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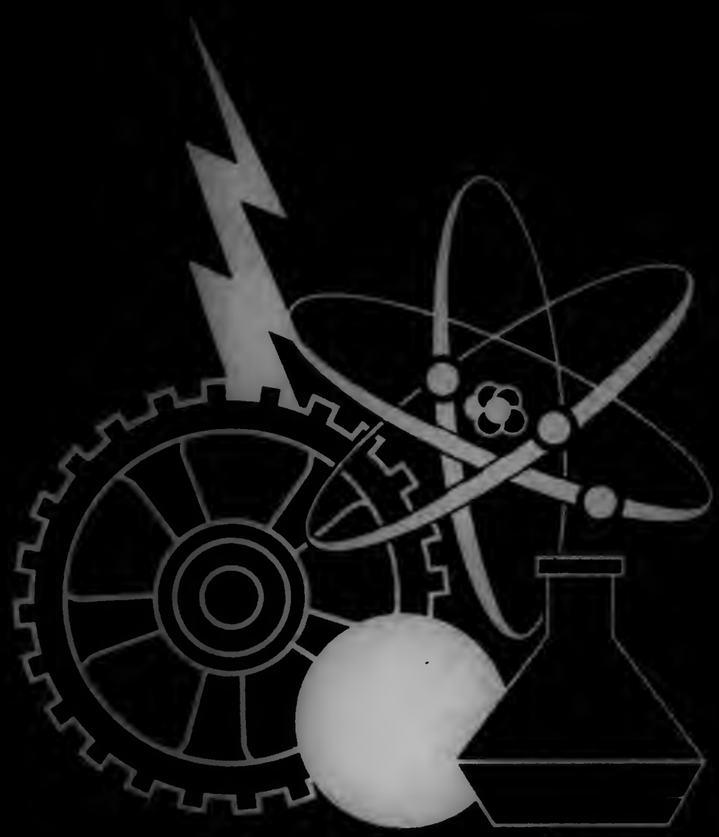
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November 5 1996



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
November 5, 1996 Volume 1192 Number 1

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1190 O.G. 3, on September 3, 1996.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on January 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1181 O.G. 49, on December 19, 1995.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective October 1, 1996, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	677.00
Basic supplemental fee (for each page over 30)	13.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	164.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	164.00
— Confirmation fee	82.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	207.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 10, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on November 03, 1993 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,257,417 through 5,259,067
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 31, 1989 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,876,745 through 4,878,254
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 29, 1985 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,549,315 through 4,550,444
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED August 28,1996
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,599	06/782,754	02/16/88
(4,467,590)	(06/560,650)	(08/28/84)
4,467,479	06/346,277	08/28/84
4,467,481	06/428,296	08/28/84
4,467,482	06/476,581	08/28/84
4,467,484	06/349,788	08/28/84
4,467,493	06/418,731	08/28/84
4,467,504	06/324,730	08/28/84
4,467,505	06/387,266	08/28/84
4,467,513	06/393,636	08/28/84
4,467,517	06/364,891	08/28/84
4,467,518	06/464,235	08/28/84
4,467,526	06/388,965	08/28/84
4,467,528	06/345,695	08/28/84
4,467,535	06/471,990	08/28/84
4,467,545	06/407,346	08/28/84
4,467,556	06/324,737	08/28/84
4,467,560	06/433,737	08/28/84
4,467,561	06/471,346	08/28/84
4,467,569	06/374,112	08/28/84
4,467,575	06/502,587	08/28/84
4,467,576	06/440,568	08/28/84
4,467,578	06/314,771	08/28/84
4,467,579	06/538,110	08/28/84
4,467,589	06/328,513	08/28/84
4,467,597	06/399,099	08/28/84
4,467,599	06/334,552	08/28/84
4,467,602	06/436,517	08/28/84
4,467,611	06/432,783	08/28/84
4,467,615	06/339,287	08/28/84
4,467,618	06/283,482	08/28/84
4,467,624	06/554,404	08/28/84
4,467,626	06/462,707	08/28/84
4,467,630	06/331,672	08/28/84
4,467,635	06/400,610	08/28/84
4,467,642	06/478,822	08/28/84
4,467,646	06/319,021	08/28/84
4,467,647	06/432,066	08/28/84
4,467,650	06/412,166	08/28/84
4,467,653	06/362,273	08/28/84
4,467,654	06/312,452	08/28/84
4,467,655	06/422,234	08/28/84
4,467,658	06/356,518	08/28/84
4,467,680	06/413,662	08/28/84
4,467,682	06/431,711	08/28/84
4,467,687	06/335,507	08/28/84
4,467,688	06/457,302	08/28/84
4,467,696	06/381,602	08/28/84
4,467,711	06/378,352	08/28/84
4,467,713	06/364,406	08/28/84
4,467,717	06/436,358	08/28/84
4,467,720	06/438,972	08/28/84
4,467,742	06/402,146	08/28/84
4,467,747	06/429,675	08/28/84
4,467,749	06/394,872	08/28/84
4,467,771	06/395,325	08/28/84
4,467,773	06/517,493	08/28/84
4,467,783	06/463,782	08/28/84
4,467,793	06/224,044	08/28/84

Patent Number	Serial Number	Issue Date
4,467,797	06/216,663	08/28/84
4,467,811	06/346,951	08/28/84
4,467,821	06/511,632	08/28/84
4,467,826	06/478,001	08/28/84
4,467,827	06/459,452	08/28/84
4,467,833	06/301,002	08/28/84
4,467,834	06/413,365	08/28/84
4,467,835	06/379,876	08/28/84
4,467,839	06/258,046	08/28/84
4,467,840	06/330,382	08/28/84
4,467,842	06/490,670	08/28/84
4,467,849	06/383,275	08/28/84
4,467,853	06/409,872	08/28/84
4,467,866	06/358,128	08/28/84
4,467,868	06/354,475	08/28/84
4,467,874	06/403,290	08/28/84
4,467,876	06/312,414	08/28/84
4,467,877	06/343,649	08/28/84
4,467,894	06/339,550	08/28/84
4,467,895	06/387,480	08/28/84
4,467,898	06/252,565	08/28/84
4,467,900	06/488,221	08/28/84
4,467,901	06/346,250	08/28/84
4,467,903	06/346,991	08/28/84
4,467,905	06/367,984	08/28/84
4,467,912	06/350,252	08/28/84
4,467,917	06/507,963	08/28/84
4,467,920	06/507,077	08/28/84
4,467,921	06/534,435	08/28/84
4,467,924	06/300,306	08/28/84
4,467,927	06/407,460	08/28/84
4,467,931	06/505,794	08/28/84
4,467,933	06/311,910	08/28/84
4,467,939	06/436,778	08/28/84
4,467,940	06/535,250	08/28/84
4,467,945	06/564,841	08/28/84
4,467,966	06/322,256	08/28/84
4,467,974	06/466,113	08/28/84
4,467,976	06/432,585	08/28/84
4,467,992	06/423,284	08/28/84
4,467,994	06/424,493	08/28/84
4,468,000	06/288,243	08/28/84
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4,468,038	06/375,487	08/28/84
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4,468,185	06/445,823	08/28/84
4,468,188	06/411,109	08/28/84
4,468,191	06/485,024	08/28/84
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4,468,334	06/410,688	08/28/84
4,468,345	06/518,349	08/28/84
4,468,351	06/501,731	08/28/84
4,468,353	06/432,051	08/28/84
4,468,354	06/466,451	08/28/84
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4,468,382	06/398,677	08/28/84
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4,468,458	06/360,519	08/28/84
4,468,459	06/446,817	08/28/84
4,468,460	06/380,847	08/28/84
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4,468,469	06/414,934	08/28/84
4,468,473	06/412,208	08/28/84
4,468,476	06/556,678	08/28/84
4,468,484	06/490,294	08/28/84
4,468,485	06/457,133	08/28/84
4,468,487	06/423,313	08/28/84
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4,468,494	06/250,401	08/28/84
4,468,501	06/509,627	08/28/84
4,468,502	06/509,629	08/28/84
4,468,503	06/509,632	08/28/84
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Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,360,854	06/215,569	12/12/80	11/23/82	08/27/96
4,426,336	06/297,736	08/31/81	01/17/84	08/26/96
4,441,087	06/330,599	12/14/81	04/03/84	08/29/96
4,442,326	06/398,403	07/14/82	04/10/84	08/26/96
4,589,475	06/490,531	05/02/83	05/20/86	08/26/96
4,639,952	06/695,549	01/28/85	02/03/87	08/29/96
4,696,034	06/660,512	10/12/84	09/22/87	08/26/96
4,719,053	06/462,340	01/31/83	01/12/88	08/26/96
4,719,683	06/814,234	12/30/85	01/19/88	08/26/96
4,747,773	07/059,332	06/08/87	05/31/88	08/23/96
4,769,413	06/920,558	10/20/86	09/06/88	08/23/96
4,945,287	07/205,993	06/13/88	07/31/90	08/27/96
4,960,271	07/229,488	08/08/88	10/02/90	08/28/96
4,984,177	07/306,001	02/01/89	01/08/91	08/26/96
5,014,570	07/428,961	10/30/89	05/14/91	08/26/96
5,020,268	07/466,859	01/18/90	06/04/91	08/29/96
5,063,765	07/327,968	03/21/89	11/12/91	08/26/96
5,081,214	07/564,043	08/07/90	01/14/92	08/26/96
5,083,400	07/605,779	10/29/90	01/28/92	08/29/96
5,085,241	07/252,264	09/02/88	02/04/92	08/26/96
5,099,799	07/570,523	08/21/90	03/31/92	08/26/96
5,119,988	07/545,399	06/28/90	06/09/92	08/23/96

Patents Reinstated Due To The Acceptance of a Late Maintenance Fee From 8/30/96

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,426,325	06/339,788	01/15/82	01/17/84	08/30/96
4,632,268	06/728,257	04/29/85	12/30/86	08/30/96
4,720,651	06/597,326	04/06/84	01/19/88	08/30/96
4,929,022	07/314,164	02/23/89	05/29/90	08/30/96
5,004,146	07/395,355	08/17/89	04/02/91	08/30/96
5,089,958	07/300,469	01/23/89	02/18/92	08/30/96
5,100,776	07/219,656	07/15/88	03/31/92	08/30/96
5,105,672	07/662,253	02/28/91	04/21/92	08/30/96

Patents Reinstated Due To The Acceptance of a Late Maintenance Fee From 9/06/96

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,453,074	06/312,705	10/19/81	06/05/84	09/12/96
4,483,890	06/460,143	01/24/83	11/20/84	09/09/96
4,606,133	06/737,786	05/28/85	08/19/86	09/12/96
4,742,837	06/921,442	10/22/86	05/10/88	09/06/96
4,744,481	07/046,394	05/06/87	05/17/88	09/12/96
4,925,674	07/236,375	08/25/88	05/15/90	09/12/96
5,063,574	07/490,769	03/06/90	11/05/91	09/12/96
5,081,150	07/512,078	04/12/90	01/14/92	09/12/96
5,109,078	07/678,470	04/01/91	04/28/92	09/12/96

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,047,733, Re. S.N. 08/688,230, July 29, 1996, Cl. 331, PLL SYNTHESIZER PROVIDING RAPID FREQUENCY CHANGEOVER, Kazuyuki Nonaka, et. al., Owner of Record: *Fujitsu Limited, Kawasak-Shi, Japan, Fujitsu VLSI Limited, Kasagai-Shi, Japan,* Attorney or Agent: Mel R. Quintos, Ex. Gp.: 2502

5,166,951, Re. S.N. 08/651,162, May 17, 1996, Cl. 375, HIGH CAPACITY SPREAD SPECTRUM CHANNEL, Donald L. Schilling, Owner of Record: *Interdigital Technology Corp., Wilmington, Del.,* Attorney or Agent: Gerald B. Halt, Jr., Ex. Gp.: 2202

5,289,021, Re. S.N. 08/595,567, Feb. 1, 1996, Cl. 257/206, BASIC CELL ARCHITECTURE FOR MASK PROGRAMMABLE GATE ARRAY WITH 3 OR MORE SIZE TRANSISTORS, Abbas El Gamal, Owner of Record: *Synopsys Inc., Mountain View, Calif.,* Attorney or Agent: Brian D. Ogonowsky, Ex. Gp.: 2503

5,298,694, Re. S.N. 08/622,638, March 27, 1996, Cl. 181/286, ACOUSTICAL INSULTING WEB, Delton R. Thompson, et. al., Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.,* Attorney or Agent: Carole Truesdale, Ex. Gp.: 2108

5,307,946, Re. S.N. 08/585,955, Jan. 16, 1996, Cl. 215/329, NECK FINISH FOR A CONTAINER AND A MATCHING REGISTER-MULTIPLE THREAD PATTERN IN A FLEXIBLE CAP FOR ENGAGEMENT ON NECK SAID FINISH, Luca Molinaro, Owner of Record: *Heller Financial Inc., Chicago, Ill.,* Attorney or Agent: Julian Caplan, Ex. Gp.: 3207

5,321,541, Re. S.N. 08/660,967, June 12, 1996, Cl. 359/127, PASSIVE OPTICAL COMMUNICATION NETWORK WITH BROADBAND UPDATE, Leonard George Cohen, Owner of Record: *American Telephone And Telegraph Co., New York, N.Y.,* Attorney or Agent: Martin I. Finston, Ex. Gp.: 2609

5,343,527, Re. S.N. 08/697,764, Aug. 29, 1996, Cl. 380/004, HYBRID ENCRYPTION AND SYSTEM FOR PROTECTING REUSABLE SOFTWARE COMPONENTS, James W. Moore, Owner of Record: *International Business Machines Corp., Armonk, N.Y.,* Attorney or Agent: Laurence J. Marhoefer, Ex. Gp.: 2202

5,362,073, Re. S.N. 08/649,954, May 10, 1996, Cl. 277/92, COMPOSITE SEAL FOR ROTARY CONE ROCK BITS, Robert G. Upton, et. al., Owner of Record: *Smith International Inc., Houston, Tex.,* Attorney or Agent: Grant T. Langton, Ex. Gp.: 3108

5,419,600, Re. S.N. 08/693,799, Aug. 1, 1996, Cl. 294/054.5, SNOW SHOVEL ASSEMBLY, Thomas A. Tisbo, et. al., Owner of Record: *Suncast Corp., Batavia, Ill.,* Attorney or Agent: Thomas W. Tolpin, Ex. Gp.: 3102

5,460,468, Re. S.N. 08/695,656, Aug. 12, 1996, Cl. 411/329, ONE-WAY NUT AND BOLT, Robert J. DiStasio, Owner of Record: *Permathread Technologies, Inc., Massapequa, N.Y.,* Attorney or Agent: Robert C. Kain, Jr., Ex. Gp.: 3508

5,503,451, Re. S.N. 08/670,627, June 26, 1996, Cl. 296/153, ADJUSTABLE WINDOW MOUNTING VEHICLE ACCESSORY, Wyman R. Thomas, Owner of Record: *Inventor,* Attorney or Agent: Stephen R. Seccombe, Ex. Gp.: 3102

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,654,849, Reexam. No. 90/004,393, Sept. 30, 1996, Cl. 371/21.1, HIGH SPEED CONCURRENT TESTING OF DYNAMIC READ/WRITE, Lionel S. White, Jr., et. al., Owner of Record: *Texas Instruments, Inc., Dallas, Tex.,* Attorney or Agent: Mark E. Courtney, Dallas, Tex., Ex. Gp.: 2413, Requester: Owner

4,868,823, Reexam. No. 90/004,394, Sept. 30, 1996, Cl. 371/21.3, HIGH SPEED CONCURRENT TESTING OF DYNAMIC READ/WRITE MEMORY ARRAY, Lionel S. White, Jr., et. al., Owner of Record: *Texas Instruments, Inc. Dallas, Tex.,* Attorney or Agent: Mark E. Courtney, Dallas, Tex., Ex. Gp.: 2413, Requester: Owner

5,181,556, Reexam. No. 90/004,395, Sept. 30, 1996, Cl. 165/080.1, SYSTEM FOR SUBSTRATE COOLING IN AN EVACUATED ENVIRONMENT, John L. Hughes, Owner of Record: *Intervac, Inc., Santa Clara, Calif.,* Attorney or Agent: Lester J. Vincent, Blakely, Sokoloff, Taylor & Zafman, Los Angeles, Calif., Ex. Gp.: 3407, Requester: Owner

5,287,914, Reexam. No. 90/004,396, Sept. 30, 1996, Cl. 165/080.1, SYSTEM FOR SUBSTRATE COOLING IN AN EVACUATED ENVIRONMENT, John L. Hughes, et. al., Owner of Record: *Intervac, Inc., Santa Clara, Calif.,* Attorney or Agent: Lester J. Vincent, Blakely, Sololoff, Taylor & Zafman, Los Angeles, Calif., Ex. Gp.: 3407, Requester: Owner

5,452,951, Reexam. No. 90/004,392, Sept. 23, 1996, Cl. 312/310, ELECTRONIC COMPONENT RACK, Hyman H. Peller, Owner of Record: *Raxxess Metalsmiths, Inc., Prospect Park, N.J.,* Attorney or Agent: Robert B. Cohen, Lerner, David, Littenburg, Krumholz & Mentlik, Westfield, N.J., Ex. Gp.: 3507, Requester: Raymond M. Speer, Klauber & Jackson, Hackensack, N.J.

5,460,317, Reexam. No. 90/004,399, Oct. 2, 1996, Cl. 228/112.1, FRICTION WELDING, Wayne M. Thomas, et. al., Owner of Record: *The Welding Institute, Cambridge, U.K.,* Attorney or Agent: Martin Novack, Westport, Conn., Ex. Gp.: 3202, Requester: Owner

5,478,356, Reexam. No. 90/004,397, Sept. 30, 1996, Cl. 510/226, CYANOAMINES AND COMPOSITIONS USEFUL FOR BLEACHING, Thomas A. Kaaret, Owner of Record: *The Chlorox Co., Oakland, Calif.,* Attorney or Agent: J. Suzanne Siebert, K. Alison de Runtz, Majestic, Parsons, Siebert & Hsuei, San Francisco, Calif., Ex. Gp.:1105, Requester: Owner

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JULY 01, 1996 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
328,291	71/363,731	09/24/1935
328,309	71/364,535	09/24/1935
328,314	71/362,043	09/24/1935
328,317	71/362,157	09/24/1935
328,326	71/354,192	09/24/1935
328,346	71/365,596	09/24/1935
328,352	71/363,132	09/24/1935
328,359	71/344,590	09/24/1935
328,363	71/365,390	09/24/1935
328,388	71/358,719	09/24/1935
328,413	71/365,329	09/24/1935
612,475	71/653,312	09/20/1955
612,834	71/679,082	09/27/1955
612,835	71/680,559	09/27/1955
612,838	71/671,003	09/27/1955
612,843	71/657,528	09/27/1955
612,845	71/675,166	09/27/1955
612,852	71/653,596	09/27/1955
612,853	71/659,395	09/27/1955
612,857	71/666,048	09/27/1955
612,858	71/666,320	09/27/1955
612,861	71/671,001	09/27/1955
612,865	71/672,725	09/27/1955
612,870	71/673,514	09/27/1955
612,871	71/674,855	09/27/1955
612,874	71/675,934	09/27/1955
612,881	71/677,021	09/27/1955
612,885	71/677,290	09/27/1955
612,887	71/677,531	09/27/1955
612,888	71/677,639	09/27/1955
612,893	71/674,496	09/27/1955
612,894	71/675,608	09/27/1955
612,895	71/656,772	09/27/1955
612,898	71/678,083	09/27/1955
612,911	71/677,770	09/27/1955
612,913	71/679,125	09/27/1955
612,914	71/679,126	09/27/1955
612,920	71/653,098	09/27/1955
612,924	71/661,885	09/27/1955
612,927	71/662,944	09/27/1955
612,929	71/663,979	09/27/1955
612,936	71/670,610	09/27/1955
612,941	71/673,298	09/27/1955
612,951	71/677,135	09/27/1955
612,952	71/677,137	09/27/1955
612,953	71/677,160	09/27/1955
612,954	71/677,177	09/27/1955
612,958	71/678,063	09/27/1955
612,972	71/664,277	09/27/1955
612,978	71/682,859	09/27/1955
612,979	71/655,667	09/27/1955
612,981	71/660,320	09/27/1955
612,988	71/676,041	09/27/1955
612,990	71/676,643	09/27/1955
613,004	71/638,745	09/27/1955
613,014	71/664,532	09/27/1955
613,017	71/667,351	09/27/1955
613,018	71/667,382	09/27/1955
613,024	71/669,537	09/27/1955
613,025	71/669,799	09/27/1955
613,029	71/670,930	09/27/1955
613,032	71/671,014	09/27/1955
613,038	71/673,243	09/27/1955
613,039	71/673,566	09/27/1955
613,042	71/675,343	09/27/1955
613,043	71/675,377	09/27/1955
613,051	71/675,944	09/27/1955
613,053	71/676,083	09/27/1955
613,057	71/676,678	09/27/1955
613,065	71/677,255	09/27/1955
613,066	71/677,257	09/27/1955
613,069	71/634,676	09/27/1955
613,073	71/628,886	09/27/1955
613,090	71/663,027	09/27/1955
613,091	71/663,295	09/27/1955
613,098	71/665,205	09/27/1955
613,101	71/667,127	09/27/1955
613,105	71/672,638	09/27/1955
613,114	71/675,658	09/27/1955
613,122	71/677,110	09/27/1955
613,124	71/677,225	09/27/1955
613,125	71/677,281	09/27/1955
613,130	71/673,603	09/27/1955
613,142	71/676,786	09/27/1955
613,143	71/659,315	09/27/1955
613,145	71/665,871	09/27/1955
613,159	71/680,861	09/27/1955
613,161	71/681,633	09/27/1955
613,164	71/654,546	09/27/1955
613,165	71/667,660	09/27/1955
613,167	71/672,704	09/27/1955
613,173	71/682,607	09/27/1955
613,182	71/678,282	09/27/1955
613,193	71/677,285	09/27/1955
613,199	71/639,433	09/27/1955
613,202	71/650,008	09/27/1955
613,209	71/660,396	09/27/1955
613,220	71/674,161	09/27/1955
613,221	71/674,559	09/27/1955
613,222	71/674,602	09/27/1955
613,229	71/678,048	09/27/1955
613,232	71/678,232	09/27/1955
613,238	71/679,562	09/27/1955
613,240	71/673,014	09/27/1955
613,247	71/618,815	09/27/1955
613,251	71/653,985	09/27/1955
613,255	71/661,524	09/27/1955
613,256	71/662,671	09/27/1955
613,274	71/678,993	09/27/1955
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613,277	71/630,030	09/27/1955
613,280	71/672,438	09/27/1955
613,283	71/675,724	09/27/1955
613,286	71/677,039	09/27/1955
613,288	71/658,282	09/27/1955
613,294	71/673,335	09/27/1955
613,296	71/676,795	09/27/1955
613,297	71/677,253	09/27/1955
613,300	71/680,869	09/27/1955
613,306	71/678,412	09/27/1955
613,311	71/663,528	09/27/1955
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Reg. Number	Serial Number	Reg. Date
1,020,855	73/033,267	09/23/1975
1,020,858	73/034,552	09/23/1975
1,020,859	73/036,940	09/23/1975
1,020,863	73/045,790	09/23/1975
1,020,864	73/046,664	09/23/1975
1,020,866	73/022,683	09/23/1975
1,020,867	73/032,181	09/23/1975
1,020,876	73/030,370	09/23/1975
1,020,877	73/030,372	09/23/1975
1,020,878	73/030,380	09/23/1975
1,020,879	73/030,382	09/23/1975
1,020,883	73/033,869	09/23/1975
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1,020,889	73/035,000	09/23/1975
1,020,891	73/035,041	09/23/1975
1,020,892	73/035,060	09/23/1975
1,020,894	73/036,824	09/23/1975
1,020,895	73/037,286	09/23/1975
1,020,896	73/037,381	09/23/1975
1,020,897	73/037,383	09/23/1975
1,020,898	73/037,594	09/23/1975
1,020,903	73/038,438	09/23/1975
1,020,904	73/039,832	09/23/1975
1,020,905	73/039,966	09/23/1975
1,020,906	73/040,101	09/23/1975
1,020,908	73/040,307	09/23/1975
1,020,916	73/020,234	09/23/1975
1,020,918	73/026,899	09/23/1975
1,020,919	73/029,678	09/23/1975
1,020,920	73/030,815	09/23/1975
1,020,921	73/035,042	09/23/1975
1,020,923	73/036,777	09/23/1975
1,020,924	73/036,806	09/23/1975
1,020,929	73/040,882	09/23/1975
1,020,930	73/041,041	09/23/1975
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1,020,948	73/024,806	09/23/1975
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1,020,956	73/033,538	09/23/1975
1,020,958	73/039,507	09/23/1975
1,020,959	73/040,171	09/23/1975
1,020,961	73/040,764	09/23/1975
1,020,963	73/045,213	09/23/1975
1,020,966	73/034,144	09/23/1975
1,020,967	73/039,162	09/23/1975
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1,020,982	73/020,753	09/23/1975
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1,020,991	73/030,810	09/23/1975
1,020,993	73/035,412	09/23/1975
1,020,995	73/037,611	09/23/1975
1,020,998	73/040,260	09/23/1975
1,021,001	73/041,279	09/23/1975
1,021,004	73/043,384	09/23/1975
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1,021,008	73/006,212	09/23/1975
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1,021,039	73/034,829	09/23/1975
1,021,044	73/016,572	09/23/1975
1,021,047	73/025,977	09/23/1975
1,021,050	73/028,977	09/23/1975
1,021,051	73/028,978	09/23/1975
1,021,052	73/029,018	09/23/1975
1,021,057	73/032,813	09/23/1975
1,021,058	73/032,817	09/23/1975
1,021,060	73/035,315	09/23/1975
1,021,065	73/018,814	09/23/1975
1,021,069	73/007,814	09/23/1975
1,021,071	73/015,654	09/23/1975
1,021,079	73/018,871	09/23/1975
1,021,081	73/028,394	09/23/1975
1,021,082	73/030,760	09/23/1975
1,021,083	73/036,295	09/23/1975
1,021,085	73/040,497	09/23/1975
1,021,087	73/033,484	09/23/1975
1,021,088	73/037,717	09/23/1975
1,021,090	73/015,519	09/23/1975
1,021,091	73/016,827	09/23/1975
1,021,092	73/019,160	09/23/1975
1,021,093	73/027,973	09/23/1975
1,021,096	73/033,320	09/23/1975
1,021,099	73/040,075	09/23/1975
1,021,107	73/022,942	09/23/1975
1,021,108	73/025,082	09/23/1975
1,021,109	73/025,083	09/23/1975
1,021,112	73/027,290	09/23/1975
1,021,113	73/029,074	09/23/1975
1,021,114	73/032,457	09/23/1975
1,021,115	73/033,683	09/23/1975
1,021,117	73/036,020	09/23/1975
1,021,118	73/036,021	09/23/1975
1,021,120	73/036,862	09/23/1975
1,021,124	73/040,853	09/23/1975
1,021,126	73/008,665	09/23/1975
1,021,127	73/017,587	09/23/1975
1,021,134	73/030,525	09/23/1975
1,021,136	73/032,480	09/23/1975
1,021,138	73/035,456	09/23/1975
1,021,144	73/035,243	09/23/1975
1,021,149	73/009,454	09/23/1975
1,021,151	73/033,335	09/23/1975
1,021,152	73/033,419	09/23/1975
1,021,154	73/008,777	09/23/1975
1,021,155	73/014,442	09/23/1975
1,021,157	73/046,496	09/23/1975
1,021,159	73/004,829	09/23/1975
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1,021,162	73/027,544	09/23/1975
1,021,165	73/030,787	09/23/1975
1,021,166	73/030,788	09/23/1975
1,021,167	73/031,440	09/23/1975
1,021,171	73/040,030	09/23/1975
1,021,176	73/033,916	09/23/1975
1,021,179	73/009,431	09/23/1975
1,021,182	73/019,401	09/23/1975
1,021,183	73/021,889	09/23/1975
1,021,186	73/044,871	09/23/1975
1,021,194	73/028,658	09/23/1975
1,021,196	73/028,983	09/23/1975
1,021,203	73/040,212	09/23/1975
1,021,204	73/040,247	09/23/1975
1,021,205	73/040,429	09/23/1975
1,021,208	73/009,166	09/23/1975
1,021,209	73/028,760	09/23/1975
1,021,211	73/030,354	09/23/1975
1,021,215	73/028,429	09/23/1975
1,021,217	73/037,881	09/23/1975
1,021,218	73/037,882	09/23/1975
1,021,238	73/037,221	09/23/1975
1,021,239	73/039,368	09/23/1975
1,021,240	73/042,435	09/23/1975
1,021,243	73/004,160	09/23/1975
1,021,247	73/011,888	09/23/1975
1,021,249	73/018,259	09/23/1975
1,021,257	73/031,774	09/23/1975
1,021,258	73/032,188	09/23/1975

Reg. Number	Serial Number	Reg. Date
1,021,259	73/032,405	09/23/1975
1,021,270	73/038,708	09/23/1975
1,021,273	73/040,489	09/23/1975
1,021,275	72/462,237	09/23/1975
1,021,276	72/431,407	09/23/1975
1,021,278	72/438,198	09/23/1975
1,021,279	72/424,646	09/23/1975
1,021,280	72/437,030	09/23/1975
1,021,283	72/455,913	09/23/1975
1,021,285	72/466,262	09/23/1975
1,021,286	72/466,665	09/23/1975
1,021,289	72/462,188	09/23/1975
1,021,290	72/442,158	09/23/1975
1,021,295	72/466,666	09/23/1975
1,021,296	72/461,926	09/23/1975
1,021,297	72/455,617	09/23/1975
1,021,302	72/402,259	09/23/1975
1,021,303	72/456,634	09/23/1975
1,021,306	72/466,563	09/23/1975
1,021,309	72/430,366	09/23/1975
1,021,314	72/448,398	09/23/1975
1,021,317	72/415,452	09/23/1975
1,021,320	72/425,064	09/23/1975
1,021,330	72/453,792	09/23/1975
1,021,334	73/028,680	09/23/1975
1,021,337	73/030,224	09/23/1975

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Dukes' Place Inc., Chicago, Ill., Reg. No. 1,112,492 for the mark "DUKES' PLACE", Canc. No. 25,140.

Gene Knutson dba National Golf Charities Hole In One Association, Mishawaka, Ind., Reg. No. 1,736,990 for the mark "NGC HOLE IN ONE ASSOCIATION AND DESIGN", Canc. No. 24,913.

Summit Game Products, Kalamazoo, Mich., Reg. No. 1,718,378 for the mark "WHAT'S THAT WORD", Canc. No. 25,318.

National Coach Corporation, Gardena, Calif, Reg. Nos. 1,217,095 and 1,638,301 for the mark "DURANGO", Canc. No. 25,347.

A & A Auto Rental, Inc., Batesville, Ark., Reg. No. 1,649,720, for the mark A & A and Design, Canc. No. 25,131.

Sam Hootstein & Sons, Inc., Norwood, Mass., Reg. No. 1,207,668, for the mark "BACK BAY COLLECTION", Canc. No. 25,416.

Darlene Tenes, dba Bay Area's Best Enterprises, Los Gatos, Calif., Reg. No. 1,784,092, for the mark "BABE", Canc. No. 25,275.

Camelot Marketing Group, Inc., Tinton Falls, N.J., Reg. No. 1,292,761, for the mark "FLOSSIES and design", Canc. No. 25,409.

JEAN BROWN
Technical Support Manager,
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Status of Certification Services

On November 28, 1995, the Office published an Official Gazette Notice entitled "Temporary Suspension of At Cost Services for Orders for Certified Copies" (1180 OG 121) to advise practitioners and the public of delays in filling orders for certified copies of PTO documents. This is an update of actual days to mail for orders filled during the month of September 1996:

Certified Product	Goal	Actual Calendar Days to Mail
Patent Application-As-Filed, Expedited	7	8
Patent Application-As-Filed, Regular	17	18
Patent Related File Wrapper	25	34
Patent Copy	10	6
Patent Assignments	17	9
Trademark Application-As-Filed, Expedited	7	9
Trademark Application-As-Filed, Regular	17	8
Trademark Related File Wrapper	25	44
Trademark Assignments	17	21
Trademark Registration, Expedited	3*	6*
Trademark Registration, Regular	10*	9*

*Business Days

Due to backlogs and varying availability of media, customers will not be advised when orders are not delivered within the published goal periods. However, customers will be advised if any unexpected delay in their order has been identified. Customers should use the above actual days to mail for each product as a guide as to when they can expect their orders.

Delivery of any specific copy will vary based on the availability of microfilm products and/or file accessibility. Customers are encouraged to fax orders for copies directly to Certification Division at (703) 308-9759 and to pay by PTO Deposit Account, MasterCard, or Visa. Information on the status of pending orders may be obtained by calling (703) 308-9726 or 1 (800) 972-6382 (outside the Washington, D.C. Metro area).

October 8, 1996

WESLEY H. GEWEHR
Administrator for Information
Dissemination

Disclaimer and Dedication

5,036,473 — Michael R. Butts, Portland; Jon A. Batcheller, Newberg, both of Oregon. METHOD OF USING ELECTRONICALLY RECONFIGURABLE LOGIC CIRCUITS. Patent dated July 30, 1991. Disclaimer and Dedication filed May 10, 1996, by the assingee, Mentor Graphics Corporation.

Hereby disclaims and dedicates to the Public claims 1, 6, 13, 14, 16, and 17 of said patent.

Disclaimers

5,458,263 — Sam Ciammitti, Phoenix; Jody L. Numbers, Tempe, both of Arizona. DISPENSER FOR AEROSOL DEVICE. Patent dated October 17, 1995. Disclaimer filed September 30, 1996, by the assignee, Guardian Royalty Corporation.

Hereby enters this disclaimer to claims 1, 5, 7, 10, 14, 15, 18, and 19 of said patent.

5,529,117 — Mark G. Voss, Franksville; Dennis C. Granetzke, Racine, both of Wisconsin. HEAT EXCHANGER. Patent dated June 25, 1996. Disclaimer filed September 3, 1996, by the assignee, Modine Manufacturing Co.

Hereby enters this disclaimer to claims 1-4 and 7 of said patent.

5,538,267 — Mario A. Pasin, Hinsdale; Roger Tonelli, Elmwood Park, both of Ill.; James B. Easley, Minneapolis, Minn. CONVERTIBLE TOY WAGON HAVING ADDITIONAL STORAGE CAPACITY. Patent dated July 23, 1996. Disclaimer filed September 6, 1996, by the assignee, Radio Flyer Inc.

Hereby enters this disclaimer to claims 11-14, 16 and 17 of said patent.

Certificate of Correction
For Week of November 5, 1995

B1 4,958,664	5,422,940	5,488,291	5,513,412
Re. 35,246	5,423,121	5,488,877	5,514,338
D. 346,208	5,426,651	5,489,637	5,515,491
D. 359,723	5,426,921	5,489,678	5,515,995
D. 372,807	5,428,467	5,489,998	5,516,352
D. 373,548	5,428,668	5,490,004	5,516,528
4,798,596	5,430,148	5,490,666	5,516,699
4,819,062	5,434,835	5,491,348	5,517,205
4,969,759	5,437,020	5,491,585	5,517,214
5,020,335	5,437,545	5,492,038	5,517,284
5,065,172	5,438,856	5,493,420	5,517,331
5,085,512	5,439,379	5,493,670	5,517,344
5,109,276	5,440,443	5,495,034	5,517,532
5,130,840	5,440,520	5,495,105	5,517,796
5,139,979	5,442,940	5,495,812	5,517,988
5,150,318	5,443,020	5,496,332	5,518,398
5,173,300	5,443,157	5,497,119	5,518,993
5,182,591	5,444,034	5,498,042	5,519,023
5,188,613	5,444,158	5,498,388	5,519,471
5,202,675	5,444,908	5,499,741	5,520,007
5,207,300	5,447,911	5,499,762	5,520,407
5,267,166	5,452,025	5,500,481	5,520,445
5,268,243	5,452,835	5,500,696	5,520,699
5,270,774	5,453,518	5,501,608	5,521,683
5,298,979	5,454,724	5,501,803	5,522,063
5,314,530	5,455,598	5,502,468	5,522,371
5,322,479	5,455,744	5,502,891	5,522,887
5,328,987	5,455,938	5,502,903	5,523,545
5,329,378	5,457,154	5,504,057	5,523,567
5,349,277	5,457,411	5,504,229	5,523,593
5,350,768	5,459,166	5,504,428	5,523,808
5,354,690	5,459,819	5,504,738	5,523,895
5,354,863	5,460,586	5,504,875	5,523,986
5,356,908	5,460,705	5,505,074	5,524,090
5,364,542	5,464,770	5,505,115	5,524,191
5,365,109	5,466,624	5,505,754	5,524,784
5,371,772	5,466,685	5,506,075	5,524,844
5,372,290	5,467,573	5,506,390	5,524,960
5,372,523	5,468,288	5,507,435	5,525,830
5,374,340	5,469,422	5,507,852	5,526,015
5,384,722	5,470,660	5,508,105	5,526,423
5,386,977	5,470,741	5,508,368	5,526,549
5,389,527	5,473,547	5,508,948	5,527,376
5,396,053	5,475,124	5,509,097	5,527,413
5,396,634	5,478,159	5,510,011	5,527,649
5,400,343	5,478,418	5,510,095	5,527,758
5,400,881	5,479,426	5,510,149	5,527,940
5,400,920	5,480,753	5,510,188	5,528,188
5,404,888	5,481,519	5,510,197	5,528,523
5,406,055	5,482,350	5,510,287	5,528,655
5,407,224	5,482,638	5,510,551	5,529,703
5,407,739	5,483,222	5,510,639	5,529,984
5,415,312	5,483,285	5,511,305	5,529,994
5,416,782	5,484,096	5,512,012	5,530,095
5,418,479	5,484,442	5,512,259	5,530,227
5,419,323	5,485,832	5,512,294	5,530,233
5,422,484	5,486,517	5,512,571	5,530,250
5,422,586	5,487,099	5,513,180	5,530,494
5,530,575	5,535,575	5,539,268	5,544,575
5,530,616	5,535,599	5,539,400	5,544,764
5,531,719	5,535,677	5,539,471	5,544,824
5,532,361	5,535,785	5,539,739	5,544,922
5,532,699	5,535,842	5,540,029	5,545,413
5,532,813	5,535,875	5,540,289	5,545,879
5,532,865	5,535,898	5,540,361	5,546,108
5,532,914	5,536,167	5,540,514	5,546,138
5,533,200	5,536,539	5,540,665	5,546,431
5,533,273	5,536,750	5,541,185	5,546,538
5,533,374	5,536,789	5,541,570	5,546,573
5,533,863	5,536,817	5,541,851	5,546,978
5,534,313	5,537,103	5,541,891	5,547,088
5,534,485	5,537,172	5,542,680	5,547,211
5,534,517	5,537,174	5,543,071	5,547,750
5,534,539	5,537,384	5,543,086	5,548,953
5,534,586	5,537,405	5,543,207	5,549,186
5,534,771	5,537,423	5,543,568	5,549,198
5,534,923	5,537,542	5,543,734	5,549,882
5,534,940	5,537,578	5,543,920	5,549,976
5,534,987	5,537,693	5,543,972	5,550,188
5,534,998	5,537,756	5,544,171	5,550,298
5,535,135	5,537,804	5,544,261	5,552,110
5,535,249	5,538,074	5,544,300	
5,535,396	5,538,573	5,544,419	

DEPARTMENT OF COMMERCE

Patent and Trademark Office

Request for Comments on the Chairman's Text of the Diplomatic Conference on Certain Copyright and Neighboring Rights Questions, To Be Held in Geneva From December 2 to 20, 1996

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Notice and request for public comments.

SUMMARY: As the Administration prepares for the Diplomatic Conference on Certain Copyright and Neighboring Rights Questions, to be held in Geneva from December 2 to 20, 1996, we invite interested parties to submit written comments on the Chairman's text and to attend a public briefing to discuss the Chairman's text of the Diplomatic Conference. During the briefing, Jukka Liedes, Chairman of the Committee of Experts, will discuss the text and will be available to answer questions.

DATES: The briefing will be held on November 12, 1996, from 1 p.m. to 5 p.m.

Written comments on the Chairman's text are due on or before November 22, 1996.

ADDRESSES: The briefing will be held in Marriott's Crystal Forum, a part of the Crystal City Marriott Hotel located in The Underground, 1999 Jefferson Davis Highway, Arlington, Virginia.

A transcript of the meeting will be made available for public inspection in room 902 of Crystal Park Two, 2121 Crystal Drive, Arlington, Virginia. The transcript will also be made available through the Patent and Trademark Office's home page, which is located at www.uspto.gov.

Written comments should be submitted to the Commissioner of Patents and Trademarks, Box 4, Patent and Trademark Office, Washington, D.C. 20231, marked to the attention of Ms. Carmen Guzman Lowrey, Associate Commissioner for Governmental and International Affairs. Written comments may also be submitted electronically by sending them to Mr. Keith Kupferschmid at diploconf@uspto.gov.

All written comments received will be made available for public inspection in room 902 of Crystal Park Two, 2121 Crystal Drive, Arlington, Virginia.

FOR FURTHER INFORMATION CONTACT: Mr. Keith M. Kupferschmid by telephone at (703) 305-9300, by facsimile at (703) 305-8885, by electronic mail at diploconf@uspto.gov or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Box 4, Patent and Trademark Office, Washington, D.C. 20231. It is not necessary for interested parties to contact the PTO to request to attend the briefing.

SUPPLEMENTARY INFORMATION: The United States is committed to making progress in the World Intellectual Property Organization (WIPO) toward improving international protection for works protected by copyright and neighboring rights. We want to build upon the international intellectual property norms that were set in the Agreement on Trade-Related Aspects of Intellectual Property (TRIPs). This is essential, especially in view of the need to deal with the intellectual property issues associated with the Global Information Infrastructure (GII). To accomplish this goal, the members of WIPO, with the leadership of the United States, are working to establish three new international agreements, commonly referred to as--

A Protocol to the Berne Convention for the Protection of Literary and Artistic Works, which would modernize the Berne Convention to take into account new forms of expression and new uses of copyrighted works that have evolved due to technological developments since the Berne Convention's most recent revision in 1971.

A New Instrument for the Protection of Performers and Producers of Phonograms, which would improve international standards of protection for sound recordings, and protect the rights of certain performers in respect of their live performances.

A Treaty for the Sui Generis Protection of Databases, which would ensure adequate incentives to invest in creating databases, through a new type of protection that would safeguard databases against destruction of their commercial value.

These agreements would provide the levels of protection for both copyright and neighboring rights that are critical to the development of the commercial potential of the GII.

Much progress has been made in the negotiations in WIPO through the submission of treaty proposals by the United States and other countries. Based on these submissions and the views expressed in meetings of the Committee of Experts, the Chairman of the Committee of Experts has prepared three draft treaties which address digital and conventional copyright issues. These proposed treaties will be taken up at a Diplomatic Conference on Certain Copyright and Neighboring Rights Issues to be convened December 2-20, in Geneva at WIPO headquarters.

As the Administration prepares for the Diplomatic Conference, we invite interested parties to submit written comments on the Chairman's text of the draft treaties. These comments should be received by the PTO no later than November 22, 1996.

In addition, to facilitate a better understanding of the text of the draft treaties, the PTO will hold a briefing to discuss them. During the briefing, Jukka Liedes, Chairman of the Committee of Experts, will discuss the text and will be available to answer questions.

Copies of the draft treaties and other information relevant to the Diplomatic Conference can be found at the PTO's home page, located at www.uspto.gov. Copies of the draft treaties will also be available at the briefing and upon request.

Dated: October 10, 1996.

Bruce A. Lehman,
Assistant Secretary of Commerce
and Commissioner of Patents and Trademarks.

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Part 2

[Docket No. 960828232-6294-02]

RIN 0651-AA90

Establishment of Recordal Fees Associated with the Fastener Quality Act

AGENCY: Patent and Trademark Office, Commerce

ACTION: Final Rule.

SUMMARY: The Patent and Trademark Office (PTO) is amending the rules of practice to establish fees associated with recordation of insignia of manufacturers and private label distributors to ensure the traceability of a fastener to its manufacturer or private label distributor. This amendment is in accordance with the provisions of the Fastener Quality Act. 15 U.S.C. 5401 et seq.

EFFECTIVE DATE: November 25, 1996.

FOR FURTHER INFORMATION CONTACT: Lizbeth Kulick by telephone at (703) 308-8900, or by fax at (703) 308-7220, or by mail marked to her attention and addressed to the Assistant Commissioner for Trademarks, 2900 Crystal Drive, Arlington, Virginia, 22202-3513.

SUPPLEMENTARY INFORMATION: On August 17, 1992, the Department of Commerce issued a notice of proposed rulemaking to implement the Fastener Quality Act (Act). 57 FR 37032. In that notice, the PTO was identified as the Office within the Commerce Department with the responsibility for recording the fastener insignia of manufacturers and private label distributors as required by Section 8 of the Act. 57 FR 37033-35, August 17, 1992. The notice proposed that the costs of recording insignia be recovered by user fees. 57 FR 37035-36, August 17, 1992.

The PTO must publish a notice in the Federal Register of any change of its fees at least 30 days before the effective date thereof. 15 U.S.C. 1113(a). On September 17, 1996, a notice of proposed rulemaking was published in the Federal Register, at 61 FR 48872-73, to announce three proposed fees of twenty dollars each, to recover costs associated with the insignia recordal program. The PTO has received no comments regarding the proposed fees.

Additionally, the September 17th notice proposed to remove two rules from Part 2, 37 C.F.R. 2.53 and 2.189, because they were deemed not administratively necessary. Section 2.53 specifies the manner in which drawings must be transmitted. Section 2.189 simply states the Office's policy on publishing amendments to the rules. This policy is not changing, but will no longer be stated as a rule. No comments were received on the proposed removal of the two rules.

OTHER CONSIDERATIONS

This rule is not significant for the purposes of Executive Order 12866. The Office of Management and Budget approved the information collections required by this rule on October 1, 1996 (OMB number 0651-0028). This clearance expires October 31, 1999. The affected public is manufacturers and private label distributors of certain types of industrial fasteners. The estimated average number of responses is six hundred. The estimated time per response is ten minutes, so the estimated total annual burden is one hundred hours. The collected information is needed to ensure that a fastener can be traced to its manufacturer or private label distributor.

Notwithstanding any other provision of law, no person is required to respond to, nor shall a person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB Control Number.

This proposed fee does not require notice and comment under 5 U.S.C. 553 or any other statute, so no analysis or certification is required under 5 U.S.C. 603(a).

List of Subjects in 37 CFR Part 2
Administrative practice and procedure, Courts, Lawyers, Trademarks.

For the reasons set out in the preamble, 37 CFR Part 2 is amended as set forth below.

PART 2 - RULES OF PRACTICE IN TRADEMARK CASES

1. The authority citation for part 2 continues to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6, unless otherwise noted.

2. Section 2.7 is added to read as follows:

§ 2.7 Fastener Recordal Fees

(a) Application fee for recordal of insignia	$20.00
(b) Renewal of insignia recordal	$20.00
(c) Surcharge for late renewal of insignia recordal	$20.00

§ 2.53 [Removed]

3. Section 2.53 is removed.

§ 2.189 [Removed]

4. Section 2.189 and the undesignated center heading "Amendment of Rules" are removed.

Dated: October 23, 1996

Bruce A. Lehman
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Summary of Final Decisions Issued by the Trademark Trial and Appeal Board September 2-6, 1996

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Mark and Goods Cited by Examining Attorney	Applicant's/ Respondent's Mark and Goods/Services	Opposer's/ Petitioner's Mark and Goods/Services	Recommended for Publication
9-3	EX	74/261,739	Custom Printing, Inc.	2(d)	Refusal Affirmed	"CHILL" [soft walled thermally insulated containers for food and/or beverages]	"CHILLER" (and design) [beverage container insulating sleeve]		No
9-4	EX	74/408,383	Lako Tool and Mfg. Co. Inc.	2(e)(1)	Refusal Affirmed		"HOT CHAMBER PUNCH" [power-operated heated tool for perforating the header region of a package in the form of a plastic bag containing desired product/ contents]		No
9-4	EX	74/390,773	Miniature Aircraft USA	whether certain portions of applicant's mark have become distinctive of its goods, such that those portions need not be disclaimed under Section 6	Refusal Affirmed		"X-CELL MINIATURE AIRCRAFT USA" (and a design incorporating the representation of a helicopter) [miniature helicopter model kits consisting of parts and accessories for miniature helicopters]		No
9-5	OPP	83,706	Polaroid Corp. v. Polatech GmbH	2(d)	Oppositions Dismissed		"POLATECH" (and design) [machine parts, namely, plastic cutting strips for paper cutting machines, and plastic machine casings]	"POLAROID" [photographic cameras and films, light filters and lenses, electronic imaging recording devices, magnetic media and diversified chemical, optical, and commercial products, etc.; and other marks with the prefix "POLA"	No
9-5	OPP	83,707							
9-5	OPP	94,678	Traveling Software, Inc. v. Mittell	2(d)	Opposition Dismissed		"LANLINK" [computer hardware; software for use in establishing interconnection of computer hardware]	"LAPLINK" [computer software]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

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Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

Please address mail as follows:

Box _____
Assistant Commissioner for Patents
Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

SPECIAL BOXES FOR TRADEMARK MAIL

Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

Please address mail as follows:

Box _____
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Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

SPECIAL BOXES APPLICABLE TO *BOTH* PATENT AND TRADEMARK MAIL

The following special box designations are applicable to both patent and trademark related mail, and the recommendations for "Special Boxes for Patent Mail" (above) should be followed for the types of mail listed below.

Please address mail as follows:

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Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6500 Ext. 257
New Hampshire	Concord: New Hampshire State Library	(603) 271-2239
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

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State	*Name of Library*	*Telephone Contact*
	New York Public Library (The Research Libraries)	(212) 592-7000
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(303) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 3459
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	Not Yet Operational
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	11/10/94
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	07/25/94
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—BARRY S. RICHMAN, Director	308-0651	09/22/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY	308-2351	02/02/95
STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-0196	08/19/94
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director		
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	10/25/94
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	02/28/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	11/11/93
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	08/29/94
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	03/03/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	01/20/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	02/27/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	06/07/94
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	11/17/94
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	07/03/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	06/02/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	11/07/94

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of October 1, 1996

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/27/96	08/05/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/27/96	05/07/96
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/04/96	07/15/96
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/10/96	07/17/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/06/96	06/04/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/10/96	07/23/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/04/96	07/22/96
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/15/96	04/19/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/10/96	08/06/96
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	07/01/96	—0—
Renewals (All Classes)	07/10/96	—0—
Section 12(c) Publications (All Classes)	04/20/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

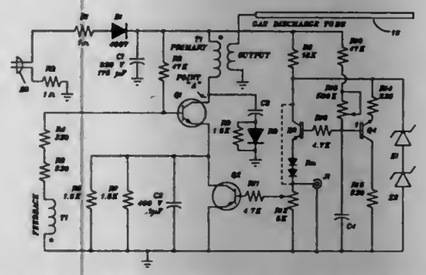
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REEXAMINATIONS

NOVEMBER 5, 1996

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,742,278 (3045th)
SINGLE CONNECTION GAS DISCHARGE DISPLAY AND DRIVER
Robert E. Iannini, Mount Vernon, N.H., assignor to Bertonee Inc., Calgary, Canada
Reexamination Request No. 90/003,834, May 17, 1995.
Reexamination Certificate for Patent 4,742,278, issued May 3, 1988, Ser. No. 57,617, Jun. 3, 1987.
Int. Cl.[6] H05B *41/16*
U.S. Cl. 315—248



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

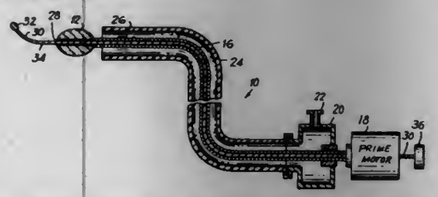
The patentability of claims **10**, **11**, **23**, **24**, **36** and **37** is confirmed.

Claims **1–9**, **12–22**, **25–35** and **38–41** are cancelled.

10. The improvement of claim **1** wherein:

said power source includes means for reducing the frequency of said voltage ramp as more gas is ionized to offset the effect of an increased available natural capacitance to ground associated with the increased quantity of ionized gas.

B1 4,990,134 (3046th)
TRANSLUMINAL MICRODISSECTION DEVICE
David C. Auth, Redmond, Wash., assignor to Heart Technology, Inc., Redmond, Wash.
Reexamination Request No. 90/003,699, Jan. 23, 1995.
Reexamination Certificate for Patent 4,990,134, issued Feb. 5, 1991, Ser. No. 378,741, Jul. 11, 1989.
Continuation of Ser. No. 929,956, Nov. 12, 1986, abandoned, which is a continuation-in-part of Ser. No. 816,190, Jan. 6, 1986, abandoned.
Int. Cl.[6] A61B *17/20*
U.S. Cl. 604—22



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–7**, **9–13** is confirmed.

Claim **8** is determined to be patentable as amended.

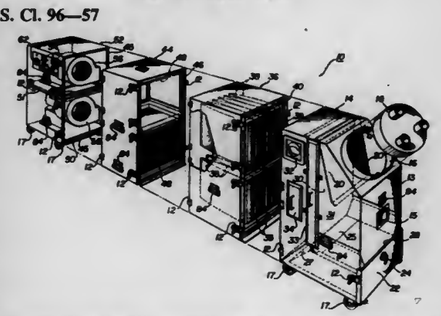
1. A transluminal microdissection device comprising:

(a) flexible, hollow drive shaft having a rotatable, substantially elliposoidal cutting tip attached thereto, said tip having a diameter which is greater than that of said drive shaft and said tip having a substantially cylindrical opening in fluid communication with said hollow drive shaft so that said drive shaft and tip can be guided along a guide wire;

(b) an abrasive surface on said tip, said abrasive surface being comprised of abrasive material attached to the surface of said tip; and

(c) a rotatable prime mover which is capable of rotating said drive shaft at a rotation rate of from about 20,000 revolutions per minute to about 160,000 revolutions per minute, whereby said abrasive material microdissects particles small enough to pass through the capillaries of a person.

B2 5,069,691 (3047th)
PORTABLE FILTRATION UNIT
Terrell Travis, Alpharetta; David Shagott, Duluth, both of Ga.; Gary Kruse, Lincoln University, Pa.; Daniel Sutherland, and Blair Harber, Jr., both of Ontario, Canada, assignors to Abatement Technologies, Duluth, Ga.
Reexamination Request No. 90/003,154, Aug. 9, 1993.
Reexamination Certificate for Patent 5,069,691, issued Dec. 3, 1991, Ser. No. 613,212, Nov. 14, 1990.
Int. Cl.[6] B01D *50/00*
U.S. Cl. 96—57



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–20** is confirmed.

New claims **21–30** are added and determined to be patentable.

1. A portable vacuum and air filtration unit, comprising:

a) a plurality of separately transportable modules and a means for locking the modules together during use;

b) an air inlet located in one of the modules;

c) a debris deflector and a means for receiving debris stopped by the deflector located in one of the modules;

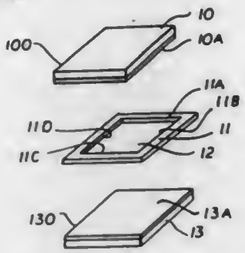
d) an electrostatic filter located in one of the modules;

e) a bag filter assembly located in one of the modules;

f) a HEPA filter assembly located in one of the modules; and

g) a means for drawing a substantial volume of air through the inlet, deflector, electrostatic filter, bag filter assembly and HEPA filter assembly.

B1 5,128,799 (3048th)
VARIABLE REFLECTANCE MOTOR VEHICLE MIRROR
Harlan J. Byker, Holland, Mich., assignor to Gentex Corporation, Zeeland, Mich.
Reexamination Request Nos. 90/003,254, Nov. 9, 1993 and 90/003,597, Oct. 11, 1994.
Reexamination Certificate for Patent 5,128,799, issued Jul. 7, 1992, Ser. No. 762,732, Sep. 17, 1991.
Continuation of Ser. No. 422,601, Oct. 17, 1989, abandoned, which is a division of Ser. No. 846,354, Mar. 31, 1986, Pat. No. 4,902,108.
Int. Cl.[6] G02F *1/15;1/153;* **G02B** *5/08*
U.S. Cl. 359—265



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **26–29** is confirmed.

Claim **31** is cancelled.

Claims **1** and **30** are determined to be patentable as amended.

Claims **2–25**, dependent on an amended claim, are determined to be patentable.

New claims **32–41** are added and determined to be patentable.

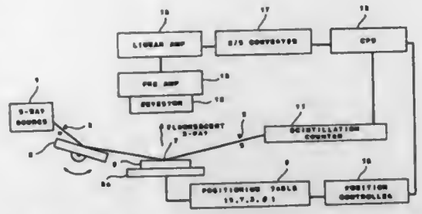
1. A variable reflectance mirror for a motor vehicle comprising [as the variable transmittance component] a single-compartment, self-erasing, solution-phase electrochromic device *as the variable transmittance component and a highly reflecting layer which reflects, through the solution of said electrochromic device, light which reaches said highly reflecting layer after passing through said solution,* wherein the sheet resistance of a transparent electrode layer of the electrochromic device is 1–40 ohms per square.

B1 5,249,216 (3049th)
TOTAL REFLECTION X-RAY FLUORESCENCE APPARATUS
Tetsuya Ohsugi; Michihisa Kyoto, both of Yokohama, and Kazuo Nishihagi, Neyagawa, all of Japan, assignors to Sumitomo Electric Industries, Ltd., and Technos Co., Ltd., both of Osaka, Japan
Reexamination Request No. 90/003,797, Apr. 19, 1995.
Reexamination Certificate for Patent 5,249,216, issued Sep. 28, 1993, Ser. No. 597,027, Oct. 15, 1990.
Claims priority, application Japan, Oct. 19, 1989, 1-272123; Oct. 19, 1989, 1-272124
Int. Cl.[6] G01N *23/203*
U.S. Cl. 378—46

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **5**, **9**, **11** and **12** are determined to be patentable as amended.

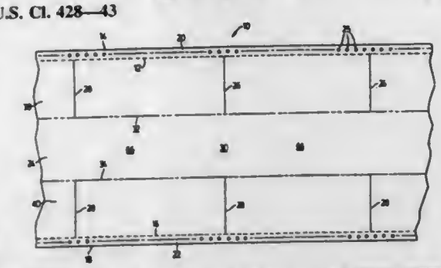
Claims **2–4**, **6–8** and **10**, dependent on an amended claim, are determined to be patentable.



New claims **13–15** and **16** are added and determined to be patentable.

1. A total reflection X-ray fluorescence apparatus comprising:
a base material having an optically flat surface for totally reflecting X-rays radiated thereonto at a given glancing angle;
monochromator means for monochromatizing X-rays radiated from an X-ray source and radiating monochromatized X-rays onto said optically flat surface at said given glancing angle, *wherein said X-ray source includes a tungsten target;*
first detection means for detecting fluorescent X-rays emerging from a specimen located near the optically flat surface of said base material;
second detection means for detecting an intensity of X-rays reflected from said base material;
positioning means for setting coordinates on the optically flat surface and positioning said monochromator means; and
control means for controlling said positioning means to set said coordinates in accordance with said intensity of said X-rays detected by said second detection means.

B1 5,275,857 (3050th)
CONTINUOUS FORM
John A. Long, 41 Lamont Ave., Scarborough, Ontario, Canada
Reexamination Request No. 90/004,149, Feb. 22, 1996.
Reexamination Certificate for Patent 5,275,857, issued Jan. 4, 1994, Ser. No. 816,712, Jan. 3, 1992.
Continuation-in-part of Ser. No. 800,285, Nov. 29, 1991, Pat. No. 5,219,631.
Int. Cl.[6] B32B *3/10*
U.S. Cl. 428—43



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2–7**, dependent on an amended claim, are determined to be patentable.

1. A paper web providing a continuous form, comprising:
two marginal web portions, one proximate each side of the web, for permitting feeding of the web;
a continuous form portion interior of said marginal web portions;
a plurality of opposed pairs of transverse lines formed by cuts or perforations, one line of each opposed pair extending in said continuous form portion of said web from one of said two marginal web portions to a central web portion and the other line of each opposed pair extending in said continuous form portion of said web from the other of said two marginal web portions to said central web portion, said central portion being at least substantially free of any transverse cuts or perforations [which are aligned with any of said opposed pairs of transverse lines] and, all transverse lines of said plurality of said opposed pairs of transverse lines which extend from a given one of said two marginal web portions being of uniform length, and said central portion having a width about as great as the length of the shortest of said transverse lines.

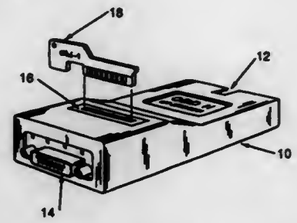
B1 5,277,972 (3051st)
ADHESIVE TAPES
Yukinori Sakumoto; Shigeyuki Yokoyama; Akihiro Shibuya, and Atsushi Koshimura, all of Shizuoka, Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, Japan
Reexamination Request No. 90/004,028, Nov. 13, 1995.
Reexamination Certificate for Patent 5,277,972, issued Jan. 11, 1994, Ser. No. 841,216, Dec. 23, 1991.
Continuation of Ser. No. 414,012, Sep. 28, 1989, abandoned.
Claims priority, application Japan, Sep. 29, 1988, 63-242265; Nov. 15, 1988, 63-286832; Feb. 23, 1989, 1-41637; Feb. 23, 1989, 1-41638
Int. Cl.[6] B32B *7/12*
U.S. Cl. 428—355

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–6** is confirmed.

1. An adhesive tape for electronic parts, comprising:
(a) a heat resistant base film, and
(b) an adhesive laminated on at least one surface of said base film, said adhesive layer comprising
(i) a resol phenol resin, and
(ii) an acrylonitrile/butadiene copolymer, in a proportion of from 100 to 500 parts by weight of said resol phenol resin per 100 parts by weight of acrylonitrile/butadiene copolymer, said resol phenol resin being selected from the group consisting of bisphenol A resins, alkyl-phenol resins, phenol resins and their co-condensed phenol resins which contains as the phenol component at least one member selected from the group consisting of bisphenol A alkylphpenols and phenol, the copolymer having a number average molecular weight (MN) of from 20,000 to 200,000, a ratio of a weight average molecular weight (MW) of said acrylonitrile/butadiene co-polymer to said number average molecular weight (MN) being in a range of MW/MN≧2.5.

B1 5,442,170 (3052nd)
PROGRAMMABLE CABLE ADAPTOR FOR CONNECTING DIFFERENT AUTOMOBILE COMPUTERS TO DIAGNOSTIC EQUIPMENT
Keith A. Kreft, Cupertino, and Karl F. Heinrich, San Jose, both of Calif., assignors to Snap-On Technologies, Inc., Crystal Lake, Ill.
Reexamination Request No. 90/004,057, Dec. 13, 1995.
Reexamination Certificate for Patent 5,442,170, issued Aug. 15, 1995, Ser. No. 228,445, Apr. 15, 1994.
Int. Cl.[6] G01D *5/34*
U.S. Cl. 250—229



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–24** and **26** is confirmed.

Claim **25** is determined to be patentable as amended.

New claims **27–48** are added and determined to be patentable.

1. A programmable cable adaptor comprising:
an input connector means having a plurality of input pins/sockets;
an output connector means having a plurality of output pins/sockets;
key receptacle means having a key-receiving aperture and a first plurality of coupling means disposed along at least one side of said aperture and electrically connected to at least some of said input pins/sockets, and, a second plurality of coupling means disposed along at least one side of said aperture and connected to at least some of said output pins/sockets; and
key means having a plurality of discrete communicating elements configured to link selected ones of said first coupling means to selected ones of said second coupling means such that selected output pins/sockets are communicatively connected to selected input pins/sockets when said key means is disposed within said aperture.

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STATUTORY INVENTION REGISTRATIONS

PUBLISHED NOVEMBER 5, 1996

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1603

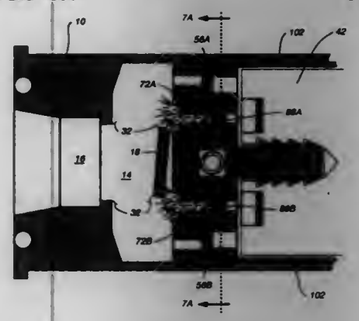
FLARE WITH SAFE-AND-ARM IGNITION SYSTEM

Dennis D. Deckard, Bedford; Stanley J. Herold, Bloomfield; Donald E. Lagrange, Washington; Dennis L. Mitchell, Coal City, and David J. Mulinix, Bloomington, all of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 7, 1995, Ser. No. 553,233

Int. Cl.[6] F42B *4/36;12/00;* F42C *15/34*

U.S. Cl. 102—336 **6 Claims**



1. An aerial flare, comprising

a casing having a fore-and-aft axis and having internal surfaces defining a chamber having a fore portion and an aft portion,

an igniter disposed in the chamber and slidable in a direction along the fore-and-aft axis of the casing,

a mass of illuminant disposed in the chamber forward of the igniter and slidable in a direction along the fore-and-aft axis of the casing,

means for attaching the igniter to the illuminant,

expulsion charge means in the aft portion of the chamber for expelling the igniter and the illuminant from the chamber,

the igniter including

a housing having passage means communicating between the aft portion of the chamber and the fore portion of the chamber,

primer means for igniting the illuminant,

the primer means being disposed in the passage means for ignition by the expulsion charge means,

blocking means mounted on the housing for movement in a direction transverse to the fore-and-aft axis between a safe position in which the blocking means blocks the passage means between the primer means and the illuminant, and an arm position in which the blocking means is displaced from blocking the passage means and exposes the illuminant for ignition by the primer means through the passage means, and

biasing means operably associated with the housing and the blocking means for biasing the blocking means toward the arm position and into engagement with an internal surface of the casing which restrains the blocking means in the safe position while the igniter is within the casing, and

breakaway closure means for sealing the illuminant and igniter in the chamber until broken away by expulsion of the illuminant and igniter by the expulsion charge means.

H1604

PROCESS FOR CONTINUOUS PRODUCTION OF HIGH DENSITY DETERGENT AGGLOMERATES IN A SINGLE MIXER/DENSIFIER

Robert G. Welch, and William T. Campbell, both of The Procter & Gamble Company, 5299 Spring Grove Ave., Cincinnati, Ohio 45217-8701

Filed Jun. 25, 1993, Ser. No. 83,145

Int. Cl.[6] C11D *1/00*

U.S. Cl. 510—441 **12 Claims**

1. A process for preparing high density detergent agglomerates comprising the steps of:

(a) continuously mixing detergent granules having a density of less than about 450 g/l in a moderate speed mixer/densifier wherein said granules are pulverized and densified to produce agglomerates having a density of at least 650 g/l, the mean residence time of said granules in said moderate speed mixer/densifier being at least about 12 minutes, said moderate speed mixer/densifier imparts from about 1×10^{11} erg/kg to about 5×10^{11} erg/kg at a rate of from about 1.4×10^{8}erg/kg-sec to about 6.9×10^{8}erg/kg-sec;

(b) spraying a binder in said moderate speed mixer/densifier to facilitate agglomeration of said granules; and

(c) drying said agglomerates to obtain said high density granular detergent agglomerates having a density of at least 650 g/l.

H1605

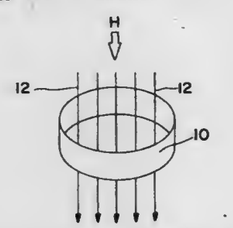
SUPERCURRENT BIFILAR TWISTER

Herbert A. Leupold, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 27, 1992, Ser. No. 826,560

Int. Cl.[6] H01L *39/00*

U.S. Cl. 335—216 **1 Claim**



1. A method of forming alternating magnetic fields of opposed polarities useful in free electron lasers comprising the steps of:

forming a ribbon of superconducting material into a bifilar configuration such that the ribbon is in a continuous figure 8 shape with two circular portions;

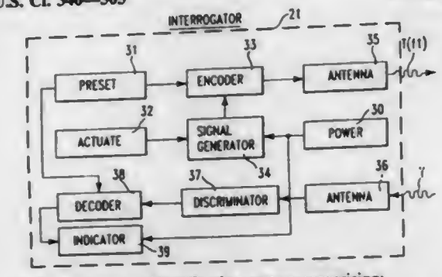
exposing one circular portion of the ribbon to a magnetic field while the ribbon is in a nonsuperconducting state; and

cooling the ribbon to a temperature at which the ribbon becomes superconducting.

H1606
ELECTRONIC QUASI-PASSIVE IDENTIFICATION SYSTEM

Vladimir G. Gelnovatch, Manasquan, N.J., and Bruce D. Jette, Springfield, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 22, 1994, Ser. No. 281,805
Int. Cl.[6] G01S *13/74*
U.S. Cl. 340—505 **17 Claims**



1. A quasi-passive identification system comprising:

an interrogator having a signal generator means for generating radio-frequency energy, an interrogation encoder means for encoding said radio-frequency energy with an interrogation code to produce an interrogation signal, an interrogation transmit means for radiating said interrogation signal, and a response receive means for receiving radio-frequency signals; and

a transponder having an interrogation receive means for receiving radio-frequency signals and separating said radio-frequency signals into received radio-frequency energy and a coded signal, an interrogation decoder means for decoding said coded signal, and a response transmit means controlled by said interrogation decoder means for encoding said received radio-frequency energy with a response code to produce said response signal and for radiating said response signal.

H1607
MULTIACTIVE ELECTROPHOTOGRAPHIC ELEMENT

Hsinjin Yang, Fairport; Paul D. Yacobucci, and David S. Weiss, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 22, 1991, Ser. No. 748,366
Int. Cl.[6] G03G *15/02*
U.S. Cl. 430—59 **3 Claims**

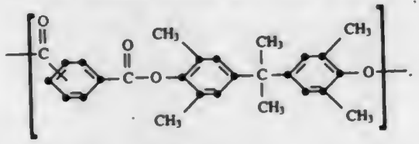
1. In an electrophotographic element comprising:

an electrically conductive support;

a charge-generation layer sensitive to visible or infrared radiation; and

a charge-transport layer containing a triarylamine charge-transport material,

the improvement wherein the charge-transport layer comprises a polyester containing recurring units having the structure



H1608
METHOD OF PROCESSING SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shoji Nishio, and Hideki Komatsu, both of Hino, Japan, assignors to Konica Corp., Tokyo, Japan

Filed Sep. 27, 1994, Ser. No. 313,358
Claims priority, application Japan, Oct. 6, 1993, 5-250709
Int. Cl.[6] G03C *1/06*
U.S. Cl. 430—264 **8 Claims**

1. A method of processing a silver halide photographic light-sensitive material comprising a support having provided thereon, a silver halide emulsion layer comprising silver halide grains having not less than 90 mol % chloride, said emulsion layer or a hydrophilic colloid layer provided adjacent to said emulsion layer containing a tetrazolium compound or a hydrazine derivative, with a developer, said developer containing a carbonate salt in an amount of not less than 0.2 mol/liter, a ratio of a potassium ion to a sodium ion in said developer being 0.2:1 to 10:1, said developer being replenished in an amount of not more than 200 ml/m^2 of material processed.

H1609
SILVER HALIDE PHOTOGRAPHIC EMULSION

Toshiya Kondo, c/o Konica Corporation 1 Sakura-machi, Hino-shi, Tokyo, Japan

Continuation of Ser. No. 151,499, Nov. 12, 1993, abandoned. This application Jan. 12, 1995, Ser. No. 371,749
Claims priority, application Japan, Dec. 3, 1992, 4-350005
Int. Cl.[6] G03C *1/005*
U.S. Cl. 430—567 **20 Claims**

1. A silver halide photographic light-sensitive emulsion comprising silver halide grains in a dispersion medium, at least 50% of the total projected area of said silver halide grains being occupied by tabular silver halide grains having an aspect ratio of at least 1.3, an average silver iodide content in the range of 4 mol % to a solid solution limit, said silver halide grains each having at least one pair of twin planes parallel to a major plane of said tabular silver halide grains, an average distance between adjacent twin planes being 130 Å to 500 Å, a grain size distribution of said tabular silver halide grains being less than 20%.

H1610
METHODS FOR CULTURING HAIR FOLLICLE EPITHELIAL MATRIX CELLS

Xiaochun Luo, West Chester; Karen M. Lammers, North Bend, and Monica L. Oltmanns, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 3, 1993, Ser. No. 162,516
Int. Cl.[6] C12N *5/02*
U.S. Cl. 435—240.2 **3 Claims**

1. A method of isolating and culturing epithelial matrix cells, comprising the steps of:

a) micro-dissecting intact hair follicles, wherein the hair follicles comprise a bulb region, the bulb region comprising dermal papilla cells and epithelial matrix cells, wherein the epithelial matrix cells exist above the dermal papilla cells and the dermal papilla cells exist proximate to the base of the bulb region;

b) cutting the bulb region of each hair follicle to remove the bulb region from the follicle, the bulb region being cut within about 50 microns or less above the dermal papilla cells to form a cut bulb region comprising epithelial matrix cells and the dermal papilla cells;

c) placing the cut bulb region in a culture plate containing Chang medium;

d) allowing the cut bulb region to form new epithelial matrix cells for about 4 to 6 days;

e) replacing the Chang medium with a medium suitable for keratinocyte growth which allows the proliferation of new epithelial matrix cells beyond the period of step (d);

f) passing the new epithelial matrix cells 4–6 days following addition of the medium suitable for keratinocyte growth by

i) treating the new epithelial matrix cells with trypsin and EDTA to detach the new epithelial matrix cells from the bottom of the culture plate;

ii) neutralizing the trypsin; and

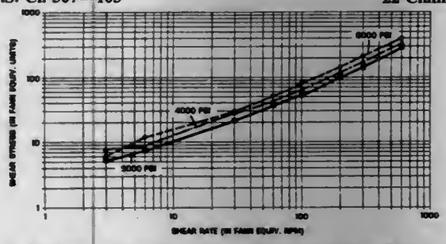
iii) dispensing the new epithelial matrix cells to a new plate to obtain a second passage of pure epithelial matrix cells; and

g) passing the pure epithelial matrix cells obtained from step (f) to a third passage.

H1611
GLYCOLS AS INTERNAL PHASE IN OIL WELL DRILLING FLUIDS

Arvind D. Patel, Houston, Tex., assignor to M-I Drilling Fluids Company, Houston, Tex.

Filed Nov. 4, 1993, Ser. No. 147,743
Int. Cl.[6] C09K *7/06*
U.S. Cl. 507—103 **22 Claims**



1. An improved emulsion for an oil-based drilling fluid, said emulsion comprising a glycol emulsified in a synthetic hydrocarbon material, said synthetic hydrocarbon material having an average molecular weight of from about 120 to about 1000 and being synthesized from one or more olefinic monomers having a chain length of C_2 to C_{14}.

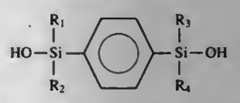
H1612
METHOD FOR MAKING SILARYLENE-SILOXANE POLYMERS

Robert A. Rhein, and James C. Baldwin, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 2, 1993, Ser. No. 104,953
Int. Cl.[6] C08G *77/04*
U.S. Cl. 528—34 **11 Claims**

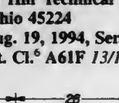
1. A method for making silarylene-siloxane polymers comprising the steps:

(a) reacting in inert solvent a disilanol with a dichlorosilane, the disilanol having the formula:



where R_1, R_2, R_3, and R_4 are independently selected form the group consisting of alkyl and aryl radicals,

the dichlorosilane further having the formula:



wherein R_5 and R_6 are independently selected from the group consisting of alkyl and aryl radicals;

(b) adding an effective amount of an acid acceptor;

(c) stirring for less than 1 hour; and

(d) isolating the polymer.

H1613
POLYAMIDE-EPICHLOROHYDRIN WET-STRENGTH RESINS WITH REDUCED CONTENT OF EPICHLOROHYDRIN-DERIVED BY-PRODUCTS IN-SITU SOLVENT EXTRACTION

Herbert H. Espy, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

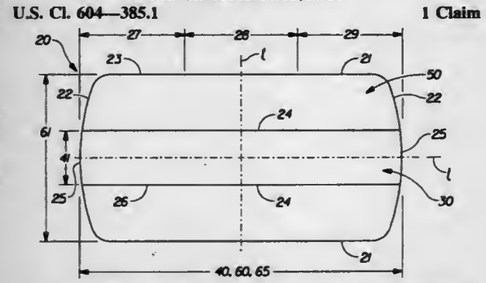
Continuation of Ser. No. 96,388, Jul. 26, 1993, abandoned. This application Jun. 23, 1994, Ser. No. 264,804
Int. Cl.[6] C08F *6/10*
U.S. Cl. 528—489 **21 Claims**

1. A process for reducing the concentration of epichlorohydrin by-products in the manufacture of polyamide-epichlorobydrin resins, comprising reacting polyaminopolyamide prepolymer in aqueous solution with epichlorohydrin, in the presence of a water-immiscible solvent for the epichlorohydrin, continuing the reaction of the prepolymer with the epichlorohydrin to produce the desired viscosity of the aqueous phase, stabilizing the resin product by diluting or acidifying the aqueous phase, separating the solvent from the aqueous resin, and treating the solvent phase with caustic to convert epichlorohydrin by-products to epichlorohydrin, wherein the weight ratio of organic solvent to aqueous reaction mixture is between about 0.1 and about 10, and wherein the lower limit of the temperature range over which the process is carried out is about 20° C. and the upper limit is the lower of the reflux temperature of the water-immiscible solvent and 85° C.

H1614
BODY FITTING COMPOUND SANITARY NAPKIN

Katherine L. Mayer; Bruce W. Lavash; John L. Hammons, and Patricia L. Lampson, all of The Procter & Gamble Company, Winton Hill Technical Center, 6100 Center Hill Rd., Cincinnati, Ohio 45224

Filed Aug. 19, 1994, Ser. No. 294,662
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—385.1 **1 Claim**



1. A compound sanitary napkin comprising: an uppermost primary absorbent member having a length, a width, and an absorptive capacity and a lowermost secondary absorbent member having a length, a width, and an absorptive capacity, the absorptive capacity of said primary absorbent member being greater than the

absorptive capacity of said secondary absorbent member, said primary absorbent member and said secondary absorbent member having a common length, said primary absorbent member including an absorbent core, a fluid pervious topsheet superimposed on said absorbent core, and a fluid barrier underlying said absorbent core, said secondary absorbent member including a fluid pervious topsheet, a fluid impervious backsheet joined to said topsheet, said primary absorbent member being affixed to said secondary absorbent member by union means extending substantially continuously along said common length.

REISSUES

NOVEMBER 5, 1996

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,369

FLOORING SYSTEM ESPECIALLY DESIGNED FOR FACILITIES WHICH HOUSE DATA PROCESSING EQUIPMENT

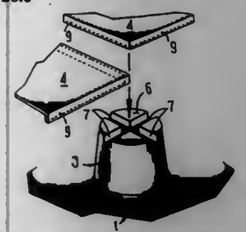
Alain R. E. Ducroux, Garches, and Miodrag Novakovic, Maule, both of France, assignors to Guilford (Delaware) Inc., Atlanta, Ga.

Original No. 5,052,157, dated Oct. 1, 1991, Ser. No. 474,144, Feb. 2, 1990. Application for reissue Aug. 19, 1993, Ser. No. 110,656

Claims priority, application France, Jan. 22, 1990, 89 01419

Int. Cl.[6] E04B *9/00*

U.S. Cl. 52—126.6 **42 Claims**



16. A removable flooring system comprising:

(a) a floor panel having a top surface and a bottom surface and having a first interlocking element; and

(b) a support member comprising a base plate and a plurality of hollow stand-offs, each stand-off having a top surface and extending from the base plate to support the removable floor panel, wherein the top surface of at least one of the hollow stand-offs includes a second interlocking element for engaging the first interlocking element of the removable floor panel.

Re. 35,370

LEAK DETECTION IN HEATING VENTILATING AND AIR CONDITIONING SYSTEMS USING AN ENVIRONMENTALLY SAFE MATERIAL

Richard G. Henry, Mayfield Heights, Ohio, assignor to Bright Solutions, Inc., Troy, Mich.

Original No. 5,421,192, dated Jun. 6, 1995, Ser. No. 312,772, Sep. 27, 1994. Continuation-in-part of Ser. No. 81,119, Jun. 25, 1993, Pat. No. 5,357,782. Application for reissue Aug. 25, 1995, Ser. No. 519,362

Int. Cl.[6] G01N *37/00*

U.S. Cl. 73—40.7 **15 Claims**

1. A method of detecting leaks in a refrigeration system that uses in combination a refrigerant and a refrigeration system lubricant comprising the steps of:

preparing a mixture that [consists of said refrigeration system lubricant mixed with] *includes* a predetermined amount of a dye selected from the general class of naphthalimide dye structures as a fluorescent dye;

adding a predetermined amount of the mixture to said [refrigerant] *combination of refrigerant and refrigerant system lubricant* for use in *said* refrigeration system;

operating the system for a predetermined period of time to allow the mixture to mix with said combination of refrigerant and the refrigeration system lubricant;

examining the system for a leak site with a lamp that produces light having an emission wavelength from 300 to 480 nanometers, directed at said refrigeration system;

determining the presence of a leak site by the presence of a colored fluorescence detectable by visual observation under the light from said lamp at said leak site;

and said dye, refrigerant and refrigeration system lubricant mixture seeping thru and appearing at [said] location of *said* leak site, [the] *then* remaining at said site without undergoing chemical oxidation changes to provide capability for stable fluorescent indication of a leak.

Re. 35,371

METHOD AND SYSTEM FOR CONTROLLING ULTRASOUND SCANNING SEQUENCE

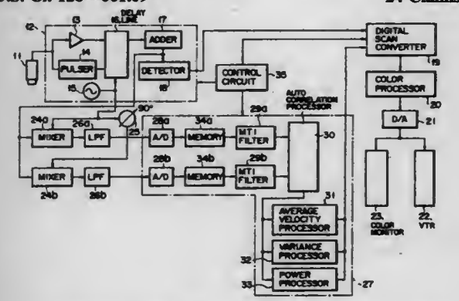
Yasutsugu Seo, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Original No. 4,993,417, dated Feb. 19, 1991, Ser. No. 423,713, Oct. 18, 1989. Continuation of Ser. No. 228,590, Aug. 5, 1988, abandoned. Application for reissue Feb. 19, 1993, Ser. No. 19,654

Claims priority, application Japan, Aug. 12, 1987, 62-201244

Int. Cl.[6] A61B *8/06*

U.S. Cl. 128—661.09 **24 Claims**



12. A method for controlling an ultrasound scanning sequence, the method comprising the steps of:

setting a number of ultrasound beams to be transmitted to a subject in a same direction;

setting a detection ratio used for detecting a flow velocity of the subject;

controlling the ultrasound scanning sequence in accordance with the number of ultrasound beams and the detection ratio, so as to increase a transmission interval of the ultrasound beams in the same direction without changing a generation interval of an ultrasound pulse by commanding the transmission of ultrasound beams to the subject in a number of additional directions;

transmitting the ultrasound beams so as to cause echo signals to be echoed from the subject;

receiving the echo signals;

generating output data corresponding to the received echo signals from each direction at equal intervals.

Re. 35,372

APPARATUS FOR DRIVING A DRILLING OR PERCUSSION TOOL

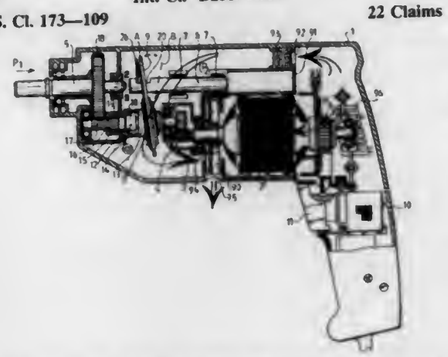
Jan P. Houben, Lv Breda, and Antonie J. Moolenaar, An Dorst, both of Netherlands, assignors to S-B Power Tool Company, Chicago, Ill.

Original No. 5,052,497, dated Oct. 1, 1991, Ser. No. 360,316, Jun. 2, 1989. Continuation of Ser. No. 128,805, Sep. 29, 1993, abandoned. Application for reissue Jun. 5, 1995, Ser. No. 462,019

Claims priority, application Netherlands, Jul. 7, 1988, 8801466

Int. Cl.[6] B25D *11/04*

U.S. Cl. 173—109 22 Claims



59. A device for driving a drilling and percussion tool provided with a spindle rotatably held in a housing, said spindle having one end suitable for fastening to the tool and a second end accessible to an oscillating percussion body movable in the housing substantially in an axial direction with respect to the spindle by support means in the housing, a rotatable drive shaft for bringing the spindle into rotation and the percussion body into motion via a transmission, said transmission being provided with an oscillating drive member, an elastic member having linear spring attributes and including a distal portion and another portion mounted on the oscillating drive member such that rotation of said drive shaft causes rocking of said distal portion, means coupling said distal portion of the elastic member to said percussion body such that rocking of the elastic member imparts generally axial oscillatory movement to said percussion body, said coupling means also permitting limited relative movement between said distal portion and said percussion body in a direction generally axially of the percussion body whereby a non-linear spring effect is achieved by reason of the coupling engagement between said distal portion and said percussion body and by reason of the relative movement between said distal portion and said percussion body.

Re. 35,373

VEHICLE TIRE DEFLATOR

Donald C. Kilgrow, 164 West 100 S., P.O. Box 844, Monticello, Utah 84535, and Melvin H. Pedersen, 161 East 175 S., North Salt Lake City, Utah 84054

Original No. 5,253,950, dated Oct. 19, 1993, Ser. No. 859,071, Mar. 27, 1992. Application for reissue Apr. 7, 1995, Ser. No. 418,804

Int. Cl.[6] E01F *13/00*

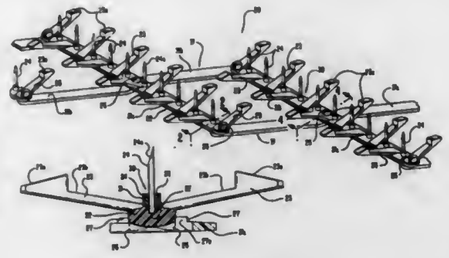
U.S. Cl. 404—6 40 Claims

15. A deflator for tires, the deflator comprising:

a frame for supporting a plurality of spikes, the frame having an aperture extending a first depth and a first diameter;

a spike of the plurality of spikes positionable in the aperture the spike having a second diameter less than the first diameter;

a sleeve positionable around the spike to fit inside the aperture to resist distortion of the frame upon deflection of the spike.



Re. 35,374

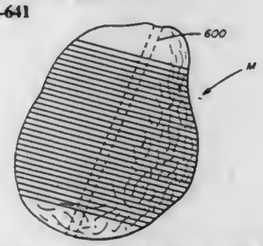
SPIRALLY SLICED BONELESS MEAT PRODUCT

James P. Logan, Jr., Rte. 4, Box 94D, Richmond, Tex. 77469

Original No. 5,030,472, dated Jul. 9, 1991, Ser. No. 550,805, Jul. 10, 1990. Continuation of Ser. No. 324,182, Mar. 16, 1989, abandoned, which is a division of Ser. No. 107,256, Oct. 9, 1987, Pat. No. 4,821,635, which is a continuation-in-part of Ser. No. 912,533, Sep. 29, 1986, abandoned, which is a continuation-in-part of Ser. No. 784,658, Oct. 5, 1985, abandoned. Application for reissue Jul. 8, 1993, Ser. No. 88,892

Int. Cl.[6] A23L *1/31*

U.S. Cl. 426—641 10 Claims



1. A boneless sliced meat having its meat arranged in the form of a continuous spiral cut about an axis of the meat, the axis being created by the temporary insertion of a support member in the meat, *wherein the depth of said cut is limited to leave an uncut core of meat, said core being of sufficient cross-section to cause the boneless sliced meat to retain its shape when the support member is removed.*

Re. 35,375

MOVABLE TOY

Dai H. Park, 5-201, Mujige APT, Seocho-dong, Seoul, Rep. of Korea

Original No. 5,221,226, dated Jun. 22, 1993, Ser. No. 570,333, Aug. 21, 1990. Continuation-in-part of Ser. No. 458,225, Dec. 28, 1989, abandoned. Application for reissue May 16, 1994, Ser. No. 243,586

Claims priority, application Rep. of Korea, Nov. 9, 1989, 89-16604

Int. Cl.[6] A63H *11/02*

U.S. Cl. 446—353 12 Claims

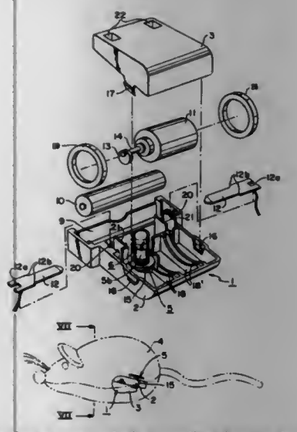
1. A movable toy adapted for movement along a surface and having a toy body and a vibrator mounted wholly within said toy body, said vibrator comprising:

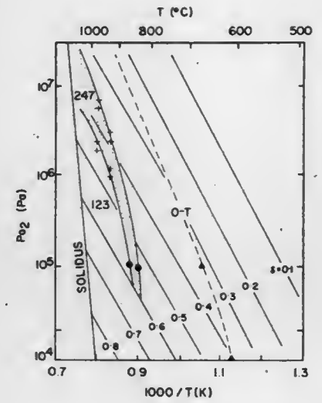
an upper cover having a pass through opening therein:

a lower cover adapted to be assembled with said upper cover:

a push member including a push plate on one end thereof and a switch means on the other end thereof, said push member being resiliently installed within said pass through opening of said upper cover and adapted to open and close said switch means upon being pressed through pressure on said toy body;

a battery housing mounted in one of said covers and adapted to receive a battery for electrical connection to said switch means:





a motor having a motor shaft extending from at least one side thereof, said motor being mounted in one of said covers and adapted to be energized into rotation by said battery when electrically connected thereto by said switch means; said motor having a pair of rubber rings around its periphery; and

at least one vibrating member being eccentrically mounted on at least one end of said motor shaft whereby said movable toy vibrates and independently moves in a predetermined direction along a surface with which it is in contact when said toy body is pressed to close said switch means and stops when said toy body is pressed to open said switch means.

Re. 35,376

METAL OXIDE 247 SUPERCONDUCTING MATERIALS

Jeffrey L. Tallon, York Bay; Robert G. Buckley, Northland, and Donald M. Pooke, Lower Hutt, all of New Zealand, assignors to Industrial Research Limited, New Zealand

Original No. 5,140,000, dated Aug. 18, 1992, Ser. No. 560,033, Jul. 31, 1990. Application for reissue Dec. 28, 1994, Ser. No. 365,125

Claims priority, application New Zealand, Aug. 2, 1989, 230183; Nov. 14, 1989, 231390

Int. Cl.[6] H01B *12/00*; C04B *35/505;35/64*; H01L *39/12*

U.S. Cl. 505—125 29 Claims

1. Oxide materials which exhibit bulk superconductivity at [temperatures exceeding 85K], *temperature of at least 88K*, within the formula

$$R_aB_bCu_cO_{1.5\delta}$$

wherein:

$1.9<a<2.1$,

$3.9<b<4.1$,

$6.8<c\leqq7.2$,

$[-0.2<\delta<0.6]$ $-0.2<\delta<0.1$,

R is Y, La, Nd, Sm, Eu, Gd, Dy, Ho, Er, Tm or Yb, or any combination thereof, and

B is Ba or Ba plus a minor amount of Sr or La or a combination thereof.

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PLANT PATENTS

GRANTED NOVEMBER 5, 1996

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,680

SHRUB ROSE PLANT NAMED 'POULDAVA'

Pernille Olesen, and Morgens Olesen, both of Fredensborg, Denmark, assignors to DeVor Nurseries, Inc., Watsonville, Calif.

Filed Mar. 31, 1995, Ser. No. 414,532
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct shrub rose plant variety, substantially as shown and described.

9,681

APPLE TREE 'OLSENTWO GALA'

Richard R. Olsen, and Larry M. Olsen, both of Rte. 2, Box 2400, Prosser, Wash. 99350

Filed Jan. 23, 1995, Ser. No. 377,288
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—34.1 **1 Claim**

1. A new and distinct variety of Gala apple tree as herein shown and described and characterized particularly by the intense bright color of its fruit, the distinct red-on-red striped color pattern of its fruit, the high percentae of coloration of its fruit, including those in the interior of the tree, and its quality following storage.

9,682

PERSICARIA PLANT NAMED TAURUS

Alan H. V. Bloom, Bressingham Hall, Bressingham, Diss, Norfolk, IP22 2AB, England

Filed Jul. 7, 1995, Ser. No. 499,253
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct variety of Persicaria plant named Taurus, as shown and described.

9,683

CHRYSANTHEMUM PLANT NAMED 'PINK MIAMI'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 24, 1995, Ser. No. 547,397
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—74.1 **1 Claim**

1. A new and distinct Chrysanthemum plant named Pink Miami, as described and illustrated.

9,684

CHRYSANTHEMUM PLANT NAMED 'WHITE MIAMI'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 24, 1995, Ser. No. 547,219
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—82.1 **1 Claim**

1. A new and distinct Chrysanthemum plant named White Miami, as described and illustrated.

9,685

POINSETTIA PLANT NAMED 'MARBLESTAR'

Marinus J. Bevelander, Bankrasweg 6B, 1183 TP Amstelveen, Netherlands

Filed May 8, 1995, Ser. No. 436,630
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—86.1 **1 Claim**

1. A new and distinct poinsettia plant named Marblestar, as illustrated and described.

9,686

ANTHURIUM PLANT NAMED 'LIPSTICK'

Marinus Vletter, Waddinxveen, Netherlands, assignor to Handelskwekerij Van Der Velden B.V., Sint-Oedenrode, Netherlands

Filed Aug. 1, 1995, Ser. No. 509,896
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct variety of *Anthurium andraeanum* plant characterized by the following combination of characteristics:

(a) exhibits a rapid growing and compact well-balanced growth habit with strong branching,
(b) forms in abundance attractive medium to large bright lilac-pink blossoms wherein the coloration of the spadix closely approximates that of the spathe when the blossoms mature,
(c) forms attractive bright green medium-sized leaves,
(d) forms strong roots, and
(e) propagated well by the use of tissue culture;

substantially as herein shown and described.

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PATENTS

GRANTED November 5, 1996

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399–329	5,572,290
399–390	5,572,291

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ERRATA–CONTINUED

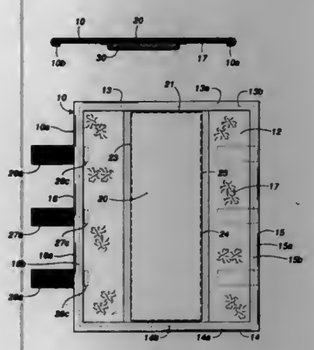
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395–203	5,572,422
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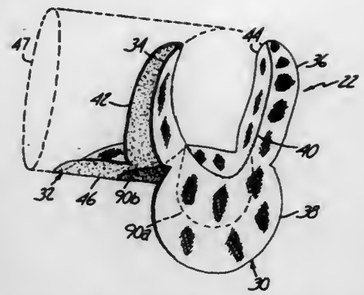
PATENTS

GRANTED NOVEMBER 5, 1996

GENERAL AND MECHANICAL

5,570,470
LEG PROTECTION DEVICE
Kent M. Miller, 5127 Shotwell St., Woodstock, Ga. 30188
Filed Jul. 3, 1995, Ser. No. 497,525
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—22 **14 Claims**





1. A legging for being worn by a lawn maintenance person for protecting the person's lower leg, comprising:

(a) a flexible body having an outer surface and an inner surface, a pair of opposed side edges, opposed side edge portions respectively adjacent to said side edges, an upper edge and a lower edge, and a central portion on said inner surface between said opposed side edge portions and said upper and lower edges;

(b) a resilient shin protector disposed longitudinally along said body between and spaced inwardly of said side edges;

(c) a shin protector overlay fixed to said central portion of said inner surface of said body to form a pocket, said pocket between and spaced inwardly of said side edges, said pocket receiving said shin protector and holding said shin protector in essentially a fixed position between and spaced inwardly of said side edges;

(d) a plurality of straps secured to said opposed side edge portions of said body, said straps being interengagable with each other for securing said side edge portions in juxtaposition with respect to each other when said body is passed around said lower leg, said shin protector being aligned with the shin when said body is appropriately positioned around said lower leg.

5,570,471
GARMENT SHIELD
Leesa C. Krawchuk, 2811 Newton Ave. North, Minneapolis, Minn. 55411
Filed Mar. 8, 1995, Ser. No. 400,378
Int. Cl.[6] A41D *27/13*
U.S. Cl. 2—53 **9 Claims**

1. A garment shield comprising:

a shield seam line;

a shield torso section including a front panel, a rear panel and a lower panel which extend from the shield seam line;

a shield sleeve section including a front panel, a rear panel and a lower panel which are stitched along the shield seam line to the front, rear and lower panels of the shield torso section, respectively, and which extend from the shield seam line;

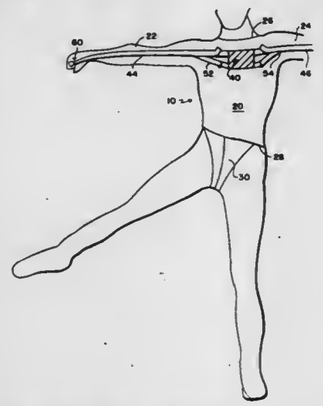
wherein the lower panels of the shield torso section and the shield sleeve section have a radius of curvature along the shield seam line such that when the shield sleeve section is attached to the shield torso section, the front, rear and lower panels of the shield sleeve section form a partial cylindrical surface;

wherein the shield torso section and the shield sleeve section have a fabric grain that is oriented such that the shield torso section and the shield sleeve section are stretchable in a lateral direction generally from the front panel of the shield torso section toward the rear panel of the shield torso section;

wherein the shield torso section and the shield sleeve section include a first absorptive layer, a second absorptive layer and a porous, dry weave layer, with the first absorptive layer being positioned between the porous, dry weave layer and the second absorptive layer, and wherein the lower panels have a surface area and the second absorptive layer has a surface area that is less than the surface area of the lower panels; and

an adhesive which is attached to the porous, dry weave layer of the shield torso section and the shield sleeve section.

5,570,472
RESISTANT EXERCISE SHIRT AND PANTS
Timothy P. Dicker, 11359 Dornfield, Lake View Ter., Calif. 91342
Filed Nov. 7, 1995, Ser. No. 554,733
Int. Cl.[6] A41D *1/08*
U.S. Cl. 2—69 **15 Claims**



1. A resistive exercise shirt, comprising:

a shirt portion having first and second sleeves and defining openings for a neck and a torso;

a first elastic block incorporated into said shirt portion, said first elastic block centrally located on a first side of said shirt portion between said first and second sleeves;

a first tension band incorporated into said first sleeve and traversing the length of said first sleeve, said first tension band connectable to said first elastic block;

a first thumb stirrup connected to said first tension band;

a second tension band incorporated into said second sleeve and traversing the length of said second sleeve, said second tension band connectable to said first elastic block; and

a second thumb stirrup connected to said second tension band; whereby

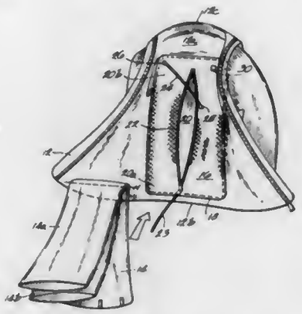
a person seeking exercise may don the resistive exercise shirt and connect said first and second tension bands to said first elastic block so as to resist movement of said person's arms, thereby augmenting muscular effort and exercise when said person moves said arms.

5,570,473

CADDY HAVING A HANGER MEANS AND INTEGRAL TO A JACKET FOR SELECTIVELY SUPPORTING COMPANION PANTS FOR STORAGE AND ACCESS

Kenneth C. Andries, 19330 Southview La., New Berlin, Wis. 53146

Filed Mar. 24, 1995, Ser. No. 409,645
Int. Cl.[6] A41D *3/02*
U.S. Cl. 2—93 **18 Claims**



1. A caddy for use with an upper garment comprising a jacket provided with a back portion having an inner surface and a lower garment comprising pants, said caddy comprising:

means for forming a compartment sized to receive said lower garment, said compartment forming means comprising a panel of selected material and dimensions joined to said inner surface;

means within the said compartment for selectively supporting said lower garment therein while said upper garment is being worn; and

said compartment forming means constructed to selectively provide access to said compartment from an interior space defined by said upper garment, to permit said lower garment to be removed from said compartment by a wearer of said upper garment.

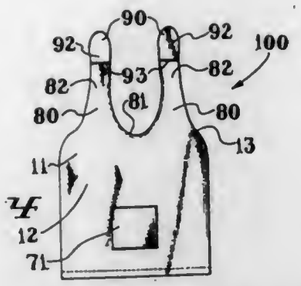
5,570,474

DRAPE FOR NURSING AND SO FORTH

Elizabeth F. Berry, 4500 Lakesbore Rd., No. 33, Fort Gratiot, Mich. 48059; Dana A. Sullivan, 8145 Smiths Creek Rd., Wales Township, Mich. 48027; Karen R. Leslie, 3562 Parkway, Port Huron, Mich. 48060, and Pamela E. Leslie, 598 Lakeside Dr., Port Huron, Mich. 48060

Filed May 15, 1995, Ser. No. 440,630
Int. Cl.[6] A41D *1/00;3/08;23/00*
U.S. Cl. 2—104 **12 Claims**

1. A drape useful for nursing comprising a flat member of a soft material generally in the shape of a semicircle, which includes a



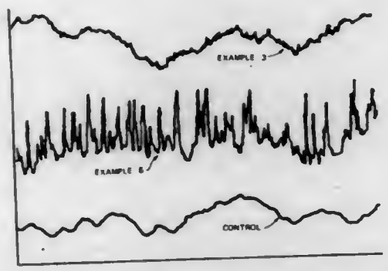
generally curvilinear outer boundary on a first side of the member and a generally linear boundary defining part of a boundary of the member on a second side of the member, which generally linear boundary intersects with the generally curvilinear outer boundary to form two vertices which oppose one another along an axis substantially parallel to the second side of the member, said drape being capable of lying over a shoulder and covering a breast and baby of a nursing mother, which has a neck recess in a mid-portion of the generally linear boundary entering into a center region of the member, which recess can accommodate the neck of the mother, and which drape has added weights about the vertices of the generally semicircular member and additional, shoulder weights present within the boundaries of the flat member about the center region and about a position where the member is to lie over the shoulder of the mother.

5,570,475

SURGEON'S GLOVE HAVING IMPROVED DONNING PROPERTIES

Jeffery G. Nile, Alliance; Stanley J. Gromelski, Canton, both of Ohio; Alan A. Brain, Harlow, and Steven T. Hardwick, Watford, both of England, assignors to Ansell Perry Inc., Massillon, Ohio

Continuation of Ser. No. 307,024, Sep. 14, 1994, abandoned, which is a continuation of Ser. No. 957,983, Oct. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 776,084, Oct. 11, 1991, abandoned. This application Apr. 17, 1995, Ser. No. 424,561
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—161.7 **8 Claims**



1. A surgeon's glove having raised domains which improve the donning properties of the glove, said glove comprising a natural or synthetic elastomer, which has, on the hand contacting surface thereof, a layer comprising a polymer comprising repeating units of the formula (I):

$$\text{|—CH}_2\text{—CH(OR)—| and |—CH(CO}_2\text{H)—CH(CO}_2\text{R}^1\text{)—|} \quad \text{(I)}$$

or a polymer comprising repeating units of the formula (IA)

$$\text{|—CH}_2\text{—CH(R}^4\text{)—| and |—CH(CO}_2\text{H)—CH(CO}_2\text{R}^1\text{)—|} \quad \text{(IA)}$$

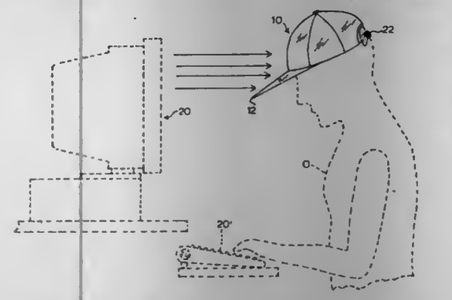
or a mixture of said polymers having repeating units of formulas (I) and (IA) wherein R is alkyl containing up to 9 carbon atoms, each R^1 is independently alkyl containing up to 9 carbon atoms or an alkoxy alkyl group containing up to four carbon atoms in the alkoxy part and up to four carbon atoms in the alkyl part, and R^4 is hydrogen or phenyl; and wherein the thickness of the polymer layer at the domains is up to 25 μm thicker than the thickness of the polymer layer in the remaining areas of the glove.

5,570,476

HEAD COVER PROVIDING SELECTIVE RADIATION SHIELDING AND METHOD

Bruce B. Olive, 5821 Mount Sinai Rd., Durham, N.C. 27705

Filed Feb. 16, 1995, Ser. No. 389,355
Int. Cl.[6] A42B *1/00*
U.S. Cl. 2—200.1 **9 Claims**



1. A covering for the head of a wearer in the form of a baseball-type cap, comprising:

(a) an upper flexible crown structure extending between top and base portions and shaped to flexibly fit and cover an upper portion of the head of a wearer of the cap;

(b) a bill structure formed as a relatively thin, self-supporting panel with inner and outer portions fixedly attached to and extending outwardly and forwardly from the base portion of said crown structure;

(c) a relatively thin, flexible metallized fabric formed of individual metallized synthetic fibers plated with a highly electrically conducting metal, having inner and outer surfaces, operative to attenuate with an effectiveness of up to about 90 Db electromagnetic field, radio and microwave frequencies within the 6 MHz to 10 GHz range directed toward either of said surfaces and suited to being formed as individual panels each with a peripheral edge capable of being both physically and electrically joined; and

(d) said crown structure comprises a selected plurality of panels formed from said fabric, individual panels each having a peripheral edge, said panels being shaped and having the edges thereof substantially physically and electrically joined together to form said crown structure as a substantially integral, electrically conducting, imperforate and flexible outer surface.

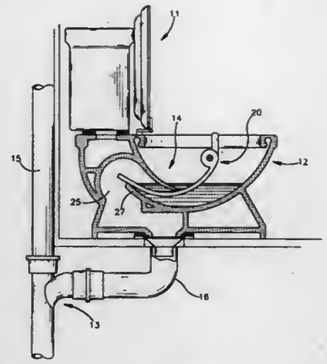
5,570,477

PORTABLE TOILET BOWL VENTILATOR

Victorio C. Rodriguez, 7791 Hoertz Rd., Parma, Ohio 44134

Filed Jun. 15, 1995, Ser. No. 490,956
Int. Cl.[6] E03D *9/052*
U.S. Cl. 4—213 **10 Claims**

1. An apparatus for forced ventilation of the bowl of a siphon-type toilet, said toilet bowl comprising a substantially horizontally-oriented rim surrounding a top opening, a concave bowl portion positioned below and contiguous with said rim, an outlet at the lowest point of said bowl, a recurving drain portion adapted to



connect said outlet to a sanitary drain, which drain portion curves upward before reaching said sanitary drain, thereby forming with a lower portion of said bowl a trap for water that prevents back flow of gases from said sanitary drain, said water having a first surface totally within said bowl and a separate second surface totally within an upwardly-directed portion of said drain portion, said apparatus for forced ventilation comprising:

(a) a fan having a fan housing that has an inlet opening and an exhaust opening;

(b) a flexible tube connected to said exhaust opening for carrying the exhaust from said fan; and

(c) a supporting bracket attached to said fan housing and adapted to engage said rim in a removable manner, thereby to suspend said fan below said rim within said bowl in a removable manner;

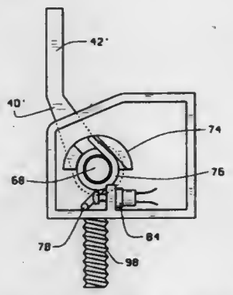
whereby, in use, said tube extends through both said water surfaces while said fan inlet opening is within said bowl, thereby to draw by forced convection air from said toilet bowl and exhaust said air into said sanitary drain.

5,570,478

TOILET SEAT HINGE ASSEMBLY FOR AUTOMATICALLY LOWERING SEAT AFTER FLUSHING

Carmon A. Armstrong, 304 Meadow Ridge, Fulton, Mo. 65251-2916

Filed Jan. 5, 1995, Ser. No. 369,094
Int. Cl.[6] A47K *13/10*
U.S. Cl. 4—246.1 **13 Claims**



1. A hinge assembly for installation on a toilet to mount a toilet seat on a toilet for pivotal movement between an up position and a down position, and to automatically move the seat from the up position to the down position after the toilet is flushed, the assembly comprising:

a shaft mounted for rotation about its axis between an up position, and a down position;

a hinge member for attachment to the toilet seat, mounted on the shaft so that when the seat and the shaft are in their respective down positions, movement of the seat to the up position rotates the shaft to its up position, and when the seat and the shaft are in their respective up positions, rotation of the shaft to the down position pivots the seat to its down position;

the shaft having a key, and the hinge member having a circumferential slot adapted to receive the key, the slot having first and second ends, and the key engaging the first end of the slot when the seat and the shaft are in their respective down positions, so that movement of the seat from its down position to its up position rotates the shaft, and the key engaging the first end of the slot when the seat and shaft are in their up positions, so that movement of the shaft from its up position to its down position causes the seat to pivot to its down position, the key being freely moveable with the slot, so that when the shaft and seat are in their up positions, the seat can be manually moved to its down position;

a spring resiliently biasing the shaft to rotate from the up position to the down position;

a flush detector for detecting when the toilet is flushed; and

a lock for releasably locking the shaft against rotation, but which releases the shaft after the flush detector detects that the toilet has been flushed.

5,570,479

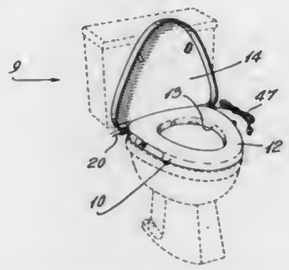
TOILET SEAT-BIDET ASSEMBLY

Richard S. Chomik, Garwood, N.J.; Francis T. Pieters, Pointe Claire, Canada, and Salvatore C. Petralia, Sayreville, N.J., assignors to Sydson & Cavaliers, Inc., Quebec, Canada

Continuation-in-part of Ser. No. 338,139, Nov. 9, 1994, abandoned. This application May 1, 1995, Ser. No. 431,754

Int. Cl.[6] A61H *33/00*

U.S. Cl. 4—420.2 **7 Claims**



1. A bidet and toilet seat assembly comprising a thin profile, hollow toilet seat that defines a central opening, water conduit, within the hollow seat for communicating water from a water source, water jet means connected to the conduit means and extending within the central opening of the toilet seat for spraying water, flow control means for controlling water flow and pressure regulator means for controlling water pressure in said conduit means, said conduit means communicating with a water heater, said water jet means having at least a retractable nozzle movable between a retracted position within a chamber defined in the hollow toilet seat and an operative position projecting from an inner edge of said toilet seat, the toilet seat defining an opening at the inner edge of the seat through which the nozzle projects, and a hinged door closes the opening when the nozzle is retracted.

5,570,480

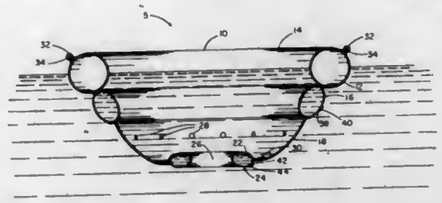
INFLATABLE FLOATING SPA

Man F. Yeung, Rowland Heights, Calif., assignor to Sunco Products, Inc., Industry, Calif.

Filed Jun. 19, 1995, Ser. No. 492,375

Int. Cl.[6] E04H *4/12*

U.S. Cl. 4—487 **8 Claims**



1. An inflatable floating spa for use in water by persons to recline and rest therein, said inflatable floating spa comprising in combination:

a floatation means for supporting said inflatable floating spa, said floatation means having a submerged side and a top side;

a sheet means for providing a seat within said inflatable floating spa being coupled to and extending downward from said floatation means, said sheet means including a center hole having an internal perimeter edge; and

a lower water chamber coupled to and along said internal perimeter edge of said center hole, said lower water chamber being tubular in nature thereby defining a central opening and said lower water chamber being sealed to retain water therein, whereby said opening facilitates the entering and exiting of said inflatable floating spa by the person from underwater, said lower water chamber being filled with water and remaining submerged while said floatation means remains afloat on top of the water thereby supporting said lower water chamber suspended therefrom under the water.

5,570,481

SUCTION-ACTUATED CONTROL SYSTEM FOR WHIRLPOOL BATH/SPA INSTALLATIONS

Cleo D. Mathis, Hacienda Heights; Robert A. Miller, Fullerton; Scott A. Romano, Murrieta, all of Calif., and Peter M. Tracey, Suffolk, United Kingdom, assignors to Vico Products Manufacturing Co., Inc., South El Monte, Calif.

Filed Nov. 9, 1994, Ser. No. 338,148

Int. Cl.[6] A47K *3/00*; **E04H** *4/12*

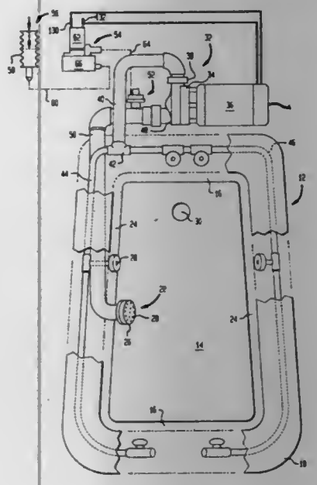
U.S. Cl. 4—541.2 **10 Claims**

1. A suction-actuated control system for use with whirlpool bath/spa installations of the type having a motor driving a recirculation pump for removing water from a tub through a suction path and for returning and reintroducing the water as pressurized jets and an actuatable electric switch in circuit with the motor, the system comprising:

a fluidically controllable actuator coupled to the electric switch for actuating the switch between a first position to complete an electric circuit with the motor and a second position to interrupt the electric circuit and having means to mechanically latch the switch in each of said first and second positions, said actuator successively actuating the switch between said first and second positions in response to successive first fluidic signals, said actuator responsive to a second fluidic signal different from said first fluidic signal to cause the switch to assume its second position;

means, operable by a system user, to apply successive first fluidic signals to said actuator to complete and interrupt the electric circuit;

a transducer coupled to the suction path for detecting a predetermined pressure in the suction path and for providing the second fluidic signal to said actuator to cause the switch to assume its second position.



5,570,482

SUPPORTER FOR A HUMAN BODY AND BED EQUIPMENT USING THE SAME

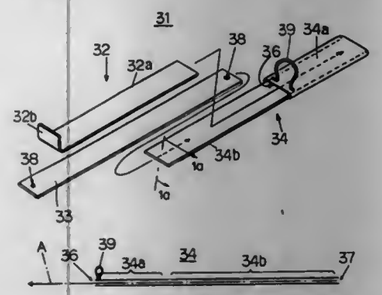
Yoshio Asakawa, 287 Tsubuku Honmachi, Kurume-shi, Fukuoka-ken, Japan

Filed Feb. 4, 1994, Ser. No. 191,595

Claims priority, application Japan, Feb. 4, 1993, 5-040520; Jun. 30, 1993, 5-189102

Int. Cl.[6] A61G *7/10*

U.S. Cl. 5—81.1 C **12 Claims**



1. A supporter for a human body, comprising:

a sleeve having a sleeve front end portion and a sleeve base end portion;

said sleeve including a handle on an end of said sleeve base end portion;

an arm insertable into said sleeve; and

a belt insertable into said sleeve.

5,570,483

MEDICAL PATIENT TRANSPORT AND CARE APPARATUS

Theodore A. Williamson, 527 E. Kingston Ave., Charlotte, N.C. 28203-5117

Filed May 12, 1995, Ser. No. 440,005

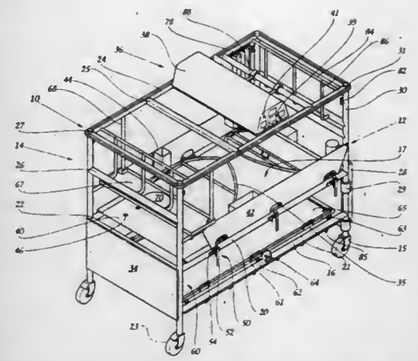
Int. Cl.[6] A61G *7/10*

U.S. Cl. 5—83.1 **67 Claims**

1. A patient transport and care apparatus for use when transporting human or animal hospitalized patents in a hospital environment without significant imposition on the patient, said patient transport and care apparatus comprising:

an upstanding skeletal frame structure having a plurality of wheels mounted thereto for rolling surface contact, said frame structure defining a patient support area and having longitudinally extending side portions and traversely extending end portions and being of a size and configuration to be selectively movable in and out of a generally surrounding relationship with a floor-standing patient support structure, with at least one of said traversely extending end portions being open for access to said patient support area when rolling said frame structure in and out of said standing relationship with the floor-standing patient support structure; and

means for supporting a patient during transport on said apparatus, said patient support means being selectively mountable to said frame and movable between a patient support disposition and a storage disposition.



5,570,484

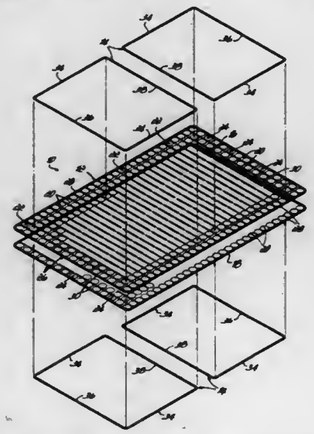
MATTRESS AND MATTRESS CORE HAVING DUAL RECTANGULAR INNER BORDER RODS

Steven E. Ogle, Carthage, Mo., assignor to L&P Property Management Company, Chicago, Ill.

Filed Jul. 15, 1994, Ser. No. 276,000

Int. Cl.[6] A47C *27/04*

U.S. Cl. 5—717 **16 Claims**



1. An improved mattress comprising:

a mattress core, padding over at least one side of the core, and an upholstered covering encasing the mattress core and padding, said mattress core comprising:

(i) a rectangular coil spring assembly including a plurality of coil springs arranged in a matrix configuration having a plurality of transverse coil spring rows and a plurality of longitudinal coil spring columns, and a pair of rectangular outer border rods surrounding said coil springs in a top and bottom plane of said assembly, said outer border rods being secured to at least some the endmost coils in said transverse coil spring rows and said longitudinal coil spring columns; and

(ii) a pair of rectangular inner border rods spaced inwardly from said outer border rods, each of said rectangular inner border rods having two side sections, a first end section and a second end section forming said rectangular inner border rod, said rectangular inner border rods being physically separated from and unattached to one another, said side and end sections controllably increasing the edge firmness and the firmness of the transverse center portion of the mattress core.

5,570,485

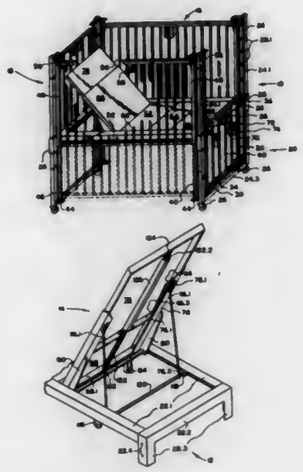
BED ASSEMBLY

Norman V. Kurlander, East Amherst; Gregory A. Fry, Lockport, and Dennis J. Pomietlasz, Barker, all of N.Y., assignors to NK Medical Products, Inc., Buffalo, N.Y.

Filed Dec. 12, 1995, Ser. No. 571,245

Int. Cl.[6] A47D *7/01*; A61G *7/00*

U.S. Cl. 5—617 **10 Claims**



1. A bed assembly comprising:

a mattress support assembly including

a generally rectangular frame, and

a mattress support carried by the frame, the mattress support including a hinged head section movable between raised and lowered positions;

a headboard assembly interconnected with the generally rectangular frame;

an extender supported by the hinged head section for extensible and retractable movement, the extender bridging the space between the headboard assembly and the hinged head section when the hinged head section is in a raised position; and

extender operating means for causing the extender to extend towards the headboard assembly when the hinged head section is raised and for causing the extender to retract when the hinged head section is lowered, the extender operating means being supported solely by the mattress support assembly.

5,570,486

BRIDGE CONSTRUCTION AND METHOD OF ASSEMBLY.

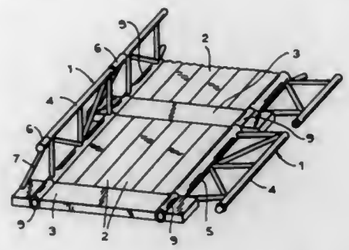
Hans-Norbert Wiedeck, Mülheim/Ruhr, Germany, assignor to Krupp Fordertechnik GmbH, Duisburg, Germany

Filed May 23, 1995, Ser. No. 448,197

Claims priority, application Germany, Jun. 1, 1994, 44 19 203.7

Int. Cl.[6] E01D *19/00*

U.S. Cl. 14—13 **15 Claims**



1. A method of assembling a bridge, comprising the steps of:

(a) providing an end beam, at least one roadway element bridging two of said end beams, and a pair of longitudinal girders adapted to interconnect said end beams and to flank said roadway element, said girders being formed as trusses with upper and lower chords;

(b) connecting said girders to said end beams by interfitting an end of each lower chord and a respective end beam to form a plug connection therewith and relatively swinging the respective girder about a respective axis from an assembly position into an erect position of the girder relative to the end beam to secure the plug connections, thereby forming a respective bridge section from at least one end beam, a respective roadway element and a pair of girders;

(c) interconnecting aligned ends of upper chords of a plurality of said bridge sections at respective couplings; and

(d) bracing said upper chords relative to the end beams with respective compression struts inclined to the planes of the respective girders, engaged with said end beams and forming triangular bracing formations with the respective end beams and girders.

4. A bridge comprising:

a multiplicity of bridge sections interconnected in end-to-end relationship, said bridge sections each comprising:

an end beam,

at least one roadway element adapted to span a pair of such end beams,

a pair of longitudinal girders adapted to interconnect said end beams and to flank said roadway element, said girders being formed as trusses with upper and lower chords,

a respective hammerhead coupling element formed on an end of each lower chord and complementarily received in a throughgoing opening in the respective end beam for locking said coupling elements to said end beams upon swinging of said girders from assembly positions into erect positions relative to said end beams, thereby connecting said sections together at the respective end beams and aligning upper chords of the respective girders;

respective couplings between said upper chords of successive bridge sections;

respective compression struts inclined to the planes of the respective girders, engaged with said end beams and forming triangular bracing formations with the respective end beams and girders; and

a respective further truss extending along the respective section and interconnected with the respective truss or each of said girders along the upper chord thereof, the upper chords of the interconnected trusses being formed by alternating sleeves of the trusses of each girder and the further truss, the sleeves being affixed together by an elongated cylindrical member traversing the sleeves.

5,570,487

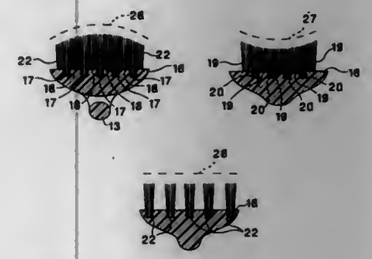
TOOTHBRUSH HAVING MULTIPLE BRUSHING SURFACE CONFIGURATIONS

Bernard S. Schneider, 7031 Aracoma Dr., Cincinnati, Ohio 45237

Filed Nov. 13, 1995, Ser. No. 557,360

Int. Cl.[6] A46B *9/04*

U.S. Cl. 15—167.1 **10 Claims**



1. A toothbrush comprising:

a shaft having a handle portion and a neck portion, said neck portion being connected to the handle portion and being offset from the handle portion;

a brush head projecting from the neck portion, said brush head being disposed in approximately perpendicular relation to the handle portion;

a plurality of bristles mounted on the brush head and arranged in a plurality of rows, at least one of said rows defining a generally convex brushing surface, at least one other of said rows defining a generally planar brushing surface and at least one further of said rows defining a generally concave brushing surface.

5,570,488

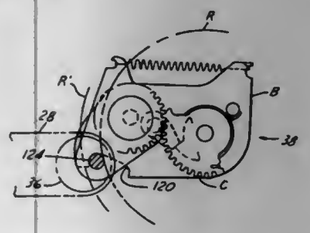
VARIABLE PARK AND WIPING RANGE MECHANISM FOR WINDSHIELD WIPER SYSTEM

Xiaoming Deng, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 9, 1995, Ser. No. 489,210

Int. Cl.[6] B60S *1/06*; *1/34*

U.S. Cl. 15—250.16 **17 Claims**



14. A vehicle window wiper system having a run mode and a park mode, the wiper system comprising:

(1) at least one window wiper having a range of motion between an in-wipe position and an out-wipe position when the wiper system is in the run mode, and having a variable park range between the in-wipe position and a depressed park position when the system is in the park mode;

(2) a motor for rotating a shaft in a first direction when in the run mode and through a first predetermined arc in a counter direction when in the park mode;

(3) a lost motion mechanism mechanically connected with the shaft for rotary motion therearound, the lost motion means comprising:

(a) a first gear mounted on the shaft for rotation therewith;

(b) a base plate separably connected to the first gear with a torsion spring;

(c) stop means for stopping the base plate at a first predetermined position when the wiper system is in the park mode;

(d) a lost motion plate pivotally mounted at a pivot point on the base plate and having a tension spring biasing the base plate thereto in a first relation;

(e) a second gear mounted at the pivot point in meshing relationship with the first gear;

(f) a third gear mounted on an end of the lost motion plate in meshing relationship with the second gear;

(g) a ball mounted to the third gear for eccentric movement with respect to the axis thereof in response to rotation of the second gear, the ball having a radius of rotation around the shaft when the wiper system is in the run mode;

(h) a slot in the base plate for allowing radially slidable movement of the third gear relative to the shaft when the wiper system is in the run mode to enable reduction of the radius of rotation of the ball around the shaft in response to transmission of an obstruction induced force to the ball so as to vary the range of motion of the at least one wiper between the in-wipe position and the out-wipe position when the wiper system is in the run mode;

(i) the first gear overcoming the connecting bias force of the torsion spring and separating from the base plate when in the park mode while rotating through the first predetermined arc in the counter direction, thus rotating the second gear through a second predetermined arc, the second gear rotating the third gear and the eccentrically mounted ball thereon through a third predetermined arc to radially increase the distance of the ball from the shaft thereby positioning the at least one wiper in the depressed park position;

(j) the lost motion plate overcoming the bias force of the tension spring to pivot about the pivot point when the ball is prevented from rotation due to an obstacle between the in-wipe position and the depressed park position so as to allow the first gear to rotate through the first predetermined arc;

(4) a driver arm journalled to the ball; and

(5) means for transforming the motion of the driver arm to oscillatory motion of the least one window wiper between the in-wipe position and the out-wipe position.

5,570,489

LIQUID EXTRACTION DEVICE FOR A VACUUM CLEANER

Ta-tang Lee, 4th Fl., No. 14, Lane 19, Pinlang Rd., Hsintien City, Taipei Hsien, Taiwan

Filed Jul. 12, 1995, Ser. No. 501,311

Int. Cl.[6] A47L *7/00*

U.S. Cl. 15—353 **7 Claims**

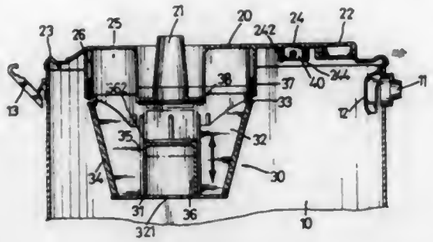
1. A liquid extraction device for a vacuum cleaner, comprising:

a container comprising an opening, a closed bottom end, a first port adapted to be connected to a hose assembly with a working head and a deflector neighboring the first port and extending toward the bottom end of the container;

a cover sealedly mounted over the opening of the container and comprising a second port adapted to be connected to a vacuum cleaner;

fastening means for fixedly connecting the container and the cover together;

a filter assembly positioned within the container and fixedly attached to and below the cover, said filter assembly comprising a frame formed by a central cylinder located just below



the second port and spaced therefrom a distance and a plurality of ribs radially extending from the cylinder, a bottom plate with a central hole fixedly mounted on a bottom of the frame, a filter fixedly mounted around a peripheral circumference defined by the ribs of the frame and sealedly connected over the bottom plate, and a top connecting member mounted around a top portion of the peripheral circumference defined by the ribs of the frame and sealedly connected between the filter and the cover, and a float sealedly and slidably mounted in the cylinder;

whereby when the vacuum cleaner is turned on, a sucking air flow is generated to flow from the first port, the deflector, the filter assembly, and the second port to enter into the vacuum cleaner, and the liquid contained in the air flow, due to its relatively heavy weight, is retained on the bottom end of the container, when the liquid retained on the bottom end of the container has reached a predetermined level, the float will be floated to block the second port so that the sucking air flow is interrupted.

5,570,490

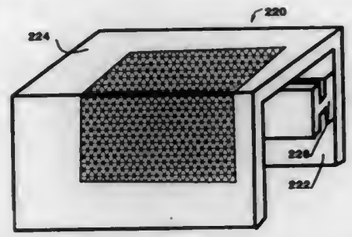
CURTAIN ROD AND ATTACHMENT SYSTEM

Daniel Walsh, 1426 Bronte Ct., Lansdale, Pa. 19446, and Francis Halligan, 207 S. Dillwyn Rd., Newark, Del. 19711

Continuation-in-part of Ser. No. 928,932, Aug. 11, 1992, Pat. No. 5,347,683. This application Feb. 23, 1994, Ser. No. 200,646

Int. Cl.[6] A47H *15/00*

U.S. Cl. 16—87.4 R **6 Claims**



1. A curtain hanging system, said curtain hanging system comprising:

an I-shaped slide member, said I-shaped slide member having a first end, a second end and a middle brace;

said second end of said I-shaped slide member being portioned to slide within the interior space of a curtain rod;

said middle brace of said I-shaped slide member being portioned to slide within the channel of said curtain rod;

an approximately n-shaped slide unit, said approximately n-shaped slide unit having a back brace, a top brace and a front brace, said top brace being at right angles to said back brace and said front brace,

wherein said I-shaped slide is affixed to said back brace within said approximately n-shaped unit.

5,570,491

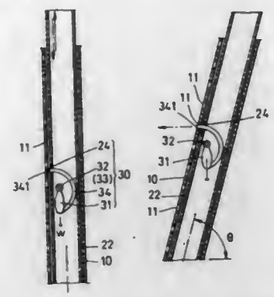
RETRACTABLE HANDLE LOCATING STRUCTURE

Chen C. Tung, No. 7, Lane 145, Te Hsing Rd., Ta Chia, Taichung, Taiwan

Filed Nov. 28, 1995, Ser. No. 563,275

Int. Cl.[6] B25G *1/04*

U.S. Cl. 16—115 **2 Claims**



1. A retractable handle locating structure comprising two sleeves adapted to be fixedly secured to the back side of a wheeled travel bag and disposed in a parallel relation, each sleeve having a longitudinal series of locating holes, a substantially U-shaped retracting handle having two sliding tubes slidably inserted into said sleeves and a transverse handgrip connected between said sliding tubes outside said sleeves, and lock means for locking said sliding tubes in an extended position relative to said sleeves, wherein said sleeves each has a longitudinal series of locating holes for engagement with said lock means; said lock means comprises two gravity-induced locating elements respectively mounted inside said sliding tubes, each gravity-induced locating element comprising a heavy pendulum having a fixed end pivotably connected to a pivot hole on one sliding tube and a free end connected with a curved locating rod, said curved locating rod having a fixed end connected to said heavy pendulum and a free end inserted into a locating hole on the respective sliding tube, the free end of said curved locating rod being forced in and out of one of the longitudinal series of locating holes on one sleeve by the gravity weight of said heavy pendulum when said travel bag is moved between a standing position perpendicular to the ground and a tilted position.

5,570,492

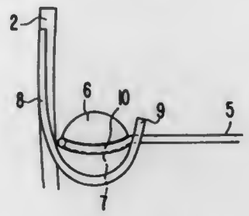
JOINT FOR EYEGLASS TEMPLES

Eiichi Nakanishi, Hyogo, Japan, assignor to Nakanishi Optical Corporation, Osaka, Japan

Filed Mar. 16, 1995, Ser. No. 405,197

Int. Cl.[6] G02C *5/22*

U.S. Cl. 16—228 **4 Claims**



1. A joint for securing eyeglass temples, the joint comprising:

a pivotal member fixed to an end-piece which is secured at one of its ends to an outer edge of a lens rim;

a temple having a front end engaging the pivotal member for rotational movement about said pivotal member;

an annular groove formed integral within and around the pivotal member;

said front end of the temple comprising an arcuate member rotatably engaging with the annular groove of the pivotal member; and

said end-piece comprising a stopper arranged to delimit the rotational movement of said temple.

5,570,493

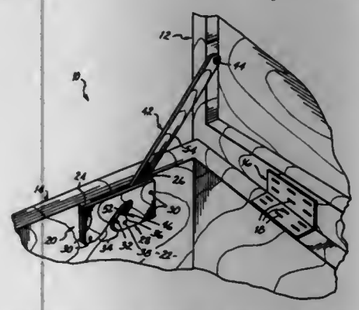
CAP BRACE AND BRACKET

Kenneth J. Gulick, Cincinnati, Ohio, assignor to Batesville Casket Company, Inc., Batesville, Ind.

Filed Nov. 18, 1994, Ser. No. 342,352

Int. Cl.[6] A61G *17/00*

U.S. Cl. 27—18 **17 Claims**



1. A combustible casket adapted to support a deceased person therein comprising a body, a cap pivoted to said body and closeable thereupon, and a casket cap brace support for supporting said pivotally mounted cap in an open position, said brace support comprising:

a support bracket fabricated from a combustible material adapted to be affixed to a wall of said casket body and including an aperture therethrough adapted to receive an end of a brace member;

an elongated brace member fabricated from a combustible material having one end pivoted to said cap and the other end received in said support bracket aperture, said other end having a projection thereon;

said support bracket having an elongated slot therein with a terminal end, said brace member projection being received in said slot during at least a portion of the movement of said cap to and between the closed and open positions;

said slot being so configured such that when said cap is in the open position said brace member is in compression, said brace member projection residing in said slot terminal end and being prevented from moving out of said slot terminal end by the action of the weight of said cap, said cap thereby being resistant to inadvertent closing in the event that said casket cap or body is accidently bumped.

5,570,494

SHAFT SEAL FINISHING DIE

James E. Prince, Jr., Sumter, S.C., assignor to Federal-Mogul Corporation, Southfield, Mich.

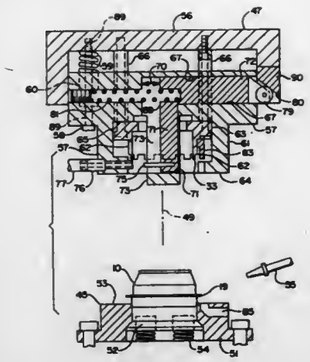
Filed Jan. 13, 1995, Ser. No. 372,477

Int. Cl.[6] B23P *23/04*

U.S. Cl. 29—33 K **18 Claims**

1. A finishing die for use on a shaft-sealing unit, wherein the sealing unit comprises a metal case having a circular side wall having an outwardly extending flange, and a flexible sealing boot extending axially from said case, said forming die comprising:

a lower die assembly, and an upper die assembly movable toward each other along a vertical axis;



said lower die assembly comprising an annular support member having an opening sized to receive the case therein;

said upper die assembly comprising an overhead carrier, a flange-clamping assembly slidably mounted on said carrier for vertical movement therealong, a hole forming device slidably mounted on said flange clamping assembly for transverse horizontal movement, and an annular staking device suspended from said carrier;

said clamping assembly being engagable with the case flange, whereby said flange is clamped to said annular support member;

said carrier having a drive connection with said hole forming device, such that relative movement of the carrier toward the lower die assembly causes the hole forming device to be driven horizontally to form a hole in the sealing boot; and

said annular staking device being oriented so that after the hole has been formed in the sealing boot, the staking device forcibly engages the case side wall to stake the case to the sealing boot.

5,570,495

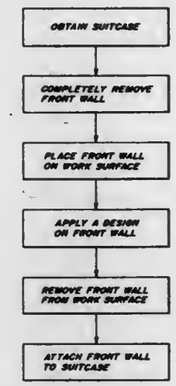
DECORATED LUGGAGE AND METHOD

Robert B. Mogell, Voorhees, N.J., assignor to Toppers, Inc., Thorofare, N.J.

Filed May 10, 1994, Ser. No. 241,166

Int. Cl.[6] B21D *39/03*; B23P *19/00*; A45C *13/08*;*13/42*

U.S. Cl. 29—428 **2 Claims**



1. A method for applying a design on a suitcase having a back wall and a front wall connected together along their peripheries by a side wall, comprising the steps of:

obtaining the front wall separate from the back and side walls, the front wall having a slide fastener along its periphery for removably connecting the front wall to the side wall, forming an entire structural component of the suitcase for closing and opening the suitcase, being made from a semi-stiff pliant material, and having a substantially planar shape;

disposing said front wall on a planar work surface of a design applying machine and transverse to the direction of a design applying mechanism;

applying a design on said front wall with said design applying machine; and

removing said front wall from said machine;

whereby commercial quantities of said front walls having identical pre-determined designs can be produced in a relatively short period of time.

5,570,496

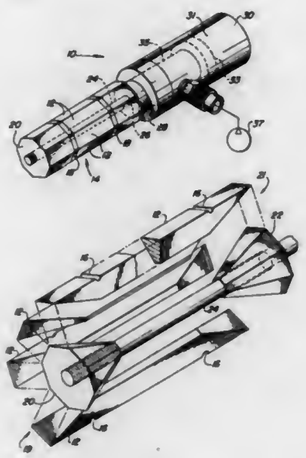
HOSE COUPLING INSERTION METHOD

R. E. Joe Felske, 1319 Woodland La., LeClaire, Iowa 52753

Filed Feb. 8, 1995, Ser. No. 385,753

Int. Cl.[6] B23P *11/02*

U.S. Cl. 29—450 **4 Claims**



1. A method of securely coupling a flexible hose to a hose coupling comprising:

a) inserting an expansion mechanism into an unexpanded end of the hose, said expansion mechanism comprising:

1) a plurality of elongate wedges fitted together to form an elongate structure having a first concave end,

2) a first frustum positioned within said first concave end, and

3) mechanism for forcing said first frustum into and against said first concave end such that said elongate wedges are forced radially apart;

b) initiating said forcing mechanism for rapidly forcing the elongate wedges to shift radially outwardly until the hose becomes expanded;

c) quickly releasing said forcing mechanism such that the expansion mechanism generally collapses, and removing the expansion mechanism from the expanded hose;

d) positioning the coupling within the expanded hose before the expanded hose contracts toward its original diameter; and

e) maintaining said coupling within the expanded hose until the expanded hose has contracted to form a generally tight fit against the coupling.

5,570,497

ALTERNATIVE COLD SHRINK DEVICE AND METHOD OF EMPLOYING SAME

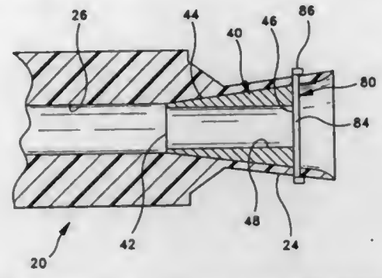
Glenn J. Luzzi, Mt. Bethel, Pa., assignor to Amerace Corporation, Hackettstown, N.J.

Division of Ser. No. 313,778, Sep. 29, 1994, Pat. No. 5,467,515.

This application Jun. 8, 1995, Ser. No. 488,565

Int. Cl.[6] B23P *19/02*

U.S. Cl. 29—450 **16 Claims**



1. The method of installing a recoverable member having a bore therethrough upon an elongate member comprising the steps of:

a) providing a mandrel means having a first end of a first diameter and a second end of a second diameter larger than said first diameter with a tapered exterior surface between said first end and said second end and a bore therethrough from said first end to said second end;

b) forcing said mandrel into the bore of said recoverable member to expand at least a portion of the bore of said recoverable member;

c) fixing said mandrel in place so that it can not be removed from said expanded bore of said recoverable member;

d) inserting an elongate member through said bore in said mandrel into at least said expanded bore of said recoverable member; and

e) releasing said mandrel causing said recoverable member to attempt to recover its initial dimensions and expelling said mandrel from said recoverable member along said elongate member.

5,570,498

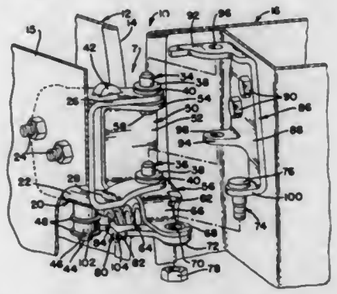
LIFT-OFF DOOR HINGE

Arthur S. Hipkiss, Shelby Township; Charles R. Fain, Sterling Heights, and Cheryl L. Barr, Rochester Hills, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 2, 1995, Ser. No. 433,882

Int. Cl.[6] E05D *7/10;7/12;11/10*

U.S. Cl. 16—258 **3 Claims**



1. A lift-off type door hinge for pivotally and detachably connecting a vehicle door to an opening frame of an automotive vehicle body comprising:

a body side strap with a base for connection to the opening frame with generally horizontally projecting upper and lower arms projecting therefrom, the upper and lower arms having generally aligned apertures with first and second pins extending therethrough, the body side strap also having a reaction surface;

a mid-strap, the mid-strap having a main body with generally horizontally projecting upper and lower arms, the mid-strap upper and lower arms via the first and second pins being pivotally attached with respect to the body side strap upper and lower arms, the mid-strap lower arm also having a door aperture, and the mid-strap also having a reaction surface;

a spring extending between the reaction surfaces of the body side strap and the mid-strap to bias the mid-strap to a hold open position with respect to the body side strap when the vehicle door is open; and

a door side strap, the door side strap having a main body fixably connected to the door and first, second and third arms extending generally horizontally outwardly, the first and second arms having apertures to allow for pivotal connection with the first and second pins, respectively, the first and second arms being able to be removed from the first and second pins by upward movement to remove the door from the vehicle body, the door side strap third arm being pivotally attached to the mid-strap lower arm by a removable fastener extending through the door aperture.

5,570,499

BOLT-TIGHTENED TYPE COUPLING

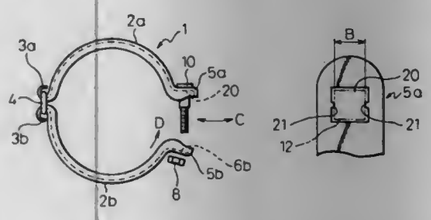
Rakuzo Katayama, Hiratsuka; Michio Kyoya, and Tokushi Koumaru, both of Sagamihara, all of Japan, assignors to The Yokohama Rubber Co., Ltd, and Mitsubishi Jukogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Dec. 23, 1994, Ser. No. 362,864

Claims priority, application Japan, Dec. 27, 1993, 5-070223 U

Int. Cl.[6] F16L *33/06*

U.S. Cl. 24—285 **6 Claims**



1. A bolt-tightened coupling comprising:

a pair of first and second semi-circular arc-shaped coupling halves having base ends that are pivotably connected to one another, so that said pair of coupling halves can be moved toward each other to a closed position and moved away from each other to an open position;

said first and second coupling halves having free ends opposite said base ends provided with first and second flanges, respectively, having first and second bolt inserting holes, respectively;

a bolt having a shank adapted to be inserted into said first bolt inserting hole and then into said second bolt inserting hole;

a nut adapted to be engaged with said shank of the bolt after said shank has been inserted into said first and second bolt inserting holes to secure the pair of coupling halves in its closed position; and

said first bolt inserting hole having a plurality of spaced projections on an inner periphery thereof that project inwardly of the hole a distance sufficient to fit tightly with the shank of the bolt inserted through the first bolt inserting hole at spaced contact points and prevent the bolt from falling out of said first bolt inserting hole before the shank of the bolt has been engaged with said nut.

5,570,500

CLAMP FOR CONNECTING FORM PANELS WITH CLAMPING JAWS URGING SECTIONS OF PANELS TOGETHER AT THEIR EDGES

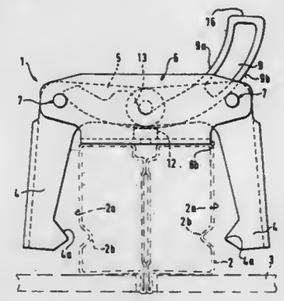
Josef Merkel, Welschensteinach, Germany, assignor to Paschal-Werk G. Maier GmbH, Steinach, Germany

Filed Jan. 20, 1995, Ser. No. 375,865

Claims priority, application Germany, Jan. 22, 1994, 44 01 794.4

Int. Cl.[6] E04G *17/04*

U.S. Cl. 24—495 **20 Claims**



1. A clamp (**1**) for connecting form panels which are disposed in coplanar, side-by-side relation and have edge sections (**2**), particularly hollow sections, at at least two confronting edges, particularly running round all the edge, said clamp comprising two clamping Jaws (**4**) which are adapted to swivel towards and urge together oppositely directed longitudinal faces (**2***a*) of abutting edge sections (**2**) and an actuating element for swivelling said clamping jaws (**4**), each clamping jaw (**4**) having an adjusting arm (**5**) arranged at an angle thereto and located at a jaw-end remote from a clamping point (**4***a*) on jaw (**4**), said adjusting arms (**5**) being directed towards each other and in a corner area of each arm the clamping jaws (**4**) are swivel-mounted to a carrier (**6**) by swivel bearings (**7**), wherein the actuating element contacts each adjusting arm (**5**) at a point spaced from the swivel bearing (**7**), the points of contact being movable together with the adjusting arms (**5**) away from the form panels to be connected so as to close the clamp (**1**), and wherein the actuating element comprises a wedge (**9**) which in a use position is arranged between the points of contact on the adjusting arms (**5**) and the edge sections (**2**) of panels, the wedge (**9**) contacting the points of contact with a wedging face (**9***a*) averted from the panels to be connected, whereby as the wedge (**9**) moves in a longitudinal direction it serves to close the clamp (**1**) by a wedging width of appropriately increasing dimension, the contact points being arranged at ends of the adjusting arms (**5**) remote from the swivel bearings (**7**) and being provided at an identical location comprising a common contact point, said ends of the adjusting arms (**5**) being swivel-connected to each other with play by a connector which forms the common contact point for applying the wedge (**9**), and an abutment (**12**) for the wedge (**9**) at a reverse face (**9***b*) thereof facing the form panels to be connected, said abutment being provided in an area of and in spaced relationship to the contact point for applying the wedge (**9**), whereby the spacing between the abutment (**12**) and the contact point is enlargeable by inserting the wedge (**9**).

5,570,501

GASKET MANUFACTURE

Alan W. Atkinson, Barby, and Melanie J. Walsh, Braunston, both of England, assignors to T&N Technology Limited, Rugby, England

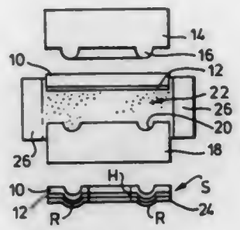
PCT No. PCT/GB93/01480, § 371 Date Dec. 7, 1994, § 102(e) Date Dec. 7, 1994, PCT Pub. No. WO94/03742, PCT Pub. Date Feb. 17, 1994

PCT Filed Jul. 14, 1993, Ser. No. 351,277

Claims priority, application United Kingdom, Aug. 5, 1992, 9216604

Int. Cl.[6] F16J *15/12*

U.S. Cl. 29—527.2 **10 Claims**



1. A method of manufacturing an embossed metallic sheet coated at least partially with expanded graphite and suitable for use as a gasket or as a component layer of a gasket, wherein the method comprises positioning a substantially planar metallic sheet between an upper embossing die and a lower embossing die with a layer of particles of expanded graphite between one of said dies and a surface of the sheet, one of said dies having at least one protuberance, the other of said dies having a corresponding recess complementary to the protuberance, said method comprising relatively moving the dies to emboss a ridge into the sheet and simultaneously compressing the particles of expanded graphite, so that they coalesce and form a coating attached to said sheet.

5,570,502

FABRICATING METAL MATRIX COMPOSITES CONTAINING ELECTRICAL INSULATORS

Ralph R. Sawtell; M. K. Premkumar, both of Monroeville, and David I. Yun, Murrysville, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 111,993, Aug. 25, 1993, which is a division of Ser. No. 682,513, Apr. 8, 1991, Pat. No. 5,259,436. This application Apr. 28, 1994, Ser. No. 235,018

Int. Cl.[6] B22D *19/00*; **H01L** *21/60*

U.S. Cl. 29—527.6 **31 Claims**

1. A method of fabricating a metal matrix composite comprising the steps of:

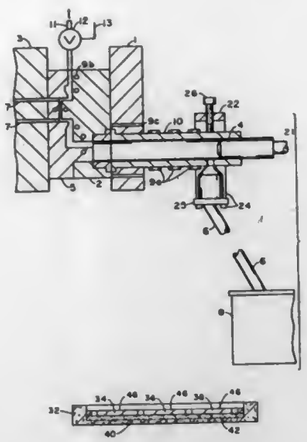
(a) placing at least one electrically insulating substrate on at least one porous preform in a forming chamber;

(b) evacuating said forming chamber;

(c) introducing liquid phase metal into said forming chamber and infiltrating said at least one porous preform and covering a surface of said at least one electrically insulating substrate with said liquid-phase metal;

(d) solidifying said liquid-phase metal, thereby forming a composite comprising said at least one porous preform, said at least one electrically insulating substrate and a metal layer said metal layer covering said surface of said at least one electrically insulating substrate; and

(e) electrically isolating at least one region of said metal layer from another region of said metal layer by removing at least a portion of said metal layer therebetween.



5,570,503

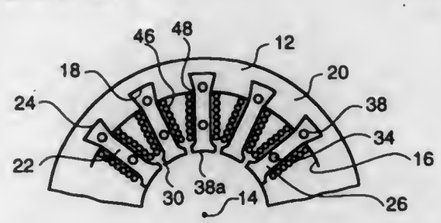
METHOD FOR MAKING AN ELECTRIC MOTOR STATOR

Vijay K. Stokes, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 28, 1995, Ser. No. 430,920

Int. Cl.[6] H02K *15/02*

U.S. Cl. 29—596 **2 Claims**



1. A method for making an electric motor stator comprising the following steps:

a) cutting an annular disk in a single cutting operation so as to create:

1) a radially-outer ring portion with a radially-inward facing circumferential surface having a plurality of circumferentially spaced-apart, radially-inward facing slots; and

2) a radially-inner ring portion having a plurality of circumferentially spaced-apart, radially-outward projecting spokes with radially-outer ends engaged with said slots and with first and second through holes;

b) separating said radially-inner and radially-outer ring portions by removing said spokes from said slots;

c) repeating steps a) and b) on a predetermined number of additional annular disks;

d) stacking together said radially-inner ring portions of steps a) through c) so as to create stacks of aligned spokes;

e) stacking together said radially-outer ring portions of steps a) through c) so as to create stacks of aligned slots;

f) disposing a coil around each stack of aligned spokes of said stacked-together radially-inner ring portions;

g) after step f), disposing said stacked-together radially-inner ring portions inside said stacked-together radially-outer ring portions such that said stacks of aligned spokes each engage a corresponding one of said stacks of aligned slots;

h) creating a hole in each of a pair of end rings;

i) disposing said pair of end rings to longitudinally enclose said stacked together radially-outer ring portions;

j) securing first bolts in said first through holes of said spokes of said stacked-together radially-inner ring portions; and

k) securing second bolts in said second through holes of said spokes of said stacked-together radially-inner ring portions and said holes of said pair of end rings.

5,570,504

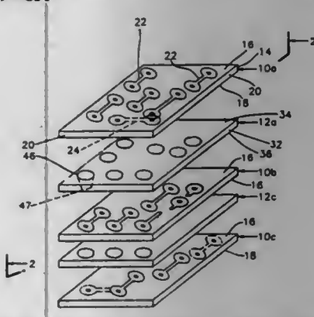
MULTI-LAYER CIRCUIT CONSTRUCTION METHOD AND STRUCTURE

Thomas H. DiStefano, Bronxville; Igor Y. Khandros, Peekskill, and Gary W. Grube, Monroe, all of N.Y., assignors to Tessera, Inc., San Jose, Calif.

Division of Ser. No. 105,641, Aug. 12, 1993, which is a division of Ser. No. 816,634, Dec. 31, 1991, Pat. No. 5,282,312. This application Feb. 21, 1995, Ser. No. 393,165

Int. Cl.[6] H05K *3/36*

U.S. Cl. 29—830 **24 Claims**



1. A method of making a circuit panel precursor comprising the steps of:

(a) applying a first electrically conductive material on a first surface of a first dielectric sheet so that said conductive material forms islands spaced apart from one another;

(b) applying an additional dielectric material over said first conductive material so as to provide a second dielectric sheet and thereby form a laminate with said first conductive material disposed between said dielectric sheets and with dielectric material surrounding each said island; and

(c) forming holes in each said dielectric sheet in alignment with said islands so that each said island is exposed through said holes to top and bottom surfaces of the laminate.

5,570,505

METHOD OF MANUFACTURING A CIRCUIT MODULE

Alan P. Downie; Peter Gallagher, both of Greenock; John J. Garrity, Strathclyde, and Brian L. Robertson, Gourock, all of Scotland, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 254,342, Jun. 3, 1994, Pat. No. 5,471,368. This application May 31, 1995, Ser. No. 455,775

Claims priority, application United Kingdom, Nov. 16, 1993, 9323646

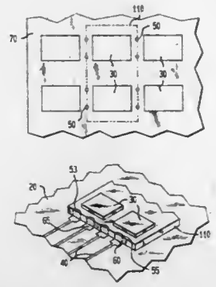
Int. Cl.[6] H05K *3/34*

U.S. Cl. 29—840 **9 Claims**

1. A method of manufacturing an electronic circuit module comprising the steps of:

(a) bonding at least one electronic component to a parent substrate carrying at least one printed circuit line, such that at least a portion of said at least one electronic component is in electrical contact with at least a portion of said at least one printed circuit line,

(b) forming at least one hole through said parent substrate at least at one predetermined connection point, such that said at least one hole passes through at least one of said at least one printed circuit line.



(c) filling said at least one hole with at least one electrically conductive material, and

(d) removing a portion from said parent substrate along at least a portion of said at least one electrically conductive material to form a first substrate, such that said first substrate has secured to it at least one of said attached component, and wherein at least a portion of said at least one electrically conductive material forms at least one electrically conductive connection pad along at least one edge of said first substrate, thereby forming said electronic circuit module.

5,570,506

METHOD FOR FORMING MULTILAYER WIRING CONSTRUCTION

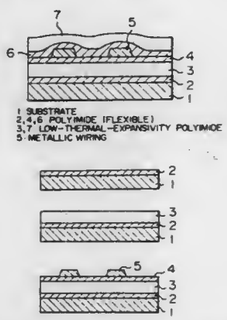
Rie Tawata; Shunichi Numata; Takao Miwa; Koji Fujisaki, all of Hitachi; Takayoshi Ikeda, Ibaraki; Yoshiaki Okabe, and Hisae Shimanoki, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 834,837, Feb. 13, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 463,562

Claims priority, application Japan, Feb. 18, 1991, 3-023106

Int. Cl.[6] H01K *3/22*

U.S. Cl. 29—851 **3 Claims**



1. A method for producing a multilayer wiring structure comprising a plural number of conductor pattern layers and a plural number of low-thermal-expansivity polyimide insulating film layers, the low-thermal expansivity polyimide forming the insulating film layers having a coefficient of thermal expansion of $2\times10^{-5}K^{-1}$ to $4\times10^{-6}K^{-1}$, which method comprises the steps of:

(A) coating a flexible polymer resin on a substrate and heat-curing the polymer coating into a half-cured state;

(B) applying on said polymer coating a polyamic acid varnish which is a low-thermal-expansivity polyimide precursor and forming a polyimide of a half-cured state by conducting a thermal condensation reaction;

(C) applying on said polyimide a flexible polymer resin and heating it to form a flexible polymer film into a perfectly cured state;

(D) bonding a copper foil on said flexible polymer film and etching said copper foil layer to form a conductor pattern layer;

(E) coating a flexible polymer varnish on said conductor pattern layer and heat curing the polymer coating into a half-cured state;

(F) applying on said polymer coating a polyamic acid varnish which is a low-thermal-expansivity polyimide precursor and subjecting the precursor to a thermal condensation reaction to form a polyimide layer into a half-cured state;

(G) coating a flexible polymer varnish on the low-thermal-expansivity polyimide layer and heating the coating to form a polymer film into a perfectly cured state; and

repeating the steps (D)-(E)-(F)-(G) at least once.

5,570,507

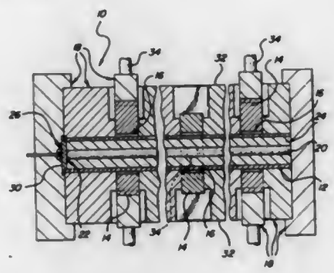
DEFLAGRATION METHOD FOR MAKING A CAMSHAFT

Peter A. Hochstein, 2966 River Valley Dr., Troy, Mich. 48098

Division of Ser. No. 198,351, Feb. 18, 1994, Pat. No. 5,406,686. This application Jan. 12, 1995, Ser. No. 371,852

Int. Cl.[6] B21D *39/00*

U.S. Cl. 29—888.1 **1 Claim**



1. A method for making a cam shaft from a hollow tubular shaft (12) extending between opposite ends and along a longitudinal axis, and a plurality of cam lobes (14) having apertures (16) disposed therethrough, the method comprising the steps of:

inserting the hollow tubular shaft (12) through the apertures (16) of the plurality of lobes (14);

positioning the lobes (14) along the hollow tubular shaft (12);

providing one of a solid and a liquid propellant (20);

inserting an elongated tube (24) having an inner diameter defining a volume of space into the tubular shaft (12) along the entire length of the shaft (12);

disposing propellant (22) in the volume of space along the elongated tube (24);

limiting the radial expansion of the shaft (12) with support means (18) axially between the lobes (14), and

deflagrating the propellant (20) to generate a sudden increase of gas pressure into the hollow tubular shaft (12) to expand the shaft into engagement with the lobes (14) thereby securing the lobes (14) to the shaft (12) and preventing movement therebetween.

5,570,508

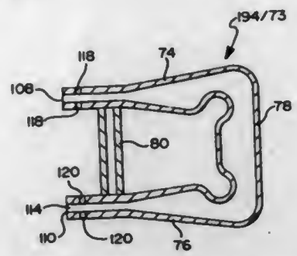
METHOD OF MAKING A HIGH STRENGTH AUTOMOTIVE SEAT FRAME

Richard W. A. Ress, Auburn Hills, Mich., assignor to ITT Industries, Inc., Wilmington, D.C.

Division of Ser. No. 162,345, Dec. 3, 1993, Pat. No. 5,528,829. This application Jun. 7, 1995, Ser. No. 475,944

Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—897.3 **14 Claims**



1. A method of forming a seat back frame for mounting to a seat cushion frame of a motor vehicle seat assembly, said method comprising the steps of:

terminating tubular inboard and outboard vertical leg members in open end portions interconnectible with said seat cushion frame;

integrally interconnecting upper portions of said leg members with a tubular horizontal base member in a generally inverted U-shape configuration;

extending said leg members downwardly from said base member;

minimizing a wall thickness of said base member and upper portions of said leg members; and

maximizing lower portions of said leg members which taper upwardly therealong to said minimum wall thickness.

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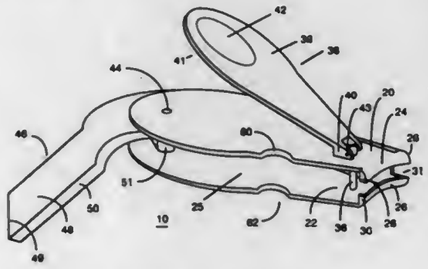
NAIL CLIPPER WITH PIVOTING RETAINER STRUCTURE, IMPROVED HANDLING AND SIDE CUTTING JAWS

Patrick Killian, 1537A 4th St., Suite 8, San Rafael, Calif. 94901

Filed May 4, 1995, Ser. No. 434,939

Int. Cl.[6] A45D *29/02*

U.S. Cl. 30—28 **20 Claims**



1. A nail clipper comprising:

a first spring arm comprising a first end, a second end, a first side, and a second side;

a second spring arm having a first end, a second end, a first side, and a second side;

a first cutting jaw coupled to said first end of said first spring arm;

a second cutting jaw coupled to said first end of said second spring arm;

a lever member, coupled to said first end of said first spring arm and said first end of said second spring arm, for resiliently moving said first cutting jaw toward said second cutting jaw;

an active wall having a top and a bottom, said bottom of said active wall coupled to said first side of said second spring arm;

a stationary wall having a top and a bottom, said top of said stationary wall coupled to said first side of said first spring arm, said bottom of said stationary wall coupled to said first side of said second spring arm;

a cylindrical member coupled to said second end of said first spring arm and said second end of said second spring arm;

a clipping retainer means for selectively retaining a nail clipping, said clipping retainer means coupled to said cylindrical member such that said clipping retainer means is radially pivotable about said cylindrical member and nests into said second side of said first spring arm and said second side of said second spring arm.

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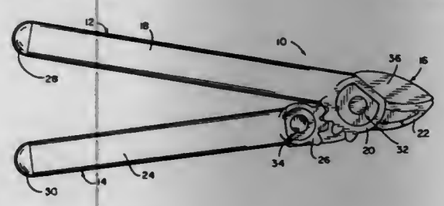
LOPPER

Erkki O. Lindén, Billnäs, Finland, assignor to Fiskars Oy Ab, Helsinki, Finland

Continuation-in-part of Ser. No. 217,916, Mar. 25, 1994, Pat. No. 5,426,857, which is a continuation-in-part of Ser. No. 23,811, Feb. 26, 1993, Pat. No. 5,325,592, which is a continuation-in-part of Ser. No. 986,057, Nov. 30, 1992, Pat. No. 5,341,573. This application Jun. 7, 1995, Ser. No. 484,846

Int. Cl.[6] B26B *13/00*

U.S. Cl. 30—250 **20 Claims**



1. A lopper, comprising:

a metal plate having oppositely facing inner and outer surfaces and a central aperture, a forwardly extending blade and a rearwardly extending tang having a second aperture offset from the central aperture;

a first elongated member formed as a unitary piece and comprising a first handle merging into a first gear segment and terminating at a distal end by an anvil configured for engagement with the blade; and

a second elongated member comprising a second handle merging into a second gear segment at one end thereof;

the first and second members being pivotally connected to the plate at the central and second apertures, respectively, so that the gear segments intermesh for pivotal movement of the blade and anvil in response to pivotal movement of the first and second handles about the central and second apertures, respectively.

5,570,511

HAND CIRCULAR SAW WITH SWINGING PROTECTIVE HOOD AND CUTTING DEPTH ADJUSTING DEVICE

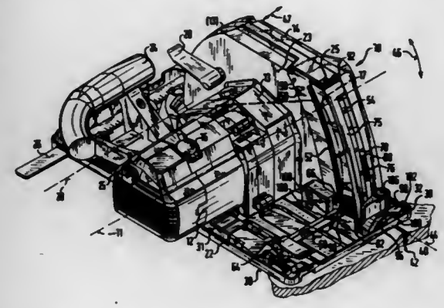
Doris Reich; Rainer Schilling, both of Stuttgart; Wolfgang Fuchs, Filderstadt; Eduard Gansel, Dettenhausen; Karl-Heinz Braunbach, Frickenhausen; Heribert Schramm, Stuttgart, and David Matzo, Leinfelden-Echterdingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 20, 1995, Ser. No. 375,638

Claims priority, application Germany, Feb. 2, 1994, 44 03 189.0

Int. Cl.[6] B23D *47/02*; B27B *9/02*

U.S. Cl. 30—376 **27 Claims**



1. A hand circular saw, comprising a swinging protective hood; a housing which carries a saw shaft axis and a saw blade held rotatable about said saw shaft axis; a base plate, said housing being arranged independently turnably relative to said base plate around two further axes extending substantially perpendicular to one another, a first of said further axes being parallel to said saw shaft axis for guiding a turning movement for adjusting a cutting depth and is adjustable on a cutting depth guiding bracket with a scale, while a second of said further axes extends parallel to both said base plate and said saw blade for guiding a turning movement for adjusting a miter angle, said cutting depth guiding bracket having an angle-profile shaped cross-section and having at least one leg which is formed as a sliding guide supporting said housing in each cutting depth position; an abutment for proselecting a cutting depth limit, said abutment being formed as an abutment strip carried by an abutment bracket, said abutment bracket being longitudinally displaceable relative to said cutting depth guiding bracket and said housing; and arresting means for arresting said abutment bracket relative to said cutting depth guiding bracket.

5,570,512

GRIP ARRANGEMENT FOR A CHAIN SAW

Klaus Höppner, Marbach, Germany, assignor to Andreas Stihl, Waiblingen, Germany

Filed Jun. 23, 1995, Ser. No. 494,188

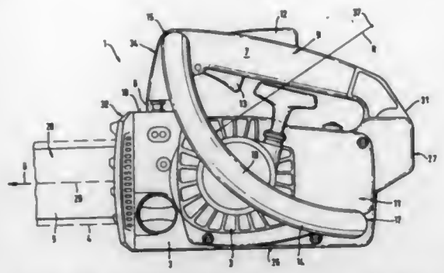
Claims priority, application Germany, Jun. 23, 1994, 44 21 994.6

Int. Cl.[6] B27B *17/00*; B26G *1/10*

U.S. Cl. 30—383 **20 Claims**

1. A grip arrangement for a motor chainsaw, said motor chainsaw comprising a housing and a motor arranged in said housing, a saw chain driven by said motor, a chain guide extending in a longitudinal direction of said motor chainsaw for guiding said saw chain, wherein said grip arrangement comprises:

a handle extending in said longitudinal direction of said motor chainsaw, said handle having a first handle end connected at a top of said housing to a forward portion of said housing facing said chain guide and having a second handle end connected at said top of said housing to a rearward portion of said housing remote from said chain guide;



a first lateral grip comprising a first grip end, a second grip end, and a center portion connected between said first and said second grip ends, wherein said first grip end is connected to a handle portion of said handle adjacent to said chain guide and said second grip end is connected laterally to a rearward portion of said housing, remote from said chain guide, in the vicinity of a bottom of said housing and wherein said center portion is positioned at a distance from a lateral side of said housing;

wherein said center portion is curved and has a curvature of a circular arc section, when projected onto a plane defined by said chain guide; and

wherein a center point of said circular arc section is located at a side of said center portion facing said handle.

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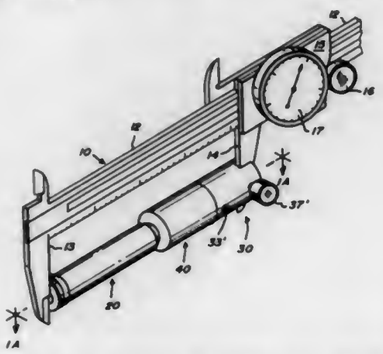
HEADSPACE GAUGE

Thomas K. M. Peterson, 124 Stoney Point Rd., Courtland, Minn. 56021

Filed Dec. 19, 1995, Ser. No. 574,533

Int. Cl.[6] G01B *5/00;121/00*

U.S. Cl. 33—506 **10 Claims**



1. Apparatus for measuring the beadspace of a cartridge case using a caliper having a fixed blade and a movable blade, said case having a case head, a body, a neck, a tapered shoulder connecting said body to said neck, and a datum reference circle on said shoulder, the longitudinal distance between said case bead and said datum reference circle being the aforesaid headspace, said apparatus comprising:

a) a body member having a longitudinally extending bore with a preselected diameter and means for attaching said body member to one of the blades of a caliper so that the longitudinal axis of said bore is aligned with an axis connecting both of said blades;

b) a bushing having a longitudinally extending bore therethrough of a preselected diameter less than said preselected diameter of said body member, said bushing further having at one end thereof an annular extension coaxial with said bore of said bushing and having an outer diameter preselected to closely fit within said bore of said body member;

c) and means for fixing said bushing to said body member when said annular extension is positioned within said bore of said body member, said apparatus being further characterized by said preselected diameter of said bore of said bushing having a diameter equal to or substantially similar to the datum reference circle of a casing of a cartridge, the headspace of which is to be measured,

whereby a cartridge case may be measured for headspace by (i) positioning the neck of the case into the bore opening at the end of said bushing, (ii) abutting the case head of the case against the other of the blades of the caliper, (iii) adjusting said blades of the caliper so that the end of said bushing is abutted against said shoulder of said case, and (iv) reading out from said caliper the headspace dimension measured thereby.

5,570,514

DEVICE AND METHOD FOR MEASURING CRIMP HEIGHT

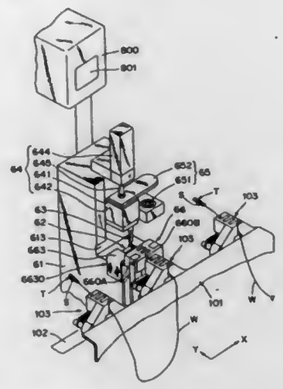
Kenji Hashimoto, and Nobuyuki Itaya, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Feb. 6, 1995, Ser. No. 384,141

Claims priority, application Japan, Feb. 9, 1994, 6-015135

Int. Cl.[6] G01B *5/02*

U.S. Cl. 33—784 **7 Claims**



1. A crimp height measuring device for use in combination with a wire conveying device in an automatic wiring assembly fabricating apparatus for measuring a crimp height of a crimp terminal crimped to an end of a terminal-crimped wire conveyed in a predetermined wire conveying direction by the wire conveying device, said crimp height measuring device comprising:

a measuring base for placing thereon the crimp terminal projecting in a direction crosswise to the wire conveying direction with the terminal-crimped wire being conveyed by the wire conveying device;

clamp means adapted to displace to a fixing position wherein said clamp means clamps the terminal-crimped wire so that the crimp terminal is placed for measurement on said measuring base, and adapted to displace to an open position wherein said clamp means does not clamp the terminal-crimped wire so that the crimp terminal can be conveyed in the wire conveying direction;

control means for displacing said clamp means to the open position to allow the crimp terminal to be conveyed when the terminal-crimped wire is conveyed and for displacing said clamp means to the fixing position to fix the crimp terminal to said measuring base when the crimp terminal is placed on said measuring base; and

measuring means for measuring the crimp height of the crimp terminal fixed to said measuring base.

5,570,515

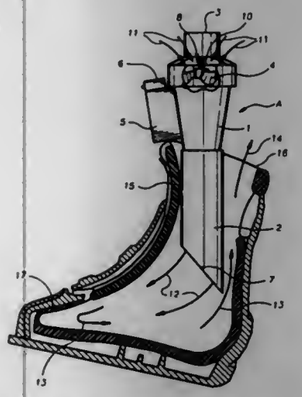
HANDWEAR AND FOOTWEAR DRYING DEVICE

Dietmar Schulte, HR1-279 Brook Trail, Greenwood Lake, N.Y. 10925

Continuation of Ser. No. 204,789, Mar. 2, 1994. This application Jul. 10, 1995, Ser. No. 500,142

Int. Cl.[6] F26B *9/00*

U.S. Cl. 34—104 **14 Claims**



1. A drying device for blowing air into the interior of an item comprising:

(a) a fan housing having a substantially cylindrical shape and a center axis oriented vertically, said fan housing having a top and a bottom end and having a hollow interior, and said fan housing having a top portion and a top opening and a bottom portion and a bottom opening, and an outside surface;

(b) a motor housing, said motor housing mounted on the vertical axis over the top portion of said fan housing;

(c) two or more struts, each strut having a first end and a second end, said struts adapted to engage the motor housing by their respective first ends and the top portion of the fan housing by their respective second ends, whereby said motor housing is fixedly mounted by said struts to said top portion of said fan housing;

(d) spaces between said struts defining air inlet ports;

(e) a motor mounted within said motor housing;

(f) a fan disposed within said fan housing and oriented to rotate on said vertical axis, and sized to substantially span the distance across said hollow interior of said fan housing, thereby producing minimal clearances therebetween, wherein said motor is adapted to driveably engage said fan, whereby said motor drives said fan;

(g) a bottom plate that covers the bottom opening of said fan housing;

(h) one or more openings in said bottom plate;

(i) discharge tubes having open ends, each tube associated with a bottom plate opening, wherein one end of each discharge tube is adapted to engage said bottom plate over its respective bottom plate opening, wherein said tube opening communicates with said bottom plate opening and the hollow interior of said fan housing; and

(j) a power source electrically connected to said motor and integral with said drying device;

whereby said fan draws air in through said spaces between said struts and directs the air into said discharge tubes and out the ends of said discharge tubes, wherein said combination together produces the required efficiencies to allow the user to carry the device along on excursions into the wilderness.

5,570,516

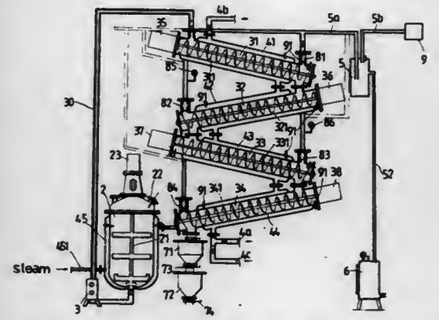
DRYING SYSTEM HAVING CONTINUOUSLY CONNECTED CLOSE SPIRAL CONVEYERS

Ching-Yuan Huang, No. 2, Lane 24, Yangteh Ave., Sec. 1, Taipei, Taiwan

Filed Jul. 10, 1995, Ser. No. 499,836

Int. Cl.[6] F26B *11/04*

U.S. Cl. 34—179 **6 Claims**



1. A drying system having continuously connected close spiral conveyers, comprising:

a material mixer having stirring blades therein;

a pump being connected to said material mixer at a bottom end thereof;

a plurality of substantially close spiral conveyers being connected end-to-end and zigzagging their way from top to bottom with the highest spiral conveyer thereof communicating with said pump by means of a material pipe extending between said pump and said highest spiral conveyer, said spiral conveyers each being provided at a beginning end with a motor and in an inner space with a set of spiral blades which are separately rotatable in said spiral conveyers when being driven by said motors;

a plurality of steam chambers being separately formed around said spiral conveyers and said material mixer; and

at least one hopper being connected to a lower outlet of one of said spiral conveyers that is disposed at the end position thereof.

5,570,517

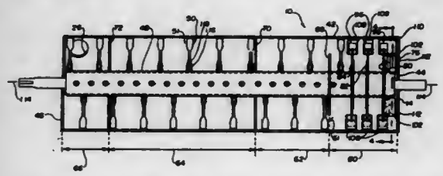
SLURRY DRYER

William A. Luker, Burnsville, Minn., assignor to Scott Equipement Company, New Prague, Minn.

Filed Feb. 13, 1995, Ser. No. 387,442

Int. Cl.[6] F26B *7/00*

U.S. Cl. 34—424 **24 Claims**



2. A method of drying a high liquid content slurry in a continuous flow process comprising the steps of:

a) injecting a high liquid content slurry material to be dried into a cylindrical housing by passage through a material inlet aperture in an inlet end wall of the housing;

b) rotating a shaft concentrically located in the housing wherein the shaft has at least one inlet disk located on and rigidly mounted for rotation therewith in an inlet region of the housing adjacent the inlet end wall;

c) scraping an interior of the inlet end wall of the housing by at least one end wall blade rigidly mounted on a side of the inlet disk to prevent buildup of the slurry material on the inlet end wall; and

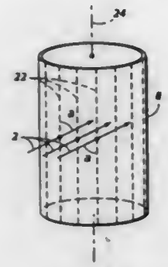
d) scraping an interior of the cylindrical housing in the inlet region by at least one side wall blade rigidly mounted on the periphery of the inlet disk to prevent buildup of the slurry material on the side wall of the housing in the inlet region thereof.

5,570,518

DRYING METHOD USING GAS STREAMS THAT ARE DIRECTED AT A TANGENTIAL ANGLE TO SUBSTRATE SURFACE

Alan B. Mistrater, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 20, 1995, Ser. No. 407,123
Int. Cl.[6] F26B *7/00*
U.S. Cl. 34—437 **11 Claims**



1. A method for drying a cylindrically-shaped substrate having a wet coating thereon which is oriented in a substantially vertical direction comprising directing a plurality of gas streams at a tangential angle against the substrate surface around the circumference of the substrate, wherein each gas stream is directed upwards at an acute angle with an imaginary line on the substrate surface parallel to the longitudinal axis of the substrate wherein the imaginary line intersects the gas stream, thereby reducing the gas pressure above a portion of the substrate surface which promotes drying of the coating, wherein the plurality of the gas streams promotes the drying of the coating without disrupting the coating.

5,570,519

METHOD AND DEVICE IN CONTACT-FREE TREATMENT OF A WEB

Richard Solin, Kemiö ; Matti Lepistö; Eelis Matilainen, both of Turku, and Bertel Karlstedt, Parainen, all of Finland, assignors to Valmet Corporation, Helsinki, Finland

Filed Feb. 10, 1995, Ser. No. 386,376
Int. Cl.[6] F26B *13/20*
U.S. Cl. 34—460 **19 Claims**

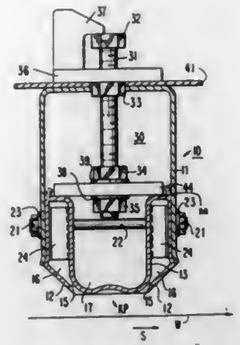
1. A method for contact-free treatment of a web in which the web is treated by air blowings which provide a carrier-face zone, comprising the steps of

blowing air to treat the web through a nozzle-carrier-face unit situated in a nozzle frame part arranged in a direction transverse to a direction of travel of the web,

slidably coupling said nozzle-carrier-face unit to said nozzle frame part to enable relative displacement therebetween, and

while maintaining said nozzle frame part in a stationary position, regulating a profile of said nozzle-carrier-face unit in the transverse direction to provide a curved form for said carrier-face zone.

6. A device for contact-free treatment of a web, comprising at least one frame part supported in a stationary position,



a nozzle-carrier-face unit arranged in a direction substantially transverse to a running direction of the web and being deflectable relative to the web,

means for coupling said nozzle-carrier face unit to said at least one frame part to enable relative displacement therebetween, and

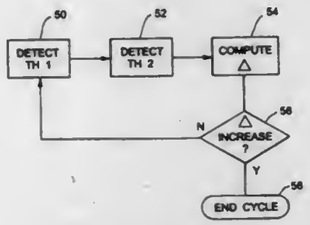
means for deflecting said nozzle-carrier-face unit to provide a curved form for a carrier-face zone of said nozzle-carrier-face unit without displacing said at least one frame part.

5,570,520

CLOTHES DRYER DRYNESS DETECTION SYSTEM

Jeffrey M. Huffington, Cary, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 17, 1995, Ser. No. 443,588
Int. Cl.[6] F26B *13/10*
U.S. Cl. 34—535 **7 Claims**



1. A system for detecting dryness of exit air from a clothes dryer comprising:

a first thermistor disposed in an air outlet of the clothes dryer for exposure to ambient exit air for detecting a first parameter representative of a temperature of the exit air;

a second self-heating thermistor similarly disposed in the air outlet for detecting a second parameter representative of a higher temperature than the temperature of the exit air and wherein said second thermistor further comprises a means for adjusting said second parameter in response to relative humidity of said exit air for representing a lower temperature than said higher temperature when a relative humidity of said exit air is high; and,

circuit means coupled to said thermistors for comparing said first and second parameters and responsive to a predetermined relationship between said parameters for detecting dryness of said exit air.

5. A method of detecting a change in relative humidity of an air stream passing through an air duct wherein a non-self heating thermistor and a self heating thermistor are disposed in the air duct for detecting respective parameters representative of air temperature in the air duct comprising steps of:

conducting a first current through the non-self heating thermistor to detect a first parameter representative of the air stream temperature;

conducting a second current through the self heating thermistor to detect a second parameter representative of a higher temperature than the air stream temperature;

computing a relative difference between said first and second parameters; and,

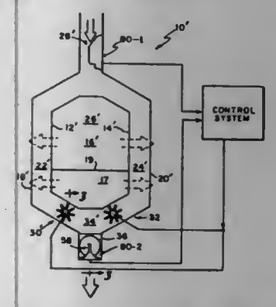
detecting an inflection in said relative difference as representative of the change in relative humidity.

5,570,521

CONTROL SYSTEM FOR A GRAIN DRYER AND PROBE MOUNTING APPARATUS THEREFOR

William Baker, Indianapolis; Raymond G. Benson, Plainfield; Brent J. Bloemendaal, City Indianapolis; Phong B. Chau, Indianapolis, and John J. Robinson, Indianapolis, all of Ind., assignors to ffi Corporation, Indianapolis, Ind.

Continuation of Ser. No. 66,046, Jul. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 617,586, Nov. 26, 1990, abandoned. This application Apr. 25, 1995, Ser. No. 430,539
Int. Cl.[6] F26B *19/00*
U.S. Cl. 34—550 **8 Claims**



1. A method for controlling the drying of grain in a grain dryer to approximately a desired moisture content comprising the steps of operating the grain dryer to fill it with grain that has been partially dried therein, measuring the moisture content of the grain adjacent an entry end of the grain dryer, measuring the moisture content of the grain adjacent an exit end of the grain dryer, establishing a drying rate for grain in the grain dryer, establishing from the drying rate an amount of time that the grain must be dried in order to achieve the desired moisture content, establishing from the amount of time a desired metering rate of grain through the dryer, and using the desired metering rate to control the flow of grain through the grain dryer, the step of establishing a drying rate for grain in the grain dryer comprising the steps of establishing a first drying rate for grain between the entry end of the grain dryer and a location along the path of the grain through the grain dryer and establishing a second, reduced drying rate for grain between the location and the exit end of the grain dryer, the first drying rate being in the range of about ten times the second drying rate.

5,570,522

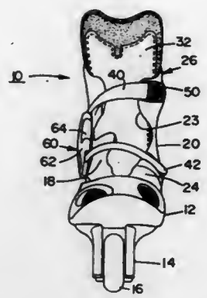
IN-LINE SKATE WITH AN ADJUSTABLE FASTENER AND STRAP

Todd J. Olson, Chanhassen; Dirk L. Cornelius, Oakdale, and Lloyd G. Keleny, Champlin, all of Minn., assignors to Rollerblade, Inc., Minneapolis, Minn.

Filed Jun. 7, 1995, Ser. No. 488,186
Int. Cl.[6] A43B *5/16;5/04*
U.S. Cl. 36—50.5 **13 Claims**

1. A skate comprising:

a boot including a cuff portion and an instep portion;



a plurality of wheels secured to said boot;

said boot including first and second sides with an open space defined therebetween;

a strap having a first end and a second end each secured to said first side, said first end secured to said first side in said cuff portion of said boot at a first point of attachment and said second end secured to said first side in said instep portion of said boot at a second point of attachment;

a buckle for releasably securing one of said first and second ends to said first side at one of said first and second points of attachment;

a first fastener member secured to said strap at a generally mid-point thereof between said first and second ends;

a second fastener member secured to said boot on said second side;

said first and second fastener members each including locking means for releasably joining said first and second fastener members to define a third point of attachment on said second side;

said strap secured to said boot at only said first, second and third points of attachment;

said first fastener member movable between a latch position and an unlatch position relative to said second fastener member, said first fastener member tensioning said strap upon movement of said first fastener member to said latch position; and

said first and second fasteners members being completely separable when said first fastener member is in said unlatch position for said strap to be moved to provide an access through said open space unobstructed by said strap;

whereby upon movement of said first fastener member to said latch position both of said first and second sides at both of said cuff portion and said instep portion are drawn together to narrow said open space and snugly secure said boot to a user.

5,570,523

ADJUSTABLE CHILD SHOES

Ji-Tyan Lin, No. 52-258, Jong Yeong Road, Nan Twen Area, Taichung City, Taiwan

Filed May 31, 1995, Ser. No. 455,405
Int. Cl.[6] A43B *3/28;3/26*
U.S. Cl. 36—112 **2 Claims**

1. A child shoe comprising:

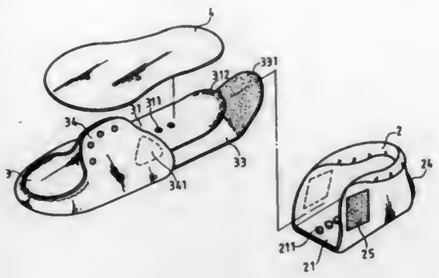
a heel which has a position guiding groove in a middle portion of said heel, an instep at an inner surface of said heel, a plurality of positioning protrusions disposed on said instep, and a plurality of fastening elements;

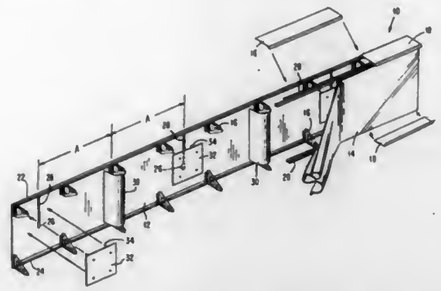
a toecap which has two flaps, an outsole at a bottom of said toecap, a pad in said toecap and a foldable extending pad at a rear portion of said pad;

a plurality of positioning holes being formed in said pad;

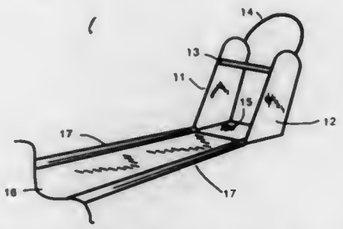
an insole covering an area of said pad and said foldable extending pad;

whereby said positioning protrusions are inserted into said positioning holes.





5,570,524
SNOW REMOVAL APPARATUS HAVING A CHUTE TO DISPOSE OF SNOW
LeRoy Groat, 6937 Bugle Ct., Anchorage, Ak. 99507
Filed Jan. 13, 1995, Ser. No. 489,756
Int. Cl.[6] E01H *5/02*
U.S. Cl. 37—285 **13 Claims**

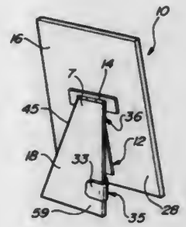


1. A snow removal device for roofs comprising:
a) a thin, flat base plate, said base plate having a front and a back, a width and a pair of oppositely disposed sides;
b) a pair of thin sidewalls, fixedly attached to said base plate and extending upwardly therefrom for a height substantially greater than the width of said base plate, each side wall having a top;
c) a cross brace fixedly attached to the two thin sidewalls;
d) a curved handle fixedly attached to the top of said pair of side walls; and
e) a long tarp, having a first side and a second side, being fixedly attached to the front of said base plate.

5,570,525
FLEXIBLE FACE SIGN WITH UNIFORM LUMINOSITY
Richard E. Paglieri, and Daniel C. Hull, both of Columbus, Ohio, assignors to Signstrut, Ltd., Columbus, Ohio
Filed Jan. 6, 1995, Ser. No. 369,647
Int. Cl.[6] G09F *13/04*; **F21P** *1/02*
U.S. Cl. 40—564 **11 Claims**

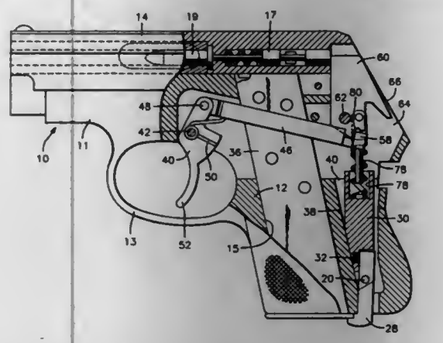
1. A flexible sign face with uniform luminosity comprising:
means defining an elongated enclosure having a rear wall and a flexible face translucent front wall, spaced from the rear wall;
a plurality of point sources of light spaced along the enclosure and positioned between the front and rear walls; and
a diffusion panel in front of each point source, and between each point source and the front wall, each diffusion panel having a pattern of perforations which increase in density from a center of the panel, nearest the point sources, outwardly toward edges of the panel spaced away from the point source for selectively transmitting light from the point sources to the front wall by a smaller amount immediately adjacent each point source and by a greater amount at locations spaced increasingly from each point source, each diffusion panel being flat and comprising a corrugated metal panel portion having at least one reflective surface facing the point source, the metal panel portion having an opposite surface facing away from the point source, each diffusion panel also comprising a translucent synthetic panel portion attached to the opposite surface of the metal panel portion, each diffusion panel being substantially centered over a respective point source.

5,570,526
PICTURE FRAME STAND CLIP
Edward J. Wallon, 1836 Vanhill, Rochester Hills, Mich. 48309
Filed Jul. 24, 1995, Ser. No. 505,878
Int. Cl.[6] G09F *1/12*
U.S. Cl. 40—748 **10 Claims**



1. A picture frame characterized by:
a front frame section constructed for containing a picture;
a support tongue having a top end hingedly connected to a rear surface of the front frame section;
a hinge for connecting the support tongue to the front frame section;
a support brace interposed under the hinge between the tongue and front frame section having two leg sections with a first leg section parallel to the front frame section and a second leg parallel to the support tongue when said tongue is in an operative support position;
said first and second legs being integrally formed together and being adjustably affixable set at a selected downwardly extending angle through a top bendable bight section with both said first and second legs extending downwardly from said top bight section;
first and second components of a detachable fastening mechanism are secured onto the respective first leg and said rear surface of said frame section for removably attaching said first leg to said rear surface of said frame section;
said second leg having a catch for removably being secured to said tongue such that said tongue is secured with respect to said frame section at said selected angle.

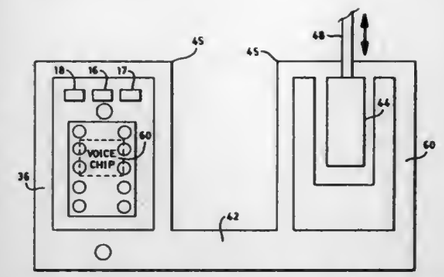
5,570,527
SEMI-AUTOMATIC PISTOL WITH A DUAL SAFETY
Joseph E. Felicci, 500 Bayview Dr., Miami Beach, Fla. 33160
Filed Feb. 17, 1995, Ser. No. 390,800
Int. Cl.[6] F41A *17/26*
U.S. Cl. 42—70.08 **6 Claims**



1. A semi-automatic pistol comprising a frame including a receiver and a depending handle, a trigger pivotally mounted on said frame generally at the intersection of the handle and receiver, said trigger including a finger receiving portion and an upper portion, a hammer pivotally mounted in said frame for movement about a pivot axis between cocked and firing position, drawbar means connected to said upper portion of said trigger and extending rearwardly toward and in underlying relation to a lower end of said hammer, spring means biasing the finger receiving portion of the trigger forwardly and the drawbar means forwardly and upwardly for engaging the drawbar means with said lower end of the hammer, coacting engagable means on the lower end of the hammer and the drawbar means to pivot the hammer to said cocked position and release the hammer for pivotal movement to said firing position, a hammer spring engaged with said hammer for spring biasing the hammer toward said firing position, a hammer spring support mounted on said handle to support the hammer spring in position for biasing the hammer toward said firing position, means supporting the hammer spring support on the handle of the frame to enable the hammer spring support to be released and moved downwardly away from the hammer to release the spring bias force exerted by the hammer spring on the hammer thereby forming a safety to enable the hammer to remain in a non-firing position even when the trigger and drawbar means are actuated, said handle including a generally vertically disposed cavity receiving a cartridge magazine, said hammer spring support including a magazine retainer at a lower end thereof for releasably securing the cartridge magazine in the handle, said hammer spring support and magazine retainer being interconnected by a hinge pin, a spring biasing the magazine retainer into engagement with the magazine and enabling the retainer to move away from the magazine for removal and insertion of the magazine in the handle.

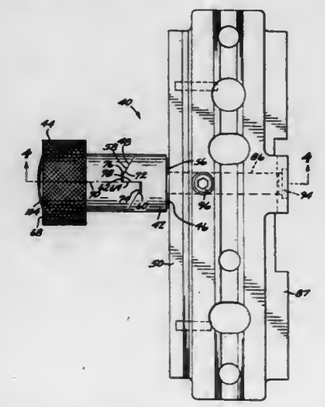
5,570,528
VOICE ACTIVATED WEAPON LOCK APPARATUS
James W. Teetzel, 151 Lafayette Rd., Portsmouth, N.H. 03801
Continuation-in-part of Ser. No. 275,128, Jul. 14, 1994, Pat. No. 5,448,847. This application Jun. 8, 1995, Ser. No. 488,647
Int. Cl.[6] F41A *17/06*
U.S. Cl. 42—70.11 **3 Claims**

1. A voice activated locking apparatus for a weapon having handgrips and a trigger that when pulled activates a discharge assembly causing said weapon to discharge, said apparatus comprising:
a microphone, attached to one of said handgrips on said weapon, wherein said microphone is positioned to receive an operator's voice having a speech pattern;



locking means, connected to the discharge assembly of said weapon, for preventing the activation of said weapon when said trigger is pulled;
voice recognition means, connected to said microphone and said locking means, for evaluating the voice received by said microphone to verify that the speech pattern of the voice corresponds to only that of an authorized operator;
operator interface means, connected to said voice recognition means, for initiating recording of the authorized operator's voice pattern by said voice recognition means, such that if the voice pattern received by said microphone is authenticated by said voice recognition means, said voice recognition means causes said locking means to unlock said weapon.

5,570,529
TORQUE-LIMITING WEAPON MOUNT AND WEAPON SYSTEM UTILIZING THE MOUNT
Victor R. Amelino, Redondo Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jun. 7, 1995, Ser. No. 478,149
Int. Cl.[6] F41G *1/38*
U.S. Cl. 42—101 **18 Claims**



1. A weapon mount, comprising:
a tightening assembly, comprising
a nut having an internally threaded nut bore extending therethrough between a first end of the nut and a second end of the nut, and further having a nut bore axis,
a clamping bar adjacent to the first end of the nut,
an inclined nut ramp defining the second end of the nut, the inclined nut ramp starting at a first axial location relative to the nut bore axis and ending at a second axial location relative to the nut bore axis, and
a nut axial step terminating the inclined nut ramp at the second axial location and extending from the second axial location toward the first axial location;

a tightening knob disposed adjacent to the second end of the nut, comprising

a knob body having a knob bore extending therethrough between a first end of the knob and a second end of the knob, and further having a knob bore axis coincident with the nut bore axis,

an inclined knob ramp defining the first end of the knob and disposed in facing relation to the inclined nut ramp, the inclined knob ramp starting at a first axial location relative to the knob bore axis and ending at a second axial location relative to the knob bore axis,

a knob axial step terminating the inclined knob ramp at the second axial location and extending from the second axial location relative to the knob bore axis toward the first axial location relative to the knob bore axis, the inclined knob ramp and knob axial step together having a shape conformal to a shape of the inclined nut ramp and the nut axial step, and

an internal shoulder within the knob bore, the internal shoulder being oriented to face the second end of the knob;

a shaft extending through the nut bore and into the knob bore, the shaft having a first end and a second end and being externally threaded in that portion lying within the nut bore;

a clamping head retained to the first end of the shaft, the clamping head being in facing but spaced-apart relationship to the clamping bar; and

a spring overlying the shaft, the spring having a first end engaged to the internal shoulder within the knob bore and a second end retained to the second end of the shaft.

5,570,530

BOWFISHING ARROWHEAD

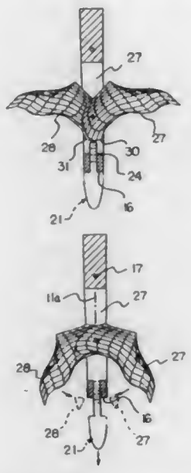
Richard D. Lee, 874 Meadow Ave., Yuba City, Calif. 95991

Filed Oct. 28, 1991, Ser. No. 783,528

The portion of the term of this patent subsequent to Feb. 21, 2010, has been disclaimed.

Int. Cl.[6] A01K *81/00;* **F42B** *6/08*

U.S. Cl. 43—1 **2 Claims**



1. An arrowhead comprising:

a cylindrical body having a forward end spaced from a rearward end and a cylindrical body longitudinal axis directed longitudinally through the forward and rearward ends, the cylindrical body being shaped so as to define a shaft receiving cylindrical cavity directed into the rearward end thereof, and a cylindrical tip receiving cavity directed into the forward end thereof, the cylindrical body being further shaped so as to define an enclosed slot directed diametrically through the cylindrical body and between the forward and rearward ends thereof, and an internally threaded bore extending from the cylindrical tip receiving cavity and into communication with the enclosed slot;

a slot axle mounted to the cylindrical body and extending substantially orthogonally relative to the cylindrical body longitudinal axis thereof, the slot axle being positioned between the forward and rearward ends of the cylindrical body and oriented proximal to the internally threaded bore;

a first blade having a first blade longitudinal axis; and a first blade abutment leg secured to the first blade and being oriented at a substantially orthogonal angle relative to the first blade longitudinal axis, the first blade being pivotally mounted about the slot axle proximal to a juncture of the first blade abutment leg and the first blade such that the first blade can project from a first side of the enclosed slot at an oblique angle relative to the cylindrical body longitudinal axis towards the rearward end of the cylindrical body and the first blade abutment leg can project from the first side of the enclosed slot at an oblique angle relative to the cylindrical body longitudinal axis towards the forward end of the cylindrical body;

a second blade having a second blade longitudinal axis; and a second blade abutment leg secured to the second blade and being oriented at a substantially orthogonal angle relative to the second blade longitudinal axis, the second blade being pivotally mounted about the slot axle proximal to a juncture of the second blade abutment leg and the second blade such that the second blade can project from a second side of the enclosed slot at an oblique angle relative to the cylindrical body longitudinal axis towards the rearward end of the cylindrical body and the second blade abutment leg can project from the second side of the enclosed slot at an oblique angle relative to the cylindrical body longitudinal axis towards the forward end of the cylindrical body;

an arrow tip including an arrow tip shank extending into the cylindrical tip receiving cavity, and an arrow tip shank threaded boss projecting from the arrow tip shank and being threadably engaged with the internally threaded bore of the cylindrical body, the arrow tip shank threaded boss extending into the enclosed slot such that a pivoting of the first and second blades towards a forward end of the cylindrical body will cause the first and second blade abutment legs to engage the arrow tip shank threaded boss to preclude pivoting of the first and second blades relative to the cylindrical body towards the forward end thereof past a position wherein the blade longitudinal axis are oriented so as to extend substantially orthogonal relative to the cylindrical body longitudinal axis, whereby the arrow tip can be rotated to effect axial threaded retraction of the arrow tip shank threaded boss from the internally threaded bore of the cylindrical body so as to permit pivoting of the first and second blades relative to the cylindrical body towards the forward end thereof past a position wherein the blade longitudinal axis are oriented so as to extend substantially orthogonal relative to the cylindrical body longitudinal axis.

5,570,531

WIND ACTIVATED DECOY HEAD AND NECK

Thomas A. Sroka, 124 Prospect Ave., Redgranite, Wis. 54970

Continuation-in-part of Ser. No. 258,275, Jun. 10, 1994, abandoned. This application Mar. 10, 1995, Ser. No. 402,201

Int. Cl.[6] A01M *31/06*

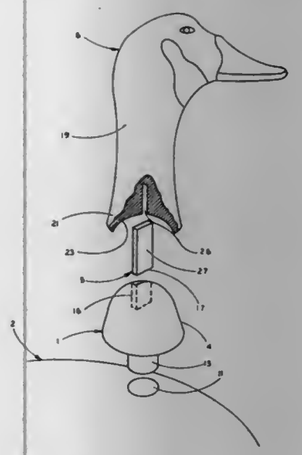
U.S. Cl. 43—3 **18 Claims**

1. A wind activated decoy comprising:

a. a decoy body having an upper surface that defines a hole;

b. a base having a first end inserted into the decoy body hole and a second end having a predetermined surface contour that defines a slot therein;

c. a flexible connector having a first end inserted into the slot in the base second end, and a second end; and



d. a decoy head and neck having a neck portion with a lower end, the lower end of the neck portion being formed with a slot therein that receives the second end of the flexible connector,

so that the flexible connector bends when wind blows on the head and neck to thereby produce lifelike movements of the head and neck relative to the body.

5,570,532

FISH STRIKE SENSOR

Charles S. Shaffer, 2740 Barton Ave., and Mark A. Priest, 1105 Minnesota St., both of Waterloo, Iowa 50702

Filed Jul. 10, 1995, Ser. No. 500,268

Int. Cl.[6] A01K *97/12*

U.S. Cl. 43—17 **21 Claims**



21. A fish strike sensor for use with a fishing rod for sensing when a fish strikes a fishing line comprising:

a housing;

a plunger coupled to the housing, said plunger being movable relative to the housing;

a line retainer coupled to the plunger for releasably retaining a portion of the fishing line such that the plunger and line retainer can move outward with the fishing line until the fishing line is released by the force of a fish strike, wherein the line retainer is comprised of a spring having a plurality of coils and wherein the line retainer retains the line between two adjacent coils of the spring;

an actuator operatively coupled to the plunger such that the actuator is actuated when the plunger is moved outward by the fishing line when a fish strikes; and

a user perceivable indicator electrically connected to the actuator such that the indicator is activated when the actuator is actuated.

5,570,533

INDUSTRIAL PATTERN GRADING TEMPLATE

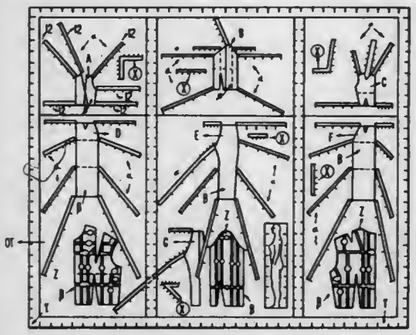
Anastasia Vouyouka, Amorgou Street 8, 54638 Thessaloniki, Greece

Continuation of Ser. No. 15,803, Feb. 10, 1993, abandoned. This application Mar. 14, 1995, Ser. No. 404,937

Claims priority, application Greece, Feb. 13, 1993, 920100055

Int. Cl.[6] A41H *3/00*

U.S. Cl. 33—17 A **4 Claims**



1. A template having a horizontal X axis and a vertical Y axis for the three-dimensional grading of pattern blocks having corresponding X and Y axes, of all parts of a garment, from one size to another size according to the international standardization of sizes, said template being rectangular, said template having a front and back side, said template having a plurality of models of various basic garment pattern blocks which together form the parts of the garment, each of said models being a miniature representation of an individual pattern block, each of said models including a plurality of elongated apertures of variable length and direction, said apertures including indicia corresponding to standardized increments of grading from size to size and positioned with respect to the X and Y axes of the garment, said template including at least one set of metric subdivision indicia for the adjustment and placement of the template X and Y axes and the corresponding X and Y axes of a pattern block being graded, said template including at least one auxiliary design portion, said auxiliary design portion indicating positions of a plurality of grading points on a basic pattern block.

5,570,534

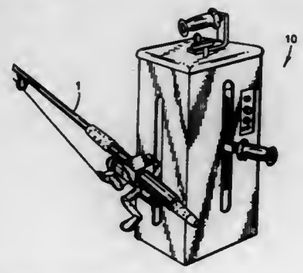
FISHING ROD JIGGER AND AUTOMATIC HOOK SETTING DEVICE

Wayne M. Ford, Newaygo, Mich., assignor to Michael R. Bowen, and David N. Bowen, both of Grand Rapids, Mich.

Filed Jun. 6, 1995, Ser. No. 468,251

Int. Cl.[6] A01K *87/00*

U.S. Cl. 43—19.2 **6 Claims**



5. A fishing jig comprising:

a frame having a base with at least one generally vertical support member secured thereto;

a slidably movable rod holder engaged with said vertical support member such that said rod holder is slidably movable along said vertical support member;

a hook set spring extending between an upper portion of said vertical support member and said rod holder, wherein said spring urges said rod holder from a set location proximate to a lower portion of said vertical support member, toward a release location proximate to said upper portion of said vertical support member;

a latch mechanism releasably retaining said rod holder at said set location; and

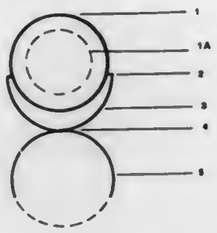
a sensor mechanism that upon detection of a strike force exerted upon said rod holder, activates said latch mechanism to release said rod holder to said hook set spring previously placed under tension by moving said rod holder to said set location, said sensor mechanism including: (i) a trip plate at said frame, having a free end which is generally moveable upon exertion of said strike force applied to said rod holder, (ii) an electrically conductive, adjustably positionable upper contact secured to said trip plate, and (iii) an electrically conductive, lower contact in position to contact said upper contact upon sufficient movement of said trip plate at said free end, whereby upon electrical contact occurring between said upper contact and said lower contact resulting from movement of said trip plate, said latch mechanism is activated thereby releasing said rod holder.

5,570,535

SQUEEZE MOUNT GUIDE RING

Frederick Hodge, 4872 Victoria Chase Ct., Jacksonville, Fla. 32257

Filed Oct. 24, 1994, Ser. No. 327,604
Int. Cl.[6] A01K *87/04*
U.S. Cl. 43—24 **5 Claims**



1. A fishing rod guide ring device for mounting on a fishing rod and guiding a fishing line,

said guide ring device comprising a metal ring for supporting the passage of a fishing line, said metal ring having an outside circumferential surface, said guide ring device further comprising an insert mounted within said metal ring for reducing fraying of said fishing line,

said guide ring device comprising two crossed S-shaped pieces of thin gage resilient material, each of said pieces having an upper half adjacent first ends of said pieces, each of said pieces having a lower half adjacent second ends of said pieces,

said first end of each of said pieces being fixedly connected to substantially opposite sides of said outside circumferential surface,

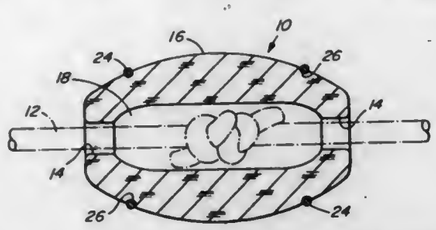
whereby said guide ring device is mounted on said fishing rod by squeezing said two upper halves together so as to resiliently separate said two lower halves thereby allowing mounting of said guide ring device on said fishing rod.

5,570,536

FLOAT

Rajko Panovic, 4978 Watling Street, Burnaby, B.C., Canada

Continuation of Ser. No. 233,094, Apr. 25, 1994, abandoned. This application Dec. 22, 1994, Ser. No. 363,563
Int. Cl.[6] A01K *91/00*
U.S. Cl. 43—44.92 **4 Claims**



1. A method of covering a knot in a fishing line that comprises:

locating the knot in the line within a float, said float comprising a buoyant body comprising two ends, said buoyant body being open at both ends to receive the line, said buoyant body being formed in two parts and defining a cavity within the body large enough to receive the knot in the line, the cavity being restricted at each end to prevent the float moving on the fishing line past the knot; and

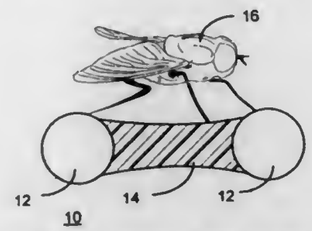
attaching the two parts of said buoyant body together by gluing to cover the knot.

5,570,537

ELECTRONIC INSECTICIDAL CABLE

Douglas A. Black, 9141 Sioux Ct., Jonesboro, Ga. 30236, and Robert A. Rowland, P.O. Box 52, Hayesville, N.C. 28904

Filed Apr. 27, 1995, Ser. No. 430,904
Int. Cl.[6] A01M *1/22;1/04*
U.S. Cl. 43—112 **12 Claims**



9. An insect control system in which a pulsed voltage is imposed between each member of a pair or pairs of conductive wires in order to destroy insects in contact with one or both conductive wires of said pair or pairs consisting of:

one or more pairs of conductive wires for having a pulsed voltage imposed between each member of the pair,

non-conductive separators consisting of non-conductive strands of diameter equal to or smaller than the diameter of said conductive wires,

non-conductive supporter consisting of a core of strong, non-conductive material,

said pair or pairs of conductive wires and said non-conductive strands arrayed about the surface of said core with the long axes of said conductive wires and non-conductive strands parallel to the long axis of said core with at least one non-conductive strand between and separating each member of a pair of conductive wires,

said supporter in contact with said pair or pairs of conductive wires along a substantial portion of the length of said pair or pairs of conductive wires,

said conductive wires having the portion of the surface of each wire which is not in contact with said non-conductive strands or with said supporter exposed to the surroundings, and

an electronic control unit for imposing a pulsed voltage between each member of each pair of conductive wires at a pulse repetition rate of 1 pulse per 4 seconds (maximum).

5,570,538

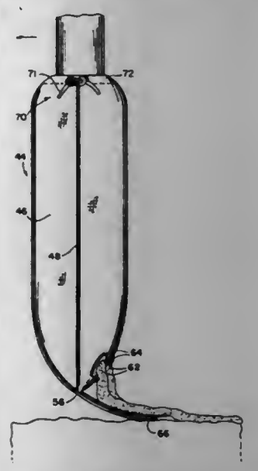
Patent Not Issued For This Number

5,570,539

FOAM SOCK APPLICATOR

Robert E. Smith, Jr., 402 N. Sheridan Ave., Ottumwa, Iowa 52501

Filed Aug. 3, 1995, Ser. No. 510,858
Int. Cl.[6] A01G *13/00*
U.S. Cl. 47—1.5 **20 Claims**



1. A foam marking apparatus conveyed by a field vehicle for marking crops with foam, the apparatus comprising:

a foam generation system to produce foam;

a distribution line having a first end and a second end, the first end coupled to the foam generation system;

a foam sock including a body having an outer wall defining an internal cavity with an open end and a closed end, at least one opening through the wall intermediate the open and closed ends, the at least one opening having a sufficient cross-sectional area to permit a flow of foam therethrough, and a flexible finger extending from the closed end, the foam sock being attached proximate its open end to the second end of the distribution line to permit communication between the distribution line and the cavity.

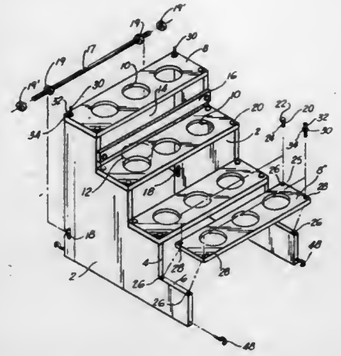
5,570,540

SEEDLING HOUSE

Ellouise Womack, and Billie F. White, both of 1939 Linden, Memphis, Tenn. 38104

Filed May 3, 1995, Ser. No. 434,072
Int. Cl.[6] A47G *7/00*
U.S. Cl. 47—39 **12 Claims**

1. A seedling house for the germination and early growth of garden plants comprising;



a. a pair of side walls disposed in generally vertical, parallel relation;

b. a plurality of shelves disposed in generally horizontal, parallel, ascending, spaced relation between said side walls;

c. shelf support means disposed on said side walls to support said shelves in said generally horizontal, parallel, ascending, spaced relation, said support means supporting said shelves in ascending, spaced relation whereby a ventilation space is disposed between said shelves, between said side walls;

d. pin means adapted to be slidingly received through said shelves proximate the ends thereof and into respective of said shelf support means whereby said shelves are detachably secured to said side walls and shelf support means; and

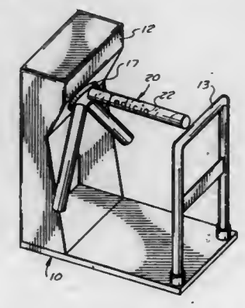
e. seedling cup support means disposed in said shelves whereby seedling cups may be detachably received in said shelves during the germination and early growing cycle of seeds and seedlings.

5,570,541

INDICIA DEVICE FOR TURNSTILE AND METHOD OF USE

Martin Hering, 10151 University Blvd., Ste. 204, Orlando, Fla. 32817

Continuation-in-part of Ser. No. 189,802, Feb. 1, 1994, Pat. No. 5,430,974. This application May 26, 1995, Ser. No. 450,496
Int. Cl.[6] E06B *11/08*
U.S. Cl. 49—47 **19 Claims**



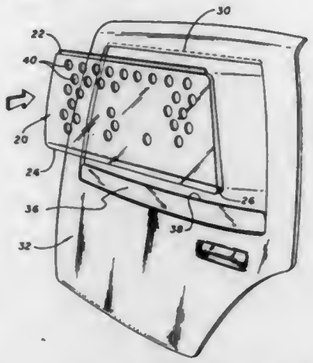
1. An indicia device for displaying indicia on a turnstile having an arm with a free end, said indicia device comprising:

a tubular sleeve having indicia and receivable about said arm, said tubular sleeve including a first end and a second end opposing said first end;

a first collar configured to adjustably and securely couple to said arm, and to adjustably and securely engage said first end of said tubular sleeve; and

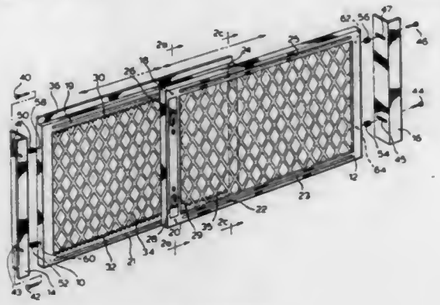
a second collar configured to adjustably and securely couple to said arm, and to adjustably and securely engage said second end of said tubular sleeve.

5,570,542
SAFETY SHIELD WINDOW INSERT
Allan Cameron, 272 Entrada Dr., Santa Monica, Calif. 90402
Filed Jun. 20, 1994, Ser. No. 265,221
Int. Cl.[6] E06B *3/32*
U.S. Cl. 49—463 **16 Claims**



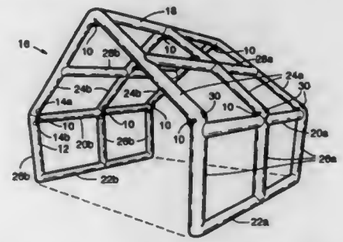
1. A safety device for an automotive vehicle having door windows defined by a retractable glass panel which is guided into a receiving frame, the safety apparatus comprising:
a window insert formed from a sheet of optically transmissive material, said window insert having an upper edge defined to be inserted into the receiving frame, said window insert including at least one orifice allowing airflow through said window insert, said at least one orifice formed on an axis at a non-perpendicular angle to the plane of said window insert; and
means positioned at a lower edge of said window insert for defining a groove for receiving the upper edge of the retractable glass panel window.

5,570,543
ADJUSTABLE, REMOVABLE CHILD WINDOW GUARD
Alvin Bishop, Hamilton, Canada, assignor to Steel Creek Concepts, Inc., Ontario, Canada
Filed Feb. 16, 1994, Ser. No. 197,195
Int. Cl.[6] E05C *21/02*
U.S. Cl. 49—465 **16 Claims**



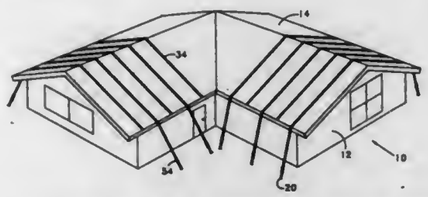
1. A child window guard comprising
a first panel,
a second panel,
means for slidably connecting the first panel to the second panel,
locking means for selectively permitting and inhibiting relative sliding movement of the first and second panels,
means for non-intrusive mounting of the window guard in a widow frame, and
wherein at least one of the first panel or second panels comprises a portion which permits the passage of air but which is of sufficient strength to prevent the passage of a child through the at least one of the first or second panels and wherein the locking means comprises two spaced apart release mechanisms, each biased to inhibit relative sliding movement of the first and second panels such that the locking means requires two-handed operation to permit relative sliding movement of the first and second panels.

5,570,544
INFLATABLE STRUCTURE
Gary A. Hale, 820 Birch St., and Troy A. Hale, 815 Long St., both of Haines, Oreg. 97833
Filed Nov. 10, 1994, Ser. No. 337,077
Int. Cl.[6] E04H *15/20;* **E04B** *1/34*
U.S. Cl. 52—218 **20 Claims**



1. An inflatable frame member for a structure comprising
an elongated inflatable air chamber;
an air inlet in communication with the air chamber through which the air chamber is inflated; and
an adjustable restraint coupled to the air chamber so as to prevent full extension of the chamber upon inflation such that the air chamber kinks and forms an angle at the location of the restraint, whereby adjustment of the restraint adjusts the angle.

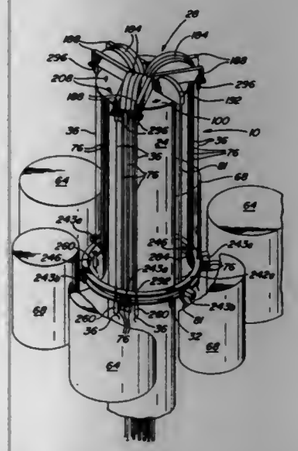
5,570,545
APPARATUS FOR HOLDING A ROOF ON A BUILDING DURING HIGH WINDS
James A. Adams, Honolulu, Hi., assignor to Jerome G. Ganske, Honolulu, Hi.
Filed Feb. 25, 1994, Ser. No. 202,211
Int. Cl.[6] E04B *7/00*
U.S. Cl. 52—23 **5 Claims**



1. Apparatus to hold down a building roof including multiple spaced rafters sitting along a length of the roof on side walls

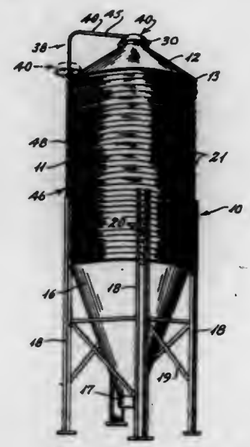
supported by surrounding Earth both vertically and horizontally during high side wind forces comprising:
a) a plurality of roof anchors alternatively attached to opposite ends of adjacent rafters along the length of the roof on two sides of the building;
b) a plurality of ground anchors fastened into the Earth below ends of the rafters opposite said opposite ends attached to said plurality of roof anchors; and,
c) a plurality of straps, each connected between a one of said roof anchors crossing over the roof to a one of said ground anchors associated with a common one of said rafters.

5,570,546
SYSTEM FOR RAISING AND LOWERING COMMUNICATIONS EQUIPMENT
Robert S. Butterworth, Glenmoore, and David O'Brien, Downingtown, both of Pa., assignors to American High Mast Systems, Inc., Downingtown, Pa.
Filed Jul. 31, 1995, Ser. No. 509,311
Int. Cl.[6] E04H *12/34*
U.S. Cl. 52—111 **52 Claims**



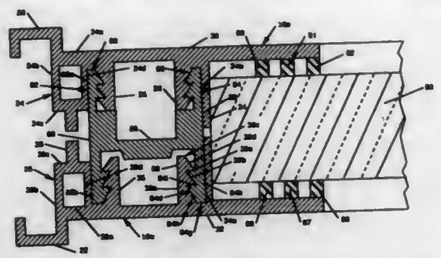
1. A system for lowering and raising first telecommunications equipment along a mast pole, the first telecommunications equipment being connected with second telecommunications equipment positioned at ground level by means of at least one telecommunications cable, the telecommunications cable having a first end connected to the first telecommunications equipment and a second end connected to the second telecommunications equipment, the second end of the telecommunications cable being detachable from the second telecommunications equipment to enable the lowering and raising of the first telecommunications equipment, said system comprising:
a. an elongated mast pole having an open upper end, a lower end, an external surface and a passageway extending between said open upper end and said lower end;
b. platform means surrounding the external surface of said mast pole and moveable along a length thereof, said platform means being arranged for mounting of the first telecommunications equipment thereon;
c. frame means attached to said mast pole adjacent said open upper end, said frame means comprising pulley means, means for guiding at least one lift cable and means for guiding at least one telecommunications cable;
d. at least one lift cable having a first end and a second end, said first end being connected to said platform means, said lift cable extending over said pulley means, through said guiding means and through the passageway of said mast pole;
e. hoisting means coupled to the lower end of said mast pole, said hoisting means including a winch cable having a free end, said hoisting means being provided for selectively raising said platform means to an elevated position adjacent the upper end of said mast pole and lowering said platform means to a lowered position adjacent the lower end of said mast pole; and
f. transition means located within the passageway of said mast pole, said transition means coupling the second end of said at least one lift cable to the free end of said winch cable, said transition means further comprising means for retaining at least one telecommunications cable.

5,570,547
GRAIN FEED TANK WITH SWINGING CAP
John C. Webb, Macclesfield, and Robert B. Batchelor, Tarboro, both of N.C., assignors to Long Manufacturing North Carolina, Inc., Tarboro, N.C.
Filed Mar. 2, 1995, Ser. No. 397,649
Int. Cl.[6] E05F *11/00*
U.S. Cl. 52—194 **19 Claims**



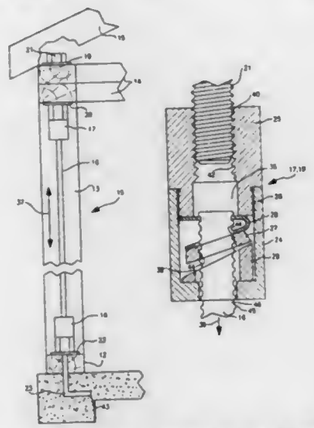
1. A roof cap assembly for use with an agricultural storage and feed tank wherein the tank includes a body having upper and lower portions and wherein the upper portion includes an inlet opening, the roof cap assembly comprising, a roof cap of a size to cover an the inlet opening when in a first position, a control rod having a vertically extending portion and a cantilevered portion, said cantilevered portion being connected to said roof cap, a handle assembly mounted to said vertical portion of said control rod and extending outwardly therefrom, and mounting means for mounting said control rod to a tank so that said cantilevered portion of said control rod and said roof cap are vertically moveable and horizontally swingable with respect to the inlet opening, whereby said handle assembly is engageable to raise said control rod to lift said roof cap relative to the inlet opening and thereafter is manipulable to rotate said control rod to swing said roof cap horizontally laterally relative to the inlet opening to a second position horizontally spaced from said first position to permit access to the inlet opening.

5,570,548
WINDOW SASH AND AN ASSOCIATED METHOD OF MAKING A WINDOW SASH
James P. Hopper, Delmont, Pa., assignor to Caradon America Inc., Norcross, Calif.
Division of Ser. No. 13,765, Feb. 4, 1993, Pat. No. 5,379,518. This application Oct. 18, 1994, Ser. No. 325,038
Int. Cl.[6] E06B *3/00*
U.S. Cl. 52—204.5 **7 Claims**



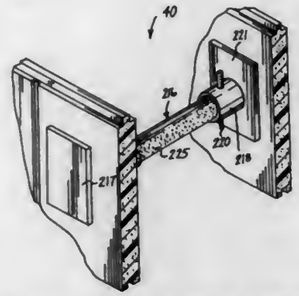
1. A window sash comprising:
a pair of framing portions, each of said framing portions having flanges defining two locking recesses having opposed inner surfaces;
connection means interposed and secured between said framing portions, said connection means having an H-shape having two substantially parallel flanges and a substantially perpendicular flange bridging therebetween and said flanges of said connection means being in substantial intimate surface-to-surface contact with said opposed inner surfaces of said locking recesses of said framing portions;
a glazing member secured in between said framing portions; and
said glazing member having a periphery edge being substantially rested on at least one of said flanges of said framing portions.

5,570,549
BUILDING ANCHORING SYSTEM
Jimmy R. Lung, 109 Calhoun Ave., and Wayne E. Lung, 124 Calhoun Ave., both of Destin, Fla. 32541
Filed Jul. 15, 1994, Ser. No. 275,974
Int. Cl.[6] E04C *3/10*
U.S. Cl. 52—295 **20 Claims**



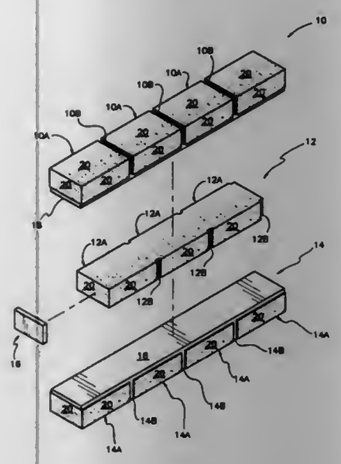
1. An anchoring system for a building having a wall with a sole plate and a top plate, said system comprising an elongated metal rod having opposite end portions with roughened surfaces, a pair of clamping means respectively attachable to said rod end portions by vertical sliding jamming relative movement therebetween without rotation and positionable vertically between a sole plate and a top plate, each said clamping means having a thread means for threadedly attaching each of said clamping means to a threaded member extendable through a sole plate and top plate of a building wall.

5,570,550
INSULATED WALL CONSTRUCTION
Edward F. Roby, 4480 S. Tiffany Dr., West Palm Beach, Fla.
PCT No. PCT/US92/00858, § 371 Date Aug. 17, 1993, § 102(e) Date Aug. 17, 1993, PCT Pub. No. WO92/14890, PCT Pub. Date Sep. 3, 1992
Continuation of Ser. No. 687,418, Feb. 19, 1991, Pat. No. 5,107,648. This PCT application Feb. 13, 1992, Ser. No. 104,091
Int. Cl.[6] E04B *1/18*
U.S. Cl. 52—309.12 **5 Claims**



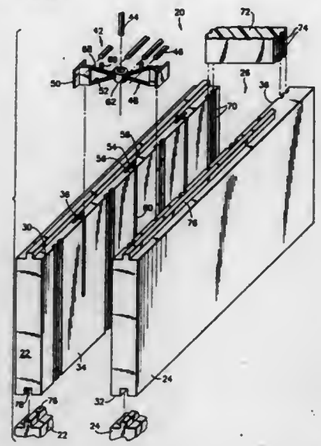
1. An insulated wall construction apparatus comprising the combination of:
first and second rod supports, each said rod support comprising a plate (**17**) and a rod support member (**18**) extending orthogonally from said plate, said plate having a transverse extent, said rod support member having a transverse cross-sectional dimension less than the transverse extent of said plate whereby said plate serves as a flange located at a first end of said rod support member, each said rod support member having a central bore and an opening for said central bore at a second end of said support member opposite to said plate and a pair of aligned apertures extending orthogonally through each said rod support member, said aligned apertures being located intermedially of said rod support member between said plate and said central bore opening;
a spacer rod (**16**), said spacer rod being of predetermined axial extent and having a pair of opposed ends each of which is adapted to be received axially into a corresponding one of said central bore openings of said rod support members, said spacer rod further having a pair of axially spaced openings extending orthogonally therethrough, each of said spaced openings being adapted to align with said pair of aligned apertures in a corresponding rod support member when said spacer rod ends are received through said central bore openings, respectively;
a pair of locking pin members, each of said locking pin members being adapted to be orthogonally inserted through a corresponding pair of said aligned apertures on said rod support member and one of said axially spaced openings on said spacer rod aligned therewith when said spacer rod is received through said bore opening in said second end of said corresponding rod support member, and
locating means for aligning at least one of said axially spaced openings extending orthogonally through said spacer rod with at least one of said pairs of aligned apertures extending orthogonally through each said rod support member when said spacer rod is received through said corresponding central bore opening.

5,570,551
MODULAR MASONRY KIT
Matthew S. Koc, Sr., 70 S. Broadway, Saddlebrook, N.J. 07663, and Thomas G. Koc, 53 King Ave., Marlton, N.J. 08053
Filed Aug. 24, 1995, Ser. No. 518,809
Int. Cl.[6] E04C *1/00*
U.S. Cl. 52—314 **8 Claims**



1. A kit of elongated modules for simulating brick masonry, comprising at least one base module, at least one intermediate module, and at least one top module having lateral sides,
each one of said at least one base module, each one of said at least one intermediate module, and each one of said at least one top module having raised first sections simulating bricks and recessed second sections simulating mortar joints, said first sections alternating with said second sections, said second sections being vertical, and said first sections and said second sections disposed in horizontal abutment, whereby each one of said at least one base module, said at least one intermediate module, and said at least one top module simulates a horizontal course of bricks,
said base module having a flat unbroken bottom surface flush across said first sections and said second sections and a horizontal third section disposed atop said first sections and said second sections, said third section being recessed and spanning all said first sections and all said second sections of said base module, whereby said base module includes a simulated horizontal mortar joint;
said intermediate module having flat unbroken top and bottom surfaces; and
said second sections of said top modules being recessed across the top of said top module and also being recessed on said lateral sides of said top module, thereby simulating a top course of brick masonry, said top module having a horizontal third section disposed below said first sections and said second sections of said top module, said third section being recessed at said lateral sides of said top module and flat at the bottom side of said top module, and spanning all said first sections and all said second sections of said top module, whereby said top module includes a simulated horizontal mortar joint;
said base module including a predetermined number of said first sections simulating bricks, said top module including an equal number of said first sections simulated bricks, and said intermediate module including a number of said first sections simulating bricks being one fewer than said predetermined number of said first sections simulating bricks of said base module and said top module.

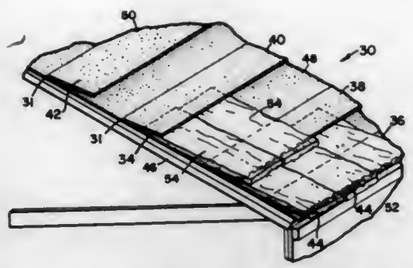
5,570,552
UNIVERSAL WALL FORMING SYSTEM
Alexander T. Nehring, P.O. Box 209, Ridgefield, Conn. 06877
Filed Feb. 3, 1995, Ser. No. 382,988
Int. Cl.[6] E04B *2/84*; E04G *11/06*
U.S. Cl. 52—426 **17 Claims**



1. A modular wall construction system comprising:
first and second opposed, spaced apart, elongated sidewalls defining a cavity therebetween for receiving flowable material and including upper and lower longitudinally extending surfaces and first and second interior surfaces, respectively, extending between said upper and lower surfaces and facing the cavity and having a plurality of longitudinally spaced vertical T-grooves therein; and
a plurality of transverse bridge members for maintaining spacing between said first and second sidewalls, each of said bridge members including a central web extending between first and second tongues extending transversely of said central web for interlocking slidable engagement with the vertically extending T-grooves in said first and second sidewalls, respectively, and a cylindrical boss member integral with said central web and substantially equidistant between said first and second tongues, said boss member having an outer peripheral surface and a vertically extending bore therein for slidably receiving a vertical reinforcement bar therethrough, said central web having first and second inclined upper edges, said first upper edge descending from said first tongue toward said boss member and said second upper edge descending from said second tongue toward said boss member; whereby horizontally disposed reinforcement bars are receivable, respectively, at the intersection between said outer surface of said cylindrical boss and said first and second upper edges.

5,570,553
ROOFING FELT PRODUCT
Thomas G. Balkins, 705 N. Hwy. 169, Plymouth, Minn. 55441
Continuation of Ser. No. 96,918, Jul. 23, 1993, abandoned. This application Feb. 15, 1995, Ser. No. 390,808
Int. Cl.[6] E04D *1/00*
U.S. Cl. 52—518 **11 Claims**

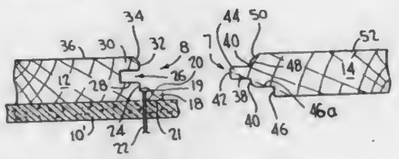
1. An improved shake roof, said shake roof comprising:
(a) a felt underlayment mechanically secured to a roof, said underlayment having a top and bottom edge portion and a left and right edge portion;
(b) a plurality of shake flaps extending across said underlayment, a first flap extending from proximate said left edge portion to proximate said right edge portion, said first flap extending proximate said bottom edge portion of said under-



layment, said first flap having a top flap portion mechanically secured to said underlayment, a second flap extending from proximate said left edge portion to proximate said right edge portion and mechanically secured to said underlayment, said second flap spaced closer to said top edge portion of said underlayment than said first flap, said flaps defining a flap space between said first and second flaps, wherein said first and second flaps are non-overlapping in said flap space; and

(c) a plurality of shakes mechanically secured to said underlayment, each shake having a top edge overlapped by one of said plurality of shake flaps, a bottom edge of a first row of shakes extending partially below said bottom felt underlayment edge, a bottom edge of a second row of shakes positioned further up the roof line, the bottom edge of said second row of shakes being substantially equidistant from said bottom edge of said first shakes.

5,570,554
INTERLOCKING STAPLED FLOORING
Floyd A. Searer, Elkhart, Ind., assignor to FAS Industries, Inc., Elkhart, Ind.
Filed May 16, 1994, Ser. No. 243,488
Int. Cl.[6] E04B *1/02*
U.S. Cl. 52—539 **6 Claims**



3. A floor surface, comprising:

side-by side rows of floor covering members attached to a subfloor, each floor covering member having opposing complementarily-shaped first and second end portions and respective upper and lower surfaces;

first end portions of adjacent floor covering members engaging respective second end portions of adjacent floor covering members in tightly abutting relationship;

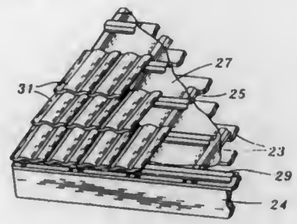
each said first end portion and said second end portion extending between the upper and lower surfaces of each said floor covering member;

each said first end portion including a blind attachment surface extending outwardly from the lower surface thereof and said blind attachment surface forming the means through which at least one fastener is driven into said sub-flooring; said blind attachment surface having an end face; a step portion having an upper surface parallel to the upper surface of said floor covering member and extending upwardly from said blind attachment surface at a distance inwardly from said end face; a first edge portion extending from said upper surface of said floor covering member and forming a vertical wall extending downwardly from said upper surface; a groove formed between said vertical wall and said upper surface of said step portion;

said second end portion including a cove having an upper surface formed therein opposite said blind attachment surface; a tongue having a vertically stepped lower surface joining said upper surface of said cove and including an upper surface; a step portion extending upwardly from said upper surface of said tongue member; and a second edge portion extending from said upper surface of said floor covering member to said step portion; and

wherein with said first end portion and said second end portion in closely abutting relationship, said tongue is engaged within said groove with said stepped lower portion engaging said blind attachment surface, said blind attachment surface is nestled within said cove, and said vertical wall is closely abutted against said step portion to form a tight edge.

5,570,555
DOUBLE BATTED ROOF STRUCTURE
Gary Ferguson, P.O. Box 550, Rocklin, Calif. 95677; David Knutson, 1520 Main St., Sacramento, Calif. 95838, and Mark Schoen, 9524 Beddinton Way, Sacramento, Calif. 95827
Filed Jan. 19, 1995, Ser. No. 375,607
Int. Cl.[6] E04D *1/04;3/00*
U.S. Cl. 52—551 **15 Claims**



1. A cement tile roof for a building having roof rafters, which roof comprises:

(a) roof rafters;

(b) a layer of skip sheathing secured to the roof rafters of the building;

(c) a series of nestable first hat track members spaced from each other and secured to said skip sheathing;

(d) a layer of insulative sheathing attached to said first hat track members;

(e) a series of nestable second hat track members spaced from each other and secured to said layer of insulative sheathing;

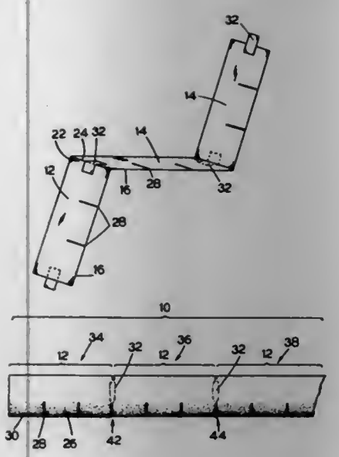
(f) adequate cement tiles laid in place over the second hat track members to cover all of said second hat track members.

5,570,556
SHINGLES WITH CONNECTORS
Thomas E. Wagner, P.O. Box 422, Rolla, Mo. 65401
Filed Oct. 12, 1994, Ser. No. 321,783
Int. Cl.[6] F04D *1/26*
U.S. Cl. 52—552 **7 Claims**

1. Shingles with connectors comprising:

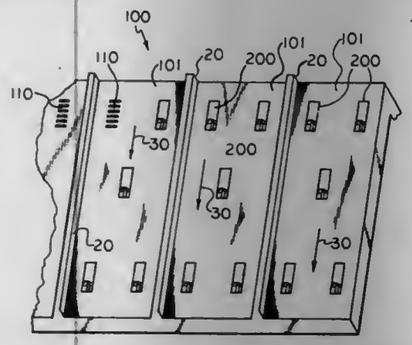
a plurality of individual roofing shingles having tabs and cut-outs, each shingle being generally rectangular with a top surface having a granular surface on the lower portion, a bottom surface, top edge, bottom edge, a right edge and a left edge; and

a plurality of connectors permanently attached to said left and right edges of said shingles to form a row of joined shingles, said connectors being impregnated within and continuous with a base material of which said shingles are made, each of said connectors forming a hinge between said shingles, such that said shingles can be folded one over another to form a



bundle, said connectors rigidly holding said shingles in alignment as said shingles are unfolded and placed for attachment on the roof to be shingled.

5,570,557
SNOW STOP ROOFING WITH PROTRUSION AND/OR WEDGE SNOW STOP
Janusz Kwiatkowski, 68 Hillside Dr., Revere, Mass. 02151, and Michael J. Mullane, 17 Mason St., Hudson, Mass. 01749
Filed Apr. 5, 1995, Ser. No. 417,104
Int. Cl.[6] E04C *2/32*
U.S. Cl. 52—630 **12 Claims**



1. A roofing system comprising a sheet with a sheet surface having a major plane extending transversely and longitudinally, and which may include standing or batten ridges extending longitudinally so as to define longitudinally directed ridges oriented in a direction corresponding to a direction in which rain, snow or ice would flow owing to a force of gravity when the sheet is installed as part of a roof, wherein the sheet surface has a predetermined arrangement of three dimensional features, which include sawtooth features, in addition to the standing or batten ridges, wherein the arrangement of the three dimensional features is predetermined to help support a snow stop and wherein the sawtooth features include a set of a plurality of transversely spanning features generally orthogonal to the direction in which rain, snow or ice would flow owing to the force of gravity, being at least one of

A) above a major plane of the sheet surface,

B) below the major plane of the sheet surface, and

C) above and below the major plane of the sheet surface, extending transversely in a pattern a minor distance compared to a total distance the sheet extends in the transverse direction about a distance corresponding to a transverse width of a snow stop, wherein the sawtooth features in the set of transversely spanning features are substantially parallel and close to one another and wherein each required sawtooth feature has a sawtooth feature surface extending transversely the minor distance at an angle at least one of generally orthogonal and acutely angled to the major plane of the sheet surface, so as to present the sawtooth feature surface to face the direction in which rain, snow or ice would flow owing to the force of gravity when the sheet is installed as part of a roof; which sheet is useful with and adapted for particular snow stop embodiments in which the three dimensional sawtooth features of the sheet surface are capable of receiving corresponding three dimensional protrusions of a bottom surface of a base of a snow stop, wherein the snow stop includes the base having the transverse width and a snow restraining member upstanding from the base, which member has a snow restraining surface that will face the direction in which rain, snow or ice would flow owing to the force of gravity when the snow stop is installed as part of the roofing system, wherein the base has the bottom surface which has downwardly directed, three-dimensional sawtooth protrusions extending in the direction of the transverse Width of the base, wherein protrusion sawtooth surfaces which face in a direction opposite to the snow restraining surface are angled at an angle which is from generally orthogonal to acute in relation to the bottom surface of the base.

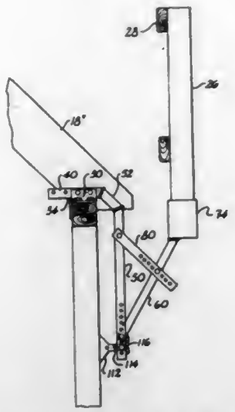
5,570,558
REINFORCING BEAM
Bengt Persson, Olofström, Sweden, assignor to AB Volvo, Gothenburg, Sweden
PCT No. PCT/SE92/00816, § 371 Date Jul. 25, 1994, § 102(e) Date Jul. 25, 1994, PCT Pub. No. WO93/11386, PCT Pub. Date Jun. 10, 1993
PCT Filed Nov. 26, 1992, Ser. No. 244,242
Claims priority, application Sweden, Nov. 26, 1991, 9103495
Int. Cl.[6] E04B *2/32; B62D 25/00*
U.S. Cl. 52—735.1 **7 Claims**



1. A strengthening member consisting essentially of a bent sheet metal channel with opposing side walls which are provided with stiffening profiling, the profiling forming a uniform pattern of closely spaced indentations (6) separated by intermediate surface regions (7), said pattern extending along each channel wall (2), both the indentations (6) and the intermediate surface regions (7) extending over the entire beight of the wall, the indentations (6) and the intermediate surface regions (7) having such a shape that a continuous boundary line (8) is formed between said indentations and regions, said boundary line winding between a transition section (4) of the wall (2) and a base (1) of the channel up to an upper edge (5) of the wall.

5,570,559
FALL ARRESTOR
Thomas D. Lewis, P.O. Box 345, Cleveland, S.C. 29635
Filed Sep. 26, 1995, Ser. No. 533,929
Int. Cl.[6] E04G *3/00*
U.S. Cl. 52—749.2 **15 Claims**

1. A guard rail support device for attachment to a wall of a building for supporting a guard rail having an upright member, the



wall having an upper wall portion with a substantially horizontal portion, the device comprising:

a bracket for attachment to the horizontal portion of the upper wall portion;

an elongated member having an upper end connected to said bracket and a lower end below said upper end;

a support arm having a first end connected to said lower end of said elongated member and extending upwardly therefrom, said support arm having a second end and a receptacle connected to said second end of said support arm for receiving an upright member of a guard rail; and

a brace connected to said elongated member between said upper and lower ends of said elongated member and to said support arm between said first and second ends of said support arm, such that upon receipt of the upright in said receptacle, the upright extends substantially vertically upwardly from said guard rail receptacle.

5,570,560

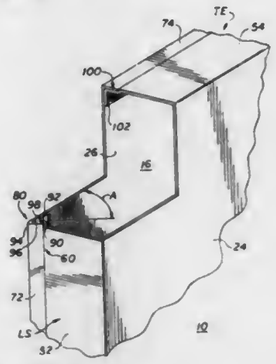
PAN TYPE METAL DOOR

James R. Thompson, Lebanon, and Robert R. Jackson, Sylvania, both of Ohio, assignors to MascoTech, Inc., Taylor, Mich.

Division of Ser. No. 113,077, Aug. 30, 1993, Pat. No. 5,448,872. This application Jun. 5, 1995, Ser. No. 461,325

Int. Cl.[6] E04C *2/34*

U.S. Cl. 52—784.13 **3 Claims**



1. A panel, comprising:

a deep first pan and a relatively shallow second pan as compared to said first pan, said pans secured together forming an interior therebetween,

said first and second pans being formed of unitary pieces of material having rectangular first and second face members with first and second opposite right and left side edges and with first and second opposite top and bottom edges respectively,

first right and left side flanges and first top and bottom end flanges extending perpendicularly from said first face member along each one of said corresponding first edges, said first flanges having a width substantially equal to a thickness of the panel,

a first coupling means formed along free side edges of said first side flanges remote from said first face member,

second right and left side flanges extend at an acute angle from said second face member and second top and bottom end flanges extending perpendicularly from said second face member along each one of said corresponding second edges, a second coupling means formed from and along said second side flanges,

corresponding sets of said first end and second end flanges are disposed in tight overlapping engagement, and

said first coupling means of said first pan engaging corresponding said second coupling means of said second pan to secure said pans and form the panel.

5,570,561

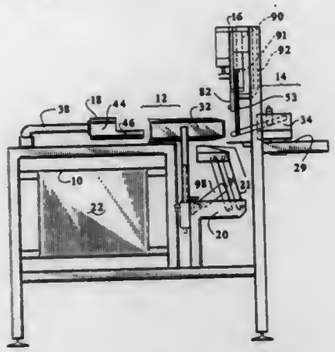
APPARATUS FOR PACKAGING FOWL AND OTHER PRODUCTS

Dennis J. May, Pittsboro, N.C.; Eddie M. Norton, Jonesboro, Ga.; Samuel H. Arnold, Raleigh, N.C.; Bryan E. Wilkins, Raleigh, N.C.; Brian K. Digeso, Raleigh, N.C., and Kuo-Raid G. Chen, Cary, N.C., assignors to Delaware Capital Formation, Inc., Wilmington, Del.

Continuation of Ser. No. 183,484, Jan. 18, 1994. This application Jun. 7, 1995, Ser. No. 481,182

Int. Cl.[6] B65B *61/00;43/14;1/00;3/00*

U.S. Cl. 53—138.4 **6 Claims**



1. Legged fowl packaging apparatus for packaging of fowl having legs, said apparatus comprising, in combination:

a frame having a horizontal support surface for supporting a legged fowl at a first station, the support surface including an elongated slot;

guide plates on each side of the support surface, said guide plates having an entry end defined by converging plates and an exit end, said exit end including spaced plates adapted to receive and hold open an end of a flexible bag positioned in the pathway of discharge of the fowl from the exit end;

a reciprocal pusher mounted on the frame at the entry end of the guide plates, said pusher including a driving arm fitted through the slot in the support surface and extending both above and below the support surface, the pusher further including a block member connected to the driving arm above the support surface, the block member positioned above the support surface for engaging the legs of the fowl and positioning the legs for packaging the fowl, the pusher further including means beneath the support surface connected to the driving arm below the support surface for moving the driving arm along the slot and thereby moving the driving arm and the block member between a retracted position to enable placement of fowl on the support surface and an extended position wherein fowl placed on the support surface is transferred between the plates into a flexible bag held open by the plates, and the bag and fowl are further transported in a continued linear direction to a second, separate station on the frame for closure of the bag;

the block member of the reciprocal pusher including a first, upper block and a second, lower block, the upper block being driven directly by the driving arm, the lower block being slidably attached to the upper block and being spring biased relative to the upper block to bias the lower block forwardly of the upper block toward the second station on the frame, the lower block including indentations for engaging the leg of a fowl located breast-side down on the support surface thereby forcing those legs upwardly and thereby positioning the legs for packaging the fowl, said pusher movable between the retracted position, too enable placement of fowl on the support surface, and the extended position, wherein fowl placed on the support surface is engaged by, first, the lower block and then the upper block, the blocks thereby pushing the fowl between the plates into a flexible bag held open by the plates, and the bag and fowl further being transported by the blocks in a continued linear direction to the second, separate station on the frame for closure of the bag;

a clip attachment assembly mounted on the frame intermediate the exit end of the guide plates and the second station whereby the open end of the bag, upon transfer of the fowl to the second station, is intermediate the first station and the second station and thus freely engageable by the clip attachment mechanism, said clip attachment assembly including: a mounting plate with a clip channel, first and second gate members, said gate members pivotally mounted on the mounting plate for movement between a bag gathering and a bag release position, said gate members defining a clip channel extension for guiding and forming U-shaped metal clips about material gathered between the gates when the gate members are in the bag gathering position, a punch reciprocal in the clip channel and channel extension for driving a clip about gathered material, and drive means for driving the gates between the bag gathering and bag release position and for driving the punch; and

a movable blocking member in the pathway of the fowl and bag for engaging therewith during movement toward the second station.

5,570,562

MULTI-LANE EXTENDED PRODUCT TRANSFER FILLING MACHINE

Paul S. Anderson, Astoria, Oreg., assignor to Carruthers Equipment Co., Warrenton, Oreg.

Filed May 22, 1995, Ser. No. 445,770

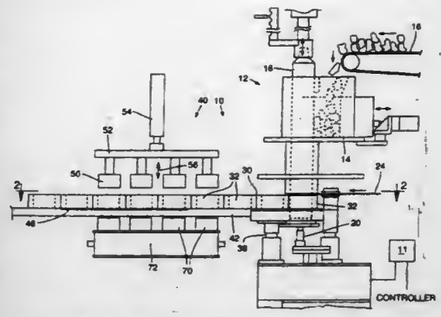
Int. Cl.[6] B65B *37/20;1/04*

U.S. Cl. 53—250 **7 Claims**

3. In combination with an automatic filling machine for inserting a sized portion of a food product into a container, an extended product transfer mechanism for transferring a sized portion from a food product sizing station to a remote container filling station comprising:

open ended pockets arranged to receive a sized portion of a food product at the food product sizing station;

a transfer mechanism including a chain connected to said pockets for transferring the pockets from the food product sizing station to a remote container filling station, the transfer mechanism arranged to insert the sized portion of food product from multiple pockets into multiple lanes of containers at the container filling station simultaneously; and



a guide plate; the open ended pockets and the chain travel on the guide plate and the guide plate serves as a bottom for the open end pockets.

5,570,563

APPARATUS FOR THE FOLDING OF FOLDING TABS OF A PACK AND FOR THE TRANSPORT OF THE SAME

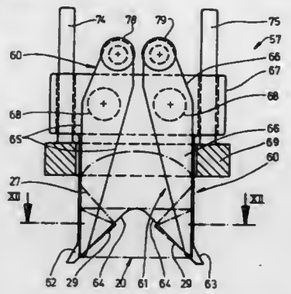
Heinz Focke, and Oskar Balmer, both of Verden, Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Germany

Filed Apr. 26, 1995, Ser. No. 429,124

Claims priority, application Germany, May 17, 1994, 44 17 258.3

Int. Cl.[6] B65B *7/00*

U.S. Cl. 53—370.5 **9 Claims**



1. An apparatus for the folding of a closing tab (**25**) of a pack (**20**), made from foldable material such as foil, paper or the like, against an end face of the pack, the closing tab (**25**) being connected to side walls (**22, 23**) of the pack (**20**) via lateral gussets (**28**), and the gussets (**28**) being foldable between the closing tab (**25**) and the end face when the closing tab is folded, said apparatus comprising a first folding member (**61**) and a second folding member (**60**) which are movable relative to one another in planes parallel to the end face and to one another;

wherein said first folding member has two triangular supporting legs (**62, 63**) with diverging folding edges (**64**), the supporting legs (**62, 63**) being formed stationary relative to one another;

wherein said second folding member (**60**) has two folding fingers (**65, 66**) which are arranged at a greater distance to the end face than the supporting legs (**62, 63**) of the first folding member (**61**), said folding fingers being movable in a plane parallel to the end face in a spreading movement;

means for moving said folding fingers apart in said spreading movement within the gussets (**28**) to fold the gussets by the folding fingers (**65, 66**) of the second folding member (**60**), in each case along one diagonal folding line (**29**), relative to the supporting legs (**62, 63**) of the first folding member (**61**) into a position between the supporting legs (**62, 63**) and the end face of the pack (**20**), such that the diagonal folding lines (**29**) contact the folding edges; and

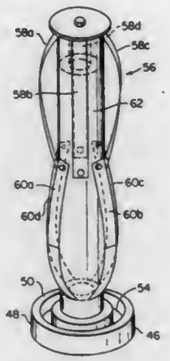
wherein, simultaneously, the closing tab (25) is foldable from a starting position, transverse to the end face of the pack, (20) into a position parallel to the pack.

5,570,564

STRETCH WRAPPING APPARATUS WITH FILM ROLL SUPPORT

Phil Moore, Mount Washington, and Patrick R. Lancaster, III, Louisville, both of Ky., assignors to Lantech, Inc., Louisville, Ky.

Filed Jul. 6, 1994, Ser. No. 267,905
Int. Cl.[6] B65B *41/00*
U.S. Cl. 53—389.2 **28 Claims**



1. An apparatus for stretch wrapping a load with a sheet of stretch wrap packaging material which is dispensed from an axially extending roll, the roll including an outer radial portion including stretch wrap packaging material having two axial ends and an inner radial portion including an axially extending core having two axial ends, comprising:

a dispenser for dispensing and stretching the sheet of stretch wrap packaging material, the dispenser including a support for the roll of stretch wrap packaging material and the core which permits the roll to rotate, the support having an indexing position with an outer radial area for contacting and indexing one axial end of the outer radial portion of the roll at a predetermined axial position and an inner radial area for permitting any portion of the core that extends beyond the one axial end of the roll of stretch wrap packaging material to extend beyond the predetermined axial position; and

means for providing relative rotation between the dispenser and the load to wrap the stretched sheet around the load.

5,570,565

HAY RECOMPRESSION AND NETTING MACHINE

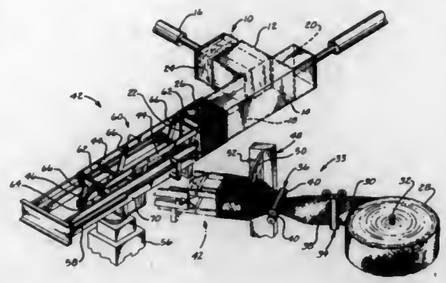
Bret A. Simpson, Ellensburg, Wash., assignor to International Packaging Incorporated, Ellensburg, Wash.

Continuation of Ser. No. 30,676, Mar. 12, 1993, Pat. No. 5,392,591. This application Feb. 21, 1995, Ser. No. 391,157
Int. Cl.[6] B65B *25/02;1/24;9/15;9/14*
U.S. Cl. 53—435 **11 Claims**

1. An apparatus for inserting at least one bale of a fibrous agricultural product into a tubular material, comprising:

a. a holding chamber having an input end and an outlet; a line extending between the input end and the outlet defining a holding chamber axis;

b. means for positioning the tubular material having two opposing open ends around the holding chamber so that a portion of one of the open ends of the tubular material extends outwardly past an end of the outlet of the holding chamber; and



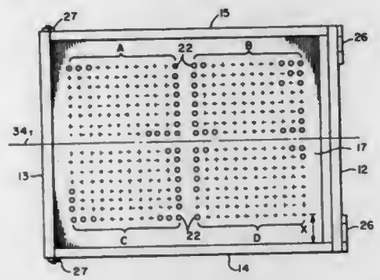
c. means for advancing said bale through the outlet of the holding chamber so that the end of said bale exiting the outlet expands and contacts the portion of the tubular material that extends outwardly past the end of the outlet and pulls the tubular material off the holding chamber onto said bale as the bale is advanced out of the outlet, thereby containing the bale within the tubular material.

5,570,566

METHOD AND APPARATUS FOR LOADING PIPETTE TIP HOLDERS

William W. Newcomb, 706 Gillespie Ave., Charlottesville, Va. 22902

Filed Mar. 3, 1995, Ser. No. 398,085
Int. Cl.[6] B65B *1/22*
U.S. Cl. 53—437 **20 Claims**



1. A method of loading disposable, plastic pipette tips into an array of apertures of a tip holder comprising

a. agitating a multitude of tips more numerous than the apertures in said array in a confined space bounded by top and side walls and located above a floor containing at least one field of discrete openings, each for receiving a single tip, having a pattern corresponding to said array to cause tips to lodge in the openings, the lodged tips being gripped by the margins of the openings and hanging therefrom;

b. removing from the region of the field excess tips not lodged in the openings; and

c. transferring said lodged tips as a group from the field to the array,

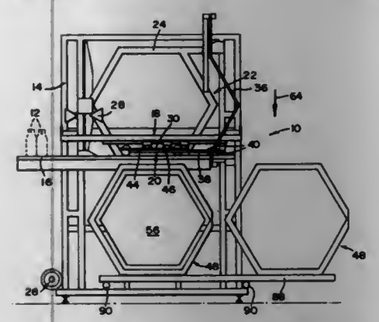
d. the height of said confined space being correlated with tip length so as to minimize the risk that tips will nest in other tips already lodged in openings.

5,570,567

PACKING OF CYLINDRICAL ARTICLES

Stephen K. Laubscher, and James M. O'Neill, both of Cape Town, South Africa, assignors to Metal Box South Africa Ltd., South Africa

Filed Nov. 28, 1994, Ser. No. 345,247
Claims priority, application South Africa, Dec. 1, 1993, 93/8985
Int. Cl.[6] B65B *35/30*
U.S. Cl. 53—443 **17 Claims**



1. A method of packing cylindrical articles, the method including

conveying articles to be packed to a receiving station;

displacing the articles from the receiving station to an accumulating station to form a predetermined, close packed array of the articles in the accumulating station, one of the accumulating station and receiving station being displaceably arranged with respect to the other to facilitate arrangement of the articles in the accumulating station; and

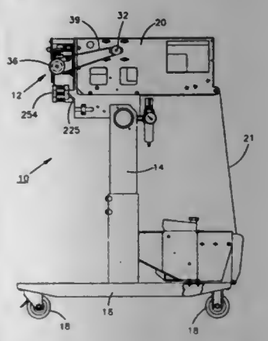
adjusting a length of the receiving station by adjusting the relative positions of the accumulating station and the receiving station to cater for the situation where adjacent rows of the array differ in length.

5,570,568

BAGGING CONTROL APPARATUS AND METHOD

James D. Kramer, Medina, Ohio, assignor to Automated Packaging Systems, Inc., Streetsboro, Ohio

Division of Ser. No. 936,925, Aug. 27, 1992, Pat. No. 5,341,625. This application May 12, 1994, Ser. No. 241,971
Int. Cl.[6] B65B *51/14;7/06;57/00*
U.S. Cl. 53—479 **7 Claims**



1. A sealing apparatus for closing a bag-like container having two overlapping sidewalls, said sealing apparatus comprising;

a) a heat sealing unit including a heating element embedded within a resiliently biased heater bar;

b) a pressure bar, reciprocally mounted for movement towards and away from said resiliently biased heater bar, said pressure bar operative to exert a clamping force to sidewalls of a bag held between said resiliently biased heater bar and said pressure bar;

c) a solenoid coupled to the pressure bar for controlling movement of the pressure bar in response to a solenoid activation signal;

d) an optical sensor for sensing an obstruction in a space between said heater bar and said pressure bar and generating a sensor output signal in response to a sensing of an obstruction;

e) a proximity switch that changes state as the pressure bar engages a bag to clamp the bag against the heater bar;

f) a programmable controller coupled to the solenoid for outputting a solenoid activation signal and coupled to said optical sensor and operative to monitor the sensor output signal and remove the solenoid activation signal to cause said pressure bar to retract to a spaced positioned upon sensing an obstruction before said pressure bar has moved to a position to activate the proximity switch; and,

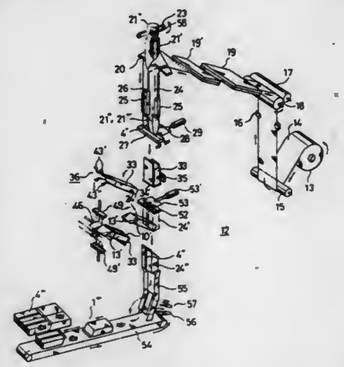
g) said programmable controller further coupled to the sealer element embedded within the sealer bar for controlling a temperature of the heating element.

5,570,569

QUADRANGULAR PACKAGE BAG AND METHOD AND APPARATUS THEREFOR

Tokihisa Masuda, 1730-11 Ooaza Sakata, Okegawa-shi, Saitama-ken, Japan

Filed Dec. 30, 1994, Ser. No. 366,769
Claims priority, application Japan, Apr. 8, 1994, 6-093853
Int. Cl.[6] B65B *7/18;9/20*
U.S. Cl. 53—410 **14 Claims**



1. A method for manufacturing a quadrangular package bag comprising:

feeding a film-like sheet from a bobbin;

feeding said sheet through a former and along a cylinder;

longitudinally sealing said sheet to form a tube;

laterally cutting said tube;

laterally sealing said tube to form a lateral seal;

flattening the lateral seal to form a bag bottom of a quadrangular barrel, the quadrangular barrel having a front side and a back side;

filling the barrel with merchandise;

separating the barrel from the tube; and

closing the top of the filled barrel by

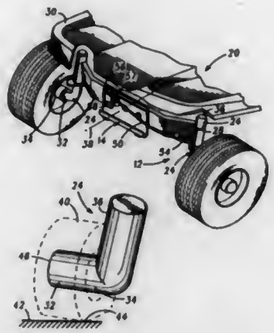
forming a package bag slanted planar top, the planar top slanting between an upper edge line of the front side and an upper edge line of back side and

sealing the top.

5,570,570
RIDE-ON MOWER STEERING AND SUSPENSION SYSTEM

Kenneth H. Klas; Edward Freier, Jr., both of Port Washington; Michael P. Schemelin, West Bend; Daniel W. Schaefer, Port Washington, and Gary A. Hays, Cedarburg, all of Wis., assignors to Simplicity Manufacturing, Inc., Port Washington, Wis.

Division of Ser. No. 92,971, Jul. 16, 1993, Pat. No. 5,474,315. This application Jun. 7, 1995, Ser. No. 437,156
Int. Cl.[6] A01D *34/74*
U.S. Cl. 56—17.1 **18 Claims**

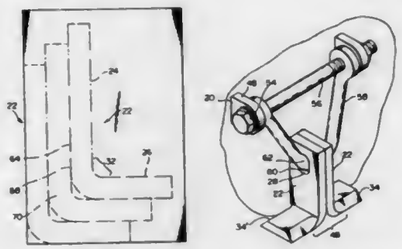


5. A level adjusting device for a ride-on mower, comprising:
steering means for steering said ride-on mower;
accessory means connected to said ride-on mower for carrying out a function powered by said ride-on mower;
level adjusting means for leveling said accessory means being coupled to said accessory means; and
said steering means selectively actuating said level adjusting means upon movement of said steering means.

5,570,571
BLADE FOR A FLAIL TYPE BRUSH CUTTING MACHINE

Jimmie J. Dallman, 3709 99th Dr. SE., Everett, Wash. 98205

Continuation of Ser. No. 338,254, Nov. 14, 1994, abandoned. This application Feb. 22, 1996, Ser. No. 605,653
Int. Cl.[6] A01D *50/02*
U.S. Cl. 56—249.5 **10 Claims**

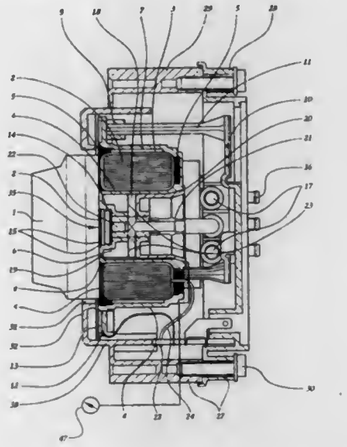


1. A blade for a flail type brush cutting machine comprising:
a metal member comprising:
a) a torch cut or cast floor extending horizontally in generally parallel relationship to a ground surface, the floor having a cutting edge;
b) a torch cut or cast stem integral with the floor, extending generally vertically at any angle from the floor, the stem having an attaching means for attaching the blade to a flail cutter; and
c) a plurality of blades being integrally formed together in a one piece unit by the torch cut or cast process.

5,570,572
DRIVE AND BEARING FOR A SHAFT-LESS OPEN-END SPINNING ROTOR

Wilhelm Birkenmaier, Weinstadt-Beutelsbach, and Anton Paweletz, Fellbach-Oeffingen, both of Germany, assignors to SKF Textilmaschinen-Komponenten GmbH, Stuttgart, Germany

PCT No. PCT/EP93/00443, § 371 Date Sep. 30, 1994, § 102(e) Date Sep. 30, 1994, PCT Pub. No. WO93/18212, PCT Pub. Date Sep. 16, 1993
PCT Filed Feb. 26, 1993, Ser. No. 295,859
Claims priority, application Germany, Mar. 11, 1992, 42 07 673.0
Int. Cl.[6] D01H *4/14*
U.S. Cl. 57—406 **22 Claims**

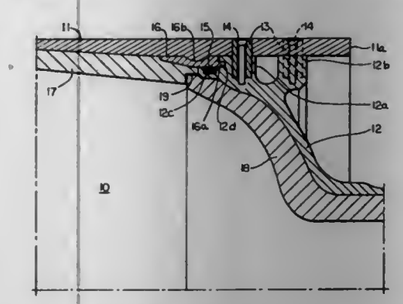


1. A device for an open end spinning machine with a drive and bearing for a shaftless spinning rotor forming the rotor of an axial field motor, wherein the device comprises
the stator with a grooveless hollow-cylindrical core and a multiphase winding
and with sensors for detecting the spinning rotor position in gaps of the winding
and a combined magnetic-gas bearing with gas outlet bores in an axial, plane-parallel bearing face, axis-symmetrical gas distribution and holding and centering magnets disposed centered in the bearing face
and means for cooling the stator and the magnetic-gas bearing
as well as an elastic, damped stator suspension on a device housing, characterized in that
the housings of the stator and the gas bearing are combined into a one-piece stator housing (**4**), in which are formed the means for cooling (**7**), the gas distribution device (**6**), holders (**9**) for the spring and damping elements (**10, 11**) of the suspension of the stator housing (**4**), and a support (**12**) for the sensor plate (**13**), and in which a yoke plate (**14**) of the magnetic bearing (**35**) and connections (**16**) for supply lines (**17**) are integrated and wherein a gas chamber (**18**) is sealing closed off on the open side by a gas bearing cover (**20**) and is reinforced in the interior by ribs (**23**), and
the device housing (**27**) has fitting elements (**28**) adapted to the spinning machine and the spinning rotor (**1**) is surrounded by a guide ring (**32**) which forms an annular gap (**31**) and limits its deflection out of the bearing center.

5,570,573
COMBUSTION CHAMBER FOR A THRUSTER WITH A SEALED CONNECTION BETWEEN AN END WALL AND A COMPOSITE TUBULAR STRUCTURE

Guy Bonnelie, Le Bouscat, France, assignor to Societe Europeene de Propulsion, Suresnes, France

Filed Jul. 6, 1995, Ser. No. 498,594
Claims priority, application France, Jul. 8, 1994, 94 08460
Int. Cl.[6] F02K *9/00*
U.S. Cl. 60—253 **9 Claims**



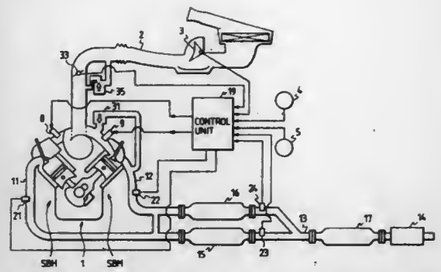
1. A thruster combustion chamber comprising a tubular structure of composite material, at least one end wall attached to one end of the tubular structure, and a sealed connection device between the tubular structure and the end wall, the connection device including mechanical connection means between the tubular structure and the end wall, and at least one sealing gasket interposed between the tubular structure and the end wall,
wherein the mechanical connection means comprise smooth-walled studs engaged through the tubular structure and the end wall so as to provide connection in an axial direction and in a circumferential direction while not securing the tubular structure to the end wall in a radial direction, and stud-retaining means for retaining the studs in a radial direction;
and wherein a sealing gasket is compressed between the end wall and an annular intermediate part forming a gasket bearing member secured to the end wall in the radial direction, thereby enabling the gasket bearing member to follow any deformation of the end wall in the radial direction and maintaining the gasket in the compressed state.

5,570,574
AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Yukihiro Yamashita, Kariya, and Toshihiro Suzumura, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Aichi-Pref., Japan

Filed Dec. 2, 1994, Ser. No. 352,208
Claims priority, application Japan, Dec. 3, 1993, 5-304434
Int. Cl.[6] F01N *3/28*
U.S. Cl. 60—276 **10 Claims**

1. An air-fuel ratio control system for an internal combustion engine, comprising:
a pair of cylinder banks;
a pair of exhaust passages connected to said cylinder banks, respectively;
a common exhaust pipe where said exhaust passages join each other at their downstream ends;
a pair of catalytic converters provided in said exhaust passages, respectively;
a pair of main air-fuel ratio sensors provided in said exhaust passages upstream of said catalytic converters, respectively;
a pair of auxiliary air-fuel ratio sensors provided in said exhaust passages downstream of said catalytic converters, respectively;
a catalytic converter provided in said common exhaust pipe;

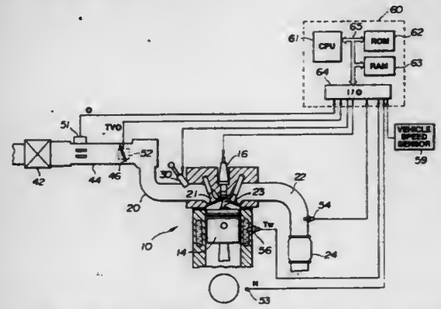


deriving means for deriving an air-fuel ratio feedback control correction value for each of said cylinder banks based on outputs of said auxiliary air-fuel ratio sensors, said deriving means deriving said air-fuel ratio feedback control correction values so as to control said outputs of said auxiliary air-fuel ratio sensors to be in antiphase with each other when said outputs of said auxiliary air-fuel ratio sensors are in phase with each other; and
feedback control means for feedback controlling an air-fuel ratio of an air-fuel mixture for each of said cylinder banks based on an output of said main air-fuel ratio sensor for said cylinder bank and said air-fuel ratio feedback control correction value for said cylinder bank.

5,570,575
FUEL DELIVERY CONTROL APPARATUS FOR USE WITH INTERNAL COMBUSTION ENGINE

Ritsuo Sato, Atsugi; Kimiyoshi Nishizawa, Yokohama; Fuminori Yamanashi, Tokyo; Katsuhiro Shibata, Machida; Hideharu Ehara, Yokohama; Kaoru Ikeda, Omiya; Keiji Yakushiji, Yokohama; Ken Ouchi, Yokohama, and Kiyotaka Baba, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 5, 1994, Ser. No. 318,406
Claims priority, application Japan, Oct. 6, 1993, 5-249625; Dec. 29, 1993, 5-351702
Int. Cl.[6] F01N *3/28*
U.S. Cl. 60—277 **3 Claims**



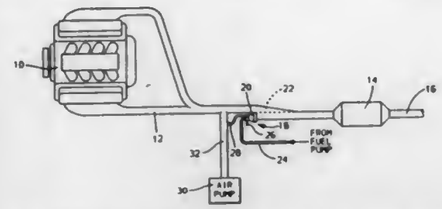
1. A fuel delivery control apparatus for use with an internal combustion engine including an exhaust system having a catalytic converter containing catalysts operable at a temperature for purifying exhaust gases discharged through the exhaust system, comprising:
means for performing fuelcut control to interrupt fuel delivery to the engine during engine deceleration;
means for estimating the catalyst temperature;
means for inhibiting the fuelcut control when the estimated catalyst temperature exceeds a predetermined value; and
means for maintaining the fuelcut control inhibited as long as the engine deceleration continues.

5,570,576

CATALYST HEATER WITH STAGED EXHAUST EXOTHERM

Frank Ament, Troy, and David B. Brown, Shelby Township, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 5, 1994, Ser. No. 270,335
Int. Cl.[6] F01N *3/10*
U.S. Cl. 60—300 **5 Claims**



5. A method for heating relatively low temperature internal combustion engine exhaust gas during passage of the exhaust gas through an exhaust gas flow path for delivering heat energy to a catalytic treatment device, comprising the steps of:

igniting a mixture of air and fuel in the exhaust gas flow path for generating heat energy;

exhausting the generated heat energy to a first mixing location along the exhaust gas flow path;

diverting a portion of relatively low temperature engine exhaust gas to the first mixing location for mixing with the exhausted heat energy to form a first exothermic mixture;

passing the first exothermic mixture to a second mixing location along the exhaust gas flow path;

diverting an additional portion of relatively low temperature engine exhaust gas to the second mixing location for mixing with the first exothermic mixture to form a second exothermic mixture; and

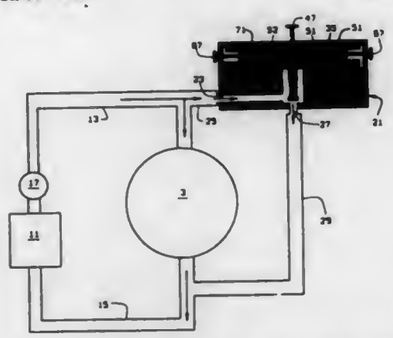
delivering a portion of the heat energy of the second exothermic mixture to the catalytic treatment device.

5,570,577

ANCHOR TORQUE CONTROLLER FOR ANCHOR INSTALLING MACHINES

Edward Dziedzic, Germantown, Tenn., assignor to Dixie Electrical Manufacturing, Memphis, Tenn.

Filed Sep. 11, 1995, Ser. No. 526,688
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—468 **4 Claims**



1. A ground anchor installing machine, the installing machine including a hydraulic fluid circuit having a reservoir of hydraulic fluid, a hydraulic motor, a high pressure line which directs hydraulic fluid to said motor, a low pressure line which returns hydraulic fluid from the motor to the reservoir, and a pump which pumps the hydraulic fluid; the hydraulic motor being adapted to operatively drive a ground anchor to embed the ground anchor in the earth; the ground anchor installing machine further including a torque controller for limiting the torque output by the hydraulic motor; the torque controller comprising a by-pass circuit which by-passes said motor and a valve manifold in said by-pass circuit, said valve manifold having an inlet and an outlet and including:

a main valve chamber in fluid communication with said inlet and outlet; a main valve member positioned in said chamber to be movable within the chamber between a closed position in which said member closes said outlet to prevent fluid flow though said manifold and an open position in which said member is spaced from said outlet to allow fluid flow through said chamber; a flange on said member; a plate in said chamber to be positioned above said main valve member, a spring between said plate and said flange, the position of the plate in the chamber being adjustable to adjust the pressure at which the main valve element will be moved from the closed to the opened position; said main valve member being normally closed by said spring; and

at least one poppet valve; said at least one poppet valve having an inlet, an outlet, and a poppet valve chamber, said poppet valve inlet being in fluid communication with said main chamber and said poppet valve outlet being in fluid communication with said outlet of said manifold, a poppet valve member received in said poppet valve chamber to be movable between an open position in which fluid may flow from said main chamber into said poppet valve chamber and a closed position in which fluid is prevented from flowing into said poppet valve chamber from said main chamber; said poppet valve member including a radially extending flange; a plate received in said poppet valve chamber behind said poppet valve member, a spring positioned between said plate and said poppet valve member to bias said poppet valve member normally closed; the position of said plate being adjustable;

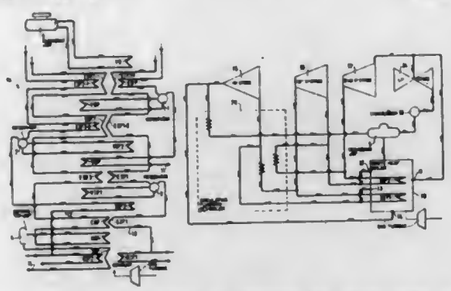
wherein the pressure setting for said at least one poppet valve is different from the pressure setting for said main valve member.

5,570,578

HEAT RECOVERY METHOD AND DEVICE SUITABLE FOR COMBINED CYCLES

Jean-Francois Saujet, Asnieres; Pascale Amadieu, Velizy; Georges Hubert, Paris; Francine Hrisafovic, Antony, and Jean-Xavier Morin, Neuville Aux Bois, all of France, assignors to Stein Industrie, Velizy-Villacoublay, France

Filed Dec. 1, 1993, Ser. No. 159,541
Claims priority, application France, Dec. 2, 1992, 92 14511
Int. Cl.[6] F01K *7/00;* **F22B** *1/00*
U.S. Cl. 60—647 **7 Claims**



4. A heat recovery system for combined gas turbine/steam turbine cycles, said system comprising:

a waste heat boiler disposed at the exhaust of a gas turbine, said waste heat boiler having a degassing unit for treating water, a first evaporator connected to said degassing unit and a plurality of heat exchangers and subcritical fluid intermediate evaporator stages for receiving an output of said degassing unit; said waste heat boiler operating with an ultrasupercritical steam cycle at a first, second, third and fourth pressure levels; and

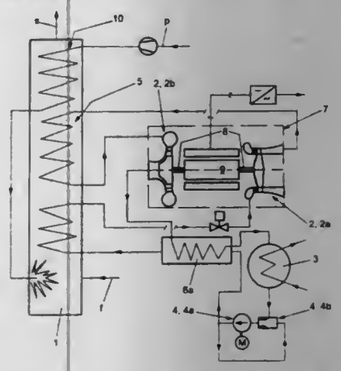
a steam turbine having a high pressure stage, a first intermediate pressure stage, a second intermediate pressure stage and a low pressure stage; said high pressure stage being connected to receive steam at said fourth pressure level from said waste heat boiler and heated fluid from said degassing unit through a circulating fluidized bed boiler, said heated fluid being heated by exchangers of said circulating fluidized bed boiler.

5,570,579

METHOD AND APPARATUS FOR IMPROVING THE EFFICIENCY OF A SMALL-SIZE POWER PLANT BASED ON THE ORC PROCESS

Jaakko Larjola, Mäntyharju, Finland, assignor to High Speed Tech Oy Ltd., Tampere, Finland

PCT No. PCT/FI92/00204, § 371 Date Jan. 11, 1994, § 102(e) Date Jan. 11, 1994, PCT Pub. No. WO93/01397, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 1, 1992, Ser. No. 178,295
Claims priority, application Finland, Jul. 11, 1991, 913367
Int. Cl.[6] F01K *25/00*
U.S. Cl. 60—651 **9 Claims**



1. A method for improving the efficiency of a small-size power plant based on a closed hermetic organic rankine cycle (ORC) process, the plant including at least one energy converter unit, and at least one burner for combustion of fuel for producing energy for said at least one energy converter unit, wherein the energy converter unit includes a high-speed machine which comprises a first and second turbine and a generator mounted on a common rotor, said method comprising the following steps:

A) supplying a fluid ORC medium to a vaporizer and vaporizing said ORC medium by utilizing the energy derived from the combustion of the fuel in the burner of the vaporizer;

B) expanding the vaporized ORC medium in the first turbine of the high-speed machine of the energy converter to produce electric energy;

C) reheating the ORC medium leaving the first turbine of the high-speed machine by a superheater in the vaporizer by utilizing the energy derived from the combustion of the fuel in the burner of the vaporizer;

D) expanding the reheated ORC medium in the second turbine of the high-speed machine of the energy converter to produce electric energy;

E) leading the ORC medium from the second turbine of the high-speed machine to a cooling arrangement for condensing the same;

F) supplying fluid ORC medium to step A through a pre-heater forming a part of the cooling arrangement wherein said fluid ORC medium is preheated by the ORC medium coming from the second turbine of the high-speed machine; and

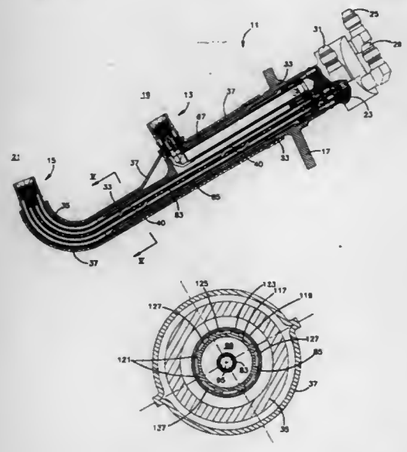
G) spraying at least partially fluid ORC medium into the reheated ORC medium to reduce reheating of the ORC medium by the superheater.

5,570,580

MULTIPLE PASSAGE COOLING CIRCUIT METHOD AND DEVICE FOR GAS TURBINE ENGINE FUEL NOZZLE

Robert T. Mains, Euclid, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation of Ser. No. 951,599, Sep. 28, 1992, Pat. No. 5,423,178. This application Jul. 18, 1994, Ser. No. 276,296
Int. Cl.[6] F02G *7/22*
U.S. Cl. 60—747 **20 Claims**



1. A gas turbine fuel nozzle cooling circuit for a gas turbine engine, comprising:

a nozzle spray tip having a primary spray orifice through which fuel can be disposed for combustion and a secondary spray orifice through which fuel can be disposed for combustion, said secondary spray orifice surrounding said primary spray orifice;

a primary fuel conduit connected to convey fuel to said primary spray orifice; and

a secondary fuel conduit connected to convey fuel to said secondary spray orifice; said primary fuel conduit i) completely surrounds said secondary fuel conduit, ii) extends along at least a portion of the length of the secondary fuel conduit, and iii) is in a heat transfer relationship with said secondary fuel conduit.

5,570,581

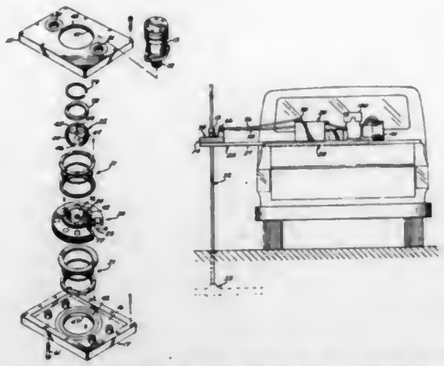
HYDRAULIC VALVE OPERATOR

Kirk H. Preston, Huntington Beach, Calif., assignor to Pacific Technical Equipment and Engineering Inc., Huntington Beach, Calif.

Filed Feb. 14, 1995, Ser. No. 388,629
Int. Cl.[6] F16D *31/02;* **F16K** *31/12*
U.S. Cl. 60—483 **16 Claims**

1. Valve operating apparatus for mounting on a transport vehicle to releasably engage a drive coupling on a stem of an underground valve, said apparatus comprising:

a horizontally projecting frame including a stationary frame section for mounting on said vehicle and an extendable frame section having open ends and being movably carried from



said stationary section and further having a driver mount thereon for alignment over said drive coupling;

a swivel housing mounted on said driver mount and formed with a bull gear cavity;

a bull gear rotatably received in said cavity and formed with a vertically projecting upwardly opening generally hemispherical swivel pocket;

reversible hydraulic motors mounted on said housing and coupled with said bull gear for driving said bull gear;

a generally spherical drive swivel received in said pocket for rotation with said bull gear and swivelly mounted for swivel about a horizontal, said drive swivel being formed with a through vertical polygonal drive socket and including a vertically projecting radial limit slot;

a limit pin projecting from said bull bear into said limit slot to limit relative rotation of said drive swivel about a vertical axis:

a captive ring on said swivel housing and overlying said drive swivel;

a polygonal valve drive rod for complementary telescopical receipt in said socket, including a universal joint, and formed on its bottom end with a drive head for releasable engagement with said drive coupling; and

a hydraulic control system connected with said motors and including a hydraulic reservoir, a pump for pumping hydraulic fluid from said reservoir to said motors, a variable pressure relief bypass valve interposed between said motor and said reservoir for bypassing hydraulic fluid from said pump to said reservoir, a pressure gauge for sensing the hydraulic pressure to said motor and a controller for controlling the pressure at which said pressure relief bypass valve relieves so the operator can control the pressure at which said pressure relief bypass valve will relieve in response to the pressure observed on said gauge.

5,570,582

CRYOGENIC REFRIGERATION METHOD FOR USE IN CONNECTION WITH A CRYOGENIC TEMPERATURE SWING ADSORPTION PROCESS

Paul Sweeney, Basking Ridge; Colleen Prince, North Plainfield, both of N.J., and Andrew Owen, Guildford, United Kingdom, assignors to The BOC Group, Inc., New Providence, N.J.

Continuation-in-part of Ser. No. 209,652, Mar. 10, 1994. This application Feb. 14, 1995, Ser. No. 388,326

Int. Cl.[6] F25J *3/00*

U.S. Cl. 62—641 **12 Claims**

1. A cryogenic refrigeration method for use in connection with a cryogenic temperature swing adsorption process having a discontinuous production cycle during which production of a purified vapor stream is at least reduced through use of at least part of the purified vapor stream to purge a regenerating adsorption bed and the purified vapor stream is superheated through use of the purified vapor stream to cool the regenerating adsorption bed after having been purged, said cryogenic refrigeration method comprising:

a) at least partially liquefying a heat exchange stream against vaporizing at least part of an impure liquid stream through indirect heat exchange to produce a process liquid from said heat exchange stream and an impure vapor stream from said liquid stream;

b) introducing said impure vapor stream into said cryogenic temperature swing adsorption process to produce said purified vapor stream;

c) liquefying said purified vapor stream from said cryogenic temperature swing adsorption process against vaporizing a mass flow rate of the process liquid through indirect heat exchange;

d) during production of the purified vapor stream, forming the mass flow rate of the process liquid from the liquefied heat exchange stream and a supplemental flow rate of a supplemental process liquid necessary to maintain thermodynamic equilibrium between the liquefactions of the heat transfer and purified vapor streams and increasing the mass flow rate of the process liquid when said purified vapor stream is superheated; and

e) during cessation or reduction of the production of the purified vapor stream, accumulating the process liquid formed from the liquefied heat exchange stream for later use in forming the mass flow rate of the process liquid during production of the purified vapor stream.

5,570,583

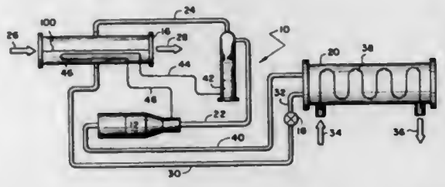
COOLING OF COMPRESSOR LUBRICANT IN A REFRIGERATION SYSTEM

Michael C. Boehde, Onalaska, and James W. Larson, La Crosse, both of Wis., assignors to American Standard Inc., Piscataway, N.J.

Division of Ser. No. 296,986, Aug. 26, 1994, Pat. No. 5,419,155, which is a continuation of Ser. No. 40,757, Mar. 31, 1993, abandoned. This application Mar. 8, 1995, Ser. No. 400,684

Int. Cl.[6] F25B *43/02*

U.S. Cl. 62—84 **8 Claims**



1. A method of cooling compressor lubricant in a refrigeration system comprising the steps of:

condensing system refrigerant in a heat exchanger;

directing compressor lubricant to the condensing heat exchanger;

passing said compressor lubricant in a heat exchange relationship with condensed system refrigerant in said condensing heat exchanger so as to cool said lubricant, a portion of said condensed system refrigerant being vaporized by the cooling of said lubricant; and

returning said cooled compressor lubricant to said compressor for further use therein.

5,570,584

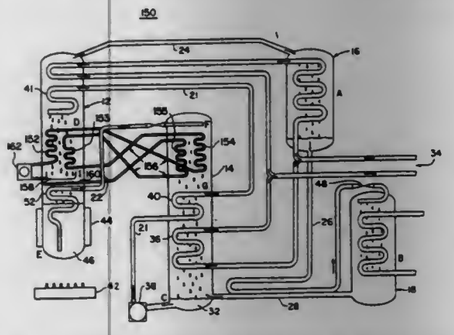
GENERATOR-ABSORBER HEAT EXCHANGE TRANSFER APPARATUS AND METHOD USING AN INTERMEDIATE LIQUOR

Benjamin A. Phillips, Benton Harbor, and Thomas S. Zawacki, St. Joseph, both of Mich., assignors to Phillips Engineering Co., St. Joseph, Mich.

Continuation-in-part of Ser. No. 76,759, Jun. 15, 1993, Pat. No. 5,367,884, which is a continuation-in-part of Ser. No. 793,644, Nov. 18, 1991, Pat. No. 5,271,235. This application Nov. 23, 1994, Ser. No. 347,255

Int. Cl.[6] F05B *15/00*

U.S. Cl. 62—101 **100 Claims**



67. A method for transferring heat between an absorber and a generator in a generator-absorber heat exchange apparatus including a generator and an absorber, the absorber having an interior pressure lower than the pressure of the generator interior and each having high and low temperature regions at opposite ends establishing respective temperature ranges, the temperature ranges defining respective overlapping heat transfer regions, and a fluid flow pathway circulating a liquor having rich, intermediate and weak concentrations of refrigerant to and through the high temperature, heat transfer and low temperature regions of the generator and the absorber, said method comprising:

circulating a liquor having an intermediate concentration between the heat transfer region of the absorber and the heat transfer region of the generator.

5,570,585

UNIVERSAL COOLING SYSTEM AUTOMATICALLY CONFIGURED TO OPERATE IN COMPOUND OR SINGLE COMPRESSOR MODE

Mikhail Vaynberg, 411 Hazelwood Dr., San Francisco, Calif. 94127

Filed Oct. 3, 1994, Ser. No. 317,001

Int. Cl.[6] F25B *7/00;1/00*

U.S. Cl. 62—175 **17 Claims**

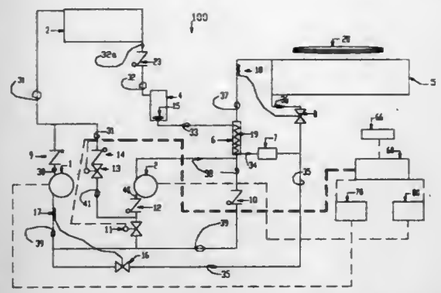
1. A cooling system comprising:

first and second compressors each having an inlet and an outlet, the outlet of the first compressor being coupled to the inlet of the second compressor;

a condenser coupled to the compressor outlets;

an expansion valve coupled to the condenser;

an evaporator coupled to the expansion valve and the compressor inlets;



a controller for selectively controlling fluid flow through the system, the controller having a closing element movable between a first position, where the fluid flows from the first compressor outlet to the second compressor inlet, and a second position, where the fluid flows from the first compressor outlet directly to the condenser; and

one or more sensors coupled to the closing element for sensing a compression ratio across the first and second compressors.

5,570,586

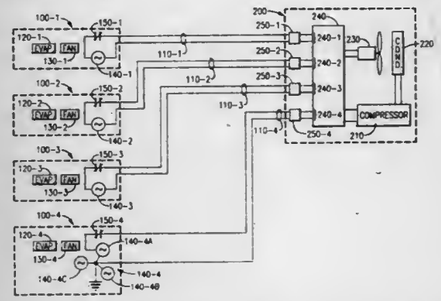
INTERFACE CIRCUIT FOR USE IN MULTI-SPLIT AIR CONDITIONING SYSTEMS

Stephen M. Maciulewicz, Auburn, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 11, 1995, Ser. No. 438,773

Int. Cl.[6] F25B *49/02*

U.S. Cl. 62—175 **14 Claims**



11. In an air conditioning system for conditioning the air in a plurality of indoor zones, said system being of the type having a plurality of indoor units each including an evaporator, a fan and an AC source, an outdoor unit including a compressor, a condenser, a fan and control circuitry for controlling said compressor and fan in accordance with AC control signals produced by said indoor units, and a plurality of control lines for transmitting said control signals from respective indoor units to respective inputs of said control circuitry, the improvement comprising:

a plurality of interface circuits connected between respective ones of said control lines and respective inputs of said control circuitry, each of said interface circuits including:

at least two AC inputs adapted to be connected to receive different respective AC control voltages, and a DC output;

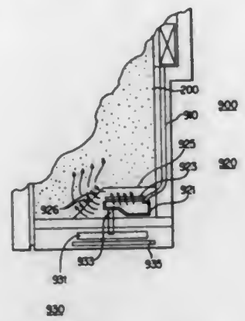
comparing means for applying a two-state DC voltage to said DC output, said comparing means having a reference input for receiving a DC reference voltage and a control input;

rectifying means for converting the AC control voltage at any of said inputs to a DC voltage and applying said DC voltage to said control input; and

voltage scaling means connected to said inputs and to said rectifying means for assuring that the DC voltage produced by

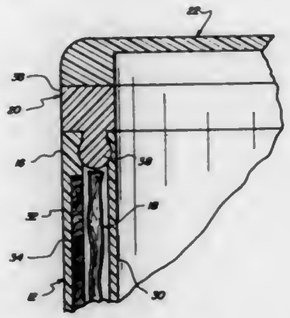
said rectifying means has roughly the same magnitude without regard to which of said AC inputs is receiving its respective AC control voltage.

5,570,587
REFRIGERATOR WITH STORAGE COMPARTMENTS AND DISPENSING MEANS
Kyeong-Taek Kim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd, Seoul, Rep. of Korea
Filed Nov. 4, 1994, Ser. No. 336,100
Claims priority, application Rep. of Korea, Nov. 6, 1993, 1993-23484
Int. Cl.[6] F25D *15/00;23/12;* **G07F** *11/72*
U.S. Cl. 62—331 **9 Claims**



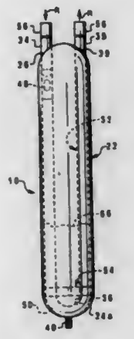
1. A multifunction refrigerator comprising:
(a) a cold storage room;
(b) cereals storage room;
(c) a generating means for generating cool air from a wall face of the refrigerator; and
(d) a conducting means for inducting the cool air generated from the generating means into the cold storage room and the cereals storage room;
wherein the cereals storage room comprises a rice storage room for storing rice, a discharging means for discharging the rice.

5,570,588
FREEZABLE INSERT COOLER
Scott A. Lowe, 34 Southeast Ave., Baltimore, Md. 21224
Filed Jun. 26, 1995, Ser. No. 494,834
Int. Cl.[6] F25D *3/08*
U.S. Cl. 62—457.7 **8 Claims**



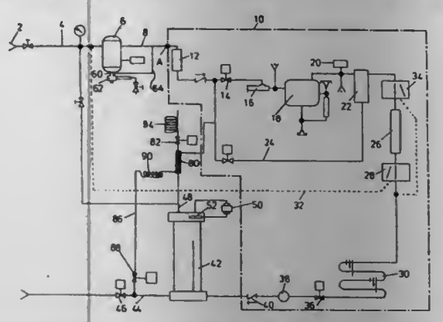
1. A freezable insert cooler comprising:
a cooler body including a bottom wall and a hollow perimeter sidewall projecting substantially upwardly from an outer periphery of the bottom wall;
a gel-pack insert removably positioned within the hollow perimeter sidewall;
an upper rim closure removably secured to an upper edge of the perimeter sidewall so as to extend coextensively therearound to enclose the gel-pack insert within the hollow perimeter sidewall;
a lid pivotally mounted to the upper rim closure.

5,570,589
REFRIGERANT CIRCUIT ACCUMULATOR AND ASSOCIATED FABRICATION METHODS
Erwin H. Petty, Montgomery, Ala., assignor to Rheem Manufacturing Company, New York, N.Y.
Filed Jan. 27, 1995, Ser. No. 379,732
Int. Cl.[6] F25B *43/02;43/00*
U.S. Cl. 62—471 **13 Claims**



1. Refrigerant circuit accumulator apparatus comprising:
an inner metal U-tube structure having:
first and second generally parallel leg portions with open refrigerant inlet and outlet ends respectively disposed thereon,
a curved, closed end portion disposed opposite said open inlet and outlet ends and joining said first and second leg portions,
an oil inlet metering orifice formed in said curved, closed end portion of said U-tube,
a side wall refrigerant inlet opening formed in said first leg portion inwardly adjacent said open refrigerant inlet end thereof,
a refrigerant outlet opening formed in said first leg portion between said refrigerant inlet opening and said open refrigerant inlet end of said first leg portion, and
deflector means carried on said first leg portion for separating said side wall refrigerant inlet opening and said refrigerant outlet opening, and for intercepting refrigerant exiting said refrigerant outlet opening and deflecting the exiting refrigerant laterally outwardly from said first leg portion;
a tubular, unitary outer copper metal shell longitudinally extending parallel to said first and second leg portions and enveloping said U-tube structure, said unitary outer copper shell having:
an inwardly deformed first closed end having a spaced pair of boles therein through which said open U-tube leg portion refrigerant inlet and outlet ends outwardly extend and are sealed within, and
an inwardly deformed second closed end; and
filter means, externally supported on said U-tube structure and disposed within said outer shell, for filtering refrigerant approaching said oil inlet metering orifice, said filter means being disposed between said oil inlet metering orifice and said side wall refrigerant inlet opening and generally dividing the interior of said outer shell into two facing longitudinal segments.

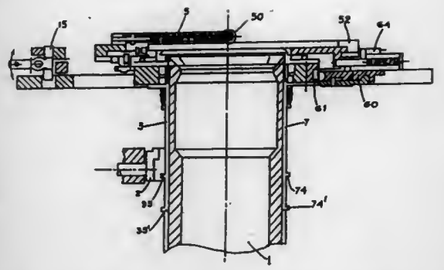
5,570,590
REFRIGERANT RECLAIMING METHOD AND SYSTEM
Eigil Hansen, Sønderberg, Denmark; Donald W. Strout, and Thomas L. Crandall, both of York, Pa., assignors to A'Gramkow A/S, Sonderborg, Denmark
Continuation of Ser. No. 19,659, Feb. 19, 1993, abandoned.
This application Mar. 9, 1995, Ser. No. 401,263
Int. Cl.[6] F25B *43/02*
U.S. Cl. 62—472 **8 Claims**



7. An apparatus for reclaiming and purifying used refrigerants, the apparatus comprising a purification unit having a suction inlet for intake of gaseous refrigerant and an outlet for fluid refrigerant, said suction inlet being connected through an oil separator in which remnants of oil in the refrigerant are precipitated, said outlet is connected to a collector tank for at least partially purified liquid refrigerant, an upper end portion of said collector tank is connected to the atmosphere through controllable means for blowing off from said collector tank non-condensable gases precipitated from the received liquid refrigerant, wherein the oil separator includes a bottom outlet connected to a separate, underlying oil reservoir in which the precipitated oil is collected, said reservoir is equipped with heater means for heating the collected oil so as to boil out any remnant of the refrigerant therein without effecting any corresponding heating of the separate oil separator, said oil reservoir at a top end thereof is connected to the suction inlet of the purification unit and at a bottom end thereof is connected to valve controlled oil outlet, a blow off from said collector tank is passed through a condensation unit in which residuals of the refrigerant gas are condensed so as to flow back into the collector tank without escaping to the atmosphere, and wherein a top of the oil reservoir is connected with the oil separator through a one-way outlet valve, while the upper end of the oil reservoir is connected to the suction intake of the purification unit by a pipe passing the oil separator.

5,570,591
METHOD AND APPARATUS FOR SEAMING TWO EDGES OF A KNITTED TUBULAR ARTICLE UPON COMPLETION THEREOF
Alberto Frullini, and Paolo Frullini, both of Florence, Italy, assignors to Fabritex S.R.L., Florence, Italy
Continuation-in-part of Ser. No. 133,651, Oct. 7, 1993, abandoned. This application May 10, 1995, Ser. No. 422,884
Claims priority, application Italy, Sep. 10, 1992, FI 92 A 194
Int. Cl.[6] D04B *9/56;35/00*
U.S. Cl. 66—58 **27 Claims**

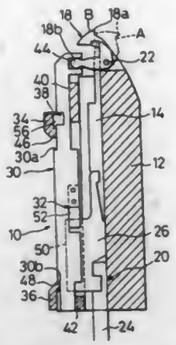
1. Method for seaming two edges of a knitted tubular article, comprising the step of manufacturing a tubular article with a single-needles cylinder circular machine, starting from the elastic hem and finishing at the side of the toe which is left open, the method comprising the steps of:



(a) lifting a predetermined number of needles of a first semirank, while holding stitches by means of sinkers, to position the stitches at a removal region of said needles;
(b) further lifting up said needles of said first semirank, with said sinkers being open, to dispose stitches at a removal level;
(c) lifting a predetermined number of needles together with stitches of a second semirank to said removal level;
(d) removing stitches of said first semirank by means provided for the transfer thereof onto corresponding needles of said second semirank;
(e) lowering said needles of said first semirank;
(f) transferring said removed stitches through a 180° overturning about an horizontal diametral axis of said needles cylinder using a transfer means, so that each stitch thus transferred will fit a corresponding needle of said second semirank;
(g) lifting said needles of said second semirank so as to load said transferred stitches of said first semirank and release them from said transfer means;
(h) placing pairs of superimposed stitches of each needle of said second semirank tightly juxtaposed and coaxial;
(i) lifting further the needles of said second semirank with stitches thus juxtaposed up to a linking level of said single needles cylinder circular machine;
(l) rotating said needles cylinder with intermittent motion and inserting, step by step, a linking needle into a pair of lifted stitches by feeding said linking needle, without loss of continuity, with a linking thread (F) used for the knitting of said knitted tubular article and then removing said linking needle to form a plain linking chain-stitch;
(m) making two or more closing knots (I, II) after having executed a last linking stitch;
(n) cutting said linking thread (F);
(o) lowering said needles of said second semirank down to a cast off position to unload a finished article.

5,570,592
SINKER ACTUATING APPARATUS HAVING SPRING FORCE ADVANCING MEMBER
Yujiro Takegawa, Ishikawa-ken, Japan, assignor to Tsudakoma Kogyo Kabushiki Kaisha, Kanazawa, Japan
Filed Nov. 8, 1995, Ser. No. 555,484
Claims priority, application Japan, Nov. 16, 1994, 6-305675
Int. Cl.[6] D04B *15/06*
U.S. Cl. 66—64 **7 Claims**

1. A pressing sinker actuating apparatus for a knitting machine which includes a plurality of knitting needles disposed on a needle bed so as to move forward and backward, a plurality of movable sinkers disposed on said needle bed so as to displace between a pressing position where the sinker presses a knitted fabric and a releasing position where the sinker releases the knitted fabric, and needle moving means for reciprocating said knitting needles, comprising:
sinker actuating means disposed on said needle bed so as to move forward and backward to displace the sinker between the pressing position and the releasing position;



connecting means for non-fixedly connecting said sinker actuating means to a corresponding one of said needle moving means to move said sinker actuating means in response to the movement of the needle moving means;

stopper means having a first stopper portion for restricting an advanced position and a second stopper portion for restricting a retracted position of said sinker actuating means; and

a resilient member provided for giving an advancing force to said sinker actuating means;

wherein said second stopper portion is formed at a position where said second stopper portion hinders the retracting movement of said sinker actuating means when the corresponding knitting needle is retracted by a predetermined distance from a most advanced position thereof;

wherein said connecting means disconnects said sinker actuating means from the needle moving means before the corresponding knitting needle is retracted to a position where the knitting needle forms a needle loop after said sinker actuating means is abutted on said second stopper portion; and

wherein said resilient member has a spring force lower than a connecting force between said sinker actuating means and the needle moving means by said connecting means.

5,570,593

STRAND FEEDING DEVICE

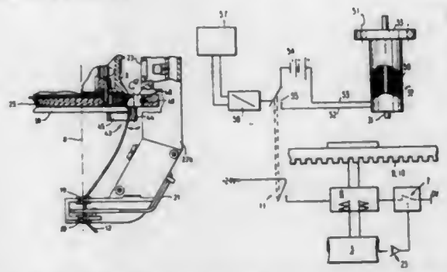
Paul Neher, Messstetten, and Jürgen Hüfner, Albstadt, both of Germany, assignors to SIPRA Patententwicklungs-und Beteiligungs Gesellschaft mbH, Albstadt, Germany

Continuation-in-part of Ser. No. 85,553, Jun. 30, 1993, abandoned, which is a continuation of Ser. No. 878,045, May 4, 1992, abandoned. This application Nov. 28, 1994, Ser. No. 345,310

Claims priority, application Germany, May 21, 1991, 41 16 497.0

Int. Cl.[6] D04B *15/48;* **B65H** *51/00*

U.S. Cl. 66—132 R **12 Claims**



1. A strand feeding and storage device, comprising a storage drum having an axis and a lower edge, onto which a strand can be wound with a plurality of turns to form a strand supply, an out-feed eye through which the strand can be drawn from the storage drum, a strand guide element, means for mounting said strand guide element in the region of the lower edge of the storage drum, an electromagnetic setting member coupled to said guide element for selectively moving said guide element into a first position for intermittent strand feed and a second position for positive strand feed, respectively, means active during intermittent feed for sensing of a minimum of strand supply on said drum, means for providing said drum with a predetermined maximum amount of strand whenever said sensor means senses that said minimum of strand supply is reached during intermittent strand feed such that the strand is always drawn from the strand supply on the drum when the strand guide element is in its first position, means active during positive feed for permanently providing said drum with the strand at a speed corresponding to a speed with which a device using said strand draws off said strand from said drum when said guide element is in its second position, and an electronic control device including said electromagnetic setting member for controlling said setting member such that said guide element can be moved automatically and during continuous knitting into said first position and said second position in accordance with a pattern of a fabric.

5,570,594

DEVICE FOR DIRECT-FLOW TREATMENT OF FIBER-CONTAINING MATERIAL

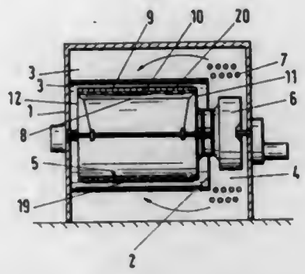
Gerold Fleissner, Zug, Switzerland, assignor to Fleissner GmbH & Co., Egelsbach, Germany

Filed Apr. 19, 1995, Ser. No. 424,625

Claims priority, application Germany, Apr. 20, 1994, 44 13 779.6

Int. Cl.[6] D06B *5/08*

U.S. Cl. 68—5 D **7 Claims**



1. A device for direct-flow treatment of fiber-containing material with a fluid treatment agent circulated therein, which comprises a transport member comprising a permeable drum rotating about its longitudinal axis, said drum having bases on its ends and being under a suction draft for effecting circulation of the fluid treatment agent, said transport member being covered on its periphery with a screen covering, sheet metal strips extending rectilinearly and unbent from one base to the other base between the bases of the drum, the widths of said strips extending in a radial direction, one-piece connector members being uniformly disposed between the sheet metal strips over the length of the drum having a width corresponding to a required spacing of the immediately adjacent sheet metal strips, said connector members being securely connected at both ends with the adjacent sheet metal strips, respective connector members being web-shaped and provided in the peripheral direction of the drum with at least one bore for at least one threaded element which may be connected to the two adjacent sheet metal strips or connector members, and an additional sheet metal jacket having apertures in its periphery and arranged with its longitudinal axis in parallel to the longitudinal axis of the permeable drum radially inwards beneath inner edges of the sheet metal strips.

5,570,595

CONTINUOUS DECATIZING OF FABRICS IN AUTOCLAVE

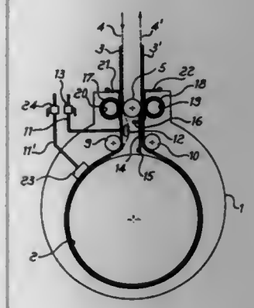
Pietro Alberto, Strada Masserano Calaria, 70 Biella (Vercelli), Italy

PCT No. PCT/IT92/00115, § 371 Date Apr. 13, 1995, § 102(e) Date Apr. 13, 1995, PCT Pub. No. WO94/10368, PCT Pub. Date May 1, 1994

PCT Filed Nov. 2, 1992, Ser. No. 416,767

Int. Cl.[6] D06B *3/10;23/18*

U.S. Cl. 68—5 E **8 Claims**



1. An improved apparatus for continuous decatizing of a fabric (4) in a pressurized steam environment comprising:

an autoclave adapted to maintain a pressurized steam environment and having a passage defined therein;

a foraminous cylinder (2) rotatably mounted within the autoclave;

first and second guide rollers (9,10) located within the autoclave;

a backing cloth (3) which supports the fabric (4) to be decatized that extends into the autoclave through the passage, between the first guide roller (9) and the foraminous cylinder (2), around the foraminous cylinder (2), between the foraminous cylinder (2) and the second guide roller (10), and out of the autoclave through the passage such that the backing cloth (3') and a decatized fabric (4') exit the autoclave, the backing cloth (3) and the fabric (4) having a predetermined width;

a rotatable cylinder (5) having ends located in the passage between a portion of the backing cloth (3) and the fabric (4) which enter into the autoclave through the passage and a portion of the backing cloth (3') and the decatized fabric (4') which exit out of the autoclave through the passage;

first and second side gaskets (19, 20) located adjacent to the rotatable cylinder (5) which cooperate with the rotatable cylinder (5) to close the passage;

an antifriction sheet (21, 22) interposed between each of the first and second side gaskets (19, 20) and the backing cloth (3, 3');

seals located at the ends of the cylinder (5); and

at least one hollow member (12, 23) having a foraminous and substantially flattened surface located adjacent to and contacting at least one of the backing material (3) and the fabric (4) in a first area in proximity to where the backing material (3) and the fabric (4) enter the autoclave through the passage, the hollow member providing a path for steam flow from one of within the autoclave toward an area outside of the autoclave and from an area outside the autoclave to within the autoclave, the hollow member extending the width of at least one of the backing material (3) and the fabric (4) and being connected by a line (11, 11') to the area outside of the autoclave by a valve (13, 24).

5,570,596

AUTOMATIC WASHING MACHINE WITH IMPROVED ARRANGEMENT FOR PREVENTING INSUFFICIENCY IN SUPPLIED WATER IN RINSE STEP

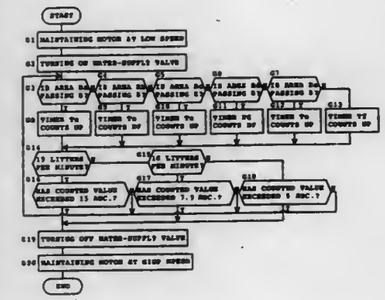
Masahiro Imai, Tajimi; Yoshiyuki Makino; Satoru Matsumoto, both of Seto; Kimihiko Nakamura, Tajimi; Kiyoshi Okazaki, and Takayuki Hirano, both of Seto, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Jun. 13, 1995, Ser. No. 489,724

Claims priority, application Japan, Jun. 29, 1994, 6-147713; Jul. 18, 1994, 6-165134

Int. Cl.[6] D06F *33/02*

U.S. Cl. 68—12.05 **17 Claims**



1. A washing machine comprising:

an electric motor;

a dehydrating tub provided to be rotated by the electric motor and centrifugally dehydrating laundry accommodated therein when rotated at high speeds;

water-supply means for supplying water to the dehydrating tub so that the water is poured onto the laundry;

speed selecting means selecting a rotational speed of the dehydrating tub between a low speed state establishing a water pouring stage and a high speed state establishing a centrifugal dehydration stage, thereby performing a rinse-with-dehydration operation in which the water is supplied to the dehydrating tub by the water-supply means in the water pouring stage so that the laundry is rendered hydrous and in which the water supply by the water-supply means is substantially stopped and the laundry is centrifugally dehydrated in the centrifugal dehydration stage subsequent to the water pouring stage;

means for detecting a rotation angle of the dehydrating tub in the water pouring stage;

area setting means for setting the interior of the dehydrating tub into a plurality of circumferential areas according to the detected rotation angle;

timer means for detecting a period of time required for each set area to pass a water pouring location of the water-supply means; and

means for determining a hydrous state of the laundry on the basis of the result of detection by the timer means.

5,570,597

SIMPLIFIED FRONT LOADING LAUNDRY WASHING MACHINE

Dino Bongini, Fabriano; Sandro Duri, Fiuminata, and Andrea Stopponi, Matelica,all of, Italy, assignors to Merloni Elettrodomestici S.P.A., Fabriano, Italy

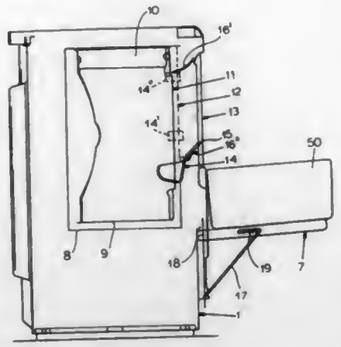
Filed Nov. 29, 1994, Ser. No. 346,154

Claims priority, application Italy, Nov. 30, 1993, TO93A000910

Int. Cl.[6] D06F *21/04;37/10;37/22;39/02*

U.S. Cl. 68—17 R **15 Claims**

1. A front loading laundry machine, comprising:



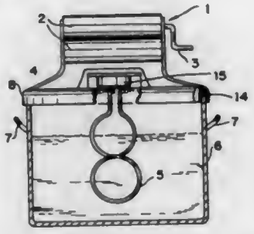
a housing having a median horizontal plane and formed with a front side, said front side being provided with a door opening delimited by an edge, at least a substantial part of said edge extending above the median horizontal plane of said housing;
a door mounted on said front side and displaceable between closed and open positions thereof to close said opening in the closed position;
a washing chamber mounted in said housing and formed with a front wall, said wall having a chamber opening and being juxtaposed with said front side of the housing:
a laundry basket mounted in said chamber and rotatable about a horizontal axis and formed with a basket opening, the door, chamber and basket opening being aligned with one another;
balancing means for reducing vibration of the laundry machine during the rotation of said laundry basket, said balancing means and said laundry basket forming an oscillating unit;
restricting means for impeding exiting of the laundry from said basket in said open position of the door and formed on a lower edge of said chamber opening and protruding into said basket; and
sealing means for preventing exit of a washing liquid from said chamber and extending between said respective openings of said basket and chamber and between said housing and restricting means.

5,570,598

COUNTER TOP CLOTHES WASHER

Lonnie M. Haven, 5600 Poinsettia Ave., West Palm Beach, Fla. 33407

Filed Feb. 21, 1995, Ser. No. 393,930
Int. Cl.[6] D06F *3/02*
U.S. Cl. 68—22 A **5 Claims**



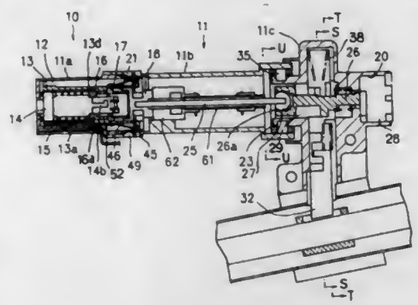
1. A portable washing machine comprising: a lid adapted to fit on a pot or tub,
said lid having attached thereto agitator means for moving clothes within water in said pot or tub,
a motor for turning said agitator,
roller means mounted above said lid for removing excess water from clothes,
and a scrubbing surface positioned on said lid, said scrubbing surface being smooth and non-even,
said lid having an apex,
said roller means being mounted at said apex, and
said scrubbing surface comprising a plurality of ridges and grooves,
said ridges extending parallel to said roller means.

5,570,599

STEERING LOCK DEVICE

Katsuji Konii, Yokohama, Japan, assignor to Alpha Corporation, Japan

PCT No. PCT/JP93/00241, § 371 Date Oct. 24, 1994, § 102(e) Date Oct. 24, 1994, PCT Pub. No. WO94/19217, PCT Pub. Date Sep. 1, 1994
PCT Filed Mar. 26, 1993, Ser. No. 325,335
Int. Cl.[6] B60R *25/02*
U.S. Cl. 70—186 **8 Claims**



1. A steering lock device comprising: a frame;
a housing arranged in the frame;
a sleeve rotatably arranged within the housing, said sleeve being formed with grooves;
a key cylinder rotatably arranged within the sleeve;
tumblers slidably arranged within said key cylinder for engagement with and disengagement from said grooves of said sleeve;
a first rotor rotatable and axially movable in said sleeve with respect to the sleeve, said first rotor being in cam connection with said key cylinder; and
a second rotor connected with a locking rod and an ignition switch in operation;
the first rotor being axially moved for connection with the second rotor when the key cylinder is rotated relative to the sleeve so that said key cylinder, first rotor and second rotor are rotated together to move the locking rod from the locked to the unlocked position;
said key cylinder being rotated together with said sleeve to prevent axial movement of said first rotor when an incorrect key is inserted into said key cylinder and rotated.

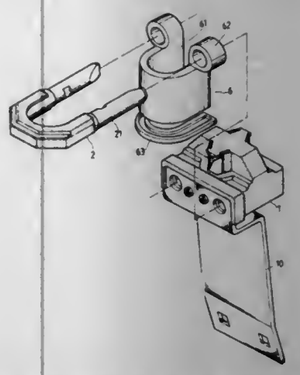
5,570,600

GEARSHIFT STICK LOCK FOR AUTOMOBILES

Wu P. Hua, P.O. Box 82-144, Taipei, Taiwan

Continuation-in-part of Ser. No. 91,790, Jul. 13, 1993, abandoned. This application Nov. 21, 1994, Ser. No. 342,748
Int. Cl.[6] B60R *25/06*
U.S. Cl. 70—247 **1 Claim**

1. A gearshift stick lock for an automobile having a transmission case, comprising:
a bracket fixedly mounted on said transmission case;
a lock body fixedly installed on said bracket;
a shackle including two legs engageable with said lock body;



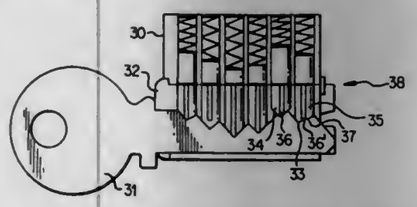
a U-shaped sleeve having an open side adapted to receive a gearshift stick of an automobile, having a pair of circular lugs at a top adapted to receive the legs of said shackle, said lugs each having a threaded hole;
a pad having a U-shaped cross section adapted to receive a bottom of said U-shaped sleeve; and
two screws each extending through a respective one of said threaded holes to bear against the gearshift stick of said automobile thereby fixedly mounting said sleeve on said gearshift stick;
said legs of said shackle being inserted through said lugs to engage said lock body so as to lock said gearshift stick in place.

5,570,601

HIERARCHICAL CYLINDER LOCK AND KEY SYSTEM

Peter H. Field, Salem, Va., assignor to Medeco Security Locks, Inc., Salem, Va.

Continuation of Ser. No. 162,606, Dec. 7, 1993, Pat. No. 5,419,168, which is a continuation-in-part of Ser. No. 959,018, Oct. 24, 1991, Pat. No. 5,289,709. This application Jan. 25, 1995, Ser. No. 378,008
Int. Cl.[6] E05B *19/06*
U.S. Cl. 70—409 **10 Claims**



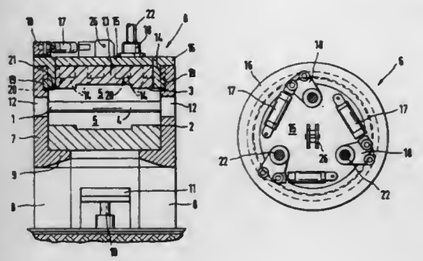
1. A key for operating a cylinder lock having a plurality of tumbler pins, the key having a key blade with a plurality of bitting surfaces formed thereon which engage the tumbler pins to operate the cylinder lock, the key comprising:
a key bow;
a key blade with a top surface and a bottom surface and having a length and a longitudinal axis extending along said length, the key blade having first and second side edges extending along the length of the key blade substantially parallel to said longitudinal axis and the key blade having a width extending between the first and second side edges substantially transverse to said longitudinal axis;
a plurality of bitting surfaces formed in the key blade, said bitting surfaces being configured to engage a plurality of tumbler pins of a cylinder lock such that the key operates the cylinder lock; and
wherein at least one of said bitting surfaces is formed as a single slanting arcuately shaped contact surface cut in the key blade and extending across the width of the key blade from adjacent the first side edge of the key blade to adjacent the second side edge of the key blade, and wherein the single slanting arcuately shaped contact surface meets the first side edge of the key blade at a first point and meets the second side edge of the key blade at a second point, said first point being closer to the bottom surface of the key blade than the second point such that the single slanting arcuately shaped contact surface slopes downward through the key blade.

5,570,602

APPARATUS FOR INTERNAL HIGH-PRESSURE MOLDING

Anton Bauer, Schwalbach, Germany, assignor to Huber & Bauer GmbH, Dillingen, Germany

Filed Jan. 19, 1995, Ser. No. 375,486
Claims priority, application Germany, Jan. 29, 1994, 44 02 674.9
Int. Cl.[6] B21D *26/02*
U.S. Cl. 72—61 **13 Claims**



1. An apparatus for molding a tubular blank of a ductile metal with internal high pressure, said apparatus comprising:
a mold having a cavity, a lower part and an upper pan which is removable from said lower part and is mounted at a frame so that it can be raised and lowered; and
a mechanism for holding said upper and lower parts together, said mechanism having a lid mounted on said upper part, a bayonet lock with at least four interlocking devices on a circle enclosing said mold, and a ring mounted on said lid, said ring bringing said interlocking devices into and out of engagement through rotation relative to said mold, and with the introduction of force near the circumference of and into said lower part and said upper part, said mechanism further comprising a hydraulic cylinder acting with a tangential force component between said lid and said ring to rotate said ring.

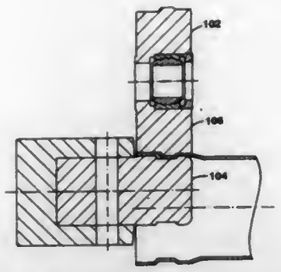
5,570,603

METHOD AND APPARATUS FOR COLD ROLLING PIPING ELEMENT CONNECTIONS HAVING MULTIPLE OUTWARD STEPS

Charles N. Chatterley, Coventry; Michael W. Horgan, West Warwick, and Sandra M. Lippka, Warwick, all of R.I., assignors to Grinnell Corporation, Cranston, R.I.

Continuation-in-part of Ser. No. 114,662, Aug. 31, 1993, Pat. No. 5,450,738. This application Feb. 8, 1995, Ser. No. 385,768
Int. Cl.[6] B21D *41/02*
U.S. Cl. 72—101 **2 Claims**

1. An apparatus for cold roll forming multiple, generally coaxial steps in a circumferential wall of a piping element having a base circumference and a base wall thickness, said apparatus comprising



an outside roller die mounted for rotation about a first axis, and an inside roller die mounted for rotation about a second axis, parallel to said first axis,

at least one of said outside roller die and said inside roller die mounted for pivoting movement about a pivot point on its respective axis,

said outside roller die defining a first outside roller surface of rotation extending axially and centered about said first axis, a second outside roller surface of rotation extending axially and centered about said first axis, and a third outside roller surface of rotation extending axially and centered about said first axis, said first outside roller surface having a mean diameter, said second outside roller surface having a mean diameter, and said third outside roller surface having a mean diameter, the mean diameter of said third outside roller surface being less than the mean diameter of said second outside roller surface and greater than the mean diameter of said first outside roller surface,

said inside roller die defining a first inside roller surface of rotation corresponding and opposed to said first outside roller surface, and extending axially and centered about said second axis, a second inside roller surface of rotation corresponding and opposed to said second outside roller surface and extending axially and centered about said second axis, and a third inside roller surface of rotation corresponding and opposed to said third outside roller surface and extending axially and centered about said second axis, said first inside roller surface having a mean diameter, said second inside roller surface having a mean diameter, and said third inside roller surface having a mean diameter, the mean diameter of said third inside roller surface being greater than the mean diameter of said second inside roller surface and less than the mean diameter of said first inside roller surface,

said first, second and third outside roller surfaces positioned for engagement with an outside surface of the wall of the piping element, and said first, second and third inside roller surfaces positioned for engagement with an inside surface of the wall of the piping element,

said first, second and third outside roller surfaces and together with said first, second and third inside roller surfaces defining a nip, said first axis, said second axis and said nip disposed in a common plane, and

means for driving at least said outside roller die or said inside roller die to rotate about its respective axis, and

means for urging together said outside roller die and said inside roller die, each being mounted for relative movement together and apart, in said plane of said first axis, said second axis and said nip, in a manner to engage the wall of a piping element disposed in said nip therebetween and applying sufficient compressive force for forming by cold rolling of multiple steps by reducing the thickness of the wall of the piping element connection disposed therebetween in said nip,

said first outside roller surface being disposed in substantial axial registration with said first inside roller surface, said second outside roller surface being disposed in substantial axial registration with said second inside roller surface, and said third outside roller surface being disposed in substantial axial registration with said third inside roller surface, and

said second outside roller surface having an axial length and said second inside roller having an axial length, the axial length of said second outside roller surface being less than the axial length of said second inside roller surface to provide a predetermined spacing dependent upon the base wall thickness of the piping element in which multiple steps are to be formed,

whereby, during rotation of said outside roller die and said inside roller die, the wall thickness of the piping element is reduced about a first circumferential region of limited axial extent, a second region of limited axial extent, and a third region of limited axial extent, to increase the circumference of the piping element in the first, second and third circumferential regions by conservation of wall material, the degree of reduction of wall thickness, and the resulting circumference, in the third region being greater than the degree of reduction of wall thickness, and resulting circumference in the second region, and less than the degree of reduction of wall thickness, and resulting circumference in the first region, thereby to form by cold rolling multiple steps in a piping element connection placed in said nip between said outside and inside roller dies, the resulting circumference in the first, second and third regions being greater than the base circumference and the resulting wall thickness in the first, second and third regions being less than the base wall thickness, said bearing allowing equalization of the forces on said first, second and third regions as said outside roller die and said inside roller die are brought together.

5,570,604

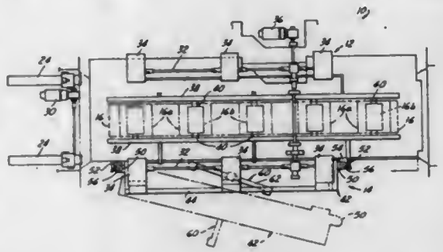
DIE TRANSFER SYSTEM WITH INDEXING CONVEYOR SUPPORTED ON A WHEELED CART

Alfred C. Fisch, Clarkston, Mich., assignor to Rapindex Incorporated, Bloomfield Hills, Mich.

Filed Jan. 3, 1995, Ser. No. 368,434

Int. Cl.[6] B21D *43/05*

U.S. Cl. 72—405.02 **8 Claims**



1. A die transfer system that includes lower die means, upper die means carried for reciprocal movement toward and away from said lower die means to perform at least one operation on a workpiece positioned therebetween, and means for sequentially conveying workpieces between said die means comprising:

a support base,

a conveyor disposed along one lateral side of said lower die means, said conveyor including means for engaging successive workpieces and indexing the workpieces in a longitudinal direction between said upper and lower die means,

a wheeled cart supporting said conveyor on said support base, and

means for selectively releasably fastening said cart to said support base for operation to convey workpieces between said die means and unfastening said cart from said support means such that said cart and conveyor may be moved away from said lower die means for operator access to said lower die means and said conveyor.

5,570,605

TRANSMISSION ASSEMBLY FOR TRACTORS

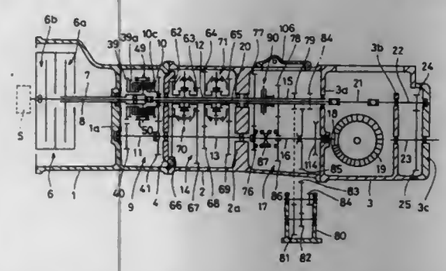
Hiroshi Kitagawara, and Keisaku Hikishima, both of Kobe, Japan, assignors to Kanzaki Kokyukoki Mfg. Co., Ltd., Amagasaki, Japan

Filed Jul. 31, 1995, Ser. No. 509,155

Claims priority, application Japan, Sep. 13, 1994, 6-244658; Sep. 16, 1994, 6-248766

Int. Cl.[6] B60K *17/08;17/06*

U.S. Cl. 74—15.63 **6 Claims**



1. A transmission assembly for tractors which comprises: a front housing (**1**) including an internal partition wall (**1***a*) and an open rear end; a transmission casing (**2**) including an open front end and being fastened to the rear end of said front housing; a bearing support frame (**4**) fixedly disposed within a rear end portion of said front housing; a primary shaft (**7**) extending through said partition wall and being supported by said partition wall; an additional speed change mechanism (**9**) disposed within said front housing at a location behind said partition wall so as to perform a speed change transmission between said primary shaft and a rotatable output member (**10**) which is supported by said bearing support frame, said additional speed change mechanism including a countershaft (**11**) which is supported by said partition wall and by said bearing support frame; and a primary speed change mechanism (**14**) disposed within said transmission casing so as to perform a speed change transmission between a drive shaft (**12**) and a speed change shaft (**13**) which are supported respectively at their front end portions by said bearing support frame, said drive shaft being drivenly connected to said rotatable output member, the improvement characterized in:

that said bearing support frame (**4**) is fixedly supported by said front housing (**1**);

that said drive shaft (**12**) is disposed co-axially with said rotatable output member (**10**) and extends forwardly of said bearing support frame (**4**), said rotatable output member being fixedly mounted on said drive shaft such that said rotatable output member is supported by said bearing support frame through said drive shaft; and

that said drive speed change shaft (**13**) is disposed co-axially with said countershaft (**11**) and extends forwardly of said bearing support frame (**4**), a rear end portion of said countershaft being journaled by said speed change shaft such that the rear end portion of said countershaft is supported by said bearing support frame through said speed change shaft.

5,570,606

REDUCTION GEAR DEVICE

Hideyuki Irie, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1995, Ser. No. 393,500

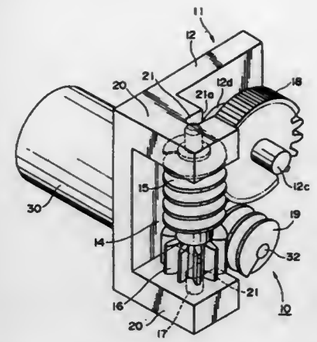
Claims priority, application Japan, Feb. 24, 1994, 6-026701

Int. Cl.[6] F16H *55/22*

U.S. Cl. 74—89.14 **7 Claims**

1. A worm gear reduction unit employing two worms, said reduction unit comprising:

a support member, having a pair of arms, each of said arms having a reference surface formed therein;



a rotatable shaft rotatably supported at either end at said reference surfaces of said pair of arms;

a first worm pinion, fixedly and coaxially mounted to said rotatable shaft between ends of said rotatable shaft;

a first worm, rotatably supported in said support member and engaging said first worm pinion, said first worm holding said rotatable shaft in an operating position, supported at said reference surfaces of said arms, by engaging said first worm pinion;

a second worm, fixedly and coaxially mounted to said rotatable shaft between said ends of said rotatable shaft; and

a second worm pinion, engaging said second worm, and holding said rotatable shaft in an operating position, supported at said reference surfaces, by engaging said second worm.

5,570,607

LEVER APPARATUS HAVING STATIONARY FULCRUM, MOVABLE FORCE POINT AND MOVABLE ACTION POINT, AND MACHINE WHICH INCORPORATES THE SAME

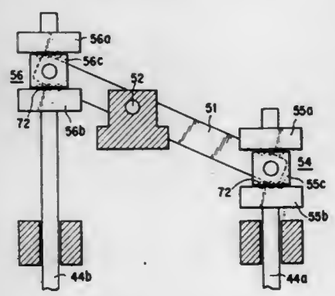
Yasuo Yoshizawa, Yonezawa, Japan, assignor to Yoshiki Industrial Co., Ltd., Yamagata-ken, Japan

PCT No. PCT/JP92/01719, § 371 Date Jul. 27, 1994, § 102(e) Date Jul. 27, 1994, PCT Pub. No. WO94/15117, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 28, 1992, Ser. No. 256,937

Int. Cl.[6] F16H *21/44*

U.S. Cl. 74—110 **4 Claims**



1. A lever apparatus comprising:

a lever member having a fixed fulcrum, a moving force point and an action point;

means for rotatably supporting said fixed fulcrum at a stationary point;

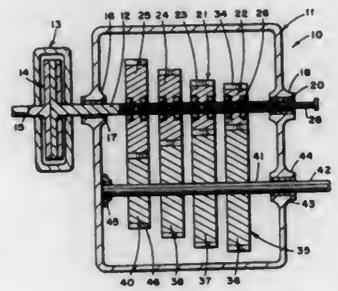
a force point regulator including a roller rotatably mounted at said force point, and a pair of guide plates for rollably supporting the roller therebetween;

first means for linearly moving the pair of guide plates of said force point regulator while guiding the roller in the pair of guide plates along a rotation locus of said force point about said fixed fulcrum;

an action point regulator including a roller rotatably mounted at said action point, and a pair of guide plates for rollably supporting the roller of said action point regulator therebetween; and

second means for linearly moving the pair of guide plates of said action point regulator while guiding the roller of the action point regulator in the guide plates of the action point regulator along a rotation locus of said action point about said fixed fulcrum.

5,570,608
POWER TRANSMISSION
Robert H. Miller, 600 Laurel Way, Casselberry, Fla. 32707
Filed Feb. 6, 1995, Ser. No. 384,648
Int. Cl.[6] F16H *3/08*
U.S. Cl. 74—325 **7 Claims**



1. A multi-speed power transmission for coupling to an engine comprising:

a housing;

an input shaft rotatable mounted in said housing and extending therefrom;

an output shaft rotatable mounted in said housing and extending therefrom;

a clutch coupled to releasably engage said input shaft to thereby couple said input shaft to an engine;

a plurality of first gears freely rotatably on said input shaft;

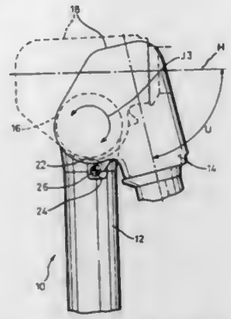
a plurality of second gears mounted to said output shaft for rotation with said output shaft, each said second gear being coupled to one said first gear;

said input shaft having a bore extending thereinto from one end thereof and said input shaft having a plurality of side bore openings;

a plurality of first gear engaging members located between said input shaft and each said first gear for selectively engaging each first gear to said input shaft such that only one first gear is engaged to said input shaft at a time, each said input shaft side bore opening being an angled wedging opening having said first gear engaging members therein for wedging between said input shaft and one said first gear and each said angled wedging opening having a pair of resilient members attached thereto for freeing said first gear engaging members from a wedged position when changing gears; and

an elongated gear changing bar movably mounted on the center axis of said input shaft bore, said elongated gear changing bar having engaging portions therein in each said input shaft opening for engaging one of said plurality of first gear engaging members to said input shaft when said elongated gear changing bar is positioned in a predetermined position to thereby couple said input shaft with one first gear and one second gear to said output shaft.

5,570,609
INDUSTRIAL ROBOT PROVIDED WITH MEANS FOR SETTING REFERENCE POSITIONS FOR RESPECTIVE AXES
Ryo Nihei; Akihiro Terada, both of Fujiyoshida; Kyozi Iwasaki, Hachioji, and Hikaru Yamashiro, Yamanashi, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan
Filed Mar. 8, 1995, Ser. No. 295,790
Claims priority, application Japan, Jan. 13, 1993, 5-004244
Int. Cl.[6] B25J *17/00*
U.S. Cl. 74—490.05 **4 Claims**



1. An industrial robot provided with a reference position setting means for setting reference positions for respective joint axes, the reference position setting means being capable of restoring an original reference position for each joint drive source after the joint drive source has been replaced with a corresponding new joint drive source;

characterized in that said reference position setting means comprises:

a first positioning contact part provided on one of two movable members joined together about each joint axis so as to perform a relative displacement therebetween within a range of displacement, said first positioning contact part being arranged at a position located inside or outside the extremities of said range of displacement of said two movable; members and

a second positioning contact part provided on the other of said two movable members so as to be brought into contact with said first positioning contact part in response to relative displacement of said two movable members about said joint axis thereof.

5,570,610
ADJUSTABLE STEERING COLUMN
William D. Cymbal, Freeland, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jun. 30, 1995, Ser. No. 497,572
Int. Cl.[6] B62D *1/18*
U.S. Cl. 74—493 **4 Claims**

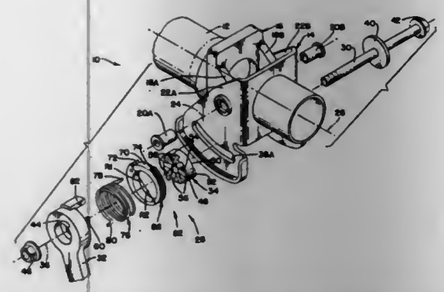
1. A motor vehicle steering column having a mast jacket, a tilt-housing supported on said mast jacket for up and down pivotal movement about a first lateral centerline of said steering column, and a friction clamp operative to squeeze together a surface on said tilt-housing and a surface on said mast jacket to induce friction therebetween in response to pivotal movement of an operating lever about a second lateral centerline of said steering column from an unlocked position to a locked position,

characterized in that said steering column further includes a wedge lock comprising:

an arc-shaped land on said tilt-housing having a center of curvature coinciding with said first lateral centerline,

a locking ring having an eccentric outer edge,

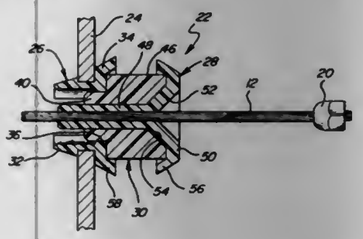
means supporting said locking ring on said stationary mast jacket for rotation about said second lateral centerline,



actuating means biasing said locking ring in a first direction of rotation to a position in which said eccentric outer edge bears against said arc-shaped land in said locked position of said operating lever and from which said locking ring is rotated further in said first direction by said arc-shaped land in response to upward pivotal movement of said tilt-housing to a wedged position against said arc-shaped land preventing further upward pivotal movement of said tilt-housing, and

releasing means operative in response to pivotal in said operating lever from said locked position to said unlocked position to rotate said locking ring in a second direction of rotation opposite to said first direction of rotation to a position in which said eccentric outer edge is remote from said arc-shaped land.

5,570,611
CORE TERMINAL FOR MOTION-TRANSMITTING REMOTE CONTROL ASSEMBLY
Joseph Pospisil, Royal Oak, and David Malone, Lapeer, both of Mich., assignors to Teleflex, Inc., Plymouth Meeting, Pa.
Filed Jul. 12, 1995, Ser. No. 501,705
Int. Cl.[6] F16C *1/10*
U.S. Cl. 74—502.6 **19 Claims**



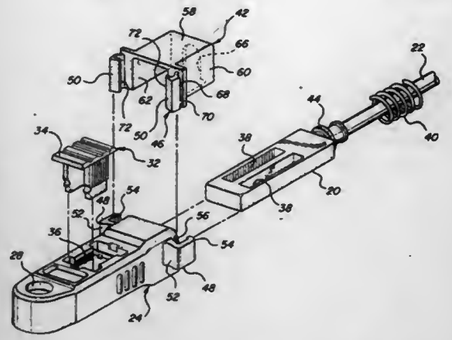
1. A motion-transmitting remote control assembly of the type for transmitting motion along a curved path by a flexible motion-transmitting core element, said assembly comprising:

a conduit (**14**);

a core element (**12**) having first and second ends;

a slug (**20**) secured to said first end of said core element (**12**); and characterized by a terminal for transferring forces between said core element (**12**) and a control member (**24**), said terminal including a connector (**26**) for connection to the control member, an abrasion resistant member (**28**) in sliding engagement with said core element (**12**) and in abutting engagement with said slug (**20**), a vibration isolating member (**30**) supporting said abrasion resistant member (**28**) within said connector (**26**) for reacting axially in compression to transmit forces axially from said slug (**20**) to said abrasion resistant member (**28**) and through said vibration isolating member (**30**) and through said connector (**26**) to the control member (**24**) while dampening vibrations between said core element (**12**) and the control member (**24**).

5,570,612
CORE ADJUST WITH SLIDING REAR SPRING COVER
Michael Reasoner, Ortonville, Mich., assignor to Teleflex, Inc., Plymouth Meeting, Pa.
Filed Nov. 13, 1995, Ser. No. 556,706
Int. Cl.[6] F16C *1/22*
U.S. Cl. 74—502.6 **13 Claims**



1. A motion transmitting remote control assembly (**10**) for transmitting motion along a curved path, said assembly (**10**) comprising: a conduit (**12**) defining a central longitudinal axis (A); a core element (**14**) slidably disposed in said conduit (**12**), said core element (**14**) having at least one end extending axially from said conduit (**12**); a slider (**20**) fixedly disposed on said end of said core element (**14**); a housing (**24**) surrounding said slider (**20**) and axially moveable thereover to adjust the overall length of said core element (**14**) between maximum and minimum operative lengths, said housing (**24**) being independent from said conduit (**12**) and including a backstop (**42**); attachment means (**28**) for attaching said housing (**24**) to a control member (**16**); locking means (**32**) selectively interconnecting said housing (**24**) and said slider (**20**) in an adjusted operative length; a compression spring (**40**) operatively disposed between said backstop (**42**) and said slider (**20**) and at least partially enclosed in said housing (**24**) for urging said core element (**14**) toward said minimum operative length; and characterized by connection means (**46**) for selectively connecting said backstop (**42**) to said housing (**24**).

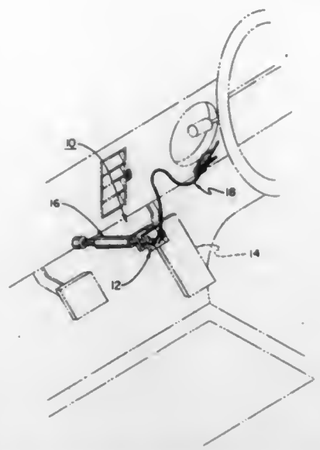
5,570,613
ACCELERATOR PEDAL MECHANICAL GOVERNOR
Gregory A. Spradlin, and Gloria L. Spradlin, both of 8401 Milwaukee St., Ft. Lewis, Wash. 98433
Filed Dec. 8, 1994, Ser. No. 351,683
Int. Cl.[6] G05G *1/14*
U.S. Cl. 74—513 **3 Claims**

1. An accelerator pedal mechanical governor comprising:

a mounting means for securing to an accelerator pedal of a vehicle;

a limiting means extending from the mounting means and positioned for engagement with a floor board of the vehicle to limit depression of the accelerator pedal; and,

an adjustment means coupled to the limiting means for selectively adjusting a length of the limiting means so as to limit a depression of the accelerator pedal to a maximum position, wherein the limiting means comprises a mounting boss coupled to the mounting means; a cylindrical receiver coupled to the mounting boss and oriented so as to extend colinearly relative thereto; an extension rod received within the cylindrical receiver and projecting at least partially exteriorly thereof, wherein the extension rod extends to a predetermined length from the cylindrical receiver to limit traveling of the vehicle accelerator, wherein the adjustment means comprises a cable sheath mounted to an upper end of the mounting boss; a cable extending through the cable sheath, the mounting boss includ-



ing a through-extending aperture permitting extension of the cable into the cylindrical receiver wherein the cable is coupled to the extension rod within the cylindrical receiver; and a spring interposed between an upper end of the cylindrical receiver and a portion of the extension rod, wherein the cable can be retracted from the cylindrical receiver through the cable sheath to position the extension rod relative to the cylindrical receiver, wherein the adjustment means further comprises a clamp coupled to the cable sheath for securing a position of the cable relative thereto, wherein the clamp of the adjustment means comprises a base plate; a clamp plate pivotally mounted to the base plate; a biasing spring biasing the clamp plate towards the base plate so as to capture the cable between the clamp plate and the base plate, the cable sheath being fixedly secured to the base plate such that a clamping of the cable between the clamp plate and the base plate retains the cable relative to the cable sheath.

5,570,614

ADJUSTABLE BICYCLE HANDLEBAR MOUNTING ASSEMBLY

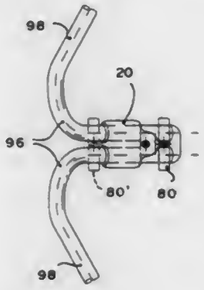
Gianfranco Nastrucci, 21, contrada Meneghetti, Bassano del Grappa 36061, Italy

Filed May 19, 1995, Ser. No. 444,772

Claims priority, application Italy, May 25, 1994, P494A0097; Jan. 13, 1995, PD95A0007

Int. Cl.[6] B62K *21/12*

U.S. Cl. 74—551.1 **12 Claims**



1. A handlebar mounting assembly suitable for mounting handlebars to a bicycle including an upstanding stem tube, comprising:

a unitary stem including a downwardly extending portion for mounting to the stem tube of the bicycle, first and second jaws defining respective first and second parallel bores extending through said stem, the first and second bores each sized to receive one of a pair of tubular members, the first and second bores being adapted to extend in the length direction of the bicycle when said stem is mounted to the stem tube, and means for adjusting the first and second jaws to enable the pair of tubular members to be adjustably positioned with respect to said stem; and

a handlebar mounting element for mounting to the pair of tubular members forwardly of said stem, the handlebar mounting element defining third and fourth parallel bores each sized to receive one of the pair of tubular members, and a third jaw defining a bore orthogonal to the third and fourth bores for receiving a handlebar, said third jaw being adjustable to enable the handlebar to be adjustably positioned relative to the width of the bicycle.

5,570,615

ARRANGEMENT FOR BALANCING VARYING MOMENTS AND VIBRATIONS IN A MOTOR VEHICLE DRIVE TRAIN

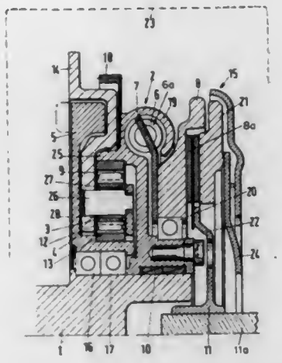
Christian Westphal, Meine, and Andreas Rundkowski, Braunschweig, both of Germany, assignors to Volkswagen AG, Wolfsburg, Germany

Filed May 17, 1995, Ser. No. 442,830

Claims priority, application Germany, May 25, 1994, 44 18 190.6

Int. Cl.[6] F16F *15/10*

U.S. Cl. 74—574 **9 Claims**



1. An arrangement for the balancing of varying moments and vibrations in the drive train of a motor vehicle having an internal combustion engine, comprising a crankshaft, a first flywheel mass connected to the crankshaft, a second flywheel mass connectable through a clutch to a transmission input shaft, a spring-damping means connected between the first and second flywheel masses so that relative angular motion between the first and second flywheel masses is permitted, a third flywheel mass rotatably mounted on the crankshaft, a common housing for the flywheel masses and a planetary gear system including a plurality of planet gears on a planet gear carrier affixed to the common housing, the planet gears engaging gears on the first and third flywheel masses, respectively, so that the third fly. wheel mass is driven in a rotational direction opposite to the direction of rotation of the first flywheel mass so as to balance varying rotational moments.

5,570,616

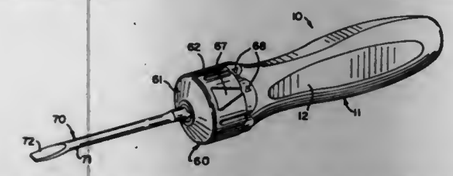
RATCHETING SCREWDRIVER WITH REVERSING CAP HAVING PROJECTING PIN

Christopher D. Thompson, Milwaukee, and Joseph R. Hoepfl, Greenfield, both of Wis., assignors to Snap- on Technologies, Inc., Crystal Lake, Ill.

Continuation of Ser. No. 388,993, Feb. 15, 1993, abandoned, which is a continuation of Ser. No. 160,151, Dec. 2, 1993, Pat. No. 5,437,212. This application Oct. 20, 1995, Ser. No. 546,511

Int. Cl.[6] B25B *13/46*

U.S. Cl. 81—63.1 **10 Claims**



1. A ratcheting driver handle for a driver having a shank, said handle comprising: an elongated body having an axis and an axial recess in one end thereof, a ratchet mechanism disposed in said recess and including a gear and a pawl assembly including at least one pawl engageable with said gear, said ratchet mechanism having a bore for receiving therein the shank of the associated driver, mounting means for said pawl assembly accommodating movement of said at least one pawl between first and second conditions, said at least one pawl including a first tooth portion engaging said gear in the first condition of said pawl assembly so that said body rotates said gear with said body when the body is rotated in one direction and said body ratchets with respect to said gear when said body is rotated in the opposite direction, said pawl assembly including a second tooth portion engaging said gear in the second condition of said pawl assembly so that said body rotates said gear with said body when said body is rotated in said opposite direction and said body ratchets with respect to said gear when said body is rotated in said one direction, a selector member coupled to said one end of said body and accessible by a user for manual movement with respect to said one end between first and second positions, said positions of said selector member corresponding to said first and second conditions of said pawl assembly, an actuator pin on said selector member extending parallel to said axis and positioned and dimensioned for direct engagement with said at least one pawl for movement of said at least one pawl between its first and second conditions in response to movement of said selector member between its first and second positions, and bias mechanism resiliently retaining said selector member in each of said first and second positions.

5,570,617

EXTENDIBLE EXTENSION HANDLE FOR WRENCHES, RATCHETS, TIRE IRON AND SUCH

John A. Love, 1032 Prospect Rd., Mableton, Ga. 30059

Filed Jun. 22, 1995, Ser. No. 493,716

Int. Cl.[6] B25G *1/04*

U.S. Cl. 81—177.2 **2 Claims**

1. An extension for standard wrenches comprising

an outer handle;

an inner handle having a first slot in a first side thereof of a size to receive a standard wrench handle portion and a second slot of a larger size to receive a head of a standard wrench, a third slot is a second side of said inner handle opposite said first side of a size to receive a head of said standard wrench;

a first bushing having two slots, both of the same size as said first and second slots of said inner handle, secured to said inner handle;

a stabilizing assembly rotatably mounted on said inner handle adjacent to said first bushing and having a slot of the same size as said first slot of said inner bandle, means to lock said stabilizing assembly to said handle portion of a standard wrench;



a second bushing having one slot, of the same size as said first slot of said inner handle, secured to said inner handle;

said stabilizing assembly mounted between said first and second bushing in abutting relationship to allow for rotation of said stabilizing assembly on said inner handle.

5,570,618

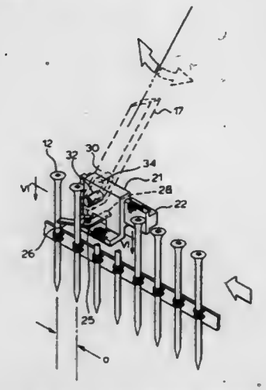
FINGER RELEASE MECHANISM FOR COLLATED STRIP SCREWDRIVER

G. Lyle Habermehl, 7528 Hickory Hill Ct., Whites Creek, Tenn. 37189, and Paul T. Scherer, 4145 Bridgemont La., Lexington, Ky. 40514

Filed Oct. 31, 1994, Ser. No. 331,729

Int. Cl.[6] B25B *23/04*

U.S. Cl. 81—434 **16 Claims**



1. An apparatus for sequentially driving fasteners from a fastener strip comprising a plurality of fasteners secured in a row in a holding strip, the apparatus comprising:

a slide body having a lateral slot and an intersecting vertical bore, the lateral slot having a slot axis and a uniform transverse cross-section configured to slidingly receive said fastener strip;

an elongate driver shaft having a shaft axis of rotation, said shaft including fastener driving bit means for engaging and driving a lead fastener in succession into said work piece, said shaft being journalled and longitudinally slidably housed in said bore between an engaged position and a withdrawn position;

advance means mounted to said body for incrementally forwardly advancing the fasteners of said fastener strip within the lateral slot in succession and for aligning the lead fastener coaxially with said bore,

said advance means comprising:

an elongate guide connected to said slide body having a guide axis disposed parallel to the slot axis;

a shuttle slidably engaged with said guide for reciprocal sliding along the guide parallel the longitudinal axis of the lateral slot between an advanced position and a retracted position;

the guide and shuttle have mating cross sections normal the guide axis;

a pawl pivotably supported on said shuttle, the pawl having a strip pusher arm at a forward end thereof;

a pawl biasing means engaging the pawl and shuttle for urging the pusber arm into engagement with the fastener strip; and

pawl release means engaging the pawl for manually disengaging the pawl from the fastener strip, thereby permitting the fastener strip to be removed from the lateral slot.

5,570,619

SLACK ADJUSTER ARM WRENCH

Leroy Goswick, P.O. Box 856, Racine, Mo. 64858

Filed Aug. 16, 1995, Ser. No. 515,657

Int. Cl.[6] B25B *11/00*

U.S. Cl. 81—484 **8 Claims**



1. A tool for adjusting the slack adjuster arm of an air brake comprising:

an elongated lever adapted for grasping by a user presenting first and second ends;

a first engagement member connected to said lever and said first end and extending substantially normal thereto, said first engagement member presenting an engagement portion remote from said lever;

a second engagement member connected to said lever in spaced relationship to said first engagement member and extending substantially normal to said lever and substantially parallel to said first engagement member, said second engagement member presenting an abutment portion remote from said lever; and

a plate interconnecting said first engagement member and said second engagement member inboard of said engagement portion and said abutment portion.

5,570,620

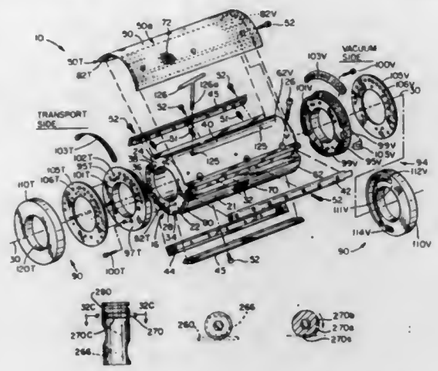
PANEL CUTTING APPARATUS

Frank Okonski, Harwood Heights, and Edward J. Porento, Sr., Des Plaines, both of Ill., assignors to Best Cutting Die Company, Skokie, Ill.

Continuation-in-part of Ser. No. 172,033, Dec. 22, 1993, abandoned. This application Jan. 25, 1994, Ser. No. 186,439

Int. Cl.[6] B31B *19/14;21/14*

U.S. Cl. 83—152 **6 Claims**



1. A rotary holder assembly adapted to carry a cutting die having edges and opposing sides for cutting a pattern from at least one material blank, the holder assembly comprising:

a cylindrical die holder adapted to be mounted on a drive shaft for rotating about an axis, the die holder having an outer surface and a plurality of orifices disposed on the outer surface wherein the orifices are in communication with a source of vacuum, at a first time, or air, at a second time, thereby selectively supplying the vacuum or the air to the surface;

the die holder having at least one groove for receiving a holding key which cooperate to clamp one of the edges of the cutting die therebetween for securing the cutting die to the holder; and

the holding key having an outer surface, a longitudinally directed feed tube, and a plurality of orifices disposed on the key outer surface and communicating with the feed tube for supplying the vacuum or the air to the surface of the key.

5. A rotary holder assembly adapted to carry a cutting die for cutting a pattern from a material blank, the assembly comprising:

a cylindrical die holder for rotating about an axis, the die holder having an outer surface and a plurality of orifices disposed on the outer surface, the plurality of orifices supplying to the surface vacuum at a first time or air at a second time, the orifices being in radial communication with a corresponding longitudinally directed feed tube; and

a valve assembly for controlling the flow of air through each of the feed tubes comprising a valve hole in radial communication with said corresponding feed tube and adapted for receiving a valve member, the valve member being rotatable within the hole between open and closed positions wherein the valve member, having a cam surface that engages with a pirl in the valve hole, permits flow through the feed tube in the open position and prevents flow through the feed tube in the closed position.

5,570,621

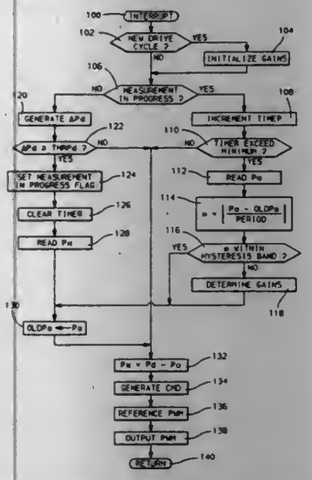
ADAPTIVE CONTROL FOR HYDRAULIC SYSTEMS

Daniel F. Kabasin, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 7, 1994, Ser. No. 319,701

Int. Cl.[6] F15B *9/09*

U.S. Cl. 91—363 R **5 Claims**



1. A control method for controlling automotive hydraulic actuator position by controlling hydraulic pressure applied to the actuator in accord with a commanded pressure generated by a hydraulic control function, comprising the steps of:

measuring actuator transient response, by (a) sensing actuator position, and (b) generating a value representing time rate of change in actuator position as an indication of actuator transient response;

comparing the measured actuator transient response to a preferred transient response; and

adapting the hydraulic control function when the measured actuator response deviates from the preferred transient response to drive the measured response toward the preferred transient response.

5,570,622

POWER BOOSTER WITH GUIDED POWER PISTON

Jeffrey A. Heinrichs; Craig A. Osterday, both of Dayton; Timothy A. Haerr, Enon; Neal B. Rosenblum, and Joseph S. Kramer, both of Kettering, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 8, 1995, Ser. No. 486,439

Int. Cl.[6] F15B *9/10*

U.S. Cl. 91—376 R **5 Claims**

1. A power booster and master cylinder assembly comprising:

a housing having an internal cavity and an opening through the housing to the internal cavity;

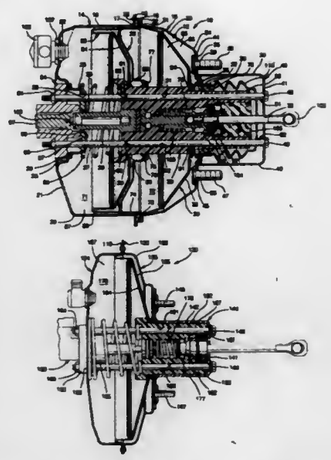
a diaphragm having an outer periphery sealingly engaging the housing and having an inner annular seal, the diaphragm separating the internal cavity into at least two control volumes;

a one piece power piston extending through and engaging the inner annular seal and including an axial bore carrying a control valve within the power piston;

a first guide rod extending through the power piston outside the axial bore;

a second guide rod extending through the power piston outside the axial bore; and

wherein the master cylinder is attached to the power booster by the first and second guide rods with an extension of the master cylinder extending through the opening of the housing into the internal chamber between the guide rods.



5,570,623

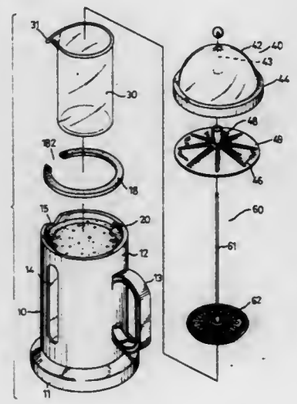
HEAT-RETAINING COFFEE POT

Henry Lin, 2nd Fl., No. 86, Sec. 1, Anho Rd., Taipei, Taiwan

Filed Dec. 7, 1995, Ser. No. 568,932

Int. Cl.[6] A47J *31/38*

U.S. Cl. 99—285 **11 Claims**



1. A heat retaining pot comprising:

a housing including an open end, a closed end, a peripheral sidewall extending therebetween, the peripheral sidewall including an inner face and an outer face, optical means for observing a beverage level inside the coffee pot and grasping means;

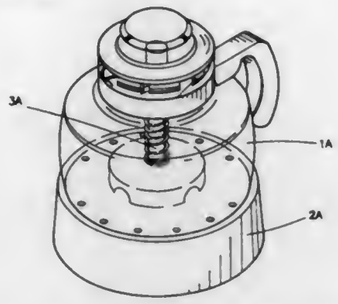
a heat retention means sized to be received in the housing;

a container sized to be received in the heat retention means;

a lid unit sized to engage over the open end of the housing; and

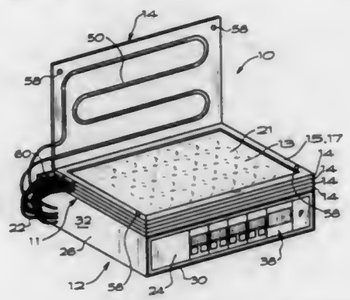
a filter unit being connected to the lid unit and extending into the container.

5,570,624
STRUCTURE OF PERCOLATOR
Kwei-Tang Chang, No. 14, Lane 54, Luong Chung St., Panchiao City, Taipei Hsien, Taiwan
Filed Feb. 7, 1996, Ser. No. 597,867
Int. Cl.[6] A47J 31/00;31/10
U.S. Cl. 99—285 2 Claims



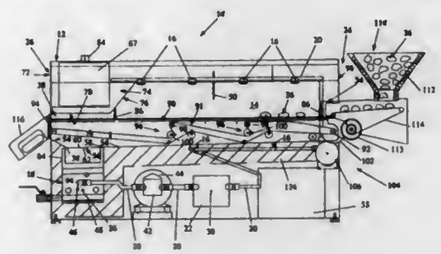
1. A percolator comprising a base, an electric heating circuit mounted in said base, a pot having a top opening, a spout extending from said top opening, and an upright guide tube, a filter mounted in the top opening of said pot and coupled to said upright guide tube, a handle fixedly secured to said pot, and a lid for covering on the the top opening of said pot over said filter, wherein said pot has a circular bottom hole, a heat-conductive cap fastened to said circular bottom hole to hold said guide tube in said pot, and an annular bottom flange around said circular bottom hole; said base comprises a circular hot plate at a top side thereof disposed in contact with said heat-conductive cap, an annular groove disposed around said circular bot plate and forced into engagement with the annular bottom flange of said pot, a wire groove around the periphery, and a plug holder at the periphery; said handle has two pivot holes aligned at a top side thereof; said lid has a pivot pivotably and detachably connected to the pivot holes of said handle.

5,570,625
MULTI-DECK CLAMSHELL COOKING AND STAGING GRILL WITH HERMETICALLY SEALED PLASTIC FOOD COOKING AND STAGING POUCH FOR PATHOGENIC RISK MANAGEMENT
Benno E. Liebermann, 2805 Lime Kiln La., Louisville, Ky. 40222
Filed Aug. 25, 1995, Ser. No. 519,831
Int. Cl.[6] A47J 37/00
U.S. Cl. 99—330 4 Claims



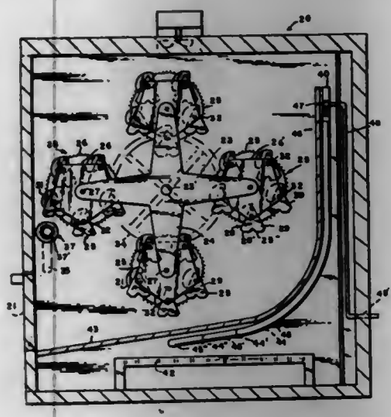
1. A clamshell cook and staging grill for transferring heat to food articles, comprising:
a housing frame;
a deck comprising at least three stacked plates defining a first plate, a second plate, and a third plate spaced apart and in alignment, each of said plates comprising a first sheet and a second sheet of heat transfer material bonded together having fluid heat transfer passages thereinbetween for recirculation of a heat transfer fluid, said plates being mounted to said housing;
means for connectively mounting said plates in hinged alignment with one another and to said housing;
a reservoir within said housing for containing a heat transfer fluid;
means for fluid-connecting said plates and said reservoir;
means for heating said heat transfer fluid to a selected temperature in said reservoir;
means for controlling the temperature of said heat transfer fluid within said reservoir at ±1° F.;
means for recirculating said heat transfer fluid through said plates in fluid-connection with said reservoir and each of said heat transfer plates;
temperature sensing means for determining the temperature of at least one of the food articles supported on said plate; and
at least one hermetically sealed plastic food cooking and staging pouch for containing said food article.

5,570,626
COOKING APPARATUS
Peter M. Vos, Malaga, Australia, assignor to Vos Industries Ltd., Australia
PCT No. PCT/AU93/00240, § 371 Date Dec. 27, 1994, § 102(e) Date Dec. 27, 1994, PCT Pub. No. WO93/24040, PCT Pub. Date Dec. 9, 1993
PCT Filed May 25, 1993, Ser. No. 341,578
Claims priority, application Australia, May 26, 1992, PL2597; May 26, 1992, PL2598; May 26, 1992, PL2599
Int. Cl.[6] A47J 37/00;37/12
U.S. Cl. 99—404 17 Claims



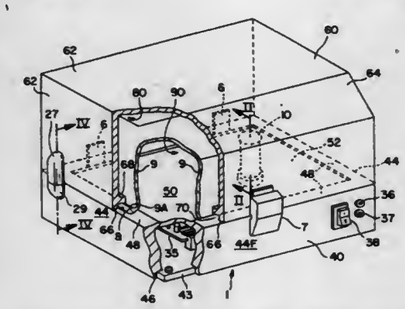
1. A spray cooking apparatus comprising:
a housing containing a cooking chamber into which cooking medium is sprayable from spray means to cook food items present in said cooking chamber;
buffer tank means for storage of cooking medium and receipt of excess cooking medium from said cooking chamber; and
circulation means to circulate cooking medium from said buffer tank means to said spray means, wherein at least one flow heater means is arranged in said circulation means to heat cooking medium flowing in said circulation means externally of said buffer tank means, whereby said cooking medium can be heated by said heater means to a predetermined extent without being overheated, after it leaves said buffer tank means and while flowing thence towards said spray means by way of said circulation means, and said heater means being sufficient of itself to maintain cooking temperature once normal operating conditions have been established.

5,570,627
OVEN APPARATUS
Richard C. Dahlstrom, R.R. #2, Fargo, N. Dak. 58102, and Clayton A. Melrose, 405 S. 11th, Oakes, N. Dak. 58474
Continuation of Ser. No. 169,428, Dec. 17, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 481,930
Int. Cl.[6] A47J 37/04
U.S. Cl. 99—427 5 Claims



1. A corn cob apparatus comprising a housing, a main wheel rotatably mounted to said housing to rotate about a horizontal axis, said main wheel having a center rotational support with a plurality of radial arms extending radially outward from the center rotational support, said main wheel having a center shaft rotationally mounted to said housing to provide said rotational mounting for said main wheel; a plurality of peripheral wheels, said main wheel radial arms having outer ends with the radius of the radial arms at their outer ends substantially larger than the radius of each peripheral wheel, each peripheral wheel being rotatably mounted to the outer ends of each radial arm, each peripheral wheel having toothed outer circumferential edges, a plurality of baskets each having an upward extending support plate with the support plates pivotally mounted to the peripheral wheels at intervals about the periphery of each peripheral wheel with the baskets depending on the support plates below their pivotal mounting to the peripheral wheel, means to rotate the main wheel to rotate its radial arms about the axis of the center shaft, gear drive means and trip means mounted to said housing, means to stop the main wheel with a selected peripheral wheel aligned with the drive means and trip means; each of said baskets having cam means, said gear means acting to rotate said selected aligned peripheral wheel with said trip means acting to engage the cam means of the baskets of the selected aligned peripheral wheel to pivot said baskets to one side for emptying the baskets after cooking corn corns placed in the baskets; floor means in said housing extending along the back of and bottom of the main wheel and the peripheral wheels thereon to receive corn cobs emptied from the baskets by tripping and allowing them to travel by gravity from the back and bottom of the floor means to the front of the housing; means to heat the housing.

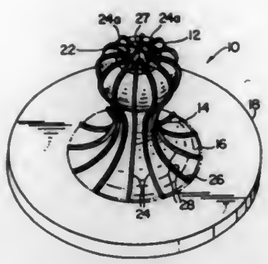
5,570,628
HERMETICALLY SEALED FRESH-KEEPING CONTAINER
Waldemar Kiener, Lauchheim, and Herbert Schmidt, Westhausen-Lippach, both of Germany, assignors to L+H Lemiteg Lebensmittel- und Freizeittechnik GMBH, Neuhausen, Germany
PCT No. PCT/EP93/00557, § 371 Date Nov. 25, 1994, § 102(e) Date Nov. 25, 1994, PCT Pub. No. WO93/18696, PCT Pub. Date Sep. 30, 1993
PCT Filed Mar. 11, 1993, Ser. No. 302,908
Claims priority, application Germany, Mar. 18, 1992, 42 08 656.6
Int. Cl.[6] A47J 27/00; B65D 51/16;81/20; B65B 31/04
U.S. Cl. 99—472 17 Claims



1. A hermetically sealable fresh-keeping container for organic goods such as foodstuffs, saio container comprising:
a bottom part that includes at least one wall, and a support surface attached to said wall for holding the goods that are to be kept fresh, said support surface including a hole therethrough;
a top part dimensionally similar to said lower part and removably positioned on top of the bottom part whereby said container is openable and closable, thereby forming a useable space above the support surface, said space containing air when said upper part is initially positioned on top of said bottom part, said walls of said bottom part having a top edge surface, and said walls of said top part having a bottom edge surface;
an air pump system for removing the air within the useable space; and
an airproof foil delimited by the useable space, said foil having an edge which is hermetically and releasably connected to said wall of said bottom part, said support wall including a suction opening therethrough, said opening communicating between said air pump apparatus and said useable space.

5,570,629
JUICE EXTRACTION DEVICE
Robin W. Ruck, Southbury, Conn., assignor to Dynamics Corporation of America, New Hartford, Conn.
Filed Aug. 23, 1995, Ser. No. 518,269
Int. Cl.[6] A23N 1/00; A47J 19/02;43/00
U.S. Cl. 99—506 17 Claims

1. A juice extraction device for rupturing the exposed cellular structure of a section of fruit such as an orange, grapefruit, or lemon on relative rotation between the device and the section of fruit in pressure engagement therewith; the device comprising an upstanding reamer substantially uniform about a vertical axis over and in pressure engagement with which a section of fruit may be placed face down for rotation relative thereto, the reamer having a generally partially-spherical and bulbous configuration at an upper and free end portion which is exposed upwardly with the generally spherical surface extending downwardly and inwardly substantially beyond an imaginary diametrical and horizontal plane, a horizontal



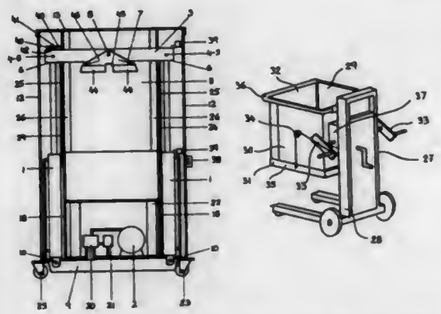
cross section of downwardly diminishing diameter thus being provided beneath the plane, and said reamer also having a series of circumaxially spaced cutting elements which engage and tend to rupture the exposed cellular structure and thereby extract juice from a section of fruit placed thereover in pressure engagement and in relative rotation with respect thereto.

5,570,630

METHOD FOR COMPACTING AND BALING REFUSE AND WASTE MATERIAL

Joseph Molitorisz, 15326 SE. 43rd Pl., Bellevue, Wash. 98006, and Reuben J. Smith, 23004 Highway 9, Woodinville, Wash. 98072

Filed Dec. 8, 1995, Ser. No. 569,933
Int. Cl.[6] B30B *9/30*
U.S. Cl. 100—3 **1 Claim**



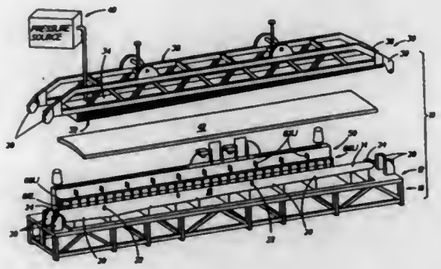
1. Method for compacting and baling waste or refuse material, including;
(a) storing the uncompacted waste or refuse material in the container of a container-lift assembly inserted into the cavity of the baler-compactor and inside the enclosed confinement of the baler-compactor,
(b) periodic compacting of the stored refuse or waste material into the container of the container-lift assembly,
(c) refilling the enclosed confinement of the baler-compactor with uncompacted refuse or waste material after each periodic compacting until the desired size and density of the bale of the compacted material is achieved,
(d) tying the compacted waste or refuse material with suitable tying material into bales or bundles,
(e) transporting the compacted and tied bales to a temporary storage site in the container of the container-lift assembly of the baler-compactor,
(f) releasing the baled waste or refuse material from the container of the container-lift assembly into the temporary storage site,
(g) applying adjustable and automatically controlled angularity for the platen of the compactor during its downward motion to exert lateral forces on the material under compaction for improved distribution of the waste or refuse material inside the container of the container-lift assembly,
(h) applying adjustable and automatically controlled angularity for the platen of the compactor to exert increased forces on the portion of the waste or refuse material which require larger forces for substantially uniform compacting.

5,570,631

APPARATUS FOR FABRICATING A HELICOPTER MAIN ROTOR BLADE

Kevin P. Leahy, 214 Long View Terr., Naugatuck, Conn. 06770, and Corey D. Jones, 10 Farmwood Dr., Prospect, Conn. 06712

Division of Ser. No. 445,627, May 22, 1995, Pat. No. 5,528,828, which is a division of Ser. No. 275,556, Jul. 15, 1994, Pat. No. 5,430,937. This application Dec. 4, 1995, Ser. No. 566,758
Int. Cl.[6] B30B *5/02*
U.S. Cl. 100—211 **2 Claims**



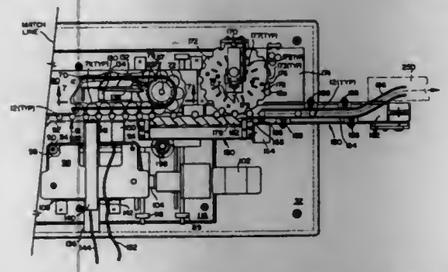
1. A compaction fixture for assembling and compacting a blade subassembly that includes an upper composite skin, a lower composite skin, a honeycomb core, and a spar assembly, comprising:
a lower assembly including
a support structure,
a contoured upper airfoil nest mounted in combination with said support structure, said contoured upper airfoil nest having an OML surface that defines the airfoil surface of the upper composite skin, a plurality of tooling pins for locating the upper composite skin in aligned combination with said contoured upper airfoil nest, and a plurality of pusher pins for locating the spar assembly in chordwise alignment in said contoured upper airfoil nest, and
a spar stanchion mounted in combination with said support structure at the inboard and outboard ends of said contoured upper airfoil nest, respectively, for locating the spar assembly in spanwise alignment in said contoured upper airfoil nest;
an upper assembly including
a structural support truss,
a contoured backplate affixed to said structural support truss, and
a pressure bag fastened in sealed combination with said contoured backplate, said pressure bag having spanwise and chordwise dimensions corresponding to the blade subassembly;
means for locking said upper assembly in combination with said lower assembly wherein compaction of the blade subassembly assembled in said lower assembly may be effectuated; and
means for pressurizing said pressure bag with said upper and lower assemblies in locked combination to compact the blade subassembly assembled in said lower assembly.

5,570,632

APPARATUS AND METHOD FOR APPLYING AND VERIFYING MARKS ON THE PERIPHERY OF GENERALLY CYLINDRICALLY-SHAPED OBJECTS

Christopher Cumens, West Chester; Charles Papciak; Eric E. Shoup, both of Exton; James W. Sloan, Spring City, and Edward F. Vander Bush, Exton, all of Pa., assignors to The West Company, Incorporated, Lionville, Pa.

Filed Mar. 23, 1995, Ser. No. 409,470
Int. Cl.[6] B41F *17/18*
U.S. Cl. 101—35 **20 Claims**



1. An apparatus for applying and verifying a mark on the periphery of generally cylindrically-shaped objects traveling on a path, the apparatus comprising:
at least a first conveyor mounted for movement on a first side of the path, the first conveyor being located to engage the objects to translate the objects at a known translational velocity along the path;
a transport assembly mounted for cyclic movement back and forth along a transport assembly path parallel to the path of the objects at least part of the cyclic movement being approximately at the known translational velocity of the objects;
a mark applicator mounted on the transport assembly and is located in a position to apply a machine readable mark on each object as each object is translated by the first conveyor;
a sensor mounted on the transport assembly and being located in a position to read the applied mark on each previously marked object as the object is translated by the first conveyor, and to generate a signal representative of the read mark.

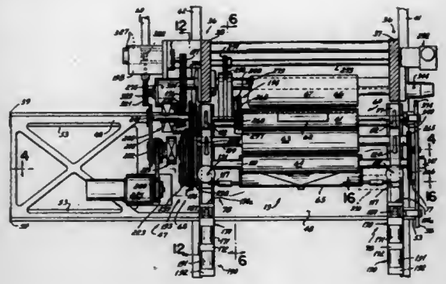
5,570,633

AUTOMATED PRINTING PRESS WITH REINSERTION REGISTRATION CONTROL

John E. Schultz, and John M. Schultz, both of Loveland, Ohio, assignors to COMCO Machinery, Inc., Milford, Ohio

Continuation of Ser. No. 102,093, Aug. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 70,078, Jun. 1, 1993, abandoned. This application Mar. 27, 1995, Ser. No. 410,920
Int. Cl.[6] B41F *5/06;13/40*
U.S. Cl. 101—182 **55 Claims**

1. A flexographic printing press having a plurality of printing stations wherein each of the printing stations comprises:
a frame;
an impression roller rotatably mounted to the frame;
a drive gear mounted to said impression roller;
a print carriage having a print roller rotatably mounted thereon, the print carriage being movably mounted to the frame to advance the print roller in a direction toward the impression roller and to retract the print roller in a direction away from the impression roller;
a drive gear mounted to said print roller;
a gear train driveably interconnecting the impression roller and the print roller and including a swing gear assembly having a housing and first and second gears mounted for rotation to the housing and in driving engagement with one another, wherein said housing is pivotal about the first gear to accommodate relative movement of said print roller and impression roller toward and away from one another, said swing gear assembly including an output gear having teeth engageable with one of said drive gears;
a pivoting and biasing mechanism coupled to said housing and operative to pivot said housing such that said output gear maintains biased engagement with said one of said drive gears; and
a first bearer ring rotatable with and separate from said output gear and a second bearer ring rotatable with and separate from said one of said drive gears, said first and second bearer rings engaging one another during biased engagement of said output gear and said one of said drive gears such that said output gear is maintained a fixed distance from said one of said drive gears.

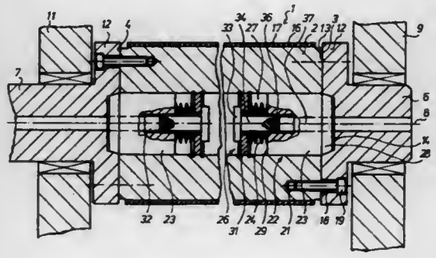


5,570,634

CYLINDER FOR A ROTARY PRESS

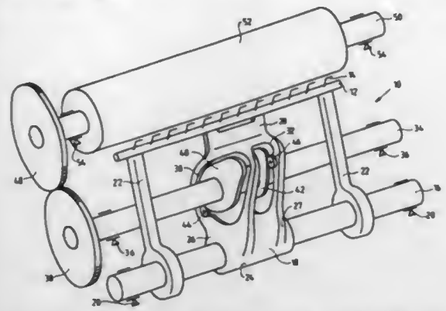
Wilfried Harter, Worms, Germany, assignor to Koenig & Bauer-Albert Aktiengesellschaft, Wurzburg, Germany

Filed Dec. 22, 1995, Ser. No. 577,343
Claims priority, application Germany, Dec. 29, 1994, 44 47 124.6
Int. Cl.[6] B41F *13/10*
U.S. Cl. 101—375 **7 Claims**



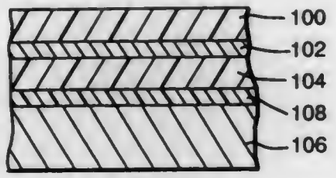
1. A cylinder for a rotary printing press comprising:
a cylinder body having a central axially extending bore;
first and second spaced cylinder journals having cylinder flanges, each cylinder flange having an inner face with a cavity;
first and second cylinder trunnions carried in said cylinder bore, said cylinder trunnions each having an outer end engageable with a corresponding one of said cylinder flange cavities; and
means for shifting each of said first and second cylinder trunnions in said cylinder central axially extending bore into and out of engagement with said cylinder flange cavities.

5,570,635
PREGRIPPER OF SHEET-FED PRINTING PRESS
Lothar Stadler, Eppelheim, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany
Filed Aug. 14, 1995, Ser. No. 514,773
Claims priority, application Germany, Aug. 12, 1994, 44 28 592.2
Int. Cl.[6] B41F 21/04
U.S. Cl. 101—409 15 Claims



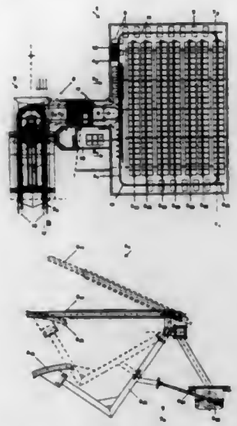
1. Pregripper of a sheet-fed printing press, comprising a drive unit for pivotally driving a pregripper bar secured to a pregripper support device, said drive unit having main and auxiliary cam elements disposed on a drive shaft so as to be fixed against rotation relative thereto, and cam follower members cooperatively engaging with said cam elements so as to produce a movement of said pregripper bar, said pregripper support device engaging said pregripper bar approximately centrally for introducing a force to produce the pivoting movement.

5,570,636
LASER-IMAGEABLE LITHOGRAPHIC PRINTING MEMBERS WITH DIMENSIONALLY STABLE BASE SUPPORTS
Thomas E. Lewis, E. Hampstead, N.H., assignor to Presstek, Inc., Hudson, N.H.
Filed May 4, 1995, Ser. No. 433,994
Int. Cl.[6] B41N 1/08
U.S. Cl. 101—454 8 Claims



1. A laminated lithographic printing member directly imageable by laser discharge, the member comprising:
a. a topmost first layer;
b. a second layer underlying the first layer and formed of a material subject to ablative absorption of imaging radiation whereas the first layer is not;
c. a third layer, substantially transparent to imaging radiation, underlying the second layer, the first and third layers exhibiting different affinities for at least one printing liquid selected from the group consisting of ink and an adhesive fluid for ink; and
d. a support for reflecting imaging radiation and to which the third layer is laminated, the support comprising a material that reflects imaging radiation.

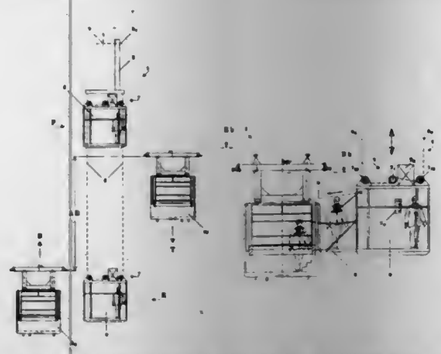
5,570,637
GARAGE FOR A CONTINUOUS CABLE RAILWAY
Ruedi Wagner, Rotkreuz, Switzerland, assignor to Garaventa Holding AG, Goldau, Switzerland
Filed Oct. 18, 1995, Ser. No. 544,475
Claims priority, application Switzerland, Nov. 8, 1994, 3329/94
Int. Cl.[6] B61B 1/00
U.S. Cl. 104—27 17 Claims



1. A garage for vehicles of a continuous cable railway system, comprising:
at least one side track;
a garage loading feeder track which loads the vehicles onto the at least one side track from the continuous cable railway system;
a garage unloading feeder track which unloads the vehicles from the at least one side track onto the continuous cable railway system; and
a junction comprising a first switch unit having a first portion which directs said vehicles to continue traveling on said garage loading feeder track and a second switch unit having a second portion which directs said vehicles to continue traveling on said garage unloading feeder track, said first switch unit further having a third portion which couples with said garage loading feeder track to direct said vehicles traveling on said garage loading feeder track to travel onto said garage unloading feeder track, and said second switch unit further having a fourth portion which couples with said garage unloading feeder track to direct said vehicles traveling on said garage unloading feeder track to travel onto said garage loading feeder track.

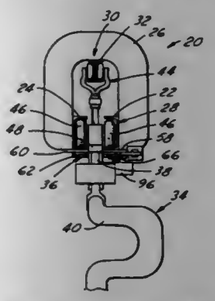
5,570,638
RESCUE VEHICLE FOR A CABLE RAILWAY
Ernst Egli, Hittnau, and Maurice Andrey, Schwyz, both of Switzerland, assignors to Garaventa Holding AG, Goldau, Switzerland
Filed Sep. 13, 1995, Ser. No. 527,455
Claims priority, application Switzerland, Nov. 2, 1994, 3271/94
Int. Cl.[6] B61B 12/00
U.S. Cl. 104—173.1 11 Claims

8. In a cable car system for conveying passengers between two spaced points, including at least one support cable extending between the points, a passenger car suspended from the cable, and drive means for moving the car thereon, a rescue apparatus, comprising:
a) a rescue cable suspended above the support cable and laterally thereof,



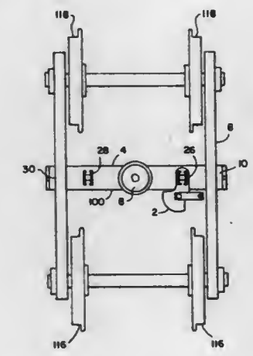
b) suspension means slidably and driveably depending from said rescue cable,
c) a discrete rescue cab moveably coupled to and depending from the suspension means, and
d) traction means controllable from the rescue cab for lowering the entire cab from a transport whereat said cab vertically abuts the suspension means to a rescue position horizontally adjacent a stranded passenger car for the direct transfer of passengers therein, and for raising said cab back up to the transport position,
e) wherein the rescue cab is coupled to the suspension means by at least three triangulated hoisting cables, and the traction means includes winch means for synchronously winding in and paying out said triangulated hoisting cables.

5,570,639
ANTI-RUNAWAY APPARATUS AND METHOD FOR A POWER-AND-FREE CONVEYOR SYSTEM
Richard G. Hooper, Southfield; Robert E. Mahu, Eastpointe, and Thomas A. Moroney, Troy, all of Mich., assignors to FKI Industries Inc., Fairfield, Conn.
Filed Oct. 11, 1995, Ser. No. 540,742
Int. Cl.[6] B61K 7/00; B61B 10/00
U.S. Cl. 104—251 14 Claims



1. In a power-and-free conveyor system that includes a tree conveyor track, at least one trolley carried for free motion along said free conveyor track, said trolley including a trolley body and rollers on said body for supporting and guiding engagement with said track, and a power conveyor spaced vertically from said free conveyor track and selectively engageable with trolleys on said free conveyor track for propelling said trolleys along said track, apparatus for preventing runaway of trolleys comprising:
a bar extending lengthwise of said track and means mounting said bar on a side of said track remote from said power conveyor for motion lengthwise of said track at an acute angle to the direction of travel of said trolley on said track,
means for releasably biasing said bar laterally outwardly of said track and in a direction lengthwise of said track opposed to the direction of said trolley travel on said track, and
means responsive to velocity of travel of said trolley on said track for moving said bar in the direction of travel of said trolley and at said acute angle laterally into a position for frictional engagement with said trolley body on said track, such that momentum of said trolley cooperates with frictional engagement of said bar with said trolley body to wedge said bar against said trolley and arrest motion of said trolley on said track.

5,570,640
YAW DAMPER FOR RAILWAY CARS
Donald F. Kroesch, Minooka, Ill., assignor to Railway & Industrial Services, Inc., Joliet, Ill.
Filed Dec. 27, 1994, Ser. No. 364,353
Int. Cl.[6] B61F 5/24
U.S. Cl. 105—199.1 9 Claims



1. A yaw damper system having a truck assembly in combination with a truck bolster on said truck assembly and a car body bolster on a railway car to absorb and lessen shock forces otherwise transmitted from said truck assembly, wherein said car body bolster of said railway car extends laterally thereof, said truck bolster of said truck assembly extends laterally thereof, said truck bolster being pivotally coupled to said car body bolster, said car body bolster being above said truck bolster when said railway car is in position on said truck bolster, said truck bolster having an upwardly facing surface, a first laterally extending side wall extending downwardly from one side edge of said upwardly facing surface, a second laterally extending side wall extending downwardly from the opposite side edge of said upwardly facing surface, rotary stabilizing means to resist and absorb forces attempting to apply rotational movement in both opposite directions of rotation, said rotary stabilizing means being positioned in the space ajacent one of said first and second laterally extending side walls of said truck bolster and extending downwardly from said upwardly facing surface of said truck bolster, said rotary stabilizing means including operating means extending upwardly therefrom to operate said rotary stabilizing means, connecting means connected between said car body bolster and said operating means to operate said rotary stabilizing means when said truck assembly and its said truck bolster are rotated relative to said railway car and its said car body bolster, wherein said rotary stabilizing means includes a housing having a sealed chamber therein, compressible fluid in said sealed chamber, a vane member mounted for rotational movement in said sealed chamber and connected to said operating means, said housing having a first side wall, said first side wall of said housing being positioned adjacent said first laterally extending side wall of said truck bolster, wherein said housing includes a second side wall, said first and second side walls of said housing having first ends converging toward a corner portion of said sealed chamber, said first and second side walls of said housing having opposite second ends diverging outwardly to terminate at opposite ends respectively of an arcuate wall bounding a peripheral portion

of said sealed chamber of said housing, including said arcuate wall, said housing having a bottom wall covering the bottom of said sealed chamber and a top wall covering the top of said sealed chamber, a mounting extension member of said housing extending outwardly therefrom to extend to said truck bolster when said first side wall of said housing is positioned adjacent said first laterally extending side wall of said truck bolster, said mounting extension member being secured to said truck bolster.

5,570,641

PIVOTING TABLE WITH POWER TOOL

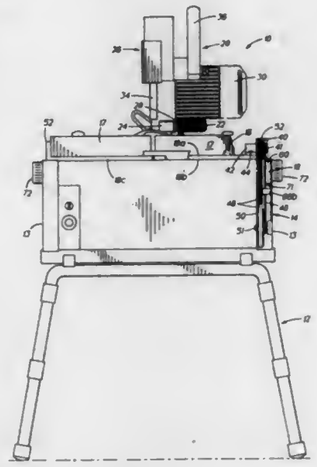
Andrea Garuglieri, Colle Brianza, Italy, assignor to Black & Decker Inc., Newark, Del.

Continuation of Ser. No. 341,852, Nov. 18, 1994, abandoned, which is a continuation of Ser. No. 111,691, Aug. 25, 1993, abandoned. This application Jul. 28, 1995, Ser. No. 508,912

Claims priority, application United Kingdom, Aug. 28, 1992, 9218388

Int. Cl.[6] A47B *85/00*

U.S. Cl. 108—13 **12 Claims**



1. A pivoting table comprising:
a first planar side;
a second planar side parallel to said first planar side;
wherein either said first or second side may occupy an uppermost position;
a distinct front side;
a distinct rear side located opposite to said front side;
a frame for supporting said table;
a first wheel rigidly connected to said table about a first pivot axis;
a second wheel attached to said frame about a second pivot axis;
an intermediate member connected to the center of said first wheel and pivotally connected to said second wheel;
a belt connecting said first wheel to said second wheel for effecting cooperative rotational movement of both said first and said second wheels; and
such that when said table is rotated about said first pivot axis the first pivot axis moves from a position above the table to a position below the table.

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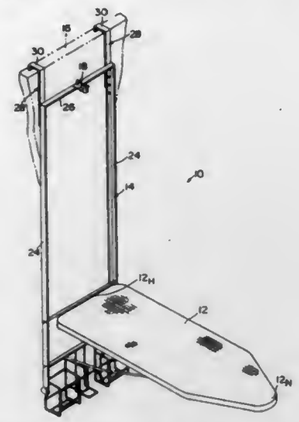
ADJUSTABLE IRONING BOARD ASSEMBLY

David Lehrman, 207 Barclay Cir., Cheltenham, Pa. 19012

Filed Jan. 6, 1995, Ser. No. 369,599

Int. Cl.[6] A47B *5/04*

U.S. Cl. 108—47 **29 Claims**



1. An ironing board assembly for mounting to a door comprising:
a bracket for engaging with the top of the door having an inverted, generally J-shaped hook portion;
a mounting frame attached to said bracket and having two vertically oriented legs;
an ironing board pivotally attached to the legs of said mounting frame and pivotable between a substantially horizontal position when said board is in use and a substantially vertical position when said board is not in use;
a latch attached to said mounting frame for retaining said ironing board in said vertical position, said latch having a first position wherein said latch is engaged with said ironing board when in said vertical position, and a second position wherein said latch is deflected so as not to be engaged with said ironing board, said latch being movable between its first and second positions, said ironing board being free to pivot when said latch is in said second position; and
means formed on the frame for biasing said latch into said first position.

5,570,643

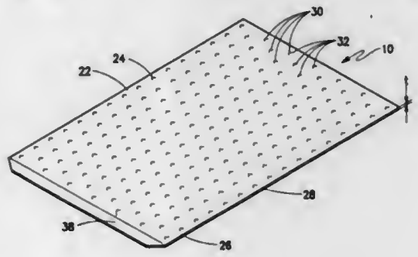
PULL SHEET PALLET WITH COLLAPSIBLE NUB STRUCTURES

Gary D. Werner, 70 S. Eaton Ct., Lakewood, Colo. 80226

Filed Aug. 18, 1994, Ser. No. 292,516

Int. Cl.[6] B65D *19/00*

U.S. Cl. 108—51.1 **15 Claims**



1. A pull sheet pallet adapted to be placed on a flat support surface for loading cargo thereon so that the cargo can be moved, comprising:
(a) a sheet of material having an upper surface and an opposite lower surface with a thickness therebetween and having an outer peripheral edge, said sheet including a plurality of nub structures formed thereon so that a plurality of protrusions extend upwardly from said upper surface and a plurality of concavities are formed into said lower surface to correspond with said plurality of protrusions, said sheet constructed of a stiff yet pliable material such that, when cargo is loaded onto said upper surface of said sheet, contacted ones of said nub structures are operative to collapse thereby forming a plurality of collapsed regions on said upper surface which inhibit lateral sliding movement of the cargo on and across said upper surface when the cargo is acted upon by a force; and
(b) a lip connected to at least a portion of said peripheral edge of said sheet of material and extending upwardly and outwardly at an obtuse angle relative to said sheet of material.

5,570,644

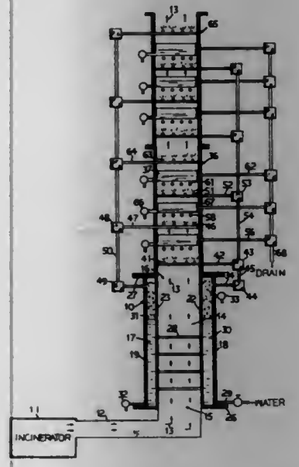
ANTI-POLLUTION SYSTEM

Slo L. Cheng, 20 Esterbrooke Avenue, Apt 1510, Willowdale, Ontario, Canada

Filed Aug. 21, 1995, Ser. No. 517,100

Int. Cl.[6] F23J *15/00*

U.S. Cl. 110—215 **14 Claims**



1. An anti-pollution process for cleaning the exhaust gas emitted from an incinerator, comprising
passing the exhaust gas into a heat recovery unit having heat transfer means operative to transform water contained therein into steam,
passing the exhaust gas subsequently to at least one scrubber unit having a plurality of collection tray members mounted in a staggered manner to create a tortuous path for the exhaust gas passing through said scrubber unit,
injecting a pressurized fine spray of a mixture of water and air onto the exhaust gas in said tortuous path for wetting pollutants contained in said exhaust gas and to propel the exhaust gas through said tortuous path,
impinging steam generated from said recovery unit upon the exhaust gas in said tortuous path at plurality of stages defined by locations of said collection tray members.

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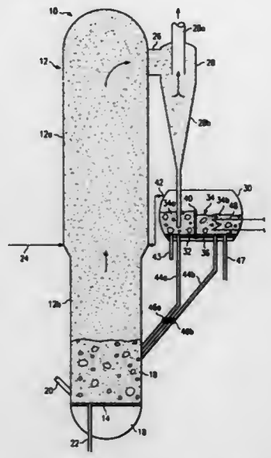
FLUIDIZED BED SYSTEM AND METHOD OF OPERATING SAME UTILIZING AN EXTERNAL HEAT EXCHANGER

Juan A. Garcia-Mallol, Morristown, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Filed Feb. 6, 1995, Ser. No. 383,624

Int. Cl.[6] F23G *5/00*

U.S. Cl. 110—245 **19 Claims**



1. A method of operating a fluidized bed system comprising the steps of introducing particulate material including fuel into a vessel to form a bed of material for combustion, distributing air through said material to fluidize said bed, receiving a mixture of flue gases and entrained fine particulate material from said fluidized bed and separating said material from said flue gases, cooling a portion of said separated material, recycling said cooled separated material back to said fluidized bed, recycling the non-cooled portion of said separated material back to said fluidized bed and controlling the respective recycle rates of said cooled portion of said separated material and said non-cooled portion of said separated material to control the temperature in said vessel.

8. A fluidized bed system comprising a first vessel, means for introducing particulate material into said first vessel to form a bed of material for combustion, means for distributing air through said material in said first vessel to fluidize said bed, a separator for receiving a mixture of flue gases and entrained particulate material from said fluidized bed and separating said material from said flue gases, a second vessel for receiving said separated material from said separator, a heat exchanger disposed in said second vessel for cooling a portion of the separated material in said second vessel, a first conduit connecting said second vessel to said furnace for recycling the cooled separated material from said second vessel back to said fluidized bed, and a second conduit connecting said second vessel to said furnace for recycling the uncooled separated material from said second vessel back to said fluidized bed.

5,570,646

DEVICE FOR USE WITH A BOBBIN-LESS COIL OF THREAD

Bar-Cochva Mardix, Tel Aviv, and Yaacov Sadeh, Ness Ziona, both of Israel, assignors to Orisol Original Solutions Ltd., Rishon Lezion, Israel

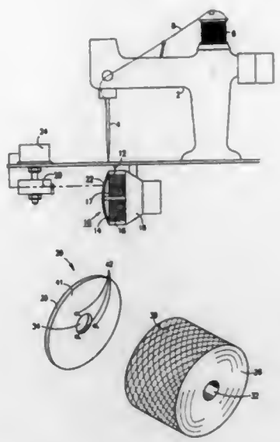
Filed Jul. 27, 1994, Ser. No. 281,470

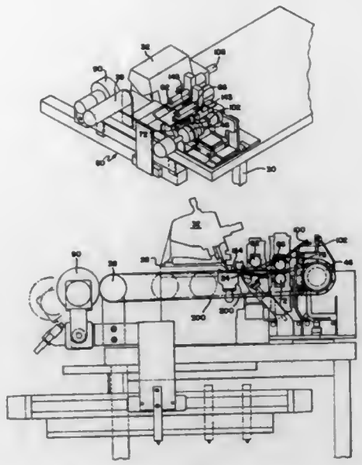
Claims priority, application Israel, Jul. 30, 1993, 106535

Int. Cl.[6] D05B *45/00*

U.S. Cl. 112—278 **20 Claims**

18. A sewing apparatus comprising: a sewing head including a drive therefor; a bobbin-less coil of thread for feeding thread to





said sewing head, the thread of said bobbin-less coil being held together in a cylindrical coil form by weak glue which permits easy release and unwinding of the thread from the coil; an indicator device fastened to said coil for indicating its non-rotation, said indicator device comprising a disc-shaped member having an inner face facing an end face of the coil, and an outer face facing away from said coil, said outer face including indicating means enabling the optical detection of the rotation of said device, said inner face including fastening means for fastening said device to said coil of thread at a predetermined radial distance from the center of the coil so as to release said disc-shaped member from said coil when a predetermined length of thread remains therein such that the disc-shaped member rotates with the coil as thread is unwound therefrom but ceases to rotate with the coil when only said predetermined length of thread remains therein; a bobbin case for holding said coil and said device; and an optical sensor for optically sensing said indicating means and for producing a train of pulses during the rotation of said coil, such that the termination of the train of pulses by the non-rotation of the coil indicates a break in, or the exhaustion of, said thread of said coil.

5,570,647

AUTOMATIC ATTACHMENT OF A RIB KNIT BAND TO A SHIRT BODY

Maximilian Adamski, Jr., Teqa Cay, S.C.; Richard J. Kurtz, and Conrad L. Fernandez, both of Charlotte, N.C., assignors to Union Special Corporation, Huntley, Ill.

Filed Sep. 23, 1994, Ser. No. 311,504
Int. Cl.[6] D05B *35/10;27/10*
U.S. Cl. 112—470.31 **47 Claims**

1. A sewing machine having components including a needle, presser foot, feed dog, throat plate and a drive motor with attachments including edge guiders, sensors, and tension rollers, in combination with a processor that automatically controls said components and attachments, said sewing machine including stitch forming instruments for forming a seam having a stitch line a predetermined distance from the aligned marginal edges of a plurality of layers of tubular workpieces, a frame, said sewing machine mounted on said frame, a workpiece control and advancing mechanism mounted on said frame, said workpiece control and advancing mechanism functioning to individually control each workpiece layer such that its marginal edge is maintained said predetermined distance from said stitch line as the tubular workpiece advances toward said stitch forming instruments, said workpiece control and advancing mechanism comprising:

a coarse guide member that supports the tubular workpieces at a location in advance of said stitch forming instruments and functions to advance and maintain all layers of tubular work pieces at a predetermined distance from the stitch line;

a tension roller that supports said tubular workpieces at a location following said stitch forming instruments;

said tension roller being mounted on said frame such that it is movable toward and away from said coarse guide member in a direction along the stitch line such that said tubular workpiece is loaded as a relaxed band on said coarse guide member and said tension roller and then stretched to an expanded state when said tension roller is moved away from said coarse guide member;

a fine edge guider member for each tubular workpiece layer, said fine edge guiders being mounted on said frame along the stitch line between said coarse guide member and said stitch forming instruments, and functioning to advance and maintain all layers of tubular work pieces a precise distance from the stitch line.

5,570,648

WAIST BAND-FORMING APPARATUS AND METHOD

Donald E. Burt, Danvers, Mass., and James R. Mazur, Londonderry, N.H., assignors to Design Technology Corporation, Billerica, Mass.

Filed Dec. 13, 1904, Ser. No. 354,673
Int. Cl.[6] D05B *35/02;35/06*
U.S. Cl. 112—470.33 **33 Claims**

1. An apparatus for forming and sewing a waist band to complete a pair of briefs, said apparatus comprising:

(a) a band maker for forming said waist band;

(b) at least one sewing machine adapted to receive said waist band and a pair of briefs and to sew said waist band onto said pair of briefs; and

(c) a band inverter and loader for transferring said waist band from said band maker to said sewing machine.

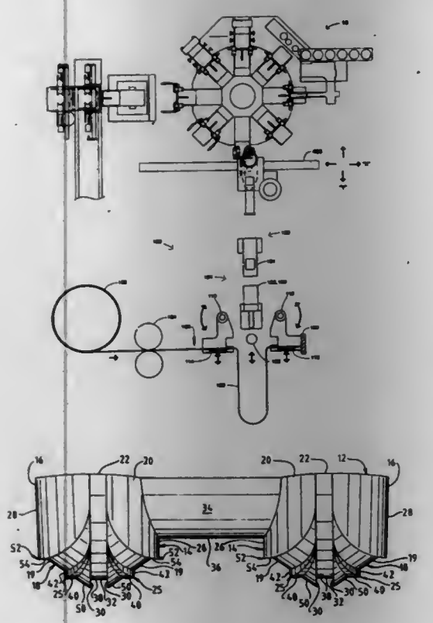
5,570,649

BOAT HULL

Lee Austin, 231 SW. 21st Terrace, Ft. Lauderdale, Fla. 33312

Filed Jun. 13, 1995, Ser. No. 489,849
Int. Cl.[6] B63B *1/00*
U.S. Cl. 114—61 **22 Claims**

1. A boat hull structure for a boat comprising a pair of laterally-spaced, interconnected hulls extending substantially along the length of the boat hull structure, each hull comprising: a top



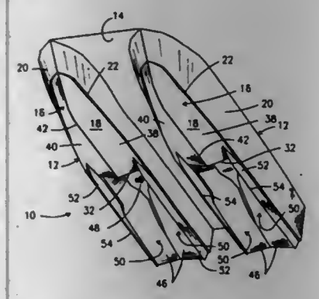
portion; a bottom portion that defines two hull walls, that has a generally V-shaped cross section substantially along its length, and that is generally symmetrical about a vertical plane extending through its longitudinal axis; a bow having a front end; a stern; inner and outer side walls extending generally upward from the hull walls; a first strike defined on each hull wall and extending along at least most of the length of the hull; and a pair of channel walls extending substantially along the length of the bottom portion to define a channel in the bottom portion into which air and water are forced to provide lift when the boat is moving; the channel being disposed between the first strikes.

5,570,650

SURFACE EFFECT VESSEL HULL

Howard D. Harley, 685 E. Pearl St., Bartow, Fla. 33830

Filed Mar. 21, 1996, Ser. No. 620,117
Int. Cl.[6] B63B *1/00*
U.S. Cl. 114—61 **6 Claims**



1. A surface effect vessel hull comprising;

two catamaran hulls joined by a deck, each catamaran hull defining a longitudinal dimension;

each said catamaran hull comprising a bottom having an exterior surface, opposing sides attached to said bottom and extending upwardly therefrom and a transom connecting said sides and being attached to and extending upwardly from said bottom, a step extending inwardly from said bottom generally perpendicular to said longitudinal dimension, said step lying in a plane passing through said hull generally transverse to said longitudinal dimension defining a bow portion extending forward of said plane and an air cushion portion extending rearwardly of said plane;

said bow portion of each said catamaran hull bottom comprising a first face and a second face joined to form a V-shape that extends from proximal said bow to said step, a line formed by said intersecting faces defining a keel of said bow portion, said first and second faces each defining an angle with a horizontal plane passing through said keel, said angle at a cross-section proximal said bow is at least 45 degrees, said angle diminishing to less than 25 degrees at said step;

said air cushion portion of each said catamaran hull bottom having a recess formed therein, said recess extending inwardly from said exterior surface of said bottom, said recess extending rearward from said step to proximal said transom, said recess defining secondary catamaran hull sections extending from said step to said transom,

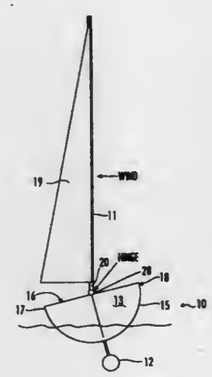
pressurized air generation means connected in fluid flow relation to said air cushion recess.

5,570,651

SAILING VESSEL WITH ADJUSTABLE MAST

Peter Schiff, 4900 Forest Hill Rd., Cookeville, Tenn. 38501

Filed Jan. 11, 1995, Ser. No. 371,146
Int. Cl.[6] B63B *15/00*
U.S. Cl. 114—91 **5 Claims**



1. A sail boat for use on a body of water, said sail boat comprising:

a. a hull, said hull having a top deck surface, a port side, a starboard side, a bow, and a stern;

b. a mast extending generally upward from said top deck surface at a mast angle with respect to said top deck surface, said mast having a base and a distal end;

c. mast angle adjustment means to adjust the mast angle of said mast both toward and away from said port side and starboard side of said hull, said mast angle adjustment means comprising means to move said mast distal end in a generally windward direction so that said mast is substantially perpendicular to a horizontal plane defined by the body of water, when said hull is beeled in a leeward direction;

d. said mast angle adjustment means further comprising mast swivel means for pivotally attaching said mast base to said top deck surface;

e. mast support means to support said mast, and said mast angle adjustment means further comprising support adjustment means for adjusting said mast support means when the mast angle is adjusted;

f. said mast support means comprising port and starboard upper shrouds, a forestay, and a backstay, said upper shrouds, forestay and backstay having first ends attached to said mast proximate said mast distal end, said port and starboard upper shrouds having second ends attached proximate to said port and starboard sides of said hull respectively, said forestay and backstay each having second ends attached proximate to said bow and stern respectively, and said mast angle adjustment means further comprising forestay and backstay swivel means for pivotally attaching said forestay and said backstay to said hull; and

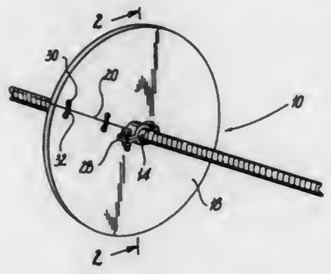
g. said mast support means further comprising port and starboard lower shrouds having first ends attached to said mast at points between said mast base and said mast distal end, said port and starboard lower shrouds having second ends attached proximate to said port and starboard sides of said hull respectively, and said support adjustment means comprising port and starboard equalizer means for compensating for variation in effective length of said port and starboard upper shrouds with respect to said corresponding port and starboard lower shrouds when the mast angle is adjusted.

5,570,652

RODENT GUARD

Bret Ferland, 68 Rodney Ave., Islip Terrace, N.Y. 11752

Filed Mar. 10, 1995, Ser. No. 401,706
Int. Cl.[6] B63B *21/00*
U.S. Cl. 114—221 R **9 Claims**



1. A rodent guard comprising:

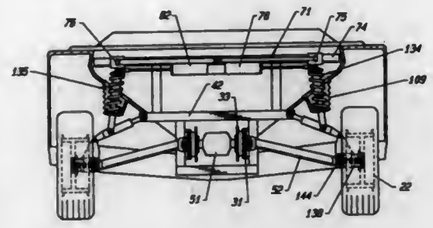
a cylindrical sleeve having opposite ends and a longitudinal slit extending between said ends for permitting said sleeve to be placed over a wire, or cable; clamp means for mounting said said sleeve against axial movement along the wire, or cable and a barrier member comprising a disk having a circular opening through its center of a diameter greater than the diameter of said sleeve to permit free relative rotation of said disk with respect to said sleeve said disk having a radial slit extending from said circular opening to the periphery of said disk permitting mounting of said barrier on said sleeve.

5,570,653

AMPHIBIOUS VEHICLE

Gary M. Gere, Menlo Park; Russell L. Holder, Jr., Monterey; Louis J. Musetti, Seaside, and Ray Ramsey, Jr., Pebble Beach, all of Calif., assignors to Aquastrada International Corporation, Monterey, Calif.

Continuation of Ser. No. 80,641, Jun. 21, 1993, abandoned, which is a continuation of Ser. No. 902,660, Jun. 23, 1992, abandoned. This application Jan. 31, 1995, Ser. No. 384,461
Int. Cl.[6] B63B *35/00*
U.S. Cl. 114—270 **10 Claims**



1. In an amphibious vehicle, the combination comprising:

(a) means for providing marine motive force;

(b) means for providing land motive force including a plurality of wheels having ground engaging tires with a resilient exterior side surface and a plurality of wheel suspensions associated respectively with corresponding ones of said wheels, said wheel suspensions each being extendable through an associated opening in the wall of the body of said vehicle; and

(c) means for retracting at least a portion of each of said wheel suspensions into the interior of said body to a raised position with the side surface of said tire associated with the same engaging the exterior surface of said body at said opening to substantially inhibit the passage of water through said opening.

5,570,654

FOLDING AUXILIARY SEAT FOR PERSONAL WATER CRAFT

Richard K. Rood, 2 Hummingbird La., Henderson, Nev. 89014

Filed Oct. 10, 1995, Ser. No. 536,594
Int. Cl.[6] B63B *17/00*
U.S. Cl. 114—363 **11 Claims**



9. An auxiliary seat for a personal water craft of the type having a bench type seat, said hull having a stern hull surface disposed rearwardly below said bench type seat, said auxiliary seat comprising:

(a) mounting means secured to said hull extending rearwardly from said hull; and

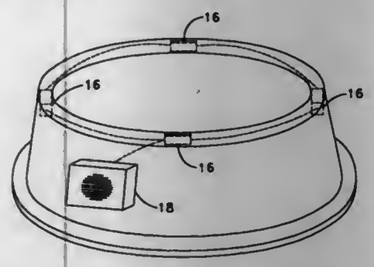
(b) a seat frame supported by said mounting means.

5,570,655

DEVICE FOR CONTROLLING ANIMAL ACCESS TO A LOCATION

Anthony Targa, 340 Kingswood Road, Toronto, Ontario, Canada

Filed Nov. 23, 1994, Ser. No. 344,001
Claims priority, application Canada, Dec. 24, 1993, 2112548
Int. Cl.[6] A01K *5/02*
U.S. Cl. 119—51.02 **4 Claims**



1. A device for controlling animal access to a location, comprising:

generating means for generating a field;

sensing means for sensing the presence of said field near said location;

means for releasably securing one of said generating means and said sensing means on an animal;

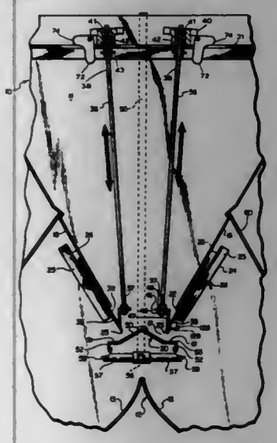
output signal means responsive to said sensing means for generating an output signal in the presence of said field, said output signal being of sufficient magnitude to deter said animal from said location, wherein said generating means iocludes a magnet and said means for sensing means includes a plurality of magnetic reed switches wired in parallel, said device further comprising a receptacle having an opening, said magnetic reed switches being located adjacent said opening.

5,570,656

ANIMAL FEEDER WITH LOCKING ADJUSTABLE GATE

John S. Waldner, and Kenneth Waldner, both of Huron, S. Dak., assignors to King Systems, Incorporated, Galesburg, Ill.

Filed Apr. 4, 1995, Ser. No. 416,187
Int. Cl.[6] A01K *5/00*
U.S. Cl. 119—53.5 **23 Claims**



1. An animal feeder, comprising:

a feed trough;

a feed hopper, located above said feed trough and having a discharge opening, for storing feed and dispensing feed through said discharge opening to said feed trough;

a gate associated with said feed hopper, said gate being movable through a range of positions defined by a first position and a second position, said discharge opening having a first size when said gate is in said first position and a second size when said gate is in said second position;

rotatable gate adjustment means associated with said gate for changing at least one of said first and second positions of said gate to adjust said range of positions through which said gate is movable;

gate support means, including a support member, for supporting said gate; and

locking means associated with said gate adjustment means, said locking means comprising:

a stop member coupled to said gate adjustment means; and

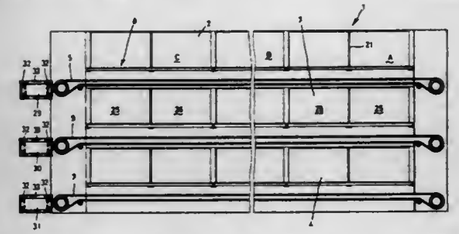
an opening in said support member, said stop member being movable between a locking position in which said stop member prevents rotation of said gate adjustment means by engaging said opening in said support member and a gate-adjusting position in which said stop member allows rotation of said gate adjustment means for adjustment of the position of said gate.

5,570,657

ARRANGEMENT FOR BREEDING POULTRY IN CAGE BATTERIES

Josef Kuhlmann, Konigstrasse 51, D-48366 Laer, Germany

PCT No. PCT/DE94/00096, § 371 Date Jul. 18, 1995, § 102(e) Date Jul. 18, 1995, PCT Pub. No. WO94/10096, PCT Pub. Date Sep. 1, 1991
PCT Filed Jan. 29, 1994, Ser. No. 500,869
Int. Cl.[6] A01K *31/04;31/06*
U.S. Cl. 119—458 **7 Claims**



1. Arrangement for breeding poultry in cage batteries (1), having a grid base (8), which is formed by a flexible netting (9), is subdivided, seen in the longitudinal axis of each row of cages (2, 3, 4), into a sequence of individual sections (A, B, C) which are independent of one another, and excrement collecting devices arranged beneath each row of cages (2, 3, 4), characterized in that the excrement collecting device is designed as a conveyor belt (5, 6, 7) circulating in the longitudinal axis of the rows of cages (2, 3, 4) and the grid base (8) of each section (A, B, C) can be folded together from outside the cages allowing it to be actuated such that it exposes the conveyor belt (5, 6, 7) lying beneath.

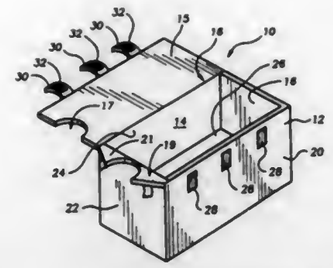
5,570,658

ANIMAL RESTRAINT DEVICE

Virginia S. Hillery, and Virginia S. Hillery, both of 6419 Rosalie Ct., Metairie, La. 70003

Filed Mar. 29, 1995, Ser. No. 411,589
Int. Cl.[6] A01K *1/03*
U.S. Cl. 119—751 **20 Claims**

1. An animal restraint device comprising:

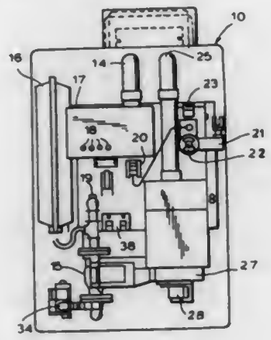


a housing having a compartment formed therein of a size sufficient to receive therein an animal; said housing having a first opening into said compartment and a closure member pivotally mounted adjacent said first opening in a manner to allow said closure member to be positioned over said first opening and partially block said animal from exiting said compartment through said first opening; said closure member having a closure perimeter having an aperture formed in connection therewith of a size sufficient to allow the head and neck of said animal to extend therethrough;

a first securing mechanism in connection with said closure member; said first securing mechanism being detachably securable to a portion of said housing when said closure member is positioned over said first opening; and

an adjustment mechanism located adjacent said aperture having a pivotal portion that is pivotally positionable to adjust the size of said aperture while the neck of an animal is disposed therethrough in a manner such that the head of said animal is blocked from passing through said aperture.

5,570,659
DOMESTIC GAS-FIRED BOILER
Kenneth Cohen, Fort Lee, N.J., assignor to Slant/Fin Corporation, Greenvale, N.Y.
Filed Sep. 28, 1994, Ser. No. 314,914
Int. Cl.[6] F22B *5/00*
U.S. Cl. 122—13.1 **13 Claims**



1. A method of operating a gas-fired boiler, comprising the steps of:

(a) feeding a fuel gas to a burner of the boiler through a gas-supply orifice;

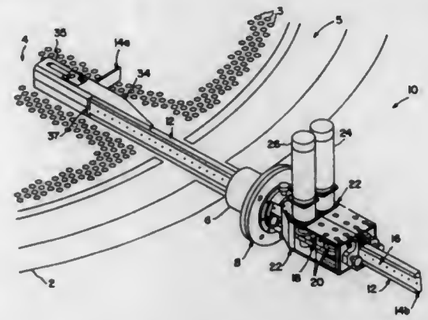
(b) feeding air for combustion of said fuel gas to said burner and into admixture with said fuel gas through an air orifice of a cross sectional area dimensioned relative to a cross sectional area of said gas-supply orifice to ensure complete combustion of the fuel gas in said burner;

(c) detecting a pressure drop across said gas-supply orifice and a pressure drop across said air orifices and applying the detected pressure drops to a servovalve controlling flow of the fuel gas to the burner;

(d) regulating said flow with said servovalve to maintain said pressure drops equal with varying air-flow rates to said burner; and

(e) turning said boiler on and off to maintain a predetermined temperature range in space heated by said boiler, measuring a proportion of "on"-time of said boiler, and modulating a rate of flow of air to said burner in response to a measured proportion of said "on"-time, thereby varying heat output per unit time in response to demand.

5,570,660
AUTOMATED SLUDGE LANCE
James P. Vandenberg, Cambridge, Canada, assignor to The Babcock & Wilcox Company, New Orleans, La.
Division of Ser. No. 189,619, Feb. 1, 1994, abandoned. This application Feb. 23, 1995, Ser. No. 392,651
Int. Cl.[6] F22B *37/18*
U.S. Cl. 122—379 **5 Claims**



1. A method for removing sludge located between a plurality of tubes within a steam generator, comprising the steps of:

positioning a lance guide having a waterlance movably contained therein in a handhole of the steam generator;

remotely advancing the lance guide and the waterlance with a first drive means to a selected position inside the steam generator;

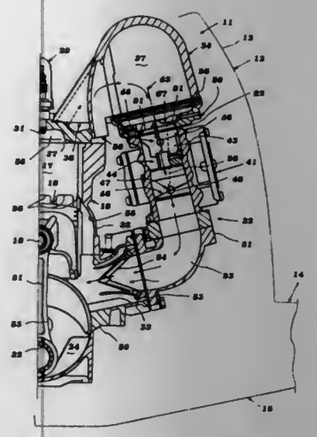
then remotely inserting the waterlance between the tubes of the steam generator with a second drive means;

directing a fluid between the tubes to remove sludge therefrom; and

removing sludge from between the tubes with the lance guide and waterlance situated in a no-tube-lane of the steam generator.

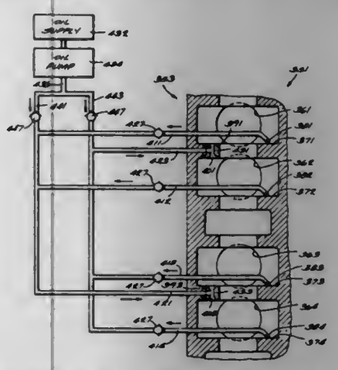
5,570,661
INDUCTION SYSTEM LUBRICANT SYSTEM FOR TWO-CYCLE ENGINES
Mitsuyoshi Nakamura, and Motohiro Ohshiro, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Apr. 21, 1995, Ser. No. 426,172
Claims priority, application Japan, Apr. 22, 1994, 6-084494
Int. Cl.[6] F02B *33/04*
U.S. Cl. 123—73 AD **16 Claims**

1. An induction system for a marine propulsion internal combustion engine, said induction system comprising a body defining an induction passage for delivering at least an air charge to the engine for its combustion, butterfly-type valve is supported upon a valve



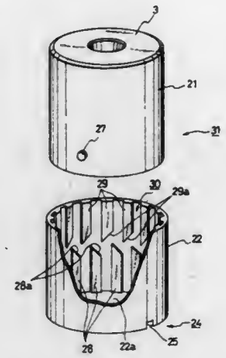
shaft supported within said induction passage for controlling the flow therethrough, and an adaptor plate affixed to said body at the upstream end thereof and defining a flow passage aligned with said induction passage for delivering lubricant to said induction passage upstream of said butterfly-type valve and in a direction so that the lubricant will impinge upon the valve shaft of said butterfly-type valve.

5,570,662
INTERNAL COMBUSTION ENGINE WITH LUBRICATING OIL SUPPLY SYSTEM
Robert L. Niemchick, Lake Villa, Ill., and Gerald Haft, Brookfield, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.
Division of Ser. No. 98,418, Jul. 27, 1993, Pat. No. 5,471,958. This application Oct. 10, 1995, Ser. No. 541,858
Int. Cl.[6] F02B *33/12*
U.S. Cl. 123—74 AE **11 Claims**



1. An internal combustion engine including first and second adjacent oppositely acting crankcases defined, in part, by a wall intermediate said first and second crankcases, a passageway through said wall and including a central portion and end portions which extends in opposite directions from said central portion, which are outwardly divergent, and which communicate with said first and second crankcases, whereby said central portion acts as a venturi consequent to air passage through said passageway between said crankcases incident to the pressure differential between said crankcases, and a conduit communicating with said central portion of said passageway for supplying fluid to said crankcases.

5,570,663
VALVE ROTATOR
Toshimitsu Shida, Fujisawa, Japan, assignor to Fuji Oozx, Inc., Japan
Filed Aug. 18, 1995, Ser. No. 516,810
Claims priority, application Japan, Aug. 29, 1994, 6-203922
Int. Cl.[6] F01L *1/32*
U.S. Cl. 123—90.3 **5 Claims**



1. A valve rotator used in an engine in which a valve spring is provided between a cylinder head and a retainer which is engaged with a projecting end of a valve, the valve being actuated against the valve spring to open and close a port, the rotator comprising:

a suspending member which suspends from an outer circumference of the retainer; and

a standing member which is concentric to the valve and extends from the cylinder head to the retainer, the standing and suspending members being at least partially overlapped, a projection being provided on one of the suspending and standing members at the overlapped portion, guide means which comprise an inclined guide surface being slidably engaged on said projection to cause relative rotation between the suspending and standing members wherein the guide means comprise a first protuberance which has an inclined guide surface which is slidably engaged with the projection when the retainer descends, and a second protuberance which has an inclined guide surface which slidably engaged with the projection when the retainer ascends.

5,570,664
ENGINE VALVE DRIVE DEVICE
Tsuneyasu Nohara, Ebina, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan
Filed Aug. 31, 1995, Ser. No. 522,437
Claims priority, application Japan, Sep. 2, 1994, 6-210017
Int. Cl.[6] F01L *13/00*
U.S. Cl. 123—90.16 **5 Claims**

1. An engine valve drive mechanism, comprising:

a rocker shaft fixed to an engine;

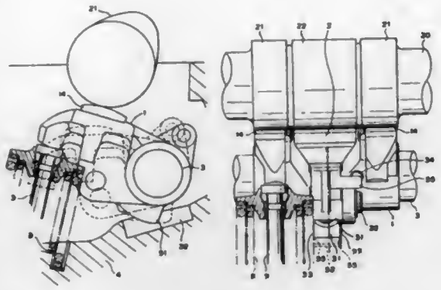
a rocker arm having a bearing which is slidably supported on said rocker shaft such that said rocker arm is supported to freely rotate on said rocker shaft;

a valve that opens and closes according to an oscillation of said rocker arm;

cam means that rotates in synchronism with said engine for causing said rocker arm to oscillate;

a thrust fin projecting from said rocker arm in a radial direction with respect to said rocker shaft, a width of said thrust fin being less than a width of said rocker arm; and

a guide groove accommodating said thrust fin for preventing said rocker arm from displacing along said rocker shaft.

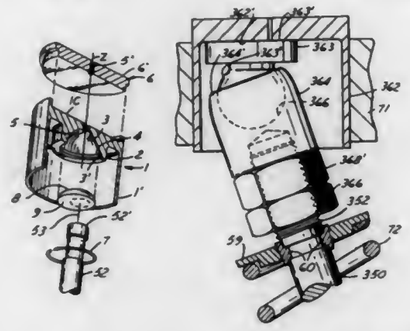


5,570,665

VALVE TRAIN FOR INTERNAL COMBUSTION ENGINE

Jose F. Regueiro, Rochester Hills, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Apr. 4, 1995, Ser. No. 416,245
Int. Cl.[6] F01L *1/14;1/16*
U.S. Cl. 123—90.27 22 Claims



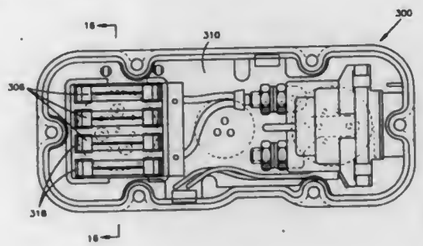
1. A valve train for an internal combustion engine having an engine block with cylinders therein and a cylinder head, a piston operatively disposed in each of said cylinders, each of said cylinders and said piston therein defining a first end portion of a combustion chamber, said cylinder head operatively disposed on said engine block and having curved recesses therein aligned with said cylinders to define second end portions of said combustion chambers, intake and exhaust valves supported by said cylinder head, each of said combustion chambers having at least first and second intake valves and first and second exhaust valves associated with each cylinder, valve seats formed in said cylinder head for each of said valves, each of said valves having an enlarged head portion to sealing engage an associated one of said valve seats and each of said valves further having an elongated stem portion which extends from said enlarged head portion through an associated stem openings in said cylinder head and terminating at an upper end portion, each of said stem portions defining an axis with each axis being inclined with respect to one another and arranged so that each axis diverges away from the axes of other stem portions, a tappet located adjacent said upper end portion of each valve stem portion and being supported by said cylinder head for movement along an axis which is angulated with respect to the axis on an associated valve stem portion, a camshaft supported for rotation by said cylinder head, said camshaft having a lobe portion corresponding to each one of said tappets wherein said lobe portions engage said tappets at contact surfaces which extend in a plane parallel to the centerline of the camshaft, said engagement of said camshaft lobe with said tappet during rotation of said camshaft produces movement of the tappet along its axis, each tappet having a pivotal force transmitting connection means for contact with said upper end of said associated valve stem to accommodate the angularity between the axis of said tappet and the axis of said associated valve stem portion wherein the connection means permits rotating and sliding movements between said tappet and said valve stem portion.

5,570,666

GLOW PLUG CONTROLLER

Michael J. Rymut, Cadillac; Mario P. Boisvert, Reed City; Ronald D. Ingraham, Reed City, and Frederick C. Simar, Reed City, all of Mich., assignors to Nartron Corporation, Reed City, Mich.

Continuation-in-part of Ser. No. 785,462, Oct. 31, 1991, abandoned. This application Apr. 1, 1993, Ser. No. 42,239
Int. Cl.[6] F02P *19/02*
U.S. Cl. 123—145 A 14 Claims



1. Apparatus for governing application of electrical power to a plurality of glow plugs in a diesel engine that applies motive power to a motor vehicle, said apparatus comprising:

a) a temperature sensor for producing a temperature signal corresponding to a temperature at a region of said diesel engine;

b) a programmable controller for controlling application of electrical power to the glow plugs of said diesel engine; said programmable controller including i) a power input coupled to a motor vehicle battery; ii) a temperature input coupled to the temperature sensor for monitoring said temperature signal iii) a stored program for determining a glow plug pre-glow period as a function of sensed temperature from the temperature sensor: iv) an enable input to signal the stored program to determine a pre-glow time period and v) an output for producing a glow plug control signal during a pre-glow time period determined by the stored program in response to receipt of the enable input, said stored program distinguishing between two different signals at the enable input to allow the motor vehicle operator to manually override the pre-glow energization time period;

c) output circuitry coupled to the programmable controller for responding to the glow plug control signal from the programmable controller and applying electrical power to the glow plugs;

d) a waterproof housing for the programmable controller that is attached to the diesel engine for enclosing the programmable controller; and

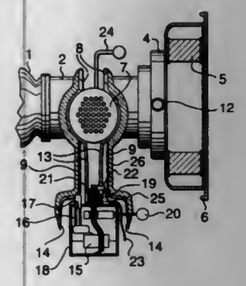
e) structure for supporting the glow plug controller and the temperature sensor within the waterproof housing.

5,570,667

INTERNAL COMBUSTION ENGINE LOW TEMPERATURE STARTING SYSTEM

Clint D. Gray; Norman J. Hole, and Gary D. Webster, all of Nepean, Canada, assignors to Advanced Engine Technology Ltd., Nepean, Canada

Filed Mar. 27, 1995, Ser. No. 410,686
Claims priority, application United Kingdom, Mar. 25, 1994, 9405984
Int. Cl.[6] F02M *31/00*
U.S. Cl. 123—179.21 22 Claims



1. A cold starting system for a fuel-injected, compression ignition or spark assisted internal combustion engine operating on middle distillate fuels and other low volatility alternative fuels, comprising:

means for switching between a start-up mode in which a fuel-injection system for said internal combustion engine is inactive and a normal mode in which the fuel-injection system is active;

an air intake duct for supplying intake air to the engine during normal operating conditions;

throttle means for restricting air flow to said engine through said air intake duct during start-up so as to prevent the engine from taking in excess cooled or partially heated air;

means for mixing fuel with said intake air in the intake duct in said start-up mode so that an air-fuel mixture is supplied to the engine; and

auxiliary heating means operating independently of said engine for pre-heating said air-fuel mixture in said start-up mode at a flow rate limited by said throttle means to a temperature sufficient to ensure sustainable combustion without undue ignition delay during a normal engine cycle prior to attainment of normal engine operating conditions;

whereby said engine can be started on said pre-heated air-fuel mixture supplied through said intake duct and then switched to fuel injection when normal operating conditions have been attained.

5,570,668

LUBRICATING DEVICE OF AN ENGINE CYLINDER

Hsin-I Hsu, 10F-1, No. 58 Cheng Te Road, Section 3, Taipei, Taiwan

Filed Dec. 27, 1995, Ser. No. 578,981
Int. Cl.[6] F01M *11/08*
U.S. Cl. 123—193.2 1 Claim

1. A cylinder block comprising:

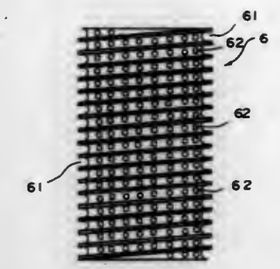
a chamber therein communicating with a cylinder sleeve in said cylinder block;

said cylinder sleeve having a large number of spiral recesses formed on an outer periphery of said cylinder sleeve;

a large number of spaced through holes formed on said spiral recesses;

an oil pipe having a large number of oil-seepage holes on a periphery of said oil pipe;

said oil pipe coiling around said outer periphery of said cylinder sleeve along said spiral recesses;



an oil-collecting groove disposed beneath said cylinder sleeve to communicate with an outlet pipe;

an inlet pipe communicating with an upper end of said cylinder sleeve; and

an upper end of said oil pipe communicating with said inlet pipe.

5,570,669

CYLINDER HEAD FOR AN OVERHEAD CAMSHAFT INTERNAL COMBUSTION ENGINE

Jose F. Regueiro, Rochester Hills, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Dec. 4, 1995, Ser. No. 567,018
Int. Cl.[6] F02B *17/00*
U.S. Cl. 123—193.5 3 Claims



1. A cylinder head for a family of engines that maintains the same valve train drive for engines having different sized cylinder bores, said valve train drive being operatively associated with each of said cylinder bores and including a first overhead camshaft directly contacting a first inverted bucket tappet and a second overhead camshaft directly contacting a second inverted bucket tappet, an intake valve actuated by said first inverted bucket tappet and an exhaust valve actuated by said second inverted bucket tappet, said intake valve and said exhaust valve each having a valve stem having a longitudinal axis and being located in a valve stem guide formed as part of said cylinder head, one end of said valve stem being formed with a valve head for opening and closing a passage communicating through a port formed in said cylinder head with said cylinder bore, the other end of said valve stem of said intake valve and the other end of said valve stem of said exhaust valve being respectively located in said first inverted bucket tappet and said second inverted bucket tappet and having a retainer secured thereto, a spring biasing said retainer in a direction to cause the associated valve to normally close the associated passage, said first inverted bucket tappet and said second inverted bucket tappet each having a downwardly extending projection formed thereon for contacting said other end of the associated valve stem, said first overhead camshaft and said second overhead camshaft each having its rotational axis offset from said longitudinal axis of the associated valve stem and having a lobe directly

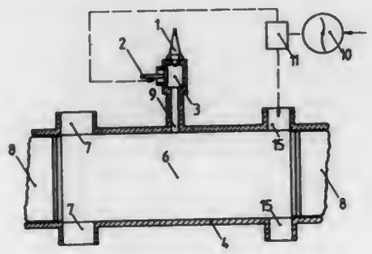
contacting the associated inverted bucket tappet for causing said valve head to open said associated passage against the bias of said spring, the arrangement being such that said projection and said inverted bucket tappet associated with each of said intake valve and said exhaust valve is of a size sufficient to allow said valve stem and said spring associated with each of said intake and exhaust valves to be moved in opposite directions without disturbing the positions of said first and second camshafts and said first and second inverted bucket tappets when said cylinder head is designed for an engine having a larger or smaller cylinder bore within said family of engines.

5,570,670

TWO STROKE INTERNAL COMBUSTION ENGINE

Brian L. Powell, Kalandan, 2630 Peak View, New South Wales, Australia

Continuation-in-part of Ser. No. 211,140, Mar. 22, 1994, abandoned. This application Dec. 12, 1995, Ser. No. 571,125
Claims priority, application Australia, Sep. 23, 1991, PK8492
Int. Cl.[6] F02B *17/00;19/12*
U.S. Cl. 123—256 **11 Claims**



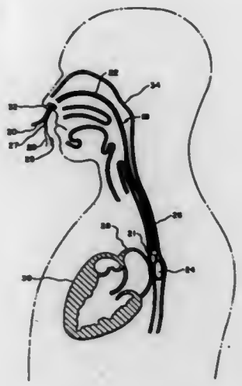
1. A two stroke internal combustion engine comprising a cylinder, two opposed pistons within the cylinder arranged to reciprocate in opposite directions along the longitudinal axis thereof, the pistons defining a common compression chamber therebetween, at least one inlet port located adjacent one end of the cylinder and communicating with the compression chamber, at least one exhaust port located adjacent the other end of the cylinder for discharge of scavenging air and products of combustion from the compression chamber, means to supply scavenging air at high pressure to the compression chamber through the inlet port(s) to pass axially through the compression chamber to the exhaust port(s) in an amount sufficient to purge substantially all products of combustion from the compression chamber and to cool the cylinder, a small combustion chamber external to the cylinder and spaced from the compression chamber but having restricted communication therewith, means to inject into the combustion chamber a rich fuel/air mixture which in part passes to the compression chamber to form a fuel lean mixture with the scavenging air therein, and ignition means mounted in the combustion chamber to ignite the fuel rich mixture therein, in turn allowing burning fuel to ignite the fuel lean mixture in the compression chamber, the arrangement being such that in operation the temperatures in the compression chamber remain sufficiently low to substantially prevent the formation of nitrogen oxides therein.

5,570,671

METHOD FOR POSITIONING ESOPHAGEAL CATHETER FOR DETERMINING PRESSURES ASSOCIATED WITH THE LEFT ATRIUM

Donald D. Hickey, Amherst, N.Y., assignor to The Research Foundation of State University of New York, Buffalo, N.Y.

Continuation-in-part of Ser. No. 377,466, Jan. 24, 1995, which is a continuation-in-part of Ser. No. 114,775, Aug. 3, 1993, Pat. No. 5,398,692, which is a continuation of Ser. No. 980,460, Nov. 23, 1992, Pat. No. 5,263,485, which is a continuation-in-part of Ser. No. 717,854, Jun. 25, 1991, Pat. No. 5,181,517, which is a continuation-in-part of Ser. No. 409,041, Sep. 18, 1989, Pat. No. 5,048,532. This application Jun. 7, 1995, Ser. No. 472,786
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—673 **4 Claims**



1. A method for determining a pressure associated with the left atrium comprising the steps of (a) moving a bi-polar electrode lengthwise within the esophagus, (b) obtaining an electrogram at each of a series of incremental depths as the electrode is moved lengthwise within the esophagus, (c) determining for at least one P wave in each of the incremental electrograms the length of the negative portion of the largest absolute value segment of the respective p wave, (d) selecting an esophageal depth which corresponds to the incremental electrode depth at which the electrogram therefor shows the greatest negative portion length, (e) inserting a balloon into the esophagus, (f) positioning the balloon at the selected esophageal depth, (g) inflating the balloon, and (h) determining a pressure associated with the left atrium from effects on the inflated balloon at the selected esophageal depth.

5,570,672

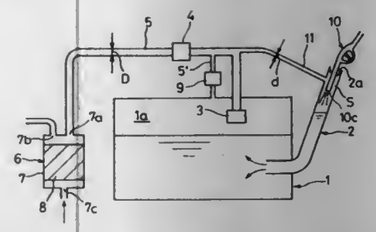
FUEL EVAPORATIVE EMISSION TREATMENT SYSTEM

Masafumi Kunimitsu; Kiyoshi Mori; Tomokazu Muraguchi, all of Okazaki, and Yoichiro Ando, Seto, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 28, 1995, Ser. No. 508,560
Claims priority, application Japan, Jul. 28, 1994, 6-176975; Mar. 13, 1995, 7-052794; Jun. 15, 1995, 7-149204
Int. Cl.[6] F02M *25/08*
U.S. Cl. 123—516 **20 Claims**

1. A fuel evaporative emission treatment system for use with an engine fuel system including a fuel tank having a filler neck, the fuel tank having an upper space defined therein above the level of fuel contained therein, the system comprising:

a canister for adsorbing evaporative fuel produced in the fuel system;



a vent passage connecting the upper space of the fuel tank and said canister, said vent passage having a first effective area; and

a vent circulation passage connecting the upper space of the fuel tank and the filler neck, said vent circulation passage having a second effective area,

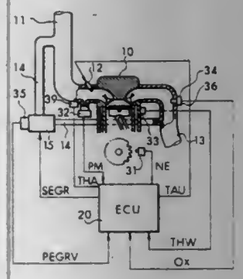
the ratio of the second effective area to the first effective area being set to a value such that internal pressure of the filler neck during refueling falls within a predetermined pressure range, and the second effective area being smaller than the first effective area.

5,570,673

INTERNAL COMBUSTION ENGINE CONTROL APPARATUS

Daiji Isobe, Toyohashi, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 21, 1995, Ser. No. 561,385
Claims priority, application Japan, Dec. 13, 1994, 6-333045
Int. Cl.[6] F02D *41/00*
U.S. Cl. 123—688 **9 Claims**



1. An internal combustion engine control apparatus having an O_2 sensor for detecting O_2 concentration in exhaust gas in an exhaust system of an engine in order to perform air-fuel ratio control and an exhaust gas recirculation valve for communicating the exhaust system with an intake system in order to perform exhaust gas recirculation control, the apparatus comprising:

promoting means for promoting activation of the O_2 sensor;

determining means for determining whether the O_2 sensor is activated;

air-fuel ratio control means for performing air-fuel ratio control in a non-feedback control mode without using feedback of O_2 concentration information during a period from start of the engine until activation of the O_2 sensor, and in a feedback control mode with feedback of O_2 concentration information in accordance with a change in the air-fuel ratio after activation of the O_2 sensor, based on a determination made by the determining means; and

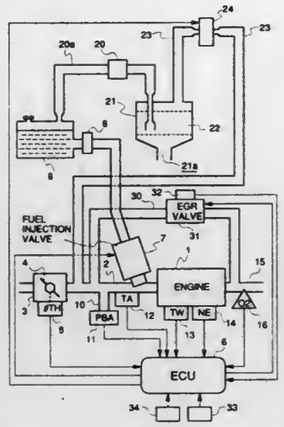
exhaust gas recirculation control means for performing exhaust gas recirculation control preset in accordance with switching over of the control modes of the air-fuel ratio control means, based on the determination made by the determining means.

5,570,674

EVAPORATIVE EMISSION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Atsushi Izumiura; Takashi Isobe, and Hiroshi Yatani, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1995, Ser. No. 562,368
Claims priority, application Japan, Nov. 25, 1994, 6-315668
Int. Cl.[6] F02M *25/08;* **F02D** *41/22*
U.S. Cl. 123—690 **10 Claims**



1. In an evaporative emission control system for an internal combustion engine having a fuel tank, an intake passage, a throttle valve arranged in said intake passage, an exhaust passage, an exhaust gas component concentration sensor arranged in said exhaust passage for detecting concentration of a component in exhaust gases emitted from said engine, air-fuel ratio control means for controlling an air-fuel ratio of a mixture supplied to said engine by the use of an air-fuel ratio correction coefficient determined in response to an output from said exhaust gas component concentration sensor, said evaporative emission control system including a canister for adsorbing evaporative fuel generated from said fuel tank, a purging passage connecting between said canister and said intake passage at a location downstream of said throttle valve, and a purge control valve arranged in said purging passage for controlling a flow rate of purged gases containing evaporative fuel to be supplied from said canister via said purging passage into said intake passage,

the improvement comprising determining means for determining whether said evaporative fuel emission control system is normal or abnormal, from a change in a value of a parameter depending upon said output from said exhaust gas component concentration sensor detected when an opening of said purge control valve is changed and a change in pressure within said intake passage at a location downstream of said throttle valve when said opening of said purge control valve is changed.

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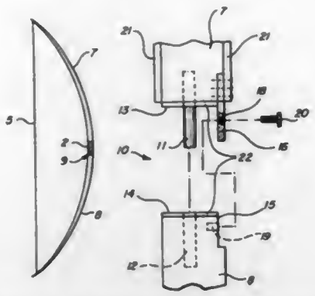
TAKE-DOWN ARCHERY BOW

Michael J. Treadway, 615 Meadows Town Rd., Marshall, N.C. 28753

Filed Apr. 18, 1994, Ser. No. 228,644
Int. Cl.[6] F41B *5/00*
U.S. Cl. 124—23.1 **11 Claims**

1. A take-down archery bow comprising:

a first elongated limb and second elongated limb each comprising a string attachment means on one end and matching abutment joint opposite thereto;



a first assembly mechanism attached to said abutment joint of said first elongated limb comprising an alignment post parallel to said first elongated limb;

a second assembly mechanism attached to said abutment joint of said second elongated limb comprising an alignment bore parallel to said second elongated limb capable of receiving said alignment post and aligning said matching abutment joints;

an attachment plate rigidly attached to the back of one said elongated limb and removably attached to the back of the other said elongated limb.

8. A method for forming a take-down archery bow comprising the steps of:

(a) cutting an archery bow into two lengths thereby forming a first joint face and a second joint face;

(b) securing an alignment post to said first joint face;

(c) forming an alignment bore in said second joint face such that when said alignment post is inserted in said alignment bore said first joint face and said second joint face are aligned;

(d) attaching a plate to the back of said take-down archery bow such that said plate contacts each said length.

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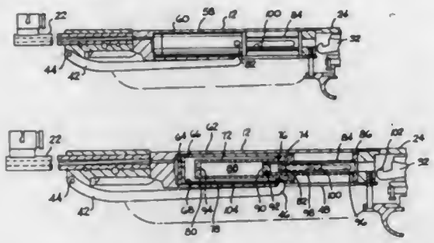
METHOD FOR CONVERTING A MECHANICAL SPRING GUN TO A PNEUMATIC SPRING GUN AND THE RESULTING PNEUMATIC SPRING GUN

Thomas D. Gore, 227 Coronation Ct., Canton, Mich. 48188

Continuation-in-part of Ser. No. 192,018, Feb. 4, 1994, abandoned. This application Mar. 10, 1995, Ser. No. 402,471

Int. Cl.[6] F41B *11/32;11/16*

U.S. Cl. 124—56 **10 Claims**



1. A method for converting a mechanical spring powered air gun to a gas-spring powered air gun, the air gun having a receiver tube with a compression chamber in communication with a discharging barrel; a first piston in the compression chamber movable toward the barrel to compress air for discharging a projectile through the barrel; a mechanical spring between a trigger housing and the first piston for urging the first piston toward the barrel; cocking means for retracting the first piston toward the trigger housing to a cocked position and for compressing the mechanical spring; and a trigger for releasing the first piston from the cocked position whereby the mechanical spring urges the first piston toward the barrel, comprising the steps of:

removing the trigger housing from the receiver tube to form an opening into the compression chamber;

removing the first piston and the spring through said opening from the compression chamber;

inserting a second piston having a compressible gas into the compression chamber for reciprocal movement therein;

connecting the second piston to a barrel-operated cocking lever so the second piston is moved toward the trigger housing as the barrel is pivoted with respect to the receiver tube to compress a gas in the second piston;

disposing a latch carried on the second piston for engagement with a complementary latch carried with the trigger housing; and

mounting the trigger housing on the receiver tube to close said opening.

5. An air gun, comprising:

an elongated receiver tube (**12**) having a longitudinal axis, a barrel end, and a trigger end, said tube forming an air compression chamber;

a discharging barrel (**22**) mounted on the barrel end of the receiver tube for discharging a projectile as compressed air is expelled from the compression chamber through the barrel;

a compression piston (**60**) slideably mounted in said receiver tube for movement either toward the barrel end of said tube or the trigger end of said tube; said compression piston having a hollow elongated cylindrical piston wall (**62**), and a piston crown (**64**) on the barrel end of said cylindrical wall;

an inner elongated housing (**72, 74,**) located within said piston, said elongated housing comprising a hollow cylinder (**72**) spaced radially inwardly from said cylindrical piston wall on the receiver tube axis to form a sealed annular chamber between said cylinder and said cylindrical piston wall;

a trigger housing secured to the trigger end of said receiver tube, a manually-operated trigger (**30**) carried on said trigger housing, and a first trigger-operated latch (**32**) located in said trigger housing in alignment with the longitudinal axis of said receiver tube;

a tubular latch guide (**84**) extending from said trigger housing into said hollow cylinder (**72**) on the receiver tube axis; said tubular latch guide having a close end wall (**90**) within the hollow cylinder, whereby said hollow cylinder forms a closed power chamber (**88**) in fluid communication with said sealed annular chamber;

a compressible gas charged into said sealed annular chamber and said power chamber;

a second latch (**98**) located within said tubular guide for engagement with said first latch, said second latch being connected to said compression piston for movement either toward or away from said first latch; and

means (**42**) for retracting said compression piston toward the trigger end of said receiver tube to compress the gas in said annular chamber and said power chamber, and to cause said second latch to be operatively engaged with said first latch;

said trigger being actuable to move said first latch out of engagement with said second latch, whereby the compression piston is powered toward the barrel to compress air in the compression chamber.

5,570,677

METHOD AND APPARATUS FOR CUTTING WET CONCRETE

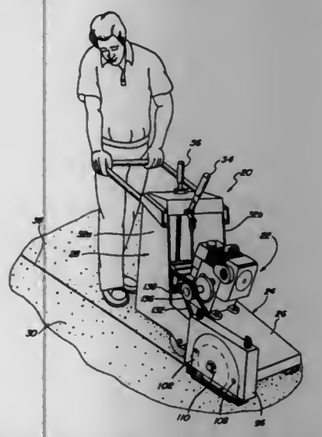
Edward R. Chiuminatta, 16405 Everett, and Alan R. Chiuminatta, 16862 Mariposa Ave., both of Riverside, Calif. 92504

Continuation of Ser. No. 17,140, Feb. 12, 1993, Pat. No. 5,429,109, which is a continuation-in-part of Ser. No. 837,248, Feb. 14, 1992, Pat. No. 5,305,729. This application Mar. 16, 1995, Ser. No. 404,930

The portion of the term of this patent subsequent to May 5, 2015, has been disclaimed.

Int. Cl.[6] B27D *1/04*

U.S. Cl. 125—15 **29 Claims**



1. An apparatus for use with a concrete saw having a rotating cutting blade with a leading cutting edge to cut grooves in a concrete surface as the saw is moved over the surface, comprising:

a skid plate having a slot through which the cutting blade extends during cutting, the skid plate having a support portion that contacts the surface being cut adjacent at least the leading cutting edge of the blade during cutting; and

at least one resilient member having a first end connected to the concrete saw, and having a second end connected to the skid plate, the resilient member orientated to allow movement of the skid plate relative to the saw during cutting while also resiliently urging the skid plate against the concrete surface with a predetermined force.

5,570,678

CEMENT SIDING SHEARING TOOL

Kurt Waggoner; Lloyd Fladgard; Scott Fladgard, all of Kingston; Joseph Gaidjurges, Renton, and John Whitehead, Sumner, all of Wash., assignors to Pacific International Tool & Shear, Ltd., Kingston, Wash.

Filed Dec. 7, 1994, Ser. No. 351,599

Int. Cl.[6] B28D *1/32*

U.S. Cl. 125—23.01 **7 Claims**

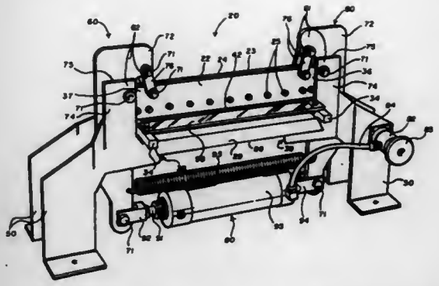
1. A shear for cutting cement siding, comprising:

upper and lower blade holders each having first and second ends and an elongated slot extending substantially therebetween, the holders being positioned so that the slots are substantially aligned and facing each other;

upper and lower blades each having a cutting edge, the upper and lower blades being removably mounted in the slots of the upper and lower holders, respectively, and positioned in a cutting plane wherein the cutting edges face one another and are substantially aligned;

a mechanically operated actuator having a cylinder, the cylinder having a piston rod and a housing; and

links operatively connecting the first ends of the holders together and the second ends of the holders together, the links being positionable so that the cutting edges of the blades are substantially parallel upon engaging the siding, the links including a first link assembly connected to the first ends of the holders and a second link assembly connected to the second ends of the holders, the link assemblies each having a bracket attached to the lower holder and extending upwardly therefrom, a lever with an upper end pivotally connected to the bracket and a lower end pivotally connected to the actuator, and a coupling with an upper end pivotally connected to the upper end of the lever and a lower end pivotally connected to the upper holder, the lower end of the lever of the first link assembly being attached to the housing of the cylinder and the lower end of the lever of the second link assembly being attached to the piston rod of the cylinder, the actuator acting in conjunction with the first and second link assemblies to move the upper holder towards the lower holder into the closed siding cutting position as the piston rod moves out of the cylinder housing.



5,570,679

INDUSTRIAL BURNER WITH LOW NO_x EMISSIONS

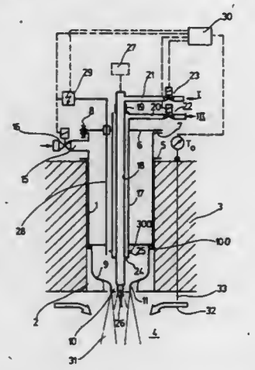
Joachim Wunning, Berghalde 20, D-71229 Leonberg, Germany

Filed May 25, 1995, Ser. No. 450,012

Claims priority, application Germany, Jun. 2, 1994, 44 19 332.7

Int. Cl.[6] F24C *3/00*

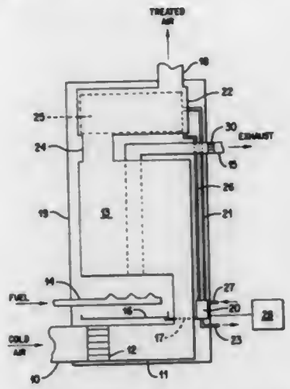
U.S. Cl. 126—91 A **21 Claims**



1. An industrial burner with low NO_x emissions/s?/, particularly for heating furnace chambers (**4**) of industrial furnaces, having

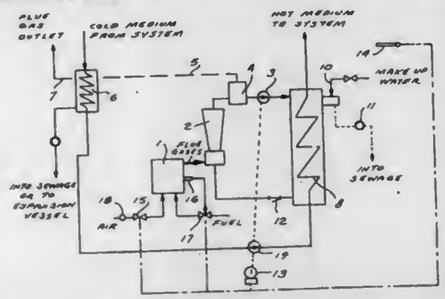
a high-heat-resistant combustion chamber (9) formed with at least one nozzle-shaped outlet (10) for gases emerging at high velocity into a heating chamber (4, 400);
a fuel supply device (17, 18, 20, 21, 22, 23, I, II);
an air supply device (15, 16);
an ignition device (28, 29, 300) for igniting a fuel/air mixture formed in the combustion chamber,
wherein the fuel supply device (17, 18, 20, 21, 22, 23, I, II) has first (25) and second (26) nozzle devices;
the first nozzle device (25) and the second nozzle device (26) being located spatially separate from each other with respect to said nozzle-shaped outlet (10) from the combustion chamber (9);
control means (30, 22, 23) selectively controlling air flow from said air supply device (15, 16) and fuel flow to said first nozzle device (25) and the second nozzle device (26),
said control means controlling, in a first operating state, air flow and fuel flow to said first nozzle device (25) to provide a fuel/air mixture in the combustion chamber which, upon ignition by said ignition device (28, 29, 300), at least partly burns therein with a stable flame,
said control means further controlling, in a second operating state, air flow and fuel flow to said second nozzle device (26),
whereby, at a temperature in the heating chamber (4, 400) which is above the ignition temperature of the fuel/air mixture, a reaction between the fuel and the combustion air inside the combustion chamber is essentially suppressed, and said reaction between the fuel and combustion air emerging at high outlet impetus from the nozzle-shaped outlet (10) of the combustion chamber is shifted into the heating chamber (4, 400);
wherein said air supply device, controlled by said control means (30, 22, 23), supplies air, at least in the second operating state, with such a high air throughput that, by means of the combustion air emerging from said nozzle-shaped outlet (10) of the combustion chamber (9), combustion exhaust gases from the heating chamber (4, 400) are aspirated by injector action and admixed with the combustion air in the combustion chamber (9).

5,570,680
CONDENSING FURNACE HOT AIR HUMIDIFICATION
Peter P. Payne, Park Ridge, Ill., assignor to Gas Research Institute, Chicago, Ill.
Filed Jun. 21, 1995, Ser. No. 493,358
Int. Cl.[6] F24F *3/14*
U.S. Cl. 126—113 **20 Claims**



1. An apparatus for heating and humidity conditioning of air for circulation to an enclosed space comprising: a hydrocarbon fuel burner within a combustion chamber, said burner capable of combusting hydrocarbon fuel forming aqueous-containing flue gases; a thermal exchanger having a first pathway for said aqueous-containing flue gases in open communication with said combustion chamber at an upstream end and in communication with a flue gas exhaust at an opposite downstream end, said thermal exchanger having a second pathway for air to be warmed in communication at an upstream end with a blower supplying air to be treated and in communication at an opposite downstream end with a humidifier, said air being warmed and said aqueous-containing flue gases being cooled by passage in indirect thermal exchange relation through said thermal exchanger forming an aqueous condensate; collection means for said aqueous condensate; pump/valve means and conduit means in communication with said collection means at one end and with an evaporator means in said humidifier at the other end, whereby said aqueous condensate is pumped to said evaporator means for direct contact with and humidification of warmed air passing from said thermal exchanger.

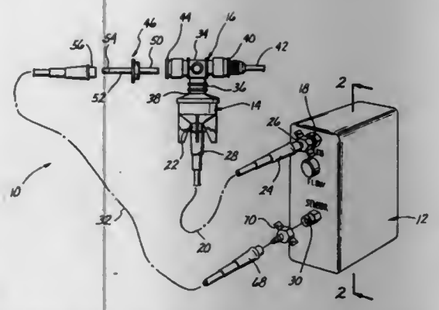
5,570,681
RESIDENTIAL BOILER/FURNACE WITH THE INTERMEDIATE WATER CIRCUIT
Aleksandr Kravets, 613 B Cranbury Cr. Rd., No. Brunswick, N.J. 08902, and Eugene Tseytlin, 4314 Valley Dr., Allentown, Pa. 18104
Filed Mar. 3, 1995, Ser. No. 398,076
Int. Cl.[6] F24H *1/20*
U.S. Cl. 126—366 **16 Claims**



5. A residential heating system, comprising a combustion chamber for burning fuel and forming fuel combustion products; an ejector connected with said combustion chamber in which the combustion products from said combustion chamber are supplied and mix with an intermediate water to provide an absorption of a combustion heat of the combustion products by the intermediate water so as to heat the intermediate water; and means for receiving the heated water and transferring a heat accumulated in the heated water to a cold water from the heating system.

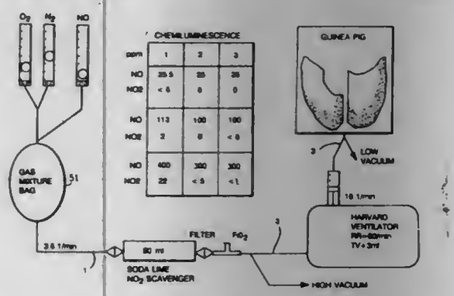
5,570,682
PASSIVE INSPIRATORY NEBULIZER SYSTEM
Robert J. Johnson, Riverside, Calif., assignor to Ethex International, Inc., Riverside, Calif.
Filed Dec. 14, 1993, Ser. No. 166,694
Int. Cl.[6] A61M *11/00*
U.S. Cl. 128—200.14 **12 Claims**

7. An apparatus for delivering pressurized gas to a patient during the inspiratory phase and for preventing delivery of pressurized gas to the patient during the expiratory phase of said patient's respiratory cycle, said apparatus comprising:
a pressurized gas supply device;
an airway device having a first port adapted to receive pressurized gas from said supply device, a second port adapted to receive a mouthpiece through which a patient may inhale and exhale, a third port which is open to the atmosphere, and a fluid passage interconnecting said first, second, and third ports; and



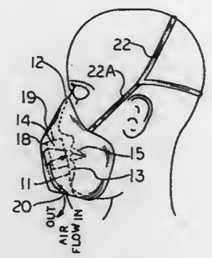
an adapter device for coupling said third port to a sensor port associated with said pressurized gas supply devices whereby said device is adapted to provide pressurized gas to said first port responsive to pressure variations generated by the patient's respiration cycle, said adapter device comprising a generally tubular element having a fluid passage therethrough and having a first end adapted for insertion into the third port and a second end adapted to be coupled to said sensor port, said first end comprising a connector end adapted for insertion into the third port, and said second end comprising a sensor end adapted to be coupled to a proximal end of a fluid line, the distal end of said fluid line being adapted to be coupled to said sensor port, such that said third port and said sensor port are in fluid communication through said generally tubular fluid passage and said fluid line;
the adapter device further including structure for ensuring that the third port remains open to atmosphere when the first adapter end is inserted therein, said structure comprising a generally disk-shaped element circumscribing said tubular element between the sensor end and the connector end, the disk-shaped element having at least one hole extending therethrough, such that when the connector end is inserted into said third port, the disk-shaped element abuts the end of the airway device and the airway device is open to the atmosphere through said at least one hole.

5,570,683
METHODS AND DEVICES FOR TREATING PULMONARY VASOCONSTRICTION AND ASTHMA
Warren M. Zapol, Concord, Mass., assignor to The General Hospital Corporation, Boston, Mass.
Continuation-in-part of Ser. No. 767,234, Sep. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 622,865, Dec. 5, 1990, abandoned. This application Apr. 1, 1994, Ser. No. 222,256
Int. Cl.[6] A61M *11/00*
U.S. Cl. 128—200.14 **33 Claims**



1. A method for treating or preventing reversible pulmonary vasoconstriction in a mammal, which method comprises identifying a mammal in need of such treatment or prevention,
providing a therapeutically-effective amount of gaseous nitric oxide for inhalation by the mammal, and
before, during, or immediately after said gaseous nitric oxide is inhaled by the mammal, introducing into the mammal a therapeutically-effective amount of a phosphodiesterase inhibitor.

5,570,684
HEATING AND HUMIDIFYING RESPIRATORY MASK
R. Douglas Behr, 1509 Wood Pointe La. Apt. 1, Midland, Mich. 48642
Filed Dec. 29, 1995, Ser. No. 581,040
Int. Cl.[6] A62B *18/08*
U.S. Cl. 128—201.13 **20 Claims**



1. A light-weight respiratory face mask for warming and humidifying inhaled air of a person who can wear the mask, i.e., a wearer, and who has a head, and a face, nose, chin and mouth, efficiently with negligible pressure differential, which comprises:
(a) an inner flexible shell capable of covering the wearer's face from the nose to the chin, said shell capable of being spaced apart from the wearer's face, and capable of providing an insulating air space between the wearer's face and the mask when the mask is worn, with peripheral edges of the inner shell able to be placed in contact with the wearer's face to form an air seal when the mask is worn;
(b) a heat exchanger disposed in a pocket in the inner shell located opposite a position which can define the wearer's mouth, and to be in open communication with the wearer's mouth, with the heat exchanger consisting of about 15 to about 50 layers of metallic mesh, and with each of the layers of the metallic mesh having a surface area and thermal conductivity within each layer of the metallic mesh appropriate to the metallic mesh employed and low thermal conductivity to adjacent layer(s) of the metallic mesh, the layers being provided in a sheetlike arrangement, one layer upon another, and being such that air can flow back and forth across the layered arrangement in a direction from outside layer to inside layer and from inside layer to outside layer in a direction substantially perpendicular to the layers in the mask during breathing by the wearer;
(c) an outer shell in a position opposite the wearer's mouth when the mask is worn, with the outer shell having edges and joining the inner shell above and on either side of the heat exchanger, and the outer shell spaced apart from the heat exchanger and the inner shell;
(d) an opening between the the inner shell and the outer shell below the heat exchanger to allow entry of air inhaled by the wearer of the mask when the mask is worn and the wearer's head is in an upright position upwardly, and discharge of air exhaled by the wearer of the mask when the mask is worn and the wearer's head is in an upright position downwardly, such that exhaled air can heat the heat exchanger, which in turn can heat the inhaled air,
with the outer shell, the opening and the heat exchanger being located on the mask so as to be able to reduce a tendency of

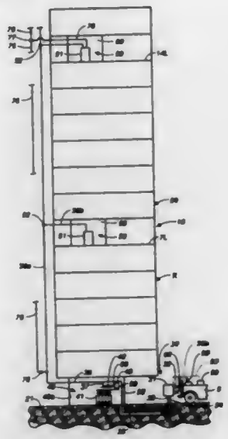
the heat exchanger to otherwise freeze in cold weather when the mask is worn when snow is falling or blowing.

5,570,685

BREATHING AIR REPLENISHMENT CONTROL SYSTEM

Anthony J. Turiello, Redwood City, Calif., assignor to Rescue Air Systems, Inc., San Carlos, Calif.

Filed May 18, 1995, Ser. No. 443,951
Int. Cl.[6] A62B *7/00*
U.S. Cl. 128—202.13 **23 Claims**



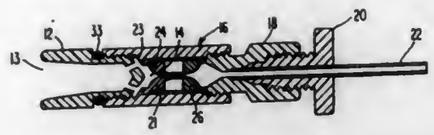
1. A breathing air replenishment control system for installation in a building structure having a first level comprising:
- an air storage subsystem positioned adjacent to said first level of the building structure;
- a series of air fill control stations at spaced locations in the building structure spaced from said air storage system;
- a compressed air inlet extending into said each of said stations and connecting said stations to said air storage subsystem;
- at least one high pressure air storage vessel in each of said stations;
- a pressure regulator in each of said stations and attached in-line between said compressed air inlet and said at least one air storage vessel for controlling the air pressure in said at least one air storage vessel; and
- a quick-disconnect associated with said pressure regulator and said at least one storage vessel for removing an air-filled storage vessel from said station, an essentially empty storage vessel then being connected to said quick disconnect for refilling said essentially empty storage vessel, the air-filled storage vessel after removal being mountable in a fireman's portable self-contained breathing apparatus.

5,570,686

POWDER DISPENSER

Theodore J. Century, 702 W. Carpenter La., Philadelphia, Pa. 19119

Division of Ser. No. 401,079, Mar. 8, 1995, Pat. No. 5,513,630. This application Nov. 1, 1995, Ser. No. 551,711
Int. Cl.[6] A61M *15/00;3/00;* **B05B** *11/02*
U.S. Cl. 128—203.12 **14 Claims**



1. A method for dispensing an amount of a powder dose from a powder dispenser wherein substantially the entire powder dose is dispensed from said powder dispenser, said method comprising the steps of:

providing a dispenser assembly, said dispenser assembly being adapted for connection with an actuating means for dispensing said powder dose, said dispenser assembly including means for receiving said powder dose, means for dispensing said powder dose connected with said receiving means, and a passage through at least a portion of said receiving means and said dispensing means for delivery of said powder dose, said passage through said receiving means defining an inner receiving means surface and said passage through said dispensing means defining an inner dispensing means surface, wherein said inner receiving means surface at least adjacent its connection with said dispensing means is substantially tapered outwardly in a direction of said dispensing means, and said inner dispensing means surface at least adjacent its connection with said receiving means is substantially tapered outwardly in a direction of said receiving means, whereby said passage is configured for delivery of substantially the entire amount of said powder dose;

providing said powder dose in said dispenser assembly;

providing said dispenser assembly in communication with said actuating means; and

actuating said actuating means for dispensing substantially the entire amount of said powder dose from said powder dispenser.

5,570,687

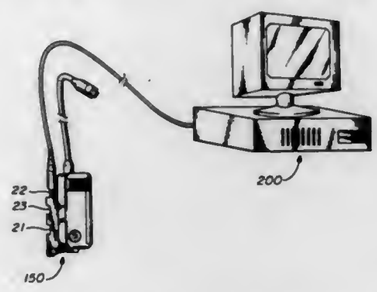
Patent Not Issued For This Number

5,570,688

ADVANCED DIVE COMPUTER FOR USE WITH A SELF-CONTAINED UNDERWATER BREATHING APPARATUS

Michael J. Cochran, Plano, and Billie P. Allen, Garland, both of Tex., assignors to Cochran Consulting, Inc., Richardson, Tex.

Filed Nov. 17, 1993, Ser. No. 154,024
Int. Cl.[6] G06F *159/00;* **A62B** *7/00;9/00;* **A61M** *16/00*
U.S. Cl. 128—205.23 **28 Claims**



1. A dive computer for use by a user of a self-contained underwater breathing apparatus, the dive computer including:
- a watertight tank unit including a microcomputer for controlling operation of the dive computer in accordance with operational parameters that may be set by the user:
- an alterable memory in said tank unit coupled to the microcomputer for storing the operational parameters; and

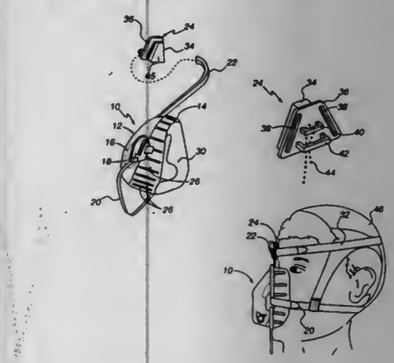
at least two external metal clasps on said tank unit for both physically attaching said tank unit to said self-contained underwater breathing apparatus and electrically connecting the microcomputer to an external personal computer in a detachable manner such that the personal computer can be used prior to a dive to vary the operational parameters that are stored in the alterable memory of the dive computer and that are to be used during a dive.

5,570,689

RESPIRATORY MASK HAVING A VERTICALLY ADJUSTABLE SPACER ELEMENT THAT LIMITS SEAL DEFORMATION ON A WEARER'S FACE

Eric W. Starr; John R. Pujol, and Andrew Serowski, all of Pittsburgh, Pa., assignors to Respironics, Inc., Murrysville, Pa.

Continuation of Ser. No. 129,440, Sep. 30, 1993, abandoned. This application May 1, 1995, Ser. No. 431,626
Int. Cl.[6] A62B *18/08*
U.S. Cl. 128—207.11 **5 Claims**



1. In a respiration system adapted for administering breathing gas to a user, the combination comprising:
- a mask body having an adjustment strap attached to and extending substantially vertically from an upper portion of said mask body;
- a flexible sealing member joined to said mask body and adapted to be placed in confronting contact with a portion of the face of user to form a seal therewith; and
- means for limiting deformation of said sealing member when said sealing member is in contact with a user's face, said means for limiting deformation including means for an element cooperating with said adjustment strap and connected for vertical adjustment along said adjustment strap, said means for limiting deformation of sealing member with respect to a user's face not requiring disengagement of said means for limiting deformation and said adjustment strap.

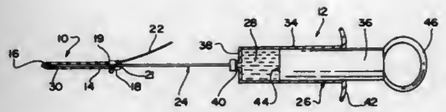
5,570,690

IMPLANTABLE DIAGNOSTIC DEVICE FOR INDICATING STRUCTURAL CHANGES OF INTERNAL ANATOMICAL TISSUE AND SYSTEM AND METHODS THEREFOR

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Filed Apr. 3, 1995, Ser. No. 417,068
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—630 **30 Claims**

1. A device for indicating structural change of internal anatomical tissue comprising
- a bladder for being implanted in the body adjacent the internal anatomical tissue;



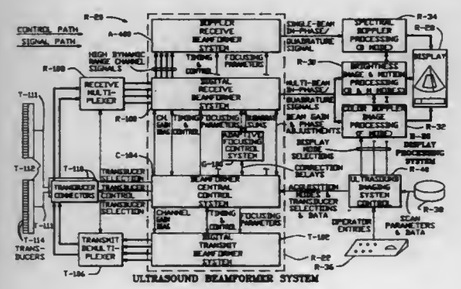
- a fluidic substance contained in said bladder and having a detectable characteristic; and
- a variable size, elastomeric passage in said bladder creating a seal preventing leakage of said fluidic substance from said bladder when said bladder is initially implanted adjacent the anatomical tissue and causing leakage of said fluidic substance from said bladder through said variable size passage when said bladder is stressed due to structural change of the anatomical tissue to provide an indication of the structural change.

5,570,691

METHOD AND APPARATUS FOR REAL-TIME, CONCURRENT ADAPTIVE FOCUSING IN AN ULTRASOUND BEAMFORMER IMAGING SYSTEM

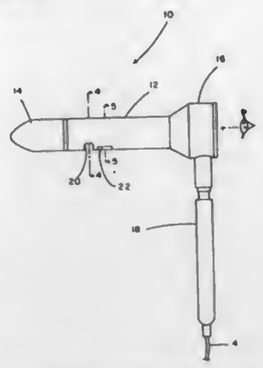
J. Nelson Wright, Menlo Park; Samuel H. Maslak, Woodside; Donald R. Langdon; Gregory L. Holley, both of Mountain View, and Christopher R. Cole, Cupertino, al of, Calif., assignors to Acuson Corporation, Mountain View, Calif.

Filed Aug. 5, 1994, Ser. No. 286,528
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—661.01 **47 Claims**



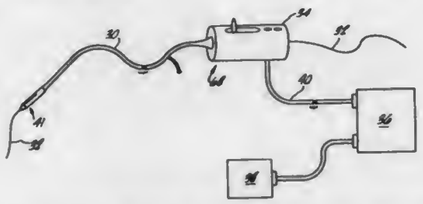
1. In an ultrasound imaging system comprising a plurality of transducer elements; a transmitter providing a plurality of first signals to a respective transmit plurality of the transducer elements based upon respective transmit delay values to form first ultrasonic beams directed to a subject; a receiver acquiring second signals associated with the first beams from a respective receive plurality of the transducer elements and delaying the second signals by respective receive delay values to form delayed second signals; and a summer responsive to the delayed second signals to form second beam signals used to form an image, the improvement comprising:
- a sub-array signal generator forming a plurality of sub-array signals, each responsive to a respective plurality of the delayed second signals;
- a plurality of aberration correction value estimators, each responsive to at least a respective first sub-array signal to generate at least one aberration correction value; and
- an adaptive focus processor modifying at least some of the delay values in response to the aberration correction values to improve the image;
- said generator forming said plurality of sub-array signals, said estimators forming said aberration correction values, and said adaptive focus processor modifying said delay values concurrently with said summer forming said second beam signals.

5,570,692
ULTRASONIC DOPPLER BLOOD FLOW DETECTOR FOR HEMORRHOID ARTERY LIGATION
Kazumasa Morinaga, Fukuoka, Japan, assignor to Hayashi Denki Co. Ltd., Kawasaki, Japan
Filed May 19, 1995, Ser. No. 444,905
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—662.05 **13 Claims**



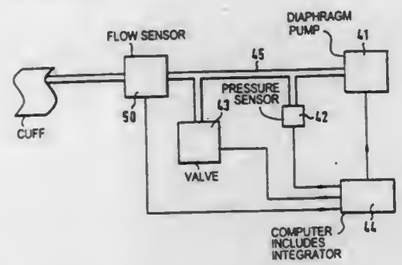
1. An ultrasonic doppler blood flow detector for use in ligation of hemorrhoid arteries of a patient, the detector comprising a hollow cylinder with an interior wall, which has a distal end and a near end, wherein the distal end is enclosed and the near end is open;
wherein the distal end of the detector is insertable through the patient's anus and along the rectal mucosa, and the near end is usable for viewing such rectal mucosa;
wherein the cylinder has an ultrasonic transducer in the interior wall for detecting blood flow in the artery; and
wherein the cylinder has a ligation hole next to the transducer through which the artery is ligated with a ligation device.

5,570,693
METHOD AND APPARATUS FOR ULTRASOUND IMAGING AND ATHERECTOMY
Yue-Teh Jang, and Axel F. Brisken, both of Fremont, Calif., assignors to Cardiovascular Imaging Systems, Inc., Sunnyvale, Calif.
Continuation of Ser. No. 956,622, Oct. 5, 1992, Pat. No. 5,383,460. This application Dec. 15, 1994, Ser. No. 356,528
Int. Cl.[6] A61B *8/12*
U.S. Cl. 128—662.06 **23 Claims**



1. A catheter for ultrasonic imaging within a vessel, said catheter comprising:
a flexible catheter body;
a flexible drive cable disposed within the catheter body;
a transducer housing mounted at the distal end of the catheter body, said transducer housing having a window;
a rotating device attached to the flexible drive cable;
a transducer mounted on a component slidably disposed within a region at the distal end of the catheter body during ultrasonic imaging, said transducer being operably connectable to an ultrasonic transmitter, receiver, signal processing unit, and display unit so that said transducer can ultrasonically scan the vessel to create images of the vessel;
means for longitudinally advancing and retracting the component; and
means for detecting longitudinal transducer position of the transducer and communicating said transducer position to the signal processing unit for use in constructing an image of the vessel;
wherein said transducer is held radially stationary while the rotating device is being rotated.

5,570,694
BLOOD PRESSURE MEASURING DEVICE AND A METHOD OF CONTROLLING THE CUFF PRESSURE IN A BLOOD PRESSURE MEASURING DEVICE
Rainer Rometsch, Wildberg, Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Sep. 8, 1994, Ser. No. 303,020
Claims priority, application Germany, Sep. 16, 1993, 43 31 451.1
Int. Cl.[6] A61B *5/02*
U.S. Cl. 128—680 **18 Claims**

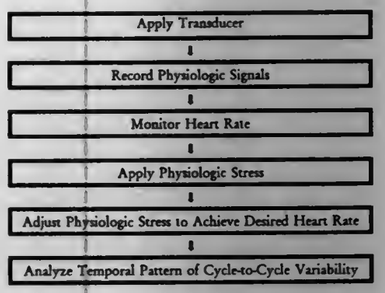


1. A blood pressure measuring device comprising:
a cuff which in use is wrapped around a part of the patient's body;
a pressure adjustment device for controlled filling and emptying of the cuff;
a flow sensor arranged between said pressure adjustment device and said cuff;
an integration means connected to be responsive to said flow sensor for producing a volume value; and
a control means for controlling the pressure adjustment device on the basis of the volume value produced by said integration means as well as on the basis of at least one quantity representative of a pressure/volume dependence of a cuff pressure on a cuff-filling volume.

5,570,695

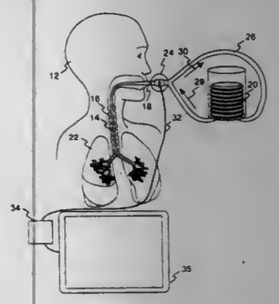
Patent Not Issued For This Number

5,570,696
METHOD AND APPARATUS FOR ASSESSING MYOCARDIAL ELECTRICAL STABILITY
Jeffrey M. Arnold, Wellesley; Paul Albrecht, Bedford; Kevin S. Librett, Boston, and Richard J. Cohen, Waban, all of Mass., assignors to Cambridge Heart, Inc., Bedford, Mass.
Filed Jan. 26, 1994, Ser. No. 187,275
Int. Cl.[6] A61B *5/0452*
U.S. Cl. 128—707 **60 Claims**



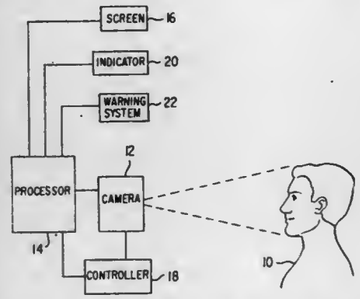
1. Method for assessing a temporal pattern of cycle-to-cycle variability in physiologic waveforms of a subject comprising:
applying one or more transducers to the subject;
recording one or more physiologic signals containing the physiologic waveforms;
monitoring the subject's heart rate;
applying a physiologic stress to the subject other than pacing the heart via electrodes applied directly to the surface of the heart;
adjusting the physiologic stress to achieve a heart rate within a desired range; and
analyzing the temporal pattern of cycle-to-cycle variability in the physiologic waveforms.

5,570,697
SENSOR FOR ANALYZING MOLECULAR SPECIES
Stephen D. Walker; Jack L. Jewell; Greg R. Olbright, and Stanley E. Swirhun, all of Boulder, Colo., assignors to Vixel Corporation, Broomfield, Colo.
Filed Jul. 15, 1994, Ser. No. 275,456
Int. Cl.[6] A62B *7/00*; A61B *5/097*; *5/00*
U.S. Cl. 128—719 **60 Claims**



1. A respiratory oxygen sensor comprising:
a first laser diode emitting a first light beam having a first emission wavelength;
tuning means for tuning said first emission wavelength to an absorption resonance of oxygen;
means for providing a first respiratory gas sample;
first directing means for irradiating said respiratory gas sample with said light beam;
a first detector which receives at least a portion of said light beam and emits signals in response thereto; and
means for interpreting said signals to measure the concentration of oxygen in said respiratory gas sample.

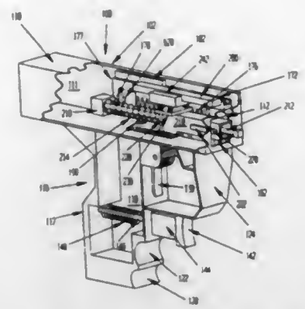
5,570,698
SYSTEM FOR MONITORING EYES FOR DETECTING SLEEP BEHAVIOR
Cheng-Chung Liang, Lawrenceville; Ming Fang, Cranbury, and Ajit Singh, Plainsboro, all of N.J., assignors to Siemens Corporate Research, Inc., Princeton, N.J.
Filed Jun. 2, 1995, Ser. No. 459,148
Int. Cl.[6] A61B *13/00*
U.S. Cl. 128—745 **16 Claims**



1. A system for monitoring eyes for detecting sleep behavior comprising:
human interface means for non-invasive monitoring of said eyes of an individual, for providing scanned images and for providing feedback to said individual; and,
processor means connected to said human interface means for receiving said scanned images from said human interface means, for processing said scanned images and for providing processed data back to said human interface means for providing said feedback to said individual, wherein said human interface means comprises:
imaging means connected to said processor means for monitoring said eyes of said individual; and,
warning system means connected to said processor means for receiving said processed data from said processor means and for providing a warning to said individual, and wherein said processor means comprises:
eye localization means connected to said human interface means;
eye tracking means connected to said eye localization means;
eye motion signal generation means connected to said eye tracking means; and,
analysis means connected between said eye motion signal generation means and said human interface means.

5,570,699
CONTROLLED SURGICAL CORE BIOPSY SYSTEM
Erik S. Kass; 20 Chapel St., Apt. #312A, Brookline, Mass. 02146
Filed Apr. 26, 1994, Ser. No. 233,470
Int. Cl.[6] A61B *10/00*
U.S. Cl. 128—754 **27 Claims**

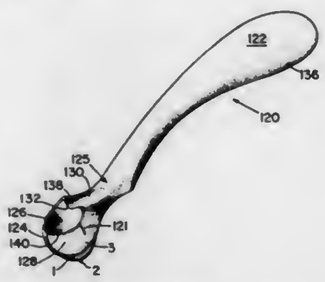
1. An apparatus capable of obtaining tissue samples, comprising:
a gun unit having a handle portion, an upper portion, a first drive means having a first part in the upper portion and a second part in the handle portion, and a second drive means having a first part in the upper portion and a second part in the handle portion;



an adaptor disposed in the upper portion with the adaptor being connected to the first part of the first drive means for the first drive means to drive at least a first portion the adaptor in at least first and second directions and being connected to the first part of the second drive means for the second drive means to drive the adaptor in at least a third direction and a second portion of the adaptor in a predetermined direction; and

a needle assembly connected to the adaptor with the needle assembly being driven by the first and second drive means via the adaptor to trap tissue samples within the needle assembly.

5,570,700
ELLIPTICAL BIOPSY PUNCH
Douglas M. Vogeler, 3587 Little Cottonwood Ln., Sandy, Utah 84092
Filed Oct. 3, 1994, Ser. No. 317,124
Int. Cl.[6] A61B *10/00*
U.S. Cl. 128—754 **16 Claims**



1. A skin biopsy punch, comprising:

(a) a first portion, including:

(i) a handle for engagement by a user's hand, said handle having a first, free end and a second end;

(ii) a support member fixedly attached to said second end of the handle;

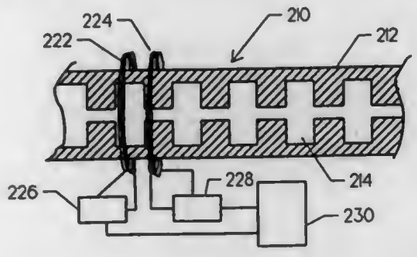
(b) a second portion, including:

(i) a pedestal member having an aperture through which the user may view an area of skin to be incised as said skin biopsy punch approaches said area, said pedestal member being fixedly attached to said support member in a manner such that said support member does not totally obscure the user's vision through said aperture;

(ii) a blade having a cutting surface and being located on the opposite side of said pedestal from said first portion, said blade being configured to incise an area of skin; and

(iii) a depth guard extending from said pedestal and along said blade, said depth guard exposing a predetermined portion of said blade for use in cutting skin, said depth guard exposing a different amount of said blade at varying distances along said cutting surface of the blade, said blade being fixedly attached to said depth guard.

5,570,701
SHAFT MOVEMENT CONTROL APPARATUS AND METHOD
Louis Ellis, St. Anthony, and Roger N. Hastings, Burnsville, both of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.
Continuation-in-part of Ser. No. 48,492, Apr. 16, 1993, which is a continuation-in-part of Ser. No. 929,083, Aug. 12, 1992. This application Oct. 22, 1993, Ser. No. 141,280
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—772 **16 Claims**

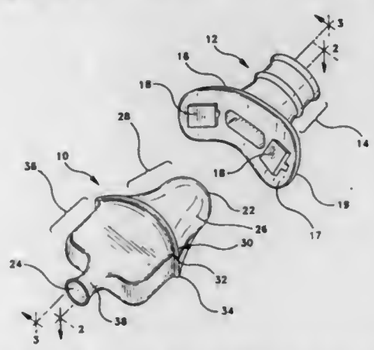


1. A device for use in measuring longitudinal relative movement of a guide wire the device comprising:

a magnetically active segment on the guide wire; and

electrical coil means positioned around the magnetically active segment on the guide wire such that a magnetic force therebetween couples the coil means and the guide wire together for providing signals indicative of the relative position and movement between the guide wire and the coil means.

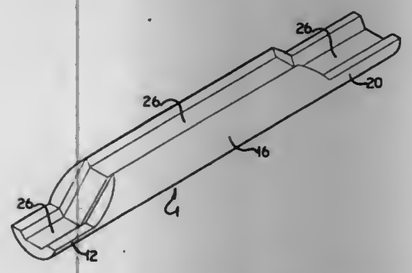
5,570,702
PROPHYLACTIC DEVICE FOR A MOUTHPIECE
David Forman, 3008 Bedminster Rd., Perkasie, Pa. 18944
Filed Jan. 29, 1996, Ser. No. 593,771
Int. Cl.[6] A61F *6/02*; A61C *5/14*
U.S. Cl. 128—842 **15 Claims**



1. A prophylactic device for a mouthpiece for preventing direct physical contact between the mouth and the mouthpiece, said prophylactic device comprising:

an elastic, water impermeable structure having a first open end and a second open end, said structure being sized to receive the mouthpiece therein between said first open end and said second open end, wherein said structure substantially conforms to the contours associated with the mouthpiece and creates a physical barrier between the mouthpiece and the mouth.

5,570,703
CONTOURED THERAPEUTIC SPINAL SUPPORT
Philip L. Cooper, 1700 Elizabeth St., Anniston, Ala. 36207
Filed Jan. 23, 1995, Ser. No. 390,308
Int. Cl.[6] A61F *5/01*
U.S. Cl. 128—845 **2 Claims**



1. A spinal support for supporting and massaging the human spine while recumbent or seated, comprising:

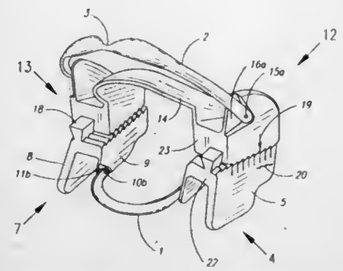
a resilient elongated cylindrical member having a sacral section, a lumbar section, and a thoracic section, said lumbar section intermediate said sacral and said thoracic sections, said elongated cylindrical member having an elongated notch extending along the entire length of said elongated cylindrical member defining opposing ridges along either side of said elongated notch, said elongated notch being deeper along said sacral and said thoracic section than said lumbar section such that said lumbar section has a substantially larger cross-section than that of said sacral and said thoracic sections, whereby said elongated cylindrical member may conform to the contours of the sacral, lumbar, and thoracic portions of the human spine, said member grasping the spine and said ridges massaging the muscles adjacent the sides of the spine.

5,570,704
UNIVERSAL, USER-ADJUSTABLE ORAL CAVITY APPLIANCE TO CONTROL SNORING AND REDUCE EPISODES OF OBSTRUCTIVE SLEEP APNEA
Ronald D. Buzzard, Pittsburg, Kans.; Larry D. Buzzard, Grove, Okla.; Peggy L. Kenyon, Pittsburg, Kans., and Brian T. Agre, Tulsa, Okla., assignors to Snoreless Corp, Pittsburg, Kans.
Continuation-in-part of Ser. No. 144,652, Oct. 28, 1993, abandoned. This application Dec. 20, 1994, Ser. No. 359,881
Int. Cl.[6] A61F *5/56*
U.S. Cl. 128—848 **22 Claims**

1. A universal, user-adjustable oral cavity appliance designed to control snoring and reduce episodes of obstructive sleep apnea by maintaining the mandible in an open and forward position during sleep, said appliance comprising:

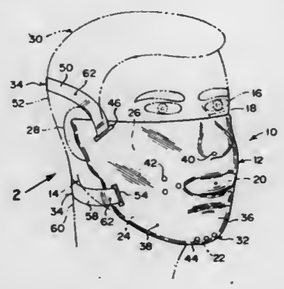
a. a lingual mandibular pressure strap means to contact and to embed in the lingual mandibular tissues below the mandibular anterior teeth and to push against the contacted lingual mandibular tissues;

b. a labial maxillary pressure strap means to contact and to embed in the labial maxillary tissues above the maxillary anterior teeth and to pull against the contacted labial maxillary tissues; and



c. means for adjustably connecting said straps such that the relative position of each said strap to the other may be varied to obtain a separation between the maxilla and mandible and a forward thrust of the mandible sufficient to prevent occlusion of the oropharyngeal airway.

5,570,705
FACIAL RESTRAINT FOR INCARCERATED PERSON
George Burke, 912 NE. 22nd St., Gainesville, Fla. 32601
Filed Mar. 1, 1995, Ser. No. 396,615
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—869 **6 Claims**

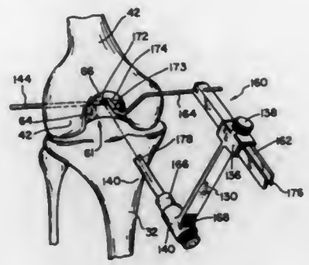


1. A facial restraint for incarcerated person, comprising:

a covering of material sufficiently strong that it cannot be readily bitten through or torn, and shaped to extend over the nose, mouth, chin and cheeks of the incarcerated person, the covering having an impervious area to overlie the mouth of the incarcerated person and a plurality of small apertures on each side of the impervious area to enable passage of air through the apertures and around the impervious area to the persons mouth; and

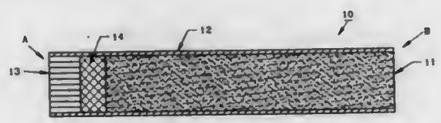
retaining means in the form of straps for securely holding the covering against the face of the incarcerated person, thereby to protect a person in the presence of the incarcerated person from being bitten and being spat upon from the mouth of the incarcerated person without impeding breathing by the incarcerated person, said covering being a molded sheet of flexible and elastic transparent polyurethane shaped to contour about the nose below the bridge, mouth, chin, jaw and cheeks up to the ears of the incarcerated person.

5,570,706
METHOD FOR ACL RECONSTRUCTION
Stephen M. Howell, 4834 Roselin Way, Elk Grove, Calif. 95759
Division of Ser. No. 20,901, Feb. 23, 1993, Pat. No. 5,300,077, which is a continuation of Ser. No. 552,815, Jul. 19, 1990, abandoned. This application Apr. 4, 1994, Ser. No. 222,082
Int. Cl.[6] A61B 17/58;17/60;19/00
U.S. Cl. 128—898 37 Claims



22. A method of replacing an anterior cruciate ligament with a substitute graft member, the method comprising the steps of:
a) determining a site in the intercondylar notch for guiding the creation of a tibial tunnel;
b) positioning a drill guide adjacent to said intercondylar notch;
c) using said drill guide to insert a locator member within a first femoral tunnel;
d) positioning the knee in at least one specific configuration;
e) creating the tibial tunnel while the knee is positioned in at least one specific configuration by using the locator member and the intercondylar notch as guides;
f) creating a second femoral tunnel;
g) inserting the substitute graft member in the second femoral tunnel and the tibial tunnel; and
h) enhancing a secured condition of said graft member.

5,570,707
CIGARETTE WITH FILTER
Archie S. Hill, 6511 Ste. R.D., Archdale, N.C. 27263
Filed Jun. 19, 1995, Ser. No. 492,403
Int. Cl.[6] A24D 3/00
U.S. Cl. 131—331 20 Claims

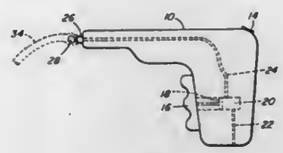


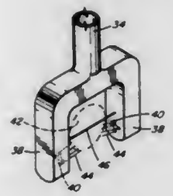
17. A cigarette having a charge of smokable material, said cigarette comprising: a tacky filter, said tacky filter positioned proximate said smokable material, said tacky filter comprising a tacky substance, said tacky substance disposed on said tacky filter to adhere particles within the smoke passing through said filter to prevent such particles from reaching the smoker, said tacky substance maintaining its tacky characteristic throughout the storage and use of said cigarette.

5,570,708
PROCESS FOR THE PERMANENT RESHAPING OF KERATINOUS MATERIAL
Henri Samain, Blevres, France, assignor to L'Oreal, Paris, France
Filed Apr. 11, 1995, Ser. No. 419,696
Claims priority, application France, Apr. 11, 1994, 94 04228
Int. Cl.[6] A45D 7/04
U.S. Cl. 132—205 44 Claims

1. A treatment process for the permanent reshaping of keratinous material, which comprises the following steps:
(i) applying to keratinous material a reducing composition containing at least one thiol selected from (a) cysteisa, (b) cystonline, (c) thioglycolic acid, (d) thiolactic acid, (e) 3-mercaptopropionic acid, (f) the salts of any of (a)–(e), and (g) the esters of any of the acids (a) and (c)–(e); said keratinous material being placed under mechanical tension before, during or after said composition is applied to said keratinous material;
(ii) rinsing said keratinous material to which said composition has been applied;
(iii) allowing the rinsed keratinous material to undergo a waiting phase;
(iv) subsequently applying an acidic composition containing at least one carboxylic acid to the keratinous material of (iii);
(v) allowing the keratinous material treated in (iv) to undergo a second waiting phase; and
(vi) rinsing the keratinous material of (v); wherein said keratinous material is separated from said mechanical tension of step (i) either before or after said application of said acidic composition in step (iv) or before or after said rinsing in step (vi).

5,570,709
DENTAL DEVICE
Malika I. Haddad, both of Coquitlam, Canada, assignor to Jinah Gaby Haddad, Coquitlam, Canada
Filed Jul. 29, 1994, Ser. No. 282,646
Int. Cl.[6] A61C 15/04;17/00
U.S. Cl. 132—322 11 Claims

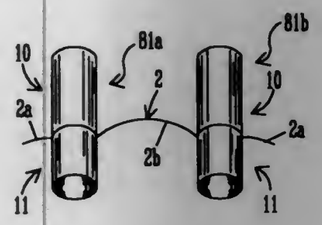




1. Portable, lightweight, apparatus to clean teeth comprising:
An intergral reservoir for cleaning liquid;
means to force cleaning liquid from the reservoir;
an outlet from the reservoir formed with attachment means;
a wand to be attached to said outlet and having an inlet to communicate with said outlet and bifurcated limbs at its distal end, each said limb having a cruciform wand outlet on an inner surface dimensioned to ensure a moderate pressure jet of liquid from said outlet and being positioned in said limb to direct a jet of liquid at an angle of about 110° to 120° to the longitudinal axis of a tooth, away from the gum; and

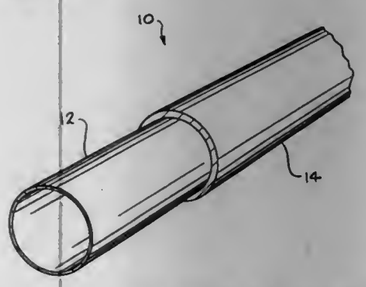
means adjacent to distal end each limb to attach dental floss, said means being positioned further from the distal end of said bifurcated limbs than said outlet.

5,570,710
DENTAL FLOSS HOLDER
Kuang-Hsing Wei, and Kuang-Hung Wei, both of 18500 Bay Leaf Way, Germantown, Md. 20874
Filed Sep. 15, 1995, Ser. No. 528,889
Int. Cl.[6] A61C 15/00
U.S. Cl. 132—232 17 Claims



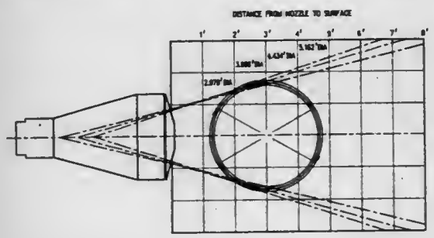
1. A dental floss holder for securely fastening one end of a dental floss, said holder comprising:
(a) a cover member having screw threads thereon;
(b) a screw head having a first end and a second end, said screw head having matching screw threads thereon so that when said cover member screws together with said screw head, the floss is fastened between said screw threads of said cover member and said screw head; and
(c) a screw base connected to said second end of said screw head, said screw base being an elongated configuration adapted to be handled by fingers, whereby when the floss is placed across said first end of said screw head, the floss may be held by fingers against said screw base so as to facilitate the screwing together of said screw threads, whereby when the floss is securely fastened between said screw threads, said holder having the floss fastened therein is manipulated by a hand in lieu of winding the floss around a finger for teeth cleaning.

5,570,711
COMPOSITE AND TIE LAYER THEREFOR
Brian J. Walsh, Sylvania, Ohio, assignor to Aeroquip Corporation, Maumee, Ohio
Continuation of Ser. No. 206,876, Mar. 4, 1994, Pat. No. 5,441,155. This application Aug. 9, 1995, Ser. No. 512,846
Int. Cl.[6] F16L 11/00
U.S. Cl. 138—137 23 Claims



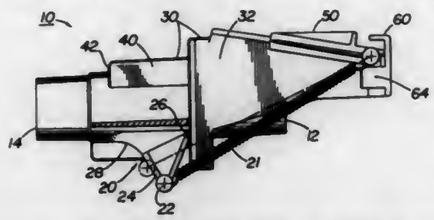
1. A composite suitable for use with fuel systems for motor vehicles comprising:
a thin inner layer resistant to hydrocarbon fuel permeation consisting essentially of a polyfluorocarbon polymer wherein the polyfluorocarbon polymer is tetrafluoroethylene hexafluoropropylene vinylidene fluoride; and
an outer cover consisting essentially of a thermoplastic elastomer wherein the thermoplastic elastomer is selected from the group consisting of styrene block copolymers, polyolefinic blends, elastomeric alloys, polyurethanes, copolyesters and elastomeric polyamides.

5,570,712
ROTATING NOZZLE
George J. Mathieus, 498 Turkey Ranch Rd., Goldendale, Wash. 98620
Division of Ser. No. 396,562, Mar. 1, 1995. This application Oct. 20, 1995, Ser. No. 546,358
Int. Cl.[6] B08B 3/02
U.S. Cl. 134—172 13 Claims



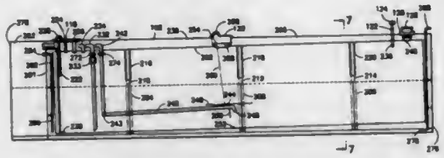
8. A rotating nozzle for use in cleaning or stripping a surface comprising:
a head adapted to be mounted on, and rotatable around, a high pressure fluid gun, said head having a longitudinal axis, a face with a center, and a fluid conduit therein; and
at least two sets of jets on said face of said head, said jets communicating with said fluid conduit for passage of high pressure fluid through said head and said jets, each of said sets having at least one jet, each of said sets of jets being disposed at an acute angle from the longitudinal axis of said head, each of said sets of jets being disposed at a different distance from the center of said face, the distances of said sets of jets being selected such that rotation of said nozzle causes separate high pressure fluid streams from each of said sets of jets to impinge upon the surface to be cleaned or stripped in a number of substantially circular concentric jet stream patterns equivalent to the number of said sets of jets, the distances of said sets of jets from the center of said face further being selected such that entire areas of the surface between adjacent ones of the circular concentric jet stream patterns are also cleaned or stripped by the high pressure fluid streams after they initially impinge on the surface and as they are angularly deflected therefrom, wherein the acute angle of each of said sets of jets is different than the acute angle of the others of said sets of jets and the different distances of said sets of jets are inversely proportional to the size of the acute angles of said sets of jets such that said set of jets having the largest angle is the shortest distance from the center of said face and said set of jets having the smallest angle is the greatest distance from the center of said face such that the separate high pressure fluid streams from each of said sets of jets first converge, then intersect, and finally diverge prior to impinging upon the surface to be cleaned or stripped, wherein each of said jets in a given one of said sets is symmetrically disposed on said face with respect to the others of said jets in said given set such that said head is balanced during rotation.

5,570,713
FLOW CONTROL WEIR VALVE
Gerhardus J. Stoltz, Pretoria, South Africa; Ronald J. Sargent, Lighthouse Point, and Shawn M. McLaughlin, Delray Beach, both of Fla., assignors to Baracuda International Corporation, Ft. Lauderdale, Fla.
Filed Nov. 7, 1994, Ser. No. 335,083
Int. Cl.[6] G05D *7/01*
U.S. Cl. 137—12 **13 Claims**



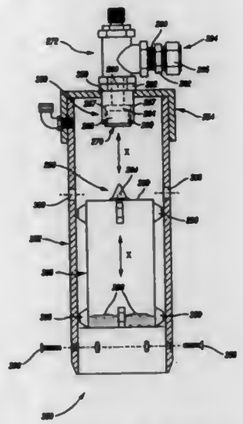
1. A flow control valve for compensating for fluctuations in the pressure within a selected cleaning system having a pump communicating with a swimming pool cleaner, the valve comprising:
(a) a body comprising an inlet, an outlet and a bypass inlet;
(b) a cover, defining a top surface, pivotally mounted above the bypass inlet and capable of moving from a closed position to an open position;
(c) an arm attached to the cover; and
(d) a spring defining a first end attached to the arm of the cover and a second end attached to an adjusting means in which the adjusting means moves the second end of the spring farther away from the first end to thereby increase the amount of closing force provided by the spring in order to conform with fluid flow parameters of the selected cleaning system so that the fluid flow through the inlet is substantially constant.

5,570,714
EXPLOSION-RETARDANT CONTAINMENT VESSEL FOR STORAGE OF FLAMMABLE LIQUIDS
Jacob J. Magish, Brookfield, Conn., assignor to Liquid Management Products, Inc., Bethel, Conn.
Filed Mar. 18, 1993, Ser. No. 33,135
Int. Cl.[6] B65D *90/04*
U.S. Cl. 137—202 **6 Claims**



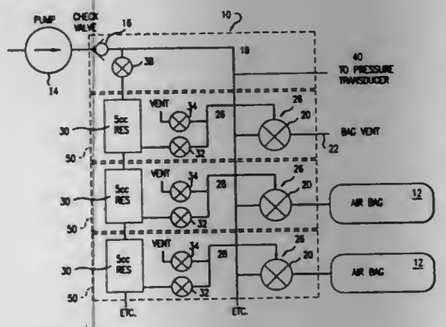
1. An above-ground, explosion-retardant containment vessel capable of storing a flammable liquid, said containment vessel comprising:
a substantially rigid primary storage tank capable of storing the flammable liquid, said primary storage tank having a predetermined volumetric capacity;
a substantially rigid containment dike completely enclosing said primary storage tank, said containment dike forming an interstitial space between the exterior of said primary storage tank and the interior of said containment dike, said containment dike being gas-tight and liquid-tight to contain any fluid leakage from said primary storage tank within the interstitial space;
a working vent from the interior of said primary storage tank to the exterior of said containment dike, said working vent including a device to restrict the flow of liquids therethrough, said working vent to allow vapor communication between the interior of said primary storage tank and the exterior of said containment dike; and
a first emergency vent operatively attached to said primary storage tank, said first emergency vent to allow conditional fluid communication between the interior of said primary storage tank and the interstitial space in the event the amount of fluid within said primary storage tank exceeds the predetermined capacity thereof.

5,570,715
SUMP-VENTED CONTROLLER MECHANISM FOR VACUUM SEWERAGE TRANSPORT SYSTEM
Burton A. Featheringill, and John M. Grooms, both of Rochester, Ind., assignors to Airvac, Inc., Rochester, Ind.
Filed Apr. 26, 1995, Ser. No. 429,536
Int. Cl.[6] E03B *5/00*
U.S. Cl. 137—205 **15 Claims**



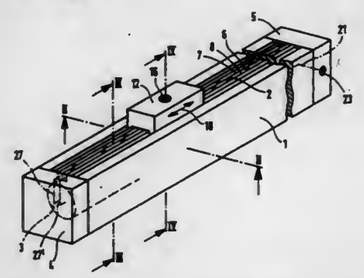
1. An apparatus for regulating the transport of sewage from a source to a transport conduit and associated collection station normally maintained at vacuum or subatmospheric pressure, the apparatus comprising:
a. a sewage accumulation receptacle installed underground and connected to the sewage source by conduit means for collecting sewage prior to discharge to the transport conduit;
b. said receptacle being adapted for connection to conduit means communicating with a remote substantially atmospheric pressure source to maintain said receptacle before and after discharge generally at a pressure level above the normal vacuum or subatmospheric pressure of the sewage transport conduit;
c. a differential pressure-operated sensor means operatively in communication with said receptacle for establishing communication of atmospheric or vacuum/subatmospheric pressure as an output pressure condition, said sensor means having a first inactivated condition, and a second activated condition arising when the sewage collected in said receptacle reaches a predetermined volume, whereby vacuum or subatmospheric pressure is delivered while said sensor means is in one condition, and whereby atmospheric pressure is delivered while said sensor means is in another condition, the atmospheric pressure being provided by conduit means in operative communication with said receptacle without an air vent openly protruding above ground level;
d. a differential pressure-operated controller means operatively in communication with the output pressure condition delivered by said sensor means for establishing communication of atmospheric or vacuum/subatmospheric pressure as an output pressure condition, said controller means having a first condition and a second condition, whereby vacuum or subatmospheric pressure is delivered while said controller means is in one condition, and whereby atmospheric pressure is delivered while said controller means is in another condition, the atmospheric pressure being provided by conduit means in operative communication with said receptacle without an air vent openly protruding above ground level;
e. conduit means operatively connecting said sensor means and controller means to the vacuum/subatmospheric pressure of the sewage transport conduit;
f. a differential pressure-operated flow control means operatively in communication with the output pressure condition delivered by said controller means, said flow control means having an open condition to permit passage of sewage from said receptacle to the transport conduit and thereby commence a sewage transport cycle therein, said flow control means also having a closed condition to block passage of sewage therethrough, thereby terminating the transport cycle, whereby said flow control means converts between the open and closed conditions based upon the pressure condition delivered by said controller means; and
g. atmospheric vent valve means for inhibiting passage of sewage collected within said receptacle through said conduit means for providing atmospheric pressure from said receptacle to said sensor means and said controller means when the vacuum/subatmospheric pressure condition delivered thereto by said vacuum/subatmospheric pressure conduit rises above a predetermined minimum level.

5,570,716
INFLATION CONTROL SYSTEM
Dean L. Kamen, Bedford, and Valentine Faust, Bow, both of N.H., assignors to DEKA Products Limited Partnership, Manchester, N.H.
Division of Ser. No. 184,638, Jan. 21, 1994, Pat. No. 5,447,286.
This application Aug. 11, 1994, Ser. No. 289,089
Int. Cl.[6] A47C *4/54*; F16K *31/128*
U.S. Cl. 137—223 **8 Claims**



1. An inflation control system comprising:
a main air supply;
a pilot air supply;
three modules, each module having
a main outlet;
a main inlet, wherein the main inlet for one of the modules is attached to the main air supply, and the main inlet for each of the remaining two modules is attached to the main outlet of another module;
a pilot outlet;
a pilot inlet, wherein the pilot inlet for one of the modules is attached to the pilot air supply, and the pilot inlet for each of the remaining two modules is attached to the pilot outlet of another module;
a main air conduit portion providing fluid communication between the main inlet and the main outlet;
a pilot air conduit portion providing fluid communication between the pilot inlet and the pilot outlet;
a high-flow valve having (i) a pilot port and (ii) a high-flow outlet, the high-flow valve being in fluid communication with the main conduit portion, the high-flow valve having an open state in which the main air conduit portion is in fluid communication with the high-flow outlet and a closed state in which fluid communication between the main conduit portion and the high-flow outlet is disrupted;
a pilot valve disposed between the pilot air conduit portion and the pilot port, the pilot valve having an open state in which the pilot air conduit portion is in fluid communication with the pilot port and a closed state in which fluid communication between the pilot air conduit portion and the pilot port is disrupted;
a vent valve connected to the pilot port, the vent valve having an open state and a closed state, wherein, when the vent valve is in its open state, the high-flow valve is urged into its closed state, and, when the pilot valve is in its open state and the vent valve is in its closed state, the high-flow valve is urged into its open state;
wherein the modules are adapted to be interchangeable with each other;
wherein the high-flow outlet of one of the modules is attached to a vent, and the high-flow outlets of each of the remaining two modules is connected to an inflatable bag;
wherein the modules are arranged so that the pilot air conduit portions form a pilot air conduit and so that the main air conduit portions form a main air conduit; and
wherein air flows from the main air supply through the main air conduit to the bags to inflate the bags, and air flows from the bags through the main air conduit to the vent to deflate the bags; and
means for switching each of the pilot valves and each of the vent valves between their open and closed states.

5,570,717
DISTRIBUTOR DEVICE
Kurt Stoll, Esslingen, Germany, assignor to Festo KG, Esslingen, Germany
Filed Nov. 3, 1994, Ser. No. 333,850
Claims priority, application Germany, Nov. 27, 1993, 93 18 183.3
Int. Cl.[6] F16L *27/12*
U.S. Cl. 137—580 **11 Claims**



1. A distributor device for compressed air, comprising a distributor housing, in which a space for the fluid to be distributed is provided, said housing defining a longitudinal slot thereon, two sealing bars serving for sealing the distributor space at the longitudinal slot and extending along the longitudinal slot, said sealing bars being arranged opposite to each other and respectively adjacent to one of two edges of the slot and adapted, using the effect of a pressure fluid acting on backs thereof, to be thrust toward each other, and a tapping device adapted to be run along the longitudinal slot, said tapping device having an opening body, serving for the transmission of the fluid and fitting between the two sealing bars, same then being locally thrust apart, wherein on the back side of each respective sealing bar a secondary pressure space is defined in addition to the distributor space, such space extending along the

associated sealing bar, means being provided for the supply of pressure fluid to such secondary pressure space, each such secondary pressure space being delimited by a wall section constituted by the associated sealing bar or being transversely movable in order to act on such sealing bar, wherein said distributor housing includes at least one connection duct formed in a wall section thereof for connecting said secondary pressure spaces with said distributor space whereby both said secondary pressure spaces and said distributor space fluidly communicate with a common source of pressure fluid.

5,570,718

MULTIPLEXING VALVE

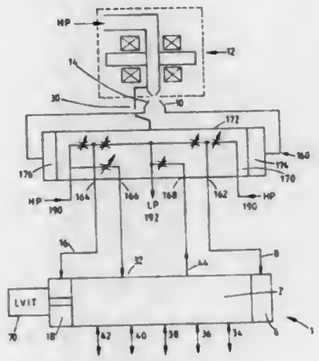
Trevor S. Smith, West Midlands; John D. Pritchard, Warwickshire, both of England, and John H. Buscher, East Amherst, N.Y., assignors to Lucas Industries public limited company, West Midlands, England

Filed Sep. 6, 1994, Ser. No. 301,132

Claims priority, application United Kingdom, Sep. 18, 1993, 9319358

Int. Cl.[6] F15B *13/06*

U.S. Cl. 137—596.16 **10 Claims**



1. A multiplexing valve, comprising;

a valve casing defining N ports, where N is an integer greater than two;

a first valve member axially movable within said valve casing and having first and second ends and determining a first variable volume between said first end of said first valve member and said valve casing and a second variable volume between said second end of said first valve member and said valve casing; and

a pilot valve, in which;

said first valve member is movable to a plurality of Jth positions, where J is an integer between 1 and (N−1) inclusive, said Jth position connecting a (J+1) port to a first port;

said pilot valve having means for controlling fluid flow to said first and second volumes so as to control a position of said first valve member; and

said pilot valve further having means for isolating said first port from one of a fluid source and a fluid sink until said first valve member has reached a selected one of said Jth positions.

5,570,719

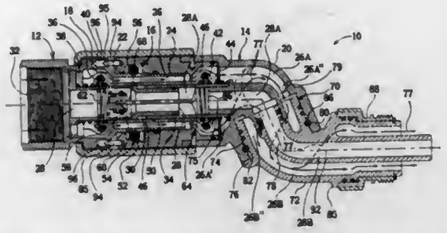
BREAKAWAY HOSE COUPLING

Alton E. Richards, and Walter M. Carow, both of Kingston, Tenn., assignors to Richards Industries, Inc., Rockwood, Tenn.

Filed Jul. 7, 1995, Ser. No. 499,609

Int. Cl.[6] F16L *29/00*

U.S. Cl. 137—614.04 **17 Claims**



1. A breakaway hose coupling for releasably joining first and second fuel dispensing devices in fluid communication, said coupling comprising:

a first valve assembly, including

(A) a first valve housing for being releasably secured to, and being placed in flow-through fluid communication with, a first dispensing device, said first valve housing being provided with a fuel passageway therethrough in fluid communication with the first dispensing device when said first valve housing is secured to the first dispensing device, and being provided with a vapor passageway therethrough in fluid communication with the first dispensing device when said first valve housing is secured to the first dispensing device, said fuel passageway and said vapor passageway being substantially coaxially disposed, with said fuel passageway jacketing said vapor passageway;

(B) a first valve mechanism including a first valve member mounted in said fuel passageway of said first valve housing for selectively terminating the flow of fuel through said fuel passageway of said first valve housing, said first valve member being aligned on a first axis;

(C) a further valve mechanism including a further valve member mounted in said vapor passageway of said first valve housing for selectively terminating the flow of fuel vapor through said vapor passageway of said first valve housing;

a second valve assembly including

(A) a second valve housing for being placed in flow-through fluid communication with a second dispensing device, said second valve housing being releasably engagable with said first valve housing placing said second valve housing in fluid communication with said first valve housing, said second valve housing being provided with a fuel passageway therethrough in fluid communication with the second dispensing device and said fuel passageway of said first valve housing, and provided with a vapor passageway therethrough in fluid communication with the second dispensing device and said vapor passageway of said first valve housing, said fuel passageway of said second valve housing and said vapor passageway of said second valve housing being substantially coaxially disposed, with said fuel passageway of said second valve housing jacketing said vapor passageway of said second valve housing, said second valve housing defining a first end portion for engaging said first valve housing and an arcuate second end portion defining an annular receptor aligned on a second axis inclined with respect to said first axis, said fuel passageway of said second valve housing being disposed so as to encircle said vapor passageway of said second valve housing from said first end portion of said first valve housing up to a point proximate said annular receptor of said second valve housing and thereafter constricting into a non-encircling outer radial portion;

(B) a second valve mechanism including a second valve member mounted in said fuel passageway of said second housing for selectively terminating the flow of fuel through said fuel passageway of said second housing when said first and second valve housings are disengaged;

(C) an elbow establishing flow-through fluid communication between the second dispensing device and said second valve housing, said elbow being provided with a fuel passageway therethrough in fluid communication with the second dispensing device and said fuel passageway of said second valve housing, and provided with a vapor passageway therethrough in fluid communication with the second dispensing device and said vapor passageway of said second valve housing, said fuel passageway of said elbow and said vapor passageway of said elbow being substantially coaxially disposed, with said fuel passageway of said elbow jacketing said vapor passageway of said elbow, said elbow defining a first end portion for being rotatably received in said annular receptor of said second housing placing said fuel passageway of said elbow in fluid communication with said non-encircling outer radial portion of said fuel passageway of said second valve housing;

(D) a swivel connecting mechanism pivotally securing said elbow to said second valve housing whereby said elbow selectively swivels with respect to said second valve housing on said second axis; and

an automatic disconnect mechanism selectively maintaining said first and second valve housings in an engaged position, and selectively disengaging said first and second valve housings, whereby said first and second valve mechanisms terminate the flow of fuel through said first and second valve housings, respectively, and said further valve mechanism terminates the flow of fuel vapor through said first valve housing, upon the disengaging of said first and second valve housings.

5,570,720

MIXING VALVE OF SINGLE LEVER TYPE PROVIDED WITH A DEVICE FOR PREVENTING PRESSURE SHOCK AT CLOSING MOVEMENT OF THE LEVER

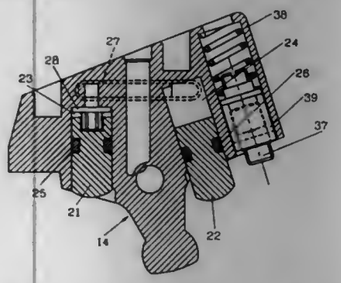
Voldemar Riis, Vårgårda, Sweden, assignor to Gustavsberg Vargarda Armatur AB, Sweden

Division of Ser. No. 162,199, Dec. 16, 1993, Pat. No. 5,413,144. This application Apr. 3, 1995, Ser. No. 415,691

Claims priority, application Sweden, Jun. 17, 1991, 9101852

Int. Cl.[6] F16K *11/078;31/72*

U.S. Cl. 137—625.17 **5 Claims**



1. A single-lever mixer valve for liquids of different temperatures, comprising a housing which is provided with an inlet for each of said liquids and a common outlet, and a lever for controlling the amount and the temperature of the liquid flowing out through said outlet, an actuator, connected to said lever, provided in the housing and a valve member in the housing cooperating with said actuator, said actuator having a built-in closing damper for reducing hydraulic shock resulting from rapid closing of the mixer valve, said closing damper including at least one sealed chamber containing a fluid, a piston movable in said chamber, and a throttling member defining flow passages for said fluid, said piston adapted to force the fluid from the sealed chamber via said throttling member when the lever closes the mixer valve, said throttling member adapted to be deformed elastically when the fluid pressure in said chamber exceeds a predetermined value to cause a progressive reduction of the flow passages of the throttling member so that resistance to flow of the fluid increases at a fast-closing movement of the lever, while the resistance to flow of the fluid remains low at a slow-closing movement of the lever, said actuator further including a stop part and a stop surface positioned to cooperate with said stop part for limiting the maximum amount of liquid flowing out through said outlet, and wherein the stop part includes a spring loaded screw which is adapted to retract and provide a temporary increase of the flow of liquids through said outlet when being pressed against the stop surface.

5,570,721

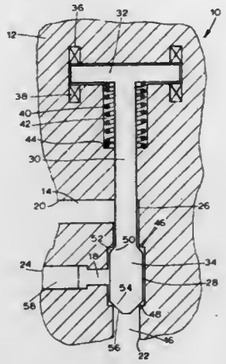
DOUBLE ACTING SOLENOID AND POPPET VALVE SERVOMECHANISM

Steven J. Funke, Peoria, Ill.; Craig W. Lohmann, Denver, Iowa, and Dennis D. Feucht, Morton, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Mar. 29, 1995, Ser. No. 412,746

Int. Cl.[6] F15B *13/044*

U.S. Cl. 137—625.65 **4 Claims**



1. A fluid pressure control valve comprising:

a valve body with a fluid inlet port, a fluid outlet port, and an intermediate fluid port;

a first valve seat communicating with said fluid inlet and said intermediate fluid ports;

a second valve seat communicating with said intermediate fluid port and said fluid outlet port;

a popper valve slidably mounted in said valve body having an actuating end and an opposite fluid sealing end,

said popper valve fluid sealing end including a first sealing portion sealably engageable with said first valve seat to open and close said first valve seat, and a second sealing portion sealably engageable with said second valve seat to open and close said second valve seat;

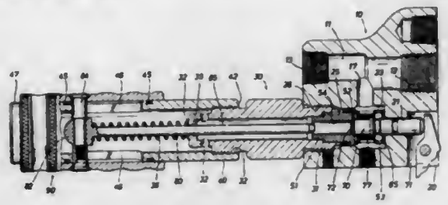
an electrical actuator adapted for mounting at said popper valve actuating end and momentarily operably energized for moving said popper valve into respective sealing engagement with said first and second valve seats;

spring means coupled to said popper valve and providing a spring force for maintaining said popper valve first sealing portion sealably engaged with said first valve seat when said electrical actuator is not energized; and

fluid pressure means coupled to said popper valve and providing respective first and second hydraulic forces, said second hydraulic force maintaining said popper valve second sealing portion sealably engaged with said second valve seat when said electrical actuator is not energized, said second hydraulic force being larger than said spring force with said popper valve engaging said second valve seat and wherein said second valve seat is larger than said first valve seat to enable said second hydraulic force to exceed said spring force when

said popper valve engages said second valve seat and said spring force to exceed said first hydraulic force when said popper valve engages said first valve seat.

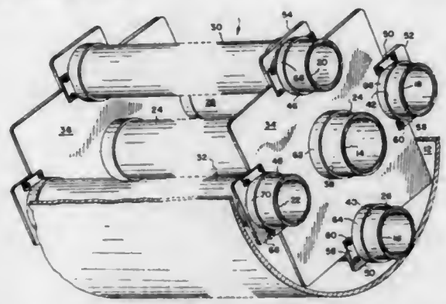
5,570,722
VALVE RELEASE MECHANISM
Peter J. Goldsmith, Houston, Tex., assignor to Control Rain Systems, Inc., Houston, Tex.
Filed Aug. 17, 1995, Ser. No. 516,492
Int. Cl.[6] B05B *1/14*
U.S. Cl. 137—882 **15 Claims**



1. In a water blasting gun having a block with an activating fluid inlet, first and second activating fluid outlets, first conduit linking said inlet and said first outlet, second conduit linking said inlet and said second outlet, and valve means for selectively establishing communication between said inlet and one of said first and second outlets, said valve means including a valve member, a valve seat, and spring means biasing said valve member toward an unseated position, the improvement comprising:

user operated actuator means for unseating said valve member from said seat.

5,570,723
SUPPORT SYSTEM AND METHOD FOR JACKETED MULTIPLE CRYOGENIC PIPES FOR CYROGENIC FLUID TRANSFER
Kwang-Fu P. Hwang, Macungie; Alexander P. Varghese; David D. Nguyen, both of Bethlehem, and Thomas Joseph, Macungie, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Aug. 26, 1994, Ser. No. 296,831
Int. Cl.[6] F16L *9/18*
U.S. Cl. 138—111 **12 Claims**

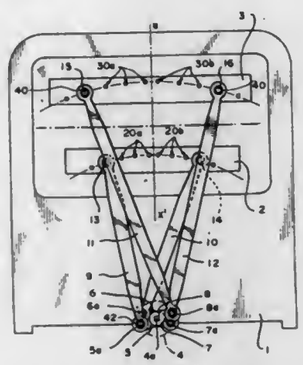


1. An assembly of a plurality of pipes or conduits for cryogenic fluid transfer inside a vacuum jacket comprising in combination:

a plurality of supports, each of said supports having means to receive said pipes and position said pipes in fixed position relative to each other and relative to said vacuum jacket, said supports are to be slidably inserted inside a vacuum jacket together with said pipes; and

each of said pipes covered with a multilayer superinsulation and overwrapped by a relatively thick ("0.005") layer of a low friction synthetic material.

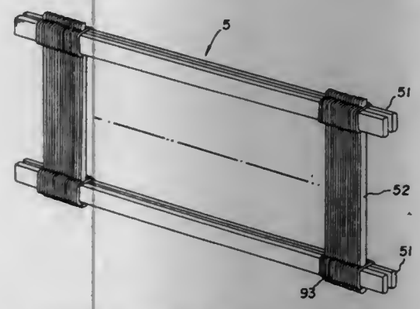
5,570,724
MECHANISM FOR CONTROLLING THE RECIPROCATING MOVEMENT OF GRIFFE FRAMES WITH CONNECTION ROD/CRANK SYSTEM
Dario Bassi, Chaponnay, and Damien Bouchet, Decines, both of France, assignors to Staubli Lyon, Chassieu, France
Filed Apr. 24, 1995, Ser. No. 426,841
Claims priority, application France, May 5, 1994, 94 05768
Int. Cl.[6] D03C *3/36*
U.S. Cl. 139—59 **12 Claims**



1. In a weaving loom having a chassis and a driving shaft having an elongated axis and outer end portions extending from the chassis, a mechanism mounted to each end portion of the driving shaft for controlling the reciprocating movement of upper and lower griffe frames of a shed-forming device, wherein each mechanism comprises:

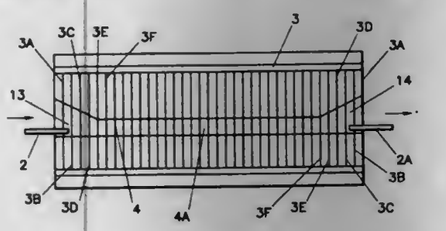
four crank arms mounted to the driving shaft and angularly offset relative to one another and with respect to the elongated axis of the driving shaft, each crank arm having a crank pin located at a predetermined distance from the elongated axis of the driving shaft, two short connecting rods each having first and second ends, means for pivotally connecting said first ends of said two short connecting rods to said crank pins of a first two of said crank arms, respectively, two long connecting rods each having first and second ends, means for pivotally connecting said first end of said two long connecting rods to said crank pins of a second two of said crank arms, respectively, means for pivotally connecting said second ends of said short connecting rods to one of said upper and lower griffe frames and means for pivotally connecting said second ends of said long connecting rods to the other of said upper and lower griffe frames, whereby said upper and lower griffe frames are reciprocated by said two short and two long connecting rods as said crank arms are driven by the driving shaft.

5,570,725
WEAVING METHOD AND REED USED WITH 1/F FLUCTUATIONS
Toshimitsu Musha, 13-17, Minami-Tsukushino 2-chome, Machida-shi, Tokyo; Yuichi Yanai, Okazaki; Shoji Takagi, Okazaki, and Yuki Niwa, Okazaki, all of Japan, assignors to Toshimitsu Musha, and Nisshinbo Industries, Inc., both of Tokyo, Japan
Filed Mar. 29, 1995, Ser. No. 413,861
Claims priority, application Japan, Mar. 31, 1994, 6-085683
Int. Cl.[6] D03D *49/62*
U.S. Cl. 139—192 **3 Claims**



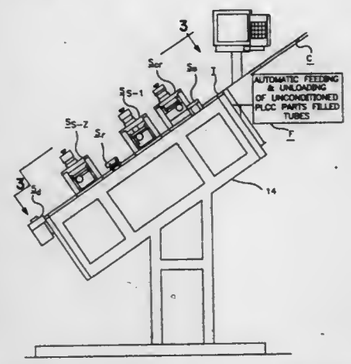
1. A weaving method for weaving woven fabric comprising providing a reed in which the spacings between dents have a 1/f fluctuation, passing warp yarns through said reed, separating said warp yarns into two sets to form a shed between said two sets, passing weft yarns through said shed, and beating said weft yarns with said reed causing said warp yarns and weft yarns to intersect, thereby weaving woven fabric in which the density of the warp yarns has a 1/fluctuation.

5,570,726
AIR WEAVING LOOM WITH WEFT HOLD-DOWN MEMBERS AND ENLARGED INLET AND OUTLET WEFT INSERTION CHANNEL
Adnan Wahhoud, Lindau, and Peter Czura, Wangen, both of Germany, assignors to Lindauer Dornier Gesellschaft mbH, Lindau/B, Germany
Filed Jul. 7, 1995, Ser. No. 499,729
Claims priority, application Germany, Jul. 9, 1994, 44 24 271.9
Int. Cl.[6] D03D *47/48;47/30;49/62*
U.S. Cl. 139—434 **11 Claims**



1. An air weaving loom, comprising a reed having reed teeth with cut-outs forming together a weft thread insertion channel in said reed, said weft thread insertion channel having a weft inlet (13), an intermediate channel section (A) with a constant channel cross-sectional area, and a weft outlet (14), said weft inlet (13) and said weft outlet (14) each comprising an increased cross-sectional area relative to said constant channel cross-sectional area, said increased cross-sectional area of said weft inlet (13) diminishing toward said constant cross-sectional area, said increased cross-sectional area of said weft outlet (14) increasing away from said constant cross-sectional area so that said weft inlet (13) and said weft outlet (14) merge into said intermediate channel section, a first weft end hold-down member (2) mounted in said loom for holding a weft thread at said weft inlet, and a second weft end hold-down member (2A) mounted in said loom for holding said weft thread at said weft outlet, whereby weft thread ends are positively bound into a fabric selvage to prevent wavy orientations or loop formations of weft thread ends.

5,570,727
PLCC REFORMING AND RECONDITIONING SYSTEM, METHOD AND APPARATUS
Frank V. Linker, Sr., Springfield, and Edward T. Claffey, Glen Mills, both of Pa., assignors to American Tech Manufacturing Corportion, Glenolden, Pa.
Filed Aug. 19, 1994, Ser. No. 293,014
Int. Cl.[6] B21F *1/02*
U.S. Cl. 140—105 **13 Claims**



1. A method for reforming leads of a device having a plurality of generally straight sides and rows of leads of J-shaped configuration extending from the sides of the body portion consisting of the steps of:

displacing grossly bent inwardly displaced leads outwardly;

reforming the leads of a pair of first opposing rows of leads at a first reforming station by moving combs of a lead straightening mechanism through the leads to space the leads a predetermined distance relative to one another;

engaging the leads of one row against reforming surfaces with the combs engaging between the J-shaped terminal ends;

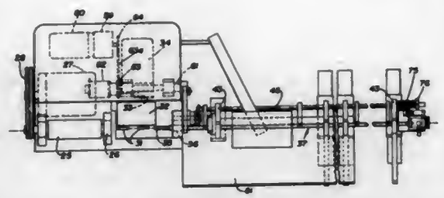
relocating the device to present a second pair of opposing rows of leads to a lead straightening mechanism;

reforming leads of a second opposing parallel rows of leads by moving combs through the leads to space the leads a predetermined distance relative to one another; and

engaging the leads of one row against reforming surfaces with the combs engaging between the J-shaped terminal ends.

5,570,728
WIRE FEEDING AND CUTTING MACHINE
Roger J. Benedict, and Craig S. Legaul, both of Rockford, Ill., assignors to Fastener Engineers Group, Inc., Rockford, Ill.
Filed Oct. 23, 1995, Ser. No. 546,604
Int. Cl.[6] B21F *11/00*
U.S. Cl. 140—140 **30 Claims**

1. A wire feeding and cutoff machine comprising, means for continuously advancing wire through a wire path in a cutoff die, an elongated wire guide defining an elongated wire receiving passage for receiving wire advanced through die and including a stationary



guide member and a closure member movable between a closed position for guiding wire in the passage and an open position for discharge of wire laterally from the passage, a cutoff arm mounted for angular movement about a cutoff arm axis paralleling the wire path and a wire cutter mounted on the cutoff arm for movement crosswise of the cutoff die, a drive motor, one-revolution clutch-brake means having an input shaft drivingly connected to the motor and an output shaft and an electroresponsive clutch actuator operable when energized to drive the output shaft with the input shaft through one revolution, and actuator control means including a switch responsive to feeding a predetermined length of wire into the wire receiving passage for actuating the electroresponsive clutch actuator, eccentric means connecting the output shaft to the cutoff arm operable during each revolution of the output shaft for angularly driving the cutoff arm from an initial position in which the cutter is spaced from one side of the wire path through a cycle moving the cutter from the initial position crosswise of the wire path and back to the initial position, the cutoff arm and cutter being constructed and arranged such that the cutter extends across the wire path during a selected portion of each cycle, and closure operating means for moving the closure member from the closed position to the open position and back to the closed position in response to angular movement of the cutoff arm during said portion of the cycle.

5,570,729

METHOD AND APPARATUS FOR THE RAPID TANKING OF A PRESSURE CONTAINER WITH A GASEOUS MEDIUM

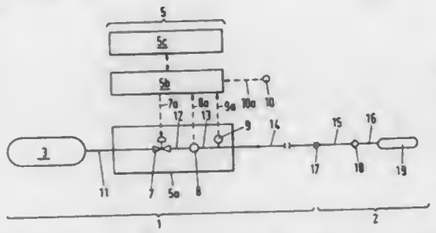
Heinz Mutter, Winterthur, Switzerland, assignor to Maschinenfabrik Sulzer-Burckhardt AG, Basel, Switzerland

Filed Oct. 28, 1994, Ser. No. 330,778

Claims priority, application Switzerland, Nov. 8, 1993, 03350/93

Int. Cl.[6] F17C *7/00*

U.S. Cl. 141—18 **18 Claims**



1. A method for rapidly filling a pressure container with pressurized gas comprising the steps of adding an initial mass of the pressurized gas to the container; measuring an initial pressure in the container after the initial mass has been added; with the initial mass and the initial pressure, and without calculating a volume of the container, determining a total mass of the pressurized gas which is to be added to the container to raise the pressure in the container to approximately its rated pressure, directing a first portion of the total mass into the container, measuring a first pressure in the container after the first portion has been added, with the first pressure and the first portion of the total mass, determining a remainder of pressurized gas required to raise the pressure in the container to approximately its rated pressure; and thereafter flowing the remainder of the pressurized gas into the container.

5,570,730

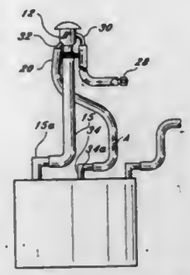
SPILL RESISTANT FUEL CAP AND VENTILATION SYSTEM

Douglas A. Keehn, Jr., Merritt Island; Frank B. Ousley, II, and William W. Powell, both of Cocoa, all of Fla., assignors to Ray Industries, Inc., Knoxville, Tenn.

Filed Mar. 24, 1995, Ser. No. 410,069

Int. Cl.[6] B63B *17/00*

U.S. Cl. 141—59 **12 Claims**



1. A spill resistant fuel and ventilation system for use with a fuel tank in boat fueling systems to minimize fuel spills and leaks during fueling and boat engine operation, said system comprising:

a fuel tank interface means for preventing fuel spills during fueling;

a pressure equalizing means for relieving internal pressure in said system, said pressure equalizing means being releasably attachable to said fuel tank interface means;

a first hose fluidly joining the fuel tank and said fuel tank interface means for venting air and vapor displaced from the fuel tank when filling the fuel tank with fuel;

a second hose, in fluid communication with said fuel tank interface means, for inducing air into the fuel tank as fuel is pulled from the fuel tank during boat engine operation.; and

a one-direction valve means, in fluid communication with said second hose, for only allowing air flow into said system through said second hose.

5,570,731

APPARATUS FOR DISPENSING LIQUID INTO CONTAINERS

Dominic Muscara, Iselin, N.J., assignor to Benjamin Moore & Co., Montvale, N.J.

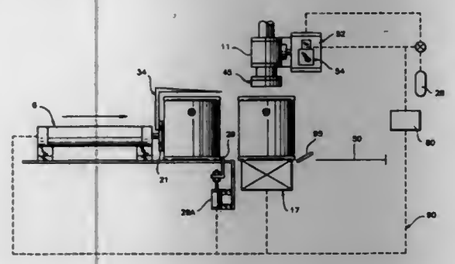
Division of Ser. No. 185,030, Jan. 24, 1994, Pat. No. 5,464,047.

This application Aug. 8, 1995, Ser. No. 512,626

Int. Cl.[6] B65B *3/28*

U.S. Cl. 141—83 **18 Claims**

1. Apparatus for dispensing a liquid into a plurality of containers comprising in combination: a plurality of stations each including a weight scale for receiving a container, a valve for controlling flow of a liquid into the container, a control system for opening and closing the valve including an actuating means for actuating the valve, and wherein there is further included means including a microprocessor for controlling each actuating means in response to the weight of liquid in the container as determined by the associated scale such that a first container will be supplied with a percentage of a predetermined final amount and then additional amounts until the final amount is reached within certain tolerances, a second container will subsequently be supplied with a percentage of the predetermined final amount of liquid greater than the first percentage and then with additional amounts until the predetermined final amount is reached, and a third container will be subsequently supplied without interruption with the predetermined final amount of liquid within certain tolerances.



5,570,732

LOG FEEDING DEVICE

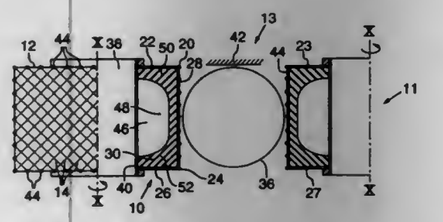
Olof Andreasson, Bornvägen 9, S-794 32 Orsa, Sweden

Filed Jul. 5, 1995, Ser. No. 498,415

Claims priority, application Sweden, Jul. 7, 1994, 9402407

Int. Cl.[6] B27B *31/00*

U.S. Cl. 144—248.3 **14 Claims**



1. A wheel for feeding and guiding elongate members, the wheel including a first and a second stiff circular side piece, the side pieces being concentric with the longitudinal axis of the wheel and axially spaced apart, each side piece having an outer periphery that is attached to a cable chain net, the cable chain net being concentric with the longitudinal axis of the wheel, the cable chain net including sets of chain strings that are attached to the outer periphery of the side pieces at connection points, each chain string having one end attached to an upper connection point and an opposite end attached to a lower connection point, the upper connection point being spaced apart a distance from the lower connection point, one set of chain strings forming an angle A relative to one side of the longitudinal axis of the wheel, the other set of chain string forming the same angle A relative to an opposite side of the longitudinal axis of the wheel, the chain cable net bearing against an elastic support surface, the elastic support surface including a peripheral surface of an elastic tire that is mounted on the wheel, comprising:

the peripheral surface of the elastic tire extending between the side pieces, the peripheral surface extending substantially to the connection points of the chain strings at the outer periphery of the side pieces, each chain string having a length that is greater than the distance between the upper and lower connection points at the outer periphery of the side pieces, each chain string being movable between an unloaded and a loaded position, the chain strings being in an outer relaxed state when in the unloaded position, the chain strings being in a tensioned inner state when pressed radially inwardly towards the longitudinal axis of the wheel by the elongate member so that a portion of the chain strings is closer to the wheel compared to when the chain strings are in the outer relaxed state.

5,570,733

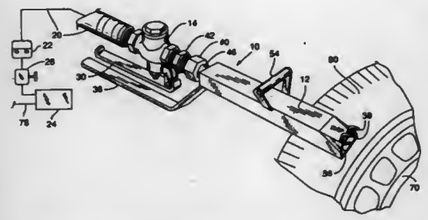
INFLATING TOOL FOR TIRES

Timothy R. Desparois, and Michael R. Desparois, both of 1141 SW. Hensley Rd., Troutdale, Oreg. 97060

Filed Nov. 9, 1994, Ser. No. 336,834

Int. Cl.[6] B60C *25/12*

U.S. Cl. 157—1.1 **5 Claims**



1. A tire inflating tool for initiating the seal of a wheel-rim flange and a tire bead to enable conventional inflation through a valve stem comprising:

an air source;

a flexible elongated air line connected at one end to the air source;

a control valve connected to the other end of the air line by a connecting portion, and a nozzle rigidly connected to the control valve, said control valve having a normally closed position in reaction to the air pressure in the line and being manually opened to release the air pressure of the line into and through the nozzle;

said air source, air line, nozzle and control valve when open, cooperatively providing a large rate of air flow through the nozzle and through a portion of the space between a deflated tire's bead and wheel-rim flange that exceeds the rate of air that can escape between the flange and bead and thereby partially inflates the tire to form a seal between the wheel-rim flange and tire bead;

said nozzle, control valve and said connecting portion providing an elongated rigid seater member extending from an open end of the nozzle at the front end of the rigid seater member to the connecting portion at the rear end of the rigid seater member; and

a post member provided on the open end of the nozzle for engaging a wheel-rim flange of a tire to be inflated, an actuating lever on the control valve adjacent said connecting portion, said connecting portion and said lever cooperatively arranged for gripping thereof with one hand of an installer for supporting the rear end of the rigid seater member and for selectively opening said control valve, said rear end and front end in longitudinal spaced apart alignment, a handle provided on said rigid seater member intermediate the front end and rear end for gripping by the operator'other hand, said post for engaging the wheel-rim flange, the connecting portion and handle substantially in alignment and thereby enabling the installer to apply a leveraged force for urging the post into engagement with the wheel-rim flange and resist recoil caused by opening of the control valve.

5,570,734

SUNSHIELDING CURTAIN FOR AN AUTOMOBILE

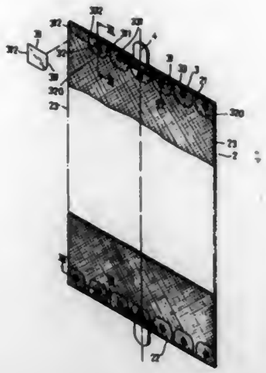
Hans Wu, 2F, No. 2, Alley 97, Lane 226, Sec. 3, Tung-Men Rd., Tainan City, Taiwan

Filed Jan. 17, 1995, Ser. No. 372,941

Int. Cl.[6] A47H *1/00*

U.S. Cl. 160—370.21 **3 Claims**

1. In a sunshielding curtain for an automobile, the automobile having a glass window, said curtain including a pressure sensitive adhesive sheet unit adapted to be adhered to the glass window and a sunshielding sheet which is heat-sealed to said adhesive sheet



unit, said sunshielding sheet being generally rectangular and having a top side, a bottom side and two vertical sides interconnecting said top and bottom sides, wherein the improvement comprises:

said adhesive sheet unit including a horizontal row of adhesive subunits each of which has a central portion that is heat-sealed to said shielding sheet, said central portions being spaced apart from each other, each of said adhesive subunits of said adhesive sheet unit being further heat-sealed to said sunshielding sheet along a horizontal seal line which is located at an intermediate portion of said top side of said sunshielding sheet in such a manner that two corners of said top side of said sunshielding sheet are not heat-sealed to said adhesive sheet unit, each of said adhesive subunits of said adhesive sheet unit also having two vertical sides and a top side interconnecting upper ends of said vertical sides, each of said seal lines being located at an upper end portion of said sunshielding sheet and extending inwardly from an intermediate portion of said top side of a corresponding one of said adhesive subunits to one of said vertical sides of the corresponding one of said adhesive subunits, in such a manner that each of said adhesive subunits of said adhesive sheet unit further has a non-heat-sealed section which is located between said seal line and the other one of said vertical sides, whereby, unexpected removal of said sunshielding sheet from the glass window at the non-heat-sealed sections can be prevented.

5,570,735

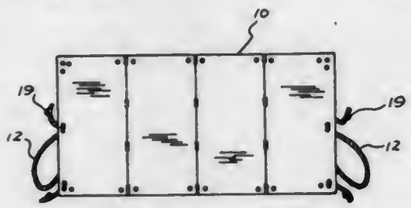
MULTI-FUNCTIONAL PLASTIC AUTOMOBILE SHADE

Lawrence H. Y. Chu, Lewisville, Tex., assignor to Merryland Products, Inc., Lewisville, Tex.

Filed May 19, 1995, Ser. No. 444,401

Int. Cl.[6] B60J *3/00*

U.S. Cl. 160—370.23 **7 Claims**



1. A multi-functional plastic automobile shade adopted to be attached to inside or outside of an automobile, comprising a single piece of board with four folding panels, said board being a rigid, lightweight and durable corrugated plastic board having smooth surfaces on both sides of the board and fine channels therebetween, said four panels being divided by three cutting lines, while adjacent ones of said panels are connected with integral portions therebetween, each of said cutting lines divided by said integral portions into segments, two scoring lines formed near each of said integral portions on the respective adjacent panels so that the panels can be folded along the cutting lines, a plurality of holes provided respectively at each corner of the board and the panels, and means for attaching the shade to inside or outside of the automobile in association with said holes.

5,570,736

PROCESS OF CONTINUOUSLY CASTING STEEL USING ELECTROMAGNETIC FIELD

Seikou Nara; Hisao Yamazaki; Nagayasu Bessho; Seiji Taguchi, and Tetsuya Fujii, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

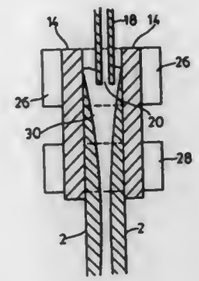
PCT No. PCT/JP92/01221, § 371 Date May 19, 1993, § 102(e) Date May 19, 1993, PCT Pub. No. WO93/59070, PCT Pub. Date Jan. 4, 1993

PCT Filed Sep. 25, 1992, Ser. No. 64,084

Claims priority, application Japan, Sep. 25, 1991, 3-246074; Sep. 25, 1991, 3-246077; Sep. 25, 1991, 3-246079; Oct. 4, 1991, 3-257309; Oct. 4, 1991, 3-257312; Mar. 6, 1992, 4-049177; Apr. 22, 1992, 4-127938

Int. Cl.[6] B22D *11/00*

U.S. Cl. 164—466 **9 Claims**



1. A process for continuously casting steel comprising the steps of:

supplying a direct flow of molten steel at a pouring speed of at least 1.5 tons/minute from a tundish to a continuous casting mold through a straight immersion nozzle which has a single discharge port, while blowing an inert gas therethrough for preventing said nozzle from clogging, said casting mold comprised of a pair of spaced long side walls interconnected to a pair of short side walls, a mold top, and a mold bottom, wherein a vertical height between said mold top and bottom defines a magnetic field operating range, said mold long side walls each having a front surface and a back surface, an upper side and a lower side, said immersion nozzle having a tube configuration with an upper and lower end, said lower end defining said discharge port;

disposing a respective static magnetic generator on the back surfaces of the long side walls of said mold at a vertical region which includes the lower end defining the discharge port of said straight immersion nozzle when a magnetic field is generated; and

casting said molten steel while generating a static magnetic field, said magnetic field directed from one long side wall to the other long side wall of said mold in order to control a direct flow rate of said molten steel into said mold.

5,570,737

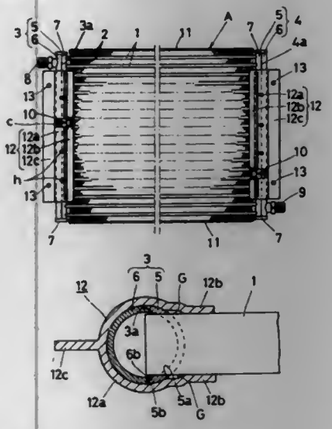
HEAT EXCHANGER

Toshinori Tokutake, Oyamashi, Japan, assignor to Showa Aluminum Corporation, Osaka, Japan

Continuation of Ser. No. 134,027, Oct. 7, 1993, abandoned. This application Aug. 1, 1995, Ser. No. 509,809

Int. Cl.[6] F28F *9/02*

U.S. Cl. 165—67 **13 Claims**



1. A heat exchanger comprising:

a plurality of tubes arranged in parallel with each other;

a pair of hollow headers disposed in spaced relation, each header having a row of tube-insertion apertures in which ends of the tubes are inserted;

at least one bracket attached to one of the headers;

the header to which the bracket is attached being composed of inner and outer halves facing one another, with the tube-insertion apertures being bored in the inner half;

the bracket comprising:

an embracing portion; and

a fastenable rib, wherein the embracing portion of the bracket fits on the outer half of the header to which the bracket is attached, further extends beyond edges of the outer half and contacts both the halves, said embracing portion being fixedly secured to both halves of the header to which the bracket is attached;

edges of the inner half being joined to corresponding edges of the outer half to form a continuous, curved outer surface for the header at the connections between the two halves;

the embracing portion of the bracket having its entire length in contact with an outer surface of the outer half and with an outer surface of the edges of the inner half.

5,570,738

RADIATOR ASSEMBLY FOR USE IN A MOTOR VEHICLE

Steven S. Christensen, Fremont, Calif., assignor to AlliedSignal Inc., Morris Township, N.J.

Filed Nov. 13, 1995, Ser. No. 554,958

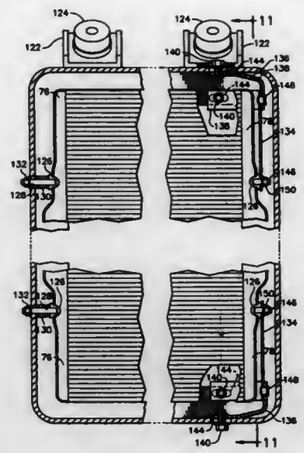
Int. Cl.[6] F28F *9/00*; B60K *11/04*

U.S. Cl. 165—67 **12 Claims**

1. A radiator assembly for use in a motor vehicle, comprising:

a radiator frame attachable to a chassis of said motor vehicle, said frame having first, second, third and fourth sides;

a radiator disposed within said frame, wherein said radiator includes a core and first and second lateral end portions attached to opposite ends of said core, wherein said first lateral end portion is rigidly mounted to the first side of said frame so as to fixedly position said radiator relative to said frame;



a first spring member having a first end coupled to said second lateral end portion opposite the third side of said frame, and second end coupled to the second side of said frame, wherein said first spring member is effective for accommodating lateral thermal growth of said radiator relative to said frame.

5,570,739

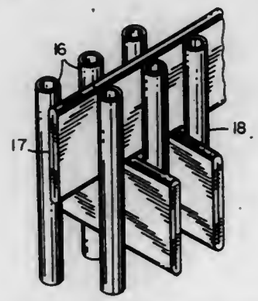
ANTI-VIBRATION SPACERS USED IN TUBULAR TYPE HEAT EXCHANGERS

Myron T. Krawchuk, Newton, and Alexander Girshik, Fair Lawn, both of N.J., assignors to Foster Wheeler Development Corporation, Livingston, N.J.

Filed Dec. 7, 1994, Ser. No. 350,575

Int. Cl.[6] F28F *7/00*

U.S. Cl. 165—69 **8 Claims**



1. A tubular type heat exchanger having vibration dampening spacer elements provided between adjacent rows of tubes, comprising,

(a) at least two pairs of elongated metal tubes, said tube pairs being located adjacent and substantially parallel to but spaced apart from each other, with each tube being attached pressure-tightly at its opposite ends to a tubesheet;

(b) a pressurizable casing surrounding said tubes; and

(c) at least two elongated anti-vibration spacer elements installed between said pairs of adjacent tubes and provided in two hanks each oriented 30°–90° angle to each other, said spacer elements being made of a metal alloy having a shape memory characteristic so that the spacer element metal will change from a austenite metallurgical condition to an austenite condition and thereby change its shape at a temperature above a selected transition temperature (TT) for the metal alloy, said

spacer elements each having a width W_1 which is 3–6 times its initial thickness T_1 and a length L at least equal to the transverse width of said tube pairs and being supported within said casing and located between each said pair of adjacent tubes, so that when the temperature of said tubes and said spacer elements are increased above the metal transition temperature for the spacer elements, they will increase in effective thickness from the initial thickness T_1 to an increased thickness T_2 so as to load said tubes laterally and thereby substantially prevent vibration of the tubes.

5,570,740

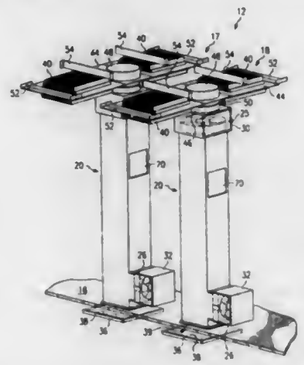
BUILT-IN COOLING SYSTEM FOR AN ENCLOSURE

Michael A. Flores; Peter A. Massacesi, both of Plano, and Andrew G. Low, McKinney, all of Tex., assignors to DSC Communications Corporation, Plano, Tex.

Filed Mar. 3, 1995, Ser. No. 398,655

Int. Cl.[6] F28D *15/00*

U.S. Cl. 165—104.34 **29 Claims**



1. A built-in cooling system for an enclosure housing electronic equipment, comprising:

at least one plenum having an interior chamber mounted in a roof area of said enclosure, said plenum having at least one vent being in fluid association with ambient air outside of said enclosure;

a heat exchanger column located centrally in said enclosure having an internal air passageway with internal air intake and exit ports, and having an external air passageway with an external intake and exit ports, said internal and external air passageways having a large mutual contact surface area, and said external air passageway being in fluid association with said interior chamber of said plenum;

an internal air fan mounted on said heat exchanger column circulating internal air through said internal air passageway;

an external air fan mounted on said heat exchanger column circulating external air through said external air passageway;

a divider plate mounted between said interior chamber of said plenum and said enclosure and substantially sealing said plenum chamber from said enclosure;

at least one heat sink mounted to said divider plate adjacent to said external air exit port, generally one half of said heat sink being positioned in said enclosure and generally the other half of said heat sink being positioned in said plenum chamber; and

moisture deflectors arranged in said plenum for preventing the entry of moisture into said external air passageway through said external air exit port.

5,570,741

WATER COMPARTMENT FOR A HEAT EXCHANGER

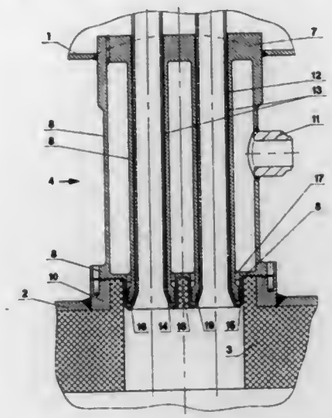
Peter Brücher, and Helmut Lachmann, both of Berlin, Germany, assignors to Deutsche Babcock-Borsig AG, Berlin, Germany

Filed Dec. 13, 1995, Ser. No. 571,812

Claims priority, application Germany, Jan. 19, 1995, 195 01 422.7

Int. Cl.[6] F28F *9/02*

U.S. Cl. 165—134.1 **4 Claims**



1. A water compartment for a heat exchanger for cooling hot gases, comprising: a jacket and a thinner pipe slab resting on a thicker pipe slab by way of said jacket and anchor pipes, said anchor pipes being accommodated in said jacket and fastened to the slabs; gas pipes, extending through said anchor pipes and leaving a cylindrical space; said gas pipes being elongated and extending beyond said thinner pipe slab, elongated ends of said gas pipes being reversed outside; reversed ends of said gas pipes being fastened tight to said thinner pipe slab radially remote from said anchor pipes; and bores extending through an annular area of said thinner pipe slab between said reversed ends of said gas pipes and said anchor pipes.

5,570,742

TUBULAR CLEANING TOOL

J. Scott Reynolds, Aberdeen, Scotland; Robert L. Sloan, Katy, and Darrell P. Salisbury, Sugar Land, both of Tex., assignors to Well-Flow Technologies, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 78,542, Jun. 16, 1993, Pat. No. 5,419,397. This application May 25, 1995, Ser. No. 450,391

Int. Cl.[6] E21B *37/02;37/06*

U.S. Cl. 166—173 **41 Claims**

1. A cleaning tool for scouring debris from the interior wall of a tubular member, comprising

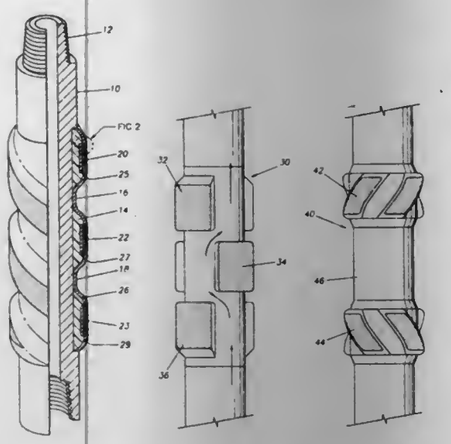
an elongate member with a curved outer surface;

said elongate member having outside walls with part of the surface covered with a layer of polymeric material;

scratching elements affixed in the polymeric material in said side wall in a pattern whereupon introduction into the tubular member to be cleaned the inner surface of said tubular member is contacted with the scratching elements upon moving the elongate member along the inside wall of the tubular member and upon rotating the elongated member;

the pattern of scratching elements arranged to allow fluid flow around the elongated member when introduced inside the tubular member; and

said elongated member having an outer diameter such that the scratching elements contact the inside wall of the tubular member upon introduction of the elongate member into the tubular member to be cleaned.



5,570,743

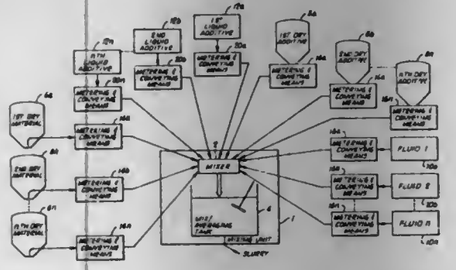
CONTINUOUS MULTI-COMPONENT SLURRYING PROCESS AT OIL OR GAS WELL

Paul O. Padgett; Stephen F. Crain; Wayne A. Handke, all of Duncan, Okla.; Jerry L. Logan, Katy, Tex.; Calvin L. Stegemoeller, Duncan, Okla.; Ricky L. Covington, Duncan, Okla.; David W. Ritter, Duncan, Okla., and Kevin D. Edgley, Duncan, Okla., assignors to Halliburton company, Duncan, Okla.

Continuation of Ser. No. 074,051, Jun. 3, 1993, Pat. No. 5,522,459. This application Feb. 21, 1996, Ser. No. 604,697

Int. Cl.[6] E21B *33/13*

U.S. Cl. 166—285 **19 Claims**



1. A continuous multi-component slurrying process at an oil or gas well, comprising continuously forming a slurry at the oil or gas well from at least three different ingredients selected to define a selected multi-component slurry, said continuously forming a slurry includes concurrently flowing at least three separate streams, each containing a respective one of the different ingredients, directly into a predetermined mixing unit at the oil or gas well so that premixing of the different ingredients of the respective streams is not required prior to the concurrent flowing of the streams.

5,570,744

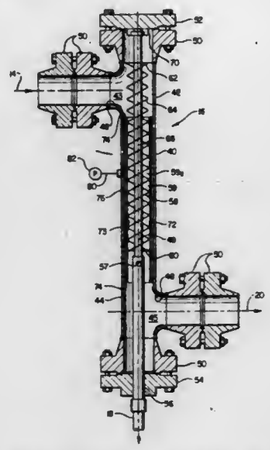
SEPARATOR SYSTEMS FOR WELL PRODUCTION FLUIDS

Jean S. Weingarten, Anchorage, Ak.; Miroslav M. Kolpak, Dallas, Tex.; Scott A. Mattison, Anchorage, Ak.; Ronald G. Oba, Anchorage, Ak., and M. Jane Williamson, Anchorage, Ak., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 345,224, Nov. 28, 1994, Pat. No. 5,431,228. This application May 17, 1995, Ser. No. 442,946

Int. Cl.[6] E21B *43/34;43/40*

U.S. Cl. 166—357 **28 Claims**



1. A fluid separator system for separating fluids of different densities in a flowstream, comprising at least two of oil, water and gas, through a surface flowline, said system comprising:

a fluid separator interposed in said flowline comprising a casing, a fluid inlet port, a first fluid discharge port and a second fluid discharge port, said separator including an elongated spiral baffle disposed for inducing spiral fluid flow through said casing to separate more dense fluid from less dense fluid whereby said more dense fluid flows through said first discharge port downstream from said baffle and said less dense fluid flows through said second discharge port;

a first fluid discharge conduit connected to said first discharge port; and

a second fluid discharge conduit connected to said second discharge port.

5,570,745

RELOCATABLE SPRINKLER ASSEMBLAGE

Norman J. MacDonald, III, Lunenburg, Mass., assignor to PNM, Inc., Boxborough, Mass.

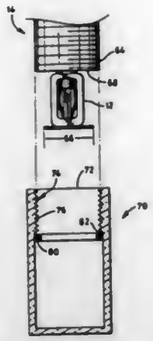
Filed May 31, 1995, Ser. No. 455,026

Int. Cl.[6] A62C *37/50*

U.S. Cl. 169—16 **17 Claims**

1. In a sprinkler system having hydraulic distribution, a grid of flexible conduits operatively feeding therefrom, a plurality of sprinkler assemblages having operative connections thereto, and a structure having a lattice and a plurality of tiles, said structure enabling transportation of said sprinkler assemblages about said system while maintaining said operative connections, wherein the improvement comprises at least one of said sprinkler assemblages comprising, along an assemblage axis:

(a) a rigid fitting communicating with one of said flexible conduits, said fitting having a longitudinal axis, a conduit end at one end of said longitudinal axis, and a head end at another end of said longitudinal axis;



(b) said fitting having an unthreaded outer surface adjacent to said conduit end and an outer surface adjacent to said head end;

(c) said fitting having an interior surface concentric about said longitudinal axis, said interior surface including a fitting interior threaded surface extending from said head end within said head end outer surface, an interior conical surface extending from said fitting interior threaded surface, and an interior cylindrical surface extending from said interior conical surface within said conduit end outer surface to said conduit end, a diameter of said fitting interior threaded surface being less than a diameter of said interior cylindrical surface;

(d) a sprinkler head having two operative conditions, one of said conditions being open and another of said conditions being closed;

(e) said sprinkler head having an externally threaded cylindrical pipe and a thermally sensitive plug;

(f) said externally threaded cylindrical pipe being turned into said fitting interior threaded surface;

(g) said plug blocking fluid from exiting said pipe at normal room temperatures and melting to unblock said pipe at predetermined elevated temperatures;

(h) a rigid cup adapted to removably attach to said fitting, forming a substantially watertight attachment and enclosing said sprinkler head in a watertight compartment when said cup is attached to said fitting;

(i) said cup including a means for indicating which one of said two operative conditions exists at a given time; and

(j) a means for mounting said one assemblage to said structure.

5,570,746

TURF AERATION DEVICE

Jerry Jones, Trenton, Tenn.; Harry Knight, Baton Rouge, La.; Kinsey Estess, Baker, La., and Ernest R. New, Zachary, La., assignors to Southern Green, Inc., Zachary, La.

Continuation-in-part of Ser. No. 31,581, Mar. 15, 1993, abandoned. This application Feb. 1, 1995, Ser. No. 381,728

Int. Cl.[6] A01B *45/02*

U.S. Cl. 172—22 **20 Claims**

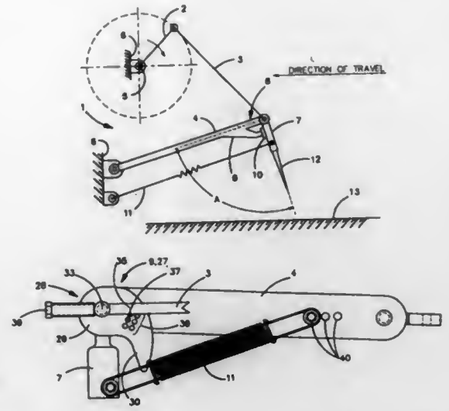
1. A turf aeration device, comprising:

(a) a wheeled frame having a journalled drive shaft, wherein said frame is attachable to a pulling vehicle having a power take-off portion;

(b) power transfer means, operatively attachable between said drive shaft and said power take-off portion, for transferring power from said power take-off portion to said drive shaft;

(c) a plurality of aerator mechanisms operatively attached to said drive shaft and said frame, each said aerator mechanism comprising:

a link member, having a base end and a distal end, wherein said base end is pivotally attached to said frame, said link member further having a first connection engagement means positioned thereon and a connection member connectable with said first connection means;



a tine holder, having at least one fine, pivotally attached to said distal end of said link member;

stop member attached to said link member for contacting said tine holder and maintaining a minimum predetermined angle between said tine holder and said link member, said stop member further having a tine adjustment mechanism to adjust said minimum predetermined angle between said tine holder and said link member wherein said tine adjustment mechanism comprises:

(i) at least one rigid body having a first end and a second end, said first end pivotally connected to said distal end of said link member, said second end for contacting said tine holder;

(ii) a second connection engagement means disposed between said first end and said second end of said rigid body;

said connection member, said first connection engagement means, and said second connection engagement means being adapted so that said second connection engagement means can be selectively aligned with said first connection engagement means, said connection member engaging said first connection engagement means and said second connection engagement means to fix said rigid body to said link member;

resilient means pivotally connected between said frame and said tine holder for urging said tine holder against said stop member;

a drive link fixedly attached to said drive shaft; and

a connecting rod pivotally attached between said drive link and said link member.

5,570,747

DRIVE POINT DEVICE

Kent E. Cordry, 308 Mountaire Pkwy., Clayton, Calif. 94517

Continuation-in-part of Ser. No. 206,000, Mar. 4, 1994, Pat. No. 5,449,045. This application Apr. 5, 1995, Ser. No. 418,144

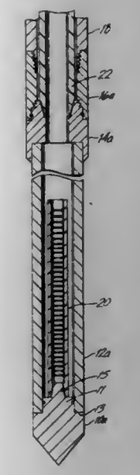
Int. Cl.[6] E21B *7/20*

U.S. Cl. 175—20 **23 Claims**

1. A drive point comprising:

means disposed at one end of the drive point for penetrating the ground by application of force which causes said means to be driven or pushed into the ground; and

a cavity formed in a top portion of the drive point at an end of the drive point opposite from the penetrating means, wherein said cavity has tapered self-tapping threads along a surface of the cavity for threadedly engaging a pipe.



5,570,748

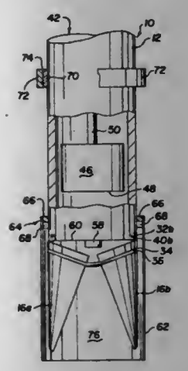
DRILL BIT FOR GEOLOGICAL EXPLORATION

Billy ' Serrette, 1043 Mustang Cir., St. Martinville, La. 70582

Division of Ser. No. 395,890, Feb. 28, 1995, Pat. No. 5,488,999, which is a continuation-in-part of Ser. No. 229,725, Apr. 19, 1994, abandoned. This application Oct. 12, 1995, Ser. No. 542,285

Int. Cl.[6] E21B *10/40*

U.S. Cl. 175—21 **23 Claims**



1. A method for drilling a exploratory geophysical hole comprising the steps of:

forcing a tubular bit closed on one end and having an internal passageway through unstable soil until the bit reaches stable soil;

loading a selected tool through the internal passageway of the tubular bit;

opening the closed end of the bit through the action of controllably forcing the tool to engage the bit until the tool contacts the stable soil; and

removing the bit from the hole.

5,570,749

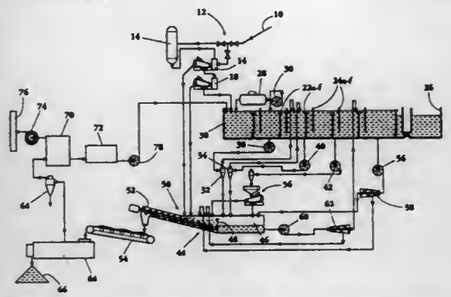
DRILLING FLUID REMEDIATION SYSTEM

Lowell M. Reed, Moore, Okla., assignor to Onsite Technology, L.L.C., Tulsa, Okla.

Filed Oct. 5, 1995, Ser. No. 539,259

Int. Cl.[6] E21B *21/06*

U.S. Cl. 175—66 **5 Claims**



4. An apparatus for use in removing and treating hydrocarbon-contaminated drill cuttings suspended in drilling mud so that the cuttings are made environmentally acceptable while the hydrocarbon contaminants are contemporaneously captured and returned for use in said drilling mud, comprising:

(a) means for separating a flow of a mixture of said mud and said cuttings into (1) a mud stream and (2) a first slurry containing said cuttings;

(b) a holding tank for receiving said mud stream;

(c) a classifier/grit dewatering unit for receiving said slurry and separating said cuttings from said slurry to obtain a drill solids discharge;

(d) means for receiving and heating said drill solids discharge for a time and at a temperature sufficient to vaporize said hydrocarbon contaminants to obtain (1) processed solids and (2) hydrocarbon vapors;

(e) means to capture said hydrocarbon vapors;

(f) a condenser for condensing said hydrocarbon vapors to obtain a liquid hydrocarbon; and

(g) means for transporting said liquid hydrocarbon from said condenser to said holding tank for admixture with said mud stream.

5,570,750

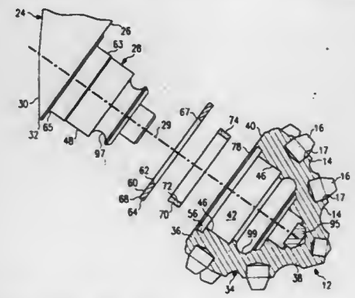
ROTARY DRILL BIT WITH IMPROVED SHIRTTAIL AND SEAL PROTECTION

Mark E. Williams, Grand Prairie, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 20, 1995, Ser. No. 425,917

Int. Cl.[6] E21B *10/00*

U.S. Cl. 175—371 **20 Claims**



1. A rotary cone drill bit for forming a borehole, the drill bit comprising:

a bit body with an upper end portion adapted for connection to a drill string for rotation about a longitudinal axis of the bit body;

a number of angularly-spaced support arms integrally formed with the bit body and depending therefrom, each of the support arms having an inside surface with a spindle connected thereto and an outer shirttail surface;

each spindle projecting generally downwardly and inwardly with respect to the longitudinal axis of the bit body and having a generally cylindrical upper end portion connected to the inside surface of the respective support arm;

a plurality of cutter cones equaling the number of support arms and rotatably mounted on one of the respective spindles;

each of the cutter cones including an internal generally cylindrical cavity for receiving the respective spindle;

a generally cylindrical gap formed between the exterior of each spindle and interior of each cavity, the gap having an outer segment extending radially outward from the exterior of the spindle and intersecting with the shirttail surface to form an opening;

a bearing element disposed within each gap between the exterior of the respective spindle and the interior of the respective cavity;

a seal element disposed within each gap and sealing between the respective spindle and the interior of the respective cavity;

a shirttail ring disposed on the exterior of each spindle adjacent to the respective inside surface and located within the opening to the respective gap, the shirttail ring operable to provide erosion protection; and

a portion of each shirttail ring extending from the bottom edge of the respective shirttail surface.

5,570,751

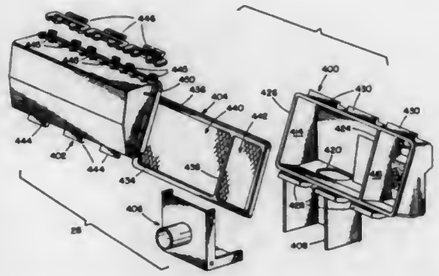
AIR INTAKE SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Robert A. Courtwright, Evans, and Edgar Grigsby, Jr., Augusta, both of Ga., assignors to Textron Inc., Providence, R.I.

Division of Ser. No. 156,811, Nov. 22, 1993. This application May 5, 1995, Ser. No. 435,182

Int. Cl.[6] B60K *13/02*

U.S. Cl. 180—68.3 **7 Claims**



1. An air intake system for an internal combustion engine, the system comprising:

a housing having an air inlet, an air outlet, and an air conduiting path therebetween, the air conduiting path including an air filter receiving area and means for changing air flow direction and velocity at least four times each along the path; and

an air filter located in the air filter receiving area, wherein the air filter includes filter element means, a seal, and a screen, the air filter having a first section with a portion of the screen located adjacent the filter element means, and a second section adjacent the first section having a portion of the screen but not the filter element means, the seal being connected to a perimeter of the screen.

5,570,752

TRANSMISSION ARRANGEMENT FOR ELECTRIC POWER ASSISTED BICYCLE

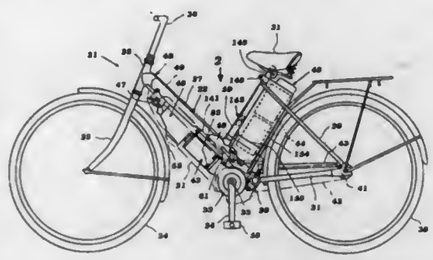
Nozomu Takata, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jul. 25, 1994, Ser. No. 279,908

Claims priority, application Japan, Jul. 26, 1993, 5-202543; Jul. 26, 1993, 5-202544; Jul. 5, 1994, 6-153658

Int. Cl.[6] B62M *23/02;* **B62K** *11/00*

U.S. Cl. 180—206 **23 Claims**



1. A compact electric motor and transmission system comprising an electric motor having an outer housing having an end plate through which an extending portion of an output shaft of said motor extends, a plurality of elements including frictional planetary elements frictionally engaged with a cylindrical periphery of said extending portion of said output shaft, a carrier element journaling said frictional planetary elements and adapted to be drivingly connected to a load driven by said output shaft, and a orbit ring element fixed relative to said motor housing and frictionally engaged with said frictional planetary elements.

5,570,753

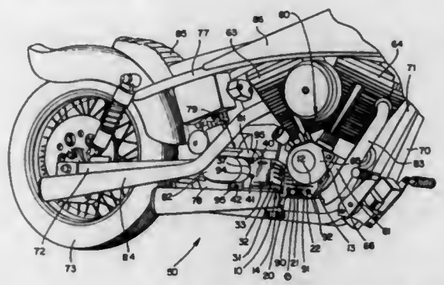
MOTORCYCLE ENGINE AND TRANSMISSION TORQUE-RESISTING ARM

Anthony J. Carlini, 5 Geneve, Newport Beach, Calif. 92660

Filed Mar. 27, 1995, Ser. No. 411,166

Int. Cl.[6] B62K *11/04;* **B62M** *7/02*

U.S. Cl. 180—219 **8 Claims**



1. For use in a motorcycle having a frame supporting an engine having an engine case, a transmission having a transmission case, a primary engine case securing said engine case to said transmission case, and drive means for driving said motorcycle coupled to said transmission, a torque-resisting arm comprising:

an engine attachment plate extending in a first plane defining a generally planar member having a first concave curved upper edge and a plurality of apertures formed therein;

a spanning plate extending in a second plane generally offset from said first plane and generally parallel thereto, said spanning plate defining a second concave curved rear edge and a plurality of apertures; and

an offset wall connecting said engine attachment plate and said spanning plate and extending in a third plane generally at an angle to said first and second planes,

said torque-resisting arm being secured to said engine case and said transmission case by attaching said engine attachment plate to said engine case and said spanning plate to said transmission case whereby torque between said engine case and said transmission case is resisted.

5,570,754

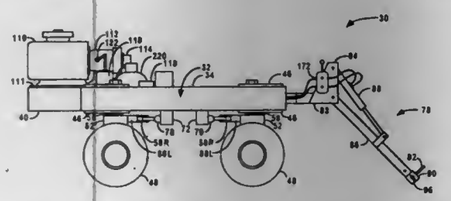
TRACTOR AND TRAILER FOR MOVING LOADS IN CONFINED SPACES

Dwight S. Stimson, 233 River St., Norwell, Mass. 02061

Filed Feb. 16, 1994, Ser. No. 197,393

Int. Cl.[6] B62D *5/07;5/28;* **B60K** *7/00*

U.S. Cl. 180—234 **30 Claims**



1. A tractor for moving truck trailers comprising:

a horizontal frame;

a fifth wheel hitch connector mounted on the frame at a standard height for fifth wheel hitch connectors to enable truck trailers designed to be hitched to standard height fifth wheel connectors to be hitched to the tractor;

at least three wheels;

a wheel mounting for each wheel, mounting each such wheel to support the frame so the mounted wheels provide a stable three, or more, point support for the frame;

means for supplying rotational power to each wheel;

a steering mechanism for turning each wheel;

a speed control device for enabling the rotational power supplied to the wheels to be selectively controlled; and

a steering control device for enabling the turning of the wheels by the steering mechanisms to be selectively controlled.

5,570,755

SYSTEM FOR THE CONTROL OF THE COUPLINGS IN THE DRIVE TRAIN OF A MOTOR VEHICLE

Gerhard J. Frühwirth, Schönau; Johann Deinhofer, Peter in der Au; Franz Stelzeneder; Günter Pichlbauer, both of Steyr; Johann Hager, Bad Hall, and Johan P. Reif, St. Wolfgang, all of Austria, assignors to Steyr-Daimler-Puch AG, Vienna, Austria

Filed Aug. 10, 1994, Ser. No. 292,818

Claims priority, application Germany, Aug. 16, 1993, 43 27 507.9

Int. Cl.[6] B60K *17/34*

U.S. Cl. 180—249 **25 Claims**

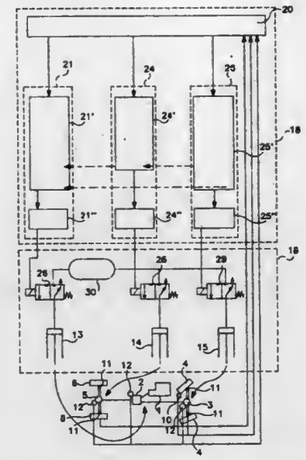
1. A system for automatic control of couplings in a drive train of an all-wheel-drive off-the-road vehicle, comprising,

a transfer case constituting a power take-off,

a plurality of drive axles, each of said plurality of drive axles having a pair of wheels connected thereto,

a plurality of rotational speed sensors associated with said wheels which produce rotational wheel speed signals indicative of the rotational speed of said wheels,

a plurality of actuable couplings associated with said transfer case and said drive axles, said actuable couplings being arranged in a hierarchy of higher and lower couplings,



a separate control module dedicated to each of said actuable couplings, each separate control module containing slip total threshold values associated with each of said couplings in said hierarchy receiving said rotational wheel speed signals from said rotational speed sensors, and producing slip total signals reflecting total slip of said wheels and control signals based thereon for actuation of said couplings,

wherein a control module dedicated to a lower coupling produces control signals which actuate at least a higher coupling in said hierarchy before producing control signals which actuate said dedicated lower coupling, and

wherein said control signals are produced by said control module dedicated to said lower coupling by comparing said slip total signals reflecting said total slip of said wheels with said slip total threshold values.

5,570,756

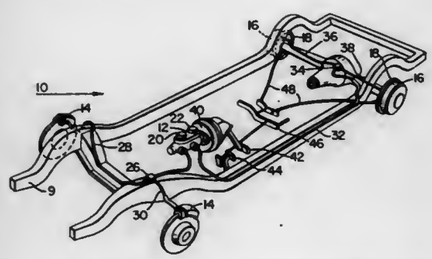
ANTI-THEFT SYSTEM FOR IMMOBILIZING A VEHICLE

Jonathan P. Hatcher, Dearing, Ga., assignor to Blatstek, Augusta, Ga.

Filed Jun. 22, 1995, Ser. No. 493,844

Int. Cl.[6] B60R *25/08*

U.S. Cl. 180—287 **18 Claims**



1. A vehicle security system for preventing unintended vehicle movement by immobilizing the vehicle, said system comprising:

a. a pressurized-fluid-operated vehicle braking system carried by the vehicle for arresting motion of wheels on which the vehicle is supported for movement;

b. a normally open blocking valve positioned in the vehicle braking system between a braking fluid reservoir and at least

one wheel brake actuator for blocking flow of braking fluid from the at least one wheel brake actuator to the braking fluid reservoir;

c. a vehicle stopped sensor carried by the vehicle for providing a signal indicative of a vehicle at rest condition;

d. a pressure sensor positioned in the vehicle braking system between the at least one wheel brake actuator and the blocking valve for providing a braking fluid pressure signal; and

e. control means carried by the vehicle and responsive to the signal from the vehicle stopped sensor and to the braking fluid pressure signal for enabling operation of the blocking valve when the vehicle is at rest and when the braking fluid pressure signal exceeds a predetermined pressure level.

5,570,757

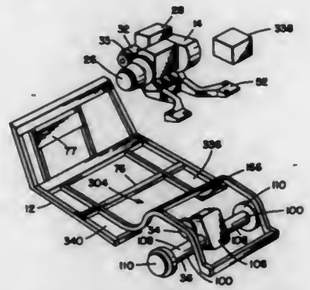
ENGINE MOUNTING SYSTEM FOR A CAR

Robert A. Courtwright, Evans, and Thomas W. Lyles, Martinez, both of Ga., assignors to Textron Inc., Providence, R.I.

Filed Nov. 22, 1993, Ser. No. 156,087

Int. Cl.[6] B60K *5/12*

U.S. Cl. 180—291 **19 Claims**



18. A car having a chassis, an engine, an axle assembly, and an engine mounting system, the engine mounting system comprising:

a front engine mount having a first one-piece rigid structural member connecting the chassis to a first portion of the engine, the first member being directly rigidly attached to the first portion of the engine; and

a rear engine mount having a second one-piece rigid structural member with a general Y-shape connecting the axle assembly to a second portion of the engine, the second member being directly rigidly attached to the second portion of the engine.

5,570,758

LIFTING APPARATUS, IN PARTICULAR A LIFTING PLATFORM

Hans Nussbaum, Kehl-Sundheim, Germany, assignor to Otto Nussbaum GmbH & Co. KG, Kehl-Bodersweier

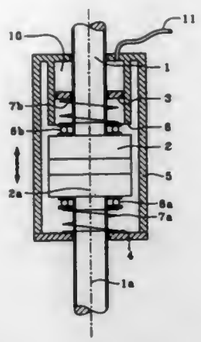
Filed Dec. 21, 1994, Ser. No. 362,082

Claims priority, application Germany, Dec. 21, 1993, 43 43 685.4

Int. Cl.[6] B66B *9/02*

U.S. Cl. 187—268 **14 Claims**

1. A lifting apparatus, in particular a lifting platform, comprising a lifting carriage (5) upon which a load to be lifted can be placed, an arrester rod (1) along which the lifting carriage can be displaced, the arrester rod having screw threading on which an easily moveable arrester nut (2) is driven by the lifting carriage (5), the arrester nut being supported on its top and bottom by the lifting carriage (5) in such a way that it can rotate on the arrester rod, the lifting carriage having a braking element (8) which can be brought into a working relationship with the arrester nut (2) in order to prevent any further rotation of the arrester nut (2), and a safety element (10, 16, 12, 19) for initiating the braking of the arrester nut



(2), the safety element (10, 16) including means for actuating the safety element from outside the lifting carriage.

5,570,759

BRAKING DEVICE PARTICULARLY FOR SKATES

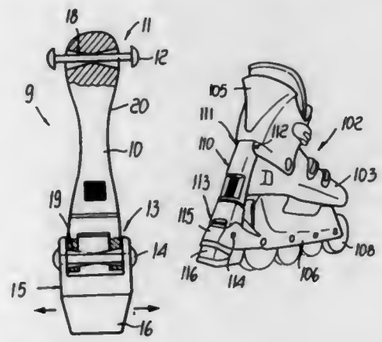
Claudio Zorzi, Paderno di Ponzano Veneto, Italy, assignor to Nordica S.p.A., Trevignano, Italy

Filed May 11, 1995, Ser. No. 439,346

Claims priority, application Italy, May 23, 1994, TV94A0056

Int. Cl.[6] A63C *17/14*

U.S. Cl. 188—5 **12 Claims**



1. In a skate comprising

a shoe,

a frame having a plurality of wheels,

a brake positioned rearwardly with respect to said frame and arranged for movement generally upwardly and downwardly relative to said frame between a first position in which said brake provides a braking action and a second position spaced generally above said first position in which said brake is disengaged from said braking action, and

an actuator having a longitudinally-extending axis, disposed rearwardly of said shoe, and having an upper portion thereof connected to said shoe by a first connector and a lower portion thereof connected to said brake by a second connector,

the improvement wherein:

at least one of said connectors permits said actuator to move relative to the one of said shoe and said brake associated with said at least one connector in a first plane that is generally vertical and transverse to said shoe and said frame, in response to lateral shifting of said shoe relative to said frame.

5,570,760

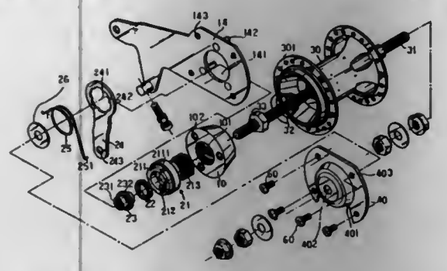
HUB BRAKE FOR BICYCLES

I-Tai Lai, Feng-Yuan, Taiwan, assignor to Valisum Industries Ltd., Taichung Hsien, Taiwan

Filed Jan. 16, 1996, Ser. No. 585,937

Int. Cl.[6] B62L *3/02*

U.S. Cl. 188—26 **1 Claim**



1. A hub brake for bicycles comprising:

a cylindrical hub in which is fitted a screw rod extending therethrough, said hub being formed at an end with a conical recess;

driving means including a driving screw, a bearing, an adjusting nut and an arm, said driving screw being a tubular member provided with a threaded portion at a first end and a plurality of notches at a second end, said arm being formed at an end with an opening having a plurality of internal teeth and at another end with a hole adapted to connect with a cable, said arm being connected to said second end of said driving screw with said teeth engaged with said notches, said adjusting nut being fitted within said hole and having a longitudinal internal threaded hole and a flange at an intermediate portion thereof, said bearing being fitted over an end of said adjusting nut and bearing against said flange;

recovering means including a torsion spring, a helical spring and a nut, said torsion spring being provided with a hook portion at both ends thereof bearing against said arm, said helical spring being fitted over said screw rod and disposed within said conical recess, said nut being engaged with said screw rod to prevent said helical spring from detaching from said screw rod;

braking means including a brake block and a positioning plate, said brake block being slidably mounted within said positioning plate, said brake block being in the shape of a frustum shaped cone adapted to be fitted into said conical recess and having a longitudinal threaded hole engageable with said threaded portion; and

a cover fixedly mounted on said positioning plate and having a center hole for passage of said screw rod.

5,570,761

VELOCITY RESPONSIVE FLUID ACTUATED FRICTION DAMPER

H. Nell Paton, 1460 Elliott Ave. West, Seattle, Wash. 98119-3124

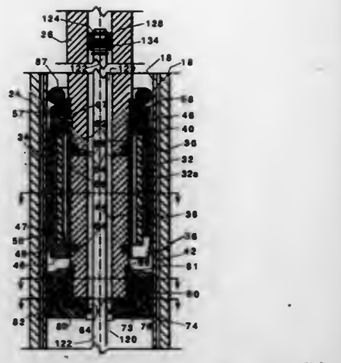
Continuation of Ser. No. 238,874, May 6, 1994, abandoned, which is a continuation-in-part of Ser. No. 87,067, Jul. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 25,674, Mar. 3, 1993, abandoned. This application Mar. 31, 1995, Ser. No. 415,156

Int. Cl.[6] F16F *11/00*

U.S. Cl. 18—271 **6 Claims**

1. A fluid actuated friction damper comprising:

telescopic inner and outer bodies having overlapping inboard ends and oppositely extending outboard ends establishing a damper length which shortens in jounce movement between the inner and outer bodies and lengthens in rebound movement between the bodies;



the outer body having an elongated, continuous friction surface between the inboard and outboard ends thereof;

the inner body comprising a hollow rod extending substantially between the inboard and outboard ends thereof and defining an interior cylindrical chamber surface, and friction shoe means mounted on the hollow rod near the inboard end thereof, said friction shoe means being engageable with said continuous friction surface under a normal friction force developed by compressed gas;

piston means positioned within said cylindrical chamber, the piston means being fixed to the outer body and slidable in the cylindrical chamber relative to said inner body; and

seal means to define with the interior cylindrical chamber surface and the piston means a variable volume chamber, whereby relative movement of said piston means and said inner body during jounce movement of the inner and outer bodies reduces gas pressure in said variable volume chamber, and movement of said piston means during rebound movement of the bodies increases gas pressure in said variable volume chamber; and

means, responsive to gas pressure in said variable volume chamber, for changing the normal force of engagement between said friction shoe means and said continuous friction surface.

5,570,762

HYDRAULIC DAMPER

Erwin Jentsch, Riedstadt, and Hartmut Wollstadter, Florsheim, both of Germany, assignors to Delphi Automotive Systems Russelsheim GmbH, Russelsheim, Germany

Filed Sep. 28, 1995, Ser. No. 535,699

Claims priority, application United Kingdom, Oct. 27, 1994, 94216694

Int. Cl.[6] F16F *9/34*

U.S. Cl. 188—322.15 **8 Claims**

1. A monotube hydraulic damper containing fluid comprising:

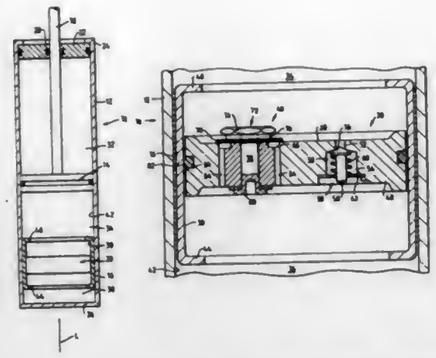
a single tube having a closed first end and a second end;

a rod guide closing the second end of the tube and carrying a seal;

a first piston sealably slidably positioned within the single tube and separating a rebound chamber from a compression chamber within the tube wherein the rebound chamber is defined within the single tube between the first piston and the rod guide adjacent the rod guide and the seal;

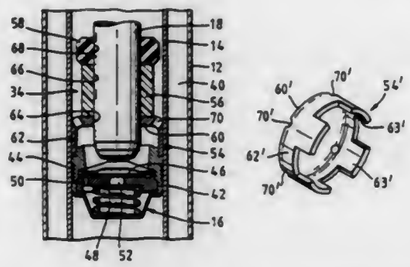
a second piston sealably slidably positioned within the single tube and separating a compensation chamber from the compression chamber within the single tube wherein the compression chamber is defined within the single tube between the second piston and the first piston and the compensation chamber is defined within the single tube between the second piston and the closed first end of the single tube;

a rod connected to the first piston and extending through the rebound chamber and the rod guide and bearing against the seal;



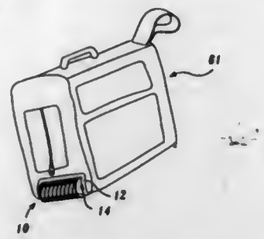
wherein the second piston includes at least one valve controlling fluid flow between the compression chamber and the compensation chamber wherein the at least one valve allows fluid flow from the compression chamber to the compensation chamber when fluid pressure in the compression chamber exceeds fluid pressure in the compensation chamber by a predetermined amount and as a result during a high speed compression stroke of the first piston vacuum development in the rebound chamber is reduced thereby maintaining integrity of the adjacent seal of the rod guide.

5,570,763
SUSPENSION STRUT
Manuel Parejo, Cadiz, Spain, assignor to Delphi Automotive Systems Espana S.A., Cadiz, Spain
Filed Jan. 18, 1995, Ser. No. 374,461
Claims priority, application United Kingdom, Apr. 15, 1994, 9407464
Int. Cl.[6] F16F *9/00*
U.S. Cl. 188—322.22 **10 Claims**



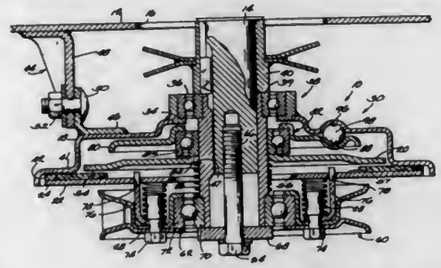
4. A suspension strut comprising a tube substantially closed at both ends and containing fluid; a piston assembly slidably mounted in the tube and making a sealing fit therewith, the piston assembly separating a compression chamber and a rebound chamber within the tube; a piston rod attached to the piston assembly and extending through the rebound chamber and out of one end of the tube; and a rebound stop slidably mounted on the piston rod between the piston assembly and said one end of the tube, the rebound stop comprising a substantially rigid ring and an annular bumper, wherein the rebound stop is engageable with said one end of the tube and with the piston assembly limiting rebound movement of the piston assembly relative to the tube such that rebound forces pass through the annular bumper and the rigid ring directly to the piston assembly.

5,570,764
ROLLER WHEEL ASSEMBLY
Norman Levin, Mercer Island, Wash., assignor to Roller Wheels, Inc., Seattle, Wash.
Filed Feb. 1, 1995, Ser. No. 381,749
Int. Cl.[6] A45C *5/14;* **A47B** *91/00;* **B60B** *15/00*
U.S. Cl. 190—18 A **22 Claims**



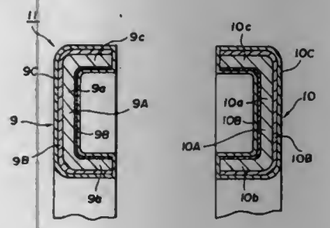
1. A piece of luggage, comprising:
(a) a bag having a base and sides joined to form a container;
(b) a handle attached to said bag;
(c) a rigid portion along the base of said bag;
(d) a housing having an outer surface and an elongate recessed channel extending inwardly from the outer surface, affixed to said rigid portion;
(e) an elongate wheel, said wheel including:
(i) two circular end plates, each having an inner and an outer surface; and
(ii) a transverse rigid webbing unitarily formed with and extending between the inner surfaces of said end plates; and
(f) a mounting mechanism for rotatably mounting said elongate wheel in the channel of said housing such that said elongate wheel protrudes at least partially beyond the surface of said housing.

5,570,765
CLUTCH/BRAKE ASSEMBLY
Arthur G. Patridge, Advance, N.C., assignor to North American Clutch Corp., Milwaukee, Wis.
Filed Jun. 2, 1995, Ser. No. 460,463
Int. Cl.[6] F16D *67/02*
U.S. Cl. 192—15 **21 Claims**



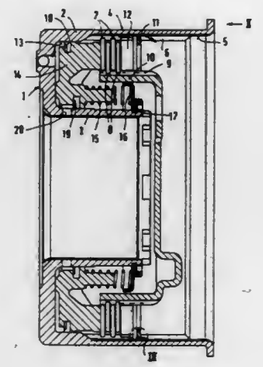
1. A brake/clutch assembly for a machine having a rotating output shaft and a mounting means which is fixed relative to the output shaft, the brake/clutch assembly including a first member adapted to be coupled to an output shaft of the machine for rotation therewith and moveable axially relative thereto, a second member moveable axially relative to the output shaft and rotatable relative thereto, a third member adapted to be fixed to a fixed mounting means of a machine and adjacent the output shaft thereof, said second member having high friction means for coupling said second member to said first member and for arresting the rotation of the second member upon engagement with the third member, biasing means for urging said first member axially away from said second member and for urging said second member axially into engagement with said third member, and cam means coupled to the first member and movable between a first position and a second position for moving said first member axially against said biasing means and into engagement with said high friction means and for moving said high friction means out of engagement with the third member whereby said second member is driven upon rotation of the output shaft, said cam means being operable upon movement from its second to its first position for permitting said biasing means to move the first member out of engagement with the high friction means and the high friction means into engagement with the third member.

5,570,766
END BEARING FOR ONE-WAY CLUTCH
Eichi Sato; Yoshihiro Kaku; Yuji Yokota; Hiroshi Shibata; Masanori Hatanaka; Eiji Sugiyama; Jun Sonoda, all of Toyota, and Tetsuaki Numata, Nara-ken, all of Japan, assignors to Taiho Kogyo Co., Ltd., Aichi, and Koyo Seiko Co., Ltd., Osaka, both of Japan
Filed Mar. 14, 1995, Ser. No. 403,469
Claims priority, application Japan, Mar. 18, 1994, 6-073958
Int. Cl.[6] F16D *41/06;* **F16C** *33/12*
U.S. Cl. 192—45.1 **14 Claims**



1. In an one-way clutch including an annular inner race which is disposed radially inward, an annular outer race which is disposed in surrounding relationship with the inner race, a plurality of sprags slidably interposed between the inner and the outer race, a retainer for retaining the sprags, a ribbon spring for urging the sprags against orbital surfaces of both the races, and an annular end bearing slidably interposed between peripheral surfaces of both the races at a location axially outside the retainer for supporting radial loads acting outside the retainer for supporting radial loads acting upon both the races;
an end bearing for the one-way clutch comprising a body formed of a metal and including a tubular portion extending around an inner periphery thereof, another tubular portion extending around an outer periphery thereof and an annular portion providing a connection between both the tubular portions, a relatively hard coating defined by a relatively hard plating formed on a surface of the body except for the end faces of the tubular portions extending around the inner and the outer periphery, and a relatively soft coating defined by a relatively soft plating formed on a surface of said relatively hard coating.

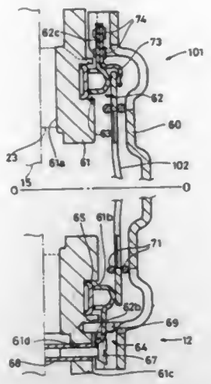
5,570,767
DRUM MEMBER HAVING TOOTH SYSTEM FOR RECEIVING MULTIPLE DISCS
Friedel Lauscher, Kreuzau-Drove, Germany, assignor to Ford Motor Company, Dearborn, Mich.
Filed May 4, 1995, Ser. No. 434,216
Claims priority, application Germany, May 28, 1994, 44 18 694.0
Int. Cl.[6] F16D *13/68;13/72*
U.S. Cl. 192—70.12 **3 Claims**



1. An hydraulically actuated friction element for operating an automatic transmission, comprising:
a first drum member having a first system of teeth extending along the length of the drum member, each tooth spaced circumferentially from an adjacent tooth by a gap having a V-shaped recess bounded by surfaces inclined radially and circumferentially and located at a base of each gap, said recess extending longitudinally along the first drum member, having an annular groove intersecting each recess;
a securing ring located in said groove; and
multiple discs, each disc having a tooth located in a gap and drivably engaged with the first system of teeth, each recess and a tooth of each disc defining a space therebetween, whereby a fluid medium can exit the first drum member longitudinally through said recesses.

5,570,768
CLUTCH COVER ASSEMBLY
Norihisa Uenobara, and Hiroshi Mizukami, both of Neyagawa, Japan, assignors to Kabushiki Kaisha Daikan Seisakusho, Osaka, Japan
Division of Ser. No. 85,649, Jun. 30, 1993, Pat. No. 5,419,418.
This application Feb. 22, 1995, Ser. No. 392,049
Claims priority, application Japan, Jul. 6, 1992, 4-46865 U; Jan. 19, 1993, 5-6825
Int. Cl.[6] F16D *13/75*
U.S. Cl. 192—70.25 **18 Claims**

1. A clutch cover assembly functioning to clamp friction facings of a clutch disc between a component of the assembly and an input plate member, comprising:
a dish-shaped clutch cover connected to said input plate member;
an annular pressure plate disposed within said clutch cover, comprising said component for pressing said friction facings against said input plate member, said pressure plate having a pressure-facing surface juxtaposed against said friction facings;
a diaphragm spring having a fulcrum portion supported by said clutch cover and a portion impelling said pressure plate in order to press said pressure plate toward said input plate member;



a surface fixed rotationally with respect to said pressure plate and connected thereto so as to be capable of transmitting axial force from said impelling portion of said diaphragm spring to said pressure plate, said impelling portion positioned to contact said surface and fixed rotationally with respect to said surface; and

a diaphragm spring posture maintenance mechanism for maintaining constant axial separation between said surface and said diaphragm spring fulcrum portion; wherein

said diaphragm spring posture maintenance mechanism includes an adjustment means comprising a wedge mechanism having opposed circumferentially extending inclined surfaces superficially in contact with each other, and an urging member for urging one of said inclined surfaces circumferentially against the other thereby shifting either of said inclined surfaces axially.

5,570,769

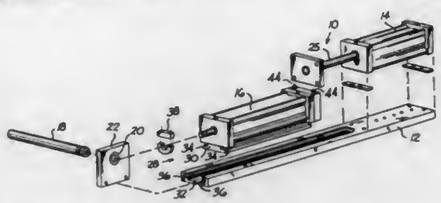
LINEAR AND ROTARY ACTUATOR COMBINATION

Fred C. Eicher; Charles F. Evans, and Gary M. Rumrill, all of Louisville, Ky., assignors to Turn Act, Inc., Louisville, Ky.

Continuation-in-part of Ser. No. 990,057, Dec. 14, 1992, Pat. No. 5,404,983. This application Jan. 30, 1995, Ser. No. 380,284

Int. Cl.[6] F16D *71/00*

U.S. Cl. 192—143 **4 Claims**



1. A combination actuator capable of independently moving a shaft in rotary and linear directions, comprising:

a base member;

a linear actuator fixed relative to the base member, said linear actuator including a linear output shaft which moves linearly relative to the base member;

a rotary actuator connected to said linear actuator such that the motion of said linear output shaft causes said rotary actuator to move linearly relative to the base member;

a guide track fixed relative to one of said base member and said rotary actuator;

a track follower mounted on the other of said base member and said rotary actuator, said guide track receiving said track follower so as to restrict the motion of said rotary actuator to linear motion relative to said base member; and

a rotary output shaft on said rotary actuator, said rotary output shaft being supported by said base member so as to restrict the motion of said rotary output shaft to linear motion and rotary motion relative to said base member.

5,570,770

APPARATUS, IN PARTICULAR AN X-RAY EXAMINATION APPARATUS, WITH ARRANGEMENT FOR COLLISION PROTECTION

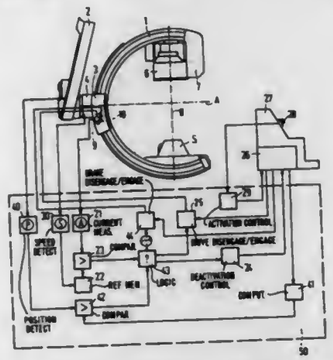
Wilhelmus H. Baaten, and Wilhelmus J. P. Habraken, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 117,904, Sep. 7, 1993, abandoned. This application Sep. 20, 1995, Ser. No. 531,267

Claims priority, application European Pat. Off., Sep. 14, 1992, 92202801; Apr. 21, 1993, 93201167

Int. Cl.[6] F16D *65/34*

U.S. Cl. 192—147 **20 Claims**



1. An apparatus comprising a plurality of components, drive means for moving certain of said components of said apparatus in response to power or current supplied to the drive means, and an arrangement for collision protection which comprises measuring means for determining values of the power or current supplied to the drive means, and comparison means for comparing the determined values of power or current supplied to the drive means with corresponding reference values for said power or current supplied and for, in dependance upon a result of said comparing indicating that a relevant one of said moving components has contacted an obstruction, generating a first drive-disengaging signal for controlling disengagement of said relevant one of said moving components from the drive means so as to render said relevant one of said moving components substantially freely moveable with respect to the drive means.

5,570,771

ELECTRONIC PARKING METER AND SYSTEM

James P. Jacobs, Phoenixville, Pa., assignor to Vincent G. Yost, Harleysville, Pa.

Continuation-in-part of Ser. No. 195,300, Feb. 10, 1994, Pat. No. 5,454,461, which is a continuation of Ser. No. 98,157, Jul. 28, 1993, Pat. No. 5,407,049. This application Sep. 2, 1994, Ser. No. 300,253

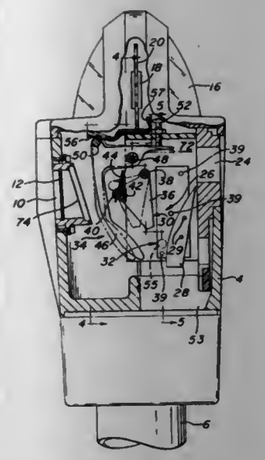
Int. Cl.[6] G07F *17/24*

U.S. Cl. 194—200 **25 Claims**

24. An electronic parking meter comprising:

(a) a stanchion;

(b) a housing mounted on said stanchion and having an exterior wall and a hollow interior, said exterior wall having a coin slot for receipt of a coin to direct the coin into said hollow interior;



(c) first means located within said hollow interior of said housing for sensing the introduction of a coin within said hollow interior through said coin slot and for producing a first electrical signal indicative thereof, said first means comprising displaceable member and associated electrical signal producing means for producing said first electrical signal upon displacement of said displaceable member;

(d) second means located within said hollow interior of said housing for determining the denomination of the coin inserted into said housing through said coin slot and for producing a second electrical signal indicative thereof;

(e) processing means located within said hollow interior of said housing and coupled to said first and second means for receiving said first and second signals, respectively, and for producing data in response thereto;

(f) display means coupled to said processing means for displaying selected ones of said data, said display means and said processing means all comprising low current drain components;

(g) power source means for providing power to said low current drain components of said electronic parking meter;

(h) third means for sensing if a vehicle is within a predetermined location adjacent said parking meter and for providing a third electrical signal indicative thereof;

(i) means located within said hollow interior of said housing for transferring said data from said processing means to external devices;

(j) fourth means located within said hollow interior of said housing for sensing if the coin inserted into the housing contains a ferrous material and for providing a fourth electrical signal indicative thereof; and

(k) fifth means located within said hollow interior of said housing for sensing if the coin inserted into the housing has become jammed within said interior so that it is not moving and for providing a fifth electrical signal indicative thereof.

5,570,772

ASSEMBLY FOR ATTACHING A COIN SEPARATOR

Takatoshi Takemoto, Tokyo; Sakuji Yaegasi, and Tsutomu Onodera, both of Hanamaki, all of Japan, assignors to Kabushiki Kaisha Ace Denken, Japan

Filed Mar. 2, 1995, Ser. No. 397,669

Claims priority, application Japan, Mar. 3, 1994, 6-033890

Int. Cl.[6] G07F *1/04;9/10*

U.S. Cl. 194—344 **2 Claims**

1. An assembly for attaching a coin separator to a coin ejector, said coin ejector having a coin ejection port for ejecting a plurality of different sized of coins therefrom, the coin separator sorting the plurality of coins ejected from the coin ejection port by size and delivering the sorted coins to coin storage devices, said coin separator having one side that is largely cut away, said coin separator being formed with a coin reception portion that is couplable to said coin ejection port of said coin ejector for receiving the plurality of coins ejected from said coin ejection port, said attaching assembly comprising:

a mainframe (**60**) provided on the coin ejector;

a subframe (**70**) which is rotatably fastened to said mainframe, said subframe detachably mounting said coin separator (**20**), said coin separator being mounted on said subframe with said one side adjacent said subframe so that said subframe forms a side wall for said coin separator, said subframe allowing said coin separator, when mounted thereon, to move with respect to said frame in arcuate path between an insertion position in which said coin reception portion of said coin separator is coupled to said coin ejection port of said coin ejector and a non-insertion position in which the former is not coupled to the latter; and

a fixing member (**80**) for fixing said coin separator to both said mainframe and said subframe at the insertion position.

5,570,773

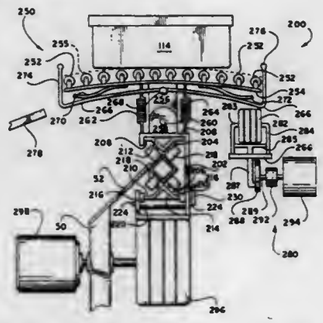
TILTING TRAY PACKAGE SORTING APPARATUS

Henri Bonnet, Atlanta, Ga., assignor to United Parcel Service of America, Atlanta, Ga.

Division of Ser. No. 261,348, Jun. 16, 1994, Pat. No. 5,489,017, which is a continuation-in-part of Ser. No. 154,207, Nov. 17, 1993, Pat. No. 5,433,311. This application May 16, 1995, Ser. No. 442,020

Int. Cl.[6] B65G *47/46*

U.S. Cl. 198—370.04 **12 Claims**



1. An apparatus for transporting objects, comprising:

a track;

a plurality of carriages mounted for movement along the track, each of the carriages including an object-holding platform and a frame for engaging the track, the object-holding platform

defining an upwardly convex carrying surface for the objects, shaped such that position of an object thereon is destabilized;

a selectively positionable retainer located at a first end of the carrying surface, the retainer operable to two different positions;

a first position in which the retainer is set forth in the path of an object at the first end of the carrying surface such that the retainer discourages discharge of the object off the first end of the carrying surface; and

a second position in which the retainer is removed from the path of the object moving toward the first end of the carrying surface such that the object is free to discharge off the first end of the carrying surface.

5,570,774

COILED BLADE ASSEMBLY FOR BELT SCRAPER

Normand J. Morin, 143 A Gibson Street, Parry Sound ON, Canada

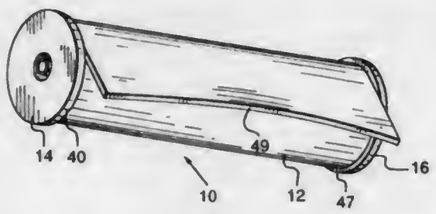
PCT No. PCT/CA93/00419, § 371 Date Apr. 10, 1995, § 102(e) Date Apr. 10, 1995, PCT Pub. No. WO94/08876, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 15, 1993, Ser. No. 411,800

Claims priority, application United Kingdom, Oct. 19, 1992, 92/21902

Int. Cl.[6] B65G *45/10;45/16*

U.S. Cl. 198—499 **16 Claims**



1. Coiled blade assembly for a conveyer belt scraper, characterised in that:

the assembly includes a blade (**20**) of scraper material, the blade being suitable for pressing against the belt, and for scraping and cleaning the belt;

in the assembly, the blade material is arranged in a spiral coil (**30**) of more than one turn, about a coil axis, the coil having left and right axial ends;

the assembly includes left and right coil-constrainers (**14,16**), which are arranged so as to constrain the coil against radial expansion;

the assembly includes structure (**18**) for holding the left and right coil-constrainers in position at, or near, the respective axial ends of the coil;

the coil-constrainers extend a distance in from the ends of the coil;

the distance is long enough that the coil is substantially firmly constrained by the coil-constrainers against radial expansion, at least during operation of the scraper;

the distance is short enough that, during operation of the scraper, an outer end (**49**) of the blade material forming the coil can be drawn smoothly and freely from the coil, between the coil-constrainers.

5,570,775

APPARATUS FOR THE RELEASE OF A PRODUCT FROM A CONTINUOUSLY CIRCULATING BELT

Matthias Kleinhans, Waiblingen, and Eckhard Heinisch, Affalterbach, both of Germany, assignors to Santrade Ltd., Lucerne, Switzerland

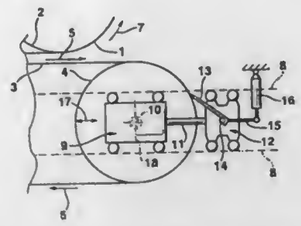
PCT No. PCT/EP95/00302, § 371 Date Nov. 29, 1995, § 102(e) Date Nov. 29, 1995, PCT Pub. No. WO95/22498, PCT Pub. Date Aug. 24, 1995

PCT Filed Jan. 28, 1995, Ser. No. 532,717

Claims priority, application Germany, Feb. 18, 1994, 44 05 197.2

Int. Cl.[6] B65G *47/74*

U.S. Cl. 198—635 **8 Claims**



1. Apparatus for releasing a product from a continuously circulating belt of a belt conveyor or double-belt press, in the region of a drum guiding the belt, the drum being rotatable about a horizontal axis formed by two horizontal axle portions mounted in respective lateral bearing cradles, the drum being susceptible to skewing in a horizontal plane in response to linear movement between the bearing cradles in a horizontal plane, a doctor blade having a length extending across the width of the belt in a direction perpendicular to the feed direction and having an edge positioned against a belt surface for releasing of the product, the doctor blade having shafts at opposite ends thereof supported in respective guide cradles, each guide cradle coupled rigidly to a respective bearing cradle and including a linear guide element for accommodating linear motion of the doctor blade in the lengthwise direction of the doctor blade, a pivot bearing supporting each end of the doctor blade for pivoting to enable the doctor blade to remain parallel to a rotary axis of the drum, and a control mechanism for moving the doctor blade in response to a lateral displacement of the belt resulting from skewing of the drum.

5,570,776

SWITCH ARRANGEMENT, PARTICULARLY FOR A ROUTER

Achim Buchholz, Limburg, and Michael Stirm, Oberursel, both of Germany, assignors to Black & Decker Inc., Newark, Del.

Filed Mar. 2, 1995, Ser. No. 397,627

Claims priority, application Germany, Mar. 3, 1994, 44 07 418.2

Int. Cl.[6] H01H *9/06*

U.S. Cl. 200—43.17 **6 Claims**

1. A switch arrangement for a router, comprising a spring biased switch (**45**) and a trigger element (**30**) which is pivotably held in a handle arrangement (**7**) adapted to be mounted on said router, which trigger element is pivotable against said spring biased switch from a release position into a switch operating position and on which is held in a displaceable manner a locking element (**38**) which in an end position prevents displacement of the trigger element (**30**) in the direction of the switch operating position and which by engagement of a gripping area (**40**) on the locking element by hand is displaceable against a spring member into a first position, in which the trigger element (**30**) is pivotable into the switch operating position so that the locking element (**38**) in a second position locks the trigger element (**30**) in the switch operating position, characterised in that the trigger element (**30**) includes legs connected at a connection area in a substantially L-shaped configuration and is pivotably mounted about a pivot connection (**37**) at the free end of one of its legs (**31**), that the locking element (**38**) is pivotably held at the free end of the other leg (**32**), that the gripping area (**40**) of the locking element (**38**) is located between the pivot connection (**37**) with the trigger element (**30**) and the connection area of the legs (**31, 32**) of the trigger element (**30**) and at a side remote from the one leg (**31**), that the locking element (**38**) on the side with the gripping area (**40**) is provided between this area and the pivot connection (**37**) with a locking surface (**39**) which cooperates with a countersurface (**16**) on the handle arrangement (**7**) and that the locking element (**38**) is provided on the side facing towards the one leg (**31**) between the pivot connection (**37**) and the connection area of the legs (**31, 32**) with a locking part (**41**) which in the second position is in locking engagement with a locking portion (**14**) on the handle arrangement (**7**).

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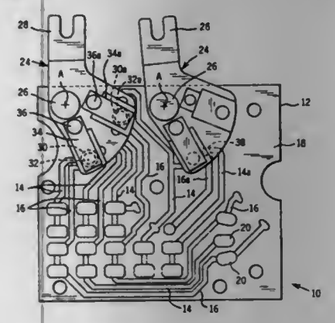
CIRCUIT BOARD MOUNTED SWITCH ASSEMBLY

Edward L. Skarivoda, Manitowoc, Wis., assignor to Paragon Electric Company, Inc., Two Rivers, Wis.

Filed Aug. 4, 1995, Ser. No. 511,541

Int. Cl.[6] H01H *9/00*

U.S. Cl. 200—292 **25 Claims**



1. A switch comprising:

a non-conductive board including a substantially planar surface having at least one depression therein;

at least two electrical conductors supported by the planar surface and terminating at the depression;

an electrically conductive rollable member;

a switch member movably attached to the board, the switch member including an opening, wherein the rollable member is located within the opening, and wherein the switch member is moveable relative to the board to a first position at which the rollable member rests within the depression and to a second position at which the rollable member is not within the depression; and

a biasing member attached to the switch member and in contact with the rollable member to force the rollable member into the depression when the switch is in the first position to electrically connect the electrical conductors.

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ELECTRICAL ROCKER SWITCH

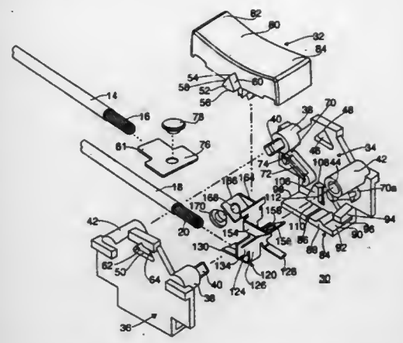
Paul Gernhardt, Northport, and Serge Krzyzanowski, Flushing, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Filed Apr. 26, 1994, Ser. No. 233,581

Int. Cl.[6] H01H *21/24*

U.S. Cl. 200—557 **20 Claims**

1. An electrical rocker switch comprising:



(a) a housing having a vertical center line about which said housing is symmetrical;

(b) a rocker having a generally arcuate outer face extending from a first end to a second end for engagement by a user; said rocker being pivotally supported in said housing at a first pivot point and being pivotally movable with limited angular movement between first and second rest positions;

(c) a boss carried by said rocker and extending downwardly therefrom into said housing;

(d) a spring member extending from said boss to a support member in said housing, said spring member being aligned with said vertical center line of said housing; said spring member having a first end and a second end and a linear central portion therebetween; a second pivot point intermediate said spring member first end and said spring member second end; a pivotable portion of said central portion between said second pivot point and said first end of said spring member pivotable about said second pivot point; said first end of said spring member engaging said boss and retaining said rocker in pivotal contact with said housing at said first pivot point and in a selected one of said first and second rest positions;

(e) a fixed contact mounted upon said housing; said fixed contact adapted to be connected to a first line of a first electrical circuit;

(f) a movable contact mounted upon a contact arm connected to and transverse to said spring member; said movable contact moved into mechanical and electrical contact with said fixed contact and moved away from mechanical and electrical contact with said fixed contact as said pivotal portion of said spring member central portion pivots about said second pivot point in response to the movement of said rocker between said first and second rest positions; and

(g) means to connect said spring member to a line of an electrical circuit to complete a first electrical circuit when said movable and fixed contacts are engaged and interrupt said first electrical circuit when said movable and fixed contacts are not engaged.

5,570,779

STEP-SHAPED INNERFRAME FOR USE WITH SHORT CIGARETTES AND HINGED LID BOX

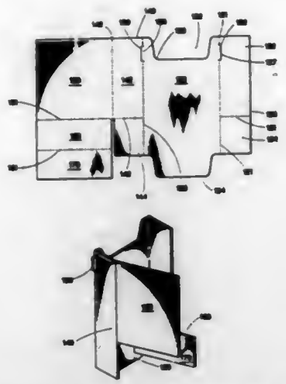
James B. Draucker, Chesterfield; Charles D. Hansen, Jr., Richmond; Reginald W. Newsome, Richmond, and Xuan M. Pham, Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Division of Ser. No. 161,495, Dec. 6, 1993, Pat. No. 5,480,025. This application Aug. 14, 1995, Ser. No. 514,526

Int. Cl.[6] B65D *85/10;* **A24F** *15/00*

U.S. Cl. 206—246 **51 Claims**

1. A step-shaped innerframe for supporting a bundle of cigarettes within a box comprising an interconnected front wall, back wall, first and second side walls, bottom wall, and top wall, the bundle



of cigarettes having a shorter height than the box, the step-shaped innerframe comprising:

a front panel;

a back panel located opposite said front panel in a substantially parallel relationship;

a bottom step panel substantially perpendicularly connected to said back panel; and

a front step panel substantially perpendicularly connected to said bottom step panel such that said front step panel and said back panel are substantially parallel and extend in opposite directions from said bottom step panel;

wherein said bottom step panel contacts said front panel substantially perpendicularly to divide said front panel into an upper portion and lower portion, and wherein said front step panel contacts the lower portion of said front panel in a face-to-face contact;

wherein an upper side of said bottom step panel, and the inner sides of the upper portion of said front panel and of said back panel define a receptacle sized for the cigarette bundle.

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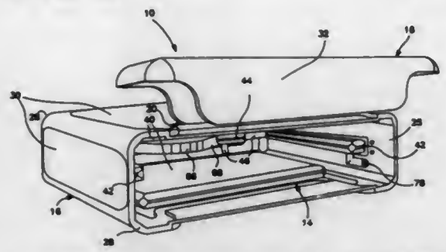
PORTABLE COMPUTER CARRING CASE

Douglas C. Miller, Severna Park, Md., assignor to Codi, Inc., Harrisburg, Pa.

Filed Apr. 17, 1995, Ser. No. 423,215

Int. Cl.[6] B65D *85/68;81/05*

U.S. Cl. 206—305 **24 Claims**



1. An instrument carrying case comprising a body defining a hollow instrument-receiving recess with an access opening at one side of the recess, the body including a first side wall adjacent to the access opening and a bottom wall facing the access opening; and a bladder assembly in the body recess, the assembly including a first bladder on the first side wall having a first compliant contact panel facing the recess, a second bladder on the bottom wall having a mounting panel and a second compliant contact panel facing the access opening; a gas passage joining the bladders; and a gas confined in the interior chambers of the bladders; said second contact panel including a collapsed portion including a flattened Z-shaped fold with three overlapping panel layers spaced outwardly from the mounting panel.

17. An instrument carrying case comprising a body having two opposing side walls, two opposed end walls and a bottom wall defining an instrument-receiving recess with an access opening away from the bottom wall; a bladder assembly in the recess including a bladder on each wall; a body of gas confined in the bladders and a gas passage communicating the interiors of the bladders; each bladder having a mounting panel on a wall and a compliant contact panel facing the recess; the contact panel of the bladder on the bottom wall having a high portion located above the bottom wall approximately midway between said end walls and located centrally between the side walls, and generally straight, downward sloping portions located to either side of the high portion and extending toward the end walls.

22. An instrument carrying case comprising a body having opposed side walls and a bottom wall, said walls defining an interior instrument-recess with an access opening facing away from the bottom wall; a bladder assembly in the recess including a bladder on each wall and a passage connecting the interiors of the bladders; and a body of gas confined in the bladders, each bladder having a mounting panel on a wall and a compliant panel overlying the mounting panel and facing the recess, each bladder on a side wall including a laterally shiftable wall extending circumferencially around the bladder, said shiftable wall joining the mounting and compliant panels, and extending generally perpendicularly outwardly from an adjacent one of said side walls.

24. An instrument carrying case comprising a body defining a hollow instrument-receiving recess with an access opening at one side of the recess, the body including a first side wall adjacent to the access opening and a bottom wall facing the access opening; and a bladder assembly in the body recess, the assembly including a first bladder on the first side wall having a first complaint contact panel facing the recess, a second bladder on the bottom wall having a second complaint contact panel facing the access opening; a gas passage joining the bladders; and a gas confined in the interior chambers of the bladders; said second contact panel including a collapsed portion including a flattened Z-shaped fold with three overlapping panel layers in which adjacent panel layers are in contacting relationship.

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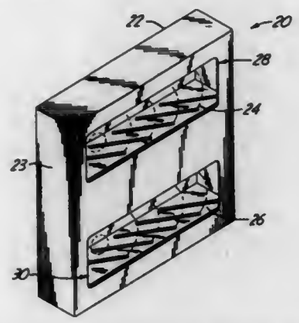
CONTAINER FOR RETAINING DISPLAYING MEDIA DISCS

Charles F. Bond, Lake Worth, Fla.; Tracy L. Kassera, Plymouth, and Keith W. Lockwood, Minneapolis, both of Minn., assignors to Slash Corporation, Edina, Minn.

Filed Oct. 5, 1994, Ser. No. 317,700

Int. Cl.[6] B65D *85/57*

U.S. Cl. 206—308.1 **14 Claims**



1. A disc container for simultaneously retaining and displaying a plurality of media discs comprising:

a disc support structure including;

at least one pair of opposing walls separated a fixed distance;

a display plane through which at least a portion of the plurality of media discs is viewable;

at least one pair of laterally aligned, opposing slots extending through the at least one pair of opposing walls, respectively, for receiving and retaining edge portions of a media disc, the pair of opposing slots being arranged relative to a display plane so that the plurality of media discs are retainable in an angular relationship relative to the display plane and a portion of a surface of each of the plurality of media discs is visible through the display plane; and

an outer housing extending substantially around the disc support structure, the outer housing having a rear wall, a front wall having a transparent display window generally coplanar with the display plane, and a plurality of perimeter walls, the at least one pair of opposing slots being offset from the outer housing by edge portions so that a portion of the plurality of media discs may extend therethrough beyond the at least one pair of opposing walls.

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DISK CARTRIDGE CASE

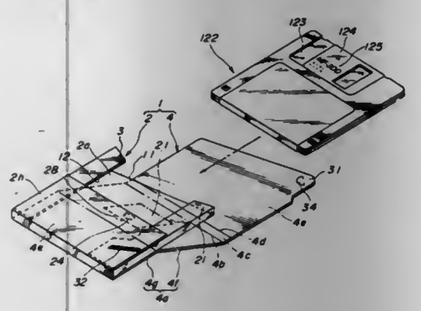
Shuichi Kikuchi; Yuji Iwaki, both of Miyagi, and Toshiro Kobayashi, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 28, 1994, Ser. No. 330,502

Claims priority, application Japan, Nov. 2, 1993, 5-274608; Dec. 28, 1993, 5-335772

Int. Cl.[6] B65D *85/57*

U.S. Cl. 206—308.3 **26 Claims**



1. A disk cartridge case comprising:

case body for accommodating a disk cartridge; and

a cover for covering a cartridge inserting port provided on an end of said case body;

said case body comprising a case body back member, a case body front plate and a side plate;

said cover comprising a cover back member superposed on said case body back member, a cover front member superposed on said case body front plate, a front forming member, a closing portion for opening and closing said cartridge inserting port located between said cover back member and said cover front member and a bottom member located between said cover back member and said front forming plate;

said back member comprising a non-adhesion portion located at a side of said closing member and being capable of contacting and separating from said case body back member of said case body and an adhesion portion located opposite said closing member and being adhered to said case body back member of said case body.

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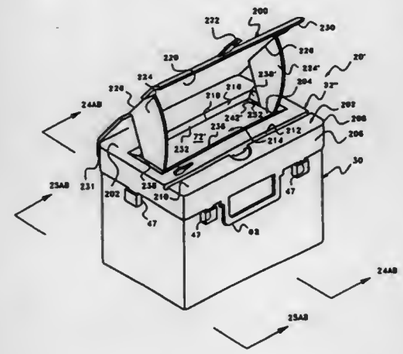
APPARATUS AND METHODS FOR TRANSPORTING AND DISCARDING MEDICAL MATERIALS

Gale H. Thorne; David A. Robinson, both of Bountiful, and Brad C. Robinson, North Salt Lake, all of Utah, assignors to Specialized Health Products, Inc., Bountiful, Utah

Continuation-in-part of Ser. No. 294,533, Aug. 23, 1994, Pat. No. 5,474,180, which is a continuation-in-part of Ser. No. 207,480, Mar. 7, 1994, abandoned. This application Apr. 6, 1995, Ser. No. 417,797

Int. Cl.[6] B65D *85/20*

U.S. Cl. 206—366 **51 Claims**



1. A container for use in transport and disposal of medical instruments, comprising:

a container body having an opening and an internal volume;

a self-closing biased flap at an associated ingress site superiorly disposed as a part of the container to provide for selective deposit of used medical instruments into the volume, said flap being securely connected to the container body as part of a covering for the opening; and

a safety guard disposed within the internal volume which denies a direct pathway through the ingress site to medical instruments ano waste disposed within the volume, said safety guard comprising an access hole through which medical products having a size which permits ingress through the alternate ingress aperture are passed into the internal volume.

2. A container for use in transport and disposal of medical instruments, comprising:

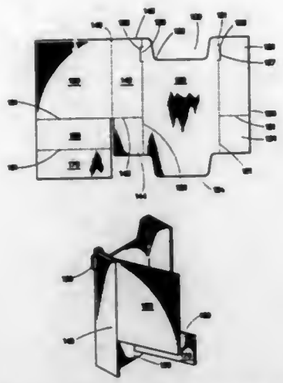
a container body having an opening and an internal volume;

a self-closing biased flap at an associated ingress site superiorly disposed as a part of the container to provide for selective deposit of used medical instruments into the volume, said flap being securely connected to the container body as part of a covering for the opening; and

a safety guard disposed within the internal volume which denies a direct pathway through the ingress site to medical instruments and waste disposed within the volume, said safety guard comprising a first acute angle relative to the plane of the self-closing biased flap and substantially comprises only sufficient material strength to support its own weight and therefore yields under weight of an item introduced through the opening to bend to a second angle which is less acute relative to the plane of the flap and therefore to a horizontal plane.

11. A method of disposing of used medical materials by means of a container assembly comprising a lid body having an opening, a self-closing biased flap connected to the lid body for covering the opening, means for permanently attaching the lid body over an opening of an associated container, means for permanently locking the biased flap closed, and a cradling means for insertion of medical materials into the container body through the opening, said cradling means having a floor disposed on the biased flap, comprising the steps of:

a) permanently securing the lid body to the associated container;



of cigarettes having a shorter height than the box, the step-shaped innerframe comprising:

a front panel;

a back panel located opposite said front panel in a substantially parallel relationship;

a bottom step panel substantially perpendicularly connected to said back panel; and

a front step panel substantially perpendicularly connected to said bottom step panel such that said front step panel and said back panel are substantially parallel and extend in opposite directions from said bottom step panel;

wherein said bottom step panel contacts said front panel substantially perpendicularly to divide said front panel into an upper portion and lower portion, and wherein said front step panel contacts the lower portion of said front panel in a face-to-face contact;

wherein an upper side of said bottom step panel, and the inner sides of the upper portion of said front panel and of said back panel define a receptacle sized for the cigarette bundle.

Z-shaped fold with three overlapping panel layers spaced outwardly from the mounting panel.

17. An instrument carrying case comprising a body having two opposing side walls, two opposed end walls and a bottom wall defining an instrument-receiving recess with an access opening away from the bottom wall; a bladder assembly in the recess including a bladder on each wall; a body of gas confined in the bladders and a gas passage communicating the interiors of the bladders; each bladder having a mounting panel on a wall and a compliant contact panel facing the recess; the contact panel of the bladder on the bottom wall having a high portion located above the bottom wall approximately midway between said end walls and located centrally between the side walls, and generally straight, downward sloping portions located to either side of the high portion and extending toward the end walls.

22. An instrument carrying case comprising a body having opposed side walls and a bottom wall, said walls defining an interior instrument-recess with an access opening facing away from the bottom wall; a bladder assembly in the recess including a bladder on each wall and a passage connecting the interiors of the bladders; and a body of gas confined in the bladders, each bladder having a mounting panel on a wall and a compliant panel overlying the mounting panel and facing the recess, each bladder on a side wall including a laterally shiftable wall extending circumferencially around the bladder, said shiftable wall joining the mounting and compliant panels, and extending generally perpendicularly outwardly from an adjacent one of said side walls.

24. An instrument carrying case comprising a body defining a hollow instrument-receiving recess with an access opening at one side of the recess, the body including a first side wall adjacent to the access opening and a bottom wall facing the access opening; and a bladder assembly in the body recess, the assembly including a first bladder on the first side wall having a first complaint contact panel facing the recess, a second bladder on the bottom wall having a second complaint contact panel facing the access opening; a gas passage joining the bladders; and a gas confined in the interior chambers of the bladders; said second contact panel including a collapsed portion including a flattened Z-shaped fold with three overlapping panel layers in which adjacent panel layers are in contacting relationship.

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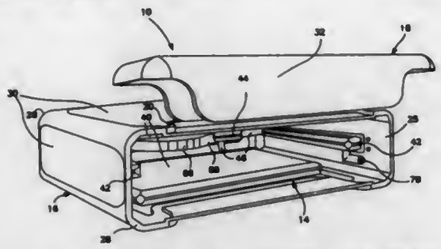
PORTABLE COMPUTER CARRING CASE

Douglas C. Miller, Severna Park, Md., assignor to Codi, Inc., Harrisburg, Pa.

Filed Apr. 17, 1995, Ser. No. 423,215

Int. Cl.[6] B65D *85/68;81/05*

U.S. Cl. 206—305 **24 Claims**



1. An instrument carrying case comprising a body defining a hollow instrument-receiving recess with an access opening at one side of the recess, the body including a first side wall adjacent to the access opening and a bottom wall facing the access opening; and a bladder assembly in the body recess, the assembly including a first bladder on the first side wall having a first compliant contact panel facing the recess, a second bladder on the bottom wall having a mounting panel and a second compliant contact panel facing the access opening; a gas passage joining the bladders; and a gas confined in the interior chambers of the bladders; said second contact panel including a collapsed portion including a flattened

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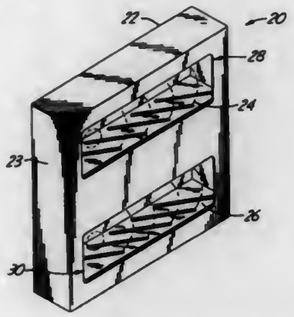
CONTAINER FOR RETAINING DISPLAYING MEDIA DISCS

Charles F. Bond, Lake Worth, Fla.; Tracy L. Kassera, Plymouth, and Keith W. Lockwood, Minneapolis, both of Minn., assignors to Slash Corporation, Edina, Minn.

Filed Oct. 5, 1994, Ser. No. 317,700

Int. Cl.[6] B65D *85/57*

U.S. Cl. 206—308.1 **14 Claims**



1. A disc container for simultaneously retaining and displaying a plurality of media discs comprising:

a disc support structure including;

at least one pair of opposing walls separated a fixed distance;

a display plane through which at least a portion of the plurality of media discs is viewable;

at least one pair of laterally aligned, opposing slots extending through the at least one pair of opposing walls, respectively, for receiving and retaining edge portions of a media disc, the pair of opposing slots being arranged relative to a display plane so that the plurality of media discs are retainable in an angular relationship relative to the display plane and a portion of a surface of each of the plurality of media discs is visible through the display plane; and

an outer housing extending substantially around the disc support structure, the outer housing having a rear wall, a front wall having a transparent display window generally coplanar with the display plane, and a plurality of perimeter walls, the at least one pair of opposing slots being offset from the outer housing by edge portions so that a portion of the plurality of media discs may extend therethrough beyond the at least one pair of opposing walls.

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DISK CARTRIDGE CASE

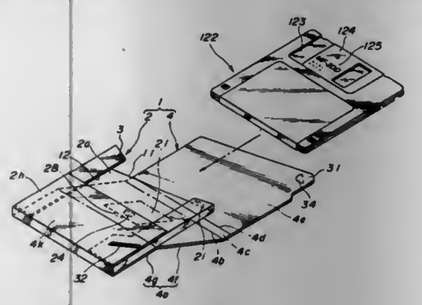
Shuichi Kikuchi; Yuji Iwaki, both of Miyagi, and Toshiro Kobayashi, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 28, 1994, Ser. No. 330,502

Claims priority, application Japan, Nov. 2, 1993, 5-274608; Dec. 28, 1993, 5-335772

Int. Cl.[6] B65D *85/57*

U.S. Cl. 206—308.3 **26 Claims**



1. A disk cartridge case comprising:

case body for accommodating a disk cartridge; and

a cover for covering a cartridge inserting port provided on an end of said case body;

said case body comprising a case body back member, a case body front plate and a side plate;

said cover comprising a cover back member superposed on said case body back member, a cover front member superposed on said case body front plate, a front forming member, a closing portion for opening and closing said cartridge inserting port located between said cover back member and said cover front member and a bottom member located between said cover back member and said front forming plate;

said back member comprising a non-adhesion portion located at a side of said closing member and being capable of contacting and separating from said case body back member of said case body and an adhesion portion located opposite said closing member and being adhered to said case body back member of said case body.

5,570,783

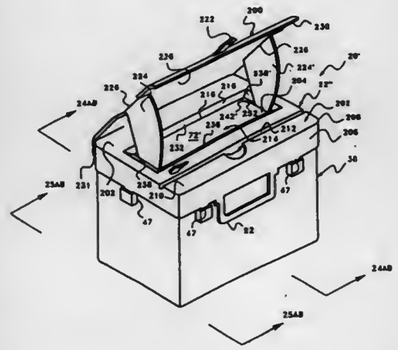
APPARATUS AND METHODS FOR TRANSPORTING AND DISCARDING MEDICAL MATERIALS

Gale H. Thorne; David A. Robinson, both of Bountiful, and Brad C. Robinson, North Salt Lake, all of Utah, assignors to Specialized Health Products, Inc., Bountiful, Utah

Continuation-in-part of Ser. No. 294,533, Aug. 23, 1994, Pat. No. 5,474,180, which is a continuation-in-part of Ser. No. 207,480, Mar. 7, 1994, abandoned. This application Apr. 6, 1995, Ser. No. 417,797

Int. Cl.[6] B65D *85/20*

U.S. Cl. 206—366 **51 Claims**



1. A container for use in transport and disposal of medical instruments, comprising:

a container body having an opening and an internal volume;

a self-closing biased flap at an associated ingress site superiorly disposed as a part of the container to provide for selective deposit of used medical instruments into the volume, said flap being securely connected to the container body as part of a covering for the opening; and

a safety guard disposed within the internal volume which denies a direct pathway through the ingress site to medical instruments and waste disposed within the volume, said safety guard comprising an access hole through which medical products having a size which permits ingress through the alternate ingress aperture are passed into the internal volume.

2. A container for use in transport and disposal of medical instruments, comprising:

a container body having an opening and an internal volume;

a self-closing biased flap at an associated ingress site superiorly disposed as a part of the container to provide for selective deposit of used medical instruments into the volume, said flap being securely connected to the container body as part of a covering for the opening; and

a safety guard disposed within the internal volume which denies a direct pathway through the ingress site to medical instruments and waste disposed within the volume, said safety guard comprising a first acute angle relative to the plane of the self-closing biased flap and substantially comprises only sufficient material strength to support its own weight and therefore yields under weight of an item introduced through the opening to bend to a second angle which is less acute relative to the plane of the flap and therefore to a horizontal plane.

11. A method of disposing of used medical materials by means of a container assembly comprising a lid body having an opening, a self-closing biased flap connected to the lid body for covering the opening, means for permanently attaching the lid body over an opening of an associated container, means for permanently locking the biased flap closed, and a cradling means for insertion of medical materials into the container body through the opening, said cradling means having a floor disposed on the biased flap, comprising the steps of:

a) permanently securing the lid body to the associated container;

b) placing the used medical materials onto the floor of the cradling means;
c) pushing downward against the biased flap in an area adjacent to the cradling means, thereby allowing the used medical materials to fall inside the container assembly without operator contact; and
d) when the container is filled to a desired level, closing and locking the biased flap closed.

13. A lid for a container apparatus for medical sharps and associated waste comprising:
an ingress site normally closed by a biased flap;
a tapered hole which permits direct insertion of medical needles and other tubing connected devices through the lid;
slider means providing manual positioning to at least three positions comprising:
an open position whereat the biased flap may be selectively opened and medical needles and other tubing connected devices may be delivered through the tapered hole;
a closed position whereat the biased flap is maintained in a closed position and the tapered hole is covered; and
a locked position whereat the biased flap and tapered hole are permanently closed to further access.

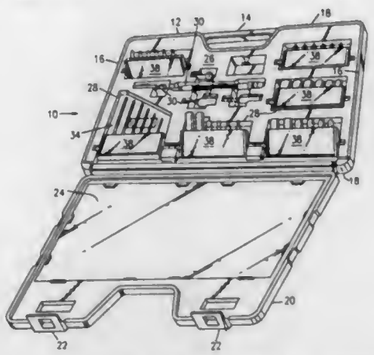
18. A method of disposing of used medical materials by means of a container assembly comprising a lid body having an opening, a self-closing biased flap connected to the lid body for covering the opening, means for permanently attaching the lid body over an opening of an associated container, a cradling means for insertion of medical materials into the container body through the opening, said cradling means having a floor disposed on the biased flap, and a hinged cover having a releasable latch which is selectively closed and releasably latched to deny access to the cradling means, said method comprising the steps of:
a) permanently securing the lid body to the associated container;
b) placing the used medical materials onto the floor of the cradling means;
c) pushing downwardly against the biased flap in an area adjacent to the cradling means, thereby allowing the used medical materials to fall inside the container assembly without operator contact; and
d) closing the cover and engaging the releasable latch, thereby restricting access to the cradling means until the cover is purposefully opened.

5,570,784

TOOL ORGANIZER AND DEPLOYMENT APPARATUS

Romie K. Sidabras, Riverside, and Jeffrey E. Bennett, Newhall, both of Calif., assignors to Allied Wholesale, Inc., Sylmar, Calif.

Continuation of Ser. No. 996,770, Dec. 24, 1992, abandoned. This application Sep. 7, 1995, Ser. No. 524,473
Int. Cl.[6] B65D *85/20*
U.S. Cl. 206—378 **18 Claims**



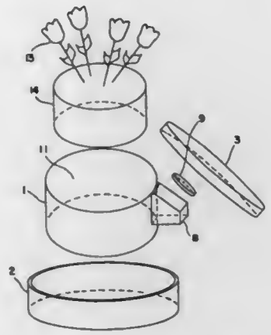
16. A tool organizer and deployment apparatus comprising:
a molded plastic housing surface attached to said tray comprising at least one compartment thereon, said at least one compartment having a central support section and at least one receptacle molded therein, each of said at least one receptacle having a mouth opening to said housing surface and first detents located in said mouth;
at least one flip index releasably securing tool accessories, said at least one flip index releasably secured at said at least one compartment, and said at least one flip index comprising at least one member projecting from at least one side of said at least one flip index for releasably engaging said at least one receptacle and said first detents.

5,570,785

COMBINED FLORAL DISPLAY AND KEEPSAKE CONTAINER

Bryan K. Honkawa, Los Angeles, Calif., assignor to Roll International, Inc., Los Angeles, Calif.

Filed Mar. 10, 1995, Ser. No. 401,786
Int. Cl.[6] B65D *85/52*
U.S. Cl. 206—423 **7 Claims**



1. A multipurpose combined floral display and keepsake container comprising:
a. a floral container having a bottom and a container wall extending upwardly from the bottom, creating a cavity above the bottom for displaying a floral arrangement therein,
b. a keepsake bottom positioned below said floral container and detachable from said floral container,
c. a keepsake top connected to said container wall and detachable from said container wall,
d. means for attaching said floral container to said keepsake bottom wherein said means is a strap secured around the keepsake bottom, said strap having enlarged portions at each end, and two slots positioned on the sides of said floral container for receiving and securing the ends of said strap to attach said keepsake bottom to said floral container, and
e. means for securing said keepsake top to said floral container.

5,570,786

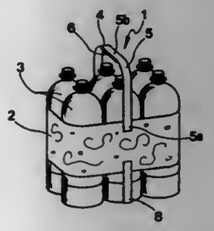
Patent Not Issued For This Number

5,570,787

DEVICE FOR BUNDLING UP CONTAINERS, IN PARTICULAR BEVERAGE CONTAINERS, INTO A UNITARY SET

Enrico Damovaro, Via Savona 80, 20144 Milan, and Enrico Ghini, Via Marconi 17, 03043 Cassino (Frosinone), both of Italy

PCT No. PCT/IT93/00067, § 371 Date Nov. 23, 1994, § 102(e) Date Nov. 23, 1994, PCT Pub. No. WO94/01342, PCT Pub. Date Jan. 20, 1994
PCT Filed Jun. 25, 1993, Ser. No. 343,439
Claims priority, application Italy, Jul. 3, 1992, M192A1628
Int. Cl.[6] B65D *65/00*
U.S. Cl. 206—428 **6 Claims**



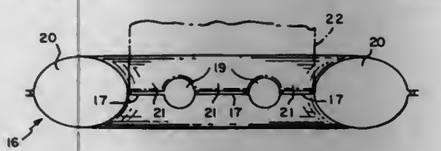
1. Characterized in A device for bundling up containers in a unitary set comprising:
a membrane of plastic material for associating said containers into a unitary set:
a carrying handle for handling said unitary set;
said membrane of plastic material being defined by a tubular band adapted to wrap and tighten said containers disposed inside by side relation in a predetermined number at side portions thereof, said tubular band being elastically extensible;
said carrying handle presenting a central handgrip portion and end portions linked to said tubular band at symmetrically opposite areas thereof and to the respective containers disposed at end positions in said unitary set:
said carrying handle is an adhesive tape: and
said carrying handle further comprises a ribbon made of paperboard engaged to said adhesive tape at said central portion.

5,570,788

PACKAGING COMPONENTS

Charles A. Batsford, Stow, Mass., assignor to Air-Ride Packaging of America, Inc., Hudson, Mass.

Filed Dec. 30, 1994, Ser. No. 367,093
Int. Cl.[6] B65D *81/02*
U.S. Cl. 206—522 **4 Claims**



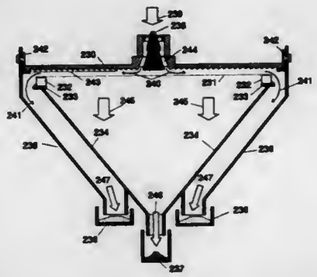
1. A packaging component comprising:
an inflatable continuous peripheral portion;
an interior portion formed within said inflatable continuous peripheral portion;
said interior portion having a plurality of non-inflatable interior regions therein;
a valve for permitting inflatable regions of said component to be inflated and deflated;
the plurality of non-inflatable interior regions of said interior portion being shaped to effectively conform to the shapes of a plurality of projecting portions of an end or side of a product so that, when said component is inflated, the plurality of non-inflatable interior regions are plane-shaped and the component fits firmly and snugly against an end or side of the product.

5,570,789

ELECTROSTATIC SIEVING APPARATUS

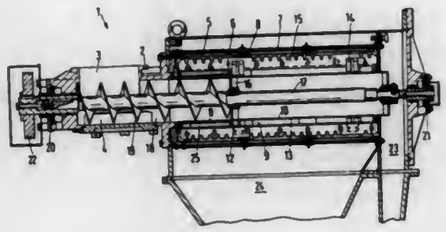
John P. Dunn, Penn Yan, N.Y., assignor to Advanced Electrostatic Technologies, Inc., Hammondsport, N.Y.

Division of Ser. No. 215,489, Mar. 21, 1994, Pat. No. 5,484,061, which is a continuation-in-part of Ser. No. 924,897, Aug. 4, 1992, abandoned. This application Oct. 3, 1995, Ser. No. 538,608
Int. Cl.[6] B03C *7/00*
U.S. Cl. 209—12.2 **5 Claims**



1. An apparatus for classifying particles by size from a mixture of larger and smaller particles, comprising:
a) a horizontal circular solid electrode having an upper and a lower surface, and a hole for the passage of particles through the electrode located on the axis thereof,
b) a horizontal circular sieve electrode located coaxially under the solid electrode, and having a diameter which is lees than the diameter of the solid electrode,
c) first collection means for collecting particles which pass through the sieve electrode, located coaxially beneath the horizontal sieve electrode, having an input end directly underneath the sieve electrode and an output end for collection of particles, the input end having a diameter which is substantially equal to the diameter of the sieve electrode, such that particles which pass through the sieve electrode fall into the input end of the first collection means and are collected at the output end of the first collection means,
d) second collection means for collecting particles which do not pass through the sieve electrode, located coaxially beneath the horizontal solid electrode, coaxially outside of the first collection means, having an input end directly underneath the solid electrode and an output end for collection of particles, the input end having a diameter which is substantially equal to the diameter of the solid electrode, such that particles which do not pass through the sieve electrode pass radially outward from the sieve electrode past the perimeter thereof, fall into the input end of the second collection means and are collected at the output end of the second collection means,
e) a source of direct electrical potential having first and second terminals, the solid electrode being connected to the second terminal, and the sieve electrode being connected to the first terminal, such that a direct electrical potential is applied between the solid and sieve electrodes,
f) means for feeding particles to the hole in the center of the solid electrode, such that particles pass through the hole and between the sieve electrode and the solid electrode, such that the particles disperse and oscillate between the sieve electrode and the solid electrode, and the smaller particles pass through the sieve electrode, to be collected by the first collection means, and the larger particles flow radially outwards on top of the sieve and are collected by the second collection means.

5,570,790
STRAINER HAVING A MAIN SCREEN AND A FORE SCREEN
Wolfhard Rumpf, and Werner Schwarzkopf, both of Rödermark, Germany, assignors to Dietrich Reimelt KG, Rödermark/Urberach, Germany
Filed Sep. 16, 1994, Ser. No. 307,369
Claims priority, application Germany, Sep. 18, 1993, 43 31 782.0
Int. Cl.[6] B07B 1/22
U.S. Cl. 209—291 12 Claims



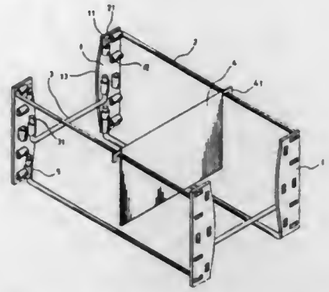
1. A strainer comprising:
a housing;
a main screen being disposed within said housing;
a fore screen being disposed within said housing, said fore screen including a first section and a second section, said first section of said fore screen being fixed with respect to said housing;
a main beater being connected to said second section of said fore screen, said fore screen and said main beater being moveable with respect to said main screen; and
an auxiliary beater being connected to said second section of said fore screen, said auxiliary beater being moveable with respect to said first section of said fore screen.

5,570,791
COMPACT DISK TACK DISPLAY DEVICE
William Sommi, 42 Orchard St., Oyster Bay, N.Y. 11771
Filed Mar. 17, 1995, Ser. No. 406,120
Int. Cl.[6] A47F 7/00
U.S. Cl. 211—40 6 Claims



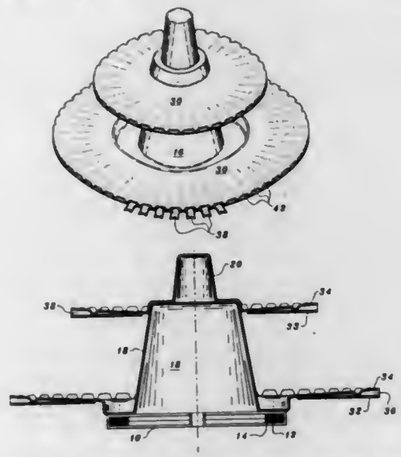
1. A compact disc tack display device comprising:
a) a cylindrical receptacle having an open top;
b) means for cushioning a compact disc within said cylindrical receptacle;
c) means for protecting the compact disc when placed within said cylindrical receptacle;
d) means for retaining said protecting means over said cylindrical receptacle; and
e) a tack centrally extending from the rear of said cylindrical receptacle for mounting said cylindrical receptacle to a vertical flat surface, so as to be visually seen therefrom.

5,570,792
HANGING FILE STORAGE UNIT
Kuo-Feng Huang, P.O. Box 82-144, Taipei, Taiwan
Filed Feb. 29, 1996, Ser. No. 607,979
Int. Cl.[6] A47F 7/16
U.S. Cl. 211—46 2 Claims



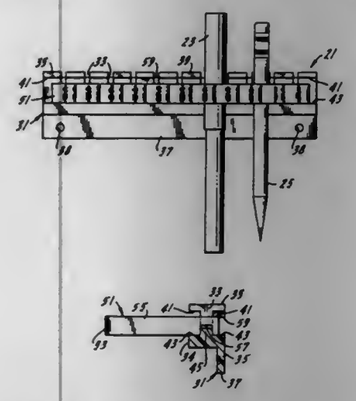
1. A hanging file storage unit comprising:
four supporting plates each provided with a plurality vertical and horizontal tubular portions at an inner side thereof;
a plurality of longitudinal rods having two bent ends adapted to engage with respective vertical and horizontal tubular portions of said supporting plates; and
a plurality of transverse rods having two bent ends adapted to engage with respective vertical and horizontal tubular portions of said supporting plates.

5,570,793
FINGERNAIL COLOR DISPLAY
Beverly A. Killough, 709 Juniper La., Lewisville, Tex. 75067
Filed Feb. 24, 1995, Ser. No. 393,847
Int. Cl.[6] A47F 7/00
U.S. Cl. 211—70 3 Claims



1. A device to display fingernail colors and styles of artificial fingernails, comprising:
a) a base,
b) a central shaft rotatably mounted on said base,
c) at least one platform attached to and extending from said shaft,
d) said platform having means for holding artificial fingernail blanks around a perimeter thereof, said means including a perimeter of said platform having a series of apertures therein, with an open end of said apertures fading outward around a perimeter of said platform,
e) a grip by which said platform is rotated,
f) said apertures for receiving artificial fingernail blanks in the open end of said apertures so that said blanks inserted into said apertures are retained therein by friction.

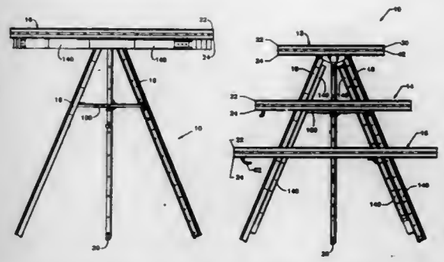
5,570,794
STORAGE RACK FOR SMALL ARTICLES
Herbert M. Drower, Wilmette, Ill., assignor to Transilwrap Company, Inc., Chicago, Ill.
Filed Aug. 1, 1995, Ser. No. 509,927
Int. Cl.[6] A47F 5/00
U.S. Cl. 211—89 8 Claims



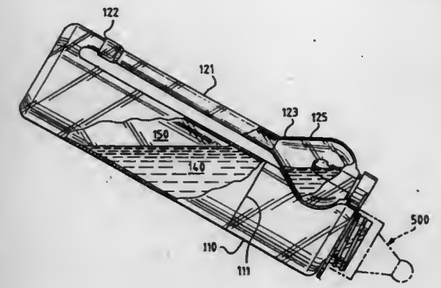
1. A storage rack for small articles, including:
an elongated support bar having a multiplicity of transverse slots spaced along its length, each slot extending from the front to the back of the support bar with each slot being open at the top but closed at the bottom of the slot,
a bottom ledge extending outwardly of the slots at the front and rear edges of the support bar,
a tenon on said support bar extending upwardly into said slots,
undercuts formed in said support bar creating overhangs on opposite sides of each slot above said tenon,
a multiplicity of retainer loops formed of a strip of a tough, resilient, abrasive-resistant resin,
each retainer loop having a bight portion positioned outwardly of said bottom ledge and two legs positioned in one of said slots with each leg engaging an overhang on an opposite side of its slot and said bottom ledge, and
a downwardly opening notch formed in each leg with said notch fitting over and receiving said tenon to preclude withdrawal of the loops forwardly through said slots.

5,570,795
CONFIGURABLE AND PORTABLE DISPLAY STAND
Mark Colgrove, 310 Cherry St., Oxford, N.C. 27565
Filed Dec. 19, 1994, Ser. No. 359,080
Int. Cl.[6] A47B 43/00;47/00;57/00
U.S. Cl. 211—187 27 Claims

12. A display stand comprising:
(a) a center section;
(b) an extension which substantially surrounds said center section;
(c) a plurality of legs attached to said center section;
(d) a plurality of locking members biased towards said center section and disposed generally within said extension, each locking member including a portion that extends from an inner edge of the extension for engaging an outer edge of said center section to releasably secure the extension to the center section; and
(e) a release mechanism for moving the locking members to a retracted position away from said center section to disengage the extension from the center section.



5,570,796
NURSING BOTTLE WITH AN AIR VENTING STRUCTURE
Craig E. Brown, 623 Antler Dr., Mt. Zion, Ill. 62549, and Robert J. Brown, R.R. 1, Bonne Terre, Mo. 63628
Filed Aug. 4, 1995, Ser. No. 511,590
Int. Cl.[6] A61J 9/04
U.S. Cl. 215—11.5 10 Claims



1. A nursing bottle adapted to be filled with liquid and capped with a nipple, whose interior remains at atmospheric pressure when the bottle is inverted during use, the nursing bottle comprising:
(a) a vertical container having a mark defining a horizontal plane in the upper one-half of the container, the container being adapted to contain a quantity of liquid not exceeding the mark, the container having an air space above the liquid, and the container having a first, radially central opening at its top for the reception of a nipple;
(b) a reservoir having a volume less than the volume of the container and being located such that substantially all its volume is above the mark in the container;
(c) a vertical liquid conduit from a point near the bottom of the container to the bottom of the reservoir, the liquid conduit having a volume less than that of the reservoir so that, when the bottle is filled with liquid and inverted, the liquid from the liquid conduit only partially fills the reservoir and an air space remains in the reservoir; and
(d) an air conduit from outside the bottle to a point in the reservoir where the air space exists when the bottle is filled with liquid and inverted; such that, when the nursing bottle is filled with liquid and fitted with a nipple, the liquid level in the container and in the liquid conduit are the same; and also such that, when the nursing bottle is inverted, the liquid from the liquid conduit flows into, and remains in, the reservoir for as long as the bottle is inverted and an open air passage is

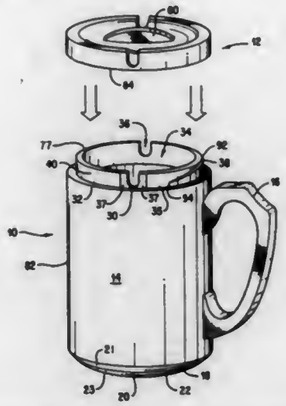
established through the air conduit-reservoir-liquid conduit to carry ambient air into the container and thereby maintain atmospheric pressure.

5,570,797

MUG AND MULTIPURPOSE LID COMBINATION

Frank Yeh, 1019 N. Mayflower St., Anaheim, Calif. 92801

Filed Mar. 6, 1995, Ser. No. 398,915
Int. Cl.[6] A47G *19/22*
U.S. Cl. 215—228 **20 Claims**



1. A drinking mug and lid combination, comprising:

a. a lid comprising a substantially cylindrical side wall having an inner surface, and at least one locking member provided on the inner surface; and

b. a mug comprising a substantially cylindrical body having an upper end, an annular shoulder provided at the upper end of the cylindrical body and having an inner edge, and a recessed cylindrical wall at the inner edge of the annular shoulder defining a mouth, the recessed cylindrical wall having an outer surface, and at least one opening provided in the outer surface, with the recessed cylindrical wall having a smaller diameter than that of the cylindrical body, the mug further comprising at least one retaining bar provided on the outer surface of the recessed cylindrical wall and at least one protrusion provided on the outer surface of the recessed cylindrical wall adjacent the at least one opening for frictional engagement with the inner surface of the cylindrical side wall of the lid;

c. wherein the inner surface of the cylindrical side wall of the lid is positioned adjacent the outer surface of the recessed cylindrical wall of the mug when the lid is used to cover the mouth of the mug, and wherein the lid is rotated in a first direction so that each locking member of the lid is retained below each corresponding retaining bar of the mug to secure the lid to the mouth of the mug.

5,570,798

CONTAINER OPENING/CLOSING DEVICE

Mitsuharu Hayashida, and Yoshihiro Miyata, both of Naraken, Japan, assignors to Mikasa Industry Co., Inc., Naraken, Japan

Filed May 12, 1995, Ser. No. 439,777
Claims priority, application Japan, May 17, 1994, 6-102470
Int. Cl.[6] B65D *41/34*
U.S. Cl. 215—252 **4 Claims**

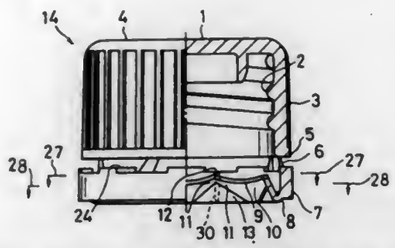
1. For use with a container having a mouth containing a screw thread on an external surface thereof and an annular projection for engaging engagement members of a container opening/closing device, a container opening/closing device, comprising:

a cap made of synthetic resin having a top wall and a tubular member formed integrally with said top wall and containing a screw thread on an inner circumferential surface thereof cooperable with the screw thread on said mouth,

a ring integrally connected to a lower end of said tubular member by means of frangible joint pieces,

a plurality of engagement members spaced concentrically about said ring and being reversely offset at one end from a lower end of said ring to extend upwardly in the direction of said tubular member, said engagement members each having a substantially uniform thickness and being defined by laterally spaced sides which diverge in an upward direction to define an upper free end which is broader than said one end and which projects radially inwardly to provide an arc-shaped bulged portion for engagement with the annular projection of said container mouth; and

thin films having a substantially uniform thickness less than the thickness of said engagement members, said thin films being alternately positioned between, and connecting with, adjacent engagement members, each of said films extending at their lower ends from the lower end of said ring and laterally between the sides of adjacent engagement members, whereby said films have a lower end that is broader than the lower ends of said engagement members and sides that are convergent in the direction of said tubular member.

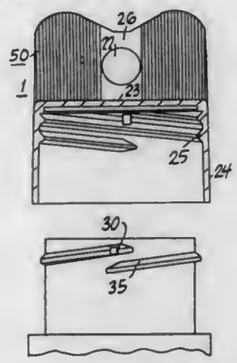


5,570,799

EASY-OPEN CLOSURE AND CONTAINER

Nicholas Farside, Lancaster, Pa., assignor to Kerr Group, Inc., Lancaster, Pa.

Continuation of Ser. No. 234,689, Apr. 28, 1994, abandoned.
This application Jun. 7, 1995, Ser. No. 472,355
Int. Cl.[6] B65D *41/04*
U.S. Cl. 215—330 **16 Claims**



1. A closure and container combination for mounting the closure on the container by rotation in an engaging direction and release by rotation in a releasing direction, the combination comprising:

(a) the closure, comprising:

(i) a base wall;

(ii) a skirt extending downwardly from the base wall;

(iii) a first closure thread for engaging a corresponding first thread on the container neck, the first closure thread helically encircling the interior of the skirt from a first starting position;

(iv) a second closure thread for engaging a corresponding second thread on the container neck, the second closure thread helically encircling the interior of the skirt from a starting position diametrically opposite to the first starting position;

(v) a handle member extending upwardly from the base wall, the handle member extending substantially across the diameter of the base wall and including a gripping portion having serrated surfaces; and

(vi) a ramped abutment formed substantially at the top of at least one of the first and second threads and constructed to gradually engage a ramp on a container neck thread so that, as the closure is rotated in the engaging direction about the container neck, the ramped abutment enters a slot formed substantially at the top of the container thread, the ramped abutment being constructed to be received in the slot in a manner which locks the closure in a predetermined closed position on the container neck to prevent further rotation of the closure in the engaging direction and to prevent unintentional rotation of the closure in the releasing direction; and

(b) the container comprising:

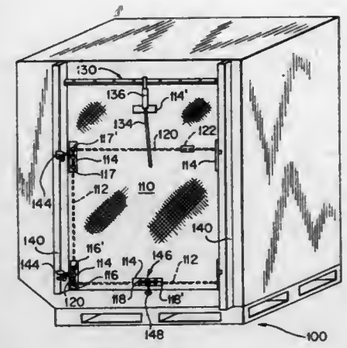
(i) a neck positioned on an upper portion of the container;

(ii) a first container thread constructed to engage a corresponding first thread on the closure, the first container thread helically extending about at least a portion of the exterior of the neck from a first starting position;

(iii) a second container thread constructed to engage a corresponding second thread on the closure, the second container thread helically encircling the exterior of the neck from a second starting position which is diametrically opposite to the first starting position;

(iv) a ramp formed on each of the first and second container threads located adjacent the first and second starting positions; and

(v) at least one slot positioned substantially at the top of at least one thread on the container, and constructed to receive the ramped abutment in a manner which locks the closure in a predetermined closed position on the container neck to prevent further rotation of the closure in the engaging direction and to prevent unintentional rotation of the closure in the releasing direction.



free end thereof, the cable being threaded through tension strap ring to render the cover taut over the portal, upon pulling the strap up.

5,570,800

Patent Not Issued For This Number

5,570,801

BARLESS CARGO CONTAINER COVER COMBINATION

Phillip E. Younger, Smyrna, Ga., assignor to Delta Air Lines, Inc., Atlanta, Ga.

Filed Oct. 17, 1995, Ser. No. 544,216
Int. Cl.[6] A47H *3/00*
U.S. Cl. 220—1.5 **10 Claims**

1. In combination with a rigid cargo container having a portal with pairs of anchor posts thereon, the anchor posts defining spaced apart side braces,

a) a fabric cargo container cover for the portal including plural grommets adjacent edges of the cover for engagement by tensioning eye hooks;

b) a continuous loop flexible cable threaded through the grommets of the cover and the eye hooks for removable securement of the cover to the container and portal side braces thereof;

c) a single point cable tension station mounted upon the cover, said tension station including a holding strap with a ring at a

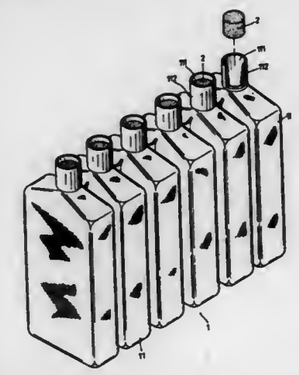
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5,570,802

BATTERY SOLUTION VESSEL STRUCTURE

Juei-Liu Wang, No. 3, Lane 330, Da-Chyau 1st., and Jui-Chih Wang, No. 37, Alley 22, Lane 139, Da-Chyau 1st., both of Yung-Kang City, Tainan Hsien, Taiwan

Filed Oct. 2, 1995, Ser. No. 538,271
Int. Cl.[6] A47G *19/00*
U.S. Cl. 220—23.8 **2 Claims**



1. A battery solution vessel structure, comprising:

a plurality of linked bottles, each of said plurality of bottles having a bottle body with a bottleneck formed on one end thereof, said bottleneck having a through bore extending between an open mouth end and an internal cavity of said bottle, said through bore having an interior surface with an inverted conical contour, said inverted conical contour being defined by said mouth end having a first internal diameter and an opposing end of said bottleneck disposed adjacent said bottle body having a second internal diameter, said second diameter being less than said first diameter; and,

a substantially cylindrically shaped gland cover formed of a foam material for sealing engagement with said bottleneck within said through bore, said gland cover having a third diameter, said third diameter being greater than said second diameter.

5,570,803

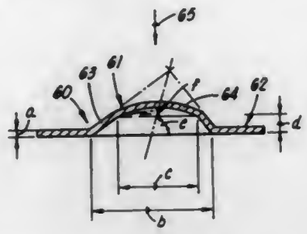
RUPTURABLE PRESSURE RELIEVING APPARATUS AND METHODS OF MANUFACTURING THE SAME

Stephen P. Farwell, Owasso, Okla., assignor to BS&B Safety Systems, Inc., Tulsa, Okla.

Continuation-in-part of Ser. No. 104,237, Aug. 10, 1993, abandoned, which is a continuation of Ser. No. 931,383, Aug. 18, 1992, which is a continuation of Ser. No. 822,643, Jan. 21, 1992, abandoned. This application Apr. 14, 1994, Ser. No. 227,664

Int. Cl.[6] B65D 51/16; F16K 17/14

U.S. Cl. 220—89.2 **13 Claims**



1. An inverting, rupturable, pressure-relieving apparatus having a predeterminable inversion initiation face, the preinversion apparatus comprising:

a structure having a wall for containing pressurized fluid; and

an indentation in the wall having a base connecting the indentation to the wall, a protuberant side for contacting the pressurized fluid, a recessed side opposite the protuberant side, and an axis about perpendicular to the base and extending through the center of the indentation at the base, the indentation being asymmetrical in a diametrical cross-sectional profile extending along the axis and passing through an inversion initiation face in the indentation, the inversion initiation face having a smaller angle with the base and less resistance to inversion than the remainder of the indentation.

5,570,804

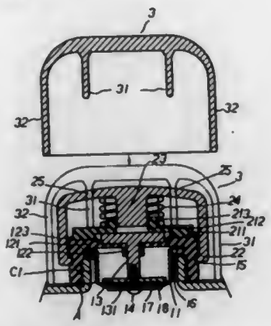
RADIATOR COVER

Chang-Yao Chang, No. 424, Sec. 2, Ming Sheng, Pu, Hsin Hsiang, Chang Hua Hsien, and Chin-Chang Lin, No. 3, Nan Jen Road, Tou Liu City, Yun Lin Hsien, both of Taiwan

Filed Oct. 31, 1995, Ser. No. 551,289

Int. Cl.[6] B65D 45/00

U.S. Cl. 220—316 **1 Claim**



1. A radiator cover comprising:

an inner cover having a circular plate with an inner threaded post extending downward, a toothed disk, a first round gasket, a serpentine plug, a second round gasket, a bolt and a circular washer;

said toothed disk having an annular groove surrounding an outer periphery of said toothed disk;

a plurality of teeth surrounding an upper rim of said toothed disk;

a circular recess defined by said teeth on top of said toothed disk;

a center hole on top of said toothed disk;

said circular plate disposed on said circular recess;

said inner threaded post passing through said first round gasket, said serpentine plug and said second round gasket;

said bolt screwing a plurality of threads in said inner threaded post tightly;

said serpentine plug beneath said toothed disk;

said first and second gaskets seal an upper and a lower openings of said serpentine plug, respectively;

said circular washer disposed on said annular groove tightly;

a hollow cylindrical middle cover having a bottom inward flange, two inserted holes formed on a top surface of said middle cover, a square post extending downward from a top portion of said middle cover, a compressed spring passed by said square post, and a toothed plate with a square hole inserted by said square post;

said toothed plate having a plurality of serrations at a bottom surface of said toothed plate, a cylinder on top of said toothed plate, and a square hole formed at a center of said cylinder;

said cylinder inserting in a lower portion of said compressed spring;

said serrations engaging with said teeth;

a hollow cylindrical outer cover having a circular wall and two pins extending downward from a top portion of said outer cover;

said pins inserting tightly into said corresponding inserted holes, respectively;

said outer cover covering said middle cover; and

said middle cover covering said inner cover.

5,570,805

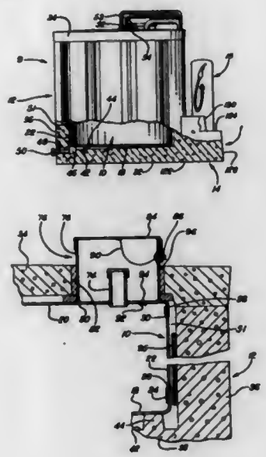
STORAGE CONTAINER ASSEMBLY FOR COMBUSTIBLE LIQUIDS

Charles W. Harding, Clarkston, Mich., assignor to Clawson Tank Company, Clarkston, Mich.

Continuation of Ser. No. 203,666, Feb. 28, 1994, Pat. No. 5,398,841, which is a continuation of Ser. No. 46,035, Apr. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 766,452, Sep. 26, 1991, Pat. No. 5,201,435. This application Mar. 20, 1995, Ser. No. 407,600

Int. Cl.[6] B65D 90/16

U.S. Cl. 220—565 **7 Claims**



1. An above ground storage container assembly for volatile liquids comprising:

(a) an inner tank of steel or plastic having a bottom wall, a top wall and side walls providing a substantially closed interior space for containing volatile inflammable liquids;

(b) an outer vault having a bottom wall, a top wall and side walls providing a substantially closed interior space in which said inner tank is disposed; said outer vault, including the bottom, top and side walls thereof, being made of concrete;

(c) the bottom, top and side walls of said outer vault being spaced from the bottom, top and side walls of said inner tank to provide an air envelope around said inner tank;

(d) means for permitting air to flow into and out of said air envelope,

(e) and an integral concrete peninsula extending laterally outwardly from said side wall of said outer concrete vault serving as an extension of said outer concrete vault,

(f) said concrete peninsula having a base for supporting said peninsula above ground and having a platform surface above said base for supporting a liquid-dispensing pump.

5,570,806

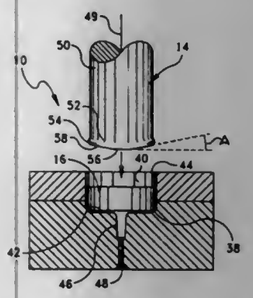
METHOD AND APPARATUS FOR FORMING EXTRUDED METAL TUBES

Joe L. Abbott, 66 Hillside Rd., Cumberland, R.I. 02864

Division of Ser. No. 328,082, Oct. 24, 1994, which is a division of Ser. No. 65,943, May 21, 1993, Pat. No. 5,377,518. This application Jun. 5, 1995, Ser. No. 462,683

Int. Cl.[6] B65D 6/28

U.S. Cl. 220—604 **1 Claim**



1. An extruded cylindrical metal tube having predetermined inner and outer dimensions and configurations and including a tubular side wall having a thickness, said tubular side wall extending parallel to a centrally located longitudinal axis, a closed end wall unitarily formed with said tubular side wall and having a central portion and a peripheral portion, said central portion having a substantially flat inner surface, said peripheral portion having an inner surface merging with and extending from said substantially flat inner surface of said central portion outwardly relative to said longitudinal axis and angled backwardly toward said tubular side wall relative to a plane perpendicular to said longitudinal axis to merge with said inner surface of said tubular side wall, said peripheral portion increasing in thickness from said central portion to said tubular side wall, and a solid projection unitary with and extending outwardly from said end wall, said tube made by an impact extrusion method comprising:

a. assembling an extrudable metal disc in a recess in a female die, said recess having a side wall having a diameter and including a main portion having a configuration which is complementary to a portion of said tube which includes said closed end wall thereof and an adjacent portion of said tubular side wall thereof, said configuration complementary to said closed end wall of said tube including a substantially flat annular portion, said recess also including an outwardly vented cavity portion having a configuration which is complementary to said projection and being correspondingly positioned thereto and located to extend from a central area of said annular portion; and

b. applying a substantially cylindrical punch to said disc in said recess, said punch having a longitudinal axis and comprising a longitudinally extending side wall and an end face including a peripheral portion which is substantially symmetrical about said axis, said peripheral portion extending outwardly relative to said axis and backwardly in a direction along the longitudinal extent of said punch at an angle of no greater than 20° relative to a plane which is perpendicular to said axis, said peripheral portion extending to and merging with an outer rim portion which defines a maximum diameter of said punch, said maximum diameter being less than the diameter of said side wall of said recess by an amount equal to said thickness, said outer rim portion merging with said longitudinally extending side wall of said punch, said longitudinally extending side wall of said punch having a diameter which is less than said maximum diameter, said punch being applied to said disc with a force sufficient to extrude metal from said disc between said rim portion and said side wall of said recess in a longitudinal direction relative to said punch and to force metal from said disc into said cavity.

5,570,807

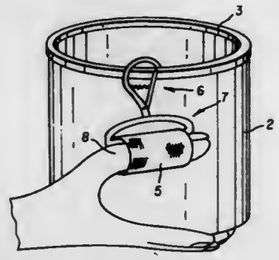
APPARATUS AND METHOD FOR HOLDING A CONTAINER IN ONE HAND

Gerald L. Busch, 5254 Lake Rd. E., Geneva, Ohio 44041

Filed Aug. 25, 1995, Ser. No. 519,597

Int. Cl.[6] B65D 25/28

U.S. Cl. 220—756 **20 Claims**



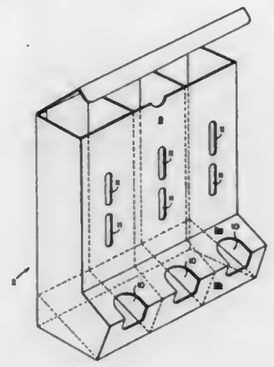
1. An apparatus for holding a container having a bottom, a side wall connected in a leak-proof manner to the bottom, a rim connected to the side wall which defines an opening in the top of the container, and optionally a swingable handle fastened to the container at opposite sides of the opening; said apparatus comprising:

a) a sleeve formed of a closed loop of material, said sleeve being adapted to fit around a user's finger;

b) a means for detachably fastening the apparatus to the rim of the container by engaging the rim between a plurality of rigid members which are biased toward each other; and

c) a means for connecting the fastening means to the sleeve.

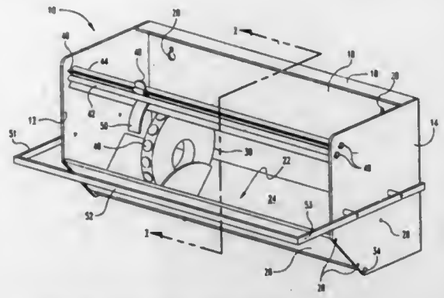
5,570,808
DISPENSERS FOR PROTECTIVE GLOVES
Vincent A. Tassoni, 136-140 Roden Street, West Melbourne, Victoria 3003, Australia
PCT No. PCT/AU92/00504, § 371 Date Mar. 22, 1995, § 102(e) Date Mar. 31, 1995, PCT Pub. No. WO94/06329, PCT Pub. Date Mar. 19, 1994
PCT Filed Sep. 23, 1992, Ser. No. 403,922
Int. Cl.[6] B65H *1/00*
U.S. Cl. 221—34 10 Claims



1. A dispenser for dispensing loose, unpackaged protective gloves, comprising:
(a) a container with at least one compartment for holding a bulk quantity of loose, unpackaged protective gloves, each compartment having a filling shaft with a filling opening at an upper end thereof to permit filling of the filling shaft with the gloves, the filling shaft extending downwardly from the filling opening to a lower end thereof, and
(b) a dispensing portion at the lower end of the container, the dispensing portion protruding forwardly from one side of the container and having
(i) a dispensing shaft leading from and being downwardly inclined from the filling shaft for receiving gloves from the filling shaft,
(ii) a bottom wall providing a bottom to the dispensing shaft and which slopes downwardly and forwardly from the filling shaft,
(iii) a top wall providing a top to the dispensing shaft and which slopes downwardly and forwardly from the filling shaft,
(iv) an end wall spaced from the compartment and extending between the top and bottom walls, and
(v) a dispensing opening into the inclined dispensing shaft through which gloves in the compartment are dispensed, the dispensing opening extending within part of each of the end and top walls,
the dispensing portion presenting loose gloves within the filling shaft to the dispensing opening for dispensing therethrough, the dispensing opening being positioned so as to prevent gloves in the compartment from inadvertently passing through the opening but shaped and sized to permit the insertion of a user's fingers into the dispensing shaft for gripping individual gloves and withdrawing them through the dispensing opening.

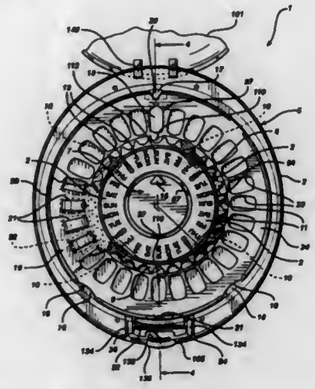
5,570,809
ADHESIVE LABEL DISPENSER
Rodger D. Martin, 5979 W. 950 N., Thorntown, Ind. 46071
Filed Feb. 17, 1995, Ser. No. 390,088
Int. Cl.[6] B65H *5/28*; G07F *11/68*
U.S. Cl. 221—73 18 Claims

1. An adhesive label dispenser, comprising:
a first end wall;



a second end wall spaced from the first end wall;
first and second longitudinally extending members positioned between the first and second end walls so as to form a longitudinally extending trough having an open bottom channel, the trough thereby being adapted to hold a plurality of rolls of backing paper which carry adhesive labels thereon;
a longitudinally extending divider rod positioned between the first and second end walls and adjacent to the bottom channel; and
at least one divider shaped to fit within the trough when positioned transverse to the trough, the divider including means for slidably engaging the divider rod.

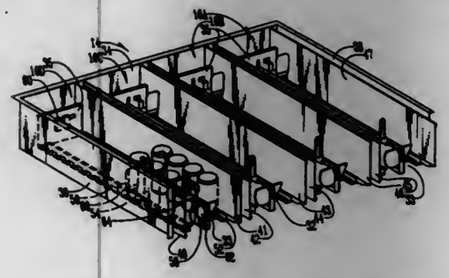
5,570,810
VARIABLE DAY START TABLET DISPENSER
Lawrence E. Lambelet, Jr.; Henry Passarotti, both of Flemington, N.J., and Gary E. McQuay, Watsontown, Pa., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.
Division of Ser. No. 282,950, Jul. 29, 1994. This application Jun. 6, 1995, Ser. No. 470,388
Int. Cl.[6] B65D *83/00*
U.S. Cl. 221—86 6 Claims



1. A tablet dispenser component system comprising:
a circular tablet package comprising a plurality of sequentially arranged collapsible tablet pockets each containing a tablet arranged substantially circularly about the package and at least two asymmetrically spaced notches about either the inner or outer periphery of the ringed circular package;
a base support comprising a single tablet dispenser aperture therein and at least two ledges which are shaped, sized, or oriented to receive the tablet package in only one position of positive engagement thereon whereby a designated tablet of the tablet package is provided over the single tablet dispensing aperture;

means for rotating the circular tablet package about the base support around a center axis portion of the base support to locate tablets in the sequentially arranged tablet pockets of the tablet package over the tablet dispensing aperture for dispensing therefrom; and
means for positively engaging the tablet package onto the base support upon the initial dispensing of a tablet from the tablet package and subsequent rotation of the tablet package causing the next sequentially arranged tablet pocket to be positioned over the tablet dispensing aperture.

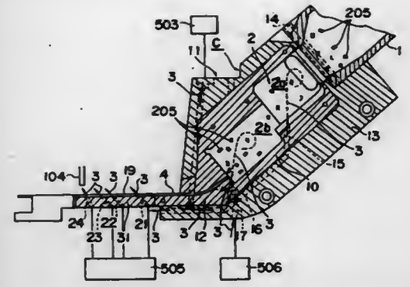
5,570,811
APPARATUS AND METHOD FOR DISPENSING ITEMS FROM A VENDING MACHINE
Francis A. Wittern, Jr., Des Moines; Paul L. Hawkins, Guthrie Center, and James L. Denato, Ames, all of Iowa, assignors to Fawn Engineering Corporation, Des Moines, Iowa
Filed Nov. 1, 1994, Ser. No. 332,944
Int. Cl.[6] B65G *59/00*
U.S. Cl. 221—127 24 Claims



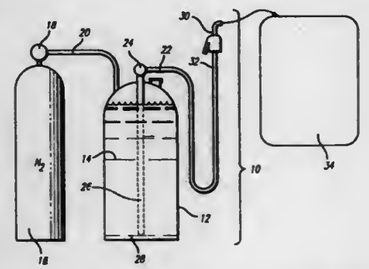
1.A dispensing apparatus for vending machines comprising:
a bottom support having front and back ends;
side retainers on opposite sides of the bottom support;
a pusher plate slideable between the front and back ends of the bottom support;
a forward biasing device connected to the pusher plate;
a dispensing member at the front end of the bottom support;
an actuator at the back end of the bottom support;
an extension member connected between the dispensing member and the actuator;
the dispensing member comprising a cam positioned along and rotatable with the extension member around an axis, a portion of the cam having a width that extends a substantial distance laterally between the side retainers, and a separating finger positioned along the extension member rearwardly from the dispensing member rotation of the cam opening or blocking a pathway for items placed on the bottom support to be dispensed out of the column.

5,570,812
COMPONENT SUPPLY APPARATUS
Takashi Ando; Shuuichi Kubota, both of Kofu; Yoshihisa Tachiyama, Yamanashi-ken; Kazuhiko Narikiyo, Kofu, and Takao Naito, Yamanashi-ken, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan
Filed Jan. 24, 1995, Ser. No. 377,241
Claims priority, application Japan, Jan. 24, 1994, 6-005962
Int. Cl.[6] B65H *9/06*; H05K *13/00*
U.S. Cl. 221—233 3 Claims

2. A component supply apparatus comprising:
a component feeding path;
a component feeding means for feeding components to said component feeding path, said component feeding means comprising an agitation chamber in which the components are intermittently agitated by air, said agitation chamber having an opening therein to said component feeding path for feeding components out of said agitation chamber to said component feeding path with the components arranged in a row;
a path forming member having a curved path extending from said component feeding path to a component supply position for guiding the components fed from said component feeding path to the component supply position by changing a direction of each of the components by a predetermined angle and an air supply hole for feeding the components fed to said curved path to the component supply position; and
one air pump for supplying air to both the air supply hole and to said agitation chamber, thereby intermittently agitating the components in said agitation chamber so that when the supply of agitating air to said agitation chamber is stopped intermittently, some of the agitated components in said agitation chamber of said component feeding means which have sectional areas of their side surfaces in approximate conformation with a sectional area of said opening to said component feeding path drop and come into said component feeding path through said opening and are then fed through said component feeding path in a row.



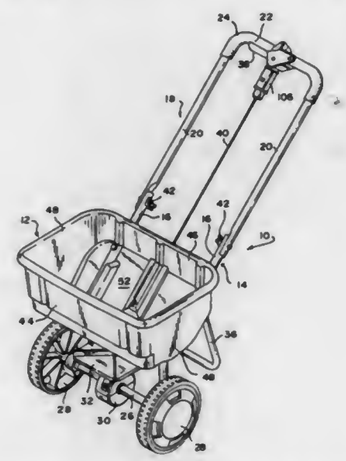
5,570,813
VISCOUS MATERIAL DELIVERY AND MANAGEMENT SYSTEM AND METHOD
James E. Clark, II, Ojai, Calif., assignor to C.H. & I. Technologies, Inc., Santa Paula, Calif.
Continuation of Ser. No. 129,952, Sep. 30, 1993, abandoned. This application May 22, 1995, Ser. No. 447,071
Int. Cl.[6] G01F *11/00*
U.S. Cl. 222—1 8 Claims



1. A method of delivering thick, viscous grease which tends to resist forces which would cause it to easily flow to a grease utilizing destination, comprising the following steps:
providing a sealed pressure container for containment of a thick, viscous grease;
providing a source of pressurized non-drying inert gas in gaseous communication with said sealed pressure container and the thick viscous grease contained therein; and

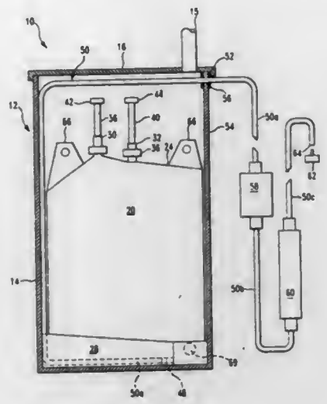
providing a viscous grease conduit means in communication with said sealed pressure container for containment of the thick, viscous grease, wherein said pressurized inert gas, acting directly on the thick, viscous grease, without a pusher plate, provides the motive force to move the thick, viscous grease from said sealed pressure container to the viscous grease utilizing destination.

5,570,814
COLLAPSIBLE BROADCAST SPREADER
Paul M. Havlovitz, Escondido, Calif., assignor to Republic Tool & Mfg. Corp., Carlsbad, Calif.
Filed Dec. 16, 1994, Ser. No. 357,917
Int. Cl.[6] B67D *5/22*
U.S. Cl. 222—45 **8 Claims**



5. A collapsible broadcast spreader having all pre-assembled parts comprising,
a lower frame having an axle and wheel means connected thereto,
an upper frame pivotally connected to said lower frame for use as a handle for said spreader when said upper frame and lower frame are in an extended position,
fastener means for tightening and loosening the pivotal connection between said upper and lower frames,
a hopper connected to said lower frame,
a materials exit aperture in said hopper,
a slide means integral with a bottom wall of said hopper,
a shut-off plate disposed within said slide means,
spring means biasing said shut-off plate into a position extending over said aperture,
a rotor plate disposed below said hopper,
a rotor shaft extending through said rotor plate and said bottom wall of said hopper, an agitator member removably fixed to the end of said shaft extending into said hopper, the other end of said shaft having a pinion gear fixedly mounted thereon,
a gear box housing having an upper half and a lower half split along a horizontal plane, said upper half of said gear box housing having a journal means integrally and continuously formed therein for receiving said shaft, and
a ring gear having a sleeve member with a splined inner surface directed along the rotating axis of said ring gear and removably mounted on said axle means, said ring gear occupying said gear housing and engaging said pinion gear, and said sleeve member journaled between adjacently disposed half-circular apertures respectively in said upper and lower halves of said gear box.

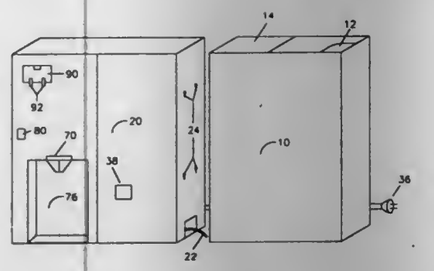
5,570,815
CHEMICAL DELIVERY SYSTEM
Bruce P. Ramsay, Milton, Vt., assignor to International Business Machine Corp., Armonk, N.Y.
Filed Jun. 6, 1995, Ser. No. 468,118
Int. Cl.[6] B65D *35/28*
U.S. Cl. 222—95 **19 Claims**



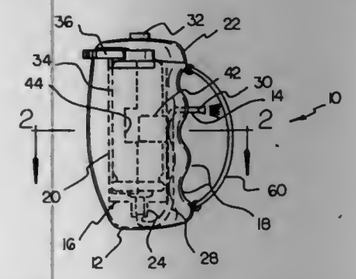
15. A chemical delivery system comprising:
a) a collapsible, chemical storage container having a hollow interior, said storage container including a first portion forming the top and a second portion forming the bottom of said storage container;
b) an inlet port coupled to said first portion in at least adjoining relation to an uppermost point thereof;
c) a delivery tube hermetically connected to said container for dispensing fluid from said interior;
d) a pressure vessel enclosing said storage container, said receptacle being pressurizable for compressing said chemical storage container to urge its contained chemicals through said delivery tube;
e) a collapsible pump storage container connected in said delivery tube, said pump storage container being configured for receiving chemicals from said chemical storage container when said chemical storage container is compressed; and
f) a pressure receptacle enclosing said pump storage container, said receptacle being pressurizable for compressing said pump storage container to urge the chemicals therein through said delivery tube.

5,570,816
DRY BABY FORMULA MAKER
George LaBarbera, Jr., 81-576 Santa Clara Ct., Indio, Calif. 92201
Filed Dec. 8, 1994, Ser. No. 351,783
Int. Cl.[6] B67D *5/56*
U.S. Cl. 222—129.4 **5 Claims**

1. A device preparing baby formula which combines portioned powder baby formula with proper temperature, sanitized water, comprising:
a containment area for holding powder baldy formula;
a heating device for boiling and pumping water through the device:
a cooling device connected to said heating device, that receives said boiling water and cools it to a desired temperature: and
a means for receiving a measured amount of powder baby formula from said containment area and releasing it into a bottle containment area, said bottle containment area also receiving the cooled water for combining the two ingredients.



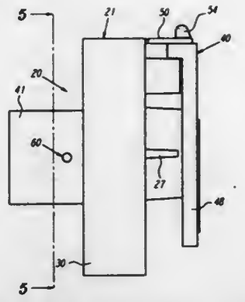
5,570,817
PALM HELD PEPPER SPRAYER
John Anderson, 8337 E. Shore, Polson, Mont. 59860-9643; Paul Berman, 1133 N. Clark St., Los Angeles, Calif. 90069, and Darrell Greenland, 934 Fourth St. #21, Santa Monica, Calif. 90403
Filed Nov. 25, 1994, Ser. No. 344,994
Int. Cl.[6] B67D *5/32*
U.S. Cl. 222—153.11 **10 Claims**



1. A palm held pepper sprayer comprising:
a main body means for positioning across a palm of a hand, the main body means comprises a main body shaped so as to define a hollow interior;
a nozzle conduit means projecting from a medial portion of the main body means for positioning between two adjacent fingers of the hand; and,
a dispensing means positioned within the hollow interior of the main body means for dispensing a chemical repellant through the nozzle conduit means, the dispensing means comprises a nozzle receiver positioned within the hollow interior of the main body for receiving a dispensing nozzle of a gas cylinder; a fluid conduit extending from the nozzle receiver and positioned in fluid communication with the nozzle conduit; and a spray nozzle means coupled to a distal end of the nozzle conduit for concentrating a chemical repellant into a directive stream.

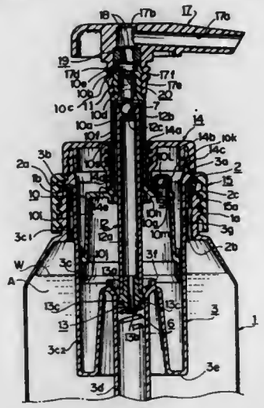
5,570,818
VALVE ASSEMBLY WITH SECURITY SEAL
Bernard Strong, Tarzana, Calif., assignor to Propak-California Corp., Industry, Calif.
Continuation of Ser. No. 151,725, Nov. 12, 1993, Pat. No. 5,445,298. This application May 19, 1995, Ser. No. 445,390
Int. Cl.[6] B65D *47/28*
U.S. Cl. 222—153.14 **18 Claims**

1. A dispensing apparatus for a container comprising
a push-pull type valve having an outer sleeve and an axially moveable inner stem concentrically positioned therein forming an annular space therebetween;



a connector plug radially positioned between the outer sleeve and the inner stem for resisting relative axial movement therebetween;
wherein the outer sleeve and the inner stem are constructed from molded plastic and the connector plug comprises a plastic melted connection formed in the annular space between the outer sleeve and the inner stem.

5,570,819
FOAM DISPENSING PUMP CONTAINER
Shoji Uehira, Joyo, and Takashi Miyagi, Yokohama, both of Japan, assignors to Daiwa Can Company, Japan
Continuation of Ser. No. 131,407, Oct. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 910,100, Jul. 7, 1992, Pat. No. 5,271,530. This application Mar. 28, 1996, Ser. No. 623,513
Int. Cl.[6] B67D *5/06*
U.S. Cl. 222—190 **11 Claims**



1. A foam dispensing pump container comprising a double cylinder which is provided inside an opening portion of a container containing a liquid and which is constituted by an air cylinder for pumping air and a liquid cylinder for pumping a liquid, a dip tube for allowing a bottom portion of said liquid cylinder and a bottom portion of said container to communicate with each other, a piston assembly constituted by air and liquid pistons provided to move reciprocally in said air and liquid cylinders respectively, a nozzle member provided at an upper end of said piston assembly and having a foam dispensing hole portion, an air flow path for allowing said hole portion and an interior of said air cylinder to communication with each other, a liquid flow path for allowing an interior of said liquid cylinder and said hole portion to communicate with each other, a first check valve disposed along said liquid flow path, a second check valve disposed in said liquid cylinder, a porous member disposed in said hole portion, a compression spring

for urging said piston assembly to a top dead point with respect to said double cylinder, an outer air inlet hole to allow the liquid in said container and outer air outside said container to communicate with each other to prevent the interior of said container from being set at a negative pressure, and a lid member for fixing said double cylinder to said container,

a juncture where said liquid flow path and said air flow path join with each other on an upstream side of said porous member to serve as a mixing chamber for mixing the liquid and air, a third check valve disposed in said air piston,

a first threaded portion being formed on an outer circumferential surface of said nozzle member and a second threaded portion being formed on said lid member to threadably engage with said first threaded portion, such that a threadable engagement of said air piston and said lid member is maintainable against repelling force of said compression spring, and

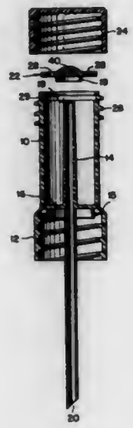
slidable seal portions maintaining said outer air inlet hole in a closed state when said lid member and said member are in the threadable engagement with each other and opening air communication between said air cylinder and atmosphere through said outer air inlet hole when said lid member and said nozzle member are released from the threadable engagement with each other.

5,570,820

LIQUID DOSING DEVICE

Hendrik J. Amoraal, Benoni, South Africa, assignor to Flowreg CC, Transvaal, South Africa

Filed Nov. 23, 1993, Ser. No. 155,843
Int. Cl.[6] B67D *5/06*
U.S. Cl. 222—205 **7 Claims**



1. A liquid dosing device for locating about the opening of a container, the device comprising:

(a) a chamber, having at least one aperture defined therein to allow liquid out the chamber;

(b) a spout extending through a wall defining a bottom of the chamber, the spout having a first end located towards the top of the chamber with an opening defined therein and a second end extending beyond the wall for locating inside the container, the opening being aligned with a longitudinal axis of the Spout; and

(c) a valve arrangement, including a disc and separate lid, for blocking and unblocking the opening,

the resilient disc mounted in the chamber being disengaged from the opening when released by the lid,

the separate lid being attachable to the chamber by a screw thread connection, the lid configured for engaging a portion of the disc to force the disc into sealing engagement with the opening in response to the lid being screwed onto the chamber, and for releasing the disc in response to the lid being unscrewed,

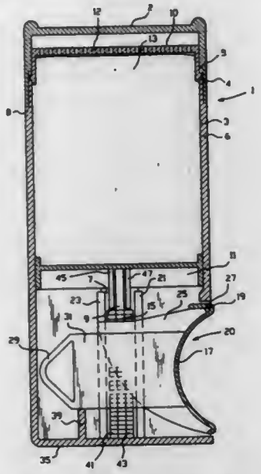
the disc including a protrusion facing the opening and shaped to fit therein when the disc is forced into sealing engagement with the opening.

5,570,821

VERTICAL RATCHET DISPENSER DEVICE WITH ANTI-OOZING PULL-BACK MECHANISM

Stuart DeJonge, Easton, Pa., assignor to Primary Delivery Systems, Inc., Easton, Pa.

Filed Jun. 14, 1995, Ser. No. 490,286
Int. Cl.[6] B67D *5/42*
U.S. Cl. 222—391 **18 Claims**



1. A gel-like material dispenser, comprising:

(a) a main hollow housing having sidewalls, a base and an open top open for dispensing material therethrough;

(b) a manifold component attached to said open top of said housing;

c) at least one vertical support column having a plurality of horizontal ratchets thereon, said at least one support column being vertically slidably mounted within said main hollow housing;

d) at least one vertical pawl adjacent to said at least one vertical support column, said at least one vertical pawl having an engagement tooth capable of engaging any one of said plurality of horizontal ratchets on said vertical support column;

e) a push plate located at the top of said vertical support column;

f) a trigger component moveably and hingedly connected to said main hollow housing and functionally contactable with the horizontal ratchets of said at least one vertical support column, said trigger component having a flexible spring portion and having an advancer pin, said trigger member being reciprocally movable between a first position and a second position such that when said trigger component is moved from said first position to said second position, it moves said at least one support column upwardly more than one ratchet length and less than two ratchet lengths and when said trigger component is moved from said second position to said first position, it retreats to a next lower horizontal ratchet of said at least one support column and further,

wherein a first portion of said sidewall of said housing has a cut out and a peg so as to be connected to a top portion of said trigger component, and,

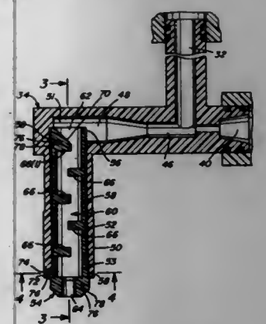
wherein said trigger component includes a plural position attachment means for attachment thereof to said housing peg and said plural attachment means has an active position and a passive position wherein said advancer fin of said trigger component is in functional contact with said ratchets of said at least one vertical support column and in said passive position said advancer pin of said trigger component is not in functional contact with said ratchets of said at least one vertical support column, said flexible spring portion of said trigger component acts as a spring biased against a second portion of said sidewall of said housing.

5,570,822

STATIC MIXING NOZZLE

Edward S. LeMarbe, Ballwin, Mo.; Sao Van Nguyen, Randolph, and Paul Cox, Brighton, both of Mass., assignors to Jet Spray Corp., Norwood, Mass.

Continuation-in-part of Ser. No. 991,440, Dec. 16, 1992, Pat. No. 5,383,581. This application Jan. 23, 1995, Ser. No. 376,421
Int. Cl.[6] B65D *83/00*
U.S. Cl. 222—459 **29 Claims**



1. A beverage dispenser system comprising:

a potable water source for supplying potable water;

a concentrate container for storing a liquid; and

a beverage discharge assembly including:

a mixing block having a passage with a receiving end for receiving the liquid from the concentrate container and for receiving potable water from the potable water source, and an outlet end;

a nozzle having a nozzle passage having a first end fluidly coupled to the outlet end of the mixing block passage and a second end at a liquid-dispensing location; and

a removable insert extending into the nozzle passage and having a housing defining an insert passage and a plurality of inwardly-directed baffles, the insert having an inlet end for receiving the liquid and the potable water from the mixing block and an outlet end for providing a mixed liquid, the housing having at the outlet end an outer diameter greater than an outer diameter of the nozzle adjacent the outlet end of the insert so as to define an insert ridge extending beyond the nozzle to provide a gripping surface.

5,570,823

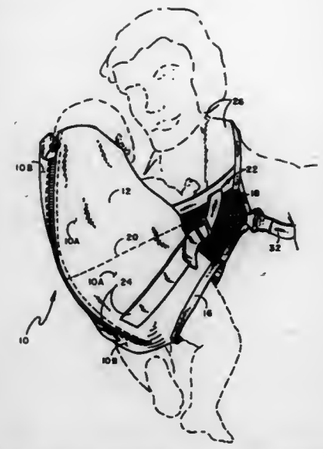
BABY CARRIER

Elaine Lindy, 897 Washington St., Newtonville, Mass. 02160

Continuation-in-part of Ser. No. 198,966, Feb. 18, 1994, abandoned. This application Jul. 5, 1995, Ser. No. 498,037
Int. Cl.[6] A47D *13/02*
U.S. Cl. 224—160 **15 Claims**

1. A baby carrier for carrying a baby on a bearer's body such that the baby and the bearer are situated in a face-to-face relationship, said carrier comprising:

a flexible pouch, a bracing means, a pair of shoulder straps and a pair of underarm straps;



said pouch having a substantially close fitting interior for supporting the baby therein in a substantially seated position facing the bearer, said pouch comprising first and second longitudinal half sections which are at least partially severable and joinable along a central closure, each half section being divisible along a substantially horizontal midline axis into an upper portion and a lower portion, said lower portion having leg openings therein;

said bracing means extendable about the back of the bearer;

each of said shoulder straps being of equal, fixed length and having first and second ends, the first end of each said shoulder strap being connected to said upper portion of said pouch and extending upwardly therefrom, the second end of one of said shoulder straps being connected to the second end of the other shoulder strap and to said bracing means and being located immediately adjacent the rear of the neck of the bearer when said carrier is worn by the bearer such that said midline axis of said half sections lies substantially at the same level as the armpits of the bearer and such that the head of the baby is supported such that it is in a face-to-face relationship with the bearer; and

each of said underarm straps having an adjustable length and having first and second ends, each of said first ends of said underarm straps being detachably connected to said lower portion of said carrier adjacent to one of said leg openings and extending in a substantially horizontal manner above the breasts of the bearer and each of said second ends of said underarm straps being connected to said bracing means.

5,570,824

BELT PACK AND SUPPORT THEREFOR

Scott B. Lyon, and Bruce W. Lyon, both of P.O. Box 139, Norfolk, Conn. 06058

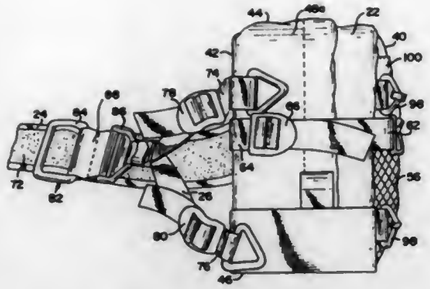
Filed May 3, 1995, Ser. No. 433,314
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—240 **14 Claims**

1. A belt pack system comprising

a pack having a front wall, a rear wall, a top wall, a bottom wall and side walls, said side walls separating the front and rear walls and separating the top and bottom walls, said pack being capable of holding contents therein;

an adjustable length belt connected to said pack, said pack having means thereon for attaching and detaching the belt from said pack, said belt extending around the waist of a wearer and said pack abutting against the small of the back of the wearer when the pack is worn by the wearer; and

a pair of adjustable length, three-point stabilizer straps connected to each side of the pack, respectively said pack having



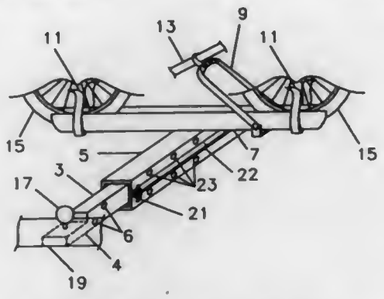
means thereon for attaching and detaching each said three-point stabilizer strap from said pack, each said three-point stabilizer strap being connected to each said belt, said three-point stabilizer strap having one end connected to an upper marginal portion of the pack, the other end connected to a lower marginal portion of the pack, and a middle portion connected to the belt.

5,570,825

REAR MOUNT BICYCLE CARRIER RACK FOR MOTOR VEHICLES

John A. Cona, 1111 Pebble Brook Rd., Cedar Park, Tex. 78613

Filed May 22, 1995, Ser. No. 446,421
Int. Cl.[6] B60R *9/042*
U.S. Cl. 224—495 **5 Claims**



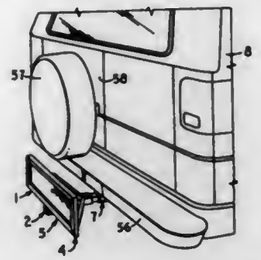
1. A rear hitch mounted bicycle rack comprising;
a) an extensible support shaft having opposite end portions with a minimum of two sections;
b) a connector means on one portion of a first section of said minimum of two sections, said connector means being fastenable to a trailer hitch on a vehicle to rigidly connect said first section to said vehicle;
c) a roller means in a second section of said minimum of two sections, said roller means allowing said second section to slide smoothly over said first section;
d) longitudinal slots through opposite sides of said second section,
e) a lever type eccentric clamp means fastened to said first section and extending through said slots and manually operable to fasten said second section rigidly to said first section;
f) at least one support channel fastened at an approximate midpoint thereof to said second section between opposite ends thereof;
g) a tie strap means on each end of said at least one support channel, said tie strap means being activatable to fasten each wheel of a bicycle firmly in said channel;
h) a dual legged frame support clamp means pivotally attached to at least one support said channel and operable to rigidly clamp said bicycle frame in place.

5,570,826

HITCH SOCKET MOUNTED COLLISION GUARD AND UTILITY PLATFORM

Larry V. Garbes, and Anita Garbes, both of 32864 190th St., Clarksville, Iowa 50619

Filed Jun. 9, 1995, Ser. No. 488,928
Int. Cl.[6] B60R *9/00*
U.S. Cl. 224—524 **16 Claims**



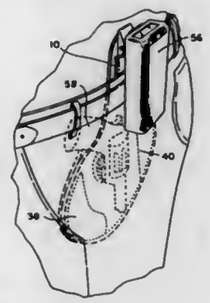
1. A vehicle accessory assembly for mounting in a standard vehicle hitch socket attached to a vehicle having a rear-opening door and comprising:
(a) a hitch extender structure including:
(1) an accessory hitch socket member forming an accessory hitch socket;
(2) a hitch plug member sized to enable insertion into the vehicle hitch socket and releasable securing therein; and
(3) said hitch plug member being connected to said accessory hitch socket member;
(b) a vehicle accessory including a rear collision guard mounted on said hitch extender structure; said rear collision guard including a collision guard frame having an upper frame member wherein said upper frame member is spaced such that a rear-opening door is openable thereover; and
(c) a Z-shaped brace connected between said upper frame member and said hitch extender structure.

5,570,827

HOLSTER

Steve A. Wiesner, 200 W. Pleasantview, Hurst, Tex. 76054

Filed Aug. 11, 1995, Ser. No. 514,274
Int. Cl.[6] A45C *1/04*
U.S. Cl. 224—587 **2 Claims**



1. A pistol holster, comprising:
a holster body;
the holster body including an outer layer formed of a flexible sheet material;
an inner layer formed of a flexible sheet material;
the inner and outer layers being joined by connection means to form a pistol compartment;

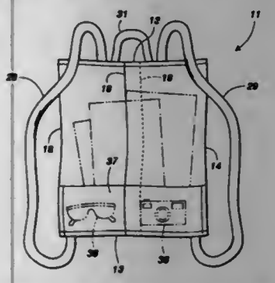
the connection means being stitching through the inner and outer layers, the connection means including a perimeter line of stitching and first and second interior lines of stitching wherein the first and second interior sections of stitching being spaced to form the pistol compartment therebetween with the inner and outer layers and wherein the first interior section of stitching is linear;
a forward portion of the holster body, located below the inner layer top edge and extending forwardly of the pistol compartment and the first interior section of stitching, forming a forward wing;
rearward portions of the holster body, located below the inner layer top edge and extending rearwardly of the pistol compartment and the second interior section of stitching, forming a rearward wing;
with the outer layer having a tab extending above the top edge of the inner layer;
a clip retainer layer joined to the tab opposite the inner layer;
the clip retainer layer formed of a flexible sheet material;
the clip retainer layer and outer layer being joined by joining means;
with the sheet material of the clip retainer layer being about 1/16 inch thick;
the sheet material of the clip retainer layer being leather;
with the joining means being stitching through the clip retainer layer and outer layer;
the joining means including forward and rearward lines of stitching;
with the forward line of stitching being collinear with the first interior section of stitching connecting the inner and outer layers and extending along a forward edge of the clip retainer layer; and
the rearward line of stitching being linear and extending along a rearward edge of the clip retainer layer.

5,570,828

DISPOSABLE PROMOTIONAL BACK PACK AND METHOD OF FABRICATING SAME

Ann Lewis, 712 Cristy Ct., Woodstock, Ga. 30188

Filed Jul. 19, 1995, Ser. No. 504,248
Int. Cl.[6] A45F *3/04*
U.S. Cl. 224—627 **15 Claims**



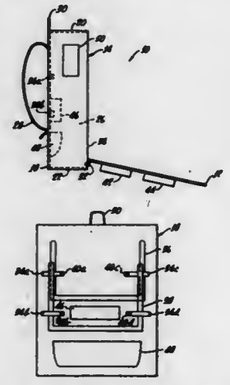
1. A disposable back pack adapted to be worn on the back of a wearer, said back pack comprising a substantially rectangular sheet of plastics material having a top edge, a bottom edge, and ends, said sheet being folded over onto itself along a first fold line spaced from one of said ends and along a second fold line spaced from the other one of said ends so that said ends are adjacent to each other along a line intermediate said fold lines, said folded sheet being sealed to itself along its top and bottom edges to form a substantially flat rectangular pouch with the sealed together top and bottom edges forming the top and bottom of said pouch, the fold lines forming the sides of said pouch, and the adjacent ends of the plastics sheet forming an open slot on one surface of said pouch extending between the top and bottom of and providing access to said pouch, first and second elongated strips of plastics material having ends with each strip being secured at one end to the sealed together top of said pouch and secured at its other end to the sealed together bottom of said pouch to form a pair of shoulder straps for receiving the arms of the wearer to support said pouch on the wearer's back with said open slot positioned against the back.

5,570,829

BACKPACK FOR CARRYING A FOLDABLE CHAIR

Rebecca Harrison, 102 Virginia St., Apt. 1, El Segundo, Calif. 90245

Continuation-in-part of Ser. No. 227,635, Apr. 14, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 467,772
Int. Cl.[6] A45F *4/02*
U.S. Cl. 224—651 **19 Claims**



11. A backpack for carrying a foldable chair, adjustable between a folded orientation for storage and an unfolded orientation for use and including at least first and second substantially U-shaped legs, in the folded orientation, the backpack comprising:
a front member;
a rear member including a rear panel and at least one shoulder strap associated with the rear panel for securing the backpack to a user's shoulder;
a connector, associated with the front and rear members, for releasably connecting the front and rear members to one another, the front and rear members defining a closed internal cavity when connected by the connector, the closed internal cavity including a chair storage space adjacent to the rear panel and a substantially unobstructed storage space located substantially between the chair storage space and the front member; and
fastening means, associated with the internal cavity, for separately releasably engaging and securing each of the substantially U-shaped legs to at least one of the front and rear members such that the foldable chair is maintained in the folded orientation, the chair being entirely within the chair storage space when engaged and secured by the fastening means.

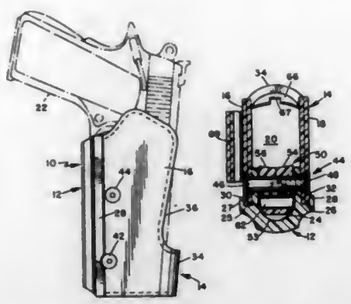
5,570,830

HOLSTER AND METHOD OF MANUFACTURE

Richard E. D. Nichols, San Diego, Calif., assignor to R.E.D. Nichols & Associates, Inc., San Diego, Calif.

Continuation of Ser. No. 9,852, Jan. 27, 1993, abandoned. This application May 17, 1995, Ser. No. 443,091
Int. Cl.[6] F41C *33/02*
U.S. Cl. 224—676 **17 Claims**

1. A holster assembly for a handgun, comprising:
an elongate spine of substantially rigid material having a pair of laterally spaced grooves running along at least part of the length of the spine;



a holster body secured to the spine to form a handgun receiving cavity having spaced side walls and an upper opening for receiving a handgun into the cavity;

each side wall having a rear edge secured in a respective one of the grooves in the spine and the spine forming an end wall of the cavity;

the spine having a central channel and the grooves being located on opposite sides of the channel, the channel facing inwardly into the handgun receiving cavity; and

a spacer member secured to the spine and extending between opposite side walls of the channel, whereby the channel walls are non-deformable.

5,570,831

PNEUMATIC STATIC GUIDE FOR A TAPE

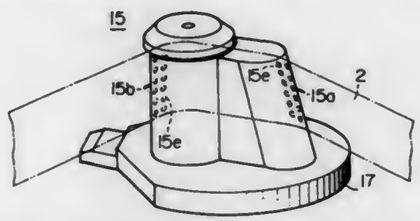
Hidekazu Takeda, Hiratsuka; Kenmei Masuda, Yokohama; Nobuyuki Kaku, Kanagawa-ken; Tomoki Shoji; Toshihiro Koyama, both of Odawara; Kazuo Sakai, Ibaraki-ken, and Fumio Takeda, Ushiku, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 16, 1993, Ser. No. 167,069

Claims priority, application Japan, Dec. 24, 1992, 4-343806

Int. Cl.[6] B65H *23/24*

U.S. Cl. 226—196 **10 Claims**



1. A tape guide device comprising:

a first non-rotatable guide portion for changing the direction of the path of a tape when the tape is wound around a part of the outer peripheral surface of said first non-rotatable guide portion, said first non-rotatable guide portion having a longitudinal axis;

a second non-rotatable guide portion for changing the running direction and the running beight of the tape when the tape is wound around a part of the outer peripheral surface of said second non-rotatable guide portion;

the outer peripheral surface of at least one of (a) said second non-rotatable guide portion and (b) both said first non-rotatable guide portion and said second non-rotatable guide portion is an apertured surface having apertures therein;

means for supplying air through said apertures to provide a space between the tape and said apertured surface, to generate therein an air film for supporting the tape; and

a flange on an upper end portion of said first non-rotatable guide portion for axial movement along said longitudinal axis, said flange having an outer diameter greater than the outer diameter of said first non-rotatable guide portion for controlling an upper edge of the tape.

5,570,832

APPARATUS FOR STAPLING SEQUENTIAL PRINTED SHEETS POSITIONED STRADDLED ONE ABOVE THE OTHER

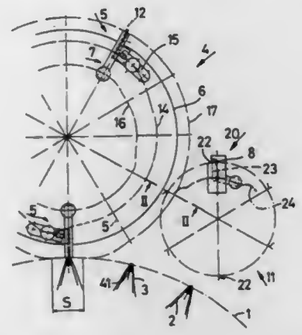
Jörg Meier, Oftringen, Switzerland, assignor to GRAFA-Holding AG, Hergiswil, Switzerland

Filed Jun. 13, 1994, Ser. No. 258,834

Claims priority, application Switzerland, Jun. 21, 1993, 01859/93

Int. Cl.[6] B42B *4/02*; **B27F** *7/17*

U.S. Cl. 227—81 **17 Claims**



1. An apparatus for stapling printed sheets, comprising:

a conveying apparatus having a plurality of sequentially spaced, saddle-shaped supports, the printed sheets straddling said sequentially spaced supports;

a shaping body rotatingly disposed on a first axis, and receiving and conveying a wire segment;

a stapling head holder rotatingly driven about a second axis parallel to the first axis; and

at least one stapling head radially displaceably seated in a guide arrangement on said stapling head holder, and having:

a bending apparatus having an end with an opening forming a guide, the opening being penetrated by said shaping body for receiving the wire segment from said shaping body, and shaping the wire segment into a staple; and

a driver that forces the staple through the printed sheets positioned on the supports, said driver and said staple being guided by the guide formed by the opening of said bending apparatus.

5,570,833

AUTO-LOCKING HANGING FILE FOLDER

Zipper Dusek, 540 W. Roscoe St., Chicago, Ill. 60657

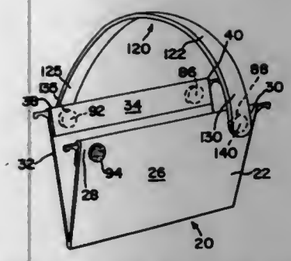
Filed Dec. 23, 1993, Ser. No. 172,058

Int. Cl.[6] B65D *27/00*

U.S. Cl. 229—67.2 **10 Claims**

1. An improvement in hanging file folders, said improvement comprising:

connection means affixed to file folder upper exterior corners for releasably lock-engaging said folder to a second file folder against which said first folder is juxtaposed within a stationary storage unit; and



carrying means for converting said file folder from a stationary storage unit to a transportable storage unit utilizing said connection means in cooperative association with said carrying means;

said connection means is comprised of hook and loop type fasteners affixed to the upper exterior corners of said file folder such that said file folder releasably locks against a second file folder by cooperatively associating said hook and loop type fasteners upon juxtaposition contact of said file folders, and said carrying means is comprised of a strap having a first end and a second end, said first end adapted with said hook and loop type fasteners to cooperatively engage an up per exterior corner of said file folder at one cover, and said second end adapted with said hook and loop type fasteners to cooperatively engage an opposite exterior corner of a second cover of said file folder.

5,570,834

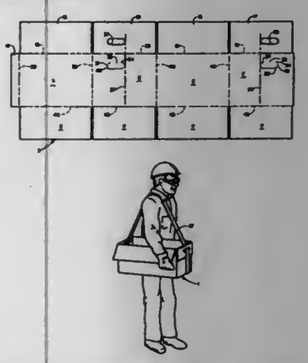
BOX FOR ROOF FASTENERS

Paul M. Larson, Hoffman Estates, and Donal H. Egan, Fox River Grove, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Feb. 2, 1996, Ser. No. 596,436

Int. Cl.[6] B65D *5/465*; **A45F** *3/00*

U.S. Cl. 229—117.11 **6 Claims**



1. A box for transporting and dispensing roof fasteners comprising:

a. two opposed side walls;

b. two opposed end walls joined to the side walls, each end wall having a generally channel-shaped perforation formed therein;

c. a bottom wall joined to the side and end walls;

d. two first top flaps connected to associated of the side walls along first foldlines;

e. two second top flaps connected to associated of the end walls along second foldlines, each second top flap having a cutout therein that is aligned with the perforation of the associated end wall when the top flap is folded along the associated foldline back against the end wall, each of the perforations being punchable to create a tab that cooperates with the cutout in the associated top flap to hold the top flap against the associated box end wall and to simultaneously produce an opening in the end wall that is aligned with the cutout in the top flap; and

f. strap means passing through the end wall openings and top flap cutouts and looping under the box bottom wall for enabling a person to sling the strap means over his shoulder and thereby carry the box and roof fasteners placed therein around a job site.

5,570,835

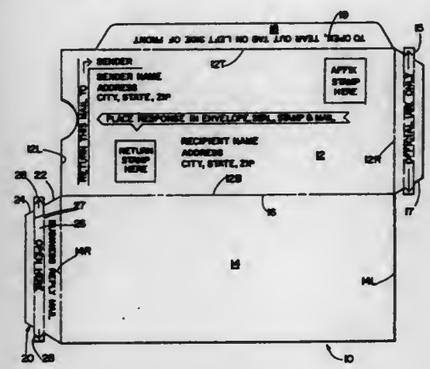
SELF-REPLY ENVELOPE

Foyer Sung; Niema Sung; Gina Sung; Anne Sung, and Lina Sung, all of 36 Hewitt Ave., Staten Island, N.Y. 10301

Filed Jan. 12, 1995, Ser. No. 372,012

Int. Cl.[6] B65D *27/06*

U.S. Cl. 229—301 **5 Claims**



1. A self-reply envelope, comprising:

a front panel having a front panel top, a front panel bottom, a front panel left, and a front panel right;

sender address indicia, located on the front panel;

return mail indicia, located on the front panel left and extending between the front panel bottom and front panel top;

a sender arrow adjacent to the return mail indicia which refers to the sender indicia;

a rear panel, the rear panel has a rear panel left and a rear panel right, the front panel attached to the rear panel creating a pocket therebetween, the front panel and rear panel are comprised of a single piece of material, and are connected by a main fold at the front panel bottom; and

a main flap attached to the rear panel right, the main flap attachable to the front panel left to seal the envelope, the main flap comprising:

an inner flap,

an outer flap, the inner flap and outer flap have gummed portions to seal the main flap to the front panel; and

an opening tab, located between the inner flap and outer flap, having a pair of perforated edges separating the opening tab from the inner flap and outer flap, the opening tab removable from the inner flap and outer flap at said perforated edges, the opening tab covering the return mail indicia when the main flap is attached to the front panel, the opening tab removable to reveal the return mail indicia wherein the main flap extends from the rear panel right and is sealable to the front panel left, the front panel further comprises an official panel extending from the front panel right, the official panel is sealable to the rear panel left, the official panel having an official tab having official tab indicia which indicates that the official panel is for official use only, the front panel top having a top flap, which is sealable to the rear panel.

5,570,836

COIN COLLECTOR FOR AN AUTOMATIC DISPENSER

Seiichi Tai, Tokyo, Japan, assignor to Sanpou Lock Co., Ltd., Tokyo, Japan

Filed Jan. 30, 1995, Ser. No. 380,704
Claims priority, application Japan, Aug. 25, 1994, 6-200550
Int. Cl.[6] G07B 15/00
U.S. Cl. 232—16 4 Claims

1. A coin collector to be slideably attachably and detachably fixed to an inside of an automatic dispenser having a coin slot for collecting coins when put in the coin slot of the dispenser, said coin collector comprising;

a coin bag member including a coin bag and a bag frame; and

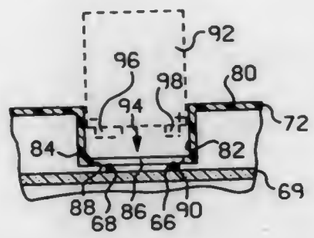
a cover member having first slot means receiving guide rail projection means of a stationary plate fixed to the inside of the dispenser when said cover member is slideably attached to the stationary plate, said stationary plate having at least one stud pin thereon, a semicylindrical cover having pivot axles and being mounted in said cover member and rotatable about said pivot axles between opening and closing positions, second slot means in said cover member to receive projection means of the bag frame, and a lock to fasten the coin bag member to the cover member, said semicylindrical cover having a bifurcate slot receiving the stud pin when said cover member is slidably attached to the stationary plate, said bifurcate slot having a shape such that said semicylindrical cover is rotated to the opening position as the stud pin travels in said bifurcate slot.

5,570,837

PROGRAMMABLE DIGITAL THERMOSTAT WITH MEANS FOR ENABLING TEMPORARY CONNECTION OF A BATTERY THERETO

Bernard T. Brown, St. Louis County; David L. Perry; Horst E. Jaeschke, both of Jefferson County, and Krishna H. Patil, St. Louis County, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 18, 1995, Ser. No. 544,022
Int. Cl.[6] F23N 5/20; H02J 7/00
U.S. Cl. 236—46 R 5 Claims



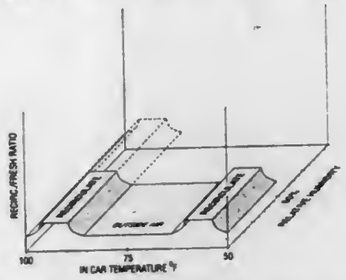
2. In a programmable digital thermostat utilizing a microcomputer normally powered by an AC power source, and a capacitor normally charged by the AC power source for providing a sole backup power source for the microcomputer in the event of a failure of the AC power source, the thermostat having no provision for mounting a battery therein, the improvement comprising means for enabling temporary connection of a battery to said thermostat to effect charging of said capacitor so as to enable said capacitor to provide power for programming said thermostat prior to installation.

5,570,838

METHOD AND CONTROL SYSTEM FOR CONTROLLING AN AUTOMOTIVE HVAC SYSTEM FOR INCREASED OCCUPANT COMFORT

Leighton I. Davis, Jr.; Robert W. Matteson, both of Ann Arbor, and Gerhard A. Dage, Franklin, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 83,757, Jun. 30, 1993, Pat. No. 5,427,313, and a continuation of Ser. No. 83,587, Jun. 30, 1993, and a continuation of Ser. No. 83,589, Jun. 30, 1993, and a continuation of Ser. No. 83,756, Jun. 30, 1993. This application Dec. 23, 1994, Ser. No. 363,076
Int. Cl.[6] B60H 1/00
U.S. Cl. 236—49.3 6 Claims



1. A method for automatically controlling a heating, ventilation and air conditioning (HVAC) system for increased comfort of an occupant in a vehicle which discharges a flow of air to a passenger cabin of the vehicle, the system including a variable speed blower, means for varying air temperature, ducting, actuators having various control positions for controlling the direction of air flow, an intake door having varying control positions for controlling the ratio of fresh air to recirculated air, a humidity sensor for sensing relative humidity within the cabin and generating a corresponding humidity signal, and temperature sensors for sensing temperature within the cabin and ambient temperature and an adjustable target temperature, the method comprising the steps of:

determining relative humidity based on the humidity signal;

determining ambient temperature;

determining temperature within the cabin;

determining standard effective temperature based on the humidity signal;

determining the difference between standard effective temperature (SET) within the cabin and the target temperature to obtain a difference sign;

defining membership functions and fuzzy rules between the relative humidity, ambient temperature, the difference signal and the control positions of the intake door; and

generating a control signal to control the position of the intake door to cause the system to discharge air into the cabin having a desired ratio of fresh air to recirculated air based on the relative humidity, ambient temperature, the temperature within the cabin, the difference signal, the membership functions and the fuzzy rules.

5,570,839

PLURAL COMPONENT FLOW MONITORING SYSTEM

Timothy S. Kukesh, Indianapolis, Ind., assignor to Glas-Craft, Inc., Indianapolis, Ind.

Continuation of Ser. No. 189,316, Jan. 31, 1994, abandoned. This application Feb. 28, 1995, Ser. No. 396,280
Int. Cl.[6] B05B 7/04
U.S. Cl. 239—61 15 Claims

1. A system for applying a plural component material, the system comprising:

application means for dispensing the plural component material,

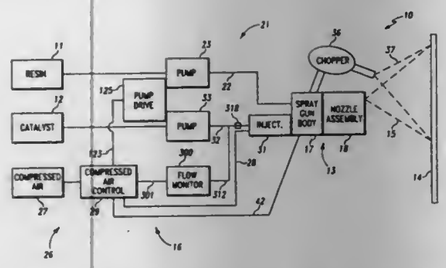
first means including a pump for delivering a flow of a first component of the plural component material to the application means at a first pressure, said first means generating said first pressure representing the rate of flow of said first component,

second means for delivering a flow of a second component of the plural component material to the application means,

means for sensing the first pressure and generating a signal when the rate of flow of said first component falls below a predetermined value at a point between the pump and the application means;

a source of compressed gas; and

an adjustable pressure regulator for said compressed gas, wherein the sensing means further includes means for receiving pressure-regulated compressed gas from said adjustable pressure regulator, the pressure of the pressure-regulated gas being adjustable to a predetermined value related to the rate of flow of the first component.

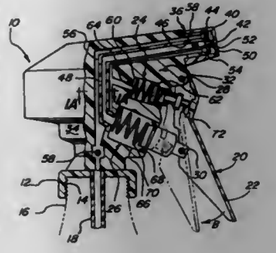


5,570,840

HAND-HELD SPRAYING APPARATUS

Thomas Gettinger, West Bloomfield, and Joel Hetrick, Ann Arbor, both of Mich., assignors to Fourth and Long, Inc., West Bloomfield, Mich.

Filed Oct. 14, 1994, Ser. No. 323,264
Int. Cl.[6] B05B 15/02; 9/043
U.S. Cl. 239—112 34 Claims



1. A hand-held, hand-powered spraying apparatus for pneumatic spraying of a liquid, said apparatus comprising:

a nozzle assembly, said nozzle assembly comprising a chamber for retaining a substantially unpressurized quantity of liquid available for spraying, an outlet, and a passageway for forcing a gaseous fluid through said quantity of liquid and out said outlet;

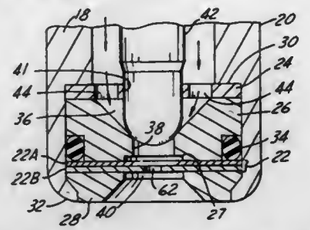
a hand actuatable apparatus manually actuatable by use of a single hand for providing liquid to said chamber and for forcing a gaseous fluid through said liquid in said chamber and through said outlet to produce a spray from said liquid, said hand actuatable apparatus including a first pump for pumping a liquid fluid to said chamber and a second pump for pumping gaseous fluid through said liquid, said first pump having a limited delivery capacity such that it ceases pumping of liquid prior to ceasing pumping of the gaseous fluid.

5,570,841

MULTIPLE DISK SWIRL ATOMIZER FOR FUEL INJECTOR

Jeffrey B. Pace, Newport News; Vernon R. Warner, Wicomico, and John F. Nally, Jr., Williamsburg, all of Va., assignors to Siemens Automotive Corporation, Auburn Hills, Mich.

Filed Oct. 7, 1994, Ser. No. 320,027
Int. Cl.[6] F02M 51/06; 61/16
U.S. Cl. 239—585.1 5 Claims



1. A multiple disk swirl atomizer nozzle for an electrically operated fuel injector from which fuel is injected into an engine, the nozzle comprising:

first and second thin disks disposed proximate to and concentric with the nozzle, said first disk disposed upstream from and concentric to said second disk and having respective areas of each disk disposed face-to-face against each other;

said first disk having four equal circular orifices equal and angularly spaced about a central axis of said disk with their centers lying on a common circle;

said areas cooperatively define between themselves four channels into which each of said orifices respectively delivers fuel, said channels are provided exclusively in said second disk having a channel depth less than the thickness of said second thin disk so that the cooperating area of said first disk is flat;

said second disk comprises an orifice, along the central axis of said second disk, each of said channels extending in a direction away from said central axis and tangentially to the circumference of said orifice for conveying fuel;

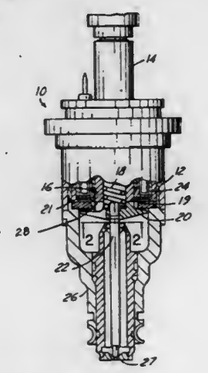
said channels for imparting a tangential component of velocity to fuel passing axially through and exiting said orifice in said second disk.

5,570,842

LOW MASS, THROUGH FLOW ARMATURE

David W. Kindley, Newport News, Va., assignor to Siemens Automotive Corporation, Auburn Hills, Mich.

Filed Dec. 2, 1994, Ser. No. 348,701
Int. Cl.[6] F02M 51/00
U.S. Cl. 239—585.1 6 Claims



1. A solenoid-operated fuel injector having

a housing containing a solenoid having an outer pole member that is selectively energized by electric current to open and close the fuel injector,
a stator magnetically coupled to the solenoid and forming an inner pole member and an outer pole member,
an inlet connector tube that extends toward the stator to convey liquid fuel into the housing,
a valve through which fuel is ejected from the housing,
an armature that is normally biased relative to the stator, said armature is operable by the solenoid,
a valve needle that is disposed within the housing and integral with and extending from one side of the armature and operable to open and close a flow path through the housing between the inlet connector tube and the valve,
a magnetic circuit comprising the inner pole of the solenoid, the solenoid, the stator and the armature, the stator and the armature forming working gap therebetween characterized in that:
impact-minimization means on the armature to minimize the effect of impact forces when the armature is moved from its normal position to its operated position, and said impact-minimization means comprises multi-dimensional fluid passages extending from the one side of the armature to the opposite side of the armature; said impact-minimization means effectively reducing the mass of the armature and
ribs on said one side of the armature to provide the desired mass for the magnetic circuit through the armature between the inner pole and outer pole on the stator, said ribs extending from the axis of the armature where said ribs have their greatest magnetic mass to the outer periphery of the armature where said ribs have their least mass.

5,570,843

FUEL INJECTION VALVE WITH SEMICIRCULAR FLATTENINGS

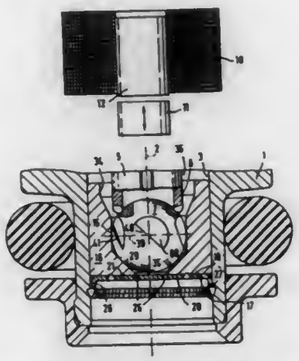
Joerg Heyse, Markgroeningen, and Michael Klaski, Erdmannhausen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 23, 1995, Ser. No. 376,724

Claims priority, application Germany, Mar. 16, 1994, 44 08 875.2

Int. Cl.[6] B05B *1/30*

U.S. Cl. 239—585.1 **12 Claims**



1. A fuel injection valve for supplying an internal combustion engine with fuel, the valve having a longitudinal valve axis, comprising:
a spherical valve-closure member having a periphery;
a valve-seat surface with which the spherical valve-closure member interacts, allowing fuel to flow along the longitudinal valve axis, along the valve-closure member;
at least one spray-outlet orifice downstream from the valve-seat surface; and
a plurality of substantially semicircular flattenings on the periphery of the valve-closure member, the flattenings being delimited by at least one deflecting surface which runs at an angle to the flattenings and runs obliquely to the longitudinal valve axis.

5,570,844

METHOD FOR TUBULAR ROTARY BALL MILL OR MILL WITH SIMILAR GRINDING INSTRUMENTS

Francis Thomart, Ottignies, Belgium, assignor to Siegten S.A., Louvain-la-Neuve, Belgium

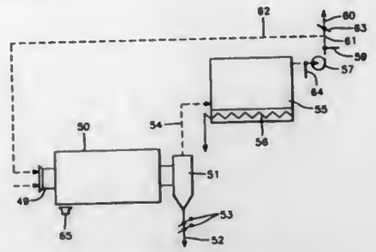
PCT No. PCT/EP93/02907, § 371 Date Jun. 8, 1995, § 102(e) Date Jun. 8, 1995, PCT Pub. No. WO94/09906, PCT Pub. Date May 11, 1994

PCT Filed Oct. 21, 1993, Ser. No. 290,740

Claims priority, application European Pat. Off., Oct. 28, 1992, 92870178

Int. Cl.[6] B02C *23/08*

U.S. Cl. 241—19 **8 Claims**



1. A method of comminuting dry material in a tube mill comprising the steps of:
passing an air flow through the tube mill in the same direction as the dry material is conveyed;
introducing said dry material at an inlet of the tube mill;
transferring the dry material to a first grinding chamber containing a bed of grinding media;
conveying the dry material in tumbling action in response to rotation of the tube mill to an upstream wall of a partition, said partition having said upstream wall and a downstream wall, said upstream and downstream walls being perforated with slots, a small compartment which is free of said grinding media being disposed between the upstream wall and a downstream wall;
transferring said dry material through said slots into the small compartment in said partition;
lifting said dry material while said dry material is inside said small compartment, using elevating vanes located radially within said partition;
pushing said dry material out of the partition into a second grinding chamber through only the slots in said downstream wall using the combined effects of (I) the pressure of the dry material being continuously fed into the tube mill and (II) the air flow which meets particles of said dry material as said particles fall downwardly, so that said partition does not require scoops or a cone to push the dry material into the second grinding chamber;
transferring said dry material in tumbling action in response to rotation of said tube mill, through said second grinding chamber, said second grinding chamber including a bed of grinding media;
discharging said dry material from the tube mill;
transferring the dry material to a dynamic separator after said dry material is discharged from said tube mill;
separating said dry material while in said dynamic separator into a first material which is sufficiently fine to represent a finished product and a second material which is not sufficiently fine;
returning said second material to the inlet of said tube mill;

regulating a total quantity of material entering the tube mill by controlling quantities of raw material entering the tube mill and by controlling the quantities of said second material returning through said inlet;
regulating the quantity of said air flow entering the tube mill;
measuring the level of said dry material in the first grinding chamber using an electric sound pick-up located next to said first grinding chamber; and
regulating the level of material inside the partition by keeping the quantity of material entering the tube mill constant and by also keeping constant the quantity of air flow passing though the tube mill.

5,570,845

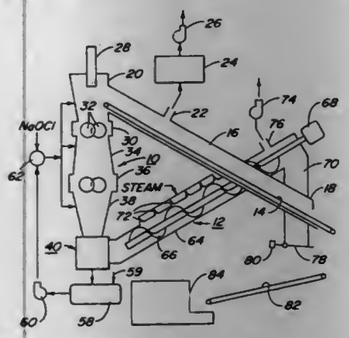
WASTE TREATMENT APPARATUS AND METHOD

Robert W. Lewis, Charlotte, N.C.; Randall G. McKee, and William Jones, both of Lebanon, Ind., assignors to Sterile Technology Industries, Inc., West Chester, Pa.

Filed Aug. 3, 1995, Ser. No. 511,027

Int. Cl.[6] B02C *19/12*

U.S. Cl. 241—21 **21 Claims**



1. Waste treatment apparatus comprising:
means for substantially continuously transporting waste in a path successively through first and second treatment stages,
the first treatment stage comprising shredding means arranged to receive containers of waste and delivering shredded waste material, and means for applying a disinfectant solution to the waste material as it is being shredded by the shredding means; and
the second treatment stage comprising means, having a plurality of steam ports arranged to direct steam toward the shredded waste material, for bringing steam into contact with the shredded waste material delivered by the shredding means and thereby exposing the shredded waste material to an elevated temperature of at least approximately 205° F. but less than 212° F., as the waste material is being transported substantially continuously, for at least approximately thirty minutes; whereby substantially complete elimination of live microorganisms in the shredded waste material is effected.

5,570,846

METHOD AND APPARATUS FOR THE CONTINUOUS AUTOGENOUS GRINDING OF FREE-FLOWING STOCK

Norbert Stehr, Grünstadt, Germany, assignor to EVV-Vermogensverwaltungs-GmbH, Wiesloch, Germany

Filed Sep. 7, 1995, Ser. No. 524,639

Int. Cl.[6] B02C *17/16*

U.S. Cl. 241—21 **25 Claims**

1. A method for the continuous autogenus grinding of free-flowing stock containing insoluble particles of varying diameter, wherein the stock is supplied to a grinding chamber (16, 16", 16") and is set rotating concentrically of a central longitudinal axis (17) in said grinding chamber (16, 16", 16") which has a first end and a second end,
wherein insoluble particles of greater diameter are concentrated in the grinding chamber (16, 16", 16") superportionally as compared to particles of smaller diameter and wherein the stock is discharged from the grinding chamber (16,16",6") at one of the first end and second end in the vicinity Of the central longitudinal axis (17) through an outlet opening, which has a substantially larger size than the particles of larger diameter.

5,570,847

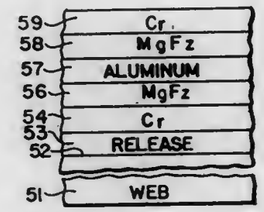
METHODS OF HEAT-TREATING MILTILAYER INTEFERENCE PLATELETS

Roger W. Phillips; Shari P. Fisher, and Paul G. Coombs, all of Santa Rosa, Calif., assignors to Flex Products, Inc., Santo Rosa, Calif.

Division of Ser. No. 231,396, Apr. 22, 1994, which is a continuation-in-part of Ser. No. 171,654, Dec. 22, 1993, which is a division of Ser. No. 902,693, Jun. 23, 1992, Pat. No. 5,279,657, which is a continuation of Ser. No. 719,166, Jun. 21, 1991, Pat. No. 5,171,363, which is a continuation of Ser. No. 251,034, Sep. 26, 1988, Pat. No. 5,059,245, which is a continuation of Ser. No. 812,814, Dec. 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 567,638, Jan. 3, 1984, abandoned, which is a continuation of Ser. No. 314,695, Oct. 26, 1981, Pat. No. 4,434,010, which is a division of Ser. No. 108,004, Dec. 28, 1979, abandoned. This application Dec. 15, 1994, Ser. No. 356,848

Int. Cl.[6] C09C *1/62*

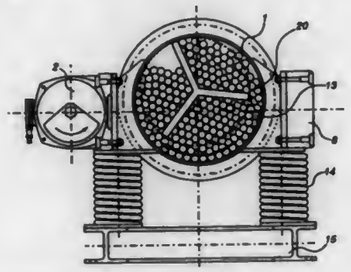
U.S. Cl. 241—23 **2 Claims**



1. A method for producing heat treated colored multilayer interference thin film platelets formed from a colored multilayer interference thin film construction comprising a metal reflecting layer having first and second reflective surfaces, a multilayer interference thin film structure on each of the first and second reflective surfaces, the multilayer interference thin film structure comprising a pair of layers consisting of a dielectric layer formed of a dielectric material and a semi-opaque metal layer, said pair being disposed so that the dielectric layer is directly adjacent to the metal reflecting layer and the semi-opaque metal layer faces away from the metal reflecting layer whereas the method comprises subjecting the colored multilayer interference thin film construction to a heat treatment at a temperature of 200°–300° C. for a period of 10 minutes to 24 hours to produce a heat treated colored multilayer

interference thin film construction having improved durability in comparison to a colored multilayer interference thin film construction which has not been subjected to said heat treatment.

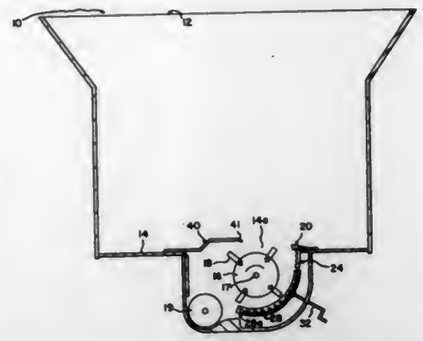
5,570,848
ECCENTRIC VIBRATING MILL
Eberhard Gock, Goslar; Willbrord Beenken, Kerken–Niewkerk, and Miroslaw Gruschka, Oberhausen, all of Germany, assignors to Siebtechnik GmbH, Germany
Filed Oct. 19, 1994, Ser. No. 325,837
Claims priority, application Germany, Oct. 20, 1993, 43 35 797.0
Int. Cl.[6] B02C *17/14*
U.S. Cl. 241—172 **19 Claims**



1. A vibrating mill comprising:
at least one grinding container having:
a vertically oriented gravity axis defined therethrough; and
a mass center;
at least one exciter unit being operatively connected to said at least one grinding unit to impart at least one vibratory movement to said at least one grinding container solely at a portion of said at least one grinding container that is offset from said gravity axis and said mass center and solely at one side of said gravity axis;
a balancing mass operatively connected to said at least one grinding container at a portion of said at least one grinding container that is disposed at an opposite side of said gravity axis from said portion of said at least one grinding container that is offset from said gravity axis and said mass center;
whereby said at least one grinding container is excited eccentrically at said portion offset from said gravity axis and said mass center by said at least one exciter unit such that, combined with the influence of said balancing mass, at least one uneven vibration is produced.

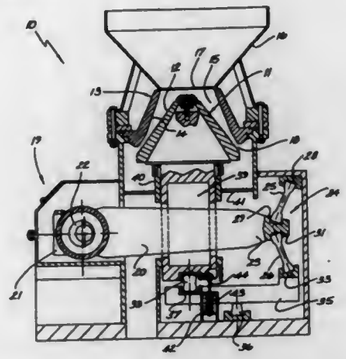
5,570,849
TUB GRINDER
Robert R. Anderson, 29774 Hwy. 257, Windsor, Colo. 80550
Filed Apr. 21, 1995, Ser. No. 426,086
Int. Cl.[6] B02C *13/286*
U.S. Cl. 241—186.4 **12 Claims**

1. Tub grinding apparatus for grinding bulk materials, the apparatus being of the type including a rotatable tub having a stationary floor with an opening therein, and an elongated rotor member with radially extending hammer elements, wherein said rotor member is rotatably mounted in a manner such that the hammer elements extend at least partially through said opening in the floor and into the tub, wherein the improvement comprises comb means on said floor adjacent said opening and including a plurality of spaced-apart teeth members generally at a right angle to the longitudinal axis of the rotor member; wherein said comb means is movable relative to said rotor member in a manner such that the spacing between said comb means and said rotor member is adjustable; and further comprising a plurality of vertical bar members below said



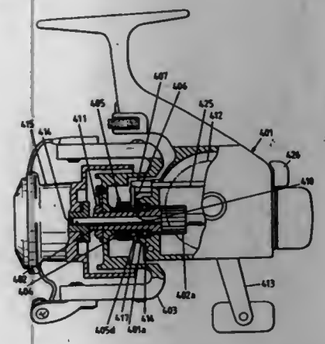
comb means and adjacent to said rotor member, wherein each said bar member includes a forward edge facing said rotor member; and wherein said forward edge includes notches.

5,570,850
CRUSHER
Roger T. Kay, 971 Cobbitty Rd., Oran Park, NSW, Australia
PCT No. PCT/AU93/00239, § 371 Date Apr. 12, 1995, § 102(e) Date Apr. 12, 1995, PCT Pub. No. WO93/24235, PCT Pub. Date Dec. 9, 1993
PCT Filed May 25, 1993, Ser. No. 338,614
Claims priority, application Australia, May 25, 1992, PL2596
Int. Cl.[6] B02C *2/00;2/04*
U.S. Cl. 241—207 **9 Claims**



1. A crusher comprising:
a fixed crusher member having an internal fixed crushing surface of frusto-conical configuration tapering upwardly;
a movable crusher member having an external surface of frusto-conical configuration tapering upwardly and being arranged with respect to the movable surface to define a downwardly converging space through which material to be crushed passes;
motor means to cause longitudinal vertical reciprocation of the movable crusher member relative to the fixed crusher member, said motor means including a drive member arranged for horizontal reciprocation, a driven member pivotably mounted for oscillation about a generally horizontal axis, a first coupling operatively connecting said driven member and said movable crusher member to cause said vertical reciprocation thereof, and a second coupling operatively connecting the drive member and driven member to cause angular oscillation of the driven member on horizontal oscillation of the drive member.

5,570,851
REVERSE ROTATION PREVENTING MECHANISM IN SPINNING REEL FOR FISHING
Nobuyuki Yamaguchi, and Kazuo Hirano, both of Tokyo, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Continuation-in-part of Ser. No. 39,682, Jan. 21, 1993, Pat. No. 5,374,001, which is a continuation of Ser. No. 645,708, Jan. 25, 1991, abandoned. This application Sep. 23, 1994, Ser. No. 311,122
Claims priority, application Japan, Feb. 2, 1990, 2-9726; Apr. 26, 1990, 2-44979
Int. Cl.[6] A01K *89/02*
U.S. Cl. 242—247 **10 Claims**



1. A reverse rotation preventing mechanism in a fishing reel, comprising:
a reel casing;
a rotary shaft member adapted to transmit a rotational torque from a first member to a second member and to rotate relative to said reel casing;
said first member non-rotatably fitted on said rotary shaft member to rotate together with said rotary shaft member and formed with a first surface;
said second member rotatably fitted on said rotary shaft member and formed with a second surface radially facing said first surface with respect to an axis of said rotary shaft member;
a rolling member provided between said first and second surfaces;
first means for interlocking said rolling member with said first and second surfaces so that said first and second members are prevented from being rotated together when said rotary shaft member is rotated in a first direction and permitting said first and second members to rotate together when said rotary shaft member is rotated in a second direction opposite to said first direction; and
second means for selectively preventing said second member from being rotated relative to said reel casing, said second means including an engagement portion formed in said second member and spaced from said second surface in a direction of said axis of said rotary shaft member.

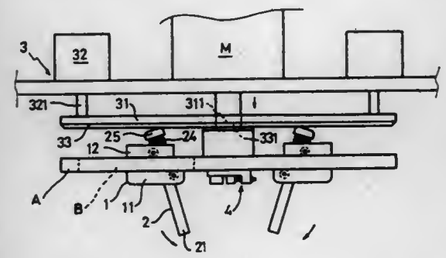
5,570,852
GEAR MECHANISM AND TAPE PLAYER USING GEAR MECHANISM
Tadahiro Ikuta, 1276-2 Modori, Nishinasuno-machi Nasu-gun, Tochigi, Japan
Filed Feb. 28, 1994, Ser. No. 203,051
Claims priority, application Japan, Mar. 2, 1993, 5-041118
Int. Cl.[6] G11B *15/44*
U.S. Cl. 242—356 **5 Claims**

1. A gear mechanism comprising a fixed-shaft gear rotated at a fixed position and a movable gear which is movable toward and away from said fixed-shaft gear so as to be freely engaged with and separated therefrom, comprising:



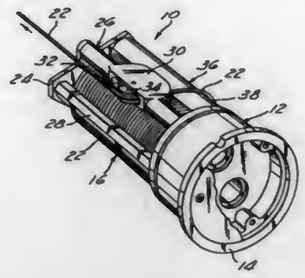
a portion from a root circle to a tip circle of each tooth of said fixed-shaft gear and movable gear being formed of a constant curvature; and
said fixed-shaft gear and said movable gear being selectively provided with truncated teeth intermittently placed with full-size teeth, each truncated tooth having a tip portion from the vicinity of a pitch circle to the tip circle cut off.

5,570,853
RELEASABLE CABLE HOLDER ASSEMBLY FOR WINDING MACHINES
Kui-Yu Teng, Taipei Hsien, Taiwan, assignor to U Gear Automatic Machinery Co., Ltd., Taipei Hsien, Taiwan
Filed Sep. 14, 1995, Ser. No. 528,227
Int. Cl.[6] B21C *47/24;* **B65H** *54/56;49/30;49/20*
U.S. Cl. 242—362.2 **5 Claims**



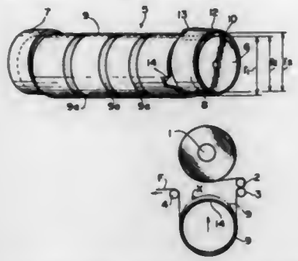
1. A releasable cable holder assembly comprising pairs of pawl devices mounted on a winding wheel of a winding machine for winding a cable, and a knock-out control mechanism controlled to release said pawl devices from the finished winding of cable, wherein each pawl device is comprised of a pawl holder and a pawl, said pawl holder consisting of a front holder plate and a rear holder plate respectively fastened to said winding wheel in an elongated slot therein at two opposite sides and having a respective L-shaped through hole for passing said pawl and a respective wheel inside the respective L-shaped through hole, the wheels of said front and rear holder plates being disposed in contact with said pawl at two opposite sides, said front and rear holder plates each having a stop block at an inner side disposed in said elongated slot, said pawl comprising an elongated retaining rod having a first arched recess and a second arched recess corresponding to the wheels of said front and rear holder plates, a cap at one end of said retaining rod, a spring mounted around said retaining rod and stopped between said cap and said rear holder plate, said retaining rod being tilted inwards from the winding of cable when said cap is forced forward by said knock-out control mechanism.

5,570,854
TOWED VEHICLE DEPLOYMENT APPARATUS HAVING GUIDE TO REDUCE LINE PULL-OFF ANGLE
Roger D. Brum, and David T. Currier, both of Irvine, Calif., assignors to Southwest Aerospace Corporation, Tustin, Calif.
Continuation of Ser. No. 213,907, Mar. 14, 1994, Pat. No. 5,501,411. This application Nov. 1, 1995, Ser. No. 551,527
Int. Cl.[6] B65H *27/00*
U.S. Cl. 242—397 **15 Claims**



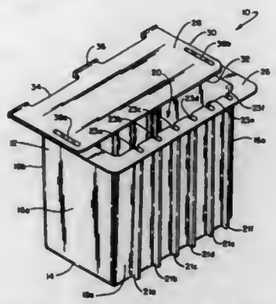
1. A reeling apparatus comprising:
a spool;
a housing, said spool being rotatably connected to said housing;
a tow line dispensably stored in windings about said spool;
a line guide attached to said housing, said line guide extending along and being spaced from said central portion of said spool, said tow line being extended from said spool over said line guide; and
at least one standoff bar attached to said housing, said standoff bar extending along and being spaced from said Central portion of said spool, said tow line being extended over said standoff bar prior to being extended over said line guide to reduce the pull-off angle of the tow line from the spool.

5,570,855
SHEET FEEDER FOR FEEDING PREDETERMINED LENGTHS OF SHEET FROM A LONG ROLL OF SHEET
Shigeichiro Aihara, 8-10-2, Nishigotanda, Shinagawa-ku, Tokyo, Japan
Filed Mar. 15, 1995, Ser. No. 404,337
Claims priority, application Japan, Mar. 15, 1994, 6-043410
Int. Cl.[6] B65H *16/00;* **A47K** *10/00*
U.S. Cl. 242—565 **17 Claims**



1. A sheet feeder for feeding a sheet wound in the form of a roll, said sheet feeder comprising:
(A) a housing;
(B) a sheet feeding path defined in said housing for causing said sheet to move through said housing along a desired path when a free end of said sheet is pulled out of said housing; and
(C) a pull length regulator stopping the running of said sheet when it has been pulled out of said housing by a predetermined length, said pull length regulator including:
(1) a rotor adapted to rest on said sheet as said sheet moves along said desired path such that the weight of said rotor would act on said sheet, said rotor rotating in response to the movement of said sheet due to friction between said sheet and said rotor; and
(2) a rotation regulator regulating the rotation of said rotor.

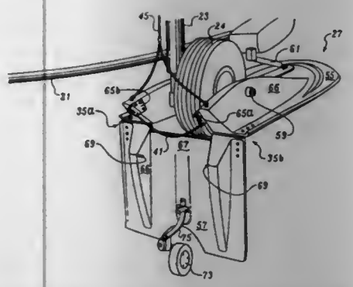
5,570,856
DISPOSABLE SHIPPING AND DISPENSING CONTAINER
Gary L. Sharpe, 21540 Beechwood Rd., Circleville, Ohio 43113
Filed Feb. 9, 1995, Ser. No. 386,262
Int. Cl.[6] B65D *85/67*
U.S. Cl. 242—588.3 **20 Claims**



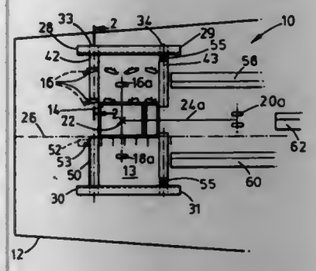
1. A container for shipping and dispensing a roll of coiled film stock, said roll being rotatable about an axis thereof for uncoiling said film stock and having an associated backer configured as a generally planar member with an edged periphery, said container comprising:
a housing portion formed as having a bottom wall, a pair of oppositely-disposed end walls extending upwardly from said bottom wall, and a pair of oppositely-disposed side walls extending upwardly from said bottom wall between said end walls, said side and end walls defining with said bottom wall a generally polygonal-shaped interior chamber configured to receive at least one said roll of coiled film stock therewithin;
at least one vertical side rib integrally formed into each of said side walls and disposed opposite a said side rib of the other said side wall to form a corresponding pair of side ribs, each said side rib formed as an outwardly-extending projection defining an inner space in communication with said interior chamber and configured to receive a corresponding edge of said backer therewithin for disposing said roll within said interior chamber when said backer is received between a said corresponding pair of side ribs; and
at least one horizontal bottom rib integrally formed into said bottom wall to extend between a corresponding said pair of side ribs, each said bottom rib being formed as an outwardly-extending projection defining an inner space in communication with said interior chamber and configured to receive a corresponding edge of said backer therewithin for disposing said roll within said interior chamber when said backer is received between a said corresponding pair of end ribs.

5,570,857
HINGED AIRCRAFT SKI FOR IMPROVING EGRESS AND INGRESS FROM AN AIRCRAFT CABIN
Wesley K. Landes, 3500 O'Malley Rd., and Gary I. Landes, 3400 O'Malley Rd., both of Anchorage, Ak. 99516
Filed Sep. 13, 1994, Ser. No. 305,767
Int. Cl.[6] B64C *35/00;25/52*
U.S. Cl. 244—108 **15 Claims**

1. A flotation apparatus for use on an aircraft, the flotation apparatus having a generally lateral flat runner portion for contacting a landing surface, and two raised longitudinal ridge portions for providing rigidity to the runner portion and for providing a rigid mounting surface for securing the flotation apparatus to the aircraft landing gear, comprising:
a. a forward portion being secured to the aircraft landing gear, the forward portion generally being maintained in a parallel configuration with respect to a longitudinal axis of the aircraft;
b. an aft portion rotatably attached to the forward portion, the aft portion being rotatable in an arc from a substantially parallel configuration with respect to the longitudinal axis of the aircraft, to a substantially perpendicular configuration with respect to the longitudinal axis of the aircraft; and
c. a fastener connecting the aft portion to the forward portion, the fastener providing for rotation of the aft portion in an arc from a substantially parallel configuration with respect to the longitudinal axis of the aircraft, to a substantial perpendicular relationship with respect to the longitudinal axis of the aircraft, the aft portion, when rotated to the substantial perpendicular relationship, improving egress and ingress from the aircraft cabin.

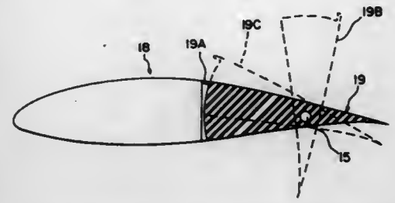


5,570,858
AIRCRAFT RESTRAINING SYSTEM
Thomas M. Craig, Loanhead, Scotland, assignor to MacTaggart Scott (Holdings) Limited, Midlothian, United Kingdom
Filed Jan. 20, 1995, Ser. No. 376,594
Claims priority, application United Kingdom, Jan. 21, 1994, 9401151
Int. Cl.[6] B64F *1/12*
U.S. Cl. 244—115 **18 Claims**



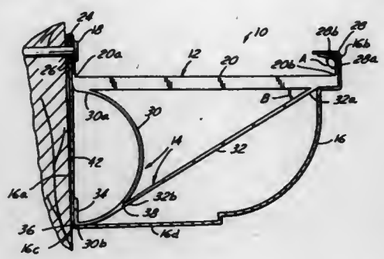
1. An aircraft restraining system adapted for securing and maneuvering a wheeled aircraft on the deck of a ship, the system comprising:
two elongate restraining beams transversely movable from respective storage positions adapted for engaging at least two transversely spaced portions of an aircraft positioned on the deck, each restraining beam including a restraining member adapted for engaging the respective portions of the aircraft above the deck and restricting longitudinal movement thereof, without restricting rotation of the aircraft wheels, and drive means for moving at least one of the restraining members along the respective beam to permit rotation of the aircraft on the deck while maintaining the aircraft wheels in rolling contact with the deck.

5,570,859
AERODYNAMIC BRAKING DEVICE
Gene A. Quandt, P.O. Box 4398, Pocatello, Id. 83205
Filed Jan. 9, 1995, Ser. No. 370,371
Int. Cl.[6] B64C *27/72*
U.S. Cl. 244—213 **14 Claims**



1. In a wind turbine blade of the type which is adapted to rotate about an axis in response to wind moving over said turbine blade, wherein said turbine blade includes a forward portion, a rearward portion, an upper surface and a lower surface, wherein the improvement comprises: a braking device pivotably secured to said rearward portion of said blade; wherein said braking device comprises a spoiler flap having forward and rearward edges; wherein the distance between said forward and rearward edges of said flap is at least about 40% of the chord length of said blade; wherein said upper and lower surfaces of said blade adjacent said forward edge of said spoiler flap terminate within 10% of said chord length of each other; wherein said spoiler flap can be pivoted to simultaneously raise said forward edge and lower said rearward edge of said spoiler flap.

5,570,860
GUTTER BRACKET
Curtis A. Schoenherr, Madison Heights, Mich., assignor to James R. Jay, Jr., St. Clair Shores, Mich.
Filed Feb. 23, 1994, Ser. No. 200,621
Int. Cl.[6] E04D *13/072*
U.S. Cl. 248—48.2 **5 Claims**



1. A gutter bracket for connecting a gutter to a structure, the gutter having a rear wall, a bottom wall and a front wall, the front wall having a U-shaped member, the rear wall and the bottom wall joining to form an inside corner of the gutter, said gutter bracket comprising:
a bracket portion, comprising:
a main body having a first end and a second end, said main body being elongated and substantially straight, said main

body having a first side and an opposite second side, a first axis extending from said first end to said second end of said main body, a second axis being perpendicular to said first axis;

clip means connected with said first end of said main body for receiving in a direction substantially parallel to said second axis the rear wall of a gutter therewithin; and

nose means having an upright extending from first side of said main body at an orientation substantially parallel to said second axis for seating within the U-shaped member of the gutter; and

an elbow portion comprising:

an arch having a first end and a second end, said first end of said arch being connected to said second side of said main body at substantially said first end thereof, said arch having a concave shape facing away from said first end of said main body, said first and second ends of said arch being mutually displaced along a line substantially parallel with respect to said second axis; and

a knee brace having a first end and a second end, said knee brace being elongated and substantially straight, said first end of said knee brace being connected to said second side of said main body at substantially said second end thereof, said knee brace being oriented at an acute angle with respect to said first axis, said second end of said knee brace being connected to said arch at a tangential intersection thereto substantially adjacent said second end thereof;

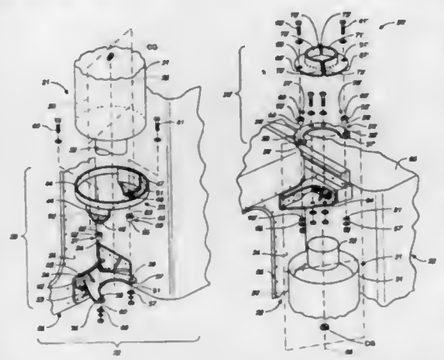
wherein said second end of said arch is abuttingly disposed at the inside corner of the gutter when said nose has been seated in the U-shaped member of the gutter and said clip has received the rear wall of the gutter.

5,570,861

MUFFLER-TO-CAB ISOLATION MOUNTING ASSEMBLY AND METHOD FOR REDUCING CAB INTERIOR NOISE

John N. Olsen, Mt. Vernon, Wash., and David E. Crowe, Krum, Tex., assignors to Paccar Inc., Bellevue, Wash.

Filed May 19, 1995, Ser. No. 444,555
Int. Cl.[6] B60K *13/04*
U.S. Cl. 248—74.1 **23 Claims**



1. A muffler apparatus and mounting assembly for mounting said muffler apparatus to a vehicle for vibratory isolation thereof comprising:

a muffler apparatus;

a mounting bracket formed for rigid coupling to said vehicle and having an end portion positioned proximate said muffler apparatus;

a muffler support bracket supportively contacting an exterior of said muffler apparatus about a longitudinal axis thereof; and

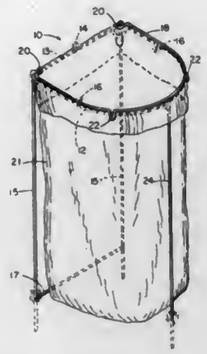
a pair of isolation mounting devices positioned between and coupling said support bracket to the end portion of said mounting bracket at locations substantially on opposite sides of the muffler apparatus such that the mounting devices are substantially aligned in a plane containing a center of gravity of said muffler apparatus.

5,570,862

FOLDABLE REFUSE BAG HOLDER

John T. Nugent, 3958 Applegate Clr., Brandon, Fla. 33511-7985

Filed Jun. 8, 1995, Ser. No. 488,992
Int. Cl.[6] A63B *55/04*
U.S. Cl. 248—97 **6 Claims**



1. A foldable holder for supporting a refuse bag, said foldable holder comprising a "D" shaped loop having a flat portion contiguous with a rounded portion a plurality of legs each having one end pivotally depending from said "D"shape loop, means to secure said refuse bag to said "D" shaped loop, and means to stabilize said "D" shaped loop so that said foldable bolder is stable in a horizontal position and able to maintain said refuse bag open for direct sweeping of debris into said open bag, wherein said means to secure said refuse bag to said "D" shaped loop comprises a bale pivotally attached to said flat portion of said "D" shaped loop, said bale having a shape conforming to said rounded portion of said "D" shaped loop, said bale also having a plurality of downwardly disposed continuous wire distentions which are capable of securely engaging said "D" shaped loop.

5,570,863

DRINK HOLDER

Sandy Cooper, New York, N.Y., assignor to Sun It Corp., Mt. Vernon, N.Y.

Filed Nov. 1, 1994, Ser. No. 332,896
Int. Cl.[6] A47G *23/02*
U.S. Cl. 248—146 **1 Claim**

1. A drink holder structure comprising an upper portion and a mid-portion, said upper portion coupled to said mid-portion and each having an outer sheath formed from tubular plastic, said upper portion defining a spiral shape to circumscribe a space in the shape of a solid cylinder with its axis vertical and generally continuing the line formed by said mid-portion, wherein most of the extent of said structure includes a cylindrical wire within said tubular outer sheath, said wire being in two parts, an upper part and a lower part, the diameter of said upper part being less than the diameter of said lower part, one of said parts having a bore sufficient in diameter to receive the other of said parts, in order to provide more strength for said mid-portion, and yet more flexibility for said upper portion, said structure also having a lower portion defining, at its lowermost extent, a pointed surface, pointing downwardly of said structure, whereby said characteristics of strength and flexibility enable alternative usages supporting said structure by use of its lower portion, or with its mid-portion wrapped, to mount said upper portion with its axis in a vertical position.

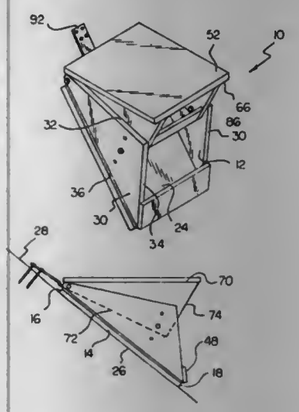


5,570,864

ADJUSTABLE ROOFING STOOL

Juan R. Flores, 6411 Spencer Hwy., Apt. 177, Pasadena, Tex. 77505-1732

Filed May 13, 1994, Ser. No. 242,649
Int. Cl.[6] A47G *29/02*
U.S. Cl. 248—148 **2 Claims**



1. An adjustable roofing stool for supporting a person and materials on a pitched roof comprising, in combination:

a pedestal further comprising:

a rectangular base plate having opposed top and bottom edges, opposed side edges, a top surface, and a bottom surface with the bottom surface adapted to be placed in contact with the surface of a pitched roof;

a pair of parallel, symmetrically spaced, and triangularly-shaped outer legs, each outer leg having an upper edge, a lower edge, and a rear edge defined about its periphery, a front corner defined between the upper edge and the lower edge, a lower corner defined between the lower edge and the rear edge, and an upper corner defined between the upper edge and the rear edge with the rear edges of the outer legs coupled to the top surface of the base plate near the side edges thereof, the outer legs further having a pair of symmetrically aligned pivot holes with each pivot hole disposed on each outer leg near the upper corner thereof and a plurality of symmetrically aligned pairs of adjustment holes with the adjustment holes disposed and spaced in curvature with respect to the pivot hole on each outer leg between the front corner and the rear edge thereof; and

a cross bar coupled across the lower edges of each outer leg near the lower corner thereof with the cross bar, outer legs, and base plate defining an essentially storage pocket adapted for holding tools and equipment therein;

a seat further comprising:

a rectangular and planar plate having opposed top and bottom edges, opposed side edges, a top surface, and a bottom surface with the top surface of the plate adapted to support a person and materials thereon;

a pair of parallel, symmetrically spaced, and triangularly-shaped inner legs, each inner leg having a top edge, a bottom edge, and a front edge defined about its periphery, a front corner defined between the top edge and the front edge, a bottom corner defined between the front edge and the bottom edge, and a rear corner defined between the top edge and bottom edge with the top edges coupled to the bottom surface of the seat near the side edges thereof, the inner legs further having a pair of symmetrically aligned adjustment holes with each adjustment hole disposed on each inner leg near the bottom corner thereof and a pair of symmetrically aligned pivot holes with each pivot hole disposed on each inner leg near the rear corner thereof; and

an elongated support bar coupled between the inner legs near the bottom corners thereof;

coupling means disposed within the pivot holes on the pedestal and the pivot holes on the seat for pivotally coupling the pedestal to the seat;

positioning means disposed within a pair of adjustment holes on the pedestal and the adjustment holes on the seat for fixing the angular orientation of the seat relative to the pedestal; and

an elongated hinge having one end coupled to the top surface of the base plate near the top edge thereof and the other end upwardly extended therefrom and adapted to be coupled to the surface of a pitched roof for maintaining the pedestal at a given location;

an elastomeric plate having a top surface and a bottom surface with the top surface coupled to the bottom surface of the base plate and the bottom surface thereof adapted to be placed in contact with the surface of a pitched roof; and

a plurality of rigid protrusions extended from the bottom surface of the base plate and adapted for gripping a pitched roof.

5,570,865

ARTICLE RESTRAINT AND FALL PREVENTION DEVICE

Kenneth E. Godfrey, 7337 Pasito Ave., Rancho Cucamonga, Calif. 91730

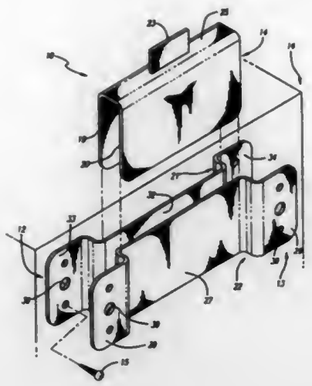
Filed Sep. 16, 1994, Ser. No. 307,343
Int. Cl.[6] A47B *96/06*
U.S. Cl. 248—226.11 **13 Claims**

1. A restraint device for securing an article to a vertical surface, comprising:

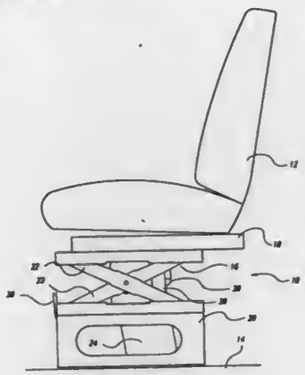
a first bracket configured to be secured to an article;

a second bracket configured to be secured to a vertical surface, said second bracket being disposed proximate said first bracket when the article is positioned proximate the vertical surface; and

a bridging member having legs forming a U-shape and configured to lock said first bracket to said second bracket, wherein said first bracket and said second bracket are formed with recesses such that the legs of said bridging member are slidably disposed in the recesses to secure the article to the vertical surface, and wherein said bridging member may be removed from the recesses such that the article may positioned away from the vertical surface.

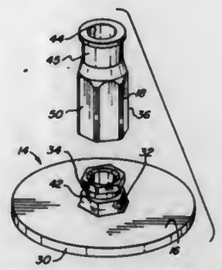


5,570,866
SEAT SUSPENSION
Donald L. Stephens, La Conner, Wash., assignor to Paccar Inc, Bellevue, Wash.
Continuation-in-part of Ser. No. 114,191, Aug. 30, 1993, abandoned. This application Mar. 7, 1995, Ser. No. 400,798
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—631 37 Claims



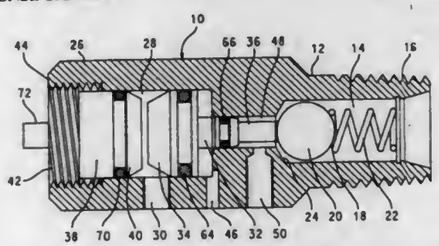
1. A shock absorbing suspension system supporting a seat on a floor of a vehicle, comprising:
a lower base member coupled to the floor;
an upper base member coupled to the seat;
a mechanism extending between the lower and upper base members, the mechanism being adapted to allow the lower and upper base members to move toward and away from each other and to restrict lateral motion of the upper base member with respect to the lower base member;
a hydraulic bag filled with a liquid and connected between the mechanism and the lower base member to support the upper base member and the seat, the hydraulic bag having an upper orifice;
a reservoir partially filled with liquid and having a lower orifice; and
a flow restrictor supporting the reservoir on the hydraulic bag and having an internal passageway communicating with the hydraulic bag via its upper orifice and the reservoir via its lower orifice to allow the liquid from the hydraulic bag to pass into the reservoir, the passageway being sufficiently small to dampen motion of the upper base member toward and away from the lower base member; wherein the flow restrictor is adjustable to provide flow areas of the passageway intermediate a fully open position and a fully closed position and thereby change the ability of the flow restrictor to dampen the motion of the seat with respect to the floor.

5,570,867
SHOCK MOUNT ASSEMBLY
James Norkus, Waterbury, Conn., assignor to Illinois Tool Works, Inc., Glenview, Ill.
Filed Sep. 18, 1995, Ser. No. 529,429
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—635 29 Claims



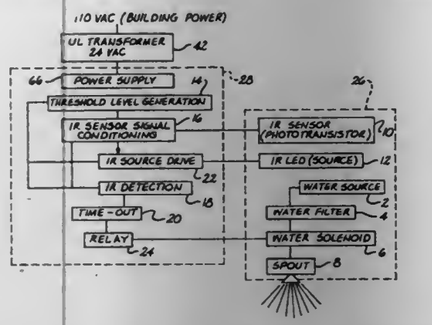
1. In a shock isolating mount for securing a mounting part of a structure onto a support, said shock isolating mount having a rigid spacer having a spacer flange and a spacer tube projecting from said spacer flange, and a mating thimble, the improvement wherein said thimble comprises:
a metal thimble base having a flange and an internally threaded post projecting from said flange;
a plastic thimble stem, said stem being hollow, said stem and said base having mating means for securing said stem to said base, said stem being telescopically receivable in said spacer tube, whereby said shock isolating mount may be provided with a selected separation strength by providing said base with a desired separation strength.

5,570,868
LUBRICATING VALVE FOR A PUMP
Lynn A. Flaming, Elsie, Nebr., assignor to L & M Manufacturing, Inc., Elsie, Nebr.
Filed Jun. 2, 1995, Ser. No. 458,567
Int. Cl.[6] F16K *31/12*; F16N *13/16*
U.S. Cl. 251—14 17 Claims



1. A valve apparatus adapted to provide a predetermined amount of flow therethrough when open, the apparatus comprising:
a valve assembly biased to remain closed when pressure supplied from a pump is below a predetermined level;
means for opening said valve assembly to put said pump in fluid communication with a lubricant supply when said pressure meets or exceeds said predetermined level allowing lubricant to flow from said lubricant supply into said pump; and,
means for manually opening said valve and holding open said valve assembly allowing lubricant to flow freely from said lubricant supply into said pump.

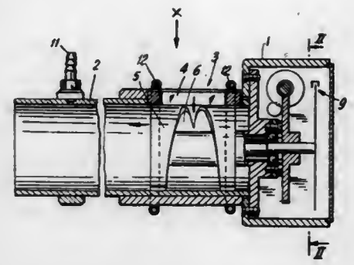
5,570,869
SELF-CALIBRATING WATER FLUID CONTROL APPARATUS
Alexander R. Diaz, Greer, S.C., and Ronald L. Roush, Colorado Springs, Colo., assignors to T & S Brass and Bronze, Inc., Travelers Rest, S.C.
Filed Dec. 20, 1994, Ser. No. 359,439
Int. Cl.[6] E03D *5/10*
U.S. Cl. 251—129.04 35 Claims



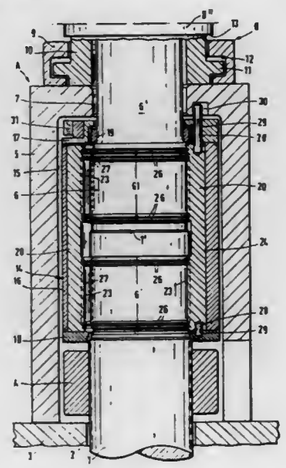
1. A continuously self-calibrating fluid flow control apparatus for utilization with a fluid flow source, comprising:
an infrared signal source configured to repeatedly emit, at a predetermined rate, an infrared signal into a defined detection area;
an infrared receiver configured to receive reflections of said infrared signals from objects within said detection area and generate electrical signals corresponding to said reflections;
a calibrating mechanism in communication with said infrared receiver and said infrared signal source and configured to compare said received infrared signal to at least one predetermined reference signal and adjust, responsive to said comparison, the intensity of infrared signals subsequently emitted by said infrared signal source so that the subsequent electrical signals corresponding to reflections therefrom approach said at least one predetermined reference signal; and
a control mechanism in communication with said infrared receiver and configured to output, responsive to said electrical signals, fluid flow source control signals to the fluid flow source, wherein said control mechanism is further configured so that when said electrical signals approximate said at least one reference signal, the fluid flow source is not activated.

5,570,870
AIR FLOW METER WITH SLIDE VALVE FOR MILKING MACHINES
Erwin Bilgery, Romanshorn, Switzerland, assignor to Westfalia Separator AG, Oelde, Germany
PCT No. PCT/EP92/02467, § 371 Date Oct. 6, 1994, § 102(e) Date Oct. 6, 1994, PCT Pub. No. WO93/10421, PCT Pub. Date May 27, 1993
PCT Filed Oct. 29, 1992, Ser. No. 240,686
Claims priority, application Germany, Nov. 16, 1991, 41 37 811.3
Int. Cl.[6] F16K *5/10*
U.S. Cl. 251—208 7 Claims

1. An air-flow meter for milking machines, comprising a housing with a connection to a line to be tested for flow and pressure of the line and air-intake means comprising an air intake with a slot-shaped cross-section, a rotatable cylindrical slide valve disposed inside the housing and rotatable about an axis, wherein the slide valve has a gradually enlarging opening extending along a length of its circumference, wherein a longitudinal axis of the intake is parallel to the axis of rotation of the slide valve, and wherein the slide valve is movable relative to the intake to position any portion of the opening in alignment with the intake to define an effective free cross-section of the intake which varies from a minimum to a maximum portion thereof.



5,570,871
DEVICE FOR SELECTIVELY TENSIONING AND CLAMPING STUDS MOUNTED ON A PRESSURE VESSEL TO PERMIT NUTS TO BE TIGHTENED OR LOOSENED
Horst Westerfeld, Castrop-Rauxel, Germany, assignor to Westfalia Nucleartechnik GmbH & Co., Germany
Filed Mar. 13, 1995, Ser. No. 402,509
Claims priority, application Germany, Mar. 16, 1994, 44 08 873.6
Int. Cl.[6] E21B *19/00*
U.S. Cl. 254—29 A 21 Claims



1. In an apparatus for use in tightening or releasing nuts engaged on screw-threaded members supported in screw-threaded bores of a vessel in order to secure or release a cover of the vessel, a clamping device for subjecting the screw-threaded members to tension to permit the tightening or release of the nuts thereon; said device comprising a rod-like extension element disposable in end-to end coaxial relationship with one of the screw-threaded members; hydraulic means for exerting force on the extension element to tension said one screw-threaded member and a coupling mechanism for selectively coupling the extension element to said one screw-threaded member to transfer the tensioning force therebetween; wherein the coupling mechanism comprises a number of coupling segments disposed around adjacent regions of the extension element and said on screw-threaded member, means for establishing a positive tension-proof contact engagement between the

inner surface of the coupling segments and the adjacent end regions of the extension element and said one screw-threaded member and a rotatable actuator including a coupling sleeve surrounding the coupling segments, the coupling sleeve being connected to upper and lower faceplates through which the extension element and the one screw-threaded member extend, the coupling segments being disposed between the faceplates, the coupling sleeve and the coupling segments having co-operating interengageable surfaces which upon rotation of the actuator cause the coupling segments to be displaced radially of the common axis of the extension element and said one screw-threaded member between open and closed positions to establish or release the contact engagement.

5,570,872

FREE-ROTATION CONTROL APPARATUS OF HOIST AND TRACTION MACHINE

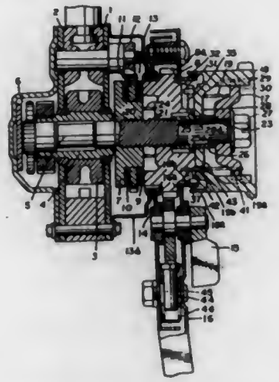
Yoshitaka Inoue; Yoshiaki Okamoto, and Yasuo Wada, all of Sayama, Japan, assignors to Elephant Chain Block Company Limited, Osaka, Japan

Filed Sep. 13, 1994, Ser. No. 305,345

Claims priority, application Japan, Oct. 5, 1993, 5-249546; Dec. 1, 1993, 5-301911

Int. Cl.[6] B66D 1/14

U.S. Cl. 254—350 **7 Claims**



1. A free-rotation control apparatus of a hoist and traction machine including a load sheave, a driving shaft which has a driven member and serves to drive the load sheave, a driving member threadably mounted to the driving shaft, a mechanical brake interposed between the driving member and the driven member and driving means for driving the driving member in the normal and reverse rotation directions, said free-rotation control apparatus enabling the load sheave to rotate freely by inactivating the mechanical brake and comprising:

a) a stopper disposed at an axial end portion of the driving shaft;

b) an operating handle interposed between the stopper and the driving member so as to be axially movable between a first position in which it comes near to the driving member and a second position in which it is spaced apart therefrom and non-rotatable relative to the driving shaft;

c) a free-rotation assisting spring interposed between the stopper and the driving member and serving to urge the operating handle toward the first position in which the handle comes near to the driving member, to urge the driving member in a brake release direction and to release the brake by rotating the driving member when the operating handle is set to the second position;

d) restrictive means interposed between the operating handle and the driving member and for restricting a relative rotation range of the driving member with respect to the driving shaft when the operating handle is located at the first position and cancelling the restriction when the handle is located at the second position; and

e) free-rotation maintaining means for bringing the operating handle into resilient contact with the driving member by an axial urging force of the spring so as to maintain the free-rotation operation carried out by the operating handle when the handle is located at the second position.

5,570,873

LONGITUDINALLY ADJUSTABLE GAS SPRING WITH A LONGITUDINALLY ADJUSTABLE COLUMN

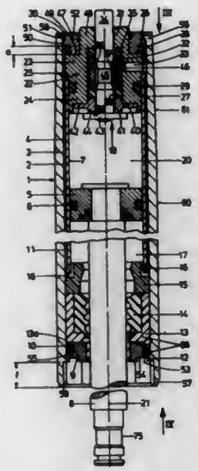
Hans-Peter Bauer, and Hans J. Bauer, both of Altdorf, Germany, assignors to Suspa Compart Aktiengesellschaft, Altdorf, Germany

Filed Jun. 14, 1995, Ser. No. 490,527

Claims priority, application Germany, Jun. 16, 1994, 44 20 914.2

Int. Cl.[6] F16F 9/02

U.S. Cl. 267—64.12 **9 Claims**



1. A longitudinally adjustable gas spring for adjustable-height chairs and tables, comprising

an exterior cylinder (3) with a central longitudinal axis (21) and having a first end with a first edge (57) and a second end with a second edge (56) and an inside wall (11),

an interior cylinder (2) arranged concentrically to the central longitudinal axis (21) in the exterior cylinder (3),

a piston (5) arranged displaceably in the direction of the central longitudinal axis (21) in the interior cylinder (2),

a piston rod (8) arranged concentrically to the central longitudinal axis (21) and mounted on the piston (5) and guided out of said first end of the exterior cylinder (3),

a valve (19) on said second end of the exterior cylinder (3), which valve (19) has a valve body (22) with an annular groove (26) open towards the inside wall (11) of the exterior cylinder (3) and containing an annular seal (28),

a sealing arrangement between the piston rod (8) and the inside wall (11) of the exterior cylinder (3) on said first end of the exterior cylinder (3), which arrangement has a sealing body (68) with an annular groove (55) open towards the inside wall (11) of the exterior cylinder (3) and accommodating an annular seal (10),

a first deformation provided on said first edge (57) of the exterior cylinder (3) and retaining the sealing body (68), and

a second deformation provided on said second edge (56) of the exterior cylinder (3) retaining the valve body (22),

wherein at least said first edge (57) assigned to the sealing body (68), of the exterior cylinder (3) is substantially annularly cylindrical and projects away from the sealing body (68),

said first edge (57) further having an outer diameter substantially equal to an outer diameter of the exterior cylinder (3).

5,570,874

FURNITURE SPRING ASSEMBLY WITH ELASTIC WEBBING

Roger Tornero, Greensboro, N.C., assignor to Matrex Furniture Components, Inc., Greensboro, N.C.

Continuation of Ser. No. 295,409, Aug. 25, 1994, abandoned. This application Dec. 12, 1995, Ser. No. 570,805

Int. Cl.[6] F16F 3/04

U.S. Cl. 267—95 **13 Claims**



1. A furniture spring assembly for attachment between a front rail and a rear rail of a furniture frame, consisting of:

(a) an elongated base, said elongated base adapted to be attached to said front and rear rails;

(b) a spring, said spring mounted eccentrically on said base forward of the midpoint of said base; and

(c) elastic webbing, said elastic webbing attached at each end of said elongated base by connectors and positioned over said spring.

5,570,875

SHEET ALIGNMENT DEVICE WITH FLEXIBLE PUSH ROD

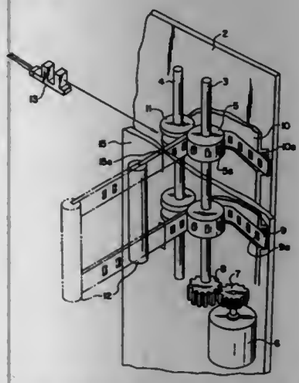
Yeon K. Jung, Seoul, Rep. of Korea, assignor to Sindo Richo Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 5, 1995, Ser. No. 465,218

Claims priority, application Rep. of Korea, Aug. 30, 1994, 94-21651

Int. Cl.[6] B65H 31/36

U.S. Cl. 270—58.09 **2 Claims**



1. A sheet post treatment apparatus for stapling, applied to a stapler sorter positioned at both ends of a sheet discharge part of a copying machine and equipped with side plates formed with slot liners of a designated size for successively receiving and carrying discharged sheets by or in the order of pages, and equipped with multiple bin trays attached to said sheet discharge part piled on one another and formed with slots of a designated size at one side thereof for providing a moving path of an aligning operation and equipped with a driving motor installed in the lower end of a side of said bin tray and impressed and regularly rotated by an external driving power source, comprising:

a power transmitting means, attached to said driving motor, for transmitting driving power;

a transfer shaft vertically equipped at one side of said bin tray and driven by said power transmitting means;

one or more feed rollers attached to a designated site of said transfer shaft and equipped with multiple projections of a designated size at regular intervals around a circumference thereof;

one or more flexible push rods composed of bendable elastic material and, bent at a designated angle, contacted to said feed roller and formed with multiple guide holes at regular intervals in a central part thereof and moved by the projections of said feed roller inserted into and pulled out from the guide holes;

a receiving housing installed between said side plate and said transfer shaft and formed with a receiving groove of a designated size for receiving length change due to retreat of said flexible push rod;

an aligning means of a designated length, the length thereof is kept as short as possible for a designated area of a sheet discharge site, positioned at the slot part of said bin tray where one end part of said flexible push rod is inserted and fixed at one side thereof for moving and aligning the received sheets in said bin tray at a site available for stapling through rectilinear movement; and

a light sensor attached at a designated site of a moving path of said flexible push rod, for controlling the level of moving displacement by passing light through the guide holes formed at the central part of the flexible push rod and counting the number of guide holes.

5,570,876

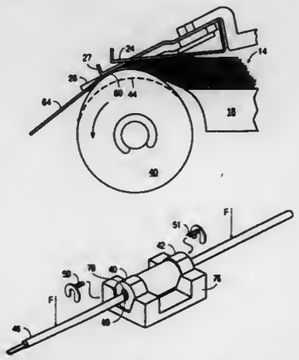
ASYMMETRICAL PAPER SEPARATOR ROLLER FOR FACSIMILE OR COPY MACHINE

Morad M. Samii, Poway, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 14, 1994, Ser. No. 324,056

Int. Cl.[6] B65H 3/06

U.S. Cl. 271—119 **10 Claims**



1. An apparatus which separates and forwards sheets one-by-one from a stack of sheets for optical detection of matter printed on said sheets, said apparatus comprising:

a rotatable stripper roller mounted on a shaft, said stripper roller having a cylindrical portion and a first eccentric portion, said first eccentric portion and said cylindrical portion being formed of the same resilient material;

a shim, consisting of a separate piece, having an extending member located between said first eccentric portion and said

shaft to convert said first eccentric portion from cylindrical to oval-shaped so as to have a maximum radius greater than a radius of said cylindrical portion, wherein an outer surface of said first eccentric portion gradually extends beyond an outer surface of said cylindrical portion to said maximum radius of said first eccentric portion.

5,570,877

PAPER TURNING DEVICE FOR AN IMAGE FORMING APPARATUS

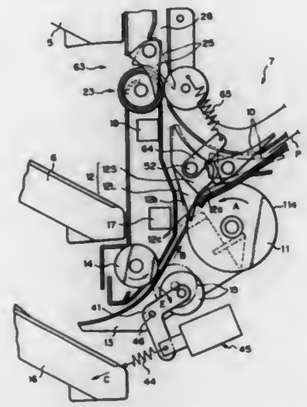
Shinji Asami, Hanazono; Yoshiaki Ushirogata, Tokyo; Hiroyuki Ishizaki, Nagoya; Minoru Hattori, Nagoya, and Terumitsu Azuma, Nagoya, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 19, 1995, Ser. No. 504,355

Claims priority, application Japan, Jul. 27, 1994, 6-175164

Int. Cl.[6] B65H *29/00*

U.S. Cl. 271—186 **4 Claims**



1. A device for turning a paper, comprising:

a transport roller constantly rotatable in a predetermined direction for paper transport;

reverse transporting means positioned downstream of said transport roller in said predetermined direction, and for transporting the paper, transported by said transport roller, in a direction opposite to said predetermined direction; and

a turn guide comprising a first guide face for guiding the paper toward said transport roller, and a second guide face for guiding in a paper discharge direction the paper being transported by said reverse transporting means in said direction opposite to said predetermined direction, an end portion of said first and second guide faces close to said reverse transporting means extending in a direction in which said end portion intersects a periphery of said transport roller, whereby said end portion is angularly retracted by the paper, being guided by said first guide face, to a position coincident with a line tangential to said transport roller;

said end of said turn guide being configured such that said first and second guide faces are tapered.

5,570,878

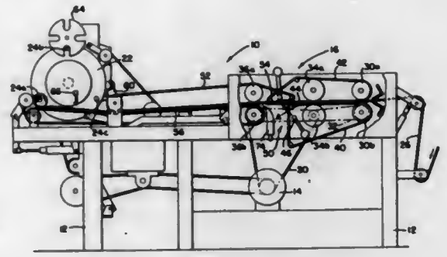
INTERLEAVING APPARATUS FOR ROLLED-UP SEGMENTS

Ronald L. Lotto, Bonduel; Ernest H. Teske, Green Bay, and Peter Hatchell, New Franken, all of Wis., assignors to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 889,230, May 27, 1992, abandoned, which is a continuation of Ser. No. 651,676, Feb. 6, 1991, Pat. No. 5,161,793. This application Mar. 21, 1995, Ser. No. 409,484

Int. Cl.[6] B65H *29/68*

U.S. Cl. 271—203 **14 Claims**



8. An apparatus for overlapping individual plastic webs of material comprising:

a pair of feed rolls driven at a first speed;

a pair of driving rolls driven at a speed slower than said first speed; and

a winder;

said driving rolls being downstream from said feed rolls and said winder being downstream from said driving rolls;

means for providing a continuous sheet of plastic film having perforations thereon between said pair of feed rolls, said feed rolls and said driving rolls and for providing forming interleaved webs of material from said plastic film between said driving rolls, said interleaved webs of material to said winder.

5,570,879

BODY SUPPORTED SPORTS TARGET AND METHOD

Timothy F. Glancey, 2929 Alamo Dr., Orlando, Fla. 32805; Walter H. Nickel, 2014 Depauw Ave., Orlando, Fla., and Jeffrey S. Deceder, 1025 S. Hiawassi Rd., Apt. 2222, Orlando, Fla. 32835

Continuation of Ser. No. 199,478, Feb. 22, 1994, Pat. No. 5,413,328, which is a continuation-in-part of Ser. No. 753,675, Sep. 3, 1991, Pat. No. 344,558, and Ser. No. 634,501, Dec. 26, 1990, Pat. No. 344,394. This application May 8, 1995, Ser. No. 436,659

Int. Cl.[6] A63B *67/00*

U.S. Cl. 273—1.5 A **26 Claims**

1. A sports target comprising:

a target member for raising above the head of a person operating the target for viewing by a player;

a receptacle coupled to the target member, the receptacle having an opening for receiving an object tossed at the target by the player; and

mounting means for attaching the target member to the trunk of the person operating the target, the mounting means positioning the target member above the head of the person operating the target for viewing by the player tossing the object at the target.



5,570,880

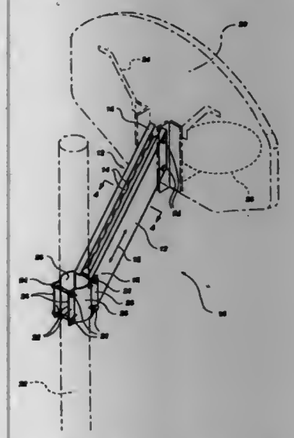
SUPPORT ARM FOR A BASKETBALL BACKBOARD

Richard C. Nordgran, Roy, Utah, assignor to Lifetime Products, Inc., Clearfield, Utah

Filed Jan. 30, 1995, Ser. No. 380,874

Int. Cl.[6] A63B *63/08*

U.S. Cl. 273—1.5 R **28 Claims**



22. A basketball system for use in playing the game of basketball, comprising:

a basketball backboard;

a goal which may be attached to the basketball backboard;

a pole;

a support arm for attaching the basketball backboard to the pole, the support arm comprising a first and second support member, each support member having two flanges extending generally along a longitudinal axis of the support arm, the flanges having a toothed configuration generally in the shape of a square wave, the toothed configuration comprising a plurality of tabs and recesses, the support members capable of mating engagement with each other wherein the tabs along each of the flanges of the first support member engage the corresponding recesses of the respective flanges of the second support member, thereby disposing engaged flanges at an angle with respect to each other of between about 45 and about 135 degrees, the support members having a cross section, taken perpendicular to the longitudinal axis of the support arm, which is substantially C shaped, the support members configured with mounting holes for use in securing the support members to each other; and

a bolt configured to extend through mounting holes on corresponding support members and a nut corresponding to each bolt;

means for attaching a first end of the support arm to the basketball backboard; and

a pair of side brackets for attaching a second end of the support arm to the pole, each side bracket configured with a pole engagement section and an attachment flange positioned on each side of the pole engagement section, the attachment flanges including holes through which mounting bolts may be inserted.

5,570,881

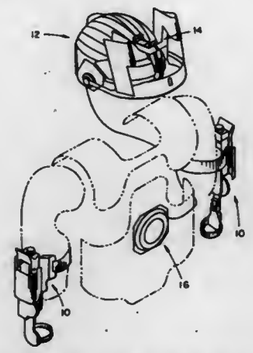
SCORING EQUIPMENT FOR A SWORD CONTEST SPORT

Anthony Lan, 58-17 College Pt. Blvd., Flushing, N.Y. 11355

Filed Oct. 24, 1994, Ser. No. 327,914

Int. Cl.[6] A63B *69/02*

U.S. Cl. 273—57.3 **15 Claims**



6. Scoring equipment for a sword contest sport, said equipment comprising the combination of:

a first target including a first portion adapted to be worn on a limb of a contestant, near a joint of that limb; a second portion adapted to be worn by the contestant, near the joint, on a side of the joint opposite said first portion; and a locking mechanism connected with each of said first and said second portions, said locking mechanism interconnecting said first and said second portions to be generally rotatably movable about a pivot axis; and

a second target including a helmet to be worn on the head of the contestant; a vision blocking visor pivotally mounted to the helmet to pivot between a first position in which the contestant's vision is unobstructed by said visor and a second position in which the contestant's vision is blocked by said visor; and a trip mechanism connected with said visor to hold said visor in said first position and release said visor to said second position, said trip mechanism being responsive to a force applied to said trip mechanism.

5,570,882

FOOTBALL TRAINING AID

Noel P. Horkan, 99-32 64 Ave., Rego Park, N.Y. 11374

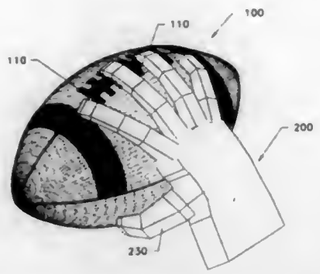
Filed Dec. 5, 1995, Ser. No. 567,548

Int. Cl.[6] A63B *43/00;69/00*

U.S. Cl. 273—65 EG **18 Claims**

1. A football training aid comprising in combination:

a football having a lacing, said lacing having a plurality of either male or female fastener elements thereon;



a flexible glove having a plurality of fingers and thumb, said fingers having distal free ends positioned adjacent the fingertips of a user wearing said glove;

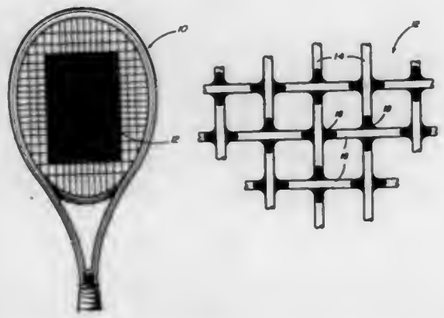
a pad on at least one of the distal free ends of said glove, said pad having a plurality of mating fastener elements thereon complementary to said fastener elements on said football lacing, said mating elements on said glove worn by a user releasably engaging said mating elements on said lacing, whereby said mating of said complementary fastener elements urges a user to properly grasp said football at said lacing by a user's fingertips within said glove.

5,570,883

SPORT RACKET WITH STRING STABILIZATION AND FRICTION COATING

Julius S. Csabai, 22 Normandy Road, Baie D'Urfe, Quebec, Canada

Filed Jun. 21, 1995, Ser. No. 493,077
Claims priority, application Canada, Jul. 4, 1994, 2127324
Int. Cl.[6] A63B *51/02*
U.S. Cl. 273—73 D **19 Claims**



10. A method of stabilizing a sport racket strung with synthetic strings and imparting thereto additional friction, which comprises:

(a) roughening the strings a least in a main hitting area of the racket;

(b) coating the roughened strings with a polymer capable of stabilizing said strings and imparting thereto additional friction; and

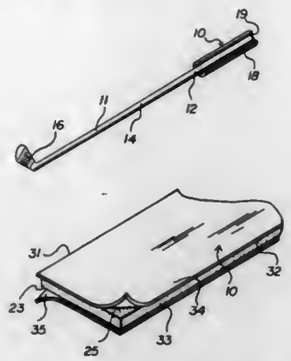
(c) curing said polymer on said strings so as to produce an essentially permanent polymeric coating at least in said main hitting area of the racket.

5,570,884

ERGONOMIC UNDERLAY FOR HAND GRIPS

Dan Carps, 25365 Leestock, Farmington Hills, Mich. 48336

Filed Apr. 10, 1995, Ser. No. 418,560
Int. Cl.[6] A63B *53/16*
U.S. Cl. 473—298 **1 Claim**



1. For use with a golf club having a standard hand grip, an underlayment comprises a foamular sheet having an inner and outer adhesive surface, said inner surface adhering to the handle shaft of said golf club, whereas said outer surface adhering to, and receiving of said standard hand grip, wherein said foamular sheet further comprises:

a plurality of pre-cut segments separated by a release paper sheet, said segments adapted for adhesion to the radius of a golf club handle, wherein said segments comprise a plurality of thicknesses for customizing the circumference of said golf club handle to the hand of a golfer while using one standard sized outer handle grip;

and;

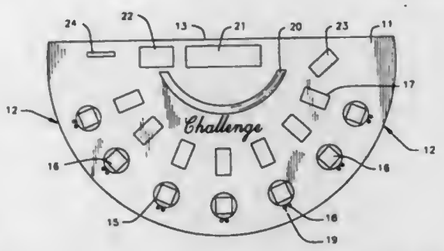
wherein said pre-cut segments comprise a plurality of densities and outer surface contours for further customizing said golf club handle, said outer hand grip resiliently conforming to said pre-cut segments to facilitate a desired ergonomic fit to the hand of said golfer.

5,570,885

ELECTRONIC GAMING SYSTEM AND METHOD FOR MULTIPLE PLAY WAGERING

Marvin A. Ornstein, 605 Porter St., Ocean Springs, Miss. 39564

Filed Feb. 21, 1995, Ser. No. 391,051
Int. Cl.[6] A63F *1/00;1/18;5/00;* **G07F** *17/34*
U.S. Cl. 463—27 **41 Claims**



2. An apparatus for playing a game of chance, having a plurality of plays wherein a win or a loss is determined after each play of the game, comprising:

means for receiving at least one betting member representing a monetary amount of a bet placed by a player prior to commencement of the player's first of a consecutive number of plays of the game;

bet selector means for selecting a number of consecutive play wins chosen by the player from among a set number of choices;

means or determining a payoff based upon a number of consecutive play wins and the monetary amount of the bet selected by the player;

means for accumulating a number of consecutive play wins of the game achieved by the player; and

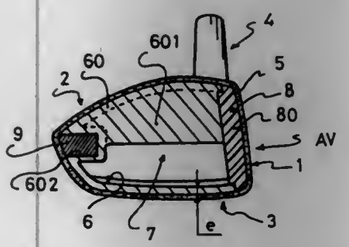
means responsive to said bet selector means and accumulating means for visually indicating to the player the number of consecutive play wins chosen by the player, the payoff based upon the number of consecutive play wins and the monetary amount of the bet selected by the player, and the number of actual consecutive play wins achieved by the player, and for providing a consecutive play win indication when the selected number of wins is equal to the number of consecutive play wins achieved by a player.

5,570,886

GOLF CLUB HEAD HAVING AN INNER SUBASSEMBLY AND AN OUTER CASING AND METHOD OF MANUFACTURE

Jean-Pierre Rigal, La Balme-de-Sillingy, and Benoît Vincent, Annecy-le-Vieux, both of France, assignors to Taylor Made Golf Company, Inc., Carisbad, Calif.

PCT No. PCT/FR93/00195, § 371 Date Sep. 30, 1994, § 102(e) Date Sep. 30, 1994, PCT Pub. No. WO93/19816, PCT Pub. Date Oct. 14, 1993
PCT Filed Feb. 26, 1993, Ser. No. 307,799
Claims priority, application France, Apr. 1, 1992, 92 04189
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—345 **23 Claims**



1. A golf club head comprising:

an inner subassembly defining an inner space, said inner subassembly comprising:

a rigid inner shell made of a low density material, said inner shell having an inner space and a forwardly facing opening; and

an impact-resistant sealing element cooperating with said inner shell for closing said opening of said inner shell, said sealing element comprising an inner wall for supporting a ball-striking surface of the club head; and

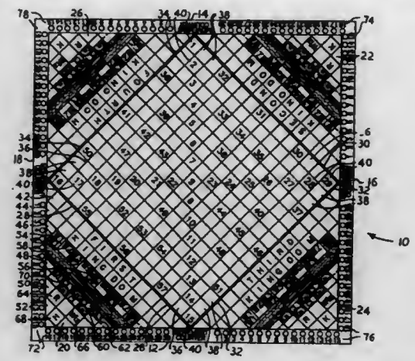
an outer casing made of a plastic material, said outer casing at least partially covering said inner sub-assembly, said outer casing comprising the ball-striking surface, wherein between said ball-striking surface and said impact-resistant sealing element, said outer casing comprises only a single layer of plastic material.

5,570,887

APPARATUS AND METHOD OF PLAYING A MEDIEVAL MILITARY COMFLICT BOARD GAME FOR TWO TO FOUR PLAYERS

George Christie, Jr., 79 Griswold Dr., Griswold, Conn. 06351

Filed May 22, 1995, Ser. No. 446,477
Int. Cl.[6] A63F *3/02*
U.S. Cl. 273—261 **20 Claims**



1. A board game apparatus for a plurality of players, comprising:

a substantially square game board having a square central area divided into a matrix of playing positions, said matrix of playing positions oriented diagonally relative to the sides of the square game bard wherein the lines defining the matrix of playing positions intersect the sides of the game board at a diagonal, said central area having a first, second, third, and fourth corner, and a first, second, third, and fourth triangularly shaped individual playing area respectively disposed at said first, second, third, and fourth corner of said board, and a substantially square common playing field diagonally disposed across said central area of said board wherein the lines bounding the square common playing field intersect the sides of the game board at a diagonal, said square common playing field, extending between each said individual playing area, said first, second, third and fourth individual playing areas each having indicia thereon distinguishing the individual playing areas from the square common playing field and;

a first, second, third, and fourth set of playing pieces respectively corresponding to each said first, second, third, and fourth individual playing area, with each said set comprising a plurality of playing pieces and at least some of said playing pieces within each said set having a different movement pattern from others of said playing pieces on said board, whereby;

players alternatingly move said playing pieces from respective said individual playing areas and across said common playing field of said board in accordance with game rules, and attempt to capture and depose said playing pieces of each other said set from said board to win the game.

5,570,888

THUMP FOOTBALL GAME AND APPARATUS

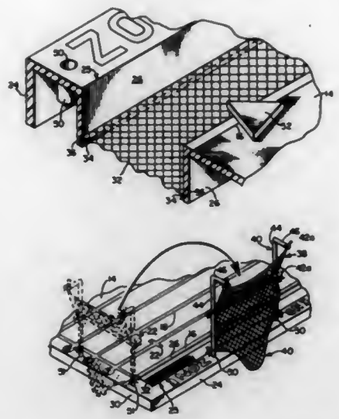
Calvin L. Robinson, 103 Bennett Lake Rd., Monroe, La. 71203, and Dewayne Robinson, 1789 Hermon Johnson Rd., Monroe, La. 71202

Filed Aug. 3, 1995, Ser. No. 510,825
Int. Cl.[6] A63F *3/00;7/06*
U.S. Cl. 273—317.5 **3 Claims**

1. A finger football game device comprising:

a. a generally rectangular game board having a generally planar playing surface and a simulated football,

b. a football field marked on said planar playing surface, said football field including a plurality of parallel yard lines, two



parallel sidelines numbered and placed at five unit intervals, two parallel goal lines adjacent to said yard lines, two end zones, and two hash marks located on each of said yard lines, each of said hash marks being equidistant from the closest sideline thereto at an approximate distance from the closest sideline of one-fourth of the total length of said yard line on which said hash mark is located,

c. a trough means located adjacent to each of said goal lines for catching said simulated football, said two trough means comprising a rectangular opening having one longer edge located adjacent to one of said goal lines, said trough means having a net means connected to the bottom thereof for catching said simulated football, said trough means having four sides connected perpendicularly to the bottom of said game board around the periphery of said rectangular opening,

d. two goal post means movably connected to said planar surface, both of said two goal post means comprising an "H" shaped rigid goal post, and a net connected thereto for preventing Said simulated football from passing therethrough, and

e. eight cylinder means connected thereto for receiving and holding said goal post means, two of said cylinder means being located in each of said end zones on the side of said trough opposite said goal line and four of said cylinder means being located on the longer sides of said game board adjacent to said parallel sidelines, whereby said cylinder means on the longer sides of the game board receive the goal post means when not in use.

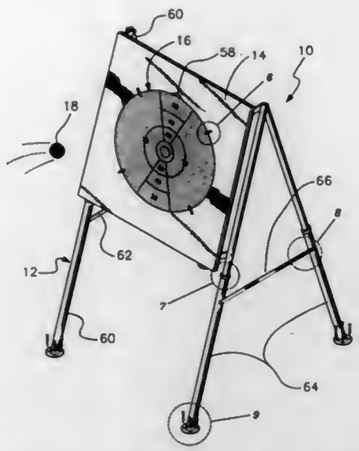
5,570,889
HOOK AND LOOP BALL TARGET
Paul Tyrer, P.O. Box 38875, Howick, Auckland, New Zealand
Filed Sep. 7, 1995, Ser. No. 524,581
Int. Cl.[6] A63B *67/00*; F41J *1/10*
U.S. Cl. 273—346 **1 Claim**

1. A hook and loop ball target comprising:

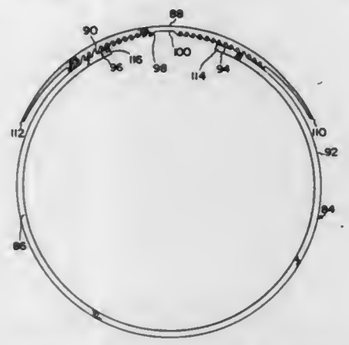
a support stand positionable upon a ground surface, the support stand comprises a first pair of legs pivotally mounted together at upper ends thereof, a first transverse brace removably mounted between medial portions of the first pair of legs, a second pair of legs pivotally mounted together at upper ends thereof, a second transverse brace removably mounted between medial portions of the second pair of legs, each of the legs having a base flange mounted at a lower end thereof by a securing pin, a plurality of fasteners directable through apertures in the base flange and into the ground surface for securement of the support stand relative thereto;

a back board removably mounted to the support stand between one of the first pair of support legs and one of the second pair of legs so as to support the pair of legs in a substantially spaced and parallel orientation relative to one another;

a target mounted to a front face and a rear face of the back board and including hook and loop material cooperable with a ball having a hook and loop material covering extending thereabout so as to permit removable securement of the ball to the target upon impacting of the ball against the target.



5,570,890
EXPANDABLE COMPRESSION RING
James W. Skinner; William O. Skinner; Fouad M. Deeb; Ronald W. Neuhaus, all of Fort Wayne, and Michael R. Miller, Churubusco, all of Ind., assignors to Press Seal Gasket Corporation, Fort Wayne, Ind.
Division of Ser. No. 30,816, Mar. 12, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 473,258
Int. Cl.[6] F16J *15/00*
U.S. Cl. 277—101 **9 Claims**



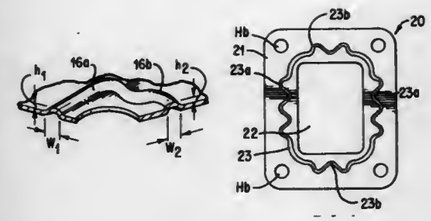
1. A compression ring for exerting an outwardly, radially directed force on an inner surface of a gasket to compress the gasket into sealing engagement with a wall of an opening, comprising:

a first portion having opposite ends and made from a resiliently flexible material;

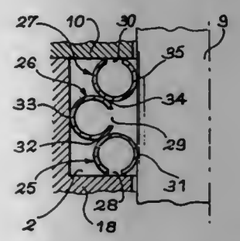
a second portion made from a resiliently flexible material;

a pair of abutments integrally formed on said first portion for engagement with a force exerting means for moving said first portion to an expanded position; and

locking structures integrally formed on each of said first and second portions which engage and cooperate together to lock said first and second portions together to form a ring, said locking structures comprising a plurality of projections on each of said opposite ends of said first portion, said second portion including first and second tapered ends which taper to a feather edge, said first and second tapered ends extending substantially beyond ends of said first portion, along an outer surface thereof when said first and second portions are locked together to form the ring, whereby exterior surfaces of said first and second portions form a substantially continuous and uninterrupted circumferential surface that exerts a generally uniform pressure on the inner surface of a gasket.



5,570,891
TORIC JOINTS HAVING AN ALTERNATING DIAMETER FOR USE IN A PACKING BOX
Raymond De Villepoix, Donzere, and Christian Rouaud, Bourg Saint-Andeol, both of France, assignors to Commissariat a l'Energie Atomique, France
Filed Jun. 7, 1995, Ser. No. 487,451
Claims priority, application France, Jun. 14, 1994, 94 07250
Int. Cl.[6] F16J *15/28*
U.S. Cl. 277—117 **12 Claims**



1. A packing box disposed around a rod engaged in a solid element, comprising; a housing fitted around a length of the rod, a set of at least three toric joints stacked in the direction of the rod in the housing, and a rammer attached to the solid element so as to press the joints in the housing, wherein some of the joints have internal faces which contact the rod, and the remaining joints have outer faces which contact a peripheral edge of the housing, and wherein the joints having internal faces and the joints having outer faces are stacked alternately and rest on one another via conical-shaped surfaces, and wherein the joints are completely metallic and three of the joints stacked successively have sections whose centers form an angle of between 110° and 140°.

5,570,892
METAL GASKET WITH A BEAD HAVING PRESSURE ADJUSTING PORTION
Tsunekazu Udagawa, Ichikawa, Japan, assignor to Ishikawa Gasket Co., Ltd., Tokyo, Japan
Filed Jun. 27, 1995, Ser. No. 495,348
Int. Cl.[6] F16J *15/08*
U.S. Cl. 277—235 B **9 Claims**

1. A metal gasket for an internal combustion engine situated between two engine parts, comprising,

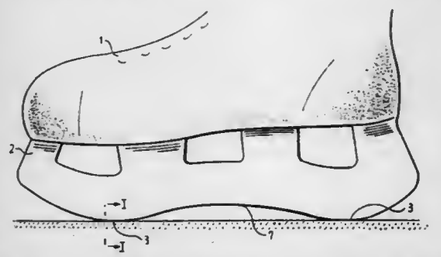
a metal plate for constituting a metal gasket,

at least one fluid hole situated in the metal plate,

a plurality of bolt holes situated in the metal plate for allowing bolts to pass therethrough, and

a bead formed in the metal plate to completely surround the fluid hole for sealing the same, said bead having a waving portion and a non-waving portion, said waving portion being formed of only said bead and having at least one curved portion facing and approaching the fluid bole, said waving portion curving differently from a contour of the fluid hole and being formed at a portion where movements in compressing directions of the gasket are large when the engine is operated, said waving portion having a covering area by the bead wider than that at the non-waving portion so that the waving portion can support pressure to reduce creep relaxation and wherein said bead consists essentially of one bead continuously surrounding the fluid hole without a branch.

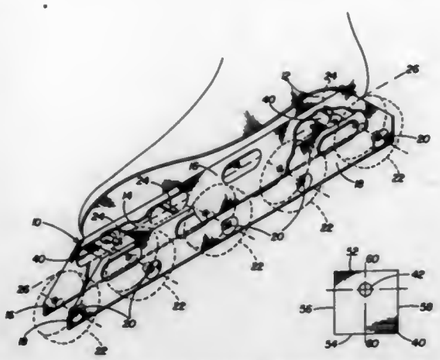
5,570,893
BLADE OF AN ICE SKATE
Jerker Swande, Stockholm, Sweden, assignor to Orebroskenan Aktiebolag, Orebro, Sweden
Filed Jul. 7, 1995, Ser. No. 481,493
Claims priority, application Sweden, Jan. 29, 1993, 9300293
Int. Cl.[6] A63C *1/30*
U.S. Cl. 280—11.18 **9 Claims**



1. An ice-skate blade comprising a central main runner (5) and at least one side-runner (4) on each side of the main runner, wherein the side-runners are arranged so as to make contact with the surface of the ice solely when the blade (2) is inclined so that the angle defined by the blade with the ice is less than 90° by a predetermined value, characterized in that the main runner (5) has in its longitudinal extension a discontinuous glide surface which includes at least one part (7) which is not intended to make contact with the ice and which is delimited by two glide-parts (3) intended for coaction with the ice.

5,570,894
DEVICE FOR LINEAR SKATE PREVENTING UNDESIRABLE SHIFTING OF WHEEL SUPPORT
Ernest E. Brandner, Couderay, Wis., assignor to Jeannette L. Brandner, Couderay, Wis.
Filed May 25, 1995, Ser. No. 452,651
Int. Cl.[6] A63C *17/04*
U.S. Cl. 280—11.22 **7 Claims**

1. A linear skate utilizing an elongate, channel-shaped structural member for supporting a plurality of longitudinally aligned wheels, said channel-shaped member being adapted to be mechanically



affixed to a spaced pair of threaded fastening means extending from the underside of a boot, said channel member comprising an elongate base portion of constant width, along each edge of which a side member extends, said side members forming approximately a right angle with said base portion, and said side members having spaced holes therein for supporting a plurality of wheels disposed in a spaced relationship along the longitudinal centerline of said base portion, at least two mounting holes disposed in a spaced apart relation in said base portion, with the spacing of said mounting holes substantially coinciding with the spacing of the threaded fastening means utilized with the boot, each of said mounting holes in said base portion being elongate in a direction orthogonal to the longitudinal centerline of said base portion, and a square washer having sides slightly less wide than the dimension across said base portion of said channel member, said washer having an offset hole therein, of a diameter slightly greater than the diameter of the threaded fastening means operatively associated with the boot, said square washer, when said offset hole has been placed over a threaded fastening means and said washer then held in place by the fastening means, serving to effectively prevent said channel member from shifting away from a desired relationship to the boot, along the respective elongate hole.

5,570,895

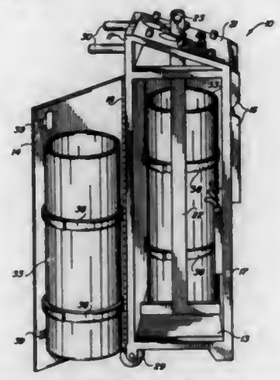
REMOTE AIR TRANSPORT TRUCK

Patrick O. McCue, 2108 W. Virginia Ave., Phoenix, Ariz. 85009; Nedward B. Dunnington, 20512 W. Lower Buckeye Rd., Buckeye, Ariz. 85326, and David Rozzen, 820 E. Vineyard, Phoenix, Ariz. 85040

Filed Jan. 30, 1995, Ser. No. 380,290

Int. Cl.[6] B62B *1/16*

U.S. Cl. 280—47.19 **6 Claims**



1. A truck for transporting air under pressure to a remote site for rescue purposes comprising:

a truck,

said truck comprising a frame having front, back, top, bottom and a pair of side panels attached thereto for defining an elongated hollow enclosure,

said side panels being hingedly mounted to said frame for moving said side panels to similar open positions to expose common planar surfaces thereof,

a pair of air reservoirs one mounted on each of said common planar surfaces,

one of said reservoirs furnishing air under pressure to a rescue person for breathing purposes and at the same time furnishing air under pressure from the other of said reservoirs to the rescue person for power tool operation,

at least a pair of runners spacedly mounted to extend longitudinally along said back panel of said enclosure,

a roller journalled on said frame along the bottom edge of said bottom panel, and

a lifting bar connected to said frame to extend longitudinally and axially thereof along a longitudinal axis and extending outwardly of said top panel for use in moving said truck to and from said site.

5,570,896

BICYCLE REAR WHEEL SUSPENSION

Benjamin C. Collins, High Mountain View, High Newton, Grange-Over-Sands, Cumbria, England

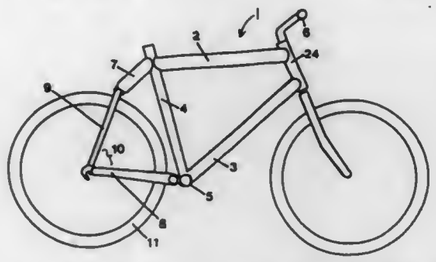
PCT No. PCT/GB92/01176, § 371 Date Dec. 28, 1993, § 102(e) Date Dec. 28, 1993, PCT Pub. No. WO93/00252, PCT Pub. Date Jan. 7, 1993

PCT Filed Jun. 29, 1992, Ser. No. 170,212

Claims priority, application United Kingdom, Jun. 28, 1991, 9113964

Int. Cl.[6] B62K *25/10*

U.S. Cl. 280—284 **8 Claims**



1. A rear wheel suspension system for a bicycle, where the bicycle includes a bicycle frame comprising a main frame portion and a rear frame portion having a rear frame pivot in the region of a bottom bracket shell, wherein the rear wheel suspension system comprises:

a shock absorbing system between a seat member of the main frame portion and the rear frame portion including

(a) an inner member mounted on one of the main frame portion and the rear frame portion and an outer member about said inner member whereby said inner member is generally axially slidable in said outer member which is mounted on the other of the rear frame portion and the main frame portion, whereby the rear frame portion moves arcuately about said rear frame pivot and the inner and outer members move substantially axially over one another, when a shock loading is received on the rear frame portion and the seat member, the inner and outer members have two bearing surfaces on their external and internal opposed sides respectively, these bearing surfaces allowing substantially axial movement of the inner member within the outer member but precluding twisting of the inner and outer member and the rear frame portion to which one of the inner and outer members is attached, thereby providing a torsion lock on the inner and outer members and therefore a torsion lock on both the pivoting rear frame portion and suspension system;

(b) a shock absorber mounted between said seat member and said rear frame portion;

(c) a stepload system wherein a stepload pin is located and fixed through the outer member, a stepload slot in said inner member in which said step pin moves whereby the limit of the inner member's slot prevents the stepload pin and subsequently the outer member and the rear frame portion from fully returning to a position where the shock absorber is unloaded, which results in a steploading of the shock absorber and suspension system such that only a shock loading on the rear frame portion greater than the steploading permits suspension system articulation; and

(d) an axial adjusting screw of the length of said stepload slot incorporated in the inner member, whereby movement of the adjusting screw decreases and increases the length of the stepload slot thereby respectively increasing and decreasing the steploading on the shock absorber and suspension system.

5,570,897

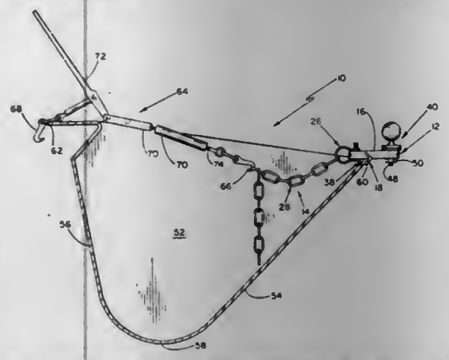
PORTABLE QUICK HITCHING DEVICE

Lloyd G. Wass, 1670 Blackhawk Cove, Eagan, Minn. 55122

Filed Dec. 21, 1994, Ser. No. 360,607

Int. Cl.[6] B60D *1/52*

U.S. Cl. 280—495 **20 Claims**



1. A hitching device detachably connectable to a bucket on a vehicle, the bucket having a front side and a back side, the hitching device comprising:

a mount for engaging the front side of the bucket, the mount having a connection for receiving a trailer; and

a brace attached to the mount and attachable to the back side of the bucket for securing the mount to the front side of the bucket, wherein the mount is readily detachable from the brace.

5,570,898

FOLDING TRAILER

Michael Albert, Bradenton, Fla., assignor to Myco Trailers, Inc, Bradenton, Fla.

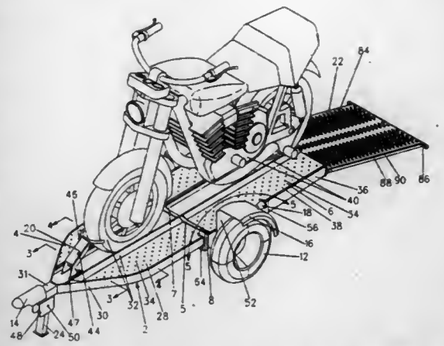
Filed Feb. 17, 1995, Ser. No. 390,497

Int. Cl.[6] B62B *1/00*

U.S. Cl. 280—656 **13 Claims**

1. A folding trailer for carrying a motorcycle, said trailer comprising a front deck having a rear edge thereof extending generally transversely of said trailer;

a rear deck having a front edge thereof extending generally transversely of said trailer and generally parallel to said front deck rear edge;



hinge means including a single pivot axis and connecting said front deck to said rear deck, such that said trailer folds around said single pivot axis between an extended position in which a defined upwardly facing surface of said front deck and a defined upwardly facing surface of said rear deck are generally coextensive, and a folded position in which said defined upwardly facing surface of said front deck and said defined upwardly facing surface of said rear deck are positioned generally facing toward one another;

an axle attached to said rear deck and comprising a first end and a second end, said axle being mounted generally transversely of said trailer and rearwardly of said hinge means; and

a first road wheel attached to said axle first end and a second road wheel attached to said axle second end, such that the trailer is designed to move generally normal to said axle.

5,570,899

AIR BAG DEVICE FOR PROTECTING AN OCCUPANT

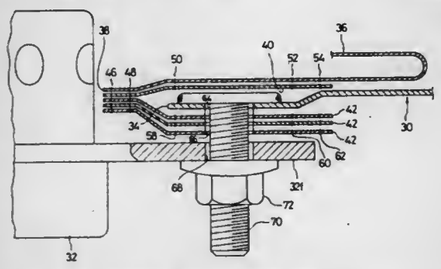
Yasuhiro Matsuo, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed Jun. 9, 1995, Ser. No. 489,288

Claims priority, application Japan, Jun. 13, 1994, 6-130332

Int. Cl.[6] B60R *21/16*

U.S. Cl. 280—728.2 **7 Claims**



1. An air bag mounting structure comprising:

an air bag mounting plate having a through opening,

an inflator disposed in the through opening, said inflator having a flange disposed under the air bag mounting plate around a periphery of the through opening;

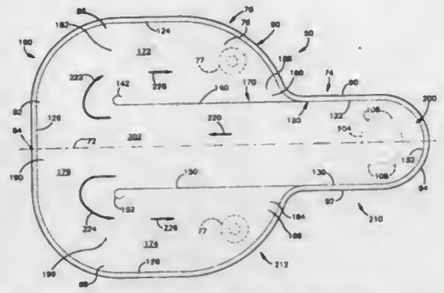
an air bag having a receiving opening in a rear portion thereof for receiving said inflator therein, said air bag being disposed on a front surface of said air bag mounting plate;

a mounting piece connected to a periphery of said receiving opening of said air bag, said mounting piece being disposed between a rear surface of said air bag mounting plate and an upper surface of the flange of the inflator; and

fastening means piercing the air bag mounting plate, the mounting piece and the flange, said fastening means connecting the air bag mounting plate and the flange so that the mounting

piece is firmly fixed between the air bag mounting plate and the flange while the inflator is attached to the air bag mounting plate.

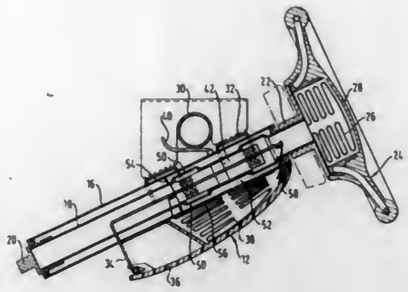
5,570,900
SIDE IMPACT HEAD AIR BAG
Louis R. Brown, Oxford, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed May 23, 1995, Ser. No. 448,202
Int. Cl.[6] B60R *21/22;21/24;21/28*
U.S. Cl. 280—729 **34 Claims**



20. A vehicle occupant safety apparatus comprising:
an inflatable vehicle occupant restraint having a deflated condition and an inflated condition, said inflatable restraint, when inflated, helping to protect a vehicle occupant in the event of an impact to a side of the vehicle, the impact being of a magnitude sufficient to require protection of the vehicle occupant, said inflatable restraint inflating into a space between the vehicle occupant and a side of the vehicle; and
an inflator for, when actuated, supplying inflation fluid to said inflatable restraint to inflate said inflatable restraint from the deflated condition to the inflated condition;
said inflatable restraint having a body portion and having an inflation fluid directing channel portion extending into said body portion to direct inflation fluid into said body portion;
said body portion of said inflatable restraint, when inflated, having an inner end portion located between said inflator and an outer end portion of said body portion;
said channel portion of said inflatable restraint being connected with said inflator to receive inflation fluid from said inflator;
said channel portion having a terminal outlet which is disposed intermediate said inner and outer end portions of said body portion for directing inflation fluid from said inflator into said body portion to inflate said body portion.

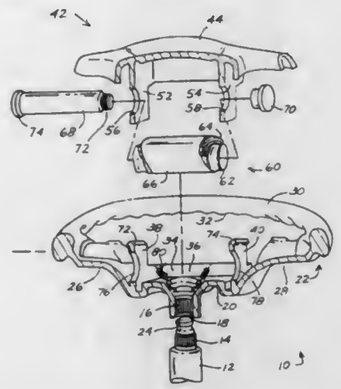
5,570,901
OCCUPANT RESTRAINING SYSTEM FOR THE DRIVER'S SIDE OF A VEHICLE
Heinz Fyrainer, Waldstetten, Germany, assignor to TRW Repa GmbH, Alfdorf, Germany
Filed May 19, 1995, Ser. No. 445,418
Claims priority, application Germany, May 27, 1994, 44 18 628.2
Int. Cl.[6] B60R *21/22*
U.S. Cl. 280—730.1 **6 Claims**

1. A combined driver restraint for a vehicle
an inflatable gas bag diposed in a steering wheel of the vehicle;
a knee impact protector with an inflatable cushion; and
a gas generator;
said vehicle having a steering shaft, said steering shaft having a tubular hollow shaft section, said gas generator being contained in a chamber defined inside said tubular hollow shaft section of said steering shaft;



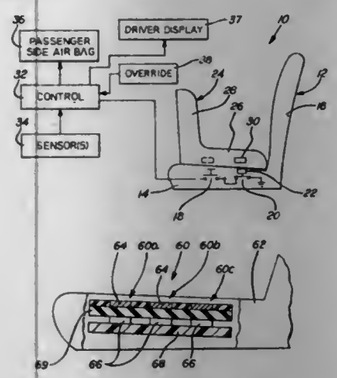
said gas and said inflatable cushion having inflation openings connected to said chamber.

5,570,902
SNAP-ON STEERING WHEEL WITH INTEGRAL AIRBAG HOUSING
Darin J. Turner, Warren; Gregory N. Goestenkors, Waterford, and Daniel G. Zelenak, Lake Orion, all of Mich., assignors to AlliedSignal Inc., Morristown, N.J.
Filed May 31, 1995, Ser. No. 456,086
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—731 **19 Claims**



1. A vehicle steering assembly for use with an airbag, comprising:
a steering wheel including a hub, a rim connected to the hub, and an airbag housing formed integrally with the hub, the air bag housing including a pair of flexible flanges extending from the hub, each said flange having an aperture formed therethrough; said hub being adapted for mating with a steering column shaft;
an airbag module assembly including an inflator and a bag pack assembly, and a cover being engagable with said airbag housing for securing the cover to the steering wheel,
the cover including a pair of legs with apertures formed therethrough for receiving the inflator.

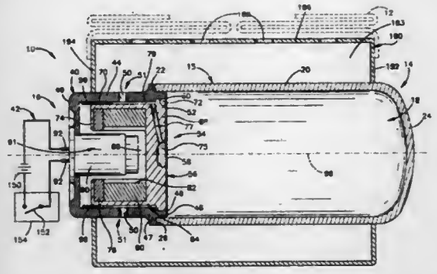
5,570,903
OCCUPANT AND INFANT SEAT DETECTION IN A VEHICLE SUPPLEMENTAL RESTRAINT SYSTEM
Jack B. Meister, Convent Station, N.J., and Bruce L. Walcott, Lexington, Ky., assignors to Echlin, Inc., Branford, Conn.
Filed Feb. 21, 1995, Ser. No. 391,061
Int. Cl.[6] B60R *21/22;21/32*
U.S. Cl. 280—735 **15 Claims**



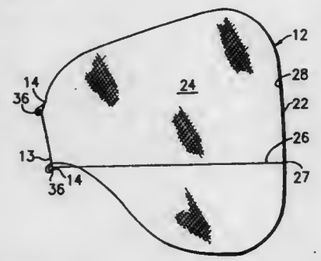
12. An automotive vehicle supplemental restraint system that includes: an air bag positioned within a vehicle opposite a predetermined vehicle seat position, means for activating the air bag in the event of vehicle impact, and deployment control means for preventing activation of the air bag when the seat is unoccupied or occupied by a rear-facing infant seat, said deployment control means comprising:
first means for disposition at said predetermined vehicle seat position for sensing occupancy of said seat position and for indicating disposition of a rear-facing infant seat at said predetermined vehicle seat position,
second means coupled to said first means for inhibiting deployment of said air bag when a rear-facing infant seat is disposed at said predetermined vehicle seat position, and otherwise enabling deployment of said air bag when said predetermined vehicle seat position is occupied as indicated by said first means and said first means does not indicate a rear-facing infant seat at said predetermined vehicle seat position,
third means for indicating to a vehicle operator that activation of said air bag has been inhibited by said second means, and
fourth means for permitting the vehicle operator to override said second means and enable activation of said air bag independent of said first means.

5,570,904
AIR BAG INFLATOR WITH MOVABLE CONTAINER
Jess A. Cuevas, Scottsdale, Ariz., assignor to TRW Inc., Lyndhurst, Ohio
Continuation of Ser. No. 304,487, Sep. 12, 1994, abandoned. This application Feb. 16, 1996, Ser. No. 602,270
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—737 **21 Claims**

1. An apparatus for use in inflating an air bag, said apparatus comprising:
first container means for defining a first chamber filled with inflation fluid;
second container means movable within said first chamber and for defining a second chamber, said second chamber containing ignitable material;
igniter means for igniting said ignitable material in said second chamber and developing a thrust to propel said second container means within said first chamber in a predetermined direction and producing combustion products including heat for heating and pressurizing said inflation fluid in said first chamber to increase the temperature and pressure of said inflation fluid as said second container means is being propelled within said first chamber in said predetermined direction;
means for directing said inflation fluid from said first chamber to the air bag; and
said second container means including tab means movable from a retracted condition to an extended condition and for, when in the extended condition, engaging said first container means to resist movement of said second container means in a direction opposite said predetermined direction.



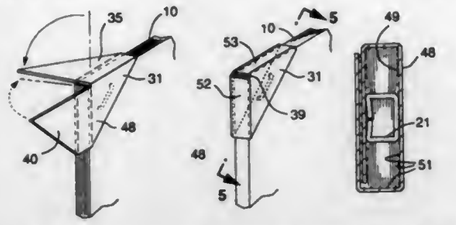
5,570,905
AIRBAG TETHER ATTACHMENT
David J. Dyer, Kaysville, Utah, assignor to Morton International, Inc., Chicago, Ill.
Filed Mar. 28, 1995, Ser. No. 412,055
Int. Cl.[6] B60R *21/20*
U.S. Cl. 280—743.2 **18 Claims**



1. An inflatable airbag for use in an airbag module comprising a canister containing an inflator for generating inflation gas for inflating the airbag, said airbag comprising a plurality of fabric panels joined to form walls of an inflatable airbag, peripheral edges of said fabric panels defining an airbag mouth for entry of said inflation gas, means at said peripheral edges for attaching the mouth of said airbag to the canister, said airbag further comprising a tether inside said inflatable airbag, said tether having opposed first and second ends, said first end of said tether attached to one of said fabric panels at a point away from the mouth of the airbag, said second end of said tether defining a loop housing a retaining rod having at least one substantially planar retaining rib extending longitudinally along and radially outward from said retaining rod, said second end of said tether and said retaining rod retainable in a retaining rod-receiving and retaining means on said canister.

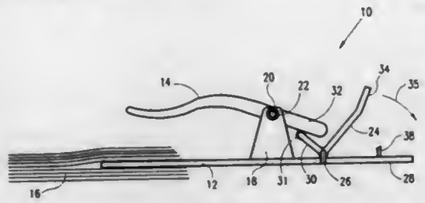
VOL 1192 ISS 1 NO 5 1996 UMI

5,570,906
CORNER BIND APPARATUS AND METHOD
Joe D. Giulie, 1170 E. Meadow Dr., Palo Alto, Calif. 94303
Filed Apr. 25, 1994, Ser. No. 232,715
Int. Cl.[6] B42D *1/106*
U.S. Cl. 281—42 13 Claims



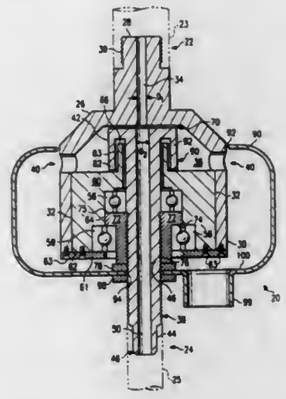
1. A corner bind apparatus for binding together a plurality of sheets, said sheets having front and back sides and wherein said sheets have one corner aligned with each other, comprising:
anti-shear means for application to the aligned corner region of each sheet to prevent said sheets from sliding relative to each other, and
anti-peel means for application to the aligned corner after application of said anti-shear means, said anti-peel means being adapted to extend fully around and grip the aligned corner to resist said sheets separating by at least one sheet being lifted off the remaining sheets wherein said anti-peel means comprises a planar body and first and second planar tabs connected to said body, said body and said first and second tabs having upper and lower surfaces and wherein said body is adapted to be applied to said front side of said plurality of sheets at said aligned corner and said first and second tabs are adapted to extend around the back side of said aligned corner whereby said first tab overlaps said second tab on said back side of said aligned corner and
adhesive means carried by said lower surfaces of both of said tabs and said body so that said body and both tabs will adhere to and form a continuous surface around said aligned corner.

5,570,907
PAPER GRIPPING DEVICE
Aviva Dromi, P.O.B. 72, Hofit; David Blum, Hadera, and Abraham Pick, Kibbutz Moran, all of Israel, assignors to Aviva Dromi, Hofit, and Esther Blum, Hadera, both of Israel
Filed Nov. 14, 1994, Ser. No. 338,849
Claims priority, application Israel, Nov. 15, 1993, 107618
Int. Cl.[6] B42F *13/42;9/00*
U.S. Cl. 281—45 9 Claims



1. A resilient sheet clamping device for retaining a plurality of stacked sheets in a predetermined orientation including a generally planar base member defining a first clamping component and supporting a generally curvilinear second clamping component thereabove for movement between clamping and unclamping positions; said second clamping component including a sheet engaging portion and an actuating portion including a first locking means; means for applying actuating forces to said actuating portion mounted on said base and responsive to the application of actuating forces to move said second clamping component toward said first clamping component and into clamping engagement with said sheets which creates a clamping force; and second locking means carried on said first clamping component for securing said clamping components in locked relation when interengaged with said first locking means.

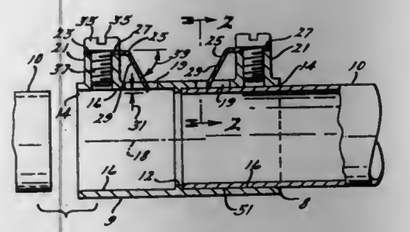
5,570,908
LOW PARTICULATE ROTARY UNION
Michael B. Merritt, Celina, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 218,492, Mar. 24, 1994, abandoned.
This application Jun. 1, 1995, Ser. No. 456,411
Int. Cl.[6] F16L *55/00*
U.S. Cl. 285—14 32 Claims



1. A rotary union comprising:
a pedestal having a first longitudinal bore therethrough for transmitting fluid through the pedestal, the pedestal having a top portion and the first bore having an opening onto said top portion;
a housing having a second longitudinal bore therethrough for transmitting fluid through the housing; the second bore having an opening opposite the first bore opening, with the diameter of the first bore opening being greater than the diameter of the second bore opening; and
a support structure coupling the housing and the pedestal to allow the housing to rotate relative to the pedestal, with a gap formed between the top portion of the pedestal and the housing;
the support structure being disposed below the gap with respect to gravity; and the housing being disposed relative to the pedestal to allow fluid communication between the first and second bore openings, across the gap, with a portion of the fluid flowing out from the gap over the pedestal top portion.

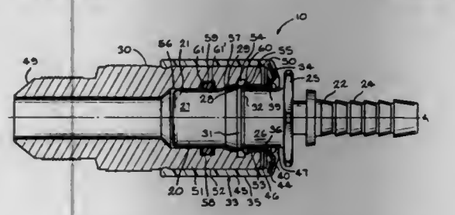
5,570,909
CONDUIT CONNECTION
Russell T. Reynolds, Jr., St. Clair Shores, Mich., assignor to ANR Manufacturing, Inc., St. Clair Shores, Mich.
Continuation-in-part of Ser. No. 871,068, Apr. 20, 1992, abandoned. This application Sep. 14, 1994, Ser. No. 306,167
Int. Cl.[6] F16L *55/00*
U.S. Cl. 285—90 18 Claims

1. A connector for a rigid tubular electrical conduit, comprising an annular socket member that includes a tubular sidewall having an external side surface and an internal cylindrical side surface defining a socket axis, said internal side surface being adapted to have a slidable slip fit on a tubular electrical conduit inserted into



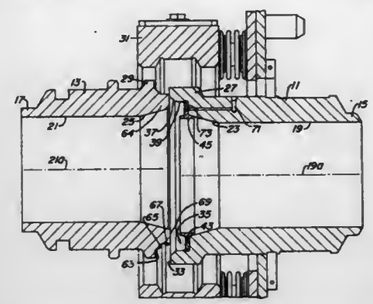
the socket member; said socket member having an internal annular shoulder for limiting the insertional motion the tubular conduit; a slot formed in said tubular wall in near proximity to the internal shoulder; an external boss projecting from the external surface of the tubular wall to form a raised side surface; said external boss containing a threaded opening perpendicular to said socket axis accepting the shank portion of an adjustable mounting means; a spring leaf detent having a flat mounting portion seated on said raised side surface being secured to said external boss by said adjustable mounting means and a deflectable arm portion extending angularly from said mounting portion through said slot; said deflectable arm portion having a free end shaped to a sharpened V shape for engaging an electrical conduit inserted into the socket member.

5,570,910
COUPLING ASSEMBLY
John L. Highlen, Rives Junction, Mich., assignor to Aeroquip Corporation, Maumee, Ohio
Filed Aug. 18, 1995, Ser. No. 516,954
Int. Cl.[6] F16L *37/088*
U.S. Cl. 285—308 19 Claims



1. A coupling assembly for connecting two members comprising:
a split locking ring having a first end and a second end, said first and second ends being aligned to permit abutting engagement;
a first member extending along an axis from a forward end toward a rearward portion and having an exterior surface;
a rib extending outwardly from said exterior surface of said first member, said rib including a ramp tapering in a direction away from said forward end and away from said axis, said rib further including a cylindrical surface substantially parallel to said axis extending rearwardly from said ramp, said rib further including a shoulder tapering away from said forward end and inwardly toward said axis;
a second member having a leading end and a leading portion extending therefrom for receiving said first member, said leading portion having an inner surface;
a locking ring receiving groove defined by said inner surface of said second member; and
a locking ring retaining groove defined by said inner surface of said second member, said retaining groove adjoining said receiving groove; whereby upon insertion of said first member into said second member, said split locking ring travels up said ramp into said locking ring receiving groove, over said cylindrical surface and contracts to engage said shoulder and said locking ring retaining groove.

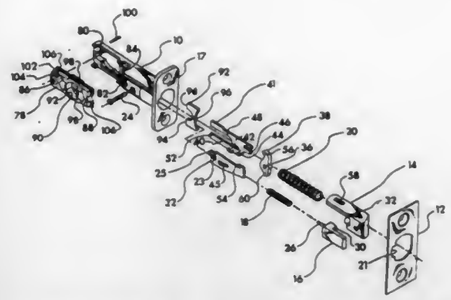
5,570,911
ALIGNMENT SYSTEM FOR HUB CONNECTOR
Gary L. Galle, Houston, Tex., assignor to ABB Vetco Gray Inc., Houston, Tex.
Filed Apr. 10, 1995, Ser. No. 419,346
Int. Cl.[6] F16L *17/06*
U.S. Cl. 285—364 18 Claims



1. In a connector for releasably connecting together two pipes into abutment with each other, wherein the pipes have mateable first and second hub members, each of the hub members having a bore with a longitudinal axis and a seal surface on an outer diameter portion of a metal seal, the improvement comprising:
the first hub member having on an end a concentric recess encircled by a face which is perpendicular to the longitudinal axis, the first member having a gross tapered surface intersecting the face, extending into the recess and being formed at an angle relative to the longitudinal axis, the first hub member having a fine tapered surface formed at a smaller angle relative to the longitudinal axis than the angle of the gross tapered surface, the fine tapered surface intersecting the gross tapered surface and extending farther into the recess;
the second hub member having a protruding guide member having an end and an external fine tapered surface that intersects and extends away from the end at the same angle relative to the longitudinal axis of the second hub member as the angle of the fine tapered surface of the first hub member, the external fine tapered surface first contacting the gross tapered surface of the first hub member to decrease misalignment when the hub members are brought together while misaligned, then mating with the fine tapered surface of the first hub member to complete alignment of the hub members; and
a seal carrier for carrying the seal with one of the hub members in a pre-connection position wherein the seal surface is in engagement with one of the seal seats, the pre-connection position and the lengths and angles of the tapered surfaces being selected to prevent contact of any portion of the other of the hub members with the seal until the external fine tapered surface of the guide member is in engagement with the fine tapered surface of the first hub member.

5,570,912
LATCH WITH ADJUSTABLE BACKSET
Richard O. Mullich, Burbank, Calif., assignor to Emhart Inc., Newark, Del.
Filed Mar. 13, 1995, Ser. No. 402,668
Int. Cl.[6] E05C *1/00*
U.S. Cl. 292—1.5 4 Claims

1. An adjustable latch assembly which is to be operated by an operator assembly having a rotatable spindle including a half round actuator and a pair of connection stems which are to be inserted into the adjustable latch assembly, comprising
a forward end and a rearward end
a cover including



a central opening for receiving the half round actuator, said opening having a pair of stop surfaces for limiting clockwise or counterclockwise rotation of the half round actuator and

a stem receiving hole in an end portion remote from said stop surfaces at the rearward end of the assembly,

a housing for supporting said cover for displacement from one backset location to a second backset location,

said housing having

a central hole selectively configured so that said cover central opening will be unobstructed at either backset location,

a first stem hole aligned with said cover hole when said cover is at one of said backset locations,

a second stem hole, which with said first stem hole, will receive the operator stems when said cover is at said one backset location, and

a third stem hole rearwardly spaced from said second stem hole a distance corresponding to the difference between the one and the second backset locations,

a latch-bolt head at the forward end of the assembly,

a retracting assembly operable to displace said latch-bolt head including a displaceable retracting member having rearwardly extending legs for engaging the half round actuator when said cover is at said one backset location, and

a backset converter having rearwardly extending legs and an effective length equal to said difference,

said housing supporting said backset converter for displacement from a retracted position so that when said cover is at said one backset location, the half round actuator can be inserted into said central opening forwardly of said backset converter engaging said retracting member legs to an advanced position against said retracting member so that when said cover is at a second backset position, the half round actuator can be inserted into said central opening rearwardly of and engaging said backset converter legs.

5,570,913

INDEPENDENT DUAL DEADBOLT LOCKING MECHANISM

Marino Puric, 4819 Birchwood, Skokie, Ill. 60077

Continuation-in-part of Ser. No. 248,438, May 24, 1994, Pat. No. 5,472,246. This application Feb. 10, 1995, Ser. No. 386,689

Int. Cl.[6] E05C *1/06*

U.S. Cl. 292—36 **17 Claims**

1. An independent dual locking mechanism for locking doors and windows, comprising:

a first deadbolt and a second deadbolt;

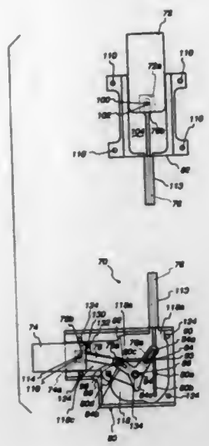
a main housing;

a main pivot element having a first slot and a second slot, said main pivot element being pivotally mounted in said main housing;

separate means linking said first deadbolt to the first slot and linking said second deadbolt to the second slot;

activating means at main pivot element and connected to said main pivot element for locking and unlocking the first deadbolt and the second deadbolt simultaneously using only one method of activation; and

means in said main housing and associated with grooves in said housing for preventing one deadbolt from becoming unlocked when the other interconnected deadbolt is forcibly unlocked or broken.



5,570,914

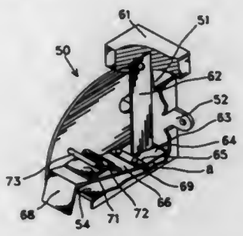
EARTHQUAKE ACTUATED DOOR LATCH

Harry H. Hughes, 786 Trenton Dr., Sunnyvale, Calif. 94087-2253

Filed Jul. 17, 1995, Ser. No. 503,459

Int. Cl.[6] E05C *19/12*

U.S. Cl. 292—130 **3 Claims**



1. A latch for automatically securing a cabinet door during an earthquake comprising:

an enclosure operating as supporting structure for mounting to a cabinet surface;

a catch assembly comprising: an L-shaped rigid strap, a hook attached to a lower extremity of said rigid strap, a lead weight attached to a top end of said rigid strap, wherein said rigid strap pivots at the bend of the L shape, wherein the weighted end is capable of pivoting over a limited arc in any direction within the confines of said enclosure, said catch assembly having two stable positions within the confines of the enclosure: a cocked position, wherein said hook is raised, and, an operated position, wherein said hook is lowered; said catch assembly being so positioned within said enclosure that in said cocked position said hook remains within said enclosure, and in said operated position said hook extends below said enclosure;

a lock as a means of preventing said catch assembly from leaving said operated position without manual assistance;

means for securing said enclosure to a mounting surface;

a V-shaped horizontal slot at the back of said enclosure that interfaces with with said catch assembly as a means of converting sideways motion of said enclosure to forward motion of said catch assembly weight.

5,570,915

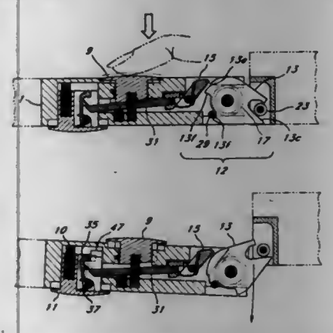
FLUSH-MOUNTED DOOR LATCH

Armond C. Asadurian, Sherman Oaks, Calif., assignor to Adams Rite Sabre International, Glendale, Calif.

Filed Nov. 30, 1993, Ser. No. 159,801

Int. Cl.[6] E05C *3/14*

U.S. Cl. 292—242 **43 Claims**



9. A flush-mounted latch for interior and exterior operation of a door, said latch comprising, in combination:

(a) a spring-loaded latch assembly adapted to retain said door in its closed position when said latch assembly is locked, and further adapted to urge said door to its open position when said latch assembly is released;

(b) first and second push-buttons mounted substantially flush with the interior and exterior surfaces of said door, respectively, each of said first and second push-buttons having a depression stroke and a release stroke; and

(c) a release mechanism responsive to the depression stroke of said first push-button and the release stroke of said second push-button for releasing said latch assembly.

5,570,916

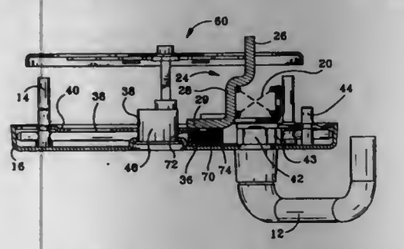
BREAKAWAY LEVER CLUTCH WITH VERTICAL LIFT TRIM

Gerald E. Mader, Indianapolis, Ind., assignor to Von Duprin, Inc., Indianapolis, Ind.

Filed Dec. 27, 1993, Ser. No. 173,282

Int. Cl.[6] B21D *43/10*

U.S. Cl. 292—336.3 **11 Claims**



1. A lever assembly for disengaging an unlocked latch of a lockable door latch assembly, the door latch assembly having an unlocked and a locked position, with vertical rods movable in the unlocked position to release a door latch, and a blocking slide movable to the locked position to prevent movement of the vertical rods and the connected door latch, the lever assembly comprising:

a trim housing supporting a stop plate;

a lever handle rotatably connected to the trim housing;

a cam operably connected to the lever handle and positioned to rotate in response to rotation of the lever handle;

a slider supporting an attached elastomer, the slider being movable toward the stop plate in response to rotation of the cam;

a lift arm connected to the vertical rods of the door latch assembly;

a rotatable pivot held by the slider and the lift arm to contact the stop plate when the door latch assembly is in its unlocked position, with the rotatable pivot rotating out of position to allow contact between the elastomer attached to the slider and the stop plate when the slider is moved when the door latch assembly is in its locked position; and

an over-ride spring connected between the slider and the lift arm, with the over-ride spring transmitting motion of the slider to the lift arm to lift the lift arm and the connected vertical rods when the door latch assembly is in its unlocked position, and with the over-ride spring compressing in response to slider movement when the blocking slide is positioned to block movement of the lift arm when the door latch assembly is in its locked position.

5,570,917

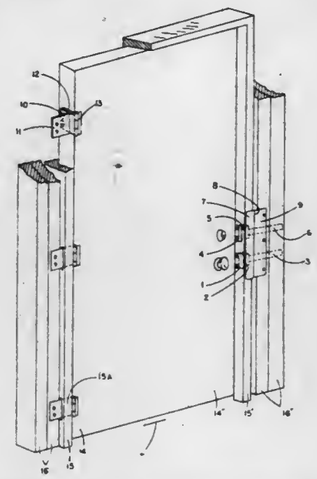
HOME SECURITY INTERLOCKING HINGES AND STRIKER PLATES

Robert E. Cutrer, P.O. Box 295, Watson, La. 70786

Filed Mar. 13, 1995, Ser. No. 402,865

Int. Cl.[6] E05B *17/00*; **E05D** *5/02*

U.S. Cl. 292—346 **6 Claims**



1. In a door assembly comprising a door having a narrow side, a substantially rigid interior wall structure, and a door casing, wherein said door casing is attached to said interior wall structure, a security hinge assembly for said door, comprising:

a first bracket, including:

(a) a door attachment plate secured to said narrow side of said door;

(b) a backstop plate extending from said door attachment plate; and

(c) first hinging means extending from said door attachment plate for making a hinged connection with a second hinging means; and

a second bracket, including:

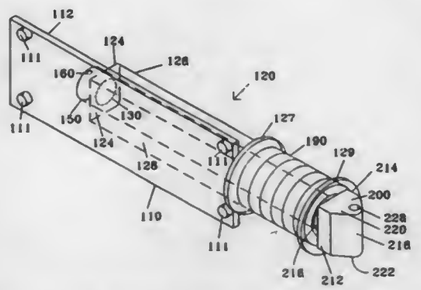
(a) a door casing attachment plate secured to said door casing;

(b) a wall structure attachment plate, secured to said interior wall structure, extending from said door casing attachment plate; and

(c) second hinging means extending from said door casing attachment plate for making a hinged connection with said first hinging means;

wherein said second hinging means of said second bracket are hingedly connected to said first hinging means of said first bracket.

5,570,918
UNIVERSAL BUMPER SYSTEM
Thomas J. Lively, 676 20th Ave., Yuma, Ariz. 85364
Filed Feb. 28, 1995, Ser. No. 395,328
Int. Cl.[6] B60R *19/02*
U.S. Cl. 293—132 **12 Claims**



8. A system for attaching a bumper to a vehicle frame comprising:

a pair of shock assemblies, each assembly comprising:

a housing for attachment to a vehicle frame;

an elongated rod having front and rear ends;

means for releasably mounting said rod in reciprocal, slidable movement through said housing with said front and rear rod ends extending beyond said housing;

a first seat at a front end of said housing and encompassing a portion of said front end of said rod;

a compressible element encompassing said rod extending beyond said first seat, said element having first and second ends with said first end positioned in said first seat;

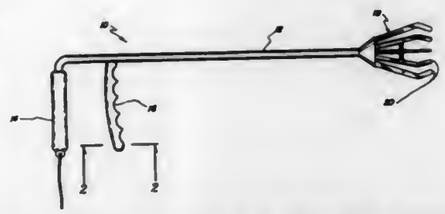
a second seat at the front end of said rod, said second seat receiving said second compressible element end therein; a bracket assembly at said front end of said rod and forward of said second seat for attachment to a vehicle bumper;

means for pivotally mounting said bracket assembly relative to said front end of said rod;

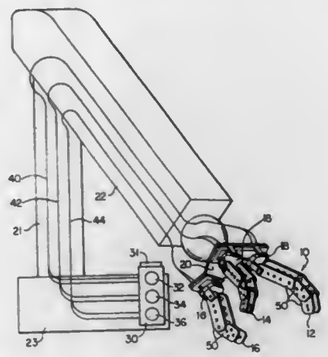
means for mounting a vehicle bumper to said bracket assembly at a normal position relative to a vehicle, whereupon an external force exerted on the bumper sufficient to displace the bumper from said normal position slides at least one rod and second seat thereon towards said first seat for compression of said element therebetween, said compressed element biasing said at least one rod and said second seat away from said first seat, whereby to bias the vehicle bumper towards a normal position.

5,570,919
REMOTE GRAPPLE
Frantz-Lee Eusebe, 20711 NW. Miami Pl., Miami, Fla. 33169
Filed Jun. 26, 1995, Ser. No. 494,841
Int. Cl.[6] B25J *1/00*
U.S. Cl. 294—19.1 **5 Claims**

1. A remote grapple comprising: an elongated handle tube having a fixed handle projecting from a first end thereof; a moving handle movably mounted relative to the handle tube; an engaging means mounted to a second end of the handle tube and including a plurality of engaging fingers responsive to a movement of the moving handle for engaging an object along radially spaced exterior portions of the object to permit manual manipulation of the object with the handle tube, wherein the handle tube includes an elongated slot directed therethrough, with the moving handle being slidably mounted within the elongated slot; and further comprising a return spring positioned within the handle tube and biasing the moving handle from the fixed handle, and further comprising a center cable coupled to the moving handle and extending through the handle tube to the engaging means, wherein the engaging means comprises a mounting head secured to the second end of the handle tube and projecting therefrom, the engaging fingers each being pivotally mounted to the mounting head and positioned in a radially spaced orientation relative to one another; a plurality of finger cables coupled to the center cable and project through guide apertures formed in the mounting head, the finger cables each extending from the center cable to couple with an individual one of the engaging fingers, wherein a tensioning of the center cable will pull the finger cables to cause a pivoting of the engaging fingers towards a center longitudinal axis of the handle tube.



5,570,920
ROBOT ARM END EFFECTOR
Jill D. Crisman, Wellesley, Mass.; Chaitanya Kanojia, Bhopal, Ind., and Ibrahim Zeid, Framingham, Mass., assignors to Northeastern University, Boston, Mass.
Filed Feb. 16, 1994, Ser. No. 197,384
Int. Cl.[6] B25J *15/10*
U.S. Cl. 294—111 **17 Claims**



1. A robot arm end effector providing conforming, adaptive grasping of varied objects, comprising:

a palm having a first surface;

a plurality of base couplings disposed on said first surface;

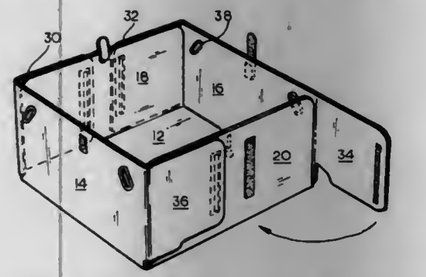
a plurality of digits, each of said digits disposed on a respective one of said plurality of base couplings, each of said digits comprised of a plurality of sequentially disposed phalanges;

a system of sequentially disposed pulleys within each of said digits, each of said pulleys being freely rotatable;

a first pair of antagonistic filaments disposed within said system of pulleys, said first pair of filaments comprised of a first filament and a second filament, said first filament disposed on alternating sides of sequential ones of said system of pulleys, and said second filament disposed on opposing sides of said sequential ones of said system of pulleys with respect to said first filament; and

motive means associated with said first pair of antagonistic filaments for simultaneously retracting said first filament and allowing extension of said second filament.

5,570,921
FOLDAWAY PLASTIC CORRUGATED MOTOR VEHICLE CARRYING TOTE
Gregory A. Brooker, 6768 Robinson La., Saline, Mich. 48176
Continuation of Ser. No. 262,695, Jun. 20, 1994, abandoned. This application May 24, 1995, Ser. No. 449,255
Int. Cl.[6] B62D *33/02*
U.S. Cl. 296—39.1 **7 Claims**



1. A foldable, substantially rigid vehicle cargo liner comprising, in combination:

a generally rectangular floor panel having a front end edge, an opposite parallel rear end edge, and a pair of opposite parallel side end edges, said front, rear and side end edges defining an area generally corresponding to a cargo area of such vehicle;

a pair of opposed and spaced apart front and rear panels extending outwardly from said front and rear end edges of said floor panel, respectively;

a pair of opposed and spaced apart side panels extending outwardly from said side end edges of said floor panel, each side panel having a pair of opposite parallel corner support end edges, said front, rear and side panels being joined to said floor panel along a foldable crease along the front, rear and side end edges of said floor panel, respectively;

a laterally extending corner support panel extending outwardly from each corner support end edge of said side panels, said corner support panels being joined to said side panels along a foldable crease along said corner support end edges of said side panels; and

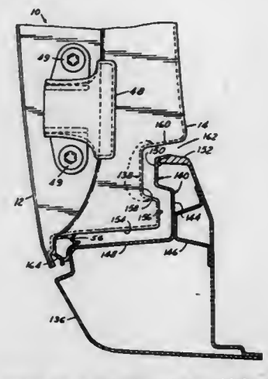
means for releasably holding said front, rear, side and corner support panels,

wherein said cargo liner is folded in an open position to form an open box when said side, front and rear panels are folded upwardly to extend at right angles to said floor panel, and then said corner support panels are folded to overlap only one side of said front and rear panels, and

wherein said cargo liner is folded in a first flat position when said corner support panels are folded inwardly upon said side panels, then said side panels are folded inwardly upon said floor panel to overlie the same, and then said front and rear panels are folded inwardly upon said side panels to overlie the same, all such folded panels being generally parallel to said floor panel and overlying the area of said floor panel, and

wherein said cargo liner is folded in a second flat position when said corner support panels are folded inwardly upon said side panels then said side panels are folded inwardly upon said floor panel to overlie the same, and then said front and rear panels are folded inwardly upon an opposite side of said floor panel to overlie the same, all such folded panels being generally parallel to said floor panel and overlie the area of said floor panel.

5,570,922
VEHICLE DOOR ASSEMBLY
Delbert D. DeRees, Romeo, and David J. Kowall, Hartland, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Division of Ser. No. 155,367, Nov. 22, 1993, Pat. No. 5,505,024. This application Jun. 6, 1995, Ser. No. 470,873
Int. Cl.[6] B60J *5/04*
U.S. Cl. 296—146.6 **2 Claims**

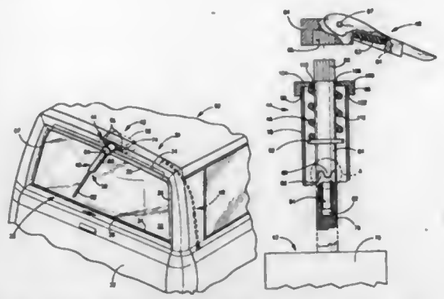


1. A combination of a vehicle and a vehicle door assembly comprising an outer contoured panel, an inner contoured panel, the panels being connected at their bottom peripheral edges, and a contoured vehicle body formed opposite the inner contoured panel, serving as a door-to-body interlock system helping to prevent the door from moving into the inner compartment in the event of a side impact condition, wherein said contoured vehicle body includes a substantially vertical first wall portion, a vertical second wall portion spaced outboard of said first wall portion, a brace therebetween, a laterally extending wall portion extending from one end of the vertical second wall portion to an outer vehicle rocker panel, and a projection portion formed to extend from the other end of the vertical second wall portion, and a connector portion between distal ends of the projection portion and the substantially vertical first wall portion, and said inner contoured panel includes first, second, third and fourth wall portions paralleling said laterally extending wall portion, said vertical second wall portion, said projection portion, and said connector portion, respectively, and a predetermined width space therebetween.

5,570,923
TRUCK CAP WINDOW WIPER SYSTEM
Bruce D. Taylor, 6064 Carversville Rd., Doylestown, Pa. 18901
Filed Mar. 27, 1995, Ser. No. 410,752
Int. Cl.[6] B60P *3/345;* **B60S** *1/16;1/46;1/58*
U.S. Cl. 296—164 **12 Claims**

1. In a truck cap and window wiper system assembly, said truck cap having a hinged window pane, the truck cap being mounted above a truck bed and the widow pane being movable at the hinge between an open position and a closed position, the wiper system comprising:

window wiper means for wiping the window pane, said wiper means including an engaging portion, a wiper holder pivotally coupled with said engaging portion and a wiper blade coupled with said holder, said window wiper means adapted for oscillatory movement against the window pane;



drive means mountable to the truck cap for providing a source of drive power to said wiper means;

engaging means for selectively transmitting the drive power provided by said drive means to said wiper means;

biasing means for resiliently biasing said engaging means and said wiper means towards said drive means and towards the window pane respectively, said engaging portion coupled to said engaging means;

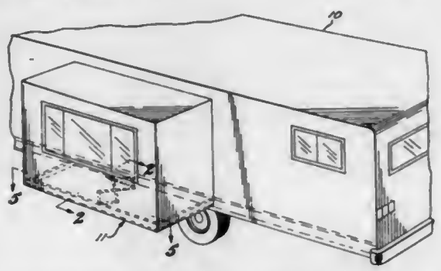
said engaging means being selectively movable between an engaged position where said engaging means are engaged with said drive means wherein said wiper means in contact with the window pane and a parked position where said engaging means are disengaged from said drive means wherein said wiper means is not in contact with the window pane so as to permit the window pane to be moved from the closed position to the open position without interference of said wiper means.

5,570,924

SCISSORS ACTUATED TRAILER SLIDE-OUT

Jeffrey P. Few, Elkhart, and Bernard F. Garceau, Granger, both of Ind., assignors to Norco Industries, Inc., Compton, Calif.

Filed Feb. 24, 1995, Ser. No. 393,654
Int. Cl.[6] B60P *3/34*
U.S. Cl. 296—175 **16 Claims**



1. A recreational vehicle slide-out room apparatus comprising:

a main frame formed with at least one longitudinal main beam and a pair of open ended, tubular cross beams;

a slide-out frame including a pair of slide beams received telescopically in said tubular cross beams and extendable therefrom, said slide-out frame further including a longitudinal slide-out beam carried from the free ends of said slide-out beams, said main and longitudinal slide-out beams cooperating to form therebetween a drive compartment;

a lazy tongs scissors drive linkage received in said compartment and including scissor channels pivotally connected together for pivoting to expand said linkage to an extended position and to retract said linkage to a retracted position, said channels being formed to form at the lateral opposite ends of said linkage respective pivot anchor ends;

respective anchor plates pivotally mounted to the respective pivot anchor ends and disposed adjacent the respective said main beam and longitudinal slide-out beam;

means of mounting said anchor plates to the respective said main beam and longitudinal slide-out beam;

a threaded drive shaft coupled with said linkages and rotatable in opposite directions to selectively extend and retract said linkage;

a drive device for driving said drive shaft in said opposite directions

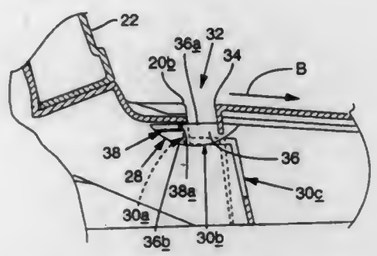
whereby said drive device may be operated to selectively rotate said drive shaft in one direction to expand said linkage to apply force between said main and slide-out beams to drive said longitudinal slide-out beam away from said main beam.

5,570,925

PINCH RELIEF STRUCTURE FOR CHILDREN'S RIDE-ON VEHICLE

Samuel L. Cohen, Fort Wayne, Ind., assignor to Mattel, Inc., and Mattel Europa B.V., both of El Segundo, Calif.

Filed Jul. 3, 1995, Ser. No. 498,674
Int. Cl.[6] B60R *5/02*
U.S. Cl. 296—177 **7 Claims**



1. In a children's riding vehicle of the type which includes a compartment-enclosing member which may be pivotably opened and closed for allowing access to a compartment on the vehicle, pinch relief structure for preventing a child from pinching a finger when the member is closed comprising:

an elongate arm with a free end and a fixed end joined to the member adjacent an edge thereof being movable therewith when the member is opened and closed and including an elongate axis;

a stop disposed on the arm proximal to the free end and including a ledge extending transverse to the elongate axis of the arm; and

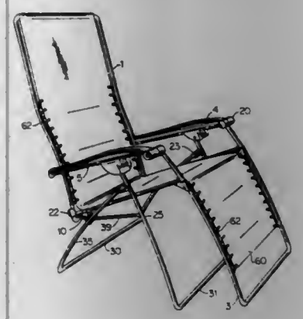
a slot in the vehicle for receiving therethrough the free end of the arm and the stop and permitting them to move pivotally within the slot when the enclosing member is opened and closed, the slot further allowing the arm and member to be selectively moved together as a unit, relative to the vehicle, in the direction of the elongate axis of the arm for a distance limited by engagement of the ledge with the vehicle for defining a space between the edge of the enclosing member adjacent which the arm is joined and the vehicle, such space for preventing a child from pinching a finger when the member is closed.

5,570,926

COLLAPSIBLE EASYCHAIR

Elie Paplernik, Paris, and Yann Le Gal, Voreppe, both of France, assignors to Lafuma S.A., France

Filed Jun. 23, 1995, Ser. No. 494,601
Claims priority, application France, Jun. 30, 1994, 94 08312
Int. Cl.[6] A47C *4/50;* **A47D** *1/02*
U.S. Cl. 297—39 **6 Claims**



1. An easychair comprising:

a back (**1**) having a lower end;

a seat having a pair of parallel side members (**2**), said side members being articulated to said back frame (**1**) said lower end;

a pair of armrests (**4**), parallel with each other and with said side members, said pair of armrests (**4**) articulated to said back frame (**1**), said each armrest having a sliding rod which is parallel with said side members (**2**), said each sliding rod having a forward end;

a legrest having a U-shaped frame (**3**), said U-shaped frame including a pair of braces, each brace having a top end, said each brace's top end articulated to one of said armrests, said each brace further articulated to one of said side members, said legrest, said back, and said seat defining a surface;

a piece of fabric secured to said easychair and disposed across said surface;

a base having a front leg unit (**36**) and a rear leg unit (**35**), each leg unit being formed by parallel legs, said each front leg having an end, said front and rear leg units being articulated together about a connecting forked yoke (**23**), said each front leg end terminating in a sliding forked yoke (**7**) configured to slide along said sliding rod;

a pair of guiding forked yokes (**10**), each being fixed to one of said side members (**2**) toward a rear end thereof, each guiding forked yoke slidably engaging one of said rear legs of said rear leg unit; and

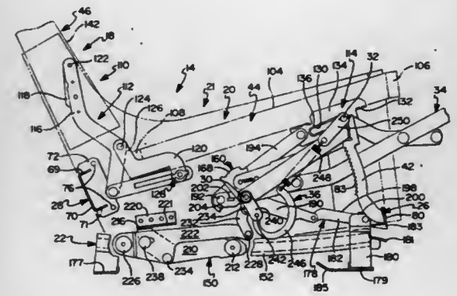
a pair of links (**39**), each having a first end attached to one of said front legs of said front leg unit (**36**), and a second end attached to one of said guiding forked yokes so that said guiding forked yoke slides downward on one of said rear legs away from said connecting forked yoke, and said sliding forked yoke slides toward said forward end of said sliding rod, when said front and rear leg units are urged together.

5,570,927

MODULAR WALL PROXIMITY RECLINING CHAIR

Larry P. LaPointe, Temperance; Jonathan R. Saul, Erie, and Karl J. Komorowski, Petersburg, all of Mich., assignors to La-Z-Boy Chair Company, Monroe, Mich.

Continuation-in-part of Ser. No. 321,079, Oct. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 230,541, Apr. 20, 1994, Pat. No. 5,427,431, which is a division of Ser. No. 897,546, Jun. 18, 1992, Pat. No. 5,323,526, which is a continuation-in-part of Ser. No. 819,784, Jan. 13, 1992, Pat. No. 5,222,286, which is a continuation-in-part of Ser. No. 772,231, Oct. 11, 1991, Pat. No. 5,301,413. This application Apr. 26, 1995, Ser. No. 429,105
Int. Cl.[6] A47C *1/02*
U.S. Cl. 297—85 **35 Claims**



1. A reclining chair comprising:

a pair of upholstered side frame members;

an actuation mechanism suspended from said side frame members;

cross rails interconnecting said side frame members to define a rigid chair frame within which said actuation mechanism is operably supported;

track means secured to a base assembly;

a seat assembly having a seat member and a seat back;

swing link means pivotally supporting said seat back and said seat member from said side frame members for causing said seat assembly to move between a non-reclined position and a fully reclined position in response to pressure applied by a seat occupant to said seat back;

a left bearing link assembly and a right bearing link assembly, each of said bearing link assemblies secured to said side frame members and having spaced wheel means which are respectively disposed for translational rolling movement within said track means, said track means being curved for causing an angular tilting movement of said chair frame relative to said base assembly upon translational movement of said bearing link assemblies within said track means;

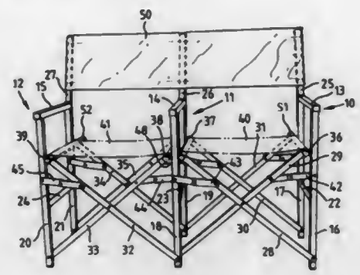
a leg rest assembly supported from said actuation mechanism for movement between a retracted position and an extended position;

manually operated means associated with said actuation mechanism for selectively moving said leg rest assembly between said retracted and extended positions;

tilt linkage means for tilting said chair frame relative to said base assembly in response to movement of said leg rest assembly; and

push linkage means connected between said base assembly and said seat member and adapted to coact with said swing link means for causing translational movement of said chair frame in response to reclining movement of said seat assembly, whereby said seat assembly can be moved through a range of reclined positions independently of actuation of said leg rest assembly, said push linkage means including stop means for defining a forward and a rearward limit of movement for said seat assembly between said fully reclined and non-reclined positions.

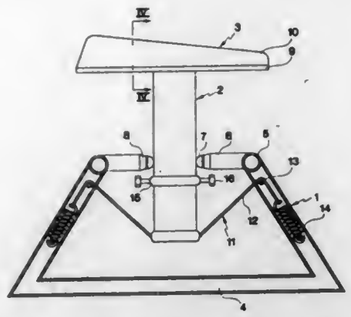
5,570,928
JOINED CONCERTINA CHAIRS
Bryan F. Staunton, Slacks Creek, and Rick J. Maynard, Shailer Park, both of Australia, assignors to Bermere Pty. Ltd., Queensland, Australia
Filed Mar. 31, 1995, Ser. No. 414,860
Claims priority, application Australia, Apr. 5, 1994, PM4808
Int. Cl.[6] A47C *15/00*
U.S. Cl. 297—232 8 Claims



1. A multiple folding chair arrangement comprising three or more rigid vertical support frames defining sides of two or more chairs and having front and rear edge regions, two pairs of diagonally crossed members located, respectively, between the front and rear edge regions of each frame, each one of the pair of members being pivotally connected adjacent a lower end to a separate one of an adjacent support frame and being pivotally joined to the other member at its midpoint, the two pairs of members having upper ends which define a plane for a seat when the chair arrangement is in an erected seating configuration, and a non-rigid linkage assembly pivotally connected adjacent to the upper ends of each member and pivotally connected to an adjacent support frame, each linkage assembly comprising two substantially equal length rigid elements which are pivotally connected to one another, the arrangement including means associated with the upper end of one or more of each pair of members located at the rear edge region of the chairs to enable the chairs to be folded whereby the frames are brought together into close proximity when such means are gripped and raised.

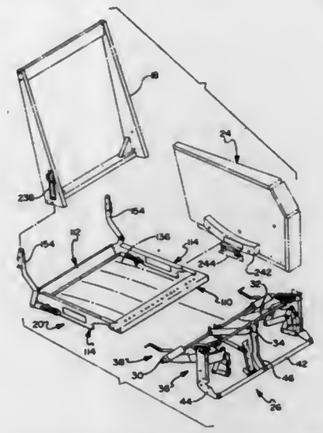
5,570,929
ACTIVE DYNAMIC SEAT
Josef Glöckl, Ammerseestrasse 6, D-8011 Kirchheim, Germany
PCT No. PCT/EP93/00757, § 371 Date Feb. 10, 1994, § 102(e) Date Feb. 10, 1994, PCT Pub. No. WO93/19645, PCT Pub. Date Oct. 14, 1993
PCT Filed Mar. 29, 1993, Ser. No. 150,108
Claims priority, application Germany, Mar. 27, 1992, 42 10 135.2
Int. Cl.[6] A47C *1/02*
U.S. Cl. 297—313 17 Claims

1. An active dynamic seat comprising:
a base including a base part and a tilting joint assembly;
a rigid intermediate piece, the intermediate piece including an upper end portion, a central portion, and a lower end portion;
at least one restoring device interconnecting the base and the lower end portion of the intermediate piece; and
a seat part connected to the upper end of the intermediate piece, wherein
the seat part is rigidly connected to the upper end portion of the intermediate piece,
the central portion of the intermediate piece is connected to the base via the tilting joint assembly such that the intermediate piece is tiltably moveable in a horizontal direction and is displaceable in a vertical direction, and



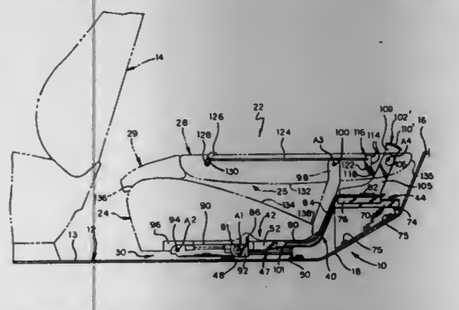
the at least one restoring device restores the tilting movement and simultaneously restores the vertical movement of the intermediate piece and of the seat part.

5,570,930
RECLINER CHAIR SEAT ASSEMBLY AND METHOD OF UPHOLSTERING
Larry P. LaPointe, Temperance, Mich.; Douglas A. Habegger, Millbury, Ohio; Jonathan R. Saul, LaSalle, Mich.; Karl J. Komorowski, Petersburg, Mich., and Richard E. Marshall, Monroe, Mich., assignors to La-Z-Boy Chair Company, Monroe, Mich.
Continuation-in-part of Ser. No. 101,515, Aug. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 100,916, Aug. 9, 1993, Pat. No. 5,435,621. This application Oct. 12, 1994, Ser. No. 319,672
Int. Cl.[6] A47C *1/02*
U.S. Cl. 297—342 43 Claims



1. In a reclining chair of the type having a seat assembly interconnected to an actuation mechanism, the actuation mechanism suspended within a chair frame for permitting a fore and aft longitudinal movement of the seat assembly relative to the chair frame, the seat assembly comprising:
a seat back detachably secured to the seat assembly;
a seat frame having a pair of side frames rails connecting a front frame rail and a rear frame rail to form a substantially rectangular frame and at least one seat spring disposed within said rectangular frame for supporting a seat cushion;
swing link means for pivotally interconnecting said seat back and said seat frame to permit reclining movement of said seat assembly with respect to the chair frame between an upright position and a reclined position in response to pressure applied by a seat occupant to said seat back, said swing link means connected to the chair frame to suspend said seat assembly therebetween; and
guide means for connecting said seat frame and the actuation mechanism and guiding the longitudinal movement of said seat frame in response to reclining movement of said seat assembly, said guide means including a pair of slide brackets having a lost-motion slot formed therein which are securable to a forward portion of said seat frame.

5,570,931
VEHICLE ADJUSTABLE AND STOWABLE REAR SEAT
Elizabeth M. Kargilis, Birmingham; James P. Salva, Shelby Township; Joseph M. Geraci, Lake Orion; Carl Mather, Troy, and Robert J. Janosko, Bloomfield Hills, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Sep. 29, 1995, Ser. No. 536,546
Int. Cl.[6] B60N *2/08;2/12;2/24;2/36*
U.S. Cl. 297—378.12 13 Claims



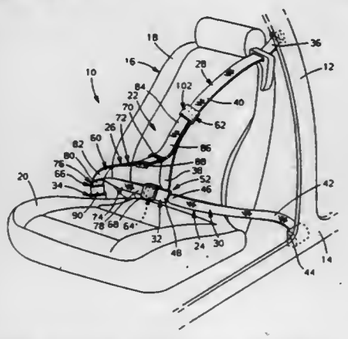
1. A seat for a motor vehicle body comprising:
a generally horizontal seat cushion and upright seatback supported on a longitudinally adjustable bi-level seat support frame;
said seat frame comprising a front lower portion slidably mounted on front track assemblies and a rear elevated portion slidably mounted on rear track assemblies at an elevation a predetermined vertical dimension above said front track assemblies;
a bi-level frame adjustment latching device for latching said seat frame to one of said front and rear track assemblies;
a pair of forward upright links each having a lower end pivotally mounted to the seat from front portion for rotation about a first transverse axis with respect to said seat frame front portion and an upper end pivotally mounted to a front portion of said seat cushion for rotation about a second transverse axis with respect to a front portion of said seat cusbion, a pair of upstanding laterally spaced arms each having a proximate end fixed to an aft end of said seat cushion and a distal end pivoted to an intermediate portion of said seatback for rotation about a third transverse axis;
a pair of upstanding seatback pivot mounts fixed on said seat frame elevated portion, each said pivot mount having an upper end pivoted to a lower portion of said seatback for seatback rotation about a fourth transverse axis, wherein said third and fourth axes define a plane common to said seatback;
a seatback pivot latching device for latching said seatback against pivotal movement;
whereby with the bi-level seat frame adjustment latching device in a locked mode and the seatback pivot latching device in an unlocked mode said seatback is adapted to be pivoted forward about said fourth axes to a fold-flat stowed position resulting in conjoint parallelogram movement of said seat cushion about said first, second, third, and fourth axes between an elevated in-use position, to a forward and lowered stowed horizontal position, wherein said seatback overlies said stowed seat cushion and said bi-level frame rear elevated portion.

5,570,932
LINEAR SAFETY BELT RETRACTOR
Cecil A. Collins, Shelby Township, and Cecil L. Champion, Madison Heights, both of Mich., assignors to AlliedSignal Inc., Morristown, N.J.
Continuation of Ser. No. 981,874, Nov. 25, 1992, Pat. No. 5,364,169. This application Oct. 11, 1994, Ser. No. 320,944
Int. Cl.[6] B60R *22/34*
U.S. Cl. 297—479 35 Claims



29. A safety belt restraint system for a child seat comprising:
a safety belt harness;
a retractor coupled to said safety belt harness and operable in a released mode for permitting said safety belt harness to be controllably withdrawn and retracted and in a locked mode for inhibiting withdrawal of said safety belt harness, said retractor including first means movable between a first position for placing said retractor in said locked mode and a second position for placing said retractor in said released mode, and second means is selectively engageable with said first means such that movement of said second means from a non-actuated position to an actuated position causes movement of said first means from said first position to said second position; and
manually-actuated operator means coupled to said second means for moving said second means to said actuated position in response to movement of said operator means to a released position for shifting said retractor from normal operation in said locked mode into said released mode.

5,570,933
LAP-SHOULDER BELT EXTENDER
Stephen W. Rouhana, Rochester Hills, and Edward A. Jedrzejczak, Brown City, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 22, 1994, Ser. No. 362,634
Int. Cl.[6] B60R *22/00*
U.S. Cl. 297—483 9 Claims



1. A seat belt assembly in a vehicle for restraining an occupant comprising:
a lap-shoulder belt assembly including a shoulder belt and a lap belt;

the shoulder belt having an upper end mounted to the vehicle and a lower end;

the lap belt having a first end mounted to the vehicle and a second end joined to the lower end of the shoulder belt to form a lap-shoulder belt junction;

a lap-shoulder belt extender assembly including an extender shoulder belt and an extender lap belt;

the extender shoulder belt having an upper extender end and a lower extender end, the upper extender end adjustably coupled to the shoulder belt at an intermediate portion of the shoulder belt between the upper and lower ends of the shoulder belt;

the extender lap belt having a first lap extender end releasably connected to the lap-shoulder belt junction and a second lap extender end connected to the lower extender end of the extender shoulder belt to form an extender junction; and

means for releasably connecting the extender junction to the vehicle;

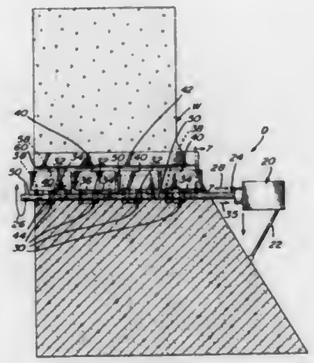
whereby the extender lap belt extends the lap belt of the lap-shoulder belt assembly, the extender shoulder belt and shoulder belt cooperatively provide dual shoulder belts for restraining the occupant, and the shoulder belt and extender shoulder belt are spaced apart at their lower ends by the extender lap belt.

5,570,934

TRACTION BORING DEVICE USING MULTIPLE TREPANS FOR PRODUCING LARGE CUTS IN CONCRETE WORKS AND THE LIKE AND METHOD OF PRODUCING CUTS

Peter Szita, Ste-Thér´se, and Louis Dubreuil, St-Didace, both of Canada, assignors to Hydro-Quebec, Montreal, Canada

Filed Mar. 16, 1995, Ser. No. 405,173
Int. Cl.[6] E21C *25/10;31/04;* B28D *1/06*
U.S. Cl. 299—15 **24 Claims**



20. A method for producing cuts in large works, comprising the steps of:

a) positioning a rotatable assembly consisting of a drilling shaft and at least one trepan means mounted on said drilling shaft on a large work and opposite a location of a desired cut such that cutting means of said trepan means extending outwardly of said drilling shaft are at least partly located opposite the work to be cut; and

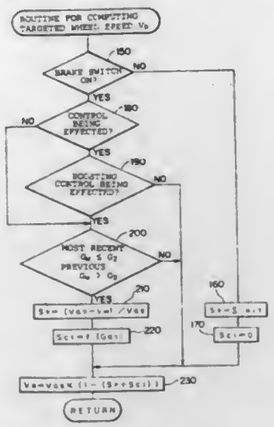
b) displacing said trepan means in translation along a rotational axis thereof while in rotation such that said cutting means removes a layer means from the large work of a width substantially corresponding to outside transverse dimensions of said cutting means and of a maximum thickness at most equal to a radial distance between said drilling shaft and an outside edge of said cutting means.

5,570,935

ANTI-LOCK CONTROLLER

Shirou Monzaki, Mishima, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Dec. 13, 1994, Ser. No. 357,183
Claims priority, application Japan, Dec. 17, 1993, 5-318655
Int. Cl.[6] B60T *8/32*
U.S. Cl. 303—155 **20 Claims**



1. An anti-lock controller comprising:

a sensor that detects a wheel speed of a vehicle;

determining means for determining if wheel deceleration based on the wheel speed is at least as great as a predetermined wheel deceleration based on vehicle deceleration;

first computing means for computing slip rate when the determining means determines that the wheel deceleration is at least as great as the predetermined wheel deceleration;

second computing means for computing slip rate offset amount between the slip rate and a targeted slip rate, based on at least one of the wheel deceleration and the vehicle deceleration;

third computing means for computing a targeted wheel speed based on the slip rate, the slip rate offset amount and a vehicle speed; and

controlling means for controlling a braking force such that the wheel speed approaches the targeted wheel speed.

5,570,936

FLUID PRESSURE CONTROL METHOD OF AN ANTI-SKID CONTROL APPARATUS FOR VEHICLE

Mitsunao Ohmori, and Motoo Yokota, both of Yokohama, Japan, assignors to Nippon A B S, Ltd., Yokohama, Japan

Filed May 1, 1995, Ser. No. 432,963
Claims priority, application Japan, May 2, 1994, 6-115921; Oct. 12, 1994, 6-272905
Int. Cl.[6] B60T *8/00*
U.S. Cl. 303—170 **7 Claims**

1. A fluid pressure control method of an anti-skid control apparatus for a vehicle, said anti-skid control apparatus including;

(a) a tandem master cylinder,

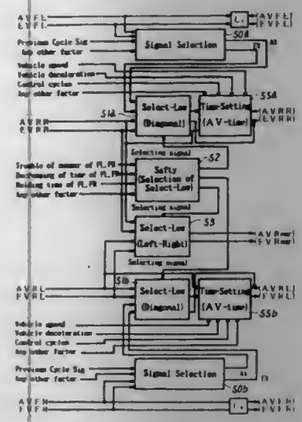
(b) wheel cylinders of wheels,

(c) wheel speed sensors associated with the respective wheels,

(d) a control unit receiving the outputs of said wheel speed sensors for judging skid conditions of the respective wheels, and

(e) fluid pressure control valves arranged between said tandem master cylinder and the respective wheels, receiving instructions from said control unit for controlling brake fluid pressures of the respective wheels,

and said control unit supplies brake-decreasing instructions and brake-holding instructions independently to the ones of said fluid-



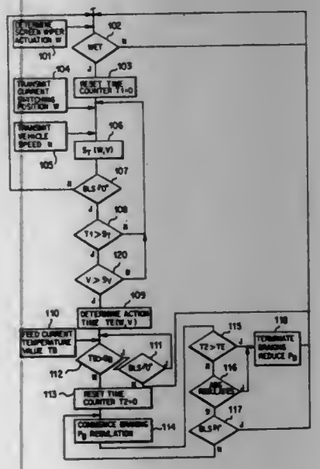
pressure control valves for the front wheels, controls the others of said fluid-pressure control valves for the rear wheels by the diagonal "Select Low" between the skid conditions of the respective rear wheels and respective front wheels diagonally connected to said respective rear wheels, and when said brake-decreasing instruction or said brake-holding instruction is supplied to the fluid pressure control valve for the rear wheel, on the basis of the control signal representing the skid condition of the front wheel diagonally connected to the said rear heel, the control signal representing the skid condition of the said front wheel is used for the fluid pressure control valve for the said rear wheel, at a predetermined rate responsive to the control condition of the said front wheel and/or the braked condition of said vehicle.

5,570,937

METHOD FOR ENSURING VEHICLE BRAKING UNDER WET CONDITIONS

Stephan Wolfsried, Waiblingen, Germany, assignor to Mercedes-Benz AG, Germany

Filed Aug. 1, 1995, Ser. No. 509,805
Claims priority, application Germany, Aug. 1, 1994, 44 27 170.0
Int. Cl.[6] B60T *8/00;8/48;8/60;17/22*
U.S. Cl. 303—191 **33 Claims**



1. A method for ensuring in a vehicle utilizing a control unit a braking effect of vehicle brakes under wet conditions, comprising the steps of

(a) determining a presence of wet conditions via a sensor device;

(b) recording a time free of brake actuation when the wet conditions are present;

(c) carrying out a braking operation during an action time at least when the recorded time free of brake actuation exceeds a time-threshold value; and

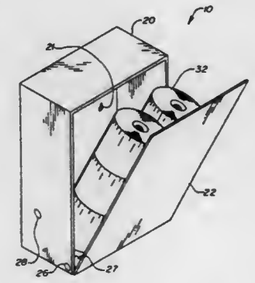
(d) generating a brake pressure during the braking operation such that the braking effect is determined so to achieve a vehicle deceleration undetectable by a driver.

5,570,938

TOILET PAPER ROLL HOLDER

Curtis P. Butler, P.O. Box 193461, Little Rock, Ark. 72219

Filed Feb. 7, 1995, Ser. No. 385,102
Int. Cl.[6] A47F *1/00;3/02;* B65D *83/08;* B65G *1/16*
U.S. Cl. 312—45 **4 Claims**



1. A toilet paper holder for holding a plurality of rolls of toilet paper having open cores comprising:

an enclosure having a pair of sides, a top and a back, and further having means for mounting said enclosure to a vertical wall;

a toilet paper roll support assembly comprising a front panel and integral therewith a bottom panel having an inner surface such that said bottom panel is not pivotally movable with respect to said front panel, said support assembly being pivotally mounted to said enclosure such that said support assembly is pivotally movable between a first position wherein said enclosure in combination with said support assembly forms an essentially enclosed space sized to contain a plurality of toilet paper rolls and a second position wherein the toilet paper rolls are accessible for removal; and

one or more support rods immovably affixed orthogonally to the inner surface of said bottom panel and parallel to said front panel, said support rods extending substantially the full height of said front panel, and sized for receiving the open cores of a plurality of rolls of toilet paper whereby a plurality of rolls may be stacked onto said rods and manually removed therefrom.

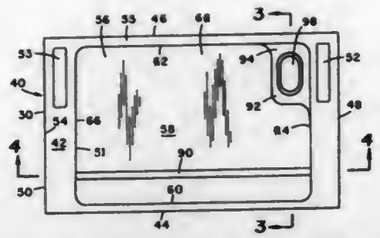
5,570,939

COUNTERTOP FOR FUME HOOD OR SIMILAR APPLICATIONS

Van G. Scott, Knoxville, Tenn., assignor to Smokey Mountain Tops, Inc., Knoxville, Tenn.

Filed May 3, 1995, Ser. No. 433,139
Int. Cl.[6] A47B *77/06*
U.S. Cl. 312—229 **7 Claims**

7. In a countertop for a fume hood which includes a front opening through which ambient air enters the fume hood to mix with fumes within the interior of the fume hood and an exhaust



opening through which ambient air entering the fume hood and admixed with the fumes, is exhausted, the improvement comprising in combination

a substantially planar member formed of an acrylic resin material which is readily altered or repaired using field maintenance tools and techniques, said substantially planar member defining a floor of the fume hood and having a top surface, a front edge, a rear edge and opposite side edges,

a recess defined in said top surface of said substantially planar member, said recess extending substantially between said front edge and said rear edge of said floor, and between said opposite side edges of said floor, to define a working surface area that extends over a major portion of said floor of the fume hood and including front, rear and opposite side walls that extend from said floor to said top surface of said substantially planar member to define a perimeter of said working surface area, each of said front, rear and opposite side walls defining a radiussed juncture with said working surface area and with said top surface of said planar member, thereby defining a reservoir for containing one or more liquids therein, and

at least one platform disposed within said recess, said platform including a top surface that is disposed at a level higher than the level of said working surface area of said recess and lower than the level of said top surface of said substantially planar member and including means defining an opening that extends from the top surface of said platform fully through the thickness of said substantially planar member to define a cupsink, and wherein the difference in the levels of said top surface of said substantially planar member and the top surface of said platform facilitates the flow of liquid overflowing said reservoir onto said platform and in position to flow from said recess through said cupsink

a safety zone demarcation identifier comprising an acrylic resin material which is compatible with the acrylic resin material of said substantially planar member, said indentifier being embedded within said top surface of said countertop and visually distinctive therefrom.

5,570,940

DOOR SYSTEM FOR A DOORLESS STORING STRUCTURE

Nicholas Maro, Chicago, Ill., assignor to Viking Metal Cabinet Co., Inc., Chicago, Ill.

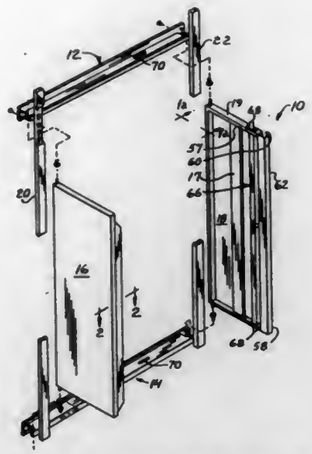
Continuation-in-part of Ser. No. 20,572, Feb. 22, 1993, Pat. No. 5,464,281. This application Jun. 7, 1995, Ser. No. 471,830

Int. Cl.[6] A47B *47/00;* **F06B** *3/00*

U.S. Cl. 312—257.1 **17 Claims**

10. A door system for equipping a doorless shelved structure having shelf supporting apertured uprights, said structure being an open-face cabinet, said system comprising:

an upper support member having a vertically extending face with opposing end portions, at least one engagement member extending out of each end portion of the face towards the apertured uprights and engageable with the apertured uprights, said face having a horizontal flange extending in the same direction as the engagement members, said horizontal flange having near each end a pivot hole, each end of the horizontal flange having a cut-out adjacent the respective pivot hole and respective engagement member;



a lower support member vertically spaced from the upper support member, the lower support member having a vertically extending face with opposing end portions, at least two engagement members extending out of each end portion of the face towards the apertured uprights and engageable with the apertured uprights, said face having a horizontal flange extending in the same direction as the engagement members, said horizontal flange having near each end a pivot hole, each end of the horizontal flange having a cut-out adjacent the respective pivot hole and respective engagement members; and

a pair of door-halves, each door-half, at its pivot axis, being provided with upper and lower pin hinges engageable with the respective holes in the upper and lower support members.

5,570,941

SUPPORTING RAIL FITTING OR ASSEMBLY FOR DRAWER

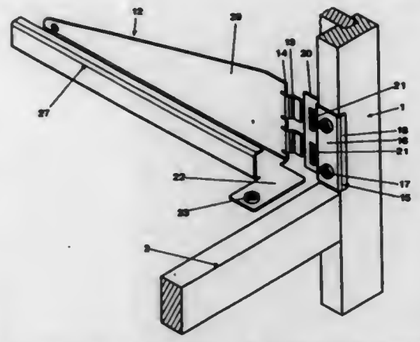
Erich Röck, Höchst, Austria, and Fredi Dubach, Adetswil, Switzerland, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Feb. 23, 1995, Ser. No. 392,506

Claims priority, application Austria, Feb. 25, 1994, A369/94

Int. Cl.[6] A47B *88/04*

U.S. Cl. 312—334.6 **17 Claims**



1. A supporting rail assembly to be employed in a drawer pull-out guide to enable movement of a drawer into and out of an article of furniture including a front frame, said assembly comprising:

a mounting plate to be secured to a vertical frame member of the front frame, said mounting plate including a securing web through which is to extend at least one securing device, at least one stop web extending from said securing web at a right angle thereto in a direction to abut the vertical frame, and an anchoring web integral with said securing web and extending in a direction to be rearwardly of the vertical frame member;

a supporting rail having a front end connectable to said anchoring web.

5,570,942

UNDER-BOTTOM GUIDE FOR PULL-OUT DRAWERS

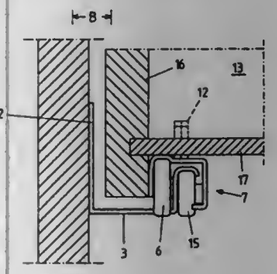
Stefan Vonier, Schruns, Austria, assignor to Fulterer Gesellschaft M.B.H., Lustenau, Austria

Filed Jul. 10, 1995, Ser. No. 500,158

Claims priority, application Austria, Jul. 27, 1994, 1489/94

Int. Cl.[6] A47B *88/04;88/10*

U.S. Cl. 312—334.6 **4 Claims**



1. An under-bottom guide for pull-out drawers, comprising:

A support rail attachable inside of a furniture body and having a substantially horizontally extending base web and a vertical web portion extending upwardly at an end of said base web remote from a wall of the furniture body, said vertical web portion having at an upper end thereof a horizontal flange extending away from said base web;

at least one support roller provided at said vertical web portion;

a pull-out substantially U-shaped rail opening toward said base web and having two spaced vertical legs connected by a substantially horizontal section; and

at least one pair of travelling rollers secured at a rear end of said pull-out rail adjacent to facing each other inner sides of said two vertical legs, respectively, and having substantially the same radius;

wherein said at least one pair of travelling rollers encloses said vertical web portion therebetween, with one of said at least one pair of travelling rollers travelling exclusively along said base web and another one of said at least one pair of travelling rollers travelling along said horizontal flange, and

wherein the travelling rollers of said at least one pair of travelling rollers are offset relative to each other in a pull-out direction of said pullout rail by a distance equal to at least the radius of said travelling rollers.

5,570,943

TRACK ASSEMBLY FOR A DRAWER

Gerhard Schröder, Bad Oeynhausen; Frank Noske, Minden, and Gordon Rush, Lemgo, all of Germany, assignors to Paul Hettich GmbH & Co., Kirchlengern, Germany

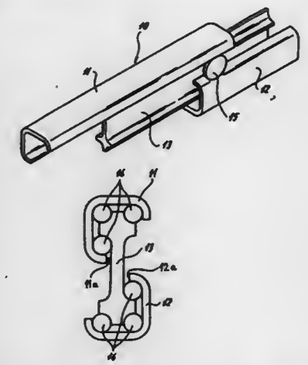
PCT No. PCT/DE94/00473, § 371 Date Jan. 9, 1995, § 102(e) Date Jan. 9, 1995, PCT Pub. No. WO94/26146, PCT Pub. Date Nov. 24, 1994

PCT Filed Apr. 26, 1994, Ser. No. 367,213

Claims priority, application Germany, May 12, 1993, 9307088 U

Int. Cl.[6] A47B *88/04*

U.S. Cl. 312—334.11 **6 Claims**



1. A track assembly for a drawer, comprising:

a guide rail securable to a body of a piece of furniture;

a pull-out rail securable to a drawer; and

an inner section rail for connecting the guide rail with the pull-out rail,

each one of said guide and pull-out rails being formed of substantially L-shaped configuration and exhibiting extreme edges that are turned inwardly to form three inner curved corner areas for receiving a set of three balls interposed between outer surfaces of the inner section rail and the inner surfaces of the guide rail and the pull-out rail and positioned such as to define corners of a rectangular triangle.

5,570,944

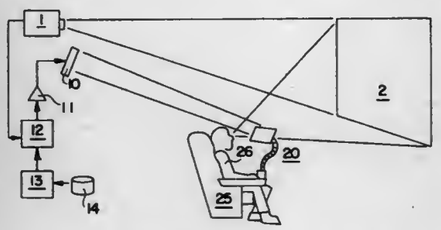
REFLECTED DISPLAY SYSTEM FOR TEXT OF AUDIOVISUAL PERFORMANCES

Rufus B. Seder, Boston, and Larry Goldberg, Cambridge, both of Mass., assignors to WGBH Educational Foundation, Boston, Mass.

Filed May 13, 1994, Ser. No. 242,225

Int. Cl.[6] G03B *21/28*

U.S. Cl. 353—98 **19 Claims**



1. A system for displaying auxiliary text to at least one viewer facing an audiovisual presentation in a theater, said system comprising:

A. a light-emitting display characterized by (i) displaying said text horizontally reversed, (ii) being situated substantially above and behind said viewer toward the rear of said theater, and (iii) being viewable from various positions within said theater at which said viewer would normally view said audiovisual presentation; and

B. a reflector situated within reach of said viewer and adjustably situatable and orientatable (i) to reflect said display, and (ii) to present said reflection substantially within or adjacent the field of view of said viewer facing said audiovisual presentation.

5,570,945

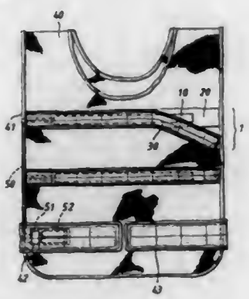
SOFT LIGHT-STRIP

Tseng-Lu Chien, and Ping-Hsiang Wu, both of 8-6 Fl., No. 9, San Min Rd., Taipei, Taiwan

Continuation of Ser. No. 156,004, Nov. 22, 1993. This application Apr. 12, 1995, Ser. No. 421,021

Int. Cl.[6] F21V *9/16*

U.S. Cl. 362—84 **4 Claims**



1. A soft light strip comprising:

a sheath having a soft upper strip (**30**) and a soft lower strip (**20**), said soft upper strip (**30**) and said soft lower strip (**20**) being detachably engaged and forming an elongated central cavity substantially along the length of said sheath; central portions of inwardly-facing surfaces of said upper and lower strips being free from engagement; said soft lower strip (**20**) having an inwardly facing reflective surface; said soft upper strip (**30**) being transparent; and

an elongated soft electro-luminescent component (**10**) being received within said sheath between said soft upper strip and said reflective surface of said soft lower strip for emitting light which includes a first light portion being directly emitted outwardly through said transparent soft upper strip (**30**) and a second light portion being reflected by said reflective surface of said soft lower strip (**20**) and finally emitted outwardly through said transparent soft upper strip (**30**), said elongated soft electro-luminescent component being repositionable between said upper and lower strips when said upper strip is detached.

5,570,946

PROTECTIVE HEADWEAR INCLUDING SUPER-THIN LIGHTING

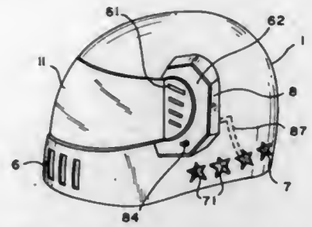
Tseng L. Chien, 8F, No. 29, Alley 73, Lin-Shen Street, Shi-Chi Town, Taipei, Hieng, Taiwan

Filed May 10, 1995, Ser. No. 438,373

Int. Cl.[6] F21L *15/14*

U.S. Cl. 362—84 **21 Claims**

1. In protective headwear of the type comprising a hard outer layer, the improvement wherein the hard outer layer includes an at least partially transparent area and wherein a flexible lighting element is affixed to an inside surface of the hard outer layer and



visible through said at least partially transparent area of the hard outer layer and further comprising an inner layer positioned inside the hard outer layer, wherein said inner layer is an absorption layer made of a foam material adhered to said hard outer layer to form a seal about said lighting element.

5,570,947

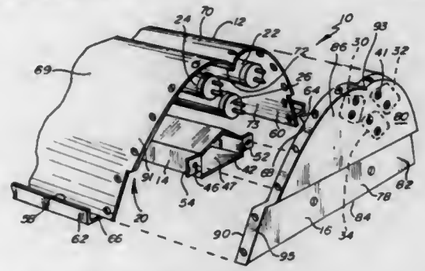
LIGHT FIXTURE

Garold M. Felland, 4550 Minnetonka Blvd., St. Louis Park, Minn. 55416

Filed Nov. 8, 1994, Ser. No. 336,304

Int. Cl.[6] F21V *15/00;7/00*

U.S. Cl. 362—148 **15 Claims**



1. An overhead light fixture comprising:

a) an upper elongate shroud having opposing side portions, two ends, an inwardly and downwardly facing reflective surface, the opposing side portions defining an open interior, and an inverted apical crease extending longitudinally down the shroud between the two side portions, the shroud having a modified elliptical cross-sectional shape;

b) a pair of opposing end portions, the opposing end portions each having a lower edge, the end portions rigidly connected to the two ends of the shroud;

c) an elongate rigid raceway, the raceway extending lengthwise through the open interior and connecting to the opposing end portions whereby the raceway provides an infrastructure for the fixture; and

d) an elongate first illuminated tube extending between the end portions, the tube positioned under the shroud and between the raceway and the shroud.

5,570,948

FLASHLIGHT WITH REMOVABLE LAMP SECTION FOR FIRE FIGHTING AND OTHER SPECIALIZED USES

W. Kenneth Menke, and W. Kenneth Menke, III, both of Glendale, Mo., assignors to The Fire Products Company, Webster Groves, Mo.

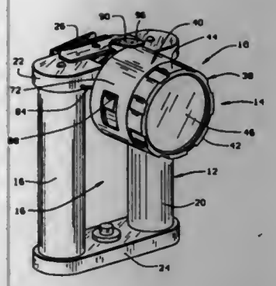
Filed Nov. 17, 1995, Ser. No. 560,461

Int. Cl.[6] F21L *7/00*

U.S. Cl. 362—191 **22 Claims**

1. A flashlight comprising:

a casing having at least one battery housing therein;



a mandrel on the casing;

a lamp housing having an electric light mounted therein;

a length of wire extending from the casing and into the lamp housing providing electrical communication between the battery housing and the electric light, a portion of the length of wire is contained in the lamp housing and is removable from the lamp housing to separate the lamp housing from the casing, and is returnable into the lamp housing when positioning the lamp housing proximate to the casing; and

a clamp on the lamp housing, the clamp having a configuration for removably attaching the clamp to the mandrel and thereby removably attaching the lamp housing to the casing.

5,570,949

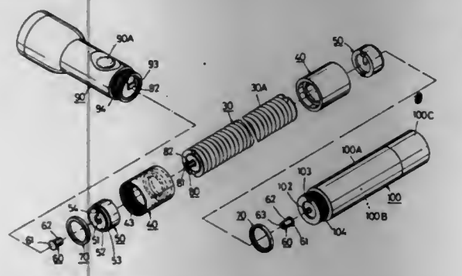
TORCH WITH A BELLOWED INTERMEDIATE FLEXIBLE HOSE MEMBER

Hanh Chiang, No. 162, Chung-Cheng S. Rd., Hsin-Ying Hsiang, Tainan Hsien, Taiwan

Filed Dec. 29, 1995, Ser. No. 580,942

Int. Cl.[6] F21L *7/00*

U.S. Cl. 362—198 **2 Claims**



1. A torch comprising:

a head member including an externally threaded rear end section, a bulb unit disposed therein, and an on-off switch which is mounted on said head member and which is capable of energizing said bulb unit upon actuation;

a tail member including an externally threaded front end section, and a cell unit for supplying power to said bulb unit; and

a bellowed intermediate flexible hose member including a hose body, two connectors respectively attached to two ends of said hose body and respectively having internally threaded end sections engaging threadedly said externally threaded end sections of said head and tail members, front and rear conductive contact sets respectively provided in said connectors in such a manner that said front conductive set is in electrical contact with said bulb unit while said rear conductive set is in electrical contact with terminals of said cell unit, wherein each of said front and rear conductive sets includes an insulated tubular holding seat fixed within a corresponding one of said connectors and provided with a reduced-diameter outer-end portion, an annular conductive ring sleeved around said outer end portion, an opening formed in the outer end portion of said seat, a conductive mushroom-like contact element press-fitted within said outer end portion of said seat and having a small-diameter portion extending into said outer end portion of said seat and a large-diameter outer end portion exposed partially to an exterior of said seat, a central wire extending through said hose body and said seat and having an outer end attached removably to said small-diameter portion of said element so as to establish an electrical connection therebetween, a peripheral wire extending through said hose body and said seat to be in electrical contact with an inner peripheral surface of said ring, said ring and said element serving as two contacts.

5,570,950

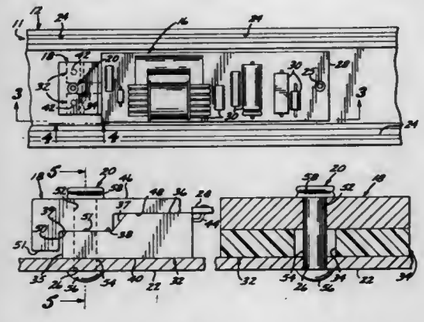
LIGHTING FIXTURE AND METHOD OF FABRICATION

Alan R. Griffin, Camarillo, Calif., assignor to Thin-Lite Corporation, Camarillo, Calif.

Filed Feb. 6, 1995, Ser. No. 383,993

Int. Cl.[6] H05K *7/20*

U.S. Cl. 362—221 **7 Claims**



1. A method of fabricating first and second fluorescent tube lighting fixtures including the steps of:

inventorying a plurality of channel housings to provide a housing inventory, each housing formed with a back wall having a planer front surface including a central mounting bore;

inventorying a plurality of first and second circuit board devices to provide respective first and second circuit board device inventories, the respective said first and second circuit board devices being of the type mounting electronics thereon to form a lighting ballast, said plurality of first circuit board devices each including a single thermally conductive transistor mounting foot projecting from one end thereof and formed with a fastener bore therethrough, said plurality of second circuit board devices each including a pair of thermally conductive laterally spaced apart transistor mounting feet projecting from the respective one ends thereof to define therebetween a clearance slot;

inventorying a plurality of thermally conductive mounting clips to provide a mounting clip inventory, each clip of the type configured with a bold down plate formed to complementally fit over the respective said transistor mounting feet of said second circuit board devices and formed with a through bore for selective alignment with the respective said clearance slots;

inventorying a plurality of fasteners to provide a fastener inventory, each of said fasteners of the type including a shaft sized for receipt within the respective said mounting bores, said fastener bores, and said through bores, said shaft having a first enlarged head at one end and an expandable opposite end defining a second enlarged head when said expandable end is expanded;

selecting a first number of said channel housings and said fasteners from the respective said housing and fastener inventories and selecting said first number of said first circuit board devices from said first circuit board inventory;

selecting a second number of said channel housings, said mounting clips, and said fasteners from said respective said housing, clip, and fastener inventories and selecting said second number of said second circuit board devices from said second circuit board inventory;

positioning said first number of first circuit board devices on said first number of selected channel housings such that the respective said fastener bores of said single transistor mounting feet overlie the respective said mounting bores;

positioning said second number of second circuit board devices on said second number of selected channel housings such that the respective said clearance slots between said pair of transistor mounting feet overlie the respective said mounting bores;

overlying said second number of said mounting clips about said second number of said second circuit board devices such that the respective said hold down plates of said clips complementally engage the respective said pair of transistor mounting feet and the respective said through bores of the respective said hold down plates overlie the respective said clearance slots thereof;

inserting the respective said shafts of said first number of said fasteners into the respective said fastener bores of said first number of first circuit board devices, and through the respective said mounting bores of said first number of channel housings and expanding the respective said expandable ends of the respective said first number of fastener shafts to form respective said second enlarged heads such that one of the respective said enlarged heads engages the respective said first number of channel housings and the other respective said enlarged head engages the single mounting foot to fasten the respective said first circuit board devices to the respective said planar back walls of said first number of channel housings; and

inserting the respective said shafts of said second number of fasteners into the respective said through bores of said second number of clips, through the respective said clearance slots of said second number of second circuit board devices, and through the respective said mounting bores of said second number of channel housings and expanding the respective said expandable ends of the respective said second number of fastener shafts to form the respective said second enlarged heads such that one of the respective said enlarged heads engages the respective said second number of channel housings and the other respective said enlarged head engages the respective said hold down plates of the second number of said mounting clips to sandwich the respective said pair of transistor mounting feet of said second circuit board devices between the respective said hold down plates of said second number of clips and the respective said planar back walls of said second number of channel housings.

4. A fluorescent tube lighting apparatus comprising:

a channel housing formed with a back wall having a planar front surface and including a central mounting bore;

a circuit board device of the type including a planar support surface and two laterally spaced apart thermally conductive mounting feet projecting longitudinally from one end thereof to define therebetween a clearance slot;

a thermally conductive mounting clip including a hold down plate configured to complementarily fit over the respective said feet and an orthogonally projecting retainer for overlying the respective ends of the respective said feet, said hold down plate being formed with a through bore;

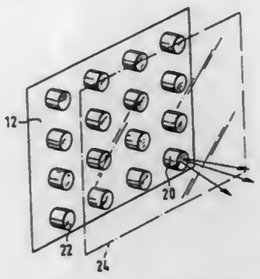
a fastener including a shaft having enlarged heads at the opposite ends thereof, said shaft configured for receipt within said through bore of said clip, within said clearance slot, and within said mounting bore of said housing to mount said circuit board to said channel housing, one of said heads engaging said channel and the other said head engages the hold down plate to sandwich said respective feet between said hold down plate and said planar back wall.

5,570,951

ILLUMINATING DEVICE FOR MOTOR VEHICLES

Johannes-Gerhard Bertling, Alter Postweg; Doris Boebel, and Peter Schoettle, both of Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Continuation of Ser. No. 89,757, Jul. 9, 1993, Pat. No. 5,477,436. This application Mar. 31, 1995, Ser. No. 414,807
Claims priority, application Germany, Aug. 29, 1992, 42 28 895.9
Int. Cl.[6] F21V 9/00
U.S. Cl. 362—231 **6 Claims**



1. An illuminating device for motor vehicles, comprising a plurality of light sources formed as semiconductor light sources, each of said semiconductor light sources emitting light of only one color and light colors emitted by different semiconductor light sources are different, said semiconductor light sources including several semiconductor light sources which emit light of a same color and said semiconductor light sources being distributed so that the lights emitted by all semiconductor light sources produce a light of a uniform color which exits the illuminating device, each of said semiconductor light sources being provided with a transparent cover having optical elements by which the lights emitted by the individual semiconductor light sources are superposed over one another to provide color mixing.

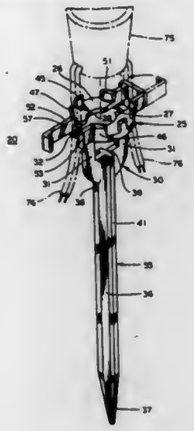
5,570,952

LIGHT STAKE

William F. Protz, Jr., Lake Forest, Ill., assignor to Santa's Best, Northfield, Ill.

Filed Feb. 9, 1995, Ser. No. 387,134
Int. Cl.[6] F21S 1/00
U.S. Cl. 362—431 **24 Claims**

1. A light stake insertable into the ground for positioning a series



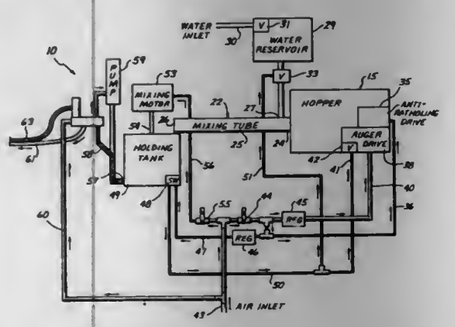
of decorative bulbs in sockets along a wire connecting the sockets at predetermined positions above the ground, comprising: a base having an elongated post extending perpendicularly therefrom; said base being capable of maintaining sockets having different diameters, a locking mechanism on said base movable between an open position and a locked position; said locking mechanism cooperating with said base fixedly to position the wire connecting the series of decorative bulb sockets with respect to said base when said locking mechanism is in the locked position thereof and the wire is trapped against said base by said locking mechanism.

5,570,953

MUD-MIXING MACHINE FOR DRYWALL TEXTURING AND OTHER APPLICATIONS

Harlen E. DeWall, 26849 Caballero Canyon Rd., Escondido, Calif. 92026

Filed Nov. 28, 1994, Ser. No. 345,299
Int. Cl.[6] B28C 5/12;7/04
U.S. Cl. 366—10 **14 Claims**



1. An apparatus for forming a mixture of powdered material and water, comprising:

means in the form of a hopper for holding a supply of powdered material;

means in the form of a tank for receiving and holding a mixture of the powdered material and water;

a tube intermediate the hopper and the tank, the tube having a first end portion in communication with the hopper, a second end portion in communication with the tank, and a midportion intermediate the first and second end portions;

a water inlet in communication with the tube; and

means in the form of an auger extending from the hopper into the tube for feeding the powdered material from the hopper into the tube, for mixing the powdered material in the tube with water introduced in the tube through the water inlet in order to produce the mixture, and for pushing the mixture out the second end of the tube to the holding tank;

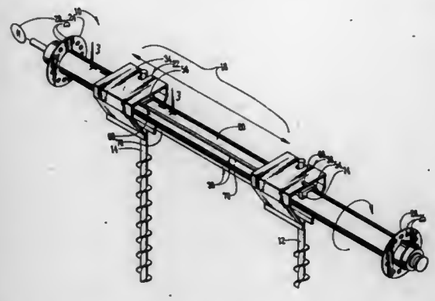
wherein the auger includes a first flight having a first diameter for augering powdered material from the hopper into the first end of the tube, a second flight having a larger second diameter for augering the powdered material further into the tube, and a spiralled pattern of mixing paddles for mixing the powdered material and water to form the mixture and for pushing the mixture out of the second end of the tube.

5,570,954

CARRIAGE RETURN APPARATUS FOR A GRAIN STIRRING DEVICE HAVING MULTIPLE STIRRERS

Eugene G. Sukup, Hampton, Iowa, assignor to Sukup Manufacturing Company, Sheffield, Iowa

Filed Mar. 1, 1995, Ser. No. 396,545
Int. Cl.[6] B01F 7/24
U.S. Cl. 366—261 **15 Claims**



15. An apparatus for stirring grain in a grain storage bin having a top portion, a bottom, and side walls, comprising:

a fixed length horizontal shaft having opposite ends movably mounted adjacent the top portion of said bin; at least two grain stirring devices movably mounted for longitudinal movement on said shaft;

a power mechanism for longitudinally moving said at least two grain stirring devices on said shaft and for reciprocally moving said at least two grain stirring devices in alternate longitudinal directions on said shaft; and

an elongated link connecting said at least two stirring devices so that said at least two stirring devices move longitudinally in unison on said shaft, said link having a length less than one-half said length of said shaft so that the length of travel of each of said stirring devices overlaps to ensure thorough stirring along the complete length of said shaft;

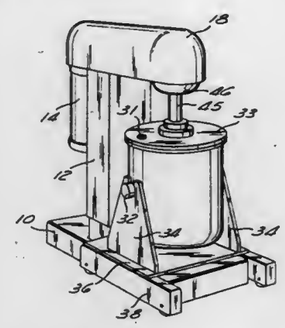
said elongated link being adjustable in length.

5,570,955

MODULAR HIGH SHEAR MIXER

James R. Swartwout, Redondo Beach, and John J. Corrigan, Garden Grove, both of Calif., assignors to Morehouse Cowles, Inc., Fullerton, Calif.

Filed May 12, 1994, Ser. No. 242,612
Int. Cl.[6] B01F 5/12
U.S. Cl. 366—264 **8 Claims**



1. A mixer comprising:

a) a motor-driven shaft having upper and lower ends;

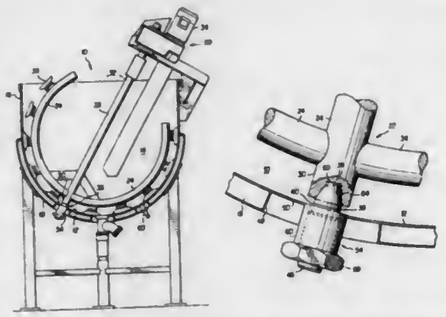
b) a first mixing member disposed upon the lower end of said shaft; and
c) a shaft guard substantially enclosing said shaft and extending generally from the upper end to the lower end thereof;
further comprising;
d) an oil cup disposed about the upper end of said shaft guard;
e) an aperture formed in said shaft guard so as to provide fluid communication from said oil cup to said shaft;
f) a first bearing disposed at the upper end of said shaft and rotatably interconnecting said shaft and said shaft guard;
g) a second bearing disposed at the lower end of said shaft and rotatably interconnecting said shaft and said shaft guard; and
h) a seal formed at the lower end of said shaft to maintain oil within said shaft guard and upon said first and second bearings and to prevent oil leakage from said shaft guard.

5,570,956

AGITATOR SHAFT TOE MOUNT FOR INCLINED AND VERTICAL AGITATORS

Valentino Gabriele, Baltimore, Md., assignor to J. C. Padro & Sons, Baltimore, Md.

Filed Dec. 4, 1995, Ser. No. 567,039
Int. Cl.[6] B01F *7/04;* **F16C** *17/08*
U.S. Cl. 366—312 **19 Claims**



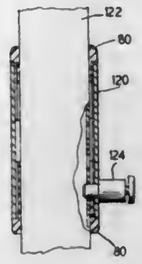
1. In combination, a kettle having inner walls and an agitator having a rotary shaft, the rotary shaft having a distal end extending into the interior of the kettle and having a free end extending from the interior of the kettle and mounted to a drive system for rotation of the shaft to mix materials being processed within the kettle, the combination further comprising:
shaft toe mounting means for mounting the distal end of the rotary shaft relative to the inner walls of the kettle and comprising a cylindrical body element, a toe bearing element mounted to one end of the cylindrical body element and an annular bevel formed at the other end of the cylindrical body element;
sleeve means formed on a wall of the kettle for receiving at least portions of the shaft toe mounting means thereinto and the sleeve means having a detent formed in the interior thereof functioning to contact the bevel formed on the cylindrical body element and thus to limit the degree of reception of the shaft toe mounting means thereinto, the location of the detent allowing the toe bearing element to extend into the interior of the kettle; and,
retaining means for holding the shaft toe mounting means within the sleeve means with at least a portion of the shaft toe mounting means extending into the interior of the kettle, at least a portion of that portion of the shaft toe mounting means extending into the interior of the kettle comprising first bearing surfaces, the toe bearing element having the first bearing surfaces formed thereon, a depression formed in the distal end of the rotary shaft having second bearing surfaces of a shape substantially complementary to the shape of the first bearing surfaces, the rotary shaft rotating relative to the shaft toe bearing means and being mounted thereby with said bearing surfaces facilitating rotation therebetween.

5,570,957

BUSHING ARRANGEMENT FOR CARRIAGE ON EXERCISE EQUIPMENT

Stephen Kuly, Warrenville, and Earl Shraiberg, Chicago, both of Ill., assignors to Body-Solid, Inc., Lombard, Ill.

Filed Jun. 24, 1994, Ser. No. 265,150
Int. Cl.[6] F16C *29/02*
U.S. Cl. 384—42 **7 Claims**



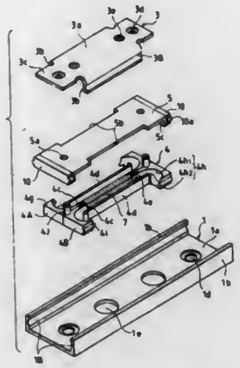
1. An exercise apparatus, comprising:
at least one exercise station having at least one rail;
a carriage carried on said rail, the carriage constructed for relative travel along said rail; and
at least one polymer bushing snugly fitted between said carriage and said rail, said bushing having a smooth bearing surface which faces and rides directly on said rail without requiring lubricant, wherein said polymer bushing is made of polyhexamethylene adipamide.

5,570,958

MINIATURE LINEAR GUIDE LUBRICATED WITH A LUBRICANT CONTAINING POLYMER

Toru Tsukada, Gunma, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Sep. 30, 1994, Ser. No. 312,969
Claims priority, application Japan, Sep. 30, 1993, 5-244850
Int. Cl.[6] F16C *29/06;33/10*
U.S. Cl. 384—45 **2 Claims**



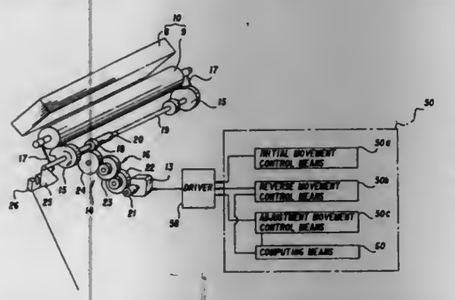
1. A miniature linear guide comprising:
a guide rail that is U-shaped in section and which extends axially, said guide rail including a first loaded ball rolling groove formed on an inner surface of a side wall of said guide rail and extending axially;
a slider including:
a slider body that is U-shaped in section and which is adapted to be fitted in said guide rail, said slider body including a second loaded ball rolling groove formed on an outer surface of a side wall of said slider body and confronted with said first loaded ball rolling groove of said guide rail; and
a circulator having an unloaded ball circulating path which extends axially, said circulator being fitted in said slider body; and
a plurality of balls fitted to roll in a space defined by said first and second loaded ball rolling grooves and said unloaded ball circulating path of said circulator; and
a lubricant-containing polymer member installed in said circulator in contact with said balls, wherein said circulator is formed by joining two half members in a back-to-back relationship, said polymer member being held between said half members.

5,570,959

METHOD AND SYSTEM FOR PRINTING GAP ADJUSTMENT

Hisao Moriwaki; Koulchi Uozumi; Hiroshi Fujimoto; Daigo Uchikoshi; Mitsunori Hiraishi; Kazuhiro Tamada; Shingo Ashida; Tsutomu Nagatomi, and Yoshito Fukata, all of Hyogo, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 7, 1995, Ser. No. 525,346
Claims priority, application Japan, Oct. 28, 1994, 6-265271; Oct. 28, 1994, 6-265778
Int. Cl.[6] B41J *25/308*
U.S. Cl. 400—56 **24 Claims**



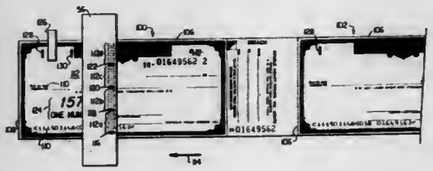
1. A printing gap adjustment system for adjusting the printing gap between a print head and a platen that are so disposed as to move closer to or away from each other with a paper sheet interposed therebetween, the system comprising:
(a) an approach/separation mechanism for moving either the platen or the print head closer to or away from the other so that the relative positions of the platen and the print head are adjusted;
(b) a torque limiter incorporated in the approach/separation mechanism, for cutting off a pressing force applied to the paper sheet by means of the print head and the platen when the pressing force exceeds a predetermined value; and
(c) approach/separation control means for controlling the approach/separation mechanism such that either the print head or the platen is moved, from an initial position, closer to a pressing position where the paper sheet is to be pressed by the print head and the platen, and then moved to an origin position, being far away from the paper sheet, and then moved from the origin position, by an appropriate pressing distance obtained by subtracting an appropriate value for the printing gap from the distance between the pressing position and the origin position, in the direction in which the relative positions of the print head and the platen come closer.

5,570,960

APPARATUS FOR DISPENSING MONEY ORDERS

Lawrence G. Smith, Oriando, Fla., assignor to Travelers Express Company, Inc., Minneapolis, Minn.

Continuation of Ser. No. 404,134, Mar. 13, 1995, Pat. No. 5,492,423, which is a continuation of Ser. No. 151,060, Nov. 12, 1993, abandoned, which is a continuation of Ser. No. 933,869, Aug. 21, 1992, abandoned, which is a continuation of Ser. No. 814,039, Dec. 24, 1991, abandoned, which is a continuation of Ser. No. 494,665, Mar. 16, 1990, abandoned, which is a continuation of Ser. No. 406,979, Sep. 13, 1989, abandoned, which is a continuation of Ser. No. 121,074, Nov. 16, 1987, Pat. No. 4,870,596, which is a continuation of Ser. No. 60,762, Jun. 8, 1987, Pat. No. 4,812,986, which is a division of Ser. No. 877,539, Oct. 31, 1986, Pat. No. 4,699,532, which is a division of Ser. No. 596,291, Apr. 3, 1984, Pat. No. 4,625,275. This application Jun. 6, 1995, Ser. No. 466,415
Int. Cl.[6] B41J *21/16*
U.S. Cl. 400—74 **3 Claims**



1. An automatic money order dispenser for printing and dispensing money orders of the type having relatively long top and bottom edges and relatively short left and right side edges, and having alphanumeric indicia pre-printed thereon along lines extending substantially parallel to the top and bottom edges comprising:
a digital processor for controlling the operation of said dispenser;
a money order issuing path along which pre-printed money order forms travel with one of the side edges of each form positioned as a leading edge as the forms travel along the issuing path through the dispenser;
printing means extending entirely transversely across the money order issuing path and perpendicular to the top and bottom edges of the pre-printed money order forms for simultaneously printing variable alphanumeric indicia on the pre-printed money order forms on a plurality of lines extending substantially parallel to the top and bottom edges of the forms thereby forming completed money orders to be issued;
means for insuring the pre-printed money order forms are not counterfeit including means sensing at least one code mark on each pre-printed form, said means for insuring further including means determining whether the forms are properly located in the printing means before actuating the printing means;
an external housing enclosing the money order issuing path, the printing means and a compartment for storing pre-printed money order forms; and
an opening in the housing for emitting completed money orders from the housing following printing by the printing means.

5,570,961

COLOR PRINTER FEEDING MECHANISM

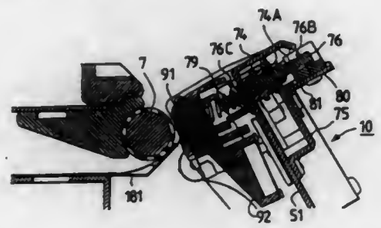
Naomi Osada, Yokohama; Toshiro Kohno, and Satoshi Kanbe, both of Yokosuka, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 27, 1994, Ser. No. 250,237

Claims priority, application Japan, May 31, 1993, 5-033483 U; May 31, 1993, 5-149896; Jun. 10, 1993, 5-165116; Jul. 23, 1993, 5-202748; Dec. 22, 1993, 5-346773

Int. Cl.[6] B41J *2/52*

U.S. Cl. 400—120.04 **14 Claims**



1. A color printer comprising:
a line thermal head;
a platen roller rotatable in both forward and reverse directions for feeding a recording sheet forward when the platen roller is rotated in the forward direction and said line thermal head is pressed against said platen roller, and for returning the recording sheet backward when the platen roller is rotated in the reverse direction and the line thermal head is released from said platen;
recording sheet pressing means, independent of said line thermal head, for pressing the recording sheet against said platen roller,
said recording sheet pressing means comprising a pressing spring plate and an elastic member, said pressing spring plate applying a pressing force to the recording sheet through said elastic member; and
a sheet transportation path for guiding the recording sheet to said platen roller;
said pressing spring plate of said recording sheet pressing means extending in a predetermined direction so as to serve as a guide member defining said sheet transportation path, and
a fixing position of said pressing spring plate being adjustable with respect to said platen roller, so that the pressing force applied by said pressing spring plate to the recording sheet through said elastic member is quantitatively adjustable.

5,570,962

THERMAL PRINTER

Minoru Suzuki; Kiyoshi Negishi; Katsumi Kawamura; Mikio Horie; Hiroshi Orita, and Katsuyoshi Suzuki, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

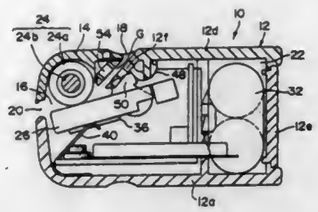
Filed May 3, 1995, Ser. No. 433,570

Claims priority, application Japan, May 18, 1994, 6-128330

Int. Cl.[6] B41J *2/32;29/02*

U.S. Cl. 400—120.16 **11 Claims**

1. A thermal printer comprising:
a housing;
a cover member, rotatably mounted on said housing, and swingable between an open position and a closed position relative to said housing;
a platen roller rotatably supported in said printer;
a thermal line printhead swingably supported in said printer, said thermal line printhead being contactable to, and swingable towards and away from, said platen roller, and being adapted to form an image on said paper;



a transfer channel, defined between said cover member and said housing, for transferring paper between said platen roller and said thermal line printhead when said cover member is in said closed position;
said cover member being displaced from said paper when said cover member is in said open position;
means for moving said thermal line printhead out of contact with said platen roller, in response to movement of said cover member to said open position; and
a paper detector, provided on said cover member, and being swingable with said cover member away from said paper to detect a presence or an absence of paper in said transfer channel when said cover member is in said closed position.

5,570,963

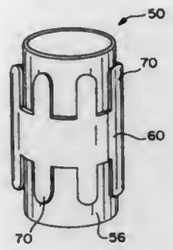
INK TRANSFER ROLLER FOR RIBBON CARTRIDGES

Narinder Gill, Chatsworth, Calif., assignor to Sercomp Corporation, Chatsworth, Calif.

Filed Jul. 14, 1995, Ser. No. 502,664

Int. Cl.[6] B41J *31/14*

U.S. Cl. 400—197 **2 Claims**



1. An ink transfer roller used in a ribbon cartridge comprising:
a main cylindrical body having an external surface and an internal surface;
a continuous central ridge provided circumferentially on said external surface of said cylindrical body; and
a plurality of branch ridges extending from both edges of said central ridge in a longitudinal direction of a longitudinal axis of said main cylindrical body, said branch ridges being equally spaced from each other in a circumferential direction of said cylindrical main body.

5,570,964

GLUE STICK APPARATUS FOR A RING BINDER

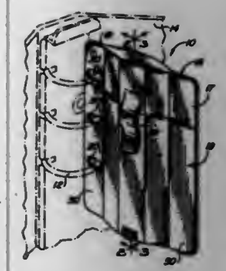
Mark A. Bedol, 3423 Yankton Ave., Claremont, Calif. 91711

Continuation of Ser. No. 236,511, Apr. 28, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 461,767

Int. Cl.[6] B43K *21/08;* **A45D** *40/20;* **B42D** *3/00*

U.S. Cl. 401—75 **7 Claims**

1. A glue stick apparatus for a ring binder, comprising:



a housing having a peripheral edge with at least two holes being sized so as to accommodate a ring binder, said housing having a chamber formed therein, said housing including an opening formed by an inwardly extending flange on a back end thereof;
a glue stick support assembly supported within said chamber of said housing said glue stick support assembly, comprising:
a rotatable knob having a recessed portion;
a threaded rod integrally connected to said knob and extending along a longitudinal axis of said chamber within said housing; and
a glue stick support member having an opening for threadable engagement with said threaded rod; and
a glue stick supported by said glue stick support assembly, wherein said flange is maintained within said recessed portion to prevent axial movement of said knob and said threaded rod relative to said housing.

5,570,965

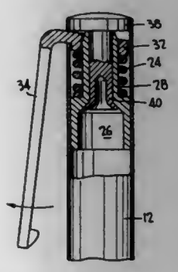
WRITING INSTRUMENT CLIP ASSEMBLY

James A. Coolen, Warwick, R.I., assignor to C & J Jewelry Co., Inc., Providence, R.I.

Filed Sep. 1, 1995, Ser. No. 522,701

Int. Cl.[6] B43K *23/00*

U.S. Cl. 401—98 **6 Claims**



1. A writing instrument comprising:
a cap means and
a clip assembly inserted in said cap means,
said clip assembly comprising
a hollow, essentially cylindrical inner sleeve having a hollow spring receiving end at a top end,
a spring means mounted upon said receiving end of said inner sleeve,
a clip means having an aperture and pivotally mounted on said spring means, and
a cap top assembly means extending through said aperture and into said inner sleeve.

5,570,966

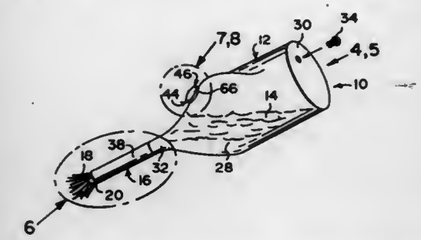
FLOW-THROUGH BRUSH FLUID DISPENSING CONTAINER

John J. Phelan, 109 Jeanette Ave., Inwood, N.Y. 11696

Filed May 8, 1995, Ser. No. 438,028

Int. Cl.[6] A46B *11/02;11/04*

U.S. Cl. 401—183 **5 Claims**



1. A flow-through brush fluid dispensing container comprising:
a) a squeeze bottle for holding a liquid therein, said squeeze bottle having an inner surface, a throughbore with a diameter, and an undeformed shaper the liquid selected from the group consisting of viscus and non-viscous;
b) an elongated stem extending smoothly from said squeeze bottle, so that the liquid held in said squeeze bottle is not stagnated where said elongated stem extends from said squeeze bottle, said elongated stem having a distal free end;
c) a plurality of bristles disposed at said distal free end of said elongated stem, said plurality of bristles receiving the liquid squeezed from said squeeze bottle through said elongated stem, so that said plurality of bristles can apply the liquid onto various articles;
d) a plunger passing through said throughbore of said squeeze bottle, said plunger having a lower end, and an external portion with an upper end extending outside said squeeze bottle;
e) a valve seat disposed in said squeeze bottle and cooperating with said inner surface of said squeeze said plunger and having a diameter greater than said bottle, said valve seat disposed on said lower end of diameter of said throughbore of said squeeze bottle, so that said valve seat closes said throughbore of said squeeze bottle in a normally closed position;
f) a bellows disposed outside said squeeze bottle and having an upper end, a lower end disposed on said squeeze bottle, and a laterally disposed vent throughbore, said external portion of said plunger disposed in said bellows, so that said plunger is biased upwardly and said valve seat is maintained in said normally closed position, so that contaminants are prevented from entering said squeeze bottle, and so that said squeeze bottle automatically recovers said undeformed shape after being squeezed since a differential pressure is created when said squeeze bottle attempts to recover said undeformed shape after being squeezed which causes air to be automatically drawn through said laterally disposed vent throughbore of said bellows and through said throughbore of said squeeze bottle into said squeeze bottle which causes said squeeze bottle to recover said undeformed shape; and
g) a cap disposed outside said squeeze bottle and being disposed on said upper end of said external portion of said plunger and on said upper end of said bellows, so that when the liquid is non-viscous and said cap is manually pressed downwardly said laterally disposed vent throughbore of said bellows is not obstructed and said plunger moves said valve seat away from said inner surface of said squeeze bottle and opens said throughbore of said squeeze bottle so as to allow air to pass through said laterally disposed vent throughbore of said bellows and through said throughbore of said squeeze bottle and causes the non-viscous liquid to flow easily from said squeeze bottle into said plurality of bristles with a high degree of control without squeezing and deforming said squeeze bottle.

5,570,967

WRITING INSTRUMENT HAVING LIGHT DEVICE

Chuang-Yi Chen, 3rd Floor, No. 192, Section 4, Chen Deh Road, Taipei, Taiwan

Filed Jul. 14, 1995, Ser. No. 502,486
Int. Cl.[6] B43K *29/10*
U.S. Cl. 401—195 1 Claim



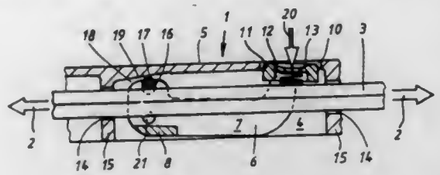
1. A writing instrument comprising:
a tube including an upper portion and including a lower portion,
a cap secured to said lower portion of said tube,
a light element engaged in said cap and including a first electrode and a second electrode,
a writing element slidably engaged in said tube,
a pipe slidably engaged in said tube and including a lower portion engaged with said writing element and including an upper portion,
a barrel secured in said tube,
a housing slidably engaged in said upper portion of said tube and electrically connecting to said tube,
a first cable for electrically connecting to said tube to said first electrode of said light element,
an insulating sleeve engaged in said housing,
at least one battery engaged in said insulating sleeve and including a case electrode and a center electrode,
a knob threadedly engaged on top of said insulating sleeve,
means for electrically connecting said knob to said case electrode of said battery,
means for electrically connecting said center electrode to said pipe and said writing element,
a second cable for electrically connecting said writing element to said second electrode of said light element, and
a circuit board engaged in said cap and including an outer peripheral portion and including an orifice having an inner peripheral surface, said first cable electrically connecting said first electrode of said light element to said outer peripheral portion of said circuit board, said second cable electrically connecting said second electrode of said light element to said inner peripheral surface, and said writing element being engaged through said orifice of said circuit board for electrically and slidably contacting with said second cable, and
said light element being energized when said knob is rotated relative to said insulating sleeve to engage with said housing.

5,570,968

PUSH BUTTON LEVER CLAMPING DEVICE FOR TELESCOPING MEMBERS

Werner Sassmannshausen, Bad Berleburg-Berghausen; Werner Sassmannshausen, Bad Berleburg-Wingeshausen, and Anke Kleindienst, Bad Berleburg, all of Germany, assignors to Sonor Johs. Link GmbH, Bad-Berleburg, Germany

PCT No. PCT/EP94/00861, § 371 Date Dec. 13, 1994, § 102(e) Date Dec. 13, 1994, PCT Pub. No. WO94/23215, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 18, 1994, Ser. No. 343,610
Claims priority, application Germany, Mar. 30, 1993, 43 10 355.3
Int. Cl.[6] F16B *7/10*
U.S. Cl. 403—109 6 Claims



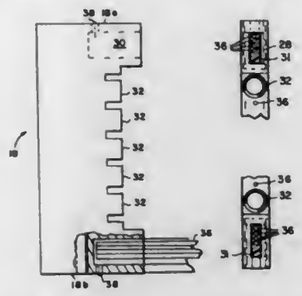
1. A clamping device securing an axially displaceable rod in optional adjustment positions, the clamping device comprising a housing having an interior, wherein the rod extends through the housing, and a lever having first and second ends, a push button extending outwardly through the housing attached to the first end of the lever, means for biasing the push button out of the interior of the housing, and a rolling body mounted on the second end of the lever, the interior of the housing having an inclined wall portion, wherein the rolling body contacts the inclined wall portion, such that the inclined wall portion acts to clamp the rolling body against the rod for locking the rod.

5,570,969

COMPOSITE WATERLANCE AND CAVITY CONNECTION

Frank Kamler, Ontario, Canada, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 2, 1995, Ser. No. 398,202
Int. Cl.[6] F16B *11/00*
U.S. Cl. 403—268 13 Claims



1. In a waterlance having a rear manifold, a fluid inlet, a plurality of longitudinally extending spaced apart fluid tubes, and a front manifold, a front manifold, comprising:
at least one wedge shaped cavity positioned at a rearward edge, said wedge shaped cavity being constructed to receive a plurality of reinforced fiber ropes, said front manifold being constructed to receive fluid tubes with a fiber reinforcement rope positioned between at least one of the fluid tubes; and

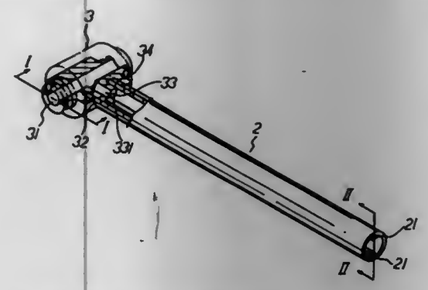
means for holding said ropes in said at least one wedge shaped cavity for attaching the front manifold to a body of the waterlance.

5,570,970

TUBE AND CONNECTOR ARRANGEMENT FOR A LIGHTING FIXTURE

Chih-Te Yang, No. 20, Lane 132, Sec. 1, Chang Mei Road, Changhua City, Taiwan

Filed Jun. 7, 1994, Ser. No. 255,243
Int. Cl.[6] F16B *9/00*
U.S. Cl. 403—374 1 Claim



1. A tube and connector arrangement for a lighting fixture, comprising:
a tube;
a connector connected to said tube for connecting parts of the lighting fixture, wherein said tube has two symmetrical rails raised from an inside wall along a length of the tube; said connector comprises a longitudinal center through hole, through which an electric wire of the lighting fixture passes, a circular recess at one side, which receives either end of said tube, and a stub rod concentrically disposed within said circular recess, which fits into one end of said tube, said stub rod having a round hole through a length of the stub rod in communication with said longitudinal center through hole for passing the electric wire and two longitudinal grooves on a periphery of the stub rod at two opposite sides respectively engaged with said symmetrical rails, a depth of either longitudinal groove being made gradually deeper from an inner end toward an outer end so that the symmetrical rails are tightly retained in the longitudinal grooves, whereby the connector and the tube are tightly joined together.

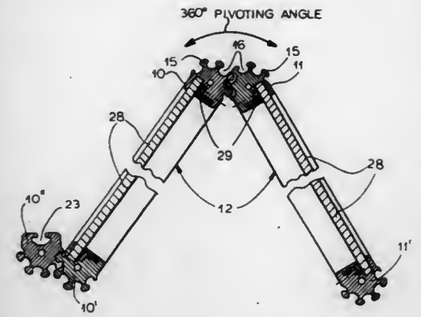
5,570,971

CONNECTION BETWEEN COMPONENTS

Wolfgang Riken, and Gerrit Pies, both of 107-109, D-42699 Solingen, Germany

PCT No. PCT/DE93/00043, § 371 Date Jul. 21, 1994, § 102(e) Date Jul. 21, 1994, PCT Pub. No. WO93/14280, PCT Pub. Date Jul. 22, 1993
PCT Filed Jan. 20, 1993, Ser. No. 256,689
Claims priority, application Germany, Jan. 21, 1992, 9200642 U
Int. Cl.[6] A47G *5/00*; F16C *11/00*
U.S. Cl. 403—381 10 Claims

1. A connection assembly comprising:
a first elongated rigid profiled component extending along a longitudinal axis and formed with a multiplicity of angularly equispaced notches and a multiplicity of angularly equispaced tongues projecting radially from said first elongated rigid profiled component, said tongues and notches alternating with one another, each of said tongues having an arcuate convex ellipsoidal outer peripheral surface, a pair of undercut surfaces extending inwardly from ends of said arcuate convex outer peripheral surface, and a stem; and



at least one second elongated rigid profiled component formed with a respective multiplicity of angularly equispaced notches and a respective multiplicity of angularly equispaced tongues projecting radially from said second elongated rigid profiled component and alternating with the respective notches, each of said tongues of the second elongated rigid profiled component being of a mushroom-shaped cross section having an arcuate convex ellipsoidal outer peripheral surface and having a pair of undercut surfaces extending inwardly from ends of said arcuate convex outer peripheral surface, and a stem,
said first and second elongated rigid profiled components being in an engaged position upon mutual axial displacement of said elongated rigid profiled components, so that one of said tongues of the second elongated rigid profiled component slides along a respective one of said multiplicity of notches of the first elongated rigid profiled component, each of said notches of said first and second elongated rigid profiled components being larger than each of said notches, so that said first and second elongaied rigid profiled components are mutually angularly pivotal with respect to each other in said engaged position, the undercut surfaces of one respective tongue of the first elongated rigid profiled component engaging the undercut surfaces of a respective pair of tongues of the second elongated rigid profiled component flanking said one respective tongue and thereby preventing separation of said elongated rigid profiled components in a direction transversely to the longitudinal axis in the engaged position during pivoting.

5,570,972

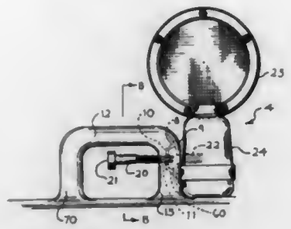
TRAFFIC BARRICADE AND FLASHER LIGHT ASSEMBLY WITH COMBINATION FLASHER LIGHT MOUNTING APPARATUS AND CARYING HANDLE

Geoffrey M. Glass, Rolling Meadows, Ill.; Wayne J. Brocka, and Douglas C. Madsen, both of Shell Rock, Iowa, assignors to Plasticade Products Corporation, Rolling Meadows, Ill.

Filed Feb. 1, 1995, Ser. No. 382,485
Int. Cl.[6] E01F *9/00*
U.S. Cl. 404—6 15 Claims

1. A traffic barricade assembly comprising:
a pair of panel members, each having a top surface, said panel members hingeably connected together;
a handle member upstanding from the top surface of at least one of said panel members, said handle member having an inverted "U" shape including two side portions extending substantially upward from the top surface of said panel member, and a substantially horizontal connecting bar connecting said side portions;
a flange on said handle member; and
a flasher light unit attached to said handle member via said flange.



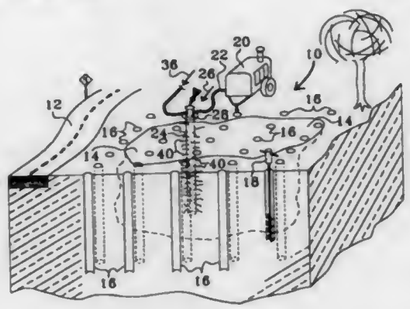


5,570,973

METHOD AND SYSTEM FOR BIOREMEDIATION OF CONTAMINATED SOIL USING INOCULATED DIATOMACEOUS EARTH

Seth C. Hunt, Lakewood, Colo., assignor to Foremost Solutions, Inc., Lakewood, Colo.

Filed Jul. 11, 1994, Ser. No. 272,816
Int. Cl.[6] A62D *3/00*; E02D *3/00;31/00*
U.S. Cl. 405—128 13 Claims



1. A method for in-situ bioremediation of contaminated soil and ground water wherein porous inorganic support spheres such as diatomaceous earth pellets are treated by inoculation with selected non-pathogenic microbes, ie. bacteria, for destroying or converting the contaminate, the steps comprising:

preparing and treating the contaminated soil by creating fractures and fissures therein using fluid pressure introduced through spaced apart drill holes drilled to selected depths;

inoculating cells of the porous inorganic support spheres with a selected microbe designed to destroy or convert the contaminate; and

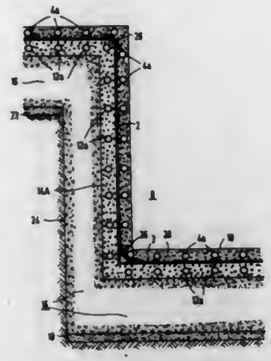
introducing said support spheres with microbes under pressure into the fractures and fissures of the contaminated soil.

5,570,974

ASSEMBLY FOR MONITORING A LANDFILL AND A METHOD OF LOCATING LEAKS

Peter Jax, Erlangen, and Klaus Ruthrof, Nuremberg, both of Germany, assignors to Siemens Aktiengesellschaft, Muenchen, Germany

Filed Oct. 24, 1994, Ser. No. 328,071
Claims priority, application Germany, Apr. 24, 1992, 42 13 585.0
Int. Cl.[6] B09B *3/00*; A62D *3/00*
U.S. Cl. 405—129 19 Claims



1. A monitoring assembly for a landfill, comprising:

a sealing liner having a first side and a second side;

a first sensor hose laid on said first side of said sealing liner;

a second sensor hose laid on said second side of said sealing liner, at least a portion of said second sensor hose running parallel to a portion of said first sensor hose;

pump means for charging said first and second sensor hoses with a transport medium;

detector means for issuing a first indicator signal indicating a substance in the transport medium fed through said first sensor hose and for issuing a second indicator signal indicating a substance in the transport medium fed through said second sensor hose; and

logic means for logically linking, with respect to location, said first indicator signal from said first sensor hose with said second indicator signal from said second sensor hose.

5,570,975

METAL FOUNDATION PUSH-IT AND INSTALLATION APPARATUS AND METHOD

Gary L. Reinert, Sr., 4319 Middle Rd., Allison Park, Pa. 15101

Filed Jun. 27, 1994, Ser. No. 266,183
Int. Cl.[6] E02D *7/00;17/02*
U.S. Cl. 405—232 10 Claims

1. A mobile pipe-column-type metal foundation installation apparatus, comprising:

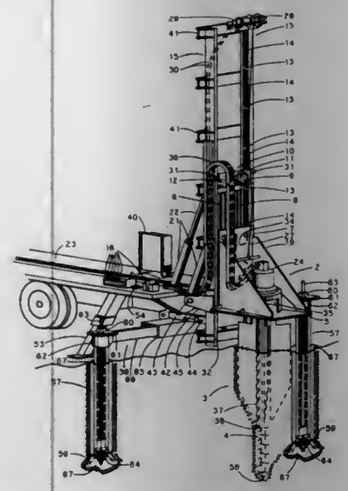
(a.) a mobile platform;

(b.) a pipe-column-type metal foundation holder supported on a tower mounted on said mobile platform, said metal foundation having a cylindrical pipe-column-type body and longitudinal fins welded vertically alongside said cylindrical pipe-column-type body;

(c.) a push-it carriage movably supported on said tower for providing controllably movable positioning to said cylindrical- pipe-column-type metal foundation holder;

(d.) hydraulic pushing cylinders on said push-it carriage for pushing against a header frame held in adjustable securing positions on said tower; and

(e.) an auger aligned below said push-it carriage and inside said cylindrical pipe-column-type metal foundation for drilling a hole in the ground in advance of pushing said cylindrical pipe- column-type metal foundation from said metal foundation holder into the ground.

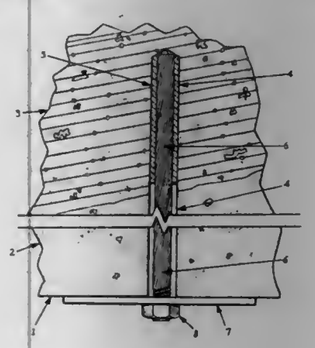


5,570,976

CABLE HOLT

Peter G. Fuller, East Hawthorn, and Paul O'Grady, Pyrmont, both of Australia, assignors to J.J.P. Geotechnical Engineering Pty. Ltd., Australia

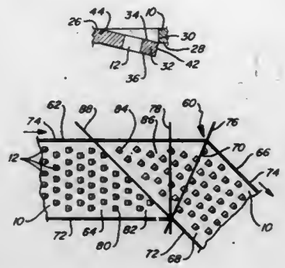
PCT No. PCT/AU92/00369, § 371 Date Jan. 21, 1994, § 102(e) Date Jan. 21, 1994, PCT Pub. No. WO93/03256, PCT Pub. Date Feb. 18, 1993
PCT Filed Jul. 22, 1992, Ser. No. 182,016
Claims priority, application Australia, Jul. 26, 1991, PK7455
Int. Cl.[6] F21D *21/00*
U.S. Cl. 405—302.2 11 Claims



1. A cable bolt comprising:

a central wire and an outer layer formed of at least one wire wound about said central wire; a thread form formed directly onto the wires in said outer layer at one end of the cable bolt, said thread form being adapted to have a nut directly threaded thereon; and

at least one intermediate layer provided between said central wire and said outer layer, the wires in said intermediate layer and said outer layer being wound around said central wire in a predetermined lay direction with the wires in each layer being substantially parallel to one another.



1. A device for effecting movement of articles along a predetermined path in a preselected direction, said device comprising:

a plate including a first portion and a plurality of second portions having substantially flat tab sections each of which has a first portion connected to said first portion of said plate and at least one edge portion unattached to said first portion of said plate, said tab sections extending from and inclined with respect to said first portion of said plate and each of said tab sections having an aperture therethrough;

article guide means cooperable with said first portion of said plate to define the predetermined path for the articles adjacent to said plate; and

fluid supply means adjacent to said plate, said fluid supply means supplying fluid. during normal operation of said device, through said apertures in said tab sections of said second portions of said plate with said fluid being discharged from said apertures in a direction to thereby urge the articles along the predetermined path in the preselected direction.

18. A device for injecting fluid into a predetermined article movement path having an upstream section, a downstream section, and a turn between the upstream section and the downstream section to effect movement of articles along the article movement path in first and second downstream directions, said device comprising:

a plate at the article movement path, said plate having a first portion adjacent to the upstream section of the article movement path and a second portion adjacent to the downstream section of the article movement path;

first and second groups of inclined apertures at said plate for injecting the fluid through said apertures into the article movement path, said first group of apertures being positioned at said first portion of said plate and inclined to inject the fluid into the upstream section of the article movement path in said first downstream direction substantially parallel to the upstream section of the article movement path, and said second group of apertures being positioned at both said first and second portions of said plate and inclined to inject the fluid into both the upstream and downstream sections of the article movement path in said second downstream direction substantially parallel to the downstream section of the article movement path; and

fluid supply means supplying the fluid to be injected through said first and second group of apertures during normal operation of the device.

5,570,978

HIGH PERFORMANCE CUTTING TOOLS

John X. Rees, 24813 Ave. 212, Lindsay, Calif. 93247, and Edward M. Sybesma, 1031 Greenfield Dr., Porterville, Calif. 93257

Filed Dec. 5, 1994, Ser. No. 349,329
Int. Cl.[6] B23B *51/10*
U.S. Cl. 408—144 5 Claims



1. In a relatively large high performance cutting tool for forming complex holes in work piece such as an aluminum wheel, or the like;

said tool having an elongated generally cylindrical body symmetrically formed about a longitudinal axis, said elongated body having a shank portion, an intermediate flute portion and a nose portion terminating in a tip, all said portions being formed about a longitudinal axis;

said flute portion defining a pair of diametrically opposed straight sided flutes, said flutes together defining a pair of diametrically opposed deep groves;

said nose portion and said flat portion together defining a slot, said slot extending inwardly from said tip of said nose portion along the longitudinal axis to a predetermined depth;

means defining an elongated unitary cutter insert, said cutter insert being formed of a relatively flat carbide material, and having a plurality of cutting edges formed thereon, said cutting edges being angularly disposed with respect to one another;

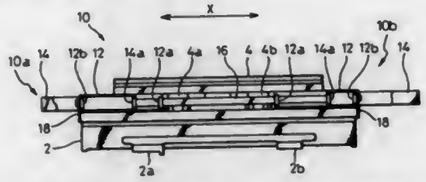
said insert being secured by brazing the same with tri-ply solder in said slot such that as said tool is rotated about its longitudinal axis, said cutting edges contact the work piece to form a complex hole therein.

5,570,979

TELESCOPIC COVER FOR A MACHINE TOOL

Shinya Okamoto, and Akihiko Fujimoto, both of Yamanashi, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

Filed Aug. 17, 1995, Ser. No. 516,333
Claims priority, application Japan, Aug. 18, 1994, 6-194187
Int. Cl.[6] B23Q *11/08*; B23C *9/00*
U.S. Cl. 409—134 7 Claims



1. A telescopic cover, on a machine tool, which comprises a first member slidable between first and second positions along an axis and having first and second ends provided toward the first and second positions respectively, a second member provided beneath the first member stationary along the axis and having first and second ends provided toward the first and second positions respectively, and a feeding mechanism for moving the first member along the axis, the feeding mechanism being provided in a space beneath a horizontal plane substantially coincident with the top face of the second member, in which the telescopic cover comprises:

a pair telescopic cover assemblies attached to the first and second ends ot the first member over the feeding mechanism such that the telescopic cover assemblies telescopically retract and extend along an axis when the first member moves along the axis;

the pair of telescopic cover assemblies comprising a pair of first cover members extending over the horizontal plane and attached to the first and second ends of the first member to move with the first member, a pair of second cover members extending over the horizontal plane and provided for the respective first cover members, the second cover members being slidable relative to the respective first cover members along the axis to retract into and come out of the respective first cover members, the first and second cover members having inner and outer ends along the axis respectively;

a means for limiting the moving range of the second member along the axis to maintain the second cover member over the feeding mechanism when the first member moves along the axis;

a means for bearing the second cover members slidable along the axis; and

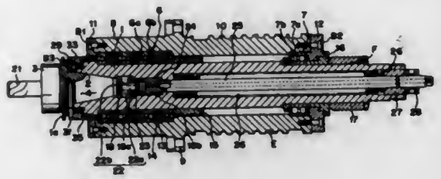
a means for connecting the second cover members to each other.

5,570,980

SPINDLE APPARATUS

Shinya Nakamura; Kiyoharu Maruta; Masaki Matsuoka, all of Maebashi, and Koji Nishii, Nara-ken, all of Japan, assignors to NSK Ltd, Tokyo, and Asuka Trading Co., Ltd., Nara-ken, both of Japan

Filed Dec. 15, 1994, Ser. No. 356,677
Claims priority, application Japan, Dec. 21, 1993, 5-322779
Int. Cl.[6] B23C *9/00*; B23B *47/00*
U.S. Cl. 409—232 2 Claims



1. A spindle apparatus comprising:

a spindle shaft having a tool mounting taper hole formed in a shaft end portion and formed with a small-diameter portion and a large-diameter portion in an outer peripheral surface of the shaft end portion;

a tool holder having a taper shank portion fitted into the taper hole of said spindle shaft and a flange having a larger diameter than the taper shank portion; and

a sleeve fitted, with respective interferences, onto the small-diameter portion and the large-diameter portion of said spindle shaft and formed with a fluid passageway communicating with the outside at a connecting portion between the small-diameter portion and the large-diameter portion,

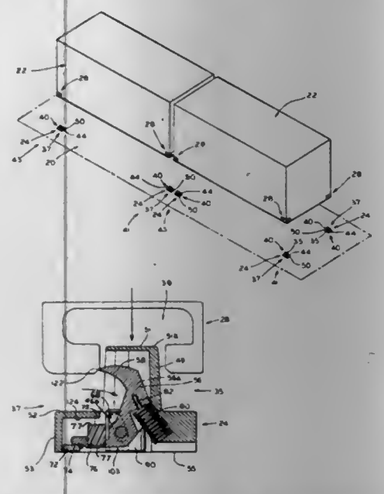
wherein a fluid pressure can be applied to the fluid passageway of said sleeve, and said sleeve is thereby brought into contact with the flange of said tool holder, and the sleeve can then be fixed to said spindle shaft by removing the fluid pressure, thus supporting said tool holder in a predetermined position.

5,570,981

LATCH DEVICE FOR SECURING CARGO CONTAINERS TO VEHICLE DECKS

John B. Brewster, Homewood, Ill., assignor to Holland Company, Chicago Heights, Ill.

Filed Nov. 16, 1993, Ser. No. 153,369
Int. Cl.[6] B60P *7/13*
U.S. Cl. 410—70 3 Claims



3. A container securement device for each respective corner fitting of a lower side of a cargo container of parallelepiped configuration for securing the cargo container to a platform, said securement device comprising:

a shear block defining a front side, a top side, and a back side,

with said shear block forming a base portion defining a planar force transmitting surfacing portion that extends to either side of the same, and a projection portion that is generally normal to said surfacing portion,

said shear block further defining an internal chamber that in the projecting portion of the same is open at said front side of the same,

said shear block base portion also defining a second force transmitting surfacing portion for engagement with such platform,

and including a latch member pivotally mounted in said chamber, for movement therein a plane that is normally disposed relative to said front and rear sides of said shear block and that is about a pivot axis that is normal of such plane,

said latch member including a nose portion having an upper cam surfacing means portion for engagement by a bearing surfacing of a correspondingly located container mounted corner fitting, and an under cam surfacing means for engagement by such bearing surfacing of such correspondingly located container mounted corner fitting upon removal of such container from such platform,

resilient means for biasing said latch member to dispose said nose portion thereof exteriorly of said shear block opening in said front side thereof when said latch member cam surfacing means are not in use, said resilient means comprises:

a first resilient body interposed between a latch member tail portion and said base portion on one side of said latch member,

and a second resilient member interposed between said latch member and said base portion on an opposite side of said latch member,

a means for effecting the deflection of said latch member about said pivot axis to within a housing on engagement of a container being lowered with a latch member nose upper cam surfacing means,

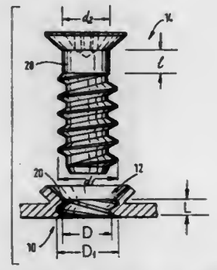
and a means for effecting deflection of said latch member within said housing on engagement of a correspondingly located container corner fitting of a container being removed form such platform about a separate axis spaced from and parallel to said pivot of said latch member.

5,570,982

SCREW HOLE WITH PREINSTALLED SCREW

Gerhard W. Lautenschläger, Brensbach-Wersau, Germany, assignor to MEPLA-Werke Lautenschläger GmbH & Co. KG, Germany

PCT No. PCT/EP93/03138, § 371 Date Sep. 20, 1994, § 102(e) Date Sep. 20, 1994, PCT Pub. No. WO94/11604, PCT Pub. Date May 26, 1994
PCT Filed Nov. 10, 1993, Ser. No. 256,331
Claims priority, application Germany, Nov. 17, 1992, 42 38 792.2
Int. Cl.[6] F16B *19/00*
U.S. Cl. 411—355 4 Claims



1. A screw hole (**12**) in hardware pieces (**10**), having a preinstalled screw provided with a truncoconical countersink head (**16**) and having a threaded shaft section (**22**) of given outside thread diameter (d_1) and a threadless shaft section (**28**) between the countersink head and the threaded shaft section, the diameter (d_2) of which is smaller than the diameter of the threaded shaft section, the screw hole (**12**) having a countersink (**18**) of a shape complementary to the truncoconical countersink head (**16**) of the screw and having a substantially cylindrical hole section (**20**) disposed adjacent in the countersink for the passage of the shaft of the screw: comprising

said cylindrical hole section (**20**) having an inside diameter (D) that is slightly smaller than an outside diameter (d_1) of the screw shaft measured across the threads of the screw (**14**) and slightly greater than the diameter (d_2) of the threadless shaft section (**28**), and said cylindrical hole section (**20**) having an internal thread section (**24**) that receives the threaded shaft (**22**) of the screw (**14**) in the preinstalled state, wherein said internal thread section (**24**) has a length (L) measured in a driving direction which is shorter than length (**1**) of the threadless shaft section (**28**) of the screw (**14**),and wherein the depth of the threads of the internal thread section (**24**) in the cylindrical hole section (**20**) is smaller than the height of the threads of the threaded shaft section (**22**) of the screw (**14**).

5,570,983

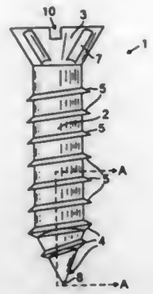
REDUCED-FRICTION SCREW

Andrew A. Hollander, 202-15 42nd Ave., Apt. 7A, Bayside, N.Y. 11361

Filed Sep. 27, 1994, Ser. No. 312,888
Int. Cl.[6] F16B *25/00*
U.S. Cl. 411—386 9 Claims

1. A reduced-friction screw, comprising:

a head having a top side and a bottom side, wherein the top side has an indentation for accepting a turning tool;

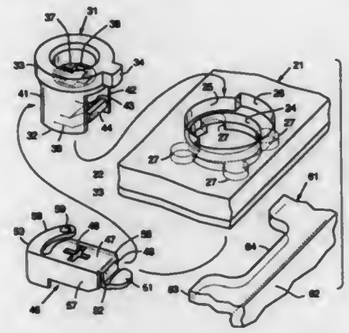


a shaft connected at its first end to the head and having a conical tip at its second end, wherein the shaft is of uniform diameter from the head to a base point located at the base of the conical tip;

a channel-cutting thread attached to the conical tip for boring a channel into a material; and

a reduced thickness thread that is approximately half the thickness of the channel cutting thread and is of the same diameter as the largest diameter channel cutting thread, wherein the reduced thickness thread is attached to the shaft between the base point and the head.

5,570,984
¼ TURN FASTENER
Naum Reznikov, Fremont, and John C. Nuttall, deceased, late of San Jose, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.
Filed Apr. 5, 1995, Ser. No. 417,212
Int. Cl.[6] F16B *21/00;39/00*
U.S. Cl. 411—551 **21 Claims**



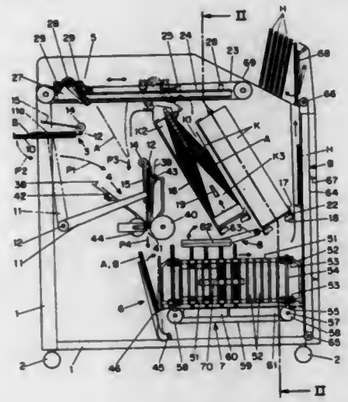
1. A rotatable fastener comprising a cap having a hollow cylindrical portion having an open top and a bottom, said cylindrical portion being formed with diametrically opposed, substantially rectangular, transverse openings, said bottom at least partially closing off said hollow cylindrical portion, and a detent connected to said bottom, and

a clip having a web and opposed sides depending from said web, said web engaging top edges of said openings, said opposed sides engaging side edges of said openings and having bottom edges engaging said bottom,

said clip having engagement means engaging said detent to hold said clip assembled on said cap after said clip has been inserted through said openings, said clip having a lateral locking extension,

said clip having turning means for rotating said fastener about a longitudinal axis, whereby when said clip is inserted through said transverse openings in said cylindrical portion, said clip is turnable through approximately a quarter turn.

5,570,985
METHOD AND A DEVICE FOR THE MANUFACTURE OF BOOKLETS
Urpo Latvakangas, Allevagen 8, S-132 42 Saltsjo-Boo, and Jan Sabelstrom, Taggsvampsvagen 173, S-141 46 Huddinge, both of Sweden
Filed Apr. 8, 1994, Ser. No. 224,809
Claims priority, application Sweden, May 18, 1993, 9301708
Int. Cl.[6] B42C *1/100;* **B65H** *1/00*
U.S. Cl. 412—4 **36 Claims**



1. A method for manufacturing booklets, the booklets including a cover made up of two cover sheets, a spine therebetween, a bead of glue attached to the inside of the spine, and a sheaf of papers inserted between the two cover sheets, one side edge of the sheaf being connected to the inside of the spine by means of the bead of glue, comprising the steps of:

moving a sheaf of papers by a power operated transport means from sheaf receiving means to an assembly means Without disassembling the sheaf of papers,

moving one of a supply of covers by the transport means from cover dispensing means to the assembly means at a distance away from the supply of covers,

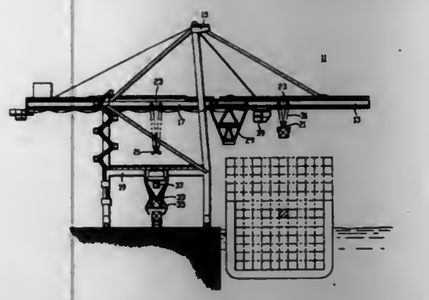
bringing the sheaf of papers by the transport means into contact with the cover, whereby a side edge of the sheaf of papers contacts the bead of glue,

moving the cover containing the sheaf of papers and an activation device relative to each other,

activating the bead of glue to connect the side edge of the sheaf of papers to the inside of the spine.

5,570,986
CARGO CONTAINER TRANSFER SYSTEM FOR CRANES
Shuji Hasegawa, and Masamitsu Enoki, both of San Mateo, Calif., assignors to Paceco Corp., San Mateo, Calif.
Filed Jan. 3, 1994, Ser. No. 177,113
Int. Cl.[6] B66C *5/02*
U.S. Cl. 414—140.3 **2 Claims**

1. A container transfer system for a cargo container handling crane having a horizontal gantry supported by a crane superstructure at an elevated location above the container pickup and deposition areas, said gantry including two pairs of collinear different gauge tracks mounted on the longitudinal axis thereof, said system comprising

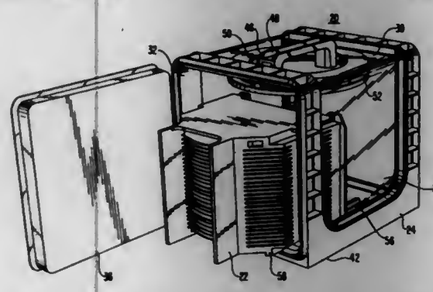


a pair of trolleys supported on the narrower pair of said tracks at opposite ends thereof and formed for movement therealong, said trolleys each having a cargo container lifting spreader suspended therefrom,

an automatic shuffle suspended from said gantry and supported on the wider pair of said tracks and formed for reciprocal movement between said trolleys, said shuttle also formed for receiving cargo containers from said lifting spreaders in mid-air and automatically transporting said containers from either trolley and spreader combination to the other, and

at least one moveable lifting spreader guide chute forming a container pass through opening suspended from said crane superstructure and disposed below said gantry and being accurately locatable above said container deposition areas, the cargo container lifting spreader suspended from that trolley of said pair of trolleys, which is located at the end of said tracks disposed over said guide chute, being formed for lowering cargo containers through said guide chute when depositing said containers, said guide chute having sloped side guide walls for restricting the pass through opening of said chute and the relative movement of lifting spreaders therethrough whereby said chute is formed for arresting the residual sway of lifting spreaders being lowered therethrough by restricting the pendulum sway of a lifting spreader between the converging sloped side guide walls until the sway of the descending spreader is restricted within said passthrough opening and permitting the relatively free passage of lifting spreaders being raised therethrough.

5,570,987
SEMICONDUCTOR WAFER TRANSPORT CONTAINER
Douglas B. McKenna, Wilmington, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.
Filed Dec. 14, 1993, Ser. No. 166,589
Int. Cl.[6] B65D *85/00*
U.S. Cl. 414—416 **4 Claims**



1. A container for transporting high purity items to and from a clean environment comprising:

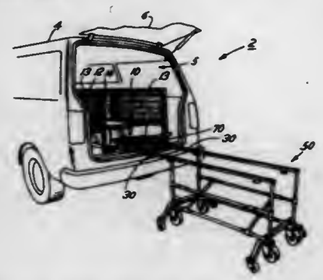
a housing having an interior and an exterior surface, and including therein at least two openings, a lower opening and a side opening;

a lower door unit sealing said lower opening of said housing and adapted to interface with a first access port on the clean environment; and

a side door unit sealing said side opening of the housing and adapted to interface with a second access port on the clean environment,

wherein said housing includes at least one additional side opening; and an additional side door seals said additional side opening and is adapted to interface with a vertical access port on the clean environment.

5,570,988
CART CARRYING DEVICE
Daniel G. Gallaway, Mishawaka, and Jack N. Morrical, Granger, both of Ind., assignors to Midway Truck & Coach, Inc., Elkhart, Ind.
Filed May 23, 1994, Ser. No. 247,684
Int. Cl.[6] B60P *3/40*
U.S. Cl. 414—498 **3 Claims**



3. A device for transporting cargo, said device adapted to receive and convey the cargo to and from a storage area, respectively, said device comprising:

a cart including a frame and two rails mounted to a top of said frame, said rails disposed in spaced apart, parallel relationship to each other and defining a longitudinal direction; two extension rails, each said extension rail connected at one end thereof to a respective said cart rail and adapted at an opposite end thereof for supporting engagement with the storage area; a table including two rail channels disposed at a bottom side thereof, said rail channels disposed in spaced apart, parallel relationship to each other for respectively receiving each of said two rails therein; said table including a latch pin movable along an axis of said latch pin, said cart including a lock hole for receiving said latch pin, one of said cart and said table including a stop bracket with an opening therein, and an other of said cart and said table including a guide shank received within said stop bracket opening.

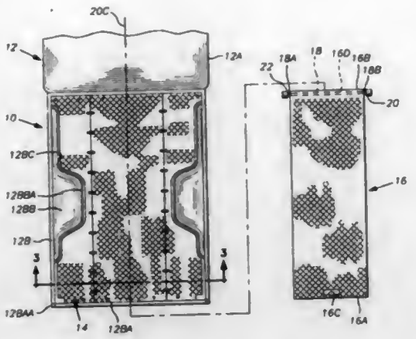
5,570,989
RAMP FOR USE ON A PICKUP TRUCK HAVING A BOTTOM HINGED TAILGATE
Michael Belanger, 2500 Brookhills Dr., Greenbay, Wis. 54313
Filed Feb. 8, 1995, Ser. No. 385,659
Int. Cl.[6] B65G *67/02*
U.S. Cl. 414—537 **9 Claims**

1. A truck ramp (10) removably mounted inside a cargo portion (12B) of a pickup truck (12), the truck ramp comprising:

(A) a fixed portion (14) which comprises a fixed portion left section (14A), a fixed portion center section (14B), and a fixed portion right section (14C);

the fixed portion left section (14A) comprising a fixed portion left section distal end (14AA), a fixed portion left section proximal end (14AB), a fixed portion left section upper surface (14AD), and a fixed portion left section distal end wheel

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well contour (14AAA) complimentary in configuration to a pickup truck cargo portion wheel well contour (12BBA);

the fixed portion center section (14B) comprising a fixed portion center section right side (14BA), a fixed portion center section left side (14BC), a fixed portion center section upper surface (14BE), and a fixed portion center section lower surface (14BF);

the fixed portion right section (14C) comprising a fixed portion right section distal end (14CA), a fixed portion right section proximal end (14CB), a fixed portion right section upper surface (14CD), and a fixed portion right section distal end wheel well contour (14CAA) complimentary in configuration to a pickup truck cargo portion wheel well contour (12BBA);

the fixed portion right section (14C) being securely fastened along the fixed portion right section proximal end (14CB) to a top side of a right longitudinal beam (30), the fixed portion center section (14B) being securely fastened along the fixed portion center section right side (14BA) to the top side of the right longitudinal beam (30), the fixed portion center section (14B) being securely fastened along the fixed portion center section left side (14BC) to a top side of a left longitudinal beam (36), and the fixed portion left section (14A) being securely fastened along the fixed portion left section proximal end (14AB) to the top side of the left longitudinal beam (36);

the right longitudinal beam (30) having a right track (20A) securely fastened therein consisting of a right track outer portion (20AA) securely fastened to a right track inner portion (20AC) having a right track bottom portion (20AB) therebetween, the right track bottom portion (20AB) being securely fastened to an inner surface of a bottom of the right longitudinal beam (30), the left longitudinal beam (36) having a left track (22A) securely fastened therein consisting of a left track outer portion (22AA) securely fastened to a left track inner portion (22AC) having a left track bottom portion (22AB) therebetween, the left track bottom portion (22AB) being securely fastened to an inner surface of a bottom of the left longitudinal beam (36);

a first rear lateral beam (21) being positioned at a rear location on the ramp and securely fastened to the fixed portion left section (14A) at a lower surface thereof, a first rear intermediate lateral beam (23) being positioned between the first rear lateral beam (21) and the fixed portion left section distal end wheel well contour (14AAA) and securely fastened to the fixed portion left section (14A) at a lower surface thereof, a first front stop lateral beam (28) being positioned at a front location on the ramp and securely fastened to the fixed portion left section (14A) at a lower surface thereof, a first front intermediate lateral beam (24) being positioned between the first front stop lateral beam (28) and the fixed portion left section distal end wheel well contour (14AAA) and securely fastened to the fixed portion left section (14A) at a lower surface thereof, and a first front lateral beam (26) being positioned between the first front stop lateral beam (28) and the first front intermediate lateral beam (24) and securely fastened to the fixed portion left section (14A) at a lower surface thereof;

a second rear lateral beam (21) being positioned at a rear location on the ramp and securely fastened to the fixed portion right section (14C) at a lower surface thereof, a second rear intermediate lateral beam (23) being positioned between the second rear lateral beam (21) and the fixed portion right section wheel well contour (14CAA) and securely fastened to the fixed portion right section (14C) at a lower surface thereof, a second front stop lateral beam (28) being positioned at a front location on the ramp and securely fastened to the fixed portion right section (14C) at a lower surface thereof, a second front intermediate lateral beam (24) being positioned between the second front stop lateral beam (28) and the fixed portion right section distal end wheel well contour (14CAA) and securely fastened to the fixed portion right section (14C) at a lower surface thereof, and a second front lateral beam (26) being positioned between the second front stop lateral beam (28) and the second front intermediate lateral beam (24) and securely fastened to the fixed portion right section (14C) at a lower surface thereof; and,

(B) a movable portion (16) having a movable portion chamber (16D) therein which is slidably mounted on the right track (20A) and the left track (22A), the movable portion (16) comprising a movable portion distal end (16A) and a movable portion proximal end (16B), a movable portion upper surface (16E) and a movable portion lower surface (16G), the movable portion chamber (16D) having an axle (18) rotatably mounted therein comprising an axle left end (18A) having a left roller (22) rotatably mounted thereon and an axle right end (18B) having a right roller (20) rotatably mounted thereon, the left roller (22) rolling upon and within the left track (22A) and the right roller (20) rolling upon and within the right track (20A), such that the movable portion has a retracted storage position and an extended ramp position.

5,570,990

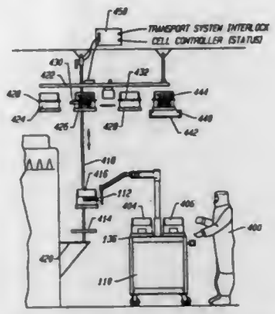
HUMAN GUIDED MOBILE LOADER STOCKER

Anthony C. Bonora, Menlo Park; Bruce A. Richardson, Pleasanton; Michael D. Brain; Edward J. Cortez, both of San Jose, and Barney H. Huang, Sunnyvale, all of Calif., assignors to ASYST Technologies, Inc., Fremont, Calif.

Filed Nov. 5, 1993, Ser. No. 147,372

Int. Cl.[6] G06F *15/50*

U.S. Cl. 414—543 **21 Claims**



1. A human guided mobile loader stocker for positioning a load in x, y and z directions of a three dimensional coordinate system, the load having a weight, the apparatus comprising:

first means for engaging the load;

second means for supporting said first means and for allowing said first means to be moved by a first human force in the x–y plane, on and off the x and y axis, without moving in the z direction, said second means including a plurality of members pivotally connected to each other; and

third means, selectively engageable, for supporting and moving said second means in the z direction, said third means including a power generator element so that said second means cannot be lowered without engaging said power generator element and said second means can be raised by a second human force less than the weight of the load.

5,570,991

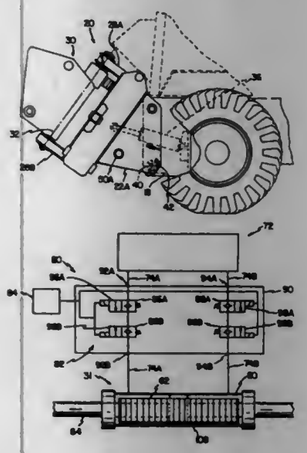
SWING LOCK FOR A BACKHOE

Larry E. Swenson; Michael A. Vig; Thomas M. Sagaser, and Troy D. Kraft, all of Bismarck, N. Dak., assignors to Clark Equipment Company, Woodcliff Lake, N.J.

Filed Mar. 9, 1995, Ser. No. 403,003

Int. Cl.[6] B66C *23/00*

U.S. Cl. 414—685 **11 Claims**



1. A control apparatus for controlling movement of an implement, the implement having a frame and a subframe mounted to the frame, the subframe being moveable from a working position, where the implement is operable to perform work, to a second position, and a hydraulic actuator for selectively moving a portion of the implement to perform work using controlled hydraulic fluid present in a hydraulic line connected to the hydraulic actuator, the control apparatus comprising:

sensing means for sensing placement of the subframe in the working position and providing an output signal representing when the subframe has been placed in the working position; and

fluid control means for receiving the output signal and for controlling fluid flow to the hydraulic actuator as a function of the output signal, the fluid control means comprising an operator actuated valve and a pair of check valves operated as a function of the output signal and connected in series in the hydraulic line between the operator actuated valve and the hydraulic actuator, wherein first check valve interrupts fluid flow to the hydraulic actuator and a second check valve interrupts fluid flow from the hydraulic actuator.

5,570,992

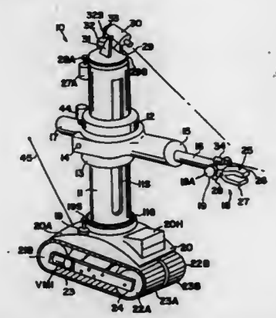
FREE-TRAVELING MANIPULATOR WITH OPTICAL FEEDBACK CONTROL AND METHODS

Jerome H. Lemelson, Ste. 286, Unit 802 930 Tahoe Blvd., Incline Village, Nev. 89451-9436

Continuation of Ser. No. 899,353, Jun. 15, 1992, which is a continuation of Ser. No. 621,341, Dec. 3, 1990, abandoned, which is a division of Ser. No. 249,404, Sep. 23, 1988, Pat. No. 5,017,084, which is a continuation-in-part of Ser. No. 251,656, Apr. 6, 1981, abandoned, , which is a continuation of Ser. No. 639,301, Aug. 9, 1984, abandoned, which is a continuation-in-part of Ser. No. 200,347, Oct. 24, 1980, abandoned, which is a continuation of Ser. No. 910,998, May 30, 1978, abandoned, which is a continuation of Ser. No. 753,321, Dec. 20, 1976, abandoned, which is a continuation of Ser. No. 544,832, Jan. 29, 1975, abandoned, which is a continuation-in-part of Ser. No. 436,073, Jan. 24, 1974, abandoned, said Ser. No. 251,656is a continuation of Ser. No. 91,908, Nov. 6, 1979, abandoned, which is a continuation of Ser. No. 107,357, Jan. 18, 1971, abandoned, which is a continuation-in-part of Ser. No. 858,560, Aug. 29, 1969, Pat. No. 3,854,889, Ser. No. 712,443, Mar. 12, 1968, Pat. No. 3,559,256, and Ser. No. 717,065, Mar. 12, 1968, Pat. No. 3,559,257, said Ser. No. 858,560is a continuation of Ser. No. 629,758, Apr. 10, 1967, abandoned, which is a continuation-in-part of Ser. No. 465,812, Apr. 8, 1965, Pat. No. 3,313,014, which is a continuation-in-part of Ser. No. 152,702, Oct. 17, 1961, abandoned, which is a division of Ser. No. 449,874, Jul. 28, 1954, abandoned, said Ser. No. 712,443and Ser. No. 717,065, , each is a continuation-in-part of Ser. No. 387,954, Aug. 6, 1964, Pat. No. 3,372,568, which is a continuation-in-part of Ser. No. 219,357, Aug. 13, 1962, abandoned, which is a continuation-in-part of Ser. No. 557,415, Apr. 10, 1956, Pat. No. 3,049,247, which is a continuation-in-part of Ser. No. 477,467, Dec. 24, 1954, abandoned, and Ser. No. 449,874. This application Jun. 7, 1995, Ser. No. 480,114

Int. Cl.[6] B66C *23/00*

U.S. Cl. 414—744.3 **34 Claims**



1. An automatic, moveable manipulator comprising:

(a) a carriage;

(b) a power drive coupled to the carriage and positioned to move the carriage in a multitude of directions, comprising two moving members oriented parallel to each other, which may be driven simultaneously and independently in the same or different directions;

(c) at least one manipulator arm supported at a first end by the carriage and having a tool holder at a second end with an engagement-release mechanism adapted to support one of a plurality of different tools;

(d) a motor drive coupled to the arm so as to move the arm;

(e) a scanner supported by the manipulator and positioned to scan the external environment of the manipulator and structured to generate a varying scanning signal;

(f) a wireless receiver supported by the carriage;

(g) an electronic storage device supported by the carriage and structured to store signals received from a remote location by the receiver; and

(h) a controller coupled to reproduce the stored signals from the storage and structured to process the reproduced signals to generate command control signals and to apply the command control signals to control the operation of the manipulator; and

(i) a computer structured to analyze the generated scanning signal to determine a characteristic of a workpiece in the vicinity of the manipulator, which computer is coupled to the manipulator arm so that the results of the analysis is applied to control the selection of one of the plurality of different tools, the supporting of the selected tool by the tool holder, and the operation of the selected tool.

5,570,993

METHOD FOR MOUNTING COMPONENTS AND APPARATUS THEREFOR

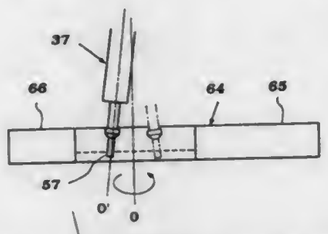
Hitoshi Onodera, and Hiroshi Sakurai, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation-in-part of Ser. No. 103,358, Aug. 9, 1993. This application Aug. 9, 1993, Ser. No. 103,353

Claims priority, application Japan, Aug. 7, 1992, 4-211839; May 13, 1993, 5-111270

Int. Cl.[6] H05K *13/04*

U.S. Cl. 414—783 **46 Claims**



1. A component handling apparatus adapted to pick up and position components comprising a base and a pick up portion supported for movement relative to said base including rotation about a desired rotational axis, a sensing station for sensing the orientation of an article upon relative rotation of said article in said sensing station when said article is within said sensing station and held by said pick up portion, and means for positioning said pick up portion in said sensing station in a position for sensing only the angular deviation of said pick up portion relative to desired said rotational axis.

5,570,994

WAFER TRAY AND CERAMIC BLADE FOR SEMICONDUCTOR PROCESSING APPARATUS

Sasson Somekh, Los Altos Hills; Kevin Fairbairn, Saratoga; Gary M. Kolsfoe, Fremont; Gregory W. White, San Carlos, and W. George Faraco, Jr., Saratoga, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Division of Ser. No. 205,711, Mar. 3, 1994, which is a continuation-in-part of Ser. No. 93,236, Jul. 15, 1993, abandoned. This application May 10, 1995, Ser. No. 438,329

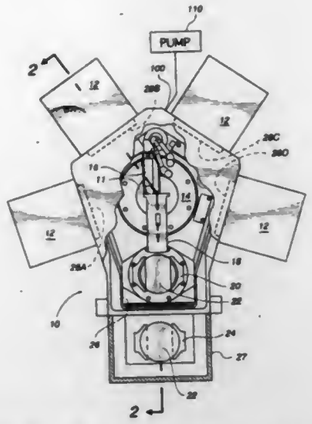
Int. Cl.[6] B65G *65/00*

U.S. Cl. 414—786 **10 Claims**

1. A method of transferring substrates under conditions of varying pressure, comprising the steps of:

(a) moving a substrate when the ambient pressure is relatively high using a substrate support provided with at least one vacuum port capable of engaging an undersurface of said substrate during such movement; and

(b) moving a substrate when the ambient pressure is relatively low by:



(i) removably mounting to said substrate support a substrate support tray capable of engaging and supporting a bottom surface of said substrate;

(ii) placing said substrate on said substrate support tray by engaging and supporting said bottom surface of said substrate with said substrate support tray and

(iii) moving said retained substrate by moving said substrate support and said substrate support tray mounted on said substrate support.

5,570,995

PACKING SYSTEM FOR ROLLING MILL STOCK BY MEANS OF AN IMPROVED SUSPENDED TRANSFER MEANS

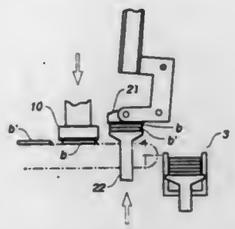
Renzo Offoiach, Tarcento, Italy, assignor to S.I.M.A.C. S.p.A., Tarcento, Italy

Continuation of Ser. No. 280,224, Jul. 25, 1994, abandoned. This application Jan. 30, 1996, Ser. No. 594,368

Claims priority, application Italy, Aug. 19, 1993, UD93A0168

Int. Cl.[6] B65G *57/18*

U.S. Cl. 414—786 **6 Claims**



1. A process of operating a packing system for rolling-mill stock, the packing system having a continuous conveyor for advancing the rolling-mill stock, the packing system further including an overhead transfer suspended from above the conveyor, said overhead transfer having an electromagnet, a lifter is provided in operative association with the overhead transfer which removes the rolling-mill stock from the conveyor and raises the rolling-mill stock to a position above the conveyor to supply the electromagnet, the electromagnet being movable from a collecting position to a position above a collecting zone so that the electromagnet can place the rolling-mill stock in a packing pocket, the process comprising the steps of:

stopping an advancement of the conveyor such that a first rolling-mill stock resides directly below a magnetic collector and a multilayer rolling-mill stock resides below the overhead transfer and directly above the lifter, said multilayer rolling-mill stock being one layer overlying another layer;

raising the first rolling-mill stock by the magnetic collector from the conveyor;

lifting the multilayer rolling-mill stock by the lifter toward the electromagnet of the overhead transfer so that the electromagnet receives the multilayer rolling-mill stock;

lowering the lifter after the electromagnet has received the multilayer rolling-mill stock;

advancing the conveyor while the overhead transfer deposits the multilayer rolling-mill stock into the packing pocket;

stopping the advancement of the conveyor such that a second rolling-mill stock resides below the magnetic collector; and

depositing the first rolling-mill stock from the magnetic collector onto the second rolling-mill stock while the overhead transfer returns to a position directly above the lifter.

5,570,996

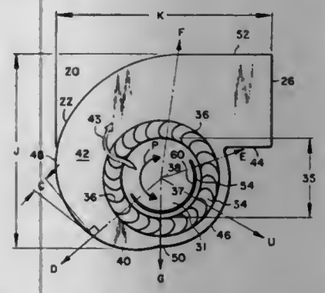
COMPACT CENTRIFUGAL FAN

William A. Smiley, III, La Crosse, Wis., assignor to American Standard Inc., Piscataway, N.J.

Filed Jun. 27, 1994, Ser. No. 266,905

Int. Cl.[6] F04D *29/44*

U.S. Cl. 415—53.2 **17 Claims**



1. An improved centrifugal fan having an impeller and a housing, the impeller having an inner diameter and a substantially greater outer diameter and being designed to accelerate air drawn from a central chamber defined within the inner diameter of the impeller to an air passageway defined in the housing substantially surrounding the outer diameter of the impeller, the air passageway terminating in an air exhaust port, the air exhaust port having an inner base that is generally tangential to the outer diameter of the impeller, the housing substantially enclosing the impeller and defining the air exhaust port and an air inlet fluidly coupled to the central chamber defined within the inner diameter of the impeller, the improvement comprising:

a shroud forming a portion of the housing defining the air passageway, the shroud having a first conformal zone being of substantially fixed radius and a second scroll zone being of expanding radius; and

a restrictor plate operably coupled to the housing and disposed proximate a portion of the inner diameter of the impeller for restricting the flow of air from the central chamber to the impeller;

wherein the first conformal zone of the shroud has a leading edge and a trailing edge, the leading edge being disposed proximate the base of the air exhaust port;

wherein the restrictor plate has a shape defined by a steeply rising leading edge to an intermediate portion substantially overlapping the entire width of the impeller and a gradually tapering trailing edge; and

wherein the restrictor plate is disposed within the central chamber defined within the inner diameter of the impeller such that the intermediate portion subtends an arc that is substantially coextensive with an arc subtended by the first conformal zone of the shroud.

5,570,997

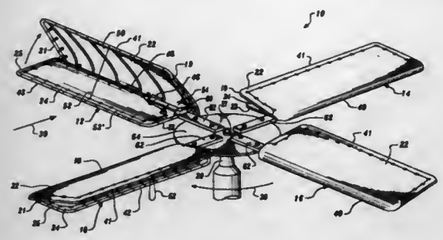
HORIZONTAL WINDMILL WITH FOLDING BLADES

Charles W. Pratt, 529 Saint Vrain La., Estes Park, Colo. 80517

Filed Jul. 17, 1995, Ser. No. 503,140

Int. Cl.[6] F03D *3/00*

U.S. Cl. 416—117 **25 Claims**



3. An energy generating fluid-propelled mill propelled by a fluid current moving at varying speeds comprising:

a) a shaft;

b) a rotatable hub journalled to one end of the shaft; and

c) a plurality of blades extending radially from the hub, each blade including:

i) a first blade portion; and

ii) a second blade portion hingedly attached to the first blade portion wherein the first blade portion defines a leading edge and a trailing edge, and the first blade portion is weighted such that the first blade portion pivots: to a balanced position with respect to the second blade portion when the speed of the fluid current fails to exceed a minimum threshold; from the balanced position toward a fluid-resisting, open position as the fluid current impinges the trailing edge of the first blade portion and the speed of the fluid current exceeds the minimum threshold; and from the open position toward a non-resisting, closed position as the fluid current ceases to impinge the trailing edge of the first blade portion.

5,570,998

IMPELLER STRUCTURE OF CLOSED TYPE CENTRIFUGAL PUMP

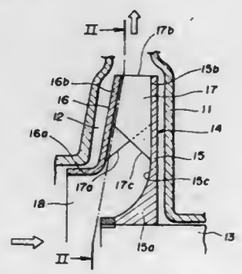
Yuji Nomoto, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Oct. 19, 1995, Ser. No. 545,534

Claims priority, application Japan, Oct. 21, 1994, 6-255936

Int. Cl.[6] F04D *29/24*

U.S. Cl. 416—186 R **5 Claims**



1. An impeller structure of a closed type centrifugal pump, comprising:

front and rear shrouds having a driven connection with a pump drive shaft; and

a series of blades provided between said front and rear shrouds for pressurizing an incoming fluid,

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wherein an inner edge (17*a*) of a first blade of two adjacent blades of said series of blades is formed to be up-sloped from an inside corner to an outside corner, whereas an inner edge (17*c*) of a second blade of said two adjacent blades is formed to be down-sloped from an outside corner to an inside corner.

5,570,999

ELECTROMAGNETIC PUMP HAVING AN AUTOMATIC EXHAUST-CONTROL VALVE

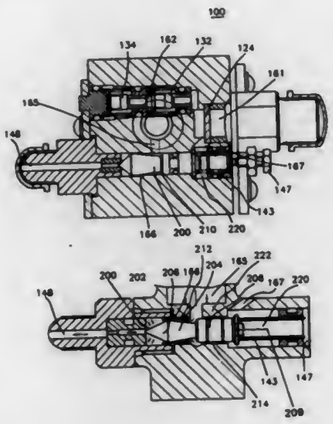
Sung-Dai Moon, Kyeongsangbuk-do, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 31, 1995, Ser. No. 412,336

Claims priority, application Rep. of Korea, Mar. 31, 1994, 94-6715; Mar. 31, 1994, 94-6718

Int. Cl.[6] F04B *49/00*

U.S. Cl. 417—307 **9 Claims**



1. An electromagnetic pump comprising:
a suction section for introducing oil from an oil reservoir;
a development section for pressurizing the oil introduced from the suction section to elevate the pressure of the oil; and
an exhaust section including controlling means for controlling the pressure elevating capability of the development section by transmitting the elevated pressure to the development section to thereby maintain a constant pressure, an exhaust nozzle for guiding an exhaust of the oil which has passed the controlling means, and setting means for setting and adjusting the exhaust pressure which is maintained constant by the controlling means;
the controlling means including an exhaust chamber having a first end open to the development section via an oil path to receive the oil from the development section and a second end open to the exhaust nozzle, and an exhaust control valve disposed within the exhaust chamber;
wherein the exhaust-control valve has a conical head at one end side, a cylindrical body integrally connected to the conical head, the cylindrical body having a tapered shape whose diameter decreases towards a rear side of the cylindrical body away from the conical head, a threshold between the conical head and the cylindrical body, and a guide tail integrally connected to the rear side of the cylindrical body for guiding reciprocating movement of the exhaust control valve.

5,571,000

BOOSTER PUMP WITH BYPASS VALVE INTEGRALLY FORMED IN GASKET

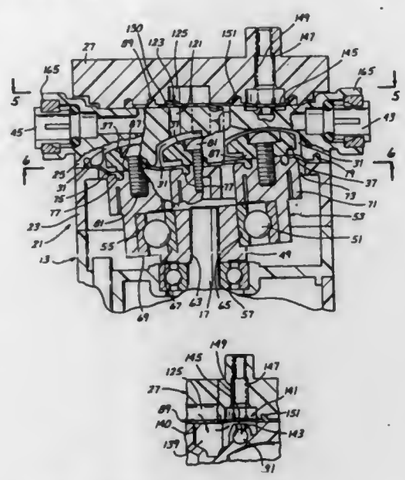
Oskar Zimmermann, Anaheim; Lloyd D. Golobay, Huntington Beach, and Hal P. Voznick, Chino, all of Calif., assignors to Shurflo Pump Manufacturing Co., Santa Ana, Calif.

Division of Ser. No. 267,796, Jul. 7, 1994, Pat. No. 5,476,367.

This application Aug. 15, 1995, Ser. No. 515,453

Int. Cl.[6] F04B *49/00*

U.S. Cl. 417—307 **10 Claims**



1. A pump comprising:
a housing including first and second housing sections;
a gasket between the first and second housing sections;
at least one fastener for holding the first and second housing sections together;
said housing having at least a first pumping chamber, an inlet, an inlet passage in the housing leading from the inlet to the pumping chamber, an outlet and an outlet passage in the housing leading from the pumping chamber to the outlet;
a first pumping member movable in the pumping chamber on an intake stroke whereby a fluid from the inlet passage is drawn into the pumping chamber and a discharge stroke whereby fluid in the pumping chamber is discharged into the outlet passage;
a drive for moving the pumping member on the intake and discharge strokes;
an inlet check valve in the inlet passage;
an outlet check valve in the outlet passage, each of said check valves including a movable valve element and a valve seat;
said gasket forming a seal between the first and second housing sections;
a bypass passage in said housing leading from a location in the outlet passage downstream of the outlet check valve to a location in the inlet passage upstream of the inlet check valve, the bypass passage including a bypass opening in the gasket; and
a bypass valve including a bypass valve seat in the bypass passage, a region of said gasket and a biasing member for biasing said region of the gasket against the bypass valve seat to close the bypass passage, said region of the gasket being responsive to fluid under pressure from the outlet passage exceeding a pressure for moving off of the bypass valve seat to open the bypass passage.

5,571,001

ELECTRICALLY-POWERED WATER-IMMERSED PUMP

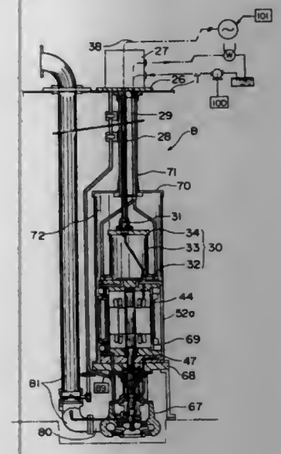
Tetsuya Fukuda, and Yoshiaki Yamada, both of Yamaguchi, Japan, assignors to Taiko Kikai Industries Co., Ltd., Yamaguchi, and Japanese Marine Equipment Association, Tokyo, both of Japan

Filed Dec. 6, 1995, Ser. No. 568,223

Claims priority, application Japan, Oct. 12, 1995, 7-264426

Int. Cl.[6] F04B *17/00*

U.S. Cl. 417—423.3 **6 Claims**



1. An electrically-powered water-immersed pump comprising:
a pressure-resistant explosion-proof electric motor enclosed by a double casing comprised of inner and outer cases with a motor-cooling oil passage formed therebetween, said outer case being at upper and lower ends closed in a watertight manner respectively by upper and lower lids between which an output shaft of said electric motor is rotatably held;
a flange detachably fitted to a top surface of a tank containing a liquid to be transferred;
a downwardly-extending pipe which is at an upper end fixed to said flange and at a lower end connected through a terminal box to said electric motor;
a pump with a casing which is at an end surface fixed to an underside of said electric motor and with a rotary shaft which is connected to said output shaft of said electric motor;
a cylindrically-shaped motor cover immersed in the liquid in the tank and accommodating therein said electric motor and said terminal box in a watertight manner;
a protective pipe extending from the flange to an upper end of said motor cover and accommodating therein said downwardly-extending pipe in a watertight manner;
a cooling-oil inlet pipe which communicates from a cooling-oil delivering pump located outside the tank through said flange to said motor-cooling oil passage inside said double casing of said electric motor;
a cooling-oil outlet pipe which extends from said motor-cooling oil passage through said flange to open to the outside of the tank; and
an electric cable which extends from a power source located outside the tank through said flange and said terminal box to said electric motor.

5,571,002

PLUNGER PUMP SYSTEM WITH SHUTTLE VALVE

Keiji Yokoi, Tokyo, Japan, assignor to Ebara Corporation, Tokyo, Japan

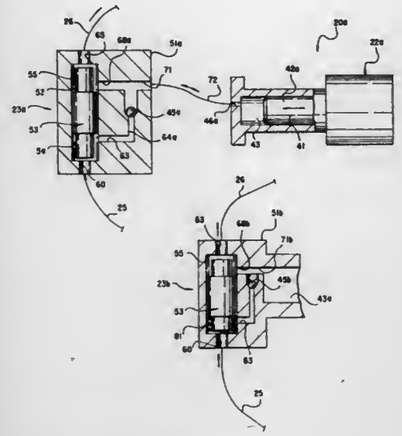
Division of Ser. No. 162,290, Dec. 7, 1993, Pat. No. 5,454,698.

This application Apr. 7, 1995, Ser. No. 418,622

Claims priority, application Japan, Dec. 9, 1992, 4-352007

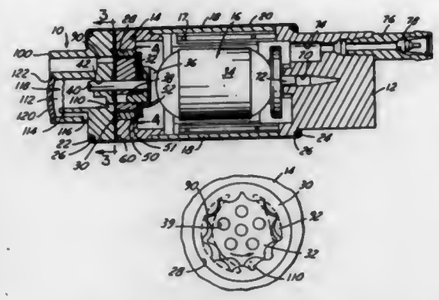
Int. Cl.[6] F04B *7/02*

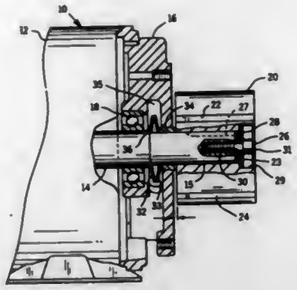
U.S. Cl. 417—507 **4 Claims**



1. A plunger system comprising:
a plunger pump having a plunger which reciprocates in a cylinder so that a liquid, which is sucked into a pump chamber from a pump liquid supply through a check valve, which allows the liquid to flow only in the direction of said pump chamber, is pressurized in said pump chamber and discharged from a pump liquid discharge; and
a shuttle valve connected to said plunger pump and having a valve body reciprocally fitted in a hollow portion formed in a valve casing to divide said hollow portion into a liquid supply side chamber and a liquid discharge side chamber,
said shuttle valve connected to said plunger pump having a liquid supply hole which provides communication between a liquid supply line and said liquid supply side chamber and which is closed by a first end surface of said valve body when a liquid pressure in said liquid discharge side chamber is higher than a liquid pressure in said liquid supply side chamber, a first connecting hole which provides communication between said pump liquid supply and said liquid supply side chamber, a liquid discharge hole which provides communication between a liquid discharge line and said liquid discharge side chamber and which is closed by a second end surface of said valve body when said liquid pressure in said liquid supply side chamber is higher than said liquid pressure in said liquid discharge side chamber, and a second connecting hole which provides communication between said pump liquid discharge and said liquid discharge side chamber,
said pump liquid supply and said pump liquid discharge are through a common hole, said first and second connecting holes are communicated to each other through a passage formed in said shuttle valve connected to said plunger pump, said check valve is provided in said passage, and said common hole of said pump is connected to said passage downstream side of said check valve.

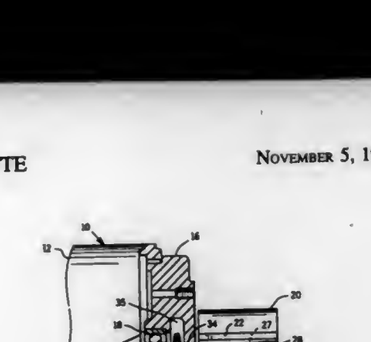
5,571,003
FUEL PUMP WITH AND METHOD TO MODULATE VAPOR PURGE PORT PRESSURE PULSES
Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.
Filed Jun. 13, 1995, Ser. No. 490,070
Int. Cl.[6] F04C 2/08
U.S. Cl. 418—1 **5 Claims**





1. A rotary pump for pumping a volatile liquid fuel, from a fuel source comprising:
a rotor combination utilizing circumferentially disposed expanding and ensmalling positive-displacement pumping chambers,
a first circumferential fuel inlet area on said rotor combination in communication with a fuel source,
a second circumferential fuel outlet area on said rotor combination spaced circumferentially from said first area,
a stationary outlet housing forming an outlet chamber on one side of said rotor combination and communicating with said outlet area of said rotor combination,
a stationary inlet housing having an inlet opening communicating with said first circumferential fuel inlet area of said rotor combination,
a purge port in said stationary inlet housing communicating with said pumping chambers downstream of said inlet opening and between said inlet opening and said outlet area to allow vapor in said pumping chambers of said rotor combination to be expelled through said port, and
a vapor chamber formed in said inlet housing in communication with said purge port, said vapor chamber having an end spaced from said purge port and a volume sufficient to absorb pressure pulsations, and an outlet passage formed in said inlet housing and extending from said vapor chamber to the exterior of said housing so that vapor and liquid fuel in said vapor chamber can be discharged therefrom through said outlet passage and said vapor chamber being closed except for communication with said purge port and outlet passage.

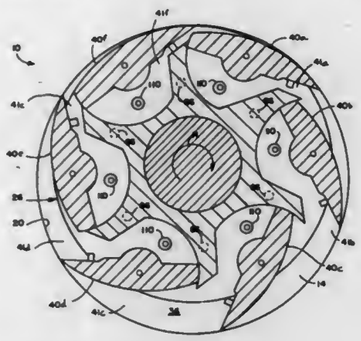
5,571,005
HINGED VANE ROTARY PUMP
Thomas D. Stoll, Grand Rapids, and William J. Bohr, Kentwood, both of Mich., assignors to Delaware Capital Formation, Inc., Wilmington, Del.
Filed Jun. 7, 1995, Ser. No. 479,676
Int. Cl.[6] F04C 2/38
U.S. Cl. 418—268 **23 Claims**



an annular shaft spacer axially positioned between said rotor and said biasing member and positioned radially between said shaft and said end wall, said spacer being compressed axially between said rotor and biasing member and having an inner radius in close proximity with said end wall; and
a threaded fastener coaxial with said shaft connecting said rotor to said shaft to exert an axial force on said rotor and spacer member to compress said biasing member so that a spacing between the motor housing and the rotor is adjusted by turning said fastener.

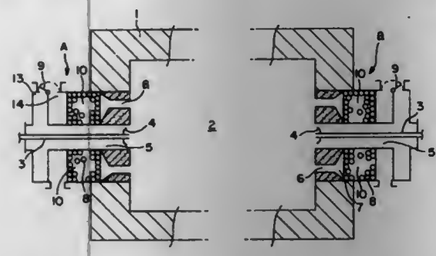
5,571,004
SLIDING VANE ROTOR ATTACHMENT
Stephen D. Masters, Rayville, and Meredith W. Meece, Monroe, both of La., assignors to Thomas Industries Inc., Monroe, La.
Filed Oct. 2, 1995, Ser. No. 537,494
Int. Cl.[6] F01C 19/00
U.S. Cl. 418—107 **5 Claims**

1. An adjustable attachment for connection of a sliding vane rotor to a shaft comprising:
a housing which defines a compartment therein and including a shaft which extends through said compartment and has an end which extends beyond an end wall of said housing;
a biasing member positioned in the compartment;
a sliding vane rotor mounted coaxially on said end of said shaft outside of said housing so as to rotate with said shaft and be slidable axially relative to said shaft;



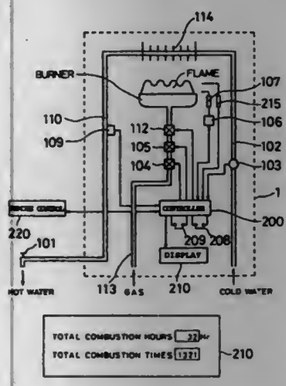
1. A rotary pump, comprising:
a pumping chamber;
a rotor eccentrically positioned within said pumping chamber, said rotor defining a plurality of vane pockets and having a direction of rotation;
a plurality of vanes pivotally mounted on said rotor each within one of said vane pockets, each of said vanes having an inner edge, an outer edge, and a middle portion between said edges, each of said vanes being hinged to pivot about an axis extending through said middle portion and being oriented to fold into said direction of rotation when folding into the associated pocket, each of said vanes further including a front surface extending from said inner edge to said outer edge, said vane pockets shaped to allow pumpage to engage substantially all of said front surface at all points of revolution of said rotor.

5,571,006
REGENERATIVE BURNER, BURNER SYSTEM AND METHOD OF BURNING
Ichiro Nakamachi, Abiko, and Kenji Koizumi, Tokyo, both of Japan, assignors to Tokyo Gas Company, Ltd., Tokyo, Japan
Filed Jul. 24, 1995, Ser. No. 506,030
Claims priority, application Japan, Aug. 10, 1994, 6-188013; Oct. 19, 1994, 6-253683; Dec. 19, 1994, 6-314772
Int. Cl.[6] F23D 11/44
U.S. Cl. 431—11 **13 Claims**



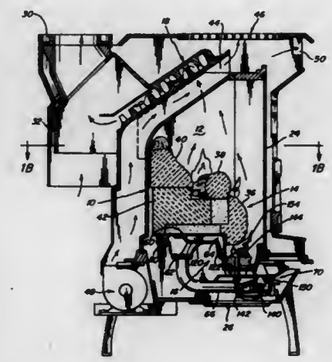
1. A regenerative burner comprising a fuel supply section having a tip which opens in a furnace; a flame stabilizing section located at said tip of said fuel supply section; a room temperature air supply section having a tip which opens in said furnace and located around said fuel supply section; plural pre-heated high temperature air supply sections having tips which open in said furnace and are located around said fuel supply section; and heat storage material located in a regenerator and upstream of said pre-heated high temperature air supply sections.

5,571,007
SYSTEM FOR MONITORING A COMBUSTION APPARATUS
Tomohisa Ishiguro; Atsushi Nishimura, both of Nagoya, and Shigekazu Asai, Gifu, all of Japan, assignors to Paloma Kogyo Kabushiki Kaisha, Nagoya, Japan
Continuation-in-part of Ser. No. 759,406, Sep. 13, 1991, abandoned. This application Feb. 14, 1994, Ser. No. 195,276
Int. Cl.[6] F24H 9/00
U.S. Cl. 431—13 **10 Claims**



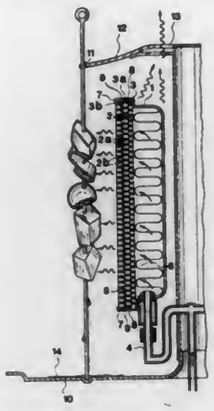
1. A water heater combustion system, said system including first means for receiving and discharging water and combustion means operatively integrated with said first means for operating to heat water in said first means by combustion, said system further comprising
sensor means for detecting a condition of operation and producing an indication thereof
memory means for storing and accumulating indications of the condition of operation by said sensor means
alarm state detection means for determining when the accumulated indications of the condition of operation in said memory means exceed a first threshold value
alarm means responsive to said alarm state detection means for providing a warning display indicative of a determination that said first threshold value is exceeded, and
operation stop means for forcibly stopping operation of said water heater when said accumulated indications of said condition of operation exceed a second threshold value.

5,571,008
GAS BURNER FOR USE WITH ARTIFICIAL LOGS
Stephen F. Richardson, Randolph Center; Shawn T. Malloy, Bethel; Jay F. Kempf, Colchester; Frank G. Medros, Bethel, all of Vt., and Steven M. Ballou, Hanover, N.H., assignors to Vermont Castings, Inc., Bethel, Vt.
Filed Jul. 1, 1994, Ser. No. 270,163
Int. Cl.[6] F23C 3/00
U.S. Cl. 431—125 **10 Claims**



1. A gas burner comprising:
a thin metal top member having substantially flat, intersecting upper and front burner surfaces;
a metal base member affixed to said top member and, together with said top member, defining a burner cavity, said burner cavity including an upper portion below said upper burner surface and a front portion behind said front burner surface, the upper portion of said burner cavity having a substantially constant thickness perpendicular to said upper burner surface, except in a region near said inlet port, the front portion of said burner cavity having a substantially constant thickness perpendicular to said front burner surface, said burner cavity having a generally L-shaped cross section in a plane perpendicular to said upper and front burner surfaces, said upper burner surface having top gas ports in gas communication with said burner cavity and said front burner surface having front gas ports in gas communication with said burner cavity, said base member having an inlet port that is located with respect to said gas ports so as to limit pressure differentials between said gas ports; and
a mixing tube for supplying a mixture of air and gas from a gas source to said inlet port, said inlet port being located so as to supply said mixture of air and gas to the upper portion of said burner cavity from below, said base member having a downward bulge in the region of said inlet port so that the incoming mixture of gas and air expands and reduces in velocity as it enters said burner cavity.

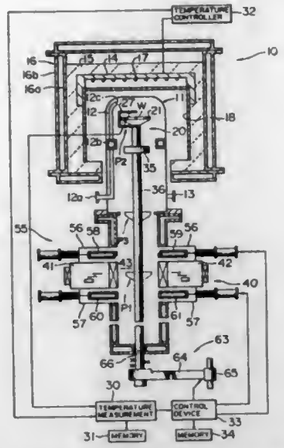
5,571,009
GAS POWERED BURNER WITH PERFORATED CERAMIC ELEMENTS
Carl H. Stålhane, Box 192, S-430, 93 Halso, and Maria B. E. Stålhane-Björnberg, Box 192, S-430, 93 Hälsö, both of Sweden
PCT No. PCT/SE92/00483, § 371 Date May 3, 1994, § 102(e) Date May 3, 1994, PCT Pub. No. WO93/01448, PCT Pub. Date Jan. 21, 1993
PCT Filed Jun. 29, 1992, Ser. No. 170,363
Claims priority, application Sweden, Jul. 8, 1991, 9102134
Int. Cl.[6] F23D *14/12*
U.S. Cl. 431—328 10 Claims



1. A gas powered burner for emitting infrared radiation, comprising:
- a gas supply means for supplying gas to said gas powered burner;
- oxygen supply means for supplying oxygen to said gas powered burner;
- a housing connected to said gas supply means and having a back part;
- at least tow ceramic plates adjacent to said housing, each ceramic plate having a plurality of perforations therein, said at least two ceramic plates lying in parallel with each other and being mutually adjustable relative to each other;
- means for supplying said at least two ceramic plates and for adjusting a position of one of said at least two ceramic plates relative to one another and thereby adjusting a combustion chamber in and between said at least two ceramic plates; wherein
- said at least two ceramic plates constitute an infrared radiating element with radiation which is variable due to mutual adjustment of said at least two ceramic plates.

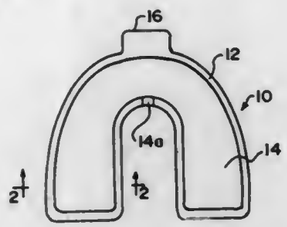
5,571,010
HEAT TREATMENT METHOD AND APPARATUS
Wataru Okase, Sagamihara, Japan, assignor to Tokyo Electron Kabushiki Kaisha, and Tokyo Electron Tohoku Kabushiki Kaisha, both of Japan
Filed Jun. 17, 1994, Ser. No. 262,057
Claims priority, application Japan, Jun. 18, 1993, 5-172674; Sep. 30, 1993, 5-268272
Int. Cl.[6] F27D *3/00*
U.S. Cl. 432—239 11 Claims

1. A heat treatment apparatus comprising:
- a vertical processing tube having a bottom opening through which an object of treatment is loaded and unloaded and including an elevated heat source for heating the object in a treatment position;



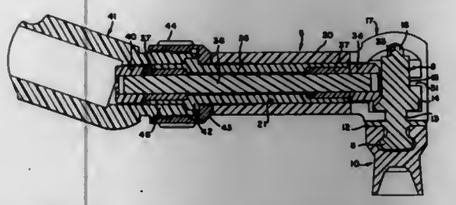
- an object holder including a mount portion for carrying the object thereon and for loading the object on the mount portion into the treatment position through the bottom opening of the processing tube;
- a first temperature sensor located facing the obverse side of the object on the mount portion, for measuring a temperature at the obverse side of the object;
- a second temperature sensor located facing the reverse side of the object on the mount portion, for measuring a temperature at the reverse side,
- the first and second temperature sensors being supported by the object holder; and
- means for detecting the temperature of the object in accordance with the respective outputs of the first and second temperature sensors.

5,571,011
DENTAL ARCH BITE REGISTRATION DEVICE
Loren S. Adell, 200 Adell Blvd., Sunnyvale, Tex. 75182
Filed Jun. 7, 1995, Ser. No. 482,479
Int. Cl.[6] A61C *9/00*
U.S. Cl. 433—71 9 Claims



1. A dental arch bite registration device comprising a thin disk having a plan shape corresponding to that portion of opposing dental arches whose registration is to be taken, said disk comprising an outer perimeter frame of polymeric material for peripherally bounding, as viewed in plan, an open space where that portion of opposing dental arches whose registration is to be taken will register, and polymeric bite registration material that is joined with and supported by said outer perimeter frame, and that, as viewed in plan, extends across and fills said open space so that when the device is used to take a bite registration, that portion of opposing dental arches whose registration is being taken will create a bite registration in only said bite registration material, and not in said outer perimeter frame.

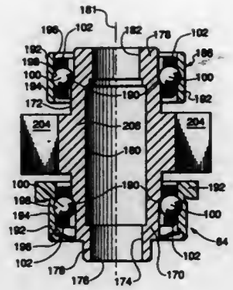
5,571,012
DISPOSABLE PROPHY ANGLE AND ADAPTER
Kenneth Witherby, Loveland, and Sheryl L. Wittstruck, Fort Collins, both of Colo., assignors to Teledyne Industries, Inc., Los Angeles, Calif.
Filed Jan. 11, 1995, Ser. No. 371,101
Int. Cl.[6] A61C *3/06*
U.S. Cl. 433—125 3 Claims



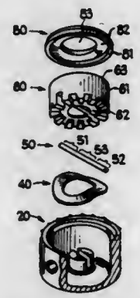
1. A disposable prophy angle permanently assembled from component parts consisting of an integral vertically oriented output gear part, an integral main body part and an integral nose cap part, said main body part and nose cap part being secured together on common mating surfaces thereof after insertion therebetween of said output gear part, and said disposable prophy angle being drivable by the power input gear on one end of a power transmitting adapter removably inserted into said main body part, the other end of said adapter being operatively connectable to a contra angle dental hand piece;
- said output gear part having a protruding prophy cup receiving button on its bottom end, a laterally extending slinger ring above said button, a lower rotary bearing section above said slinger ring, a driven gear above said lower rotary bearing member, and an upper rotary bearing section above said driven gear;
- said main body part comprising a horizontal longitudinally extending barrel portion and a nose forming portion on one end matable with said nose cap part; and
- said nose cap part when mated with said nose forming portion on said common mating surfaces forming together therewith an enclosed nose portion of said disposable prophy angle which houses all of said output gear part above said slinger ring and also said power input gear on said inserted end of a power transmitting adapter, and said enclosed nose portion providing internal stationary bearing formations in which said lower rotary bearing section and said upper rotary bearing section are journaled for rotation, said common mating surfaces being co-planar with a plane longitudinally bisecting said barrel portion of said main body part.

5,571,013
INTEGRAL BUR TUBE AND BEARING ASSEMBLY
Eugene J. Novak, Deerfield, Ill., assignor to Dentsply Research & Development Corp., Milford, Del.
Filed Mar. 31, 1994, Ser. No. 221,693
Int. Cl.[6] A61C *1/05*
U.S. Cl. 433—132 15 Claims

1. An improved dental handpiece having a head containing an air driven rotor that is supported therein by at least one bearing assembly including an outer race in contact with said head and an outer raceway for retaining bearing elements for supporting and positioning said rotor, said handpiece comprising:
- a bur tube supporting said rotor in said head, said tube having outer cylindrical surfaces and an axial bore for receiving and retaining a dental bur, at least one end of said bur tube including a tapered portion and having at least one bearing inner raceway formed in said tapered outer surface portion, said taper and raceway arranged such that, in combination with said outer race and raceway, axial advancement of said bearing assembly upon assembly is limited to a predetermined geometrical relationship.



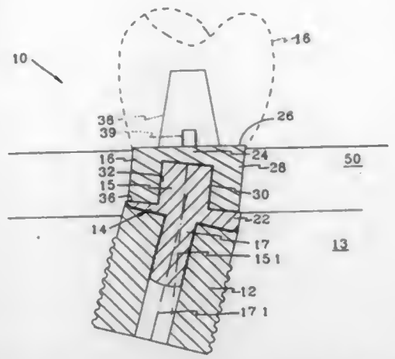
5,571,014
DISPOSABLE TORQUE LIMITING WRENCH
Franklin P. Gregory, Jr., Racine, Wis., and James W. Nelson, Morristown, N.J., assignors to Snap-on Technologies, Inc., Crystal Lake, Ill.
Filed Sep. 2, 1994, Ser. No. 300,468
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—141 20 Claims



1. A torque limiting wrench for applying up to a predetermined maximum torque to an associated driven member during each of a plurality of torque-applying cycles, said wrench comprising: a rotatable casing; a cam member adapted for coupling to the driven member and having a plurality of sequentially arranged portions including a predetermined number of cam portions and a release portion; and resilient cam following structure coupled to said casing for resilient engagement with said cam portions and with said release portion, said cam following structure, when in engagement with a cam portion, being responsive to rotation of said casing during a torque-applying cycle for rotating said cam member until the predetermined torque is reached, whereupon said cam following structure shifts to engagement with the next successive portion, said cam following structure, when in engagement with said release portion, being unresponsive to rotation of said casing and thereby preventing further engagement of said cam following structure with a cam portion of said cam member.

5,571,015
DENTAL REPLACEMENT MOUNTING SYSTEM
Ernie Siegmund, 201-407 Graham Avenue, Winnipeg, Manitoba, Canada
Filed Sep. 26, 1994, Ser. No. 312,265
Int. Cl.[6] A61C *8/00*
U.S. Cl. 433—173 10 Claims

1. A mounting system for supporting on a dental endosseous implant having a longitudinal implant axis is in disalignment with the axes of adjacent teeth or abutments, a non-angulated dental abutment for a dental prosthetic structure and in an orientation



wherein a longitudinal abutment axis of the abutment intersects the implant axis and coincides with a desired axis which is in alignment with the longitudinal axes of the adjacent teeth or abutments, comprising:

a mounting base having a substantially planar mounting surface for supporting the dental abutment; and

a transmucosal member for connecting the mounting base with the dental implant, the transmucosal member including a base portion having means for coaxially engaging the implant and having a first longitudinal axis, and an attachment portion for coaxial engagement with the mounting base and having a second longitudinal axis, and the second longitudinal axis extending at an angle to the first longitudinal axis for partial compensation of the implant angulation; and

the mounting base being shaped and constructed such that, when the mounting base is fastened to the implant by way of the transmucosal member, the mounting surface extends at right angles to the desired axis.

5,571,016

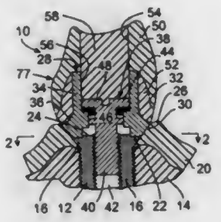
DENTAL IMPLANT SYSTEM

Abraham Ingber, Potomac; Vincent Prestipino, Germantown, both of Md., and Anopet Phimmasone, Alexandria, Va., assignors to Nobelpharma AB, Goteborg, Sweden

Continuation of Ser. No. 908,580, Jun. 29, 1992, abandoned, which is a continuation of Ser. No. 589,263, Sep. 28, 1990, Pat. No. 5,125,839. This application Jan. 24, 1995, Ser. No. 377,502

Int. Cl.[6] A61C *8/00*

U.S. Cl. 433—173 **6 Claims**



1. In a dental implant including a base body, a threaded element and a tubular post, said base body having a threaded bore receiving said threaded element through which the tubular post is held on an axial end of the base body, including: a receiving portion at said axial end of the base body, the tubular post having a centering socket complementary to said receiving portion at said axial end and an inner bore with a counter-bore forming an internal stop shoulder, and head means provided on one end of the threaded element engageable with the internal stop shoulder for holding the tubular post with the centering socket thereof in interlocking engagement with the receiving portion of the base body, said head means comprising a screw head fixed to the threaded element at said one end thereof and a deformable washer between the screw head and the stop shoulder.

5,571,017

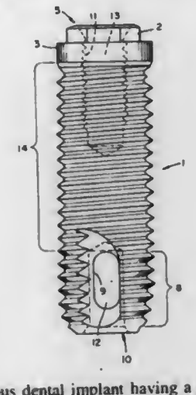
SELECTIVE SURFACE, EXTERNALLY-THREADED ENDOSSEOUS DENTAL IMPLANT

Gerald A. Niznick, Las Vegas, Nev., assignor to Core-Vent Corporation, Las Vegas, Nev.

Filed Oct. 5, 1994, Ser. No. 318,231

Int. Cl.[6] A61C *8/00*

U.S. Cl. 433—174 **24 Claims**



1. An endosseous dental implant having a generally cylindrical shape and including, at its distal end, self-tapping threads, and at its proximal end, wrench-engaging surfaces for engaging a tool to place said implant in a generally-cylindrical passage formed in the jawbone of a person to receive said implant, said distal end and said proximal end having a roughness of up to about 20 microns measured by the average difference between the peaks and valleys of the surface texturing, and, between said distal and proximal ends, a relatively rough, middle region having a roughness of at least about 25 microns, measured by the average difference between the peaks and valleys of the surface texturing.

5,571,018

ARRANGEMENT FOR SIMULATING INDIRECT FIRE IN COMBAT TRAINING

Mark R. FitzGerald, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 23, 1994, Ser. No. 344,299

Int. Cl.[6] F41G *1/00*

U.S. Cl. 434—16 **15 Claims**

1. An arrangement for simulating indirect fire comprising:

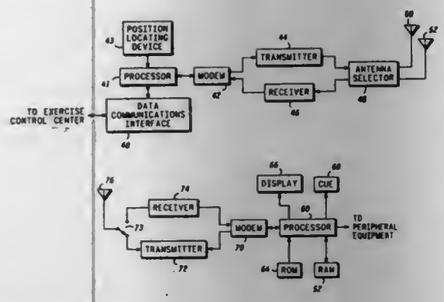
an exercise control center for initiating and controlling an indirect fire mission;

a first data link for receiving and for transmitting messages, said first data link coupled to said exercise control center;

a group master unit for determining a position relative to a target, said group master unit coupled via said first data link to said exercise control center;

a plurality of individual player units for determining effects of said indirect fire mission on a corresponding troop, each of said plurality of individual player units coupled to said group master unit via a secondary data link;

said group master unit transmitting said position relative to said target and transmitting indirect fire information, received from said exercise control center to each of said plurality of individual player units;



each of said plurality of individual player units assessing casualties of said corresponding troop based on a location of said group master unit;

each of said plurality of individual player units transmits said casualties to said group master unit; and

said group master unit transmits to said exercise control center each of said casualties of said plurality of individual player units in a single message.

5,571,019

APPARATUS AND METHOD FOR TEACHING CONCEPTS OF MATHEMATICS

Dallas R. Wilson, 2608 Fifth St., Slidell, La. 70458

Filed Dec. 16, 1994, Ser. No. 358,790

Int. Cl.[6] G09B *19/00*

U.S. Cl. 434—207 **9 Claims**



1. An apparatus for teaching basic concepts of mathematics, comprising:

a ball having a generally radial surface having situated thereon a field of diverse, basic mathematical problems of different types and solutions, each problem in said field having framed thereabout a specific geometric symbol selected from a diverse group of symbols, said symbols indicating discernable commonalities in each of said problems relative to the remaining problems in said field.

5,571,020

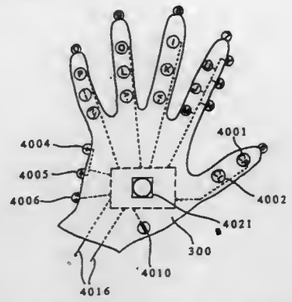
EDUCATION DEVICE FOR ASSISTING IN THE LEARNING OF KEYBOARDING

Faridch Troudet, 18612 Buccaneer Creek, P.O. Box 360664, Strongsville, Ohio 44136

Continuation-in-part of Ser. No. 912,874, Jul. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 770,610, Oct. 3, 1991, abandoned. This application Sep. 28, 1993, Ser. No. 128,821

Int. Cl.[6] G09B *13/00*

U.S. Cl. 434—233 **10 Claims**



1. An educational device for assisting in the learning of characters and their association with the keys of a keyboard, the device comprising:

(a) support means for mounting to the fingers of the hands of a human learner and including a finger portion associated with each finger;

(b) indicia formed on said support means, the indicia on each finger portion corresponding to indicia on the keyboard keys which are struck by the associated finger; and

(c) switch keys mounted on the support means for permitting manual switching by contact of the switch key with another object, a different one of said switch keys associated with and mounted at each indicium for connection to and actuation of an apparatus connected to the switch keys.

5,571,021

EMULATOR PROBE

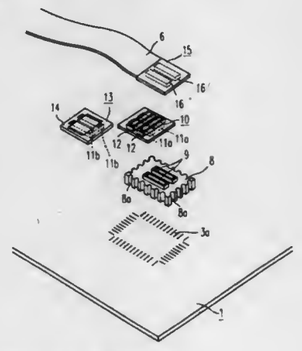
Hideki Kawabe, and Toshihiko Sugahara, both of Hyogo, Japan, assignors to Mitsubishi Electric Semiconductor Software Co., Ltd., Itami, and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of Japan

Filed Apr. 17, 1995, Ser. No. 422,902

Claims priority, application Japan, Nov. 24, 1994, 6-289533

Int. Cl.[6] H01R *23/72;9/09*

U.S. Cl. 439—71 **4 Claims**



1. An emulator probe comprising:

at least one semicylindrical conductor having a semicircular edge portion, soldered to a microcomputer mounting foot pattern, provided on a user target board and forming a semicylindrical through-hole;

a semicircular through-hole board having said semicylindrical conductor disposed on the peripheral surface thereof such that said semicircular through hole is formed as a recess in the peripheral surface;

a relaying connector having a terminal electrically connected with said semicylindrical conductor and disposed on said semicircular through-hole board;

a direction changing board having a first connector electrically coupled to said relaying connector and set on the under side thereof and having a second connector electrically connected with said first connector and set on the upper side thereof such that the direction of setting thereof differs from the direction of setting of said first connector; and

cable setting board attached to the end of an emulator cable and having a connector electrically coupled to said second connector on said direction changing board.

5,571,022

ELECTRICAL CONNECTOR SUCTION PLATFORM FOR FACILITATING PICKING

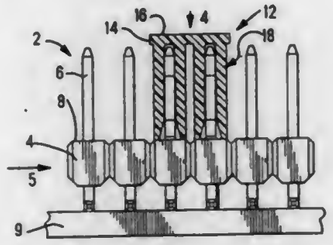
Manfred Schaarschmidt, Bensheim, Germany, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 27, 1995, Ser. No. 411,008

Claims priority, application United Kingdom, Apr. 11, 1994, 9407137

Int. Cl.[6] H01R *13/44*

U.S. Cl. 439—135 **6 Claims**



1. A connector assembly comprising a housing having a mating face from which pin contacts extend, and a separate suction platform assembled to the connector assembly over a portion of the mating face, the suction platform held to the connector assembly sufficiently strongly for picking up the assembly thereby, the suction platform comprising a base plate having a suction surface on one side and an extension projecting from the other side thereof, the extension frictionally engageable with the contacts for frictionally retaining the suction platform to the connector assembly during picking, the connector assembly being characterized in that the extension is a plurality of pin receiving pipes coextending from the base plate, each pipe comprising an outer wall, surrounding a pin receiving cavity, each cavity being profiled to receive a respective pin contact therein with space between individual pipes defining clearance permitting deflection of a respective wall irrespective of the adjacent pipes, such that relative resilient deformation of the pipe outer wall with respect to the pin contact occurs, thereby resulting in frictional force therebetween for retention of the suction platform to the connector assembly.

5,571,023

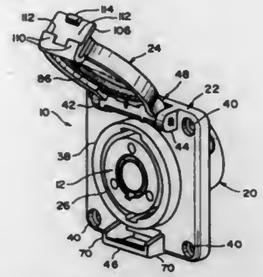
ELECTRICAL CONNECTOR HOUSING WITH LID

John C. Anthony, Fairfield, Conn., assignor to Hubbell Incorporated, Orange, Conn.

Filed May 17, 1995, Ser. No. 442,841

Int. Cl.[6] H02G *3/14*

U.S. Cl. 439—142 **20 Claims**



1. An electrical connector housing for an electrical connector, comprising:

a flange portion with an opening formed therein for accessing electrical contacts of said electrical connector; and

a lid having a body portion pivotally coupled to said flange portion at a first end by a hinge assembly for selectively covering said opening in said flange portion and releasably coupled to said flange portion at a second end by a latch assembly, said latch assembly including

a resilient U-shaped latch member integrally formed with said body portion as a one-piece, unitary member, said latch member having a first leg coupled to said body portion and a second leg with a first integral latch surface formed thereon, and

a locking surface integrally formed with said flange portion for releasably engaging said latch surface of said latch member via a snap-fit.

5,571,024

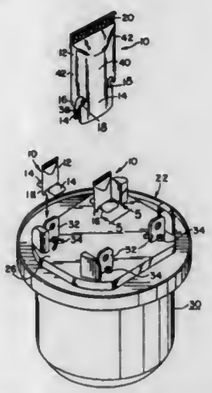
DISCONNECT FOR ELECTRIC METERS

Vincent J. Ranoia, 504 Westbourne Dr., Broomall, Pa. 19008

Filed Nov. 15, 1994, Ser. No. 339,814

Int. Cl.[6] H01R *13/44*

U.S. Cl. 439—146 **8 Claims**



1. A disconnect sleeve, comprising: a sleeve defining an envelope and sealed at one end and open at the other end for enclosing a vertical electrical terminal extending from a horizontal base, said sleeve having a pair of generally flat faces spaced apart by a pair of generally rounded edges or sides, said flat faces each having a flap extending from said open end to provide an electrically non-conductive horizontal sheath, said sides each having a skirt extending from said open end to provide an electrically non-conductive vertical side sheath, and arcuate cut outs separating said skirts from said flaps.

5,571,025

CIRCUIT BOARD ELECTRICAL CONNECTOR

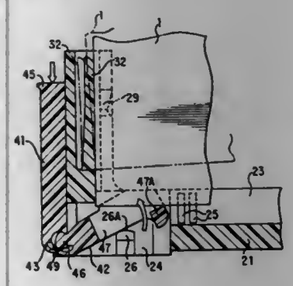
Tatsuya Arai, and Yutaka Ichimura, both of Tokyo, Japan, assignors to Hirose Electric Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1994, Ser. No. 355,169

Claims priority, application Japan, Dec. 16, 1993, 5-72338 U

Int. Cl.[6] H01R *13/62*

U.S. Cl. 439—160 **7 Claims**



1. A circuit board electrical connector, comprises:

a housing made from an insulation material so as to provide a holding section and a pair of guiding sections extending upwardly from opposite ends of said holding section;

a plurality of contact elements arranged in said holding section;

a receiving recess provided in said holding section for receiving a circuit board such that contact pads of said circuit board are brought into contact with said contact elements;

an ejector provided on said housing for ejecting said circuit board from said holding section;

a slide portion provided on said ejector for sliding along one of said guiding sections and having surface means at a lower end thereof;

a finger portion provided on said ejector and having bearing means abutted on said surface means of said slide portion when said ejector is attached to said housing so that when said slide portion is depressed downward in a solely vertical direction, said bearing means receives a pushing force from said slide portion and moves downwardly; and

fulcrum means provided on said holding section for supporting said finger portion between said bearing means and a front end of said finger portion so that when said slide portion is depressed downwardly, said finger portion rotates to lift said circuit board with said front end of said finger portion, thereby ejecting said circuit board from said electrical connector.

5,571,026

FLAT MOUNT ELECTRODE SOCKET

Paul Kahre, Oak Creek, Wis., assignor to KCS Industries, Inc., Milwaukee, Wis.

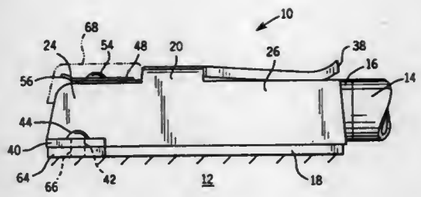
Filed Dec. 9, 1994, Ser. No. 352,601

Int. Cl.[6] H01R *33/02*

U.S. Cl. 439—242 **17 Claims**

1. An electrode socket assembly that can be mounted along a mounting surface of an object and is designed to receive an electrode of a lighting device, comprising:

a housing having ends including a base at one of the ends and a socket at the other of the ends, the socket including a plurality of flexible panels, the flexible panels being non-conductive and arranged to grip the electrode;



a spring extending into the socket, the spring being disposed to bias the electrode towards at least one of the flexible panels when the electrode is inserted into the socket; and

further comprising a barrier panel designed to abut along the base and the socket of the housing when the housing is mounted along the mounting surface, of object.

5,571,027

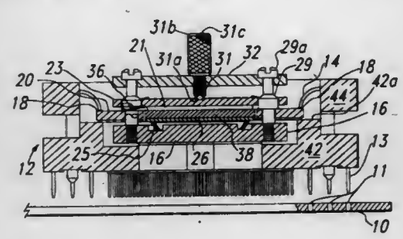
NON-DESTRUCTIVE INTERCONNECT SYSTEM FOR SEMICONDUCTOR DEVICES

Randal D. Roebuck, Dallas, Tex., and Salvatore P. Rizzo, Norwood, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 375,863, Jan. 20, 1995, Pat. No. 5,468,158, which is a continuation of Ser. No. 146,726, Oct. 29, 1993, Pat. No. 5,397,245. This application Oct. 24, 1995, Ser. No. 547,538

Int. Cl.[6] H01R *13/15*

U.S. Cl. 439—264 **5 Claims**



1. A carrier assembly for carrying a semiconductor device, comprising:

a base;

a thin film interconnect extending over a top surface of said base;

a plurality of contact bumps on a top surface of said thin film interconnect for contacting bond pads on the semiconductor device;

a pair of posts extending from said base, each of said posts having a shaft having a first lateral dimension and a head having a second lateral dimension greater than said first lateral dimension;

a lid positioned over said base;

a rotary latch positioned over said lid, said rotary latch having a pair of openings through which said posts extend, each of said openings having a first portion in a first surface of said rotary latch and a second portion in a second surface of said rotary latch, said first and second surfaces being spaced vertically apart;

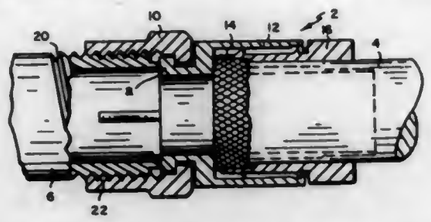
a spring positioned between said lid and said rotary latch, said rotary latch applying force to said lid through said spring, whereby rotation of said rotary latch moves said heads from said first portion to said second portion to increase the force applied by said rotary latch to said lid through said spring.

5,571,028

COAXIAL CABLE END CONNECTOR WITH INTEGRAL MOISTURE SEAL

Andrew Szegda, Canastota, N.Y., assignor to John Mezzalingua Assoc., Inc., East Syracuse, N.Y.

Filed Aug. 25, 1995, Ser. No. 519,654
Int. Cl.[6] H01R 4/38
U.S. Cl. 439—322 14 Claims



1. A connector for connecting a coaxial cable to a system component, said connector comprising:
- a connector body having a from end and a rear end, said rear end being adapted to axially inserted into an end of said cable;
- means associated with the rear end of said connector body for securing said connector to said cable end;
- a rotatable nut at the front end of said connector body, said nut having an internal thread with an axial length, pitch, thread angle and major and minor diameters configured and dimensioned to coact in threaded engagement with a complimentary external thread on said system component; and
- a circular seal element contained within and axially fixed with respect to said nut, said seal element being deformable into a configuration lining at least a substantial portion of said internal thread and a portion of said external thread to thereby establish a barrier to the penetration of moisture between said internal and external threads.

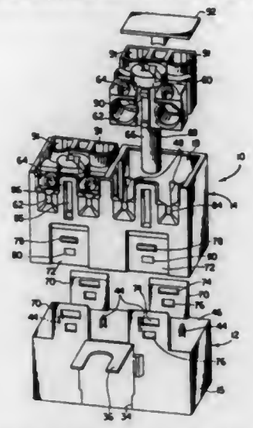
5,571,029

INSULATION DISPLACEMENT CONNECTOR

Serge Poissant, Philippe; Claude Pelletier, Laval; Gaetan Dube, Montreal; Gilles Hurtubise, Vaudreuil; Roger L. Paradis, Longueuil, and David Pepler, Pierrefonds, all of Canada, assignors to Siecor Corporation, Hickory, N.C.

Filed Nov. 23, 1994, Ser. No. 347,240
Int. Cl.[6] H01R 4/24
U.S. Cl. 439—412 13 Claims

1. An insulation displacement connector for at least one circuit



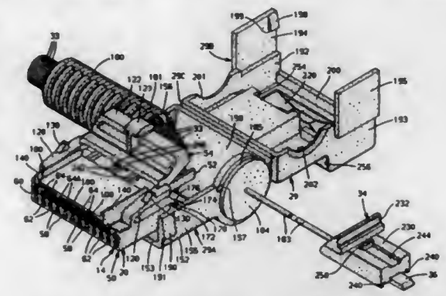
lines comprising first housing means sealingly enclosing an electrical surge protection means which is connected at one side to ground means and on the other side to first conductor means of the circuit line, the first conductor means having two terminals extending externally of the first housing means, a second housing means movable into a closed condition with the first housing means, second and third conductor means located within the second housing means and each having at one end an insulation displacement terminal for connection to an insulated conductor wire and having at the other end another terminal which connects to an individual one of the terminals of the first conductor means with the two housing means closed together, the second housing means comprising a means for aligning a conductor wire with each of the insulation displacement terminals and for connecting the conductor wires to the insulation displacement terminals.

5,571,030

PROTECTED CONNECTOR ASSEMBLY HAVING DOUBLE ENDED SHORTING CLIP

Joseph H. Gladd; John M. Sova, both of Cortland, and Paul S. Ghirardi, Brookfield, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 9, 1995, Ser. No. 369,947
Int. Cl.[6] H01R 9/00
U.S. Cl. 439—489 22 Claims



1. An electrical connector assembly comprising:
- a first insulator housing having a plurality of first spaced apart cavities therein, a first plurality of metal terminals housed in said first cavities, a second cavity in said first insulator housing which is laterally spaced from said first cavities, said first insulator housing having a slot for communicating said first and second cavities, a spring clip housed within said second cavity, said spring clip having a bridge portion extending transversely of the second cavity and a plurality of spaced resilient fingers extending transversely of the bridge portion through the slot means and overlying respective ones of the first terminals, said fingers each having an end portion which is engaged with one of the first plurality of terminals to provide a shorting path between the respective ones of said first plurality of terminals, said spring clip when disposed in the second cavity being self-biased toward a position in which the end portions of the fingers engage the respective ones of the first plurality of terminals, a second insulator housing which is matable with the first insulator housing, said second insulator housing having a plurality of spaced openings therein, a second plurality of metal terminals carried by said second insulator housing and extending through said openings of said second insulator housing which are adapted to mate with the first plurality of terminals in the first insulator housing when the second insulator housing is mated to the first insulator housing, a latch means on said first and second insulator housings to latch said first and second insulator housings together when they are fully mated to each other,
- a third housing comprising, a floor half and a cover half integrally hinged together for movement between an open side by side position and a closed position in which said cover overlies the floor and as connected thereto,

said first insulator housing being slidably and blockably connected to said floor when the third housing is in its open position, said cover having a channel and an opening through a back wall thereof for slidably receiving a connector position assurance member,

a connector position assurance member guided for linear sliding movement in the channel and on said first insulator housing and being lockable to the cover insulator housing if the first and second insulator housings and their respective terminals have been properly mated together, said connector position assurance member upon being slid being engageable with the first insulator housing and not lockable to the cover if the first and second insulator housings are not properly mated, wherein said connector position assurance cover member includes a first lock component and said insulator housing includes a second lock component matable with said first lock component and

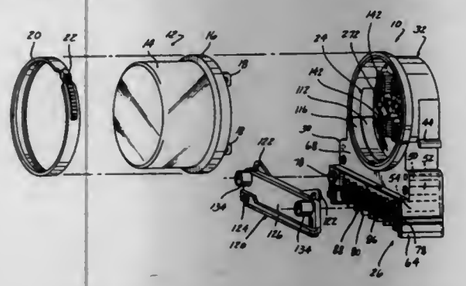
cam means on said connector position assurance member for engaging said fingers of said spring clip and moving said fingers out of engagement with said first plurality of metal terminals to interrupt said shorting path when being lockably connected to said cover whereby said connector position assurance member functions both to assure that the first and second insulator housings and their respective terminals have been properly mated and to prevent disengagement of the spring clip from said first plurality of terminals until the connector position assurance member has assured that the first and second insulator housings have been properly connected together.

5,571,031

WATTHOUR METER MOUNTING APPARATUS WITH IMPROVED ELECTRICAL CONNECTIONS

Darrell Robinson, Highland Township; Robert O. Learmont, Walled Lake; Karl R. Loehr, Novi; Robert Goozen, St. Clair; Michael E. Lewis, Ann Arbor, and Allen V. Pruehs, Howell, all of Mich., assignors to Ekstrom Industries, Inc., Farmington Hills, Mich.

Continuation of Ser. No. 216,261, Mar. 22, 1994, abandoned.
This application Aug. 30, 1995, Ser. No. 521,008
Int. Cl.[6] H01R 33/945
U.S. Cl. 439—517 65 Claims



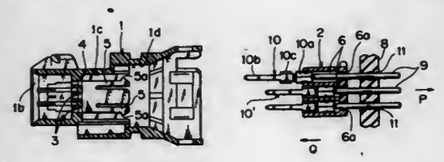
1. A watthour meter socket adapter for use with a watthour meter having a plurality of blade terminals, the socket adapter comprising:
- a housing, the housing including:
  - a watthour meter receiving portion; and
  - a terminal portion spaced from the watthour meter receiving portion;
- a plurality of electrical contacts mounted in the watthour meter receiving portion of the housing, each contact receiving one blade terminal of a watthour meter in a snap-in connection;
- a plurality of electrical terminals disposed in the terminal portion of the housing and receiving one of an external electrical power line conductor and an electrical load conductor connected to an external load; and
- a plurality of electrical conductors, each connected to and extending between one contact and one terminal in the housing in a co-planar, non-overlapped arrangement, the electrical conductors being in the form of rigid, polygonal-shaped bus bars, each having a first pair of opposed exterior surfaces of a first length, and a second pair of opposed exterior surfaces angularly disposed from the first pair of exterior surfaces and having a length no greater than the first length of the first pair of exterior surfaces, one electrical contact mounted on the first pair of exterior surfaces, the first pair of exterior surfaces of each electrical conductor being co-planarly aligned with an axial extent of the blade terminals of a watthour meter insertable into the housing.

5,571,032

COUPLED HOUSING TYPE CONNECTOR

Takahiro Sano, Shizuoka, and Hiroshi Okamoto, Niimi, both of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Sep. 23, 1994, Ser. No. 311,061
Claims priority, application Japan, Sep. 24, 1993, 5-237737; Dec. 14, 1993, 5-313035; Jun. 14, 1994, 6-131565
Int. Cl.[6] H01R 13/40
U.S. Cl. 439—589 5 Claims



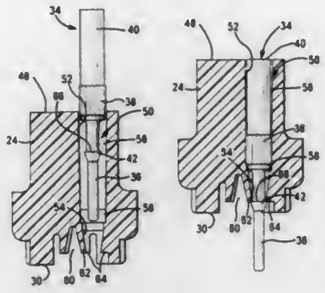
1. A coupled housing type connector comprising:
- a one piece insulative cylindrical outer housing having locking wall means integrally formed therein and an inner peripheral wall integrally formed with a partition wall located within said outer housing approximately perpendicularly to said inner peripheral wall, said partition wall having a plurality of terminal leadout openings approximately perpendicularly therethrough;
- an inner housing having an inner periphery which forms a plurality of terminal accommodating chambers;
- a sealing rubber plug having wire insertion holes therethrough;
- a plurality of terminals each having two ends with a first end including an electric contact portion, a second end including a wire connecting portion and an erected piece located between said electric contact portion and said wire contacting portion so that said wire connecting portion and said erected piece of each of said terminal is housed in said terminal accommodating chambers;
- a plurality of wires each having two ends with a first end passed through each of said wire insertion holes of said rubber plug and being housed in each of said terminal accommodating chambers adjacent said wire connecting portion of each of said terminals;
- wherein said inner housing is connected to said rubber plug by said wires so that said inner housing and rubber plug are fitted into said outer housing in such a way that electric contact portions of said terminals project outwardly from said terminal leadout openings formed in said partition wall: and
- wherein said locking wall means engages with interior portions of said inner housing.

5,571,033

ELECTRICAL CONNECTOR HAVING PRESS-FIT CONTACTS FOR CIRCUIT BOARD MOUNTING

Forrest I. Kinsey, Jr., Harrisburg, and Clifford J. Wampler, Lebanon, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Feb. 21, 1995, Ser. No. 395,394
Int. Cl.[6] H01R 13/422
U.S. Cl. 439—595 26 Claims



1. An electrical connector adapted to be mounted to a circuit board and comprising:

a housing block of relatively noncompressible dielectric material having a board-mounting face and an opposed mating face, said housing block being formed with a plurality of passageways in at least one row extending therethrough from said mating face to said board-mounting face, each of said passageways having a contact body receiving portion opening to said mating face and an exit portion opening to said board-mounting face, said exit portion tapering inwardly toward said board-mounting face so as to be of reduced cross-sectional area relative to said contact body receiving portion;

said housing block including a nonresilient portion partially surrounding said exit portions of said passageways of each said row, and said housing block being cut away at least partially surrounding said exit portions of said passageways to form a resilient wall partially surrounding said exit portions of said passageways of each said row thereof and also forming a recessed channel adjacent said resilient wall, said housing block further including a stop ledge recessed from said mounting face and adjacent to each said exit portion, said stop ledge having a portion thereof defined on said resilient wall and a portion defined on said nonresilient housing block portion; and

a contact terminal associated with each said passageway, said contact terminal having a forward contact section adapted to be insertable into and through said passageway from said mating face to said board-mounting face, a contact body section and a rearward mating section, said contact body section adapted to be press-fit into said passageway contact body receiving portion with said rearward mating section being accessible at said mating face, said forward contact section being formed with a retention collar of greater cross-sectional area than at least some of said passageway exit portion, said retention collar having a rearward facing surface adapted to abut said stop ledge when said at least one contact terminal is fully inserted in said one passageway;

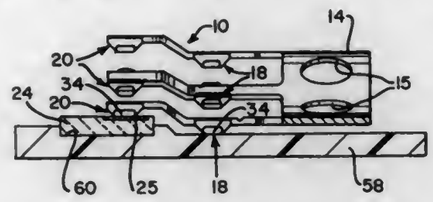
whereby, upon insertion of said contact terminal into said passageway, as said retention collar passes through said exit portion the resilient wall is flexed outwardly from its unstressed position surrounding said exit portion and as said retention collar leaves said exit portion the resilient wall moves inwardly to return to its unstressed position so that the housing block stop ledge and the retention collar rearward facing surface abut in interfering relation to prevent rearward removal of the contact terminal from the passageway.

5,571,034

METHOD OF MAKING AN ARRAY OF ELECTRICAL COMPONENTS WITH LEADS ATTACHED AND THE PRODUCT THEREOF

Jack Seidler, Flushing, N.Y., assignor to North American Specialties Corporation, Flushing, N.Y.

Filed Jan. 20, 1995, Ser. No. 375,970
Int. Cl.[6] H01R 4/02
U.S. Cl. 439—876 12 Claims



7. An array of leads assembled with electronic components for automated assembly of electrical components to substrates, comprising:

a continuous carrier strip of electrically conductive material,

a plurality of parallel leads integrally joined to said carrier strip in predetermined spaced relation, each of said leads extending transversely of said carrier strip and having a first, proximal end adjacent said carrier strip and a second, distal end remote from said carrier strip,

first and second solder arrangements on each lead adjacent respectively to said first and second lead ends,

an electrical component having first and second opposed faces, and said component having a respective conductive terminal on said first face electrically and mechanically joined to each said second solder arrangement, and

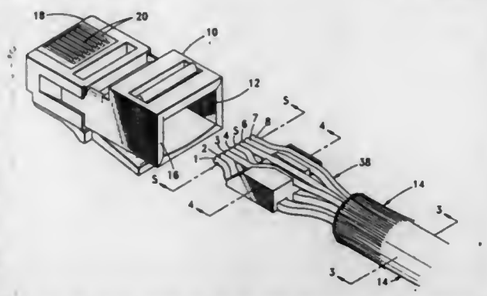
each said first solder arrangement being substantially coplanar with a respective one of said second component faces.

5,571,035

DIVERGENT LOAD BAR

Jess B. Ferrill, Madison, N.C., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Oct. 31, 1994, Ser. No. 332,218
Int. Cl.[6] H01R 9/22
U.S. Cl. 439—894 4 Claims



1. An electrical connector of the plug assembly type for mating with a receptacle type connector, where a plurality of conductors which are associated as signal pairs are terminated therein for electrical engagement with corresponding contacts in said receptacle connector, and said signal pairs are susceptible to electrical crosstalk, said plug assembly comprising:

a dielectric housing having a conductor receiving end, a conductor terminating end, a passageway communicating internally between said respective ends, and a spacing insert in said passageway, said insert having an upper surface and a lower surface with plural grooves arranged along said surfaces generally parallel to said passageway, said grooves being spaced apart and configured to receive respective ones of said signal pairs in different ones of said grooves, whereby separation of said signal pairs reduces crosstalk therebetween.

5,571,036

FLEXIBLE TUBE FLOATING SLING

Gail Hannigan, 1436 Willowdown Road, Oakville, Ontario, Canada

Filed Dec. 21, 1994, Ser. No. 360,457
Int. Cl.[6] B63C 9/08
U.S. Cl. 441—129 7 Claims



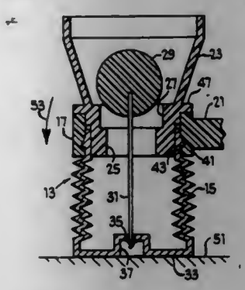
1. A flotation support including an elongate resilient and flexible foam tube folded about itself into a generally U-shaped configuration defining a pair of leg portions movable between generally parallel and generally converging portions and interconnected by a generally arcuate bight portion when in use; sling means extending between said leg portions and including opposite side edges secured to said leg portions of said foam flotation support and defining complementary sleeve means within which said leg portions of said foam tube are positioned and retained; and a head supporting portion of said flotation support defined by said arcuate bight configured to conform to the user anatomy to support the head of a user positioned on the sling to elevate the head above the water and the user's body in a generally supine position.

5,571,037

NOISE MAKING TOY

Craig D. Sellers, Lansing, Ill., assignor to Meyer/Glass Design, Chicago, Ill.

Filed Sep. 26, 1995, Ser. No. 534,035
Int. Cl.[6] A63H 3/31
U.S. Cl. 446—188 7 Claims



1. A noise making toy including:

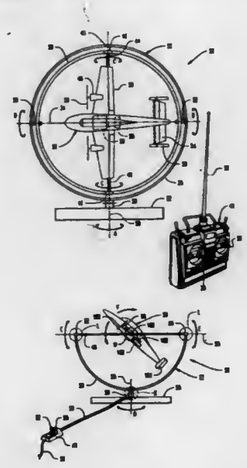
a tubular bellows having an elongated, pleated tubular wall with opposite ends, a base closing one end of said tubular bellows, an opening into said bellows formed at the opposite end thereof, a seat surrounding said opening, a plug seated on said seat and a tether directly connecting said plug to said base said bellows to maintain said plug on said seat when said pleated tubular wall is in an extended position and to allow said plug to unseat from said seat upon the build up of air pressure in said bellows thereby releasing air to create a noise.

5,571,038

MODEL AIRPLANE FLIGHT SIMULATOR

Richard Halling, 4113 Prescott St., Sarasota, Fla. 34232

Filed Aug. 15, 1995, Ser. No. 515,452
Int. Cl.[6] A63H 27/00
U.S. Cl. 446—232 2 Claims



1. A miniature model airplane flight simulator consisting essentially of:

a fuselage;

full wings extending laterally in either direction from a central portion of said fuselage;

an aileron forming a trailing edge portion of each of said wings;

an elevator and a rudder connected to a rear of said fuselage;

actuator means within said fuselage for receiving a remote control signal and for selectively, independently pivotally moving said ailerons, elevator and rudder in response to said remote control signal;

propeller means for producing a flow of air over said ailerons, elevator and rudder to induce full roll, pitch and yaw movement, respectively of said airplane in response to corresponding pivotal movement of said ailerons, elevator and rudder;

first means for supporting said model airplane for free independent rotation of said model airplane about a third rotational axis passing generally through a length of said fuselage;

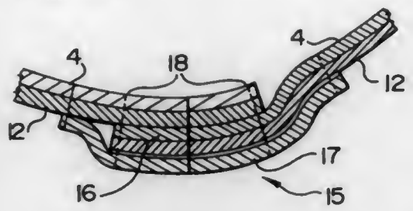
second means for supporting said first means for free independent rotation of said miniature model airplane about a second rotational axis orthogonally intersecting said third rotational axis and transverse to said fuselage and passing through a central point of said fuselage;

third means for supporting said second means for free independent rotation of said miniature model airplane about a first rotational axis orthogonally intersecting said second rotational axis, said third means also for receiving support for said flight simulator from a stationary surface;

hand-activated means for producing and for conveying said remote control signal to said actuator means;

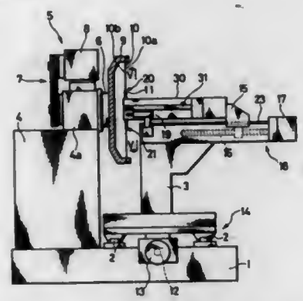
said first, second and third support means each also for conveying electric dower to said propeller means from a remote source of electric power.

5,571,039
ABDOMINAL SUPPORT
Donna M. Ford, 3409 West 42nd Avenue, Vancouver, British Columbia, Canada
Filed Oct. 28, 1994, Ser. No. 330,789
Int. Cl.[6] A41C *1/10;1/08*
U.S. Cl. 450—155 16 Claims



1. An abdominal support for wearing by a person and supporting weight of the abdomen of the person by transferring abdominal weight to the shoulders of the person comprising:
(a) an elastic girdle for fitting about and encircling at least a portion of the hips, lower back and buttocks of a person, and a lower region of the abdomen of the person, said girdle comprising:
(i) a first web having therein elastic fibres, said first web forming a main body of the girdle for fitting about at least a portion of the hips, lower back and the buttocks of the person, and a lower region of the abdomen of the person extending from an upper region and a lower region of a left side of the abdomen of the person, to thereby define a left lower abdominal area, to an upper region and a lower region of a right side of the abdomen of the person, to thereby define a right lower abdominal area, a junction point between the left lower abdominal area and the right lower abdominal area forming a vertical frontal midline, as viewed by the person;
(ii) a second web secured to the left lower abdominal area of the first web and having therein a set of generally parallel elastic fibres inclined at an angle downwardly from the upper region of the left side of the first web towards the front of the abdomen and attaching to the first web at the frontal midline, said second web fitting over or under a portion of the left lower abdominal area of the first web; and
(iii) a third web secured to the right lower abdominal area of the first web and having therein a set of generally parallel elastic fibres inclined at an angle downwardly from the upper region of the right side of the first web towards the front of the abdomen and attaching to the first web at the frontal midline, said third web fitting over or under a portion of the right lower abdominal area of the first web;
the lower abdominal area of the first web, and the lower left and lower right abdominal areas of the second and third webs, in combination, forming a supportive pouch which conforms with the lower abdominal shape of a person with a distended abdomen, the two sets of parallel elastic fibres of the second and third web corresponding generally in direction with the respective direction of pull of external oblique muscles of a person's abdomen, the second and third webs overlapping at the vertical frontal midline to form a vertical reinforced section over the vertical frontal midline of the abdomen of the person; and
(b) pair of elastic elongated suspenders with a proximal end and a distal end, the proximal end secured to and extending from an upper rear region of the first web, the pair of suspenders passing over respective left and right shoulders of the person, the pair of suspenders being detachably secured at their distal ends to an upper frontal region of the girdle, said suspenders uplifting the weight of the abdomen of the person and distributing the abdominal weight to the shoulders of the person;
(c) a fourth web having a set of generally parallel vertical elastic fibres fitting over the overlapping area of the second and third webs and aligned to correspond generally with vertical rectus abdomens muscles of the abdomen of the person.

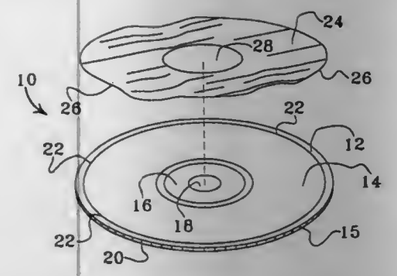
5,571,040
METHOD AND DEVICE FOR DETECTING BLADE FLEXURE AND BLADE FLEXURE CONTROL DEVICE FOR USE WITH A SLICING MACHINE
Keishi Kawaguchi, Higashihiroshima; Tatsumi Hamasaki, Hiroshima; Yoshihiro Tadera, Kure, and Kunio Matsuda, Aki-gun, all of Japan, assignors to Toyo Advanced Technologies Co., Ltd., Hiroshima-ken, Japan
Filed Dec. 15, 1993, Ser. No. 168,023
Claims priority, application Japan, Jan. 18, 1993, 5-006087; Oct. 5, 1993, 5-248953
Int. Cl.[6] B24B *49/00*
U.S. Cl. 451—11 19 Claims



1. A method for detecting the flexure of a blade member of a slicing machine in which a workpiece is placed in the blade member and in which the blade member is in the form of a flat ring, said workpiece having a forward longitudinal end and a rear longitudinal end, said blade member having an internal cutting edge on an internal periphery of the blade member, and wherein the blade member is rotated and relative movement is rendered between the rotated blade member and the workpiece in a radial direction of the blade member to produce a wafer from the forward longitudinal end of the workpiece, the detecting method comprising the steps of:
disposing an axial load detecting means at said rear longitudinal end of said workpiece with said axial load detecting means being generally axially aligned with said workpiece;
detecting the axial load acting between the workpiece and the blade member; and
calculating the flexure amount of the blade member on the basis of the axial load.

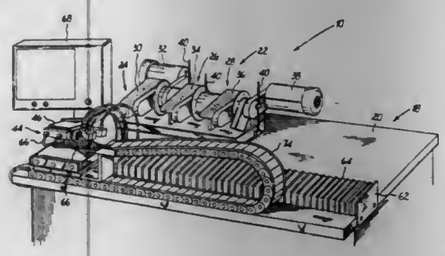
5,571,041
REFINISHING COMPACT DISKS
Josh K. Leikam, 11258 W. 74th Pl., Arvada, Colo. 80005
Filed Apr. 21, 1995, Ser. No. 433,630
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—37 13 Claims

6. A method for repairing and refinishing an audio and video compact disk having a scratch or a plurality of scratches on a plastic cover bottom side of the disk, the scratch interfering with a laser beam reading digital information upwardly through the bottom side of the disk, a top side of the disk having a thin film layer of the recorded digital information secured thereon, the steps comprising:
inspecting the disk to determine the depth of the scratch in order to select a type of chemical cleaner to be used such as a heavy cut, a medium cut, and fine cut chemical cleaner;
placing the top side of the disk against a soft covered wheel and secured thereto, the wheel driven by a drive shaft on a motor;



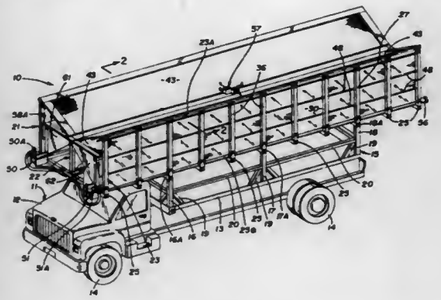
applying by hand a heavy cut chemical cleaner evenly across the surface of the bottom side of the disk as the wheel is rotated by the motor in a range of up to 500 rpm;
applying by hand a medium cut chemical cleaner and then a fine cut chemical cleaner evenly cross the surface of the bottom side of the disk as the wheel is rotated by the motor in a range from 500 to 1800 rpm;
applying by hand a clear plastic cleaner and a clear plastic polish evenly across the surface of the bottom side of the disk as the wheel is rotated by the motor;
removing the disk from the wheel and finally inspecting the bottom side for any remaining scratches; and
applying a thin film clear plastic cover to the top side of the disk to protect the recorded data thereon from permanent damage prior to placing the disk on the wheel.

5,571,042
APPARATUS FOR PRODUCING HOLLOW GROUND NEEDLES
Richard Abbate, Killingworth; Said Rizk, Monroe; Michael Haroldsen, Botsford, and Timothy D. Kosa, Milford, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Continuation-in-part of Ser. No. 959,326, Oct. 9, 1992, Pat. No. 5,388,373. This application Aug. 9, 1993, Ser. No. 104,304
Int. Cl.[6] B24B *19/16*
U.S. Cl. 451—59 21 Claims



1. An apparatus for applying a cutting edge to a needle blank comprising:
a means for abrading at least one needle;
b means for holding the needle; and
c means for positioning said holding means in relation to said abrading means to selectively engage and disengage the needle with said abrading means, said positioning means including;
i) means for moving said holding means in at least two directions while the needle is in contact with said abrading means wherein, one of said at least two directions is a vertical direction.

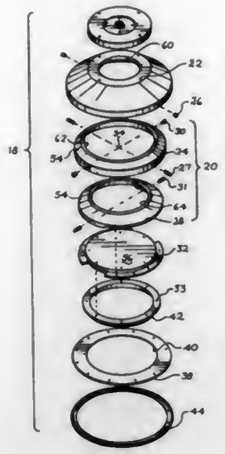
5,571,043
MOBILE PLATFORM RECOVERY SYSTEM FOR BRIDGE MAINTENANCE
Gus G. Lyras, Lowellville, and Steve G. Lyras, Campbell, both of Ohio, assignors to Corcon Industrial Painting, Lowellville, Ohio
Continuation of Ser. No. 348,042, Dec. 1, 1994, abandoned. This application Dec. 26, 1995, Ser. No. 577,725
Int. Cl.[6] B24C *9/60*
U.S. Cl. 451—87 8 Claims



1. A work platform assembly mounted on a vehicle, said assembly comprising:
a support frame attached to the vehicle;
a platform attached to the support frame, the platform having a grating on a deck, a portion of the deck being movable;
a collection area beneath said grating, the collection area having a wall assembly extending from said support frame and said platform;
a conveyor through in said collection area; and
a movable conveyor in said conveyor trough, the conveyor assembly including a drive motor.

5,571,044
WAFER HOLDER FOR SEMICONDUCTOR WAFER POLISHING MACHINE
Hooman Bolandi, Santa Clara, and David E. Weldon, Los Gatos, both of Calif., assignors to Ontrak Systems, Inc., Milpitas, Calif.
Filed Oct. 11, 1994, Ser. No. 321,086
Int. Cl.[6] B24B *7/22*
U.S. Cl. 451—385 19 Claims

1. In a semiconductor wafer polishing machine of the type comprising at least one polishing pad assembly and at least one wafer holder positioned to hold a semiconductor wafer against the polishing pad assembly, said wafer holder comprising a joint having at least two axes of rotation intersecting at a center of rotation, said wafer comprising a surface to be polished that defines a polishing plane, the improvement comprising:
a wafer chuck comprising a front surface and a back surface, said front surface configured to support the wafer, said back surface comprising a periphery and a central region disposed inwardly of the periphery, said chuck coupled to the joint at a coupling region located on the back surface closer to the periphery than to the central region such that forces applied to the chuck by the joint stress a peripheral portion of the chuck to a greater extent than a central portion of the chuck.

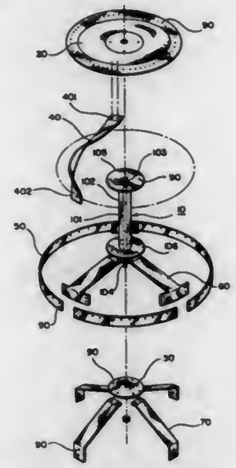


5,571,045

ASSEMBLABLE TURBINE AIR PUMP

Kuo-Shung Tsung, 1F, No. 17, Lane 51, Heng-Kuang Road, Taipei, Taiwan

Filed Jul. 10, 1995, Ser. No. 499,925
Int. Cl.[6] F23L *17/10*
U.S. Cl. 454—18 3 Claims



1. An assemblable turbine air pump, including:
a pipe shaped main axle assembly which is composed of a bearing block slipped over a main axle, an upper and a lower bearings inserted between said main axle and said bearing block, the bottom end of said main axle extending downwards to a distance to form a bolt, the upper and lower ends of said bearing block being provided with an upper and a lower fixing plates having a larger diameter than that of said bearing block, a plurality of screw holes being provided on the surfaces of said plates;
a round disk like top lid which has four screw holes in the center area thereof for fixing on the top of said upper fixing plate, and has a plurality of screw holes provided along its periphery;
a plurality of T shaped blade supports capable of being fixed on the bottom of said lower fixing plate, being extended downwardly and outwardly from the center of the same when is assembled, and having two pair of screw holes provided at the outter end thereof and a pair of screw holes provided at the inner end of thereof;
a plurality of arc shaped blade supporting parts which can be connected end with end to form a blade supporting ring in a round shape, said supporting ring having a plurality of screw holes on the surface and around the periphery thereof;
a plurality of arc shaped blades which can be fixed at the top end thereof to said top lid and at the bottom end thereof to the periphery of said blade supporting ring, said blades being arrayed to form a sphere like body;
a round shaped bottom seat plate which has a plurality of screw holes on the surface thereof and a central hole connectable with said bolt on the bottom end of said main axle;
a plurality of L shaped bottom seat supporting legs capable of being fixed on the bottom of said bottom seat plate, and being extended downwardly and outwardly from the center of the same, and having a pair of screw holes on their respective ends;
a fixing seat which has a connecting ring on the top thereof and can be fixed to said bottom seat supporting legs, the bottom of said fixing seat being fixed on a vent provided on a roof to secure said bottom seat plate and said main axle;
said bearing block, and said top lid, said blade supporting ring, as well as said blades directly or indirectly fixed on said bearing block can rotate in pursuance of wind force, in this way, function of said turbine air pump can be effected.

5,571,046

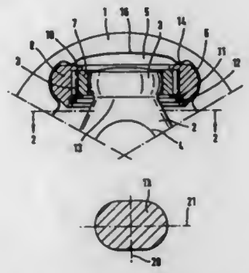
Patent Not Issued For This Number

5,571,047

CONSTANT VELOCITY UNIVERSAL JOINT OF THE TRIPODE TYPE

Ing. E. Stall, Neunkirchen-Seelscheid; Winfried Busch, Cologne, and Dieter Jost, Neunkirchen, all of Germany, assignors to GKN Antomotive AG, Seigburg, Germany

Filed Feb. 10, 1994, Ser. No. 194,489
Claims priority, application Germany, Feb. 20, 1993, 43 05 278.9
Int. Cl.[6] F16D *3/205*
U.S. Cl. 464—111 5 Claims



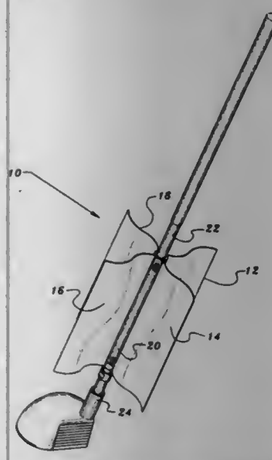
1. A constant velocity joint defining a joint axis, said constant velocity joint comprising:
an outer joint part having three circumferentially distributed axially extending axis-parallel guiding grooves, each groove having two associated guiding tracks;
an inner joint part having a hub and three necks carrying spherical trunnions, each neck defining a radial axis, each of said necks being disposed between said hub and said spherical trunnion to position said trunnion into a respective guiding groove between said associated guiding tracks, said neck having a width, said width continuously decreasing from said hub to said spherical trunnion; and
a roller assembly arranged on each of said three spherical trunnions, said roller assembly comprising an inner roller, an outer roller disposed around said inner roller and a needle bearing disposed between said inner and outer rollers, said outer roller having a collar extending towards said radial axis at one end disposed radially outwardly with respect to said joint axis for prohibiting movement of said inner roller radially outward along said radial axis relative to said outer roller, said outer roller further having securing means for prohibiting movement of said inner roller radially inward along said radial axis relative to said outer roller, said securing means being disposed at the end of said outer roller opposite to said collar.

5,571,048

GOLF SWING PRACTICE DEVICE

Lawrence D. Kenney, 4 Park View Rd., Newton, N.J. 07860

Filed Dec. 11, 1995, Ser. No. 570,721
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—228 1 Claim



1. A new and improved golf swing practice device removably attachable to the shaft of a golf club comprising in combination:
a cylindrical member capable of being removably attached to a shaft of a golf club above a golf club head, the cylindrical member having a thumb screw for lockingly engaging the cylindrical member about the golf club;
an internal cylindrical sleeve being positionable between the shaft of the golf club and the cylindrical member, the sleeve serving to prevent abrasive damage to the shaft from the thumb screw being used to secure the cylindrical member to the shaft, the sleeve being formed of a polymeric material chosen from the group of polymeric material consisting of polyurethane and rubber; and
at least four contoured wing members being fixedly attached to the cylindrical member when attached to the shaft, each wing member extending outwardly from the Shaft when attached to the cylindrical member, each wing having a curved shape like an airfoil and being predetermined for providing a wind resistance during golf swing practice, the four curved shaped wing members of the cylindrical member functioning together when positioned on the shaft for effecting a controlled rotational movement of the golf club during swinging thereof, the four curved shaped wing members being capable of effectively training a golfer with respect to required proper rotational movement of said golf club during use thereof on the shaft of the golf club.

5,571,049

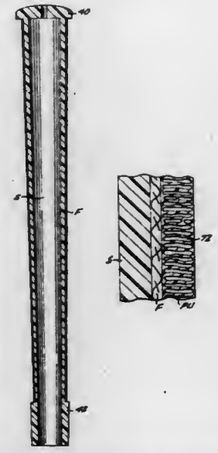
Patent Not Issued For This Number

5,571,050

TUBULAR GOLF CLUB GRIP

Ben Huang, 19472 Woodlands La., Huntington Beach, Calif. 92648

Filed Sep. 13, 1995, Ser. No. 527,443
Int. Cl.[6] A63B *49/08*
U.S. Cl. 473—300 8 Claims



1. An integral golf club grip adapted for application over a golf club shaft, such grip comprising:
a resilient, rubber-like sleeve adapted for snug application over the grip-receiving area of a golf club shaft;
a textile sleeve bonded to the exterior of the rubber-like sleeve;
a polyurethane sleeve bonded onto the exterior surface of the textile sleeve; and
wherein the textile sleeve is of porous construction and the polyurethane sleeve is formed with closed pores that extend transversely to the longitudinal axis of the polyurethane sleeve.

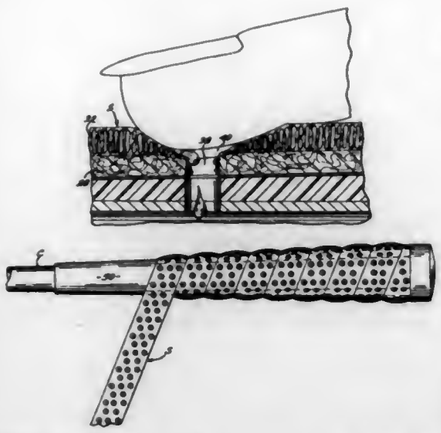
5,571,051

GOLF CLUB GRIP

Ben Huang, 19472 Woodlands La., Huntington Beach, Calif. 92648

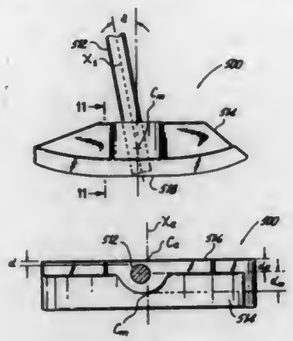
Filed Apr. 12, 1995, Ser. No. 421,376
Int. Cl.[6] A63B *53/14;49/08*
U.S. Cl. 473—302 5 Claims

1. The combination of a golf club shaft and a grip applied to said shaft, wherein the grip comprises an elongated strip of resilient material formed from an open-pored textile layer having an inner surface adhered to and abutting the golf club shaft, and a smooth polyurethane layer formed with closed pores, said polyurethane layer being bonded to the surface of the textile layer remote from the golf club shaft, with the pores of such polyurethane layer extending generally normal to the longitudinal axis of the golf club shaft, and wherein the longitudinal profile of the grip tapers in a



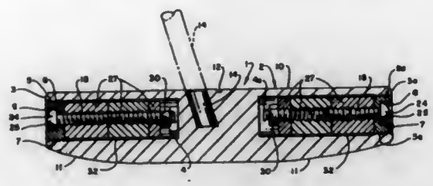
straight line from one of its ends to its opposite end whereby when the strip is spirally wrapped about the golf club shaft, the longitudinal profile of such strip and shaft defines a grip that tapers in a straight line form one of its ends to its opposite end at an angle greater than the angle at which the golf club shaft tapers.

5,571,052
GOLF CLUB CONSTRUCTION
Henry Bolanos, 9 Tonetta Clr., East Norwalk, Conn. 06855
Continuation-in-part of Ser. No. 316,627, Sep. 20, 1994. This application Jun. 5, 1995, Ser. No. 465,547
Int. Cl.[6] A63B *53/02*
U.S. Cl. 475—313 **6 Claims**



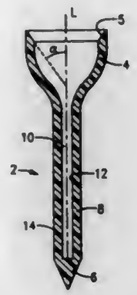
1. A golf putter comprising:
a) an elongate shaft defining a shaft axis, and opposed proximal and distal end portions; and
b) a putter head associated with said distal end portion of said elongate shaft, said putter head defining a body having a center of mass located therein, an external striking face spaced from said center of mass, and a center of effort located at said striking face, said center of effort being in axial alignment with said center of mass to define an axis of effort, said distal end portion of said elongate shaft extending substantially through said body such that said shaft axis intersects said axis of effort at a location forward of said center of mass and proximate said striking face, wherein the distance between said center of effort and said shaft axis aloog said axis of effort is substantially less than the distance between said shaft axis and said center of mass along said axis of effort.

5,571,053
CANTILEVER-WEIGHTED GOLF PUTTER
Stephen P. Lane, P.O. Box 1683, Marshall, Tex. 75671
Filed Aug. 14, 1995, Ser. No. 514,797
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—336 **20 Claims**



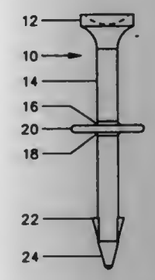
1. A cantilever-weighted golf putter comprising a putter head having opposite ends and a center, a "sweet spot" or golf ball contact area located at substantially the center of said putter head, a shaft extending from said putter head adjacent to said contact area to facilitate balancing of said golf putter, at least one longitudinal bore provided in said putter head and weight means cantilever-mounted in said opposite ends of said putter head, said weight means projecting into said longitudinal bore in cantilever relationship from said opposite ends, respectively, of said putter head, defining a clearance between said weight means and said at least one longitudinal bore.

5,571,054
SYNTHETIC GOLFING TEE AND METHOD OF MANUFACTURING SAME
Mark A. Chantal, P.O. Box 754, Goffstown, N.H. 03045
Filed Jun. 1, 1995, Ser. No. 456,958
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—387 **20 Claims**



1. A hollow synthetic golf tee comprising:
a ball supporting end having an annular surface which is contoured for supporting a golf ball;
a tapered end for facilitating insertion of at least a portion of the synthetic tee into a ground surface; and
an intermediate portion interconnecting said ball supporting end and said tapered end with one another to form a contiguous monolithic golf tee;
wherein a central bore extends completely through said ball supporting end, said intermediate portion and a portion of said tapered ends;
said ball supporting end tapers into a sharp circular linear edge which provides a perimeter point contact for solely Engaging with and supporting a golf ball, during use, to minimize a contact area between a golf ball and the golf tee when the golf ball is supported thereon.

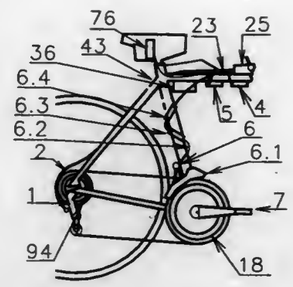
5,571,055
GOLF TEE STAND WITH GROUND ANCHORING MECHANISM AND NON-ADJUSTABLE BASE
Timothy J. Lewis, 528 Kahkwa Blvd., Erie, Pa. 16505, and David W. Lewis, Jr., RD 1, Center Rd., Box 202, Venango, Pa. 16440
Filed Mar. 14, 1995, Ser. No. 403,293
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—398 **1 Claim**



1. A golf tee device for supporting a golf ball above a ground surface comprising:
a cylindrically shaped spine having a pointed tip at a first end adapted to be inserted into the ground surface and a concave head at an opposite second end of said spine for supporting the golf ball,
means for limiting the extent of insertion of said spine into the ground surface to thereby locate said concave head at a determined elevation above the ground surface and for aligning said spine in a fully perpendicular position relative to the ground surface, said limiting means comprising a base fixed securely and extending outward at a fixed position along said spine between the first and second ends,
said limiting means being joined to said spine by a lower spine support radius and an upper spine support radius so as to strengthen said spine, and
means for releasably anchoring said spine in the ground surface, said means comprising at least a pair of elongated ground anchoring members angling outward from the first end of said spine, said ground anchoring members solidly connected at all points of elongation to said spine, thereby strengthening said ground anchoring members and stabilizing said spine, head and base in the ground surface upon impact from a striking member, the means for releasably anchoring said spine cooperating with the limiting means to constrain the spine within the ground surface between the limiting means and the means for releasably anchoring without adversely affecting a golfer's ability to withdraw said spine from the ground surface.

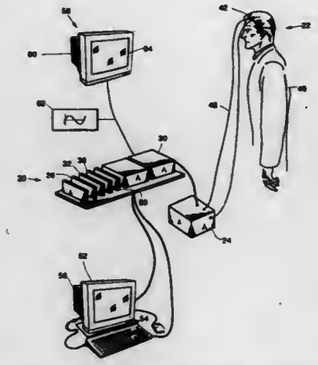
5,571,056
DERAILLEUR CABLE COLLET
Raymond D. Gilbert, 6501 Inwood Dr., Springfield, Va. 22150
Filed Mar. 31, 1995, Ser. No. 422,533
Int. Cl.[6] F16H *59/00*
U.S. Cl. 474—80 **20 Claims**

1. A cable collet comprising:
a pedal-driven vehicle with frame, wheels, pedals, chain, sprockets and derailleur apparatus further comprising cable-arm, cable-core and chain-guides; and
a stored energy means,
a cable moving means,
a chain-shifting instruction means, and,
a chain-shifting communication means;
wherein the stored energy means, the cable moving means and the chain shifting instruction means are connected to the chain-shifting communication means, and all are attached to the vehicle; and,



wherein the chain shifting instruction means further comprises a downshifting switch; and
wherein the communicating means further comprises a relay; and
wherein the stored energy means further comprises a battery;
wherein the cable moving means includes a cable-driving pedal-force collet, connected to a driving solenoid and oriented to move a derailleur cable in a first-direction;
whereby the switch, when triggered, closes the relay to connect the battery to the cable-driving collet; and the collet advances the cable core to guide a moving chain onto a larger sprocket in a coaxial rear sprocket set.

5,571,057
APPARATUS AND METHOD FOR CHANGING A SEQUENCE OF VISUAL IMAGES
Margaret E. Ayers, 427 N. Canon Dr., Suite 209, Beverly Hills, Calif. 90210
Filed Sep. 16, 1994, Ser. No. 306,931
Int. Cl.[6] A63F *9/24*
U.S. Cl. 463—36 **20 Claims**



1. An improved method of changing a sequence of visual images, by means of application of a measured player's bioelectrical signals in combination with said sequence of visual images, said method comprising the steps of:
(a) displaying a sequence of visual images including a control signal having a preselected frequency;
(b) detecting an analog bioelectrical signal at a selected location of a player's body while said sequence of visual images are being viewed;
(c) amplifying said analog bioelectrical signal;
(d) converting said analog bioelectrical signal to digital signals representing particular frequencies;
(e) selecting a particular digital signal which corresponds in frequency to said control signal;

(f) establishing an amplitude threshold voltage without delay and distortion resulting from bandpass and spectral analysis for said particular digital signal;

(g) wherein said method further comprises the steps of sending a signal to said player when said particular digital signal falls within said amplitude threshold for a predetermined duration; and

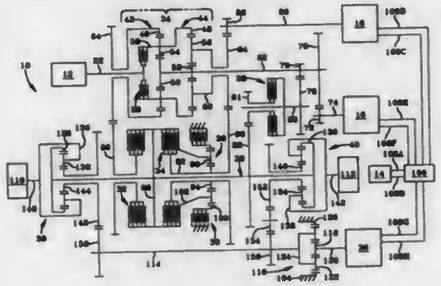
(h) causing said player to mentally concentrate so as to affect a change of amplitude of said digital signal thereby displaying a next sequence of visual images in accordance with said change.

5,571,058

FOUR-MODE, INPUT-SPLIT, PARALELL, HYBRID TRANSMISSION

Michael R. Schmidt, Carmel, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 8, 1995, Ser. No. 512,497
Int. Cl.[6] B60K *17/04*
U.S. Cl. 475—5 **12 Claims**



1. A hybrid transmission comprising:

an input means to receive power from an engine;

an intermediate power output means;

first and second motor/generators;

energy storage means for accepting power from, and supplying power to, said first and second motor/generators;

control means for regulating power flow between said energy storage means and said first and second motor/generators as well as between said first and second motor/generators;

a compounded planetary gear set having first and second planetary gear sub-sets;

each planetary gear sub-set having an inner gear member and an outer gear member each of which meshingly engage a plurality of planet gear members;

said plurality of planet gear members in said first and second planetary gear sub-sets being rotatably mounted on respective first and second carriers;

said input means being operatively connected to said first carrier;

said first motor/generator connected to said second carrier;

said second carrier also being selectively connected to said intermediate power output means;

said second motor/generator being continuously connected to said inner gear member of each said first and second planetary gear sub-sets;

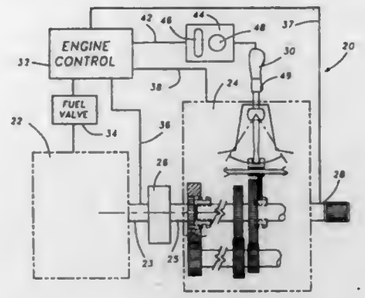
said second motor/generator also being selectively connected to said intermediate power output means.

5,571,059

OPERATOR INPUT SYSTEM FOR GEAR SHIFT ASSIST MECHANISM

Thomas Desautels, West Bloomfield, Mich.; Jon M. Huber, Laurinburg, N.C.; Edward M. Bacon, Northville, and Steve M. Weisman, Farmington Hills, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jul. 27, 1995, Ser. No. 508,307
Int. Cl.[6] B60K *41/08*
U.S. Cl. 477—111 **20 Claims**



1. A vehicle drive comprising:

an engine having an output shaft and an electronic control unit for controlling the output speed of said engine output shaft;

a multi-speed transmission, said multi-speed transmission being selectively connected to said engine output shaft and operable to convert drive from said engine output shaft through several speed ratios to an output speed on a transmission output shaft;

a clutch that may be selectively actuated by an operator, said clutch positioned between said engine and said transmission; and

an input control for an operator, said input control allowing an operator to provide an indication to said electronic control unit of whether an upshift or a downshift is to be initiated, and further providing the operator the ability to request torque elimination during this shift, said electronic control unit being operable to receive signals from said input control, and determine a desired engine speed at the next gear ratio based upon said operator indication, and to control said engine to achieve said desired engine speed, and said electronic control unit further being operable to modify an engine parameter to achieve reduced torque transmission to said transmission to allow an operator to move said transmission to a neutral position when a signal requesting torque elimination is received from said input control.

5,571,060

PROCESS FOR CORRECTING THE SHIFTING QUALITY OF AN AUTOMATIC TRANSMISSION

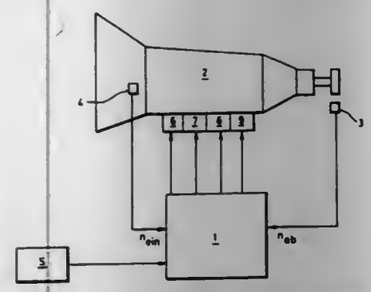
Gernot Becker, Dexheim; Hans Kleila, Russelsheim, and Rainer Reitenbach, Bischofsheim, all of Germany, assignors to Adam Opel AG, Russelsheim, Germany

PCT No. PCT/DE92/00847, § 371 Date Nov. 14, 1994, § 102(e) Date Nov. 14, 1994, PCT Pub. No. WO93/24772, PCT Pub. Date Dec. 9, 1993
PCT Filed Oct. 7, 1992, Ser. No. 335,808
Claims priority, application Germany, May 25, 1992, 42 17 270.5
Int. Cl.[6] F16H *61/26*
U.S. Cl. 477—159 **4 Claims**

1. A method of controlling an automatic transmission which is coupled to an engine, the transmission including friction elements that are engaged by oil at a line pressure to effect a shift between a pair of transmission gears, the method comprising the steps of:

storing a line pressure value;

initiating the shift between the pair of transmission gears;



controlling the line pressure, when the shift is initiated, at the stored line pressure value to engage the friction elements;

measuring a transmission input speed n_{ein};

measuring a transmission output speed n_{ab};

determining a translation ratio R having a value n_{ein}/n_{ab};

determining a derivative dR/dt of the translation ratio R;

determining a difference between the determined derivative corresponding to the determined translation ratio and a reference derivative corresponding to the determined translation ratio and determining a line pressure correction factor K_r that is a function of the determined difference; and

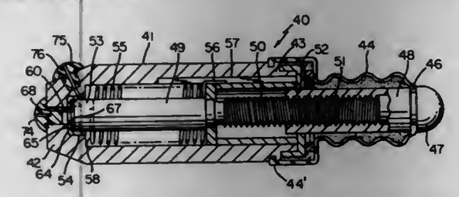
adjusting the stored line pressure value by the correction factor so that a subsequent shift between the pair of transmission gears is effected by the adjusted stored controlled line pressure to reduce the difference between the determined and reference derivatives of the translation ratio.

5,571,061

BELT TENSIONER, ACTUATOR AND METHOD OF MAKING

M. Michael Tsai, Rochester Hills; David E. Fletcher, Flint, and Joseph W. Zamm, Rochester Hills, all of Mich., assignors to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 387,521, Feb. 13, 1995, Pat. No. 5,499,950, which is a division of Ser. No. 248,134, May 24, 1994, Pat. No. 5,391,118. This application Nov. 1, 1995, Ser. No. 551,635
Int. Cl.[6] F16H *7/12*
U.S. Cl. 474—135 **12 Claims**



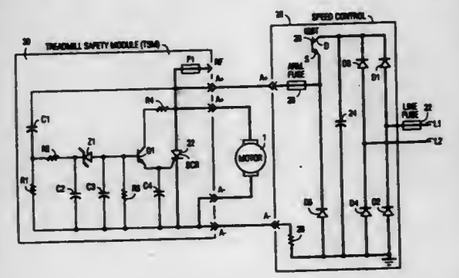
1. In a belt tensioner for an endless transmission belt construction arranged to move in a certain path, said tensioner comprising a support means, an arm pivotally mounted to said support means, a pulley rotatably carried by said arm for being disposed in engagement with said belt construction, and an actuator carried by said support means and having opposed ends, said actuator having a movable piston projecting out of one of said opposed ends thereof for being in engagement with said arm to pivot said arm in a direction to urge said pulley into said belt construction as said piston is extended outwardly from said one of said opposed ends of said actuator, said actuator having spring means therein that is operatively associated with said piston for urging said piston outwardly, said actuator having a rotatable shaft means that is operatively interconnected to said spring means and that is provided with opposite end means one of which is operatively interconnected to said piston, said actuator having a casing provided with an internal recess means therein that receives the other of said opposite end means of said shaft means therein, said recess means having end surface means, said spring means being adapted to rotate said shaft means to extend said piston while said other end means of said shaft means rotates in said recess means and bears against said end surface means thereof, said other end means of said shaft means comprises a thrust washer means assembled to said shaft means to be carried thereby, the improvement wherein said end surface means of said recess means comprising a cup-shaped cap press-fitted into said casing and having a closed end and an open end receiving said other end means of said shaft means therein, said closed end of said cap having an opening means passing therethrough, said other end means of said shaft means having an opening means aligned with said opening means of said cap, said cap having second opening means therein for receiving a locking pin therethrough to prevent said shaft from extending said piston.

5,571,062

TREADMILL SAFETY MODULE

Abraham Saganovsky, Coral Springs, Fla., assignor to KB Electronics, Inc., Coral Springs, Fla.

Filed Nov. 2, 1995, Ser. No. 537,588
Int. Cl.[6] H02P *5/00*
U.S. Cl. 482—54 **1 Claim**



1. A safety module for a motor speed control circuit, when speed control circuit has a failure mode in which full power is applied to the motor being driven by the speed control circuit, which is coupled to power terminals of a motor, the safety module comprising:

a high pass filter followed by a low-pass filter coupled to the variable voltage power output of said speed control circuit;

a threshold member coupled to an output of said high pass filter for passing a signal only if a change in the signal exceeds a predetermined value; and

a semiconductor short-circuiting switching device coupled to said threshold device and coupled to said power terminals of the motor and to said output of said speed control circuit for shorting out said output of said speed control circuit responsive to an abrupt increase in a signal at the output of said speed control circuit which exceeds said predetermined value at the output of said speed control circuit.

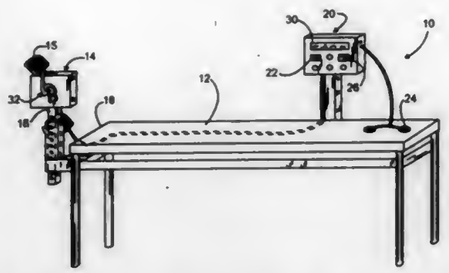
5,571,063

CYCLOERGOMETER FOR IMPROVED FUNCTION OF IMPAIRED HEART

Yakov Ivanov, 3909 N. Murray Ave., Apt. 209, Shorewood, Wis. 53211-2306

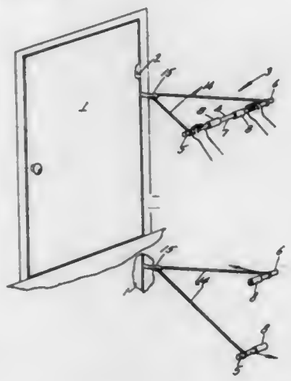
Continuation-in-part of Ser. No. 410,862, Mar. 10, 1995, abandoned. This application Sep. 26, 1995, Ser. No. 533,849
Int. Cl.[6] A63B *69/16*; A61B *5/024*
U.S. Cl. 482—57 **1 Claim**

1. A method for exercising an impaired heart using a cycloergometer comprising:



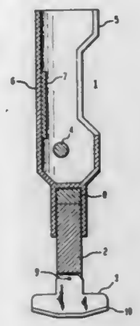
a platform which accommodates a supine human body, the platform having a leg end and a head end;
a loading unit mounted at the leg end of the platform in a manner to be vertically adjustable relative to the platform and including a pair of joined rotatable pedals;
a sensor for engagement to a human for sensing of heart rate;
a sensor for sensing the rate pedal rotation;
a time sensor;
a central processor for receiving sensor input and carrying out a predefined program based on the sensor input, and
means for outputting sensor and programming output; the method including the steps of:
determining an average resting heart rate which must be between 50 and 100 beats per minute;
calculating a formula for determining a maximum exercising heart rate point=0.8 HRr+46
where HRr is resting heart rate and 46 is a constant;
beginning exercise by pedalling and monitoring the number of pedal rotations to maintain rotations per minute between 45 and 55 and monitoring heart rate to maintain same near the calculated exercising heart rate point, and indicating when predefined heart rate and rotation frequency are outside predefined limits for user pedal action correction; and
indicating when 40 minutes have elapsed.

5,571,064
ELASTIC EXERCISE DEVICE WITH SEGMENTED HANDLE
James E. Holm, 1754 River Point Loop, Eugene, Oreg. 97401
Filed May 26, 1995, Ser. No. 451,126
Int. Cl.[6] A63B *21/04*
U.S. Cl. 482—129 **3 Claims**



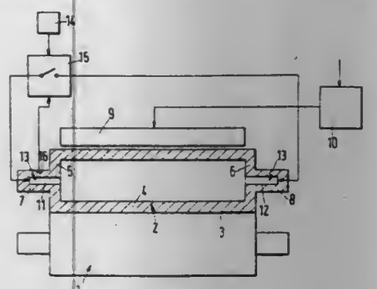
1. An exercise device comprising,
a handle assembly having aligned segments including a middle segment and end segments all with threaded end segments,
internally threaded connectors spaced along said handle assembly and coupling said aligned segments,
said aligned segments each including a shoulder for supported abutment with one or more of said connectors,
an elastic cord having ends attached to said end segments,
a loop through which the cord passes and including an enlarged portion for abutment against a stationary object, and
said middle segment detachable from the end segments and permitting independent movement of said end segments by the user during exercising.

5,571,065
ARM EXTENSION EXERCISE DEVICE
Gian L. L. Buitoni, 78 Essex Dr., Tenafly, N.J. 07670
Filed Jul. 21, 1995, Ser. No. 505,059
Int. Cl.[6] A63B *22/00*
U.S. Cl. 482—74 **14 Claims**



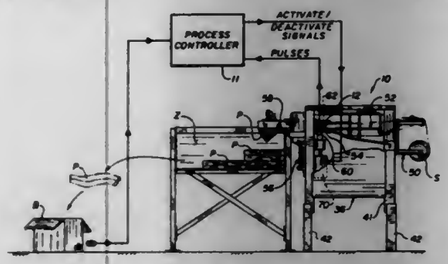
1. An exercise device for extending the forearm of a human user to permit running on hands and legs in a forward direction comprising:
a. a brace adapted for supporting the user's forearm, comprising an extended support member with a first end proximal to the user's elbow and a second end distal to the users elbow, an arm embracing member at the first end, adapted for grasping the user's forearm, a hand grip with a first axis approximately perpendicular to the forward direction, fixed in the support member between the first end and the second end, a wrist support fixed in the support member between the hand grip and the first end and positioned forward of the hand grip by a distance sufficient to permit the forward surface of the wrist and at least a portion of the user's forearm to rest in contact therewith;
b. a post slidably engaging the support member at the second end and linked to the support member by a linkage, wherein the linkage comprises a shock absorbing means for reducing the impulse transmitted to the user as the device strikes the ground during use; and
c. a foot affixed to the post opposite the linkage and adapted for permitting rotation of the post and the brace about a second axis that is horizontal and approximately parallel to the first axis, when the foot is in contact with the ground.

5,571,066
HEATABLE ROLL FOR CALENDERING OR SMOOTHING SYSTEMS
Franz Kayser, Geldern, Germany, assignor to Volth Sulzer Finishing GmbH, Krefeld, Germany
Filed Mar. 16, 1995, Ser. No. 405,080
Claims priority, application Germany, Mar. 26, 1994, 44 10 675.0
Int. Cl.[6] B23P *15/00*
U.S. Cl. 492—46 **9 Claims**



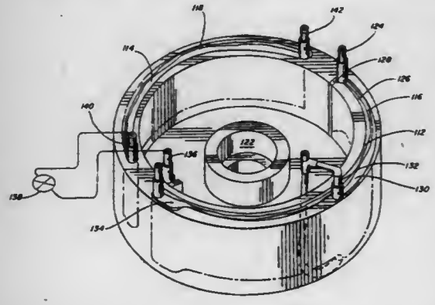
1. The combination comprising:
a heatable calendering or smoothing roll with trunnions at each end,
an inductively operated external heating system extending over the effective working width of the roll:
an internal heating system limited to each of the end sections of the roll being located adjacent a roll end face;
a temperature sensor in the area of at least one roll end; and
a switch means responsive to said sensor which interrupts the internal heating system when the temperature measured by said sensor reaches a preset limit.

5,571,067
CUSHIONING CONVERSION MACHINE INCLUDING A LENGTH MEASURING DEVICE
Richard O. Ratzel, Westlake, Ohio, assignor to Ranpak Corp., Concord Township, Ohio
Filed Nov. 19, 1993, Ser. No. 155,116
Int. Cl.[6] B05B *1/14*; **B26D** *5/22*; **B31F** *1/10*; **B41J** *15/04*
U.S. Cl. 493—30 **16 Claims**



1. A cushioning conversion machine comprising a frame, conversion assemblies which are mounted to the frame and which convert a stock material into a cushioning product, and a length measuring device which measures the length of the cushioning product as it is being produced;
the conversion assemblies including a rotating conversion assembly, the angular movement of this assembly directly corresponding to the length of the cushioning product,
the length measuring device being positioned to monitor the angular movement of the rotating conversion assembly and thus the length of the cushioning product;
the length measuring device including a rotating member which is attached to, and rotates with, the rotating conversion assembly, and a monitor which monitors the angular motion of the rotating member, and thus the rotating conversion assembly;
the rotating member comprising a disk with a series of openings arranged in equal circumferential increments;
the monitor comprising a photo-optic transmitter/receiver which transmits and receives light beams and a reflector which reflects light beams;
the photo-optic transmitter/receiver being positioned so that, as the rotating member turns, transmitted light beams will travel through its openings; and
the reflector being positioned to receive the transmitted light beams which travel through the openings and to reflect these transmitted light beams back through the openings.

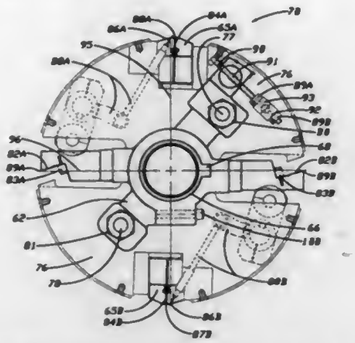
5,571,068
CENTRIFUGE ASSEMBLY
David V. Bacehowski, Wildwood, Ill.; Herbert M. Cullis, Silver Spring, Md., and Armand R. VanBaelen, Rolling Meadows, Ill., assignors to Baxter International Inc., Deerfield, Ill.
Continuation of Ser. No. 900,897, Jun. 18, 1992, abandoned, which is a division of Ser. No. 744,947, Aug. 14, 1991, Pat. No. 5,217,426, which is a continuation of Ser. No. 660,710, Feb. 25, 1991, abandoned, which is a division of Ser. No. 463,694, Jan. 11, 1990, Pat. No. 5,006,103, which is a division of Ser. No. 824,182, Aug. 12, 1977, Pat. No. 4,934,995. This application Jul. 20, 1994, Ser. No. 277,706
Int. Cl.[6] B04B *7/08*
U.S. Cl. 494—45 **37 Claims**



1. A centrifuge assembly for processing a suspension including at least one cell component, said assembly comprising:
a rotor;
a first arcuate processing channel segment defined in said rotor for performing a separation function, said channel segment being defined by a pair of spaced-apart rigid walls, and having a height substantially greater than its width along a substantial length of said channel;
a second arcuate processing channel segment, separate from said first segment, defined in said rotor for performing another separation function, said channel segment being defined by a pair of spaced-apart rigid walls, and having a height substantially greater than its width along a substantial length of said channel segment; and
fluid communication means extending between said first and second arcuate segments for withdrawing at least a portion of the suspension from one of said channel segments and for introducing it into the other of said channel segments.

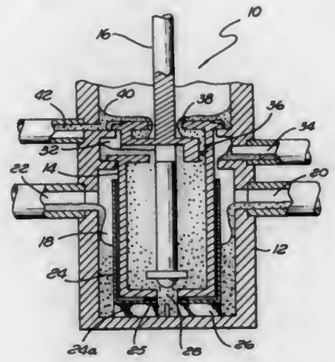
VOL 1192 ISS 1 NO 5 1996 UMI

5,571,069
PAPER FOLDING ASSEMBLY WITH A CUTTING CYLINDER LAP ADJUSTMENT APPARATUS AND METHOD
Chandrakant K. Shah, 7041 Wright Ter., Niles, Ill. 60714
Filed Jun. 3, 1993, Ser. No. 73,016
Int. Cl.[6] B65H *45/28;45/16*
U.S. Cl. 493—357 **39 Claims**



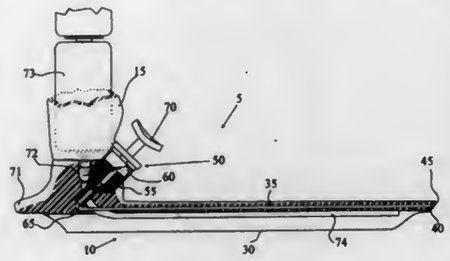
1. In a paper folding assembly having a plurality of rotatable rollers including a cutting cylinder mounted for rotation with a rotary drive shaft and having a cutting member for cutting a paper ribbon into individual paper sheets and a folding member for creasing the individual sheets into a rotatable jaw cylinder to create a lap between opposed edges of the sheet, the improvement being a cutting cylinder lap adjustment apparatus, comprising:
means for mounting the folding member to the rotary shaft including
an end plate,
means for mounting the folding member to the end plate, and
means for securing the end plate to the rotary drive shaft; and
means for mounting the cutting member to the rotary shaft at different selected angular positions on the shaft to change the lap.

5,571,070
ROTOR SLEEVE FOR A CENTRIFUGAL SEPARATOR
David H. Meikrantz; Alfred G. Federici; Lawrence L. Macaluso; Peter J. Harris, all of Carson City, and H. William Sams, III, Reno, all of Nev., assignors to Costner Industries Nevada, Inc., Carson City, Nev.
Filed Jan. 16, 1996, Ser. No. 586,964
Int. Cl.[6] B04B *5/06;11/00*
U.S. Cl. 494—22 **3 Claims**



1. A centrifugal separator comprising:
a housing having a generally cylindrical inner surface defining an interior chamber, said inner surface symmetrically disposed about an axis;
a hollow rotor disposed within said chamber for rotation about the axis, said rotor having upper and lower openings and a generally cylindrical rotor wall with an inner and an outer surface, said outer surface of the rotor wall spaced apart from the inner surface of the housing;
a generally cylindrical sleeve fixed to said housing, said sleeve being spaced apart from and surrounding said outer surface of the rotor wall, thereby defining an annular volume between the sleeve and the inner surface of the housing, wherein said lower opening in the rotor is in communication with the annular volume and wherein said sleeve includes a bottom wall having an aperture aligned with said lower opening in the rotor;
at least one inlet for introducing a liquid mixture having a density into the annular volume; and
separation means disposed adjacent to the upper opening of the rotor for directing a first component of the liquid mixture having a density greater than the mixture's density to a first outlet and for directing a second component of the liquid mixture having a density less than the mixture's density to a second outlet.

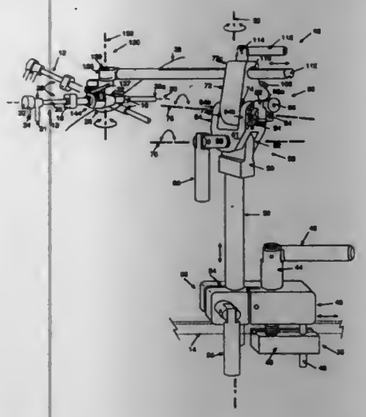
5,571,071
LARYNGOSCOPE BLADE INCLUDING MEANS FOR DISPENSING TOPICAL ANESTHETIC
Jeffrey M. Shapiro, 21 Quail La., San Carlos, Calif. 94070
Filed Aug. 8, 1995, Ser. No. 512,295
Int. Cl.[6] A61B *1/267*
U.S. Cl. 600—187 **4 Claims**



1. A laryngoscope blade comprising:
a blade member having proximate and distal ends, the proximate end of the blade member king adapted for attaching to one end of a handle;
a reservoir for containing a topical anesthetic, the reservoir being attached directly to the blade member;
a fluid delivery means in fluid communication with the topical anesthetic for expelling the topical anesthetic from the reservoir; and
a fluid conduit for providing fluid communication between the reservoir and the distal end of the blade member.

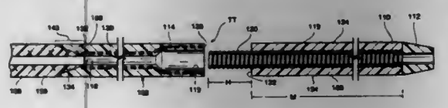
5,571,072
DUAL-AXIS ENDOSCOPE HOLDER
Richard F. Kronner, 1443 Upper Cleveland Rapids Rd., Roseburg, Oreg. 97470
Filed Apr. 28, 1995, Ser. No. 430,346
Int. Cl.[6] A61B *19/00*
U.S. Cl. 600—102 **14 Claims**

1. An endoscope supporting apparatus for supporting an endoscope extending along a scope axis through an incision region



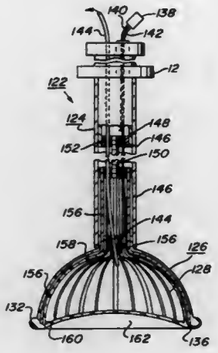
corresponding to an incision in a patient positioned adjacent to an external frame comprising:
a base fixedly mountable on the external frame;
a holder fixedly mountable to the endoscope for supporting the endoscope with the scope axis extending through the incision region; and
articulating means coupling said base to said holder for restraining movement of said holder to motion only about a plurality of non-parallel axes that pass through the incision region.

5,571,073
CATHETER FLEXIBLE TIP ASSEMBLY
Frank O. Castillo, Miami Lakes, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.
Continuation of Ser. No. 187,836, Jan. 28, 1994, abandoned. This application Oct. 26, 1995, Ser. No. 548,781
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—282 **36 Claims**



1. A catheter flexible tip assembly combined with and mounted to the distal end of a catheter body, said catheter body having high torque and high kind resistant characteristics, having a central lumen and having a distal end with a conical outer surface, said tip assembly comprising an elongate soft body having a wire coil embedded therein, a distal end having a tip plug and a proximal end, and a high stress resistant connection between said distal end of said catheter body and said proximal end of said elongate soft body of said tip assembly, said high stress resistant connection being defined a conical cavity in said proximal end of said elongate soft body, by said conical distal end of said catheter body being received in and heat fused to a wall of said conical cavity in said proximal end of said elongate soft body and by said wire coil in said elongate soft body having a proximal end which extends proximally beyond said proximal end of said elongate soft body and into said conical cavity and beyond the outer end of said conical cavity and is embedded in and heat fused into a wall of a distal portion of said central lumen in said catheter body.

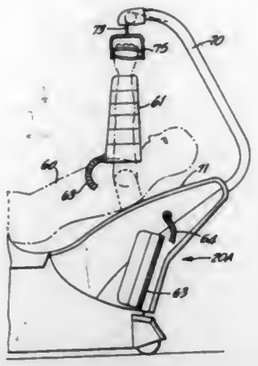
5,571,074
INFLATABLE AND EXPANDABLE DIRECT MANUAL CARDIAC COMPRESSION DEVICE
Robert F. Buckman, Jr., Radnor, and Michael M. Badellino, Hatboro, both of Pa., assignors to Temple University-Of The Commonwealth System of Higher Education, Philadelphia, Pa.
Division of Ser. No. 922,714, Jul. 30, 1992, abandoned. This application May 27, 1994, Ser. No. 250,728
Int. Cl.[6] A61H *7/00*
U.S. Cl. 601—6 **26 Claims**



1. An intra-thoracic heart compression apparatus for intra-thoracic direct substernal heart massage, comprising a heart-contacting member adapted for insertion into a thoracic cavity for directly contacting the heart and an inflexible handle attached thereto for manually manipulating the apparatus, the member including a cup having one end which is open and which receives the handle, and another end which is closed by an at least partially concave-shaped diaphragm which forms a heart contacting surface, the concave portion of the diaphragm adapted to contact and conform to the shape of the heart's surface when the heart contacting member contacts the heart in its operative state, the ends of the cup being joined by a flexible sidewall which flares outward from the handle to the diaphragm so as to form an enclosed cavity, the sidewall adapted to flex from a collapsed state for insertion between intercostals in the chest to an expanded operative state for intra-thoracic heart massage and wherein the diaphragm is spaced from the sidewall in its operative state.

5,571,075
METHOD FOR EXERCISE AND SIMULTANEOUS MOVEMENT OF BLOOD BY EXTERNAL PRESSURE
Horace Bullard, 3333 Henry Hudson Parkway, Riverdale, N.Y. 10463
Filed Apr. 28, 1995, Ser. No. 431,127
Int. Cl.[6] A61H *9/00*
U.S. Cl. 601—152 **26 Claims**

1. A method of vascular exercise for a human subject comprising the following steps:
(a) providing a physical exercise-vascular pressure machine having an exercise mechanism for monitoring the subject's heart rate and an inflation mechanism including a series of bladders adapted to be positioned around at least two of the subject's limbs;
(b) positioning the subject into the physical exercise-vascular pressure machine and attaching the series of bladders about at least two of the subject's limbs;
(c) having the subject perform a physical exercise in the physical exercise-vascular pressure machine and monitoring the subject's heart rate until the subject's heart rate is at least 25% above the subject's normal heart rate; and



(d) immediately thereafter, in the same physical exercise - vascular pressure machine, squeezing at least two of the subject's limbs to move blood toward the subject's trunk by inflation, with at least 4 lbs./sq.in. pressure, and deflation of the series of inflatable bladders which are positioned around at least two of the subject's limbs.

5,571,076
VERTICALLY-APPLIED SUPPORT FOR THE MUSCLES AND BONES OF THE VERTEBRAL COLUMN
Philip L. Cooper, 1700 Elizabeth St., Anniston, Ala. 36207
Filed Jan. 23, 1995, Ser. No. 390,293
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—19 **5 Claims**

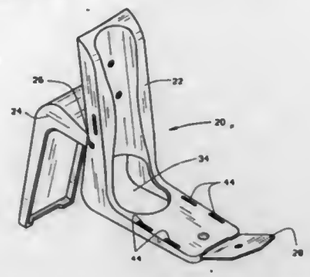


1. An upper torso garment having an integral support device for supporting the muscles adjacent to the vertebral column of a user while lifting said garment including a front panel and a rear panel and openings to accommodate the arms of the user wherein the improvement comprises:

an integral support device consisting of two parallelly adjacent lengths of half-rounded pliable material fastened by their flat sides to a less pliable shroud and fastened to the upper torso garment in such a way as to cause the rounded side of the pliable members to be in contact with the spinous process of the concave portion of the human back and make pressure contact with the erector spinal muscles on either side of the spinous process and on the outside of the transverse process on both sides of the spinous process;

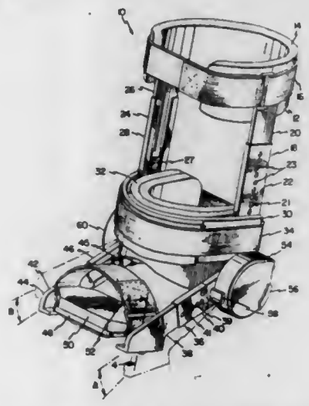
said torso garment made of non-stretch material with means to be fastened in such a way as to maintain the integral support device in contact against the erector spinal muscles.

5,571,077
SELF-SUPPORTING FOOT ORTHOSIS WITH PIVOTALLY MOUNTED COVER
Jeffrey D. Klearman; Jeffrey J. Bierman, both of St. Louis, Mo., and Kevin Runkle, Midland, Tex., assignors to Lake Medical Products, Inc., St. Louis, Mo.
Filed Oct. 18, 1994, Ser. No. 324,723
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—27 **19 Claims**



1. An orthosis for supporting a patient's ankle region in a neutral orientation, said orthosis including a substantially L-shaped frame, said frame having an aperture for access to a portion of the ankle region, and a selectably movable cover for said aperture to thereby protect the ankle region portion from inadvertent contact when said cover is in a closed position and to provide access to the ankle region portion when said cover is in an open position.

5,571,078
RANGE-OF-MOTION ANKLE SPLINT
Andrzej Malewicz, Minneapolis, Minn., assignor to Empi, Inc., Minneapolis, Minn.
Continuation-in-part of Ser. No. 382,993, Feb. 3, 1995, Pat. No. 5,520,627, which is a continuation-in-part of Ser. No. 205,837, Mar. 4, 1994, Pat. No. 5,437,619, which is a continuation-in-part of Ser. No. 85,758, Jun. 19, 1993, Pat. No. 5,399,154. This application Jun. 7, 1995, Ser. No. 472,339
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—27 **21 Claims**



1. A range-of-motion splint for applying torque to an ankle joint of a patient, the splint comprising:

a foot plate for supporting a foot of the patient;

a first foot bracket connected to the foot plate;

a second foot bracket connected to the foot plate;

a first ankle bracket;

a second ankle bracket;

first pivot means for pivotally connecting the first foot bracket to the first ankle bracket;

second pivot means for pivotally connecting the second foot bracket to the second ankle bracket;

foot securing means connected to the foot plate for securing the foot of the patient to the foot plate;

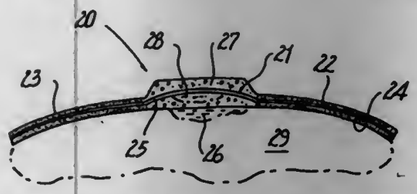
calf securing means connected to the first and second ankle brackets for securing the first and second ankle brackets to a calf of the patient;

a front ankle strap pivotally connected to the first and second pivot means for adjustably positioning above the foot in front of the ankle joint;

a back ankle strap pivotally connected to the first and second pivot means for adjustably positioning behind the ankle joint; and

a heel strap pivotally connected to the first and second pivot means for adjustably positioning beneath the ankle joint.

5,571,079
WOUND DRESSING
Gastone P. Bello, Manmouth Beach; John W. Lyle, Belmar, and Donald A. Johnson, Sea Girt, all of N.J., assignors to Algos Pharmaceutical Corporation, Neptune, N.J.
Filed Dec. 30, 1994, Ser. No. 366,670
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—46 **10 Claims**



1. A wound dressing for application to a wound site comprising:

a) a wound exudate-absorbing component constructed from a flexible cellular structure fabricated from a flexible cellular thermoplastic resin workpiece, the wound exudate-absorbing component having a wound contacting surface;

b) at least one wound dressing-securing component having a skin-contacting portion, the wound dressing-securing component integral with and adjacent the wound dressing-absorbing component and being fabricated from the same workpiece as the wound exudate-absorbing component, the wound dressing-securing component possessing a layer of adhesive on its skin-contacting surface; and

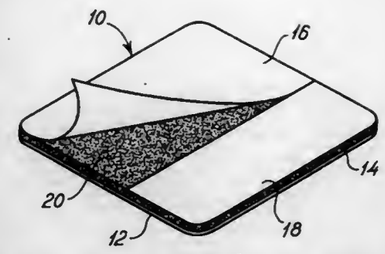
c) a region of collapsed cellular structure where the wound exudate-absorbing component and the wound dressing-securing component meet, the region of collapsed cellular structure formed by compressing and heating the flexible cellular thermoplastic resin workpiece and being essentially non-absorbing for aqueous substances for substantially preventing the passage of wound exudate from the wound-absorbing component,

the wound dressing being fabricated from a single workpiece.

5,571,080
SURGICAL DRESSING AND AN ADHESIVE COMPOSITION THEREFOR
Ole R. Jensen, 646 Orangeburgh Rd., River Vale, N.J. 07675, assignor to Ole R. Jensen, Northvale, N.J.
Filed Apr. 6, 1994, Ser. No. 223,649
Claims priority, application Denmark, Apr. 20, 1993, 0441/93
Int. Cl.[6] A61F *13/00;15/00*
U.S. Cl. 602—56 **21 Claims**

1. An adhesive surgical dressing comprising:

a backing layer having first and second side surfaces, and



an adhesive composition applied to one of said surfaces;

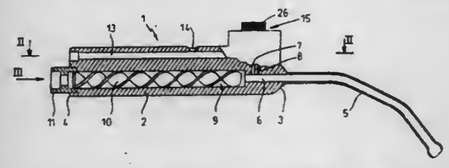
said adhesive composition comprising a three-dimensional, open cell mesh network of discrete polymeric filaments coated with a tacky water-insoluble adhesive material having an adherence affinity for said filaments and joining the coated filaments together at their intersections to maintain the integrity of said said network;

and a hydrocolloid material composed of one or more water-absorbing and swellable hydrocolloids, said hydrocolloid material being dispersed throughout the open cells of said network;

said network being expandable for retaining said hydrocolloid material when said hydrocolloid material absorbs water and swells as it becomes hydrated,

said filaments constituting no less than 3% by weight of said adhesive composition.

5,571,081
PER-OPERATIONAL AUTOTRANSFUSION SUCTION DEVICE
Gérard Adhonte, Domaine du Dramont, Le Dramont, 83700 Saint-Raphael, France
PCT No. PCT/FR92/00420, § 371 Date Jul. 5, 1994, § 102(e) Date Jul. 5, 1994, PCT Pub. No. WO92/20380, PCT Pub. Date Nov. 26, 1992
PCT Filed May 12, 1992, Ser. No. 182,098
Claims priority, application France, May 13, 1991, 91 05760
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—4 **12 Claims**



1. Suction device for autotransfusion during surgery comprising a suction canula (**1**; **101**) having a tubular suction nozzle (**5**; **105**) communicating with an interior passage (**6**, **9**; **106**, **109**) of said canula (**1**;**101**), said passage (**6**, **9**; **106**, **109**) of the canula being connected to a blood collection storage vessel (**41**) adapted to be depressurized by a vacuum source (**40**), said passage (**6**, **9**; **106**, **109**) of the canula communicating with an anticoagulant feed circuit (**42**, **47**, **12**, **12***a*, **15**, **7**; **112**, **112***a*) incorporating an anticoagulant feed control valve (**15**; **115**), characterized in that:

—said control device includes an independent vacuum circuit (**13**, **44**, **45**, **50**, **43**; **113**, **113***a*) adapted to aspirate only air and connected to the vacuum source (**40**), to the blood collection storage vessel (**41**) and to the control valve (**15**; **115**)

—the control valve (**15**; **115**) includes a vacuum chamber (**49**; **149**) connected to said vacuum circuit (**13**, **44**, **45**, **50**, **43**; **113**, **113***a*), said vacuum chamber (**49**; **149**) having a deformable wall (**29**; **193***b*) connected to a closure member (**30**; **184**) of the anticoagulant circuit adapted to shut off the anticoagulant feed circuit (**42**, **47**, **12**, **12***a*, **15**, **7**; **112**, **112***a*) and said

closure member (30; 184) being urged towards a closed position by elastic means (28; 128) and adapted to be urged towards an open position by deformation of said deformable wall (29; 193b) when there is a sufficient pressure drop in the vacuum chamber (49; 149), and

—the vacuum circuit (23, 13, 44, 45, 50, 43; 113, 113a) communicates with an air vent (14; 114) adapted to be shut off manually.

5,571,082

METHOD OF PRODUCING THERAPEUTIC EFFECT UPON AN ORGANISM TO REDUCE THE PATHOLOGIC LYMPHOCYTE POPULATION

Alexei B. Bashkirov, 12, Akademichesky prospekt, apt. 12, Puchkin, St. Petersburg, 189620, Russian Federation

Filed Aug. 1, 1994, Ser. No. 283,624

Claims priority, application Russian Federation, Aug. 2, 1993, 93038964

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—4 **14 Claims**

1. A method of producing a therapeutic effect upon a living organism endowed with a lymphatic system, comprising the steps of:

withdrawing from said organism a biological fluid, wherein lymphocytes prevail as the cellular constituent;

introducing into said biological fluid a photo-active chemical agent soluble in said fluid, having a specific affinity for the receptor sites in or on the constituents of said fluid capable of being activated by ultraviolet radiation, and capable, when activated by said ultraviolet radiation, of forming photo-adducts with receptor sites of the constituents of the lymphocytes-rich fluid, thereby ensuring chemical linkages between said photo-active chemical agent and said receptor sites;

wherein said biological fluid is force saturated with oxygen prior to being irradiated by ultraviolet light, or wherein said biological fluid is vacuumized prior to being irradiated by ultraviolet, or wherein said biological fluid is force saturated with oxygen and is vacuumized prior to being irradiated by ultraviolet;

irradiating said biological fluid, with said photo-active chemical agent introduced thereinto, by ultraviolet light; and

introducing said biological fluid after said irradiation directly back into said lymphatic system.

5,571,083

METHOD AND SYSTEM FOR CELL TRANSPLANTATION

Jerome H. Lemelson, Suite 286, Unit 802, 930 Tahoe Blvd., Incline Village, Nev. 89451-9436

Filed Jun. 6, 1995, Ser. No. 465,953

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—51 **20 Claims**

1. A system for delivering cellular transplant material to a patient comprising:

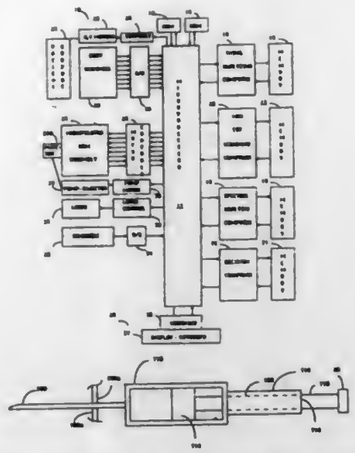
a computer;

a tranplantation tool for delivering a fluid transplant medium containing cellular transplants into tissue;

an automatic manipulator including a manipulator arm assembly for supporting and operating said tranplantation tool and a power driving device for moving said manipulator arm along multiple axes;

a patient support structure having a support surface;

a power driven device operable under computer control for moving said support surface and said manipulator arm assembly relative to one another to cause the manipulator arm assembly to controllably move said tranplantation tool into select regions of the patient's body;



a scanning system including an imaging device for generating image information of select anatomical regions of the patient's body;

a plurality of sensors for sensing the relative positions of said patient support, said manipulator arm assembly, and said scanning imaging device, and generating and feeding coded signals representing the sensed positions to said computer;

a first computer program for calculating location coordinates of select body regions defined by pixels of images produced by said scanning imaging device and using the coded signals representing the sensed relative positions of said patient support means and said imaging device; and

a second computer program for calculating location coordinates of said injection needle and determining when said tranplantation tool is located at said select body region into which it is desired to deliver said cellular transplants.

5,571,084

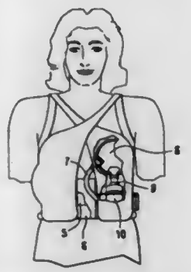
MICROPROCESSOR-CONTROLLED VESTED LACTATION SYSTEM

William R. Palmer, Melbourne, Fla., assignor to Spread Spectrum Inc., Melbourne, Fla.

Filed Dec. 12, 1994, Ser. No. 353,824

Int. Cl.[6] A61M *1/06*

U.S. Cl. 604—74 **12 Claims**



1. A lactation system, comprising:

a vest worn by a user allowing hands free operation and full mobility of said user during lactation, said vest being adjustable to fit various user shapes and sizes, and being configured for attachment of all required hardware to said vest;

a vacuum system having a vacuum source;

a lactate store;

a breast cup assembly containing two breast cups disposed within said vest for interface of a breast and said vacuum system, and being comprised of a rigid outer shell and a flexible inner annular ring dimensionally configured to receive a breast, and having an element for quickly increasing pressure within a breast cup to atmospheric pressure, a vacuum source attachment arrangement for attaching and disconnecting said vacuum source to said breast cup, said breast cup assembly being configured to prevent flow of lactate into a vacuum line of said vacuum system, and a connector for flexibly connecting said lactate store to said breast cup;

said vacuum system being operative to impart a negative pressure to said breast cup and thereby draw a breast into an opening of said flexible inner annular ring of said breast cup to extract lactate;

said lactate store storing lactate during system operation;

a control unit which is coupled to said vacuum system and controls vacuum magnitude and cycle frequency of said vacuum system; and

a power unit which is coupled to said vacuum system and said control unit and supplies power to said vacuum system and said control unit.

5,571,085

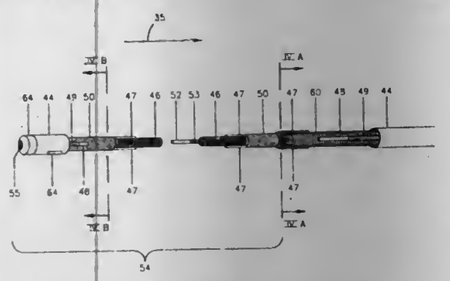
STEERABLE OPEN LUMEN CATHETER

Nicholas G. Accisano, III, Howell, N.J., assignor to Electro-Catheter Corporation, Rahway, N.J.

Filed Mar. 24, 1995, Ser. No. 410,238

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—95 **27 Claims**



1. A tip deflectable, steerable catheter comprising:

a catheter handle having a first body and a second body, said second body being mounted to and for selective movement relative to said first body;

an elongated catheter tube having longitudinally spaced apart proximal and distal ends, said proximal end of said catheter tube being fixedly attached to said first body of said catheter handle;

a catheter distal portion carried at said distal end of said catheter tube and having a distal end most remote from said handle;

an elongated tube having a central lumen disposed therewithin, said elongated tube being disposed within said catheter tube and extending from said proximal end of said catheter tube to said distal end of said catheter distal portion terminating in a distal opening in said catheter distal portion, said elongated tube having an circumferential outer surface;

a pair of elongated support members fixedly attached to and along a length of the circumferential outer surface of said elongated tube, said support members extending within said catheter distal portion and having proximal and distal ends; and

a first pull cable having a proximal end and a distal end, said distal end of said first pull cable being fixedly attached to the distal end of said catheter distal portion, and said proximal end of said first pull cable being attached to said second body such that when said second body moves relative to said first body, the distal end of said first pull cable moves longitudinally to cause said catheter distal portion to curve.

5,571,086

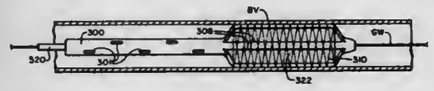
METHOD AND APPARATUS FOR SEQUENTIALLY PERFORMING MULTIPLE INTRALUMINAL PROCEDURES

Aaron V. Kaplan, Los Altos; James R. Kermode, Sunnyvale, and Enrique J. Klein, Los Altos, all of Calif., assignors to Localmed, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 47,737, Apr. 15, 1993, Pat. No. 5,336,178, which is a continuation-in-part of Ser. No. 969,595, Nov. 2, 1992, abandoned. This application Apr. 1, 1994, Ser. No. 222,143

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—96 **18 Claims**



1. A method for sequentially performing intraluminal procedures, said method comprising:

introducing over a guidewire a base catheter having a sleeve catheter slidably disposed thereover to a target location in a body lumen, wherein the base catheter has an inflatable balloon near its distal end and the sleeve catheter has a radially expandable region near its distal end and an interactive device on or within the radially expandable region;

positioning the balloon which is on the base catheter at the target location; and

axially translating the sleeve catheter relative to the base catheter to position the radially expandable region on the sleeve catheter over the balloon at the target location to position the interactive device over the balloon and perform a diagnostic or therapeutic procedure using the interactive device.

5,571,087

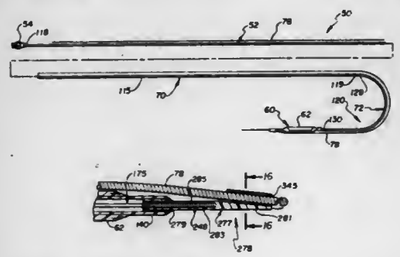
INTRAVASCULAR CATHETER WITH DISTAL TIP GUIDE WIRE LUMEN

Thomas V. Ressemann, St. Cloud; Steven S. Hackett, Maple Grove, and Peter T. Keith, Fridley, all of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Division of Ser. No. 206,616, Mar. 10, 1994, Pat. No. 5,395,332, which is a continuation of Ser. No. 922,902, Jul. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 833,099, Feb. 10, 1992, abandoned. This application Mar. 7, 1995, Ser. No. 400,982

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—96 **1 Claim**



1. A balloon catheter comprising:

a proximal hypotube shaft portion having a proximal end and a distal end and having a lumen extending therethrough;

a distal shaft portion having a proximal end and a distal end, the proximal end of the plastic shaft portion being sealingly connected to the distal end of the hypotube shaft portion, the plastic shaft portion having an inner lumen extending therethrough, and the plastic shaft portion being more flexible than the hypotube shaft portion;

a core member having a proximal end and a distal end, the core member being secured to the hypotube shaft portion to extend distally therefrom through the inner lumen of the plastic shaft portion, and the distal end of the core member terminating distally of the distal end of the plastic shaft portion;

a balloon having a proximal waist and a distal waist, the proximal waist of the balloon being sealably connected to the distal end of the plastic shaft portion, the distal waist of the balloon terminating proximally of the distal end of the core member and being sealably connected thereto, and the interior of the balloon member being in fluid communication with the lumen of the hypotube shaft portion through the inner lumen of the plastic shaft portion;

a distal tip body secured to that portion of the core member extending distally of the distal waist of the balloon, the tip body including a short guide wire lumen therein which is adapted to slidably receive a guide wire therethrough; and

said distal tip body has a distal segment which has a tube defining the guide wire lumen, the axis of the tube being canted relative to the axis of the core member.

5,571,088

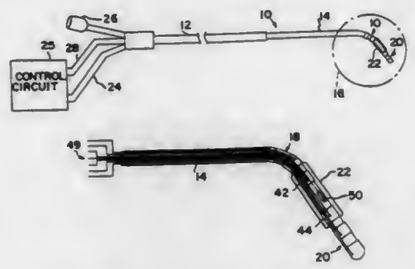
ABLATION CATHETERS

Charles D. Lennox, Hudson, N.H.; Susan M. Ropiak, Hanscom Air Force Base; Troy W. Roberts, Arlington, both of Mass., and Stephen P. Beaudet, Lexington, Mass., assignors to Boston Scientific Corporation, Natick, Mass.

Division of Ser. No. 86,740, Jul. 1, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 471,647

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—96 **12 Claims**



1. A method of ablating heart tissue within a body of a living being, comprising the steps of:

providing a catheter comprising:

a catheter shaft constructed for insertion into a blood vessel;

an inflatable balloon mounted on a distal portion of said catheter shaft, said catheter shaft and said balloon being sized and constructed to permit said distal portion of said catheter shaft to be inserted into an atrium or ventricle of a heart while said balloon is deflated and to permit said balloon to be filled with a fluid inside said atrium or ventricle, said balloon being sufficiently deformable under stress to conform to the shape of said atrium or ventricle; and

a heating device mounted on said distal portion of said catheter shaft and constructed to cause a large area of tissue in contact with said balloon while said balloon is inflated to be heated;

inserting said catheter into said body;

positioning said distal portion of said catheter within said atrium or ventricle and adjacent to a wall of said atrium or ventricle;

inflating said balloon within said atrium or ventricle, and engaging said balloon, while said balloon is inflated, in direct contact with said wall of said atrium or ventricle; and

heating, through use of said heating device, said large area of tissue of said atrium or ventricle in contact with said balloon while said balloon is inflated.

5,571,089

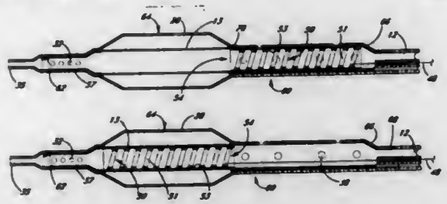
LOW PROFILE PERFUSION CATHETER

Michael Crocker, Mission Viejo, Calif., assignor to Cardiovascular Dynamics, Inc., Irvine, Calif.

Continuation of Ser. No. 208,617, Mar. 8, 1994, which is a continuation of Ser. No. 84,820, Jun. 30, 1993, Pat. No. 5,344,402. This application Dec. 16, 1994, Ser. No. 357,401

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—102 **13 Claims**



1. A drug delivery catheter, comprising:

an elongate, flexible tubular body;

an inflatable drug delivery balloon on the tubular body;

at least one influent port on the tubular body on a first side of the balloon;

at least one effluent port on the tubular body on a second side of the balloon, said influent and effluent ports in fluid communication with each other by way of a central lumen through the balloon; and

an axially movable support within the central lumen, said support movable from a first, proximal position to a second, distal position, wherein at least a portion of the central lumen has a first inside cross-sectional flow area when the support is in the proximal position and a second, larger inside cross-sectional flow area when the support is in the distal position.

5,571,090

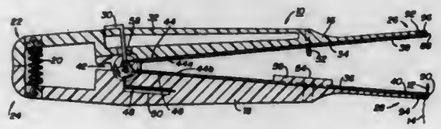
VASCULAR SUTURING APPARATUS

Charles R. Sherts, Southport, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 7, 1994, Ser. No. 319,703

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—144 **22 Claims**



1. An apparatus for suturing tissue comprising:

a) a first arm having a first needle engaging member mounted for movement with respect to the first arm;

b) a second arm movably mounted to the first arm and moveable between an open position spaced from the first arm to a closed position in close cooperative alignment with tile first arm:

c) a reciprocating mechanism connected to the first needle engaging member and mounted for movement with respect to at least one of the arms, the reciprocating mechanism movable between a first position moving the first needle engaging member into engagement with a surgical needle and a second position disengaging the first needle engaging member from the surgical needle; and

d) a cam actuating lever movably mounted to one of the first and second arms and engagable with the reciprocating mechanism such that the cam actuating lever cams the reciprocating mechanism between the first and second positions.

5,571,091

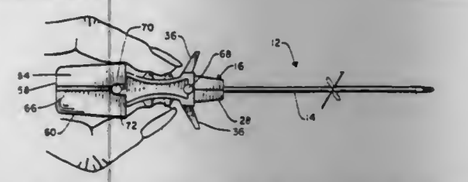
SURGICAL NEEDLE ASSEMBLY

Richard E. Davis, Grand Rapids, and William J. Greenhoe, Rockford, both of Mich., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 250,046, May 27, 1994, Pat. No. 5,466,225, which is a continuation of Ser. No. 930,098, Aug. 13, 1992, Pat. No. 5,336,191. This application Sep. 1, 1995, Ser. No. 522,621

Int. Cl.[6] A61M *5/158;5/32*

U.S. Cl. 604—165 **11 Claims**



1. In a surgical needle including a cannula member and a stylet member, the cannula member comprising a cannula handle and a cannula having a proximal end affixed to the cannula handle and a distal end opposite from the cannula handle, the stylet member comprising a stylet handle and a stylet having a proximal end affixed to the stylet handle and a distal end opposite from the stylet handle, the stylet being removably receivable within the lumen of the cannula, the axial dimensions of the stylet and the cannula being so related that when the stylet is fully received within the cannula with the handles adjacent to each other the distal ends are coterminous, the distal ends being respectively contoured to form a predetermined needle tip configuration when the stylet is fully received in the lumen of the cannula in predetermined angular relation therewith, the handles including respective indicators for determining the angular relation of the cannula and the stylet, the improvement wherein the indicators comprise at least one guide projection mounted on one of the handles and a longitudinal rib mounted on the other of said handles wherein the at least one guide projection and longitudinal rib are aligned when the stylet and the cannula are in said predetermined angular relation.

5,571,092

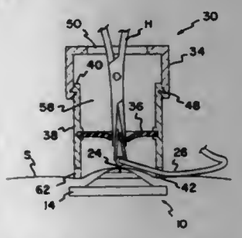
METHOD FOR HANDLING A NEEDLE

Nancy L. Thompson, 1212 Reston Ave., Herndon, Va. 22070

Continuation of Ser. No. 95,537, Jul. 26, 1993, Pat. No. 5,476,452. This application Jul. 11, 1995, Ser. No. 500,637

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—263 **8 Claims**



1. A method of handling a needle comprising the steps of:

providing a body construction defining an accessible interior, the body construction having a self-closing passageway adjacent to a first end of the body construction, the body construction having a cover with a stop surface adjacent to a second end of the body construction, the cover defining an opening to the accessible interior;

positioning the first end of the body construction adjacent to a needle having a tip inserted into an implanted portal;

passing an end of a needle grasping tool through the opening and then through the self-closing passageway;

grasping the needle with the needle grasping tool while the needle grasping tool is positioned in the opening and the self-closing passageway;

pulling the needle with the needle grasping tool to remove the needle from the portal;

pulling the needle with the needle grasping tool past the self-closing passageway;

releasing the needle in the interior of the body construction between the self-closing passageway and the stop surface of the cover; and

removing the needle grasping tool from the interior of the body construction.

5,571,093

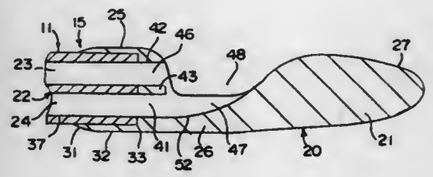
MULTIPLE-LUMEN CATHETER

Cosme Cruz, 253 Lewiston, Grosse Pointe Farms, Mich. 48236; Richard W. Dow, Rte. 1, Box 12A, Sharon, Vt. 05065, and David G. Quinn, 21860 W. Washington St., Grayslake, Ill. 60030

Filed Sep. 21, 1994, Ser. No. 310,237

Int. Cl.[6] A61M *25/00;31/00*

U.S. Cl. 604—270 **20 Claims**



1. A multiple-lumen catheter for use in the delivery or the withdrawal and delivery of fluids to a patient, said catheter comprising:

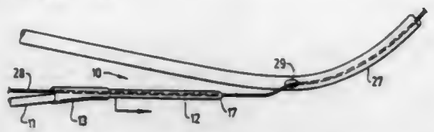
a) an elongate generally cylindrical body having an axial passageway extending the length thereof;

b) a septum extending across the interior of the body and along the length thereof in order to divide the body into first and second lumens;

c) a bolus extending from a distal end of the body, the bolus having a tube connector section at one end, a nose section at the other end and a passage section between the connector section and the nose section,the nose section having a solid bullet-shaped construction; and

d) the passage section containing an axial passage portion adjacent the connector section and a radial passage portion adjacent the nose section, the axial passage portion in fluid communication with the first and second lumens, the radial passage portion forming a single port through the side of the bolus and in fluid communication with the first and second lumens, the septum terminating in the axial passage portion of the bolus.

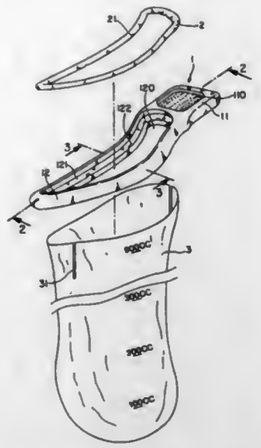
5,571,094
GUIDEWIRE REPLACEMENT DEVICE
Motasim M. Sirhan, Santa Clara, Calif., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.
Continuation of Ser. No. 818,288, Jan. 9, 1992, abandoned. This application Dec. 16, 1993, Ser. No. 168,571
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—284 **12 Claims**



1. An intravascular guidewire exchange device comprising,
an elongated shaft which has a length of at least about 85 cm and which is configured for percutaneous introduction into and advancement within a human patient's vasculature to the coronary artery thereof, said shaft including:
a flexible distal shaft section which has at least a distal portion thereof configured to be advanced through the patient's coronary artery and into a proximal guidewire port of a rapid exchange type intravascular catheter, proximal and distal ends, a first guidewire port in the distal end and a second guidewire port in the proximal end, a first open guidewire receiving inner lumen extending therein from the first guidewire port in the distal end thereof to the second guidewire port spaced proximally from the distal guidewire port and a longitudinally extending axis;
a proximal shaft section having
a length much greater than the distal shaft section,
a proximal end,
a distal end which is secured to the distal shaft section at a location between the first and second guidewire ports,
a third guidewire port in the distal end of the proximal shaft section which is located proximal to the first guidewire port and distal to the second guidewire port and which is in fluid communication with the first guidewire lumen,
a fourth guidewire port in the proximal end of the proximal shaft section
a second open guidewire receiving inner lumen which is disposed within the proximal shaft portion, which extends between the third and fourth guidewire ports in the proximal shaft portion and intercommunicates with the first guidewire receiving inner lumen in the distal shaft portion through the third guidewire port in the distal end of the proximal shaft portion and which has a longitudinal axis extending therein; and
the longitudinal axis of the second guidewire receiving inner lumen intersecting with the longitudinal axis of the first guidewire receiving inner lumen at an acute angle.

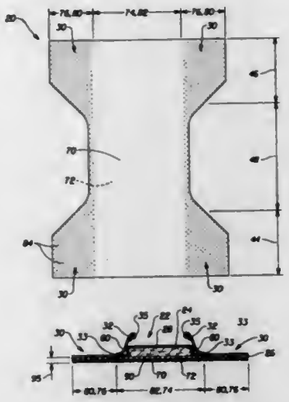
5,571,095
DISPOSABLE URINE BAG FOR FEMALES
Ke-Way Lu, Taipei City, Taiwan, assignor to Flying Point Enterprise, Co., Taipei City, Taiwan
Filed Aug. 30, 1995, Ser. No. 520,819
Int. Cl.[6] A61F *5/44;* **A61B** *5/00*
U.S. Cl. 604—329 **3 Claims**

1. A urine collection device for females, comprising: a bracket for carrying a container for collecting urine, said bracket comprising a flat handle at one end, and a bearing frame at an opposite end for fitting around the vulva, said bearing frame comprising a center opening, an endless mounting groove at a top side around said center opening, and a plurality of retaining portions spaced around said endless mounting groove; said container comprising a bag carried on said bracket for collecting urine, said bag having an opening, and a plurality of splits around a border of the opening for permitting the border to be turned inside-out and fastened to the endless mounting groove of said bearing frame; said device further



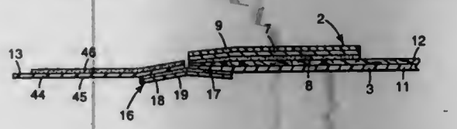
comprising a packing member fitted into the endless mounting groove of said bearing frame to fix said bag in place, said packing member having a plurality of notches which engage with the retaining portions of said bearing frame.

5,571,096
ABSORBENT ARTICLE HAVING BREATHABLE SIDE PANELS
George C. Dobrin; Karen M. Davis, both of Cincinnati, and David M. Weirich, West Chester, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sep. 19, 1995, Ser. No. 530,036
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—383 **33 Claims**



1. A disposable absorbent article having a front waist region, a rear waist region, a crotch region located between said front waist region and said rear waist region, a pair of opposed side edges, a first end edge located in said front waist region and a second end edge located in said rear waist region, the absorbent article comprising:
a containment assembly comprising an absorbent core having a pair of opposing longitudinal edges, an inner surface and an outer surface; and
a breathable laminate comprising a backsheet and an air pervious outer cover, said backsheet being positioned between said containment assembly and said air pervious outer cover, said backsheet comprising a formed film having a garment-facing surface, a body-facing surface, a central region, two apertured zones and a non-apertured zone; said non-apertured zone comprising said central region and being juxtaposed said outer surface of said absorbent core; said apertured zones comprising apertures and extending continuously laterally outwardly from said central region beyond said longitudinal edges of said absorbent core and continuously longitudinally from said end edge located in said front waist region through said crotch region to said end edge located in said rear waist region,
at least a portion of said garment-facing surface of said backsheet being joined with said outer cover juxtaposed at least said apertured zones.

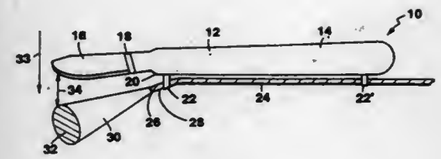
5,571,097
ADHESIVE TAPE TAB CLOSURE SYSTEM
Jayshree Seth, Woodbury, Minn., assignor to Minnesota Mining And Manufacturing Company, St. Paul, Minn.
Filed Nov. 29, 1994, Ser. No. 346,486
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—389 **10 Claims**



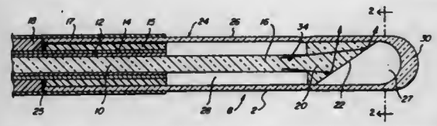
1. A disposable garment pressure-sensitive adhesive closure tape tab system comprising a closure tab laminate, comprised of a fastening tape tab portion having a substrate with a first and second face, and a release tab portion having a substrate with a first and second face, and a hinge tape having a substrate with a first face and a second face, the release tab portion substrate first face having a release layer with no release layer on said second face, said fastening tape tab portion first face having an adhesive layer, said two tab portions first faces are releasably attached to each other, such that the fastening tape tab portion adhesive layer does not form a permanent adhesive bond to said release tab with said fastening tape tab portion first face in face-to-face contact with said release tape tab portion first face, the release tab portion second face is attached to a first face of a disposable garment adjacent an edge thereof, said hinge tape first face coated with a pressure-sensitive adhesive layer, a first end of the hinge tape first face permanently adhesively attached to said fastening tape tab portion second face and a second end of said hinge tape first face permanently adhesively attached to said disposable garment second face adjacent said edge and opposite said release tab portion thereby permanently attaching the fastening tape tab to the disposable garment wherein the fastening tape tab second face has no adhesive layer other than that provided by the adhesive layer on the first end of the hinge tape second face.

5,571,098
LASER SURGICAL DEVICES
Yacov Domankevitz, Brookline, and Norman S. Nishioka, Wayland, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.
Filed Nov. 1, 1994, Ser. No. 332,942
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—15 **23 Claims**

1. A method for incising a region of a mammal with a cutting means, comprising the steps of:
irradiating said region and not said cutting means to induce coagulation in said region, and then incising said region.

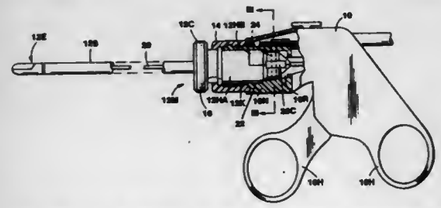


5,571,099
SIDE FIRING PROBE
Earl E. Purcell, Jr., Westfield, Mass., and Ronald E. Hille, East Hartland, Conn., assignors to Pioneer Optics Company, Windsor Locks, Conn.
Filed May 9, 1995, Ser. No. 437,994
Int. Cl.[6] A61B *17/36;* **A61N** *5/06*
U.S. Cl. 606—17 **17 Claims**



1. In a side firing fiberoptic probe, the combination comprising:
(a) an optical fiber with proximal and distal ends having a core and cladding about said core, a portion of said fiber adjacent said distal end being free from cladding;
(b) a transparent reflector of generally cylindrical configuration on the distal end of said core, said reflector being of larger diameter than and coaxial with said core, said reflector having a planar face at its opposite end extending at an angle to said axis of said core and reflector; and
(c) a transparent end cap having a cylindrical body portion extending about and sealingly engaged with said fiber distal end portion and said reflector, said cap having a closed end spaced from said planar face of said reflector, said closed end having inner and outer surfaces, said end cap being dimensioned to provide an atmospheric interface between the inner surface of its closed end and said planar face of said reflector and about said unclad distal end portion of said core, whereby light rays passing through said core fall on said planar face in a generally circular pattern and are reflected at an angle of 50°–90° in a generally circular beam through said reflector and cap.

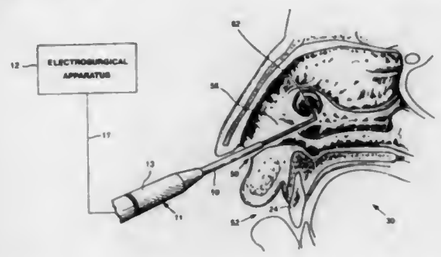
5,571,100
ELECTROSURGICAL APPARATUS
Nigel M. Gobel, Castleton, and Colin C. O. Gobel, Penarth, both of Wales, assignors to Gyrus Medical Limited, Cardiff, Wales
Filed Oct. 28, 1994, Ser. No. 331,225
Claims priority, application United Kingdom, Nov. 1, 1993, 9322464
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—41 **15 Claims**



1. An electrode assembly for an electrosurgical instrument, the assembly comprising an elongate tubular shaft mounting on a

distal end portion thereof at least one electrode, an electrical conductor passing through the shaft and connected to the electrode, and, mounted on a proximal end portion of the shaft, mounting means for detachably mounting the assembly to a handpiece of the instrument, the mounting means comprising a first component shaped for attachment to the handpiece in a non-rotational relationship, and a second component rotatably coupled to the first component and secured to the shaft and rotatable with the shaft with respect to the first component about a longitudinal axis of the shaft, the conductor terminating in a contact portion housed in the first component and being formed so as to allow the electrode, the shaft, a part of the conductor in the distal end portion of the shaft, and the second component to rotate with respect to the first component and the contact portion about the longitudinal axis.

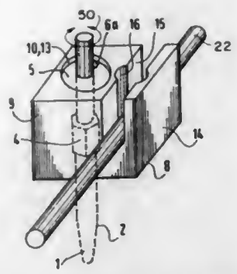
5,571,101
ELECTROSURGICAL ELECTRODE FOR DCR SURGICAL PROCEDURE
Alan G. Ellman, and Jon C. Garito, both of 1135 Railroad Ave., Hewlett, N.Y. 11557
Filed May 25, 1995, Ser. No. 450,703
Int. Cl.[6] A61B *17/39*
U.S. Cl. 606—45 **8 Claims**



1. An electrosurgical electrode for excising of nasal tissue, comprising:
(a) an electrically conductive shaft member having a first exposed end for mounting in an electrosurgical handpiece and a second end,
(b) said second end having a generally transversely-extending portion terminating in an active, electrically conductive, tip portion tapering to a point,
(c) said active tip portion being exposed electrically for applying electrosurgical currents to said nasal tissue when said shaft member first end is connected to a source of electrosurgical currents,
(d) portions of said shaft member extending from the first exposed end to said transversely-extending portion adjacent said exposed tip portion being coated with an electrically insulating coating to prevent contact and passage of electrosurgical currents to areas adjacent to or surrounding the tissue to be excised,
(e) the length of the exposed tip portion being greater than 0.05 but less than 0.30 inches.

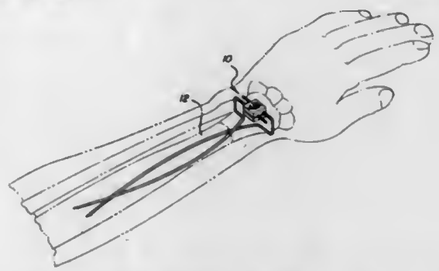
5,571,102
SYSTEM FOR SPINAL OSTEOSYNTHESIS
Remi Cavagna, 29 rue Sainte Anne, 56270 Ploemeur, and Robert Clerc, Carimel, 22130 Languenan, both of France
Continuation of Ser. No. 121,827, Sep. 14, 1993, abandoned. This application Jul. 24, 1995, Ser. No. 505,903
Claims priority, application France, Sep. 15, 1992, 92 10956
Int. Cl.[6] A61B *17/70*
U.S. Cl. 606—61 **26 Claims**

1. A system for spinal osteosynthesis comprising:



a pedicle screw having a pedicle thread insertable into the pedicle of a vertebra and a saddle thread;
a rod having a predetermined diameter and a longitudinal axis;
at least one saddle member having at least one head provided with a hole of a diameter substantially corresponding to a diameter of the saddle thread provided on said pedicle screw and at least one throat portion, an axis of said throat portion being substantially perpendicular to the axis of said head;
said throat portion including a split passage having an opening corresponding at least to the diameter of said rod, the rod being insertable into the opening of the split passage in a direction generally perpendicular to the longitudinal axis of the rod;
means for securing said saddle member on said screw to thereby render said pedicle screw at the head thereof integral with said saddle member prior to application of mechanical effort for effecting spinal reduction;
when said securing means is engaged in a locked position, a part of said saddle thread being free; and
means for securing said rod in said throat portion to thereby render said rod integral with said throat portion of said saddle member after application of mechanical effort for effecting spinal reduction, said means for securing said rod in said throat portion comprising a screw engaging a threaded portion provided in the passage of said throat portion substantially perpendicular thereto and substantially parallel to said pedicle screw.

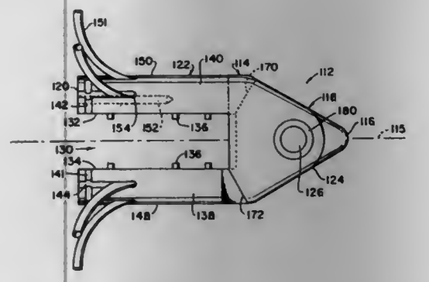
5,571,103
METHOD FOR THE FIXATION OF BONE
Kirk J. Bailey, 1220 Bittersweet La., Rochester, Ind. 46975
Filed Oct. 18, 1994, Ser. No. 324,957
Int. Cl.[6] A61B *17/72*
U.S. Cl. 606—62 **11 Claims**



1. A method for the fixation of at least a first and a second portion of a fractured bone having an intramedullary canal, said method comprising the steps of:
providing a first elongated member that is operable to be at least partially inserted into the first and second portions of the bone;
forming an abrasive surface to at least part of said first elongated member;

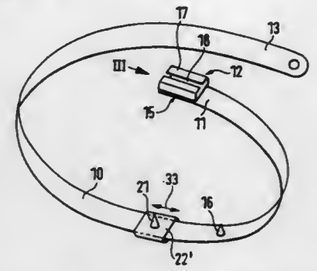
providing a second elongated member that is operable to be at least partially inserted into the first and second portions of the bone;
forming an abrasive surface to at least part of said second elongated member;
inserting said first and second elongated members into the intramedullary canal and across the fracture of the first and second portions of the bone; and
releasably securing said first elongated member to said second elongated member by engaging the abrasive surfaces in a manner to resist relative rotation between said first and second elongated members.

5,571,104
SURGICAL ANCHOR AND METHOD FOR USING THE SAME
Lehmann K. Li, Milford, Conn., assignor to Mitek Surgical Products, Inc., Westwood, Mass.
Division of Ser. No. 75,168, Jun. 10, 1993, Pat. No. 5,505,735. This application Jun. 6, 1995, Ser. No. 468,053
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—72 **8 Claims**



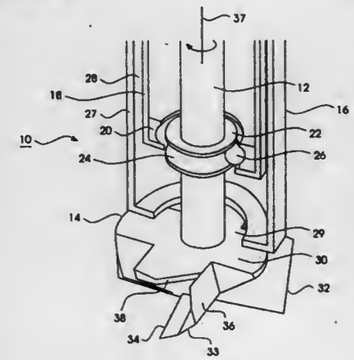
1. A surgical anchor for fixedly locating a free end of a ligament, tendon or a similar elongated, non-rigid member formed from natural or artificial materials or both having a substantially rigid object attached to at least one free end thereof within a piece of bone or bone-like material defining a substantially symmetrical tunnel therein, comprising:
a body adapted for longitudinal insertion into said tunnel, and a plurality of barbs;
said body having a longitudinal axis, an outer surface, a front end, a rear end, a front portion adjacent said front end, a rear portion adjacent said rear end, connection means associated with said front portion, and attachment means associated with said rear portion, said connection means being adapted to connect said anchor to anchor pulling means, and said attachment means being adapted to connect said rigid object to said anchor, said attachment means comprising a first section of said rear portion defining a first wall and a second section of said rear portion defining a second wall, said first and second walls being located in facing parallel relation so as to together define a diametrical slot extending through said body from said rear end to said front portion, at least one of said first and said second sections being pivotally movable relative to said front portion of said body; and
said barbs each comprising an outer end and an inner end, said inner end being attached to said body, and each said barb being formed and connected to said body so that said outer end is normally disposed outwardly beyond an axial projection of the maximum transverse cross-section of said body, but each said barb being elastically deformable so that said outer end may be disposed inwardly of an axial projection of the maximum transverse cross-section of said body.

5,571,105
OSTEOSYNTHESIS APPARATUS FOR THE FIXATION OF BONE FRAGMENTS
Ferdinand Gundolf, Kemterstr. 1/I, A-6330 Kufstein, Austria
Filed Jul. 6, 1994, Ser. No. 271,048
Claims priority, application Germany, Jul. 6, 1993, 43 22 507.1
Int. Cl.[6] A61B *17/82;17/68*
U.S. Cl. 606—74 **14 Claims**



1. An apparatus for the osteosynthesis of bone fragments comprising:
a retaining strap in the form of a flat strip adapted to be wrapped around a bone in the region of a site to be treated and having a first end and second end,
the first end having an axis perpendicular to the flat strip,
a sleeve, a rotating connector secured to said sleeve and to said first end of said strap, said sleeve having a bore slightly larger than said second end of said strap so that said second end of the strap can be passed through said sleeve with a slight clearance,
said rotating connector being secured to said sleeve in alignment with said bore and to said first end of said strap and securing said sleeve on said strap with said bore overlying said first end of said strap so that said axis passes through said rotating connector and said bore; and,
a bone securing element projecting from said sleeve and strap in alignment with said sleeve to secure said first end of said strap to a bone.

5,571,106
SURGICAL CUTTING INSTRUMENT
Hans J. Coufal, and Robert K. Grygier, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 17, 1995, Ser. No. 442,905
Int. Cl.[6] A61B *17/56;17/16*
U.S. Cl. 606—80 **3 Claims**



1. A high speed rotary bone cutter comprising:

(a) an elongated housing having a proximal end and a distal end, said housing comprising an inner tube surrounded by a outer tube to define a space between said inner tube and said outer tube, said space defining an enclosed fluid passage and said outer tube being open at its distal end;

(b) a drive shaft having a proximal end and a distal end, the drive shaft rotatably mounted inside of said inner tube, said distal end projecting distally beyond said distal end of said inner tube and said distal end of said outer tube, the inner tube separating the fluid passage from the rotation of the drive shaft;

(c) a cutting head attached to the distal end of the drive shaft and comprising (i) a plurality of blades radially mounted on the head, each blade having a cutting edge extending outwardly and perpendicular to a rotational axis of the drive shaft, and (ii) a plurality of fluid channels to direct cutting fluid that exits from the open distal end of the outer tube to each of the cutting edges.

5,571,107

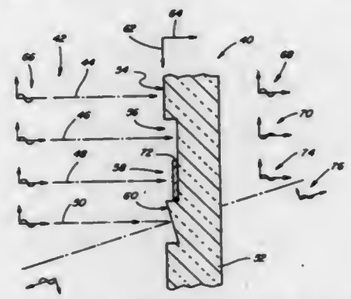
LASER SURGICAL APPARATUS FOR SCULPTING A CORNEA USING A DIFFRACTIVE OPTICAL ELEMENT AND METHOD OF USING THE SAME

Sanan B. Shaibani, 1629 Washington Ave., Apt. #8, New Orleans, La. 70130; Bahram Khoobehi, 2020 Gravier, Ste. B, New Orleans, La. 70112-2234, and John S. Morvant, Jr., 4 F Rue Chardonnay, Kenner, La. 70065

Continuation-in-part of Ser. No. 143,087, Oct. 26, 1993, Pat. No. 5,376,086. This application Sep. 8, 1994, Ser. No. 303,219

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—4 **12 Claims**



1. An apparatus for profiling a cornea of an eye, the cornea having an initial profile and a desired profile with the desired profile for correcting any abnormalities of the cornea, the apparatus comprising:

means for producing and projecting a beam of radiation, the beam of radiation having a wavelength, a phase, and an amplitude; and

a diffractive optical element which is representative of the desired profile of the cornea, the diffractive optical element comprising a substrate having a thickness, a reference axis, and a matrix of elements formed thereon, each of the elements having a preselected reflective index, length, width, thickness, and an angle relative to the reference axis with an element having a thickness greater than the thickness of the substrate producing an exit beam of radiation having the same amplitude and phase as the beam of radiation, an element having a thickness less than the thickness of the substrate producing an exit beam of radiation having a phase that is shifted when compared to the phase of the beam of radiation, and an element having a coating applied to the substrate producing an exit beam of radiation having a phase and amplitude that are shifted when compared to the phase and amplitude of the beam of radiation, and when the beam of radiation is projected at the diffractive optical element each of the elements within the matrix produces an exit beam which is directed at the cornea for selectively ablating the cornea for profiling the cornea to the desired profile which corrects any abnormalities of the cornea.

5,571,108

BINOCULAR STEREO MICROSCOPE

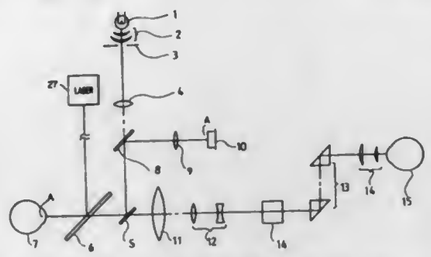
Masanori Amano, and Akira Yabusaki, both of Gamagori, Japan, assignors to Nidek Co., Ltd., Gamagori, Japan

Continuation of Ser. No. 23,684, Feb. 26, 1993, abandoned. This application May 20, 1994, Ser. No. 246,568

Claims priority, application Japan, Feb. 29, 1992, 4-079044

Int. Cl.[6] A61N *5/02*; **G06K** *9/00*

U.S. Cl. 606—10 **15 Claims**



1. An alignment device for aligning an ultra-violet laser with a patient's eye having a cornea so that the laser can ablate the cornea, the alignment device comprising:

a light source emitting light;

means for transmitting the light to the cornea;

means for monitoring light reflected from the cornea and for providing an indication light beam indicating the three-dimensional position of the cornea, the indication light beam designating a direction in which the cornea should be moved;

an optical system including a stereo binocular microscope for directly and optically observing a front portion of the eye, enabling a direct observation of the patient's eye in the absence of an analysis means; and

means for guiding the indication light beam to an operator's eye, including a beam splitter disposed in an observing optical path of said optical system.

5,571,109

SYSTEM FOR THE IMMOBILIZATION OF VERTEBRAE

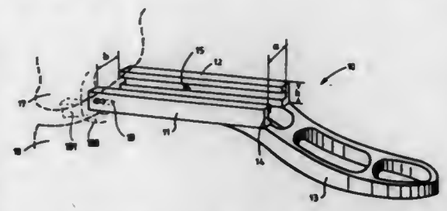
Rudolf Bertagnoli, Göttingen, Germany, assignor to MAN Ceramics GmbH, Deggendorf, Germany

Filed Aug. 26, 1994, Ser. No. 297,445

Claims priority, application Germany, Aug. 26, 1993, 43 28 690.9

Int. Cl.[6] A61B *17/70;17/88;17/90*

U.S. Cl. 606—61 **24 Claims**



1. An implantation system for immobilizing vertebrae, said system comprising:

at least one guide instrument for mounting on vertebrae to be immobilized;

said guide instrument comprises at least two elongate, parallel guide rails assembled to form a unitary component, each of said guide rails having a longitudinal groove for guiding and exactly positioning surgical implants to be employed for surgery on the vertebrae, wherein said longitudinal grooves extend in a longitudinal direction of said guide instrument and face one another;

at least one elongate surgical implement guided with said guide instrument, said surgical implement having elongate first guide means for cooperating with said longitudinal grooves of said guide rails of said guide instrument; and

surgical implants having means for immobilizing vertebrae, said surgical implants having second guide means for cooperating with said longitudinal grooves of said guide rails of said guide instrument.

5,571,110

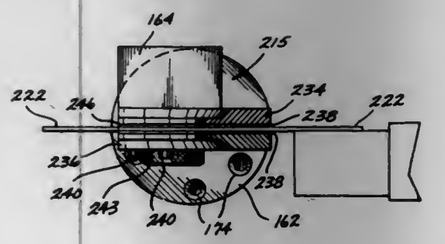
ORTHOPEDIC SAW GUIDE FOR USE IN A ROBOT-AIDED SYSTEM FOR SURGERY

Frederick A. Matsen, III; Joseph L. Garbini; John A. Sidles, all of Seattle; Donald C. Baumgarten, Lynnwood, and Brian S. Pratt, Seattle, all of Wash., assignors to Board of Regents of the University of Washington, Seattle, Wash.

Division of Ser. No. 338,422, Nov. 14, 1994, which is a division of Ser. No. 72,466, Jun. 4, 1993, Pat. No. 5,403,319, which is a division of Ser. No. 934,713, Aug. 24, 1992, Pat. No. 5,236,432, which is a division of Ser. No. 606,521, Oct. 31, 1990, Pat. No. 5,154,717, which is a division of Ser. No. 186,345, Apr. 26, 1988, Pat. No. 4,979,949. This application Jun. 7, 1995, Ser. No. 486,355

Int. Cl.[6] A61B *17/15*

U.S. Cl. 606—88 **7 Claims**



1. An orthopaedic saw guide for confining a blade of a surgical saw to movement in a single plane, while allowing translational and rotational movement of the blade within the plane, said saw guide comprising a pair of curved elongated guide plates having outer surfaces and opposing inner surfaces, securing means for securing said plates together such that said inner surfaces and securing means define a guide space, and means for adjusting the distance between said inner surfaces, whereby the saw guide may be positioned adjacent a bone such that said guide space corresponds to a cut plane, and the blade can then be inserted in said guide space and constrained in the cut plane.

5,571,111

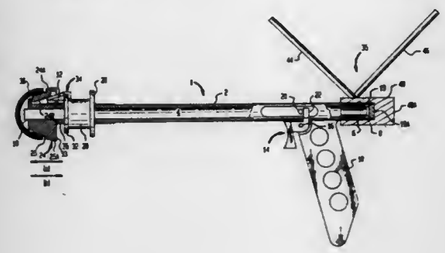
INSTRUMENT FOR ORIENTING, INSERTING AND IMPACTING AN ACETABULAR CUP PROSTHESIS INCLUDING PROSTHESIS RETAINING HEAD ARRANGEMENT

Robert I. Aboczky, 323 E. Saddle River Rd., Upper Saddle River, N.J. 07458

Filed May 1, 1995, Ser. No. 432,569

Int. Cl.[6] A61F *2/34*

U.S. Cl. 606—91 **14 Claims**



8. An instrument for engaging an acetabular cup prosthesis and for orienting, inserting and impacting the prosthesis for implanting said prosthesis in the acetabulum of a patient, comprising:

an instrument cylinder having one and opposite ends corresponding to the one and the opposite ends of the instrument;

a head carried on and being integral with one end of the cylinder for removably engaging a selected one of a plurality of prostheses of different sizes, said head being in the form of a truncated right circular cone having a base spaced away from the one cylinder end, said head, in turn, further including;

a plurality of sectors, with one of the sectors being displaceable away from and toward the other sectors;

a rod disposed in sliding relation within the cylinder, and biased by a spring so that one end of the rod extends beyond the corresponding one end of the cylinder;

means for securing the selected prosthesis on the head;

a sleeve in threaded engagement with the one cylinder end;

a key in engagement with the one sector and coupled to the sleeve;

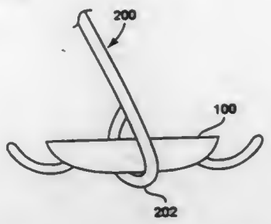
displacement of the sleeve in threaded engagement with the one cylinder end in one direction being effective for displacing the key coupled to the sleeve toward the one cylinder end, whereupon the key displaces the one sector away from the other sectors to create the friction force between the key and the one sector to secure the selected prosthesis to said head;

means for orienting the secured prosthesis carried on the opposite end of the instrument, whereupon the oriented prosthesis is inserted in the acetabulum of the patient, said means including a surface which is impacted for seating the oriented and inserted prosthesis whereupon said prosthesis is implanted on the acetabulum; and

displacement of said sleeve in threaded engagement with the one cylinder end in an opposite direction being effective for displacing the key coupled to the sleeve away from the one cylinder end, whereupon the friction force between the key and the one sector is relieved for removing the instrument from the implanted prosthesis.

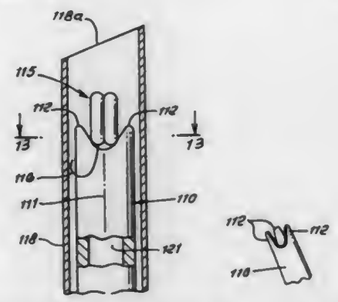
VOL 1192 ISS 1 NO 5 1996 UMI

5,571,112
METHOD AND APPARATUS FOR INSERTING AN INTRAOCULAR LENS
Joseph DeVenuto, 2955 Sugan Rd., Sulbury, Pa. 18963, assignor to Joseph DeVenuto, Sulbury, Pa.
Continuation-in-part of Ser. No. 230,426, Apr. 19, 1994, abandoned, which is a continuation of Ser. No. 973,996, Nov. 10, 1992, abandoned. This application Jul. 8, 1994, Ser. No. 272,195
Int. Cl.[6] A61F 9/00
U.S. Cl. 606—107 23 Claims



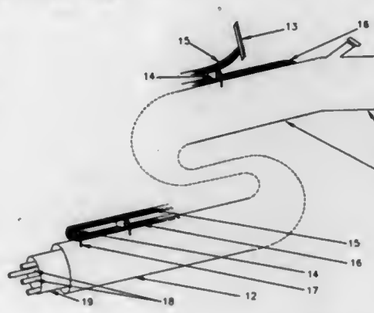
1. An apparatus for inserting a foldable intraocular lens into an eye, comprising:
(a) a loop, for maintaining the lens in a folded state, the loop having a large opening and a small opening and
(b) a tail connected to the loop near the small opening, the loop being adapted to retain the lens in a folded position while the lens is grasped with a forceps and inserted into the eye through an incision in the eye; and the tail being adapted to be pulled to release the lens from the loop.

5,571,113
SURGICAL PROBE WITH TIPS FOR PLASTIC LENS IMPLANTATION IN THE EYE
Henry H. McDonald, 65 North Madison, Suite 810, Pasadena, Calif. 91101, assignor to Henry H. McDonald, and William W. Haefliger, both of Pasadena, Calif.
Continuation-in-part of Ser. No. 110,185, Aug. 20, 1993, Pat. No. 5,395,378, which is a continuation-in-part of Ser. No. 884,904, May 18, 1992, Pat. No. 5,242,450. This application Mar. 3, 1995, Ser. No. 397,927
Int. Cl.[6] A61F 9/00
U.S. Cl. 606—107 18 Claims



1. Surgical apparatus useful for eye surgery, wherein an incision is made in the eye corneo-scleral tissue, and via which a plastic lens is to be introduced into an eye lens zone in a capsule from which a natural lens has been removed, the lens having haptic means including haptics attached thereto, said apparatus comprising in combination:
a) an elongated probe having an axis and at least three discrete tips projecting longitudinally at one end of the probe, said tips having fixed positions and annularly spaced about said axis to receive said lens in fixed size spaces located annularly between the tips for probe manipulation and positioning of the haptics and lens in said capsule,
b) and a tube receiving the probe, with said tips positioned to displace the haptics and lens, in said tube,
c) said tips shaped to include smooth undulations about the axis and along edges of the tips.

5,571,114
MECHANISM TO ADVANCE OR WITHDRAW OBJECTS IN LUMENS OR CAVITIES OF MAMMALS
Udaya-Sankar Devanaboyina, 12646 Monterey Cypress Way, San Diego, Calif. 92130
Filed Jul. 13, 1994, Ser. No. 274,340
Int. Cl.[6] A61B 1/00
U.S. Cl. 606—108 20 Claims



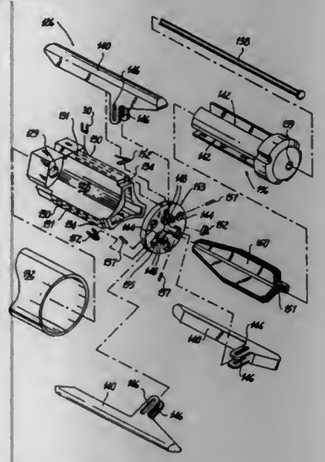
19. An improved method for reducing patient trauma while examining or treating a lumen of said patient, said method comprising advancing into a lumen of a mammal a medical or veterinary implement comprising
a) an elongated body having a first end and a second end;
b) at least one sheath comprising a loop of chain material, said sheath being positioned parallel said elongated body and wherein the sheath loop consists of an inner section and a parallel outer section;
c) a first means for anchoring each sheath to a position on the elongated body near the first end of the elongated body, whereby the outer section of the sheath can pass around said first anchoring means, reverse direction to form the inner section, said inner section being free to slide along the elongated body;
d) a second means for anchoring the sheath to a position on the elongated body some distance removed from the first end of the elongated body, whereby the inner section of the sheath can pass around said second anchoring means and reverse direction to form the outer section;
and when the elongated body is advanced into said lumen, reducing the friction on an inner side wall of said lumen and reducing patient trauma by contacting said inner side wall of said lumen with the outer section of the sheath.

5,571,115
MANIPULATOR APPARATUS
David A. Nicholas, Trumbull, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.
Continuation-in-part of Ser. No. 132,616, Oct. 6, 1993, Pat. No. 5,431,662, which is a continuation-in-part of Ser. No. 122,079, Sep. 15, 1993, abandoned, and Ser. No. 949,071, Sep. 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 925,496, Aug. 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 834,687, Feb. 12, 1992, Pat. No. 5,383,888. This application Sep. 23, 1994, Ser. No. 311,302
The portion of the term of this patent subsequent to Oct. 6, 2013, has been disclaimed.
Int. Cl.[6] A61B 17/42
U.S. Cl. 606—119 20 Claims



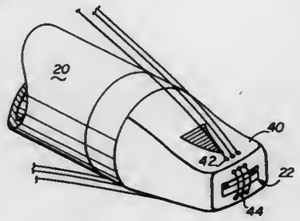
1. A surgical apparatus for manipulating body tissue, which comprises:
a handle member;
a generally elongated member extending from said handle member, said elongated member having a distal end portion;
a holding member positioned on said elongated member for holding a gasping instrument;
a channel formed in said elongated member for transporting fluid to said distal end portion of said elongated member;
a collet assembly slidably mounted on the elongated member; and
a seal removably mounted to said collet assembly.

5,571,116
NON-INVASIVE TREATMENT OF GASTROESOPHAGEAL REFLUX DISEASE
Henry Bolanos, East Norwalk; Jeffrey J. Blewett, Plantsville, and Timothy O. Van Leeuwen, Bloomfield, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Oct. 2, 1994, Ser. No. 334,614
Int. Cl.[6] A61B 17/04
U.S. Cl. 606—139 13 Claims



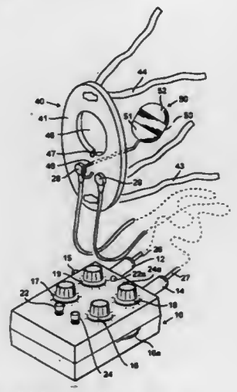
1. A surgical stapler comprising:
a staple carrying cartridge having at least two rows of staples; and first and second independently actuable staple ejecting members longitudinally slidably disposed within the staple carrying cartridge, the first staple ejecting member movable from a first position to a second position to fire at least one said rows of staples while the second staple ejecting member remains in the cartridge.

5,571,117
METHOD OF ENDOSCOPIC STAPLING AND SUTURING AND INSTRUMENT THEREFOR
Young W. Ahn, Marietta, Ga., assignor to Emory University, Atlanta, Ga.
Filed Mar. 6, 1995, Ser. No. 398,995
Int. Cl.[6] A61B 17/04
U.S. Cl. 606—139 13 Claims



1. An endoscopic surgical stapler and suture placing instrument having a proximal end, an opposite distal end, and a body portion housing a stapling mechanism having an opening at the distal end of said body portion for discharging a staple therefrom, comprising a means adjacent the distal end for removably positioning a suture in front of and in registry with the staple discharge opening such that a staple discharged therefrom will affix the suture to a target tissue.

5,571,118
APPARATUS FOR STIMULATING PENILE, SCROTAL, ANAL, VAGINAL AND CLITORAL TISSUE
David Boutos, 4420 Dunlap Crossing St., Las Vegas, Nev. 89129
Filed Jan. 5, 1995, Ser. No. 369,172
Int. Cl.[6] A61N 1/05
U.S. Cl. 607—138 13 Claims



1. An electrode apparatus comprising:
a nonconductive base;
a plug formed from elastomeric material and having a conductive member coupled said base, said plug having a noncon-

ductive stripe running around its circumference, and having conductive areas on both sides of said nonconductive stripe; and

at least one electrical connector mounted to said base and in direct contact with said conductive member.

5,571,119

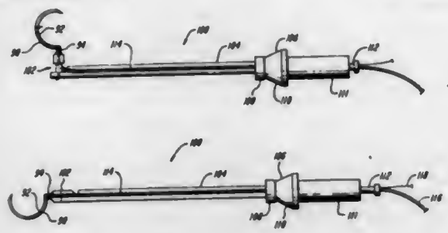
RETRACTABLE SUTURE NEEDLE WITH SELF-CONTAINED DRIVER

Anthony Atala, Weston, Mass., assignor to Children's Medical Center Corporation, Boston, Mass.

Continuation of Ser. No. 142,218, Oct. 25, 1993, abandoned. This application May 10, 1995, Ser. No. 437,963

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—146 **24 Claims**



1. Suturing apparatus for endoscopic suturing, comprising

a curved needle dimensionally adapted for fitting through an endoscopic port and having a pointed distal end portion, a proximal end portion adapted to form a mounting element, and engagement means for receiving suture and for holding the suture at a position between said distal and proximal ends; and

an arm having a distal end which couples to said needle mounting element to carry said curved needle at said distal arm end with said pointed portion of said needle extending outward from said arm, a linkage located at said distal portion of said arm and including means for pivoting said needle relative to an axis extending transversely to said arm, whereby tissue segments can be joined by piercing the tissue segments with said needle, engaging the suture with the needle and pivoting said needle to draw the suture through the tissue segments.

5,571,120

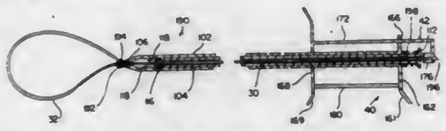
LIGATING INSTRUMENT AND METHODS OF LIGATING TISSUE IN ENDOSCOPIC OPERATIVE PROCEDURES

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Division of Ser. No. 195,491, Feb. 14, 1994, Pat. No. 5,486,186, which is a division of Ser. No. 930,320, Aug. 17, 1992, Pat. No. 5,334,199. This application May 30, 1995, Ser. No. 452,756

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—148 **4 Claims**



1. A ligating instrument for ligating anatomical tissue in the body comprising

a tubular member having a distal end for being introduced in the body, a proximal end for being disposed externally of the body and a lumen extending between said distal and proximal ends;

a ball member disposed externally of said distal end and having a passage therethrough, said ball member having an external size preventing passage of said ball member into said lumen;

a length of ligature material of uniform cross-section extending entirely through said lumen and said passage such that a portion of said length of ligature material protrudes distally from said passage, said length of ligature material having a proximal end for being disposed externally of the body and a distal end attached to said ball member such that said protruding portion defines a pre-formed loop externally of said ball member for receiving anatomical tissue, said ligature material being movable through said passage and said lumen in a proximal direction to reduce the size of said loop around the anatomical tissue to form a ligature;

an operating member connected to said ligature material externally of the body for moving said ligature material in the proximal direction through said passage and said lumen to form a ligature; and

a plurality of barbs extending along said passage of said ball member and angled in a proximal direction to prevent movement of said ligature material through said passage in a distal direction while permitting movement of said ligature material through said passage in said proximal direction.

5,571,121

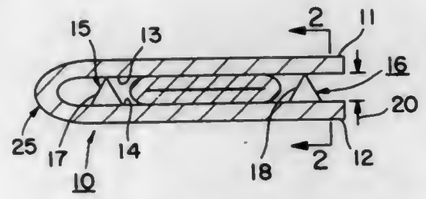
ATRAUMATIC CLAMP FOR TEMPORARY OCCLUSION OF BLOOD VESSELS

Milton D. Helfetz, 704 N. Bedford Dr., Beverly Hills, Calif. 90210

Filed Mar. 28, 1995, Ser. No. 410,870

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—158 **8 Claims**



1. An atraumatic occluder for the temporary occlusion of tubular vessels in the human body, said vessels comprising a cylindrical wall having a dimension of wall thickness and a lumen lined by an intima layer whose disruption is to be minimized when the vessel is compressed to close the lumen to flow, said occluder comprising:

a first jaw and a second jaw, each said jaw having a pressure face, said pressure faces being opposed to one another;

mount means joining said jaws so the pressure faces can be moved toward and away from one another; and

spacer means on at least one of said pressure faces rising to a known height above said pressure face, and facing said other pressure face so as to be contacted by said other pressure face to prevent further movement of said pressure faces toward one another, said height being approximately equal to twice said wall thickness so that the vessel is compressed and its lumen closed to flow when the spacer means make said contact, a plurality of said spacers means being spaced apart from one another along said pressure faces so as to prevent a vessel held between them from slipping from between the jaws, said spacing apart of the spacer means being at least, and approximately the width of the compressed vessel.

5,571,122

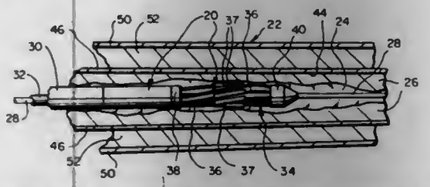
UNITARY REMOVAL OF PLAQUE

Thomas L. Kelly, West Linn, and Thomas A. Wilta, Lake Oswego, both of Oreg., assignors to Endovascular Instruments, Inc., Vancouver, Wash.

Continuation-in-part of Ser. No. 973,514, Nov. 9, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 470,805

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—159 **32 Claims**



1. A method of excising plaque from an artery comprising the steps of:

inserting an instrument into the artery, the artery having an axis;

placing the instrument adjacent to plaque in the artery;

grasping the plaque with the instrument without materially cutting the plaque by the instrument;

maintaining grasp while displacing the instrument along the axis of the artery thereby generally axially dislodging a length of plaque from the artery;

removing the dislodged length of plaque from the artery.

5,571,123

Patent Not Issued For This Number

5,571,124

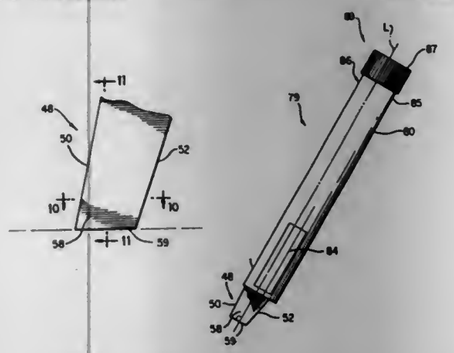
APPARATUS AND METHOD FOR PERFORMING SURGERY ON THE CORNEA OF AN EYE

Jerry Zelman, 31 The Glen, Glen Head, N.Y. 11545

Filed Apr. 13, 1995, Ser. No. 421,316

Int. Cl.[6] A61F *9/00*

U.S. Cl. 606—166 **19 Claims**



1. A surgical instrument, comprising:

a handle having a longitudinal axis;

a blade having a shank attached to said handle, said blade having:

(a) a first edge which is sharpened to form a first cutting edge;

(b) a second edge which is disposed on a side of said blade which is opposite to said first edge, said second edge having a first portion and a second portion extending along a same plane as said first portion, wherein said first portion is dull and said second portion is sharpened to form a second cutting edge; and

(c) a third edge disposed on a side of said blade which is opposite to said shank and which is dull, wherein said third edge extends from said first edge to said first portion of said second edge in a single plane which is substantially perpendicular to said longitudinal axis of said handle, whereby said third edge defines a single straight line.

5,571,125

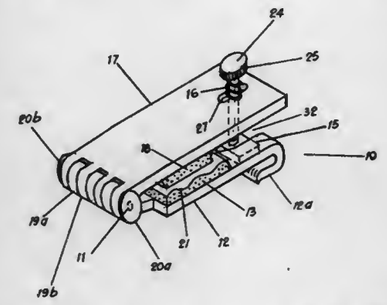
PENIS-CLAMPING DEVICE FOR THE INCONTINENT

Dale A. Chadwick, 960 Northwood Dr., Endwell, N.Y. 13760

Filed Aug. 7, 1995, Ser. No. 512,063

Int. Cl.[6] A61B *17/08*

U.S. Cl. 606—157 **5 Claims**



1. A device used to electively control incontinent urination in males, comprising:

a) a pair of hinged jaw members having a distal end and forming a clamshell type of restraint for the penis of a human male user, said clamshell type of restraint being able to open and close about said penis, which is disposed therebetween, each of said hinged jaw members rotatively movable with respect to each other, and comprising a cushion member attached thereto, each cushion member being in contact with said penis when said clamshell type of restraint is closed about said penis; and

b) an adjustment device carried by said clamshell type of restraint for establishing a predetermined pressure upon the penis, and for preventing urine flow in the urethra of said penis, said adjustment device including spring-loaded biasing means disposed proximate said distal end of said pair of hinged jaw members, operable with one hand for controlling a compressive force upon said hinged jaw members, said adjustment device reestablishing said predetermined pressure upon the penis, after use or removal and replacement of said device, and means disposed proximate said distal end of said pair of hinged jaw members for changing the compressive force exerted by said biasing means, said adjustment device being capable of being manually overridden without releasing, repositioning or removing said device by said human male user thereof, whereby urine flow is electively restricted without appreciably restricting blood flow in said penis, and whereby urine is electively and substantially immediately allowed to flow when said adjustment device is compressed.

5,571,126

FAN SPRAY SURGICAL PROBE

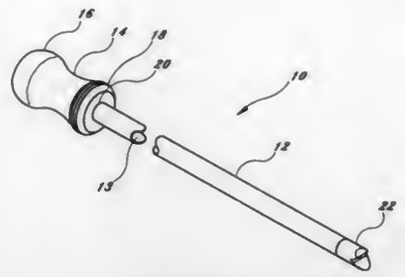
James H. Dorsey, III, Delray Beach, Fla., assignor to C.R. Bard, Inc., Murray Hill, N.J.

Filed Aug. 22, 1994, Ser. No. 294,088

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—167 **20 Claims**

1. A surgical probe, comprising:



a probe shaft having a first end and a second end, said shaft defining an internal passageway extending from said first end to said second end;

means for providing a fan shaped irrigation spray, said means for providing forming the second end of said probe shaft; and

means for attaching said probe shaft to a source of fluid.

5,571,127

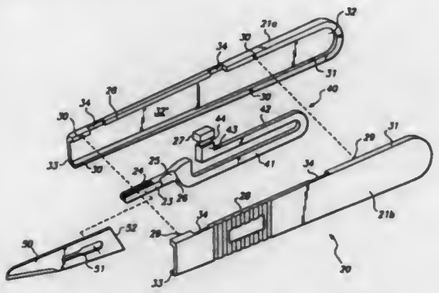
SCALPEL HANDLE HAVING RETRACTABLE BLADE SUPPORT AND METHOD OF USE

William M. DeCampli, 8 Heritage Ct., Atherton, Calif. 94027

Filed Mar. 8, 1995, Ser. No. 401,018

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—167 **17 Claims**



1. A scalpel handle adapted for use with a scalpel blade having a mounting post, the scalpel handle comprising:

a housing having a proximal end and a distal end, the housing defining a chamber having an upper surface and an opening at the distal end, the housing having a portion defining a slot in the upper surface, and proximal and distal notches formed in the slot;

a blade carrier slidably disposed within the chamber and comprising a first leg having proximal and distal portions, a second leg having proximal and distal portions, and means for flexibly joining the proximal portions of the first and second legs, the distal portion of the first leg defining a support member adapted for replaceably engaging a scalpel blade mounting post, the distal portion of the second leg defining a tab to selectively engage either the distal notch, to extend the support member from the chamber, or the proximal notch, to retract the support member and a replaceably engaged scalpel blade within the chamber.

5,571,128

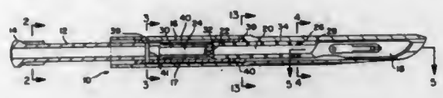
SAFETY SURGICAL INSTRUMENT

Henry Shapiro, 328 Downham Ct., Walnut Creek, Calif. 94598

Filed Jul. 24, 1995, Ser. No. 506,023

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—167 **19 Claims**



1. A safety surgical instrument comprising:

a) a hollow sheath having a forward end and a rear end and a longitudinal axis,

b) a hollow insert having a forward end and a rear end and a longitudinal axis, said insert being fixed within said seath with said insert longitudinal axis aligned with said sheath longitudinal axis,

c) a handle, said handle being axially aligned with said sheath and adapted to be longitudinally and rotatably movable within said insert,

d) a blade, said blade being longitudinally movable with said handle with respect to said sheath,

e) a W-shaped cutout axially along said insert, said cutout being radially from said insert longitudinal axis,

f) a pin extending radially from said handle, said pin being aligned with and cooperating with said cutout along said insert,

g) a spring, said spring being positioned between said handle and said sheath and biasing said handle and said blade within said sheath from said forward end toward said rear end,

h) said W-shaped cutout in said insert defining a continuous cutout groove within said insert and 360° around said insert, the ends of the outer legs of said W-shaped cutout connecting with each other and forming a rear end stop position within said cutout, the junction of the inner legs of said W-shape being at about 180° around said insert and forming a forward end stop position within said cutout,

i) whereby initial rotation and depression of said handle causes said pin to pass along an outer leg of said W-shaped cutout from said rear end stop position to said forward end stop position against the bias of said spring to move said blade from said sheath, and a second depression of said handle causes said pin to pass along said inner leg of said W-shape to rotate said handle and move said pin to said rear end stop postion under the bias of said spring and to move said blade into said sheath.

5,571,129

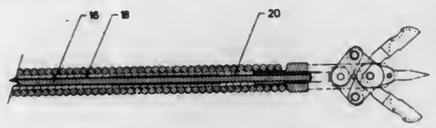
SURGICAL CUTTING INSTRUMENT WITH IMPROVED CLEANING CAPABILITY AND EASE OF USE

David E. Porter, Center Sandwich, N.H., assignor to Portlyn Corporation, Moultonboro, N.H.

Filed May 15, 1995, Ser. No. 441,381

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—170 **5 Claims**



1. A surgical cutting instrument comprising

an elongated flexible hollow-body tube having a lumen extending therethrough, and having a proximal end and distal end,

a means for cutting, grasping or manipulating tissue coupled to the distal end of said body portion,

control wire means having proximal and distal ends, extending through the lumen in said body portion and coupled to its distal end to said cutting means,

characterized in that the control wire means contains on its surface a means surrounding and sealing the control wire means and extending from the distal end, and sealing the control wire within the flexible hollow body tube therein, providing a seal as against the uptake of body fluids or small tissue.

5,571,130

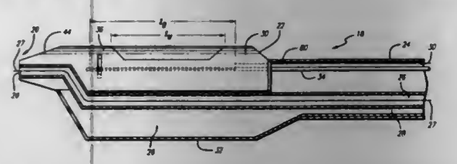
ATHERECTOMY AND PROSTECTOMY SYSTEM

John B. Simpson, and Hanson S. Gifford, both of Woodside, Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Oct. 4, 1994, Ser. No. 317,809

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—171 **11 Claims**



1. A catheter system for excising material from a patient, the system comprising:

a flexible catheter member having a proximal end and a distal end, a housing disposed at said distal end, at least one treatment lumen in communication with said housing, and means for guiding said catheter member to the site at which treatment is to be rendered;

said housing having an aperture cut out therein and means for excising material disposed about said aperture, said excising means adapted to deliver a cutting action to cut the material situated within said aperture and further adapted to close off said aperture to the environment exterior to said housing, wherein said housing is provided with at least one slot disposed peripherally therein, said excising means is provided with at least one slot disposed along a longitudinal axis thereof and said actuating means is provided with at least one slot diagonally disposed thereon, and a rivet is provided to slidably connect together each said peripheral slot, each said longitudinal slot and each said diagonal slot.

5,571,131

BACK BITING PUNCH

Steven Ek, Bolton, Mass., and David M. Auerbach, Encino, Calif., assignors to Smith & Nephew Endoscopy, Inc., Andover, Mass.

Filed Jun. 7, 1995, Ser. No. 484,984

Int. Cl.[6] A61B *17/14*

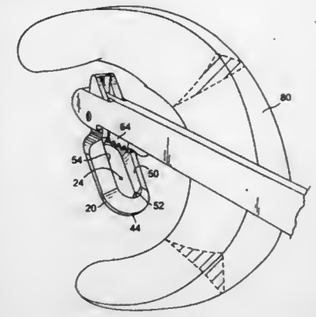
U.S. Cl. 606—184 **6 Claims**

1. A surgical cutting instrument for cutting body tissue comprising

an axially elongated support shaft,

a ring-shaped jaw member having a through opening, said jaw member mounted for rearward pivotable movement at a pivot axis at a distal end of said jaw elongated shaft, said jaw member moving rearwardly toward and away from a closed cutting position, said opening lying in a plane substantially parallel to said pivot axis,

a fixed cutter block, in cutting alignment with the opening of the ring-shaped jaw member in its closed position, said fixed cutter block being in a stationary position relative to the support shaft at a position between the pivot axis of said jaw member and a proximal end of said support shaft,



said fixed cutter block and said ring-shaped member at the opening each having respective cooperative cutting edges which cooperate for cutting said body tissue when said jaw member pivots from said open position to said closed position in which said jaw member cuttingly engages, aligns with, and surrounds said fixed cutter block, and

an actuating member extending along said support shaft for causing opening and closing pivotable movement of said jaw member.

5,571,132

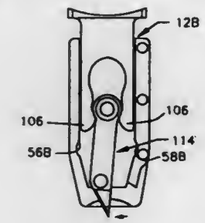
SELF ACTIVATED FINGER LANCET

James A. Mawhirt, Brooklyn, N.Y., and Anthony F. Kuklo, Jr., Bridgewater, N.J., assignors to International Technidyne Corporation, Edison, N.J.

Filed Jun. 6, 1995, Ser. No. 465,686

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—182 **19 Claims**



1. A self-activated blood drop generator device comprising:

casing means having an internal hollow;

blade means disposed within said hollow of said casing means for generating an incision in a patient's skin. wherein upon the activation of said device, said blade means follows a predetermined path which causes a cutting portion of said blade means to travel out of said hollow of said casing means through an aperture defined in an end of said casing means to incise the patient's skin and then retract back through said aperture into said hollow of said casing means;

fork means coupled to said blade means for propelling said blade means through said predetermined path;

cam means associated with said casing means for causing said cutting portion of said blade means to travel through an arcuate scalpel-like path as said cutting portion of said blade means passes through said aperture in said casing means, wherein said cam means includes a cam groove defined in an interior surface of said casing means and a cam groove follower defined on said blade means that rides in said cam groove; and

retractor means associated with said casing means, said blade means and said fork means for retracting said cutting means of said blade means into said hollow of said casing means.

5,571,133

PENETRATING INSTRUMENT WITH SEQUENTIAL INDICATION OF ENTRY INTO ANATMICAL CAVITIES

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Filed Jun. 1, 1995, Ser. No. 457,527
Int. Cl.[6] A61B *17/34*
U.S. Cl. 606—185 24 Claims



1. A penetrating instrument for penetrating an anatomical cavity wall to gaio access to the anatomical cavity comprising

a penetrating member having a distal end for penetrating the anatomical cavity

a plurality of probes disposed in said penetrating member, each of said probes having a distal end movable relative to said penetrating member between an extended position where said distal end of said probe protrudes from said distal end of said penetrating member and a retracted position where said distal end of said probe recedes into said penetrating member, wherein respective distal ends of said probes in said retracted positions are disposed at a respective plurality of axially spaced locations along said distal end of said penetrating member;

bias means for biasing said distal ends of said probes toward said extended positions while permitting respective distal ends of said probes to move sequentially from said extended positions to said retracted positions during penetration so that, as said distal end of said penetrating member enters the anatomical cavity, respective distal ends of said probes will move sequentially from said retracted positions to said extended positions; and

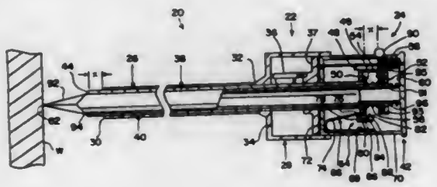
indicating means operatively associated with said probes for displaying a sequence of sensible signals in response to the sequential movement of said respective distal ends of said probes during penetration of the anatomical cavity wall.

5,571,134

SAFETY PENETRATING INSTRUMENT WITH PENETRATING MEMBER AND SAFETY MEMBER MOVING DURING PENETRATION AND TRIGGERED SAFETY MEMBER PROTRUSION

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation-in-part of Ser. No. 83,220, Jun. 24, 1993, Pat. No. 5,431,635, and a continuation-in-part of Ser. No. 83,728, Jun. 29, 1993, Pat. No. 5,466,224, and a continuation-in-part of Ser. No. 115,152, Sep. 2, 1993. This application Oct. 24, 1994, Ser. No. 327,686
Int. Cl.[6] A61M *5/00*
U.S. Cl. 606—185 32 Claims



1. A safety penetrating instrument for establishing a portal in the wall of an anatomical cavity comprising

a housing;

an elongate cannula mounted by said housing and having a distal end for introduction in the anatomical cavity and a proximal end for positioning externally of the anatomical cavity;

a penetrating member disposed in said cannula and having a distal end for penetrating the anatomical cavity wall, said penetrating member being movable relative to said housing between an extended rest position and a penetrating member retracted position;

a safety member disposed within said cannula and having a distal end, said safety member being movable relative to said housing between a safety member extended position where said safety member distal end protrudes distally from said penetrating member distal end and a safety member retracted position where said safety member distal end is disposed proximally of said penetrating member distal end to expose said penetrating member distal end;

safety member extending means for moving said safety member distally relative to said housing from said safety member retracted position to said safety member extended position;

means for manually moving said safety member proximally relative to said housing from said safety member extended position to said safety member retracted position;

safety member locking means for locking said safety member in said safety member retracted position to prevent distal movement of said safety member relative to said housing beyond said safety member retracted position while permitting proximal movement of said safety member relative to said housing during penetration of the anatomical cavity wall;

safety member bias means for biasing said safety member distally relative to said housing in said safety member retracted position and for permitting proximal movement of said safety member relative to said housing from said safety member retracted position during penetration of the anatomical cavity wall and distal movement of said safety member relative to said housing toward said safety member retracted position upon introduction into the anatomical cavity;

penetrating member bias means for biasing said penetrating member distally relative to said housing toward said penetrating member rest position and for permitting proximal movement of said penetrating member relative to said housing during penetration of the anatomical cavity wall; and

releasing means responsive to penetration of said safety penetrating instrument into the anatomical cavity for triggering release of said safety member locking means to permit said safety member extending means to move said safety member distally relative to said housing from said safety member retracted position to said safety member extended position.

5,571,135

STENT DELIVERY APPARATUS AND METHOD

Phlayne M. Fraser, Plymouth; Paul H. Burmeister, Maple Grove, and Dean A. Peterson, Minneapolis, all of Minn., assignors to Scimed Life Systems Inc., Maple Grove, Minn.

Filed Oct. 22, 1993, Ser. No. 141,269
Int. Cl.[6] A61M *25/00*
U.S. Cl. 606—198 12 Claims



1. A delivery system for implantation of a stent in a vessel, comprising:

an elongate flexible catheter having proximal and distal ends for delivering a self-expanding stent to a predetermined location in a vessel;

a self-expanding stent having proximal and distal ends, the stent surrounding the flexible catheter near its distal end, the stent being in a delivery configuration where the stent has a reduced radius along its entire axial length;

stent retaining and release means for retaining the stent in the delivery configuration and for deploying the stent, comprised of sheath means extending over the entire axial length of the stent which holds the self-expanding stent in its delivery configuration against the outwardly urging force of the self-expanding stent;

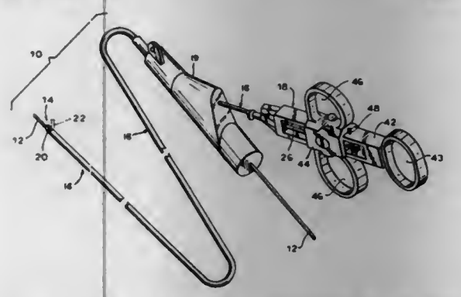
retraction means for retracting the sheath means to release the stent to self-expand, the retraction means comprised of a wire carried in a lumen of the elongate flexible catheter which is attached to the sheath means, whereby retracting the wire retracts the sheath means.

5,571,136

FORCEPS WITH GUIDE WIRE

George W. Weaver, East Earl, Pa., assignor to Medical Innovations Corporation, Draper, Utah

Continuation of Ser. No. 290,142, Aug. 15, 1994, abandoned. This application Jan. 29, 1996, Ser. No. 593,541
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—205 9 Claims



1. An assembly of forceps and a substantially flexible guide wire, comprising:

(A) a substantially flexible solid guide wire;

(B) a non-pivotable rigid jaw defining a longitudinal lumen therethrough, said lumen of said non-pivotable jaw being mounted on said guide wire for sliding longitudinal movement of said non-pivotable jaw along said guide wire;

(C) a rigid jaw pivotably secured to said non-pivotable jaw; and

(D) flexible longitudinally-extending drive means secured to said pivotable jaw and extending generally parallel to said guide wire such that said drive means is longitudinally movable between an opening position wherein said jaws assume an open orientation enabling tissue to enter there-between and a closing position wherein said jaws assume a closed orientation such that any tissue which entered intermediate said jaws in said open orientation is grasped therebetween for movement therewith.

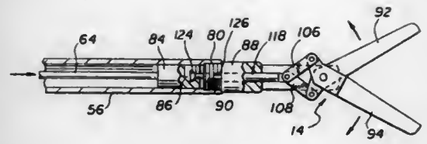
5,571,137

ENDOSCOPIC INSTRUMENT SYSTEM AND METHOD

Scott C. Marlow, Chesterland; Haans K. Petruschke, Kirtland; Donald B. Coon, Chesterland, and John T. Nelson, Kirtland, all of Ohio, assignors to Marlow Surgical Technologies, Inc., Willoughby, Ohio

Division of Ser. No. 907,853, Jul. 2, 1992, Pat. No. 5,368,606. This application Aug. 17, 1994, Ser. No. 292,094
Int. Cl.[6] A61B *17/28*
U.S. Cl. 606—207 11 Claims

1. A method of using an endoscopic instrument system of a type having at least one endoscopic instrument and a plurality of disposable instrument end tools, each of said end tools having a support and at least one jaw and including linkages to effect movement of said jaw relative to said support comprising the steps of:



selecting one endoscopic instrument of a type having a handle portion including means for gripping said instrument, means forming a shaft extending from said gripping means and means for actuating said instrument;

selecting a single instrument end tool from the plurality of disposable end tools, said end tool being of a type having means for replaceably mounting said end tool on an end of said shaft and including at least one movable jaw, linkages to effect movement of said jaw and means for engaging said actuating means, whereby said at least one jaw of said end tool is operable relative to said support by said actuating means;

mounting said end tool on said shaft;

using said endoscopic instrument and said end tool; and

subsequent to use of said instrument and end tool, removing said end tool with said support, said at least one jaw, said engaging means and said linkages from said shaft.

5,571,138

SURGICAL STRETCHING DEVICE FOR THE EXPANSION OF TISSUE

Gunnar Blomqvist, Västra Frölunda, and Hans Hellström, Onsala, both of Sweden, assignors to Stretchex AB, Sweden

Continuation of Ser. No. 108,691, Sep. 3, 1993, abandoned. This application Dec. 23, 1994, Ser. No. 364,845
Claims priority, application Sweden, Mar. 6, 1991, 9100666
Int. Cl.[6] A61B *17/08*; A61D *1/00*
U.S. Cl. 606—218 8 Claims



1. A surgical stretching device for the expansion of tissue comprising at least one band means having a first end and a second end, said band means being implantable through a channel under the skin with said first and second ends of said band means sticking up through said skin at opposite ends of said channel;

first and second anchoring means, each comprising an elongated body, said first anchoring means including a first aperture means for receiving said first end of said band means, said second anchoring means including a second aperture means for receiving said second end of said band means and each of said anchoring means including a first surface and a second surface with said first surfaces of said first and second anchoring means facing each other with said band means therebetween, each of said anchoring means further including a means for removably attaching each anchoring means to said tissue; and

a first one-way tightening means for fixedly clamping said first anchoring means to said first end of said band means passing through said first aperture means, and a second one-way tightening means for fixedly clamping said second anchoring means to said second end of said band means passing through said second aperture means, wherein said first and second one-way tightening means clamps said first and second anchoring means to said first and second ends of said band means outward of said second surfaces of said first and second anchoring means;

so that by implanting said band means through said skin channel, attaching said anchoring means to said skin, passing said first and second ends of said band means through said first

and second aperture means, drawing together said first surfaces of said first and second anchoring means as close together as possible and clamping said first and second anchoring means to said first and second ends of said band means with said first and second one-way tightening means, said first and second anchoring means are secured to said skin at said opposite ends of said channel and stretch the skin outside said second surfaces of said first and second anchoring means so that said skin between said first surfaces of said first and second anchoring means under which said band means is implanted is pressed together;

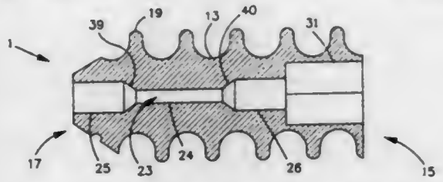
whereby said first and second one way tightening means allow only one-way movement of said first and second ends of said band means through said first and second aperture means of said first and second anchoring means outwardly from said second surfaces of said first and second anchoring means, so that outward displacement of said first and second ends of said band means moves said first surfaces of said first and second anchoring means towards each other, thereby additionally stretching said skin outside said second surfaces of said first and second anchoring means.

5,571,139

BIDIRECTIONAL SUTURE ANCHOR

Joseph R. Jenkins, Jr., 12203 Becontree Dr., Baton Rouge, La. 70810

Filed May 19, 1995, Ser. No. 445,337
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—232 **8 Claims**



1. A cannulated bone screw for anchoring a suture thread to bone, comprising:

(a) a biocompatible body having a proximal end and a distal end, said body including exterior screw threads for inserting and retaining said body into the bone;

(b) a passageway extending through said body, said passageway including a central portion, a proximal portion, and a distal portion, the central portion being sized to receive a suture thread therethrough, the proximal portion being sized to receive a suture thread knot, the distal portion being sized to receive a suture thread knot, the central portion being sized smaller than the proximal portion and the distal portion, the central portion being sufficiently small as to prevent a suture thread knot from being drawn therethrough; and

(c) a drive socket, formed into said proximal end of said body, said drive socket being sized to prevent a drive tool from contacting a suture thread knot within said proximal portion of said passageway.

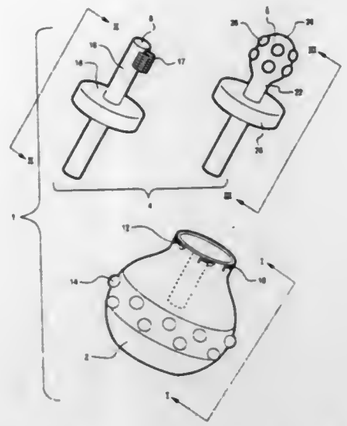
5,571,140

INFANT TEETHER AND TRAINING TOOTHBRUSH

Mary F. Gura-Emerling, 405 Good Hope Cemetery Rd., Oak Grove, Ky. 42262

Filed Jun. 5, 1995, Ser. No. 488,754
Int. Cl.[6] A61J *17/00*
U.S. Cl. 606—236 **4 Claims**

1. A combination infant teether and training toothbrush comprising:



a bulbus, generally round handle, said handle having narrowed, elongated neck;

at least one first attachable extension, said first attachable extension comprising a toothbrush unit having a first connection means for connecting said toothbrush unit to said elongated neck; and

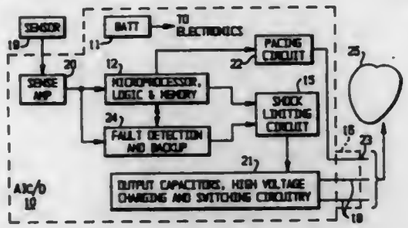
at least one second attachable extension, said second attachable extension comprising a bulbus teether unit having a second connection means for connecting said teether unit to said elongated neck wherein said second attachable extension further comprises a generally elongated shaft attached at a teether end to said teething unit, said teether unit further containing a series of protuberances extending therefrom.

5,571,141

DEVICE AND METHOD FOR CARDIAC ARRHYTHMIA THERAPY WITH FAILURE DETECTION AND BACKUP

Ken R. McNeil, Valencia, Calif.; Lee A. Cantrell, Freeport, Tex., and Balakrishnan Shankar, Santa Clarita, Calif., assignors to Intermedics, Inc., Angleton, Tex.

Filed Sep. 30, 1994, Ser. No. 316,254
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **12 Claims**



1. A cardioverter/defibrillator device structured to be implanted in a patient's body for automatic response to sensing of electrical cardiac activity of the patient's heart to detect and treat disorders thereof, comprising:

primary control mode means responsive to detection of fibrillation of the patient's heart for causing the generation of a prescribed electrical waveform regimen as electrical defibrillation therapy for application to the heart, and

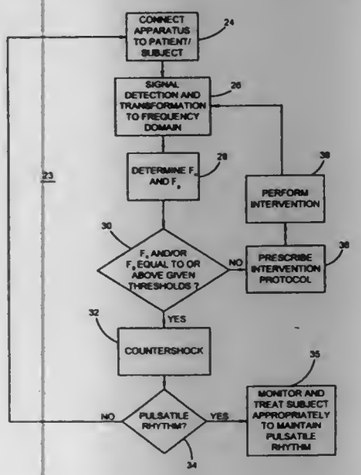
secondary control mode means responsive to a predetermined type of failure mechanism of the device that causes malfunction of the primary control mode means for thereupon assuming control of generation of the electrical defibrillation therapy from the primary control mode means, and further responsive to detection of fibrillation after assuming said control to cause the generation of the electrical fibrillation therapy as a backup system for defibrillation of the patient's heart.

5,571,142

NON-INVASIVE MONITORING AND TREATMENT OF SUBJECTS IN CARDIAC ARREST USING ECG PARAMETERS PREDICTIVE OF OUTCOME

Charles G. Brown, and Roger R. Dzwonczyk, both of Columbus, Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Filed Aug. 30, 1994, Ser. No. 298,376
Int. Cl.[6] A61B *5/046*; A61N *1/39*
U.S. Cl. 607—5 **44 Claims**



1. A non-invasive method of guiding the administration of therapy to a subject in ventricular fibrillation or asystole, including:

connecting electrodes to the body of the subject and detecting from the electrodes an analog electrical potential which is proportional to the electrical potential generated by the subject's heart;

sampling the analog potential for a selected interval of time to obtain a set of time domain samples;

detecting the power distribution of said electrical potential by transforming said time domain samples to a frequency domain power spectrum;

monitoring and evaluating at least one frequency parameter of said power spectrum that is predictive of a clinically relevant cardiac arrest outcome for the subject, said at least one parameter selected from the group consisting of at least centroid frequency and peak power frequency; and

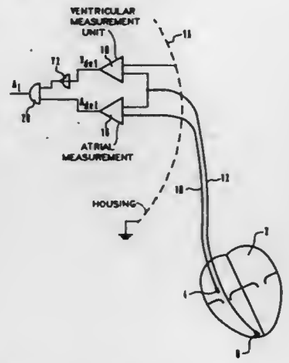
using a monitored evaluation of said selected frequency parameter in administering therapy to the subject.

5,571,143

HEART STIMULATOR

Kurt Hoegnelid, Voesterhuninge, and Hans Strandberg, Sundbyberg, both of Sweden, assignors to Pacesetter AB, Solna, Sweden

Continuation of Ser. No. 147,744, Nov. 4, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 467,267
Claims priority, application Sweden, Nov. 4, 1992, 9203284
Int. Cl.[6] A61N *1/00*
U.S. Cl. 607—9 **7 Claims**



1. A heart stimulator comprising:

a housing;

a pulse generator contained in said housing;

electrode means for detecting atrial and ventricular activity including a pole adapted to be arranged in the atrium of a heart and a pole adapted to be arranged in the ventricle of said heart;

means for measuring atrial activity connected for measuring a signal between said pole adapted to be arranged in the atrium and at least said pole adapted to be arranged in the ventricle; and

means for measuring ventricular activity connected for measuring a signal between said pole adapted to be arranged in the ventricle and said housing.

5,571,144

METHOD OF VERIFYING CAPTURE OF THE ATRIUM BY A CARDIAC STIMULATOR

Edward A. Schroeppel, Lake Jackson, Tex., assignor to Intermedics, Inc., Angleton, Tex.

Filed Dec. 18, 1995, Ser. No. 574,240
Int. Cl.[6] A61N *1/37*
U.S. Cl. 607—28 **16 Claims**

1. A method of verifying whether an atrium of a heart has been captured by an electrical cardiac stimulation pulse delivered to the atrium, by sensing a cardiac signal via an electrode located in the atrium, comprising the steps of:

a) sensing a waveform signal at said electrode during a period of time extending from a time preceding the time of delivery of said cardiac stimulation pulse to a time following the time of delivery of said cardiac stimulation pulse;

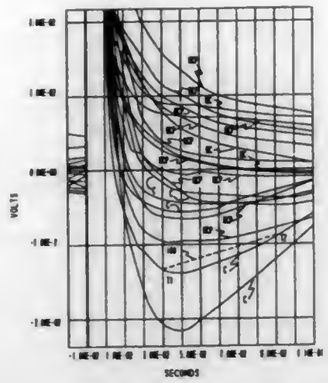
b) analyzing said sensed waveform-signal by:

detecting whether said sensed waveform signal includes a P-wave component occurring at a time prior to the time of delivery of said cardiac stimulation pulse such that said stimulation pulse would have been delivered within a refractory period of said atrium;

determining the slope of said sensed waveform signal within a selected interval of time beginning at a selected time after the time of delivery of said cardiac stimulation pulse; and

c) generating a signal indicative of capture status, where said capture status signal indicates:

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capture, if and only if a P-wave component is not detected and the determined slope of said sensed waveform signal surpasses a pre-selected slope threshold demarcating capture from non-capture; or

non-capture, if either:

a P-wave component is detected; or

a P-wave component is not detected and the determined slope of said sensed waveform signal does not surpass a pre-selected slope threshold demarcating capture from non-capture.

5,571,145

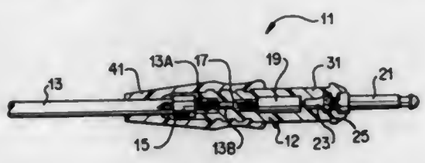
RIGID ELECTRICAL PLUG ASSEMBLY WITH STRAIN RELIEF

Kelly B. Drebin, Amity, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 21, 1994, Ser. No. 310,184

Int. Cl.[6] H01R *13/56;13/58*

U.S. Cl. 607—37 **14 Claims**



1. A plug assembly for use with electrical equipment, said plug assembly comprising:

a tip;

a flexible cable secured to said tip by an electrical conductor;

a wholly rigid portion enclosing a portion of said tip, said conductor, and a portion of said cable, said wholly rigid portion having strength sufficient to protect at least said conductor from breakage, said tip being nonrotatably coupled to said wholly rigid portion; and

a strain relief portion formed of material more flexible than said wholly rigid portion, said strain relief portion being nonrotatably coupled to said wholly rigid portion and partially enclosing said cable to relieve strain applied to said cable due to said cable being bent in a small radius adjacent to said plug assembly.

5,571,146

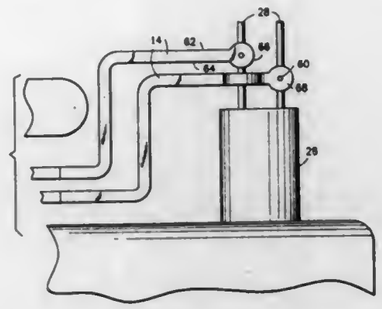
TECHNIQUE FOR WELDING DISSIMILAR METALS

Stephen M. Jones, Canyon Country; Arthur A. Campbell, Stevenson Ranch, and Jeffrey L. Pennala, Long Beach, all of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.

Filed Oct. 31, 1995, Ser. No. 550,907

Int. Cl.[6] A61N *1/375*

U.S. Cl. 607—37 **5 Claims**



1. An implantable stimulating device for stimulating a patient's heart, comprising:

a battery;

pulse generating means, coupled to the battery, for generating stimulation pulses to the patient's heart;

a hermetically sealed housing having an interior region containing the battery and the pulse generating means and an exterior region;

a plurality of connector blocks disposed adjacent the exterior region of the housing;

at least one stimulation lead having a proximal end secured to the connector blocks and a distal end for implantation into the patient's heart;

a plurality of feedthrough terminal pins, each having a longitudinal axis, extending through the housing for connecting the pulse generating means to the connector blocks, the plurality of feedthrough terminal pins being made of a first material having a first melting point;

a plurality of conductor ribbons extending between respective ones of the connector blocks and the feedthrough terminal pins, the plurality of conductor ribbons being made of a second material having a second melting point, the first and second materials being dissimilar, the first and second melting points being substantially different, each conductor ribbon extending to a terminal end proximate an associated one of the terminal pins, the terminal end having a transversely extending aperture therethrough with an opening smaller than a transverse dimension of the terminal pin, the terminal end lying in a plane parallel with and proximate to the associated one of the terminal pins and such that the center of the aperture in the terminal end of the conductor ribbon is generally aligned with the longitudinal axis of the terminal pin, such that a laser beam directed transversely of the conductor ribbon through the aperture therein impinges on the terminal pin to simultaneously melt the terminal pin and the conductor ribbon in the region of the aperture and create a homogenous mix of the first material with the second material in the region surrounding the aperture which, when solidified, achieves a welded connection between the conductive ribbon and the terminal pin without the formation of cracks and voids in the welded connection; and

encapsulation means, attached to the housing, for encapsulating the plurality of connector blocks and the plurality of conductor ribbons therein, the encapsulation means further having at least one channel for receiving at least one stimulating lead therein.

5,571,147

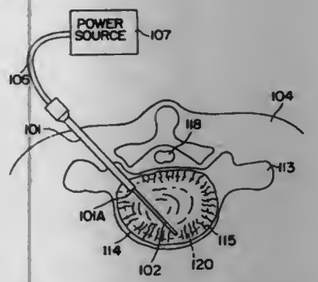
THERMAL DENERVATION OF AN INTERVERTEBRAL DISC FOR RELIEF OF BACK PAIN

Menno E. Sluijter, 1077 Stadionkade 6, Amsterdam, Netherlands, and Eric R. Cosman, 872 Concord Ave., Belmont, Mass. 02178

Continuation-in-part of Ser. No. 146,875, Nov. 2, 1993, Pat. No. 5,433,739. This application Sep. 9, 1994, Ser. No. 303,956

Int. Cl.[6] A61F *7/00*

U.S. Cl. 607—99 **7 Claims**



1. A method of treating back or neck pain by cooling an intervertebral disc, including:

(a) inserting a probe into said intervertebral disc, said probe being adapted to be connected to an external apparatus which can enable cooling of said probe so as to cool said intervertebral disc;

(b) connecting said external apparatus to said probe, causing cooling of said intervertebral disc, which thereby causes relief of said back or neck pain.

5,571,148

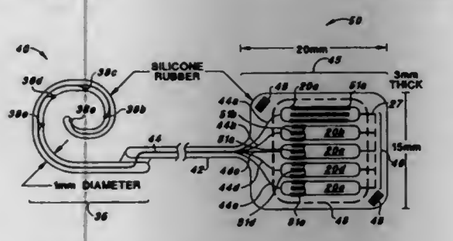
IMPLANTABLE MULTICHANNEL STIMULATOR

Gerald E. Loeb, 90 Bagot Street, Kingston, Ontario, Canada, and Joseph H. Schulman, 10650 Comet Way, Santa Clarita, Calif. 91351

Filed Aug. 10, 1994, Ser. No. 288,289

Int. Cl.[6] A61N *1/36;* **H04R** *25/00*

U.S. Cl. 607—57 **48 Claims**



(DIMENSIONS ARE TYPICAL FOR A COCHLEAR IMPLANT)

1. A multichannel stimulation system comprising:

a plurality of implanted electrodes;

a plurality of implantable microstimulators, each being electrically connected to at least two of said plurality of implanted electrodes, each microstimulator including:

first coupling means for receiving a power signal and an informational signal;

stimulation circuitry powered by said power signal including:

power means for extracting power from said power signal,

demodulator means for recovering and demodulating said information signal,

output circuitry responsive to said information signal for applying a stimulation pulse, derived from the power extracted from said power signal, to said implanted electrodes whenever said information signal contains prescribed stimulator codes,

whereby the stimulation pulse may be selectively applied to the electrodes connected to a respective one of said plurality of microstimulators as controlled by said information signal;

a biocompatible, non-conductive plastic material adapted for binding said plurality of microstimulators together to form a stimulator array; and

an external control unit that includes:

first generating means for generating said power signal,

second generating means for selectively generating said information signal, and

second coupling means for transmitting said power and information signals.

5,571,149

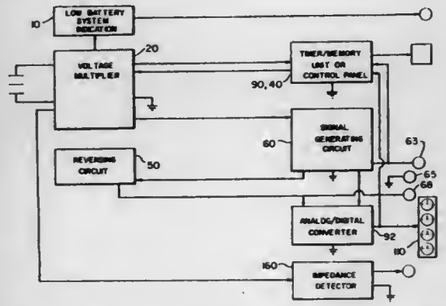
NON-INTRUSIVE ANALGESIC NEUROAUGMENTIVE AND IONTOPHORETIC DELIVERY APPARATUS AND MANAGEMENT SYSTEM

Saul Liss, Hawthorne, and Bernard Liss, Glen Rock, both of N.J., assignors to E.P., Inc., Paterson, N.J.

Continuation-in-part of Ser. No. 82,131, Jun. 23, 1993, abandoned, and a continuation-in-part of Ser. No. 127,163, Sep. 27, 1993, Pat. No. 5,421,817, which is a continuation-in-part of Ser. No. 877,873, May 4, 1992, abandoned, which is a continuation of Ser. No. 703,610, May 21, 1991, Pat. No. 5,109,847. This application Apr. 13, 1994, Ser. No. 227,014

Int. Cl.[6] A61N *1/18*

U.S. Cl. 607—72 **20 Claims**



1. In combination, in a system for the iontophoretic topical delivery of a pharmaceutically active agent, said system comprising:

a. means for generating a substantially constant current pulsed DC output voltage;

b. means for converting said output voltage into an n-modulated output adjustable constant current waveform, wherein n is an integer;

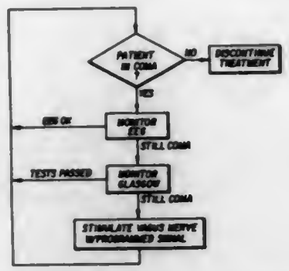
c. a pharmaceutically active agent effective for topical administration;

d. contact means for containing and delivering said pharmaceutically active agent to a topical area of a patient in need of treatment, said contact means including at least two electrodes;

e. means for directing said n-modulated output waveform to said contact means;

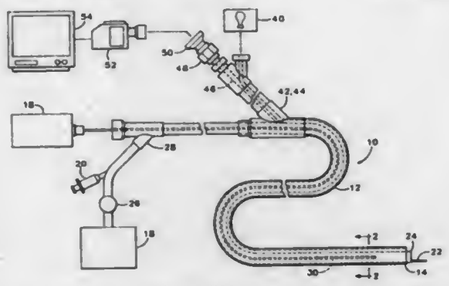
wherein said n-modulated output waveform comprises a first waveform component ranging between 1 and 300,000 KHz, a second waveform component ranging between 10 and 199,000 Hz, and a third waveform component ranging between 100 and 300,000 Hz, and each waveform component is substantially time invariant and distinct from said other waveform components, said double modulated output waveform having a monopolar characteristic.

5,571,150
TREATMENT OF PATIENTS IN COMA BY NERVE STIMULATION
Joachim F. Wernicke, League City; Reese S. Terry, Jr., and Ross G. Baker, Jr., both of Houston, all of Tex., assignors to Cyberonics, Inc., Webster, Tex.
Filed Dec. 19, 1994, Ser. No. 358,264
Int. Cl.[6] A61N *1/36*
U.S. Cl. 607—72 **19 Claims**



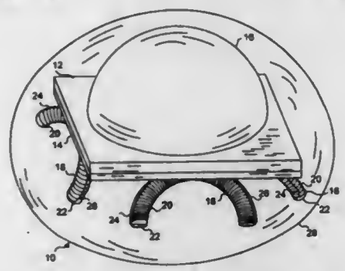
1. A method of treating a patient in coma, comprising the steps
placing at least one electrode of an electrode array in juxtaposition with a preselected cranial nerve of the patient for electrical stimulation thereof;
applying an electrical pulse waveform to said electrode array to stimulate said cranial nerve; and
adjusting electrical parameters of said pulse waveform to modulate electrical activity of said cranial nerve in an effort to rouse the patient from the coma.

5,571,151
METHOD FOR CONTEMPORANEOUS APPLICATION OF LASER ENERGY AND LOCALIZED PHARMACOLOGIC THERAPY
Kenton W. Gregory, 9205 SW. Barnes Rd., Portland, Oreg. 97225
Filed Oct. 25, 1994, Ser. No. 328,857
Int. Cl.[6] A61B *17/32*
U.S. Cl. 607—88 **12 Claims**



1. A method for contemporaneously applying light energy and locally delivering pharmacologic therapy to a selected site in a body lumen using a liquid core laser catheter, the catheter including a flexible tube having a distal end for insertion into the lumen, a conduit housed within the tube, means for coupling a flow of light transmissive liquid from an external source into the conduit, means for transmitting light energy from a light energy source into the conduit, the conduit having a sidewall capable of reflecting light into the liquid in the conduit so that the liquid guides the light energy through the conduit to the site, the method comprising the steps of:
preparing a dose of pharmacologic agent;
introducing the dose of pharmacologic agent into the light transmissive liquid;
inserting the catheter into the lumen;
directing the catheter to the site;
flowing the light transmissive liquid, containing the pharmacologic agent, through the conduit for discharge at the distal end into the lumen adjacent the site; and
delivering light energy through said conduit via the light transmissive liquid to the distal end of the conduit to irradiate the site contemporaneously with discharge of the pharmacologic agent.

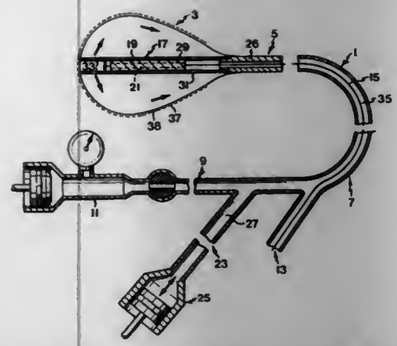
5,571,152
MICROMINIATURE ILLUMINATOR FOR ADMINISTERING PHOTODYNAMIC THERAPY
James C. Chen, and Brian D. Swanson, both of Bellevue, Wash., assignors to Light Sciences Limited Partnership, Bellevue, Wash.
Filed May 26, 1995, Ser. No. 451,831
Int. Cl.[6] A61N *1/30*
U.S. Cl. 607—92 **29 Claims**



1. A microminiature light source for providing light to an internal treatment site to effect a photodynamic therapy at said site, comprising:
(a) a light emitting device that produces light of a desired wavelength or waveband when energized by an electrical current, said light emitting device including a supporting substrate;
(b) a plurality of electromagnetic receivers electrically connected to the light emitting device, each one of the plurality of electromagnetic receivers comprising a core and a plurality of turns of an electrical conductor wrapped around the core, said plurality of electromagnetic receivers being thus adapted to electromagnetically couple with an external electromagnetic transmitter that produces an electromagnetic field to induce an electrical current to flow in the electromagnetic receivers, said electrical current being applied to the light emitting device to energize it; and
(c) a biocompatible, light transmitting material that encloses the light emitting device and the plurality of electromagnetic receivers to form a bead, said bead being thus adapted for insertion into the internal treatment site to effect the photodynamic therapy by providing light to the treatment site.

5,571,153
DEVICE FOR HYPERTHERMIA TREATMENT
Hans I. Wallstén, CH-1141, Denens, Switzerland
Continuation of Ser. No. 204,358, Mar. 29, 1994, abandoned.
This application Mar. 25, 1996, Ser. No. 616,042
Claims priority, application Switzerland, Sep. 20, 1991, 910728; Apr. 16, 1992, 920224
Int. Cl.[6] A61B *17/36*
U.S. Cl. 607—98 **33 Claims**

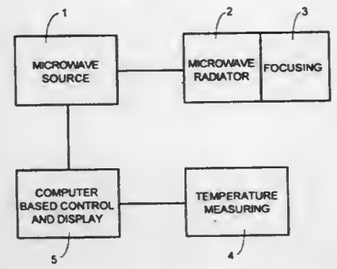
30. A device for carrying out hyperthermia in a body cavity or duct having a narrow access path, the device comprising:



an elongate distal section insertable into a body cavity or duct, the elongate distal section including a centrally located, heat-releasing element, which is either surrounded by an elongate housing or is itself constituted by an elongate housing;
a flexible and elastic enclosure surrounding said elongate housing in a fluid-tight manner;
means for supplying energy to the heat-releasing element;
wherein the elongate housing has an axially operating first inlet passage at a proximal part of the housing and an outlet for supplying a heat-transmitting fluid under pressure from the housing to the elastic enclosure for expansion of the elastic enclosure to accommodate and to exert a controlled pressure on walls of a cavity or duct in which the elongate housing is adapted to be inserted surrounding the elongate housing;
wherein the elongate housing has an inlet port communicating with the elastic enclosure, the inlet port having a first back valve to allow flow into the housing only, the inlet port located on the housing so that the heat-releasing element is disposed between the inlet port and the outlet port;
a partition disposed in the housing between the heat-releasing element and one of the inlet port and the outlet port, the partition defining a chamber in the housing and having an axially directed aperture containing a second back valve which is oppositely acting relative to the first back valve placed in inlet port; and
means for circulating the fluid through the housing, said means providing a reciprocating movement of a small quantity of the pressurized fluid enclosed in the inlet passage after expansion of the enclosure, so that the fluid flows from the housing to the elastic enclosure through the outlet port and returns to the housing through the inlet port; and
wherein the heat-releasing element is of an inherently self-regulating type and comprises one of a PCT semi-conductor material having a Curie temperature or Trip point, and a ferromagnetic material having a Curie point in combination with said means for the supply of energy being based on magnetic induction.

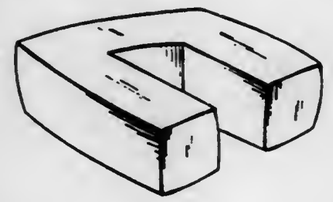
5,571,154
MICROWAVE DEEP-DIATHERMY APPARATUS
Changxue Ren, Hunan, China, assignor to Hunan University, China
Continuation of Ser. No. 89,029, Jul. 19, 1993, abandoned.
This application Jun. 2, 1995, Ser. No. 459,727
Int. Cl.[6] A61N *5/02*
U.S. Cl. 607—102 **10 Claims**

1. A non-contact type of microwave deep-diathermy apparatus adapted for diathermizing a medium including a surface, comprising:
a microwave source including an output for providing microwaves, said microwave source having a continuously adjustable output power with a maximum output power of more than 1.2 kw and an output frequency range of 600–1500 MHz;



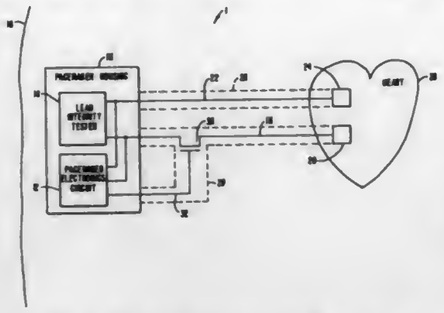
a microwave radiator having an input port and an output port with the input port coupled with the output of said microwave source for receiving said microwaves from said microwave source and radiating them through the output port thereof, said microwave radiator adapted for radiation toward said medium and being non-contact with the medium, wherein a distance between the surface of the medium and said output port of the microwave radiator is 20–70 cm;
microwave focusing means provided in front of said output port of said microwave radiator and attached thereto for focusing said radiating microwaves on a point positioned in the medium, the focusing means having a focal distance of 30–80 cm;
temperature-measuring means for measuring a surface temperature and deep tissue temperatures of said medium; and
computer based control and display means coupled with said temperature-measuring means and said microwave source respectively, and responsive to a temperature signal from said temperature-measuring means for displaying a temperature value measured by said temperature-measuring means and providing a corresponding control signal for said microwave source to control and adjust the output power of said microwave source and consequently change the temperature of a diathermized position in the medium to be diathermized.

5,571,155
THERMO-PAD
Gilles Bastille, 48 Elizabeth Dr., Fort Payne, Ala. 35967
Filed Jun. 22, 1994, Ser. No. 264,110
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—114 **12 Claims**



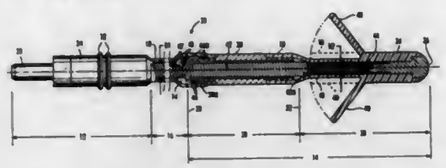
1. A therapeutic pad for application of heat or cold to a predetermined potion of the human body comprising:
a porous fabric cover having a predetermined three dimensional configuration and a heat transfer medium filing said cover, said medium consisting of cereal grains sterilized to destroy all living micro-organisms.

5,571,156
SWITCHED IMPLANTABLE ELECTRICAL STIMULATOR LEADS
Robert E. Schmukler, Rockville, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.
Filed Jun. 21, 1994, Ser. No. 263,312
Int. Cl.[6] A61N *1/04*
U.S. Cl. 607—116 **6 Claims**



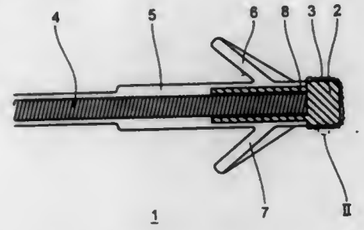
1. A lead for use with an electronic controller, comprising:
a first conductor including a first electrode adapted for implantation into tissue, a first end of said first conductor for coupling to the electronic controller and a second end of said first conductor coupled to said first electrode; and
a first electronic switch coupled between said ends of said first conductor and integrated into said first electrode wherein said first switch includes a first state and a second state with said first state providing electrical continuity between the electronic controller and said tissue and said second state interrupting electrical continuity between the electronic controller and said tissue.

5,571,157
ENDOCARDIAL LEAD WITH REDUCED DIAMETER TIP PORTION AND METHOD FOR MAKING SUCH LEAD
Susan M. McConnell, Woodland Hills, Calif., assignor to Pacesetter, Inc., Sylmar, Calif.
Filed Jul. 19, 1995, Ser. No. 504,207
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—116 **12 Claims**



5. A body implantable lead assembly adapted to transmit electrical signals between a proximal end portion of the lead assembly and a distal end portion of the assembly and to thereby stimulate selected body tissue, said distal end portion having a proximal extremity, a distal tip and an electrode at the distal tip, the assembly comprising:
at least two coiled, insulated conductors extending between said proximal and distal end portions for transmitting the electrical signals, the coils of the at least two insulated conductors being contiguous and having substantially the same first outer diameter, one of the coiled conductors extending through said distal end portion of the lead and being electrically connected to said tip electrode, the remaining conductor(s) terminating at the proximal extremity of the distal end portion, said distal end portion comprising a proximal segment and a distal segment, the proximal segment extending between the proximal extremity of the distal end portion and the distal segment, and the distal segment including the distal tip, the portion of the one conductor within the proximal segment having contiguous insulated coils having an outer diameter approximately equal to the first diameter, the portion of the one conductor within the distal segment having uninsulated, contiguous coils having a second outer diameter that is less than the first diameter; and
insulating sheath means of biocompatible material for electrically insulating the at least two coiled conductors from body tissue and fluids.

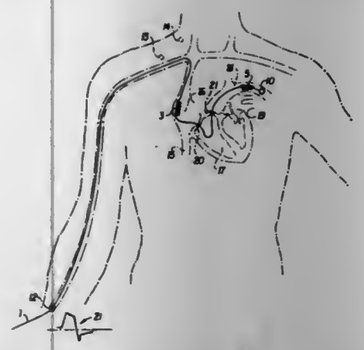
5,571,158
STIMULATION ELECTRODE
Armin Bolz, and Max Schaldach, both of Erlangen, Germany, assignors to Biotronik Mess- und Therapiegeraete GmbH & Co., Berlin, Germany
PCT No. PCT/DE92/00658, § 371 Date Jun. 23, 1994, § 102(e) Date Jun. 23, 1994, PCT Pub. No. WO93/02739, PCT Pub. Date Feb. 18, 1993
PCT Filed Aug. 6, 1992, Ser. No. 193,042
Claims priority, application Germany, Aug. 6, 1991, 41 26 362.6; Mar. 5, 1992, 42 07 368.5
Int. Cl.[6] A61N *1/04*
U.S. Cl. 607—121 **8 Claims**



1. A stimulation electrode, comprising:
an electrode base body which has a basic geometric shape and a surface area; and
a porous surface coating which is provided on at least a portion of the electrode base body, which is comprised of an inert material having a low oxidation tendency effective to render the material substantially inert and being selected from the group consisting of a element, a chemical compound, and an alloy, which is porous and has a fractal spatial geometry, and which has an active surface area which is greater by a factor of at least one thousand times than the surface area of the electrode base body.

5,571,159
TEMPORARY ATRIAL DEFIBRILLATION CATHETER AND METHOD
Eckhard Alt, Eichendorffstrasse, 52, Ottobrunn, Germany
Filed Apr. 4, 1994, Ser. No. 222,242
Int. Cl.[6] A61N *1/04*
U.S. Cl. 607—122 **8 Claims**

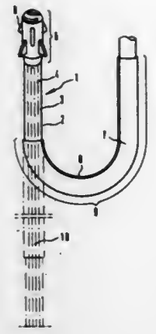
1. A catheter adapted for temporary insertion in the body of a patient to treat atrial fibrillation, comprising:
a thin elongate flexible catheter body having a proximal end, a distal end, and a central portion between said proximal end and said distal end, said catheter body having a width, length, and flexibility to permit advancement thereof from said distal end along a path including right atrium, right ventricle, and pulmonary artery adjacent left atrium of the patient's heart; said central portion including first and second defibrillation electrodes of relatively low impedance structure spaced apart



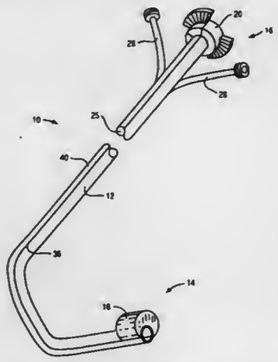
thereon and conforming in shape to said central portion to maintain a substantially smooth continuous surface therewith, the first electrode of said first and second electrodes being relatively more proximally located along said central portion and the second electrode thereof being relatively more distally located along said central portion, said first and second electrodes being spaced apart by a distance along said central portion such that when the distal end of the catheter body is advanced along said path into predetermined position in the pulmonary artery, said first electrode is located in the right atrium and said second electrode is located in the pulmonary artery adjacent the left atrium to establish an electric field with a vector through a substantial mass of the right and left atria when said first and second electrodes are energized by a defibrillating electrical shock; said catheter body further including an electrical connector at the proximal end thereof and first and second electrical conductors carried therein and connected from said electrical connector to respective ones of said first and second electrodes for selective application of a defibrillating electrical shock thereto; and
deployable facilitating means at the distal end of the catheter body for selective deployment to aid maneuvering of the catheter body in advancement along said path and for temporarily and passively maintaining the distal end of the catheter body in said predetermined position in the pulmonary artery.

5,571,160
PERMANENTLY CURVED SLEEVE FOR SHAPING AN ELECTRODE CABLE, AND METHOD FOR IMPLANTING THE CABLE WITH THE SLEEVE
Per Nyman, Djursholm, Sweden, assignor to Pacesetter AB, Solna, Sweden
Filed Jul. 11, 1994, Ser. No. 272,825
Claims priority, application Sweden, Jul. 22, 1993, 9302476
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—122 **15 Claims**

1. A medical electrode assembly comprising:
an electrode cable having an outer diameter, an exterior surface and a length, for shaping said electrode cable, and a rigidity;
a tubular element having a length which is short relative to the length of said electrode cable and having an inner diameter relative to said outer diameter of said electrode cable permitting said tubular element to be manually placed over said exterior surface of said electrode cable to assume an arbitrarily selectable position along the length of said electrode cable, said tubular element, when on said electrode cable, surrounding a portion of said electrode cable, and said tubular element having a permanently curved shape and having a rigidity which is stronger than said rigidity of said electrode cable for conforming said portion of said electrode cable surrounded by said tubular element to the permanently curved shape of said tubular element.



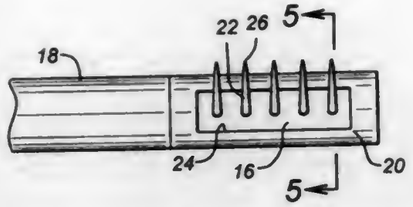
5,571,161
APPARATUS AND METHOD FOR IMPLANTING ELECTRICAL LEADS IN THE HEART
Niel F. Starksen, 12119 Edgecliff Pl., Los Altos, Calif. 94022
Filed Apr. 12, 1995, Ser. No. 422,182
Int. Cl.[6] A61M *25/10;25/00;25/01*
U.S. Cl. 607—122 **18 Claims**



1. A steerable guide catheter comprising:
a flexible tubular body having a proximal end, a distal end, an axial lumen, and at least one axial separation line extending from the proximal end to the distal end;
a bub having a hemostatic seal secured to the proximal end of the flexible tubular body, said hub having a primary access port which is axially aligned with the axial lumen of the flexible tubular body, wherein the bub has at least one weakened axial line so that it may be manually separated along said at least one axial line; and
a balloon at the distal end of the flexible tubular body, said balloon being attached to the flexible tubular body in a manner which permits axial separation of the body.

5,571,162
TRANSVENOUS DEFIBRILLATION LEAD WITH SIDE HOOKS
Jack H. Lin, Lake Jackson, Tex., assignor to Intermedics, Inc., Angleton, Tex.
Filed Jun. 7, 1995, Ser. No. 475,011
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—122 **6 Claims**

1. A transvenous defibrillation lead, comprising:
a conductor;



an electrode mechanically and electrically connected to said conductor at a distal end thereof, said electrode having a plurality of hooks extending generally transversely to a longitudinal axis of said lead, each of said plurality of hooks having a first end mechanically and electrically connected to said electrode and having a second end free;

means connecting said electrode to said plurality of hooks for biasing each of said second ends to spring outwardly from said electrode when unconstrained;

means for alternately constraining and unconstraining said hooks, including a hollow cylinder disposed coaxially about said electrode and having a window therethrough, said hollow cylinder having a first orientation in which said hooks are overlain and constrained by said cylinder, and a second orientation in which said hooks are unconstrained and extend outwardly through said window so as to overlie said hollow cylinder in spaced relationship, said hollow cylinder being movable between said first and second orientations upon rotation of said outer hollow cylinder relative to said electrode; and

a sheath overlying said conductor and rotatable relative thereto, said sheath being connected to said hollow cylinder such that rotation of said sheath relative to said conductor results in rotation of said hollow cylinder relative to said electrode.

5,571,163

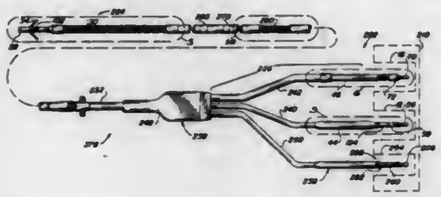
COMBINATION PACING AND DEFIBRILLATING LEAD HAVING ATRIAL SENSING CAPABILITY AND METHOD

John R. Helland, Redmond, Wash., assignor to Pacesetter, Inc., Sylmar, Calif.

Continuation-in-part of Ser. No. 125,448, Sep. 22, 1993, Pat. No. 5,431,681. This application Mar. 10, 1995, Ser. No. 401,846

Int. Cl.[6] A61B *5/04*

U.S. Cl. 607—123 **42 Claims**



1. An apparatus for ventricular pacing, cardioverting or defibrillating a heart comprising:

an implantable pulse generator;

a lead having a proximal end and a distal end;

a connector assembly attached to the proximal end of said lead, said connector assembly allowing connection of said lead to said pulse generator;

a plurality of conductors within said lead extending from said connector assembly at the proximal end of said lead to the distal end of said lead, said plurality of conductors including at least a pacing conductor, a defibrillation conductor and a sensor conductor and wherein said conductor assembly includes means for electrically interfacing said pacing, defibrillation, and sensor conductors with said implantable pulse generator; and

an electrode assembly attached to the distal end of said lead, said electrode assembly including:

a pacing electrode at a distal tip of said electrode assembly, said pacing electrode electrically connected to said pacing conductor;

a defibrillation electrode positioned proximally of said pacing electrode, said defibrillation electrode electrically connected to said defibrillation conductor; and

at least one atrial ring sensor positioned proximally from said defibrillation electrode and electrically connected to said sensor conductor.

5,571,164

CARDIAC ELECTRODE DEVICE HAVING AT LEAST A PORTION THEREOF WHICH IS RIBBON SHAPED

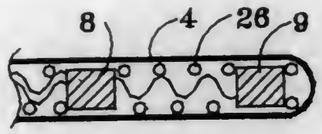
Christer Ekwall, Spånga; Jakub Hirschberg, Täby, and Kurt Högnelid, Bromma, all of Sweden, assignors to Pacesetter AB, Solna, Sweden

Filed Sep. 25, 1995, Ser. No. 533,250

Claims priority, application Sweden, Sep. 29, 1994, 9403279

Int. Cl.[6] A61N *1/05*

U.S. Cl. 607—122 **19 Claims**



1. An electrode device for in vivo delivery of electrical signals to and reception of electrical signals from cardiac tissue in a heart having a heart wall, said electrode device comprising:

at least one elongate electrical conductor;

a flexible electrode cable having an outer coating of electrical insulation and containing said at least one elongate conductor, said flexible electrode cable having at least a portion which is ribbon-shaped;

an electrode, having a substantially flat exposed electrode surface, carried on said electrode cable and electrically connected to said elongate conductor, said portion of said cable which is ribbon-shaped forming means for endocardially retaining said exposed electrode surface in substantially flat contact with said heart wall; and

means for endocardially affixing said electrode cable to said heart wall.

5,571,165

X-RAY TRANSMISSIVE TRANSCUTANEOUS STIMULATING ELECTRODE

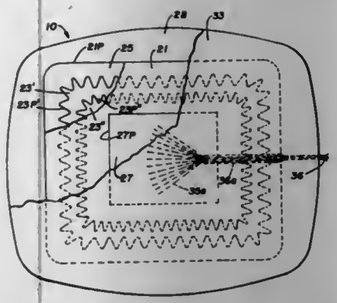
R. Keith Ferrari, 6525 Radcliff Dr., Nashville, Tenn. 37221

Filed Dec. 8, 1995, Ser. No. 569,567

Int. Cl.[6] A61N *1/04*; A61B *5/04*

U.S. Cl. 607—142 **25 Claims**

1. A disposable transcutaneous electrode comprising, a sheet electrode member of electrically conductive polymer having upper and lower sides and an outer perimeter, an electrically conductive silver/silver chloride coating on at least a major portion of the lower side of the electrode member, a pad of electrically conductive gel having an upper surface underlying the silver/silver chloride coating on the lower side of the electrode member, a removable carrier sheet on a lower surface of the pad for covering the latter prior to use, a current distributing mat having upper and lower surfaces and an outer perimeter spaced inwardly of the outer



perimeter of the electrode member, the mat including an open mesh metallized carbon fiber web having a carbon impregnated pressure sensitive adhesive composition on upper and lower sides of the web, the mat being configured to be electrically conductive along the surfaces of the mat and transverse to the surfaces of the mat, the mat having the lower surface conductively adhered to the upper side of the sheet electrode member, means for conducting defibrillating energy to or from the upper side of the mat and a medical device, the sheet electrode member and the current distributing mat being configured to be X-ray transparent and capable of conducting energy at levels sufficient for defibrillation.

5,571,166

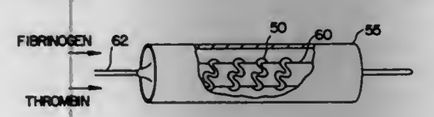
METHOD OF MAKING AN INTRALUMINAL STENT

Thomas Q. Dinh, Minnetonka; Michael Dror, Edina, and Robert S. Schwartz, Rochester, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 79,222, Jun. 17, 1993, which is a continuation of Ser. No. 854,118, Mar. 19, 1992, abandoned. This application Sep. 15, 1994, Ser. No. 306,781

Int. Cl.[6] A61F *2/06*; *2/04*; A61M *29/00*

U.S. Cl. 623—1 **14 Claims**



1. A method for making an intraluminal stent for implantation in a body lumen comprising the steps of:

(a) providing a stent body;

(b) applying to the stent body a composition of fibrinogen and thrombin to effect polymerization of the fibrinogen to fibrin; and

(c) applying heparin to the fibrinogen and thrombin as the fibrinogen is being polymerized to fibrin.

5,571,167

BYPASS GRAFTING METHOD

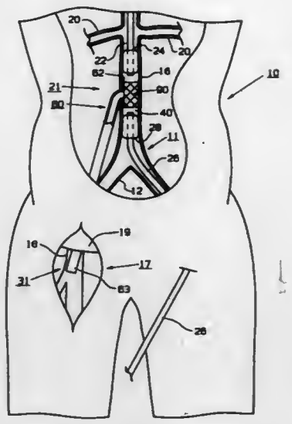
Thomas J. Maginot, 741 Meadow La., Crown Point, Ind. 46307

Continuation of Ser. No. 138,912, Oct. 18, 1993, Pat. No. 5,456,712, which is a division of Ser. No. 56,371, May 3, 1993, Pat. No. 5,304,220, which is a continuation-in-part of Ser. No. 725,597, Jul. 3, 1991, Pat. No. 5,211,683. This application Feb. 21, 1995, Ser. No. 391,960

Int. Cl.[6] A61F *2/06*

U.S. Cl. 623—1 **15 Claims**

1. A method of implanting a graft in the body of a patient to bypass a segment of a blood vessel, comprising the steps of:



securing a first end of the graft to the blood vessel at a first location while the first location is covered by a substantially intact portion of the epidermis of the body; and

securing a second end of the graft to the blood vessel at a second location while the second location is exposed through an incision in the body.

5,571,168

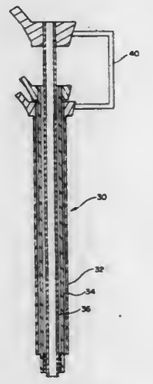
PULL BACK STENT DELIVERY SYSTEM

Connie D. Toro, Plymouth, Minn., assignor to Scimed Lifesystems Inc, Maple Grove, Minn.

Filed Apr. 5, 1995, Ser. No. 417,385

Int. Cl.[6] A61F *2/06*

U.S. Cl. 623—1 **5 Claims**



1. A delivery system for implantation of a medical device in a vessel, comprising:

a medical device; and elongate flexible catheter means having proximal and distal ends for delivering a medical device to a predetermined location in a vessel of a patient, the elongate flexible catheter means being further comprised of:

an inner shaft which carries the medical device near its distal end,

a middle pull back shaft concentrically arranged around the inner shaft, the medical device being carried between the inner shaft and middle pull back shaft, and

an outer stiffening shaft concentrically arranged around the middle pull back shaft, the inner and outer shafts being

connected at their proximal ends to prevent axial movement of the inner shaft with respect to the outer shaft,

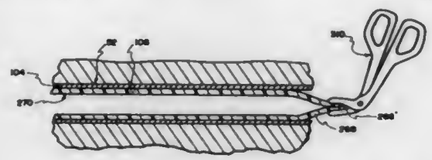
whereby the medical device is delivered at the desired site by pulling on the proximal end of the middle pull back shaft, which deploys the medical device, and where the outer stiffening shaft connection to the inner shaft prevents axial movement of the inner shaft with respect to the outer stiffening shaft, thereby preventing the distal end of the inner shaft from being urged forward during delivery and therefore allowing for more accurate placement of the medical device.

5,571,169

ANTI-STENOTIC METHOD AND PRODUCT FOR OCCLUDED AND PARTIALLY OCCLUDED ARTERIES

Mark Plaia, Tigard; Vincent A. Reger, Portland, and Gregory N. Nordgren, Wilsonville, all of Oreg., assignors to EndoVascular Instruments, Inc., Vancouver, Wash.

Filed Jun. 7, 1993, Ser. No. 73,002
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 **4 Claims**



1. A method of restoring reduced or absent blood flow capacity to an artery in a patient, comprising the steps of:

excavating plaque and the like from within a segment of an artery;

placing a vascular graft at a location within and as an internal lining for the artery at least co-extensive with the excavated segment by displacing the vascular graft through the surgical access site using a forceps to grasp a distal end of the vascular graft;

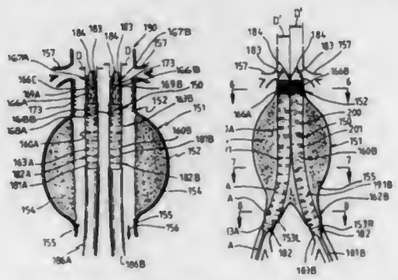
securing the vascular graft within said artery at said location.

5,571,170

METHOD AND APPARATUS FOR BILATERAL INTRA-AORTIC BYPASS

Julio C. Palmaz, San Antonio, Tex., and Jean C. LaBorde, Montpellier, France, assignors to Expandable Grafts Partnership, San Antonio, Tex.

Division of Ser. No. 818,052, Jan. 8, 1992, Pat. No. 5,316,023. This application Feb. 22, 1994, Ser. No. 199,119
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 **49 Claims**



1. A bilateral intra-aortic bypass graft for intraluminal delivery to repair an abdominal aortic aneurysm in an aorta having a diameter and two iliac arteries associated therewith, by forming a bilateral passageway through the abdominal aortic aneurysm, comprising:

a first tube having a diameter, first and second ends and a wall surface disposed between the two ends, at least a portion of the first tube adapted to be disposed within the abdominal aortic aneurysm;

a second tube having a diameter, first and second ends and a wall surface disposed between the two ends, at least a portion of the second tube adapted to be disposed within the abdominal aortic aneurysm; and

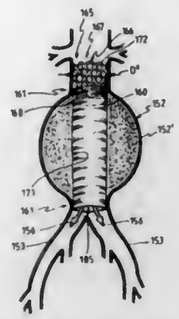
means for securing the first ends of the first and second tubes in an abutting relationship in the aorta, the securing means including first and second tubular members, each tubular member having first and second ends, the first tube being connected to the first tubular member and the second tube being connected to the second tubular member, the tubular members having a first diameter which permits intraluminal delivery of the tubular members and tubes into the aorta and the tubular members each having a second, expanded and deformed diameter, with at least a portion of the first and second tubular members in an abutting relationship, upon the application from the interior of the tubular members of a radially, outwardly extending force, to expand and deform the tubular members to secure the first ends of the tubular members to the aorta in an abutting relationship and to form a bilateral passageway within the abdominal aortic aneurysm.

5,571,171

METHOD FOR REPAIRING AN ARTERY IN A BODY

Hector D. Barone, Maza 1869/73, Buenos Aires 1240, Argentina; Julio C. Palmaz, 636 Ivy La., San Antonio, Tex. 78209, and Juan C. Parodi, Mercedes 4255, 1419 Buenos Aires, Argentina

Division of Ser. No. 991,593, Dec. 16, 1992, abandoned, which is a division of Ser. No. 535,745, Jun. 11, 1990, Pat. No. 5,360,443. This application Jun. 22, 1994, Ser. No. 263,766
Int. Cl.[6] A61F 2/06; A61M 29/00
U.S. Cl. 623—1 **9 Claims**



1. A method for repairing an artery in a body comprising the steps of:

(a) connecting a tube to a first expandable and deformable, tubular member having a smooth outer wall surface by disposing a first portion of the first tubular member within the tube and disposing a second portion of the first tubular member outside the tube;

(b) disposing the tube and first tubular member upon a catheter having an expandable, inflatable portion with the first tubular member disposed upon the expandable, inflatable portion;

(c) intraluminally delivering the tube, first tubular member and catheter to a portion of the artery to be repaired and disposing at least a portion of the tube within the portion of the artery to be repaired;

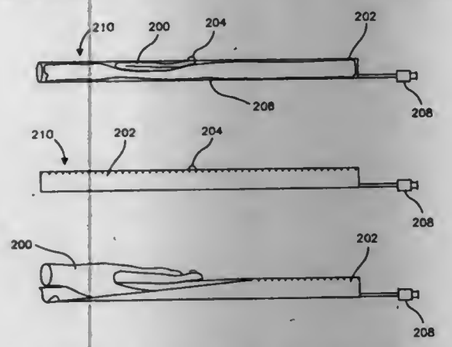
(d) expanding the expandable, inflatable portion of the catheter to expand and deform the first tubular member to force the second portion of the first tubular member radially outwardly into contact with the artery to secure the first tubular member and at least a portion of the tube within the portion of the artery to be repaired, whereby the tube provides a fluid passageway through the artery.

5,571,172

METHOD AND APPARATUS FOR ENDOSCOPIC GRAFTING

Albert K. Chin, Palo Alto, Calif., assignor to Origin Medsystems, Inc., Menlo Park, Calif.

Filed Aug. 15, 1994, Ser. No. 290,361
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 **12 Claims**



1. A method for reconstruction of target tissue using a sheathed graft that is encased in an inelastic perforated casing and that includes an enclosed expandable chamber extending along the graft, using a stabilizing catheter having a plurality of selectively deployable extensions at one end thereof, the method comprising the steps of:

introducing the sheathed graft via an introduction site to position the sheathed graft at a proximal part of the target tissue;

elevating fluid pressure within the chamber to expand the chamber sufficiently to split the perforated casing for releasing the graft from the perforated casing;

deploying the extensions of the stabilizing catheter at a proximal part of the graft to press the graft adjacent the target tissue to stabilize the graft at the target tissue; and

securing the graft to the target tissue.

5,571,173

GRAFT TO REPAIR A BODY PASSAGEWAY

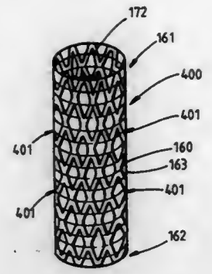
Juan C. Parodi, Mercedes 4255, Buenos Aires 1419, Argentina

Division of Ser. No. 130,352, Oct. 1, 1993, which is a continuation-in-part of Ser. No. 535,745, Jun. 11, 1990, Pat. No. 5,360,443. This application Jun. 6, 1995, Ser. No. 466,354
Int. Cl.[6] A61F 2/06;2/04; A61M 29/02
U.S. Cl. 623—1 **10 Claims**

1. A graft for intraluminal delivery to repair a body passageway, comprising:

a tube having first and second ends and a wall surface disposed between the two ends, the tube adapted to be disposed within the body passageway; and

means for securing the tube within the body passageway, the securing means including a thin-walled tubular member having, a longitudinal axis, an interior, first and second ends and a smooth outer wall surface disposed between the first and second ends, the wall surface of the securing means having a substantially uniform thickness and a plurality of slots formed therein, the slots being disposed substantially parallel to the longitudinal axis of the tubular member, the tube being secured to the outer wall surface of the tubular member; the tubular member having a first diameter which permits intraluminal delivery of the tubular member and tube into the body passageway and the tubular member and tube having a second, expanded and deformed diameter, upon an application from the interior of the tubular member of a radially, outwardly extending force, which second diameter is variable and dependent upon the amount of force applied to the tubular member, the tube and tubular member each having a predetermined length, the length of the tube and tubular member being substantially the same, whereby the tubular member may be expanded and deformed to secure the tube within the body passageway.

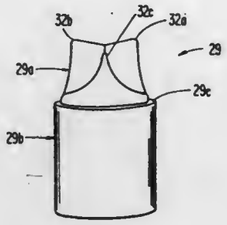


5,571,174

METHOD OF ASSEMBLING A TISSUE HEART VALVE

Charles S. Love, Camarillo; Jack W. Love, Santa Barbara, and John H. Calvin, Carpenteria, all of Calif., assignors to Autogenics, Glasgow, United Kingdom

Continuation of Ser. No. 216,169, Mar. 22, 1994, abandoned, which is a continuation of Ser. No. 925,589, Aug. 3, 1992, Pat. No. 5,326,371, which is a division of Ser. No. 646,001, Jan. 24, 1991, Pat. No. 5,163,955. This application Nov. 18, 1994, Ser. No. 341,847
Int. Cl.[6] A61F 2/24
U.S. Cl. 623—2 **2 Claims**



1. A method of assembling a mating stent valve, comprising the steps of:

positioning a first stent on a mandrel;

indexing said first stent on said mandrel;

wrapping at least one piece of tissue around the first stent;

providing a second stent comprising a base portion and a top portion, each of which is normally in a closed position but which is capable of being expanded into an open position;

spreading the base portion and the top portion of the second stent into their respective open positions utilizing at least one spreading tool;

positioning the second stent, after said spreading step, over the first stent; and

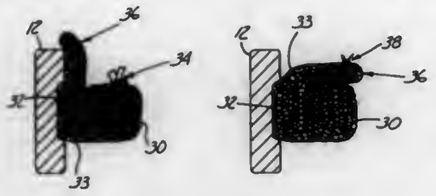
removing the at least one spreading tool, thereby allowing the base and top portions of the second stent to move into their closed positions.

5,571,175

SUTURE GUARD FOR PROSTHETIC HEART VALVE

Guy Vanney, Blaine; Kurt D. Krueger, Stacy, and Michael J. Girard, Lino Lakes, all of Minn., assignors to St. Jude Medical, Inc., St. Paul, Minn.

Filed Jun. 7, 1995, Ser. No. 487,497
Int. Cl.[6] A61F 2/24
U.S. Cl. 623—2 18 Claims



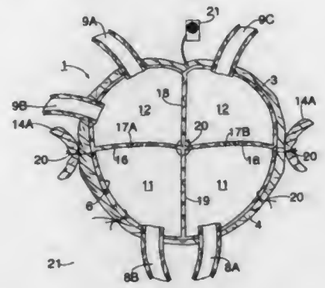
1. A heart valve prosthesis, comprising:
an orifice housing having an exterior circumference and providing a lumen therethrough;
an occluder movable in the orifice housing between an open position allowing flow through the lumen and a closed position in which flow through the lumen is blocked;
a suture cuff extending around the exterior circumference and coupled to the orifice housing, the suture cuff adapted for receiving a suture therethrough for attaching the prosthesis to a heart tissue annulus, wherein the suture cuff provides a suture knot surface for carrying a suture knot thereon; and
a suture guard movably attached to the suture cuff and movable between an attached open position in which the suture knot surface is exposed and a closed position covering the suture knot surface and a suture knot carried on the suture knot surface.

5,571,176

PARTIALLY AUTOGENOUS FOUR CHAMBERED HEART

Syde A. Taheri, 268 Dan Troy, Williamsville, N.Y. 14221

Filed Apr. 2, 1993, Ser. No. 41,950
Int. Cl.[6] A61M 1/00; A61K 31/70
U.S. Cl. 623—3 7 Claims



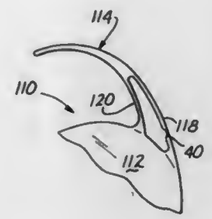
1. A method of forming a four chambered heart, which comprises:
(a) providing two segments of autogenous muscle, the first segment for providing the force for contracting the upper two chambers, the second segment for providing the force for contracting the lower two chambers;
(b) wrapping the two segments about a mold of predetermined size to form a cavity by enclosing the mold within the two muscle segments;
(c) segmenting the cavity into two sections so that each section is surrounded by approximately one-half of the first muscle segment and one-half of the second muscle segment;
(d) dividing the two sections so as to form four chambers, each chamber having an exterior wall defined by a portion of either the first or second muscle segment, but not both;
(e) installing valves between the upper and lower chambers to permit single direction flow of a fluid from the upper chamber to the lower chamber; and
(g) connecting each chamber to the blood vessel corresponding to that found in a native heart.

5,571,177

IOL STRUCTURED FOR POST-OPERATIVE RE-POSITIONING AND METHOD FOR POST-OPERATIVE IOL RE-POSITIONING

Jim Deacon, Capistrano Beach; Glenn R. Sussman, Lake Forest, and Joseph I. Weinschenk, III, Laguna Niguel, all of Calif., assignors to Allergan, Irvine, Calif.

Filed Jun. 14, 1993, Ser. No. 77,810
Int. Cl.[6] A61F 2/16
U.S. Cl. 623—6 13 Claims



1. An intraocular lens comprising an optic and, secured to said optic, a fixation member including a distal end extending away from said optic and first and second spaced apart arms secured to said optic, located proximally of said distal end and respectively having substantially different cross sectional areas, one of said first and second arms structured to be altered after said intraocular lens is placed in an eye to at least assist in controllably repositioning said optic substantially perpendicular to the optical axis of the eye.

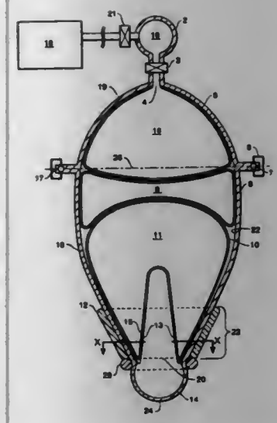
5,571,178

BREAST IMPLANT INTRODUCER

Walter J. Ledergerber, 31 Morningwood, Laguna Niguel, Calif. 92677

Continuation of Ser. No. 73,966, Jun. 8, 1993, abandoned, which is a continuation of Ser. No. 660,290, Feb. 22, 1991, abandoned. This application Jul. 8, 1994, Ser. No. 272,907
Int. Cl.[6] A61F 2/12
U.S. Cl. 623—8 18 Claims

1. A surgical implant inserter comprising
a first enclosure adapted to receive an implant, said first enclosure having a first end with a first opening and a second end with a second opening,
a second enclosure having a first end with a first opening through which a gas or fluid may pass and a second end with a second opening connected to said second end of said first enclosure,
an expansible structure adapted to receive gas or fluid to force an implant received in said first enclosure through said first opening of said first enclosure, said expansible structure being enclosed by said first and second enclosures while said first and second enclosures are in adjacent relationship,
a slit in said first end of said first enclosure adjacent said first opening of said first enclosure, and
a collar disposed around said first end of said first enclosure, adjacent to said first opening of said first enclosure, said collar being movable relative to said first end of said first enclosure to reveal and obscure said slit.

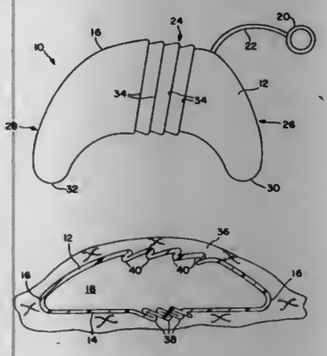


5,571,179

DIMENSIONALLY ADJUSTABLE SOFT TISSUE EXPANDER AND METHOD

Ernest C. Manders; Ernest K. Manders, both of 1 Timberline Pl., Hummelstown, Pa. 17036, and Thomas Hooker, 820 Cragmoor Rd, York Haven, Pa. 17370

Continuation of Ser. No. 221,104, Mar. 31, 1994, abandoned. This application Jul. 18, 1995, Ser. No. 503,621
Int. Cl.[6] A61F 2/12
U.S. Cl. 623—8 40 Claims



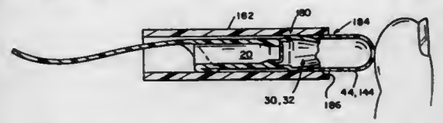
1. A dimensionally adjustable tissue expander adapted to be inserted under soft tissue to be expanded, the expander comprising a substantially flat base having a shape and defining a peripheral edge; a cover formed from an expandable elastomer, the cover overlying the base and joined to the base at the peripheral edge to define a closed interior chamber; a movable S-shaped fold in the base having a number of adjustable shapes; and a port for inflating and deflating the chamber, said fold being freely movable to vary the shape of the base.

5,571,180

TOOL FOR LOADING FLEXIBLE FLANGE INTO RETAINER

Eric D. Blom, Indianapolis, Ind., assignor to Hansa Medical Products, Inc., Indianapolis, Ind.

Continuation of Ser. No. 143,835, Oct. 27, 1993, abandoned, which is a division of Ser. No. 818,853, Jan. 10, 1992, Pat. No. 5,300,119. This application Apr. 3, 1995, Ser. No. 416,589
Int. Cl.[6] A61F 2/20
U.S. Cl. 623—9 3 Claims



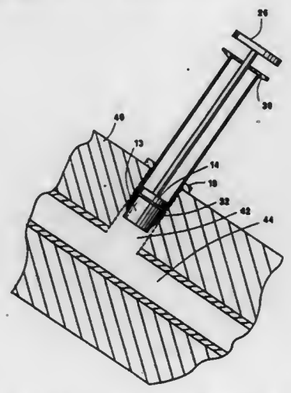
1. In combination, first and second tools, a device, and a retainer, the first tool for use in folding a resiliently foldable flexible flange of the device, the resiliently foldable flexible flange having a resiliently folded orientation and a deployed use orientation and in placing the retainer over the resiliently folded flexible flange of the device to retain the flange in its resiliently folded orientation, the device being for insertion into an opening in a wall of a human body, the retainer being constructed of a material soluble in fluids present adjacent the wall, the device having a cylindrical device body, the flexible flange provided on an outside surface of the device body, the first tool comprising a cylindrical passageway having a cross section slightly larger than a cross section of the device body but smaller than the flange, the passageway having an open end for receiving the device, the open end of the first tool provided with an edge, the edge of the open end causing the flange to be resiliently folded toward the device body as the device is inserted into the passageway, means for receiving the retainer at the open end, and the second tool for ejecting the device with the flange retained in its resiliently folded orientation by the retainer from the passageway through the open end.

5,571,181

SOFT TISSUE CLOSURE SYSTEMS

Shu-Tung Li, 1 Kiowa Ter., Oakland, N.J. 07436

Continuation-in-part of Ser. No. 881,213, May 11, 1992, Pat. No. 5,326,350. This application Mar. 11, 1994, Ser. No. 212,008
Int. Cl.[6] A61F 2/02; 13/20
U.S. Cl. 623—11 13 Claims



1. A device for sealing a void in a soft tissue of a living being comprising:
a) an implant, having a length, formed of a material capable of being resorbed in the living being characterized by being in a compressed configuration having an average pore size of from

about 0.5 μm to about 50 μm, and self-expandable when wetted having an average pore size of from about 100 μm to about 3,000 μm in the expanded configuration;

b) a delivery means having an outlet at its distal end and a depth insertion guide, said delivery means being adapted to be inserted into the void to a depth which is controlled by the depth insertion guide, said implant being disposed within said delivery means in a compressed configuration; and

c) a retractable ejection means capable of ejecting the compressed implant out of the said outlet a controlled distance into the void of the soft tissue to form an expanded, hydrated matrix which conforms to seal the soft tissue void, wherein the (i) the depth insertion guide, (ii) the length of the implant, and (iii) the retractable ejection means, in combination, control the positioning of the implant within the void.

5,571,182

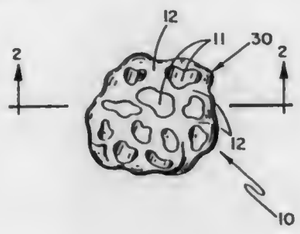
TEXTURED MICRO IMPLANTS

Robert A. Ersek, 62 Pascal, Austin, Tex. 78746; Arthur A. Beisang, III, 5883 Carlson St., Shoreview, Minn. 55126, and Arthur A. Beisang, 1300 Ingerson Rd., Arden Hills, Minn. 55112

Continuation of Ser. No. 52,414, Apr. 22, 1993, abandoned, which is a continuation of Ser. No. 714,273, Jun. 12, 1991, Pat. No. 5,258,028, which is a continuation-in-part of Ser. No. 282,671, Dec. 12, 1988, abandoned. This application Oct. 10, 1994, Ser. No. 321,571

Int. Cl.[6] A61F 2/02

U.S. Cl. 623—11 **20 Claims**



1. An injectable particulate implantation system for long-term augmentation of soft tissue, comprising in combination:

(a) an amount of generally soft, malleable, elastic, biologically compatible non-resorbin prosthetic particles dispersed in a non-retentive compatible physiological vehicle, said particles being further characterized by a rough surface texture having a plurality of surface irregularities generally randomly formed therein;

(b) said implantation system incorporating a combination of average particle size and average particle texture sufficient to cooperate in an autogenous manner to substantially prevent loss of said particles from an augmentation site, said particles remaining in situ to form part of a permanent implant.

5,571,183

USE OF STARCH AND STARCH DERIVATIVES AS FILLER MATERIAL IN PROSTHESES

Farid Kazem, Hoorn; Ido P. Bleeker, Ten Boer, and Henk J. Meijer, Groningen, all of Netherlands, assignors to Cooperatieve Verkoop - En Productievereniging Van Aardappelmeel en Derivaten Avebe B.A., Ja Veendam, Netherlands

Filed Nov. 21, 1994, Ser. No. 342,744

Claims priority, application European Pat. Off., Oct. 25, 1994, 94203089

Int. Cl.[6] A61F 2/02

U.S. Cl. 623—11 **10 Claims**



1. A reconstructive prosthesis comprising:

a container made from a flexible, non-absorbable material; and

a filler material contained within said container, wherein said filler material is an aqueous solution of a non-retrograding cross-linked starch or starch derivative.

5,571,184

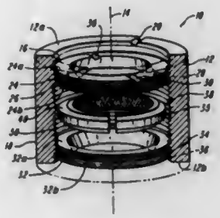
GRAFT FIXATION DEVICE AND METHOD OF USING

Allen DeSatnick, Marblehead, Mass., assignor to Wright Medical Technology, Inc., Arlington, Tenn.

Filed Jun. 7, 1995, Ser. No. 482,472

Int. Cl.[6] A61F 2/08

U.S. Cl. 623—13 **9 Claims**



1. A graft fixation device, comprising:

A. an annular collar disposed about and extending along a central axis, said collar having a first end, a second end, an interior lateral surface, and an exterior lateral surface, said interior lateral surface being threaded about and along said central axis, said collar further having at said first end collar driver means for receiving an external driver rotatable about said central axis,

B. a first annular drive element disposed concentrically within said collar and having a first end closest to said first end of said collar and a second end opposite thereto, and further having:

i. an outer lateral surface in threaded engagement with said threaded interior surface of said collar,

ii. an inner lateral surface disposed about said central axis,

iii. first driver means at said first end of said drive element for receiving an external driver rotatable about said central axis,

C. a second annular drive element disposed concentrically within said collar and having a first end closest to said second end of said collar and a second end opposite thereto, and further having:

i. an outer lateral surface in threaded engagement with said threaded interior surface of said collar,

ii. an inner lateral surface disposed about said central axis, and

D. tissue securing means disposed concentrically within said collar between said first and second drive elements for releasably securing at least a portion of said graft.

5,571,185

PROCESS FOR THE PRODUCTION OF A BONE IMPLANT AND A BONE IMPLANT PRODUCED THEREBY

Martin Schug, Lübeck, Germany, assignor to ESKA Implants GmbH, Lubeck, Germany

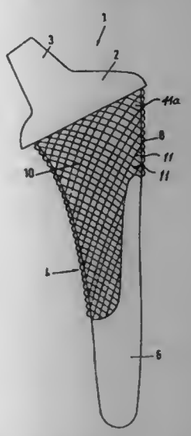
PCT No. PCT/EP92/02335, § 371 Date Sep. 30, 1993, § 102(e) Date Sep. 30, 1993, PCT Pub. No. WO93/07835, PCT Pub. Date Apr. 29, 1993

PCT Filed Oct. 10, 1992, Ser. No. 75,494

Claims priority, application Germany, Oct. 12, 1991, 41 33 877.4

Int. Cl.[6] A61F 2/28

U.S. Cl. 623—16 **12 Claims**



1. A process for the production of a bone implant made from metal or plastic and having at least a portion of a surface of the implant covered with an open-pore or open-cell structure, comprising the steps of:

(a) producing a base member for a positive molding of a bone implant from a molding material,

(b) forming a porous structural covering from a molding material, said covering having an open-pore or open-cell structure;

(c) applying the covering of step (b) to at least a portion of a surface of the base member of step (a) to form the positive molding in such a manner that pores or cells of the structural covering are arranged on the base member in a local distribution which corresponds to a trabecular structure of a bone environment into which the implant is to be inserted,

(d) embedding the positive molding into a ceramic embedding compound to fill the pores or cells with ceramic compound,

(e) removing the molding material of the base member and covering by application of heat to form a ceramic core having spaces which were previously occupied by the molding material,

(f) filling the spaces in the ceramic core by casting or centrifuging with metal or plastic, and

(g) removing the ceramic core to form the implant.

5,571,186

PHARMACEUTICAL BONE GROWTH-PROMOTING COMPOSITION AND PROCESS

Laszlo Prezmeczky, Basel, Switzerland; Gusztav Klenk, Budapest, Hungary; Erzsebet Englovszky, Vac, Hungary; Tibor Horvath, Budapest, Hungary; Laszlo Miszkiewicz, Budapest, Hungary; Gabor Szekacs, Budapest, Hungary; Ferenc Levai, Budapest, Hungary, and Magdolna Vitanyi nee Morvai, Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Filed Jul. 29, 1994, Ser. No. 282,753

Claims priority, application Hungary, Aug. 2, 1993, 2230/93

Int. Cl.[6] A61F 2/28

U.S. Cl. 623—16 **8 Claims**

1. A bone growth-promoting composition for rehabilitating a pathologically developed or artificially established bone defect which consists essentially of:

(a) porous hydroxyapatite or tricalcium phosphate; and

(b) 7-isopropoxy-isoflavone, in a weight ratio of 1:1 to 9:1.

5,571,187

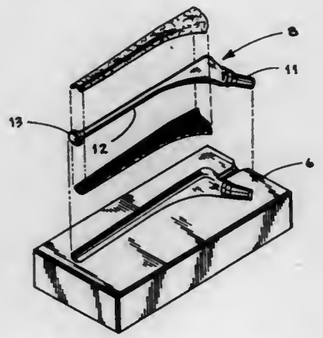
IMPLANT HAVING A METALLIC POROUS SURFACE

Thirumal Devanathan, Warsaw, Ind., assignor to Zimmer, Inc., Warsaw, Ind.

Continuation of Ser. No. 3,331, Jan. 12, 1993, abandoned, which is a division of Ser. No. 842,690, Feb. 27, 1992, Pat. No. 5,236,457. This application Sep. 22, 1994, Ser. No. 310,903

Int. Cl.[6] A61F 2/28

U.S. Cl. 623—16 **8 Claims**



1. An implant intermediate material comprising:

a body including a first plastic;

a porous material attached to the body by infiltration of the first plastic into the porous material wherein the filler material is more soluble in a solvent than is the body such that the body and porous material interdigitate; and

a filler material including a second plastic embedded in the porous material.

5,571,188

PROCESS FOR TREATING A METALLIC SURGICAL IMPLANT

Jan E. Ellingsen, Bekkestua, and Gunnar Rölla, Oslo, both of Norway, assignors to Astra Aktiebolag, Sodertalje, Sweden

PCT No. PCT/SE93/01032, § 371 Date May 30, 1995, § 102(e) Date May 30, 1995, PCT Pub. No. WO94/13334, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 1, 1993, Ser. No. 446,790

Claims priority, application Norway, Dec. 4, 1992, 924697

Int. Cl.[6] A61L *27/00;* B05D *3/10*

U.S. Cl. 623—16 22 Claims

1. A process for treating a metallic surgical implant prior to implantation, which implant is not coated with a calcium phosphate coating, comprising treating a metallic surface of said implant with an aqueous solution containing sodium fluoride, which solution is of pH 2.5 to pH 6.

5,571,189

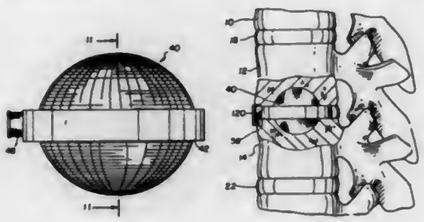
EXPANDABLE FABRIC IMPLANT FOR STABILIZING THE SPINAL MOTION SEGMENT

Stephen D. Kuslich, 2400 Keller Pkwy., Maplewood, Minn. 55109

Filed May 20, 1994, Ser. No. 246,959

Int. Cl.[6] A61F *2/44*

U.S. Cl. 623—17 3 Claims



1. A device for use in stabilizing a spinal motion segment comprising:

a generally hollow, flexible bag adapted for expansion solely by the introduction of graft material, said bag being further characterized by the absence of any other expansion means, said bag including at lest one fill opening into which biological fill material for promoting bony or fibrous union may be inserted, said bag being filled with biological fill material to a rigid state, said flexible bag including a plurality of pores, said pores being sized to allow ingress and egress of liquids, solutions, small particle suspensions and ingrowth of bony trabeculae or fabrous elements into and through said device when said device is positioned in a hollowed region of an intervertebral space, said pores being sized to retain said fill material within said bag; said bag further including closure means for closing said fill opening to prevent egress of said fill material from said bag, wherein said bag is generally spherical in shape, having an equator defined by a line extending circumferentially around a periphery of the spherical shape, an axis and an equatorial band, said equatorial band having greater rigidity than the remainder of said bag causing a force to be directed in a predefined direction.

5,571,190

IMPLANT FOR THE REPLACEMENT OF VERTEBRAE AND/OR STABILIZATION AND FIXING OF THE SPINAL COLUMN

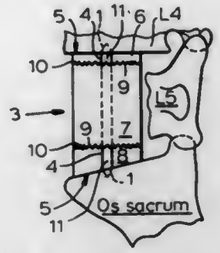
Heinrich Ulrich, Galgenbergweg 28, D 89077 Ulm/Donau, and Oleg J. P. Wolf, Berlin, both of Germany, assignors to Heinrich Ulrich, Ulm/Donau, Germany

Filed Aug. 11, 1994, Ser. No. 289,286

Claims priority, application Germany, Aug. 20, 1993, 43 28 062.5

Int. Cl.[6] A61F *2/44;* A61B *17/56*

U.S. Cl. 623—17 20 Claims



1. Spinal implant for vertebral replacement, stabilization and fixation in a spinal column, said implant comprising:

a bracing pin having centering points at opposite ends engageable in spaced apart vertebrae of the spinal column, and a pin shank between said points;

an implant body fitted laterally over said pin in a direction transverse to an axis thereof between said spaced apart vertebrae and having end surfaces abutting same, said body having a laterally open groove receiving said pin and extending from end to end of said body between said end surfaces, opening at a mouth at an outer periphery of said body and extending into said body from said periphery to a center of said body; and

structuring on said surfaces for mutually fixing said surfaces and portions of said spaced apart vertebrae engaged thereby.

5,571,191

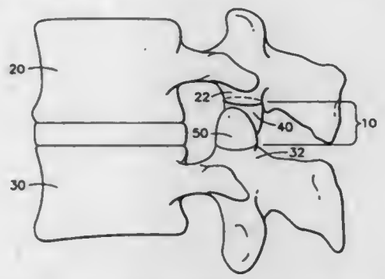
ARTIFICIAL FACET JOINT

William R. Fitz, 6524 Hammerstone Way, Cincinnati, Ohio 45227

Filed Mar. 16, 1995, Ser. No. 405,199

Int. Cl.[6] A61F *2/44*

U.S. Cl. 623—17 17 Claims



1. A prosthetic device for implantation over a painful or otherwise damaged inferior articular process or a superior articular process, or both, of a human spinal facet joint, comprising,

a superior component roughly in the form of a hollow cone or pyramid with a rounded apex substantially conforming to the size and shape of the distal tip of the inferior articular process so as to be a substantially matching fit over it;

an inferior component roughly in the form of a hollow cone or pyramid substantially conforming to the size and shape of the distal tip of the inferior articular process so as to be a substantially matching fit over it;

means for affixing said superior component to said distal tip of the inferior articular process;

means for affixing said inferior component to said distal tip of the superior articular process.

5,571,192

PROSTHETIC VERTEBRAL IMPLANT

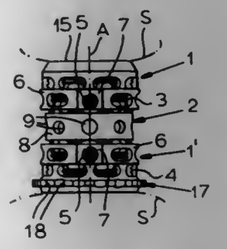
Helmut Schönhöffer, Ulm, Germany, assignor to Heinrich Ulrich, Ulm/Donau, Germany

Filed Jul. 3, 1995, Ser. No. 497,948

Claims priority, application Germany, Jul. 2, 1994, 44 23 257.8

Int. Cl.[6] A61F *2/44*

U.S. Cl. 623—17 18 Claims



1. A spinal implant for engagement in a space left by ablation of a vertebral body between a pair of adjacent vertebrae, the implant comprising:

a tubular center element extending along an axis, having upper and lower ends formed with respective upper and lower external screwthreads of opposite hand, and formed with a plurality of radially throughgoing apertures; and

respective upper and lower tubular end elements each formed with a plurality of radially throughgoing apertures, axially flanking the center element, each having an internally threaded circular-section inner end threaded onto a respective one of the external screwthreads and radially surrounding the respective upper and lower ends of the center element, and each having an outer end adapted to bear on a respective one of the adjacent vertebrae, all the apertures being so positioned and dimensioned that when the end elements are threaded to the center element each center-element aperture in a region of axial overlap between the elements is at least partially radially aligned with one of the respective end-element apertures.

5,571,193

IMPLANT WITH REINFORCED RESORBABLE STEM

Stanley L. Kampner, 2320 Sutter St., San Fransisco, Calif. 94115

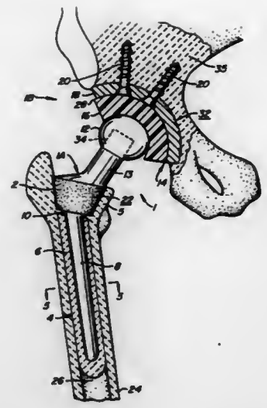
Continuation-in-part of Ser. No. 850,091, Mar. 12, 1992, abandoned. This application Jun. 11, 1992, Ser. No. 897,197

Int. Cl.[6] A61F *2/30*

U.S. Cl. 623—18 16 Claims

1. An anchor for a bone joint implant adapted to be inserted in a cavity defined by a bone and having a given cross section for affixing the implant to the bone without substantial motion of the implant relative to the bone after affixation, the anchor comprising:

a nonresorbable core sized for insertion in the cavity and having a cross section sufficiently smaller than the cross section of the cavity so that contact between the bone and the core is prevented; and



a resorbable sleeve applied to the core and having a size so that it tightly engages the cavity in the bone to thereby immovably secure the anchor to the bone.

5,571,194

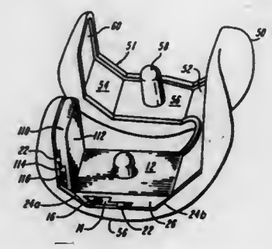
FEMORAL AUGMENTATION SYSTEM FOR ARTIFICIAL KNEE JOINT

Stefan M. Gabriel, Lakeville, Mass., assignor to Johnson & Johnson Professional, Inc., Raynham, Mass.

Filed Nov. 14, 1994, Ser. No. 339,019

Int. Cl.[6] A61F *2/30*

U.S. Cl. 623—18 21 Claims



1. An augmentation device for a joint prosthesis; comprising

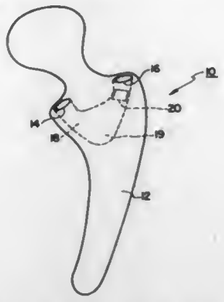
a main augmenting block adapted to mount on a surface of a joint prosthesis, the main augmenting block having a nominal distal surface and a proximal surface, first and second side surfaces that are either anterior or posterior surfaces, and third and fourth side surfaces that are either medial or lateral surfaces;

a channel disposed in the main augmenting block and extending into an interior portion of the main augmenting block through one of the side surfaces of the main augmenting block;

a secondary block means, adjustably positioned within the channel of the main augmenting block, for securing the augmentation device to a joint prosthesis, the secondary block means including a side surface that is either a lateral or medial surface and that corresponds in shape and orientation to the side surface of the main augmenting block through which the channel extends; and

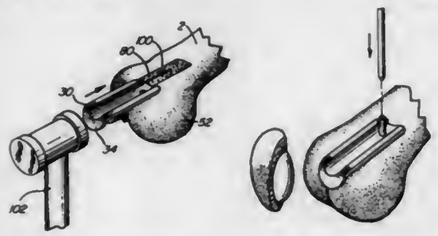
screw means associated with the secondary block means fog adjusting the position of the secondary block means relative to the main augmenting block between at least a first and a second position.

5,571,195
PROTHESIS FOR AN ARTIFICIAL JOINT HAVING A WEAR PARTICLE COLLECTION CAPABILITY
Lanny L. Johnson, 4528 Hagadorn, East Lansing, Mich. 48823
Filed May 30, 1995, Ser. No. 453,877
Int. Cl.[6] A61F *2/30;2/34*
U.S. Cl. 623—18 **4 Claims**



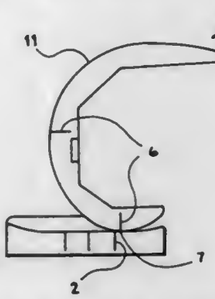
1. A synovial joint prosthesis, said prosthesis having openings on an exterior surface thereof and being provided with an interior passage extending between said openings, said openings and interior passage being oriented to cause unassisted natural circulation of synovial joint fluid through the passage and to permit particles carried by said fluid to be deposited within the passage in the prosthesis.

5,571,196
PATELLO-FEMORAL JOINT REPLACEMENT DEVICE AND METHOD
Daniel Stein, 2415 Buckeye St., Newport Beach, Calif. 92660
Filed Oct. 24, 1994, Ser. No. 328,140
Int. Cl.[6] A61F *2/38*
U.S. Cl. 623—20 **9 Claims**



1. A patello-femoral prosthesis system for replacing articulating surfaces of a patello-femoral joint, the prosthesis system comprising:
a patellar component dimensioned and arranged to be attached to a surface of a patella and dimensioned and arranged for facing a surface of a femur, the patellar component comprising:
a disc-shaped attachment piece including a plurality of pegs on a patellar surface thereof for insertion into a patella; and
a bearing piece attached to a femoral surface of the attachment piece and presenting a smooth, convex surface; and
an elongate femoral prosthesis arranged for attachment to a patellar surface of a femur and dimension for replacing a trochlear groove thereof, the femoral prosthesis comprising:
an outer surface for facing a patella, the outer surface bearing a shallow, cross-sectionally arcuate indentation running the length of the outer surface parallel to a long axis of a femur when the femoral prosthesis is attached thereto;
out-turned lips forming longitudinal edges of the outer surface of the femoral prosthesis;
a proximal end spaced from a tibial end of a femur when the femoral prosthesis is attached thereto, the proximal end bearing an insertable peg for attaching the femoral prosthesis to a femur and preventing accidental loosening; and
a distal end near a tibial end of a femur when the femoral prosthesis is attached thereto, the distal end forming a downturned edge to keep the bearing piece of the patellar component from becoming trapped;
a convex inner surface sized to fit an enlarged trochlear groove; and
at least two projecting vanes, spreading apart and non-parallel cross-sectionally, borne on the inner surface, running a length thereof and arranged and dimensioned to fit slots cut in a femur, for ensuring permanent adhesion of the femoral prosthesis by directly contacting bone when the femoral prosthesis is affixed to a femur.

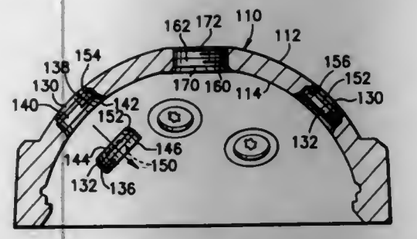
5,571,197
KNEE POSITION INDICATOR
John N. Insall, 227 Griffin Ave., Scarsdale, N.Y. 10583
Continuation of Ser. No. 94,636, Jul. 20, 1993, Pat. No. 5,443,518. This application May 17, 1995, Ser. No. 443,412
Int. Cl.[6] A61F *2/38*
U.S. Cl. 623—20 **7 Claims**



1. An apparatus for determining knee position during knee joint replacement comprising a femoral component and a tibial component the tibial component having medial, lateral and superior tibial surfaces, the superior tibial surface configured to accommodate articulation with the femoral component, at least one of the medial and lateral tibial surfaces including an elongated, linear, tibial reference mark extending down the at least one surface for visually indicating relative location between the tibial component and the femoral component, the tibial reference mark being visible when the tibial component and the femoral component are implanted so that in use the relative location of a contact point between the tibial component and the femoral component is visually indicated by the contact point's location relative to the reference mark, the contact point's location relative to the reference mark changing as the components are articulated relative to one another.

5,571,198
ACETABULAR SHELL WITH SELECTIVELY AVAILABLE BONE SCREW HOLDS
David A. Drucker, 210 W. Shearwater Pl. Apt. 51, Jersey City, N.J. 07305; Robert G. Collins, Saddle Brook, and Nicholas N. G. Dong, Little Falls, both of N.J., assignors to David A. Drucker, New York, N.Y.
Filed Jan. 21, 1994, Ser. No. 185,062
Int. Cl.[6] A61F *2/32*
U.S. Cl. 623—22 **15 Claims**

1. An improvement in an acetabular cup component of a prosthetic hip implant, the acetabular cup component having an acetabular shell which receives a bearing member within the



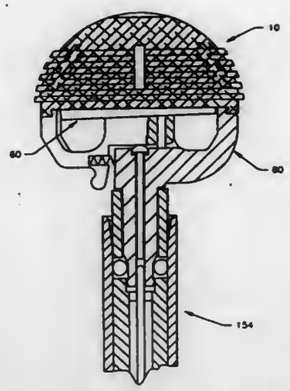
acetabular shell, the acetabular shell having an inner surface defining an interior of the acetabular shell for receiving the bearing member, an outer surface for engagement with the natural bone at an implant site, and at least one bone screw hole in the acetabular shell, the bone screw hole extending through the acetabular shell from the inner surface to the outer surface of the acetabular shell, the improvement enabling the interoperative selection of implanting the acetabular shell without the employment of a bone screw or with the employment of at least one bone screw for assisting securement of the acetabular shell within the natural bone at the implant site, the improvement comprising:
a plug for seating in the bone screw hole to close the bone screw hole, the plug including fastener means for engaging the acetabular shell to fasten the plug within the bone screw hole, and sealing means for engaging the acetabular shell essentially to seal the bone screw hole against the migration of debris from the bearing member through the bone screw hole in the direction from the inner surface to the outer surface;
the plug having a length extending in a direction axially between the inner surface and the outer surface of the acetabular shell, when the plug is seated within the bone screw hole in the acetabular shell, the length being such that the plug does not protrude beyond the outer surface of the acetabular shell when the plug is seated within the bone screw hole;
the fastener means including a screw thread on the plug and operator means for being selectively operated from the interior of the acetabular shell to selectively release the screw thread of the plug from the bone screw hole for removal of the plug through the interior of the acetabular shell to thereby selectively open the bone screw hole for reception of the bone screw after engagement of the acetabular shell with the natural bone at an implant site.

5,571,199

Patent Not Issued For This Number

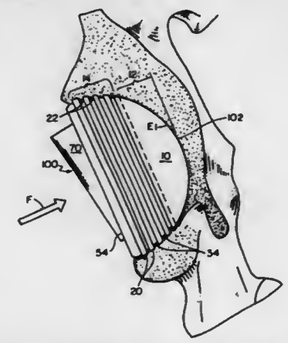
5,571,200
ACETABULAR CUP, METHOD AND TOOL FOR INSTALLING THE SAME
Robert C. Cohen, Rockaway Township, and Rafial Zubok, Midland Park, both of N.J., assignors to Implex Corporation, Allendale, N.J.
Division of Ser. No. 286,003, Aug. 4, 1994. This application May 5, 1995, Ser. No. 435,969
Int. Cl.[6] A61F *2/34*
U.S. Cl. 623—22 **9 Claims**

1. In an acetabular cup of the type including an outer shell of a hard material having a cavity circumscribed by an annular base surface, and a bearing insert of a material which is softer than said material of said outer shell, said bearing insert being disposed within said cavity of said shell, the improvement therewith comprising:
coupling means disposed on said annular base surface for coupling a tool to said outer shell, said tool being used for installing said cup in a patient's acetabulum, said coupling



means operating to prevent said tool from damaging said bearing insert during the installation of said cup, wherein said coupling means includes a track with an inclined surface, a track rim surface, and locking means, said inclined surface having a first end and a second end, said first end of said inclined surface merging with said annular base surface and said second end of said inclined surface merging with said track rim surface of said track, said locking means including a locking depression disposed in said track for receiving an associated locking means on said tool.

5,571,201
PROSTHETIC ACETABULAR CUP AND METHOD OF IMPLANT
Robert G. Averill, Ringwood, and Robert C. Cohen, Rockaway Township, both of N.J., assignors to Implex Corporation, Allendale, N.J.
Division of Ser. No. 317,887, Oct. 4, 1994. This application May 5, 1995, Ser. No. 435,971
Int. Cl.[6] A61F *2/34*
U.S. Cl. 623—22 **5 Claims**



1. A method of implanting an acetabular cup prosthesis within the acetabulum of a patient, comprising the steps of:
reaming said acetabulum into a generally hemispherical shape;
inserting said acetabular cup prosthesis ioto said acetabulum, wherein said acetabular cup has an outer surface with a plurality of regions and at least one of said regions conforms to the curvature of an ellipsoid which defines an elliptical plane section having a major axis and a minor axis, said major axis being longer than said minor axis; and
deforming said hemispherical shape of said acetabulum during said step of inserting, whereby said acetabular cup prosthesis causes said acetabulum to deform into a shape that generally

corresponds to said outer surface, whereby said acetabulum contacts said acetabular cup prosthesis along said outer surface.

5,571,202

SHAFT FOR AN ARTICULATION ENDOPROSTHESIS

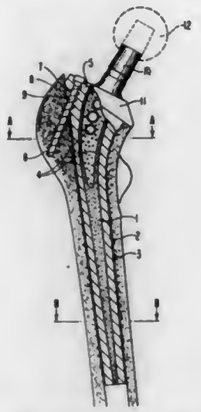
Robert Mathys, Sr.; Robert Mathys, Jr., both of Bettlach, and Beat Gasser, Ittigen, all of Switzerland, assignors to Mathys AG Bettlach, Bettlach, Switzerland

PCT No. PCT/CH93/00008, § 371 Date Sep. 19, 1994, § 102(e) Date Sep. 19, 1994, PCT Pub. No. WO94/16649, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 19, 1993, Ser. No. 307,562

Int. Cl.[6] A61F *2/32*

U.S. Cl. 623—23 **32 Claims**



1. A shank for a joint endoprosthesis comprising

a metal core (**1**) having a proximal end, a distal portion and a neck portion (**10**) joined to said proximal end;

a non-metallic, elastic sheath (**2**) enclosing said distal portion of said core and having an outer surface,

said sheath having a Young's modulus between 500 and10,000 N/mm^2,

said core and sheath being geometrically or frictionally held together,

said outer surface of essentially one-third of the length of said sheath adjacent said proximal end having a macro-structure with a roughness depth of between 0.2 and 2.5 mm, and

said outer surface of essentially two thirds of the length of said sheath in said distal portion having a micro-structure with a roughness depth of between 0.1 and 500 μ; and

a surface layer (**3**) on said outer surface of said sheath, said surface layer comprising a bio-compatible material free of inner pores, said surface layer having a thickness of less than 600 μm and a surface hardness greater than said sheath.

5,571,203

BONE-CONSERVING HIP SYSTEM

Michael A. Masini, 4817 Hillway Ct., Ann Arbor, Mich. 48105

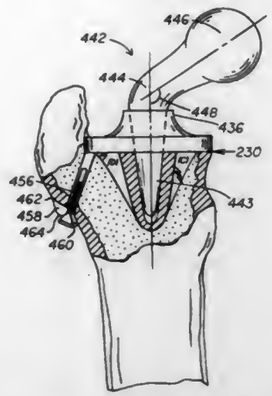
Continuation-in-part of Ser. No. 79,366, Jun. 18, 1993, abandoned. This application Jan. 17, 1995, Ser. No. 373,174

Int. Cl.[6] A61F *2/36*

U.S. Cl. 623—23 **17 Claims**

1. A bone-conserving prothesis adapted for installation on the shaft of a femur at its proximal end, comprising:

a flanged body having an upper portion and a bottom surface adapted to mate against and apply compressive force to a surface resected on the proximal end of a femur;



an elongated member extending downwardly and adapted to extend through the shaft of the femur, the member having a first end secured at a point proximate to the periphery of the flanged body, and a second end for anchoring to the lateral cortex of the femur, thus establishing a pivot point where the member is secured to the body to prevent lift-off of the body and to direct the compressive force along the longitudinal axis of the femur;

a neck component bent at an obtuse angle and having first and second ends, the first end being connected to the body and extending upwardly therefrom; and

a head component connected to the neck component second end, at least a portion of the outer surface of the head component being hemispherical for acetabular engagement,

whereby forces applied to the head component during use are converted into the compressive force through the interface between the bottom surface of the flanged body and the resected surface on the femur.

5,571,204

FEMORAL PROSTHESIS

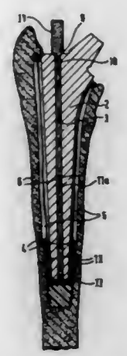
Berthold Nies, Darmstadt, Germany, assignor to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

Filed Jul. 13, 1995, Ser. No. 501,923

Claims priority, application Germany, Jul. 14, 1994, 44 24 883.0

Int. Cl.[6] A61F *2/36*

U.S. Cl. 623—23 **11 Claims**



1. A femoral prosthesis (**1**) for implantation by cementation in a bone bed (**6**), the prosthesis having a prosthesis stem (**2**) thereof

with a longitudinal borehole (**3**) extending from a proximate end to a distal end for transprosthetic application of bone cement, the improvement comprising:

spaces (**7**) for centering and aligning the prosthesis in the proximal region;

a medullary space blocker (**8**) for fastening the sheath (**4**) in the distal region;

an elastic sheath (**4**) of a biocompatible polymeric material, the sheath (**4**) having pores therein and surrounding the prosthesis stem in such a way that, on application of the cement through the bore hole, the sheath is filled starting at the distal end and advancing to the proximate end of the prosthesis, wherein when a space (**5**) between stem (**2**) and the bone bed (**6**) is completely filled, the elastic sheath (**4**) is pressed flush against the bone bed (**6**) and the pores widen so that the bone cement comes into contact with the bone bed (**6**).

5,571,205

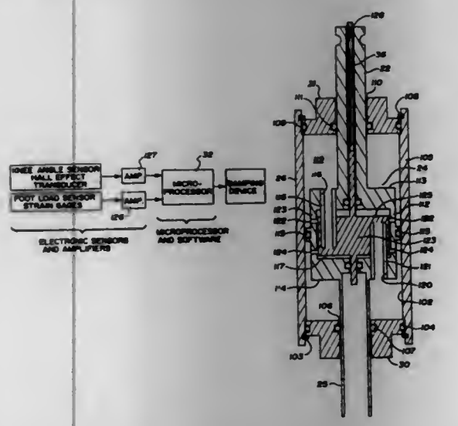
SYSTEM FOR CONTROLLING ARTIFICIAL KNEE JOINT ACTION IN AN ABOVE KNEE PROSTHESIS

Kelvin B. James, 7955 98th Avenue, Edmonton, Alberta, Canada

Continuation-in-part of Ser. No. 804,264, Dec. 5, 1991, Pat. No. 5,383,939. This application Nov. 18, 1994, Ser. No. 341,127

Int. Cl.[6] A61F *2/64;2/70;2/74*

U.S. Cl. 623—24 **5 Claims**



1. A method for controlling rotation of the knee joint of an above knee prosthesis (AKP) in flexion and extension, said AKP in use having a predictable pattern of swing and stance phases states having durations, comprising:

(a) circulating fluid with pumping means driven by the AKP through a first passageway in the course of flexion and through a second passageway in the course of extension;

(b) continuously measuring, throughout the course of AKP movement, at least two AKP characteristics which vary with the activity of the AKP;

(c) using the measurements to continuously establish the state of the AKP throughout the course of its movement, having reference to the predictable patterns and durations of AKP movements; and

(d) separately varying the flow capacity of the first passageway at pre-determined transition points in the course of AKP movement and separately varying the flow capacity of the second passageway at pre-determined transition points in the course of AKP movement, to separately and variably damp knee rotation in each of flexion and extension.

5,571,206

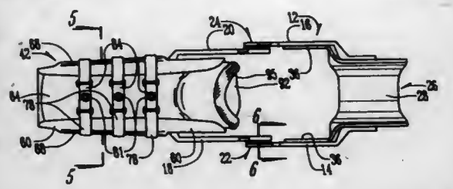
LEG AMPUTEE ORTHOSIS

Harold T. Varn, Lawrenceville, Ga., assignor to Restorative Care Of America Incorporated, Clearwater, Fla.

Filed May 16, 1994, Ser. No. 243,117

Int. Cl.[6] A61F *2/50*

U.S. Cl. 623—27 **20 Claims**



17. A leg orthosis for an leg amputee having a residual limb, the orthosis comprising:

a pair of splints, each having upper and lower ends, and being positioned on opposite sides of the residual limb;

a curved calf band mounted to and extending between the splints for engaging the amputee'residual limb, and having opposite sides with a space therebetween for receiving the residual limb;

a cover removably mountable with the calf band after the residual limb is received in the calf band for closing the space therein and thereby defining an openable bivalve for enclosing the residual limb;

straps extending between the opposite sides of the calf band and over the cover for securing the band and cover around the residual limb; and

padding on the band to engage the amputee'residual limb.

5,571,207

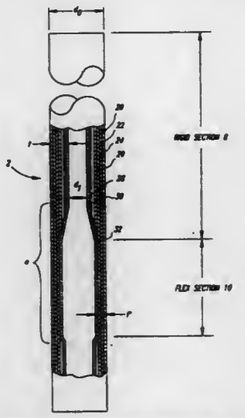
PROSTHETIC PYLON HAVING UNIFORM FLEXURE CHARACTERISTICS

Guy M. Houser, Bainbridge Island, Wash., assignor to Model & Instrument Development Corporation, Poulsbo, Wash.

Filed Sep. 16, 1994, Ser. No. 308,092

Int. Cl.[6] A61F *2/60;3/00*

U.S. Cl. 623—27 **25 Claims**



1. A prosthetic pylon comprising an elongated cylindrical member having first and second ends, the pylon being directly or indirectly attachable at one of the ends to a prosthetic socket and being directly or indirectly attachable at the other end to prosthetic foot, said cylindrical member being relatively stiff along the major portion of its length to form a relatively rigid section and relatively

compliant along a minor portion of its length adjacent said second end to form a relatively flexible section along the rain or portion of its length in which substantially all of the flexure of said pylon is concentrated so that said pylon may be trimmed to a desired length at said first end without affecting the flexure characteristics of said pylon.

5,571,208

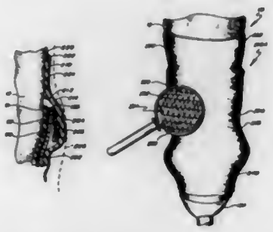
REINFORCED PROSTHETIC POLYURETHANE HYPOBARIC SLEEVE

Carl A. Caspers, 510-8 25th Ave. North, St. Cloud, Minn. 56301

Continuation-in-part of Ser. No. 146,600, Nov. 1, 1993, Pat. No. 5,534,034, which is a continuation-in-part of Ser. No. 959,523, Oct. 13, 1992, Pat. No. 5,258,037, which is a continuation of Ser. No. 552,445, Jul. 13, 1990, abandoned. This application Jun. 21, 1995, Ser. No. 493,170

Int. Cl.[6] A61F *2/78*

U.S. Cl. 623—32 **15 Claims**



1. A suspension sleeve for rolling over and covering the socket portion of an artificial limb and a portion of an amputee's residual limb to flexibly secure the residual limb to the artificial limb, the suspension sleeve comprising a tube open therethrough made entirely from nonporous, tacky polyurethane comprised of predetermined mixed amounts of nonfoaming isocyanates and polyols and being sized to tack up to and surround portions of both the socket and the residual limb.

5,571,209

POST-OPERATIVE PROTECTIVE PROSTHESIS

Robert N. Brown, Sr., Ithaca, N.Y., assignor to Flo-Tech Orthotic & Prosthetic Systems, Inc., Ithaca, N.Y.

Filed Jan. 27, 1995, Ser. No. 379,217

Int. Cl.[6] A61F *2/80*

U.S. Cl. 623—33 **12 Claims**

1. A post operative prosthesis device for protecting the residual limb of a wearer after a transtibial amputation that includes

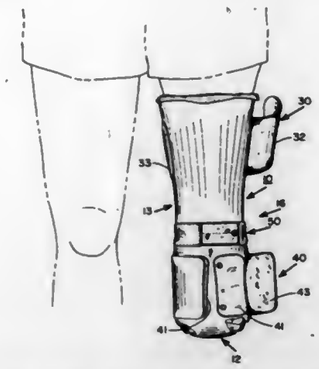
a prosthetic device formed of a semi-rigid plastic,

said device having a circular cup-shaped base, a semi-circular cross-section elongated rear shell and a semi-circular cross-section front shell, both of which extend vertically upwardly from said base such that said base, from shell and rear shell are integrally molded into a single piece of plastic to form a sleeve receiving a residual limb therein,

said rear shell having a pair of opposed cuffs that extend circumferentially from the upper part thereof adapted to encompass the wearer's limb above the knee,

said front shell extending vertically to a height just below the circumferential cuffs of said rear shell,

elastic means for encircling the sleeve and compressing the shells inwardly toward the wearer's limb, and



an adjustable strap secured to the rear shell that surrounds the top of the front shell adapted to be positioned at about the level of the wearer's patella tendon whereby the strap can be tightened about the shells to provide additional protection against impact forces in the event of a fall.

5,571,210

ADJUSTABLE FOOT PROSTHESIS

Leif Lindh, Danderyd, Sweden, assignor to Pro-Pel AB, Danderyd, Sweden

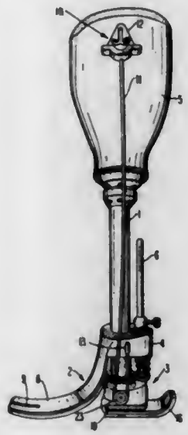
PCT No. PCT/SE93/00492, § 371 Date Dec. 2, 1994, § 102(e) Date Dec. 2, 1994, PCT Pub. No. WO93/24080, PCT Pub. Date Dec. 9, 1993

PCT Filed Jun. 2, 1993, Ser. No. 347,331

Claims priority, application Sweden, Jun. 2, 1992, 9201720-1

Int. Cl.[6] A61F *2/62*

U.S. Cl. 623—38 **14 Claims**



1. An adjustable foot prosthesis comprising a prosthesis socket; an elongated support part securing a foot element to said prosthesis socket; said foot element cooperating with said support part, said foot element comprising a forefoot part, having a forefoot attachment element slidably disposed on said support part, said forefoot part thereby being slidingly displaceable in an axial direction along said support part, and a heel part, said heel part being fixed on an end of said support part opposite to said prosthesis socket; and a means for setting the position of said forefoot part on said support part.

5,571,211

TUBULAR ADAPTER FOR A PROSTHETIC LIMB

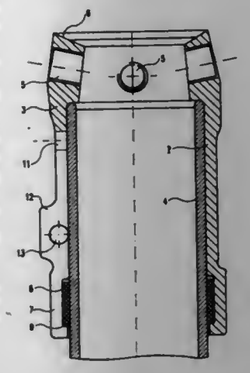
Christian Hiemisch, Duderstadt, and Markus Holzapfel, Osterode, both of Germany, assignors to Otto Bock Orthopädische Industrie Besitz-und Verwaltungs-Kommanditgesellschaft, Germany

Filed May 11, 1995, Ser. No. 439,380

Claims priority, application Germany, May 30, 1994, 9408804 U

Int. Cl.[6] A61F *2/62*

U.S. Cl. 623—38 **5 Claims**



1. Tubular adapter for clamping connection with an end of a tubular part of a modular prosthesis, comprising a connecting sleeve including an axial slot, said connecting sleeve being circumferentially clampable by a clamping member which is connected to said connecting sleeve across said axial slot, said connecting sleeve having an opening to receive said end of said tubular part, a first end of said connecting sleeve abutting upon an annular coupling section which includes on its circumference four equally spaced threaded holes, each threaded hole for receiving a coupling and adjusting bolt, said annular coupling section comprising an annular ball socket provided endwise to abut a ball collar of an adjusting core and a clamping area positioned adjacent said annular ball socket, said connecting sleeve including a second end located opposite said coupling section, said second end of said connecting sleeve including an inner annular surface, and wherein a plastic clamping cuff is positioned on said inner annular surface of said second end of said connecting sleeve, wherein said plastic clamping cuff is a separate ring which is embedded in a region of said second end of said connecting sleeve.

5,571,212

PROSTHETIC ANKLE JOINT FOR PIVOTALLY CONNECTING A RESIDUAL LIMB TO A PROSTHETIC FOOT

Craig J. Cornelius, Woodinville, Wash., assignor to M+IND (Model & Instrument Development Corporation, Poulsbo, Wash.

Filed Jan. 10, 1995, Ser. No. 371,024

Int. Cl.[6] A61F *2/60*

U.S. Cl. 623—48 **23 Claims**

1. A prosthetic ankle joint, comprising:

a first joint structure having a first attachment member attachable to one of either a pylon or a prosthetic foot to receive a force therefrom acting at a first location on the first attachment member, the first joint structure having first and second spaced apart fins each of which substantially lie in a sagital plane;

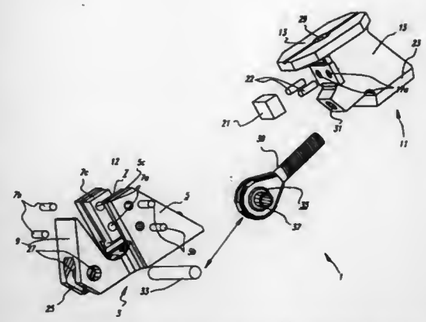
a second joint structure having a second attachment member attachable to the other of either a pylon or a prosthetic foot to receive a force therefrom acting at a second location on the second attachment member, the second joint structure having a lateral restraining member positioned between the first and second fins;

a spherical bearing interconnecting the first joint structure and the second joint structure so that the first and second joint structures pivot with respect to each other in dorsiflexion, plantar flexion, coronal rotation, and transverse rotation; the pivot point of the spherical bearing being offset from the first and second locations in a direction lying in transverse and sagital planes so that a compressive :force applied between the first and second locations imparts a dorsiflexal or plantar flexal torque about the pivot axis;

a dorsiflexion cushion positioned between the first and second joint structures at a location causing the dorsiflexion cushion to be compressed during dorsiflexal pivotal movement of the ankle joint;

a plantar flexion cushion positioned between the first and second joint structures at a location causing the plantar flexion cushion to be compressed during plantar flexal pivotal movement of the ankle joint; and

a lateral cushion positioned between the lateral restraining member and each of the first and second fins so that the lateral cushions are compressed during coronal rotation and transverse rotation pivotal movement of the ankle joint in opposite directions.



5,571,213

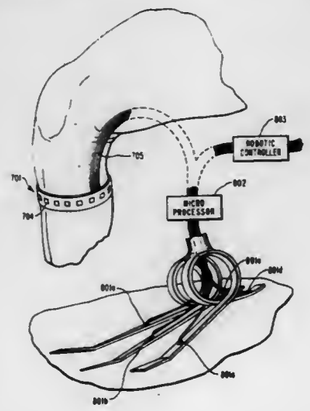
PROSTHETIC FOOT

Scott Allen, 2286 Harvest La., West Jordan, Utah 84084

Continuation of Ser. No. 977,806, Nov. 17, 1992, Pat. No. 5,443,528. This application Aug. 19, 1994, Ser. No. 232,946

Int. Cl.[6] A61F *2/66;2/70*

U.S. Cl. 623—52 **34 Claims**



24. A coil spring prosthetic foot comprising:

(a) a foot center coil section having a top and a bottom, said foot center coil section serving to transfer energy from a heel extension section to a forefoot extension section during a gait cycle involving the coil spring prosthetic foot;

(b) a heel extension section extending in a first generally posterior direction from said foot center coil section, said heel extension section serving to absorb and store energy at heel strike during a gait cycle involving the coil spring prosthetic foot, and

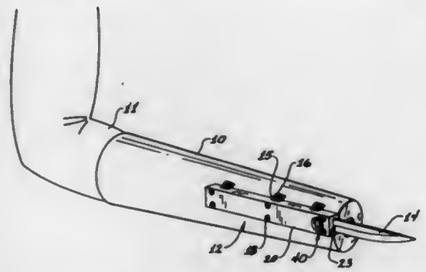
(c) a forefoot extension section extending in a second generally anterior direction from said foot center coil section, said forefoot extension section comprising a plurality of toe extensions, each of said toe extensions being separately articulable from the rest of said toe extensions during a gait cycle involving the coil spring prosthetic foot, and said forefoot extension section serving to release stored energy at toe-off during a gait cycle involving the coil spring prosthetic foot.

5,571,214

PROSTHESIS FOR HUMAN FOREARM

Edward Niziol, 1731 Harrison La., Youngstown, N.Y. 14174

Filed Jul. 12, 1995, Ser. No. 501,235
Int. Cl.[6] A61F 2/54
U.S. Cl. 623—65 2 Claims



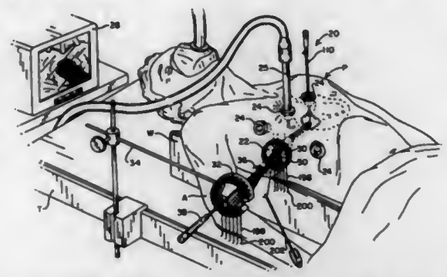
1. In combination, a human forearm prosthesis, and attached thereto a cutting device comprising a housing, said housing having a front and back, a knife blade suitable for cutting, first means and second means for restraining the travel of the knife blade into said housing when said knife blade is retracted into said housing to a retracted position, and out of said front of said housing when the knife blade extends from the housing to an extended position for use of the knife blade, wherein said knife blade moves into and out of the housing by force of gravity; wherein said first means for restraining the travel of the knife blade comprises guide means which runs substantially the length of said housing and a projection located on or near the back end of the knife blade, which projection travels in said guide means; wherein said second means for restraining the travel of said knife blade comprises a spring operated knife blade release mechanism that blocks the knife blade from passing out of the housing when it is desired to restrain the blade in a retracted position, but which spring operated blade release mechanism permits the knife blade to protrude from the housing and which mechanism projects through an aperture in the knife blade near the back end of said knife blade, to lock said knife blade in place, when it is desired to use the knife blade, and wherein, said spring operated knife blade release mechanism is attached to an aperture in said housing located in said front of the housing and said knife blade release mechanism remains in the: aperture in the front of the housing when the knife blade moves from the retracted position to the extended position.

5,571,215

DEVICES AND METHODS FOR INTRACARDIAC PROCEDURES

Wesley D. Sterman, San Francisco; Michi E. Garrison, Belmont; Hanson S. Gifford, III, Woodside, and John H. Stevens, Palo Alto, all of Calif., assignors to Heartport, Inc., Redwood City, Calif.

Continuation-in-part of Ser. No. 23,778, Feb. 22, 1993, Pat. No. 5,452,733. This application Dec. 6, 1993, Ser. No. 163,241
Int. Cl.[6] A61F 2/24; A61B 17/00
U.S. Cl. 623—66 51 Claims



1. A method of closed-chest replacement of a heart valve in a valve position in a patient's heart, the method comprising:

establishing cardiopulmonary bypass by withdrawing blood from a major vein in the patient, oxygenating the blood, and returning the blood after oxygenation to a major artery in the patient;

arresting the patient's heart;

forming a plurality of percutaneous intercostal penetrations in the patient's chest, each of the percutaneous intercostal penetrations being within an intercostal space between two adjacent ribs;

viewing the patient's heart through a scope extending through a first of said percutaneous intercostal penetrations in the patient's chest;

forming an internal penetration through a wall of the patient's heart using a cutting tool introduced through one of said percutaneous intercostal penetrations in the patient's chest;

locating a valve position in the heart;

positioning a replacement valve through one of said plurality of percutaneous intercostal penetrations in the patient's chest;

using an elongated instrument positioned in one of said percutaneous intercostal penetrations to position the replacement valve through the internal penetration into a chamber of the heart, the elongated instrument having a length sufficient to reach the valve position from outside of the patient's chest; and

securing the replacement valve in the valve position in the heart;

wherein all surgical manipulations are performed from outside of the patient's chest.

5,571,216

METHODS AND APPARATUS FOR JOINING COLLAGEN-CONTAINING MATERIALS

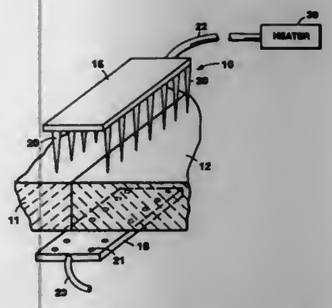
R. Rox Anderson, Lexington, Mass., assignor to The General Hospital Corporation, Boston, Mass.

Filed Jan. 19, 1994, Ser. No. 184,008
Int. Cl.[6] A61F 2/54
U.S. Cl. 623—66 13 Claims

1. A method of permanently joining a first, solid, biological, collagen-containing material to a second, solid collagen-containing material, each material having free ends of collagen fibrils at a surface, said method comprising the steps of

bringing the free ends of collagen fibrils at the surfaces of the first and second materials into contact,

heating the first and second materials for a time and to a temperature sufficient to permanently join the first and second materials at an area of contact of the free ends, wherein said temperature is above a melting temperature of the collagen fibril free ends, and below a melting temperature of intact collagen fibrils, such that collagen fibrils in the first and second materials are not denatured except at their free ends, and thereafter crosslinking the collagen along said area of contact.

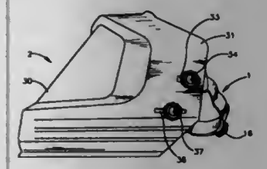


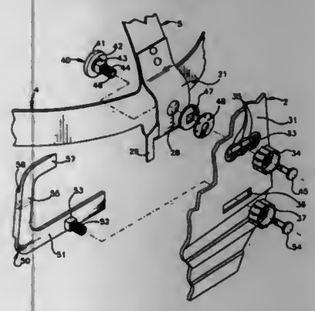
5,571,217

PROTECTIVE ASSEMBLY FOR THE PROTECTION OF THE HUMAN HEAD

Francesco Del Bon, Aarburg, and Christoph Lutz, Maur, both of Switzerland, assignors to Optrel AG, Switzerland

Filed Jul. 23, 1993, Ser. No. 96,612
Claims priority, application Germany, Jul. 24, 1992, 42 24 476.5
Int. Cl.[6] A61F 9/06
U.S. Cl. 2—9 22 Claims





1. A protective assembly for the protection of the human head from external detrimental effects, comprising:

a support structure adapted to be connected to the head of the person wearing the protective assembly;

a visor means through which a human wearing the protective assembly sees along a horizontal viewing axis, said visor means being pivotally connected to said support structure for swiveling from a lower operative position to an upper rest position; and

means for adjusting and fixing the position of said visor means along said horizontal viewing axis and in said lower operative position, said means for adjusting and fixing the position of said visor means including actuating members for the operation of said means for adjusting and fixing the position of said visor means;

all said actuating members for the operation of said means for adjusting and fixing the position of said visor means being located at the outer side of the protective assembly and the visor means, respectively, such that they can be actuated in said lower operative position of the protective assembly to adjust and fix the position of said visor means along said horizontal viewing axis and in said lower operative position;

said support structure including a stiff-elastic forehead tape portion, said visor means being fixed to said forehead tape portion, said visor means including two lateral portions in operative connection with said support structure, each of said lateral portions being connected to said support structure by means of a releasable screw connection operating as a slip clutch member, said forehead portion of said support structure being provided with a radially outwardly protruding tape section located in the temple region of said support structure which serves as a basis portion for the determination of said releasable screw connection;

each of said radially outwardly protruding tape sections of said support structure and said lateral portions of said visor means each having a port-like aperture for receiving a threaded bolt forming the pivot axis for the visor, one of said port-like apertures, on each side of the visor, is in the shape of a longitudinal slit extending essentially parallel to the direction of viewing of the person wearing the protective assembly;

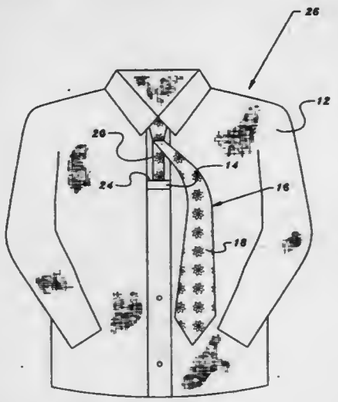
each of said longitudinal slits having, along its longitudinal extension, a plurality of snap-in recesses adapted to cooperate with an actuating knob member, said actuating knob member being located on said threaded bolt at the outside of said lateral portions of said visor in order to enable the wearer to positively fix the position of said visor with reference to said support structure in one of several predetermined positions defined by said snap-in recesses.

5,571,218

NECKTIE RESTRAINING SHIRT

Bob Caniglia, 62 River Rd., Scarborough, N.Y. 10510

Filed Dec. 11, 1995, Ser. No. 570,722
Int. Cl.[6] A41B 1/08; A41D 27/00
U.S. Cl. 2—115 1 Claim



1. A necktie restraining means comprising:

a fabric shirt; and

necktie retention means forming a part of and being attached to a front portion of said shirt, said necktie retention means serving to retain a rear tail portion of said necktie in an aligned engagement with said fabric shirt, whereby said rear

tail portion is normally and more securely concealed from view behind a front visible portion of said fabric necktie;

wherein said necktie retention means includes a substantially horizontal opening in said shirt, said rear tail portion of said fabric necktie being positionable through and being retained by said opening; and

wherein said necktie retention means further includes a loop of material fixedly secured to said front portion of said shirt, said front visible portion of said fabric necktie being positionable through and being retained by said loop.

5,571,219

COATING COMPOSITION METHOD OF USING IT AND ARTICLE COATED WITH SAME

Anthony D. T. Gorton, Hatfield, United Kingdom, assignor to Wembley Rubber Products (M) Sdn. Bhd., Selangor, Malaysia

Filed Dec. 6, 1994, Ser. No. 349,962

Claims priority, application United Kingdom, Aug. 11, 1994, 9416251

Int. Cl.[6] A41D *19/00*; **A61B** *19/04*; **C09D** *107/00*; *109/02*

U.S. Cl. 2—161.7 **12 Claims**

1. A method of coating an article to be worn by a user, the method comprising applying to said article an aqueous coating composition comprising a natural rubber modified with a graft-polymerised methacrylate polymer, a vinyl acetate or acrylic polymer, and an acrylonitrile synthetic rubber.

5,571,220

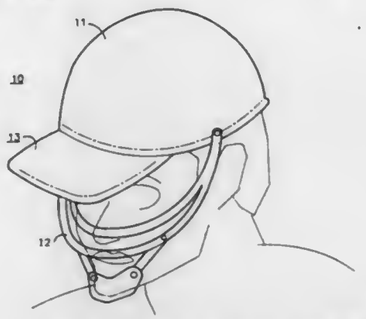
PROTECTIVE HEADGEAR FOR BASEBALL FIELDERS

Rex B. Hall, 2000 Chase Brook Dr., Hoover, Ala. 35244

Filed Oct. 18, 1995, Ser. No. 544,719

Int. Cl.[6] A42B *3/20*

U.S. Cl. 2—424 **14 Claims**



1. A protective helmet for use by fielders while fielding or catching balls comprising a cap portion substantially in the shape of a baseball cap having a visor and a head covering for covering for the head above the ears, a protective faceguard attached to each side of the helmet at points on the rear half of the cap portion so that the faceguard is adapted to extend past the temporal regions of the head of the wearer and encircle the face of the wearer, said faceguard comprising a nose protective bar adapted to shield a portion of the nose and eyes of the wearer, and a mouth protective bar adapted to shield the mouth of the wearer, means for fixing the spacing between the nose protective bar and mouth protective bar, and a chin guard adapted to engage the chin of the wearer, and being attached to the faceguard on each side of the faceguard so that the spacing between the chin guard and mouth protective bar is fixed whereby when the protective helmet is worn the chin, mouth, nose, eyes and the temporal areas of the wearer are protected against impact by a ball during the fielding or catching thereof.

5,571,221

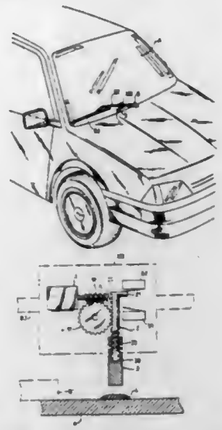
AUTOMOBILE WINDSHIELD WIPER PROTECTION DEVICE

Chunn-Cherh Kuo, 4F, No. 155-2, Sec. 1, Tsu-Chiang Rd., Sanchung, Taipei, and Chung-Gang Shieh, 3F, No. 84, Sec. 2, Pa-Teh Rd., Taipei, both of Taiwan

Filed Mar. 1, 1996, Ser. No. 609,555

Int. Cl.[6] B60S *1/34*; *1/32*

U.S. Cl. 15—250.19 **7 Claims**



1. In an automobile which includes a windshield and a windshield wiper assembly for wiping said windshield, said wiper assembly comprising:

a wiper blade engaging said windshield of said automobile, said wiper blade being supported by a windshield wiper arm, said arm mounted to said automobile for oscillating said blade over said windshield; the improvement comprising:

a wiper blade protection device for raising the blade so as to be spaced from the windshield when a vehicular ignition means of the automobile is shut off, said protection device comprising a housing mounted on the wiper arm, a DC motor provided in the housing, control means for controlling motor rotation in response to said vehicular ignition means, an elongated telescopic pusher rod mounted to said housing for linear movement, driving means coupling the motor to said pusher rod such that rotation of said motor causes said pusher rod to extend from or retract into the housing depending on motor rotation direction, extension of said pusher rod from said housing causing engagement of said pusher rod with said windshield, thereby raising the wiper arm and moving the wiper blade away from the windshield.

5,571,222

PROCESS AND ARRANGEMENT FOR MEASURING TAPERED THREAD

Peter Ludwig, Kappeln, Germany, assignor to Carl Zeiss Jena GmbH, Jena, Germany

Filed Mar. 24, 1995, Ser. No. 410,249

Claims priority, application Germany, Mar. 24, 1994, 44 10 195.3

Int. Cl.[6] G01B *5/008*

U.S. Cl. 33—199 B **13 Claims**

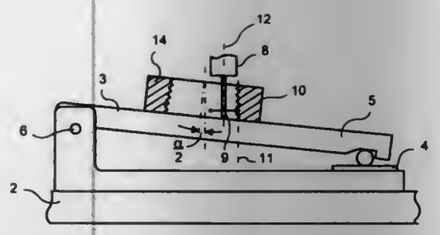
1. In a process for measuring a tapered thread of a test piece by the one-ball or two-ball measuring method, in particular, on a coordinate measurement device outfitted with a device table and a measuring feeler which are movable relative to one another, wherein a feeler element which can be deflected in a measurement coordinate is arranged at the measuring feeler and is brought into contact with different thread flanks of the thread of the test piece to be tested one after the other, and wherein the measurement data determined by contacting the thread flanks of the test piece are fed to an evaluating device for determining the characteristic values and fundamental quantities of the measured thread, the improvement comprising the process steps of:

calibrating the measuring feeler of the coordinate measurement device by diametrically contacting a calibrating ring placed on a horizontally adjusted auxiliary table arranged on the device table of the coordinate measurement device and storing the recorded measurement data in the evaluating device;

positioning the test piece on said auxiliary table and adjusting said auxiliary table so that a first flank diameter line of the tapered thread is aligned vertically to a surface of the device table and contacting the thread in at least one thread turn and performing on-line recording of measurement data and storage of same in the evaluating device;

adjusting said auxiliary table so that a second flank diameter line of the tapered thread located diametrically opposite the first flank diameter line is aligned vertically to the surface of the device table (X-Y plane) and contacting the thread in at least one thread turn and performing on-line recording of the measurement data and storage of same in the evaluating device; and

calculating and determining the characteristic values and fundamental quantities of the tapered thread by said evaluating device.



5,571,223

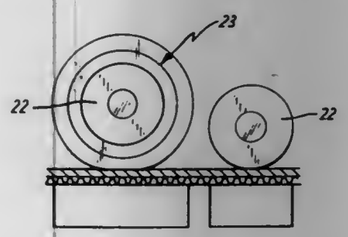
ROLLER APPARATUS

Walter Dudovicz, Salem, N.H., assignor to Scapa Group PLC, Blackburn, United Kingdom

Filed Jun. 22, 1993, Ser. No. 90,685

Int. Cl.[6] D06F *58/00*

U.S. Cl. 34—110 **13 Claims**



1. A roller apparatus for use in the drying section of apparatus for producing corrugated board, said roller apparatus comprising a tubular body, the tubular body comprising a cylindrical wall defining an aperture extending therethrough, the aperture being operative to receive a rotatable metal roller, wherein the cylindrical wall comprises an inner layer consisting essentially of polymeric material and a relatively less hard outer layer, the outer layer comprising deformable material and wherein a reinforcing structure is provided at an interface between the inner layer and the outer layer.

5,571,224

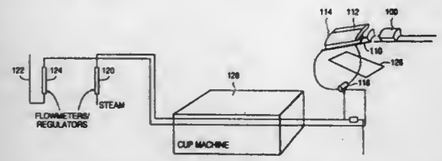
PRECONDITIONED PAPERBOARD CONTAINERS AND METHOD AND APPARATUS FOR MAKING THE SAME

Robert J. Aloisi, Neenah, Wis.; Arthur Livingston, Hamilton Township, Pa., and Brian S. Huss, Little Chute, Wis., assignors to James River Corporation of Virginia, Richmond, Va.

Division of Ser. No. 245,544, May 18, 1994, which is a continuation-in-part of Ser. No. 208,883, Mar. 11, 1994, Pat. No. 5,472,402. This application Jun. 22, 1995, Ser. No. 493,820

Int. Cl.[6] F26B *19/00*

U.S. Cl. 34—218 **25 Claims**



1. A container blank retaining device for retaining container blanks for further processing, said retaining device comprising:

positioning means for positioning a stack of blanks and maintaining the blanks in a retrievable position having a portion of the blanks accessible;

restraining means for restraining the stack of blanks within said positioning means such that blanks from the stack of blanks can be sequentially removed from said positioning means; and

means for creating a humid atmospbere about the stack of blanks for subjecting at least a portion of each of the blanks of the stack of blanks intended to form an upper periphery of a container to said humid atmosphere.

5,571,225

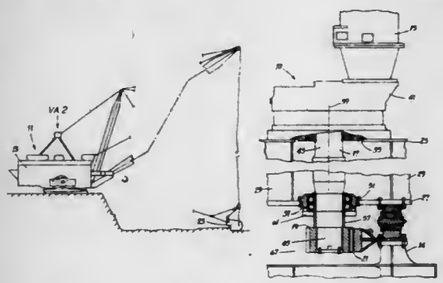
DRIVE ARRANGEMENT AND METHOD FOR INSTALLING SUCH ARRANGEMENT IN A MACHINE

Jerry J. David, Franklin, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.

Filed May 5, 1995, Ser. No. 435,747

Int. Cl.[6] F16N *57/02*

U.S. Cl. 37—307 **11 Claims**



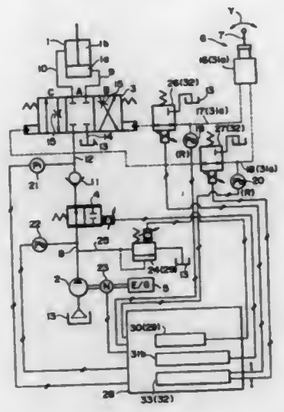
1. A drive arrangement for a machine having upper and lower deck members with respective upper and lower openings therethrough, and wherein (a) the lower deck member has an upper surface, and (b) the drive arrangement includes a bearing housing having a flange attached to the lower deck member, the improvement wherein:

the upper opening and the bearing housing are cooperatively configured to permit the bearing housing to pass through the upper opening; and

the flange is attached to the upper surface of the lower deck member,

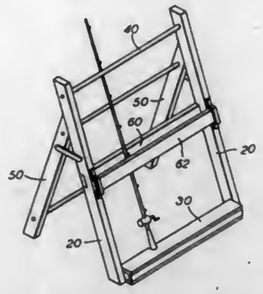
whereby the drive arrangement is configured to be installed through the upper opening.

5,571,226
HYDRAULIC DEVICE FOR CONSTRUCTION MACHINERY
Takahiro Kobayashi, Akashi, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan
Filed Sep. 7, 1994, Ser. No. 301,875
Claims priority, application Japan, Sep. 7, 1993, 5-221836; Dec. 28, 1993, 5-333951
Int. Cl.[6] G05D *1/02*
U.S. Cl. 37—348 **15 Claims**



1. A hydraulic device comprising:
a hydraulic pump;
a hydraulic actuator having inlet and outlet side fluid chambers;
a pressure sensor positioned for detecting a value indicative of a fluid pressure at said inlet side fluid chamber;
actuator fluid lines leading from each of said fluid chambers;
a pump fluid line leading from said pump;
a fluid tank fluid line leading to a fluid tank;
a direction switching unit connected to said actuator lines, said fluid line, and said pump fluid line;
an operating lever to be operated by an operator;
direction switching unit drive means connected to said operating lever and to said direction switching unit for driving said direction switching unit;
an inflow variable restriction located between said pump and said actuator fluid lines;
pressure difference controlling means for controlling the difference in pressure between inlet and exit ports of said inflow variable restriction;
inflow variable restriction control means connected to said inflow variable restriction and to said operating lever for controlling said inflow variable restriction in accordance with the degree of operation of said operating lever;
an outflow variable restriction located in between said fluid tank and said actuator fluid lines and whose restriction area may be controlled independently of the restriction area of the inflow variable restriction; and
outflow variable restriction control means connected to said outflow variable restriction for controlling said outflow variable restriction as a function of a comparison of fluid pressure at said inlet side fluid chamber with a fluid pressure value indicative of cavitation in said inlet side fluid chamber.

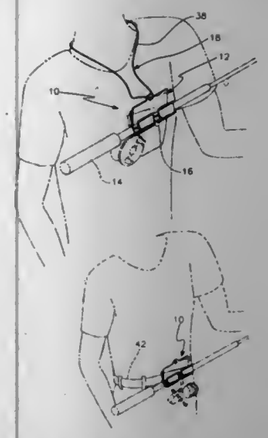
5,571,227
APPARATUS FOR HOLDING A FISHING POLE
William S. Pisarek, 305 Marose Dr., Pittsburgh, Pa. 15235
Filed Jan. 24, 1995, Ser. No. 377,471
Int. Cl.[6] A01K *97/10*
U.S. Cl. 43—21.2 **18 Claims**



1. An apparatus for holding and supporting at least one fishing pole while such at least one fishing pole is being utilized for fishing purposes, said apparatus comprising:
(a) a frame structure having a base side and an upper side opposite and spaced from said base side;
(b) an upright support means adapted to support said frame structure on a generally horizontal surface in a generally inclined vertical orientation, with said base side disposed in a lowermost position adjacent to such generally horizontal surface;
(c) a handle support means at said base side comprising a horizontally disposed, elongated channel structure adapted to retain a handle of such at least one fishing pole over such generally horizontal surface, said elongated channel having at least one notch adapted to receive such handle and prevent lateral displacement thereof;
(d) a transverse support means at said upper side adapted to laterally support a mid-length portion of such at least one fishing pole, such that such at least one fishing pole can be supported on said frame structure in a generally inclined vertical orientation, with such handle thereof engaged by said handle engaging means, and such mid-length portion thereof resting against said transverse support means; and
(e) a first transverse structural member attached to said upright support means between said handle support means and said transverse support means adapted to extend across an underside of such at least one fishing pole supported on said frame structure, and a second transverse structural member adapted to be positioned against said frame structure generally parallel to said first transverse structural member to form a slot between said first and second transverse structural members, such that any fishing pole supported on said frame structure will have a portion thereof above such fishing pole handle extending through said slot, said slot being sized to permit such portion to extend therethrough but prevent such handle from being pulled therethrough.

5,571,228
BODY SUPPORTED FISHING ROD HOLDER
Kevin J. McMurtrie, 1700 Butler Pike, 28-C, Conshohocken, Pa. 19428
Filed May 8, 1995, Ser. No. 438,086
Int. Cl.[6] A01K *97/10*; **A45F** *4/00*
U.S. Cl. 43—21.2 **1 Claim**

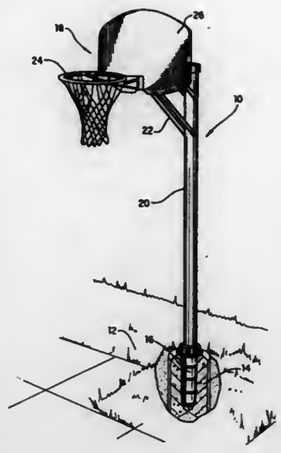
1. A body supported fishing rod holder comprising:
an engaging means for engaging a fishing rod along opposed longitudinal sides of a projection extending from the fishing rod, the engaging means comprises a back plate having a lower edge and lateral edges, a first clamp plate coupled to the



lower edge of the back plate proximal to a first one of the lateral edges thereof, the first clamp plate extending towards the back plate, a second clamp plate coupled to the lower edge of the back plate proximal to a second one of the lateral edges thereof, the second clamp plate extending towards the back plate, the clamp plates being constructed of a substantially resilient material permitting selective deformation thereof away from the back plate during insertion of a fishing rod between the clamp plates and the back plate whereby a resilient contraction of the clamp plates towards the back plate permits frictional engagement of the clamp plates relative to the fishing rod, the first clamp plate being spaced from the second clamp plate so as to define a spacing void through which a projection of a fishing rod can extend, each of the clamp plates includes a guide flange projecting therefrom and oriented at an oblique angle relative thereto;
a mounting means coupled to the engaging means for securing the engaging means relative to an individual, the mounting means comprises a hanger projecting from the back plate and including a hanger aperture directed therethrough, a tether directed through the hanging aperture of the hanger and formed in a continuous loop positionable about a head and neck of an individual so as to hang the engaging means along a torso portion thereof, the mounting means further comprises a belt clip secured to a rear surface of the back plate, the belt clip being constructed of a substantially resilient material permitting deformation thereof away from the back plate such that a belt worn by a user can be inserted between the belt clip and the back plate whereby resilient contraction of the belt clip towards the back plate results in a frictional engagement of the holder with the belt retaining the holder relative thereto.

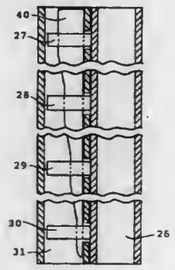
5,571,229
GROUND SLEEVE
James N. Fitzsimmons, Waukesha, and Randy R. Schickert, Kewaskum, both of Wis., assignors to Huffy Corporation, Miamisburg, Ohio
Filed Sep. 27, 1994, Ser. No. 313,360
Int. Cl.[6] E02D *5/80*; **A63B** *63/08*
U.S. Cl. 52—40 **25 Claims**

1. A support structure for supporting a pole comprising:
a sleeve having a longitudinal axis and a deformable open end with an inner periphery of predetermined size for receiving a pole;
a cap having a camming surface inclined with respect to the longitudinal axis of the sleeve and being engageable with said open end of said sleeve to adjust the size of the inner periphery of said open end and form a collet for engaging the pole; and



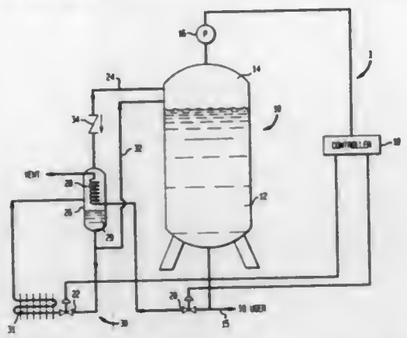
wherein said sleeve is formed of a corrosion resistant material.

5,571,230
HAND-TOOL-ASSEMBLABLE AND -DISASSEMBLABLE BUILDING
Gaylon Berg, P.O. Box 70227, Eugene, Oreg. 97401
Filed May 19, 1993, Ser. No. 64,758
Int. Cl.[6] E04B *2/76*
U.S. Cl. 52—585.1 **1 Claim**



1. A building structure comprising:
a first exterior wall panel, the first exterior wall panel having
a first vertical member and
a plurality of tabs extending from the first vertical member, each of the tabs defining a connecting pin opening therein, the connecting pin openings being progressively smaller from a first end of the vertical member to a second end thereof;
a second exterior wall panel, the second exterior wall panel having
a second vertical member, the second vertical member defining a plurality of tab receiving openings therein along a side of the second vertical member; and
a connecting pin, the connecting pin having a graduated width from a first end thereof to a second end thereof such that the connecting pin is securingly receivable in each of the plurality of connecting pin openings when each of the tabs is received in each of the respective tab receiving openings of the second vertical member.

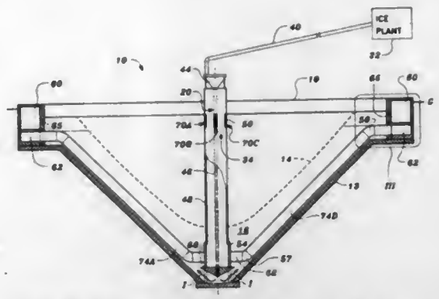
5,571,231
APPARATUS FOR STORING A MULTI-COMPONENT CRYOGENIC LIQUID
Ron C. Lee, Bloomsbury, N.J., assignor to The BOC Group, Inc., New Providence, N.J.
Filed Oct. 25, 1995, Ser. No. 547,764
Int. Cl.[6] F17C *7/04*
U.S. Cl. 62—48.2 **7 Claims**



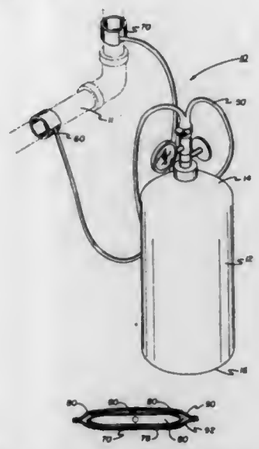
1. An apparatus for storing a multi-component cryogenic liquid comprising:
a storage tank to contain said multi-component cryogenic liquid;
a condensation tank located external to said storage tank for condensing headspace vapor;
heat exchange means located within said condensation tank for condensing said head space vapor, said heat exchange means in communication with said storage tank and vented to atmosphere so that a liquid stream from said storage tank vaporizes within said heat exchange means against said condensation of said head space vapor and vents to said atmosphere;
actuable valve means for permitting said liquid stream to flow to said heat exchange means when pressure within said headspace region is above a predetermined value;
said condensation tank connected to said storage tank to permit said headspace vapor to flow from a headspace region of said storage tank to said condensation tank and said condensed headspace vapor to flow back into said storage tank; and
means for driving said condensed headspace vapor back into said storage tank after said pressure falls below said predetermined value.

5,571,232
THERMAL ENERGY STORAGE TANK CONTAINING SUBMERGED ICE MASS
Thomas L. Davis, Raleigh; Alexander O. Hobbs, Cary, and Barney P. Roberts, Jr., Wake Forest, all of N.C., assignors to Carolina Power & Light Company, Raleigh, N.C.
Filed Jun. 2, 1995, Ser. No. 459,776
Int. Cl.[6] F25D *3/00*
U.S. Cl. 62—59 **20 Claims**

7. A method of thermal energy production, storage and reclaim utilized to satisfy a cyclical thermal cooling load that is uncoupled from the power supply that produces the thermal energy, said method comprising:
producing ice particles utilizing energy from a power supply;
delivering produced ice particles to a flooded thermal energy storage tank and building a floating ice mass in the tank, said ice mass being symmetrical about at least one vertical centerline;
exerting a counterbuoyant force to the ice mass to maintain the ice mass submerged to a greater extent than if the ice mass were free floating;
withdrawing relatively colder water from the tank at selected times that define an operational cycle for cooling a thermal load and delivering the water to the load, while maintaining the symmetry of the ice mass during repetitive ice mass melting and rebuilding associated with the operational cycle;
the steps of withdrawing the relatively colder water from the tank while maintaining symmetry of the ice mass being accomplished by (i) withdrawing relatively colder water from within the ice mass at a location along the upper portion of a vertical centerline of the ice mass and (ii) returning water from the thermal load for recooling at locations symmetrically disposed within the tank external of the ice mass.

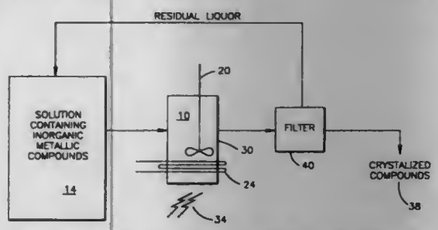


5,571,233
APPARATUS FOR FREEZING WATER IN A PIPE AT A GIVEN LOCATION
Mark Rolland, and Joseph Ferris, both of 835 Lenox Ave., Apt. 301, Miami Beach, Fla. 33139
Filed Dec. 26, 1995, Ser. No. 578,355
Int. Cl.[6] F25D *3/00*
U.S. Cl. 62—293 **7 Claims**



2. An apparatus for freezing water in a pipe at a given location comprising:
a tank having an amount of pressurized gas disposed therein at a temperature below the freezing point of water;
a valve coupled to the tank and openable for allowing the gas to be expelled;
a flexible discharge hose having a proximal end coupled to the valve and a distal end extended therefrom; and
a flow nozzle coupled to the distal end the discharge hose, each flow nozzle having a fabric sleeve, an elastomeric pad with a hollow interior slidably inserted within the sleeve, a plurality of through holes formed on one side of the pad, a coupler having an inboard end secured to the pad and in communication with the interior and an outboard end removably coupled to the distal end of the hose, and coupling means secured to the sleeve for removably coupling the sleeve to the pipe, whereby when the flow nozzle is wrapped around the pipe and the valve is opened, gas flows through the discharge hose and the flow nozzle for cooling the pipe and freezing water therein.

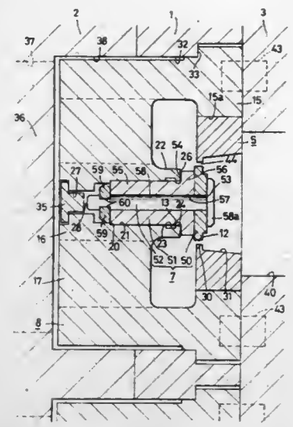
5,571,234
METHOD OF REMOVING INORGANIC METALLIC COMPOUNDS FROM SOLUTIONS
René Leutwyler, Oberdorfstrasse 9, CH-5506 Mëgenwil, Switzerland
Filed Feb. 17, 1995, Ser. No. 390,646
Claims priority, application Germany, Mar. 25, 1994, 44 10 347.6
Int. Cl.[6] B01D *9/04*
U.S. Cl. 62—539 **7 Claims**



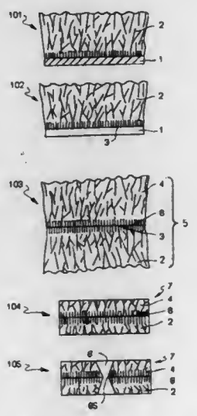
1. A method of removing inorganic metallic compounds, particularly salts, oxides and hydroxides, from solutions by cooling the solution, said method comprising the steps of:
removing from said solution containing said inorganic metallic compounds at least part of its solution liquid;
stirring and cooling, in a cooling container, said part of its solution liquid while in the metastable state until a crystallization of the metallic compounds is rendered possible in said cooled down part;
feeding energy in bursts to said cooled down part in order to initiate the crystallization;
separating the crystallized metallic compounds from said cooled down part, leaving a residual liquor; and
transferring said residual liquor back to said solution.

5,571,235
DIE ASSEMBLY FOR EXTRUDING HOLLOW ARTICLES
Sadahide Yano, Osakashi, Japan, assignor to Yugen Kaisha Yano Engineering, Osaka, Japan
Filed Feb. 27, 1995, Ser. No. 397,037
Int. Cl.[6] B21C *25/04*
U.S. Cl. 72—269 **7 Claims**

1. A die assembly for extruding hollow articles, the assembly comprising:
at least one core having a bearing tip to form a hollow space through a hollow article extruded by the die assembly;
at least one male die supporter composed of an annular base, a core holder and bridges rigidly connecting the base to the core holder;
a cylindrical recess formed in the core holder so as to open forward in the direction of the extrusion;
at least one female member having a bearing hole to form a periphery of the hollow article; and
a core retaining means to prevent the core from slipping off forward in the direction of extrusion, including:
a cylindrical lug protruding forward in the direction of extrusion beyond the bridges;
slits formed in the cylindrical lug and longitudinally thereof so that sections each defined between the adjacent slits are capable of deforming radially and inwardly of the lug; and
a latching mechanism including a protrusion or recess formed integral with an inner periphery of the cylindrical lug and a recess or protrusion formed integral with an outer periphery of the core, such that a pressure of the material being extruded acts on an outer periphery of the lug so that the protrusion or recess thereof is forced radially and inwardly to engage with the recess or protrusion of the core, thereby preventing the core from slipping off the direction of extrusion, wherein a body of the core is shrinkage-fitted in the cylindrical recess of the core holder so as to be integral with the die supporter, and the female member is shrinkage-fitted in the annular base of the die supporter so as to be integral therewith.



5,571,236
DIAMOND WIRE DRAWING DIE
Toshiya Takahashi; Akihiko Ikegaya; Keiichiro Tanabe, and Noaji Fujimori, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan
Filed Aug. 26, 1993, Ser. No. 112,777
Claims priority, application Japan, Aug. 28, 1992, 3-230362
Int. Cl.[6] B21C *3/02*
U.S. Cl. 72—467 **5 Claims**



1. A wire drawing die, comprising a reinforcing mount material and a central portion made of gaseous phase-synthesized diamond through which a die hole runs, wherein
a) the die hole defines wire contact and reduction areas with the synthesized diamond, and

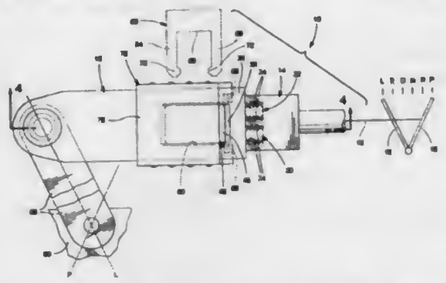
b) the synthesized diamond comprises diamond particles, wherein the particles bordering the wire contact and reduction areas are finer than those of which the synthesized diamond otherwise comprised; and wherein the synthesized diamond comprises a first polycrystalline diamond layer and a second polycrystalline diamond layer, said layers being bonded together at a bonding surface.

5,571,237

CABLE CORE ADJUSTER WITH LOCK MEMBERS

Jian G. Lu, Troy, and Ronald L. Beckmann, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 27, 1995, Ser. No. 429,962
Int. Cl.[6] F16C *1/10*
U.S. Cl. 74—502.4 **4 Claims**



1. A cable length adjustment mechanism comprising:
a cable body core having an attachment portion and a toothed locking portion;
a cable body having a toothed adjustment portion operatively disposed in said toothed locking portion;
a lock member operatively connected with said toothed locking portion and being disposed to selectively engage said toothed adjustment portion for securement thereof with said toothed locking portion to establish a desired cable operating length; and
a clip member removably engaging said lock member to prevent selective securement of said cable body core to said cable body by said lock member to establish the desired cable operating length.

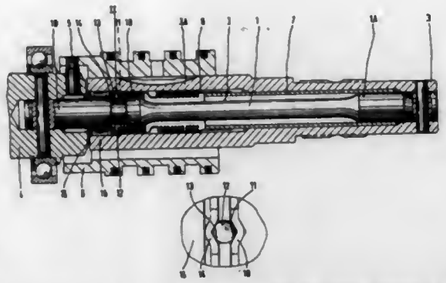
5,571,238

CENTERING DEVICE, ESPECIALLY FOR STEERING VALVES

Werner Breitweg, Schwäbisch Gmünd, Germany, and Hans Hofmann, Mögglingen, Germany, assignors to ZF Friedrichshafen AG, Friedrichshafen, Germany

Filed Jul. 10, 1995, Ser. No. 481,402
Claims priority, application Germany, Jan. 13, 1993, 43 00 612.4
Int. Cl.[6] F15B *9/10*
U.S. Cl. 91—375 A **3 Claims**

1. A centering device for steering valves in motor vehicles which comprises:
a rotary rod provided with first and second endpieces at first and second ends of the rotary rod, respectively;
a drive shaft connected with the first endpiece at a first end of the rotary rod;
a power takeoff shaft connected with the second endpiece at the second end of the rotary rod;
the driveshaft and the power takeoff shaft bearing mutual cooperating parts of the steering valve;
the centering device being arranged between the two shafts and consisting of two centering pieces provided with opposing



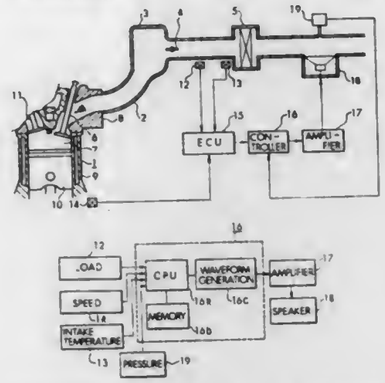
oblique surfaces and roller bodies that are biased against with the oblique surfaces of the centering pieces by a spring element, and the first centering piece being connected to the drive shaft by a tube-shaped endpiece;
a rotary slide which is adjustable in relation to a valve bushing, which rotary slide is provided as a steering valve;
the rotary slide being supported by a needle bearing located on the endpiece of the rotary rod which is connected to the drive shaft;
and the second centering piece being formed integrally with a bearing race of the needle bearing.

5,571,239

NOISE CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Yasutoshi Kameda, Anjo; Yoshitaka Nishio, Nagoya; Katsuyuki Tanaka, Nishio; Naoya Kato, Ama-gun, and Kouzi Ohara, Nukata-gun, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 16, 1995, Ser. No. 559,092
Claims priority, application Japan, Nov. 30, 1994, 6-297383
Int. Cl.[6] F02M *35/10*
U.S. Cl. 123—184.53 **10 Claims**



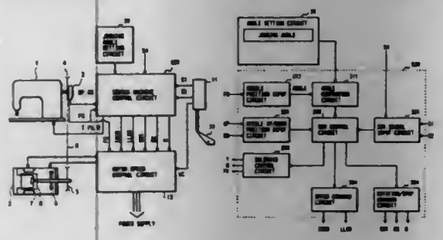
1. A noise control apparatus for an internal combustion engine comprising:
engine load detector means for detecting an engine load caused during operation of the engine;
engine speed detector means for detecting an engine speed;
temperature detector means for detecting temperature of at least one of intake air of an intake system and exhaust gas of an exhaust system of the engine;
control signal generator means for generating a control signal corresponding to a control wave that is equal in sound pressure but shifted by substantially 180 degrees in phase with respect to noise produced in at least one of the intake system and the exhaust system, on the basis of engine load information detected by the engine load detector means, engine speed information detected by the engine speed detector means, and temperature of at least one of the intake air and the exhaust gas detected by the temperature detector means; and
a wave actuator provided in a propagating path of noise produced by the engine, the wave actuator inputting the control signal from the control signal generator means and producing a noise control wave corresponding to the control signal.

5,571,240

APPARATUS AND METHOD FOR CONTROLLING SEWING MACHINE

Satomi Yamauchi; Hisaaki Tsukahara; Hiroshi Yamada, and Osamu Gouta, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 141,353, Oct. 26, 1993, Pat. No. 5,474,005.
This application Jun. 7, 1995, Ser. No. 475,301
Claims priority, application Japan, Oct. 27, 1992, 4-288707; Sep. 16, 1993, 5-230246
Int. Cl.[6] D05B *69/18*
U.S. Cl. 112—275 **6 Claims**



2. A sewing machine controlling apparatus comprising:
reversible sewing machine drive means for driving a sewing machine pulley in forward and reverse directions and for moving a needle at least between UP and DOWN positions;
thread trimming means for providing a thread trimming operation;
control means responsive to a plurality of signals, including an angle storage signal, for controlling said sewing machine drive means and said thread trimming operation;
needle position detection means for detecting the needle position of said sewing machine;
rotary angle setting means for setting a rotary angle of said sewing machine pulley; and
means for measuring the rotary angle of said sewing machine pulley in response to said needle position detection means and for rotating said sewing machine pulley in response to a first angle storage signal entered into said control means and for transferring the measured rotary angle of said sewing machine pulley to said rotary angle setting means in response to a second subsequent angle storage signal.

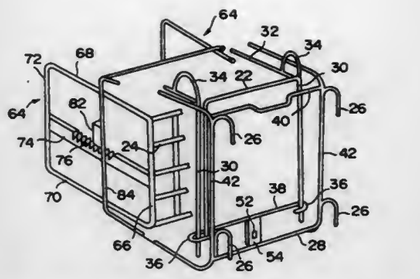
5,571,241

PRIMATE CONTAINMENT CAGE TO RESTRICT MOVEMENT

Ryoichi Nagata, Yoshida, Japan, assignor to Shin Nippon Biomedical Laboratories, Ltd., Japan

Filed Oct. 6, 1994, Ser. No. 319,423
Claims priority, application Japan, Dec. 1, 1993, 5-325751
Int. Cl.[6] A01K *1/03;* **A61D** *3/00*
U.S. Cl. 119—473 **5 Claims**

1. In a primate containment cage comprising a rectangular framework which is fabricated from a top horizontal panel, two side panels and a bottom horizontal panel, a front door panel which is movably mounted on a front opening side of the rectangular framework, a partition panel which is slidably mounted in the



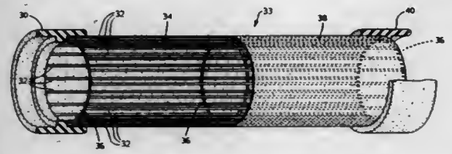
rectangular frame from a rear opening side, and means for positioning the partition panel to the rectangular framework in the desired position, the upper end of the front side vertical posts of the cage being connected to each of the side bars of the top horizontal panel by an inverted U-like portion to mount the front door panel thereon so as to open or close the front door panel when the cage has been mounted on a standard layer animal pen.

5,571,242

ENGINE AIRFLOW SYSTEM AND METHOD

Donald R. Demorest, Fenton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 26, 1995, Ser. No. 579,624
Int. Cl.[6] F02M *29/00*
U.S. Cl. 123—184.21 **3 Claims**



1. In a vehicle with an engine, an engine gas flow system for attenuating engine noise, comprising:
a first flow path of air intake through which a first gas flow is substantially into the engine;
a second flow path of engine exhaust in which a second gas flow is substantially out of the engine; and
at least one duct in flow contact with at least one of the first and second flow paths, wherein the duct comprises:
a tubular fluid flow passage;
at least one open end connecting the tubular fluid flow passage to the at least one of the first and second flow paths;
a support structure preventing radial collapse of the duct during occurrences of negative pressures, caused by the engine, within the duct; and
a pliant material attached to the support structure forming a gas-tight tubular duct wall for the tubular fluid flow passage,
wherein the pliant material forms, on the support structure, a series of loosely pliant panels that freely move radially outwardly and inwardly, wherein during engine operation sound generating vibrations of air into one of the first and second flow passages cause the loosely pliant panels to vibrate in a direction radial with respect to the duct, wherein a detectable level of audible sound radiated by the engine is attenuated by the duct.

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5,571,243

PUMP DEVICE FOR SUPPLYING FUEL FROM A TANK TO AN INTERNAL COMBUSTION ENGINE

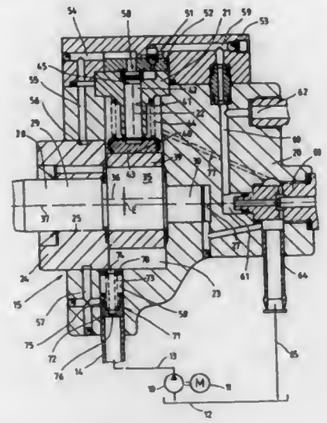
Bernhard Arnold, Roden-Ansbach; Egon Eisenbacher, Karlstadt, and Franz Pawellek, Hafenlohr, all of Germany, assignors to Elasis Sistema Ricerca Fiat Nel Mezzogiorno Societa Consortile Per Azioni, Pomigliano D'Arco, Italy

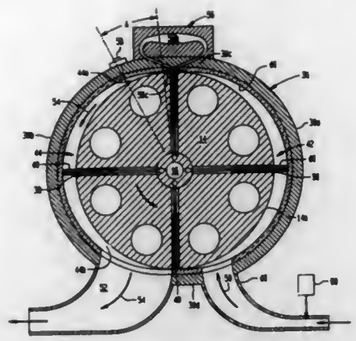
Filed Jan. 11, 1995, Ser. No. 371,017

Claims priority, application Germany, Jan. 15, 1994, 44 01 074.5

Int. Cl.[6] F02B *77/00;* **F02M** *37/04*

U.S. Cl. 123—198 DB **18 Claims**





1. A pump device for supplying fuel to an internal combustion engine, said pump device comprising:

a high-pressure radial-piston pump (**15**) having a casing (**20**), a cam (**35, 39**) rotating in an inner chamber (**23**) of said casing (**20**), and at least one radial piston (**42**) operated by said cam (**35, 39**) for varying the volume of a compression chamber (**45**), said piston (**42**) being arrested inwards against said cam (**35, 39**); and

a low-pressure pump (**10**) upstream from said high-pressure pump (**15**) and comprising a connection (**13, 14, 54–57**) between said low-pressure pump (**10**) and said compression chamber (**45**), and a cutoff valve (**71**) provided in said connection (**13, 14, 54–57**) between said low-pressure pump (**10**) and said compression chamber (**45**), and a cutoff valve (**71**) provided in said connection (**13, 14, 54–57**) and including a movable member (**72**) operated in one direction by a spring element (**73**) for cutting off communication with said compression chamber (**45**) and directing surplus fuel supplied by said low-pressure pump (**10**) towards said inner chamber (**23**).

5,571,244

AIR BEARING ROTARY ENGINE

David C. Andres, 2020 3rd St., Berkeley, Calif. 94710, assignor to David C. Andres; Robert W. Burnett, and Kathleen C. Barry, all of Berkeley, Calif.

Division of Ser. No. 366,825, Dec. 30, 1994, Pat. No. 5,509,388. This application Mar. 11, 1996, Ser. No. 613,358

Int. Cl.[6] F02B *53/00*

U.S. Cl. 123—231 **20 Claims**

1. A rotary engine comprising:

a stator housing having a perimeter casing and first and second annular sidewalls joined thereto;

a cylindrical rotor disposed in said housing between said first and second sidewalls and having a coaxial drive shaft fixedly joined to a center of said rotor and rotatably mounted to said first and second sidewalls, said rotor having four slots extending radially inwardly from a perimeter thereof and equiangularly spaced from each other;

four planar vanes slidably mounted in respective ones of said rotor slots, and each of said vanes including a tip having apertures;

said perimeter casing being oblong and having first and second diametrically arcuate portions and first and second diametrically opposite flat portions disposed therebetween, with said arcuate portions being spaced radially further from said rotor perimeter than said flat portions to define generally crescent shaped, diametrically opposite first and second working chambers in which said rotor vanes travel;

an inlet port disposed through said casing adjacent to an upstream end of said first chamber and said casing second flat portion for receiving a compressible fluid for being compressed in said first chamber as said rotor rotates in said casing;

an exhaust port disposed through said casing adjacent to a downstream end of said second chamber and said casing second flat portion for discharging combustion gases therefrom;

a pump for pressuring air;

means for channeling said pressurized air from said air pump through said vanes and out said tip apertures for providing an air bearing between said vanes and said casing; and

a spark plug disposed in said casing adjacent to said upstream end of said second chamber for defining a combustion zone at said upstream end of said second chamber.

5,571,245

IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINE

Shinji Ooyabu, Anjo; Kazuhiro Yamada, Chiryu, and Mitsuyasu Enomoto, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 8, 1995, Ser. No. 525,194

Claims priority, application Japan, Sep. 9, 1994, 6-215139; Dec. 19, 1994, 6-314866

Int. Cl.[6] F02P *3/04; 17/12*

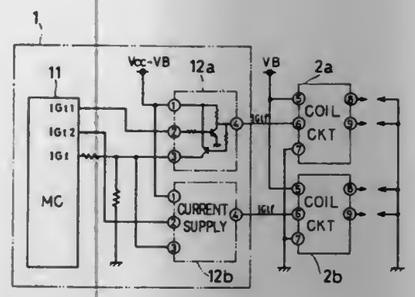
U.S. Cl. 123—630 **17 Claims**

1. An ignition apparatus for an internal combustion engine, which applies a high voltage to an ignition plug of the internal combustion engine, comprising:

an ignition coil means having a primary coil and a secondary coil; and

an igniter circuit means for connecting/interrupting a supply of an energizing current to said primary coil in response to an ignition signal; wherein:

said ignition coil means and said igniter circuit means are assembled as a unit in an integral form, and said unit has a power supply terminal, a ground terminal, a terminal for the ignition signal, and an output terminal to which said ignition plug is connected;



said igniter circuit means includes:

a semiconductor switching element for connecting/interrupting the supply of the energizing current from said power supply terminal via said primary coil to said ground terminal in response to the ignition signal;

a constant current controlling circuit for detecting an energizing current to said primary coil and for blocking an input of the ignition signal to said semiconductor switching element in response to a detected value; and

a monitor signal transmitting circuit for detecting an energizing current to said secondary coil so as to determine whether an ignition operation is normal or abnormal, and for transmitting a monitor signal in response to a determination result;

said monitor signal transmitting circuit is so arranged that after the ignition signal is ended, a voltage is applied to said ignition signal terminal, whereby said monitor signal is transmitted from said ignition signal terminal; and

said igniter circuit means is further comprised of a mask circuit for blocking the supply of the energizing current to said primary coil by said semiconductor switching element while the monitor signal is transmitted.

5,571,246

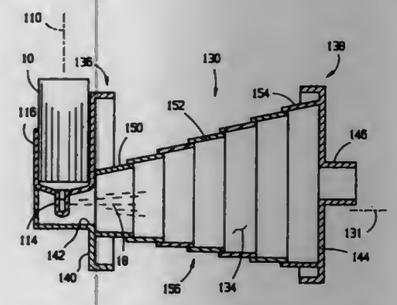
COLLAPSIBLE METERED DOSE INHALER

Andrew L. Alldredge, 1186 Brandywyn La., Buffalo Grove, Ill. 60089

Filed Feb. 16, 1995, Ser. No. 389,917

Int. Cl.[6] A61M *11/04*

U.S. Cl. 128—200.23 **8 Claims**



1. For use with a metered dose pressurized canister having an outlet opened by a shiftable valve stem for discharging a pulsed output spray, a collapsible inhaler comprising

a tubular body defining a through cavity, said tubular body being comprised as a plurality of generally annular substantially rigid pieces of different sizes, including largest and smallest end pieces and progressively sized intermediate pieces therebetween, the adjacent pieces being respectively telescoped and nested;

the smallest end piece including structure for directing said output spray axially through the cavity and toward the largest end piece;

the largest end piece including a generally tubular mouthpiece suited to be fitted into the user's mouth;

said tubular body being axially collapsible, with said adjacent nested pieces suited to cooperate without flexture or bending, between an expanded operational position of maximum cavity volume and maximum separation between the end pieces and a collapsed storage position of minimum separation of the end pieces;

the smallest and largest end pieces having end plates of substantially equal size with peripheries suited to be gripped by the user, and flange means on one of the end plates which cooperates with means on the other end plate in the collapsed position so that said end plates and flange means form a housing for the rigid pieces when collapsed; and

the periphery of said smallest end piece being closely proximate the pressurized canister when its outlet is disposed for directing said output spray axially through the cavity, whereby the user can manually grip the largest piece with one hand and hold it steady with the mouthpiece operatively in one's mouth and can manually grip the smallest piece with the other hand and further simultaneously manually shift with this same hand the canister and valve stem to effect said pulsed output spray.

5,571,247

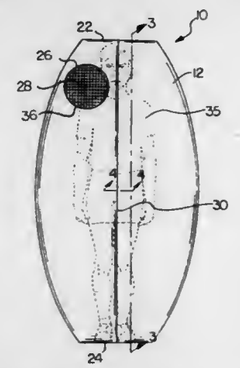
SELF CONTAINING ENCLOSURE FOR PROTECTION FROM KILLER BEES

Virginia L. Butler, P.O. Box 1134, Redlands, Calif. 92373

Filed Nov. 13, 1995, Ser. No. 556,406

Int. Cl.[6] A01K *55/00;* **E04H** *15/00*

U.S. Cl. 135—87 **1 Claim**



1. A new and improved self containing enclosure for protection from killer bees comprising, in combination:

an enclosure with a generally cylindrical configuration comprising a sheet formed of a flexible transparent plastic material selected from the class of materials including polyethylene and nylon, the sheet having a pair of V-shaped cutouts formed on an upper edge and a pair of V-shaped cutouts formed on a lower edge, each V-shaped cutout having a pair of opposing edges sealed together, the upper edge thereof sealed to form a closed top, the lower edge thereof sealed to form a closed bottom, the enclosure having an intermediate cross-sectional circumference larger than an upper and a lower cross-sectional circumference;

a circular aperture formed adjacent the upper edge of the enclosure;

a mesh positioned in the aperture for allowing a user inside the enclosure to see therethrough and to breath therethrough;

an opening formed in the enclosure along a vertical extent thereof with opposite edges, the opening being provided with

pile type fasteners adjacent to the opposite edges for overlapping, each pile type fastener situated on an outer surface of the enclosure allowing a user to seal the enclosure from within; and

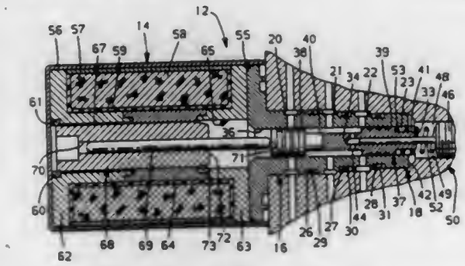
a pouch formed with a main extent for the receipt of the enclosure therein when not in use, the pouch having a flap with a releasable fastener on the main extent and the flap for the coupling thereof.

5,571,248

PRESSURE REGULATOR

Viswanath Seetharaman, Anderson, and Dale L. Baldauf, Pendleton, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 10, 1995, Ser. No. 402,216
Int. Cl.[6] F15B *13/044*; F16K *31/06*
U.S. Cl. 137—625.65 **8 Claims**



1. A pressure regulator comprising:

a solenoid actuator including an armature that is substantially cylindrical in shape, the armature maintained in a centered orientation by a first bearing that is sleeve shaped and a second bearing that is ring shaped the first and the second bearings each encircling the armature and maintaining the armature in a centered orientation; and

a pressure control valve combined in an integrated assembly with the solenoid actuator including an output port, a supply port and a spool that is positionable by the solenoid actuator, the spool having an axial bore and a cross bore intersecting the axial bore and a pin disposed in the axial bore wherein the spool is slidable relative to the pin and the output port is in constant fluid communication with the cross bore wherein the solenoid actuator and pressure control valve include a single spring that biases the spool toward the armature.

5,571,249

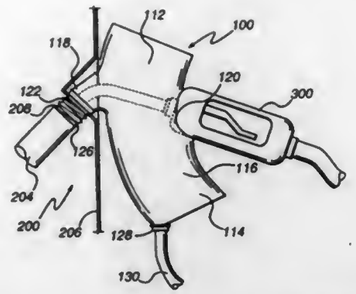
FLUID SLEEVE FOR A MOTORIZED VEHICLE

Daniel B. Boylen, 219 Urban Dr., Verona, Pa. 15147

Filed May 15, 1995, Ser. No. 441,025
Int. Cl.[6] B65B *1/04*; *3/04*; B67C *3/02*
U.S. Cl. 141—86 **13 Claims**

1. A fluid sleeve for channeling fluids spilled during the servicing of a motorized vehicle, the fluid sleeve comprising:

an enclosed body having a top portion having a drain therein and a bottom portion, the enclosed body defining a substantially cylindrical member having a longitudinal axis, the enclosed body defining a flexible first opening operable to sealingly engage a fluid inlet of the motorized vehicle and a flexible second opening operable to sealingly engage a fluid outlet of a fluid container received therethrough to be disposed in the fluid inlet, at least a portion of the cyclindrical member being curved away from the first opening to divert fluids away from the motorized vehicle, whereby fluid discharged from the fluid inlet or the fluid outlet during servicing is retained within the body portion and channeled toward the drain in the bottom portion; and



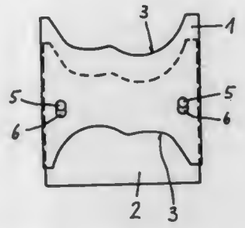
a connector connected to the body portion at the first opening, the connector operable to interface the first opening with the fluid inlet.

5,571,250

CUTTING BLADE MOUNTING ARRANGEMENT FOR INSERTED BLADE CUTTING HEADS

Bernd Stegmaier, Ellenberg, Germany, assignor to Hapro Hartmetall-Profiltechnik GmbH, Haselbach, Germany

Filed Jul. 27, 1995, Ser. No. 507,993
Claims priority, application Germany, Sep. 3, 1994, 9414327 U
Int. Cl.[6] B27G *13/00*
U.S. Cl. 144—218 **10 Claims**



1. A cutting blade mounting arrangement for inserted blade cutting heads comprising a mounting plate for supporting said cutting blade at one side thereof, said mounting plate having on its opposite side a tooth structure for firm engagement with a corresponding tooth structure in the cutting head, said mounting plate having cylindrical fitting pins projecting from said one side thereof and said cutting blade having corresponding ground bores receiving said cylindrical fitting pins for accurately positioning said cutting blade on said support plate in axial as well as in radial direction with respect to the axis of said cutting head.

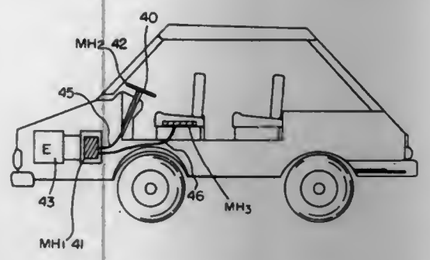
5,571,251

VEHICLE USING HYDROGEN ABSORBING ALLOYS

Takaharu Gamou, Fujiidera; Noboru Taniguchi, Osaka; Junji Nikura, Hirakata; Kazuhito Hatoh, Daito; Eiichi Yasumoto, Katano, and Kinichi Adachi, Takarazuka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 166,505, Dec. 13, 1993, Pat. No. 5,469,913. This application Jul. 18, 1995, Ser. No. 503,845
Claims priority, application Japan, Dec. 18, 1992, 4-338420
Int. Cl.[6] B60H *13/02*; *1/32*
U.S. Cl. 165—42 **8 Claims**

1. A vehicle using hydrogen absorbing alloys, comprising:



a plurality of hydrogen absorbing alloy storing vessels for independently storing a plurality of hydrogen absorbing alloys with a different hydrogen equilibrium decomposition pressure,

a connecting means for passing hydrogen fro and to among said plurality of hydrogen absorbing alloy storing vessels, said connecting means includes hydrogen flow adjusting valves, and

a heating means for heating a low pressure hydrogen absorbing alloy which has the lowest hydrogen equilibrium decomposition pressure among said plurality of hydrogen absorbing alloys, using combustion heat of fuel of an internal combustion engine or an external combustion engine of said vehicle as a heat source,

wherein, when said heating means heats said low pressure hydrogen absorbing alloy so that hydrogen is desorbed from said low pressure hydrogen absorbing alloy and then is absorbed by a high pressure hydrogen absorbing alloy of said plurality of hydrogen absorbing alloys, said high pressure hydrogen absorbing alloy having a hydrogen equilibrium decomposition pressure higher than that of said low pressure hydrogen absorbing alloy, exothermic heat generated by absorption of hydrogen by said high pressure hydrogen absorbing alloy is utilized for heating the air in a passenger compartment or a component of said vehicle;

when hydrogen is desorbed from said high pressure hydrogen absorbing alloy, endothermic heat generated by desorption of hydrogen from said high pressure hydrogen absorbing alloy is utilized for cooling the air in said passenger compartment or said component of said vehicle;

when hydrogen is desorbed from said high pressure hydrogen absorbing alloy and then is absorbed by said low pressure hydrogen absorbing alloy, exothermic heat generated by absorption of hydrogen by said low pressure hydrogen absorbing alloy is utilized for heating the air in said passenger compartment or said component of said vehicle; and

heat is directly exchanged between at least one of said hydrogen absorbing alloy storing vessels, where said at least one of said hydrogen storing vessels stores a high pressure hydrogen absorbing alloy, and said component.

5,571,252

HIGH FREQUENCY, LOW AMPLITUDE, SOD HARVESTING APPARATUS

Vernon J. Worrel, Mahtomedi, Minn.; Brian L. Bouchard, West Kingston, R.I.; Scott Kaercher, Blaine, Minn.; Jerry Anderson, Somerset, Wis., and James Stewart, Shoreview, Minn., assignors to Turfco Manufacturing, Incorporated, Minneapolis, Minn.

Division of Ser. No. 923,244, Jul. 31, 1992, Pat. No. 5,454,433. This application Jun. 6, 1995, Ser. No. 465,722
Int. Cl.[6] A01B *45/04*
U.S. Cl. 172—20 **15 Claims**

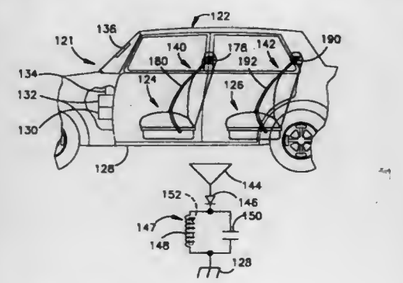
1. Method for harvesting sod from turf of a sod field comprising the steps of: providing a blade; vibrating the blade at a high frequency in the range of 3,000 to 7,000 cycles per minute and at a low amplitude in the range of 0.15 to 1.27 centimeters; lowering the vibrating blade to enter the turf of the sod field; and moving the vibrating blade forward after the blade has entered the turf to sever the roots of the turf.

5,571,253

SEAT BELT RETRACTOR SYSTEM

Brian K. Blackburn, Rochester; Louis R. Brown, Oxford; Joseph F. Mazur, Washington, and Scott B. Gentry, Romeo, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Division of Ser. No. 222,120, Apr. 4, 1994. This application Jun. 6, 1995, Ser. No. 468,265
Int. Cl.[6] B60R *21/00*
U.S. Cl. 180—282 **7 Claims**



1. A vehicle safety apparatus comprising:

a seat for an occupant of a vehicle;

vehicle occupant protection means on said seat and actuatable for protecting a vehicle occupant in response to vehicle deceleration exceeding a predetermined deceleration;

mounting means for mounting said vehicle occupant protection means on said seat;

sensor means for sensing vehicle deceleration exceeding a predetermined deceleration and for providing a control signal indicative thereof;

transmitter means operatively coupled to said sensor means and actuatable in response to the control signal for transmitting an EMF signal;

signal receiver means for receiving said transmitted EMF signal;

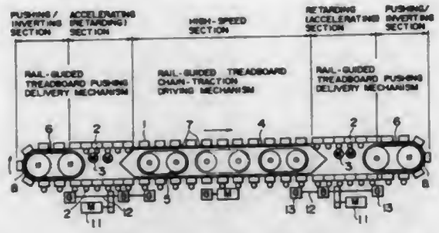
means for mounting said signal receiver means for movement in response to said signal receiver means receiving said transmitted signal; and

means for actuating said vehicle occupant protection means in response to movement of said signal receiver means.

5,571,254
SPEED VARIABLE MOVING SIDEWALK

Hiroshi Saeki; Masao Yasukawa; Kiyotaka Nagai; Mitsukazu Tomoshige, and Toshiro Fushiya, all of Mihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Mihara, Japan

Filed Sep. 30, 1994, Ser. No. 316,571
Claims priority, application Japan, Oct. 1, 1993, 5-246874; Oct. 7, 1993, 5-251613
Int. Cl.[6] B65G 23/00; B66B 21/12
U.S. Cl. 198—334 6 Claims



1. A speed variable moving sidewalk for conveying passengers on the upper face thereof, comprising:

an endlessly continuous circulating path extending longitudinally and vertically, comprising:

a pair of inverting sections which are disposed at opposite ends of the sidewalk and each composed of arced guide rails arranged within vertical planes,

a high-speed section which is disposed at a center portion of the sidewalk and composed of horizontally extending and substantially straight guide rails, and

a pair of speed variable sections which are each disposed between said inverting section and said high-speed section and composed of curving guide rails arranged within horizontal planes;

a large number of treadboards moving along said circulating path, said treadboards being inverted as proceeding vertically in said inverting sections, being transferred horizontally in a longitudinal direction in said high-speed section and being transversely slid right or left relative to neighboring treadboards in said speed variable sections so that said treadboards accelerate or retard to allow passengers to step onto or off from an upper face at end portions of the sidewalk;

a pair of driving chains for the inverting sections which each endlessly keep on circulating vertically and are disposed inside the guide rails in said respective inverting sections disposed at the end portions;

a pair of driving chains for the high-speed section each of which endlessly keeps on circulating vertically and are disposed inside the guide rails in opposite ends of said high-speed section;

a rack chain which is disposed inside the guide rails and outside said pair of driving chains for the high-speed section and endlessly continues to be circulated vertically across a whole part of said high-speed section by engaging said pair of driving chains for the high-speed section; and

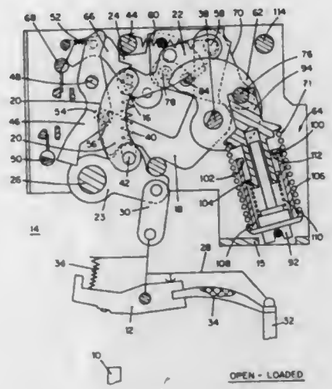
a pair of motors for line driving each of which is disposed at respective extremes of said circulating path and connected to closer one of said driving chains for the high-speed section through a line shaft with a reducing gear so as to drive a corresponding driving chain for the high-speed section at an appropriately reduced speed,

wherein each treadboard is able to move independently of neighboring treadboards as being guided by said guide rails, and each of said treadboards comprises: hooks on an underside thereof which engage shafts of said driving chain for the inverting section in order to drive the treadboard at the inverting section; hooks on the underside thereof which engage shafts of said rack chain in order to drive the treadboard in the high-speed section; and a roller disposed in a portion being in contact with a neighboring treadboard in order to enable each treadboard to transversely slide relative to the neighboring treadboard.

5,571,255
CIRCUIT BREAKER MECHANISM EQUIPPED WITH AN ENERGY STORAGE DEVICE WITH A DAMPING STOP

Pierre Baginski, and Pierre Latapie, both of Grenoble, France, assignors to Schelder Electric SA, France

Filed Jul. 10, 1995, Ser. No. 500,403
Claims priority, application France, Aug. 1, 1994, 94 09732
Int. Cl.[6] H01H 23/00
U.S. Cl. 200—401 6 Claims



1. An operating mechanism for a multipole electrical circuit breaker having a pair of separable contacts per pole, comprising:

a tripping hook connected to a toggle device, said toggle device comprising a first rod articulated between a switching bar and a second rod, said toggle device being arranged to provide a closing dead point;

an energy storage system comprising a telescopic link and an elastic device for biasing the telescopic link, said elastic device comprising at least one main compression spring;

a drive lever interconnecting the energy storage system and the second rod of the toggle device;

operating means for switching the telescopic link between loaded and unloaded positions; and

a damping stop designed to absorb excess energy of the main closing spring upon unloading of the telescopic link, after the closing dead point of the toggle device has been passed.

5,571,256
SERVER DRAWER SLIDE MOUNT APPARATUS FOR A RACK-MOUNTED COMPUTER SYSTEM

Lowell M. Good, Cypress; Paily T. Varghese, Tomball, and Joseph A. Villanueva, Spring, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Oct. 25, 1994, Ser. No. 328,893
Int. Cl.[6] A47F 7/00
U.S. Cl. 211—26 10 Claims

1. Rack-mounted computer apparatus comprising:

a generally rectangularly cross-sectioned cabinet frame structure including two spaced pairs of vertically extending front and rear corner support channels, each corner support channel having a laterally inwardly projecting side flange with a vertically spaced series of openings formed therethrough;

a server unit including a drawer structure into which selected computer components may be operatively placed, said drawer structure having a front end wall from which a pair of opposite vertical side walls rearwardly extend; and

mounting means for supporting said drawer structure on said cabinet frame structure, between said spaced pairs of vertically extending front and rear corner support channels, for horizontal forward and rearward movement relative thereto between open and closed positions, said mounting means, on each side of said drawer structure, including:

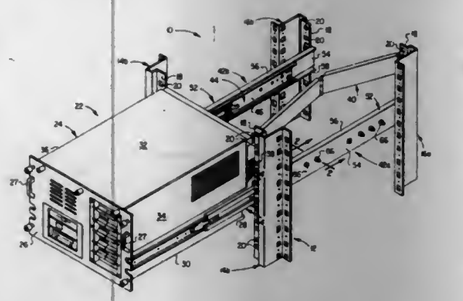
a horizontally elongated one-piece slide support bracket longitudinally extending parallel to one of said drawer structure side walls and having a front end portion engaging the side flange of one of said front corner support channels, and a rear end portion engaging the side flange of one of said rear corner support channels, said slide support bracket having a horizontally elongated base wall, and said front end portion of said slide support bracket being transverse to said base wall and having upper and lower ends.

alignment means, carried on said front end portion of the slide support bracket and complementarily received in a vertically spaced first pair of the openings in the side flange of the front corner support channel, for horizontally and vertically aligning the front end portion of the slide support bracket with the front corner support channel, said alignment means including alignment tabs formed on said upper and lower ends and forwardly and complementarily received in said vertically spaced first pair of openings in the side flange of the front corner support channel,

first attachment means for removably securing said front end portion of the slide support bracket to the side flange of the front corner support channel, said front end portion of said slide support bracket forwardly abutting the side flange of the front corner support channel, said first attachment means including a pair of nut members captively retained on said front end portion of said slide support bracket and aligned with a vertically spaced second pair of said openings in the side flange of the front corner support channel, and a pair of fastening members extending rearwardly through said vertically spaced second pair of openings in the side flange of the front corner support channel and threaded into said pair of captively retained nut members,

second attachment means for removably securing said rear end portion of the slide support bracket to the side flange of the rear corner support channel, and

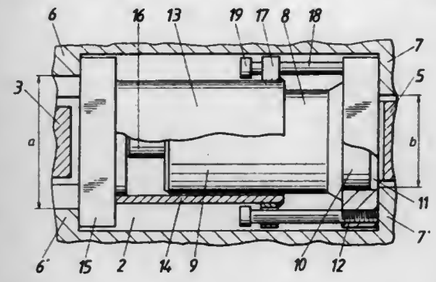
a telescoping slide structure having an inner end portion removably secured to said slide support bracket, and an outer end removably secured to one of said side walls of said drawer structure.



5,571,257
COUPLER ARRANGEMENT IN PARTICULAR FOR RAILWAY CARS

Marek Bruski, S ł owackiego; Andrzej Chmielewski, Sienkiewicza; Józef K ę dzior, Klaudyny; Antoni Kubicki, Krasickiego; Kamimierz Milczarski, Chopina; Wojciech Pop ł awski, Afrykańska, and Eugeniusz Stryz, Zielona, all of Poland, assignors to Kamax, S.A. Fabryka Urzadzen Mechanicznych, Kanczuga, Poland

Filed Feb. 18, 1994, Ser. No. 198,313
Claims priority, application Poland, Aug. 16, 1993, 300098
Int. Cl.[6] B61G 9/22; 9/14
U.S. Cl. 213—50 4 Claims

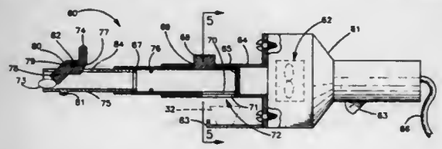


1. A coupler arrangement, comprising a coupler arm (3) partially disposed in a chamber located in a railway car underframe (1), said coupler arm (3) being located between a front stop means (6,6'); said coupler arm (3) being connected with a draw gear (5) by means of a coupler pin (4); and said draw gear (5) being located between a rear stop means (7,7'), said front and rear stop means being fixedly attached to the walls of the chamber (2); a cushioning device (8) being mounted between said coupler arm and said draw gear, inside the chamber (2), in a space limited by the front stop means (6,6') and said coupler arm on one side and said rear stop means and said draw gear on the other side, said coupler arrangement being characterized in that the cushioning device (8) comprises an elastomeric shock absorber (9) whose bottom section (10) is located in a rear stop plate (12) abutting the rear stop means (7,7'), whereas the opposite section of said elastomeric shock absorber is slidably mounted in a casing (13) formed by a guide bar (14), said guide bar being closed by a front stop plate (15) fixedly attached thereon, with said front stop plate abutting said front stop means; with said piston rod (16) of said elastomeric shock absorber abutting said front stop plate; wherein said elastomeric shock absorber is compressed under buff loads by movement of said front stop plate and under draft loads by said rear stop plate.

5,571,258
SEMI-AUTOMATED MEDICATION DISPENSER

Walter G. Pearson, P.O. Box 4371, Pineville, La. 71361-4371

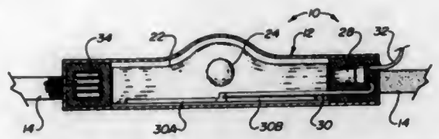
Filed Jul. 13, 1995, Ser. No. 502,118
Int. Cl.[6] B23Q 7/04
U.S. Cl. 221—211 11 Claims



1. A suction tube for use with a medication dispensing system, comprising:

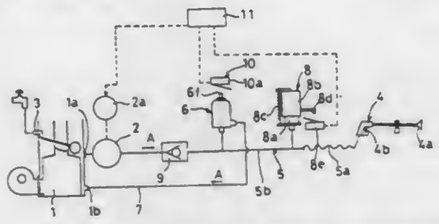
(a) a handle which houses a suction motor powered by an external power source;

(b) a stationary tube attached to and extending from said handle in fluid communication with said suction motor;
(c) a second tube slidably attached to said stationary tube, said second tube having a distal end;
(d) pill obstruction means on said second tube for preventing a retrieved pill from traveling through said second tube;
(e) collection cup retaining means attached to said handle for holding a collection cup;
(f) pill guiding means positioned adjacent to said collection cup retaining means for guiding said retrieved pill to said collection cup; and
(g) sensing means operatively disposed within said pill guiding means for detecting the passage of said retrieved pill through said pill guiding means.



a bladder for holding a liquid, said bladder being disposed within said pouch;
a pump in fluid connection with said bladder;
a power source operatively connected to said pump; and
a hose in fluid connection with said pump for supplying liquid to the user.

5,571,259
STRUCTURE OF WASHING MACHINE
Hiroyasu Takasu, Ohmiya, Japan, assignor to Robin & Leslie Co., Ltd., Taoyuan County, Taiwan, and Kyowa Seisakusho Co., Ltd., Saitama-Pre, Japan
Filed Mar. 20, 1995, Ser. No. 407,080
Int. Cl.[6] F04B *17/00*
U.S. Cl. 239—126 **3 Claims**

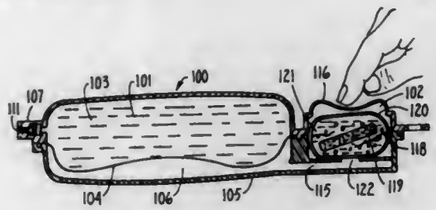


1. A washing machine of the type comprising a boiler connected to a water source through a float valve and controlled to heat water to the desired temperature, a pump driven by a motor to pump warm water from said boiler to a water supply piping, an unload valve controlled to release water pressure from said water supply piping, a spray gun connected to said water supply piping and controlled by a lever to eject warm water through a nozzle, and a water return pipe for sending warm water from said water supply piping back to said boiler when said unload valve is opened to release pressure, the improvement comprising:
a water volume detector connected to said water supply piping between said unload valve and said spray gun to accumulate water from said water supply piping, said water volume detector being actuated when accumulated water volume drops below a predetermined value;
a pressure detector mounted on said unload valve, said pressure detector being actuated when said unload valve is opened; and
a control device to control the operation of said motor, said control device being driven by said water volume detector to start said motor when said water volume detector is actuated, or driven by said pressure detector to turn off said motor when said pressure detector is actuated.

5,571,260
PORTABLE LIQUID CONTAINER AND DISPENSER SYSTEM
Schani Krug, 267 Mast Rd., Durham, N.H. 03824
Filed Nov. 7, 1995, Ser. No. 551,855
Int. Cl.[6] B67D *5/64*
U.S. Cl. 222—175 **23 Claims**

1. A portable apparatus for dispensing liquids to a user, comprising:
a pouch;
means for securing said pouch about a waist of the user;

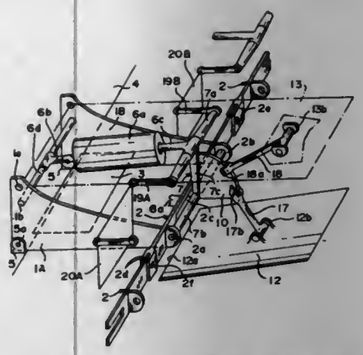
5,571,261
LIQUID DELIVERY DEVICE
Gregory E. Sancoff, Windham, N.H.; Mark C. Doyle, San Diego, and Frederic P. Field, Solana Beach, both of Calif., assignors to River Medical, Inc, San Diego, Calif.
Continuation-in-part of Ser. No. 105,327, Aug. 6, 1993, Pat. No. 5,398,851. This application Aug. 5, 1994, Ser. No. 286,707
Int. Cl.[6] B65D *83/14*
U.S. Cl. 222—386.5 **7 Claims**



1. A device for the controlled delivery of a fluid, comprising:
a hollow casing which comprises a pair of fluid impermeable shells which are sealingly joined together along a seal line to form said casing, said casing having an interior;
a flexible fluid impermeable membrane having a peripheral edge portion and at least one convolution providing for expansion and contraction of the membrane, said membrane disposed within said interior and separating a liquid chamber from a propellant chamber; and
an outlet port in said casing providing fluid communication between said liquid chamber and the exterior of said casing.

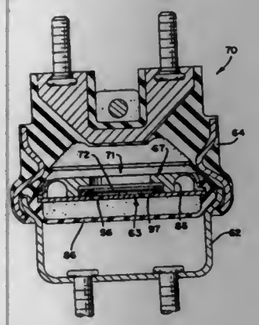
5,571,262
SUPERSONIC NOZZLE FOR A TURBOJET ENGINE
André A. M. L. Camboulives, Savigny sur Orge, France, assignor to Societe Natinonale d'Etude ed de Construction de Moteurs d'Aviation S.N.E.C.M.A., Paris Cedex, France
Filed Jan. 12, 1984, Ser. No. 573,700
Claims priority, application France, Jan. 13, 1983, 83 00423
Int. Cl.[6] F02K *1/11*
U.S. Cl. 239—265.39 **16 Claims**

1. In a supersonic nozzle for a turbojet engine having a plurality of convergent and divergent flaps pivotally attached together so as to vary the cross section of the nozzle, the improved control system for controlling the orientation of the flaps comprising:
a) a fixed structure defining a passage for the gases of the turbojet engine;
b) a plurality of beam members attached to the fixed structure and extending in a downstream direction from the fixed structure, each beam member defining a median plane extending between its longitudinal centerline and the longitudinal axis of the turbojet engine;
c) means to pivotally attach the upstream end of the convergent flaps to the beam members;



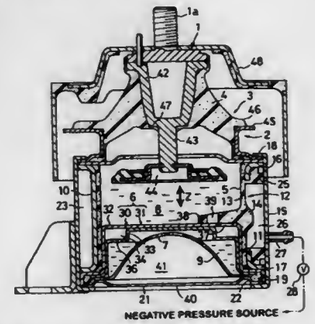
d) means to attach the downstream ends of the beam members together to form a rigid ring;
e) a synchronization lever pivotally attached to each beam member;
f) hydraulic cylinder control means connected between the beam member and the synchronization lever such that, as a piston rod extends and retracts with respect to the cylinder, the synchronization lever is caused to pivot about its attachment to the beam member;
g) first linkage means connecting the synchronization levers to the convergent flaps;
h) second linkage means connecting the synchronization levers to the divergent flaps; and
i) third linkage means interconnecting the synchronization levers such that all of the synchronization levers move simultaneously.

5,571,263
HYDRAULIC ENGINE MOUNT WITH REDUCED IMPULSE VIBRATION
David J. Koester, Miamisburg; Michael G. Zimmerman, Spring Valley; Frederick C. Miller, Beavercreek, and Robert D. Milos, III, Kettering, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 14, 1995, Ser. No. 422,399
Int. Cl.[6] F16M *1/00*
U.S. Cl. 267—140.13 **7 Claims**



1. A hydraulic mount comprising:
a first mounting member;
a second mounting member mating with the first mounting member forming a first cavity therebetween;
a resilient diaphragm cooperating with the first mounting member to form a second cavity that is filled with fluid; and
a partition having a periphery captured between the first and second mounting members positioned within the second cavity including an orifice track extending through the partition from the first cavity to the second cavity and defined substantially around the periphery bounding the central area of the partition a first orifice plate having a substantially opened central flow area defined as the area bounded by the orifice track and a first orifice track port, a second orifice plate having a substantially closed central flow area with larger and smaller flow orifices of unequal flow area and a second orifice track port therethrough and a decoupler positioned between the first orifice plate and the second orifice plate, the first orifice plate and the second orifice plate forming the orifice track therebetween wherein the decoupler is capable of closing off flow through the central flow areas of the first and second orifice plates channeling flow through the orifice track resulting in a large increase in dynamic rigidity of the mount as the mount changes from a first mode wherein flow is through the central flow areas of the orifice plates and a second mode wherein flow is through the orifice track during which the substantially closed central flow area of the second orifice plate reduces mode transition vibration generation and the unequal flow area of the larger and smaller flow orifices result in optimization of a resonant frequency at which flow is maximized.

5,571,264
FLUID SEALED TYPE ANTIVIBRATION RUBBER DEVICE
Osamu Maruyama, and Kazutoshi Satori, both of Saitama, Japan, assignors to Yamashita Rubber Kabushiki Kaisha, Saitama, Japan
Filed Jun. 14, 1995, Ser. No. 490,539
Claims priority, application Japan, Jun. 28, 1994, 6-168946; Apr. 26, 1995, 7-102576
Int. Cl.[6] F16F *11/00*
U.S. Cl. 267—140.14 **11 Claims**



1. A fluid sealed type antivibration rubber device comprising:
a first connecting member secured to one of a vehicle body and a vibrating member;
a second connecting member secured to the other of the vehicle body and the vibrating member;
a rubber block disposed between the first and second connecting members, the first and second connecting members being adapted to form a closed space therebetween with at least a part of the rubber block;
a partition member dividing the closed space into a plurality of fluid chambers and
an orifice passage provided to place the plurality of fluid chambers in communication with each other;
wherein the first or second connecting member includes a wall portion, the inside being covered by a rubber wall being contiguous with the rubber block;
the wall portion of the first or second connecting member covered by the rubber wall being provided at a part thereof with an opening portion, and a rubber wall portion corresponding to the opening portion is adapted to serve as a

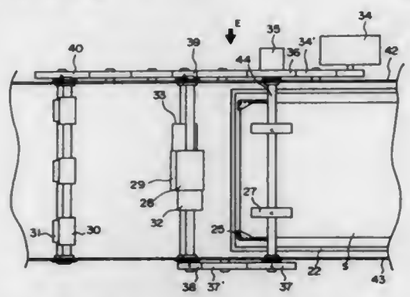
movable wall portion which is elastically deformable away from the opening portion toward one side;
the elastic deformation being effected such that the elastic deformation displacement is controlled by a control means provided outside the device; and
wherein the partition member on the side of a first fluid chamber facing the movable wall portion is provided at its surface with a first opening portion which is always open as an opening portion for the orifice passage and an intermediate opening portion which is opened and closed by a passage length adjustable valve;
the passage length adjustable valve being integrally formed with the movable wall portion and projecting toward the center of the partition member so that the movable wall portion can slide on the surface of the partition member, whereby the orifice length is adjustably controlled such that when the intermediate opening portion is closed, the orifice passage is long and when the intermediate opening portion is opened, the orifice passage is short.

5,571,265

SHEET SUPPLYING APPARATUS

Tadashi Yagi, Machida; Yutaka Kikuchi, Kawasaki; Sumitoshi Sootome, Yachiyo; Kazuyuki Morinaga, Yokohama, and Hisayuki Tomura, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 77,866, Jun. 18, 1993, abandoned. This application Jan. 13, 1995, Ser. No. 372,830
Claims priority, application Japan, Jun. 19, 1992, 4-186353; Jun. 29, 1992, 4-171085
Int. Cl.[6] B65H *3/06*
U.S. Cl. 271—119 **11 Claims**



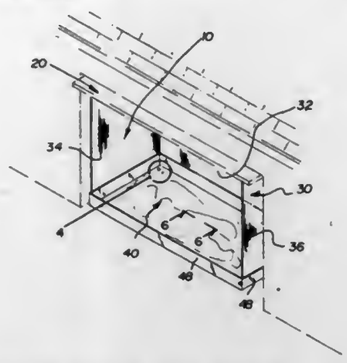
1. A sheet supplying apparatus, comprising
sheet stacking means for supporting sheets;
a sheet supply roller having different radial dimensions along a periphery thereof for feeding out the sheets from said sheet stacking means;
separation means comprising a feed rotary member rotatable in a sheet feeding direction and a reverse rotary member rotatable in a direction opposite to the sheet feeding direction, for separating the sheets fed out by said sheet supply roller one by one;
driving means for generating a rotation drive force to rotate said sheet supply roller and the rotary members of said separation means;
first rotation transmitting means for transmitting the rotation force of said driving means to the reverse rotary member;
second rotation transmitting means for transmitting the rotation force of said driving means to said sheet supply roller and to the feed rotary member; and
rotation controlling means provided in said second rotation transmitting means for interrupting transmission of the rotation drive force from said driving means to said sheet supply roller, after a predetermined amount of rotation of said sheet supply roller, to thereby stop rotation of said sheet supply roller and the feed rotary member.

5,571,266

UNIVERSAL SPORTS NET SYSTEM

Donald H. Nichols, 2453 Studebaker Rd., Long Beach, Calif. 90815

Filed Apr. 18, 1996, Ser. No. 634,582
Int. Cl.[6] A63B *63/00*
U.S. Cl. 273—400 **5 Claims**



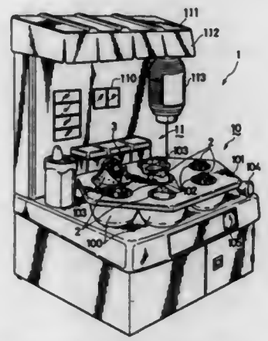
1. A Universal Sports Net System comprising:
a netting structure;
a padded floor structure attached to the netting structure;
a garage door securing means engaging the padded floor structure; and
a garage door where the garage door securing means is attached.

5,571,267

TARGET HITTING GAME MACHINE

Hidekazu Yokoi, Zama; Yuichiro Sagawa, Yamato, and Shinichi Wada, Zama, all of Japan, assignors to Konami Co., Ltd., Hyogo-ken, Japan

Filed Sep. 7, 1995, Ser. No. 524,696
Claims priority, application Japan, Sep. 9, 1994, 6-216327
Int. Cl.[6] A63F *9/00*
U.S. Cl. 273—446 **10 Claims**



1. A target hitting game machine comprising:
a cover member being formed with an opening;
a target having an effective hitting area on a portion of the surface thereof, the target being rotatably disposed in the cover member and partially exposed through the opening during the rotation;
a drive mechanism which rotates the target;
an exposure detector which detects that the effective hitting area of the target is exposed through the opening;
a hit detector which senses that the target is hit by a player; and

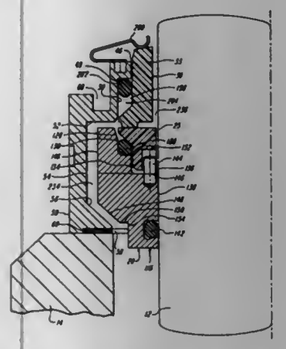
a successful hitting determinator which is in responsive to the exposure detector and the hit detector and determines a successful hitting that the effective hitting area is hit.

5,571,268

UNIVERSAL SPLIT MECHANICAL SEAL

Henri V. Azibert, Windham, N.H., assignor to A.W. Chesterton Company, Stoneham, Mass.

Filed Dec. 16, 1993, Ser. No. 168,860
Int. Cl.[6] F16J *15/38*
U.S. Cl. 277—39 **30 Claims**



1. A split mechanical seal for mounting to a housing containing a rotating shaft, comprising:
a pair of seal ring assemblies concentrically disposed about said shaft and including a first seal ring assembly and a second seal ring assembly, each said seal ring assembly having a seal ring formed of at least two seal ring segments, said seal rings being disposed generally concentric to a first axis, said segments being resiliently supported in said mechanical seal and having inner and outer concentric surfaces, and a pair of axially extending segment sealing faces disposed at opposite ends of each of said segments,
at least one resilient biasing means concentric about and in intimate contact with said outer concentric surface of said seal segments of at least one seal ring, for applying a first radially inward force to said seal segments, said first radially inward force operating to bias each of said segment sealing faces of one of said seal ring segments into sealing contact with corresponding segment sealing faces of another of said seal ring segments to prevent radial separation thereof, when said mechanical seal is exposed to a positive pressure condition, and
at least one axial biasing means associated with at least one of said seal ring assemblies for generating and applying, in cooperation with said resilient biasing means, a second radially inward force to said seal segments, said second radially inward force also operating to bias said segment sealing faces of one of said seal ring segments into sealing contact with corresponding segment sealing faces of another of said seal ring segments to prevent radial separation thereof, when said mechanical seal is exposed to a negative pressure condition.

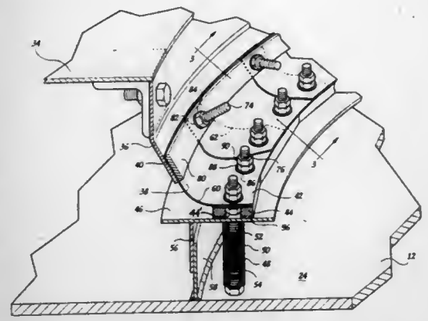
5,571,269

ROTARY SEAL ASSEMBLY FOR ROTARY DRUM

Karl Buelow, P.O. Box 997, Lake Junaluska, N.C. 28745

Filed Apr. 6, 1995, Ser. No. 417,804
Int. Cl.[6] F16J *15/32;* **F27B** *7/24*
U.S. Cl. 277—138 **11 Claims**

1. A rotary seal assembly for sealing a large, high temperature rotary drum to a stationary hood, said drum having a substantially



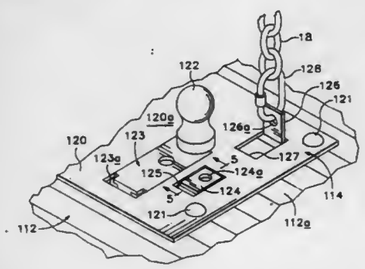
circular cylindrical surface near one open end thereof substantially coaxial with its axis of rotation, and said hood being open to the interior of said drum through said open end, said seal assembly comprising:
a series of resilient overlapping metal leaves disposed to collectively encircle said cylindrical surface of said drum, each said leaf having a mounting end and a sealing end, said mounting end being affixed to said stationary hood and said sealing end extending toward said cylindrical surface, each said leaf having a sealing edge between said mounting and sealing ends, said sealing edge being disposed in lapping relation to an adjacent leaf, and each said leaf further having an overlapping edge between said mounting and sealing ends, said overlapping edge being located opposite said sealing edge;
a wear liner disposed on each said leaf at its sealing end;
a plurality of support devices fixed to said cylindrical surface;
a wear ring mounted annularly about said cylindrical surface to said support devices and having an outer surface for sealing engagement by said wear liners;
said support devices having resilient means for yielding movement in response to radial movement of said cylindrical surface; and
inner and outer annular plates attached respectively to said cylindrical surface and to said wear ring and extending therefrom toward one another into overlapping abutment to seal the annular area between said cylindrical surface and said wear ring.

5,571,270

HITCH ASSEMBLY WITH RETRACTABLE TRAILER COUPLING

Kenneth M. Larkin, 342 SE. Evergreen, Redmond, Oreg. 97756

Filed May 15, 1995, Ser. No. 441,445
Int. Cl.[6] B60D *1/54*
U.S. Cl. 280—491.1 **5 Claims**



1. A hitch assembly for use in coupling the towing vehicle with a trailer, said hitch assembly comprising:

a hitch base plate configured for attachment to the towing vehicle, said hitch base plate including a support surface contoured substantially similar to a body contour of the towing vehicle, and said hitch base plate defining a safety chain recess, said safety chain recess being configured to house said safety chain connector, and wherein said safety chain recess includes a pair of transversely intersecting elongate slot portions;

a hitch mount configured for retractable extension from said hitch base plate to provide a seat for a matching trailer mount;

a safety chain connector configured for retractable extension from said hitch base plate to selectively provide a seat for a trailer-connected safety chain, said safety chain connector being defined by a retractable flap with an eyelet, said hitch base plate including a safety chain recess configured to house said flap;

wherein said hitch base plate includes a keeper which extends across said safety chain recess to couple said flap with said hitch base plate;

wherein said hitch assembly further includes a removable safety chain link which connects the safety chain to said flap; and

said hitch mount and said safety chain connector being retractable to provide a hitch assembly which conforms generally to the body contour of the towing vehicle when said hitch assembly is not in use.

5,571,271

AIR BAG INFLATION GAS GENERATOR

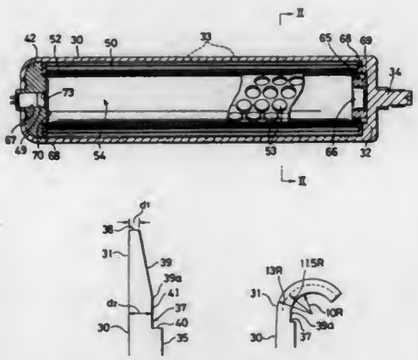
Hirokazu Kobari; Junichi Kishimoto; Takashi Minamizawa; Yukio Ikeda, all of Fukushima-ken; Kanichi Fukuda, and Haruki Abe, both of Tokyo, all of Japan, assignors to Nippon Koki Co., Ltd., and Honda Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 83,889, Jun. 28, 1993, abandoned. This application Sep. 21, 1995, Ser. No. 532,005

Claims priority, application Japan, Aug. 28, 1992, 4-230085; Oct. 9, 1992, 4-272003

Int. Cl.[6] B60R *21/28*

U.S. Cl. 280—741 **3 Claims**



1. An air bag inflation gas generator comprising:

a longitudinal outer cylindrical member having a first closed end and a second end having an opening and a plurality of gas outlets formed in the outer periphery,

a circular end cap disposed in the opening of the outer cylindrical member and caulked by a wall face of said opening,

a gas generating agent pack comprising a longitudinal cylindrical pack, wherein said gas generating agent pack is accommodated in said outer cylindrical member, and

an igniter disposed in said end cap,

said opening of the outer cylindrical member having an end cap placing step section having an approximately L-shaped cross section formed toward an outer wall face of the outer cylindrical member from an inner wall face of said cylindrical member and a taper section having a diameter increased toward the opening end ranging to the end cap placing step section, and

said end cap having a wall face tapering inwardly from a rim of an inner face and a caulking face circularly formed from the periphery of the wall face toward the center whereby said taper section is caulked to cover said caulking face.

5,571,272

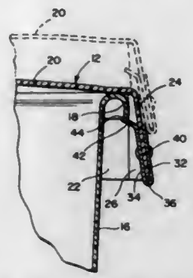
SEED BOX LID REPLACEMENT LATCH

Norman E. Roehr, Box 40, Rt. 1, Kismet, Kans. 67859; and Stanley R. Reiss, Box 10, Rt. 1, Plains, Kans. 67869

Filed Oct. 21, 1994, Ser. No. 326,836

Int. Cl.[6] E05C *19/06*

U.S. Cl. 292—80 **2 Claims**



1. In combination with a planter seed box having an open top defined by an outwardly and downwardly extending peripheral lip, a pivotal one-piece closure lid mounted for movement between open and closed positions relative to said seed box, said lid including a depending peripheral flange telescoped over the lip on the seed box when the lid is in closed position, said lid being constructed of plastic material to enable the flange on the lid to flex outwardly during movement of the lid between open and closed position, a latch mounted on said flange, said latch including a U-shaped bracket telescopically receiving a lower edge portion of said flange and oriented adjacent the seed box when the lid is in closed position and a projection mounted on said bracket and extending upwardly and inwardly toward said lip on the seed box to a position underlying said lip when the lid is in closed position, the lower edge portion of said flange on the lid and said projection being flexed laterally away from the seed box to release said projection from the lip to enable the lid to move to open position, said projection being constructed of spring metal to enable resilient snap engagement of the projection into underlying relation to said lip during movement of the lid toward closed position, said U-shaped bracket including two adjacent legs closely receiving said flange on the closure lid therebetween, fastening means extending through the legs and through the flange on the closure lid, said projection on the bracket extending along a major portion of the length of an end edge of one leg of said U-shaped bracket and including a free edge engaging a bottom edge of said lip on the seed box.

5,571,273

MANUALLY TILTABLE SEAT

Sulevi Saarinen, Sauvalantie 1,, FIN-21350 Ilmarinen, Finland

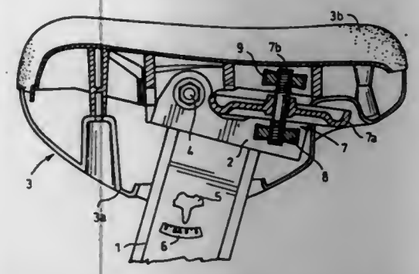
Filed Apr. 6, 1995, Ser. No. 417,926

Claims priority, application Finland, Apr. 12, 1994, 941678

Int. Cl.[6] B62J *1/04*

U.S. Cl. 297—215.15 **4 Claims**

1. Arrangement in connection with a seat, especially a seat of an exercise apparatus, comprising a mounting bracket fixedly positioned at the upper end of a support tube, a seat portion, comprising an upper surface and a casing forming a lower side pivotally positioned on said mounting bracket in such a way that said seat portion may turn about a horizontal axis with respect to said support tube, and manually adjustable adjusting and locking means, functioning by two coacting threaded elements, by means of which the angular position of said seat portion with respect to said support tube can be adjusted and locked in a desired manner, said casing and said upper surface forming a cavity, said upper end, said bracket, and said adjusting and locking means being disposed in said cavity, said arrangement further comprising pointer means positioned in said seat portion and a scale part positioned on a part which is movable relative to the seat portion, both being arranged to act as an indicating means of the angle of tilt of said seat portion, said angle of tilt being obtained by means of said adjusting and locking means.



adapted to maintain the rear supporting bar (**8**) in an initial position as regards its pivotal movement about the horizontal transverse axis (**10**) and to counteract, with an adjustable spring pressure, pivotal movement of the rear supporting bar (**8**) from this initial position caused by a depression of the forearm rest (**20**), said spring means (**15, 16, 17, 18, 19**) comprising a threaded rod (**15**) which is articulated to the rear supporting bar (**8**) and extends through a part (**14**) fixedly connected to the column (**7**), a spring (**19**) arranged on the rod (**15**) between said part (**14**) and an adjusting nut (**17**) screwed on the rod (**15**) for adjusting the pressure exerted by the spring (**19**), and a stop nut (**18**) screwed on the rod (**15**) for setting the initial position.

5,571,274

ARM-REST DEVICE FOR A CHAIR

Lars Holstensson, Nassjö , Sweden, assignor to Ergonomiprodukter I Bodafors A.B., Nassjo, Sweden

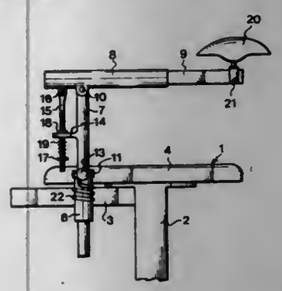
PCT No. PCT/SE94/00329, § 371 Date Jan. 16, 1996, § 102(e) Date Jan. 16, 1996, PCT Pub. No. WO94/23616, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 14, 1994, Ser. No. 537,679

Claims priority, application Sweden, Apr. 20, 1993, 9301286

Int. Cl.[6] A47C *7/54*

U.S. Cl. 297—411.38 **2 Claims**



1. An armrest device for a chair, especially an office chair, said device comprising a fastening element (**5, 6**), which is adapted to be fixed to the chair beside the seat (**4**) thereof, and an armrest (**7, 8, 9, 20**), which is connected to the fastening element and has a substantially vertical column (**7**) so connected to the fastening element as to be rotatable about its longitudinal axis, a substantially horizontal rear supporting bar (**8**) connected to the column, and a front supporting bar (**9**) carrying a forearm rest (**20**), on which the user's forearm is to rest, and being telescopically displaceable in relation to the rear supporting bar (**8**) in order to form an armrest that can be lengthened and shortened as desired, c h a r a c t e r i s e d in that the rear supporting bar (**8**) is so mounted on the column (**7**) as to be pivotable about a substantially horizontal transverse axis (**10**), and that a spring means (**15, 16, 17, 18, 19**) is

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5,571,275

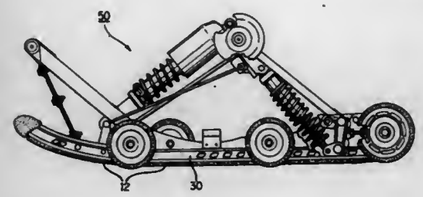
WEAR BLADE FOR SNOWMOBILE ENDLESS TRACK SUSPENSION

Paul A. Cyr, 7 Willimantic Ct., Presque Isle, Me. 04769

Filed Jun. 7, 1995, Ser. No. 476,560

Int. Cl.[6] B62D *55/10*

U.S. Cl. 305—127 **12 Claims**



1. An endless track device, comprising:

an endless track engaging a ground surface;

a slide rail for pressing a portion of the endless track against the ground surface; and

a wear blade connected to the slide rail, the endless track slidingly contacting the wear blade;

wherein the wear blade comprises a composition comprising by weight:

about 20% carbon;

about 5% graphite; and

about 75% polytetrafluoroethylene.

5,571,276

DISHWASHER FRONT PANEL RETAINER CHANNEL

Duane M. Kobos, Laporte, Ind.; Gary M. Lindgren, Three Oaks, Mich., and Joseph T. Ferencevich, Findlay, Ohio, assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 31, 1995, Ser. No. 381,402

Int. Cl.[6] E06B *3/00;* **E04C** *1/40;* **A47B** *47/00*

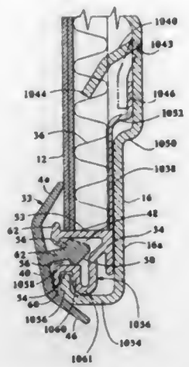
U.S. Cl. 312—265.6 **13 Claims**

1. A combination of a channel member, a frame of an appliance and a retaining strip, wherein said channel member is configured to be held on said frame, and wherein said frame includes a lip perpendicular to a first portion of said frame with a flange extending perpendicular to said lip parallel to and in a direction of said first portion of said frame, and at least one tab projecting out of said first portion of said frame, said channel member being configured to receive said retaining strip having a projecting portion, said channel member comprising:

a channel portion and a back portion,

said back portion extending between said lip and said tab and having a portion retainingly held by said tab;

said channel portion comprising a first resilient leg and a second resilient leg, said first and second legs being spaced apart to form a channel for receiving said projecting portion of said retaining strip, at least one of said first and second legs having a detent formed thereon to retainingly engage



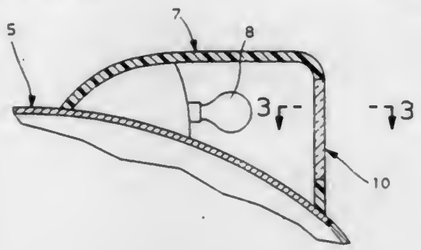
said projection, said second leg being configured to at least partially be received in an area defined by said first portion of said frame, said lip and said flange and to avoid engaging interference with said flange.

5,571,277

AUTOMOTIVE HOLOGRAPHIC SIGNAL LAMP

Christopher S. Allred, and Dewayne A. Landwehr, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 12, 1995, Ser. No. 489,493
Int. Cl.[6] B60Q *1/44*
U.S. Cl. 362—61 **4 Claims**



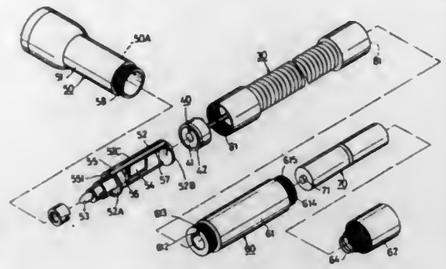
1. An automotive signal lamp comprising:
a first light providing a source of illumination;
a tinted lens receiving the illumination by the first light source on a first side of the lens, the lens tinting the illumination given by the first light source to a first desired frequency;
a transmissive hologram adjacent the lens for providing a first image only when the first light source is actuated, the transmissive hologram being activated by light at the first desired frequency; and
a reflective hologram adjacent the transmissive hologram for providing an image differing from the first image, the second image being visible only when the first light source is not actuated and when the lens is illuminated by a second light source on a side of the lens generally opposite the first light source.

5,571,278

TORCH WITH A BELLOWED INTERMEDIATE FLEXIBLE HOSE MEMBER

Hanh Chiang, 162, Chung-Cheng S. Rd., Hsin-Ying Hsiang-,Tainan Hsien, Taiwan

Filed Dec. 29, 1995, Ser. No. 581,175
Int. Cl.[6] F21L *7/00*
U.S. Cl. 362—198 **1 Claim**



1. A torch comprising:
a head member including an externally threaded rear end section, a bulb unit disposed therein, and an on-off switch which is mounted on said head member and which is capable of energizing said bulb unit upon actuation;
a tail member including an externally threaded front end section, a cell unit for supplying power to said bulb unit;
said bulb unit including an elongated bulb-holding seat made from an insulated material which has a front end wall, a rear end wall and a C-shaped-cross-sectioned intermediate section interconnecting said front and rear end walls securely, said bulb unit further including a bulb mounted on the front end wall, a conductive long stick having a front end connected electrically to said bulb and a rear end fixed on an external surface of said rear end wall, a conductive front short stick having a front end connected electrically to said bulb and a rear end, and a conductive rear short stick having a front end spaced apart from and adjacent to said rear end of said front short stick and a rear end fixed on said rear end wall, said switch being capable of actuated to interconnect electrically said rear end of said front short stick and said front end of said rear short stick; and
a bellowed intermediate flexible hose member having internally threaded front and rear end sections which respectively have front and rear end surfaces and which are respectively provided with conductive front and rear contact sets respectively fixed on said front and rear end surfaces, said hose member being connected threadedly to said head and tail members in such a manner that said front contact set is in electrical contact with said rear ends of said long stick and said rear short stick, while said rear contact set is in electrical contact with terminals of said cell unit.

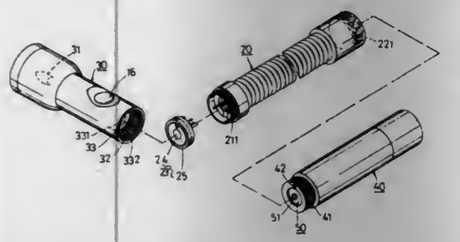
5,571,279

TORCH WITH BELLOWED INTERMEDIATE FLEXIBLE HOSE MEMBER

Hanh Chiang, No. 162, Chung-Cheng S. Rd., Hsin-Ying Hsiang, Tainan Hsien, Taiwan

Filed Dec. 29, 1995, Ser. No. 581,174
Int. Cl.[6] F21L *7/00*
U.S. Cl. 362—198 **1 Claim**

1. A torch comprising:
a head member including a bulb unit disposed therein, and an on-off switch which is mounted on said head member and which is capable of energizing said bulb unit upon actuation;
a tail member including a cell unit for supplying power to said bulb unit, one of said head member and said tail member having an internally threaded end section, the other of said head member and said tail member having an externally threaded end section; and
a bellowed intermediate flexible hose member having an internally threaded end section, an externally threaded end section, and two conductive contact sets respectively located in said end sections of said hose unit, said hose member being connected threadedly to said head and tail members in such a manner that one of said conductive contact sets is in electrical contact with said bulb unit while the other one of said conductive contact sets is in electrical contact with terminals of said cell unit, said tail and head members being detachable from said end sections of said hose member so as to interconnect said head and tail members by engagement of the internally threaded end section and the externally threaded end section of said head and tail members, thereby coupling said bulb unit and said terminals of said cell unit electrically.

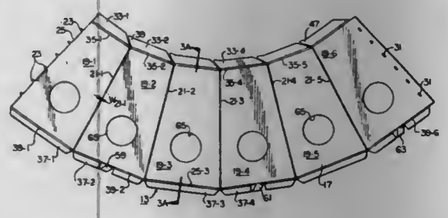


5,571,280

LAMPSHADE

William M. Lehrer, Wellesley, Mass., assignor to Photofabrication Engineering Inc., Milford, Mass.

Filed May 25, 1995, Ser. No. 449,995
Int. Cl.[6] F21V *1/00*
U.S. Cl. 362—352 **14 Claims**



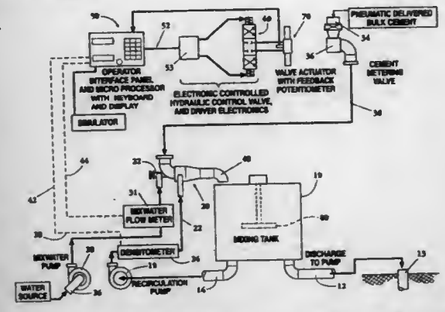
1. A lampshade comprising a one piece metal blank having a front surface and a rear surface and including:
a. at least three side wall panels connected to one another in sequence in side-by-side relationship by fold lines, each side wall panel at each end of the sequence having an outer side edge,
b. a locking tab extending out from the outer side edge of the side wall panel at one end of the sequence,
c. an auxiliary panel extending out from the outer side edge of the side wall panel at the other end of the sequence, said auxiliary panel having an inner edge, and
d. a locking slot formed on the auxiliary panel adjacent its inner side edge for engagement by said locking tab to hold together the side wall panels at the ends of the sequence so as to form the lampshade.

5,571,281

AUTOMATIC CEMENT MIXING AND DENSITY SIMULATOR AND CONTROL SYSTEM AND EQUIPMENT FOR OIL WELL CEMENTING

Thomas E. Allen, 4045 N. Garnett, Tulsa, Okla. 74116

Filed Feb. 9, 1996, Ser. No. 598,908
Int. Cl.[6] B01F *15/02*; B28C *9/04*
U.S. Cl. 366—2 **18 Claims**



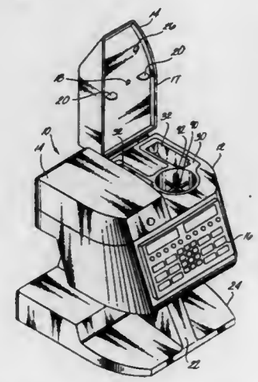
1. Apparatus for mixing and maintaining density of cement slurries for a well comprising:
a vehicle transportable to a site adjacent said well;
a first slurry mixing tank; said tank including means to mix said slurry therein;
an eductor conduit, the outlet of which enters said first slurry mixing tank, said eductor comprised of:
a central water conduit and nozzle for controllably injecting water under pressure to the outlet of said eductor;
a casing surrounding said nozzle creating a first annular space around said conduit and nozzle;
means to introduce dry cement into said first annular space;
a second annular space between said eductor conduit and said casing; and
means to recirculate slurry from said first mixing tank to said second annular space.

5,571,282

AUTOMATED BONE CEMENT MIXING APPARATUS

Michael L. Earle, 279 Old Ranch Rd., Sierra Madre, Calif. 91024

Continuation-in-part of Ser. No. 88,216, Jul. 6, 1993. This application Jun. 7, 1995, Ser. No. 486,829
Int. Cl.[6] B01F *13/06*
U.S. Cl. 366—139 **18 Claims**



1. A motorized mixer for mixing bone cement for use in attachment of prosthetics, the mixer comprising:

a mixing chamber;
a liner in the mixing chamber;
an impeller within the liner wherein the impeller comprises:
blades for mixing;
a hollow shaft;
a motor for driving the impeller; and
means for regulating the operations of the motor.

5,571,283

SHAKING AND MIXING DEVICE WITH A BLOWER

Günter Vollgold, Rednitzhembach, Germany, assignor to Heidolph-Elektro GmbH & Co. KG, Kelheim, Germany

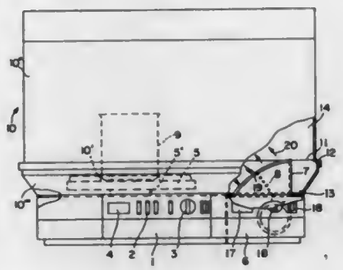
PCT No. PCT/EP93/03467, § 371 Date Nov. 8, 1994, § 102(e) Date Nov. 8, 1994, PCT Pub. No. WO94/15705, PCT Pub. Date Jul. 21, 1994

PCT Filed Dec. 9, 1993, Ser. No. 302,643

Claims priority, application Germany, Jan. 14, 1993, 43 00 748.1

Int. Cl.[6] B01F *11/00;15/06*

U.S. Cl. 366—143 **8 Claims**



1. Shaking and mixing device comprising
a device housing having a drivable plate-like bearing surface;
a blower for cold air and warm air, and a blower housing for receiving the blower;
said device housing and said blower housing are arranged directly next to each other fixed or detachably fixed together; and
a common covering hood for overgripping the device housing and the blower housing jointly at the same time, and said covering hood can be freely mounted on the two housings; the blower feeding the air into an interior space defined within the common covering hood.

5,571,284

LINEAR MOTOR DRIVEN SHUTTLE MECHANISM FOR A PRINTER

Genichiro Kawamichi; Satoru Tobita, and Shun Suzuki, all of Hitachinaka, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

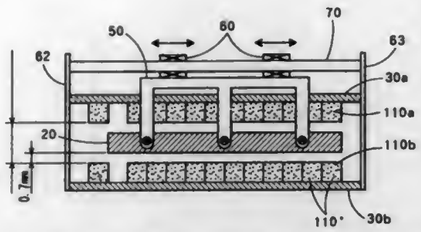
Filed Jun. 23, 1995, Ser. No. 525,229

Claims priority, application Japan, Jun. 24, 1994, 6-143081

Int. Cl.[6] B41J *19/30*

U.S. Cl. 400—322 **20 Claims**

1. A shuttle mechanism for bidirectionally moving a printing unit for printing characters and symbols, the shuttle mechanism comprising:
a linear motor comprising:
a first magnet bank including a plurality of first magnets juxtaposed in a first direction, wherein adjacent magnets of said first magnets have alternate polarity;



a second magnet bank including a plurality of second magnets juxtaposed in the first direction, wherein adjacent magnets of said second magnets have alternate polarity and said second magnets are positioned to confront respective ones of the first magnets to form a plurality of confronting pairs, wherein said first magnets and said second magnets of said confronting pairs have opposite polarity, wherein said first magnet bank and said second magnet bank are positioned so as to have a space therebetween; and
a coil member positioned in the space between said first magnet bank and said second magnet bank, said coil member having a conductor extending in a second direction perpendicular to the first direction, wherein the first magnets and the second magnets each have at leasf one chamfered face that substantially confronts said cóil member; and
a supporting member connected to said coil member and supporting the printing unit, said supporting member being movable in a third direction perpendicular to both the first and second directions.

5,571,285

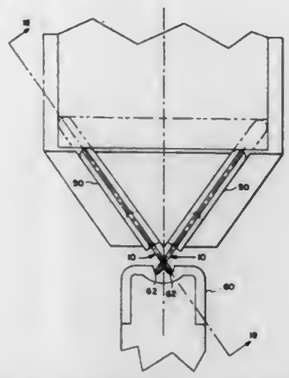
SURGICAL STAPLE FOR INSERTION INTO TISSUE

Hector Chow; Earl J. Mills, both of Cincinnati; Federico Bilotti, Madeira; Ronald J. Brinkerhoff, New Richmond; Martin Madden, and Richard L. Grant, both of Cincinnati, all of Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 641,380, Feb. 19, 1991, abandoned. This application Mar. 30, 1992, Ser. No. 860,479

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—219 **9 Claims**



1. A cartridge of surgical staple rows, said staple rows tilted within said cartridge and facing an adjacent row, such that when said staples exit said cartridge to grip tissue, each of the legs in each of said staples forming said tilted rows interlock with one of the legs of a staple in said adjacent row.

5,571,286

POLYMERS AND PREPOLYMERS AND THEIR USE IN A METHOD FOR THE TREATMENT OF WOOL

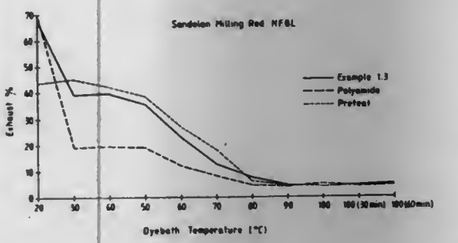
David L. Connell, and Anthony Szpala, both of Derby, England, assignors to Precision Processes (Textiles) Limited, Great Britain

Division of Ser. No. 556,976, Jul. 24, 1990, Pat. No. 5,438,116. This application Jul. 7, 1994, Ser. No. 271,743

Claims priority, application United Kingdom, Jul. 24, 1989, 8916906

Int. Cl.[6] D06L *3/06;* **D06M** *15/00*

U.S. Cl. 8—108.1 **7 Claims**



1. A method for the treatment of wool so as to impart shrink resistance which comprises contacting said wool with an aqueous solution of the reaction product of a diamine or triamine polyoxyalkylene polymer having a polymerization degree of four to fifty or a mixture thereof with epichlorohydrin in a ratio of epichlorohydrin to amino nitrogen of 1:1 to 3:1.

5,571,287

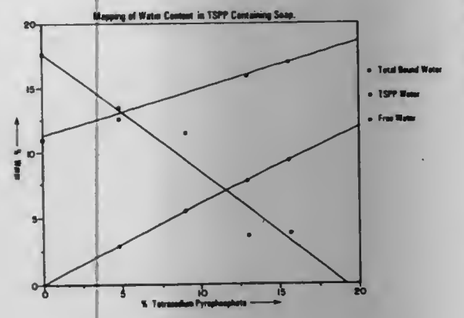
SOAP COMPOSITION CONTAINING SODIUM PYROPHOSPHATE

Ravi Subramanyam, North Brunswick, N.J.; Syed H. Abbas, Maharashtra, Ind., and Suman K. Chopra, Dayton, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 3,152, Jan. 11, 1993, abandoned. This application Aug. 12, 1994, Ser. No. 289,956

Int. Cl.[6] C11D *9/08;17/00*

U.S. Cl. 510—150 **12 Claims**



11. A detergent soap composition in bar form comprising:
(a) about 1 to about 93 wt % of an alkali metal or ammonium salt of a saturated or unsaturated fatty acid or mixture thereof;
(b) a moisture content in the range of from about 6% to 14% weight; and
(c) from about 2 to about 4% by weight of a structurant selected from the group consisting of tetrasodium pyrophosphate, a hydrate of tetrasodium pyrophosphate and mixtures thereof.

5,571,288

FLAME-RETARDANT TREATMENT OF FABRICS

Mohsen Zakikhani, Worcestershire, and Xiao P. Lei, Birmingham, both of England, assignors to Albright & Wilson UK Limited, West Midlands, England

Filed Jun. 6, 1995, Ser. No. 467,611

Claims priority, application United Kingdom, Jun. 22, 1994, 9412484

Int. Cl.[6] D06M *11/68*

U.S. Cl. 8—127.1 **20 Claims**

1. A method of treating a fabric to impart flame-retardant properties thereto, said process comprising the following stages:
(a) impregnating said fabric with an aqueous solution of a poly(hydroxyorgano)phosphonium compound;
(b) drying said impregnated fabric to a residual moisture content of from 13% to 25%;
(c) curing said dried impregnated fabric with ammonia to produce a cured, water-insoluble, phosphorus-containing polymer which is mechanically fixed within the fibres of said fabric,
(d) batching said cured dried impregnated fabric for at least one hour;
(e) oxidising said cured phosphorus-containing polymer to convert trivalent phosphorus to pentavalent phosphorus:
(f) washing and drying said fabric; and
wherein, following stage (a), said fabric has an add-on of said phosphonium compound of from 50% to 73%, relative to the weight of said fabric.

5,571,289

DYED RECEIVING ELEMENTS WHICH COMPRISE A HETEROCYCLIC HYDRAZONO DYE

Wilhelmus Janssens, Aarschot, and Luc Vanmaele, Lochristi, both of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Division of Ser. No. 169,335, Dec. 17, 1993, Pat. No. 5,468,258. This application May 23, 1995, Ser. No. 447,442

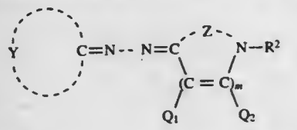
Claims priority, application European Pat. Off., Jan. 20, 1993, 93200138

Int. Cl.[6] D06P *5/00*

U.S. Cl. 8—468 **1 Claim**

1. A dyed receiving element comprising a support having thereon a dye image receiving layer and a releasing agent selected from the group consisting of solid waxes, fluorine-containing surface-active agents, phosphate-containing surface-active agents and silicone oils, wherein said releasing agent is contained in said dye image receiving layer or in a separate layer on at least part of said dye image receiving a layer, said dyed receiving element further comprising at least one heterocyclic hydrazono dye in an image-wise distribution, wherein said at least one heterocyclic hydrazono dye corresponds to the following general formula (I):

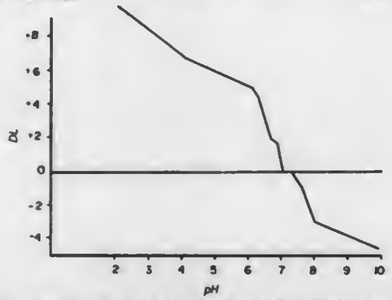
(I)



wherein:
Z represents the atoms necessary to complete a heterocyclic ring system, or a substituted heterocyclic ring system, including a heterocyclic ring system carrying a fused-on aliphatic or aromatic ring system,
Y represents the atoms necessary to complete a heterocyclic coupler system or substituted heterocyclic coupler system,
R^2 represents an alkyl group, a substituted alkyl group, a cycloalkyl group, a substituted cycloalkyl group, an aryl group, or a substituted aryl group,
m is 0 or 1, and
each of Q_1 and Q_2 independently represents hydrogen or a substituent.

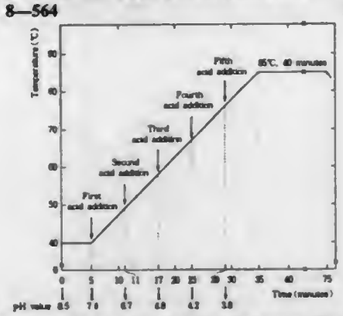
VOL 1192 ISS 1 NO 5 1996 UMI

5,571,290
STAIN RESISTANCE OF NYLON CARPET
William G. Jenkins, Lexington, Va., assignor to Burlington Industries, Inc., Greensboro, N.C.
Continuation-in-part of Ser. No. 335,951, Nov. 3, 1994, Pat. No. 5,466,527, which is a continuation of Ser. No. 51,682, Apr. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 787,220, Nov. 4, 1991, abandoned, which is a division of Ser. No. 552,178, Jul. 12, 1990, Pat. No. 5,085,667, which is a continuation-in-part of Ser. No. 519,237, May 4, 1990, abandoned. This application Sep. 25, 1995, Ser. No. 533,817
Int. Cl.[6] D06P *3/00;3/06*
U.S. Cl. 8—485 **24 Claims**



23. A process of preparing a stain resistant, multicolored, cationic dyeable nylon yarn comprising the successive steps of (a) dyeing a cationic dyeable nylon yarn in a dyebath with an acid dye at a pH of about 2.0 to less than 6.5 and fixing the acid dye to yarn to produce a desired base shade; (b) overprinting the dyed cationic dyeable yarn of step (a) by applying a print paste containing an acid dye or a premetallized acid dye to produce a multicolored stain-resistant nylon yarn.

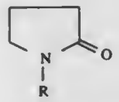
5,571,291
LOW-TEMPERATURE DYEING ADDITIVE FOR PROTEIN FIBER PRODUCTS AND DYEING METHOD USING THE SAME
Sachizumi Koike, Aichi, Japan, assignor to Tuyaku Co., Ltd., Aichi, Japan
Filed Jul. 5, 1995, Ser. No. 481,316
Claims priority, application Japan, Nov. 5, 1993, 5-276499
Int. Cl.[6] D06P *5/00;3/06;3/16;1/90*
U.S. Cl. 8—564 **2 Claims**



1. A low-temperature dyeing additive for protein fiber products which comprises one or more kinds of solvents selected from the group consisting of dimethylformamide, N-methylpyrrolidone, N-dimethylacetamide, dimethylsulfoxide, N-diethylacetamide, N-methylmorpholine, pyridine, and hexamethylphosphoric triamide which are freely miscible with water and having a donor number within the range of 24 to 50 and an acceptor number within the range of 10 to 24 in the presence or absence of a surfactant, in amount of 0.025 to 40 g per liter of water, and at least one anion selected from the group consisting of thiocyanates and perchlorates having an enthalpy of hydration ($-\Delta H_{KJ\,mol}^{-1}$) of 200 to 290 in amount of 0.05 to 40 g per liter of water, said additive having a pH of 3.5 to 9.5.

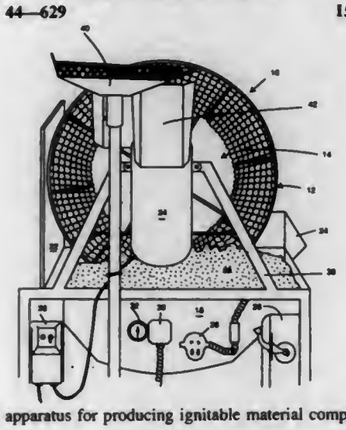
5,571,292
METHOD OF PRODUCING A COMPOSITE ELECTRODE
Tadashi Sotomura, Kashiwara; Hiroshi Uemachi, Osaka; Yoshiko Miyamoto, Hirakata, and Kenichi Takeyama, Osaka, all of Japan, assignors to Matsushita Electronic Industrial Co., Ltd., Kadoma, Japan
Division of Ser. No. 190,931, Feb. 3, 1994, Pat. No. 5,518,841. This application Jan. 24, 1996, Ser. No. 590,758
Claims priority, application Japan, Feb. 12, 1993, 5-024219; Dec. 3, 1993, 5-303994
Int. Cl.[6] H01M *4/04*
U.S. Cl. 29—623.5 **17 Claims**

1. A method of producing a composite electrode comprising the steps of:
(1) dissolving an organic disulfide compound which contains at least one sulfur-sulfur bond or at least two thiolate or thiol groups in 2-pyrrolidone or N-alkyl-2-pyrrolidone represented by the formula:



where R represents a hydrogen atom or an alkyl group, to form a solution,
said sulfur-sulfur bond being cleaved when electrolytically reduced to form thiolate groups or thiol groups and said sulfur-sulfur bond being regenerated when said thiolate or thiol groups are electrolytically oxidized,
(2) adding polyaniline to said solution to dissolve said polyaniline, thereby obtaining a homogeneous liquid, and
(3) removing at least a part of the 2-pyrrolidone or N-alkyl-2-pyrrolidone from said homogeneous liquid to obtain a solid product wherein said organic disulfide compound and said polyaniline are homogeneously mixed.

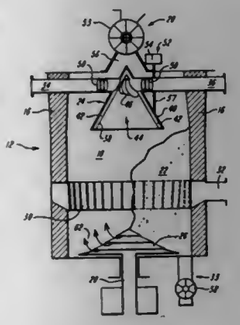
5,571,293
APPARATUS AND METHOD FOR PRODUCING IGNITABLE MATERIAL
Freddy E. Carter, P.O. Box 1644, Brownwood, Tex. 76804
Filed Sep. 13, 1995, Ser. No. 527,711
Int. Cl.[6] C10L *9/08;11/08*
U.S. Cl. 44—629 **15 Claims**



1. An apparatus for producing ignitable material comprising:

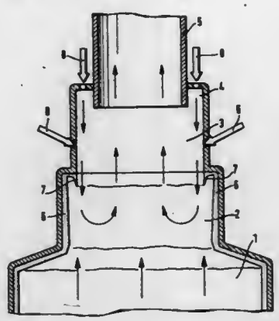
(a) an angled, rotatable, hollow drum with a high end entrance and a low end exit;
(b) a molten treatment vat for containing molten treatment within which the hollow drum is rotated;
(c) ejection guides attached interiorly of the hollow drum adjacent the low end exit; and
(d) a molten treatment excess return connected to the low end exit so that material introduced at the high end entrance and rotated through the molten treatment and then ejected by the ejection guide is allowed to shed excess molten treatment which is returned to the molten treatment vat for reuse.

5,571,294
GAS CONDITIONER APPARATUS
Johnnes Ferges, Gladbach, Germany, assignor to American High Temp., Inc., Manchester, N.H.
Division of Ser. No. 214,682, Mar. 16, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 458,980
Int. Cl.[6] C10J *3/20;3/42*
U.S. Cl. 4—76 **6 Claims**



1. A gas conditioner apparatus for converting and cleaning a crude gas produced from a gasification process, comprising:
a chamber means for retaining a fuel supply and containing a reaction;
an interior housing means for mixing a raw gas with a process gas and for housing a combustion reaction of the raw gas and process gas to yield a producer gas, the interior housing means being disposed within the top portion of the chamber means and being formed by:
first and second parallel walls which define a space therebetween, the first parallel wall being disposed interior of the second parallel wall,
a primary combustion zone disposed interior of the first parallel wall, the first parallel wall circumscribing the primary combustion zone and providing an upper closed end and a downward facing open end communicating with the chamber means, and
apertures disposed within the first parallel wall;
air inlet means for introducing process gas into the space between the first and second parallel walls, the air being communicated through the apertures into the primary combustion zone;
raw gas inlet means for introducing a raw gas into the primary combustion zone of the interior housing means; and
outlet means connected to the chamber means at a location below the interior housing means for removing the producer gas from the chamber means.

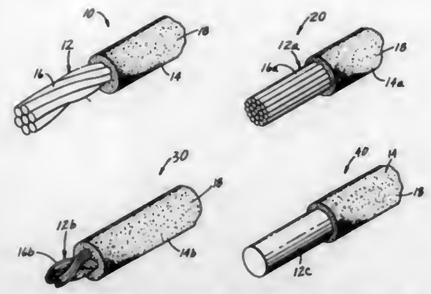
5,571,295
PROCESS FOR COOLING OF A PARTIAL OXIDATION CRUDE GAS
Johannes Kowoll, Bochum, Germany, assignor to Krupp Koppers GmbH, Essen, Germany
Filed Nov. 22, 1994, Ser. No. 343,105
Claims priority, application Germany, Nov. 25, 1993, 43 40 156.2
Int. Cl.[6] C10J *3/06;3/08;3/16*
U.S. Cl. 48—197 R **4 Claims**



1. A process for cooling of partial oxidation crude gas comprising the steps of:
a) partially oxidizing a fine grained to powdery combustible material in a flow gasifier in the presence of water vapor and an oxidizing member selected from the group consisting of oxygen and air at pressures of up to 100 bar and at temperatures above a cinder melting point to form a crude gas flow;
b) feeding the crude gas flow in a crude gas duct in an upward crude gas flow direction; and
c) feeding an annular cooling flow of a gaseous or vaporous cooling fluid into the crude gas flow in a downward direction opposite to the crude gas flow direction, said annular cooling flow being bounded by interior walls of the crude gas duct, and further comprising providing a lower substantially cylindrical quenching chamber and an upper substantially cylindrical quenching chamber, said upper quenching chamber being connected to said lower quenching chamber downstream in said crude gas flow direction from said lower quenching chamber, and wherein said feeding of said annular cooling flow into said crude gas flow is in said upper quenching chamber, wherein said upper quenching chamber has a smaller diameter than said lower quenching chamber to prevent the growth of a cinder deposit layer from the lower quenching chamber into the upper quenching chamber.

5,571,296
METHOD OF MAKING COMPOSITE ABRASIVE FILAMENTS
Loren L. Barber, Jr., Lake Elmo; Dennis G. Welygan, Woodbury, and Richard M. Pihl, Cottage Grove, all of Minn., assignors to Minnesota Mining And Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 66,862, May 25, 1993, Pat. No. 5,460,883, which is a division of Ser. No. 853,799, Mar. 19, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 456,401
Int. Cl.[6] B24D *11/00*
U.S. Cl. 51—295 **6 Claims**

1. A method of making a composite abrasive filament comprising at least one preformed core at least partially coated with a hardened composition comprising a thermoplastic elastomer and abrasive particles, said abrasive particles dispersed and adhered in the thermoplastic elastomer, said method comprising:
(a) rendering a thermoplastic elastomer molten and combining abrasive particles therewith;



(b) coating at least a portion of a preformed core with a coating comprising the molten thermoplastic elastomer and abrasive particles; and

(c) cooling the coating to a temperature sufficient to harden the molten thermoplastic elastomer to form the hardened composition.

5,571,297

DUAL-CURE BINDER SYSTEM

Gwo S. Swei, East Amherst; Anthony C. Gaeta, Lockport; Wen L. P. Yang, Ballston Lake, all of N.Y., and Jane L. Cercena, Ashford, Conn., assignors to Norton Company, Worcester, Mass.

Filed Jun. 6, 1995, Ser. No. 469,286

Int. Cl.[6] B24D *3/02*

U.S. Cl. 51—298 **22 Claims**

1. A process for the production of a coated abrasive said process comprising

a. Forming an abrasive layer on a backing material, said abrasive layer comprising abrasive grits and a bi-functional binder formulation which comprises a compound having at least one radiation-curable functionality and at least one thermally curable functionality per molecule;

b. At least partially curing the radiation-curable functionality; and

c. Subsequently completing the cure by activation of the thermally curable functionality.

5,571,298

REGENERATABLE FILTER FOR COMBUSTIBLE PARTICLES, PARTICULARLY SOOT FILTER

Alfred Buck, Nagolder Strasse 32 D-72108, Nagold, Germany

Continuation of Ser. No. 200,645, Feb. 23, 1994, abandoned. This application Aug. 9, 1995, Ser. No. 512,776

Claims priority, application Germany, Feb. 26, 1993, 43 05 915.5

Int. Cl.[6] B01D *29/62*

U.S. Cl. 55—267 **24 Claims**

1. Regeneratable filter for combustible solid particles within a gas stream, having

a housing (2) having a gas stream inlet (7) and a gas stream outlet (8);

a filter medium support (13) located in the housing (2);

gas pervious, high temperature resistant filter material (15) supported on said filter medium support (13);

an electrical resistance heater (13–16) located in the housing and positioned, with respect to the flow direction of the gas stream through the filter, upstream of said filter material (15),

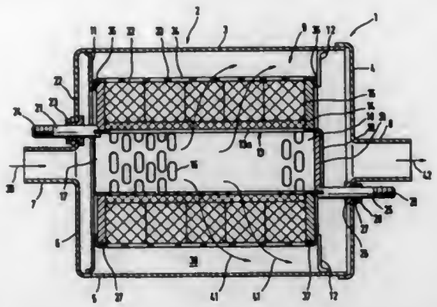
and comprising, in accordance with the invention,

a heat transfer material (14) located in the housing, and having, inherently, limited thermal inertia,

said heat transfer material being located in physical heat transfer contact with the electrical resistance heater (13–16), to increase the effective heat transfer surface of the electrical resistance heater to the gas stream and affect heat transfer from said heater to the gas stream without essentially inhibiting gas flow;

said heat transfer material having a surface in contact with the gas which is substantially larger than the surface of the electrical resistance heater; and

said heat transfer material (14) being positioned, with respect to the flow direction of the gas stream through the filter, upstream of said filter material (15), and thermally exposed to said gas stream for heat exchange with the gas stream.



5,571,299

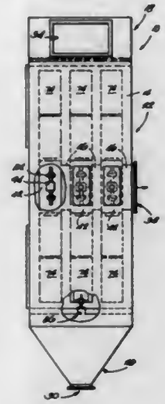
DUST COLLECTOR

Harold H. Tonn, 13105 W. Scarborough Dr., New Berlin, Wis. 53051

Filed Apr. 28, 1995, Ser. No. 430,731

Int. Cl.[6] B01D *46/04*

U.S. Cl. 55—302 **14 Claims**



1. A dust collector comprising

a housing including a contaminated air inlet, and a clean air outlet,

an exhaust conduit extending generally horizontally within said housing and communicating with said clean air outlet,

at least one upper filter element extending generally vertically and upwardly from said exhaust conduit, said upper filter element having an open lower end communicating with said exhaust conduit, and

at least one lower filter element extending generally vertically and downwardly from said exhaust conduit, said lower filter element including an open upper end communicating with said exhaust conduit,

wherein contaminated air enters said housing via said air inlet and flows through said filter elements, leaving contaminants thereon, and wherein air cleaned by said filter elements flows out of said housing through said exhaust conduit and said clean air outlet.

5,571,300

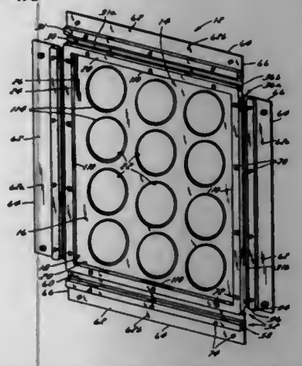
FRAME AND PAD FILTER SYSTEM

Michael J. Stemmer, Collierville, Tenn., assignor to Air Kontrol, Inc., Batesville, Miss.

Filed Feb. 13, 1995, Ser. No. 387,412

Int. Cl.[6] B01D *35/30*

U.S. Cl. 55—493 **28 Claims**



1. A one piece reusable filter frame housing for use in a forced air ventilating system, the filter frame housing releasably supporting a generally planar disposable filter media including a first side and a second side for filtering air which moves through the media from the first side to the second side, comprising:

a main member having a planar surface including a plurality of openings, the planar surface having an upstream face and a downstream face, a first pair of planar edges and a second pair of planar edges substantially perpendicular to the first pair of planar edges;

a retaining flange;

a hinge integrally formed between the retaining flange and main member to connect the retaining flange to the main member; and

a fastener included on the flange, the fastener being releasably engageable with a portion of the filter frame housing to permit replacement of the filter media with a new filter media and restrict movement of the retaining flange and hold the new filter media between the upstream face and the retaining flange.

5,571,301

APPARATUS FOR MAKING CRYSTALLIZED GLASS

Takeshi Yamaura, 4-5-7, Akitsu, Narashino-shi, Chiba-ken; Takatsugu Ogata, Hannoh; Yoshikazu Nagayoshi, Tokyo; Keiichiro Miyano, Tokyo, and Kenji Suzuki, Tokyo, all of Japan, assignors to Tsukishima Kikai Co., Ltd., Tokyo, and Takeshi Yamaura, Chiba-ken, both of Japan

Filed Jun. 3, 1994, Ser. No. 253,651

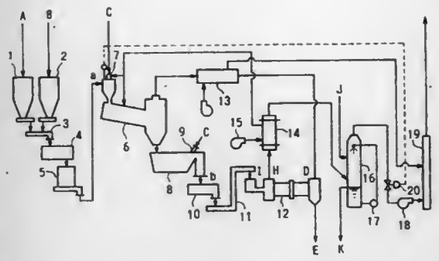
Int. Cl.[6] C03B *3/00*

U.S. Cl. 65—335 **5 Claims**

1. An apparatus for making crystallized glass product by melting a waste material including a waste ash and a calcined material of a waste slurry from sewage and industrial water treatment facilities, producing a glassy material and subjecting said glassy material to a crystallization step to produce said crystallized glass product, said apparatus comprising:

a main hopper for storing said waste material;

an auxiliary hopper for storing an additive to adjust the composition of said waste material for glass melting;



a mixer for mixing materials supplied by said main and auxiliary hoppers to make a mixed raw material for glass melting;

a constant rate feeder for supplying said mixed raw material for melting;

a primary melting furnace of a circular type for producing a primary melt from said mixed raw material;

a secondary melting furnace connected to said primary furnace at one end and having a melt discharge at another end, for homogenizing and refining the primary melt;

a cooling and shaping apparatus having one end disposed at the melt discharge end of said secondary melting furnace and having a discharge at another end for producing a glass material; and

a crystallization furnace disposed at the discharge end of said cooling and shaping apparatus for nucleating said glass material and converting said glass material to said crystallized glass product, wherein said crystallization furnace includes a rotary section in its middle, stationary sections disposed at both ends of the rotary section, and a cylindrical dam disposed inside of said rotary section dividing the inside into a nucleation chamber and a crystallization chamber, wherein nucleation and crystallization can be conducted at different temperatures.

5,571,302

FERTILIZATION OF TREES

John S. Lojek, Ontario, Canada, assignor to Terra Care International Corporation, Canada

Continuation of Ser. No. 190,202, Aug. 19, 1992, Pat. No. 5,478,373. This application Jun. 6, 1995, Ser. No. 467,539

Claims priority, application United Kingdom, Aug. 8, 1991, 9117115

Int. Cl.[6] C05F *1/00*

U.S. Cl. 71—17 **3 Claims**

1. A fertilizer composition for preventing the on-set of or combatting die-back damage in a tree comprising about 3 to 5 wt % nitrogen, about 3 to 5 wt % phosphorus and about 6 to 10 wt % potassium, wherein said nitrogen, phosphorus and potassium are provided solely by natural components and wherein said nitrogen is provided by feather meal, said phosphorus is provided by bone meal and said potassium is provided by sulfate of potash.

5,571,303

SULFUR-BASED FERTILIZER AND PROCESS FOR PRODUCTION THEREOF

Stewart G. Bexton, Calgary, Canada, assignor to Cominco Fertilizers Ltd., Calgary, Canada

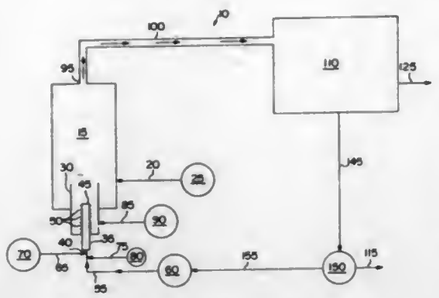
Filed Mar. 6, 1995, Ser. No. 398,532

Int. Cl.[6] C05B *7/00*

U.S. Cl. 71—34 **29 Claims**

1. A homogeneous granulated sulfur-containing fertilizer, each granule of the fertilizer comprising:

a uniform dispersion of: (i) sulfur particles, and (ii) at least one member selected from the group consisting of ammonium sulfate, ammonium phosphate and mixtures thereof;



wherein the sulfur particles in the uniform dispersion have an average particle size of about 100 μm or less.

5,571,304

OXIDE DISPERSION STRENGTHENED ALLOY FOILS

Ann M. Ritter, Albany; Melvin R. Jackson, Niskayuna; Paul L. Dupree, Scotia, and Donald N. Wemple, Jr., Rotterdam, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 27, 1994, Ser. No. 265,892

Int. Cl.[6] B22F *7/06*

U.S. Cl. 75—246 **18 Claims**

1. An oxide dispersion strengthened (ODS) Ni-base alloy foil having a controlled concentration of nitrogen as an impurity, a thickness less than or equal to 0.017 in. and a non-oriented grain microstructure, said foil being formed directly from a powder of the ODS Ni-base alloy having a concentration of nitrogen as an impurity by hot pressing the powder, wherein a concentration of nitrogen as an impurity in the foil is the same as the concentration of nitrogen in the ODS Ni-base alloy powder.

5,571,305

ATOMIZED STEEL POWDER EXCELLENT MACHINABILITY AND SINTERED STEEL MANUFACTURED THEREFROM

Satoshi Uenosono; Hiroyuki Ishikawa, and Kuniaki Ogura, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Aug. 31, 1994, Ser. No. 298,596

Claims priority, application Japan, Sep. 1, 1993, 5-217368; Sep. 1, 1993, 5-217369; Sep. 9, 1993, 5-223765; Dec. 28, 1993, 5-336076; Dec. 28, 1993, 5-337325

Int. Cl.[6] C21D *1/00*

U.S. Cl. 75—246 **9 Claims**

1. Atomized steel powder having excellent machinability and satisfactory dimensional accuracy, comprising about:

S 0.05 wt % to 0.15 wt %;

Cr 0.03 wt % to less than 0.1 wt %;

Mn 0.03 wt % to 0.5 wt %;

O 0.3 wt % or less; and

the balance Fe and incidental impurities.

5,571,306

METHOD FOR PRODUCING AN ENRICHED IRON FEEDSTOCK FROM INDUSTRIAL FURNACE WASTE STREAMS

Allan S. Myerson, Brooklyn, N.Y.; Charles A. Burrows, Atlanta, and Paul R. DiBella, Ball Ground, both of Ga., assignors to Metals Recycling Technologies Corp., Atlanta, Ga.

Continuation-in-part of Ser. No. 348,446, Dec. 2, 1994, abandoned, which is a continuation-in-part of Ser. No. 238,250, May 4, 1994, Pat. No. 5,464,596, which is a continuation-in-part of Ser. No. 953,645, Sep. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 820,987, Jan. 15, 1992, Pat. No. 5,208,004. This application Dec. 21, 1994, Ser. No. 360,394

Int. Cl.[6] C22B *3/14*

U.S. Cl. 75—430 **11 Claims**

1. A continuous method for the production of an iron product suitable for use as a feedstock for a steel making process, comprising the steps of:

a. combining an iron oxide rich material with a waste material stream which comprises iron, zinc, lead, and cadmium compounds to produce a waste material combination;

b. combining said waste material combination with carbon and roasting said waste material combination at an elevated temperature resulting in the reduction of at least a portion of the iron oxides in said waste material combination into direct reduced iron and the production of exhaust vapors comprising iron oxides, and zinc, lead, and cadmium compounds;

c. treating said exhaust vapors with an ammonium chloride solution at an elevated temperature to form a product solution which comprises dissolved constituents and an undissolved precipitate, whereby the iron oxides in said exhaust vapors combination will be contained in said undissolved precipitate and will not go into solution;

d. separating said product solution from said undissolved precipitate; and

e. recycling said undissolved precipitate to step b.

5,571,307

PROCESS AND DEVICE FOR BLOWING OXYGEN OVER METAL MELTS

Anatoly Sizov, St. Petersburg, U.S.S.R.; Horst-Dieter Schöler, and Ulrich Meyer, both of Duisburg, Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Germany

PCT No. PCT/DE93/00362, § 371 Date Feb. 10, 1995, § 102(e) Date Feb. 10, 1995, PCT Pub. No. WO94/00604, PCT Pub. Date Jan. 6, 1994

PCT Filed Apr. 22, 1993, Ser. No. 360,742

Claims priority, application Germany, Jun. 26, 1992, 42 21 266.9

Int. Cl.[6] C21C *5/46*

U.S. Cl. 75—512 **11 Claims**

1. A process for blowing oxygen with a lance over a metal melt in a vessel exposed to a vacuum, comprising the steps of:

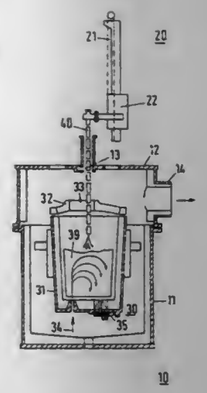
(a) providing oxygen flow into a lance;

(b) converting within the lance the oxygen flow into accelerated compressed plug-shaped pulsed successions of oxygen;

(c) controllably providing an exit for the plug-shaped pulsed successions of oxygen from the lance at ultrasonic speed so as to separate each plug-shaped succession of oxygen into an oxygen core and an oxygen casing surrounding the oxygen core;

(d) controllably providing the oxygen casing to expand in the vacuum above the metal melt so as to form a bell above the melt;

(e) providing a speed relationship between the oxygen core and the oxygen casing before impinging upon the melt, of



$$\frac{\rho_c \cdot v_c^2}{\rho_p \cdot v_p^2} = 0.4 \text{ to } 4.0,$$

wherein ρ_c is the density of the oxygen core, ρ_p is the density of the oxygen casing, v_c is the speed of the oxygen core and v_p is the speed of the oxygen casing; and wherein a pressure relationship between the oxygen pressure in the lance (p_O) and the pressure in the vacuum container (p_K) is in the range of p_O/p_K=40 to 4,500; and a relationship between the speed of a pressure wave (½ v^2) and the oxygen pressure in the lance (P_O) is in the range of

$$\frac{\rho \cdot v^2}{2 p_O} = 0.001 \text{ to } 0.65.$$

5,571,308

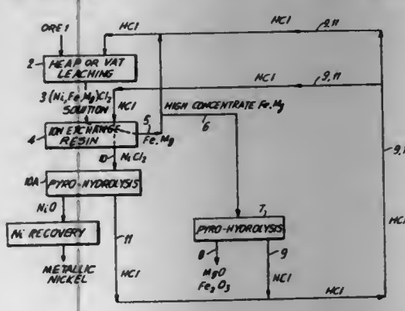
METHOD FOR RECOVERING NICKEL FROM HIGH MAGNESIUM-CONTAINING NI-FE-MG LATERITIC ORE

Willem P. C. Duyvesteyn; Manuel R. Lastra, and Houyuan Llu, all of Reno, Nev., assignors to BHP Minerals International Inc., Reno, Nev.

Filed Jul. 17, 1995, Ser. No. 502,923

Int. Cl.[6] C22B *3/42*

U.S. Cl. 75—430 **18 Claims**



1. A method for leaching in a leaching system a high magnesium Ni-Fe-Mg containing lateritic ore in the particulate state containing at least about 5% magnesium, at least about 10% iron and at least about 0.5% nickel which comprises:

contacting said particulate ore of mesh size less than about one inch with a mineral acid solution selected from the group consisting of HCl, H_2SO_4 and HNO_3,

the concentration of said acid being at least about 0.25 molar at a temperature at least ambient for a time sufficient to dissolve substantial amounts of said nickel, including iron and magnesium, and thereby forming a pregnant nickel solution thereof,

adjusting the pH of said solution, if necessary, to a range of about 1 to 3,

extracting said nickel from said pregnant nickel solution by contacting said solution with an ion exchange resin selective to the absorption of nickel and thereby forming a nickel-loaded resin and a raffinate containing said acid, iron and magnesium,

separating said raffinate from said resin,

extracting said absorbed nickel from said nickel loaded resin by contacting said resin with said mineral acid and forming a soluble nickel salt thereof as an eluate,

and recovering nickel from said eluate.

5,571,309

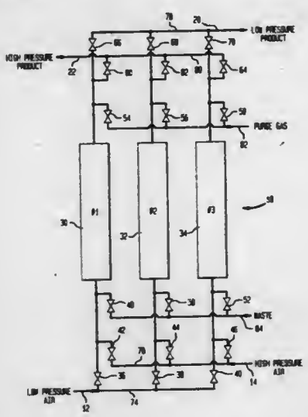
ADSORPTION PROCESS

Ravi Kumar, Allentown, Pa., assignor to The BOC Group, Inc., New Providence, N.J.

Filed Jul. 28, 1995, Ser. No. 508,375

Int. Cl.[6] B01D *53/047*

U.S. Cl. 95—99 **8 Claims**



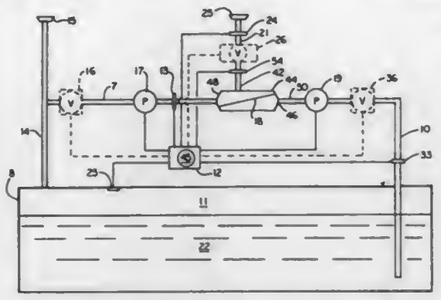
1. An adsorption process including:

introducing at least high and a low pressure feed streams into a plurality of adsorption beds containing at least one adsorbent to adsorb at least one more preferentially adsorbed component contained within said high and low pressure feed streams, thereby to produce at least high and low pressure product streams from adsorption by said at least one adsorbent;

subjecting said plurality of adsorption beds to operational cycles, each having at least two adsorption stages comprising high and low pressure feed stages having said high and low pressure feeds streams introduced into said adsorption beds; at least two repressurization stages situated just prior to said high and low pressure feed stages, said at least two repressurization stages comprising a high pressure repressurization stage prior to said high pressure feed stage and a low pressure repressurization stage before said low pressure feed stage; and regeneration stages for desorbing said at least one more preferentially adsorbed component; and

said operational cycles being conducted out-of-phase with respect to one another, such that said high and low pressure product streams are continually being produced.

5,571,310
VOLATILE ORGANIC CHEMICAL TANK ULLAGE PRESSURE REDUCTION
Seifollah S. Nanaji, Greensboro, N.C., assignor to Gilbarco Inc., Greensboro, N.C.
Filed May 12, 1995, Ser. No. 440,312
Int. Cl.[6] B01D *61/00*
U.S. Cl. 96—4 **17 Claims**



1. An apparatus for reducing the pressure in a volatile chemical tank ullage comprising
a first conduit adapted to be connected to the volatile chemical tank ullage,
a vapor extractor associated with said first conduit for pulling vapor from the volatile chemical tank ullage,
a pressure sensor adapted for mounting to detect the pressure in the volatile chemical tank ullage,
a separation module having
an inlet connected to said first conduit,
a separation membrane in said module,
a permeate outlet separated from said inlet by said separation membrane, and
a retentate outlet not separated from said inlet by said membrane,
a second conduit connected to said permeate outlet and adapted for connection to the volatile chemical tank for returning permeate to the tank,
a vapor pump associated with said second conduit for creating a lower pressure in said separation module near said permeate outlet than near said inlet so as to induce selected vapors to pass through said separation membrane,
a vent associated with said retentate outlet to vent retentate to atmosphere,
a VOC detector to detect VOC concentrations in said vent, and
a controller arranged to receive inputs from said pressure sensor and said VOC detector and arranged to send output control signals to said vapor extractor and said vapor pump to actuate said vapor extractor and said vapor pump to pull vapor from the ullage when the pressure exceeds a pressure threshold and return permeate to the tank and permit relatively VOC-free air to be released through said vent, thereby reducing the pressure in the ullage.

5,571,311
INK JET INK FORMULATIONS CONTAINING CARBON BLACK PRODUCTS
James A. Belmont, Acton, Mass.; Joseph E. Johnson, Nashua, N.H., and Curtis E. Adams, Andover, Mass., assignors to Cabot Corporation, Boston, Mass.
Filed Dec. 15, 1994, Ser. No. 356,460
Int. Cl.[6] D09D *11/02*
U.S. Cl. 106—20 R **25 Claims**

1. An aqueous ink jet ink composition comprising an aqueous vehicle and a carbon black product having attached at least one organic group, the organic group comprising a) at least one aromatic group, and b) at least one ionic group, at least one ionizable group, or a mixture of an ionic group and an ionizable group, wherein at least one aromatic group of the organic group is directly attached to the carbon black.

5,571,312
ENVIRONMENTALLY SAFE EPOXY ADHESIVE-COPPER HULL COATING AND METHOD
Graham C. Andoe, Dunwoody, Ga., assignor to Cresco Inc., SA., St. John's, Antigua/Barbuda
Continuation-in-part of Ser. No. 506,070, Jul. 24, 1995, abandoned, which is a continuation-in-part of Ser. No. 273,133, Jul. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 920,927, Jul. 28, 1992, Pat. No. 5,336,304. This application Dec. 29, 1995, Ser. No. 581,336
Int. Cl.[6] C09D *5/16;* **A01N** *25/00*
U.S. Cl. 106—18.32 **18 Claims**

1. A coating composition for covering a hull of a marine vessel and rendering it impervious to water incursion while repelling marine organisms, comprising a mixture of:
a) an amount of an epoxy adhesive resin having a weight and comprising a mixture including Diglycidyl Ether of Bisphenol A and Di-N-Butyl Phtalate;
b) a quantity of Polyamide containing hardener from 29.1% to 70.1% the weight of said epoxy adhesive resin, which quantity is sufficient to harden said epoxy adhesive resin;
c) 45–85%, by weight, of marine organism repelling copper particles;
d) 0.04% to 30%, by volume, of a water insoluble thixotropic agent; and
e) 0.06% to 1%, by volume, isopropyl alcohol;
said coating composition being coatable on a marine vessel hull, said coating composition holding its shape while curing through operation of said thixotropic agent, said coating composition, in use, rendering a hull impervious to water incursion and repelling marine organisms.

5,571,313
INK-JET INK
Kumiko Mafune, Kawasaki; Mayumi Yamamoto; Akira Nagashima, both of Tokyo; Mikio Sanada, Yokohama, and Eriko Saito, Fujisawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 29, 1995, Ser. No. 520,640
Claims priority, application Japan, Aug. 31, 1994, 6-228985
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—22 H **15 Claims**

1. An ink-jet ink comprising in combination at least one compound selected from nitrogen compounds consisting of secondary amines and derivatives thereof, tertiary amines and derivatives thereof, and complexes thereof and having at least one group selected from the group consisting of alkyl groups, a carboxyl group and the salts thereof, and a sulfonic group and the salts thereof; and a cyclic phosphate in a liquid medium in which a dye is dissolved or dispersed.

5,571,314
FORMULATION AND PREPARATION OF A GEL SYSTEM FOR THE PROMOTION OF RAPID SOLVATION IN AQUEOUS SYSTEMS
Robert F. Supcoe, Annapolis, and Ira M. Felsen, Greenbelt, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 24, 1973, Ser. No. 391,419
Int. Cl.[6] C08L *15/00*
U.S. Cl. 523—175 **11 Claims**

1. A ship's drag reducing slurry comprising:

	% by weight
a high molecular weight water soluble polymer	0+–50%;
a carrier, inert with respect to the polymer	40–99%;
a dispersant	1–5%;
a first surfactant	0.1–1.0% and
a second surfactant	0.1–0.4%.

5,571,315
HYDROCARBON GELS USEFUL IN FORMATION FRACTURING
Kevin W. Smith, McMurray, and Leonard J. Persinski, Pittsburgh, both of Pa., assignors to Clearwater, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 360,438, Dec. 21, 1994, which is a division of Ser. No. 209,266, Mar. 14, 1994, Pat. No. 5,417,287. This application Dec. 28, 1995, Ser. No. 580,171
Int. Cl.[6] C09K *7/06*
U.S. Cl. 106—285 **20 Claims**

1. A method of fracturing a subterranean formation comprising adding to a hydrocarbon liquid to be used as a fracturing fluid (a) about 0.3% to about 1.5% by weight, based on the hydrocarbon liquid, of an organic phosphate of the formula HPO_4RR' where R is a straight or branch chain alkyl, aryl, alkoxy or alkaryl group having from 6 to about 18 carbon atoms and R' is hydrogen or an aryl, alkaryl alkoxy or alkyl group having from 1 to about 18 carbon atoms, and (b) ferric ammonium citrate or a lower alkyl substituted derivative thereof in an amount effective to form a gel, and introducing the mixture into the formation to be fractured under pressure sufficient to accomplish fracturing.

5,571,316
SILICATE-DEXTRIN ADHESIVE COMPOSITIONS
Petra Gill, Warminster, Pa., assignor to PQ Corporation, Valley Forge, Pa.
Filed Feb. 28, 1996, Ser. No. 607,905
Int. Cl.[6] C09J *103/02*
U.S. Cl. 106—617 **7 Claims**

1. An adhesive composition comprising:
(a) from about 0.05 to about 0.50% w/w of sodium metasilicate;
(b) from about 10 to about 47% w/w of dextrin;
(c) from about 17 to about 70% w/w of an alkali metal silicate;
(d) from about 0.05 to about 0.50% w/w of sodium metaborate octahydrate or sodium metaborate tetrahydrate; and
(e) from about 18.0 to about 62.0% w/w water.

5,571,317
FIBER-REINFORCED MAGNESIUM OXYCHLORIDE BOND
Stephen M. Freeman, Roscoe, Ill., and David B Hanson, Afton, Wis., assignors to Western Atlas Inc., Waynesboro, Pa.
Continuation of Ser. No. 99,415, Jul. 30, 1993, abandoned. This application Feb. 14, 1995, Ser. No. 388,885
Int. Cl.[6] C04B *9/02*
U.S. Cl. 106—685 **34 Claims**

1. An abrasive tool comprising an abrasive magnesium oxychloride cement bond containing ceramic fibers having a minimum average length of at least about ¼" in an amount sufficient to reinforce the bond against disintegration in use, and abrasive grit in an amount sufficient to render the bond abrasive to a workpiece.

5,571,318
WELL CEMENTING METHODS AND COMPOSITIONS FOR USE IN COLD ENVIRONMENTS
James E. Griffith; Patty L. Totten; Bobby L. King, and Jiten Chatterji, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Aug. 31, 1995, Ser. No. 521,705
Int. Cl.[6] C04B *7/02;24/16*
U.S. Cl. 106—725 **20 Claims**

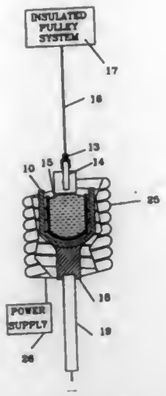
1. A well cement composition for use in performing cementing operations in a subterranean zone at a temperature as low as about 40° F. comprising:
a coarse particulate hydraulic cement having a maximum particle size of about 118 microns and a specific surface of about 2800 square centimeters per gram;
an ultra fine particulate hydraulic cement having a maximum particle size of about 15 microns and a specific surface of about 12000 square centimeters per gram, said ultra fine particulate cement being present in an amount in the range of from about 5% to about 150% by weight of said coarse particulate hydraulic cement;
sufficient water to form a pumpable slurry; and
a fluid loss control additive.

5,571,319
CEMENT ADMIXTURE
Neal S. Berke, Chelmsford, Mass., and Michael P. Dallaire, Dover, N.H., assignors to W. R. Grace & Co.-Conn., New York, N.Y.
Filed Sep. 18, 1995, Ser. No. 529,388
Int. Cl.[6] C04B *22/00;24/02*
U.S. Cl. 106—802 **28 Claims**

1. A cement admixture comprising a uniform aqueous dispersion of
a) from about 10 to 50 weight percent of silica fume;
b) at least one alkali metal or alkaline earth metal nitrite in a weight ratio of nitrite salt to silica fume of from about 1:2 to 1:10; and
c) at least a stabilizing amount of at least one glycol selected from (i) C_3–C_{12} alkylene glycol or (ii) a water soluble condensed alkylene glycol represented by the formula $HO(AO)_xH$ wherein A is a C_2–C_4 alkylene or mixture thereof, O represents oxygen and x is an integer of from 1 to 20; or mixtures thereof.

5,571,320
SPIRAL HEATER FOR USE IN CZOCHRALSKI CRYSTAL PULLERS
H. Michael Grimes, Plano, and Farouk A. Hariri, Sherman, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 371,664, Jan. 11, 1995, which is a continuation of Ser. No. 70,628, Jun. 1, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 474,280
Int. Cl.[6] C30B *15/20*
U.S. Cl. 117—32 **1 Claim**

1. A method for controlling carbon content in silicon crystals pulled from a quartz crucible in a graphite susceptor in a Czochralski crystal puller, including the steps of:
enclosing the susceptor in a combination heater/magnetic coil; said heater/magnetic coil being formed from a graphite member which is cut in a spiral to form the coil which is placed around the susceptor;
applying power to the heater/magnetic coil; and
maintaining the current in the coil at a value to melt the silicon, and to provide a magnetic field to control the generation of silicon oxide in the molten silicon during the crystal growing procedure.



5,571,321
METHOD FOR PRODUCING A GALLIUM PHOSPHIDE EPITAXIAL WAFER

Munehisa Yanagisawa, Takasaki; Yuuki Tamura; Susumu Arisaka, both of Annaka, and Hidetoshi Matsumoto, Matsuida-machi, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Japan

Filed Oct. 20, 1994, Ser. No. 327,783
Claims priority, application Japan, Nov. 22, 1993, 5-291656
Int. Cl.[6] H01L *21/20*
U.S. Cl. 117—56 **1 Claim**

1. A method for producing a GaP epitaxial wafer having a structure for emitting green light comprising the steps of

growing an n-type GaP buffer layer on an n-type GaP single crystal substrate by liquid phase epitaxy using a gallium solution containing n-type solutes and GaP while gradually lowering a temperature of said gallium solution;

planarizing a surface of said n-type GaP buffer layer;

dissolving a surface portion of said n-type GaP buffer layer in a heated gallium melt, subsequent to said planarization step, to form a saturated gallium solution;

lowering a temperature of said gallium solution to grow a second n-type GaP layer on said n-type GaP buffer layer by liquid phase epitaxy;

growing, by liquid phase epitaxy, a third GaP layer on said second n-type GaP layer, said third GaP layer being a nitrogen doped n-type GaP layer, by further lowering said temperature of said gallium solution while supplying nitrogen as a further dopant subsequent to said step of lowering said temperature of said gallium solution to grow said second n-type GaP layer; and

growing, by liquid phase epitaxy, a fourth GaP layer on said third GaP layer, said fourth GaP layer being a p-type GaP layer, by still further lowering said temperature of said gallium solution while supplying a p-type dopant as a further dopant subsequent to said step of lowering said temperature of said gallium solution to grow said third GaP layer.

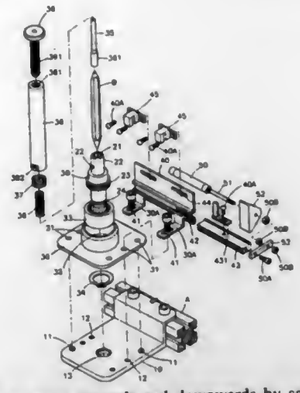
5,571,322
PENCIL MARKING DEVICE FOR CLIPPED CLOTH

Shin-Chuan Yao, Tu Cheng; Yun-Kuang Lin, Yung Ho, and Hsiang-Hung Peng, Hua Lien Hsien, all of Taiwan, assignors to China Textile Institute, Taipei Hsien, Taiwan

Filed Jun. 13, 1995, Ser. No. 489,745
Int. Cl.[6] B43L *13/00*
U.S. Cl. 118—76 **3 Claims**

1. A pencil marking device for clipped cloth, comprising:

a fixing base, an end of which is bent to be an inverse L shape for connecting with an automatic marking machinery which can move upwards and downwards, so that said base being



driven to move upwards and downwards by said automatic marking machinery and a marking hole formed on a central portion of said fixing base on the other end;

a pencil pedestal including a sleeve barrel for receiving and cramping the pencil having a predetermined length, tenons installed on two sides of an upper section thereof, a tooth ring circularly formed on a central section of said pedestal, and a circular formed on a lower section of said pedestal;

a pencil base constructed substantially similar to a dimension of said fixing base, said fixing base being screwed on said pencil base, and a receiving groove corresponding to said marking hole and matching with said pencil pedestal formed on a center of said pencil base for stably fixing said pencil pedestal, a needle bearing engaged with a lower section of said pencil pedestal and buckled on the circular groove of said pencil pedestal by a retainer ring;

a top column, a bottom of which formed a receiving end for connecting with a top end of said pencil;

a first elastic brake element and a second elastic brake element for engaging said top column;

a pencil sleeve having a length and an inner diameter matching with said pencil and said top column for stably engaging said pencil sleeve at the upper section of said pencil pedestal by an engagement between an L shaped slot and one of said tenons of said pencil pedestal behind said pencil sleeve, said first elastic brake element and said second elastic brake element being engaged with said top column, wherein said pencil pedestal forming a screw region, and said L shaped slot matching with said tenon of said pencil pedestal on the ends thereof;

a pencil locking component, a lower portion of which formed with a screw part for being screwed in said screw region of said pencil sleeve, and the top end of said pencil being stably fixed by touching the end of said screw part with said top column;

a driving pedestal two sides of a bottom of which is screwed on said fixing base with said pencil base, a sliding rail installed on a center of said driving pedestal for engaging an active gear rack having a predetermined length to drive said pencil pedestal through the tooth ring, a center of said active gear rack connected with an L shape approaching lamella, and two ends of a top of said driving pedestal being connected with sensors respectively for sensing a range of moving trace of said active gear rack in the sliding rail by matching with said L shape approaching lamella;

a driving source installed on the back of said driving pedestal, which being driven by a controlling circuit of said automatic marking machinery, an end of a linking stick being connected with a plurality of linking elements and an U shape connecting structure formed by connecting said linking elements with said active gear rack for moving said active gear rack horizontally along said sliding rail by said driving source; wherein:

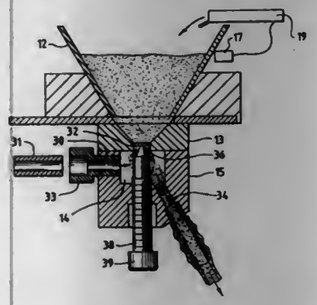
said active gear rack in said driving pedestal being driven to move horizontally by said driving source when said automatic

marking machinery moves downwards and touches the clipped cloth, said tooth ring of said pencil pedestal being driven by the horizontal movement of said active gear rack for rotating said pencil pedestal at a fix point, thereby said pencil in said pencil pedestal marks the clipped cloth at said fix point, the moving range, trace and number of round trips of said active gear rack are sensed by the sensors and a feedback is sent to the controlling circuit of said automatic marking machinery.

5,571,323
POWDER SPRAY APPARATUS FOR THE MANUFACTURE OF COATED FASTENERS

Richard J. Duffy, Shelby Township, and Eugene Sessa, Mt. Clemens, both of Mich., assignors to Nylok Fastener Corporation, MaComb, Mich.

Continuation of Ser. No. 113,203, Aug. 27, 1993, abandoned.
This application Mar. 27, 1995, Ser. No. 410,944
Int. Cl.[6] B05B *7/14*
U.S. Cl. 118—308 **15 Claims**



1. An apparatus for dispensing powder and generating a powder stream comprising:

a powder reservoir having means for maintaining a substantially constant level of powder within the reservoir;

a mixing chamber;

a passageway extending between said mixing chamber and said reservoir and terminating in a powder inlet to said mixing chamber;

an adjustable powder metering valve, disposed in said powder inlet, for delivering a controlled amount of powder from said reservoir to said mixing chamber;

an aspirating air inlet, disposed in said mixing chamber separate from said powder inlet, for introducing and mixing air with powder in said mixing chamber;

an airborne powder outlet, disposed in said mixing chamber;

a nozzle including a powder stream generating passageway, said passageway having a controllable gas flow input and a separate airborne powder input;

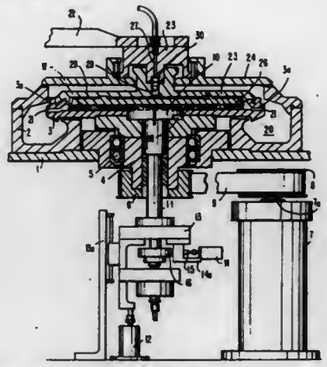
a transfer conduit having one end in communication with an outlet of said mixing chamber and a second end communicating with the airborne powder input to said nozzle; and

said controllable gas flow input generating a gas flow within said nozzle passageway and a vacuum within said mixing chamber and said transfer conduit to convey powder to said nozzle; whereby said substantially constant powder level, said powder metering valve, said aspirating air inlet and said controllable gas flow input are operatively associated to generate a substantially uniform powder stream flowrate.

5,571,324
ROTARY-CUP COATING APPARATUS

Hiroyoshi Sago; Hideyuki Mizuki, and Katsuhiko Kudo, all of Kanagawa, Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa, Japan

Filed Jul. 20, 1994, Ser. No. 277,903
Claims priority, application Japan, Jul. 26, 1993, 5-183703
Int. Cl.[6] B05B *13/04*
U.S. Cl. 118—320 **9 Claims**



1. A rotary-cup coating apparatus for applying a coating solution on a surface of a workpiece comprising:

a base;

an inner cup rotatably mounted on said base, said inner cup, having a lower surface and having a cylindrical shaft extending downwardly,

an outer cup fixedly mounted on said base and extending around said inner cup;

a chuck vertically movably disposed centrally in said inner cup for supporting a workpiece to be coated; said chuck having a shaft extending downwardly through said cylindrical shaft of said inner cup; said cylindrical shaft having an upper end connected to the lower surface of said inner cup around said chuck;

a motor operatively connected with said cylindrical shaft for rotating said inner cup;

interengaging means on said inner cup and said chuck for engaging said inner cup and said chuck in communication with each other, whereby said chuck can be rotated through said inner cup by said motor; and

means for applying a coating solution onto the surface of the workpiece while it is supported and rotated by said chuck.

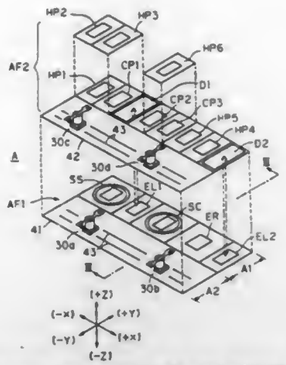
5,571,325
SUBTRATE PROCESSING APPARATUS AND DEVICE FOR AND METHOD OF EXCHANGING SUBSTRATE IN SUBSTRATE PROCESSING APPARATUS

Tsutomu Ueyama; Hideki Adachi, both of Kyoto; Yoshio Matsumura, Hikone, and Yasuhide Tanaka, Kyoto, all of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Continuation of Ser. No. 170,094, Dec. 20, 1993, abandoned.
This application Jun. 7, 1995, Ser. No. 476,052
Claims priority, application Japan, Dec. 21, 1992, 4-356752; May 27, 1993, 5-151160
Int. Cl.[6] B05C *13/02*
U.S. Cl. 118—320 **13 Claims**

1. A substrate processing apparatus for transferring and processing substrates having plate configurations, said apparatus comprising:

processing means including a plurality of processing units for processing each of said substrates serially one by one, each of said processing units processing said substrates in a selected one of a plurality of different manners, each of said processing units including a holding component for holding each of



said substrates horizontally while said substrate is processed in said processing unit, said processing units being arranged in upper and lower processing rows, each processing row comprises selected ones of said plurality of said processing units arranged in a predetermined horizontal direction, said upper processing row being arranged above and in parallel with said lower processing row; and

transferring means, arranged along both said upper and lower processing rows, for transporting each of said substrates, one by one in a predetermined order, while simultaneously supporting each of said substrates horizontally, to each of said processing units, said transferring means also receiving each of said substrates from said holding component of each of said plurality of processing units and transferring said substrate to said holding component of another one of said processing units.

5,571,326

DEVICE FOR SHEATHING A FILIFORM MATERIAL WITH A MOLTEN SUBSTANCE

Philippe Boissonnat, Barby; Dominique Loubinoux, La Terrasse, and Louis Roy, Chambery, all of France, assignors to Vetrotex France S.A., Chambery, France

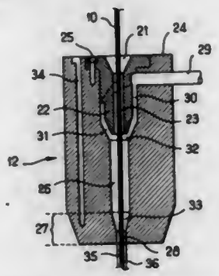
PCT No. PCT/FR93/00124, § 371 Date Nov. 30, 1993, § 102(e) Date Nov. 30, 1993, PCT Pub. No. WO93/15896, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 5, 1993, Ser. No. 129,104

Claims priority, application France, Feb. 6, 1992, 92/01328

Int. Cl.[6] B05C *3/02*

U.S. Cl. 118—405 **4 Claims**



1. In an apparatus for coating of an elongated material consisting of a group of threads or filaments with an organic material in the molten state, said apparatus including an extruder having an output end and a crosshead device mounted on said output end, said device having an inlet end and an outlet end, an outer periphery and a central longitudinal axis along which said elongated material is fed for coating with said organic material from said extruder, the improvement in said device comprising:

a) an internal central duct disposed along said longitudinal axis of said device adjacent said outlet end, said duct having a duct inlet and a duct outlet, said duct outlet defining said outlet end of said device;

b) an internal feed chamber disposed above said duct for feeding said organic material from said extruder to said duct; said feed chamber having a chamber outlet opening disposed concentrically with respect to said longitudinal axis and communicating with said duct inlet;

c) a hollow die disposed internally of said device at the inlet end thereof, said hollow die having an internal central conduit extending along said longitudinal axis with a conduit outlet communicating with said duct inlet;

d) a side opening extending from said inlet end to said outlet end of said device and from said longitudinal axis to said outer periphery of said device for permitting relative lateral movement of said elongated material and said device between a first position with said elongated material disposed laterally outwardly of the periphery of said device and a second position with said elongated material disposed along said longitudinal axis, said side opening being defined by a slot extending through said device; and

e) closing means for closing said side opening to provide said duct, said feed chamber and said central conduit, said closing means including a removable separate stopper part positioned within said slot for completely blocking said slot.

5,571,327

CONTINUOUS HOT DIPPING APPARATUS AND SLIDE BEARING STRUCTURE THEREFOR

Takahiko Ookouchi; Tamihito Kawahigashi; Masatoshi Seki, all of Katsuta; Junji Sakai, Ibaraki-ken; Hitoshi Okoshi, Hitachi, and Yoshitaka Nakayama, Hitachiota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

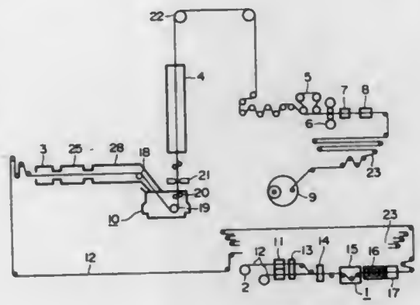
Filed Feb. 12, 1993, Ser. No. 16,928

Claims priority, application Japan, Feb. 12, 1992, 4-024994

The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.

Int. Cl.[6] B05C *3/00*

U.S. Cl. 118—423 **4 Claims**



1. A continuous hot dipping apparatus including at least one roll which is supported by a bearing and rotates in a molten metal, wherein said roll is made of a heat resistant alloy, a cylindrical sintered ceramic sleeve is fitted and secured on the entire periphery of a roll shaft of said roll, said roll shaft and a roll body is an integral structure, an intermediate portion between said roll shaft and said roll body becomes gradually larger in diameter from said roll shaft to said roll body, and a metallic ring is mounted on the intermediate portion between said cylindrical sintered ceramic member and said roll body.

5,571,328

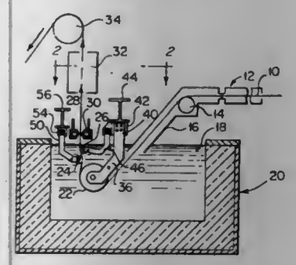
BEARING SUPPORT FOR SUBMERGED ROLLS IN HOT DIP COATING OPERATION

Franklin R. Newland, Michigan City, Ind., assignor to National Steel Corporation, Mishawaka, Ind.

Filed Apr. 6, 1994, Ser. No. 223,871

Int. Cl.[6] B05C *3/00*

U.S. Cl. 118—423 **11 Claims**



1. In a continuous hot dip coating apparatus for applying a metal coating to a moving metal strip, including an insulated vessel for containing a bath of molten coating metal and roll means including at least one roll submerged in the bath and defining a path of travel for a running length of metal strip through the bath with the strip engaging and applying a load to each submerged roll as a result of tensile load in the strip during coating, each submerged roll including a cylindrical body and a rigid shaft projecting axially from each end of the body, a pair of laterally spaced roll support arms each having a fixed end mounted above the bath and a free end projecting into the bath for supporting one end of each submerged roll, and bearing means mounting the shaft at each end of each submerged roll on the free end of one of said support arms, said bearing means including a pair of substantially flat bearing surfaces directed toward said shaft and disposed in planes parallel to and spaced from the axis of the shaft supported therein, the improvement wherein each said bearing means comprises

a pair of bearing pads in the form of wear resistant blocks of carbide material each having a substantially flat wear surface defining one of said flat bearing surfaces,

support means mounting each said bearing pad on one of said support arms with said wear surfaces disposed one in each said plane in position to engage and support said shaft during the coating operation, said support means including a first generally cylindrical sleeve adapted to be mounted within an opening in one of said support arms, and recess means formed in the inner surface of said first sleeve for engaging and supporting said bearing pads during the coating operation, said recess means comprising axially extending grooves, and a second cylindrical sleeve supported within said first cylindrical sleeve, said second cylindrical sleeve having an internal diameter greater than the diameter of the shaft to be supported therein to permit the flow of molten metal therebetween to act as a lubricant for the bearing during operation and an outer diameter substantially equal to the inner diameter of the first sleeve, said second sleeve having a pair of flat support surfaces formed in its outer peripheral surface defining said planes, said flat support surfaces being adapted to engage said wear surfaces of said bearing pads to retain the pads in said grooves, said flat support surfaces extending substantially tangent to the inner cylindrical surface of said second sleeve.

5,571,329

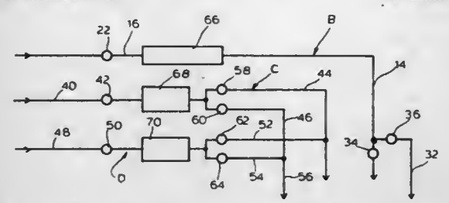
GAS FLOW SYSTEM FOR CVD REACTOR

Joseph Chan, Kings Park; Dennis Garbis, Huntington Station; John Saplo, Huntington, and John Latza, Lindenhurst, all of N.Y., assignors to GI Corporation, Hatsboroa, Pa.

Division of Ser. No. 15,658, Feb. 9, 1993, abandoned. This application Mar. 28, 1995, Ser. No. 411,408

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—715 **4 Claims**



1. A gas flow system for a chemical vapor deposition reactor of the type adapted for use in growing epitaxial structures, the reactor having a reactor chamber with an input port and an output port, the system comprising a main dopant gas supply line connected to said input port, main dopant supply value means in said main dopant gas supply line adjacent said input port, a main dopant gas supply vent line connected to said main dopant gas supply line at a point proximate said main dopant gas supply valve means, first, second and third branch dopant gas supply lines connected to feed said main dopant gas supply line, each of said branch dopant gas supply lines having a branch dopant gas supply valve means, an etchant gas supply line connected to said input port, etchant gas supply line valve means in said etchant gas supply line, an etchant gas supply vent line connected to said etchant gas supply line, a silicon gas supply line connected to said input port, silicon gas supply line valve means in said silicon gas supply line, a silicon gas supply vent line connected to said silicon gas supply line, said etchant gas supply vent line and said silicon gas supply vent line forming a common vent line separate from said main dopant gas vent line.

5,571,330

LOAD LOCK CHAMBER FOR VERTICAL TYPE HEAT TREATMENT APPARATUS

Mitsusuke Kyogoku, Tokyo, Japan, assignor to ASM Japan K.K., Tokyo, Japan

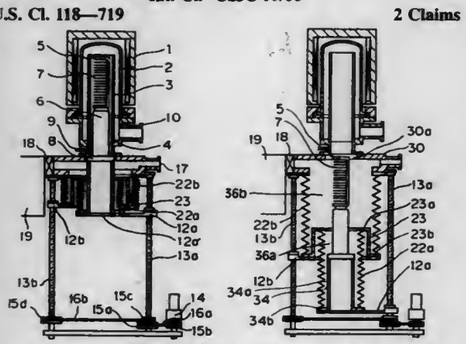
PCT No. PCT/JP93/01660, § 371 Date Sep. 19, 1994, § 102(e) Date Sep. 19, 1994, PCT Pub. No. WO94/11898, PCT Pub. Date May 26, 1994

PCT Filed Nov. 12, 1993, Ser. No. 256,504

Claims priority, application Japan, Nov. 13, 1992, 4-327614

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—719 **2 Claims**



1. A load lock chamber, which is vertically contractible and is arranged below a treatment chamber of a vertical type heat treatment apparatus capable of gas-tightly inserting a means for carrying workpieces therein, comprising:

an upper chamber portion; and

a lower chamber portion operatively connected with said upper chamber portion, the size of said lower chamber portion being different from the size of said upper chamber portion, said lower chamber portion being mounted on said means for carrying workpieces;

wherein said load lock chamber is contracted by elevator means provided outside of said load lock chamber and said upper chamber portion operatively connected with said lower chamber portion, in a telescopic relationship formed of a plurality of bellows, by connection means which is movable in a vertical direction by said elevator means.

5,571,331

VACUUM TREATMENT APPARATUS

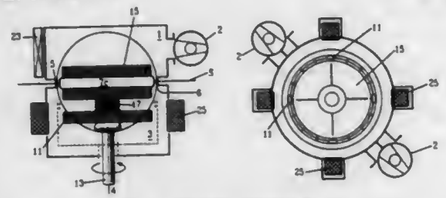
Roman Schertler, Wolfurt, Austria, and Paul-Rene Muralt, Sarraz, Switzerland, assignors to Balzers Aktiengesellschaft, Liechtenstein

Filed Mar. 13, 1995, Ser. No. 402,618

Claims priority, application Germany, Mar. 16, 1994, 44 08 947.3

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—719 **18 Claims**



1. Vacuum treatment apparatus, comprising

at least two chambers linked by a transit opening,

a valve body pivotably linked within said opening to pivote around a pivot axis being disposed transverse in said opening,

a drive for pivoting said valve body around said pivot axis,

whereby said valve body comprises at least one workpiece carrier to be transported by pivoting said valve body around said pivote axis between said at least two chambers

an expandable seal arrangement around said opening, at least one of at said body and of at said opening, said seal arrangement being expandable by pressure of a pressurizing medium, so as to seal said body against said opening in dependency of said pressure of said pressurizing medium.

5,571,332

ELECTRON JET VAPOR DEPOSITION SYSTEM

Bret Halpern, Bethany, Conn., assignor to Jet Process Corporation, New Haven, Conn.

Filed Feb. 10, 1995, Ser. No. 386,705

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 HC **10 Claims**

1. A gas jet system for vapor deposition of material upon a substrate, said system comprising:

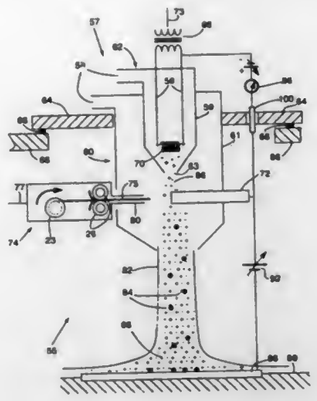
a vacuum chamber having a port allowing for access to a vacuum chamber interior;

a means for positioning the substrate within said vacuum chamber interior at a substrate position;

a gas jet apparatus affixed to said vacuum chamber port for depositing the material on said substrate by providing controlled entry of the material into the interior of the vacuum chamber, said gas jet apparatus including:

a nozzle having an interior cavity for providing, from a nozzle tip, a supersonic jet of gas formed from a neutral plasma directed towards said substrate position;

a means for providing the material within said nozzle interior cavity;



a cathode means for providing electrons to said nozzle interior cavity;

an electrical potential means for providing an electrical potential between said cathode and an anode causing said anode to become heated such that when said material is presented to said heated anode, said material is vaporized and substantially all of said vaporized material is directly entrained within said supersonic jet of gas and presented to said substrate; and

a pump means for evacuating gas from said vacuum chamber to maintain a pressure in said vacuum chamber.

5,571,333

HEAT TREATMENT FURNACE WITH AN EXHAUST BAFFLE

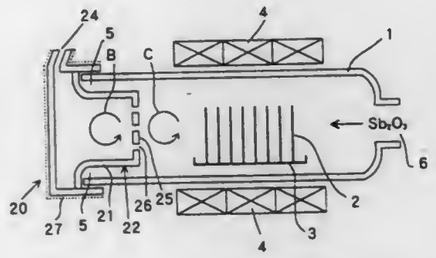
Koichi Kanaya, Annaka, Japan, assignor to Shin-Etsu Handotai Co. Ltd., Tokyo, Japan

Filed May 26, 1995, Ser. No. 451,224

Claims priority, application Japan, Jun. 2, 1994, 6-143809

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—724 **6 Claims**



1. A heat treatment furnace which has a reaction tube with one open end and a detachable front cap with an exhaust port provided such that it closes the opening of said reaction tube, characterized by the fact that a detachable inner tube is provided in the opening of said reaction tube wherein said inner tube has a cylindrical side whose diameter is smaller than the inner diameter of said reaction tube and a disk-shape end which is located such that there is a partitioned space between the disk-shaped end having a through hole(s) and said front cap to divide a convectional current in the reaction tube into smaller convections.

5,571,334

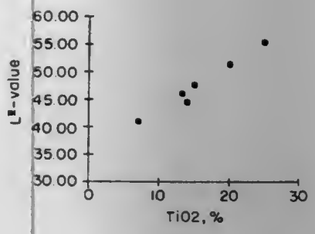
STARCH-BASED OPACIFYING AGENT FOR FOODS AND BEVERAGES

John M. Dunn, Sioux City, Iowa; Akiva T. Gross, Newton, and Eugene T. Finocchiaro, Milton, both of Mass., assignors to Opta Food Ingredients, Inc., Bedford, Mass.

Continuation-in-part of Ser. No. 221,178, Mar. 31, 1994, abandoned. This application Mar. 30, 1995, Ser. No. 413,507

Int. Cl.[6] C08B *30/00;30/12;* C13F *3/00;* A23L *1/05*

U.S. Cl. 127—70 **36 Claims**



1. A starch-based opacifying agent consisting essentially of starch, an opacifying agent and optional additive selected from the group consisting of excipients, flavors, sugars, lipids, colors and combinations thereof, in the form of a complex in which the opacifying agent is incorporated into the starch matrix.

5,571,335

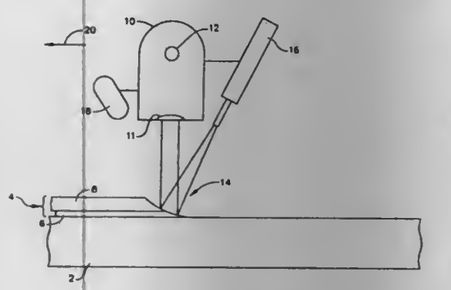
METHOD FOR REMOVAL OF SURFACE COATINGS

Daniel L. Lloyd, Mason, Ohio, assignor to Cold Jet, Inc., Loveland, Ohio

Continuation of Ser. No. 175,171, Dec. 29, 1993, abandoned, which is a continuation of Ser. No. 806,029, Dec. 12, 1991, abandoned. This application Sep. 29, 1994, Ser. No. 315,321

Int. Cl.[6] B08B *7/00*

U.S. Cl. 134—1 **20 Claims**



1. A method of removing a surface coating from a substrate, comprising:

a) applying energy to an area of impingement of the surface coating so as to elevate a temperature of at least a portion of the surface coating within the area of impingement to a temperature at least as high as that required to pyrolyze the surface coating; and

b) while said at least a portion of the surface coating is at a temperature above that required to pyrolyze the surface coating, impinging the area of impingement with cryogenic particles.

5,571,336

BASE SOLUTION FOR CLEANING ALUMINUM

Stephen R. Wurzburger, P.O. Box C, Goodyear Bar, Calif. 95944, and James M. Overton, 1127 Nickel La., Yuba City, Calif. 95991

Filed Sep. 29, 1995, Ser. No. 536,083

Int. Cl.[6] C23G *1/02*

U.S. Cl. 134—2 **8 Claims**

1. Add sulfuric acid to water

2. Bring pH to 13.1 with Ca (OH)2

3. Filter solution

4. Bring pH to above 13.8 with KOH

5. Dilute with water

6. Apply to surface and rinse

5. A method for cleaning an aluminum surface, said method comprising in sequential order:

a) adding a concentrate of sulfuric acid to water to produce a sulfuric acid solution having a concentration of 10% to 20% acid in water by volume;

b) adding calcium oxide or calcium hydroxide to said sulfuric acid solution in a predetermined amount to form a calcium sulfate solution and to raise the pH of said calcium sulfate solution to a value in the range of 12.8 to 13.1;

c) passing the calcium sulfate solution through a filter to remove calcium sulfate particles;

d) producing a solution concentrate comprising adding an alkali hydroxide to said calcium sulfate solution in a predetermined amount to raise the pH to a value between 13.8 to 14;

e) producing a cleaning solution comprising mixing said solution concentrate with water in an amount of about 15 parts solution concentrate to 85 parts of water by volume;

f) applying said cleaning solution to said aluminum surface;

g) allowing said cleaning solution to remain in contact with said aluminum surface for a predetermined period of time; and

h) rinsing said cleaning solution from said aluminum surface.

5,571,337

METHOD FOR CLEANING AND DRYING A SEMICONDUCTOR WAFER

Raj Mohindra, Los Altos Hills; Abhay Bhushan, Palo Alto; Rajiv Bhushan, Mountain View; Suraj Puri, Los Altos; John H. Anderson, Milpitas, and Jeffrey Nowell, San Francisco, all of Calif., assignors to YieldUP International, Mountain View, Calif.

Continuation-in-part of Ser. No. 339,326, Nov. 14, 1994. This application May 9, 1995, Ser. No. 437,541

Int. Cl.[6] B08B *3/04*

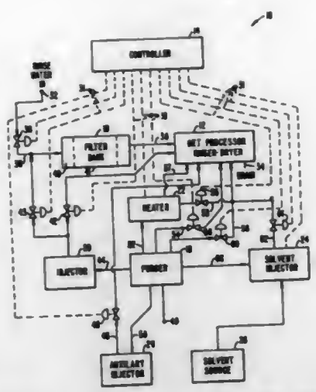
U.S. Cl. 134—25.4 **44 Claims**

1. A method for cleaning and drying a semiconductor wafer comprising:

introducing a partially completed semiconductor wafer into a chamber;

immersing said partially completed semiconductor wafer in a liquid comprising water, said partially completed semiconductor wafer including a front face, a back face, and an edge, said liquid being substantially free from particles greater than about 0.2 microns in diameter;

displacing said liquid with a gaseous mixture in said chamber, said liquid being displaced along said front face of said partially completed semiconductor wafer, said gaseous mixture comprising a carrier gas and a trace of polar organic compound, said trace of polar organic compound being a



non-saturated vapor in said chamber, said trace of polar organic compound causing particles to be removed from said front face; and

directing a drying fluid at said partially completed semiconductor wafer, said drying fluid removing any remaining amount of said liquid from said edge;

wherein said partially completed semiconductor wafer is substantially stationary during said displacing and directing, thereby decreasing a possibility of any damage to said partially completed semiconductor wafer due to movement of said partially completed semiconductor wafer.

5,571,338

PHOTOVOLTAIC MODULE AND A PHOTOVOLTAIC APPARATUS

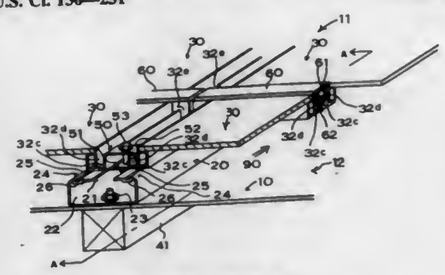
Nobuo Kadonome; Takayoshi Yasuda, both of Kyogo; Jyunji Kumamoto, Toyooka; Nobuyuki Nishi, Sumoto, and Yasuo Kishi, Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Nov. 25, 1994, Ser. No. 344,922

Claims priority, application Japan, Nov. 26, 1993, 5-296712; Aug. 30, 1994, 6-205316

Int. Cl.[6] H01L *31/048;* **E04D** *13/18*

U.S. Cl. 136—251 **17 Claims**



1. A photovoltaic module comprising:

photovoltaic panel having atop edge and a bottom edge;

an exterior frame structure attached to the top and bottom edges of the photovoltaic panel, the exterior frame structure including an upwardly open groove extending along each of the top and bottom edges for channeling rain water.

3. A photovoltaic apparatus for mounting on a sloped surface, said photovoltaic apparatus comprising:

at least one lengthwise member adapted to be mounted on the sloped surface in the direction of the slope of the sloped surface, the lengthwise member having a top open groove and a mounting flange on one side of the top open groove; and

at least two adjacent pbotovoltaic modules adapted to be placed on the lengthwise member along the direction of the slope of the sloped surface, each of the photovoltaic modules including a sheet-shaped photovoltaic panel having a top edge, a bottom edge and side edges, and an exterior frame structure attached to the top edge, bottom edge and side edges of the photovoltaic panel, the exterior frame structure including an upwardly open groove extending at least along each of the top edge and the bottom edge and projecting outwardly from each of the top edge and the bottom edge, the upwardly open grooves of the frame structure fluidically communicating with the top open groove of the lengthwise member; and

the side edges of the exterior frame structures of two adjacent photovoltaic modules being mounted on the mounting flange of the lengthwise member.

5,571,339

HYDROGEN PASSIVATED HETEROEPITAXIAL III-V PHOTOVOLTAIC DEVICES GROWN ON LATTICE-MISMATCHED SUBSTRATES, AND PROCESS

Steven A. Ringel, Columbus; Richard W. Hoffman, Jr., Bay Village, and Basab Chatterjee, Columbus, all of Ohio, assignors to The Ohio State Univ. Research Found, Columbus, and Essential Research Inc., Cleveland, both of Ohio

Filed Apr. 17, 1995, Ser. No. 422,850

Int. Cl.[6] H01L *31/068;31/0304;31/18*

U.S. Cl. 136—252 **23 Claims**

1. A photovoltaic device, comprising:

a lattice-mismatched substrate; and

a hydrogen-plasma-passivated heteroepitaxial layer formed of a III-V semiconductor material grown on said substrate.

5,571,340

ROSIN-FREE, LOW VOC, NO-CLEAN SOLDERING FLUX AND METHOD USING THE SAME

Alvin F. Schneider, Warren, N.J.; David B. Blumel, New York, N.Y., and Jack Brous, Livingston, N.J., assignors to Fry's Metals, Inc., Providence, R.I.

Filed Sep. 9, 1994, Ser. No. 303,668

Int. Cl.[6] B23K *35/34*

U.S. Cl. 148—23 **22 Claims**

1. A low VOC, no-clean soldering flux which is rosin-free and which consists essentially of:

one or more halide-free carboxylic acid activators in an aggregate amount not exceeding about 8% by weight of the flux, each activator having a solubility in water less than 5 grams per 100 cc at 20° C.;

one or more alkyl amines capable of forming amine salt of said one or more activators and in an aggregate amount not exceeding about 10% by weight of the flux; and

water, with or without a surfactant.

5,571,341

THERMOCHEMICAL TREATMENT OF THIN-WALLED STRUCTURAL STEEL ELEMENTS

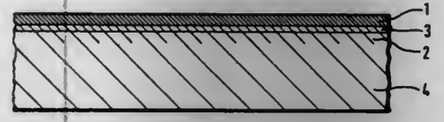
Dieter Jackel, Herzogenaurach, Germany, assignor to Ina Walzlager Schaeffler KG, Germany

Filed Mar. 13, 1995, Ser. No. 403,273

Claims priority, application Germany, Mar. 16, 1994, 44 08 866.3

Int. Cl.[6] C22C *38/00;* **C23C** *8/32*

U.S. Cl. 148—210 **5 Claims**



1. A process for the thermochemical treatment of thin-walled structural elements made of steel comprising enriching an edge zone of a thin-walled structural element with nitrogen and carbon at 590° to 700° C. to harden the edge zone whereby an intermediate layer (3) is formed in the diffusion zone (2), said intermediate layer comprising 1 to 3% by weight of nitrogen and at most 0.8% by weight of carbon and cooling the said thin-walled structural element under an inert atmospbere at a rate of 50° to 100° C. per minute to room temperature to form a nitrogen austenite and/or an eutectoid mixture of ferrite and iron nitride Fe_4N phase between the connection layer (1) and the basic structure (4) with increased fatigue strength.

5,571,342

DECARBURIZED STEEL SHEET FOR THIN ORIENTED SILICON STEEL SHEET HAVING IMPROVED COATING/MAGNETIC CHARACTERISTICS AND METHOD OF PRODUCING THE SAME

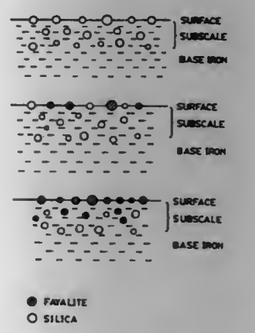
Michiro Komatsubara; Yasuyuki Hayakawa; Katsuo Iwamoto, and Makoto Watanabe, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Continuation of Ser. No. 36,029, Mar. 23, 1993, abandoned, which is a division of Ser. No. 797,438, Nov. 22, 1991, abandoned. This application Dec. 14, 1993, Ser. No. 166,736

Claims priority, application Japan, Nov. 30, 1990, 2-336438

Int. Cl.[6] H01F *1/04*

U.S. Cl. 148—308 **2 Claims**



1. A thin grain oriented decarburized silicon steel sheet having improved magnetic and coating characteristics and having at its steel sheet surface an undissolved subscale comprising a fayalite-silica composition having an infrared reflection absorbance ratio A_1/A_2 in the range of about 0.5–5.5 at the surface of said subscale and having a marked oxygen amount of about 0.4–1.6 g/m^2.

5,571,343

AUSTENITIC STAINLESS STEEL HAVING SUPERIOR PRESS-FORMABILITY, HOT WORKABILITY AND HIGH TEMPERATURE OXIDATION RESISTANCE, AND MANUFACTURING PROCESS THEREFOR

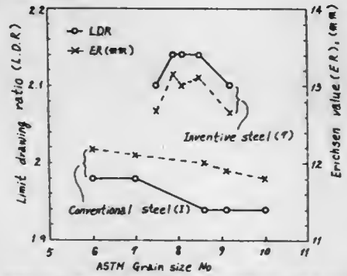
Do Y. Ryoo; Yong H. Lee; Jae S. Park; Hyun C. Kim, and Eung J. Kim, all of Pohang, Rep. of Korea, assignors to Pohang Iron & Steel Co., Ltd., and Research Institute of Industrial Science & Technology, both of Kyong Sang Book-Do, Rep. of Korea

Filed Apr. 19, 1995, Ser. No. 416,875

Claims priority, application Rep. of Korea, Aug. 25, 1993, 1993/16607

Int. Cl.[6] C22C *38/40;* **C21D** *8/00*

U.S. Cl. 148—325 **9 Claims**



1. An austenitic stainless steel having superior press formability, season cracking resistance, hot workability and high temperature oxidation resistance, comprising in weight %: less than 0.07% of C, less than 1.0% of Si, less than 2.0% of Mn, 16–18% of Cr, 6.0–8.0% of Ni, less than 0.005 % of Al, less than 0.05 % of P, less than 0.005 % of S, less than 0.03 % of Ti, less than 0.003 % of B, less than 3.0% of Cu, less than 0.3 % of Mo, less than 0.1% of Nb, less than 0.045% of N, the balance of Fe and other incidental impurities, said steel further having an austenitic phase stabilizing temperature Md_{30} (°C.) within the range of −10° to+15° C.; and having a delta-ferrite content of less than 9.0 vol %, where said stabilizing temperature is defined by the formula: Md_{30} (°C.)=551–462 (C % N %)–9.2 Si %–8.1 Mn %–29 (Ni %+Cu %)–13.8 Cr %–18.5 Mo %–68 Nb %–1.42 (ASTM grain No.—8.0).

5,571,344

HEAT PROTECTION ELEMENT CONSISTING OF A QUASICRYSTALLINE ALUMINUM ALLOY

Jean-Marie Dubous, Pompey; Pierre Archambault, Nancy, and Bernard Colleret, Jarville, all of France, assignors to Centre National de la Recherche Scientifique, Paris, France

PCT No. PCT/FR92/01197, § 371 Date Aug. 9, 1993, § 102(e) Date Aug. 9, 1993, PCT Pub. No. WO93/13237, PCT Pub. Date Jul. 8, 1993

PCT Filed Dec. 17, 1992, Ser. No. 98,317

Claims priority, application France, Dec. 10, 1991, 91 15866

Int. Cl.[6] C23C *4/08;4/06;* **C22C** *21/00;21/12*

U.S. Cl. 148—437 **10 Claims**

1. A composite structure comprising a substrate and a heat protection element deposited on the substrate, wherein the heat protection element consists essentially of a quasicrystalline aluminum alloy consisting essentially of one or a number of quasicrystalline phases which are either a quasicrystalline phase in the strict sense or approximating phases, wherein said quasicrystalline phases exhibit a thermal diffusivity, measured at ambient temperature, lower than 2.5×10^{-6} m^2/s, and a thermal diffusivity measured in the temperature range 650°–750° C. which does not exceed the thermal diffusivity measured at ambient temperature by more than a factor of 3, and wherein said quasicrystalline aluminum alloy consists essentially of:

$Al_aX_gJ_j$, wherein X represents at least one element selected from B, C, Si, Ge, P, and S; wherein J represents at least one

element selected from V, Mo, Cr, Mn, Fe, Co, Ni, Ru, Rh, and Pd; wherein I represents impurities; wherein $0 \leq g \leq 2$, $0 \leq d \leq 5$, $18 \leq e \leq 29$, and wherein a+d+e+g=100 atom %.

9. A method for manufacturing a composite structure comprising coating a substrate with a heat protection element, wherein the heat protection element consists essentially of a quasicrystalline aluminum alloy consisting essentially of one or a number of quasicrystalline phases which are either a quasicrystalline phase in the strict sense or approximating phases, wherein said quasicrystalline phases exhibit a thermal diffusivity, measured at ambient temperature, lower than 2.5×10^{-6} m^2/s, and a thermal diffusivity measured in the temperature range 650°–750° C. which does not exceed the thermal diffusivity measured at ambient temperature by more than a factor of 3, and wherein said quasicrystalline aluminum alloy consists essentially of:

$Al_aX_dJ_eI_g$, wherein X represents at least one element selected from B, C, Si, Ge, P, and S; wherein J represents at least one element selected from V, Mo, Cr, Mn, Fe, Co, Ni, Ru, Rh, and Pd; wherein I represents impurities; wherein $0 \leq g \leq 2$, $0 \leq d \leq 5$, $18 \leq e \leq 29$, and a+d+e+g=100 atom %.

5,571,345

THERMOMECHANICAL PROCESSING METHOD FOR ACHIEVING COARSE GRAINS IN A SUPERALLOY ARTICLE

Swami Ganesh, Clifton Park, N.Y., and Eric S. Huron, West Chester, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jun. 30, 1994, Ser. No. 268,696
Int. Cl.[6] C22F *1/10*
U.S. Cl. 148—514 **11 Claims**

1. A method for forming an article from a γ precipitation strengthened nickel-base superalloy such that at least a portion of the article has a uniform grain size of at least ASTM 5, the method comprising the sequence of the steps of:

forming a billet from a powder of a nickel-base superalloy having a recrystallization temperature and a γ solvus temperature;

preheating the billet at a temperature for a duration sufficient to yield a substantially uniform temperature of at least about 2000° F. throughout the billet, and maintaining the uniform temperature for a duration of at least about 0.5 hour;

working at least a first portion of the billet at preselected working conditions such that an article is formed in which the first portion is at near-net shape, the preselected working conditions including a first strain rate of less than about 0.01 per second, and a first working temperature at or near the recrystallization temperature but below the γ solvus temperature such that the first portion has a precipitate of γ and a uniform grain size of finer than about ASTM 6;

heating the article at a supersolvus solutioning temperature for a duration sufficient to solutionize at least some of the γ and to coarsen the grains within the article such that the grain size within the first portion is at least 5 ASTM; and

cooling the article from the supersolvus solutioning temperature to room temperature so as to reprecipitate γ within the article.

5,571,346

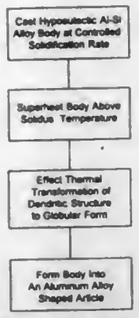
CASTING, THERMAL TRANSFORMING AND SEMI-SOLID FORMING ALUMINUM ALLOYS

S. Craig Bergsma, The Dalles, Oreg., assignor to Northwest Aluminum Company, The Dalles, Oreg.

Filed Apr. 14, 1995, Ser. No. 422,242
Int. Cl.[6] C22F *1/04*
U.S. Cl. 148—550 **58 Claims**

1. A process for casting, thermally transforming and semi-solid forming an aluminum base alloy into an article, the process comprising the steps of:

(a) providing a molten body of said aluminum base alloy;



(b) casting said molten body of aluminum base alloy to provide a solidified body, said molten aluminum base alloy being solidified at a rate between liquidus and solidus temperatures of the aluminum base alloy in a range of 5° to 100° C./sec. to provide an entire solidified body having a dendritic microstructure and having a gain size in the range of 20 to 250 μm;

(c) thereafter, heating said solidified body to bring said body to a superheated temperature of 3° to 50° C. above said solidus temperature of said aluminum base alloy while maintaining said body in a solid shape said heating to said superheated temperature being at a rate greater than 30° C. per minute;

(d) effecting thermal transformation of said body having said dendritic structure when said entire body is uniformly heated to said superheated temperature; and

(e) forming said body having said non-dendritic structure in a semi-solid condition into said article.

5,571,347

HIGH STRENGTH MG-SI TYPE ALUMINUM ALLOY

S. Craig Bergsma, The Dalles, Oreg., assignor to Northwest Aluminum Company, The Dalles, Oreg.

Continuation-in-part of Ser. No. 224,485, Jan. 7, 1994, abandoned. This application Sep. 12, 1994, Ser. No. 304,511
Int. Cl.[6] C22F *1/04*
U.S. Cl. 148—550 **58 Claims**

1. A method of casting an aluminum base alloy to provide a cast product having a controlled dendritic microstructure, the method comprising the steps of:

(a) providing a body of a molten aluminum base alloy containing 0.2 to 2 wt. % Si, 0.3 to 1.7 wt. % Mg, 0.5 to 1.2 wt. % Cu, less than about 0.05 wt. % Mn, 0.05 to 0.4 wt. % Cr, 0.1 to 0.4 wt. % Fe, max. 0.2 wt. % Ti, max., less than 0.05 wt. % Zn, and at least one of the elements selected from the group consisting of 0.01 to 0.3 wt. % V, 0.001 to 0.1 wt. % Be and 0.01 to 0.1 wt. % Sr, the remainder comprising aluminum, incidental elements and impurities;

(b) introducing said molten aluminum base alloy to a mold; and

(c) continuously solidifying said molten aluminum base alloy in said mold to provide a cast product, the molten alloy being solidified at a rate 1° to 100° C./second to provide a dendritic cell spacing in the range of 5 to 100 μm in said cast product.

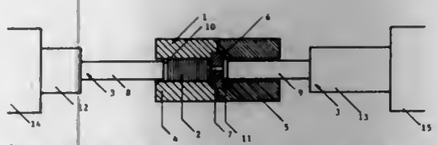
5,571,348

METHOD AND APPARATUS FOR IMPROVING ALLOY PROPERTY AND PRODUCT PRODUCED THEREBY

Jien-Wei Yeh, Hsinchu, Taiwan, assignor to National Tsing Hua University, Taiwan

Continuation of Ser. No. 18,191, Feb. 16, 1993, abandoned. This application Nov. 23, 1994, Ser. No. 348,131
Int. Cl.[6] C22F *1/00*
U.S. Cl. 148—559 **8 Claims**

1. A method for improving properties of an alloy comprising steps of:



(a) selecting a raw alloy from the group consisting of an ingot, alloy layers, compacted metal powder, and stacks of at least two pure elements;

(b) providing a working apparatus for working said raw alloy, said working apparatus comprising a first extruding vessel, a second extruding vessel and an extruding die therebetween, said extruding die having a small passage, said small passage being a slit or a hole;

(c) preheating said raw alloy to a softening temperature to create a pre-heated raw alloy; and

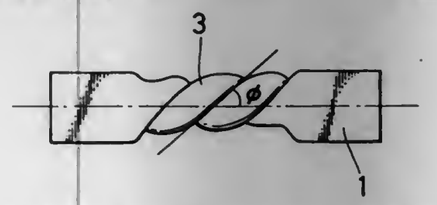
(d) repetitively kneading said pre-heated raw alloy to a desired extent in said working apparatus by reciprocatingly passing said raw alloy through said small passage between said first and second extruding vessels.

5,571,349

METHOD OF PRODUCING TWISTED ALUMINUM ARTICLES

Yasushi Nakazawa; Hitoshi Kazama, both of Utsunomiyashi; Yasushi Tashiro, and Tadashi Yasuoka, both of Oyamashi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, and Showa Aluminum Corporation, Osaka, both of Japan

Filed Dec. 15, 1994, Ser. No. 358,066
Claims priority, application Japan, Dec. 17, 1993, 5-318762
Int. Cl.[6] C22F *1/04*
U.S. Cl. 148—690 **12 Claims**



7. A method of producing a twisted aluminum article which comprises:

extruding a heat-treatable aluminum billet to form an elongate aluminum article having an axis;

slicing the elongate aluminum article in a direction perpendicular to the axis thereof to prepare a sliced aluminum article;

twisting the sliced aluminum article to a helical angle of wherein tan φ is 0.5 or more;

subsequently subjecting the twisted aluminum article to a solid solution treatment; and

aging the twisted solid solution treated aluminum article.

5,571,350

PNEUMATIC TIRE WITH TREAD OF MATRIX FOAMED RUBBER CONTAINING RESIN

Hiroyuki Teratani, and Masanori Aoyama, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 332,777, Nov. 1, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 467,292
Claims priority, application Japan, Nov. 2, 1993, 5-297274
Int. Cl.[6] B60C *5/00;11/00*
U.S. Cl. 152—209 R **3 Claims**

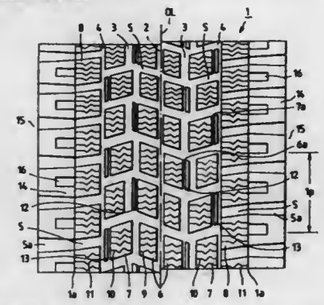
1. A pneumatic tire, comprising a tread containing a foamed rubber; wherein said foamed rubber comprises a matrix rubber composition containing a crystalline syndiotactic 1,2-polybutadiene with a melting point of not lower than 110° C. and a resin having a Shore D hardness of not less than 40° and an average particle size of 10–400 μm, and the resin is capable of forming a polymer alloy with rubber in said matrix rubber composition or co-crosslinking with rubber in said matrix rubber composition and is present in the foamed rubber in an amount of 5–30 parts by weight per 100 parts by weight of rubber in the matrix rubber composition, and the foamed rubber has an expansion ratio of 5–30%, an average expanded cell size corresponding to 0.2–2 times the average particle size of the resin and a storage modulus (E') at −20° C. of 6.0×10^7–20×10^7 dyn/cm².

5,571,351

STUDLESS TIRE

Kenji Hatakenaka; Kenichi Mineta, both of Hyogo, and Akihiro Miyoshi, Okayama, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Division of Ser. No. 261,113, Jun. 14, 1994. This application May 1, 1995, Ser. No. 431,755
Claims priority, application Japan, Jun. 14, 1993, 5-165918; Jun. 24, 1993, 5-175869
Int. Cl.[6] B60C *11/01;101/00;107/00*
U.S. Cl. 152—209 R **4 Claims**



1. A studless tire comprising:

a tread portion having a pair of tread ends including;

first transverse grooves in a width direction of said studless tire, said first transverse grooves having a first depth,

a first longitudinal groove on a center line of the tire through the ground contact area of said tread portion, said first longitudinal groove having said first depth,

a pair of second longitudinal grooves, one on each side of the center line, each of said second longitudinal grooves having said first depth,

a pair of third longitudinal grooves, one of said third longitudinal grooves being disposed between said first longitudinal groove and one of said second longitudinal grooves, the other of said third longitudinal grooves being disposed between said first longitudinal groove and the other of said second longitudinal grooves, each said third longitudinal groove having said first depth, each of said third longitudinal grooves including first portions and second portions such that the first portions and the second portions of the third longitudinal groove alternate and the first portions of the third longitudinal groove are offset from the second portions of the third longitudinal groove in the axial direction of the tire,

fourth longitudinal grooves, each of said fourth longitudinal grooves being a subgroove and having a second depth which is shallower than said first depth, and

fifth longitudinal grooves, each of said fifth longitudinal grooves being a subgroove and having said second depth wherein, on each side of the center line of the tire, said fourth longitudinal grooves are disposed between one of said third longitudinal grooves and said first longitudinal groove, said fifth longitudinal grooves are disposed between one of said second longitudinal grooves and one of said portions of one of said third longitudinal grooves adjacent thereto, said fourth longitudinal

grooves and said fifth longitudinal grooves alternate in the circumferential direction and no fourth longitudinal groove is interposed between said one of said portions and said first longitudinal groove; and

shoulder portions including buttress portions which extend radially inward from each said tread end, wherein

said first transverse grooves and said first, second, third, fourth, and fifth longitudinal grooves form a tread pattern having a plurality of tread blocks and sub-blocks.

5,571,352

VEHICLE TIRES HAVING A THREE-DIMENSIONAL REINFORCEMENT STRUCTURE

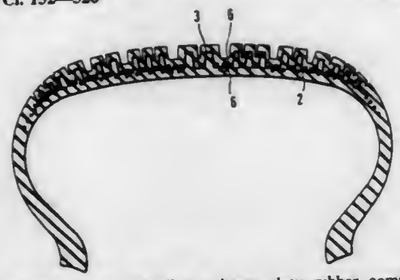
Dieter Disselbeck, Bad Soden, Germany, assignor to Hoechst Aktiengesellschaft

Division of Ser. No. 976,344, Nov. 13, 1992, Pat. No. 5,447,776, which is a continuation of Ser. No. 555,945, Jul. 19, 1990, abandoned. This application Jan. 17, 1995, Ser. No. 372,917

Claims priority, application Germany, Jul. 21, 1989, 39 24 178.5

Int. Cl.[6] B60C *9/00;9/02;9/18*

U.S. Cl. 152—526 **5 Claims**



1. A vehicle tire including a heavy duty rubber composite comprising a reinforcement structure composed of a network material made from a textile material of natural or synthetic fibers forming a filigree-like open-mesh network containing rods, knots and cavities, the open mesh network being shaped in three dimensions to include a plurality of cup-shaped deformations arranged in a regular pattern and extending in a direction generally perpendicular to a planar portion of the network material, and rubber material surrounding the reinforcement structure.

5,571,353

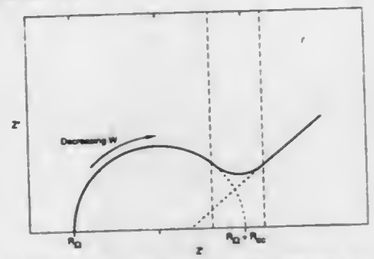
ELECTRONICS FOR SOLID RECHARGEABLE BATTERIES

Milton N. Golovin, 145 Manton Dr., San Jose, Calif. 95123

Filed Oct. 29, 1993, Ser. No. 102,162

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—64 **13 Claims**



1. A method of selecting an electrode material for a solid electrochemical cell comprises the steps of forming a capacitative laminate of a potential electrode material and an electrolyte, obtaining the electrochemical impedance spectrum of said laminate, and rejecting said potential electrode material if said spectrum contains a substantial semicircular portion wherein the capacitative laminate comprises two identical electrodes having said electrolyte interposed therein between.

5,571,354

AUTO-SPLICE DEVICE AND METHOD

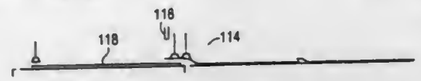
Yoshinori Miyamoto, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 196,368, Feb. 15, 1994, Pat. No. 5,514,233. This application Feb. 2, 1995, Ser. No. 382,498

Claims priority, application Japan, Feb. 16, 1993, 5-26701; Mar. 2, 1993, 5-41330

Int. Cl.[6] B32B *31/10*

U.S. Cl. 156—64 **8 Claims**



5. A method of splicing pieces of fabric to one another, said method comprising:

cutting a sheet on a cutting conveyor in a direction across said sheet at an angle to a conveyance direction of said sheet by said cutting conveyor, thereby producing a cut fabric having front and rear ends spaced in said direction;

determining positions of said front and rear ends of said cut fabric relative to said cutting conveyor; and

in response to determined positions of said front and rear ends of said cut fabric, lifting a rear end of a preceding fabric and operating said cutting conveyor to move said cut fabric in said conveyance direction until said front end of said cut fabric is beneath said lifted rear end of said preceding fabric, holding said rear end of said cut fabric, holding and splicing together said rear end of said preceding fabric and said front end of said cut fabric, releasing the thus spliced ends, and moving the thus spliced preceding fabric and cut fabric in said direction away from said cutting conveyor while holding said rear end of said cut fabric.

5,571,355

METHOD OF MAKING A DOOR PANEL WITH INTEGRATED BOLSTER

Walter P. Kornylo, Livonia, Mich., assignor to Atoma International Inc., Newmarket, Canada

Continuation-in-part of Ser. No. 52,453, Apr. 26, 1993, abandoned. This application Jan. 4, 1995, Ser. No. 368,623

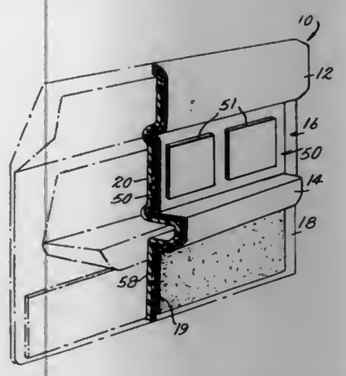
Int. Cl.[6] B32B *31/06;31/20*

U.S. Cl. 156—78 **18 Claims**

1. A method of making an interior panel of an automotive vehicle door having an exterior surface which is to face toward the interior of the automotive vehicle when installed therein which comprises the steps of

providing a bolster laminate including a textile outer layer, a flexible imperforate layer having an inner surface which becomes tacky when heated wherein said inner surface is provided by a polyurethane film having a thickness in the range of 2–4 mils and a melting point in the range of 220° F.–260° F.,

mounting the bolster laminate in a vacuum mold part having a mold surface shaped to define the exterior surface of the door panel with the outer layer engaging the mold surface, said thickness of said polyurethane film making said bolster laminate sufficiently imperforate to enable the textile outer layer to be moved into conformity with the mold surface by application of a vacuum communicated through openings in the mold surface,



heating a sheet of predetermined material content presenting a vinyl surface,

vacuum forming the heated sheet in the vacuum mold part and bringing the heated sheet into contact with the inner surface of the polyurethane film so that the temperature of the inner surface of the polyurethane film is raised to at least 220° F. so as to be made tacky and to bondingly interengage the vinyl surface of the heated sheet which engages a remaining portion of the mold surface of said vacuum mold part, and

molding material between said vacuum mold part with said bolster laminate and the vinyl surface of said sheet engaged with the mold surface thereof and a cooperating opposed mold part to form an integrally molded panel having (1) an exterior surface in a shape corresponding with the shape of the mold surface of said vacuum mold part defined by the textile outer layer of said bolster laminate and the vinyl surface of said sheet other than the portion thereof bondingly interengaged with said bolster laminate, (2) an opposed surface of a shape corresponding in shape to a mold surface of said cooperating opposed mold part, and (3) a content between the exterior and opposed surfaces which includes a relatively hard substrate defining the opposed surface, a layer of sheet vinyl presenting said vinyl surface and a layer of relatively soft foamed material adjacent said layer of sheet vinyl.

5,571,356

THERMOFORMABLE, FIBER-REINFORCED COMPOSITE MATERIAL, PROCESS FOR ITS PRODUCTION AND USE

Detlef Skaletz, Mainz; Ludger Czyborra, Aachen; Horst Heckel, Darmstadt, and Karin Mehmke, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Jan. 31, 1994, Ser. No. 189,044

Claims priority, application Germany, Feb. 2, 1993, 43 02 782.2

Int. Cl.[6] B32B *5/08*

U.S. Cl. 156—166 **4 Claims**

1. A process for the production of a thermoformable, fiber-reinforced composite material, in which a multiplicity of continuous filaments having individual filament diameters of 7 to 30 μm are arranged in parallel to form a ribbon and tensioned, the filament ribbon is impregnated with molten thermoplastic polymer in a melt pultrusion process, the filament ribbon being drawn over at least two heated spreader surfaces and a proportion by volume of 5 to 70% by volume of continuous filaments being established in the solidifying filament ribbon, which comprises using an elastomer-modified polypropylene as the thermoplastic polymer which., m.easured at low shear rates, has a viscosi,t.y of 105 to 2500 Pa·s and the drawing tension is set to 5 to 50N per 4000 individual filaments on entry into the first spreader surface.

5,571,357

METHOD FOR PRODUCING HOLLOW COMPOSITE ARTICLES BY WINDING/LAYING DOWN ON AN EXPANSIBLE MANDREL

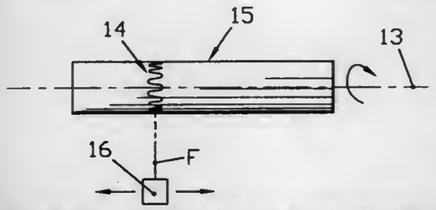
Jean-Louis Darrieux, Saint Medard En Jalles; Christian Picosson, Macau, and Hugues Canfranc, Saint Aubin De Medoc, all of France, assignors to Societe Anonyme Dite Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Jun. 2, 1994, Ser. No. 253,056

Claims priority, application France, Jun. 14, 1993, 93 07432

Int. Cl.[6] B29C *70/20;70/22;70/34*

U.S. Cl. 156—173 **33 Claims**



1. A method for forming hollow articles made of composite material including at least one access orifice by at least one of winding and laying down fibers on an expansible mandrel, said method comprising:

placing preimpregnated fibers on an expansible, extractable mandrel having a longitudinal axis formed by the at least one of winding and laying down of the preimpregnated fibers on the mandrel, the preimpregnated fibers being placed at any angle with respect to the longitudinal axis, at least the placing of circumferential fibers at an angle of approximately 90° with respect to the longitudinal axis forming on the mandrel one of a sinuous line and plural discontinuous elements, the one of a sinuous line and plural discontinuous elements enabling the preimpregnated fibers to be expanded circumferentially during radial expansion of the mandrel; and

expanding the mandrel inside a shaper while polymerizing the preimpregnated fibers.

5,571,358

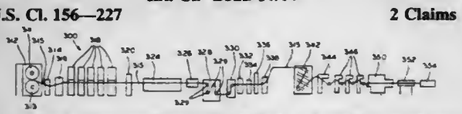
MULTIPLE-PLY LABEL AND METHOD FOR PRODUCING A MULTIPLE-PLY LABEL

Charles A. Laff, Shoreview, Minn., and Gerald T. Szymczak, Schaumburg, Ill., assignors to The Wessel Company, Inc., Elk Grove Village, Ill.

Continuation-in-part of Ser. No. 96,707, Jul. 23, 1993, abandoned. This application Oct. 12, 1993, Ser. No. 134,390

Int. Cl.[6] B32B *31/14*

U.S. Cl. 156—227 **2 Claims**



1. A method for simultaneously affixing a releasable coupon and a product label to a product using a labelling apparatus for single-ply, product labels, comprising the steps of:

a. providing a single web of stock material having two opposing web surfaces;

b. applying printed matter to the single web using a process selected from the group consisting of offset printing and rotogravure, the printed matter being applied to form a product label portion of the single web and a coupon portion of the single web;

c. selectively applying a non-tacky-residue adhesive to the single web to one of the web surfaces;

d. folding the single web over on itself along a transverse axis of the single web to form a top ply and a bottom ply with the label portion positioned on both of the plies and the coupon portion positioned on the top ply;

e. releasably adhering the top ply to the bottom ply with the adhesive to form a two-ply laminate;
f. cutting the two-ply laminate from the folded single web to form a combination releasable coupon and product label;
g. providing a labelling apparatus for single-ply product labels; and
h. feeding the combination releasable coupon and product label into the labelling apparatus to adhere the combination releasable coupon and product label to the product in a single labeling operation with the bottom ply being adhered directly to the product and the top ply overlying the bottom ply.

5,571,359

RADIATION CURABLE PIGMENTED COMPOSITIONS

Melvin E. Kamen, Highlands, and Bhupendra Patel, Edison, both of N.J., assignors to Revlon Consumer Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 824,968, Jan. 24, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 199,414
Int. Cl.[6] B44C *1/14*
U.S. Cl. 156—233 **25 Claims**

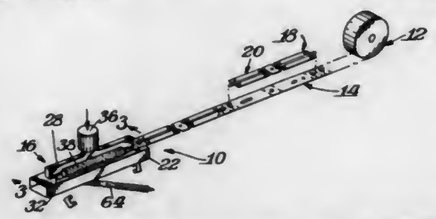
1. A method for decorating a substrate with an ink composition comprised of a radiation curable component and an organic pigment comprising:
a) applying the pigmented ink composition to the substrate in a predetermined design, said ink being operable when cured to bond to the substrate,
b) curing the ink on the substrate by exposing it to the radiation by which it is curable, thereby bonding the ink to the substrate, wherein the organic pigment provides bright and true red coloration and does not interfere with radiation curing of the radiation curable component.

5,571,360

NAME PLATE FORMING METHOD

Anthony Ciccotelli, El Dora, N.J.; George Barrar, Morton; Bob Fuss, Havertown, both of Pa.; Christopher Flaherty, Nokomis, Fla., and Peter Peroni, Pottstown, Pa., assignors to LaFrance Corporation, Philadelphia, Pa.

Continuation of Ser. No. 79,259, Jun. 21, 1993, abandoned. This application Aug. 2, 1994, Ser. No. 284,915
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—251 **10 Claims**



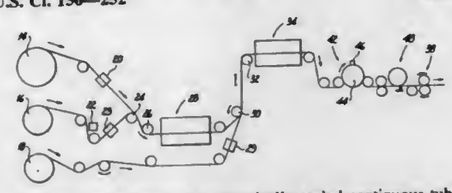
1. A method of forming burr-less edged injection molded name plates comprising feeding a backing member in the form of a tape having an adhesive coating on release paper to a shearing station, feeding a plurality of injection molded name plate assemblies onto contact with the backing member before the backing member enters the shearing station with each name plate assembly including at least one name plate and an integral connector web wherein the name plate is secured along only one side edge of the connector web and the remaining three side edges being exposed and being burr-less, disposing the name plate assemblies and backing member with respect to each other whereby the adhesive coating is remote from the name plate assemblies, and cutting through the connection of the one side edge of the name plate and the web and through the backing member by a shear blade of a shearing bar in the shearing station to form a name plate unit comprising the name plate and the portion of the backing member in contact with the name plate with all of the exposed edges of the name plate being burr-less.

5,571,361

APPARATUS AND METHOD FOR FABRICATING BREATHER BAGS

John F. Stuerzel, Freeport, N.Y., assignor to Clean Room Products, Inc., Ronkonkoma, N.Y.

Division of Ser. No. 226,480, Apr. 12, 1994. This application Jun. 6, 1995, Ser. No. 468,961
Int. Cl.[6] B30B *5/04*
U.S. Cl. 156—252 **5 Claims**



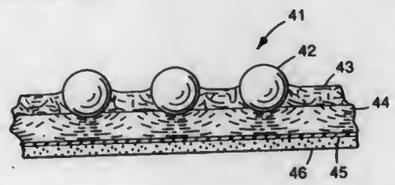
1. A process for forming a hermetically sealed continuous tubular structure from continuous webs of polymer material for gas sterilization of a product contained therein, the process comprising the steps of:
providing a first, second, and third continuous web of polymer material mounted on a frame, the first continuous web being substantially pervious to sterilizing gas, the second continuous web including a plurality of perforations therethrough positioned between first and second longitudinal edges;
continuously moving the continuous webs of polymer material simultaneously in a longitudinal direction;
continuously heat sealing the first continuous web of polymer material to the second continuous web of polymer material to join said first continuous web of polymer material to said second continuous web of polymer material to form a first plurality of continuous parallel longitudinal seams and to seal the perforations between the first plurality of continuous parallel longitudinal seams; and
continuously heat sealing the second continuous web of polymer material to the third continuous web of polymer material to join said second and third continuous webs of polymer material to form the hermetically sealed continuous tubular structure open at its proximal and distal ends.

5,571,362

METHOD FOR MAKING RETROREFLECTIVE ARTICLE WITH DUAL REFLECTORS

Kathleen A. Hachey, Hudson, Wis.; Thomas P. Hedblom, Eagan, Minn., and David C. May, Roberts, Wis., assignors to Minnesota Mining And Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 247,056, May 20, 1994, Pat. No. 5,417,515. This application Apr. 7, 1995, Ser. No. 418,514
Int. Cl.[6] B05D *5/06*; B32B *21/00*
U.S. Cl. 156—264 **12 Claims**



1. A method of making a retroreflective article comprising the steps of:

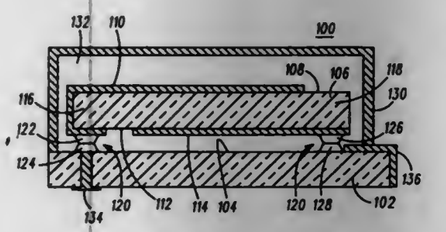
1) providing a specularly reflective fluid layer comprising a specular reflector pigment in a polymeric medium, said layer having first and second sides;
2) applying a diffusely reflective fluid layer comprising a diffuse reflector pigment in a polymeric medium, said layer having first and second sides, over one side of the specularly reflective layer yielding a fluid bi-layer; and
3) depositing microspheres onto the fluid bi-layer, allowing said microspheres to sink through the diffusely reflective layer and become partially embedded in the specularly reflective layer.

5,571,363

METHOD FOR REDUCING THE FREQUENCY-TEMPERATURE SHIFT OF PIEZOELECTRIC CRYSTALS

Jill A. Brosig, Downers Grove, and Matt Laurich, Elgin, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 268,001, Jun. 29, 1994, Pat. No. 5,473,216. This application Aug. 15, 1995, Ser. No. 515,419
Int. Cl.[6] H01L *41/22*
U.S. Cl. 156—292 **5 Claims**



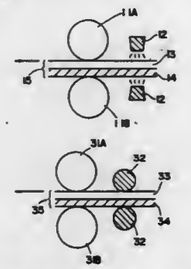
1. A method of compliantly mounting a piezoelectric element onto a substrate having an upwardly facing surface to which the piezoelectric element is to be attached, the method comprising the steps of:
providing a viscous conductive adhesive material comprising epoxy and a conductive material;
applying first, uncured dollops of the viscous conductive adhesive material onto selected places on the upwardly facing surface of the substrate;
curing the first, uncured dollops of the viscous conductive adhesive material to form first cured dollops of compliant, conductive material coupled to the piezoelectric element;
applying second uncured dollops of the viscous conductive adhesive material onto the first cured dollops of compliant conductive material;
mounting the piezoelectric element including a bottom electrode and a wraparound top electrode onto the second uncured dollops of compliant conductive material;
curing the second uncured dollops of the viscous conductive adhesive material, thereby forming a temperature dependent interface structure comprising the first and the second cured dollops of the viscous conductive adhesive material having a predetermined glass transition temperature; and
providing a piezoelectric package defined by the substrate, the piezoelectric element and temperature dependent interface structure having a non-compensated third order Bechmann curve with a low temperature end and a high temperature end with the interface structure being more compliant in proximity to and above the glass transition temperature than below, whereby a beneficially stressed piezoelectric element is provided which has a substantially reduced frequency temperature shift at the low temperature end of the third order Bechmann curve due to a reduced compliance of the interface structure below the glass transition temperature.

5,571,364

PROCESS FOR THE PREPARATION OF RADIATION IMAGE STORAGE PANELS

Hideki Suzuki, and Katsuhiro Kohda, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 692,649, Apr. 29, 1991, Pat. No. 5,306,367. This application Feb. 15, 1994, Ser. No. 196,460
Claims priority, application Japan, Apr. 27, 1990, 2-112505; May 11, 1990, 2-122380; Jun. 20, 1990, 2-161518
Int. Cl.[6] B29C *53/18*; B32B *31/26*; G03C *1/00*
U.S. Cl. 156—309.6 **5 Claims**



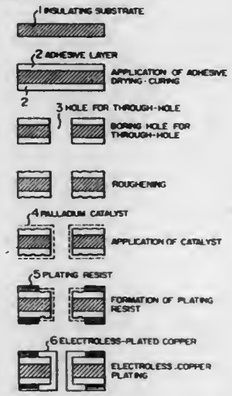
1. A process for the preparation of a radiation image storage panel comprising the steps of:
forming a phosphor sheet comprising a stimulable phosphor and a binder of thermoplastic elastomer having a softening point of 30° to 300° C.;
heating the phosphor sheet on a support; and
subsequently compressing thus heated phosphor sheet on the support under heating or maintaining the heated phosphor sheet at a temperature of not lower than the softening point of the binder, by means of a calender roll, so as to fix the phosphor sheet on the support.

5,571,365

ADHESIVE FOR PRINTED CIRCUIT BOARD

Eiji Maehata, Tokyo, and Toshio Komiyatani, Fujieda, both of Japan, assignors to Nec Corporation, and Sumitomo Bakelite Corporation Limited, both of Tokyo, Japan

Filed Nov. 14, 1994, Ser. No. 340,327
Claims priority, application Japan, Nov. 26, 1993, 5-296976
Int. Cl.[6] C09J *163/00*
U.S. Cl. 156—326 **14 Claims**



1. An adhesive for a printed circuit board which consists essentially of a dispersion of (1) molecules of a bis-phenol A epoxy resin having an epoxy equivalent of 2,000 or more or of a phenoxy resin as a resin which is soluble in an alkaline oxidizing agent after

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curing, in (2) a resin matrix which is sparingly soluble in the alkaline oxidizing agent after curing.

5,571,366

PLASMA PROCESSING APPARATUS

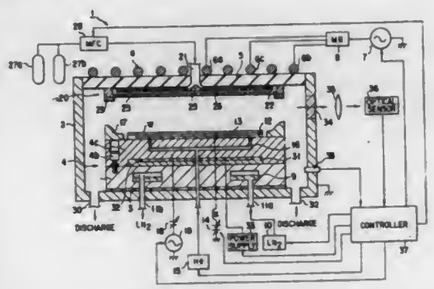
Nobuo Ishii; Jiro Hata; Chishio Koshimizu, all of Yamanashi-ken; Yoshifumi Tahara; Hiroshi Nishikawa, both of Tokyo, and Isei Imahashi, Yamanashi-ken, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Oct. 20, 1994, Ser. No. 327,798

Claims priority, application Japan, Oct. 20, 1993, 5-284206; Oct. 20, 1993, 5-284208; Oct. 20, 1993, 5-284209; Oct. 20, 1993, 5-284210; Dec. 2, 1993, 5-338764; Feb. 22, 1994, 6-023992; Feb. 22, 1994, 6-023993; Feb. 22, 1994, 6-023994; Mar. 25, 1994, 6-056237

Int. Cl.[6] H05H *1/00*

U.S. Cl. 156—345 **21 Claims**



1. A plasma processing apparatus comprising:

a processing chamber for plasma processing, having an external wall, said chamber containing within said wall an object having a surface to be processed in a plasma;

induction means for providing a radio frequency induction field within said chamber for generating a plasma within said chamber;

voltage applying means for applying a radio frequency voltage to said induction means;

measuring means for measuring a pressure variation and/or a light intensity variation from the plasma in said chamber during generation of the plasma, and outputting a signal corresponding to the variation;

control means for controlling said radio frequency voltage applying means based on the signal from said measuring means, and controlling said voltage for controlling said plasma within said chamber;

wherein said induction means has a radio frequency antenna arranged outside said chamber, and an insulating member positioned between said radio frequency antenna and said processing chamber; and

wherein said antenna has an inner terminal formed at an inner end of said antenna, an outer terminal formed at an outer end of said antenna, and at least one intermediate terminal formed between said terminals, the terminals being respectively connected to said radio frequency voltage applying means such that currents flow between said inner terminal and said intermediate terminal, between said intermediate terminal and said outer terminal, and between said intermediate terminal and said radio frequency voltage applying means, and said control means independently controls the currents.

5,571,367

APPARATUS FOR SUBJECTING A SEMICONDUCTOR SUBSTRATE TO A WASHING PROCESS

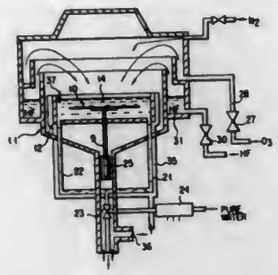
Takahito Nakajima, and Yuji Fukazawa, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaka, Japan

Filed Mar. 10, 1995, Ser. No. 401,686

Claims priority, application Japan, Mar. 30, 1994, 6-061432

Int. Cl.[6] H01L *21/00*

U.S. Cl. 156—345 **7 Claims**



1. An apparatus for subjecting a semiconductor substrate to a washing process, comprising:

a hermetically closable, washing process chamber for substrate washing;

a washing process bath provided in the washing process chamber to subject the semiconductor substrate to the washing process;

a substrate support mechanism provided in the process chamber to support the semiconductor substrate in a horizontal state;

a liquid supply mechanism for supplying a liquid in an amount to allow the semiconductor substrate to be immersed with the liquid;

a chemicals component supply mechanism for supplying a chemicals liquid vapor and gas into the process chamber for a time period to allow the chemicals liquid vapor and gas to be dissolved into the liquid in the process bath to give a solution; and

a pure water replacing mechanism for replacing, with a specific liquid, the solution in the process bath.

5,571,368

LAMINATING MACHINE WITH IMPROVED HEATING AND COOLING

Eric W. Barge, Honeoye Falls, N.Y., assignor to Graphic Laminating, Inc., Solon, Ohio

Filed Apr. 15, 1994, Ser. No. 228,407

Int. Cl.[6] B32B *31/04;* **B30B** *15/34*

U.S. Cl. 156—359 **18 Claims**

1. An apparatus for heating a material, said apparatus comprising:

a) a plurality of sub-assemblies each including:

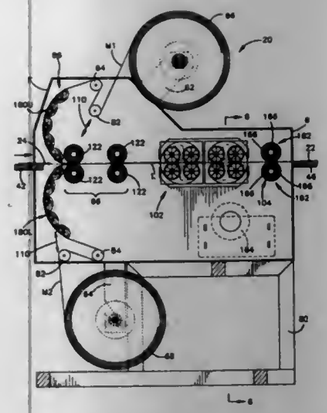
i) a roller for contacting such material;

ii) a heater;

iii) a heater control connected to the heater; and,

iv) heat transmission means for operatively connecting said heater with its roller to heat the roller and thereby heat such material during roller contact, said transmission means comprising a heat transfer bar having walls defining a roller recess, the roller being substantially within its recess, the bar also including a chamber for mounting the heater to conduct heat from said heater to said roller when the apparatus is in use; and,

b) the sub-assemblies being arranged in a curved array.



5,571,369

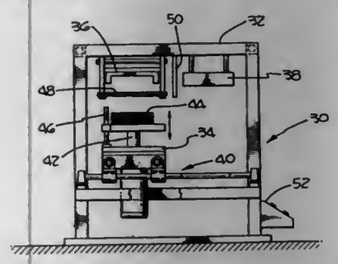
APPARATUS FOR MAKING THERMALLY FUSED THERMOPLASTIC HONEYCOMB STRUCTURES

Doyle G. Dixon, Walnut Creek, and Peter G. Turner, Oakley, both of Calif., assignors to Hexcel Corporation, Pleasanton, Calif.

Division of Ser. No. 105,763, Aug. 11, 1993, Pat. No. 5,421,935, which is a continuation of Ser. No. 730,267, Jul. 12, 1991, abandoned. This application May 23, 1995, Ser. No. 448,136

Int. Cl.[6] B32B *31/26*

U.S. Cl. 156—359 **5 Claims**



1. An apparatus for thermally fusing a plurality of thermoplastic sheets together at selected locations to form a stack of interconnected thermoplastic layers which can be expanded to form a honeycomb structure, said apparatus comprising:

a support structure comprising a framework which defines a heating zone and a chilling zone;

a heating grid attached to said framework and located in said heating zone;

a chill plate attached to said framework and located in said chilling zone;

a table having a top upon which said thermoplastic sheets are placed sequentially during formation of said stack of interconnected thermoplastic layers, wherein at any one time there is a first layer located on top of said stack and a second layer located directly under said first layer;

heating press means located within said heating zone for moving said table towards and away from said heating grid to provide pressing of thermoplastic sheets stacked on said table top against said heating grid for thermally fusing said thermoplastic sheets together at selected locations;

cooling press means located within said chilling zone for moving said table towards and away from said chill plate to provide contact between said stack of thermoplastic sheets and said chill plate to provide cooling of said thermoplastic sheets;

table transport means for moving said table between said heating zone and said chilling zone; and

means for controlling the movement of said heating press means, said cooling press means and said table transport means to provide melting of only said first and second layers together at said selected locations to form welded portions which include an upper exterior surface located on the top of said first layer and a lower surface located on the bottom of said second layer wherein said lower surface is not melted.

5,571,370

APPARATUS FOR HEAT-SEALING THERMOPLASTIC MATERIALS

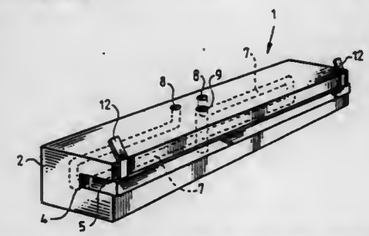
Hans Selberg, Lund, and Gyula Balla, Malmö, both of Sweden, assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Continuation of Ser. No. 242,962, May 16, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 478,856

Claims priority, application Sweden, May 19, 1993, 9301733

Int. Cl.[6] B32B *31/20*

U.S. Cl. 156—498 **16 Claims**



1. An apparatus for heat-sealing thermoplastic material, comprising a sealing jaw defined by a jaw body, and a thermal strip, the jaw body being of one piece manufacture and including a groove in which a portion of the thermal strip is disposed so that an oppositely located working surface of the thermal strip projects beyond the jaw body, a portion of said jaw body being plastically deformed to mechanically anchor the thermal strip within the groove, said portion of the thermal strip disposed in the groove being provided with a plurality of spaced apart slots, and an electrically insulating layer being located between the jaw body and the groove.

5,571,371

SHEET MATERIAL BUTT-JOINING APPARATUS

Takashi Senbokuya, Fussa, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

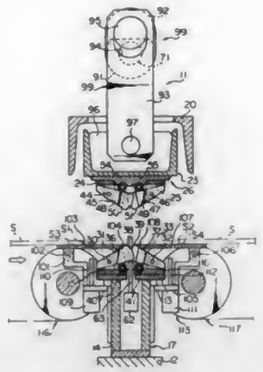
Filed Apr. 11, 1995, Ser. No. 419,689

Claims priority, application Japan, Apr. 11, 1994, 6-096882

Int. Cl.[6] B65H *69/06*

U.S. Cl. 156—502 **5 Claims**

1. A butt-joining apparatus for joining starting and finishing ends of a sheet material with each other, comprising: a stationary first base; a movable second base arranged above the first base and adapted to be moved vertically; a pair of bottom joining pawls extending along the starting and finishing ends of a sheet material and including bottom ends which are swingably supported by a top portion of the first base, and top ends provided with bottom joining sections which can be brought into contact with starting and finishing ends of the sheet material, respectively, and which are inclined so as to approach to each other in an upward direction; a bottom energizing member for energizing said bottom joining pawls in a rising direction; a pair of top joining pawls extending along the starting and finishing ends of the sheet material and including top ends which are swingably supported by a bottom portion of the second base, and bottom ends provided with top joining sections which can be brought into contact with said



starting and finishing ends of the sheet material, respectively, and which are inclined so as to approach to each other in a downward direction; a top energizing member for energizing said top joining pawls in the rising direction; a control member which can be situated at or retracted from an intermediate position between the starting and finishing ends of the sheet material, for maintaining a distance between said ends of the sheet material substantially constant at any position when the control member is situated at said intermediate position and contacted by said starting and finishing ends of the sheet material; and vertically moving means for vertically moving the second base by applying a vertically moving force thereto; wherein said starting and finishing ends of the sheet material are butt-joined by lowering the second base by the vertically moving means and bringing the top joining sections of the top joining pawls into contact with a top of the starting and finishing ends of the sheet material, respectively, when the bottom joining sections of the bottom joining pawls contact the bottom of the starting and finishing ends of the sheet material to thereby hold the starting end of the sheet material by one of the pairs of the top and bottom joining pawls and the finishing end of the sheet material by the other of the pairs of the top and bottom joining pawls, and continuously lowering the second base even after holding the starting and finishing ends of the sheet material to swing the top and bottom joining pawls in a falling direction against the top and bottom energizing members, thereby causing the top and bottom joining sections of the top and bottom joining pawls to approach to each other while holding the starting and finishing end of the sheet material; wherein said apparatus further comprises an intermittent transfer mechanism provided in the middle of the vertically moving means, for temporarily stopping the transfer of a vertically moving force to the second base while the vertically moving means continuously operates, when the top joining sections of the top joining pawls contact the top of the starting and finishing ends of the sheet material and the control member is moved toward or retracted from the intermediate position between the starting and finishing ends of the sheet material while the transfer of the vertically moving force to the second base is stopped.

5,571,372

PROCESS AND APPARATUS FOR MANUFACTURING CLUTCH FRICTION PLATE

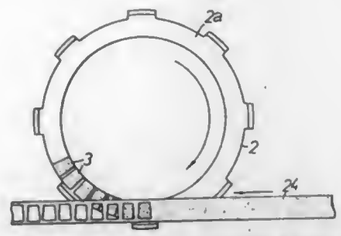
Kazuomi Miyaishi; Akihiro Agata, and Hiroji Shimoi, all of Hamamatsu, Japan, assignors to Kabushiki Kaisha F.C.C., Hamamatsu, Japan

Division of Ser. No. 922,921, Jul. 21, 1992. This application Oct. 19, 1994, Ser. No. 325,884

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—515 **4 Claims**

1. An apparatus for manufacturing a friction plate for a clutch, the friction plate being comprised of a large number of friction material segments adhesively bonded to each of opposite bonding



surfaces of an annular core in a circumferential direction of the core with oil grooves provided between adjacent segments, said apparatus comprising:

a support for positioning said core thereon with either of said opposite bonding surfaces having an adhesive applied thereto being turned upwards, said support being intermittently rotated for adhesive-bonding of every one of the friction material segments;

an unwinding mechanism for intermittently unwinding a friction material tape to a position above said support in an amount corresponding to each of the friction material segments;

a liftable pressing mechanism for subjecting said friction material tape to a cutting, and pressing and adhesively bonding the resulting cut friction material segment to said core;

means for reversing the annular core to direct its other bonding surface upwards upon completion of adhering of the friction material segments to one bonding surface; and

means for pressing the annular core with the friction material segments adhered to both of its opposite bonding surfaces, in order to form the friction plate.

5,571,373

METHOD OF ROUGH POLISHING SEMICONDUCTOR WAFERS TO REDUCE SURFACE ROUGHNESS

Vepa Krishna, St. Charles; Michael S. Wisnieski, O'Fallon, and Lois Illig, Troy, all of Mo., assignors to MEMC Electronic Materials, Inc., St. Peters, Mo.

Filed May 18, 1994, Ser. No. 245,592

Int. Cl.[6] C03C *25/06*

U.S. Cl. 156—636.1 **37 Claims**

1. A method of rough polishing a semiconductor wafer to reduce roughness on a surface of the wafer prior to finish polishing the wafer, the method comprising the steps of:

(a) applying a first polishing solution to a polishing material;

(b) contacting the polishing material and the first polishing solution with the surface of the wafer as the wafer moves relative to the polishing material to reduce low frequency surface roughness of the wafer;

(c) applying a second polishing solution containing an ammonia stabilized colloidal silica slurry to the polishing material; and

(d) contacting the polishing material and the second polishing solution with the surface of the wafer as the wafer moves relative to the polishing material to further reduce the low frequency surface roughness, wherein the wafer has an average surface roughness not greater than 1.0 nmRa, as measured on a 1 mm×1 mm scan with an optical interferometer, after being rough polished.

5,571,374

METHOD OF ETCHING SILICON CARBIDE

Christine Thero, Scottsdale, and Patricia A. Norton, Mesa, both of Ariz., assignors to Motorola, Schaumburg, Ill.

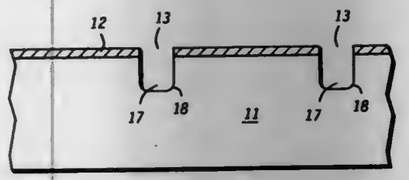
Filed Oct. 2, 1995, Ser. No. 538,064

Int. Cl.[6] H01L *21/00*

U.S. Cl. 156—643.1 **7 Claims**

1. A method of etching silicon carbide comprising:

providing a silicon carbide substrate;



forming a mask layer by applying a layer of material on the substrate, the material having a Mohs hardness factor of four or greater;

patterning the mask layer to expose underlying areas of the substrate; and

etching the underlying areas of the substrate with a plasma.

5,571,375

METHOD OF REMOVING NATIVE OXIDE FILM FROM A CONTACT HOLE ON SILICON WAFER

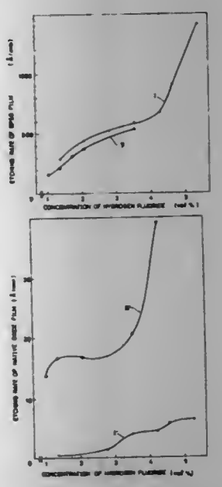
Akira Izumi, and Takeshi Matsuka, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Aug. 13, 1992, Ser. No. 929,678

Claims priority, application Japan, Aug. 20, 1991, 3-235404

Int. Cl.[6] B44C *1/22;* **C03C** *15/00;25/06*

U.S. Cl. 156—646.1 **14 Claims**



1. A method of removing a native oxide film that has formed on a main surface of a silicon wafer, said native oxide film being formed in a contact hole in a BPSG film or a PSG film formed on said main surface, said method comprising the steps of:

placing the silicon wafer in a reaction chamber hermetically separated from outside atmosphere, and

supplying a mixed vapor including anhydrous hydrogen fluoride and a substantially high concentration of alcobol to said reaction chamber, so as to selectively etch said native oxide film relative to said BPSG or PSG film.

5,571,376

QUANTUM DEVICE AND METHOD OF MAKING SUCH A DEVICE

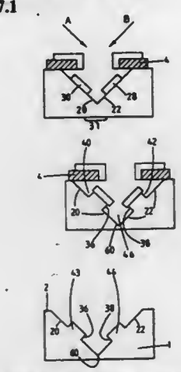
Timothy D. Bestwick; Alistair H. Kean; Martin D. Dawson, and Geoffrey Duggan, all of Oxfordshire, United Kingdom, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 15, 1995, Ser. No. 404,508

Claims priority, application United Kingdom, Mar. 31, 1994, 9406488

Int. Cl.[6] H01L *21/31*

U.S. Cl. 156—647.1 **15 Claims**



1. A method of making a quantum confined device, comprising the steps of:

forming in a surface of a substrate a depression having a plurality of walls extending into the substrate from the surface, and

modifying the walls by forming a plateau-like raised portion in each wall so as to define in a base region of the depression a sub-depression of lateral size smaller than that of the depression,

wherein the plateau-like raised portion has a first step up from the depression and a second step down to the sub-depression.

5,571,377

PROCESS FOR PEROXIDE BLEACHING OF CHEMICAL PULP IN A PRESSURIZED BLEACH VESSEL

Petter Tibbling, Pilvägen 7; Ulla Ekstroöm, Kappstad; Erik Nilsson, Aåtorp, and Lars-Ove Larsson, Garvaregatan, all of Sweden, assignors to Kvaerner Pulping Technologies AB, Sweden

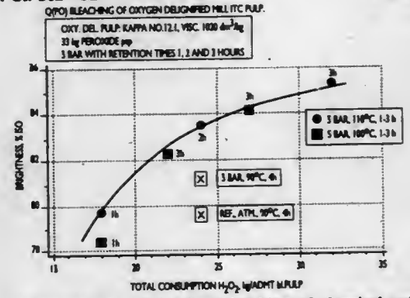
PCT No. PCT/SE93/00988, § 371 Date Jun. 7, 1994, § 102(e) Date Jun. 7, 1994, PCT Pub. No. W094/29511, PCT Pub. Date Dec. 22, 1994

PCT Filed Nov. 18, 1993, Ser. No. 244,637

Claims priority, application Sweden, Jun. 8, 1993, 9301960-2

Int. Cl.[6] D21C *9/153;9/16*

U.S. Cl. 162—52 **49 Claims**



1. A process for chlorine-free bleaching of chemical pulp in association with the production thereof, where a suspension of the

pulp has a consistency in a range of about between 8% to about 20% of cellulose-containing fibre material, comprising the steps of:

(a) treating the chemical pulp having a consistency of between 8% and 20% of cellulose-containing fibre material with at least one acid for adjusting the pH to a value below 7,

(b) treating the pulp with a chelating agent,

(c) pumping said pulp into at least one bleaching vessel by means of a medium consistency centrifugal pump to aid in pressurizing said bleaching vessel; and

(d) bleaching the pulp in a liquid, non-gaseous state in at least one stage to a brightness exceeding 80% ISO with a peroxide, said peroxide employed in a quantity exceeding 5 kg/BDMT, wherein said bleaching with a peroxide occurs at a temperature above 100° C. and at a pressure exceeding 2 bar in at least one bleaching vessel having a cross-sectional area exceeding 3 m^2; and further wherein the exposed area of the interior surface of the bleaching vessel is metal and is not more than 4 Vm^2, where V equals the volume of the bleaching vessel in cubic meters.

5,571,378

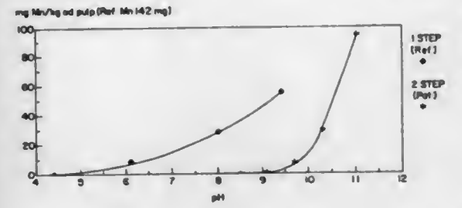
PROCESS FOR HIGH-PH METAL ION CHELATION IN PULPS

Arne Elofson, Helsingborg, and Arne Nordgren, Svalov, both of Sweden, assignors to Hampshire Chemical Ltd., London, United Kingdom

Continuation-in-part of Ser. No. 156,572, Nov. 23, 1993, abandoned. This application Oct. 27, 1994, Ser. No. 327,919

Int. Cl.[6] D21C *9/02;9/147;9/16*

U.S. Cl. 162—65 **16 Claims**



1. A process for metal ion chelation in pulps, comprising:

(a) mixing aqueous pulp containing transition metals with a chelating agent at a pH of 1–6, to form an aqueous pulp mix including chelated transition metals;

(b) subsequently oxidizing sulfurous species and expelling carbon dioxide and sulfurous species from said aqueous pulp mix so as to inhibit redeposition of said chelated transition metals upon pH adjustment in step (c);

(c) subsequently adjusting the pH of said aqueous mix to a pH above 6;

(d) dewatering and washing said mix to remove said chelated transition metals from said mix after adjusting the pH of said mix in step (c); and

(e) subsequently subjecting said dewatered and washed mix to a delignification bleaching.

5,571,379

COLLOIDAL COMPOSITION AND ITS USE IN THE PRODUCTION OF PAPER AND PAPERBOARD

Arthur P. Derrick, Cronulla, Australia, assignor to Laporte Industries Limited, London, United Kingdom

Division of Ser. No. 133,452, Oct. 7, 1993, which is a division of Ser. No. 410,820, Sep. 22, 1989, Pat. No. 5,015,334. This application Jun. 7, 1995, Ser. No. 485,852

Claims priority, application United Kingdom, Dec. 10, 1988, 8828899

Int. Cl.[6] D21H *21/10*

U.S. Cl. 162—168.1 **2 Claims**

1. A process for the production of paper or paperboard, which comprises;

introducing into thin stock prior to the entry of said stock into a headbox or machine vats a retention or drainage agent consisting essentially of; particles of a colloidally dispersible siliceous material selected from clay or silica, said particles being in intimate association with a water molecules of a water-soluble cationic organic polymer having a molecular weight of from 1,000 to below 50,000 and a cationic charge density of from 4 to 24 meq/g, the amount of water soluble organic polymer being effective to give composite colloidal particles having an electrophoretic mobility towards a negative electrode.

5,571,380

PAPERMAKING PROCESS WITH IMPROVED RETENTION AND MAINTAINED FORMATION

Thomas C. Fallon, West Chicago, Ill., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Jan. 8, 1992, Ser. No. 818,033

Int. Cl.[6] D21H *21/06*

U.S. Cl. 162—168.2 **20 Claims**

1. A process in which paper or paperboard is made by forming an aqueous cellulosic slurry, draining said slurry on a screen to form a sheet and drying said sheet, chracterized in that a cationic polymer having a quaternary ammonium salt cationic charge density of at least about 3.2 equivalents of cationic nitrogen per kilogram of dry polymer and having an Intrinsic Viscosity of at least about 8 dl/g is added to said slurry after the last high shear stage and prior to said draining of said slurry in an amount effective to provide at least about a 50 percent increase in retention wherein said increase in retention is obtained without more than about a 10 percent decrease in formation index as measured by digital image analysis on an index of from about 20 to about 120.

5,571,381

METHOD FOR CUTTING OUT AN EDGE OF A WEB IN A PAPER MACHINE

Reijo Vessari, and Tapani Kimari, both of Mänttä, Finland, assignors to Metsa-Serla Oy, Finland

PCT No. PCT/FI93/00325, § 371 Date Feb. 27, 1995, § 102(e) Date Feb. 27, 1995, PCT Pub. No. WO94/05473, PCT Pub. Date Mar. 17, 1994

PCT Filed Aug. 17, 1993, Ser. No. 392,880

Claims priority, application Finland, Sep. 1, 1992, 923919

Int. Cl.[6] D21F *7/00*

U.S. Cl. 162—195 **5 Claims**

1. A method for producing a fibre web by a paper machine, said paper machine comprising a yankee cylinder, said method comprising the steps of:

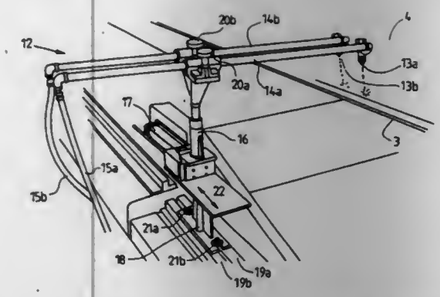
supplying pulp to a wire;

dehydrating said pulp on said wire;

cutting by means of a water jet the edges of the produced fibre web to produce strips of fibre, said water jet repetitively reciprocated throughout the production of the fibre web in a transverse direction with respect to the fibre web at a predetermined width so that the edge of the fibre web undulates at the cut and the place where the cut of the fibre web comes against the surface of the yankee cylinder varies;

conducting said strips around the yankee cylinder for drying; and

detaching said strips from the surface of the yankee cylinder.



5,571,382

METHOD OF MEASURING AND CONTROLLING ADHESION/RELEASE OF A PAPER WEB WHICH IS REMOVED BY A DOCTOR BLADE FROM A YANKEE CYLINDER AND A WEB TENSION GAUGE

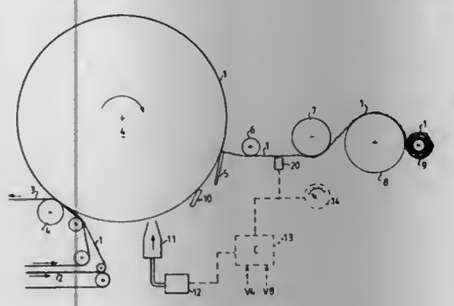
Roode P. Berglund, Musserongången 18, Tyresö, Sweden

PCT No. PCT/SE92/00281, § 371 Date Dec. 13, 1994, § 102(e) Date Dec. 13, 1994, PCT Pub. No. WO93/22134, PCT Pub. Date Nov. 11, 1994

PCT Filed Apr. 29, 1992, Ser. No. 325,447

Int. Cl.[6] D21F *11/12*

U.S. Cl. 162—198 **8 Claims**



1. In a method of controlling release of a paper web (1) from a Yankee-cylinder (4) with the aid of a doctor blade (5), said web being taken up on a roll (9) under a specific degree of creping, wherein the paper web has a web-part which is drawn freely between the doctor blade and the roll, and with the aid of a device (11, 12) which functions to deliver a substance between the paper web and the Yankee-cylinder for controlling web release; the improvement comprising exerting a deformation force (via 20) on the paper web at a local part of the freely drawn web-part; detecting the resultant positional change at said local web-part so as to obtain an electric signal corresponding to the tension in the paper web; and passing said signal to a control unit (13) for controlling the supply of said substance to control release of the paper web from the Yankee-cylinder.

5,571,383

METHOD AND DEVICE FOR TRANSVERSE DISTRIBUTION OF A FLOWING MEDIUM

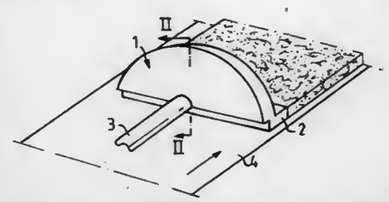
Börje Fredriksson, Sundsbruk, and Lennart Svensson, Sundsvall, both of Sweden, assignors to Sunds Defibrator Industries, Sweden

Filed May 4, 1995, Ser. No. 424,380

Claims priority, application Sweden, Nov. 4, 1992, 92032572

Int. Cl.[6] D21F *1/02;* **F15D** *1/12*

U.S. Cl. 162—213 **26 Claims**



1. A method for uniformly distributing a flowing medium flowing in a first direction in a conduit having a first width onto a surface so as to form a uniformly distributed medium having a second width, said second width being greater than said first width, said method comprising deflecting said flowing medium and simultaneously spreading said flowing medium from said first width to said second width in a plane transverse to said first direction, and again deflecting said flowing medium in a passage having a curvilinear shape in said plane, so as to provide a substantially uniformly distributed and parallel flow of said flowing medium onto said surface at said second width.

5,571,384

METHOD AND ARRANGEMENT FOR THE TREATMENT OF A FIBER SUSPENSION

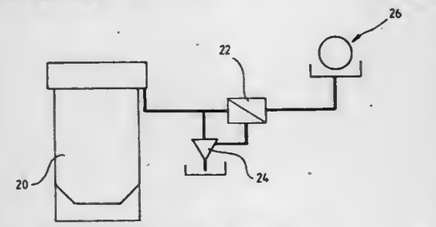
Olavi Pikka, and Hannu Rönkönharju, both of Karhula, Finland, assignors to A. Ahlstrom Corporation, Noormarkku, Finland

Division of Ser. No. 73,793, Jun. 8, 1993, Pat. No. 5,470,432. This application Aug. 1, 1995, Ser. No. 510,016

Claims priority, application Finland, Jun. 8, 1992, 922635

Int. Cl.[6] D21C *7/00*

U.S. Cl. 162—242 **7 Claims**



1. An apparatus for treating pulp, comprising:

a first bleaching tower for bleaching pulp;

a post-screening treatment device including at least one of a washer, a thickener, a dryer and a second bleaching tower;

a screener in fluid communication with said first bleaching tower and said post-screening treatment device, said screener including a pressure screen for generating from the pulp exiting said bleaching tower a first reject fraction and a first accept fraction, such that said first accept fraction is supplied to one of said post-screening treatment devices without further treatment by a separate thickener; and

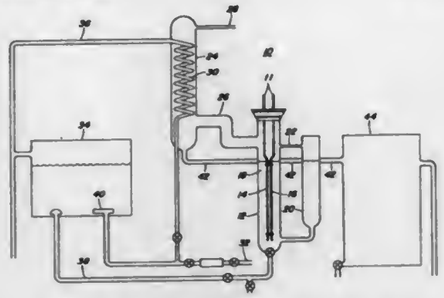
a vortex cleaner including means for generating from said first reject fraction a second reject fraction and a second accept fraction, said vortex cleaner being connected with one of said screener and said post-screening treatment device such that

said second accept fraction is supplied to one of said screener and said post-screening treatment device without further treatment by a separate thickener.

5,571,385
METHOD AND APPARATUS FOR WATER PURIFICATION

Mircea Faur; Maria Faur, both of North Olmsted, and David W. Epperly, Mentor, all of Ohio, assignors to Cleveland State University, Cleveland, Ohio

Filed May 8, 1995, Ser. No. 437,897
Int. Cl.[6] B01D *3/42;* **C02F** *1/04*
U.S. Cl. 203—10 **4 Claims**



1. A water purification apparatus to continuously remove dissolved contaminants from potable tap water which comprises:
(a) a glass flask from which the potable tap water is continuously distilled with internal heating means,
(b) the internal heating means having spaced apart electrode members comprising stainless steel plates immersed in the potable tap water and electrically connected to an alternating electrical current power source for producing purified water vapor while concurrently causing the dissolved contaminants to be removed thereat as precipitates in the remaining potable tap water without significant coating of the immersed electrode members,
(c) condenser means connected to the glass flask for converting the purified water vapor to a liquid state exhibiting electrical resistivity no less than 4–5 megohm-centimeters.
(d) liquid storage means connected to the glass flask while also being connected to a continuous potable tap water supply,
(e) liquid level means being contained in the liquid storage means so as to maintain a constant liquid level in both the liquid storage means and the glass flask, and
(f) the continuous potable tap water supply further providing means for a cooling medium to be supplied into the condenser means.

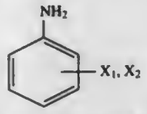
2. A method of removing dissolved contaminants from a potable tap water supply which comprises:
(a) continuously supplying the potable tap water to a glass flask having internal spaced apart stainless steel electrode members in an amount sufficient to immerse the electrode members,
(b) continuously producing purified water vapor upon heating by the immersed electrode members when supplied with a source of alternating electric current,
(c) concurrently precipitating the dissolved contaminants in the remaining potable tap water by further action of the immersed electrode members without significant coating of the immersed electrode members,
(d) continuously condensing the purified water vapor with a cooling medium provided by the potable tap water supply to produce a liquid exhibiting electrical resistivity no less that 4–5 megohm-centimeters, and
(e) collecting the condensed liquid in liquid storage means provided with liquid level means so as to maintain a constant liquid level in both the liquid storage means and the glass flask.

5,571,386
PROCESS FOR GRADE ACRYLIC ACID

William Bauer, Jr., Huntingdon Valley, Pa.; Timothy A. Hale, Houston, Tex.; Robert M. Mason, Roslyn, and Rita K. Upmacis, North Wales, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

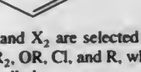
Filed May 31, 1994, Ser. No. 251,762
Int. Cl.[6] B01D *3/34*
U.S. Cl. 203—38 **8 Claims**

1. A continuous process for producing a pure grade acrylic acid (PGAA) comprising the steps of:
a) feeding to a first distillation column an acrylic acid source feed stream at a temperature of from 25° to 100° C., the source feed stream comprising:
i) an acrylic acid source selected from the group consisting of an aqueous acrylic acid solution and an acrylic acid extract, the acrylic acid source optionally containing acetic acid;
ii) a minimum effective level of from 0.1 to 2.0 molar ratio, based on total moles of aldehydes and maleic acid and maleic anhydride in the acrylic acid source, of at least one of a Group A amine selected from the group consisting of:
i) a primary arylamine of structure (I),



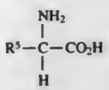
(I)

wherein X_1 and X_2 are selected from the group consisting of H, NR_2, OR, Cl, and R, wherein R is selected from H or C_1–C_6 alkyl;
ii) a hydrazine, optionally its hydrate, of structure R^2—NH— NH_2, wherein R^2 is selected from H, phenyl, 4-nitrophenyl, or 2,4-dinitrophenyl;
iii) an alkylenepolyamine of structure (II)



(II)

wherein R^3 is selected from H or a C_1–C_6 alkyleneamine, and R^4 is a C_1–C_6 alkyleneamine; and
iv) an α-amino acid selected from the group consisting of structure III



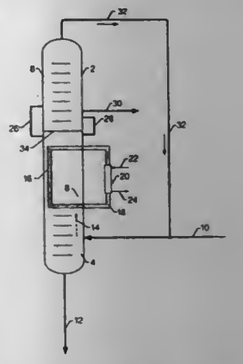
(III)

wherein R^5 is selected from H, R, or R^4; arginine, aspartic acid, glutamic acid, histidine, and methionine;
b) dehydrating the acrylic acid source feed stream to provide a low acrolein crude acrylic acid having an acrolein content less than 10 ppm;
c) optionally distilling off acetic acid from the low acrolein crude acrylic acid to provide a low acrolein crude acrylic acid having a reduced acetic acid level;
d) subsequently feeding to a final distillation column
i. the low acrolein crude acrylic acid having acrolein content less than 10 ppm, and
ii. concurrently, to an upper portion of the final distillation column above the low acrolein crude acrylic acid feed, an amine feed stream comprising a minimum effective level of from 0.01 to 1.0 molar ratio, based on total moles of aldehydes and maleic acid and maleic anhydride in the low acrolein crude acrylic acid, of at least one of a Group B amine selected from the group consisting of o-, m-, p-phenylenediamine, 4-nitrophenylhydrazine, and 2,4-dinitrophenylhydrazine; and
e) fractionally distilling the low acrolein crude acrylic acid through the final distillation column, distilling off PGAA having a residual individual aldehyde content less than 10 ppm.

5,571,387
CONTINUOUS SINGLE VESSEL DISTILLATION AND ADSORPTION PROCESS

Terry L. Marker, Warrenville; Santi Kulprathipanja, Inverness, and Simon H. Hobbs, Chicago, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed Sep. 13, 1994, Ser. No. 304,919
Int. Cl.[6] B01D *15/00;3/00;* **C07C** *41/00*
U.S. Cl. 203—41 **14 Claims**



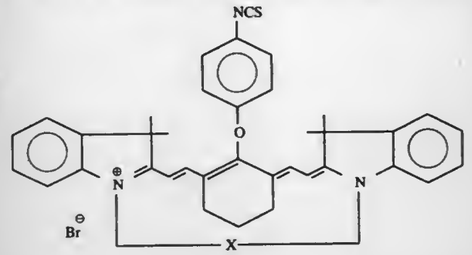
1. A process for separating in a single vessel two components present in at least a first stream comprising:
(a) providing a single vessel having a first distillation zone devoid of an adsorbent, an adsorption zone positioned above said first distillation zone and containing an adsorbent capable of selectively adsorbing the second component, and a second distillation zone devoid of an adsorbent and positioned above said adsorption zone;
(b) conducting said first stream into said first distillation zone;
(c) fractionating said first stream in said first distillation zone to afford a first distillate enriched in a first component and a first bottoms enriched in a second component;
(d) conducting said first distillate to the adsorption zone and selectively adsorbing a portion of the second component to afford a second stream depleted in the second component;
(e) passing the second stream to the second distillation zone and fractionating to afford a second distillate enriched in the first component and a second bottoms; and
(f) collecting the second distillate from the second distillation zone.

5,571,388
SEQUENCING NEAR INFRARED AND INFRARED FLUORESCENSE LABELED DNA FOR DETECTING USING LASER DIODES AND SUITABLE LABELS THEREOF

Gabor Patonay, Stone Mountain, Ga.; Narasimhachari Narayanan, Lincoln, Nebr.; Lucjan Strekowski, Stone Mountain, Ga.; Lyle R. Middendorf, Lincoln, Nebr., and Malgorzata Lipowska, Decatur, Ga., assignors to Li-Cor, Inc., Lincoln, Nebr.

Continuation-in-part of Ser. No. 860,140, Mar. 30, 1992, Pat. No. 5,366,603, which is a divisIon of Ser. No. 763,230, Sep. 20, 1991, Pat. No. 5,230,781, which is a continuation-in-part of Ser. No. 570,503, Aug. 21, 1990, Pat. No. 5,207,880, which is a continuation-in-part of Ser. No. 78,279, Jul. 27, 1987, abandoned, which is a division of Ser. No. 594,676, Mar. 29, 1984, Pat. No. 4,729,947. This application Mar. 1, 1994, Ser. No. 204,627
Int. Cl.[6] G01N *27/26;27/447;* **C12Q** *1/68*
U.S. Cl. 204—461 **4 Claims**

1. A method of identifying strands of DNA comprising the steps of:
marking the strands with fluorescent labels that emit light in a region of wavelengths including at least one wavelength within the infrared and near infrared region wherein the fluorescent label includes a chromophore having the formula:

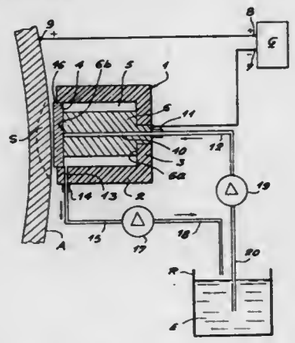


where X is $(CH_2)_n$; n=4–10 or X is —CH_2—CH_2— O—CH_2—CH_2—O—CH_2—CH_2—;
irradiating the strands with light having a wavelength withio one of the infrared and near infrared regions; and
detecting the light emitted from the fluorescent labels.

5,571,389
DEVICE FOR THE ELECTROCHEMICAL TREATMENT ESPECIALLY THE LOCAL ELECTROCHEMICAL TREATMENT, OF CONDUCTIVE SUBSTRATE

Patrick K. Kerampran, Vitre, France, assignor to Dalic, Vitre, France

Filed Dec. 13, 1994, Ser. No. 364,681
Claims priority, application France, Dec. 16, 1993, 93 15166
Int. Cl.[6] C25D *17/00*
U.S. Cl. 204—224 R **17 Claims**



1. Device for localized electrochemical treatment of a conducting substrate by movement of said device over said substrate, said device being used with a source of electric current having a pair of terminals, said device being capable of being used in any position, which device comprises: a casing provided with an opening and delimiting a space, an electrode arranged in the space and being connectable to one of the terminals of the source of electric current, the conducting substrate being connectable to the other terminal of said source, and an electrolyte inlet and an electrolyte outlet both communicating with the space, characterized in that said device moreover comprises a body made of absorbent, flexible material which does not conduct electricity and which is permeable to gases and liquids, said body being in contact with the said electrode and closing off said opening, projecting beyond the latter, a first pump mounted on said electrolyte outlet, said first and second pumps having a common driving shaft and the flow rate of the second pump being greater than that of the first pump so as to create in

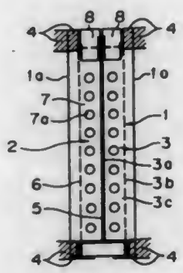
said space an underpressure sufficient to prevent any outflow of electrolyte through said opening.

5,571,390

BIPOLAR ION EXCHANGE MEMBRANE ELECTROLYTIC CELL

Tatsuhito Kimura, Ichihara; Mikio Suzuki, and Takahiro Uchibori, both of Tokyo, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Sep. 20, 1995, Ser. No. 530,623
Claims priority, application Japan, Sep. 30, 1994, 6-259775
Int. Cl.[6] C25B *9/04;13/02*
U.S. Cl. 204—254 **5 Claims**



1. A bipolar ion exchange membrane electrolytic cell comprising:

plural compartment frame units having ion exchange membranes interposed therebetween, each of said compartment frame units including an anode compartment frame and a cathode compartment frame;

said anode compartment frame having an anode back plate and an anode meshed electrode plate arranged substantially in parallel, said cathode compartment frame having a cathode back plate and a cathode meshed electrode plate arranged substantially in parallel, said anode and cathode back plates being connected to each other;

an inverse U-shaped portion formed by bending an upper portion of each of said anode and cathode back plates;

a U-shaped channel member arranged in and fixed to said inverse U-shaped portion such that respective opening ends of said inverse U-shaped portion and said U-shaped channel member face each other to form a gas-liquid separating chamber therein and a passage between said anode or cathode back plate and said U-shaped channel.

5,571,391

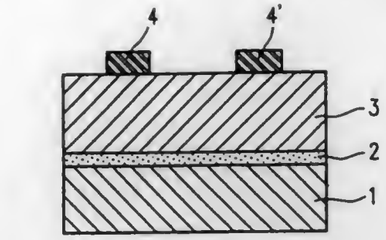
ELECTRODE STRUCTURE AND METHOD FOR FABRICATING THE SAME

Nobuaki Teraguchi, Nara-ken, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 14, 1995, Ser. No. 502,349
Claims priority, application Japan, Jul. 15, 1994, 6-164379
Int. Cl.[6] C25B *11/00*
U.S. Cl. 204—290 R **6 Claims**

1. An electrode structure comprising an n-type $Al_xGa_yIn_{1-x-y}N$ ($0 \leq x \leq 1$, $0 \leq y \leq 1$, $x+y \leq 1$) semiconductor layer and an electrode layer formed on the semiconductor layer,

wherein the electrode layer is made of a metal silicide and, when a metal contained in the metal silicide is nitrified, a free energy of the metal nitride becomes smaller than a free energy of the metal contained in the metal silicide.

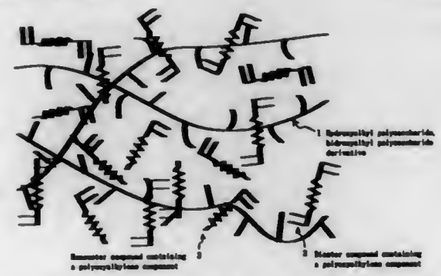


5,571,392

SOLID ION CONDUCTIVE POLYMER ELECTROLYTE AND COMPOSITION AND PRODUCTION METHOD THEREFOR

Takaya Sato; Hiroshi Yoshida; Soichiro Takenishi, all of Tokyo; Yasunobu Kodama, Hyogo; Tsukasa Ito, Hyogo, and Takashi Sakai, Hyogo, all of Japan, assignors to Nisshinbo Industries, Inc., Tokyo, and Sanyo Electric Co., Ltd., Osaka, both of Japan

Filed Nov. 22, 1995, Ser. No. 562,062
Claims priority, application Japan, Nov. 22, 1994, 6-311272
Int. Cl.[6] H01M *6/18*
U.S. Cl. 204—296 **7 Claims**



1. A composition for a solid polymer electrolyte comprising 100 parts by weight of hydroxyalkyl polysaccharide and/or hydroxyalkyl polysaccharide derivative, 10–500 parts by weight of a diester compound containing a polyoxyalkylene component and a monoester compound containing a polyoxyalkylene component, and 5–1000 parts by weight of an ion conductive metallic salt.

5,571,393

MAGNET HOUSING FOR A SPUTTERING CATHODE

Clifford L. Taylor, Nerstrand, and Daniel T. Crowley, Owatonna, both of Minn., assignors to Viratec Thin Films, Inc., Faribault, Minn.

Filed Aug. 24, 1994, Ser. No. 295,324
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—298.21 **9 Claims**

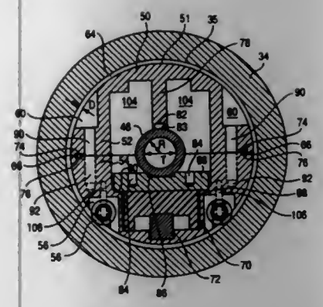
1. A cylindrical magnetron cathode, comprising:

a magnet array;

a magnet housing having an upper and lower section, an outer surface and a cooling fluid passage therethrough, said lower section including a sealed magnet cavity, said magnet array disposed therein, and at least one pair of roller assemblies including a roller portion thereof disposed in recesses on either side of said magnet cavity, such that said roller portion extends beyond said outer surface of said magnet housing; and

a cathode wall portion having an inner surface, said cathode wall portion being within a sputtering zone during sputtering operation, said roller portion engaging said inner surface of said cathode wall portion to prevent the deformation of said magnet housing due to magnetic forces; and wherein

said magnet housing is located inside said cathode wall portion with a distance between said magnet housing outer surface and said inner surface of said cathode wall portion being less than one-half of the greatest inner transverse dimension of said cooling fluid passage.

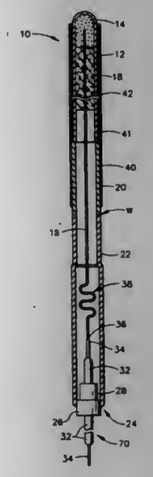


5,571,394

MONOLITHIC SENSOR SWITCH FOR DETECTING PRESENCE OF STOICHIOMETRIC H_2/O_2 RATIO IN BOILING WATER REACTOR CIRCUIT

Samson Hettiaracbchi, Menlo Park; Maurice E. Indig, Fremont, and Robert J. Law, Livermore, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed May 8, 1995, Ser. No. 437,269
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—400 **20 Claims**



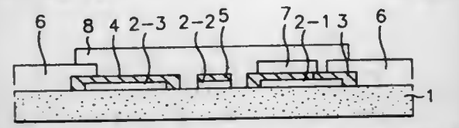
1. An electrode probe for use in monitoring electrochemical potentials, comprising a hydrogen electrode, a first electrical conductor, means for electrically connecting said hydrogen electrode to said first electrical conductor, a reference electrode, a second electrical conductor, and means for electrically connecting said reference electrode to said second electrical connector, wherein said hydrogen electrode has openings, is made of noble metal and is arranged to surround said reference electrode with a gap therebetween.

5,571,395

BREATH ALCOHOL ANALYZER USING A BIOSENSOR

Je Kyun Park, Seoul, and Hee J. Lee, Kwangmyung-si, both of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 4, 1994, Ser. No. 334,128
Claims priority, application Rep. of Korea, Nov. 4, 1993, 23296/1993
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—403 **8 Claims**



1. A breath alcohol analyzer for measuring alcohol concentration comprises:

a biosensor for reacting with a vapor-phase alcohol gas, the biosensor including:

an insulating substrate,

an amperometric device formed on the insulation substrate and having a plurality of conductive lines and connective pads and a plurality of electrodes,

an enzyme immobilized layer formed on one of the plurality of electrodes of the amperometric device,

an outer membrane formed on the substrate having the plurality of electrodes for forming an electrode system, and

an insulating membrane formed on said substrate except on the outer membrane;

a sensor and amplifying circuit for sensing current generated from the reaction of the biosensor with the alcohol gas and amplifying the current;

an analog-to-digital converter for converting a signal output from said sensor and amplifying circuit to a digital signal;

a microprocessor for processing said digital signal output from said analog-to-digital converter and determining a drinking degree corresponding to the digital signal, the microprocessor outputting a signal indicating the drinking degree; and

a display for receiving the signal output from the microprocessor and displaying the drinking degree.

5,571,396

FLUID ANALYSIS SYSTEM AND SENSING ELECTRODE, ELECTRODE ASSEMBLY, AND SENSING MODULE COMPONENTS

Alan D. Cormier, Newburyport, Mass.; Melvin S. Weinberg, Nashua; Ronald L. Jones, Newton, both of N.H., and Janet D. Vitiello, Bedford, Mass., assignors to Dade International Inc., Deerfield, Ill.

Filed Jul. 12, 1993, Ser. No. 90,581
Int. Cl.[6] G01N *27/403;27/414*
U.S. Cl. 204—418 **17 Claims**

1. An electrode assembly for use in measuring the activity of ions in a fluid sample, the assembly comprising at least one electrode holder and at least one sensing electrode, wherein the electrode bolder comprises:

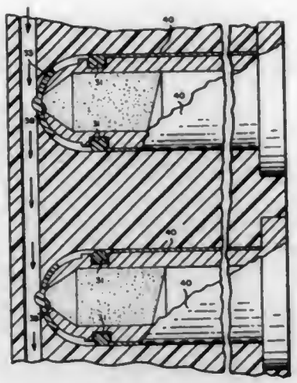
a hollow cylindrical holding member adapted to receive the sensing electrode, the hollow cylindrical holding member terminating at one end in a hemispherical section having an opening in communication with a flow path for the sample and at the opposite end in an opening to receive the electrode;

wherein the electrode comprises:

(i) a cylindrical body member;

(ii) a contact member disposed at one end of the body member, wherein the contact member is adapted to make electrical connection with a resiliently mounted electrical contact for receiving electrical signals from the electrode when the sensing electrode is disposed in the electrode holder;

(iii) a hemispherical sensing tip disposed at one end of the cylindrical body member, wherein the sensing tip is provided



with an opening configured to align with and fit within the opening in the hemispherical section of the electrode holder when the electrode is placed therein;

(iv) a compliant ion selective membrane material bonded on the outer surface of the hemispherical sensing tip and sealing the opening therein and, when the electrode is disposed in the holder, simultaneously (a) providing sealing contact with the opening between the flow path and the electrode holder, and (b) protruding into the flow path to provide contact with the sample;

(v) an internal reference electrode disposed in the body member and in electrical contact with the sensing tip and the contact member; and

(vi) at least one positioning member disposed on the body member for positioning the electrode in the electrode holder.

5,571,397

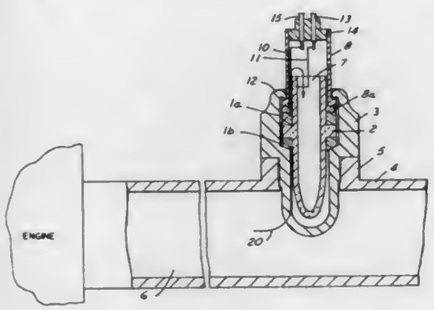
BORON NITRIDE EXHAUST SEAL

David C. Weber, Toledo, Ohio, assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 5, 1995, Ser. No. 498,446

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—428 **5 Claims**



1. An internal combustion engine having an exhaust gas flow path including a sealing member for restricting the flow of exhaust gas, said sealing member being formed of boron nitride.

5,571,398

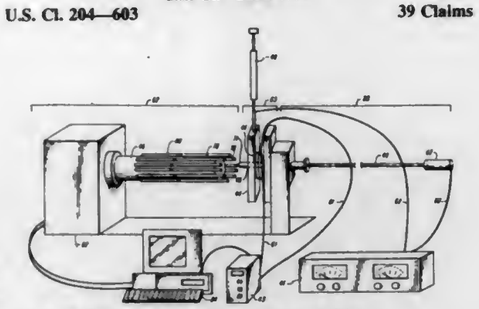
PRECISE CAPILLARY ELECTROPHORETIC INTERFACE FOR SAMPLE COLLECTION OR ANALYSIS

Barry L. Karger, Newton; Frantisek Foret, Malden, and Odilo Müller, Chestnut Hill, all of Mass., assignors to Northeastern University, Boston, Mass.

Filed Dec. 23, 1994, Ser. No. 363,474

Int. Cl.[6] C25B *9/00*

U.S. Cl. 204—603 **39 Claims**



1. A capillary electrophoretic system comprising:

a separation capillary having an inlet end and an outlet end, said capillary having the capacity to separate a sample of molecules traversing said capillary from said inlet end to said outlet end in an electric field;

an electrophoresis buffer reservoir positioned to provide electrophoresis buffer at said inlet end of said capillary;

a detector positioned less than ten centimeters from said outlet end of said capillary, said detector having the capacity to detect said separated molecules, without post-separation processing of said separated molecules prior to detection; and

a sheath surrounding said outlet end of said capillary, said sheath positioned to permit a collection buffer to flow over said outlet end and mix with separated molecules from said sample as said separated molecules exit from said outlet end, wherein said capillary, said electrophoresis buffer reservoir and said collection buffer in said sheath are in electrical contact in an electrical circuit, said circuit having the capacity to provide said electric field.

5,571,399

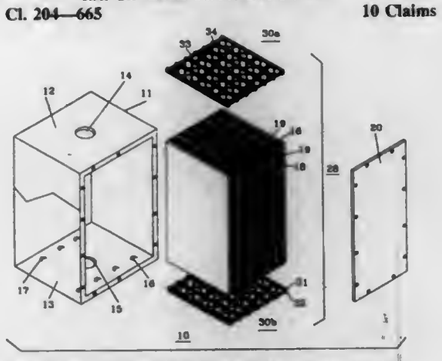
ELECTROSTATIC FLUID FILTER AND SYSTEM

Robert H. Allen, 270 Willow Wood St., Plano, Tex. 75094

Filed Jan. 9, 1995, Ser. No. 370,305

Int. Cl.[6] B01D *35/06*; **B03C** *5/02*

U.S. Cl. 204—665 **10 Claims**



1. A filter for removing particles from fluids, comprising:

a housing having first and second ends;

a plurality of plates, adapted to be charged, parallel to each other and extending from said first to said second end of said housing;

a pair of holder/spacers for holding said plates, each holder spacer comprising a mesh of an insulating material with a plurality of parallel guide tracks for holding a plurality of parallel plates, and each guide track is adjacent to a conductive strip which is in electrical contact with a plate when the plate is in a guide track;

a plurality of filter elements, one each placed between adjacent plates;

a first fluid inlet in said first end of said housing, and a fluid outlet in said second end of said housing for flowing a fluid through the filter; and

two electrical terminals on one of said first or second ends for providing a positive charge to alternate ones of said plates, and a negative charge to different alternate ones of said plates.

5,571,400

PROCESS FOR THE ELECTROSYNTHESIS OF ALDEHYDES

Thomas Karcher, Hofheim, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Aug. 16, 1995, Ser. No. 515,911

Claims priority, application Germany, Aug. 16, 1994, 44 28 905.7

Int. Cl.[6] C25B *3/00*

U.S. Cl. 205—448 **14 Claims**

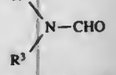
1. A process for the electrosynthesis of an aldehyde of the formula (I)

$$R^1—CHO \quad (I)$$

in which R^1 is an aryl or alkyl radical, comprising the step of: electrolyzing an organic halide of the formula (II)

$$R^1—Hal \quad (II)$$

in which Hal is chlorine or bromine and an N,N-disubstituted formamide of the formula (III)



(III)

in which R^2 and R^3 are alkyl or aryl

in a cell equipped with cathodic and anodic electrodes and that has a chamber, wherein the anode is self-consuming and comprises a reducing metal, and the cathode consist of lead.

5,571,401

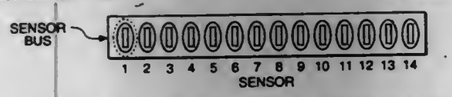
SENSOR ARRAYS FOR DETECTING ANALYTES IN FLUIDS

Nathan S. Lewis, La Canada, Calif., and Michael S. Freund, Allentown, Pa., assignors to California Institute of Technology, Pasadena, Calif.

Filed Mar. 27, 1995, Ser. No. 410,809

Int. Cl.[6] G01N *27/26*

U.S. Cl. 205—787 **10 Claims**



7. A method for detecting the presence of an analyte in a fluid, said method comprising:

resistively sensing the presence of an analyte in a fluid with a sensor array comprising at least first and second chemically sensitive resistors each comprising a mixture of nonconductive organic polymer and a conductive material compositionally different than said nonconductive organic polymer, each resistor providing an electrical path through said mixture of nonconductive organic polymer and said conductive material, a first electrical resistance when contacted with a first fluid comprising a chemical analyte at a first concentration and a second different electrical resistance when contacted with a second fluid comprising said chemical analyte at a second different concentration.

5,571,402

Patent Not Issued For This Number

5,571,403

PROCESS FOR EXTRACTING HYDROCARBONS FROM DIATOMITE

Thomas G. Scott; Frederick B. Seufert, Houston, and Edward J. Hanzlik, Katy, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 6, 1995, Ser. No. 468,905

Int. Cl.[6] C10G *1/04*

U.S. Cl. 208—428 **22 Claims**

1. An improved process for extracting hydrocarbons from a diatomite ore which comprises in combination the steps of:

a) reducing the particle size of the ore to form a processed ore;

b) grinding the processed ore in an enclosed pin mixer without a binder and without drying step to form pelletized ore, wherein the addition of water is optional;

c) feeding the pelletized ore into each section or cell of a rotating extractor unit capable of countercurrent extraction and containing 5–8 sections to form a column of pelletized ore in each section;

d) distributing a solvent from the top of each section of the rotating extractor consecutively, counterclockwise to the rotation of the extractor, and allowing the solvent to permeate the pelletized ore column in each section to form a hydrocarbon-rich solvent stream while leaving behind extracted spent ore mixture wherein the extraction cycle for each section within the extraction comprises:

a) loading pelletized ore into the basket;

b) solvent extracting in 5–8 stages counter-currently;

c) draining the extracted ore;

d) dumping the spent ore from the basket for removal from the extractor enclosure; and

e) transporting to a desolventizer, wherein the solvent is initially nonindigenous to the extracted hydrocarbon and is subsequently diluted with extracted hydrocarbon and becomes indigenous to the extracted hydrocarbon as the cycle continues;

e) separating the hydrocarbon solvent stream to form a hydrocarbon product stream and an extracting solvent stream;

f) removing the spent ore mixture from the extracting zone;

g) recycling the extracting solvent; and

h) recovering the hydrocarbon product.

5,571,404

BELT FILTER WITH MEANS TO ADVANCE THE BELT RESPONSIVE TO A CAPACITANCE SIGNAL

Ulrich Derenthal, Bad Kreuznach, Germany, assignor to Pannevis B.V., Netherlands

Filed Oct. 31, 1994, Ser. No. 332,823

Int. Cl.[6] B01D *33/04*

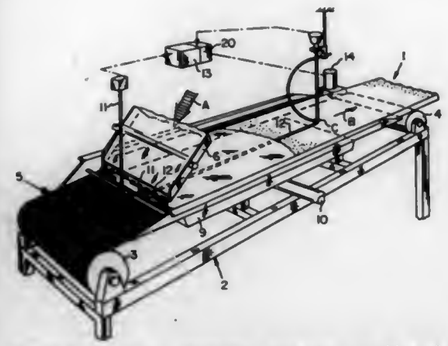
U.S. Cl. 210—97 **8 Claims**

1. An apparatus for separating into solid material and liquid a mixture thereof, comprising:

movable belt filtering means for filtering the mixture;

feed means for supplying the mixture onto said belt filtering means;

suction means for drawing off liquid from the mixture through said belt filtering means; and



measuring means for continuously measuring a position of an edge of a liquid pool on said belt filtering means, said measuring means comprising a capacitive sensor extending substantially along an upper surface of said belt filtering means.

5,571,405

Patent Not Issued For This Number

5,571,406

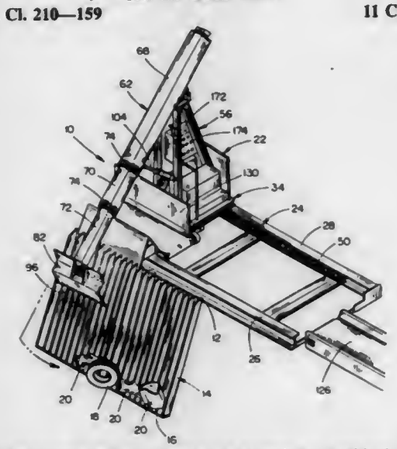
ROVING BAR SCREEN

Herman E. Mensching, R.R. 3, Box 113M, Missouri Valley, Iowa 51555

Filed May 17, 1995, Ser. No. 443,156

Int. Cl.[6] B01D *29/64*

U.S. Cl. 210—159 **11 Claims**



1. A laterally moveable bar screen operative to positively clean and remove debris from the upstream front side of a bar rack disposed across a liquid stream, said bar screen comprising,

a traveling framework,

support means for supporting said traveling framework, said support means being fixedly attached to at least one side of said liquid stream and adjacent the top of a bar rack for lateral movement back and forth across the top of said bar rack,

a telescoping arm having a top end and an extendable lower end,

a rake head mounted on said lower end of the telescoping arm for raking debris from said bar rack at times,

pivotal support means for supporting said telescoping arm on said traveling framework for pivotal movement of said arm between a raking position wherein said rake head is positioned in raking relation to said bar rack and an extension position wherein said rake head is positioned in clearance relation from said bar rack for extending past debris accumulated thereon,

telescoping means for extending and retracting said telescoping arm between an extended position wherein said rake head is situated adjacent the bottom edge of said bar rack and a retracted position wherein said rake head is positioned adjacent the top edge of said bar rack,

tilt means for pivoting said telescoping arm between said raking and extension positions,

screening collection means associated with said traveling frame work for receiving debris raked from said bar rack by said rake head upon retraction of said telescoping arm to the retracted position, and

drive means for laterally moving said traveling framework on said support means for laterally repositioning said rake head relative to said bar rack.

5,571,407

HORIZONTAL DRAIN

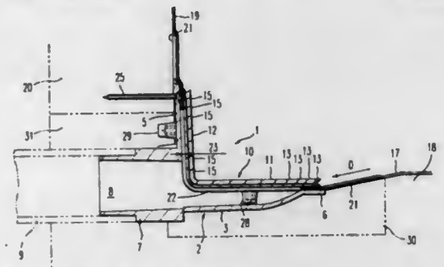
Setsuo Kato, Tokyo, Japan, assignor to Aluteck Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1995, Ser. No. 393,357

Claims priority, application Japan, Mar. 4, 1994, 6-034607

Int. Cl.[6] E03F *5/06*

U.S. Cl. 210—164 **8 Claims**



6. A horizontal drain, comprising:

a drain main body having a pan mountable in a recess on a floor and

a vertical flange located at a downstream end of the pan in the direction of flow of rainwater and mountable on a wall, and a drain cover having a horizontal cover covering the pan and a vertical cover located at a downstream end of the horizontal cover and mounted in a spaced-apart relationship with said vertical flange, said pan having a pipe-like body integrally connected therewith at a downstream end of the pan, said pipe-like body extending horizontally, connecting with a drain pipe and additionally having a drain bore communicating with the pan, said horizontal cover having an upper surface provided with a plurality of first guide ridges which extend from an outer periphery of the horizontal cover toward a lateral center portion of the horizontal cover in the direction of flow of rainwater, each of said first guide ridges being inclined such that an upper end of each of the first guide ridges is positioned further away from the pipe-like body than a lower end thereof, a plurality of first guide gaps guiding rainwater into the pan being defined between the adjacent first guide ridges, said vertical cover having a front surface provided with a plurality of second guide ridges which extend from an outer periphery of the vertical cover toward a lateral center portion of the vertical cover in the direction of flow of rainwater, each of said second guide ridges being inclined such that an upper end thereof is at higher position than a base end thereof, and wherein second guide gaps guiding rainwater into the pan through a gap between the vertical flange and the vertical cover are respectively defined between the adjacent second guide ridges.

5,571,408

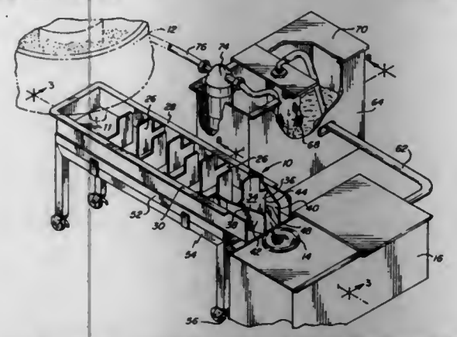
COMPOUND CLARIFICATION SYSTEM

William R. Rising, 221 Peachtree, Elk Grove Village, Ill. 60007

Filed Apr. 21, 1995, Ser. No. 426,025

Int. Cl.[6] B01D *35/06*

U.S. Cl. 210—167 **11 Claims**



1. A compound clarification system including an apparatus for cleaning and recycling a fluid deburring compound containing contaminant solids comprising:

filter chute means for transporting fluid deburring compound received from a metal deburring apparatus to a further filtering apparatus, said filter chute means including a bottom wall defining an upper surface and a lower surface, a pair of opposed sidewalls extending upwardly from opposed sides of said bottom wall, an inlet end, and an outlet end;

table means for supporting said filter chute means, said table means including leg means defining free ends which terminate in a horizontal reference plane, wherein said table means is configured and arranged to support said filter chute means such that said bottom wall has a positive angle of inclination with respect to said horizontal reference plane and such that said outlet end is elevated with respect to said inlet end;

a plurality of spaced baffle plates, said baffle plates being positioned on the upper surface of said bottom wall and on alternate ones of said opposed sidewalls and extending inwardly toward the respective other one of said opposed sidewalls to provide a positively inclined tortuous path for said fluid, resulting in solids in said fluid settling upon the upper surface of the bottom wall of said chute means;

a plurality of magnets disposed adjacent the lower surface of said bottom wall of said filter chute means arranged to providing a magnetic field covering said chute means to separate ferrous solids from said fluid which are subsequently collected on the upper surface of the bottom wall of said chute means;

a further filtering apparatus including filter bag purification means disposed adjacent said outlet end of said filter chute means for removing any remaining solids in said fluid; and

means connected to said further filtering apparatus for returning filtered fluid to said deburring apparatus.

5,571,409

AQUARIUM WATERFALL ASSEMBLY

Jerry L. Scarborough, 900 Berry La., Longview, Tex. 75603

Filed Aug. 22, 1994, Ser. No. 293,900

Int. Cl.[6] A01K *63/04*

U.S. Cl. 210—169 **8 Claims**

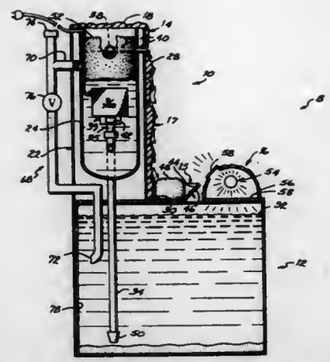
1. An aquarium waterfall assembly, comprising:

a simulated waterfall structure having a waterfall surface, said simulated waterfall structure constructed and arranged to be mounted on an aquarium;

a pump reservoir containing a pump having a pump housing, an intake opening and a discharge port, said intake opening connected to an inflow line extending into said pump reservoir, said inflow line having an opening outside said pump reservoir for allowing water to be drawn through said pump and into said pump reservoir from an aquarium on which said simulated waterfall structure is mounted;

an outlet leading from said pump reservoir to said waterfall surface of said simulated waterfall structure, wherein pumping action of said pump causes water to pass from said reservoir through said outlet and over said waterfall surface; and

a waterfall bypass line connected to said pump reservoir and including a valve for controlling flow of water therein, whereby when said valve is open, water from said reservoir passes through said waterfall bypass line and bypasses said outlet.



5,571,410

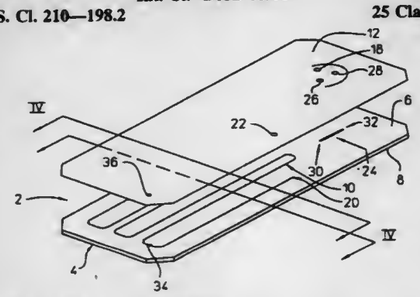
FULLY INTEGRATED MINIATURIZED PLANAR LIQUID SAMPLE HANDLING AND ANALYSIS DEVICE

Sally A. Swedberg, Los Altos, Calif.; Patrick Kaltenbach, Bischweier, Germany; Klaus E. Witt, Keltern, Germany; Fritz Bek, Waldbronn, Germany, and Laurie S. Mittelstadt, Belmont, Calif., assignors to Hewlett Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 326,111, Oct. 19, 1994, Pat. No. 5,500,071. This application Jun. 7, 1995, Ser. No. 486,024

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—198.2 **25 Claims**



17. A μ-TAS device comprising:

(a) a support body formed from a substrate comprised of a material other than silicon or silicon dioxide, said support body having first and second component halves each having substantially planar interior surfaces;

(b) a first microchannel laser-ablated in the interior surface of the first support body half and a second microchannel laser-ablated in the interior surface of the second support body half, wherein said first and second microchannels are arranged so as to provide the mirror image of the other;

(c) a sample processing compartment formed by aligning the interior surfaces of the support body halves in facing abutment with each other whereby the microchannels define said

sample processing compartment and wherein said sample processing compartment comprises sample handling regions which define a sample flow component in fluid communication with a sample treatment component; and

(d) at least one inlet port and at least one outlet port communicating with the sample processing compartment, said ports enabling the passage of fluid from an external source through the sample processing compartment.

5,571,411

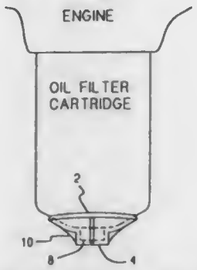
MAGNETIC ATTACHMENT FOR FILTERING OIL

Norman P. Butler; James Cheng, and Li K. Pui, all of 7755 Arjons Dr., San Diego, Calif. 92126

Continuation of Ser. No. 558,385, Nov. 16, 1995, abandoned, which is a continuation of Ser. No. 227,273, Apr. 13, 1994, abandoned. This application Apr. 8, 1996, Ser. No. 629,061

Int. Cl.[6] B01D *35/06*

U.S. Cl. 210—223 **9 Claims**



1. A device for capturing magnetically attractable particles from oil flowing through an oil passageway comprising:

magnetic means, held against an external side of the oil passageway, for producing a magnetic field within the oil passageway for attracting and holding ferrous particles against an internal side of the oil passageway opposite said means

means for holding said magnetic means against the oil passageway by use of at least a partial vacuum, and

an adhesive for further holding said magnetic means against the oil passageway.

5,571,412

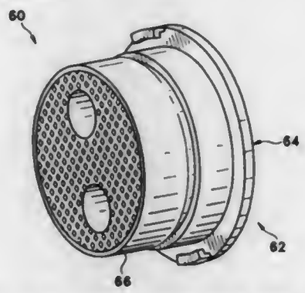
DENTAL FILTER ASSEMBLY

Robert A. Neril, 1370 Hayne Rd., Hillsborough, Calif. 94010

Filed Oct. 28, 1994, Ser. No. 331,124

Int. Cl.[6] B01D *27/00*

U.S. Cl. 210—232 **21 Claims**



1. A filter canister assembly for receiving waste from a dental cuspidor, comprising:

a canister generally defining an internal chamber and having an open end,

an outlet means, connected to the canister and in fluid communication with the internal chamber, for connection to a source of suction to be applied to the canister,

inlet means in fluid communication with the interior of the chamber of the canister, for delivering waste material from said cuspidor, to be filtered, and

a disposable canister closure fitted to said open end of the canister, the closure having means for engagement with the canister to close the open end and for generally providing a seal with the canister when engaged with said open end, with a disposable filter secured to an underside of the canister closure by securing means, the disposable filter being so positioned in the internal chamber of the canister, when the closure is engaged on the canister, as to receive suction from the outlet means against an outlet side of the filter and to receive waste material from the inlet means at an opposite, inlet side of the filter,

whereby the filter of the filter canister can be quickly changed by removal and disposal of the canister closure and attached filter and replacement with another disposable canister closure/filter combination.

5,571,413

COMPOSITE FILTER MATERIAL

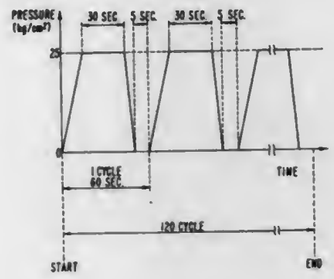
Yoshiaki Mogami, and Akira Moriya, both of Okayama, Japan, assignors to Junkosha Company Ltd., Tokyo, Japan

Filed Jun. 18, 1993, Ser. No. 80,022

Claims priority, application Japan, Jun. 22, 1992, 4-187583

Int. Cl.[6] B01D *29/00*

U.S. Cl. 210—489 **4 Claims**



1. A composite filter material comprising layered material in the sequence of:

(a) a porous support layer of a woven or non-woven sheet of synthetic polymer fibers,

(b) a porous buffer layer, more extensible and compressible than said support layer, of a non-woven sheet of synthetic polymer fibers, and

(c) a filtration layer of porous polytetrafluoroethylene membrane;

said layers having adjacent surfaces in parallel laminar relationship;

said layers adhered by discrete separated primary and secondary bonds;

said primary bonds extending from said support layer through the full thickness of said buffer layer to said filtration layer so that all three layers are bonded together at a primary bond site,

said primary bonds separated, one from another, by a distance not greater than 5 millimeters;

said secondary bonds formed only between and adhering the surfaces of adjacent layers,

said secondary bonds sites located in the spaces between said primary bond sites and separated, one from another, by a distance not greater than 1 millimeter.

5,571,414

Patent Not Issued For This Number

5,571,415

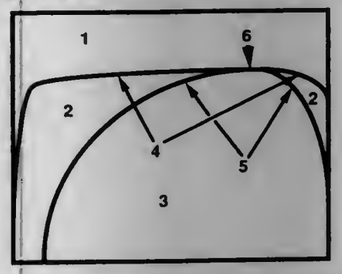
METHOD FOR PREPARING POROUS POLYMER STRUCTURES

Richard R. Clikeman, Washington Crossing, and David A. Armbruster, West Chester, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 2, 1994, Ser. No. 333,173

Int. Cl.[6] B01D *71/68*

U.S. Cl. 210—490 **17 Claims**



15. A process for preparing a multi-layer porous polymer article comprising the steps of:

a. forming at least two separate solutions independently comprising diphenylsulfone and a polymer selected from the group consisting of polysulfone, polyarylsulfone; and polyphenylene oxide at temperatures of from 130° C. to 230° C.;

b. lowering the temperature of at least one of the solutions below the temperature at which the solution viscosity prevents phase separation of the polymer and the diphenylsulfone;

c. forming a layer of each solution;

b. forming a non-porous article from the layers; and

d. contacting the non-porous article with a solvent mixture comprising acetone and methanol.

17. An article prepared by the process of claim 15.

5,571,416

CONTINUOUS DRAIN FOR SOLIDS SEPARATED BY A CENTRIFUGAL SEPARATOR

Lee Halsup, Dunwoody, Ga., and Phil Pelletier, Bel Air, Md., assignors to Claude Laval Corporation, Fresno, Calif.

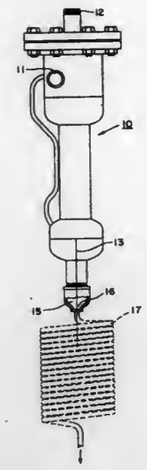
Filed Jun. 6, 1995, Ser. No. 472,703

Int. Cl.[6] B01D *21/26*

U.S. Cl. 210—512.1 **3 Claims**

1. In a separator for separating solids from a mixture of solids and liquids, said separator having a cylindrical separation chamber into which said mixture is tangentially introduced, and from which at least some of said solids migrate to a lower collection chamber, said chamber having a drain port through which said solids, accompanied by some of said liquid are to be purged, said solids having a specific gravity, the improvement comprising:

a drain conduit connected to said drain port to receive a thickened mixture of solids and liquid, said conduit having parameters of friction factor, dimension of inside diameter, and dimension of length, said parameters being selected such that said thickened mixture completely fills said drain conduit, continuously passing through said conduit at a velocity sufficient to prevent settling of solids in said conduit as could prevent flow through said conduit, sufficient to prevent such velocity as would enable free-flowing liquid to pass through such conduit, and said diameter being sufficiently larger than the largest expected size of solids as to enable passage of said solids.



5,571,417

METHOD FOR TREATING PHOTOLITHOGRAPHIC DEVELOPER AND STRIPPER WASTE STREAMS CONTAINING RESIST OR SOLDER MASK AND GAMMA BUTYROLACTONE OR BENZYL ALCOHOL

Anilkumar C. Bhatt, Johnson City; Gary S. Ksenak, Endwell; Kostas I. Papathomas, Endicott; James A. Shurtleff, Endwell, and Jerome J. Wagner, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 160,339, Dec. 1, 1993, abandoned, which is a division of Ser. No. 781,542, Oct. 22, 1991, Pat. No. 5,268,260. This application Dec. 28, 1994, Ser. No. 365,088

Int. Cl.[6] C02F *3/02*

U.S. Cl. 210—620 **12 Claims**

1. A method of treating a waste stream from a photolithographic process producing a gamma-butyrolactone waste stream consisting essentially of the following steps:

(a) collecting the waste stream at a pH of about 8 to 10;

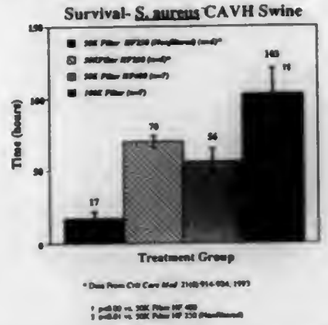
(b) acidifying the waste stream to a pH of about 7.5 to 8.5; and

(c) aerating the acidified waste stream in an activated biomass capable of aerobically metabolizing the gamma-butyrolactone and thereby forming water and carbon dioxide and reducing the biological oxygen demand of the gamma-butyrolactone.

5,571,418
HEMOFILTRATION OF TOXIC MEDIATOR-RELATED DISEASE

Patrice A. Lee, 2425 Winona Dr., Plano, Tex. 75074; James R. Matson, 7826 Mason Dells Dr., Dallas, Tex. 75023, and Robert W. Pryor, 3341 Sage Brush Trail, Plano, Tex. 75023

Continuation-in-part of Ser. No. 109,750, Aug. 20, 1993, abandoned. This application Jul. 6, 1994, Ser. No. 271,136
Int. Cl.[6] B01D *61/00;61/14;* A61M *1/38*
U.S. Cl. 210—651 8 Claims

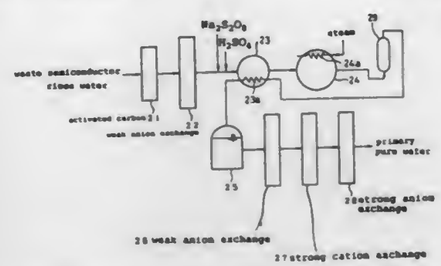


1. A method of treating a pathophysiological state caused by a toxic mediator-related disease consisting of hemofiltering blood with a filter, wherein said filter has a molecular weight exclusion limit of 100,000 to 150,000 Daltons and allows for passage of molecules with a molecular weight of about 70,000 Daltons in the presence of whole blood.

5,571,419
METHOD OF PRODUCING PURE WATER

Yoshinobu Obata; Nobuhiro Orita, and Hiroshi Kurobe, all of Tokyo, Japan, assignors to Kurita Water Insustries Ltd., Tokyo, Japan

PCT No. PCT/JP94/00152, § 371 Date Oct. 6, 1994, § 102(e) Date Oct. 6, 1994, PCT Pub. No. WO94/18127, PCT Pub. Date Aug. 18, 1994
PCT Filed Feb. 3, 1994, Ser. No. 302,806
Claims priority, application Japan, Feb. 3, 1993, 5-16281
Int. Cl.[6] C02F *1/42*
U.S. Cl. 210—664 6 Claims

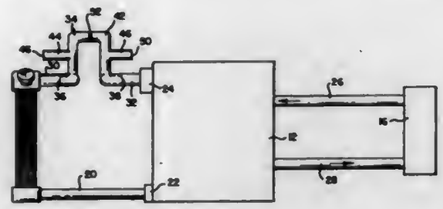


1. A method of producing pure water, comprising:
contacting raw water containing hydrofluoric acid and TOC components with a weak basic anion exchange resin to remove fluoride ions from the raw water,
making the raw water acidic so that pH is not more than 4.5, and heating the raw water in a presence of an oxidizing agent to decompose the TOC components, and
deionizing the raw water.

5,571,420
COOLING SYSTEM CHANGE OVER APPARATUS AND PROCESS

Richard F. Creeron, Valley Stream, N.Y.; Aleksei V. Gershun, Danbury, Conn.; Stephen M. Woodward, Lakeside, Conn., and Peter M. Woyciesjes, Woodbury, Conn., assignors to Prestone Products Corporation, Danbury, Conn.

Continuation of Ser. No. 751,411, Aug. 28, 1991, abandoned. This application Feb. 13, 1995, Ser. No. 431,494
Int. Cl.[6] C02F *1/62;1/28;1/42*
U.S. Cl. 210—665 29 Claims

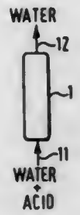


1. A process for the change-over of a first liquid in a cooling system of a vehicle with a second liquid where said second liquid displaces said first liquid, said cooling system having an engine with a water pump and a thermostat and having a radiator, having an upper radiator hose section connected to said radiator and an upper engine hose section connected to said engine wherein said process consists essentially of:
a) providing a volume of said second liquid to said upper radiator hose section while said engine is running;
b) providing liquid collecting means at said upper engine hose section while said engine is running; and
c) running said vehicle having said cooling system until a volume of said second liquid has displaced a volume of said first liquid from said cooling system to said collection means solely by action of the water pump.

5,571,421
PROCESS FOR SEPARATING COMPONENTS OF A LIQUID MIXTURE

Stephen R. Tennison, Weybridge, and Derrick J. Watson, East Yorkshire, both of England, assignors to BP Chemicals Limited & British Petroleum Co. P.L.C., London, England

Filed Jul. 19, 1994, Ser. No. 277,498
Claims priority, application United Kingdom, Jul. 21, 1993, 9315081
Int. Cl.[6] B01D *15/00*
U.S. Cl. 210—674 23 Claims

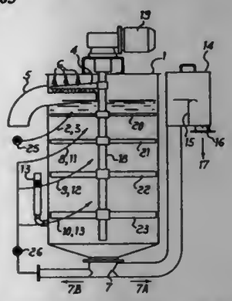


1. A process for separating components of a liquid mixture comprising a more adsorbable component (A) and a less adsorbable component (B) wherein the relative adsorbity of component (A), component (B) and a desorbent liquid (D) with respect to an adsorbent in an adsorption column is in the order D>A>B, which process comprises the steps in sequence of:
(a) passing the liquid mixture through an adsorption column containing the adsorbent and selectively adsorbing the more adsorbable component (A) while discharging a stream enriched in component (B);
(b) rinsing the adsorbent in the adsorption column after step (a) with desorbent liquid (D) which is immiscible with the less adsorbable component (B) whereby the more adsorbable component (A) is displaced from the adsorbent by desorbent (D) and withdrawing from the adsorption column a first liquid phase stream comprising a mixture of more adsorbable component (A) and less adsorbable component (B) and withdrawing from the adsorption column a second liquid phase stream comprising a mixture of desorbent (D) and more adsorbable component (A); and
(c) thermally displacing desorbent (D) from the adsorbent in the adsorption column after step (b).

5,571,422
METHOD FOR REMOVING IMPURITIES FROM A LIQUID

Flavio Magaraggia, Vicenza, Italy, assignor to Comer S.p.A., Vicenza, Italy

Division of Ser. No. 267,277, Jun. 28, 1994, Pat. No. 5,454,935. This application Jun. 12, 1995, Ser. No. 489,995
Claims priority, application Italy, Jul. 5, 1993, MI93A1455
Int. Cl.[6] C02F *1/24*
U.S. Cl. 210—703 7 Claims



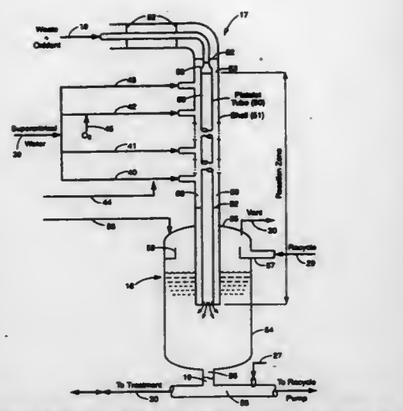
1. A method for removing impurities from a liquid including the steps of:
providing a tank having an upper and lower portion, a main inlet in the upper portion, an outlet located in the lower portion of said tank;
introducing gas or air together with the liquid to be purified through said main inlet;
providing inlets at different heights in the tank;
introducing into said inlets purified liquid drained off from said outlet together with gas or air; and
providing in the tank, mechanical rotating stirring element suitable to stir the liquid, wherein said mechanical rotating stirring element is at said different heights of the tank where the liquid together with gas or air is introduced through said inlets.

5,571,423
PROCESS AND APPARATUS FOR SUPERCRITICAL WATER OXIDATION

Ernest L. Daman, Mountainside, N.J., assignor to Foster Wheeler Development Corporation, Livingston, N.J.

Filed Oct. 14, 1994, Ser. No. 320,426
Int. Cl.[6] C02F *1/72*
U.S. Cl. 210—761 26 Claims

1. A process for the supercritical water oxidation of an organic waste material comprising:



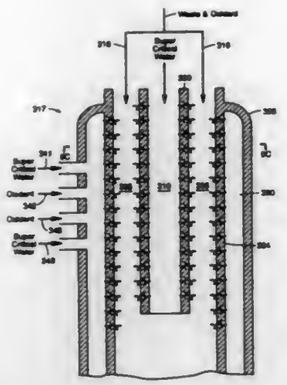
(a) feeding a pressurized aqueous mixture of said waste material and an oxidant source to a center reaction zone of a platelet tube reactor which is supported within an outer shell and whose outer surface defines, together with an inner surface of said shell, an annular space, a wall of said platelet tube being provided with fluid passages which permit the flow of fluid from said annular space into said center reaction zone through a plurality of apertures;
(b) igniting a fuel at an inlet of said reaction zone to increase the temperature of said pressurized aqueous mixture;
(c) feeding water heated and pressurized to at least supercritical conditions externally of said reactor to at least one point along said annular space surrounding said platelet tube reactor, wherein the resulting pressure in said annular space is higher than the pressure in the center reaction zone within said platelet tube such that said supercritical water flows from said annular space through said fluid passages in the wall of said platelet tube and into said center reaction zone through said plurality of apertures, forming a thin film of supercritical water over substantially the entire inner surface of said platelet tube and heating said mixture to supercritical reaction temperature; and
(d) reacting said organic waste with said oxidant in said reaction zone.

5,571,424
INTERNAL PLATELET HEAT SOURCE AND METHOD OF USE IN A SUPERCRITICAL WATER OXIDATION REACTOR

Kawaljit S. Ahluwalia, Montville, N.J., assignor to Foster Wheeler Development Corporation, Livingston, N.J.

Filed Feb. 27, 1995, Ser. No. 394,864
Int. Cl.[6] C02F *1/72*
U.S. Cl. 210—76.1 11 Claims

1. A process for the supercritical water oxidation of an organic waste material comprising:
feeding a pressurized aqueous mixture of the waste material and an oxidant source to a reaction zone of a compound platelet tube reactor which comprises inner and outer platelet tubes supported concentrically within a reactor shell, the compound reactor comprising, at least for part of its length, three elongated chambers: (i) a central chamber within the inner platelet tube, (ii) an outer annular chamber defined by the outer surface of the outer platelet tube and the inner surface of the reactor shell and (iii) an inner annular chamber comprising a reaction zone and defined by the outer surface of the inner platelet tube and the inner surface of the outer platelet tube, the inner and outer platelet tubes being formed from a plurality of thin plates assembled into tube shapes and provided with fluid passages, which permit the flow of fluid into the reaction zone through a plurality of apertures;



feeding heated supercritical water to (i) at least one point along said outer annular chamber and (ii) said central chamber under conditions such that supercritical water is injected into the reaction zone from both the outer annular chamber, through the wall of the outer platelet tube, and from the central chamber, through the wall of the inner platelet tube, forming thin films of protective supercritical water over substantially the entire surfaces which define the reaction zone and heating the mixture of waste material and oxidant to reaction temperature; and

reacting the organic waste with the oxidant in the reaction zone.

5,571,425

METHOD FOR MAKING A SINGLE CONE DISK, IN PARTICULAR A DRESSING WHEEL

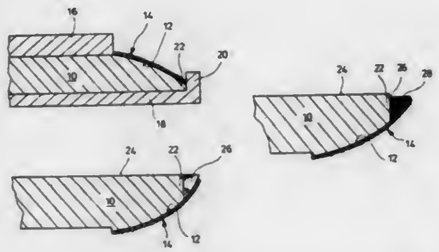
Hans-Jürgen Watzlaw, Kattendorf, Germany, assignor to Ernst Winter & Sohn diamantwerkzeuge GmbH & Co., Norderstedt, Germany

Filed Nov. 3, 1995, Ser. No. 552,380

Claims priority, application Germany, Dec. 3, 1994, 44 43 074.4

Int. Cl.[6] B44C *1/22*

U.S. Cl. 216—33 **6 Claims**



1. A method for making a single cone disk, comprising a metal base member having a main surface and head area coated by hard material grains so as to form a hard material grain layer fixed to said base member by metal bonding, in which method a pocket is formed at the back side of the head area of said base member while said metal bonded hard material grain layer is retained thereat, and thereafter the pocket is filled by hard material grains.

5,571,426

METHOD OF DETERMINING ELECTRIC DISCHARGE MACHINING CONDITIONS AND ELECTRIC DISCHARGE MACHINING CONTROLLER

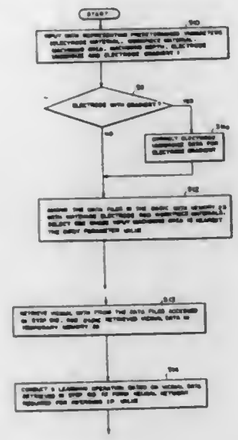
Osamu Akemura, Nakamachidai, Japan, assignor to Sodick Co., Ltd., Kanagawa, Japan

Filed Dec. 21, 1994, Ser. No. 360,419

Claims priority, application Japan, Dec. 22, 1993, 5-345596

Int. Cl.[6] B23H *1/02*

U.S. Cl. 219—69.17 **18 Claims**



17. An electric discharge machining controller for controlling electric discharge machining conditions in a machining gap formed between an electrode and a workpiece based on a set of predefined machining parameters including machining depth and electrode undersize, said controller comprising:

means for setting a set of predefined machining parameters including machining depth and electrode undersize;

a memory for storing data files including multiple sets of basic machining data indicative of relationships among electric discharge machining current machining depth and minimum electrode undersize;

selecting means for selecting at least two sets of basic machining data from among the multiple sets thereof, said at least two sets of basic machining data including data corresponding to or adjacent to the set values of machining depth and electrode undersize; and

means for inferring electric discharge machining current value on the basis of said at least two sets of basic machining data.

5,571,427

TORCH HEAD AND CABLE ASSEMBLY FOR A WELDING DEVICE

John Dimock, Housion, Tex., and James Watson, St. Charles, Ill., assignors to Weldcraft Products, Inc., Burbank, Calif.

Filed Apr. 3, 1995, Ser. No. 415,368

Int. Cl.[6] B23K *9/167*

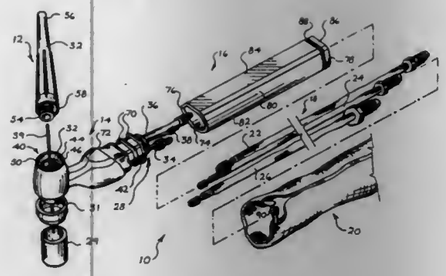
U.S. Cl. 219—75 **25 Claims**

1. A torch head for a TIG welding device comprising:

a back cap seal for receiving a back cap and electrically insulating a welding torch operator;

said back cap seal having an inner sealing wall and an outer sealing wall, wherein said inner sealing wall forms a first sealing surface with the back cap and said outer sealing wall forms a second sealing surface with the back cap; and

a handle connector for connecting the torch head to a handle.



5,571,428

SEMICONDUCTOR LEADFRAME AND ITS PRODUCTION METHOD AND PLASTIC ENCAPSULATED SEMICONDUCTOR DEVICE

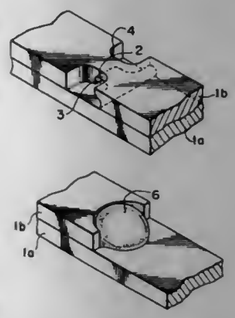
Asao Nishimura, Ushiku; Akihiro Yaguchi, Niihari-gun; Mitsuaki Haneda, Nishlibaraki-gun; Ichiro Anjoh, Koganei; Junichi Arita, Musashino; Akihiko Iwaya, Kokubunji, and Masahiro Ichitani, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 261,230, Jun. 16, 1994, which is a continuation of Ser. No. 5,036, Jan. 15, 1993, abandoned. This application Apr. 18, 1995, Ser. No. 423,735

Claims priority, application Japan, Jan. 17, 1992, 4-006522

Int. Cl.[6] B23K *26/00;28/02*

U.S. Cl. 219—121.64 **3 Claims**



1. A method of producing a leadframe for use in semiconductor devices, which comprises the steps of forming at least one lead in each of a plurality of element leadframes; placing said element leadframes one upon another so that leads are overlapped with each other and opposed surfaces of the overlapped leads are in face-to-face contact; and welding said overlapped leads to each other and at the same time cutting off one of said overlapped leads; wherein:

one of the opposed surfaces of the overlapped leads is provided with a recessed portion so that said opposed surfaces have surface portions that are spaced from each other; and

said leads are melted at regions including said spaced surface portions to weld the overlapped leads together and at the same time one of said leads which has said recessed portion is cut at the recessed portion.

5,571,429

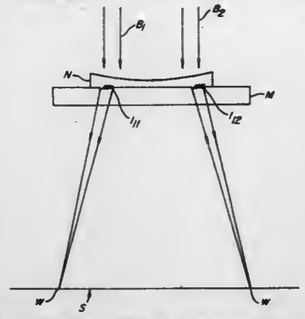
APPARATUS AND PROCESS FOR HIGH SPEED LAMINATE PROCESSING WITH COMPUTER GENERATED HOLOGRAMS

Adlai H. Smith; Bruce B. McArthur, both of San Diego, and Robert O. Hunter, Jr., Rancho Santa Fe, all of Calif., assignors to Litel Instruments, San Diego, Calif.

Filed Feb. 25, 1994, Ser. No. 201,600

Int. Cl.[6] B23K *26/06*

U.S. Cl. 219—121.68 **18 Claims**



7. An apparatus for ablating a substrate with a scanning beam of coherent light emanating from a coherent light source and passing through light beam scanning means, the apparatus for ablating including a lens and mask having at least one subaperture comprising combination:

a mask having an area for incidence of a scanning beam of coherent light along a linear path on the mask, the mask including subaperture groups with a plurality of discrete subapertures contained therein, at least one subaperture of the mask including a computer generated hologram for diverging in a first direction light from the scanning beam of coherent light incident upon the mask in a direction away from the linear path of a scanning beam of coherent light on the mask; and,

a negative lens mounted adjacent the mask for causing light incident upon the mask at the subaperture to be diverged in the first direction relative to the mask whereby a working image is formed.

5,571,430

METHOD AND SYSTEM FOR PROCESSING WORKPIECE WITH LASER SEAM, WITH OSCILLATION OF BEAM SPOT ON THE WORKPEIECE AND BEAM OSCILLATING APPARATUS

Minoru Kawasaki; Akio Sato; Hitoshi Kinoshita, and Koji Yamada, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 21, 1994, Ser. No. 360,453

Claims priority, application Japan, Dec. 28, 1993, 5-336315

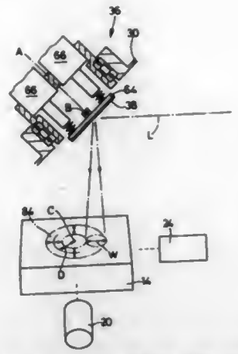
Int. Cl.[6] B23K *26/06*

U.S. Cl. 219—121.78 **15 Claims**

1. A method of reflecting a laser beam generated by a laser source, by using a movable reflecting mirror, and oscillating a spot of the reflected laser beam incident upon a workpiece for processing the workpiece, said method comprising the steps of:

bidirectionally pivoting said movable reflecting mirror about a first axis at a predetermined frequency, and thereby bidirectionally oscillating the spot of said reflected laser beam incident upon the workpiece; and

rotating said movable reflecting mirror about a second axis during bidirectional oscillation of said spot of the reflected laser beam, to thereby change an oscillating direction in which the spot of the reflected laser beam is bidirectionally oscillated, said second axis being perpendicular to said first axis, and to change an angular position of said movable reflecting mirror about said second axis as a function of a



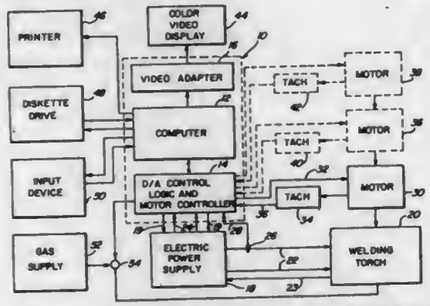
position of the spot of the reflected laser beam on the workpiece in a direction other than said oscillating direction, whereby said oscillating direction is changed as the position of said spot on the workpiece is changes in said direction other than said oscillating direction.

5,571,431

METHOD AND APPARATUS FOR CONTROLLING AND SIMULTANEOUSLY DISPLAYING ARC WELDING PROCESS PARAMETERS

Louis T. Lantieri, Mission Viejo, and Douglas M. Kensrue, Irvine, both of Calif., assignors to MK Products, Inc., Irvine, Calif.

Filed Mar. 31, 1995, Ser. No. 414,931
Int. Cl.[6] B23K *9/095*
U.S. Cl. 219—130.01 **17 Claims**



1. A method of controlling and simultaneously displaying on a video color display signals representative of the demand and actual welding parameters associated with an arc welding torch including the weld voltage, the weld current and the speed of a motor which sets the travel speed of the torch electrode relative to the workpiece or the feed rate of a consumable wire supplied to the weld area comprising:

a) selecting a demand weld voltage, weld current and motor speed;

b) supplying a weld voltage and a weld current to the torch in accordance with the selected demand values thereof;

c) selecting a demand motor speed:

d) controlling the speed of the motor in accordance with the selected demand value thereof; and

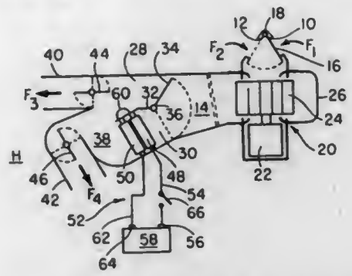
e) displaying on the video color display signals representative of the selected demand values of the weld voltage, weld current and motor speed, each signal being displayed in a separate color and simultaneously displaying on the video color display, in real time, signals representative of the actual weld voltage, actual weld current and actual motor speed with the actual and demand value signals for each separate parameter being displayed in the same color, whereby an operator may readily correlate the demand and actual parameter values and ascertain deviations therebetween.

5,571,432

HEATING AND VENTILATING APPARATUS FOR THE CABIN OF A MOTOR VEHICLE HAVING A PROPULSION MOTOR WITH RELATIVELY LOW HEAT LOSS

Jean-Charles Sarbach, Les Essarts Le Roi, France, assignor to Valeo Thermique Habitacle, Le Mesnil-Saint-Denis, France

Filed Apr. 20, 1993, Ser. No. 49,954
Claims priority, application France, Apr. 21, 1992, 92 04859
Int. Cl.[6] B60L *1/02*
U.S. Cl. 219—202 **5 Claims**



1. Heating and ventilating apparatus for the cabin of a motor vehicle having a propulsion motor with relatively low heat loss, said apparatus comprising: air inlet means; an air blower associated with said air inlet means; air outlet means; at least one air outlet connected with the air outlet means downstream of the latter, and open into the cabin of the vehicle; an air heating branch connecting the air inlet means to the air outlet means; and heating means arranged in the air heating branch, the apparatus further having an electrical circuit and a voltage source connected to said circuit for supplying the circuit with power, said heating means having a first electrical resistance heater and a second electrical resistance heater connected electrically in series in said circuit, said first heater having a substantially constant temperature coefficient of resistance and said second heater having a positive temperature coefficient of resistance, wherein said first and second heaters are arranged with said first heater being upstream of the second heater in the air heating branch, so that air flow through the air heating branch passes successively over them, a heating unit which includes both said first and second heaters in combination, at least three heat exchange bodies in the heating unit, namely two end heat exchange bodies and an intermediate heat exchange body arranged between the two end bodies with at least one resistor of said first heater being flanked by the intermediate heat exchange body and one of said end bodies and at least one resistor of said second heater being flanked by the intermediate body and the other end body.

5,571,433

LOW TEMPERATURE SELF CLEAN FOR OVENS

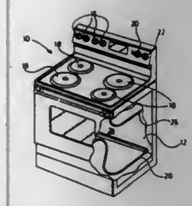
Richard L. Baker, Lewisburg, Ohio, assignor to Whirlpool Corporation, Benton Harbor, Mich.

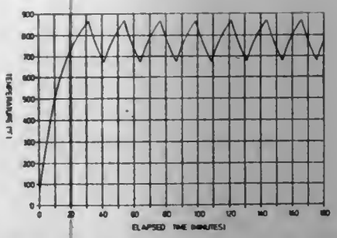
Filed Dec. 28, 1994, Ser. No. 365,582
Int. Cl.[6] A21B *1/40*
U.S. Cl. 219—413 **16 Claims**

1. A self-cleaning oven comprising:

a housing having an interior constructed and arranged to receive items to be cooked within the housing;

heating means within the housing wherein the heating means raises the temperature of the interior of the housing; and





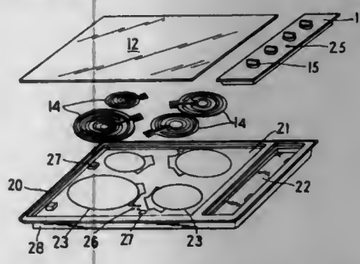
control means operative to control operation in a plurality of modes including a clean mode wherein the control means is operatively connected to the heating means to maintain a self-cleaning temperature in the housing, the control means raises the temperature to a maximum cleaning temperature of approximately 875° F. and not to exceed 900° F. and maintains an average self-cleaning temperature between 700° and 800° F. and further wherein the control means cycles the self-cleaning temperature through a predetermined range in the housing to maintain the average self-cleaning temperature by selectively activating and deactivating the heating means.

5,571,434

COOKTOP STAMPING HAVING MEANS FOR ATTACHING HEATING ELEMENTS AND AN INTEGRAL TRIM RING

Richard O. Cavener, Miamisburg, and Dennis L. Queary, Sugarcreek Township, both of Ohio, assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jun. 29, 1994, Ser. No. 267,652
Int. Cl.[6] H05B *3/68*
U.S. Cl. 219—464 **20 Claims**



1. A single piece integral metal stamping for holding a glass ceramic cooktop sheet, a control unit and a plurality of burner elements of an appliance comprising:

a means for holding said glass ceramic cooktop sheet;

an element portion of the single piece integral metal stamping having a plurality of element holes wherein said burner elements are disposed and further having an attachment means for securing said burner elements to said integral metal stamping;

a control unit portion of the single piece integral metal stamping having a means for attaching said control unit to said integral metal stamping; and

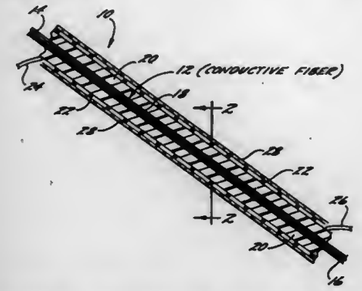
a trim ring means for attaching said single piece integral metal stamping to said appliance.

5,571,435

WELDING ROD HAVING PARALLEL ELECTRICAL PATHWAYS

Donald G. Needham, Ramona, Okla., assignor to Neeco, Inc., Ramona, Okla.

Filed Apr. 26, 1995, Ser. No. 428,468
Int. Cl.[6] H05B *3/44*; **B27G** *11/02*
U.S. Cl. 219—544 **15 Claims**



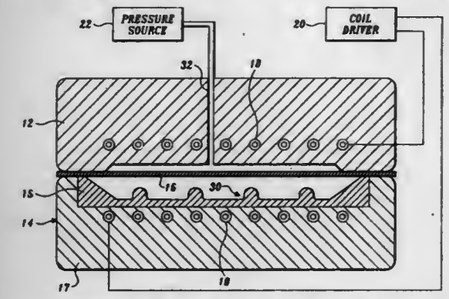
1. A welding rod comprising a core of electrically resistive fiber surrounded by a meltable layer of a first plastic material; a winding of electrically resistive fiber wrapping said meltable layer, the fiber core and the fiber winding being electrically separated by said meltable layer, which also serves as an insulator; and a meltable tie-layer of a second plastic material over the fiber winding, said second plastic material of said tie-layer being different than said first plastic material which is incompatible with plastic members to be welded, and said second plastic material being compatible with said plastic members to be welded for joining the incompatible first plastic material to said plastic members to be welded.

5,571,436

INDUCTION HEATING OF COMPOSITE MATERIALS

Paul S. Gregg, and Marc R. Matsen, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 777,739, Oct. 15, 1991, Pat. No. 5,410,132. This application Apr. 17, 1995, Ser. No. 423,549
Int. Cl.[6] B23K *13/01*
U.S. Cl. 219—604 **19 Claims**



1. An apparatus for heating a workpiece formed of a composite material susceptible to inductive heating, the apparatus comprising:

a die formed of a material substantially transparent to the transmission of an inductive magnetic field, the die having a forming surface on which the workpiece is placed; and

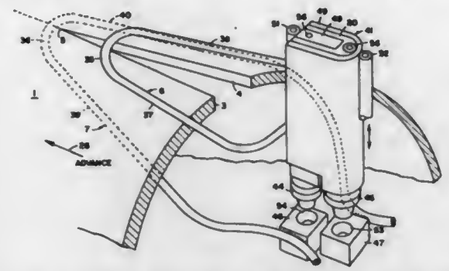
an inductive heater, located within the die, that subjects an electrically conductive material in the composite material to

an alternating magnetic field to heat the electrically conductive material, thereby heating the workpiece.

5,571,437
INDUCTION WELDING OF TUBING WITH MULTIPLE INDUCTION COILS

Wallace C. Rudd, New Canaan, Conn., assignor to Thermatool Corp., Conn.

Filed Jun. 5, 1995, Ser. No. 464,299
Int. Cl.[6] H05B *6/40*; B23K *11/08*
U.S. Cl. 219—607 **28 Claims**



1. In a method of electrically welding together a pair of edge portions of a metal part or parts having oppositely facing surfaces in which said edge portions have edge surfaces and are advanced toward a weld point with said edge surfaces in facing and spaced apart relation in advance of the weld point but which are brought together at said weld point, said edge surfaces being heated to welding temperature by the time they reach said weld point by high frequency electrical currents induced in the metal of said part or parts and flowing, at any given time, in one direction on one of said edge surfaces and in the opposite direction on the other of said edge surfaces, the improvement comprising:

inducing a pair of said high frequency currents by at least two induction coils, one said coil disposed at one side of said metal part or parts and another said coil disposed at the other side of said metal part or parts and the one of said pair of currents induced by said one of said coils flowing in the same direction as the other of said pair of currents induced by said another coil on each of said edge surfaces.

5,571,438
INDUCTION HEATING COOKER OPERATED AT A CONSTANT OSCILLATION FREQUENCY

Kiyoshi Izaki, Kadoma; Hideki Omori, Akashi; Kenji Hattori, Kobe, and Hirofumi Noma, Otsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 13, 1995, Ser. No. 402,372
Claims priority, application Japan, Mar. 14, 1994, 6-042515
Int. Cl.[6] H05B *6/08*
U.S. Cl. 219—625 **13 Claims**

1. An induction heating cooker comprising:

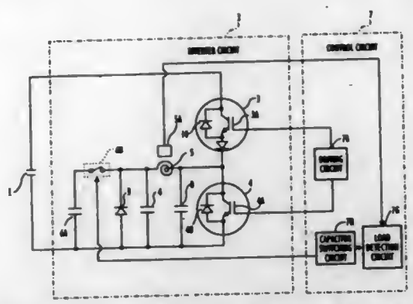
a heating coil,

a first resonance capacitor which is coupled at one end thereof to one end of said heating coil and connected at the other end thereof to a direct current source,

a diode coupled in parallel with said first resonance capacitor,

a first switching device of a reverse current blocking type coupled at one end thereof to the other end of said heating coil,

a second switching device of a reverse current conducting type coupled at one end thereof to said one end of said first switching device and to the other end of said heating coil and coupled at the other end thereof to said other end of said first resonance capacitor,



a second resonance capacitor coupled across said second switching device,

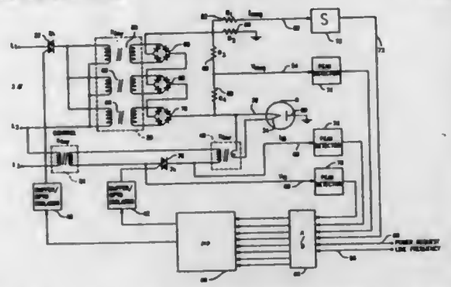
a control circuit comprising driving means for alternately conducting said first switching device and said second switching device at a constant frequency and for varying a DUTY FACTOR defined as a ratio of a conductive period of one of said two switching devices to a period of said signal of said constant frequency, and

an oppositely poled diode coupled across the collector-emitter portion of a switching element provided in said first switching device.

5,571,439
MAGNETRON VARIABLE POWER SUPPLY WITH MODING PREVENTION

Chuck Daley, Olean, N.Y.; Robert J. Sweetman, Olney, Md., and Charlie Lenny, Orlando, Fla., assignors to Fusion Systems Corporation, Rockville, Md.

Filed Apr. 27, 1995, Ser. No. 429,843
Int. Cl.[6] H05B *6/68*
U.S. Cl. 219—716 **17 Claims**



1. A power supply for supplying operating voltages to a magnetron used in a heating process, comprising:

a DC high voltage source controlled by a first thyristor for producing a direct current for said magnetron which is related to a conduction angle of said first thyristor;

a source of AC filament voltage for said magnetron controlled by a second thyristor for producing a filament current related to a conduction angle of said second thyristor;

a first means for detecting an anode current and an anode voltage of said magnetron;

a second means for detecting a filament current and a filament voltage of said magnetron; and

a microprocessor means connected to said first and second means, which is programmed to:

determine from a desired power setting, a target current for said anode current,

control said conduction angle of said first thyristor for generating high voltage which produces said target current,

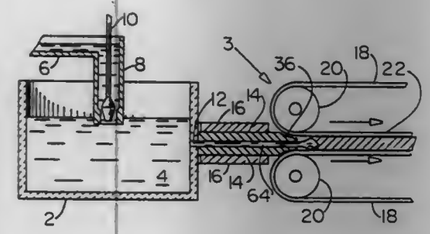
monitor said anode voltage of said magnetron for determining moding of said magnetron; and

control said conduction angle of said second thyristor for producing a filament current which eliminates said moding of said magnetron.

5,571,440
CONTINUOUS CASTER AND METHOD OF USING THE SAME

C. Edward Eckert, 260 Lynn Ann Dr., New Kensington, Pa. 15068

Continuation of Ser. No. 91,720, Jul. 13, 1993, Pat. No. 5,452,827. This application Sep. 25, 1995, Ser. No. 533,263
Int. Cl.[6] B22D *41/50*
U.S. Cl. 222—594 **22 Claims**



1. In a continuous caster, an improved casting tip, the tip designed for transferring molten metal from a molten metal reservoir to a continuously advancing mold for casting said molten metal into solid form, the casting tip comprised of:

(a) a top wall;

(b) a bottom wall oppositely disposed from said top wall;

(c) a first side wall; and

(d) a second side wall oppositely disposed from said first side wall, said first and second side walls joined to said top and bottom walls to form a passage therebetween having an entrance and an exit, said entrance adapted for receiving molten metal from said reservoir and said exit adapted for transferring molten metal to said mold, said passage having:

(i) a top wall inside surface having a first portion that first converges towards said bottom wall starting at said entrance and having a second portion that diverges from said bottom wall to said exit, said top wall first portion having a length less than said top wall second portion length; and

(ii) a bottom wall inside surface having a first portion that first converges towards said top wall starting at said entrance and having a second portion that diverges from said top wall to said exit, said bottom wall first portion having a length less than said bottom wall second portion length.

5,571,441
NUTRIENT SUPPLEMENT COMPOSITIONS PROVIDING PHYSIOLOGIC FEEDBACK

Mark B. Andon, Fairfield, and Paul D. Leis, Jr., Hamilton, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 1, 1994, Ser. No. 332,689
Int. Cl.[6] A61K *47/00*; A23L *1/30*
U.S. Cl. 252—1 **24 Claims**

1. A vitamin supplement comprising:

(a) from about 3% to about 1000% of the RDA of vitamins;

(b) from about 10 mg to about 4000 mg flavanols; and

(c) a bracer, wherein said bracer delivers the bioequivalent alertness benefit of from about 10 mg to about 300 mg of caffeine.

5,571,442
TEXTILE TREATING COMPOSITION

Takao Masaki, Yamatotakada; Tomoo Komatsubara, Kashiwara, and Seizi Nakanishi, Higashiosaka, all of Japan, assignors to Matsumoto Yushi-Seiyaku Co., Ltd., Osaka, Japan

Filed Jun. 6, 1995, Ser. No. 469,823
Claims priority, application Japan, Feb. 1, 1995, 7-015026
Int. Cl.[6] D06M *13/224*; *15/643*
U.S. Cl. 252—8.62 **5 Claims**

1. A textile treating composition consisting essentially of;

a silicone oil containing at least 50 weight percent of amino-modified polysiloxane having a viscosity of at least 50 cSt at 25° C.;

an emulsifier containing from 10 to 100 weight percent of monoesters of dicarboxylic acids, and from 90 to 0 weight percent of nonionic surfactants; and

amino carboxylic acids, which have an amino group and a carboxyl group in one molecule and solubility in water of higher than 0.2 g in 100 g of water, being present in an amount from 0.2–10 parts to 100 pans of the mixture of (A) and (B).

5,571,443
SYNERGISTIC COMBINATION OF 2-(THIOCYANOMETHYLTHIO)BENZOTHIAZOLE AND THIOPHANATE COMPOUNDS USEFUL AS FUNGICIDES

Dennis L. Dalton, Singapore; Robert A. Oppermann, Montville, N.J., and Hayley Chambers, Loyang Valley, Singapore, assignors to Buckman Laboratories International, Inc., Memphis, Tenn.

Filed Dec. 30, 1994, Ser. No. 366,907
Int. Cl.[6] C14C *9/00*; *9/02*
U.S. Cl. 252—8.57 **20 Claims**

1. A leather-tanning liquor composition comprising

(a) 2-(thiocyanomethylthio)benzothiazole and

(b) a thiophanate compound wherein (a) and (b) are present in a combined amount synergistically effective to control growth of at least one fungus on leather to be tanned, wherein the leather-tanning liquor composition is a pickling liquor; a chrome-tanning liquor, a vegetable-tanning liquor, a post-tan washing liquor, or a fatliquor.

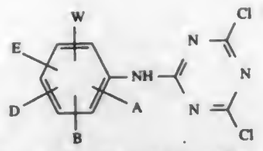
5,571,444
TEXTILE TREATMENT

Arthur D. Fisher, Gisborne, Australia; Dieter Reinehr, Kandern, Germany; Jorg Binz, Reinach, and Sven Strunk, Ormalingen, both of Switzerland, assignors to Invicta Group Industries Pty Ltd., Braybrook, Australia

Continuation of Ser. No. 335,563, Nov. 7, 1994, abandoned, which is a continuation of Ser. No. 109,298, Aug. 19, 1993, abandoned, which is a continuation of Ser. No. 850,195, Mar. 11, 1992, abandoned. This application Jan. 11, 1996, Ser. No. 583,891
Claims priority, application Australia, Sep. 11, 1989, PJ6291; Switzerland, Jan. 2, 1990, 12/90
Int. Cl.[6] D06M *13/358*
U.S. Cl. 252—8.62 **17 Claims**

1. A textile treatment composition useful for treating a textile comprising:

(a) a textile binding agent which forms a chemical bond with the outer layer of the textile which is a compound according to formula (Ia):



(Ia)

wherein W is SO_3H and A, B, D and E, which are the same or different, are hydrogen or halogen atoms, or hydroxy, optionally substituted alkyl, optionally substituted alkoxy, optionally substituted aralkyl, optionally substituted arylalkoxy, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted aryl, optionally substituted aryloxy, optionally substituted arylthio, optionally substituted heteroaryloxy, optionally substituted heteroarylthio, optionally substituted acyloxy, optionally substituted amino, optionally substituted acylamino, nitro, cyano, $—CO_2R^1$, — $CONR^1R^2$, $—COR^1$, $—CR^1{=}NR^2$, $—N{=}CR^1R^2$ or $—S(O)_nR^1$ groups, any two of the groups A, B, D and E, when they are in adjacent positions on the ring, optionally join to form a fused ring, either aromatic or aliphatic, optionally containing one or more heteroatoms; n is 0, 1 or 2; and R^1 and R^2, which are the same or different, are hydrogen atoms or alkyl, cycloalkyl, cycloalkylalkyl, alkenyl, alkynyl, optionally substituted aryl or optionally substituted aralkyl groups, and,

(b) a barrier agent which forms a chemical bond with said binding agent and which increases the surface tension of the textile.

5,571,445

GEAR OIL COMPOSITIONS

Sanjay Srinivasan, Midlothian, and Rolfe J. Hartley, Glen Allan, both of Va., assignors to Ethyl Corporation, Richmond, Va.

PCT No. PCT/US94/03367, § 371 Date Sep. 21, 1995, § 102(e) Date Sep. 21, 1995, PCT Pub. No. WO94/22990, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 29, 1994, Ser. No. 525,637

Int. Cl.[6] C10M *111/02;111/04*

U.S. Cl. 508—189 **20 Claims**

1. An essentially metal-free and essentially halogen-free, boron-containing gear oil lubricant composition is provided which comprises:

a) base oil consisting essentially of a blend of (1) at least one dialkyl ester of an aliphatic dicarboxylic acid having a maximum pour point of about −55° C. and a maximum kinematic viscosity at 100° C. of about 4 cSt (mm^2/sec); (2) hydrogenated poly-α-olefin oligomer having a kinematic viscosity at 100° C. of about 40 cSt; (3) at least one hydrogenated poly-α-olefin oligomer having a kinematic viscosity at 100° C. in the range of about 4 to about 8 cSt; and (4) hydrogenated poly-α-olefin oligomer having a kinematic viscosity at 100° C. of about 2 cSt, in proportions such that for each 100 parts by weight of (2) there are about 10 to about 40 parts by weight of (1), about 3 to about 25 parts by weight of (3), and about 11 to about 30 parts by weight of (4);

b) about 0.7 to about 7 wt % of at least one oil-soluble organic sulfur-containing antiwear and/or extreme pressure agent having a sulfur content of at least about 20% by weight;

c) about 0.2 to about 3 wt % of at least one oil-soluble organic phosphorus-containing antiwear and/or extreme pressure agent;

d) about 0.05 to about 0.35 wt % of at least one oil-soluble copper corrosion inhibitor;

e) about 0.1 to about 0.8 wt % of at least one oil-soluble rust inhibitor;

f) about 0.005 to about 0.06 wt % of at least one oil-soluble foam inhibitor; and

g) about 0.15 to about 3 wt % of at least one oil-soluble ashless dispersant; all of the foregoing percentages being based on the weight of the total composition, said composition being still further characterized in that the sulfur:phosphorus weight ratio of said composition is in the range of about 8:1 to about 35:1, in that the boron content of said composition is in the range of about 0.0025 to about 0.07 wt %, and in that the kinematic viscosity of said composition is in the range of about 13 to about 15 cSt at 100° C.

5,571,446

ANIONIC STABILIZED ENZYME BASED CLEAN-IN-PLACE SYSTEM

Carol A. Rouillard, Taylor, Mich., assignor to Diversey Corporation, Ontario, Canada

Filed Jul. 27, 1995, Ser. No. 508,124

Int. Cl.[6] C11D *3/386;1/722*

U.S. Cl. 510—234 **8 Claims**

1. A two-part enzyme-based cleaning system comprising first and second liquid concentrates stored in separate containers for use in preparing a dilute use solution,

A. the first concentrate consisting of:

i) 1.75 to 7.5 percent by weight of a source of alkalinity selected from the sources of hydroxide based alkaline composition;

ii) 1 to 16 percent by weight of a water conditioner selected from the group consisting of polyacrylic acids and polyphosphates;

iii) balance water, and

B. the second concentrate consisting of:

i) 35 to 45 percent by weight of a blend of an alkali salt of a (C_6 to C_{12}) fatty acid and a linear (C_8–C_{18}) polyoxyalkylene alcohol;

ii) an effective amount of a proteolytic enzyme; and

iii) balance water.

5,571,447

STRIPPING AND CLEANING COMPOSITION

Irl E. Ward, Bethlehem; Francis Michelotti, and Leslie D. Molnar, both of Quakertown, all of Pa., assignors to Ashland Inc., Dublin, Ohio

Filed Mar. 20, 1995, Ser. No. 407,202

Int. Cl.[6] C11D *7/08;7/50;* **C09K** *13/08;* **G03F** *7/30*

U.S. Cl. 510—206 **5 Claims**

1. A stripping and cleaning composition consisting essentially of the admixture of:

(a) about 60 to 85% by weight of propylene glycol;

(b) about 5 to 40% by weight of dimethylsulfoxide;

(c) about 0.5 to 10% by weight of 50% fluoroboric acid;

(d) an effective amount of corrosion inhibitor; and

(e) the remainder being ammonium tetrafluoroborate,

wherein said composition has a pH less than 5.

3. A stripping and cleaning composition consisting essentially of the admixture of:

(a) about 77% by weight of propylene glycol;

(b) about 1% by weight of ammonium fluoride;

(c) about 2.5% by weight of 50% aqueous fluoroboric acid; and

(d) the remainder being water, wherein said composition has a pH less than 5.

5,571,448

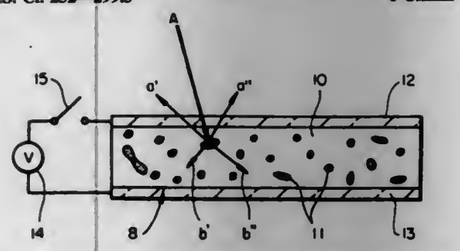
ENCAPSULATED LIQUID CRYSTAL STRUCTURES, APPARATUS CONTAINING THE SAME, AND METHODS THEREFOR

Mark F. Wartenberg, San Jose; Harriette Atkins, Mt. View; Robert H. Reamey, Palo Alto; Laurence Welsh, San Carlos; James Strala, Newark; Janusz Wójtowicz, Palo Alto; Wayne Montoya, Newark; Paul S. Drzaic, Palo Alto; John Havens, Menlo Park; Akira Tomita, Redwood City, and Aldrich N. K. Lau, Palo Alto, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 28,497, Mar. 9, 1993, Pat. No. 5,427,713, which is a continuation-in-part of Ser. No. 850,378, Mar. 10, 1992, abandoned. This application Apr. 4, 1995, Ser. No. 416,556

Int. Cl.[6] C09K *19/54;* **G02F** *1/13*

U.S. Cl. 252—299.5 **6 Claims**



1. A method of making a film of an encapsulated liquid crystal structure comprising a liquid crystal composition dispersed in a containment medium, which method comprises the steps of

(a) adding a reactive additive means to the liquid crystal composition, the reactive additive means being selected from the group consisting of acrylic compounds, methacrylic compounds, epoxy compounds, aldehydes, and thiol compounds;

(b) forming an emulsion of the liquid crystal composition, including the reactive additive means, dispersed in the containment medium;

(c) coating the emulsion onto a support sheet and drying the emulsion to form a film of encapsulated liquid crystal structure supported by the support sheet; and

(d) initiating the reaction of the reactive additive means to deposit the reactive additive means on the surfaces of the containment medium in contact with the liquid crystal composition.

5,571,449

PARTIALLY FLUORINATED BENZENE DERIVATIVES

Ekkehard Bartmann, Erzhausen; Herbert Plach, Darmstadt, and Rudolf Eidenschink, Mainz, all of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

PCT No. PCT/EP94/01487, § 371 Date Jan. 19, 1995, § 102(e) Date Jan. 19, 1995, PCT Pub. No. WO94/26839, PCT Pub. Date Nov. 24, 1994

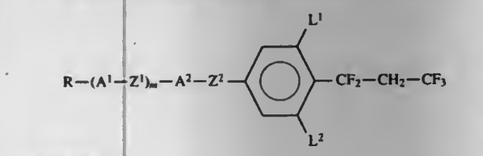
PCT Filed May 9, 1994, Ser. No. 373,283

Claims priority, application Germany, May 19, 1993, 43 16 909.0

Int. Cl.[6] C09K *19/06;19/30;19/12;* **C07C** *22/00*

U.S. Cl. 252—299.6 **18 Claims**

1. A partially fluorinated benzene compound of formula I



I

wherein

R is H, alkyl having 1 to 15 carbon atoms which is unsubstituted, monosubstituted by CN or CF_3 or at least monosubstituted by halogen, wherein one or more CH_2 groups can be replaced, in each case independently of one another by —O—, —S—,



—CO—, —CO—O—, —O—CO— or —O—CO—O—, without O atoms being linked directly to one another, or alkenyl having 1 to 15 carbon atoms which is unsubstituted, monosubstituted by CN or CF_3 or at least monosubstituted by halogen, wherein one or more CH_2 groups can be replaced, in each case independently of one another, by —O—, —S—,



—CO—, —CO—O—, —O—CO— or —O—CO—O—, without O atoms being linked directly to one another;

A^1 and A^2 are each, independently of one another,

(a) trans-1,4-cyclohexylene radical in which one or more nonadjacent CH_2 groups can each be replaced by —O— or —S—,

(b) 1,4-phenylene in which one or two CH groups can be replaced by N,

(c) 1,4-cyclobexenylene, 1,4-bicyclo-(2,2,2)octylene, piperidine-1,4-diyl, naphthalene-2,6-diyl, decahydronaphthalene-2,6-diyl or 1,2,3,4-tetrahydronaphthalene-2,6-diyl, wherein radicals of (a) and (b) can be substituted by one or two fluorine atoms;

Z^1 and Z^2 are each, independently of one another, —CO—O—, —O—CO—, $—CH_2O—$, $—CH_2CH_2—$, —CH=CH—, —C≡C— or a single bond, and one of Z^1 and Z^2 can also be $—(CH_2)_4—$ or $—CH{=}CH—CH_2CH_2—$;

m is 0, 1 or 2; and

L^1 and L^2 are each, independently of one another, H or F.

5,571,450

FERROELECTRIC LIQUID CRYSTAL COMPOSITION

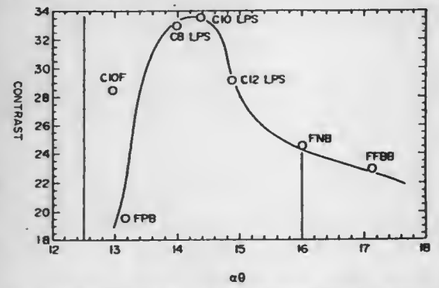
Akio Yasuda, and Kelichi Nito, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 114,921, Sep. 2, 1993, abandoned. This application Mar. 1, 1995, Ser. No. 396,906

Claims priority, application Japan, Sep. 4, 1992, 4-262861

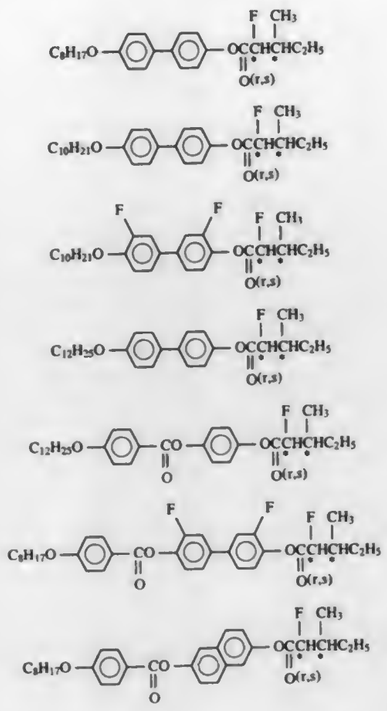
Int. Cl.[6] C09K *19/34;19/32;19/12;19/20*

U.S. Cl. 252—299.61 **2 Claims**



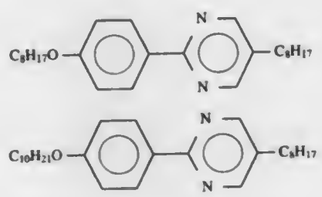
1. A ferroelectric liquid crystal composition which comprises a mixture of chiral smectic ferroelectric liquid crystal molecules and non-chiral liquid crystal molecules defined by the product between a liquid crystal molecule design parameter, α, and an apparent cone angle, θ, of the liquid crystal molecules, α, θ, being such that $12.5 \leqq \alpha\theta \leqq 16$ wherein α=(an infrared peak intensity ratio of the alkyl chain portion of a liquid crystal molecule prior to and after switching through an electric field)/(an infrared peak intensity ratio

of the core portion of the liquid crystal molecules prior to and after switching through an electric field) and θ is a cone angle (°) observed from the direction to the substrate normal and the cone has a circular cone surface when liquid crystal molecules are rotated along the circular cone surface at the time of switching through an electric field and wherein said liquid chiral smectic crystal molecules are selected from the group consisting of



and the non-chiral liquid crystal molecules are selected from the group consisting of:

(1)



(2)

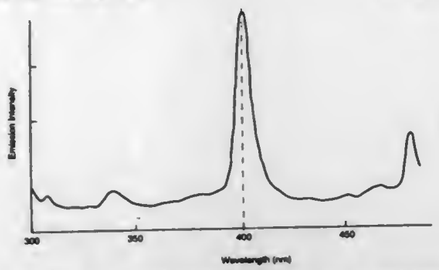
wherein $12.5 \leqq \alpha\theta \leqq 16$, wherein a product, δ, of the liquid crystal molecule design parameter, α, and a ratio of a length of a flexible portion of the liquid crystal molecules to a length of a rigid portion of the liquid crystal molecules is such that $\delta \leqq 0.5$, and wherein said chiral smectic ferroelectric liquid crystal molecules are present in an amount of from 1 to 50 wt % based on said composition.

5,571,451

QUANTUM SPLITTING OXIDE PHOSPHOR AND METHOD OF MAKING

Alok M. Srivastava, Schenectady, N.Y., and William W. Beers, Chesterland, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 3, 1995, Ser. No. 367,637
Int. Cl.[6] C09K *11/64*
U.S. Cl. 252—301.4 R **8 Claims**



1. An oxide phosphor comprising Sr, Al and Mg as constituents of the oxide, having an oxide lattice that is doped with Pr^{+3}, said oxide phosphor adapted to exhibit quantum splitting behavior in the oxide lattice when irradiated by a source of VUV radiation.

5,571,452

PROCESS FOR RECOVERING AND MOVING HIGHLY VISCOUS PETROLEUM PRODUCTS

Armando Marcotullio, S. Donato Milanese, and Alberto Di Lullo, Sirmione, both of Italy, assignors to Agip S.p.A., Milan, Italy

Filed Nov. 17, 1994, Ser. No. 341,073
Claims priority, application Italy, Dec. 17, 1993, 002648/93
Int. Cl.[6] B01F *17/12*
U.S. Cl. 252—312 **17 Claims**

1. Process for recovering and moving highly viscous petroleum derivatives by the use of aqueous dispersions in the presence of sulphonate dispersers having high solubility in water, wherein the above sulphonate dispersers are prepared starting from steam cracking fuel oil with the following series of steps:

a) increase of the molecular weight of the steam cracking fuel oil by its oligomerization in the presence of a catalyst selected from BF_3 and its complexes with strong acids;

b) sulphonation of the compound as obtained in step (a) by reaction with a sulphonating agent selected from oleum, concentrated sulphuric acid, SO_3;

c) neutralization of the sulphonate obtained in step (b) by treatment with hydroxides selected from the hydroxides of alkaline or earth alkaline metals or ammonium.

5,571,453

STABILIZED POLYETHER POLYOL AND POLYURETHANE FOAM OBTAINED THEREFROM

Lawrence B. Barry, Newington, and Mark C. Richardson, Cheshire, both of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Filed Oct. 25, 1994, Ser. No. 329,019
Int. Cl.[6] C08K *5/132;5/16;* **C09K** *15/08;15/18*
U.S. Cl. 252—400.24 **8 Claims**

1. A liquid stabilizer composition comprising:

a) from about 30 to about 50 weight percent of a diphenylamine:isobutylene:diisobutylene reaction product;

b) from about 50 to about 70 weight percent of a hindered phenol; and,

c) from about 1 to about 8 weight percent of a trihydrocarbyl phosphite;

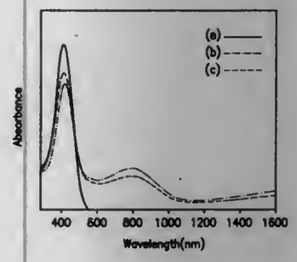
wherein the molar ratio ranges of the diphenylamine:isobutylene-:diisobutylene reactants in said reaction product are 1:0.5 to 1.3:0.75 to 1.3, said reaction product being formed at a temperature of 140° C. or lower in the presence of an acid activated earth catalyst.

5,571,454

SOLUBLE AND PROCESSABLE DOPED ELECTRICALLY CONDUCTIVE POLYMER AND POLYMER BLEND THEREOF

Show-An Chen, and Mu-Yi Hua, both of Hsinchu, Taiwan, assignors to National Science Council, China

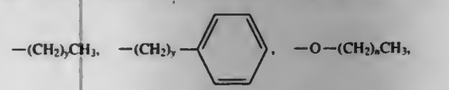
Filed Mar. 16, 1994, Ser. No. 214,397
Int. Cl.[6] H01B *1/04;1/20;1/24*
U.S. Cl. 252—500 **22 Claims**



1. A homogeneously doped conductive polymer comprising:

(a) a conductive polymer selected from the group consisting of 3,4-disubstituted poly(thiophene)s, 3,4-disubstituted poly-(furan)s, 3,4-disubstituted poly(pyrrole)s, and 3,4-disubstituted poly(N-substituted pyrroles);

wherein one substituent is selected from the group consisting of

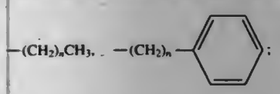


$-(CH_2)_a-O-(CH_2)_eCH_3$, $-(CH_2-CH_2-O)_o-CH_3$,

$-(CH_2)_aCOOH$, $-(CH_2)_nCOOY$,

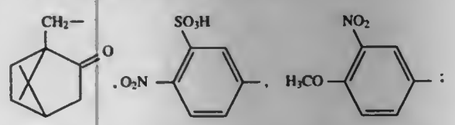
$-O-CH_2-CH_2-O-(CH_2)_nCH_3$;

wherein y is an integer selected from 3 to 22;
wherein n is an integer selected from 1 to 22;
wherein —Y is selected from the group consisting of



wherein the other substituent is selected from the group consisting of —H, $—CH_3$, and $—OCH_3$; and

(b) a protonic acid selected from the group consisting of R"—SO_3H wherein R" is selected from



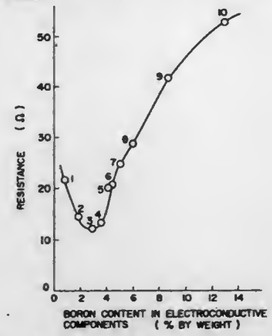
said protonic acid being homogeneously distributed throughout said doped conductive polymer.

5,571,455

COMPOSITION FOR FORMING ELECTROCONDUCTIVE PATTERN AND PROCESS FOR PRODUCING THE SAME

Naoshige Higuchi, Tokyo-to, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo-to, Japan

Continuation of Ser. No. 114,238, Sep. 1, 1993, abandoned, which is a continuation of Ser. No. 684,937, Jul. 1, 1991, abandoned. This application Apr. 13, 1995, Ser. No. 422,608
Claims priority, application Japan, Aug. 31, 1989, 1-226304; Jun. 21, 1990, 2-163612
Int. Cl.[6] C09D *5/25;* **H01B** *1/16*
U.S. Cl. 252—513 **15 Claims**



1. A composition for forming an electroconductive pattern, comprising:

(a) an alloy powder which is obtained by cooling and finely dividing an eutectic mixture consisting of from 96.3% to 98.0% by weight of nickel and from 2.0% to 3.7% by weight of boron, said eutectic mixture being prepared by melting at a temperature of at least 1450° C.;

(b) a glass frit having a softening point in the range of 400°–550° C.; and

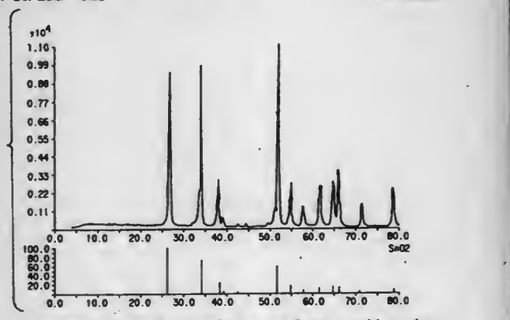
(c) an organic vehicle, the decomposition temperature of the organic vehicle being lower than the softening point of the glass frit.

5,571,456

TIN OXIDE BASED CONDUCTIVE POWDERS AND COATINGS

Oswald R. Bergmann, Wilmington; Thomas P. Feist, Hockessin; Jacob Hormadaly, and Howard W. Jacobson, both of Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 292,895, Aug. 18, 1994. This application Apr. 24, 1995, Ser. No. 427,315
Int. Cl.[6] H01B *1/08;1/14;1/16*
U.S. Cl. 252—518 **13 Claims**



1. A transparent conductive coating on a substrate, said conductive coating containing an electroconductive powder consisting

essentially of from about 0.1 to 10% by weight silica, and tin oxide doped with at least one of tantalum and niobium, and optionally phosphorus; wherein said powder is substantially free of antimony and pyrochlore.

5,571,457

BIASABLE TRANSFER COMPOSITIONS AND MEMBERS HAVING EXTENDED ELECTRICAL LIFE

William B. Vreeland, Webster; John C. Wilson, and Mark C. Zaretsky, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

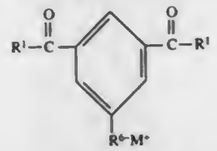
Filed Aug. 31, 1994, Ser. No. 298,914

Int. Cl.[6] H01B *1/12;1/20;* G03G *13/00;15/00*

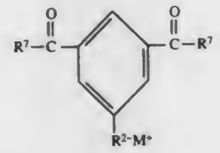
U.S. Cl. 252—519 30 Claims

1. An electrically conductive or semiconductive polymeric material comprising a polymeric material having incorporated therein to provide the polymeric material with a resistivity of from about 10^6 to about 5.0×10^{11} ohm cm, a blend of:

(i) a bis[oxydiethylenebis(polycaprolactone)yl]sulfoaryldicarboxylate or a bis[oxydiethylenebis(polycaprolactone)yl] sulfonamidosulfonylaryldicarboxylate, as represented by formula (I) or formula (II):



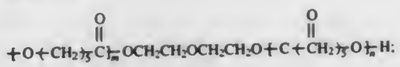
(I)



(II)

wherein

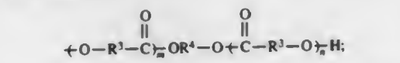
R^1 represents:



R^6 represents sulfonate, oxyphenylene sulfonate, oxycyclohexylene sulfonate or p-toluenesulfonamidosulfonyl;

R^2 represents oxyphenylene sulfonate, oxycyclohexylene sulfonate, or p-toluenesulfonamidosulfonyl;

R^7 represents:



R^3 represents a straight or branched chain alkylene group having 2 to 7 carbon atoms;

R^4 is the same as R^3 or is $-(R^5-O-)_z R^5$;

R^5 is the same as R^3;

m and n in formula (I) are integers which together are of sufficient value to achieve an R^1 molecular weight of 300 to 30,000;

m and n in formula (II) are integers which together are of sufficient value to achieve an R^7 molecular weight of 300 to 30,000; and

M represents hydrogen, an alkali metal, ammonium or $P^+(C_6H^5)_3CH_3$, and

(ii) a complex of a ferric halide selected from the group consisting of ferric fluoride, ferric chloride and ferric bromide and ethylene glycol or an oligoethylene glycol selected from the group consisting of di-, tri-, and tetraethylene glycol in a molar ratio of a dicarboxylate of formula (I) or formula (II) to complex of from 1.0:5.0 to 5.0:1.0.

5,571,458

WASHING COMPOSITION FOR KERATIN FIBRES WHICH IS BASED ON CHITOSAN-DERIVED POLYMERS

Bernard Beauquey, Clichy, and Sandrine Decoster, Epinay-sur-Seine, both of France, assignors to L'Oreal, Paris, France

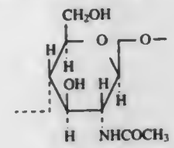
Filed Jul. 28, 1994, Ser. No. 281,544

Claims priority, application France, Jul. 28, 1993, 93 09299

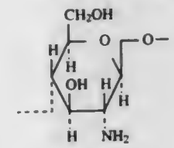
Int. Cl.[6] C11D *1/94;3/37;* A61K *7/075*

U.S. Cl. 510—125 8 Claims

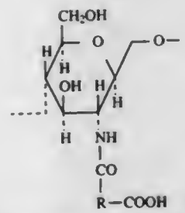
1. A washing composition which is free from cationic and anionic polymers, comprising, in an aqueous medium suitable for washing keratin fibres, at least one anionic surfactant having one or more sulphonate groups, at least one surfactant from the family of the betaines and at least one chitosan-derived polymer, the weight ratio of anionic surfactant to betaine surfactant being between 0.7 and 4, the at least one anionic surfactant, the at least one betaine surfactant, and the at least one chitosan-derived polymer each being present in the composition in an amount effective for washing and styling keratin fibres, said chitosan-derived polymer contains monomer units of the following formula:



(A)

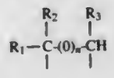


(B)



(C)

in which unit (A) is present in ratios of between 0 and 30% by weight, unit (B) is present in ratios of between 5 and 50% by weight and unit (C) is present in ratios of between 30 and 90% by weight; in formula (C) R is represents a radical of the formula:



in which n is zero or 1; if n is zero, R_1, R_2 and R_3 are identical or different and each is a hydrogen atom, a methyl, hydroxyl, acetoxy or amino group, an alkylthio radical whose alkyl group contains an amino group or a monoalkylamine or dialkylamine radical, it being possible for the monoalkylamine and dialkylamine radicals to be interrupted by one or more nitrogen atoms or substituted by one or more amino, hydroxyl, carboxyl, alkylthio or sulpho groups, in which case at least one of the radicals R_1, R_2 and R_3 represents a hydrogen atom; if n is 1, each of the radicals R_1, R_2 and R_3 represents a hydrogen atom, it being possible for these polymers to be present in the form of a salt formed together with a cosmetically acceptable base or acid.

5,571,459

MICROEMULSION ALL PURPOSE LIQUID CLEANING COMPOSITONS

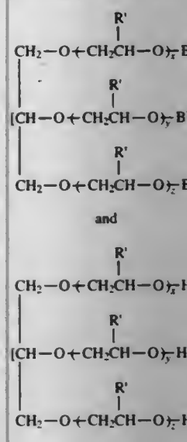
Steven Adamy, Hamilton, N.J.; Guy Broze, Grace-Hollogne, Belgium; Ammanuel Mehreteab, Piscataway; Frank Bala, Jr., Middlesex, both of N.J.; Myriam Mondin, Seraing, and Myriam Loth, Saint-Nicolas, both of Belgium, assignors to Colgate-Palmolive Co., Piscataway, N.J.

Continuation-in-part of Ser. No. 192,902, Feb. 7, 1994, abandoned. This application Dec. 7, 1994, Ser. No. 350,576

Int. Cl.[6] C11D *1/722;1/83*

U.S. Cl. 510—365 5 Claims

1. A microemulsion composition comprising:



and



wherein w equals one to four, and B is selected from the group consisting of hydrogen and a group represented by:



wherein R is selected from the group consisting of alkyl group having about 6 to 22 carbon atoms, and alkenyl groups having about 6 to 22 carbon atoms, wherein at least one of the B groups is represented by said



R' is selected from the group consisting of hydrogen and methyl groups; x, y and z have a value between 0 and 60, provided that (x+y+z) equals about 2 to about 100, wherein in Formula (I) the weight ratio of monoester/diester/triester is 40 to 90/5 to 35/1 to 20, wherein the weight ratio of Formula (I) to Formula (II) is a value between about 3 to about 0.02;

(b) about 0.1 wt. % to about 8 wt. % of an anionic surfactant;

(c) about 1 wt. % to about 50 wt. % of a cosurfactant, wherein said cosurfactant is selected from the group consisting of C_3 to C_9 alkanols, isoalkanol or cycloalkanols, propylene glycols of the formula $HO(CH_3CHCH_2O)_mH$, wherein m is from 2 to 18, and monoalkyl ethers and esters of ethylene glycol or propylene glycol having the structured formulas $R(X)_nOH$ or $R_1(X)_nOH$ wherein R is a C_1–C_6 alkyl, R_1 is a C_2–C_4 acyl group, X is (OCH_2CH_2) or $(OCH_2(CH_3)CH)$ and n is from 1 to 4 and mixtures thereof;

(d) about 0.4 wt. % to about 20 wt. % of at least one hydrocarbon; and

(e) the balance being water.

5,571,460

LIQUID COMPOSITION EMITTING FAR INFRARED RAYS AND METHOD FOR PREPARATION THEREOF

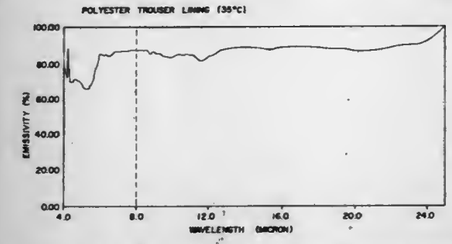
Su I. Choi, Seoul, and Yong H. Kim, Kyungki-Do, both of Rep. of Korea, assignors to Korean Angora Co., Ltd., Kyungi-Do, Rep. of Korea

Filed Jan. 6, 1995, Ser. No. 369,514

Claims priority, application Rep. of Korea, Jan. 6, 1994, 94-160

Int. Cl.[6] F21V *9/04;* C09K *11/08*

U.S. Cl. 252—587 13 Claims



1. A method for the preparation of a liquid composition emitting far infrared rays, comprising the steps of:

dissolving sodium silicate, sodium aluminate, sodium oxide, sodium thiosulfate, germanium dioxide and highly pure white sugar in water at a temperature of 20° to 40 ° C. and mixing the dissolved solutions to resultingly prepare a first solution;

adding a second solution made by ionizing gold to chloroauric acid and a third solution made by ionizing silver nitrate to silver thiosulfate to the first solution; and

maintaining the resultant mixture within a temperature range of 15° to 25° C. for 48 to 72 hours.

5,571,461

PROCESS FOR EXTRUDING A POLYMER ONTO A GLAZING

Heinz Scholl, Eschweiler; Hans-Georg Friedrich, Wurselen, and Friedhelm Hammes, Herzogenrath, all of Germany, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Continuation of Ser. No. 771,084, Oct. 2, 1992, Pat. No. 5,273,704. This application Jun. 29, 1993, Ser. No. 84,667

Claims priority, application Germany, Oct. 4, 1990, 4031236.4

The portion of the term of this patent subsequent to Oct. 2, 2011, has been disclaimed.

Int. Cl.[6] B29C *47/92*

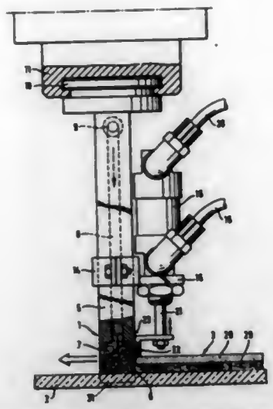
U.S. Cl. 264—40.5 14 Claims

1. A process for forming an extruded material onto a glazing which comprises:

placing extrusion die means against an edge of a glazing, wherein said die means includes a calibrated exit orifice and plate means positionable adjacent said exit orifice, said plate means having formed therein first and second die cross-sections which define corresponding profile cross-sections of material extruded through said exit orifice;

positioning said plate means in a first location adjacent said exit orifice to position a first die cross section downstream from said exit orifice;

guiding said die means along and against a first portion of an edge of the glazing while delivering a flowable material at a first flow rate to said die means to form a first extruded



section of said material having a first profile cross section corresponding to said first die cross section along said first portion;

positioning said plate means into a second location adjacent said exit orifice to position a second die cross section downstream from said exit orifice; and

guiding said die means along and against a second portion of the edge of said glazing while delivering said material at a second flow rate to said die means to form a second extruded section of said material along said second portion of the glazing edge, said second extruded section having a profile cross section corresponding to said second die cross section.

5,571,462

METHOD OF MANUFACTURING ELECTRIC WIRE INSULATED WITH FOAMED PLASTIC

Dai Hashimoto; Shoji Yamamoto, both of Ichihara, and Zensuke Iwata, Kamakura, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 969,856, Jan. 14, 1993, abandoned. This application Apr. 15, 1994, Ser. No. 228,184

Claims priority, application Japan, May 17, 1991, 3-113390; WIPO, May 18, 1992, PCT/JP92/00636

Int. Cl.[6] B29C *44/24;44/32*

U.S. Cl. 264—45.9 **8 Claims**

1. A method of manufacturing an electric wire insulated with a foamed plastic, comprising the steps of:

introducing a foaming agent into a fluororesin in a molten state to allow said foaming agent to be uniformly dispersed in said molten resin; and

extruding the molten resin having said foaming agent dispersed therein onto a conductor wire having a small diameter to allow foaming of said fluororesin at an expansion ratio of at least 60% by volume so as to obtain an electric wire insulated with the foamed fluororesin, said insulated wire having an outer diameter of 1.6 mm or less,

wherein said foaming agent comprises a fluorocarbon compound represented by formula (1) given below:

$$C_xF_y \quad (1)$$

where x is 7, 8, or 9 and y is 2x+2; and

said fluororesin comprises at least one copolymer selected from the group consisting of a tetrafluoroethylene-perfluoroalkyl vinyl ether copolymer exhibiting a melt flow rate exceeding 10 g/10 min. at a temperature of 372° C. and under a load of 5 kgf, a tetrafluoroethylene-hexafluoropropylene copolymer exhibiting a melt flow rate exceeding 10 g/10 min. at a temperature of 372° C. and under a load of 5 kgf, and an ethylene-tetrafluoroethylene copolymer exhibiting a melt flow rate exceeding 5 g/10 min. at a temperature of 297° C. and under a load of 5 kgf.

5,571,463

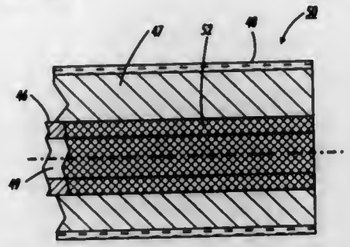
METHOD OF FABRICATING A MICROPOROUS SURFACE BLOTTER ROLL

Donald S. Sypula, Penfield, and Santokh S. Badesha, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 9, 1996, Ser. No. 599,207

Int. Cl.[6] B29C *67/20*

U.S. Cl. 264—45.9 **6 Claims**



1. A method of fabricating a controlled and uniform cell size blotter roll for blotting liquid images consisting of toner particles and carrier liquid, the method comprising:

(a) first mixing a first grade of salt having particles of a first uniform size, and polymer material to form a first mixture;

(b) extruding the first mixture to form an extruded inner sleeve having intimately compacted polymer material and salt particles, an outer surface, and an inner surface defining a hollow interior;

(c) curing the extruded sleeve until rigid;

(d) next mixing a second grade of salt having particles of a second uniform microsize, and a polymer material to form a second mixture;

(e) co-extruding the second mixture as a surface layer directly onto the extruded inner sleeve to form a solid compound polymer and salt particles sleeve;

(f) curing the compound sleeve by drying;

(g) leaching all salt particles from the surface layer and from the inner sleeve in order to form a compound, conformable open cell sleeve having open cells and a hollow interior; and

(h) inserting into the hollow interior a rigid support core.

5,571,464

METHOD FOR FORMING CONCRETE PRODUCTS

Allen Aaseth, 45810 NE. Headland Rd., Woodland, Wash. 98674, and Robert A. Schmitt, 12309 NE. 119th St., Vancouver, Wash. 98682

Division of Ser. No. 193,272, Feb. 7, 1994, Pat. No. 5,395,228. This application Jul. 28, 1994, Ser. No. 282,090

Int. Cl.[6] B28B *1/087;3/02*

U.S. Cl. 264—72 **8 Claims**

1. A method for vibrating concrete material in a mold box of a concrete product forming machine, comprising:

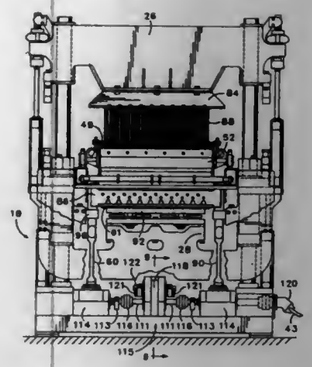
providing at least one vibration arm, a first drive shaft elongated about a central horizontal axis, a second drive shaft mechanically coupled to the first drive shaft by a gear box, the vibration arm having a first end joined to the mold box and a second end joined to the first drive shaft;

flexibly mounting the mold box to the concrete product forming machine;

mounting a first counter-weight to the first drive shaft;

mounting a second counter-weight to the second drive shaft with a 180 degree phase off-set from the first counterweight;

depositing the concrete material into the mold box;



rotating the first counter-weight with the first drive shaft along the central horizontal axis in a given drive shaft rotational direction;

eccentrically rotating the second end of the vibration arm with the first drive shaft along the first drive shaft central horizontal axis, the vibration arm vibrating the mold box in both a horizontal and vertical direction while receiving the concrete material in the mold box; and

rotating the second counter-weight with the second drive shaft in a rotational direction opposite to the given drive shaft rotational direction thereby increasing mold box vibration in the vertical direction while reducing the mold box vibration in the horizontal direction.

5,571,465

METHOD FOR MAKING FIBER-FILLED BOLSTERED CUSHION

Prem P. Gill, Rochester Hills, and Paul W. Chrenka, Shelby Township, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 18, 1995, Ser. No. 573,771

Int. Cl.[6] B29C *35/04*

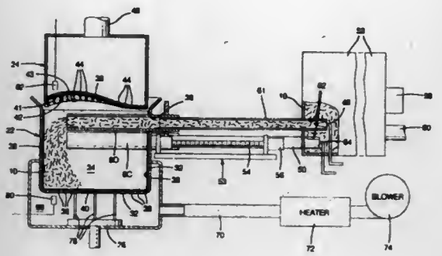
U.S. Cl. 264—121 **3 Claims**

1. A method of molding a porous, breathable cushion having a relatively low density central region flanked by lateral regions having a higher density than said first region comprising the steps of:

a. providing a mold having a moveable member moveable between a mold-open and a mold-closed position so as to define a cavity conforming substantially to the desired shape of said cushion in the mold-closed position, said cavity having first and second zones for respectively shaping said central and lateral regions;

b. blowing a mixture of polymeric matrix fibers having a first melting point and polymeric bonding fibers having a second melting point lower than said first melting point into said mold via a carrier gas, said mixture being blown into said second zones at a faster rate than said first zone to provide a higher density of said fibers in said second zones than said first zone;

c. moving said moveable member to said mold-closed position following said blowing so as to compress said fibers in said mold cavity to a first density in said first zone and a second density in said second zones which is greater than said first density; then



d. passing a heated gas through the compressed mixture for a time and at a temperature sufficient to soften said bonding fibers and unite them with said matrix fibers at their points of intersection;

e. passing a cooling gas through the compressed mixture for a time and at a temperature sufficient to bond said bonding fibers to said matrix fibers such that said mixture retains said shape after said mold is opened; and

f. removing said cushion from said cavity.

5,571,466

Patent Not Issued For This Number

5,571,467

Patent Not Issued For This Number

5,571,468

PROCESS OF MAKING FIBERS OR FILMS OF REGENERATED CELLULOSE

Jean-Paul Meraldi; Vlastimil Cizek, and Rima Huston, all of Zurich, Switzerland, assignors to Michelin Recherche et Technique S.A., Granges-Pacot, Switzerland

Division of Ser. No. 302,753, Sep. 13, 1994. This application Jun. 6, 1995, Ser. No. 466,590

Claims priority, application France, Jan. 27, 1993, 93 01121

Int. Cl.[6] B29C *47/00;* **D01D** *10/06;* **D01F** *2/28*

U.S. Cl. 264—187 **14 Claims**

1. A process for producing a fiber or film of regenerated cellulose from a composition having a base of cellulose formate, said composition being characterized by the following points:

(i) the composition is a solution;

(ii) the concentration of cellulose formate in the composition is at least 8% by weight;

(iii) the degree of substitution of the cellulose by formate groups is greater than 20% and

(iv) the composition contains as solvent one or more compounds selected from the group consisting of alkylsulfoxides, lactams, acrylic amides and cyclic derivatives of urea,

comprising the steps of

(a) transforming the composition into a liquid extrudate having the form of a fiber or film at a temperature such that the solution is isotropic when at rest;

(b) coagulating said liquid extrudate;

(c) regenerating the cellulose of the fiber or film obtained; and

(d) washing and drying the regenerated cellulose fiber or film.

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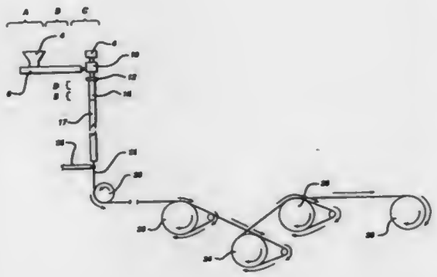
PROCESS FOR PRODUCING A POLYAMIDE SUTURE

Jogendra Suryadevara, Franklin Park, and Irandokht L Nozad, Branchburg, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Apr. 11, 1994, Ser. No. 226,138

Int. Cl.[6] D01D *5/16;10/02;* **D01F** *6/60*

U.S. Cl. 264—210.8 **14 Claims**



1. A process for manufacturing a fine denier polyamide filament suitable for use as a suture, comprising:

extruding a polyamide under conditions suitable to provide a filament;

quenching the filament in a controlled environment to provide a quenched filament;

drawing said quenched filament at a draw ratio of from about 3.0 to about 5.5× to provide a drawn filament;

annealing said drawn filament at a temperature of in the range of from about 120° C. to about 185° C. for a time in the range of from about 30 minutes to about 8 hours thereby forming a fine denier polyamide filament suitable for use as a suture.

5,571,470

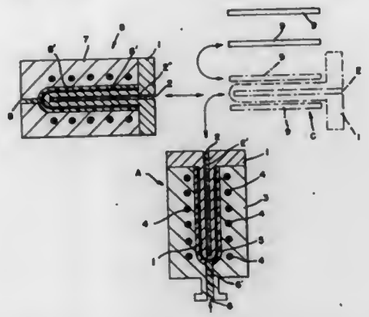
METHOD FOR FABRICATING A THIN INNER BARRIER LAYER WITHIN A PREFORM

George Piester, Brussels, Belgium, assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Feb. 18, 1994, Ser. No. 198,572

Int. Cl.[6] B29C *44/06;49/22*

U.S. Cl. 264—255 **3 Claims**



1. A method of fabricating a relatively thin inner barrier layer of a first polymer within a container preform comprising a second polymer, which comprises the steps of:

(a) internally heating a molding core rod by feeding a heating fluid into a lengthwise channel therein;

(b) internally heating a core rod receiver by flowing a heating fluid through a plurality of channels located in the body of the receiver and inserting the heated core rod into the heated core rod receiver;

(c) filling a gap formed between the core rod and the core rod receiver with a first polymer in a molten state, said first polymer having a predetermined barrier and/or inertness characteristic and forming a relatively thin barrier layer directly on the heated core rod and having a thickness defined by said gap;

(d) removing the core rod and barrier layer formed thereon from the core rod receiver while the thin barrier layer is still in a molten state;

(e) inserting the core rod and the thin barrier layer into an injection cavity mold;

(f) terminating the flow of heating fluid in the core rod and introducing a cooling fluid in said lengthwise channel and cooling the core rod; and

(g) feeding a second polymer in a molten state into an entry port of the injection cavity mold and flowing said second polymer over the thin barrier layer, said thin barrier layer being in a molten state at its outer-surface which is in contact with said second polymer, thereby fabricating a container preform comprising a thin inner layer of barrier material formed within said second polymer material.

5,571,471

METHOD OF PRODUCTION OF THREE-DIMENSIONAL OBJECTS BY STEREOLITHOGRAPHY

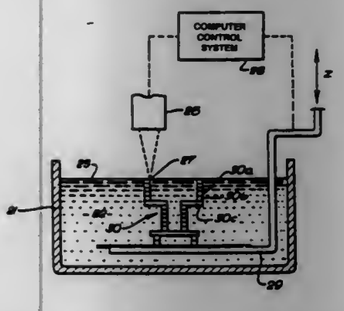
Charles W. Hull, Arcadia, Calif., assignor to 3D Systems, Inc., Valencia, Calif.

Continuation of Ser. No. 299,878, Sep. 1, 1994, abandoned, which is a division of Ser. No. 967,303, Oct. 20, 1992, Pat. No. 5,344,298, which is a continuation of Ser. No. 749,125, Aug. 23, 1991, Pat. No. 5,174,943, which is a continuation of Ser. No. 637,999, Jan. 4, 1991, abandoned, which is a continuation of Ser. No. 493,498, Mar. 14, 1990, abandoned, which is a division of Ser. No. 340,894, Apr. 19, 1989, Pat. No. 4,929,402, which is a continuation of Ser. No. 161,346, Feb. 19, 1988, abandoned, which is a continuation of Ser. No. 792,979, Dec. 9, 1985, abandoned, which is a division of Ser. No. 638,905, Aug. 8, 1984, Pat. No. 4,575,330. This application Jun. 5, 1995, Ser. No. 462,866

Int. Cl.[6] B29C *35/08;41/02*

U.S. Cl. 264—401 **20 Claims**

1. A method of producing a three-dimensional object from a



liquid medium by forming first and second cross-sectional layers of structure of said object at a surface of said liquid medium, said method comprising the steps of:

providing a body of said liquid medium;

forming said first cross-sectional layer of structure of said object at said surface of said liquid medium;

coating said first cross-sectional layer of structure of said object with a layer said liquid medium having a desired thickness, said coating step including the steps of:

firstly, positioning said first cross-sectional layer of structure into said liquid medium at a depth greater than said desired thickness; and

secondly, positioning said first cross-sectional layer of structure at a depth equal to said desired thickness;

forming said second cross-sectional layer of structure of said object at said surface of said liquid medium to build up said three-dimensional object.

5,571,472

METHOD OF IMPROVING THE ELECTRICAL CONDUCTIVITY OF SHAPED RESIN ARTICLES AND AN ELECTROSTATIC COATING PROCESS

Tetsuo Shiraiwa, Osaka, Japan, assignor to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Mar. 21, 1995, Ser. No. 408,324

Claims priority, application Japan, Mar. 30, 1994, 6-060801; Mar. 31, 1994, 6-062228

Int. Cl.[6] B29C *35/08*

U.S. Cl. 264—439 **2 Claims**

1. A method of improving the electrical conductivity of a shaped resin article which comprises kneading a nitrogen-containing compound of the following general formula (1) into a resin molding material, molding the kneaded mixture and subjecting the surface of the resulting article to corona discharge treatment:



(1)

wherein R1 represents an alkyl group of 6–22 carbon atoms, R2 and R3 may be the same or different and each represents an alkyl group of 1–4 carbon atoms; n represents 2–3;

said nitrogen-containing compound of general formula (1) being used in a proportion of 0.01–10 parts by weight based on 100 parts by weight of said resin molding material.

5,571,473

PROCESS FOR THERMOFORMING THERMOPLASTIC RESIN SHEET

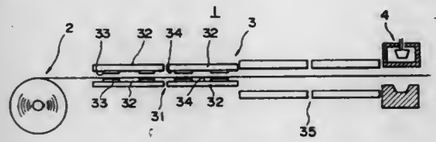
Atsushi Fujii, Himeji, Japan, assignor to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 905,406, Jun. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 627,838, Dec. 17, 1990, abandoned. This application Mar. 22, 1994, Ser. No. 215,674

Claims priority, application Japan, Dec. 28, 1989, 1-342392

Int. Cl.[6] B29C *51/10;51/42*

U.S. Cl. 264—510 **9 Claims**



1. In a process for producing a formed article by heating a thermoplastic resin sheet and then thermoforming a part of the sheet, the improvement which comprises heating said part to be thermoformed and an adjacent portion of another part of the resin sheet by placing said part and said adjacent portion in contact with a heating plate while a remaining portion of the thermoplastic resin sheet is not heated by contact with the heating plate, and then heating said part to be thermoformed, the adjacent portion and the remaining portion by placing the part to be thermoformed, said adjacent portion and the remaining portion in a non-contact state with a heating means; the part and the adjacent portion of the thermoplastic resin sheet heated with said heating plate being in a temperature range of 80° to 140° C. and said part and said portions subsequently heated in the non-contact state with said heating means being in a temperature range of 150° to 180° C.

5,571,474

BLOW MOULDING MACHINE

Dietmar Przytulla, Kerpen, Germany, assignor to Mauser-Werke GmbH, Brühl, Germany

PCT No. PCT/EP92/00800, § 371 Date May 18, 1994, § 102(e) Date May 18, 1994, PCT Pub. No. WO93/05942, PCT Pub. Date Apr. 1, 1993

PCT Filed Apr. 8, 1992, Ser. No. 211,099

Claims priority, application Germany, Sep. 14, 1991, 41 30 717.8

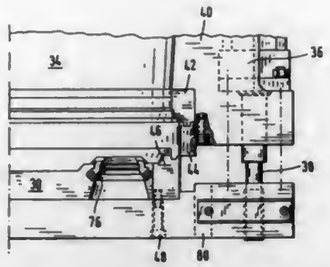
Int. Cl.[6] B29C *49/02;49/28;49/48*

U.S. Cl. 264—534 **12 Claims**

11. A process for making blow-moulded drums from thermoplastic synthetic material with an upset ring flange, comprising the steps of:

providing a kit containing a first set of ring parts exhibiting a configuration for blow moulding a first type of drum having a ring flange, and a second set of ring parts exhibiting a configuration for blow moulding a second type of drum having a ring flange, each set of ring parts including a contour ring and a pinch ring;

detachably mounting the first set of ring parts in a blow mould;



extruding a tubular preform into the blow mould equipped with the first set of ring parts and blow moulding the tubular preform in the blow mould;

vertically displacing said contour ring and pinching ring relative to one another thereby pinching the blow moulded preform between the contour and pinching rings to form the flange on the first type of drum;

removing the first type of drum from the blow mould;

removing the first set of ring parts from the blow mould and inserting the second set of ring parts;

extruding a second tubular preform into the blow mould equipped with the second set of ring parts and blow moulding the second tubular preform in the blow mould: and

vertically displacing said contour ring and pinching ring of the second set of ring parts relative to one another thereby pinching the second blow moulded preform between the contour and pinching rings to form the flange on the second type of drum; and

removing the second type of drum from the blow mould.

5,571,475

REDUCING AND SMELTING FURNACE HAVING FILTER LAYER

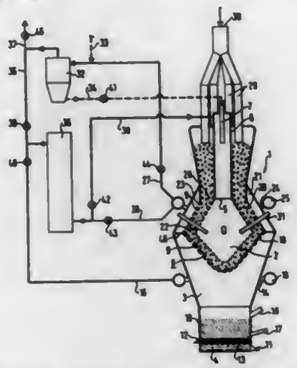
Ralph Weber, Rio de Janeiro, Brazil, assignor to Kortec AG, Zug, Switzerland

Division of Ser. No. 949,837, May 3, 1993, Pat. No. 5,364,448. This application Oct. 6, 1994, Ser. No. 318,981

Claims priority, application Germany, Mar. 14, 1991, 41 08 283.4

Int. Cl.[6] C21B *13/02*

U.S. Cl. 266—185 **13 Claims**



1. A reducing and smelting furnace in the shape of a shaft-like container having in an intermediate beight thereof a lower partition wall which is at least partially formed by a bulk material filter layer which is held by a support grid, said lower partition wall having an upper and lower side and allowing penetration of gas an liquid material from the upper to the lower sides, said lower partition wall dividing the inner space of the container in

an upper reducing space for the reduction of metal oxide particles, having inlets for solid materials in particle form and gases, and a gas outlet, and

a lower receiving space for receiving the liquid metal produced from the metal oxide particles, having a material and a gas inlet for waste gas from the reducing space and gas outlets and a tap opening for liquid metal and slag, said furnace further comprising

at least one tuyere disposed proximate said lower partition wall and directed towards the upper side of the lower partition wall.

5,571,476

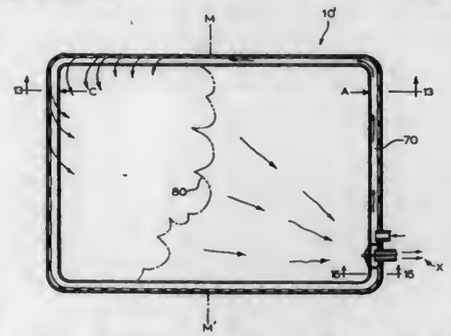
PRESSURE CHAMBER FOR STEAM STERILIZATION OF ARTICLES

Duncan Newman, 314 Kenilworth Avenue, Toronto, Ontario, Canada

Continuation of Ser. No. 976,425, Nov. 13, 1992, abandoned, which is a division of Ser. No. 762,797, Sep. 20, 1991, Pat. No. 5,271,893, which is a continuation of Ser. No. 440,689, Nov. 24, 1989, abandoned. This application Mar. 22, 1994, Ser. No. 210,767

Int. Cl.[6] A61L *2/06*

U.S. Cl. 422—26 **19 Claims**



15. Apparatus comprising a tray for receiving articles, a lid for covering said tray and for forming a cavity for sustaining a substantial pressure differential between said cavity and the exterior of said tray throughout an operating cycle, an inlet for introducing sterilizing medium into said cavity, a discharge area remote from said inlet for discharging said sterilizing medium into said cavity, and a perimetric seal at an intersection of said tray and said lid for maintaining pressure in said cavity, wherein said seal forms a channel communicating with said inlet for conveying said medium from said inlet to said discharge area in said cavity remote from said inlet.

5,571,477

EQUIPMENT FOR SAMPLING AND WORK-UP FOR ANALYSIS OF PAH AND OTHER ORGANIC COMPOUNDS, AND HYDROGEN FLUORIDE AND SULPHUR OXIDES

Kalman Nagy, Trondheim; Trygve Foo-næs, Årdalstangen; Herman Kolderup, Trondheim, and Knut Bergli, Bødalen, all of Norway, assignors to Norsk Hydro A.S., Oslo, Norway

Filed Sep. 2, 1993, Ser. No. 114,310

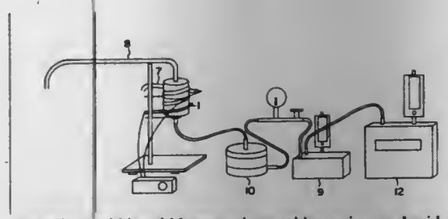
Claims priority, application Norway, Sep. 2, 1992, 923420

Int. Cl.[6] B01D *24/00;41/00*

U.S. Cl. 422—88 **25 Claims**

1. Sampling and extraction equipment, comprising:

an adsorption device comprising a bottom piece, a top piece, at least one middle piece connected between said bottom piece and said top piece, and a solid adsorbent sandwich structure



contained within said bottom piece, said top piece and said at least one middle piece, said adsorbent device further comprising an inlet and an outlet;

a sampling arrangement comprising a temperature measurement device connectable with said adsorption device for measuring the temperature thereof, a sampling device connectable with said inlet of said adsorption device for providing a sample to said adsorption device and a humidity removal device connectable with said adsorption device for removing water from a sample; and

an extraction device directly connectable with said inlet and said outlet of said adsorption device.

5,571,478

METHOD AND SYSTEM FOR DETERMINING THE DESTRUCTION AND REMOVAL EFFICIENCY OF A THERMAL COMBUSTION DEVICE

Candace D. Bartman, Lexington, S.C.; Erin M. Connolly; Michael K. Crocker, both of Morgan City, and James H. Renfroe, Jr., Houma, all of La., assignors to Marine Shale Processors, Inc., Baton Rouge, La.

Continuation-in-part of Ser. No. 24,370, Mar. 1, 1993, abandoned, and Ser. No. 984,271, Dec. 1, 1992, abandoned, which is a continuation of Ser. No. 601,299, Oct. 22, 1990, abandoned. This application Jul. 23, 1993, Ser. No. 95,482

Int. Cl.[6] G01N *31/12;21/84*

U.S. Cl. 422—94 **24 Claims**

1. A method of assessing the destruction and removal efficiency (DRE) of a thermal combustion device having a gaseous effluent according to the formula

$$DRE=100\times(W_{in}-W_{out})/W_{in}$$

where:

W_{in}=mass feed rate of an organic compound into the device, and

W_{out}=the mass emission rate of the organic compound in the gaseous effluent;

said method comprising the steps of:

feeding at least one known organic compound into said device at a known rate to provide W_{in};

combusting said organic compound to form a gaseous effluent;

sampling said gaseous effluent at a first location;

measuring with a detector the concentration of said organic compound in the sampled effluent;

calculating an expected W_{out} for a desired DRE based on W_{in};

assessing the DRE by comparing said expected W_{out} to said measured concentration of sampled effluent, or, by converting said measured concentration to a rate value, calculating the DRE based on the rate value, and comparing the calculated DRE to said desired DRE;

injecting an amount of said organic compound into said gaseous effluent at a known rate less than or equal to the expected W_{out} and sufficient to be detected, said organic compound being injected at a second location upstream from said first location and downstream from any means for removing said organic compound from said gaseous effluent;

sampling said gaseous effluent a second time at said first location; and

measuring the concentration of said organic compound in the sampled effluent in real time to ensure the detector is capable of detecting the presence of the organic compound at the desired DRE.

5,571,479

CUVETTE

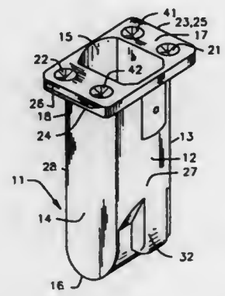
Bruno Koch, Cham, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Aug. 10, 1994, Ser. No. 288,169

Claims priority, application Switzerland, Feb. 18, 1994, 489/94

Int. Cl.[6] B01L *3/00*

U.S. Cl. 422—102 **9 Claims**



1. A cell injection molded in one piece from a transparent plastic material for performing optical measurements in an automatic analyzer, which comprises:

(a) a tubular body having a longitudinal axis and two opposite ends, the first end being open and the second end being closed, and comprising:

(i) two plane-parallel walls, each plane-parallel wall being parallel to the other plane-parallel wall;

(ii) a bottom wall which abuts the two plane-parallel walls, configured and dimensioned to close the second end of the tubular body, the bottom wall also having the shape of a half-cylinder; and

(iii) two side walls which extend between the plane-parallel walls, one of the side walls having a feeding point for injection molding the cell, the side walls each having an upper portion and a lower portion, each lower portion being adjacent the bottom wall, the lower portion of each side wall including an elongated outer projection which extends parallel to the longitudinal axis of the cell between the upper portion of the side wall and a point at a predetermined distance from the bottom wall, the outer projection on the side wall which has the feeding point being longer and broader than the outer projection on the opposite side wall, the configuration and dimensions of both outer projections and the feeding point resulting in a minimized confluence of the transparent plastic material in the bottom wall of the cell; and

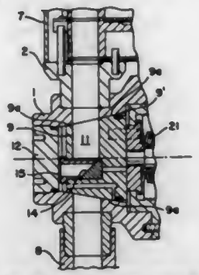
(b) two tongue members adjacent the open end of the tubular body and extending from each of the plane-parallel walls, each tongue member extending outwardly from the open end of the tubular body in a direction substantially perpendicular to the plane-parallel wall, each tongue member having an upper surface with a recess, each tongue member and its recess being positioned symmetrically relative to the other tongue member and its recess with respect to the longitudinal axis of the cell.

5,571,480

DEVICE FOR FEEDING SAMPLES TO ELEMENTAL ANALYSIS APPARATUSES

Marco Baccanti, Rodano; Paolo Magni, Besana in Brianza; Camillo Rena, Brescia, and Elio Bassi, Soresina, all of Italy, assignors to Fisons Instruments S.P.A., Rodano, Italy

Filed Aug. 27, 1993, Ser. No. 113,431
Claims priority, application Italy, Aug. 31, 1992, MI92A2035
Int. Cl.[6] G01N *35/10*
U.S. Cl. 422—103 **8 Claims**



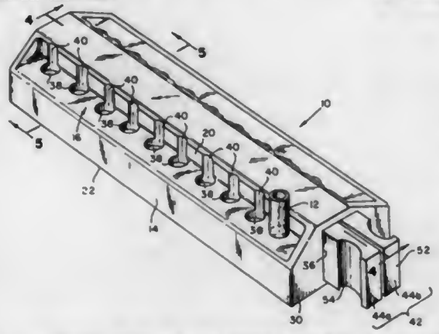
1. A sampling device for feeding samples to a combustion elemental analysis apparatus comprising a chamber having:
(a) first means for receiving a sample from a delivering unit;
(b) second means for releasing the sample into the apparatus for analysis;
(c) said chamber further including a seat having a conjugated shape, sample supporting means having a housing means; and biasing means for urging said sample supporting means against said seat, wherein said sample supporting means is substantially a truncated cone and is rotatable about its own axis between a first position wherein said housing means is connected to said first means for receiving the sample therefrom and a second position wherein said housing means is Connected to said second means and is insulated from ambient atmosphere for releasing the sample into the apparatus for analysis, and wherein said sample supporting means and said seat are complementary for substantially sealing said sample supporting means during rotation between said first position and said second position.

5,571,481

MAGNETIC CAPTURE RACK WITH SLIDABLE MAGNETIC MEMBER

Ralph Powell, Spring, Tex.; Alisa Phillips, Tyngsboro, and Barbara Jackson, Watertown, both of Mass., assignors to Vicam, L.P., Somerville, Mass.

Filed Feb. 17, 1995, Ser. No. 390,784
Int. Cl.[6] B01L *9/06*
U.S. Cl. 422—104 **28 Claims**



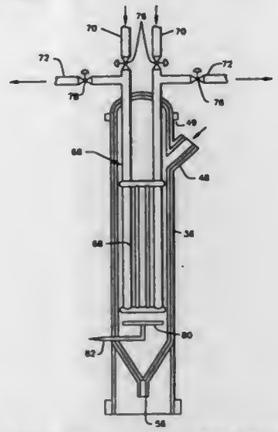
1. A magnetic capture rack for holding a plurality of tubes, said rack comprising:
a primary housing member having an upper surface, a substantially planar base surface, and a single longitudinal bore formed in said primary housing, the upper surface having a longitudinally raised portion corresponding to said longitudinal bore and a recessed portion adjacent and longitudinally formed along each opposing side of said longitudinally raised portion, thereby defining a stepped upper surface, wherein said longitudinal bore is open at least at one end thereof;
a plurality of linearly arranged wells formed in the recessed portion of the upper surface of said housing on at least one of the opposing sides of said longitudinal bore and along a length of said primary housing; and
a slidable magnetic member conforming in outer surface shape to an inner surface shape of said longitudinal bore, said magnetic member being selectively slidable into and out of said longitudinal bore, while maintaining said plurality of linearly arranged wells in a stationary position.

5,571,482

APPARATUS FOR CONTROLLING CATALYST TEMPERATURE DURING REGENERATION

Steve L. Long, Katy; Joseph L. Ross, Dallas, and Gautham Krishnaiah, Katy, all of Tex., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Filed Apr. 27, 1992, Ser. No. 874,590
Int. Cl.[6] B01J *38/32*; **F27B** *15/08*
U.S. Cl. 422—144 **1 Claim**



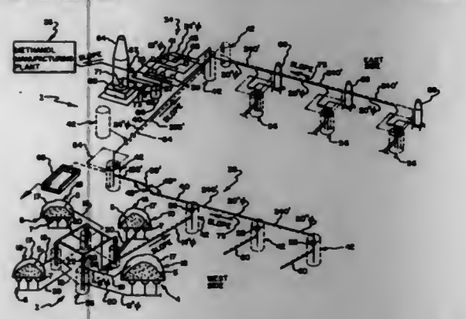
1. In a fluidized catalytic cracking system including a cracking reactor and a two-stage catalyst regeneration system, the first stage of said regeneration system comprising a first regeneration vessel having a catalyst bed, means to deliver catalyst from the cracking reactor to the first regeneration vessel, means to charge an oxidizing gas to the first regeneration vessel where oxidation of the spent catalyst takes place, said second stage comprising a second regeneration vessel having a catalyst bed therein where the catalyst from the first stage is delivered, means to deliver the catalyst from the first regeneration vessel to the second regeneration vessel, means to charge an oxidizing gas to the second regeneration vessel to complete regeneration of the catalyst, and means to deliver the regenerated catalyst from the second regeneration vessel to the reactor including exit means from the second regenerator vessel, wherein the improvement comprises a catalyst cooling system associated with the second regeneration vessel comprising a heat exchanger, means for delivery of catalyst from said second regeneration vessel to the heat exchanger including outlet means to the heat exchanger located on the second regeneration vessel at a point above the delivery of the oxidizing gas and at a level approximately equal to the level of the exit means from which the regenerated catalyst is taken for delivery to the reactor, means for return of cooled catalyst from the heat exchanger to the second regeneration vessel including cooled catalyst inlet means to the second regeneration vessel at a point below the means to charge an oxidizing gas, said heat exchanger comprising indirect cooling means within a heat exchange vessel for indirect heat exchange between the catalyst and a cooling medium wherein the means for return of the cooled catalyst and the means to deliver the catalyst from the first to the second regeneration vessel comprise the same riser.

5,571,483

SYSTEM OF CONVERTING ENVIRONMENTALLY POLLUTANT WASTE GASES TO A USEFUL PRODUCT

Hans Pfingstl, East Amherst; Walter Martyniuk, Williamsville, both of N.Y.; Armand Ladage, Hennepin, Ill.; Tom McNally, Spring Valley, Ill.; Robert Myers, Hennepin, Ill., and Ludwig Eberle, Kempten, Germany, assignors to Exelon-ESK Company, Tonawanda, N.Y., and Electroschmelzwerk Kempten GmbH, Kempten, Germany

Filed Jan. 26, 1990, Ser. No. 470,923
Int. Cl.[6] B01J *19/00*
U.S. Cl. 422—166 **19 Claims**



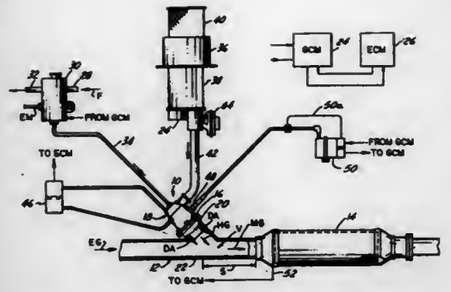
1. A system comprising:
an electrical resistance furnace silicon carbide manufacturing plant including a plurality of batch furnaces which emit environmentally pollutant by-product gases during the production of silicon carbide;
means for staggering the operation of said batch furnaces to provide a continuous flow of the by-product gases from said silicon carbide manufacturing plant;
a methanol manufacturing plant for processing the by-product gases, for production of methanol; and
means for continuously flowing the by-product gases as emitted from said silicon carbide manufacturing plant directly to said methanol manufacturing plant for immediate processing for production of methanol whereby evolution of the pollutant by-product gases into the atmosphere may be prevented.

5,571,484

CATALYTIC CONVERTER HEATER

William H. Pettit, Rochester; Kenneth J. Dauer, Avon; James F. Burkhard, Churchville, all of N.Y.; Brian C. Pugh, and James R. Finlayson, both of Grand Blanc, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 25, 1995, Ser. No. 428,746
Int. Cl.[6] F01N *3/20*
U.S. Cl. 422—173 **11 Claims**



1. An exhaust system for an internal combustion engine comprising:
exhaust pipe means for receiving exhaust gas from an internal combustion engine;
catalytic converter means connected with said exhaust pipe means for catalytically removing selected pollutants from the exhaust gas;
a fitting connected with said exhaust pipe means upstream of said catalytic converter means; and
a catalytic converter heater comprising:
an air chamber housing having an air chamber thereinside;
means for connecting a source of pressurized air to said air chamber;
a combustion chamber housing having a first end, a second end and an external surface therebetween, said combustion chamber housing having a combustion chamber therewithin, said combustion chamber housing having at least one aperture formed therein remote from said first end thereof;
means for connecting said combustion chamber housing to said air chamber housing;
a single-stage vortex located in said first end of said combustion chamber housing, said vortex having a perimeter and a vortex opening centrally disposed with respect to said perimeter, said vortex having vane means for inducing swirling movement of air passing therethrough from said perimeter to said vortex opening, said vane means forming a mixing chamber coaxial with respect to said vortex opening;
fuel nozzle assembly means for providing connection to a source of fuel, for providing atomization of fuel from the source of fuel, and for providing an orifice for emission of the atomized fuel into said mixing chamber;
combustion air passage means for providing a first air passage between said air chamber and said vortex adjacent to said vane means and said perimeter thereof;
dilution air passage means for providing a second air passage between said air chamber and an area adjacent to said external surface of said combustion chamber housing;
ignition means located in said combustion chamber housing for providing selective ignition of an air-fuel mist; and
mounting flange means connected with said air chamber housing for providing selectively removable connection thereof to said fitting of said exhaust system means;
wherein a combustion air portion of pressurized air within said air chamber passes through said combustion air passage means, through said vane means into said mixing chamber whereupon the combustion air mixes with atomized fuel emitted from said orifice to thereby form the air-fuel mist, the air-fuel mist then passes through said vortex opening into said combustion chamber whereupon the air-fuel mist is ignited by said ignition means, wherein heater combustion gas formed from combustion of the air-fuel mist is released into exhaust gas of the exhaust system through said at least one aperture in said combustion chamber housing;
wherein a dilution air portion of the pressurized air within said air chamber passes through said dilution air passage means, passes alongside said external surface of said combustion chamber, and thereupon mixes with said heater combustion gas and the exhaust gas; and
wherein said upstream location of said fitting with respect to said catalytic converter means provides a reaction volume in said exhaust pipe means between said catalytic converter heater and said catalytic converter means for providing

oxidation of said selected pollutants with oxygen of said dilution air in advance of entry thereof into said catalytic converter means;

wherein said vortex further comprises a base component having a first side and a second side, said first side thereof having a frustoconical outlet communicating with said vortex opening; and

a vane component comprising said vane means, said vane component being integrally connected with said first side of said base component, said vane means comprising a plurality of vanes having a pinwheel configuration situated between said vortex opening and said perimeter;

wherein said fuel nozzle assembly comprises a nozzle holder having a fuel passage formed therewithin, said nozzle holder having an end structured to connect to the source of fuel; and

a nozzle body connected with said nozzle bolder, said nozzle body comprising fuel atomization means communicating with said fuel passage for atomizing fuel from the source of fuel and emitting the atomized fuel at said orifice into said mixing chamber;

wherein said fuel atomization means comprises a pocket formed in said nozzle body, said pocket having a floor, said orifice being formed in said floor;

a fuel director located in said pocket, said fuel director having a cylindrical segment and a triangular segment, said triangular segment having three sides and three radiused corners, said radiused corners providing shelves with respect to said cylindrical segment, said triangular segment having a foot end abutting said floor, said foot end having a cylindrical sink formed therein, said foot further having a plurality of grooves formed therein extending from said sides to said cylindrical sink; and

a spring extending from said nozzle holder to said shelves of said fuel director.

5,571,485

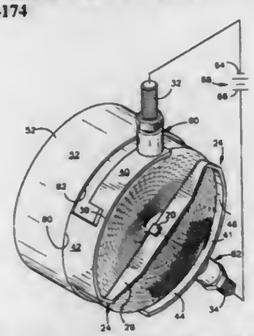
COMBINED ELECTRICALLY HEATABLE CONVERTER BODY

Gordon W. Brunson, Chagrin Falls, Ohio, assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation-in-part of Ser. No. 282,716, Jul. 29, 1994, abandoned. This application Apr. 24, 1995, Ser. No. 428,803

Int. Cl.[6] F01N *3/10;* **B01D** *53/34*

U.S. Cl. 422—174 **34 Claims**



1. A converter body comprising (a) a multicellular metallic core honeycomb formed of thin sheet metal layers, said multicellular metallic core honeycomb having a circular, oval or elliptical cross-section, said multicellular metallic core honeycomb having least one electrically heatable portion and at least one unheated honeycomb portion, the thin metal layers of the electrically heatable honeycomb portion being intertwined and integral with the thin sheet metal layers of the unheated honeycomb portion, said core honeycomb having a gas inlet face and a gas outlet face; (b) a tubular housing for said unheated honeycomb portion; and (c) a terminal bus and retainer for surrounding said electrically heatable honeycomb portion and said unheated honeycomb portion, said terminal bus and retainer comprising a shaped metal bar including at least two isolatable segments, at least one of said segments including means for connecting said at least one of said segments to a voltage source, and the other of said at least two isolatable segments dimensioned and configured to overlie and retain the intertwined integral electrically heatable and unheated portions, and each of said at least two isolatable segments lying along the periphery of said cross-section of said core honeycomb; said a shaped metal bar having a top marginal edge and a bottom marginal edge, a centrally disposed notch in sand bar in which said core honeycomb is disposed, a pair of first projections bounding said centrally disposed notch, each of said projections having a predetermined axial length extending from said top marginal edge toward said bottom marginal edge, a pair of notches outwardly of said projections, respectively, said pair of notches extending from said bottom marginal edge toward said top marginal edge, and each defining a severable strip along the top maraginal edge.

5,571,486

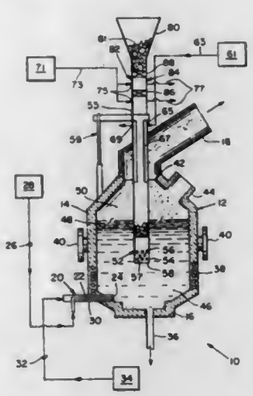
METHOD AND APPARATUS FOR TOP-CHARGING SOLID WASTE INTO A MOLTEN METAL BATH

Edgar J. Robert, Glenshaw, Pa.; F. James Howie, III, Boxborough, Mass.; Christopher J. Nagel, Wayland, Mass., and Thomas P. Griffin, Norton, Mass., assignors to Molten Metal Technology, Inc., Waltham, Mass.

Division of Ser. No. 42,609, Apr. 2, 1993, Pat. No. 5,491,279. This application May 16, 1995, Ser. No. 442,024

Int. Cl.[6] C22B *7/00*

U.S. Cl. 422—184.1 **24 Claims**



1. An apparatus for top-charging solid waste into a molten metal bath contained in a reactor, wherein the solid waste is dissociated into dissociation products which are subsequently oxidized to form a gaseous oxygenated product comprising:

a) a reactor having a reactor outlet disposed above the molten metal bath; and

b) a refractory tube extending within the reactor, through which said solid waste can be introduced into the molten metal bath, said refractory tube having a submergible end for immersion into the molten metal bath, the submergible end having a lower opening at a terminal portion of the submergible end and at least one elevated opening, whereby a portion of the molten metal bath enters the refractory tube through the lower opening for dissociating the waste and for forming the oxygenated product, the gaseous oxygenated product passing out of the refractory tube through said elevated opening end being discharged from the reactor through the reactor outlet.

5,571,487

INSTALLATION FOR SUPPLYING FLUID TO A UTILIZATION STATION AT THE UTILIZATION SITE

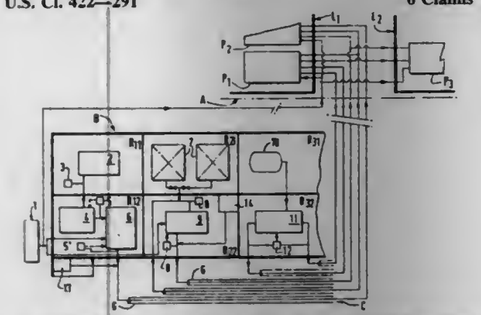
Yasuo Sato, Paris, France, assignor to L'Air, Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris Cedex, France

Division of Ser. No. 202,497, Feb. 28, 1994, Pat. No. 5,433,921. This application Mar. 8, 1995, Ser. No. 400,569

Claims priority, application France, Mar. 3, 1993, 93 02452

Int. Cl.[6] B01J *19/14*

U.S. Cl. 422—291 **6 Claims**



1. Installation for supplying at least one pure active fluid to at least one utilization station, in a first building at a utilization site, which comprises also a second building disposed at a distance from the first building and enclosing at least one source of said pure active fluid, and at least one safety conduit of high cleanliness connecting the source of said pure active fluid to the utilization station.

5,571,488

APPARATUS FOR THE HYGIENIC PREPARATION OF MEDICAL INSTRUMENTS

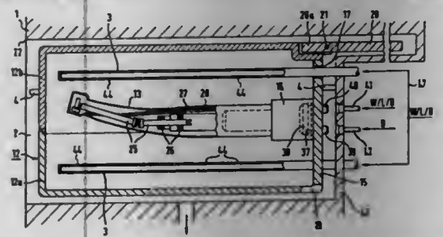
Lutz Beerstecher, Bensheim; Ralf Sutter, Weinheim; David Hruza, Bad Waldsee; Raimund Stetter-Alle, Ulm, and Karl Trackl, Langenau, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 13, 1994, Ser. No. 274,324

Claims priority, application Germany, Jul. 15, 1993, 43 23 815.7; European Pat. Off., Apr. 26, 1994, 94106517

Int. Cl.[6] A61L *2/00;9/00*

U.S. Cl. 422—297 **18 Claims**



1. An apparatus for the hygienic preparation of medical and dental instruments with media channels and dental instruments with movable interior parts, said apparatus including a closable chamber for receiving the instruments, said chamber being closable pressure-tight, means for directing a high-energy water jet onto the exterior surfaces of the instrument and in the media channels of instruments, means for blowing a water steam onto the exterior surfaces of the instrument and through the passages, means for injecting a lubricant in the internal movable parts, means for sterilizing the exterior surfaces of the instruments and internal passages with saturated steam water, and means for drying and cooling the instrument in said chamber, said means for directing, means for blowing and means for sterilizing all including nozzle arms with a plurality of nozzles being arranged to extend along each instrument for directing agents including water, water steam and saturated steam water directly onto the exterior surfaces of the instrument.

5,571,489

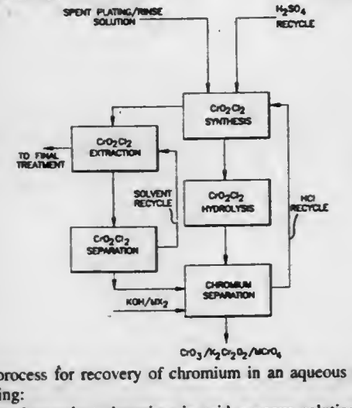
PROCESS FOR CHROMIUM RECOVERY FROM AQUEOUS SOLUTIONS

Thomas M. Holsen, Oak Forest; Jan R. Selman, and Subbarao L. Guddati, botb of Chicago, all of Ill., assignors to Illinois Institute of Technology, Chicago, Ill.

Filed Jan. 27, 1995, Ser. No. 380,851

Int. Cl.[6] C01G *37/00;37/14;37/02;* **C01B** *11/00*

U.S. Cl. 423—53 **12 Claims**



1. A process for recovery of chromium in an aqueous solution comprising:

reacting hexavalent chromium in said aqueous solution with a reactant capable of converting said hexavalent chromium to chromyl chloride, forming chromyl chloride;

separating said chromyl chloride from said aqueous solution;

hydrolyzing said chromyl chloride to form a hydrolyzed solution comprising chromic acid and hydrochloric acid; and

then treating said hydrolyzed solution to form one of a) chromic acid, b) an alkali chromate salt, or c) an insoluble chromate salt.

5,571,490

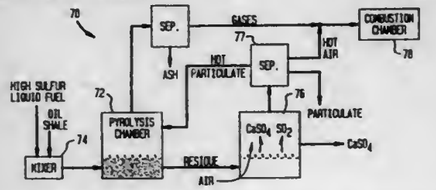
METHOD AND MEANS FOR EXPLOITING FUEL HAVING HIGH SULFUR CONTENT

Lucien Y. Bronicki, Yavne, and Benjamin Doron, Jerusalem, both of Israel, assignors to Ormat, Inc., Sparks, Nev.

Continuation of Ser. No. 835,358, Feb. 14, 1992, abandoned, which is a continuation of Ser. No. 683,690, Apr. 11, 1991, abandoned. This application Feb. 17, 1994, Ser. No. 197,551

Int. Cl.[6] B01J *8/00;* **C01B** *7/00;* **F23J** *11/00*

U.S. Cl. 423—244.01 **24 Claims**



1. A method comprising:

a) pyrolyzing a sulfur bearing fuel together with oil shale containing calcium compounds to produce a combustible gaseous product containing entrained particulate, and a carbonaceous residue product;

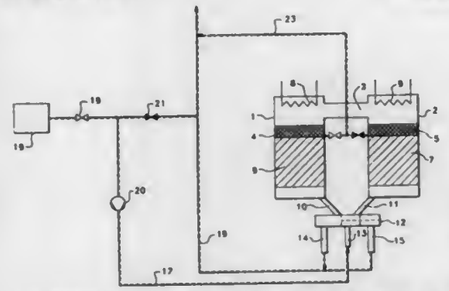
b) separately combusting said residue product with excess air at a temperature sufficient to produce hot gases and hot particulate;
c) separating said hot particulate from said hot gases to produce substantially particulate-free hot gases;
d) separating particulate from said combustible gaseous product to form combustible gases substantially free of particulate; and
e) mixing said substantially particle-free hot gases with said combustible gases substantially free of particulate to form a gaseous mixture substantially free of particulate.

5,571,491

PURIFYING APPARATUS

Alf Thunström, Södertälje, Sweden, assignor to Modo-Chemetics AB, Ärnsköldsvik, Sweden

PCT No. PCT/SE92/00883, § 371 Date Sep. 2, 1994, § 102(e) Date Sep. 2, 1994, PCT Pub. No. WO93/11857, PCT Pub. Date Jun. 24, 1993
PCT Filed Dec. 18, 1992, Ser. No. 256,097
Claims priority, application Sweden, Dec. 19, 1991, 9103777
Int. Cl.[6] B01J *8/00;8/02*
U.S. Cl. 423—245.3 **5 Claims**



1. A method of purifying a gas polluted by hydrocarbons in an apparatus having two reactors, each reactor including a catalyst bed and a ceramic bed with a border layer therebetween, said method comprising the steps of:
alternately streaming said gas in a clock-wise direction through the first reactor and then through the second reactor, and streaming said gas in a counter clock-wise direction through the second reactor and then through the first reactor, wherein the hydrocarbons are oxidized to carbon dioxide and water as the hydrocarbons pass over the catalyst beds;
monitoring the temperature of said gas streaming through an upper portion of the reactors;
removing a portion of said gas streaming in the clock-wise direction as said gas passes over the border layer lying between the catalyst bed and the corresponding ceramic bed of the second reactor when said gas exceeds a certain temperature; and
removing a portion of said gas streaming in the counter clock-wise direction as said gas passes over the border layer lying between the catalyst bed and the corresponding ceramic bed of the first reactor when said gas exceeds a certain temperature.

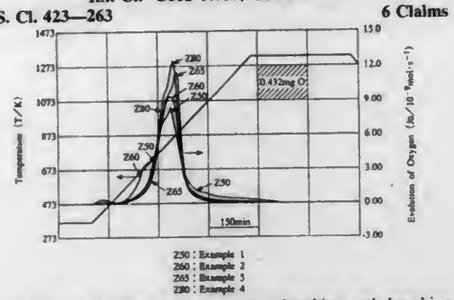
2. An apparatus for purifying a gas polluted by hydrocarbons; said apparatus comprising:
two reactors positioned at a distance from one another;
pipe means connecting the two reactors together;
the first reactor including a first catalyst bed connected to a first ceramic bed;
a first border layer lying between the first catalyst bed and the first ceramic bed;
the second reactor including a second catalyst bed connected to a second ceramic bed;
a second border layer lying between the second catalyst bed and the second ceramic bed; and
conduit means for venting said gas from each reactor to the atmosphere, the conduit means being connected to each reactor at the border layers so that said gas may be vented to the atmosphere from the border layer of each reactor.

5,571,492

COMPOSITE OXIDE HAVING OXYGEN ABSORBING AND DESORBING CAPABILITY

Shinya Yao, Osaka-fu; Hideo Yokoi; Tadatoshi Murota; Kazuhiro Yamamoto, and Shigeru Aozasa, all of Hyogo-ken, Japan, assignors to Santoku Metal Industry Co., Ltd., Hyogo-ken, Japan

Continuation-in-part of Ser. No. 263,608, Jun. 20, 1994, Pat. No. 5,478,543. This application Oct. 2, 1995, Ser. No. 537,628
Claims priority, application Japan, Oct. 5, 1994, 6-241661
Int. Cl.[6] C01F *17/00;* **C01B** *13/00*
U.S. Cl. 423—263 **6 Claims**



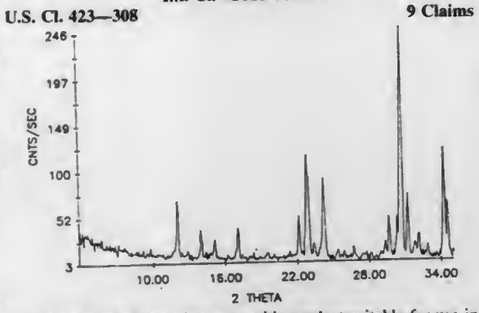
1. A composite oxide having oxygen absorbing and desorbing capability, which comprises 4.99–98.99% by weight of cerium oxide, 1–95% by weight of zirconium oxide and 0.01–20% by weight of hafnium oxide, the composite oxide including Φ' phase as a crystal phase and having oxygen absorbing and desorbing capability of at least 100 μmol/g at 400° to 700° C.

5,571,493

REACTIVE TRICALCIUM PHOSPHATE COMPOSITIONS AND USES

Mark Fulmer, San Jose; Brent R. Constantz, Los Gatos; Ira C. Ison, Campbell, and Bryan M. Barr, San Jose, all of Calif., assignors to Norian Corporation, Cupertino, Calif.

Divislon of Ser. No. 334,519, Nov. 4, 1994. This application Jun. 6, 1995, Ser. No. 468,673
Int. Cl.[6] C01B *25/32*
U.S. Cl. 423—308 **9 Claims**



1. A method of preparing an apatitic product suitable for use in bone repair comprising:
combining (a) a phosphoric acid source substantially free of combined water, (b) a calcium source comprising reactive α-C_3P and at least one additional calcium source selected from the group consisting of calcium hydroxide and calcium carbonate and (c) a physiologically compatible lubricant, to form a kneadable product, wherein said kneadable product is capable of setting in situ in less than 10 minutes; and
allowing said kneadable product to set into a solid apatitic product.

5,571,494

TEMPERATURE-ACTIVATED POLYSILICIC ACIDS

Sakari Saastamoinen, Taavetti, Finland, assignor to J. M. Huber Corporation, Locust, N.J.

Filed Jan. 20, 1995, Ser. No. 375,886
Int. Cl.[6] C01B *33/12*
U.S. Cl. 423—338 **26 Claims**

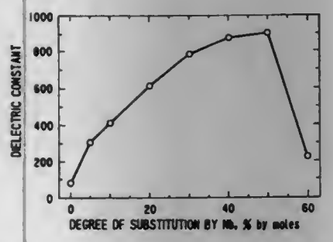
1. A process for producing a temperature-activated polysilicic acid comprising the steps of heating an acidified aqueous alkali metal silicate at a temperature of about 30° to 250° C. at a pH of about 0 to 5 to produce said temperature-activated polysilicic acid.

5,571,495

DIELECTRIC THIN FILM OF SUBSTITUTED LEAD TITANATE

Takashi Iijima, Sendai, and Norio Sanada, Miyagi-ken, both of Japan, assignors to Japan as represented by Director General of Agency of Industrial Science and Technology, Japan

Filed Aug. 2, 1995, Ser. No. 510,270
Claims priority, application Japan, Aug. 11, 1994, 6-210644
Int. Cl.[6] C01G *23/00*
U.S. Cl. 423—598 **2 Claims**



1. A dielectric thin film of a substituted lead titanate having a chemical composition expressed by the composition formula

$$Pb(Ti_{1-x}M_x)O_3$$

in which the subscript x is a positive number in the range from 0.05 to 0.50 and M is an element selected from the group consisting of niobium, tantalum, vanadium, antimony, bismuth, arsenic, tungsten, hafnium, germanium, tin, aluminum and gallium substituting for a part of the titanium atoms in the perovskite crystal lattice of lead titanate.

5,571,496

Patent Not Issued For This Number

5,571,497

LIPOSOMES AS CONTRAST AGENTS FOR ULTRASONIC IMAGING AND APPARATUS AND METHODS FOR PREPARING THE SAME

Evan C. Unger, Tucson, Ariz., assignor to ImaRx Pharmaceutical Corp., Tucson, Ariz.

Division of Ser. No. 395,683, Feb. 28, 1995, Pat. No. 5,456,901, which is a division of Ser. No. 163,039, Dec. 6, 1993, which is a division of Ser. No. 85,608, Jun. 30, 1993, Pat. No. 5,334,381, which is a division of Ser. No. 18,112, Feb. 17, 1993, abandoned, which is a division of Ser. No. 967,974, Oct. 27, 1992, Pat. No. 5,352,435, which is a division of Ser. No. 818,069, Jan. 8, 1992, Pat. No. 5,230,882, which is a division of Ser. No. 750,877, Aug. 26, 1991, Pat. No. 5,123,414, which is a division of Ser. No. 569,828, Aug. 20, 1990, Pat. No. 5,088,499, which is a continuation-in-part of Ser. No. 455,707, Dec. 22, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 468,056
Int. Cl.[6] A61K *49/00*
U.S. Cl. 424—9.51 **86 Claims**

1. A method of synthesizing a liposome having encapsulated therein a gas comprising the steps of:
(a) placing a liquid media containing liposomes in a vessel,
(b) pressurizing said vessel with a cooled gas, thereby dissolving a first portion of said gas into said liquid media, so that a portion of said dissolved gas enters said liposomes, and
(c) rapidly depressurizing said vessel by releasing a second portion of said gas from said vessel, thereby causing said dissolved gas having entered said liposomes to form bubbles within said liposomes,
and further comprising the step of sizing said liposomes.

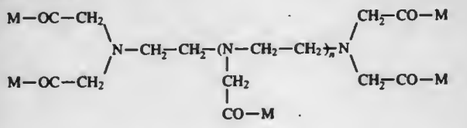
5,571,498

EMULSIONS OF PARAMAGNETIC CONTRAST AGENTS FOR MAGNETIC RESONANCE IMAGING (MRI).

William P. Cacheris, Florissant; Robert J. Kaufman, and Thomas J. Richard, both of University City, all of Mo., assignors to HemaGen/PFC, St. Louis, Mo.

Filed Jun. 2, 1994, Ser. No. 252,830
Int. Cl.[6] A61B *5/055*
U.S. Cl. 424—936.5 **37 Claims**

1. A physiologically acceptable emulsion for enhancement of MRI imaging comprising water, a dispersed oil phase and a complex of a paramagnetic metal ion and an organic chelator having the formula



wherein from 2 to 5M groups are hydroxyl, n=0 to 2, and at least one remaining M group is NR_1R_2, each R_1 is a C_{10}–C_{30} unsaturated aliphatic group and R_2 is hydrogen, hydroxyl or a C_1–C_2 alkyl.

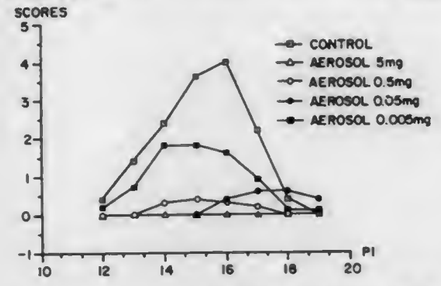
5,571,499
TREATMENT OF AUTOIMMUNE DISEASES BY AEROSOL ADMINISTRATION OF AUTOANTIGENS

David A. Hafler, W. Newton, and Howard L. Weiner, Brookline, both of Mass., assignors to Autoimmune, Inc., Lexington, Mass.

Continuation of Ser. No. 419,502, Apr. 10, 1995, which is a continuation of Ser. No. 53,306, Apr. 26, 1993, abandoned, which is a continuation of Ser. No. 454,806, Dec. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 379,778, Jul. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 65,734, Jun. 24, 1987, abandoned. This application Jun. 6, 1995, Ser. No. 465,815

Int. Cl.[6] A61K *9/12;38/02*

U.S. Cl. 414—43 **14 Claims**



1. A method for treating a cell-mediated autoimmune disease in a mammal by suppressing an autoimmune response associated with said disease, which comprises administering to said mammal through nasal administration an effective amount for suppressing said autoimmune response of at least one agent selected from the group consisting of:

(a) MBP or an autoimmune response suppressive fragment of MBP when said autoimmune disease is multiple sclerosis: and

(b) collagen or an autoimmune response suppressive fragment of collagen when said autoimmune disease is rheumatoid arthritis.

5,571,500
TREATMENT OF AUTOIMMUNE DISEASES THROUGH ADMINISTRATION BY INHALATION OF AUTOANTIGENS

David A. Hafler, W. Newton, and Howard L. Weiner, Brookline, both of Mass., assignors to Autoimmune, Inc., Lexington, Mass.

Continuation of Ser. No. 419,502, Apr. 10, 1995, which is a continuation of Ser. No. 53,306, Apr. 26, 1993, abandoned, which is a continuation of Ser. No. 454,806, Dec. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 379,778, Jul. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 65,734, Jun. 24, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 480,188

The portion of the term of this patent subsequent to Jun. 7, 2015, has been disclaimed.

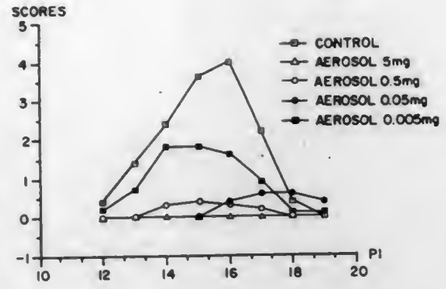
Int. Cl.[6] A61K *9/12;38/02*

U.S. Cl. 424—43 **13 Claims**

1. A method for treating a cell-mediated autoimmune disease selected from the group consisting of multiple sclerosis and rheumatoid arthritis by suppressing an autoimmune response associated with said disease, which comprises administering to said mammal by inhalation an effective amount for suppressing said autoimmune response of at least one agent selected from the group consisting of:

(a) MBP or an autoimmune response suppressive fragment of MBP when said autoimmune disease is multiple sclerosis; and

(b) collagen or an autoimmune response suppressive fragment of collagen when said autoimmune disease is rheumatoid arthritis.



5,571,501
ANTIBACTERIAL ORAL CARE COMPOSITION CONTAINING TRICLOSAN OF IMPROVED COMPATIBILITY

Arthur Toy, Stanford, Conn., assignor to Colgate Palmolive Company, New York, N.Y.

Filed Mar. 15, 1994, Ser. No. 213,279

Int. Cl.[6] A61K *7/16;31/085*

U.S. Cl. 424—49 **6 Claims**

1. An aqueous based oral composition which comprises an orally acceptable vehicle for such composition and the potassium salt of 2,4,4'-trichloro-2'-hydroxydiphenyl ether (Triclosan) as the sole antibacterial agent.

5,571,502
STABLE SINGLE-PART COMPOSITIONS AND THE USE THEREOF FOR REMINERALIZATION OF LESIONS IN TEETH

Anthony E. Winston, East Brunswick, and Norman Usen, Marlboro, both of N.J., assignors to Enamelon Research, East Brunswick, N.J.

Filed Aug. 8, 1995, Ser. No. 512,287

Int. Cl.[6] A61K *7/16;7/18;33/16*

U.S. Cl. 424—52 **12 Claims**

1. A stable, single part, non-aqueous product for remineralizing lesions in teeth comprising:

(i) from about 0.05% to 15.0% of at least one water-soluble calcium salt;

(ii) from about 0.05% to 15.0% of at least one water-soluble phosphate salt;

(iii) a hydrophilic, non-aqueous vehicle which is water-soluble; and

(iv) wherein when the salts are contacted with water or saliva the pH of the mixture is between about 4.5 and 10.0.

5,571,503
ANTI-POLLUTION COSMETIC COMPOSITION

Jack Mausner, 150 E. 69th St., New York, N.Y. 10021

Filed Aug. 1, 1995, Ser. No. 510,077

Int. Cl.[6] A61K *7/42;7/00*

U.S. Cl. 424—59 **62 Claims**

1. A cosmetic composition comprising: water, and emulsified and dispersed in the water:

(a) an anti-pollution complex comprising propylene glycol, hydrolyzed wheat protein, mannitol, glycogen, yeast extract, ginseng extract, linden extract, calcium pantothenate, horse chestnut extract, and biotin;

(b) a micellar complex comprising: phospholipids, glycosphingolipids, panthenol, cholesterol, Crataegus extract, and sodium hyaluronate;

(c) an anti-free radical complex comprising melanin, a short-chain fatty acid ester of tocopherol, a long-chain fatty acid ester of retinol, and a long-chain fatty acid ester of ascorbic acid; and

(d) a sunscreen;

the anti-pollution complex, the micellar complex, and the anti-free radical complex each being present in a quantity sufficient to detectably reduce the damaging effect of at least one environmental stress selected from the group consisting of environmental pollutants, moisture loss, and free radical activity on the skin of a wearer to whom the composition is applied, and the sunscreen being present in a quantity sufficient to protect the skin against at least one of UV-A and UV-B solar radiation.

5,571,504
METHOD OF STABILIZING PREPARATIONS FOR CONTACT LENSES

Hisayuki Nakayama, Akashi; Akihiro Kimoto, Kobe, and Kuniko Tsuchino, Osaka, all of Japan, assignors to Senju Pharmaceutical Co., Ltd., Osaka, Japan

Filed Oct. 3, 1994, Ser. No. 317,660

Claims priority, application Japan, Oct. 1, 1993, 5-270045; Aug. 11, 1994, 6-211834

Int. Cl.[6] A61K *33/18*

U.S. Cl. 424—78.04 **14 Claims**

1. A method for stabilizing a preparation for cleansing contact lenses that contains a proteolytic enzyme, the method comprising including in the preparation an amount effective to stabilize the enzyme of a pyrrolidone compound selected from the group consisting of pyrrolidone and pyrrolidone-carboxylic acid and a salt or ester thereof.

5,571,505
ANTI-HIV OLIGOMERS

Alan D. Cardin; Richard L. Jackson, both of Cincinnati, Ohio, and Michael J. Mullins, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 132,551, Oct. 6, 1993, which is a division of Ser. No. 710,370, Jun. 10, 1991, Pat. No. 5,276,182, which is a continuation-in-part of Ser. No. 549,782, Jul. 9, 1990, abandoned. This application May 19, 1995, Ser. No. 445,158

Int. Cl.[6] A61K *31/74*

U.S. Cl. 424—78.08 **38 Claims**

1. A water-soluble, rigid backbone oligomer having a number average molecular weight less than 10,000 comprising recurring units coupled by carbonyl linking moieties, said oligomer having anionic groups and predominantly linear geometry such that regular spacing between anionic groups exists in an aqueous medium.

5,571,506
AROMATIC OLIGOMERIC COMPOUNDS USEFUL AS MIMICS OF BIOACTIVE MACROMOLECULES

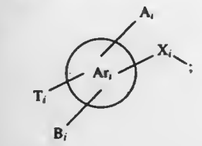
John R. Regan, Princeton, N.J.; Daniel G. McGarry, King of Prussia, Pa.; Michael N. Chang, Newtown, Pa.; Jeffrey N. Barton, Philaddelphia, Pa.; Jack Newman, Warrington, Pa., and Schmuel Ben-Sasson, Jerusalem, Israel, assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Collegeville, Pa.

Continuation of Ser. No. 703,061, May 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 440,584, Nov. 22, 1989, abandoned, Ser. No. 440,586, Nov. 22, 1989, abandoned, and Ser. No. 393,873, Aug. 14, 1989, abandoned. This application Sep. 10, 1993, Ser. No. 119,456

Int. Cl.[6] A61K *31/775;* **C08G** *8/04*

U.S. Cl. 424—78.17 **32 Claims**

1. A pharmaceutical composition comprising, in admixture with a pharmaceutically acceptable carrier, a linear oligomeric compound according to the formula



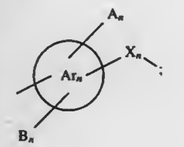
$$M_r\text{-}(M_n)_n\text{-}M_t$$

wherein:

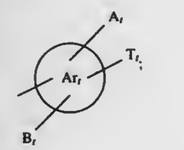
n represents a sequence of whole numbers beginning at 3 and having an upper limit of about 50;

M_i is

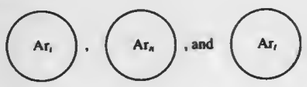
M_n is



M_t is



where



are independently aromatic carbocyclic or aromatic heterocyclic rings;

where



A_n, B_n, and X_n may be the same or different for each of the $(M_n)_n$ groups in the n sequence; and

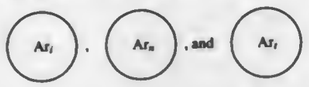
A_i, B_i, A_n, B_n, A_t, and B_t are independently hydrogen, alkyl, aralkyl, cyano, alkoxyalkoxy, or $-(CH_2)_a-W-(CH_2)_b-R_z$, where R_z is NRR', COOR, CONRR', NR(COR'), PO(OR)$_2$, COR, SO_3OR, OSO_2OR, halogen, OR, SO_2R, SOR, SR, or CHO, and where a and b are independently 0 to about 4, (a+b) is less than about 5, W is —O—, —S—, —SO—, —SO_2—, —NR(COR')—, —NR—, or a bond, and R and R' are independently hydrogen, alkyl or aralkyl, provided that at least one of the substituent groups, A_i, B_i, A_n, B_n, A_t, and B_t is $-(CH_2)_a-W-(CH_2)_b-R_z$ where R_z is other than hydroxy or halogen;

T_i and T_t are independently hydrogen, alkyl, alkenyl, halo, cyano, alkoxyalkoxy, haloalkyl, hydroxy, tert-butyldimethylsilyloxyalkyl, hydroxyalkyl, alkoxy, aralkoxy, aryloxy, alkoxyalkyl, aralkoxyalkyl, aryloxyalkyl, mercapto, mercaptoalkyl, alkylthio, aralkylthio, alkylthioalkyl, aralkylthioalkyl, arylthioalkyl, amino, alkylamino, aminoalkyl, alkylaminoalkyl, acylamino, acylaminoalkyl, carboxy, carboxyalkyl, alkoxycarbonyl, alkoxycarbonylalkyl,

aralkoxycarbonyl, aralkoxycarbonylalkyl, aryloxycarbonyloxy, formyl, formylalkyl, acyl, acyloxy, and acylalkyl;

X_i and X_n are independently $—(CR_1R_2)_m—Y—(CR_3R_4)_p—$ where R_1, R_2, R_3, and R_4 are independently hydrogen or alkyl, m and p are independently 0 to about 5, provided that (m+p) is 0 to about 5, and Y is a bond or —O—, provided that when Y is —O—, then either m or p is 0;

provided that at least one of A_i, B_i, A_n, B_n, A_r, B_r, T_i and T_r is NRR', COOR, NR(COR'), $PO(OR)_2$, COR, SO_2OR, OR, SO_2R, SR, or CHO; and provided further that when



are all naphthalene, then at least one of A_i, B_i, A_n, B_n, A_r, and B_r is $—(CH_2)_a—W—(CH_2)_b—R_s$ where R_s is COOR;

or a pharmaceutically acceptable salt thereof.

5,571,507

METHODS OF TREATING DIABETES

Vicki E. Rubin-Kelley; Terry B. Strom, both of Brookline, Mass.; Jean-Francois Bach, Paris, France, and Jean C. Nichols, Wayland, Mass., assignors to Seragen, Inc., Hopkinton, Mass.

Filed Feb. 25, 1992, Ser. No. 840,867

Int. Cl.[6] A61K *45/05;38/20;* **C07K** *14/55;7/64*

U.S. Cl. 424—85.2 **14 Claims**

1. A method of treating a patient with diabetes, said method comprising administering to said patient a hybrid molecule comprising a first portion and a second portion joined together covalently, said first portion comprising a cytotoxin capable of decreasing cell viability, said second portion comprising all or an interleukin-2 receptor binding portion of interleukin-2 capable of binding to a high affinity interleukin-2 receptor on a cell, said hybrid molecule being administered to said patient in the presence or absence of cyclosporin A administered at a non-nephrotoxic dosage of 4–5 mg/kg/day until said patient's diabetic condition has substantially improved, following which cyclosporin A, but not said hybrid molecule is administered to said patient, said cyclosporin A being administered at a non-nephrotixic dosage of 4 . 5 mg/kg/day.

5,571,508

METHOD FOR THE TREATMENT OF THROMBOCYTOPENIA AND PHARMACEUTICAL COMPOSITIONS USEFUL THEREFOR

Donald Metcalf, Balwyn, Australia, assignor to Amrad Corporation Limited, Victoria, Australia

PCT No. PCT/AU90/00592, § 371 Date Jul. 27, 1992, § 102(e) Date Jul. 27, 1992, PCT Pub. No. WO91/08752, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 8, 1990, Ser. No. 853,774

Claims priority, application Australia, Dec. 18, 1989, PJ7912/89; Nov. 23, 1990, PK3501/90

Int. Cl.[6] A61K *45/05*

U.S. Cl. 424—85.2 **10 Claims**

1. A method for treating thrombocytopenia in a mammal which method comprises administering to said mammal an effective amount of Leukaemia Inhibitory Factor (LIF) for a time and under conditions sufficient to increase the level of formation of megakaryocytes or their progenitors or increase the level of platelets.

5,571,509

TRUNCATED FORMS OF THE HEPATOCYTE GROWTH FACTOR (HGF) RECEPTOR

Paolo Comoglio; Tiziana Crepaldi, and Maria Prat, all of Turin, Italy, assignors to Farmitalia Carlo Erba S.R.L., Milan, Italy

Filed May 7, 1992, Ser. No. 879,384

Claims priority, application United Kingdom, May 10, 1991, 9110202; Nov. 22, 1991, 9124896

Int. Cl.[6] C12N *9/10;9/12;* **A61K** *38/45*

U.S. Cl. 424—94.5 **2 Claims**

1. An isolated and purified protein comprising two disulfide linked chains of 50 kDa and either 75 or 85 kDa, wherein the 50 kDa chain is an α-chain of a tyrosine kinase encoded by a MET protooncogene and the 75 or 85 kDa chain is a C-terminal truncated form of a β-chain of said tyrosine kinase.

5,571,510

METHOD FOR SELECTIVE METHIONINE STARVATION OF MALIGNANT CELLS IN MAMMALS

Tsutomu Nobori, and Dennis A. Carson, both of San Diego, Calif., assignors to The Regents of the University of California, Calif.

Filed Dec. 29, 1993, Ser. No. 176,413

Int. Cl.[6] A61K *38/51;* **C12Q** *1/68;* **C12N** *9/88*

U.S. Cl. 424—94.5 **10 Claims**

1. A method for the selective methionine starvation of cells in a mammal which are suspected of being MTAse negative comprising:

determining whether the mammal has cells which lack catalytically active and catalytically inactive MTAse by assay means comprising:

(a) obtaining an assayable sample of cells from the mammal which are suspected of being MTAse negative,

(b) adding oligonucleotide probes to the sample which will specifically hybridize to a nucleic acid that encodes MTAse, wherein the probes are added under conditions which will allow the probes to detectably hybridize to any such nucleic acid present in the sample, and

(c) determining whether the nucleic acid is present in the sample, wherein the absence of nucleic acid indicates that the cells are MTAse negative;

wherein further a therapeutically effective amount of METase is administered to a mammal having MTAse negative cells and, at substantially the same time, a therapeutically effective amount of MTA is administered to the mammal.

5,571,511

BROADLY REACTIVE OPSONIC ANTIBODIES THAT REACT WITH COMMON STAPHYLOCOCCAL ANTIGENS

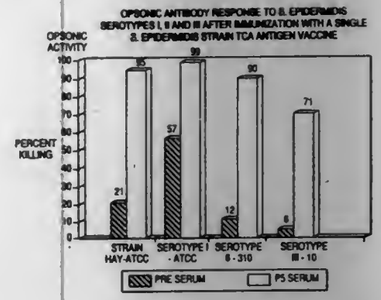
Gerald W. Fischer, Bethesda, Md., assignor to The U.S. Government, Washington, D.C.

Continuation of Ser. No. 854,027, Mar. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 804,317, Feb. 25, 1992, abandoned, which is a continuation of Ser. No. 601,089, Oct. 22, 1990, abandoned. This application Mar. 28, 1994, Ser. No. 219,238

Int. Cl.[6] A61K *39/40*

U.S. Cl. 424—165.1 **7 Claims**

1. An antigen preparation isolated from *Staphylococcus epidermidis* strain Hay ATCC 55133, wherein said preparation generates broadly reactive opsonic antibody which specifically reacts in an assay with *Staphylococcus epidermidis* serotypes I, II and III, and which exhibits opsonic activity greater than 70%.



5,571,512

PHARMACEUTICAL COMPOSITION AGAINST AIDS

Mitsuo Honda; Shudo Yamazaki, both of Tokyo; Ryuichi Horie, Kawasaki; Takashi Saito, Ayase; Katsuyoshi Shigeta, Yokohama, and Noriyuki Ota, Sagamihara, all of Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Filed Aug. 5, 1993, Ser. No. 102,218

Claims priority, application Japan, Aug. 14, 1992, 4-237594

Int. Cl.[6] A61K *39/395;* **C07K** *16/18;* **C12N** *5/12*

U.S. Cl. 424—137.1 **1 Claim**

1. An immunoreactive composition comprising a monoclonal antibody capable of recognizing glycolipid extracted from sperm of *Hemicentrotus pulcherrimus*, wherein said antibody also binds to glycolipid extracted from LS-174T cells, K562 cells and COLO201 cells, and wherein said antibody binds a least one glycolipid selected from the group consisting of NeuAcα2→6Glc→Cer and NeuAcα2→8NeuAcα2→6Glc-Cer.

5,571,513

ANTI-GP130 MONOCLONAL ANTIBODIES

Samuel A. Burstein, Edmond, Okla., assignor to The Board Of Regents Of The University Of Oklahoma, Norman, Okla.

Filed May 31, 1995, Ser. No. 455,799

Int. Cl.[6] A61K *39/395;* **C07K** *16/28;* **C12P** *21/08;* **C12N** *5/20*

U.S. Cl. 424—144.1 **4 Claims**

1. An antibody which specifically binds to the extracellular domain of human cytokine receptor gp130 and which is produced by a hybridoma having ATCC Accession No. HB12022.

5,571,514

FIBRONECTIN BINDING PROTEIN AS WELL AS ITS PREPARATION

Magnus Höök, Birmingham, Ala.; Martin K. Lindberg, Upsala, Sweden; Lars C. Signäs, Upsala, Sweden; Torkel M. Wadström, Lund, Sweden, and Gunnar Fröman, Upsala, Sweden, assignors to Alfa Laval AB, Tumba, Sweden

Division of Ser. No. 7,817, Jan. 22, 1993, Pat. No. 5,320,951, which is a continuation of Ser. No. 201,028, Jun. 1, 1988, abandoned. This application Jun. 13, 1994, Ser. No. 259,000

Claims priority, application Sweden, Jun. 1, 1987, 8702272

Int. Cl.[6] A61K *39/085*

U.S. Cl. 424—190.1 **8 Claims**

1. A vaccine composition comprising an effective amount of a protein encoded by a hybrid DNA molecule comprising a nucleotide sequence from *Staphylococcus aureus* encoding an isolated protein having fibronectin binding activity, whereby said protein induces immunization by forming antibodies in a mammal against *Staphylococcus aureus* to provide protection for clinical symptoms to *Staphylococcus aureus* wherein the hybrid DNA molecule comprises one or more of the nucleotide sequences selected from the group consisting of nucleotides 1–114 of [SEQ ID NO. 2], nucleotides 115–228 of [SEQ ID NO. 2], and nucleotides 229–342 of [SEQ ID NO. 2]: and a pharmaceutical acceptable vaccine carrier therefor.

5,571,515

COMPOSITIONS AND METHODS FOR USE OF IL-12 AS AN ADJUVANT

Phillip Scott, Swarthmore, and Giorgio Trinchieri, Wynnewood, both of Pa., assignors to The Wistar Institute of Anatomy & Biology, and The Trustees of the University of Pennsylvania, both of Philadelphia, Pa.

Continuation-in-part of Ser. No. 229,282, Apr. 18, 1994, abandoned. This application Jun. 17, 1994, Ser. No. 265,087

Int. Cl.[6] A61K *39/21;39/12;* **C07K** *1/00;14/00*

U.S. Cl. 424—208.1 **3 Claims**

1. An immunogenic composition comprising soluble leishmania antigen and an effective adjuvanting amount of Interleukin-12.

5,571,516

BATH MEDICINE

Hiroshi Tezuka, and Kazuyo Tezuka, both of Tokyo, Japan, assignors to K.K. Nendo Science Laboratory, Tokyo, Japan

Filed Aug. 23, 1994, Ser. No. 294,556

Claims priority, application Japan, Aug. 24, 1993, 5-230860

Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—401 **3 Claims**

1. A bath medicine comprising:

Ingredient	Amount (pt. by wt.)
purified water	25.5
sodium montmorillonite	7.5
urea	3.0
kaolin	19.0
concentrated glycerol	23.0
sugar ester	2.0
squalane	2.0
rice germ oil	3.0
sodium lactate	3.0
oligopeptide formed by enzymolyzing silk yarn protein	2.0
sodium DL-pyrrolidonecarboxylate	4.0
1, 3-butylene glycol	2.5
fermented rice extract	2.0
loquat leaf extract	1.5.

2. The bath medicine comprising:

Ingredient	Amount (pt. by wt.)
purified water	9.2
sodium montmorillonite	5.5
urea	3.0
1, 3-butylene glycol	3.0
sodium lactate solution	2.0
oligopeptide formed by enzymolyzing silk yarn protein	2.0
sodium DL-pyrrolidonecarboxylate	3.5
kaolin	14.5
glycerol	18.0
rice germ oil	2.5
jojoba oil	1.5
lysozyme	1.8
scutellaria root extract	2.0.

3. The bath medicine comprising:

Ingredient	Amount (pt. by wt.)
purified water	37.0
sodium montmorillonite	6.0
urea	1.0
1, 3-butylene glycol	2.0
sodium lactate solution	2.0
kaolin	14.5
glycerol	19.0
sorbitol solution	6.5
rice germ oil	2.6
jojoba oil	1.5
fermented rice extract	1.0
scutellaria root extract	2.0
loquat extract	2.5
mulberry bark extract	2.0.

5,571,517

MIXED LIPID-BICARBONATE COLLOIDAL PARTICLES FOR DELIVERING DRUGS OR CALORIES

David W. Yesair, P.O. Box 347, Byfield, Mass. 01922

Division of Ser. No. 238,592, May 5, 1994, which is a division of Ser. No. 908,442, Jun. 30, 1992, Pat. No. 5,314,921, which is a continuation of Ser. No. 567,243, Aug. 13, 1990, abandoned. This application May 24, 1995, Ser. No. 448,878

Int. Cl.[6] A61K *6/00;7/00*

U.S. Cl. 424—401 1 Claim

1. A method of administering a mixed lipid-bicarbonate composition to the skin of an individual comprising the topical application to said skin of a composition comprised of:

a. at least one non-esterified fatty acid having 14–18 carbon atoms;

b. at least one monoglyceride which is a monoester of glycerol and a fatty acid having 14–18 carbon atoms;

c. lysophosphatidylcholine in which the fatty acid moiety has 14–18 carbon atoms; and

d. bicarbonate;

wherein the molar ratio of said fatty acids to said monoglycerides is from about 2:1 to about 1:2, and said lysophosphatidylcholine comprises from about 30.0 mole percent to about 1.0 mole percent of the total lipid in the composition; and

wherein the composition is in the form of colloidal particles in an aqueous environment.

5,571,518

COSMETIC COMPOSITIONS CONTAINING TRICHOLINE CITRATE

Sreekumar Pillai, Wayne; Manisha N. Mahajan, Edgewater, and Anthony V. Rawlings, Wyckoff, all of N.J., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Oct. 30, 1995, Ser. No. 546,959

Int. Cl.[6] A61K *7/42;7/06;7/48*

U.S. Cl. 424—401 4 Claims

1. A method of enhancing keratinocyte proliferation in skin, the method comprising applying to the skin composition comprising from 0.0001 to 50 wt. % by weight of the composition of tricholine citrate and a cosmetically acceptable vehicle.

5,571,519

ORGANOLEPTICALLY STABLE DENTURE CLEANSER TABLETS

Joseph Synodis, Summit; Robert C. Gasman, Milford, and Frank Mazzella, Jersey City, all of N.J., assignors to Block Drug Company, Inc., Jersey City, N.J.

Continuation of Ser. No. 152,977, Nov. 15, 1993, abandoned. This application Dec. 13, 1994, Ser. No. 356,793

Int. Cl.[6] A01N *25/00*

U.S. Cl. 424—405 19 Claims

1. A multilayer denture cleanser tablet composition having at least two layers, containing a flavoring effective amount of a flavoring agent and a bleaching effective amount of a bleaching agent, the flavoring agent and bleaching agent being kept apart such that the flavoring agent is located in a first layer and the bleaching agent is located in a second, separate layer, whereby deterioration of the flavoring agent by the bleaching agent is reduced.

5,571,520

MOLECULAR CRYSTAL REDOX DEVICE FOR PHARMACEUTICALS

Marvin S. Antelman, Rehovot, Israel, assignor to Antelman Technologies Ltd., Providence, R.I.

Continuation of Ser. No. 971,933, Nov. 5, 1992, Pat. No. 5,336,499, which is a division of Ser. No. 820,282, Jan. 10, 1992, abandoned. This application Aug. 4, 1994, Ser. No. 286,007

Int. Cl.[6] A61K *33/38*

U.S. Cl. 424—405 3 Claims

1. A method for curing amoebic dysentery comprising, administering crystals of tetrasilver tetroxide intravenously so as to give a concentration of crystals of 40 PPM in the bloodstream.

5,571,521

COMPOSITION CONTAINING SILVER AMMONIUM PHENYTOIN COMPLEX AND A PHENYTOIN AND USE OF SAID COMPOSITION

Sigmund E. Lasker, New York Medical College, Valhalla, N.Y. 10595

Continuation-in-part of Ser. No. 178,768, Jan. 7, 1994, Pat. No. 5,439,903, which is a continuation of Ser. No. 974,686, Nov. 12, 1992, Pat. No. 5,298,264, which is a continuation of Ser. No. 765,460, Sep. 25, 1991, abandoned, which is a continuation of Ser. No. 363,288, Jun. 2, 1989, abandoned, which is a continuation of Ser. No. 862,160, May 12, 1986, abandoned, which is a continuation of Ser. No. 570,800, Jan. 16, 1984, abandoned. This application Feb. 13, 1995, Ser. No. 387,251

Int. Cl.[6] A61K *9/06;9/14;* A61L *15/00*

U.S. Cl. 424—409 33 Claims

1. A composition comprising silver phenytoin and a phenytoin.

5,571,522

BAIT WITH CORN GERM

Derrill Munson, Pittsboro, N.C.; Chel W. Lew, San Antonio, Tex.; James M. Gaggero, Citrus Heights, Calif., and Kelth Branly, Brandon, Fla., assignors to Micro Flo Company, Mulberry, Fla.

Filed Jan. 31, 1994, Ser. No. 189,355

Int. Cl.[6] A01N *25/14*

U.S. Cl. 424—410 14 Claims

1. A bait composition useful for controlling insect populations, said composition consisting essentially of a binder that is palatable to diabroticine insects and is able to bind together bait components yet pass through equipment used to form particles, an insecticide, and a feeding stimulant wherein said binder has homogeneously distributed therein: (a) insecticide in an amount 0.01–99 w % based on the total weight of said bait; and (b) 0.01–99 wt % based on the total weight of said bait of corn germ in an amount sufficient to stimulate feeding in a target insect and less than 25 wt %, based on the weight of said corn germ, of corn endosperm associated therewith.

5,571,523

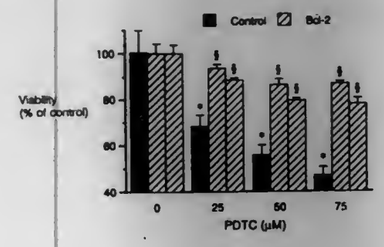
ANTIOXIDANT-INDUCED APOPTOSIS IN VASCULAR SMOOTH MUSCLE CELLS

Mu-En Lee, Newton, Mass.; Edgar Haber, Salisbury, N.H., and Jer-Chia Tsai, Kaohsiung, Taiwan, assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Mar. 9, 1995, Ser. No. 401,341

Int. Cl.[6] A61F *2/02*

U.S. Cl. 424—423 16 Claims



1. A method of inhibiting arteriosclerosis in an animal, comprising identifying an animal having an artery suspected of needing said inhibition and contacting said artery with an apoptosis-inducing amount of an antioxidant.

5,571,524

AGENT FOR CURING ISCHEMIC MYOCARDIAL DISEASE

Masafumi Kitakaze, Izumi; Masatsugu Hori, Kobe; Takenobu Kamada, Kyoto; Hiroshi Nakajima, Uji; Akihiro Sekine, and Tetsuaki Yamaura, both of Tokyo, all of Japan, assignors to Unitika Ltd., Amagasaki, and Fujirebio, Inc., Tokyo, both of Japan

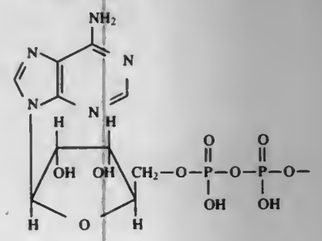
Filed Jun. 6, 1995, Ser. No. 473,774

Claims priority, application Japan, Jun. 30, 1994, 6-149971

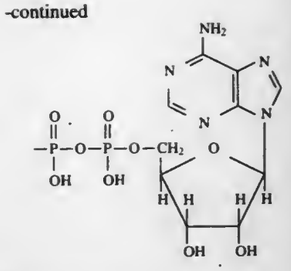
Int. Cl.[6] A61F *2/02;* A61K *9/48;31/715*

U.S. Cl. 424—423 4 Claims

1. A method for curing ischemic myocardial disease comprising administering to a patient suffering from ischemic myocardial disease an effective amount of diadenosine 5',5"-p[1].p[4]-tetraphosphate (Ap4A) of formula (I):



-continued



or a pharmaceutically-acceptable salt thereof.

5,571,525

EROSION RATE MODIFIER FOR USE IN BIOERODIBLE DRUG DELIVERY DEVICES AND METHOD OF USE

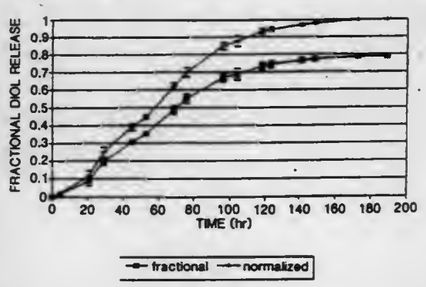
Wouter E. Roorda, Newark, and Fred Ehnow, Mountain View, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.

PCT No. PCT/US93/03003, § 371 Date Sep. 30, 1994, § 102(e) Date Sep. 30, 1994, PCT Pub. No. WO93/20134, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 30, 1993, Ser. No. 307,845

Int. Cl.[6] A61K *9/14*

U.S. Cl. 424—426 10 Claims



1. A method for altering the erosion rate of a drug-containing bioerodible composition to obtain a predetermined rate of drug release therefrom, said composition comprising a polymer selected from the group consisting of polymers and copolymers of d,l-lactic and glycolic acids and mixtures thereof, said method comprising:

a) forming a dispersion of said drug in said polymer; and

b) completely dissolving in said dispersion so that a single homogenous phase is formed an amount of an erosion rate modifier sufficient to produce an erosion rate of said composition that is different than the erosion rate of the composition in the absence of said modifier, said erosion rate modifier being selected from the group consisting of weak acids and bases which are soluble in said polymer, substantially insoluble in water and have a pK of at least about 2.0.

VOL 1192 ISS 1 NO 5 1996 UMI

5,571,526

COMPOSITE METAL HYDROXIDE AND ITS USE

Shigeo Miyata, Takamatsu, Japan, assignor to Kabushiki Kaisha Kaisui Kagau Kenkyujo, Kagawa-ken, Japan

Division of Ser. No. 63,055, May 19, 1993, Pat. No. 5,401,442, which is a continuation-in-part of Ser. No. 825,276, Jan. 24, 1992, abandoned. This application Dec. 7, 1994, Ser. No. 351,537

Claims priority, application Japan, Feb. 6, 1991, 3-036816

Int. Cl.[6] C08K *3/00;* C09K *21/02;21/14*

U.S. Cl. 424—435 2 Claims

1. A flame-retardant composition, comprising 100 parts by weight of at least one material selected from the group consisting of resin and rubber, and 20 to 250 parts by weight of a composite metal hydroxide which is a solid solution of the formula (1),

$$Mg_{1-x}M^{2+}_{x}(OH)_2 \quad (1)$$

wherein M^{2+} is at least one divalent metal ion selected from the group consisting of Mn^{2+}, Fe^{2+}, Co^{2+}, Ni^{2+}, Cu^{2+} and Zn^{2+}, and x is in the range of $0.001 \leq x \leq 0.9$.

5,571,527

GRANULAR AGENT FOR RUMINANTS AND PROCESS FOR PRODUCING THE SAME

Kunio Nishimura, and Toshio Morita, both of Kawasaki, Japan, assignors to Showa Denko K. K., Tokyo, Japan

Continuation-in-part of Ser. No. 219,699, Mar. 30, 1994, abandoned, which is a continuation of Ser. No. 856,728, Mar. 24, 1992, abandoned. This application Apr. 5, 1994, Ser. No. 223,178

Claims priority, application Japan, Mar. 25, 1991, 3-84778

Int. Cl.[6] A23K *1/18*

U.S. Cl. 424—438 24 Claims



1. A granular agent for ruminants, comprising a core granular agent containing a physiologically active substance coated with a coating layer comprising:

(a) a first coating material composed of one or more substances selected from the group consisting of a fatty acid having 12 to 22 carbon atoms or ester thereof, an animal or vegetable fat and fatty oil or a hardened animal or vegetable fat and fatty oil, having a melting point of 40° C. or higher, and a wax having a melting point of 40° C. or higher, and

(b) a second coating material composed of tabular crystals of a substance which is sparingly water-soluble under a neutral condition but is readily water-soluble under an acidic condition and which has an average particle size of 5 to 30 μm,

wherein said coating layer has a laminar structure in which said tabular crystals are arranged in a laminated state,

wherein said first coating material and said second coating material are in a proportion of 3:2 to 1:3 by weight,

wherein said coating layer is present in a coating ratio of 5% by weight or more and 50% by weight or less, based on the total weight of the granular agent, and

wherein said physiologically active substance of said granular agent has a dissolution rate not higher than 50% when measured under conditions consisting of pH 7.1, 39° C. and 18 hours, and a dissolution rate not lower than 20% when measured under conditions consisting of pH 2, 39° C. and 18 hours.

5,571,528

PILOCARPINE-CONTAINING CHEWING GUM THAT STIMULATES SALIVATION

Sung-Woo Lee, 14-1201 Jindalle Apt., Yoksam 2-dong, Kangnam-ku, Seoul, and Hong-Ryeol Ryu, 1410-4, Edo 1-dong, Cheju-shi, Cheju-do, both of Rep. of Korea

Filed Jun. 28, 1995, Ser. No. 496,216

Claims priority, application Rep. of Korea, Jun. 30, 1994, 94-15477

Int. Cl.[6] A61K *9/68;9/28;47/30*

U.S. Cl. 424—440 2 Claims

1. A pilocarpine-containing chewing gum comprising:

4~5 mg of pilocarpine and 2.5~3 g of a base material, and,

said base material comprising:

a mixture of chicle, latex rubber (major component of a normal gum base), a hydrogenated esterified rubber base, paraffin wax, stearic acid, and xylitol(glycoalcohol).

5,571,529

METHOD OF MAKING POLYURETHANE FOAM

Catherine L. Cheong, Burnley, England, assignor to Johnson & Johnson Medical, Inc., Arlington, Tex.

Filed Nov. 4, 1992, Ser. No. 971,440

Claims priority, application United Kingdom, Nov. 7, 1991, 9123708

Int. Cl.[6] A61L *15/26;* A61F *13/00;* C08J *9/08;* C08G *18/10*

U.S. Cl. 424—445 23 Claims

1. A method of forming and packaging a wound dressing comprising a polyurethane foam suitable for use as a wound-contacting layer, said method comprising mixing 1 part by weight of an isocyanate-capped prepolymer having from 0.5 to 1.2 meq NCO groups/g with from 0.4 to 1.0 parts by weight of water in the presence of from 0.05 to 0.4 parts by weight of C_1 to C_3 monohydric alcohol thereby forming the foam, then drying the foam, leaving less than 1% by weight of alcohol in the foam, and then packaging the wound dressing in a sterile, bacteria proof envelope.

5,571,530

PERCUTANEOUS PREPARATION OF TULOBUTEROL

Yoshihisa Nakano; Tetsuo Horiuchi; Sanae Fujiwara, and Senji Unozawa, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, and Hokuriku Seiyaku Co., Ltd., Fukui, both of Japan

Continuation of Ser. No. 20,439, Feb. 22, 1993, abandoned, which is a continuation of Ser. No. 454,829, Dec. 22, 1989, abandoned. This application Jul. 22, 1994, Ser. No. 279,070

Claims priority, application Japan, Dec. 23, 1988, 63-327242; Sep. 22, 1989, 1-247629

Int. Cl.[6] A61K *9/70*

U.S. Cl. 424—448 3 Claims

1. A percutaneous preparation of tulobuterol consisting of a support having thereon a base layer consisting of a pressure-sensitive adhesive containing tulobuterol, wherein the tulobuterol is present in an amount of from 1 to 50% by weight based on the total weight of the base layer, and wherein said pressure-sensitive adhesive consists of a mixture of (i) from 10 to 80% by weight, based on the amount of said pressure-sensitive adhesive, of polyisobutylene having a viscosity-average molecular weight of from 900,000 to 2,100,0.00., and (ii) at least one polyisobutylene selected from the group consisting of

(a) from 0 to 80% by weight, based on the amount of said pressure-sensitive adhesive, of polyisobutylene having a viscosity-average molecular weight of from 500 to 4,000, and

(b) from 0 to 90% by weight, based on the amount of said pressure-sensitive adhesive, of polyisobutylene having a viscosity-average molecular weight of from 10,000 to 200,000.

5,571,531

MICROPARTICLE DELIVERY SYSTEM WITH A FUNCTIONALIZED SILICONE BONDED TO THE MATRIX

Mark R. McDermott; Michael A. Brook, both of Ancaster; Philippa L. Heritage, Hamilton; Brian J. Underdown, Dundas; Lesley M. Loomes, and Jianxiong Jiang, both of Hamilton, all of Canada, assignors to McMaster University, Hamilton, Canada

Filed May 18, 1994, Ser. No. 245,646

Int. Cl.[6] A61K *9/56;9/50;9/14;* A01N *25/34*

U.S. Cl. 424—459 30 Claims

1. A particulate carrier, which comprises:

a solid matrix comprising a polysaccharide and a proteinaceous material, and

a functionalized silicone polymer bonded to the matrix.

5,571,532

PHARMACEUTICAL PREPARATION FOR SUPPLYING FLUORIDE IONS

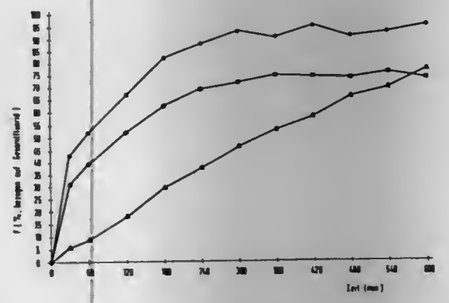
Wolfram Tritthart, Wolfsberg, and Rüdiger Wolf, Vienna, both of Austria, assignors to Asta Medica Arzneimittal Ges. m.b.H., Osterreich, Austria

Filed Sep. 20, 1993, Ser. No. 124,310

Claims priority, application Germany, Oct. 26, 1992, 42 36 090.0

Int. Cl.[6] A61K *9/20*

U.S. Cl. 424—464 14 Claims



1. A tablet for the treatment and prevention of bone loss which facilitates a substantially linear release of sodium fluorophosphate, said tablet comprising an effective amount of sodium fluorophosphate, a hydrophobic retardant core matrix and a retardant coating, wherein said hydrophobic retardant core matrix is selected from the group consisting of copolymers of acrylic and methacrylic acid esters, polyvinyl acetate, ethylcellulose and a wax matrix, said retardant coating being selected from the group consisting of copolymer of acrylic and methacrylic acid esters, ethylcellulose, and films resistant to gastric juices.

5,571,533

CONTROLLED-RELEASE MUCOADHESIVE PHARMACEUTICAL COMPOSITION FOR THE ORAL ADMINISTRATION OF FUROSEMIDE

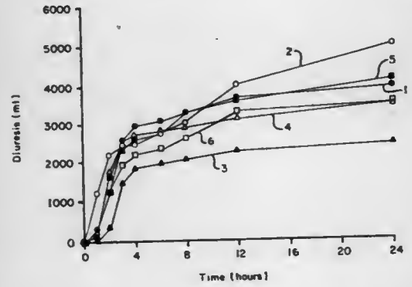
Giancarlo Santus, Milan; Giuseppe Bottoni, Bergamo, and Caterina Lazzarini, Milan, all of Italy, assignors to Recordati, S.A., Chemical and Pharmaceutical Company, Chiasso, Switzerland

Continuation-in-part of Ser. No. 174,191, Dec. 27, 1993, Pat. No. 5,472,704, which is a continuation of Ser. No. 832,229, Feb. 7, 1992, abandoned. This application May 9, 1994, Ser. No. 240,033

Claims priority, application Italy, May 21, 1993, MI93A1049

Int. Cl.[6] A61K *9/26*

U.S. Cl. 424—469 27 Claims



1. An oral dosage form containing an effective amount of furosemide for inducing diuresis in a human and having both control-release and mucoadhesive properties, said dosage form comprising:

a) a multiplicity of controlled-release microgranules containing said furosemide and one or more granulation excipients having an overall Hydrophilic Lipophilic Balance (HLB) lower than 8; said microgranules having substantially no mucoadhesive properties prior to coating with a mucoadhesive; said granulation excipients being selected from the group consisting of saturated glycerides and polyglycolyzed glycerides;

b) a coating containing at least one mucoadhesive constituent, said coating having been applied to the surface of said microgranules to substantially completely envelop each microgranule, said coating having been applied in a manner so that it is non-swollen by water, the coating enveloping each microgranule being substantially detached from coatings enveloping other microgranules, and said coating ensuring adhesion of the coated microgranules to the mucous membrane of the gastrointestinal tract; and

c) extragranular excipients mixed with the mucoadhesive microgranules, facilitating non-aggregation and dispersion of the mucoadhesive microgranules over the mucous membrane of the gastrointestinal tract and detachment of the coating enveloping each microgranule from the coatings enveloping other microgranules.

5,571,534

DRUG FORMULATIONS FOR PARENTERAL USE

Harry G. Jalonen; Terttu M. Heikkilä; Hannu U. Jalonen, all of Turku; Lauri V. M. Kangas, Raisio; Risto A. S. Lamminsausta, and Kauko O. A. Kurkela, both of Turku, all of Finland, assignors to Orion-yhtymä Oy, Espoo, Finland

PCT No. PCT/FI92/00339, § 371 Date Jul. 7, 1994, § 102(e) Date Jul. 7, 1994, PCT Pub. No. WO93/11757, PCT Pub. Date Jun. 24, 1993

PCT Filed Dec. 10, 1992, Ser. No. 244,549

Claims priority, application United Kingdom, Dec. 10, 1991, 9126209

Int. Cl.[6] A61K *9/14*

U.S. Cl. 424—479 4 Claims

1. A parental drug formulation comprising an emulsion or liposome comprising a complex which comprises a 2-hydroxypropyl cyclodextrin component and an active drug component in which the active drug is selected from the group consisting of toremifene, desmethyl toremifene, tamoxifen and desmethyltamoxifen or a pharmaceutically acceptable non-toxic salt thereof.

5,571,535

TREATMENT OF TOPICAL INFECTIONS

Marianne Flowers, and Basilio Tavares, both of 4372 37th St., San Diego, Calif. 92105-1003

Continuation-in-part of Ser. No. 389,689, Aug. 3, 1989, abandoned. This application Nov. 30, 1990, Ser. No. 620,145

Int. Cl.[6] A61K *9/06;9/10*

U.S. Cl. 424—489 11 Claims

3. A method for topical treatment of cold sores caused by Herpes simplex 1 infections of the skin, comprising applying a composition comprising a mixture of at least 0.5% by weight of each of the following ingredients: an alkali metal carbonate; an alkali metal phosphate; and an alkali metal hypochlorite, in a pharmaceutically acceptable carrier to the site of the infection.

5,571,536

FORMULATIONS OF COMPOUNDS AS NANOPARTICULATE DISPERSIONS IN DIGESTIBLE OILS OR FATTY ACIDS

W. Mark Eickhoff, Downingtown; Karl R. Mueller, Pexton, and David A. Engers, Collegeville, all of Pa., assignors to Nano Systems L.L.C., Collegeville, Pa.

Filed Feb. 6, 1995, Ser. No. 384,057

Int. Cl.[6] A61K *9/14*

U.S. Cl. 424—489 3 Claims

1. Particles consisting essentially of 0.1–50.0% by weight of a crystalline drug substance having a solubility in water of less than 10.0 mg/ml, said crystalline drug substance having a non-cross-linked modifier adsorbed on the surface thereof in an amount of 0.1–20% by weight, said particles suspended in an aqueous phase, the aqueous phase emulsified in oleic acid, sufficient to maintain an effective particle size of less than 1000 nanometers.

5,571,537

STATIONARY-PRESSURE APPARATUS FOR PRODUCING SPUN-BOND WEB

Hans G. Geus, Niederkassel; Detlef Frey, Troisdorf, and Bernd Kunze, Hennef, all of Germany, assignors to Reifenhauser GmbH & Co. Maschinenfabrik, Troisdorf, Germany

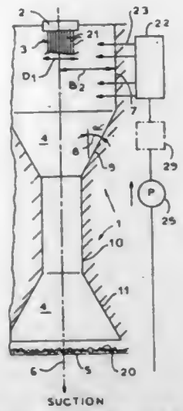
Filed Apr. 21, 1995, Ser. No. 425,113

Claims priority, application Germany, Apr. 23, 1994, 44 14 277.3

Int. Cl.[6] D01D *5/092;5/12*

U.S. Cl. 425—72.2 7 Claims

1. An apparatus for producing a nonwoven spun-bond web by using expansion and acceleration of process air and drawing of the spun filament, said apparatus comprising:



a spinneret producing a descending curtain of spun filaments;

means forming a shaft enclosing said descending curtain of spun filaments below said spinneret;

process-air supply means connected with said shaft for feeding process air thereto;

a continuously moving foraminous receiving belt below said shaft for collecting said spun filaments and on which a nonwoven spun-bond web is formed; and

a suction device below said belt for drawing air through said belt, said shaft having from top to bottom an inlet section of a given length and width and in which air is directed against said curtain of spun filament, a downwardly tapering intermediate section having a certain convergence angle, a stretching section connected to said intermediate section, and a downwardly flaring diffusor section connected to said stretching section, said process air is introduced into the inlet section and after an initial flow path in the shaft reaches a maximum velocity at the upstream end of the stretching section, said spun filaments achieve a constant drawing value just after the curtain emerges from the spinneret, a curve of the process air velocity plotted along the length of the shaft intersects a curve of the drawing value at an intersection point (S) substantially in a region of the intermediate section,

(a) a distance (A_1) of the intersection point (S) from the spinneret being smaller than a distance (A_2) from the intersection point (S) to a downstream end of the stretching section,

(b) the convergence half angle (α) of the intermediate section being 0.05° to 2°,

(c) a width (B_1) of the spun filament curtain in the region of the inlet section being smaller than a width (B_2) of the inlet section, and

(d) said shaft and process-air supply means being constructed and arranged so that the process air has a maximum velocity (VL_{MAX}) greater than the constant drawing value (VF_a) by a factor of 1.2 to 1.6 so that VL_{MAX}=(1.2$VF_a$to 1.6VF_a).

5,571,538

GROUT SEALANT APPLICATOR

Donald E. Cloud, 3436 Highlands Bridge Rd., Sarasota, Fla. 34235

Filed Jul. 17, 1995, Ser. No. 503,378

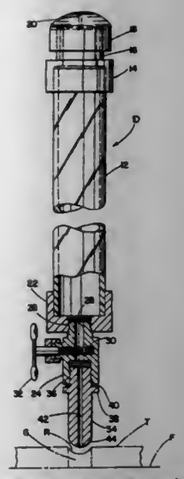
Int. Cl.[6] B05C *1/16*

U.S. Cl. 425—87 12 Claims

1. A grout sealant applicator for holding a quantity of low viscosity liquid grout sealant and for dispensing the sealant into a groove defined by grout between floor tile, comprising:

an elongated tubular handle having a first and second end thereof;

said handle first end is open for receiving sealant poured into said handle when said first end is elevated;



a sealant metering means connected to said handle second end for manually regulating and stopping the gravity flow of sealant from said handle second end downwardly out from an outlet of said sealant metering means when said handle first end is elevated;

a nozzle means having a distal end and longitudinal bore therethrough and connected to said metering means outlet for sliding said distal end along and in contact with the groove and for depositing sealant at a flow rate regulated by said metering means into the groove from a supply of sealant in said handle when said handle first end is elevated by hand hold adjacent to said handle first end; and

said handle is formed of transparent plastic for viewing the level of sealant stored within the handle.

5,571,539

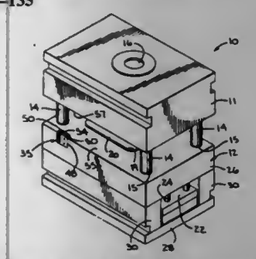
MOLD WITH AN ON-BOARD COUNTER OR MONITOR

Glenn Starkey, Lake Zurich, Ill., assignor to D & L Incorporated, Wauconda, Ill.

Filed Dec. 30, 1994, Ser. No. 367,396

Int. Cl.[6] B29C *33/00*

U.S. Cl. 425—135 14 Claims



1. A mold having moving portions and constructed for removal from a molding press for storage and for return to the same or another molding press and for storing on the mold itself the number of molding cycles for maintenance purposes, the mold comprising:

a mold body;

a first mold portion of the mold having a first cavity therein;

a second mold portion of the mold having a second cavity therein aligned with the first cavity to mold a plastic part in the first and second cavities when the first and second mold portions are in a closed position;

guide means on the mold body for guiding the first and second mold portions between the closed position to mold the part and an open position with mold portions and cavities spaced apart, the movement of the first and second mold portions between open and closed positions constituting a molding cycle;

a monitor comprising a counter mounted in the first mold portion at a position spaced from the mold cavity so as not to be engaged by the plastic and at a position on the mold for viewing the mold cycles when the mold is stored or in use;

said counter being carried by the mold when the mold is removed from the molding press and retaining the last molding cycle count when the mold is removed from the molding press and when the mold is returned to the same or a different molding press; and

a counter actuator operable by the moving portions of the mold moving through a molding cycle to continue the previous count when the mold and counter are returned from storage to the molding press.

5,571,540

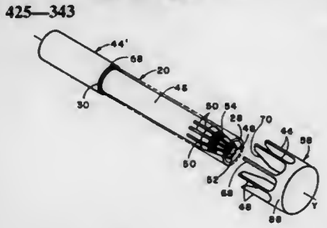
APPARATUS FOR CRIMPING, PLEATING AND FORMING A TIP ON A HOLLOW TUBE

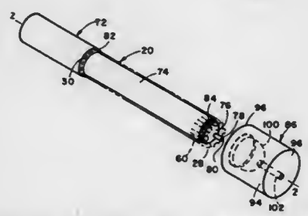
Jeffrey M. Weyenberg, Appleton; Noel J. Rasmussen, Oshkosh, and Richard R. Tews, Larsen, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 300,987, Sep. 6, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 584,808

Int. Cl.[6] B29C *57/10*

U.S. Cl. 425—343 12 Claims





1. An apparatus for crimping, pleating and forming a tip on a hollow tube, said apparatus comprising:

a) a first punch having a tubular section sized to receive said tube and a shoulder formed at one end of said tubular section which acts as a stop for said tube, and said first punch further having a smooth tip void of any elongated grooves;

b) a first die mateable with said first punch and tube to crimp an end of said tube, said first die including a base having a plurality of blades extending axially outward therefrom, each of said blades capable of engaging said tube and crimping the tip of said tube positioned between said first die and said first punch;

c) a second punch having a tubular section sized to receive said tube and having a semi-spherically shaped tip with a pin extending outward from the apex thereof, and said second punch further having a shoulder formed at one end of said tubular section thereof which acts as a stop for said tube; and

d) a second die mateable with said second punch to transform said crimped end of said tube into a plurality of pleats and form said pleats into a semi-spherically shaped tip having a central aperture formed therethrough, said second die including a base having a semi-spherical cavity formed therein with

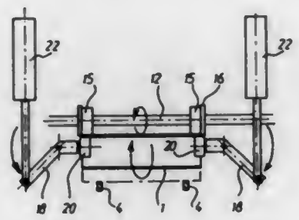
a central passageway formed at the bottom of said cavity, said cavity being sized to receive both said second punch and said tube and said passageway being sized to receive only said pin.

5,571,541

DEVICE FOR RECONDITIONING TUBES, PARTICULARLY CARDBOARD TUBES

Charles Ochsenbein, Rixheim, France, assignor to Pack'Industrie S.A., Rixheim, France

Filed Dec. 6, 1994, Ser. No. 349,804
Claims priority, application France, Dec. 7, 1993, 93 14953
Int. Cl.[6] B28B 21/42;21/98;21/96
U.S. Cl. 425—393 11 Claims



1. A device, for reconditioning tubes with deformed parts, comprising: a series of treatment stations and conveying means to convey the tubes one after the other to the treatment stations, wherein the treatment stations comprise at least one rolling station (7) comprising

at least one internal roller (20, 27) and at least one external roller (15, 26), the external roller being connected to a rotational drive mechanism (12–14) and the internal roller being rotatably mounted to a movable support (18,28) for free rotation on the movable support (18,28);

wherein an actuator (22) is connected to the movable support (18, 28) for moving the movable support and thereby moving the internal roller (20, 27) between:

(i) a withdrawn position where the internal roller (20, 27) is separated from the external roller (15, 26) and does not engage the tubes on the conveying means (4); and

(ii) a working position where the internal roller (20, 27) is inserted in an end of one of the tubes, whereby the one of the tubes is lifted and supported by the internal roller (20, 27) above the conveying means (4) during rolling, and a wall of the one of the tubes is pressed between the internal roller (20, 27) and the external roller (15, 26).

5,571,542

METHOD OF MAKING AN ANIMAL FEED HAVING A STABLE SUSPENSION OF PSYLLIUM

Bill L. Miller, and Robert DeGregorio, both of Fort Dodge, Iowa, assignors to Land O'Lakes, Inc., Arden Hills, Minn.

Filed Apr. 20, 1995, Ser. No. 425,478
Int. Cl.[6] A23K 1/14
U.S. Cl. 426—2 16 Claims

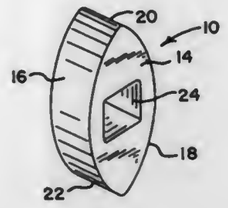
1. A method of making an animal feed having a stable suspension of psyllium, the method comprising the step of mixing an effective amount of a psyllium composition, an animal feed composition, and water to form an animal feed solution, wherein the psyllium composition remains in suspension for greater than 5 minutes.

5,571,543

CONTINUOUS GUM BASE MANUFACTURE USING PADDLE MIXING

Joo H. Song, Northbrook, and Donald J. Townsend, Chicago, both of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Continuation of Ser. No. 141,281, Oct. 22, 1993, Pat. No. 5,419,919. This application Mar. 9, 1995, Ser. No. 401,412
Int. Cl.[6] A23G 3/30
U.S. Cl. 426—5 18 Claims



1. A method of making chewing gum base on a continuous basis, comprising the steps of:

a) providing a paddle mixer system having a mixer system length, a maximum paddle diameter, and a ratio of mixer system length to maximum paddle diameter of at least about 4:1;

b) selectively feeding about 5–95 weight percent elastomer, about 0–75 weight percent elastomer plasticizer, about 0.5–40 weight percent softener/emulsifier and about 1–65 weight percent filler to the paddle mixer system, at two or more locations along the mixer system length; and

c) continuously blending the ingredients using the paddle mixer system until a homogeneous gum base is obtained;

d) wherein the paddle mixer system comprises a plurality of paddles including two concave mixing surfaces intersecting at two lines.

5,571,544

SUBSTRATE-LIMITED YEAST-LEAVENED REFRIGERATED DOUGH PRODUCTS

David J. Domingues, Plymouth, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Division of Ser. No. 87,616, Jul. 2, 1993, Pat. No. 5,492,707, which is a continuation-in-part of Ser. No. 26,927, Mar. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 732,081, Jul. 18, 1991, abandoned. This application Mar. 13, 1995, Ser. No. 402,939
Int. Cl.[6] A21D 2/00
U.S. Cl. 426—62 6 Claims

1. A yeast-leavened refrigeratable dough product comprising flour, water and yeast, the yeast characterized by yeast deposited with the ATCC, Deposit No. 74230, wherein the yeast are capable of phosphorylating substantially only fructose to produce fructose-6-phosphate, the total amount of carbohydrate present in the dough being no more than necessary to produce about 200 ml CO_2/100 g of dough.

5,571,545

HAMBURGER TYPE FOOD MATERIAL AND PROCESS OF MAKING IT

Hideaki Yokoyama, Takaishi, and Hideo Sugano, Sennan-gun, both of Japan, assignors to Fuji Oil Company, Limited, Osaka-fu, Japan

Continuation-in-part of Ser. No. 386,088, Feb. 9, 1995. This application Jan. 23, 1996, Ser. No. 590,150
Claims priority, application Japan, Feb. 22, 1994, 6-024264
Int. Cl.[6] A23J 3/16
U.S. Cl. 426—93 5 Claims

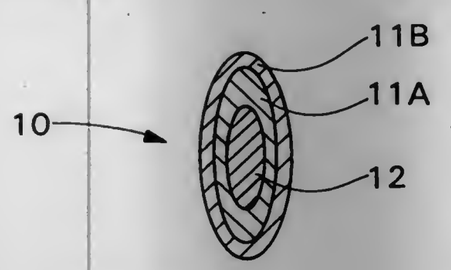
1. An imitation hamburger which comprises an edible stuffing wrapped with a food composition, said food composition comprising, as a main ingredient, granular soybean proteins and 0.5 to 5% by weight of casein as dry weight, 0.5 to 6% by weight of egg white as dry weight, 0.2 to 9% by weight of a starch as dry weight, 0.001 to 0.1% by weight of Gellan gum and 55 to 79% by weight of water, based on the total weight of the composition, and said composition being free from minced meat.

5,571,546

FOOD PRODUCT AND METHOD OF MAKING SAME

Con L. Kristinus; Rainer W. Kristinus, both of Villanova, Pa., and Marvin J. Rudolph, Sharon, Mass., assignors to Ciracor Limited, Villanova, Pa.

Continuation of Ser. No. 99,988, Jul. 30, 1993, abandoned, which is a continuation of Ser. No. 759,299, Sep. 13, 1991, abandoned. This application Jul. 6, 1994, Ser. No. 271,227
Int. Cl.[6] A23G 3/00; A23L 1/0522
U.S. Cl. 426—93 12 Claims



1. A food product comprising:

(a) a comestible core;

(b) a first layer substantially covering said core and comprising a mixture of non-pregelatinized waxy starches and non-waxy starches having:

(i) a first sub-layer comprising amylose and amylopectin in major proportion and disaccharide in minor proportion, the weight ratio of amylose to amylopectin in said first sub-layer being from about 1:99 to about 1:10; and

(ii) a second sub-layer substantially covering said first sub-layer and comprising amylose and amylopectin in major proportion and disaccharide in minor proportion, the weight ratio of amylose to amylopectin in said second sub-layer being from about 1:99 to about 1:10 and the weight ratio of simple sugar in said second sub-layer to simple sugar in said first sub-layer being no less than about 1:0.8;

(c) a second layer substantially covering said first layer, said second layer comprising amylose and amylopectin, the weight ratio of amylose to amylopectin in the second layer being no less than about 1:19.

5,571,547

PROCESS OF SUGARLESS HARD COATING AND PRODUCTS OBTAINED THEREFROM

Michel Serpelloni, Beuvry les Bethune, and Guillaume Ribadeau-Dumas, Lambersart, both of France, assignors to Roquette Freres, Lestrem, France

Division of Ser. No. 241,709, May 12, 1994, Pat. No. 5,478,593. This application Sep. 21, 1995, Ser. No. 531,646
Claims priority, application France, May 17, 1993, 93 05917
Int. Cl.[6] A23L 1/09
U.S. Cl. 426—103 7 Claims

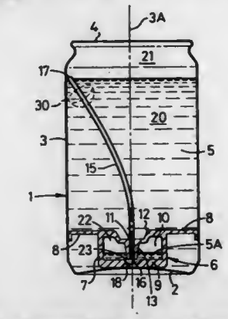
1. Sugarless hard coating containing from about 80 to about 99.5% of a polyol selected from the group consisting of maltitol, mannitol, xylitol, erythritol, lactitol and isomalt and having a crystallinity such that its enthalpy of fusion is at least equal to 70% of the enthalpy of fusion of the selected polyol of which it is made, said coating being obtained by applying a syrup crystallizable to the selected polyol and a high purity powder of the same polyol.

5,571,548

PRESSURIZED BEVERAGE PACKAGE WITH AN INTERIOR COMPARTMENT FOR THE PRODUCTION OF FOAM ON OPENING OF THE PACKAGE, AND A METHOD OF FORMING SUCH A PACKAGE

Francis J. Lynch, Dublin, Ireland; Derek C. Lockington, Whissendine, and Robert Purdham, West Hendon, both of Great Britain, assignors to Guiness Brewing Worldwide Limited, London, United Kingdom

Filed Nov. 1, 1993, Ser. No. 146,000
Claims priority, application United Kingdom, Nov. 10, 1992, 9223519
Int. Cl.[6] B65B 31/00;17/00;25/00
U.S. Cl. 426—112 12 Claims



1. A method of forming a beverage package which comprises providing an open topped container with a primary chamber and a secondary chamber in which the secondary chamber contains gas at a pressure greater than atmospheric which will develop in the secondary chamber, said secondary chamber being formed by a hollow bodied insert located within the primary chamber, the primary chamber opening to the open top of the container, and the insert having a port for providing communication therethrough between said secondary chamber and said primary chamber, said port being located remote from said open top; and said insert having an external socket which communicates with said port; inserting into the primary chamber a tube having a bore which communicates between one open end of the tube and a second open end thereof remote from said one open end and press fitting said one open end of the tube to seal into said socket for communication of said one open end with the secondary chamber through said port, said one open end of said tube having a small diameter bore providing a restriction for fluid flow; arranging the tube to extend upwardly toward the open top to locate said second open end of the tube to open into the primary chamber at a position remote from a bottom of the primary chamber; charging the primary chamber with beverage having gas in solution; sealing the open top of the container to provide a primary headspace therein

with a pressure greater than atmospheric while maintaining said second open end of the tube open to communication with said primary chamber, and wherein beverage is arranged to flow from the primary chamber into the secondary chamber to form in the secondary chamber a secondary headspace containing gas at a pressure greater than atmospheric when the contents of the package are in equilibrium so that when the package is opened to the open the primary headspace to atmospheric pressure, a pressure differential develops which causes beverage from the secondary chamber to flow by way of said restriction and said tube into the primary chamber, said restriction causing gas in solution from said beverage in said secondary chamber to evolve therefrom by its flow through said restriction for developing froth for the primary headspace.

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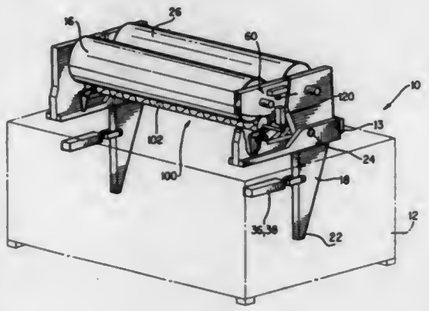
PROCESS FOR FORMING SHEETS OF MATERIAL HAVING A UNIFORM THICKNESS

Edward L. Ouellette, Corinth; Carolyn E. Bryoles, McKinney, both of Tex., and Barry F. Wilson, Santa Monica, Calif., assignors to Recot, Inc., Plano, Tex.

Division of Ser. No. 292,816, Aug. 10, 1994, Pat. No. 5,498,148. This application Aug. 16, 1995, Ser. No. 515,590

Int. Cl.[6] A23P *1/00*

U.S. Cl. 426—231 **14 Claims**



1. A process for forming a sheet of dough material having a substantially uniform and consistent thickness without monitoring the thickness of the sheet during forming thereof, the process comprising steps of:

providing an apparatus for forming a sheet of dough from a dough supply, the apparatus including a pair of rotating rollers defining a gap therebetween;

feeding a dough mass into the gap located between the pair of rotating rollers, the pair of rollers including a front roller and a rear roller, each roller being set in a predetermined position to define the desired size of the gap;

forming a dough sheet between the rollers as the dough mass passes therebetween and outputting the dough sheet from the gap;

sensing any changes in the size of the gap by detecting a change in the position of one of the rollers due to variations in the rheology of the dough mass as the dough mass passes between the front and rear rollers; and

comparing the detected position of the one roller to the predetermined position thereof and using the results of the comparison to correct the position of the one roller by moving the one roller back to said predetermined position to maintain a substantially constant gap size without monitoring the thickness of the formed sheet of dough material;

whereby a dough sheet having a substantially uniform and consistent thickness is output by the rollers.

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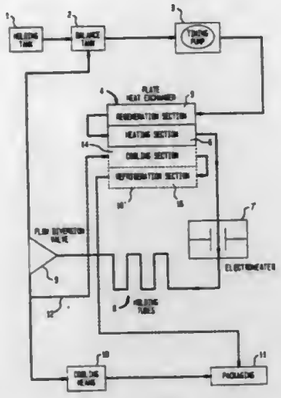
METHODS FOR ELECTROHEATING FOOD EMPLOYING CONCENTRIC ELECTRODES

Thaddeus J. Polny, Jr., 705 Suburban Rd., Union, N.J. 07083

Continuation-in-part of Ser. No. 7,553, Jan. 22, 1993, abandoned. This application Jun. 3, 1993, Ser. No. 71,572

Int. Cl.[6] A23B *5/01*

U.S. Cl. 426—244 **77 Claims**



1. A method of pasteurizing liquid egg comprising the steps of:

providing liquid egg;

passing a first relatively high voltage, relatively low current, high frequency AC electric current through said liquid egg, said first high frequency AC electric current heating said liquid egg substantially without electrolysis;

and passing a second relatively low voltage, relatively high current, high frequency AC electric current through said liquid egg, said second high frequency AC electric current heating said liquid egg substantially without electrolysis.

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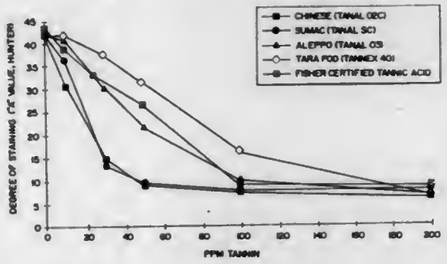
HIGH MOLECULAR WEIGHT GALLOTANNINS AS A STAIN-INHIBITING AGENT FOR FOOD DYES

Robert W. Fusi, Stockton, N.J.; Gary H. Kestenbaum, Highland Mills, and Sigmund L. Klug, Monroe, both of N.Y., assignors to Kraft Foods, Inc., Northfield, Ill.

Continuation-in-part of Ser. No. 68,361, May 27, 1993. This application Feb. 23, 1994, Ser. No. 200,797

Int. Cl.[6] A23L *1/27;1/275*

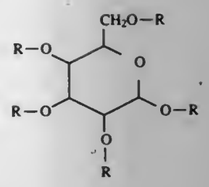
U.S. Cl. 426—540 **30 Claims**



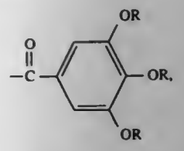
1. A foodstuff which is not subject to oxidation comprising:

(a) an artificial colorant which stains a polymeric substrate; and

(b) an amount of gallotannins effective to inhibit staining of said polymeric substrate, said gallotannins consisting of a mixture of compounds having the formula:



where each R=H or



independently,

and wherein at least 40% by weight of said mixture of compounds contain at least 8 galloyl groups.

5,571,552

CONTINUOUS COUPLED JET-COOKING/SPRAY-DRYING PROCESS AND NOVEL PREGELATINIZED HIGH AMYLOSE STARCHES AND GUMS PREPARED THEREBY

James J. Kasica, Whitehouse Station, and James L. Eden, East Millstone, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Division of Ser. No. 239,650, May 9, 1994, Pat. No. 5,465,851, which is a continuation-in-part of Ser. No. 919,673, Jul. 27, 1992, Pat. No. 5,318,635, which is a division of Ser. No. 697,659, May 8, 1991, Pat. No. 5,188,674, which is a division of Ser. No. 242,657, Sep. 12, 1988, Pat. No. 5,131,953. This application Apr. 6, 1995, Ser. No. 417,545

Int. Cl.[6] A23L *1/05;1/0522;1/0562*

U.S. Cl. 426—573 **13 Claims**

1. A pre-dispersed, jet-cooked/spray-dried gum or viscosifying protein which is prepared by a continuous coupled jet-cooking/spray-drying process comprising the steps of:

a. forming a slurry comprising a gum or a viscosifying protein and water;

b. jet-cooking the slurry with steam at a temperature sufficient to form a dispersion;

c. immediately conveying and introducing, under elevated temperature and pressure, the jet-cooked dispersion into a nozzle of a spray-dryer chamber;

d. atomizing the jet-cooked dispersion through the nozzle;

e. drying the atomized mist within the spray-dryer chamber at a temperature sufficient to dry the dispersed gum or protein; and

f. recovering the dried gum or protein as a water-dispersible powder.

5,571,553

HIGH ENERGY FOOD PRODUCTS CONTAINING PARTIALLY HYDROGENATED STRUCTURED LIPIDS

Thomas P. Stein, Cherry Hill, N.J., assignor to University of Medicine and Dentistry of New Jersey, Newark, N.J.

Continuation of Ser. No. 948,282, Sep. 18, 1992, abandoned. This application Oct. 4, 1994, Ser. No. 317,995

Int. Cl.[6] A23D *7/00*

U.S. Cl. 426—607 **7 Claims**

1. A method of preparing a solid high caloric density food product which avoids the stimulation of the Triglyceride-Free Fatty Acid (TG-FFA) cycling and activation of the arachidonic acid—prostaglandin pathway which comprises mixing from about 40 to about 80% by weight of a partially hydrogenated structured lipid said partially hydrogenated structured lipid being a mixture of triacylglycerides wherein at least one, but not more than two of the fatty acid moieties are straight medium chain length fatty acids (C-8 to C-12) and the remaining one or two glycerol hydroxyls are esterified with a straight long chain fatty acid (C-16 to C-24), and having an iodine value in the range of 30–65, said structured lipid avoiding the stimulation of the Triglyceride-Free Fatty Acid (TG-FFA) cycling and activation of the arachidonic acid—prostaglandin pathway; with about 20–60% non-fat ingredients.

5,571,554

PROCESS FOR REDUCING THE CONTENT OF TRIGLYCERIDES IN EGG YOLK AND IN PRODUCTS CONTAINING EGG YOLK

Günter Dressnandt, München; Manfred Amann, Odelzhausen, and Jodoca Rockinger-Mechlem, Gilching, all of Germany, assignors to Consortium für elektrochemische, München, Germany

Filed Sep. 8, 1994, Ser. No. 303,069

Claims priority, application Germany, Sep. 16, 1993, 43 31 565.8

Int. Cl.[6] A23L *1/015;1/32*

U.S. Cl. 426—614 **6 Claims**

1. A process for reducing the content of triglycerides in egg yolk and in products containing egg yolk, comprising

(a) diluting egg yolk with water or an aqueous salt solution to produce a mixture;

(b) adding γ-cyclodextrin to said mixture to form a γ-cyclodextrin/triglyceride complex; said β-cyclodextrin being used in an amount of 90% to 150% by weight, based on the undiluted egg yolk weight used;

(c) separating off the γ-cyclodextrin/triglyceride complex from said mixture; and

(d) separating off to the respective desired extent the added water or the added salt solution from the egg yolk thus treated.

5,571,555

STABLE ICING COMPOSITION

Victor T. Huang, Moundsview; Lorri D. Cullen, Minneapolis, and James A. Kivi, Brooklyn Center, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Mar. 23, 1995, Ser. No. 409,328

Int. Cl.[6] A23G *3/00;* A23L *1/09*

U.S. Cl. 426—659 **14 Claims**

1. A freezable flat icing, glaze or filling that is substantially free of aeration comprising sucrose and water in concentrations effective to prevent sucrose hydrate crystal formation when the flat icing, glaze or filling is frozen and further comprising a starch hydrolysate having a molecular weight effective to prevent weeping of the flat icing, glaze or filling when the flat icing, glaze or filling is in contact with a water-bearing matrix.

5,571,556

PULVERULENT ORGANOMETALLIC COMPOUNDS INTENDED FOR FORMING A TIN OXIDE FILM ON A SUBSTRATE, METHOD OF USING SAME AND THUS COATED SUBSTRATE

Jean-Francois Oudard, Thiescourt, France, assignor to Saint-Gobain Vitrage International, Courbevoie, France

Filed Jun. 17, 1994, Ser. No. 261,705
Claims priority, application France, Jun. 17, 1993, 93 07335
Int. Cl.[6] B05D 5/12
U.S. Cl. 427—108 9 Claims

1. A method of forming a film on a transparent substrate, comprising the steps of:

depositing a pulverulent organometallic compound comprising tin and a halogen and having a particle diameter in which 90% of particles have a diameter less than between 40–200 microns and 10% of particles have a diameter greater than 40–200 microns, and in which 50% of particles have a diameter less than between 20–60 microns and 50% of particles have a diameter greater than 20–60 microns onto a transparent substrate; and

pyrolyzing said deposited organometallic compound at a temperature of about 400–650° C. to form a film of tin oxide doped with said halogen on said substrate.

5,571,557

FAUX GLASS ETCH PRODUCT AND PROCESS OF PREPARING SAME

Norman P. De Bastiani, So. Hadley, and Richard J. Boucher, Chicopee, both of Mass., assignors to Chartpak, Inc., Leeds, Mass.

Filed May 9, 1995, Ser. No. 437,707
Int. Cl.[6] B05D 1/38;5/06; B32B 5/16; B41M 3/12
U.S. Cl. 427—152 11 Claims

1. A process for manufacture of a transfer sheet for applying images to surfaces to simulate the look of an etched design which comprises utilizing a screen printing process to coat a base sheet selected from the group of polystyrene and a release coated paper in at least a three step process comprising:

(1) coating said base sheet with nitrocellulose lacquer by silk screening onto said base sheet, and then subjecting said thus coated base sheet to a heating temperature for a sufficient time to dry said coating;

(2) further coating said base sheet over the dried coating of step (1) with an etch ink mixture of said nitrocellulose lacquer, a silica powder flattening agent and a mica/silica pearlescent powder, and then subjecting said thus coated base sheet to a heating temperature for a sufficient time to dry said etch ink mixture coated thereon;

(3) thereafter applying by screen printing a solvent based adhesive suitable for polystyrene or paper to said dried base sheet coatings resulting from steps (1) and (2), heating to dry said adhesive, and positioning a releasable slip sheet on the adhesive side of the base sheet.

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SILICONE IOL TUMBLING PROCESS

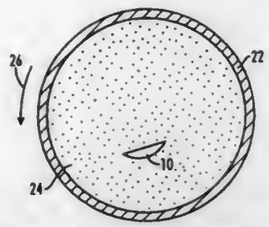
Tien P. Nguyen, Costa Mesa; Michael W. Orchowski, Laguna Beach, and Moises A. Valle, Glendale, all of Calif., assignors to Chiron Vision Corporation, Claremont, Calif.

PCT No. PCT/US92/08605, § 371 Date Jun. 27, 1994, § 102(e) Date Jun. 27, 1994
PCT Filed Oct. 8, 1992, Ser. No. 78,285
Int. Cl.[6] B24B 31/00; B29C 37/02; B29D 11/00; B05D 3/12
U.S. Cl. 427—215 9 Claims

1. A method of removing flash from a molded silicone lens body, the method comprising the steps of:

applying a layer of aluminum oxide on a plurality of beads;

containing the coated beads with alcohol and water in a tumbling container;



adding at least one silicone lens body to the tumbling container; and

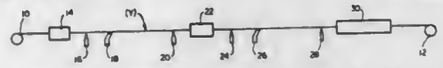
tumbling the silicone lens body within the coated beads to remove flash and at least some lens body material from the silicone lens body.

5,571,559

METHOD AND APPARATUS FOR BONDING, COATING AND DYEING YARN

Sara A. Cathey, Lake Toxaway; Mike C. Sellers, Hendersonville; Robert A. Spicuzza, Fletcher, and William C. Stuckey, Hendersonville, all of N.C., assignors to Belding Heminway Co., Inc., New York, N.Y.

Filed Dec. 5, 1994, Ser. No. 349,532
Int. Cl.[6] B05D 3/08; B05C 11/00
U.S. Cl. 427—224 15 Claims



1. A method for bonding, coating and/or dyeing the individual fibers of a multi-filament yarn, said method including the steps of:

(a) impregnating said yarn with a solution of a polymer resin dissolved in a flammable solvent/carrier; and

(b) igniting the solvent/carrier in the impregnated yarn to burn away only a part of said solvent/carrier from the yarn, wherein the burning is halted before all of the solvent/carrier is burned away from the yarn.

9. A method for bonding, coating and/or dyeing the individual fibers of a multi-filament yarn, said method including the steps of:

(a) impregnating said yarn with a solution of a polymer resin dissolved in a flammable solvent/carrier;

(b) igniting the solvent/carrier in the impregnated yarn to burn away only a part of said solvent/carrier from the yarn;

(c) halting the burning before all of the solvent/carrier is burned away from the yarn;

(d) again impregnating said yarn with said solution of a polymer resin;

(e) again igniting the solvent/carrier in the impregnated yarn to burn away only a part of said solvent/carrier from the yarn;

(f) again halting the burning before all of the solvent/carrier is burned away from the yarn; and

(g) drying said yarn to remove additional solvent/carrier.

5,571,560

PROXIMITY-DISPENSING HIGH-THROUGHPUT LOW-CONSUMPTION RESIST COATING DEVICE

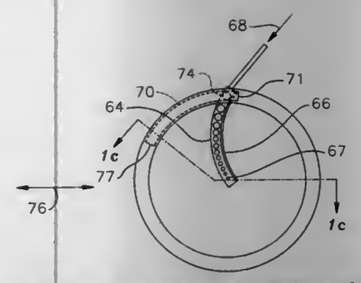
Burn J. Lin, 4603 Bayshore Blvd., Tampa, Fla. 33611

Filed Jan. 12, 1994, Ser. No. 180,368
Int. Cl.[6] B05D 3/12; B05C 11/02
U.S. Cl. 427—240 12 Claims

1. A method of coating a substrate with a soluble material comprising the steps of

supporting a substrate within a proximity distance of liquid dispensing nozzles in a spin chamber;

maintaining a solvent vapor rich environment in said spin chamber;



depositing said soluble material upon said substrate from said dispensing nozzles;

disposing said dispensing nozzles to provide an aerodynamically non-turbulent surface; and

spinning said substrate, such that said soluble material is distributed about said substrate.

8. An apparatus for coating a substrate with a soluble material comprising

a spin chamber;

a plurality of liquid dispensing nozzles in said spin chamber;

means for providing an aerodynamically non-turbulent surface across said dispensing nozzles;

means for supporting a substrate within a proximity distance of said dispensing nozzles;

means for maintaining a solvent vapor rich environment in said spin chamber; and

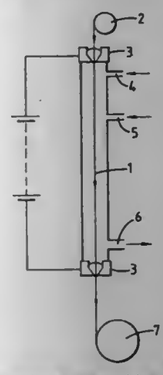
means for spinning said substrate, such that said soluble material is distributed about said substrate.

5,571,561

COATED FILAMENTS

Yann LePetitcorps, Leognan, France, and Robert A. Shatwell, Farnham, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Farnborough, United Kingdom

Filed Oct. 19, 1993, Ser. No. 138,012
Claims priority, application United Kingdom, Oct. 27, 1992, 9222594
Int. Cl.[6] C23C 16/00
U.S. Cl. 427—249 16 Claims



1. A process for continuous deposition of a titanium carbide coating of a tungsten filament which comprises the steps of:

heating the filament to a temperature of from 900° C. to 1200° C.; and

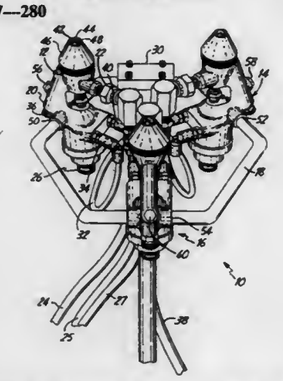
passing the heated filament through a deposition chamber containing gases, which, upon contact with the heated filament, deposit the coating thereon, said gases comprising a hydrocarbon and a titanium halogenated compound, said passing step including the step of said titanium halogenated compound contacting the tungsten filament before the hydrocarbon.

5,571,562

METHOD OF PRODUCING A MULTI-PATTERNED COATING

George H. Wakat, St. Paul Park, Minn., assignor to Master Coating Technologies, Inc., Eagan, Minn.

Continuation of Ser. No. 785,023, Oct. 30, 1991, abandoned.
This application Nov. 17, 1993, Ser. No. 154,152
Int. Cl.[6] B05D 5/00
U.S. Cl. 427—280 10 Claims



1. A method of forming a textured coating on a stationary surface, comprising:

providing a plurality of fluids under pressure;

providing a plurality of fluid nozzles, each fluid nozzle having an outlet end;

simultaneously delivering the plurality of fluids, one to each fluid nozzle, to provide simultaneous and continuous fluid streams simultaneously exiting the outlet ends of each of the fluid nozzles;

providing a gas under pressure;

delivering the gas under pressure to an area proximate the outlet ends of the fluid nozzles, the gas being delivered at a pressure sufficient to propel the fluid exiting the outlet ends of the fluid nozzles to the surface, but being at a pressure low enough to substantially avoid atomizing the fluid being delivered to the surface; and

the plurality of fluids under pressure being delivered having properties such that the fluids substantially avoid flowing on the surface and mixing while being propelled to the surface.

5,571,563

APPARATUS AND METHOD FOR PREVENTING INK RESOFTENING ON A PRINTED WEB AS THE WEB TRAVELS OVER A CHILL ROLL

Randall D. Helms, New Franken, and Daniel J. Hansen, Green Bay, both of Wis., assignors to Advance Systems, Inc., Green Bay, Wis.

Filed Mar. 20, 1995, Ser. No. 406,572
Int. Cl.[6] B05D 3/12; B41F 23/04
U.S. Cl. 427—288 19 Claims

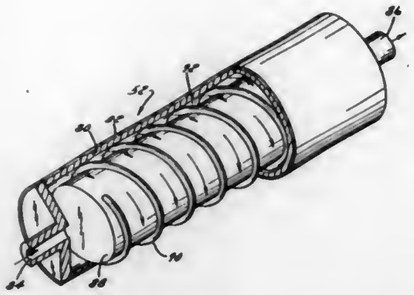
1. A method comprising:

(A) applying ink to at least one side of a moving endless paper web to form a printed web; then

(B) conveying said printed web through a dryer to form a dried web; then

(C) conveying said dried web over a cooled chill roll, thereby cooling and reducing the temperature of said dried web;

(D) pressing said dried web into intimate contact with said chill roll so as to substantially completely prevent solvent conden-



sate formation on said chill roll and to enhance web cooling taking place during said step (C), said pressing step comprising pressing an elastomer coated nip roll into said web without softening said ink, wherein heat is transferred to said nip roll from said web during said pressing step; and

(E) cooling an outer peripheral surface of said nip roll without applying coolant to said outer peripheral surface.

5,571,564

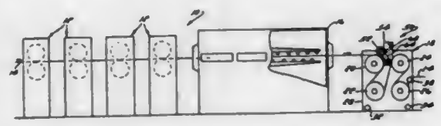
APPARATUS AND METHOD FOR PREVENTING INK RESOFTENING ON A PRINTED WEB AS THE WEB TRAVELS OVER A CHILL ROLL

Randall D. Helms, New Franken, and Daniel J. Hansen, Green Bay, both of Wis., assignors to Advance Systems, Inc., Green Bay, Wis.

Continuation-in-part of Ser. No. 406,572, Mar. 20, 1995. This application Sep. 27, 1995, Ser. No. 534,287

Int. Cl.[6] B05D *3/12;5/00;* **B41F** *23/04*

U.S. Cl. 427—288 **13 Claims**



1. A method comprising:

(A) applying ink to at least one side of a moving endless paper web to form a printed web; then

(B) conveying said printed web through a dryer to form a dried web; then

(C) conveying said dried web over a cooled chill roll, thereby cooling said dried web;

(D) moving an elastomer-coated nip roll from a first position in which said nip roll is spaced from said chill roll and does not press against said dried web to a second position in which said nip roll is located adjacent said chill roll and presses said dried web into intimate contact with said chill roll, so as to at least inhibit solvent condensate formation on said chill roll;

(E) circulating a chilled coolant through said nip roll so long as said nip roll is in said second position, said chilled coolant having a temperature below the temperature of an ambient atmosphere surrounding said nip roll; then

(F) moving said nip roll from said second position to said first position; and then

(G) circulating a heated fluid through said nip roll after said nip roll moves from said second position to said first position, said heated fluid having a temperature above the temperature of said chilled coolant and transferring sufficient heat to said nip roll to maintain the temperature of an outer peripheral surface of said nip roll above a dew point temperature of a surrounding atmosphere.

5,571,565

METHOD FOR PRODUCING SURFACE-TREATED PAPER AND DRY END OF A PAPER MACHINE

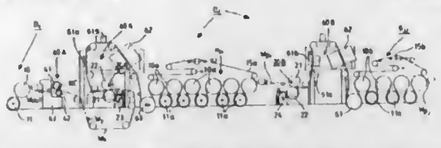
Seppo Elijoki; Heikki Ilvespää; Antti Kuhasalo, all of Jyväskylä, and Reima Kerttula, Muurame, all of Finland, assignors to Valmet Corporation, Helsinki, Finland

Filed Jun. 6, 1995, Ser. No. 467,780

Claims priority, application Finland, Feb. 1, 1995, 950434

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—316 **24 Claims**



1. A method for producing surface-treated paper from a paper web which has been dewatered by pressing to substantially a first dry solids content of from about 35% to about 60%, comprising the steps of:

a1) drying the web in a forward dryer section to substantially a second dry solids content of between 90% and 99%;

a2) wherein the drying of the web in step a1 comprises the step of applying drying energy to the web over substantially the entire length of the forward dryer section asymmetrically in the z-direction from only one side of the web, the web having a tendency to curl as a result of the asymmetric drying thereof in the forward dryer section;

a3) wherein the drying energy is applied asymmetrically to the web in step a2 by passing the web through a plurality of successive drying groups with single-wire draw that are open downward, each of said drying groups having steam-heated drying cylinders arranged in a first row and reversing suction cylinders arranged in a second row below said first row, the side of the web being dried being passed into direct contact with a face of said drying cylinders;

b1) passing the web from the forward dryer section to a finishing section without the interposition of an additional drying group; and

b2) reducing the curling tendency of the web that arose in the forward dryer section by moistening the web and/or working the web plastically.

5,571,566

METHOD OF MANUFACTURING A COATED STEEL

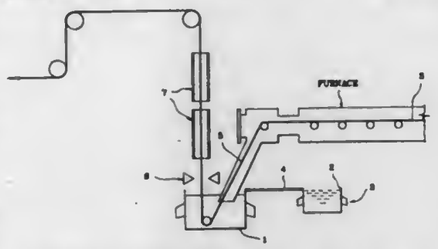
Nam-Geun Cho, Pusan, Rep. of Korea, assignor to Union Steel Manufacturing Co., Ltd., Pusan, Rep. of Korea

Filed Jan. 30, 1995, Ser. No. 379,911

Claims priority, application Rep. of Korea, Mar. 10, 1994, 4688/1994

Int. Cl.[6] B05D *3/04*

U.S. Cl. 427—349 **10 Claims**



1. A method of manufacturing a coated steel plate comprising contacting a steel plate with a molten coating composition comprising 55% by weight of Al, 43.3% by weight of Zn, 1.6% by weight of Si and a percentage by weight of Ti.

5,571,567

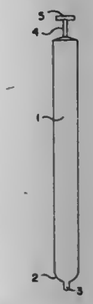
DIP MOLDED POLYURETHANE FILM METHODS

Tilak M. Shah, Cary, N.C., assignor to Polygenex International, Inc, Cary, N.C.

Division of Ser. No. 158,604, Nov. 29, 1993. This application Jun. 7, 1995, Ser. No. 478,931

Int. Cl.[6] B05D *1/18*

U.S. Cl. 427—379 **10 Claims**



1. The method of dip molding polyurethane elastomers comprising:

A. forming a dipping solution comprising:

i. a polyurethane elastomer;

ii. a first solvent component which is at least one strong solvent for said polyurethane elastomer;

iii. a second solvent component which is at least one non-solvent or non-polar or low polarity weak solvent for said polyurethane elastomer, whereto said second solvent component is freely miscible with said first solvent component;

iv. a third solvent component which is at least one blush resistor which limits the rate of evaporation of said first solvent component and said second solvent component and which limits the absorption of water vapor into said composition;

v. wherein said polyurethane is homogeneously dissolved in said solvent to form a solution having a viscosity in the range of from about 400 to about 800 cP;

B. dipping a shaped form into said solution to wet the surface of said form;

C. withdrawing said form from said solution to deposit a coating of said solution on the surface thereof, said coating having a thickness of from about 0.5 to 1.5 mils;

D. drying said coating to form a continuous, non-porous solid polyurethane elastomer film having a thickness of from about 0.5 to about 1.5 mils on the surface of said form;

E. repeating steps B, C, and D at least one additional time the continuous, non-porous solid polyurethane elastomer film has at least two of said thicknesses;

F. stripping from said form said continuous, non-porous solid polyurethane elastomer film conforming to the shape of said form.

5,571,568

MULTILAYERED BIOELECTRONIC SENSORS

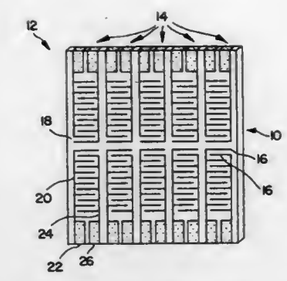
Hans O. Ribi, San Mateo; Todd Guion, Palo Alto, and Paul T. Shafer, Burlingame, all of Calif., assignors to Biocircuits Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 203,846, Feb. 28, 1994, Pat. No. 5,491,097, which is a continuation of Ser. No. 893,563, Jun. 3, 1992, abandoned, which is a continuation of Ser. No. 453,784, Dec. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 366,651, Jun. 15, 1989, Pat. No. 5,156,810. This application Jun. 7, 1995, Ser. No. 474,114

Int. Cl.[6] B05D *3/02;3/06*

U.S. Cl. 427—487 **8 Claims**

1. A method of forming a crystalline electrically conducting surfactant layer comprising:



spreading over an aqueous subphase on a solid substrate a solution of surfactant comprising polymerizable surfactants capable of forming an electrically conducting surfactant polymer, wherein said aqueous subphase comprises at least one water miscible organic compound;

evaporating the solvent of said surfactant solution to produce films;

heating said substrate at a temperature and for a time sufficient to cause surfactant melting;

cooling said melted dry patches to a temperature of less than about 10° C.; and

polymerizing said polymerizable surfactants to said electrically conducting surfactant polymer.

5,571,569

THIN-FILM FORMING METHOD

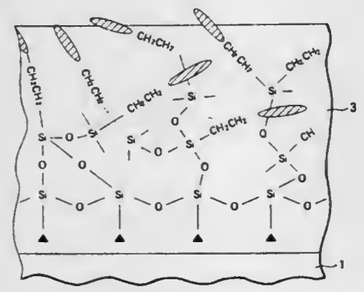
Yoshifumi Kato; Yoshifumi Fujita; Atsushi Hozumi, and Akiteru Nishio, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Apr. 11, 1995, Ser. No. 420,209

Claims priority, application Japan, Apr. 14, 1994, 6-076179; Nov. 18, 1994, 6-285616; Dec. 20, 1994, 6-316773

Int. Cl.[6] B05D *3/02;3/06*

U.S. Cl. 427—493 **8 Claims**



1. A thin-film forming method comprising:

an uncured-layer forming step in which a mixed composition containing an organic polymerizing agent curable composition and a silicone polymerizing curable composition is prepared to form an uncured layer consisting of this mixed composition on a resin substrate;

a solvent removing step in which the solvent in the uncured layer is removed;

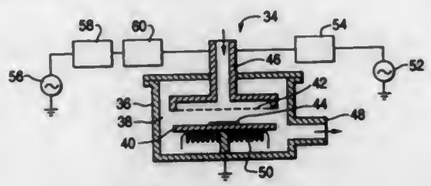
a first polymerization curing step in which the organic polymerizing curable composition in the uncured layer is polymerized; and

a second polymerization curing step in which the silicone polymerizing curable composition in the uncured layer is polymerized.

5,571,570
UV CURABLE BLEND COMPOSITIONS AND PROCESSES
Randall T. Lake, Newburgh, Ind., assignor to Red Spot Paint and Varnish Co., Inc., Evansville, Ind.
Division of Ser. No. 231,895, Apr. 22, 1994. This application Jun. 7, 1995, Ser. No. 486,346
Int. Cl.[6] B05D 3/06
U.S. Cl. 427—494 **15 Claims**

1. A method for forming a coating on an article, comprising the steps of:
(a) applying to the article an ultraviolet curable coating composition including, exclusive of any solvent present:
about 35% to about 65% by weight of a first acrylated aliphatic urethane having a number average molecular weight of between about 500 and 2000 and formed by the reaction of
(i) a first acrylate having multiple acrylate functionalities with a molecular weight of about 190 to about 500 and containing at least three polymerizable unsaturated groups per molecule, with
(ii) an aliphatic urethane based on a polymer of alkyl carbomonocycle diisocyanate with alkanepolyol polyacrylates;
about 5% to about 25% by weight of a second acrylated aliphatic urethane having a number average molecular weight of between about 1200 and 2600 and formed by the reaction of
(i) a second acrylate with multiple acrylate functionalities with a molecular weight of about 110 to about 500 , with
(ii) an aliphatic polyether urethane having a molecular weight of about 800 to about 2200;
about 10% to about 55% by weight of a third acrylate having multiple acrylate functionalities and a molecular weight of about 170 to about 1,000 and containing at least two polyemerizable unsaturated groups per molecule; and
a photopolymerization initiator or sensitizer; and,
(b) irradiating and thereby curing the applied composition with ultraviolet light.

5,571,571
METHOD OF FORMING A THIN FILM FOR A SEMICONDUCTOR DEVICE
Katsuyuki Musaka, Sakae, and Shinzuke Mizuno, Narita, both of Japan, assignors to Applied Materials, Inc., Santa Clara, Calif.
Continuation-in-part of Ser. No. 184,331, Jan. 19, 1994, abandoned. This application Jun. 14, 1994, Ser. No. 259,584
Claims priority, application Japan, Jun. 16, 1993, 5-145070
Int. Cl.[6] H05H 1/02;1/30;1/24
U.S. Cl. 427—574 **10 Claims**

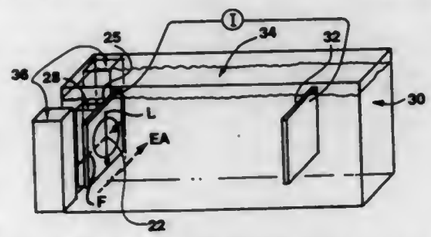


1. A method of forming a conformal thin film of silicon oxide on a substrate having spaced conductive lines thereon comprising the steps of:
mounting a substrate onto a substrate support in a vacuum chamber;
forming a plasma in the vacuum chamber in a region above the substrate by means of an electrical power source from a reaction gas comprising a mixture of tetraethylorthosilicate and a fluorine-containing halocarbon gas selected from the group consisting of CX_4 and CX_3—$(CX_2)_n$—CX_3 wherein X is hydrogen or halogen and n is an integer from 0 to 5 with the proviso that at least one X is fluorine; and
subjecting the substrate to the plasma so as to deposit a layer of silicon oxide containing at least about 2.5 atomic percent of fluorine onto the substrate without the formation of voids in the film.

5,571,572
METHOD OF DEPOSITING TITANIUM CARBONITRIDE FILMS ON SEMICONDUCTOR WAFERS
Gurtej S. Sandhu, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Continuation of Ser. No. 971,943, Nov. 5, 1992, abandoned, and a continuation-in-part of Ser. No. 755,202, Sep. 5, 1991, Pat. No. 5,192,589. This application Jun. 30, 1994, Ser. No. 269,957
Int. Cl.[6] C23C 8/00;16/00
U.S. Cl. 427—585 **13 Claims**

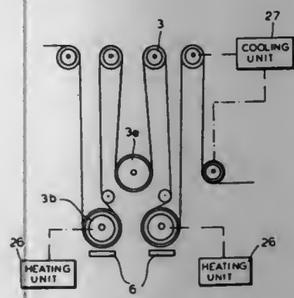
1. A chemical vapor deposition method of providing a conformal layer of titanium carbonitride atop a semiconductor wafer, the method comprising the following steps:
prior to providing said titanium carbonitride conformal layer on a semiconductor wafer, pretreating internal sidewalls of a chemical vapor deposition reactor with an activated halogen species to cause such species to bind to the internal reactor sidewalls;
providing a wafer within the chemical vapor deposition reactor;
injecting quantities of a gaseous, carbon containing, titanium organometallic precursor and a carrier gas into the reactor having the semiconductor wafer positioned therein; and
maintaining the reactor at a pressure of less than or equal to about 100 Torr and the semiconductor wafer at a temperature which in combination cause a reaction of the precursor to withdraw active halogenated species from the reactor sidewalls to bond carbon from the precursor with the withdrawn activated halogen species and to deposit a film on the semiconductor wafer which comprises titanium carbonitride, the deposited titanium carbnoitride film having less incorporated carbon than would otherwise be present were the activated halogen species not present in the chemical vapor deposition reactor during deposition.

5,571,573
PROCESS OF FORMING MAGNETIC DEVICES WITH ENHANCED POLES
Harold B. Shukovsky, Framingham; Michelle Martin, Westford; Michael Mallary, Berlin, and Alan L. Sidman, Wellesley, all of Mass., assignors to Quantum Corporation, Milpitas, Calif.
Continuation of Ser. No. 345,719, May 1, 1989, abandoned. This application Feb. 6, 1992, Ser. No. 831,615
Int. Cl.[6] C23C 14/14
U.S. Cl. 427—531 **21 Claims**



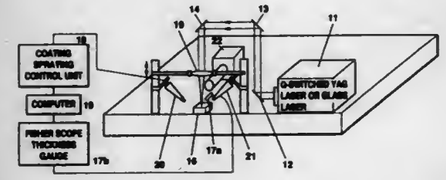
1. A process for forming and annealing at least one pole of a magnetic device, comprising the steps of:
(a) determining a maximum permeance for a chosen pole width,
(b) relating that permeance to an anisotropy field for a pole having the chosen pole width,
(c) determining a concentration of cobalt that is needed in a mixture of deposition material from which the pole is to be formed so that the pole, after being annealed, will have approximately said anisotropy field that is related to the maximum permeance,
(d) forming the at least one pole from the mixture of deposition material, the pole having approximately the desired cobalt concentration and having an initial anisotropy field of a strength less than that of said anisotropy field that is related to the maximum permeance, and
(e) annealing the pole in a manner selected to cause the initial anisotropy field of the pole to increase to approximately said anisotropy field that is related to the maximum permeance.

5,571,574
PROCESS FOR CONTINUOUS REACTIVE METAL OXIDE FORMATION IN VACUUM
Carlo Misiano, and Enrico Simonetti, both of Rome, Italy, assignors to CE.TE.V. Centro Tecnologie Del Vuoto, Carsoli, Italy
Division of Ser. No. 258,978, Jun. 10, 1994, Pat. No. 5,462,602. This application Jul. 12, 1995, Ser. No. 501,532
Claims priority, application Italy, Jun. 11, 1993, RM93A0385
Int. Cl.[6] B05D 3/06
U.S. Cl. 427—536 **6 Claims**



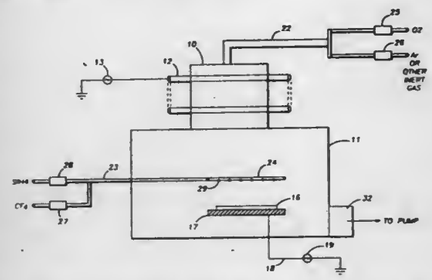
1. A method of continuously coating a web of a plastic film with a metal oxide, said method comprising the steps of:
(a) withdrawing a web of a plastic film from a roll within a vacuum chamber;
(b) passing said web of plastic film withdrawn from said roll around rollers of upper and lower arrays in a plurality of substantially vertical loops extending from a lower zone to an upper zone in said chamber;
(c) maintaining said lower zone at a higher pressure than the upper zone with a reactive atmosphere supplied to said zones said reactive atmosphere including oxygen;
(d) electromagnetically activating the reactive atmosphere in said upper zone;
(e) juxtaposing with said plurality of loops in said other of said zones at least one source of metal vaporizing onto said web and located directly below rollers of the lower array, thereby depositing said metal on each of said loops upon passing by said web each of said rollers of one of said upper and lower arrays in said other of said zones in a plurality of coatings, each of said plurality of coatings reacting on each loop in said upper zone with said reactive atmosphere before being coated with a subsequent coating in said one of said zones to build-up a multi-layer metal oxide on said web of sufficient thickness upon passing said rollers of said one of said upper and lower arrays; and
(f) a take up roll downstream of said array in said chamber for winding up said web of said plastic film coated with said metal compound.

5,571,575
LASER SHOCK METHOD UTILIZING LIGHT ABSORBING MATERIAL
Noboru Takayanagi, Tajimi, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Continuation of Ser. No. 352,868, Dec. 2, 1994, abandoned. This application Jul. 6, 1995, Ser. No. 498,728
Claims priority, application Japan, Dec. 7, 1993, 5-306664; Aug. 24, 1994, 6-199278
Int. Cl.[6] B05D 3/00
U.S. Cl. 427—9 **20 Claims**



1. A laser shock processing method for evaporating a light absorbing material by irradiation of laser light and for applying a shock to a metallic workpiece by utilizing an increase in pressure due to evaporation of the light absorbing material, comprising the steps of:
forming a light absorbing material layer for absorbing laser light, on a surface of a metallic workpiece, while simultaneously measuring a thickness of the light absorbing material layer, and performing a control operation that controls the thickness of the light absorbing material layer;
covering the formed light absorbing material layer with a light transmitting member layer; and
irradiating the light absorbing material layer with a laser light pulse through the light transmitting member layer.

5,571,576
METHOD OF FORMING A FLUORINATED SILICON OXIDE LAYER USING PLASMA CHEMICAL VAPOR DEPOSITION
Lingqian Qian; Melvin C. Schmidt, both of San Jose, and Glenn L. Nobinger, Santa Clara, all of Calif., assignors to Watkins-Johnson, Palo Alto, Calif.
Filed Feb. 10, 1995, Ser. No. 386,647
Int. Cl.[6] H05N 1/02
U.S. Cl. 427—574 **19 Claims**



1. A method of forming a fluorinated silicon oxide layer on the surface of a substrate using a plasma chemical vapor deposition apparatus which includes a process chamber and a plasma chamber, comprising the steps of:
positioning the substrate within said process chamber;
introducing into said plasma chamber an inert gas and oxygen gas, said inert gas being selected from at least one of the inert gases of the group consisting of argon, neon, krypton or xenon;

introducing r.f. power into said plasma chamber such that a plasma is created in the plasma chamber, and wherein the stability of the plasma is enhanced by introduction of said inert gas;

introducing a silicon-containing gas into said process chamber adjacent the surface of said substrate; and

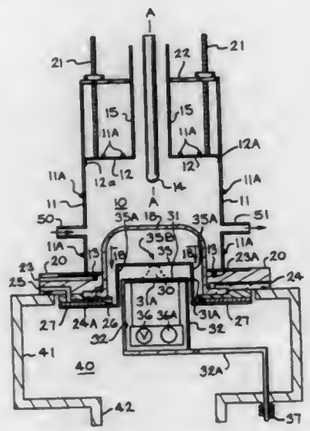
introducing into one of said chambers a fluorine-containing gas whereby said fluorine gas is available at the surface of said substrate, and said silicon-containing gas and said fluorine-containing gas are excited by said plasma and interact proximate to the surface of said substrate to form a fluorinated silicon oxide layer on the surface of said substrate.

5,571,577

METHOD AND APPARATUS FOR PLASMA TREATMENT OF A SURFACE

Jie Zhang, East Lansing, and Jes Asmussen, Okemos, both of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Filed Apr. 7, 1995, Ser. No. 418,383
Int. Cl.[6] H05H *1/30*
U.S. Cl. 427—575 **10 Claims**



1. A method for treating a substrate with a plasma which comprises:

(a) providing a plasma generating apparatus including a plasma source employing a radiofrequency, including UHF or microwave, wave coupler means which is metallic and optionally including a static magnetic field around the plasma which aids in coupling radiofrequency energy at electron cyclotron resonance and aids in confining ions in the plasma in an electrically insulated chamber means in the coupler means, mounted in closely spaced and sealed relationship to an area of the coupler means with an opening from the chamber means at one end; waveguide means for coupling the radiofrequency waves to the coupler means; a stage means which forms part of the coupler means and provides for mounting a substrate adjacent the plasma, a conductive plate with at least one orifice mounted at the opening from the chamber between the stage means and the chamber; an inlet and an outlet for gas flow through the orifice and through the plasma which is in a region between the orifice and the stage means and onto the substrate and then removal from the region; and tuning means for positioning the radiofrequency waves between the orifice and the stage means; and

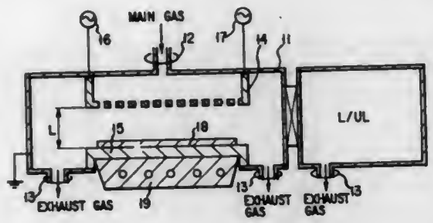
(b) generating the plasma in a flow of the gas between the orifice and the stage means by tuning the radiofrequency waves so that the plasma treats the substrate.

5,571,578

METHOD FOR FORMING SILICON OXIDE ON A SEMICONDUCTOR

Naruhiko Kaji, Yokohama; Riichirou Aoki, Tokyo; Hiroyuki Toyama, Kitakami; Hidemitsu Egawa, Tokyo; Takamitsu Yoshida, and Yukio Nishiyama, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Tohsiba, Kawasaki, Japan

Filed Jan. 13, 1995, Ser. No. 372,325
Claims priority, application Japan, Jan. 18, 1994, 6-003549
Int. Cl.[6] H05H *1/24*
U.S. Cl. 427—579 **12 Claims**



1. A method for forming silicon oxide on a semiconductor sample comprising the steps of:

preparing a plasma CVD device having a chamber, an upper electrode provided in said chamber, an under electrode provided in said chamber to be opposite to said upper electrode, and first and second power sources connected to said upper electrode;

mounting said semiconductor sample onto said under electrode;

applying power of a first frequency to said upper electrode from said first power source;

applying power of a second frequency to said upper electrode from said second power source;

introducing gas into the chamber of said plasma CVD device, said gas containing at least an organic silicon compound, CF_4 and O_2, and having an element ratio (F/Si) of silicon (Si), constituting said organic silicon compound, to fluorine (F), constituting CF_4, to be set to 15 or more; and

generating plasma in the chamber of said plasma CVD device to form silicon oxide containing F (fluorine) on said semiconductor sample.

5,571,579

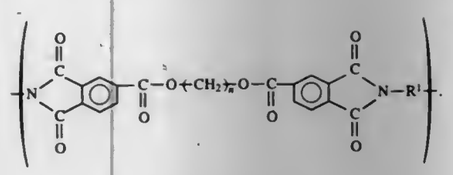
ALIGNMENT FILM FOR LIQUID CRYSTAL, LIQUID CRYSTAL-SANDWICHED PANEL, LIQUID CRYSTAL DISPLAY MODULE AND MATERIAL FOR LIQUID CRYSTAL ALIGNMENT FILM

Toshihiko Kato, Tsukuba; Masami Yusa, Shimodate; Nobuo Miyadera, Tsukuba; Hideyuki Hashimoto, Tsukuba; Yasuo Miyadera, Tsukuba, and Masahiro Kawakami, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd, Tokyo, Japan

Continuation of Ser. No. 60,600, May 12, 1993, abandoned. This application Oct. 19, 1994, Ser. No. 326,151
Claims priority, application Japan, Jul. 24, 1992, 4-217478; Oct. 7, 1992, 4-268542
Int. Cl.[6] C09K *19/00*; B05D *3/12*
U.S. Cl. 428—1 **14 Claims**

1. A manufacturing process of an alignment film for a liquid crystal, said process comprising the steps of forming a polyimide film and performing a rubbing treatment on the surface of said polyimide film so as to form an alignment film for liquid crystal, wherein:

said polyimide includes a polyamide having a repeating unit of general formula (1):



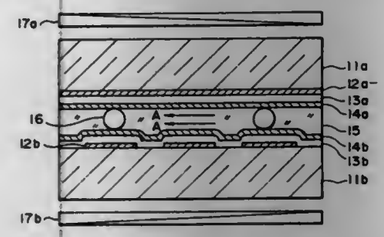
(I)

5,571,580

LIQUID CRYSTAL DEVICE

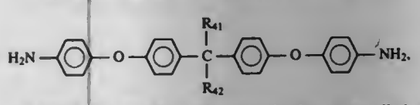
Masanobu Asaoka, Yokahama; Hideaki Takao, Sagamihara; Takeshi Togano, Yokohama, and Makoto Kojima, Hino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 399,043, Mar. 6, 1995, which is a division of Ser. No. 122,936, Sep. 20, 1993, Pat. No. 5,419,931. This application Jun. 7, 1995, Ser. No. 476,767
Claims priority, application Japan, Sep. 18, 1992, 4-273574; Sep. 18, 1992, 4-273576; Dec. 14, 1992, 4-352913
Int. Cl.[6] G02F *1/1337*
U.S. Cl. 428—1 **3 Claims**



1. A liquid crystal device, comprising:

a pair of substrates and a liquid crystal disposed between the substrates, at least one of said pair of substrates having thereon an alignment film of a polyamide composite comprising at least two polyamides formed from an aromatic ring-containing acid component and at least two different diamine components represents by formula (4) below:



(4)

wherein R_{41} and R_{42} independently denote an alkyl group having 1–10 carbon atoms.

5,571,581

LONG SANDWICH MOLDED ARTICLE

Junji Koizumi; Hiroshi Mukai; Junji Takeuchi, and Takahiko Sato, all of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Japan

Continuation of Ser. No. 894,428, Jun. 5, 1992, abandoned. This application Nov. 8, 1994, Ser. No. 338,794
Claims priority, application Japan, Jun. 14, 1991, 3-143569; Jun. 14, 1991, 3-170667
Int. Cl.[6] B60R *13/04*
U.S. Cl. 428—31 **13 Claims**

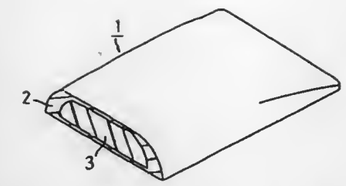
1. A long molded article comprising:

a skin layer comprising a thermoplastic elastomer, and

a core layer coated with said skin layer which comprises:

a) 30 to 70% by weight of a matrix phase comprising a polypropylene resin, and

b) 70 to 30% by weight of one dispersed phase selected from the group consisting of ethylene-α-olefin copolymers and styrene-based thermoplastic elastomers, wherein the ratio of the flexural modulus of said core layer to that of said skin layer is 3.0 or more.



5,571,582

GARBAGE BAG OR CONTAINER

Masahiko Katoh, Yokkaichi, Japan, assignor to Mitsubishi Chemical Corporation, Tokyo, Japan

Continuation of Ser. No. 88,036, Jul. 6, 1993, abandoned. This application Jan. 6, 1995, Ser. No. 369,334
Claims priority, application Japan, Jul. 8, 1992, 4-203197
Int. Cl.[6] B32B *1/08*
U.S. Cl. 428—35.5 **8 Claims**

1. A garbage bag or container for keeping off fur and feather comprising a polyolefin composition consisting essentially of:

i) a polyethylene;

ii) 10 to 5,000 ppm by weight of at least one compound selected from the group consisting of methyl salicylate, ethyl salicylate, propyl salicylate, n-butyl salicylate, iso-butyl salicylate, iso-amyl salicylate and menthol; and

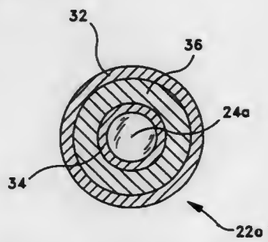
iii) 1 to 50% by weight of an elastomer miscible with said polyolefin selected from the group consisting of EPR, V-LDPE, SEBS, polybutadiene and a mixture thereof wherein ppm and % by weight are based on the entire weight of said polyolefin composition.

5,571,583

INJECTION SPIN MOLDING PROCESS AND ARTICLES MADE THEREWITH

Bangshu Cao, Chapel Hill, and Thomas A. Shepard, Apex, both of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Apr. 26, 1995, Ser. No. 428,975
Int. Cl.[6] B32B *7/00*; F16L *9/12*
U.S. Cl. 428—35.7 **7 Claims**



1. A hollow, polymeric article comprising a a wall, said wall having outer and inner skin layers and a core layer therebetween, said wall comprising a polymer capable of being obtained in a molten state, said skin layers having the polymer molecules thereof oriented in a first direction and the polymer molecules of the core layer being oriented in a second direction transverse to the molecules of the skin layers.

5,571,584

BLOW MOLDED ARTICLES

Kazuhito Yamamoto; Hiroji Niimi; Yoji Yamamoto, and Susumu Hatabu, all of Kuga-gun, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

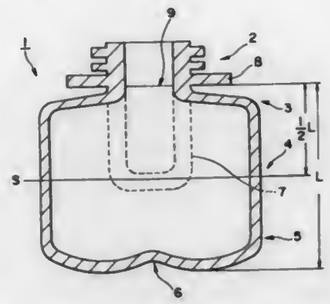
Division of Ser. No. 301,440, Sep. 9, 1994, which is a continuation of Ser. No. 29,914, Mar. 11, 1993, abandoned, which is a continuation of Ser. No. 569,993, Aug. 20, 1990, abandoned.

This application May 15, 1995, Ser. No. 440,972

Claims priority, application Japan, Aug. 31, 1989, 1-225755; Aug. 31, 1989, 1-225756; Aug. 31, 1989, 1-225757; Aug. 31, 1989, 1-225758; Aug. 31, 1989, 1-225760; Aug. 31, 1989, 1-225761; Aug. 31, 1989, 1-225762; Aug. 31, 1989, 1-225763; Aug. 31, 1989, 1-225764

Int. Cl.[6] B29C *49/00*

U.S. Cl. 428—35.7 6 Claims



1. A blow molded article having excellent transparency, moldability and gas barrier properties,

wherein the blow molded article is composed of a copolyester resin composition comprising (A) a polyethylene terephthalate resin and

(B) at least one polyester resin selected from the group consisting of (i) a polyethylene naphthalate resin, (ii) a polyethylene isophthalate resin, (iii) a copolyester formed by esterification of dicarboxylic acid containing terephthalic acid and 2,6-naphthalene dicarboxylic acid with ethylene glycol, (iv) a copolyester formed by esterification of terephthalic acid with a dihydroxy compound component containing ethylene glycol and cyclohexane- dimethanol, (v) a copolyester formed by esterification of terephthalic acid with a dihydroxy compound component containing ethylene glycol and neopentyl glycol, (vi) a copolyester formed by esterification of terephthalic acid with a dihydroxy compound component containing ethylene glycol and diethylene glycol, and (vii) a copolyester formed by esterification of dicarboxylic acid containing terephthalic acid and an aliphatic dicarboxylic acid of 6–10 carbon atoms with ethylene glycol, and is highly oriented so that the stretch index as defined by the following equation becomes not less than 130 cm.,

$$\text{Stretch index} = \frac{\text{Internal volume of oriented bottle (excluding stopper portion)}}{\text{Internal volume of unoriented preform (excluding stopper portion)}} \times \frac{1}{f}$$

$$f = \frac{\text{Internal surface area of oriented bottle (excluding stopper portion)}}{\text{Internal volume of oriented bottle (excluding stopper portion)}} \ (\text{cm}^{-1}).$$

5,571,585

RESIN-COATED PIPE

Jiichirou Yoshida, Ichihara; Syoich Nezu, Chiba, and Junichi Ono, Okazaki, all of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Filed Dec. 27, 1994, Ser. No. 364,499

Claims priority, application Japan, Dec. 27, 1993, 5-331575

Int. Cl.[6] B32B *15/08*

U.S. Cl. 428—36.91 6 Claims

1. A resin-coated pipe obtainable by extrusion coating a tubular base with a resin composition comprising 5 to 30% by weight of a component A as shown below and 95 to 70% by weight of a component B as shown below:

Component A: an ethylene-α-olefin copolymer resin in which the melt flow rate at a temperature of 190° C. and under a load of 2.16 kg is 0.01 to 50 g per 10 min., the density is 0.910 g/cm or below, and the maximum fusion peak temperature as measured by a differential scanning calorimeter is 60° C. or above;

Component B: a block copolymer containing propylene and up to 15% by weight α-olefin having a carbon number of 2 or of 4 to 10, in which the melt flow rate at a temperature of 190° C. and under a load of 2.16 kg is 0.1 to 10 g per 10 min.

5,571,586

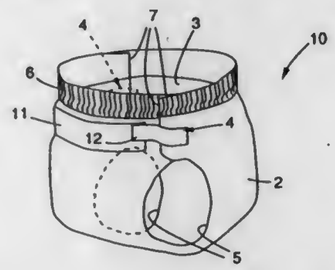
REPOSITIONABLE TAPE CLOSURE SYSTEM FOR A THIN FILM ARTICLE

Ramsis Gobran, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 2, 1994, Ser. No. 333,499

Int. Cl.[6] A61F *13/60*

U.S. Cl. 428—41.3 14 Claims



1. A pressure-sensitive adhesive closure system comprisIng at least two opposing closure surfaces and a pressure-sensitive adhesive tape tab fastener, said pressure-sensitive adhesive tape tab fastener removably attached to a first face of a first closure surface at a first free end of the tape tab fastener by a pressure-sensitive adhesive layer on a first face of said tape tab fastener, a second opposing end of said tape tab fastener permanently attached to a first face of a second opposing closure surface, said first and second closure surfaces comprising a thin thermoplastic film or laminate, only a discrete area of the first face of the first closure surface thin thermoplastic film is provided with a printed low-adhesion material said low adhesion material printed directly on said thin thermoplastic film by coating, said low adhesion material comprising a material that is soluble, dispersible, emulsifiable or suspendable in aqueous or polar solvents or 100 percent solids which solids is then cured into said low-adhesion material, the fastening tape tab free end is removable from the first closure surface first face discrete area provided with said printed low adhesion material at least two times at a 135° peel adhesion of at least about 70 grams/25.4 mm at the same or different locations of the first closure surface first face discrete area provided with the printed low-adhesion material.

5,571,587

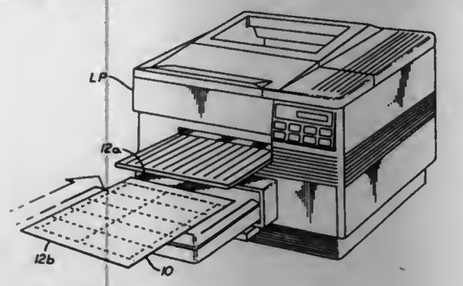
SHEETSTOCK ADAPTED FOR USE WITH LASER AND INK JET PRINTERS

Willis E. Bishop, Diamond Bar; Dennis L. Greaver, Rialto, and Jane M. Thompson, Pasadena, all of Calif., assignors to Avery Dennison, Pasadena, Calif.

Filed Jul. 14, 1994, Ser. No. 274,772

Int. Cl.[6] B32B *3/02*

U.S. Cl. 428—43 20 Claims



1. Sheetstock, comprising:

first and second sheets laminated to one another, each of the first and second sheets defining respective thicknesses, side edges and longitudinal edges, the thickness of the first sheet being less than the thickness of the second sheet, the first and second sheets being combined to form a composite sheet in which a portion of each longitudinal edge of the first sheet extends longitudinally beyond a corresponding longitudinal edge of the second sheet;

perforation lines formed in at least the second sheet adjacent each of the longitudinal edges of the second sheet;

a plurality of perforation lines formed in at least the second sheet at longitudinal intervals between the perforation lines formed adjacent the longitudinal edges;

longitudinal perforation lines formed in at least the second sheet adjacent to each of the side edges of the second sheet; and

a longitudinal perforation line formed in at least the second sheet substantially equidistant between the perforation lines adjacent to each side edge of the second sheet;

wherein the perforation lines divide the composite sheet into a plurality of substantially rectangular, readily separable cards, and wherein said sheetstock will feed through a laser or ink jet printer or photocopier.

5,571,588

DURABLE INLAID FLOOR COVERINGS HAVING A UNIFORM, UNPATTERNED DECORATIVE APPEARANCE

Edward F. Lussi, Bethlehem, and Thomas G. Smith, Easton, both of Pa., assignors to Tarkett Inc., Parsippany, N.J.

Continuation of Ser. No. 102,396, Aug. 5, 1993, abandoned, which is a continuation of Ser. No. 362,344, Jun. 6, 1989, abandoned. This application Aug. 1, 1994, Ser. No. 283,717

Int. Cl.[6] B32B *3/10;* D06H *7/04;* B05D *3/02;1/36*

U.S. Cl. 428—46 26 Claims

1. An inlaid floor covering having a uniform, unpatterned decorative appearance which comprises:

a) a relatively flat substrate;

b) a matrix layer overlaying said substrate, the matrix layer consisting essentially of a resin in which are embedded spheroidal particles having an aspect ratio no greater than about 2:1, wherein said particles are colored and are selected from the group consisting of translucent and opaque, and are provided in a uniform, unpatterned matrix and in a density from about 0.55 to about 0.8 pounds per square yard to prevent the underlying material from showing through, wherein the colors of the spheroidal particles determine the colors of the floor covering.

5,571,589

Patent Not Issued For This Number

5,571,590

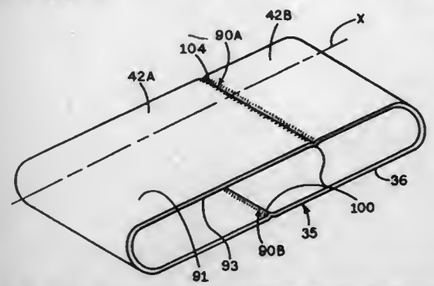
METHODS OF MAKING PAPERMAKING FELT AND SUBSTRATE

Gary V. Schultz, Kimberly, and Dennis J. Le Gault, Appleton, both of Wis., assignors to Appleton Mills, Appleton, Wis.

Filed Jun. 6, 1995, Ser. No. 469,072

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—57 75 Claims



1. A method of making a papermaking felt circumscribing a closed loop path, the papermaking felt comprising a substrate web, the papermaking felt having opposing first and second surfaces, and first and second batts of fibrous material assembled to the first and second surfaces, the papermaking felt having a first length along the closed loop path and a first width extending transverse to the length, the substrate web having opposing third and fourth surfaces, the method comprising the steps of:

(a) fabricating a flat-weave substrate web precursor, the flat-weave substrate web precursor having a second length, a second width transverse to the second length, and a weave pattern;

(b) severing, from the flat-weave substrate web precursor, a substrate web element having a third length, and a third width transverse to the third length, first and second ends, and corresponding first and second edges;

(c) forming the substrate web element into a closed loop, and thereby forming the substrate web element into the substrate web, by joining the first and second ends and forming, in the substrate web element, at least one fuse-bonded joint extending across the substrate web element, and correspondingly across the substrate web, between the first and second edges in a direction transverse to the length; and

(d) securing a batt of fibrous material to at least one of the third and fourth surfaces.

5,571,591

MAGNETIC FILM PATTERNING BY GERMANIUM OR SILICON DIFFUSION

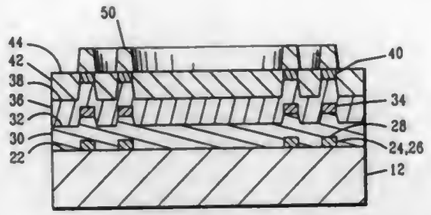
Michael J. Brady, Brewster; Richard J. Gambino, Yorktown Heights, and Ralph R. Ruf, New City, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 877,937, May 1, 1992, abandoned. This application Feb. 27, 1995, Ser. No. 396,285

Int. Cl.[6] G11B *5/66;* B32B *3/02;15/00*

U.S. Cl. 428—65.3 10 Claims

1. A ferromagnetic structure comprising first and second regions having a diffusion defined boundary interface therebetween, said first region being composed of a first material having a ferromagnetic property, and said second region being composed of a second material that is substantially not ferromagnetic, said second region being composed of said first material into which atoms of silicon



or germanium have been diffused, after formation of said second region, in sufficient quantity to substantially destroy said ferromagnetic property of said first material in said second region and define said boundary interface.

5,571,592

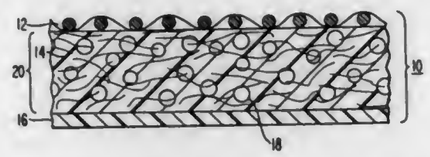
PUFFED INSULATIVE MATERIAL

Gordon L. McGregor, 5 Copper Beech Ct., Landenberg, Pa. 19350, and Raymond B. Minor, 233 Greenhaven Dr., Elkton, Md. 21921

Continuation-in-part of Ser. No. 125,092, Sep. 21, 1993, abandoned. This application Feb. 28, 1995, Ser. No. 395,772

Int. Cl.[6] B32B *5/18;5/24;5/26;5/30*

U.S. Cl. 428—71 **15 Claims**



1. A multilayered insulative material that comprises at least one porous barrier layer which defines at least one side of a confined space wherein the confined space contains at least one layer of fibrous insulation and wherein the fibrous insulation contains loose thermoplastic microspheres interspersed within the fibrous insulation with the microspheres being of sufficient diameter that they are unable to pass through the pores in the barrier layer so that the microspheres are retained in the fibrous insulation without the use of a binder, and wherein the microspheres provide resilient loft to the insulative material.

5,571,593

VIA FILL COMPOSITIONS FOR DIRECT ATTACH OF DEVICES AND METHODS FOR APPLYING SAME

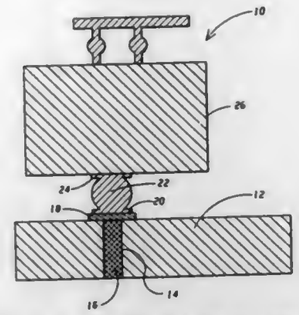
Roy L. Arldt, Georgetown, Tex.; Christina M. Boyko, Conklin, N.Y.; Burtran J. Cayson, Austin, Tex.; Richard M. Kozlowski, Apalachin, N.Y.; Joseph D. Kulesza, Binghamton, N.Y.; John M. Lauffer, Waverly, N.Y.; Philip C. Liu, Endwell, N.Y.; Voya R. Markovich, Endwell, N.Y.; Issa S. Mahmoud, Apalachin, N.Y.; James F. Muska, Johnson City, N.Y.; Kostas Papathomas, Endicott, N.Y.; Joseph G. Sabia, Norwich, N.Y., and Richard A. Schumacher, Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 154,341, Nov. 16, 1994. This application Jun. 6, 1995, Ser. No. 467,558

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—131 **7 Claims**

1. A circuit carrier comprising:
a. a first circuit carrier having at least one aperture, filled with an epoxy or cyanate fill composition;
b. a metal pad disposed atop the filled aperture, and
c. a solder ball disposed atop the pad;



d. a second circuit carrier disposed atop the solder ball electrically connected to the first circuit carrier through the solder ball.

5,571,594

ELECTRONIC COMPONENT CHIP HOLDER INCLUDING TWO ADHESIVE SURFACES HAVING DIFFERENT ADHESIVENESS

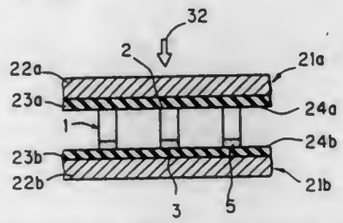
Kenji Minowa; Norio Sakai; Tetsuro Saito, and Toshimi Yoshimura, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 105,022, Aug. 10, 1993, abandoned, which is a division of Ser. No. 855,202, Mar. 20, 1992, abandoned. This application Nov. 14, 1994, Ser. No. 339,480

Claims priority, application Japan, Mar. 20, 1991, 3-55256

Int. Cl.[6] H01L *21/68*

U.S. Cl. 428—138 **26 Claims**



1. A kit of elements for use in a method of holding a plurality of electronic component chips while opposite ends of the electronic component chips are processed, the kit comprising:
a first electronic component chip holder including a first elastic body having a first adhesive surface being adapted to apply a first adhesive force to respective first ends of the electronic component chips for holding said electronic component chips while respective second opposite ends of the electronic component chips are being processed;
a second electronic component chip holder including a second elastic body having a second adhesive surface being adapted to apply a second adhesive force to said second ends of the electronic component chips to hold said electronic component chips on said second electronic component chip holder while respective first opposite ends are being processed, the second adhesive force applied by the second adhesive surface being stronger than the first adhesive force of said first adhesive surface, such that when said respective first ends of said electronic component chips are held by said first chip holder and said second adhesive surface is connected to said respective second opposite ends of said electronic component chips, the second adhesive force provided by the second adhesive surface is sufficiently greater than the first adhesive force so that the plurality of electronic component chips are transferred from said first electronic component chip holder to said second electronic component chip holder for permitting respective first ends of the electronic component chips to be processed.

5,571,595

MAGNETIC RECORDING MEDIUM AND METHOD FOR PRODUCTION THEREOF

Kazunobu Chiba; Kenichi Sato; Yuichi Arisaka; Hirofumi Kondo, and Yukari Yamada, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

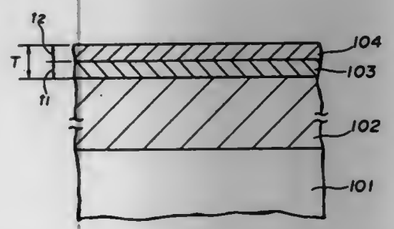
PCT No. PCT/JP92/01510, § 371 Date Nov. 26, 1993, § 102(e) Date Nov. 26, 1993, PCT Pub. No. WO93/10526, PCT Pub. Date May 27, 1993

PCT Filed Nov. 18, 1992, Ser. No. 90,197

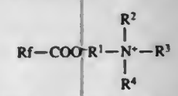
Claims priority, application Japan, Nov. 18, 1991, 3-302009; Dec. 26, 1991, 3-356779; Jan. 31, 1992, 4-041962

Int. Cl.[6] G11B *5/66;* **B32B** *3/10;* **C23C** *14/00*

U.S. Cl. 428—141 **13 Claims**

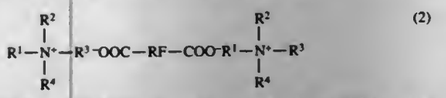


1. A magnetic recording medium comprising:
a base film having first and second opposed surfaces, said first surface having a centerline mean roughness, R_a, of greater than or equal to 0.0015 μm and less than equal to 0.0070 μm and having a maximum protrusion height R_{max} of greater than or equal to 0.0015 μm and less than or equal to 0.070 μm;
a magnetic metal thin film layer disposed on said second surface of the base film;
an oxide layer having a thickness of from about 20 to about 230 Å disposed on said magnetic metal thin film;
a protective layer having a thickness of from about 20 to about 230 Å disposed on said oxide layer, the combined total thickness of said oxide layer and said protective layer being from about 40 to 250 Å; and
a lubricant layer disposed on said protective layer, said lubricant layer including a perfluoro polyether derivative formed by reaction of a carboxy-terminated perfluoro polyether with a hydrocarbon substituted quaternary ammonium compound and selected from derivatives having the formula:



(1)

wherein Rf represents a perfluoro polyether chain, R^1, R^2, R^3 represent hydrogen or a hydrocarbon residue and R^4 is a hydrocarbon residue having six or more carbon atoms, and



(2)

wherein Rf is a perfluoro polyether chain, R^1, R^2 and R^3 are each hydrogen or a hydrocarbon residue and R^4 is a hydrocarbon residue having six or more carbon atoms.

5,571,596

ADVANCED COMPOSITE ROOFING SHINGLE

Matthew E. Johnson, 4054 Glen Avon Ct., Fort Worth, Tex. 76109

Filed Dec. 23, 1993, Ser. No. 172,324

Int. Cl.[6] E04D *1/22;* **B32B** *5/28*

U.S. Cl. 428—143 **24 Claims**

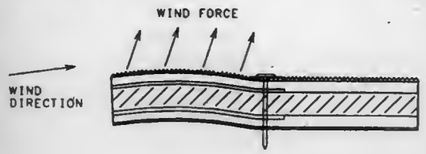


FIG. 6B SCHEMATIC
WINDFORCE REACTIONS-INVENTIVE SHINGLE

1. A roofing shingle having an exposed surface comprising:
(a) a fibrous mat material having a chord and a length and top and bottom side;
(b) an upper layer of directional fiber positioned adjacent to the top side of said mat;
(c) a lower layer of directional fiber positioned adjacent to the bottom side of said mat; and
(d) a semi-flexible matrix compound impregnating the said fibrous mat, said upper layer, said lower layer wherein the directional fiber's upper and lower layers are oriented and positioned with respect to each other such that the overall weighted elastic modulus of said materials in the chordwise direction is located below the geometric centroid of said shingle, thereby imparting slight convex curvature of said exposed surface when said shingle is placed under tension in a chordwise direction.

5,571,597

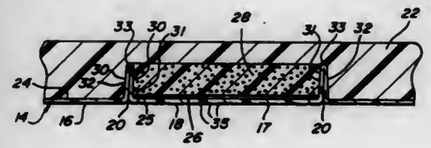
MOLDED TRIM PANEL WITH INTEGRALLY FORMED SIMULATED LEATHER APPLIQUES AND A METHOD FOR MOLDING SAME

Michael J. Gallagher, Hampton, and Lawrence R. Nichols, Dover, both of N.H., assignors to Davidson Textron, Inc., Dover, N.H.

Division of Ser. No. 114,928, Sep. 2, 1993, Pat. No. 5,439,630. This application Apr. 21, 1995, Ser. No. 425,880

Int. Cl.[6] B32B *3/28*

U.S. Cl. 428—152 **9 Claims**



1. A trim panel for a motor vehicle characterized by;
a shell of flexible plastic material having a front exposed surface and a back surface, said front surface having a textured section with a plurality of wrinkles;
a rigid cured substrate adhered to a back surface of said shell about said textured section with a recess in said substrate directly behind said textured section and facing said textured section;
a cushion member interposed between said rigid cured substrate and said back surface of said shell behind said textured section;
said shell having an upright double layered wall with a seam therebetween, said wall surrounding said cushion member such that a seam is appearing at the front surface of said shell about said textured section; and

a compressible layer of material being interposed between said cushion member and said texture section of said shell.

5,571,598

DECORATIVE LIGHT TRANSMITTING PANEL AND METHOD FOR ITS FABRICATION

Delicia M. Butler, 31089 Old River Rd., Bonsall, Calif. 92003, and Stefan Kanetis, 5722 E. Stillwater, No. 38, Orange, Calif. 92669

Filed Feb. 27, 1995, Ser. No. 394,738
Int. Cl.[6] A47G *35/00*; C03B *21/00*
U.S. Cl. 428—156 12 Claims



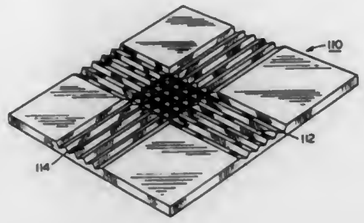
9. A decorative, light-transmitting panel formed by thermoforming a light transmitting thermoplastic sheet having optical quality surfaces into a sheet having a relief pattern comprising a plurality of planar segments separated by entirely curvilinear convex surface relief areas on one side of said panel, and corresponding curvilinear concave surface relief areas on the opposite side of said panel, said areas also characterized by greater thicknesses than said planar segments and by smoothly arched, entirely curvilinear surfaces of greater optical quality than said planar segments.

5,571,599

SHEET OF GLASS WITH GROOVE PATTERN TO PROVIDE DECORATIVE VISUAL EFFECT

Keith L. Eichborn, High Point, and Lars Richter, Greensboro, both of N.C., assignors to Glass Unlimited of High Point, Inc.

Division of Ser. No. 938,846, Sep. 1, 1992, Pat. No. 5,409,416.
This application Nov. 21, 1994, Ser. No. 342,848
Int. Cl.[6] B32B *3/28*; A47G *35/00*
U.S. Cl. 428—167 16 Claims



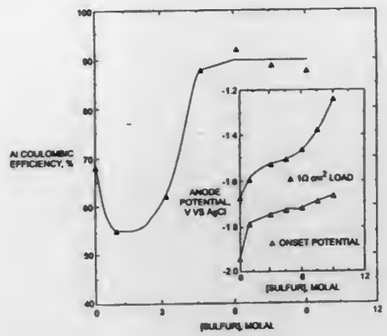
1. A decorative glass sheet comprising a sheet of glass having a thickness in the range of ⅛ inch to 1 inch, at least one surface of said glass sheet having at least one decorative band extending thereacross and a non-banded area, said band comprising of a plurality of parallel, immediately adjacent, straight walled, ground and polished grooves, said band having an overall width of from about 10 millimeters to about 19 millimeters, each of said grooves having a maximum width dimension of 7 millimeters and a maximum depth of no greater than 30% of the thickness of said glass sheet, whereby said grooves form with said non-banded area a striking decorative visual effect in which the bands tend to distort objects therebehind or reflected therein.

5,571,600

SULFUR/ALUMINUM ELECTROCHEMICAL BATTERIES

Stuart Licht, Charlton City, Mass., assignor to Clark University, Worcester, Mass.

Filed Nov. 7, 1994, Ser. No. 335,299
Int. Cl.[6] H01M *6/04*
U.S. Cl. 429—188 40 Claims



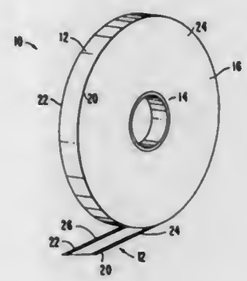
1. An electrical storage cell, comprising:
a cathode,
an aluminum-containing anode, and
an aqueous, electrolytic solution in direct contact with said aluminum-containing anode, said solution containing sulfide ions, polysulfide ions, or both sulfide ions and polysulfide ions, at a combined sulfide and polysulfide ion concentration of at least 1.0 molal.

5,571,601

CLEANING TAPE WITH IMPROVED EDGE ADHESIVE

John Skoufis, Denville; Cary Africk, Montclair, both of N.J.; John M. Questel, Cayahoga Falls, and Wayne Mazorow, Akron, both of Ohio, assignors to The Texwipe Company, Upper Saddle River, N.J.

Filed Jan. 6, 1995, Ser. No. 369,373
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—192 16 Claims



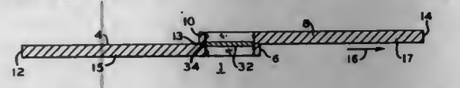
1. A cleaning tape roll comprising a cleaning tape wound into a roll so that opposite edges of said tape form opposed substantially flat sides of said roll, and a dried adhesive layer on said sides for stabilizing said edges of said tape, said adhesive being substantially solvent resistant.

5,571,602

SUPERCONDUCTING JOINTS FOR SUPERCONDUCTING SHEETS

Phillip W. Eckels; Delton A. Grey, Jr.; Christopher G. King, all of Florence; Anthony Mantone, Effingham; O'Neil T. McClam, and Granville G. Ward, Jr., both of Florence, all of S.C., assignors to General Electric Company, Milwaukee, Wis.

Filed Dec. 29, 1994, Ser. No. 366,188
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—195 12 Claims



1. A superconducting magnetic shield formed from a plurality of sheets of superconducting material for use in MRI superconducting magnets comprising:
a plurality of overlapping sheets of superconducting material selected from the group consisting of NbTi and Nb_3Sn joined together by a joint including at least one weld,
said at lease one weld substantially around the periphery of at least one elongated aperture in the region of overlap extending in the direction of current flow along said sheets during operation of MRI,
a weld seam extending substantially along the sides of said elongated aperture in the direction of said current flow; and
wherein said weld seam is the selected superconducting material substantially spanning the periphery of said sheets in said aperture.

5,571,603

ALUMINUM NITRIDE FILM SUBSTRATE AND PROCESS FOR PRODUCING SAME

Yoshiharu Utumi; Takahiro Imai, and Naoji Fujimori, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 24, 1995, Ser. No. 393,482
Claims priority, application Japan, Feb. 25, 1994, 6-028203; Jun. 17, 1994, 6-135291; Jun. 17, 1994, 6-135292
Int. Cl.[6] C01B *21/072*
U.S. Cl. 428—212 4 Claims



1. An aluminum nitride film substrate comprising a single crystal diamond having, on its (111) plane, (1) a C-axis oriented aluminum nitride film or (2) an aluminum nitride single crystal film, the C-plane of said aluminum nitride single crystal being parallel to the (111) plane of said single crystal diamond.

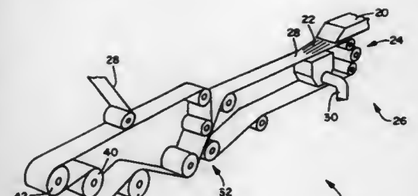
5,571,604

ADSORBENT FIBROUS NONWOVEN COMPOSITE STRUCTURE

Troy A. Sprang, Alpharetta; Annmarie V. Douglas, Norcross, and Benji D. Morgan, Atlanta, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 151,609, Nov. 12, 1993, abandoned.
This application Mar. 24, 1995, Ser. No. 409,105
Int. Cl.[6] B32B *5/16*; A24D *3/04*
U.S. Cl. 428—212 17 Claims

1. An adsorbent fibrous nonwoven composite structure comprising:



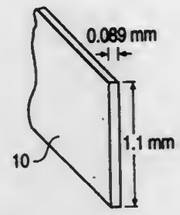
a matrix of pulp fibers having a first exterior surface and a second exterior surface; and
at least one adsorbent material integrated into the pulp fiber matrix so that the concentration of adsorbent material adjacent the first exterior surface of the nonwoven structure is at least about 70 percent, as determined by optical image analysis, and the concentration of adsorbent material adjacent the second exterior surface of the nonwoven structure is less than about 30 percent, as determined by optical image analysis.

5,571,605

IMPROVED PTFE FIBER WOVEN FABRIC

Brad F. Abrams, Philadelphia, Pa.; Raymond B. Minor, Elkton, Md.; Gordon L. McGregor, Landenberg, and John W. Dolan, Boothwyn, both of Pa., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Division of Ser. No. 260,141, Jun. 15, 1994. This application Jun. 1, 1995, Ser. No. 460,470
Int. Cl.[6] D03D *3/00*
U.S. Cl. 428—229 6 Claims



1. A woven fabric comprising fibers of:
expanded polytetrafluoroethylene (PTFE) wherein the fibers have uniform dimensions in width along their entire length; wherein each fiber has an outer surface of essentially rectangular to oblong cross-sectional dimension, the fiber being without folds so that its outer surface is fully exposed and is essentially flat;
wherein the fiber in an unfolded orientation comprises cross-section dimensions with a width of between 0.5 to 3 mm and a thickness of at least 50 μm; and
wherein the fabric comprises a weave of multiple strands of the fiber.

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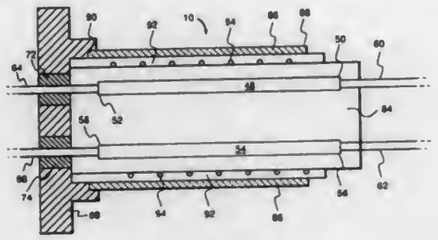
5,571,606
CERAMIC SUPERCONDUCTING LEAD RESISTANT TO BREAKAGE

Robert A. Ackermann, Schenectady; Kenneth G. Herd, Niskayuna; Evangelos T. Laskaris, Schenectady, and Richard A. Ranze, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 329,919, Oct. 27, 1994, abandoned. This application May 12, 1995, Ser. No. 440,160

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—285 **1 Claim**



1. In combination with a superconductive device cooled by a cryocooler coldhead having a first stage and a second stage, a superconductive lead assembly comprising:

a) a first ceramic superconductive lead having a first end thermally connected to said first stage and a second end thermally connected to said second stage:

b) a jacket comprising an open cell material having a coefficient of thermal conductivity not exceeding that of glass reinforced epoxy at a temperature of 50 Kelvin, said jacket in surrounding compressive contact with said first ceramic superconductive lead;

c) a rigid support tube surrounding said jacket having a coefficient of thermal conductivity not exceeding that of stainless steel at a temperature of 50 Kelvin, having a first end, and having a second end thermally connected to said second stage; and

d) a glass-reinforced-epoxy jacket overwrap in general surrounding contact with and attached to said jacket, and wherein said rigid support tube is in general surrounding contact with and attached to said glass-reinforced-epoxy jacket overwrap.

5,571,607
THERMOPLASTIC THERMOFORMABLE COMPOSITE MATERIAL AND METHOD OF FORMING SUCH MATERIAL

David M. Blakeman, Westlake Village; Douglas R. Fitchmun, Woodland Hills, and Niran Perera, Simi Valley, all of Calif., assignors to Medical Materials Corporation, Camarillo, Calif.

Division of Ser. No. 731,640, Jul. 17, 1991, Pat. No. 5,354,604. This application Aug. 3, 1994, Ser. No. 285,062

Int. Cl.[6] B32B *27/04;7/00*

U.S. Cl. 428—246 **12 Claims**

1. A thermoplastic thermoformable composite material, including,

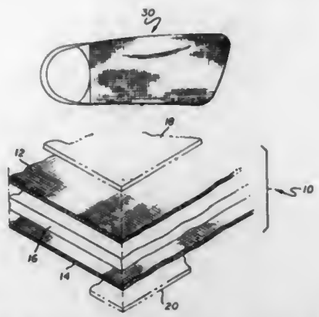
a sheet of a thermoplastic material defining a core and having first and second opposite surfaces,

a first layer of a fabric material disposed on the first surface of the core,

a second layer of a fabric material disposed on the second surface of the core,

a first layer of a thermoplastic material disposed on the first layer of the fabric material and impregnating the first layer of the fabric material and bonding the first layer of the fabric material to the core,

a second layer of a thermoplastic material disposed on the second layer of the fabric material and impregnating the second layer of the fabric material and bonding the second layer of the fabric material to the core,



the layers of the fabric material and the layers of the thermoplastic material having relative thicknesses providing for the shaping of the composite material at elevated temperatures without any rippling or buckling of any of the layers and to impart strength and rigidity to the thermoplastic composite material and to maximize the flexural load of the thermoplastic composite material.

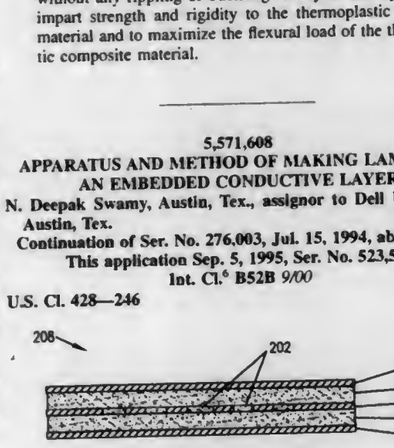
5,571,608
APPARATUS AND METHOD OF MAKING LAMINATE AN EMBEDDED CONDUCTIVE LAYER

N. Deepak Swamy, Austin, Tex., assignor to Dell USA, L.P., Austin, Tex.

Continuation of Ser. No. 276,003, Jul. 15, 1994, abandoned. This application Sep. 5, 1995, Ser. No. 523,567

Int. Cl.[6] B52B *9/00*

U.S. Cl. 428—246 **14 Claims**



1. An embedded core laminate, comprising:

a first and a second conductive layer;

a first and a second insulating layer interposed between said first and second conductive layers; and

a conductive reference layer interposed between said first and second insulating layers, wherein said conductive reference layer includes a plurality of holes;

wherein said first and second conductive layers, said conductive reference layer and said first and second insulating layers are laminated together, so that said conductive reference layer is the center layer of the embedded core laminate.

5,571,609
POLYBUTADIENE AND POLYISOPRENE BASED THERMOSETTING COMPOSITIONS AND METHOD OF MANUFACTURE THEREOF

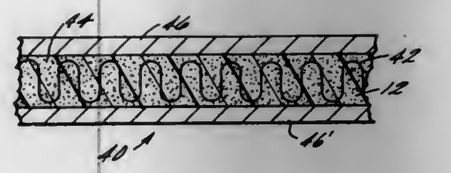
Michael E. St. Lawrence, Thompson; Vincent R. Landi, Danielson; Doris I. Hand, Dayville, all of Conn.; Robert H. Walker, Phoenix, Ariz.; Samuel Gazit, Bet Lechem HaGlilit, Israel, and Raymond R. Miskiavitch, Putnam, Conn., assignors to Rogers Corporation, Rogers, Conn.

Filed Oct. 13, 1994, Ser. No. 322,890

Int. Cl.[6] B32B *7/00*

U.S. Cl. 428—268 **43 Claims**

1. An electrical circuit material consisting essentially of:



(a) a thermosetting composition comprising a polybutadiene or polyisoprene resin and an unsaturated butadiene or isoprene containing polymer capable of participating in crosslinking with said polybutadiene or polyisoprene resin in an amount of from 25 to 50 volume percent with respect to the entire electrical circuit material, said polybutadiene and polyisoprene resin being chemically distinct from said unsaturated butadiene or isoprene containing polymer;

(b) a woven fabric in an amount of from 10 to 40 volume percent with respect to the entire electrical circuit material; and

(c) a particulate filler in an amount of from 5 to 60 volume percent with respect to the entire electrical circuit material.

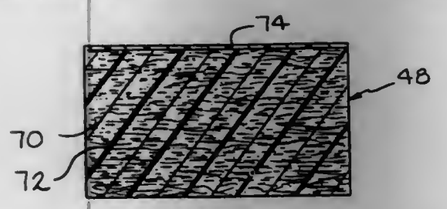
5,571,610
GLASS MAT THERMOPLASTIC PRODUCT

James E. Loftus; Michael T. Pellegrin; Patrick L. Ault, all of Newark; Randall M. Haines, Frazeysburg, and Virgil G. Morris, Newark, all of Ohio, assignors to Owens Corning Fiberglass Technology, Inc., Summit, Ill.

Continuation-in-part of Ser. No. 473,600, Jun. 7, 1995, which is a continuation-in-part of Ser. No. 481,029, Jun. 7, 1995, which is a continuation of Ser. No. 79,413, Jun. 21, 1993, Pat. No. 5,490,961, which is a continuation-in-part of Ser. No. 473,600, which is a continuation of Ser. No. 78,909, Jun. 21, 1993, Pat. No. 5,458,822. This application Dec. 15, 1995, Ser. No. 573,079

Int. Cl.[6] B32B *15/00*

U.S. Cl. 428—285 **19 Claims**



1. A composite sheet comprising a moldable resin which consists of thermoplastic resin, thermosetting resin or mixtures thereof, and reinforcement fibers which are fibers centrifuged from a rotary process fiberizer, where the composite sheet has at least 5 distinct layers of reinforcement fibers per mm of thickness.

5,571,611
COMPOSITE CERAMIC SINTERED MATERIAL AND SLIDER MEMBER USING THE SAME

Saburou Nagano; Shuichi Tateno, both of Kokubu; Kouichi Kamitubo, Kojubu; Kenichi Tajima, and Masahito Nakanishi, both of Kokubu, all of Japan, assignors to Kyocera Corporation, Kyoto, Japan

Division of Ser. No. 162,796, Dec. 7, 1993, Pat. No. 5,462,813, which is a continuation of Ser. No. 828,773, Jan. 30, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 466,930

Claims priority, application Japan, Jan. 31, 1991, 3-32269; Jan. 31, 1991, 3-32270; Jan. 31, 1991, 3-32271; Mar. 25, 1991, 3-84806; Jun. 27, 1991, 3-156826

Int. Cl.[6] B32B *9/04*

U.S. Cl. 428—319.1 **6 Claims**



1. A slider member comprising a composite ceramic sintered material comprising a surface layer of a composition which contains silicon nitride and carbon, and an internal portion of silicon carbide or a combination of silicon carbide, silicon nitride and carbon, the content of carbon or of silicon nitride being greater in the surface layer larger than in the internal portion and wherein a composition gradient in which the composition ratio represented by silicon carbide/(silicon carbide+silicon nitride) increases nearly continuously from the surface layer toward the internal portion.

5,571,612
ANISOTROPIC NANOPHASE COMPOSITE MATERIAL AND METHOD OF PRODUCING SAME

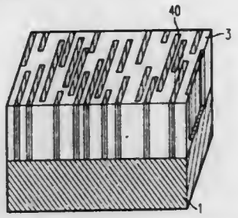
Tomoyoshi Motohiro; Yasuhiko Takeda; Shoji Noda, and Yoshihide Watanabe, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Division of Ser. No. 675,878, Mar. 27, 1991, Pat. No. 5,401,587. This application Dec. 20, 1994, Ser. No. 359,449

Claims priority, application Japan, Mar. 27, 1990, 2-80259

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—323 **10 Claims**



1. An anisotropic nanophase material comprising a nanophase structure of only one inorganic material, said nanophase structure containing a multiplicity of particulates, each of said particulates having a flat sheet structure,

wherein said particulates have an average thickness of 1 to 10 nanometers and an average length of not less than 10 nanometers, the length being larger than the thickness,

the particulates being anisotropically oriented in a given direction,

said particulates are three-dimensionally dispersed within the nanophase structure,
said nanophase structure is formed on a substrate, and
wherein said particlates are inclined at an angle of not more than 6° from the normal of the surface of the substrate.

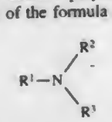
5,571,613

BIAXIALLY ORIENTATED POLYPROPYLENE MULTILAYER FILM, PROCESS FOR ITS PRODUCTION, AND ITS USE

Detlef E. Schuhmann, Kiedrich; Thomas Dries, Schwabenheim; Adolf Wilhelm, Wiesbaden; Dieter Scheidecker, Eltville; Harald Lohmann, Neunkirchen; Ursula Murschall, Nierstein; Herbert Peiffer, Mainz, and Gunter Schloegl, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 186,144, Jan. 25, 1994, Pat. No. 5,501,901.
This application Sep. 20, 1995, Ser. No. 531,306
Claims priority, application Germany, Jan. 25, 1993, 43 01 897.1; Jan. 25, 1993, 43 01 896.3
Int. Cl.[6] B32B *27/00*
U.S. Cl. 428—323 **20 Claims**

1. A sealable, coextruded, biaxially orientated opaque film comprising a base layer which comprises a propylene polymer and filler, and at least one sealable top layer comprising an olefinic polymer, wherein the top layer comprises 4–8% by weight based on the weight of the top layer of inorganic and/or organic particles incompatible with the olefinic polymers of the top layer, and tertiary aliphatic amine of the formula I



(I)

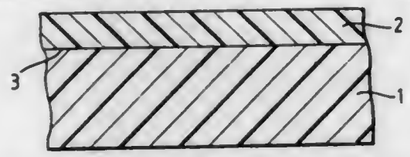
in which
R^1 is a saturated alkyl radical having 8 to 26 carbon atoms and
R^2 and R^3 are identical or different and are R^4-CH_2OH, in which R^4 is a saturated C^1–C^6-alkylene radical.

5,571,614

POLYMERIC PACKAGING FILM COATED WITH A COMPOSITION COMPRISING A LAYER MINERAL AND A CROSSLINKED RESIN

Anthony G. Harrison, Middlesbrough; William N. E. Meredith, Stockton on Tees, and David E. Higgins, Yorkshire, all of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 898,601, Jun. 15, 1992, abandoned.
This application Feb. 4, 1994, Ser. No. 191,722
Claims priority, application United Kingdom, Jun. 14, 1991, 9112827
Int. Cl.[6] B32B *5/16;27/30*
U.S. Cl. 428—331 **18 Claims**



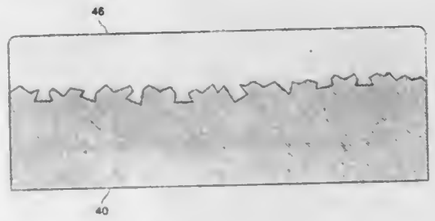
1. In a polymeric packaging film comprising a substrate layer of polymeric material having on at least one surface thereof a coating layer to reduce oxygen permeability, the improvement which comprises using as the coating layer, one formed from a composition comprising a layer mineral and a monomeric or oligomeric cross-linking agent, the coating layer comprising greater than 10% and less than 90% by weight of the layer of the layer mineral, and greater than 10% and less than 90% by weight of the layer of a resin formed in situ by said cross-linking agent during formation of said coating layer, said coating layer functioning to adhere the layer mineral to the substrate and provide the film with an oxygen permeability of less than 50 cc/m^2/day.

5,571,615

ULTRASMOOTH ADHERENT DIAMOND FILM COATED ARTICLE AND METHOD FOR MAKING SAME

William Phillips, Belmont, and John M. Pinneo, Redwood City, both of Calif., assignors to Xrystallume, Santa Clara, Calif.

Division of Ser. No. 339,989, Nov. 14, 1995, abandoned. This application May 16, 1995, Ser. No. 442,258
Int. Cl.[6] B32B *15/04;* **C01B** *31/06*
U.S. Cl. 428—336 **2 Claims**



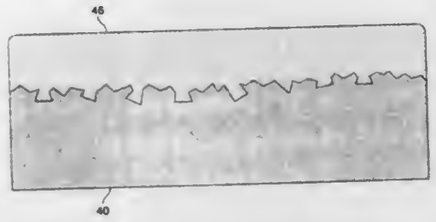
1. A diamond-coated tool comprising a tungsten carbide substrate coated with a diamond film, said diamond film having a grain size less than about 0.5 micron and a thickness greater than about 10 microns.

5,571,616

ULTRASMOOTH ADHERENT DIAMOND FILM COATED ARTICLE AND METHOD FOR MAKING SAME

William Phillips, Belmont, and John M. Pinneo, Redwood City, both of Calif., assignors to Crystallume, Santa Clara, Calif.

Division of Ser. No. 339,989, Nov. 14, 1995, abandoned. This application May 16, 1995, Ser. No. 442,259
Int. Cl.[6] C01B *31/06*
U.S. Cl. 428—336 **1 Claim**



1. A synthetic diamond film having a grain size less than about 0.5 micron and a thickness greater than about 10 microns.

5,571,617

PRESSURE SENSITIVE ADHESIVE COMPRISING TACKY SURFACE ACTIVE MICROSPHERES

Terrence E. Cooprider, Woodbury; Dale O. Bailey, White Bear Lake, both of Minn., and Ronald W. Most, River Falls, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 174,620, Dec. 28, 1993, abandoned, which is a continuation of Ser. No. 52,386, Apr. 23, 1993, abandoned. This application Jul. 1, 1994, Ser. No. 270,179
Int. Cl.[6] B32B *7/12;27/30*
U.S. Cl. 428—341 **11 Claims**

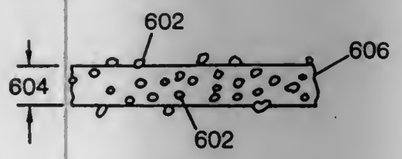
1. A sheet material comprising a backing and a coating of repositionable pressure-sensitive adhesive coated on at least one major surface of said backing, the adhesive comprising:
i) a plurality of polymeric, solid, elastomeric microspheres that are the reaction product of reactants comprising polymerizable starting materials comprising at least one C_4–C_{14} alkyl (meth)acrylate monomer and at least one polar comonomer with the proviso that if the polar comonomer comprises a dissociable proton, the polar comonomer has no dissociable proton having a K_d of greater than 10^{-3};
ii) a polymeric stabilizer in an amount of about 0.1 to about 3 parts by weight per 100 parts by weight of the microspheres; and
iii) a surfactant in an amount of no greater than about 5 parts by weight per 100 parts by weight of the microspheres.

5,571,618

REACTIVATABLE BINDERS FOR BINDING PARTICLES TO FIBERS

Michael R. Hansen, Seattle, and Richard H. Young, Sr., Renton, both of Wash., assignors to Weyerhaeuser Company, Federal Way, Wash.

Continuation of Ser. No. 931,278, Aug. 17, 1992, Pat. No. 5,352,480. This application Jun. 17, 1994, Ser. No. 261,811
Int. Cl.[6] D02G *3/00*
U.S. Cl. 428—359 **34 Claims**



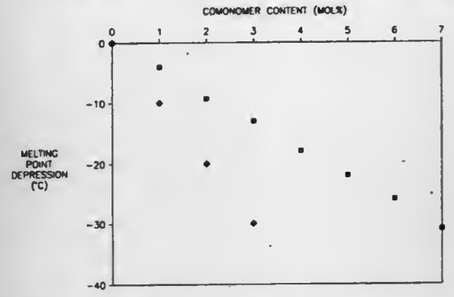
1. Fibers that will adhere particles, comprising:
fibers that have hydrogen bonding functional sites; and
a binder mixed with the fibers, the binder having a volatility less than water, the binder also having a functional group that is capable of forming a hydrogen bond with the fibers, and a functional group that is capable of forming a hydrogen bond or coordinate covalent bond with particles, wherein the particles have a hydrogen bonding or a coordinate covalent bonding functionality, the binder having formed a non-covalent bond with the fibers and being present in an inactive form in a sufficient amount to bind the particles by non-covalent bonds to the fibers in an amount of at least 1% by weight of the binder, particles and fibers after the binder is activated.

5,571,619

FIBERS AND ORIENTED FILMS OF POLYPROPYLENE HIGHER α-OLEFIN COPOLYMERS

James J. McAlpin, Houston, and Glenn A. Stahl, Humble, both of Tex., assignors to Exxon Chemical Patents, Inc., Wilmington, Del.

Filed May 24, 1994, Ser. No. 247,952
Int. Cl.[6] D02G *3/00*
U.S. Cl. 428—364 **17 Claims**



1. An article comprising a copolymer of propylene and at least one alpha-olefin, said alpha olefin having 5 or more carbon atoms; said α-olefin being present in the range of from about 0.2 to about 6 mole percent based on the total moles of monomer in said copolymer, said copolymer having a $M_w/M_n \leqq 5$, said copolymer having a melting point in the range of from about 100° C. to about 145° C.;
wherein said article has an R_{ms} exceeding about 1.1.

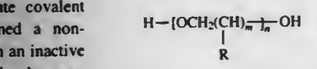
5,571,620

WATER-DISPERSIBLE COPOLYESTER-ETHER COMPOSITIONS

Scott E. George; Edgar W. Lefler, IV, and James M. Spain, Jr., all of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 515,400, Aug. 15, 1995. This application Nov. 27, 1995, Ser. No. 562,949
Int. Cl.[6] B32B *27/36;33/00;* **C08G** *63/688;* **D02G** *3/40*
U.S. Cl. 428—375 **2 Claims**

1. A fibrous article sized with a sizing composition comprising a linear, water-dispersible, sulfopolyester having a dry Tg of 35° C. to 50° C. and an inherent viscosity of 0.1 to 1.1 dl/g, said sulfopolyester consisting essentially of the reaction product of:
(A) 60 to 95 mole %, based on moles of acid in the sulfopolyester, of at least one difunctional dicarboxylic acid which is not a sulfomonomer, said dicarboxylic acid being selected from the group consisting of aromatic dicarboxylic acids having 8 to 14 carbon atoms, saturated aliphatic dicarboxylic acids having 4 to 12 carbon atoms, and cycloaliphatic dicarboxylic acids having 8 to 12 carbon atoms;
(B) 5 to 40 mole %, based on moles of acid in the sulfopolyester, of at least one difunctional sulfomonomer containing at least one metal sulfonate group bonded to an aromatic ring wherein the functional groups are ester or carboxyl;
(C) 0.1 to 50 mole %, based on moles of glycol in the sulfopolyester, of at least one higher order polyalkylene glycol having a number average molecular weight of 650–2000 having the structure:



wherein R is selected from the group consisting of hydrogen and an alkyl group having 1 to 12 carbon atoms, n is an integer of 2 to 200, m is an integer of 1 to 10 when R is an alkyl group or m is an

integer of 2 to 10 when R is hydrogen, provided that the mole % of the higher order polyalkylene glycol is inversely proportional to the value of n;

(D) 0.1 to 99.9 mole %, based on moles of glycol in the sulfopolyester, of at least one polyethylene glycol having a number average molecular weight of less than 300 and having the structure:

$$H-(OCH_2CH_2)_{n'}-OH$$

wherein n' is an integer of 2 to 500, provided that the mole % of the polyethylene glycol is inversely proportional to the value of n'; and

(E) 10 to 75 mole %, based on moles of glycol in the sulfopolyester, of a glycol which is not polyethylene glycol, said glycol being selected from the group consisting of cycloaliphatic glycols having 6 to 20 carbon atoms, aliphatic glycols having 3 to 20 carbon atoms, and mixtures thereof;

the sulfopolyester containing substantially equal molar proportions of acid equivalents (100 mole percent) and glycol equivalents (100 mole percent).

5,571,621

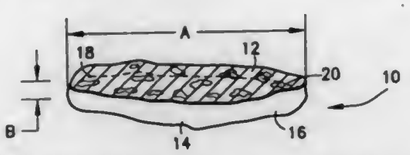
INFRARED RADIATION-INTERACTIVE ARTICLE, AND METHOD OF GENERATING A TRANSIENT INFRARED RADIATION RESPONSE

Ward C. Stevens, New Fairfield, and Edward A. Sturm, New Milford, both of Conn., assignors to Advanced Technology Materials, Inc., Danbury, Conn.

Continuation-in-part of Ser. No. 273,356, Jul. 11, 1994, which is a continuation-in-part of Ser. No. 734,199, Jul. 22, 1991, Pat. No. 5,328,717, which is a division of Ser. No. 448,252, Dec. 11, 1989, Pat. No. 5,034,274. This application Jun. 7, 1995, Ser. No. 487,836

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—389 **15 Claims**



1. An infrared radiation-interactive article comprising a supported or unsupported oxidizable metal film of an infrared radiation-interactive size and shape, with an oxidation-promoting salt in contact with the metal film, arranged so that in exposure to ambient moisture, the metal film is oxidizable to an infrared radiation non-interactive form.

5,571,622

WATER- AND OIL REPELLENT SUBSTRATE AND METHOD OF TREATMENT

Kazufumi Ogawa, Nara, and Mamoru Soga, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

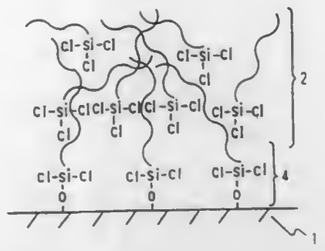
Continuation of Ser. No. 914,533, Jul. 17, 1992, abandoned. This application Sep. 20, 1994, Ser. No. 309,545

Claims priority, application Japan, Jul. 26, 1991, 3-187693; Jul. 26, 1991, 3-187695

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—391 **1 Claim**

1. A water- and oil repellent substrate comprising a chemically adsorbed non-oriented polymer film as a surface layer covalently bonded to the substrate by siloxane bonds, said chemically adsorbed film containing water- and oil repellent functional groups, wherein said water- and oil repellent functional groups are fluorine groups, the substrate is a fiber for apparel, and the wetting angle of the substrate to water is 130° or more.



5,571,623

FINE POLYURETHANE PARTICLES, COLLOIDAL POLYUREA PARTICLES, AND PRODUCTION PROCESSES THEREOF

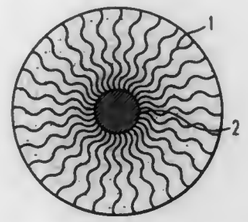
Katsumi Kuriyama, Koshigaya; Takao Endoh, Iwatsuki, and Teruo Akita, Yono, all of Japan, assignors to Dainichiseika Color & Chemical Mfg. Co., Ltd., and Ukima Colour & Chemicals Mfg, Co., Ltd., both of Tokyo, Japan

Filed Sep. 27, 1994, Ser. No. 312,839

Claims priority, application Japan, Sep. 28, 1993, 5-263102

Int. Cl.[6] B32B *5/16;27/08;27/40*

U.S. Cl. 428—403 **9 Claims**



1. Fine polyurethane particles having surfaces covered with colloidal polyurea particles, which are free flowing and exhibit good oil absorbance, heat resistance and abrasion resistance, prepared by polymerizing the components which form the polyurethane particles in a medium containing colloidal polyurea particles, each of the polyurea particles comprising a solvated portion and a non-solvated portion, said non-solvated portion having a particle size ranging from 0.01 μm to 1.0 μm, and said colloidal polyurea particles prepared by reacting an oil-modified polyol having 2 or less functional groups and a diisocyanate at a functional group ratio which satisfies the relationship:

$$1<NCO/OH\leq 2$$

thereby synthesizing an isocyanate-containing prepolymer, and then reacting at least a portion of the isocyanate groups of the polymer with a polyamine compound, said polyurea particles individually having a non-solvated, urea entity containing portion which forms hydrogen bonds with other urea groups.

5,571,624

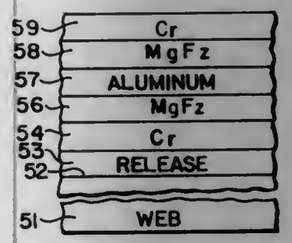
HIGH CHROMA MULTILAYER INTERFERENCE PLATELETS

Roger W. Phillips; Shari P. Fisher, and Paul G. Coombs, all of Santa Rosa, Calif., assignors to Flex Products, Inc., Santa Rosa, Calif.

Division of Ser. No. 231,396, Apr. 22, 1994, which is a continuation-in-part of Ser. No. 171,654, Dec. 22, 1993, which is a division of Ser. No. 902,693, Jun. 23, 1992, Pat. No. 5,279,657, which is a continuation of Ser. No. 719,166, Jun. 21, 1991, Pat. No. 5,171,363, which is a continuation of Ser. No. 251,034, Sep. 26, 1988, Pat. No. 5,059,245, which is a continuation of Ser. No. 812,814, Dec. 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 567,638, Jan. 3, 1984, abandoned, which is a continuation of Ser. No. 314,695, Oct. 26, 1981, Pat. No. 4,434,010, which is a division of Ser. No. 108,004, Dec. 28, 1979, abandoned. This application Dec. 15, 1994, Ser. No. 356,853

Int. Cl.[6] B32B *15/02;15/04;* G02B *1/10;5/28*

U.S. Cl. 428—403 **5 Claims**



1. A color shifting paint comprising a polymeric paint medium, and a plurality of color shifting interference thin film platelets dispersed in the polymeric paint medium, each of said platelets changing color as the angle of incident light or viewing changes, each of said color shifting interference thin film platelets being characterized in that each platelet has first and second parallel planar outer surfaces and an edge thickness perpendicular to the first and second parallel planar outer surfaces, each of said platelets comprising a metal reflecting layer having first and second reflective surfaces and a multilayer interference thin film structure disposed on each of said first and second reflective surfaces, the multilayer interference thin film structure comprising a pair of layers consisting of a dielectric layer formed of a dielectric material and a semi-opaque metal layer, said pair being disposed so that the dielectric layer is directly adjacent to the metal reflecting layer and the semi-opaque metal layer faces away from the metal reflecting layer, each platelet having an aspect ratio of at least 2:1 for the longest planar dimension of first and second outer surfaces in comparison to the edge thickness of the platelet, each platelet having a maximum dimension on any surface ranging from 2–200 microns.

5,571,625

METHOD FOR THE PRODUCTION OF A SILICONE-BASED FIREPROOF PROTECTION MEANS AND PROTECTION MEANS THUS OBTAINED

Alain Porte, Colomiers; François Cros, Toulouse, and Jean-Marc Martinou, L'Union, all of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, and Tecalemit Flexibles, Blois, both of France

Filed Dec. 19, 1994, Ser. No. 358,713

Claims priority, application France, Dec. 20, 1993, 93 15287

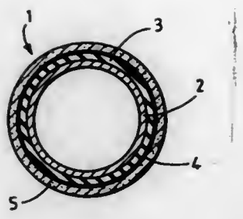
Int. Cl.[6] B32B *7/00;* B27N *9/00*

U.S. Cl. 428—447 **2 Claims**

1. A silicone-based fireproof protection means, comprising:

(i) an inner polymerized unfilled silicone coating adhering directly to an object to be protected; and

(ii) a fibrous, fire-resistant jacket carried by said inner coating without adhering to said inner coating.



5,571,626

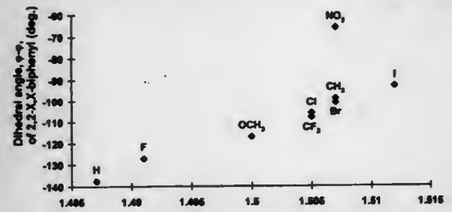
ELECTROLUMINESCENT DEVICES COMPRISING POLYMERS, AND PROCESSES FOR THEIR USE

William J. Cumming, North Chelmsford, Mass.; Russell A. Gaudiana, Merrimack, N.H.; Richard T. Ingwall, Newton, Mass.; Eric S. Kolb, Ipswich, Mass., and Cheryl P. Petersen, Acton, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 61,180, May 13, 1993, Pat. No. 5,376,456. This application Dec. 15, 1994, Ser. No. 356,884

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—457 **18 Claims**



1. A process for generating electromagnetic radiation, which process comprises:

providing first and second electrodes;

providing a layer of an electroluminescent polymer disposed between, and in electrical contact with, the first and second electrodes, the electroluminescent polymer having a chain comprising a plurality of electroluminescent groupings, at least one adjacent pair of the electroluminescent groupings being connected via two benzene rings linked to each other only by a single covalent bond, at least one of said benzene rings bearing at least one substituent at a position ortho to said covalent bond, the number and size of said ortho substituent(s) being such that the length of the bond connecting said two benzene rings is not less than 1.495 Angstroms; and

applying a potential difference between the first and second electrodes sufficient to cause current to flow from the first electrode to the second electrode and electromagnetic radiation to be emitted from the layer of electroluminescent polymer.

5,571,627

TEMPERATURE CONTROLLED SUSCEPTOR STRUCTURE

Michael R. Perry, Plymouth, and Ronald R. Lentz, Wayzata, both of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Continuation of Ser. No. 630,867, Dec. 20, 1990, abandoned. This application Apr. 21, 1995, Ser. No. 426,640

Int. Cl.[6] B32B *15/08;27/36*

U.S. Cl. 428—458 **8 Claims**

2. A susceptor, comprising

a metalized layer formed to produce heat in response to exposure to microwave energy; and



a biaxially oriented substrate directly coupled to the metalized layer, the substrate having an onset of melting of the substrate at a temperature in a range of approximately 260°–300° C., and having mechanical stresses induced therein tending to cause size deformation of the substrate as the substrate approaches the onset of melting in response to temperature changes, and so that the deformation of the substrate causes discontinuities to develop in the metalized layer to achieve a susceptor cooking temperature in a range of approximately 230°–250° C.

5,571,628

METAL FIBER PREFORMS AND METHOD FOR MAKING THE SAME

Lloyd E. Hackman, Worthington, Ohio, assignor to Ribbon Technology Corporation, Gahanna, Ohio

Filed Jul. 23, 1993, Ser. No. 96,518

Int. Cl.[6] B23P *17/06*

U.S. Cl. 428—605 **7 Claims**

1. A preform useful in forming fiber reinforced cementitious composites, said preform consisting of a free-standing network of metal fibers, said network of metal fibers having a shape which bounds a substantial non-interstitial volume devoid of fibers wherein the amount of fibers in the preform ranges from about 1 to 10 percent by volume.

5,571,629

OPTICAL RECORDING MEDIUM

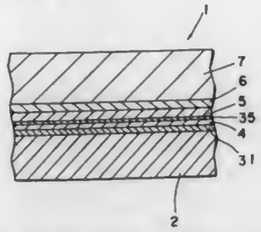
Hajime Utsunomiya; Hideki Hirata; Kenji Uchiyama; Hideki Ishizaki, and Suguru Takayama, all of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation of Ser. No. 46,128, Apr. 12, 1993, abandoned, which is a continuation of Ser. No. 763,497, Sep. 23, 1991, abandoned, which is a continuation of Ser. No. 213,936, Jun. 30, 1988, abandoned. This application Aug. 29, 1994, Ser. No. 296,156

Claims priority, application Japan, Jul. 10, 1987, 62-172377; Jul. 23, 1987, 62-184555

Int. Cl.[6] G11B *11/00;5/66;5/70*

U.S. Cl. 428—694 DE **6 Claims**



1. An optical recording medium comprising a substrate,
a recording layer on the substrate, and
an intermediate layer between the substrate and the recording layer formed by sputtering, which comprises silicon, aluminum, oxygen, nitrogen, and 6 to 35 atom % of at least one element selected from the group consisting of Y, La, Cs, Pr, Nd, Sm, Eu and Th, wherein the silicon content is 5–38 atom %, the total amount of silicon plus nitrogen is 20 to 56 atom % and the Al content is 1 to 10 atom %.

5,571,630

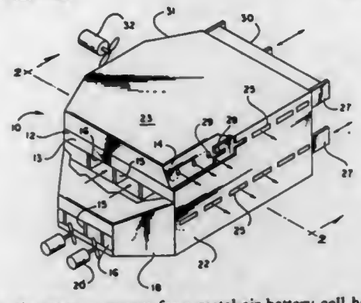
AIR MANAGER SYSTEM FOR A METAL-AIR BATTERY

Michael C. Cheiky, Santa Barbara, Calif., assignor to Dreisbach Electromotive, Inc., Santa Barbara, Calif.

Continuation of Ser. No. 83,204, Jun. 25, 1993, Pat. No. 5,387,477, which is a continuation of Ser. No. 916,360, Jul. 17, 1992, abandoned. This application Aug. 8, 1994, Ser. No. 287,124

Int. Cl.[6] H01M *8/04*

U.S. Cl. 429—26 **11 Claims**



1. An air manager system for a metal-air battery cell having an air cathode, comprising:
means for directing a first flow of air adjacent to the air cathode to provide reactant air, and
means for directing a second flow of air adjacent to a portion of the cell isolated from the air cathode and adjacent to an anode to provide cooling of the cell.

5,571,631

Patent Not Issued For This Number

5,571,632

NONAQUEOUS ELECTROLYTE SOLUTION SECONDARY CELL AND METHOD FOR PRODUCING THE SAME

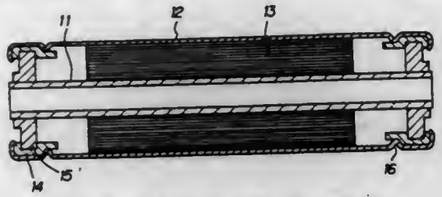
Kazunori Teramoto, Fukushima, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 21, 1995, Ser. No. 493,100

Claims priority, application Japan, Jun. 22, 1994, 6-163248; Jan. 9, 1995, 7-017468

Int. Cl.[6] H01M *4/00*

U.S. Cl. 429—94 **9 Claims**



1. A nonaqueous electrolyte secondary cell comprising:
an outer tube;
an inner tube substantially coaxially disposed with respect to said outer tube;
a first ring-shaped electrically insulating gasket inserted into an inner circumference of a first end of said outer tube;
a first ring-shaped sealing plate for sealing a portion between said first ring-shaped electrically insulating gasket and the first end of said inner tube;
a spiral electrode laminate structure in which strip-shaped anode and cathode impregnated with nonaqueous electrolyte solution between the first end and a second end of said inner tube are spirally wound through a separator, by using said inner tube as a core;
a second ring-shaped electrically insulating gasket inserted into an inner circumference of a second end of said outer tube; and
a second ring-shaped sealing plate for sealing a portion between said second ring-shaped electrically insulating gasket and an outer circumference of the second end of said inner tube.

5,571,633

VENT VALVE FOR AN AMPHIBIOUS EQUIPMENT HAVING A BATTERY HOUSING

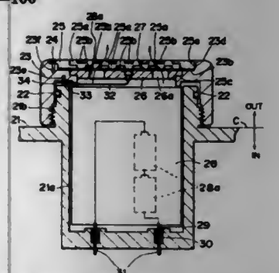
Nobuyoshi Hagiuda, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 113,341, Aug. 30, 1993, Pat. No. 5,538,807. This application Jun. 6, 1995, Ser. No. 469,372

Claims priority, application Japan, Sep. 3, 1992, 4-62134; Sep. 14, 1992, 4-64145

Int. Cl.[6] H01M *2/10*

U.S. Cl. 429—100 **6 Claims**



1. A waterproof device, comprising:
an airtight battery housing for housing a battery;
said battery housing having a common wall shared by an outer wall of the waterproof device;
said common wall having an opening;
and
a disengagable cap structure extending over said opening, said cap structure having an air-permeable and liquid-imperable filter and having a hole to allow gas to pass through said cap structure.

5,571,634

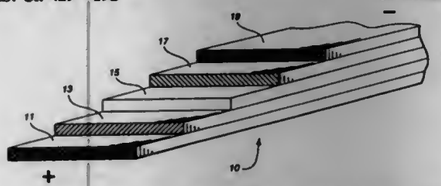
HYBRID LITHIUM-ION BATTERY POLYMER MATRIX COMPOSITIONS

Antoni S. Gozdz, Tinton Falls; Caroline N. Schmutz, Eatontown, and Paul C. Warren, Far Hills, all of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

Continuation-in-part of Ser. No. 160,018, Nov. 30, 1993, Pat. No. 5,460,904, which is a continuation-in-part of Ser. No. 110,262, Aug. 23, 1993, Pat. No. 5,418,091. This application Aug. 3, 1995, Ser. No. 510,984

Int. Cl.[6] H01M *10/08;4/36*

U.S. Cl. 429—192 **13 Claims**



1. A rechargeable battery structure comprising a positive electrode element, a negative electrode element, and a separator element disposed therebetween

characterized in that
a) each of said elements comprises a flexible, self-supporting, polymeric matrix film composition;
b) each said element is bonded to contiguous elements at its respective interfaces to form a unitary flexible laminate structure; and
c) said separator element composition comprises a copolymer of vinylidene fluoride with about 8 to 20% by weight chlorotrifluoroethylene and has homogeneously distributed therein about 20 to 60% by weight of a compatible organic plasticizer for said copolymer.

5,571,635

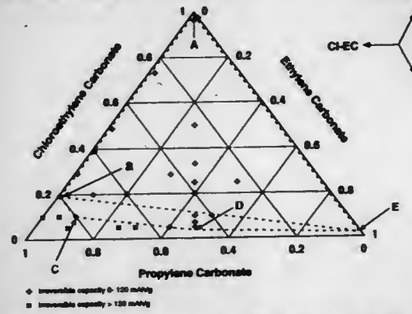
ELECTROLYTE FOR A SECONDARY CELL

Zhi X. Shu, Ottawa; Roderick S. McMillan, and John J. Murray, both of Gloucester, all of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Continuation-in-part of Ser. No. 228,502, Apr. 15, 1994, Pat. No. 5,529,859. This application Oct. 6, 1995, Ser. No. 540,247

Int. Cl.[6] H01M *6/14*

U.S. Cl. 429—194 **15 Claims**



1. An electrolyte for a secondary alkali metal ion cell including an anode of a carbonaceous material having a degree of graphitization (g) of about 1.0, as determined by the equation:

$$g = \frac{3.45 - d_{002}}{0.085}$$

wherein d_{002} represents the spacing (Å) between the graphitic layers in the crystal structure of the carbonaceous material, said carbonaceous material being capable of having alkali metal ions reversibly incorporated therein, the electrolyte comprising a solution of chloroethylene carbonate, an alkali metal salt dissolved therein, ethylene carbonate and propylene carbonate.

5,571,636

NICKEL POSITIVE ELECTRODE FOR ALKALINE STORAGE BATTERY AND SEALED NICKEL-HYDROGEN STORAGE BATTERY USING NICKEL POSITIVE ELECTRODE

Kazuhiro Ohta, Neyagawa; Hiromu Matsuda, Kawabe-gun; Munehisa Ikoma, Shiki-gun; Nobuyasu Morishita, Fujiidera, and Yoshinori Toyoguchi, Yao, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

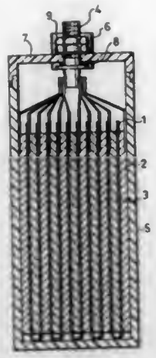
Division of Ser. No. 225,278, Apr. 8, 1994, Pat. No. 5,451,475. This application May 12, 1995, Ser. No. 439,930

Claims priority, application Japan, Apr. 28, 1993, 5-125376

Int. Cl.[6] H01M *4/02*

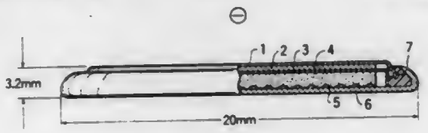
U.S. Cl. 429—218 **10 Claims**

1. A nickel positive electrode for an alkaline storage battery comprising an active material mixture and a conductive support for said active material mixture, said active material mixture comprising predominantly nickel hydroxide, and further comprising nickel



powder, a second powder compound, and at least one member selected from the group consisting of cobalt, cobalt hydroxide and cobalt oxide, said nickel powder having a specific surface area of from 0.1 to 3 m^2/g and an average particle diameter of from 0.1 to 15 micrometers, and said second powder compound including at least one element selected from the group consisting of Ca, Sr, Ba, Cu, Ag, and Y.

5,571,637
NON-AQUEOUS SECONDARY BATTERY
Yoshio Idota, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Nov. 16, 1995, Ser. No. 558,873
Claims priority, application Japan, Nov. 16, 1994, 6-282068
Int. Cl.[6] H01M *4/58*
U.S. Cl. 429—218 **6 Claims**



1. A non-aqueous secondary battery which comprises a positive electrode-active material, a negative electrode material, and a non-aqueous electrolyte, wherein the negative electrode material comprises a boron-containing compound represented by the following general formula: wherein n ranges from 3.2 to 6.6.

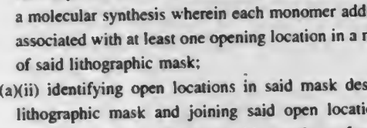
5,571,638
LITHIUM SECONDARY BATTERY
Tomoari Satoh; Tatsuo Tateno, both of Tsukuba; Yasuhito Furukawa, and Toshihisa Deguchi, both of Nihama, all of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan
Filed Sep. 28, 1994, Ser. No. 313,832
Claims priority, application Japan, Sep. 30, 1993, 5-244819; Jan. 28, 1994, 6-008351; Feb. 7, 1994, 6-013516; Apr. 26, 1994, 6-088294
Int. Cl.[6] H01M *2/16*
U.S. Cl. 429—248 **10 Claims**

1. A lithium secondary battery comprising a lithium-rechargeable cathode, a lithium-rechargeable anode and a nonaqueous liquid electrolyte, wherein at least one of the cathode and the anode contains one of the following (A), (B) and (C):

(A) a composite material comprising a carbon powder and a binder, which is treated with a silane coupling agent represented by the following formula (1):

$$YSiX_3 \quad (1)$$

wherein Y is represented by CH_2=CH—, CH_2=C(CH_3)$COOC_3H_6$—,



$HN_2C_3H_6$—, $NH_2C_2H_4NHC_3H_6$—, $NH_2COCHC_3H_6$—, $CH_3COOC_2H_4NHC_2H_4NHC_3H_6$—, $NH_2C_2H_4NHC_2H_4NHC_3H_6$—, SHC_3H_6—, ClC_3H_6—, CH_3—, C_2H_5—, $C_2H_5OCONHC_3H_6$—, $OCNC_3H_6$—, C_6H_5—, $C_6H_5CH_2NHC_3H_6$—, or $C_3H_5NHC_3H_6$—.; and X is represented by —OCH_3, —OC_2H_5, —$OCOCH_3$, —$OC_2H_4OCH_3$, —$N(CH_3)_2$, or —Cl,

(B) a composite material comprising a binder and a mixed carbon powder containing 70–99% by weight of a graphite powder and 30-1% by weight of a pseudo-graphitic carbon black, which is treated with the silane coupling agent represented by formula (1), and

(C) a composite material comprising a composite oxide powder of lithium and a transition metal, a conductive powder and a binder, which is treated with a silane coupling agent.

5,571,639
COMPUTER-AIDED ENGINEERING SYSTEM FOR DESIGN OF SEQUENCE ARRAYS AND LITHOGRAPHIC MASKS
Earl A. Hubbell, Mt. View; MacDonald S. Morris, San Jose, and James L. Winkler, Palo Alto, all of Calif., assignors to Affymax Technologies N.V., Curaco, Netherlands Antilles
Filed May 24, 1994, Ser. No. 249,188
Int. Cl.[6] G03F *7/26;* **G03C** *5/00;* **C12Q** *1/68*
U.S. Cl. 430—5 **10 Claims**

1. A method of forming a lithographic mask comprising the steps of:

in a computer system, generating a lithographic mask design file by the steps comprising:

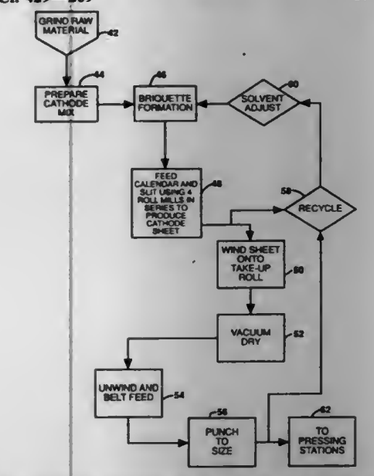
(a)(i) inputting sequence information into said computer system, said sequence information defining monomer addition steps in a molecular synthesis wherein each monomer addition step is associated with at least one opening location in a mask design of said lithographic mask;

(a)(ii) identifying open locations in said mask design of said lithographic mask and joining said open locations in said mask design of said lithographic mask to form a joined location, said open locations defining flash locations for forming said lithographic mask, said joined location defining a larger flash location for forming said lithographic mask;

(a)(iii) outputting said mask design file, said mask design file defining locations for openings in said lithographic mask, wherein at least one flash location in said mask design file corresponds to a joined location; and

(b) with a computer-controlled system, forming said lithographic mask according to said mask design file, whereby at least some flash locations on said lithographic mask are connected.

5,571,640
CATHODE COMPONENT FOR USE IN ELECTROCHEMICAL CELLS
Esther S. Takeuchi, East Amherst; Ralph T. Mead, Kenmore, and Clifford J. Post, Amherst, all of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.
Continuation-in-part of Ser. No. 146,707, Nov. 1, 1993, Pat. No. 5,435,874. This application May 5, 1995, Ser. No. 435,728
Int. Cl.[6] H01M *4/02*
U.S. Cl. 429—209 **17 Claims**



9. A nonaqueous electrochemical cell having a cathode means, an anode means and an ionically conductive electrolyte solution associated with the anode means and the cathode means, wherein the anode means is electrochemically oxidized to form metal ions in the cell upon discharge, and wherein electron flow is generated in an external electrical circuit connected to the cell by intercalation of the metal ions into a cathode active material comprising the cathode means, the cathode means comprising:

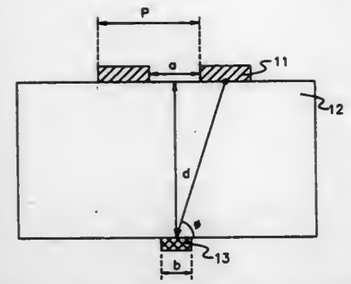
at least one cathode structure characterized as having been calendared into a shape from a paste comprising a metal-containing material as the cathode active material mixed with a solvent material, and after removal of the solvent material, the calendared cathode structure is characterized as having been pressed onto at least one side of a perforated current collector means to provide a laminated cathode component as the cathode means with the metal-containing material providing interstices substantially uniformally distributed throughout the cathode structure, and wherein the interstices provide for intercalation of the metal ions formed by the anode means to generate the electron flow in the external electrical circuit connected to the electrochemical cell.

5,571,641
DIFFRACTION MASK FOR THE FABRICATION OF SEMICONDUCTOR DEVICES
Sang M. Bae, Bubaleub, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea
Filed Jun. 27, 1994, Ser. No. 266,173
Claims priority, application Rep. of Korea, Jun. 25, 1993, 1993-11746
Int. Cl.[6] G03F *9/00;* **G03B** *27/42;* **G02B** *27/44;27/46*
U.S. Cl. 430—5 **11 Claims**

1. A diffraction mask for substantially reducing an amount of light normal to a surface of a photomask from being incident on the photomask, the diffraction mask comprising:

a transparent substrate having a thickness;

a first pattern having a plurality of first regions uniformly spaced apart on a first surface of the transparent substrate to form a diffracting pattern for diffracting light incident on the diffraction mask, each of the first regions having a shape and a width; and



a second pattern having a plurality of second regions uniformly spaced apart on a second surface of the transparent substrate opposing the first surface, each of the second regions having a shape and a size such that the second regions do not overlap the first regions along an axis normal to the surface of the photomask;

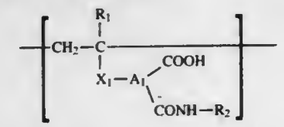
wherein the first surface is spaced apart from the second surface in a direction of the axis normal to the surface of the photomask by a distance d determined according to the relationship:

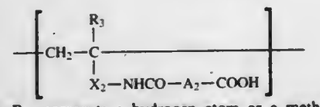
$$d = \frac{ap}{\lambda}$$

where a represents a spacing distance between the first regions, p represents a sum of the width of the first regions and the spacing distance between the first regions and λ represents the wavelength of the incident light, a, p and λ being measured in consistent units of measurements.

5,571,642
PHOTOSENSITIVE RESIN COMPOSITION, COLOR FILTER USING THE SAME, AND METHOD OF PRODUCING A COLOR FILTER
Yuichi Wakata, and Koji Inoue, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 27, 1995, Ser. No. 549,542
Claims priority, application Japan, Oct. 28, 1994, 6-265182
Int. Cl.[6] G03C *1/73*
U.S. Cl. 430—7 **3 Claims**

1. A photosensitive resin composition which comprises (1) a resin, (2) a photopolymerization initiator or a photopolymerization initiating system, and (3) an addition polymerizable monomer having an ethylenically unsaturated double bond, wherein said resin contains at least one repeating unit represented by the following general formulae (I) and (II):





wherein R_1 represents a hydrogen atom or a methyl group; R_2 represents an alkyl group having 1 to 12 carbon atoms, an aralkyl group having 7 to 16 carbon atoms or an aryl group having 6 to 18 carbon atoms, and each of the alkyl, aralkyl and aryl groups may be branched and may be substituted with an alkyl group having 1

to 4 carbon atoms, an alkoxy group having 1 to 6 carbon atoms, an aryl group having 6 to 10 carbon atoms, an aralkyl group having 7 to 12 carbon atoms, a halogen atom or a combination of two or more thereof; R_3 represents a hydrogen atom or a methyl group; X_1 represents a single bond, —COO—, —OCO—, —$CONR_5$—, —COO—R_6— or —$CONR_7$—R_8—; X_2 represents a single bond, —COO—, —OCO—, —$CONR_9$—, —COO—R_{10}— or —$CONR_{11}$—R_{12}—; A_1 represents a trivalent organic group which can form an imide ring by a ring closure reaction with COOH and CONH—R_2; A_2 represents a divalent organic group which can form an imide ring by a ring closure reaction with COOH and NHCO; R_5, R_7, R_9 and R_{11} each represents a hydrogen atom, an alkyl group having 1 to 12 carbon atoms, an aralkyl group having 7 to 16 carbon atoms, or an aryl group having 6 to 18 carbon atoms, and each of the alkyl, aralkyl and aryl groups may be branched and may be substituted with an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 6 carbon atoms, an aryl group having 6 to 10 carbon atoms, an aralkyl group having 7 to 12 carbon atoms, a hydroxyl group, a halogen atom or a combination of two or more thereof; R_6, R_8, R_{10} and R_{12} each represents a hydrogen atom, an alkylene group having 1 to 10 carbon atoms, an arylene having 6 to 10 carbon atoms or an aralkylene group having 7 to 20 carbon atoms, and each of the alkylene, arylene and aralkylene groups may be branched, the carbon chain of each group may be interposed by a linkage group selected from the group consisting of —O—, —S—, —OCO—, —COO—, —CONH—, —NHCO—, —SO_2—, —SO_2NH—, —$NHSO_2$— and combinations of two or more of these linkage groups, and each group may be substituted with an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 6 carbon atoms, an aryl group having 6 to 10 carbon atoms, an aralkyl group having 7 to 12 carbon atoms, a halogen atom or a combination of two or more thereof.

5,571,643

SPECTROPHOTOMETRIC QUANTITATION OF IMAGES IN X-RAY FILM AND ELECTROPHORESIS GEL BANDS

Mark T. Martin, 9 Prairie Rose La., Gaithersburg, Md. 20878, and Rosa I. Sanchez, 2711 Green Hollow Dr., Iselin, N.J. 08830

Filed Jul. 22, 1994, Ser. No. 279,192
Int. Cl.[6] G01N *21/77*; G01J *3/42*
U.S. Cl. 430—30 **22 Claims**

1. A method of quantitating images comprised of silver comprising the sequential steps of:
a) isolating an area of the image to be quantitated;
b) removing any silver which is present in the isolated area by converting the silver to a form suitable for binding a complexing agent and obtaining an extraction solution containing the removed silver;
c) adding a solution containing a complexing agent to the extraction solution to obtain a sample solution;
d) measuring an absorbance change between the extraction solution and the sample solution by spectrophotometry; and
e) comparing the absorbance measurement to a calibrated reference standard.

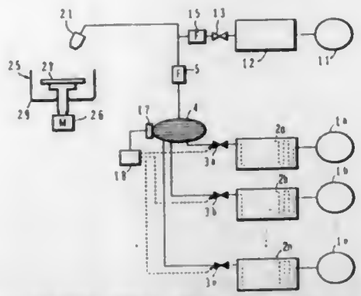
5,571,644

METHOD AND APPARATUS FOR DEVELOPING RESIST

Masahiro Uraguchi; Yusei Miyazono, and Kazuhiko Sumi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 110,931, Aug. 24, 1993, abandoned. This application Jul. 3, 1995, Ser. No. 497,886
Claims priority, application Japan, Aug. 28, 1992, 4-230159
Int. Cl.[6] G03F *7/30*
U.S. Cl. 430—30 **6 Claims**

1. A resist developing method for developing a resist film sensitive to an energy beam and which has been selectively



exposed to the energy beam so that the resist film has exposed and unexposed regions, said method comprising the steps of:
preparing developing solutions having different temperatures in different containers, either said exposed regions of the resist film or alternatively said unexposed regions of the resist film having a solubility in the developing solutions which is reduced as the temperature of the developing solution is lowered;
mixing said developing solutions having different temperatures at a mixture ratio to provide a mixed developing solution having a predetermined temperature;
subsequent to said mixing step, applying said mixed developing solution having said predetermined temperature to the resist film to thereby remove either the exposed regions of the resist film or the unexposed regions of the resist film;
further mixing said developing solutions having different temperatures, while changing the mixture ratio of said developing solutions as the development proceeds to thereby gradually lower the temperature of the mixed developing solution; and
further applying said mixed developing solution having the gradually lowered temperature to said resist film.

4. A resist developing method for developing a resist film sensitive to an energy beam and which has been selectively exposed to the energy beam so that the resist film has exposed and unexposed regions, said method comprising the steps of:
preparing first and second developing solutions having different temperatures in different containers, either said exposed regions of the resist film or alternatively said unexposed regions of the resist film having a solubility in the developing solutions which is reduced as the temperature of the developing solution is lowered;
mixing said first and second developing solutions having different temperatures at a mixture ratio to provide a mixed developing solution;
subsequent to said mixing step, applying said mixed developing solution to the resist film to thereby remove either the exposed regions of the resist film or the unexposed regions of the resist film and thereby develop the resist film;
holding said mixture ratio of said developing solutions constant during a first developing period to thereby maintain said mixed developing solution at a constant temperature during said first developing period; and thereafter
continually changing the mixture ratio of said developing solutions having different temperatures during a second developing period in such a manner that the temperature of the mixed developing solution is gradually lowered during said second developing period.

5,571,645

PRINTING WITH INCREASED COLOR DENSITY

Benzion Landa, Edmonton, Canada, assignor to Indigo N. V., SM Veldhoven, Netherlands

Filed Jan. 3, 1995, Ser. No. 367,814
Int. Cl.[6] G03G *13/14*
U.S. Cl. 430—42 **24 Claims**

1. A method for printing giving increased color density comprising:

printing a first electrostatically formed image in a given color on a substrate; and
printing a second image electrostatically formed in the given color onto at least a portion of the first image.

5,571,646

ELECTROSTATIC INFORMATION-RECORDING MEDIA AND PROCESS FOR RECORDING AND REPRODUCING ELECTROSTATIC INFORMATION

Minoru Utsumi; Hiroyuki Obata; Seiji Take; Masayuki Iijima, and Hironori Kamiyama, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Division of Ser. No. 126,523, Sep. 24, 1993, Pat. No. 5,492,783, which is a continuation-in-part of Ser. No. 720,863, Jul. 16, 1991, abandoned. This application Nov. 17, 1995, Ser. No. 560,468
Claims priority, application Japan, Nov. 17, 1989, 1-299165; Nov. 17, 1989, 1-299166; Mar. 12, 1990, 2-60374; Jul. 16, 1990, 2-187546
Int. Cl.[6] G03G *5/147*
U.S. Cl. 430—48 **4 Claims**

1. An electrostatic information-recording medium comprising at least an electrode layer and a charge-retaining layer, characterized in that said charge-retaining layer is a
pentafluorostyrene polymer layer and having a weight-average molecular weight of 10,000 to 2,000,000.

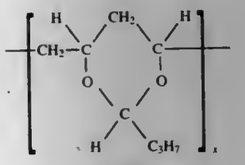
5,571,647

ELECTROPHOTOGRAPHIC IMAGING MEMBER WITH IMPROVED CHARGE GENERATION LAYER

Satchidanand Mishra; Robert C. U. Yu, both of Webster; Kathleen M. Carmichael, Williamson; Edward F. Grabowski, Webster; Anthony M. Horgan, Pittsford; William W. Limburg, Penfield; Sharon E. Normandin, Macedon; Damodar M. Pai, Fairport; Richard L. Post, Penfield; Donald P. Sullivan, Rochester, and Donald C. VonHoene, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

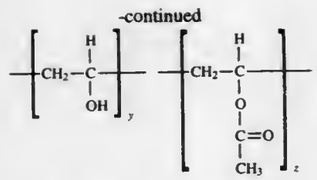
Filed Jan. 11, 1996, Ser. No. 587,119
Int. Cl.[6] G03G *5/14*
U.S. Cl. 430—58 **14 Claims**

1. An electrophotographic imaging member comprising a support substrate having a two layered electrically conductive outer surface, a hole blocking layer, an adhesive layer comprising a copolyester resin, a charge generation layer comprising photoconductive perylene or phthalocyanine particles dispersed in a film forming resin binder blend, said resin binder blend comprising polyvinyl butyral copolymer represented by the following general formula:



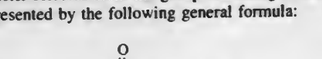
polyvinyl butyral

-continued

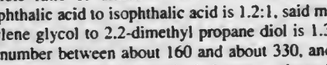


polyvinyl alcohol — polyvinyl acetate

wherein:
x is a number such that the polyvinyl butyral content is between about 50 and about 75 mol percent,
y is a number such that the polyvinyl alcohol content is between about 12 and about 50 mol percent, and
z is a number such that the polyvinyl acetate content is between about 0 to 15 mol percent, and
a copolyester selected from the group consisting of a first copolyester represented by the following general formula:



wherein
said diacid is selected from the group consisting of terephthalic acid, isophthalic acid, and mixtures thereof,
said diol comprises ethylene glycol and 2,2-dimethyl propane diol,
said mole ratio of diacid to diol is 1:1, said mole ratio of terephthalic acid to isophthalic acid is 1.2:1, said mole ratio of ethylene glycol to 2,2-dimethyl propane diol is 1.33:1,
n is a number between about 160 and about 330, and
the T_g of said copolyester resin is between about 50° C. and about 80° C.,
a second copolyester represented by the following general formula:



and mixtures of said first copolyester and said second copolyester, and a charge transport layer, said charge transport layer being substantially non-absorbing in the spectral region at which the charge generation layer generates and injects photogenerated holes but being capable of supporting the injection of photogenerated holes from said charge generation layer and transporting said holes through said charge transport layer.

5,571,648

CHARGE GENERATION LAYER IN AN ELECTROPHOTOGRAPHIC IMAGING MEMBER

Satchidanand Mishra; Robert C. U. Yu, both of Webster; Donald P. Sullivan, Rochester; Kathleen M. Carmichael, Williamson; Edward F. Grabowski, Webster; Anthony M. Horgan, Pittsford; William W. Limburg, Penfield; Sharon E. Normandin, Macedon; Richard L. Post, Penfield, and Donald C. VonHoene, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 586,469
Int. Cl.[6] G03G *5/14*
U.S. Cl. 430—59 **20 Claims**

1. An electrophotographic imaging member comprising a support substrate having a two electrically conductive ground plane layer comprising a layer comprising zirconium over a layer comprising titanium,a hole blocking layer, an adhesive layer comprising a copolyester film forming resin, an intermediate layer in contact with said adhesive layer, said intermediate layer comprising a film forming carbazole polymer, a charge generation layer comprising perylene or a phthalocyanine particles dispersed in a

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film forming polymer binder blend of polycarbonate and carbazole polymer, and a hole transport layer, said hole transport layer being substantially non-absorbing in the spectral region at which the charge generation layer generates and injects photogenerated holes but being capable of supporting the injection of photogenerated holes from said charge generation layer and transporting said holes through said charge transport layer.

5,571,649

ELECTROPHOTOGRAPHIC IMAGING MEMBER WITH IMPROVED UNDERLAYER

Satchidanand Mishra; Robert C. U. Yu, both of Webster; Kathleen M. Carmichael, Williamson; Edward F. Grabowski, Webster; Anthony M. Horgan, Pittsford; William W. Limburg, Penfield; Sharon E. Normandin, Macedon; Damodar M. Pai, Fairport; Richard L. Post, Penfield; Donald P. Sullivan, Rochester, and Donald C. VonHoene, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 587,121
Int. Cl.[6] G03G *5/14*
U.S. Cl. 430—59 **28 Claims**

I. An electrophotographic imaging member comprising a support substrate having a two layered electrically conductive ground plane layer comprising a layer comprising zirconium over a layer comprising titanium, a hole blocking layer, an adhesive layer comprising a polymer blend comprising a carbazole polymer and a thermoplastic resin selected from the group consisting of copolyester, polyarylate and polyurethane in contiguous contact with said hole blocking layer, a charge generation layer comprising perylene or phthalocyanine pigment particles dispersed in a polycarbonate film forming binder in contiguous contact with said adhesive layer, and a hole transport layer, said hole transport layer being substantially non-absorbing in the spectral region at which the charge generation layer generates and injects photogenerated holes but being capable of supporting the injection of photogenerated holes from said charge generation layer and transporting said holes through said charge transport layer.

5,571,650

ORGANIC POSITIVE PHOTOCONDUCTOR

Garry D. Hinch, Louisville; Laura L. Kierstein, Westminster, and Ronald H. Levin, Boulder, all of Colo., assignors to Lexmark International, Inc., Greenwich, Conn.

Filed Sep. 5, 1995, Ser. No. 523,670
Int. Cl.[6] G03G *5/09*
U.S. Cl. 430—83 **4 Claims**

1. A photoconductive element capable of retaining a positive electrical charge sufficient for xerographic imaging comprising by weight 4 to 12% metal-free phthalocyanine, at least 20% tritolylamine and the remainder polyvinylbutyral.

5,571,651

CAPSULE TONER

Yoshihiro Inaba; Tsutomu Kubo, and Koichi Takashima, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

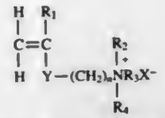
Continuation of Ser. No. 769,251, Oct. 1, 1994, abandoned.
This application Apr. 5, 1994, Ser. No. 223,131
Claims priority, application Japan, Oct. 4, 1990, 2-265174
Int. Cl.[6] G03G *9/00*
U.S. Cl. 430—109 **3 Claims**

1. A capsule toner for developing an electrostatic latent image comprising:

a core material;

a shell material covering said core material wherein said shell material comprises a polyurea resin, a polyurethane resin, an epoxyurethane resin, an epoxyurethane resin, a mixture of a polyurea resin and a polyurethane resin or a mixture of an epoxyurea resin and an epoxyurethane resin; and

a polymer material chemically bonded to the surface of said shell material comprising as a monomer component a quaternary ammonium salt-containing vinyl monomer represented by formula (I):



(I)

wherein R_1 represents a hydrogen atom or methyl group; R_2, R_3 and R_4 each represents a hydrogen atom, a C_{1-5} alkyl group or a benzyl group; Y represents $—CO_2—$ or $—CONH—$; n represents an integer from 1 to 7; and X^- represents an anion containing a $—COO^-$ group, a $—SO_3^-$ group or a $—SO_4^-$ group in the structure.

5,571,652

ENCAPSULATED TONER FOR HEAT-AND-PRESSURE FIXING AND METHOD FOR PRODUCING THE SAME

Tetsuya Asano; Mitsuhiro Sasaki, both of Wakayama; Takashi Yamaguchi, Arida, and Kuniyasu Kawabe, Wakayama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Aug. 17, 1994, Ser. No. 291,475
Claims priority, application Japan, Sep. 1, 1993, 5-242032
Int. Cl.[6] G03G *9/093*
U.S. Cl. 430—109 **9 Claims**



1. An encapsulated toner for heat-and-pressure fixing comprising a heat-fusible core material containing at least a thermoplastic resin and a coloring agent, and a shell formed thereon so as to cover the surface of the core material, said shell having a structure in which a part of the heat-fusible core material is incorporated therein, wherein the shell has an islands-sea structure in which a part of the heat-fusible core material is dispersed as islands.

5,571,653

TONER FOR DEVELOPING ELECTROSTATIC IMAGES, AND PROCESS FOR ITS PRODUCTION

Takashige Kasuya, Soka; Tatsuya Nakamura, Tokyo; Makoto Kanabayashi, Kawasaki; Tatsuhiko Chiba, Kamakura; Kazuyuki Miyano, Tokyo, and Koji Inaba, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1994, Ser. No. 325,479
Claims priority, application Japan, Oct. 20, 1993, 5-284201; Oct. 4, 1994, 6-263258
Int. Cl.[6] G03G *9/087*
U.S. Cl. 430—109 **18 Claims**

1. A toner for developing an electrostatic image, comprising toner particles containing a binder resin, a colorant and a wax, wherein:

said toner contains polymerizable vinyl monomer or a mixture of organic solvent and polymerizable vinyl monomer in an amount of not more than 1,000 ppm; and

said toner particles are obtained by forming a polymerizable monomer composition comprising (a) one or plural kinds of polymerizable vinyl monomer, (b) a styrene-diene copolymer comprised of styrene or a styrene derivative and butadiene or isoprene in a copolymerizable weight ratio from 95:5 to 65:35, (c) the colorant, (d) the wax and (e) a polymerization initiator; dispersing the polymerizable monomer composition in an aqueous medium to carry out granulation; and polymerizing the polymerizable vinyl monomer in the aqueous medium.

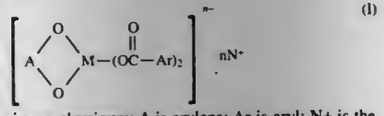
5,571,654

TONER COMPOSITIONS WITH NEGATIVE CHARGE ENHANCING ADDITIVES

Beng S. Ong, Mississauga, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 5, 1995, Ser. No. 523,577
Int. Cl.[6] G03G *9/097*
U.S. Cl. 430—110 **23 Claims**

1. A negatively charged toner composition comprised of thermoplastic resins, colorants, optional surface additives, and a metal charge enhancing additive of the formula (I)



(I)

wherein M is zinc or aluminum; A is arylene; Ar is aryl; N+ is the countercation of an alkaline cation, and which countercation is K+, Li+, Na+, Cs+, or the ammonium ion; and n is the number 1 or 2.

5,571,655

TONER REACTIVE MELT MIXING PROCESS

Hadi K. Mahabadi, Etobicoke; Michael S. Hawkins, Cambridge; Gerald R. Allison; Sheau V. Kao, both of Oakville; Paul J. Gerroir, Oakville; Nam S. Ro, Mississauga, and Enno E. Agur, Toronto, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 17, 1995, Ser. No. 425,014
Int. Cl.[6] G03G *9/00*
U.S. Cl. 430—137 **27 Claims**



1. A process for the preparation of toner compositions consisting of

(a) preparing a polymer composite consisting essentially of a reactive linear unsaturated polyester base resin and pigment by melting the base resin, and enabling dispersing of said pigment in said resin; subsequently cooling; and

(b) melting by heating and shearing the resultant composite of (a) with additional base resin and free radical initiator, thereby forming a polymer composite melt of resin, initiator, and pigment, and crosslinking the resin component to form a crosslinked toner resin with substantially no unpigmented gel domains,

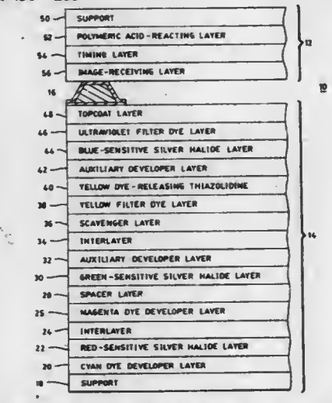
wherein said pigment is carbon black, wherein the blend of base resin and pigment in (a) is subjected to melt mixing during said melting of said base resin, and where in the pigment is dispersed in and wetted by said base resin in said polymer composite.

5,571,656

MULTICOLOR DIFFUSION TRANSFER PHOTOGRAPHIC FILM ELEMENTS

Edward D. Kingsley, Acton; Emmett S. McCaskill, Wellesley; Avinash C. Mehta, Belmont, and Kenneth C. Waterman, Concord, all of Mass., assignors to Polroid Corporation, Cambridge, Mass.

Filed Feb. 9, 1996, Ser. No. 599,044
Int. Cl.[6] G03C *8/16;8/20;8/36*
U.S. Cl. 430—218 **12 Claims**



1. A diffusion transfer photographic film unit comprising a photosensitive element comprising a support carrying at least two different color image components, each said color image component including a color-sensitive silver halide emulsion layer in association with a corresponding image dye-providing material, a first silver halide developer capable of participating in photographic development after photoexposure whereby an imagewise pattern of diffusible dye image-forming material is provided and wherein at least one of said color image components further includes a second silver halide developer, or precursor thereof, having an oxidation potential more negative than that of said first silver halide developer and capable of developing silver halide indiscriminately, said second silver halide developer being adapted to be made available after photographic development has been substantially completed in said color image component in which said second silver halide developer is located;

a second sheet-like element which is in superposed relationship, or adapted to be placed in superposed relationship, with said photosensitive element;

an image-receiving layer positioned in one of said photosensitive and second sheet like elements; and

means providing an aqueous alkaline processing composition for distribution between predetermined layers of said elements.

5,571,657

MODIFIED CATION EXHANGE PROCESS

Charles R. Szmanda, Westborough, and Richard J. Carey, Sherborn, both of Mass., assignors to Shipley Company, Inc., Marlborough, Mass.

Filed Sep. 30, 1993, Ser. No. 128,994
Int. Cl.[6] G03C *1/73*
U.S. Cl. 430—270.1 **4 Claims**

1. A process for removing metal ions from an organic photoresist solution having ethyl lactate as the solvent comprising one or more acid labile photoresist components without formation of

by-products, said process comprising the steps of providing said organic solution, providing a cation exchange resin modified by having strong acid protons displaced with ammonium ions by contact of the cation exchange resin with ammonium hydroxide, and contacting said organic solution with said modified cation exchange resin for a time sufficient to remove essentially all of said metal ions from said solution by exchange of said metal ions with said ammonium ions.

5,571,658

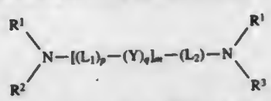
PHOTOSENSITIVE PLATE HAVING A PHOTOPOLYMERIZABLE PHOTOSENSITIVE LAYER AND A SILICONE RUBBER LAYER FOR PREPARING A LITHOGRAPHIC PRINTING PLATE REQUIRING NO FOUNTAIN SOLUTION

Koji Sonokawa, and Seiji Uno, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Aug. 29, 1995, Ser. No. 520,572
Claims priority, application Japan, Sep. 7, 1994, 6-214005
Int. Cl.[6] G03C *1/73*
U.S. Cl. 430—273.1 **16 Claims**

1. A photosensitive plate for preparation of a lithographic printing plate requiring no fountain solution by imagewise exposure to light and development, said photosensitive plate comprising a support having provided thereon a photopolymerizable photosensitive layer and silicone rubber layer in this order,

wherein the photopolymerizable photosensitive layer contains at least one photopolymerizable monomer represented by the following formula (I) and a photopolymerizable initiator:



(I)

wherein m represents an integer of from 0 to 30;

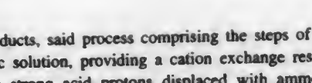
Y represents —COO—, —OCO—, —CONH—, —O—, —NH— or —S—;

L_1 represents a substituted or unsubstituted alkylene group;

L_2 represents a substituted or unsubstituted alkylene group, a substituted or unsubstituted phenylene group or a substituted or unsubstituted aralkylene group;

p and q each represents 0 or 1; and

R^1, R^2, and R^3 are the same or different and each represents a hydrogen atom, an alkyl group or a group represented by the following formula (II), provided that at least two of R^1, R^2 and R^3 are selected from the groups represented by the following formula (II):



(II)

wherein n represents an integer of from 1 to 15, provided that the total number of an ethylene oxide group or a propylene oxide group in one molecule of a monomer represented by formula (I) is 30 or less;

R^4 represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms;

R^5 represents a hydrogen atom or a methyl group, and where a plurality of R^5 groups are present, the plurality of R^5 groups may be the same or different;

X represents —COO—, —CONH— or a phenylene group;

L_3 and L_4 each represent a substituted or unsubstituted alkylene group; and

r represents 0 or 1.

5,571,659

LIQUID JET RECORDING HEAD AND RECORDING APPARATUS USING SAME

Hiromichi Noguchi, Atsugi; Tadayoshi Inamoto, Machida, and Megumi Saito, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 272,642, Jul. 11, 1994, abandoned, which is a continuation of Ser. No. 497,093, Mar. 21, 1990, abandoned. This application Mar. 20, 1995, Ser. No. 407,099
Int. Cl.[6] B41J *2/16;* **C08F** *2/50;* **C08L** *57/00;* **G03F** *7/004*
U.S. Cl. 430—284.1 **25 Claims**

1. A process for producing a liquid jet recording head comprising a discharge opening for discharging a recording liquid, a liquid path communicating with the discharge opening and a discharge energy generating element aligned with the liquid path for generating an energy to discharge the recording liquid from the discharge opening, said process comprising the steps of:

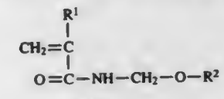
applying an active energy-curing resin composition onto at least a part of a surface of a first member for forming a wall of the liquid path;

exposing the applied active energy-ray-curing resin composition to an active energy ray selected from the groups consisting of an ultraviolet-ray having an intensity of 1 mW/cm^2 to 100 mW/cm^2 and an electron beam having an intensity of 0.5M Rad to 20M Rad; and

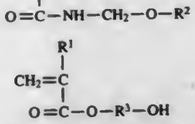
providing a second member on the exposed active energy-ray-curing resin composition;

wherein said first member or said second member has a discharge energy generating element provided thereon and the active energy-ray-curing resin composition comprises

(a) a graft copolymerized polymer having a number average molecular weight of 5,000 or more and a weight average molecular weight of 50,000 or less, which comprises a trunk chain composed mainly of structural units derived from at least one monomer selected from the group consisting of alkyl methacrylates, acrylonitrile and styrene and has graft chains having structural units derived from at least one monomer selected from the group consisting of monomers represented by the following formulae (x) and (y):

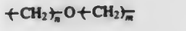


(x)

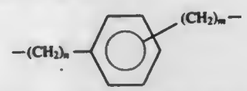


(y)

wherein R^1 is a hydrogen atom or an alkyl or hydroxyalkyl group having 1 to 3 carbon atoms, R^2 is a hydrogen atom or an alkyl or acyl group having 1 to 4 carbon atoms which may have hydroxy groups, R^3 is an alkyl group having 2 to 6 carbon atoms, a halogen-substituted alkyl group having 2 to 6 carbon atoms, an alkylether group represented by the formula:



wherein $2 \leqq m+n \leqq 6$, $n \neq 0$, $m \neq 0$, or a phenylalkyl group represented by the formula:



wherein $2 \leqq m+n \leqq 4$, or the case where n=0 or m=0 is contained;

(B) a linear polymer having a number average molecular weight of 50,000 or more and a weight average molecular weight of 350,000 or less and having a glass transition temperature of 60° C. or higher, which comprises (i) structural units derived from at least one monomer selected from the group consisting of methyl methacrylate, ethyl methacrylate, isobutyl methacrylate, t-butyl methacrylate, benzyl methacrylate, acrylonitrile, isobornyl methacrylate, isobornyl acrylate, tricyclodecaneacrylate, tricyclodecane methacrylate, tricyclodecaneoxyethyl methacrylate, styrene, dimethylaminoethyl methacrylate and cyclohexyl methacrylate, and (ii) from 5 to 30 mol % of structural units derived from at least one monomer selected from the group consisting of the monomers represented by the formula (x) and the monomers represented by formula (y);

(C) an esterified polyurethane obtained from oligoesterdiol or from oligoetherdiol and dihydric isocyanate which has a molecular chain terminal end esterified with acrylic acid; and

(D) a photopolymerization initiator.

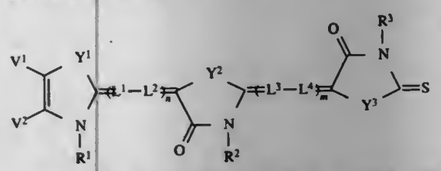
5,571,660

METHOD FOR FORMING AN IMAGE

Hirohide Ito, and Takeo Arai, both of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

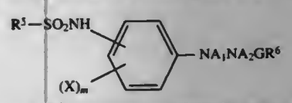
Continuation-in-part of Ser. No. 300,145, Sep. 2, 1994, abandoned. This application Sep. 15, 1995, Ser. No. 528,799
Claims priority, application Japan, Sep. 8, 1993, 5-223558
Int. Cl.[6] G03C *5/18;5/26*
U.S. Cl. 430—399 **4 Claims**

1. A method of forming an image comprising imagewise-exposing a silver halide photographic light sensitive material and developing the exposed photographic material with a developer to form the image, wherein said silver halide photographic material contains a spectral sensitizing dye represented by the following formula (S), and a hydrazine compound represented by formula (Ha) and wherein said photographic material is developed with a developer having a pH of 10.9 or less, said developer being replenished by a developer-replenishing solution having a pH value of 10.9 or less in an amount of 300 ml or less per m^2 of the photographic material,



formula (S)

wherein Y^1, Y^2 and Y^3 independently represent —N(R)— group, an oxygen atom, a sulfur atom or a selenium atom provided that at least one of Y^1, Y^2 and Y^3 is not selected to be either a sulfur or selenium atom; R, R^1, R^2 and R^3 independently represent an aliphatic group, an aryl group or a heterocyclic group, provided that at least one of R, R^1, R^2 and R^3 has a water-solubilizing group as a substituent; V^1 and V^2 independently represent a hydrogen atom, an alkyl group, an alkoxy group or an aryl group, and V^1 and V^2 may combine with each other to form a ring; L^1, L^2, L^3 and L^4 independently represent a methine group n is 1 or 2; m is 0 or 1



formula (Ha)

wherein R^5 represents an aliphatic group, an aryl group or a heterocyclic group; R^6 represents a hydrogen atom, an aliphatic group, an aryl group, a heterocyclic group, an amino group, an alkoxy group, an aryloxy group, —$COOR_8$, or —$CON(R_9)(R_{10})$, in which R_8 represents a hydrogen atom, an alkyl group, an alkenyl group, an alkynyl group, an aryl group or a heterocyclic group; and R_9 and R_{10} represents each a hydrogen atom, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, a heterocyclic group, hydroxy, an alkoxy group, an alkenyloxy group, an alkynyloxy group, an aryloxy group, a heterocyclicoxy group or an amino group; A_1 and A_2 are both hydrogen atoms, or one of them is a hydrogen atom and the other one is an acyl group, a sulfonyl group or an oxyalyl group; G represents a carbonyl group, a sulfonyl group, a sulfoxy group, a phosphoryl group or iminomethylene group; X represents a substituent; m is an integer of 0 to 4.

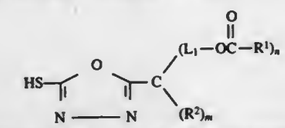
5,571,661

SILVER HALIDE LIGHT-SENSITIVE COLOR PHOTOGRAPHIC MATERIAL

Osamu Ishige; Takesi Nakamura; Naoki Sato, and Yntaka Kaneko, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

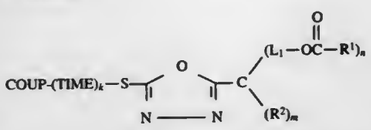
Filed Jun. 6, 1995, Ser. No. 466,431
Claims priority, application Japan, Jun. 9, 1994, 6-127692
Int. Cl.[6] G03C *7/305*
U.S. Cl. 430—544 **3 Claims**

1. A silver halide light-sensitive color photographic material having a silver halide emulsion layer, provided on a support, comprising a compound which releases, upon reaction with an oxidation product of a color developing agent, a 2-mercapto-1,3,4-oxadiazole derivative represented by formula I:



I

the compound being a yellow or cyan dye forming coupler represented by formula



formula (S)

wherein L_1 represents a linkage or a divalent linking group; R^1 represents an alkyl group, an aryl group or a heterocyclic group; R^2 represents a hydrogen atom or a substituent; n represents an integer of one, two or three; and m represents an integer of zero, one or two, provided that sum of m and n is three; COUP is a group coupling with an oxidation product of a color developing agent, TIME is a group which releases 2-mercapto-1,3,4-oxadiazole derivative represented by formula upon reaction that an oxidation product of a color developing agent couples with COUP, k is 0 or 1.

5,571,662

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Yuji Mihara; Tadashi Ikeda; Yoshio Inagaki, and Takashi Kato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 167,220, Dec. 16, 1993, abandoned, which is a continuation of Ser. No. 878,453, May 5, 1992, abandoned. This application Apr. 10, 1995, Ser. No. 419,756
Claims priority, application Japan, May 15, 1991, 3-138613
Int. Cl.[6] G03C *1/20;1/38*
U.S. Cl. 430—567 **6 Claims**

1. A black and white silver halide photographic material comprising a support having thereon at least one silver halide photographic emulsion layer, wherein said silver halide emulsion layer has been spectral-sensitized with at least one spectral-sensitizer to have a sensitized peak in a wavelength range greater than 730 nm; absorbance of light due to said silver halide emulsion containing said spectral-sensitizer satisfies the following equation:

Abs (peak wavelength)/Abs (peak wavelength−100 nm)>5;

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and said spectral-sensitizer comprises at least one imidadicarbocyanine dye.

2. The black and white silver halide photographic material as in claim 1, wherein the silver halide emulsion comprises a silver halide having a chloride content of 50 mol % or more.

5,571,663

SILVER HALIDE LIGHT-SENSITIVE MATERIAL AND COLOR FILTER

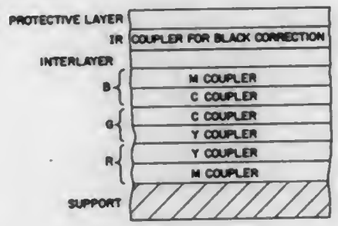
Hiroyuki Hirai, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 5, 1995, Ser. No. 498,412

Claims priority, application Japan, Jul. 7, 1994, 6-155726

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—504 **8 Claims**



1. A silver halide light-sensitive material comprising a support having thereon at least four silver halide emulsion layers each having a different color sensitivity,

wherein three of the four silver halide emulsion layers are

a red color forming-layer containing a yellow coupler and a magenta coupler;

a green color forming-layer containing a yellow coupler and a cyan coupler; and

a blue color forming-layer containing a magenta coupler and a cyan coupler, and

wherein one of the at least four silver halide emulsion layers contains one or more couplers capable of correcting colors so as to provide a black color having a transmission density of 2.5 or more when all couplers on the support react,

and wherein the order of the at least four silver halide emulsion layers is freely selected.

5,571,664

COLOR PHOTOGRAPHIC SILVER HALIDE MATERIAL

Jörg Siegel, Leverkusen; Peter Hankofer, Köln, and Hans-Ulrich Borst, Elsdorf, all of Germany, assignors to Agfa-Gevaert AG, Germany

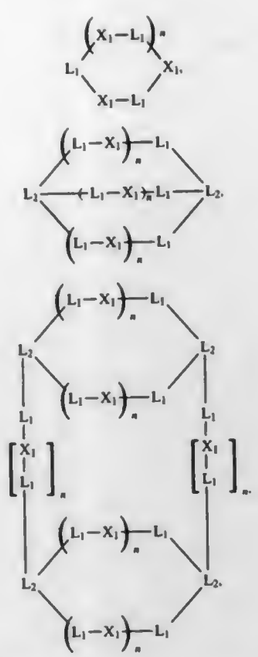
Filed Sep. 8, 1995, Ser. No. 525,090

Claims priority, application Germany, Sep. 21, 1994, 44 33 637.3

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—506 **13 Claims**

1. A negatively developing color photographic silver halide material comprising at least two blue-sensitive, yellow-coupling silver halide emulsion layers, at least two green-sensitive, magenta-coupling silver halide emulsion layers, at least two red-sensitive, cyan-coupling silver halide emulsion layers and a yellow filter layer on a transparent support, the layers of the same spectral sensitivity having different photographic sensitivities and the blue-sensitive layers being arranged further from the support than the yellow filter layer and the green-sensitive and red-sensitive layers being arranged nearer the support than the yellow filter layer, wherein at least one of the green-sensitive layers of highest sensitivity and the red-sensitive layers of the highest sensitivity contains a compound corresponding to one of formulae (I), (II) or (III):



in which

X_1 independently of one another represents nitrogen, phosphorus, arsenic, oxygen or sulfur

L_1 independently of one another represents an unsubstituted or substituted hydrocarbon radical containing at least two carbon atoms in the main chain, the main chain being the atom sequence between two adjacent atoms X_1 or between an atom X_1 and an adjacent bridgehead atom L_2, the substituents of L_1 may be part of a carbocyclic or heterocyclic aromatic ring,

L_2 independently of one another represent a bridgehead atom and

n is a number of 1 to 10;

and the layers of highest sensitivity green and red mentioned contain silver bromide iodide emulsions with a percentage iodide content of 1 to 15 mole-%.

5,571,665

SILVER HALIDE PHOTOGRAPHIC MATERIAL HAVING IMPROVED ANTISTATIC PROPERTIES

Dario Ballerini; Marco Bucci, both of Genova; Domenico Marinelli, Ferrania, and Renzo Torterolo, Bragno, all of Italy, assignors to Imation Corp., Woodbury, Minn.

Filed Aug. 5, 1994, Ser. No. 286,277

Claims priority, application European Pat. Off., Oct. 6, 1993, 93116137

Int. Cl.[6] G03C *1/85*

U.S. Cl. 430—527 **7 Claims**

1. A silver halide photographic material comprising a support having at least one silver halide emulsion layer coated thereon, and a hydrophilic colloid layer coated on said at least one silver halide emulsion layer, characterized in that said hydrophilic colloid layer comprises a combination of (a) a non-ionic polyoxyethylene surfactant, an anionic polyoxyethylene surfactant, and (c) at least one surfactant selected from the group consisting of non-ionic perfluoroalkylpolyoxyethylene surfactants and polyoxyethylene-modified polysiloxane surfactants characterized in that said anionic polyoxyethylene surfactant is represented by the following formula:

$$R-(A)_m-(CH_2-CH_2-O)_n-X$$

wherein

R is an aliphatic, aromatic or a mixed hydrocarbon residue and selected from the group consisting of a linear or branched alkyl moiety having from 4 to 18 carbon atoms or an aryl group substituted with one or more alkyl groups altogether having from 4 to 18 carbon atoms,

A is a divalent organic residue, selected from a group consisting of a carbonyl, a sulfonyl, an amino and an alkylene group having from 1 to 3 carbon atoms, an oxygen atom or groups consisting of two or more of the above-mentioned groups,

X is an anionic group selected from the class consisting of sulfonate group, carboxylate group, phosphate group and sulfate group, and

m is 0 or 1 and n is an integer of from 1 to 25.

5,571,666

THIAZINE DYES USED TO INACTIVATE HIV IN BIOLOGICAL FLUIDS

Robert A. Floyd, Oklahoma City, Okla., and Raymond F. Schinazi, Decatur, Ga., assignors to Oklahoma Medical Research Foundation, Oklahoma City, Okla.

Continuation of Ser. No. 29,984, Mar. 12, 1993, abandoned, which is a continuation of Ser. No. 758,228, Sep. 9, 1991, abandoned, which is a continuation of Ser. No. 632,606, Dec. 24, 1990, abandoned, which is a continuation of Ser. No. 350,383, May 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 264,088, Oct. 28, 1988, Pat. No. 4,950,665.

This application May 31, 1994, Ser. No. 251,624

Int. Cl.[6] A01N *1/02*; C12N *7/06*; A61K *31/54*

U.S. Cl. 435—2 **9 Claims**

1. A method for treating a biological fluid, obtained from a human for administration to a human patient in need thereof, in order to inactivate human immunodeficiency virus in the biological fluid comprising the steps of:

adding to the biological fluid a thiazine dye selected from the group consisting of methylene blue, toluidine blue O, azure A, azure B, azure C and combinations thereof, in a concentration which is effective to inactivate the human immunodeficiency virus in the biological fluid upon exposure to light, and

exposing the biological fluid to light of a wavelength and a period of time effective to activate the dye which induces the formation of 8-hydroxyguanosine in said virus.

5,571,667

ELONGATED MEMBRANE FLOW-THROUGH DIAGNOSTIC DEVICE AND METHOD

Albert E. Chu, 140 Roblar Ave., Hillsborough, Calif. 94010; Peter K. Chun, 2566 Adams Ct., So., South San Francisco, Calif. 94080, and Siu Chin C. Yeung, 36 Ottawa St., San Mateo, all of Calif. 94401

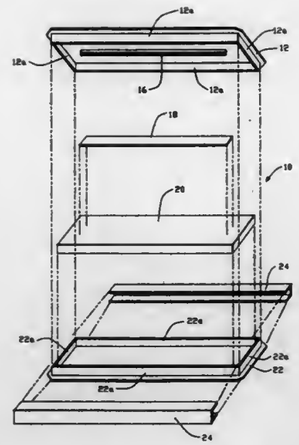
Continuation of Ser. No. 958,537, Oct. 8, 1992, abandoned, which is a continuation of Ser. No. 798,346, Nov. 21, 1991, abandoned, which is a continuation of Ser. No. 358,786, May 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 103,845, Oct. 1, 1987, Pat. No. 5,006,464. This application Jul. 8, 1993, Ser. No. 89,429

Int. Cl.[6] C12Q *1/70*

U.S. Cl. 435—5 **23 Claims**

1. A storage and reaction apparatus for use in assays for determining bindable target substances comprising:

(a) a liquid-permeable, porous, elongate reaction membrane strip comprising an upper and lower surface, at least said upper surface comprising immobilized proteins capable of specifically binding to said target substances, said proteins being positioned on said strip so as to correspond to electrophoretically resolved proteins which have been transferred to said strip and which are capable of specifically binding to said target substances,



(b) a body of absorbent material capable of absorbing liquid, said body having a surface located adjacent to the lower surface of the reaction membrane strip, and

(c) a container means for said reaction membrane strip and said absorbent material comprising a top wall defining a fluid port in the form of an elongate slot adjacent said membrane strip and further comprising a fluid seal means peripherally disposed at said fluid port defining a seal between said container top wall and said reaction membrane strip.

5,571,668

Patent Not Issued For This Number

5,571,669

TRANSCRIPTION AND NUCLEIC ACID SEQUENCE DETERMINATION WITH SHORT PRIMER DNA/RNA MOLECULES AND RNA POLYMERASE

Ponzy Lu, Bala Cynwyd, Pa., and Fraydoon Rastinejad, New Haven, Conn., assignors to The University of Pennsylvania, Philadelphia, Pa.

Filed Jan. 14, 1993, Ser. No. 4,383

Int. Cl.[6] C12Q *1/68*; C12D *19/34*; C07H *21/04*; C12N *15/00*

U.S. Cl. 435—6 **24 Claims**

1. A method for transcribing a DNA target segment, and thereby producing an RNA segment complementary to said DNA target segment, comprising:

(a) providing an DNA template segment containing the DNA target segment,

(b) hybridizing to said DNA target segment a complementary RNA primer comprising 7 or more nucleotides to produce a modified template comprising a double-stranded hybrid DNA/RNA segment, and

(c) exposing said modified template to an RNA polymerase selected from the group consisting of T7 RNA polymerase, T3 RNA polymerase and SP6 RNA polymerase which polymerase transcribes said DNA target segment by extension of said RNA primer, wherein the template segment lacks a promoter for said RNA polymerase.

5,571,670

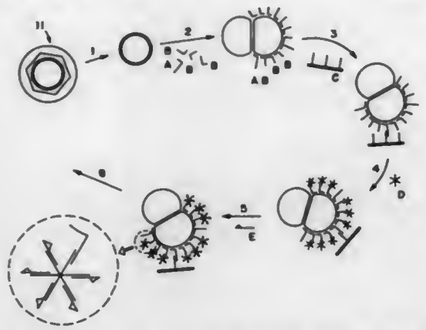
NUCLEIC ACID PROBES USEFUL IN DETECTING *CHLAMYDIA TRACHOMATIS* AND AMPLIFIED NUCLEIC ACID HYBRIDIZATION ASSAYS USING SAME

Michael S. Urdea, Alamo, and Jennifer M. Clyne, Martinez, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 824,795, Jan. 22, 1992, abandoned, which is a division of Ser. No. 340,031, Apr. 18, 1989, Pat. No. 5,124,246, which is a continuation-in-part of Ser. No. 252,638, Sep. 30, 1988, abandoned, which is a continuation-in-part of Ser. No. 185,201, Apr. 22, 1988, abandoned, which is a continuation-in-part of Ser. No. 109,282, Oct. 15, 1987, abandoned. This application Dec. 14, 1993, Ser. No. 167,435

Int. Cl.[6] C12Q *1/68*; C07H *21/04*

U.S. Cl. 435—6 **3 Claims**



3. A solution-phase sandwich hybridization assay for detecting *Chlamydia trachomatis* DNA in an analyte, the assay comprising the steps of:

(a) contacting the analyte under specific hybridizing conditions with an excess of: (i) an amplifier probe oligonucleotide consisting of a first segment having a nucleotide sequence complementary to a segment of the Chlamydia pCHL2 plasmid, a second segment having a nucleotide sequence complementary to an oligonucleotide unit of a nucleic acid multimer but not complementary to *Chlamydia trachomatis* nucleic acid, and optionally one or more non-complementary segments each consisting of a nucleotide sequence that is not complementary to *Chlamydia trachomatis* nucleic acid; and (ii) a capture probe oligonucleotide consisting of a first segment having a nucleotide sequence complementary to another segment of the Chlamydia pCHL2 plasmid, a second segment having a nucleotide sequence complementary to an oligonucleotide bound to a solid phase but not complementary to *Chlamydia trachomatis* nucleic acid, and optionally one or more non-complementary segments each consisting of a nucleotide sequence that is not complementary to *Chlamydia trachomatis* nucleic acid;

(b) contacting under hybridizing conditions the product of step (a) with the oligonucleotide bound to the solid phase;

(c) thereafter separating materials not bound to the solid phase;

(d) contacting under hybridizing conditions the solid phase complex product of step (c) with the nucleic acid multimer, said multimer comprising (i) at least one oligonucleotide unit that is complementary to the second segment of the amplifier probe oligonucleotide and (ii) a multiplicity of second oligonucleotide units that are complementary to a labeled oligonucleotide;

(e) removing unbound multimer;

(f) contacting under hybridizing conditions the solid phase complex product of step (e) with the labeled oligonucleotide;

(g) removing unbound labeled oligonucleotide; and

(h) detecting the presence of *Chlamydia trachomatis* by detecting the presence of label in the solid phase complex product of step (g),

wherein the first segment of the amplifier probe oligonucleotide has a sequence selected from the group consisting of

CTACTAAACTCGCACACATCGCGACTTCTT,
AACTCATTAAAGTAAAAGGCGAGCAAATTA,
ATGTTACTTTTAGGTAACGCATCTAGAGGC,
TCACGATATCGTTTCTGAAAAAGATAAGCG,
CGATCTCCGGCCAGATAAATACTATATAAG,
GTCAGTCTTTAACCTCACGACCGAGCATAT,
AGAAAGAAACTACGGAAGGGTTGTCCTATG,
CTATAACTACTATTTCCTCAATAGAATCGA,
CCATTAAAGCACTAATATCGTCGATCCGGT,
TATTTAGAACGCCAATGCGTTGTCGCATCT,
CCAAAGGATAGAGATCTTTACTCGCGTCCA,
TAACAACTCGCCTAATAACGATTAAATTGT,
AGATTTCTTCTTAATAAGGCTCATCTTCTT, or
CCTCTTTGTCAATCTCTTAGTGTAAAAATA,

and the first segment of the capture probe oligonucleotide has a sequence selected from the group consisting of

TTCGAATCTAGGCAAAGAGTATGCCAAAAG,
GATAACGAACTCGCATATTTCCCTTCCGAA,
TTTTCTGCTCGTTGCAAGAGACTCTTAGTT,
TATCCCTTTTGACGAAATCGATATCTGTAC, or
TATAGACCACTTTTTAATGTTTCTCCCCTA.

5,571,671

METHOD FOR DETECTING ALZHEIMER'S DISEASE

Huntington Potter, Boston, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.

Division of Ser. No. 678,683, Apr. 1, 1991, Pat. No. 5,297,562. This application Mar. 23, 1994, Ser. No. 216,302

Int. Cl.[6] C12Q *1/68*; G01N *33/48*

U.S. Cl. 435—6 **3 Claims**

1. A method for screening for an increased likelihood of alzheimer's disease in an individual comprising testing the individual for the presence of a mosaic population of cells containing two copies of chromosome 21 and cells containing three copies of chromosome 21, wherein the presence of the mosaic population of cells is indicative of an increased likelihood of Alzheimer's disease in the individual.

5,571,672

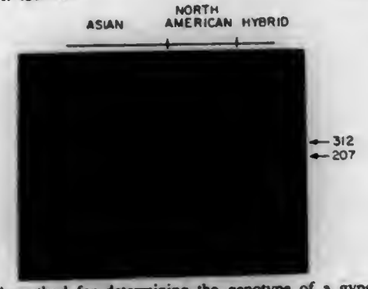
GYPSY MOTH GENOTYPE ASSAY

James M. Slavicek, Dublin; Karen J. Garner, Delaware, and David E. Schreiber, Columbus, all of Ohio, assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 20, 1994, Ser. No. 308,894

Int. Cl.[6] C12Q *1/68*; C12P *19/34*; C07H *21/02;21/04*

U.S. Cl. 435—6 **12 Claims**



1. A method for determining the genotype of a gypsy moth comprising the steps of

(a) isolating genomic DNA from a candidate gypsy moth;

(b) exposing the DNA to an oligonucleotide primer selected from the group consisting of SEQ ID NO:3, SEQ ID NO: 6, SEQ ID NO:7, and SEQ ID NOs:4 and 5;

(c) comparing the amplification products of step (b) to determine the presence or absence of diagnostic fragments obtained from exposing genomic DNA obtained from control Asian and North American/European gypsy moths to the primer or primers selected in step (b) under conditions permitting amplification of genomic DNA; and

(d) determining a genotype identity of the candidate moth according to which control sample has amplified fragments similar to those produced in step (b).

5,571,673

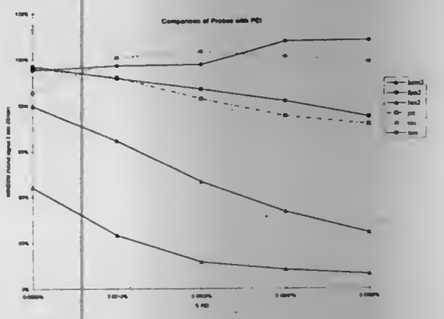
METHODS FOR IN-SOLUTION QUENCHING OF FLUORESCENTLY LABELED OLIGONUCLEOTIDE PROBES

Teresa K. H. Picone, Benicia, Calif., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 23, 1994, Ser. No. 347,657

Int. Cl.[6] C07H *21/04*; C12P *19/34*; C12Q *1/68*

U.S. Cl. 435—6 **10 Claims**



1. A method for detecting a change in length of an oligonucleotide labeled with a light-emitting label, wherein the change in length is catalyzed by a reaction carried out in a reaction mixture, and wherein said method comprises:

(a) measuring the light emission of said label in said reaction mixture in the presence of a DNA binding compound that is capable of interacting with said label to modify the light emission of said label, wherein the interaction depends on the length of said oligonucleotide, and wherein said DNA binding compound is selected from the group consisting of polyethylenimine, hydroxyethylated polyethylenimine, spermine, and spermadine;

(b) carrying out said reaction in said reaction mixture under conditions which result in a change in length of said oligonucleotide;

(c) measuring the light emission of said label in said reaction mixture in the presence of said DNA binding compound; and

(d) detecting the change in length of said oligonucleotide by comparing the light emission measured in step (a) to the light emission measured in step(c), wherein a change in light emission indicates a change in length of said oligonucleotide.

5,571,674

DNA OLIGOMERS FOR USE IN DETECTION OF CAMPYLOBACTER PYLORI AND METHODS OF USING SUCH DNA OLIGOMERS

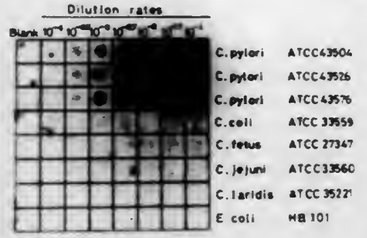
Sadayori Hoshina, Tokyo, Japan, and I. Bernard Weinstein, Englewood, N.J., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation of Ser. No. 672,691, Mar. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 408,881, Sep. 18, 1989, abandoned. This application Apr. 14, 1994, Ser. No. 227,475

Claims priority, application Japan, Sep. 18, 1990, 2-246383

Int. Cl.[6] C12P *19/34*; C12Q *1/68*

U.S. Cl. 435—6 **15 Claims**



1. A method for detecting the presence of *Campylobacter pylori* ribosomal DNA in a sample of isolated DNA comprising:

a) contacting the sample with a DNA oligomer having the sequence 5'GCGCAATCAGCGTCAGGTAATG3' (SEQ ID NO:2) and a DNA oligomer having the sequence 5'GCTAAGAGATCAGCCTATGTCC3' (SEQ ID NO:3) under conditions suitable for a polymerase chain reaction so as to amplify the DNA encoding *Campylobacter pylori* 16s ribosomal RNA sequences lying between the binding sites of the DNA oligomers; and

b) detecting the amplified DNA encoding *Campylobacter pylori* 16s ribosomal RNA sequences lying between the binding sites of the DNA oligomers.

thereby detecting the presence of *Campylobacter pylori* ribosomal DNA in the sample.

5,571,675

DETECTION AND AMPLIFICATION OF CANDIOTROPHIN-1(CARDIAC HYPERTROPHY FACTOR)

Joffre Baker, El Granada; Kenneth Chien, La Jolla; Kathleen King, Pacifica; Diane Pennica, Burlingame, and William Wood, San Mateo, all of Calif., assignors to Genentech, Inc., South San Francisco, and Regents of the Univ. of California, Oakland, both of Calif.

Division of Ser. No. 286,304, Aug. 5, 1994, which is a continuation-in-part of Ser. No. 233,609, Apr. 25, 1994. This application May 17, 1995, Ser. No. 444,083

Int. Cl.[6] C12Q *1/68*; C12P *19/34*; C07H *21/04*

U.S. Cl. 435—6 **14 Claims**

1. A method of determining the presence of a cardiotrophin-1 nucleic acid molecule in a sample, comprising:

(a) selecting a nucleic acid molecule which has at least 20 contiguous nucleotides selected from SEQ ID NO: 6, its exact complementary sequence (SEQ ID NO: 7), a nucleic acid which encodes the amino acid sequence SEQ ID NO: 8, or an exact complementary sequence thereof, and which selectively hybridizes to SEQ ID NO: 6, its exact complementary sequence (SEQ ID NO: 7), a nucleic acid which encodes the amino acid sequence SEQ ID NO: 8, or an exact complementary sequence thereof;

(b) hybridizing the selected nucleic acid to the sample nucleic acid to create a hybrid molecule; and

(c) determining the presence of the cardiotrophin-1 nucleic acid in the sample by means of the hybrid molecule.

5,571,676
METHOD FOR MISMATCH-DIRECTED IN VITRO DNA SEQUENCING

Anthony P. Shuber, Milford, Mass., assignor to IG Laboratories, Inc., Framingham, Mass.

Filed Jun. 7, 1995, Ser. No. 487,986
Int. Cl.[6] C12Q *1/68;1/70;* C12P *19/34;* C07H *21/04*
U.S. Cl. 435—6 **32 Claims**

1. A method for identifying one or more genetic alterations in a target sequence present in a first genomic DNA sample, which comprises:
a) hybridizing said DNA sample with a second DNA sample, wherein said second sample does not contain the alteration(s), to form heteroduplex DNA containing a mismatch region at the site of an alteration(s);
b) cleaving one strand of said heteroduplex in the target sequence to form a single-stranded gap across the site of said alteration(s);
c) treating said cleaved heteroduplex with a DNA polymerase in the presence of dideoxynucleotides to determine the nucleotide sequence across said gap; and
d) comparing said nucleotide sequence with a predetermined cognate wild-type sequence to identify said genetic alteration(s).

5,571,677
CONVERGENT SYNTHESIS OF BRANCHED AND MULTIPLY CONNECTED MACROMOMOLECULAR STRUCTURES

Sergei M. Gryaznov, San Mateo, Calif., assignor to LYNX Therapeutics, Inc., Hayward, Calif.

Continuation of Ser. No. 87,386, Jul. 2, 1993. This application May 31, 1995, Ser. No. 455,627
Int. Cl.[6] C12Q *1/68;1/70;* C12P *19/34;* C07H *21/04*
U.S. Cl. 435—6 **20 Claims**

1. A branched or multiply connected macromolecular structure which specifically binds to a target molecule, the branched macromolecular structure comprising:
a plurality of covalently connected oligonucleotides, with at least one oligonucleotide comprising a target binding sequence that binds specifically and stably with a target molecule and at least two oligonucleotides comprising at least two signal generation moieties that directly or indirectly generate a signal, wherein said plurality of oligonucleotides are covalently connected by at least one branch point by one or more thiophosphorylaklylamino bridges formed from either a haloalkylamino derivatized oligonucleotide and a 5' phosphorothioate derivatized oligonucleotide or a haloalkylamino derivatized oligonucleotide and a 3' phosphorothioate derivatized oligonucleotide.

5,571,678
PLACENTAL ISOFERRITINS FOR THE PROGNOSIS AND DIAGNOSIS OF IMMUNOSUPPRESSION

Chaya Moroz, 40 Yehuda-Hanasi Street, Tel Aviv, Israel, and S. Leslie Misrock, 74 Hilltop Dr., Chappaqua, N.Y. 10514

Division of Ser. No. 853,462, Mar. 18, 1992, which is a division of Ser. No. 689,656, Apr. 23, 1991, Pat. No. 5,120,640, which is a continuation of Ser. No. 164,947, Mar. 7, 1988, which is a continuation-in-part of Ser. No. 148,133, Jan. 22, 1988, Pat. No. 4,882,270, which is a continuation of Ser. No. 568,275, Jan. 4, 1984, which is a continuation-in-part of Ser. No. 373,715, Apr. 30, 1982. This application Mar. 12, 1993, Ser. No. 30,524
Claims priority, application Israel, May 15, 1981, 62879
Int. Cl.[6] G01N *33/53*
U.S. Cl. 435—7.1 **12 Claims**

1. A method for the diagnosis and prognosis of immunosuppression, comprising measuring the concentration of the 43 Kd subunit of placental isoferritin in a blood sample obtained from a patient in which an elevated concentration of the 43 Kd subunit correlates with early stage immunosuppression.

5,571,679
ANTI-EDA MONOCLONAL ANTIBODY AND A METHOD FOR DIAGNOSIS OF DISEASE ASSOCIATED WITH THE EDA REGION OF FIBRONECTIN

Kiyotoshi Sekiguchi, Osaka; Kaneji Asakawa, Tokushima; Eiji Sakashita, Tokushima; Kazuo Hino, Tokushima; Sadahito Shin, Tokushima; Tetsuya Tachikawa, Tokushima, and Hisanobu Hirano, Naruto, all of Japan, assignors to Otsuka Pharmaceutical Factory, Inc., Tokushima, Japan

Filed Sep. 22, 1993, Ser. No. 119,231
Claims priority, application Japan, Mar. 26, 1991, 3-061524; Jun. 28, 1991, 3-157966; Oct. 31, 1991, 3-286668
Int. Cl.[6] G01N *33/53;* C12N *5/20;* C07K *16/18*
U.S. Cl. 435—71 **5 Claims**

1. A method for determining the level of EDA-FN in plasma of a patient by an antigen-antibody binding reaction comprising the steps of:
(a) exposing a sample of plasma from a patient to monoclonal antibody HHS-01 produced by hybridoma HHS-01 having Fermentation Research Institute Deposit No. BP-3297, wherein said monoclonal antibody is obtained by using a fused protein derived from a peptide having the amino acid sequence of the EDA region of fibronectin and protein A as an immunogen;
(b) reacting the product of (a) with a labeled anti-FN second monoclonal antibody;
(c) detecting the level of EDA-FN by determining the optical density of the product of (b) as to whether said monoclonal antibody HHS-01 has bound EDA-FN antigen in the plasma of said patient, wherein elevated levels of EDA-FN are indicative of a EDA-FN-associated inflammatory disease selected from the group consisting of vasculitis, thrombosis, gestational toxicosis, renal failure rheumatoid arthritis and diabetes mellitus.

5,571,680
HOMOGENEOUS IMMUNOASSAYS AND ENZYME BASED ASSAYS OF ANALYTES USING CAPILLARY ELECTROPHORESIS

Fu-Tai A. Chen, Brea, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jan. 21, 1994, Ser. No. 184,791
Int. Cl.[6] G01N *33/573*
U.S. Cl. 435—7.4 **12 Claims**

1. A method of assaying the concentration of an analyte in a sample which comprises:
(A) incubating said sample in the presence of a fluorophore labelled analyte comprising said analyte attached to at least one nucleotidyl residue which contains a fluorescent moiety and an immunoglobulin which specifically binds to said analyte and to said fluorophore labelled analyte, wherein said incubation is conducted under conditions sufficient to permit formation of an immunoglobulin-analyte complex and/or an immunoglobulin-fluorophore labelled analyte complex;
(B) subjecting an amount of said incubated sample of step (A) to capillary electrophoresis, wherein said capillary electrophoresis is conducted under conditions sufficient to separate said fluorophore labeled analyte from said immunoglobulin-fluorophore labelled analyte complex; and
(C) assaying said concentration of analyte by detection of a laser induced fluorescence of said fluorophore, wherein said laser induced fluorescence is inversely proportional to the concentration of said analyte in said sample.

5,571,681
CHEMICAL EVENT SELECTION BY SUICIDE SUBSTRATE CONJUGATES

Kim D. Janda, San Diego, Calif., assignor to The Scripps Research Institute, La Jolla, Calif.

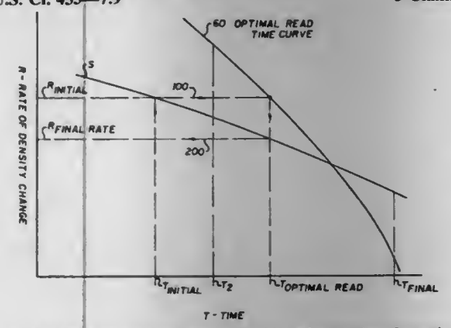
Filed Mar. 10, 1994, Ser. No. 209,525
Int. Cl.[6] C12Q *1/25;* C12N *9/00*
U.S. Cl. 435—7.6 **5 Claims**

1. A method for panning a phage display protein library displaying an encoded protein having covalent catalytic activity, the method comprising the following steps:
Step A. contacting the phage display protein library with an immobilized suicide substrate for forming a covalent conjugate between the immobilized suicide substrate and the encoded protein having covalent catalytic activity; then
Step B. separating and isolating the covalent conjugate obtained in said Step A with respect to non-covalently bound components and unbound components of the phage display protein library; and then
Step C. decoding the encoded protein incorporated within the covalent conjugate isolated in said Step B for identifying the encoded protein having covalent catalytic activity.

5,571,682
CALIBRATING AND TESTING IMMUNOASSAYS TO MINIMIZE INTERFERENCES

Merrit N. Jacobs, Fairport; Paul A. Kildal-Brandt, Webster, and Thomas C. Arter, Rochester, all of N.Y., assignors to Johnson & Johnson Clinical Diagnostics, Inc., Rochester, N.Y.

Filed Dec. 22, 1994, Ser. No. 363,099
Int. Cl.[6] G01N *33/53*
U.S. Cl. 435—7.9 **3 Claims**

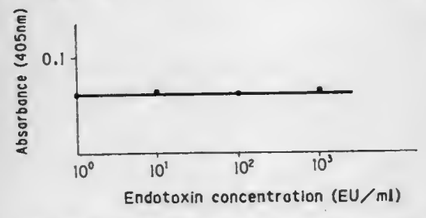


1. A method of reducing bias caused by a known interferent in a peroxidase-labeled immunoassay using a dry analytical element, the method comprising:
a) providing a single generation of dry analytical elements for determining an analyte in a liquid sample, each dry analytical element comprising in one or more layers (i) a predetermined amount of a labeled immunoreactant comprising peroxidase coupled to an immunoreactant selected from the group consisting of the analyte, an analyte analog and a specific binding partner which specifically binds to the analyte and the analyte analog. (ii) an immobilized immunoreactant which specifically binds to a member selected from the group consisting of the analyte, the analyte analog and the specific binding partner, and (iii) a substrate that reacts with the peroxidase to produce a detectable product;
b) providing a first set of calibrators, the first set comprising (i) a first calibrator comprising a known first amount of the analyte without a detectable amount of the known interferent present, and (ii) a second calibrator comprising the same known first amount of the analyte with a detectable first known amount of the known interferent present;
c) individually contacting said first calibrator and said second calibrator of the first set with at least one dry analytical element from the single generation and measuring the rate of change in reflectance density per unit time for each of the first and the second calibrators;
d) calculating a cross-over time point at which the rate of change in reflectance density per unit time for the first calibrator either (i) matches the rate of change in reflectance density per unit time for the second calibrator of the first set or (ii) first reaches a constant minimum difference from the rate of change in reflectance density per unit time for the second calibrator of the first set; and
e) contacting the liquid sample to another dry analytical element from the single generation and initiating measurement of the rate of change in reflectance density per unit time caused by the analyte in the liquid sample at the cross-over time point calculated in step d) to reduce any bias caused by any of the known interferent which may be present in the liquid sample.

5,571,683
β-GLUCANS DETECTION REAGENTS AND METHODS OF DETECTING β-GLUCANS

Hiroshi Nakajima; Hisashi Yamamoto, and Junko Cho, all of Tukuba, Japan, assignors to Maruha Corporation, Japan

Continuation of Ser. No. 953,922, Sep. 29, 1992, abandoned. This application Oct. 12, 1994, Ser. No. 322,171
Claims priority, application Japan, Dec. 25, 1991, 3-343617
Int. Cl.[6] C12Q *1/54;1/00;1/37;* C12N *1/14*
U.S. Cl. 435—14 **13 Claims**

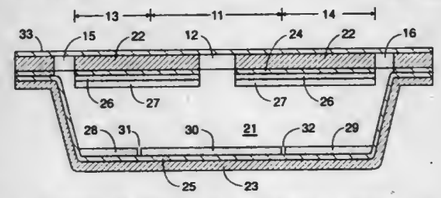


1. A β-glucan detection reagent comprising a horseshoe crab hemocyte lysate containing an endotoxin neutralizing peptide and a chromogenic substrate.

5,571,684
ASSAY FOR PROLINE IMINOPEPTIDASE AND OTHER HYDROLYTIC ACTIVITIES

Paul J. Lawrence, Campbell; Terrence J. Andreasen, San Jose, and David R. Shockey, Cupertino, all of Calif., assignors to Litmus Concepts, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 335,007, Nov. 7, 1994, abandoned. This application Jan. 17, 1995, Ser. No. 374,487
The portion of the term of this patent subsequent to Mar. 25, 2012, has been disclaimed.
Int. Cl.[6] C12Q *1/34;* C12N *11/08;* G01N *21/00*
U.S. Cl. 435—18 **48 Claims**



1. A method for assaying for the presence or absence of an analyte selected from the group consisting of a catalytically active hydrolase and an inhibitor of a catalytically active hydrolase in a sample, said method comprising:

(a) contacting said sample with a solid-phase conjugate consisting of a reporter group coupled to a substrate residue yet cleavable therefrom by said catalytically active hydrolase, said reporter group when not so coupled being capable of causing a detectable change in an indicator, this step being performed in an environment in which the condition of said reporter group as either coupled or decoupled correlates with the presence or absence of said analyte;

(b) during or subsequent to step (a), contacting said sample with a solid-phase indicator which undergoes a detectable change upon action of said reporter group; and

(c) observing whether said indicator undergoes a detectable change, said detectable change being an indication of the presence or absence of said analyte in said sample.

5,571,685

MORPHINONE REDUCTASE FOR THE PREPARATION OF HYDROMORPHONE AND HYDROCODONE

Anne M. Halles, Erith, United Kingdom; Christopher E. French, Palmerston North, New Zealand, and Neil C. Bruce, Cambridge, United Kingdom, assignors to MacFarlan Smith Limited, Edinburgh, United Kingdom

PCT No. PCT/GB93/01129, § 371 Date Nov. 30, 1994, § 102(e) Date Nov. 30, 1994, PCT Pub. No. WO94/00565, PCT Pub. Date Jan. 6, 1994

PCT Filed May 28, 1993, Ser. No. 343,606

Claims priority, application United Kingdom, Jun. 25, 1992, 9213524

Int. Cl.[6] C12Q *1/26;* C12P *17/12*

U.S. Cl. 435—25 **9 Claims**

1. A purified morphinone reductase enzyme having the N-terminal amino-acid sequence:

Pro Asp Thr Ser Phe Ser Asn Pro Gly Leu Phe Thr Pro Leu Gln (Seq ID NO:1).

5,571,686

METHOD OF USING MEGAPOIETIN FOR PROLONGING THE SURVIVAL & VIABILITY OF PLATLETS

Robert D. Rosenberg, Jamestown, R.I., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 14, 1994, Ser. No. 227,530

Int. Cl.[6] A61K *38/19;* C07K *14/52*

U.S. Cl. 435—29 **4 Claims**

1. A method for prolonging the survival and viability of a platelet containing preparation comprising contacting the preparation with an effective amount of a megapoietin protein, said protein being capable of: i) stimulating an increase in the megakaryocyte size, number and ploidy as well as production of platelets therefrom; and ii) binding to platelets in vitro or in vivo.

5,571,687

MODULATORS OF MULTIDRUG RESISTANCE TRANSPORTERS

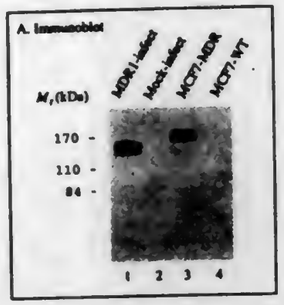
Patrick J. Casey, and Lili Zhang, both of Durham, N.C., assignors to Duke University, Durham, N.C.

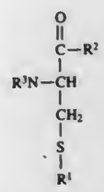
Filed Jun. 7, 1994, Ser. No. 257,321

Int. Cl.[6] C12Q *1/00;1/02;* G01N *33/48*

U.S. Cl. 435—29 **17 Claims**

1. A method of inhibiting or reversing the resistance of cells to the effects of a drug with which said cells are treated comprising contacting said cells with a compound, or pharmaceutically acceptable salt thereof, of the formula (I):





wherein:

R^1 is a straight or branched chain alkyl, alkene or alkyne of 10–20 carbon atoms;

R^2 is $—CH_3$, $—NH_2$, —OX, —NHX, NX_2, $—CH_2X$, $—(CH_2)_nCH(X)_2$ or $—(CH_2)_nC(X)_3$, wherein n is 1–5 and X is an alkyl of 1–4 carbon atoms and ;

NR^3 is , $—N(Y)_3^+$ wherein Y is hydrogen or an alkyl of 1–4 carbon atoms, —NHCOZ wherein Z is an alkyl of 1–4 carbon atoms, or an amino acid residue,

in an amount sufficient to effect expression in said cells of a membrane transporter of said drug and thereby effect said inhibition or reversal.

5,571,688

METHOD OF DETECTING GENE EXPRESSION

John J. Mekalanos, 78 Fresh Pond La., Cambridge, Mass. 02138, and Andrew Camilli, 136 Boylston St., Apt. 2, Chestnut Hill, Mass. 02167

Continuation-in-part of Ser. No. 127,905, Sep. 28, 1993, which is a continuation-in-part of Ser. No. 58,299, May 6, 1993, Pat. No. 5,434,065. This application Feb. 27, 1995, Ser. No. 396,415

Int. Cl.[6] C12Q *1/02;1/04;1/68*

U.S. Cl. 435—29 **16 Claims**

1. A method of detecting induction of gene expression in a microorganism during in vivo infection of a host, comprising the steps of:

(a) constructing a reporter strain or pool of reporter strains of said microorganism containing an artificial cointegrate comprising a reporter gene flanked by, directly repeated recombination sequences and said microorganism further contains a coding sequence under the control of a promoter sequence of said microorganism, wherein said coding sequence produces a recombinase capable of resolving said cointegrate;

(b) infecting said host with said constructed reporter strain or pool of reporter strains;

(c) harvesting from said host the reporter strains that survive and propagate in said host after step (b); and

(d) detecting expression of said coding sequence by detecting resolution of said cointegrate thereby resulting in the loss of said reporter gene.

5,571,689

METHOD OF N-ACYLATING PEPTIDE AND PROTEINS WITH DIHETEROATOM SUBSTITUTED ANALOGS OF MYRISTIC ACID

Robert O. Heuckeroth, St. Louis; Steven P. Adams, St. Charles; Jeffrey I. Gordon, St. Louis, all of Mo., and George W. Gokel, Miami, Fla., assignors to Washington University, St. Louis, Mo.

Continuation of Ser. No. 57, Jan. 4, 1993, abandoned, which is a continuation of Ser. No. 750,669, Aug. 27, 1991, abandoned, which is a division of Ser. No. 478,298, Feb. 9, 1990, Pat. No. 5,082,967, which is a continuation-in-part of Ser. No. 208,192, Jun. 16, 1988, abandoned, and Ser. No. 402,094, Sep. 1, 1989, Pat. No. 5,073,571. This application Mar. 28, 1994, Ser. No. 218,399

Int. Cl.[6] C12P *21/06;7/00;11/00;* C12N *9/10;* C07K *1/13*

U.S. Cl. 435—68.1 **2 Claims**

1. A method of acylating a peptide or protein at an amino terminal glycine residue of said peptide or protein with an analog of myristic acid to form a N-myristoyl analog peptide or protein comprising reacting said peptide or protein with N-myristoyltransferase and an enzyme substrate consisting of the CoA ester of a diheteroatom-substituted fatty acid analog of myristic acid selected from the group consisting of C_{13} and C_{14} fatty acids, in which two non-adjacent methylene groups of said analogs which are normally in positions from 3 to 13 are replaced by oxygen or sulfur to reduce the hydrophobicity of said myristic acid analog.

5,571,690

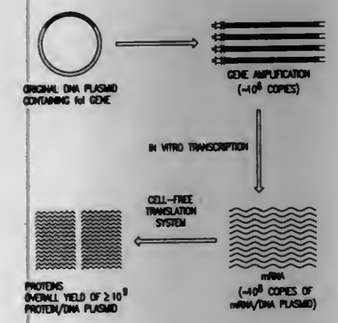
METHOD FOR THE CELL-FREE SYNTHESIS OF PROTEINS

Sidney M. Hecht, Charlottesville, Va., assignor to The University of Virginia Patents Foundation, Charlottesville, Va.

Filed May 8, 1991, Ser. No. 696,916

Int. Cl.[6] C12P *19/34*

U.S. Cl. 435—69.1 **11 Claims**



1. A method for producing a water-soluble protein, consisting essentially of:

(i) amplifying a DNA segment consisting essentially of a gene encoding said water-soluble protein under the transcriptional control of a phage promoter, by the polymerase chain reaction, in vitro, to obtain multiple copies of said DNA segment which contains said gene under transcriptional control of said promoter;

(ii) transcribing without purification said multiple copies of said DNA segment in vitro, to obtain multiple copies of a RNA segment which encodes said water-soluble protein; and

(iii) translating without purification said multiple copies of said RNA segment, in vitro, to obtain at least one billion copies of said water-soluble protein per original DNA segment.

5,571,691

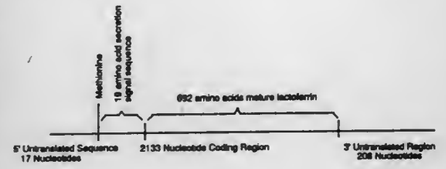
PRODUCTION OF RECOMBINANT LACTOFERRIN AND LACTOFERRIN POLYPEPTIDES USING CDNA SEQUENCES IN VARIOUS ORGANISMS

Oria M. Conneely, Houston, Tex.; Denis R. Headon, Galway, Ireland; Bert W. O'Malley, and Gregory S. May, Houston, both of Tex., assignors to Baylor College of Medicine, Houston, Tex.

Continuation-in-part of Ser. No. 873,304, Apr. 24, 1992, abandoned, Ser. No. 413,880, Sep. 28, 1989, abandoned, and Ser. No. 967,947, Oct. 27, 1992, abandoned, which is a continuation of Ser. No. 348,270, May 5, 1989, abandoned. This application Oct. 28, 1993, Ser. No. 145,681

Int. Cl.[6] C12N *15/12;15/79;15/85;* C07K *14/79*

U.S. Cl. 435—69.1 **16 Claims**



1. A DNA sequence encoding human lactoferrin protein, a substitution analog wherein said DNA sequence is a substitution analog of SEQ ID NO:1 or of a naturally-occurring allele of SEQ ID NO:1.

5,571,692

RETINOIC ACID RECEPTOR α, VECTORS AND CELLS COMPRISING THE SAME DNA ENCODING

Ronald M. Evans, La Jolla; Estelita S. Ong; Prudimar S. Segui, both of San Diego; Catherine C. Thompson, La Jolla; Kazuhiko Umesono, San Diego, all of Calif., and Vincent Giguere, Etobicoke, Canada, assignors to The Salk Institute For Biological Studies, La Jolla, Calif.

Continuation of Ser. No. 845,857, Mar. 3, 1992, which is a division of Ser. No. 546,570, Aug. 6, 1990, abandoned, which is a division of Ser. No. 276,536, Nov. 30, 1988, Pat. No. 4,981,784, which is a continuation-in-part of Ser. No. 128,331, Dec. 2, 1987, abandoned. This application Dec. 16, 1993, Ser. No. 168,686

Int. Cl.[6] C12N *15/12;15/63;5/10;1/21*

U.S. Cl. 435—69.1 **7 Claims**

1. A substantially pure DNA molecule selected from the group consisting of:

a DNA molecule which encodes a human retinoic acid receptor α protein, wherein said DNA has the sequence of DNA obtained from a human cDNA library, and wherein said DNA molecule hybridizes under stringent conditions with the complementary strand of the DNA molecule having the sequence shown in FIG. 1B-1, 1B-2, and 1B-3;

a DNA molecule which encodes a polypeptide fragment of said protein, wherein said fragment comprises at least the DNA-binding domain or the ligand-binding domain of said receptor protein; and

a DNA molecule degenerate with either of the preceding DNA molecules.

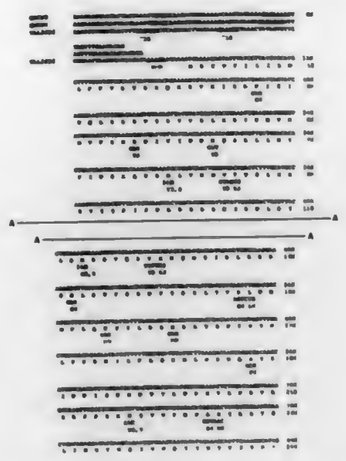
5,571,693
DNA SEQUENCES AND AMINO ACID SEQUENCES OF CLASS B BETA LACTAMASE ENZYMES FROM BACTEROIDES FRAGILIS

Beth A. Rasmussen, Nyack; Francis P. Tally, No. Tarrytown, both of N.Y., and Yakov Gluzman, Upper Saddle River, N.J., assignors to American Cyanamid Company, Wayne, N.J.

Continuation of Ser. No. 554,050, Jul. 16, 1990, abandoned. This application May 3, 1995, Ser. No. 433,129

Int. Cl.[6] C07H *21/04;* **C12N** *1/21;5/10;* **C12P** *21/00*

U.S. Cl. 435—69.1 **18 Claims**



1. An isolated DNA sequence encoding a Class B beta-lactamase enzyme of *Bacteroides fragilis*, wherein the DNA sequence is isolated from a *Bacteroides fragilis* selected from the group consisting of *Bacteroides fragilis* isolates TAL3636, QMCN3 and QMCN4 and comprises at least one of the nucleotide sequences shown in FIG. 6.

5,571,694
EXPRESSION OF TETANUS TOXIN FRAGMENT C IN YEAST

Andrew J. Makoff; Michael A. Romanos; Jeffrey J. Clare, and Neil F. Fairweather, all of Beckenham, England, assignors to Evans Medical Limited, Surrey, United Kingdom

Continuation of Ser. No. 618,312, Nov. 27, 1990, Pat. No. 5,389,540. This application Jul. 25, 1994, Ser. No. 280,228

Claims priority, application United Kingdom, Nov. 28, 1989, 8926832; Mar. 17, 1990, 9006097

Int. Cl.[6] A61K *39/08;* **C12N** *15/31;15/37;* **C12P** *21/02*

U.S. Cl. 435—69.3 **5 Claims**

1. An expression vector which incorporates DNA encoding tetanus toxin fragment C having the amino acid sequence shown in SEQ ID NO:2 and having an increased (G+C)-content relative to the wild-type DNA sequence shown in SEQ ID NO:1 in each of the following regions:

(i) from nucleotide 510 to nucleotide 710,

(ii) from nucleotide 650 to nucleotide 850,

(iii) from nucleotide 800 to nucleotide 1100,

(vi) from nucleotide 900 to nucleotide 1200 and,

(v) from nucleotide 1100 to nucleotide 1356,

the numbers corresponding to those set forth in the sequence of SEQ ID NO:1 and SEQ ID NO:3, so as to allow the production of complete mRNA transcripts in yeast, which vector thereby expresses said fragment C in yeast, wherein said DNA has the sequence shown in SEQ ID NO:3 in each of said regions (i)–(v).

5,571,695
HUMAN NEUROPEPTIDE Y-Y1 RECEPTOR

Lisa Selbie, McMahons Point; Herbert Herzog, New South Wales, and John Shine, Woolwich, all of Australia, assignors to Garvan Institute of Medical Research, Darlinghurst, Australia

PCT No. PCT/AU92/00600, § 371 Date May 26, 1994, § 102(e) Date May 26, 1994, PCT Pub. No. WO93/09227, PCT Pub. Date May 13, 1993

PCT Filed Nov. 6, 1992, Ser. No. 232,144

Claims priority, application Australia, Nov. 6, 1991, PK 9336; Jun. 23, 1992, PL 3131

Int. Cl.[6] C12N *15/12*

U.S. Cl. 435—69.1 **10 Claims**

1. A cDNA molecule encoding the human NPY-Y 1 receptor, the cDNA molecule encoding the amino acid sequence shown in SEQ ID NO: 4.

5,571,696
NOVEL RECEPTORS

Ronald M. Evans, La Jolla; David J. Mangelsdorf, San Diego; Estelita S. Ong, San Diego; Anthony E. Oro, San Diego, all of Calif.; Uwe K. Borgmeyer, Hamburg, Germany; Vincent Giguere, Etobicoke, Canada, and Tso-Pang Yao, San Diego, Calif., assignors to The Salk Institute for Biological Studies, La Jolla, Calif.

Continuation of Ser. No. 761,068, Sep. 17, 1991, abandoned. This application Nov. 2, 1994, Ser. No. 333,358

Int. Cl.[6] C12P *21/06;* **C12N** *5/00;15/00;* **C07H** *17/00*

U.S. Cl. 435—69.1 **14 Claims**

1. DNA encoding a polypeptide characterized by having a DNA binding domain comprising about 66 amino acids with 9 Cys residues, wherein said DNA binding domain is further characterized by the following amino acid sequence identity, relative to the DNA binding domains of hRAR-alpha, hTR-beta, hGR and hRXR-alpha, respectively:

A.

(i) about 68% amino acid sequence identity with the DNA binding domain of hRAR-alpha;

(ii) about 59% amino acid sequence identity with the DNA binding domain of hTR-beta;

(iii) about 45% amino acid sequence identity with the DNA binding domain of hGR; and

(iv) about 65% amino acid sequence identity with the DNA binding domain of hRXR-alpha; or

B.

(i) about 55% amino acid sequence identity with the DNA binding domain of hRAR-alpha;

(ii) about 56% amino acid sequence identity with the DNA binding domain of hTR-beta;

(iii) about 50% amino acid sequence identity with the DNA binding domain of hGR; and

(iv) about 52% amino acid sequence identity with the DNA binding domain of hRXR-alpha; or

C.

(i) about 62% amino acid sequence identity with the DNA binding domain of hRAR-alpha;

(ii) about 58% amino acid sequence identity with the DNA binding domain of hTR-beta;

(iii) about 48% amino acid sequence identity with the DNA binding domain of hGR; and

(iv) about 62% amino acid sequence identity with the DNA binding domain of hRXR-alpha; or

D.

(i) about 59% amino acid sequence identity with the DNA binding domain of hRAR-alpha;

(ii) about 52% amino acid sequence identity with the DNA binding domain of hTR-beta;

(iii) about 44% amino acid sequence identity with the DNA binding domain of hGR; and

(iv) about 61% amino acid sequence identity with the DNA binding domain of hRXR-alpha; or

E.

(i) about 59% amino acid sequence identity with the DNA binding domain of hRAR-alpha;

(ii) about 55% amino acid sequence identity with the DNA binding domain of hTR-beta;

(iii) about 50% amino acid sequence identity with the DNA binding domain of hGR; and

(iv) about 65amino acid sequence identity with the DNA binding domain of hRXR-alpha.

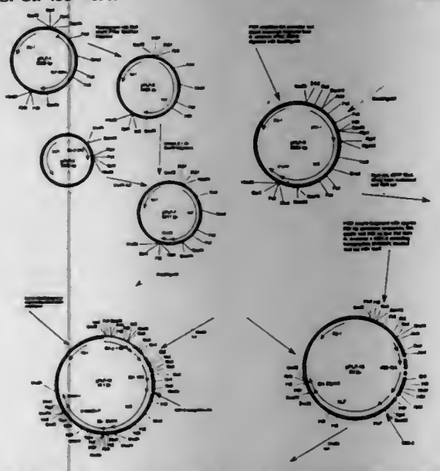
5,571,697
EXPRESSION OF PROCESSED RECOMBINANT LACTOFERRIN AND LACTOFERRIN POLYPEPTIDE FRAGMENTS FROM A FUSION PRODUCT IN ASPERGILLUS

Orla M. Conneely, Houston, Tex.; Denis R. Headon, Galway, Ireland, and Bert W. O'Malley, Houston, Tex., assignors to Baylor College of Medicine Texas Medical Center, Houston, Tex.

Continuation-in-part of Ser. No. 145,681, Oct. 28, 1993, and a continuation of Ser. No. 250,308, May 27, 1994, which is a continuation-in-part of Ser. No. 873,304, Apr. 24, 1992, abandoned, said Ser. No. 145,681is a continuation-in-part of Ser. No. 967,947, Oct. 27, 1992, abandoned, which is a continuation of Ser. No. 348,270, May 5, 1989, abandoned. This application Nov. 2, 1994, Ser. No. 303,009

Int. Cl.[6] C07K *14/79;* **C12N** *15/12;15/62;15/80*

U.S. Cl. 435—69.7 **74 Claims**



36. A process for producing lactoferrin which comprises culturing a transformed Aspergillus fungal cell containing a recombinant plasmid, wherein said plasmid comprises the following components operably linked from 5' to 3':

(a) a promoter;

(b) a signal sequence;

(c) a sequence encoding an amino terminal portion of a highly expressed endogenous gene the product of which is secreted by Aspergillus cells; and,

(d) a nucleotide sequence selected from the group consisting of a nucleotide sequence encoding a mature, native, lactoferrin, a nucleotide sequence encoding an iron-binding lobe of a native lactoferrin and a nucleotide sequence encoding an antimicrobial peptide of a native lactoferrin;

wherein said transformed Aspergillus fungal cells are cultured in a suitable nutrient medium until the mature, native, lactoferrin, the iron-binding lobe of a native lactoferrin, or the antimicrobial peptide of a native lactoferrin, is produced as a fusion product and then processed via an endogenous proteolytic enzyme specific for the linker sequence, wherein the processed mature, native, lactoferrin, the iron-binding lobe of a native lactoferrin, or the antimicrobial peptide of a native lactoferrin is secreted into the nutrient medium and isolated therefrom.

5,571,698
DIRECTED EVOLUTION OF NOVEL BINDING PROTEINS

Robert C. Ladner, Ijamsville, Md.; Sonia K. Guterman, Belmont, Mass.; Bruce L. Roberts, Milford, Mass.; William Markland, Milford, Mass.; Arthur C. Ley, Newton, and Rachel B. Kent, Boxborough, all of Mass., assignors to Protein Engineering Corporation, Cambridge, Mass.

Continuation of Ser. No. 664,989, Mar. 1, 1991, Pat. No. 5,223,409, which is a continuation-in-part of Ser. No. 487,063, Mar. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 240,160, Sep. 2, 1988, abandoned. This application Jun. 18, 1993, Ser. No. 57,667

The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.

Int. Cl.[6] C12N *25/62*

U.S. Cl. 435—69.7 **83 Claims**

1. A method of obtaining a nucleic acid encoding a binding protein having a proteinaceous binding domain that binds a predetermined target material comprising:

a) preparing a variegated population of amplifiable genetic packages, said genetic packages being selected from the group consisting of cells, spores and viruses, each said genetic package being genetically alterable and having an outer surface including a genetically determined outer surface protein, each package including a first nucleic acid construct coding for a chimeric potential binding protein, each said chimeric protein comprising and each said construct comprising nucleic acid encoding (i) a potential binding domain which is a mutant of a predetermined domain of a predetermined parental protein other than a single chain antibody, and (ii) an outer surface transport signal for obtaining the display of the potential binding domain on the outer surface of the genetic package, the expression of which construct results in the display of said chimeric potential binding protein and its potential binding domain on the outer surface of said genetic package; and wherein said variegated population of genetic packages collectively display a plurality of different potential binding domains, the differentiation among said plurality of different potential binding domains occurring through the at least partially random variation of one or more predetermined amino acid positions of said parental binding domain to randomly obtain at each said position an amino acid belonging to a predetermined set of two or more amino acids; the amino acids of said set occurring at said position in statistically predetermined expected proportions, said genetic packages being amplifiable in cell culture and separable on the basis of the potential binding domain displayed thereon,

b) causing the expression of said chimeric potential binding proteins and the display of said potential binding domains on the outer surface of said packages;

c) contacting said packages with the predetermined target material such that said potential binding domains and the target material may interact;

d) separating packages displaying a potential binding domain that binds the target material from packages that do not so bind, and

e) recovering at least one package displaying on its outer surface a chimeric binding protein comprising a successful binding domain (SBD) which bound said target, said package comprising nucleic acid encoding said successful binding domain, and amplifying said SBD-encoding nucleic acid in vivo or in vitro,

with the proviso that when the target is an antibody, the predetermined parental protein is not an antigen specifically bound by that antibody.

5,571,699

Patent Not Issued For This Number

5,571,700

PROCESS FOR PREPARING MELANIN PIGMENTS BY BIOCONVERSION AND USE OF THE PIGMENTS OBTAINED IN COSMETICS

Alex Junino, Livry-Gargan; Pascal Hilaire, Tours, and Richard Martin, Rochecorbon, all of France, assignors to L'Oreal, Paris, France

PCT No. PCT/FR93/01138, § 371 Date Jul. 18, 1994, § 102(e) Date Jul. 18, 1994, PCT Pub. No. WO94/12653, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 19, 1993, Ser. No. 256,576

Claims priority, application France, Nov. 20, 1992, 92 14000

Int. Cl.[6] C12P *21/00;17/00;* **A61K** *7/00*

U.S. Cl. 435—70.1 **9 Claims**

1. Process for preparing a melanin pigment by enzymatic bioconversion, employing a melanin precursor substrate and plant cells, comprising:

a) separating poppy (*Papaver somniferum*) plant cells previously cultured from their culture medium and subculturing the separated poppy plant cells in a culture medium at a concentration ranging from 10 to 100 g/l,

b) at least partially grinding the cells before or at the end of the latency time,

c) bringing the at least partially ground cells into contact, in a bioconversion medium, with a melanin precursor substrate selected from the group consisting of indole, indoline, dihydroxyphenylalanine, tyramine and tyrosine, and

d) recovering precipitated melanin pigment.

5,571,701

ANTIBIOTIC, BALHIMYCIN, A PROCESS FOR ITS PRODUCTION AND ITS USE AS PHARMACEUTICAL

Suresh R. Nadkarni; Sugata Chatterjee; Mahesh V. Patel, all of Bombay; Kalvanapuram R. Desikan, Mulund; Erra K. S. Vijayakumar; Bimal N. Ganguli, both of Bombay, all of Ind.; Jürgen Blumbach, Niedernhausen, Germany; Hans-Wolfram Fehlhaber, Idstein/Taunus, Germany, and Herbert Kogler, Kelkheim/Taunus, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

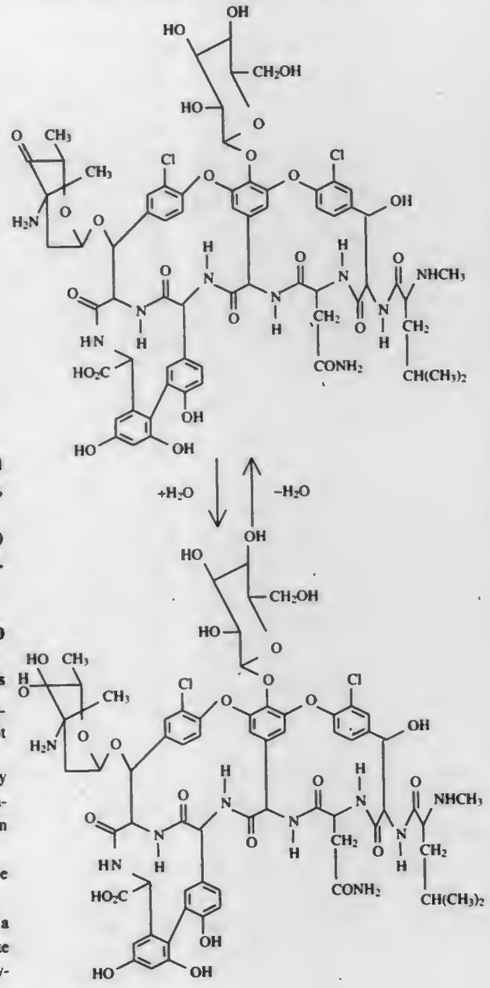
Division of Ser. No. 996,936, Dec. 30, 1992, Pat. No. 5,451,570, which is a continuation-in-part of Ser. No. 735,891, Jul. 25, 1991, abandoned. This application May 24, 1995, Ser. No. 449,543

Claims priority, application European Pat. Off., Jul. 27, 1990, 90114471; Oct. 17, 1990, 90119883

Int. Cl.[6] C12P *21/04;* **C12N** *1/20;* **C07K** *9/00;* **A61K** *38/14*

U.S. Cl. 435—71.3 **10 Claims**

1. A process for the preparation of Balhimycin



which comprises

fermentation of Actinomycete species Y-86,21022 (DSM 5908), and the mutants thereof, cultivated under aerobic conditions in a nutrient medium containing sources of carbon and of nitrogen, inorganic nutrient salts and trace elements, and isolation and purification of the compound from the culture broth.

5,571,702

AMPLIFICATION METHOD FOR DETECTION OF HUMAN PF4A RECEPTORS

James Lee, San Bruno; William E. Holmes, Pacifica, and William I. Wood, San Mateo, all of Calif., assignors to Genentech, Inc., South Francisco, Calif.

Division of Ser. No. 234,494, Apr. 28, 1994, abandoned, which is a continuation of Ser. No. 677,211, Mar. 29, 1991, abandoned. This application Mar. 24, 1995, Ser. No. 410,455

Int. Cl.[6] C12P *19/34;* **C12Q** *1/68;* **C07H** *21/04*

U.S. Cl. 435—91.2 **1 Claim**

1. A method of amplifying a single stranded nucleic acid in a test sample, comprising the steps of

(a) selecting an oligonucleotide primer having a 3' terminus consisting of at least 20 contiguous nucleotides selected from SEQ ID NO:1 or at least 20 contiguous nucleotides exactly complementary to SEQ ID NO:1, wherein the oligonucleotide primer is neither identical nor exactly complementary to the nucleic acid sequence encoding the rabbit fMLP receptor,

(b) hybridizing the oligonucleotide primer to the single stranded nucleic acid in the sample, and

(c) performing a nucleic acid polymerase reaction wherein the hybridized oligonucleotide primer primes the synthesis of a second strand complementary to the single stranded nucleic acid form an amplified nucleic acid.

5,571,703

MUNICIPAL SOLID WASTE PROCESSING FACILITY AND COMMERCIAL ETHANOL PRODUCTION PROCESS

Rodger Chieffalo, Birmingham, Ala., and George R. Lightsey, Starkville, Miss., assignors to Controlled Environmental Systems Corporation, Birmingham, Ala.

Continuation-in-part of Ser. No. 351,017, Dec. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 291,045, Aug. 12, 1994, Pat. No. 5,407,817, which is a continuation of Ser. No. 172,202, Dec. 23, 1993. This application Apr. 14, 1995, Ser. No. 422,585

Int. Cl.[6] C12P *19/02;7/10*

U.S. Cl. 435—105 **27 Claims**

1. A method for producing ethanol from municipal solid waste, comprising the following steps:

(a) obtaining municipal solid waste;

(b) removing tires, bulk ferrous and non-ferrous metals, plastic, glass and rubber from the waste to give a cellulosic component;

(c) shredding the cellulosic component obtained in step (b);

(d) treating the shredded cellulosic component with dilute sulfuric acid at a temperature of 40° to 100° C. to solubilize substantially the remaining heavy metals and give a soluble component and an insoluble component;

(e) removing the soluble component obtained in step (d) from the insoluble component;

(f) drying the insoluble component obtained in step (e);

(g) treating the dried insoluble component obtained in step (f) with about 1:1 concentrated sulfuric acid to insoluble component, by weight, to give a partially hydrolyzed mixture;

(h) diluting the partially hydrolyzed mixture obtained in step (g) with water at a temperature of about 80° to 100° C.;

(i) agitating the diluted mixture obtained in step (h) at about 80° to about 100° C. to give a digested material;

(j) removing the solids from the digested mixture obtained in step (i) to give a filtrate;

(k) separating the filtrate into an acid containing solution and a sugar containing solution;

(l) concentrating the sugar containing solution to about 12–14% sugar;

(m) adjusting the pH of the concentrated sugar containing solution obtained in step (l) to about 6;

(n) fermenting with yeast the solution obtained in step (m) to give a beer; and

(o) recovering the ethanol from the beer.

5,571,704

PROCESS FOR THE PREPARATION OF INTERMEDIATES USEFUL FOR THE SYNTHESIS OF BENZOTHIAZEPINES

Luca Ghirotto, Tortona; Stefano Servi; Claudio Fuganti, both of Milan; Angelo Gentile, Cernusco Sul Naviglio, and Claudió Giordano, Monza, all of Italy, assignors to Zambon Group S.p.A., Vicenza, Italy

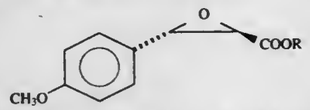
Division of Ser. No. 197,544, Feb. 17, 1994, which is a continuation of Ser. No. 698,853, May 13, 1991. This application Mar. 14, 1995, Ser. No. 404,284

Claims priority, application Italy, May 17, 1990, 20348/90

Int. Cl.[6] C12P *17/02;* **C12N** *9/18;9/20*

U.S. Cl. 435—123 **8 Claims**

1. A process for the preparation of esters of (2R,3S)-3-(4-methoxyphenyl)-glycidic acid of the formula



wherein R is a linear or branched C_1–C_8 alkyl group; a C_5–C_6 cycloaklyl group or a 2.2-dimethyl-1,3-dioxolane-4-methyl group; which consists of:

subjecting an enantiomeric mixture of (2R,3S)-3-(4-methoxyphenyl)-glycidic acid methyl ester or ethyl ester (I, R=CH_3, C_2H_5) and its (2S,3R)-enantiomer (ent-I) to an enantioselective enzymatic transesterification, in the presence of a lipase of animal or microbial origin as the enzyme and in the presence of an alcohol which is different from the alcobol esterifying compound I and ent-I and which is selected from the group consisting of a linear or branched C_2–C_8 aliphatic alcohol, a C_5–C_6 cycloaliphatic alcobol and 2,2-dimethyl-1,3-dioxolane-4-methanol, optionally in the presence of a suitable solvent or mixture of solvents; and

separating the transesterified ester from the untransesterified ester.

5,571,705

BIOFILTER FOR BIOREMEDIATION OF COMPOUND

George E. Pierce, Lebanon, N.J., assignor to Cytec Technology Corp., Stamford, Conn.

Division of Ser. No. 357,821, Dec. 16, 1994. This application May 23, 1995, Ser. No. 448,279

Int. Cl.[6] C12N *11/00;1/26*

U.S. Cl. 435—174 **8 Claims**

1. A biofilter to degrade an organic compound comprising an apparatus having a microorganism immobilized on a solid support, said microorganism selected from the group consisting of microorganisms having ATCC Accession Nos. 55641, 55642, 55643, 55644, 55645, 55646, 55647, 55648 and 55649.

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5,571,706

PLANT VIRUS RESISTANCE GENE AND METHODS

Barbara J. Baker, Richmond, and Steven A. Whitham, Albany, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C., and The Regents of the University of California, Oakland, Calif.

Filed Jun. 17, 1994, Ser. No. 261,663
Int. Cl.[6] C12N *15/00;5/14;* A01H *1/04;* C07H *17/00*
U.S. Cl. 435—172.3 32 Claims

23. A method of using a nucleic molecule comprising a nucleic acid portion which encodes an N gene protein, said N gene protein-encoding portion being derived from a plant of the family Solanaceae and said N gene protein-encoding portion having at least about 70% nucleotide sequence identity with SEQ ID NO:3 from about nucleotide **60** through nucleotide **3494** and wherein said N gene protein has the function of mediating resistance to tobacco mosaic virus in a plant synthesizing said N gene protein to render a transgenic plant containing and expressing said N gene protein resistant to tobacco mosaic virus, said method comprising the steps of:

(a) genetically engineering plant tissue to contain and express said N gene protein coding sequence; and

(b) regenerating the genetically engineered plant tissue of step (a) to form plants, whereby a plant containing and expressing said sequence is rendered resistant to tobacco mosaic virus.

5,571,707

Patent Not Issued For This Number

5,571,708

THROMBIN-ACTIVATABLE PLASMINOGEN ACTIVATOR

Wen-Pin Yang, Lawrenceville; Gary R. Matsueda, Princeton, and Shyh-Yu Shaw, Plainsboro, all of N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Apr. 19, 1993, Ser. No. 49,195
Int. Cl.[6] C12P *21/08;* A61K *38/48;* C07K *16/00;* C07H *19/00*
U.S. Cl. 435—215 5 Claims

1. A chimeric immunoglobulin molecule comprising

(a) an antibody variable region having a fibrin-specific antigen binding site and

(b) a single chain urokinase region having a thrombin activatable site but not a plasmin activatable site.

5,571,709

MODIFIED BACULOVIRUS AND BACULOVIRUS EXPRESSION VECTORS

Gérard Devauchelle; Martine Cerutti, both of Saint-Christol-Les-Ales, and Claire Cahoreau, Nimes, all of France, assignors to Institut National de la Recherche Agronomique, Paris, France

PCT No. PCT/FR91/00588, § 371 Date Jan. 15, 1993, § 102(e) Date Jan. 15, 1993, PCT Pub. No. WO92/01801, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 17, 1991, Ser. No. 966,197
Claims priority, application France, Jul. 18, 1990, 90 09143
Int. Cl.[6] C12N *15/86;7/00*
U.S. Cl. 435—235.1 12 Claims

1. An expression vector comprising a modified nuclear polyhedrosis virus (NPV) baculovirus in which the promoter of the P10 or polyhedrin gene present in the genome of the wild-type is inactive, and wherein a nucleotide sequence placed under control of the promoter which is active in the said modified NPV is different from the corresponding nucleotide sequence of the wild-type NPV.

5,571,710

CDNA CODING FOR CARCINOEMBRYONIC ANTIGEN

Thomas R. Barnett, East Haven; James J. Elting, Madison, and Michael E. Kamarck, Bethany, all of Conn., assignors to Bayer Corporation, Tarrytown, N.Y.

Division of Ser. No. 876,821, Apr. 29, 1992, Pat. No. 5,274,087, which is a continuation of Ser. No. 231,741, Aug. 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 60,031, Jun. 19, 1987, abandoned, which is a continuation-in-part of Ser. No. 16,683, Feb. 19, 1987, abandoned, which is a continuation-in-part of Ser. No. 896,361, Aug. 13, 1986, abandoned. This application Dec. 20, 1993, Ser. No. 170,134
Int. Cl.[6] C12N *5/06;15/00;15/12;* C07H *21/04*
U.S. Cl. 435—240.1 6 Claims

1. A nucleic acid sequence isolated from a cell comprising a nucleic acid sequence encoding a CEA family member polypeptide, said isolated nucleic acid sequence hybridizing to the following nucleic acid sequence:

```
GGGGTTTACA  CAACCACCAC                    40
                      CCCATCAAAC  CCTTCATCAC
CAGCAACAAC  TCCAACCCCG                    80
                      TGGAGGATGA  GGATGCTGTA
GCCTTAACCT  GTGAACCTCA                   120
                      GATTCAGAAC  ACAACCTACC
TGTGGTGGGT  AAATAATCAG                   160
                      AGCCTCCCGG  TCAGTCCCAG
GCTGCAGCTG  TCCAATGACA                   200
                      ACAGGACCCT  CACTCTACTC
AGTGTCACAA  GGAATGATGT                   240
                      AGGACCCTAT  GAGTGTGGAA
TCCAGAACGA  ATTAAGTGTT                   280
                      GACCACAGCG  ACCCAGTCAT
CCTGAATGTC  CTCTATGGCC                   320
                      CAGACGACCC  CACCATTTCC
CCCTCATACA  CCTATTACCG                   360
                      TCCAGGGGTG  AACCTCAGCC
TCTCCTGCCA  TGCAGCCTCT                   400
                      AACCCACCTG  CACAGTATTC
TTGGCTGATT  GATGGGAACA                   440
                      TCCAGCAACA  CACACAAGAG
CTCTTTATCT  CCAACATCAC                   480
                      TGAGAAGAAC  AGCGGACTCT
ATACCTGCCA  GGCCAATAAC                   520
                      TCAGCCAGTG  GCCACAGCAG
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-continued

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GACTACAGTC  AAGACAATCA                   560
                      CAGTCTCTGC  GGACGTGCCC
AAGCCCTCCA  TCTCCAGCAA                   600
                      CAACTCCAAA  CCCGTGGAGG
ACAAGGATGC  TGTGGCCTTC                   640
                      CACTGTGAAC  CTGAGGCTCA
GAACACAACC  TACCTGTGGT                   680
                      GGGTAAATGG  TCAGAGCCTC
CCAGTCAGTC  CCAGGCTGCA                   720
                      GCTGTCCAAT  GGCAACAGGA
CCCTCACTCT  ATTCAATGTC                   760
                      ACAAGAAATG  ACGCAAGAGC
CTATGTATGT  GGAATCCAGA                   800
                      ACTCAGTGAG  TGCAAACCGC
AGTGACCCAG  TCACCCTGGA                   840
                      TGTCCTCTAT  GGGCCGGACA
CCCCCATCAT  TTCCCCCCCC  CC               862;
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under the following conditions:

(a) hybridizing in 2XSSPE 5X Denhardt's 50 μg/ml denatured salmon sperm DNA at 68° C. for 18 hours, followed by

(b) washing in 0.2X SSPE, 0.25% SDS at 68° C. for 2 hours;

and said CEA family member polypeptide binding an antibody raised against human CEA;

or a chemically synthesized nucleic acid isolated from a cell sequence identical to said nucleic acid.

5,571,711

ISOLATED NUCLEIC ACID MOLECULES CODING FOR BAGE TUMOR REJECTION ANTIGEN PRECURSORS

Pierre van der Bruggen; Thierry Boon-Falleur; Pierre Coulie, and Jean-Christophe Renauld, all of Brussels, Belgium, assignors to Ludwig Institute for Cancer Research, New York, N.Y.

Filed Jun. 17, 1993, Ser. No. 79,110
Int. Cl.[6] C12P *19/34;21/02;* C12N *15/00;5/00;1/21;1/15;1/19*
U.S. Cl. 435—240.2 11 Claims

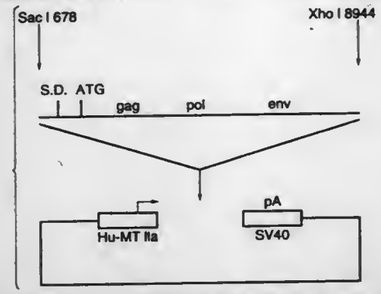
1. An isolated nucleic acid molecule which codes for a BAGE, tumor rejection antigen precursor consisting of the nucleotide sequence set forth in SEQ ID NO: 1.

5,571,712

NON-INFECTIOUS, REPLICATION DEFECTIVE, IMMUNOGENIC HIV RETROVIRUS-LIKE PARTICLES PRODUCED FROM A RECOMBINANT HIV GENOME DEVOID OF LONG TERMINAL REPEATS

Joel Haynes, Middleton, Wis.; Michel H. Klein, Willowdale, Canada; Benjamin Rovinski, Thornhill, Canada, and Shi X. Cao, Etobicoke, Canada, assignors to Connaught Laboratories Limited, Willowdale, Canada

Division of Ser. No. 839,751, Jun. 15, 1992, Pat. No. 5,439,809. This application May 6, 1994, Ser. No. 239,427
Claims priority, application United Kingdom, Oct. 13, 1989, 8912123
Int. Cl.[6] C12P *21/06;* A61K *39/21;* C07H *21/04*
U.S. Cl. 435—240.2 17 Claims



1. A DNA molecule comprising an HIV genome devoid of long terminal repeats and a heterologous promoter operatively connected to said HIV genome for expression of said HIV genome in mammalian cells to produce non-infectious, non-replicating and immunogenic HIV retrovirus-like particles.

5,571,713

THERAPEUTIC TREATMENT FOR INHIBITING VASCULAR RESTENOSIS

Leon R. Lyle, Webster Groves, Mo.; Steven L. Kunkel, and Robert M. Strieter, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 965,678, Oct. 22, 1992, abandoned. This application May 27, 1994, Ser. No. 250,958
Int. Cl.[6] C12N *5/10;5/08;* C07H *21/04;21/02*
U.S. Cl. 435—240.2 7 Claims

1. A composition comprising an antisense MCP-1 oligonucleotide selected from the group consisting of 5'-ACTTCTGCTTGGGGTCAGCACAGATCTCC-3' (SEQ ID NO:8) and 5'-GCTTCAGTTTGAGAATTGGATGTTTCTGG-3' (SEQ ID NO:9), which composition inhibits MCP-1 production by human cells in vitro, said cells being selected from the group consisting of human mononuclear cells and human smooth muscle cells.

5,571,714

MONOCLONAL ANTIBODIES WHICH BIND BOTH TRANSFORMING GROWTH FACTORS β1 AND β2 AND METHODS OF USE

James R. Dasch, Palo Alto; Doran R. Pace, III, San Francisco, and Wendy O. Waegell, Mountain View, all of Calif., assignors to Celtrix Pharmaceuticals, Inc., Santa Clara, Calif.

Continuation of Ser. No. 288,432, Dec. 22, 1988, abandoned. This application Sep. 6, 1991, Ser. No. 759,109
Int. Cl.[6] C12N *5/20;* C07K *16/22;* C12P *21/08;* A61K *39/395*
U.S. Cl. 435—240.27 9 Claims

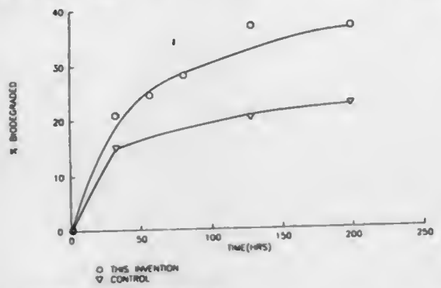
1. A monoclonal antibody which neutralizes transforming growth factor-β1 and which neutralizes transforming growth factor-β2.

5,571,715

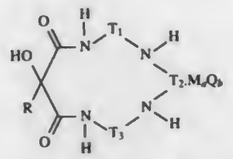
SURFACE ACTIVE METAL CHELATED NUTRIENTS FOR BIOREMEDIATION OF HYDROCARBON CONTAMINATED SOILS AND WATER

Ramesh Varadaraj, Flemington; Stanley J. Brois, Westfield; Jan Bock, Warren, and Cornelius H. Brons, Washington, all of N.J., assignors to Exxon Research and Engineering Company, Florsham Park, N.J.

Filed Jan. 20, 1995, Ser. No. 375,748
Int. Cl.[6] C12N *1/38*
U.S. Cl. 435—244 5 Claims



1. A composition comprising:
a compound selected from the group consisting of metal chelated macrocyclic amido amines, and mixtures thereof represented by the formula:



wherein R is selected from linear and branched alkanes of from about 8 to about 22 carbon atoms, linear and branched alkenes having from about 4 to about 22 carbon atoms; T_1, and T_2 and T_3 are independently selected from ethylene, trimethylene, $CH_2CH_2(NHCH2CH2)_x$; x is an integer of from 1 to 10; M_aQ_b is a metal compound wherein M is a cation selected from Fe, Co, Ni, Cu, Zn and Mn cations; Q is an anion selected from nitrate, phosphate; and a and b are integers from 1 to 3 necessary to satisfy the valence requirements of M and Q; a phosphorous source; and, a diluent and wherein the metal chelated macrocyclic amido amine and the phosphorous source are combined to provide a N:P ratio of from about 10:1 to 10:5.

5,571,716

GRAM-NEGATIVE ALKALIPHILIC MICROORGANISMS

Brian E. Jones, VA Leidschendam, Netherlands; William D. Grant, Leicester, and Nadine C. Collins, Surrey, both of United Kingdom, assignors to Gist-brocades, N.V., Delft, Netherlands

Continuation-in-part of Ser. No. 903,786, Jun. 24, 1992, Pat. No. 5,401,657, which is a continuation-in-part of Ser. No. 719,307, Jun. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 562,863, Aug. 6, 1990, abandoned. This application Apr. 8, 1993, Ser. No. 46,878
Int. Cl.[6] C12P *1/04;* C12N *1/20;9/20*
U.S. Cl. 435—252.1 4 Claims

I. A pure culture consisting of a single strain of bacteria useful for the production of alkali-tolerant enzymes wherein the strain is aerobic, Gram-negative, and rod-shaped, and is an obligate alkaliphile that has the following characteristics:
a) forms cream-colored, circular colonies;
b) grows optimally between pH9 and pH10;
c) gives a positive response to the following tests:
1) leucine arylamidase
2) Valine arylamidase
3) Phosphohydrolase
4) Polymixin;
d) gives a negative response to the following tests:
1) N-acetylglucosamine
2) Maltose
3) Propionate
4) Caprate
5) Valerate
6) Citrate
7) Histidine
8) Glycogen
9) 4-hydroxybenzoate
10) α-galactosidase.

5,571,717

BIOLOGICALLY PURE CULTURE OF *LYOPHYLLUM ULMARIUM*

Yukita Kawano; Susumu Matsui, and Hideo Morita, all of Otsu, Japan, assignors to Takara Shuzo Co., Ltd., Kyoto, Japan

Filed Aug. 8, 1994, Ser. No. 286,255
Claims priority, application Japan, Aug. 16, 1993, 5-222323
Int. Cl.[6] C12N *1/14;1/16;1/18;* A01G *1/04*
U.S. Cl. 435—254.1 1 Claim

I. A biologically pure culture of *Lyophyllum ulmarium* selected from the group consisting of *Lyophyllum ulmarium* K-8101, *Lyophyllum ulmarium* K-8103 and *Lyophyllum ulmarium* K-8104.

5,571,718

CLONING AND EXPRESSION OF SOLUBLE TRUNCATED VARIANTS OF BORRELIA OSPA, OSPB AND VMP7

John J. Dunn, Bellport, N.Y., and Alan G. Barbour, San Antonio, Tex., assignors to Associated Universities, Inc., Washington, D.C.

Continuation-in-part of Ser. No. 632,072, Dec. 21, 1990, abandoned. This application Sep. 8, 1992, Ser. No. 941,523
Int. Cl.[6] C12N *1/20;15/70;* C07K *13/00;* C07H *21/04*
U.S. Cl. 435—252.3 8 Claims

1. A recombinant soluble variant of a Borrelia outer surface lipoprotein wherein the amino acid sequence is SEQ ID NO: 4, except that the penultimate amino terminal amino acid residue is replaced with one selected from the group consisting of: glycine, proline, serine, threonine and valine.

5,571,719

CATALASE, ITS PRODUCTION AND USE

Bjørn E. Christensen, Holte; Niels K. Lange, Søborg, both of Denmark, and Kosaku Daimon, Funabashi, Japan, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK92/00098, § 371 Date Sep. 15, 1993, § 102(e) Date Sep. 15, 1993, PCT Pub. No. WO92/17571, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 27, 1992, Ser. No. 117,201
Claims priority, application European Pat. Off., Mar. 27, 1991, 91610024; Jun. 4, 1991, 91610050
Int. Cl.[6] D06M *16/00*
U.S. Cl. 435—264 15 Claims

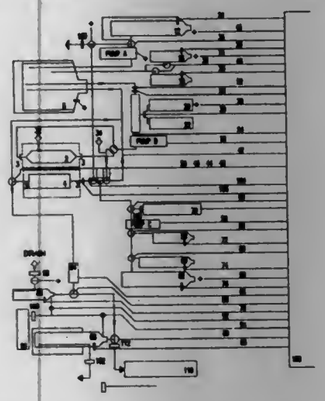
I. An isolated catalase obtained from a strain of *Scytalidium thermophilum* or *Humicola insolens* which retains at least 75% residual activity after 20 minutes at 70° C. and a pH the range of 9.0–10.5 in the presence of 40 mM polyvinyl pyrrolidone.

5,571,720

INTEGRATED CELL CULTURE PROTEIN PURIFICATION SYSTEM FOR THE AUTOMATED PRODUCTION AND PURIFICATION OF PROTEINS

Peter Grandics, and Susan Szathmary, both of P.O. Box 1924, Arcadia, Calif. 91006

Continuation of Ser. No. 35,909, Mar. 23, 1992, abandoned, which is a continuation of Ser. No. 389,606, Aug. 4, 1989, abandoned. This application May 6, 1994, Ser. No. 238,807
Int. Cl.[6] C12M *3/04*
U.S. Cl. 435—286.1 46 Claims



1. An integrated cell culture and purification system for producing a purified cell culture product, consisting essentially of:
a. a cell culture subunit for culturing cells;
b. a purification subunit linked to the cell culture subunit adapted to remove said product from a culture fluid in which the cells are cultured by purification means comprising a solid-phase medium; and
c. means for circulating said culture fluid from said cell culture subunit to said purification subunit, said cell culture subunit, said purification subunit and said means for circulating being integrated in a single unit and contained in a sterile environment to purify said product in a sterile environment without removing said culture fluid from said integrated cell culture and purification system; said purification subunit separating said product from other molecules of substantially equivalent molecular weight by specific interactions and removing one immunoglobulin molecule from another immunoglobulin molecule of different binding specificity.

5,571,721

IMPROVED BIOLOGICAL CULTURE SLIDE AND METHOD OF MAKING SAME

Bruce R. Turner, Fremont, N.H., assignor to Erie Scientific Company, Portsmith, N.H.

Filed May 5, 1994, Ser. No. 238,312
Int. Cl.[6] C12M *1/00*
U.S. Cl. 435—305.1 32 Claims

I. A culture slide kit, comprising:
(a) a slide having an upper surface;
(b) a compartment having sidewalls with an upper extremity and a lower margin, said compartment adapted to be operatively positioned on said upper surface of said slide; and
(c) a bonding element adapted to seal and releasably bond said upper surface of said slide to said lower margin, said bonding element including an acrylic adhesive and remaining bonded to said lower margin when said compartment and slide are physically separated, leaving said upper surface of said slide substantially free of said bonding element following said separation.



5,571,722

PLASMID FOR DETECTING MERCURY IN WATER

Reinhardt A. Rosson, Manitowoc, Wis., assignor to Bio-Technical Resources L.P., Manitowoc, Wis.

Continuation-in-part of Ser. No. 737,951, Jul. 30, 1991, abandoned. This application Aug. 23, 1993, Ser. No. 111,316
Int. Cl.[6] C12N *15/63;9/02;15/53*
U.S. Cl. 435—320.1 8 Claims

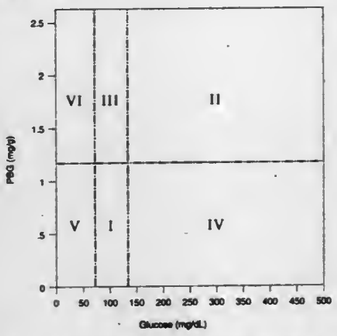
4. A recombinant plasmid, the recombinant plasmid comprising a plasmid cassette, the plasmid cassette comprising:
(1) a promoterless, lux gene operon complex from *Xenorhabdus luminescens* that is bioluminescent when induced by a regulatory gene, the lux operon complex comprising luxC, luxD, luxA, luxB, and luxE genes; and
(2) an inducible regulatory gene that is activated by exposure to either (1) divalent mercury ions or (2) divalent mercury ions and monomethyl mercury, the regulatory gene being located 5' of the lux gene operon complex.

5,571,723

METHOD OF TESTING FOR DIABETES THAT REDUCES THE EFFECT OF INTERFERING SUBSTANCES

Cody A. Evans, 28 Innisbrook Ave., Las Vegas, Nev. 89113, and Harold M. Bates, 4 Barnes Ct., East Brunswick, N.J. 08816

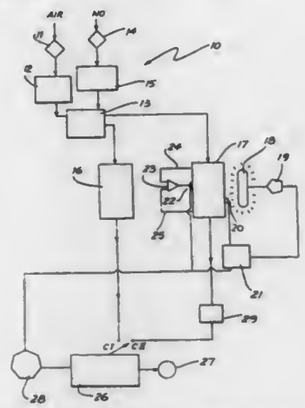
Continuation-in-part of Ser. No. 651,768, Feb. 7, 1991, abandoned, and Ser. No. 14,060, Feb. 5, 1993, abandoned, which is a continuation of Ser. No. 795,990, Nov. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 651,768, Feb. 7, 1991, abandoned. This application May 3, 1993, Ser. No. 56,993
Int. Cl.[6] G01N *33/49;1/18*
U.S. Cl. 436—87 21 Claims



1. A method of determining protein-bound glucose in a specimen composition containing protein-bound glucose and one or more interfering substances that may interfere with an assay for protein-bound glucose, said method comprising the steps:

(a) contacting at a pH of about 4.1 the specimen composition with a first reagent composition containing about 4.1 millimoles/liter of uranyl acetate to precipitate protein-bound glucose without denaturing it to produce (i) a precipitate product comprising protein-bound glucose that can be redissolved and that is substantially free of the one or more interfering substances and (ii) a supernatant containing the one or more interfering substances;
(b) separating the precipitate product from the supernatant;
(c) dissolving the precipitate product to give a solution of redissolved protein-bound glucose that is substantially free of the one or more interfering substances; and
(d) contacting the redissolved protein-bound glucose in solution at a pH of at least about 10.0 with a colorimetric reagent that colorimetrically indicates the presence of protein-bound glucose.

5,571,724
SMOG MONITOR
Graham M. Johnson, Ryde, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Australia
Continuation of Ser. No. 245,256, May 17, 1994, abandoned, which is a division of Ser. No. 671,873, Apr. 8, 1991, Pat. No. 5,356,818. This application Jan. 22, 1996, Ser. No. 589,200
Claims priority, application Australia, Aug. 30, 1988, PJ0144; Sep. 19, 1988, PJ0488; Jun. 23, 1989, PJ4900
Int. Cl.[6] G01N *33/00*
U.S. Cl. 436—116 **48 Claims**



1. A method for determining rate coefficient of smog formation in air, the method comprising:
(a) adding excess ozone to an air sample containing nitric oxide to provide an excess ozone/air mixture;
(b) permitting the mixture to react for a first selected reaction period wherein excess ozone in the mixture reacts with substantially all nitric oxide in the mixture;
(c) determining a first ozone concentration of the mixture after the first selected reaction period;
(d) illuminating the mixture of (a) or the mixture after the first selected reaction period for a second selected reaction period under reference temperature and illumination conditions;
(e) permitting the mixture, after illumination, to react for a third selected reaction period wherein excess ozone in the mixture reacts with any nitric oxide present in the mixture;
(f) determining a second ozone concentration of the mixture after the third selected reaction period; and
(g) determining the rate coefficient of smog formation from the first and second ozone concentrations, the reference temperature and illumination conditions and the duration of the second selected reaction period.

5,571,725
METHOD FOR PRECIPITATION OF INSOLUBLE SALTS IN DIVALENT ION-FORM MATERIALS
Christopher A. Pohl, Union City, Calif.; Archava Siriraks, Bangkok THX; Rosanne W. Slingsby, Pleasanton, and Harpreet S. Dhillon, Santa Clara, both of Calif., assignors to Dionex Corporation, Sunnyvale, Calif.
Filed Mar. 3, 1995, Ser. No. 398,117
Int. Cl.[6] G01N *30/02;30/96*
U.S. Cl. 436—161 **21 Claims**

1. In a pretreatment and separation method for the removal or a precipitable anion in a liquid sample and subsequent detection of other anions of interest in said liquid sample, the steps of
(a) flowing a stream of the liquid sample, containing said anions of interest, precipitable anion, and an added displacing salt through a first cation exchange resin material having a precipitable exchangeable polyvalent cation, said displacing salt comprising a displacing polyvalent cation and a counterion to said displacing cation, to displace said precipitable exchangeable polyvalent cation ion from said cation exchange material into said liquid sample under conditions to cause said precipitable anion and exchangeable polyvalent cation to form a precipitate,
(b) separating from each other the anions of interest in the soluble portion of said liquid sample stream, and
(c) detecting the separated anions of interest.

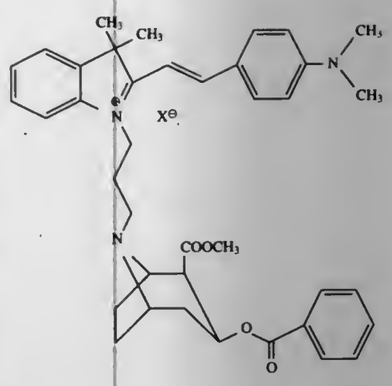
5,571,726
KIT CONTAINING GLUTARALDEHYDE COATED COLLOIDAL METAL PARTICLES OF A PRESELECTED SIZE
Houston G. Brooks, Jr., Somerset; Chi-Deu Chang, Bridgewater; Utpal R. Chakraborty, Flemington; Henry A. Graham, Jr., Annandale; Lloyd L. Hollenbeck, Jr., Flemington; Sharon R. Lawler, Somerville; Jennifer Nasser, Piscataway; Ernest G. Schutt, Long Valley, all of N.J., and Albert Venturini, E. Stroudsburg, Pa., assignors to Ortho Diagnostic Systems, Inc., Raritan, N.J.
Continuation of Ser. No. 22,544, Feb. 25, 1993, which is a continuation of Ser. No. 437,977, Nov. 16, 1989, abandoned, which is a continuation-in-part of Ser. No. 273,640, Nov. 17, 1988, abandoned, which is a continuation of Ser. No. 872,357, Jun. 9, 1986, abandoned. This application May 19, 1995, Ser. No. 446,533
Int. Cl.[6] G01N *33/551;33/553*
U.S. Cl. 436—525 **6 Claims**

1. A kit for performing an immunoassay, comprising:
(a) a gold sol reagent comprising gold sol particles directly coated with glutaraldehyde to which an immunochemically reactive component has been attached;
(b) medium containing said reagent; and
(c) an assay buffer containing a chaotrophic agent.

5,571,727
LABELLING COLORS FOR DETECTING COCAINE OR METHAMPHETAMINE, METHOD OF PREPARING THE SAME AND DETECTOR FOR COCAINE OR METHAMPHETAMINE
Nobuyuki Shigetoh, Hirakata; Hiroshi Nakayama, Toyonaka; Jinsei Miyazaki, Higashiosaka, and Tadayasu Mitsumata, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 7, 1994, Ser. No. 319,976
Claims priority, application Japan, Oct. 7, 1993, 5-251513; Dec. 16, 1993, 5-316194; Jul. 25, 1994, 6-172437
Int. Cl.[6] G01N *33/542;33/533;* **C07D** *401/06;209/14*
U.S. Cl. 436—537 **16 Claims**

3. A method of detecting cocaine, comprising the steps of adding a labelling color of Formula I

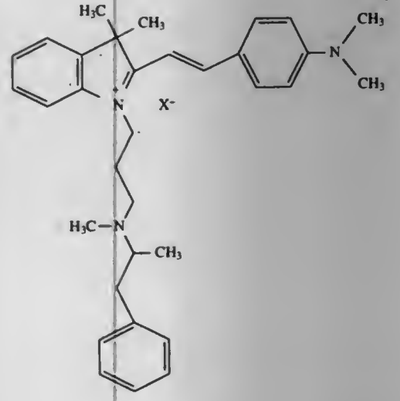
Formula I



wherein X represents a halogen atom to a first solution of cocaine antibody to form a labelling color-cocaine antibody complex,
measuring the fluorescence of the first solution,
adding a sample containing an unknown amount of cocaine to the first solution to form a second solution,
measuring the fluorescence of the second solution, and
correlating any change in the fluorescence between the first and second solutions to the concentration of cocaine in the sample.

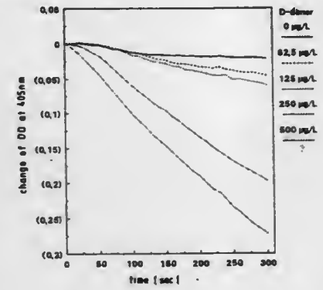
4. A method of detecting methamphetamine, comprising the steps of adding a labelling color of Formula II

Formula II



wherein X represents an anion to a first solution of methamphetamine antibody to form a labeling color-methamphetamine antibody complex,
measuring the fluorescence of the first solution,
adding a sample containing an unknown amount of methamphetamine to the first solution to form a second solution,
measuring the fluorescence of the second solution, and
correlating any change in the fluorescence between the first and second solutions to the concentration of methamphetamine in the sample.

5,571,728
METHOD FOR ANALYZING PARTICLE-ENHANCED AGGLUTINATION REACTIONS IN CENTRIFUGAL ANALYZERS BY DETERMINING THE BRIGHTENING OF TURBIDITY
Michael Kraus, Marburg, Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Germany
Filed Apr. 1, 1993, Ser. No. 41,210
Claims priority, application Germany, Apr. 4, 1992, 42 11 351.2
Int. Cl.[6] G01N *33/546*
U.S. Cl. 436—534 **10 Claims**



1. A method for determining the concentration of an analyte within less than 8 minutes comprising the steps of:
a) mixing and distributing in an automatic centrifugal analyzer a sample of a biological material containing the analyte with at least one binding partner specific for the analyte, said binding partner being immobilized on a particulate carrier material wherein the concentration of the particulate carrier material in the mixture is higher than 0.09% by weight,
b) maintaining constant centrifugal acceleration between 10 and 10,000 x g during the mixing and distributing step,
c) determining a decrease in absorption as a measurement of turbidity immediately upon completion of the mixing and distributing step, and
d) determining the concentration of the analyte by comparing the measurement of turbidity obtained in step c) with values measured under identical conditions for samples of known analyte content.

5,571,729
PROCESS FOR SEPARATING COMPLEX
Kenji Nakamura; Taizo Hara; Hideo Katoh, and Shinji Satomura, all of Amagasaki, Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 76,777, Jun. 15, 1993, abandoned. This application Dec. 12, 1994, Ser. No. 354,264
Claims priority, application Japan, Jun. 17, 1992, 4-183018
Int. Cl.[6] G01N *33/538;33/573*
U.S. Cl. 436—541 **13 Claims**

1. A process for separating a complex from free substances existing therewith which tend to affect the detection of the complex which comprises
combining a complex of one or more analytes to be measured and an affinity substance A having affinity for the analytes, with a modified affinity substance B having affinity for the complex, said affinity substance B being modified by attachment to a separation-improving substance which when attached to the complex via affinity substance B can change a property of the complex for improving separation of the complex from free affinity substance A and the free substances, and
separating the complex combined with the modified affinity substance B from free affinity substance A or the free substances by a high pressure liquid chromatography on the basis of properties of the separation-improving substance.

5,571,730

SEMICONDUCTOR DEVICE HAVING VERTICAL METAL OXIDE SEMICONDUCTORS AND A METHOD FOR MANUFACTURING THE SAME

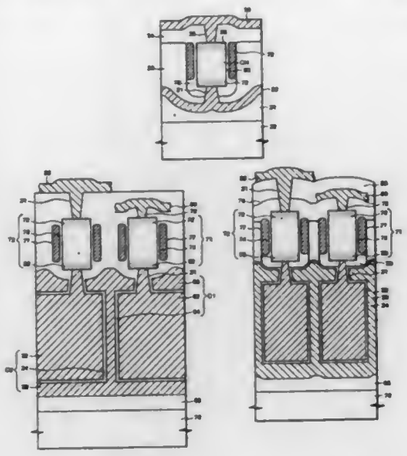
Kyu-chan Park, Songtan; Tae-earn Shim, Seongnam, and Seon-il Yu, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Division of Ser. No. 298,470, Aug. 30, 1994. This application May 22, 1995, Ser. No. 445,649

Claims priority, application Rep. of Korea, Nov. 24, 1993, 93-25138

Int. Cl.[6] H01L *21/265;21/70;27/00*

U.S. Cl. 437—21 9 Claims



1. A method for manufacturing a plurality of MOS transistors comprising steps of:

forming a first impurity region of said plurality of MOS transistors in a surface of a first semiconductor substrate;

forming a plurality of silicon pillars by etching said first semiconductor substrate;

filling a space between said plurality of silicon pillars with an insulator;

forming a plurality of first contact holes each for respective ones of said plurality of silicon pillars by etching said insulator;

forming a first electrode on said insulator, said first electrode being connected to said first impurity region of said plurality of MOS transistors through said plurality of first contact holes;

forming a first insulating layer on a surface of a resultant structure of said step of forming a first electrode;

planarizing a surface of said first insulating layer;

attaching a second semiconductor substrate on said planarized surface of said first insulating layer;

etching a back side of said first semiconductor substrate;

forming a second impurity region in a first end surface of said plurality of silicon pillars;

exposing a second end surface of said plurality of silicon pillars by partially etching said insulator;

forming a gate insulating film so as to surround each of said plurality of silicon pillars; and

forming a gate electrode so as to surround each of said plurality of silicon pillars and said gate insulating film.

5,571,731

PROCEDURE FOR THE MANUFACTURE OF BIPOLAR TRANSISTORS WITHOUT EPITARY AND WITH FULLY IMPLANTED BASE AND COLLECTOR REGIONS WHICH ARE SELF-POSITIONING RELATIVE TO EACH OTHER

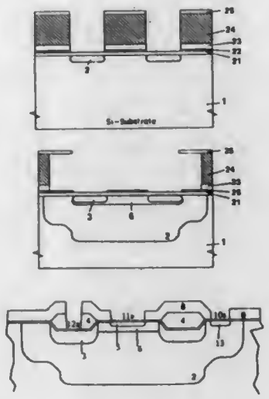
Hartmut Grützediek; Joachim Scheerer, both of Mainz; Wolfgang Winkler, Frankfurt/Oder; Michel Pierschel, Berlin, and Karl-Ernst Ehwald, Frankfurt/Oder, all of Germany, assignors to PREMA Präzisionselektronik GmbH, Mainz, Germany

Filed Mar. 21, 1994, Ser. No. 215,187

Claims priority, application Germany, Mar. 21, 1993, 43 08 958.5

Int. Cl.[6] H01L *21/265;21/00;21/30;* H01R *21/22*

U.S. Cl. 437—31 18 Claims



1. A method of fabricating a semiconductor device comprising the steps of:

(a) depositing, on a semiconductor substrate of a first conductivity type, a series of layers to form a shielding arrangement including an upper part and a lower part to provide a shield against accelerated ions;

(b) forming openings in said shielding arrangement by microlithographic processes and anisotropic etching;

(c) implanting ions via said openings to form one of a base area and a base-connection area of said first conductivity type;

(d) displacing edges of said openings by isotropic etching of said lower part of said shielding arrangement;

(e) implanting ions accelerated to energies sufficient to penetrate said one of said base area and base-connection area and a portion of said substrate underlying said one of said base area and base-connection area to form a sub-collector and a graded collector of a second conductivity type for completely encircling and separating a base from said substrate, wherein said sub-collector is more heavily doped than said collector;

(f) forming said base by one of:

implanting ions between said step (b) of forming openings and said step (e) of implanting ions accelerated, and

implanting ions after said step (e) of implanting ions accelerated;

(g) forming an emitter;

(h) depositing an insulating layer;

(i) forming contacts to said base, said emitter and said collector; and

(j) forming a metalization arrangement.

5,571,732

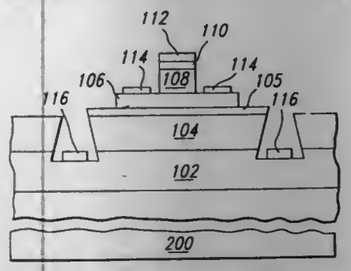
METHOD FOR FABRICATING A BIPOLAR TRANSISTOR

William U. Liu, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 109,225, Aug. 19, 1993. This application Jun. 7, 1995, Ser. No. 474,272

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 10 Claims



1. A method for fabricating a bipolar transistor comprising the steps of:

providing a GaAs substrate in the (111) orientation; and

forming an InGaAs region over said substrate, said InGaAs region having a first surface and a second surface, wherein the mole fraction of the indium in said InGaAs region varies from said first surface to said second surface.

5,571,733

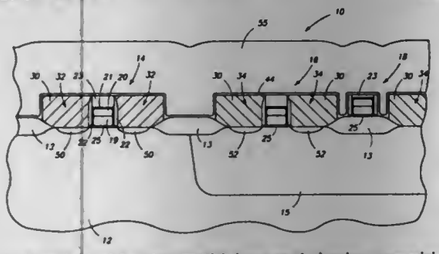
METHOD OF FORMING CMOS INTEGRATED CIRCUITRY

Jeff Z. Wu, Meridian, and Sittampalam Yoganathan, Boise, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed May 12, 1995, Ser. No. 440,222

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—34 27 Claims



1. A method of forming CMOS integrated circuitry comprising the following steps:

providing a series of isolation regions and a series of gate lines over a semiconductor substrate, a first gate line being positioned relative to the substrate for formation of an NMOS transistor, a second gate line being positioned relative to the substrate for formation of a PMOS transistor;

providing a layer of polysilicon over the substrate, the polysilicon layer defining a first pair of polysilicon outward projections extending from the semiconductor substrate adjacent the first gate line, the polysilicon layer defining a second pair of polysilicon outward projections extending from the semiconductor substrate adjacent the second gate line;

masking one of the first or second pair of polysilicon projections while conductively doping the other of the first or second pair with an n-type or a p-type conductivity enhancing dopant impurity, respectively; the polysilicon layer having not been patterned by masking between the first and second gate lines prior to the conductively doping of said other pair;

masking the other of the first or second pair of polysilicon projections while conductively doping the one of the first or second pair of polysilicon projections with an n-type or a p-type conductivity enhancing dopant impurity, respectively;

out-diffusing n-type conductivity enhancing dopant impurity from the first pair of polysilicon projections into the semiconductor substrate to provide NMOS type diffusion regions within the substrate adjacent the first gate line; and

out-diffusing p-type conductivity enhancing dopant impurity from the second pair of polysilicon projections into the semiconductor substrate to provide PMOS type diffusion regions within the substrate adjacent the second gate line.

5,571,734

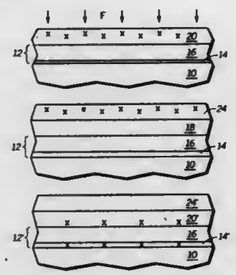
METHOD FOR FORMING A FLUORINATED NITROGEN CONTAINING DIELECTRIC

Hsing-Huang Tseng, and Philip J. Tobin, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 3, 1994, Ser. No. 316,175

Int. Cl.[6] H01L *21/225;21/3115*

U.S. Cl. 437—40 19 Claims



1. A method for making a dielectric comprising the steps of:

providing a substrate having a surface portion;

oxidizing the surface portion of the substrate using a nitrogen-containing oxidant to form a nitrogen-containing dielectric;

forming a gate electrode overlying the nitrogen-containing dielectric;

implanting fluorine into the gate electrode to form a fluorinated gate electrode; and

annealing the fluorinated gate electrode to drive the fluorine into the nitrogen-containing dielectric to form a fluorinated nitrogen-containing dielectric.

5,571,735

METHOD OF MANUFACTURING A SEMICONDUCTER DEVICE CAPABLE OF EASILY FORMING METAL SILICIDE FILMS ON SOURCE AND DRAIN REGIONS

Tohru Mogami, and Toru Tatsumi, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Jun. 16, 1995, Ser. No. 490,653

Claims priority, application Japan, Jun. 21, 1994, 6-138827; Apr. 6, 1995, 7-081185

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—41 9 Claims

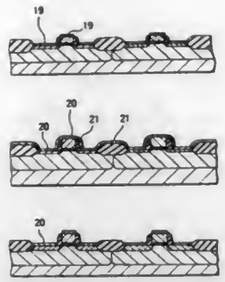
1. A method of manufacturing a semiconductor device comprising the steps of:

(a) forming silicon gate electrodes on gate insulating films on a silicon semiconductor substrate on which an element separation region is formed, said silicon gate electrodes having an upper surface and a side surface;

(b) forming insulating films on the side surface of said silicon gate electrodes;

(c) performing ion implantation of impurities in the element separation region to form source and drain regions of N-channel type and P-channel type field effect transistors on said silicon semiconductor substrate;

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(d) selectively depositing silicon films on said source and drain regions and on the upper surface of said silicon gate electrodes, said silicon films having impurity concentration less than 10^{19} cm^{-3};
(e) amorphizing said silicon films, said silicon gate electrodes, and said silicon semiconductor substrate by ion implantation;
(f) depositing a metal film on said silicon films and on said silicon gate electrodes;
(g) performing heat treatment of said metal film to form metal silicide films on said source and drain regions and on the upper surface of said silicon gate electrodes; and
(h) removing unreacted metal films remaining on said insulating films.

5,571,736

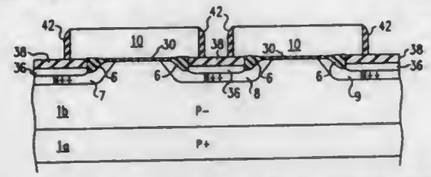
FABRICATING A HIGH DENSITY EPROM CELL BY REMOVING A PORTION OF THE FIELD INSULATOR REGIONS

James L. Paterson, Richardson, and Gregory J. Armstrong, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 966,615, Oct. 26, 1992, which is a continuation of Ser. No. 707,242, May 22, 1991, abandoned, which is a continuation of Ser. No. 526,961, May 22, 1990, abandoned, which is a continuation of Ser. No. 128,549, Dec. 3, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 478,642

Int. Cl.[6] H01L *21/8247*

U.S. Cl. 437—43 **4 Claims**



1. A method for forming an electrically programmable memory cell on a substrate having a semiconductor surface area of a first conductivity type, said method comprising the steps of:
applying a mask on the surface of said substrate;
applying dopant ions of a second conductivity type to said substrate in areas of said substrate not covered by said mask;
removing said mask;
forming field insulator regions above said ions;
forming a floating gate overlying said substrate surface partially over said field insulator regions;
forming an interlevel insulator on a surface of said floating gate;
forming an active gate on a surface of said interlevel insulator so that a capacitance exists between said active gate and said floating gate;
removing a portion of each of said field insulator regions to form field insulator region slots; and
forming a conductive region on said substrate surface within said slots.

5,571,737

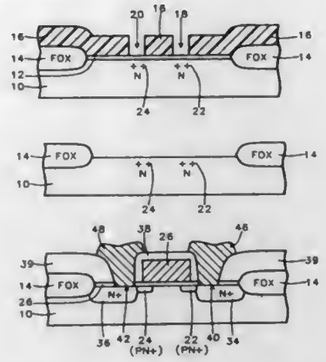
METAL OXIDE SEMICONDUCTOR DEVICE INTEGRAL WITH AN ELECTRO-STATIC DISCHARGE CIRCUIT

Shing-Ren Sheu, Tao-Yuan, and Chung-Yuan Lee, Chung-Li, both of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Jul. 25, 1994, Ser. No. 280,113

Int. Cl.[6] A01L *21/265*

U.S. Cl. 437—44 **16 Claims**



1. A method of forming an improved metal oxide semiconductor device with fully overlapping pre-gate and post-gate source and drain regions and gate electrode elements comprising:
forming on a semiconductor substrate having a background dopant of a first conductivity type, spaced pre-gate said source and drain regions of a second conductivity type thereby defining a channel region between said pre-gate source and drain regions;
forming a gate oxide layer on the surface of said semiconductor substrate having said background dopant;
forming a gate electrode with vertical sidewalls on the gate oxide layer over said channel region, and said gate electrode partially overlying said pre-gate source and drain regions;
forming spacers on the vertical sidewalls of the gate electrode, thereby said spacers define openings over said post-gate source and drain regions;
ion implanting impurity ions of a second conductivity type through the openings formed by said spacers forming said post-gate source and drain regions;
forming a threshold voltage layer having a doping of said first conductivity type in said semiconductor substrate after said pre-gate source and drain regions are formed; and
using conventional semiconductor fabrication techniques forming and completing said semiconductor device.

5,571,738

METHOD OF MAKING POLY LDD SELF-ALIGNED CHANNEL TRANSISTORS

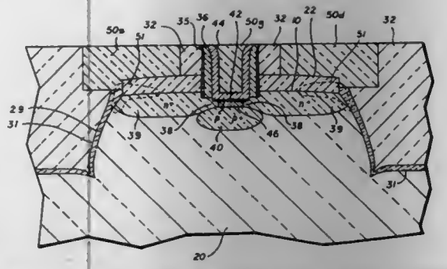
Zoran Krivokapic, Santa Clara, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 948,365, Sep. 21, 1992, abandoned. This application Jan. 6, 1995, Ser. No. 369,766

Int. Cl.[6] H01L *21/762*

U.S. Cl. 437—44 **13 Claims**

1. In a method for making a trench isolated FET wherein an active region in a silicon substrate is isolated by a trench and wherein wells of a first conductivity type in said substrate have separated source and drain regions having top surfaces therein, both said source and drain regions being contiguous to and separated by a gate region, and where in a completed said trench isolated FET said gate region overlies said top surfaces of said source and drain regions adjacent to said contiguous edge by a first distance, the improvement comprising:



(a) layering said top of said source and drain regions of said FET with a first poly layer;
(b) creating said trench having sidewalls around said source and drain regions by etching into said underlying Si and exposing the edge of said first poly layer without removing said first poly layer overtop said source and drain region;
(c) oxidizing said sidewalls of said trench including oxidizing said exposed edge of said first poly layer to form an isolation oxide liner around said periphery of said active region including said source and drain regions, said first poly layer and said trench sidewall having an intersection;
(d) depositing an oxide layer over top of said silicon substrate;
(e) planarizing said substrate;
(f) depositing resist on said substrate and exposing said resist to electromagnetic radiation to pattern said wafer for source and drain contacts and for said gate region; and
(g) etching said oxide layer to form said source and drain contact holes and gate openings while maintaining intact said first poly layer and said oxide liner in the vicinity of said intersection.

5,571,739

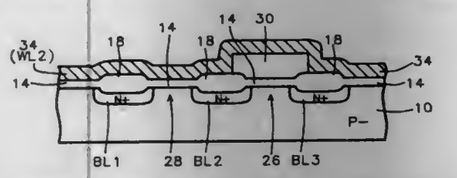
METHOD FOR FABRICATING A READ-ONLY-MEMORY (ROM) USING A NEW ROM CODE MASK PROCESS

Gary Hong, Hsin-Chu, Talwan, assignor to United Microelectronics Corporation, Hsin-Chu, Taiwan

Filed Jul. 3, 1995, Ser. No. 497,883

Int. Cl.[6] H01L *21/8246*

U.S. Cl. 437—48 **21 Claims**



1. A method for fabricating a Read Only Memory (ROM) device on a semiconductor substrate having an array of memory cells selectively coded, comprising the steps of:
providing a semiconductor substrate having a principle surface with device areas thereon;
forming an array of parallel buried bit lines oriented in a first direction in a portion of said device areas by photoresist masking and ion implantation;
forming a silicon oxide layer on said substrate by thermal oxidation and thereby forming an electrically insulating layer over said buried bit lines and a gate oxide layer between said buried bit lines and on said substrate;
forming a patterned photoresist code mask having opening in selected cell areas between said buried bit lines and over said gate oxide areas wherein said coded memory cells are to be formed;
depositing selectively by Liquid Phase Deposition (LPD) a LPD silicon oxide layer on said exposed gate oxide layer and leaving free from deposition said patterned photoresist code mask layer, thereby forming patterned isolation oxide areas in said coded memory cell areas;
removing said patterned photoresist mask layer;
depositing a polysilicon layer;
patterning said polysilicon layer by photoresist masking and etching, and thereby forming an array of parallel word lines oriented in a second direction orthogonal to said buried bit lines and aligned over said patterned isolation oxide areas and thereby completing said array of memory cells having select cells coded on said read-only-memory (ROM) device.

5,571,740

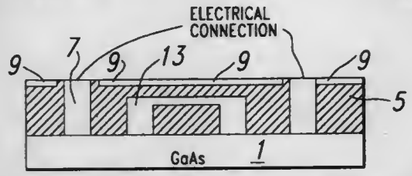
METHOD OF MAKING A CAPPED MODULAR MICROWAVE INTEGRATED CIRCUIT

Robert K. Peterson, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 99,350, Jul. 30, 1993, Pat. No. 5,376,574. This application Sep. 1, 1994, Ser. No. 299,787

Int. Cl.[6] H01L *21/70*

U.S. Cl. 437—51 **7 Claims**



1. A method of making a shielded monolithic microwave integrated circuit comprising the steps of:
(a) providing a wafer having a first surface containing a monolithic microwave integrated circuit extending to said first surface;
(b) forming an electrically insulating layer on and secured to said first surface, said electrically insulating layer having vias therethrough extending to said first surface said electrically insulating layer having a coefficient of thermal expansion structurally compatible with the coefficient of thermal expansion of said wafer;
(c) forming a ground plane on said electrically insulating layer by providing a layer of metallization disposed on said electrically insulating layer, at least a part of said layer of metallization forming said ground plane to shield a portion of said first surface, at least one portion of said layer of metallization extending to said first surface through said vias;
(d) further including the step of providing an electrical conductor buried in said electrically insulating layer interconnecting the metallization in a pair of vias.

5,571,741

MEMBRANE DIELECTRIC ISOLATION IC FABRICATION

Glenn J. Leedy, 1061 E. Mountain Dr., Montecito, Calif. 93108

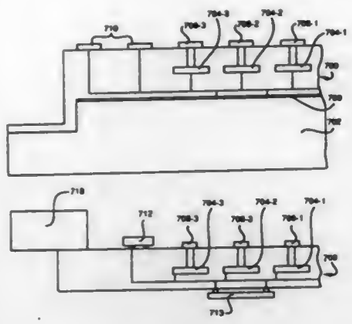
Continuation of Ser. No. 315,905, Sep. 30, 1994, which is a division of Ser. No. 865,412, Apr. 8, 1992, Pat. No. 5,354,695. This application Jun. 7, 1995, Ser. No. 474,449

Int. Cl.[6] H01L *21/70*

U.S. Cl. 437—51 **3 Claims**

1. A method for forming a flat panel display comprising the steps of:
providing a substrate;
forming a layer of a release agent on a surface of the substrate;
forming a membrane less than about 100 μm thick and including integrated circuitry on the layer of release agent;
selectively depositing color phosphors on localized portions of the membrane, thereby forming pixels; and
releasing the membrane from the substrate by activating the release agent.

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5,571,742

METHOD OF FABRICATING STACKED CAPACITOR OF DRAM CELL

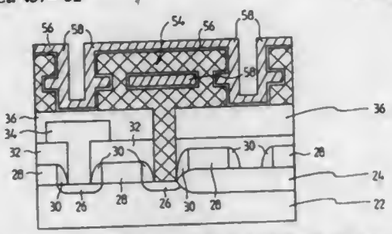
Jae Goan Jeong, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Apr. 14, 1994, Ser. No. 227,737

Claims priority, application Rep. of Korea, Apr. 14, 1993, 1993-6203

Int. Cl.[6] H01L 21/70;27/00

U.S. Cl. 437—52 8 Claims



1. A process for fabricating a stacked capacitor of a dynamic random access memory (DRAM) device, the process comprising:
forming a metal oxide semiconductor field effect transistor (MOSFET) on a silicon substrate, coating an insulating film for planarization over an entire exposed surface of a resulting structure including the MOSFET, and forming a first polysilicon layer connected to a source and a drain of the MOSFET;
sequentially forming a first oxide film, a second polysilicon layer and a second oxide film over said first polysilicon layer, and then forming a first photoresist pattern on said second oxide film;
etching exposed portions of the second oxide film to form a second oxide film pattern, removing said first photoresist pattern, and then forming side wall oxide films on respective side walls of said second oxide film pattern and exposing portions of said second polysilicon layer;
etching through said exposed portions of said second polysilicon layer, and etching exposed portions of said first oxide film, and removing said second oxide film pattern and said side wall oxide films, thereby partially exposing the first polysilicon layer;
depositing a third polysilicon layer over an entire exposed surface of a resulting structure such that it is connected with the partially exposed first polysilicon layer, and forming a second photoresist pattern for a storage electrode;
sequentially dry etching said third polysilicon layer, said second polysilicon layer, said first oxide film and said first polysilicon layer under a condition that the second photoresist pattern is used as a mask, removing the second photoresist pattern, and wet-etching the remaining first oxide film; and
forming a capacitor dielectric film and a plate electrode on an inner surface and an outer surface of said storage electrode including the first, second and third polysilicon layers.

5,571,743

METHOD OF MAKING BURIED-SIDEWALL-STRAP TWO TRANSISTOR ONE CAPACITOR TRENCH CELL

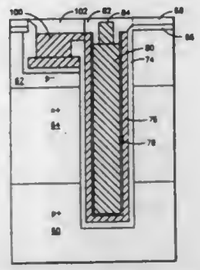
Walter H. Henkels, Putnam Valley, and Wei Hwang, Armonk, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 6,087, Jan. 19, 1993, Pat. No. 5,363,327.

This application Aug. 26, 1994, Ser. No. 296,714

Int. Cl.[6] H01L 21/8242

U.S. Cl. 437—52 8 Claims



1. A method of forming a two transistor one capacitor dynamic random access memory cell comprising:
forming a deep trench in a semiconductor substrate of a first conductivity type;
forming a first insulating layer on each sidewall of said trench;
depositing a layer of conductive material of a second conductivity type on said first insulating layer to form an outer electrode of said capacitor;
forming a second insulating layer on said outer electrode;
filling a portion of said trench which is above said second insulating layer with conductive material of said second conductivity type to form an inner electrode of said capacitor;
forming source, drain and gate regions of a first field effect transistor on said substrate;
forming source, drain and gate regions of a second field effect transistor on said substrate;
forming a first contact for electrically connecting the source or drain region of said first field effect transistor to said outer electrode, said first contact being formed by
forming a shallow trench adjacent the deep trench;
forming an insulating layer on each side wall of said shallow trench; and
forming a layer of conductive material in said shallow trench in which a portion of said conductive material contacts said outer electrode; and
forming a second contact for electrically connecting the source or drain region of said second field effect transistor to said inner electrode.

5,571,744

DEFECT FREE CMOS PROCESS

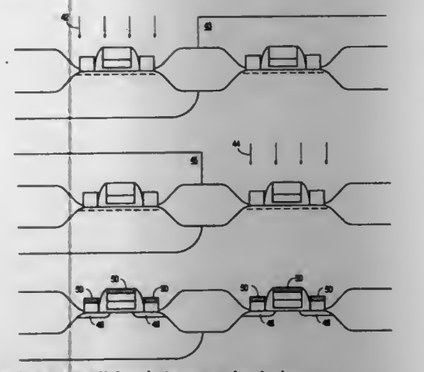
Esin K. Demirlioglu, Cupertino, and Sheldon Aronowitz, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 27, 1993, Ser. No. 113,787

Int. Cl.[6] H01L 21/265;21/70;27/00;21/225

U.S. Cl. 437—57 14 Claims

1. A method for manufacturing a CMOS device having a substrate, the method using a self-aligned process wherein damage to active regions of the device due to direct implantation of impurities is suppressed, the method comprising the steps of:
forming wells in the device substrate;
isolating the active regions of the device;
selectively forming a first buffer material on the active regions, the first buffer material comprising germanium;
introducing first impurities into the first buffer material;
diffusing the first impurities into the active regions;
selectively removing the first buffer material;



forming a gate dielectric layer on the device;
depositing a polysilicon layer on the gate dielectric layer;
depositing a first suppressant layer on the polysilicon layer;
defining gates on the active regions, the gates comprising portions of the gate dielectric layer, the polysilicon layer, and the first suppressant layer;
depositing a second suppressant layer on the device;
etching the second suppressant layer to form dielectric spacers on the sides of the gates;
removing the first suppressant layer from the polysilicon layer of each gate;
selectively depositing a second buffer material on the polysilicon layer of each gate and any exposed areas of the active regions, the second buffer material comprising germanium;
introducing second impurities into the second buffer material;
diffusing the second impurities into the active regions to form source and drain regions, and into the polysilicon layer of each gate; and
forming contacts on the second material.

5,571,745

FABRICATION METHOD OF SEMICONDUCTOR DEVICE CONTAINING N- AND P-CHANNEL MOSFETS

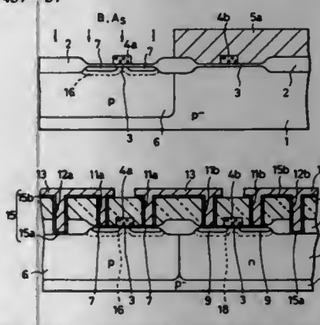
Tadahiko Horiuchi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 1, 1995, Ser. No. 510,103

Claims priority, application Japan, Aug. 1, 1994, 6-197161

Int. Cl.[6] H01L 21/70

U.S. Cl. 437—57 9 Claims



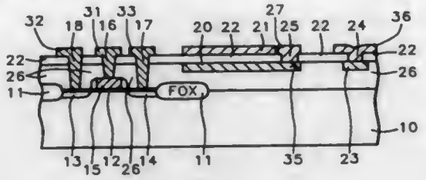
1. A fabrication method of a semiconductor device having a CMOS structure, said method comprising the steps of:
(a) selectively forming an isolation insulator film on a semiconductor substrate to define a first active region where a first MOSFET is formed and a second active region where a second MOSFET is formed;
(b) forming a gate insulator film on said first active region and said second active region;
(c) forming a first gate electrode and a second gate electrode on said gate insulator film, said first gate electrode being placed over said first active region and said second gate electrode being placed over said second active region;
(d) forming a first patterned photoresist film over said substrate, said first photoresist film having a first window that exposes said first active region and a surrounding area of said first active region;
(e) selectively implanting first dopant ions of a first conductivity type into said substrate using said first photoresist film as a mask to form a first well region of said second conductivity type in said substrate, said first dopant ions penetrating through said first gate electrode and said gate insulator film into said first active region and through said isolation insulator film into said surrounding area of said first active region;
(f) selectively implanting second dopant ions of a second conductivity type into said substrate using said first photoresist film as a mask, to form a first pair of source/drain regions of said second conductivity type in said first well region, said second dopant ions penetrating through said first well region and not penetrating through said isolation insulator film;
(g) removing said first resist film after said step (f);
(h) forming a second patterned resist film over said substrate, said second resist film having a second window that exposes said second active region and a surrounding area of said second active region;
(i) selectively implanting third dopant ions of said second conductivity type into said substrate using said second resist film as a mask to form a second well region of said second conductivity type in said substrate, said third dopant ions penetrating through said second gate electrode and said gate insulator film into said second active region and through said isolation insulator film into said surrounding area of said second active region;
(j) selectively implanting fourth dopant ions of said first conductivity type into said second well region using said second resist film as a mask to form a second pair of source/drain regions of said first conductivity type in said second well region, said fourth dopant ions penetrating through said second gate electrode and said gate insulator film into said second well region and not penetrating through said isolation insulator film;
(k) removing said second resist film after said step (j);
(l) forming an interlayer insulator film to cover said first active region having said first pairs of source/drain regions and said second active region having said second pair of source/drain regions and said isolation insulator film;
(m) forming first contact holes that penetrate said interlayer insulator film and said underlying gate insulator film over said first active region;
(n) forming second contact holes that penetrate said interlayer insulator film and said interlying gate insulator film over said second active region;
(o) forming a third contact hole that penetrates said interlayer insulator film and said underlying isolation insulator film over said first well region;
(p) forming a fourth contact hole that penetrates said interlayer insulator film and said underlying isolation insulator film over said second well region; and
(q) forming a patterned conductor film on said interlayer insulator film, said conductor film being contacted with said first pair of source/drain regions of said second conductivity type through said first contact holes, with said second pair of source/drain regions of said first conductivity type through said second contact holes, with said first well region through said third contact hole, and with said second well region through said fourth contact hole.

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5,571,746
METHOD OF FORMING A BACK END CAPACITOR WITH HIGH UNIT CAPACITANCE

Yang Pan, Singapore, Singapore, assignor to Chartered Semiconductor Manufacturing Pte Ltd., Singapore, Singapore

Filed Oct. 19, 1995, Ser. No. 545,413
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—60 **11 Claims**



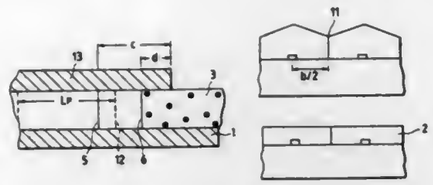
1. A method of forming a capacitor, comprising the steps of:
providing a semiconductor substrate having devices formed therein and a layer of interlevel dielectric formed thereon;
planarizing said layer of interlevel dielectric;
forming a bottom capacitor plate trench region, a bottom capacitor contact trench region, and a number of bond pad trench regions in said layer of interlevel dielectric;
filling said bottom capacitor plate trench region with a first conductor material thereby forming a bottom capacitor plate;
filling said bottom capacitor contact trench region with a first conductor material thereby forming a bottom capacitor contact;
filling said bond pad trench regions with said first conductor material thereby forming a number of bond pads;
forming a layer of capacitor dielectric over said bottom capacitor plate, said bottom capacitor contact, said bond pads, and said layer of interlevel dielectric;
forming a bottom capacitor contact hole and a number of bond pad contact holes in said capacitor dielectric, wherein said bottom capacitor contact hole is directly over said bottom capacitor contact and each said bond pad contact hole is over one of said bond pads;
forming a number of device contact holes in said capacitor dielectric and said interlevel dielectric;
filling said bond pad contact holes, said bottom capacitor contact hole, and said device contact holes with a second conductor material;
forming a layer of third conductor material over said capacitor dielectric, said bond pad contact holes, and said device contact holes; and
patterning said layer of third conductor material to form a top capacitor plate and a top electrode pattern.

5,571,747
METHOD FOR PRODUCING A SEMICONDUCTOR COMMUTATOR

Toru Koizumi, Machida, and Hidemasa Mizutani, Sagamihara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 998,761, Dec. 29, 1992, abandoned, which is a continuation of Ser. No. 665,592, Mar. 6, 1991, abandoned, which is a division of Ser. No. 422,762, Oct. 17, 1989, Pat. No. 5,034,782. This application Nov. 23, 1994, Ser. No. 347,164
Claims priority, application Japan, Oct. 20, 1988, 63-262930
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—81 **7 Claims**

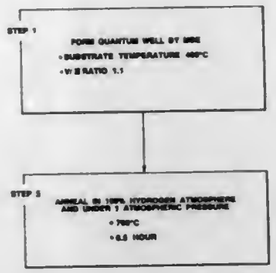
1. A method for producing a semiconductor commutator comprising the steps of:
preparing a substrate having a free surface comprising plural nucleation surfaces and a non-nucleation surface arranged on the free surface, each of the nucleation surfaces (1) having a respective nucleation density sufficiently higher than a nucleation density of the non-nucleation surface, and (2) having a sufficiently small area, to grow only one monocrystal from a nucleus correspondingly produced on each of the nucleation surfaces;
growing a monocrystal on each of the nucleation surfaces so as to form a grain boundary between adjacent monocrystals;
introducing into at least one of the monocrystals a high concentration of an impurity for controlling a conductivity type to form a monocrystalline semiconductor region of a first conductivity type, to form a junction between the monocrystalline semiconductor region of the first conductivity type and another semiconductor region including the gain boundary and having a second conductivity type, wherein the gain boundary is outside a depletion region formed at the junction at a distance within a carrier diffusion length (Lp) from an edge of the depletion region and acts as a recombination center for excess minority carriers; and
forming first and second electrodes respectively electrically connected to the monocrystalline semiconductor region of the first conductivity type and to the semiconductor region having the second conductivity type.



5,571,748
METHODS FOR PRODUCING COMPOUND SEMICONDUCTOR DEVICES

Seiichi Miyazawa, Zama, and Natsuhiko Mizutani, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 35,194, Mar. 22, 1993, abandoned. This application Mar. 22, 1995, Ser. No. 409,635
Claims priority, application Japan, Mar. 26, 1992, 4-100709; Jun. 12, 1992, 4-179389
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—107 **7 Claims**

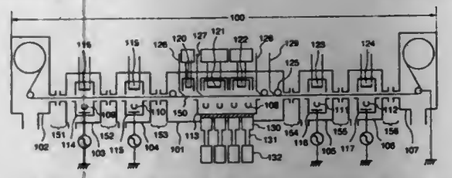


1. A method of fabricating a semiconductor laser device, which comprises a substrate and a plurality of semiconductor layers including a laser active layer formed on said substrate, said method comprising the steps of:
growing a compound semiconductor at a substrate temperature not greater than 500° C., by a vacuum deposition, to form the semiconductor layers on the substrate; and
causing a current to flow into a semiconductor layer formed on the substrate with the proviso that the semiconductor laser device is not oscillated.

5,571,749
METHOD AND APPARATUS FOR FORMING DEPOSITED FILM

Koichi Matsuda, Nara; Takaharu Kondo, and Yusuke Miyamoto, both of Tsuzuki-gun, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,244
Claims priority, application Japan, Dec. 28, 1993, 5-337467; Dec. 22, 1994, 6-320034
Int. Cl.[6] H01L *31/20*
U.S. Cl. 437—113 **49 Claims**

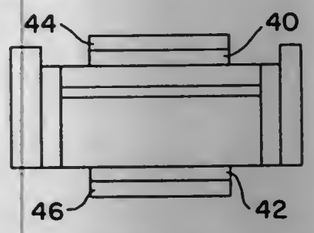


1. A process for forming a deposited semiconductor film by glow discharge on a continuously moving belt-like substrate which has a first semiconductor layer deposited thereon, which comprises the steps of:
heating said moving substrate immediately before said substrate enters a glow discharge region;
forming said deposited semiconductor film on said moving substrate in said glow discharge region; and
cooling said moving substrate after passing through said glow discharge region.

5,571,750
METHOD FOR PRODUCING A SEMICONDUCTOR LASER DEVICE

Masanori Watanabe, Nara; Ken Obbayashi, Tenri; Kazuaki Sasaki, Yao; Osumu Yamamoto, Nara, and Mitsuhiro Matsumoto, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 995,064, Dec. 22, 1992, Pat. No. 5,413,956. This application Sep. 28, 1994, Ser. No. 314,585
Claims priority, application Japan, Mar. 4, 1992, 4-46975; Mar. 4, 1992, 4-46976
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—129 **9 Claims**

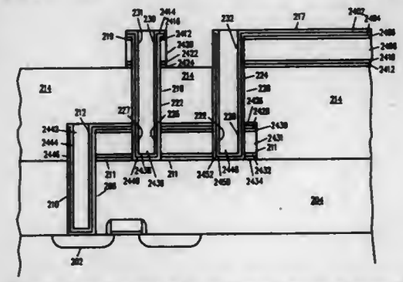


1. A method for producing a semiconductor laser device in which a substrate with a layered structure for light emitting is cleaved into a plurality of bars, the layered structure including an active layer, and the bars are cut into chips, comprising the steps of:
forming window layers on light-emitting end facets of the bars;
holding the bars with the window layers into a holding portions of top surfaces and reverse surfaces of the bars, the portions being adjacent to the window layers, and for fixing the bars therewith, and forming the electrodes on the remaining portions of the top surfaces and the reverse surfaces of the bars under the condition that the bars are kept in the holding and masking means without being disassembled through the electrodes forming process; and
cutting the bars on which the electrodes are formed into the chips, wherein the holding and masking means includes a first mask and a second mask each having through openings whose insides are larger on one side thereof than on the other side thereof, and the bars are inserted within spaces formed by both of the insides of the through openings of the first mask and the second mask.

5,571,751
INTERCONNECT STRUCTURES FOR INTEGRATED CIRCUITS

Henry W. Chung, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 240,044, May 9, 1994, abandoned. This application Aug. 25, 1994, Ser. No. 295,957
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—187 **10 Claims**



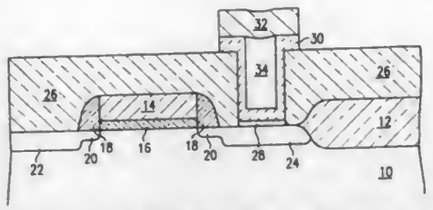
1. A process for forming a metallic interconnect structure in an integrated circuit, comprising the steps of:
forming a dielectric layer;
forming a sacrificial layer on the dielectric layer;
forming a mask having an opening to the sacrificial layer;
etching the sacrificial layer through the mask to form an opening in the sacrificial layer;
etching the dielectric layer through the opening in the sacrificial layer to form an opening in the dielectric layer;
depositing a first metallic layer to fill the opening in the sacrificial layer and the opening in the dielectric layer;
removing the sacrificial layer following the first metallic depositing step;
depositing a second metallic layer on the dielectric layer, wherein a contact is formed between the first and the second metallic layers; and
patterning the second metallic layer to form a horizontal interconnect.

5,571,752
METHOD OF FORMING A PLANAR CONTACT WITH A VOID

Fusen E. Chen, Milpitas, Calif.; Girish A. Dixit, Dallas, and Robert O. Miller, The Colony, both of Tex., assignors to SGS-THOMSON Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 919,948, Jul. 27, 1992, abandoned. This application Jan. 9, 1995, Ser. No. 370,456
Int. Cl.[6] H01L *21/283*
U.S. Cl. 437—189 **14 Claims**

14. A method of forming a contact in an integrated circuit., comprising the steps of:
forming a first conductive structure on the integrated circuit;
forming a dielectric layer over the first conductive structure;
forming a contact opening through the dielectric layer to expose a portion of the first conductive structure;
forming a barrier layer in the bottom of the contact opening;
forming. by chemical vapor deposition. a conformal layer including a refractory metal over the dielectric layer, over the



barrier layer, and along the sidewalls of the contact opening, wherein the conformal layer is formed to a thickness sufficient to leave a space between the sidewalls of the opening;

removing moisture from the space by in situ baking in a vacuum at approximately 425° C.;

forming an aluminum layer over the conformal conductive layer, wherein the aluminum layer bridges over the space in the opening to define a void between the conformal layer and the aluminum layer, and wherein no aluminum is formed below an upper surface of the dielectric layer; and

etching the conformal layer and the aluminum layer to define an interconnect layer, wherein the void remains in the contact opening after the etching step.

5,571,753

METHOD FOR FORMING A WIRING CONDUCTOR IN SEMICONDUCTOR DEVICE

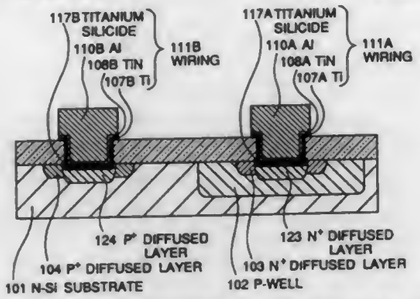
Masaru Saruwatari, Kumamoto, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 31, 1995, Ser. No. 455,086

Claims priority, application Japan, May 31, 1994, 6-119113

Int. Cl.[6] H01L *21/266;21/283*

U.S. Cl. 437—192 **6 Claims**



1. A method for manufacturing a semiconductor device, comprising:

the step of preparing a semiconductor substrate having a principal surface having a first region of a first conductivity type and a second region of a second conductivity opposite to said first conductivity type;

the step of forming a first diffused layer of said first conductivity type at a surface portion of said second region, forming a second diffused layer of said second conductivity type at a surface portion of said first region, forming an insulator film covering said principal surface of said semiconductor substrate, and forming first and second contact holes passing through said insulator film to reach said first diffused layer and said second diffused layer, respectively;

the step of forming a first conductor film which is composed of a refractory metal film and a refractory metal nitride film formed on a surface of said refract or metal film, to cover a surface of said insulator film including an inner surface of said first and second contact holes;

the step of forming, on said surface of said insulator film, a first resist film having an opening in alignment with said first contact hole but covering said second contact hole, and performing an ion implantation of impurities of said first conductivity by using said first resist film and said insulator film as a mask, so as to form a first ion-implanted region having impurities of said first conductivity type at said surface of said first diffused layer;

the step of forming, on said surface of said insulator film, a second resist film having an opening in alignment with said second contact hole but covering said first contact hole, and performing an ion implantation of impurities of said second conductivity by using said second resist film and said insulator film as a mask, so as to form a second ion-implanted region having impurities of said second conductivity type at said surface of said second diffused layer;

the step of performing a heat treatment to activate impurities of said first conductivity type in said first ion-implanted region and impurities of said second conductivity type in said second ion-implanted region, and to form refractory metal silicide film at said surface of said first diffused layer on a bottom of said first contact hole and at said surface of said second diffused layer on a bottom of said second contact hole; and

the step of forming a metal film on the whole of said principal surface of said semiconductor substrate, and patterning a multi-layer film composed of said metal film and said first conductor film, so as to form a first wiring conductor connected through said first contact hole to said first diffused layer and a second wiring conductor connected through said second contact hole to said second diffused layer.

5,571,754

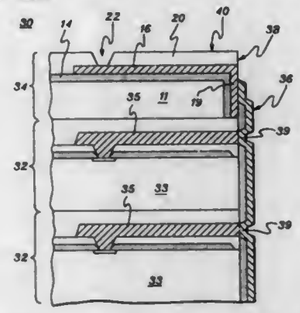
METHOD OF FABRICATION OF ENDCAP CHIP WITH CONDUCTIVE, MONOLITHIC L-CONNECT FOR MULTICHIP STACK

Claude L. Bertin, South Burlington; Wayne J. Howell, Williston, and Howard L. Kalter, Colchester, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 506,939, Jul. 26, 1995. This application Nov. 9, 1995, Ser. No. 555,738

Int. Cl.[6] H01L *21/60*

U.S. Cl. 437—209 **10 Claims**



1. A method for forming an endcap chip for use in a multichip stack, said method comprising the steps of:

(a) providing a wafer comprising a substrate having an upper surface and a lower surface;

(b) forming a trench in said wafer, said trench defining in said substrate a substrate edge;

(c) forming a conductive, monolithic L-connect having a first leg extending at least partially over said upper surface of said substrate and a second leg extending at least partially over said substrate edge, said second leg having a substantially planar outer surface;

(d) separating the endcap chip from said wafer at least partially along said trench such that said endcap chip includes said conductive, monolithic L-connect, said second leg of said conductive, monolithic L-connect residing at an edge surface of said endcap chip, wherein when said endcap chip is employed within said multichip stack, said conductive, monolithic L-connect electrically interconnects metal on an end face of said multichip stack and metal on a side face of said multichip stack, said side face being parallel to said edge surface of said endcap chip.

5,571,755

COMPOSITION AND PROCESS FOR FORMING DIESEL ENGINE ELEMENTS

Michael H. Haselkorn, and Michael C. Long, both of Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Nov. 2, 1994, Ser. No. 333,464

Int. Cl.[6] C03C *1/00;10/12;10/8;* **C04B** *35/52*

U.S. Cl. 501—32 **8 Claims**

1. A composition for a diesel engine element subjected to elevated temperatures and friction, comprising:

a matrix of a glass, glass-ceramic, or mixtures thereof

said matrix having a density greater than about 2.0 g/cm^3 and said matrix having lubricating graphite particles generally uniformly dispersed therein,

said graphite particles being present in the range of about 10 to about 50 percent by volume,

said glass matrix being one of soda-borosilica, soda-alumina-borosilica and silica-alkali-barium borosilica,

said glass-ceramic matrix being one of barium-magnesium-aluminumsilicate, lithium-aluminumosilicate, and calcium-alumino-silicate, and

a metal uniformly dispersed within said graphite particles, said metal being nickel.

5,571,756

COMPOSITION AND PROCESS FOR FORMING DIESEL ENGINE ELEMENTS

Michael H. Haselkorn, and Michael C. Long, both of Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 333,464, Nov. 2, 1994. This application Jun. 7, 1995, Ser. No. 485,843

Int. Cl.[6] C03C *14/00;10/08;10/12*

U.S. Cl. 501—32 **2 Claims**

1. A process for forming a self lubricating diesel engine component subjected to tribological wear in a combustion environment, elevated temperatures and friction, comprising:

providing a matrix of glass, glass-ceramic, or mixtures thereof, said matrix having lubricating graphite particles generally uniformly dispersed therein and being present in the range of about 10 to about 50 percent by volume, said glass matrix being one of soda-borosilica, soda-alumina-borosilica and silica-alkali-barium borosilica,

said glass-ceramic matrix being one of barium-magnesium-aluminumsilicate, lithium-aluminumosilicate, and calcium-alumino-silicate, and a metal uniformly dispersed within said graphite particles, said metal being nickel;

forming an element of the matrix; and

sintering the element for a time and temperature sufficient to obtain a density of at least 90% of theoretical density.

5,571,757

SUBSTRATE OF A CERAMIC MATERIAL

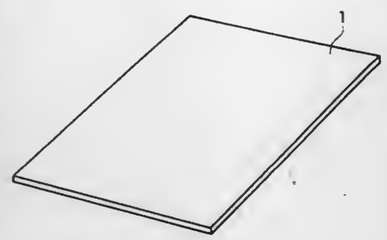
Wilhelm A. Groen; Marcellinus J. Kraan; Paulus F. Van Hal, and Gijsbertus De With, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 7, 1995, Ser. No. 568,774

Claims priority, application European Pat. Off., Dec. 12, 1994, 94203601

Int. Cl.[6] C04B *35/56;35/581*

U.S. Cl. 501—87 **4 Claims**



1. A substrate of a ceramic material, characterized in that said material comprises 44–47 at. % Al, 31–39 at. % O, 8–13 at. % C and 8–12 at. % N.

5,571,758

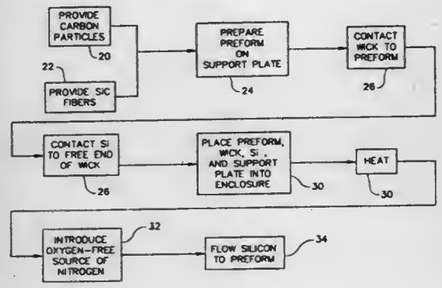
NITROGEN-REACTED SILICON CARBIDE MATERIAL

Theodore R. Grossman, Hamilton, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 108,417, Aug. 19, 1993, abandoned. This application Dec. 19, 1994, Ser. No. 359,357

Int. Cl.[6] C04B *35/58*

U.S. Cl. 501—92 **20 Claims**



1. A process for preparing a material, comprising the steps of:

preparing a preform comprising

carbon particles, and

silicon carbide fibers;

contacting a first end of a wick to the preform, the wick being made of a material that is wet by molten silicon:

heating the wick and the preform to a temperature greater than the melting point of silicon, at least a portion of the step of heating being performed in an atmosphere containing a source of nitrogen and substantially free of oxygen; and

flowing silicon along the wick to the preform such that the amount of silicon reaching the preform is in about equimolar proportion to the carbon particles, wherein the silicon reacts with the carbon particles to form silicon carbide and the nitrogen reacts with any remaining free, unreacted silicon within the preform to form silicon nitride whereby free silicon is eliminated from the resulting material.

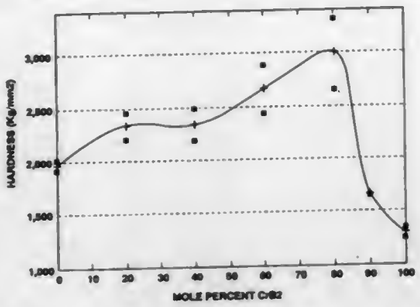
VOL 1192 ISS 1 NO 5 1996 UMI

5,571,759

CRB_2-NBB_2 CERAMICS MATERIALS

Inna G. Talmy, Silver Spring; Eric J. Wuchina, Wheaton; James A. Zaykoski, Beltsville, and Mark M. Opeka, Laurel, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 31, 1995, Ser. No. 551,253
Int. Cl.[6] C04B *35/58*
U.S. Cl. 501—96 8 Claims



1. A material which is a ceramic based on a solid solution comprising from more than zero to less than 100 mole percent CrB_2 with NbB_2 being the remainder in the solid solution.

5,571,760

SILICON NITRIDE HAVING A HIGH TENSILE STRENGTH

Vimal K. Pujari, Northboro; Dennis M. Tracey, Medfield; Michael R. Foley; Norman L. Pallie, both of Oxford; Paul J. Pelletier, Millbury; Lenny C. Sales, Grafton; Craig A. Willkens, Sterling, and Russell L. Yeckley, Oakham, all of Mass., assignors to Saint-Gobain/Norton Industrial Ceramics Corporation, Worcester, Mass.

Division of Ser. No. 113,477, Aug. 27, 1993, abandoned. This application Oct. 18, 1994, Ser. No. 324,937
Int. Cl.[6] C04B *35/587*
U.S. Cl. 501—97 18 Claims

1. A silicon nitride ceramic comprising:
a) inclusions no greater than 25 microns in length,
b) agglomerates no greater than 20 microns in diameter, and
c) a surface finish of less than about 8 microinches, said ceramic having a four-point flexural strength of at least about 900 MPa.

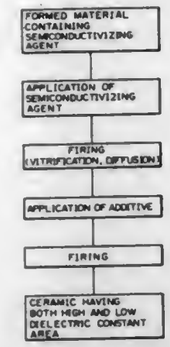
5,571,761

CERAMIC SUBSTRATE CIRCUIT SUBSTRATE

Motoo Kumagai, Yokohama, and Keiichi Kato, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 39,689, Mar. 29, 1993, abandoned, which is a continuation of Ser. No. 794,643, Nov. 18, 1991, abandoned, which is a continuation of Ser. No. 633,178, Dec. 28, 1990, abandoned, which is a continuation of Ser. No. 88,411, Aug. 24, 1987, abandoned. This application Apr. 29, 1994, Ser. No. 235,240
Claims priority, application Japan, Aug. 22, 1986, 61-196913; Aug. 22, 1986, 61-196914; Aug. 23, 1986, 61-197706; Aug. 23, 1986, 61-197707
Int. Cl.[6] C04B *35/46;* H01G *4/22;4/20;4/06*
U.S. Cl. 501—134 18 Claims

1. A ceramic substrate having two or more functional regions separated from each other, said substrate comprising: a first region comprising a first dielectric porcelain with a first dielectric constant, said first dielectric porcelain comprising a material selected from the group consisting of SrO and TiO_2 or BaO and TiO_2, and



containing a first amount of semiconductivizing agent, and a second region comprising a second dielectric porcelain with a second dielectric constant different from the first dielectric constant, said second dielectric porcelain comprising a material selected from the group consisting of SrO and TiO_2 or BaO and TiO_2 and containing a second amount of the semiconductivizing agent, said second amount being different from said first amount in the first region so as to vary electrical characteristics between the regions, and, wherein the semiconductivizing agent is at least one selected from the group consisting of Y, Dy, Ln, Nb, Sb, Ta, Ce, Nd, Al, Cd, Pr_2O_3, ThO_2, Pm_2O_3, Sm_2O_3, Eu_2O_3, Lu_2O_3, Tb_2O_3, Tm_2O_3, WO_3, Ln_2O_3 and Fe_2O_3.

10. A ceramic substrate having two or more functional regions separated from each other, said substrate comprising a first region comprising a first dielectric porcelain with a first dielectric constant, said first dielectric porcelain comprising a material selected from the group consisting of SrO and TiO_2 or BaO and TiO_2, and containing a first semiconductivizing agent and a second region comprising a second dielectric porcelain with a second dielectric constant different from the first dielectric constant, said second dielectric porcelain comprising a material selected from the group consisting of SrO and TiO_2 or BaO and TiO_2 and containing a second semiconductivizing agent which is different from said first semiconductivizing agent in the region so as to vary electrical characteristics between the regions, wherein the semiconductivizing agent is at least one selected from the group consisting of Y, Dy, Sa, Nb, Sb, Ta, Ce, Nd, Al, Cd, Pi_2O_3, ThO_2, Pm_2O_3, Sm_2O_3, Eu_2O_3, Lu_2O_3, Tb_2O_3, Tm_2O_3, Yb_2O_3, WO_3, La_2O_3 and Fe_2O_3.

5,571,762

CATALYST AND PROCESS FOR THE ALKYLATION OF ALIPHATIC HYDROCARBONS WITH OLEFINS

Mario G. Clerici, San Donato Milanese; Carlo Perego, Carnate; Alberto De Angelis, Legnano, and Luciano Montanari, Brescia, all of Italy, assignors to Enitricerche S.p.A., Milan, and AGIP Petroli S.p.A., Rome, both of Italy

Filed Aug. 1, 1994, Ser. No. 283,509
Claims priority, application Italy, Aug. 6, 1993, MI93A1796
Int. Cl.[6] B01J *31/26;27/02;21/08*
U.S. Cl. 502—155 18 Claims

1. A catalyst consisting of silica, characterized in that the surface Si—OH groups of said silica are esterified with a fluoroalkylsulphonic acid of formula $CF_3(CF_2)_nSO_3H$, wherein n is a whole number between 0 and 11, said catalyst having:
a) a Hammett acidity $Ho \leq -11.4$
b) an IR signal at 1546 cm^{-1} after treatment with pyridine.

5,571,763

EXHAUST GAS PURIFICATION SYSTEM AND CATALYST THEREFOR

Takashi Takemoto, Higashihiroshima; Yasuto Watanabe, Iwakuni; Akihide Takami, Hiroshima; Hidebaru Iwakuni, Hiroshima; Makoto Kyogoku, Hiroshima, and Kazunari Komatsu, Mihara, all of Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan

Filed Jun. 2, 1993, Ser. No. 71,020
Claims priority, application Japan, Jun. 2, 1992, 4-141508; Sep. 29, 1992, 4-259265; May 28, 1993, 5-126552
Int. Cl.[6] B01J *23/40;23/42*
U.S. Cl. 502—334 9 Claims

1. An engine exhaust purifying catalyst comprising:
a catalytic material including, as active substances, platinum (Pt), iridium (Ir) and rhodium (Rh); and
a catalyst carrier by which said catalytic material is carried;
proportions of said active substances being 74 to 96%, 7 to 23% and 2.5 to 8% in weight, relative to the total weight of said active substances, for platinum (Pt), iridium (Ir) and rhodium (Rh), respectively.

5,571,764

ABSORBENT FOR WATER AND AQUEOUS SOLUTIONS

Rainer Greve, Bad Segeberg; Gerlinde Ebert, Dreieich/Offenthal; Ulrich Riegel, and Fritz Engelhardt, both of Frankfurt, all of Germany, assignors to Cassella Aktiengesellschaft, Germany

Continuation of Ser. No. 123,259, Sep. 20, 1993, abandoned. This application Jan. 16, 1996, Ser. No. 590,694
Int. Cl.[6] B01J *20/26;20/00;* A61M *1/00;* A61F *13/15*
U.S. Cl. 502—402 16 Claims

1. Absorbent for water and aqueous fluids, comprising a natural product from the tuber of a plant from the family of the Araceae and a synthetic polymer based on (co)polymerised hydrophilic monomers.

5,571,765

THERMAL DYE TRANSFER IMAGE WITH IMPROVED LIGHT-FASTNESS

Luc VanMaele, Lochristi, and Wilhelmus Janssens, Aarschot, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Dec. 22, 1994, Ser. No. 363,279
Claims priority, application European Pat. Off., Jan. 31, 1994, 94200257
Int. Cl.[6] B41M *5/035;5/38*
U.S. Cl. 503—227 9 Claims

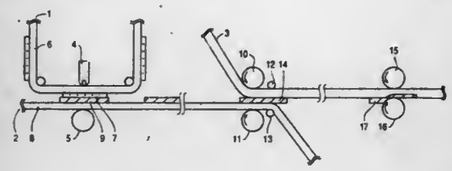
4. A method for making an image comprising the steps of:
(i) bringing a dye donor element comprising on a support a dye layer containing a colorizing dye dispersed or dissolved in a binder and an infrared absorbing azo dye having an absorption maximum above 700 nm said infrared absorbing azo dye being comprised in said dye layer and/or a layer adjacent thereto in contact with an image receiving element comprising on a support an image receiving layer containing a dye-able resin such that said image receiving layer is in face-to-face relationship with said dye layer of said dye donor element;
(ii) image-wise heating said dye donor element, thereby causing image-wise transfer of said infrared absorbing azo dye and
(iii) separating said dye donor element from said image receiving element, with the proviso that in case said thermotransferable infrared absorbing azo dye is a thiazolylazo dye it has an absorption maximum above 730 nm, said azo dye displaying little or no absorption in the visual range of the spectrum.

5,571,766

THERMAL DYE TRANSFER PRINTING METHOD AND INTERMEDIATE MEDIA THEREFOR

Akihiro Imai, Ikoma; Hiroyuki Matsuo, Neyagawa; Yasuo Fukui, Kadoma, and Nobuyoshi Taguchi, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Division of Ser. No. 997,199, Dec. 28, 1992, Pat. No. 5,444,037. This application Jun. 5, 1995, Ser. No. 462,789
Claims priority, application Japan, Dec. 27, 1991, 3-346127
Int. Cl.[6] B41M *5/035;5/38*
U.S. Cl. 503—227 8 Claims



1. An intermediate medium for use in a thermal transfer printing method comprising the combination of a transfer printing member having a coloring material layer on a substrate A, an intermediate medium having a dye-receiving layer on the substrate B, and an image receiving member comprising paper, said dye-receiving layer being formed with at least a polymer having a flow softening point of less than 300° C., wherein the coloring material layer of the transfer printing member is overlapped with the dye-receiving layer of the intermediate medium and then a sublimation thermal transfer image is transfer-printed in the dye-receiving layer of the intermediate medium by heating the transfer printing member with a printing head and subsequently the intermediate medium is overlapped with said image receiving member in such a manner that the dye-receiving layer with printed image comes to the side of said image receiving member and the dye-receiving layer with printed image is transferred from substrate B of the intermediate medium directly onto said image receiving member by heat and/or pressure and further the dye-receiving layer is fixed on the image receiving member by heat and/or pressure.

5,571,767

LOW FIRE X7R DIELECTRIC COMPOSITIONS AND CAPACITORS MADE THEREFROM

James M. Wilson, Victor, and Walter J. Symes, Jr., Dundee, N.Y., assignors to Ferro Corporation, Cleveland, Ohio

Filed Aug. 21, 1995, Ser. No. 517,737
Int. Cl.[6] C04B *35/46*
U.S. Cl. 501—139 9 Claims

1. A low fire ceramic dielectric composition in powder form capable of producing a multi-layer capacitor having a dielectric constant which does not vary more than about 15% from its value at 25° C. over a temperature range of −55° C. to 125° C., and consisting essentially of a barium titanate and neodymium oxide mixture forming a host material present in the range of approximately 88.6 to 91 wt. % of the composition, a $Bi_2O \cdot 2TiO_2$ sintering aid present in the range of approximately 7.98 to 10.0 wt. % of the composition, a glass powder present in the range of approximately 0.8 to 1.6 wt. % of the composition, and a trace amount of manganese dioxide.

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5,571,768

ZEOLITE FUNCTIONALIZED WITH ORGANOSILICEOUS GROUPS

Clarence D. Chang, Princeton, and Paul G. Rodewald, Rocky Hill, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 223,383, Apr. 5, 1994, Pat. No. 5,475,179, which is a continuation of Ser. No. 24,972, Mar. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 850,105, Mar. 12, 1992, which is a continuation-in-part of Ser. No. 38,310, Mar. 29, 1993, which is a continuation-in-part of Ser. No. 850,104, Mar. 12, 1992, abandoned. This application Sep. 15, 1994, Ser. No. 306,567

Int. Cl.[6] B01J 29/26;29/40

U.S. Cl. 502—64 40 Claims

1. A zeolite functionalized with at least one organosiliceous group of the formula, $SiR_n(OX)_{4-n}$, where R is at least one hydrocarbyl group, n is 1 or 2 and X is Si or H.

5,571,769

PROCESS FOR PREPARING A METAL CATALYST WITH IN SITU GENERATED CARRIER FOR THE HYDROGENATION OF ORGANIC COMPOUNDS AND CATLAYST OBTAINED BY MEAN OF SUCH A PROCESS

Giuseppe Gubitosa, Novara; Maurizio Giampeitri, Trecate, and Giuliano Vecchiato, Padova, all of Italy, assignors to Ministero Dell 'Universita' e Della Ricerca Scientifica e Technologica, Rome, Italy

Filed Jun. 15, 1994, Ser. No. 260,023

Claims priority, application Italy, Jun. 16, 1993, MI93A1292

Int. Cl.[6] B01J 21/08;21/12;21/14

U.S. Cl. 502—244 15 Claims

1. Process for preparing a supported metal catalyst for hydrogenating organic compounds, comprising:

(a) preparing an ammoniacal solution of at least one active metal selected from the group consisting of nickel, cobalt, copper, and chromium;

(b) reacting the ammoniacal solution with an organic silicon compound having the general formula

$$SiC_{n1}H_{n2}O_{n3}$$

wherein

n is from 2 to 21, n2 is from 8 to 46, and n3 is from 0 to 4;

(c) isolating the solid reaction product;

(d) drying and firing the isolated reaction product; and

(e) reducing the dried and fried reaction product.

5,571,770

CATALYST FOR FLUORINATION OF 1,1,1,-TRIFLUORO-2,2-DICHLOROETHANE AND METHOD FOR PREPARING THE SAME

Hoon Sik Kim; Moon Jo Chung; Byung Gwon Lee, and Hyun Joo Lee, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Jun. 15, 1995, Ser. No. 490,726

Claims priority, application Rep. of Korea, Dec. 2, 1994, 32574/1994

Int. Cl.[6] B01J 23/26

U.S. Cl. 502—307 7 Claims

1. A catalyst for the fluorination of 1,1,1-trifluoro-2,2-dichloroethane comprises chromium, one compound selected from the group consisting of Mg and Ca and at least one metal component selected from the group consisting of Ce, Zn and Ni, wherein the molar ratio of Cr to Mg or Ca ranges from 1:1 to 1:32 and the molar ratio Cr to the metal component is not more than 1:0.5.

5,571,771

CARRIER CATALYST, PROCESS FOR THE PRODUCTION THEREOF, AND USE THEREOF FOR THE PREPARATION OF VINYL ACETATE

Roland Abel, Oberhausen, and Karl-Fred Wörner, Hofheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Jul. 18, 1994, Ser. No. 276,438

Claims priority, application Germany, Jul. 16, 1993, 43 23 978.1

Int. Cl.[6] B01J 23/02;23/06;23/40;23/42

U.S. Cl. 502—330 12 Claims

1. A process for producing a surface impregnated catalyst comprising palladium, potassium and cadmium on porous support particles, which comprises impregnating the support particles once or a plurality of times with at least one solution of at least one salt of each of the three elements and drying the support particles after each impregnation, with the dynamic viscosity of the solution being at least 0.003 Pa.s and the solution volume in each impregnation being more than 80% of the pore volume of the support particles, and with the duration of each impregnation and also the time until commencement of the drying following this impregnation being selected so as to be sufficiently short for, after completion of the last drying, the specified metal salts to be present in an outer layer of from 5% to 80% of the pore volume of the support particles.

5,571,772

MIXTURES OF TRIAZINE SULFONYLUREA HERBICIDES AND PYRAZOLINE SAFENERS

Lothar Willms, Hofheim; Hermann Bieringer, Eppstein; Erwin Hacker, Hochheim, and Heinz Kehne, Hofheim, all of Germany, assignors to Hoechst Schering AgrEvo GmbH, Germany

Filed Sep. 28, 1994, Ser. No. 314,326

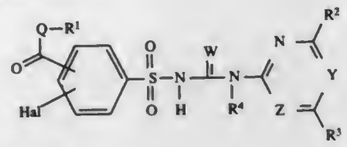
Claims priority, application Germany, Sep. 30, 1993, 43 33 249.8

Int. Cl.[6] A01N 43/56;43/66

U.S. Cl. 504—106 14 Claims

1. A herbicide/safener combination, comprising

A) a herbicidal active substance from the group consisting of the substituted phenylsulfonylureas of the formula (A) and their salts,



(A)

in which

Q and W are oxygen atoms,

Y and Z are nitrogen atoms,

R^1 is hydrogen, $(C_1–C_6)$-alkyl,

Hal is chlorine, bromine or iodine,

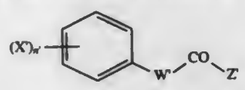
R^2 is methyl or methoxy,

R^3 is methyl or methoxy and

R^4 is hydrogen or methyl

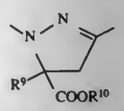
and

B) at least one safener compound selected from the group consisting of the compounds of formula (B),



in which

W' is a group of the formula (W1)



(W1)

X' is hydrogen, halogen, methyl, ethyl, methoxy, ethoxy, halomethyl or haloethyl,

Z' is OR^7

R^7 is hydrogen, $(C_1–C_8)$-alkyl, $(C_1–C_4)$-haloalkyl, $(C_1–C_4)$-hydroxyalkyl, $(C_1–C_7)$-cycloalkyl, $(C_1–C_8)$-alkoxy-$(C_1–C_4)$-alkyl,

R^9 is hydrogen, $(C_1–C_8)$-alkyl, $(C_1–C_8)$-haloalkyl, $(C_3–C_7)$-cycloalkyl or phenyl,

R^{10} is hydrogen, $(C_1–C_8)$-alkyl, $(C_1–C_4)$-haloalkyl, $(C_1–C_8)$-alkoxy-$(C_1–C_4)$-alkyl, $(C_1–C_4)$-hydroxyalkyl or $(C_1–C_7)$-cycloalkyl, and

n' is 1, 2, or 3.

5,571,773

(2-IMIDAZOLIN-2-YL) FUSED HETEROPYRIDINE COMPOUNDS INTERMEDIATES FOR THE PREPARATION OF AND USE SAID COMPOUNDS AS HERBICIDAL AGENTS

Barrington Cross, Rocky Hill; Marinus Los, Pennington; Robert F. Doehner, Jr., East Windsor; David W. Ladner, Hamilton Square, and Jerry L. Johnson, Lawrenceville, all of N.J., assignors to American Cyanamid Company, Madison, N.J.

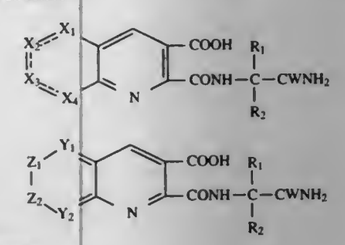
Division of Ser. No. 123,827, Sep. 20, 1993, Pat. No. 5,510,319, which is a division of Ser. No. 465,569, Jan. 16, 1990, Pat. No. 5,252,538, which is a continuation of Ser. No. 178,408, Apr. 6, 1988, abandoned, which is a continuation of Ser. No. 876,599, Jun. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 808,578, Dec. 13, 1985, abandoned, and Ser. No. 612,531, May 21, 1984. This application Jun. 2, 1995, Ser. No. 459,687

Claims priority, application Brazil, May 20, 1985, 8502364

Int. Cl.[6] A01N 43/90; C07D 471/04;491/052;491/056

U.S. Cl. 504—221 4 Claims

1. (2-Imidazolin-2-yl)fused heteropyridine compounds having the structure



(XXI)

(XXIII)

wherein

R_1 is $C_1–C_4$ alkyl;

R_2 is $C_1–C_4$ alkyl or $C_3–C_6$ cycloalkyl;

or and when taken together with the carbon to which they are attached, R_1 and R_2 represent $C_3–C_6$ cycloalkyl, optionally substituted with methyl;

- - represents a single or double bond;

W is O or S;

X_1, X_2, X_3 and X_4 are any combination of from zero to three CR_4 or CR_5; from zero to three N or NR_3 and from zero to two O or S;

Y_1 and Y_2 are N or CR_4 and are the same or different;

Z_1 and Z_2 are independently O, S, NR_3 or CR_4R_6 with the proviso that at least one of X_{1-4}, Y_{1-2} or Z_{1-2} is a heteroatom;

R_3 is $C_1–C_4$ alkyl, which may be optionally substituted with phenyl or one or more halogens; $C_3–C_6$ alkenyl, optionally substituted with phenyl or one or more halogens; C_3—C_6 alkynyl, optionally substituted with phenyl or halogen; $C_1–C_4$ alkoxy, optionally substituted with phenyl or one or more halogens; $C_3–C_6$ alkenyloxy optionally substituted with phenyl or one or more halogens; $C_3–C_6$ alkynyloxy optionally substituted with halogen or phenyl; or $C_2–C_6$ alkanoyloxy, optionally substituted with halogen or phenyl;

R_4 is hydrogen, halogen, $C_1–C_6$ alkyl; $C_1–C_4$ alkoxy; $C_2–C_6$ alkanoyloxy; $C_1–C_4$ alkylthio; phenoxy; $C_1–C_4$ haloalkyl, $C_1–C_4$ haloalkoxy; nitro, $C_1–C_4$ alkoxycarbonyl; $C_1–C_4$ dialkylamino; $C_1–C_4$ alkyl-sulfonyl or phenyl, optionally substituted with one or two $C_1–C_4$ alkyl, $C_1–C_4$ alkoxy, halogen or $C_1–C_4$ haloalkyl;

R_5 and R_6 are each hydrogen, $C_1–C_4$ alkyl; $C_1–C_4$ alkoxy, $C_1–C_4$ haloalkoxy; nitro, $C_1–C_4$ alkylsulfonyl or phenyl optionally substituted with one or two $C_1–C_4$ alkyl, $C_1–C_4$ alkoxy, halogen or $C_1–C_4$ haloalkyl; or any combination of these groups except when R_5 and R_6 are the same group, they are either both hydrogen or both $C_1–C_4$ alkyl; and when taken together, R_5 and R_5 may form a ring in which R_5R_6 are represented by the structure $—(CH_2)_n—$ where n is an integer of 4 or 5, or when taken together, R_5 and R_6 may form a group =O or $=NR_7$ wherein R_7 is phenyl, $C_1–C_4$ alkyl, $C_1–C_4$ alkoxy, $C_1–C_4$ alkylamino;

R_3, R_4, R_5 and R_6, when present on adjacent positions may, along with the atoms to which they are attached, form a ring and such $R_3–R_6$ pairs can be represented by the structure $—(CH_2)_m—$ or $—(CH)_m—$ where m is an integer of 3 or 4;

with the provisos that - - - represents a single bond between:

X_1 and X_2 when either X_1 or X_2 is S, O, NR_3 or CR_5R_6;

X_2 and X_3 when either X_2 or X_3 is S, O, NR_3 or CR_5R_6;

X_3 and X_4 when either X_3 or X_4 is S, O, NR_3 or CR_5R_6; and

when one of X_{1-4} is oxygen, the X_{1-4} to which it is attached is N, NR_3, CR_4 or or CR_5R_6; and when one of Z_{1-2} is oxygen, the Z_{1-2} to which it is attached is NR_3 or CR_5R_6.

5,571,774

PYRIDINE-2,3-DICARBOXIMIDES, THEIR PREPARATION AND THEIR USE FOR CONTROLLING UNDESIRED PLANT GROWTH

Gerhard Hamprecht, Weinheim; Peter Müster, Neulussheim; Matthias Gerber, Limburgerhof; Helmut Walter, Obrigheim, and Karl-Otto Westphalen, Speyer, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

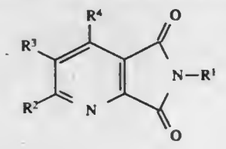
Filed Dec. 22, 1994, Ser. No. 361,561

Claims priority, application Germany, Dec. 22, 1993, 43 43 922.5

Int. Cl.[6] A01N 43/40; C07D 471/04

U.S. Cl. 504—246 9 Claims

1. A pyridine-2,3-dicarboximide of the general formula I



I

where

R^1 is hydrogen;

$C_1–C_4$-alkoxy;

$C_1–C_6$-alkyl which can carry one to three of the following groups: $C_1–C_4$-alkoxy, $C_1–C_4$-haloalkoxy, $C_1–C_4$-alkylthio, $C_1–C_4$-haloalkylthio, $C_1–C_4$-dialkylamino, $C_3–C_8$-cycloalkyl, halogen, excluding $C_1–C_4$-dialkylaminoethyl if one of the radicals R^2, R^3 or R^4 is amino or hydroxyl;

$C_3–C_8$-cycloalkyl, which can carry one to three of the following groups: $C_1–C_6$-alkyl, $C_1–C_6$-haloalkyl, $C_1–C_4$-alkoxy, $C_1–C_4$-haloalkoxy, halogen or nitro;

$C_3–C_6$-alkenyl or $C_3–C_6$-alkynyl, which can be substituted up to three times by halogen, and

at least one radical R^2, R^3 or R^4 is nitro, a group OR^5 or a group NR^6R^7 and the other radicals R^2, R^3 and R^4 are defined as follows:

i) hydrogen;

ii) halogen, nitro or cyano;

iii) C_1–C_6-alkyl, which can be substituted by one to five halogen atoms and/or one or two of the following radicals: C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, C_3–C_6-cycloalkyl or cyano;

iv) benzyl which can be substituted up to three times by C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, halogen, cyano or nitro;

v) C_3–C_8-cycloalkyl which can be substituted one to three times by C_1–C_4-alkyl or halogen;

vi) C_2–C_6-alkenyl which can be substituted up to three times by halogen and/or once by C_1–C_3-alkoxy or by phenyl which can carry one to three of the following groups: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, halogen, cyano or nitro;

vii) C_2–C_6-alkynyl which can be substituted up to three times by halogen or C_1–C_3-alkoxy and/or once by phenyl which can carry one to three of the following groups: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, halogen, cyano or nitro;

viii) C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkoxy, C_1–C_4-haloalkylthio, C_2–C_5-alkenyloxy, C_2–C_5-alkynyloxy, C_1–C_4-alkylsulfinyl, C_1–C_4-alkylsulfonyl, C_1–C_4-haloalkylsulfonyl;

ix) phenoxy or phenylthio which can be substituted up to three times by C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, halogen, cyano or nitro;

x) a 5- or 6-membered heterocyclic radical having one or two heteroatoms selected from the group consisting of oxygen, sulfur and nitrogen which can carry one or two of the following groups: C_1–C_3-alkyl, halogen, C_1–C_3-alkoxy or C_2–C_4-alkoxycarbonyl;

xi) phenyl which can carry one to three of the following groups: C_1–C_6-alkyl, C_1–C_6-haloalkyl, C_1–C_6-alkoxy, C_1–C_6-haloalkoxy, C_1–C_6-alkylthio, C_1–C_6-haloalkylthio, halogen, nitro or cyano;

xii) a group OR^5, where R^5 is hydrogen, C_1–C_4-alkylcarbonyl, C_1–C_4-haloalkylcarbonyl, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkoxy-C_2–C_4-alkoxycarbonyl, C_1–C_4-alkylcarbamoyl, C_1–C_4-dialkylcarbamoyl, C_1–C_4-alkylsulfonyl, C_1–C_4-haloalkylsulfonyl, sulfamoyl, C_1–C_4-alkylaminosulfonyl, C_1–C_4-dialkylaminosulfonyl, phenylsulfonyl, which can be substituted one to three times by C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, halogen, cyano or nitro;

xiii) a group NR^6R^7, where R^6 is hydrogen, C_1–C_4-alkyl, benzyl, C_1–C_4-alkoxy or, together with R^7, is C═S and R^7 is hydrogen, C_1–C_4-alkyl, C_1–C_4-alkylcarbonyl, C_1–C_4-haloalkylcarbonyl, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkoxy-C_2–C_4-alkoxycarbonyl, C_1–C_4-alkylcarbamoyl, C_1–C_4-dialkylcarbamoyl, C_1–C_4-alkylsulfonyl, C_1–C_4-haloalkylsulfonyl, sulfamoyl, C_1–C_4-alkylaminosulfonyl, C_1–C_4-dialkylaminosulfonyl, phenylsulfonyl, which can be substituted one to three times by C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, halogen, cyano or nitro;

excluding 6-amino-5-cyano-4-phenylpyridine-2,3-dicarboximide;

or its agriculturally utilizable salts.

5,571,775

N-ARYL[1,2,4]TRIAZOLO[1,5–A]PYRIDINE–2–SULFONAMIDE HERBICIDES

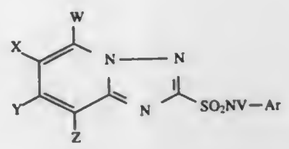
John C. Van Heertum; William A. Kleschick; Kim E. Arndt; Mark J. Costales; Robert J. Ehr; Kimberly B. Bradley, all of Indianapolis, Ind.; Walter Reifschneider, Walnut Creek, Calif.; Zoltán Benkó, Indianapolis, and John J. Jachetta, Zionsville, both of Ind., assignors to DowElanco, Indianapolis, Ind.

Continuation-in-part of Ser. No. 273,519, Jul. 11, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 466,510

Int. Cl.[6] **A01N** *43/90*; **C07D** *471/04*

U.S. Cl. 504—246 **57 Claims**

1. An N-aryl[1,2,4]triazolo[1,5-a]pyridine-2-sulfonamide compound of the formula:

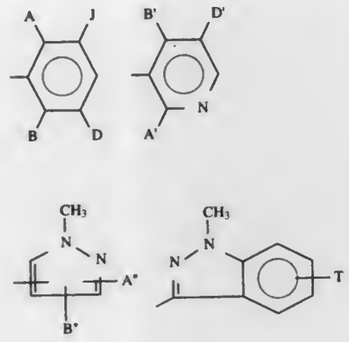


wherein

W, X, Y, and Z each independently represents H, CH_3, CH_2CH_3, CH_2OCH_3, CF_3, F, Cl, Br, I, OCH_2CF_3, $S(C_1$–$C_3)$alkyl, or $O(C_1$–$C_3)$alkyl optionally monosubstituted with F, Cl, or OCH_3, with the proviso that at least one of W, X, Y, and Z represents H;

V represents H, COR', CO_2R'', or $CONR'''_2$;

Ar represents an aromatic moiety one of the formulas:



A represents F, Cl, Br, CO_2R'', $CONR'''_2$, $(C_1$–$C_2)$haloalkyl, NO_2, CN, SOR', or SO_2R';

B represents H, CH_3, C_2H_5, F, Cl, Br, CN, OR', SR', NR'''_2, phenyl, or phenoxy, each phenyl and phenoxy optionally possessing 1 to 3 substituents selected from the group consisting of F, Cl, Br, CN, CF_3, NO_2, and CH_3;

D and J each independently represents H or CH_3 with the proviso that at least one of D and J represents H;

A' and B' each independently represents H, R', OR', OCH_2CH_2Cl, $OCH_2CH_2OCH_3$, $S(O)_nR'$, F, Cl, Br, I, CN, NO_2, C_6H_5, CO_2R'', or $CONR'''_2$ with the proviso that not more than one of A' and B' represents H;

D' represents H, F, Cl, Br, I, CF_3, or CH_3;

A" represents F, Cl, Br, I, CF_3, SCF_3, CN, CO_2R'', or $CONR'''_2$ and is located in the 4-position when the point of attachment is the 3- or 5-position and represents F, Cl, Br, I, CF_3, or CH_3 and is located in the 3- or 5-position when the point of attachment is the 4-position;

B" represents H when the point of attachment is the 3-or 5-position and represents H, Cl, Br, F, CH_3, or OCH_3 and is located the 3- or 5-position not occupied by A" when the point of attachment is the 4-position;

T represents H or F;

n represents 0, 1, or 2;

R' represents $(C_1$–$C_4)$alkyl optionally singly to completely substituted with fluorine;

R" represents $(C_1$–$C_4)$alkyl, $(C_3$–$C_4)$alkenyl, or $(C_3$–$C_4)$alkynyl;

R'" represents H or $(C_1$–$C_4)$alkyl; and

when V represents H, the agriculturally acceptable salts thereof.

5,571,776

SINGLE CRYSTALLINE BULK OXIDE SUPERCONDUCTOR AND PROCESS FOR PRODUCING SAME

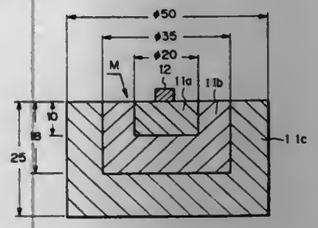
Mitsuru Morita, Kawasaki, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 18, 1992, Ser. No. 995,643

Claims priority, application Japan, Dec. 20, 1991, 3-354469

Int. Cl.[6] **H01B** *12/00*; **C04B** *35/505*; **H01L** *39/12*

U.S. Cl. 505—126 **8 Claims**



1. An oxide superconducting material exhibiting a microstructure wherein precipitates of a RE_2BaCuO_5 (211) phase are dispersed in a single crystal of a $REBa_2Cu_3O_{7-x}$ (123) phase where RE represents at least one element; selected from a group consisting of Y, Sm, Eu, Gd, Dy, Ho, Er. Tm, Yb and Lu; said single crystal comprising an inner layer surrounded by successive three dimensional layers, said successive three dimensional layers being concentric and extending outward from said inner layer; each of said layers comprising an RE element or a composition of RE elements different from those of the other layers; said layers being located in an order such that the (123) phase formation temperature of said layers are successively lowered from the inner layer outward.

5,571,777

SUPERCONDUCTING THIN FILM HAVING AT LEAST ONE ISOLATED SUPERCONDUCTING REGION FORMED OF OXIDE SUPERCONDUCTOR MATERIAL AND METHOD FOR MANUFACTURING THE SAME

So Tanaka, and Michitomo Iiyama, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

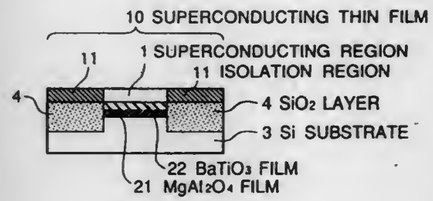
Continuation of Ser. No. 136,613, Oct. 15, 1993, abandoned, which is a continuation of Ser. No. 849,491, Mar. 11, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 479,853

Claims priority, application Japan, Mar. 11, 1991, 3-70671; Mar. 11, 1991, 3-70672

Int. Cl.[6] **B32B** *9/00*

U.S. Cl. 505—237 **10 Claims**

1. A superconducting thin film structure formable on a semiconductor substrate which has a principal surface, said thin film structure comprising:



a buffer layer structure formed on said principal surface of said semiconductor substrate, said buffer layer structure having a planar upper surface located above said principal surface in a direction perpendicular to said principal surface, said buffer layer structure including a first thin film deposited directly on said principal surface of said substrate, and a second thin film deposited directly on said first film, said substrate being a silicon substrate and said first thin film of said buffer layer structure being a $MgAl_2O_4$ film and said second thin film thereof being a $BaTiO_3$ film;

an insulator layer which abuts at least an edge of said buffer layer structure, said insulator layer having a planar upper surface located above said principal surface, in said direction, each of said planar upper surface of said buffer layer structure and said planar upper surface of said insulator layer being in the same plane; and

a superconductive thin film layer, said thin film layer having a uniform thickness in said direction and a portion located on said buffer layer structure and a portion located on said insulator layer, said thin film layer thereby having a planar upper surface defined by said portion thereof located on said buffer layer structure and said portion thereof located on said insulator layer, said superconducting layer being formed of one of a Y-Ba-Cu-O compound oxide superconductor material, a Bi-Sr-Ca-Cu-O compound oxide superconductor material, and a Tl-Ba-Ca-Cu-O compound oxide superconductor material, said thin film layer having, at least one superconducting region formed by said portion formed on said buffer layer structure on said principal surface of said semiconductor substrate, and at least one isolation region formed by said portion formed on said insulator layer, said superconducting thin film of said isolation region including constituent atoms from said insulator layer whereby said thin film of said isolation region surrounds said superconducting region;

said buffer layer being formed of a material which prevents constituent atoms of said insulator layer from defusing into said superconductive thin film layer and on which can be grown a crystalline oxide superconductive thin film layer formed of one of a Y-Ba-Cu-O compound oxide superconductor material, a Bi-Sr-Ca-Cu-O compound oxide superconductor material, and a Tl-Ba-Ca-Cu-O compound oxide superconductor material.

5,571,778

SUPERCONDUCTING JUNCTION MATERIAL AND PROCESS OF PREPARING SAME

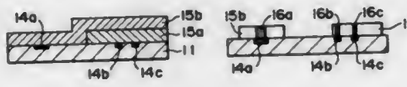
Manabu Fujimoto, Osaka; Katsumi Suzuki, Tokyo; Youichi Enomoto, Tokyo, and Shoji Tanaka, Tokyo, all of Japan, assignors to Superconductivity Research Laboratory of International Superconductivity Technology Center, and Sharp Corporation, both of Japan

Filed Mar. 30, 1995, Ser. No. 413,999

Claims priority, application Japan, Apr. 1, 1994, 6-065077

Int. Cl.[6] B44C *1/22*; B05D *5/00*

U.S. Cl. 505—329 9 Claims



1. A process for the production of a superconducting junction material, comprising the steps of:

(a) irradiating a surface of a single crystal substrate with a focused ion beam to form at least two damaged portions;

(b) then forming a first superconducting oxide layer by vacuum deposition on said surface;

(c) then selectively removing a part of said first superconducting layer to expose part of said surface together with at least one of said damaged portions and to leave at least one first pattern of said first superconducting layer intersecting at least one of the other damaged portions;

(d) then forming a second superconducting oxide layer by vacuum deposition on said exposed surface including said exposed damaged portion; and

(e) then selectively removing a part of said second superconducting layer to leave at least one second pattern of said second superconducting layer intersecting at least one exposed damaged portion,

steps (b) and (d) being carried out at different oxygen partial pressures so that either one of said first and second sections forms a Josephson junction element having a weak link just above the corresponding damaged portion with the other section forming a flux flow junction element having a weak link just above the corresponding damaged portion.

5,571,779

METHOD OF LUBRICATION USING PERFLUOROALKYL TERMINATED URETHANES

Eduard K. Kleiner, 29 Hemlock Hill Rd., Pound Ridge, N.Y. 10576, and Athanasios Karydas, 400 E. 71st St., New York, N.Y. 10021

Division of Ser. No. 972,825, Nov. 9, 1992, Pat. No. 5,502,225. This application Nov. 15, 1995, Ser. No. 558,905

Int. Cl.[6] C10M *105/08*; *105/54*

U.S. Cl. 508—153 25 Claims

1. Method for lubricating surfaces by applying a lubricant to said surfaces, said lubricant comprising compounds having the formula:

$$[R_f-CH_2CH_2-X-CONH]_m A+NHCO-X-R_1]_n$$

in which

R_f is a straight or branched perfluoroalkyl group of from 6 to 20 carbon atoms;

X is —O— or —S—;

R_1 is alkyl of from 8 to 36 carbon atoms;

m has a value of 1, 2, or 3;

n has a value of 0, 1, or 2;

the sum of m and n being 1, 2, or 3; and

A is R_1 if the sum of m and n is 1, and otherwise an aliphatic, cycloaliphatic, or aromatic group of up to 36 carbon atoms and having a valence equal to the sum of m and n.

5,571,780

PROCESS FOR REDUCING THE BACK MIGRATION IN MECHANICAL VACUUM PUMPS OPERATING WITH PERFLUOROPOLYETHER OILS

Rossella Silvani; Valerio Carsetti, both of Milan; Casimiro Pace, Alessandria, and Padmanabhan Srinivasan, Milan, all of Italy, assignors to Ausimont S.p.A., Italy

Continuation of Ser. No. 344,514, Nov. 23, 1994, abandoned, which is a continuation of Ser. No. 10,417, Jan. 28, 1993, abandoned. This application Feb. 9, 1996, Ser. No. 599,661

Claims priority, application Italy, Jan. 30, 1992, MI92A0170

Int. Cl.[6] C10M *147/04*

U.S. Cl. 508—582 2 Claims

1. A process for generating vacuum comprising operating a mechanical vacuum pump containing perfluoropolyethers having perfluoroalkyl end groups, said perfluoropolyethers having a perfluoropolyether fraction such that the amount of perfluoropolyether having a molecular weight lower than or equal to 1,500 is present in an amount not exceeding 0.1% by weight of said perfluoropolyethers, and the amount of perfluoropolyether having a molecular weight lower than or equal to 1,800 is present in an amount not exceeding 1.3% by weight of said perfluoropolyethers.

5,571,781

NON-AQUEOUS LIQUID DETERGENT COMPOSITIONS

Jean-Pol Boutique, Genbloux, Belgium, assignor to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US93/09799, § 371 Date Apr. 7, 1995, § 102(e) Date Apr. 7, 1995, PCT Pub. No. WO94/09101, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 13, 1993, Ser. No. 416,687

Claims priority, application United Kingdom, Oct. 13, 1992, 92871064; Nov. 6, 1992, 92870182

Int. Cl.[6] C11D *3/32*; *3/42*; *3/04*

U.S. Cl. 510—339 5 Claims

1. A non-aqueous liquid detergent composition comprising a surfactant comprising 2 vicinal hydroxyl groups, which surfactant is selected from poly hydroxy fatty acid amides according to the formula:

$$R^2-\underset{\underset{O}{\|}}{C}-N(R^1)-Z$$

wherein R^1 is H, C_{1-1} hydrocarbyl, 2-hydroxyethyl, 2-hydroxypropyl or a mixture thereof, R^2 is C_{5-31} hydrocarbyl, and Z is a polyhydroxyhydrocarbyl having a linear hydrocarbyl chain with at least 3 hydroxyls directly connected to the chain, or an alkoxylated derivative thereof, characterized in that said composition further comprises a boron comprising compound selected from the group consisting of boric acid and the alkanolamine salts of tetraborate and metaborate wherein the molar ratio of said surfactant to said boron comprising compound is equal to or lower than 2:1.

5,571,782

SOLID CONSUMER PRODUCT COMPOSITIONS CONTAINING SMALL PARTICLE CYCLODEXTRIN COMPLEXES

Toan Trinh, Maineville, and John M. Gardlik, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 268,157, Jun. 29, 1994, which is a continuation of Ser. No. 707,266, May 24, 1991, abandoned, which is a continuation of Ser. No. 486,757, Mar. 6, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 475,307

Int. Cl.[6] A61K *7/46*

U.S. Cl. 512—4 4 Claims

1. Solid disposable absorbent consumer product composition comprising an effective amount of perfume/cyclodextrin inclusion complex prepared by the kneading method and having a particle size of less than about 5 microns.

5,571,783

COMPOSITION AND METHOD FOR TREATING PATIENTS WITH HEPATIC DISEASE

Dirk H. Montagne, Grossbochstetten, Switzerland; Ahmad R. Kamarei, Wilmette, Ill.; Guy Vaussard, Bionay, Switzerland; Eric Leopold, Sunnyvale, Calif., and Susan Trimbo, Evanston, Ill., assignors to Clintec Nutrition Company, Deerfield, Ill.

Filed Mar. 9, 1993, Ser. No. 28,373

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—2 25 Claims

1. A shelf stable ready-to-use composition for providing nutritional support for a hepatic patient, that does not require reconstitution and can be stored in a liquid form comprising:

a lipid component;

a carbohydrate component; and

a protein component that comprises at least 25% by protein content free amino acids and a storage stabilizing amount of whey protein.

5,571,784

USE OF VWF-CONTAINING CONCENTRATES AS A THERAPY WHICH IS EMPLOYED IN COMBINATION WITH ANTITHROMBOTIC AND FIBRINOLYTIC THERAPY

Martin Reers, and Gerhard Dickneite, both of Marburg, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Filed Oct. 18, 1995, Ser. No. 544,867

Claims priority, application Germany, Oct. 20, 1994, 44 37 544.1

Int. Cl.[6] A61K *38/00*

U.S. Cl. 514—2 2 Claims

1. A method for decreasing the bleeding side effect in a patient caused by administering anticoagulant and/or fibrinolytic agents comprising administering to said patient a therapeutically active amount of von Willibrand Factor, or a fragment having von Willibrand Factor activity.

5,571,785

BIOLOGICALLY ACTIVE COMPOUNDS

Francesco Angelucci, Milan; Maria Grandi, Reggio Emilia, and Antonino Suarato, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.r.l, Milan, Italy

PCT No. PCT/EP94/01100, § 371 Date Dec. 20, 1994, § 102(e) Date Dec. 20, 1994, PCT Pub. No. WO94/26311, PCT Pub. Date Nov. 24, 1994

PCT Filed Apr. 8, 1994, Ser. No. 351,474

Claims priority, application United Kingdom, May 11, 1993, 9309663.4

Int. Cl.[6] A61K *38/16*; *31/70*; C07K *9/00*; C07H *15/24*

U.S. Cl. 514—8 15 Claims

1. A polymer-bound anthracycline, prepared by radically copolymerizing methacryloyl compounds of the following formulae 6 and 7:

6 $CH_2=C(CH_3)-CO-[Gly]_n-NHR_1$

7 $CH_2=C(CH_3)-CO-Gly-R_2$

to form a copolymer, wherein the methacryloyl compounds of the formulae 6 and 7 are present in a molar ratio of from 98:2 to 70:30, respectively, then

reacting the copolymer with an anthracycline aminoglycoside intermediate of formula 10:

10 H—Y—NH—D

to form said polymer-bound anthracycline, wherein:

Gly represents glycine;

n is 0 or 1;

R^1 is a C_1–C_6 alkyl group substituted by one or more hydroxy groups;

R_2 is a hydroxy group or a leaving group;

Y is an amino acid residue or a peptide spacer; and

NH—D is the residue of an anthracyline aminoglycoside NH_2—D.

13. A pharmaceutical composition comprising a pharmaceutically acceptable diluent or carrier and, as active ingredient, the polymer-bound anthracycline of claim 1.

5,571,786

USE OF PROTEIN C OR THE ACTIVATION PEPTIDE OF PROTEIN C FOR PREPARING A PHARMACEUTICAL PREPARATION

Johann Eibl; Ludwig Pichler; Hans P. Schwarz, and Peter Turecek, all of Vienna, Austria, assignors to Immuno Aktiengesellschaft, Vienna, Austria

Continuation-in-part of Ser. No. 18,910, Feb. 17, 1993, abandoned, which is a continuation of Ser. No. 694,213, Apr. 19, 1991, abandoned. This application Jan. 20, 1995, Ser. No. 375,777

Claims priority, application Austria, Aug. 16, 1990, A1697/90; European Pat. Off., Jan. 28, 1991, 91890012

Int. Cl.[6] A61K *38/16*

U.S. Cl. 514—8 4 Claims

1. A method of treating and preventing pain resulting from inflammation comprising administering to a patient having or susceptible to pain occurring as a result of an inflammatory reaction an effective amount of an anti-nociceptive agent selected from the group consisting of protein C, activation peptide of protein C and mixtures thereof to treat or prevent the pain.

5,571,787

PROSAPOSIN AS A NEUROTROPHIC FACTOR

John S. O'Brien, and Yasuo Kishimoto, both of San Diego, Calif., assignors to Myelos Corporation, La Jolla, Calif.

Filed Jul. 30, 1993, Ser. No. 100,247

Int. Cl.[6] A61K *38/17*; *38/18*; C12N *15/00*

U.S. Cl. 514—12 19 Claims

1. A method of stimulating neural cell outgrowth or increased myelination, comprising contacting neuronal cells in vitro with a composition comprising an effective neuritogenic concentration of prosaposin or a neurotrophic fragment thereof, wherein said fragment comprises saposin C, a peptide comprising amino acids 8–29 of SEQ ID NO: 3, or said fragment includes the active neurotrophic fragment located within amino acids 8–29 of SEQ ID NO: 3.

5,571,788
STABLE CALCITONIN PHARMACEUTICAL COMPOSITIONS

Tudor Arvinte, Billingshurst, and Katherine D. Ryman, Guildford, both of Great Britain, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 73,646, Jun. 8, 1993, abandoned, which is a continuation of Ser. No. 805,252, Dec. 9, 1991, abandoned. This application Jan. 24, 1994, Ser. No. 185,757

Int. Cl.[6] A61K *38/00;38/02;38/30;* **C07K** *5/00*

U.S. Cl. 514—12 **7 Claims**

1. A stable aqueous solution of human calcitonin (hCT) which remains free of hCT fibrils for at least 24 hours at 25 ° C. which comprises water, hCT and at least one compound selected from the group consisting of formic acid, acetic acid, ascorbic acid, hydrochloric acid, succinic acid, L-glutamic acid, malonic acid, glutaric acid, adipic acid, citric acid, L-a-tartaric acid, DL-tartaric acid, ethylene diamine tetraacetic acid, and phenol, the concentration of acid being from 0.0001% to 0.01% by weight and in the absence of a metal salt or buffer.

5,571,789
USE OF URODILATIN IN PULMONARY AND BRONCHIAL DISEASES

Thomas Flüge, and Wolf-Georg Forssmann, both of Hannover, Germany, assignors to Haemopep Pharma GmbH, Germany

PCT No. PCT/EP93/01189, § 371 Date Nov. 15, 1994, § 102(e) Date Nov. 15, 1994, PCT Pub. No. WO93/23070, PCT Pub. Date Nov. 25, 1993

PCT Filed May 12, 1993, Ser. No. 335,695

Claims priority, application Germany, May 15, 1992, 42 16 133.9

Int. Cl.[6] C07K *1/04;14/00;* **A61K** *38/02;37/24*

U.S. Cl. 514—12 **11 Claims**

1. A method for the treatment of pulmonary or bronchial diseases characterized by spasm of the bronchial muscles, swelling of the bronchial mucosa and enhanced production of bronchial secretion, comprising administering an effective amount of urodilatin to a patient in need of such treatment.

5,571,790
RECOMBINANT HUMAN ENDOTHELIAL CELL GROWTH FACTOR

Michael Jaye, Glenside, Pa.; Wilson Burgess, Gaithersburg; Thomas Maciag, Rockville, both of Md., and William N. Drohan, Springfield, Va., assignors to Rhone-Poulenc Rorer Pharmaceuticals, Inc., Collegeville, Pa.

Continuation of Ser. No. 334,884, Nov. 3, 1994, which is a continuation of Ser. No. 799,859, Nov. 27, 1991, abandoned, which is a continuation of Ser. No. 693,079, Apr. 29, 1991, abandoned, which is a continuation of Ser. No. 134,499, Dec. 18, 1987, abandoned, which is a continuation-in-part of Ser. No. 835,594, Mar. 3, 1986, Pat. No. 4,868,113. This application Jun. 7, 1995, Ser. No. 472,964

Int. Cl.[6] A61K *38/27;* **C07K** *14/50*

U.S. Cl. 514—12 **12 Claims**

1. Purified and isolated biologically active human recombinant endothelial cell growth factor, said factor having an amino acid sequence selected from the group consisting of:

(i) AEGEITTFTALTEKFNLPPGNYKKPKLLYCSNGGHF LRILPDGTVDGTRDRSDQHIQLQLSAESVGEVYIKST ETGQYLAMDTDGLLYGSQTPNEECLFLERLEENHYN TYISKKHAEKNWFVGLKKNGSCKRGPRTHYGQKAIL FLPLPVSSD; and

(ii) a sequence of (i) additionally comprising an NH_2-terminal methionine residue,

said factor being free of other proteins of human origin.

5,571,791
MODIFIED POLYPEPTIDE FRAGMENTS OF THE GLUCOCORTICOID RECEPTOR

E. Brad Thompson, and E. Brad Thompson, both of Galveston, Tex., assignors to Board Of Regents, The University Of Texas System, Austin, Tex.

Division of Ser. No. 87,151, Jul. 2, 1993, Pat. No. 5,468,624. This application Nov. 20, 1995, Ser. No. 561,072

Int. Cl.[6] A61K *38/00;* **C07K** *14/00*

U.S. Cl. 514—12 **2 Claims**

1. A cell lysis factor consisting of the amino acid sequence of SEQ ID NO:2.

2. A pharmaceutical composition comprising the cell lysis factor of claim 1 and a pharmaceutically acceptable carrier.

5,571,792
HISTIDINE AND HOMOHISTIDINE DERIVATIVES AS INHIBITORS OF PROTEIN FARNESYLTRANSFERASE

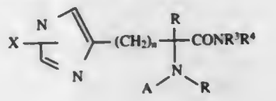
Gary L. Bolton; John C. Hodges, and Michael W. Wilson, all of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 30, 1994, Ser. No. 268,364

Int. Cl.[6] A61K *31/415;* **C07D** *233/64;* **C07K** *5/078;5/097*

U.S. Cl. 514—18 **19 Claims**

1. An inhibitor of protein farnesyltransferase which is a histidine or homohistidine derivative of the Formula I,



wherein:

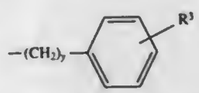
n=1 or 2;

A=COR^2, CO_2R^2, $CONHR^2$, CSR^2, $C(S)OR^2$, $C(S)NHR^2$, or SO_2R^2 with R^2 as defined below;

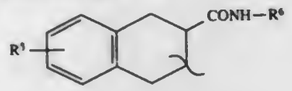
R=independently H or Me;

R^2=alkyl, $(CH_2)_m$-cycloalkyl, $(CH_2)_m$-aryl, or $(CH_2)_m$-heteroaryl with m=0, 1, 2, or 3;

R^3 and R^4=independently $(CH_2)_x$-R^7, with x=2–5 and R^7 as defined below,



or $(CH_2)_nCONH$-R^6 with y=1–5 and n as defined above and with R^5 and R^6 as defined below, or R^3 and R^4 are connected together to form a ring of the following type:



with R^5 and R^6 as defined below;

R^5=R^2, OR^2, or SR^2 with R^2 as defined above;

R^6=$(CH_2)_nR^5$, $(CH_2)_nCO_2R^2$, $(CH_2)_nCONHR^2$, $(CH_2)_nCONH(CH_2)_{n+1}R^5$, or $CH(COR^8)(CH_2)_nR^5$, with n, R^2, and R^5 as defined above and R^8 as defined below;

R^7=$(CH_2)_m$-cycloalkyl, $(CH_2)_m$-aryl, $(CH_2)_m$-heteroaryl, $O(CH_2)_m$-cycloalkyl, $O(CH_2)_m$-aryl, or $O(CH_2)_m$-heteroaryl with m=0, 1, 2, or 3;

R^8=OH, O-alkyl, NH_2, or NH-alkyl; and

X=H, Me, $(CH_2)_nCO_2R^9$, or $(CH_2)_nP(O)(OR^9)_2$, with R^9=H or alkyl; or a pharmaceutically acceptable salt thereof.

5,571,793
ENDOPARASITICIDAL COMPOSITIONS BASED ON OPEN-CHAIN TETRADEPSIPEPTIDES

Jürgen Scherkenbeck, Wermelskirchen; Peter Jeschke, Leverkusen; Andrew Plant, Odenthal; Achim Harder, Köln, and Norbert Mencke, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

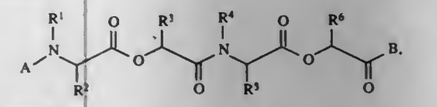
Filed Dec. 2, 1994, Ser. No. 348,420

Claims priority, application Germany, Dec. 9, 1993, 43 41 992.5

Int. Cl.[6] A61K *38/15;* **C07K** *11/00*

U.S. Cl. 514—19 **10 Claims**

1. A method for combatting endoparasites in a human or animal host which comprises administering to said host an endoparasitically effective amount of an open-chain tetradepsipeptide of the formula



(I)

in which

A represents hydrogen, alkyl, aralkyl or an acyl radical of the formula —CO—R^9, in which

R^9 represents straight-chain or branched alkyl, alkoxy, aralkyl or aralkoxy having up to 6 carbon atoms in the alkyl moiety,

R^1 and R^4 independently of one another represent hydrogen, C_1–C_8-alkyl, C_3–C_6-cycloalkyl or aralkyl,

R^2 and R^5 independently of one another represent hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms, hydroxyalkyl, alkanoyloxyalkyl, alkoxyalkyl, aryloxyalkyl, mercaptoalkyl, alkylthioalkyl, alkylsulphinylalkyl, alkylsulphonylalkyl, carboxyalkyl, alkoxycarbonylalkyl, arylalkoxycarbonylalkyl, carbamoylalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, guanidinoalkyl, which itself is optionally substituted by one or two benzyloxycarbonyl radicals or by one, two, three or four alkyl radicals, or represent alkoxycarbonylaminoalkyl, 9-fluorenylmethoxycarbonyl-(FMOC)aminoalkyl, alkenyl, cycloalkyl, cycloalkylalkyl and optionally substituted aryl, optionally substituted arylalkyl or optionally substituted hetarylmethyl, wherein the substituents are halogen, hydroxyl, alkyl, alkoxy, nitro or a radical —$NR^{10}R^{11}$, in which R^{10} and R^{11} independently of one another represent hydrogen or alkyl, or R^{10} and R^{11} together with the adjacent N atom represent a carbocyclic 5-, 6-, 7- or 8-membered ring which is optionally interrupted hy O, S and N and which is optionally substituted by C_1–C_4-alkyl.

R^3 and R^6 independently of one another represent hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms, hydroxyalkyl, alkanoyloxyalkyl, alkoxyalkyl, aryloxyalkyl, alkylthioalkyl, alkylsulphinylalkyl, alkylsulphonylalkyl, carboxyalkyl, alkoxycarbonylalkyl, arylalkoxycarbonylalkyl, carbamoylalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, alkoxycarbonylaminoalkyl, alkenyl, cycloalkyl, cycloalkylalkyl and optionally substituted aryl, optionally substituted arylalkyl or optionally substituted betarylmethyl, wherein the substituents are halogen, hydroxyl, alkyl, alkoxy, nitro or a radical —NR^{10}—R^{11}, in which R^{10} and R^{11} independently of one another represent hydrogen or alkyl or R^{10} and R^{11} together with the adjacent N atom represent a carbocyclic 5-, 6-, 7- or 8-membered ring which is optionally interrupted by O, S and N and which is optionally substituted by C_1–C_4-alkyl,

B represents hydroxyl, alkoxy having up to 4 carbon atoms or the radical NR^7R^8, in which

R^7 and R^8 represent hydrogen, alkyl, aralkyl or aryl,

or its optical isomer or racemate.

5,571,794
NON-INVASIVE NOVEL METHOD FO COSMETIC LIP AUGMENTATION

Bruce M. Frome, P.O. Box 15157, Beverly Hills, Calif. 90209

Filed Jun. 22, 1995, Ser. No. 493,675

Int. Cl.[6] A61K *31/70;31/395;31/44;31/22;31/16;31/12;31/075;31/05*

U.S. Cl. 514—23 **12 Claims**

1. A process for achieving a selective augmentation of the size of the upper and lower lips comprising delivery specifically to the lips where the augmentation is sought, an effective amount of vasodilator.

5,571,795
DERIVATIVE-COMPOUND-CONJUGATES AND PHARMACEUTICAL COMPOSITIONS COMPRISING SAME

Daniel E. Kahne, and Suzanne Walker Kahne, both of Princeton, N.J., assignors to The Trustees of Princeton University, Princeton, N.J.

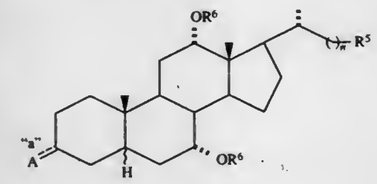
Continuation-in-part of Ser. No. 806,985, Dec. 13, 1991. This application Dec. 14, 1992, Ser. No. 989,667

Int. Cl.[6] A61K *31/70;31/56;* **C07J** *17/00;41/00*

U.S. Cl. 514—26 **68 Claims**

1. A compound-conjugate comprising a compound of the formula (I) conjugated through any of A, C-3, or R^5 to a therapeutically-significant-compound:

(I)



wherein

A is O, OH, OR^6 , NR^7R^8 , N_3, $NHCOR^7$, OCOAr, O-CO-OR^9, $OCOR^9$, $NHCH_2C_6H_5$, and in which Ar is phenyl or phenyl substituted with 1–3 groups selected from the group consisting of halogen, C_1–C_{12} alkyl or C_1–C_3 alkoxy;

"a" is a single bond in the alpha or beta configuration with the proviso that when A =O, "a" is a double bond;

R^5 is CO_2R^{10}, CH_2OR^9, $CONH_2$, $CONHR^7$, $CONR^7R^8$, CO-S-R^{10} , $CH^2S(O)_p$-S-R^{10}, CH_2NH_2, CH_2NHR^7, $CH_2NR^7R^8$, CH_2-$SO(O)_p$-S-R^{10};

R^6 is a glycosyl moiety comprising 1–10 monosaccharide units in which the glycosidic linkage at the anomeric carbon of each monosaccharide unit is independently alpha or beta;

R^7 and R^8 , independently are H, C_1–C_4 alkyl, C_3–C_7 cycloakyl, C_4–C_{10} alkylcycloalkyl, phenyl, benzyl, or, taken together are $(CH_2)_f$, where f=3–6;

R^9 is H, or C_1–C_3 alkyl;

R^{10} is H, C_1–C_{10} alkyl, C_1–C_{10} alkenyl, C_1–C_{10} alkynyl, C_6H_5 or $CH_2C_6H_5$;

p is 0, 1 or 2;

n is 0, 1 or 2;

or a pharmaceutically suitable salt thereof.

5,571,796

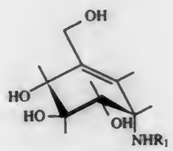
ADMINISTRATION OF VALIENAMINE-RELATED DISACCHARIDE COMPOUNDS IN REDUCING INFLAMMATION IN A SENSITIZED MAMMAL ARISING FROM EXPOSURE TO AN ANTIGEN

Om P. Srivastava; Roman Szweda; Richard H. Smith, all of Edmonton; Robert M. Ippolito, West Edmonton, all of Canada, and Ulrike Spohr, Boulder, Colo., assignors to Alberta Research Council, Edmonton, Canada

Filed Jun. 6, 1995, Ser. No. 466,621
Int. Cl.[6] A61K *31/70;* **C07H** *5/04*
U.S. Cl. 514—42 **11 Claims**

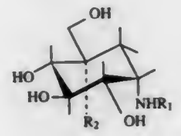
1. A method for reducing the degree of inflammation in a mammal arising from the initiation of a mammal's secondary immune response due to antigen exposure, which method comprises administering to said mammal an valienamine-related disaccharide compound selected from the group consisting of Formula I

I



and Formula II

II

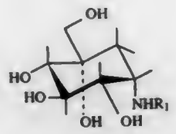


where R_1 is selected from the group consisting of glucose and 1,6-anhydroglucose;

where R_2 is selected from the group consisting of —H and —OH; and pharmaceutically acceptable salts thereof.

6. A method for reducing the degree of inflammation in a mammal arising from the initiation of a mammal's secondary immune response due to antigen exposure, which method comprises administering to said mammal an valienamine-related disaccharide compound selected from the group consisting of valienamine-glucose, valiolamine-1,6-anhydroglucose and valiolamine-glucose and pharmaceutically acceptable salts thereof.

8. An α-5,2-valiolamine disaccharide of the structure

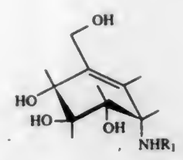


where R_1 is selected from the group consisting of glucose and 1,6-anhydroglucose; and

pharmaceutically acceptable salts thereof.

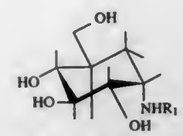
9. An α-1,2-valienamine-related disaccharide selected from the group consisting of Formula I

I



and Formula II

II



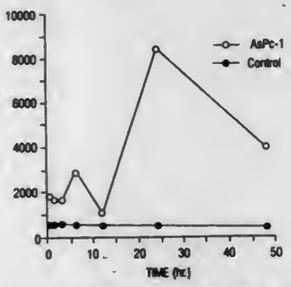
where R_1 is selected from the group consisting of glucose and 1,6-anhydroglucose; and pharmaceutically acceptable salts thereof.

5,571,797

METHOD OF INDUCING GENE EXPRESSION BY IONIZING RADIATION

Tsuneya Ohno, Boston, Mass.; Ralph R. Weichselbaum, Chicago, Ill., and Donald W. Kufe, Wellesley, Mass., assignors to Arch Development Corporation, Chicago, Ill.

Filed May 11, 1994, Ser. No. 241,863
Int. Cl.[6] A61K *48/00;51/00*
U.S. Cl. 514—44 **16 Claims**



1. A method of inducing the expression of a gene within a host, comprising the steps of:

(a) delivering to a host tissue a DNA segment comprising a radiation responsive enhancer-promoter, operatively linked to a structural gene; and

(b) administering to the host tissue a radionuclide in a dose effective to promote expression of the structural gene.

5,571,798

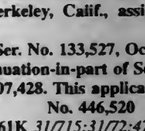
SYNERGISTIC ANTIVIRAL NUCLEOSIDE COMBINATIONS

Johan Harmenberg, Karlavagen 94, S-115 22 Stockholm; Britta Wahren, Fritiofsvagen 10, S-182 64 Djursholm, and Bo Oberg, Askvagen 27, S-752 52 Uppsala, all of Sweden

Continuation of Ser. No. 793,383, Mar. 16, 1992, abandoned. This application Dec. 9, 1994, Ser. No. 354,891
Claims priority, application Sweden, Jul. 19, 1989, 8902568
Int. Cl.[6] A61K *31/70*
U.S. Cl. 514—45 **3 Claims**

3. A synergistic antiviral composition comprising in combination an effective antiviral synergistic amount of 3'-fluoro-2',3'-dideoxy nucleoside compound I of the formula:

I



wherein B is guanine; and an effective antiviral synergistic amount of a 2',3'-dideoxy nucleoside selected form the group consisting of 2',3'-dideoxycytidine (ddC), 2',3'-dideoxyinosine (ddI) and 3-azido-3'-deoxythymidine (AZT); and a pharmaceutically acceptable carrier.

5,571,799

RESPONSE (2'-5') OLIGOADENYLATE ANALOGUES USEFUL AS INHIBITORS OF HOST-V5.-GRAFT

Zenovy Tkachuk; Eugeny Kvasyuk; Gennady Matsuka, and Igor Mikhailopulo, all of Kiev, U.S.S.R., assignors to Basco, Ltd., Washington, D.C.

PCT No. PCT/US91/05734, § 371 Date Aug. 29, 1994, § 102(e) Date Aug. 29, 1994, PCT Pub. No. WO93/03733, PCT Pub. Date Mar. 4, 1993
PCT Filed Aug. 12, 1991, Ser. No. 185,795
Int. Cl.[6] A61K *31/70;* **C07H** *19/167*
U.S. Cl. 514—47 **8 Claims**

1. Adenylyl (2'-5')adenylyl (2'-5')-9-(2,3-anhydro-β-D-ribofuranosyl)adenine disodium salt.

5,571,800

METHOD FOR INHIBITING ALLOGRAFT REJECTION BY THE ADMINISTRATION OF 6-AZAURIDINE OR ITS TRIACETATE DERIVATIVE

Randall E. Morris, Los Altos; Robert I. Fox, La Jolla, and William Drell, San Diego, all of Calif., assignors to Azura, Inc., Carson, Nev.

Continuation-in-part of Ser. No. 63,010, May 17, 1993, abandoned. This application Feb. 14, 1994, Ser. No. 330,510
Int. Cl.[6] A61K *31/70*
U.S. Cl. 514—50 **3 Claims**

1. A method for suppressing the rejection of an allograft in a mammal comprising the administering of a therapeutic dose of azaribine or 6-azauridine at a time after the recipient of the allograft has begun to mount a reject reaction against the allograft.

5,571,801

PLASMA EXPANDER AND BLOOD SUBSTITUTE

Paul E. Segall; Harold D. Waitz; Hal Sternberg, and Judith M. Segall, all of Berkeley, Calif., assignors to Biotime, Inc., Berkeley, Calif.

Continuation of Ser. No. 133,527, Oct. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 71,533, Jun. 4, 1993, Pat. No. 5,407,428. This application May 22, 1995, Ser. No. 446,520
Int. Cl.[6] A61K *31/715;31/72;47/36;* **A01N** *1/00*
U.S. Cl. 514—59 **29 Claims**

1. A blood-free plasma expander and blood substitute for use in a subject in need thereof, comprising a single solution with at least two water soluble oncotic agents, one of which is a water soluble polysaccharide oncotic agent and one of which is serum albumin, wherein said polysaccharide is selected from the group consisting of dextran 70 and hydroxyethyl starch having an average molecular weight of 400,000 daltons or higher, wherein one of said oncotic agents is eliminated from the circulation of said subject at a relatively greater rate than the other oncotic agent.

5,571,802

METHOD OF TREATING POST MENOPAUSAL OSTEOPOROSIA WITH HEXAFLURO-VITAMIN D

Hector F. Deluca, Deerfield, Wis., and Yosuke Ogura, Tokyo, Japan, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 20,218, Feb. 19, 1993. This application Feb. 18, 1994, Ser. No. 199,991
Int. Cl.[6] A61K *31/59;31/595*
U.S. Cl. 514—167 **19 Claims**

1. A method of treating postmenopausal osteoporosis in humans which comprises administering to a subject having said postmenopausal osteoporosis an effective daily dose of 26,26,26,27,27,27-hexafluoro-1α,25-dihydroxy-cholecalciferol compound in an amount of from about 0.05 μg to about 2.0 μg.

5,571,803

HETEROARYLPIPERIDINES, PYRROLIDINES AND PIPERAZINES AND THEIR USE AS ANTIPSYCHOTICS AND ANALGETICS

Joseph T. Strupczewski, Flemington; Grover C. Helsley, Stockton; Edward J. Glamkowski, Warren; Yulin Chiang, Covent Station, all of N.J.; Kenneth J. Bordeau, Kintnersville, Pa.; Peter A. Nemoto, Raritan, and John J. Tegeler, Bridgewater, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Sommerville, N.J.

Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Dec. 22, 1995, Ser. No. 577,325
Int. Cl.[6] C07D *417/04;401/04;403/04;221/04;239/02;* **A61K** *31/495;31/55;31/505;31/44;* **C07C** *49/84*
U.S. Cl. 546—198 **3 Claims**

1. 2-[4-(6-Fluoro-1,2-benzisoxazol-3-yl)-1-piperidinyl] acetonitrile and its pharmaceutically acceptable acid addition salts.

3. [4-(6-Fluoro-1H-indazol-3-yl)-1-piperazinyl]acetonitrile and its pharmaceutically acceptable acid addition salts.

5,571,804

CEPHALOSPORIN ANTIBIOTICS

Chan S. Bang; Jae H. Yeo; Young M. Woo; Jong C. Lim; Deog H. Yang, all of Daejeon; Se H. Kim, Seoul; Jae H. Jeon, Seoul; Mi K. Seo, Seoul; Sam S. Kim, Daejeon; Tae H. Lee, Daejeon; Yong Z. Kim, Daejeon, and Hun S. Oh, Daejeon, all of Rep. of Korea, assignors to Lucky Limited, Seoul, Rep. of Korea

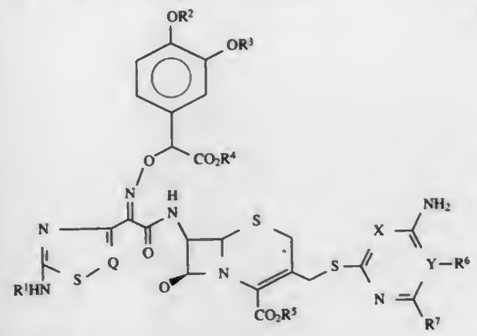
Filed Sep. 9, 1994, Ser. No. 303,930

Claims priority, application Rep. of Korea, Sep. 11, 1993, 93-18319

Int. Cl.[6] C07D *501/60;* **A61K** *31/545*

U.S. Cl. 514—203 **5 Claims**

1. A cephalosporin compound of formula (I):



wherein:

R^1 is a hydrogen or an amino protecting group;

R^2 and R^3 are, independently, a hydrogen or a hydroxy protecting group, or form together a cyclic diol protecting group;

R^4 and R^5 are, independently, a hydrogen or a carboxyl protecting group;

X and Y are a nitrogen and a carbon atom, respectively, or a carbon and a nitrogen atom, respectively;

R^6 and R^7 are, independently, a hydrogen or an amino, hydroxy, alkoxy, C_{1-4} alkyl, carboxyl or alkoxy carbonyl group, or jointly form a C_{3-7} cycloalkyl group together with the carbon to which they are attached, when X and Y are a nitrogen and a carbon, respectively, or R^7 is a hydrogen or an amino group when X and Y are a carbon and a nitrogen, respectively; and

Q is =CH—or =N—, or pharmacologically acceptable non-toxic salts, physiologically hydrolyzable esters, and solvates and isomers thereof.

5,571,805

ANTIBIOTIC COMPOUNDS

Frederic H. Jung, Rilly la Montagne; Alain M. Bertrandie, Cormontreuil, both of France, and Ronald H. B. Galt, Cheshire, England, assignors to Zeneca Limited, London, United Kingdom

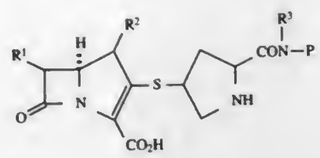
Continuation of Ser. No. 37,171, Mar. 26, 1993, abandoned. This application Sep. 8, 1994, Ser. No. 302,394

Claims priority, application European Pat. Off., Mar. 26, 1992, 92400837; Mar. 26, 1992, 92400839; Oct. 2, 1992, 92402700

Int. Cl.[6] A61K *31/40;* **C07D** *487/04*

U.S. Cl. 514—210 **42 Claims**

1. A compound of the formula (I):



(I)

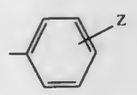
or a pharmaceutically acceptable salt or in vivo hydrolysable ester thereof wherein:

R^1 is 1-hydroxyethyl, 1-fluoroethyl or hydroxymethyl;

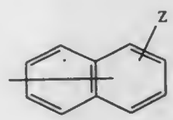
R^2 is hydrogen or C_{1-4}alkyl;

R^3 is hydrogen or C_{1-4}alkyl;

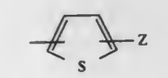
P is of the formula (IA), (IB) or (IC)



(IA)



(IB)



(IC)

and the formula (IB) the naphthyl group may be bonded to the nitrogen of the linking carbamoyl group at either ring;

Z is carboxy, sulfonic acid, sulfonic acid, C_{1-4}alkanamidosulfonyl (—SO_2NHCOC_{1-3}alkyl), benzamidosulfonyl, C_{1-4}alkylsulfonylcarbamoyl (—$CONHSO_2C_{1-4}$alkyl), phenylsulfonylcarbamoyl, C_{1-4}alkoxycarbamoyl, hydroxycarbamoyl, sulfoamino, N-C_{1-4}alkanesulfonamido, cyanocarbamoyl, cyanosulfamoyl, tetrazol-5-yl, 3-hydroxyisoxazol-4-yl or 3-hydroxyisoxazol-5-yl;

and P is optionally further substituted by one or two substituents selected from halo, cyano, C_{1-4}alkyl, nitro, hydroxy, carboxy, C_{1-4}alkoxy, trifluoromethyl, C_{1-4}alkoxycarbonyl, amino, C_{1-4}alkylamino, di-C_{1-4}alkylamino, sulfonic acid, C_{1-4}alkylS(O)$_n$- wherein n is 0–2, C_{1-4}alkanoylamino, C_{1-4}alkanoyl(N-C_{1-4}alkyl)amino, carbamoyl, C_{1-4}alkylcarbamoyl and di-C_{1-4}alkylcarbamoyl;

provided that when P is a ring of the formula (IA) or (IC) and Z is either sulfonic acid or N-C_{1-4}alkanesulfonamido, the ring is not further substituted by carboxy; and when P is of the formula (IA) or (IC), Z is not carboxy.

5,571,806

DIBENZ[B,F][1,4]OXAZEPIN(AND THIAZEPIN)-11(10H)-ONES AND-THIONES AND THEIR USE IN THE PREVENTION OR TREATMENT OF HIV INFECTION

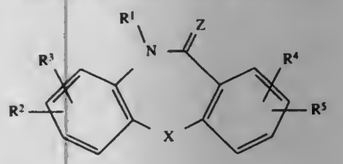
Karl D. Hargrave, Brookfield, Conn.; Gunther Schmidt, deceased, late of Munich, Germany; Wolfhard Engel, Biberach, Germany, and Kurt Schromm, Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Conn.

Continuation of Ser. No. 53,948, Apr. 28, 1993, abandoned, which is a continuation of Ser. No. 879,652, May 6, 1992, abandoned, which is a continuation of Ser. No. 582,773, Aug. 3, 1990, abandoned, which is a continuation of Ser. No. 400,254, Aug. 29, 1989, abandoned. This application Jul. 6, 1994, Ser. No. 271,350

Int. Cl.[6] A61K *31/55*

U.S. Cl. 514—211 **5 Claims**

1. A method for treating HIV-1 infection which comprises administering, to a human infected by HIV-1, a therapeutically effective amount of a compound of the formula I



wherein,

X is oxygen or sulfur;

Z is oxygen or sulfur;

R^1 is hydrogen, alkyl of 1 to 6 carbon atoms, fluoroalkylmethyl of 1 to 3 fluorine atoms and 2 to 6 carbon atoms alkenyl or alkynyl of 2 to 6 carbon atoms, mono- or dihalovinyl, cycloalkyl of 3 to 6 carbon atoms, alkyloxyalkyl or alkylthioalkyl of 2 to 6 carbon atoms alkanoyl of 2 to 4 carbon atoms, arylmethyl or arylmethyloxy or arylcarbonyl (wherein the aryl moiety is phenyl, thienyl or furanyl, optionally substituted with methyl, methoxy or halogen), alkoxycarbonylalkyl of 3 to 6 carbon atoms aminoalkyl of 1 to 3 carbon atoms, mono- or di-alkylaminoalkyl wherein each alkyl moiety contains 1 to 2 carbon atoms, alkanoylaminoalkyl wherein the alkanoyl moiety contains 2 to 3 carbon atoms and the alkyl moiety contains 1 to 2 carbon atoms, aminocarbonylalkyl of 2 to 4 carbon atoms, mono- or dialkylaminocarbonylalkyl wherein each alkyl moiety contains 1 to 2 carbon atoms or hydroxyalkylmethyl of 2 to 6 carbon atoms;

R^2 is hydrogen, methyl or halogen;

R^3 is hydrogen, alkyl of 1 to 4 carbon atoms, halogen, hydroxyl, alkoxy of 1 to 3 carbon atoms alkylthio of 1 to 3 carbon atoms, alkanoyloxy of 2 to 3 carbon atoms, amino, alkylamino of 1 to 2 carbon atoms aminoalkyl of 1 to 2 carbon atoms, mono-or dimethylaminomethyl, hydroxyalkyl of 1 to 4 carbon atoms, alkoxyalkyl wherein each alkyl moiety contains 1 to 2 carbon atoms, alkylthioalkyl wherein each alkyl moiety contains 1 to 2 carbon atoms carboxylalkyl of 2 to 4 carbon atoms, carboxyalkoxy of 2 to 3 carbon atoms alkoxycarbonylmethyl of 3 to 4 carbon atoms or methoxycarbonylmethoxy;

R^4 is hydrogen, methyl or halogen; and,

R^5 is hydrogen, alkyl of 1 to 4 carbon atoms, halogen, hydroxyl alkoxy of 1 to 3 carbon atoms alkylthio of 1 to 3 carbon atoms, alkanoyloxy of 2 to 3 carbon atoms, amino or alkylamino of 1 to 2 carbon atoms (excepting 4-amino and 4-alkylamino), aminoalkyl of 1 to 2 carbon atoms, mono-or dimethylaminomethyl, hydroxyalkyl of 1 to 4 carbon atoms, alkoxyalkyl wherein each alkyl moiety contains 1 to 2 carbon atoms carboxylalkyl of 2 to 4 carbon atoms, carboxyalkoxy of 2 to 3 carbon atoms, alkoxycarbonylmethyl of 3 to 4 carbon atoms or methoxycarbonylmethoxy;

or a pharmaceutically acceptable salt thereof.

5,571,807

1,5 BENZOTHIAZEPINONE DERVATIVES THEIR PREPARATION AND PHARMACEUTICAL USE

Aldo Salimbeni; Saturnino Caliari; Francesco Fici, and Elso Manghisi, all of Milan, Italy, assignors to Istituto Luso Farmaco D'Italia S.P.A., Milan, Italy

Continuation of Ser. No. 941,127, Oct. 21, 1992, abandoned. This application Mar. 31, 1995, Ser. No. 397,904

Claims priority, application Italy, Apr. 27, 1990, 20160/90

Int. Cl.[6] A61K *31/55;* **C07D** *417/06*

U.S. Cl. 514—211 **3 Claims**

1. The compound cis(+)-3-acetyloxy-2,3-dihydro-5-(2-N-isopropyl-N-methylaminoethyl)-2-(4-methoxyphenyl)-1,5-benzothiazepin-4-(5H)-one, a diastereoisomer or enantiomer thereof and pharmaceutically acceptable salts thereof.

5,571,808

METHOD FOR TREATING SMOKING-RELATED BONE LOSS

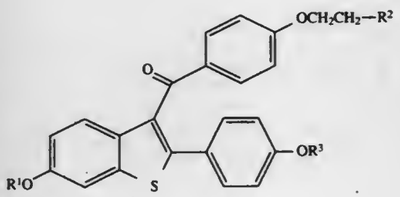
James P. Leeds, Noblesville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 31, 1995, Ser. No. 381,036

Int. Cl.[6] A61K *31/55;31/445;31/40;31/185*

U.S. Cl. 514—212 **6 Claims**

1. A method for treating smoking-related bone loss comprising administering to a human in need thereof a pharmaceutically-effective amount of a compound having the formula



(I)

wherein

R^1 and R^3 are independently hydrogen, C_1–C_4 alkyl, —CO—(C_1–C_6 alkyl), or —CH_2Ar, —CO—Ar, wherein Ar is phenyl or substituted phenyl;

R^2 is selected from the group consisting of pyrrolidino, hexamethylenemino, and piperidino; or a pharmaceutically-acceptable salt thereof.

5,571,809
THE TREATMENT OF HIV-1 INFECTION USING CERTAIN PYRIDODIAZEPINES

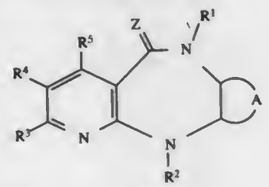
Karl D. Hargrave, Brookfield, Conn.; Gunther Schmidt, deceased, late of Munich, Germany; Wolfhard Engel, Biberach, Germany; Gunther Trummlitz, Warthausen, Germany, and Wolfgang Eberlein, Biberach, Germany, assignors to Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Conn.

Continuation of Ser. No. 154,844, Nov. 19, 1993, abandoned, which is a continuation of Ser. No. 26,353, Mar. 4, 1993, abandoned, which is a continuation of Ser. No. 897,734, Jun. 12, 1992, abandoned, which is a continuation of Ser. No. 768,453, Sep. 27, 1991, abandoned, which is a continuation of Ser. No. 600,547, Oct. 19, 1990, abandoned, which is a continuation of Ser. No. 584,409, Sep. 14, 1990, abandoned, which is a continuation of Ser. No. 438,570, Nov. 17, 1989, abandoned, which is a continuation of Ser. No. 372,732, Jun. 28, 1989, abandoned, which is a continuation of Ser. No. 340,973, Apr. 20, 1989, abandoned. This application Aug. 17, 1994, Ser. No. 291,634

Int. Cl.[6] **A61K** *31/55;* **C07D** *471/04;495/14*

U.S. Cl. 514—220 **12 Claims**

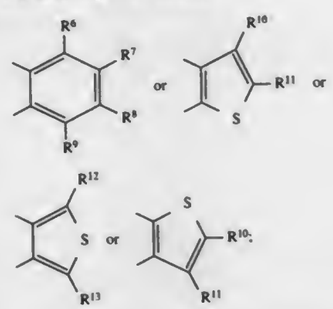
1. A compound of the formula I



(I)

wherein,

A is a fused ring of the formula



Z is oxygen, sulfur, =NCN, or a group of the formula =NOR[14] wherein R^{14} is alkyl of 1 to 3 carbon atoms;

R^1 is hydrogen, alkyl or fluoroalkyl of 1 to 5 carbon atoms, cyclopropyl, alkenyl or alkynyl of 3 to 5 carbon atoms, 2-halo-propen-1-yl, arylmethyl (wherein the aryl moiety is phenyl, thienyl or furanyl, which is either unsubstituted or substituted by methyl, methoxy or halogen), alkanoyl of 2 to 3 carbon atoms, cyanoalkyl wherein the alkyl moiety contains 1 to 3 carbon atoms, or alkoxyallyl or alkylthioalkyl of 2 to 4 carbon atoms;

R^2 is alkyl or fluoroalkyl of 1 to 5 carbon atoms, cycloalkyl of 3 to 5 carbon atoms, alkenyl or alkynyl of 2 to 5 carbon atoms, alkoxyalkyl or alkylthioalkyl of 2 to 4 carbon atoms, alkanoyl of 2 to 4 carbon atoms, hydroxyalkyl of 2 to 5 carbon atoms, arylmethyl (wherein the aryl moiety is phenyl, thienyl or furanyl, which is either unsubstituted or substituted by alkyl or alkoxy of 1 to 3 carbon atoms, hydroxyl, or halogen), phenyl (which is either unsubstituted or substituted by alkyl or alkoxy of 1 to 3 carbon atoms, halogen or hydroxyl) or alkoxy-carbonylmethyl wherein the alkoxy moiety contains 1 to 5 carbon atoms;

R^3, R^4, and R^5 are each independently hydrogen, alkyl of 1 to 3 carbon atoms or chloro, with the proviso that at least one of these substituents is hydrogen; or,

one of R^3, R^4 and R^5 is butyl, alkanoyl of 1 to 3 carbon atoms, hydroxyalkyl of 1 to 4 carbon atoms, alkoxycarbonyl of 2 to 3 carbon atoms, alkoxycarbonylalkyl wherein both the alkoxy and alkyl moieties contain 1 to 2 carbon atoms, halogen, trihalomethyl, hydroxyl, alkoxy of 1 to 3 carbon atoms, alkythio of 1 to 3 carbon atoms, alkanoyloxy of 2 to 3 carbon atoms, alkanoylamino of 1 to 3 carbon atoms, aminoalkyl of 1 to 3 carbon atoms, mono- or di-alkylamino or mono- or di-alkylaminocarbonyl wherein each alkyl moiety contains 1 to 2 carbon atoms, carboxyalkyl of 2 to 3 carbon atoms, cyano, nitro, carboxyl, carbamyl, amino, azido or mono- or di-alkylaminoalkyl wherein the alkyl moieties each contain 1 to 2 carbon atoms, and the remaining two substituents are hydrogen or methyl; or,

when Z is oxygen, one of R^3, R^4 and R^5 is alkylsulfinyl or alkylsulfonyl of 1 to 3 carbon atoms, with the proviso that the remaining two substituents are hydrogrogen or methyl;

R^6, R^7, R^8 and R^9 are each hydrogen; or,

one of R^6, R^7, R^8 and R^9 is alkyl of 1 to 4 carbon atoms, alkanoyl of 1 to 3 carbon atoms, alkoxycarbonyl of 2 to 3 carbon atoms, hydroxyalkyl of 1 to 4 carbon atoms, alkoxy-carbonylalkyl wherein both the alkoxy and alkyl moieties contain 1 to 2 carbon atoms, halogen, trihalomethyl, hydroxyl, alkoxy of 1 to 3 carbon atoms, alkylthio of 1 to 3 carbon atoms, alkanoyloxy of 2 to 3 carbon atoms, alkanoylamino of 1 to 3 carbon atoms, aminoalkyl of 1 to 3 carbon atoms, mono- or di-alkylamino or mono- or di-alkylaminocarbonyl wherein each alkyl moiety contains 1 to 2 carbon atoms, carboxylalkyl of 2 to 3 carbon atoms, cyano, nitro, carboxyl, carbamyl, amino, azido or mono- or di-alkylaminoalkyl wherein each alkyl moiety contains 1 to 2 carbon atoms, and the remaining three substituents are hydrogen or two of the remaining three substituents are hydrogen and one is methyl, ethyl or halogen;

R^{10} or R^{11} is hydrogen, alkyl of 1 to 4 carbon atoms, cyano, nitro, halogen or alkanoyl of 1 to 3 carbon atoms, with the remaining substituent being hydrogen, chloro, methyl or ethyl; and,

R^{12} and R^{13} are each independently hydrogen, alkyl of 1 to 4 carbon atoms, halogen or nitro;

or a pharmaceutically acceptable acid addition salt thereof.

8. A method for treating infection by HIV-1 which comprises administering to a human exposed to or infected by HIV-1 a therapeutically effective amount of a compound according to claims 1, 2, 3, 4, 5, 6 or 7.

5,571,810
THIOPHENE DERIVATIVES

Masaaki Matsuo, Toyonaka; Kiyoshi Tsuji, Kishiwada; Nobukiyo Konishi, Nagaokakyo, and Katsuya Nakamura, Takatsuki, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

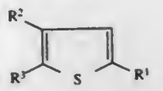
Continuation of Ser. No. 955,739, Dec. 3, 1992, abandoned. This application Apr. 13, 1995, Ser. No. 422,545

Claims priority, application United Kingdom, Nov. 6, 1990, 9012936

Int. Cl.[6] **A61K** *31/535;31/38;31/495;31/42*

U.S. Cl. 514—231.5 **8 Claims**

1. A compound of the formula:



[I]

wherein

R^1 is bromo; cyano; lower alkyl substituted with substituent(s) selected from the group consisting of halogen, hydroxy, amino, acylamino, lower alkylamino, lower alkyl(acyl)amino, acyl, hydroxyimino and lower alkoxyimino; lower alkenyl optionally substituted with cyano; acyl; nitro; amino optionally substituted with substituent(s) selected from the group consisting of acyl and lower alkylsulfonyl; sulfo; sulfamoyl optionally substituted with lower alkyl, hydroxy; or a heterocyclic group other than thienyl and tetrazole optionally substituted with substituent(s) selected from the group consisting of hydroxy, oxo, amino and lower alkylamino;

R^2 is aryl optionally substituted with substituent(s) selected from the group consisting of halogen, lower alkoxy, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl, nitro, amino, sulfamoyl and lower alkylsulfonylamino; and

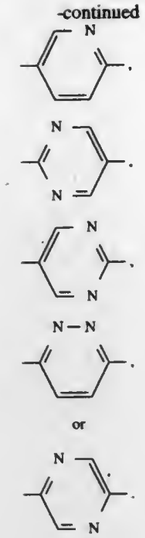
R^3 is aryl optionally substituted with substituent(s) selected from the group consisting of halogen, lower alkoxy, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl, nitro, amino, lower alkylamino, acylamino, lower alkyl(acyl)amino, lower alkylsulfonylamino and sulfamoyl;

provided that

R^3 is aryl substituted with substituent(s) selected from the group consisting of amino, mono(lower)alkylamino, acylamino, lower alkyl(acyl)amino and sulfamoyl

when R^1 is bromo or cyano, and pharmaceutically acceptable salts thereof.

-continued



(a-3)

(a-4)

(a-5)

(a-6)

or

(a-7)

5,571,811
SULFONAMIDE DERIVATIVES OF AZOLONES

Jan Heeres, Vosselaar; Raymond A. Stokbroekx, Beerse; Joseph H. Mostmans, Antwerpen, and Louis J. E. Van der Veken, Vosselaar, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

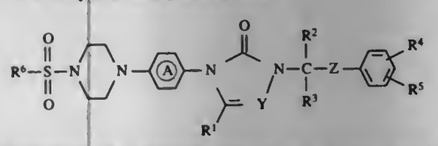
Filed May 23, 1995, Ser. No. 447,505

Claims priority, application European Pat. Off., Jul. 12, 1994, 94202015

Int. Cl.[6] **A61K** *31/495;* **C07D** *403/02;403/14*

U.S. Cl. 514—252 **16 Claims**

1. A compound having the formula



(I)

a pharmaceutically acceptable addition salt or a stereochemically isomeric form thereof,

wherein

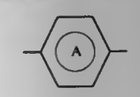
Y is CH or N;

R^1, R^2 and R^3 each independently are hydrogen or C_{1-4}alkyl;

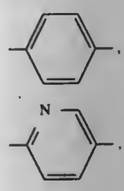
R^4 and R^5 each independently are hydrogen, halo, C_{1-4}alkyl, C_{1-4}alkyloxy, hydroxy, trifluoromethyl, trifluoromethyloxy or difluoromethyloxy;

R^6 is C_{1-4}alkyl; or phenyl optionally substituted with halo, C_{1-4}alkylcarbonylamino, C_{1-4}alkyloxy, C_{1-4}alkyl or nitro;

Z is C=O or CHOH; and



is a radical of formula



(a-1)

(a-2)

5,571,812
7-AMINO-1-CYCLOPROPYL-6,8-DIHALOGENO-1,4-DIHYDRO-4-OXO-3-QUINOLINECARBOXYLIC ACID ANTIBACTERIAL AGENTS

Uwe Petersen, Leverkusen; Klaus Grohe, Odenthal; Hans-Joachim Zeiler, Velbert, and Karl G. Metzger, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

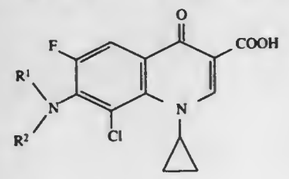
Continuation of Ser. No. 735,500, May 17, 1985, abandoned. This application Apr. 27, 1992, Ser. No. 875,572

Claims priority, application Germany, Jun. 4, 1984, 34 20 743.0

Int. Cl.[6] **A61K** *31/495;31/47;* **C07D** *401/04*

U.S. Cl. 514—254 **8 Claims**

1. A 7-amino-8-chloro-1-cyclopropyl-6-fluoro-1,4-dihydro-4-oxo-3-quinolinecarboxylic acid of the formula



in which

R^1 and R^2, together with the nitrogen atom to which they are bonded, form a 5- or 6-membered heterocyclic ring which can contain in addition, as ring member, the group N—R^3 and which can optionally be substituted on the carbon atoms once or twice by C_1-C_2-alkyl, 2-thienyl, hydroxy, methoxy, amino, methylamino or ethylamino or phenyl which is optionally substituted once or twice by chlorine, fluorine, bromine, methyl, phenyl, hydroxyl, methoxy, benzyloxy, nitro or piperidino,

R^3 represents hydrogen, a branched or unbranched alkyl having 1 to 4 carbon atoms which can optionally be substituted by hydroxyl or the alkoxycarbonyl group having 1 to 4 carbon atoms in the alcobol moiety, a phenacyl radical or an oxoalkyl radical having up to 4 carbon atoms or furthermore denotes the group —CHO

or a pharmaceutically acceptable hydrate or acid addition, alkali metal, alkaline earth metal or guanidinium salt thereof.

5,571,813

FUSED PYRIMIDINE COMPOUNDS AND THEIR USE AS PHARMACEUTICALS

Gerd Rühter; Theo Schotten, both of Hamburg; Wolfgang Stenzel, Reinbek, and Michael Paal, Hamburg, all of Germany, assignors to Beiersdorf-Lilly GmbH, Hamburg, Germany

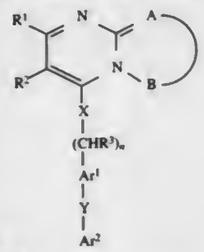
Filed Jun. 6, 1994, Ser. No. 254,803

Claims priority, application European Pat. Off., Jun. 10, 1993, 93304513

Int. Cl.[6] **C07D** *487/04;* **A61K** *31/505*

U.S. Cl. 514—257 **14 Claims**

1. A compound of the formula



(I)

in which

R^1 is either R^{1a} selected from

a) hydrogen,

b) C_{1-8}-alkyl, C_{3-8}-cycloalkyl, C_{4-8}-cycloalkylalkyl, or C_{4-8}-alkylcycloalkyl, which optionally may be substituted by one or more fluoro or chloro substituents, or by a single hydroxy, C_{1-4}-alkoxy, or C_{1-4}-alkylthio,

c) phenyl or phenyl-C_{1-3}-alkyl

d) C_{2-8}-alkenyl, C_{3-8}-cycloalkenyl, or C_{2-8}-alkynyl, which optionally may be substituted by phenyl, or

R^{1b} selected from

a) C_{1-6}-alkylthio, C_{3-6}-cycloalkylthio, C_{1-6}-alkoxy, C_{3-6}-cycloalkoxy, mono-C_{1-6}-alkylamino, or mono-C_{3-6}-cycloalkylamino, in which an alkyl group optionally may be substituted by phenyl or by one or more fluoro substituents,

b) phenylthio or phenoxy,

c) di-C_{1-4}-alkylamino, in which the alkyl groups may be the same or different or together form a polymethylene ring with three, four, five, or six carbon atoms, which optionally may be interrupted by an oxygen atom and optionally may be substituted by one or more fluoro substituents,

d) mono-phenylamino or mono-C_{1-4}-alkyl-monophenylamino, in which the alkyl groups optionally may be substituted by one or more fluoro substituents, or

e) halo,

R^2 is

a) hydrogen,

b) C_{1-8}-alkyl, which optionally may be substituted by one or more fluoro substituents,

c) phenyl,

R^3 is hydrogen or C_{1-4}-alkyl, and n is 0 or 1,

X is O, S, or NR^4, and

R^4 is

a) hydrogen,

b) C_{1-8}-alkyl, C_{3-8}-cycloalkyl, C_{4-8}-cycloalkylalkyl, or C_{4-8}-alkylcycloalkyl, which optionally may be substituted by phenyl or by one or more fluoro substituents,

c) phenyl,

d) $(CH_2)_mCOOR^{22}$,

e) $(CH_2)_mCONR^{23}R^{24}$,

f) $(CH_2)_mCOOP^1$, in which P^1 is a carboxy-protecting group,

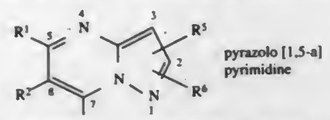
g) $(CH_2)_mCN$,

h) $(CH_2)_m$(5-tetrazolyl),

and m is 1 or 2 in groups d), e), f), g) or b)

=A—B— together with the pyrimidine ring forms

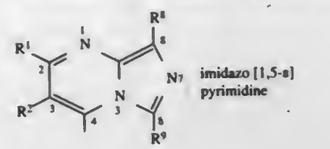
a) a pyrazolo[1,5-a]pyrimidine of formula (A),



(A)

pyrazolo [1,5-a] pyrimidine

c) an imidazo[1,5-a]pyrimidine of formula (C),

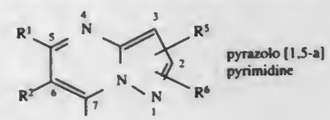


(C)

imidazo [1,5-a] pyrimidine

or

d) an imidazo[1,2-a]pyrimidine of formula (D),



(A)

pyrazolo [1,5-a] pyrimidine

in which

R^5 is

a) hydrogen,

b) C_{1-8}-alkyl, C_{3-8}-cycloalkyl, C_{4-8}-cycloalkylalkyl, or C_{4-8}-alkylcycloalkyl, which optionally may be substituted by one or more fluoro or chloro substituents,

c) phenyl-C_{1-3}-alkyl,

d) hydroxy, C_{1-6}-alkoxy, C_{3-6}-cycloalkoxy, C_{1-3}-phenylalkoxy, or phenoxy, in which the alkyl and cycloalkyl groups optionally are substituted by one or more fluorine atoms,

e) halo,

f) mercapto,

g) C_{1-6}-alkylthio, C_{1-6}-alkylsulfinyl, C_{1-6}-alkylsulfonyl, C_{3-6}-cycloalkylthio, C_{3-6}-cycloalkylsulfinyl, or C_{3-6}-cycloalkylsulfonyl, which optionally may be substituted by one or more fluorine atoms,

h) phenylthio, phenylsulfinyl, phenylsulfonyl, phenyl-C_{1-3}-alkylthio, phenyl-C_{1-3}-alkylsulfinyl, or phenyl-C_{1-3}-sulfonyl,

i) optionally substituted phenyl,

j) cyano,

k) $COOR^{22}$,

l) $CONR^{23}R^{24}$,

m) 5-tetrazolyl,

n) $COOP^1$, in which P^1 is a carboxy-protecting group,

o) SO_3H,

p) $SO_2NR^{23}R^{24}$,

q) nitro or nitroso, with the proviso that these groups are not connected to C-2 of the heterocycle,

r) $NR^{23}R^{24}$,

s) C_{1-6}-alkanoyl or 1-hydroxy-C_{1-6}-alkyl, which optionally may be substituted by one or more fluorine atoms,

t) benzoyl or phenylhydroxymethyl,

u) $NH(C_{1-6}$-alkanoyl) or $NH(C_{1-6}$-alkylsulfonyl), in which the alkyl groups optionally may be substituted by one or more fluorine atoms,

v) NH(benzoyl) or NH(benzenesulfonyl),

R^6 is

a) hydrogen,

b) C_{1-8}-alkyl, C_{3-8}-cycloalkyl, C_{4-8}-cycloalkylalkyl, or C_{4-8}-alkylcycloalkyl, which optionally may be substituted by one or more fluoro or chloro substituents,

c) halo,

d) optionally substituted phenyl,

e) C_{1-6}-alkylthio, C_{1-6}-alkylsulfinyl, C_{1-6}-alkylsulfonyl, C_{3-6}-cycloalkylthio, C_{3-6}-cycloalkylsulfinyl, or C_{3-6}-cycloalkylsulfonyl, which optionally may be substituted by one or more fluorine atoms,

R^7 has the meaning as defined for R^5 with the exception of nitro and nitroso,

R^8 is

a) hydrogen,

b) C_{1-8}-alkyl, C_{3-8}-cycloalkyl, C_{4-8}-cycloalkylalkyl, or C_{4-8}-alkylcycloalkyl, which optionally may be substituted by one or more fluoro or chloro substituents,

c) halo,

d) phenyl,

e) nitro,

f) cyano,

g) 5-tetrazolyl,

h) $COOR^{22}$,

i) $CONR^{23}R^{24}$,

j) $COOP^1$, in which P^1 is a carboxy-protecting group,

k) $NR^{23}R^{24}$,

l) $NH(C_{1-6}$-alkanoyl) or $NH(C_{1-6}$-alkylsulfonyl), in which the alkyl groups optionally may be substituted by one or more fluorine atoms,

m) NH(benzoyl) or NH(benzenesulfonyl),

R^9 is

a) hydrogen,

b) C_{1-8}-alkyl, C_{3-8}-cycloalkyl, C_{4-8}-cycloalkylalkyl, or C_{4-8}-alkylcycloalkyl, which optionally may be substituted by one or more fluoro or chloro substituents,

c) phenyl group,

d) cyano,

e) $COOR^{22}$,

f) $CONR^{23}R^{24}$,

g) 5-tetrazolyl,

h) $COOP^1$, in which P^1 is a carboxy-protecting group,

i) formyl,

j) hydroxymethyl,

R^{10} has independently the same meaning as R^5,

R^{11} has independently the same meaning as R^6,

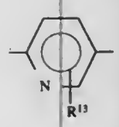
Ar^1 is a group selected from

a) 1,4-phenylene of formula (E),

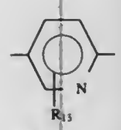


(E)

b) 1,4-substituted pyridine of formula (F) or formula (G),



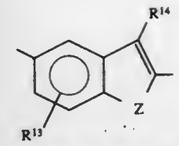
(F)



(G)

or

c) benzofuran, benzothiophene, or indole of formula (H),



(H)

in which the group Z is O, S, or NR^{12}, and R^{12} is hydrogen or C_{1-4}-alkyl,

and in each of the groups Ar^1 the substituent

R^{13} is

a) hydrogen,

b) halo,

c) C_{1-4}-alkyl,

d) C_{1-4}-alkoxy,

e) trifluoromethyl,

f) nitro,

R^{14} is

a) hydrogen,

b) C_{1-6}-alkyl, C_{3-6}-cycloalkyl, C_{4-6}-cycloalkylalkyl, or C_{4-6}-alkylcycloalkyl, which optionally may be substituted by one or more fluoro or chloro substituents,

c) C_{2-6}-alkenyl or C_{3-6}-cycloalkenyl,

d) halo,

e) cyano,

f) nitro,

g) C_{1-6}-alkanoyl, in which the alkyl group optionally may be substituted by one or more fluorine atoms,

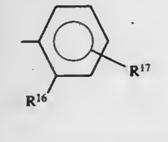
h) C_{1-6}-alkoxy,

i) $COOR^{22}$,

j) $CONR^{23}R^{24}$,

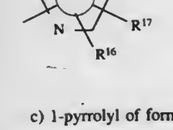
Ar^2 is a group selected from

a) phenyl of formula (I),



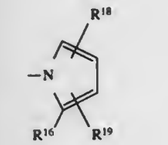
(I)

b) pyridine of formula (J),



(J)

c) 1-pyrrolyl of formula (K),

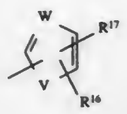


(K)

or

d) a five-membered heterocycle of formula (L),

(L)



in which the group V is O, S, SO, SO_2, or NR^{15}, the group W is CH or N, and R^{15} is hydrogen or C_{1-4}-alkyl,

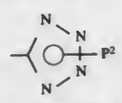
with the proviso that in groups Ar^2 of formula (J) and (L) the substituent R^{16} and the group Y are in ortho positions, and in each of the groups Ar^2 the substituent

R^{16} is hydrogen, 5-tetrazolyl, carboxy, sulpho, phosphono, $COOP^1$, in which P^1 is a carboxy-protecting group, or a group selected from

a) cyano,

b) a protected 5-tetrazolyl of formula (M),

(M)



in which the group P^2 is a protecting group,

d) nitro,

e) amino,

f) mercapto,

g) SO_2Cl,

h) $SO_2(OC_{1-4}\text{-alkyl})$,

i) $PO(OC_{1-4}\text{-alkyl})_2$,

R^{17} has independently the same meaning as R^{13},

R^{18} and R^{19} are independently selected from

a) hydrogen,

b) C_{1-6}-alkyl, C_{3-6}-cycloalkyl, C_{4-6}-cycloalkylalkyl, or C_{4-6}-alkylcycloalkyl, which optionally may be substituted by one or more fluoro or chloro substituents,

c) C_{2-6}-alkenyl or C_{3-6}-cycloalkenyl,

d) halo,

e) nitro,

f) cyano,

g) C_{1-4}-alkylthio,

Y is a group selected from

a) a direct bond, CHR^{20}, $CHR^{20}CH_2$, $OCHR^{20}$, $OCHR^{20}CH_2$, $SCHR^{20}$, $SCHR^{20}CH_2$, $NR^{21}CHR^{20}$, $NR^{21}CHR^{20}CH_2$, CH_2CHR^{20}, $CH_2CHR^{20}CH_2$,

b) O, S, SO_2, NR^{21}, CO, CONH, NHCO, CH_2O, CH_2S, CH_2NR^{21}, with the proviso that when Y is (b), Ar^1 is 1,4-phenylene of formula (E) and Ar^2 is phenyl of formula (I),

R^{20} is hydrogen or

a) COOH,

b) $COOP^1$, in which P^1 is a carboxy-protecting group,

d) 5-tetrazolyl,

e) cyano,

f) a protected 5-tetrazolyl of formula (M),

with the proviso that one of the substituents R^{16} and R^{20} is hydrogen and the other is a substituent other than hydrogen,

R^{21} and R^{22} are independently selected from hydrogen or C_{1-6}-alkyl, and

R^{23} and R^{24} are independently selected from hydrogen or C_{1-4}-alkyl, or together may form a polymethylene chain containing three, four or five carbon atoms, which optionally may be interrupted by an oxygen atom;

the phenyl groups of R^1 choice c, R^{1a} choice c), R^{1b} choice b), R^{1b} choice c), R^2 choice c), R^4 choice c), R^5 choice d), R^5 choice h), R^5 choice t), R^5 choice v), R^8 choice d), R^8 choice m) and R^9 choice c) being unsubstituted or substituted by at least one member selected from the group consisting of halo, C_{1-4}-alkyl, C_{1-4}-alkoxy, C_{1-4}-alkylthio, C_{1-4}-alkylsulfinyl, C_{1-4}-alkylsulfonyl, cyano, nitro, trifluoromethyl and hydroxy.

5,571,814

N-[(3-HETEROARYL-1-PYRROLIDINYL)ALKYL]PHTHALIMIDES AND RELATED COMPOUNDS AND THEIR THERAPEUTIC UTILITY

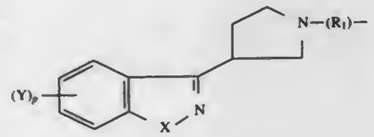
Joseph T. Strupczewski, Flemington; Grover C. Helsley, Stockton; Edward J. Glamkowski, Warren; Yulin Chiang, Covent Station, all of N.J.; Kenneth J. Bordeau, Kintnersville, Pa.; Peter A. Nemoto, Raritan, and John J. Tegeler, Bridgewater, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

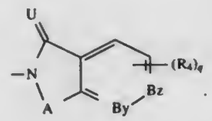
Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 471,574

Int. Cl.[6] A61K *31/495;31/55;31/505;* **C07D** *401/00;403/00;417/00;221/04;275/04;239/02*

U.S. Cl. 514—258 **14 Claims**

1. A compound of the formula:





wherein,

X is —O—, —S—, —NH—, or —N(R_2)—;

R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C_3–C_{10})cycloalkyl, aroyl, (C_2–C_{12})alkanoyl, (C_1–C_{18})alkoxycarbonyl, and phenylsulfonyl groups;

aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;

A is —C(=O)—, —C(=S)—, —C(=CH_2)—, —C(=O)CH_2—, —CH_2CH_2—, —CR_{26}=N—, or —$CR_{25}R_{26}$—;

R_{25} is hydrogen, (C_1–C_6)alkyl, hydroxy, or (C_1–C_8) alkanoyloxy;

R_{26} is hydrogen or (C_1–C_6)alkyl;

either one of B_y and B_z is CH or N and the other is CH;

U is O or S;

q is 1, 2, 3, or 4;

R_1 is —$CR_{24}R_{27}$-($CR_{23}R_{24}$)$_n$—$CR_{24}R_{27}$— where n is 0, 1, 2, or 3; or

—CHR_{24}—CH=CH—CHR_{24}—,

—CHR_{24}—C≡C—CHR_{24}—,

—CHR_{24}—CH=CH—$CR_{23}R_{24}$—CHR_{24}—,

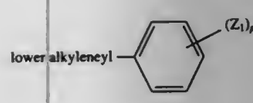
—CHR_{24}—$CR_{23}R_{24}$—CH=CH—CHR_{24}—,

—CHR_{24}—C≡C—$CR_{23}R_{24}$—CHR_{24}—, or

—CHR_{24}—$CR_{23}R_{24}$—C≡C—CHR_{24}—,

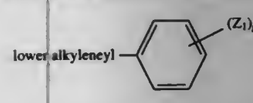
the —CH=CH— bond being cis or trans;

R_{23} is hydrogen, (C_1–C_{18}) linear alkyl, phenyl, hydroxy, (C_1–C_{18})alkoxy, aryloxy, aryl(C_1–C_{18})alkyloxy, (C_1–C_{18})alkanoyloxy, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl(C_1–C_6)alkoxy, aryl(C_1–C_{18})alkyloxy(C_1–C_6)alkyl, (C_1–C_{18})alkanoyloxy(C_1–C_6)alkyl, or



where Z_1 is lower alkyl,—OH, lower alkoxy, —CF_3, —NO_2, —NH_2 or halogen, and p is as previously defined; and

R_{24} is hydrogen, (C_1–C_{18})linear alkyl, phenyl, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl(C_1–C_6)alkyloxy, aryl(C_1–C_{18})alkyloxy(C_1–C_6)alkyl, (C_1–C_{18})alkanoyloxy(C_1–C_6)alkyl, or

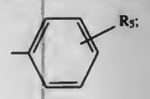


where Z_1 is as previously defined, and p is as previously defined;

R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C=O or C=S; and

R_4 is hydrogen, lower alkyl, lower alkoxy, hydroxy, tri(C_1–C_6)alkylsilyloxy, hydroxy lower alkyl, alkanoyloxy lower alkyl, amino, mono- or dialkylamino, (C_1–C_{18})acyl amino, (C_1–C_{18})alkanoyl, trifluoromethyl, chlorine, fluorine, bromine, —O—C(=O)—(C_1–C_{18} straight or branched chain-)alkyl or —C(=O)-aryl;

in which aryl is phenyl or



wherein R_5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamine, nitro, cyano, trifluoromethyl, or trifluoromethoxy and, any hydroxyl group attached to an aliphatic or aromatic carbon atom, or any primary or secondary nitrogen atom may be acylated with a (C_4–C_{18})carboxylic group, in addition, any nitrogen atom may alternatively be acylated with a (C_4–C_{18})alkoxycarbonyl group; and

q is 1, 2, 3, or 4;

all geometric, optical, and stereoisomers thereof,

or a pharmaceutically acceptable acid addition salt thereof.

5,571,815

SUBSTITUTED PYRIMIDINES, PROCESS FOR THEIR PREPARATION, AND THEIR USE AS PESTICIDES AND FUNGICIDES

Wolfgang Schaper, Diedorf; Rainer Preuss, Hofheim am Taunus; Gerhard Salbeck, deceased, late of Kriftel/Taunus; Peter Braun, Mainz; Werner Knauf, Eppstein/Taunus; Burkhard Sachse, Kelkheim; Anna Waltersdorfer, Frankfurt am Main; Manfred Kern, Lörzweiler; Peter Lümmen, Niedernhausen, and Werner Bonin, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Mar. 11, 1993, Ser. No. 29,889

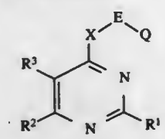
Claims priority, application Germany, Mar. 14, 1992, 42 08 254.4

Int. Cl.[6] C07D *239/34;239/46;401/14;* **A61K** *31/505*

U.S. Cl. 514—269 **16 Claims**

1. A compound of the formula I

(I)



in which

R^1 is hydrogen, halogen, (C_1–C_4)-alkyl or (C_3–C_6)-cycloalkyl,

R^2 is hydrogen, (C_1–C_4)-alkyl, halogen, (C_1–C_4)-haloalkyl, (C_1–C_4)-alkoxy, (C_1–C_4)-haloalkoxy, (C_1–C_4)-alkoxy-(C_1–C_4)-alkyl, (C_1–C_4)-alkylthio, (C_1–C_4)-alkylthio-(C_1–C_4)-alkyl, (C_1–C_4)-alkyl-amino or di-(C_1–C_4)-alkylamino,

R^3 is hydrogen, (C_1–C_4)-alkyl, (C_1–C_4)-alkoxy, (C_1–C_4)-haloalkoxy, halogen, (C_1–C_4)-alkylthio, amino, (C_1–C_4)-alkylamino or di-(C_1–C_4)-alkyl-amino or

R^2 and R^3 together with the carbon atoms to which they are bonded form an unsaturated 5- or 6-membered carbocyclic ring which, if it is a 5-membered ring, can contain an oxygen atom in place of CH_2 and which 5- or 6-membered ring is optionally substituted by 1, 2 or 3 identical or different radicals, these radicals being (C_1–C_4)-alkyl, (C_1–C_4)-alkoxy, (C_1–C_4)-haloalkyl, (C_1–C_4)-haloalkoxy or halogen, or if it is a 5-membered ring, can also contain a sulfur atom in place of CH_2 and which ring is optionally substituted by 1, 2 or 3 identical or different radicals, these radicals being (C_1–C_6)alkyl, (C_1–C_4)-alkoxy, (C_1–C_4)-haloalkyl, or (C_1–C_4)-haloalkoxy, or

R^2 and R^3 together with the carbon atoms to which they are bonded form a saturated 5-, 6- or 7-membered carbocyclic ring which can contain an oxygen or sulfur atom in place of CH_2 and which is optionally substituted by 1, 2 or 3 (C_1–C_4)-alkyl groups,

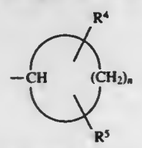
X is NH or oxygen,

E is a direct bond or a straight-chain or branched (C_1–C_4)-alkanediyl group,

Q has the meaning Q^1 and

Q^1 is a cycloalkyl group of the formula II

(II)



in which n is an integer from 2 to 7,

R^4 and R^5 are identical or different and are in each case hydrogen, (C_1–C_{12})-alkyl, (C_3–C_8)-cycloalkyl, (C_3–C_8)-cycloalkyl-(C_1–C_4) -alkyl, (C_1–C_4)-alkoxy, (C_3–C_8)-cycloalkoxy, (C_1–C_4)-alkoxy-(C_1–C_4)-alkyl, (C_3–C_8)-cycloalkyl-(C_1–C_4)-alkoxy, tri-(C_1–C_4)-alkylsilyl, di-(C_1–C_8)-alkyl-(C_3–C_8)-cycloalkyl-silyl, di-(C_1–C_8)-alkyl-(phenyl-(C_1–C_4)-alkyl)-silyl, di-(C_1–C_8)-alkyl-(C_1–C_4)-haloalkylsilyl, dimethylphenyl silyl, (C_1–C_4)-haloalkyl, halogen, (C_1–C_4)-haloalkoxy, phenyl, phenyl-(C_1–C_4)-alkyl, benzyloxy,

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benzyloxy-(C_1–C_4)-alkyl, benzylthio, phenylthio or phenoxy, it being possible for the phenyl rings in the seven last-mentioned radicals to be unsubstituted or provided with one or two substituents and these substituents are identical or different and can be in each case (C_1–C_8)-alkyl, (C_1–C_8)-cycloalkyl, (C_1–C_4)-haloalkyl, halogen, (C_1–C_4)-dialkylamino, (C_1–C_4)-alkylthio, (C_1–C_8)-alkoxy, (C_1–C_4)-haloalkoxy, (C_1–C_4)-alkoxy-(C_1–C_4)-alkoxy, H_5C_2—O—[CH_2—CH_2—O]$_y$, 2- (tetrahydro-2H-pyran-2-yloxy)-ethoxy, (C_2–C_8)-alkenyl, (C_2–C_8)-alkynyl, benzyloxy which in the phenyl radical optionally carries one or two identical or different substituents selected from the group comprising (C_1–C_4)-alkyl, (C_1–C_4)-haloalkyl, (C_1–C_4)-alkoxy, (C_1–C_4)-haloalkoxy and halogen, or tri-(C_1–C_4)-alkylsilylmethoxy, (C_3–C_8)-cycloalkyl-(C_1–C_4)-alkoxy, 1,3 -dioxolan-2-ylmethoxy, tetrahydrofuran-2 -ylmethoxy or tetrahydro-2H-pyran-2-ylmethoxy, where, both R^4 and R^5 do not coincidentally denote hydrogen, and where, in two adjacent substituents which are identical or different and selected from the group comprising (C_1–C_8)-alkyl and (C_1–C_8)-alkoxy, in each case one hydrogen atom can be replaced by a joint carbon-carbon bond which links these two substituents, or

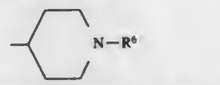
R^4 and R^5 together with the cycloalkyl group form a 3-8-membered spirocyclic ring system which can contain oxygen or sulfur in place of one or two CH_2 groups or

R^4 and R^5 together with the carbon atoms carrying them form a fused 5- or 6-membered carbocycle,

y is 2, 3 or 4, or

Q has the meaning Q^2 and

Q^2 is a group of the formula III



(III)

in which R^6 is a group of the formula Z—W and Z is a direct bond or carbonyl or sulfonyl and W is a phenyl, naphthyl, or biphenyl or heteroaryl selected from the group consisting of 2-pyridyl, 2-quinoxalinyl and 2-pyrimidinyl which phenyl, naphthyl, biphenyl or beteroaryl can be unsubstituted or provided with one or two substituents and these substituents are identical or different and are in each case (C_1–C_8)-alkyl, (C_3–C_8) -cycloalkyl, trifluoromethyl, halogen, (C_1–C_4)-alkoxy, (C_1–C_4)-dialkylamino or (C_1–C_4)-alkylthio, or acid addition salts thereof.

5,571,816

PYRIMIDINES

Klaus-Dieter Kampe, Bad Soden am Taunus; Ernold Granzer, Kelkheim; Michael Leineweber, Frankfurt am Main; Gerhard Rackur, Idstein/Taunus, and Hans G. Böger, Hofheim am Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

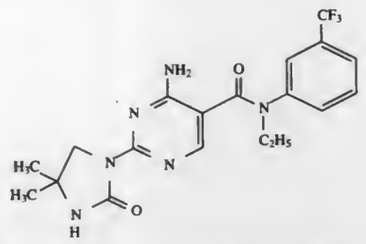
Continuation of Ser. No. 352,745, Dec. 2, 1994, abandoned, which is a continuation of Ser. No. 17,054, Feb. 11, 1993, abandoned. This application Aug. 16, 1995, Ser. No. 515,882

Claims priority, application Germany, Feb. 22, 1992, 42 05 484.2

Int. Cl.[6] C07D *239/48;* A61K *31/505*

U.S. Cl. 514—275 **7 Claims**

1. A compound which is 4-amino-2-(4,4-dimethyl-2-oxo-1-imidazolidinyl)pyrimidine-5-carboxylic acid N-ethyl-N-(3-trifluoromethylphenyl)amide of the formula



or the physiologically tolerated acid addition salts thereof.

5,571,817

METHODS OF TREATING ANDROGENIC ALOPECIA WITH FINASTERIDE [17β-N-MON-SUBSTITUTED-CARBAMOYL-4-AZA-5-α-ANDROST-1-EN-ONES]

Gary H. Rasmusson, Watchung, and Glenn F. Reynolds, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 16,476, Feb. 10, 1993, abandoned, which is a continuation of Ser. No. 927,256, Aug. 7, 1992, abandoned, which is a continuation of Ser. No. 698,374, May 9, 1991, abandoned, which is a continuation of Ser. No. 545,676, Jun. 28, 1990, abandoned, which is a continuation of Ser. No. 370,142, Jun. 21, 1989, abandoned, which is a continuation of Ser. No. 198,708, May 19, 1988, abandoned, which is a continuation of Ser. No. 34,806, Apr. 3, 1987, abandoned, which is a continuation-in-part of Ser. No. 800,623, Nov. 21, 1985, Pat. No. 4,760,071, which is a continuation of Ser. No. 584,062, Feb. 27, 1984, abandoned. This application Jul. 20, 1993, Ser. No. 94,815

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—284 **2 Claims**

1. A method of treating androgenic alopecia which comprises orally administering to a human in need of such treatment a therapeutically effective amount of 17β-(N-tert-butylcarbamoyl)-4-aza-5α-androst-1-en-3-one.

5,571,818

PYRROLYL-4H-PYRANOISOQUINOLINES

Andrew C. Williams, Surrey, United Kingdom, assignor to Eli Lilly and Company, Indianapolis, Ind.

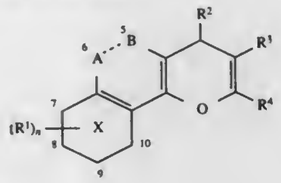
Division of Ser. No. 215,344, Mar. 21, 1994, Pat. No. 5,514,699. This application Jun. 5, 1995, Ser. No. 461,343

Claims priority, application United Kingdom, Mar. 24, 1993, 9306062

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—291 **7 Claims**

1. A compound of the formula:



in which A–B is CH=CH;

X is a pyridine ring;

n is 0;

X and the ring adjacent to it form isoquinolyl;

R^2 is phenyl, methylenedioxyphenyl, nitrophenyl, dichlorophenyl, methyl benzoate, pyridyl, or thienyl;

R^3 is nitrile, carboxy, —$COOR^8$ where R^8 is an alkyl group; and

R^4 is 1-pyrrolyl;

and salts thereof.

5,571,819

IMIDAZOPYRIDINES AS MUSCARINIC AGENTS

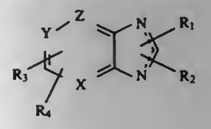
Annmarie L. Sabb, 15 Meadow La., Pennington, N.J. 08534, and Michael B. Webb, 9071 Millcreek Rd., Apt. 2401, Levittown, Pa. 19057

Filed Nov. 22, 1994, Ser. No. 343,399

Int. Cl.[6] A61K *31/435;* C07D *471/04*

U.S. Cl. 514—303 **15 Claims**

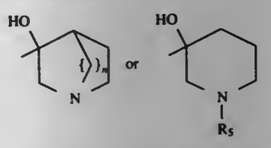
1. A compound of the formula:



where

R_1 is H, alkyl of 1 to 6 carbon atoms, perhaloalkyl of 1 to 6 carbon atoms, arylalkyl of 7 to 12 carbon atoms, alkenyl of 2 to 6 carbon atoms, or alkynyl of 2 to 6 carbon atoms;

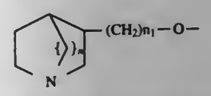
R_2 is H when R_4 is other than H, and, when R_4 is H, R_2 is



in which R_5 is hydrogen or alkyl of 1 to 6 carbon atoms;

R_3 is hydrogen or halogen;

R_4 is H or



X, Y and Z are nitrogen or carbon wherein one of X, Y or Z is nitrogen and the others are carbon;

n is 1 or 2;

n_1 is 0, 1, 2, 3, 4, or 5;

or a pharmaceutically acceptable salt thereof.

5,571,820

HETEROCYCLIC COMPOUND

Yutaka Obuchi; Masaji Suzuki; Hajime Asanuma; Sadakazu Yokomori; Katsuo Hatayama; Yoshihiko Isobe; Chika Ito, and Makoto Muramatsu, all of Tokyo, Japan, assignors to Taisho Pharmaceutical Co., Ltd., Japan

PCT No. PCT/JP93/01484, § 371 Date Apr. 28, 1995, § 102(e) Date Apr. 28, 1995, PCT Pub. No. WO94/12497, PCT Pub. Date Jun. 9, 1994

PCT Filed Oct. 15, 1993, Ser. No. 428,119

Claims priority, application Japan, Nov. 20, 1992, 4-311653

Int. Cl.[6] C07D *451/04;* A61K *31/46*

U.S. Cl. 514—304 **13 Claims**

1. Endo-N-(8-methyl-8-azabicyclo[3.2.1]oct-3-yl)- 1-isopropyl-2(1H)-quinolone-3-carboxamide or a pharmaceutically acceptable salt thereof.

5,571,821

SULFONAMIDES AND DERIVATIVES THEREOF THAT MODULATE THE ACTIVITY OF ENDOTHELIN

Ming Fai Chan; Bore G. Raju; Adam Kois; Erik J. Verner; Chengde Wu; Rosario S. Castillo; Venkatachalapathi Yalamoori; Vitukudi N. Balaji, and Kalyanaraman Ramnarayan, all of San Diego, Calif., assignors to Texas Biotechnology Corporation, Del.

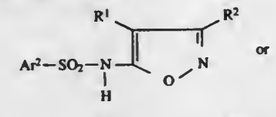
Continuation-in-part of Ser. No. 222,287, Apr. 5, 1994, Ser. No. 142,552, Oct. 21, 1993, Pat. No. 5,514,691, Ser. No. 142,159, Oct. 21, 1993, Pat. No. 5,464,853, Ser. No. 142,631, Oct. 21, 1993, abandoned, Ser. No. 100,565, Jul. 30, 1993, abandoned, Ser. No. 100,125, Jul. 30, 1993, abandoned, and Ser. No. 65,202, May 20, 1993, abandoned, said Ser. No. 222,287is a continuation-in-part of Ser. No. 142,159, Ser. No. 142,559, Oct. 25, 1993, Pat. No. 5,378,463, Ser. No. 142,631, Ser. No. 100,565, Ser. No. 100,125, and Ser. No. 65,202, said Ser. No. 142,159Ser. No. 142,559, and Ser. No. 142,631, , each is a continuation-in-part of Ser. No. 100,565, Ser. No. 100,125, and Ser. No. 65,202, said Ser. No. 100,565and Ser. No. 100,125, , each is a continuation-in-part of Ser. No. 65,202.

This application May 20, 1994, Ser. No. 247,072

Int. Cl.[6] A61K *31/47;* C07D *413/12*

U.S. Cl. 514—312 **91 Claims**

1. A compound of formula I:



(I)

wherein: R^1 and R^2 are either (i), (ii) or (iii) as follows:

(i) R^1 and R^2 are independently selected from H. NH_2. NO_2. halide, pseudohalide, alkyl, alkenyl, alkynyl, aryl, arylalkyl, heterolaryl, alkoxy, alkylamino, hydroxyalkyl, alkoxyalkyl, alkylthio, haloalkoxy, haloalkyl, alkylsufinyl, alkylsulfonyl, aryloxy, arylamino, arylthio, arylsufinyl, arylsulfonyl, haloalkyl, haloaryl, alkoxycarbonyl, alkylcarbonyl, aminocarbonyl, arylcarbonyl, formyl, substituted or unsubstituted amido, substituted or unsubstituted ureido, in which the alkyl, alkenyl and alkynyl portions contain from 1 up to about 14 carbon atoms and are either straight or branched chains or cyclic, and the aryl portions contain from about 4 to about 16 carbons, with the proviso that R^2 is not halide or pseudohalide; or,

(ii) R^1 and R^2 together form —$(CH_2)_n$, where n is 3 to 6; or,

(iii) R^1 and R^2 together form 1,3-butadienyl; and

Ar^2 is a heterocycle containing up to about 16 carbons in the ring, except that Ar^2 is not naphthyl unless the compound is an N-isoxazolylsulfonamide substituted at the 4-position on the isoxazolyl group with halide or higher alkyl that contains from 8 to 15 carbon atoms and is a straight or branched chain.

5,571,822

ANTITUMOR COMPOUNDS

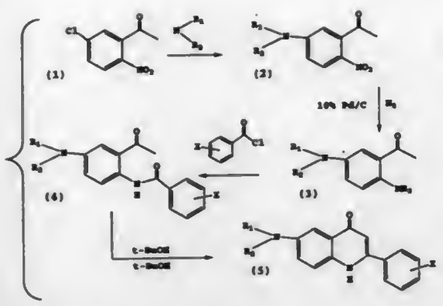
Kuo-Hsiung Lee, Chapel Hill, N.C.; Sheng-Chu Kuo, Tai-Chung; Tian-Shung Wu, Tainan City, both of Taiwan; Hui K. Wang, Carboro, and Leping Li, Chapel Hill, both of N.C., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Filed Sep. 30, 1994, Ser. No. 316,409

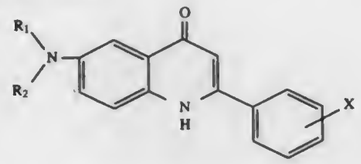
Int. Cl.[6] C07D *215/38;215/233*

U.S. Cl. 514—312 **20 Claims**

1. A method of inhibiting tumor cell growth in a mammalian subject, comprising administering to the subject a therapeutically



effective amount of a 2-phenyl- 4-quinolone compound represented by the formula:



wherein X is a selected from the group consisting of H, F, Cl, Br, I, CH_3, CF_3, OH, OCH_3, OCF_3, OCH_2CH_3, NH_2, $NHCH_3$, $N(CH_3)_2$, O-benzyl, —C(=O)—R_o, —C(=O)—OR_o, where R_o is a lower alkyl group; and where R_1 and R_2 (i) are lower alkyl groups or (ii) taken together, form a chain having the form $—(CH_2)_mY(CH_2)_n—$, where Y is CH_2, O, or S; m and n are each greater than 1; and the sum of m and n is between 3 and 6.

5,571,823

PHARMACOLOGICAL TREATMENT OF OCULAR DEVELOPMENT

Richard A. Stone, Havertown; Alan M. Laties, Philadelphia, both of Pa., and Paul M. Iuvone, DeKalb, Ga., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa., and Emory University, Atlanta, Ga.

Division of Ser. No. 687,847, Apr. 10, 1991, Pat. No. 5,284,843, which is a continuation of Ser. No. 342,942, Apr. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 202,220, Jun. 3, 1988, abandoned. This application Jun. 22, 1993, Ser. No. 81,469

Int. Cl.[6] A61K *31/445*

U.S. Cl. 514—317 8 Claims

1. A method of controlling the abnormal postnatal growth of the eye of a maturing animal which comprises the ocular administration of therapeutically effective amounts of a dopamine antagonist.

5,571,824

Patent Not Issued For This Number

5,571,825

METHOD OF SELECTIVELY INHIBITING PROSTAGLANDIN G/H SYNTHASE-2

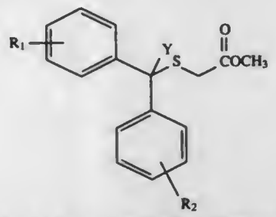
Diane H. Boschelli, Plymouth; David T. Connor; Richard D. Dyer, both of Ann Arbor; Sonya S. Khatana, Northville, all of Mich.; James B. Kramer, Sylvania, Ohio, and William H. Roark, Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 31, 1995, Ser. No. 414,394

Int. Cl.[6] A61K *31/44;31/38;31/34;31/235;31/24;31/215;31/35*

U.S. Cl. 514—332 10 Claims

1. A method of selectively inhibiting prostaglandin G/H synthase-2, the method comprising administering to a patient in need of such inhibition an inhibiting amount of a compound having the Formula I



I

wherein R_1 and R_2 are independently hydrogen, halo, hydroxy, thiol, C_1–C_6 alkyl, C_3–C_6 cycloalkyl, C_1–C_6 alkoxy, phenyl, amino, dimethylamino or $S(O)_nR_3$, where R_3 is C_1–C_6 alkyl and n is 0, 1, or 2; and

Y is hydrogen, phenyl or phenyl substitued with hydrogen, halo, hydroxy, thiol, C_1–C_6 alkyl, C_3–C_6 cycloalkyl, C_1–C_6 alkoxy, phenyl, amino, dimethylamino or $S(O)_nR_3$, where R_3 is C_1–C_6 alkyl and n is 0, 1, or 2.

5,571,826

HETEROCYCLIC COMPOUNDS AND THEIR PREPARATION AND USE

Per Sauerberg, Valby; Preben H. Olesen, Copenhagen, both of Denmark, and Charles H. Mitch, Columbus, Ind., assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

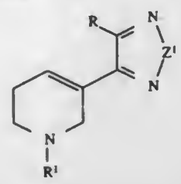
Division of Ser. No. 26,708, Mar. 5, 1993, Pat. No. 5,376,668, which is a continuation-in-part of Ser. No. 745,033, Aug. 14, 1991, Pat. No. 5,328,924. This application Dec. 22, 1994, Ser. No. 362,031

Claims priority, application Denmark, Aug. 21, 1990, 1983/90

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—342 12 Claims

1. A method for providing an analgesic effect comprising administering to a subject in need thereof an effective amount of a compound of formula I:



(I)

wherein

Z^1 is oxygen or sulphur;

R^1 is hydrogen, straight or branched C_{1-5}-alkyl, straight or branched C_{2-5}-alkenyl or straight or branched C_{2-5}-alkynyl; and

R is $—Z^2—R^2—X$ or $—Z^2—R_2—Z^3—X$, wherein Z^2 and Z^3 independently are oxygen or sulphur, R^2 is straight or branched C_{1-15}-alkylene, straight or branched C_{1-15}-alkenylene, straight or branched C_{2-15}-alkynylene, each of which is optionally substituted with halogen, —OH, —CN, $—CF_3$, one or two phenyl, phenoxy, benzoyl, or benzyloxycarbonyl groups wherein each aromatic group is optionally substituted with halogen, —CN, C_{1-4}-alkyl or C_{1-4}-alkoxy, and X is a heterocyclic group selected from the group consisting of 1,3-dioxolanyl, pyridyl, thienyl, pyrrolidonyl, oxazolidonyl, thiazolidonyl, pyrrolidinyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, tetrazolyl, thiazolyl, oxazolyl, benzoxazolyl, and benzthiazolyl, which heterocyclic group is optionally substituted at a carbon or nitrogen atom with straight or branched C_{1-6}-alkyl, phenyl, benzyl or pyridine; or a pharmaceutically acceptable salt thereof.

5,571,827

METHODS AND COMPOSITIONS FOR TREATING HYPERTENSION, ANGINA AND OTHER DISORDERS USING OPTICALLY PURE S(−) NITRENDIPINE

Timothy J. Barberich, Concord, Mass., and James W. Young, Palo Alto, Calif., assignors to Sepracor Inc., Marlborough, Mass.

Continuation of Ser. No. 957,200, Oct. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 492,647, Mar. 13, 1990, Pat. No. 5,190,962. This application Jun. 15, 1994, Ser. No. 259,930

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—356 33 Claims

1. A method for treating hypertension in a human, while avoiding the concomitant liability of adverse effects associated with administration of racemic nitrendipine, which comprises administering to a human in need of antihypertensive therapy, an amount of S(−) nitrendipine, or a pharmaceutically acceptable salt thereof, substantially free of its R(+) stereoisomer, said amount being sufficient to alleviate hypertension but insufficient to cause said adverse effects of racemic nitrendipine.

5,571,828

N-[(3-HETEROARYL-1-PYRROLIDINYL)ALKYL]-2,3-NAPTHALIMIDES AND RELATED COMPOUNDS AND THEIR THERAPEUTIC UTILITY

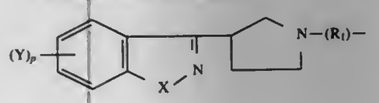
Joseph T. Strupczewski, Flemington; Grover C. Heisley, Stockton; Edward J. Glamkowski, Warren; Yulin Chiang, Covent Station, all of N.J.; Kenneth J. Bordeau, Kintnersville, Pa.; Peter A. Nemoto, Raritan, and John J. Tegeler, Bridgewater, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 469,361

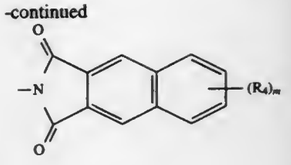
Int. Cl.[6] A61K *31/495;31/55;31/505;* C07D *401/00;403/00;417/00;419/00;221/04;275/04;239/02*

U.S. Cl. 514—373 14 Claims

1. A compound of the formula:



-continued



wherein,

X is —O—, —S—, —NH—, or $—N(R_2)$;

R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C_3–C_{10}) cycloalkyl, aroyl, (C_2–C_{18}) alkanoyl, (C_1–C_{18}) alkoxycarbonyl and phenylsulfonyl groups;

aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;

R_1 is $—CR_{24}R_{27}—(CR_{23}R_{27})_n—$, where n is 0,1,2 or 4; or

$—CHR_{24}CH═CH—CHR_{24}—$,

$—CHR_{24}—C≡C—CHR_{24}—$,

$—CHR_{24}—CH═CH—CR_{23}R_{24}—CHR_{24}—$,

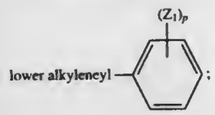
$—CHR_{24}—CR_{23}\ R_{24}—CH═CH—CHR_{24}—$,

$—CHR_{24}—C≡C—CR_{23}R_{24}—CHR_{24}—$, or

$—CHR_{24}—CR_{23}R_{24}—C≡C—CHR_{24}$,

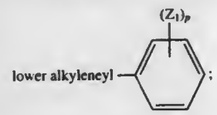
the —CH═CH— bond being cis or trans;

R_{23} is hydrogen, (C_1–C_{18}) linear alkyl, phenyl, hydroxy, (C_1–C_{18})alkoxy, aryloxy, aryl(C_1–C_{18})alkyloxy, (C_1–C_{18})alkanoyloxy, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl (C_1–C_6)alkyloxy, aryl(C_1–C_{18})alkyloxy (C_1–C_6) alkyl, (C_1–C_{18})alkanoyloxy(C_1–C_6)alkyl or



where Z_1 is lower alkyl, —OH, lower alkoxy, $—CF_3$, $—NO_2$, $—NH_2$, or halogen, and p is as defined previously;

R_{24} is hydrogen, (C_1–C_{18}) linear alkyl, phenyl, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl (C_1–C_6)alkyloxy, aryl(C_1–C_{18})alkyoxy(C_1–C_6)alkyl, (C_1–C_{18})alkanoyloxy(C_1–C_6)alkyl or

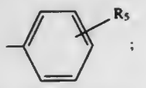


where Z_1 and p are as previously defined;

R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C=O or C=S;

R_4 is hydrogen, lower alkyl, lower alkoxy, hydroxy, tri(C_1–C_6)alkylsilyloxy, hydroxy lower alkyl, alkanoyloxy lower alkyl, amino, mono- or dialkylamino, (C_1–C_{18})acyl amino, (C_1–C_{18})alkanoyl, trifluoromethyl, chlorine, fluorine, bromine, —O—C(=O)—(C_1–C_{18}straight or branched chain) alkyl or —C(=O)—aryl;

where aryl is phenyl or



where R_5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy;

alkyl is (C_1–C_{18})alkyl;
m is 1, 2, or 3;
and, any hydroxyl group attached to an aliphatic or aromatic carbon atom, or any primary or secondary nitrogen atom may be acylated with a (C_4–C_{18})carboxylic group, in addition, any nitrogen atom may alternatively be acylated with a (C_4–C_{18})alkoxycarbonyl group;
all geometric, optical, and stereoisomers thereof, or a pharmaceutically acceptable acid addition salt thereof.

5,571,829

SYNERGISTIC INSECTICIDAL COMPOSITIONS

Muthuvelu Thirugnanam, Langhorne, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 340,574, Nov. 16, 1994, Pat. No. 5,506,251. This application Jun. 6, 1995, Ser. No. 467,382
Int. Cl.[6] A01N *37/18;43/64*
U.S. Cl. 514—383 **3 Claims**

1. A synergistic insecticidal composition comprising N'-(3,5-dimethylbenzoyl)-N-(2-methyl-3-methoxybenzoyl)-N'-tert-butylhydrazine and a cytochrome P450 enzyme inhibitor selected from fenbuconazole and myclobutanil, in a ratio of from 1:0.1 to 1:1000 by weight.

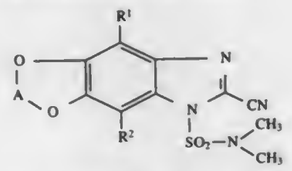
5,571,830

2-CYANOBENZIMIDAZOLES AND THEIR USE

Winfried Lunkenheimer, Wuppertal; Heinz-Wilhelm Dehne, and Ulrike Wachendorff-Neumann, both of Monheim, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 981,035, Nov. 24, 1992, Pat. No. 5,510,364. This application Jan. 16, 1996, Ser. No. 586,119
Claims priority, application Germany, Dec. 4, 1991, 41 39 950.1
Int. Cl.[6] A01N *43/90;* **C07D** *235/02*
U.S. Cl. 514—395 **6 Claims**

1. A 2-cyanobenzimidazole of the formula



(I)

in which
R^1 represents hydrogen, fluorine, chlorine, bromine or straight-chain or branched alkyl having 1 to 4 carbon atoms,
R^2 represents hydrogen, fluorine, chlorine, bromine or straight-chain or branched alkyl having 1 to 4 carbon atoms and
A represents a divalent alkanediyl radical having 1 to 4 carbon atoms.

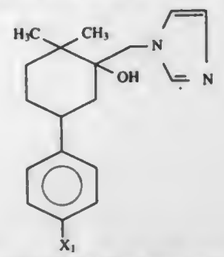
5,571,831

IMIDAZOLE DERIVATIVE, AND PHARMACEUTICAL COMPOSITION

Koichi Niimura, Saitama; Takao Ando, Yamanashi; Toyohiko Nitta, Ibaraki, and Yuko Ikeda, Chiba, all of Japan, assignors to Kureha Chemical Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 137,045, Oct. 14, 1993, Pat. No. 5,489,597. This application Jun. 7, 1995, Ser. No. 486,141
Claims priority, application Japan, Feb. 15, 1992, 4-61441
Int. Cl.[6] A61K *31/415;* **C07D** *233/60*
U.S. Cl. 514—399 **35 Claims**

1. A compound of the formula (I):



(I)

wherein X_1 is a chlorine or fluorine atom, or a hydroxy group or a salt thereof.

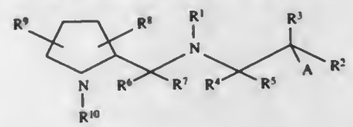
5,571,832

NITROGEN-CONTAINING CYCLOHETERO ALKYLAMINO ARYL DERIVATIVES FOR CNS DISORDERS

Brian R. de Costa, Rockville; Wayne D. Bowen; Xiao-Shu He, both of Derwood, all of Md.; Lilian Radesca, Newark, Del., and Kenner C. Rice, Bethesda, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 976,585, Nov. 13, 1992, abandoned. This application Jun. 20, 1994, Ser. No. 261,796
Int. Cl.[6] A61K *31/40;* **C07D** *207/08;207/12;207/46*
U.S. Cl. 514—408 **12 Claims**

1. A compound represented by the following formula:



wherein
each of R^1 and R^{10} is independently selected from the group consisting of hydrido, alkyl, cycloalkyl, hydroxyalkyl, haloalkyl, cycloalkylalkyl, alkoxyalkyl, aralkyl, aryl, alkenylalkyl, alkynylalkyl, carboxyalkyl, alkanoyl, alkylsulfinyl, alkylsulfonyl, arylsulfinyl and arylsulfonyl;
each of R^2 and R^3 is independently selected from the group consisting of hydrido, alkyl, cycloalkyl, hydroxyalkyl, haloalkyl, cycloalkylalkyl, alkoxyalkyl, aralkyl, aryl, alkenyl, alkynyl, alkenylalkyl, alkynylalkyl, carboxyalkyl, alkanoyl, alkoxycarbonyl, carboxy, cyanoalkyl, alkylsulfinyl, alkylsulfonyl, arylsulfinyl, and arylsulfonyl;
or R^2 and R^3 may be taken together to form oxo;
each of R^4 through R^9 is independently selected from hydrido, alkyl, cycloalkyl, cycloalkylalkyl, aralkyl, aryl, alkoxyalkyl, haloalkyl, hydroxyalkyl, carboxy, carboxyalkyl, alkanoyl, alkenyl and alkynyl;
or R^6 and R^7 may be taken together to form oxo;
or R^8 and R^9 may be taken together to form oxo;
A is selected from the group consisting of phenyl or napthyl which can be further substituted with one or more substituents independently selected from the group consisting of hydrido, hydroxy, alkyl, cycloalkyl, cycloalkylalkyl, aralkyl, aryl, alkoxy, aryloxy, aralkoxy, alkoxyalkyl, halo, haloalkyl, hydroxyalkyl, cyano, amino, monoalkylamino, dialkylamino, carboxy, carboxyalkyl, alkanoyl, alkenyl and alkynyl; or a pharmaceutically acceptable salt thereof.

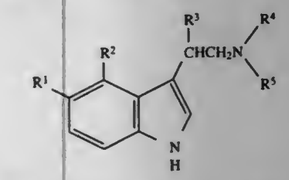
5,571,833

TRYPTAMINE ANALOGUES, THEIR SYNTHESIS AND THEIR USE AS 5-HT1-LIKE OR 5-HT2 RECEPTOR AGONISTS

Lawrence I. Kruse, Haddonfield, N.J.; Rodney C. Young, Hertford, and Alberto J. Kaumann, Trumpington, both of England, assignors to SmithKline Beecham plc, England

PCT No. PCT/GB92/01089, § 371 Date May 26, 1994, § 102(e) Date May 26, 1994, PCT Pub. No. WO93/00333, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 17, 1992, Ser. No. 167,890
Claims priority, application United Kingdom, Jun. 21, 1991, 9113382; Jun. 21, 1991, 9113385
Int. Cl.[6] A61K *31/40;* **C07D** *207/08*
U.S. Cl. 514—414 **11 Claims**

1. A method of treatment of condition where a 5-HT_1-like or 5-HT_2 receptor agonist is indicated which comprises administering to a subject in need thereof an effective amount of a compound of structure (I):



Structure (I)

in which
R^1 is hydrogen, hydroxy, C_{1-4}alkoxy, halo C_{1-4}alkoxy, C_{3-7}cycloalkyl-C_{1-4}alkoxy, aryloxy or arylC_{1-4}alkyl;
R^2 is halogen, C_{1-4}alkyl, CN, NO_2 or CF_3;
R^3 is hydrogen or C_{1-4}alkyl;
R^4 and R^5 are the same or different and are each hydrogen or C_{1-4}alkyl or together with the nitrogen atom to which they are attached form a heterocyclic ring; or a pharmaceutically acceptable salt, solvate or hydrate thereof, provided that the compound of structure (I) is not 3-(2-n-propylaminoethyl)-4-chloro-5-methoxyindole, 3-(2-methylminoethyl)-4-chloro-5-methoxyindole, or 3-(2-methylaminoethyl)4-chloro-5-propoxyindole.

5,571,834

PHARMACEUTICAL COMPOSITION USEFUL FOR THE TREATMENT OF CARDIOVASCULAR DISEASES

Cesare Casagrande, Arese, and Luciano Licciardello, Monza, both of Italy, assignors to Zambon Group S.p.A., Vicenza, Italy

Continuation of Ser. No. 378,036, Jul. 11, 1989, Pat. No. 5,304,570. This application Jan. 25, 1994, Ser. No. 186,177
Claims priority, application Italy, Jul. 15, 1988, 21369A/88
Int. Cl.[6] A61K *31/40;31/225*
U.S. Cl. 514—423 **15 Claims**

1. A pharmaceutical composition useful for treating cardiovascular disease and comprising a pharmaceutically-acceptable carrier and an effective enhanced amount combination of a) ibopamine or a pharmaceutically-acceptable salt thereof and b) an enalapril or pharmaceutically-acceptable salt thereof.

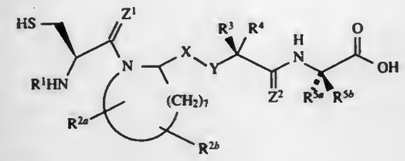
5,571,835

INHIBITORS OF FARNESYL-PROTEIN TRANSFERASE

Neville J. Anthony, Hatfield; S. Jane deSolms, Norristown, and Samuel L. Graham, Schwenksville, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 29, 1994, Ser. No. 315,059
Int. Cl.[6] A61K *31/40;* **C07D** *207/09*
U.S. Cl. 514—428 **19 Claims**

1. A compound which inhibits Ras farnesyltransferase having the formula I:



I

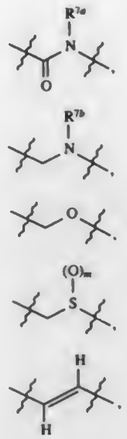
wherein:
R^1 is selected from:
a) hydrogen,
b) $R^8S(O)_2$-, $R^8C(O)$-, $(R^8)_2NC(O)$- or $R^9OC(O)$-, and
c) C_1–C_6 alkyl unsubstituted or substituted by aryl, cycloalkyl, alkenyl, alkynyl, R^8O-, $R^8S(O)_m$-, $R^8C(O)NR^8$-, CN, $(R^8)_2N$-$C(NR^8)$-, $R^8C(O)$-, $R^8OC(O)$-, N_3, $—N(R^8)_2$, or $R^9OC(O)NR^8$-;
R^{2a} is selected from:
a) hydrogen,
b) substituted or unsubstituted C_1–C^{10} alkyl, C_2–C_{10} alkenyl, C_3–C_{10} cycloalkyl or aryl group,
wherein the substituent is selected from F, Cl, B, NO_2, R^8O-, $R^8S(O)_m$-, $R^8C(O)NR^8$-, CN, $(R^8)_2N$-$C(NR^8)$-, $R^8C(O)$-, $R^8OC(O)$-, N_3, $—N(R^8)_2$, $R^9OC(O)NR^8$- and C_1–C_{20} alkyl,
c) R^8O-, $R^8S(O)_m$-, $R^8C(O)NR^8$-, CN, NO_2, $(R^8)_2N$-$C(NR^8)$-, $R^8C(O)$-, $R^8OC(O)$-, N_3, $—N(R^8)_2$, or $R^9OC(O)NR^8$-,
d) C_1–C_6 alkyl substituted with an unsubstituted or substituted group selected from aryl and C_3–C_{10} cycloalkyl, and
e) a side chain of a naturally occurring amino acid, wherein the amino acid is selected from alanine, leucine, isoleucine, norleucine, valine and norvaline;
R^{2b} is selected from:
a) hydrogen,
b) C_1–C_6 alkyl unsubstituted or substituted by alkenyl, R^8O-, $R^8S(O)_m$-, $R^8C(O)NR^8$-, CN, $(R^8)_2N$-$C(NR^8)$-, $R^8C(O)$-, $R^8OC(O)$-, N_3, $—N(R^8)_2$, or $R^9OC(O)NR^8$-,
c) aryl, cycloalkyl, alkenyl, R^8O-, $R^8S(O)_m$-, $R^8C(O)NR^8$-, CN, NO_2, $(R^8)_2N$-$C(NR^8)$-, $R^8C(O)$-, $R^8OC(O)$-, N_3, $—N(R^8)_2$, or $R^9OC(O)NR^8$-, and
d) C_1–C_6 alkyl substituted with an unsubstituted or substituted group selected from aryl and C_3–C_{10} cycloalkyl;
R^3 and R^4 are independently selected from:
a) a side chain of a naturally occurring amino acid,
b) an oxidized form of a side chain of a naturally occurring amino acid which is:
i) methionine sulfoxide, or
ii) methionine sulfone,
c) substituted or unsubstituted C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_3–C_{10} cycloalkyl or aryl group,
wherein the substituent is selected from F, Cl, Br, $N(R^8)_2$, NO_2, R^8O-, $R^8S(O)_m$, $R^8C(O)NR^8$-, CN, $(R^8)_2N$- $C(NR^8)$-, $R^8C(O)$-, $R^8OC(O)$-, N_3, $—N(R^8)_2$, $R^9OC(O)NR^8$- and C_1–C_{20} alkyl, and
d) C_1–C_6 alkyl substituted with an unsubstituted or substituted group selected from aryl and C_3–C_{10} cycloalkyl; or
R^3 and R^4 are combined to form $—(CH_2)_s$-;
R^{5a} and R^{5b} are independently selected from:
a) a side chain of a naturally occurring amino acid,
b) an oxidized form of a side chain of a naturally occurring amino acid which is:
i) methionine sulfoxide, or
ii) methionine sulfone,
c) substituted or unsubstituted C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_3–C_{10} cycloalkyl or aryl group,

wherein the substituent is selected from F, Cl, Br, $N(R^8)_2$, NO_2, R^8O-, $R^8S(O)_m$-, $R^8C(O)NR^8$-, CN, $(R^8)_2N$-$C(NR^8)$-, $R^8C(O)$-, $R^8OC(O)$-, N_3, $—N(R^8)_2$, $R^9OC(O)NR^8$- and C_1–C_{20} alkyl, and

d) C_1–C_6 alkyl substituted with an unsubstituted or substituted group selected from aryl and C_3–C_{10} cycloalkyl; or

R^{5a} and R^{5b} are combined to form $—(CH_2)_s—$;

X-Y is



or

$—CH_2—CH_2—$;

R^{7a} is selected from

a) hydrogen,

b) unsubstituted or substituted aryl,

c) unsubstituted or substituted cycloalkyl, and

d) C_1–C_6 alkyl substituted with hydrogen or an unsubstituted or substituted group selected from aryl and cycloalkyl;

R^{7b} is selected from

a) hydrogen,

b) unsubstituted or substituted aryl,

c) unsubstituted or substituted cycloalkyl,

d) C_1–C_6 alkyl substituted with hydrogen or an unsubstituted or substituted group selected from aryl and cycloalkyl,

e) a carbonyl group which is bonded to an unsubstituted or substituted group selected from aryl, cycloalkyl and C_1–C_6 alkyl substituted with hydrogen or an unsubstituted or substituted group selected from aryl and cycloalkyl, and,

f) a sulfonyl group which is bonded to an unsubstituted or substituted group selected from aryl, cycloalkyl and C_1–C_6 alkyl substituted with hydrogen or an unsubstituted or substituted group selected from aryl and cycloalkyl;

R^8 is independently selected from hydrogen, C_1–C_6 alkyl and aryl;

R^9 is independently selected from C_1–C_6 alkyl and aryl;

Z^1 and Z^2 are independently H_2 or O, provided that Z^1 is not O when

X-Y is $—C(O)N(R^{7a})—$;

m is 0, 1 or 2;

s is 4 or 5; and

t is 3;

or a pharmaceutically acceptable salt thereof.

5,571,836

VIRAL ATTACHMENT INHIBITORS

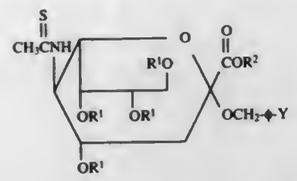
Nicolai V. Bovin, 117871, ul. Artsimovicha 11,, 181 Moscow, Russian Federation; Nargiz E. Bryamova, ul. Ostravitiyanova 16/4, 46 Moscow, Russian Federation; Alexander B. Tuzikov, Ismaylowski, Prospekt 47, 4, Moscow, Russian Federation; Mikhail N. Matrosovich, Ramenka Str., 9/2 Apt. 287, 117607 Moscow, Russian Federation; Larisa V. Mochalova, Ramenka ul. 9/3, 572, 117607 Moscow, Russian Federation, and Alexandra S. Gambaryan, ul. Vargy 40, 71, 117133 Moscow, Russian Federation

Filed May 9, 1995, Ser. No. 438,661

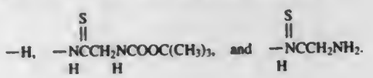
Int. Cl.[6] A61K *31/35*

U.S. Cl. 514—459 **19 Claims**

1. A composition comprising a neuraminic acid compound of the formula:



wherein R^1 is selected from the group consisting of hydrogen and acetyl; R^2 is selected from the group consisting of hydrogen and methyl; and Y is selected from the group consisting of:



—H, $—NCCH_2NCOOC(CH_3)_3$, and $—NCCH_2NH_2$.

5,571,837

METHOD OF TREATING WRINKLES USING SACCHARIC ACID OR SACCHAROLACTONE

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology Inc., Wilmington, Del.

Continuation of Ser. No. 179,190, Jan. 10, 1994, Pat. No. 5,470,880, which is a continuation of Ser. No. 89,101, Jul. 12, 1993, Pat. No. 5,389,677, which is a division of Ser. No. 8,223, Jan. 22, 1993, abandoned, which is a continuation of Ser. No. 812,858, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 469,738, Jan. 19, 1990, abandoned, which is a continuation of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 7, 1995, Ser. No. 475,685

Int. Cl.[6] A61K *7/48;31/19;31/365*

U.S. Cl. 514—473 **10 Claims**

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising saccharic acid or a topically effective salt thereof, or saccharolactone in an amount and for a period of time sufficient to visibly reduce said wrinkle, wherein said wrinkle is a facial wrinkle.

5,571,838

Patent Not Issued For This Number

5,571,839

D-ASPARTIC ACID β-HYDROXAMATE FOR THE TREATMENT OF VIRAL INFECTIONS AND TUMORS

Jorge Vila, Irigny; Nicole Thomasset, Villeurbanne; Farid H. Sangsart, Lyon, and Jacques Grange, Oullins, all of France, assignors to Institut National de la Sante et de la Recherche Medicale (INSERM), Paris, France

Division of Ser. No. 768,324, Oct. 28, 1991, abandoned. This application Mar. 19, 1993, Ser. No. 34,399

Claims priority, application France, Apr. 28, 1989, 89 05744

Int. Cl.[6] A01N *37/18;37/30*

U.S. Cl. 514—564 **13 Claims**

1. A method of treating a patient, comprising administering to said patient an independently therapeutically effective amount of DAH, wherein said patient has HIV or FLV viral infection and said DAH is administered in an amount independently effective to inhibit viral replication associated with said viral infection without administering L-asparaginase to said patient.

5,571,840

METHOD FOR TREATING CENTRAL NERVOUS SYSTEM ISCHEMIA

Gilbert H. Mayor, Lincolnshire, Ill., and Louis G. D'Alecy, Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich., and Knoll Pharmaceuticals Co., Mount Olive, N.J.

Continuation of Ser. No. 79,805, Jun. 22, 1993, abandoned. This application Jun. 6, 1994, Ser. No. 254,417

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—567 **11 Claims**

1. A method for treating a patient suffering from central nervous system ischemia resulting from an acute insult, comprising administering an effective amount of levothyroxine to the patient as a bolus dose and/or continuous infusion at a time consisting of after ischemia has occurred.

5,571,841

METHOD OF TREATING WRINKLES USING MANDELIC ACID

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 179,190, Jan. 10, 1994, Pat. No. 5,470,880, which is a continuation of Ser. No. 89,101, Jul. 12, 1993, Pat. No. 5,389,677, which is a division of Ser. No. 8,223, Jan. 19, 1993, abandoned, which is a continuation of Ser. No. 812,858, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 469,738, Jan. 19, 1990, abandoned, which is a continuation of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 470,434

Int. Cl.[6] A61K *7/48;31/19*

U.S. Cl. 514—570 **10 Claims**

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising mandelic acid or a topically effective salt thereof, in an amount and for a period of time sufficient to visibly reduce said wrinkle, wherein said wrinkle is a facial wrinkle.

5,571,842

PERFLUOROALKYL-SUBSTITUTED, BENZOYLGUANIDINES, A PROCESS FOR THEIR PREPARATION, THEIR USE AS A MEDICAMENT OR DIAGNOSTIC AGENT, AND A MEDICAMENT CONTAINING THEM

Heinz-Werner Kleemann, Bischofsheim; Hans-Jochen Lang, Hofheim; Jan-Robert Schwark, Frankfurt; Andreas Weichert, Egelsbach; Wolfgang Scholz, Eschborn, and Udo Albus, Florstadt, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

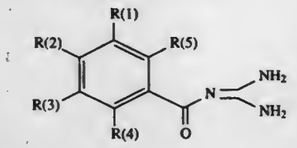
Filed May 11, 1995, Ser. No. 438,795

Claims priority, application Germany, May 13, 1994, 44 17 004.1

Int. Cl.[6] A61K *31/165;* **C07C** *323/23*

U.S. Cl. 514—618 **9 Claims**

1. A benzoylguanidine of the formula I



in which:

R(1) is R(6)—SO_m;

m is zero, 1 or 2;

R(6) is perfluoroalkyl of 1, 2, 3, 4, 5 or 6 carbon atoms which is straight-chain or branched;

R(2) and R(3) independently of one another are hydrogen, F, Cl, Br, I, alkyl of 1, 2, 3 or 4 carbon atoms, alkoxy of 1, 2, 3 or 4 carbon atoms, or phenoxy which is unsubstituted or is substituted by 1–3 substituents selected from the group consisting of F, Cl, methyl and methoxy;

R(4) and R(5) independently of one another are hydrogen, alkyl of 1, 2 or 3 carbon atoms, F, Cl, Br, I, CN, OR(7), NR(8)R(9), $—(CH_2)_n—(CF_2)_o—CF_3$;

R(7), R(8) and R(9) independently of one another are hydrogen or alkyl of 1, 2, 3 or 4 carbon atoms;

n is zero or 1;

o is zero, 1 or 2;

or a pharmacologically acceptable salt thereof.

5,571,843

DERIVATIVES OF INDAN-1,3-DIONE AND INDAN-1,2,3-TRIONE, METHODS OF PREPARING THEM AND THERAPEUTIC USE THEREOF

Michel P. Cugnon de Sevricourt, Moult; Catherine G. Dacquet, Paris; Michel Finet, Fresnes; Florence J. Le Marquer; Max F. Robba, both of Paris; Norbert O. Tembo, Cergy St Christophe; Sylvie J. Yannic-Arnoult, Grigny, and Jean-Luc Torregrosa, Saint-Denis, all of France, assignors to Innothera, Arcueil, France

PCT No. PCT/FR93/00328, § 371 Date Mar. 24, 1994, § 102(e) Date Mar. 24, 1994, PCT Pub. No. WO93/20045, PCT Pub. Date Oct. 14, 1993

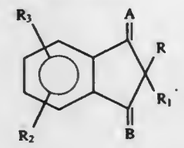
PCT Filed Apr. 1, 1993, Ser. No. 142,479

Claims priority, application France, Apr. 3, 1992, 92 04071

Int. Cl.[6] A61K *31/175;* **C07C** *281/06*

U.S. Cl. 514—590 **15 Claims**

1. Indan compounds of the formula:



wherein R_2 and R_3 each independently represent H, C_1–C_4 alkoxy or OH, and:

a) each of A and B is an oxygen atom and R and R_1 together form a group of the formula:
   1) =NNHCONHR$_5$ where R_5 represents H, pyridyl, phenyl or phenyl substituted by one, two or three groups selected from OH, CF_3, C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen, or hydroxyethyl;
   2) =NNHCON (phenyl)$_2$,; or
   3) =NNHCONHNHR$_5$ where R_5 is the same as defined above; or
b) A is a N—OH group and B is an oxygen atom and R and R_1 together form a =NNHCONHR$_5$ group or a =NNHCON (phenyl)$_2$ group, where R_5 is the same as defined above; or
c) A is a NNHCONHR$_5$ group and B is an oxygen atom and R and R_1 together form a =NNHCONHR$_5$ group, where R_5 is the same as defined above; or
d) each of A and B is a N—OH group and R and R_1 together form a =NNHCONHR$_5$ group or a =NNHCON (phenyl)$_2$ group, where R_5 is the same as defined above

and acid addition salts of salt-forming compounds of formula (I).

5,571,844

AMIDINOPHENYLALANINE DERIVATIVES, A PROCESS FOR THEIR PREPARATION, THEIR USE AND COMPOSITIONS CONTAINING THESE AS ANTICOAGULANTS

Werner Stüber, Lahntal 3, and Rainer Koschinsky, Cölbe, both of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

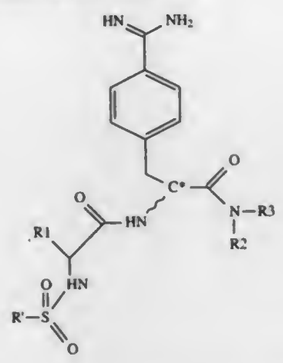
Filed Dec. 8, 1994, Ser. No. 354,741

Claims priority, application Germany, Dec. 10, 1993, 43 42 154.7

Int. Cl.^{6} A61K *31/18*

U.S. Cl. 514—602 **11 Claims**

1. A compound of the formula I



in which

R' is selected from the group consisting of a naphthalene ring which is bonded in the alpha or beta position and which may be derivatized with alkyl groups having up to 3 carbon atoms and/or alkoxy groups having up to 3 carbon atoms; a tetralin ring which is bonded in the alpha or beta position and which may be derivatized with alkyl groups having up to 3 carbon atoms and/or alkoxy groups having up to 3 carbon atoms; a phenyl ring which may be derivatized with alkyl groups which contain up to 4 carbon atoms and/or with up to three groups of the structure Z-X in which Z is oxygen or sulfur and X is hydrogen, methyl, ethyl, n-propyl, i-propyl or tert-butyl; and a chroman system which is derivatized with up to 5 alkyl groups which contain up to 3 carbon atoms;

R1 is a group of the structure A-B-poly in which A is —(CH$_2$)$_n$—, n is an integer from 1 to 7, B is selected from the group consisting of: a bond; —CO—NH—; N(Y)—CO — wherein Y =H, CH_3 or C_2H_5; —CO—O—; —O—CO—; —SO_2—NH—; —S—S—; —S—; —O—; and —N(Y)— wherein Y =H, CH_3 or C_2H_5; and poly is a polymer having a molecular weight of up to 75000 selected from the group consisting of polyethylene glycol; polysaccharide; a gelatin partial hydrolysate which may be crosslinked; and a copolymer of acrylic acid and polyethylene glycol with a crosslinker; and

R2 and R3 can be identical or different and are selected from the group consisting of an alkyl group with up to 4 carbon atoms or together form a ring and may be derivatized with a hydroxyl group or a hydroxyalkyl group, where the hydroxyalkyl group may be esterified and contains up to 3 carbon atoms, and their physiologically acceptable salts; and

C* is in the R or S structure.

5,571,845

NITROANILINE DERIVATIVES AND THEIR USE AS ANTI-TUMOUR AGENTS

William A. Denny; Brian D. Palmer, and William R. Wilson, all of Auckland, New Zealand, assignors to Cancer Research Campaign Technology Limited, London, England

PCT No. PCT/GB92/02199, § 371 Date May 26, 1994, § 102(e) Date May 26, 1994, PCT Pub. No. WO93/11099, PCT Pub. Date Jun. 10, 1993

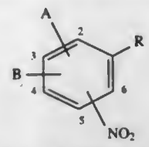
PCT Filed Nov. 27, 1992, Ser. No. 244,449

Claims priority, application New Zealand, Nov. 28, 1991, 240785

Int. Cl.^{6} A01N *37/18;* **C07C** *233/65*

U.S. Cl. 514—619 **9 Claims**

1. A compound represented by the general formula (I),



(I)

where the nitro group is substituted at any one of the available benzene positions 2–6; where R and A separately represent the groups NO_2, CN, $COOR^1$, $CONR^1R^2$, $CSNR^1R^2$ or $SO_2NR^1R^2$ and A is substituted at any one of the available benzene positions 2–6; where B represents N(CH_2CH_2halogen)$_2$ or N($CH_2CH_2OSO_2R^3$)$_2$ substituted at any one of the available benzene positions; and where R^1, R^2 and R^3 separately represent H, or lower alkyl optionally substituted with hydroxyl, ether, carboxy or amino functions, including cyclic structures, or R^1 and R^2 together with the nitrogen form a heterocyclic structure.

5,571,846

METHOD OF INHIBITING FIBROSIS

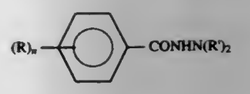
Saood Murad, and Sheldon R. Pinnell, both of Durham, N.C., assignors to Duke University, Durham, N.C.

Continuation of Ser. No. 17,795, Feb. 16, 1993, Pat. No. 5,374,660, which is a continuation of Ser. No. 678,472, Apr. 1, 1991, abandoned. This application Dec. 7, 1994, Ser. No. 351,484

Int. Cl.^{6} A61K *31/165*

U.S. Cl. 514—620 **9 Claims**

1. A method of inhibiting fibrosis in a subject afflicted with a fibrosing disorder, comprising administering to said subject an effective fibrosis-inhibiting amount of a compound of Formula (I)



(I)

wherein:

n is 1 or 2;

R is selected from the group consisting of hydrogen, C1–C4 alkyl, hydroxy, amino, and nitro; and

R' is selected from the group consisting of hydrogen and C1–C4 alkyl;

or a pharmaceutically acceptable salt thereof.

5,571,847

COMPATIBILIZED CARBON BLACK AND A PROCESS AND A METHOD FOR USING

Martin K. Hitchcock, Newark; Kyung W. Suh, Granville; Arnold M. Bartz, Granville; Andrew N. Paquet, Granville, and William G. Stobby, Johnstown, all of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 297,354, Aug. 26, 1994, Pat. No. 5,461,098, which is a division of Ser. No. 250,327, May 27, 1994, Pat. No. 5,397,807, which is a continuation of Ser. No. 137,248, Oct. 14, 1993, abandoned. This application Jun. 9, 1995, Ser. No. 489,206

Int. Cl.^{6} C08J *9/00;3/20;* **C08K** *5/01*

U.S. Cl. 521—56 **12 Claims**

1. A process for making a thermoset polymer foam, comprising:

a) providing a first thermoset monomer;

b) providing a second thermoset monomer the same or different than the first monomer and polymerizable with the first monomer;

c) incorporating into either or both the first and second monomers carbon black coated with a compatibilizing agent capable of enhancing the dispersion of the carbon black in either or both the first and second monomers;

d) incorporating into either or both the first and second monomers a blowing agent; and

e) mixing the first and second monomers under polymerizing conditions to form the thermoset polymer foam.

5,571,848

METHOD FOR PRODUCING A MICROCELLULAR FOAM

Andreas Mortensen, Cambridge, Mass., and Thomas J. Fitzgerald, Erlangen, Germany, assignors to Massachusetts Institute of Technology, a Ma corp., Cambridge, Mass.

Filed Jan. 20, 1995, Ser. No. 375,936

Int. Cl.^{6} C08J *9/26*

U.S. Cl. 521—61 **33 Claims**



1. A method for producing a microcellular foam of a curable material comprising:

(1) providing dissolvable particles;

(2) packing said dissolvable particles to form a preform;

(3) infiltrating said preform with a liquid curable material to form an infiltrated preform;

(4) cooling said infiltrated preform so that said liquid curable material hardens to form a hardened curable material infiltrated preform;

(5) leaching said hardened curable material infiltrated preform so that said dissolvable particles dissolve to form a hardened curable material microcellular foam characterized by pores having dimensions in the range of from about 1 μm to about 1 mm.

5,571,849

ABSORBENT FOAMS MADE FROM HIGH INTERNAL PHASE EMULSIONS USEFUL FOR ACQUIRING AQUEROUS FLUIDS

Thomas A. DesMarais, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 520,793, Aug. 30, 1995. This application Jan. 5, 1996, Ser. No. 583,356

Int. Cl.^{6} C08J *9/28*

U.S. Cl. 521—64 **3 Claims**

1. A polymeric foam material which is capable of acquiring and distributing aqueous fluids, said polymeric foam material comprising a hydrophilic, flexible, nonionic polymeric foam structure of interconnected open cells, which foam structure has:

A) a capacity after desorption at 30 cm of less than about 10% of the foam's free absorbent capacity;

B) a capillary absorption pressure of from about 3 to about 20 cm;

C) a capillary desorption pressure of from about 8 to about 25 cm;

D) a resistance to compression deflection of from about 5 to about 85% when measured under a confining pressure of 0.74 psi; and

E) a free absorbent capacity of from about 12 to about 125 g/g;

wherein the foam is made from a polymerized water-in-oil emulsion having:

1) an oil phase comprising:
   a) from about 85 to about 98% by weight of a monomer component capable of forming a copolymer having a Tg value of below about 35° C. or lower, said monomer component comprising:
      i) from about 30 to about 80% by weight of a substantially water-insoluble, monofunctional monomer capable of forming a polymer having a Tg of about 25° C. or less;
      ii) from about 5 to about 40% by weight of a substantially water-insoluble, monofunctional comonomer capable of imparting toughness about equivalent to that provided by styrene;
      iii) from about 5 to about 25% by weight of a first substantially water-insoluble, polyfunctional crosslinking agent selected from the group consisting of divinylbenzenes, trivinylbenzenes, divinyltoluenes, divinylxylenes, divinylnaphthalenes, divinyl-alkylbenzenes, divinylphenanthrenes, divinyl-biphenyls, divinyldiphenylmethanes, divinylbenzyls, divinylphenylethers, divinyldipbenylsulfides, divinyl-furans, divinylsulfide, divinylsulfone, and mixtures thereof; and
      iv) from 0 to about 15% by weight of a second substantially water-insoluble, polyfunctional crosslinking agent selected from the group consisting of polyfunctional acrylates, methacrylates, acrylamides, methacrylamides, and mixtures thereof;
   b) from about 2 to about 15% by weight of an emulsifier component which is soluble in the oil phase and which is suitable for forming a stable water-in-oil emulsion; and
2) a water phase comprising from about 0.2 to about 20% by weight of a water-soluble electrolyte;
3) a volume to weight ratio of water phase to oil phase in the range of from about 25:1 to about 90:1.

5,571,850

AQUEOUS DISPERSIONS CONTAINING CYCLOPOLYMER DISPERSANTS

Sheau-Hwa Ma, Chadds Ford, Pa.; San Hoa Thang, Clayton, Australia; Ezio Rizzardo, Wheelers Hill, Australia, and Graeme Moad, Kallista, Australia, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US94/08645, § 371 Date Jan. 25, 1996, § 102(e) Date Jan. 25, 1996, PCT Pub. No. WO95/04109, PCT Pub. Date Feb. 9, 1995

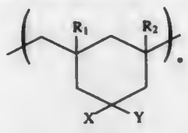
PCT Filed Jul. 29, 1994, Ser. No. 586,852

Claims priority, application Australia, Jul. 30, 1993, PM 0280/93

Int. Cl.[6] C09D *11/02;* **C08L** *9/00*

U.S. Cl. 523—160 **9 Claims**

1. A dispersion comprising an aqueous carrier medium, a particulate solid, and a cyclopolymer dispersant consisting essentially of at least one cyclopolymer having the formula:



with the proviso that either (i) R_1 and R_2 are hydrophobic groups, and X and Y are hydrophilic groups, or (ii) R_1 and R_2 are hydrophilic groups, and X and Y are hydrophobic groups; and n is selected such that the weight average molecular weight of the cyclopolymer is in the range of 1,000 to 50,000.

5,571,851

REINFORCING FILLERS FOR PLASTICS SYSTEMS

Gary Freeman, and Carl J. Marshall, both of Macon, Ga., assignors to J.M. Huber Corporation, Edison, N.J.

Division of Ser. No. 188,088, Jan. 28, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 486,677

Int. Cl.[6] C08K *3/20;5/54;* **C08L** *77/00*

U.S. Cl. 523—212 **36 Claims**

4. A polyamide resin composition, comprising a polyamide resin and a filler, said filler comprising a silane treated mineral product, said mineral product comprising a mineral nucleus which has been surface treated with a blend of silanes comprising an aminosilane and an alkylsilane having a blending ratio of aminosilane to alkylsilane of about 1.1 to 5:1 by weight.

5,571,852

FLUORINATED CARBON POLYMER COMPOSITES

Ali Afzali-Ardakani, Yorktown Heights, N.Y.; Juan Ayala-Esquilin, San Jose, Calif.; Bodil E. Braren, Hartsdale; Shahrokh Daijavad, Peekskill, both of N.Y.; Elizabeth Foster, Friendsville, Pa.; James L. Hedrick, Jr., Oakland, Calif.; Jeffrey C. Hedrick, Peekskill, N.Y.; Rodney T. Hodgson, Ossining, N.Y.; Ashit A. Mehta, Vestal, N.Y.; Steven E. Molis, Brewster, N.Y.; Jane M. Shaw, Ridgefield, Conn.; Stephen L. Tisdale, Vestal, and Alfred Viehbeck, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 346,766, Nov. 30, 1994, which is a division of Ser. No. 929,313, Aug. 13, 1992, Pat. No. 5,397,863, which is a continuation-in-part of Ser. No. 759,377, Sep. 13, 1991, abandoned, and Ser. No. 759,380, Sep. 13, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 472,120

Int. Cl.[6] C08J *3/28*

U.S. Cl. 523—215 **14 Claims**

1. A process of forming a polymeric composite material with at least one surface conductive region in said polymeric composite material containing a fluorinated carbon material comprising irradiating said polymeric composite material with a pulsed UV laser wherein said polymeric material is selected from the group consisting of polyimides, fluoropolymers, epoxies, polycyanurates, polysiloxanes, polybenzocyclobutenes, polyquinoxalines and bismaleimides and wherein said fluorinated carbon material contains 28 to 75 atomic weight percent of fluorine.

5,571,853

GEL-FORMING SILICONE COMPOSITION

Masayuki Ikeno, Maebashi, and Hironao Fujiki, Takasaki, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 193,862, Feb. 9, 1994, abandoned. This application Jul. 20, 1995, Ser. No. 504,489

Claims priority, application Japan, Feb. 9, 1993, 5-044671

Int. Cl.[6] C08K *5/54*

U.S. Cl. 524—268 **6 Claims**

1. A gel-forming silicone composition comprising:

(A) an organopolysiloxane containing a silicon-bonded vinyl group in an average amount of from 0.15 to 0.35 mol % based on the amount of all the silicon-bonded organic groups contained in its molecule;

(B) from 10 to 150 parts by weight per 100 parts by weight of the component (A), a non-functional organopolysiloxane other than (C) having the following average composition formula (2):

$$(R^3)_cSiO_{(4-c)/2} \quad (2)$$

wherein R^3 is a substituted or unsubstituted non-functional monovalent hydrocarbon group, and c has a value of from 2.0 to 2.2, component (B) having a viscosity at 25° C. not higher than the viscosity at 25° C. of the component (A);

(C) an organohydrogenpolysiloxane containing an average of from 1 to 3 silicon-bonded hydrogen atoms per molecule present in an amount such that the amount of the silicon-bonded hydrogen atoms in the component (C) is from 0.8 to 2.0 moles per mole of the vinyl groups in the component (A); and

(D) an addition reaction catalyst.

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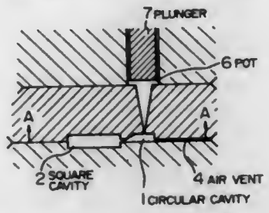
PHENOLIC RESIN MOLDING MATERIAL INCLUDING A CRYSTALLINE PHENOLIC COMPOUND HAVING PLURAL HYDROXYPHENYL GROUPS AND A COMPOUND HAVING PLURAL HYDROXYL GROUPS IN A BENZENE RING

Tamotsu Ishida, Fujieda; Tsukasa Sakamoto, Kawasaki, and Hidenori Saito, Yokohama, all of Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

Filed Nov. 15, 1994, Ser. No. 340,903

Int. Cl.[6] C08J *5/10;* **C08K** *5/13;* **C08L** *61/12*

U.S. Cl. 524—342 **8 Claims**



1. A phenolic resin molding material for low-pressure molding, comprising hexamethylenetetramine as curing agent and as resin components a combination of (A) a crystalline phenolic compound having two or more hydroxyphenyl groups and (B) a compound having two or more hydroxyl groups in the benzene ring, or (A), (B) and (C) a novolak resin.

5,571,855

ATTENUATION OF POLYMER SUBSTRATE DEGRADATION DUE TO ULTRAVIOLET RADIATION

Bruce R. Palmer; James W. Kauffman, both of Edmond, Okla., and Penelope Stamatakis, Aurora, Ill., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Division of Ser. No. 194,968, Feb. 14, 1994, Pat. No. 5,504,134, which is a division of Ser. No. 942,486, Sep. 9, 1992, Pat. No. 5,352,725, which is a continuation of Ser. No. 766,936, Sep. 27, 1991, abandoned. This application May 26, 1995, Ser. No. 451,896

The portion of the term of this patent subsequent to Feb. 14, 2014, has been disclaimed.

Int. Cl.[6] C08K *3/18;3/22;* **H01B** *1/06*

U.S. Cl. 524—432 **7 Claims**

1. A method of reducing the ultraviolet radiation degradation of a polymer substrate comprising dispersing ultraviolet scattering and absorbing particles in at least a surface layer of said polymer substrate, said particles being formed of a material having a band gap in the range of from about 2.8 eV to about 4.1 eV and being of a size in the range of from about 0.01 micrometer to about 0.15 micrometer in diameter and wherein said particles are amorphous zinc oxide particles.

5,571,856

SELF-CURING CLAY COMPOSITION AND METHOD

Bruce N. Carlson, Sioux Falls, S. Dak., assignor to Dakota Chemaclay Corporation, Fort Dodge, Iowa

Continuation of Ser. No. 257,744, Jun. 9, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 585,655

Int. Cl.[6] C08J *5/10;* **C08K** *3/34;* **C08L** *25/10*

U.S. Cl. 524—446 **24 Claims**

1. An aqueous self-curing clay composition suitable for binding clay comprising an elastomer system including a first elastomer and a second elastomer, wherein the second elastomer partially cures the composition upon removal of water to a self-supporting state, the composition being curable to a solid, ceramic-like state in the absence of heat from an external source.

5,571,857

PROCESSES FOR PRODUCING ORGANIC SOLVENT FREE URETHANE/ACRYLIC POLYMER LAMINATING ADHESIVE FOR FLEXIBLE PACKAGING

Bruce A. Gruber, Emmaus, and Richard Derby, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 194,190, Feb. 8, 1994, abandoned. This application Jun. 30, 1995, Ser. No. 497,119

Int. Cl.[6] C08J *3/02;* **C08K** *3/20*

U.S. Cl. 524—457 **6 Claims**

1. In a method for preparing an aqueous polyurethane/acrylic polymer dispersion by reacting a polyol, a carboxylic acid-containing polyol and a polyisocyanate to form an anionic, water dispersible prepolymer which is subsequently chain extended to form the polyurethane component of the polyurethane/acrylic polymer and polymerizing at least one acrylic monomer in the presence of the prepolymer and/or polyurethane to form the acrylic polymer component, the improvement for providing an adhesive composition which comprises using isophorone diisocyanate as the polyisocyanate and performing the chain extension with a composition comprising a monofunctional amine and a difunctional amine, the monofunctional amine being selected from the group consisting of amino alcohols, ammonia, primary and secondary aliphatic, alicyclic, aromatic, araliphatic and heterocyclic amines and the difunctional amine being selected from the group consisting of ethylenediamine, propylenediamine, butylenediamine, hexamethylenediamine, cyclohexylenediamine, piperazine, toluenediamine and isophoronediamine, the monofunctional amine and the difunctional amine in a 1:4 to 4:1 weight ratio.

6. In a method for preparing an aqueous polyurethane/acrylic polymer dispersion by reacting a polyol, a carboxylic acid-containing polyol and a polyisocyanate to form an anionic, water dispersible prepolymer which is subsequently chain extended to form the polyurethane component of the polyurethane/acrylic polymer and polymerizing at least one acrylic monomer in the presence of the prepolymer and/or polyurethane to form the acrylic polymer component, the improvement for providing an adhesive composition which comprises using isophorone diisocyanate as the polyisocyanate and performing the chain extension with a composition comprising a monofunctional amine and a difunctional amine, the monofunctional amine being selected from the group consisting of amino alcohols, ammonia, primary and secondary aliphatic, alicyclic, aromatic, araliphatic and heterocyclic amines and the difunctional amine being selected from the group consisting of ethylenediamine, propylenediamine, butylenediamine, hexamethylenediamine, cyclohexylenediamine, piperazine, toluenediamine and isophoronediamine, the monofunctional amine and the difunctional amine in a 1:4 to 4:1 weight ratio.

5,571,858

COLOURLESS OR COLOURED AQUEOUS NAIL VARNISH CONTAINING A FILM-FORMING POLYMER IN THE DISPERSED STATE AND A WATER-SOLUBLE PERFLUOROALKYL COMPOUND

Valérie de La Poterie, Rungis, and Myriam Meliul, L'Hay Les Roses, both of France, assignors to L'Oreal, Paris, France

Filed May 25, 1994, Ser. No. 249,877

Claims priority, application France, May 26, 1993, 93 06329

Int. Cl.[6] C08K *5/02*

U.S. Cl. 524—462 **5 Claims**

1. In an aqueous nail varnish consisting essentially of

(a) from 10 to 59 percent by weight of a film-forming polymer present in the dispersed state,

(b) from 0.01 to 1 percent by weight of a water-soluble spreading agent, and

(c) from 40 to 90 percent by weight of water,

the proportions of (a), (b) and (c) being expressed relative to the total weight of said nail varnish, the improvement comprising, as spreading agent, a perfluoroalkyl compound selected from the group consisting of:

(a) (C_nF_{2n+1})-C_2H_4X

wherein

the radical C_nF_{2n+1} is linear or branched, n ranges from 4 to 16 and X is a radical selected from the group consisting of:

(i) $—CO_2Y$

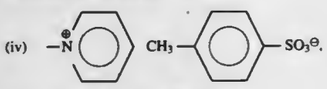
wherein Y represents hydrogen, an alkali metal or an ammonium group,

(ii) $—SO_3Y$

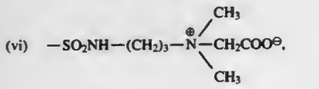
wherein Y represents hydrogen, an alkali metal or an ammonium group,

(iii) $—(OC_2H_4)_m$-OH

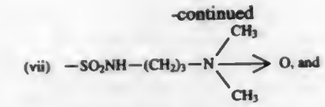
wherein m represents 2 to 100,

(iv) 

(v) $-SO_2NH(CH_2)_3-N^{\oplus}(CH_3)_3\ I^{\ominus}$,

(vi) 

-continued

(vii)  O, and

(viii) —SCH_2CH_2R

wherein R represents CO_2M, wherein M represents an alkali metal or the radical $N^{\oplus}(CH_3)_3CH_3SO_4^{\ominus}$, and

(b) $(C_nF_{2n+1}C_2H_4O)_xP(O)(R')_y$,

wherein n ranges from 3 to 8

and x and y, which are different, represent 1 or 2 and R' represents ONH_4 or OH.

5,571,859

ANTISTATIC COMPOSITION, RESIN COMPOSITION AND MOLDED ARTICLE OF THE RESIN COMPOSITION

Hidenori Yukishige; Yuji Koshima; Hajime Tanisho, all of Yokohama, and Teiji Kohara, Kawasaki, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1994, Ser. No. 330,861

Claims priority, application Japan, Oct. 29, 1993, 5-294179

Int. Cl.[6] C08J *5/06;* **C08K** *3/04;* **C08L** *19/00*

U.S. Cl. 524—496 **17 Claims**

1. A resin composition which comprises 100 parts by weight of a thermoplastic resin and 1 to 50 parts by weight of an antistatic composition consisting essentially of (a) 100 parts by weight of carbon fibers having a length of 0.01 to 100 mm and (b) 5 to 70 parts by weight of carbon fibers having a length of ½ to 1/100 of the length of the carbon fibers (a).

5,571,860

HIGH PERFORMANCE PVOH STABLILIZED EVA ADHESIVES

Pravin K. Kukkala, Raritan; Malcolm F. Hallam, Branchburg, both of N.J.; M. Erin Jones, Newtown, Pa., and Richard K. Vetterl, Pompton Lakes, N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation of Ser. No. 259,414, Jun. 14, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 459,068

Int. Cl.[6] C08L *29/04*

U.S. Cl. 524—503 **11 Claims**

1. An aqueous emulsion adhesive composition comprising a polyvinyl alcohol stabilized polymer emulsion; the polymer comprising 40 to 94.5% by weight of a vinyl ester of a C1–C13 alkanoic acid, 5 to 40% by weight ethylene and 0.5 to 10% by weight N-vinyl formamide, the amounts total 100%, the adhesive being characterized by superior adhesion and heat resistance.

7. An emulsion adhesive composition suitable for packaging and converting applications comprising:

a) 30 to 100 parts by weight of a polyvinyl alcohol stabilized polymer emulsion; the polymer comprising 40 to 94.5% by weight of a vinyl ester of a C1–C13 alkanoic acid, 5 to 40% by weight ethylene and 0.5 to 10% by weight N-vinyl formamide, the amounts to total 100%;

b)

i) 0 to 20 parts by weight plasticizer;

ii) 0 to 10 parts by weight polyvinyl alcohol;

iii) 0 to 20 parts by weight tackifier;

iv) 0 to 20 parts by weight filler;

v) 0 to 20 parts by weight humectant; wherein the parts by weight of components i)–v) are based on total adhesive composition.

11. An emulsion adhesive composition suitable for vinyl laminating comprising:

a) 75 to 99.95 parts by weight of a polyvinyl alcohol stabilized polymer emulsion; the polymer comprising 40 to 94.5% by weight of a vinyl ester of a C1–C13 alkanoic acid, 5 to 40% by weight ethylene and 0.5 to 10% by weight N-vinyl formamide, the amounts to total 100%;

b)

i) 0 to 20 parts by weight plasticizer;

ii) 0.05 to 0.5 parts by weight wetting agent;

iii) 0 to 10 parts by weight filler;

iv) 0 to 10 parts by weight humectant; wherein the parts by weight of components i)–iv) are based on total adhesive composition.

5,571,861

AQUEOUS, AUTOCROSSLINKING POLYURETHANE-VINYL HYBRID DISPERSIONS

Heinz-Peter Klein, Mainz, and Joerg-Peter Geisler, Ingelheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Oct. 21, 1994, Ser. No. 327,495

Claims priority, application Germany, Oct. 23, 1993, 43 36 206.0

Int. Cl.[6] C08L *75/04*

U.S. Cl. 524—591 **25 Claims**

1. An aqueous, autocrosslinking polymer dispersion binder, which comprises polyhydrazides and carbonyl-containing urethane-vinyl hybrid polymers, which are composed of vinyl-containing urethane macromonomer blocks and vinyl blocks derived from further vinyl monomer units, at least one of which contains one or more carbonyl groups.

5,571,862

STABILIZED POLYACRYLAMIDE EMULSIONS AND METHODS OF MAKING SAME

John J. Santini, and N. Alan Yankie, both of Mobile, Ala., assignors to Cytec Technology Corp., Wilmington, Del.

Filed Nov. 28, 1994, Ser. No. 345,953

Int. Cl.[6] C08F *2/32*

U.S. Cl. 524—801 **11 Claims**

1. A method of preparing a stable emulsion of hydrolyzed poly(alk)acrylamide consisting essentially of the steps of:

a) providing a water-in-oil emulsion having a discontinuous phase comprising (alk)acrylamide monomer, and a continuous phase comprising a liquid hydrocarbon and emulsifying agent(s);

b) polymerizing said (alk)acrylamide monomer to form (alk)acrylamide polymer;

c) reacting said (alk)acrylamide polymer with an alkaline substance to hydrolyze at least a portion of said polymer to produce

1) a hydrolyzed poly(alk)acrylamide polymer; and

2) ammonia; and

d) neutralizing said ammonia by acetic acid or removing said ammonia.

5,571,863

LAMINATING RESINS HAVING LOW ORGANIC EMISSIONS (II)

Thomas W. Smeal, Murrysville, and George L. Brownell, Mount Lebanon, both of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Division of Ser. No. 205,233, Mar. 3, 1994, Pat. No. 5,500,171, which is a continuation-in-part of Ser. No. 24,033, Mar. 1, 1993, abandoned. This application Dec. 11, 1995, Ser. No. 570,046

Int. Cl.[6] C08L *67/06*

U.S. Cl. 525—44 **4 Claims**

1. A laminating resin composition characterized by low volatile emissions comprising (A) a base resin comprising glycols, unsaturated polycarboxylic acids or derivatives thereof, and, optionally, saturated dicarboxylic acids and (B) alkoxylated bisphenol-A diacrylate or dimethacrylate having at least two alkoxy groups, in a weight ratio of (A) to (B) of 2:1 to 0.5:1, and (C) about 20% to about 60% by weight, based on the total of components (A) and (B) of ethylene glycol dimethacrylate, and wherein said composition emits no more than 20.0 g/m^2 of volatile emissions as measured by Section 1162 of the Regulations of the South Coast (California) Air Quality District.

5,571,864

MISCIBLE POLYOLEFIN BLENDS WITH MODIFYING POLYOLEFIN HAVING MATCHING SEGMENT LENGTHS

Frank S. Bates, St. Louis Park, Minn.; Jeffrey H. Rosedale, Philadelphia, Pa.; Mark F. Schulz, Minneapolis, Minn., and Kristoffer Almdal, Roskilde, Denmark, assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation-in-part of Ser. No. 36,013, Mar. 23, 1993. This application Feb. 1, 1994, Ser. No. 189,863

Int. Cl.[6] C08L *23/06;23/08;23/12*

U.S. Cl. 525—88 **21 Claims**

1. A two-phase polyolefin blend comprising two separate melt-miscible polyolefin blend phases, the two-phase polyolefin blend comprising:

(a) from about 60 to about 99.8 weight percent, based on the two-phase polyolefin blend weight, of a primary polyolefin blend comprising:

(i) polypropylene; and

(ii) an immiscible polyolefin selected from the group consisting of polyethylene and an ethylene/alpha-olefin copolymer, wherein each polyolefin of the primary polyolefin blend has a segment length (SL-1 and SL-2, respectively) within a range of absolute value of from about 4.2 to about 8.8 Angstroms; and

(b) from about 0.2 to about 40 weight percent, based on the two-phase polyolefin blend weight, of at least one modifying polyolefin comprising a block copolymer having at least two blocks, each block being a polymer of ethylene and one or more monomer units selected from the group consisting of propylene, 1-butene, butadiene, 1-pentene, 1-hexene, 1-octene, isoprene, 2-methyl-1-butene, 3-methyl- 1-butene, 4-methyl-1-pentene, and mixtures thereof, wherein:

(i) each of the polymeric blocks of the modifying polyolefin has a weight average molecular weight of at least 20,000 daltons;

(ii) said modifying polyolefin comprises:

(A) a first polymeric block having a first block segment length (SL-B1) of from about 85% to about 115% of SL-1 which forms a first melt-miscible polyolefin blend phase with the primary polyolefin having the segment length, SL-1; and

(B) a second polymeric block having a second block segment length (SL-B2) of from about 85% to about 115% of the SL-2 which forms a second melt-miscible polyolefin blend phase with the primary polyolefin having the segment length, SL-2;

(iii) the SL-1 and SL-2 range and the absolute value of the SL-1, SL-2, SL-B 1, and SL-B2, respectively, is determined from an arbitrarily chosen common segment volume of 1.08×10^{-22} cubic centimeters; and

(iv) the first and second melt-miscible polyolefin phases are separate phases within the two-phase polyolefin blend.

5,571,865

THERMOPLASTIC POLYMER COMPOSITION

Makoto Nishikawa; Mizuho Maeda; Hiromichi Nakata; Hideo Takamatsu, all of Kashima-gun, and Yoshio Hirayama, Azuma-mura, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed May 12, 1995, Ser. No. 440,123

Claims priority, application Japan, May 16, 1994, 6-125692; Jul. 22, 1994, 6-191926

Int. Cl.[6] C08F *297/04;* **C08L** *53/00*

U.S. Cl. 525—98 **12 Claims**

1. A thermoplastic polymer composition which comprises:

100 parts by weight of polypropylene (1);

5 to 100 parts by weight of a hydrogenated block copolymer (2) which has at least one block A, at least one block B and at least one block C and which has a number average molecular weight of not higher than 700,000 wherein the block A consists essentially of a butadiene polymer having a number average molecular weight of 2500 to 200,000 and a vinyl bond content of not higher than 20%, the block B consists essentially of a polymer of isoprene and butadiene at a ratio by weight of 30:70 to 100:0 and has a number average molecular weight of 30,000 to 300,000 and a vinyl bond content of not higher than 20%, and the block C consists essentially of a polymer of isoprene and butadiene at a ratio by weight of 0:100 to 100:0 and has a number average molecular weight of not higher than 200,000 and a vinyl bond content of not less than 40%; and

0 to 100 parts by weight of an ethylene/propylene rubber, wherein the ratio of the melt viscosity of said hydrogenated block copolymer (2) to the melt viscosity of said polypropylene (1), as determined at 200° C. at a shear rate of 1220 $second^{-1}$, is in the range of 0.5:1 to 10:1.

5,571,866

THERMOPLASTIC RESIN COMPOSITION

Koji Nishida; Kiyoji Takagi; Hironari Sano, and Motohiro Seki, all of Yokkaichi, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Division of Ser. No. 210,365, Mar. 18, 1994, Pat. No. 5,449,722. This application May 23, 1995, Ser. No. 448,303

Claims priority, application Japan, Mar. 19, 1993, 5-60201; Jun. 30, 1993, 5-162346; Jun. 30, 1993, 5-162347; Jun. 30, 1993, 5-162348

Int. Cl.[6] C08L *51/06;25/10;71/12;* **C08H** *77/06*

U.S. Cl. 525—98 **9 Claims**

1. A thermoplastic resin composition which comprises:

30 to 97% by weight of at least one of

(a) a crystalline thermoplastic resin component and

(b) a non-crystalline thermoplastic resin component,

3 to 70% by weight of (c) a rubbery polymer component which is ununiformly mixed with at least one of Component (a) and Component (b) and

0 to 40% by weight of (d) an inorganic filler,

wherein Component (c) forms a network and at least one of the ratio of flexural modulus of Component (a) to Component (c) and that of Component (b) to Component (c) is 5 or more.

5,571,867

HYDROCARBON RESINS, PROCESSES FOR THEIR MANUFACTURE AND ADHESIVE COMPOSITIONS CONTAINING SUCH RESINS

Quoc Luvinh; Anne V. Macedo, both of Brussels, Belgium, and Richard J. F. Rydzkowski, Le Havre, France, assignors to Exxon Chemical Patents Inc., Wilmington, Del.

PCT No. PCT/EP93/00632, § 371 Date Jan. 9, 1995, § 102(e) Date Jan. 9, 1995, PCT Pub. No. WO93/19097, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 17, 1993, Ser. No. 307,561

Claims priority, application United Kingdom, Mar. 18, 1992, 9205841

Int. Cl.[6] C08L *9/00*

U.S. Cl. 525—99 15 Claims

1. An adhesive composition comprising 12 to 35 wt. % of an SBS or SIS block copolymer and 65 to 30 wt. % of a low-colour hydrocarbon resin of a softening point of from 75° to 110° C. and a Mw/Mn as determined by GPC of less than 2, said low-colour hydrocarbon resin prepared by:

(1) preparing a resin from a feed containing a piperylene stream and an olefinic cracker stream to provide a diolefin/olefin ratio (D/O) of from 1/10 to 1/1 and a heart cut distillate stream containing C_8 to C_{10} aromatics to provide at least 5 wt. % of indenic feed material using Friedel-Crafts catalyst to provide a resin having an aromaticity of at least 25%; and

(2) hydrogenating the resin to an extent whereby less than 80% of the aromatic structures are hydrogenated so as to provide an aromaticity of from 15 to 25% equivalent wt. % styrene as determined by the number of aromatic protons using proton NMR.

5,571,868

CALENDERED ELASTOMERIC ARTICLES

Sndhin Datta, Houston; Periagaram S. Ravishankar, Kingwood, and Lawrence G. Kaufman, League City, all of Tex., assignors to Exxon Chemical Patents Inc., Wilmington, Del.

Filed Jun. 15, 1995, Ser. No. 490,794

Int. Cl.[6] C08L *45/00;* B32B *27/06;27/08;27/32*

U.S. Cl. 525—211 18 Claims

1. A calendered article comprising an elastomeric polymer blend, said blend including:

a) a first ethylene, α-olefin, non-conjugated bicyclic diene elastomeric polymer, wherein in said first elastomeric polymer;

i) said ethylene is present in the range of from about 10 to about 63 weight percent and said non-conjugated bicyclic diene is present in the range of from about 0.1 to 10 weight percent, wherein said alpha-olefin is present in the range of from about 80 to about 27 weight percent, said weight percents based on the total weight percent of said first elastomeric polymer, wherein said first elastomeric polymer is present in said calendered article at a ratio of about 1.5:1 to about 9:1 with a second ethylene, α-olefin, non-conjugated bicyclic diene elastomeric polymer, said first elastomeric polymer has a crystallinity less than about 2.5 percent; and

b) said second ethylene, α-olefin, non-conjugated bicyclic diene elastomeric polymer, includes;

i) said ethylene in the range of from about 65 to about 85 weight percent, said bicyclic non-conjugated diene in the range of from about 0.1 to about 10 weight percent, said alpha-olefin is present in the range of from about 27 to about 37 weight percent, said weight percents based on the total weight of said second elastomeric polymer; said second elastomeric polymer has a crystallinity greater than about 3 percent, and wherein said first elastomeric polymer has a ML (1+4) 125° C. in the range of from about 20to about 150 and wherein said second elastomeric polymer has a ML (1+4) 125° C. in the range of from about 100 to about 1000.

5,571,869

FLAME INITIATED GRAFT POLYMERIZATION

Sunggyu Lee, Akron, Ohio, and Ramesh Rengarajan, Singapore, Singapore, assignors to The University of Akron, Akron, Ohio

Filed Apr. 25, 1995, Ser. No. 428,562

Int. Cl.[6] C08F *255/00;257/02;265/10;265/04;265/06;265/08;283/02, 279/02;265/10;261/04;259/04;263/04*

U.S. Cl. 525—322 14 Claims

1. A process for grafting a monomer onto a solid polymer particle, comprising the steps of:

flame heating at at least one localized portion of a surface of the solid polymer particle to a temperature sufficient to form at least one free-radical on the polymer surface without significantly raising the bulk temperature of the polymer,

contacting said polymer with at least one polymerizable ethylenically unsaturated monomer which will react with said free-radical on the polymer surface, and

forming at least one grafted chain of said monomer on said solid polymer particle, said process being substantially free of any free radical initiators.

7. A graft copolymer, comprising:

the reaction product of a solid polymer particle having free-radicals thereon generated by a flame and being substantially free of any free radical initiators,. with at least one monomer, said solid polymer particle having a grafted chain of said monomer substantially on the surface of said polymer.

5,571,870

LIQUID PHASE FLUORINATION

Thomas R. Bierschenk; Timothy Juhlke, both of Round Rock; Hajimu Kawa, and Richard J. Lagow, both of Austin, all of Tex., assignors to Exfluor Research Corporation, Round Rock, Tex.

Continuation of Ser. No. 823,836, Jan. 17, 1992, Pat. No. 5,322,903, which is a continuation of Ser. No. 414,119, Sep. 28, 1989, Pat. No. 5,093,432, which is a continuation-in-part of Ser. No. 250,376, Sep. 28, 1988, abandoned. This application May 10, 1994, Ser. No. 240,225

The portion of the term of this patent subsequent to Jun. 21, 2011, has been disclaimed.

Int. Cl.[6] C07B *9/00;* C07C *17/04;17/02;/19/02*

U.S. Cl. 525—331.6 28 Claims

1. A liquid-phase process for forming a perfluorinated organic substance without the addition of a hydrogen fluoride scavenger which comprises directly contacting in a temperature-controlled reactor a diluted solution or dispersion of a perfluorinateable, organic substance in a liquid, inert medium with a stoichiometric excess of fluorine gas, optionally diluted with an inert gas, to perfluorinate said organic substance using a temperature in the range of between about −40° and 90° C. and a flow rate of the inert gas and the fluorine gas sufficient to volatilize and remove the resulting byproduct hydrogen fluoride from the reactor, removing said hydrogen fluoride from the reactor as it is produced, and separately removing from the reactor the resultant solution or dispersion of said perfluorinated organic substance.

5,571,871

RESIN COMPOSITION

Kaoru Ikeda; Toshiaki Sato, both of Kurashiki, and Kazushige Ishiura, Ibaragi-Prefecture, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Division of Ser. No. 208,025, Mar. 8, 1994, Pat. No. 5,466,748. This application Aug. 14, 1995, Ser. No. 514,864

Claims priority, application Japan, Mar. 15, 1993, 5-54124; Jul. 14, 1993, 5-174335; Jul. 19, 1993, 5-178360

Int. Cl.[6] C08F *8/42*

U.S. Cl. 525—337 4 Claims

1. A vinyl polymer or diene polymer having at least one functional group selected from the group consisting of boronic acid groups, borinic acid groups and boron-containing groups which convert into boronic acid groups or borinic acid groups when exposed to water.

5,571,872

POLYMETHACRYLATE ESTERS, THE ESTER GROUPS OF WHICH IN THE α AND OPTIONALLY ALSO IN THE ω POSITION DIFFER FROM THE ESTER GROUPS IN THE CHAIN

Eberhard Esselborn, Essen, and Jürgen Fock, Düsseldorf, both of Germany, assignors to Th. Goldschmidt AG, Essen, Germany

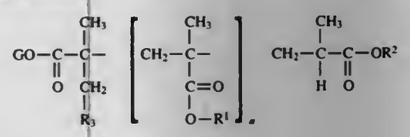
Division of Ser. No. 501,591, Jul. 12, 1995, which is a continuation of Ser. No. 187,978, Jan. 28, 1994, abandoned. This application Jan. 19, 1996, Ser. No. 589,031

Claims priority, application Germany, Mar. 3, 1993, 43 06 537.6

Int. Cl.[6] C08F *8/14*

U.S. Cl. 525—384 3 Claims

1. A method for the synthesis of polymethacrylate ester of the general formula



wherein

R^1 are the same or different and represent alkyl groups with 1 to 8 carbon atoms,

R^2 represents a group derived from an alcohol R^2OH, wherein R^2 is a C_2–C_{30} alkyl group, an —R^4OH group, wherein R^4 is a divalent aliphatic carbon group with 2 to 20 carbon atoms, or a —$(CH_nH_{2n}O$—) R^5 group, wherein R^5 is a hydrogen, alkyl or an alkaryl group,

n is a number from 2 to 18 and b is a number not less than 1,

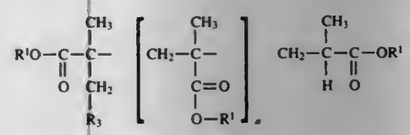
G represents the R^1 groups or R^2 groups,

R^3 represents the group of a known chain regulator, the R^3 group being free of active hydrogen atoms, and

a is a number which, on the average, is not less than 4,

with the proviso that the boiling point of the R^2OH alcohol is higher than that of the R^1OH alcohol, comprising

transesterifying a polymethacrylate ester of the general formula



obtained by free radical polymerization in presence of a chain-length regulator and wherein the R^1 and R^3 groups and the subscript a have the meanings already given, with alcohols of the formula R^2OH at a temperature of about between 70° and 150° C., optionally in the presence of a solvent with the addition of non-basic transesterification catalysts in a molar ratio of polymethacrylate ester to R^2OH of 1:1 to 1:5.

5,571,873

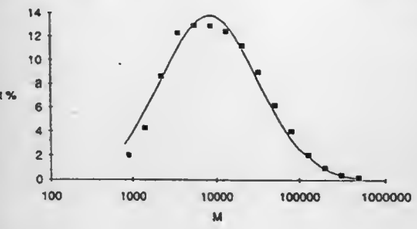
SYNTHETIC BIODEGRADABLE POLYMER FROM O-CRESOL

Li-Xia Li, Atlanta, Ga.; Patrick J. Oriel, Midland, Mich., and Eric A. Grulke, Lexington, Ky., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Division of Ser. No. 236,580, May 2, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 462,061

Int. Cl.[6] C08F *283/08*

U.S. Cl. 525—391 2 Claims



1. A polymer composition which comprises:

(a) a thermoplastic poly(2-methyl phenylene oxide) homopolymer having a molecular weight distribution between about 1,000 and 700,000 and a weight (M_w) average molecular weight between about 5,000 and 500,000 which is prepared by reacting o-cresol and a catalytic amount of a copper complex of a salt selected from cuprous and cuptic salts complexed with 2-(2-isopropyloxyethyl)pyridine in an organic solvent; and

(b) a hydrophobic polymer, wherein the ratio of the homopolymer of (a) to the hydrophobic polymer of (b) is between about 1 to 99 and 99 to 1 and wherein the homopolymer is biodegradable.

5,571,874

METHOD OF PRODUCING MOLECULAR COMPOSITE MATERIAL INCLUDING RIGID AROMATIC POLYMER

Tatsuya Hattori, Tokyo; Kazuhiro Kagawa; Hiroshi Akita, both of Asaka, and Hiroto Kobayashi, Tokorozawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 22, 1994, Ser. No. 293,318

Claims priority, application Japan, Nov. 26, 1993, 5-321153

Int. Cl.[6] C08L *77/00;* C08G *69/48*

U.S. Cl. 525—420 26 Claims

1. A method of producing a molecular composite material comprising the steps of:

(a) dissolving a prepolymer of an aromatic polymer, said aromatic polymer having at least one condensed ring selected from the group consisting of a thiazole ring, an imidazole ring, an oxazole ring, an oxazinone ring, an imidazolebenzopyrrolone ring and an imidazolebenzophenanthroline ring, in monomers of a matrix polyamide or copolyamide to form a homogeneous solution; and

(b) heating said homogeneous solution to simultaneously cause a ring closure reaction of said prepolymer and a polymerization reaction of said monomers, thereby forming said molecular composite material.

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5,571,875

POLYIMIDE BASED RESIN COMPOSITION

Toshihiko Tsutsumi; Toshiyuki Nakakura; Shuichi Morikawa; Toshiaki Takahashi; Atsushi Morita, and Yoshihisa Gotoh, all of Kanagawa-ken, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

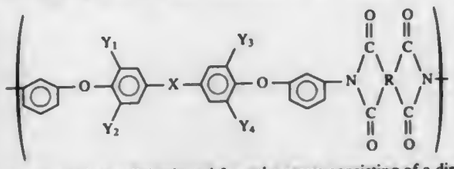
Division of Ser. No. 204,433, Mar. 2, 1994, Pat. No. 5,516,837, which is a division of Ser. No. 883,267, May 14, 1992, Pat. No. 5,312,866, which is a continuation-in-part of Ser. No. 617,147, Nov. 23, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 474,112

Claims priority, application Japan, Nov. 30, 1989, 1-309100; Dec. 5, 1989, 1-314394; Jul. 30, 1990, 2-199058; May 30, 1991, 3-127081; May 21, 1991, 3-116153; May 28, 1991, 3-123350; May 29, 1991, 3-125726; May 29, 1991, 3-125789

Int. Cl.[6] C08L *67/00; 79/08*

U.S. Cl. 525—425 **3 Claims**

1. A polyimide-based resin composition for sliding materials comprising from 1 to 150 parts by weight of one or more additive selected from the group consisting of fluororesin, graphite and aromatic polyamide resin for 100 parts by weight of a resin composition comprising from 50 to 99% by weight of a polyimide resin having recurring units represented by the formula (I):



(I)

wherein X is a radial selected from the group consisting of a direct bond, sulfur, divalent hydrocarbon having from 1 to 10 carbon atoms, hexafluorinated isopropylidene, carbonyl, thio, sulfonyl and ether; Y_1, Y_2, Y_3 and Y_4 and are individually a radical selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, chlorine and bromine; and R is a tetravalent radical selected from the group consisting of an aliphatic radical having from 4 to 9 carbon atoms; monocyclicaliphatic radical having from 4 to 10 carbon atoms, monoaromatic radical, condensed polyaromatic radical and noncondensed aromatic radical connected to each other with a direct bond or bridge member, and from 50 to 1% by weight of one ore more thermotropic liquid crystal polymer.

5,571,876

ARTICLE CONTAINING A WATER-DISPERSIBLE ADHESIVE BLEND COMPOSITION

Richard A. Miller; Theron E. Parsons, III, and Mark A. Montgomery, all of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 283,011, Jul. 29, 1994, Pat. No. 5,543,488, which is a continuation-in-part of Ser. No. 175,330, Dec. 29, 1993, abandoned. This application Oct. 31, 1995, Ser. No. 550,858

Int. Cl.[6] C08F *20/00;* **B32B** *27/06*

U.S. Cl. 525—437 **7 Claims**

1. An article of manufacture comprising a hot melt adhesive blend composition laminated between two substrates, wherein said bot melt adhesive blend composition comprises:

(1) about 20 to 80 weight percent of the linear water-dispersible polyester composition made of the residues or moieties of reaction products;

(i) at least one difunctional dicarboxylic acid which is not a sulfomonomer;

(ii) about 4 to 25 mol percent, based on the total of all acid, hydroxyl and amino equivalence, of residues of at least one difunctional sulfomonomer containing at least one sulfonate group bonded to an aromatic ring wherein the functional groups are hydroxyl, carboxyl, or amino;

(iii) at least one diol or a mixture of a diol and a diamine comprising:

(A) at least 15 mol percent, based on the total mol percent of diol moieties or diol and diamine moieties, of a diol or diamine having the formula $H(—OCH_2CH_2—)_nOH$ and $HRN(-(CH_2CH_2O-))_nNHR$ wherein n is 2 to about 20 and R is hydrogen or C_1–C_6 alkyl, or

(B) about 0.1 to less than about 15 mol percent, based on the total mol percent of diol moieties or diol and diamine moieties, of moieties of a poly(ethylene glycol) having the formula $H(—OCH_2CH_2—)_nOH$ wherein n is 2 to about 500, provided that the mol percent of such moieties is inversely proportional to the value of n; and,

(iv) 0 to about 40 mol percent, moieties of a difunctional monomer reactant selected from hydroxycarboxylic acids, aminocarboxylic acids and aminoalkanols;

the polymer containing substantially equal mol proportions of acid equivalents (100 mol %) and diol or diol and diamine equivalents (100 mol %) wherein at least 20 weight percent of the groups linking the moieties of the monomeric units are ester linkages and wherein the inherent viscosity is at least 0.1 dL/g measured in a 60/40 parts by weight solution of phenol/tetrachloroethane at 25° C. and at a concentration of about 0.25 g of polymer in 100 ml of the solvent; and

(2) about 20 to 80 weight percent of the branched water-dispersible polyester made of the moieties of reaction products;

(a) at least one difunctional dicarboxylic acid which is not a sulfomonomer;

(b) about one to 20 mol percent, based on the total of acid, hydroxyl and amino equivalents, of residues of at least one difunctional sulfomonomer containing at least one sulfonate group bonded to an aromatic ring wherein the functional groups are hydroxyl, carboxyl, or amino;

(c) at least one difunctional reactant selected from a glycol or a mixture of glycol and diamine having two —NRH groups, the glycol containing two $—C(R^1)_2—OH$ groups wherein R in the reactant is hydrogen or an alkyl group of 1 to 6 carbon atoms, and R^1 in the reactant is a hydrogen atom, an alkyl of 1 to 5 carbon atoms, or an aryl group of 6 to 10 carbon atoms;

(d) about 0 to 40 mol % of a difunctional reactant selected from hydroxycarboxylic acids having one $—C(R—)_2—OH$ group, aminocarboxylic acids having one —NRH group, amino-alcohols having one $—C(R—)_2—OH$ group and one —NRH group, or mixtures of said difunctional reactants wherein R in the reactant is hydrogen or an alkyl group of 1 to 6 carbon atoms; and

(e) 1 to 40 mol % of a multifunctional reactant containing at least three functional groups selected from the group consisting of hydroxyl, carboxyl, amino, and mixtures thereof;

wherein the polyester has a predispersion pH greater than 4 and all stated mol percents are based on the total of all acid, hydroxyl, and amino group containing reactants being equal to 200 mol percent, and wherein the polymer containing a portion of the acid-group containing reactants (100 mol percent acid) to hydroxyl and amino-group containing reactants (100 mol %)

wherein the blend of the polyester of (1) and the polyester of (2) has an overall IV of 0.1 dL/q measured in a 60/40 parts by weight solution of phenol/tetrachloroethane at 25° C. and at a concentration of about 0.25 g of polymer blend in 100 ml of the solvent, the ring and ball softening point (RBSP) of the blend is at least 70° C., and the glass transition temperature T_g of the blend is no greater than 20° C.

5,571,877

METHOD OF PREPARING LOW OR MEDIUM-DENSITY STRAIGHT-CHAIN POLYETHYLENE, AND CATALYSTS SUITABLE FOR THIS PURPOSE

Mauro Mirra, Biella-Vercelli; Renzo Invernizzi, Milan; Francesco Masi, Milan, and Antonio Bani, Milan, all of Italy, assignors to Enichem Base S.p.A., Palermo, Italy

Continuation of Ser. No. 279,838, Jul. 25, 1994, abandoned, which is a continuation of Ser. No. 4,321, Jan. 14, 1993, abandoned, which is a continuation of Ser. No. 905,155, Jun. 25, 1992, abandoned, which is a continuation of Ser. No. 800,760, Dec. 2, 1991, abandoned, which is a continuation of Ser. No. 664,476, Mar. 4, 1991, abandoned, which is a continuation of Ser. No. 38,999, Apr. 16, 1987, abandoned, which is a continuation-in-part of Ser. No. 38,626, Apr. 15, 1987, abandoned. This application May 8, 1995, Ser. No. 436,645

Claims priority, application Italy, Apr. 17, 1986, 20123/86

Int. Cl.[6] C08F *4/654; 10/02*

U.S. Cl. 526—64 **16 Claims**

1. A catalyst comprising a trialkyl aluminum and a titanium-containing solid catalyst component, wherein the trialkyl aluminum contains from 2 to 4 carbon atoms in the alkyl group and wherein the titanium-containing solid catalyst component is obtained by:

spray-drying an ethanolic solution consisting essentially of magnesium chloride to form a substrate of solid particles of magnesium chloride containing alcoholic hydroxyls, at least 70% by weight of the particles having a size in the range from 0.5 to 10 microns and the alcoholic hydroxyl content varying from 3 to 15% by weight expressed as ethanol;

reacting the substrate with titanium tetrachloride to form an activated substrate having a bonded titanium content of 0.8 to 4.0% by weight, expressed as metal, and an alcoholic hydroxyl content of 0.02 to 4% by weight expressed as ethanol, and

reacting the activated substrate with an alkyl aluminum chloride having an atomic ratio of 2/1 to 20/1 between the aluminum in the alkyl aluminum chloride and the titanium in the activated substrate, in a hydrocarbon diluent at a temperature of from 50° C. to 80° C. and for a time of from 0.5 hours to 4.0 hours, to chlorinate the titanium and reduce the titanium from the tetravalent state to the trivalent state so that the quantity of titanium in the trivalent state is between 20% and 50% of the total of the titanium in the trivalent state and the titanium in the tetravalent state.

5,571,878

ETHYLENE-ALKYL ACRYLATE COPOLYMERS AND DERIVATIVES HAVING IMPROVED MELT-POINT TEMPERATURES AND ADHESIVE STRENGTH AND PROCESSES FOR PREPARING SAME

Jerry G. Latiolais, Groves; J. Paul Gathright, Orange; Nicholas R. Galante, Orange; M. Stephen Galland, Orange; J. Diores Gallet, Orange; Lewis R. Compton, Orange; George L. Baker, Bridge City, all of Tex., and James H. Wang, Appleton, Wis., assignors to Chevron Chemical Company, San Ramon, Calif.

Continuation-in-part of Ser. No. 764,861, Sep. 24, 1991, abandoned. This application Apr. 26, 1994, Ser. No. 233,180

The portion of the term of this patent subsequent to Sep. 21, 2012, has been disclaimed.

Int. Cl.[6] C08F *10/02; 20/18*

U.S. Cl. 526—65 **3 Claims**

1. A process for the preparation of ethylene-alkyl acrylate copolymers comprising:

A) feeding overall an amount by weight, A, of alkyl acrylate and an amount by weight, E, of ethylene to a multi-zone agitated autoclave polymerization reactor;

B) introducing an effective amount of an initiator and at least a portion, E_1, of the total amount of ethylene into a first reaction zone of the reactor;

C) concurrently introducing a portion, A_1, of alkyl acrylate to said first reaction zone such that the ratio A_1/E_1 is at least about 20% more than or is at least about 20% less than the ratio A/E for the reactor overall; and

D) feeding any remaining portions of initiator, ethylene and alkyl acrylate to a subsequent reaction zone or zones.

5,571,879

METHOD OF VAPOR PHASE POLYMERIZATION OF OLEFINS

Makoto Jimbo; Mamoru Yoshikawa; Shinjiro Suga; Yoshihisa Yamaguchi, all of Kawasaki; Masahiro Niwa, Yokohama; Eiko Kobayashi, Yokosuka, and Kunimichi Kubo, Tokyo, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Continuation of Ser. No. 174,277, Dec. 28, 1993, abandoned. This application Feb. 1, 1996, Ser. No. 595,520

Claims priority, application Japan, Dec. 30, 1992, 4-360002; Dec. 30, 1992, 4-360003; Dec. 31, 1992, 4-361383

Int. Cl.[6] C08F *2/34*

U.S. Cl. 526—74 **16 Claims**

1. In a method for starting vapor phase polymerization of olefins by feeding a catalyst comprising an organoaluminum compound and a solid catalyst component containing at least one or both of titanium and vanadium, and magnesium into a reactor;

the improvement comprising the steps of:

(I) feeding seed polymer particles into said reactor;

(II) then feeding an organoaluminum compound into said reactor with at least one measuring step selected from the group consisting of:

(a) measuring the difference (δT) between the temperature indicated by a short thermometer inserted into said reactor and the temperature indicated by a long thermometer inserted into said reactor, and when the difference in temperatures (δT) abruptly decreases provisionally ceasing the feeding of said organoaluminum compound,

(b) measuring the electrostatic voltage in the reactor and when said voltage is changed from a minus value to zero, provisionally ceasing the feeding of said organoaluminum compound, and

(c) measuring the center of oscillation of electrostatic current and its amplitude in the reactor and when the oscillation is changed to zero and the amplitude reaches a minimum, provisionally ceasing the feeding of said organoaluminum compound;

(III) then feeding an additional quantity of organoaluminum compound into said reactor in the quantity calculated according to the following equation:

$$A=0.044\times V_{3/4}+aW$$

wherein A is the quantity (mol) of the feed of organoaluminum compound, V is the volume (m^3) of the whole reaction system including gas circulation pipings, W is the weight (ton) of said seed polymer, and "a" is a coefficient (mol/ton) in the range from 0 to 89; and

(IV) then starting the polymerization reaction with further feeding of a solid catalyst component and an organoaluminum compound.

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5,571,880

ORGANOMETALLIC FLUORENYL COMPOUNDS AND USE THEREOF IN AN ALPHA-OLEFIN POLYMERIZATION PROCESS

Helmut G. Alt, Bayreuth, Germany; Syriac J. Palackal, Bartlesville, Okla.; Roland Zenk, Bayreuth, Germany; M. Bruce Welch, Bartlesville, Okla., and Michael Schmid, Bayreuth, Germany, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 734,853, Jul. 23, 1991, Pat. No. 5,436,305, which is a continuation-in-part of Ser. No. 697,363, May 9, 1991, Pat. No. 5,191,132, and a continuation-in-part of Ser. No. 3,221, Jan. 7, 1993, Pat. No. 5,406,013, which is a continuation of Ser. No. 697,363, May 9, 1991, Pat. No. 5,191,132, and a continuation-in-part of Ser. No. 64,630, May 20, 1993, Pat. No. 5,401,817, which is a continuation-in-part of Ser. No. 734,853, Jul. 23, 1991, Pat. No. 5,436,305, and a continuation-in-part of Ser. No. 984,054, Nov. 30, 1992, Pat. No. 5,393,911, which is a continuation-in-part of Ser. No. 697,363, May 9, 1991, Pat. No. 5,191,132. This application Feb. 3, 1994, Ser. No. 192,223

Int. Cl.[6] C08F *4/642;* C07F *17/00*

U.S. Cl. 526—160 **22 Claims**

1. A metallocene of the formula $R''(FlR_n)(CpR_m)MeQ_k$, wherein Fl is a fluorenyl radical, Cp is a cyclopentadienyl, indenyl, tetrahydroindenyl, or fluorenyl radical, each R of Cp is the same or different and is an organo radical having 1 to 20 carbon atoms, R'' is a C_1 to C_{20} hydrocarbyl structural bridge linking (FlR_n) and (CpR_m), Me is a metal selected from the group consisting of IVB, VB, and VIB metals of the Periodic Table, each Q is the same or different and is selected from the group consisting of hydrocarbyl or hydrocarbyloxy radicals having 1 to 20 carbon atoms and halogen, k is a number sufficient to fill out the remaining valences of Me, m is a number in the range of 0 to 7, n is a number in the range of 2 to 7 and (FlR_n) is symmetrically substituted with identical substituents, said substituents being selected from the group consisting of methyl vinyl and hydrocarbyl radicals having up to 20 carbon atoms, said hydrocarbyl radicals being selected from a group consisting of cycloalkyl, cycloalkenyl, aralkyls and aryl radicals.

17. A process for producing a homopolymer of propylene comprising contacting propylene under suitable polymerization conditions with a catalyst system comprising a fluorenyl-containing metallocene and a suitable cocatalyst, said metallocene being selected from the group consisting of 1-(2,7-diphenylfluorenyl)-1-(cyclopentadienyl)-1,1-(diphenyl) methane zirconium dichloride and 1-(2,7-di-t-butylfluorenyl)-1-(cyclopentadienyl)-1,1-(diphenyl) methane zirconium dichloride.

5,571,881

ADDITION POLYMERS DERIVED FROM NORBORNENE-FUNCTIONAL MONOMERS AND PROCESS THEREFOR

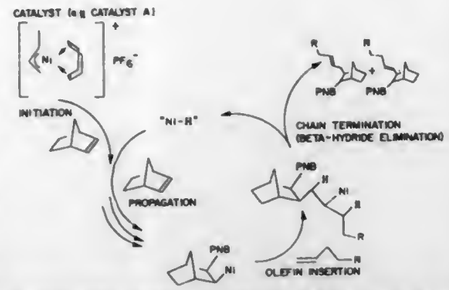
Brian L. Goodall, Akron; George M. Benedikt, Solon; Lester H. McIntosh, III, Cuyahoga Falls; Dennis A. Barnes, Medina, and Larry F. Rhodes, Silver Lake, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 339,863, Nov. 15, 1994, which is a continuation-in-part of Ser. No. 153,250, Nov. 16, 1993, Pat. No. 5,468,819. This application Jun. 7, 1995, Ser. No. 476,810

Int. Cl.[6] C08F *4/80;4/76;4/78*

U.S. Cl. 526—171 **20 Claims**

1. A process for appending an olefinic end-group onto a terminal end of an addition polymer having repeating units polymerized from at least one norbornene-functional monomer wherein said olefinic end-group is exclusively located at a terminal end of said addition polymer and not copolymerized into the backbone thereof, said process comprising reacting a reaction mixture comprising one or more norbornene-functional monomers, a solvent for said monomers(s) and an effective amount of a single or multicomponent catalyst system each comprising a Group VIII transition metal source and a chain transfer agent selected from a compound having



a terminal olefinic double bond between adjacent carbon atoms, excluding styrenes, vinyl ethers, and conjugated dienes, and at least one of said adjacent carbon atoms has two hydrogen atoms attached thereto.

5,571,882

POLYMERSABLE CARBOHYDRATE ESTERS, POLYMERS THEREFROM AND THEIR USE

Dirk Vetter, Freiburg, Germany, assignor to Ciba-Geiby Corporation, Tarrytown, N.Y.

Division of Ser. No. 256,828, Jul. 26, 1994, Pat. No. 5,488,102. This application Jun. 6, 1995, Ser. No. 467,248

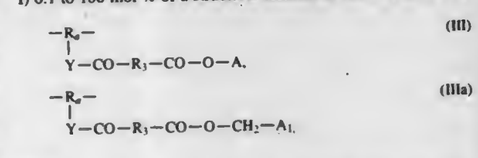
Claims priority, application Switzerland, Nov. 30, 1992, 3656/92; WIPO, Nov. 19, 1993, PCT/EP93/03236

Int. Cl.[6] C12P *19/14;7/08;* C07H *1/00;3/00*

U.S. Cl. 526—238.2 **30 Claims**

1. A polymer that, based on the polymer, comprises

I) 0.1 to 100 mol % of a structural element of formula III or IIIa



wherein

R_a is the radical of a radically polymerised group containing from 2 to 12 carbon atoms,

R_3 is a direct bond, linear or branched C_1–C_{22}alkylene, C_3–C_8cycloalkylene or C $_6$–C_{14}arylene,

A is a radical, reduced by a hydroxy group in a 2- or 3-position, of a cyclic-oligomeric carbohydrate or of a derivative of such a carbohydrate,

A_1 is a radical, reduced by a hydroxymethyl group of a monomeric or linear or branched oligomeric carbohydrate or of a derivative of such a carbohydrate, and

Y is —O—, —NH—, or —N(C_1–C_6 alkyl)-.

ii) 99.9 to 0 mol % of a structural element, different from formulae III and IIIa, of a radically polymerised olefin, and

iii) 80 to 0 mol % of a structural element of a radically polymerised diolefin, the molar percentages totalling to 100%.

5,571,883

ELASTOMERIC VEHICLE VIBRATION DAMPING DEVICES

Eric P. Jourdain, Houston, and Periagaram S. Ravishankar, Kingwood, both of Tex., assignors to Exxon Chemical Patents Inc., Wilmington, Del.

Filed Jun. 14, 1995, Ser. No. 490,274

Int. Cl.[6] C08F *210/18*

U.S. Cl. 526—282 **10 Claims**

1. A vehicle part comprising an ethylene, α-olefin, vinyl norbornene elastomeric polymer; wherein said elastomeric polymer:

a) includes ethylene in the range of from about 40 to about 90 mole %;

b) includes vinyl norbornene in the range of from about 0.2 to about 5.0 mole %;

c) has a branching index in the range of from about 0.1 to about 0.6; and

d) has a Mooney viscosity ML (1+4), 125° C. from about 80 to MST (5+4),200° C. up to 90;

wherein a compound including said ethylene, α-olefin, vinyl norbornene elastomeric polymer has:

i) ML 1+100° C. up to about 80;

ii) MH-ML above about 50 daN.m;

iii) cure rate of at least about 15 daN.m/min.;

iv) 100% modulus of up about 3 MPa;

v) compression set 22H/125° C. / 25% deflection up to about 20%;

vi) compression set 22H/150° C./25% deflection up to about 25%;

vii) loss tangent below about 0.2 at +26° C.;

viii) loss tangent below about 0.2 at +80° C.;

ix) loss tangent below about 0.2 at +125° C.;

x) a glass transition temperature of about –40° C. measured by DMTA (Dynamic-mechanical-thermal analyser) machine@1 Hz.

5,571,884

HYDROXY-FUNCTIONAL ACRYLATE RESINS

Shao-Hua Guo, West Goshen, Pa., assignor to ARCO Chemical Technology, L.P., Greenville, Del.

Division of Ser. No. 341,823, Nov. 18, 1994, Pat. No. 5,475,073. This application Jun. 6, 1995, Ser. No. 471,113

Int. Cl.[6] C08F *220/12;220/18;216/08;216/02*

U.S. Cl. 526—329.6 **8 Claims**

1. A process which comprises copolymerizing a C_1–C_{20} alkyl or aryl acrylate or methacrylate monomer with an allylic alcohol or a propoxylated allylic alcohol, optionally in the presence an ethylenic monomer, in the presence of a free-radical initiator, to produce a hydroxy-functional acrylate resin;

wherein at least about 50 wt.% of the acrylate or methacrylate monomer used is gradually added to the reaction mixture during the copolymerization;

wherein the acrylate resin comprises from about 5 to about 60 wt.% of recurring units derived from the allylic alcohol or propoxylated allylic alcohol, and from about 40 to about 95 wt.% of recurring units derived from the acrylate or methacrylate monomer; and

wherein the acrylate resin has a hydroxyl number within the range of about 20 to about 500 mg KOH/g, and a number average molecular weight within the range of about 500 to about 10,000.

5,571,885

IMMOBILIZED LEWIS ACID CATALYSTS

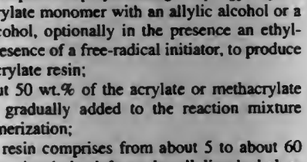
Tze-Chiang Chung, State College, Pa.; Frank J.-Y. Chen, Edison; Jon E. Stanat, Westfield, both of N.J., and Alok Kumar, Vashi, Ind., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 905,582, Jun. 26, 1992, Pat. No. 5,409,873, which is a continuation-in-part of Ser. No. 723,130, Jun. 28, 1991, Pat. No. 5,288,677. This application Mar. 3, 1995, Ser. No. 398,635

Int. Cl.[6] C08F *10/00;10/08;36/02;36/06*

U.S. Cl. 526—348 **36 Claims**

1. A cationically polymerized polymer, having a number average molecular weight of from 300 to 1,000,000 and a molecular weight distribution from about 1.1 to about 8.0, the polymer chains of said polymer containing internal vinylidene double bonds at least more than one monomer unit removed from the end of said chains, and terminal vinylidene double bonds, said polymer made by a process for polymerizing cationically polymerizable olefin monomer comprising contacting said monomer with a catalytically effective amount of an immobilized Lewis Acid catalyst in a manner and under conditions sufficient to polymerize said monomer, wherein said immobilized catalyst comprises an immobilizing polymer having at least one Lewis Acid immobilized within said polymer structure, said immobilizing polymer having monomer units represented by the structural formula:



$$-[A]_a-[B]_b-[C]_c-$$

wherein

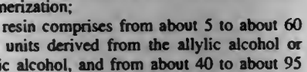
a represents about 1 to about 99 mole %

b represents about 0 to about 50 mole %

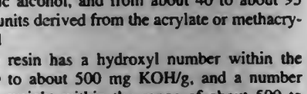
c represents about 1 to about 99 mole %

a+b+c is about 100%;

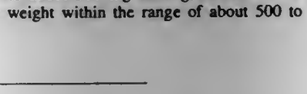
A is:

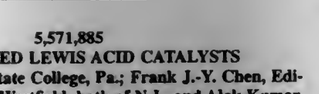


B is:



C is selected from the group consisting of:





(III) combinations thereof, wherein

D is OH, halide, OR^4, NH_2, NHR^3, OM', or OM";

E is the residue of the reaction of at least one Lewis Acid with the D substituent of monomer unit B;

R^1 represents proton, C_1–C_{24} alkyl group, or C_3–C_{24} cycloalkyl;

R^2 represents C_1–C_{24} alkylene group, C_3–C_{24} cycloalkylene, C_6–C_{18} arylene, or C_7–C_{30} alkylarylene;

R^3 represents C_1–C_{24} alkyl, C_3–C_{24} cycloalkyl, C_1–C_{24} aryl, or C_7–C_{30} alkylaryl;

R^4 represents C_1–C_{24} alkyl, C_3–C_{24} cycloalkyl, C_1–C_{24} aryl, or C_7–C_{30} alkylaryl;

M' represents alkali metal;

M" represents alkaline-earth metal.

5,571,886

AROMATIC NOVOLAK RESINS

Anthony Zampini, Westborough, Mass., assignor to Shipley Company, Inc., Marlborough, Mass.

Continuation of Ser. No. 988,854, Dec. 10, 1992, abandoned, which is a division of Ser. No. 600,862, Oct. 22, 1990, Pat. No. 5,216,111, which is a continuation-in-part of Ser. No. 411,670, Sep. 25, 1989, abandoned, which is a continuation of Ser. No. 108,192, Oct. 13, 1987, abandoned, which is a continuation-in-part of Ser. No. 2,364, Dec. 23, 1986, abandoned. This application Mar. 21, 1994, Ser. No. 215,890

Int. Cl.[6] C08G *8/04*

U.S. Cl. 528—143 **13 Claims**

1. An alkali soluble novolak resin formed by condensation of aldehyde and a phenol where at least 50 mole percent of the

aldehyde is aromatic, said novolak resin having a weight average molecular weight in excess of 1500 Daltons and a glass transition temperature in excess of 125° C.

5,571,887

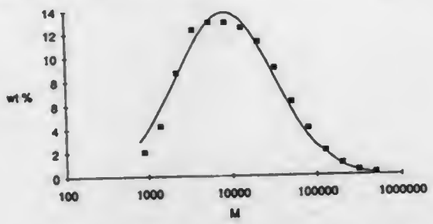
SYNTHETIC BIODEGRADABLE POLYMER FROM O-CRESOL

Li-Xia Li, Atlanta, Ga.; Patrick J. Oriel, Midland, Mich., and Eric A. Grulke, Lexington, Ky., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Continuation of Ser. No. 236,580, May 2, 1994. This application Jun. 19, 1995, Ser. No. 492,318

Int. Cl.[6] C08G *65/38*

U.S. Cl. 528—217 **8 Claims**



1. A process for producing a thermoplastic poly(2-methyl phenylene oxide) or poly(2-dimethylphenylene oxide) homopolymer which comprises:

(a) reacting in a reaction mixture o-cresol, a catalytic amount of a copper complex with a 2-(2-isopropyl(oxyethyl)pyridine and an organic solvent in the presence of oxygen in the solvent while maintaining the reaction mixture at a temperature of less than the boiling point of the mixture to form the poly(2-methyl phenylene oxide); and

(b) separating the homopolymer from the reaction mixture, wherein the homopolymer produced has a weight average molecular weight of between about 5,000 and 500,000 and a molecular weight distribution between about 1,000 and 700,000.

5,571,888

PROCESS FOR PREPARING FLAME-RETARDANT PHOSPHORUS-CONTAINING UNSATURATED POLYESTER

Yi-Ni Cheng, Taipei; Shinn-Jen Chang, Hsinchu; Yaung-Ching Sheen, Tainan Hsien, and Shyue-Pyng Juang, Taipei Hsien, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jun. 14, 1995, Ser. No. 490,427

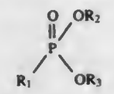
Int. Cl.[6] C08G *63/692*

U.S. Cl. 528—287 **15 Claims**

1. A process for preparing a flame-retardant phosphorus-containing unsaturated polyester resin blend, comprising the following steps:

(a) reacting

(1) a phosphorus-containing monomer having the formula:



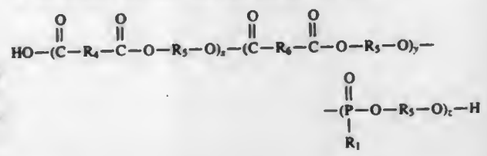
wherein R_1, R_2 and R_3 are respectively H, C_1–C_4 alkyl, phenyl, alkaryl or aralkyl, with

(2) a saturated dicarboxylic acid, or a saturated dicarboxylic acid anhydride,

(3) a double bond-containing unsaturated dicarboxylic acid or a double bond-containing unsaturated dicarboxylic acid anhydride, and

(4) a diol

in the presence of a metal catalyst combined with an acid to form an unsaturated polyester oligomer having the formula:



wherein

R_5 and R_6 are respectively C_1–C_4 alkylene, alkarylene, phenylene or aralkylene,

R_4 is a vinyl-containing group,

x is an integer of 1–10,

y is an integer of 1–10,

z is an integer of 1–10, and

(b) blending said unsaturated polyester oligomer with a vinyl-containing monomer.

5,571,889

POLYMER CONTAINING MONOMER UNITS OF CHEMICALLY MODIFIED POLYASPART ACIDS OR THEIR SALTS AND PROCESS FOR PREPARING THE SAME

Toshio Katoh, Saitama-ken; Akinori Nagatomo, Kanagawa-ken; Hiroaki Tamatani, Kanagawa-ken; Masanobu Ajioka, Kanagawa-ken, and Akihiro Yamaguchi, Kanagawa-ken, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

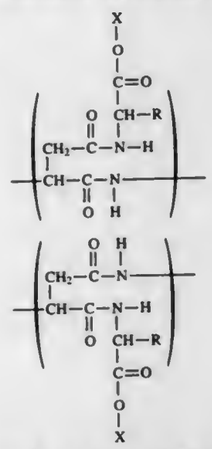
Filed May 25, 1995, Ser. No. 450,117

Claims priority, application Japan, May 30, 1994, 6-116981

Int. Cl.[6] C08G *69/10*

U.S. Cl. 528—328 **7 Claims**

1. A polymer containing, in its molecule, at least one monomer unit selected from the group consisting of monomer units of chemically modified α type or β type polyaspartic acids or their salts represented by the following formula (I) or (II):



(I)

(II)

wherein R is an amino acid side chain, and X is independently an alkyl group having 1 to 6 carbon atoms, a cycloalkyl group, a benzyl group, a hydrogen atom or an alkali metal, as chemically modified polyaspartic acid monomer units.

5,571,890

POLYETHERAMIDOAMINE SUPERABSORBENT HYDROGELS

Maria C. Tanzi, Milan; Gianfranco Palumbo, and Giovanni Carlucci, both of Pescara, all of Italy, assignors to Societa Consortile Ricerche Angelini S.p.A., Pescara, Italy

Filed Nov. 22, 1994, Ser. No. 331,511

Claims priority, application Italy, Apr. 21, 1992, MI92A0956

Int. Cl.[6] C08G *73/02;* **A61L** *15/00;13/00*

U.S. Cl. 528—342 **9 Claims**

1. Polyetheramidoamine hydrogels consisting of polyetheramidoamine and/or polyamidoamine, prepolymers containing an activated double bond which is susceptible to the Michael's nucleophilic polyaddition, crosslinked with alpha-omega-diamino monomers or oligomers, with the proviso that at least one of the prepolymer or of the alpha-omega-diamino monomers or oligomers contains a polyether alkylene chain.

5,571,891

AROMATIC COPOLYAMIDES, PRODUCTION THEREOF, FORMED STRUCTURES AND PRODUCTION THEREOF

Holger Jung, Niedernhausen; Richard Neuert, Winkelhaid, and Peter Klein, Wiesbaden, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

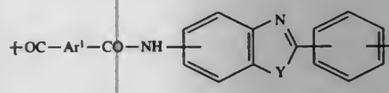
Filed Apr. 5, 1995, Ser. No. 417,305

Claims priority, application Germany, Apr. 6, 1994, 44 11 757.4; Jun. 23, 1994, 44 21 885.0

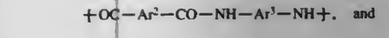
Int. Cl.[6] C08G *73/10;69/12*

U.S. Cl. 528—310 **43 Claims**

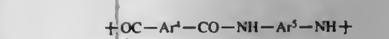
1. An aromatic copolyamide comprising the structural repeat units of the formulae I, II and III



(I)



(II)



(III)

where Ar^1, Ar^2, Ar^3 and Ar^4 are independently of one another bivalent aromatic radicals whose valence bonds are disposed para or comparably coaxial or parallel to each other,

Ar^5 is a non-Ar^3 bivalent aromatic radical whose valence bonds are disposed para or comparably coaxial or parallel to each other, or Ar^5 is a bivalent aromatic radical whose valence bonds are disposed meta or comparably angled to each other,

Y is —O—, —S— or —NR^1— where R^1 a univalent organic radical or hydrogen, and

Ar^1, Ar^2, Ar^3, Ar^4 and Ar^5 are independently of one another optionally substituted by one or two radicals inert toward carbonyl chlorides.

5,571,892

POLYPEPTIDE AND ANTI-HIV DRUG PREPARED THEREFROM

Nobutaka Fujii, Hirakata, and Naoki Yamamoto, Tokyo, both of Japan, assignors to Seikagaku Kogyo Co., Ltd., Tokyo, Japan

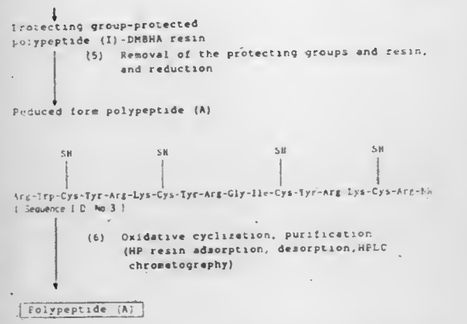
PCT No. PCT/JP91/01201, § 371 Date Jul. 1, 1992, § 102(e) Date Jul. 1, 1992, PCT Pub. No. WO92/04374, PCT Pub. Date Mar. 19, 1992

PCT Filed Sep. 10, 1991, Ser. No. 856,026

Claims priority, application Japan, Sep. 11, 1990, 2-238922

Int. Cl.[6] A61K *38/10;* **C07K** *7/08*

U.S. Cl. 530—326 **15 Claims**



1. A polypeptide, having a C-terminus, represented by formula I:



(I)

wherein:

(I) A_1 denotes a hydrogen atom or one or two amino acid residues of amino acids selected from lysine and arginine,

A_2 independently denotes a tyrosine, phenylalanine or tryptophan residue,

A_3 independently denotes an arginine or lysine residue,

A_4 independently denotes an alanine, valine, leucine, isoleucine, serine, cysteine or methionine residue,

(II) Cys denotes a cysteine residue,

Gly denotes a glycine residue,

Lys denotes a lysine residue,

Arg denotes an arginine residue, and

Trp denotes a tryptophan residue; and wherein the C-terminus of the polypeptide is a carboxylic acid, or an amide or a salt thereof.

5,571,893

CARDIAC HYPERTROPHY FACTOR

Joffre Baker, El Granada; Kenneth Chien, La Jolla; Kathleen King, Pacifica; Diane Pennica, Burlingame, and William Wood, San Mateo, all of Calif., assignors to Genentech, Inc., South San Francisco, and Regents of the Univ. of California, Oakland, both of Calif.

Continuation of Ser. No. 233,609, Apr. 25, 1994, Pat. No. 5,534,615. This application Aug. 5, 1994, Ser. No. 286,304

Int. Cl.[6] C07K *14/52;* **A61K** *38/19*

U.S. Cl. 530—350 **3 Claims**

1. An isolated polypeptide having the translated human cardiotrophin-1 (CT-1) amino acid sequence (SEQ ID NO: 8) shown in FIG. 5.

5,571,894

RECOMBINANT ANTIBODIES SPECIFIC FOR A GROWTH FACTOR RECEPTOR

Winfried S. Wels; Nancy E. Hynes, both of Basel, Switzerland; Ina-Maria Harweth, Grenzach-Wyhlen, Germany; Bernd Groner, Basel, Switzerland; Norman Hardman, Riehen, Switzerland, and Markus Zwicki, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 828,832, Jan. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 731,190, Jul. 15, 1991, abandoned. This application Apr. 29, 1994, Ser. No. 235,838

Claims priority, application European Pat. Off., Feb. 5, 1991, 91810079

Int. Cl.[6] C07K *16/28;16/46;* C12N *15/62*

U.S. Cl. 530—387.3 19 Claims

1. A recombinant antibody directed to the extracellular domain of the growth factor receptor c-erbB-2 comprising of heavy chain variable domain and a light chain variable domain of a monoclonal antibody, wherein the heavy chain variable domain comprises a polypeptide of the formula

$$FR_1\text{-}CDR_{1H}\text{-}FR_2\text{-}CDR_{2H}\text{-}FR_3\text{-}CDR_{3H}\text{-}FR_4 \quad (I)$$

wherein FR_1 is a polypeptide comprising 25–33 naturally occurring amino acids, FR_2 is a polypeptide comprising 12–16 naturally occurring amino acids, FR_3 is a polypeptide comprising 30–34 naturally occurring amino acids, FR_4 is a polypeptide comprising 6–13 naturally occurring amino acids, CDR_{1H} is a polypeptide of the amino acid sequence 32–36 of SEQ ID NO:5, CDR_{2H} is a polypeptide of the amino acid sequence 51–67 of SEQ ID NO:5, CDR_{3H} is a polypeptide of the amino acid sequence 100 to 109 of SEQ ID NO:5, and wherein the amino acid Cys may be in the oxidized state forming S—S-bridges.

5,571,895

MODIFIED GAF POLYPEPTIDES

Tsutomu Kurokawa, Kawanishi; Ken-ichi Kuroshima, Osaka; Sumie Yoshitomi, Osaka, and Chisako Seko, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 21, 1993, Ser. No. 172,328

Claims priority, application Japan, Dec. 22, 1992, 4-342100; Aug. 23, 1993, 5-207719

Int. Cl.[6] C07K *14/475*

U.S. Cl. 530—399 3 Claims

1. A purified polypeptide represented by the following amino acid sequence:

(Met)n X_2 Val Thr Asp Leu Asp His Leu Lys Gly Ile Leu Arg Arg Arg Gln Leu Tyr Cys Arg Thr Gly Phe His Leu Glu Ile Phe Pro Asn Gly Thr Ile Gln Gly Thr Arg Lys Asp His Ser Arg Phe Gly Ile Leu Glu Phe Ile Ser Ile Ala Val Gly Leu Val Ser Ile Arg Gly Val Asp Ser Gly Leu Tyr Leu Gly Met Asn Glu Lys Gly Glu Leu Tyr Gly Ser Glu Lys Leu Thr Gln Glu Cys Val Phe Arg Glu Gln Phe Glu Glu Asn Trp Tyr Asn Thr Tyr Ser Ser Asn Leu Tyr Lys His Val Asp Thr Gly Arg Arg Tyr Tyr Val Ala Leu Asn Lys Asp Gly Thr Pro Arg Glu Gly Thr Arg Thr Lys Arg His Gln Lys Phe Thr His Phe Leu Pro Arg Pro Val Asp Pro Asp Lys Val Pro Glu Leu Tyr Lys Asp Ile Leu Ser Gln Ser wherein n is 0 or 1; and X_2 represents Ser Asp His Leu Gly Gln Ser Glu Ala Gly Gly Leu Pro Arg Gly Pro Ala or Ala (n=0, X_2=Ser Asp His Leu Gly Gln Ser Glu Ala Gly Gly Leu Pro Arg Gly Pro Ala SEQ.ID NO:6; n=0, X_2=Ala SEQ.ID NO:8; n<1, X_2=Ser Asp His Leu Gly Gln Ser Glu Ala Gly Gly Leu Pro Arg Gly Pro Ala SEQ ID NO:7; n=1, X_2=Ala SEQ.ID NO:9).

5,571,896

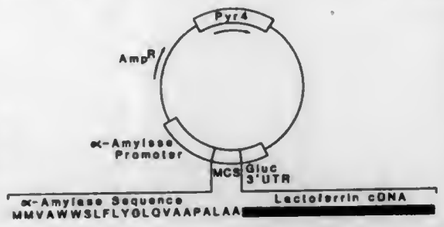
PRODUCTION OF RECOMBINANT HUMAN LACTOFERRIN

Oria M. Conneely, Houston, Tex.; Denis R. Headon, Galway, Israel; Bert W. O'Malley, and Gregory S. May, both of Houston, Tex., assignors to Baylor College of Medicine, Houston, Tex.

Continuation of Ser. No. 873,304, Apr. 24, 1992, abandoned. This application May 27, 1994, Ser. No. 250,308

Int. Cl.[6] C07K *14/79;* C12N *15/12;15/62;15/80*

U.S. Cl. 530—400 24 Claims



1. A process for a producing human lactoferrin comprising the following steps:

1) culturing an Aspergillus cell in a nutrient medium under conditions suitable for the expression of human lactoferrin by said Aspergillus cell and the secretion of said human lactoferrin protein into said medium, wherein said Aspergillus cell is transformed with an expression vector that comprises a fungal promoter sequence operably linked to a polypeptide-encoding nucleotide sequence, said polypeptide-encoding sequence comprising a secretory signal peptide-encoding nucleotide sequence fused to a polynucleotide encoding a human lactoferrin protein and providing a single open reading frame, said vector further comprising nucleotide sequence elements regulating translation of said polypeptideencoding nucleotide sequence, and,

2) isolating said secreted human lactoferrin protein from said medium.

5,571,897

LUMINESCENT LANTHANIDE CHELATES

Harri Takalo, Turku, and Veli-Matti Mukkala, Kaarina, both of Finland, assignors to Wallac Oy, Turku, Finland

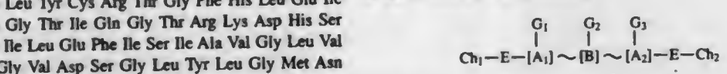
PCT No. PCT/FI91/00373, § 371 Date Jul. 26, 1994, § 102(e) Date Jul. 26, 1994, PCT Pub. No. WO93/11433, PCT Pub. Date Jun. 10, 1993

PCT Filed Dec. 5, 1991, Ser. No. 244,659

Int. Cl.[6] C07F *5/00;* C07J *21/00;* C07D *401/50;413/00*

U.S. Cl. 534—15 8 Claims

1. A luminescent lanthanide chelate consisting of a lanthanide ion and a chelator of the formula



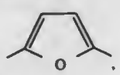
characterized in that

a)~ represents a covalent bond between two carbon atoms;

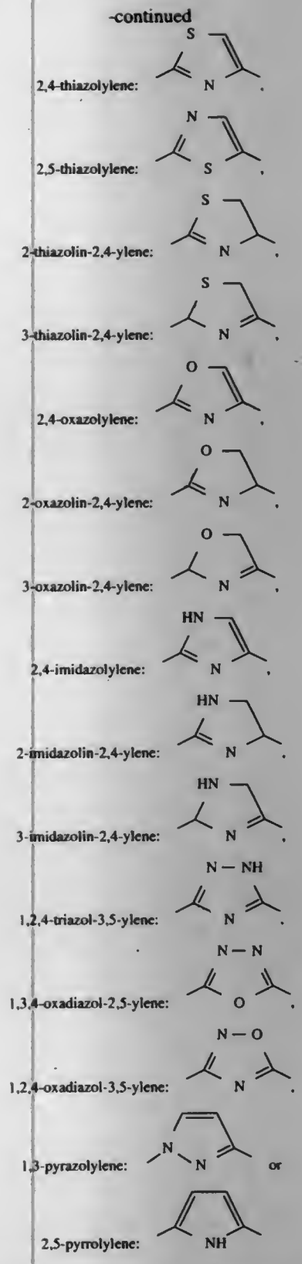
b)— represents a covalent bond;

c) E represents methylene (CH_2) or carbonyl (C=O);

d) A_1 is the same as A_2, and one or two of $[A_1]$, [B] and $[A_2]$ is/are bivalent heterocyclic unsaturated five-membered rings selected from the group consisting of



-continued



and corresponding rings in which one hydrogen is replaced with the appropriate group G_1, G_2 or G_3, which may be the same or different,

the remaining group(s) $[A_1]$, [B] and or $[A_2]$ is/are 2,6-pyridylene or a 2,6-pyridylene ring in which one hydrogen is replaced with the appropriate group G_1, G_2 or G_3 which may be the same or different,

one heteroatom in each ring $[A_1]$, [B] and $[A_2]$ coordinates to the same lanthanide ion so that two five-membered rings are formed in which one member of each five-membered ring is the lanthanide ion and two members of each five-membered ring are coordinating heteroatoms of different rings $[A_1]$ and [B] or [B] and $[A_2]$, and

e) Ch_1 and Ch_2 represent identical or different chelating groups, each of which comprises at least two heteroatoms that are coordinated to the lanthanide ion and are selected from the group consisting of oxygen and nitrogen, and at least one of the said coordinating heteroatoms in each of Ch_1 and Ch_2 forms a five- or six-membered ring together with the lanthanide ion and a coordinating heteroatom of one of $[A_1]$ or $[A_2]$,

the distance between each pair of heteroatoms in Ch_1 and Ch_2 participating in the chelation and forming the same five- or six-membered ring being two or three atoms, respectively,

f) G_1, G_2 and G_3, respectively, are selected from the group consisting of hydroxy, nitro, amino, lower alkyl substituted amino, lower aryl substituted amino, lower acyl substituted amino, C_{1-12} alkyl, aryl, alkylaryl, arylalkyl, arylethynyl, alkoxy and aryloxy groups, with the proviso that aryls are selected from the group consisting of phenyl, naphthyl and pyridyl, and an arylalkylene group wherein the alkylene contains from 1 to 8 carbon atoms and from 0 to 4 other atoms selected from the group consisting of oxygen, sulphur, nitrogen and phosphorus, and wherein aryl is selected from the group consisting of phenyl, naphthyl and pyridyl

wherein each of said groups G_1, G_2 and G_3 is optionally substituted with a group selected from the group consisting of isothiocyanato, isocyanato, diazonium, bromoacetamido, iodoacetamido, pyridyl-2-dithio, 4-chloro-6-ethoxy-triazon-2-ylamino, 4,6-dichlorotriazon-2-ylamino, amino, aminooxy, carboxyl, hydroxy, aldehyde and mercapto "N-hydroxysuccinimido, 4-nitrophenyl and 2,4-dinitrophenyl ester".

5,571,898

BASIC DYES BASED ON AMIDES OF J-ACID (1-HYDROXY-6-AMINONAPHTHALENE-3-SULFONIC ACID) AND AMIDES OF J-ACID

Ulrike Schloesser, Ludwigshafen, and Udo Mayer, Frankenthal, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

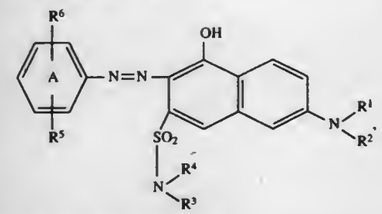
Continuation of Ser. No. 215,647, Mar. 22, 1994, abandoned, which is a continuation-in-part of Ser. No. 136,034, Oct. 14, 1993, abandoned. This application Jul. 11, 1995, Ser. No. 500,565

Claims priority, application Germany, Oct. 19, 1992, 42 35 154.5

Int. Cl.[6] C09B *29/15;31/068;* D06P *1/41;* D21H *21/28*

U.S. Cl. 534—604 5 Claims

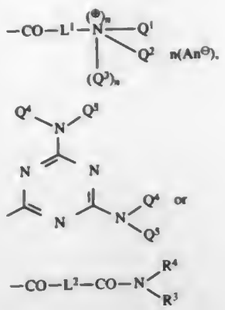
1. A dye of the formula I



(I)

where the ring A may be benzofused,

R^1 is C_1-C_{13}-alkyl, benzyl, 2-chloroethyl, substituted or unsubstituted phenyl, C_1-C_8-alkanoyl, substituted or unsubstituted benzoyl or a radical of the formula



where L^1 is C_1-C_3-alkylene,

L^2 is C_2-C_3-alkylene, which may be chlorine-substituted, vinylene or phenylene,

n is 0 or 1,

Q^1, Q^2 and Q^3 are identical or different and each is independently of the others hydrogen or unsubstituted or hydroxyl-substituted C_1-C_8-alkyl, which may be interrupted by from 1 to 3 oxygen atoms in ether function or by from 1 to 3 imino groups which imino groups may be substituted by C_1-C_4-alkyl or ω-hydroxy-C_1-C_8-alkyl, which may be interrupted by from 1 to 3 oxygen atoms in ether function, or Q^1 and Q^2, together with the nitrogen atom joining them together, are a 5- or 6-membered saturated or unsaturated heterocyclic radical which may contain a further betero atom selected from the group consisting of nitrogen, oxygen and sulfur, and

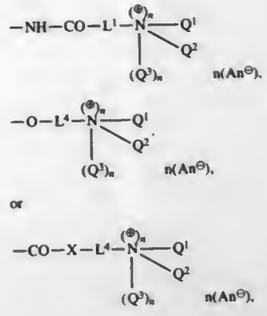
$An^{\ominus}$ is the equivalent of an anion, and

Q^4 and Q^5 are identical or different and each is independently of the other (1) C_1-C_{13}-alkyl, which may be interrupted by from 1 to 4 oxygen atoms in ether function, by imino or by C_1-C_4-alkyl-imino groups and which C_1-C_{13}-alkyl, interrupted or not interrupted, may be substituted by amino, by a 5- or 6-membered saturated or unsaturated heterocyclic radical which contains a nitrogen atom and may contain a further hetero atom selected from the group consisting of nitrogen, oxygen and sulfur, or by substituted or unsubstituted C_5-C_7-cycloalkyl, (2) substituted or unsubstituted phenyl, (3) substituted or unsubstituted C_5-C_7-cycloalkyl or (4) unsubstituted or C_1-C_4-alkyl-substituted piperidinyl, and Q^4 may also be hydrogen.

R^2 is hydrogen or C_1-C_4-alkyl or R^1 and R^2 together are a radical of the formula CO—L^3, where L^3 is C_3-C_4-alkylene,

R^3 and R^4 are identical or different and each is independently of the other (1) C_1-C_{13}-alkyl, which may be interrupted by from 1 to 4 oxygen atoms in ether function or by from 1 to 4 imino groups which imino groups may be substituted by C_1-C_4-alkyl or ω-hydroxy-C_1-C_8-alkyl, which may be interrupted by from 1 to 3 oxygen atoms in ether function, and which C_1-C_{13}-alkyl, interrupted or not interrupted, may be substituted by hydroxyl, by amino, by a 5- or 6-membered saturated or unsaturated heterocyclic radical which contains a nitrogen atom and may contain a further hetero atom selected from the group consisting of nitrogen, oxygen and sulfur, or by substituted or unsubstituted C_5-C_7-cycloalkyl, (2) substituted or unsubstituted phenyl, (3) substituted or unsubstituted C_5-C_7-cycloalkyl or (4) unsubstituted or C_1-C_4-alkyl-substituted piperidinyl, and R^3 may also be hydrogen, and R^3 and R^4, together with the nitrogen atom joining them together, ar a 5- or 6-membered saturated heterocyclic radical which may contain a further hetero atom selected from the group consisting of oxygen and sulfur,

R^5 is hydrogen, C_1-C_4-alkyl, C_1-C_4-alkoxy, C_2-C_5-alkanoylamino, halogen, nitro, cyano, unsubstituted or C_1-C_4-alkyl-substituted phenylazo or a radical of the formula



where X is oxygen or imino, and L^4 is C_2-C_4-alkylene, and Q^1, Q^2, Q^3, n and $An^{\ominus}$ are each as defined above, and

R^6 is hydrogen, C_1-C_4-alkyl, C_1-C_4-alkoxy, halogen, nitro, or cyano,

with the proviso that at least one quaternizable or quaternary group is present in the molecule.

5,571,899

SALTS OF METAL-FREE ANIONIC SUBSTITUTED-2-HYDROXY-1-PHENYLAZONAPHTHALENE DYES HAVING CATIONS CONTAINING STERICALLY HINDERED AMINE GROUPS

Bansi L. Kaul, Biel-Benken, Switzerland, and Angelos-Elie Vougioukas, St. Louis, France, assignors to Sandoz, Ltd., Basel, Switzerland

Division of Ser. No. 166,410, Dec. 13, 1993, Pat. No. 5,510,467, which is a continuation of Ser. No. 968,785, Oct. 30, 1992, abandoned, which is a continuation of Ser. No. 689,408, Apr. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 592,163, Oct. 3, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 471,991

Claims priority, application Germany, Oct. 3, 1989, 39 32 913.5

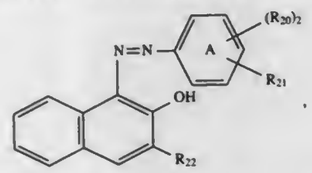
Int. Cl.[6] C09B *31/00*

U.S. Cl. 534—728 **10 Claims**

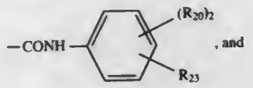
1. A salt of the formula

F_mA,

wherein F is an onion of a compound of the formula

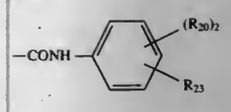


wherein R_{21} is hydrogen, sulfo, C_{1-4}alkyl, C_{1-4}alkoxy, halo, trihalomethyl or



, and

R_{22} is carboxy or



with the proviso that R_{22} must be carboxy or contain a sulfo group when Ring A does not bear a sulfo group,

wherein each R_{20} is independently hydrogen, halo, C_{1-4}alkyl or C_{1-4}alkoxy, and

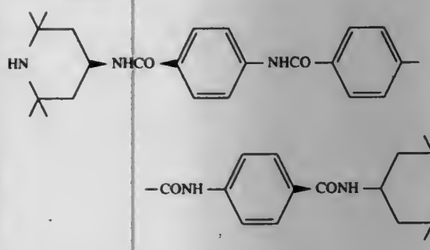
R_{23} is hydrogen, sulfo, halo, C_{1-4}alkyl or C_{1-4}alkoxy,

A is a cation of an amine selected from the group consisting of

1,3,5-tri-(1',2',2',6',6'-pentamethylpiperid-4'-yl)trimesinic acid triamide,

2,4-bis-(2',2',6',6'-tetramethylpiperid-4'-ylamino)-6-chloro-1,3,5-triazine,

2,4,6-tri-(2',2',6',6'-tetramethylpiperid-4'-ylamino)-1,3,5-triazine,



bis-(2',2',6',6'-tetramethylpiperid-4'-yl)terephthalic acid amide,

2,4-bis-(2',2',6',6'-tetramethylpiperid-4'-ylamino)quinazoline,

2,3-bis-(2',2',6',6'-tetramethylpiperid-4'-ylamino)quinoxaline,

1,4-bis-(2',2',6',6'-tetramethylpiperid-4'-ylamino)phthalazine,

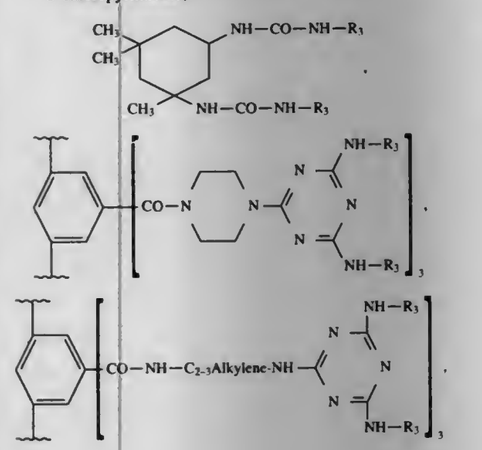
2-chloro-4,6-bis-(2',2',6',6'-tetramethylpiperid-4'-ylamino)pyrimidine,

2,5-dichloro-4,6-bis-(2',2',6',6'-tetramethylpiperid-4'-ylamino)pyrimidine,

2'-fluoro-5-chloro-4,6-bis-(2',2',6',6'-tetramethylpiperid-4'-ylamino)pyrimidine,

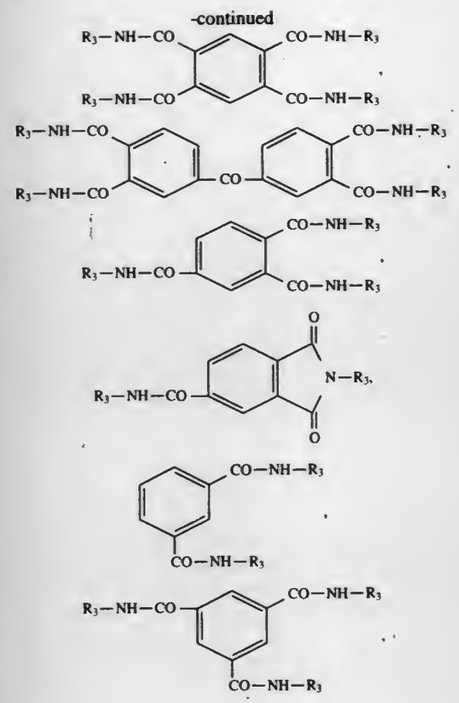
2,4,6-tri-(2',2',6',6'-tetramethylpiperid-4'-ylamino)pyrimidine,

2,4,6-tri-(2',2',6',6'-tetramethylpiperid-4'-ylamino)-5-chloropyrimidine,



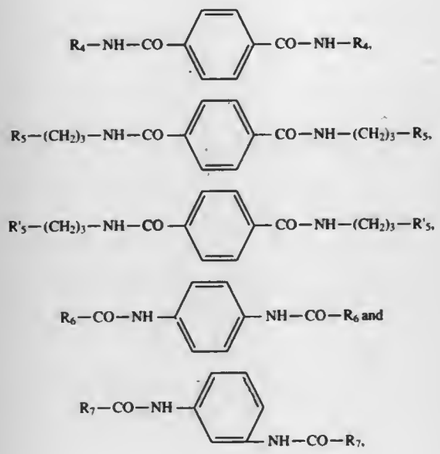
wherein each R_3 is 2,2,6,6-tetramethylpiperid-4-yl,

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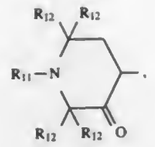
bis-(1,2,2,6,6-pentamethylpiperid-4-yl)terephthalic acid amide,

bis-(1,2,2,6,6-pentamethylpiperid-4-yl)isophthalic acid amide,

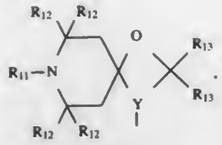


VOL 1192 ISS 1 NO 5 1996 UMI

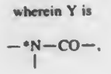
each R_4 is



each R_5 is

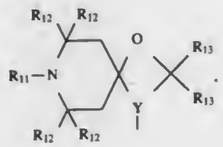


wherein Y is

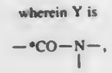


wherein the * identifies the atom attached to the piperidyl group,

each R'_5 is

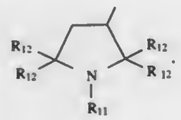


wherein Y is



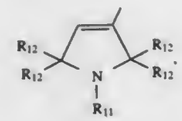
wherein the * identifies the atom attached to the piperidyl group,

each R_6 is



and

each R_7 is



wherein R_{11} is hydrogen or C_{1-4}alkyl,

each R_{12} is independently C_{1-6}alkyl,

each R_{13} is independently hydrogen, methyl, ethyl or phenyl, with the proviso that not more than one R_{13} is phenyl, or both R_{13}'s taken together are $-(CH_2)_z-$, wherein Z is 5 to 11, inclusive, and n is 1 or 2.

5,571,900

GLYCOSPHINGOLIPIDS WITH A GROUP CAPABLE OF COUPLING IN THE SPHINGOID PORTION, THE PREPARATION AND USE THEREOF

Herbert Wiegand, and Silke Bosslet, both of Marburg, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

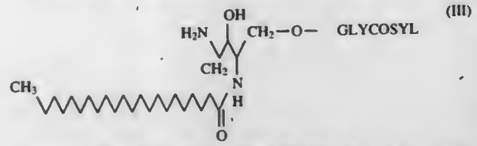
Division of Ser. No. 440,798, Nov. 24, 1989. This application Jun. 2, 1995, Ser. No. 462,991

Claims priority, application Germany, Nov. 27, 1988, 38 40 044.08

Int. Cl.[6] **C07G** *3/00;* **C07H** *5/04;* **A61K** *39/00*

U.S. Cl. 536—4.1 **11 Claims**

1. A process for coupling a compound of formula (III)



(III)

in which glycosyl is the carbohydrate portion of GM3, GD3, GM2 or GM1, through the amino group $—NH_2$ to a heterobifunctional reagent comprising the steps of

a. reacting the compound of formula (III) with the heterobifunctional reagent; and

b. coupling the compound of formula III to the heterobifunctional reagent.

5,571,901

INSECTICIDE AND MITICIDE COMPOSITIONS CONTAINING A83543 COMPOUNDS

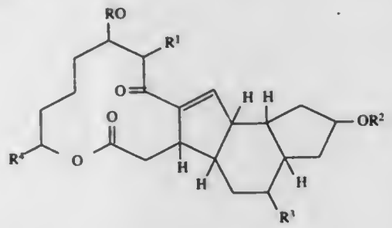
LaVerne D. Boeck, Indianapolis; Hang Chio, Greenfield; Tom E. Eaton; Otis W. Godfrey, Jr., both of Greenwood; Karl H. Michel; Walter M. Nakatsukasa, both of Indianapolis, and Raymond C. Yao, Carmel, all of Ind., assignors to Dow-Elanco, Indianapolis, Ind.

Continuation of Ser. No. 406,760, Mar. 17, 1995, Pat. No. 5,496,931, which is a continuation of Ser. No. 141,174, Oct. 22, 1993, abandoned, which is a division of Ser. No. 773,754, Oct. 10, 1991, Pat. No. 5,362,634, which is a continuation of Ser. No. 429,441, Oct. 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 286,591, Dec. 19, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 479,500

Int. Cl.[6] **C07H** *7/06*

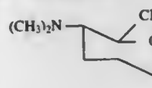
U.S. Cl. 536—7.1 **3 Claims**

1. An ectoparasiticidal composition comprising a physiologically-acceptable inert carrier and a compound of the formula



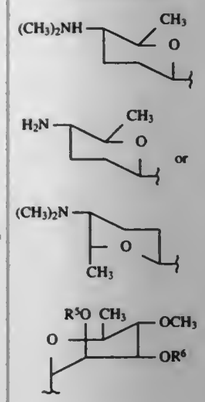
wherein

R is H or a group selected from

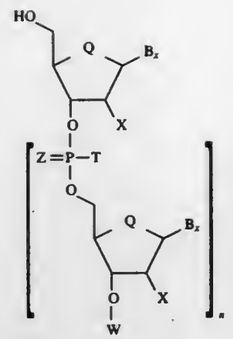


(a)

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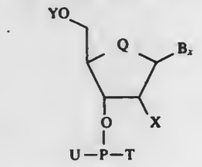
(b)



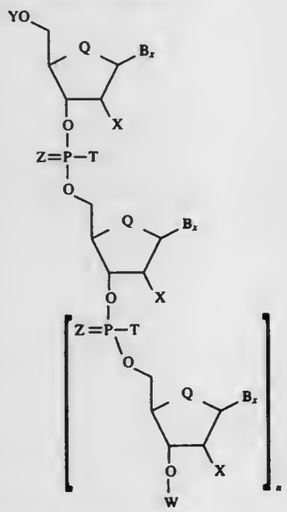
(c)

(d)

with a second synthon having the structure



to form a moiety having the structure



where each Q is independently O or S;

each B_x is independently a nucleosidic base;

each X is independently, H, OH, F, O-alkyl, S-alkyl, N-alkyl, O-alkenyl, S-alkenyl or N-alkenyl;

each Y is independently a 5' hydroxyl protecting group;

W is a 3' hydroxyl protecting group;

each Z is independently O or S;

each T is independently $—O—(CH_2)_xSiR_3R_4R_5$;

R_3, R_4 and R_5 are each independently alkyl or aryl;

U is a phosphite activating group;

n is an integer from 0 to 50; and

x is 1 to about 7.

R^1, R^3, R^5 and R^6 are hydrogen or methyl;

R^4 is methyl or ethyl; and provided that R, R^1, R^3, R^4, R^5 and R^6 must be present in one of the following combinations:

R	R^1	R^3	R^4	R^5	R^6
(a)	Me	H	Et	Me	Me
(b)	Me	H	Et	Me	Me
(c)	Me	H	Et	Me	Me
(a)	Me	Me	Et	Me	Me
(a)	Me	H	Me	Me	Me
(a)	H	H	Et	Me	Me
(d)	Me	H	Et	Me	Me
(a)	Me	H	Et	H	Me
(a)	Me	H	Et	Me	H
H	Me	H	Et	Me	Me
H	Me	Me	Et	Me	Me
H	Me	H	Me	Me	Me
H	H	H	Et	Me	Me
H	Me	H	Et	H	Me
H	Me	H	Et	Me	H

or an acid addition salt of a compound wherein R is other than hydrogen.

5,571,902

SYNTHESIS OF OLIGONUCLEOTIDES

Vasulinga Ravikumar, Carlsbad, and Douglas L. Cole, San Diego, both of Calif., assignors to ISIS Pharmaceuticals, Inc., Carlsbad, Calif.

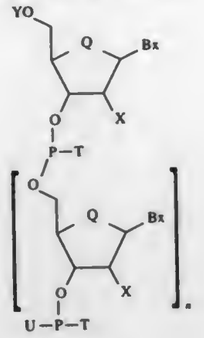
Continuation-in-part of Ser. No. 99,075, Jul. 29, 1993. This application May 26, 1994, Ser. No. 249,442

Int. Cl.[6] **C07H** *1/00;21/00;* **C12N** *15/11*

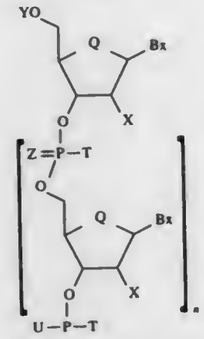
U.S. Cl. 536—22.1 **16 Claims**

1. A method for the solution phase preparation of an oligonucleotide comprising reacting, in solution, a first synthon having the structure

13. A compound having one of the formulas



or



where each Q is independently O or S;
each B_x is independently a nucleosidic base;
each X is independently, H, OH, F, O-alkyl, S-alkyl, N-alkyl O-alkenyl, S-alkenyl or N-alkenyl;
each Z is independently O or S;
Y is H or a hydroxyl protecting group;
U is a phosphite activating group;
each T is independently —O—$(CH_2)_nSiR_3R_4R_5$;
R_3, R_4 and R_5 are each independently alkyl or aryl;
n is an integer from 0 to 200; and
x is 1 to about 7.

5,571,903

AUTO-LIGATING OLIGONUCLEOTIDE COMPOUNDS

Sergei M. Gryaznov, San Mateo, Calif., assignor to Lynx Therapeutics, Inc., Hayward, Calif.

Filed Jul. 9, 1993, Ser. No. 89,999
Int. Cl.[6] C07H *21/02;21/04*
U.S. Cl. 536—23.1 **13 Claims**

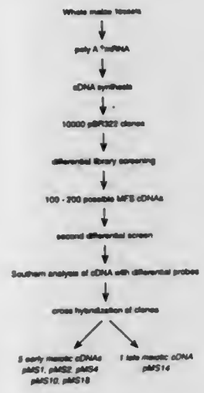
1. A polynucleotide binding composition comprising:
two to five components with an overall length of 12 to 120 nucleotides, each component comprising:
(1) an oligonucleotide moiety comprising at least 6 nucleotides, and
(2) at least one terminal binding moiety linked by a short flexible linker having no more than from 2 to 8 carbon atoms to a 5' or 3' terminus of said oligonucleotide moiety,
each terminal binding moiety being a member of a pair of terminal binding moieties that spontaneously forms a stable non-covalent complex with one another when said components of said composition specifically bind to a target polynucleotide in a contiguous end-to-end fashion such that each pair of terminal binding moieties is brought into juxtaposition.

5,571,904

MALE FLOWER SPECIFIC GENE SEQUENCES

Ian G. Bridges, Slater, Iowa; Simon W. J. Bright, Marlow, England; Andrew J. Greenland, Maidenhead, and Wolfgang W. Schuch, Crowthorne, both of Great Britain, assignors to Zeneca Limited, London, England

Continuation of Ser. No. 141,553, Oct. 25, 1993, abandoned, which is a continuation of Ser. No. 929,494, Jul. 17, 1991, abandoned, which is a continuation of Ser. No. 470,604, Jan. 26, 1990, abandoned. This application Jun. 27, 1994, Ser. No. 266,313
Claims priority, application United Kingdom, Jan. 26, 1989, 8901697
Int. Cl.[6] C12N *15/11;* A01H *1/00*
U.S. Cl. 536—24.1 **6 Claims**



1. A plant gene construct comprising a structural gene of interest operably linked to the male flower specific promoter sequence which comprises the polynucleotide sequence of FIG. 4, which said structural gene is specifically expressed in male flower tissue, or a mutant or variant of the promoter sequence which retains said tissue specificity.

5,571,905

GENE THERAPY WITH MCC

Bert Vogelstein; Kenneth W. Kinzler, both of Baltimore, Md.; Raymond White, Salt Lake City, Utah, and Yusuke Nakamura, Tokyo, Japan, assignors to The Johns Hopkins University, Baltimore, Md.; University of Utah, Salt Lake City, Utah, and The Cancer Institute, Japan

Division of Ser. No. 220,674, Mar. 31, 1994, which is a division of Ser. No. 670,611, Mar. 13, 1991, Pat. No. 5,330,892. This application Mar. 31, 1994, Ser. No. 220,674
Int. Cl.[6] C07H *21/04;* C12P *19/34;* C12Q *1/68*
U.S. Cl. 536—24.31 **9 Claims**

1. A pair of single stranded DNA primers for determination of a nucleotide sequence of an MCC gene by polymerase chain reaction, the sequence of said primers consisting of contiguous nucleotides of SEQ ID NO: 1, wherein the use of said primers in a polymerase chain reaction with human cDNA as a template results in synthesis of a DNA fragment containing all or part of the nucleotide sequence as shown in SEQ ID NO: 1.

5,571,906

PROCESS FOR OBTAINING OCTAHYDRO TRISODIUM SALT OF FRUCTOSE 1,6-DIPHOSPHATE (FDPNA3H*8H2O) IN CRYSTALLINE FORM

Stefano Ceccarelli, Frosinone; Magnante Francesco, Colleferro, and Zanarella Sergio, Mentana, all of Italy, assignors to Biomedica Foscama Industrial Chimico-Farmaceutica, S.p.A., Rome, Italy

Continuation of Ser. No. 179,528, Jan. 10, 1994, abandoned. This application Aug. 3, 1995, Ser. No. 510,871
Claims priority, application Italy, Jan. 13, 1993, MI93A0029
Int. Cl.[6] C07H *1/06;11/04*
U.S. Cl. 536—117 **3 Claims**

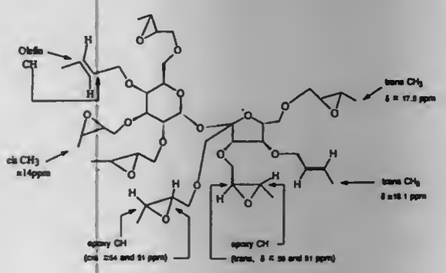
1. A process for producing trisodium salt of fructose 1,6-diphosphate octahydrate in a crystalline form comprising: adjusting an aqueous solution of fructose 1,6-diphosphate to a pH of from 5.5 to 6.3 using NaOH at a temperature of from 0° to 15° C., thus obtaining a concentration of fructose 1,6-diphosphate of from 70 to 200 mg/ml; mixing the solution with a total volume of acetone equal to 2.7 to 3 times the volume of the starting aqueous solution to form a reaction mixture; allowing the reaction mixture to crystallize, the temperature of the mixture not being over 10° C. during the mixing step and up to the end of the crystallization step; filtering the crystallized reaction mixture to isolate the product and then drying the product.

5,571,907

EPOXY MONOMERS FROM SUCROSE

Navzer D. Sachinala, Aiea, Hi., and Morton H. Litt, Cleveland, Ohio, assignors to Hawaiian Sugar Planters' Association, Aiea, Hi.

Continuation-in-part of Ser. No. 199,695, Feb. 28, 1994, Pat. No. 5,470,931, which is a continuation-in-part of Ser. No. 28,545, Mar. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 877,813, May 4, 1992, Pat. No. 5,248,747, which is a continuation-in-part of Ser. No. 697,983, May 10, 1991, Pat. No. 5,116,961, which is a continuation-in-part of Ser. No. 623,548, Dec. 7, 1990, abandoned. This application Feb. 14, 1995, Ser. No. 388,569
Int. Cl.[6] C07H *1/00*
U.S. Cl. 536—120 **23 Claims**



1. A method for producing a saccharide-based epoxy monomer having one to eight epoxy groups per molecule of saccharide, which comprises reacting a mixture comprising:
(a) a monomer comprising an allyl-containing group which is bonded to at least one primary or secondary hydroxyl group on a saccharide, and
(b) an acidic or metallic catalyst in the presence of an oxidizing agent,
in relative amounts sufficient to produce a saccharide-based epoxy monomer having one to seven epoxy groups per molecule of saccharide.

9. The monomer produced by the method of claim 1.

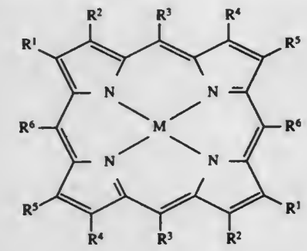
5,571,908

PORPHYRINS

Tilak Wijesekera, Glen Mills; James E. Lyons, Wallingford, and Paul E. Ellis, Jr., Downingtown, all of Pa., assignors to Sun Company, Inc. (R&M), Philadelphia, Pa.

Continuation-in-part of Ser. No. 568,116, Aug. 16, 1990, which is a continuation-in-part of Ser. No. 425,089, Oct. 23, 1989, abandoned, which is a continuation-in-part of Ser. No. 66,666, Jun. 26, 1987, Pat. No. 4,900,871, which is a continuation-in-part of Ser. No. 246, Jan. 2, 1987, Pat. No. 4,895,682. This application Dec. 29, 1993, Ser. No. 174,732
Int. Cl.[6] C07D *487/22*
U.S. Cl. 540—145 **13 Claims**

1. Composition of matter having the following structural formula:



where M is a metal with or without halide, hydroxide or azide or with or without an oxo bridge form an oxo-bridged dimer, where said metal is iron, manganese, cobalt or ruthenium and (a) R^6 is hydrogen or haloaryl, R^3 is hydrogen or haloalkyl, but R^6 and R^3 are not both hydrogen, and where R^1, R^2, R^4 and R^5 are independently hydrogen, hydrocarbyl, halogen, nitro, cyano or halocarbyl, or (b) R^3 is haloalkyl and R^6 is haloalkyl but R^3 and R^6 are not the same haloalkyl, and R^1, R^2, R^4 and R^5 are halogen.

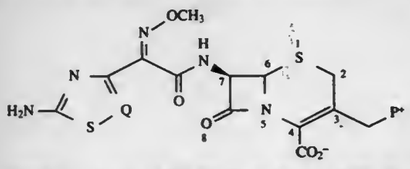
5,571,909

CEPHALOSPORIN COMPOUNDS AND PROCESSES FOR PREPARING THEREOF

Hokoon Park; Sun Ho Jung; Yong Sup Lee; Jae Yeol Lee, and Eun-Rhan Woo, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Jun. 7, 1994, Ser. No. 255,266
Claims priority, application Rep. of Korea, Jun. 9, 1993, 10422/1993
Int. Cl.[6] C07D *501/38*
U.S. Cl. 540—222 **3 Claims**

1. Quaternary ammonium cephalosporins with hydroxylated alicyclic or aliphatic amines represented as formula (I);



(I)

wherein Q is CH or N and P is selected from the group consisting of N-methyl-bis(2-hydroxyethyl)amine, rac-3,4-trans-dihydroxy-1-methylpyrrolidine, (3S, 4S)-3,4-dihydroxy-1-methylpyrrolidine, (3R, 4R)-3,4-dihydroxy-1-methylpyrrolidine, meso-3,4-dihydroxy-1-methylpyrrolidine, (2S,4R)-4-hydroxyl-1-methyl-2-pyrrolidinemethanol, 3,4,-cis-dihydroxy-1-methylpiperidine,3,4-trans-dihydroxy-1-methylpiperidine and tropine.

5,571,910

PROCESS FOR THE PREPARATION OF INTERMEDIATES USEFUL IN THE SYNTHESIS OF CEPHALOSPORINS

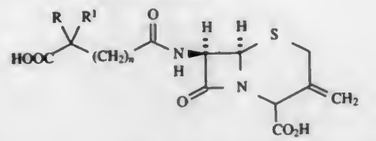
Derek Walker, Summit; Junning Lee, Gillette, both of N.J.; Charles R. Martin; Haiyan Zhang, both of Fort Collins, Colo.; Loris Sogli, Novara, and Ermanno Bernasconi, Caronno Varesino, both of Italy, assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 353,030, Dec. 9, 1994, abandoned. This application May 26, 1995, Ser. No. 451,287

Int. Cl.[6] C07D *501/22*

U.S. Cl. 540—230 **2 Claims**

1. A compound of the formula



wherein: n is 2 or 3;; R^1 is H and R is H or NHR^2, where R^2 is $C_6H_5C(O)$—; $C_6H_5CH_2OC(O)$—, or $(CH_3)_2CHCH_2OC(O)$—; or wherein R and R^1 together with the carbon to which they are attached comprise —C(O)—;

and salts thereof.

5,571,911

METHOD OF PURIFYING ORGANIC COMPOUNDS USING AN ENANTIOSELECTIVE RECEPTOR

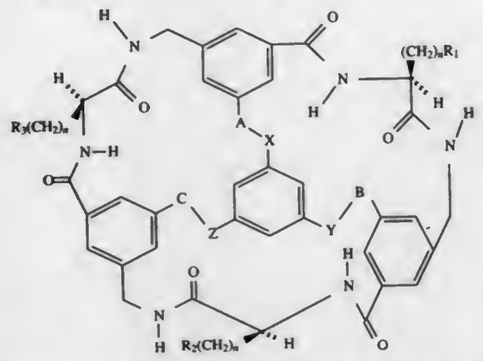
W. Clark Still, New York, N.Y.; Julian A. Simon, and Jong-In Hong, both of Cambridge, Mass., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Division of Ser. No. 901,401, Jun. 19, 1992, Pat. No. 5,342,934. This application Aug. 26, 1994, Ser. No. 296,814

Int. Cl.[6] C07D *487/18;513/18;498/18;* **C07B** *57/00*

U.S. Cl. 540—456 **2 Claims**

1. A method of obtaining a purified organic compound of interest from a mixture of organic compounds, which comprises contacting the mixture with a composition having the structure:



wherein each of A, B, C, X, Y, and Z is independently O, NH, $N(CH_2)_mCH_3$, $N(C{=}O)(CH_2)_mCH_3$, CH_2, S, or Se; each of R_1, R_2, and R_3 is independently phenyl, 4-hydroxyphenyl, pyridyl, pyrrolyl, indolyl, naphthyl, $(C{=}O)(CH_2)_pCH_3$, $NH(C{=}O)(CH_2)_pCH_3$, OH, COOH, NH_2, or SH; and m, n, and p are integers between 0 and 5, so that the organic compound of interest binds to the composition to form a complex, separating the resulting complex from the mixture, treating the complex so as to separate the organic compound from the composition, and recovering the purified organic compound of interest.

5,571,912

METHOD FOR THE PREPARATION OF 5,11-DIHYDRO-6H-DIPYRIDO [3,2-B:2',3'-E][1,4]DIAZEPINES

Karl G. Grozinger, Ridgefield; Karl D. Hargrave, Brookfield, and Julian Adams, Ridgefield, all of Conn., assignors to Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Conn.

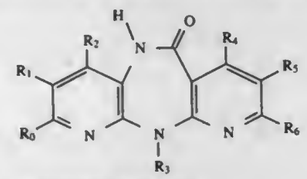
Continuation of Ser. No. 63,592, May 18, 1993, abandoned, which is a continuation of Ser. No. 769,094, Sep. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 600,451, Oct. 19, 1990, abandoned. This application Aug. 14, 1995, Ser. No. 515,093

Int. Cl.[6] C07D *471/14;* **A61K** *31/55*

U.S. Cl. 540—495 **11 Claims**

1. A method for the preparation of a compound of the formula:

(I)



wherein R_0 is hydrogen or halogen;

R_1 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy or alkylthio of 1 to 4 carbon atoms, alkoxycarbonyl of 2 to 4 carbon atoms, trihalomethyl, hydroxyalkyl of 1 to 4 carbon atoms, alkanoyl of 2 to 4 carbon atoms, alkanoyloxy of 2 to 4 carbon atoms, alkanoylamino of 1 to 4 carbon atoms, aminoalkyl of 1 to 4 carbon atoms, alkoxycarbonylalkyl wherein the alkoxy and alkyl moieties each contain 1 to 2 carbon atoms, carboxyalkyl of 2 to 4 carbon atoms, mono- or di-alkylamino wherein each alkyl moiety contains 1 to 2 carbon atoms, cyano, nitro, hydroxyl, carboxy, amino, mono- or di-alkylaminoalkyl wherein each alkyl moiety contains 1 to 2 carbon atoms, azido or halogen;

R_2 is hydrogen or alkyl of 1 to 3 carbon atoms, with the proviso that if R_1 is other than hydrogen or alkyl of 1 to 3 carbon atoms, then R_2 is hydrogen;

R_3 is alkyl or fluoroalkyl of 1 to 5 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, alkenyl or alkynyl of 2 to 5 carbon atoms, alkoxyalkyl or alkylthioalkyl of 2 to 4 carbon atoms, alkanoyl of 2 to 4 carbon atoms, hydroxylakyl of 2 to 4 carbon atoms, arylmethyl (wherein the aryl moiety is phenyl, thienyl or furanyl, which is either unsubstituted or substituted by alkyl or alkoxy of 1 to 3 carbon atoms, hydroxyl or halogen), phenyl (which is either unsubstituted or substituted by alkyl or alkoxy of 1 to 3 carbon atoms, hydroxy or halogen), or alkoxycarbonylmethyl wherein the alkoxy moiety contains 1 to 5 carbon atoms;

one of R_4, R_5 and R_6 is alkyl of 1 to 4 carbon atoms, alkenyl or alkynyl of 2 to 4 carbon atoms, trihalomethyl, hydroxyalkyl of 1 to 4 carbon atoms, alkyloxyalkyl or alkylthioalkyl of 2 to 4 carbon atoms, alkyloxycarbonylalkyl wherein the alkyl moieties each contain 1 to 2 carbon atoms, hydroxyl, alkyloxy or alkylthio of 1 to 4 carbon atoms, hydroxyalkyloxy of 2 to 4 carbon atoms, alkanoyloxy of 2 to 4 carbon atoms, alkylsulfinyl or alkylsulfonyl of 1 to 4 carbon atoms, alkanyol of 2 to 6 carbon atoms, alkoxycarbonyl wherein the alkyl moiety contains 1 to 3 carbon atoms, aminoalkyl of 1 to 4 carbon atoms, mono- or di-alkylaminoalkyl wherein each alkyl moiety contains 1 to 2 carbon atoms, halogen, cyano, nitro, azido or carboxyl, with the other two substituents being hydrogen; or,

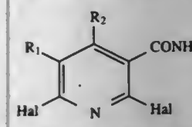
two of R_4, R_5 and R_6 are independently alkyl of 1 to 2 carbon atoms, trihalomethyl, alkyloxy or alkylthio of 1 to 2 carbon atoms, or halogen, with the remaining substituent being hydrogen; or

R_4, R_5 and R_6 are each hydrogen,

which method comprises the following steps:

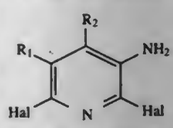
a) reacting a compound having the formula

(II)

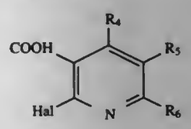


wherein Hal is halogen, and R_1 and R_2 are as defined above, with a base and a halide, in an aqueous solution, at about 0° C. to about 100° C., to produce a compound having the formula

(III)

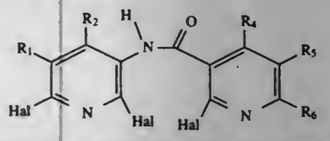


b) reacting the compound of formula III prepared in a), with a compound of the formula



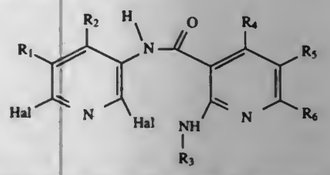
wherein Hal, R_4, R_5, and R_6 are as defined above, in an anhydrous organic solvent, between about 20° C. to about 80° C., to produce a compound having the formula

(IV)



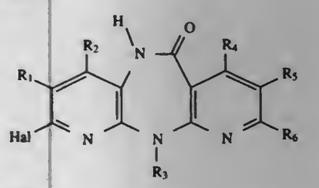
c) reacting the compound of formula IV prepared in b), with a compound of the formula R_3NH_2, in an inert organic solvent at between about 20° C. to about 150° C., to produce a compound of the formula

(V)



d) heating the compound of formula V prepared in c), in an inert organic solvent comprising sodium hydride at between about 60° C. to about 150° C. to produce a compound of the formula

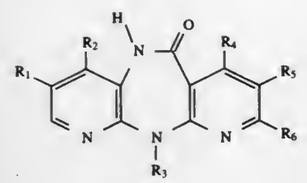
(Ia)



and, optionally,

e) hydrogenating the compound of formula Ia prepared in d), in the presence of a metal catalyst, between about 20° C. to about 100° C., to produce a compound of the formula

(Ib)



5,571,913

PROCESS FOR PREPARING A LACTAM

Petrus J. H. Thomissen, Lanaken, Belgium, assignor to DSM N.V., Heerlen, Netherlands

Filed Aug. 19, 1994, Ser. No. 293,098

Claims priority, application Belgium, Aug. 20, 1993, 09300848

Int. Cl.[6] C07D *201/02;201/04*

U.S. Cl. 540—532 **11 Claims**

1. Process for preparing a lactam from an alicyclic ketoxime in the presence of a lactim-O-sulphonic acid and a solvent, characterized in that the reaction is carried out essentially Lewis acid free in the presence of an acid cation exchanger, and wherein a molar excess of lactim-O-sulphonic acid is used relative to said alicyclic ketoxime.

5,571,914

4-DESOXY-4-EPIPODOPHYLLOTOXIN DERIVATIVE OR PHARMACEUTICALLY ACCEPTABLE SALT THEREOF

Tadafumi Terada, Saitama; Katsuhiko Fujimoto, Honjo; Makoto Nomura; Junichi Yamashita, both of Hannou; Setsuo Takeda, Tokushima; Takashi Kobunai, Naruto; Hideo Yamaguchi, Kawanishi, and Konstanty Wierzba, Saitama, all of Japan, assignors to Taiho Pharmaceutical Co. Ltd., Tokyo, Japan

Division of Ser. No. 375,565, Jan. 13, 1995, Pat. No. 5,489,698, which is a continuation of Ser. No. 924,079, Sep. 21, 1992. This application Jun. 6, 1995, Ser. No. 466,733

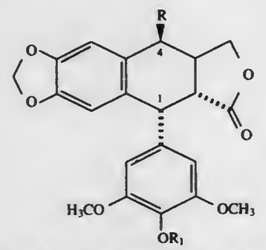
Claims priority, application Japan, Jan. 25, 1991, 3-87140; Mar. 26, 1991, 3-61706; Apr. 22, 1991, 3-90794

Int. Cl.[6] C07D *413/00;407/00*

U.S. Cl. 544—148 **3 Claims**

1. A 4-desoxy-4-epipodophyllotoxin derivative of the general formula:

(I)



wherein R_1 is a hydrogen atom, R is a group of the formula $—(CH_2)_nNR_2R_3$ where n is an integer of 1 to 4; R_2 is a group of the formula —N(Ra)(Rb) where Ra and Rb combine to form a lower alkyl-substituted piperazino group and R_3 is or a lower alkyl group which may be substituted by piperidino; or R_2 and R_3 combine to form a cyclic structure which may optionally include additional nitrogen atoms and may further have a lower alkyl group or piperidino group, as a substituent, or a pharmaceutically acceptable salt thereof.

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5,571,915
PROCESS FOR PREPARING AMIDE DERIVATIVES FROM HALOAMINOTRIAZINES AND ACID HALIDES

Ram B. Gupta, Bronx, N.Y., assignor to Cytec Technology Corp., Wilmington, Del.

Division of Ser. No. 150,679, Nov. 10, 1993, Pat. No. 5,405,959, which is a division of Ser. No. 968,871, Oct. 30, 1992, Pat. No. 5,288,865, which is a continuation-in-part of Ser. No. 793,077, Nov. 15, 1991, abandoned. This application Mar. 3, 1995, Ser. No. 398,256

Int. Cl.[6] C07D *251/48;251/54*

U.S. Cl. 544—200 **16 Claims**

1. A process for preparing an isocyanate adduct comprising the steps of:

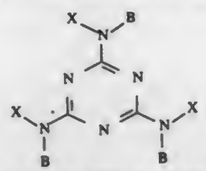
(a) contacting a haloaminotriazine with an acid halide at a temperature and for a length of time to produce an acid amide, wherein said acid halide is selected from the group consisting of phosgene and phosgene analogs; and

(b) decomposing said acid amide to produce said isocyanate compound; and

(c) contacting said isocyanate compound with an active hydrogen-containing compound to produce said isocyanate adduct,

wherein the haloaminotriazine is selected from the group consisting of

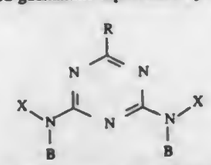
(i) a halogenated melamine represented by the formula I:



(I)

wherein each X group is the same or different and is selected from the group consisting of chloro, bromo, iodo and fluoro groups and wherein each B group is the same or different and is selected from the group consisting of hydrogen, chloro, bromo, iodo, fluoro, triazino, pyrimidino, pyridino, imidazolo, tetrazolo, silyl, cyano, perfluoroalkyl, perfluoroaryl, and perfluoroaralkyl groups;

(ii) a halogenated guanamine represented by the formula (II):



(I)

wherein X and B are the same as described above; and wherein R is selected from the group consisting of linear alkyl of 1 to 20 carbon atoms, cyclic or branched alkyl of 3 to 20 carbon atoms alkenyl of 2 to 20 carbon atoms, aryl of 6 to 20 carbon atom, aralkyl of 7 to 20 carbon atoms, alkylthio of 1 to 20 carbon atoms, arylthio of 6 to 20 carbon atoms, alkylamino of 1 to 20 carbon atoms, dialkylamino of 2 to 40 carbon atoms, morpholino, piperidino, pyrrolidino, hydrogen, chloro, bromo, iodo, fluoro, perfluoroalkyl, perfluoroaryl, and perfluoroaralkyl groups; and

(iii) a mixture of any of (i) and (ii).

5,571,916
PROCESS TO PREPARE DIAZINON

Elkana Gurfinkel, Omer, and Yaakov Shmuell, Beer Sheva, both of Israel, assignors to Makhteshim Chemical Works Ltd., Beer-Sheva, Israel

Filed Jul. 8, 1994, Ser. No. 271,988

Claims priority, application Israel, Jun. 23, 1994, 110096

Int. Cl.[6] C07F *9/6512*

U.S. Cl. 544—243 **22 Claims**

1. A process for preparing diazinon comprising reacting wet or dry 2-isopropyl-4-methyl-6-hydroxypyrimidine with thiophosphoryl chloride (TPC), by mixing said 2-isopropyl-4-methyl-6-hydroxypyrimidine with an aliphatic hydrocarbon solvent selected from the group consisting of petroleum ether having a boiling point of about 60°–140° C., hexane, heptane, octane, cyclohexane and a mixture thereof, and removing water by azeotropic distillation;

then adding dry potassium carbonate to the reaction mixture to convert said 2-isopropyl-4-methyl-6-hydroxypyrimidine to its potassium salt in the absence of water; and

adding less than a stoichometric amount of said TPC to form said diazinon, wherein the improvement comprises

using a mole ratio of potassium carbonate to 2-isopropyl-4-methyl-6-hydroxypyrimidine of 0.55 to 0.75, and further comprising

adding dry methyl ethyl ketone (MEK) following said azeotropic distillation and prior to adding said TPC.

12. A process for preparing diazinon comprising

reacting wet or dry 2-isopropyl-4-methyl-6-hydroxypyrimidine with thiophosphoryl chloride (TPC), by mixing said 2-isopropyl-4-methyl-6-hydroxypyrimidine with an organic solvent selected from the group consisting of petroleum ether having a boiling point of about 60°–140° C., hexane, heptane, octane, cyclohexane or a mixture thereof, and removing water by azeotropic distillation;

then adding dry potassium carbonate to the reaction mixture to convert said 2-isopropyl-4-methyl-6-hydroxypyrimidine to its potassium salt in the absence of water; and

adding less than a stoichometric amount of said TPC to form said diazinon, wherein the improvement comprises

adding dry methyl ethyl ketone (MEK) following said azeotropic distillation and prior to adding said TPC; and adding less than 1 mole of potassium carbonate per mole of 2-isopropyl-4-methyl-6-hydroxypyrimidine and optionally azeotropically distilling off water during the reaction with TPC.

5,571,917
TAXOID INTERMEDIATES

Hervé Bouchard, Ivry Sur Seine; Jean-Dominique Bourzat, Vincennes, and Alain Commercon, Virty-Sur-Seine, all of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

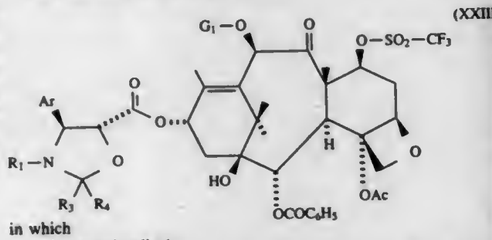
Continuation of Ser. No. 162,984, Dec. 8, 1993. This application Jun. 7, 1995, Ser. No. 474,417

Claims priority, application France, Dec. 9, 1992, 92 14813

Int. Cl.[6] C07D *263/04;413/12;413/00*

U.S. Cl. 544—369 **9 Claims**

1. A compound of the formula XXIII:



(XXIII)

in which

Ar is an aryl radical;

R_1 is a benzoyl radical or a radical R_2—O—CO—, wherein R_2 is a straight or branched alkyl radical containing 1 to 8 carbon atoms, an alkenyl radical containing 2 to 8 carbon atoms, an alkynyl radical containing 3 to 8 carbon atoms, a cycloalkyl radical containing 3 to 6 carbon atoms, a cycloalkenyl radical containing 4 to 6 carbon atoms or a bicycloalkyl radical containing 7 to 11 carbon atoms, these radicals being unsubstituted or substituted by one or more optionally substituted piperidine, morpholino, or 1-piperazinyl radicals;

R_3 and R_4, which are identical or different, are a hydrogen atom or an alkyl radical containing 1 to 4 carbon atoms, or an optionally substituted aralkyl radical whose alkyl portion contains 1 to 4 carbon atoms, or an optionally substituted aryl radical, or R_3 is an alkoxy radical containing 1 to 4 carbon atoms or a trihalomethyl radical or a phenyl radical substituted by a trihalomethyl radical and R_4 is a hydrogen atom, or R_3 and R_4 form, together with the carbon atom to which they are attached, a 4- to 7-membered ring; and

G_1 is a hydrogen atom or an acetyl, alkoxyacetyl or alkyl radical or a hydroxy-protecting group.

5,571,918
METHOD FOR PRODUCING 2-METHYLSPIRO(1,3-OXATHIOLANE-5,3')QUINUCLIDINE

Koji Hayashi; Sho Tokumoto; Hiroshi Yoshizawa; Tatsuo Isogai; Masaru Kimura; Masahiko Sawaki; Takayoshi Ando, all of Yokkaichi; Isamu Katsuyama, Kasugai; Hayato Ariyoshi, and Tadashi Nakamura, both of Yokkaichi, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

Filed May 11, 1995, Ser. No. 439,576

Claims priority, application Japan, May 19, 1994, 6-130907; Jun. 10, 1994, 6-152873; Sep. 27, 1994, 6-258802; Mar. 20, 1995, 7-087461

Int. Cl.[6] C07D *453/02*

U.S. Cl. 546—18 **16 Claims**

1. A method for producing 2-methylspiro(1,3-oxathiolane-5,3')quinuclidine, which comprises reacting 3-hydroxy-3-mercaptomethylquinuclidine or a salt thereof and a carbonyl compound in the presence of a catalyst made of at least one member selected from the group consisting of tin halides, oxyacids of phosphorus, phosphorus oxyhalides and organic sulfonic acids, to produce cis-form 2-methylspiro(1,3-oxathiolane-5,3')quinuclidine or a salt thereof.

5,571,919
DIMERIC NAPHTHYLISOQUINOLINE ALKALOIDS AND SYNTHESIS METHODS THEREOF

Gerhard Bringmann; Sven Harmsen, both of Wurzburg, Germany, and Michael R. Boyd, Ijamsville, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jul. 22, 1994, Ser. No. 279,339

Int. Cl.[6] C07D *217/02;217/04*

U.S. Cl. 546—146 **34 Claims**

1. A method of preparing a compound which comprises:

(a) selecting first and second naphthylisoquinoline alkaloid monomers, which are either the same or different,

(b) optionally introducing protective group(s) at desired site(s) in said monomers,

(c) introducing activation group(s) at the desired coupling site(s) of said monomers if needed for coupling of said monomers,

(d) coupling said first and second monomers to form a dimeric naphthylisoquinoline alkaloid, and

(e) optionally removing said protective group(s) from said dimeric naphthylisoquinoline alkaloid.

5,571,920
ALCOHOLS

Kevin E. B. Parkes, Letchworth; Sally Redshaw, Stevenage, and Gareth J. Thomas, Welwyn, all of Great Britain, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

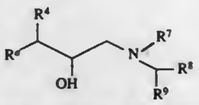
Division of Ser. No. 439,604, May 12, 1995, Pat. No. 5,516,913, which is a division of Ser. No. 128,978, Sep. 29, 1993, Pat. No. 5,451,678, which is a continuation of Ser. No. 615,204, Nov. 19, 1990, abandoned. This application Jan. 26, 1996, Ser. No. 592,796

Claims priority, application United Kingdom, Dec. 11, 1989, 8927915

Int. Cl.[6] C07D *217/00*

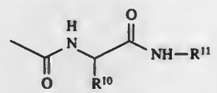
U.S. Cl. 546—146 **5 Claims**

1. A compound of formula



I

wherein R^a represents phthalimido; R^4 represents alkyl, cycloalkyl, cycloalkylalkyl, aryl or aralkyl; R^7 and R^8 together represent a tetramethlyene group which carries a fused aromatic ring; and R^9 represents alkoxycarbonyl, monoalkylcarbamoyl, monoaralkylcarbamoyl, monoarylcarbamoyl or a group of the formula



in which R^{10} and R^{11} each represent alkyl.

5,571,921
SUBSTITUTED (2-OXO-1-BENZIMIDAZOLINYL)-PEPERIDINES, PROCESS FOR THEIR PREPARATION, AND USE AS ANTI-RETROVIRAL AGENTS

Wolfgang Bender; Dieter Häbich, both of Wuppertal; Siegfried Raddatz, Köln; Wolfgang Röben, Bergisch Gladbach; Hanno Wild; Jutta Hansen, both of Wuppertal, and Arnold Paessens, Haan, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

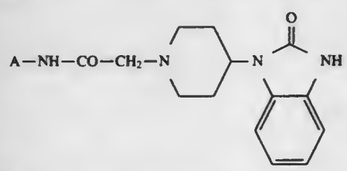
Continuation of Ser. No. 252,297, Jun. 1, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 470,372

Claims priority, application Germany, Jun. 8, 1993, 43 19 039.1

Int. Cl.[6] C07D *401/04*

U.S. Cl. 546—199 **13 Claims**

1. A substituted (2-oxo-1-benzimidazolinyl)-piperidine of the formula (I)



(I)

in which

A represents phenyl or naphthyl each of which is optionally substituted up to 4 times by identical or different substituents from the group consisting of halogen, carboxyl, nitro, hydroxyl, trifluoromethyl, cyano and straight-chain or branched alkyl, alkoxy, alkoxycarbonyl or alkylthio in each case having up to 8 carbon atoms, by cycloalkyl having 3 to 7 carbon atoms or by a group of the formula $—P(O)(OR^1)(OR^2)$, —CO—R^3, —CO—NR^4R^5, $—SO_2R^6$, $—NR^7R^8$, $—SO_2NR^9R^{10}$, —D—R^{11} OR —N=NR^{12}, in which

R^1 and R^2 are identical or different and denote hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms,

R^3 denotes straight-chain or branched alkyl having up to 6 carbon atoms, morpholine or phenyl which is optionally substituted by halogen,

R^4 and R^5 are identical or different and denote hydrogen, cycloalkyl having 3 to 7 carbon atoms, or straight-chain or branched alkyl having up to 6 carbon atoms, which is optionally substituted by phenyl, carboxyl or pyridyl, or by straight-chain or branched alkoxycarbonyl having up to 6 carbon atoms,

R^6 denotes phenyl or straight-chain or branched alkyl having up to 6 carbon atoms,

R^7 and R^8 are identical or different and denote hydrogen, phenyl, straight-chain or branched alkyl or acyl in each case having up to 6 carbon atoms, or a radical of the formula —C(S)—$NR^{15}R^{16}$, in which

R^{15} denotes hydrogen or methyl and

R^{16} denotes straight-chain or branched alkoxycarbonyl having up to 6 carbon atoms,

R^9 and R^{10} are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 6 carbon atoms or phenyl,

D denotes an oxygen or sulphur atom,

R^{11} and R^{12} are identical or different and denote phenyl which is optionally substituted by halogen,

or a salt thereof.

5,571,922

REACTIVE DILUENT ALDIMINE OXAZOLIDINES

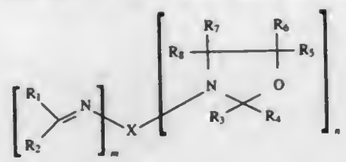
Chih-Yuch Chou, Elk Grove, Ill., assignor to Angus Chemical Company, Buffalo Grove, Ill.

Division of Ser. No. 143,470, Oct. 26, 1993, Pat. No. 5,466,769. This application Nov. 13, 1995, Ser. No. 556,025

Int. Cl.[6] C07D *263/02;413/00*

U.S. Cl. 548—215 **6 Claims**

1. An aldimine oxazolidine compound having the formula:



wherein: R_1, R_2, R_3, R_4, R_5, R_6, R_7 and R_8 are, individually, a hydrogen atom, a methyl or methylol group, an ethyl or ethylol group, a straight chain or branched chain alkyl or alkanol group, a cycloalkyl group, or an aryl group, including any of the above groups substituted by nitro, halogen, thiol and amino functional groups, such that when both R_7 and R_8 are hydrogen atoms, neither R_3 nor R_4 are hydrogen atoms; m and n are integers of one to three, and m+n is between two and four; and X is a covalent bond between the nitrogen atom of the aldimine group and the nitrogen atom of the oxazolidine group or an (m+n)-valent methylene group, ethylene group, straight chain or branched chain alkylene group, cycloalkylene group, or arylene group, including any of the above X groups substituted by nitro, halogen, thiol and amino functional groups.

5,571,923

1-ALKYL-, 1-ALKENYL-, AND 1-ALKYNLARYL-2-AMINO-1,3-PROPANEDIOLS AND RELATED COMPOUNDS

John J. Tegeler, Bridgewater; Barbara S. Rauckman, Flemington; Russell R. L. Harner, Lebanon; Brian S. Freed, Phillipsburgh, all of N.J., and Gregory H. Merriman, Fairfield, Ohio, assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 942,908, Sep. 10, 1992, Pat. No. 5,360,811, which is a continuation-in-part of Ser. No. 840,236, Feb. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 632,910, Dec. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 596,448, Oct. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 492,200, Mar. 13, 1990, abandoned. This application Apr. 21, 1995, Ser. No. 426,350

Int. Cl.[6] C07D *261/08*

U.S. Cl. 548—248 **1 Claim**

1. 3-(1-Dodecyl)-5-isoxazolemethanol.

5,571,924

PROCESS FOR THE PREPARATION OF BENZOTRIAZOLES

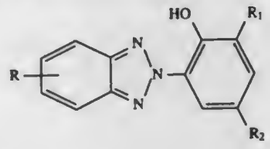
Jere K. Kaplan, Mobile, Ala.; Wolfgang J. Tritschler, Bad Säcklingen, Germany, and Gary Clauson, San Diego, Calif., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Jul. 12, 1995, Ser. No. 501,638

Int. Cl.[6] C07D *249/18*

U.S. Cl. 548—260 **25 Claims**

1. An improved process for the preparation of a 2-(2-hydroxyphenyl)-2H-benzotriazole of the formula I



(I)

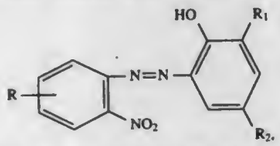
wherein

R is hydrogen, C_1-C_{12}alkyl, C_1-C_4alkoxy or halogen;

R_1 is hydrogen, C_1-C_{24}alkyl, C_5-C_{12}cycloalkyl, phenyl or phenyl-C_1-C_9alkyl;

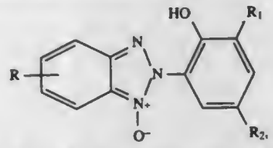
R_2 is C_1C_{24}alkyl, C_5-C_{12}cycloalkyl, phenyl, phenyl-C_1-C_9alkyl or a group $—C_nH_{2n}COOR_3$, in which n is 0 to 4 and R_3 is hydrogen or C_1-C_{24}alkyl or R_2 is $—(CH_2CH_2O)_xR_4$, in which x is 1 to 12 and R_4 is hydrogen or C_1-C_{24}alkyl, which process comprises the steps of

a) catalytically reducing an azo compound of the formula II



(II)

wherein R, R_1 and R_2 are as defined above, to an N-oxybenzotriazole compound of the formula III



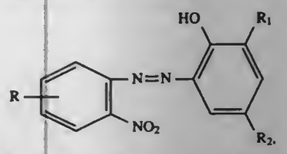
(III)

wherein R, R_1 and R_2 are as defined above, in the presence of an effective mount of hydrazine hydrate, a catalyst selected from the group consisting of Raney-Ni and the noble metals, an organic or

inorganic base, an organic solvent, and optionally water, the reaction being carried out at temperatures between 15° and 60° C;

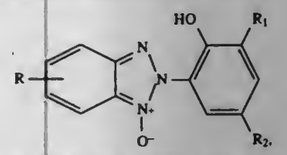
b) isolating said N-oxybenzotriazole compound; and

c) converting said isolated N-oxybenzotriazole compound to the corresponding benzotriazole compound of formula (I), wherein the improvement comprises catalytically reducing an azo compound of the formula II



(II)

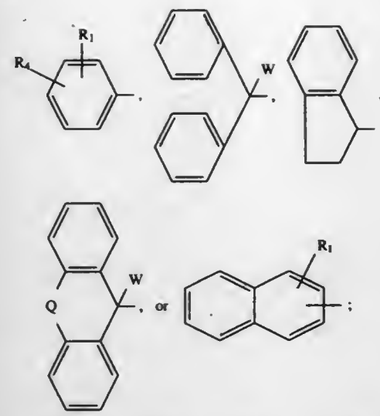
wherein R, R_1 and R_2 are as defined above, to an N-oxybenzotriazole compound of the formula III



(III)

wherein R, R_1 and R_2 are as defined above, in the presence of an effective amount of hydrazine hydrate, a catalyst selected from the group consisting of Raney-Ni and the noble metals, an organic or inorganic base, an organic solvent, and optionally water, the reaction being carded out at temperatures between 15° and 60° C.

Ar is



X is —CO—, —CONH—, —NHCO—, —CH_2CONH—, —O—, —NH—, —CH_2— or a bond;

each R_1 is independently $—(CH_2)_nR_3$;

R_2 is C_4–C_7 straight chain alkyl;

each R_3 is independently —OH, or —COOH;

each n is independently 0, 1, 2, 3, or 4;

R_4 is H, OH, halo, nitro, methyl, amino, acetamido, or methanesulfonamido;

Q is a bond or —O—; and

W is H, methyl, ethyl, or hydroxy.

5,571,925

ANGIOTENSIN II ANTAGONISTS

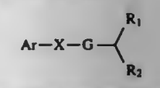
Sherryl L. Lifer, Indianapolis; Winston S. Marshall, Bargersville; Fariborz Mohamadi; Jon K. Reel, both of Indianapolis; Richard L. Simon, Greenwood; Mitchell L Steinberg, Indianapolis, and Celia A. Whitesitt, Greenwold, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 761,127, Sep. 17, 1991, Pat. No. 5,312,936, which is a division of Ser. No. 444,456, Nov. 30, 1989, Pat. No. 5,073,566. This application Jan. 19, 1994, Ser. No. 183,685

Int. Cl.[6] C07D *249/04;249/10;407/12;* **A61K** *31/40;31/41;31/415*

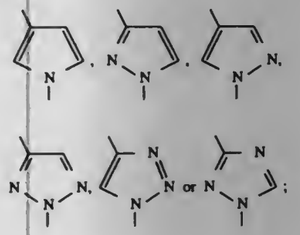
U.S. Cl. 548—267.6 **5 Claims**

1. A compound of the Formula:



I

or a pharmaceutically acceptable salt or solvate thereof where G is



5,571,926

ONE-STEP PROCESS FOR PREPARATION OF N-(4-SUBSTITUTED PYRAZOLYL) AMIDINES AS INTERMEDIATES IN PT-COUPLER SYNTHESIS

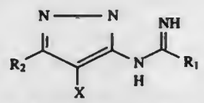
Sundaram Krishnamurthy, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 2, 1995, Ser. No. 614,610

Int. Cl.[6] C07D *231/38*

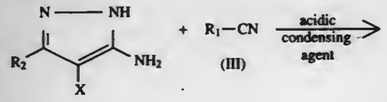
U.S. Cl. 548—371.7 **6 Claims**

1. A process for preparing a compound of formula (I)

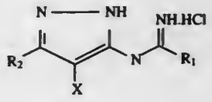


(I)

comprising reacting a compound of formula (V) with a compound of formula (III) in the presence of an acidic condensing agent as follows:



(V)



(I)

wherein, in each of the above structural formulae,

VOL 1192 ISS 1 NO 5 1996 UMI

R_1 is an alkyl group which be straight or branched and which may be substituted;

R_2 represents a member selected from the group consisting of hydrogen; alkyl which may be straight or branched and which may be substituted; alkoxy which may be substituted; alkylthio which may be substituted; aryl, aryloxy, and arylthio, each of which may be substituted; a heterocyclic group, a heterocyclic oxy group, and a heterocyclic thio group, each of which may be substituted and which contain a 3 to 7 membered heterocyclic ring composed of carbon atoms and at least one hetero atom selected from the group consisting of oxygen, nitrogen, and sulfur; cyano; an acyloxy group which may be substituted; a silyloxy group which may be substituted; a sulfonyloxy group which may be substituted; an acylamino group which may be substituted; an anilino group which may be substituted; an ureido group which may be substituted; an imido group which may be substituted; a sulfamoylamino group which may be substituted; an alkoxycarbonylamino group which may be substituted; an aryloxycarbonylamino group which may be substituted; a sulfonamido group which may be substiuted; a carbamoyl group which may be substituted; an acyl group which may be substituted; a sulfonyl group which may be substituted; a sulfinyl group which may be substituted; an alkoxycarbonyl group which may be substituted; an aryloxycarbonyl group which may be substituted; an alkenyl group which may be substituted; a carboxyl group which may be substituted; a sulfo group which may be substituted; hydroxyl; an amino group which may be substituted; and a carbonamido group which may be substituted;

wherein the substituents of the R_1 and R_2 groups, if present, are selected from the group consisting of halogen; alkyl; aryl; aryloxy; heterocyclic, heterocyclic oxy, and heterocyclic thio wherein the heterocyclic moiety is a 3 to 7 membered heterocyclic ring composed of carbon atoms and at least one hetero atom selected from the group consisting of oxygen, nitrogen and sulfur; cyano; alkoxy; acyloxy; carbamoyloxy; silyloxy; sulfonyloxy; acylamino; anilino; ureido; imido; sulfonylamino; carbamoylamino; alkylthio; arylthio; alkoxycarbonylamino; aryloxycarbonylamino; sulfonamido; carbamoyl; acyl; sulfamoyl; sulfonyl; sulfinyl; alkoxycarbonyl; aryloxycarbonyl; alkenyl; carboxyl; sulfo; hydroxyl; amino; and carbonamido; and

X is a coupling-off group.

5,571,927

ARENO [E]INDOLS, PREPARATION METHOD AND APPLICATION AS INTERMEDIATES IN THE SYNTHESIS OF PRODUCTS WITH ANTITUMORAL ACTIVITY

Koen Alexander, Amsterdam, Netherlands; Jose Delamano Garcia, Villagarcia de Arosa, Spain; Benedikt Sas, Turnhout, Belgium; Gabriel Tojo Suarez, Santiago de Compostela, and Dolores Garcia Gravalos, Madrid, both of Spain, assignors to Pharma-Mar, S.A.- Pharmar, Madrid, Spain

Filed May 19, 1994, Ser. No. 252,658

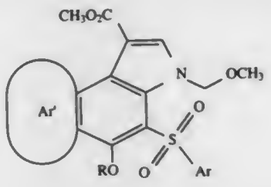
Claims priority, application Spain, Sep. 22, 1992, 9201894

Int. Cl.[6] C07D *487/02;209/56*

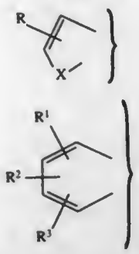
U.S. Cl. 548—433 **16 Claims**

1. A preparation method of new areno[e]indols, useful as intermediates in the synthesis of products with antitumoral activity, of formula:

(I)



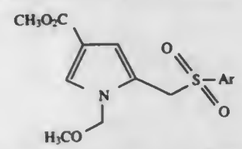
wherein: —Ar represents phenyl or substituted phenyl —Ar' represents a condensed radical of formulae:



wherein R, R^1, R^2, R^3 represent a hydrogen, a halide, a linear or branched alkyl, alkenyl or alkynyl radical, a formyl, acyl, carboxy, alkoxycarbonyl, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, cyano, hydroxy, alkoxy, amino, alkylamino, dialkylamino, acylamino or nitro radical; and X represents a substituted or unsubstituted nitrogen; whose method comprises the following steps:

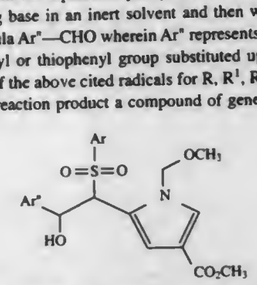
a) reacting a compound of general formula (VI):

(VI)



wherein Ar represents phenyl or substituted phenyl, with a strong base in an inert solvent and then with an aldehyde of formula Ar"—CHO wherein Ar" represents a phenyl, pyrrolyl, furanyl or thiophenyl group substituted up to three times by any of the above cited radicals for R, R^1, R^2 and R^3, obtaining as a reaction product a compound of general formula:

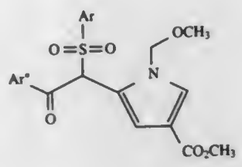
(VII)



wherein Ar and Ar" have the meaning given above;

b) oxidizing the compounds of general formula (VII) obtained in step a) in an inert solvent to obtain the corresponding ketone of general formula:

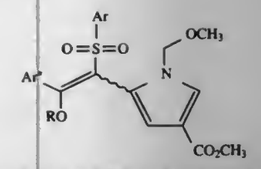
(VIII)



wherein Ar and Ar" have the meaning given above;

c) reacting the ketone of general formula (VIII) of step b) with a strong base in a suitable solvent and then with acyl chloride of general formula ClCOR obtaining products of general formula:

(IX)



wherein Ar, Ar" and R have the meaning given above;

d) subjecting the compounds of general formula (IX) obtained in step c) to a photochemical cycling process in an organic solvent in the presence of an oxidant and source of ultraviolet light, finally obtaining compounds of general formula (I).

5,571,928

4-AMINO-3-HYDROXY-PHTHALIMIDINE, AND A PROCESS FOR THE PREPARATION THEREOF

Jürgen Stoltefuss, Haan; Michael Negele, Solingen, and Friedrich Dürholz, Remscheid, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 19, 1995, Ser. No. 504,380

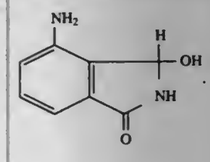
Claims priority, application Germany, Jul. 26, 1994, 44 26 374.0

Int. Cl.[6] C07D *209/48*

U.S. Cl. 548—481 **5 Claims**

1. 4-Amino-3-hydroxyphthalimidine of the formula (I)

(I)



5,571,929

RESOLUTION AND REDUCTION OF PHYSOSTIGMINE INTERMEDIATES AND DERIVATIVES

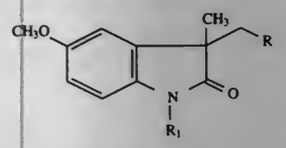
Xue F. Pei, Washington, D.C., and Arnold Brossi, Bethesda, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Dec. 7, 1994, Ser. No. 350,819

Int. Cl.[6] C07D *209/34*

U.S. Cl. 548—486 **29 Claims**

1. A method of separating a racemic mixture or a mixture enriched with one or other enantiomer, said mixture comprising the enantiomers of the compound of the formula:



wherein R is CN or CONHR' where R' is selected from the group consisting of a C_1–C_6 alkyl, hydrogen, and benzyl, and R_1 is selected from the group consisting of C_1–C_6 alkyl and benzyl, said method comprising contacting said mixture with a cellulosic solid phase material comprising microcrystalline cellulose triacetate, eluting said mixture in contact with said material with an eluant, and recovering an eluted product having an enantiomeric excess greater than that of said mixture.

5,571,930

INTERMEDIATE FOR PESTICIDAL AMINOMETHYLHETEROCYCLIC COMPOUNDS

Wolfgang Krämer, Burscheid; Joachim Weissmüller, Monheim; Dieter Berg, Wuppertal; Wilhelm Brandes, Leichlingen, and Stefan Dutzmann, Duesseldorf, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 443,522, May 18, 1995, Pat. No. 5,493,034, which is a division of Ser. No. 279,933, Jul. 25, 1994, Pat. No. 5,447,927, which is a division of Ser. No. 924,764, Aug. 3, 1992, Pat. No. 5,376,660, which is a division of Ser. No. 616,155, Nov. 20, 1990, Pat. No. 5,177,103, which is a division of Ser. No. 395,391, Aug. 17, 1989, Pat. No. 5,010,101. This application Sep. 26, 1995, Ser. No. 534,216

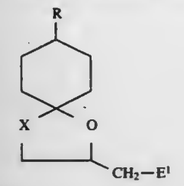
Claims priority, application Germany, Aug. 23, 1988, 38 28 545.2

Int. Cl.[6] C07D *327/04*

U.S. Cl. 549—30 **4 Claims**

1. A substituted heterocyclic compound of the formula

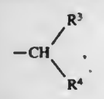
(II)



wherein

X represents sulphur,

R represents cycloalkyl having 3 to 7 carbon atoms or represents aryl which has 6 to 10 carbon atoms and is optionally substituted by one or more identical or different straight-chain or branched alkyl radicals having 1 to 12 carbon atoms, or represents the radical



R^3 represents hydrogen, or represents straight-chain or branched alkyl having 1 to 12 carbon atoms, or represents aryl which has 6 to 10 carbon atoms and is optionally substituted by one or more identical or different straight-chain or branched alkyl radicals having 1 to 12 carbon atoms, and

R^4 represents straight-chain or branched alkyl having 1 to 12 carbon atoms, or represents cycloalkyl having 3 to 7 carbon atoms, or represents aryl which has 6 to 10 carbon atoms and is optionally substituted by one or more identical or different straight-chain or branched alkyl radicals having 1 to 12 carbon atoms,

but wherein R^3 and R^4 may not simultaneously represent methyl.

5,571,931

PROCESS FOR THE SYNTHESIS OF VINYLDIOXO COMPOUNDS

Basil V. Gregorovich, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 186,367, Jan. 25, 1994, abandoned. This application May 5, 1995, Ser. No. 435,251

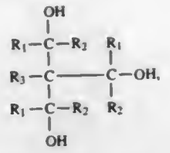
Int. Cl.[6] C07D *319/06*

U.S. Cl. 549—374 **6 Claims**

1. Process for the synthesis of 1,3-dioxo compounds substituted in the 2-position with a vinyl group, said process comprising:

A) selecting a vinyl aldehyde and a compound having at least three hydroxymethyl groups in positions separated by one carbon atom and having no other hydroxyl groups in its molecule, all the hydroxymethyl groups present being structurally equivalent, said compound being represented by the

following formula



where all R_1 groups are concurrently the same meaning and are selected from the group consisting of H, CH_3, CH_2CH_3, $[CH_2CH_3]$phenyl, Cl, F, and COOR;

all R_2 groups are concurrently the same meaning and are selected from the group consisting of H, CH_3, CH_2CH_3phenyl, Cl, F, and COOR; and

R_3 is selected from the group consisting of H, CH_3, CH_2CH_3, phenyl, Cl, F, and COOR; and

R is a C_1–C_{20} alkyl or a C_6–C_{10} aryl group;

B) contacting together the compounds selected in step A, above, in the presence of an aromatic hydrocarbon solvent having a boiling point of about 100°–115° C., and in the presence of an aliphatic hydrocarbon having a boiling point within the range of about 60–100° C. and being capable of forming a binary azeotrope with water within this temperature range; said aliphatic hydrocarbon being present in an amount of 5–30 weight percent, based on the total of the materials recited in step A above; plus any aromatic hydrocarbon solvent present; and the concentration of the materials selected in step A in the solution being about 50–95 weight percent;

C) refluxing the solution in the presence of a nonvolatile acid catalyst having a pK_a at room temperature in an aqueous medium of less than 5.0, and removing from the solution a binary azeotrope of water with the second, aliphatic hydrocarbon added in step B above, until the reaction is substantially complete;

D) separating the acid catalyst from the liquid phase; and

E) removing any organic liquids present in the liquid phase and recovering the reaction product.

5,571,932

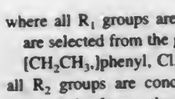
PERFLUORODIOXOLES, THE PREPARATION PROCESS THEREOF, AND HOMOPOLYMERS AND COPOLYMERS OBTAINED THEREFROM

Walter Navarrini, Boffalora Ticino; Vito Tortelli; Pasqua Colaianna, both of Milan, and Julio A. Abusleme, Saronno, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Division of Ser. No. 466,387, Jun. 6, 1995, Pat. No. 5,495,828, which is a division of Ser. No. 270,149, Jul. 1, 1994, Pat. No. 5,498,682. This application Nov. 21, 1995, Ser. No. 560,196
Claims priority, application Italy, Jul. 1, 1994, MI93A1445
Int. Cl.[6] C07D *317/00*

U.S. Cl. 549—455 **3 Claims**

1. A process for preparing perfluorodioxoles having the following formula:



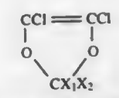
(I)

wherein:

R_F is a perfluoroalkyl radical having from 1 to 5 carbon atoms; and X_1 and X_2, equal or different from each other are F or CF_3,

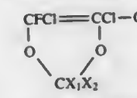
which comprises:

1°) reacting at a temperature of from −140° C. to +60° C. a dioxole of formula:



(II)

(wherein X_1 and X_2, equal or different from each other, are F or CF_3) with a fluorooxycompound of formula R_FOF (wherein R_F is a perfluoroalkyl radical having from 1 to 5 carbon atoms), obtaining a dioxolane of formula:



(III)

2°) dehalogenating the dioxolane (III) by reaction with a metal in an aprotic polar solvent.

5,571,933

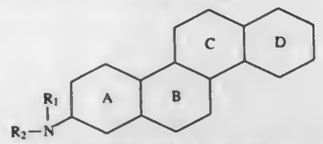
DERIVATIVES OF ESTRA 1,3,5(10)TRIENE-17-ONE, 3-AMINO COMPOUNDS AND THEIR USE

Pui-Kai Li, Library, and Kyle W. Selcer, Export, both of Pa., assignors to Duquesne University of the Holy Ghost, Pittsburgh, Pa.

Filed Nov. 17, 1994, Ser. No. 341,410
Int. Cl.[6] C07J *41/00*

U.S. Cl. 552—521 **18 Claims**

1. A compound comprising the formula (5)



(5)

wherein (a) R_1 is hydrogen and R_2 is selected from the group consisting of SO_2CF_3, SO_2NH_2, $COCF_3$, $CONH_2$, and (b) the ring system ABCD is asteroid nucleus selected from the group consisting of estrone, dehydroepiandrosterone, estradiol, estradiolester, pregnenolone, substituted estrones, substituted dehydroepiandrosterone, substituted estradiols, substituted estradiolesters and substituted pregnenolone.

5,571,934

PROCESS FOR PREPARING SOLUTIONS OF POLYHYDROXY-FATTY ACID AMIDES HAVING GOOD COLOR QUALITY, AND THEIR USE

Bernd Papenfuhs, Neuötting, and Reinhard Vybiral, Burgkirchen, both of Germany, assignors to Hoechst AG, Germany

Filed Aug. 1, 1995, Ser. No. 509,765
Claims priority, application Germany, Aug. 2, 1994, 44 27 301.0
Int. Cl.[6] C07C *231/22;231/24*

U.S. Cl. 554—70 **10 Claims**

1. A process for preparing a solution, of improved color, of polyhydroxy-fatty acid amide from N-alkylpolyhydroxyamine and fatty acid alkyl ester, which comprises mixing at least one salt compound of the dithionous acid into the crude solution in an effective to improve the color thereof amount.

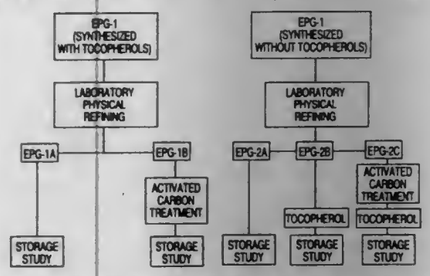
5,571,935

PROCESS FOR PRODUCING ESTERIFIED ALKOXYLATED POLYOLS WITH IMPROVED STABILITY

Bernard C. Sekula, High Bridge; Thaddeus R. Ziegert, Hackettstown, both of N.J., and Michael R. Ferenz, Coatesville, Pa., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Jan. 14, 1994, Ser. No. 182,267
Int. Cl.[6] C11C *3/00*

U.S. Cl. 554—168 **21 Claims**



1. A method for the preparation of an esterified alkoxylated polyol exhibiting improved oxidative and flavor stability which comprises the steps of:

(a) alkoxylating the polyol;

(b) esterifying the alkoxylated polyol with an excess of saturated or unsaturated fatty acids; and

(c) steam stripping the esterified alkoxylated polyol;

wherein an antioxidant is added to the alkoxylated polyol or the fatty acids.

5,571,936

INTERMEDIATES FOR THE SYNTHESIS OF 16-PHENOXY-PROSTATRIENOIC ACID DERIVATIVES AND A PREPARING METHOD THEREOF

Hokoon Park; Sun Ho Jung; Yong Sup Lee, and Ki Hong Nam, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Sep. 30, 1994, Ser. No. 316,205
Int. Cl.[6] C07C *69/587*

U.S. Cl. 560—121 **3 Claims**

1. A method for preparing a compound represented as formula II comprising the steps of:

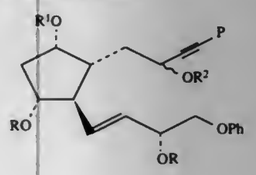
reacting a compound represented as formula I in which R^1 and R^2 are acetyl, and P is hydrogen with a butyldimethylsilyloxypropylmagnesium bromide to give an allene compound represented as formula VIII, in the presence of copper iodide triethylphosphite complex;

reacting the allene compound represented as VIII with a tetranbutylammonium fluoride to give an allene compound represented as formula IX;

treating the compound represented as formula IX with potassium carbonate in methanol and pyridinium dichromate in methylene chloride;

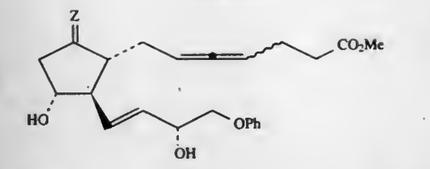
reacting the resultant compound with pyridinium dichromate in N,N-dimethylformamide and methanol; and

treating the resultant compound with a mixture of formic acid, H_2O and tetrahydrofuran

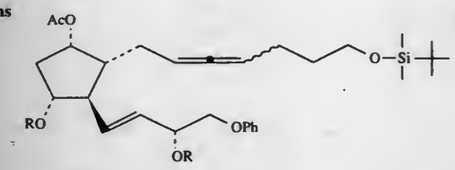


(I)

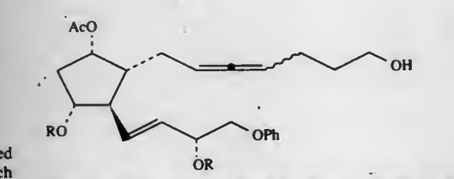
-continued



(II)



(VIII)



(IX)

wherein R is tetrahydropyranyl, tetrahydrofuranyl, 2-ethoxyethyl, 3-t-butyldimethylsilyltriisopropylsilyl or triethylsilyl group; and Z is alpha-hydroxyl group or oxygen.

5,571,937

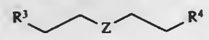
COMPLEMENTARY DNA AND TOXINS

Kyoichi A. Watanabe, Port Chester; Wu-Yun Ren, New Rochelle, both of N.Y., and Roger Weil, Geneva, Switzerland, assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y., and ZW Biomedical Research AG, Bern, Switzerland

Filed May 13, 1994, Ser. No. 242,664
Int. Cl.[6] C07F *9/22;9/28;* **C07C** *321/00;323/00*

U.S. Cl. 560—147 **3 Claims**

1. A compound having the formula:



wherein

R^3 is a suitable protecting group;

Z is $—SO_2—$ or —S—S—;

R^4 is —OH, a H-phosphonate, an alkane-phosphonate, a phosphite diester, a phosphite triester, a phosphotriester, a phosphorothioate, a phosphorodithioate, a phosphoroamidate, or a phosphoroamidite.

5,571,938

AN ESTERIFICATION PROCESS USING A CATALYST CONSISTING OF SAND, STANNOUS AND ALUMINATE

Stan Jakubowycz, 504 Albermarle Rd., Bricktownship, N.J. 08724

Division of Ser. No. 172,703, Dec. 27, 1993, Pat. No. 5,462,906. This application Jul. 31, 1995, Ser. No. 509,609
Int. Cl.[6] C07C *67/00*

U.S. Cl. 560—204 **7 Claims**

1. A process for the production of esters boiling above 100° C. which comprises reacting an alcohol component with an organic acid or anhydride component, at a temperature greater than 100° C., in the presence of an esterification catalyst composition wherein said catalyst composition consists essentially of:

(1) sand;

(2) a source of stannous tin; and
(3) an aluminate wherein said catalyst composition in the presence of water forms stannous and aluminate ions; wherein said source of stannous tin is selected from the group consisting of stannous acetate, stannous tartrate, stannous benzoate, stannous citrate, stannous oxalate, stannous phthalate, stannous sebacate, stannous formate, stannous octoate, dibutyl tin oxide and mixtures thereof; wherein said aluminate is selected from the group consisting of sodium aluminate, potassium aluminate, magnesium aluminate, cesium aluminate, and mixtures thereof; and wherein said sand has particle sizes predominantly in the range of from about 5 microns to about 18 microns in diameter.

5,571,939

METHOD FOR PREPARING DODECAHYDRO-3A,6,6,9A-TRETRAMETHYLNAPHTHO[2,1-B]FURAN AND NOVEL HALOETHYL DECALIN DERIVATIVES

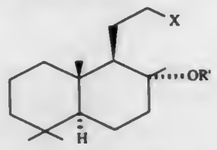
Philip A. Christenson, Midland Park, N.J., assignor to BASF Corporation, Mount Olive, N.J.

Division of Ser. No. 104,317, Aug. 9, 1993, Pat. No. 5,434,300, which is a division of Ser. No. 408,876, Sep. 18, 1989, Pat. No. 5,235,098, which is a continuation-in-part of Ser. No. 65,426, Jun. 23, 1987, abandoned. This application Jul. 17, 1995, Ser. No. 503,118

Int. Cl.[6] C07C *69/013*; C07D *311/92;303/14*

U.S. Cl. 560—256 **3 Claims**

1. A decalin derivative of the formula



wherein X is chloro, bromo, or iodo and R' is C_2 to C_5 alkanoyl.

5,571,940

METHOD FOR MAKING CONJUGATE MOIETIES CAPABLE OF CHELATING PARAMAGNETIC METALS AND DESIGNED FOR COUPLING WITH A FACTOR RESPONSIVES TO SPECIFIC CELLULAR MARKER SITES

Paul Palacios, Madrid, Spain, assignor to Bracco International B.V., Netherlands

Division of Ser. No. 975,533, Feb. 18, 1993, Pat. No. 5,414,114. This application Feb. 3, 1995, Ser. No. 386,661

Claims priority, application Switzerland, Jul. 22, 1991, 91 810589.1

Int. Cl.[6] C07C *229/04;321/14*; C07D *233/04*

U.S. Cl. 562—556 **2 Claims**

1. Polyalkylaminopolycarboxylic chelatants having a reactive end group X^1 for coupling to proteins and having formula III

$$X^1—Alk—NH—(CO—CH—NH)_n—MY\ Z\text{-}NH\text{-}MY \qquad (III)$$

where
X^1 is a —CHO or —SH group;
Alk is a C_1 to C_4 alkylene, optionally interrupted by a —S— bond;
Z is a C_1 to C_4 alkylene, optionally interrupted by a —COO— bond;
at least one Y represents a polyalkyleneamino-polycarboxylic acid chelatant molecule, the other Y being either in its free acid form or as complex with paramagnetic ions;
n is an integer from 0 to 100; and
M represents a link between —NH and Y, said link being either an amido bond involving a —CO of Y and said —NH of III, or an organic bridging substituent connecting to an alkylene carbon of Y, said bridging substituent resulting from bridging functional groups selected from the group consisting of isocyanato-, isothiocyanato-, bromoacetamido-, diazo-, N-hydroxysuccinimide esters and intermolecular or intramolecular anhydrides-.

5,571,941

PROCESS FOR THE PURIFYING OF IOPAMIDOL

Marco Villa, and Maurizio Paiocchi, both of Milan, Italy, assignors to Zambon Group S.p.A., Vicenza, Italy

Filed Jul. 29, 1994, Ser. No. 281,985

Claims priority, application Italy, Jul. 30, 1993, MI93A1720; Apr. 20, 1994, MI94A0760

Int. Cl.[6] C07C *231/22*

U.S. Cl. 564—153 **4 Claims**

1. A process for purifying L-5-α-hydroxypropionylamino-2,4,6-triiodo-isophthalic acid bis-(1,3-dihydroxyisopropylamide) (Iopamidol) comprising the steps of:
dissolving a crude solid of Iopamidol in sec-butanol; and
crystallizing pure Iopamidol therefrom, wherein said pure Iopamidol has less residual solvent than said crude Iopamidol.

5,571,942

RING-SUBSTITUTED 2-AMINO-1,2,3,4-TETRAHYDRONAPHTHALENES AND 3-AMINOCHROMANES

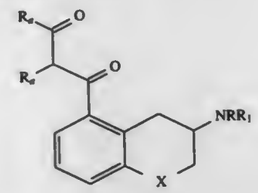
Craig S. Hoechstetter; Diane L. Huser, both of Indianapolis; John M. Schaus, Zionsville, and Robert D. Titus, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 653,583, Feb. 8, 1991, abandoned. This application Aug. 22, 1995, Ser. No. 517,781

Int. Cl.[6] C07C *225/20*

U.S. Cl. 564—428 **4 Claims**

1. A compound of the formula



in which R is C_1-C_4 alkyl, allyl or cyclopropylmethyl;
R_1 is hydrogen, C_1-C_4 alkyl, allyl, cyclopropylmethyl or aryl (C_1-C_4 alkyl);
X is $—CH_2—$; and
each R_a is independently hydrogen, C_1-C_4 alkyl, halogen, hydroxy, C_1-C_4 alkoxy, C_1-C_4 alkylthio, amino, cyano or phenyl.

5,571,943

PROCESS FOR PREPARING PRIMARY AMINES AND CATALYST SYSTEM SUITABLE THEREFOR

Frederik Borninkhof, Nieuwegein; John W. Geus, Bilthoven, and Michiel J. F. M. Verhaak, Alkmaar, all of Netherlands, assignors to Engelhard De Meern B.V., De Meern, Netherlands

Continuation of Ser. No. 45,817, Apr. 9, 1993, abandoned. This application Mar. 28, 1995, Ser. No. 411,388

Claims priority, application Netherlands, Apr. 13, 1992, 9200685; Jul. 17, 1992, 9201291

Int. Cl.[6] C07C *209/48*

U.S. Cl. 564—493 **24 Claims**

1. A process for preparing primary amines by hydrogenation of mono and/or dinitrile with hydrogen, comprising the steps of:
providing a mono and/or dinitrile to be hydrogenated;
providing a catalyst comprising nickel and/or cobalt on a support, said catalyst having substantially no acid sites; and
hydrogenating said mono and/or dinitrile with hydrogen in the presence of said catalyst, wherein said hydrogenation takes place in a substantially diluent-free environment with respect to said catalyst, said hydrogenation resulting in a high selectivity of primary amine.

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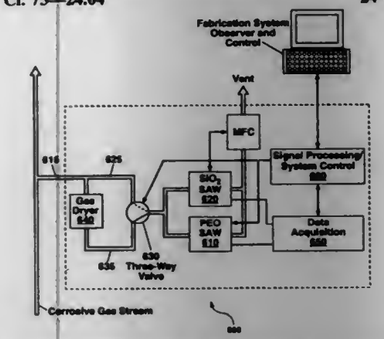
ACOUSTIC WAVE (AW) BASED MOISTURE SENSOR FOR USE WITH CORROSIVE GASES

Kent B. Pfeifer, Los Lunas; Gregory C. Frye, Cedar Crest, and Thomas W. Schneider, Albuquerque, all of N.M., assignors to Sandia Corporation, Albuquerque, N.M.

Filed Dec. 20, 1994, Ser. No. 359,510

Int. Cl.[6] G01N *29/02*; H01L *41/04;41/18*

U.S. Cl. 73—24.04 **24 Claims**



1. A sensor system for detecting moisture in a corrosive gas, comprising:

a) a sensing acoustic wave moisture detector having a sensing film comprising a porous hydrophilic dielectric material, said detector producing a moisture sensing frequency;

b) a reference acoustic wave moisture detector having a reference film comprising a porous hydrophilic dielectric material, said detector producing a moisture reference frequency;

c) a sensing acoustic wave corrosive gas detector comprising a corrosive gas sensing film of a heterochain-thermoplastic material, said detector producing a corrosive gas sensing frequency;

d) a reference acoustic wave corrosive gas detector comprising a corrosive gas reference film of a heterochain-thermoplastic material, said detector producing a corrosive gas reference frequency;

e) means for controllably extracting the moisture from the corrosive gas to form a dry corrosive gas;

f) means for alternately directing the flow of the dry corrosive gas and the corrosive gas across the porous hydrophilic dielectric and the heterochain-thermoplastic sensing detectors;

g) means for generating a first output related to the change in relative frequency between the moisture sensing frequency and the moisture reference frequency;

h) means for generating a second output related to the change in relative frequency between the corrosive gas sensing frequency and the corrosive gas reference frequency; and

i) means for combining the first and second output, thereby determining the moisture content in the corrosive gas.

5,571,945

METHOD AND APPARATUS TO MEASURE PARTICULATE MATTER IN GAS

Petros Koutrakis, 24 Ashmont Rd., Wellesley, Mass. 02181; Peng-Yau Wang, Nine Peabody Terr., Cambridge, Mass. 02138; Jack M. Wolfson, 428 Centre St., Jamaica Plain, Mass. 02130, and Constantinos Sioutas, Four Goodwin Pl., Apt. #4, Boston, Mass. 02114

Filed Mar. 13, 1995, Ser. No. 403,321

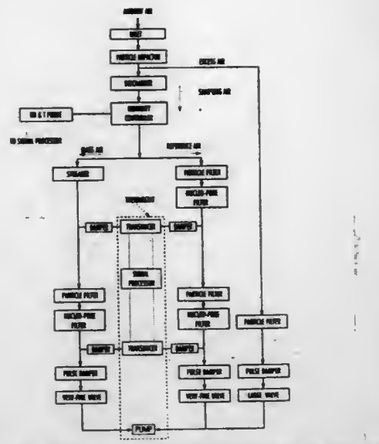
Int. Cl.[6] G01N *15/06*

U.S. Cl. 73—28.03 **19 Claims**

1. Apparatus for measuring the amount of particulate matter in a gas, comprising:

a gas supply,

a first particulate matter collector downstream of said gas supply and in gaseous communication with said gas supply,



a second particulate matter collector downstream of said gas supply and in gaseous communication with said gas supply wherein gas from said gas supply to said second particular matter collector is passed through a particle remover to remove particulate matter prior to contact of gas from said gas supply with said second particulate matter collector,

a pressure sensor to measure differential pressure between the downstream side of said first particulate matter collector and the downstream side of said second particulate matter collector, and at least one pump to cause gas to pass from said gas supply to said first particulate matter collector and said second particulate matter collector,

wherein said particulate matter collectors are non-hygroscopic polycarbonate membranes having pores normal to the surface.

5,571,946

APPARATUS FOR AUTOMATICALLY MEASURING DUST CONCENTRATION IN FLUE GAS

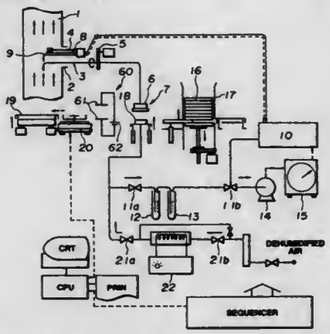
Hideyuki Koshi; Hiroshi Funanokawa; Satoshi Doi; Kunihiro Kondo; Toshiyuki Umeda; Toshihiro Takahashi, all of Kawasaki-ku, and Megumi Kikkawa, Hiroshima, all of Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Sep. 7, 1994, Ser. No. 301,851

Claims priority, application Japan, Sep. 9, 1993, 5-224423; Aug. 22, 1994, 6-196432

Int. Cl.[6] G01N *37/00*

U.S. Cl. 73—28 **15 Claims**



1. An apparatus for automatically measuring dust concentration in flue gas travelling in a gas duct, comprising:

(a) sampling means for sampling dust in flue gas;

(b) measuring means for measuring a volumetric gas flow rate of the flue gas;

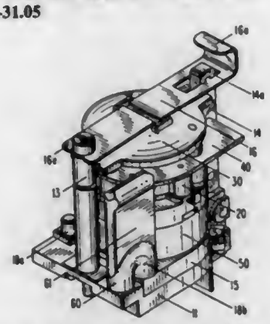
(c) feeding and weighing means for feeding and weighing a filter paper for filtering the sampled gas, said feeding and weighing means comprising:
(i) a filter paper cassette for storing the filter paper,
(ii) a filter paper stocker for storing a plurality of the filter paper cassettes,
(iii) a cassette pusher unit for pushing a filter paper cassette out of the filter paper stocker,
(iv) a filter paper ascending unit for raising the filter paper,
(v) a filter paper drier for drying the filter paper,
(vi) a filter paper transfer arm for transferring the filter paper between the filter paper cassette, the filter paper ascending unit and the filter paper drier,
(vii) a vibration-free balance for balancing the filter paper, and
(viii) a hot air generation unit; and
(d) controlling means for transmitting data among said dust sampling means, said measuring means, and said feeding and weighing means, and for controlling a sequence of operations thereof.

5,571,947

MEASURING ASSEMBLY FOR STUDYING GASEOUS MEDIA

Jürgen Senn, Freiburg, and Kurt Strnad, Lenzkirch, both of Germany, assignors to Testo GmbH & Co., Lenzkirch, Germany

Filed May 8, 1995, Ser. No. 436,149
Claims priority, application Germany, May 20, 1994, 44 17 665.1
Int. Cl.[6] B01L *3/00*; G01N *27/56*
U.S. Cl. 73—31.05 **8 Claims**



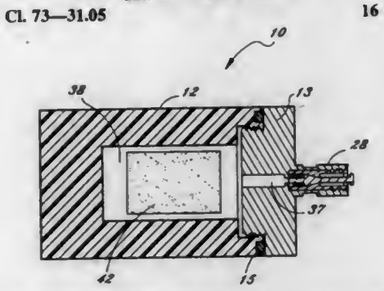
1. A measuring assembly for sensing gaseous media, comprising:
a) an electrical measuring cell having an inlet opening for introducing gas thereto and an outlet for dismissing gas therefrom for generating electrical signals in accordance with the concentration and/or composition of the gaseous medium introduced to said measuring cell;
b) a signal processing circuit connected to said measuring cell for receiving and evaluating said electrical signals, said circuit being arranged on a circuit board;
c) a receptacle including a base plate and a cover plate between which said measuring cell is located;
d) means for electrically and mechanically connecting said circuit board to the said measuring cell in a releasable manner so that said measuring cell with said circuit board is disposed between said base plate and said cover plate whereby said measuring cell may be readily replaced with another;
e) said cover plate comprising a pressure plate constructed to press said measuring cell against said base plate with a uniform pressure distribution; and
f) a pressure spring connected in a retaining position to said receptacle to abut an adjacent surface of said pressure plate and to impose a defined tension on a said pressure plate and movable from said retaining position to permit the replacement of said measuring cell.

5,571,948

PRESSURIZED AIR TANK AIR QUALITY TESTER

Lawrence Kaplan, Miami Beach, and Robert Laughlin, Miami, both of Fla., assignors to Lawrence Factor, Inc., Hialeah, Fla.

Filed May 22, 1995, Ser. No. 445,756
Int. Cl.[6] G01N *37/00*
U.S. Cl. 73—31.05 **16 Claims**



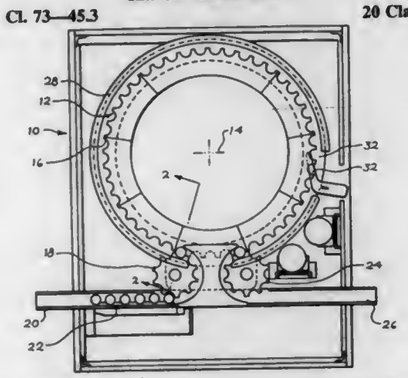
1. An apparatus for testing air quality of a pressurized air source, comprising:
a housing having a longitudinal bore disposed therein, said housing having a first end and a second end;
said bore penetrating said first end and not penetrating said second end;
a closure disposed on said first end for sealing said housing and for forming an airtight test chamber therein;
a valve connector connected to said first end for fluidly communicating said air source with said test chamber; and
an indicating cartridge removably disposed within said test chamber for indicating by color an excessive amount of a contaminant contained within said test chamber.

5,571,949

LEAK DETECTION DEVICE AND COMPONENTS THEREFOR

Donald N. MacLaughlin, Midland, Mich., assignor to Packaging Resources Incorporated, Coleman, Mich.

Filed Jul. 14, 1995, Ser. No. 502,832
Int. Cl.[6] G01M *3/04*
U.S. Cl. 73—45.3 **20 Claims**



1. A leak detection device for containers, each of said containers comprising an opening, said device comprising:
a container-rotating disc mounted for rotation about a rotation axis;
a plurality of container-supporting test heads mounted to the disc for rotation about the rotation axis, each test head comprising a sealing assembly and a piston, each sealing assembly supported by a first cam follower and comprising a cylinder, and each piston supported by a second cam follower and received in the respective cylinder, each of the sealing assemblies comprising a seal configured to create a seal with one of the containers around the opening; and
first and second annular cams, both mounted on a first side of the disc, the first and second cams coupled to the first and second cam followers, respectively, such that the sealing assemblies and the pistons are moved between respective upper and lower positions as the disc rotates with respect to the cams;
said cams shaped to press the sealing assemblies against the containers, to raise the pistons to draw a partial vacuum in the containers, and then to lift the sealing assemblies and any sealed containers for a vacuum test.

5,571,950

METHOD FOR TESTING SOOT-RELATED VISCOSITY INCREASE

Malcolm Waddoups, Westfield, and Arunas T. Lapinas, Pittstown, both of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Apr. 28, 1994, Ser. No. 234,079
Int. Cl.[6] G01N *33/28*
U.S. Cl. 73—53.05 **13 Claims**

1. A method for testing a sample for soot related viscosity increase, the method comprising:
(a) obtaining a sample which comprises a major amount of an oil of lubricating viscosity,
(b) measuring the viscosity of the oil;
(c) preparing a stable sample/paste dispersion of the sample and carbon black paste;
(d) equilibrating the sample/paste dispersion, and
(e) measuring the viscosity of the sample paste dispersion, wherein shear is added to mimic the shear effects of an engine environment at any time after said step (a).

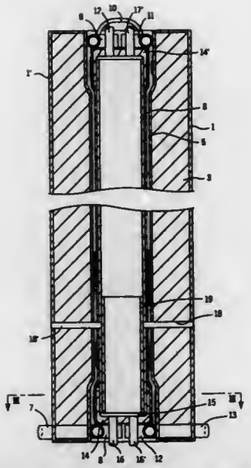
5,571,951

APPARATUS AND A METHOD FOR THE TESTING OF CONCRETE FOR USE WHEN CEMENTING CASINGS IN OIL AND GAS WELLS

John K. Jamth, Randaberg, Norway, assignor to Veba AS, Norway

PCT No. PCT/NO92/00128, § 371 Date Feb. 3, 1995, § 102(e) Date Feb. 3, 1995, PCT Pub. No. WO94/03803, PCT Pub. Date Feb. 17, 1994
PCT Filed Aug. 7, 1992, Ser. No. 379,522
Int. Cl.[6] G01N *11/00*
U.S. Cl. 73—54.03 **21 Claims**

1. An apparatus for testing a sample of a concrete/cement mixture intended for use under conditions in which the mixture is subjected to gas pressures, said apparatus enabling such testing to be carried out under pressure conditions resembling those to which the concrete/cement mixture may be subjected in use, said apparatus comprising:
chamber means for forming a tubular chamber;
an elongated, closable, tubular test container for receiving wet concrete/cement mixture to form a columnar concrete/cement mixture sample in the test container, said container having first and second, spaced ends and a side wall extending between said ends, said container being placed in said chamber of said chamber means;
first gas inlet means communicating with said test container at said first end thereof, said first gas inlet means supplying gas to said test container at said first end thereof to apply pressure to the sample in said test container;
second gas inlet means communicating with said test container at a location along the side wall of said test container that is adjacent to, but spaced from, an end of said test container, said second gas inlet means supplying gas to the exterior of the sample in said test container for establishing a differential overpressure along the columnar sample;



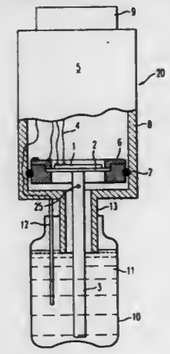
measuring means coupled to said test chamber for measuring the pressure to which the sample is subjected as a result of the gas supplied by said first gas inlet means;
measuring means coupled to said second end of said test chamber for measuring the amount of gas exiting from said concrete/cement mixture; and
measuring means coupled to said test chamber for measuring the overpressure within said test container caused by the gas supplied through said second gas inlet means.

5,571,952

ELECTRONIC VISCOMETER

James J. Kauzlarich, Charlottesville, Va., assignor to University of Virginia Patent Foundation, Charlottesville, Va.

Filed Apr. 6, 1995, Ser. No. 418,112
Int. Cl.[6] G01N *11/10*
U.S. Cl. 73—54.24 **6 Claims**



1. An electronic viscometer, comprising:
a piezoelectric crystal attached to a first side of a metal plate, said plate made of a material selected from a group consisting of nickel, brass and steel;
a hollow circular tube having a first end attached to a second side of said plate, said tube having a longitudinal axis perpendicular to said second side, said tube made of a material selected from a group consisting of brass, steel, aluminum, ceramics and glass;
said piezoelectric crystal being driven by piezoelectric drive means and having a feedback electrode for providing a feedback signal, wherein said piezoelectric crystal receives an

input signal and provides an exclusive longitudinal vibratory motion to said tube and wherein at least a second end of said tube has a sufficiently thin wall to maximize shear forces produced by said exclusive longitudinal vibratory motion when said second end is inserted in a liquid whose viscosity is to be measured;

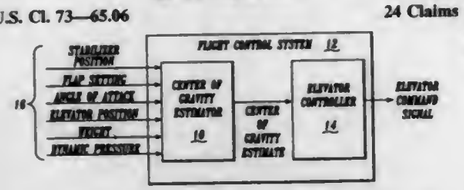
and wherein the aspect ratio of said tube is chosen so as to provide said exclusive longitudinal vibration motion when said piezoelectric crystal is driven by an oscillating constant root mean square value driving voltage.

5,571,953

METHOD AND APPARATUS FOR THE LINEAR REAL TIME ESTIMATION OF AN AIRCRAFT CENTER OF GRAVITY

Tzong-Hsiu B. Wu, Redmond, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 15, 1995, Ser. No. 441,589
Int. Cl.[6] G01M *1/12*
U.S. Cl. 73—65.06 **24 Claims**



1. A method of determining the location of an aircraft's center of gravity in an aircraft flight control system that employs the aircraft's center of gravity location for executing one or more control laws that establish the flight path of the aircraft, said method comprising the steps of:

(a) obtaining signals from said aircraft flight control system that are representative of the aircraft angle of attack, flap setting, stabilizer position, effective elevator position, effective weight, and dynamic pressure;

(b) adding the aircraft effective elevator position signal to the aircraft stabilizer position signal to determine an adjusted stabilizer position signal;

(c) multiplying the adjusted stabilizer position signal by a first constant that is based on the aircraft flap setting signal to determine a scaled stabilizer position signal;

(d) adding to the scaled stabilizer position signal a first additive factor that is based on the aircraft angle of attack signal and the aircraft flap setting signal to determine a first approximation signal;

(e) dividing the first approximation signal by the aircraft effective weight signal to determine a second approximation signal;

(f) multiplying the second approximation signal by the aircraft dynamic pressure signal to determine an estimate of the location of the aircraft center of gravity; and

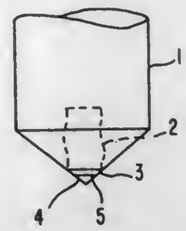
(g) supplying as a flight control signal the estimate of the location of the aircraft center of gravity to said aircraft flight control system, the flight control signal being used in the execution of one or more control laws controlling a flight control surface of said aircraft.

5,571,954

ELECTRICAL RESISTANCE HARDNESS TESTER FOR METALLIC MATERIALS

Alfred Ernst, Via Ronchetto, 3, Cadenpino, Switzerland

PCT No. PCT/EP94/02867, § 371 Date May 9, 1995, § 102(e) Date May 9, 1995, PCT Pub. No. WO95/07454, PCT Pub. Date Mar. 16, 1995
PCT Filed Aug. 30, 1994, Ser. No. 433,446
Claims priority, application Italy, Sep. 10, 1993, VA93A0018
Int. Cl.[6] G01N *3/42;27/04*
U.S. Cl. 73—81 **6 Claims**



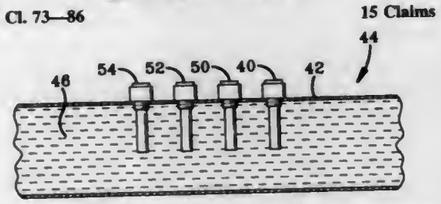
1. A hardness tester for metals, metal alloys and similar conducting materials, comprising an indenter provided with an electrically conducting indenting tip and with means for measuring the resistance between said tip and a test specimen under a certain load applied to the indenter, said tip being made of a substantially insulating material having a conducting superficial film, the conductivity of which decreases towards the tip vertex.

5,571,955

MONITORING OF STRESS CORROSION CRACKING

John A. Beavers, Columbus, and Neil G. Thompson, Dublin, both of Ohio, assignors to CC Technologies Systems, Inc., Columbus, Ohio

Filed Apr. 6, 1995, Ser. No. 418,015
Int. Cl.[6] G01N *17/04;3/10*
U.S. Cl. 73—86 **15 Claims**



1. An apparatus for monitoring corrosion of a first material exposed to a chemical environment having an environmental pressure, the apparatus comprising:

(a) a first probe exposed to said environment, the probe being made of a material substantially similar to the first material, and having a sealed internal chamber containing a pressurized fluid;

(b) a second probe exposed to said environment, the probe being made of a material substantially similar to the first material, and having a sealed internal chamber containing a pressurized fluid, wherein the fluid is pressurized to a fluid pressure different than the fluid pressure in the first probe; and

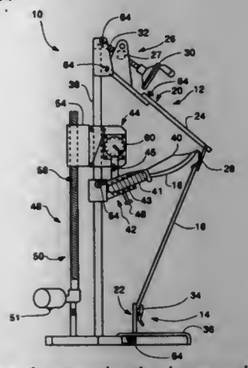
(c) a pressure transducer in communication with at least one of the sealed internal chambers.

5,571,956

APPARATUS AND METHOD FOR TESTING THE SHARPNESS OF CUTTING EDGES

Lee A. Sargent, Roggen, Colo., assignor to Monfort, Inc., Greeley, Colo.

Filed Sep. 21, 1994, Ser. No. 310,235
Int. Cl.[6] G01N *3/58*
U.S. Cl. 73—104 **11 Claims**



1. An apparatus for measuring the sharpness along a predetermined length of an edge, comprising:

means for securing a cutting medium, wherein said securing means allows for adjustment of said cutting medium to a plurality of specific angular orientations;

means for holding an edge so that said edge may contact said cutting medium, said edge being an edge of a knife blade projecting from a handle;

means for relatively moving said edge at a substantially constant velocity relative to said cutting medium; and

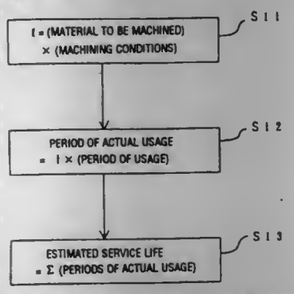
means for quantitatively measuring the force required to relatively move said edge relative to said cutting medium.

5,571,957

METHOD OF ESTIMATING SERVICE LIFE OF CUTTER

Kunio Tanaka, Tokyo, Japan, assignor to Fanuc Limited, Yamanashi, Japan

PCT No. PCT/JP94/01207, § 371 Date Mar. 24, 1995, § 102(e) Date Mar. 24, 1995, PCT Pub. No. WO95/04633, PCT Pub. Date Feb. 16, 1995
PCT Filed Jul. 21, 1994, Ser. No. 403,771
Claims priority, application Japan, Aug. 9, 1993, 5-197119
Int. Cl.[6] G06F *15/46*
U.S. Cl. 73—104 **2 Claims**



1. A method of estimating the service life of a cutter, comprising the steps of:

determining a corrective coefficient from a material coefficient determined by a material to be machined by the cutter and from a machining condition coefficient determined by machining conditions;

multiplying a period of usage of the cutter by the corrective coefficient thereby to correct the period of usage; and

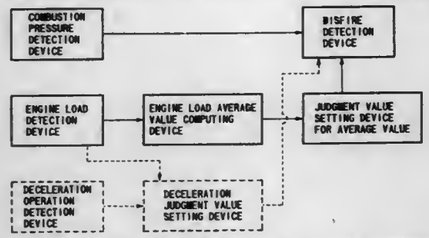
accumulating corrected periods of usage thereby to estimate the service life of the cutter with the accumulated corrected periods.

5,571,958

APPARATUS AND METHOD FOR DETECTING MISFIRE IN AN INTERNAL COMBUSTION ENGINE

Atsumi Hoshina, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Apr. 13, 1995, Ser. No. 422,550
Claims priority, application Japan, Apr. 15, 1994, 6-077343
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—117.3 **10 Claims**



1. An apparatus for detecting misfire in an internal combustion engine comprising:

combustion pressure detection means for detecting a combustion pressure value of the engine,

engine load detection means for detecting an engine load,

engine load average value computing means for computing an average value of the engine load detected by the engine load detection means,

deceleration operation detection means for detecting a deceleration operating condition of the engine,

judgment value setting means for setting a judgment value based on the computed average engine load value,

decelerating judgment value setting means for setting the judgment value based on the detected engine load value, and

misfire detection means for judging the presence or absence of misfire based on a comparison of the detected combustion pressure value and the judgment value based on the computed average engine load value or based on the detected engine load value instead of the computed average engine load value when the engine deceleration operating condition is detected, and outputting a misfire detection signal.

5,571,959

250PFNT SERIES PORTABLE FUEL NOZZLE TESTER

Kevin P. Griggs, 4620 Asheville Ct., Carmichael, Calif. 95608, assignor to Kevin P. Griggs, Coupeville, Wash.

Filed Jun. 24, 1994, Ser. No. 188,753
Int. Cl.[6] F02M *65/00;* **G01M** *15/00*
U.S. Cl. 73—118.1 **2 Claims**

1. A portable, self-contained fuel nozzle tester capable of testing

1 Cabinet & Frame Assy.
2 Fluid Cylinder
3 Cap & Feed Tube Assy.
4 Fuel Nozzle Adapters
5 Hose Assy.
6 Lamp & Battery Pack
7 Nitrogen Cylinder
8 Nitrogen Regulator
9 Pressure Relief Valve
10 Delivery Pressure Guage
11 Fluid Filter
12 Ball Valve
13 Protractors

gas turbine engine fuel nozzles through-out a full operating range comprising:

a cabinet and frame assembly having a viewing window and fixed protractors for nozzle flow angle measurement;

a fluid cylinder having a cap and feed tube assembly, and fitted to the cabinet and frame assembly behind the cabinet;

a nitrogen cylinder having a regulator with a pressure relief valve, and fitted to the cabinet and frame assembly behind the cabinet;

a delivery pressure gauge, fluid filter, and ball valve assembly fitted to a top of the cabinet on a bracket means;

a battery pack for a lamp assembly mounted to the bracket means on an inside of the cabinet;

hoses connected between the nitrogen cylinder regulator and the fluid cylinder, the fluid cylinder and the delivery pressure gauge, fluid filter, and ball valve assembly, and the delivery pressure gauge, fluid filter, and ball valve assembly and the fuel nozzle being tested; and

a fuel nozzle adaptor which mounts on top of the cabinet to accommodate a type of fuel nozzle being tested.

5,571,960

THROTTLE VALVE OPENING DEGREE SENSOR

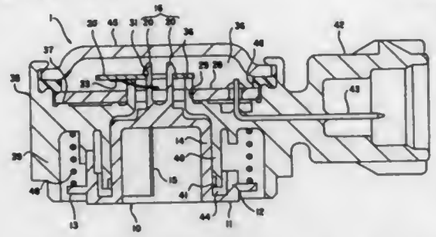
Mamoru Tateishi; Shoichi Hagiwara, and Hitoshi Takeuchi, all of Obu, Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed Mar. 13, 1995, Ser. No. 402,950

Claims priority, application Japan, Apr. 8, 1994, 6-071127; May 23, 1994, 6-108685

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—118.2 **7 Claims**



1. A throttle valve opening degree sensor comprising:

a rotor shaft capable of interlocking with a throttle valve operationally connected to a throttle body,

a substrate having an opening degree detection section for the throttle valve,

a rotor attached to said rotor shaft and having sliding contacts sliding on said opening degree detection section, and

a housing having a housing chamber for housing said substrate,

a bearing portion for rotatably supporting said rotor shaft and

a base portion attached to said throttle body, wherein

said rotor shaft has a cylindrical covering portion having an outer circumferential cylindrical body at an outer end, said cylindrical covering portion covering the outer end of said bearing portion exposed to the base portion of said housing and having an elastic engaging portion having cross-like splitted grooves at a top end and a square outer periphery, and

said rotor has a square engaging hole for fitting said elastic engaging portion, said elastic engaging portion being fitted to and elastically abutted against said engaging hole thereby securing said rotor to said rotor shaft wherein a portion of the top end of the elastic engaging portion protrudes in a direction of said square engaging hole.

5,571,961

WHEEL-LOAD SENSOR WITH PIEZO-ELECTRIC PICKUP AND METHOD OF MANUFACTURING SUCH A SENSOR

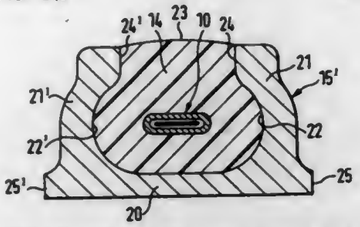
Siegfried Gassner, Obope, New Zealand, and Joe Cal, Chambersburg, Pa., assignors to Pietzsch AG, Ettlingen, Germany

Filed Sep. 30, 1994, Ser. No. 316,579

Claims priority, application Germany, Oct. 1, 1993, 43 33 532.2

Int. Cl.[6] G01M *5/00*

U.S. Cl. 73—146 **11 Claims**



1. A wheel-load sensor cast into a mass of material for positioning in a depression in a pavement, comprising: a sensor having a piezo-electric pickup enclosing an inner electrode; an outer electrode enclosing said pickup; said inner electrode being a solid conductor and said outer electrode being a bollow conductor, said pickup being positionable in the pavement; said piezo-electric pickup having wall sections substantially parallel to the pavement surface and received subject to a predetermined pressure between adjacent sections of the hollow conductor wall comprising said outer electrode and other sections of the piezo-electric pickup wall in the hollow conductor and away from the remainder of the walls, a hollow space being left between said pickup and said outer conductor along said adjacent sections of said bollow conductor and said other sections of said pickup wall for keeping said sections separated said adjacent sections of said hollow conductor and said other sections of said pickup being non-parallel to the pavement; said sensor having an output free of influence from horizontal components of a force acting on said sensor, said output being influenced only by components of said force that act perpendicular to said sensor and against said parallel wall sections.

5,571,962

METHOD AND APPARATUS FOR ANALYZING DRILL CUTTINGS

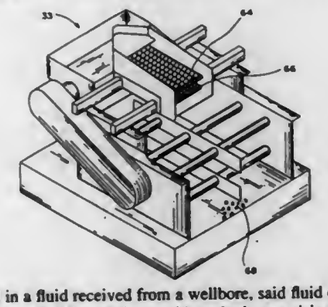
Daniel T. Georgi, Houston; Homer A. Robertson, The Woodlands, and Mark S. Franks, Sugar Land, all of Tex., assignors to Core Holdings B.V., Netherlands

Division of Ser. No. 37,918, Mar. 26, 1993, abandoned. This application Aug. 13, 1993, Ser. No. 106,368

Int. Cl.[6] E21B *49/00*

U.S. Cl. 73—152.04 **7 Claims**

1. A method for determining wellbore depth of drill cuttings



contained in a fluid received from a wellbore, said fluid containing drill cuttings of different sizes, said method comprising the steps of:

(a) segregating drill cuttings of a selected intermediate size range from the fluid in a sequential order;

(b) retaining the segregated cuttings within and along a collector in substantially the same sequential order in which such drill cuttings have been segregated;

(c) measuring emissions from the drill cuttings in the collector at different positions along the collector;

(d) recording the measured emissions; and

(e) correlating the recorded emissions with gamma ray emissions from the wellbore to determine wellbore depth of the cuttings.

5,571,963

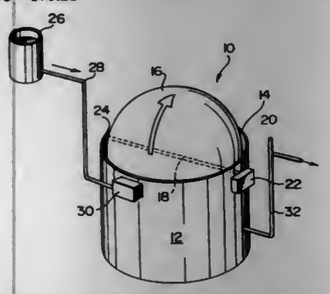
PRECIPITATION GAUGE FOR COLLECTING SOLID LIQUID PRECIPITATION

Douglas Balchin, Nepean, and Henry Hayhoe, Manotick, both of Canada, assignors to Her Majesty the Queen in right of Canada as represented by Agriculture and Angri-Food Canada, Ottawa, Canada

Filed Apr. 21, 1995, Ser. No. 426,728

Int. Cl.[6] G01W *1/00*

U.S. Cl. 73—170.21 **9 Claims**



1. A precipitation gauge for collecting solid and liquid precipitation, comprising:

a receptacle for receiving precipitation, said receptacle for retaining a second fluid in addition to said precipitation, said second fluid comprising a fluid having a freezing point less than said precipitation;

a convex precipitation collection Surface extending at least partially above said receptacle in said second fluid for exposure to said precipitation;

means for introducing said second fluid over said collection surface to transfer collected precipitation into said second fluid;

means for measuring collected precipitation; and

means for supplying said second fluid to receptacle.

5,571,964

FLOW METER

Yukio Sawada, Anjo; Yukio Mori; Ryo Nagasaka; Tsunemitsu Kato, all of Nagoya; Takao Ban, Toyohashi; Kunihiro Umezu, Kariya; Noboru Kitahara, Kariya, and Minoru Kondo, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

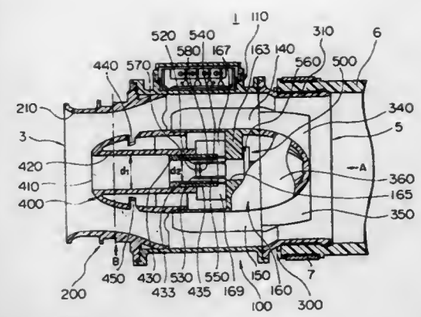
Division of Ser. No. 319,030, Oct. 6, 1994, which is a continuation of Ser. No. 992,211, Dec. 17, 1993, abandoned. This application Apr. 27, 1995, Ser. No. 429,471

Claims priority, application Japan, Dec. 19, 1991, 3-336636; May 8, 1992, 4-116306; Oct. 8, 1992, 4-270328; Oct. 8, 1992, 4-270337; Oct. 8, 1992, 4-270341

Int. Cl.[6] G01F *5/00*

U.S. Cl. 73—202 **22 Claims**

1. A flow meter for measuring a flow rate of fluid which flows through a main passage defined by a body, said flow meter comprising:



a central element;

a supporting rib extending from said central element for supporting said central element substantially at a center of said main passage;

an introduction port opening to said central element for introducing a part of fluid flowing through said main passage;

a branch passage formed in said central element, through which fluid introduced from said introduction port flows;

a sensor disposed within said branch passage for measuring a flow rate of fluid flowing within said branch passages; and

an outlet opening to a portion of said central element located upstream side of a downstream end of said supporting rib for returning fluid flowing through said branch passage to said main passage,

wherein said branch passage has a downstream passage portion in which said sensor is located and an upstream passage portion disposed upstream of said downstream passage portion,

wherein a ratio d_1/d_2 between an inner diameter d_1 of said upstream passage portion and an inner diameter d_2 of said downstream passage portion is equal to or more than 1.2, and

wherein said branch passage includes a step abruptly changing in inner diameter between said upstream passage portion and said downstream passage portion.

5,571,965

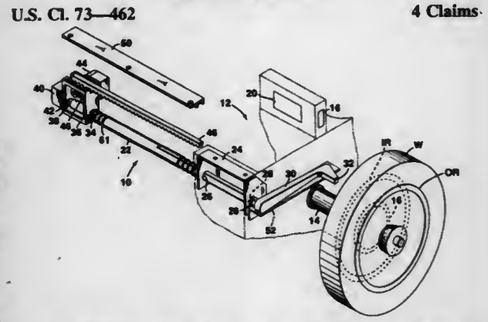
WHEEL BALANCER PARAMETER ENTRY DEVICE

Frederick J. Rogers, N. Little Rock, and Jean deBellefeuille, Maumelle, both of Ark., assignors to FMC Corporation, Chicago, Ill.

Filed Sep. 8, 1994, Ser. No. 302,283

Int. Cl.[6] G01M *1/02*

U.S. Cl. 73—462 **4 Claims**



1. A parameter entry device for a wheel balancer having a rotatable shaft upon which a wheel to be balanced is mounted, which comprises:

an elongated rod slideably and rotatably mounted on the wheel balancer in parallel with the shaft;

a transverse arm connected to one end of the rod;

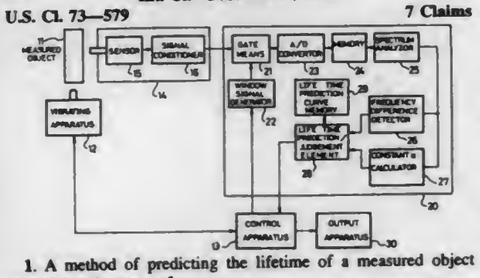
a first rotary encoder having a shaft connected to the distal end of the rod;
wherein rotation of the arm causes rotation of the shaft of the first rotary encoder;
a second rotary encoder supported on the rod and having a shaft which is connected to a gear;
a rack mounted on the wheel balancer in alignment with the rod;
wherein the gear engages the rack and extension of the rod causes rotation of the shaft of the second rotary encoder.

5,571,966

METHOD AND APPARATUS FOR PREDICTING LIFETIME OF MEASURED OBJECT

Kiyoshi Tsuboi, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1994, Ser. No. 321,317
Claims priority, application Japan, Oct. 12, 1993, 5-278972
Int. Cl.[6] G01N *29/00;29/12*
U.S. Cl. 73—579 **7 Claims**



1. A method of predicting the lifetime of a measured object comprising the steps of:
vibrating a measured object to generate at least one of a group consisting of longitudinal waves, transverse waves, and distortional waves;
detecting a degree of deterioration of said measured object based on a change of frequency difference Δf between a frequency of nth-order spectrum and (n+1)th-order spectrum of said at least one of the group; and
predicting the lifetime based upon the detected degree of deterioration.

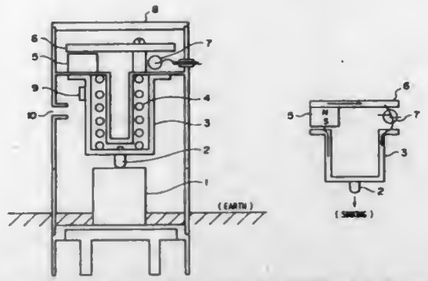
5,571,967

TERMITE DETECTING DEVICE AND A METHOD OF DETECTING TERMITES

Kunio Tanaka, Ikeda; Yuji Dohi, Nara; Akira Okamoto, Kitakatsuragi-gun; Katsushi Morimoto, Nara, and Gouichi Kagiyama, Izumi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 6, 1994, Ser. No. 267,940
Claims priority, application Japan, Jul. 7, 1993, 5-167568; Oct. 27, 1993, 5-268609; Mar. 24, 1994, 6-053551; Apr. 15, 1994, 6-077531
Int. Cl.[6] G01N *3/40;29/00*
U.S. Cl. 73—587 **34 Claims**

16. A termite detecting device which is placed in an expected invading passage for detecting damage or destruction caused by termites, comprising:
a detecting sample for attracting termites;
a detecting terminal being pressed against said detecting sample for transmitting displacement due to the damage or destruction caused by termites;
an elastic member for pressing said detecting terminal and said detecting sample against one another;
a moving structure connected to said detecting terminal and capable of displacement by virtue of an elastic pressing force generated by said elastic member and upon damage or destruction to said detecting sample caused by termites; and



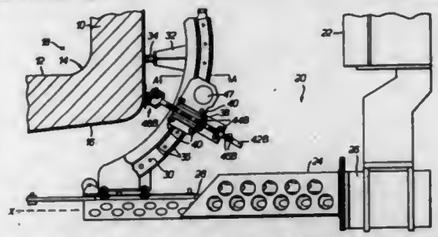
detection signal generating means for generating a detection signal indicating a displacement of said moving structure, detection of termites being carried out based on the detection signal.

5,571,968

APPARATUS FOR MOUNTING A PLURALITY OF ULTRASONIC PROBES FOR MOVEMENT IN SPECIFIED DIRECTIONS FOR DETECTING DEFECTS IN A BODY

Paul S. Buckley, Derby, England, assignor to Rolls-Royce and Associates, Limited, Derby, England

Filed Jul. 15, 1993, Ser. No. 91,257
Claims priority, application United Kingdom, Jul. 18, 1992, 9215346
Int. Cl.[6] G01N *29/04*
U.S. Cl. 73—623 **22 Claims**



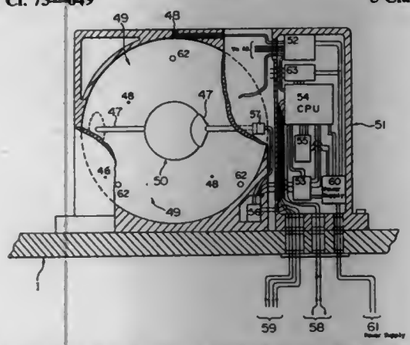
1. An apparatus for detecting defects in a wall of a hollow object, the object having a contoured exterior surface, the apparatus comprising a first ultrasonic probe pivotally mounted to a first member about a first axis, the first member is pivotally mounted to a first elongate member about a second axis, the first and second axes are mutually perpendicular and are arranged in a first plane, a second member pivotally mounted to a third member about a third axis, the third member is pivotally mounted to the first elongate member about a fourth axis, the third and fourth axes are mutually perpendicular and are arranged in a second plane, the second and fourth axes are spaced apart and are parallel, the second member is arranged to act on the first ultrasonic probe such that in operation the first ultrasonic probe transmits ultrasound into the object in a plane parallel to the first elongate member, a second ultrasonic probe pivotally mounted to a fourth member about a fifth axis, the fourth member is pivotally mounted to a second elongate member about a sixth axis, the fifth and sixth axes are mutually perpendicular and are arranged in a third plane, a fifth member pivotally mounted to a sixth member about a seventh axis, the sixth member is pivotally mounted to the second elongate member about an eighth axis, the seventh and eighth axes are mutually perpendicular and are arranged in a fourth plane, the sixth and eighth axes are spaced apart and are parallel, the fifth member is arranged to act on the second ultrasonic probe such that in operation the second ultrasonic probe receives ultrasound travelling in the object in a plane parallel to the second elongate member, the first and second elongate members are arranged at a predetermined angle such that the first ultrasonic probe and second ultrasonic probe are focused at a common point on the contoured exterior surface of the object.

5,571,969

VIBRATION DETECTION AND REDUCTION SYSTEM AND VIBRATION SENSORS FOR USE IN MICRO-GRAVITY ENVIRONMENT

Shuichi Kawasaki, Nagoya, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 12, 1993, Ser. No. 59,753
Claims priority, application Japan, May 14, 1992, 4-121989; Sep. 14, 1992, 4-244625
Int. Cl.[6] G01H *11/00*
U.S. Cl. 73—649 **8 Claims**



1. A vibration factor analyzing system for use in a micro-gravity environment, comprising:
a plurality of vibration sensors disposed on a vibration body held under a micro-gravity environment;
data storage means for storing vibration data of said sensors and a threshold vibration spectra;
analyzing means for analyzing vibration data detected by said vibration sensors to obtain vibration spectra;
a factor extracting section for specifying a vibration source on the basis of a comparison between said vibration spectra obtained by said analyzing means and said threshold vibration spectra stored in said data storage means;
actuators disposed on said vibration body;
an actuator control section responsive to vibration energy detected by said vibration sensor and a vibration source specified by said factor extracting section for controllably driving said actuators so as to reduce harmful vibrations and eliminating the factors of vibrations and for sending data to said data storage means; and
prediction means for predicting a next occurrence of vibrations based on said data and for improving said threshold vibration spectra and sending said prediction and said improved threshold vibration spectra to said data storage means.

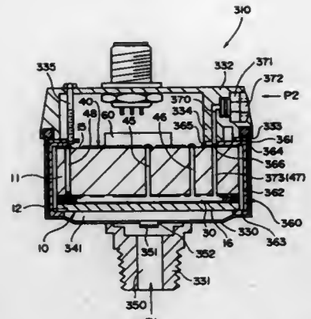
5,571,970

PRESSURE SENSOR

Eiji Mutoh; Akihiro Niiya, both of Wako; Shigemitsu Ogawa, Tokyo; Fujito Tanaka, Tokyo; Munenori Tsuchiya, Tokyo; Daiji Uehara, Tokyo, and Kenji Nagasawa, Tokyo, all of Japan, assignors to Honda Motor Co., Ltd., and Nagano Keiki Seisakusho, Ltd., both of Tokyo, Japan

Filed Mar. 28, 1994, Ser. No. 218,973
Claims priority, application Japan, Mar. 30, 1993, 5-015489 U; Mar. 30, 1993, 5-015491 U; Mar. 30, 1993, 5-015492 U
Int. Cl.[6] G01L *9/12*
U.S. Cl. 73—724 **14 Claims**

1. A pressure sensor for measuring the pressure of a fluid, said pressure sensor comprising:
a main body including a ceramic base formed with a front surface, a back surface opposite said front surface and an outer circumferential surface that extends between said front surface and said back surface, said back surface having a circumferentially extending outer perimeter;



a ceramic, elastic diaphragm coupled to and spaced from said ceramic base front surface so as to define a pressure chamber therebetween, said diaphragm having an inner surface that partially defines said pressure chamber, a pressure face opposite said inner surface that is exposed to the fluid and an outer circumferential surface that extends between said pressure face and said inner surface, said pressure face having a circumferentially extending outer perimeter;
a first electrode disposed on said ceramic base front surface and a second electrode disposed on said diaphragm inner surface;
a signal processing circuit connected to said electrodes and located adjacent to said main body, said signal processing circuit being configured to apply a stimuli signal to said electrodes, to measure a response from said electrodes to said stimuli signal and to generate an output signal based on said measured response that is a function of the pressure of the fluid; and
a one-piece seal fitted around said ceramic base outer circumferential surface and said diaphragm outer circumferential surface and positioned to extend over said outer perimeter of said ceramic base back surface and over said outer perimeter of said diaphragm pressure face.

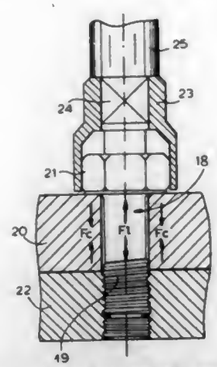
5,571,971

METHOD FOR MONITORING AND CONTROLLING STRESS IN A THREADED MEMBER

Jean-Marc Chastel, Sauzet, and Didier Rey, Saint Georges les Bains, both of France, assignors to Clandar, Saint Georges les Bains, France

PCT No. PCT/FR92/01192, § 371 Date Jun. 15, 1995, § 102(e) Date Jun. 15, 1995, PCT Pub. No. WO94/13437, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 16, 1992, Ser. No. 481,430
Int. Cl.[6] G01L *5/24*
U.S. Cl. 73—761 **9 Claims**

1. A method of monitoring and controlling axial force applied to a pair of relatively rotatable elements interconnected by a screwthread, said method comprising the steps of:
(a) obtaining a value of a screwing-in torque and a value of a screwing-out torque by rotation of one of said elements relative to another of said elements by one of the following procedures:
(a_1) automatically measuring a static screwing-in torque at a start of a screwing-in process of said one of said elements from a rest position and measuring a static screwing-out torque at a start of a screwing-out process of said one of said elements from a rest position,
(a_2) dynamically measuring automatically during rotation of said one of said elements and during screwing in and screwing out at each of a succession of corresponding positions of said one of said elements during a single screwing-in and screwing-out operation, respective screwing-in and screwing out torques,



(a_3) dynamically measuring automatically during rotation of said one of said elements and during screwing in and screwing out at each of a succession of corresponding positions of said one of said elements during a plurality of iteratively repeated screwing-in and screwing-out operations, respective screwing-in and screwing out torques, and

(a_4) dynamically measuring automatically during rotation of said one of said elements and during a process of screwing in, screwing out and screwing in of said one of said elements at each of a succession of corresponding positions of said one of said elements, respective screwing-in and screwing-out torques;

(b) automatically subtracting a respective measured screwing-in torque from a respective screwing-out torque to obtain a difference; and

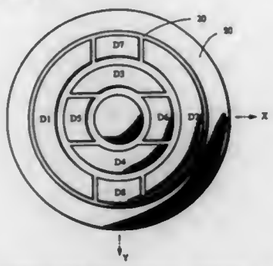
(c) automatically dividing said difference by a coefficient proportional to a pitch of said screwthread to obtain an output representing axial force on said a pair of relatively rotatable elements resulting from rotation of said one of said elements relative to the other of said elements.

5,571,972

SENSOR USING PIEZOELECTRIC ELEMENTS

Kazuhiro Okada, 73, Sugaya 4-Chome, Ageo-shi, Saitama, 362, Japan

Filed Jun. 28, 1994, Ser. No. 267,044
Claims priority, application Japan, Jul. 29, 1993, 5-207118
Int. Cl.[6] G01L *3/00*
U.S. Cl. 73—862.043 **17 Claims**



1. A force sensor using piezoelectric elements comprising:

a substrate having flexibility wherein an origin is defined at a point within said substrate and an X-axis and a Y-axis extending in a direction in parallel to a principle surface of said substrate are defined, said X-axis and said Y-axis crossing perpendicular to each other at the origin to fore an XY coordinate system;

four detection elements composed of a piezoelectric element in a plate form, an upper electrode formed on an upper surface of said piezoelectric element and a lower electrode formed on a lower surface of said piezoelectric element, respective one of said upper electrode and said lower electrode being fixed to said substrate;

a working body having a function for transmitting, to the origin, a force produced on the basis of a physical action exerted from an external source and;

a sensor casing to which an outside peripheral portion of the substrate is fixed;

wherein a first detection element, a second detection element, a third detection element and a fourth detection element are respectively arranged in a negative region on the X-axis, in a positive region on the X-axis, in a negative region on the Y-axis and in a positive region on the Y-axis, respectively;

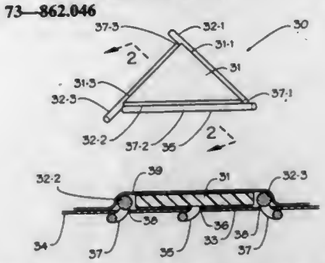
wherein a force relating to the X-axis direction produced in the working body is detected on the basis of charges produced in the first detection element and the second detection element, and a force relating to the Y-axis direction produced in the working body is detected on the basis of charges produced in the third detection element and the fourth detection element.

5,571,973

MULTI-DIRECTIONAL PIEZORESISTIVE SHEAR AND NORMAL FORCE SENSORS FOR HOSPITAL MATTRESSES AND SEAT CUSHIONS

Geoffrey L. Taylot, 211 Oak Street, Winnipeg, Manitoba, Canada

Filed Jun. 6, 1994, Ser. No. 254,918
Int. Cl.[6] G01L *3/00*
U.S. Cl. 73—862.046 **36 Claims**



1. A force sensor for producing an electrical signal proportional to forces exerted on said sensor comprising;

a. a first type conductive member,

b. at least one second type conductive member movable into resiliently deformable, electrically conductive contact with said first type conductive member, the area and electrical conductance of said contact being proportional to forces urging said first and second type conductive member together, said contact being characterised by a surface piezoresistivity inversely related to said forces and greater than the resistivity of said first conductive member,

c. means for supporting said first and second type conductive members, and

d. means for making external electrical contact to said first and second type conductive members.

5,571,974

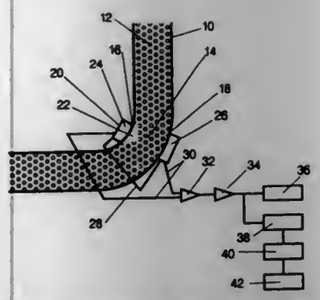
METHOD AND APPARATUS FOR THE MEASUREMENT OF PARTICLE FLOW IN A PIPE

Eli S. Nauful, 104 Spring Water Dr., Columbia, S.C. 29223

Filed Jan. 6, 1995, Ser. No. 369,670
Int. Cl.[6] G01F *1/66*
U.S. Cl. 73—861.27 **18 Claims**

1. A coal particle flow measuring apparatus for use on a bend in a pipe through which coal particles travel comprising:

a plurality of piezoelectric film vibration sensors directly connected to the external walls of said pipe proximate to the bend, said sensors capable of generating vibrational signals



reflecting the impingement of said particles with said walls and the impingement of said particles with each other as said particles flow through said pipe;

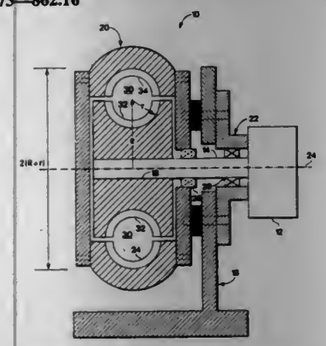
means for developing differential vibration signals from said sensors for net cool flow signal; means for amplifying said differential vibration signals of said sensors; and means for processing said signals.

5,571,975

POWER ABSORBING DYNAMOMETER

Joseph L. Smith, Jr., Concord, Mass., and Edward J. Ognibene, Ossining, N.Y., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 28, 1995, Ser. No. 431,313
Int. Cl.[6] G01L *3/00*; F16D *57/00*
U.S. Cl. 73—862.16 **34 Claims**



1. A power absorbing dynamometer, comprising:

a stator having an inside stator surface;

a rotor having an inside rotor surface and being rotatable by a mechanical power source, the rotor and the stator together defining a passage bounded substantially by the inside rotor and stator surfaces;

a port for introducing a liquid into the passage; and

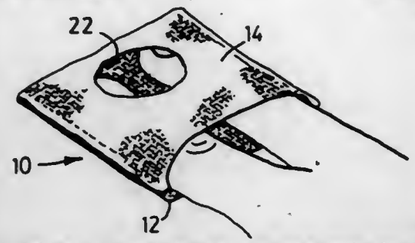
means for developing and maintaining within the passage a substantially helical recirculating flow of the liquid on the inside rotor and stator surfaces as the rotor is rotated by the mechanical power source, whereby the liquid is heated or vaporized as the rotor is rotated by the mechanical power source and power absorbed from the mechanical power source is related to a rate at which the liquid is heated or vaporized.

5,571,976

APPARATUS AND METHOD FOR COLLECTING SAMPLES FOR IMS (ION MOBILITY SPECTROMETERS) ANALYZERS AND THE LIKE

Gerald Drolet, Ottawa, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Revenue, Nepean, Canada

Filed Dec. 9, 1994, Ser. No. 352,486
Int. Cl.[6] G01N *1/08; 1/02*
U.S. Cl. 73—864.71 **6 Claims**



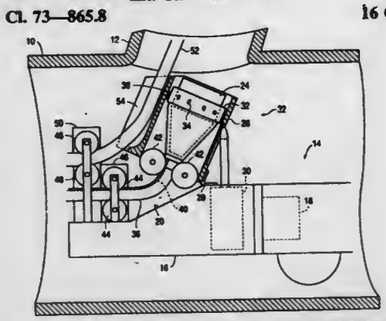
1. A flexible, generally sheet-form collection device for use in collecting a sample for analysis, the collection device comprising top and bottom layers of a flexible material, and means securing the top and bottom layers together around substantially three sides thereof, with a fourth side of the collection device being open for insertion of a user's fingers, wherein both of the top and bottom layers are generally rectangular and are secured together along the sides and rear edges thereof, with the device being open along a front edge thereof, and wherein the bottom layer extends beyond the top layer along the front edge thereof.

5,571,977

PROCESS AND DEVICE FOR INSPECTING AND/OR SERVICING AND REPAIRING SUBSIDIARY CANALS BRANCHING OFF FROM A MAIN DRAIN

Jens-Werner Kipp, Klashofsiedlung 13, D-33659 Bielefeld, Germany

PCT No. PCT/EP93/02412, § 371 Date Mar. 7, 1995, § 102(e) Date Mar. 7, 1995, PCT Pub. No. WO94/05989, PCT Pub. Date Mar. 17, 1994
PCT Filed Sep. 6, 1993, Ser. No. 397,201
Claims priority, application Germany, Sep. 8, 1992, 42 29 787.7; Jul. 8, 1993, 9310192 U
Int. Cl.[6] H04N *7/18*
U.S. Cl. 73—865.8 **16 Claims**



1. A device for inspecting subsidiary canals which branch off from a main drain where a camera probe (**24**) is deflected from the main drain pipe (**10**) with a deflecting frame (**22;76;96**) into the branching off subsidiary canal pipe (**12**), characterized in that the camera probe (**24**) is driven forward in the subsidiary canal pipe (**12**) by propulsion, by supplying a pressure medium to reaction jets (**34;90**) mounted on the camera probe, said device including a camera probe (**24**) and a deflecting frame (**22;76;96**) which can be held in position in the main drain pipe (**12**) for deflecting the

camera probe into the subsidiary canal, characterized in that the camera probe (24) is provided with reaction jets (34;90) and is connected to a hose (36) for supplying a pressure medium to the reaction jets, wherein the reaction jets (34) are contrived on a rim (32) which encircles the periphery of the camera probe (24) at a distance from its front end, and are oriented outwards at an angle in relation to the axis of the canal probe (24).

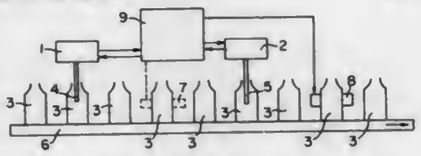
8. A device for inspecting subsidiary canals which branch off from a main drain where a camera probe (24) is deflected from the main drain pipe (10) with a deflecting frame (22;76;96) into the branching off subsidiary canal pipe (12), characterized in that the camera probe (24) is driven forward in the subsidiary canal pipe (12) by propulsion, by supplying a pressure medium to reaction jets (34;90) mounted on the camera probe, said device including a camera probe (24) and a deflecting frame (22;76;96) which can be held in position in the main drain pipe (12) for deflecting the camera probe into the subsidiary canal, characterized in that the camera probe (24) is provided with reaction jets (34;90) and is connected to a hose (36) for supplying a pressure medium to the reaction jets, wherein a camera cable (40) connected to the camera probe (24) is integrated in the hose (36).

5,571,978

APPARATUS FOR TESTING BOTTLES FOR THE PRESENCE OF CONTAMINATION

Peter Gysi, Bellikon; Theo Huesser, Rudolfstetten; Martin Mueller, Unterlunkhofen; Peter M. Robertson, Winkel; Felix Van der Schaar, Seuzach, and Melchior Zumbach, Dübendorf, all of Switzerland, assignors to Elpatronic AG, Zug, Switzerland

Division of Ser. No. 88,432, Jul. 7, 1993, Pat. No. 5,520,060.
This application Jun. 7, 1995, Ser. No. 471,872
Claims priority, application Switzerland, Jul. 9, 1992, 166/92; Feb. 11, 1993, 415/93; Feb. 11, 1993, 416/93; Mar. 4, 1993, 656/93
Int. Cl.[6] B07C *5/02*
U.S. Cl. 73—865.8 **4 Claims**



1. Apparatus for testing returnable bottles for refilling, comprising:

a conveyor system for returning bottles;

a first testing station arranged on the conveyor system including a gas sampling unit and a photoionization detector for testing gas samples taken from bottles returned for refilling at a predetermined detection threshold indicative of a predetermined high level of contamination;

a second testing station arranged in the conveyor system downstream of the first testing station in the bottle conveying direction including a further gas sampling unit and a testing unit for testing further gas samples taken from bottles at a detection threshold indicative of a level of contamination lower than the predetermined level; and

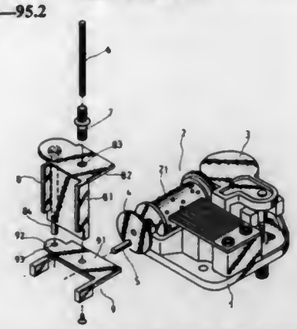
means arranged between the gas sampling units for selectively removing bottles from or permitting bottles to proceed along the conveyor path based upon test results of the gas samples taken at the first testing station, so that bottles in which the contamination exceeds the predetermined level are removed from the conveyor system prior to being tested at the second testing station, and bottles which do not exceed the predetermined level are tested a second time.

5,571,979

TRANSMISSION MECHANISM FOR MUSIC BOX ORNAMENT

Yu-Kai Chen, No. 2-2, Lane 15, Da-Hsing St., Tan-Shui Town, Taiwan

Filed Oct. 24, 1995, Ser. No. 547,366
Int. Cl.[6] G10F *1/06*
U.S. Cl. 84—95.2 **2 Claims**



1. A transmission mechanism for music box ornament, comprising:

a rotary wheel rotated by a reproducer of a wind-up music box mechanism, said rotary wheel having an eccentric rod;

a locating block fixedly mounted within a base plate within which said wind-up music box mechanism is mounted, said locating block comprising a channeled vertical wall and a flat horizontal wall perpendicularly extended from top of said channeled vertical wall, said flat horizontal wall having a downward guide rod at one end of said flat horizontal wall and a through hole at an opposite end;

a follower plate supported on said eccentric rod and moved by it along said channeled vertical wall and said downward guide rod of said locating block, said follower plate having a mounting hole at one end aligned with said through hole of said flat horizontal wall of said locating block, and a guide hole at an opposite end, which loosely receives the downward guide rod of said locating block;

a copper sleeve fixedly mounted within said through hole of said flat horizontal wall of said locating block; and

a tappet rod inserted through said copper sleeve and reciprocated by said eccentric rod through said follower plate, said tappet rod having a bottom end fixedly fastened to the mounting hole of said follower plate, and a top end coupled with an ornament.

2. The transmission mechanism of claim 1 wherein said base plate is supported on a rocker, having an upright guide block at one end, a through hole adjacent to said upright guide block, a T-rod inserted through said through hole and stopped beneath said eccentric rod of said rotary wheel, and a spring mounted around said T-rod to impart upward force to said T-rod against said eccentric rod of said rotary wheel, said T-rod being alternatively moved up and down by said eccentric rod of said rotary wheel and said spring to force said rocker moved forwards and backwards alternatively when said wind-up music box mechanism is operated.

5,571,980

MULTIPLE FINGERBOARD INSTRUMENT STRUCTURES

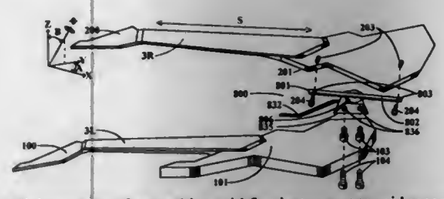
Bradford M. Busley, 384 S. Ironton St. #413, Aurora, Colo. 80012

Continuation-in-part of Ser. No. 466,022, Jan. 17, 1990, abandoned. This application Feb. 10, 1992, Ser. No. 832,997
Int. Cl.[6] G01D *1/00;3/00*
U.S. Cl. 84—263 **8 Claims**

1. In combination:

a first musical instrument having a first fingerboard;

a second musical instrument having a second fingerboard;



a linkage means for attaching said first instrument to said second instrument comprising:

a block having a first attachment face defining a first plane and a second attachment face, opposite said first attachment face, defining a second plane; wherein, the second plane is angularly disposed relative to the first plane;

the first attachment face fixedly attached to said first instrument; and

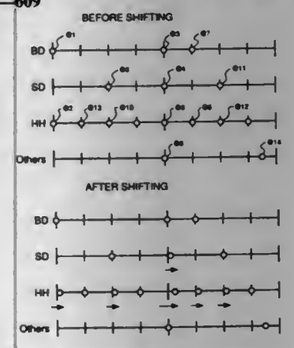
means for attaching said second attachment face to said second instrument.

5,571,981

AUTOMATIC PERFORMANCE DEVICE FOR IMPARTING A RHYTHMIC TOUCH TO MUSICAL TONES

Hiromu Miyamoto, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Mar. 10, 1995, Ser. No. 402,149
Claims priority, application Japan, Mar. 11, 1994, 6-068007
Int. Cl.[6] A63H *5/00;* **G04B** *13/00;* **G10H** *7/00*
U.S. Cl. 84—609 **11 Claims**



6. An automatic performance device comprising:

memory means for storing automatic performance data including event data;

playback means for reading out said automatic performance data from said memory means and playing back said automatic performance data for generating musical tones; and

control means for shifting output timing of at least part of said event data of said automatic performance data read out by said playback means, for generating musical tones;

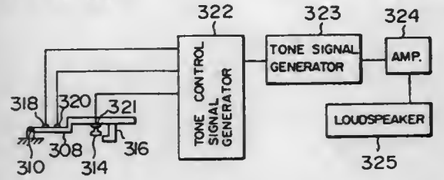
wherein said control means determines a direction in which said output timing of said at least part of said event data is to be shifted, according to a location of said at least part of said event data within a predetermined performance section.

5,571,982

KEYBOARD FOR ELECTRONIC MUSICAL INSTRUMENT

Takamichi Masubuchi, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Aug. 27, 1993, Ser. No. 113,720
Claims priority, application Japan, Aug. 31, 1992, 4-255620; Aug. 31, 1992, 4-255621; Aug. 31, 1992, 4-255623
Int. Cl.[6] G01P *3/00;* **G10H** *1/32*
U.S. Cl. 84—658 **36 Claims**



1. An operating device for an electronic musical instrument comprising:

an operating member of a predetermined length supported at one end of said operating member;

at least two sensors mounted on said operating member at two different positions in the longitudinal direction, said two sensors each generating a signal proportional to the distortion amount of said operating member; and

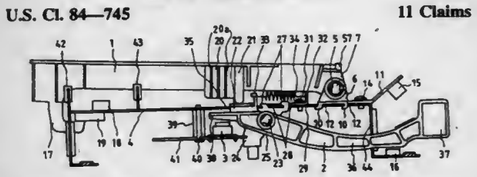
musical tone controlling means for obtaining a difference between two signals outputted from said two sensors and generating a control signal so as to control a musical tone to be generated, in accordance with said difference.

5,571,983

ABUTMENT DEVICE FOR A KEY SWITCH ARRANGEMENT OPERABLE WITH BOTH HAMMER-EQUIPPED AND HAMMERLESS KEYBOARDS FOR ELECTRONIC MUSICAL INSTRUMENTS

Tsutomu Yamaguchi, and Kazuhiro Tsukamoto, both of Shizuoka-ken, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka-ken, Japan

Filed Nov. 16, 1993, Ser. No. 152,706
Claims priority, application Japan, Nov. 17, 1992, 4-085220 U
Int. Cl.[6] G10H *1/34;3/00*
U.S. Cl. 84—745 **11 Claims**



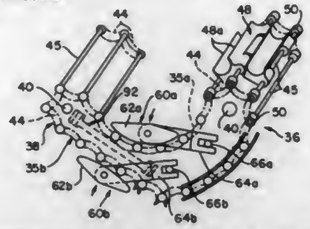
1. An abutment device operable with both a hammer-equipped keyboard and a hammerless keyboard, comprising:

a hammer-depressing portion for depressing a hammer when used in said hammer-equipped keyboard;

a switch-depressing portion for depressing a key switch when used in said hammerless keyboard; and

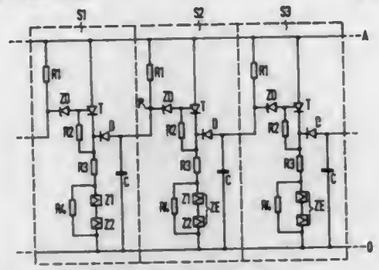
wherein said hammer-depressing portion and said switch-depressing portion are arranged adjacent to each other, with said hammer-depressing portion extending to a level lower than a lower end of said switch-depressing portion.

5,571,984
AMMUNITION FEED SYSTEM FOR A MEDIUM-CALIBRE FIREARM
Guy Ferrand, Bourges, France, assignor to Giat Industries, Versailles, France
Filed Jan. 19, 1995, Ser. No. 375,103
Claims priority, application France, Jan. 21, 1994, 94 00625
Int. Cl.[6] F41A *9/03;9/04*
U.S. Cl. 89—33.16 **25 Claims**



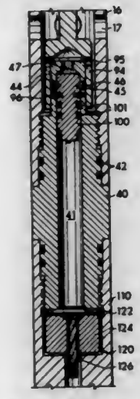
1. An ammunition feed system for a medium-calibre firearm, comprising: a box in which ammunition is stored; a drive mechanism for extracting said ammunition from said box; said drive mechanism leading said ammunition to a weapon loading and firing system of said firearm; said drive mechanism including a plurality of links interposed between said ammunition box and said weapon loading and firing system; said links forming a chain conveyor having an outward upper strand and a return lower strand; said chain conveyor further including an oscillation damping mechanism having upper and lower tension members respectively associated with said upper and lower strands.

5,571,985
SEQUENTIAL BLASTING SYSTEM
Heinz Ritter, Schongau, and Wolf Steinbichler, Bad Feilnbach, both of Germany, assignors to Euro-Matsushita Electric Works AG., Holzkirchen, Germany
Filed Apr. 25, 1995, Ser. No. 428,300
Claims priority, application Germany, May 2, 1994, 44 15 388.0
Int. Cl.[6] F42D *1/055*
U.S. Cl. 102—217 **19 Claims**



1. A sequential blasting system including
a plurality of detonator stages to be triggered in succession, each detonator stage including a series circuit of detonator means for detonating at least one explosive charge and a semiconductor switch having a control input terminal and a pair of output terminals, with a junction between said detonator means and said semiconductor switch,
pulse generating means constituting first and second channels which are alternately supplied with electrical pulses, each pulse having a main interval of a given voltage and an initial interval of a voltage lower than said given voltage and overlapping the respective preceding pulse supplied to the other channel,
said detonator stages being alternately connected to said first and second channels of said pulse generating means, and the control input of the semiconductor switch of each detonator stage being connected to the junction between the semiconductor switch and the detonator means of the respective preceding detonator stage.

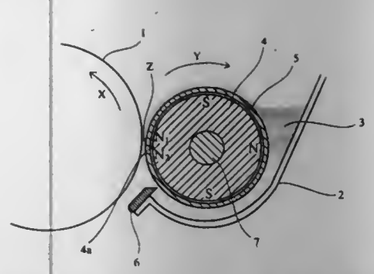
5,571,986
METHOD AND APPARATUS FOR ACTIVATING AN ELECTRIC WIRELINE FIRING SYSTEM
Philip M. Snider, Houston; David S. Wesson, Waxahachie; Lyle W. Andrich, Mansfield, and William D. Smith, Fort Worth, all of Tex., assignors to Marathon Oil Company, Findlay, Ohio
Continuation of Ser. No. 286,155, Aug. 4, 1994, abandoned. This application Jul. 20, 1995, Ser. No. 504,544
Int. Cl.[6] C06C *5/00;* **E21B** *7/00;29/02*
U.S. Cl. 102—275.11 **32 Claims**



1. An apparatus for activating electric wireline firing systems comprising:
a tubular housing;
a motor having a lead screw secured thereto and positioned within said housing;
a bushing positioned upon said lead screw and capable of axial movement upon said lead screw when said lead screw is rotated;
a retainer sleeve positioned within said housing and connected to said bushing; and
a firing pin positioned within said housing and secured against movement by said retainer sleeve.

5,571,987
DEVELOPING APPARATUS USING MAGNETIC DEVELOPING POLES HAVING THE SAME POLARITY
Ryuji Goto, Fukaya, and Koji Noguchi, Kitaadachi, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan
Continuation of Ser. No. 188,130, Jan. 28, 1994, abandoned, which is a continuation of Ser. No. 948,449, Sep. 22, 1992, abandoned. This application Feb. 12, 1996, Ser. No. 598,624
Claims priority, application Japan, Oct. 4, 1991, 3-257389
Int. Cl.[6] G03G *15/09*
U.S. Cl. 399—276 **3 Claims**

1. A developing apparatus for developing an electrostatic latent image on a surface of a moving image-bearing member, the apparatus comprising:
a developing unit including a fixed permanent magnetic member having a surface, a plurality of magnetic poles on the surface, and a non-magnetic cylindrical sleeve mounted to be rotatable about the permanent magnet member at a position with an outer sleeve surface opposing and spaced from the movable image-bearing member to form a developing region having a

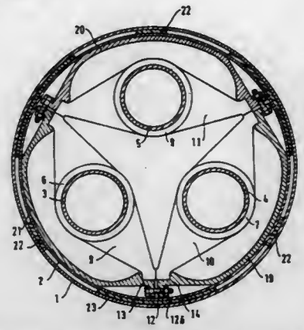


development gap of 0.2–0.6 mm, said permanent magnet member having a surface, two magnetic poles of the same polarity disposed with a small interval for producing at least two peaks having the same polarity in a magnetic flux density distribution on the surface of said non-magnetic sleeve, said surface magnetic flux density of each of said two peaks being about 700–1200 G and said image bearing member having an organic photosensitive surface having a surface potential of 400–700 V in an absolute value;
the unit further including a developer magnetically attractable onto the surface of the non-magnetic cylindrical sleeve, the developer comprising magnetic toner comprising a binder resin, magnetic powder and charge-controlling agent and capable of being charged at a particular polarity and a magnetic carrier having a relatively large conductivity represented by an electrical resistivity of 10^5–10^{10} Ω-cm, the concentration of said magnetic toner in said developer being 20–60% in said developing region; and
means for rotating the non-magnetic cylindrical sleeve to convey the developer into the developing region and to form a magnetic brush which is in contact with the surface of the movable image-bearing member in the developing region, at a peripheral velocity not lower than the peripheral velocity of said movable image-bearing member, the ratio of the peripheral velocity of the sleeve to the peripheral velocity of the image-bearing member being between 1 and 4; and
wherein the moving velocity of the developer in the developing region is higher than the peripheral velocity of the non-magnetic cylindrical sleeve, and wherein a bias voltage 0.6 to 0.9 times as large as said surface potential, and of the same polarity, is applied to said sleeve.

5,571,988
GAS-PRODUCING MATERIAL
Rainer Hagel, Erlangen, and Uwe Brede, Furth, both of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany
Continuation of Ser. No. 967,392, Oct. 28, 1992, abandoned. This application Apr. 6, 1995, Ser. No. 417,835
Claims priority, application Germany, Oct. 30, 1991, 41 35 776.0
Int. Cl.[6] C06B *47/00;* **C10L** *1/30;* **B60R** *21/28*
U.S. Cl. 149—1 **14 Claims**

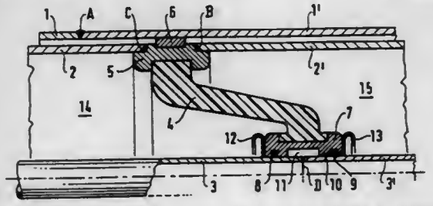
1. A gas-producing material for a gas generator, for use with an air bag of a vehicle, said gas-producing material consists of a liquefied gas mixture, wherein the components making up the liquefied gas mixture comprise 0.5 to 27% by weight of at least one hydrocarbon selected from the group consisting of propane, n-butane, and isobutane, 14 to 97.5% by weight of nitrogen monoxide, and up to 80% by weight of an inert gas.

5,571,989
GAS-INSULATED HIGH-TENSION LINE FOR LONG DISTANCES
Edmond Thuries; Van Doan Pham, both of Meyzieu; René Tixier, Lyon, and Marcel Guillen, Pont-Eveque, all of France, assignors to GEC Alsthom T & D SA, Paris, France
Filed Dec. 20, 1994, Ser. No. 359,991
Claims priority, application France, Dec. 21, 1993, 93 15355
Int. Cl.[6] H02G *5/06*
U.S. Cl. 174—24 **7 Claims**



1. A gas-insulated high-tension three-phase electricity line comprising a cylindrical steel case and three conductors disposed parallel to a longitudinal axis of said case, and a magnetic screen including a cylindrical aluminum case disposed inside the steel case in close proximity to the steel case, wherein the conductors are held by a plurality of sets of insulating arms, each of said sets comprising three of said arms secured to each other, said conductors being free to slide through openings formed in said arms, the aluminum case being separated from the steel case by strips made of one of a plastic material and a filled polymer having a low coefficient of friction, said line further comprising supporting hoops disposed inside said aluminum case, said hoops being bolted together at ends of said hoops, wherein ends of said arms are clamped in pairs between the ends of said hoops.

5,571,990
GAS-INSULATED SINGLE-PHASE CABLE FOR TRANSPORTING ELECTRICITY
Van Doan Pham, Meyzieu, and René Tixier, Lyon, both of France, assignors to GEC Alsthom T & D SA, Paris, France
Filed Dec. 20, 1994, Ser. No. 360,008
Claims priority, application France, Dec. 21, 1993, 93 15356
Int. Cl.[6] H02G *5/06*
U.S. Cl. 174—24 **6 Claims**



1. A gas-insulated single-phase cable for long-distance transport of electricity under high tension, the cable comprising a cylindrical steel case filled with nitrogen under a pressure of at least about 10 hectopascals, an aluminum- or copper-based metal conductor held axially inside the steel case by closed insulating cones, and an aluminum case disposed at a short distance from the steel case and constituting a magnetic screen protecting the steel case from a magnetic field generated by a current carried by the conductor, said steel case being separated from said aluminum case by rings made of one of a plastic material and a filled polymer, wherein each of

said rings is placed in a groove in a metal collar, and two adjacent portions of the aluminum case are welded to said collar.

5,571,991

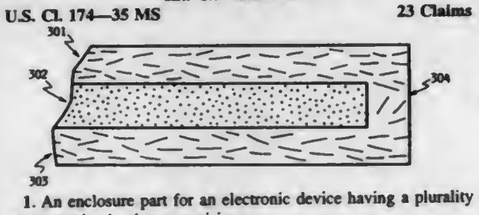
ELECTRO-MAGNETIC SHIELDING STRUCTURE HAVING SURFACE LAYERS CONNECTED TO EACH OTHER AT EDGES

Edward A. Higham, Kasson; Alfred W. Mueller; Thomas W. Nash, both of Rochester, all of Minn.; Ewald E. G. Stadler, Herrenberg, Germany, and Scott M. Thorvilson, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 197,574, Feb. 15, 1994, abandoned, which is a continuation of Ser. No. 816,696, Jan. 2, 1992, abandoned. This application Jun. 30, 1995, Ser. No. 497,351

Int. Cl.[6] H05K *9/00*

U.S. Cl. 174—35 MS **23 Claims**



1. An enclosure part for an electronic device having a plurality of electronic circuits, comprising:

an outer surface layer disposed externally to said device, said outer layer comprising an electrically conductive fill material suspended in a polymeric base;

an inner surface layer disposed internally to said device and facing said electronic circuits, said inner layer comprising an electrically conductive fill material suspended in a polymeric base;

a middle layer disposed between said outer layer and said inner layer, and having a first boundary surface in contact with said outer layer at all of the first boundary surface and a second boundary surface in contact with said inner layer at all of the second boundary surface, said middle layer comprising a magnetically permeable fill material suspended in a polymeric base,

wherein said enclosure part is an injection-molded part formed by co-injection molding of said layers, said outer and inner layers being connected to each other at edges of said enclosure part, said polymeric base materials of said outer, middle and inner layers being in direct contact with each other and creating a continuous bond without the aid of an additional bonding agent at all of the respective contacting boundary surface areas, said layers being so bonded to form a single, integrated enclosure part.

5,571,992

LIGHTWEIGHT SHIELDED CABLE ASSEMBLY

Harry R. Maleski, Mesa; Mike D. Bendell, Apache Junction, and Keith A. Kerfoot, Mesa, all of Ariz., assignors to McDonnell Douglas Helicopter Co., Mesa, Ariz.

Filed Oct. 25, 1994, Ser. No. 329,089

Int. Cl.[6] H01B *11/06*

U.S. Cl. 174—36 **8 Claims**

5. A cable assembly comprising:

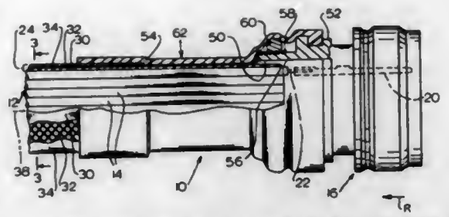
a bundle of wires having an axis;

an inner shrink tube lying around said bundle of wires and shrunk tightly thereabout;

a metal braiding lying around said inner shrink tube;

an outer shrink tube lying around said metal braiding and shrunk tightly thereabout;

said inner shrink tube having a radially outer surface region comprising a layer of metal, and said outer shrink tube having a radially inner surface region comprising a layer of metal, with said metal braiding being sandwiched between and in contact with both of said layers of metal.



5,571,993

OUTLET BOXES

Michael A. Jones, Sydney, Australia; Alan R. Pond, Chingford, England; Alan C. Penfield, Chadwell Heath, England, and Derek G. McCarty, Edmonton, England, assignors to Caradon MK Electric Limited, Essex, England

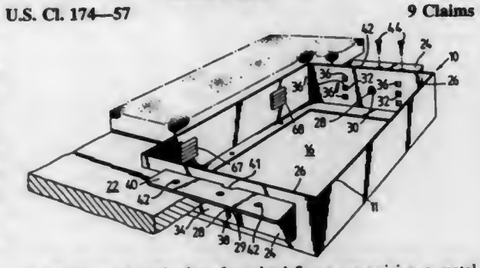
PCT No. PCT/GB92/01101, § 371 Date Dec. 17, 1993, § 102(e) Date Dec. 17, 1993, PCT Pub. No. WO93/00732, PCT Pub. Date Jan. 1, 1993

PCT Filed Jun. 18, 1992, Ser. No. 167,942

Claims priority, application United Kingdom, Jun. 20, 1991, 9113409; Jun. 20, 1991, 9113425

Int. Cl.[6] H02G *3/08*

U.S. Cl. 174—57 **9 Claims**



1. An electrical outlet box for raised floors comprising a metal box (**10**) with a lid assembly (**12**), means (**14**) for adjusting the height of the lid assembly relative to the box, the box being adapted to have mounted in the bottom thereof electrical sockets and/or switches (**20**), the box having means (**24**) for adjustably securing the box to a floor panel (**22**) wherein the means (**14**) for adjusting the height of the lid assembly (**12**) relative to the box (**10**) comprises at least one pawl means (**62**, **63**) and at least one ratchet means (**67**, **68**) between at least one side of the box and the lid assembly with a handle means to releasably engage said pawl means and said ratchet means.

5,571,994

WEATHERPROOF SEAL FOR A WIRE ENTRANCE

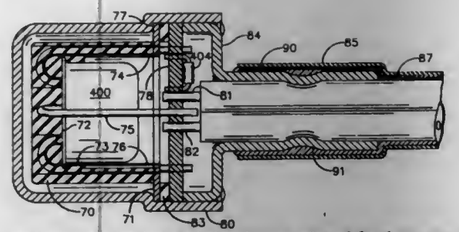
Peter Nortou, P.O. Box 62, Northville, Mich. 48167

Division of Ser. No. 776,871, Oct. 16, 1991, abandoned, which is a division of Ser. No. 529,716, May 25, 1990, abandoned, which is a continuation of Ser. No. 364,640, Jun. 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 262,732, Oct. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 218,917, Jul. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 190,165, May 4, 1988, abandoned. This application Jan. 18, 1994, Ser. No. 183,134

Int. Cl.[6] H02G *3/18*

U.S. Cl. 174—65 R **3 Claims**

1. In an electrical device in an automobile having an enclosure and having wires entering said enclosure, the improvement comprising:



said enclosure having a tubular element adapted for the passage of said wires entering said enclosure,

a wrapper wrapped about said tubular element and also wrapped about a length of said wires, said length of said wires being outside of said tubular element and adjacent to one end of said tubular element,

said wrapper comprising heat shrinkable tubing having a lining of meltable material that has been placed around said tubular element and said length of said wires and heated sufficiently to melt said meltable material and cause said heat shrinkable tubing to shrink.

5,571,995

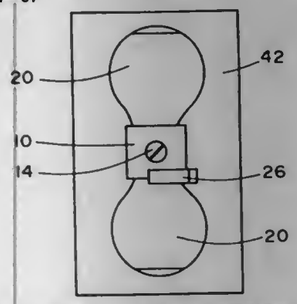
LOCKING SAFETY COVER FOR ELECTRICAL OUTLETS

David B. Pierce, P.O. Box 246, Bells, Tex. 75414

Filed Dec. 2, 1993, Ser. No. 160,248

Int. Cl.[6] H01R *13/44*

U.S. Cl. 174—67 **4 Claims**



1. A safety cover for electrical outlets, comprising:

a) a locking block secured to an electrical outlet,

d) said locking block having a front, two sides, a top and a bottom,

b) said locking block having at least one groove therein,

c) at least one receptacle cover having an integral elongate member to slidably engage said at least one groove in said locking block,

e) said at least one groove beginning at one side and extending therefrom along a portion of the top, and another of said at least one groove beginning at another side and extending along a portion of the bottom,

f) each of said grooves having a cross section sized and shaped to receive said elongate member integral with said receptacle cover,

g) said elongate member having a cross section sized and shaped to slidably engage one of said grooves,

h) said receptacle cover having therein a groove in which to place another receptacle cover for storage, and

i) said receptacle cover having two or more retractable prongs to engage an electrical outlet.

5,571,996

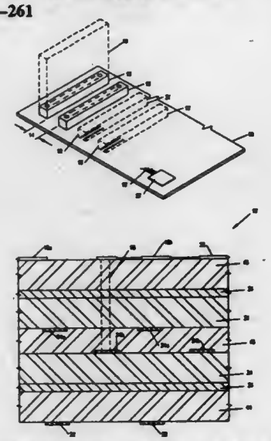
TRACE CONDUCTOR LAYOUT CONFIGURATION FOR PRESERVING SIGNAL INTEGRITY IN CONTROL BOARDS REQUIRING MINIMUM CONNECTOR STUB SEPARATION

N. Deepak Swamy; Victor K. Pecone, and Darrell Slupek, all of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed Jan. 17, 1995, Ser. No. 375,327

Int. Cl.[6] H05K *1/18; 1/14*

U.S. Cl. 174—261 **19 Claims**



1. A trace conductor layout configuration within a control board, comprising:

a control board substrate having a pair of opposing planar surfaces;

first and second planes arranged within said control board substrate parallel to each other and parallel to said opposing planar surfaces;

a first pair of trace conductors formed parallel to each other across a portion of said first plane, said first pair of trace conductors being connected together and terminated at a first pair of vias, and a second pair of trace conductors formed parallel to each other across a portion of said second plane, said second pair of trace conductors being connected together and terminated at a second par of vias, wherein said first pair of trace conductors are laterally offset from said second pair of trace conductors; and

first and second connector stubs coupled to said first and second pair of vias, wherein each said first and second connector stubs is adapted for receiving edge terminals of a daughter board.

5,571,997

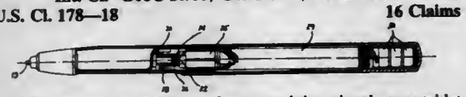
PRESSURE SENSITIVE POINTING DEVICE FOR TRANSMITTING SIGNALS TO A TABLET

Donald F. Gray, Phoenix, and Michael M. Malkin, Scottsdale, both of Ariz., assignors to Kurta Corporation

Filed Aug. 2, 1993, Ser. No. 101,442

Int. Cl.[6] G08C *21/00;* **G09G** *3/02;* **H04L** *15/08*

U.S. Cl. 178—18 **16 Claims**



1. A pressure sensitive pen for transmitting signals to a tablet comprising:

(a) a stylus mounted within a carrier for limited axial movement and extending therefrom for contact with a surface;

(b) switch means responsive to a first predetermined axial force applied to said stylus for generating a pen down signal; and

(c) modulating means having a variable reluctance responsive to axial forces exceeding a second predetermined axial force

VOL 1192 ISS 1 NO 5 1996 UMI

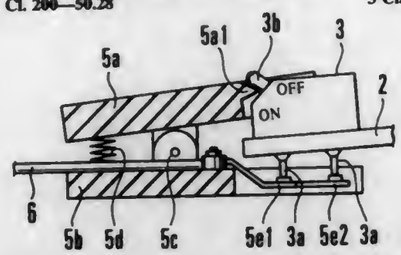
larger than said first predetermined axial force for varying said reluctance and for modulating transmitted signals in proportion to said axial forces exceeding said second predetermined axial force.

5,571,998

FUNCTION SWITCHING DEVICE FOR INFORMATION PROCESSING APPARATUS

Akira Momoi, Yamanashi, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 1, 1994, Ser. No. 332,057
Claims priority, application Japan, Nov. 5, 1993, 5-276265
Int. Cl.[6] H01H *9/00*; H01R *11/22*
U.S. Cl. 200—50.28 **3 Claims**



1. A function switching device for an information processing apparatus, comprising a function switching section mounted to a DIP switch arranged to face a mounting port-side edge of a printed circuit board to be parallel to said edge, said printed circuit board being mounted in said information processing apparatus, a control unit for outputting a function switching signal to said function switching section, and a signal cable for electrically connecting said function switching section and said control unit,

said function switching section comprising

a pair of clip segments,

a pivot shaft for pivotally supporting both said clip segments,

springs for normally biasing both said clip segments in a closed direction,

means, provided at a central portion of a front side of one clip segment, for resetting knobs of said DIP switch to an initial state when said function switching section is mounted to said board, and

a plurality of contacts arranged to extend forward from the other clip segment and brought into contact with leads of switch contacts of said DIP switch that project from a rear surface of said board when said function switching section is mounted to said DIP switch.

5,571,999

MULTI-POSITION ELECTRICAL SWITCH

Timothy S. Harris, Fort Wayne, Ind., assignor to Mattel, Inc., El Segundo, Calif.

Filed Nov. 28, 1994, Ser. No. 345,484
Int. Cl.[6] H01H *19/46*
U.S. Cl. 200—565 **10 Claims**

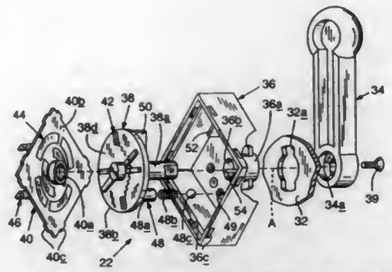
1. A multi-position electrical switch for use in a child's riding toy to connect a power source to a plurality of motors in selected alternative configurations, said switch comprising:

a base which includes a plurality of stationary contacts, each contact adapted to be independently electrically connected to a predetermined terminal of the motors and power source;

a manually operable selector mechanism mounted for movement relative to said base;

an arrangement of electrically conductive bridges which are mounted on said selector mechanism for unitary movement between a forward/parallel orientation wherein said bridges connect the stationary contacts so as to configure the motors in parallel with the power source in a first polarity arrangement, a forward/series orientation wherein said bridges connect the stationary contacts so as to configure the motors in series with the power source in said first polarity arrangement, and a reverse/series orientation wherein said bridges connect the stationary contacts so as to configure the motors in series with the power source in a second polarity arrangement opposite said first polarity arrangement; and

wherein said contacts are spaced to automatically momentarily disconnect said power source and said motors as said bridges move between said orientations.

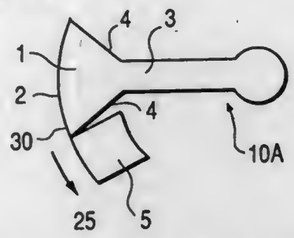


5,572,000

DISTRIBUTOR IN IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Yoshimichi Numata, Mito; Hiromitsu Nagae, and Michitaka Yumino, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 10, 1994, Ser. No. 194,589
Claims priority, application Japan, Feb. 10, 1993, 5-022970
Int. Cl.[6] H01H *19/00*
U.S. Cl. 200—19 DR **37 Claims**



1. Electrode arrangement for a rotor in a distributor of an internal combustion engine of the type having a rotating electrode and a stationary electrode for supplying a high voltage to a discharge region of a sparking surface of said rotating electrode, at an outer periphery of said rotating electrode, when said discharge region is rotationally adjacent said stationary electrode, said electrode arrangement comprising:

a rotating electrode made of an electrically conductive material and mounted on said rotor; and

at least one dielectric element mounted on said rotor; wherein;

said at least one dielectric element is in electrical contact with said rotating electrode, and is mounted on said rotor adjacent said outer periphery of said rotating electrode, at a location which is angularly removed from said discharge region relative to a direction of rotation of said rotor, whereby said at least one dielectric element is not rotationally adjacent said stationary electrode when said discharge region is rotationally adjacent said stationary electrode and said stationary electrode delivers said high voltage to said discharge region.

5,572,001

Patent Not Issued For This Number

5,572,002

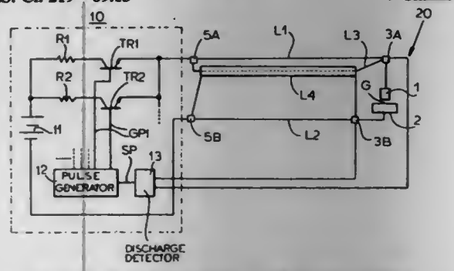
Patent Not Issued For This Number

5,572,003

ELECTRIC DISCHARGE MACHINING APPARATUS WITH PAIRS OF LOW INDUCTANCE AND LOW CAPACITANCE CONDUCTORS

Yuji Kaneko, Yokohama, Japan, assignor to Sodick Co. Ltd., Yokohama, Japan

Filed Dec. 23, 1994, Ser. No. 363,759
Claims priority, application Japan, Dec. 24, 1993, 5-354942
Int. Cl.[6] B23H *1/02*
U.S. Cl. 219—69.13 **7 Claims**



1. An electric discharge machining apparatus comprising:

a machining unit having a tool electrode spaced from a workpiece to be machined by electrical discharges and defining a machining gap with said tool electrode, said workpiece constituting a workpiece electrode;

a power supply spaced from said machining unit and comprising:

source means for supplying electrical energy for said discharges,

first switch means connected to said source means for supplying at a terminal of said power supply, a first current pulse contributing to a machining discharge, and

second switch means connected to said source means for supplying at a terminal of said power supply, a second current pulse during generation of said first current pulse and with a steep leading flank, said terminals of said first and second switch means being connectable to one of said electrodes, another terminal of said power supply being connectable to the other of said electrodes; and

conductor means for connecting said power supply with said machining unit and comprising:

a low-capacitance pair of conductors connecting said terminal of said first switch means with said one of said electrodes and said other terminal of said power supply with said other of said electrodes, and

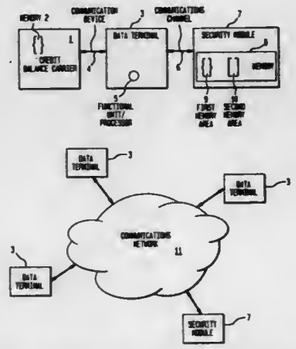
a low-inductance pair of conductors connecting said terminal of said second switch means with said one of said electrodes having a lower ampacity than said conductor of the low-capacitance pair which connects said terminal of said first switch means with said one of said electrodes.

5,572,004

METHOD FOR PAYING FOR SERVICES AND/OR GOODS AND APPARATUS FOR CARRYING OUT THE METHOD

Gerhard Raimann, Alland, Austria, assignor to Landis & Gyr Business Support AG, Zug, Switzerland

Continuation of Ser. No. 159,854, Nov. 30, 1993, abandoned.
This application Apr. 28, 1995, Ser. No. 431,911
Claims priority, application Switzerland, Dec. 1, 1992, 03678/92
Int. Cl.[6] G06K *5/00*
U.S. Cl. 235—380 **9 Claims**



1. A method for payment for services and/goods of a type, using a credit balance means that stores an amount M thereon, comprising steps of:

prior to a purchase of a service and/or goods:

reading with a data terminal device said amount M from said credit balance means; and

writing with said data terminal device said amount M into a memory of a security module; and

during said purchase:

determining with said data terminal device a running cost amount K for said service and/or goods; and

storing back with said data terminal device into said credit balance means an amount Mv, wherein said amount Mv is a difference between said amount M and said cost amount K,

wherein said method comprises steps of:

a) providing said memory with a first memory area and a second memory area, and

b) in a first transaction prior to said purchase, said data terminal device subtracting said amount M from said credit balance means, and adding said amount M to said first memory area;

c) in a second transaction during said purchase, said data terminal device subtracting said amount Mv from said first memory area, and adding said amount Mv to said credit balance means; and

d) in a third transaction, said data terminal device transferring said cost amount K from said first memory area to said second memory area.

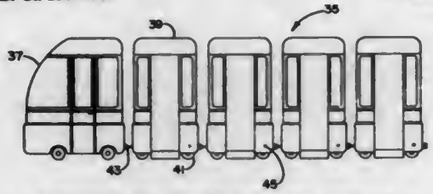
5,572,005
TELECOMMUNICATIONS BOOTH COMPRISING A TELECOMMUNICATIONS TRAIN HAVING A PLURALITY OF WHEELED HOUSINGS

Robert H. Hamilton, Edina; Thomas J. Doyle, Minneapolis, and Phillip R. Brooks, Eagan. all of Minn., assignors to TPI Inc., Eden Prairie, Minn.

Division of Ser. No. 243,533, May 16, 1994, Pat. No. 5,393,964, which is a continuation of Ser. No. 779,114, Oct. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 596,761, Oct. 12, 1990, abandoned. This application Jan. 31, 1995, Ser. No. 381,127

Int. Cl.[6] G06F *7/08*; H04M *11/00*

U.S. Cl. 235—381 **4 Claims**



1. A transportable telecommunications train, comprising:
a self-propelled vehicle;
a plurality of wheeled housings, each of said housings being walled and having a door, each of said housings including;
a card reader supported by said housing for reading data on card wielded by a user;
a preprogrammed computer system supported by said housing and including program means for interacting with said user;
a telephone coupled to said computer system and supported by said housing;
a facsimile module coupled to said computer system and supported by said housing;
a modem coupled to said computer system:
means for connecting to a public telecommunications channel, and means for selectively providing communication between said public telecommunications channel and one of said telephone, said facsimile module, and said modem;
said communication providing means including means for switching connection with said public telecommunications channel connecting means to one of said telephone, said facsimile module, and said modem;
said communication providing means further including means for controlling said switching means through said computer system based on interaction between said user and said program means; and
means for hitching one of said wheeled housings to said vehicle and the remainder to one another thereby forming said train.

5,572,006
AUTOMATIC EXPOSURE SINGLE FRAME IMAGING SYSTEMS

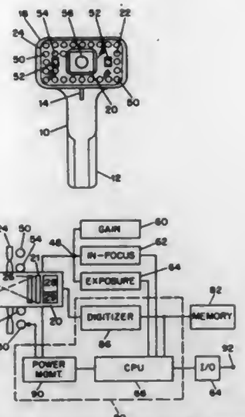
Yajun P. Wang, and Paul P. Ju, both of Fort Myers, Fla., assignors to Metanetics Corporation, Fort Myers, Fla.

Filed Jul. 26, 1994, Ser. No. 280,489

Int. Cl.[6] B06K *7/10*

U.S. Cl. 235—454 **55 Claims**

1. An automatic exposure imaging system, usable as a dataform reader to read a dataform in a target area at a distance from said reader, comprising:
a plurality of sensor elements which are readable to provide image signals and at least some of which are positioned in a two-dimensional array;
at least one focus illuminator arranged to illuminate said target area with an area of illumination characterized by at least one of a size, a brightness and a location which varies with the distance between the array and the target area;
a user trigger device arranged to activate said at least one focus illuminator and initiate reading of selected sensor elements;



an in-focus sensing device responsive to image signals from at least one of said sensor elements and arranged to provide an in-focus signal when said area of illumination is characterized by at least one of a size within a predetermined size range, a brightness within a predetermined brightness range and a location within a predetermined location range;
a gain control device responsive, in a period after said in-focus signal, to the level of reflected light as represented by image signals from at least one of said sensor elements and arranged to control image signal amplification;
an exposure control device, responsive to image signals from at least one of said sensor elements, and arranged to provide a start signal in response to said in-focus signal and a stop signal in response to reflection of a predetermined level of illumination from said target area;
at least one exposure illuminator responsive to said start signal and to said stop signal, and arranged to illuminate said target area during an exposure period determined by said start and stop signals;
a memory unit coupled to said array and arranged to store image data representative of said image signals;
a processing unit coupled to said memory unit and arranged to process stored image data to decode said dataform, and to provide an end-cycle signal effective to terminate reading of selected sensor elements and operation of the dataform reader, upon successful decoding of the dataform; and
an output device coupled to said processing unit and arranged to provide output signals representative of decoded dataform information.

5,572,007
SYMBOLOGY READER WITH INTERCHANGEABLE WINDOW

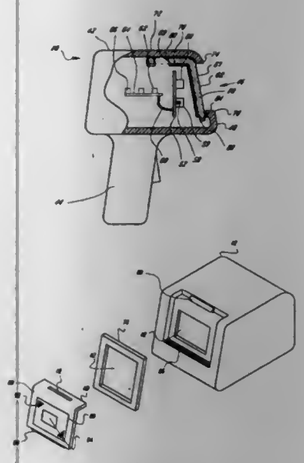
Joel T. Aragon, Everett, and Steven M. Bunce, Mill Creek, both of Wash., assignors to Intermec Corporation, Everett, Wash.

Filed Aug. 19, 1994, Ser. No. 293,386

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—472 **31 Claims**

1. A user replaceable window for a symbology reader having a reading face with an optical aperture therethrough, the reader having a releasable window retainer positioned adjacent an edge of the reader aperture, comprising:
an optically transmissive base for attachment to the reader at its reading face, the base conforming substantially to the reading face;
an alignment guide for retaining the window in alignment with the aperture; and
a region adapted for engaging the window retainer to releasably hold the window in attachment to the reader.



5,572,008
OPTICAL INFORMATION READING APPARATUS WITH CONCAVE MIRROR

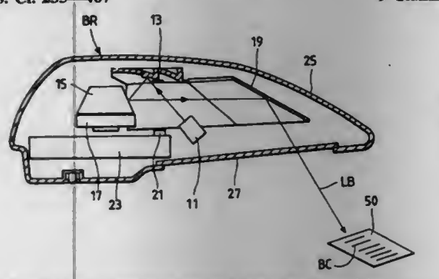
Yasuyuki Sakai, Kariya, and Katsunori Goto, Handa, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 15, 1994, Ser. No. 357,124

Claims priority, application Japan, Dec. 16, 1993, 5-316575

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—467 **9 Claims**



1. An optical information reading apparatus comprising:
an irradiating optical system for converting a laser beam emitted from a light source to a scanning light using a rotating mirror, and for applying said scanning light onto an object bearing optical information thereon to be read via a pattern mirror;
a condensing optical system for converging light reflected from said object onto a given focal point via said pattern mirror and said rotating mirror;
light-receiving means, arranged at said given focal point, for producing a light-receiving signal indicative of an intensity of said converged light reflected from said object;
recognition means for reading said optical information based on said light-receiving signal from said light-receiving means; and
a concave mirror arranged near said rotating mirror, said concave mirror including:
a planar portion for reflecting said laser beam emitted from said light source to be incident on said rotating mirror,
a concave portion for reflecting and converging said reflected light from said rotating mirror onto said light-receiving means arranged apart from said light source, said concave portion of said concave mirror including:
a first concave portion; and
a second concave portion,
said first concave portion being located closer to said rotating mirror than said second concave portion,
said first concave portion forming a portion of a first ellipsoidal surface of revolution and said second concave portion forming a portion of a second ellipsoidal surface of revolution,
said first and second ellipsoidal surfaces sharing a rotation axis and focal points located on said rotation axis, and
second diameters of said second ellipsoidal surface being greater than first diameters of said first ellipsoidal surface.

5,572,009
METHOD FOR ENCODING A MACHINE-READABLE MEASUREMENT SCALE

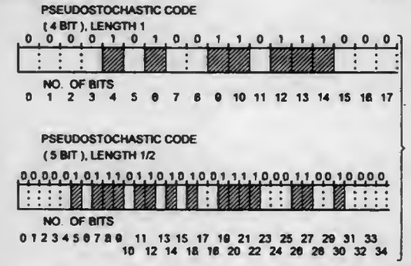
Klaus Guertler, Jena, Germany, assignor to Carl Zeiss Jena GmbH, Jena, Germany

Filed Oct. 19, 1994, Ser. No. 326,001

Claims priority, application Germany, Nov. 8, 1993, 43 38 038.7

Int. Cl.[6] G06V *19/06*

U.S. Cl. 235—494 **6 Claims**



1. A method for encoding a machine-readable scale using a BP-code which is formed from a first P-code with length k, said BP-code providing half bit pairs each having right- and left-half bits, said half bit pairs corresponding to whole bits of the first P-code, each of said bits being assigned light or dark coloring, said method comprising the steps of:
generating a second P-code having a length of k+1, said second P-code providing whole bits having dark and light coloring;
comparing the coloring of each half-bit of said BP-code with the coloring of whole bits of said second P-code based upon predetermined relationships to obtain first and second sets of comparison results;
assigning coloring to bits of said machine-readable scale based upon said first and second sets of comparison results according to predetermined guidelines.

5,572,010
DISTRIBUTED TYPE LABELING FOR EMBEDDED DATA BLOCKS

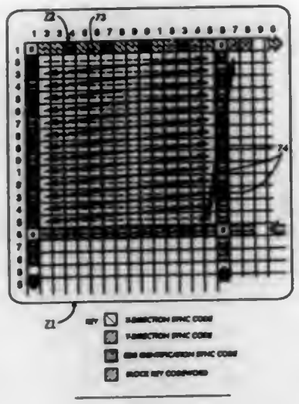
Glen W. Petrie, Los Gatos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1995, Ser. No. 368,115

Int. Cl.[6] G06K *19/06*

U.S. Cl. 235—494 **9 Claims**

1. A two dimensional embedded data block for storing machine readable information on a recording medium; said embedded data block comprising a lattice-like synchronization frame composed of embedded data characters for encoding a recognizable address code, said code being selected to provide a type label for said data block and for distinguishing said data block from different data block types.

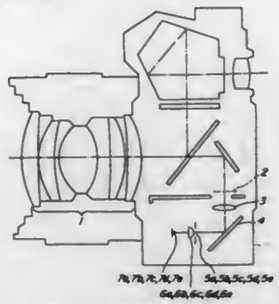


5,572,011

FOCUS DETECTING METHOD AND DISTANCE MEASURING METHOD WITH A PLURALITY OF LIGHT FLUXES AND A CONTRAST OPERATION

Hisashi Goto, Yokohama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,764
Claims priority, application Japan, Dec. 28, 1993, 5-350274
Int. Cl.[6] G01J *1/20*
U.S. Cl. 250—201.2 30 Claims



1. A method of detecting a focus condition of an image forming optical system comprising:

a first step for dividing, by means of a pupil dividing optical system, a light flux emanating from an object into a plurality of light fluxes which are transmitted through different regions of a pupil of the image forming optical system, receiving said plurality of light fluxes by a photoelectric converting means having a plurality of light receiving element arrays and deriving plural sets of photoelectrically converted output signals;

a second step for selecting at least two sets of photoelectrically converted output signals among said plural sets of photoelectrically converted output signals;

a third step for adding said selected at least two sets of photoelectrically converted output signals at arbitrary positions of respective signals to derive a first sum signal;

a fourth step for adding said selected at least two sets of photoelectrically converted output signals at positions which are different from said arbitrary positions in the third step to derive a second sum signal;

a fifth step for performing contrast operation for said first sum signal to derive a first contrast value and performing contrast operation for said second sum signal to derive a second contrast value; and

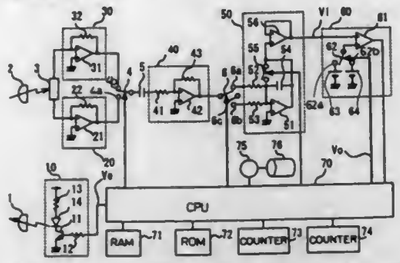
a sixth step for detecting a focus condition in accordance with said first and second contrast values.

5,572,012

DISTANCE MEASURING DEVICE FOR CAMERA USING INTEGRATION OF REFLECTED LIGHT

Hiroyuki Saito, and Akira Ito, both of Yotsukaido, Japan, assignors to Seiko Precision Inc., Japan

Filed Jun. 15, 1994, Ser. No. 260,353
Claims priority, application Japan, Jun. 16, 1993, 5-145095; Jun. 16, 1993, 5-145096
Int. Cl.[6] G03B *13/36*
U.S. Cl. 250—201.6 13 Claims



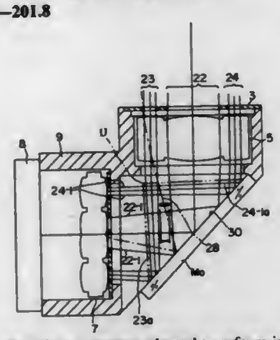
1. A distance measuring device, comprising: light emitting means for emitting a light projected to reflect off a subject; light receiving means for receiving reflected light from the subject and for providing a corresponding output signal; variable-gain amplifying means for amplifying the output signal and for providing an amplified output signal; integrating means for integrating the amplified output signal and for producing an integrated output signal; comparing means for comparing the integrated output signal to a first predetermined value and a to a second predetermined value, the second predetermined value being higher than the first predetermined value; switching means for switching the gain of the amplifying means when the integrated output signal is higher than the first predetermined value; and calculating means for calculating a distance to the subject in accordance with the number of times integration is performed until the integrated output signal exceeds the second predetermined value.

5,572,013

FOCUS DETECTION APPARATUS WITH A LIGHT SHIELDING MEMBER

Keiji Ohsawa, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 212,810, Mar. 15, 1994, abandoned.
This application Jun. 7, 1995, Ser. No. 485,121
Claims priority, application Japan, Mar. 15, 1993, 5-080181
Int. Cl.[6] G01J *1/20*
U.S. Cl. 250—201.8 14 Claims



1. A focus detection apparatus adapted to reform images of light fluxes that pass through differing regions of a photographic lens into a pair of images on light receiving element arrays by using, for each pair of images, a field mask, a field lens, a pair of re-imaging lenses, and an aperture mask having a pair of aperture openings

provided in the vicinity of the pair of re-imaging lenses, the focus detection apparatus having multiple focus detection blocks that detect the focus condition of said photographic lens from positions relative to said pairs of images, the focus detection apparatus comprising:

a deflection mirror positioned between said field lens and said pair of re-imaging lenses, said deflection mirror causing said light fluxes to be deflected at nearly right angles for focus detection; and

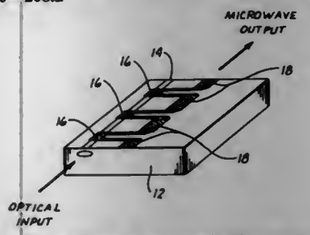
a light shielding member completely positioned within a triangular space determined by a beam of light to said deflection mirror for focus detection that is closest to said pair of re-imaging lenses, a beam of light from said deflection mirror for focus detection that is closest to said field lens and a reflecting surface of said deflection mirror.

5,572,014

HIGHLY EFFICIENT, ULTRAFAST OPTICAL-TO-ELECTRICAL CONVERTER AND METHOD OF OPERATING THE SAME

Ming-Chiang Wu, and Tatsuo Itoh, both of Los Angeles, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jul. 14, 1994, Ser. No. 274,919
Int. Cl.[6] H01J *40/14*
U.S. Cl. 250—208.2 20 Claims



1. A circuit for providing transformation between optical and microwave signals comprising:

a passive optical waveguide;

a microwave transmission line characterized by a group velocity for microwaves traveling in said microwave transmission line matching a group velocity of optical waves traveling in said optical waveguide; and

a plurality of photodiodes periodically optically coupled in series to said passive optical waveguide, said photodiodes being periodically and electrically coupled in series to said microwave transmission line so that output of said photodiodes is generated in phase on said microwave transmission line with an optical wave traveling on said optical waveguide serially coupled to said photodiodes,

whereby said circuit is characterized by high speed, high bandwidth and high efficiency.

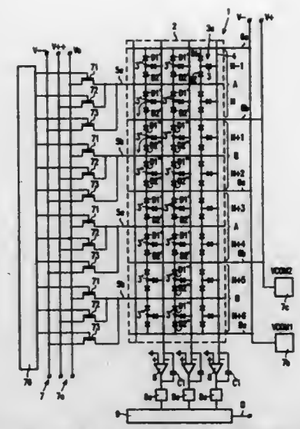
5,572,015

CHARGE STORAGE DEVICE HAVING SHARED CONDUCTORS

Neil C. Bird, Horley, and Gerard F. Harkin, London, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 3, 1995, Ser. No. 398,320
Claims priority, application United Kingdom, Mar. 3, 1994, 9404111
Int. Cl.[6] H01L *27/00*
U.S. Cl. 250—208.1 14 Claims

1. A charge storage device comprising an array of storage elements for storing charge, the storage elements being arranged in rows and columns with the storage elements in a column being coupled to a first conductor and the storage elements in a row



being coupled between respective second and third conductors, each storage element in a row being coupled to the associated second conductor by a first rectifying element and to the associated third conductor by a second rectifying element with the first and second rectifying elements allowing the passage of current when forward-biassed by applied voltages, wherein each row of storage elements shares its second and third conductors with adjacent rows, with one of the second and third conductors associated with each row forming a row conductor and the other being provided by one of first and second reference conductors so that adjacent row conductors are separated by a reference conductor and each first reference conductor is separated from any other first reference conductor by two row conductors and a second reference conductor, the first and second rectifying elements of storage elements associated with a respective row conductor being oppositely oriented to the first and second rectifying elements of storage elements associated with adjacent row conductors of a same set, and means are provided for applying first and second different reference voltages to the first and second reference conductors respectively and for applying voltages to the row conductors for enabling only the rectifying elements associated with a selected row of storage elements to be forward-biassed to allow charge stored at the storage elements of the selected row to be read by stored charge reading means.

5,572,016

PHOTOLUMINESCENCE BUILT-IN-TEST FOR OPTICALLY INITIATED SYSTEMS

Lance A. Wood, Winter Park, Colo.; Paul J. Caldwell, Elkridge, and Terrance L. Worcbesky, Columbia, both of Md., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Apr. 25, 1995, Ser. No. 428,377
Int. Cl.[6] H01J *5/16*; G02B *5/14*
U.S. Cl. 250—227.15 23 Claims

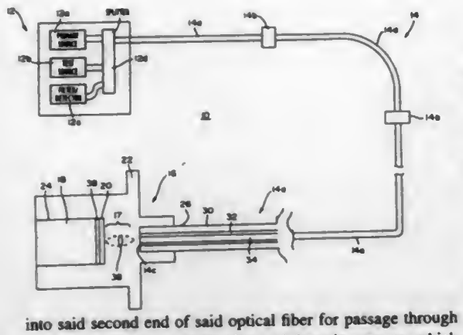
1. An apparatus for testing the integrity of an optical fiber from a single end of said fiber, comprising:

optical means for selectively transmitting light energy within first and second wavelength ranges into a first end of said optical fiber;

an optically initiated device coupled to a second end of said optical fiber;

means for filtering and detecting coupled to said first end of said optical fiber; and

a photoluminescence material, disposed at a junction of said device and said second end of optical fiber, being substantially transparent to said first wavelength range and photoluminescent when exposed to said second wavelength range at a different wavelength from either said first or said second wavelength range, said photoluminescent light being coupled



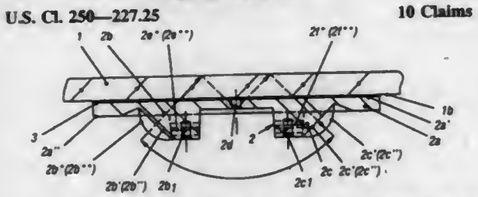
into said second end of said optical fiber for passage through said optical fiber to said filtering and detecting means, which will respond to said photoluminescent light for indicating continuity of said optical fiber.

5,572,017

PRECIPITATION-DETECTING OPTOELECTRONIC SENSOR

Christian Veltum, Iserlohn, and Ralf Böbel, Dortmund, both of Germany, assignors to Leopold Kostal GmbH & Co. KG, Ludenscheid, Germany

Filed Dec. 9, 1994, Ser. No. 352,500
Int. Cl.[6] G02B 6/42
U.S. Cl. 250—227.25 **10 Claims**



1. An optoelectronic sensor for detecting precipitation on an outer surface of a transparent pane, the sensor including a waveguide element having a first surface for affixing to an inner surface of the transparent pane, the waveguide element including a plurality of recesses, at least two of which are on opposing sides of a waveguide element centerline, the sensor also including a beam transmitter for transmitting a beam to be received by a beam receiver, the sensor comprising:

a housing for surrounding the beam transmitter, the beam receiver, and the waveguide element, the housing including a plurality of resilient latching arms corresponding in number and location to the plurality of recesses, each latching arm having an arcuate portion and a barb adapted to engage a corresponding recess; and

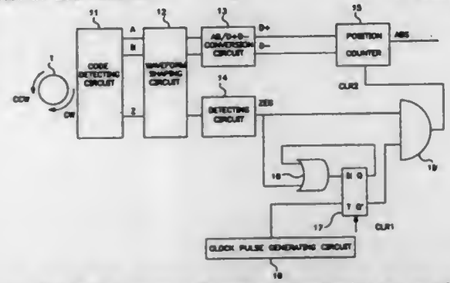
a plurality of locking elements corresponding in number to the plurality of latching arms, each locking element being guided by the housing parallel to the waveguide element between a locked and an unlocked position, the locked position being determined by positioning of the locking element into a space defined by the arcuate portion of a corresponding latching arm to prevent disengagement of the corresponding latching arm from its corresponding recess.

5,572,018

METHOD AND APPARATUS TO DETECT ABSOLUTE POSITION USING ENCODER HAVING A COUNTER CLEAR SIGNAL

Mitsuyuki Taniguchi; Hiroshi Yamaguchi, both of Minamitsuru-gun; Yukio Toyozawa, Kikuchi-gun, and Shunsuke Matsubara, Minamitsuru-gun, all of Japan, assignors to Fanuc Ltd., Japan

PCT No. PCT/JP94/00939, § 371 Date Feb. 13, 1995, § 102(e) Date Feb. 13, 1995, PCT Pub. No. WO94/29673, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 9, 1994, Ser. No. 381,985
Claims priority, application Japan, Jun. 14, 1993, 5-167527
Int. Cl.[6] G01D 5/34
U.S. Cl. 250—231.14 **8 Claims**



1. An absolute position detecting method using an encoder having a rotary plate fixed to a shaft of an object, using a detecting device to detect a rotation of said rotary plate and in response thereto to produce a one-rotation signal and an incremental signal corresponding to a division of one revolution of said rotary plate into a plurality of equal sections and using a counter to count said incremental signal to detect an absolute position of said object, comprising the steps of:

clearing a count value of said counter only in response to a first said one-rotation signal inputted to said counter after said encoder starts a detecting operation;

after said count value in said counter is cleared at said clearing step, continuously counting said incremental signal by said counter in response to a rotation of the shaft of the object; and

determining a moving distance between an origin position corresponding to when said counter received the first one-rotation signal and a present position corresponding to a present count value of said counter, said moving distance representing an absolute position of said object from said origin position.

5,572,019

ENCODER WITH VARYING WIDTH LIGHT RECEIVER AND APPARATUS HAVING THE ENCODER

Tsuyoshi Sakuma, Chichibu, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 145,048, Nov. 3, 1993, abandoned, which is a division of Ser. No. 849,159, Mar. 10, 1992, abandoned. This application Jan. 12, 1995, Ser. No. 371,609
Claims priority, application Japan, Mar. 12, 1991, 3-073941; Mar. 12, 1991, 3-073942
Int. Cl.[6] G01D 5/34
U.S. Cl. 250—231.16 **6 Claims**

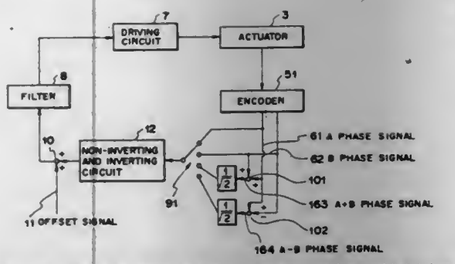
1. An encoder comprising:

detection means for detecting a displacement of a movable portion;

generating means for generating multiple phase periodic signals of at least three different phases, which signals change according to the displacement;

selection means for selecting one of the multiple phase periodic signals;

giving means for giving a predetermined offset to the selected signal;



driving means for displacing said movable portion, said driving means being controlled based on an output signal from said giving means; and

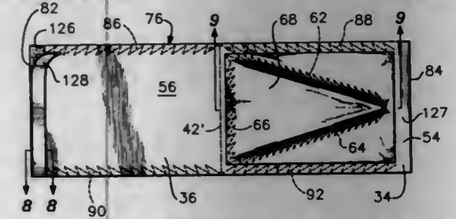
means for changing said offset while the selected signal is switched by said selection means when said offset is a predetermined value.

5,572,020

SIMPLIFIED RADON TESTING PACKAGE

Bernard V. Alvarez, 570 Butler Bridge Rd., Fletcher, N.C. 28732

Filed Dec. 29, 1995, Ser. No. 580,765
Int. Cl.[6] G01T 1/00
U.S. Cl. 250—253 **26 Claims**



1. A package for use in testing for the presence of radon in a given area, said package comprising:

a generally flat, flexible outer packet formed of two panels of radon barrier material joined along sealed edge portions with a closable open edge portion, said panels having facing inner surfaces, and said outer packet being expandable so as to define a chamber therewithin and an opening corresponding to said open edge portion for providing selected access to said chamber; and

a sheet of gas permeable material adhered to the inner surface of one of said panels in an adhesion pattern defining a closed pocket containing radon collecting material between said sheet and said inner surface;

whereby any radon present in the given area may be conducted into the chamber through the opening and collected by said radon collecting material during a testing period, and thereafter retained within said packet by closing the open edge portion for subsequent detection of any such radon.

5,572,021

METHODS OF DETECTING THE LOCATIONS OF WELL TREATING FLUIDS

James F. Heathman, Duncan, Okla.; Robert F. Shelley, Kingsport, Tenn., and Jiten Chatterji, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed May 1, 1995, Ser. No. 432,501
Int. Cl.[6] G01V 5/10
U.S. Cl. 250—269.5 **27 Claims**

1. A method of detecting the presence and concentration of a well treating fluid in surface fluids produced from a well after the treating fluid has been used for performing a treatment in the well comprising the steps of:

(a) combining a non-hazardous thermal neutron absorbing material with said treating fluid;

(b) introducing said treating fluid including said thermal neutron absorbing material into said well and performing a well treatment in said well therewith;

(c) thereafter emitting fast neutrons from a source thereof into contact with surface fluids produced by said well whereby said fast neutrons interact with elements in said fluids and are thermalized thereby;

(d) detecting the thermal neutrons produced by said surface fluids and generating a count representative of the detected thermal neutrons; and

(e) determining the presence and concentration of said treating fluid in said well fluids by comparing the count generated in step (d) with a count representative of the detected thermal neutrons produced by said surface fluids when they do not contain said treating fluid with said thermal neutron absorbing material therein.

5,572,022

METHOD AND APPARATUS OF INCREASING DYNAMIC RANGE AND SENSITIVITY OF A MASS SPECTROMETER

Jae C. Schwartz, San Jose; Xaio-Guang Zhou, Fremont, and Mark E. Bier, Menlo Park, all of Calif., assignors to Finnigan Corporation, San Jose, Calif.

Filed Mar. 3, 1995, Ser. No. 398,143
Int. Cl.[6] H01J 49/00; B01D 59/44
U.S. Cl. 250—282 **10 Claims**

1. A method of mass analysis comprising the steps of:

(a) forming sample ions in a source external to a mass spectrometer;

(b) establishing and maintaining a trapping field in a trap region of a mass spectrometer to store ions whose mass-to-charge ratios lie within a predetermined range of mass-to-charge ratios:

(c) transferring ions from said source into the mass spectrometer for a predetermined time;

(d) removing the transferred sample ions from the mass spectrometer into a detector;

(e) measuring total ion content of the transferred sample ions to develop an ion content signal;

(f) receiving the ion content signal and comparing the ion content with a predetermined ideal ion content to develop a control signal; and

(g) controlling the time in which sample ions are subsequently transferred into the mass spectrometer from the ion source in

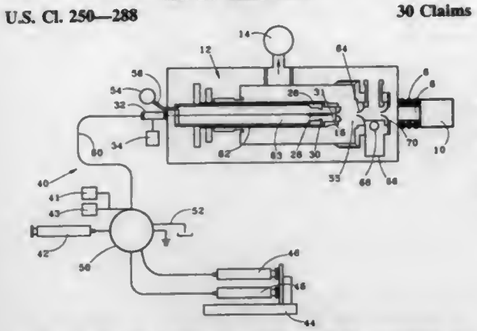
VOL 1192 ISS 1 NO 5 1996 UMI

response to the control signal to control saturation and space charge in the mass spectrometer.

5,572,023
ELECTROSPRAY METHODS AND APPARATUS FOR TRACE ANALYSIS

Richard M. Caprioli, Houston, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Filed May 30, 1995, Ser. No. 453,385
Int. Cl.[6] H01J *49/10*
U.S. Cl. 250—288 **30 Claims**

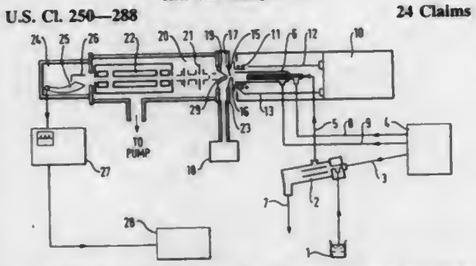


1. Apparatus for receiving a liquid solution containing test molecules of interest and solvent and for forming ionized droplets of interest for test analysis of the molecules of interest, comprising:
- a vaporizer chamber for receiving the ionized droplets of interest;
- a spray needle having a flow path therein for transmitting the liquid solution to the vaporizing chamber, the spray needle having a discharge nozzle for discharging the ionized droplets of interest into the vaporizer chamber;
- a charging source for electrically charging the liquid solution to obtain an electrospray discharge from the spray needle; and
- a selected solid material within the flow path of the needle for chemically interacting with the liquid solution while passing through the spray needle.

5,572,024
APPARATUS AND METHOD FOR ISOTOPIC RATIO PLASMA MASS SPECTROMETRY

Alan L. Gray, Farnham; Martin Liezers, Winsford, and John G. Williams, Brookwood Woking, all of England, assignors to Fisons plc, Ipswich, England

Filed Sep. 1, 1995, Ser. No. 522,597
Claims priority, application United Kingdom, Sep. 2, 1994, 9417700
Int. Cl.[6] H01J *49/12*
U.S. Cl. 250—288 **24 Claims**



1. A method of isotopic analysis of a sample by mass spectrometry comprising the steps of:
- a) introducing a said sample into the plasma generated by an inductively-coupled or microwave-induced plasma mass spectrometer;
- b) sampling said plasma through an orifice in a sampling member into an evacuated expansion region so that a zone of silence bounded by a barrel shock and a Mach disk is formed downstream of the orifice in said sampling member;
- c) allowing at least some ions from said zone of silence through an orifice in a skimming member into a second evacuated region maintained at a pressure lower than that in said expansion region;

said method characterized by: maintaining the ratio

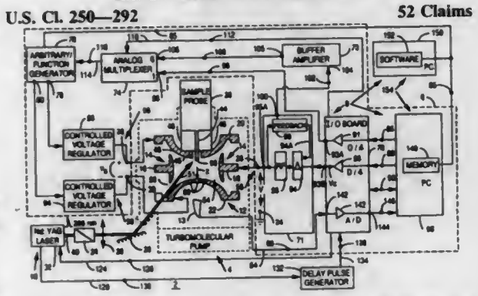
$$\frac{d_i}{s} \times \sqrt{p_1}$$

at a value greater than 0.8 $mB^{1/2}$, where d_i is the diameter of the orifice in said skimming member (mm), s is the distance between the exit side of the orifice in said sampling member and the entrance side of the orifice in said skimming member (mm), and p_1 is the pressure (mB) at which said expansion region is maintained.

5,572,025
METHOD AND APPARATUS FOR SCANNING AN ION TRAP MASS SPECTROMETER IN THE RESONANCE EJECTION MODE

Robert J. Cotter, Baltimore, and Vladimir M. Doroshenko, Reisterstown, both of Md., assignors to The Johns Hopkins University, School of Medicine, Baltimore, Md.

Filed May 25, 1995, Ser. No. 450,464
Int. Cl.[6] B01D *59/44;* **H01J** *49/00*
U.S. Cl. 250—292 **52 Claims**

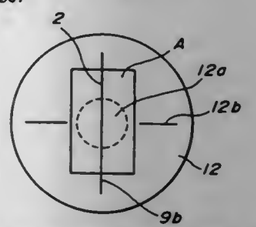


34. Ion trap mass spectrometer apparatus for operation in a resonance ejection mode comprising
- ionizing means for producing ions from a plurality of atoms or molecules,
- trapping means for trapping the produced ions,
- separating means for separating the trapped ions according to a ratio of mass to charge thereof, said separating means including a ring electrode and a pair of end-cap electrodes,
- applying means for applying a trapping voltage to the ring electrode and for applying an excitation voltage to the end-cap electrodes, with a ratio of the amplitude of the trapping voltage to the amplitude of the excitation voltage being generally constant, and
- determining means for determining the mass-to-charge ratio of at least some of the separated ions.

5,572,026
METHOD FOR PREPARATION OF TRANSMISSION ELECTRON MICROSCOPE SAMPLE MATERIAL UTILIZING SHEET MESH

Yuji Ikeda, Kanagawa, Japan, assignor to Sony Corporation, Japan

Division of Ser. No. 112,718, Aug. 27, 1993, Pat. No. 5,440,123. This application Apr. 13, 1995, Ser. No. 422,313
Claims priority, application Japan, Sep. 3, 1992, 4-235026
Int. Cl.[6] H01J *37/20*
U.S. Cl. 250—307 **11 Claims**

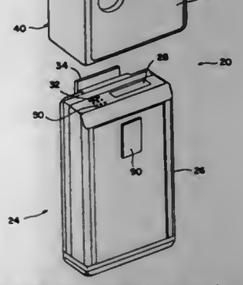


5. A method for processing sample material for use with a transmission electron microscope, comprising the steps of:
- cutting a portion from said sample material to be used with said transmission electron microscope;
- defining an opening in a layer of sheet mesh;
- mounting said portion of said sample material on one side of said sheet mesh so as to be set at a predetermined position indicated by a positioning indication; and
- irradiating said sample material via an energy beam directed through said opening in said sheet mesh.

5,572,027
INTEGRATED DOSIMETER FOR SIMULTANEOUS PASSIVE AND ACTIVE DOSIMETRY

Riad A. Tawil, Kirtland, Ohio, and Sam S. Hsu, Farmingham, Mass., assignors to Saint-Gobain/Norton Industrial Ceramics Corp., Worcester, Mass.

Filed Jan. 12, 1995, Ser. No. 371,694
Int. Cl.[6] G01T *1/11;1/15;* **G01J** *1/02*
U.S. Cl. 250—336.1 **17 Claims**



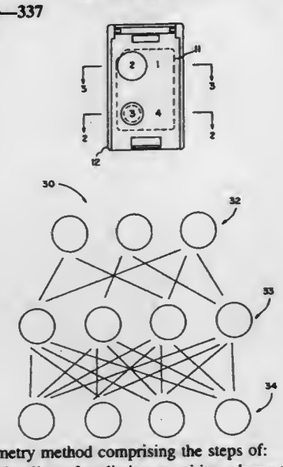
1. A radiation dosimeter comprising a passive detector and an active detector physically connected together as a unitary package, said active detector providing an output representative of radiation exposure on a real time basis, and said passive detector being readable on a delayed basis after exposure to radiation for a period of time to provide an output representative of radiation exposure over said period of time.

12. A radiation monitoring method comprising the steps of using paired active and passive radiation detectors in a single assembly to monitor exposure to a radiation field, the active detector providing an output representative of radiation exposure on a real time basis while the passive detector is readable on a delayed basis after exposure to radiation for a period of time to provide an output representative of radiation exposure over said period of time.

5,572,028
MULTI-ELEMENT DOSIMETRY SYSTEM USING NEURAL NETWORK

Marko Moscovitch, Potomac, Md., and Joseph E. Rotunda, Cuyahoga Falls, Ohio, assignors to Saint-Gobain/Norton Industrial Ceramics Corporation, Worcester, Mass.

Filed Oct. 20, 1994, Ser. No. 326,606
Int. Cl.[6] F01T *1/11*
U.S. Cl. 250—337 **23 Claims**



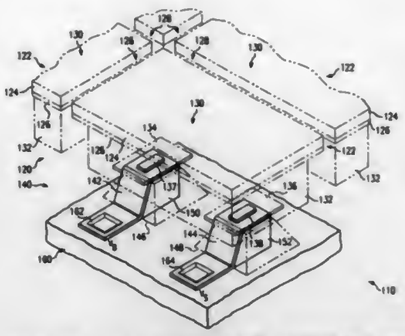
1. A dosimetry method comprising the steps of:
- using a plurality of radiation sensitive elements to monitor exposure to a radiation field composed of one or more types of radiation at one or more different energies;
- reading the radiation sensitive elements after irradiation by the radiation field to obtain element outputs; and
- analyzing the element outputs to determine the radiation field to which the radiation sensitive elements have been exposed, said analyzing step including supplying the element outputs to a trained neural network computer apparatus to provide an output indicative of the radiation field.

5,572,029
THERMAL ISOLATION FOR HYBRID THERMAL DETECTORS

William K. Walker, 2605 Westridge Dr., Plano, Collin County, Tex. 75075; John P. Long, 218 Ridgegate Dr., Garland, Dallas County, Tex. 75040; Robert A. Owen, 4105 Tradewind Dr., Rowlett, Dallas County, Tex. 75088; Bert T. Runnels, 1801 Concho Dr., Garland, Dallas County, Tex. 75040, and Gail D. Shelton, 4224 Spanish Broom, Albuquerque, Bernalillo County, N.M. 87120

Continuation of Ser. No. 268,365, Jun. 30, 1994. This application Jun. 7, 1995, Ser. No. 488,390
Int. Cl.[6] G01J *5/10*
U.S. Cl. 250—338.3 **8 Claims**

1. A hybrid thermal detector comprising:
- at least three thermal sensors for generating a sensor signal output representative of the thermal radiation incident to the respective thermal sensor, each thermal sensor having an associated pyroelectric element;
- a substrate having at least three signal contact pads for receiving the sensor signal outputs from the respective thermal sensors



and at least three bias contact pads for applying bias inputs to the respective thermal sensors;

at least three pairs of mesa-type formations wherein each pair has a first mesa-type formation projecting adjacent to one of the signal contact pads of the substrate and a second mesa-type formation projecting adjacent to one of the bias contact pads;

at least three pairs of mesa strip conductors disposed between the thermal sensors and the substrate, each mesa strip conductor extending from the top of an associated mesa-type formation to a corresponding contact pad of the substrate, each mesa strip conductor formed from a single film of thermally insulating material; and

the thermal sensors being disposed over the substrate such that each thermal sensor is coupled with the corresponding bias contact pad by the respective mesa strip conductor and the sensor signal output for each thermal sensor is coupled with the corresponding signal contact pad by the respective mesa strip conductor.

5,572,030

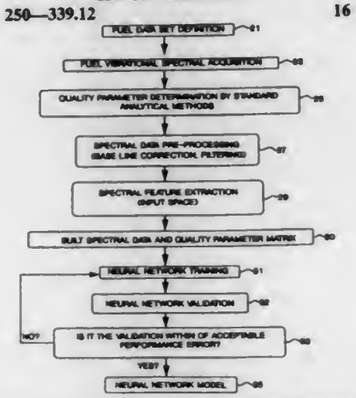
METHOD FOR DETERMINING PARAMETER OF HYDROCARBON

Aaron Ranson, S. Antonio, Venezuela; Fernando Arroyo, Babson Park, Mass.; Adriano Parisi, Los Nuevos Teques., and Hernan Prieto, Los Teques, both of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Continuation of Ser. No. 231,424, Apr. 22, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 585,000

Int. Cl.[6] G01N *21/35*

U.S. Cl. 250—339.12 **16 Claims**



1. A method for evaluating a hydrocarbon fuel from a family of hydrocarbon fuels selected from the group consisting of gasoline, diesel fuel, kerosene, naphtha and jet fuel to determine a desired parameter selected from the group consisting of Reid vapor pressure, simulated distillation values, research octane number, motor octane number, oxygen content, specific gravity octane number, bromine number, aniline point, smoke point, and combinations thereof, comprising the steps of:

(1) providing a computer configured as a neural network;

(2) training the neural network so as to evaluate a hydrocarbon fuel from the family of hydrocarbon fuels to determine the desired parameter, said training comprising the steps of:

(a) selecting a plurality of hydrocarbon fuels from the family of hydrocarbon fuels to be evaluated;

(b) obtaining an NIR spectra for each of said plurality of hydrocarbon fuels;

(c) codifying each of the NIR spectra obtained by providing a base line correction and thereafter reducing the base line corrected spectra to a desired number of points corresponding to the parameters being evaluated;

(d) developing a first matrix from the desired number of points, said first matrix to be subsequently inputted to the neural network;

(e) obtaining a second matrix of parameter values from an analytical evaluation of the plurality of hydrocarbon fuels;

(f) processing the first matrix and the second matrix in the neural network to obtain a functional relationship between the first matrix and the second matrix so as to develop a weighted matrix; and

(g) repeating steps (b) through (f) to obtain an optimal weighted matrix.

(3) comparing an NIR spectra from a hydrocarbon fuel selected from the family of hydrocarbon fuels with the optimal weight matrix in the neural network to obtain a predicted value of the desired parameters for the selected hydrocarbon fuel.

5,572,031

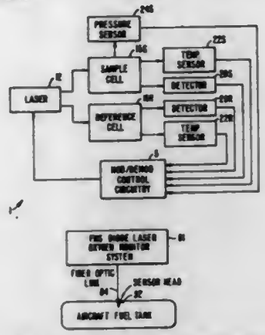
PRESSURE- AND TEMPERATURE-COMPENSATING OXYGEN SENSOR

David E. Cooper; Jan E. ver der Laan, both of Palo Alto; Haris Riris, and Clinton B. Carlisle, both of Menlo Park, all of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Nov. 23, 1994, Ser. No. 344,765

Int. Cl.[6] G01J *3/433;* **G01N** *21/00;* **G01D** *21/02*

U.S. Cl. 250—343 **15 Claims**



1. Apparatus for determining oxygen concentration in an aircraft fuel tank, comprising:

at least one sample cell for holding gas samples to be analyzed, said sample cell attached to said fuel tank;

a reference cell for holding a volume of gas having a known oxygen concentration;

a laser diode illuminator for passing light of wavelength in the 0.75 micrometer to 0.77 micrometer range through each sample cell and said reference cell, wherein said wavelength is at an absorption line for oxygen molecules;

means for determining pressure in each cell;

means for determining temperature in each cell;

means for modulating the light at said wavelength according to a first regime;

means for demodulating the light at said wavelength according to a second regime to provide respective signals corresponding to the absorption at said wavelength in each of said sample and reference cells;

means for correcting said respective signals for the pressure and temperature determined for each cell; and

means for correlating said corrected respective signals to provide a representation of the concentration of oxygen in said fuel tank.

5,572,032

GAS ANALYZER AND GAS-ANALYZING MECHANISM

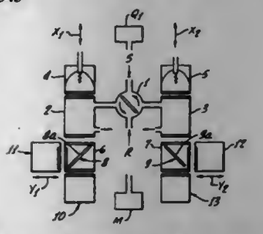
Masahiko Fujiwara; Shigeyuki Akiyama; Masahiko Ishida, and Satoshi Inoue, all of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Nov. 18, 1994, Ser. No. 342,247

Claims priority, application Japan, Nov. 20, 1993, 5-066724 U; Dec. 31, 1993, 5-354288

Int. Cl.[6] G01J *5/08;* **G01N** *21/61*

U.S. Cl. 250—345 **18 Claims**



1. A gas analyzer with a measuring cell into which a sample gas is to be introduced, the measuring cell including one end side and a second end side, the gas analyzer comprising:

a light source on the one end side of the measuring cell;

a gas filter cell on the second end side of the measuring cell, said gas filter cell having interferential gaseous components hindering a detection of components to be measured enclosed therein, said gas filter cell including a light separator therein, said gas filter cell including a reflecting position and a transmitting position, said light separator for reflecting light from said light source to said reflecting position and for transmitting light from said light source to said transmitting position; and

a first detector for said reflecting position and for measuring a first component of the sample gas, and a second detector for said transmitting position and for measuring a second component of the sample gas.

6. A gas analyzer unit in a gas-analyzer mechanism for measuring a plurality of components, the gas analyzer unit comprising:

two measuring cells into which a sample gas and a reference gas are alternatively introduced through a change-over valve which is connected to a sampling device, each of the measuring cells including one end side and a second end side;

light sources provided on said one end side of each of said measuring cells;

one gas filter cell provided on said second end side of one of said measuring cells, said one gas filter cell having interferential gaseous components hindering a detection of components to be measured enclosed therein, said one gas filter cell including an optical filter therein, said one gas filter cell including a reflecting position and a transmitting position, said optical filter for reflecting light from one of said light sources to Said reflecting position and for transmitting light from said one of said light sources to said transmitting position; and

a plurality of detectors including a detector for said reflecting position and a detector for transmitting position, each of said detectors for measuring a component of the sample gas.

5,572,033

WIDE-ANGLE INFRA-RED DETECTION APPARATUS

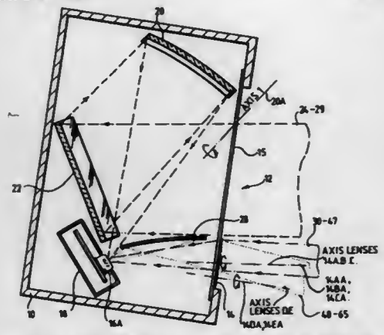
John T. Grant, Reepham, England, assignor to Security Enclosures Limited, United Kingdom

Filed Jan. 26, 1995, Ser. No. 379,329

Claims priority, application United Kingdom, Jan. 27, 1994, 9401548

Int. Cl.[6] G01J *5/08*

U.S. Cl. 250—353 **18 Claims**



1. Infra-red detection apparatus comprising an infra-red sensor array mounted in a housing, a focusing reflector system constructed and arranged in the housing to focus infra-red radiation received from a first range of distances onto the array, and a focusing refractor constructed and arranged in the housing to focus infra-red radiation from a second range of distances onto the array, the second distance range encompassing distances shorter than the first distance range, wherein the sensor array comprises at least three sensing elements or groups of sensing elements, which elements or groups are spaced apart transversely with respect to a lens axis of the focusing refractor, and wherein the focusing reflector system includes a multiple reflector having at least three reflector surfaces each oriented to direct incoming radiation to a different transverse position on the sensor array.

5,572,034

FIBER OPTIC PLATES FOR GENERATING SEAMLESS IMAGES

Andrew Karellas, Auburn, Mass., assignor to University of Massachusetts Medical Center, Worcester, Mass.

Continuation-in-part of Ser. No. 287,239, Aug. 8, 1994, Pat. No. 5,519,227. This application Jun. 7, 1995, Ser. No. 486,406

Int. Cl.[6] G01T *1/20;* **H01L** *25/00*

U.S. Cl. 250—368 **30 Claims**

11. An optical imaging system comprising:

at least two optical detectors, each comprising an optically active region for generating a light-induced image; and

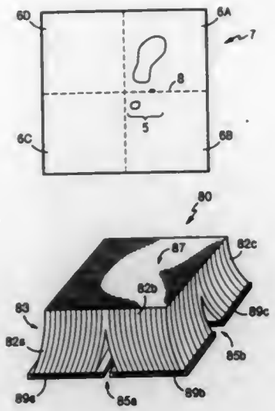
a single fiber optic plate comprising:

at least two sections comprising multiple radiation-transmitting fibers, wherein at least one of said sections is curved, tapered, or angled with respect to another section;

a continuous, seamless top portion disposed above said sections; and,

a groove extending partially into said fiber optic plate for separating a first section from a second section, said groove being positioned along the axial extension of said fibers and having a depth less than a thickness of said fiber optic plate so that said top portion is continuous and seamless;

wherein each of said sections is connected to an individual optical detector such that fibers contained in said first section deliver light exclusively to an optically active region of a first detector, and fibers contained in said second section deliver light exclusively to an optically active region of a second detector.



5,572,035

METHOD AND DEVICE FOR THE REFLECTION OF CHARGED PARTICLES ON SURFACES

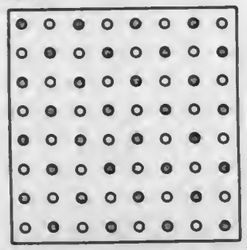
Jochen Franzen, Bremen, Germany, assignor to Bruker-Franzen Analytik GmbH, Bremen, Germany

Filed Nov. 30, 1995, Ser. No. 565,107

Claims priority, application Germany, Jun. 30, 1995, 195 23 859.1

Int. Cl.[6] H01J *49/42;3/16*

U.S. Cl. 250—396 R **42 Claims**



1. An ion reflection surface for reflecting charged particles of both positive and negative polarities, the surface comprising:

a plurality of electrically conducting grid elements spaced in a substantially regular manner in at least a first direction along the surface;

a first high-frequency electrical signal supplied to alternating grid elements along the first direction; and

a second high-frequency electrical signal supplied to alternating grid elements interspersed between the grid elements which are supplied with the first signal, the second electrical signal having the same frequency as the first electrical signal at a different relative phase.

5,572,036

SUPPORT ELEMENT FOR AN AUTOMATIC LOAD PLATFORM OF A SILICON WAFER EXPOSURE UNIT

Andreas Gakis, and Ralph Busskamp, both of Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

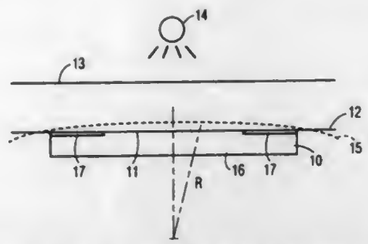
Filed Sep. 11, 1995, Ser. No. 492,066

Claims priority, application Germany, Nov. 23, 1993, 43 39 818.9

Int. Cl.[6] H01L *21/68*

U.S. Cl. 250—453.11 **4 Claims**

1. A support element of an automatic load platform of a silicon wafer exposure unit, which element has a circular cross-section



with a first outer diameter which is adapted to the guide of a load station and which is smaller than that of a silicon wafer,

characterized in that the circular disc of the support element has at its circumference parallel to the insertion direction of the load station at least partly enlarged portions and therewith a second outer diameter which corresponds approximately to that of the silicon wafer, and in that the greatest width of the support element at right angles to the insertion direction corresponds to that of the circular disc.

5,572,037

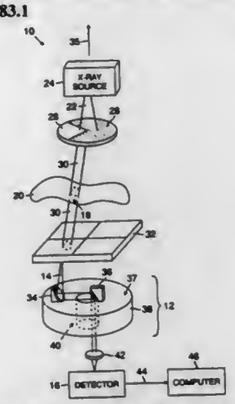
DIGITAL IMAGING USING A SCANNING MIRROR APPARATUS

Hong Liu, Worcester, and Andrew Karellas, Auburn, both of Mass., assignors to University of Massachusetts Medical Center, Worcester, Mass.

Filed Feb. 3, 1995, Ser. No. 383,411

Int. Cl.[6] G01N *23/04;21/63;* **G01T** *1/24;* **H01L** *27/00*

U.S. Cl. 250—483.1 **20 Claims**



1. A method for generating a large-field, high-resolution image of an object, said method comprising the steps of:

(a) generating a first optical scene representative of a first portion of the object by:

spatially filtering a first portion of an incident X-ray field with a spatial filter to generate a first, two-dimensional X-ray sub-field;

projecting the first X-ray sub-field through the first portion of the object and then through an X-ray-to-optical conversion screen to produce the first optical scene; and,

directing the first optical scene with a reflecting assembly onto an optical detector to generate a two-dimensional sub-image of the first portion of the object;

(b) rotating both the spatial filter and the reflecting assembly;

(c) generating a second optical scene representative of a second portion of the object by:

spatially filtering a second portion of the incident X-ray field with the rotated spatial filter to generate a second, two-dimensional X-ray sub-field;

projecting the second x-ray sub-field through the second portion of the object and then through the X-ray-to-optical conversion screen to produce the second, optical scene; and,

directing the second optical scene with the rotated reflecting assembly onto the optical detector to generate a two-dimensional sub-image of the second portion of the object; and,

(d) combining all two-dimensional sub-images to form a large-field, high-resolution image of the object.

12. An apparatus for generating a large-field, high-resolution image of an object, said apparatus comprising:

an X-ray imaging system for generating at least two, two-dimensional optical scenes representative of at least two spatially separate portions of the object;

an optical detector;

a rotating and reflecting assembly comprising at least one reflecting optic, said assembly configured to sequentially receive and then direct the two-dimensional optical scenes onto said optical detector to generate a two-dimensional sub-image for each optical scene; and,

electronics that combine the two-dimensional sub-images together to at least partially form the large-field, high-resolution image of the object.

5,572,038

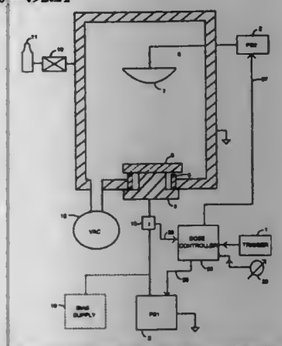
CHARGE MONITOR FOR HIGH POTENTIAL PULSE CURRENT DOSE MEASUREMENT APPARATUS AND METHOD

Terry T. Sheng; Charles B. Cooper, III, both of San Jose; Susan B. Felch, Los Altos, and Charles E. Van Wagoner, San Jose, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed May 7, 1993, Ser. No. 59,033

Int. Cl.[6] H01J *37/30*

U.S. Cl. 250—492.21 **11 Claims**



6. Apparatus for measuring charge accumulated on a sample in a vacuum chamber that is simultaneously exposed to a plasma and pulsed to a high potential, comprising:

cold plasma discharge means for sustaining said plasma in said chamber;

an electrode having a planar surface for supporting said sample in said plasma sustaining chamber;

a high voltage pulse power supply, said high voltage power supply being electrically connected between said electrode and said chamber;

an electrode current sensor being electrically connected between said power supply and said electrode, said electrode current sensor having an output signal representative of charge flow from said electrode; and

a dose controller circuit being electrically connected to receive output signals, from said electrode current sensor, said dose controller circuit having a first circuit for discriminating between a first portion of said current sensor output signal corresponding to ion implantation and a second portion of said current sensor output signal not corresponding thereto, and a second circuit for integrating over time only said first portion of said current sensor output signal.

5,572,039

METHOD AND APPARATUS FOR OBSERVING A GAP

Michael Sweeney, Newcastle upon Tyne, and Michael P. Jenkins, Northumberland, both of England, assignors to Rolls-Royce Power Engineering plc, Newcastle upon Tyne, England

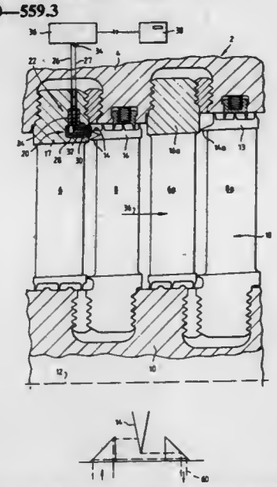
PCT No. PCT/GB93/00224, § 371 Date Aug. 15, 1994, § 102(e) Date Aug. 15, 1994, PCT Pub. No. WO93/17296, PCT Pub. Date Sep. 2, 1993

PCT Filed Feb. 3, 1993, Ser. No. 290,814

Claims priority, application United Kingdom, Feb. 29, 1992, 9204413

Int. Cl.[6] G01N *21/86*

U.S. Cl. 250—559.3 **13 Claims**



7. An apparatus fixed in a turbine so as to enable a gap to be measured between turbine parts mounted for relative rotation about an axis of rotation, comprising first and second radiation transmitting members which are connected in spaced apart relationship to a fixed part of the turbine so that said first and second radiation transmitting members protrude towards an opposing face of a rotatable part of the turbine, a source of radiation, said first and second radiation transmitting members being aligned relative to one another to direct a beam of radiation from said source of radiation to said first radiation transmitting member and then to said second radiation transmitting member along an optical path that extends radially relative to the axis of rotation of the turbine, another part of said turbine including a rotating part having a face opposing said first and second radiation transmitting members and including a projection on said face positioned to assure passage of said projection between said first and second radiation transmitting members during rotation of said another part of said turbine, a measuring device being provided for measuring the amount by which the beam of radiation passing between said first and second radiation transmitting members is obstructed when the projection on said opposing face of said another part of the said turbine passes between said first and second radiation transmitting members.

VOL 1192 ISS 1 NO 5 1996 UMI

5,572,040

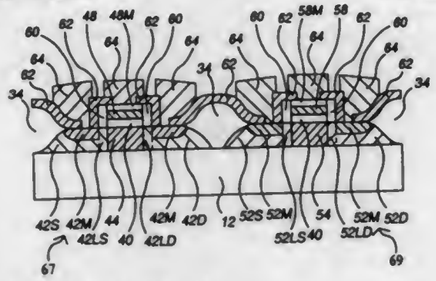
HIGH-FREQUENCY WIRELESS COMMUNICATION SYSTEM ON A SINGLE ULTRATHIN SILICON ON SAPPHIRE CHIP

Ronald E. Reedy, and Mark L. Burgener, both of San Diego, Calif., assignors to Peregrine Semiconductor Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 90,400, Jul. 12, 1993, Pat. No. 5,416,043. This application Mar. 25, 1994, Ser. No. 218,561

Int. Cl.[6] H01L *29/06*

U.S. Cl. 257—9 **11 Claims**



1. A MOS device comprising:
an insulating substrate;
a silicon layer formed on said insulating substrate wherein said silicon layer is less than approximately 1000Å thick and is substantially free of electrically active states achieved by restricting all processing of said silicon layer to temperatures of less than or equal to approximately 950° C.;
a source region formed in said silicon layer;
a drain region formed in said silicon layer;
a channel region formed in said silicon layer between said source region and said drain region; and
a gate positioned adjacent said channel region.

5,572,041

FIELD EMISSION CATHODE DEVICE MADE OF SEMICONDUCTOR SUBSTRATE

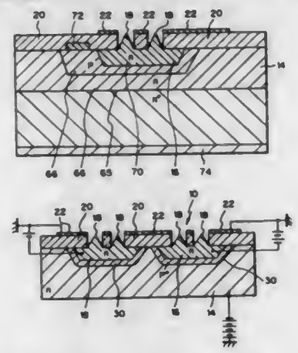
Keiichi Betsui; Osamu Toyoda, and Shin'ya Fukuta, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 16, 1993, Ser. No. 121,538

Claims priority, application Japan, Sep. 16, 1992, 4-246662

Int. Cl.[6] H01L *29/06;* **H01J** *1/02;9/04;1/46*

U.S. Cl. 257—10 **22 Claims**



1. A field emission cathode device comprising:
a semiconductor substrate;
a cathode electrode layer, of a semiconductor material and formed on the substrate, the cathode electrode layer comprising a plurality of cathode electrodes;
each of the cathode electrodes of the plurality of cathode electrodes further comprising at least one corresponding and integral emitter tip, the respectively corresponding, integral emitter tips of the plurality of cathode electrodes protruding therefrom in a common direction;
an insulating layer formed on the substrate and having a plurality of apertures;
a gate electrode layer, formed on the insulating layer, having a plurality of apertures respectively in alignment with the plurality of apertures of the insulating layer and forming a plurality of pairs of respective, aligned apertures of the gate electrode layer and the insulating layer;
each of the emitter tips being aligned with and extending, in the common direction, into a corresponding aperture pair;
the plurality of cathode electrodes extending in parallel, spaced relationship in a first direction and the gate electrode layer comprising a plurality of gate electrodes extending in parallel, spaced relationship in a second direction on the substrate, substantially perpendicular to the first direction, and defining a plurality of intersecting regions therewith, the field emission cathode device further comprising, at each intersecting region, a corresponding transistor having a collector, a base and an emitter, the emitter comprising the corresponding cathode electrode; and
means for electrically isolating the plurality of cathode electrodes from each other.

5,572,042

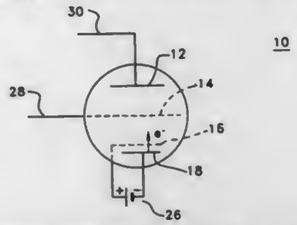
INTEGRATED CIRCUIT VERTICAL ELECTRONIC GRID DEVICE AND METHOD

Michael E. Thomas, Milpitas, and Irfan Saadat, Santa Clara, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 11, 1994, Ser. No. 226,251

Int. Cl.[6] H01L *29/06;* **H01J** *1/02*

U.S. Cl. 257—10 **21 Claims**



1. An integrated circuit electronic grid device, comprising:
a depression having a substantially vertical depression surface;
a first metal surface disposed substantially parallel to said vertical depression surface, said first metal surface having a plurality of emitters disposed thereupon;
a second metal surface insulated from said first metal surface by a first dielectric medium;
electrical biasing means coupled to said first and second metal surfaces for providing an electrical bias between said first and second metal surface to provide a flow of electrons from the surface of said first metal layer toward said second metal surface; and,
said second metal surface being formed with a plurality of holes therethrough adapted for permitting said flow of electrons to pass through said second metal surface wherein at least a portion of said holes are nonaligned with respect to said emitters.

5,572,043

SCHOTTKY JUNCTION DEVICE HAVING A SCHOTTKY JUNCTION OF A SEMICONDUCTOR AND A METAL

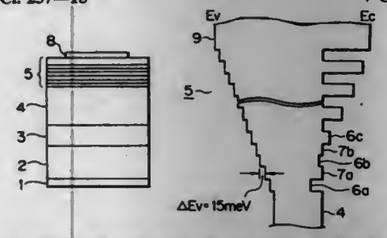
Hitoshi Shimizu; Yoshiyuki Hirayama, and Michinori Irikawa, all of Yokohama, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 139,694, Oct. 22, 1993, abandoned. This application May 15, 1995, Ser. No. 441,640

Claims priority, application Japan, Oct. 22, 1992, 4-308189

Int. Cl.[6] H01L *29/06;31/0328;27/095*

U.S. Cl. 257—18 **7 Claims**



1. A Schottky junction device having a Schottky junction of a semiconductor and a metal and a superlattice at the interface of the semiconductor and the metal characterized in that the upper edge of the valence band of said superlattice is varied gradually to show a turn to a specific direction, and wherein compositional ratios of adjoining barriers and adjoining well layers are different from each other.

5,572,044

MONOCRYSTALLINE SEMICONDUCTOR COMMUTATOR WITH GRAIN BOUNDRY

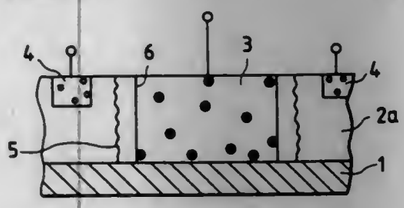
Toru Koizumi, Machida, and Hidemasa Mizutani, Sagamihara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 347,164, Nov. 23, 1994, which is a continuation of Ser. No. 998,761, Dec. 29, 1992, abandoned, which is a continuation of Ser. No. 665,592, Mar. 6, 1992, abandoned, which is a division of Ser. No. 422,762, Oct. 17, 1989, Pat. No. 5,034,782. This application Jun. 6, 1995, Ser. No. 471,161

Claims priority, application Japan, Oct. 20, 1988, 63-262930

Int. Cl.[6] H01L *29/04;31/036*

U.S. Cl. 257—49 **9 Claims**



1. A semiconductor commutator comprising:
a substrate;
a first monocrystalline semiconductor region arranged on said substrate;
a second monocrystalline semiconductor region arranged adjacent to said first monocrystalline semiconductor region on said substrate, a grain boundary being formed between said first monocrystalline semiconductor region and said second monocrystalline semiconductor region, said first monocrystalline semiconductor region having a first region of a first conductivity type and a second region of a second conductivity type opposite to the first conductivity type and adjacent to said grain boundary, said second monocrystalline semiconductor region being of the second conductivity type, said first and second conductivity regions forming a junction therebetween, wherein said grain boundary is positioned outside a depletion region formed at the junction at a distance within a minority carrier diffusion length from an edge of the depletion region; and
electrodes respectively provided on said first conductivity region of said first monocrystalline semiconductor region and said second monocrystalline semiconductor region so that carriers flowing between said electrodes pass through said grain boundary.

5,572,045

LIGHT VALVE DEVICE USING SEMICONDUCTIVE COMPOSITE SUBSTRATE

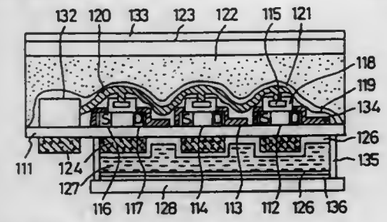
Kunihiro Takahashi; Yoshikazu Kojima; Hiroaki Takasu; Nobuyoshi Matsuyama; Hitoshi Niwa; Tomoyuki Yoshino, and Tsuneo Yamazaki, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Division of Ser. No. 264,635, Jun. 23, 1994, Pat. No. 5,486,708, which is a division of Ser. No. 791,912, Nov. 13, 1991, Pat. No. 5,347,154. This application Jun. 2, 1995, Ser. No. 460,538

Claims priority, application Japan, Nov. 15, 1990, 2-309437; Jan. 23, 1991, 3-6501; Feb. 16, 1991, 3-22420; Apr. 11, 1991, 3-79330; Apr. 11, 1991, 3-79337

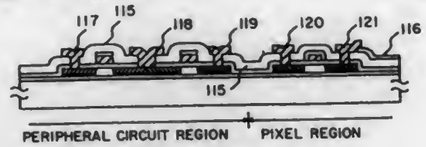
Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—59 **1 Claim**



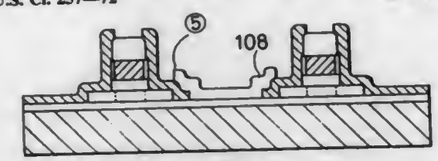
1. An image projection system comprising:
a light source;
a light valve device for guiding a light emanating from the light source, the light valve device comprising a drive substrate having drive electrodes and drive circuits for exciting the drive electrodes in response to predetermined signals, an opposed substrate arranged opposite to the drive substrate, and an electrooptical substance layer arranged between the drive substrate and the opposed substrate, wherein the drive substrate includes a transparent insulating thin film layer, a single crystal semiconductor thin film layer formed over the transparent insulating thin film layer, and a light shielding layer formed at that surface of the transparent insulating layer which is opposed to the side of the single crystal semiconductor thin film layer, wherein the drive circuits include transistor elements formed in the transparent insulating thin film layer, wherein the light shielding layer covers the active portions of the transistor elements, and wherein the drive electrodes are integrally arranged on the single crystal thin film layer and electrically connected with the drive circuits so that they are excited by the drive circuits to act upon the electrooptical substance layer to thereby control the optical transparency thereof; and
an optical lens for magnifying and projecting an image on the light valve device.

5,572,046
SEMICONDUCTOR DEVICE HAVING AT LEAST TWO THIN FILM TRANSISTORS
Yasuhiko Takemura, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Japan
Division of Ser. No. 266,712, Jun. 28, 1994, Pat. No. 5,403,762. This application Dec. 29, 1994, Ser. No. 365,744
Claims priority, application Japan, Jun. 30, 1993, 5-186891
Int. Cl.[6] H01L *29/76;29/04;31/036;29/94*
U.S. Cl. 257—66 **17 Claims**



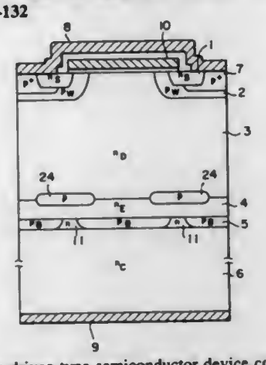
1. A semiconductor device comprising:
(a) a first transistor comprising:
a first semiconductor region;
a first gate electrode provided adjacent to said first semiconductor region with a first gate insulating film therebetween; and
a first oxide of a material of said first gate electrode provided on side and top surfaces of said first gate electrode, and
(b) a second transistor comprising:
a second semiconductor region;
a second gate electrode provided adjacent to said second semiconductor region with a second gate insulating film therebetween; and
a second oxide of a material of said second gate electrode provided only on a top surface of said second gate electrode,
wherein substantially no oxide of said material of said second gate electrode is provided on a side surface of said second gate electrode.

5,572,047
ELECTRO-OPTIC DEVICE HAVING PAIRS OF COMPLEMENTARY TRANSISTORS
Masaaki Hiroki, and Akira Mase, both of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan
Continuation of Ser. No. 974,893, Nov. 12, 1992, abandoned, which is a division of Ser. No. 758,904, Sep. 11, 1991, Pat. No. 5,165,075. This application Mar. 28, 1994, Ser. No. 219,285
Claims priority, application Japan, Dec. 10, 1990, 2-415722
Int. Cl.[6] H01L *29/786*
U.S. Cl. 257—72 **10 Claims**



1. A thin film transistor comprising:
a substrate having an insulating surface;
a semiconductor layer including at least source, drain regions and a channel region interposed therebetween, said semiconductor layer being directly adjacent the insulating surface of the substrate; and
a gate insulating layer on and directly adjacent to the semiconductor layer;
a gate electrode formed on and directly adjacent said gate insulating layer;
wherein said gate electrode comprises an anodizable material, and at least a side surface of said gate electrode is covered with an anodic oxide of said gate electrode and a top surface of said gate electrode is in direct contact with an insulating material different in composition than said anodic oxide of the gate electrode, and
wherein each boundary between said channel region and said source and drain regions is substantially aligned with a side surface of said gate electrode.

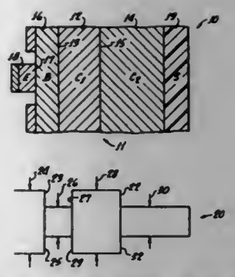
5,572,048
VOLTAGE-DRIVEN TYPE SEMICONDUCTOR DEVICE
Yoshitaka Sugawara, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 17, 1993, Ser. No. 153,047
Claims priority, application Japan, Nov. 20, 1992, 4-311532
Int. Cl.[6] H01L *29/74;31/111*
U.S. Cl. 257—132 **2 Claims**



1. A voltage-driven type semiconductor device comprising:
a first device having a linear volt-ampere characteristic, said first device including a first semiconductor region of first conductivity type said first device being provided with a first electrode applied with drive voltage at a first surface thereof, and having a pair of main electrodes to provide a predetermined voltage across the first semiconductor region;
a second semiconductor region, distinct from the first device, of a second conductivity type located at a position at a distance from said first surface of said first device and for injecting carriers into said first semiconductor region so as to modulate conductivity thereof;
a second electrode coupled to said second semiconductor region,
wherein said second semiconductor region is formed on a plane opposite to said first surface in said first device
wherein said first device portion is comprised of a voltage-driven type transistor, said first semiconductor region is a drain region of said voltage-driven type transistor, said second semiconductor region is a base of a bipolar transistor, and wherein said first and second semiconductor regions have the opposite conductivity type, and are coupled with each other through an emitter region of said bipolar transistor, and
wherein a third semiconductor region for connecting a collector region and said emitter region with each other is provided in the base region of said bipolar transistor, and said third semiconductor region has the same conductivity type as that of said emitter.

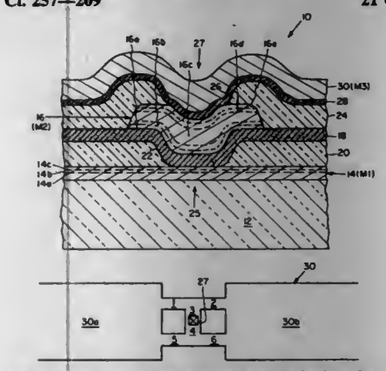
5,572,049
MULTI-LAYER COLLECTOR HETEROJUNCTION TRANSISTOR
Cheng P. Wen, Mission Viejo; Chan-Shin Wu; Cheng-Keng Pao, both of Torrance; David B. Rensch, and William E. Stanchina, both of Thousand Oaks, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Apr. 14, 1995, Ser. No. 422,110
Int. Cl.[6] H01L *31/0328;31/0336*
U.S. Cl. 257—197 **4 Claims**

1. A transistor comprising:
an emitter region comprising a material of a first conductivity type and having a relatively large energy band gap;



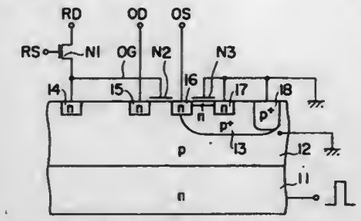
a base region contacting said emitter region and comprising a material of a second conductivity type and having a relatively small energy band gap; and
a collector region comprising
a first collector layer contacting said base and comprising a material of said first conductivity type and having an energy band gap of relatively large magnitude compared to that of said base region and wherein the thickness of said first collector layer comprises approximately 15% of the thickness of said collector region; and
a second collector layer contacting said first collector layer and comprising a material of said first conductivity type and having an energy band gap of relatively small magnitude compared to that of said first collector layer region;
said base region being disposed between said emitter region and said collector region.

5,572,050
FUSE-TRIGGERED ANTIFUSE
Simon S. Cohen, Burlington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Dec. 6, 1994, Ser. No. 349,933
Int. Cl.[6] H01L *23/62;23/58*
U.S. Cl. 257—209 **21 Claims**



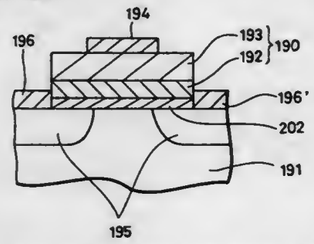
1. An integrated circuit for interrupting continuity of a conductive lead at a breakpoint comprising:
a control electrode adjacent to the breakpoint; and
an insulator between the control electrode and the conductive lead such that, upon application of a programming voltage across the insulator between the conductive lead and the control electrode, a transient conductive link is formed across the insulator, current through the conductive lead and the transient conductive link heating around the transient conductive link sufficiently to destroy the conductive lead at the breakpoint; wherein
the conductive lead is shaped into a plurality of conductive branches near the breakpoint arranged such that the current flowing from one end of the conductive lead to the transient conductive link is split to flow along the conductive branches of the conductive lead into the transient conductive link from different sides of the breakpoint.

5,572,051
SOLID STATE IMAGE SENSING DEVICE
Kenichi Arakawa, Yokohama, and Kenji Nakahara, Kawasaki, both of Japan, assignors to Kabushiki-Kaisha Toshiba, Kanagawa-ken, Japan
Filed Dec. 7, 1994, Ser. No. 351,013
Claims priority, application Japan, Dec. 9, 1993, 5-309056
Int. Cl.[6] H01L *27/148*
U.S. Cl. 257—225 **6 Claims**



1. A solid state image sensing device, comprising:
a first conductive type semiconductor substrate;
a second conductive type well formed on a surface portion of said semiconductor substrate, the first and second conductivity types being opposite to each other;
a first conductive type diffusion layer of a load transistor of a source follower circuit formed in said well; and
a second conductive type diffusion layer having an impurity concentration higher than that of said well and being formed in said well under and detached from said first conductive type diffusion layer.

5,572,052
ELECTRONIC DEVICE USING ZIRCONATE TITANATE AND BARIUM TITANATE FERROELECTRICS IN INSULATING LAYER
Kelichiro Kashihara; Tomonori Okudaira, and Hiromi Itoh, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 93,671, Jul. 20, 1993, abandoned. This application Jan. 19, 1995, Ser. No. 374,890
Claims priority, application Japan, Jul. 24, 1992, 4-198080; Apr. 28, 1993, 5-102511; Apr. 30, 1993, 5-104146
Int. Cl.[6] H01L *29/94;* **H01G** *4/20;4/06;* **G11C** *11/22*
U.S. Cl. 257—295 **3 Claims**



1. An electronic device including a MIS structure, wherein said MIS structure comprises:
a silicon layer,
a sub-insulating layer formed directly on said silicon layer by CVD or sputtering, and consisting essentially of at least a compound selected from the group consisting of lead titanate,

lanthanum lead titanate, barium titanate, strontium titanate, barium strontium titanate, lead zirconate, and lanthanum lead zirconate,

a main insulating layer formed directly on said sub-insulating layer by CVD or sputtering, and consisting essentially of zirconate titanate, and

a layer formed on said main insulating layer, and consisting essentially of a conductor,

wherein said main insulating layer has a perovskite type crystal structure, and exhibits ferroelectricity at ambient temperature, and wherein said sub-insulating layer consists essentially of barium titanate.

5,572,053

DYNAMIC RANDOM ACCESS MEMORY CELL HAVING A STACKED CAPACITOR

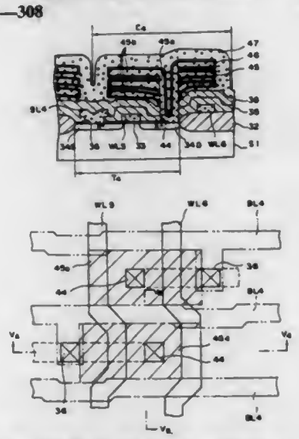
Taiji Ema, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 815,581, Dec. 30, 1991, abandoned, which is a division of Ser. No. 536,757, Jun. 12, 1990, Pat. No. 5,128,273, which is a division of Ser. No. 462,290, Dec. 29, 1989, Pat. No. 4,953,126, which is a continuation of Ser. No. 274,279, Nov. 22, 1988, abandoned. This application Aug. 16, 1994, Ser. No. 291,581

Claims priority, application Japan, Nov. 25, 1987, 62-296669; Nov. 30, 1987, 62-302464

Int. Cl.[6] H01L *27/108;29/94*

U.S. Cl. 257—308 **10 Claims**



I. A dynamic random access memory comprising:

a plurality of dynamic type memory cells, each of said plurality of dynamic type memory cells including:

a transfer gate transistor having a source region and a drain region formed in a semiconductor substrate, and a gate electrode; and

a memory cell capacitor;

a first insulating film formed over the semiconductor substrate;

word lines covered by said first insulating film, said gate electrode being connected to one of said word lines;

pairs of bit lines formed over said first insulating film, intersections being formed at cross points of said word lines and said bit lines, said bit lines contacting source regions of said transfer gate transistors of said dynamic type memory cells at every other cross point of said bit lines and word lines; and

a second insulating film covering said pairs of bit lines;

said memory cell capacitor comprising:

a storage electrode contacting said drain region and extending over said second insulating film, said bit lines being located at a layer level lower than said storage electrode;

a dielectric film formed around said storage electrode; and

an opposed electrode covering said storage electrode through said dielectric film, said opposed electrode having a portion located between said first insulating film and said storage electrode.

5,572,054

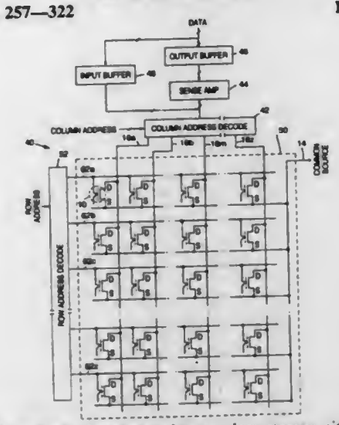
METHOD OF OPERATING A SINGLE TRANSISTOR NON-VOLATILE ELECTRICALLY ALTERABLE SEMICONDUCTOR MEMORY DEVICE

Ping Wang, Saratoga, and Bing Yeh, Los Altos Hills, both of Calif., assignors to Silicon Storage Technology, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 246,574, May 20, 1994, abandoned, which is a continuation of Ser. No. 682,459, Apr. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 467,907, Jan. 22, 1990, Pat. No. 5,029,130. This application Sep. 1, 1995, Ser. No. 523,037

Int. Cl.[6] H01L *29/68*

U.S. Cl. 257—322 **14 Claims**



13. A method of programming a select storage site from an electrically programmable and erasable memory array device having a plurality of interconnected storage sites, while minimizing programming disturbance on a plurality of non-selected storage site in said array, said device having a substrate of semiconductor material of a first conductivity type, with each storage site including a single asymmetrical transistor, with each transistor having first and second spaced-apart regions in said substrate with a channel region therebetween, said first and second regions are of a second conductivity type; a first insulating layer disposed over said substrate including over said first, second and channel regions; an electrically conductive floating gate disposed over said first insulating layer and extending over a portion of said channel region and over a portion of said second region to maximize a capacitive coupling therewith; a second insulating layer disposed over and adjacent said floating gate and having a thickness permitting Fowler-Nordheim tunneling of charges therethrough; an electrically conductive control gate having two electrically connected sections, a first section disposed over said first insulating layer, spaced apart from said floating gate and adjacent to said second insulating layer, extending over a portion of said first region; said second section disposed over said second insulating layer to minimize capacitive coupling with said floating gate; said method comprising:

applying a first positive potential to the second region of each transistor of all the storage sites including said select storage site and said plurality of non-selected storage sites;

applying a ground potential to the first region of each transistor of a first plurality of the storage sites, said first plurality being less than all of the storage sites but including at least said select storage site and excluding said plurality of non-selected storage sites;

applying a second positive potential, less than the first positive potential, to the control gate of each transistor of a second plurality of storage sites, said second plurality being less than all of the storage sites and having at least said select storage site in common with said first plurality and at least a first of said plurality of non-selected storage sites;

applying a third positive potential, less than the first positive potential but greater than the second positive potential, to the first region of the plurality of transistors at the non-selected storage sites; and

whereby the transistor at the select storage site in said first plurality in common with said second plurality is programmed, and said programming disturbance on said plurality of non-selected storage sites is minimized.

5,572,055

INSULATED-GATE BIPOLAR TRANSISTOR WITH REDUCED LATCH-UP

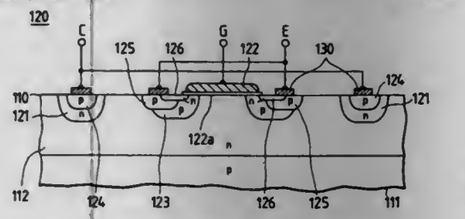
Hitoshi Sumida, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 145,848, Nov. 5, 1993, abandoned. This application Jun. 19, 1995, Ser. No. 491,517

Claims priority, application Japan, Nov. 9, 1992, 4-297500; Jun. 15, 1993, 5-142413

Int. Cl.[6] H01L *29/76;29/74;29/94*

U.S. Cl. 257—343 **9 Claims**



1. An insulated-gate bipolar transistor, comprising:

a semiconductor region of a first conductive type;

a base layer of a second conductive type in a surface portion of said semiconductor region;

a base connection layer of the second conductive type in said semiconductor region on one side of said base layer overlapping said base layer, said base connection layer contacting said semiconductor region, and said base connection layer having a lower resistivity than said base layer;

a source layer of the first conductive type shallowly diffused within a range including surfaces of said base layer and said base connection layer and a boundary between said base layer and said base connection layer;

a gate electrode covering a surface of said base layer on a side of said source layer;

a collector layer of the second conductive type in a surface portion of said semiconductor region on one side of said base connection layer;

an emitter terminal electrically and physically connected to said base connection layer and electrically connected to said source layer;

a collector terminal electrically connected to said collector layer; and

a gate terminal electrically connected to said gate electrode.

5,572,056

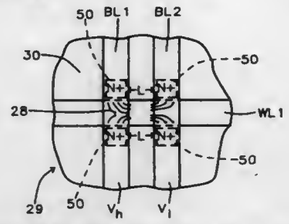
HIGH DENSITY ROM

Chen-Chiu Hsue; Ming-Tzong Yang, and Te-Sun Wu, all of Hsin-chu, Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan

Division of Ser. No. 247,680, Mar. 23, 1994, Pat. No. 5,380,676. This application Dec. 29, 1994, Ser. No. 368,146

Int. Cl.[6] H01L *29/76*

U.S. Cl. 257—402 **21 Claims**



I. A semiconductor ROM device formed on a semiconductor substrate having a surface comprising:

a first layer composed of a material selected from polysilicon and polycide over said substrate;

a dielectric layer over said first layer, said dielectric layer and said first layer patterned in the shape of first conductor lines;

contact windows through said dielectric layer down to said substrate on either side of a first conductor line;

a second layer composed of a material selected from polysilicon and polycide on said device and formed as second conductor lines directed orthogonally to said first conductor lines formed from said first layer, said second conductor lines extending down to said substrate through said contact windows; and

self aligned ion implanted contact regions in said substrate formed through said second conductor lines comprising source/drain regions on either side of the first conductor line;

wherein said contact regions are electrically connected to said second conductor lines of said second layer.

5,572,057

SEMICONDUCTOR ACCELERATION SENSOR WITH MOVABLE ELECTRODE

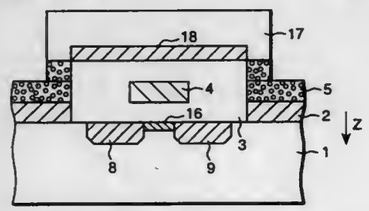
Toshimasa Yamamoto, Bisai; Yukihiro Takeuchi, Seto; Yoshinori Ohtsuka, Okazaki, and Kazuhiko Kano, Obu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 21, 1994, Ser. No. 360,940

Claims priority, application Japan, Dec. 21, 1993, 5-322348; Jan. 19, 1994, 6-004162

Int. Cl.[6] H01L *29/82*

U.S. Cl. 257—417 **65 Claims**



1. A semiconductor acceleration sensor comprising:

a semiconductor substrate;

a beam structure supported by said semiconductor substrate and having a electrode disposed at a predetermined interval above said semiconductor substrate;

fixed electrodes disposed on said semiconductor substrate and provided with respect to said movable electrode so that a sensing portion is constituted by said movable electrode and said fixed electrodes and acceleration is detected by changes in current between said fixed electrodes generated by means

of a displacement of said movable electrode caused by an acceleration on said sensing portion; and

an electrode for movable electrode upward-movement use disposed at a height at least equal to a height at which said movable electrode is disposed, said electrode for movable electrode upward-movement use being given a potential difference against said movable electrode so as to counteract an attractive force of said movable electrode toward said semiconductor substrate,

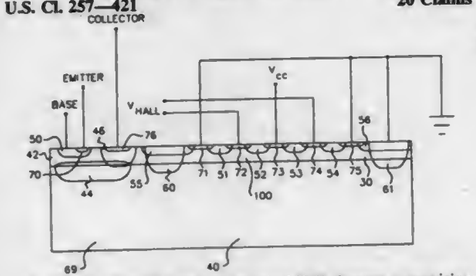
wherein said electrode for movable electrode upward-movement use includes an impurity diffusion layer formed on a high-resistance silicon substrate disposed above said movable electrode, said impurity diffusion layer opposing said movable electrode.

5,572,058

HALL EFFECT DEVICE FORMED IN AN EPITAXIAL LAYER OF SILICON FOR SENSING MAGNETIC FIELDS PARALLEL TO THE EPITAXIAL LAYER

James R. Biard, Richardson, Tex., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 17, 1995, Ser. No. 503,167
Int. Cl.[6] H01L *29/82;43/00*
U.S. Cl. 257—421 **20 Claims**



1. An integrated circuit with a vertical Hall element, comprising:

a substrate comprising a material of a first conductivity type;

an epitaxial layer disposed on a first surface of said substrate, said epitaxial layer comprising a material of a second conductivity type;

a transistor base diffusion within said epitaxial layer, said transistor base diffusion having a depth of a first magnitude, said transistor base diffusion comprising a material of said first conductivity type;

a transistor emitter diffusion within said epitaxial layer, said transistor emitter diffusion having a depth of a second magnitude, said second magnitude being less than said first magnitude, said transistor emitter diffusion comprising a material of said second conductivity type;

means for isolating a Hall effect region of said epitaxial layer;

a position defining diffusion comprising a material of said first conductivity type, said position defining diffusion having first, second, third, fourth and fifth openings formed therein, said position defining diffusion being diffused within said epitaxial layer simultaneously with said transistor base diffusion, said first, second, third, fourth and fifth openings being disposed within said Hall effect region;

first, second, third, fourth and fifth contact diffusions comprising a material of said second conductivity type and being diffused within said first, second, third, fourth and fifth openings, respectively, within said epitaxial layer simultaneously with said transistor emitter diffusion, said first, second, third, fourth and fifth contact diffusions being disposed within said Hall effect region;

first means for connecting said third contact diffusion to a first terminal of a power supply circuit;

second means for connecting said first and fifth contact diffusions to a second terminal of said power supply circuit; and

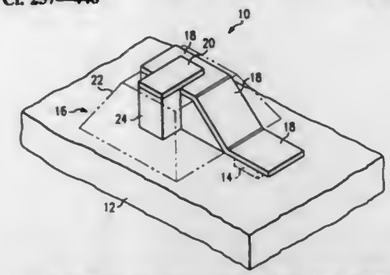
third means for connecting said second and fourth contact diffusions to a means for measuring a voltage differential.

5,572,059

THERMAL ISOLATION OF HYBRID THERMAL DETECTORS THROUGH AN ANISOTROPIC ETCH

William K. Walker, Plano; Steven N. Frank, McKinney; Charles M. Hanson, Richardson; Robert J. S. Kyle, Rowlett; Edward G. Meissner, Dallas; Robert A. Owen, Rowlett, and Gail D. Shelton, Mesquite, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 236,778, Apr. 29, 1994, Pat. No. 5,478,242.
This application Jun. 7, 1995, Ser. No. 477,718
Int. Cl.[6] H01L *27/095*
U.S. Cl. 257—448 **8 Claims**



1. A hybrid thermal detector including a focal plane array mounted with a thermal isolation structure on an integrated circuit substrate, comprising:

at least three thermal sensors in the focal plane array for generating a sensor signal output representative of the thermal radiation incident to the focal plane array;

at least three contact pads, disposed on the integrated circuit substrate, for coupling the integrated circuit substrate to the focal plane array;

at least three mesa-type formations projecting adjacent to the contact pads of the integrated circuit substrate;

at least three mesa strip conductors extending from the top of the mesa-type formations to the contact pads of the integrated circuit substrate, each mesa strip conductor coupling at least one of the thermal sensors in the focal-plane array to an associated contact pad of the integrated circuit substrate; and

each mesa strip conductor comprising a bonding area having a bonding area width, disposed on the top of the mesa-type formation, for coupling to the focal plane array and a voltage lead having a voltage lead width coupling the bonding area to an associated contact pad, wherein the mesa-type formation associated with each mesa strip conductor is substantially defined by a vertical projection of the mesa strip conductor on the integrated circuit substrate.

5,572,060

UNCOOLED YBACUO THIN FILM INFRARED DETECTOR

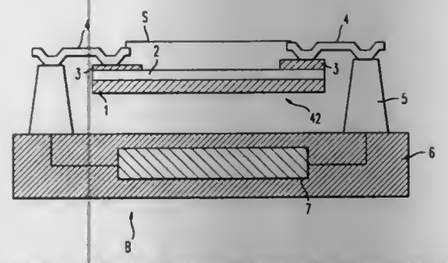
Donald P. Butler; Zeynep Celik-Butler, and Pao-Chuan Shan, all of Dallas, Tex., assignors to Southern Methodist University, Dallas, Tex.

Filed Feb. 1, 1995, Ser. No. 382,200
Int. Cl.[6] H01L *31/058;29/12;31/0288*
U.S. Cl. 257—467 **13 Claims**

1. A bolometer, comprising:

an electrically insulating supporting layer having a supporting layer lower surface and a supporting layer upper surface;

a semiconducting transducing layer of crystalline or polycrystalline oxide formed from (1) at least one member selected from the group consisting of barium, strontium, and calcium, (2) at least one member selected from the group consisting of yttrium, lanthanum, and rare earths, (3) copper, and (4) oxygen, having a transducing layer lower surface, a transducing layer upper surface for absorbing infrared radiation, a resistivity of greater than 0.1 Ω-cm at twenty degrees centigrade, a percentage change in resistivity with change in temperature of



at least 0.4 percent per degree centigrade at twenty degrees centigrade, and said transducing layer lower surface formed on and in contact with said supporting layer upper surface;

a first electrode layer having a first electrode layer lower surface and a first electrode layer upper surface, the first electrode layer lower surface in contact with a first region of the transducing layer upper surface; and

a second electrode layer having a second electrode layer lower surface and a second electrode layer upper surface, the second electrode layer lower surface in contact with a second region of the transducing layer upper surface, wherein said supporting layer, said transducing layer, said first electrode layer, and said second electrode layer form an integral transducer structure;

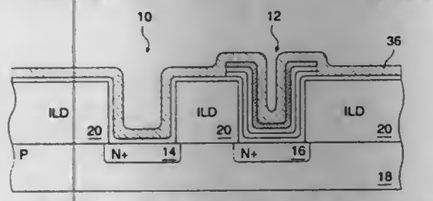
means, electrically coupled to said first electrode layer and said second electrode layer, for measuring resistance of said transducing layer between said first electrode layer and said second electrode layer.

5,572,061

ESD PROTECTION DEVICE FOR ANTIFUSES WITH TOP POLYSILICON ELECTRODE

Wenn-Jei Chen, Sunnyvale; Huan-Chung Tseng, Santa Clara; Yeouchung Yen, and Linda Liu, both of San Jose, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 290,029, Aug. 12, 1994, Pat. No. 5,498,895, and a continuation-in-part of Ser. No. 277,673, Jul. 19, 1994, Pat. No. 5,519,248, which is a continuation of Ser. No. 87,942, Jul. 7, 1993, Pat. No. 5,369,054. This application Aug. 12, 1994, Ser. No. 289,678
Int. Cl.[6] H01L *29/00;23/48*
U.S. Cl. 257—530 **10 Claims**



1. An integrated circuit device formed on a substrate, said integrated circuit comprising:

an antifuse including:

an antifuse lower electrode disposed in or over said substrate;

an interlayer dielectric layer disposed over said antifuse lower electrode;

an antifuse cell opening in and through said interlayer dielectric layer and exposing a portion of said antifuse lower electrode;

an antifuse material layer of a first thickness disposed over said interlayer dielectric layer, in said antifuse cell opening, and over said antifuse lower electrode;

a first polysilicon layer disposed over said antifuse material layer in a region over said antifuse lower electrode;

a second polysilicon layer disposed over said first polysilicon layer; and

an ESD protection cell disposed over said substrate and including:

an ESD protection cell lower electrode disposed in or over said substrate;

said interlayer dielectric layer disposed over said ESD protection cell lower electrode;

an ESD protection cell opening in and through said interlayer dielectric layer and exposing a portion of said ESD protection cell lower electrode;

said antifuse material layer disposed over said interlayer dielectric layer, in said ESD protection cell opening, and over said ESD protection cell lower electrode and partially etched back to a second thickness in the region over said ESD protection cell lower electrode, said second thickness being less than said first thickness;

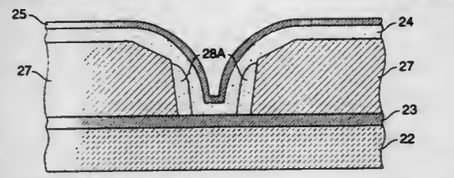
said second polysilicon layer also disposed over said antifuse material layer in the region above said ESD protection cell lower electrode.

5,572,062

ANTIFUSE WITH SILICON SPACERS

Ali A. Iranmanesh, Sunnyvale, Calif., assignor to Crosspoint Solutions, Inc., Santa Clara, Calif.

Filed Mar. 31, 1994, Ser. No. 221,344
Int. Cl.[6] H01L *29/00;29/04*
U.S. Cl. 257—530 **14 Claims**



1. An antifuse structure in an integrated circuit device, said integrated circuit device formed within and on a semiconductor substrate, said antifuse structure comprising:

a first metal layer on a first insulating layer over said substrate;

a first refractory metal layer on said first metal layer;

a second insulating layer over said first metal layer and said first refractory metal layer, said second insulating layer having an aperture exposing said first refractory metal layer therein;

an amorphous silicon layer in said aperture, said amorphous silicon layer having a first region on said first refractory metal layer and displaced from sides of said second insulating layer in said aperture, and a second region on said sides of said second insulating layer, said first region having substantially a first thickness, said second region having substantially a second thickness, said second thickness greater than said first thickness;

a second refractory metal layer on said amorphous silicon layer; and

a second metal layer on said second refractory metal layer;

whereby, upon programming of said antifuse structure, a conducting link is formed in said first region of said amorphous silicon layer.

5,572,063

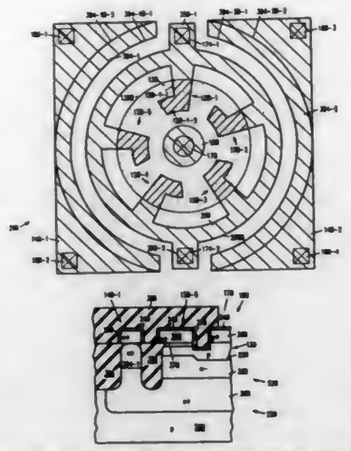
BIPOLAR TRANSISTOR WITH L-SHAPED EMITTER

Ali A. Iranmanesh, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 10,919, Jan. 29, 1993, Pat. No. 5,389,552.
This application Oct. 13, 1994, Ser. No. 322,674
Int. Cl.[6] H01L *29/73;25/331*
U.S. Cl. 257—565 **18 Claims**

1. A transistor comprising:

a collector;



a base overlying said collector, said base having a top surface; and

a first emitter overlying said top surface of said base and comprising:

a first portion which in plan view extends from a boundary of said top surface of said base inside said top surface; and

a second portion which in plan view extends at an angle to said first portion, and wherein said first emitter is in plan view substantially L-shaped.

5,572,064

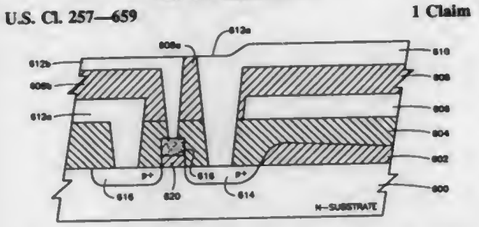
INPUT-OUTPUT DRIVE REDUCTION IN A SEMICONDUCTOR INTEGRATED CIRCUIT

Nicholas F. Pasch, Pacifica, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 143,197, Oct. 25, 1993, Pat. No. 5,517,055. This application Oct. 3, 1995, Ser. No. 538,396

Int. Cl.[6] H01L *23/552*

U.S. Cl. 257—659 **1 Claim**



1. A method for reducing the capacitance of input and output connection pads on an integrated circuit, comprising the step of changing a voltage potential on an intermediate conductive structure located between a respective one of the integrated circuit input and output connection pads and the integrated circuit substrate such that the change in the voltage potential on the intermediate conductive structure substantially tracks the change in the voltage potential on the respective one of the integrated circuit input and output connection pads.

5,572,065

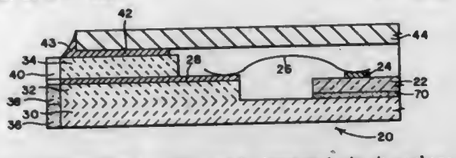
HERMETICALLY SEALED CERAMIC INTEGRATED CIRCUIT HEAT DISSIPATING PACKAGE

Carmen D. Burns, Austin, Tex., assignor to Staktek Corporation, Austin, Tex.

Continuation of Ser. No. 905,587, Jun. 26, 1992, abandoned. This application Oct. 24, 1994, Ser. No. 328,338

Int. Cl.[6] H01L *23/495*

U.S. Cl. 257—666 **63 Claims**



1. A hermetically sealed ceramic integrated circuit package having good thermal conductivity for efficiently transferring heat from an integrated circuit chip die contained therein, comprising:

an integrated circuit chip having a face with circuit connection pads thereon;

a ceramic housing comprising three thin layers, including a ceramic base, metal on ceramic wire bond pads and metal on ceramic seal ring, respectively, fused together to form a hermetically sealable ceramic housing,

said integrated circuit chip attached in said ceramic housing and positioned wherein the integrated circuit chip face is accessible from within said ceramic housing;

said integrated circuit chip connection pads connected to said housing wire bond pads;

a cover, said cover attached to said ceramic housing seal ring wherein said cover and housing are hermetically sealed together;

a lead frame having a plurality of electrical conductors;

said lead frame attached to said ceramic housing base wherein the plurality of electrical conductors of said lead frame are fixedly aligned with said housing wire bond pads; and

said lead frame conductors are connected to said housing wire bond pads.

5,572,066

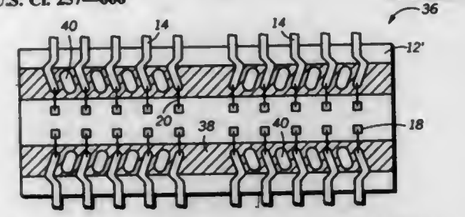
LEAD-ON-CHIP SEMICONDUCTOR DEVICE AND METHOD FOR ITS FABRICATION

Sohrab Safai, Round Rock, and Michael C. Przano, Pflugerville, both of Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jan. 3, 1995, Ser. No. 368,506

Int. Cl.[6] H01L *23/495*

U.S. Cl. 257—666 **14 Claims**



6. A lead-on-chip (LOC) semiconductor device, comprising:

a semiconductor die having a plurality of bonding pads on an active surface;

a plurality of leads overlying the active surface of-the semiconductor die;

an integral piece of electrically insulative adhesive tape having cut-outs between two continuous edges of the integral piece of tape, the integral piece of tape being disposed between the semiconductor die and the plurality of leads to affix the plurality of leads to-the active surface of the die, the cut-outs being located between each of the plurality of leads; and

a plurality of wire bonds connecting the plurality of leads to the plurality of bonding pads.

5,572,067

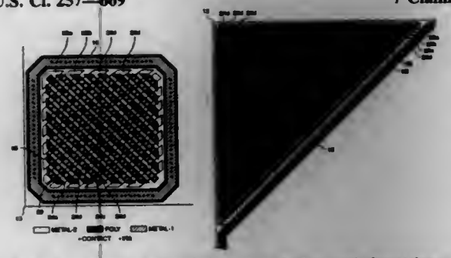
SACRIFICIAL CORNER STRUCTURES

Guru Thalapaneni, Union City, Calif., assignor to Altera Corporation, San Jose, Calif.

Filed Oct. 6, 1994, Ser. No. 318,920

Int. Cl.[6] H01L *23/13;23/18*

U.S. Cl. 257—669 **7 Claims**



1. An apparatus for resisting propagation and formation of cracks in a fabricated integrated circuit wherein said integrated circuit is formed on a polygonal die having a plurality of layers of one or more materials, said die having a shape that is nearly polygonal with a vertical dimension substantially smaller than its horizontal dimensions, said layers comprising horizontal layers and further comprising at least an upper layer and a lower layer, said layers being vertically stacked to form said die, said die having a lower surface comprising a substrate and an upper surface, said apparatus located in a region near the corner of said polygonal die on at least one surface comprising:

a plurality of lower layer metal lines running nearly parallel to a direction from said corner of said polygonal die to near the center of said polygonal die;

a plurality of upper layer metal lines running at a transverse angle to said plurality of lower layer metal lines; and

a plurality of vias connecting said plurality of upper layer metal lines to said plurality of lower layer metal lines.

5,572,068

INTEGRATED DOUBLE-CHIP SEMICONDUCTOR PACKAGE AND METHOD FOR FABRICATING SAME

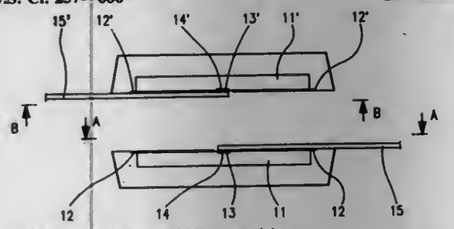
Heung Sup Chun, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Inc., Rep. of Korea

Continuation of Ser. No. 104,244, Aug. 9, 1993, abandoned, which is a continuation of Ser. No. 861,480, Apr. 1, 1992, abandoned. This application Dec. 2, 1994, Ser. No. 349,132

Claims priority, application Rep. of Korea, May 11, 1991, 7632/1991

Int. Cl.[6] H01L *23/02*

U.S. Cl. 257—686 **11 Claims**



1. A semiconductor package comprising:

a. upper and lower semiconductor chips which include mutually facing active faces, with each of said upper and lower semiconductor chips having a plurality of mutually facing pads positioned on intermediate portions of the active faces;

b. solders formed on said plurality of pads;

c. a plurality of first and a plurality of second connected inner leads alternately arranged and connected to said solders, wherein each of said first connected leads is connected solely to said upper semiconductor chip and each of said second connected leads is connected solely to said lower semiconductor chip, such that said upper and lower semiconductor chips are electrically connected to said first and second connected inner leads, respectively.

5,572,069

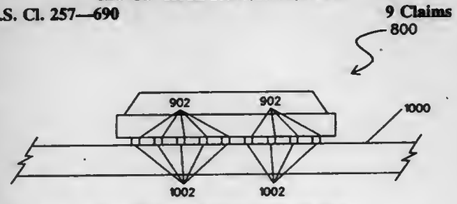
CONDUCTIVE EPOXY GRID ARRAY SEMICONDUCTOR PACKAGES

Mark Schneider, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 121,678, Sep. 15, 1993, Pat. No. 5,410,806. This application Apr. 27, 1995, Ser. No. 429,627

Int. Cl.[6] H01L *23/48;23/52;29/40*

U.S. Cl. 257—690 **9 Claims**



1. A semiconductor device assembly, comprising:

a planar substrate having a top surface, a bottom surface and an attachment area for a semiconductor device, each surface having conductive paths disposed thereon;

a semiconductor device having electronic circuits and attachment pads connected thereto;

said semiconductor device attached to said planar substrate;

said semiconductor device attachment pads connected to some of said planar substrate conductive paths;

connection pads disposed on a surface of said planar substrate and connected to some of the conductive paths thereon;

encapsulation coveting said semiconductor device and planar substrate attachment area; and

conductive epoxy contacts disposed on said connection pads, wherein some of the conductive paths are interconnected in a desired pattern so that said semiconductor device attachment pads are in electrical communication with the desired conductive epoxy contacts, wherein the conductive epoxy contacts are B-staged and ready for attachment to a system printed circuit board without the need for further means of attachment or connection to the system printed circuit board.

5,572,070

INTEGRATED CIRCUIT PACKAGES WITH HEAT DISSIPATION FOR HIGH CURRENT LOAD

Richard J. Ross, Moraga, Calif., assignor to RJR Polymers, Inc., Oakland, Calif.

Filed Feb. 6, 1995, Ser. No. 383,511

Int. Cl.[6] H01L *23/10;23/12;23/34*

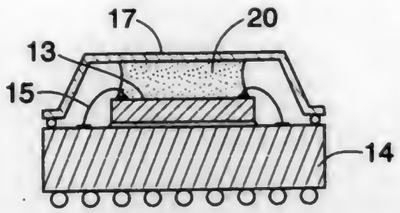
U.S. Cl. 257—713 **23 Claims**

1. A combination of components for assembly into an integrated circuit package, said combination comprising:

a substrate bearing a printed circuit which includes an array of electrical contact areas:

a die bearing an integrated circuit with conductive leads mounted thereto and arranged to contact said electrical contact areas of said substrate when said die is placed on said substrate: and

a concave metal lid sufficiently large to enclose said die when said die and said lid are placed on said substrate; and



a thermoplastic heat-curable resin containing a thermally conductive particulate material uniformly dispersed throughout said thermoplastic heat-curable resin and comprising at least about 60% by Weight of said resin, said resin adhering to a concave inner surface of said lid and positioned to contact said die when said die and said lid are placed on said substrate.

5,572,071

SEMICONDUCTOR DEVICE HAVING A MULTI-LAYER METALLIZALIAN STRUCTURE

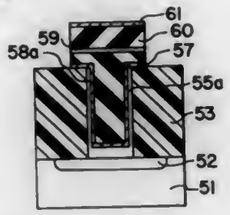
Sang-in Lee, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Division of Ser. No. 341,982, Nov. 16, 1994, which is a division of Ser. No. 172,216, Dec. 23, 1993. This application Jun. 7, 1995, Ser. No. 476,738

Claims priority, application Rep. of Korea, Dec. 30, 1992, 92-26603

Int. Cl.[6] H01L *29/41;29/43*

U.S. Cl. 257—751 **13 Claims**



1. A semiconductor device, comprising:
a substrate;
an insulating layer formed on said substrate;
an opening formed in said insulating layer, said opening including a bottom surface comprised of a portion of said substrate;
a composite diffusion barrier layer formed on said bottom surface of said opening and on walls of said insulating layer defining said opening, said composite diffusion barrier layer being comprised of at least first and second sub-layers;
a nucleation layer formed on said composite diffusion barrier layer, said nucleation layer including wing portions extending laterally outwardly beyond an upper edge of said opening and on adjacent surface portions of said insulating layer;
a first metal layer formed on said nucleation layer, said first metal layer including a plug portion filling said opening and wing portions which extend laterally outwardly beyond an upper edge of said opening and on said wing portions of said nucleation layer, said plug portion and said wing portions of said first metal layer being continuous and comprised of the same material;
an intermediate layer formed on said first metal layer; and,
a second metal layer formed on said intermediate layer.

5,572,072

SEMICONDUCTOR DEVICE HAVING A MULTI-LAYER METALLIZATION STRUCTURE

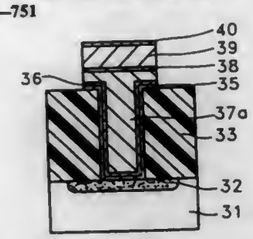
Sang-in Lee, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Division of Ser. No. 172,216, Dec. 23, 1993. This application Nov. 16, 1994, Ser. No. 341,982

Claims priority, application Rep. of Korea, Dec. 30, 1992, 92-26603

Int. Cl.[6] H01L *29/43;29/41*

U.S. Cl. 257—751 **3 Claims**



1. A semiconductor device, comprising:
a substrate;
an insulating layer formed on said substrate;
an opening formed in said insulating layer, said opening including a bottom surface comprised of a portion of said substrate;
a composite diffusion barrier layer formed on said bottom surface of said opening and on walls of said insulating layer defining said opening, said composite diffusion barrier layer being comprised of at least first and second sub-layers, said composite diffusion barrier layer including wing portions extending laterally outwardly beyond an upper edge of said opening and on adjacent surface portions of said insulating layer;
an oxide layer formed on said composite diffusion barrier layer;
a nucleation layer formed on said oxide layer;
a first metal layer formed on said nucleation layer, said first metal layer including a plug portion filling said opening and wing portions which extend laterally outwardly beyond an upper edge of said opening and on said wing portions of said composite diffusion barrier layer, said plug portion and said wing portions of said first metal layer being continuous and comprised of the same material;
an intermediate layer formed on said first metal layer; and
a second metal layer formed on said intermediate layer.

5,572,073

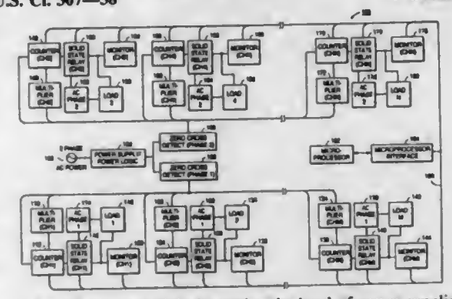
AC POWER MODULE FOR AUTOMATION SYSTEM

Michael H. Burgess; James D. Pritchett, and Douglas L. Volta, all of Naples, Fla., assignors to IntelliNet, Inc., Naples, Fla.

Filed Feb. 15, 1994, Ser. No. 196,472

Int. Cl.[6] H02J *3/14*

U.S. Cl. 307—38 **9 Claims**



1. An AC power module for setting the level of power supplied to a plurality of electrical devices according to control signals from a microprocessor comprising:

at least one solid state relay coupling one of said plurality of devices to a high voltage AC power supply;
means for providing a low voltage reference signal having a phase synchronized with said high voltage AC power supply;
means for adjusting said low voltage signal in accordance with said control signals to provide a relay signal for controlling said solid state relay device, said relay signal determining the level of power supplied to said one of said plurality of devices; and
means for monitoring power supplied to said one of said plurality of devices, said monitoring means providing a digital signal to said microprocessor which indicates whether current is flowing through said one of said plurality of devices;
wherein said means for adjusting includes a counter which reads in said control signals from said microprocessor according to a clock pulse supplied by a multiplier circuit, said clock pulse having a frequency which is a multiple of the frequency of said high voltage AC power supply.

5,572,074

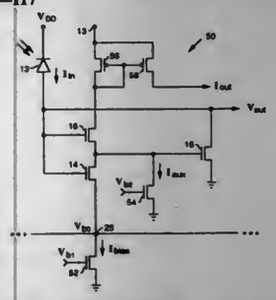
COMPACT PHOTOSENSOR CIRCUIT HAVING AUTOMATIC INTENSITY RANGE CONTROL

David L. Standley, Westlake Village, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Jun. 6, 1995, Ser. No. 469,989

Int. Cl.[6] H01H *47/24*

U.S. Cl. 307—117 **20 Claims**



1. A photosensor circuit, comprising:
a photodetector providing a current input and a voltage output in response to light intensity;
an attenuator comprising first and second FETs connected in series with a bias source and providing an attenuator output, said first and second FETs having gates connected to said current input;
a transconductance means connected to receive said current input and said attenuator output; and
said voltage output responding as a function of said light intensity.

5,572,075

SAFETY INTERLOCK APPARATUS

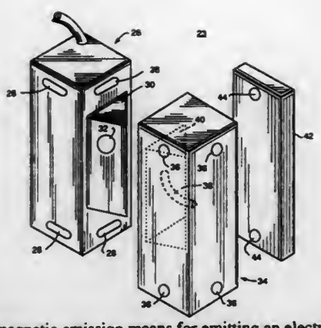
Jeffrey Campbell, 109 Temple St., Rutland, Vt. 05701, and Michael Kellogg, 65 South St., Proctor, Vt. 05765

Filed Aug. 24, 1994, Ser. No. 295,263

Int. Cl.[6] H02H *7/00*

U.S. Cl. 307—328 **11 Claims**

1. A safety interlock apparatus for a device requiring electrical power comprising:
a first assembly having a first emission face and a first detecting face, wherein said first emission face and said first detecting face are different faces of a polyhedron-shaped projection, and with each of said faces forming a predetermined uncommon first surface of said polyhedron-shaped projection, said first assembly further comprising:



electromagnetic emission means for emitting an electromagnetic signal from the first emission face of said first assembly;
electromagnetic detection means for detecting the signal provided by said electromagnetic emission means on the first detecting face of said first assembly:
a second assembly having a second emission face corresponding to said first emission face and a second detecting face corresponding to said first detecting face, with each of said second faces forming a predetermined uncommon second surface, said second assembly further comprising:
transmission means for transmitting the signal provided by said electromagnetic emission means from said second emission face on said second assembly to said second detecting face on said second assembly such when said first surface of said first assembly is releasably mated with said second surface of said second assembly, said signal from said emission means can be transmitted to said detecting means thereby providing a safe condition and when said first surface is not releasably mated with said second surface of said second assembly, said signal from said emission means cannot be transmitted to said detecting means thereby providing an unsafe condition;
switching means, connected to said first assembly, for turning on power to said device when a safe condition exists and turning off power to said device when an unsafe condition exists.

5,572,076

DIELECTRIC MICROMECHANICAL ELEMENT

Wolfgang Benecke; Bernhard Wagner; Günter Fuhr; Rolf Hagedorn; Roland Glaser, and Jan Gimsa, all of Berlin, Germany, assignors to Fraunhofer Gesellschaft zur Foerderung der angewandten Forschung e.V., Muenchen, Germany

PCT No. PCT/DE90/00069, § 371 Date Oct. 21, 1991, § 102(e) Date Oct. 21, 1991, PCT Pub. No. WO90/09059, PCT Pub. Date Aug. 9, 1990

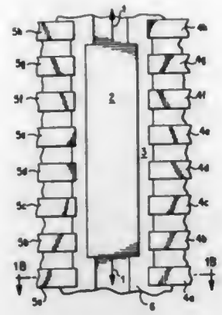
PCT Filed Feb. 2, 1990, Ser. No. 730,914

Claims priority, application Germany, Feb. 2, 1989, 325 465-7

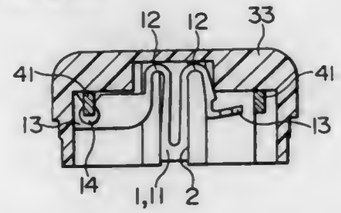
Int. Cl.[6] H02K *57/00;* **H02N** *1/06*

U.S. Cl. 310—40 MM **14 Claims**

1. An asynchronous dielectric micromechanical element comprising:
a movable rotor that is at least one of dielectrically homogeneous and inhomogeneous;
a chamber that envelops said rotor and includes at least one of a fluid-filled, gas-filled and evacuated medium;
electrodes arranged on two or more sides of said rotor, with several of said electrodes being arranged on at least one side of said rotor and said electrodes being triggered via at least one of phase-shifted alternating voltages and discontinuously switched voltages, wherein field vectors are thereby generated that move at least one of continuously and discontinuously in relation to said rotor; and
wherein at least some components of said rotor are penetrable to optical radiation and other electromagnetic waves.

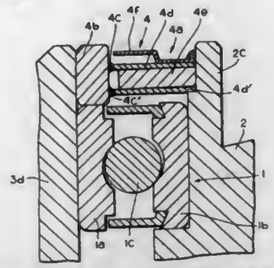


5,572,077
MINIATURE MOTOR
Hiroshi Kimura, Chiba-ken, Japan, assignor to Mabuchi Motor Co., Ltd., Chiba-ken, Japan
Filed Dec. 15, 1993, Ser. No. 167,733
Claims priority, application Japan, Dec. 17, 1992, 4-086624 U
Int. Cl.[6] H02K *11/00*
U.S. Cl. 310—40 MM 12 Claims



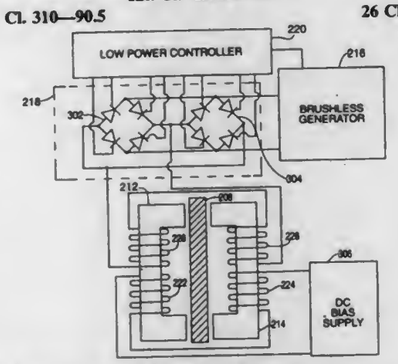
1. A miniature motor comprising:
a case, said case defining an opening;
a rotor rotatably positioned in said case;
a case cover engaging with said case opening, said case cover including first and second input terminals, said case cover also including an engaging projection and said case cover defining a groove;
a ground terminal positioned on said case cover, said ground terminal having a central part formed in a U-shape, and said engaging projection of said case cover engaging with an inside of said U-shape, a portion of said central part of said ground terminal being press fitted into said groove, a width of said groove being substantially similar to a width of said portion of said central part, said ground terminal also including first and second pinching parts, said first pinching part being positioned to connect to said first terminal, said second pinching part being spaced from said second terminal, said first pinching part having a keyhole shaped groove, said first pinching part being positioned to directly contact said first terminal both electrically and physically at said keyhole shaped groove;
said case is electrically connected to said first terminal through said ground terminal.

5,572,078
SPINDLE MOTOR
Masayoshi Saichi, and Toru Kumagai, both of Nagano, Japan, assignors to Sankyo Seiki Mfg. Co., Ltd., Nagano-ken, Japan
Filed Sep. 20, 1995, Ser. No. 530,636
Claims priority, application Japan, Sep. 20, 1994, 6-251181
Int. Cl.[6] H02K *5/00*
U.S. Cl. 310—90 8 Claims



6. A magnetic fluid sealing arrangement for a motor having a stationary part, a rotary part rotatably mounted on a stationary part by a bearing and having a radial gap between the stationary part and the rotary part, said sealing arrangement comprising:
a magnetic ring mounted on the stationary part;
a ring-like magnet unit mounted on the rotary part;
a magnetic fluid retained in a gap between said ring-like magnet unit and said magnetic ring; and
wherein said magnetic ring is composed of a sintered metal made by baking a magnetic metal powder.

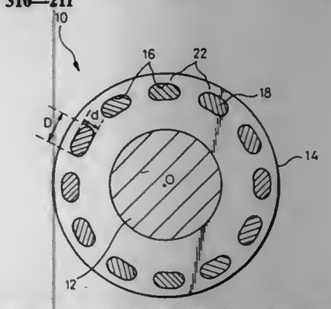
5,572,079
MAGNETIC BEARING UTILIZING BRUSHLESS GENERATOR
Joseph F. Pinkerton, Austin, Tex., assignor to Magnetic Bearing Technologies, Inc., Austin, Tex.
Filed Dec. 21, 1994, Ser. No. 361,142
Int. Cl.[6] H02K *7/09*
U.S. Cl. 310—90.5 26 Claims



1. An active magnetic bearing comprising:
a member having a shaft which may be rotated about a first axis;
at least one electromagnet having a control winding adapted for receiving control currents, said electromagnet generating fields upon being energized, said fields applying electromagnetic forces to said member;
at least one position sensor for measuring displacement of said shaft along at least a second axis;
a low power controller for providing input signals in response to the displacement measured by said position sensor;
at least one brushless generator adapted for receiving said input signals and for amplifying said input signals into control currents;

rectifier circuitry for providing said control currents to said electromagnet control windings to vary said fields of said electromagnet to change the electromagnetic forces applied to said member to cause said member to be centered along said second axis.

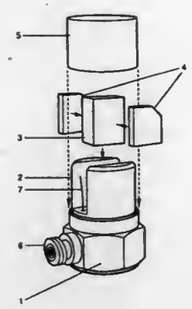
5,572,080
SQUIRREL-CAGE ROTOR FOR INDUCTION MOTOR
Kosei Nakamura, Yamanashi; Yoshiyuki Hayashi, Shizuoka, and Hisashi Maeda, Yamanashi, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan
PCT No. PCT/JP94/00301, § 371 Date Jan. 6, 1995, § 102(e) Date Jan. 6, 1995, PCT Pub. No. WO94/19858, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 24, 1994, Ser. No. 318,885
Claims priority, application Japan, Feb. 24, 1993, 5-035677
Int. Cl.[6] H02K *7/16*
U.S. Cl. 310—211 4 Claims



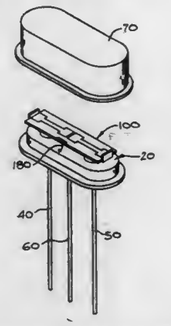
1. A squirrel-cage rotor for an induction motor, comprising:
a rotor shaft;
a laminated core coaxially fixed to said shaft and having a plurality of slots axially penetrating near an outer circumferential surface of said core, each of said slots being defined by a wall having a predetermined profile which has a maximum circumferential distance larger than a maximum radial distance in a given section orthogonal to an axis; and
a conductor portion including a plurality of secondary conductors arranged in said slots of said laminated core and a pair of end rings connected to said secondary conductors at both axial ends of said laminated core, wherein each of said slots of said laminated core is defined by a wall having a generally elliptical profile of which a major axis is oriented in a circumferential direction in a given section orthogonal to an axis.

5,572,081
ACCELEROMETER
Lars Starck, Gilleleje, Denmark, assignor to A/S Brüel & Kjær, Denmark
PCT No. PCT/DK93/00329, § 371 Date Feb. 24, 1995, § 102(e) Date Feb. 24, 1995, PCT Pub. No. WO94/09373, PCT Pub. Date Apr. 28, 1994
PCT Filed Oct. 7, 1993, Ser. No. 387,851
Claims priority, application Denmark, Oct. 9, 1992, 1238/92
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—329 17 Claims

1. An accelerometer comprising a base with at least two uprights supporting at least one seismic mass and at least one piezoelectric element, and a securing means for securing said seismic masses and said piezoelectric elements to an inner side of each of said uprights.



5,572,082
MONOLITHIC CRYSTAL STRIP FILTER
Thomas J. Sokol, 442 Twisting Pine Cir., Longwood, Fla. 32779
Filed Nov. 14, 1994, Ser. No. 340,043
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—366 23 Claims



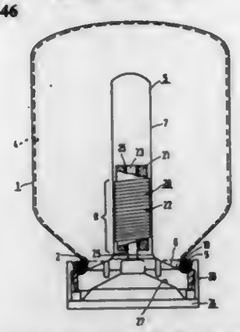
1. A low profile monolithic crystal strip filter package comprising:
a base having a main body and first and second mounting posts;
a quartz crystal strip mounted substantially parallel to the main body of the base, and wherein the strip has first and second surfaces, first and second ends and first and second sides, and wherein the sides of the strip are substantially longer than the ends of the strip;
a first signal electrode located on the first surface of the strip and in electrical communication with a first mounting contact, and wherein the first mounting contact is in electrical communication with the first mounting post;
a second signal electrode located on the first surface of the strip and in electrical communication with a second mounting contact, and wherein the second mounting contact is in electrical communication with the second mounting post;
a ground electrode located on the strip in substantial registry with at least one signal electrode, and wherein the ground electrode is in electrical communication with a ground contact; and,
a ground member in electrical communication with the ground contact,
and wherein the output signal of the strip filter has a 3 dB bandwidth in the range of about 3 to 250 kHz at a center frequency in the range of about 10 to 150 MHz.

5,572,083

ELECTROLESS LOW-PRESSURE DISCHARGE LAMP

Petrus H. Antonis; Hendrik J. Eggink, and Winand H. A. M. Friederichs, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 83,803, Sep. 3, 1993, abandoned.
This application Apr. 21, 1995, Ser. No. 426,441
Claims priority, application European Pat. Off., Jul. 3, 1992, 92202026
Int. Cl.[6] H01J 1/50
U.S. Cl. 313—46 14 Claims



1. An electrodeless low pressure discharge lamp, comprising:

a) a lamp vessel closed in a gas-tight manner and comprising a dome end, an end portion with a distal end opposite said dome end and a tube which extends from said end portion into said lamp vessel towards said dome end and defines a cavity in said lamp vessel extending from said end portion, said lamp vessel having a length dimension from said distal end to said dome end, a first zone adjacent said end portion extending from said end portion toward said dome end for a distance equal to half said length dimension, and a second zone extending from said first zone to said dome end over the remaining half of said length dimension;

b) a discharge sustaining filling within said lamp vessel; and

c) a power coupler within said tube in said lamp vessel, said power coupler comprising a core of soft magnetic material, an electric coil around the core, said coil being disposed adjacent to said end portion of said lamp vessel substantially entirely within said first zone, a solid heat conducting rod within said core of soft magnetic material which extends to the exterior of said tube past said end portion, and an elastic material laterally coupling said heat conducting rod to said core of soft magnetic material;

d) a flange adjacent said end portion and coupled to said heat conducting rod; and

wherein during lamp operation said lamp consumes a power of at least about 40 W.

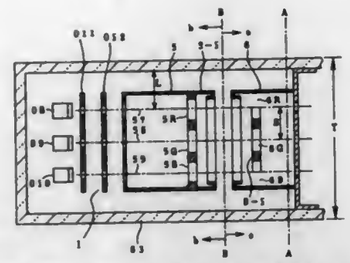
5,572,084

COLOR CATHODE RAY TUBE

Go Uchida, and Syoji Shirai, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 49,346, Apr. 21, 1993, abandoned. This application Nov. 2, 1994, Ser. No. 332,788
Claims priority, application Japan, Nov. 16, 1993, 5-286772
Int. Cl.[6] H01J 29/50;31/00;29/46
U.S. Cl. 313—414 9 Claims

1. A color cathode ray tube equipped with an in-line electron gun comprising at least electron beam producing means for emitting three electron beams of in-line arrangement toward a fluorescent screen, and main lens means for focusing said three electron beams on a fluorescent screen, said main lens means comprising two cylindrical electrodes arranged in a spaced relationship in a direction of an axis of said tube, each having an opening and having therein a plate electrode with a beam passing area, a thickness of said plate electrode being substantially smaller than the radius of



said beam passing area in a direction parallel to said in-line arrangement of said three electron beams; said two cylindrical electrodes being given different voltages, wherein the D and S values are in the region where all of the following inequalities are satisfied;

5.0>S,

D>S, and

55S−20D≧145.5

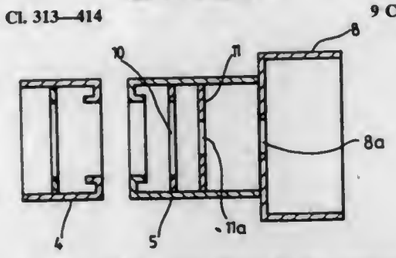
S being a beam spacing in mm between central axes of said three adjacent electron beams, and D being a diameter in mm in a direction perpendicular to an in-line arrangement of said three electron beams, of said cross section of an opening at opposing ends of said two cylindrical electrodes.

5,572,085

ELECTRON GUNS FOR COLOR CATHODE RAY TUBE

Jin Y. Choi, Kyungsangbuk-do, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 5, 1994, Ser. No. 353,308
Claims priority, application Rep. of Korea, Nov. 4, 1994, 28895/1994
Int. Cl.[6] H01J 29/50
U.S. Cl. 313—414 9 Claims



1. An electron gun for a color cathode ray tube comprising:

a first grid electrode, a second grid electrode, a third grid electrode, a fourth grid electrode, a first accelerating/focusing electrode, a second accelerating/focusing electrode, and a shield cup, disposed sequentially from a cathode to a screen; and

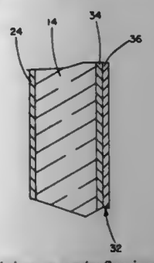
a correction electrode having at least one horizontally elongated electron beam passing hole, shaped in the form of a plate so as to permit its location to be moved selectively during fabrication between a shield cup and an inner shield, and wherein the correction electrode is fixed in said second accelerating/focusing electrode between the inner shield fixed to said second accelerating/focusing electrode and said shield cup.

5,572,086

BROADBAND ANTIREFLECTIVE AND ANTISTATIC COATING FOR CRT

Hua-Sou Tong, Arlington Heights, Ill.; Chun-Min Hu, Keelung, and Yu-Chung Yu, Chungli, both of Taiwan, assignors to Chunghwa Picture Tubes, Ltd., Taoyuan, Taiwan

Filed May 18, 1995, Ser. No. 443,440
Int. Cl.[6] H01J 29/86
U.S. Cl. 313—478 16 Claims



1. A method of applying an antireflective/antistatic coating to a glass video display panel comprising the steps of:

preheating the display panel;

applying a conductive metal salt coating to the heated display panel;

applying a water soluble organic or inorganic salt antireflective coating or a polymer antireflective coating to the display panel over said conductive metal salt coating; and

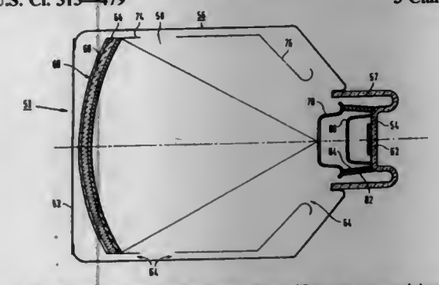
washing said organic or inorganic salt coating with water or said polymer coating with toluene so as to partially dissolve the organic or inorganic salt coating or the polymer coating and form pores in the antireflective coating, whereby the light refractive index of the antireflective coating is established by the extent of pore formation in said coating.

5,572,087

IMPROVED CATHODE RAY TUBE OF AN IMAGE INTENSIFIER TYPE IN WHICH INTERNAL PROTECTIVE FILMS ARE DEGRADED ORGANIC MATERIALS

Gerardus A. H. M. Vrijssen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 977,426, Feb. 23, 1993, abandoned. This application Jun. 28, 1993, Ser. No. 83,809
Int. Cl.[6] H01J 31/00
U.S. Cl. 313—479 3 Claims



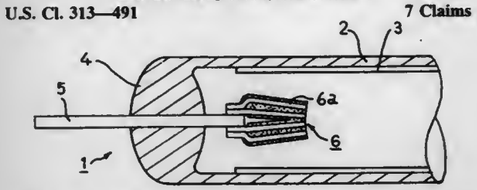
1. A cathode ray tube of an image intensifier type comprising an electron gun, an electrically insulating surface in said cathode ray tube being covered with an electrically insulating film, characterized in that the film is a degradation product of a layer of an organic material, the film being provided on an insulating surface within an envelope of the image intensifier tube, and the organic material is an element selected from the group including nitride cellulose, polyacylalates, acrylic resins, polyvinyl compounds including polyvinyl acylates, polyvinyl acetates, and polyvinyl alcohols, fats and organic soaps.

5,572,088

COLD-CATHODE FLUORESCENT LAMP

Masanobu Aizawa, Iwaki; Masatosi Chiba, Katsushika-ku; Thuneyosi Sibasaki, Iwaki; Mitugi Tayama, Iwaki; Tomohiko Sakamoto, Iwaki, and Masalu Ito, Iwaki, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1995, Ser. No. 459,187
Claims priority, application Japan, Oct. 7, 1994, 6-268156
Int. Cl.[6] H01J 17/04;17/24;17/26
U.S. Cl. 313—491 7 Claims



1. A cold-cathode fluorescent lamp including an opposing pair of electrodes in spaced relationship in a tubular glass bulb of which an inner wall surface is coated with a fluorescent material, comprising:

two electricity feeding wires airtightly extending through beads at opposite ends of said tubular glass bulb and terminating within said glass bulb at respective distal ends for feeding electricity to a respective electrode while holding said electrodes in said tubular glass bulb, said two electricity feeding wires defining a first axis through said tubular glass bulb, and

said electrodes, each comprising four plate-like electrode members each having mercury and getter preliminarily coated thereon to serve as an electrode and spot-welded at a first end thereof to a side surface of a respective one of said electricity feeding wires at said electricity feeding wire distal end without any contact with the inner wall surface of said tubular glass bulb while maintaining a necessary area for each of said electrodes, two of said four plate-like electrode members being located on one side of said first axis, while another two being located on the opposite side of said first axis, the first end of each of said plate-like electrode members being bent toward said respective electricity feeding wire distal end for welding thereto, and an opposite second end of each of said plate-like electrode members extending into said tubular glass bulb, beyond said electricity feeding wire, and substantially parallel with said first axis.

5,572,089

PHOTOMULTIPLIER FOR MULTIPLYING PHOTOELECTRONS EMITTED FROM A PHOTOCATHODE

Hiroyuki Kyushima; Koji Nagura; Yutaka Hasegawa; Eiichiro Kawano; Tomihiko Kuroyanagi; Akira Atsumi, and Masuya Mizuide, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Apr. 28, 1994, Ser. No. 234,153
Claims priority, application Japan, Apr. 28, 1993, 5-102898; Apr. 28, 1993, 5-102902; Apr. 28, 1993, 5-102910; Apr. 30, 1993, 5-104668
Int. Cl.[6] H01J 43/22;43/04
U.S. Cl. 313—533 28 Claims

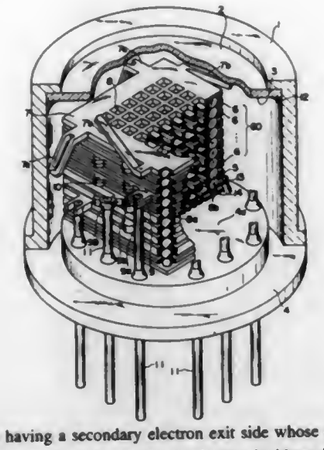
1. An electron multiplier comprising:

a dynode unit constituted by stacking a plurality of stages of dynodes, spaced apart from each other at predetermined intervals;

an inverting dynode plate; and

an anode plate being arranged between said dynode unit and said inverting dynode plate, said anode plate having an electron through hole for causing the secondary electrons emitted from said dynode unit to pass therethrough, said electron through

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hole having a secondary electron exit side whose diameter is larger than that of a secondary electron incident side thereof.

5,572,090

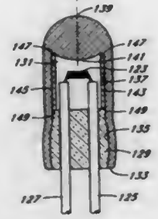
QUALITY LAMP AND METHOD FOR MAKING

James A. Carley, 1502 W. 228th St., Torrance, Calif. 90501

Filed Aug. 18, 1995, Ser. No. 516,819

Int. Cl.[6] H01J *17/04*

U.S. Cl. 313—634 **8 Claims**



1. An electric lamp comprising:

a bead portion supporting and sealing about a pair of spaced apart electrical conductors each having a terminated end above said bead portion;

a filament having a first end attached near a terminated end of one of said pair of conductors, and a second end attached near a terminated end of the other of said pair of conductors;

a hollow glass cylindrical insert having a cylindrical outer surface and a cylindrical inner surface bound by a first end and a second open end, said second end abutting said bead portion;

a glass envelope having an outside surface, a first inside circumferential surface portion opposing said bead portion, a second circumferential surface portion opposing said cylindrical outer surface of said hollow glass cylindrical insert, and an inside end surface adjacent said first end of said hollow glass cylindrical insert.

5,572,091

QUARTZ GLASS WITH REDUCED ULTRAVIOLET RADIATION TRANSMISSIVITY, AND ELECTRICAL DISCHARGE LAMP USING SUCH GLASS

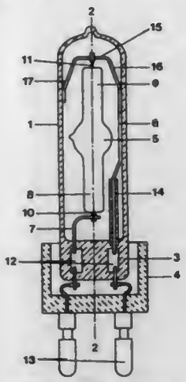
Alfred Langer, Kissing; Andreas Genz, Berlin; Manfred Deisenhofer, Unterschöneberg/Altenmünster; Walter Kelle, Munich; Bernd Lewandowski, Feldafing, and Jürgen Reichardt, Schwabmünchen, all of Germany, assignors to Patent-Treuhand-Gesellschaft für elektrische Glühlampen mbH, Munich, Germany

Division of Ser. No. 120,729, Sep. 13, 1993, Pat. No. 5,464,462. This application May 17, 1995, Ser. No. 442,831

Claims priority, application Germany, Sep. 15, 1992, 42 30 817.8; Nov. 27, 1992, 42 40 006.7

Int. Cl.[6] C03C *3/06;* **H01J** *5/02*

U.S. Cl. 313—636 **15 Claims**



1. A quartz glass adapted to be subjected to radiation including at least part of the visible spectrum and ultraviolet (UV) radiation of wave lengths below about 300 nm, said quartz glass,

in accordance with the present invention,

being doped with cerium which is present in form of a cerium compound,

wherein the cerium is present between about 0.065% and 3.25%, by weight, of the cerium as such, with respect to the overall weight of the quartz glass;

and wherein the cerium compound is a compound of 3 valent oxide of cerium or 4 valent oxide of cerium, or a mixture of oxide compounds of cerium, which, besides cerium, includes at least one other metal.

5,572,092

HIGH FREQUENCY VACUUM TUBE WITH CLOSELY SPACED CATHODE AND NON-EMISSIVE GRID

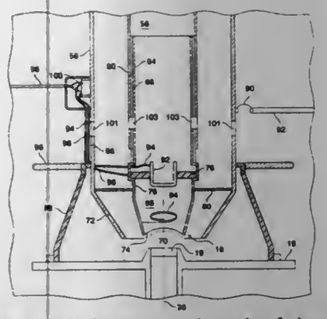
Merrald B. Shrader, Buena Vista, Colo., assignor to Communications and Power Industries, Inc., Palo Alto, Calif.

Filed Jun. 1, 1993, Ser. No. 69,705

Int. Cl.[6] H01J *25/02*

U.S. Cl. 315—5.37 **29 Claims**

1. A vacuum tube for handling an r.f. signal having a predetermined frequency range comprising a cathode for emitting a linear electron beam, a grid comprised of non-electron emissive material for current modulating the beam, the grid being positioned from the cathode no farther than a distance in which electrons emitted from the cathode can travel in a quarter cycle of the r.f. signal, an anode for accelerating the beam, an electrode for collecting the beam, an output cavity resonant to a frequency of the r.f. signal positioned between the grid and electrode for collecting the beam, a coupler responsive to the r.f. signal connected to the grid and cathode so electrons from the cathode upon passing through the grid and accelerated toward the anode are in bundles in an interaction region between the anode and grid to cause r.f. fields that are responsive to the r.f. signal to be derive in the interaction region, and r.f. absorbing material coupled to the interaction region for



absorbing the r.f. fields that are responsive to the r.f. signal so there is non-regenerative coupling of the r.f. signal to the region.

5,572,093

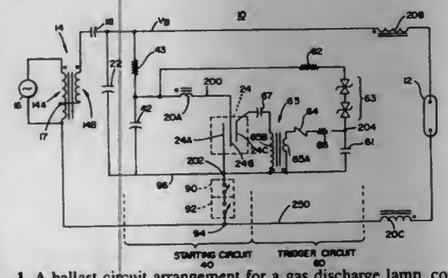
REGULATION OF HOT RESTRIKE PULSE INTENSITY AND REPETITION

George E. Kiefer, Hendersonville, N.C., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 15, 1994, Ser. No. 306,869

Int. Cl.[6] H05B *41/00*

U.S. Cl. 315—289 **9 Claims**



1. A ballast circuit arrangement for a gas discharge lamp, comprising:

(a) a ballast transformer arrangement receptive of an input power signal and providing an output, ballast voltage having positive and negative half cycles;

(b) a pulse transformer having a secondary winding in serial circuit with the lamp for impressing a high voltage, hot restrike starting pulse across the lamp;

(c) a bypass capacitor coupled to said ballast transformer for being charged by the ballast voltage;

(d) a hot restrike starting circuit for pulsing a primary winding of said pulse transformer, comprising a serially connected starting capacitor and resistor coupled across said bypass capacitor; and a circuit for discharging said starting capacitor including, in serial circuit, said primary winding of said pulse transformer and a current switch having a control electrode responsive to a control signal; and

(e) a trigger circuit for supplying said control signal, comprising a serially connected trigger capacitor and trigger resistor coupled across said starting capacitor; a circuit for discharging said trigger capacitor including a first voltage-breakover switch and producing said control signal when said first voltage-breakover switch becomes conductive; and a second voltage-breakover switch in serial circuit with said trigger resistor, between said trigger and starting capacitors; said second voltage-breakover switch allowing said trigger capacitor to become charged only when the voltage on said starting capacitor exceeds a threshold voltage, thereby providing consistently high hot restrike pulses, and, further, reducing its current conduction after said trigger capacitor is discharged to below the holding current of said first voltage-breakover switch for a sufficient duration to allow said first voltage-breakover switch to reset during the same half-cycle of said ballast voltage, whereby said starting circuit provides multiple hot restrike pulses in said same half-cycle.

5,572,094

LIGHTING CIRCUIT FOR DISCHARGE LAMP

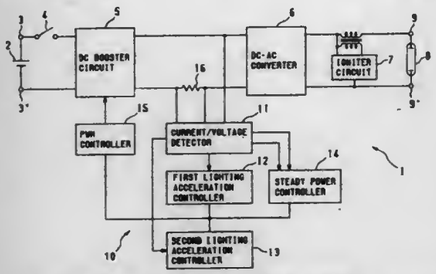
Masayasu Yamashita; Atsushi Toda, and Goichi Oda, all of Shimizu, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1995, Ser. No. 522,087

Claims priority, application Japan, Sep. 2, 1994, 6-232538

Int. Cl.[6] G05F *1/00*

U.S. Cl. 315—308 **12 Claims**



1. A lighting circuit for discharge lamp comprising:

DC power supply circuit section for boosting and/or decreasing a DC voltage;

a DC-AC converter for converting an output voltage of said DC power supply circuit section into an AC voltage;

a lamp voltage detector for detecting a voltage applied to a discharge lamp or a signal equivalent to said voltage;

a lamp current detector for detecting a current-flowing in said discharge lamp or a signal equivalent to said current; a control circuit for controlling said output voltage of said DC power supply circuit section in accordance with signals from said lamp voltage detector and said lamp current detector and performing lighting control in accordance with a predetermined control curve defining a characteristic of said lamp voltage v.s. said lamp current;

a first lighting acceleration controller, provided in said control circuit, for, when said lamp voltage is smaller than a rated value or a minimum value in a range including said rated value, supplying power equal to or greater than rated power to said discharge lamp during transition from a point where said lamp voltage of said discharge lamp has indicated a minimum value to a point where said lamp voltage rises to a level of steady power control; and

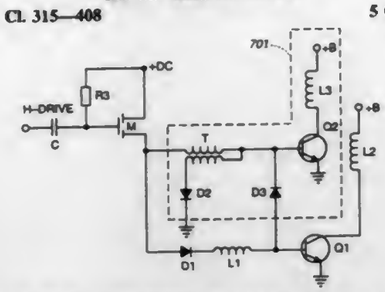
a second lighting acceleration controller, provided in said control circuit, for detecting a light-OFF time of said discharge lamp and executing such control as to increase an amount of a lamp current or power to be supplied to said discharge lamp as said light-OFF time becomes longer, whereby at beginning of lighting when said discharge lamp is reactivated immediately after deactivation, a length of a period in which said current or power supplied to said discharge lamp by said second lighting acceleration controller is greater than a current or power supplied to said discharge lamp by said first lighting acceleration controller is changed in accordance with said light-OFF time of said discharge lamp.

5,572,095

METHOD AND APPARATUS FOR DRIVING DEFLECTION AND HIGH VOLTAGE STAGES IN A VIDEO DISPLAY

Peter Krause, Singapore, Singapore, assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Jul. 21, 1995, Ser. No. 505,730
Int. Cl.[6] H01J *29/70;29/76*
U.S. Cl. 315—408 **5 Claims**



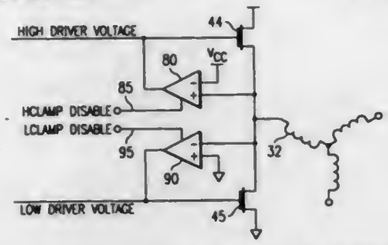
1. For use in a video monitor, an apparatus comprising:
a first power transistor connected to power and ground voltages and having a first control electrode;
a second power transistor connected to power and ground voltages and having a second control electrode;
a signal comprising periodic retrace pulses for periodically switching off the first and second power transistors; and
a drive circuit coupled to said signal and to said first and second control electrodes, said circuit comprising:
means for providing a positive drive current to said first and second control electrodes;
means for causing a first negative drive current to flow from said first control electrode, producing a negative voltage at said first control terminal; and
means coupled to said first control electrode and said second control electrode of said second power transistor and responsive to said negative voltage for causing a second negative drive current to flow from said second control electrode.

5,572,096

METHOD AND CIRCUIT FOR CLAMPING THE RECIRCULATION CURRENT IN STATOR WINDINGS

Karl M. Schlager, Campbell, Calif., assignor to SGS–THOMSON Microelectronics, Inc., Carrollton, Tex.

Filed May 27, 1994, Ser. No. 250,027
Int. Cl.[6] H02P *7/00*
U.S. Cl. 318—254 **20 Claims**



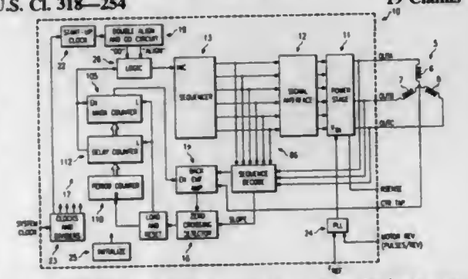
1. A circuit for clamping voltage spikes on a stator winding of a direct current motor comprising:
a transistor having a current path connected between a voltage supply and the stator coil and having a control terminal;
a driver circuit connected to the control terminal of said transistor, and
a comparator for comparing the voltage on the coil to a reference voltage and having an output connected to the control terminal of the transistor;
wherein said comparator turns on said transistor responsive to the voltage on the stator coil exceeding the voltage supply voltage.

5,572,097

METHOD AND APPARATUS FOR STARTING POLYPHASE DC MOTOR

Scott W. Cameron, Woodland, Colo., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 843,824, Feb. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 770,576, Oct. 3, 1991, Pat. No. 5,221,881. This application Jul. 15, 1994, Ser. No. 275,645
Int. Cl.[6] H02K *23/00*
U.S. Cl. 318—254 **19 Claims**



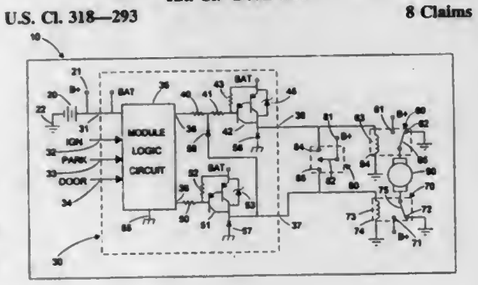
1. An apparatus for starting a polyphase dc motor having a rotor, a stator, and commutation circuitry wherein the commutation circuitry comprises:
a start-up clock circuit having a clock output;
a double align and go circuit connected to the clock output and having an align output and a go output;
a logic circuit for receiving the align output and the go output, and having an increment output for generating an increment signal; and
a sequencer circuit connected to said increment output for commutating a plurality of phases in said stator responsive to said increment signal.

5,572,098

MOTOR VEHICLE ACCESSORY CONTROL WITH CONTROL MODULE HAVING SINGLE POWER TERMINAL

Michael J. Dreon, Utica, Mich., and Pierre Y. Abboud, Cortland, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 269,486, Jul. 1, 1994, abandoned. This application Nov. 22, 1995, Ser. No. 561,564
Int. Cl.[6] B60L *1/00*
U.S. Cl. 318—293 **8 Claims**



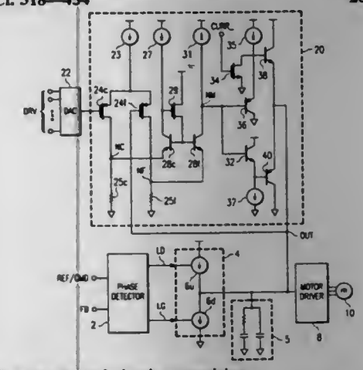
1. A motor vehicle accessory control comprising, in combination:
a source of DC electric power in the vehicle having first and second terminals;
a DC electric motor for the accessory having motor armature terminals;
first and second relays each having a relay armature connected to one of the motor armature terminals and normally open and normally closed terminals connected to the first and second terminals of the source of DC electric power in an H-switch arrangement for selectively and reversibly powering the DC electric motor to activate the accessory selectively in either of two modes, the first and second relays each further having an activating coil, one end of each coil being connected to the second terminal of the DC electric power source;
a control module comprising a module logic circuit and first and second output semiconductor switches in an insulating package, the control module having a plurality of terminals for providing input electric signals of vehicle conditions from external sensing devices to the module logic circuit therein, only a single power terminal, which connects the module logic circuit therein to the first terminal of the DC electric power source, and first and second output terminals, the first and second output semiconductor switches being connected to control electric current flow between the single power terminal and the first and second output terminals, respectively, in response to the module logic circuit, the module logic circuit being effective to selectively render one, the other, or neither, but not both, of the first and second output semiconductor switches conducting, the first and second output terminals being connected to the other end of the relay coils of the first and second relays, respectively; and
the module logic circuit having a first power distribution conductor connected to the power terminal and a second power distribution conductor connected through unidirectional current devices to each of the first and second output terminals so as to provide, through the relay coils, a connection between the module logic circuit and the second terminal of the DC power source.

5,572,099

MOTOR SPEED CONTROL WITH CURRENT LIMIT

Francesco Carobolante, Portola Valley, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Sep. 30, 1994, Ser. No. 316,232
Int. Cl.[6] H02K *17/32*
U.S. Cl. 318—434 **20 Claims**



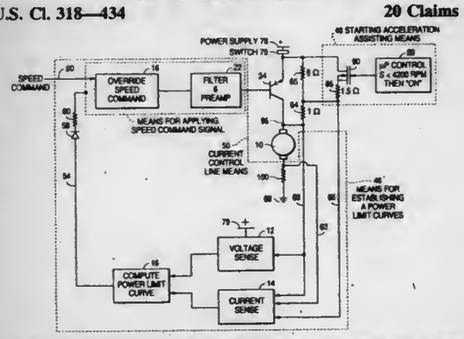
1. A motor control circuit, comprising:
a phase detector, having a first input for receiving a feedback signal indicating the speed of a motor and having a second input for receiving a command signal, for generating a phase detector output signal corresponding to the phase difference between a signal received on said first input and a signal received on said second input;
circuitry for generating a drive signal responsive to the phase detector, said drive signal being an analog signal having an amplitude which is dependent on the amplitude of the drive to be applied to the motor;
a drive amplifier for receiving the drive signal, and for driving coils of a motor responsive thereto; and
a buffer amplifier having a first input for receiving a current limit signal, having a feedback input, and having an output coupled to the input of the drive amplifier and to the feedback input of the buffer amplifier, for controlling the amplitude of the drive signal applied to the drive amplifier in a manner corresponding to the current limit signal;
wherein the buffer amplifier operates to both sink current from and source current to the input of the drive amplifier in a current control mode, and to sink excess current from but not source current to the input of the drive amplifier in a speed control mode.

5,572,100

SEMICONDUCTIVE POWER UNIT FOR VARIABLE SPEED DRIVE MOTOR

Craig W. Moulton, Golden, Colo., assignor to Cobe Laboratories, Inc., Arvada, Colo.

Filed Oct. 28, 1994, Ser. No. 330,521
Int. Cl.[6] H02P *5/16;5/06*
U.S. Cl. 318—434 **20 Claims**



1. A semiconductive power unit for a variable speed drive motor, comprising
a controllable semiconductive device connected to provide a variable impedance path between a power supply and the variable speed drive motor;
means connected in parallel with the variable impedance path for providing a minimum current to the variable speed motor;
means for assisting starting acceleration of the variable speed motor including a controllable impedance shunt connected in parallel with at least a portion of the minimum current providing means; and
means for establishing a power dissipation limit characteristic for the variable impedance path, wherein current flow through the variable impedance path decreases with increasing voltage variable across the impedance path, and for providing maximum power dissipation in the variable impedance path for respective intermediate values of the current and the voltage, said maximum power dissipation being a safe value for the controllable semiconductive device,
wherein
the means for establishing the power dissipation limit characteristic for the variable impedance path includes;
means for applying a speed command signal to the controllable semiconductive device to change the impedance of the variable impedance path, whereby to change the speed of the variable speed motor; and
means for overriding the speed command signal when the power dissipation in the variable impedance path exceeds a value corresponding to a point on the power dissipation limit characteristic, as determined for the existing voltage across the

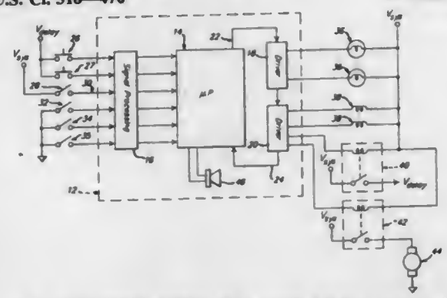
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variable impedance path, and temporarily stopping current flow in the variable impedance path.

5,572,101
PROGRAMMABLE ONE-TOUCH-DOWN POWER WINDOW

David J. Rutkowski, Grosse Ile, and Mohammad H. Arghavani-Badrabadi, Walled Lake, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 2, 1994, Ser. No. 348,402
Int. Cl.[6] H02P *1/22*
U.S. Cl. 318—470 **11 Claims**



1. A programming method for a power window system of a motor vehicle, said power window system equipped to provide a one-touch-down feature, said method comprising:

accepting commands regarding a desired change of state of said power window system from one-touch-down feature ENABLED to DISABLED or from DISABLED to ENABLED; and

changing the state of the power window system in accordance with said commands;

wherein all said commands are issued from devices already in the vehicle to perform function other than providing commands regarding a desired change of state of said power window system from one-touch-down feature ENABLED to DISABLED or from DISABLED to ENABLED; and

wherein said step of accepting commands regarding a desired change of state of said power window system from one-touch-down feature ENABLED to DISABLED or from DISABLED to ENABLED further includes the step of accepting commands from a power window control switch and a key-in-ignition switch.

5,572,102
METHOD AND APPARATUS FOR VISION CONTROL OF WELDING ROBOTS

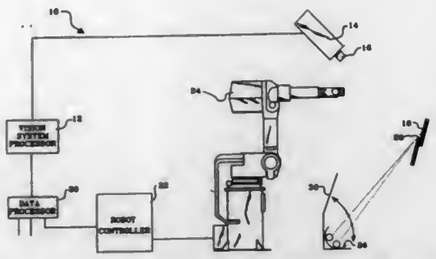
John Goodfellow, Waterloo, and Wilhelm Doerr, Kitchener, both of Canada, assignors to Budd Canada Inc., Kitchener, Canada

Filed Feb. 28, 1995, Ser. No. 395,810
Int. Cl.[6] B25J *09/22*; B23K *09/12*
U.S. Cl. 318—568.13 **20 Claims**

1. Apparatus for controlling the operation of a robot welder to effect the sequential welding of a plurality of parts having seams to be welded, each of the parts being similar to a known reference part, comprising:

means for supporting a one of the parts to be welded in a predetermined welding position so that the seam to be welded is supported in a predetermined plane;

an unoriented light source that is independent of the robot and positioned to illuminate the seam to be welded so that a light intensity gradient is detectable along the seam;



vision sensor means for acquiring a digital image of the seam to be welded, the vision sensor means being independent of the robot and positioned to acquire images that capture the light intensity gradient along the seam;

image processor means for accepting the images from the vision sensor means and for processing the images to determine from a digitized representation of the light intensity gradient a deviation of the seam with respect to a reference weld path on the reference part at each of a plurality of reference points spaced along the reference weld path;

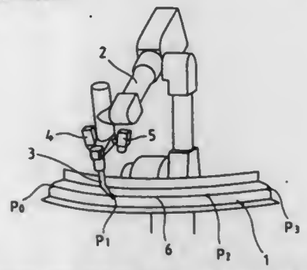
data processor means for accepting each deviation from the image processor means and for converting each deviation to a coordinate adjustment for a respective one of each of the plurality of reference points, each coordinate adjustment being expressed in a format readable by a controller of the robot; and

means for communicating the coordinate adjustments to the controller of the robot, whereby the robot is enabled to weld along the seam using predetermined adjusted coordinates for the seam to be welded in uninterrupted real time without further weld path scanning, computation or adjustment.

5,572,103
ROBOT TEACHING PROGRAM CORRECTION METHOD

Tomoyuki Terada, Oshino-mura, Japan, assignor to Fanuc, Ltd., Minamitsuru-gun, Japan

PCT No. PCT/JP94/01509, § 371 Date May 2, 1995, § 102(e) Date May 2, 1995, PCT Pub. No. WO95/08143, PCT Pub. Date Mar. 23, 1995
PCT Filed Sep. 12, 1994, Ser. No. 428,221
Claims priority, application Japan, Sep. 14, 1993, 4-250985
Int. Cl.[6] G05B *19/42*
U.S. Cl. 318—568.13 **6 Claims**



1. A robot teaching program correction method for controlling a robot having a vision sensor comprising the steps of:

forming a mark which can be identified by the vision sensor on a portion of a workpiece corresponding to at least one teaching point selected from teaching points in a teaching program, wherein each of the teaching points has corresponding position data;

measuring a position of the formed mark by the vision sensor while maintaining the robot at the selected teaching point;

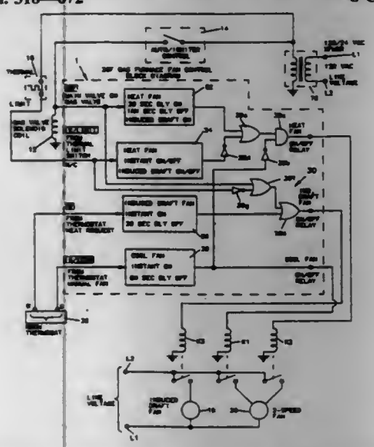
obtaining correction amounts corresponding to the position data for some teaching points in the teaching program in accordance with the measured mark position; and

correcting the position data in accordance with the correction amounts.

5,572,104
FURNACE CONTROL APPARATUS

Craig M. Nold, Lexington; Mark E. Miller, Versailles; Mitchell R. Rowlette, Berea, and Robert B. Brown, Lexington, all of Ky., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 105,790, Aug. 12, 1993, abandoned, which is a division of Ser. No. 886,275, May 20, 1992, Pat. No. 5,272,427. This application Jun. 27, 1995, Ser. No. 495,134
Int. Cl.[6] G05B *13/02*; F24H *3/00*; G05D *29/00*
U.S. Cl. 318—672 **8 Claims**

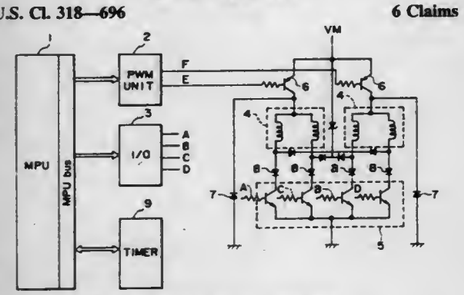


1. A control system having a low voltage AC power source, a low voltage AC input signal indicative of a selected condition, an output relay adapted to control a system component responsive to the low voltage AC input signal, the relay having electrical contacts relatively movable into and out of engagement with one another, means to determine the status of the AC input signal synchronously with the AC power source and means to effect at least one of contact engagement and contact disengagement asynchronously with the AC power source, the means to determine the status of the AC input signal synchronously with the AC power source includes microprocessor means having input and output ports including an interrupt IRO port and having a real time clock, the AC input signal coupled to an input port and the AC power source being coupled to the IRO port to detect an edge of the AC wave to read the AC input signal at the input port at a time related to the detection of said edge of the AC wave at the IRO port and means to energize the relay contacts from the output of the microprocessor means based on the real time clock so that the AC input signal is asynchronous relative to the AC power source.

5,572,105
STEPPING MOTOR CONTROL METHOD INCLUDING VARYING THE NUMBER OF SPLIT SECTIONS IN ONE STEP DRIVE PERIOD OF A STEPPING MOTOR

Takashi Nojima, Tokyo; Akira Miyakawa, Yokohama; Soichi Hiramatsu, Hachioji; Hideki Yamaguchi, Yokohama; Hiroyuki Inoue, Yokohama; Kenji Kawazoe, Yokohama; Tetsuya Ishikawa, Yokohama; Hitoshi Nakamura, Kawasaki; Akira Kida, and Hideaki Kawakami, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1994, Ser. No. 363,012
Claims priority, application Japan, Dec. 27, 1993, 5-331782
Int. Cl.[6] G05B *19/40*
U.S. Cl. 318—696 **6 Claims**



1. A stepping motor control device comprising:

a stepping motor;

a drive circuit for driving said stepping motor, said drive circuit having a changeover circuit which changes an excitation phase of excitation current supplied to an excitation coil of said stepping motor whenever a step drive signal is applied thereto and having a switching circuit which controls the excitation current supplied to the excitation coil of said stepping motor in accordance with an applied pulse signal with a predetermined duty cycle;

a stepping signal generating portion for generating the step drive signal in accordance with a driving frequency for step-driving said stepping motor, said stepping signal generating portion applying the step drive signal to said changeover circuit of said drive circuit;

a control portion for splitting one step drive period of said stepping motor into a plurality of sections in accordance with the driving frequency of said stepping motor, said control portion varying the number of said split sections in accordance with the driving frequency of said stepping motor; and

a pulse signal generating portion for generating said pulse signal with a predetermined duty cycle for each of said split sections and for applying said pulse signal to said switching circuit of said drive circuit.

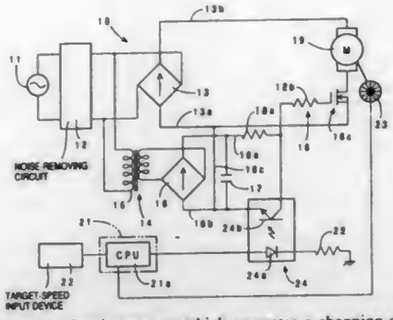
5,572,106
MOTOR DRIVING APPARATUS

Motoaki Yamanashi, Nagoya, and Yoshiaki Komatsu, Yokkaichi, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 3, 1995, Ser. No. 415,501
Claims priority, application Japan, Apr. 6, 1994, 4-068607
Int. Cl.[6] H02K *23/64*; H02P *3/18*
U.S. Cl. 318—803 **11 Claims**

1. An apparatus for driving an electric motor according to a given control target, comprising:

a control circuit which generates a control command signal corresponding to said control target;



a chopping signal generator which generates a chopping signal based on said control command signal generated by said control circuit;

supply terminals which are connectable to an alternating-current power supply;

a full-wave rectifier which rectifies an alternating current supplied from said alternating-current power supply, and supplies a full-wave rectified current to said motor, said full-wave rectifier being connected to said supply terminals without any transformer being provided therebetween, and having output terminals one of which provides a first ground line;

a chopper which is connected in series to a series circuit including said motor and said full-wave rectifier and which chops said full-wave rectified current supplied to said motor according to said chopping a signal generated by said chopping signal generator;

an insulator-type signal transmitter which transmits said chopping signal to said chopper in a state in which said chopping signal generator is electrically insulated from the chopper;

said chopper comprising a direct-current power source which includes a first transformer having input terminals connected to said supply terminals, respectively, transforms said alternating current into a first transformed current, and produces a direct current from said first transformed current, said direct-current power source having output terminals one of which provides a second ground line connected to said first ground line of said full-wave rectifier, and outputting said direct current via said output terminals thereof,

a direct-current control circuit which causes said direct current to change between a high voltage state thereof and a low voltage state thereof according to said chopping signal supplied from said chopping signal generator via said insulator-type signal transmitter, and

a chopping element which is connected in series to said series circuit including said motor and said full-wave rectifier and which is selectively placed in an ON state thereof and an OFF state thereof according to said direct current which changes between said high and low voltage states thereof under control of said direct-current control circuit; and

said chopping signal generator comprising a second transformer which has input terminals connected to said supply terminals, respectively, and has output terminals and which transforms said alternating current into a second transformed current and outputs said second transformed current via said output terminals thereof,

a computer which is supplied with said second transformed current and which operates on a voltage of the second transformed current, and

a third ground line connected to one of said output terminals of said second transformer, said third ground line being earthed.

5,572,107

SWITCHED CAPACITOR NETWORK

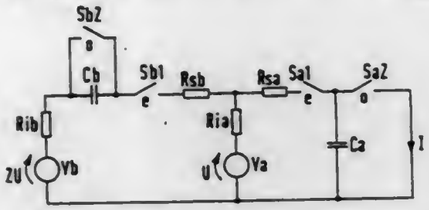
Rudolf Koch, Oberhaching, and Michael Alger-Meunier, Haar, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 29, 1994, Ser. No. 297,625

Claims priority, application Germany, Aug. 27, 1993, 43 28 973.8

Int. Cl.[6] H02J *7/00;* **H03M** *3/00;1/12*

U.S. Cl. 320—1 **3 Claims**



1. A switched capacitor network, comprising:

first and second voltage sources;

first and second switch devices;

a first capacitor being charged and discharged in alternation by said first switch device and being connected to said first voltage source for charging;

a second capacitor being charged and discharged by said second switch device in synchronism with said first capacitor; said second capacitor being connected in series between said first voltage source and said second voltage source for charging;

a product of the capacitance of said first capacitor and the voltage of said first voltage source being equal to a product of the capacitance of said second capacitor and a voltage difference between said two voltage sources; and

a product of the capacitance of said first capacitor and a contact resistance of said first switch device in a supply line path thereof, being equal to a product of the capacitance of said second capacitor and a sum of an internal resistance of said second voltage source and a contact resistance of said second switch device in a supply line path of said second capacitor.

5,572,108

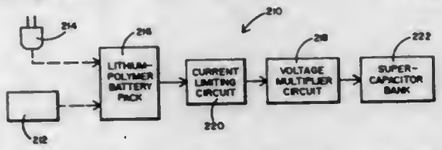
POWER SYSTEM USING BATTERY-CHARGED CAPACITORS

John A. Windes, 24656 Eloisa, Mission Viejo, Calif. 92691

Continuation-in-part of Ser. No. 383,988, Feb. 6, 1995, which is a continuation-in-part of Ser. No. 27,378, Mar. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 817,725, Jan. 7, 1992, Pat. No. 5,214,313. This application Sep. 5, 1995, Ser. No. 523,190

Int. Cl.[6] H02J *1/00*

U.S. Cl. 320—1 **5 Claims**



1. A self-contained power system for powering a variable electrical load, comprising:

a) a rechargeable battery pack of sufficient storage capacity to store substantially the total power required by said load between charges of said battery pack;

b) a capacitor bank so connected to said load as to drive it at a substantially constant voltage;

c) said capacitor bank being so connected to said battery pack as to be charged therefrom to a voltage substantially greater than the operating voltage of said load, the charging current of said capacitor bank being substantially less than the current required from said capacitor bank to drive said load.

5,572,109

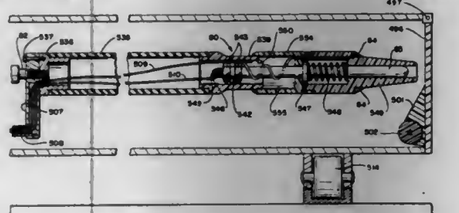
CHARGING BATTERIES OF ELECTRIC VEHICLES

Arlie L. Keith, Rte. 2, Box 93b, Laurel Springs, N.C. 28644

Division of Ser. No. 49,053, Apr. 19, 1993, Pat. No. 5,462,439. This application Jun. 7, 1995, Ser. No. 474,029

Int. Cl.[6] H02J *7/00*

U.S. Cl. 370—2 **12 Claims**



1. A system for charging the batteries of electric vehicles, comprising:

a charge station to which a vehicle may be presented to receive an electric charge, said charge station including a source of charging voltage and a first electric contact; and

a vehicle charging system disposed on an electric vehicle that has a battery for supplying motive energy to the vehicle, said vehicle charging system including charge control circuits and a second electric contact disposed to connect respectively with said first electric contact when said vehicle is presented to said station for a charge;

one of said contacts being disposed on a probe and the other of said contacts being disposed within a receptacle in a manner to connect with the contact of said probe when said probe is inserted in said receptacle;

wherein the improvement comprises:

means disposed in said vehicle to advise an operator thereof to cause said vehicle to creep forward so as to cause said probe to be inserted in said receptacle;

means to sense the magnitude of force applied between said probe contact and said receptacle contact as said probe is inserted in said receptacle; and

means responsive to force of a predetermined threshold magnitude to disable said vehicle.

5,572,110

SMART BATTERY CHARGER SYSTEM

Robert A. Dunstan, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 15, 1994, Ser. No. 356,719

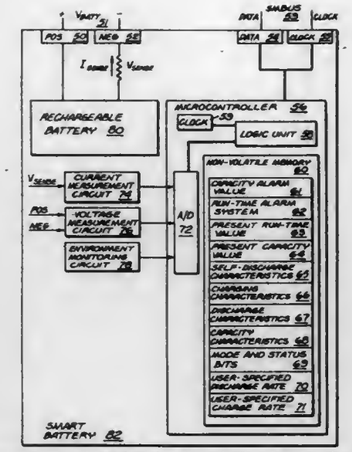
Int. Cl.[6] H01M *10/44;* **H02J** *7/04*

U.S. Cl. 320—30 **19 Claims**

1. A smart battery charger for charging a smart battery, comprising:

a nonvolatile memory that stores a charging current value and a charging voltage value;

a logic unit coupled to the nonvolatile memory, the logic unit programming the charging current value into the nonvolatile memory in response to a set current value command and programming the charging voltage value into the memory in response to a set voltage value command; and



a charging unit coupled to the nonvolatile memory, the charging unit generates a charging current and a charging voltage according to the charging current value and the charging voltage value, respectively.

5,572,111

DEVICE FOR REGULATING A VOLTAGE DROP ACROSS A LOAD

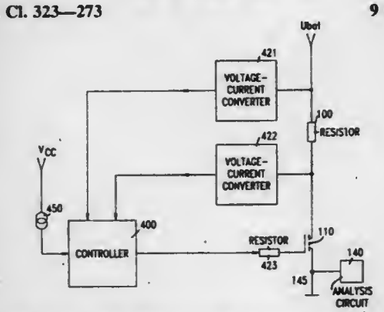
Klaus Dressler, Löchgau, and Andreas Koch, Bietigheim-Bissingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 26, 1994, Ser. No. 311,801

Claims priority, application Germany, Oct. 20, 1993, 43 35 687.7

Int. Cl.[6] G05F *1/40*

U.S. Cl. 323—273 **9 Claims**



1. A device for regulating a voltage across a load, comprising:

an actuator coupled in series with the load, a voltage supply and a ground;

first means coupled to the load for providing an actual current indicative of the voltage across the load;

second means for establishing a desired current;

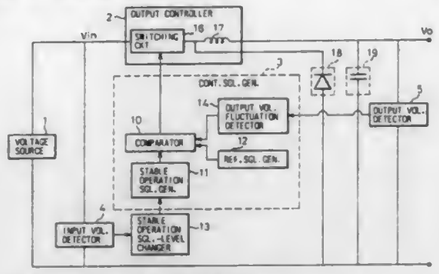
control means coupled to the first means and to the second means for providing a signal to the actuator as a function of a comparison between the actual current and the desired current, the actuator being responsive to the signal and thereby regulating the voltage across the load.

5,572,112

POWER SUPPLY UNIT

Mitsuo Saeki; Hidekiyo Ozawa, and Hidetoshi Yano, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 29, 1995, Ser. No. 412,582
Claims priority, application Japan, May 23, 1994, 6-108114
Int. Cl.[6] G05F *1/56*
U.S. Cl. 323—282 **7 Claims**



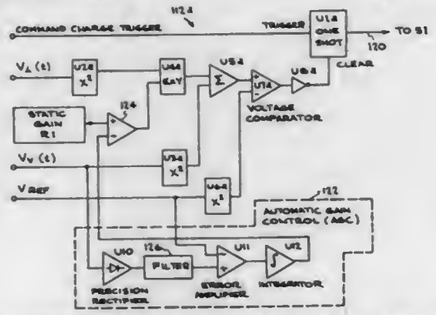
1. A power supply unit comprising:
an output controller which receives an input voltage from a voltage source and controls an output voltage;
an output voltage detector for detecting said output voltage;
a control signal generator which receives a signal from said output voltage detector to detect a fluctuation in the output voltage, generates a signal for stably operating said output controller, and outputs a signal for controlling said output controller in response to the detected fluctuation signal in the output voltage, the signal for stably operating said output controller;
an input voltage detector which receives an input voltage from said voltage source to detect the input voltage;
and a stable operation signal-level changer which receives a signal from said input voltage detected, detects a decrease of the input voltage, and feeds an output to said control signal generator so as to change the level of signal for stably operating said output controller in accordance with the decrease of the input voltage so that the output voltage of the output controller becomes a predetermined voltage.

5,572,113

COMPENSATED GAIN CONTROL CIRCUIT FOR BUCK REGULATOR COMMAND CHARGE CIRCUIT

David M. Barrett, Albuquerque, N.M., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 5, 1994, Ser. No. 285,532
Int. Cl.[6] G05F *1/44*
U.S. Cl. 323—285 **20 Claims**



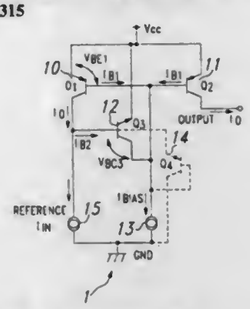
1. A compensated-gain control circuit for use in a buck regulator command charge circuit, the buck regulator command charge circuit having a switching element, a charging inductor, and a storage capacitor, said compensated-gain control circuit turning on and off the switching element so as to provide voltage regulation on the storage capacitor, said compensated-gain control circuit comprising:
monostable multivibrator means responsive to a command charge trigger signal for generating a drive pulse signal which turns on said switching element;
first multiplier means responsive to a first voltage which is proportional to the instantaneous charging current in said inductor for squaring said first voltage;
second multiplier means responsive to a second voltage which is proportional to the instantaneous voltage on said capacitor for squaring said second voltage;
third multiplier means responsive to a third voltage which is proportional to the desired final voltage on said capacitor for squaring said third voltage;
automatic-gain control means responsive to said second and third voltages for comparing said second and third voltages and for generating a variable-gain control signal;
variable-gain amplifier means responsive to a static gain and said variable-gain control signal for generating a varied-gain signal;
fourth multiplier means responsive to said squared first voltage and said varied-gain signal for generating a gain adjusted square signal;
summing means for combining said gain adjusted square signal and said squared second voltage to generate a summed signal;
voltage comparator means responsive to said summed signal and said squared third voltage for generating a reset signal when said summed signal exceeds said squared third voltage;
inverting means responsive to said reset signal for generating a disable signal; and
said monostable multivibrator means being responsive to said disable signal for turning off said switching element.

5,572,114

CURRENT MIRROR CIRCUIT WITH BIPOLAR TRANSISTOR CONNECTED IN REVERSE ARRANGEMENT

Kouzou Ichimaru, Kunisaki-machi, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 18, 1994, Ser. No. 228,985
Claims priority, application Japan, Apr. 16, 1993, 5-089887
Int. Cl.[6] G05F *3/16;3/20*
U.S. Cl. 323—315 **4 Claims**



1. A current mirror circuit comprising:
a first transistor of one conductivity type having a power supply terminal, an output terminal and a control terminal;
a second transistor of the same one conductivity type as said first transistor and having a power supply terminal, an output terminal and a control terminal;
the power supply terminals and the control terminals of said first and second transistors being respectively commonly connected to each other;

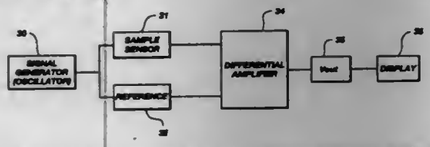
a third transistor of opposite conductivity type to said one conductivity type of said first and second transistors and having a power supply terminal, an output terminal and a control terminal;
a first current source having an input and an output, the input of said first current source being connected to the output terminal of said first transistor; and
a second current source having an input and an output, the input of said second current source being connected to the output terminal of said third transistor and to a node located in the connection between the control terminals of said first and second transistors;
said third transistor being a bipolar transistor having base, collector and emitter electrodes connected in reverse arrangement with the emitter of said third transistor being the power supply terminal and the collector being the output terminal connected to the input of said second current source; and
said second current source drawing a bias current through said third transistor and from the control terminals of said first and second transistors to render said first and second transistors conductive.

5,572,115

DEVICE AND METHOD FOR MEASURING CHARGE CARRYING ACTIVITY IN GENERALLY NON-CONDUCTIVE MATERIALS

A. Brent Strong, Sandy; R. Scott Merrell, Provo, and Barry M. Lunt, Orem, all of Utah, assignors to Brigham Young University, Provo, Utah

Continuation-in-part of Ser. No. 948,008, Sep. 22, 1992, Pat. No. 5,432,435. This application Sep. 29, 1994, Ser. No. 315,267
Int. Cl.[6] G01N *27/02;* **G01R** *27/02*
U.S. Cl. 324—71.1 **33 Claims**



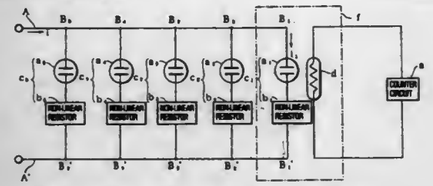
1. A method for detecting an extent of chemical/physical change within a high impedance material during the shelf life of the material, said method comprising the steps of:
a) applying a test signal through a sensor in the material during the material's shelf life to determine a level of impedance and corresponding sample voltage representative of a degree of chemical/physical change within the material;
b) applying the same test signal through the sensor to a reference resistance having a fixed resistance to determine a reference voltage;
c) determining a voltage difference between the test signal applied to the material during the shelf life of the material and the test signal applied to the reference resistance as the reference voltage;
d) correlating the voltage difference as a relative indicator of the extent of chemical/physical change which has occurred within the material, based on comparison of magnitude of the voltage difference with respect to a comparable potential range of impedance for the chemical/physical change.

5,572,116

SURGE COUNTER

Koichi Kurasawa; Yoshiyuki Tanaka, and Takaaki Itoh, all of Saitama-ken, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 949,468, Sep. 22, 1992, abandoned. This application Nov. 28, 1994, Ser. No. 345,220
Claims priority, application Japan, Sep. 27, 1991, 3-277003
Int. Cl.[6] G01R *19/65*
U.S. Cl. 324—103 P **15 Claims**



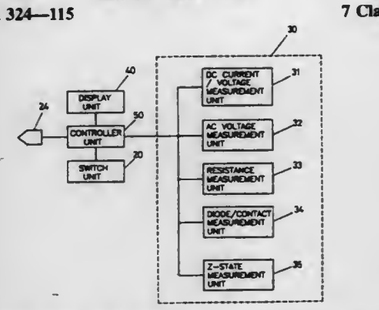
1. A surge counter comprising first and second stages,
said first stage comprising:
a surge detecting element having a first discharge starting voltage, the surge detecting element including a first discharge tube serially connected to a first nonlinear resistor, the first discharge tube having an illuminated state and a non-illuminated state; and,
counting means for counting a number of times the first discharge tube changes from the non-illuminated state to the illuminated state,
said second stage comprising:
a surge absorbing element having a second discharge starting voltage,
the first and second stages being connected in parallel across a pair of lines, the first discharge starting voltage being less than the second discharge starting voltage, and the surge counter having a high input impedance.

5,572,117

MULTI-METER

Hee Y. Yoon, Kyungsangbook-Do, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Choongchungbook-do, Rep. of Korea

Filed Sep. 13, 1994, Ser. No. 304,900
Claims priority, application Rep. of Korea, Sep. 16, 1993, 18688/1993
Int. Cl.[6] G01R *15/08*
U.S. Cl. 324—115 **7 Claims**



1. A multi-meter comprising:
switching means for selecting one object of a plurality of measurement objects and one of a plurality of ranges of values for said one object to be measured between a test probe and an electrical ground;
display means for displaying a value measured for said object;

Z-state measurement means selectable by said switching means to measure a Z-state with a probe, in addition to said objects, at a point contacted by said probe, the Z-state being unknown; and

control means for controlling said switching means, said display means and said measurement means to selectively determine the Z-state at the probe contact point.

5,572,118

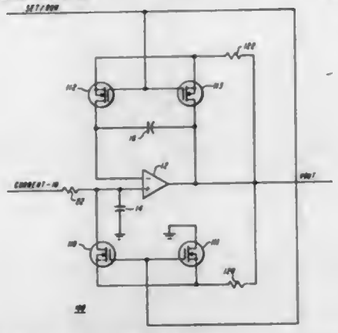
CHARGE RATE ELECTROMETER INCLUDING MEANS FOR SUBSTANTIALLY ELIMINATING LEAKAGE CURRENTS

John F. Lewis, Malden, Mass., assignor to MKS Instruments, Inc., Andover, Mass.

Filed Jun. 29, 1995, Ser. No. 496,635

Int. Cl.[6] G01R *17/06*

U.S. Cl. 324—123 R **26 Claims**



24. An electrometer comprising:

(A) an amplifier including an inverting input terminal, a non-inverting input terminal, and output terminal;

(B) a first capacitor electrically connected between said non-inverting input terminal and reference terminal means for receiving a system reference signal;

(C) a second capacitor electrically connected between said output terminal and said inverting input terminal;

(D) a first transistor and a second transistor each having a gate, a source and a drain, said first and second transistor gates being coupled together, said first and second transistor sources being coupled together, said first transistor drain being coupled to said non-inverting input terminal, said second transistor drain being coupled to said reference terminal means;

(E) a first resistor being electrically connected between said output terminal and said first and second transistor sources.

5,572,119

EDDY CURRENT POSITION SENSOR INCLUDING AN INSULATING BASE HAVING CONDUCTIVE SURFACES FOR ELECTRICALLY CONNECTING A COIL TO THE LEAD WIRES

Howard E. Taylor, Bradenton, Fla., assignor to Barber-Colman Company, Loves Park, Ill.

Continuation-in-part of Ser. No. 331,058, Oct. 28, 1994, abandoned. This application Oct. 31, 1994, Ser. No. 332,850

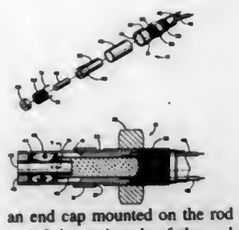
Int. Cl.[6] G01B *7/14;7/30*

U.S. Cl. 324—207.16 **16 Claims**

1. A shaft position sensor having a sensing end adapted to be aimed at and positioned closely with respect to a rotating shaft for accurately measuring the position of the shaft, the shaft position sensor comprising, in combination:

a ceramic holder;

a magnetically permeable rod having a first end inserted in and fixed to a bobbin end of the ceramic holder;



an end cap mounted on the rod near a second end thereof and defining a length of the rod between the end cap and the ceramic holder for supporting a coil;

a wire coil wound on said length of the rod between the end cap and the ceramic holder;

the ceramic holder carrying two conductive surfaces positioned on an outer surface thereof and running generally from the bobbin end toward a base end of the holder which is opposite the bobbin end;

the coil having two free wire end portions formed into strain relief loops and soldered to respective ones of the conductive surfaces near the bobbin end;

a pair of lead wires of sufficient diameter to withstand mechanical handling and having ends soldered to the conductive surfaces near the base end, the lead wire ends being out of direct physical contact with the coil wire ends but being electrically connected to the coil wire through the conductive surfaces; and

means for supporting the shaft position sensor in a fixed position proximate to and aimed at the shaft for sensing the position thereof.

5,572,120

MAGNETIC POSITION DETECTOR WITH A MOLDED RADIATION SHIELD

Tadao Takaishi, and Masami Matsumura, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

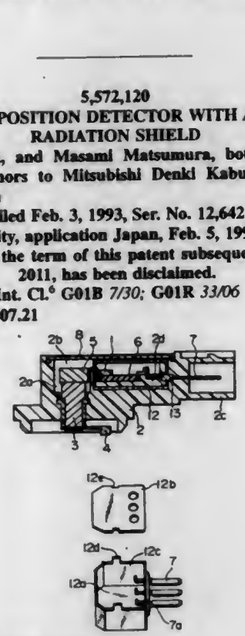
Filed Feb. 3, 1993, Ser. No. 12,642

Claims priority, application Japan, Feb. 5, 1992, 4-019874

The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.

Int. Cl.[6] G01B *7/30;* **G01R** *33/06*

U.S. Cl. 324—207.21 **5 Claims**



1. A position detector comprising:

a molded resin case;

a movable permanent magnet disposed in said resin case;

a circuit board disposed in and supported by said resin case, and having a magnetic sensor element mounted thereon for detecting the movement of said permanent magnet; and

a radiation shield surrounding said circuit board and said magnetic sensor for shielding said circuit board and said magnetic sensor against an external electromagnetic radiation, said radiation shield being insert-molded in said molded resin case as an integral part thereof.

5,572,121

METAL DETECTOR INCLUDING A METAL SCREENING FOR PRODUCING A SECONDARY MAGNETIC FIELD TO REDUCE THE METAL FREE ZONE

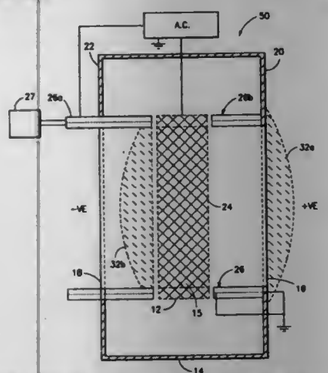
Ivan Beswick, Lancashire, United Kingdom, assignor to Safeline Limited, Salford, United Kingdom

Continuation of Ser. No. 962,189, Dec. 23, 1992. This application May 2, 1995, Ser. No. 434,114

Claims priority, application United Kingdom, Jun. 29, 1990, 9014496

Int. Cl.[6] G01N *27/72;* **H01F** *27/36;* **G01R** *33/12*

U.S. Cl. 324—234 **10 Claims**



1. A metal detector comprising a coiled conductor defining a channel extending therethrough, the coiled conductor being operative to be connected to an a.c. power supply so as to provide an a.c. generated primary electromagnetic field, the detector further comprising means for generating a secondary magnetic field for nullifying the primary field beyond a distance from the coiled conductor, the means for generating the secondary field being stationary, and at least a part of the means for generating the secondary field being located within the primary field and being located adjacent the coiled conductor, characterized in that the coiled conductor is located within a metal enclosure and at least a part of the means for generating the secondary magnetic field extends between the coiled conductor and the metal enclosure, the metal enclosure having apertures in opposed walls thereof, the apertures being aligned with the coil channel such that a material to be subjected to metal detection can be passed therethrough, the position of the means for generating the secondary magnetic field being such that it does not interfere with the passage of said material along the path of travel through the enclosure apertures and the coil channel.

5,572,122

APPARATUS INCLUDING A SPECIMEN TILT MECHANISM FOR MEASURING ELECTROMAGNETIC FIELD DISTRIBUTION IN THE SPECIMEN USING A FOCUSED ELECTRON BEAM

Yusuke Yajima; Yoshio Takahashi; Masakazu Ichikawa, and Shigeyuki Hosoki, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 26, 1993, Ser. No. 141,077

Claims priority, application Japan, Oct. 26, 1992, 4-287438

Int. Cl.[6] G01R *33/02;33/025*

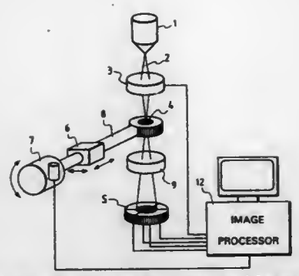
U.S. Cl. 324—250 **8 Claims**

1. An apparatus for measuring an electromagnetic field distribution in an area on a specimen using a focused electron beam, comprising:

a specimen tilt mechanism for tilting a specimen by 180° about a tilt axis that is perpendicular to the optical axis of said focused electron beam, so as to turn the specimen over;

an electron beam position detector for receiving said focused electron beam after said focused electron beam has transmitted through the same measuring point on the specimen before and after the turnover of the specimen, and for measuring the direction and magnitude of deflection of the optical axis of said focused electron beam before and after the turnover; and

means for analyzing the direction and magnitude of deflection measured by said electron beam position detector to determine the direction and intensity of an electric field and the direction and intensity of a magnetic field separately at the measuring point.



5,572,123

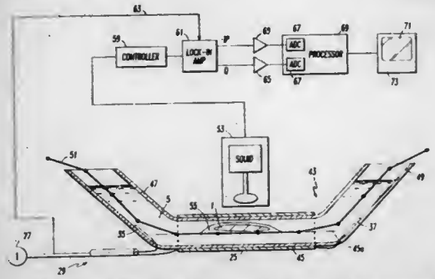
APPARATUS AND METHOD FOR ON-LINE INSPECTION OF ELECTRICALLY CONDUCTIVE FOOD PRODUCTS USING LIQUID ELECTROLYTE

John P. Wikswo, Jr., Brentwood; Yu P. Ma; William G. Jenks, both of Nashville, all of Tenn.; Christopher G. Bublitz, and Gour S. Choudhury, both of Kodiak, Ak., assignors to University of Alaska, Fairbanks, Ak., and Vanderbilt University, Nashville, Tenn.

Filed Jun. 7, 1995, Ser. No. 477,602

Int. Cl.[6] G01R *33/00*

U.S. Cl. 324—263 **17 Claims**



1. Apparatus for inspecting food products having a first electrical conductivity for inclusions having a second, substantially different electrical conductivity, said apparatus comprising:

a container containing a liquid electrolyte having an electrical conductivity substantially similar to said first electrical conductivity and in which said food products are immersed;

means producing an electrical current in said electrolyte which flows through said food products, said current producing a magnetic field;

detecting means for detecting a component of said magnetic field resulting from perturbations in said electric current produced by said inclusions; and

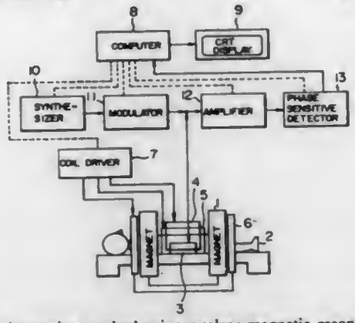
means responsive to a predetermined magnitude of said component of said magnetic field to generate an output representative of the presence of said inclusion in said food product.

5,572,124

INSPECTION METHOD AND INSPECTION APPARATUS USING NUCLEAR MAGNETIC RESONANCE

Yoshitaka Bito; Satoshi Hirata; Takayuki Nabeshima, all of Kokubunji, and Etsuji Yamamoto, Akishima, all of Japan, assignors to Hitachi, Ltd., and Hitachi Medical Corporation, both of Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 361,664
Claims priority, application Japan, Dec. 27, 1993, 5-330878
Int. Cl.[6] G01R 33/00; G01V 3/00
U.S. Cl. 324—307 30 Claims



1. An inspection method using nuclear magnetic resonance by generating a static magnetic field, gradient magnetic fields and a radio frequency magnetic field, detecting nuclear magnetic resonance signals from an inspection object, processing detected nuclear magnetic resonance signals and outputting processing results, said method comprising the steps of:

applying a motion probing gradient magnetic field for generating signal attenuation by diffusion in order to observe diffusion of materials contained in said inspection object; and

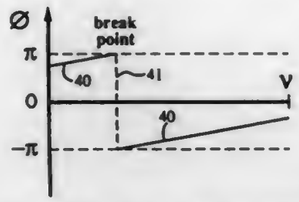
applying an oscillating gradient magnetic field so as to acquire simultaneously and separately chemical shift information and spatial information of said materials contained in said inspection object.

5,572,125

CORRECTION AND AUTOMATED ANALYSIS OF SPECTRAL AND IMAGING DATA

Reinhard Dunkel, 470 S. 1300 East, #1004, Salt Lake City, Utah 84102

Continuation-in-part of Ser. No. 73,337, Jun. 7, 1993, which is a continuation-in-part of Ser. No. 675,401, Mar. 25, 1991, Pat. No. 5,218,299. This application Jun. 6, 1995, Ser. No. 471,726
Int. Cl.[6] G01V 3/00;3/14
U.S. Cl. 324—307 29 Claims



1. A method for correcting spectral data comprising

a) providing a digital computing device having memory;

b) obtaining spectral data to be corrected, said obtained spectral data including at least one signal in said obtained spectral data, and placing at least a portion of said obtained spectral data in the memory;

c) selecting a predetermined mathematical model of expected spectral data;

d) automatically estimating preselected model parameters of at least one signal in the obtained spectral data;

e) adjusting the estimates of preselected parameters through regression analysis with said mathematical model to obtain adjusted estimates of the preselected parameters representing a fit of said mathematical model to the at least a portion of said obtained spectral data in memory; and

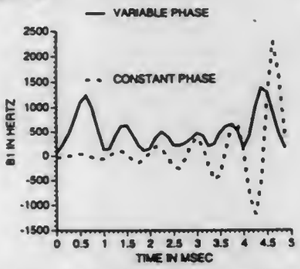
f) determining corrected data using the adjusted estimates of at least one of the preselected parameters.

5,572,126

REDUCED POWER SELECTIVE EXCITATION RF PULSES

Meir Shinnar, Bala Cynwyd, Pa., assignor to University of Pennsylvania, Philadelphia, Pa.

Filed Jul. 28, 1994, Ser. No. 282,220
Int. Cl.[6] G01V 3/00;3/14
U.S. Cl. 324—314 26 Claims



11. A method of generating a desired physically realizable, frequency dependent excitation of a system by applying a hard pulse sequence of N pulses, said hard pulse sequence having a predetermined maximum total energy during a duration T of said hard pulse sequence and said hard pulse sequence having a peak power which is reduced from the peak power which results when a minimum phase solution to a determination of the roots of $\beta(\omega)$ is used in calculation of a desired frequency dependent magnetization M_z, said method comprising the steps of:

(a) determining, as a function of frequency ω, an approximation to the desired frequency dependent magnetization M_z in a direction z parallel to an external magnetic field B for the desired frequency dependent excitation of said system, where $|M_z|^2=|\alpha|^2-|\beta|^2$;

(b) selecting roots for α which minimize the total energy of said hard pulse sequence during said duration T and roots for β which minimize the peak power of each pulse of said hard pulse sequence during said duration T;

(c) synthesizing the hard pulse sequence of N pulses which generates the approximation for M_z having the roots for α and β selected in step (b); and

(d) applying the hard pulse sequence of N pulses synthesized in step (c) to said system.

5,572,127

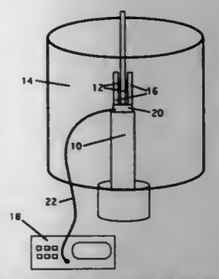
INHOMOGENEITIES IN STATIC MAGNETIC FIELDS NEAR SUPERCONDUCTING COILS

Wai H. Wong, Monterey Park, and Vincent Y. Kotsubo, Sunnyvale, both of Calif., assignors to Conductus, Inc.

Continuation-in-part of Ser. No. 297,352, Aug. 29, 1994, Pat. No. 5,508,613. This application Jun. 7, 1995, Ser. No. 473,696
Int. Cl.[6] G01V 3/00;3/14
U.S. Cl. 324—315 10 Claims

1. A method of preventing inhomogeneities in a static magnetic field near a superconducting coil having a critical temperature T_c and a critical field H_{c1} comprising:

(a) placing the coil in a static magnetic field of at least H_{c1};



(b) cooling the coil in the magnetic field from a temperature above the T_c of the coil at a rate of less than 3 K./minute to a desired operational temperature for the coil;

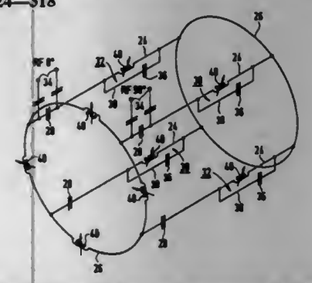
(c) maintaining the coil at the operational temperature.

5,572,128

DOUBLE RESONANCE ANTENNA ARRANGEMENT FOR A NUCLEAR MAGNETIC RESONANCE APPARATUS

Helmut Kess, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 18, 1994, Ser. No. 292,042
Claims priority, application Germany, Sep. 29, 1993, 43 33 182.3
Int. Cl.[6] G01R 33/32
U.S. Cl. 324—318 5 Claims



1. A double resonance antenna arrangement having a lower resonant frequency and a higher resonant frequency, for use in a nuclear magnetic resonance apparatus, said double resonance antenna arrangement comprising:

at least one conductor section which defined an examination region;

a series circuit including a capacitive element and an inductive element, said series circuit connected in parallel with at least a portion of said conductor section;

said inductive element comprising a substantially straight conductor disposed substantially parallel to said portion of said conductor section; and

said series circuit having a high impedance at the lower resonant frequency and forming a resonant circuit at the higher resonant frequency.

5,572,129

RF SHIELD FOR GRADIENT COIL

Joseph W. Carlson, Kensington, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Jan. 19, 1995, Ser. No. 374,883
Int. Cl.[6] G01R 33/42
U.S. Cl. 324—318 15 Claims

1. An RF shield, comprising:

a plurality of shingles,, each having a first side of laminate conductor attached to a second side of laminate insulator, the shingles overlapping such that a portion of the second side of each shingle adheres to a portion of the first side of an adjacent shingle, whereby the laminate insulator of each shingle forms a capacitor between its laminate conductor and the laminate conductor of an adjacent shingle, and the shingles overlap to form a mechanically contiguous cylinder such that no RF current path exists in the circumferential direction of the RF shield except through the plurality of shingles.

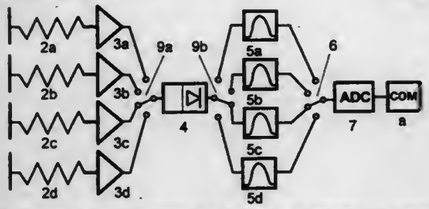


5,572,130

METHOD AND APPARATUS FOR THE PRODUCTION OF AN NMR TOMOGRAPHY IMAGE USING AN ARRAY OF SURFACE COILS AND MULTIPLEXERS

Dieter Ratzel, Rheinstetten, Germany, assignor to Bruker Medizintechnik GmbH, Rheinstetten, Germany

Filed Apr. 12, 1995, Ser. No. 421,045
Claims priority, application Germany, Apr. 12, 1994, 44 12 446.5
Int. Cl.[6] G01R 33/28
U.S. Cl. 324—318 4 Claims



1. Method for the generation of a nuclear magnetic resonance (NMR) image of an object using n>1 surface coils comprising the steps of:

a) extracting one signal from each surface coil to produce n signals from the object;

b) preamplifying each signal in a separate preamplifier to produce n preamplified signals;

b1) multiplexing the n preamplified signals in a first multiplexer to produce n multiplexed preamplified signals;

b2) feeding the n multiplexed preamplified signals into a phase sensitive detector;

c) detecting the n preamplified signals in the phase sensitive detector to produce n low frequency signals;

c1) multiplexing the n low frequency signals in a second multiplexer to produce n multiplexed low frequency signals;

c2) feeding the n multiplexed low frequency signals into separate filters;

d) filtering the low frequency signals in the separate filters to produce n filtered signals;

e) multiplexing the n filtered signals in a third multiplexer to produce n multiplexed filtered signals;

f) digitizing the n multiplexed filtered signals in an analog to digital converter (ADC) to produce n digitized signals;

g) imaging the n digitized signals in a computer to produce n partial images of the object; and

h) assembling the n partial images into a single image of the object.

5,572,131

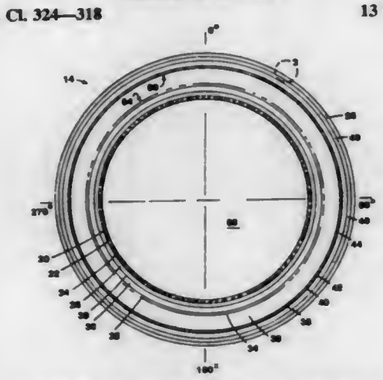
SHIELDED GRADIENT COIL FOR NUCLEAR MAGNETIC RESONANCE IMAGING

Richard Rzedzian, Lexington, Mass., assignor to Advanced NMR Systems, Inc., Wilmington, Mass.

Division of Ser. No. 242,706, May 13, 1994, which is a continuation of Ser. No. 133,733, Oct. 7, 1993, abandoned, which is a continuation of Ser. No. 921,411, Jul. 23, 1992, abandoned, which is a continuation of Ser. No. 545,888, Jun. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 534,142, Jun. 6, 1990, abandoned. This application May 30, 1995, Ser. No. 452,540

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—318 13 Claims



1. A gradient coil assembly for use in magnetic resonance imaging, said coil assembly comprising

a primary coil assembly including a primary coil placed about a first generally cylindrical outer surface of a first substrate, said primary coil generating a first magneto-motive force and a spatially varying magnetic field in a region radially inside said first surface when driven with a first pulsed current signal,

a shielding coil assembly including a shielding coil for said primary coil placed about a second generally cylindrical surface of a second substrate disposed coaxially outside said first surface, said shielding coil generating a second magneto-motive force in a direction substantially opposed to said first magneto-motive force and substantially cancelling said magnetic field in a region radially outside said second surface when driven with a second pulsed current signal that is substantially 180° out-of-phase with respect to said first pulsed current signal; and

a cylindrical support member substantially entirely filling an annular region bounded by said primary coil assembly and said shielding coil assembly to substantially continuously support said assemblies along their respective lengths and circumferences, said member being sufficiently stiff or massive to mechanically couple said primary and said shielding coil assemblies to substantially cancel effects of said first and said second magneto-motive forces.

5,572,132

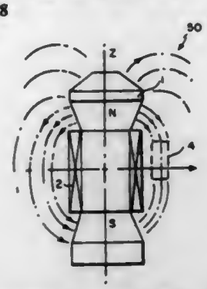
MRI PROBE FOR EXTERNAL IMAGING

Yuly M. Pulyer, 350 Revere Beach Blvd., Revere, Mass. 02151, and Samuel Patz, 32 Harrison St., Brookline, Mass. 02146

Filed Aug. 15, 1995, Ser. No. 515,483

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—318 12 Claims



1. A magnetic resonance imaging (MRI) probe having an external background magnetic field B_o, said probe comprising:

a primary magnet having a longitudinal axis and an external surface extending in the axial direction, and

a rf coil surrounding and proximal to said surface,

wherein the B_o field provides an imaging volume having a region of substantial homogeneity of axial directed field component along said surface and proximal to said surface.

5,572,133

MAGNETIC RESONANCE APPARATUS COMPRISING AN IMPROVED GRADIENT SYSTEM

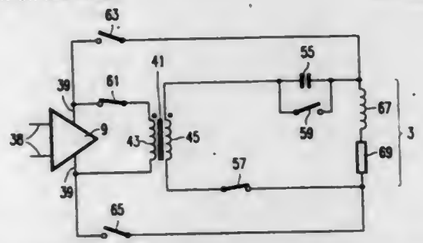
Paul B. Bunk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 19, 1995, Ser. No. 504,088

Claims priority, application European Pat. Off., Jul. 29, 1994, 94202216

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—322 12 Claims



1. A magnetic resonance apparatus, comprising a magnet system (1) for generating a steady magnetic field in a measurement space (35), a gradient coil system (3) for generating gradient fields in the measurement space, and a number of gradient amplifiers (9) with input terminals (38) which are connected to means (7) for generating an input signal exhibiting a predetermined variation as a function of time, and output terminals (39), wherein the output terminals of at least one of the gradient amplifiers is connected to a primary winding (43) of a transformer (41), and a secondary winding (45) of the transformer (41) is included in a series resonany circuit together with a gradient coil (3) and a capacitor (55).

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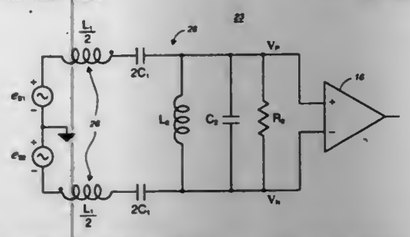
BANDPASS FILTERING PREAMPLIFIER INCLUDING AN ANTENNA AS A COMPONENT

Michael F. Gard, Perry, Okla., assignor to The Charles Machine Works, Inc., Perry, Okla.

Filed May 15, 1995, Ser. No. 441,454

Int. Cl.[6] G01V *3/08;3/165;* H03H *7/00;* H04B *1/18*

U.S. Cl. 324—326 25 Claims



10. A bandpass preamplifier for a receiver having an antenna for detecting signals transmitted from an underground transmitting element operating at a plurality of frequencies with extrema characterized by a first characteristic frequency and a second characteristic frequency, comprising:

a balanced bandpass filter including,

an antenna inductance defined by a pair of series-connected coil windings, said coil windings having induced therein opposite polarity voltages as a result of electromagnetic signals transmitted by the underground transmitting element, a pair of capacitors, each connected in series with a respective said coil winding, a parallel inductor-capacitor resonant circuit connected between output terminals of said pair of capacitors; and

a differential amplifier connected to the output terminals.

5,572,135

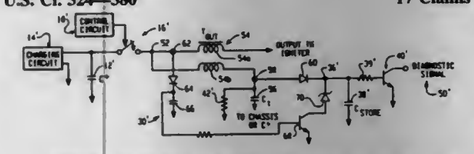
DIAGNOSTIC APPARATUS AND METHODS FOR IGNITION CIRCUITS

David N. Owens, Smithville Flats, and Dale F. Geislinger, Norwich, both of N.Y., assignors to Simmonds Precision Engine Systems, Akron, Ohio

Continuation of Ser. No. 173,596, Dec. 27, 1993. This application Feb. 26, 1994, Ser. No. 606,694

Int. Cl.[6] F02P *3/02;3/06*

U.S. Cl. 324—380 17 Claims



1. Diagnostic apparatus for an ignition system having an exciter circuit connected to discharge through an igniter, comprising: means for detecting a plurality of ignition system discharge conditions including discharge from the exciter circuit through the igniter, discharge from the exciter circuit other than through the igniter, and insufficient discharge of the exciter circuit; and means for producing at a single output a diagnostic signal having at least three states with each state indicative of one of said discharge conditions.

5,572,136

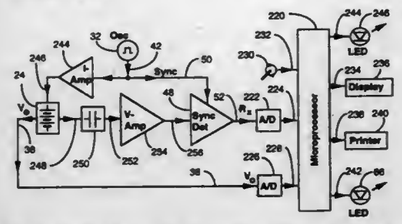
ELECTRONIC BATTERY TESTING DEVICE

Keith S. Champlin, 5438 Elliot Ave. S., Minneapolis, Minn. 55437

Division of Ser. No. 292,925, Aug. 19, 1994, abandoned, which is a continuation of Ser. No. 877,646, May 1, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 480,847

Int. Cl.[6] G01N *27/416;* G01R *31/36*

U.S. Cl. 324—426 11 Claims



7. An electronic device for providing a quantitative assessment of the condition of an electrochemical cell or battery having internal resistance comprising:

current-signal generating means operably connected to said cell or battery for passing a time-varying current signal through said cell or battery, said current-signal generating means having internal resistance that is substantially large in comparison with said internal resistance of said cell or battery;

voltage-signal processing means coupled to said cell or battery for deriving a signal component from a time-varying voltage signal across said cell or battery responsive to said time-varying current signal;

signal-component digitizing means operably connected to said voltage-signal processing means for establishing a digital input quantity representative of said signal component;

microprocessor means for implementing a firmware program, said microprocessor means coupled to said signal-component digitizing means and accepting said digital input quantity as an input, said firmware program directing said microprocessor means to divide a number derived from said digital input quantity into a constant number to form a reciprocal numerical result; and

numerical display means coupled to said microprocessor means for displaying said reciprocal numerical result thereby providing a quantitative assessment of the condition of said cell or battery.

5,572,137

PORTABLE DEVICE FOR DETECTING UV LIGHT IONIZABLE GAS OR VAPOR

Christopher D. Jones, Salisbury, Great Britain, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, United Kingdom

PCT No. PCT/GB92/01313, § 371 Date Jan. 25, 1994, § 102(e) Date Jan. 25, 1994, PCT Pub. No. WO93/02354, PCT Pub. Date Feb. 4, 1994

PCT Filed Jul. 17, 1992, Ser. No. 182,041

Claims priority, application United Kingdom, Jul. 19, 1991, 9115659; Jul. 1, 1992, 9214010

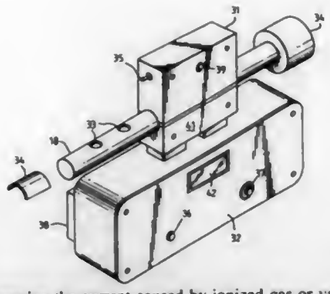
Int. Cl.[6] G01N *27/66*

U.S. Cl. 324—464 23 Claims

1. A method of quantification of an ultraviolet light ionizable gas or vapor in a gas sample at substantially atmospheric air pressure comprising the steps of:

(a) ionizing at least a part of any ultraviolet light ionizable gas or vapor present in the sample by irradiating said sample at substantially atmospheric pressure with a source of ultraviolet light;

(b) passing the irradiated sample through a gap between two electrode units having a voltage applied across them; and



(c) measuring the current caused by ionized gas or vapor being neutralized by the electrode units and relating that to presence or amount of the ionizable gas or vapor;

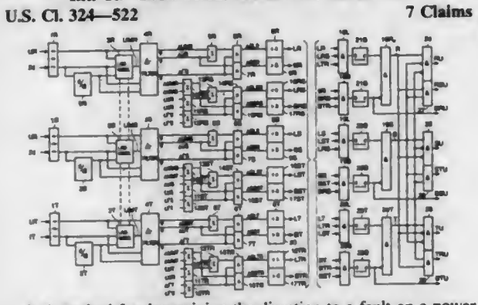
wherein the ultraviolet light source is positioned relative to the electrode units such that ionization of the ionizable gas or vapor is substantially completed before the gas enters the gap between the electrode units and that at least a part of the irradiated gas or vapor passes through the gap to reach the outlet.

5,572,138

METHOD AND DEVICE FOR DETERMINING THE DIRECTION TO A FAULT ON A POWER TRANSMISSION LINE

Gunnar Nimmersjö, Västerås, Sweden, assignor to Asea Brown Boveri AB, Vasteras, Sweden

Filed Dec. 15, 1994, Ser. No. 356,539
Claims priority, application Sweden, Jan. 3, 1994, 9400009
Int. Cl.[6] G01R *31/02;* **H02H** *3/38;* **H04B** *3/46*
U.S. Cl. 324—522 **7 Claims**



1. A method for determining the direction to a fault on a power transmission line relative to a measuring station for measuring the phase currents IR, IS, IT and the phase voltages UR, US and UT of the power transmission line, comprising, for each phase of the! power transmission line, the steps of:

determining the derivative (I') of the phase current (I);

determining a model voltage (UM) of the power transmission line from a predetermined line model;

determining the phase change current (ΔI') in the measured phase current (I), the phase change voltage (ΔU) in the phase voltage (U) and the phase change model voltage (ΔUM) in the model voltage (UM);

summing the phase change voltage (ΔU) and the phase change model voltage (ΔUM) to form the phase difference voltage (ΔU−ΔUM);

multiplying the phase difference voltage (ΔU−ΔUM) by the phase change current (ΔI') to form a signal (ΔQL) and multiplying the phase change voltage (ΔU) by the derivative phase charge current (ΔI') to form a signal (ΔQB);

comparing signal (ΔQL) with an assumed negative constant and if (ΔQL) is smaller than said negative constant generating a signal (L) that a fault lies ahead relative to the measuring station;

comparing (ΔQB) with an assumed positive value and if (ΔQB) is greater than said positive constant, generating a signal (B) that a fault lies behind relative to the measuring station;

the previous steps generating: signals LR and BR, LS and BS and LT and BT for the respective phases R,S and T of the power transmission line; and

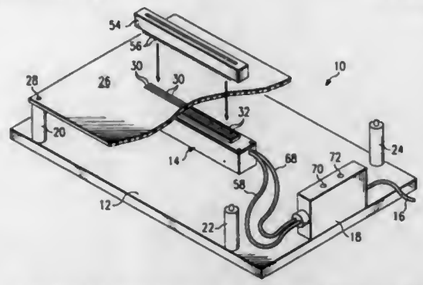
at least one of disconnecting and blocking the faulty phase or phases using signals LR, BR, LS, BS, LT and BT.

5,572,139

CONNECTOR INSTALLATION GO/NO-GO TEST METHOD

Randall J. Kelley, The Woodlands, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Division of Ser. No. 157,641, Nov. 24, 1993, Pat. No. 5,432,456. This application Feb. 27, 1995, Ser. No. 395,080
Int. Cl.[6] G01R *31/00*
U.S. Cl. 324—538 **9 Claims**



1. A method for ensuring the pins of a through-hole component protrude through a plurality of through-holes of a printed circuit board, said method comprises the steps of:

aligning each pin of said through-hole component with said through-holes;

urging said through-hole component through said printed circuit board such that said pins extend through said through-holes and such that said pins urge a plurality of elements in a fixture from a first position to a second position;

transmitting a beam of light from a light source so that said beam of light passes through a void of each of said elements when said elements are in approximate alignment while being urged into said second position by said pins; and

detecting light which passes through said elements.

5,572,140

REUSABLE CARRIER FOR BURN-IN/TESTING ON NON PACKAGED DIE

Samuel S. S. Lim, and Siew K. Tan, both of Tiong Bahru, Singapore, assignors to Sunright Limited, Tiong Bahru, Singapore

Continuation-in-part of Ser. No. 111,706, Aug. 25, 1993. This application Nov. 5, 1993, Ser. No. 147,945
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—755 **9 Claims**

1. A re-usable carrier for mounting a non-packaged die for burn-in and testing comprising

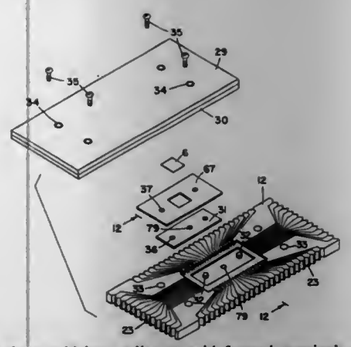
a molded base having a configuration and outer perimeter conforming to a standard integrated circuit package design, said base including integrally formed terminals positioned on the outer perimeter and having a shape conforming to the terminals of the standard integrated circuit package design,

a thin layer electrically conductive material coated on the integrally formed terminals of the base to form outer circuitry for enabling electrical contact of the terminals with test equipment, said thin layer electrically conductive material extending along said base adjacent said formed terminals to form electrical contacts on the base,

a thin layer film construct received on the molded plastic base, said film construct including means for receiving and positioning a non-packaged die with bond pads, and including a printed circuit positioned on the film and engaging the electrical contacts on the base for enabling electrical connection between the outer circuitry positioned on the formed terminals and the bond pads of a received non-packaged die,

a cover removably mounted on the molded base for holding the non-packaged die to the film construct and imparting sufficient pressure for maintaining connection between the bond pads of the non-packaged die and the printed circuit on the film, and

cover holding means for detachably holding the cover to the molded base, wherein said cover, molded base, film construct and cover holding means form a carrier having a shape and dimension substantially conforming to a standard integrated circuit package design so as to allow use with existing test equipment.

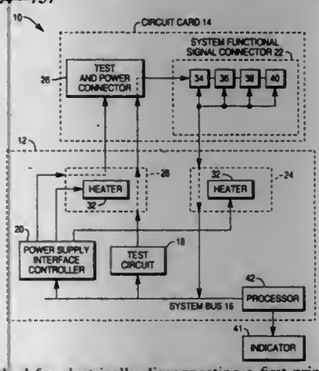


5,572,141

MEMORY METAL HOT PLUG CONNECTOR AND METHOD

Edward W. Hutton, Columbia, S.C., assignor to AT&T Global Information Solutions Company, Dayton, Ohio

Filed Mar. 9, 1994, Ser. No. 207,999
Int. Cl.[6] G01R *1/04;* **H01R** *13/15*
U.S. Cl. 324—757 **6 Claims**



1. A method for electrically disconnecting a first printed circuit board from a second printed circuit board comprising the steps of:

(a) providing first and second connectors on the first and second printed circuit boards;

(b) issuing test signals from a test circuit on the second printed circuit board through the second connectors to interrupt system functional signal flow through the first connectors;

(c) issuing power control signals from a power controller on the second printed circuit board to disconnect power to the first printed circuit board;

(d) dissipating energy stored by components in the first printed circuit board and static electricity on surfaces of the first printed circuit board; and

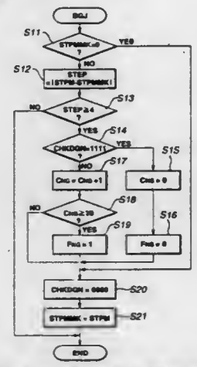
(e) unlocking the first connectors only after steps (b), (c), and (d) have been completed.

5,572,142

APPARATUS AND METHOD FOR DIAGNOSING PRESENCE OR ABSENCE OF BREAKAGE IN ELECTROMAGNETIC COIL MEANS APPLICABLE TO BREAKAGE DIAGNOSIS FOR STEPPING MOTOR

Hirotada Muraki, Atsugi, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed May 4, 1995, Ser. No. 434,719
Claims priority, application Japan, May 6, 1994, 6-094286; May 9, 1994, 6-094713
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—546 **25 Claims**



1. An apparatus for diagnosing a presence or absence in a breakage of electromagnetic coil means, comprising:

a) an exciting circuit having a power supply connected to the electromagnetic coil means and having a switching element which is so constructed and arranged as to be switched on to conduct a current flow to the electromagnetic coil means from said power supply in response to an input drive signal having a predetermined actuation level and as to be switched off to interrupt the current flow to the electromagnetic coil means in response to the input drive signal having a predetermined non-actuation level, the input drive signal being a pulse signal having a fixed period;

b) observing means for observing a voltage level change on a junction between the electromagnetic coil means and the switching element so as to provide a checking pulse signal such that only when the input actuation signal is either at the predetermined actuation level or at the predetermined non-actuation level and no breakage of the electromagnetic coil means occurs, the checking pulse signal providing a particular level of either the predetermined actuation level or the predetermined non-actuation level;

c) sampling means for sampling the checking pulse signal from the observing means are a sampling period which is different from a multiple of at least the period of the input drive signal;

d) historical storing means for storing a history of the checking pulse signal which has been sampled by said sampling means; and

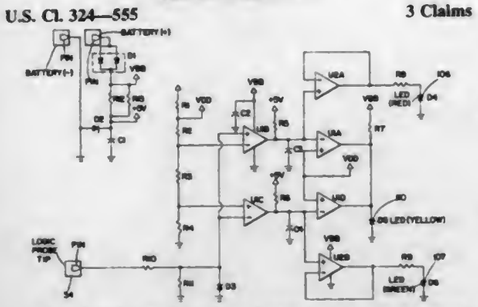
e) diagnosing means for diagnosing a presence or absence in the breakage of the electromagnetic coil means on the basis of a stored content of said historical storing means.

5,572,143

CIRCUIT TESTING DEVICE

Dean E. Myers, South Solon; James F. Mellott, Washington C. H., both of Ohio, and Jeff Masterman, Bakersville, N.C., assignors to MAC Tools, Inc., Washington Court House, Ohio

Filed Oct. 19, 1993, Ser. No. 138,711
Int. Cl.[6] G01R 31/02
U.S. Cl. 324—555 3 Claims



1. A method for testing a circuit condition of a point in a circuit, comprising the steps of:

connecting a first lead extending from a voltage divider network to a power source;

connecting a second lead extending from said voltage divider network to a ground source;

providing a first constant reference voltage from said voltage divider network to a first op-amp in a first comparator circuit arrangement;

providing a second constant reference voltage from said voltage divider network to a second op-amp in a second comparator circuit arrangement;

providing a third constant reference voltage from said voltage divider network to a third op-amp in a third comparator circuit arrangement;

providing said third constant reference voltage from said divider network to a fourth op-amp in a fourth comparator circuit arrangement;

contacting a probe to a selected circuit point to be tested to provide an input signal to said first and second comparator circuit arrangement;

providing a first output signal from said first comparator circuit through a first RC network to said third comparator circuit and a fifth op-amp circuit in a voltage follower arrangement when said first constant reference voltage is less than the high state of said input signal;

providing a second output signal from said first comparator circuit through said first RC network to said third comparator circuit and said fifth op-amp circuit when said first constant reference voltage is higher than the low state of said input signal, wherein said third comparator circuit is referenced to said third constant reference voltage;

illuminating a first LED when said first comparator circuit transitions from sending said first output signal to sending said second output signal to said third comparator circuit;

illuminating a second LED when said fifth op-amp circuit receives said first output signal from said first comparator circuit;

providing a third output signal from said second comparator circuit through a second RC network to said fourth comparator circuit and a sixth op-amp circuit in a voltage follower arrangement when said second reference voltage is less than the high state of said input signal;

providing a fourth output signal from said second comparator circuit through said first RC network to said fourth comparator circuit and said sixth op-amp circuit when said second constant reference voltage is higher than the low state of the input signal, wherein said fourth comparator circuit is referenced to said third constant reference voltage;

illuminating said first LED when said second comparator circuit transitions from sending said third output signal to sending said fourth output signal to said fourth comparator circuit;

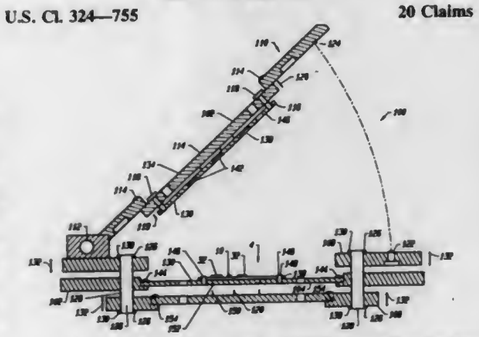
illuminating a third LED when said fourth input signal from said second comparator is provided to said sixth op-amp circuit.

5,572,144

TEST JIG AND METHOD FOR PROBING A PRINTED CIRCUIT BOARD

Ryan L. Davidson, Santa Cruz, and Mark S. Seymour, Felton, both of Calif., assignors to Seagate Technology, Scotts Valley, Calif.

Filed Feb. 22, 1993, Ser. No. 20,768
Int. Cl.[6] G01R 1/02
U.S. Cl. 324—755 20 Claims



4. A test jig for probing a circuit board whose first surface includes at least a first test target and whose second surface includes at least a second test target, the jig comprising:

a main frame;

a nest plate defining a nest plane and being statically attached to said main frame;

said nest plate including means for statically retaining said circuit board in a predetermined registration alignment with said nest plate and defining at least one through hole coinciding with a location of said second test target on said printed circuit board;

a first frame overlying said main frame;

a cover assembly, hingedly attached to said first frame to permit access to said nest plate;

a first bed of nails defining a first bed plane and including a first probe intended to electrically contact said first test target, said first bed of nails being statically attached to a portion of said cover assembly facing said nest plate such that said first probe points toward said nest plate;

a second frame underlying said main frame;

a second bed of nails including a second probe intended to electrically contact said second test target, said second bed of nails being statically attached to a portion of said second frame facing said nest plate such that said second probe points toward said nest plate; and

actuation means for displacing said first frame and said second frame along a path substantially perpendicular to said nest plane, maintaining said circuit board in a plane parallel to said nest plane while maintaining parallel registration between said first bed of nails, said printed circuit board and said second bed of nails;

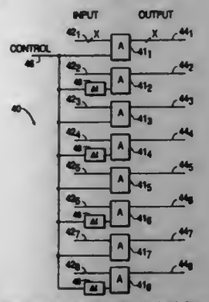
wherein following actuation said first probe contacts said first test target and said second probe contacts said second test target.

5,572,145

METHOD FOR MINIMIZING GROUND BOUNCE IN DIGITAL CIRCUITS VIA TIME DOMAIN SHIFTS

Kevin R. Kinsella, San Diego, Calif., assignor to Sony Corporation, Tokyo, Japan, and Sony Electronics Inc., Park Ridge, N.J.

Filed Sep. 6, 1995, Ser. No. 523,923
Int. Cl.[6] H03K 17/16
U.S. Cl. 326—26 19 Claims



1. A switching array for use with digital busses in which a first logical value is represented by a first voltage and a second logical value is represented by a second voltage, comprising:

a plurality of switches with each switch having an input and an output, each switch producing said first voltage on said output when said first voltage is on said input upon receipt of a control signal, and each switch producing said second voltage on said output when said second voltage is on said input upon receipt of said control signal;

said switches producing a load current which is discharged to ground when outputs of said switches undergo a transition from said first voltage to said second voltage;

a first group of said plurality of switches generating said first voltage or said second voltage on said output at a first period of time following said control signal; and

a second group of said plurality of switches generating said first voltage or said second voltage on said output at a second period of time following said control signal;

wherein said first period of time is shorter than said second period of time so that said load current from said first group of switches is discharged to ground before said load current from said second group of switches and wherein said first group of switches has a first switching speed and said second group of switches has a second switching speed with said first switching speed being faster than said second switching speed.

5,572,146

NOISE ATTENUATION OUTPUT BUFFER

Sang W. Ahn, and Byoung J. Yoon, both of Kyoungkido, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungkido, Rep. of Korea

Filed Aug. 22, 1995, Ser. No. 518,017
Claims priority, application Rep. of Korea, Aug. 24, 1994, 1994-20940
Int. Cl.[6] H03K 17/16
U.S. Cl. 326—27 8 Claims

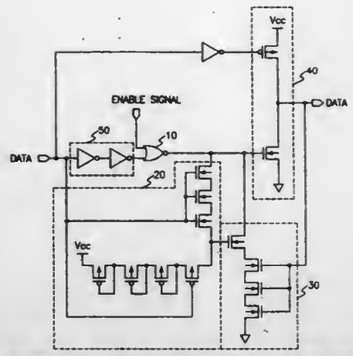
1. A noise attenuation output buffer comprising:

signal delay means for delaying input data for a predetermined time period;

NORing means for NORing an output signal from said signal delay means and an enable signal;

pull-up/down drive means for performing a pull-up operation in responses to the input data and a pull-down operation in response to an output signal from said NORing means to provide output data;

noise attenuation control means for outputting a noise attenuation signal in response to a drive voltage, the input data and the output signal from said NORing means; and



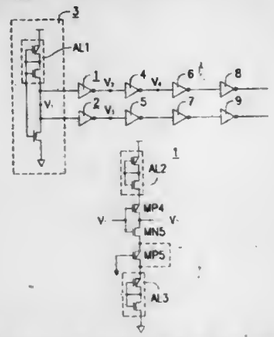
noise attenuation means for forming a current path between an output terminal of said NORing means and a ground terminal in response to the noise attenuation signal from said noise attenuatioo control means and the output data from said pull-up/down drive means to suppress the generation of noise.

5,572,147

POWER SUPPLY VOLTAGE DETECTOR

Heng-Sheng Huang, Taipei; Kun-Lun Chen, Hsinchu, and Te-Sun Wu, Hsinchu Hsien, all of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Sep. 8, 1995, Ser. No. 525,060
Int. Cl.[6] H03K 19/0948; 5/153
U.S. Cl. 326—33 10 Claims



1. A voltage detector for determining the high or low status of a power supply voltage and generating a detection result signal, the voltage detector comprising:

a front-end detector including:

a first load element having a first end coupled to the power supply voltage and a second end, and

a pull-down element having a first end coupled to the second end of the first load element and forming a front-end detector output node therewith, and a second end coupled to power supply ground; and

an inverting amplifier including:

a second load element having a first end coupled to the power supply voltage and a second end,

an inverter having a first end coupled to the second end of the second load element and a second end, the inverter comprising at least one NMOS transistor and one PMOS transistor, the gate terminals of the transistors being coupled together to form an input of the inverter connected to the output of the front-end detector, the drain terminals of the transistors being coupled together to form the output of the inverter and the inverting amplifier, and

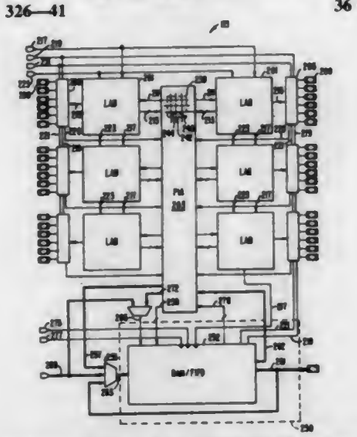
a third load element having a first end coupled to the second end of the inverter and a second end coupled to power supply ground, the second load element being an upper load for the inventer, and the third load element providing a lower load for the inverter, each of the load elements comprising a pair of PMOS and NMOS transistors, the PMOS and NMOS transistor's gate and drain terminals being connected together, forming an active load element with the source terminal of the PMOS transistor forming one node of the active load element, and the source terminal of the NMOS transistor forming the other node of the active load element.

5,572,148

PROGRAMMABLE LOGIC ARRAY INTEGRATED CIRCUIT WITH GENERAL-PURPOSE MEMORY CONFIGURABLE AS A RANDOM ACCESS OR FIFO MEMORY

Craig S. Lytle, Mountain View, and Donald F. Faria, San Jose, both of Calif., assignors to Altera Corporation, San Jose, Calif.

Filed Mar. 22, 1995, Ser. No. 408,510
Int. Cl.[6] H03K *19/177*
U.S. Cl. 326—41 **36 Claims**



1. A programmable logic device integrated circuit comprising:
a first plurality of conductors, extending along a first dimension of a two-dimensional array;
a second plurality of conductors, extending along a second dimension of said two-dimensional array, wherein said second plurality of conductors is programmably coupled to said first plurality of conductors;
a plurality of logic array blocks, programmably coupled to said first plurality of conductors and second plurality of conductors; and
a memory block, programmably coupled to said first plurality of conductors, wherein said memory block is programmably configurable as a random access memory in a first mode and a first-in, first-out memory in a second mode.

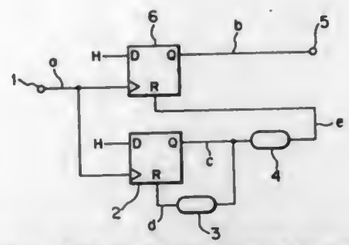
5,572,149

CLOCK REGENERATION CIRCUIT

Haruhiko Fujii, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Jan. 16, 1996, Ser. No. 584,945
Claims priority, application Japan, Jan. 17, 1995, 7-022210
Int. Cl.[6] H03K *19/00*
U.S. Cl. 326—93 **2 Claims**

1. A clock regeneration circuit comprising:



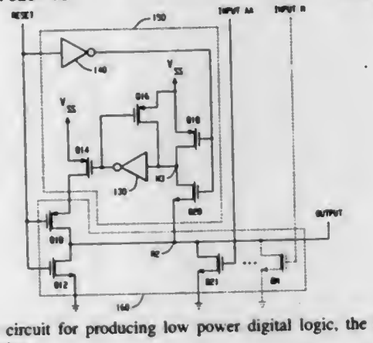
a first D-type flip-flop having a clock terminal for receiving an input clock signal from an input terminal, and a data input terminal for receiving data of an H level;
a second D-type flip-flop having a clock terminal for receiving the input clock signal from the input terminal, and a data input terminal for receiving data of an H level;
a first delay circuit for receiving an output from an output terminal of the first D-type flip-flop and for outputting an output to a reset terminal of the first D-type flip-flop; and
a second delay circuit for receiving the output from the output terminal of the first D-type flip-flop and for outputting an output to a reset terminal of the second D-type flip-flop;
wherein an output clock signal is outputted from an output terminal of the second D-type flip-flop to an output terminal.

5,572,150

LOW POWER PRE-DISCHARGED RATIO LOGIC

Paul D. Kartschoke, Williston, and Norman J. Rohrer, Underhill, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 10, 1995, Ser. No. 419,630
Int. Cl.[6] H03K *19/00*
U.S. Cl. 326—95 **23 Claims**



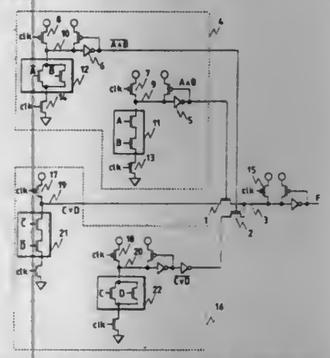
1. A circuit for producing low power digital logic, the circuit comprising:
(a) ratioed logic circuitry in circuit communication with a switching circuit, the ratioed logic circuitry comprising a signal input and a signal output and logic circuitry for performing digital logic functions;
(b) the switching circuit having:
(i) an output circuit switchable between first and second states, for regulating the ratioed logic circuitry signal output and thereby ratioed logic circuitry power consumption;
(ii) a control circuit for switching the output circuit between the first state and the second state;
(iii) a sensing circuit for sensing ratioed logic circuitry input signal conditions and for controlling the output circuit responsive to the states of the control circuit;
the control circuit in circuit communication with the sensing circuit, and
the sensing circuit in circuit communication with the output circuit.

5,572,151

PASS TRANSISTOR TYPE SELECTOR CIRCUIT AND DIGITAL LOGIC CIRCUIT

Makoto Hanawa, Niza; Kenji Kaneko, Sagamihara, and Noriyasu Ido, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 7, 1995, Ser. No. 511,802
Claims priority, application Japan, Aug. 8, 1994, 6-185808
Int. Cl.[6] H03K *19/0944*
U.S. Cl. 326—113 **18 Claims**



1. A pass transistor type selector circuit comprising:
a signal selecting circuit composed of a pair of signal selecting nMOS transistors whose drain electrodes are commonly connected so as to form an output terminal, and also including a pMOS transistor, wherein said pMOS transistor is connected between the output terminal of the signal selecting circuit and a power supply terminal, and wherein a gate electrode of said pMOS transistor is connected to an output terminal of an inverter connected to the output terminal of the signal selecting circuit;
a control signal generating circuit for generating a pair of control signals of opposite phases;
a control signal supplying circuit for supplying the control signals to the respective gate electrodes of the nMOS transistors of said signal selecting circuit;
an input signal supplying circuit for supplying input signals to the respective source electrodes of the nMOS transistors of said signal selecting circuit; and
said control signal supplying circuit including a control signal interrupting means which operates in synchronism with a clock signal so as to selectively interrupt the supply of the control signals to the signal selecting circuit while the clock signal level is low.

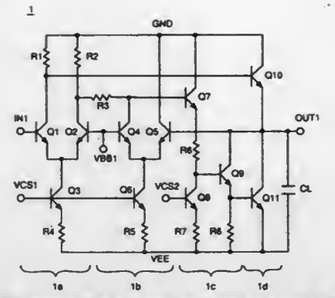
5,572,152

LOGIC CIRCUIT WITH THE FUNCTION OF CONTROLLING DISCHARGE CURRENT ON PULL-DOWN AND EMITTER COUPLED LOGIC CIRCUIT

Kimio Ueda, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 398,843, Mar. 6, 1995, abandoned. This application Dec. 15, 1995, Ser. No. 573,604
Claims priority, application Japan, May 6, 1994, 6-094306
Int. Cl.[6] H03K *19/20*
U.S. Cl. 326—126 **12 Claims**

1. An emitter coupled logic circuit for outputting a first or second logic potential to an output terminal in response to a logic signal input to an input terminal, comprising:
a first current switch circuit including a first differential transistor pair one transistor of which has an input electrode connected to said input terminal, and outputting a first logic signal and a complementary signal thereof in response to said input logic signal;



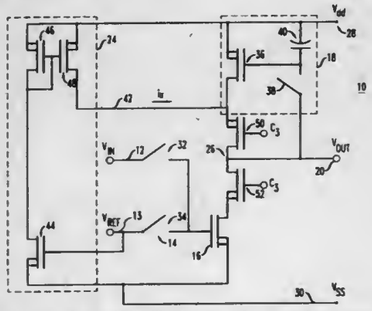
a second current switch circuit including a second differential transistor pair one transistor of which has an input electrode connected to said output terminal, and outputting a second logic signal based on the potential of the output terminal and the complementary signal output from said first current switch circuit;
a level shift circuit for shifting a level of the second logic signal output from said second current switch circuit so as to lower a logic potential thereof by a prescribed potential; and
an output circuit for controlling the potential of said output terminal based on the first logic signal output from said first current switch circuit and the second logic signal having the level shifted by said level shift circuit.

5,572,153

LOW OFFSET COMPARATORS BASED ON CURRENT COPIERS

David G. Vallancourt, Macungie, Pa., and Thayamkulangara R. Viswanathan, Addison, Tex., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 3, 1995, Ser. No. 398,487
Int. Cl.[6] H03K *5/153;* **H03M** *1/00*
U.S. Cl. 327—77 **16 Claims**



1. An integrated circuit (IC) including a comparator comprising:
an input node;
a reference node;
an output node;
an input device for receiving a reference signal from the reference node during a first comparison cycle, for receiving an input signal from the input node during a second comparison cycle, for converting the input signal and the reference signal to an input current and a reference current, respectively, and for outputting the input current and the reference current to the output node;
an adjustment circuit, coupled to the output node and responsive to the reference signal, for generating an approximation current at the output node; and
a current copier for storing the reference current as a corresponding first stored voltage during the first comparison cycle, and responsive to the approximation current at the

output node for generating a comparison signal at the output node from the first stored voltage, the approximation current, and the input current during a third comparison cycle.

5,572,154

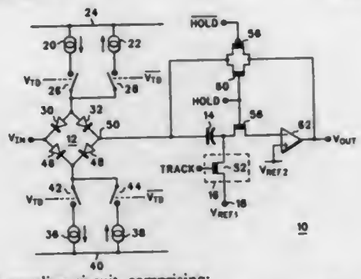
CIRCUIT AND METHOD OF SAMPLING AN ANALOG SIGNAL

Patrick L. Rakers, Schaumburg; Christopher P. Lash, Arlington Heights, and Steven F. Gillig, Roselle, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 3, 1995, Ser. No. 498,716

Int. Cl.[6] G11C *27/02;* **H03K** *17/76*

U.S. Cl. 327—92 **14 Claims**



1. A sampling circuit, comprising:

a bipolar switching circuit having an input coupled for receiving an analog input signal and having an output for passing said analog input signal to a first node in response to a first control signal;

a charge storage element having a first terminal coupled to said first node;

a first switching circuit operating in response to a second control signal and coupled between a second terminal of said charge storage element and a reference node at which a first reference potential is applied;

a first transistor having a drain coupled to said second terminal of said charge storage element, and a gate coupled for receiving a third control signal;

an amplifier having a first input coupled to a source of said first transistor, and a second input coupled for receiving a second reference potential; and

a transmission gate having a first conduction terminal coupled to an output of said amplifier, a second conduction terminal coupled to said first terminal of said charge storage element, and a first control terminal coupled for receiving said third control signal.

5,572,155

CCD SIGNAL READ-OUT CIRCUIT FREE FROM AILIASING OF HIGH-FREQUENCY NOISES

Hiroshi Tamayama, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

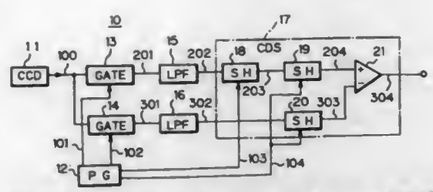
Filed Jun. 7, 1995, Ser. No. 474,670

Claims priority, application Japan, Jun. 20, 1994, 6-137296; May 23, 1995, 7-123482

Int. Cl.[6] G11C *27/02;* **H04N** *5/14*

U.S. Cl. 327—94 **21 Claims**

1. A charge coupled device (CCD) signal read-out circuit for receiving a first signal output from a CCD and for substantially removing a reset noise from the first signal by correlated double sampling to produce a second signal that is substantially free from the reset noise, the first signal including a plurality of pixel periods each pixel period comprising a reset period, a feed-through period, and a pixel signal period, said CCD signal read-out circuit comprising:



first and second signal extractor circuits for receiving the first signal and extracting a feed-through signal and a pixel signal from each respective pixel period;

first and second low-pass filter circuits for low-pass filtering the feed-through signal and the pixel signal extracted by said first and second signal extractor circuits, respectively;

a signal hold circuit for sampling and holding the feed-through signal filtered by said first low-pass filter circuit; and

a differential amplifier for subtracting the pixel signal filtered by said second low-pass filter circuit from a signal sampled and held by said signal hold circuit and outputting a resultant signal as the second signal.

5,572,156

CONTROL CIRCUIT WITH A LEVEL SHIFTER FOR SWITCHING AN ELECTRONIC SWITCH

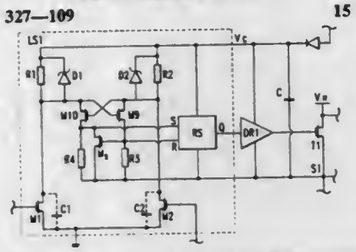
Claudio Diazzi, Milan; Fabrizio Martignoni, Varese, and Mario Tarantola, Milan, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate-Brianza, Italy

Filed Sep. 18, 1995, Ser. No. 529,883

Claims priority, application European Pat. Off., Sep. 16, 1994, 94830435

Int. Cl.[6] H03K *3/00;17/16*

U.S. Cl. 327—109 **15 Claims**



8. An integrated control circuit for switching an electronic power switch, comprising:

a control logic circuit for producing first and second voltage levels; and

a level shifter having an input connected to the control logic circuit and an output connected to the electronic power switch, the level shifter including

a bistable stage having first and second inputs, and an output defining the output of the level shifter;

a first circuit branch having an output connected to the first input, and including a first transistor and a first resistor connected between the first transistor and a connection node;

a second circuit branch having an output connected to the second input, and including a second transistor and a second resistor connected between the second transistor and the connection node, the first and second transistors being switched alternately based on the first and second voltage levels produced by the control logic circuit; and

means for maintaining the first input at substantially the same voltage level as the voltage level at the connection node during the switching of the electronic power switch.

5,572,157

DIGITAL PHASE-LOOKED LOOP CIRCUIT

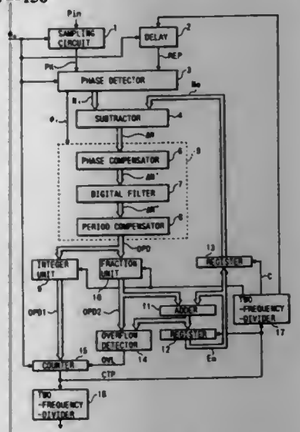
Terumi Takashi, Ebina; Kazunori Iwabuchi, Yokohama; Minoru Kosuge, Odawara; Hiromi Matsushige, Odawara, and Hideki Miyasaka, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 24, 1993, Ser. No. 21,854

Claims priority, application Japan, Feb. 24, 1992, 4-036603

Int. Cl.[6] H03L *7/085*

U.S. Cl. 327—156 **25 Claims**



1. A phase-locked loop circuit for generating a reproduction signal synchronized to an input signal comprising:

a phase detector for detecting a difference in phase between said input signal and said reproduction signal;

a filter for processing a compensated difference in phase and generating a signal for controlling an oscillation frequency;

a phase compensator for compensating a time delay to be experienced in said filter by a signal representing said difference in phase output by said phase detector and outputting said compensated difference in phase;

an oscillation-frequency compensator for compensating said signal for controlling said oscillation frequency and generating a signal for controlling compensated oscillation frequency; and

an oscillator for generating said reproduction signal based on said signal for controlling said compensated oscillation frequency.

5,572,158

AMPLIFIER WITH ACTIVE DUTY CYCLE CORRECTION

Thomas H. Lee, Cupertino; Kevin S. Donnelly, San Francisco, and Tsyr-Chyang Ho, San Jose, all of Calif., assignors to Rambus, Inc., Mountain View, Calif.

Continuation of Ser. No. 196,711, Feb. 15, 1994, abandoned. This application Sep. 18, 1995, Ser. No. 548,900

Int. Cl.[6] H03K *3/017*

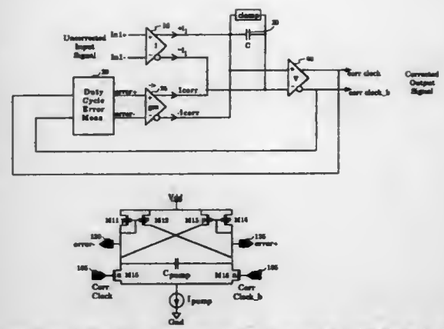
U.S. Cl. 327—175 **21 Claims**

1. An amplifier circuit with active duty cycle correction of an input signal to generate a corrected output signal, said amplifier comprising:

a first amplifier receiving an input representative of an uncorrected input signal and generating as output an uncorrected output signal;

a duty cycle measurement circuit which measures the corrected output signal and generates as an output a difference signal representative of the difference of the duty cycle of the corrected output signal and a predetermined duty cycle;

a second amplifier which receives as input the output of the duty cycle measurement circuit and generates a correction signal;



summing means for summing the correction signal and the uncorrected output signal to produce a summed signal;

an integrating capacitance which receives as input the summed signal and generates as output a slew limited voltage signal, said integrating capacitance causing the output to be slew limited for a portion of the input greater than the predetermined duty cycle, said slew limited voltage signal representative of the corrected output signal.

5,572,159

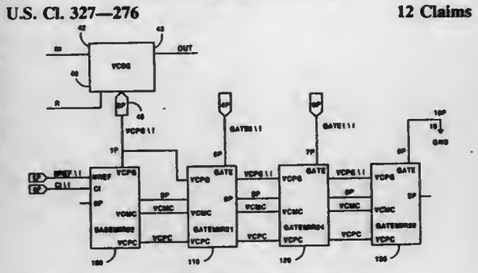
VOLTAGE-CONTROLLED DELAY ELEMENT WITH PROGRAMMABLE DELAY

Harold L. McFarland, Los Gatos, Calif., assignor to NexGen, Inc., Milpitas, Calif.

Filed Nov. 14, 1994, Ser. No. 339,328

Int. Cl.[6] H03K *5/13;17/28*

U.S. Cl. 327—276 **12 Claims**



1. A programmable delay element comprising:

a voltage controlled delay element having a delay period proportional to an analog control voltage;

control voltage determining means connected to said voltages controlled delay element for determining said analog control voltage; and

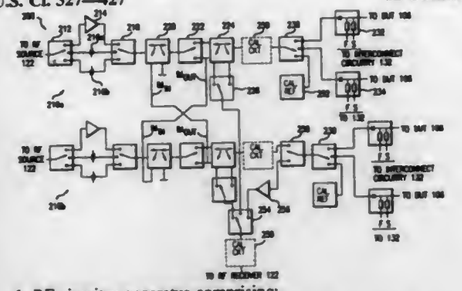
a plurality of programmable control voltage adjusting means connected to said control voltage determining means for modifying said analog control voltage in response to logic signals, wherein said control voltage determining means comprises:

a source path that sets a base current;

a control voltage generating path connected to said source path that determines said analog control voltage by running a source current that is proportional to said base current over a transistor; and

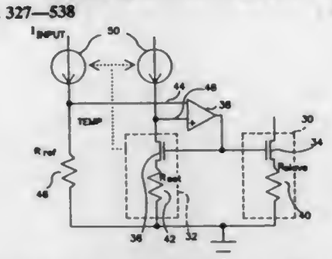
a gate path connected to said control voltage generating path for draining source current from said control voltage generating path and thereby adjusting said control voltage.

5,572,160
ARCHITECTURE FOR RF SIGNAL AUTOMATIC TEST EQUIPMENT
Brian C. Wadell, Reading, Mass., assignor to Teradyne, Inc., Boston, Mass.
Filed Dec. 1, 1994, Ser. No. 347,633
Int. Cl.[6] G01N *22/00*
U.S. Cl. 327—427 **12 Claims**



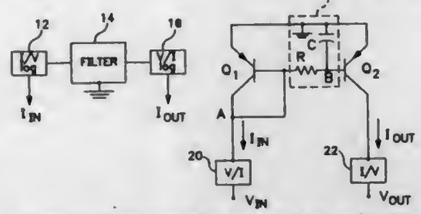
1. RF circuitry apparatus comprising:
a) a first channel and a second channel, each comprising:
i) a first directional element having at least two of a first type of ports and at least two of a second type of ports wherein a signal applied as an input to one type of port appears as an output on ports of the other type;
ii) an RF source coupled to a first type of port of the directional element;
iii) a first switch having at least two input ports and an output port which is switchably coupled to one of the input ports, a first one of said input ports being coupled to a first type of port of the directional element and a second one of said input ports being coupled to a second type of port of the directional element;
b) at least one receiver connectable to the output port of the first switch in the first channel and the second channel.

5,572,161
TEMPERATURE INSENSITIVE FILTER TUNING NETWORK AND METHOD
Brent A. Myers, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.
Filed Jun. 30, 1995, Ser. No. 497,045
Int. Cl.[6] H03K *17/687;* **G05F** *3/26*
U.S. Cl. 327—538 **18 Claims**



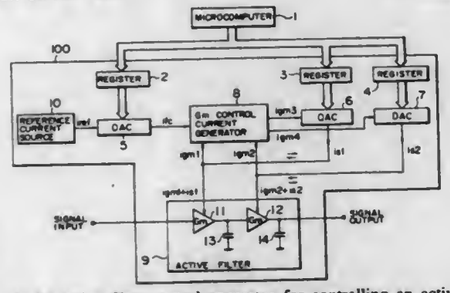
1. In a method of compensating for temperature changes in a resistive circuit in which an amplifier output adjusts a gate voltage applied to a common gate of plural MOSFETs to vary equivalent resistances provided by the plural MOSFETs, and in which the inputs to the amplifier are a first voltage across a reference resistor and a second voltage across an equivalent resistor that includes a first one of the plural MOSFETs, the improvement comprising the steps of:
(a) providing an input current across the reference resistor and across the equivalent resistor; and
(b) varying the input current in inverse proportion to the first MOSFET temperature-dependent conduction parameter, k, whereby both the first and second voltages vary so that the amplifier output adjusts the gate voltage to compensate for temperature changes.

5,572,162
FILTER WITH REDUCED ELEMENT RATINGS AND METHOD
Gerald M. Cotreau, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.
Filed Jan. 30, 1995, Ser. No. 380,412
Int. Cl.[6] G06F *7/556*
U.S. Cl. 327—552 **28 Claims**



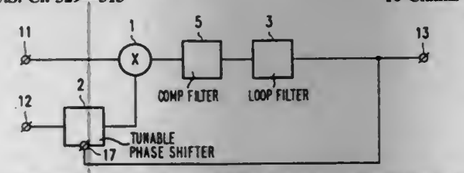
1. A method of filtering an input current with an RC filter, the method comprising the steps of:
(a) providing the input current to a collector of a first bipolar junction transistor;
(b) grounding an emitter of the first transistor; and
(c) connecting a base of the first transistor to an input of the RC filter and to the collector of the first transistor so as to provide a first voltage that is proportional to the logarithm of the input current at the base of the first transistor;
(d) filtering the first voltage with the RC filter; and
(e) converting the filtered first voltage to a filtered output current that is proportional to the inverse logarithm of the filtered first voltage.

5,572,163
ACTIVE FILTER CONTROL APPARATUS
Hiroshi Kimura, Takasaki; Ryutaro Horita, Yokohama; Kenichi Hase, Yokohama; Kunio Watanabe, Yokohama, and Takashi Nara, Takasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 23, 1994, Ser. No. 362,874
Claims priority, application Japan, Dec. 28, 1993, 5-334601
Int. Cl.[6] H03B *5/00;* **H03H** *11/04*
U.S. Cl. 327—553 **12 Claims**



1. An active filter control apparatus for controlling an active filter having a variable cut-off frequency, said active filter control apparatus comprising:
means responsive to a control signal for tuning the cut-off frequency of the active filter; and
characteristic correction means coupled to said turning means and responsive to the control signal signal for generating a correction signal to correct a group delay characteristic of the active filter in accordance with a set cut-off frequency, wherein:
said characteristic correction means includes correction signal generator means for generating the correction signal in accordance with a set correction amount from the control signal, and
said cut-off frequency tuning means controls the characteristic of the active filter by using the correction signal.

5,572,164
FM DEMODULATOR WITH THRESHOLD EXTENSION AND RECEIVER COMPRISING SUCH AN FM DEMODULATOR
Wolfdietrich G. Kasperkovitz, and Robert F. E. Kokke, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 14, 1995, Ser. No. 528,277
Claims priority, application European Pat. Off., Sep. 30, 1994, 94202823
Int. Cl.[6] H03D *3/00*
U.S. Cl. 329—315 **10 Claims**

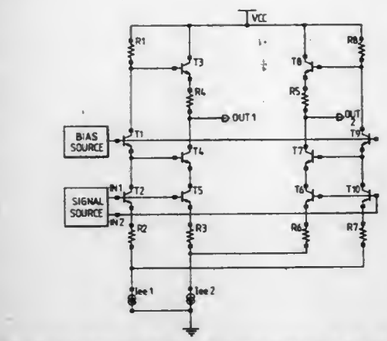


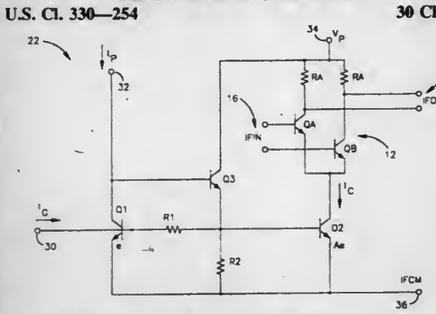
1. An FM demodulator having a first input terminal and a second input terminal for receiving FM modulated input signals having a 90° degree phase relation, and an output terminal for supplying a demodulated FM signal, said FM demodulator comprising:
a phase comparator having a first input, a second input and an output, said first input being coupled to the first input terminal of said FM demodulator and said output being coupled to the output terminal of said FM demodulator;
a first tunable phase shifting means coupled between the second input terminal of said FM demodulator and the second input of said phase comparator said first phase shifting means having a tuning control input for controlling a tuning frequency of said first phase shifting means; and
a feedback path coupling the output of said phase comparator to said tuning control input, said feedback path comprising a loop filter, characterized in that said feedback path further comprises a compensation filter having a transfer characteristic substantially corresponding to an inverse transfer characteristic of said first phase shifting means transposed to baseband.

5,572,165
AMPLIFIER ARRANGEMENTS
Arshad Mandi, Wiltshire, United Kingdom, assignor to Plessey Semiconductors Limited, United Kingdom
Filed Aug. 25, 1994, Ser. No. 295,620
Claims priority, application United Kingdom, Sep. 10, 1993, 93188836
Int. Cl.[6] H03F *3/45*
U.S. Cl. 330—252 **7 Claims**

1. An amplifier arrangement comprising first and second cascoded transistor amplifier stages, means to apply input signal voltages in common to input terminals of said first and second amplifier stages, first and second resistive load means in said first and second amplifier stages across which first and second output signal voltages are developed respectively, and an emitter follower stage arranged to apply said first output signal voltage to one end of said second resistive load means such that the sum of said first and second output signal voltages is developed at the other end of said second resistive load means.

5,572,166
LINEAR-IN-DECIBEL VARIABLE GAIN AMPLIFIER
Barrie Gilbert, Portland, Oreg., assignor to Analog Devices, Inc., Norwood, Mass.
Filed Jun. 7, 1995, Ser. No. 472,901
Int. Cl.[6] H03F *3/45;* **H03G** *3/30*
U.S. Cl. 330—254 **30 Claims**



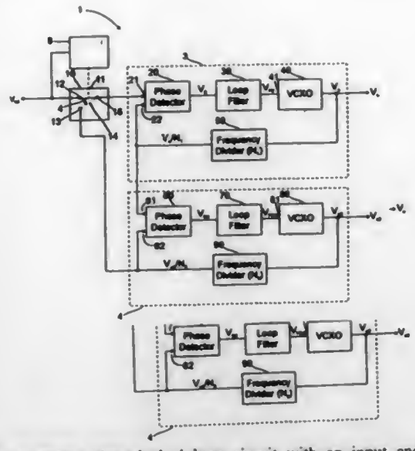


1. A linear-in-dB gain amplifier comprising:
an amplifier circuit having a gain that is proportional to an amplifier bias current; and
a gain control circuit having an input terminal for receiving a gain control current and an output terminal coupled to the amplifier circuit for providing the amplifier bias current, the amplifier bias current varying exponentially in response to linear changes in the gain control current thereby producing an exactly linear-in-decibel relationship between the gain control current and the amplifier circuit gain over the entire range of the gain control current.

5,572,167
METHOD AND APPARATUS FOR A PHASE-LOCKED LOOP CIRCUIT WITH HOLDOVER MODE
John M. Alder, Den Bosch, and Hendricus M. H. Bontekoe, Huizen, both of Netherlands, assignors to Lucent Technologies Inc., Murray Hill, N.J.
Continuation of Ser. No. 147,631, Nov. 5, 1993, abandoned. This application Jul. 31, 1995, Ser. No. 509,613
Int. Cl.[6] H03L *7/07*
U.S. Cl. 331—2 **25 Claims**

1. A frequency synthesizer circuit for generating a phase-locked local clock signal without interruption based on a reference clock signal that may be interrupted, the circuit comprising:
a primary phase-locked loop circuit with an input and an output, the local clock signal being generated at the output;

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a secondary phase-locked loop circuit with an input and an output, the input being connected to the output of the primary loop, the secondary phase-locked loop generating a highly stable scaled output signal of substantially minimal frequency variation that is substantially equal in frequency and substantially in phase with the reference clock signal, wherein the secondary phase-locked loop output signal is partly based on frequency samples over a period of time of the secondary loop output signal; and

a switch adaptable for connecting the input of the primary loop to the reference clock signal or to the output of the secondary loop, wherein the switch operates in a first position to provide the input of the primary loop with the reference clock signal when the reference clock signal is present and wherein the switch operates in a second position to connect the primary loop circuit input to the output of the secondary loop when the reference clock signal is interrupted or absent.

5,572,168

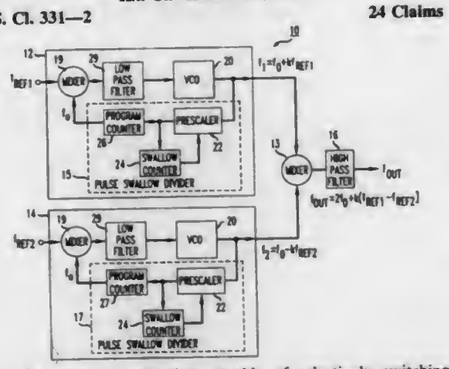
FREQUENCY SYNTHESIZER HAVING DUAL PHASE LOCKED LOOPS

Sanjay Kasturia, Middletown, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 9, 1995, Ser. No. 513,195

Int. Cl.[6] H03L *7/07;7/16*

U.S. Cl. 331—2 **24 Claims**



1. A frequency synthesizer capable of selectively switching between an initial frequency and a subsequent frequency separated by an incremental difference, comprising:

a first phase-locked loop wherein said first phase-locked loop receives a first reference frequency and produces a first output frequency that is a function of said first reference frequency;

a second phase-locked loop wherein said second phase-locked loop receives a second reference frequency and provides a second output frequency that is a function of said second reference frequency; and

a mixer for mixing said first output frequency and said second output frequency to produce said subsequent frequency, wherein said subsequent frequency is a function of both said first reference frequency and said second reference frequency, and said incremental difference between said initial frequency and said subsequent frequency is equal to a difference between said first reference frequency and said second reference frequency.

5,572,169

TEMPERATURE-COMPENSATED PIEZOELECTRIC OSCILLATOR

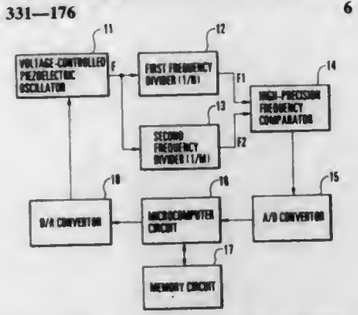
Hiroyuki Iwamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 7, 1995, Ser. No. 568,976

Claims priority, application Japan, Dec. 9, 1994, 6-306227

Int. Cl.[6] H03B *5/04;5/32;* **H03L** *1/02;7/00*

U.S. Cl. 331—176 **6 Claims**



1. A temperature-compensated piezoelectric oscillator comprising:

voltage-controlled piezoelectric oscillation means, having an output frequency controlled by a control voltage, for oscillating the output frequency having a center frequency f_0 at an ambient temperature of t_0;

first frequency division means for frequency-dividing the output frequency from said voltage-controlled piezoelectric oscillation means by N to output a first divided output frequency;

second frequency division means for frequency-dividing the output frequency from said voltage-controlled piezoelectric oscillation means by M to output a second divided output frequency; and

control means for controlling the control voltage to be applied to said voltage-controlled piezoelectric oscillation means on the basis of a frequency difference between the first and second divided output frequencies upon a variation in ambient temperature of t_0 to keep the output frequency of said voltage-controlled piezoelectric oscillation means at the center frequency f_0.

5,572,170

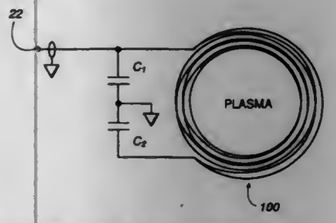
ELECTRONICALLY TUNED MATCHING NETWORKS USING ADJUSTABLE INDUCTANCE ELEMENTS AND RESONANT TANK CIRCUITS

Kenneth S. Collins; John Trow; Craig A. Roderick; Jay D. Pinson, II, all of San Jose; Douglas A. Buchberger, II, Tracy; Robert P. Hartlage, Sunnyvale, and Viktor Shel, Milpitas, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Division of Ser. No. 336,873, Nov. 9, 1994, which is a division of Ser. No. 975,355, Nov. 12, 1992, Pat. No. 5,392,018, which is a continuation-in-part of Ser. No. 825,658, Jan. 23, 1992, Pat. No. 5,187,454, and a continuation-in-part of Ser. No. 722,340, Jun. 27, 1991, abandoned. This application Aug. 22, 1995, Ser. No. 518,014

Int. Cl.[6] H01P *5/08*

U.S. Cl. 333—32 **12 Claims**



1. A plasma processing system comprising:

a plasma processing chamber;

an antenna circuit including a source antenna positioned relative to said processing chamber so as to couple energy into a plasma within said chamber during processing, said antenna circuit having a first terminal and a second terminal with said source antenna electrically coupled between said first and second terminals; and

a local impedance transforming network connected to said antenna circuit, said local impedance transforming network including

a first capacitor connected between said first terminal and a grounded node, and

a second capacitor connected between said second terminal and said grounded node.

5,572,171

SIGNAL DISTRIBUTION SYSTEM WITH PLURAL LINES SEGMENTS IN A PATH AND HAVING VARYING SENSITIVITIES

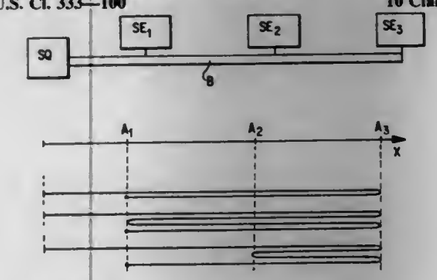
Michael Völker, and Rolf Zahn, both of Markdorf, Germany, assignors to Dornier GmbH, Germany

Filed Apr. 8, 1994, Ser. No. 225,285

Claims priority, application Germany, Apr. 8, 1993, 43 11 601.9

Int. Cl.[6] H03H *11/36*

U.S. Cl. 333—100 **10 Claims**



1. A signal distribution arrangement comprising:

a signal source;

a plurality of signal receivers located along a common path, each of said signal receivers being coupled in communication with said signal source by a respective line arranged within said common path;

each of said lines having at least two segments within said common path, including a first segment which lies within a portion of the common path that is between said signal source and the corresponding signal receiver to which said respective line is coupled, and a second segment which lies within a portion of the common path that is between said corresponding signal receiver to which said respective line is coupled and an end of said common path;

each of said lines having a respective relative sensitivity associated with one of said at least two segments which is different from a relative sensitivity associated with at least another of said at least two segments;

each of said lines being arranged within the common path so that the first segment thereof traverses the common path an odd number of times, and the second segment thereof traverses the common path an even number of times; and

within each of said at least two segments of each of said lines within the common path, the product of the number of times a respective line traverses said segment and said corresponding relative sensitivity of said respective line being the same for all lines.

5,572,172

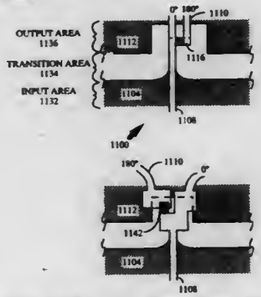
180° POWER DIVIDER FOR A HELIX ANTENNA

Randolph E. Standke, San Deigo, and James H. Thompson, Carlsbad, both of Calif., assignors to QUALCOMM Incorporated, San Diego, Calif.

Filed Aug. 9, 1995, Ser. No. 513,163

Int. Cl.[6] H01P *5/12;5/10*

U.S. Cl. 333—128 **8 Claims**



1. A device for providing two output signals having a relative differential phase of 180°, the device comprising:

a substrate;

first conductive path disposed on a first surface of said substrate;

a ground portion disposed on a second surface of said substrate forming a ground plane and tapering from said ground plane to form a second conductive path having a width that is substantially equal to the width of said first conductive path and being positioned on said second surface substantially in alignment with said first conductive path;

a third conductive path disposed on said first surface of said substrate;

a tab disposed on said second surface and extending from said second conductive path; and

an electrical connection between said tab on said second surface and said third conductive path on said first surface.

VOL 1192 ISS 1 NO 5 1996 UMI

5,572,173

LADDER TYPE FILTER WITH ADJUSTABLE RESONATOR POSITIONING MEMBER

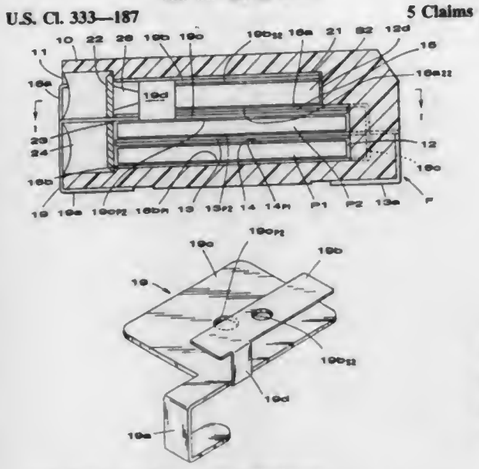
Tatsuo Ogawa; Yasuhiko Nakagawa, and Junji Kawai, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi-ken, Japan

Filed Feb. 14, 1995, Ser. No. 388,417

Claims priority, application Japan, Feb. 15, 1994, 6-042051; Feb. 15, 1994, 6-042052

Int. Cl.[6] H03H 9/205

U.S. Cl. 333—187 5 Claims



1. A ladder type electric filter comprising:

a pair of square shape parallel resonators which are arranged vertically as an upper and a lower parallel resonator, each being provided with an upper and lower surface-electrode;

a pair of strip shape series resonators which are horizontally juxtaposed on the upper parallel resonator of said parallel resonators, each being provided with an upper and lower surface-electrode;

an input terminal member connected to the upper surface-electrode of one of said series resonators;

an output terminal member connected to the upper surface-electrode of the other of said series resonators and the upper surface-electrode of the upper parallel resonator;

a grounded terminal member connected to the lower surface-electrodes of the upper parallel resonator and the upper surface-electrode of the lower parallel resonator;

a connecting terminal member for connecting the upper surface-electrode of the series resonators with the lower surface-electrode of the lower parallel resonator; and

a casing for containing said parallel resonators and said series resonators and said terminal members and having an opening to be hermetically sealed by an insulating shield member;

wherein said connecting terminal member is provided with a pair of raised connecting sections arranged side by side and having respective abutting surfaces to be held in close contact with the lower surface-electrodes of said series resonators;

wherein said output terminal member is provided with a raised connecting section and having a contacting surface to be held in close contact with the center of the upper surface-electrode of the upper parallel resonator; and

wherein the raised connecting sections of said connecting terminal member and the raised connecting section of said output terminal member are arranged so that the abutting surfaces of said connecting terminal member only partly overlap with the contacting surface of said output terminal member as viewed from above.

5,572,174

DIELECTRIC RESONATOR DEVICE HAVING RESONATOR ELECTRODES WITH GAPS, AND METHOD OF MANUFACTURING THE SAME

Yukihiro Kitaichi, Ishikawa-ken, and Yasuo Yamada, Kanazawa, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

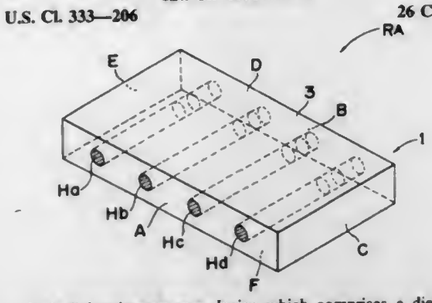
Continuation of Ser. No. 966,555, Oct. 26, 1992, abandoned.

This application Jan. 13, 1994, Ser. No. 182,664

Claims priority, application Japan, Oct. 25, 1991, 3-087755 U; Sep. 28, 1992, 4-258153

Int. Cl.[6] H01P 1/202

U.S. Cl. 333—206 26 Claims



1. A dielectric resonator device which comprises a dielectric block having a first face and a second face generally parallel to each other, side faces continuous between said first and second faces, and at least one through-hole extending from the first face to the second face through the dielectric block, opening portions of said at least one through-hole located at said first and second face, respectively,

an outer electrode formed over said first face, said second face, and said side faces of said dielectric block, and

a first inner electrode and second inner electrode formed in said at least one through-hole and being unequal in length, a gap between said first and second inner electrodes, said gap being at least in the vicinity of one of said opening portions and disposed on an inner peripheral surface of said at least one through-hole, a surface of said gap being flush with the inner peripheral surface, one of said first inner electrode and said second inner electrode functioning as a resonator with an open end thereof at said gap and a short-circuit end thereof conductively connected to said outer electrode.

5,572,175

COAXIAL DIELECTRIC RESONATOR APPARATUS HAVING A PLURALITY OF SIDE RECESSES LOCATED ON A MOUNT SUBSTRATE

Hiroshi Tada; Hajime Saemasa; Haruo Matsumoto; Takashi Maruyama; Hideyuki Kato; Yasuo Yamada; Hirohumi Miyamoto, and Hitoshi Tada, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 116,079, Sep. 2, 1993, abandoned.

This application Jul. 31, 1995, Ser. No. 509,332

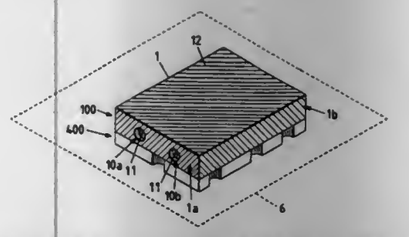
Claims priority, application Japan, Sep. 7, 1992, 4-069059 U; Mar. 31, 1993, 5-098768

Int. Cl.[6] H01P 1/202

U.S. Cl. 333—206 18 Claims

1. A dielectric resonator apparatus comprising:

at least one dielectric resonator component including one dielectric block, at least one inner conductor formation hole located in said one dielectric block, an inner conductor located on an inner surface of said at least one inner conductor formation hole, and an outer conductor substantially covering an entire outer surface of aid one dielectric block, said at least one dielectric resonator component including at least one dielectric resonator in said one dielectric block and a pair of input/output electrodes; and



a mount substrate fixedly mounted on said at least one dielectric resonator component for transmitting a signal between said at least one dielectric resonator component and an external circuit board, said mount substrate including connecting means for connecting each of said input/output electrodes of said at least one dielectric resonator component to a respective one of a pair of input/output electrodes located on said circuit board, wherein said connecting means of said mount substrate extends onto side surfaces of said mount substrate, said mount substrate having a plurality of recesses located on said side surfaces thereof, said connecting means being located within said recesses located in said side surfaces of said mount substrate.

5,572,176

RELAY HAVING A MOVABLE SLIDE AND METHOD FOR THE MANUFACTURE THEREOF

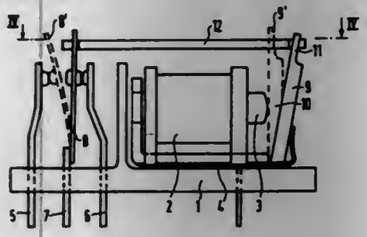
Alfred Heinzl, and Heinz Stadler, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 8, 1995, Ser. No. 385,694

Claims priority, application Germany, Feb. 18, 1994, 44 05 222.7

Int. Cl.[6] H01H 51/22

U.S. Cl. 335—129 7 Claims



1. A relay comprising:

an armature;

at least one moveable contact element;

an elongated slide having first and second ends;

the first end of the elongated slide connected to the armature and the second end of the elongated slide connected to the moveable contact element wherein a length of the slide is matched to a distance between the armature and moveable contact element when the armature and moveable contact element are in a predetermined switch position; and

an electromagnetic actuator for moving said armature, slide and moveable contact element to make and break an electrical contact, wherein the elongated slide is a common slide comprising a plurality of actuation points, each of the actuation points having a length matched to a distance between the armature and a corresponding moveable contact element when the armature and moveable contact element are in a predetermined switch position.

5,572,177

CURRENT DETECTION UNIT AND RELAY TERMINAL ARRAY

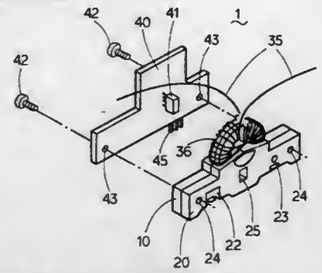
Teruhiko Fujiwara, Kyoto, Japan, assignor to Omron Corporation, Najaokakyo, Japan

Filed Mar. 10, 1994, Ser. No. 208,374

Claims priority, application Japan, Mar. 10, 1993, 5-048913

Int. Cl.[6] H01H 67/02

U.S. Cl. 335—132 5 Claims



1. A current detection unit, comprising:

an annular core having an air gap;

a case having a compartment in which said annular core is disposed, and a hole in said case disposed in a position corresponding to said air gap in said annular core;

a circuit board mounted on one side of said case, said circuit board having a magnetic-to-electric converter element disposed thereon, said magnetic-to-electric converter being inserted into said air gap of said annular core through said hole in said case; and

a coil wound on said annular core.

5,572,178

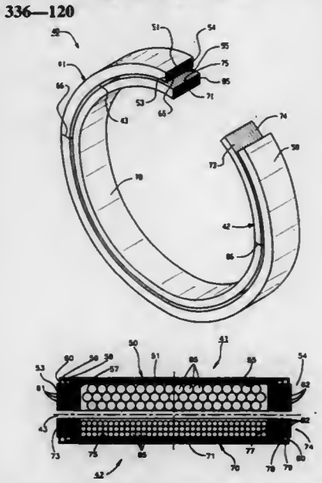
ROTARY TRANSFORMER

Richard J. Becker; Michael J. Douglass, both of Oxford, N.Y., and David B. Sweet, Canal Fulton, Ohio, assignors to Simmonds Precision Products, Inc., Akron, Ohio

Continuation-in-part of Ser. No. 982,202, Nov. 25, 1929, abandoned. This application Feb. 16, 1994, Ser. No. 197,776

Int. Cl.[6] H01F 21/06

U.S. Cl. 336—120 34 Claims



1. In combination, a rotary transformer and an aircraft deicing apparatus, associated therewith said transformer comprising:

a primary winding adjacent a laminated primary core, and a secondary winding adjacent a laminated secondary core;

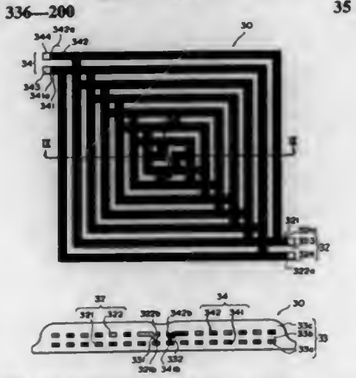
said primary and secondary cores each comprising a generally cylindrical body formed of magnetically permeable material and being located with clearance therebetween to allow relative rotation between said cores on a common axis of rotation;
said primary core comprising a pair of spaced end portions and a span connecting said end portions to define an annular recess adapted to receive said primary winding, and
said secondary core comprising a pair of spaced end portions and a span connecting said end portions to define an annular recess facing said recess of said primary core and adapted to receive said secondary winding,
the thickness of each end portion of each of said cores being substantially greater than the thickness of the respective span.

5,572,179

THIN FILM TRANSFORMER

Naoki Ito; Tsuneo Watanabe; Yoshiyuki Sugahara, and Toshio Komori, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Division of Ser. No. 67,058, May 26, 1993, Pat. No. 5,480,588. This application Jan. 10, 1995, Ser. No. 371,036
Claims priority, application Japan, May 27, 1992, 4-135073; Aug. 21, 1992, 4-228033; Sep. 14, 1992, 4-244786
Int. Cl.[6] H01F *27/28*
U.S. Cl. 336—200 **35 Claims**



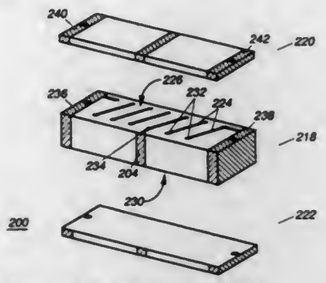
1. A thin film transformer apparatus, comprising:
a first thin film coil which consists of a conductive material and which has loops;
a second thin film coil which consists of a conductive material and which has loops;
an insulation layer which insulates said first thin film coil from said second thin film coil, said insulating layer having an upper side and a lower side; and
a substrate which supports said first and second thin film coils and said insulation layer, said substrate having a surface;
wherein said first thin film coil includes a first lower-layer coil part selected from a plurality of lower-layer coil parts formed at said lower side of said insulation layer in a spiral shape with a designated wiring gap defined in a direction parallel to said surface of said substrate and a first upper-layer coil part selected from a plurality of upper-layer coil parts formed at said upper side of said insulation layer in a spiral shape with a designated wiring gap defined in a direction parallel to said surface of said substrate, said first lower-layer coil part and said first upper-layer coil part being connected electrically to each other through said insulation layer, said first lower-layer coil part and said first upper-layer coil part having respective outer loops and respective outer ends which are located outside of the respective outer loops and which serve as terminals, and
wherein said second thin film coil includes a second lower-layer coil part selected from said plurality of lower-layer coil parts and a second upper-layer coil part selected from said plurality of upper-layer coil parts, said second lower-layer coil part and said second upper-layer coil part being connected electrically to each other through said insulation layer, said second lower-layer coil part and said second upper-layer coil part having respective outer loops and respective outer ends which are located outside the respective outer loops and which serve as terminals,
thereby said first thin film coil and said second thin film coil have terminals located outside of said loops of said first thin film coil and said second thin film coil.

5,572,180

SURFACE MOUNTABLE INDUCTOR

Philip M. Huang, Plantation; John J. Neumann, North Lauderdale, and John L. Holley, Jr., Lake Worth, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 16, 1995, Ser. No. 559,353
Int. Cl.[6] H01F *41/04*
U.S. Cl. 336—200 **25 Claims**



1. A surface mountable inductor, comprising:
an inner substrate layer having first and second metalization patterns disposed upon first and second opposed surfaces, said first and second metalization patterns interconnected by vias to form an inductor having first and second ends;
first and second outer substrate layers disposed on the first and second opposed surfaces;
said inner substrate layer and first and second outer substrate layers forming a structure having first, second, third, and fourth side surfaces and first and second ends;
a metalized trace coupled to a center point of the first metalization pattern and extending about said first, second, third, and fourth side surfaces, said metalized trace providing a center tap element for the inductor; and
said surface mountable inductor being mountable upon any of the first, second, third, and fourth side surfaces interchangeably between the first and second ends.

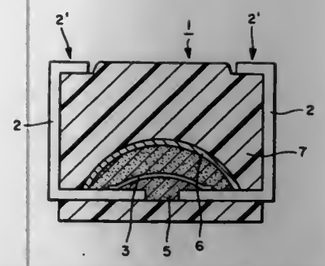
5,572,181

OVERCURRENT PROTECTION DEVICE

Michiaki Kiryu, Ina, and Satoru Kobayashi, Komagane, both of Japan, assignors to KOA Kabushiki Kaisha, Nagano, Japan

Filed Apr. 29, 1994, Ser. No. 235,287
Claims priority, application Japan, Apr. 30, 1993, 5-103867
Int. Cl.[6] H01H *85/38;85/18;85/04*
U.S. Cl. 337—273 **10 Claims**

1. An overcurrent protection device comprising:
means for conducting a current from an input to an output;
said means for conducting including a fusible portion for fusing at a predetermined current level;
said fusible portion being composed of one percent by weight silicon and a balance substantially alumioum;
said fusible portion including a diameter of from 10 μm to 500 μm;
a composite layer enveloping said fusible portion;



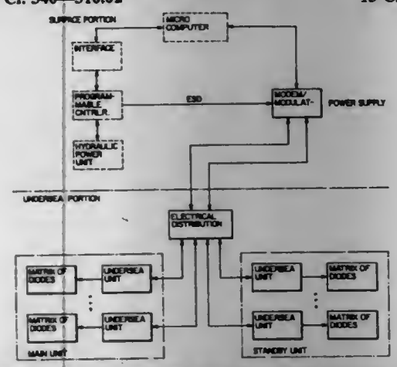
said composite layer including a nonconducting powder having a melting temperature below a melting temperature of said fusible portion;
said composite layer including a means for elastically binding said nonconducting powder;
a housing containing said composite layer and said fusible portion; and
said housing having said input and said output exposed external thereto.

5,572,182

INTEGRATED POWER AND SIGNAL TRANSMISSION SYSTEM

Orlando J. De Pinho Filho; Robert Eisemberg; Orlando D. Correia, and Ricardo M. Freitas, all of Rio de Janeiro, Brazil, assignors to Petrolew Brasileiro S.A. - Petrobras, Rio de Janeiro, Brazil

Filed Feb. 17, 1994, Ser. No. 197,867
Claims priority, application Brazil, Feb. 17, 1993, 9300603
Int. Cl.[6] H04M *11/04*
U.S. Cl. 340—310.02 **13 Claims**



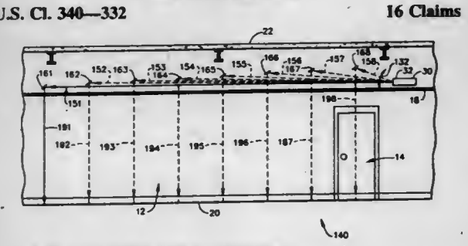
1. An integrated power and signal transmission system, which joins a signal control and emission station containing a hydraulic power unit, a programmable controller, and a microcomputer, to a remote operating station that receives control signals so that the control signals sent out by the signal control and emission station reach operating points which are connected to and controlled by the remote operating station and at the same time sends information back to said signal control and emission station, when necessary, wherein said integrated power and signal transmission system includes a surface unit, comprising a modem and a modulated source, which directly receives said control signals broadcast by the signal control and emission station, which converts said control signals to modified signals, and which communicates with an electric distribution unit, wherein said electric distribution unit is directly connected to an electronic unit which is enclosed in a housing and which comprises:
a) boards containing electronic components to manipulate said modified signals;
b) at least one transformer;
c) at least one electronic distribution unit; and
d) at least one capacitor;
wherein said boards, said at least one transformer, said at least one electronic distribution unit, and said at least one capacitor are electrically connected together,
wherein said electronic unit receives said modified signals from said surface unit and sends said modified signals to the operating points,
wherein said modified signals output from said surface unit have voltage levels substantially in a range of 36 V to 100 V and have frequencies substantially in a range of 0.9 kHz to 1.1 kHz,
wherein said modified signals have a substantially square waveform, and
wherein said modified signals are transmitted from said surface unit to said remote operating station along a single pair of conductors, so as to provide power and operating signals to operate the remote operating station.

5,572,183

LASER LIGHT FIRE EVACUATION SYSTEM

Gary L. Sweeney, 10693 Silverbrook Dr., Cincinnati, Ohio 45240

Filed Jan. 17, 1995, Ser. No. 373,652
Int. Cl.[6] G08B *5/00*
U.S. Cl. 340—332 **16 Claims**



1. A fire evacuation system comprising:
(a) an electromagnetic light source emitting radiation in the visible spectrum, said radiation being substantially coherent, said radiation forming a first beam in a predetermined direction;
(b) a beam distribution assembly which receives said first beam of radiation and sequentially diverts said first beam into a plurality of directions, thereby creating a plurality of second beams, each of said second beams having a separate direction;
(c) a plurality of light-guiding members which receive said plurality of second beams, each of said light-guiding members redirecting one of said second beams so as to transit the distance through a building space, thereby creating a plurality of third beams; and
(d) a controller to initiate the emission of said plurality of third beams upon the occurrence of an alarm condition, said third beams becoming greater in perceived intensity as the smoke density becomes greater within said building space, said third beams sequencing on and off so as to indicate the correct direction to an exit.

5,572,184

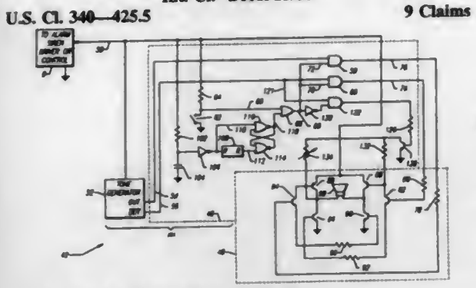
Patent Not Issued For This Number

5,572,185

CAR ALARM HAVING A SOFT CHIRP ARMING SIGNAL

Chau-ho Chen, and Chih-hung Shee, both of Hsin Tien, Taiwan, assignors to Nutek Corporation, Taipei, Taiwan

Continuation of Ser. No. 503, Jan. 5, 1993, abandoned. This application Mar. 6, 1995, Ser. No. 400,176
Int. Cl.[6] B60R 25/00
U.S. Cl. 340—425.5 9 Claims



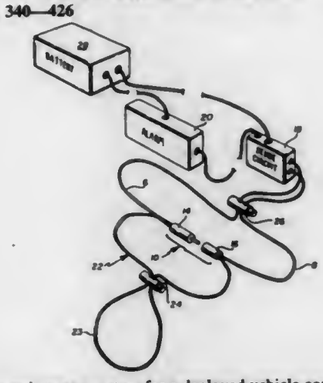
1. A vehicular alarm system comprising:
signal generator means for producing a first speaker control signal and a second speaker control signal;
speaker means for producing an audible tone in response to said first speaker control signal and said second speaker control signal from said signal generator means;
sensor means for sensing at least one environmental parameter and for directing power to said signal generator means and to said speaker means via said circuitry means; and
circuitry means for interconnecting said signal generator means and said speaker means, and for selectively reducing the volume of said audible tone produced by said speaker means, wherein said circuitry means includes a volume control circuit having a first amplifier circuit for providing an arm/disarm signal to said speaker means in response to said first speaker control signal from said signal generator means and a second amplifier circuit for providing an alarm signal to said speaker means in response to said first speaker control signal and said second speaker control signal from said signal generator means, wherein said speaker means provides an arm/disarm sound in response to said arm/disarm signal and an alarm sound in response to said sensor means.

5,572,186

BOAT SECURITY SYSTEM

Norbert Traxler, and Sharon Traxler, both of Prior Lake, Minn., assignors to C.O.P. Corp., Mankato, Minn.

Filed Jul. 18, 1994, Ser. No. 276,301
Int. Cl.[6] B60R 25/10; G08B 23/00
U.S. Cl. 340—426 17 Claims



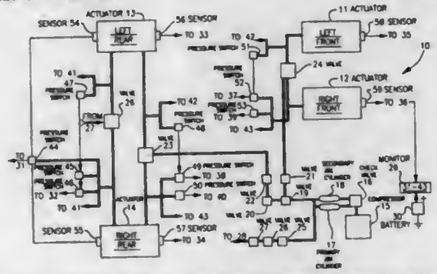
1. An anti-tamper system for a deployed vehicle cover, comprising a continuous conductive loop, said loop, including and being electrically completed through, a position insensitive, manually reconnectable, tension sensitive, disconnect device, said loop further being attached to said deployed vehicle cover in a manner such that tension associated with peripheral movement of said deployed vehicle cover, causes said disconnect device to separate thereby interrupting said continuous conductive loop, said interruption causing a tampering event to be registered.

5,572,187

AIR BRAKE MONITORING AND SAFETY SYSTEM

Robert F. Williford, 7211 Crane Ave., Apt. 33, Jacksonville, Fla. 32211

Filed May 23, 1994, Ser. No. 247,300
Int. Cl.[6] B60Q 1/00; B60T 13/00
U.S. Cl. 340—454 15 Claims



1. An air brake monitoring and safety system for monitoring the operation of an air brake system of a vehicle, the air brake system including parking and foot brakes, and for providing indication of the operation of the air brake system, the monitoring and safety system comprising first sensor means operably connected to each air operated parking brake actuator in said air brake system and responsive to movement thereof for providing a first output signal when respective said parking brake actuator moves in a predetermined manner as established by said first sensor means, first alarm circuit means having an alarm within a driver's compartment of a vehicle operably connected to each said first sensor means and responsive to each said first output signal for providing a first alarm output signal in response to a respective said first output signal, second sensor means responsive to the air pressure in each said parking brake actuator for providing a second output signal when the air pressure in any said parking brake actuator is less than a first value as established by each said second sensor means said second sensor means blocks a corresponding said first output signal when air pressure in a corresponding said parking brake actuator is less than said first value.

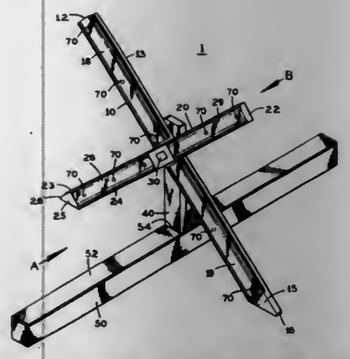
5,572,188

DISTRESS WARNING SIGNAL DEVICE

Robert A. McDowell, II, 1920 N. 48th Ave., Hollywood, Fla. 33021

Filed Apr. 27, 1995, Ser. No. 429,788
Int. Cl.[6] B60Q 7/00
U.S. Cl. 340—473 14 Claims

1. An erectable and collapsible warning signal assembly for roadside use comprising:
a first elongated arm having a top end, a bottom end, and a midpoint section substantially halfway between the top end and the bottom end;
a second elongated arm having a top end, a bottom end, and a midpoint section substantially halfway between the top end and the bottom end, the midpoint section of the first arm being pivotally connected to the midpoint section of the second elongated arm at a pivot point;
a electrically powered light attached to at least one of the elongated arms;



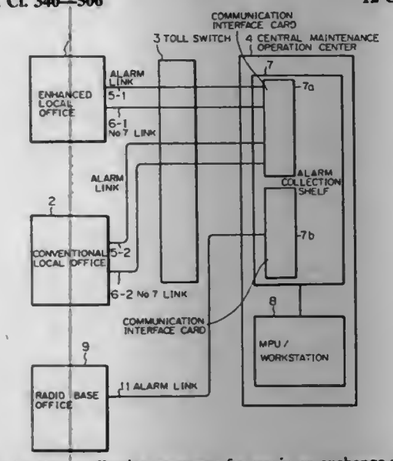
a vertical support post having an upper portion and a lower portion, the upper portion attached to the first elongated arm and the second elongated arm at the pivot point;
an elongated hollow stand having an upper opening for receiving the lower portion of the vertical support post, wherein the axis of the stand is substantially perpendicular to the axis of the support post, and wherein the bottom end of the first elongated arm, the bottom end of the second elongated arm and the elongated hollow stand solely support the assembly.

5,572,189

ALARM COLLECTION APPARATUS OF CENTRAL MAINTENANCE OPERATION CENTER

Kunio Yamamoto, Kawasaki; Nobuhiko Eguchi, and Hidetaka Nishi, both of Fukuoka, all of Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

Filed Mar. 2, 1993, Ser. No. 25,316
Claims priority, application Japan, Mar. 2, 1992, 4-044548
Int. Cl.[6] G08B 29/00
U.S. Cl. 340—506 12 Claims



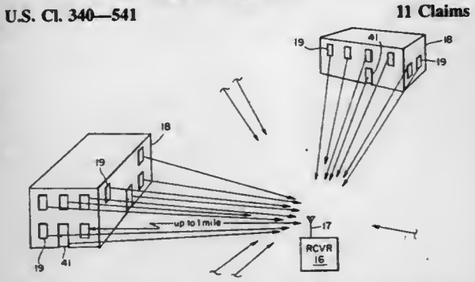
1. An alarm collection apparatus for use in an exchange system, comprising:
a central maintenance office;
a toll switch;
a plurality of local offices, including an enhanced local office and a conventional local office, connected to said central maintenance office through said toll switch, said enhanced local office and said conventional local office providing alarms;
an alarm link connecting the alarms in said enhanced local office and said conventional local office to the central maintenance office;
an alarm collection shelf provided in said central maintenance office to collect alarm information received through said alarm link from said enhanced local office and said conventional local office and to convert alarm information from said enhanced local office and said conventional local office to alarm information having same format to accommodate the plurality of local offices providing differently formatted alarm information; and
means, connected to said alarm collection shelf, for performing an initial setting of said alarm collection shelf, and for performing editing and display of the collected alarm information.

5,572,190

BATTERYLESS SENSOR USED IN SECURITY APPLICATIONS

Gerald F. Ross, Longboat Key, Fla.; Richard M. Mara, Shaplelgh, Me., and Kenneth W. Robbins, North Reading, Mass., assignors to Anro Engineering, Inc., Lexington, Mass.

Filed Mar. 22, 1995, Ser. No. 408,642
Int. Cl.[6] G08B 13/00
U.S. Cl. 340—541 11 Claims



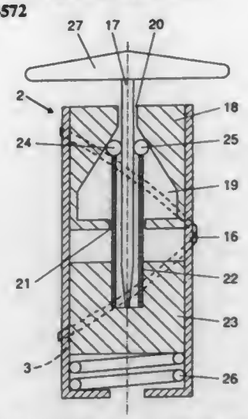
1. A system of batteryless sensors for detecting door openings by an intruder, each of said batteryless sensors comprises:
a door knob having a first section and a second section for opening and closing said door;
generator means having a casing and permanent magnet pole pieces coupled to said casing, said generator means further having a gear train and an armature coupled to a shaft, said casing being press fit into an opening in said first section, said first section, said second section and said shaft having a common axis;
means for fastening said axial shaft to said door so that any rotation of said first and said second sections results in a relative rotation of said pole pieces with said armature thereby generating a voltage;
electronic means coupled to said generator means and responsive to said voltage for generating a coded RF signal identifying said sensor, said electronic means further having means for coupling said coded RF signal to said door knob for radiating said coded RF signal; and
receiver means for receiving said coded RF signal radiated from said door knob for signaling that said intrusion occurred and identifying a site of said intrusion.

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5,572,191
ARTICLE SECURITY ELEMENT

Peter Lundberg, Stockholm, Sweden, assignor to Esselte Meto International GmbH, Heppenheim, Germany

Filed Mar. 17, 1994, Ser. No. 214,826
Claims priority, application Germany, Mar. 19, 1993, 43 08 750
Int. Cl.[6] G08B *13/14*
U.S. Cl. 340—572 **20 Claims**



1. An anti-theft device for use in a magnetic surveillance system for protecting an article from being stolen, the surveillance system including a transmitter for emitting magnetic energy along a detection axis and a receiver for detecting the energy, said anti-theft device comprising:

a base body, said base body having a longitudinal axis;

said base body comprising a non-magnetic material;

a perimeter surface disposed outward of and at least partially surrounding said longitudinal axis of said base body;

at least one strip of soft magnetic material disposed on said perimeter surface of said base body;

said at least one strip of soft magnetic material being disposed in a spiral on said perimeter surface transverse to said longitudinal axis at an angle of pitch of between about 30° and about 60° with respect to said longitudinal axis; and

means for permitting fastening of said anti-theft device to the article to protect the article from being stolen.

5,572,192
PERSONAL SECURITY SYSTEM WITH GUARD TOUR FEATURES

James E. Berube, Farmington, N.Y., assignor to Detection Systems, Inc., Fairport, N.Y.

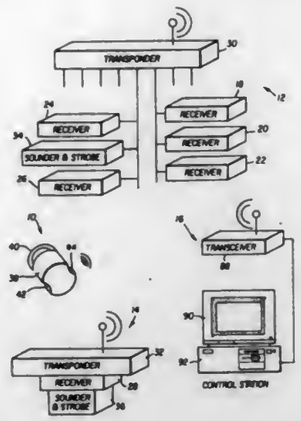
Filed Mar. 17, 1994, Ser. No. 214,276
Int. Cl.[6] G08B *13/00*
U.S. Cl. 340—574 **4 Claims**

1. A personal security system comprising:

a plurality of hand-portable devices for transmitting radio frequency signals, said signals including a code identifying first and second sets of said hand-portable devices, respectively;

a plurality of fixed devices for receiving said radio frequency signals, said fixed devices 1) decoding said signals to identify said first and second sets, respectively, and 2) registering the strengths of the received signals; and,

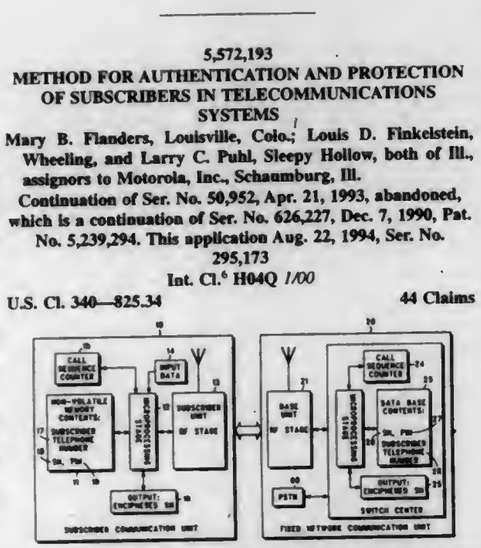
means using only a strongest of the received signals for locating a respective hand-portable device in said first set and using the received signals at a plurality of said fixed devices for locating a respective hand-portable device in said second set.



5,572,193
METHOD FOR AUTHENTICATION AND PROTECTION OF SUBSCRIBERS IN TELECOMMUNICATIONS SYSTEMS

Mary B. Flanders, Louisville, Colo.; Louis D. Finkelstein, Wheeling, and Larry C. Puhl, Sleepy Hollow, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 50,952, Apr. 21, 1993, abandoned, which is a continuation of Ser. No. 626,227, Dec. 7, 1990, Pat. No. 5,239,294. This application Aug. 22, 1994, Ser. No. 295,173
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.34 **44 Claims**



1. A communication unit which authenticates communications with a subscriber unit of a communication system, comprising:

(a) receiver means for receiving an authentication message;

(b) memory means for maintaining a non-arbitrary value which is a count of occurrences of a communication event; and

(c) processor means for determining, through the use of the received authentication message and the maintained non-arbitrary value, whether a received service request is authentic.

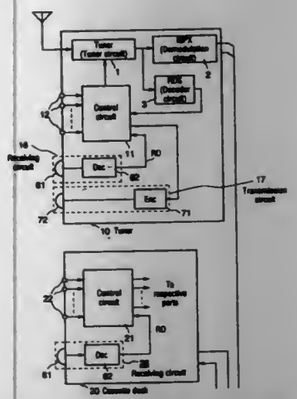
5,572,194
BROADCAST RECEIVER AND SIGNAL REPRODUCTION APPARATUS CONTROLLED USING RDS DATA

Shinichi Shiota, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 2, 1994, Ser. No. 300,328
Claims priority, application Japan, Sep. 10, 1993, 5-249768
Int. Cl.[6] H04B *1/16;* **H04Q** *5/14*
U.S. Cl. 340—825.25 **11 Claims**

1. A signal reproduction apparatus comprising:

an audio device;



a receiver for receiving a transmission signal which includes a primary signal, and data relating to a broadcasting station and a program transmitted together with the primary signal, said receiver comprising:

a tuner circuit for receiving and demodulating the transmission signal;

a decoder circuit for extracting the data relating to the broadcasting station and the program from the transmission signal received by the tuner circuit;

a signal generation device for generating a remote control signal based on the data output from the decoder circuit, and outputting the generated remote control signal; and

an input section to be used for setting an operation state of the audio device; and

a control circuit for comparing a preset condition set through the input section with the data output from the decoder circuit and for supplying a control signal to the signal generation device when the data output from the decoder circuit coincides with the preset condition; and

the audio device including a receiving section for receiving the remote control signal output from the signal generation device, and for controlling an operation of the audio device based on the remote control signal;

wherein the signal generation device generates a remote control signal based on the supplied control signal, and supplies the generated remote control signal to the audio device; and

wherein when receiving, from the decoder circuit, data representing a prescribed broadcast with the audio device in a power-off state, the control circuit causes the signal generation device to output a remote control signal for turning on a power of the audio device.

5,572,195
SENSORY AND CONTROL SYSTEM FOR LOCAL AREA NETWORKS

Alan C. Heller, San Antonio, Tex.; Steven Springmeyer, Bellevue, Wash., and Christopher W. Fox, Englewood, Colo., assignors to Precision Tracking FM, Inc., Dallas, Tex.

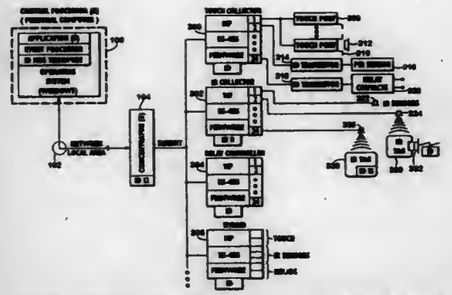
Filed Aug. 1, 1994, Ser. No. 283,832
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.35 **19 Claims**

1. An object location and tracking system for tracking infrared transmitters that transmit identifying codes, comprising:

a computer network for passing messages;

a computer connected to said network, said computer including means for sending and receiving messages over said computer network in a variable-based protocol that implements object identifier variables;

a plurality of infrared sensors for receiving transmitted identifying codes from the infrared transmitters, said plurality of infrared sensors providing signals containing the transmitted identifying codes; and

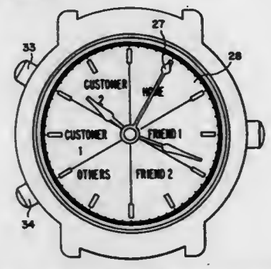


interface circuitry coupling said plurality of infrared sensors to said computer network, said interface circuitry including means for providing to said computer network object identifier variables in the variable-based protocol corresponding to the transmitted identifying codes received from said signals from said plurality of infrared sensors.

5,572,196
ELECTRONIC ANALOG WATCH WITH PAGER

Kazumi Sakumoto, and Fugio Ozawa, both of 31-1, Kameido 6-chome, Koto-ku, Tokyo, Japan

Filed Jun. 23, 1993, Ser. No. 83,014
Claims priority, application Japan, May 10, 1993, 5-108432
Int. Cl.[6] G08B *5/22;* **G04B** *47/00*
U.S. Cl. 340—825.44 **25 Claims**



10. A timepiece provided with a pager, comprising: time measuring means for measuring time and producing an output signal in accordance therewith; pager means including receiving means for receiving high frequency paging signals, and demodulating means for demodulating the high frequency paging signals and producing a demodulated output signal; selecting means for selecting for display an output signal from one of the time measuring means and the paging means; means for converting the selected output signal into a driving signal for driving an analog display; received information storing means for storing received paging signals; call number storing means for storing a plurality of previously given call numbers; and analog display means, including a display hand, receptive of the driving signal for displaying the selected information, the analog display means further including display hand drive pattern storing means for storing predetermined display hand drive pattern data and for outputting a respective display hand drive pattern in accordance with an output signal of the received information storing means and an output signal of the call number comparing means.

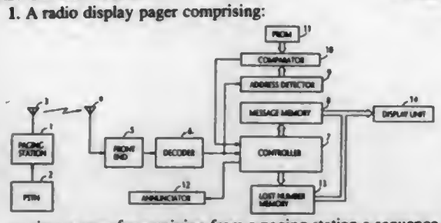
5,572,197

LOST CALL DETECTION DISPLAY PAGER WITH REPEAT CALL DISCRIMINATION CAPABILITY

Mariko Matsumoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 26, 1994, Ser. No. 233,521
Claims priority, application Japan, Apr. 26, 1993, 5-099668
Int. Cl.[6] H04Q *7/00*
U.S. Cl. 340—825.44 **9 Claims**

1. A radio display pager comprising:



receiver means for receiving from a paging station a sequence of repeat calls and non-repeat calls addressed to the radio pager, each of said repeat and non-repeat calls containing a message and a message number identifying the message, the message numbers of repeat calls containing identical messages being equal to each other;

first memory means for storing the message numbers of calls received by the receiver means;

second memory means;

mismatch detector means for comparing a call currently received by the receiver means with each of the calls previously stored in the first memory means for detecting a mismatch therebetween;

lost call detector means responsive to the detection of a mismatch by the mismatch detector means for detecting the message number of a lost call which may exist between a call currently received by the receiver means and a call stored last in the first memory means storing the detected message number into the second memory means as a lost message number, and removing from the second memory means the lost message number when a call having the same message number is received by the receiver means; and

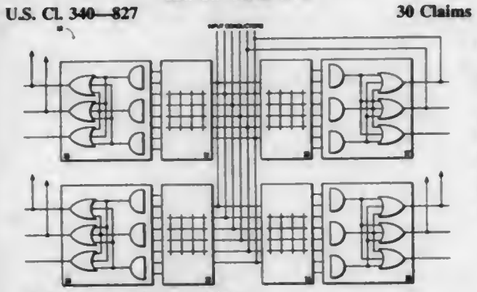
display means for displaying the message number which remains in said second memory means.

5,572,198

METHOD AND APPARATUS FOR ROUTING IN REDUCED SWITCH MATRICES TO PROVIDE ONE HUNDRED PERCENT COVERAGE

Jay Sturges, Orangevale, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jul. 25, 1994, Ser. No. 279,954
Int. Cl.[6] H04B *3/38*
U.S. Cl. 340—827 **30 Claims**



1. A switch matrix comprising:

a plurality of reduced switch matrices, each of the reduced switch matrices comprising:

a plurality of rows of input conductors,

a plurality of columns of output conductors logically intersecting the rows of input conductors, and

a plurality of switching devices each arranged to connect one of the input conductors to one of the output conductors at an intersection, the plurality of switching devices forming a pattern of logical interconnections of input conductors and output conductors, the pattern being a fraction of a total of logical intersections;

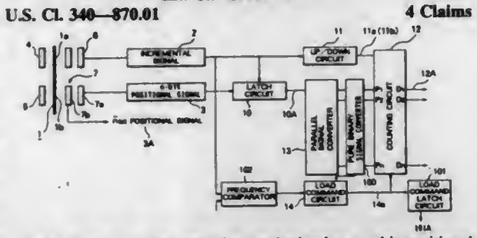
wherein the pattern of logical interconnections in a first one of the reduced switch matrices being continued in additional ones of the reduced switch matrices until complete coverage of all possible combinations of input conductors is obtained on the output conductors.

5,572,199

ABSOLUTE SIGNAL DETECTING METHOD AND ABSOLUTE ENCODER

Shigeo Seki, Iida, Japan, assignor to Tamagawa Seiki Kabushiki Kaisha, Nagano, Japan

Filed Dec. 16, 1994, Ser. No. 357,446
Claims priority, application Japan, Mar. 29, 1994, 6-059282
Int. Cl.[6] G08C *19/16*
U.S. Cl. 340—870.01 **4 Claims**



1. An absolute signal detecting method using a n-bit positional signal formed on one track of a code plate and an incremental signal corresponding to said n-bit positional signal, said absolute signal detecting method comprising the steps of performing a load into a counting circuit after reading said n-bit positional signal at power ON; detecting an input axis position through performing count up/down of said counting circuit with said incremental signal, whereby a load command circuit for said n-bit positional signal detects the frequency of said incremental signal, and does not issue a load command to said counting circuit when the rotation speed is over a predetermined value.

5,572,200

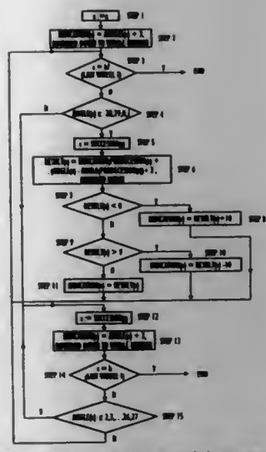
MULTIDIGIT MULTIPLE COUNTING WHEEL READOUT FOR VOLUME-MEASURING INSTRUMENT OR ELECTRICITY METER

Roland Mettler, Kriens, Switzerland, assignor to GWF Gas-& Wassermesserfabrik AG, Luzern, Switzerland

Filed Dec. 5, 1994, Ser. No. 341,226
Claims priority, application Switzerland, Dec. 23, 1993, 03853/93
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—870.02 **4 Claims**

1. A method for reading a read-out of a multidigit, multiple counting wheel mechanism for a volume-measuring instrument including gas, water and electricity meters, each multidigit counting wheel, displaying digits from **0** through **9** on its peripheral edge, arranged in parallel and rotating about a common axis, the digits to be read-out being displayed through a window in the meter, said method comprising:

A. dividing the displayed digits to be read out into rotating wheel packets and stationary wheel packets, wherein the rotating wheel packet includes one of a least significant digit counting wheel; the least significant digit counting wheel and adjacent counting wheels when each displays the digit **9** and the next highest digit counting wheel not displaying the digit **9**; and an instance of one or more counting wheels displaying the digit **9** and the next highest digit counting wheel not displaying the digit **9**, such that a one-tenth revolution rotation of a lowest digit counting wheel within the rotating wheel



packet will advance each of a remaining counting wheels of the rotating wheel packet one digit, and

wherein the stationary wheel packet includes a group of at least one counting wheel, each counting wheel in the group not displaying the digit **9** and not positioned as the next higher digit counting wheel adjacent a counting wheel displaying the digit **9**,

B. determining an instantaneous angle of rotation of the least significant digit counting wheel with respect to 0°;

C. ascertaining instantaneous displayed digits of a first rotating wheel packet, which includes at least the least significant digit counting wheel, the displayed digit of the least significant digit counting wheel ascertained in accordance with the determined instantaneous angle of rotation of the least significant digit counting wheel,

wherein, if the rotating packet includes additional counting wheels, said method further comprising:

D. determining the angle of rotation, with respect to 0°, of the next higher digit counting wheel, the indication of the displayed digit of the next higher counting wheel digit ascertained in accordance with a difference between the determined instantaneous angle of rotation of the next higher digit counting wheel and the determined angle of rotation of an adjacent lower digit counting wheel, and repeating step D until each displayed digit within the rotating packet has been ascertained;

E. determining whether the displayed digit of a most significant digit counting wheel has been ascertained,

wherein if the displayed digit of the most significant digit counting wheel has been ascertained, ending said method,

wherein if the displayed digit of the most significant digit counting wheel has not been ascertained, the method further comprises:

F. determining an instantaneous angle of rotation for the lowest digit counting wheel of one of a first or a next stationary packet with respect to 0°;

G. ascertaining instantaneous displayed digits of a first stationary packet, which includes at least the lowest digit counting wheel of the first stationary packet, the displayed digit of the lowest digit counting wheel ascertained in accordance with the determined instantaneous angle of rotation of the lowest digit counting wheel,

wherein, if the stationary packet includes additional counting wheels, said method further comprising:

H. determining an instantaneous angle of rotation, with respect to 0°, of the next higher digit counting wheel, and determining the displayed digit of the next higher digit counting wheel in accordance with the determined instantaneous angle of rotation of the next higher digit counting wheel, and repeating step H until each displayed digit within the stationary packet has been ascertained;

I. determining whether the displayed digit of the most significant digit counting wheel has been ascertained,

wherein if the displayed digit of the most significant digit counting wheel has been ascertained, ending said method,

wherein if the displayed digit of the most significant digit counting wheel has not been ascertained, the method further comprises:

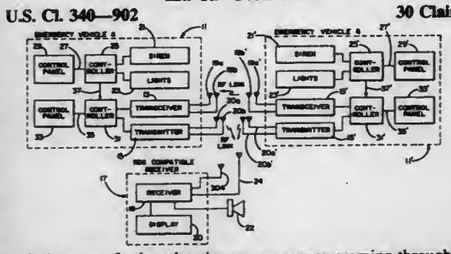
J. returning to step D and continuing the method until the displayed digit of the most significant digit counting wheel has been ascertained.

5,572,201

ALERTING DEVICE AND SYSTEM FOR ABNORMAL SITUATIONS

Paul D. Graham, LaGrange Park; Gregory A. Sink, Homewood, and Jerry L. Williams, Tinley Park, all of Ill., assignors to Federal Signal Corporation, Oak Brook, Ill.

Filed Aug. 5, 1994, Ser. No. 286,624
Int. Cl.[6] G08G *1/00*
U.S. Cl. 340—902 **30 Claims**



1. A system for broadcasting an emergency warning throughout an area about a site, the system comprising: a source at the site of an audible or visual warning signal detectable by at least one of the human senses; a transmitter at the site for broadcasting an electromagnetic warning signal within a tunable bandwidth of a standard radio receiver for receiving commercial broadcasts, with at least part of the electromagnetic warning signal encoded in an RDS compatible format; a power amplifier within the transmitter whose power rating provides an effective range of the electromagnetic warning signal that complements an effective range of the audible or visual signal and is approximately coextensive therewith; and, means for detecting the electromagnetic warning signal within is effective range and in response thereto tuning the receiver to a carrier frequency of the electromagnetic warning signal.

5,572,202

TRAFFIC SIGNALLING SYSTEM

Kenneth E. Regel, 422 E. 1st. St., Kimberly, Wis. 54136, and Kenneth G. Vandeyacht, 206 Edwards St., Combined Locks, Wis. 54113

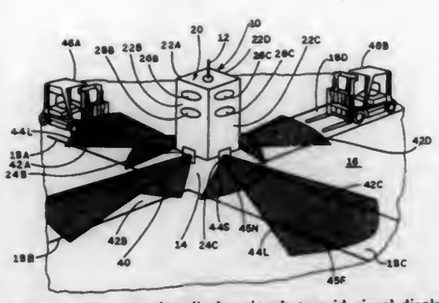
Filed Apr. 3, 1995, Ser. No. 415,297
Int. Cl.[6] G08G *1/07*
U.S. Cl. 340—917 **36 Claims**

1. A traffic signalling system, for detecting targets contained in any of at least two approach paths in a signal zone, and for providing signals responsive to the targets detected, said traffic signalling system comprising:

(a) a presence detector effective to receive a minimum threshold stimulus, at one or more frequencies outside the human visible spectrum and outside the human audible spectrum, from each target, including each vehicle and each human, entering the signal zone in any one of the at least two approach paths, and to generate output signals responsive to the stimuli so received;

(b) visual display apparatus for directing visual displays toward each of the at least two approach paths; and

(c) electrical processing circuitry for receiving and processing output signals from said presence detector, and for delivering

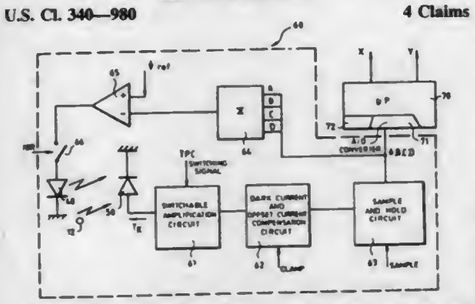


corresponding warning display signals to said visual display apparatus, directing visual warning displays, representing the presence of the respective target, toward each of the at least two approach paths outside the approach path occupied by the respective target.

5,572,203
DEVICE FOR CONTROLLING THE POSITION OF AN IMAGE IN A HEAD-UP DISPLAY

Michel Golia, La Brede, and Jean-Michel Francois, Talence, both of France, assignors to Sextant Avionique, Meudon La Foret, France

Continuation of Ser. No. 160,846, Dec. 3, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 480,734
Claims priority, application France, Dec. 8, 1992, 92 14767
Int. Cl.[6] G01C *21/00*
U.S. Cl. 340—980 **4 Claims**



1. A device for verifying and correcting the position of a symbolic image, for use in head-up display systems which incorporate means for generating a symbolic image, said device comprising:

means for generating a luminous spot at a known position on a geometric surface on which said symbolic image is formed, said luminous spot emitting a light beam;

a first collimating optical unit for collimating said symbolic image onto a combiner and said light beam onto a mirror fixed to a structure of said combiner;

a first optical focusing system for focusing said light beam which is reflected from said mirror;

a first position sensor having a light sensitive surface which receives said light beam focused by said first optical focusing system and generates a signal in accordance with a position of said light beam;

first means for processing signals output from said first position sensor to thereby correct a position of said symbolic image;

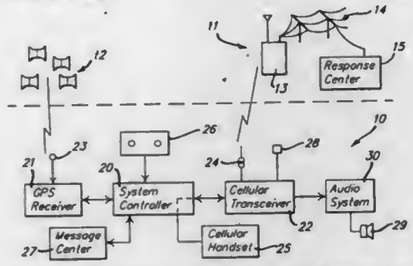
a second position sensor having a light-sensitive surface divided into a number of elements each of which emits a signal which varies in accordance with variations of an incident light beam; and

second means for processing signals output by said second position sensor to thereby correct a position of said symbolic image, wherein said second collimating optical unit collimates an image of said light source onto said combiner, and said second optical focusing system focuses light emitted by said light source and reflected by said combiner onto said second position sensor.

5,572,204
VEHICULAR EMERGENCY MESSAGE SYSTEM

Mark J. Timm, Northville, and Walter A. Dorfstatter, Farmington, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 10, 1995, Ser. No. 419,349
Int. Cl.[6] G08G *1/123*
U.S. Cl. 340—988 **7 Claims**



1. A vehicular emergency message system in a mobile vehicle for communicating with a response center, comprising:

a position locator receiving reference broadcast signals and determining a position of said vehicle;

a cellular transceiver having an audio signal input, an audio signal output, and a control input;

a controller coupled to said position locator and said cellular transceiver for causing said cellular transceiver to communicate with said response center in a predetermined manner, wherein said controller operates in a wait mode, an activation mode, and a communication mode, said controller including a tone detector for detecting tone signals from said response center; and

an activation unit coupled to said controller responsive to a manual activation to send an activating signal to said controller to place said controller in said activation mode;

wherein said activation mode is comprised of 1) obtaining control of said cellular transceiver through said control input in order to establish a communication channel between said cellular transceiver and said response center, 2) initiating a first call to said response center including an initial transmission of audio signals responsive to a data output of said controller for specifying a unique identifier code of said vehicle while said audio output is muted, 3) detecting a failure of said first call in response to whether said tone signals are detected or not detected during said first call, and 4) initiating a second call to said response center if said first call fails, said second call being comprised of an initial transmission and reception of voice responsive to said audio input and said audio output without muting.

5,572,205
TOUCH CONTROL SYSTEM

David W. Caldwell, and Nicholas W. Medendorp, both of Holland, Mich., assignors to Donnelly Technology, Inc., Holland, Mich.

Filed Mar. 29, 1993, Ser. No. 40,188
Int. Cl.[6] H03K *17/955*
U.S. Cl. 341—33 **60 Claims**

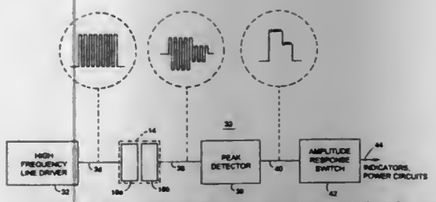
1. A moisture immune touch control that is responsive to a user input selection comprising:

an electrically non-conducting substrate that is subject to contact with moisture;

a capacitance-responsive touch pad on said substrate;

a signal generator that is adapted to generate a high frequency electrical signal having a primary frequency of at least 150 kHz and to apply said high frequency electrical signal to one portion of said touch pad, wherein said touch pad couples said high frequency electrical signal to another portion of said touch pad in order to develop a detection signal and responds to the presence of capacitance of a user in order to selectively attenuate said detection signal, wherein said detection signal is substantially immune to the presence of moisture on said substrate; and

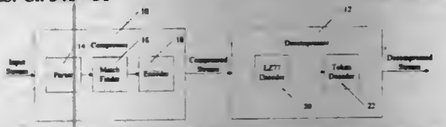
a decoding circuit that responds to said detection signal in order to determine the presence of said capacitance of a user.



5,572,206
DATA COMPRESSION METHOD AND SYSTEM

John W. Miller, Kirkland, and Ben W. Slivka, Clyde Hill, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jul. 6, 1994, Ser. No. 271,125
Int. Cl.[6] H03M *7/30*
U.S. Cl. 341—51 **35 Claims**



1. A computer-implemented data compression method of compressing an input stream of bytes, each byte having a position, comprising:

assigning a token type to each byte of the input stream, the token type assigned to each byte being selected from plural token types;

searching for a matching sequence of already processed bytes that matches a current sequence of bytes;

determining that a selected byte of the current sequence and a corresponding byte of the matching sequence have the same token type;

determining a match length indicating the number of bytes in the matching sequence;

determining a token offset indicating the number of already processed bytes of the same token type positioned between the current sequence and the matching sequence; and

appending to an encoded data stream a match code indicating the token offset and the match length.

5,572,207
METHOD AND APPARATUS FOR NUMERIC-TO-STRING CONVERSION

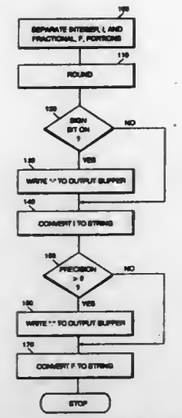
Stephen S. Harding; Jody L. Mace, both of Charlotte, and Edward R. Swiatek, Concord, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 23, 1994, Ser. No. 311,699
Int. Cl.[6] H03M *7/00*
U.S. Cl. 341—62 **8 Claims**

1. Method for converting a numeric representation of a number stored in a memory into a string representation of the number, said numeric representation including a 2N-bit wide integer portion, having base, B, and a fractional portion, comprising the steps of:

(a) separating the integer portion of the numeric representation from the fractional portion of the numeric representation;

(b) rounding the numeric representation of the number to a specified amount of precision;



(c) outputting a string sign symbol which indicates that the number is negative if the numeric representation of the number indicates that the number is negative;

(d) successively dividing the integer portion by an N-bit wide divisor, D, where D=B, to produce at least one digit, I_i, where i=0 to number of integer digits, and each I_i is the corresponding remainder of each successive division;

(e) for each digit, I_i,

(1) converting the digit, I_i, to a representative string symbol, S_i; and

(2) outputting the string symbol, S_i;

(f) outputting a string separator symbol which separates the integer portion of the string representation from the fractional portion of the string representation if the specified amount of precision is greater than zero; and

(g) for each digit comprising the fractional portion of the numeric representation, F_j, where j=0 to number of fractional portion digits,

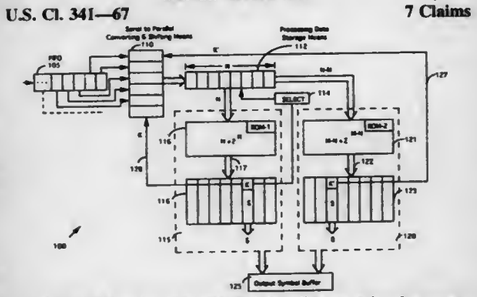
(1) converting the digit, F_j, to a representative string symbol, S_j; and

(2) outputting the string symbol, S_j.

5,572,208
APPARATUS AND METHOD FOR MULTI-LAYERED DECODING OF VARIABLE LENGTH CODES

Druong-Yow Wu, Hsin chu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jul. 29, 1994, Ser. No. 282,617
Int. Cl.[6] H03M *7/40*
U.S. Cl. 341—67 **7 Claims**



1. An apparatus for receiving and decoding an ordered sequence of serial binary bit-stream containing a plurality of variable length codewords with a maximum codeword length of M, said decoding apparatus comprising:

a serial to parallel converting and shifting means having a first-in-first-out (FIFO) buffer for receiving said serial bit stream, said serial to parallel converting and shifting means

further includes a plurality of parallel latches for receiving a shift-count for shifting and converting said shift-count number of bits from said serial bit stream to a parallel data record of M bits;

a dictionary means including at least two read-only-memory (ROM) decoders represented by D(i), where i representing a positive integer and $1 \geq i \geq 1$ where $2 \leq 1 \leq M$, each of said D(i) including a ROM(i) for listing a plurality of standard codewords (CWs) and a bit length of each codeword BL(CW) wherein each of said ROM(i) having a bit-length of L(i) which being less than said M, each of said ROM-decoders D(i) further includes a L(i)-to-$2^{L(i)}$ processing means P(i) for receiving a partial bit-stream BS(i) having a bit-length of L(i) from said parallel latches, said processing means P(i) further comparing said partial bit-stream BS(i) with each of said codewords (CWs) stored in said ROM(i) to find a match;

each of said ROM-decoders D(i) further includes an index means for generating a ROM-index ROM-j when a match between said partial bit stream BS(i) and a codeword (CW-j) stored in said ROM(i) is found;

an output port for outputting said codeword CW-j and a bit length BL(CW-j) of said codeword CW-j; and

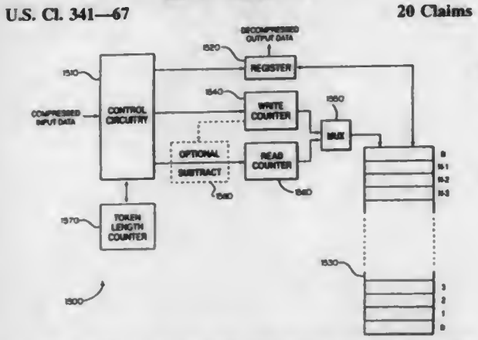
a barrel shifter connected to said FIFO buffer and parallel latches for receiving said bit-length BL(CW-j) and for shifting said binary serial bit stream for decoding.

5,572,209

METHOD AND APPARATUS FOR COMPRESSING AND DECOMPRESSING DATA

Henry R. Farmer, Colchester, and Anne A. Wilson, Waterbury, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 16, 1994, Ser. No. 291,694
Int. Cl.[6] H03M 7/30
U.S. Cl. 341—67 **20 Claims**



1. An apparatus for processing compressed, variable length data items in a data compression system, said apparatus comprising:

code storing means for storing variable length code items, each code item representing a corresponding variable length data item and comprising a corresponding number of code bits which are within one of a predetermined number of possible variable length code cases;

means for decoding said stored code bits and outputting a signal identifying a length case within one of said possible variable length code cases;

means for concurrently generating the sums of the number of code bits in each of said variable length code bit cases and a starting address of a first code item in order to generate a plurality of possible starting addresses for a second code item; and

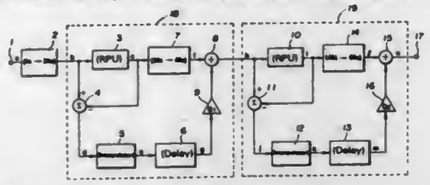
means for selecting one of said plurality of possible starting addresses for said second code item on the basis of the signal output by said decoding means.

5,572,210

DIGITAL SIGNAL PROCESSING APPARATUS

Takashi Toyoda, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 25, 1994, Ser. No. 218,382
Claims priority, application Japan, Mar. 26, 1993, 5-068351
Int. Cl.[6] H03M 1/66
U.S. Cl. 341—144 **12 Claims**



1. A method for processing a digital signal comprising the steps of:

rounding a filter output signal of a first digital filter to (m) bits from an (n) bit input signal, where (n) bits is longer that (m) bits, thereby providing a mixed signal having a rounding error;

supplying said mixed signal with said rounding error to a second digital filter having (m) bits for an allowed input word length;

generating a rounding error signal opposite in phase to said mixed signal by subtracting said mixed signal with said rounding error from said (n) bits input signal;

compensating amplitude and phase of said rounding error signal in accordance with a process performed by said second digital filter; and

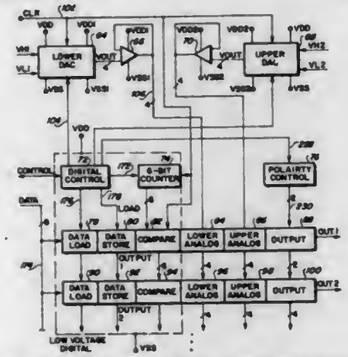
adding said compensated signal and a filter output signal of said second digital filter so as to generate an output signal.

5,572,211

INTEGRATED CIRCUIT FOR DRIVING LIQUID CRYSTAL DISPLAY USING MULTI-LEVEL D/A CONVERTER

Richard A. Erhart, Chandler, and Thomas W. Ciccone, Paradise Valley, both of Ariz., assignors to Vivid Semiconductor, Inc., Chandler, Ariz.

Filed Jan. 18, 1994, Ser. No. 183,474
Int. Cl.[6] G09G 1/16;3/00
U.S. Cl. 341—144 **36 Claims**



1. A monolithic digital-to-analog converter integrated circuit for converting a digital input signal to an analog output signal, the digital input signal including a plurality N of digital input bits, one of said digital input bits corresponding to a least significant bit, said circuit comprising in combination:

a. counting means having an input terminal for receiving a clocking signal, the clocking signal undergoing periodic transitions, said counting means having a plurality of output terminals for providing a counter output, said counting means being responsive to the clocking signal for sequencing the counter output through a series of unique output patterns;

b. an analog voltage generator having an input terminal for receiving the clocking signal, said analog voltage generator including a plurality of analog output terminals providing a corresponding plurality of different analog output voltages, said analog voltage generator being responsive to the clocking signal for changing the plurality of analog output voltages in a monotonic fashion in response to periodic transitions of the clocking signal;

c. comparison means having a first set of input terminals for receiving a first subset of the plurality N of digital input bits, the first subset excluding at least the least significant bit of the digital input signal, the first subset including M bits where M is smaller than N, said comparison means being coupled to said counting means and being responsive to the counter output, said comparison means generating a correlation signal indicating a correlation between the first subset of the digital input bits received at the first set of input terminals and the counter output; and

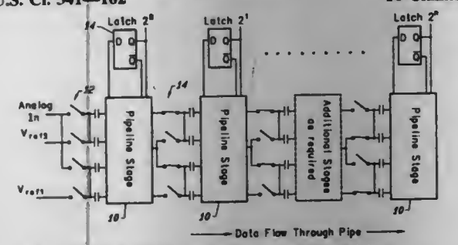
d. selection means having an analog output port for providing an analog output signal corresponding to the digital input signal, said selection means being coupled to the analog output terminals of said analog voltage generator for receiving the plurality of analog output voltages, said selection means also being coupled to said comparison means for receiving said correlation signal, said selection means receiving a second subset of the plurality N of digital input bits, the second subset excluding the first subset of such digital input bits of the digital input signal, said selection means being responsive to said correlation signal for selecting one of the plurality of analog output voltages to said analog output port as the analog output signal in accordance with the second subset of the digital input bits.

5,572,212

PIPELINED ANALOG TO DIGITAL CONVERTER

Roger A. Levinson, and Sang T. Ngo, both of Sunnyvale, Calif., assignors to Exar Corporation, San Jose, Calif.

Filed Mar. 31, 1995, Ser. No. 414,997
Int. Cl.[6] H03M 1/44
U.S. Cl. 341—162 **10 Claims**



1. A pipelined analog to digital converter comprising

a plurality of pipelined analog comparator stages including a first stage,

means for providing to said first stage an analog input signal (Ain), a first reference voltage (Vref1), and a second reference voltage (Vref2),

said first stage having a first amplifier for providing an amplified comparison of said analog input signal and said first reference voltage ((Vref1−Ain) G), a second amplifier for providing an amplified comparison of said analog input signal and said second reference voltage, a middle reference generation circuit and amplifier for providing an amplified comparison of said analog input signal and an average of said first reference voltage and said second reference voltage

$$\left(\left[\frac{Vref2 + Vref1}{2} - Ain\right] G\right)$$

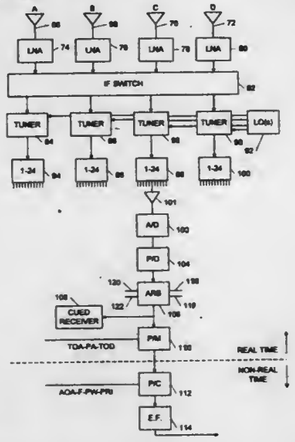
and latch means for storing a digital bit indicative of the amplified comparison of said analog input signal and said average, and multiplex means for transferring outputs of said amplifiers to a second stage.

5,572,213

PARAMETER ENCODER ARCHITECTURE

Mark E. Noneman, Ramona; Donald A. Porter, and Donald L. Lochhead, both of San Diego, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 154,909, Nov. 19, 1993, abandoned. This application May 9, 1995, Ser. No. 438,232
Int. Cl.[6] G01S 7/292
U.S. Cl. 342—13 **28 Claims**



1. A channelized receiver comprising:

at least two front-end means each front-end means having an input and an output, said inputs for connection to antenna means,

IF switch means having at least two inputs and two outputs, said inputs for connection to the outputs of said front-end means,

at least two tuners, each tuner having an input and an output, the input of said tuner means connected to the outputs of said IF switch means, at least two channelized means, each channelized means having an input and multiple outputs, said inputs of said channelized means are individually connected to the outputs of said tuner means, said channelized means for dividing the frequency spectrum output from said tuner means into individual channels, the outputs of said channelized means being connected to a logarithmic amplifier means having an input and an output, the output of said logarithmic amplifier means connected to an A/D converter for converting the output of said logarithmic amplifier means to a digital signal,

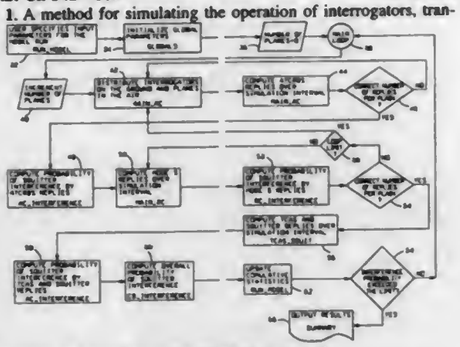
pulse detection means connected to said A/D converter for digitally detecting when pulses are present in said individual channels,

frequency and sector arbitration means connected to said pulse detector means for identifying at least one pulse signal in a first individual channel and for eliminating a spurious signal caused by at least one of frequency and spatial noise in a second individual channel, said frequency and sector arbitration means and said pulse detection means operating to digitally identify said at least one pulse signal and to eliminate said spurious signal in real time.

5,572,214
APPARATUS AND METHOD FOR FREQUENCY SPACE MODELING

Emanuel I. Ringel, Fort Washington, Pa., assignor to Unisys Corporation, Blue Bell, Pa.

Filed May 4, 1995, Ser. No. 433,650
Int. Cl.[6] G01S *13/91*
U.S. Cl. 342—169 **4 Claims**



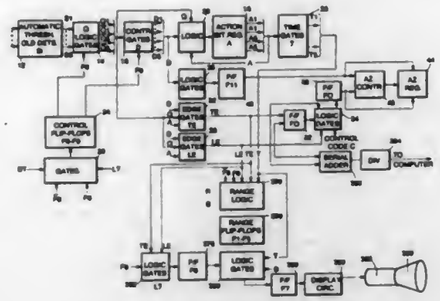
1. A method for simulating the operation of interrogators, transponders and receivers, comprising the steps of:
(a) specifying the number of reply signal(s) per transponder;
(b) setting the number of transponders to zero;
(c) incrementing the number of transponders by a fixed amount;
(d) defining the positions of the interrogators and the transponders;
(e) determining the number of transponder replies over a predetermined interval;
(f) determining whether the correct number of reply signals per interrogator has been found in step (e);
(g) using a sliding window for determining probability in the following steps;
(h) determining the probability of interference between one type of transponder reply signal and a regularly repeated transponder signal;
(i) determining the number of a second type of transponder reply signal over the predetermined interval;
(j) determining the probability of interference between the second type of transponder reply signal and the regularly repeated signal; and
(k) from the results of steps (h) and (j) determining the overall probability of interference with the regularly repeated signal.

5,572,215
DIGITAL DATA PROCESSOR

Norol T. Evans, San Pedro, and Duane R. Ritchie, La Mirada, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 13, 1967, Ser. No. 634,024
Int. Cl.[6] G01S *7/34*
U.S. Cl. 342—195 **27 Claims**

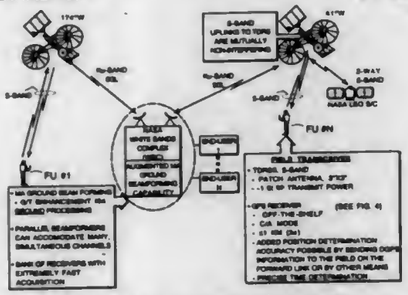
1. A digital data processor including a display means for displaying the data processed comprising:
a plurality of analog threshold detectors, each detector of said plurality having an output circuit and an input circuit;
a converter, said converter having an input circuit coupled to each output circuit of each detector of said plurality, said converter having an output circuit;
a counter, said counter having an input circuit coupled to the output circuit of said converter and an output circuit;
a storage register, said register having an input circuit coupled to the output circuit of said counter, and an output circuit;
a display device, said display device having an input circuit; and
display logic, having an output circuit said display logic having its output circuit coupled to the input circuit of said display device, said display logic having an input circuit coupled to the output circuit of said storage register.



5,572,216
SYSTEM FOR INCREASING THE UTILITY OF SATELLITE COMMUNICATION SYSTEMS

Aaron Weinberg, Potomac, Md., and Kenneth Cunningham, Sterling, Va., assignors to Stanford Telecommunications, Inc., Reston, Va.

Filed Nov. 19, 1993, Ser. No. 154,410
Int. Cl.[6] G01S *5/02*
U.S. Cl. 342—357 **6 Claims**

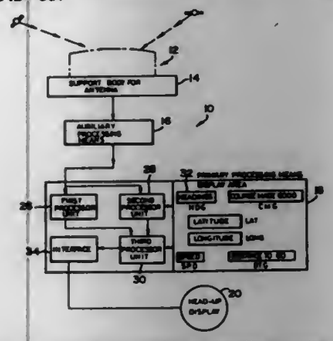


1. In a tracing and data relay satellite system (TDRSS) having a satellite communication system that derives satellite receiver directionality through phase-coherent combination of multiple signals at a ground terminal, and wherein the signals are derived from an array of broad-coverage antenna elements on one or more earth orbiting satellites having a composite downlink signal, the improvement for providing additional communication, sensor, surveillance radio ink services comprising,
a plurality of ground-based beam forming elements, each having antennae and receiver for said satellite's composite down-link signal, the output from each element being directed to one or more data receptors selected from one of human operator, recorder, alarming device, signal distributing circuit,
control circuit means enabling each ground based beam forming element to alter the width of its angular coverage and scan the beam thus formed and to track the direction from which a signal is received,
one or more low-power ground based transmitters operating with low transmitted power, each such transmitter located within view of said satellite's broad-coverage antenna elements,
said transmitters transmitting radio signals using pulse code modulation whose code sequences are uncorrelated with those used by said satellite sensor or communication system in its normal functions, thereby enabling said low-power ground-based transmitters to communicate via a suitably satellite to a satellite ground station, for reporting, alarming, or other functions, without alternation to said satellites or pre-existing ground equipment.

5,572,217
COMPASS

Brian J. Flawn, 61 High Road., Berea, Durban, Natal Province, South Africa

Filed Jun. 2, 1994, Ser. No. 253,093
Int. Cl.[6] H04B *7/185*; G01S *5/02*
U.S. Cl. 342—357 **14 Claims**



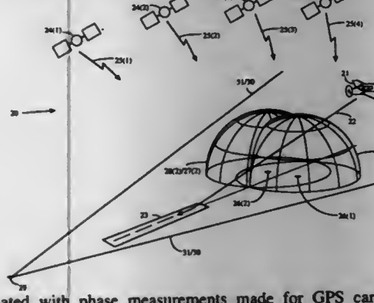
1. A compass which comprises a heading marker; a signal receiver for receiving signals transmitted from global positioning system (GPS) satellites, the receiver having an antenna that, in use, is fixedly positioned with respect to the heading marker and that permits information representing the direction from which a GPS satellite signal is transmitted to it relative to the heading marker to be generated; auxiliary processing means for cooperating with the antenna for generating the information representing the direction from which a GPS satellite signal is transmitted to the antenna relative to the heading marker; and primary processing means for processing signals received from a GPS satellite, extracting particularly the azimuth position information of the satellite and for calculating the direction of the heading marker relative to the direction north by utilizing the information giving the direction from which a satellite signal is transmitted to the antenna of the signal receiver relative to the heading marker and the azimuth position information of the satellite.

5,572,218
SYSTEM AND METHOD FOR GENERATING PRECISE POSITION DETERMINATIONS

Clark E. Cohen, Palo Alto; Bradford W. Parkinson, Los Altos; John D. Powell, Menlo Park; David G. Lawrence; Boris S. Pervan, both of Mountain View, and Henry S. Cobb, Stanford, all of Calif., assignors to IntegriNautics, Palo Alto, Calif.

Continuation of Ser. No. 410,011, Mar. 22, 1995, abandoned, which is a continuation of Ser. No. 36,319, Mar. 24, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 480,021
Int. Cl.[6] G01S *5/02;1/08*; H04B *7/185*
U.S. Cl. 342—357 **25 Claims**

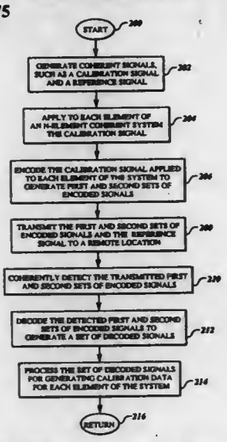
1. A method of resolving integer wavelength ambiguities associated with phase measurements made for GPS carrier signals transmitted by GPS satellites, the method being used with an aircraft on a final approach trajectory to a runway, the method comprising the steps of:
positioning one or more pseudolites each at a fixed known location in front of the runway below the final approach trajectory of the aircraft;
with the one or more pseudolites, transmitting one or more pseudolite carrier signals;
with a mobile GPS receiver system mounted on the aircraft:
receiving the transmitted one or more pseudolite carrier signals and the transmitted GPS carrier signals;
making phase measurements for the received one or more pseudolite carrier signals and the received GPS carrier signals at measurement epochs while the aircraft is on the final approach trajectory, there being an integer wavelength ambiguity associated with the phase measurements made for each of the received GPS carrier signals;
determining directions to the GPS satellites with respect to the reference coordinate system at the measurement epochs; and
resolving the integer wavelength ambiguities in response to the phase measurements, the known location of each of the one or more pseudolites, and the determined lines of sight to the GPS satellites.



5,572,219
METHOD AND APPARATUS FOR REMOTELY CALIBRATING A PHASED ARRAY SYSTEM USED FOR SATELLITE COMMUNICATION

Seth D. Silverstein; Robert L. Nevin, both of Schenectady, and William E. Engeler, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 7, 1995, Ser. No. 499,528
Int. Cl.[6] H01Q *3/22*
U.S. Cl. 342—375 **30 Claims**



1. A method for remotely calibrating a system having a plurality of N elements, N being a positive integer number, said method comprising the steps of:
coherently generating a calibration signal and a reference signal having a predetermined spectral relationship between one another;
applying to each respective one of said plurality of N elements the calibration signal;
encoding the calibration signal applied to each respective one of said plurality of N elements to generate first and second sets of encoded signals;
transmitting the first and second sets of encoded signals and the reference signal to a remote location;
coherently detecting the transmitted first and second sets of encoded signals at the remote location;

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decoding the coherently detected first and second sets of encoded signals to generate a set of decoded signals; and

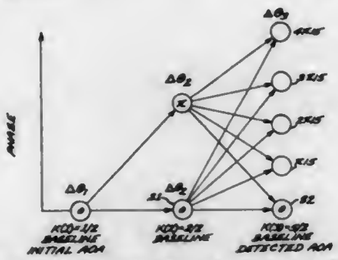
processing the set of decoded signals for generating calibration data for each element of said system.

5,572,220

TECHNIQUE TO DETECT ANGLE OF ARRIVAL WITH LOW AMBIGUITY

Khiem V. Cai, Brea, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 18, 1995, Ser. No. 443,537
Int. Cl.[6] G01S 5/04
U.S. Cl. 342—442 **16 Claims**



1. A method for detecting angle of arrival of an RF signal incident at an antenna array comprising a plurality of spaced receiving elements, the method comprising:

collecting the signals received at the plurality of spaced antenna elements;

processing the signals received at the plurality of elements to determine, for N different baseline pairs of said elements, a measured phase difference $\Delta\phi_{k(x)}$ in the signals received at the two elements comprising each baseline pair, thereby providing a measured phase difference value for each baseline element pair, wherein one or more of said measured phase difference values is in the range from 0 degrees to 360 degrees and is subject to ambiguities such that the actual phase difference may be m times said measured phase difference value;

wherein each of said baseline pairs of elements is spaced by a distance d, and the distances d are different for each baseline pair, and the N baselines are characterized by baseline factors k(x)=the ratio of the spacing d to the signal wavelength, x=1, . . . N, and wherein the first baseline pair of factor k(1) has the smallest spacing distance d and the corresponding phase difference value indicates the angle of arrival (AOA) of the RF signal in relation to the antenna array with least accuracy and least ambiguity of all the baseline pairs, and the Nth baseline pair of factor k(N) has the largest spacing distance d and the corresponding phase difference value indicates the AOA with highest accuracy and greatest ambiguity of all the baseline pairs;

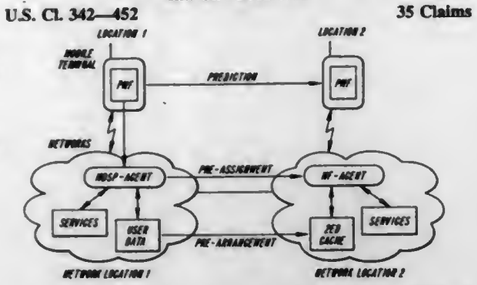
processing the phase difference values $\Delta\phi_{k(x)}$ for each baseline element pair using a trellis search process to determine with low ambiguity the angle of arrival (AOA) of said RF signal in relation to the antenna array, including (i) determining an unwrapped phase shift value $\Delta\theta_{k(1)}$ for said first baseline pair having a factor k(1) with least ambiguity, (ii) for each successive baseline of factor k(1+i), i=1 to N−1, using said unwrapped phase shift value $\Delta\theta_{k(i)}$ for said baseline pair having factor k(i) to determine an unwrapped phase shift value $\Delta\theta_{k(i+1)}$ for said baseline pair having factor k(1+i), thereby resolving ambiguity in said phase shift values for baselines of factors k(i+1), and (iii) converting the unwrapped phase shift value $\Delta\theta_{k(N)}$ for said baseline of factor k(N) into an AOA.

5,572,221

METHOD AND APPARATUS FOR DETECTING AND PREDICTING MOTION OF MOBILE TERMINALS

Alexander Marievi, Spånga; Anders Danne, and George Liu, both of Kista, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Oct. 26, 1994, Ser. No. 329,608
Int. Cl.[6] G01S 3/02
U.S. Cl. 342—452 **35 Claims**



1. A method of predicting a next location of a mobile terminal based on stored previous locations of the mobile terminal comprising the steps of:

comparing a current sequence that includes the current location of the mobile terminal and a plurality of previous locations of the mobile terminal to each of a plurality of stored sequences that each include previous locations of the mobile terminal;

selecting one of the stored sequences based on at least one quantitative measure of a degree of matching between the current sequence and each stored sequence; and

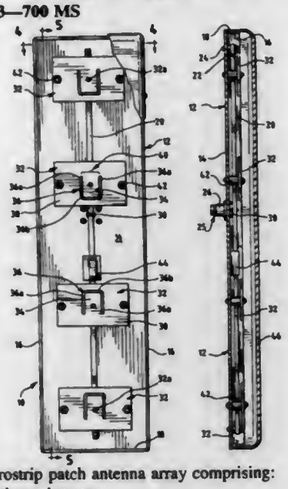
predicting the next location of the mobile terminal based on the selected one of the stored sequences.

5,572,222

MICROSTRIP PATCH ANTENNA ARRAY

Peter Mailandt, Dallas, and Tan D. Huynh, Hurst, both of Tex., assignors to Allen Telecom Group, Solon, Ohio

Continuation of Ser. No. 83,030, Jun. 25, 1993, abandoned. This application Aug. 11, 1995, Ser. No. 514,132
Int. Cl.[6] H01Q 1/38
U.S. Cl. 343—700 MS **19 Claims**



1. A microstrip patch antenna array comprising:

a conductive substrate;

a continuous conductive elongated microstrip line of finite length extending entirely along a straight line, having opposed ends, and spaced from said conductive substrate;

a connector having a conductor connected to said elongated microstrip line at a feed point located intermediate the ends thereof;

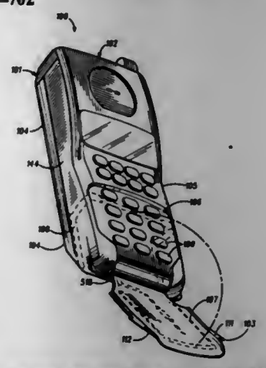
a plurality of generally rectangular patch radiating elements disposed at selected positions along the length of said microstrip line on the side of said microstrip line opposite from said conductive substrate, each of said patch radiating elements having a width and length greater than the width of said microstrip line and including a coupling portion disposed generally centrally thereof and having a peripheral edge, and an outer radiating portion surrounding said coupling portion, said coupling portion being physically separated from said radiating portion by an elongate slot extending along a substantial portion of said peripheral edge thereof, said coupling portion being connected to said radiating portion at a boundary therebetween, each of said patch radiating elements being spaced one from the other and insulated from said conductive substrate and from said microstrip line and positioned adjacent to said microstrip line with said microstrip line disposed underneath a portion of said elongate slot of each of said patch radiating elements, and with said coupling portion of each of said patch radiating elements being disposed over said elongated microstrip line, for electromagnetic excitation therefrom in response to a signal applied to said microstrip line at said feed point, and said coupling portion, said elongate slot, and outer radiating portion of each of said patch radiating elements being disposed on either side of said elongated microstrip line.

5,572,223

APPARATUS FOR MULTI-POSITION ANTENNA

James P. Phillips, Lake in the Hills; Louis J. Vannatta, and Eric L. R. Krenz, both of Crystal Lake, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 278,295, Jul. 21, 1994. This application Sep. 16, 1994, Ser. No. 307,224
Int. Cl.[6] H01Q 1/24
U.S. Cl. 343—702 **20 Claims**



17. A multi-position antenna apparatus for a radio communication device including a housing having a first housing portion and a second housing portion which are interconnected such that they move relative to one another between a collapsed position and an extended position, and radio circuitry positioned in the first housing portion to transmit or receive signals at a predetermined signaling frequency, the antenna apparatus comprising:

a first antenna supported in the second housing portion, the first antenna coupled to the radio circuitry in the extended position and in the collapsed position; and

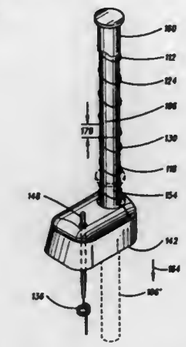
a parasitic radiator supported in the first housing portion such that the parasitic radiator is only coupled to the first antenna when the housing is in the collapsed position, wherein an end of the parasitic radiator is connected to ground.

5,572,224

MULTIPLE WINDING WHIP ANTENNA ASSEMBLY FOR RADIO CIRCUIT AND METHOD THEREFOR

Paul J. Moller, Lake Zurich, and Patrick A. Schwinghammer, Arlington Heights, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 11,016, Jan. 29, 1993, abandoned. This application Apr. 19, 1995, Ser. No. 425,694
Int. Cl.[6] H01Q 1/24
U.S. Cl. 343—702 **11 Claims**



1. A radio frequency communication device comprising:

a housing body;

radio circuitry housed within the housing body;

a whip movingly carried on the housing body such that the whip moves between an extended and a retracted position, the whip having a proximal end, to be positioned at the housing body when the whip is supported thereon, and a distal end to be spaced from the housing body when the whip is supported thereon, the proximal and distal ends being opposite ends of the whip, the whip projecting outwardly from the housing body when the proximal end is supported thereon;

a first antenna winding mounted on the whip and extending from the proximal end toward the distal end and terminating at a location between the proximal and distal ends, the first antenna winding having a proximal end for coupling to the radio circuitry within the housing body; and

a second antenna winding mounted on the whip and extending from the distal end toward the proximal end of the whip, the second antenna winding terminating at a location between the proximal end and the distal end, the lengths of the first and second windings such that the first and second windings are capacitively coupled but are not connected, whereby the first and second windings are carried on the whip to move with the whip and the second winding is coupled to the radio circuitry within the housing body via the first winding when the whip is extended to space the second winding from the housing body when the whip is extended to reduce shadowing effect of a user of the radio telephone.

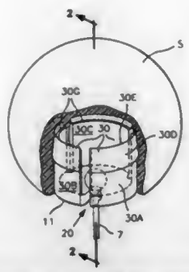
5,572,225

ANTENNA MOUNTING DEVICE

John McCarthy, 16912 Westwood La. #31, Huntington Beach, Calif. 92647

Filed Aug. 15, 1995, Ser. No. 515,145
Int. Cl.[6] H01Q 1/00; G09F 17/00
U.S. Cl. 343—720 **10 Claims**

8. A connector device for interconnecting an automobile antenna with a novelty object, the device comprising:



a base portion shaped as a horizontally oriented disk and having a slot extending radially from a peripheral edge of the base portion to a central position of the disk base portion, the slot having a width for accepting the automobile antenna in sliding engagement;

at least one prong integral with the disk and extending vertically upwardly from a face thereof, the at least one prong providing a wall having an outside surface facing away from the central position of the base portion, and an inside surface facing toward the central position of the base portion, the at least one prong having a wedge shape terminating with a sharp ridge tip pressing into the novelty object.

5,572,226

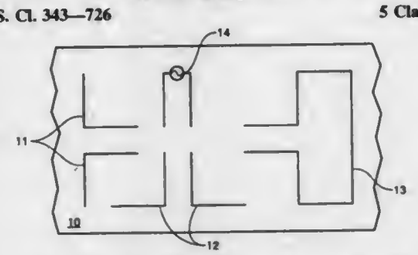
SPHERICAL ANTENNA PATTERN(S) FROM ANTENNA(S) ARRANGED IN A TWO-DIMENSIONAL PLANE FOR USE IN RFID TAGS AND LABELS

John R. Tuttle, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 137,699, Oct. 14, 1993, abandoned, which is a continuation of Ser. No. 884,507, May 15, 1992, abandoned. This application Apr. 11, 1995, Ser. No. 422,007

Int. Cl.[6] H01Q *21/00*

U.S. Cl. 343—726 **5 Claims**



1. A radio frequency (RF) transceiver system comprising first and second sending/receiving units wherein at least one of the units contains multiple antennas constructed in a planar arrangement, said planar arrangement creating a spherical electromagnetic antenna pattern, wherein said multiple antennas comprise two dipole antennas and a single loop antenna formed in said planar arrangement and oriented such that each dipole antenna axis is approximately at a 90° angle to one another and the antenna axis of the loop antenna is approximately at a 90° angle to the axis of at least one of said dipole antennas, thereby causing an RF signal received by said multiple antennas to create said spherical electromagnetic pattern.

5,572,227

MULTIBAND ANTENNA SYSTEM FOR OPERATING AT L-BAND, S-BAND AND UHF-BAND

Surendra Pal; Vodralli K. Lakshmeesha; Vaidyanathan Mahadevan; Lourdnathan Nicholas; Kunhambu Sadanandan; Subramaniam Aswathnarayan; Manickam Kumar; Mallavalli L. Subramanya; Venkatagiri Subrahmanya; Changantidurga V. Subramanyam, and Thammaiahappa Mallikarjunaiah, all of Bangalore, Ind., assignors to Indian Space Research Organisation, Bangalore, Ind.

Filed Jan. 25, 1995, Ser. No. 378,172

Int. Cl.[6] H01Q *1/36;21/28*

U.S. Cl. 343—727 **3 Claims**



1. A multiband antenna system for operating at L-band, S-band and UHF-band comprising L-band antenna elements and S-band antenna elements provided in the form of quadrifilar helices spaced from each other on the surface of a hollow cylindrical insulator; UHF band antenna elements provided in the form of a cage dipole on the surface of the said hollow cylindrical insulator; art L-band antenna input being connected to a first connector through an L-band feed network card; art S-band antenna input being connected to a second connector through an S-band feed network card and a UHF-band antenna input being connected to a third connector through a split sheath balun provided along the longitudinal axis of said hollow cylindrical insulator.

5,572,228

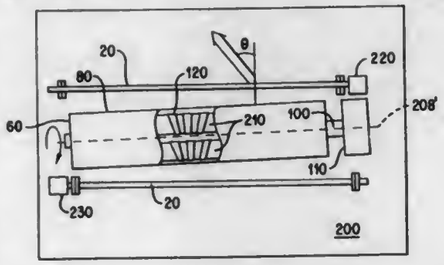
EVANESCENT COUPLING ANTENNA AND METHOD FOR THE UTILIZATION THEREOF

Vladimir A. Manasson; Lev S. Sadovnik, both of Los Angeles, and Paul I. Shnitser, Irvine, all of Calif., assignors to Physical Optics Corporation, Torrance, Calif.

Filed Feb. 1, 1995, Ser. No. 382,493

Int. Cl.[6] H01Q *13/00*

U.S. Cl. 343—785 **14 Claims**



1. A scanning antenna comprising:

a frame;

an electric motor connected to said frame;

a spindle connected to said electric motor;

a rotatable cylinder connected to said spindle, said rotable cylinder including an outer surface;

a varying period conductive grating pattern of separates strips on said outer surface, said varying period conductive grating pattern of separated strips defining a grating axis;

a first elongated dielectric waveguide defining a first waveguide axis, said first elongated dielectric waveguide being connected to said frame and located proximally adjacent and alongside said period varying conductive grating pattern of separated strips so as to evanescently couple electromagnetic signals out-of said first elongated dielectric waveguide;

an electromagnetic signal source connected to said first elongated dielectric waveguide;

a second elongated dielectric waveguide defining a second waveguide axis, said second elongated dielectric waveguide being connected to said frame and located proximally adjacent and alongside said varying period conductive grating pattern of separated strips so as to evanescently couple electromagnetic signals into said second elongated dielectric waveguide; and

an electromagnetic signal receiver connected to said second elongated dielectric waveguide,

wherein a varying period of said varying period conductive grating pattern of separated strips is a function of an angle defined by a position of said rotable cylinder.

5,572,229

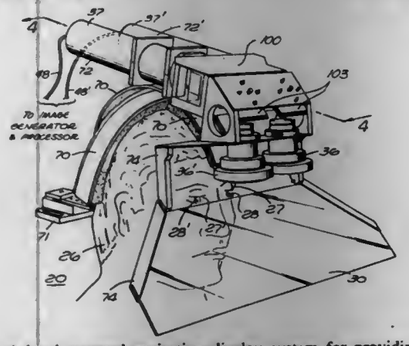
HEAD-MOUNTED PROJECTION DISPLAY SYSTEM FEATURING BEAM SPLITTER AND METHOD OF MAKING SAME

Ralph W. Fisher, Park City, Utah, assignor to Evans & Sutherland Computer Corp., Salt Lake City, Utah

Continuation-in-part of Ser. No. 690,173, Apr. 22, 1991, abandoned. This application Oct. 26, 1993, Ser. No. 144,169

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—8 **14 Claims**



1. A head-mounted projection display system for providing a display to the eyes of an observer, comprising:

a retro-reflective screen; and

a head-mounted projector for use with said retro-reflective screen, further comprising:

a head mount to be worn by the observer;

a head position sensor means coupled to said head mount for providing angular position signals indicative of the angular position of the observer's head;

an image generator means providing display signals representative of binocular dynamic displays for the observer and connected to receive said angular position signals to control said display signals;

at least one pair of binocular image means affixed to said head mount and connected to receive said display signals for projecting a pair of binocular images; and

a beam splitter means including a pair of beam splitters affixed to said head mount and positioned at different angles over each of the observer's eyes for separately reflecting said pair of binocular images onto said retro-reflective viewing screen, said beam splitter means optically co-locating said pair of binocular images reflected onto said retro-reflective viewing screen and diverging with limited binocular overlap with the eyes of the observer by passing said pair of binocular images from said retro-reflective viewing screen back to the observer through said beam splitter means to provide a substantially unlimited field of view, where a right one of said pair or binocular images appears to the observer as an image projected directly onto a right pupil of the observer's eyes and a left one of said pair of binocular images appears to the observer as an image projected directly onto a left pupil of the observer's eyes such that a right one of the observer's eyes only sees a right one of the pair of binocular images and a left one of the observer's eyes only sees a left one of the pair of binocular images.

5,572,230

METHOD FOR DRIVING GAS DISCHARGE DISPLAY PANEL AND GAS DISCHARGE DISPLAY EQUIPMENT IN WHICH THE GAS DISCHARGE DISPLAY PANEL IS DRIVEN ACCORDING TO THE METHOD

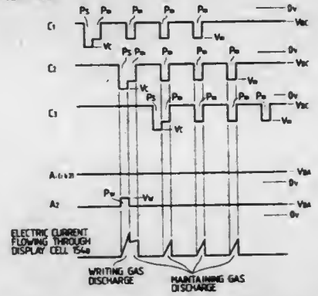
Yoshimichi Takano; Tetsuo Sakai, both of Tokyo; Hiroshi Murakami, Yokohama; Kazuo Takahashi, Osaka; Mutsumi Mimasu, Hikone; Utaro Miyagawa, Osaka; Makoto Takei, Osaka, and Koichi Wani, Osaka, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, and Matsushita Electronics Corporation, Osaka, both of Japan

Filed Apr. 30, 1993, Ser. No. 54,490

Claims priority, application Japan, Jun. 26, 1992, 4-169283

Int. Cl.[6] G09G *3/28*

U.S. Cl. 345—68 **2 Claims**



1. A method for driving a gas discharge display panel comprising a plurality of display electrode lines arranged side by side, a plurality of scanning electrode lines which are arranged side by side and cross the display electrode lines, and a plurality of discharge cells arranged at intersection spaces between the display electrode lines and the scanning electrode lines, comprising the steps of:

applying a writing pulse set at a positive writing voltage of a direct current on a specific display electrode line selected from the display electrode lines according to a piece of display information;

applying a scanning pulse set at a negative scanning voltage of a direct current on a specific scanning electrode line selected from the scanning electrode lines in synchronism with the writing pulse to produce writing gas discharge in cooperation with the writing pulse in a specific discharge cell arranged at an intersection space between the specific display electrode and the specific scanning electrode line;

setting a maintaining period to start from the production of the writing gas discharge and to end with a start of a non-display period; and

applying a series of maintaining pulses set at a negative maintaining voltage of a direct current on the specific scanning electrode during only the maintaining period to produce a maintaining gas discharge subsequent to the writing gas discharge in the specific discharge cell, the maintaining gas discharge being intermittently produced in synchronism with the maintaining pulses subsequent to the scanning pulse, and to stop the maintaining gas discharge when the maintaining period is ended.

5,572,231

DRIVE DEVICE FOR IMAGE DISPLAY DEVICE

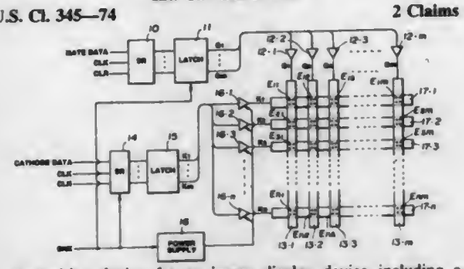
Yoichi Kobori, Mobara, Japan, assignor to Futaba Denshi Kogyo Kabushiki Kaisha, Mobara, Japan

Filed Jun. 24, 1994, Ser. No. 265,157

Claims priority, application Japan, Jun. 25, 1993, 5-177560

Int. Cl.[6] G09G *3/10*

U.S. Cl. 345—74 **2 Claims**



1. A drive device for an image display device including a plurality of stripe-like gate electrodes and a plurality of stripe-like cathode electrodes which are arranged so as to form a matrix by cooperation with each other, emitters arranged on said cathode electrodes so as to be positioned at intersections between said gate electrodes and said cathode electrodes on said matrix, said emitters field-emitting electrons by application of a predetermined voltage between said gate electrodes and said cathode electrodes, and an anode upwardly spaced from said gates for capturing electrons emitted from said emitters, said drive device comprising:

means for successively driving said cathode electrodes by a drive pulse so as to scan said cathode electrodes;

means for applying an image signal to each of said gate electrodes, resulting in luminescence of said phosphors for display of an image;

means for applying a precharge voltage to the cathode electrodes prior to application of said drive pulse in a precharge period during which said cathode electrodes are precharged; and

means for blanking application of said image signal applied to each of said gate electrodes during said precharge period to prevent said image signal from being applied to said gate electrodes during said precharge period.

5,572,232

METHOD AND APPARATUS FOR DISPLAYING AN IMAGE USING SUBSYSTEM INTERROGATION

Ken Rhodes, Portland; Rohan Coelho, Hillsboro; Davis Frank, and Blake Bender, both of Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

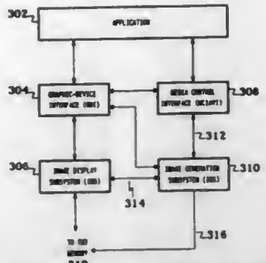
Filed Aug. 6, 1993, Ser. No. 103,261

Int. Cl.[6] G09G *5/04;* **G06F** *15/00*

U.S. Cl. 345—115 **58 Claims**

1. A computer-implemented process for processing image signals, comprising the steps of:

(a) interrogating an image display subsystem of a computer system with an image generation subsystem of the computer



system to determine image display subsystem capabilities for at least one of (1) a plurality of different types of color format support, (2) a plurality of different types of access to a memory of the image display subsystem, and (3) a plurality of different types of window management, wherein:

the computer system comprises the image generation subsystem, a media control interface, a graphic-device interface (GDI), and the image display subsystem;

the image display subsystem capabilities may change after the computer system boots up;

the image generation subsystem is electrically connected directly to each of the media control interface, the graphic-device interface, and the image display subsystem;

the media control interface is electrically connected to the graphic-device interface; and

the graphic-device interface is electrically connected to the image display subsystem;

(b) generating image signals with the image generation subsystem in accordance with results of the interrogation;

(c) transmitting the image signals from the image generation subsystem to the image display subsystem memory; and

(d) displaying the image signals.

5,572,233

DATA STORAGE APPARATUS CAPABLE OF SEARCHING AND DISPLAYING CHARACTER DATA ACCORDING TO CORRESPONDING PICTORIAL SYMBOL DATA

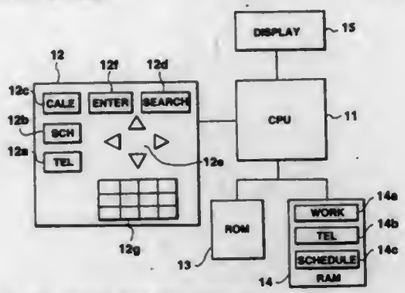
Satoru Kakegawa, Kawagoe, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1994, Ser. No. 319,162

Claims priority, application Japan, Oct. 14, 1993, 5-256961

Int. Cl.[6] G09G *5/40*

U.S. Cl. 345—116 **9 Claims**



1. A data storage apparatus comprising:

a display;

a data memory;

input means for inputting into said data memory character data and pictorial symbol data for graphically representing associated character data;

data search command input means for causing the character data stored in said data memory to be searched; and

a processor, responsive to said data search command input means, for performing the steps of:

a) reading out all pictorial symbol data associated with the character data stored in said data memory;

b) simultaneously displaying pictorial symbols on said display corresponding to the read out pictorial symbol data in order to prompt a user to select a displayed pictorial symbol;

c) reading out character data associated with the selected pictorial symbol; and

d) displaying the read out character data on said display.

5,572,234

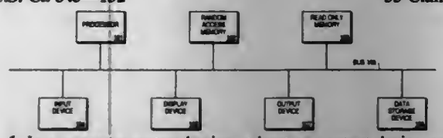
DISPLAY ELEMENT DENSITY CONVERSION

Wayne L. Dohnal, Banks, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 281,857, Jul. 28, 1994, abandoned, which is a continuation of Ser. No. 763,287, Sep. 20, 1991, abandoned. This application Aug. 7, 1995, Ser. No. 511,844

Int. Cl.[6] G09G *5/26*

U.S. Cl. 345—132 **33 Claims**



1. In a computer system having at least one output device, said at least one output device having a plurality of picture elements (pixels) for representing at least one image, each pixel having a position on said at least one image, said pixels being arranged in a first density, a method for converting from using said first density to represent said at least one image on a first output device of said at least one output device to using a second pixel density to represent said at least one image on a second output device of said at least one output device, wherein said first output device and said second output device may be the same output device, said method comprising the steps of:

performing a primary conversion on an input pixel from said plurality of pixels arranged in said first density to determine the position of a first output pixel in said second pixel density corresponding to the position of said input pixel in said first pixel density;

determining a primary pixel positioning error of said first output pixel; and

performing a secondary conversion on said input pixel to determine the position of a second output pixel in said second pixel density corresponding to the position of said input pixel in said first pixel density, said step of performing a secondary conversion being performed if said primary pixel positioning error is greater than a predetermined limit, said second output pixel being displayed on said second output device of said at least one output device if said secondary conversion is performed otherwise said first output pixel being displayed on said second output device of said at least one output device.

5,572,235

METHOD AND APPARATUS FOR PROCESSING IMAGE DATA

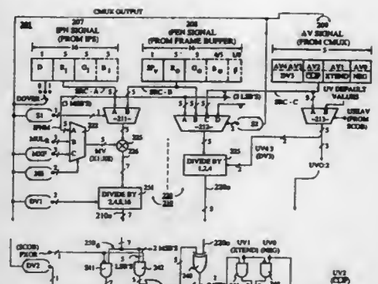
Robert J. Mical, Redwood City, and David L. Needle, Alameda, both of Calif., assignors to The 3DO Company, Redwood City, Calif.

Filed Nov. 2, 1992, Ser. No. 970,083

Int. Cl.[6] G09G *5/02*

U.S. Cl. 345—150 **40 Claims**

1. An image signal processing apparatus comprising one or a plurality of pixel-component processing units where each pixel-component processing unit includes:



(a) first input selector means for receiving and selecting one of a first set of plural image-defining signals, each of the first set of plural image-defining signals representing a stream of pixel-component values that provide initial, but-modifiable definitions for a stream of pixels in a corresponding image;

(b) second input selector means for receiving and selecting one of a second set of plural image-defining signals, each of the second set of plural image-defining signals representing a stream of pixel-component values that provide initial, but-modifiable definitions for a stream of pixels in a corresponding image, where the second set of plural image-defining signals can include some or all of the signals in the first set;

(c) first pre-scale factor defining means for variably defining a first prescaling factor, where the first pre-scale factor defining means is responsive to a signal in one of said first and second sets of plural image-defining signals;

(d) first pre-scaling means, coupled to the first input selector means and the first pre-scale factor defining means, for scaling one or more of the pixel-component values of an image-defining signal selected by the first input selector means by the variably-defined first prescaling factor and for thereby producing a corresponding first pre-scaled signal having one or more once-scaled pixel-component values representing the one or more pixel-component values of the image-defining signal selected by the first input selector means, multiplied by the variably-defined first prescaling factor; and

(e) combiner means for producing a combined image signal representing a function of the combination of the pixel-component values of the first pre-scaled signal and of the signal selected by the second input selector means or a scaled version thereof.

5,572,236

DIGITAL IMAGE PROCESSOR FOR COLOR IMAGE COMPRESSION

Ephraim Feig, Briarcliff Manor, and Elliot N. Linzer, Bronx, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 922,601, Jul. 30, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 151,592

Int. Cl.[6] G09G *5/02*

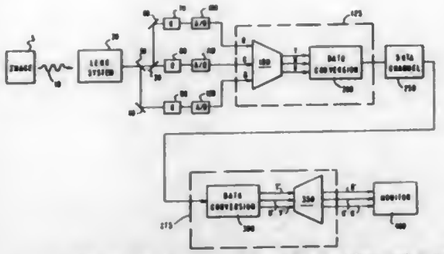
U.S. Cl. 345—154 **76 Claims**

1. A method for transmitting an image over a data channel, comprising:

representing an image with RGB form data;

transforming said RGB form data into YUV data;

converting said YUV data into DCT data by multiplying a factored transform matrix S_A to a plurality of subsets of said



YUV data having k points wherein $k=pq$ and p and q are relatively prime integers;

said factored transform matrix S_k being the product of:

$RTS_p \otimes qP$, wherein:

R forms a product with an arbitrary vector having pq points using at most pq−p−q+1 additions and/or subtractions;

P comprises a permutation matrix;

a tensor product between a SDCT matrix on p points (S_p) and a SDCT matrix on q points (S_q) form $S_{(p} \otimes q)$;

$T=D_p \otimes q^{-1}R[(E_p^{-1}D_p) \otimes (E_q^{-1}D_q)]R^{31\ 1}$ wherein E_p and E_q are initial factors, and D_p and D_q are secondary factors for scaled transform matrices on p and q points respectively, and $D_{(p} \otimes q)=(E_p \otimes E_q)\bar{D}_{(p} \otimes q)$; and where

$\bar{D}_p \otimes q$ comprises a pg×pg diagonal matrix having each jj-th term selected from any of the non-zero entries in the j-th row of $R[(E_p^{-1}D_p) \otimes (E_q^{-1}D_q)]$;

quantizing said DCT data;

converting said quantized DCT data into signals for transmission over said data channel; and

applying said signals to said data channel.

5,572,237

POINTING DEVICE FOR A PORTABLE COMPUTER

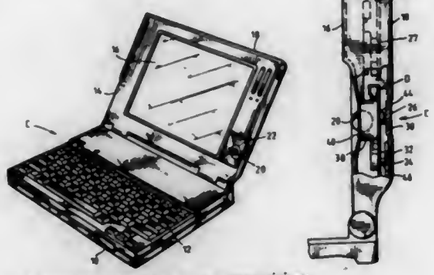
Cynthia A. Crooks, Houston; Michael W. Ambrose, Cypress; Stephan A. Mato, Jr., Katy, and Gopal C. Bhagat, Houston, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Division of Ser. No. 25,071, Mar. 2, 1993, abandoned, which is a division of Ser. No. 885,121, May 18, 1992, Pat. No. 5,208,736. This application Jun. 28, 1994, Ser. No. 267,833

The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—156 **13 Claims**



1. A portable computer system comprising:

a base section; and

a display section pivotably connected to said base section, said display section including:

a housing, said housing being generally a parallelepiped and including a front face, a back face, a bottom face, two side faces and a first opening in said front face, said first opening being less than the size of said front face so that a border results, a second opening in said border and a third opening in said back face;

a display for displaying an image, said display located inside said housing at said first opening; and

a user interface device located inside said housing,

said user interface device including:

a pointing device projecting through said second opening; and

a first select button located near said pointing device and projecting through said third opening.

5,572,238

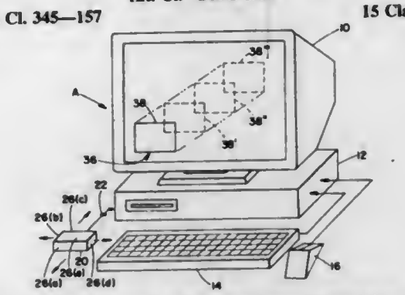
COMPUTER USER INTERFACE FOR NON-DOMINANT HAND ASSISTED CONTROL

Robert T. Krivacic, San Jose, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 27, 1995, Ser. No. 379,817

Int. Cl.[6] G09G *5/08*

U.S. Cl. 345—157 **15 Claims**



1. A computer terminal user interface control comprising:

a first force-sensitive transducer pair defining a first force sensitive axis;

a second force-sensitive transducer pair defining a second force sensitive axis;

means for aligning the first and second force-sensitive transducer pairs such that the first force sensitive axis and the second force sensitive axis are disposed at an angle relative to one another; and

a data processor including means for positioning the cursor on an associated video display terminal at a position relative to a default position in accordance with force applied to at least one transducer of the first and second transducer pairs;

wherein the cursor includes tools adapted to be activated by a second cursor generated by a second pointer controller.

5,572,239

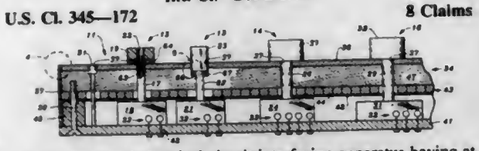
OPERATOR/CIRCUIT INTERFACE WITH INTEGRATED DISPLAY SCREEN

Denny Jaeger, 6120 Valley View Rd., Oakland, Calif. 94611

Continuation of Ser. No. 225,782, Apr. 11, 1994, abandoned, which is a continuation-in-part of Ser. No. 147,545, Nov. 5, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 420,438

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—172 **8 Claims**



1. Operator and electrical circuit interfacing apparatus having at least one circuit component for enabling operator interaction with the electrical circuit, said apparatus further having an electrically controlled display screen and control means for generating any of a plurality of different images at an image display area of said screen, at least a portion of said circuit component being situated at said screen within said image display area thereof, and wherein said control means generates an image on said screen that conveys information pertaining to said circuit component, said screen having at least one opening that extends through said screen at said image display area thereof and wherein at least a portion of said circuit component extends within said display screen at said opening, wherein said display screen includes a plurality of spaced apart conductors extending along said screen at said image display area thereof for creating electrical fields within said screen, each of said conductors having opposite end segments that are linear and in alignment with each other and wherein ones of said conductors which have end segments that are directed towards said opening have intermediate segments which link said end segments and which are shaped to extend along the portions of said screen that adjoin said opening.

5,572,240

CHART RECORDER

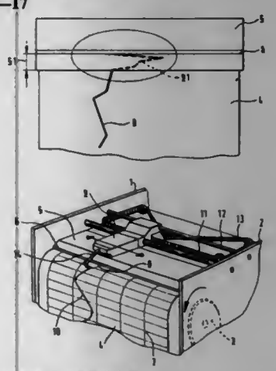
Dieter Schmidt, Nesselwang, Germany, assignor to Endress +Hauser Wetzer GmbH & Co. KG, Nesselwang, Germany

Continuation of Ser. No. 106,058, Aug. 13, 1993. This application Aug. 8, 1995, Ser. No. 512,513

Claims priority, application European Pat. Off., Aug. 14, 1992, 92710023

Int. Cl.[6] G01D *9/00;9/04*

U.S. Cl. 346—17 **4 Claims**



4. A chart recorder comprising:

means for producing m, m=1, 2, 3, . . . measurement signals to be recorded,

m measuring channels, one for each of said m measurement signals to be recorded,

a moveable recording medium,

m continuous-line recording devices (**31, 32**) having a covering portion, the recording devices producing a continuous-line (**8', 8"**) associated with each one of the m measurement signals as a measurement curve on the recording medium (**4'**) as the recording medium moves past the continuous-line recording devices,

the continuous-line recording devices producing the continuous-lines on the moveable recording medium as the moveable recording medium is moved to a location in the continuous-line recording device that lies behind the covering portion (**51'**) of the continuous-line recording devices of the chart recorder, such that the produced continuous-lines are not visible at the time they are produced,

said continuous-line recording devices being movably guided past each other on n parallel guides (**11', 12'; 11", 12"**) that extend perpendicular to the direction of movement of the recording medium, and

an electronic visual display (**21'**) with p lines each consisting of q dots on which display portions of the continuous-lines currently being produced are displayed in time-corrected form as corresponding electronic dot-sequences (**80', 80"**) prior to the non-visible produced continuous-lines on the moveable medium being moved to a visible portion of the chart recorder wherein the dot sequences produced by the display and the dot sequence produced by the printing device are in a same pattern and formatted with a dark and light border portion.

5,572,241

INK JET PRINTER CAPABLE OF DETECTING LACK OF INK

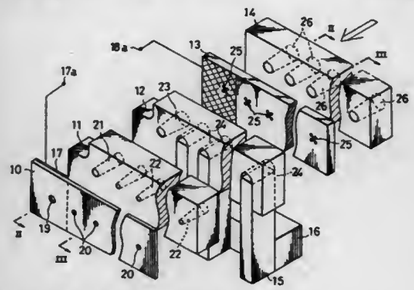
Yoshio Kanayama, Nabari; Hisashi Yoshimura, Nara, and Norihiro Ochi, Yamato-Koriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 35,461, Mar. 23, 1993, abandoned. This application Mar. 23, 1995, Ser. No. 410,001

Claims priority, application Japan, Apr. 1, 1992, 4-079845

Int. Cl.[6] B41J *2/195*

U.S. Cl. 347—7 **11 Claims**



1. An ink jet printer comprising:

an ink tank storing an electrically conductive ink;

a plurality of nozzle passages communicating with said ink tank arranged in parallel to one another for jetting said ink from a front end of said ink jet printer;

a through hole, communicating with said ink tank, arranged along and in parallel to said plurality of nozzle passages, said through hole having a diameter at the front end of said ink jet printer that is greater than a diameter of each of said nozzle passages at the front end of said ink jet printer in order to draw air into said through hole more quickly than air is drawn into said nozzle passages when a pressure in said ink tank becomes negative due to a lack of said ink and when said nozzle passages are still filled with said ink; and

detecting means, disposed in said through hole, for detecting the air introduced in said through hole even if said ink passages are still filled with said ink.

5,572,242

INKJET HAVING RECOVERY SYSTEM CONTROL METHOD AND APPARATUS OPERATING DURING PERIODS OF NON-USE

Masahiro Fujii; Susumu Hama; Hiroshi Takizawa, and Masahiro Minowa, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Mar. 2, 1993, Ser. No. 25,310

Claims priority, application Japan, Mar. 2, 1992, 4-044495; Nov. 10, 1992, 4-300094

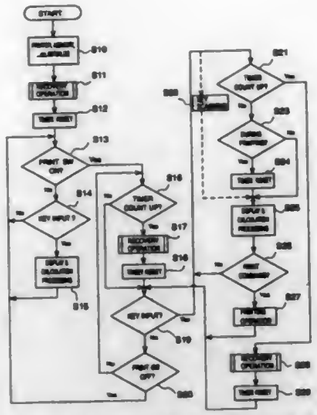
Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—23 **8 Claims**

1. A control method for an electronic system having an ink-jet printer mechanism that discharges ink drops from nozzles of an ink-jet head, comprising the steps of:

(a) applying power from a main power source to the electronic system and detecting the application of power;

(b) performing recovery processing of the nozzles by discharging ink therefrom;



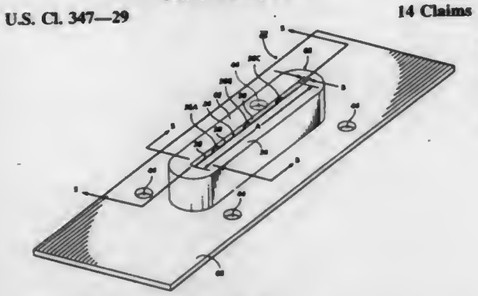
(c) enabling the ink-jet printer mechanism to print after step (a);
(d) measuring passage of time from when power is applied to the electronic system until the ink-jet printer mechanism is enabled to print; and
(e) controlling the amount of ink discharged in a subsequent recovery processing to step (b), according to the length of time measured in step (d).

5,572,243

INK JET PRINTER PRIMING ELEMENT

Herman A. Hermanson, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 23, 1994, Ser. No. 200,605
Int. Cl.[6] B41J *2/165*
U.S. Cl. 347—29 **14 Claims**



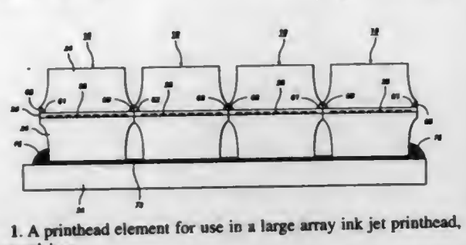
1. A priming element comprising;
a first wall member defining a contacting surface;
a second wall member spaced a distance from said first wall member, said first wall member and said second wall member together defining a passageway therebetween; and
support means recessed from the contacting surface, connecting said first wall member to said second wall member, wherein said support means comprises a plurality of spaced apart support members, each of said plurality of support members spanning the passageway and connecting said first wall member to said second wall member to maintain the passageway in an open condition, thereby permitting the flow of material therethrough.

5,572,244

ADHESIVE-FREE EDGE BUTTING FOR PRINTHEAD ELEMENTS

Donald J. Drake, Rochester, and Hung C. Nguyen, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 27, 1994, Ser. No. 280,973
Int. Cl.[6] G01D *15/18;* **B41J** *2/16;2/14*
U.S. Cl. 347—42 **20 Claims**



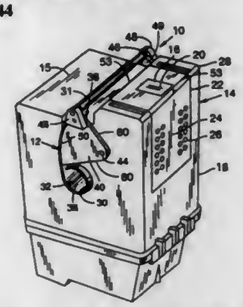
1. A printhead element for use in a large array ink jet printhead, comprising:
a heater element;
a channel element in butting engagement with said heater element and defining a first overflow trough therebetween; and
a layer of adhesive disposed between said heater element and said channel element with excess adhesive flowing into the first overflow trough therebetween, said heater element including a first butting edge and a first surface extending from said first butting edge, said channel element including a second butting edge in substantial alignment with said first butting edge and a second surface extending from said second butting edge, and the first overflow trough located along a portion of said first butting edge and said second butting edge, said second surface defining the first overflow trough, and said second surface further defining an array of channels and at least one reservoir, said at least one reservoir located behind said army of channels, and the first overflow trough located behind said at least one reservoir.

5,572,245

PROTECTIVE COVER APPARATUS FOR AN INK-JET PEN

Bruce Cowger, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 10, 1994, Ser. No. 209,082
Int. Cl.[6] B41J *2/135*
U.S. Cl. 347—44 **19 Claims**



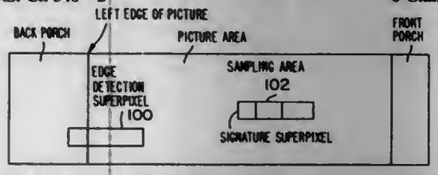
1. A protective cover for an ink pen that has a print head comprising:
a resiliently bendable shield, the shield adapted to resiliently bend in a curve that defines an arch, the shield mounted to the ink pen and movable from a stowed position wherein the shield is spaced from the print head to expose the print head, to a protective position wherein the arch of the shield covers the print head to protect the print head against mechanical damage, the resiliency of the shield establishing different shield shapes in the stowed and protective positions; and
a cavity formed in the ink pen for accepting at least part of the shield which is retracted into the cavity when the shield is moved to the stowed position.

5,572,246

METHOD AND APPARATUS FOR PRODUCING A SIGNATURE CHARACTERIZING AN INTERVAL OF A VIDEO SIGNAL WHILE COMPENSATING FOR PICTURE EDGE SHIFT

Michael D. Ellis; Stephen M. Dunn; Michael W. Fellinger; Fancy B. Youngiove, all of Boulder; David M. James, Fort Collins; David L. Clifton, Boulder, and Richard S. Land, Lafayette, all of Colo., assignors to The Arbitron Company, Columbia, Md.

Division of Ser. No. 876,578, Apr. 30, 1992, Pat. No. 5,436,653. This application Jun. 7, 1995, Ser. No. 486,511
Int. Cl.[6] H04N *17/00;17/04*
U.S. Cl. 348—2 **6 Claims**



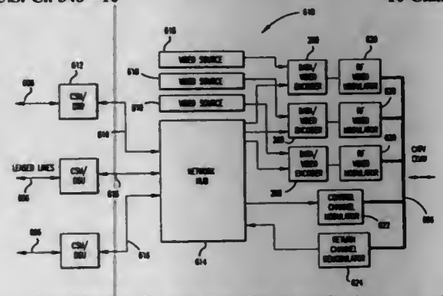
1. A method of producing a signature characterizing an interval of a video signal representing a picture for use in broadcast segment recognition, wherein the signature is produced based on portions of the video signal representing corresponding regions of the picture each spaced a respective predetermined amount from a nominal edge of the picture, comprising the steps of:
detecting a shift in the video signal corresponding with a shift in the edge of the picture from the nominal edge thereof;
adjusting the portions of the video signal to compensate for said shift in the edge of the picture; and
producing the signature based on the adjusted portions of the video signal.

5,572,247

PROCESSOR FOR RECEIVING DATA FROM A VIDEO SIGNAL

Gerald D. Montgomery, and Jay B. Norrish, both of Mesa, Ariz., assignors to WavePhore, Inc., Phoenix, Ariz.

Division of Ser. No. 947,134, Sep. 18, 1992, Pat. No. 5,387,941, which is a continuation-in-part of Ser. No. 715,920, Jun. 14, 1991, Pat. No. 5,327,237. This applicatiou Apr. 8, 1994, Ser. No. 224,732
Int. Cl.[6] H04N *7/14;7/10;7/08*
U.S. Cl. 348—10 **10 Claims**



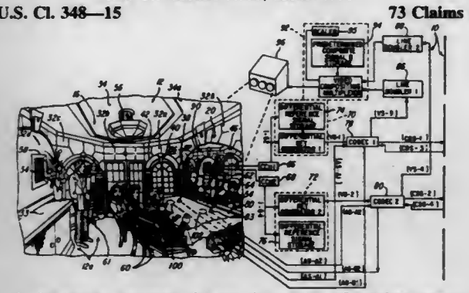
1. An apparatus for receiving data transmitted over a cable television network, the network including a transmission medium and having forward channels for transmission of video signals having a rasterized format, the format having a bandwidth and active video intervals, the active video intervals separated by horizontal blanking intervals, at least one of the forward channels transmitting a combined signal of a data signal frequency interleaved with the bandwidth of a video signal in active intervals, subchannels and a control channel, the apparatus comprising:
a video receiver having a tuner for selecting between forward channels;
a control channel receiver responsive to the control channel;
a tunable subchannel transmitter; and
a controller responsive to control signals transmitted over the control channel for altering the selection of the forward channel and the tuning of the subchannel transmitter.

5,572,248

TELECONFERENCING METHOD AND SYSTEM FOR PROVIDING FACE-TO-FACE, NON-ANIMATED TELECONFERENCE ENVIRONMENT

David L. Allen, Arcanum, and Herold Williams, Huber Heights, both of Ohio, assignors to Teleport Corporation, Englewood, Ohio

Filed Sep. 19, 1994, Ser. No. 308,603
Int. Cl.[6] H04M *11/00;* **H04N** *7/10*
U.S. Cl. 348—15 **73 Claims**



1. An image generator for use in a teleconferencing system comprising:
a differentiator for comparing a differential reference image to an input video image from a first station and for generating a differential image in response thereto; and
a compositor associated with a remote station for receiving said differential image and for combining that differential image with a predetermined composite image to provide a composite image which may be displayed at the remote station to provide a single, complementary, integrated, non-cartoon-animated and face-to-face environment.

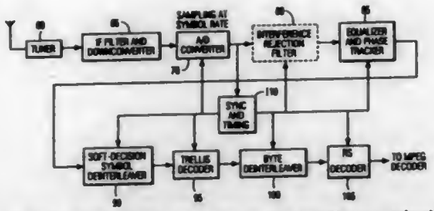
5,572,249

METHOD AND APPARATUS FOR OPTIMAL NTSC REJECTION FILTERING AND TRANSMITTER AND RECEIVER COMPRISING SAME

Monisha Ghosh, Mohegan Lake, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Jul. 7, 1994, Ser. No. 271,810
Int. Cl.[6] H04N *7/00;7/13*
U.S. Cl. 348—21 **2 Claims**

1. A transmitter for transmitting a digital television signal to a television receiver, said television receiver comprising:
a) means for receiving a digital television signal accompanied by noise, and an interference component resulting from a co-channel signal; and
b) an interference rejection filter for reducing the effect of said interference component on said digital television signal,
wherein said interference rejection filter flattens the frequency spectrum of the co-channel signal and minimizes the energy of the interference component while simultaneously limiting



enhancement of the noise due to the interference rejection filter to a specified level, said interference filter using a plurality of coefficients,

said transmitter comprising a precoder which precodes said digital signal prior to its transmission using said plurality of coefficients.

5,572,250

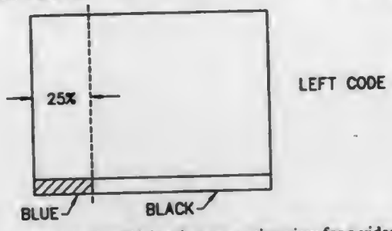
UNIVERSAL ELECTRONIC STEREOSCOPIC DISPLAY

Lenny Lipton, San Rafael; Jeffrey J. Hainon, Richmond, and Lawrence D. Meyer, San Rafael, all of Calif., assignors to StereoGraphics Corporation, San Rafael, Calif.

Filed Oct. 20, 1994, Ser. No. 326,270

Int. Cl.[6] H04N *13/00*

U.S. Cl. 348—43 **21 Claims**



1. A method for identifying the perspective view for a video field in a stereoscopic video signal, comprising the steps of:

encoding the video field with a predetermined video code,

monitoring the video signal using a circuit adapted to detect the video code, and

enabling a field selection device when the video code is detected by the circuit.

5,572,251

OPTICAL POSITION DETECTING UNIT AND OPTICAL COORDINATE INPUT UNIT

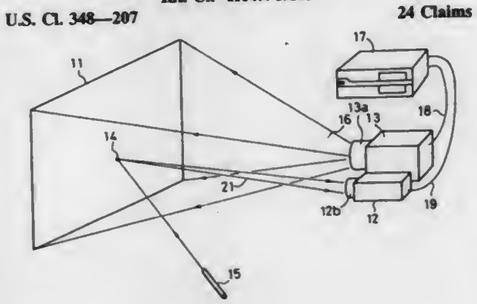
Yasuji Ogawa, Saitama-Ken, Japan, assignor to Wacom Co., Ltd., Saitama-Ken, Japan

Filed Oct. 28, 1994, Ser. No. 330,457

Claims priority, application Japan, Mar. 17, 1994, 6-072553

Int. Cl.[6] H04N *5/225*

U.S. Cl. 348—207 **24 Claims**



1. An optical position detecting unit for optically detecting a position of a freely movable light point comprising:

an image sensor having a pixel array region configured by a relatively small number of pixels;

an imaging lens for forming an image of said light point at a position in front of the pixel array region of said image sensor;

a converging lens disposed between said image sensor and the position of the image of said light point on an optical axis of said imaging lens for converging light coming from said light point onto the pixel array region of said image sensor, the light passing through the image of said light point;

a transparent optical pattern plate having a pattern containing optical code information uniquely corresponding to the position of said light point on the screen, the plate being disposed between said converging lens and the position of the image of said light point in a plane parallel with the pixel array region of said image sensor, the code information pattern enabling the position of said light point to be determined by means of optical codes included in a region through which the light from said light point passes, said optical codes in the region being projected onto the pixel array region by the converging light coming from said light point onto the pixel array region; and

signal processing means for processing signals outputted from said image sensor on which said codes are projected onto said pixel array region so as to extract information of the position of said light point by using said codes.

5,572,252

VIDEO CAMERA HAVING ERRONEOUS RECORDING PREVENTING FUNCTION AND METHOD THEREOF

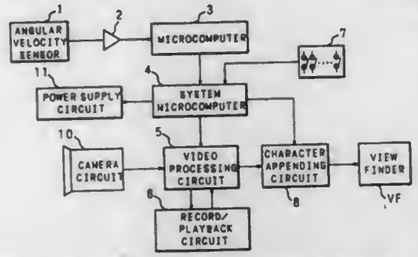
Masafumi Naka, and Kozo Ishida, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 86,124, Jul. 6, 1993, abandoned. This application Jun. 28, 1995, Ser. No. 496,049

Claims priority, application Japan, Jul. 10, 1992, 4-183741; Mar. 1, 1993, 5-039726

Int. Cl.[6] H04N *5/228*

U.S. Cl. 348—208 **83 Claims**



58. A method of controlling a video camera comprising:

(a) sensing movement of said video camera;

(b) determining whether said video camera is in a photographing state or in a non-photographing state on the basis of the sensed movement;

(c) stopping a tape for a first predetermined length of time after said non-photographing state has been determined; and

(d) rewinding a tape after said first predetermined length of time has expired.

5,572,253

DIGITAL VIDEO CAMERA FOR PROCESSING ANALOG LUMINANCE SIGNAL AND DIGITAL COLOR INFORMATION SIGNAL

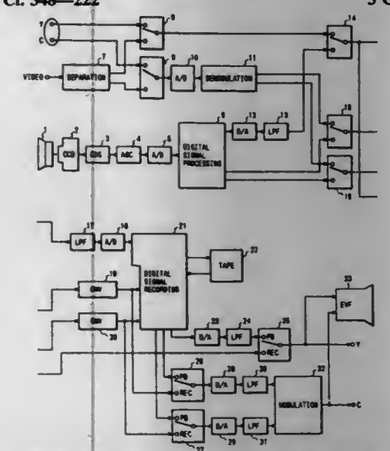
Osamu Ueda, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 213,927, Mar. 16, 1994. This application Jun. 7, 1995, Ser. No. 482,003

Claims priority, application Japan, Mar. 19, 1993, 5-85574; May 31, 1993, 5-152981; Jun. 11, 1993, 5-166318

Int. Cl.[6] H04N *5/228;9/68*

U.S. Cl. 348—222 **3 Claims**



1. A digital video camera apparatus which comprises a digital signal processing circuit and a digital signal recording device, converts an analog video signal obtained from an image pickup element into a digital video signal, supplies the converted digital video signal to said digital signal processing circuit, and records the digital video signal on a recording medium by said digital signal recording device after predetermined signal processing,

wherein of signals supplied from said digital signal processing circuit to said digital signal recording device, a luminance signal is supplied in a state of an analog signal, and a color information signal is supplied in a state of a digital signal.

5,572,254

DIGITAL VIDEO CAMERA WITH FREQUENCY CONVERTER AND D/D CONVERTER FOR COLOR-DIFFERENCE SIGNALS

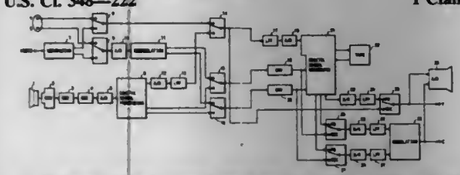
Teruo Hieda, Yokohama; Osamu Ueda, Kawasaki, and Norihiro Kawahara, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 213,927, Mar. 16, 1994. This application Jun. 7, 1995, Ser. No. 485,011

Claims priority, application Japan, Mar. 19, 1993, 5-85574; May 31, 1993, 5-152981; Jun. 11, 1993, 5-166318

Int. Cl.[6] H04N *5/228*

U.S. Cl. 348—222 **1 Claim**



1. A digital video camera apparatus which supplies a digital luminance signal and digital color-difference signals having a sampling frequency corresponding to an integer multiple of a subcarrier frequency, which signals are obtained by processing an image pickup signal of an image pickup element by digital signal processing means, to a digital signal recording/reproduction device, comprising:

a frequency converter for converting the sampling frequency of the digital color-difference signals into a sampling frequency of said digital signal recording/reproduction device in a recording mode; and

a D/A converter for performing D/A conversion of the sampling frequency converted color-difference signals from said frequency converter or reproduced color-difference signals reproduced by said digital signal recording/reproduction device at the sampling frequency of said digital signal recording/reproduction device.

5,572,255

IMAGE READING APPARATUS AND METHOD FOR DRIVING APPROPRIATE PHOTOELECTRIC ENERGY CONVERTING ELEMENTS WHEN FIRST AND SECOND DRIVING VOLTAGES ARE APPLIED SIMULTANEOUSLY

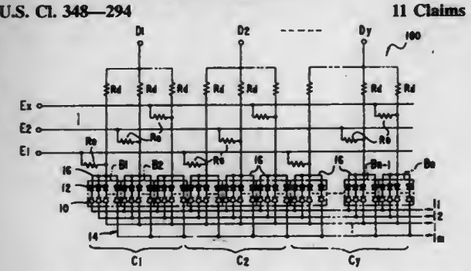
Satoru Murakami, Moriyama; Hiromi Maeda, Uji, and Yoichi Hosokawa, Akashi, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 8, 1994, Ser. No. 225,063

Claims priority, application Japan, Apr. 9, 1993, 5-107505; Sep. 20, 1993, 5-257792

Int. Cl.[6] H04N *5/335*

U.S. Cl. 348—294 **11 Claims**



1. An image reading method in which a driving voltage is sequentially applied via a matrix driver to a plurality of photoelectric energy converting elements disposed in a one-dimensional array and the electrical signals of said photoelectric energy converting elements are read,

wherein the drive side on which the driving voltage is applied to said photoelectric energy converting elements is divided every x elements into y blocks, comprising the steps of:

sequentially applying a first driving voltage to the units of x photoelectric energy converting elements in said blocks;

sequentially applying a second driving voltage to the photoelectric energy converting elements in the same relative positions in the respective blocks; and

driving the appropriate photoelectric energy converting elements when said first driving voltage and said second driving voltage are applied simultaneously,

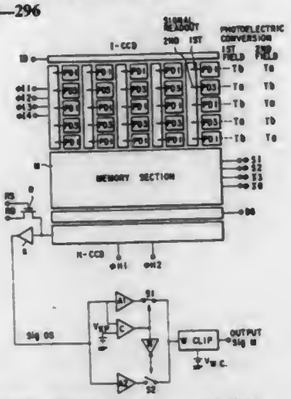
wherein the first and second driving voltages are applied to the photoelectric energy converting elements via the matrix driver, the matrix driver including a plurality of resistors to form an adding circuit.

5,572,256

SOLID-STATE IMAGING APPARATUS

Yoshitaka Egawa, Kawasaki; Yukio Endo, Yokohama, and Yoshiyuki Matsunaga, Kamakura, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 20, 1994, Ser. No. 275,748
Claims priority, application Japan, Jul. 20, 1993, 5-179272
Int. Cl.[6] H04N 5/335
U.S. Cl. 348—296 19 Claims



1. A solid-state imaging apparatus comprising:
a solid-sate imaging device including a plurality of photosensitive pixels arranged in a matrix on a semiconductor substrate;
a driving circuit for driving said photosensitive pixels of said solid-state imaging device during a first photoelectric conversion time period and a second photoelectric conversion time period which is defined within, is shorter than, and occurs simultaneously with the same first photoelectric conversion time period, to obtain a first signal corresponding to the first photoelectric conversion time period and a second signal corresponding to the second photoelectric conversion time period, said driving circuit including means for clipping the first signal at a specified level or above, and adding the signal obtained from the clipping to the second signal to produce an added signal; and
a signal processing circuit for amplifying the added signal from said adding means so as to amplify the second signal at an amplification degree larger than that for the first signal, and outputting the amplified signal.

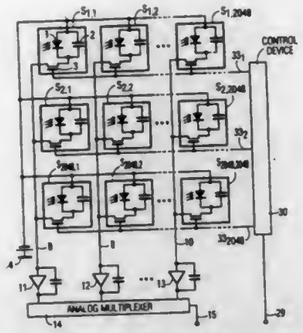
5,572,257

ARRANGEMENT COMPRISING A SENSOR MATRIX

Norbert Conrads, Hauset, Belgium; Ulrich Schiebel, and Herfried Wieczorek, both of Aachen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 893,141, Jun. 3, 1992, abandoned.
This application Mar. 3, 1995, Ser. No. 400,427
Claims priority, application Germany, Jun. 3, 1991, 41 18 154.9
Int. Cl.[6] H04N 3/14;5/335
U.S. Cl. 348—308 20 Claims

1. An apparatus comprising light-sensitive or X-ray sensitive sensors arranged in a matrix in rows and columns, which sensors produce charge states in dependance upon the amount of incident radiation, each sensor having its own electrical switch, and each row of sensors having an associated switching line of a plurality of switching lines coupled to a control device for selectively activating rows for reading purposes and for selectively activating rows for resetting purposes by controlling the conductive state of said switch of each sensor in an activated row in a manner that for said reading purposes, charge states of the sensors of the activated row are read simultaneously via a plurality of read lines coupled to said switch of the sensors in the activated row, and in the course of reading, these charge states are changed at least partially toward an initial charge state, and for said resetting purposes, the charge states of previously read rows of sensors are changed substantially completely to the initial charge state, and wherein said control device comprises reset means, responsive to successive clock pulses of a reset clock signal, for activating at least one of the previously read rows via said switches of the sensors of the activated previously read row, for, after a first predetermined number of successive clock pulses of the reset clock signal, activating another of the previously read rows, and for deactivating each activated previously read row a second predetermined number of successive clock pulses of the reset clock signal after activating the previously read row.

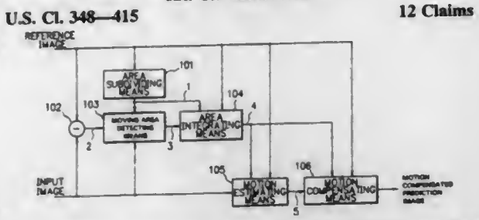


5,572,258

MOTION COMPENSATION ESTIMATING DEVICE AND METHOD ACHIEVING IMPROVED MOTION COMPENSATION

Yutaka Yokoyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 20, 1994, Ser. No. 309,083
Claims priority, application Japan, Sep. 28, 1993, 5-240983
Int. Cl.[6] H04N 7/36
U.S. Cl. 348—415 12 Claims



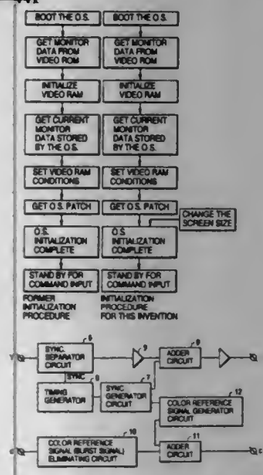
1. A motion compensation apparatus for inter-frame prediction comprising:
an area subdividing means for subdividing a reference image into sub-areas and producing a subdivided area,
an inter-frame difference calculating means for producing inter-frame difference information between an input image and the reference image;
a moving area detecting means for detecting, by reference to the inter-frame difference information, sub-areas in said subdivided area having inter-frame difference information of a predetermined character and designating said sub-areas as moving areas;
an area integrating means for integrating the moving areas and outputting the integrated areas as moving object areas;
motion estimating means for estimating inter-frame motion between the input and reference images for each of the moving object areas and outputting motion parameters representing motion of the moving object areas; and
motion compensating means for conducting motion compensation for each of the moving object areas according to the motion parameters and producing and outputting a motion compensated prediction image.

5,572,259

METHOD OF CHANGING PERSONAL COMPUTER MONITOR OUTPUT FOR USE BY A GENERAL PURPOSE VIDEO DISPLAY

Nohara Ichiro, Miyoshi-gun, Japan, assignor to Maki Enterprise Inc., Tokushima, Japan

Filed Oct. 27, 1994, Ser. No. 329,826
Claims priority, application Japan, Oct. 29, 1993, 5-294017
Int. Cl.[6] H04N 7/01;5/04
U.S. Cl. 348—441 6 Claims



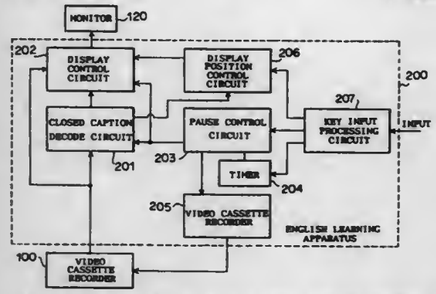
1. A method for causing a personal computer to generate a video display output for a general purpose video display device, the personal computer having an operating system and configured to normally generate a computer monitor display output at a timing set by scanning trigger pulse signals, the resolution of the computer monitor display output being stored in a video memory and being greater than that of the video display output, said method comprising:
changing the resolution set in the video memory to a modified resolution coinciding with the resolution of the video display output, wherein upon initialization of the operating system the modified resolution is read from the video memory to set a corresponding image area of a video signal;
delaying the video signal by a prescribed time interval with respect to the scanning signal trigger pulses to generate the video display output for the general purpose video display device;
wherein the video signal includes a Y signal containing a synchronization signal, and wherein said delaying step comprises (a) separating the synchronization signal from the Y signal, (b) using the synchronization signal to trigger oscillations from a timing generator, (c) using the oscillations from the timing generator to trigger a synchronization generator which outputs delayed trigger pulses which are delayed by the prescribed time interval with respect to the scanning signal trigger pulses, and (d) using the delayed trigger pulses to delay the video signal by the prescribed time interval.

5,572,260

CLOSED CAPTION DECODER HAVING PAUSE FUNCTION SUITABLE FOR LEARNING LANGUAGE

Yasushi Onishi, and Shoichi Kamimura, both of Hyogo, Japan, assignors to Mitsubishi Electric Semiconductor Software Co. Ltd., Hyogo, and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of Japan

Filed Jul. 21, 1995, Ser. No. 505,418
Claims priority, application Japan, Mar. 20, 1995, 7-060437
Int. Cl.[6] H04N 7/087
U.S. Cl. 348—460 12 Claims



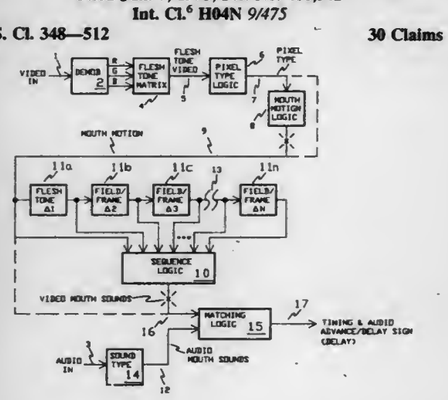
1. A closed caption decoder with a pause function suitable for learning a language, comprising:
a closed caption decode means for decoding closed caption signals included in video signals outputted from a video cassette recorder and for outputting a detection signal when a predetermined control code is decoded;
an input processing means for performing processing of input of an instruction indicating a termination of a pause operation from a user; and
a pause control means for instructing the caption decode means to perform a pause operation of caption decode and the video cassette recorder to perform a pause of video reproduction when the detection signal is outputted from the closed caption decode means, and for outputting a pause termination signal of caption decode to the closed caption decoder and a pause termination signal of video reproduction to the video cassette recorder when an instruction indicating a termination of a pause operation is inputted from a user by the input processing means.

5,572,261

AUTOMATIC AUDIO TO VIDEO TIMING MEASUREMENT DEVICE AND METHOD

J. Carl Cooper, 15288 Via Pinto, Monte Sereno, Calif. 95030

Filed Jun. 7, 1995, Ser. No. 486,542
Int. Cl.[6] H04N 9/475
U.S. Cl. 348—512 30 Claims



5. A method for measuring the relative timing of an audio and a visual portion of a program including the steps of:

a) identifying in said visual portion the presence and occurrence in time of known mouth sounds created by visual patterns of mouth movements,

b) identifying in said audio portion the presence and occurrence in time of known mouth sounds created by audible patterns of mouth movements,

c) storing first data representative of a sequence of said known mouth sounds of step a),

d) storing second data representative of a sequence of said known mouth sounds of step b),

e) comparing said first data of step c) with said second data of step d) to determine a relative position of a best match thereof,

and measuring said relative timing in response to the relative position of the best match.

5,572,262

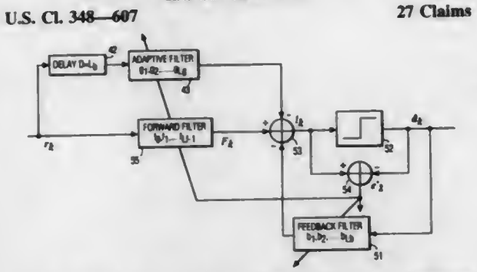
RECEIVER BASED METHODS AND DEVICES FOR COMBATING CO-CHANNEL NTSC INTERFERENCE IN DIGITAL TRANSMISSION

Monisha Ghosh, Mohegan Lake, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Dec. 29, 1994, Ser. No. 366,138

Int. Cl.[6] H04N *5/21*

U.S. Cl. 348—607 **27 Claims**



1. A method of removing co-channel conventional television signal interference from a digital signal, comprising the steps of:

receiving the digital signal which includes a plurality of symbols, noise and co-channel conventional television signal interference;

delaying the received digital signal;

adaptively filtering the delayed signal using a feed forward adaptive filter having a plurality of adjustable taps;

subtracting the adaptively filtered signal from the received digital signal and producing an error signal; and

recursively using the error signal to adjust the taps of the adaptive filter to minimize the mean squared error of the error signal such that the adaptive filter becomes tuned to the co-channel conventional television signal interference.

5,572,263

VIDEO SIGNAL SELECTION CIRCUIT

Jae Y. Kim, Songnam; Dong J. Go, Suwon; In S. Kim, Suwon, and Sang S. Lee, Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Nov. 30, 1994, Ser. No. 351,083

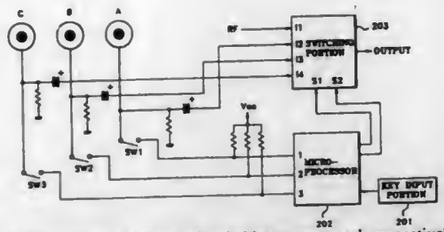
Claims priority, application Rep. of Korea, Nov. 30, 1993, 93-25902

Int. Cl.[6] H04N *5/268*

U.S. Cl. 348—705 **14 Claims**

1. A video signal selection circuit, comprising:

a predetermined number of video jack ports;



a predetermined number of switching means, each respectively connected to an associated one of said video jack ports and being switched when a jack is connected to said associated video jack port;

a micro-processing means, perceiving whether the jack is connected to said associated video jack port by determining if said respective switching means is switched, and outputting a corresponding control signal so that only a video signal from the connected jack is selected by said micro-processor for output.

5,572,264

HIGH DEFINITION TV SIGNAL RECEIVER

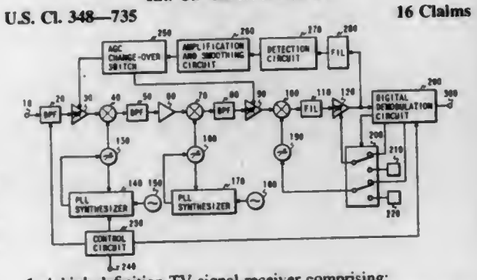
Hiroyuki Mizukami; Yutaka Igarashi, and Toshio Nagashima, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 9, 1995, Ser. No. 386,038

Claims priority, application Japan, Feb. 14, 1994, 6-017072; Oct. 19, 1994, 6-253466

Int. Cl.[6] H04N *5/46;5/44*

U.S. Cl. 348—735 **16 Claims**



1. A high definition TV signal receiver comprising:

an input filter extracting a desired signal from input radio frequency signals;

a radio frequency amplifier amplifying or attenuating said desired signal of said input filter;

a first local oscillator outputting a first local oscillation signal at an oscillation frequency corresponding to channel selection information;

a first frequency converter converting said desired signal which is an output signal of said radio frequency amplifier to a first intermediate frequency signal in accordance with said first local oscillation signal;

a first intermediate frequency filter extracting said first intermediate frequency signal from an output signal of said first frequency converter;

a first intermediate frequency amplifier amplifying said first intermediate frequency signal;

a second local oscillator outputting a second local oscillation signal;

a second frequency converter converting said first intermediate frequency signal to a second intermediate frequency signal utilizing said second local oscillation signal;

a second intermediate frequency filter extracting only said second intermediate frequency signal from an output signal of said second frequency converter;

a second intermediate frequency amplifier amplifying or attenuating said second intermediate frequency signal;

a third local oscillator outputting a third local oscillation signal;

a third frequency converter converting said second intermediate frequency signal to a third intermediate frequency signal utilizing said third local oscillation signal;

a third intermediate frequency filter extracting only said third intermediate frequency from an output signal of said third frequency converter;

a third intermediate frequency amplifier amplifying said third intermediate frequency signal;

a first demodulator demodulating said third intermediate frequency signal, and also generating a first AFC voltage finely tuning the oscillation frequency of said third or second local oscillator and a first AGC voltage controlling the amplification degree of said third intermediate frequency amplifier;

a filter having frequency characteristics reducing a frequency component, which is equal to a carrier component in a TV signal of a standard system, of said third intermediate frequency signal which is supplied from said third intermediate frequency amplifier;

a detector detecting an output signal from said filter; and

a smoothing amplifier smoothing an output signal of said detector and amplifying it to a desired voltage, when said desired signal from said input radio frequency signals is a high definition TV signal having an occupied band width which is the same as that of the TV signal of the standard system, and wherein an output signal of said smoothing amplifier is a gain control signal of said radio frequency amplifier and said second intermediate frequency amplifier.

5,572,265

NOSE PAD DEVICE FOR GLASSES

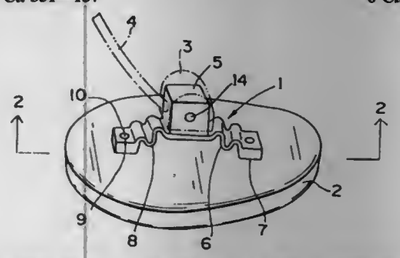
Keizo Hasegawa, Tokyo, Japan, assignor to Hasegawa Bicoh Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1995, Ser. No. 559,170

Claims priority, application Japan, Jul. 24, 1995, 7-207310

Int. Cl.[6] G02C *5/12;1/00*

U.S. Cl. 351—137 **6 Claims**



1. A nose pad device for glasses with a frame, comprising:

a pad engaging portion fixed to the frame,

an attaching member including a base portion to be attached to the pad engaging portion, a pair of resilient legs fixed to the base portion and extending in a direction away from the base portion such that as a distance from the base portion increases, a distance between the resilient legs increases, each resilient leg having a distal end, and two first fixing portions, each being fixed to the distal end of the leg, and

a nose pad having two second fixing portions to be attached to the first fixing portions so that the nose pad is resiliently attached to the frame.

5,572,266

FUNDUS CAMERA

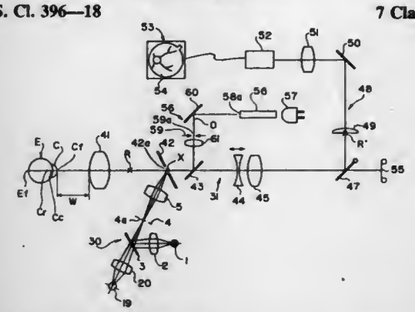
Hiroyuki Ohtsuka, Tokyo, Japan, assignor to Kabushiki Kaisha Topcon, Tokyo, Japan

Filed Jul. 25, 1994, Ser. No. 280,198

Claims priority, application Japan, Jul. 26, 1993, 5-183933

Int. Cl.[6] G03B *29/00*

U.S. Cl. 396—18 **7 Claims**



1. A fundus camera comprising:

an illumination optical system for illuminating a fundus of a subject's eye with illumination light;

projecting means for projecting two beams of alignment light onto a cornea of the eye in order to align a camera body with the eye, the beams coinciding to form a single alignment image on the eye when a working distance between a camera body and the eye is in a predetermined proper condition, the beams forming two split alignment images on the eye when the working distance between the camera body and the eye is out of the predetermined proper condition;

a photographic optical system having an objective lens disposed in front of the eye, the illumination light being reflected by the fundus of the eye and converged upon a point conjugate with the fundus by the objective lens so as to form a fundus image as an aerial image and then be guided to an image pickup tube, the alignment light being projected onto the cornea and converged upon the point conjugate with the fundus so as to form an alignment image as an aerial image and be guided to said image pick tube; and

display means for displaying the fundus image and the alignment image each formed on said image pickup tube.

5,572,267

PASSIVE DATA RECORDING ONTO MAGNETIC LAYERS OF PHOTOGRAPHIC FILM

Robert E. Swanson, Del Mar; Tomasz Jagielinski, Carlsbad, and George W. Brock, La Jolla, all of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 23, 1994, Ser. No. 294,285

Int. Cl.[6] G03B *29/00*

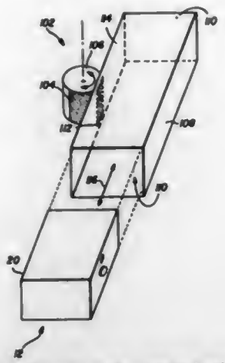
U.S. Cl. 396—319 **23 Claims**

9. A method of magnetically recording a fixed pattern of information onto a magnetic media layer of a photographic filmstrip that is carried within a camera, comprising the steps of:

arranging a plurality of permanent magnets in a sequence of alternating poles so as to provide a sequence of magnetic orientations in the fixed pattern of information;

moving the permanent magnets and camera relative to each other such that they make rolling contact with no interface

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sliding and the filmstrip in the camera is placed in sufficient proximity to the magnets that they impart the fixed pattern onto the magnetic media layer.

5,572,268

CAMERA WITH RETRACTABLE MAGNETIC HEAD AND RETRACTABLE PAD

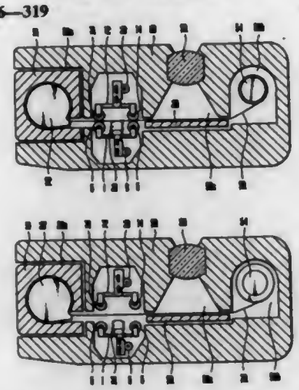
Hideo Tamamura, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 141,681, Oct. 26, 1993, abandoned, which is a continuation of Ser. No. 867,312, Apr. 10, 1992, abandoned, which is a continuation of Ser. No. 633,997, Dec. 26, 1990, abandoned. This application May 1, 1995, Ser. No. 432,523

Claims priority, application Japan, Dec. 28, 1989, 1-338457; Apr. 18, 1990, 2-102325; Jun. 29, 1990, 2-170093

Int. Cl.[6] G03B *17/24*

U.S. Cl. 396—319 **64 Claims**



48. An apparatus having a shutter release device and being adapted to use a film having a storage part, said apparatus comprising:

a) a head for at least one of reading information from and writing information to the storage part of the film, and

b) bringing means for bringing a relation between said head and the film into a state where said head performs said at least one of reading information from and writing information to the storage part of the film independently of an operation of the shutter release device.

5,572,269

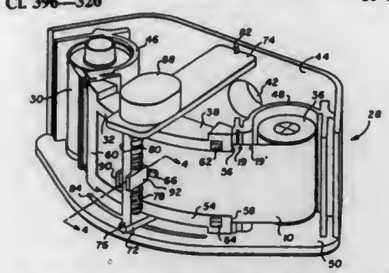
MAGNETIC HEAD TRANSLATION SYSTEM FOR RECORDING AND REPRODUCING ON MAGNETIC-ON-FILM LAYER

George W. Brock, La Jolla; Robert E. Swanson, Del Mar, and Sheldon W. Hower, San Diego, all of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 8, 1995, Ser. No. 437,204

Int. Cl.[6] G03B *17/24;29/00*

U.S. Cl. 396—320 **10 Claims**



1. A method of recording and/or reproducing sets of photographic data by means of a magnetic head into parallel data tracks extending lengthwise of a magnetic layer on a photographic filmstrip, the method comprising the steps of:

supporting the filmstrip in a stationary position in a film transport path;

translating the magnetic head to a selected track across the width of said filmstrip;

translating the magnetic head lengthwise along the selected track;

energizing the magnetic head to record or reproduce data in the selected track during the lengthwise translation thereof;

wherein said supporting step further comprises the step of:

locating an image frame of said filmstrip in said stationary position in a viewing station for viewing the image exposed therein;

wherein said filmstrip exhibits a lengthwise curvature of a predetermined sign and said supporting step further comprises the step of:

supporting said filmstrip in said stationary position in a curved transport path in the length dimension of said filmstrip, said curved transport path having a curvature radius of the same sign as the predetermined curvature sign of the filmstrip;

wherein said step of translating the magnetic head lengthwise along the selected track further comprises the steps of:

supporting said magnetic head for movement in said curvature radius for lengthwise translation with respect to the selected track; and

moving said magnetic head in said curvature radius to thereby translate said magnetic head lengthwise with respect to said track.

5,572,270

OPTICAL APPARATUS HAVING A MOTOR CONTROL DEVICE

Harushige Yamamoto, Yamato, and Yoshiyuki Kaneko, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 832,993, Feb. 10, 1992, abandoned. This application Feb. 10, 1994, Ser. No. 194,648

Claims priority, application Japan, Feb. 12, 1991, 3-019024

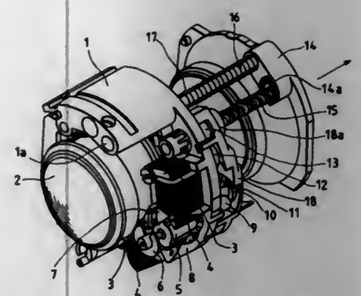
Int. Cl.[6] G03B *1/18;3/00*

U.S. Cl. 396—133 **35 Claims**

31. An optical apparatus comprising:

a movable member movable in response to a motor which acts as a drive source;

a stopper member positioned to bear against said movable member at a point of travel of said movable member; and



movement control means for moving said movable member to a set position, said movement control means driving the motor in one direction so that said movable member bears against said stopper member, and after the bearing of said movable member against said stopper member is discriminated, driving the motor by a predetermined amount in a direction opposite to the one direction, the position of said movable member in that state being defined as the set position;

wherein the set position of said movable member is located at a predetermined distance Spaced away from said stopper member.

5,572,271

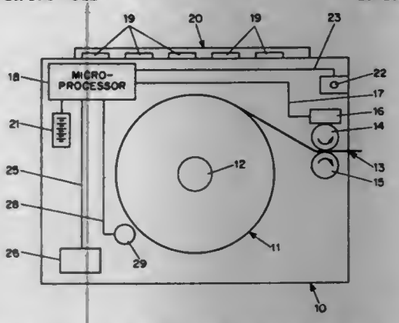
COMPUTER OUTPUT MICROFILM CANISTER

Gregory F. Pelican, New Milford, Conn., assignor to Fuji Photo Film Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1995, Ser. No. 416,150

Int. Cl.[6] B03B *17/26*

U.S. Cl. 396—512 **18 Claims**



1. A film canister for use with a computer output microfilm system comprising a container removably installable in a computer output microfilm system for holding a roll of film to be dispensed in incremental units to a computer output microfilm system, a motion detector in the container for detecting motion of film each time any film is withdrawn from the container, and a microprocessor in the container for computing the length of film remaining in the container based on the number of times the motion detector has been actuated and for retaining numerical information relating to the remaining length of film when the container is removed from a computer output microfilm system.

5,572,272

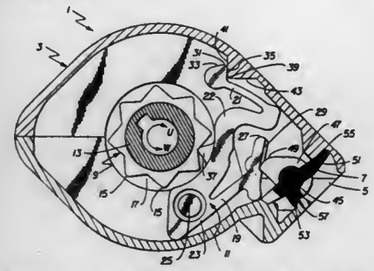
FILM CASSETTE WITH SPOOL LOCK AND LIGHT-SHIELDING DOOR

Dennis R. Zander, Penfield, and Eugene Sisto, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 22, 1993, Ser. No. 36,020

Int. Cl.[6] G03B *17/26*

U.S. Cl. 396—513 **1 Claim**



1. A film cassette comprising light-shielding means for preventing ambient light from entering the cassette interior, a film spool supported for rotation, and locking means supported for movement into engagement with said spool to secure the spool and out of engagement with the spool to release the spool, is characterized in that:

said light-shielding means is supported for closing movement to prevent ambient light from entering the cassette interior and for opening movement, and includes cam means for moving said locking means into engagement with said spool responsive to closing movement of the light-shielding means; and

said locking means includes resilient means for being temporarily deformed should the locking means be prevented from being moved by said cam means to engage said spool and said light-shielding means is forcibly closed, whereby the light-shielding means is permitted to be closed even though the locking means is obstructed.

5,572,273

APPARATUS AND METHOD FOR MAKING A LITHOGRAPHIC OFFSET PLATE BY THE SILVER SALT DIFFUSION TRANSFER PROCESS

Leo Vackier, 's-Gravenwezel; Bart Verhoest, Wilrijk, and Jan Claes, Mortsel, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

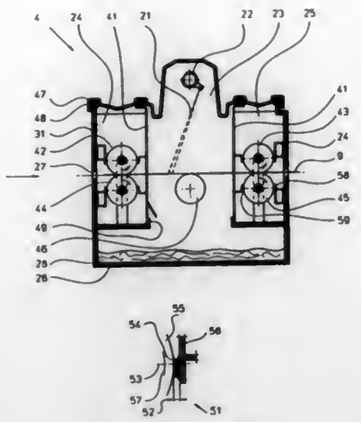
Filed Mar. 20, 1995, Ser. No. 407,293

Claims priority, application European Pat. Off., Mar. 25, 1994, 94200812

Int. Cl.[6] G03D *3/02*

U.S. Cl. 396—630 **7 Claims**

1. An apparatus for processing a photographic sheet (**9**) which comprises at least one station (**4**) with inlet and outlet pressure roller pairs (**42** to **45**) for transporting said sheet through the station, spray means (**22**) for spraying processing liquid (**21**) onto at least one surface of said sheet while in the station, wherein said station includes at least one sealing arrangement between at least one roller of at least one of said roller pairs and an adjacent wall of said station, said sealing arrangement being formed by selection of a spacing between said adjacent wall and an outer surface of said at least one roller to cause said processing liquid to form a continuous meniscus across said spacing.



5,572,274

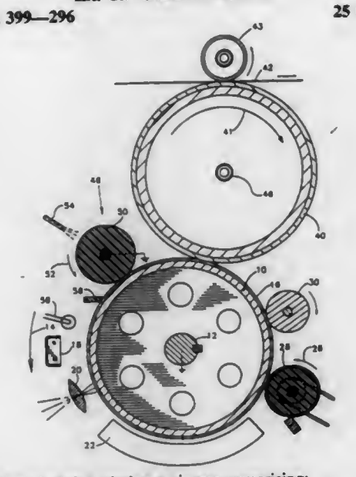
LIQUID DEVELOPER IMAGING SYSTEM AND METHOD UTILIZING AN INTERMEDIATE TRANSFER MEMBER

Ishaiau Lior, Nes Ziona; Benzion Landa, Edmonton; Amiran Lavon, Bat Yam, and Hanna Pinhas, Holon, all of Israel, assignors to Indigo N.V., Veldhoven, Netherlands

Continuation of Ser. No. 446,877, Dec. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 293,456, Jan. 4, 1989, abandoned. This application Sep. 3, 1993, Ser. No. 115,803

Int. Cl.[6] G03G *15/16;15/10*

U.S. Cl. 399—296 25 Claims



24. A method for printing an image comprising:

forming a liquid toner image on an image bearing surface using a liquid toner, said liquid toner image comprising carrier liquid and charged toner particles;

electrostatically transferring the liquid toner image from the image bearing surface to an intermediate transfer member coated with a release coating;

heating the developed image during its transfer from the image bearing surface to the intermediate transfer member to a temperature effective in aiding the electrostatic transfer; and

transferring the image from the intermediate transfer member to a substrate.

5,572,275

FIXING DEVICE AND FIXING ROLLER

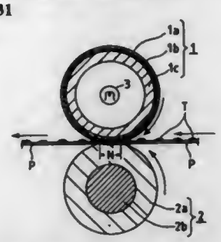
Makoto Jinzai, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 210,938, Mar. 21, 1994, abandoned. This application Jan. 31, 1995, Ser. No. 381,321

Claims priority, application Japan, Mar. 23, 1993, 5-088209

Int. Cl.[6] G03G *15/20*

U.S. Cl. 399—331 22 Claims



1. A fixing device comprising:

a pair of rollers respectively pressed against to each other to form a nip therebetween,

wherein a recording medium which carries a non-fixed image is pinched and conveyed by said nip to perform fixing, and

at least one of said pair of rollers comprises a mixture layer prepared by mixing a perfluoroelastomer having rubber elasticity and a PFA resin.

5,572,276

INNER FOCUS TYPE TELEPHOTO ZOOM LENS

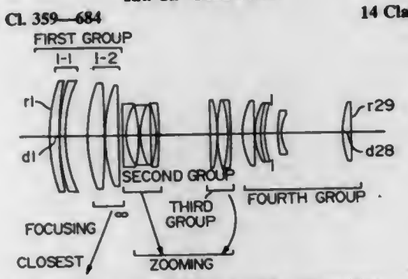
Jun Hirakawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1994, Ser. No. 339,186

Claims priority, application Japan, Nov. 12, 1993, 5-283617

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—684 14 Claims



1. An inner focus type telephoto zoom lens comprising:

a first lens group having a positive power; and

a rear lens group of a variable power having a plurality of lens groups, located in this order from an object side;

said first lens group comprising:

a first sub-group that is not moved upon focusing, and

a second sub-group comprising a plurality of movable positive lenses that are moved along an optical axis to provide said focusing, said first sub-group and said second sub-group being located in this order from the object side, wherein

said second sub-group satisfies the following relationship:

$$v_{1\text{-}2}>75$$

wherein $v_{1\text{-}2}$ represents a mean value of the Abbe of all the lenses that constitute said second sub-group.

5,572,277

ZOOM LENS

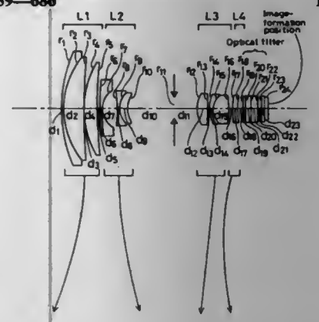
Tsutomu Uzawa, Hidaka; Naoki Fujii, and Atsujiro Ishii, both of Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1994, Ser. No. 258,925

Claims priority, application Japan, Jun. 15, 1993, 5-143238

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—686 15 Claims



1. A zoom lens system comprising, in order from the object side,

a first lens unit which is movable along the optical axis and in zooming from a wide-angle end to a telephoto end, said first lens unit being relatively displaceable toward the object side at the telephoto end position rather than at the wide-angle end position, and has positive refracting power as a whole,

a second lens unit which is movable along the optical axis and in an orbit for zooming from the wide-angle end to the telephoto end, said orbit being relatively displaceable toward the image side at the telephoto end position rather than at the wide-angle end position, and has negative refracting power as a whole,

a third lens unit which is movable along the optical axis and in an orbit for zooming from the wide-angle end to the telephoto end, said orbit being relatively displaceable toward the object side at the telephoto end position rather than at the wide-angle end position, and has positive refracting power as a whole, and

a fourth lens unit which is movable along the optical axis for zooming from the wide-angle end to the telephoto end, and has positive or negative refracting power as a whole, and

said zoom lens system conforming to the following conditions:

$$2.6<f_t/(f_w f_T)^{1/2}<6 \quad (1)$$

$$-1.2<\beta_{2T}<-0.7 \quad (2)$$

$$3.2<\beta_{2T}/\beta_{2W}<8 \quad (3)$$

where:

f_t is the focal length of the first lens unit,

f_w and f_T are the focal lengths of the overall system at the wide-angle and telephoto ends, respectively, and

β_{2W} and β_{2T} are the image-formation magnifications of the second lens unit at the wide-angle and telephoto ends, respectively.

5,572,278

CAMERA HAVING LEARNING FUNCTION

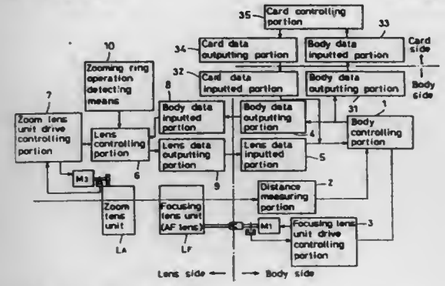
Masataka Hamada, Osakasayama; Masayuki Ueyama, Toyonaka; Kenji Ishibashi, Sakai, and Hiroshi Ootsuka, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 145,510, Nov. 4, 1993, Pat. No. 5,374,984, which is a division of Ser. No. 797,960, Nov. 26, 1991, Pat. No. 5,285,231. This application Sep. 16, 1994, Ser. No. 307,150

Claims priority, application Japan, Nov. 29, 1990, 2-334414; Nov. 29, 1990, 2-334415; Nov. 29, 1990, 2-334416

Int. Cl.[6] G03B *5/00*

U.S. Cl. 396—49 8 Claims



1. A camera comprising:

a memory in which an automatic control data is stored;

an automatic setting apparatus which determines an automatic control value based on said automatic control data;

a manual setting apparatus which determines a manual control value according to a manual operation;

an apparatus which discriminates whether or not a changing operation can be performed where the automatic control data stored in said memory is changed according to said manual control value; and

a selector which selects between a mode where said changing operation is performed and a mode where said changing operation is not performed when said discriminating apparatus discriminates that said changing operation can be performed.

5,572,279

CAMERA INCORPORATING AN AUTO-ZOOM FUNCTION

Toshifumi Ohsawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 160,205, Dec. 2, 1993, Pat. No. 5,485,239. This application May 23, 1995, Ser. No. 448,306

Claims priority, application Japan, Dec. 3, 1992, 4-349963

Int. Cl.[6] G03B *13/36*

U.S. Cl. 396—52 4 Claims

1. A camera incorporating an auto-zoom function to automatically drive a zoom optical system in a predetermined zoom state, said camera comprising:

(a) a detecting means for detecting a camera shake; and

(b) a control circuit for making the auto-zoom function operative when said detecting means detects that the camera is not shaken.

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5,572,280

PHOTOELECTRIC CONVERSION APPARATUS AND CAMERA USING THE SAME IN FOCUS DETECTION THEREOF

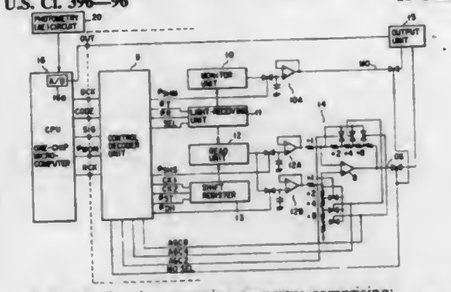
Tsuyoshi Yaji, Kawagoe, and Masayuki Uno, Ina, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1994, Ser. No. 311,166

Claims priority, application Japan, Sep. 29, 1993, 5-242761

Int. Cl.[6] G03B *13/36;* **H04N** *5/235*

U.S. Cl. 396—96 **18 Claims**



1. A photoelectric conversion apparatus comprising:

photoelectric converting means including a plurality of photoelectric conversion devices for receiving light from an object and for storing charge corresponding to a quantity of received light;

monitor means for outputting a monitor signal corresponding to the received light quantity from a start of charge storage by said photoelectric conversion devices of said photoelectric converting means;

monitor read means for reading out the monitor signal output from said monitor means when a predetermined time elapses from the start of the charge storage by said photoelectric converting means;

time determining means for determining an end time of the charge storage by said photoelectric converting means on the basis of the monitor signal read out by said monitor read means; and

signal read means for reading out charge signals stored in said photoelectric conversion devices of said photoelectric converting means when the charge storage end time determined by said time determining means elapses.

5,572,281

PHOTO-TAKING APPARATUS CAPABLE OF MAKING A PHOTOGRAPH WITH FLASH BY A FLASH DEVICE

Shinichi Suzuki, Tokyo; Seiichi Yasukawa, Kawasaki; Toshihiro Sato, Yokohama, and Tsutomu Narisawa, Saitama-ken, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 375,400, Jan. 18, 1995, abandoned, which is a division of Ser. No. 277,947, Jul. 19, 1994, Pat. No. 5,450,162, which is a continuation of Ser. No. 135,616, Oct. 14, 1993, abandoned, which is a division of Ser. No. 827,719, Jan. 29, 1992, Pat. No. 5,305,048. This application Sep. 27, 1995, Ser. No. 534,383

Claims priority, application Japan, Feb. 12, 1991, 3-40923

Int. Cl.[6] G03B *15/05*

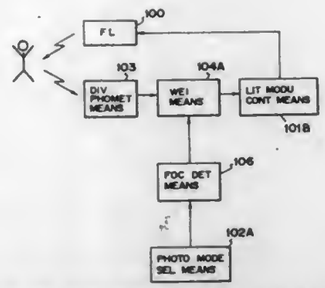
U.S. Cl. 396—121 **3 Claims**

1. A camera comprising:

a focus detecting circuit which detects a focus adjusted state of a photographing lens attached to said camera, at each of a plurality of focus detection areas set in a photographing image plane;

a photographing mode selecting circuit which selects either one of an AF response mode in which flash control is performed in response to said focus detecting circuit, or another photographing mode;

a divisional photometry circuit which performs photometry of light emitted from a flashing device and reelected at an object, through said photographing lens, at each of photometric areas into which said photographing image plane is divided, and outputs respective photometric values;



a light adjusting circuit electrically connected to said flashing device, which controls said flashing device to emit light or stop emission of light; and

a light adjustment control circuit connected to said focus detecting circuit, said photographing mode selecting circuit and said light adjusting circuit, which weights the photometric value at each of said photometric areas based on a focus detection result of said focus detecting circuit, when the AF response mode is selected by said photographing mode selecting circuit, and stops emission of said flashing device via said light adjusting circuit, when a sum of the weighted photometric values reaches a predetermined level.

5,572,282

FOCUS DETECTING APPARATUS

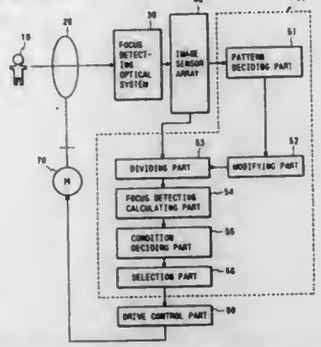
Shigeyuki Uchiyama, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 400,125, Mar. 6, 1995, abandoned, which is a continuation of Ser. No. 234,633, Apr. 28, 1994, abandoned, which is a continuation of Ser. No. 120,231, Sep. 14, 1993, abandoned, which is a continuation of Ser. No. 7,359, Jan. 21, 1993, abandoned, which is a continuation of Ser. No. 921,374, Jul. 29, 1992, abandoned, which is a continuation of Ser. No. 888,426, May 28, 1992, abandoned, which is a continuation of Ser. No. 661,620, Feb. 28, 1991, abandoned. This application Aug. 22, 1995, Ser. No. 517,894

Claims priority, application Japan, Mar. 1, 1990, 2-52230

Int. Cl.[6] G03B *13/36*

U.S. Cl. 396—125 **24 Claims**



1. In a focus detecting apparatus, comprising:

a focus detecting optical system which leads two images created by light passing through two different points of an objective lens onto a pair of one-dimensional image sensor arrays;

a dividing means for dividing said pair of image sensor arrays into small blocks to take out an image output from each block;

a focus detection calculating means for relatively shifting the image outputs obtained from said pair of image sensor arrays to calculate a relative shift amount of said two images; and

modifying means for changing the width of said blocks;

said focus detecting apparatus comprising deciding means which analyzes space frequency components of a subject, and which decreases the width of said blocks through said modifying means when it determines that said subject includes a high-frequency component, or increases the width of said blocks when it determines that said subject includes a low-frequency component.

5,572,283

DISPLAY ILLUMINATION DEVICE FOR CAMERA

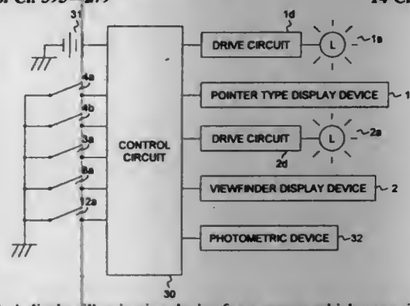
Hiroshi Wakabayashi, Yokohama; Daiki Tsukahara, Hiratsuka; Hidenobu Kaji, Kawasaki, and Tadashi Ohtani, Ohtawara, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Nov. 17, 1994, Ser. No. 343,959

Claims priority, application Japan, Nov. 29, 1993, 5-298042; Nov. 29, 1993, 5-298043

Int. Cl.[6] G03B *17/18*

U.S. Cl. 395—279 **14 Claims**



1. A display illumination device for a camera which comprises a plurality of display devices which display information related to photography, comprising:

a plurality of illuminators, provided in correspondence to said display devices, which illuminate said display devices;

a plurality of illuminator control buttons for turning on and off said illuminators; and:

a control device which controls said plurality of illuminators according to the operation of said plurality of illuminator control buttons and turns off all of said plurality of illuminators when at least two among said plurality of illuminator control buttons are operated simultaneously.

5,572,284

BOOK DOCUMENT HANDLING DEVICE

Tetsuya Fujioka, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 5, 1995, Ser. No. 435,483

Claims priority, application Japan, May 11, 1994, 6-097757; Oct. 20, 1994, 6-255665

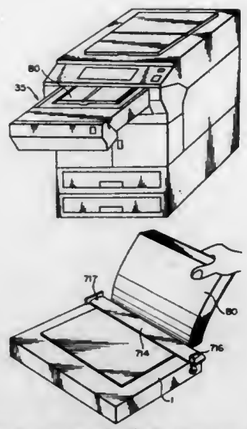
Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—362 **20 Claims**

1. A book document handling device comprising:

a document table for laying a book document in a spread position with spread pages of said book document facing upward;

page turning means for turning the pages of the book document by scanning the spread pages;



reading means for reading the book document; and

a scanning unit supporting said page turning means and said reading means for allowing said page turning means and said reading means to scan the book document;

said scanning unit being movable in a reciprocating motion for turning the pages of the book document while reading said book document;

said document table comprising:

a pair of separate document tables positioned side by side;

moving means for causing said pair of document tables to move up and down independently of each other such that each of said pair of document tables is movable independent of the other;

fixing means for fixing a front and a rear cover of the book document to said pair of document tables, respectively; and

supporting means for supporting said pair of document tables in such a manner as to be movable relative to a body of said device;

wherein said fixing means fixes the front cover and the rear cover at a location adjacent to a binding of said book document.

5,572,285

IMAGE FORMING APPARATUS

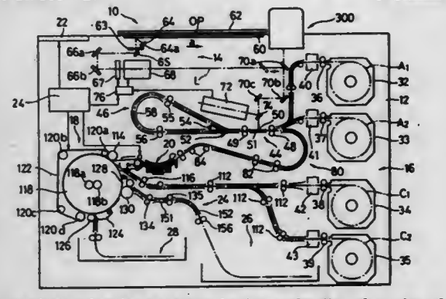
Atsushi Takagi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 144,360, Nov. 1, 1993, abandoned. This application May 10, 1995, Ser. No. 438,468

Claims priority, application Japan, Oct. 30, 1992, 4-293013

Int. Cl.[6] G03B *27/30;* **G03D** *3/00*

U.S. Cl. 355—27 **5 Claims**



1. An image forming apparatus having a plurality of species of light-sensitive material and a plurality of species of image-receiving material, comprising an exposure unit to first perform scan exposure on said light-sensitive material, an applicator to

apply an image forming solvent to at least one of the exposed light-sensitive material and the image-receiving material onto which a developed image is to be transferred, and means for bringing said light-sensitive and image-receiving materials into a superimposed relationship for thermal development and transfer to form the developed and transferred image on the receiving material,

wherein image formation is performed with a temperature condition being held substantially constant whereas other conditions for image forming are varied between preset values in accordance with various combinations of said light-sensitive and image-receiving materials, and

wherein said temperature condition consists of a temperature of said image forming solvent and a temperature for the thermal development and transfer, and said other conditions for image forming comprise at least one condition of a coating weight of the image forming solvent, a time of the thermal development and transfer, and an amount of color and density adjustments at the time of the exposure.

5,572,286

HEAD FOR A COLOR ENLARGER

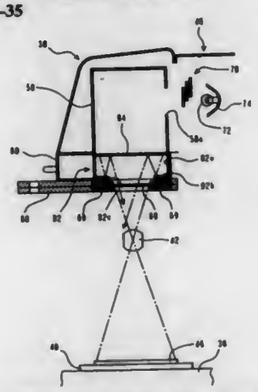
Tetsuo Morita, Ohmiya, and Takekazu Yanagimoto, Kanagawa-ken, both of Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama-ken, and Fuji Photo Film Co., Ltd., Kanagawa-ken, both of Japan

Filed May 31, 1995, Ser. No. 455,278

Claims priority, application Japan, Jun. 1, 1994, 6-142404; Jun. 1, 1994, 6-142405

Int. Cl.[6] G03B *27/72*

U.S. Cl. 355—35 **32 Claims**



1. A color enlarger head provided with a scattering type light diffusion box functioning to diffuse light rays emitted from a light source through filters so as to substantially equalize the light rays respectively colored by said filters and to project said light rays onto an original picture negative held in a mask, comprising:

a mixing box having an inner surface serving as a diffuse reflector and a projecting window through which diffuse light is projected toward the original picture negative; and

a light distribution adjusting box positioned between said projecting window and the original picture negative, said light distribution adjusting box including transmitting means opposed and adjacent to said projecting window, a frame extending downward substantially in vertical direction from a peripheral edge of said transmitting means, a bottom portion extending inward from a lower end of said frame in parallel with and spaced apart from said transmitting means and adjacent to said mask, said bottom portion having a central opening smaller in size than said projecting window, and reflecting means provided on an inner surface of said bottom portion facing away from said original picture negative, said light distribution adjusting box being removably engaged with said mixing box;

wherein the light rays transmitted through the peripheral zone of said transmitting means and entering said light distribution adjusting box are partially reflected by said reflecting means toward a zone extending in the proximity of its central zone and reflected by a lower surface of said transmitting means so as to be transmitted through said original picture negative and then through an enlarging lens.

5,572,287

ILLUMINATING ARRANGEMENT FOR A PROJECTION MICROLITHOGRAPHIC EXPOSURE APPARATUS

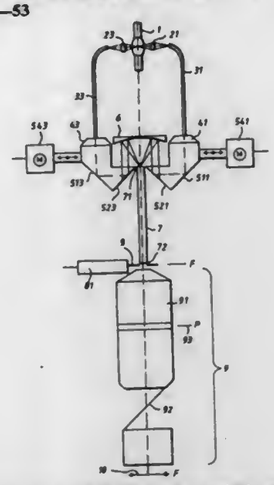
Johannes Wangler, Königsbronn, and Gerhard Ittner, Oberkochen, both of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Germany

Filed Dec. 8, 1994, Ser. No. 355,177

Claims priority, application Germany, Dec. 13, 1992, 43 42 424.4; Jun. 17, 1994, 9409744 U

Int. Cl.[6] G03F *7/20;* **G02B** *19/06*

U.S. Cl. 355—53 **13 Claims**



1. An illuminating arrangement for selectively providing a projection microlithographic exposure apparatus with various types of illumination including illumination having an adjustable coherence factor (σ), illumination via an annular aperture and symmetrically inclined illumination from two or four directions, the illuminating arrangement comprising:

a light source for emitting light;

first light collecting means for collecting a first portion of said light in a first spatial angle region of the emitted light;

first shaping means for receiving and shaping said first portion of said light into a first shaped flux of light;

second light collecting means for collecting a second portion of said light in a second spatial angle region of the emitted light;

second shaping means for receiving and shaping said second portion of said light into a second shaped flux of light;

objective means defining a pupillary plane and a reticle plane downstream of said pupillary plane;

imaging means for imaging images of said first and second shaped fluxes of light into sectors of said pupillary plane;

said objective means including means interposed between said planes for transmitting said fluxes of light to said reticle plane;

first displacing means for operating on said first shaped flux of light so as to radially and azimuthally displace the image of said first shaped flux of light in said pupillary plane; and,

second displacing means for operating on said second shaped flux of light so as to radially and azimuthally displace the image of said second shaped flux of light in said pupillary plane.

5,572,288

EXPOSURE APPARATUS WITH VARIABLE ALIGNMENT OPTICAL SYSTEM

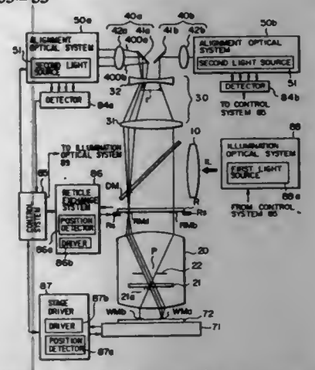
Hideo Mizutani, Yokohama, Japan, assignor to Nikon Corporation, Japan

Filed Dec. 16, 1994, Ser. No. 358,223

Claims priority, application Japan, Dec. 16, 1993, 5-317031; Dec. 28, 1993, 5-334499

Int. Cl.[6] H01L *21/027*

U.S. Cl. 355—53 **23 Claims**



4. An alignment mechanism used in an exposure apparatus arranged to project exposure light onto a mask and to transfer a pattern on said mask onto a photosensitive substrate through a projection optical system, for detecting an alignment mark provided at least on said mask, said alignment mechanism comprising:

an objective lens arranged opposite to said projection optical system with respect to a first plane on which said mask is to be located;

an alignment optical system having a light source for emitting alignment light of a predetermined wavelength, for obtaining reference information related to said alignment light emitted from said light source and measurement information related to reflected light of said alignment light emitted toward the alignment mark provided on said mask through said objective lens;

a detector for detecting a position of said alignment mark, based on the reference information and measurement information obtained from said alignment optical system; and

a variable optical system set between said first plane and a second plane which is parallel to said first plane and on which said objective lens is to be located, for obtaining a reduced image of said mask.

5,572,289

IMAGE CONVERTING APPARATUS WITH DOCUMENT CONTACTING DEVICE CAPABLE OF ELIMINATING THIN-FILM INTERFERENCE AND METHOD FOR ELIMINATING THIN-FILM INTERFERENCE

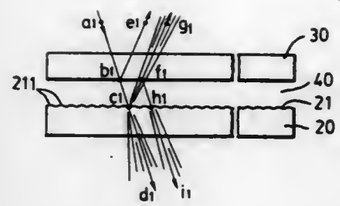
Jyi-Fang Cheng, Taipei City, Taiwan, assignor to Teco Information Systems Co., Ltd., Taipei City, Taiwan

Filed Jun. 15, 1995, Ser. No. 490,814

Int. Cl.[6] G03B *27/62*

U.S. Cl. 355—75 **10 Claims**

1. An image converting apparatus comprising a document contacting device with a contact surface that is provided with a plurality of micro-particles which have a light diffusing effect and a distribution density greater than a resolution of the image converting apparatus.



5,572,290

ELECTROPHOTOGRAPHIC PRINTING SYSTEM INCLUDING A PLURALITY OF ELECTROPHOTOGRAPHIC PRINTERS HAVING ADJUSTABLE PRINTING SPEEDS

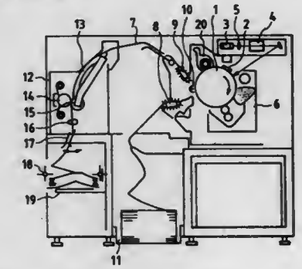
Hiroshi Ueno; Yasuyuki Tsuji; Shuuho Yokokawa; Kunitomo Takahashi; Isao Nakajima; Youji Hirose; Kazuo Takano; Takehiro Honda; Satoshi Aita; Isao Watanabe; Koji Doi; Tsukasa Onose, and Syou Sawahata, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1995, Ser. No. 510,619

Claims priority, application Japan, Aug. 5, 1994, 6-184553

Int. Cl.[6] G03G *15/00;15/20*

U.S. Cl. 399—329 **3 Claims**



1. An electrophotographic system, comprising:

a first electrophotographic apparatus including a first preheater which is in contact with a conveyed recording material, for preheating the recording material, and first fixing means, disposed downstream of said first preheater in a recording material conveyance direction, for fixing a toner image formed on said recording material onto the recording material;

a second electrophotographic apparatus including a second preheater which is in contact with a conveyed recording material, for preheating the recording material, and second fixing means disposed downstream of said second preheater in a recording material conveyance direction, for fixing a toner image formed on said recording material onto the recording material; and

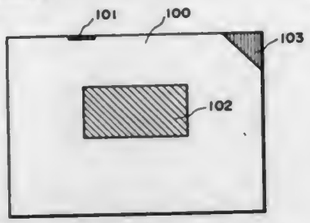
a printing speed change-over unit that selects a first printing speed when said first and second electrophotographic apparatuses are operatively independent from each other for printing operation, and for setting a temperature of said second preheater to a temperature equal to or lower than the glass transition point of toner and selecting a second printing speed lower than said first printing speed when said first and second electrophotographic apparatuses are operatively linked together for printing operation.

5,572,291

IMAGE FORMING METHOD, IMAGE FORMING APPARATUS AND TRANSPARENT FILM

Haruhiko Moriguchi, Yokohama; Tatsuo Takeuchi, Kawasaki; Nobuhiko Takekoshi, and Jiro Ishizuka, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 54,132, Apr. 30, 1993, abandoned.
This application Sep. 14, 1995, Ser. No. 528,525
Claims priority, application Japan, Apr. 30, 1992, 4-135627; Jun. 16, 1992, 4-181866; Jul. 24, 1992, 4-198677
Int. Cl.[6] G03G *15/00;13/00*
U.S. Cl. 399—390 **197 Claims**



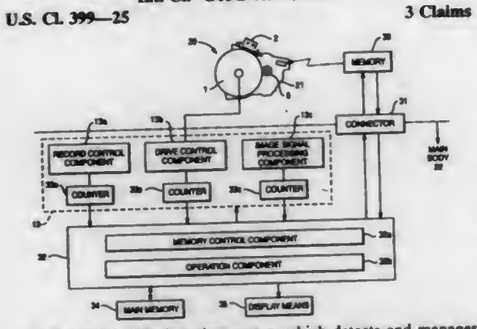
1. An image forming method, comprising:
providing a transparent film comprising an optically transparent sheet member having an opaque part;
forming an image on the transparent film; and
clearing the opaque part by detaching the opaque part under heating, wherein the opaque part is held detachably under heating by the transparent sheet member with an adhesion-controlling layer disposed therebetween, the opaque part is detached under heating from the transparent sheet member by detaching means contacting the transparent film surface, and an adhesion A acting between the transparent sheet member and the adhesion-controlling layer, an adhesion B acting between the adhesion-controlling layer and the opaque part and an adhesion C acting between the opaque part and the detaching means satisfy a relationship of: adhesion A≦adhesion B<adhesion C.

5,572,292

CARTRIDGE LIFE DETECTING SYSTEM

Kiyoshi Chatani; Masahiko Kitamura, and Kazuhiro Yoshihara, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1995, Ser. No. 420,004
Claims priority, application Japan, Apr. 12, 1994, 6-073271
Int. Cl.[6] G03G *15/00;21/00*
U.S. Cl. 399—25 **3 Claims**



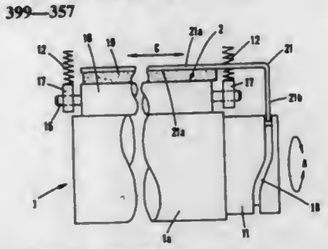
1. A cartridge life detecting system which detects and manages the life of a cartridge by mounting a memory on a print cartridge comprising at least an image formation member removably mounted on a main body of an image formation apparatus, carrying out operation to obtain information about the life of said cartridge based on contents read from said memory and criterial information of the life of said cartridge, and writing said information about the life in said memory, comprising the steps of:
setting a value corresponding to the life of said cartridge by selecting one of a) combination of the number of printed sheets and the number of rotations of said image formation member, combination b) of the number of printed sheets and the number of pixels of image information, and c) combination of the number of printed sheets, the number of rotations of said image formation member and the number of pixels of image information;
storing said value in said memory in advance; and
making determination as to the life of said cartridge based on said value.

5,572,293

METHOD OF AND SYSTEM FOR CLEANING A CHARGE INDUCING MEMBER

Nobuo Kikuchi, Saitama-ken; Kouichi Yamazaki, Kanagawa-ken; Sadao Takahashi, Tokyo-to; Kentaro Matsumoto, Chiba-ken; Tadashi Hayakawa, Tokyo-to; Yoshiaki Miyashita, Kanagawa-ken; Takeshi Tabuchi; Hirohisa Ohtsuka, both of Saitama-ken, and Takaaki Tawada, Kanagawa-ken, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 13, 1994, Ser. No. 322,136
Claims priority, application Japan, Oct. 14, 1993, 5-256910; Nov. 9, 1993, 5-279818
Int. Cl.[6] G03G *15/02*
U.S. Cl. 399—357 **53 Claims**



1. An apparatus comprising:
a charge receiving member upon which an electrostatic charge is to be formed;
an electric charge inducing member for inducing an electric charge on said charge receiving member;
a cleaning element for cleaning said charge inducing member; and
motion imparting means for maintaining said cleaning element and said charge inducing member in contact with each other while imparting relative lineal motion between them,
including means for moving said charge inducing member into contact with only one or the other of said charge receiving member and said cleaning element at a time.

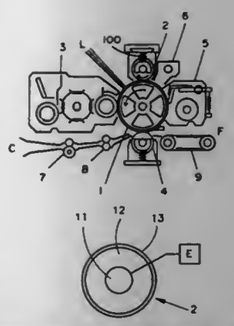
5,572,294

CONTACT CHARGER AND IMAGE FORMING APPARATUS PROVIDED WITH SAME

Izumi Osawa, Ikeda; Isao Doi, Toyonaka; Seishi Ojima, Takatsuki, and Yoshihiro Uchimoto, Habikino, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Oct. 25, 1994, Ser. No. 328,834
Claims priority, application Japan, Oct. 27, 1993, 5-269224
Int. Cl.[6] G03G *15/02*
U.S. Cl. 399—174 **27 Claims**

1. In a charging device which charges a surface of a member moving at a high speed by contacting a charging member to the surface of said moving member, said charging member comprising:
a conductive substrate;



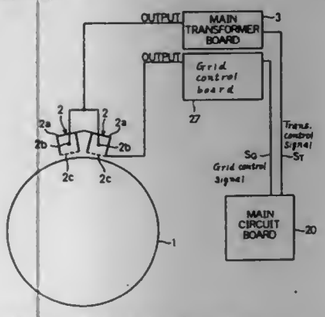
a conductive elastic layer provided on said conductive substrate and having a JIS-A hardness of 30° or greater; and
a conductive resin layer provided on said conductive elastic layer and having a 10% elongation load of not more than 700 gf on a 1 cm wide section.

5,572,295

VOLTAGE CONTROL DEVICE FOR A CHARGES

Hidekazu Sakagami; Masahiro Tsutsumi; Masaru Watanabe; Hiroyuki Hazawa; Hidehiro Tabuchi; Kazuhiro Mizude; Junichi Oura, and Yukio Hashimoto, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jan. 9, 1995, Ser. No. 370,436
Claims priority, application Japan, Jan. 14, 1994, 6-002557; Jan. 14, 1994, 6-002558; Jan. 14, 1994, 6-002584; Jan. 14, 1994, 6-002585
Int. Cl.[6] G03G *15/02*
U.S. Cl. 399—50 **13 Claims**



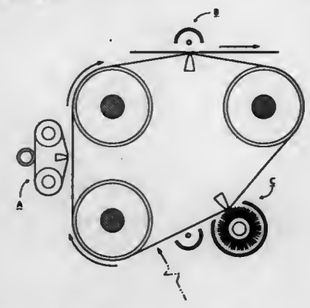
1. An image forming apparatus comprising:
an electrostatic latent image carrier having a photo-sensitive layer formed on its surface, said electrostatic latent image carrier moving from a charging section by way of an exposing section, a developing section and a charge removing section in this order to return to the charging section;
a charger provided in the charging section;
a voltage applying means for applying to the charger a voltage for supplying a potential to the surface of the electrostatic latent image carrier;
an operation means for starting an image forming operation;
means for performing arbitrary times an image forming processing, the processing including steps for charging the surface of the electrostatic latent image carrier by the charger in response to an operation of the operation means, for forming an electrostatic latent image on a charged surface of the electrostatic latent image carrier at the exposing section, for developing the electrostatic latent image into a toner image at the developing section, and for getting ready for a next charging by charge-removing the surface of the electrostatic latent image carrier at the charge removing section;
controlling means for correcting an output value of the voltage applying means to a voltage value necessary for the surface of the electrostatic latent image carrier to be charged at a stable potential level in a predetermined number of charging operations performed until a surface potential of the electrostatic latent image carrier increases from a low potential to a predetermined stable potential after a start of the image forming processing; and
detecting means for detecting a length of a left period from an end of a last image forming processing to a start of a present image forming processing;
wherein said control means corrects the output value of the voltage applying means by adding a correcting value corresponding to said left period to a control signal which is directed to the voltage applying means.

5,572,296

COLOR PRINTING SYSTEM EMPLOYING NON-INTERACTIVE DEVELOPMENT

Christopher Snelling, Penfield; Richard F. Bergen, Ontario; Robert W. Gundlach, Victor, and Dale R. Mashtare, Macedon, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 23, 1994, Ser. No. 344,057
Int. Cl.[6] G03G *15/06*
U.S. Cl. 399—265 **13 Claims**



1. A printing machine, comprising;
a flexible member having particles thereon; and
a deflector, operatively associated with said flexible member, to stretch said flexible member loosening particles adhering thereto; and
a member having a latent image recorded thereon, said member being adjacent said flexible member to receive particles therefrom developing the latent image recorded thereon.

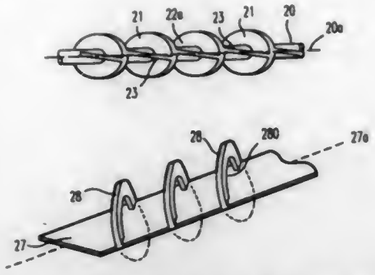
5,572,297

DEVELOPER DISPERSING DEVICE

Takashi Kawashima, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 363,879
Claims priority, application Japan, Dec. 27, 1993, 5-331417
Int. Cl.[6] G03G *15/06*
U.S. Cl. 399—257 **10 Claims**

1. A developer dispersing device for use in a development apparatus, the developer-dispersing device comprising:
a rotatable shaft having first and second ends for mounting in a development apparatus housing;
a plurality of spaced plate members longitudinally mounted along a length of the rotatable shaft, each of the plate members radially extending from said rotatable shaft and being inclined with respect to a rotational axis of said shaft for longitudinally moving a toner along the length of said shaft upon rotation of said shaft; and



an inclined pumping plate attached to the shaft and longitudinally extending along the length of the shaft, wherein said pumping plate and adjacently positioned plate members form cells for the toner along the length of the rotatable shaft, said pumping plate having a longitudinal axis which intersects the rotational axis of said shaft, such that a first end portion of said pumping plate is positioned on one side of the rotational axis of the shaft at the first end of shaft, and a second end portion of said pumping plate is positioned on a second opposite side of the rotational axis of said shaft at the second end of said shaft, wherein said pumping plate radially and longitudinally moves the toner with respect to said shaft upon rotation of said shaft.

5,572,298

IMAGE FORMING APPARATUS HAVING A DEVELOPING APPARATUS WHICH INCLUDES A PARTITION MEMBER FOR PARTITIONING A DEVELOPING ROOM AND A TONER HOPPER

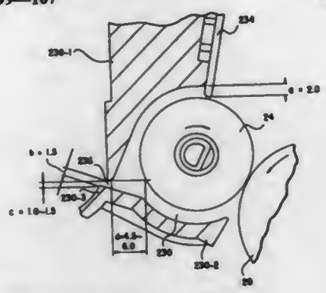
Akira Nagahara; Sachio Sasaki; Mitsuru Sato; Shigenobu Utaka, all of Kawasaki; Takefumi Takahashi, Inagi; Masahiro Wanou, and Masao Konishi, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 220,096, Mar. 30, 1994. This application Mar. 8, 1995, Ser. No. 400,561

Claims priority, application Japan, Mar. 31, 1993, 5-098573

Int. Cl.[6] G03G *15/09*

U.S. Cl. 399—107 **20 Claims**



1. An image forming apparatus, comprising:

a rotary endless latent image carrier;

image forming means for forming an electrostatic latent image on said latent image carrier;

developing means for developing said electrostatic latent image on said latent image carrier, including:

a developing room containing a powdery developer, said developing room including a bottom member which defines a bottom of said developing room;

a developing roller, provided in said developing room and having a cylindrical surface, for supplying said powdery developer to a latent image carrier;

a blade member which regulates a height of the powdery developer on said developing roller;

a toner supply room for containing toners to be supplied to said developing room; and

a partition member for partitioning said developing room and said toner supply room and forming a toner supply passage to supply the toners to said developing room, said partition member having an inner surface opposing to the cylindrical surface, the inner surface having an analogous shape as a shape of the cylindrical surface; and

transfer means for transferring the developed image on said latent image carrier to a sheet; and

wherein a cleanerless process is provided without a cleaner for collecting the residual toner on the latent image carrier, and wherein in the cleanerless process the developing roller collects the residual toner;

wherein the apparatus is capable of performing an image forming operation both in a horizontal position and in an upright position.

5,572,299

DEVELOPING DEVICE USING TWO-COMPONENT DEVELOPER

Makoto Kato; Sachio Sasaki; Shin Araki; Kunihiko Sato, and Naoyuki Fujimoto, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

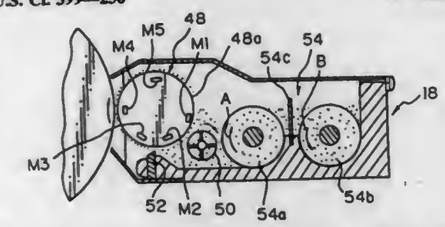
PCT No. PCT/JP92/01452, § 371 Date Jul. 8, 1993, § 102(e) Date Jul. 8, 1993, PCT Pub. No. WO93/09475, PCT Pub. Date May 13, 1993

PCT Filed Nov. 9, 1992, Ser. No. 84,277

Claims priority, application Japan, Nov. 8, 1991, 3-292735

Int. Cl.[6] G03G *15/06*

U.S. Cl. 399—256 **30 Claims**



1. A developing device using a two-component developer composed of a toner component and a magnetic component, said developing device comprising:

vessel means for holding the developer;

magnetic roller means rotatably provided within said vessel means to bring the developer to a developing zone for a development of an electrostatic latent image; and

agitator means provided within said vessel means for agitating and circulating the developer to cause a triboelectrification between the toner component and the magnetic component and a uniform distribution of the toner component in the magnetic component,

wherein said agitator means includes a first screw means disposed in parallel with said magnetic roller means and rotated in such a manner that a developer entangled by said first screw means is upwardly moved from a bottom side of said vessel means toward a top side thereof at a side of said first screw means adjacent to said magnetic roller means, to thereby present a uniform density mass of the developer to said magnetic roller means,

wherein the first screw means includes a continuous screw flight spirally extending along an axis of said first screw means, and

wherein the first screw means is rotated in a direction so that the developer is upwardly moved at a side of said first screw means adjacent to the magnetic roller means while the developer is entangled and propelled by said continuous screw flight of the first screw means in a directional along said axis.

5,572,300

DEVELOPING DEVICE CONTAINING FOR STORING DEVELOPER HAVING ZONER AND CARRIER

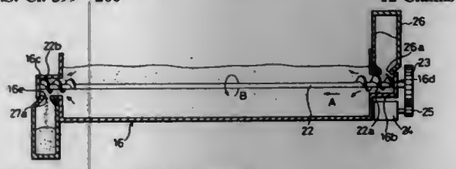
Hideo Yamasa, Yamatokoriyama; Yasuhiro Takai, Sakurai; Atsushi Ueda, Shiki-gun, and Hirokazu Tanaka, Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 9, 1994, Ser. No. 208,431

Claims priority, application Japan, Mar. 9, 1993, 5-047901; May 18, 1993, 5-116198

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—260 **12 Claims**



1. A developing device comprising:

a developer container for storing developer having toner and carrier;

a developer supply section, connected to a wall surface of said developer container, for supplying developer to said developer container, the developer supply section having a structure to set a ratio of toner to carrier in the developer contained in said developer supply section to be equal to a target ratio of toner to carrier in the developer contained in the developer container; and

a toner supply unit, connected to a wall surface of said developer container, for supplying toner to said developer container,

wherein said developer container includes:

a supply transporting section, disposed inside said developer container at a location in vicinity of said developer supply section, for transporting the developer supplied from the developer supply section into said developer container;

a discharge opening, formed in a wall surface of said developer container;

a discharge transporting section, disposed inside said developer container at a location in vicinity of said discharge opening, for transporting the developer in said developer container to said discharge opening; and

a driver for driving at least one of said supply transporting section and said discharge transporting section.

5,572,301

DEVELOPING DEVICE TO WHICH DRIVE TRANSMISSION FROM A CARTRIDGE IS CUT OFF

Tatsuya Shiratori, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 15, 1995, Ser. No. 515,326

Claims priority, application Japan, Aug. 22, 1994, 6-196846

Int. Cl.[6] G03G *15/06*

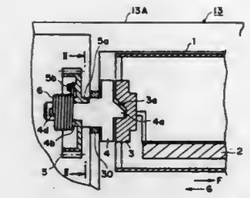
U.S. Cl. 399—234 **12 Claims**

1. A developing device comprising:

supporting means for removably and rotatably supporting a toner cartridge containing a toner therein and having a toner supply opening portion and toner discharge means for discharging the toner in the toner cartridge through said opening portion;

driving means for driving said toner discharge means; and

cut-off means for cutting off drive transmission of said driving means during rotation of said toner cartridge.



5,572,302

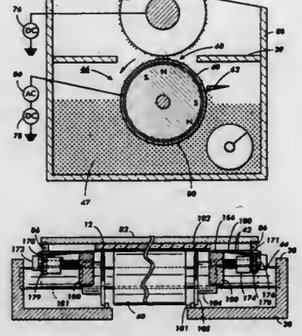
ELECTRODE WIRE POSITIONING FOR SCAVENGELESS DEVELOPMENT

Thomas J. Behe, Webster; Daniel M. Bray; Jeffrey J. Folkins, both of Rochester; Steven C. Hart, Webster, and Joseph G. Schram, Liverpool, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 6, 1995, Ser. No. 568,105

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—235 **18 Claims**



1. An apparatus for maintaining wire positioning in a development system, comprising:

a wire;

a wire module supporting the wire comprising a frame including two side beams connected by a first cross member at one end and a second cross member at the other end;

a first wire maintaining member associated with and spaced a horizontal distance from the first cross member and a second wire maintaining member member associated with and spaced a horizontal distance from the second cross member; said first and second wire maintaining members supporting the wire along the length of the wire in the vertical and horizontal directions such that the wire is tensioned and located on the first and second wire maintaining members prior to mounting the wire module in the development system.

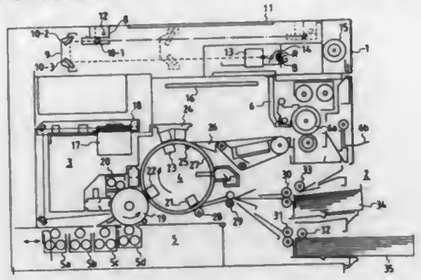
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5,572,303

IMAGE FORMING APPARATUS FOR TRANSFERRING IMAGE ONTO RECORDING SHEET

Shinobu Arimoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1995, Ser. No. 376,241
Claims priority, application Japan, Jan. 24, 1994, 6-005908
Int. Cl.[6] G03G *15/14*
U.S. Cl. 399—303 **13 Claims**



1. An image forming apparatus comprising:
scanning means for scanning an image of an original;
reading means for reading the image of the original which is scanned by said scanning means;
memory means for storing the image of the original read by said reading means;
image forming means for forming a visible image onto a recording medium on the basis of an image signal from said reading means and an image signal from said memory means;
a holding member which can hold a plurality of transfer sheets and is used for transferring the visible image formed on said recording medium onto said held transfer sheets; and
control means for controlling in a manner such that in case of transferring the same image onto each of said plurality of transfer sheets, said plurality of sheets are held to said holding member at unequal intervals and the visible image is formed onto the first transfer sheet on the basis of the image signal from said reading means and the visible image is formed on the second and subsequent transfer sheets on the basis of the image signal from said memory means.

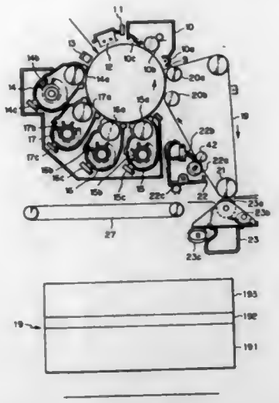
5,572,304

INTERMEDIATE IMAGE TRANSFER ELEMENT AND IMAGE FORMING APPARATUS USING THE SAME

Mitsuru Seto, Yamakita-machi, and Yasuo Hirano, Numazu, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 24, 1995, Ser. No. 377,340
Claims priority, application Japan, Jan. 24, 1994, 6-023396; Jan. 24, 1994, 6-023397; Jan. 14, 1995, 7-021153
Int. Cl.[6] G03G *15/14;15/16*
U.S. Cl. 399—313 **20 Claims**

1. A movable endless intermediate image transfer element for an image forming apparatus and for transferring a visible image, transferred thereto from an image carrier by primary transfer, to a transfer medium by secondary transfer, said element comprising:
an upper layer to which the visible image is to be transferred; and
a lower layer positioned below said upper layer;
wherein said upper layer having a higher specific resistance than said lower layer and wherein said upper layer is made of at least a polymer component and epichlorohydrin rubber.

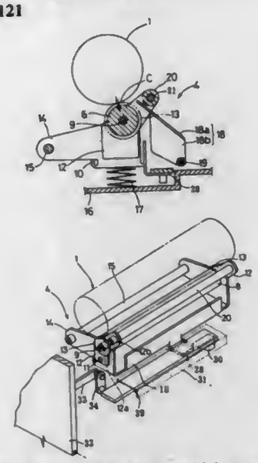


5,572,305

IMAGE FORMING APPARATUS EMPLOYING MOVABLE SUPPORT FOR TRANSFER ROLLER

Shigeki Hayashi; Hiroyuki Ueda; Tadakazu Ogiri; Shinichi Kotera; Hiroki Morishita; Yasuhiko Moriuchi; Kohichi Yasuda, and Naoyuki Ishida, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Oct. 17, 1994, Ser. No. 323,933
Claims priority, application Japan, Nov. 10, 1993, 5-281108; Nov. 16, 1993, 5-286347
Int. Cl.[6] G03G *15/14*
U.S. Cl. 399—121 **6 Claims**



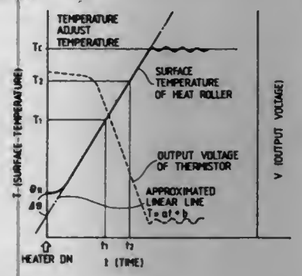
1. An image forming apparatus in which a transfer roller is arranged below a photoreceptor drum, said image forming apparatus comprising:
a supporting member arranged to be movable upward and downward for supporting both ends of a roller shaft of the transfer roller;
a pushing member which elastically pushes the supporting member upward;
a front cover provided at a front surface of a body of the apparatus so as to open frontward; and
a pushing down member arranged to connect with the front cover, said pushing down member moving forward and backward as the front cover is opened and closed, and when moving forward, engaging with the supporting member to push down the supporting member against a pushing force of the pushing member.

5,572,306

IMAGE FORMING APPARATUS CAPABLE OF SETTING FIXING TEMPERATURE CORRESPONDING TO TEMPERATURE RISING STATE OF HEATING MEMBER

Masahiro Goto; Takahiro Inoue; Koichi Hiroshima; Koichi Suwa, all of Yokohama; Shinichi Tsukida, Okegawa, and Manabu Takano, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 789,893, Nov. 12, 1991, abandoned.
This application Jun. 7, 1995, Ser. No. 480,326
Claims priority, application Japan, Nov. 13, 1990, 2-307912
Int. Cl.[6] G03G *15/20*
U.S. Cl. 399—69 **15 Claims**



1. An image forming apparatus, comprising:
image forming means for forming an unfixed image on a recording medium;
a heating member for fixing the unfixed image;
a temperature detecting member for detecting a temperature of said heating member;
electric power supply controlling means for controlling power supply to said heating member so that the temperature of said heating member detected by said temperature detecting member is maintained at a fixing temperature during a fixing operation;
temperature change rate detection means for detecting a rate of change in temperature of said heating member; and
fixing temperature changing means for changing the fixing temperature based on the rate of change in temperature detected by said temperature change rate detection means.

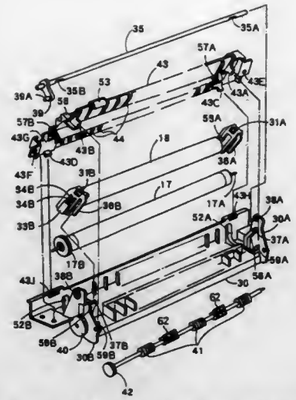
5,572,307

PRESS MECHANISM USED WITH A FIXING DEVICE FOR AN IMAGE FORMING APPARATUS

Yoshiya Tomatsu, Kasugai, and Takao Nakazawa, Owariasahi, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 21, 1995, Ser. No. 493,284
Claims priority, application Japan, Jul. 21, 1994, 6-190952
Int. Cl.[6] G03G *15/20*
U.S. Cl. 399—122 **20 Claims**

12. A press mechanism in a fixing device that presses a press roller against a heat roller, the press mechanism comprising:
a displacement unit operatively engaging said press roller;
an urging member urging said displacement unit in a press direction; and
a rotatable cam shaft engaging said displacement unit and including a cam face integral with said cam shaft, said cam face displacing said displacement unit between a first position corresponding to a non-press position and a second position corresponding to a press position.

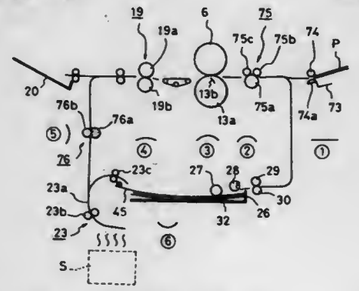


5,572,308

IMAGE FORMING APPARATUS WITH CURL FORMING MEANS

Masashi Soda, Iruma, and Junichi Sata, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1995, Ser. No. 407,870
Claims priority, application Japan, Mar. 24, 1994, 6-053794; Mar. 24, 1994, 6-076304; Mar. 14, 1995, 7-054018
Int. Cl.[6] G03G *21/00*
U.S. Cl. 399—401 **24 Claims**



1. An image forming apparatus comprising:
sheet carrying means for carrying a sheet;
image forming means for forming an image on the sheet carried by said sheet carrying means;
re-supply means for again supplying the sheet, on which the image has been formed by said image forming means, to said sheet carrying means; and
first curl forming means for curling the sheet, which is being again supplied by said re-supply means, in a direction in which the sheet can easily be carried by said sheet carrying means, wherein said sheet carrying means has an outer peripheral surface around which the sheet is wound and carries the sheet by rotating.

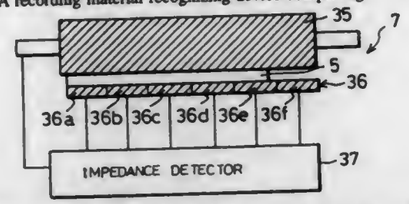
5,572,309

IMAGE FORMING APPARATUS WITH IMPEDANCE DETECTION

Yukihito Nishio, Gojo; Shirou Wakahara, Osaka, and Hirokazu Fujita, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 3, 1995, Ser. No. 382,912
Claims priority, application Japan, Feb. 4, 1994, 6-012969
Int. Cl.[6] G03G 21/00
U.S. Cl. 399—389 15 Claims

1. A recording material recognizing device comprising:



a first electrode provided on a transport path of a recording material, on an upstream side of an image forming section in an image forming apparatus;

a second electrode facing said first electrode, provided in such a position that the recording material passes between said first electrode and said second electrode, wherein at least one of said first electrode and said second electrode is composed of a plurality of divided electrodes arranged in a widthwise direction of the recording material;

detection means for detecting a current flowing through each of said plurality of divided electrodes with an application of a predetermined voltage across said first electrode and said second electrode; and

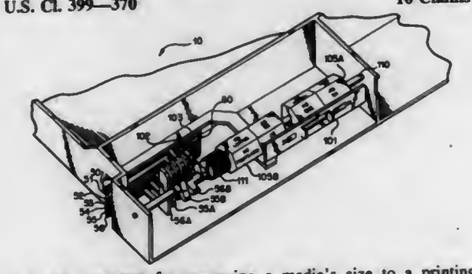
recognition means for recognizing whether or not the recording material has passed therethrough and a width of the recording material based on results of detection by said detection means.

5,572,310

UNIVERSAL MEDIA SIZE DIAL

Tim M. Hoberock, Boise; R. Scott Johnson, Nampa, and Paul K. Mui, Boise, all of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 24, 1996, Ser. No. 590,536
Int. Cl.[6] G03G 21/00; B65H 1/00
U.S. Cl. 399—370 10 Claims



1. An apparatus for conveying a media's size to a printing system, said apparatus comprising:

a shaft having a radius and being rotated about an axis;

a cam attached to said shaft, said cam having a plurality of lobes extending beyond said radius of said shaft;

a plurality of levers, each of said plurality of levers having a first end that pivots about a pivot point and a second end, said first end positioned adjacent to one of said plurality of lobes, said second end being in contact with said printing system;

an indicator wheel attached to said shaft, said indicator wheel having a first plurality of faces located around a circumference of said indicator wheel where each face of said first plurality of faces indicates a media size, said indicator wheel further having a second plurality of faces located around said circumference of said indicator wheel where each face of said second plurality of faces indicates a media size; and

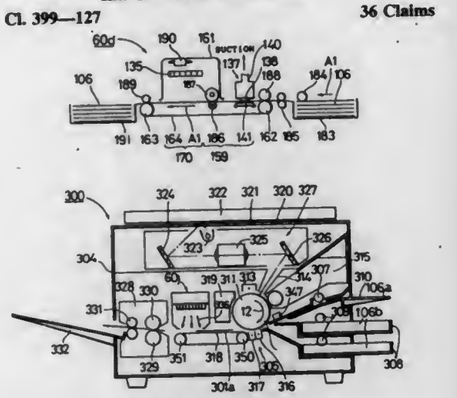
a slidable lever positioned adjacent to said indicator wheel and having a first and a second position, said first position of said slidable lever indicating to said printing system that said first plurality of faces are in use, said second position of said slidable lever indicating to said printing system that said second plurality of faces are in use.

5,572,311

APPARATUS FOR DECOLORIZING TONER IMAGES AND AN IMAGE FORMING APPARATUS

Yuki Abe; Rikuzou Kouzuki; Masakazu Okamoto; Yasunori Mikata; Masatsugu Tabata; Shigeki Inoue; Sadao Tanimoto, all of Kobe; Yoshihiro Uchimoto, Osaka; Katsumi Murofushi, and Hosoda Yoshikazu, both of Kawasaki, all of Japan, assignors to Bando Chemical Industries, Ltd., Hyogoken, and Showa Denko Kabushiki Kaisha, Tokyo, both of Japan

Division of Ser. No. 974,122, Nov. 10, 1992, Pat. No. 5,405,726. This application Sep. 9, 1994, Ser. No. 303,740
Claims priority, application Japan, Nov. 11, 1991, 3-294552; Nov. 15, 1991, 3-300048
Int. Cl.[6] G03G 15/01;21/00
U.S. Cl. 399—127 36 Claims



1. A photocopy apparatus comprising:

means for forming toner images on a cut sheet with a photochemically decolorizable toner by an electrostatic photocopy process; and

means for decolorizing the toner image on a cut sheet by heating the toner image and illuminating the toner image with decolorizing light;

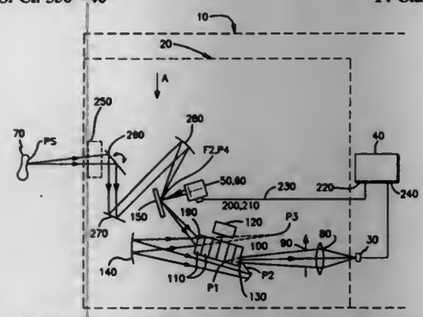
wherein said means for forming and said means for decolorizing are selectively operable.

5,572,312

ARRANGEMENT FOR CALIBRATION OF AT LEAST ONE RADIATION-SENSITIVE DETECTOR MEANS

Lars Karlsson, Taby, and Ulf Handberg, Upplands Vasby, both of Sweden, assignors to Agema Infrared Systems AB, Danderyd, Sweden

PCT No. PCT/SE93/00465, § 371 Date Jan. 17, 1995, § 102(e) Date Jan. 17, 1995, PCT Pub. No. WO93/24815, PCT Pub. Date Dec. 9, 1993
PCT Filed May 26, 1993, Ser. No. 343,470
Claims priority, application Sweden, May 26, 1992, 9201655; May 26, 1992, 9201656
Int. Cl.[6] G01J 5/52; H04N 5/33
U.S. Cl. 356—46 14 Claims



1. In an arrangement for calibration of at least one radiation-sensitive detector means, comprising an aperture (**90**), at least one reference body (**50**, **60**, **600**) which emits radiation with a measurable intensity, at least one deflection member (**160**, **170**, **620**) which deflects radiation from the reference body, and at least one radiation-sensitive detector means (**30**) which detects the radiation value and generates an output signal dependent on the detected radiation value; the improvement wherein during reference measurement the deflection member is arranged to reproduce the aperture (**90**) on the reference body (**50**, **60**, **600**), and the deflection member (**160**, **170**, **620**) deflects the radiation such that the midpoint of the reproduction of the aperture (**90**) remains on substantially the same area of the surface of the reference body (**50**, **60**, **600**) during that time period in which the detector means receives radiation which is transmitted from the reference body and which passes through the aperture (**90**).

5,572,313

DETERMINATION OF ANGULAR OFFSET BETWEEN OPTICAL FIBERS HAVING OPTICAL, AXIAL ASYMMETRY AND ALIGNMENT AND SPLICING OF SUCH FIBERS

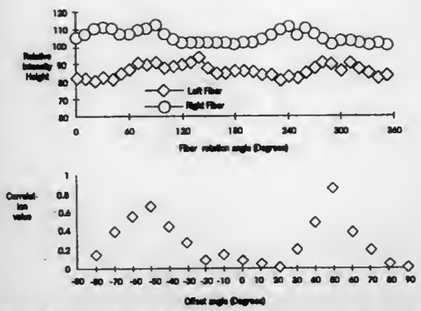
Wenxin Zheng, Solna; Ola Hultén, Bromma, and Mats Bengtsson, Stockholm, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Nov. 29, 1994, Ser. No. 350,998
Claims priority, application Sweden, Nov. 29, 1993, 9303973; Nov. 29, 1993, 9303974; Mar. 8, 1994, 9400780
Int. Cl.[6] G01B 11/27
U.S. Cl. 356—73.1 26 Claims

1. A method for determination of an offset between angular positions about longitudinal axes of axial optical asymmetries, including optically inhomogeneous regions, located in parallel to longitudinal axes of two cylindrical bodies located in arbitrary angular start positions, comprising the steps of:

illuminating the bodies by a light beam, substantially perpendicularly to the longitudinal directions of the bodies, the light beam comprising light for which the bodies are transparent,

rotating each one of the bodies through a predetermined angular interval, at least half a full turn for a body having a corresponding symmetry, from its start angular position about its longitudinal axis,



during the rotation for different angular positions, determining a difference between light intensity of light, which has passed through the body and in its position corresponds to a central portion of the body as seen in the longitudinal direction, and of light which has passed through the body and in its position corresponds to a region located most close to and outside the body,

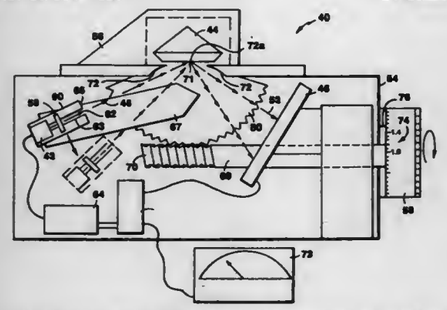
comparing the determined differences for one of the bodies to the differences for the other one of the bodies and determining from this comparison the angular offset from the angular position of one body in relation to its start angular position which, if it would have been the angular start position, had given the best agreement between the determined differences for this body and the differences for the other body, and added thereto a constant angular value which is characteristic to the two bodies when they are of different kinds.

5,572,314

BREWSTER ANGLE REFRACTOMETER

Mark Hyman, Jr., 1010 Memorial Dr., Cambridge, Mass. 02138, and Cornelius S. Hurlbut, 1010 Waltham St., Lexington, Mass. 02173

Filed Sep. 19, 1994, Ser. No. 308,696
Int. Cl.[6] G01N 21/41
U.S. Cl. 356—128 14 Claims



1. A Brewster angle refractometer for determining the refractive index of a material, comprising:

a light source providing an incident optical beam for illuminating a surface of said material, said light source being attached to one end of a bridging section for positioning said light source and said incident optical beam at an adjustable angle relative to the normal vector of said surface, said incident optical beam having a polarized component in a direction substantially parallel to a plane containing said incident optical beam and a second reflected beam,

a photosensitive detector for receiving said reflected beam, said detector generating a light-induced signal which varies according to the intensity of said reflected beam,

a gear for varying said angle of said incident optical beam, said gear attached in a fixed relationship to said bridging section at an end opposite to said light source and configured such that said incident optical beam is pivoted about a point on said surface of said material during rotation of said gear, thereby varying said angle of said incident optical beam,

a worm gear engaged with said gear such that when rotated, said worm gear rotates said gear,

an electronic circuit for powering said light source and said photosensitive detector, and for electrically amplifying said light-induced signal from said photosensitive detector,

a readout element connected to said electronic circuit for determination of a null in said light-induced signal, said null occurring when said angle of said incident optical beam is substantially equivalent to the Brewster angle for said material, and

a calibrated knob attached directly to said worm gear, said knob comprising a set of calibrated markings correlating to the refractive index of the material such that when rotated, said knob pivots said bridging section to adjust the angle of said incident optical beam to determine mechanically the null in the light-induced signal, with a calibrated marking within said set corresponding to the refractive index of the material when the null in said light-induced signal is determined, thereby allowing determination of said refractive index of said material.

5,572,315

OPTICAL SENSOR SYSTEM

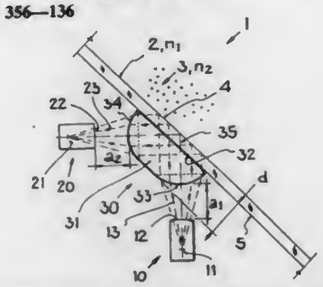
Stephan Krell, Schwabach, Germany, assignor to Temic Telefunken microelectronic GmbH, Heilbronn, Germany

Filed Nov. 14, 1994, Ser. No. 339,720

Claims priority, application Germany, Nov. 30, 1993, 43 40 681.5

Int. Cl.[6] G01N *21/17*

U.S. Cl. 356—136 **5 Claims**



1. A sensor system for determining the optical conditions at a boundary surface which separates a first medium in the form of a solid body and a second medium whose refracting indices (n_1, n_2) are different from one another, with the sensor system having an optical unit which comprises:

at least one sending unit with at least one sending element and having a light emission surface;

at least one receiving unit with at least one receiving element, and having a light admission surface;

an optical path linking the sending unit with the at least receiving unit;

a light-conducting body arranged in the optical path and having a base surface and first and second optically active end surfaces, with the base surface of the light-conducting body being affixed to the surface side of the first medium disposed between the at least one sending unit and the at least one receiving unit and the boundary surface, and with the first end surface of the light-conducting body facing the light emission surface of the at least one sending unit and the second end surface of the light-conducting body facing the light admission surface of the receiving unit;

and wherein the first and second end surfaces of the light-conducting body, the light emission surface of the at least one sending unit, and the light admission surface of the at least one receiving unit are each provided with a predetermined convex shape, with the light emission surface of the sending unit and the light admission surface of the receiving unit each having such a weakly convex shape and with the two end surfaces of the light-conducting body each having such a strongly convex shape that the emitted radiation received on the base surface of the light-conducting body is distributed homogeneously and the distance (a_1) between the at least one sending unit and light-conducting body and the distance (a_2) between the at least one receiving unit and light-conducting body are minimal.

5,572,316

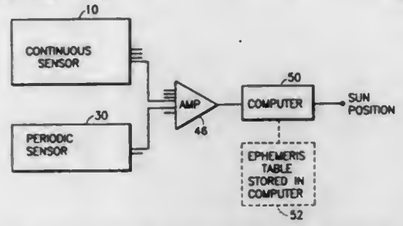
ANALOG SUN SENSOR

Carlo E. Zaffanella, Watertown; Robert C. Savoca, Ridgefield, and Todd J. Bednarek, Wolcott, all of Conn., assignors to EDO Corporation, Barnes Engineering Division, Shelton, Conn.

Filed Dec. 7, 1994, Ser. No. 350,683

Int. Cl.[6] G01C *21/24*; G01B *11/26*

U.S. Cl. 356—139.01 **7 Claims**



1. An attitude sensor for providing continuous positional information for an orbiting body such as a spacecraft, satellite or the like with respect to a reference body comprising:

a first continuous sensor continuously viewing a reference body from said orbiting body for generating electrical signals in a predetermined time frame which provide two axis information with respect to the reference body,

a second periodic sensor means directed at said reference body from said orbiting body having patterned mask means covering said periodic sensor means for producing periodic electrical signals over a shorter time frame than said electrical signals generated in said predetermined time frame by said first continuous sensor,

means for combining said electrical signals from said first continuous sensor and said periodic electrical signals from said second periodic sensor means for periodically calibrating the two axis information provided by said first sensor to correct for errors in the two axis information provided by said first sensor.

5,572,317

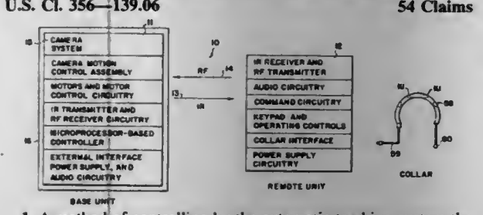
REMOTE-CONTROLLED TRACKING SYSTEM FOR TRACKING A REMOTE CONTROL UNIT AND POSITIONING AND OPERATING A CAMERA AND METHOD

Jeffrey L. Parker; David F. Sorrells; Jonathan D. Mix, and Richard C. Looke, all of Jacksonville, Fla., assignors to ParkerVision, Inc., Jacksonville, Fla.

Division of Ser. No. 196,774, Feb. 14, 1994, Pat. No. 5,432,597, which is a continuation of Ser. No. 875,078, Apr. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 530,999, May 31, 1990, Pat. No. 5,268,734, which is a continuation-in-part of Ser. No. 569,643, Aug. 20, 1990, Pat. No. 5,179,421. This application May 12, 1995, Ser. No. 439,879

Int. Cl.[6] G01B *11/26*; G01C *21/02*; G05B *1/06*; H04N *5/225*

U.S. Cl. 356—139.06 **54 Claims**



1. A method of controlling by the automatic tracking system the field of view of a camera used to automatically track a target with the field of view comprising the steps of:

A. controlling the field of view of a camera with the automatic tracking system;

B. enabling automatic tracking of the automatic tracking system for automatically tracking the target by the field of view;

C. determining by the automatic tracking system an interruption of automatic tracking of the target by the automatic tracking system; and

D. continuing to control the field of view of the camera by the automatic tracking system in the same direction as the field of view was being controlled before interruption of the automatic tracking of the target.

5,572,318

LEAD PIPE CONFIGURATION FOR UNDERGROUND PIPE LAYING

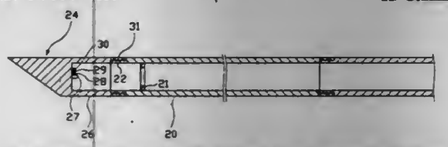
Norizumi Hidaka, Tokyo, Japan, assignor to Housbou Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1995, Ser. No. 419,149

Claims priority, application Japan, Nov. 29, 1994, 6-294624

Int. Cl.[6] G01B *11/26*

U.S. Cl. 356—153 **12 Claims**



1. A lead pipe configuration for use in an underground piping device of a type which lays down an underground pipeline, wherein the piping device includes propelling means for propelling the lead pipe configuration in a forward direction to guide the pipeline lay down, the lead pipe configuration comprising

a plurality of hollow lead pipes connected in endwise succession of one lead pipe with another,

a direction correcting head carried at a fore end of a frontmost lead pipe in the succession,

a light source carried in said direction correcting head for projecting light rearwardly in the lead pipe succession toward a light detection means so that a detected light can be used to determine if any error in lead pipe direction from the said predetermined direction exists requiring that lead pipe direction adjustment be made, and

a ring-shaped light shield carried in at least one of the lead pipes in said succession and disposed crosswise to a lead pipe major axis so as to block passage of at least some of any rearwardly non axially directed incident light as well as light reflecting off inner surfaces of the said one lead pipe upstream of the light shield.

5,572,319

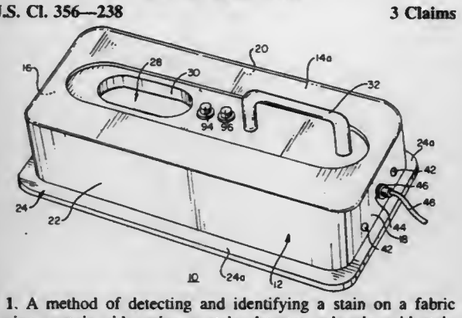
STAIN DETECTOR APPARATUS AND METHOD

Stephen E. Blackman, 1906 Westfield Ave., Scotch Plains, N.J. 07076, and Daniel Eisen, 404 Brookside La., So. Somerville, N.J. 08876

Filed Oct. 24, 1994, Ser. No. 327,612

Int. Cl.[6] C01N *21/64*

U.S. Cl. 356—238 **3 Claims**



1. A method of detecting and identifying a stain on a fabric having a stain side using a stain detector, wherein said stain detector includes a housing with a fabric opening, a viewing opening, a source of white visible light, a source of ultraviolet light, and an interior reflector, comprising the steps of:

a) placing said housing on the fabric to be inspected, wherein said fabric opening of said housing faces the stain side of the fabric;

b) activating said source of ultraviolet light and directing the ultraviolet light rays toward said fabric opening and the stain side of the fabric;

c) inspecting the stain side of the fabric through said viewing opening to determine if a stain is present;

d) identifying the type of stain by the type of reaction said ultraviolet light rays have on the stain;

e) placing said housing on the fabric to be inspected, wherein said fabric opening of said housing faces the other side of the fabric opposite to the stain side;

f) activating said source of white visible light and directing the white visible light rays toward said fabric opening and said other side of the fabric;

g) inspecting the fabric from the stain side of the fabric to determine if a stain is present; and

h) identifying the type of stain by the type of reaction said white visible light rays have on the stain.

5,572,320

FLUID SAMPLER UTILIZING OPTICAL NEAR-FIELD IMAGING

John F. Reintjes, Alexandria, Va., and Paul L. Howard, Westchester, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

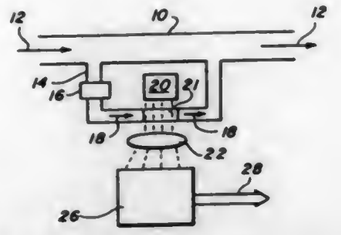
Filed Nov. 17, 1994, Ser. No. 342,053

Int. Cl.[6] E01N *15/02*

U.S. Cl. 356—335 **4 Claims**

1. A particle classifier comprising:

means for diverting fluid from a flow line into a passageway;



a source of coherent light;

optical means, responsive to coherent light from said source, for periodically imaging said fluid in said passageway onto an optical detector, said detector being effective to transduce said image into electronic pixel information;

wherein the width of said passageway in the direction transverse to said passageway is selected to be of a size which causes the diffraction pattern formed of the interior of said passageway by said light passing through said passageway to be of the near field of said interior;

said classifier further comprising an analysis means for classifying, responsive to said electronic pixel information, the distribution of sizes or shapes of objects in said image.

5,572,321

DETECTOR FOR MEASURING THE LUMINOUS INTENSITY SCATTERED BY THIN FILMS OF COLLOIDAL MEDIA

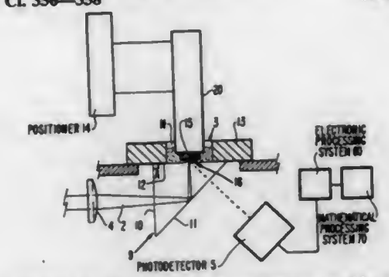
Frank Pinier, Cagnes S/Mer; Bill Woodley, Mons; Patrick Patin, Nice, and Didier Frot, Choisy le Roi, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, and Sematech, Nice, both of France

Filed Nov. 23, 1994, Ser. No. 347,257

Claims priority, application France, Nov. 24, 1993, 9314347

Int. Cl.[6] G01N *21/00*

U.S. Cl. 356—338 **30 Claims**



1. A device for measuring intensity of light scattered by a film of a colloidal media to be analyzed comprising:

a monochromatic luminous source for emitting a luminous beam;

a conveying optical system for focusing the luminous beam on the film to be analyzed;

at least one photosensitive detector for detecting light scattered by the film, and producing an output signal; and

a system for processing the output signal from the at least one photosensitive detector; and wherein

the optical system includes a dioptric element placed in the luminous beam having a face supporting the film, a wall disposed on the face which forms a well containing the film, an element disposed at least partially within the well formed by the face and the wall for absorbing at least part of the luminous beam transmitted by the film, and a positioner for positioning the element relative to an axis extending orthogonally from the face to control a thickness of the film to be analyzed.

5,572,322

APPARATUS FOR MEASURING PARTICLE PROPERTIES

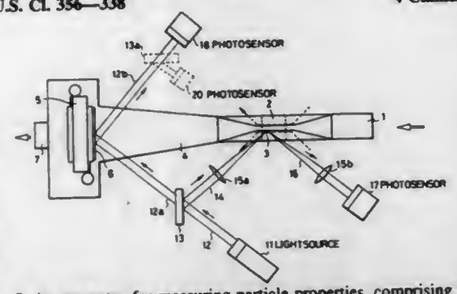
Kazutoshi Noda, Tsukuba, Japan, assignor to Agency of Industrial Science & Technology, Ministr of International Trade & Industry, Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,438

Claims priority, application Japan, Jun. 29, 1994, 6-147263

Int. Cl.[6] G01N *21/00*

U.S. Cl. 356—338 **4 Claims**



1. An apparatus for measuring particle properties, comprising a first measurement section having a nozzle-shaped configuration for light incidence, said first measurement section having an inside diameter that does not allow the simultaneous passage of multiple particles; a second measurement section that is connected to the first measurement section and is able to transmit light; a third measurement section that is connected to the second measurement section, said third measurement section having a particle adhesive on its surface and an internal crystal oscillator; intake means for guiding airborne particles to the third measurement section via the first and second measurement sections; a first optical system that projects light at the first measurement section and receives light scattered from particles in the first measurement section; and a second optical system that projects light at the second measurement section and receives light transmitted between particles in the second measurement section; wherein particle size is measured based on intensity of scattered light received by the first measurement section, relative concentration of particles is measured based on intensity of transmitted light received by the second measurement section, and particle weight is measured based on amplitude of variation in operating frequency of the crystal oscillator to which particles have adhered in the third measurement section.

5,572,323

INFINITESIMAL DISPLACEMENT MEASURING APPARATUS AND OPTICAL PICK-UP UNIT

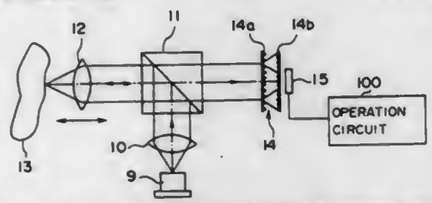
Hideo Maeda, and Hiroshi Akiyama, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,140

Claims priority, application Japan, Dec. 27, 1993, 5-330593; Jan. 31, 1994, 6-009820

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—356 **36 Claims**



1. An infinitesimal displacement measuring apparatus comprising:

a light source for emitting a light beam;

an optical system through which the light beam emitted from said light source travels to an article;

a double grating unit on which the light beam reflected by said article is incident, said double grating unit having a first grating and a second grating, said first grating receiving the light beam and generating ±n-th order diffraction light beams (n is an integer), said second grating receiving the ±n-th order diffraction light beams from said first grating and generating ±m-th order diffraction light beams (m is an integer);

detecting means for detecting an interference pattern formed by said ±m-th order diffraction light beams from said second grating of said double grating unit; and

operation means for carrying out an operation for obtaining a displacement of said article in a direction parallel to an optical axis of said optical system based on the interference pattern detected by said detecting means.

5,572,324

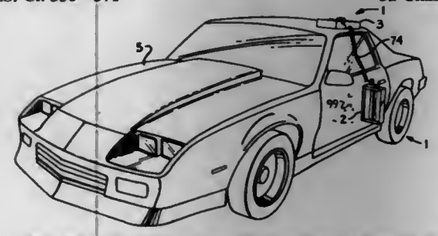
PORTABLE DENT HIGHLIGHTING UNIT

George Ventura, Shawnee, Kans., assignor to It's Dents Or Us, Inc., Overland Park, Kans.

Continuation-in-part of Ser. No. 432,797, May 2, 1995, which is a continuation-in-part of Ser. No. 247,640, May 23, 1994, Pat. No. 5,436,726. This application Jun. 7, 1995, Ser. No. 486,113

Int. Cl.[6] G01N *21/00*

U.S. Cl. 356—371 **32 Claims**



1. A portable highlighting unit for inspecting a surface of a structure for imperfections comprising:

a. a framework having a first side;

b. a light source supported by said framework and spaced behind said first side;

c. a lens securable to said first side of said framework to cover at least a portion of said first side of said framework; said lens including a first lens surface having at least one translucent light colored area adjacent to at least one opaque dark colored area; and

d. mounting means secured to said framework for releasably securing said framework to the structure such that said first lens surface may be positioned to face the surface to be inspected.

5,572,325

APPARATUS FOR OPTICALLY DETECTING A POSITION OF MARK

Kouichiro Komatsu, Tokyo, and Masashi Tanaka, Kanagawa, Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 344,613, Nov. 18, 1994, Pat. No. 5,483,348, which is a continuation of Ser. No. 945,330, Sep. 16, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 467,677

Claims priority, application Japan, Sep. 17, 1991, 3-262550

Int. Cl.[6] G01B *11/00*

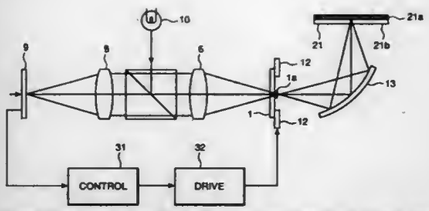
U.S. Cl. 356—401 **12 Claims**

1. An apparatus for optically detecting a position of a mark provided on an object to be detected, said apparatus comprising:

light source means for supplying light;

an illumination optical system for directing the light from said light source means to said mark to illuminate said mark;

reflecting means having a predetermined reflectance;



optical means for projecting the light passed around said mark to form a first image of said mark onto said reflecting means;

said mark and said reflecting means being arranged in a conjugate relation with respect to said optical means so as to superpose a second image of said mark produced by the light which is returned as the result of the reflection from said reflecting means in a coincident condition with said mark; and

detecting means for detecting a reflection image of said mark in accordance with first light which is directly reflected from said mark illuminated by said illumination optical system and second light which is reflected from said reflecting means and passed through said optical means and around said mark.

5,572,326

ARRANGEMENTS FOR MEASURING THE HEIGHT OF A LAYER OF FLOATING LIQUID

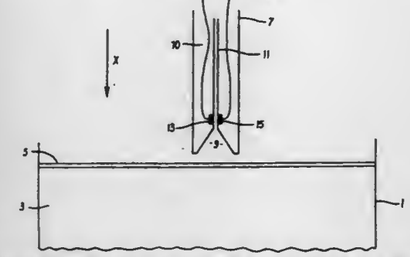
John A. Lightfoot, 5 Beck Close, Beckermet, Cumbria, United Kingdom; Richard Smith, 38 Windermere Ave., Clinkham Wood, St Helens, Merseyside, United Kingdom, and Joseph W. Spencer, Dept. of Electrical Engineering & Electronics, Brownlow Hill, PO Box 147, Liverpool, United Kingdom

Filed Nov. 10, 1993, Ser. No. 149,831

Claims priority, application United Kingdom, Nov. 10, 1992, 9223574

Int. Cl.[6] C01N *21/59*

U.S. Cl. 356—436 **14 Claims**



1. An apparatus for the measurement of the height of a layer of a first liquid floating on a second liquid, said apparatus comprises:

projection means for projecting a beam of optical radiation along an inspection path which is horizontal when the arrangement is in use;

detector means for detecting radiation of the said beam after transmission along the inspection path,

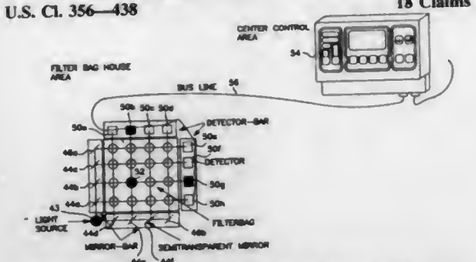
means for providing relative displacement in a direction which is vertical when the arrangement is in use between said layer and said inspection path whereby said layer traverses the inspection path, the detector means being capable of observing the upper and lower surfaces of said layer by detecting changes in an optical transmission property of said beam occurring at said surfaces, wherein the optical transmission property observed by the detector means is the dominant wavelength or chromaticity of a beam of white light transmitted from the projection means along the inspection path; and

means for measuring said relative displacement between the locations of the observed upper and lower surfaces.

5,572,327
REMOTE LEAK DETECTION SENSING METHOD AND DEVICE

Marc A. E. Pluke, Baltimore, Md.; Gernot G. Pranghofer, Wasserburg, and Ulrich Virnich, Neumarkt, both of Germany, assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Feb. 1, 1995, Ser. No. 384,270
Int. Cl.[6] G01N *15/06;21/89;* **B01D** *46/00*
U.S. Cl. 356—438 **18 Claims**



1. A method for monitoring a particle filtration unit releasing particles dispersed in air that comprises:

providing an array of filter devices;

providing at least one light source positioned adjacent the array of filter devices projecting its light across the filter devices;

providing at least one sensor positioned to receive signals from the at least one light source across the array of filter devices;

providing a means to measure changes in the amount of light received by the at least one sensor;

measuring an amount of light passing across the array of filter devices between the at least one light source and the sensor to establish a base-line measurement;

re-measuring the amount of light passing across the array of filter devices between the at least one light source and the at least one sensor to provide current measurements;

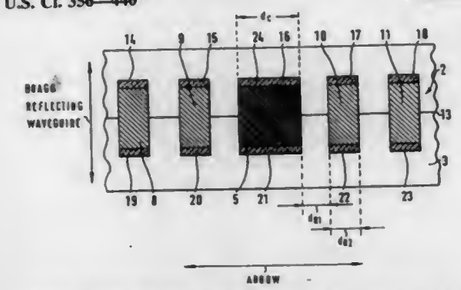
comparing the base-line measurements to the current measurements;

whereby changes in filter device status are detected when a current measurement differs from the base-line measurement.

5,572,328
OPTICAL DETECTOR INCLUDING BRAGG WAVEGUIDE STRUCTURE

Henning Fouckhardt, Hanover, and Thomas Delonge, Brunswick, both of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 14, 1995, Ser. No. 388,349
Claims priority, application Germany, Apr. 27, 1994, 94106551.8
Int. Cl.[6] G01N *21/05;21/85*
U.S. Cl. 356—440 **9 Claims**



1. An optical detector device for analytical measurement systems, in particular for use in liquid chromatography systems or capillary electrophoresis systems, comprising:

an analyte channel through which a fluid containing the analyte can be guided, and

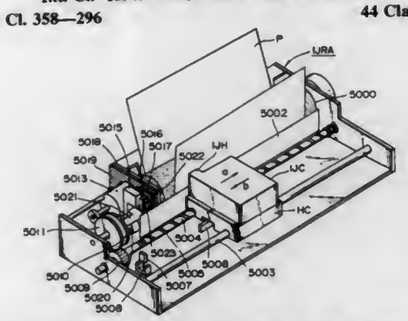
a light path extending through said analyte channel into which light coming from a light source can be introduced and from which light can be coupled out and introduced in an optoelectric sensor element of the analytical measurement system,

at least part of the light path being defined by a waveguide, which is constructed at least partially as a Bragg waveguide structure in such a way that the light is guided through the analyte channel essentially in the channel direction at least along a sublength of said analyte channel, said Bragg waveguide structure exhibiting Bragg reflecting layers in a plane extending through the analyte channel, and further defined by an antiresonant reflecting waveguide structure in an additional plane which is perpendicular to said first-mentioned plane and which also extends through said analyte channel.

5,572,329
APPARATUS AND METHOD FOR SCANNED MULTI-LEVEL IMAGE RECORDING

Toshihiko Otsubo, Tama, and Yuji Matsuda, Mitaka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 13, 1993, Ser. No. 105,680
Claims priority, application Japan, Aug. 21, 1992, 4-222713
Int. Cl.[6] H04N *1/00;1/034;1/46;* **B41J** *2/145*
U.S. Cl. 358—296 **44 Claims**



1. An image processing apparatus which records a multi-level image by scanning of a recording head having an array of M-pixel recording elements divided into N groups, and by conveying a recording medium by a width of one group at one scanning of the recording head, comprising:

image reading means for reading an original image in units, each unit being a band, the band having a width corresponding to a width of the array of M-pixel recording elements;

memory means for storing as an image data a portion of the read original image over at least two band units;

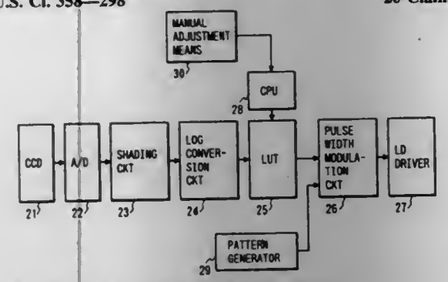
recording data generation means for generating binary data corresponding to the respective groups of the recording head in accordance with the image data stored in said memory mean; and

control means for supplying the binary data generated by said recording data generation means to corresponding groups of the recording head.

5,572,330
IMAGE PROCESSING APPARATUS AND METHOD

Nobuatsu Sasanuma, Yamato, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 885,773, May 20, 1992, abandoned.
This application Apr. 3, 1995, Ser. No. 415,575
Claims priority, application Japan, May 21, 1991, 3-115913; May 21, 1991, 3-115914
Int. Cl.[6] G03G *15/00*
U.S. Cl. 358—298 **20 Claims**



1. An image processing apparatus comprising:

pattern forming means for forming a predetermined gradation pattern on a medium;

detecting means for detecting the predetermined gradation pattern on the medium and generating a detection signal;

processing means for processing input image signals and outputting a reproduction signal;

control means for automatically controlling an image processing condition of said processing means based on the detection signal generated by said detecting means so that a target density is reproduced; and

setting means for manually setting the target density to be reproduced,

wherein a condition of a feedback system formed by said pattern forming means, said detecting means and said processing means is determined automatically in accordance with the target density set by said setting means.

5,572,331
VIDEO SIGNAL RECORDING FORMAT, DEEP RECORDING/REPRODUCING APPARATUS AND METHOD THEREFOR

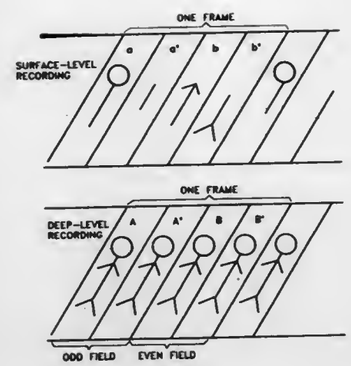
Jae-cheon Yu, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 29, 1993, Ser. No. 158,574
Claims priority, application Rep. of Korea, Nov. 27, 1992, 92-22669
Int. Cl.[6] H04N *5/76*
U.S. Cl. 386—46 **22 Claims**

1. A deep recording/reproducing apparatus of a video signal comprising:

a recording system in which an input digital video signal of one frame is divided into a predetermined number of segments and recorded in a corresponding predetermined number of tracks on a surface level of a recording medium, and an undivided digital video signal of one frame is recorded on a deep level of the recording medium in said predetermined number of tracks; and

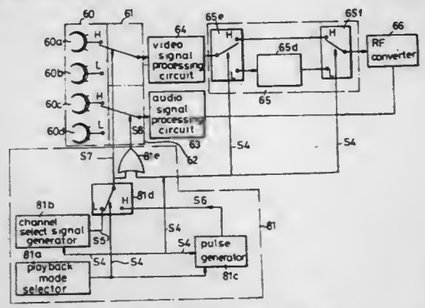
a reproducing system in which said digital video signal recorded on the recording medium by said recording system is reproduced, with the surface-level-recorded data being reproduced during normal speed playback and with the deep-level-recorded data being reproduced during multifunctional playback.



5,572,332
VIDEO CASSETTE RECORDER FOR SIMULTANEOUSLY RECORDING BROADCASTING SIGNALS OF TWO CHANNELS AND SELECTIVELY PLAYING BACK THE RECORDED TWO CHANNEL BROADCASTING SIGNALS

Joong I. Shin, Kyungki-do, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 980,213, Nov. 23, 1992, abandoned.
This application May 4, 1994, Ser. No. 237,917
Claims priority, application Rep. of Korea, Nov. 26, 1991, 21316/1991
Int. Cl.[6] H04N *5/91;5/76;5/94;* **G11B** *5/02*
U.S. Cl. 386—96 **28 Claims**



1. A recording system for a VCR comprising:

first signal input means for inputting a first channel signal and detecting video and audio signals from the inputted first channel signal;

second signal input means for inputting a second channel signal and detecting video and audio signals from the inputted second channel signal;

video signal processing means for inputting the video signals from said first and second signal input means and processing the inputted video signals to be a first non-interleaved recordable video signal and a second non-interleaved recordable video signal, respectively;

audio signal processing means for processing the audio signals from said first and second signal input means to be a first recordable audio signal and a second recordable audio signal, respectively;

audio recording means, responsive to the audio signal processing means, for recording the first and second recordable audio signals, respectively, onto the VCR tape;

a first video head for recording the first non-interleaved recordable video signal onto a VCR tape;

a second video head for recording the second non-interleaved recordable video signal onto the VCR tape; and

VOL 1192 ISS 1 NO 5 1996 UMI

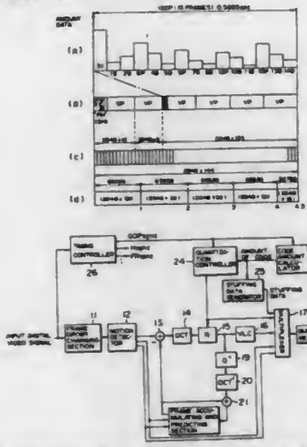
a video recording controller, responsive to the video signal processing means, for controlling, for each frame, the first and second video heads to selectively record one of two fields of the first non-interleaved recordable video signal and one of two fields of the second non-interleaved recordable video signal, respectively, to form an interleaved video signal, each frame of the interleaved video signal having a field from each of the first and second non-interleaved recordable video signals, the interleaved video signal being present only as recorded on the VCR tape.

5,572,333

COMPRESSED DATA RECORDING METHOD USING INTEGRAL LOGICAL BLOCK SIZE AND PHYSICAL BLOCK SIZE RATIOS

Yoshiaki Moriyama; Kouichi Ono, both of Tsurugashima; Sumio Hosaka, and Takao Yamada, both of Tokorozawa, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 262,501, Jun. 20, 1994, abandoned. This application Mar. 11, 1996, Ser. No. 614,940
Claims priority, application Japan, Jul. 16, 1993, 5-176694
Int. Cl.[6] H04N *5/76;5/91;* **G11B** *5/00;5/09*
U.S. Cl. 386—98 **8 Claims**



1. A compressed and coded data recording method for recording video signals on a recording medium in compressed and coded form, said method comprising the steps of:

compressing and coding video signals for every predetermined number of frames with an amount of codes per said predetermined number of frames being constant;

storing the compressed and coded video signals for each of said predetermined number of frames into at least one video packet;

for each of said predetermined number of frames, storing said at least one video packet in a respective pack having a time slot corresponding to said predetermined number of frames; and

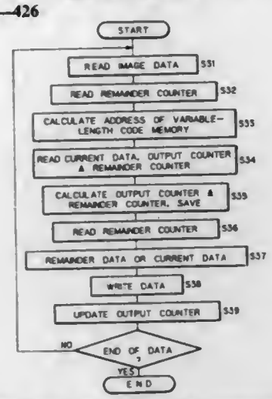
recording said video signals on said recording medium in a pack stream containing the respective packs, with a relation between a size of each respective pack, and a size of a logical block of said recording medium being set to 1: n, where n is an integer and with a relation between said size of each respective pack and a size of a physical block of said recording medium being set to 2: m, where m is an integer.

5,572,334

VARIABLE-LENGTH CODING DEVICE

Nobuyuki Tanaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,514
Claims priority, application Japan, Dec. 20, 1993, 5-320475
Int. Cl.[6] H04N *1/41*
U.S. Cl. 358—426 **4 Claims**



1. A variable-length coding device for compressing video data, comprising:

a variable-length code memory for storing pre-shifted versions of variable-length codes in respective entries, each of said entries having:

a code field containing a predetermined code value corresponding to one of said variable-length codes shifted zero or more times,

an output count field containing an output count value corresponding to the byte number of a last saturated byte of said code value, and

a remainder count field containing a remainder count value corresponding to the number of valid bits in a last valid byte of said code value; and

a processor for performing a current write operation by writing combined data to a next write address of a compressed data memory, said next write address having remainder data;

said combined data being a logical combination of said remainder data and one of said entries, said one of said entries being selected on the basis of said remainder data and one of said variable-length codes;

said one of said variable-length codes corresponding to video input data;

said output count value of said entry indicating a subsequent next write address for a subsequent write operation;

said remainder count value indicating said remainder data for said subsequent write operation.

5,572,335

METHOD AND SYSTEM FOR TRANSFERRING IMAGE DATA BETWEEN TWO DEVICES HAVING DIFFERENT BANDWIDTHS

James W. Stevens, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 1, 1994, Ser. No. 222,200
Int. Cl.[6] H04N *1/36;1/00;1/32;* **H01J** *1/00*
U.S. Cl. 358—442 **22 Claims**

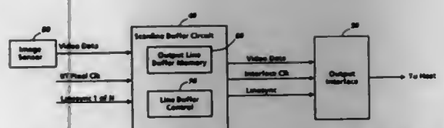
1. A system for transferring video data from an image input terminal to a host terminal, the host terminal having a transfer rate slower than a data transfer rate of the image input terminal, comprising:

control means for selecting a scan rate and a line sampling rate;

image means, operatively connected to said control means, for scanning a document at the selected scan rate and for producing a set of N scanlines of valid image data therefrom, N being equal to two or more;

buffer means, operatively connected to said control means, for storing less than N scanlines of valid image data according to the selected line sampling rate; and

interface means, operatively connected to said buffer means, for outputting the stored scanlines of image data to the host terminal.

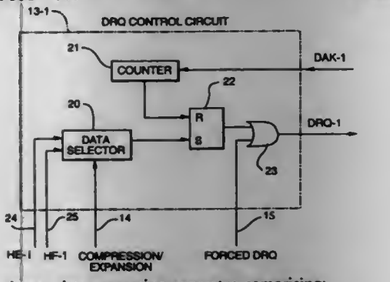


5,572,336

APPARATUS HAVING SEGMENTED MEMORY FOR HIGH-SPEED PARALLEL PROCESSING OF IMAGE DATA

Kazuhiko Mikami, and Jun Yamashita, both of Iwatsuki, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 115,085, Sep. 2, 1993. This application Jun. 5, 1995, Ser. No. 461,544
Claims priority, application Japan, Sep. 4, 1992, 4-262990
Int. Cl.[6] H04N *1/40;1/00;1/32*
U.S. Cl. 358—444 **5 Claims**



1. An image data processing apparatus comprising:

an image memory divided into a plurality of segments;

a plurality of compandors corresponding to said segments for individually processing the image data contained therein;

a plurality of small-capacity temporary data storage means corresponding to said compandors;

shared compressed data storage means for storing compressed data sent as DMA data transfers from said small-capacity temporary data storage means;

a DMA data transfer controller for controlling the DMA data transfers, said DMA data transfer controller being initiated prior to one of a compression process and an expansion process and being kept in operation during said one of said compression process and said expansion process;

a DMA data transfer request signal control circuit provided for each of said small-capacity temporary data storage means for outputting the DMA data transfer request signal during said data compression process upon receipt of one of a first signal and a second signal, said first signal indicating that at least a predetermined amount of compressed data is stored in said each of said small-capacity temporary data storage means, said second signal denoting the end of the data compression process, said DMA data transfer request signal control circuit further outputting the DMA data transfer request signal during said expansion process upon receipt of a third signal, said third signal indicating that at least a predetermined amount of free storage space has become available in said small-capacity temporary data storage means for data expansion; and

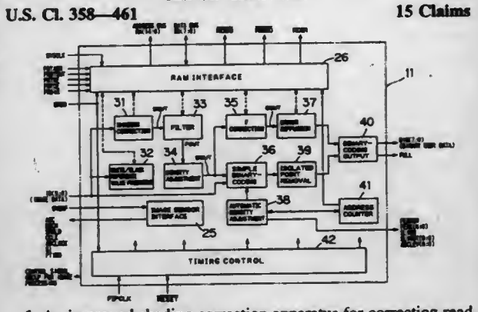
means for supplying said DMA data transfer request control circuit with any one of said first signal, said second signal, and said third signal.

5,572,337

SHADING CORRECTING METHOD AND SHADING CORRECTING APPARATUS

Tetsuji Kajitani; Ariyoshi Hikosaka, both of Osaka; Hideo Azumai, Toyonaka, and Satoshi Iwatsubo, Osaka, all of Japan, assignors to Mita Industrial, Co., Ltd., Osaka, Japan

Continuation of Ser. No. 89,379, Jul. 12, 1993, abandoned. This application Dec. 14, 1992, Ser. No. 358,542
Claims priority, application Japan, Jul. 13, 1992, 4-209651
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—461 **15 Claims**



1. An improved shading correction apparatus for correcting read image data read in by an image reading means to provide shading-corrected image data, said apparatus comprising:

operating means;

first means for applying to said operating means, read image data read in by a certain image reading means;

second means for applying to said operating means, black reference data indicative of reading in of a black reference image by said certain image reading means,

and white reference data indicative of reading in of a white reference image by said certain image reading means; and

third means for applying offset value data to said operating means,

said operating means being responsive to receipt of read image data from said first means, black reference data and white reference data from said second means, and offset value data from said third means for calculating shading-corrected image data, and including an adding means, a subtracting means and output means to determine shading-corrected image data, SOUT, and to output such shading-corrected image data according to the relation

$$SOUT = \frac{ID - BST + OFFSET}{WST - BST + OFFSET} \times K$$

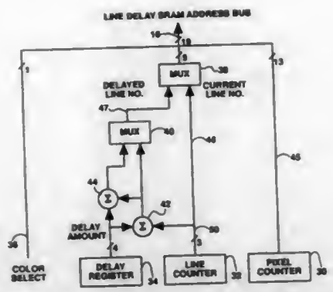
5,572,338

IMAGE SCANNING DEVICE HAVING DIRECTION-RESPONSIVE PROGRAMMABLE DELAY MECHANISM

Mark E. Shafer, Fairport, and Lawrence E. Walther, Macedon, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 943,421, Sep. 14, 1992. This application Oct. 18, 1994, Ser. No. 326,162
Int. Cl.[6] H04N *1/04;1/40*
U.S. Cl. 358—474 **12 Claims**

1. For use with an imaging device for scanning an image-containing medium, said imaging device having a first linear array of photosensors which are operative to sense a first attribute of an image, and a second linear array of photosensors which are arranged parallel to and are spaced apart from said first linear array by a spatial separation distance therebetween and are operative to sense a second attribute of an image, each of said first and second linear arrays of photosensors extending in a direction that is transverse to a direction of relative translation between said image-containing medium and said imaging device, so that at a given spatial positioning of said image-containing medium and said



imaging device, a prescribed region of said image-containing medium is imaged onto one of said first and second linear arrays of photosensors, and subsequently, in the course of relative translation between said image-containing medium and said imaging device imaged, said prescribed region of said image-containing medium is imaged onto the other of said first and second linear arrays of photosensors, and wherein image signals output by said first and second linear arrays are digitized and processed to form a composite digital image, a method of controlling the operation of said imaging device comprising the steps of:

(a) providing a programmable delay mechanism which is operative to delay image signals output by a selected linear array of photosensors by a programmable amount of delay; and

(b) in response to a first direction of relative translation between said image-containing medium and said imaging device causing said first array to sense said prescribed region of said image-containing medium prior to said second array sensing said prescribed region of said image-containing medium, causing image signals output by said first linear array to be delayed by said delay mechanism, but in response to a second direction of relative translation between said image-containing medium and said imaging device causing said second array to sense said prescribed region of said image-containing medium prior to said first array sensing said prescribed region of said image-containing medium, causing image signals output by said second linear array to be delayed by said delay mechanism.

5,572,339

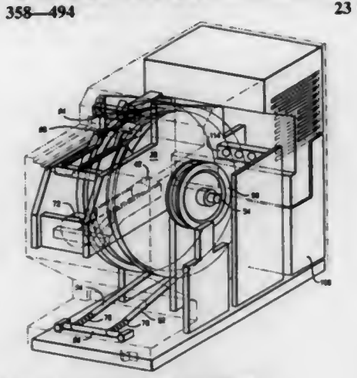
FILM SCANNING SYSTEM AND METHOD

Albert D. Edgar, Austin, and Steven C. Penn, Georgetown, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1994, Ser. No. 269,335

Int. Cl.[6] H04N *1/04;* **G03D** *13/02;13/08;13/14*

U.S. Cl. 358—494 **23 Claims**



1. A method for scanning film comprising

disposing said film along a curved path defining an arc, a segment of said path extending between and a first and a second location;

directing light from said first location through said film and said segment to said second location; and

collecting by linear scanning said light at said second location;

moving said film along said path during said scanning; and

wherein said arc defines a radius of curvature;

said film defines a scan area on a surface facing said second location; and said first and second locations and said scan area lie along a line parallel to and offset from said radius of curvature.

5,572,340

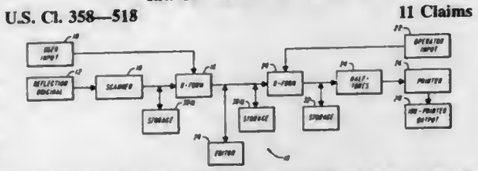
PRE-PRESS PROCESS AND SYSTEM FOR ACCURATELY REPRODUCING COLOR IMAGES

Richard Eckhardt, 51 Lockeland Ave., Arlington, Mass. 02174, and Jerry B. Roberts, 15 Pine Ridge Rd., Arlington, Mass. 02174

Filed Aug. 2, 1994, Ser. No. 284,886

Int. Cl.[6] H04N *1/56;1/60*

U.S. Cl. 358—518 **11 Claims**



1. A system for reproducing a color image on a reproduction medium in accordance with a reproduction process of an original color image provided on a reflection medium so that said reproduced color image appears the same as said original color image regardless of said mediums, said system comprising:

means for scanning the color image provided on the reflection original medium so as to provide data representative of pixels of the image, each pixel having determinable reflectance values for preselected color components, and the original medium having determinable reflecting values for said preselected color components of a blackpoint and whitepoint:

first standardization means for standardizing said data as a function of the reflectance values of each said pixel for said preselected color components so as to provide a first set of transformed data, said first standardization means including means for defining a transform as a function of reflectance values of said first medium, said means for defining a transform as a function of reflectance values of said first medium including means for defining said transform as a function of the reflectance values of the blackpoint and whitepoint of each of said pixels;

second standardization means, responsive to said first set of transformed data, for standardizing said first set of transformed data as a function of the reproduction process so as to provide a second set of transformed data; and

means, responsive to said second set of transformed data, for reproducing said image on said reproduction medium in accordance with said reproduction process.

5,572,341

ELECTRO-OPTICAL DITHERING SYSTEM USING BIREFRINGENCE FOR OPTICAL DISPLAYS AND METHOD

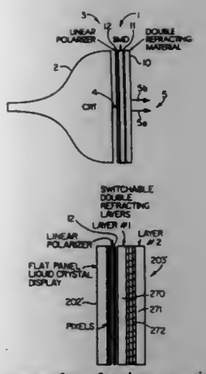
James L. Fergason, 92 Adam Way, Atherton, Calif. 94025

Continuation-in-part of Ser. No. 328,375, Oct. 25, 1994, Pat. No. 5,537,256. This application Feb. 22, 1995, Ser. No. 392,055

Int. Cl.[6] G02F *1/13*

U.S. Cl. 359—39 **34 Claims**

3. Apparatus for shifting an optical signal, comprising



double refraction means for refracting an optical signal based on a characteristic of such optical signal to change the direction of the optical signal,

means for changing such characteristic to determine whether such direction is changed, and

said double refraction means comprising liquid crystal material, and said means for changing comprising means for changing a characteristic of the liquid crystal material relative to the optical signal incident thereon thereby effectively to change such characteristic of the optical signal relative to such double refraction means.

5. Apparatus for shifting an optical signal, comprising

double refraction means for refracting an optical signal based on a characteristic of such optical signal to change the direction of the optical signal,

means for changing such characteristic to determine whether such direction is changed,

said double refraction means and changing means comprising means for selectively changing the location of an optical output signal between plural locations,

said double refraction means and changing means comprising means for selectively changing the location of an optical output signal between plural locations located on plural respective axes, and

said double refraction means and changing means comprising means for selectively changing the location of an optical output signal between plural locations located on plural respective non-parallel axes.

5,572,342

LCD, LIGHT SOURCE, AND HEMISPHERIC CONCAVE REFLECTOR MOUNTED INDIVIDUALLY TO A SUPPORT AND PART OF A HEADS UP DISPLAY

Masahiro Higuchi, Chiryu; Hideki Okuyama, Obu, and Minoru Sumiya, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 21, 1995, Ser. No. 408,165

Claims priority, application Japan, Mar. 30, 1994, 6-061764; Jun. 8, 1994, 6-126619; Jul. 29, 1994, 6-178778

Int. Cl.[6] G02F *1/1335;1/1333;* **G02B** *27/14;* **G03B** *21/28*

U.S. Cl. 359—49 **17 Claims**

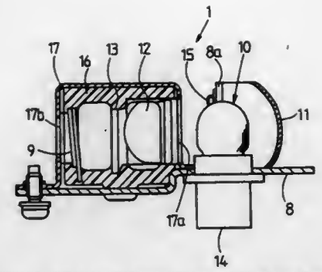
1. A liquid crystal displaying device comprising:

a base member having an opening;

a liquid crystal displaying panel having an optical axis secured to said base member;

a light source member, secured to said base member within said opening, having a light bulb transversely passing through said base member; and

a reflector having a hemispheric concave reflecting surface secured to said base member, said reflecting surface having an optical axis aligned with said optical axis of said liquid crystal displaying panel and being disposed to face said light bulb at a distance from said light bulb opposite said liquid crystal displaying panel, said distance being set so that said concave reflecting surface receives said bulb without sacrificing reflecting function of said reflecting surface.



5,572,343

VISUAL DISPLAY HAVING SEE-THROUGH FUNCTION AND STACKED LIQUID CRYSTAL SHUTTERS OF OPPOSITE VIEWING ANGLE DIRECTIONS

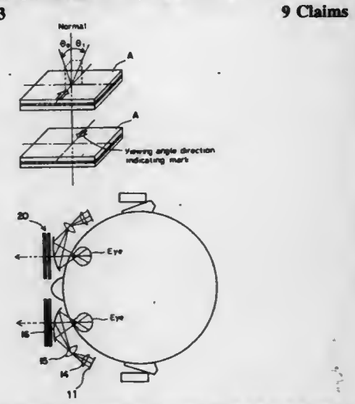
Toshiro Okamura; Seiichiro Tabata; Naoto Shimada; Keiichi Kuba; Masato Yasugaki; Yoichi Iba, and Akiyoshi Tochigi, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 26, 1993, Ser. No. 67,130

Claims priority, application Japan, May 26, 1992, 4-133854; Oct. 6, 1992, 4-267505; Dec. 25, 1992, 4-346087; Dec. 25, 1992, 4-346089; Mar. 10, 1993, 5-010163 U; Mar. 26, 1993, 5-014401 U

Int. Cl.[6] G02B *27/02;* **G02F** *1/1347*

U.S. Cl. 359—53 **9 Claims**



1. A display apparatus adapted to be mounted on an individual's head and including a device for displaying an image, an ocular optical system for projecting the image displayed by said image display device towards at least one eye of the individual, and a liquid crystal shutter unit for selectively transmitting and intercepting an outside image in its path toward the observer's eye to enable said outside image to be selectively observed, wherein the improvement comprises

said liquid crystal shutter unit having at least two liquid crystal shutters, each including two polarizing plates and a liquid crystal molecular layer provided therebetween, and each having a viewing angle direction defined by a direction in which a highest degree of viewing contrast is obtained, said at least two liquid crystal shutters being stacked one on top of another such that the viewing angle direction of one of said at least two liquid crystal shutters and the viewing angle direction of another of said at least two liquid crystal shutters are rotated

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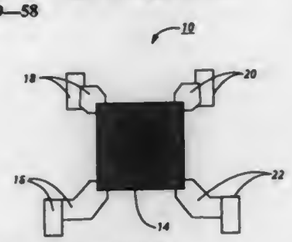
relative to each other through approximately 180° in respective planes of said liquid crystal shutters so as to be opposite to each other.

5,572,344

PIXEL ELEMENTS HAVING RESISTIVE DIVIDER ELEMENTS

Warren B. Jackson, San Francisco; David K. Biegelsen, Portola Valley; David A. Jared, Mountain View, and Richard L. Weisfield, Los Altos, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1995, Ser. No. 368,131
Int. Cl.[6] G02F *1/1393*
U.S. Cl. 359—58 **2 Claims**



1. A pixel element comprised of:
a substrate;
a gate electrode over said substrate;
an isolation layer over said gate electrode;
a plurality of conductive storage nodes for storing induced charges over said isolation layer;
at least two conductive collection electrodes;
an electrically controllable resistance layer having an electrical input, said electrically controllable resistance layer being in a low resistance, touching relationship with both said storage nodes and said at least two collection electrodes;
a layer of electro-optic material over said electrically controllable resistance layer; and
a metal conductive layer at a first potential over said layer of electro-optic material;
wherein a voltage applied across said at least two conductive collection electrodes when a gate turn on voltage is applied to said gate electrode causes said electrically controllable resistance layer to have a relatively low resistance such that a current flows through said electrically controllable resistance layer and charges accumulate on said storage nodes, wherein the resistance of said electrically controllable resistance layer becomes relatively high when a gate turn on voltage is not applied to said gate electrode and such that charges on said storage nodes are trapped, and wherein electric fields between said storage nodes and said metal conductive layer controls the light transmission through said electro-optic material.

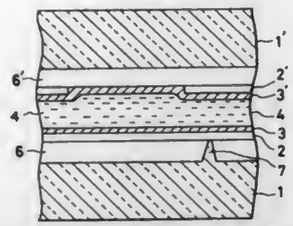
5,572,345

LIQUID CRYSTAL DEVICE FOR PREVENTING SHORT CIRCUITING THEREIN

Shunpei Yamazaki, Setagaya-Ku; Toshimitsu Konuma, and Toshiji Hamatani, both of Atsugi, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 277,437, Nov. 28, 1988, abandoned, which is a continuation of Ser. No. 23,399, Mar. 9, 1987, abandoned, which is a continuation of Ser. No. 494,957, Mar. 15, 1990, abandoned. This application Jun. 9, 1993, Ser. No. 74,163
Claims priority, application Japan, Mar. 11, 1986, 61-53974
Int. Cl.[6] G02F *1/1335;1/1333;1/13*
U.S. Cl. 359—62 **24 Claims**

1. A liquid crystal device comprising:



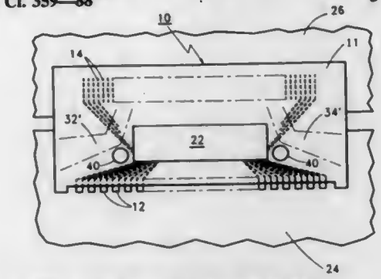
a pair of substrates, at least one of said substrates comprising a transparent glass substrate;
an electrode arrangement comprising a conductive thin film formed on each of said substrates; and
a liquid crystal layer disposed between said substrates;
wherein an insulating organic resin layer is interposed between an inside surface of each of said substrates and the conductive thin film in order to make even a surface of the conductive thin film to prevent any projections on said glass substrates from creating a short circuit between said conductive thin films; and
said liquid crystal layer and said insulating organic resin layers have respective thicknesses such that the thickness of each insulating organic resin layer is not less than the thickness of said liquid crystal layer.

5,572,346

TAPE CARRIER FOR LCD DRIVER PACKAGE WITH ANCHOR HOLES ON EITHER SIDE OF AND SPACED 0.2 MM TO 10 MM FROM THE CHIP MOUNTING SITE

Kazunori Sakamoto, Yokohama, and Kazuhiro Umemoto, Kusatsu, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 28, 1994, Ser. No. 345,109
Claims priority, application Japan, Nov. 26, 1993, 5-296442
Int. Cl.[6] G02F *1/1345;* **H05K** *1/00;* **H01L** *23/495*
U.S. Cl. 359—88 **5 Claims**



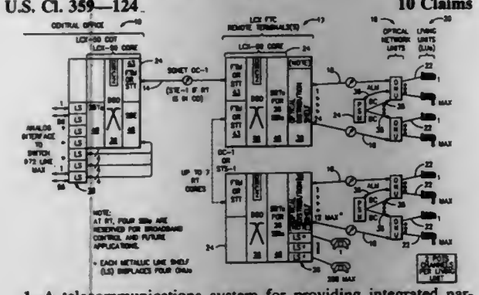
1. A liquid crystal display (LCD) comprising:
a glass board having liquid crystal panel electrodes;
a circuit board;
an LCD driver tape carrier package having a chip mounting Opening, input leads connecting said chip mounting Opening to said circuit board, output leads connecting said chip mounting opening to said liquid crystal panel electrodes, and an LCD driver chip mounted in said chip mounting opening and connected to said input leads and said output leads;
wherein said tape carrier has at least one pair of anchor holes arranged along opposite sides of and laterally spaced from said chip mounting opening in a region where neither said input leads nor said output leads are formed, said tape carrier being anchored to said circuit board via the anchor holes;
at least one of said anchor holes on each side of said chip mounting opening being spaced from said chip mounting opening by a distance of from 0.2to 10mm in order to prevent twisting and wrinkling of the tape carrier in the region of the output leads from propagating to the input leads.

5,572,347

SWITCHED VIDEO ARCHITECTURE FOR AN OPTICAL FIBER-TO-THE-CURB TELECOMMUNICATIONS SYSTEM

Larry W. Burton; Todd D. Poston, both of Raleigh; Martin F. Jordy, Knightdale, and Michael R. Slawson, Raleigh, all of N.C., assignors to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Jul. 30, 1991, Ser. No. 738,111
Int. Cl.[6] H04J *14/02*
U.S. Cl. 359—124 **10 Claims**



1. A telecommunications system for providing integrated narrowband telephony and video services to subscribers, said system comprising:
terminal means for receiving narrowband telephony signals from a telephone network and a plurality of video channels;
multiplexing means, connected to said terminal means, for frequency division multiplexing the narrowband telephony signals with the video channels and for providing a multiplexed output signal;
modulating means, connected to said multiplexing means to receive said multiplexed output signal, for modulating an optical carrier with the multiplexed output signal;
an optical fiber connected to the modulating means for transmitting the modulated optical carrier;
demodulating means connected to the optical fiber for receiving the modulated optical carrier and for demodulating the carrier to provide a demodulated multiplexed signal;
demultiplexing means for demultiplexing the demodulated multiplexed signal to provide the narrowband telephony signals and the video channels; and
distributing means for distributing the narrowband telephony signals and the video channels to subscribers,
wherein the terminal means includes a video channel switching means for selecting video channels to be provided to the multiplexing means, whereby the narrowband telephony signals are frequency division multiplexed with selected video channels.

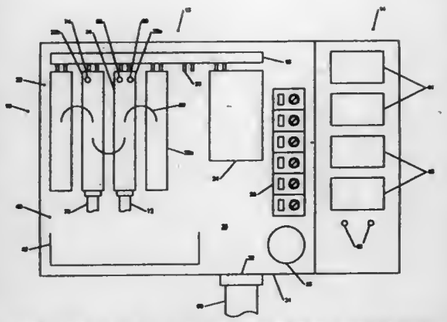
5,572,348

UNIVERSAL DEMARCATION POINT

Jeffrey A. Carlson, Hwy. #2E, Shevlin, Minn. 56676, and Craig D. Mead, 753 Center St., Cleveland, N.Y. 13042

Filed Feb. 9, 1995, Ser. No. 386,474
Int. Cl.[6] H04J *14/02*
U.S. Cl. 359—125 **21 Claims**

1. A universal demarcation point for managing the delivery of communications services to a subscriber by providing an interface between a utility distribution network and subscriber owned equipment, the universal demarcation point comprising:
a utility accessible portion comprising:
an input port in the universal demarcation point for delivering the communications services from the utility distribution network, the communications services being delivered through a hybrid cable having a plurality of fiber optic cables and a plurality of copper cables, the fiber optic cables are capable of transmitting light signals, the copper cables are capable of transmitting electric power;



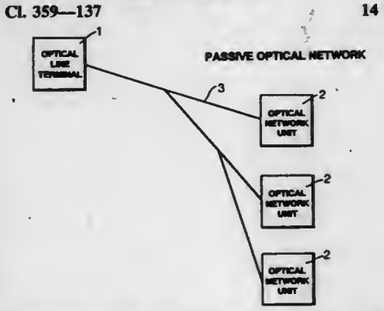
an output port in the universal demarcation point for delivering the communications services into the subscriber's dwelling;
a plurality of modular connectors fixedly mounted to the universal demarcation point;
a power supply removably mounted to the universal demarcation point, the power supply converting the electric power into a voltage for powering the operation of the universal demarcation point; and
a plurality of service modules that are capable of being plugged into the modular connectors, the service modules converting light signals that are transmitted on the fiber optic cables onto cables that are suitable for use in the subscriber's dwelling; and
a subscriber accessible portion being adjacent to the utility accessible portion and having ports that enable the subscriber to test the integrity of the communications services delivered from the utility distribution network.

5,572,349

COMMUNICATIONS SYSTEM

Michael A. Hale, and Donald E. A. Clarke, both of Essex, England, assignors to British Telecommunications public limited company, Great Britain

Continuation-in-part of Ser. No. 194,081, Feb. 9, 1994. This application Jan. 11, 1995, Ser. No. 371,550
Claims priority, application Great Britain, Dec. 15, 1993, 9325697
Int. Cl.[6] H04J *14/08*
U.S. Cl. 359—137 **14 Claims**



1. A communications system comprising a line terminal connected via an optical network to a plurality of terminations, in which:
the line terminal includes means for receiving narrow bandwidth traffic and relatively wider bandwidth traffic, a plurality of terminal units each arranged to format traffic into frames, and a time division multiplexer arranged to receive one frame from each terminal unit and to interleave them into a superordinate frame for transmission over the optical network, one

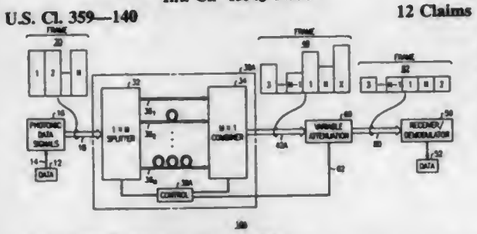
of the terminal units being arranged to generate a frame which includes a multiplexer synchronization sequence;
each termination comprises a time division demultiplexer for segregating received traffic into narrow bandwidth traffic and wide bandwidth traffic, each termination including means for synchronization in accordance with the synchronization sequence, and control means connected to each termination for generating narrow bandwidth control signals for transmission, using time division multiple access, to the line terminal;
and in which the line terminal is responsive to the control signals from a given termination to control the transmission of wide bandwidth traffic to that termination.

5,572,350

METHOD AND APPARATUS TO COMPENSATE FOR DIFFERENTIAL ATTENUATION IN AN OPTICAL TIME SLOT INTERCHANGER

Ronald A. Spanke, Wheaton, Ill., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 31, 1994, Ser. No. 221,206
Int. Cl.[6] H04J *14/08*
U.S. Cl. 359—140 **12 Claims**



1. An optical apparatus, comprising:
an optical switch having an output for delivering a frame of optical data, said optical data being divided among a plurality of time slots and said optical data in each of said plurality of time slots having a respective photonic intensity that is a function of an amount of delay to which the data is subjected;
a controllable optical attenuator, having an input and an output, having its input connected to said optical switch output for receiving delivery of said frame, said controllable optical attenuator being dynamically adjustable among a plurality of pre-selected amounts of attenuation; and
means for controlling said controllable optical attenuator to attenuate a photonic intensity of said optical data within each time slot by a pre-selected amount of said plurality of pre-selected amounts of attenuation such that it is substantially the same as the photonic intensity of the optical data within the time slot of the frame having the lowest photonic intensity.

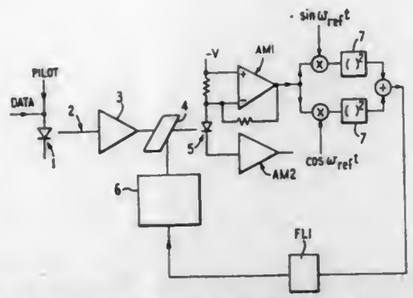
5,572,351

OPTICAL COMMUNICATIONS SYSTEMS

Anagnostis Hadjifotiou, Harlow, Great Britain, assignor to Northern Telecom Limited, Montreal, Canada

Continuation of Ser. No. 947,271, Sep. 18, 1992, abandoned.
This application Aug. 20, 1995, Ser. No. 492,496
Claims priority, application United Kingdom, Sep. 26, 1991, 9120495
Int. Cl.[6] H04B *10/00;10/12;10/02;10/16*
U.S. Cl. 359—161 **7 Claims**

1. An optical communications system comprising an optical transmitter arranged to transmit optical data signals at an optical data signal frequency, an optical receiver an optical transmission path between the transmitter and receiver, and an optical amplifier and an optical bandpass filter disposed in the optical path between the transmitter and receiver said filter having a pass band whose width is substantially constant but whose centre frequency is adjustable via frequency control means associated with the filter, wherein the transmitter includes means for transmitting together with the data signals an optical pilot signal having a frequency different from said optical data frequency but sufficiently close to said data frequency that both frequencies can be accommodated within the band width of the bandpass filter, wherein said receiver includes detection means for detecting said pilot signal, there being feedback means provided between said detection means and said filter control means, wherein the optical filter control means incorporates acquisition means for adjusting the centre frequency of the filter pass band so as to include the frequency of the pilot signal within the pass band so as to provide detection of the pilot signal by the detection means and initial acquisition of the pilot signal, and wherein, subsequent to said initial acquisition of the pilot signal, the filter control means responds to signals from the detection means via the-feedback means to provide adjustment of the centre frequency of the optical filter in dependence on the received optical pilot carrier signal frequency such that the centre frequency of the al band.

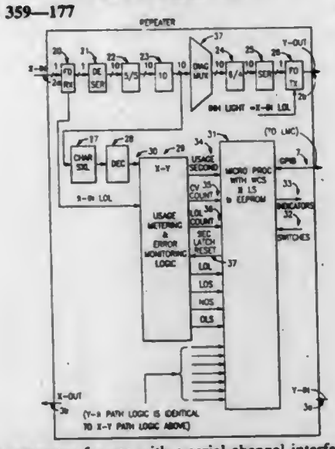


5,572,352

APPARATUS FOR REPOWERING AND MONITORING SERIAL LINKS

Quiedo J. Carbone, Jr., Kingston; Gerald H. Miracle, Pleasant Valley, both of N.Y., and Peter L. Potvin, Holly Springs, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 76,027, Jun. 14, 1993. This application Jan. 23, 1995, Ser. No. 376,269
Int. Cl.[6] H04B *10/16*
U.S. Cl. 359—177 **6 Claims**



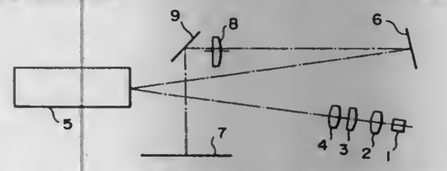
1. An apparatus for use with a serial channel interface connecting a serial channel with a serial component said serial channel interface conforming to a predetermined protocol, said apparatus comprising:
a repeater unit having a connector for connecting into a serial link between the serial channel and the serial component, said repeater unit repowering a plurality of serial bit streams passing in both directions on the serial link,
wherein the apparatus further interrogates serial characters being repeated in both in both directions, but without disturbing the repowered serial bit streams,
wherein the interrogated repeated serial characters are tested for being valid characters or code violations (CV's), and if the repeated serial characters are valid, then they are tested for being idle or non-idle.

5,572,353

LASER SCANNING DEVICE

Takashi Iizuka, and Ryota Ogawa, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 14, 1994, Ser. No. 180,997
Claims priority, application Japan, Jan. 14, 1993, 5-004957; Nov. 5, 1993, 5-276974
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—207 **21 Claims**



1. A scanning optical system for scanning an object surface, comprising:
a light emitting device for emitting a beam of light;
a deflection mirror having a plurality of light reflection surfaces which is rotatable to deflect said beam emitted by said light emitting device, and to scan within a predetermined scanning angle zone along a plane of a main scanning,
wherein said beam incident to said deflection mirror is inclined in a direction of an auxiliary scanning, and a direction of said beam incident to said deflection mirror intersects a rotational axis of said deflection mirror;
wherein the direction of said beam is orthogonal to one of said plurality of light reflection surfaces when viewed in said main scanning plane as said beam reaches the center of said predetermined scanning angle zone;
a curved mirror having a predetermined curvature, said curved mirror having power mainly in said main scanning plane, said beam reflected by said plurality of reflection surfaces being incident to said curved mirror and reflected towards said object surface at a predetermined angle in said auxiliary scanning direction; and
a toric lens positioned between said curved mirror and said objective surface for converging the beam reflected by said curved mirror onto said object surface, said toric lens having power mainly in said auxiliary scanning direction.

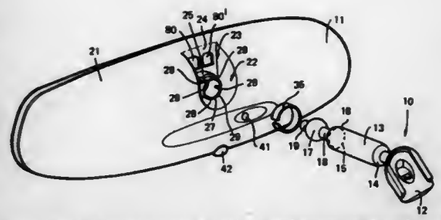
5,572,354

REARVIEW MIRROR SUPPORT BRACKET WITH RETAINING PROTRUSION, REVIEW MIRROR CASE AND REFLECTIVE ELEMENT

John Desmond, Newbridge; Patrick MacNamara, Naas; Sean McComack, Newbridge, and Patrick Lawlor, Dublin, all of Ireland, assignors to Donnelly Mirrors, Ltd., Naas, Ireland

Filed Mar. 18, 1994, Ser. No. 210,358
Claims priority, application Ireland, Mar. 19, 1993, 930210; Mar. 19, 1993, 930211; Mar. 19, 1993, 930212
Int. Cl.[6] G02B *5/10*
U.S. Cl. 359—265 **14 Claims**

1. A support bracket for mounting a rearview mirror on a vehicle, said support bracket having two ends, means at one end for mounting said bracket to a vehicle, and means at the other end for mounting the rearview mirror, said means for mounting the rearview mirror further including a generally spherical ball for insertion in a complementary socket provided in a mirror case of the rearview mirror, and retaining means for substantially preventing disengagement of said spherical ball from the socket, said retaining means including a protrusion on said spherical ball, said protrusion having a free end adapted to project into an aperture in the socket in the mirror case, the socket aperture having a predetermined width, said protrusion having a width less than the width of the socket aperture whereby movement of said spherical ball out of the socket is prevented.

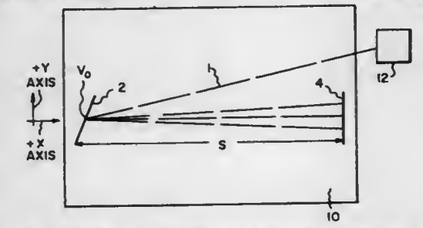


5,572,355

OPTICAL SYSTEM FOR STRETCHING, COMPRESSING AND AMPLIFYING ULTRASHORT OPTICAL PULSES

Christopher Cotton, Honeoye Falls, N.Y., and Yang Pang, Ann Arbor, Mich., assignors to Clark MXR, Inc., Dexter, Mich.

Filed May 1, 1995, Ser. No. 432,576
Int. Cl.[6] H01S *3/00;* **H04B** *10/04;* **G02B** *26/00*
U.S. Cl. 359—333 **51 Claims**



1. An apparatus for altering the temporal pulsewidth of an ultrashort pulse comprising:
a dispersive element arranged to receive an input beam to produce a collection of output beams that differ chromatically;
a concave reflecting surface disposed to receive and reflect the collection of beams at a first location;
a convex reflecting surface, disposed to receive the collection of beams from the concave reflecting surface to reflect said collection of beams,
arranged so that a temporally altered pulsewidth of an ultrashort pulse has an approximate minimal quartic phase chirp.

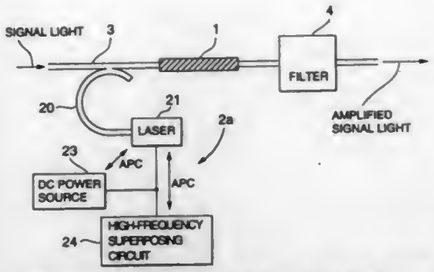
5,572,356

OPTICAL AMPLIFIER

Ichiro Yoshida; Masayuki Shigematsu, and Michio Murata, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 14, 1995, Ser. No. 502,618
Claims priority, application Japan, Jul. 15, 1994, 6-186269
Int. Cl.[6] H01S *3/00*
U.S. Cl. 359—341 **12 Claims**

1. An optical amplifier comprising:
a semiconductor laser for generating an exciting light;



a light transmitting medium in which a rare earth element is doped, said rare earth element being excited by said exciting light; and

modulating means for modulating a drive current of a power source connected to said semiconductor laser with an AC component having a higher frequency than the frequency corresponding to the life time of excited states of an ion of said rare earth element;

wherein said drive current of said drive power has an amplitude which is higher than a threshold value of said semiconductor laser.

5,572,357

OPTICAL SYSTEM FOR AMPLIFYING SIGNAL LIGHT

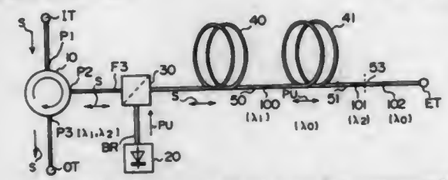
Koji Nakazato, and Masayuki Nishimura, both of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 14, 1995, Ser. No. 389,698

Claims priority, application Japan, Feb. 14, 1994, 6-017690

Int. Cl.[6] H01S *3/02;3/10*

U.S. Cl. 359—341 **29 Claims**



1. An optical system for amplifying signal light containing first and second light signals respectively having first and second wavelengths, comprising:

(a) a first optical circulator, having first, second, and third ports, wherein light input through the first port is output through the second port, and wherein light input through the second port is output through the third port;

(b) a first amplification fiber for amplifying light passing therethrough, said first amplification fiber being connected to the second port of said first optical circulator;

(c) a second amplification fiber for amplifying light passing therethrough, said second amplification fiber being connected to said first amplification fiber;

(d) first reflecting means for connecting said first amplification fiber to said second amplification fiber, said first reflecting means reflecting the first light signal, and transmitting the second light signal; and

(e) second reflecting means for selectively reflecting the second light signal, said second reflecting means being connected to said second amplification fiber such that said second amplification fiber is arranged between said first and second reflecting means.

5,572,358

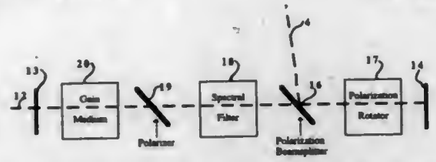
REGENERATIVE AMPLIFIER INCORPORATING A SPECTRAL FILTER WITHIN THE RESONANT CAVITY

Edward F. Gabl, Saline; David R. Walker, and Yang Pang, both of Ann Arbor, all of Mich., assignors to Clark-MXR, Inc., Dexter, Mich.

Filed Dec. 16, 1994, Ser. No. 358,023

Int. Cl.[6] H01S *3/00*

U.S. Cl. 359—347 **24 Claims**



1. A regenerative amplifier for amplifying seed pulses, the seed pulses having energy in a band of wavelengths and characterized by a center wavelength comprising:

a resonant cavity;

a gain medium in said resonant cavity characterized by a gain bandwidth that at least partially overlaps the band of wavelengths of the seed pulses, and;

a spectral filter within the resonant cavity for passing a band of wavelengths that at least partially overlaps the gain bandwidth and the band of wavelengths of the seed pulse;

an input port for injecting the seed pulses into the resonant cavity; and

an output port for extracting amplified pulses from the resonant cavity.

5,572,359

DIFFERENTIAL INTERFERENCE MICROSCOPE APPARATUS AND AN OBSERVING METHOD USING THE SAME APPARATUS

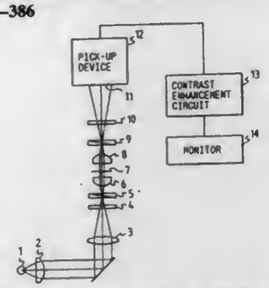
Tatsuro Otaki, Tokyo, and Takashi Kawahito, Fujisawa, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jun. 30, 1994, Ser. No. 269,125

Claims priority, application Japan, Jul. 15, 1993, 5-196717

Int. Cl.[6] G02B *21/06;21/00*

U.S. Cl. 359—386 **11 Claims**



1. A differential interference microscope apparatus comprising:

a light source;

a condenser optical system for condensing beams of flight from said light source and illuminating an object with the beams of light;

an objective optical system for converging the beams of light from the illuminated object and forming an image of the object;

a pick-up device for photoelectrically detecting the image of the object; and

a contrast enhancement circuit for enhancing a contrast of the image on the basis of an output signal of the image of the object photoelectrically detected by said pick-up device,

wherein the following elements are disposed sequentially from the side of said light source in an optical path between said light source and the object, said elements being:

a first polarizing element for changing a beam of light from said light source into a predetermined beam of polarized light; and

a first birefringent element for separating the beam of polarized light into an ordinary ray beam including an ordinary ray and a corresponding extraordinary ray beam including an extraordinary ray, the ordinary ray beam and corresponding extraordinary ray beam being guided to pass through the object;

wherein the following elements are disposed sequentially from the side of the object in an optical path between the object and the image, said elements being:

a second birefringent element for guiding the ordinary ray beam and corresponding extraordinary ray beam which mass through the object, onto the same optical path; and

a second polarizing element for causing the ordinary ray beam and corresponding extraordinary ray beam guided onto the same optical path to interfere with each other,

and wherein the shear quantity S between the ordinary ray of the ordinary ray beam and the extraordinary ray of the corresponding extraordinary ray beam satisfies the following condition:

$$\delta/20 \leq S < \delta/2$$

where δ is the resolving power of said objective optical system.

5,572,360

MICROSCOPE STAND FOOT WITH A CARRIER FOR BRACING A CYLINDRICAL TUBE OF AN ILLUMINATION DEVICE IN A NON-DISPLACEABLE MANNER

Norbert Gaul, Solms-Oberbiel, Germany, assignor to Leica Mikroskopie und Systeme GmbH, Wetzlar, Germany

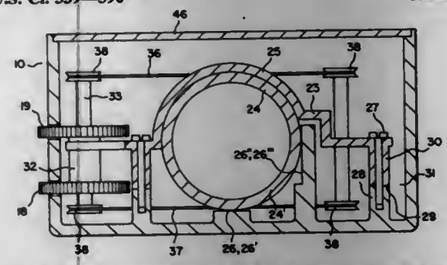
PCT No. PCT/DE93/00678, § 371 Date Mar. 17, 1995, § 102(e) Date Mar. 17, 1995, PCT Pub. No. WO94/07171, PCT Pub. Date Mar. 31, 1994

PCT Filed Aug. 2, 1993, Ser. No. 397,241

Claims priority, application Germany, Sep. 19, 1992, 42 31 468.2

Int. Cl.[6] G02B *21/00;21/06*

U.S. Cl. 359—390 **7 Claims**



1. A microscope stand foot including at least two mating surfaces, said microscope stand foot comprising:

a cylindrical tube having an envelope surface;

an illumination device including at least one optical component, an aperture diaphragm, and a field diaphragm; said at least one optical component, said aperture diaphragm, and said field diaphragm being assembled in said cylindrical tube;

a drive unit operatively connected to each of said diaphragms; and

a carrier secured to a surface of said microscope stand foot by a fastening device such that said cylindrical tube is braced under tension in a non-displaceable manner by said carrier and said envelope surface of said cylindrical tube is pressed onto said at least two mating surfaces; and

wherein said at least two mating surfaces are integrally disposed on said surface of said microscope stand foot.

5,572,361

BINOCULAR SYSTEM WITH AUTOMATIC DIOPTIC POWER ADJUSTMENT

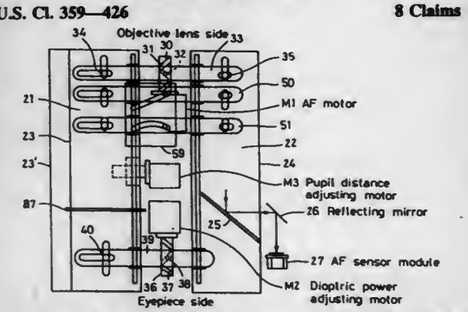
Makoto Kamiya, Osaka; Katsuhito Akagi; Yukio Maekawa, both of Sakai; Kazuo Kimura; Yoshiharu Ohta, both of Sakai; Haruyuki Nagano, Sakai; Ichiro Yoshiyama, Kobe; Masataka Hamada, Osakasayama; Kohtaro Hayashi, Suita, and Keiji Yamazaki, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 16, 1992, Ser. No. 962,286

Claims priority, application Japan, Oct. 17, 1991, 3-297898; Oct. 31, 1991, 3-313354; Oct. 31, 1991, 3-313355

Int. Cl.[6] G02B *23/00*

U.S. Cl. 359—426 **8 Claims**



5. A binocular system to permit an operator user to automatically set a dioptric power comprising:

an optical system;

means for moving the optical system to provide a dioptric power adjustment suitable for the dioptric power requirement of a user;

means for entering a specific user signal for a particular dioptric power adjustment;

storing means for storing data of a specific user signal and the corresponding specific dioptric power adjustment;

switch means for addressing a stored specific user signal in the storing means; and

means, in response to the switch means, for enabling the moving means to provide a dioptric power adjustment for the optical system corresponding to the stored specific user signal entered by the switch means.

5,572,362

CONDENSER LENS, POLARIZING ELEMENT, LIGHT SOURCE APPARATUS, AND PROJECTION DISPLAY APPARATUS

Shinsuke Shikama; Hiroshi Kida, and Akira Daijogo, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 312,770, Sep. 27, 1994, which is a division of Ser. No. 47,504, Apr. 16, 1993, Pat. No. 5,384,659. This application Apr. 26, 1995, Ser. No. 427,815

Claims priority, application Japan, Apr. 20, 1992, 4-099653; May 6, 1992, 4-113475; Oct. 26, 1992, 4-287671; Nov. 24, 1992, 4-313261

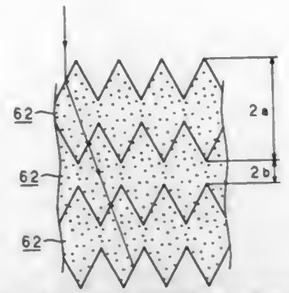
Int. Cl.[6] G02B *5/30*

U.S. Cl. 359—487 **23 Claims**

19. A polarizing element for converting natural light with randomly oriented polarization into partially polarized light whose polarization is greater in one particular direction, comprising:

a plurality of polarizing layers each of which includes an incident surface and an emergent surface having a periodic fold structure and a triangular-wavelike shaped cross section with each crest of the incident surface aligned with a trough of the emergent surface,

wherein vertex angles formed by each of said folds orients the incident and emergent surfaces for substantially transmitting



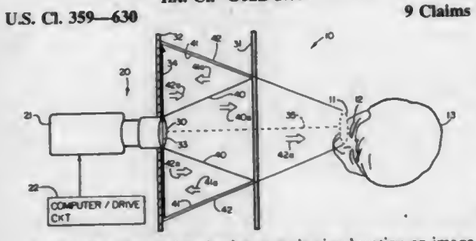
P-polarized light through said polarizing element with little loss and for substantially reflecting S-polarized light.

5,572,363

RETRO-REFLECTOR BASED IN-LINE VIEWING SYSTEM

James L. Fergason, 92 Adam Way, Atherton, Calif. 94025

Filed Nov. 28, 1994, Ser. No. 345,656
Int. Cl.[6] G02B *27/14*
U.S. Cl. 359—630 **9 Claims**



1. An in-line system for viewing at a viewing location an image provided from an image source, comprising

a retro-reflector,

a beamsplitter, and

a lens;

said retro-reflector, beamsplitter and lens being relatively positioned along a substantially straight line axis, and the viewing location also being on the axis,

said lens and said beamsplitter being cooperative to form relative to said retro-reflector an enlarged image of the image provided from an image source, and said retro-reflector reflects light to said beamsplitter for transmission therethrough for viewing.

5,572,364

PROJECTION LENS SYSTEM

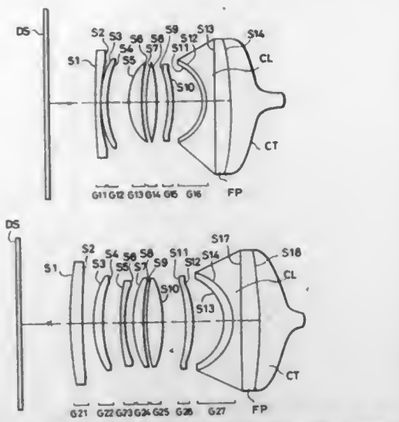
Eiichi Toide, and Toshihide Kaneko, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 941,380, Sep. 4, 1992, abandoned.
This application Jun. 21, 1994, Ser. No. 263,492
Claims priority, application Japan, Sep. 13, 1991, 3-234743; Sep. 13, 1991, 3-234744
Int. Cl.[6] G02B *3/00*
U.S. Cl. 359—649 **34 Claims**

1. A projection lens system for projecting an enlarged image onto a display screen from an image appearing on a faceplate of a cathode ray tube, comprising;

a first lens group, positioned at an end closest to said display screen, being in a form of a meniscus and having a negative power;

a second lens group having a convex surface towards said display screen and having a weak positive power;



a third lens group positioned between said second lens group and said cathode ray tube without another lens group intervening between said second lens group and said third lens group, and having a strong positive power;

a fourth lens group being bi-convex and having a strong positive power;

a fifth lens group having a weak positive power;

a sixth lens group having a pronounced concave surface away from said display screen and having a negative power;

said second and fifth lens groups each having lenses made of plastic with aspheric surfaces on both sides, and said third and fourth lens groups each having lenses with spherical surfaces on both sides.

10. A projection lens system for projecting an enlarged image onto a display screen from an image appearing on a faceplate of a cathode ray tube, comprising:

a first lens group, positioned from an end closest to the display screen, being in a form of a meniscus and having a positive power;

a second lens group having a convex surface towards the display screen and having a weak positive power;

a third lens group being in a form of a meniscus and having a negative power;

a fourth lens group being in a form of a meniscus and having a positive power;

a fifth lens group, disposed close to said fourth lens group, being bi-convex and having a positive power;

a sixth lens group having a concave surface away from the display screen and having a positive power; and

a seventh lens group having a pronounced concave surface away from the display screen and having a negative power;

said second and sixth lens groups each having lenses made of plastic with at least one aspheric surface.

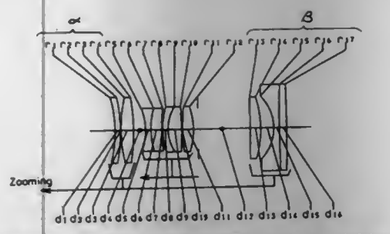
5,572,365

ZOOM LENS SYSTEM

Takayuki Ito, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 17, 1994, Ser. No. 291,892
Claims priority, application Japan, Aug. 18, 1993, 5-203945
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—677 **7 Claims**

1. A zoom lens system comprising: at least three lens groups having a zoom ratio that is greater than 3.0; two of said lens groups are moved together, keeping the distance between said two lens groups constant during a zooming operation; a lens group α of said two lens groups has a small degree of contribution to a variation of magnification by said zoom lens system compared to that of a lens group β of said two lens groups; and said lens groups α and β have



focusing sensitivities $K\alpha$ and $K\beta$ of different signs satisfying the following relationships:

$$12<|K\beta| \quad (1)$$

$$-0.5<K\alpha/K\beta<-0.1 \quad (2)$$

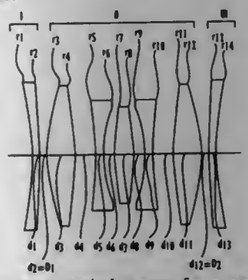
wherein "$K\alpha$" represents a focusing sensitivity of said lens group α at a telephoto extremity; and "$K\beta$" represents a focusing sensitivity of said lens group β at a telephoto extremity position, respectively.

5,572,366

VARIABLE POWER OPTICAL SYSTEM FOR COPYING MACHINE

Hiroyuki Hirano, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 7, 1994, Ser. No. 350,463
Claims priority, application Japan, Dec. 9, 1993, 5-309282; Sep. 21, 1994, 6-226562
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—679 **12 Claims**



1. A variable power optical system for a copying machine, comprising:

a first lens group having a negative power;

a second lens group having a positive power; and

a third lens group having a negative power;

wherein the three lens groups are moved to vary a distance D_1 between said first and second lens groups and a distance D_2 between said second and third lens groups to vary a magnification from a reduction range to an enlargement range and including an actual size, while keeping a constant distance between an object to be copied and an image of the object, said second lens group comprising a plurality of lenses, a distance between each lens of said plurality of lenses being maintained substantially constant during said varying of said magnification, and

wherein said variable power optical system satisfies a relationship defined by the following formula in said range from said actual size to said enlargement range:

$$0.60<|(D_{m1}-D_{e1})/(D_{m2}-D_{e2})|<0.85,$$

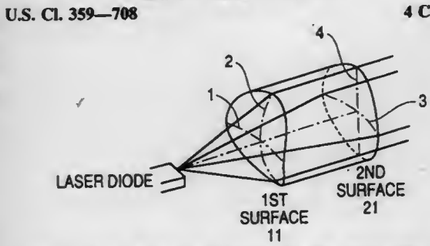
wherein "D_{mi}" designates a value of D_i (i=1, 2) at said maximum magnification, and "D_{ei}" designates a value of D_i (i=1,2) at said actual size, respectively.

5,572,367

ASPHERIC LENS FOR SIMULTANEOUSLY COLLIMATING AND SHAPING A LASER DIODE BEAM

Jin Ho Jung, Kyeongki-do, and Young Jin Choi, Dagu, both of Rep. of Korea, assignors to Hyundai Electronics Ind. Co., Ltd., Kyeongki-do, Rep. of Korea

Filed Mar. 30, 1994, Ser. No. 219,978
Claims priority, application Rep. of Korea, Mar. 30, 1993, 1993-5080
Int. Cl.[6] G02B *13/18;3/00*
U.S. Cl. 359—708 **4 Claims**



1. An aspheric lens for converting an input laser beam into a collimated laser beam having a circular cross-section normal to an optical path, the input laser beam being outwardly divergent and defining vertical and horizontal components normal to the optical path and having a non-circular cross-section normal to the optical path, a vertical angle of divergence of the input laser beam relative to the vertical components being greater than a horizontal angle of divergence of the input laser beam relative to the horizontal components, said aspheric lens comprising a lens body having opposite first and second surfaces which respectively receive the input laser beam and output the collimated laser beam, the collimated laser beam having the circular cross-section normal to an optical axis of said lens body, said first surface having a configuration in which the vertical components of the input laser beam are refracted in a direction parallel to the optical axis upon entering the lens body and the horizontal components of the input laser beam are not refracted upon entering the lens body, and said second surface having a configuration in which the refracted vertical components of the input laser beam are not refracted upon exiting the lens body and the non-refracted horizontal components of the input laser beam are refracted in a direction parallel to the optical axis upon exiting the lens body.

5,572,368

LIGHT PROJECTING DEVICE WITH CYLINDRICAL LENS

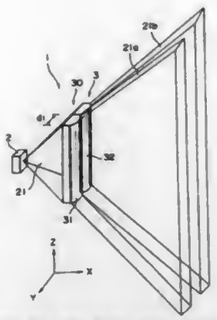
Hidetaka Yokota, and Tsuyoshi Ishikawa, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1994, Ser. No. 219,452
Claims priority, application Japan, Mar. 29, 1993, 5-093680
Int. Cl.[6] G03B *3/00*
U.S. Cl. 359—710 **37 Claims**

1. A light projecting device used to project light onto an object, said device comprising:

means for emitting light; and

means for projecting said emitted light, said projecting means refracting said emitted light such that an image pattern having alternate bright and dark areas is projected, said projecting means comprising at least two adjacent converging lenses which have cylindrical surfaces, said image pattern having



alternate bright and dark areas being generated as a result of light projected by each of said at least two adjacent converging lenses.

5,572,369

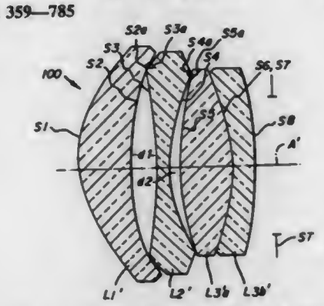
TRIPLET-TYPE LENS FOR USE IN A COMPACT PHOTOGRAPHIC CAMERA

Lee R. Estelle, Rochester, and William T. Goosey, Jr., Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 29, 1993, Ser. No. 84,380

Int. Cl.[6] G02B *9/14*

U.S. Cl. 359—785 **45 Claims**



1. A lens system comprising a plurality of lens components having a plurality of lens surfaces and arranged in order from a front, object side to a rear, image side:

a first positive power meniscus lens component having a lens surface convex to the object side;

a second bi-concave lens component;

a third bi-convex lens component; and

a diaphragm, one of said plurality of lens surfaces and said diaphragm defining two aperture stop locations, said diaphragm being adjustable between a wide-open condition and a small open condition, said diaphragm being located to operate as an aperture stop when in the small open condition, said lens components having a lens surface that is positioned and sized to operate as an aperture stop when said diaphragm is in its wide-open condition while said diaphragm does not function as an aperture stop but operates as a baffle to eliminate propagation of unwanted light towards the image plane, wherein the lens system fulfills the following conditions:

$$N_3 - N_1 \leq 0.1$$

$$\frac{N_1}{N_2} \geq 0.9$$

$$0.25f < \Sigma d < 0.35f$$

where:

f is the composite focal length of the lens system;

Σd is the distance from the vertex of the foremost lens surface to the vertex of the rearmost lens surface of the lens system;

N_1 represents the refractive index of a positive first lens element forming the first lens component;

N_2 represents the refractive index of a negative second lens element forming the second lens component; and

N_3 represents the refractive index of a positive third lens element forming a part of the third lens component.

5,572,370

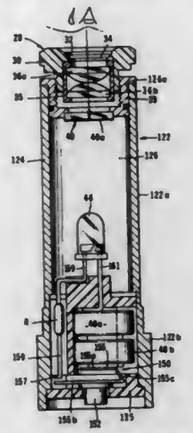
APPARATUS FOR DETERMINING FERTILE PERIODS

Casey Cho, 420 Pilgrim Pl., San Marino, Calif. 91108

Filed May 26, 1995, Ser. No. 451,684

Int. Cl.[6] G02B *21/00*

U.S. Cl. 359—801 **9 Claims**



1. An apparatus for determining the period of maximum fertility in women comprising:

(a) a hand-held housing having a base portion and a body portion connected to said base portion, said body portion having:

(i) a wall defining an interior chamber having a top opening;

(ii) a generally ring-shaped member removably receivable within said top opening of said interior chamber; and

(iii) a transparent plate connected to said ring-shaped member; and

(b) magnification means removably receivable within said top opening for viewing the interior of said chamber, said magnification means comprising:

(i) a support assembly having a viewing aperture; and

(ii) a magnifying lens mounted within said support assembly;

(c) illumination means carried by said hand-held housing for illuminating said interior chamber; and

(d) a saliva receiving surface disposed within said interior chamber intermediate said magnifying lens and said illumination means, said saliva receiving surface being formed in said transparent plate connected to said ring-shaped member.

5,572,371

VIEWER ASSEMBLIES AND IN VIEWABLE MATERIAL ADAPTED THERETO

Jeffrey M. Woolf, London, Great Britain, assignor to Micromap Limited, England

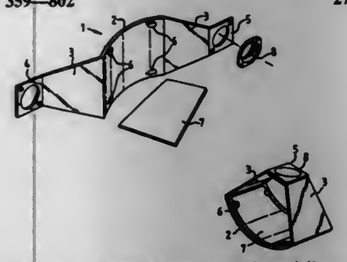
PCT No. PCT/GB92/01072, § 371 Date Jan. 10, 1994, § 102(e) Date Jan. 10, 1994, PCT Pub. No. WO92/22885, PCT Pub. Date Dec. 3, 1992

PCT Filed Jun. 15, 1992, Ser. No. 162,177

Claims priority, application United Kingdom, Jun. 14, 1991, 9112821

Int. Cl.[6] G02B *27/02*

U.S. Cl. 359—802 **27 Claims**



1. A viewer for use with at least one substantially rectangular card which has on at least one face thereof information which has a character or feature size distinguishable by the eye only under magnification, the viewer comprising:

a support base adapted to support at least one information card in a first curved plane, the support base having two opposed elongated side edges and two opposed short side edges;

two side portions each having opposed upper and lower edges, each side portion being connected at a respective lower edge to a short side edge of the support base by a respective first hinge; and

a magnification viewing lens mounted on the upper edges of each side portion by a second hinge, the first and second hinges being parallel to each, wherein the side portions are pivotal about the first hinges and the viewing lens is pivotal about the second hinges, such that the lens moves in a second curved plane corresponding to the first curved plane and with respect to scan a card supported in the support base.

5,572,372

OPTICAL APPARATUS PROVIDED WITH A DRIVING UNIT FOR MOVING A LENS

Masayoshi Sekine, Tokyo; Junichi Murakami, Atsugi; Shigeru Ogino, Tokyo; Hiroyuki Takahara, Yokohama; Masamichi Toyama, Yokohama; Sadahiko Tsuji, Yokohama; Shigeyuki Suda, Yokohama, and Jun Tokumitsu, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 737,149, Jul. 29, 1991, Pat. No. 5,289,318. This application Feb. 22, 1994, Ser. No. 200,885

Claims priority, application Japan, Jul. 31, 1990, 2-202817; Jul. 31, 1990, 2-202818; Aug. 3, 1990, 2-206593; Apr. 24, 1991, 3-94371

Int. Cl.[6] G02B *7/02;15/14*

U.S. Cl. 359—824 **3 Claims**

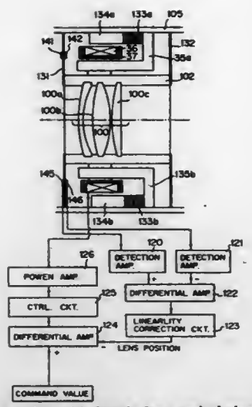
1. An optical apparatus having a framework, said optical apparatus comprising:

a first lens unit;

a second lens unit being moved when a zooming operation is employed and having an optical axis therein;

first guide means, said first guide means being provided with a driving portion for making said second lens unit move in a direction of the optical axis by means of electromagnetic induction, a bar fixed to the framework of the optical apparatus and a sleeve fitted around said bar and coupled to said second lens unit;

a third lens unit;



a fourth lens unit, said fourth lens unit being moved when zooming or focusing operations are employed and having the optical axis therein;

second guide means, said second guide means being provided with a driving portion for making said fourth lens unit move in a direction of the optical axis by means of electromagnetic induction, a bar fixed to the framework of said optical apparatus and a sleeve fitted around said bar and coupled to said fourth lens unit; and

control means for controlling a zooming operation of each of said driving portions provided in said first guide means and said second guide means for a zooming operation and for controlling a focusing operation of said driving portion provided in said second guide means.

5,572,373

PHOTOGRAPHING LENS SWITCHABLE BETWEEN MANUAL-FOCUS AND AUTO-FOCUS MODES

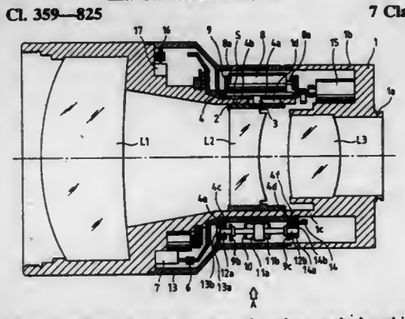
Hitoshi Imanari, Kawasaki; Hideo Kanno, Chiba; Tsuneo Watanabe, Yokohama; Shinichi Ushio, Yokohama, and Yuichi Katagishi, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 77,863, Jun. 18, 1993, abandoned, which is a division of Ser. No. 791,548, Nov. 14, 1991, Pat. No. 5,227,829, which is a continuation-in-part of Ser. No. 648,035, Jan. 30, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 481,159

Claims priority, application Japan, Feb. 5, 1990, 2-010272 U; Nov. 19, 1990, 2-121114 U

Int. Cl.[6] G02B *7/02;15/14*

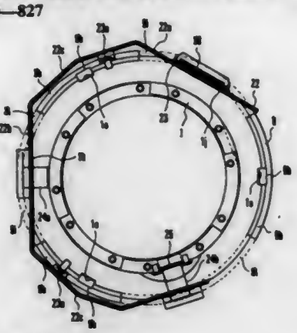
U.S. Cl. 359—825 **7 Claims**



1. A lens bodytube having an auto-focusing mode in which a photographing lens is automatically driven to an in-focus position by a drive force of a motor and a manual focusing mode in which the photographing lens is driven to an in-focus position by manually rotating a distance ring, comprising:

a rotary ring for driving the photographing lens along an optical axis as said rotary ring is rotated;
a movable member driven to a first position in the auto-focusing mode and to a second position in the manual focusing mode;
first means for engaging with said movable member when said movable member is at said first position to couple said motor to said rotary ring to transmit a drive force of said motor to said rotary ring;
second means for engaging with said movable member when said movable member is at said second position to couple said distance ring to said rotary ring to transmit a manual drive force from said distance ring to said rotary ring; and
switching means responsive to manual rotation of said distance ring when said movable member is at said first position in the auto-focusing mode to drive said movable member from said first position to said second position to enable manual focusing.

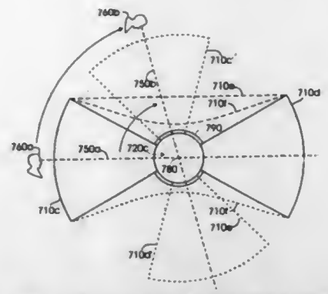
5,572,374
LENS BARREL
Tadanori Okada, and Haruhiko Yamanouchi, both of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 19, 1993, Ser. No. 93,395
Claims priority, application Japan, Jul. 23, 1992, 4-217106
Int. Cl.[6] G02B *7/02;* **G03B** *7/00;* **H05K** *1/00*
U.S. Cl. 359—827 **27 Claims**



1. A lens barrel, comprising:
a) a fixed tube;
b) a moving tube arranged to move over an outer circumference of said fixed tube in a direction of an optical axis, said moving tube having a cutout part; and
c) a band-like circuit board disposed around the optical axis on an outer diameter side of said fixed tube, said circuit board having a part located at a position within an area corresponding to the cutout part of said moving tube and which would be on an inner diameter side of said moving tube if said moving tube were continued through said cutout part, and said circuit board having a part located on an outer diameter side of said moving tube within an area other than the area corresponding to the cutout part.

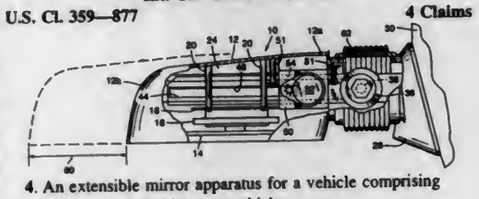
5,572,375
METHOD AND APPARATUS FOR MANIPULATING, PROJECTING AND DISPLAYING LIGHT IN A VOLUMETRIC FORMAT
Allen F. Crabtree, IV, 359A RR 10, Concord, N.H. 03301
Continuation-in-part of Ser. No. 840,316, Feb. 24, 1992, Pat. No. 5,311,335, which is a division of Ser. No. 562,271, Aug. 3, 1990, Pat. No. 5,090,789. This application Nov. 15, 1993, Ser. No. 152,861
Int. Cl.[6] G02B *5/10;27/22*
U.S. Cl. 359—858 **7 Claims**

5. An image translation chamber, comprising:



a first concave reflector, said reflector having a mirror finish on a concave surface thereof, and a first centrally located opening, said concave reflector including two reflector segments positioned diametrically opposite one another about the first centrally located opening in the first concave reflector;
a second concave reflector, said reflector having a mirror finish on a concave surface thereof, and a second centrally located opening, said concave reflector including two reflector segments, positioned diametrically opposite one another about the second centrally located opening in the second concave reflector; and
said first and second concave reflectors being positioned such that the mirror finishes thereof face one another, such that the first and second openings in the first and second concave reflectors are coaxially aligned, and such that the reflector segments of the second concave reflector are positioned opposite and aligned with the reflector segments of the first concave reflector;
further comprising:
means for rotating the first and second concave reflectors in unison about a centerline extending through a center of the first opening in the first concave reflector and a center of the second opening in the second reflector.

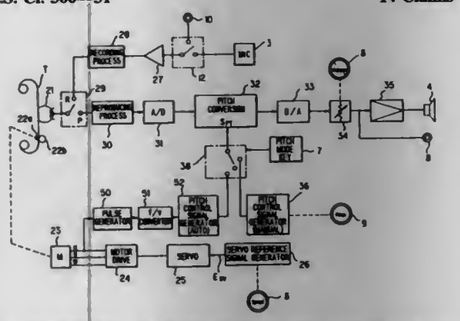
5,572,376
EXTENSIBLE VEHICLE MIRROR
Dusty R. Pace, Pendleton, Oreg., assignor to Power Vision LLC, Pendleton, Oreg.
Filed Aug. 31, 1994, Ser. No. 299,480
Int. Cl.[6] G02B *5/08;7/182*
U.S. Cl. 359—877 **4 Claims**



4. An extensible mirror apparatus for a vehicle comprising
an adapter for attaching to a vehicle,
a swivel connector mounted on said adapter,
an elongate arm mounted on the swivel connector and extending laterally outwardly from the swivel connector and adapter, said arm having an elongate slot formed therein extending longitudinally of the arm,
a series of gear teeth formed in said slot defining a rack gear extending longitudinally along said arm,
a bracket slidably mounted on and movable longitudinally of said arm toward and away from the adapter,
a housing mounted on said bracket and movable therewith having an inner end portion nearest the adapter and an outer end portion space outwardly therefrom,
a mirror and a motor mounted on and movable with said bracket, said bracket and motor being enclosed in the inner end portion of said housing,

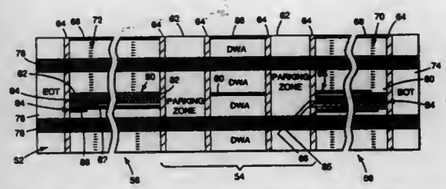
a drive gear drivingly connected to said motor and engaging said rack gear operable to move said bracket, housing, mirror and motor longitudinally along said arm upon operation of said motor, and
an extensible-contractible boot extending between said housing and the adapter covering the portion of the arm which otherwise would be exposed upon movement of the housing away from the adapter,
said adapter and housing each having depressions formed therein and said boot having projections thereon adjacent opposite end portions thereof which frictionally fit in said depressions to operatively connect opposite end portions of said boot to said adapter and housing respectively.

5,572,377
PITCH CONTROL APPARATUS FOR SOUND REPRODUCING SYSTEM
Noriyuki Ueno, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jan. 25, 1995, Ser. No. 377,821
Claims priority, application Japan, Jan. 28, 1994, 6-024893; Jan. 28, 1994, 6-024894
Int. Cl.[6] G11B *27/36;7/00*
U.S. Cl. 360—31 **14 Claims**



1. An apparatus for producing sound data from a recording medium, comprising.
a motor for driving the recording medium;
means for generating a motor control signal to control a reproducing speed of the motor to be different than a recording speed used to record the sound data;
means for generating a pitch control signal including means for generating a frequency pulse correlative to the recording medium drive speed on the basis of the motor control signal;
means for converting the frequency pulse to a first voltage value proportional to the recording medium drive speed;
means for converting a pitch of the sound data to a predetermined pitch in accordance with the pitch control signal including a converting table representing a relation between the pitch control signal and a pitch converting amount, so that the pitch of the reproducing sound is converted to the predetermined pitch on the basis of the converting table; and
means for generating a second voltage value as the pitch control signal by adjusting the first voltage value to a relation obtained by a predetermined expression between the voltage value corresponding to the pitch converting amount in the converting table and the recording medium drive speed.

5,572,378
DIRECT FILE ACCESS SYSTEM FOR MAGNETIC TAPE
Theodore A. Schwarz, Woodbury; Robert E. Wolff, Edina, and Robert J. Youngquist, White Bear Lake, all of Minn., assignors to Imation Corp., St. Paul, Minn.
Filed Jun. 13, 1994, Ser. No. 259,200
Int. Cl.[6] G11B *5/09;15/12;15/48*
U.S. Cl. 360—48 **56 Claims**

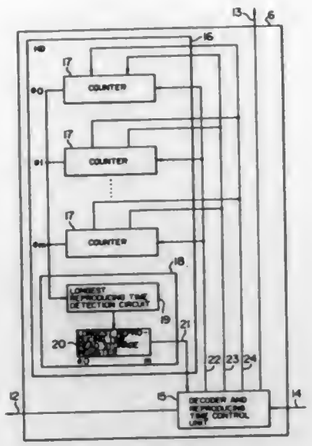


1. A direct file access system for a magnetic tape, comprising:
a magnetic tape having a beginning area, an ending area, and a center area arranged longitudinally along the tape;
at least one service region on the tape proximate the center area;
first and second data storage areas for storing data files on the tape, the first data storage area having a plurality of data tracks extending longitudinally along the tape between the service region and the beginning area, the second data storage area having a plurality of data tracks extending longitudinally along the tape between the service region and the ending area; and
a plurality of data files in the first and second storage areas, all such data files being separated into first and second portions, the first portion being written on a first data track in a direction starting adjacent to the service region and extending away therefrom to an ending location, and the second portion being written on a second data track beginning proximate the ending location of the first portion and extending toward the service region and ending adjacent to the service area.

5,572,379
MAGNETIC RECORDING DRIVE HAVING ARRANGEMENTS FOR AVERAGE USEFUL LIFE OF MAGNETORESTIVE EFFECTS SENSORS
Hajime Aoi, Tachikawa; Toshiaki Tsuyoshi, Odawara; Makoto Koizumi, Akigawa; Nobumasa Nishiyama, Odawara; Yoshibumi Matsuda, Odawara; Takuji Ogawa, Odawara, and Kazuhisa Shiraishi, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 13, 1994, Ser. No. 305,193
Claims priority, application Japan, Sep. 13, 1993, 5-226850
Int. Cl.[6] G11B *5/03;5/33;5/127*
U.S. Cl. 360—66 **8 Claims**

1. A magnetic recording drive comprising:
a plurality of magnetic heads each employing a magnetoresistive sensor; and
means for averaging a distribution of currents through respective magnetoresistive effect sensors such that said currents are distributed in an averaged manner among said plurality of magnetic heads so as to use up useful lives of said plurality of magnetic beads evenly.

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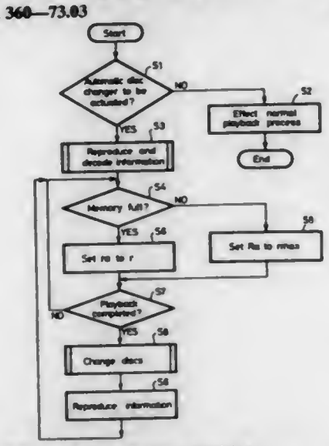


5,572,380

DISC PLAYBACK APPARATUS WITH AUTOMATIC DISC CHANGER

Yasushi Fujinami, Kanagawa, and Kiyoshi Ohsato, Chiba, both of Japan, assignors to Sony Corporation, Japan

Filed Jun. 26, 1992, Ser. No. 906,268
Claims priority, application Japan, Jul. 5, 1991, 3-190930
Int. Cl.[6] G11B *19/26*
U.S. Cl. 360—73.03 4 Claims



1. A disc playback apparatus comprising:

selecting means for selecting one of a plurality of information storage discs at a time for playback;

rotating means for rotating the disc selected by said selecting means at a rotational speed;

pickup means for reproducing information from the disc being rotated by said rotating means;

memory means for temporarily storing the information reproduced by said pickup means;

processing means for reading and processing the information stored by said memory means; and

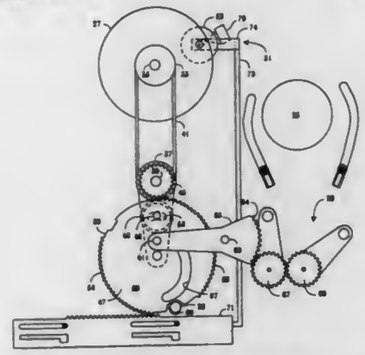
control means for monitoring the amount of information stored in said memory means and controlling the rotational speed at which the disc is rotated by said rotating means, depending on the amount of information stored in said memory means thereby avoiding interruptioo in reading of information from the memory means, which would otherwise result from interrupted flow to the memory means of information reproduced by the pickup means during switching between discs selected for playback.

5,572,381

MECHANICAL POWER TRANSMISSION FOR A SIMPLIFIED VIDEO CASSETTE RECORDER APPARATUS

David S. Stewart, Palatine, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jun. 7, 1993, Ser. No. 72,808
Int. Cl.[6] G11B *15/18;15/66*
U.S. Cl. 360—85 4 Claims



1. A mechanical power assembly for a rotary drum VCR with retractable threading arms for the tape path, a pinch roller and capstan assembly for tape speed control, and a spool drive for taking up tape within the video cassette, comprising:

a) a first motor for directly driving the capstan, and for moving the tape threading arms and the pinch roller, the first motor having a shaft with a first single pulley attached thereto;

b) a second pulley and a drive gear vertically spaced, and attached to a first axle;

c) a drive belt, drivingly connecting the second pulley and the drive gear to the single pulley;

d) a toggle arm fixedly connected to the first axle at a first end thereof and pivotably connected at a second end thereof to a second fixed rotatable post, the toggle arm having a center-cutout surrounding a first rotatable post;

e) a spool drive gear affixed to the first rotatable post, the spool drive gear meshing with the drive gear for powering spool drives for the video cassette;

f) a cam gear affixed to the second rotatable post and spaced from the toggle arm, the cam gear having:

1) a curved groove on a planar face thereof,

2) first and second toothed curved faces, the first toothed and curved face meshing with the drive gear, the second toothed and curved face meshing with a slider plate;

g) a spatulate gear operably connected to the curved groove at a first end of the spatulate gear, the spatulate gear further having a central pivot therein, and a toothed face at a second end thereof for driving gears connected to the tape threading arms;

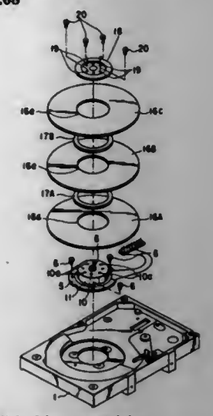
h) a pinch roller assembly operably connected to the slider plate for movement of the pinch roller proximal and distal to the capstan.

5,572,382

MAGNETIC DISK DRIVE HAVING BALANCED MAGNETIC DISK MOUNTED ON ROTOR OF MOTOR

Hiroyuki Kuno, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Apr. 6, 1994, Ser. No. 223,692
Claims priority, application Japan, Apr. 7, 1993, 5-080921
Int. Cl.[6] G11B *17/08*
U.S. Cl. 360—98.08 8 Claims



1. A magnetic disk drive comprising:

a motor having a substantially cylindrical rotor rotatable around a motor shaft, the rotor having a diameter and an outer circumferential surface;

a magnetic disk having an inner circumferential edge defining a center hole with a diameter in which the rotor is inserted, the diameter of the rotor being smaller than the diameter of the center hole, the magnetic disk being fitted on the outer circumferential surface of the rotor and being displaced in a direction along the diameter of the rotor so that a portion of the inner circumferential edge of the magnetic disk defining the center hole is pressed against a portion of the outer circumferential surface of the rotor;

a fixing member mounted on the rotor and fixing the magnetic disk to the rotor; and

a counterweight for correcting the balance of the magnetic disk in rotation, the counterweight being mounted on the fixing member adjacent to the portion of the outer circumferential surface of the rotor against which the inner circumferential edge of the magnetic disk is pressed.

3. A method for assembling a magnetic disk drive which includes a motor having a substantially cylindrical rotor rotatable around a motor shaft, a magnetic disk having a center hole in which the rotor is inserted and fitted on the outer circumferential surface of the rotor, and a fixing member fixing the magnetic disk to the rotor, said method comprising the steps of:

mounting the magnetic disk on the rotor in a manner such that the rotor is inserted in the center hole;

moving the mounted magnetic disk in a direction along the diameter of the rotor so that the inner circumferential edge of the magnetic disk defining the center hole is pressed against the outer circumferential surface of the rotor;

fixing the pressed magnetic disk to the rotor by means of the fixing member;

rotating the fixed magnetic disk and the rotor and measuring the degree of unbalance of the magnetic disk and the rotor in rotation; and

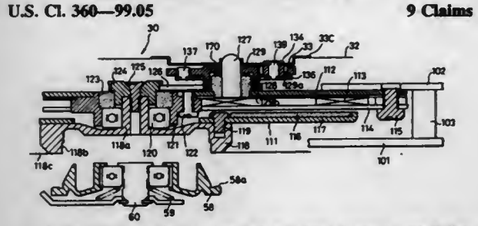
mounting a counterweight for correcting the measured unbalance degree of the fixing member, in the vicinity of that region of the outer circumferential surface of the rotor against which the inner circumferential edge of the magnetic disk is pressed.

5,572,383

MAGNETIC FLOPPY DISC DRIVE RECEIVING TWO DISCS HAVING DIFFERENT SIZES

Akio Hoshi, Chichibu; Toru Wakazawa, Saitama, and Nobuhiro Aizawa, Chichibu, all of Japan, assignors to Canon Denshi Kabushiki Kaisha, Saitama, Japan

Continuation of Ser. No. 804,383, Dec. 10, 1991, abandoned.
This application May 20, 1994, Ser. No. 247,116
Int. Cl.[6] G11B *5/016;5/012;17/08;17/02*
U.S. Cl. 360—99.05 9 Claims



1. A disc drive device having a front panel formed with a first slit and a second slit, comprising:

a base;

a first rotary member and a second rotary member each rotatably supported on said base,

a first chucking mechanism for holding a first kind of disc-shaped recording medium while coinciding a rotational center of said first kind of recording medium with a rotational center of said first rotary member, said first chucking mechanism being arranged at one end of said first rotary member;

a second chucking mechanism for holding another second kind of disc-shaped recording medium having a larger diameter and disc formatting different from that of the first kind of recording medium while coinciding a rotational center of the second kind of recording medium with a rotational center of said second rotary member, said second chucking mechanism being arranged at one end of said second rotary member;

single driving motor for driving said first rotary member and said second rotary member; and

said first rotary member and said second rotary member being spaced away from each other by a first distance substantially equal to a half of a difference in diameter between the first kind of recording medium and second kind of recording medium so that a second distance between said first kind of recording medium and the first slit of said front panel is substantially equal to a third distance between said second kind of recording medium and the second slit of said front panel.

5,572,384

MAGNETIC DISK DRIVE DEVICE HAVING LEAD WIRE HOLDING STRUCTURE

Toru Kumagai, and Mitsuru Ide, both of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Mar. 23, 1994, Ser. No. 216,281
Claims priority, application Japan, Mar. 23, 1993, 5-019237
U
Int. Cl.[6] G11B *17/02*
U.S. Cl. 360—99.08 2 Claims

1. A magnetic disk drive device comprising:

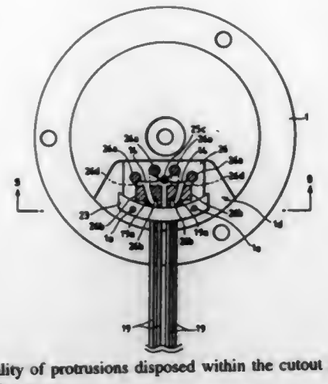
a hub for driving a magnetic disk placed on the hub;

a drive magnet fastened to an inner surface of the hub;

a stator core with a coil wound thereon, the stator core being confronted with the drive magnet, the coil having terminal wires;

a frame for fixedly supporting the stator core, a cutout portion formed in the surface of the frame which is opposite to the surface with the stator core fastened thereto;

a plurality of flexible lead wires for connection to a power supply;



a plurality of protrusions disposed within the cutout portion of the frame;

a lead wire holder fitted to the plurality of protrusions and which presses the flexible lead wires against the frame; and

a flexible printed circuit, for electrically connecting the terminal wires and the flexible lead wires, disposed within the cutout portion, the flexible printed circuit including

a hole through which the terminal wires of the coil wound about the stator core pass;

terminal wire soldering lands for electrically connecting the terminal wires led through the hole directly to the flexible printed circuit; and

lead wire soldering lands for electrically connecting the flexible lead wires directly to the flexible printed circuit.

5,572,385

FLYING MAGNETIC HEAD AND FLYING MAGNETIC HEAD ASSEMBLY

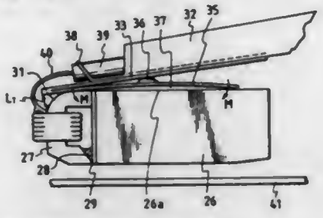
Yoshinobu Kuwamoto, Sejyuru T.S 201, 15-30, Heisei 1-chome, Kumamoto-shi; Kumamoto-ken, Japan

Continuation of Ser. No. 950,516, Sep. 25, 1992. This application Jun. 22, 1994, Ser. No. 264,218

Claims priority, application Japan, Sep. 27, 1991, 3-249008

Int. Cl.[6] G11B *5/60*

U.S. Cl. 360—103 **20 Claims**



1. A flying magnetic head comprising:

a magnetic slider having first and second surfaces, said first surface working as an air bearing surface and said second surface located opposite to said first surface for mounting load applying means thereon; and

a magnetic core attached to said magnetic slider with a magnetic gap including a back gap therebetween and having a third surface at a side of said magnetic core adjacent to said back gap, said third surface being coplanar with said second surface, said magnetic core further having a fourth surface at another side thereof remote from said back gap, said fourth surface adjoining said third surface, said fourth surface inclined from said third surface so as to approach a level of said first surface;

said magnetic core further having a planar fifth surface substantially perpendicular to said second and third surfaces, said fifth surface remote from and free of contact with said magnetic gap;

said fourth surface extending between said third surface and said fifth surface;

wherein a distance along said third surface between said fourth surface and said back gap is greater than 0.05 mm and no greater than 0.1 mm, and an angle between said third and fourth surfaces is greater than zero and no greater than 10 degrees.

5,572,386

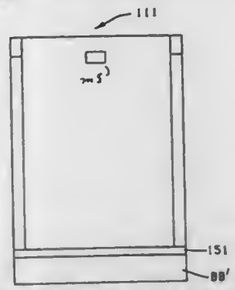
SLIDER FOR INHIBITING STICTION

Raju S. Ananth, San Jose, and Michael A. Verdone, Hillsborough, both of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Division of Ser. No. 270,647, Jul. 5, 1994, Pat. No. 5,479,306, which is a division of Ser. No. 6,422, Jan. 19, 1993, Pat. No. 5,327,311, which is a division of Ser. No. 896,717, Jun. 10, 1992, Pat. No. 5,220,470, which is a division of Ser. No. 225,680, Jul. 28, 1988, which is a division of Ser. No. 836,364, Mar. 5, 1986, which is a continuation-in-part of Ser. No. 687,667, Dec. 31, 1984, and a continuation-in-part of Ser. No. 670,451, Nov. 13, 1984. This application Jun. 7, 1995, Ser. No. 481,641

Int. Cl.[6] G11B *5/60;17/32*

U.S. Cl. 360—103 **13 Claims**



1. An improved magnetic disk recording slider means which includes disk-confronting slider face portions for defining a prescribed "flight-plane" in its moving traducing mode, this slider means including: anti-stiction boss means disposed on disk-confronting face portions so as to space said face portions somewhat beyond this "flight plane", and to thereby reduce "stiction", when it is "landing", or is "taking-off" or when it is "at rest" on an associated disk.

5,572,387

LOW PROFILE HEAD SUSPENSION ASSEMBLY WITH LOAD AND UNLOAD CAPABILITY

William W. Brooks, Jr.; Jeffrey B. Brown; Jerome T. Coffey, and Donald J. Wanek, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

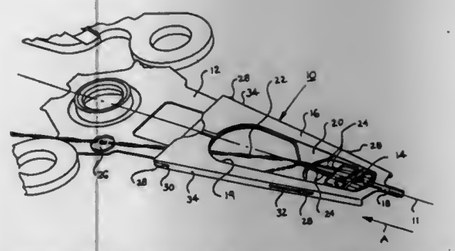
Continuation of Ser. No. 221,339, Mar. 31, 1994, abandoned. This application May 23, 1995, Ser. No. 448,272

Int. Cl.[6] G11B *5/48;21/16*

U.S. Cl. 360—104 **7 Claims**

2. A head suspension assembly for use in a data storage disk drive having a load and unload ramp, comprising:

a load beam having a longitudinal axis extending from a first end to a second end wherein said first end of said load beam is operably connectable to an actuator motor, said load beam further including side edges extending between said first end and said second end of said load beam wherein said side



edges include a locking tang projecting in a direction that intersects said longitudinal axis;

a flexure supported at a second end of said load beam, said flexure being adapted for receiving a slider;

a cover comprised of a constraining material attached to said load beam, said cover having a load and unload tang projecting beyond said load beam so as to be engageable with the load and unload ramp, said cover further including flanges respectively extending along said side edges of said load beam, said flanges each including a slot located to receive said locking tang projecting from a respective one of said side edges of said load beam, each of said locking tangs of said load beam extends through a respective one of said slots of said cover;

a visco-elastic coming overlaying at least a portion of said load beam to provide damping, a first portion of said visco-elastic coating being sandwiched between said cover and said load beam so that said cover is a constraining member to said visco-elastic coating; and

a head lead wire extending through said first portion of said visco-elastic coating, said head lead wire being adapted for bonding to said slider.

5,572,388

MAGNETIC DISK DRIVE

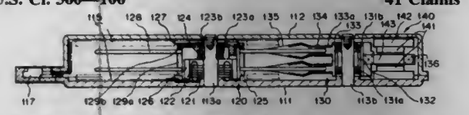
Norio Yagi, Kawasaki; Yoshihiro Arikawa, Higashine, and Kaho Nishimura, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 895,681, Jun. 8, 1992, abandoned. This application Aug. 31, 1994, Ser. No. 299,241

Claims priority, application Japan, Jun. 10, 1991, 3-137884; Jun. 11, 1991, 3-138840

Int. Cl.[6] G11B *5/55*

U.S. Cl. 360—106 **41 Claims**



1. A magnetic disk drive comprising:

one or more disks that have a laminated arrangement with equally fixed spaces respectively and are rotatably mounted;

a disk driving means that forces said disks to rotate;

one or more positioners that are mounted in the direction of the tracks of said disks respectively, and each having a sloping surface inclined toward the corresponding surface of each of said disks;

a positioner driving means that drives said positioners so that their respective ends can traverse said tracks; and,

one or more reproducing/recording elements which are constituted by one or more unitary magnetic heads that perform read/write operations for said disks, and each of which consist of a body of flexible thin sheet, a head portion that is located on one tip portion of said body and that has the air gap for reproducing or recording formed in one surface of said body, and a mounting portion that is formed in the opposite tip portion of said body,

wherein said mounting portion of each of said magnetic heads is fixed to said sloping surface of each of said positioners so that said magnetic heads have a predetermined inclination to the respectively corresponding surfaces of said disks.

5,572,389

AUDIO HEAD POSITION ADJUSTING DEVICE FOR A VIDEO CASSETTE RECORDER

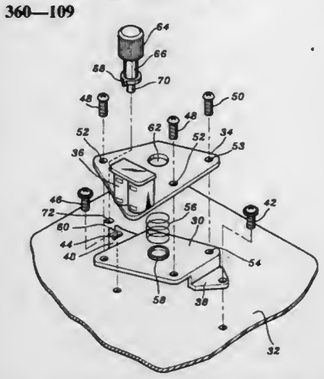
Hyun-Moo Lee, Incheon, Rep. of Korea, assignor to Ltd. Daewoo Electronics Co, Seoul, Rep. of Korea

Filed Sep. 14, 1994, Ser. No. 306,278

Claims priority, application Rep. of Korea, Sep. 15, 1993, 93-18538

Int. Cl.[6] G11B *5/56*

U.S. Cl. 360—109 **4 Claims**



1. In a video cassette recorder incorporating therein an audio head position adjusting device, said adjusting device comprising:

a support plate including two bent flanges formed at opposite sides of the support plate and an annular protrusion formed at a middle area of the support plate, one of the flanges being rotatably coupled to a pivotal bolt threadedly secured to a deck of the recorder, the other of the flanges having toothed lugs formed at an outer portion thereof and a curved slot provided therein for accommodating a bolt threadedly engaged with the deck to allow the support plate to rotate in a horizontal direction about the pivotal bolt;

a mounting plate resiliently supported on said support plate and carrying an audio head thereon;

azimuth adjusting screws engaged with said mounting plate and said support plate for adjusting a vertical position of the audio head carried on the mounting plate;

a tilt adjusting screw coupled to said mounting plate and said support plate for adjusting an inclined position of the audio head in a forward and a backward direction with respect to the support plate;

means interposed between the support plate and the mounting plate for biasing the mounting plate upward; and

means provided at the outer of the bent flanges of the support plate for adjusting a horizontal position of the audio head, said horizontal position adjusting means including an adjusting knob having a projection portion engaged with the toothed lugs of the support plate, said adjusting knob removably held in a recessed groove of the deck at its tip portion.

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5,572,390

MAGNETIC HEAD INCLUDING AN APEX PORTION WITH TWO CHAMFERED PORTIONS HAVING OPTIMIZED ANGLES

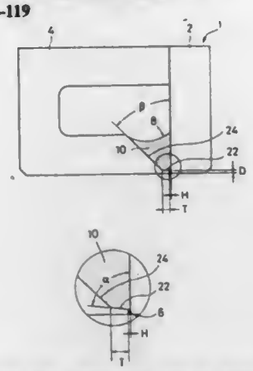
Kazuhiro Saito; Osamu Murata, and Tatsushi Shimizu, all of Toda, Japan, assignors to Japan Energy Corporation, Tokyo, Japan

Continuation of Ser. No. 175,386, Jan. 5, 1994, abandoned. This application Jan. 24, 1996, Ser. No. 590,962

Claims priority, application Japan, Nov. 11, 1992, 4-326016; Feb. 16, 1993, 5-050112

Int. Cl.[6] G11B 5/23

U.S. Cl. 360—119 11 Claims



1. A magnetic head comprising a pair of magnetic core halves with mating surfaces thereof bonded together via a gap, an apex portion being formed adjacent said gap, said apex portion having a first chamfered portion and a second chamfered portion both formed in one of said magnetic core halves, said first chamfered portion having a first apex angle α at a position D corresponding to a predetermined gap depth and a predetermined apex length, the second chamfered portion being contiguous to the first chamfered portion and having a second apex angle β smaller than the first apex angle α, said first apex angle α being $70° \leqq \alpha \leqq 80°$.

5,572,391

MAGNETIC HEAD

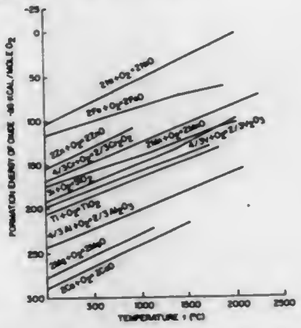
Nobuyuki Ishiwata, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 873,169, Apr. 24, 1992, abandoned. This application Nov. 22, 1993, Ser. No. 155,185

Claims priority, application Japan, Apr. 24, 1991, 3-119083; Apr. 24, 1991, 3-119084

Int. Cl.[6] G11B 5/235

U.S. Cl. 360—120 2 Claims



1. A magnetic head, comprising:

a first non-magnetic substrate;

a magnetic layer of metallic material; and

means for inhibiting the diffusion of oxygen to said magnetic layer, said inhibiting means comprising a protection layer formed between said first substrate and said magnetic layer, and having a formative energy of oxide lower than that of said magnetic layer;

a bonding glass layer formed between said first substrate and said protection layer; and

a second substrate formed on another surface of said magnetic layer, wherein

said first and second substrates include NiO and CoO, and

said magnetic layer is made of FeMN, where "M" is an element including at least one of Ti, Zr, Nb, Mo, Hf, and Ta, and N is nitrogen.

5,572,392

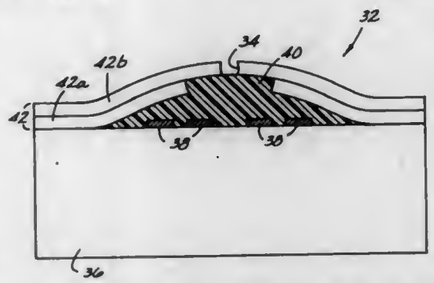
ARBITRARY PATTERN WRITE HEAD ASSEMBLY FOR WRITING TIMING-BASED SERVO PATTERNS ON MAGNETIC STORAGE MEDIA

Joseph A. Aboaf; Edward V. Dennison; Jules D. Friedman; Vincent N. Kahwaty, and Herman C. Kluge, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 17, 1994, Ser. No. 341,792

Int. Cl.[6] G11B 5/147

U.S. Cl. 360—26 15 Claims



1. An arbitrary pattern write head assembly for writing timing-based servo patterns on magnetic storage media, comprising:

(a) a first pole piece comprising a substrate comprising a magnetic material, said substrate having a major surface;

(b) a plurality of electrically conducting windings formed on said major surface; and

(c) a second pole piece formed on said substrate, with a portion thereof formed above said plurality of electrically conducting windings and electrically insulated therefrom, said second pole piece having at least one opening therethrough defining a magnetic gap for inducing a writing field above said electrically conducting windings and said substrate, said second pole piece comprising at least two layers, each layer comprising a magnetic material said second pole piece further electrically insulated from said plurality of electrically conducting windings by a solid insulating material consisting essentially of a photoresist material.

5,572,393

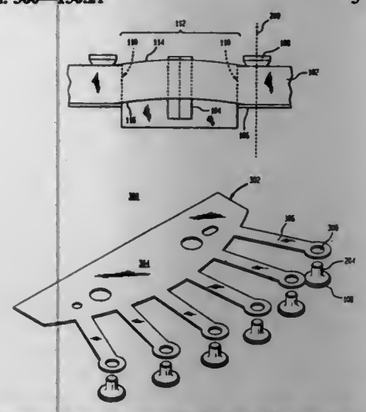
COMPLIANT GUIDE ASSEMBLY FOR A MAGNETIC TAPE TRANSPORT

Wayne E. Church, Longmont, and Donovan M. Janssen, Boulder, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Division of Ser. No. 122,307, Sep. 17, 1993. This application Dec. 1, 1994, Ser. No. 352,787

Int. Cl.[6] G11B 15/60; B65H 20/14

U.S. Cl. 360—130.21 5 Claims



1. A compliant guide assembly for providing an edge biasing force to a tape to precisely position the tape as it passes a read/write head in a tape transport, the guide assembly comprising:

a spring assembly formed from a sheet of resilient material, the spring assembly including a body portion and a plurality of cantilever spring elements, each cantilever spring element extending outward from said body portion; and

a plurality of guide buttons, each guide button including an elongated stem and a head, said stem of each guide button being fixedly attached to a distal end of one of said cantilever spring elements in a manner in which the distance between said head of said guide button and the distal end of said cantilever spring element is varied during calibration to compensate for variables which contribute to the edge biasing force exerted by said cantilever spring element at said head of said guide button, said plurality of guide buttons providing a substantially equivalent edge biasing force to the tape.

5,572,394

CMOS ON-CHIP FOUR-LVTSCR ESD PROTECTION SCHEME

Ming-Dou Ker, Tainan, and Tain-Shun Wu, Miou-Lee, both of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Apr. 6, 1995, Ser. No. 419,650

Int. Cl.[6] H02H 9/00

U.S. Cl. 361—56 6 Claims

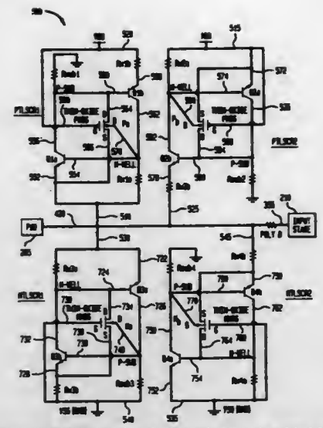
1. A CMOS ESD protection circuit comprising:

a first lateral SCR having a cathode connected to a first supply voltage and an anode connected to a pad and which includes a first thin-oxide PMOS device which triggers the first lateral SCR at the turn-on voltage of the first thin-oxide PMOS device;

a second lateral SCR having an anode connected to the first supply voltage and a cathode connected to the pad and which includes a second thin-oxide PMOS device which triggers the second lateral SCR at the snapback breakdown voltage of the second thin-oxide PMOS device;

a third lateral SCR having an anode connected to the pad and a cathode connected to a second supply voltage and a first thin-oxide NMOS device which triggers the third lateral SCR at the snapback breakdown voltage of the first thin-oxide NMOS device; and

a fourth lateral SCR having a cathode connected to the pad and an anode connected to the second supply voltage and a second thin-oxide NMOS device which triggers the fourth lateral SCR at the turn-on voltage of the second thin-oxide NMOS device.



5,572,395

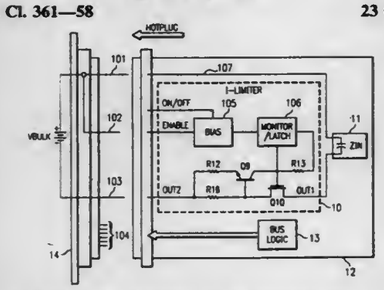
CIRCUIT FOR CONTROLLING CURRENT IN AN ADAPTER CARD

Todd M. Rasums, Cary, and Frederick K. Yu, Durham, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1993, Ser. No. 171,486

Int. Cl.[6] H02H 9/00

U.S. Cl. 361—58 23 Claims



6. An adapter card adaptable for hot-plugging into a card slot coupled to a processor-based system and an energy source for powering said system, said adapter card including electrical components and a transferring means for transferring electrical energy received from said energy source to said components, said adapter card comprising:

a first circuit for controlling application of said electrical energy to said transferring means; and

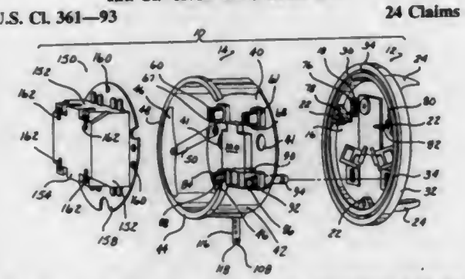
a second circuit, coupled to said first circuit, for causing said first circuit to remove application of said electrical energy to said transferring means when said transferring means has limited current flow and is operated as a current source for said components for a specified period of time.

5,572,396

ELECTRIC SERVICE SAFETY DISCONNECT APPARATUS WITH OVERVOLTAGE AND OVERCURRENT PROTECTION

Darrell Robinson, Highland Township, Mich., assignor to Ekstrom Industries, Inc., Farmington Hills, Mich.

Filed Apr. 21, 1995, Ser. No. 425,887
Int. Cl.[6] H02B 1/26; H02H 1/04
U.S. Cl. 361—93 24 Claims



1. An electrical service protection and disconnect apparatus mountable in a watthour meter socket having a plurality of jaw contacts connected to electrical line conductors and electrical load conductors and normally receiving a watthour meter, the apparatus comprising:

a housing;

a plurality of line and load jaw contacts mounted in the housing for receiving line and load blade terminals of a watthour meter;

a plurality of line and load blade terminals mounted in the housing and extending outward from the housing for insertion into jaw contacts of a watthour meter socket;

electrical power disconnect means, mounted in the housing and connected between the line blade terminals and the line jaw contacts, for selectively controlling the application of power to the line jaw contacts in the housing; and

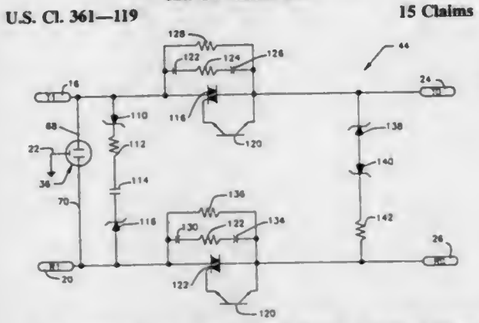
surge suppression means, mounted in the housing and electrically connected between ground potential and each load blade terminal, for conducting electrical surges to ground.

5,572,397

COMBINED OVERVOLTAGE STATION PROTECTOR APPARATUS HAVING MAINTENANCE TERMINATION AND HALF RINGER CIRCUITRY

Thomas J. Smith, Bay Shore, and James Chermak, Huntington, both of N.Y., assignors to TII Industries, Inc., Copraque, N.Y.

Filed Nov. 21, 1994, Ser. No. 342,629
Int. Cl.[6] H02H 9/00
U.S. Cl. 361—119 15 Claims



1. A combined overvoltage station protector apparatus having maintenance termination and a half ringer circuit arrangement disposed therein, comprises in combination:

A. a hollow housing divided into a first section and a second section, each said section having a top surface;

B. a pair of input line terminals and a ground terminal disposed in said first section top surface extending inside said hollow housing first section, said ground terminal being intermediate said pair of line terminals;

C. a pair of output line terminals disposed in said second section top surface extending inside said hollow housing second section;

D. non-conductive printed circuit board means being disposed within said second section of said housing having;

a) a plurality of electrically conductive paths thereon, one of said conductive paths being connected to each of said input line terminals and each of said output terminals by electrically conductive means, one of said conductive paths being connected to said housing ground terminal, and

b) a plurality of electrical circuit components forming said maintenance termination and said half ringer circuit arrangement;

E. holding assembly means affixed to said housing ground terminal within said hollow housing first section adapted to removably receive a surge arrester means therein;

F. said surge arrester means having at least a pair of electrode terminals and a ground terminal, said surge arrester means ground terminal being in electrically conductive contact with said housing first section ground terminal, each one of said pair of surge arrester electrode terminals being in electrically conductive contact with one of said pair of line terminals;

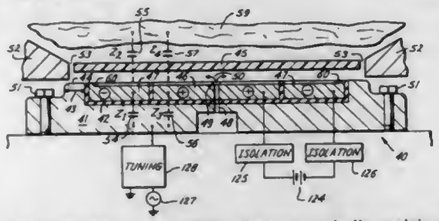
G. a pair of back-up surge protector means, each having a first terminal and a second terminal, said first terminal of said back-up surge protector means being connected to said first section ground terminal and said second terminal of said back-up surge protector means being connected to one of said surge arrestor means electrodes.

5,572,398

TRI-POLAR ELECTROSTATIC CHUCK

Peter Federlin; Lee Chen, both of Austin, and D. Rex Wright, Bastrop, all of Tex., assignors to Hewlett-Packard Co., Palo Alto, Calif.; International Business Machines, Corp., Armonk, N.Y., and Sematech, Inc., Austin, Tex.

Filed Nov. 14, 1994, Ser. No. 338,306
Int. Cl.[6] H02N 13/00
U.S. Cl. 361—234 18 Claims



1. An electrostatic chuck (ESC) for electrostatically retaining a semiconductor wafer disposed thereon comprising:

a base housing for forming a main support body to support said semiconductor wafer which resides thereon, said housing having an electrically isolated polarized region disposed on or in its upper surface but interior to its outer perimeter, such that said outer perimeter of said base housing is not biased by a polarizing potential;

a first polarized electrode biased by a first polarizing potential and disposed within said polarized region, but electrically isolated from said base housing;

a second polarized electrode biased by a second polarizing potential and disposed within said polarized region, but electrically isolated from said base housing and said first polarized electrode;

such that when said semiconductor wafer is disposed above said base housing, first and second polarized electrodes, said first and second polarized electrodes electrostatically retain said semiconductor wafer thereon; wherein an impedance measured from said base housing through said first polarized electrode to a processing gas used to process said semiconductor wafer is substantially equivalent to an impedance measured from said base housing through said second polarized electrode to said processing gas, in order to provide for uniform impedance across said semiconductor wafer during processing;

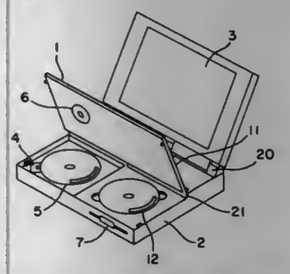
and wherein peripbery of said semiconductor wafer resides proximal to said outer perimeter of said base housing in order to reduce attraction of charged particles of said processing gas from traversing around said semiconductor wafer, so as to inhibit bombardment of said base housing and said two polarized electrodes by said charged particles.

5,572,399

INFORMATION PROCESSING APPARATUS HAVING CD-ROM DEVICE

Kiyoshi Shirato, Kawanishi, and Yasuji Yamato, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 10, 1995, Ser. No. 401,820
Claims priority, application Japan, Mar. 15, 1994, 6-044300; Aug. 2, 1994, 6-181278
Int. Cl.[6] G11B 7/00; G06F 1/00
U.S. Cl. 361—680 5 Claims



1. An information processing apparatus comprising:

a body haying a top face,

display means moveably coupled to the body,

information reproducing means, disposed in said body, reproducing information from a first medium disk, said information reproducing means having a top loading face for loading the first medium disk,

keyboard arrangement, moveably coupled to the body, for entering data, said keyboard arrangement moveable between:

(1) a first position to conceal the top loading face of the information reproducing means, and

(2) a second position to expose the top loading face of the intbnnation reproducing means for one of loading and unloading of the first medium disk, and

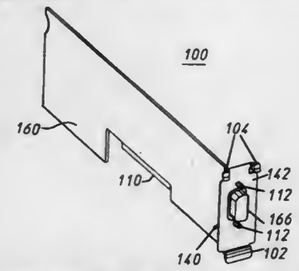
at least one storage area positioned on said top face of the body at a different position from the top loading face of the information reproducing means for storing a second medium disk, said second medium disk being prevented from being reproduced at the same time as said first medium disk.

5,572,400

PRINTED CIRCUIT BOARD FORM FACTOR AND MOUNTING CONCEPT FOR COMPUTER OR WORKSTATION INPUT AND OUTPUT

Arlen L. Roesner, and Stuart Yoshida, both of Fort Collins, Colo., assignors to Hewlett-Packard CO, Palo Alto, Calif.

Filed Sep. 28, 1994, Ser. No. 314,187
Int. Cl.[6] G06F 1/16; H05K 7/02
U.S. Cl. 361—683 5 Claims



1. A computer assembly comprising:

a computer chassis having four walls and a bottom, said computer chassis having at least one slot in at least one wall;

a mother board mounted inside said computer chassis;

an electrical connector mounted to said mother board; and

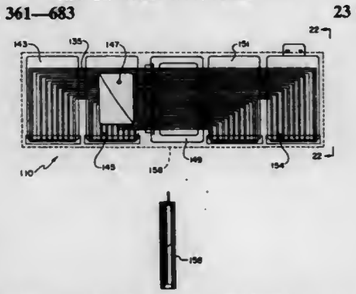
at least one daughter board having a bulkhead that mounts in said at least one slot of said computer chassis, said bulkhead having flaps that slidingly secure said bulkhead to said computer chassis wall in a snug manner, said flaps slidingly mating to said at least one slot on the opposite side of said computer chassis wall as said bulkhead when said bulkhead is secured to said computer chassis, said flaps allowing said at least one daughter board and said bulkhead to self-locatingly mate with said mother board, said flaps securing said at least one daughter board and said bulkhead against movement within said computer chassis, said at least one daughter board being electrically connected to said mother board via said electrical connector when completely mounted in said at least one slot.

5,572,401

WEARABLE PERSONAL COMPUTER SYSTEM HAVING FLEXIBLE BATTERY FORMING CASING OF THE SYSTEM

David W. Carroll, Northfield, Minn., assignor to Key Idea Development L.L.C., Northfield, Minn.

Continuation-in-part of Ser. No. 166,222, Dec. 13, 1993. This application Oct. 25, 1994, Ser. No. 330,134
Int. Cl.[6] G06F 1/16; H05K 7/10
U.S. Cl. 361—683 23 Claims



1. An electronic computing device, comprising:

a plurality of operably connected microcomputer elements, the microcomputer elements including a processor for performing computer processing functions and at least one input and/or output device; and

VOL 1192 ISS 1 NO 5 1996 UMI

a power supply operably coupled to the plurality of microcomputer elements to provide power to the plurality of microcomputer elements, the power supply comprising a flexible battery that forms a casing of the electronic computing device to protect the plurality of microcomputer elements.

5,572,402

HARD DISK DRIVE MOUNTING ASSEMBLY FOR A COMPUTER

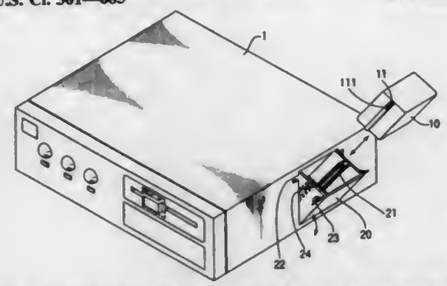
Taehwan Jeong, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 1, 1995, Ser. No. 381,516

Claims priority, application Rep. of Korea, Feb. 2, 1994, 94-1949

Int. Cl.[6] G06F *1/16*; H05K *7/16*

U.S. Cl. 361—685 **16 Claims**



1. A computer for use with a hard disk drive having opposed parallel first and second sides; having a third side perpendicular to each of said first and second sides thereof; having a first slide member located on said first side of said hard disk drive, oriented so as to parallel said third side of said hard disk drive, and provided with a first rail hook; and having a second slide member located on said second side of said hard disk drive, oriented so as to parallel said third side of said hard disk drive, and provided with a second rail hook, said computer comprising:

a body including a body side having exterior and interior surfaces and having a hole between said exterior and interior surfaces of said body side that opens into an interior void within said body, said hole having opposed parallel straight first and second hole sides of similar lengths and having a straight third hole side perpendicular to both said first and second hole sides;

first and second hinges, each of pin and eye type, said first hinge having a first pin and having a first eye attached to the interior surface of said body side next to an end of said third hole side meeting said second hole side and oriented for receiving said first pin which is directed away from said hole in a direction parallel to said third hole side, said second hinge having a second pin and having a second eye attached to the interior surface of said body side next to an end of said third hole side meeting said second hole side and oriented for receiving said second pin which is directed away from said hole in a direction parallel to said third hole side;

a hard disk drive case having an open first end into which said hard disk drive can be inserted, having a second end opposite said first end near which second end said first and second hinges are located to enable said hard disk drive case to swing into said interior void in a closed position and to swing sufficiently out of said interior void in an open position to make its said open first end accessible for mounting or removing said hard disk drive therethrough, having opposed parallel first and second case sides that extend between said first and second ends and that are spaced for fitting through the hole through said body side close to its said first and second sides respectively, having a third case side that extends between said first and second ends perpendicular to said first and second case sides abutting thereagainst and that closes the hole through said body side when said hard disk drive case is swung into said interior, having first and second channel rails located on respective interior surfaces of said first and said second case sides so as to parallel said third case side, and having said first and second pins respectively protruding from an exterior surface of said first rectangular case side and from an exterior surface of said second rectangular case side, said first channel rail being located on the interior surface of said first case side such that the first slide member of said hard disk drive can be fitted within the channel of said first channel rail, said second channel rail being located on the interior surface of said second case side such that the second slide member of said hard disk drive can be fitted within the channel of said second channel rail, said hard disk drive case having a first aperture extending through the channel of said first channel rail and said first case side at a location suitable for receiving said first rail hook when said hard disk drive is inserted within said hard disk drive case, and said hard disk drive case having a second aperture extending through the channel of said second channel rail and said second case side at a location suitable for receiving said second rail hook when said hard disk drive is inserted within said hard disk drive case.

5,572,403

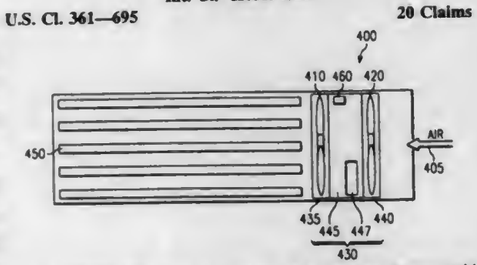
PLENUM BYPASS SERIAL FAN COOLING SUBSYSTEM FOR COMPUTER SYSTEMS

R. Steven Mills, Austin, Tex., assignor to Dell USA, L.P., Austin, Tex.

Filed Jan. 18, 1995, Ser. No. 374,266

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—695 **20 Claims**



1. A cooling subsystem in a chassis of a computer system, said computer system having at least one specified heat producing component device to be cooled, said cooling subsystem comprising:

first and second cooling fans having first and second motors associated therewith for driving said first and second cooling fans, respectively; and

a common plenum only between said cooling fans substantially shrouding and providing a pathway for air communication between said first and second cooling fans, said first and second fans cooperating to provide an optimum rate of air flow from without said chassis to within said chassis to provide air exchange within said chassis, said air flow within said chassis being in a predetermined direction to provide directed cooling of said specified device within said chassis, said first cooling fan located between said specified device and said second cooling fan and said common plenum substantially free of said specified device, said common plenum allowing said first and second fans to continue to cooperate to provide a minimum air flow to provide a minimum air exchange within said chassis, said air flow remaining in said predetermined direction to continue said directed cooling of said specified device when a selected one of said first and second motors fails, said plenum comprising a bypass aperture therein between said fans for allowing said air to alternatively enter and exit said plenum, said bypass aperture increasing a rate of air flow across said subsystem when a selected one of said first and second motors fails.

5,572,404

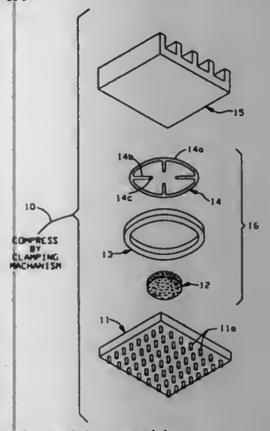
HEAT TRANSFER MODULE INCORPORATING LIQUID METAL SQUEEZED FROM A COMPLIANT BODY

Wilbur T. Layton, San Diego; Ronald A. Norell, Oceanside, and James A. Roecker, Escondido, all of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Sep. 21, 1995, Ser. No. 531,434

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—699 **14 Claims**



1. A heat transfer module, comprising,

a heat generating unit and a heat receiving unit which are separated by a gap;

a compliant body, having microscopic voids therethrough, which is in said gap;

a liquid metal alloy that is absorbed in microscopic voids in said compliant body;

a seal ring, in said gap, which surrounds compliant body and is spaced, at least in part, from said compliant body; and,

a clamping means which squeezes all of the above recited components together and compresses said compliant body so much that a portion of said liquid metal alloy is squeezed from said compliant body into the space between said compliant body and said seal ring.

5,572,405

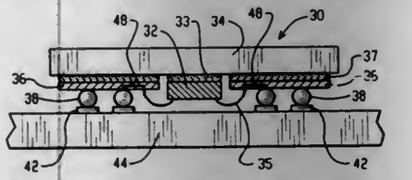
THERMALLY ENHANCED BALL GRID ARRAY PACKAGE

James W. Wilson, Vestal; Stephen R. Engle, Binghamton, and Scott P. Moore, Apalachion, all of N.Y., assignors to International Business Machines Corporation (IBM), Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 474,989

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—705 **10 Claims**



1. A thermally enhanced electronic package comprising:

a thermally conductive member having a first coefficient of thermal expansion;

a first electronic component bonded to said thermally conductive member;

a plurality of discreet connector members bonded to said thermally conductive member and each having:

at least one coefficient of thermal expansion different from said first coefficient of thermal expansion;

a plurality of fusible conductors on at least one surface; and

a plurality of conductive passageways;

said electronic component being electrically connected to conductive passageways in a plurality of said connector members and electrically connected through said passageways to said fusible conductors.

5,572,406

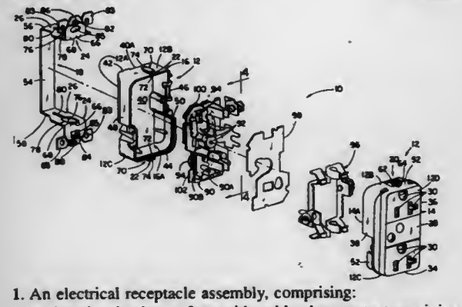
ELECTRICAL RECEPTACLE ASSEMBLY WITH ENHANCED HEAT DISSIPATION ARRANGEMENT

Ward E. Strang, Fairfield; Carol Z. Howard, Oxford, and Thomas M. McDonald, Monroe, all of Conn., assignors to Hubbell Incorporated, Orange, Conn.

Filed Nov. 13, 1995, Ser. No. 557,735

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—707 **17 Claims**



1. An electrical receptacle assembly, comprising:

(a) a housing having a front side with plug contact receiving openings, and a rear side spaced from said front side;

(b) a circuitboard mounted in said housing between said front and rear sides thereof and spaced from said rear side;

(c) at least one varistor mounted to said circuitboard and disposed between said circuitboard and said rear side of said housing; and

(d) a mounting bridge fitted over said rear side of said housing for mounting said housing to an outlet box and for providing a heat sink for dissipating from said housing heat generated by said varistor.

5,572,407

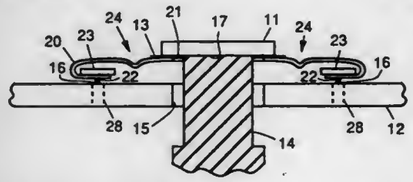
APPARATUS FOR INTERCONNECTING AN INTEGRATED CIRCUIT DEVICE TO A MULTILAYER PRINTED WIRING BOARD

Mohi Sobhani, Encino, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 279,756, Jul. 22, 1994, abandoned. This application Nov. 13, 1995, Ser. No. 556,670

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—719 **6 Claims**



1. Apparatus comprising:

an integrated circuit device having a plurality of leads;

a multilayer printed wiring board having a first plurality of interconnects disposed on its surface; and

a flexible circuit having first and second ends and having a second plurality of interconnects wherein said first and second ends of said flexible circuit are each folded under in a C-shape so that said second plurality of interconnects are mated with the first plurality of interconnects on the printed wiring board, said flexible circuit having wrinkles formed along its surface on either side of said integrated circuit device to thereby provide spring that protects said integrated circuit device from vibration, and having a plurality of printed circuit leads having third and fourth ends, wherein said leads are electrically connected at said third ends to the leads of the integrated circuit device and at said fourth ends to the second plurality of interconnects, said integrated circuit device being supported by said flexible circuit; and

securing means for forcibly interconnecting the respective pluralities of interconnects.

5,572,408

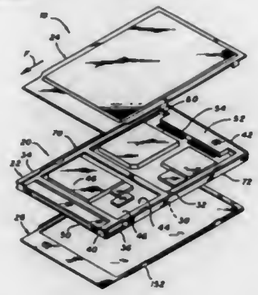
CARD PERIMETER SHIELD

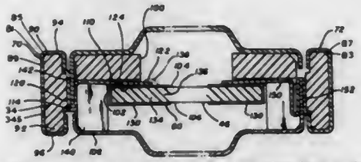
John W. Anhalt, Orange; William H. Doose, Anaheim Hills, and William Galarza, Jr., Laguna Hills, all of Calif., assignors to ITT Corporation, Secaucus, N.J.

Continuation of Ser. No. 292,143, Aug. 18, 1994, abandoned, which is a continuation of Ser. No. 226,093, Apr. 11, 1994, abandoned, which is a continuation of Ser. No. 906,179, Jun. 29, 1992, Pat. No. 5,333,100. This application Apr. 17, 1995, Ser. No. 422,811

Int. Cl.[6] H05K *1/14;9/00*

U.S. Cl. 361—737 **17 Claims**





1. An IC card which is designed for insertion into a slot of an electronic device that has contact elements, comprising:

a body molded of plastic material that has a conductivity at least about two orders of magnitude less than that of copper, said body having opposite side portions with outer surfaces and having opposite ends;

a connector portion at one of said body ends, said connector portion including a plurality of contacts for mating with the contact elements of the electronic device;

a circuit board assembly mounted on said body between said outer surfaces, said assembly including a board having a ground conductor, said board having an end with a plurality of conductive traces and said contacts each being engaged with one of said traces; and

electrically conductive EMI shielding which includes top and bottom sheet metal cover portions lying respectively above and below said circuit board assembly and a plurality of sheet metal rail portions lying outside of said body opposite side portions, each of said rail portions covering more than half of the area of the outer surface of a corresponding one of said body side portions, with said cover portions and said rail portions being electrically connected to said ground conductor of said circuit board, and with said shielding including corner regions each lying adjacent to one of said body opposite side portions, with each corner region including a largely 90° bend and a top part on one side of the bend and a downwardly-extending part on the other side of the bend, with each of said top parts lying above a corresponding body side portion and with each downwardly-extending part lying outside of a corresponding body side portion and forming one of said rail portions that covers more than half of the area of the outer surface of the corresponding body side portion.

5,572,409

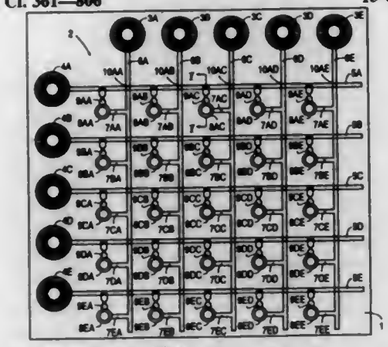
APPARATUS INCLUDING A PROGRAMMABLE SOCKET ADAPTER FOR COUPLING AN ELECTRONIC COMPONENT TO A COMPONENT SOCKET ON A PRINTED CIRCUIT BOARD

Richard J. Nathan, Morgan Hill; James J. D. Lan, Fremont, and Steve S. Chiang, Saratoga, all of Calif., assignors to Prolinx Labs Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 194,110, Feb. 8, 1994. This application Oct. 7, 1994, Ser. No. 319,860

Int. Cl.[6] H05K *7/06;* **H01R** *9/09*

U.S. Cl. 361—806 **15 Claims**



1. An apparatus comprising:

a first electronic component having a plurality of first terminals;

a printed circuit board;

a component socket mounted on said printed circuit board, said component socket comprising a plurality of first component contacts for coupling with a plurality of second terminals of a second electronic component;

a socket adapter for coupling said plurality of first terminals of said first electronic component to said plurality of first component contacts of said component socket, said socket adapter comprising:

a first exposed surface,

a plurality of second component contacts formed on said first exposed surface in a configuration suitable for coupling with said first terminals of said first electronic component;

a second exposed surface;

a plurality of electrical contacts formed on said second exposed surface in a configuration suitable for coupling with said first component contacts of said component socket;

a plurality of inner layers interposed between said first exposed surface and said second exposed surface;

a first trace patterned as part of a first inner layer of said plurality of inner layers, said first trace being formed of an electrically conducting material, said first trace being coupled to a second component contact of said plurality of second component contacts;

a second trace patterned as part of a second inner layer of said plurality of inner layers, said second trace being formed of an electrically conducting material, said second trace being coupled to an electrical contact of said plurality of electrical contacts;

insulating material between said first trace and said second trace;

a fuse formed on an inner layer, said fuse coupling said first trace to said second trace;

wherein said fuse decouples said first trace from said second trace on passage of a programming current through said fuse.

5,572,410

INTEGRATED CIRCUIT DEVICE HAVING A WINDING CONNECTED TO AN INTEGRATED CIRCUIT SOLELY BY A WIRE

Ake Gustafson, Route Champ Thomas, 1618, Chatel-St-Denis, Switzerland

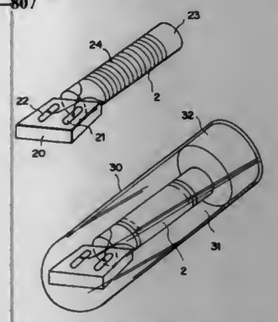
PCT No. PCT/EP92/00363, § 371 Date Jul. 26, 1993, § 102(e) Date Jul. 26, 1993, PCT Pub. No. WO92/15105, PCT Pub. Date Sep. 3, 1992

PCT Filed Feb. 20, 1992, Ser. No. 94,027

Claims priority, application Switzerland, Feb. 25, 1991, 00555/91

Int. Cl.[6] H05K *7/02*

U.S. Cl. 361—807 **10 Claims**



1. A component produced particularly in the course of a process for producing a winding and for fixing said winding to at least one electronic circuit, the process comprising the steps of:

placing at least one electronic circuit, each electronic circuit comprising a body having a surface and a plurality of leadless accessible metal contact regions formed on or within the surface, on a holding tool;

bringing a winding wire on a first side of guide means disposed on one face of said holding tool, then above a first one of the plurality of leadless metal contact regions of the at least one electronic circuit;

producing the winding with said winding wire;

withdrawing the winding wire above a second one of the plurality of leadless metal contact regions of the at least one electronic circuit, then by a second side of said guide means;

electrically connecting each portion of the winding wire situated directly above each of said first and second ones of the plurality of leadless metal contact regions directly to the corresponding metal contact region; and

opening the tool and withdrawing the component made up of said at least one electronic circuit connected to the winding solely by the two winding end wires electrically connected on the two leadless metal contact regions of said at least one electronic circuit;

wherein the at least one electronic circuit and the winding are electrically and mechanically connected only by the ends of the winding wires being directly electrically connected to the leadless metal contact regions of said at least one electronic circuit without leads being connected between the ends of the winding wires and the leadless metal contact regions; and

wherein the at least one electronic circuit is not mechanically fixed to a core.

5,572,411

SURFACE LIGHT SOURCE DEVICE

Kayoko Watai, Hasuda, and Tsuyoshi Ishikawa, Tokyo, both of Japan, assignors to Enplas Corporation, Saitama-ken, Japan

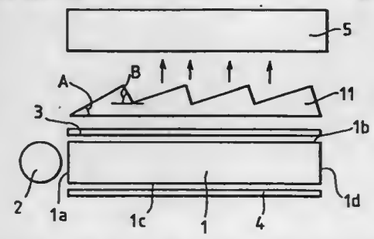
PCT No. PCT/JP94/00743, § 371 Date Jan. 5, 1995, § 102(e) Date Jan. 5, 1995, PCT Pub. No. WO94/27171, PCT Pub. Date Nov. 24, 1994

PCT Filed May 6, 1994, Ser. No. 362,446

Claims priority, application Japan, May 7, 1993, 5-028993 U

Int. Cl.[6] F21V *7/04*

U.S. Cl. 362—31 **8 Claims**



1. A surface light source device comprising a light conducting member; a linear light source being disposed in the vicinity of at least one of light emitting edge surfaces of said light conducting member; a light diffusing member being disposed on a front surface side of said light conducting member; a light reflecting member being disposed on a rear surface of said light conducting member; and a prism sheet being disposed on one side of said light diffusing member, which is opposite to the side where the light conducting member is arranged, and having a multiplicity of prism-like convex portions on at least one of surfaces of the prism sheet; wherein each convex portion of said prism sheet is arranged such that an inclined angle on a light source side is smaller than an inclined angle on an opposite side thereof in a cross-section of the prism sheet which is cut in a direction perpendicular to both an light incident edge surface and a front surface of said light conducting member.

5,572,412

POWER SUPPLY WITH HEATED PROTECTION DIODE

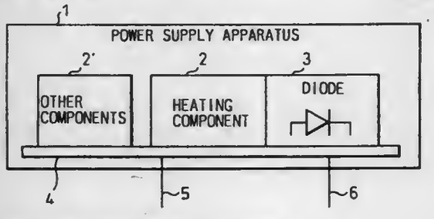
Mituo Saeki, and Hidetoshi Yano, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 26, 1995, Ser. No. 452,375

Claims priority, application Japan, May 26, 1994, 6-112405

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—16 **7 Claims**



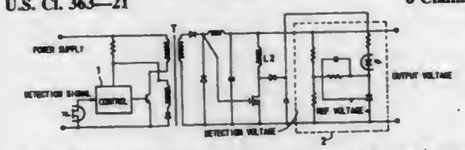
2. A power supply apparatus comprising:

a heating element; and

a diode device thermally coupled to said heating element and connected in series with a power supply line.

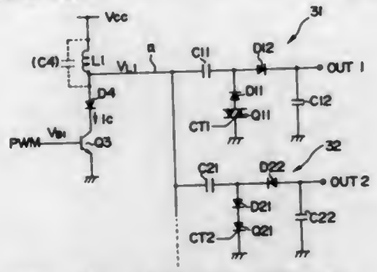
VOL 1192 ISS 1 NO 5 1996 UMI

5,572,413
PRIMARY CONTROL TYPE SWITCHING POWER SUPPLY CIRCUIT
Minoru Hirahara, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan
Filed Jan. 6, 1995, Ser. No. 369,362
Claims priority, application Japan, Mar. 18, 1994, 6-049555
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—21 **6 Claims**



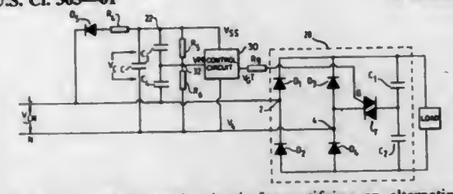
1. A primary control type switching power supply circuit comprising:
a transformer having a primary side and a secondary side;
a control circuit, coupled to the primary side of said transformer, for generating a control signal based on a detection signal;
switching means for switching a current flowing through the primary side in response to the control signal so as to generate an A.C. voltage on the secondary side;
rectifying and smoothing means for rectifying and smoothing the A.C. voltage to generate an output voltage across first and second terminals;
an output voltage detection circuit including means for comparing a reference voltage and a detection voltage which is based on the output voltage, and a detection signal transmitting part supplying to said control circuit the detection signal which is indicative of an error between the reference voltage and the detection voltage so that the output voltage is maintained constant based on the control signal; and
means, including a choke coupled to one of the first and second terminals, for turning the output voltage ON/OFF via the choke at a switching frequency and for obtaining a D.C. voltage by rectifying and smoothing an induced voltage of the choke caused by the ON/OFF of the output voltage,
said D.C. voltage being supplied to the detection signal transmitting part of said output voltage detection circuit as a driving voltage from a driving power supply for the detection signal transmitting part, said D.C. voltage being greater than or equal to a minimum voltage which is required to operate the detection signal transmitting part so as to ensure operation of said output voltage detection circuit.

5,572,414
HIGH VOLTAGE POWER SUPPLY CIRCUIT
Chihigo Komori, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Sep. 28, 1994, Ser. No. 314,504
Claims priority, application Japan, Oct. 4, 1993, 5-247824
Int. Cl.[6] H02M *3/18*
U.S. Cl. 363—60 **27 Claims**



1. A high voltage power supply circuit comprising:
(a) a resonant circuit including at least a coil;
(b) a first switching circuit for oscillation connected to the resonant circuit;
(c) a voltage multiplier rectifier circuit comprising a capacitor and a diode and connected to the resonant circuit; and
(d) a second switching circuit for changing an output, connected to a zero voltage terminal of the diode.

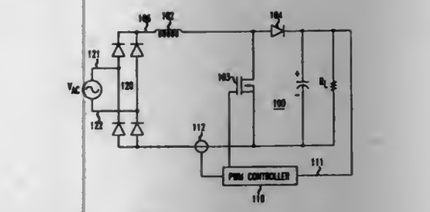
5,572,415
DC VOLTAGE SUPPLY CIRCUIT FOR RECTIFYING AN AC INPUT VOLTAGE TO PROVIDE A SUBSTANTIALLY CONSTANT DC OUTPUT VOLTAGE
Muni Mohan, Singapore, Singapore, assignor to SGS-Thomson Microelectronics Pte. Limited, Singapore, Singapore
Filed Jul. 6, 1994, Ser. No. 271,288
Claims priority, application United Kingdom, Jul. 9, 1993, 9314262
Int. Cl.[6] H02M *7/19*
U.S. Cl. 363—61 **10 Claims**



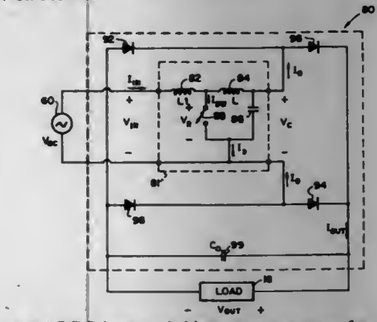
1. A DC voltage supply circuit for rectifying an alternating voltage which has upper and lower excursions with respect to a baseline, and supplying a DC output voltage at a substantially constant value, said voltage supply circuit comprising:
rectification circuitry for rectifying an alternating voltage;
a voltage detection circuit for detecting, within upper and lower limits, peak values of said excursions for controlling said rectification circuitry; and
a voltage shift circuit having an input connected to receive the alternating voltage and connected to supply a composite voltage to the voltage detection circuit, the voltage shift circuit scaling said alternating voltage and shifting its baseline by a preselected DC bias, in order that the excursions fall within the upper and lower limits, so that the voltage detection circuit is operable to detect peak values of both upper and lower excursions.

5,572,416
ISOLATED INPUT CURRENT SENSE MEANS FOR HIGH POWER FACTOR RECTIFIER
Mark E. Jacobs, Dallas; Richard W. Farrington, and Robert J. Murphy, Jr., both of Mesquite, all of Tex., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Jan. 9, 1994, Ser. No. 255,624
Int. Cl.[6] H02M *7/04*; **G05F** *1/625*
U.S. Cl. 363—89 **22 Claims**

1. An AC to DC Power Converter connected to an AC line; including:
an input rectifier connected to the AC line;
a switching regulator connected to receive rectified AC from the input rectifier through an input inductor;
sensing means for monitoring a current flow between the rectifier and switching regulator through the input inductor; the sensing means including:
a sense winding magnetically coupled to the input inductor;
an integrating circuit connected to receive at an input the output voltage of the sense winding;
a valley detector connected to an output of the integrating circuit and including circuitry for detecting and storing a voltage minimum of the output of the integrating circuit; and
a feedback connection coupling the voltage output of the valley detector to an input of the integrating circuit.



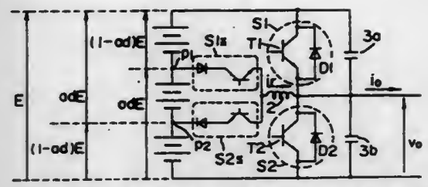
5,572,417
AC TO DC BOOST POWER CONVERTERS
Patrizio Vinciarelli, Boston, and Jay Prager, Tyngsboro, both of Mass., assignors to VLT Corporation, San Antonio, Tex.
Filed Jul. 13, 1994, Ser. No. 274,991
Int. Cl.[6] H02M *7/04*
U.S. Cl. 363—89 **34 Claims**



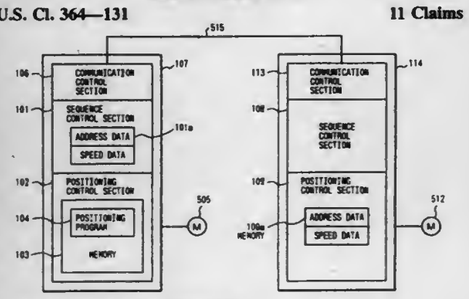
1. An AC-DC boost switching power converter for delivering power from an input voltage source of either polarity to a load at a unipolar load voltage, comprising
an input inductive element for receiving an input current, Iin, of either polarity, from said input source,
a bipolar switch, capable of (a) blocking a voltage of either polarity when off, (b) conducting a current of either polarity when on, and (c) being turned off while carrying current, said bipolar switch providing a shunt path for returning a shunt current of either polarity, Is, to said input source,
conduction paths for delivering a unipolar output current, Io, to said load,
a controller for turning said bipolar switch on and off during each of a series of converter operating cycles.

5,572,418
QUASI-RESONANT PWM INVERTER
Gunji Kimura; Toshihisa Shimizu; Akio Toba, and Shigeru Sano, all of Tokyo, Japan, assignors to Yuasa Corporation, Osaka Prefecture, Japan
Filed Aug. 23, 1994, Ser. No. 294,398
Claims priority, application Japan, Aug. 23, 1993, 5-229488
Int. Cl.[6] H02M *3/24*
U.S. Cl. 363—97 **2 Claims**

1. A quasi-resonant PWM inverter comprising:
a first condensor having a first terminal connected to a connecting point between a first side of terminals of a first main switch and a second side of terminals of a second main switch, and a second terminal connected to a second side of terminals of said first main switch;
a second condensor connected between said connecting point and a first side of terminals of said second main switch;
a DC power source connected between the second side of terminals of said first main switch and the first side of terminals of said second main switch; said DC power source having a first dividing point with a first potential and a second dividing point with a second potential;
a first auxiliary switch having first and second sides of which the second side is connected to said first dividing point;
a second auxiliary switch having first and second sides, said first side connected to said second dividing point; and
a reactor connected between a connecting point to connect the first side of terminals of said first auxiliary switch to the second side of terminals of said second auxiliary switch, and said connecting point to connect the first and second main switches.



5,572,419
CONTROL SYSTEM HAVING MULTIPLE CONTROL APPARATUSES
Makoto Nishimura, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 21, 1994, Ser. No. 183,806
Claims priority, application Japan, Jan. 21, 1993, 5-008322
Int. Cl.[6] G05B *15/00*
U.S. Cl. 364—131 **11 Claims**



1. A control system comprising:
a first control apparatus for controlling a first object and a second control apparatus for controlling a second object, said first control apparatus storing and executing a positioning program containing instructions for instructing said second control apparatus to control the second object, wherein the instructions contain control data and wherein said control data is transferred to said second controller during execution of said positioning program in said first control apparatus, and
wherein said control data includes data for identifying a positioning target address to which said second object is controlled to be moved, and speed data representing the speed at which said second object is to be moved to said positioning target address.

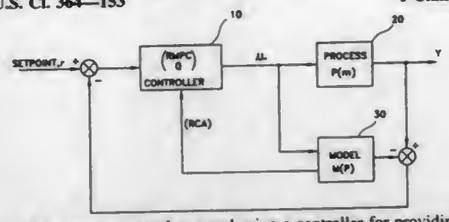
VOL 1192 ISS 1 NO 5 1996 UMI

5,572,420

METHOD OF OPTIMAL CONTROLLER DESIGN FOR MULTIVARIABLE PREDICTIVE CONTROL UTILIZING RANGE CONTROL

Zhuxin J. Lu, Glendale, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 3, 1995, Ser. No. 415,881
Int. Cl.[6] G05B *13/04*
U.S. Cl. 364—153 **1 Claim**



1. In a process control system having a controller for providing robust control to a process, the process further having at least one manipulated variable and at least one process variable, a method for providing the robust control of a process, comprising the steps of:

a) loading the controller with parameters which define an optimal controller, the parameters calculated off-line including the steps of:

i) defining a single min-max statement for a worst case model of the process to operate in conjunction with the controller having a best case;

ii) converting said single min-max statement to a corresponding minimization expression, the corresponding minimization expression being a canonical of the single min-max statement; and

iii) solving the minimization problem yielding a resultant solution, the resultant solution being the parameters;

b) initializing the robust control to have predetermined constraints of the manipulated variables and the controlled variables;

c) obtaining present values of the manipulated variables and the process variables said process variables corresponding to measurement parameters of the process;

d) calculating new values of the process variables for a predetermined number of points in the future in order to have the values of the process variables within the predetermined range to obtain an optimal robustness of the resultant controller, the manipulated variables being within predetermined constraints, and the process variables falling within a predetermined range when controllable; otherwise, keeping process variable constraint violations to a minimum;

e) from a plurality of solutions, selecting a most robust solution; and

f) controlling the process in accordance with the most robust solution.

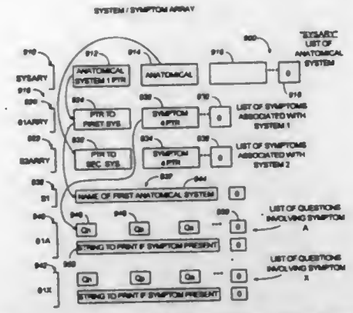
5,572,421

PORTABLE MEDICAL QUESTIONNAIRE PRESENTATION DEVICE

Louis Altman; David Summerell, both of 5622 S. Woodlawn, Chicago, Ill. 60637, and William E. Turcotte, II, 1234 Edmer St., Oak Park, Ill. 60302

Continuation of Ser. No. 711,616, Jun. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 130,934, Dec. 9, 1987, Pat. No. 5,025,374. This application Jun. 2, 1994, Ser. No. 253,201
Int. Cl.[6] G06F *159/00*
U.S. Cl. 395—203 **8 Claims**

1. For use with a hand-held medical-history-taking device, the method of reporting which particular anatomical systems, among a plurality of candidate anatomical systems, are associated with at least one health symptom, responsive to information supplied by the patient, comprising the steps of:



(a) providing question storage means in said history-taking device storing a plurality of questions to be asked of a medical patient;

(b) providing answer storage means in said history-taking device for storing a plurality of answers obtained from said patient and respectively associated with said questions;

(c) providing, first list storage means in said history-taking device storing a first list identifying, for each of said plurality of candidate anatomical systems, at least one of said symptoms as being associated with said anatomical system;

(d) providing second list storage means in said history-taking device storing a second list identifying, for each of said health symptoms, at least one of said questions as being associated with said health symptom;

(e) causing said history-taking device to consult said question storage means to present a selected sequence of said questions to said patient, causing said history-taking device to solicit a respective answer to each of said questions of said sequence, and causing said history-taking device to store each of said answers in said answer storage means;

(f) causing said history-taking device to select, in turn, each of said plurality of candidate anatomical systems, and causing said history-taking device to consult said first list storage means to determine which health symptoms are associated with said selected anatomical system;

(g) causing said history-taking device to select, in turn, each of said health symptoms determined in the previous step, and causing said history-taking device to consult said second list storage means to determine which questions are associated with said selected health symptom;

(h) causing said history-taking device to select, in turn, each of said questions determined in the previous step, and causing said history-taking device to consult said answer storage means to determine whether the stored answer associated with that question is non-negative; and

(i) if said stored answer is non-negative, causing said history-taking device to produce printer signals to cause an external printer to present in a printed report a report element associating said selected anatomical system with said selected health symptom.

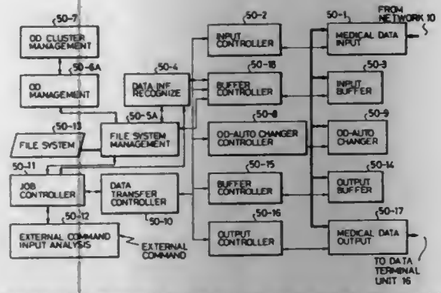
5,572,422

METHOD FOR MANAGING CLUSTERED MEDICAL DATA AND MEDICAL DATA FILING SYSTEM IN CLUSTERED FORM

Mohammad A. Nematbakhsh, Anaheim, Calif., and Shinichi Tsubura, Tochigiken, Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Continuation of Ser. No. 46,180, Apr. 14, 1993, abandoned, which is a continuation of Ser. No. 961,840, Oct. 16, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 474,143
Claims priority, application Japan, Oct. 16, 1991, 3-267524; Oct. 15, 1992, 4-277110
Int. Cl.[6] G06F *159/00*
U.S. Cl. 395—203 **14 Claims**

1. A method for managing medical data comprising the steps of:



sequentially acquiring a plurality of medical data about a biological body under medical examination;

classifying said plurality of medical data using a temporal term;

classifying said plurality of medical data which has been classified using the temporal term based upon at least one of medical classification items to obtain a plurality of classified medical data; and

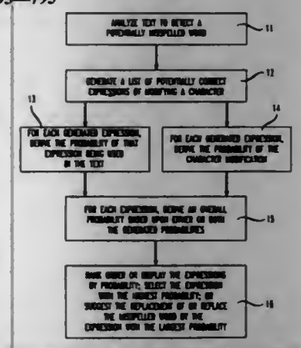
sequentially storing said plurality of medical data which has been classified using the temporal term and said at least one of medical classification items into optical disks of an automatic disk changer in such a manner that said plurality of classified medical data belonging to a same medical classification item are stored in a same one of said optical disks.

5,572,423

METHOD FOR CORRECTING SPELLING USING ERROR FREQUENCIES

Kenneth W. Church, Chatham, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 826,294, Jan. 27, 1992, abandoned, which is a continuation of Ser. No. 538,286, Jun. 14, 1990, abandoned. This application Jan. 23, 1995, Ser. No. 376,693
Int. Cl.[6] G06F *17/21*
U.S. Cl. 395—795 **6 Claims**



1. In an automatic machine, a method of correcting incorrectly-spelled words in an object text stored in a memory wherein an incorrectly-spelled word is identified and a plurality of correctly-spelled candidate expressions is generated to replace said incorrectly-spelled word, which comprises:

determining a probability function for each candidate expression, said probability function being based on both (1) a first stored probability of occurrence of said candidate expression in text independent of context and (2) a second stored probability of occurrence of the particular typographical modification that, when applied to said candidate expression, results in said incorrectly-spelled word, said first stored probability being computed from the number of occurrences of said candidate word in a large body of text in relation to the total number of words in said large body of text, said second probability being computed from the number of occurrences of said particular typographical modification in a training text containing known incorrectly-spelled words in relation to the total number of occurrences in said training text of the character or combination of characters modified by said particular typographical modification, and

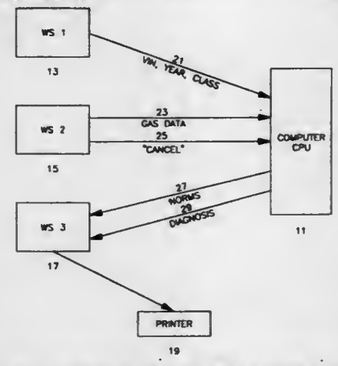
replacing said incorrectly-spelled word in said stored object text with the candidate expression having the highest probability function.

5,572,424

DIAGNOSTIC SYSTEM FOR AN ENGINE EMPLOYING COLLECTION OF EXHAUST GASES

Robert L. Kellogg; Kenneth S. Norman, both of Minneapolis; Jeffrey K. Hislop, Blaine, all of Minn., and Sushil L. Pillai, Bombay, Ind., assignors to Automotive Information Systems, Roseville, Minn.

Filed May 23, 1994, Ser. No. 247,542
Int. Cl.[6] F02B *27/04*
U.S. Cl. 364—424.03 **15 Claims**



1. A computer implemented method for providing a diagnosis for automotive engine malfunctions using collected vehicle emissions data, comprising the steps of:

(a) generating a concentration level subset for each individual gas of a group of gases within said vehicle emissions data collected forming a plurality of concentration level subsets;

(b) comparing each of said concentration level subsets with predetermined normative concentration break point value data sets to determine relative correspondence between each of said concentration level subsets and said predetermined normative concentration break point values;

(c) generating relative correspondence data patterns representative of said relative correspondence between each of said concentration level subsets and said predetermined normative concentration break point values; and

(d) comparing said relative correspondence data patterns with a plurality of predetermined relative correspondence data patterns for finding a match, wherein each said predetermined relative correspondence data patterns are each associated with a failure signature code, whereby said failure signature code is used to diagnose said engine malfunctions.

VOL 1192 ISS 1 NO 5 1996 UMI

5,572,425

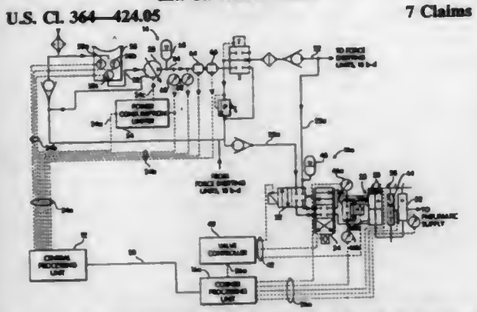
POWERED ACTIVE SUSPENSION SYSTEM RESPONSIVE TO ANTICIPATED POWER DEMAND

Joel A. Levitt, Ann Arbor; Benjamin I. Bachrach, Dearborn; Michael B. Goran, Bloomfield Hills; James D. Grenda, Grosse Pointe, and John E. Nametz, Ypsilanti, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 717,242, Jun. 18, 1992, Pat. No. 5,232,242. This application Jan. 7, 1993, Ser. No. 1,710

Int. Cl.[6] B60G 17/015

U.S. Cl. 364—424.05 7 Claims



1. An active suspension system for a vehicle having an engine, a plurality of wheels, and sprung and unsprung masses, comprising:

fluid providing means for providing a pressurized fluid to said active suspension system, wherein said fluid providing means is coupled to said engine for receiving power from said engine; and

data processing means, coupled to said fluid providing means and to the engine, for calculating a prediction value indicative of the magnitude of the future power demand to be placed on said engine by said fluid providing means, and

means responsive to said prediction value for controlling the amount of power produced by said engine to anticipate the power requirements of said fluid providing means.

5,572,426

APPARATUS AND METHOD FOR CONTROLLING DAMPING FORCE CHARACTERISTIC OF VEHICULAR SHOCK ABSORBER

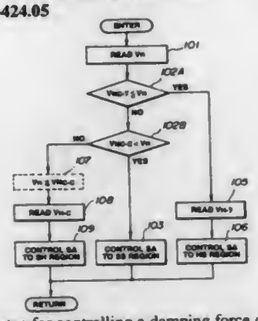
Mitsuo Sasaki, and Toshiro Hirai, both of Atsugi, Japan, assignors to Unisia Jecs Corporation, and Nissan Motor Co., Ltd., Japan

Filed Sep. 12, 1994, Ser. No. 305,282

Claims priority, application Japan, Sep. 13, 1993, 5-227066

Int. Cl.[6] B60G 17/015

U.S. Cl. 364—424.05 15 Claims



1. An apparatus for controlling a damping force characteristic of a vehicular suspension system, said vehicular suspension system comprising at least one shock absorber interposed between a sprung mass and an unsprung mass, the damping force of said shock absorber being changeable, said apparatus comprising:

a) detecting means for detecting a sprung mass vertical acceleration with respect to a direction of gravity;

b) deriving means for deriving a vertical sprung mass velocity on the basis of the vertical sprung mass acceleration detected by the detecting means;

c) damping force characteristic controlling means for controlling the damping force characteristic of said shock absorber according to a control signal, said control signal being formed on the basis of a magnitude and a direction of the derived vertical sprung mass velocity;

d) calculating means for sampling and holding a plurality of peak values of said derived vertical sprung mass velocity with respect to time and for calculating a moving average of the plurality of the sampled and held peak values; and

e) control gain setting means for adjustably setting a control gain of the formed control signal on the basis of the calculated moving average, said control signal being set such that said control gain is increased as the calculated moving average becomes decreased when said damping force characteristic controlling means controls the damping force characteristic of either a piston extension stroke side or a piston compression stroke side so as to change the damping force characteristic thereof according to the control signal.

5,572,427

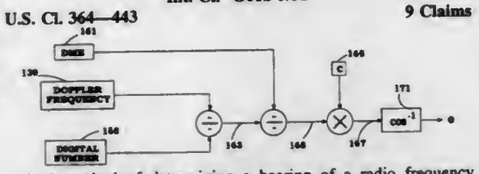
DOPPLER POSITION BEARING ANGLE LOCATOR

John T. Link, Fort Wayne, Ind., and Gene D. Robertson, Bonita Springs, Fla., assignors to Magnavox Electronic Systems Company, Fort Wayne, Ind.

Filed Feb. 10, 1994, Ser. No. 194,599

Int. Cl.[6] G01S 3/52

U.S. Cl. 364—443 9 Claims



1. A method of determining a bearing of a radio frequency source from a moving craft comprising the steps of:

transmitting a radio frequency signal of a predetermined frequency from the source;

transmitting a Doppler effect independent indication of the predetermined frequency from the source;

receiving both the transmitted radio frequency signal and the Doppler effect independent indication of the predetermined frequency on the moving craft;

comparing the frequency of the received radio frequency signal with the Doppler effect independent indication of the predetermined frequency of that signal to determine the Doppler shift induced in the received radio frequency signal due to motion of the craft; and

utilizing the determined Doppler shift to compute the bearing of the radio frequency source from the moving craft.

5,572,428

ANTI-COLLISION SYSTEM FOR VEHICLES

Shinnosuke Ishida, and Kenshiro Hashimoto, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

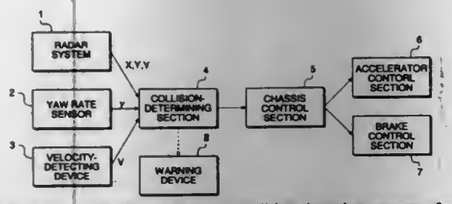
Filed Sep. 28, 1994, Ser. No. 313,991

Claims priority, application Japan, Sep. 30, 1993, 5-268128

Int. Cl.[6] G06F 165/00

U.S. Cl. 364—461 9 Claims

1. In an anti-collision system for preventing a collision of a source vehicle with an object, including object-detecting means for detecting conditions of said object present in the vicinity of said source vehicle, said object including a traveling vehicle preceding



said source vehicle, operating condition-detecting means for detecting parameters indicative of operating conditions of said source vehicle, and control means for controlling said source vehicle so as to prevent a collision thereof with said object, based on said conditions of said object detected by said object-detecting means, and said parameters detected by said operating condition-detecting means;

the improvement comprising:

first estimating means for estimating a path of travel of said source vehicle, based on said parameters detected by said operating condition-detecting means;

first setting means for setting an area of travel of said source vehicle to a first predetermined area including said path of travel of said source vehicle estimated by said first estimating means;

second estimating means for estimating a path of movement of said object, based on said conditions of said object detected by said object-detecting means;

second setting means for setting an area of movement of said object to a second predetermined area including said path of movement of said object estimated by said second estimating means; and

calculating means for calculating a possibility of collision between said source vehicle and said object, based on said area of travel of said source vehicle set by said first setting means, and said area of movement of said object set by said second setting means; and

wherein said control means is responsive to said possibility of collision calculated by said calculating means, for controlling velocity of said source vehicle.

5,572,429

SYSTEM FOR RECORDING THE INITIALIZATION AND RE-INITIALIZATION OF AN ELECTRONIC POSTAGE METER

Kevin D. Hunter, 440 Allyndale Dr., Stratford, Conn. 06851; Perry A. Pierce, 11 Raymond Heights, Darien, Conn. 06820, and Iiya Shnayder, 7 Rockmere Rd., Apt. 2, Norwalk, Conn. 06851

Filed Dec. 5, 1994, Ser. No. 349,576

Int. Cl.[6] G07B 17/02

U.S. Cl. 364—464.02 6 Claims

1. An improved electronic meter for accounting for funding and transaction information having:

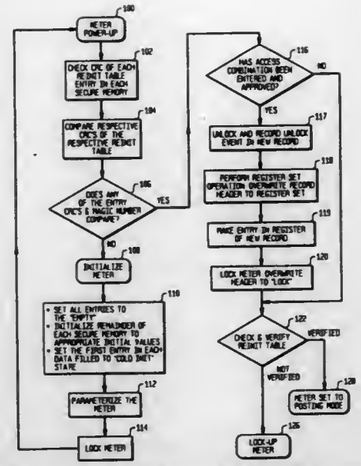
a micro control system for controlling the operation of said meter in response to an operation program,

said micro control system having a microprocessor in bus communication with a plurality of addressable memory units and first input means in bus communication with said microprocessor,

said meter having a first mode of operation for performing transactions and accounting for said transactions by generating accounting information and storing said accounting information in said memory units and a second mode of operation for accessing said accounting information in response to a first security code, and

said improved meter comprising:

a first one of said memory units having a plurality of accounting registers for storing said accounting informatioo to provide a historical record of desired frequency of desired accounting information in predetermined categories,



said meter having a third mode of operation for accessing said registers of said first memory and initializing said registers in response to input of a second security code,

said accounting information including a REINIT table for creating a selected number of records representative of said accounting information of said accounting register in said respective categories upon each initialization of said accounting registers,

said operation program having means for preventing said record from being overwritten once said respective record has been created and said meter is in said first, second or third mode.

5,572,430

METHOD AND APPARATUS FOR COOPERATED DESIGN

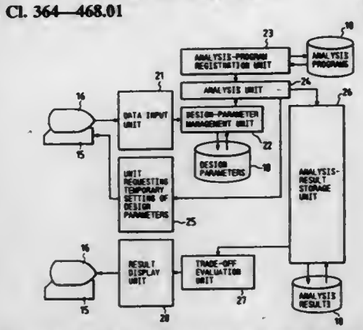
Shingo Akasaka, Zushi; Sugino Kazuhiro, Yokohama; Hiroko Imanishi, Yokohama; Junichi Saeki, Yokohama, and Kunihiko Nishi, Tokyo-to, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 29, 1992, Ser. No. 905,888

Claims priority, application Japan, Jul. 3, 1991, 3-162929; Aug. 2, 1991, 3-194185

Int. Cl.[6] G06F 19/00

U.S. Cl. 364—468.01 9 Claims



1. A collaborated design management method for supporting a process of determining specifications comprised of design parameters of a product during a design process involving a plurality of design sections or prototyping sections, said method comprising:

a first step of inputting into a computer system design parameters of a product-specification draft including at least external dimensions, materials and manufacturing conditions

which are input at each design section with constraint conditions for each design parameter related to said product as well as set base data or empirical data for said constraint conditions, rules governing relations among said design parameters and a set of programs necessary for evaluation of said design parameters registered in advance;

a second step of autonomously correcting all design parameters or setting all design parameters affected by updating of a design parameter or inputting of a new design parameter;

a third step of judging whether values of said corrected design parameters meet said constraint conditions;

a fourth step of computing and displaying to a user a difference between a value of a design parameter and a constraint value in the case of a detected constraint violation by said design parameters;

a fifth step of requesting the user to correct an inputted value of said design parameter or to modify said constraint condition in the case of the detected constraint violation by said design parameter;

a sixth step of creating a list of constraint conditions related to said design parameter which violate said constraint along with set base data of said conditions and displaying said list to the user in case the user has selected an alternative to modify said constraint values;

a seventh step of re-cataloging said displayed constraint conditions after being corrected interactively, whereby all relevant design parameters are corrected automatically through collaboration among a plurality of design sections whenever a local design parameter is changed by an individual design section; and

constructing the product in accordance with the corrected relevant design parameters.

5,572,431

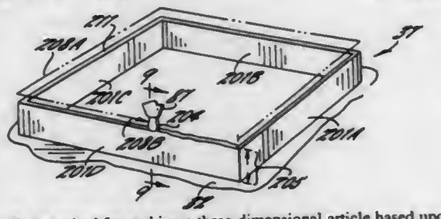
APPARATUS AND METHOD FOR THERMAL NORMALIZATION IN THREE-DIMENSIONAL ARTICLE MANUFACTURING

Robert B. Brown, Duncan; Charles F. Kirschman, Central, and Herbert E. Menhennett, Easley, all of S.C., assignors to BPM Technology, Inc., Greenville, S.C.

Filed Oct. 19, 1994, Ser. No. 326,009

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—468.01 **61 Claims**



38. A method for making a three-dimensional article based upon article defining data, said method comprising the steps of:

dispensing solidifiable build material upon a platform to construct the article in successive layers based upon the article defining data and which layers solidify after dispensing; and

heating, melting and displacing predetermined solidified portions of dispensed solidified build material at predetermined intervals during construction of the article.

5,572,432

Patent Not Issued For This Number

5,572,433

DETECTION OF MARKS REPETITIVELY PLACED AT LENGTHWISE INTERVALS ALONG A WEB

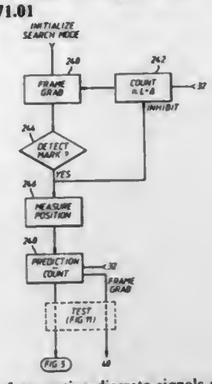
Andrew P. Falconer, Marlow Bottom, and Peter T. Herdman, High Wycombe, both of England, assignors to The Wiggins Teape Group Limited, Hampshire, United Kingdom

Filed Jul. 8, 1993, Ser. No. 87,288

Claims priority, application United Kingdom, Jul. 10, 1992, 9214664

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—471.01 **30 Claims**



1. A method of generating discrete signals representative of the positions of a series of marks spaced at nominally known intervals along a paper web that is moving lengthwise, comprising the steps of:

a) capturing an image of a given mark of said series at a predetermined moment;

b) processing the captured image to compare the lengthwise position of said given mark at said predetermined moment to a lengthwise position predicted therefor as a result of processing of a previously captured image of a predecessor mark in said series, and generating a signal representative of the difference between the captured and predicted positions of said given mark; and

c) predicting the moment for capturing an image of a subsequent mark of said series using said signal representative of the difference between the captured and predicted lengthwise positions of given mark.

5,572,434

METHOD FOR SIMULATING MOLD FILLING OF SEMISOLID MATERIAL

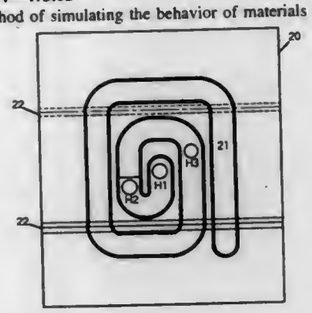
Kuo K. Wang, and Shau-Poh Wang, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Jun. 14, 1994, Ser. No. 259,615

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—475.02 **19 Claims**

1. A method of simulating the behavior of materials in a mold,



where the materials are in the form of a liquid containing semi-solid components, comprising the steps of:

a) discretizing the mold into a fixed mesh comprising a plurality of triangular finite elements, each finite element having a vertex node at each corner, a centroid at the center of the finite element, and a side node midway between the vertex nodes on each side, each node having two velocity components u and v representing velocity in the x and y direction, respectively, and each vertex node having a pressure, each finite element being divided into three sub-mass control volumes SMaCV's along lines derived by joining the side nodes and the centroid;

b) incrementing the time by predetermined time step;

c) determining the status of each SMaCV, wherein a SMaCV is considered empty if there is no liquid in the SMaCV, partially filled if the volume of liquid q is more than zero but less than the total volume Q of the SMaCV, and filled otherwise;

d) determining the computational domain, comprising the set of SMaCV's having at least one node which is an interior, driven or free-surface node, or which has a node adjoining a driven node even if all of the SMaCV's associated with the node are empty, wherein an interior node is one which adjoins only filled SMaCV's, a free-surface node is one which is not interior, but which is associated with filled SMaCV's, and a driven node is one which adjoins a free-surface node but which is not itself associated with a filled SMaCV;

e) for all SMaCV's in the computational domain, solving the continuity equations;

f) determining the interfacial pressure between each SMaCV and the adjoining SMaCV's;

g) computing the tangential matrix [T];

h) computing the boundary conditions;

i) computing the change in velocities u and v and filled volume q;

j) checking each SMaCV for a change in filled/unfilled status, and returning to step d) if there has been a change in status;

k) checking if the velocity has converged, and returning to step f) if the velocity has not converged;

l) solving the energy equation;

m) determining if the last time step has been reached, and returning to step b) if it has not; and

o) controlling an injection molding process in accordance with the solved energy equation.

5,572,435

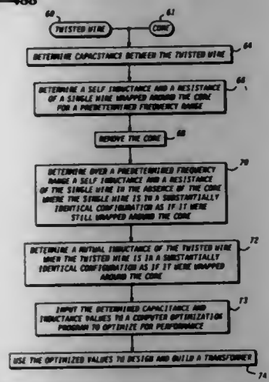
METHOD FOR DESIGNING A TRANSFORMER

Robert S. Kaltenecker, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 28, 1994, Ser. No. 202,610

Int. Cl.[6] G06F *19/00;* **G01R** *15/18*

U.S. Cl. 364—488 **9 Claims**



1. A method for making a transformer, the transformer including a core and twisted wires, the method utilizing a model for the transformer wherein the model has parameters that relate to a physical construction of the core and the twisted wires, the method comprising the steps of:

measuring a capacitance between the twisted wires;

measuring, over a predetermined frequency range, a self inductance and a resistance of a single wire wrapped around the core;

measuring, over a predetermined frequency range, a self inductance and a resistance of said single wire in the absence of the core wherein a physical geometry of said single wire is in a substantially identical configuration as if said single wire was wrapped around the core;

measuring a mutual inductance of the twisted wires when in a substantially identical configuration as if the twisted wires were wrapped around the core;

optimizing said measured inductances, capacitances and resistances; and

using said optimized inductances, capacitances and resistances to make a transformer.

5,572,436

METHOD AND SYSTEM FOR CREATING AND VALIDATING LOW LEVEL DESCRIPTION OF ELECTRONIC DESIGN

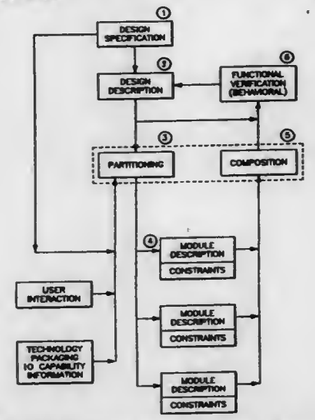
Carlos Dangelo, Los Gatos; Vijay Nagasamy, Union City, and Vijayanand Ponukumati, Sunnyvale, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 76,729, Jun. 14, 1993, Ser. No. 76,738, Jun. 14, 1993, Ser. No. 76,728, Jun. 14, 1993, and Ser. No. 77,403, Jun. 14, 1993, each which is a continuation-in-part of Ser. No. 54,053, Apr. 26, 1993, and Ser. No. 77,294, Jun. 14, 1993, which is a continuation-in-part of Ser. No. 54,053, and Ser. No. 917,801, Jul. 20, 1992, Pat. No. 5,220,512, which is a continuation of Ser. No. 512,129, Apr. 19, 1990, abandoned, said Ser. No. 54,053is a continuation of Ser. No. 507,201, Apr. 6, 1990, Pat. No. 5,220,030. This application Jun. 2, 1994, Ser. No. 252,823

The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—489 **19 Claims**



1. In an ECAD system, a method of creating and validating a low level description of an electronic design from a higher level, behavior-oriented description thereof, comprising:

entering on an ECAD system a specification of a desired behavior of an electronic design, including high-level timing goals, in a high-level, behavior-oriented language;

on the ECAD system, iteratively simulating and changing the electronic design at the behavioral-level until the desired behavior is obtained;

on the ECAD system, partitioning the electronic design into a number of architectural blocks and constraining the architectural choices to those which meet the high-level timing goals;

on the ECAD system, directing the various architectural blocks to logic synthesis programs, said logic synthesis programs also running in the ECAD system, thereby providing a low level description of the electronic design; and

for each change of the behavioral-level description of the electronic design, estimating at least one ancillary parameter of the electronic design.

5,572,437

METHOD AND SYSTEM FOR CREATING AND VERIFYING STRUCTUAL LOGIC MODEL OF ELECTRONIC DESIGN FROM BEHAVIORAL DESCRIPTION, INCLUDING GENERATION OF LOGIC AND TIMING MODELS

Michael D. Rostoker, Boulder Creek; Carlos Dangelo, Los Gatos, and Owen S. Bair, Sarotoga, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

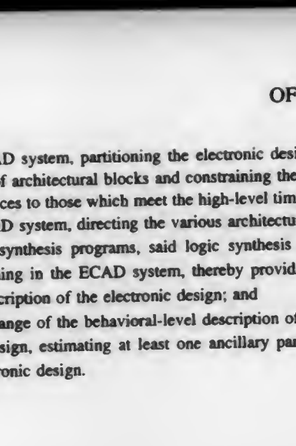
Continuation-in-part of Ser. No. 85,658, Jun. 30, 1993, Ser. No. 54,053, Apr. 26, 1993, and Ser. No. 77,294, Jun. 14, 1993, said Ser. No. 85,658is a continuation of Ser. No. 684,668, Apr. 12, 1991, Pat. No. 5,278,769, said Ser. No. 54,053is a continuation of Ser. No. 507,201, Apr. 6, 1990, Pat. No. 5,222,030.

This application May 20, 1994, Ser. No. 246,798

The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—489 **17 Claims**



1. A method of verifying a logic model of an electronic design, in an ECAD system, comprising:

providing a logic-level model of the electronic design;

obtaining timing and delay information obtained from a transistor-level model simulation of the design; and

providing the timing and delay information to the logic-level model for simulation.

5,572,438

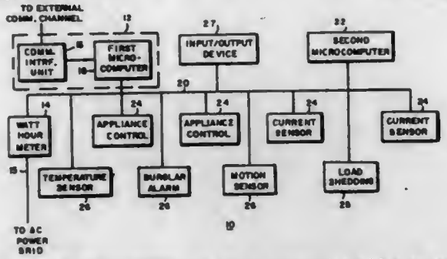
ENGERY MANAGEMENT AND BUILDING AUTOMATION SYSTEM

Gregory A. Ehlers, Tampa, Fla.; Robert D. Howerton, and Gary E. Speegle, both of Decatur, Ga., assignors to TECO Energy Management Services

Filed Jan. 5, 1995, Ser. No. 369,679

Int. Cl.[6] H02J *3/00*

U.S. Cl. 364—492 **29 Claims**



1. A first microcomputer for use in conjunction with a second microcomputer to control the operation of a plurality of electrical loads in a customer premises, comprising:

a first processor unit;

a first memory unit;

means for receiving from the second microcomputer commands to schedule events concerning the operation of loads;

means operable in cooperation with the first processor unit for collecting and storing in the first memory data describing historical power or energy usage by the customer; and

means operable under control of the first processor unit for transmitting to load control modules message to effectuate said scheduled events.

5,572,439

MOLECULAR DESIGN SUPPORT SYSTEM

Kazuhiro Nishida, Kawasaki, and Takaaki Harada, Chikushino, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

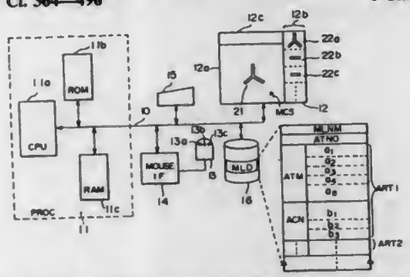
Continuation of Ser. No. 993,775, Dec. 21, 1992, abandoned.

This application May 22, 1996, Ser. No. 446,300

Claims priority, application Japan, Dec. 20, 1991, 3-338878

Int. Cl.[6] G06F *17/50; 19/00*

U.S. Cl. 364—496 **6 Claims**



1. A molecular design support system for creating and/or modifying a molecular structure, comprising:

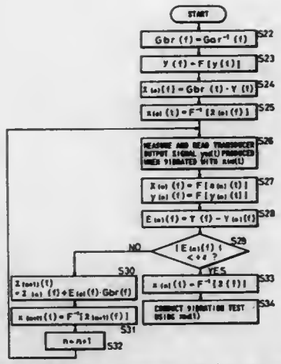
display means supplied with molecular data representing a molecular structure for displaying said molecular structure graphically;

database means for storing information about atoms forming a molecule in terms of atomic component information, said atomic component information representing information about atomic components that are assembled to form a molecular structure of said molecule, each of said atomic components including an atom and at least one orbital associated therewith, said atomic component information comprising, for each of said atomic components, atomic data and bond data, said atomic data comprising: first identification data for identifying the atomic type of said atom that forms a first atomic component, first coordinate data representing the position of said atom that forms said first atomic component; number data representing the number of the orbitals associated with said atom that form said first atomic component; and second coordinate data showing the position of a free end of the orbital for each of said orbitals in said first atomic component; said bond data comprising: second identification data for identifying the atomic type of an atom that forms a second atomic component and is bonded to the free end of said orbital in said first atomic component; third identification data for identifying the orbital associated with said atom that forms said second atomic component; and fourth identification data for identifying the bond order of a bond that is established between the atoms that respectively form said first and second atomic components;

inputting means including a mouse for selecting the first atomic component, which is initially located at a first position, and moving the first atomic component to a second position, the first atomic component being selected by depressing a mouse button when a mouse cursor is located in the first position, the first atomic component being moved by releasing the mouse button when the mouse cursor is located in the second position; and

processing means for manipulating said atomic component information of said first atomic component at said second position to assemble a molecular structure from said first atomic component located at said second position and said second atomic component which is also located at said second position, said processing means producing thereby said molecular data in correspondence to said assembled molecular structure,

said processing means including translation means for translating the first coordinate data of the first atomic component to the second position; and rotation means for rotating said first atomic component such that the free end of an orbital in said first atomic component aligns with the orbital that is identified by said third identification data and associated with the atom that forms the second atomic component, said translation means and said rotation means establishing the bond between the atoms that respectively form said first and second atomic components, the bond being formed at said free end of said orbital of said first atomic component and said free end of said orbital of said second atomic component, with a bond order specified by said fourth identification data.



(b) calculating an inverse function $Gb^{-1}(f)$ by said temporary transfer function Ga(f);

(c) converting the output signal Y(t), produced by the vibration detector while the motor vehicle is actually running, into a signal Y(f) by Fourier transformation;

(d) multiplying said inverse function $Gb^{-1}(f)$ by said signal Y(f) to produce a product signal;

(e) subjecting said product signal to inverse Fourier transformation to provide a time domain vibration signal $X_{(n)}(t)$;

(f) vibrating the vehicle according to the time domain vibration signal $X_{(n)}(t)$;

(g) determining an output signal $Y_{(n)}(f)$ from an output $Y_{(n)}(t)$ produced by the vibration detector when the vehicle is vibrated in step (f) according to said time domain vibration signal $X_{(n)X(t)}$;

(h) determining a difference signal $E_{(n)}(f)$ between the absolute value of said signal Y(f) and the absolute value of said signal $Y_{(n)}(f)$;

(i) successively incrementing the time domain vibration signal $X_{(n)}(t)$ and repeating said steps (f)–(h) until said difference signal $E_{(n)}(f)$ falls within a predetermined allowable error range;

(j) calculating a permanent transfer function Gar(f) with a group of noise patterns having a Fourier spectrum distribution equal to the Fourier spectrum distribution of time-domain vibration signal $X_{(n)}(t)$, wherein when said difference signal $e_{(n)}(f)$ falls within the predetermined allowable error range, the Fourier distribution of the current time domain vibration signal $X_{(n)}(t)$ is determined, and then said permanent transfer function Gar(f) is calculated therefrom; and

(k) subjecting said motor vehicle to a vibration test employing a vibration signal determined from said permanent transfer function Gar(f) to simulate a load which would be applied from an actual road.

5,572,440

MOTOR VEHICLE VIBRATING SYSTEM AND METHOD OF CONTROLLING SAME

Shokichi Harashima; Hiroshi Takahashi; Kazuo Shinomiya; Masakazu Kadota, and Kazutoyo Yasuda, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 831,569, Feb. 5, 1992, abandoned.

This application May 15, 1995, Ser. No. 440,658

Claims priority, application Japan, Feb. 6, 1991, 3-015568; Feb. 6, 1991, 3-015569; Sep. 20, 1991, 3-242002; Oct. 2, 1991, 3-255467

Int. Cl.[6] G01H *17/00;* **G01M** *7/00*

U.S. Cl. 364—508 **6 Claims**

1. A method of controlling a vibrating system for forcibly vibrating a motor vehicle to simulate a load which would be applied from an actual road, comprising the steps of:

(a) determining a temporary transfer function Ga (f) from a predetermined vibration noise pattern and an output signal Y(t) produced by a vibration detector attached to the motor vehicle, when the motor vehicle is vibrated by applying said predetermined vibration noise pattern to a vibrator that vibrates the vehicle;

5,572,441

DATA CONNECTOR FOR PORTABLE DEVICES

Robert A. Bole, Westfield, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 4, 1994, Ser. No. 222,220

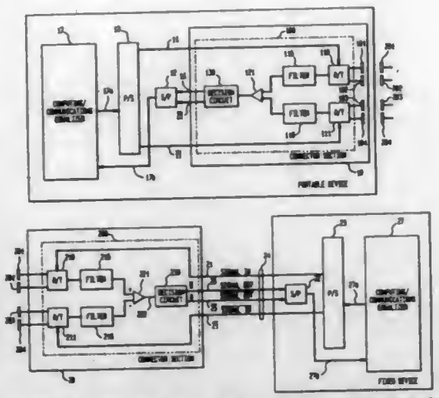
Int. Cl.[6] G06K *15/00*

U.S. Cl. 364—514 R **13 Claims**

1. A first connector section adapted to be mated to a second connector section, said first and second connector sections together comprising a connector for a computing or communications device, said first connector section comprising

a first coupling plate which, when said first and second connector sections are mated, forms a first capacitor with a corresponding first coupling plate in said second connector section, and

circuitry for applying outgoing signals to said first coupling plate in such a way that said outgoing signals are coupled through said first capacitor to said second connector section,



circuitry for detecting incoming signals received at said first coupling plate in response to signals coupled through said first capacitor from said second connector section, said detecting circuitry including means for filtering said received incoming signals with a signal-transition-detection matched filter, means responsive to the level of said filtered signals for generating time window signals, means for differentiating said filtered signals, and means for replicating said signals coupled from said second connector section as a function of zero-crossings of said differentiated signals which occur during said time window signals, and

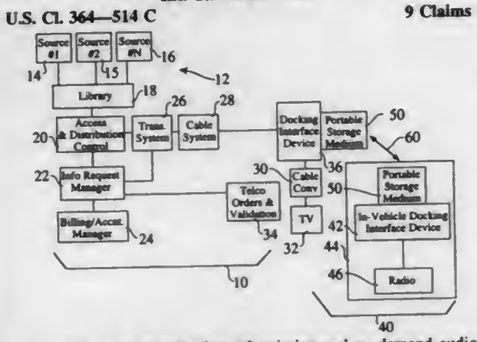
said device including a housing, and the entirety of said first connector section being contained wholly within said device housing.

5,572,442

SYSTEM FOR DISTRIBUTING SUBSCRIPTION AND ON-DEMAND AUDIO PROGRAMMING

Nathan Schulhof, Los Gatos, and James M. Janky, Los Altos, both of Calif., assignors to Information Highway Media Corporation, Cupertino, Calif.

Filed Jul. 21, 1994, Ser. No. 279,243
Int. Cl.[6] H04N *5/268*
U.S. Cl. 364—514 C **9 Claims**



1. A system for distributing subscription and on-demand audio programming comprising:

a library containing a pluality of audio program materials stored in a digital format:

a program selection module that allows a subscriber to request program materials contained within said library:

an information request manager that selects program materials chosen by said subscriber from said library and that forwards said selected program material to a data transmission system for distribution to the subscriber at rates faster than real time wherein said information request manager sorts said subscriber library requests into bins to determine the number of subscriber requests for each program in said library, fetches a copy of the requested program, queues the program, and commands transfer of the program to said data transmission system, and wherein said information request manager stores subscriber addresses in said bins to track the subscriber address of each subscriber who has requested a particular program;

and further comprising:

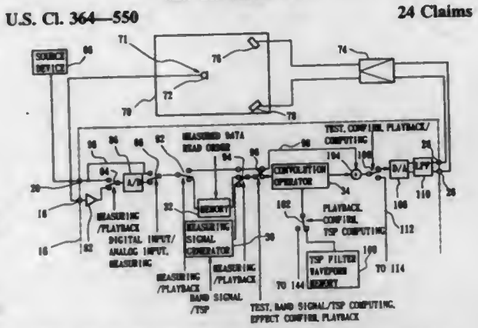
a counter for determining when a preset number of subscriber requests is reached in each bin, such that said information request manager activates a program transfer routine when said preset number is reached.

5,572,443

ACOUSTIC CHARACTERISTIC CORRECTION DEVICE

Naohiro Emoto, and Tsugio Ito, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed May 5, 1994, Ser. No. 238,510
Claims priority, application Japan, May 11, 1993, 5-132756; Jul. 16, 1993, 5-198977; Jnl. 22, 1993, 5-201765; Jul. 22, 1993, 5-201766; Jul. 29, 1993, 5-207281; Sep. 21, 1993, 5-257596
Int. Cl.[6] H03G *5/00*
U.S. Cl. 364—550 **24 Claims**



1. An acoustic characteristic correction device comprising:

desired frequency-amplitude (gain) characteristic setting means for setting, on the basis of an operation by an operating person, a desired frequency-amplitude (gain) characteristic of a response characteristic in a reproduction system including a sound field;

desired frequency-amplitude (gain) characteristic display means for graphically displaying the set desired frequency-amplitude (gain) characteristic to assist the operation by the person;

measured frequency-amplitude (gain) characteristic input means for inputting information of a measured frequency-amplitude(gain) characteristic of the response characteristic of the reproduction system including the sound field:

correction frequency-amplitude (gain) characteristic computing means for computing a correction frequency-amplitude (gain) characteristic for realizing the desired frequency-amplitude (gain) characteristic on the basis of tile desired frequency-amplitude (gain) characteristic and the measured frequency-amplitude (gain) characteristic; and

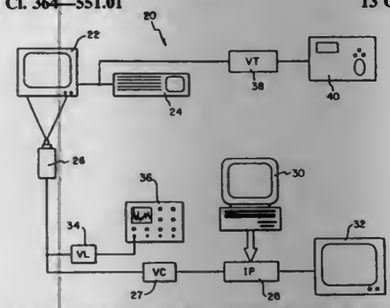
correction frequency-amplitude (gain) characteristic imparting means for imparting the computed correction frequency-amplitude (gain) characteristic to a sound signal to be reproduced.

5,572,444

METHOD AND APPARATUS FOR AUTOMATIC PERFORMANCE EVALUATION OF ELECTRONIC DISPLAY DEVICES

Louis F. Lentz, Beaver Creek; Michael W. Shellhause, Vandalia, and John H. Harshbarger, Jr., Xenia, all of Ohio, assignors to MTL Systems, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 932,364, Aug. 19, 1992, Pat. No. 5,351,201. This application Aug. 8, 1994, Ser. No. 287,539
The portion of the term of this patent subsequent to Sep. 27, 2011, has been disclaimed.
Int. Cl.[6] G01R *31/00*
U.S. Cl. 364—551.01 **13 Claims**



1. A method for automatically evaluating the performance of an electronic video display device, said method comprising the steps of:

generating a time sequenced plurality of test stimuli and inputting said test stimuli sequence to the video display device for display of respective test images thereon, said test stimuli sequence defining an embedded code;

providing a processor capable of recognizing said embedded code;

sensing said plurality of test stimuli and outputting signals corresponding thereto to said processor;

analyzing said test stimuli in the sequence defined by said embedded code with said processor, to evaluate the performance of the video display device; and

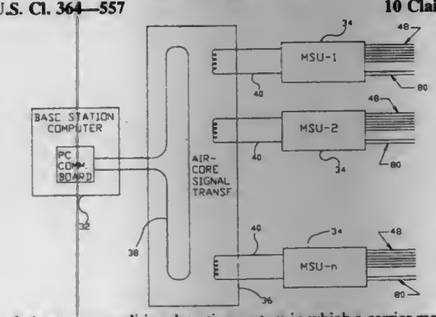
providing by means of an output device an indication of the performance of the video display device.

5,572,445

INDUSTRIAL MOBILE PROCESS MONITOR SYSTEM

William B. Shook, Columbus; Dennis R. Pugh, Galena, and Karl W. Olson, Worthington, all of Ohio, assignors to American Ceramic Service Company, Columbus, Ohio

Continuation of Ser. No. 991,285, Dec. 15, 1992, Pat. No. 5,416,727. This application Aug. 10, 1994, Ser. No. 288,567
Int. Cl.[6] G01K *7/00*
U.S. Cl. 364—557 **10 Claims**



1. A process condition detection system in which a carrier moves material along a path of said process, comprising:

a mobile sensor unit associated with said carrier, said sensor adapted to move in association with said carrier to detect a measurable condition at various locations within or near said material;

a signal transmitter in association with said mobile sensor unit liar transmitting signals characterizing said measurable condition detected by said mobile sensor unit, via an air core signal transformer including a primary winding along said path, and a secondary winding connected to said carrier, such that communication is established via magnetic energy linking said primary and said secondary windings, said transmitter adapted to enable transmitting from said mobile sensor unit at substantially all points along said path independent of any restriction of transmitting at set locations along said path, to a conductor which conveys said transmitted signals to a station spaced a distance apart from said path; and

a communication circuit at said station for receiving said measurable condition transmitted signals, and generating output characterizing said condition.

5,572,446

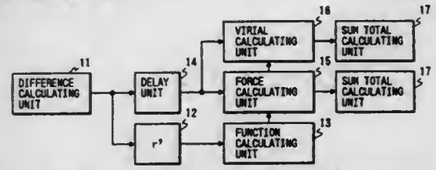
Patent Not Issued For This Number

5,572,447

COORDINATE DIFFERENCE CALCULATING DEVICE

Shinjiro Toyoda; Hitoshi Ikeda; Eiri Hashimoto, and Nobuaki Miyakawa, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1993, Ser. No. 160,800
Claims priority, application Japan, Dec. 4, 1992, 4-325682; Dec. 4, 1992, 4-325683
Int. Cl.[6] G01N *15/02*; G01B *21/16*
U.S. Cl. 364—561 **11 Claims**



1. A device for aiding in the making of determinations of properties of matter based on calculation of differences $\Delta x_j = x_j - x_i$, $\Delta y_j = y_j - y_i$, and $\Delta z_j = z_j - z_i$ between respective first particle coordinates of i having (x_i, y_i, z_i) coordinate signals and respective second particle coordinates of j having (x_j, y_j, z_j) coordinate signals in an orthogonal coordinate system, where i is an arbitrary point and j is one of inner points each regularly located within each of virtual rectangular parallelepipeds regularly stacked, j being located in a same rectangular parallelepiped as the point of i is located, and generating differences $\Delta x_j = x_j - x_i$, $\Delta y_j = y_j - y_i$, $\Delta z_j = z_j - z_i$, where x_j is a coordinate of the nearest point among said inner points from said point of i with respect to an x-axis, y_j is a coordinate of the nearest point among said inner points from said point of i with respect to an y-axis, and z_j is a coordinate of the nearest point among said inner points with respect to a z-axis, comprising:

an x-axis circuit, responsive to the x_i and x_i signals, comprising:

a first circuit for receiving the x_i coordinate signal and the x_j coordinate signal and generating the Δx_j;

a comparison circuit for comparing the x_i and x_j signals and determining whether the Δx_j is less than a first set value $-L_x/2$ corresponding to a length of a side of the virtual rectangular parallelepiped or greater than a second set value $L_x/2$ corresponding to the length of the side of the virtual rectangular parallelepiped, L_x being a value indicating the length of an elongated side in the x-axis direction of the virtual rectangular parallelepiped;

an adder circuit for receiving the L_x and Δx_j and adding the L_x to Δx_j and outputting a result as said difference $\Delta x_j=x_j-x_j$ when Δx_j is less than $-L_x/2$;

a subtraction circuit for receiving the L_x and Δx_j and subtracting L_x from Δx_j and outputting a result as said difference $\Delta x_j=x_j-x_i$ when Δx_j is greater than $L_x/2$; and

said first circuit outputting the Δx_j as said difference $\Delta x_j=x_j-x_i$ when Δx_j is equal to or more than $-L_x/2$ and equal to or less than $Li/2$;

a y-axis circuit, responsive to the y_i and y_j signals, comprising:

a second circuit for receiving the y_i coordinate signal and the y_j coordinate signal and generating the Δy_j;

a comparison circuit for comparing the y_i and y_j signals and determining whether the Δy_j is less than a first set value $-L_y/2$ corresponding to a length of a side of the virtual rectangular parallelepiped or greater than a second set value $L_y/2$ corresponding to the length of the side of the virtual rectangular parallelepiped, L_y being a value indicating the length of an elongated side in the y-axis direction of the virtual rectangular parallelepiped;

an adder circuit for receiving the L_y and Δy_j and adding the L_y to Δy_j and outputting a result as said difference $\Delta y_j=y_j-y_i$ when Δy_j is less than $-L_y/2$;

a subtraction circuit for receiving the L_y and ΔL_y and Δy_j and subtracting L_y from Δy_j and outputting a result as said difference $\Delta y_j=y_j-y_i$ when Δy_j is greater than $L_y/2$; and

said second circuit outputting the Δy_j as said difference $\Delta y_j=y_j-y_i$ when Δy_j is equal to or more than $-L_y/2$ and equal to or less than $L_y/2$; and

a z-axis circuit, responsive to the z_i and z_j signals, comprising:

a third circuit for receiving the z_i coordinate signal and the z_j coordinate signal and generating the Δz_j;

a comparison circuit for comparing the z_i and z_j signals and determining whether the Δz_j is less than a first set value $-L_z/2$ corresponding to a length of a side of a virtual rectangular parallelepiped or greater than a second set value $L_z/2$ corresponding to the length of the side of the virtual rectangular parallelepiped, L_z being a value indicating the length of an elongated side in the z-axis direction of the virtual rectangular parallelepiped;

an adder circuit for receiving the L_z and Δz_j and adding the L_z to Δz_j and outputting a result as said difference $\Delta z_j=z_j-z_i$ when Δz_j is less than $-L_z/2$;

a subtraction circuit for receiving the L_z and Az_j and subtracting L_z from Δz_j and outputting a result of said difference $\Delta z_j=z_j-z_i$ when Δz_j is greater than $L_z/2$; said third circuit outputting the Δz_j as said difference $\Delta z_j=z_j-z_i$ when Δz_j is equal to more than $-L_z/2$ and equal to or less than $L_z/2$.

5,572,448

ENHANCED RESOLUTION IMAGING AND MEASUREMENT SYSTEMS

Neil H. Judell, Andover, Mass., assignor to Technology Development Group, Inc.

Continuation-in-part of Ser. No. 977,684, Nov. 18, 1992, Pat. No. 5,420,803. This application Nov. 18, 1993, Ser. No. 154,363

Int. Cl.[6] G01B *15/00*

U.S. Cl. 364—563 **25 Claims**

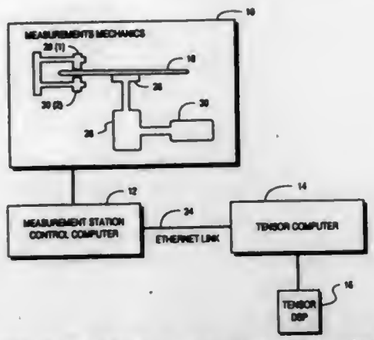
11. An ultrasound imaging system for generating an enhanced resolution ultrasound image of internal structure of an object, said ultrasonic imaging system comprising:

a housing;

a transducer inside of the housing for sending and receiving acoustic signals;

a motor drive positioning the transducer to selected angles within a range of possible angles;

measurement control circuitry controlling the motor drive, sending ultrasonic pulses through the transducer and receiving echoes from the object, said measurement control circuitry generating a plurality of vectors of ultrasonic data, each



vector of said plurality of vectors representing a plurality of signal samples for a given angle of said transducer, each vector of said plurality of vectors representing a different angle of said transducer, said plurality of vectors being represented by a measured column tensor;

a memory for storing the measured column tensor; and

a computer programmed to left multiply the measured column tensor stored in said memory by a reconstruction tensor T to obtain an estimate of a desired measurement column tensor, wherein said reconstruction tensor T is equal to $R_{dm}R_{mmm}^{-1}$, being a cross-covariance tensor computed for d, a desired measurement column tensor, and m, the measured column tensor, and R_{mmm} being an auto-covariance tensor computed for m, the measured column tensor, and wherein the estimate of a desired measurement column tensor represents an estimate of measurements that would be obtained from an hypothetical transducer having a higher resolution than said first mentioned transducer.

5,572,449

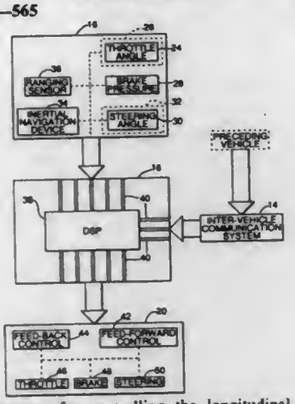
AUTOMATIC VEHICLE FOLLOWING SYSTEM

Qing Tang; Wei-Ping Wang; Zhongxue Gan; Ruiming Zhang, all of Storrs, Conn., and John Moh, Freshmeadows, N.Y., assignors to VI&T Group, Inc., Freshmeadows, N.Y.

Filed May 19, 1994, Ser. No. 245,865

Int. Cl.[6] B60T *7/16*

U.S. Cl. 364—565 **26 Claims**



1. An apparatus for controlling the longitudinal and lateral motion of a following vehicle to follow the path of a preceding vehicle, comprising:

first means for generating first signals indicative of a state vector comprising velocity and position vector components of the preceding vehicle, wherein each position vector component is derived by integrating the corresponding velocity vector component with respect to time;

second means for generating second signals indicative of a state vector comprising velocity and position vector components of the following vehicle, wherein each position vector component is derived by integrating the corresponding velocity vector component with respect to time; and

third means for controlling the longitudinal and lateral motion of the following vehicle by generating a performance index based on an integration with respect to time of the differences between the state vector components of a first signal at a first time and the corresponding state vector components of a second signal at a second time following the first time controlling the speed and steering of the following vehicle such that the performance index is less than a predetermined value to cause the following vehicle to follow the path of the preceding vehicle.

5,572,450

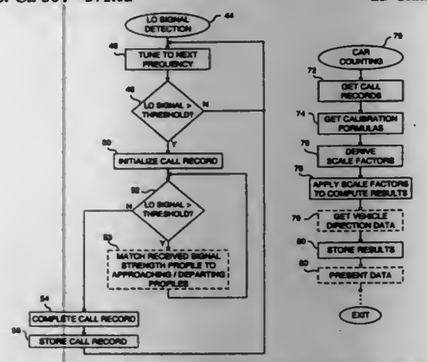
RF CAR COUNTING SYSTEM AND METHOD THEREFOR

David G. Worthy, 819 E. Vaughn, Gilbert, Ariz. 85234

Filed Jun. 6, 1995, Ser. No. 471,416

Int. Cl.[6] G01C *25/00*

U.S. Cl. 364—571.02 **22 Claims**



1. A car counting method, based upon survey data, for estimating the number of vehicles passing a testing site during a testing period, said method comprising the steps of:

detecting local oscillator (LO) signals emitted from a portion of said vehicles, said portion of vehicles having tuners located therein;

maintaining an LO count of said detected LO signals; and

performing a data translation operation on said LO count to estimate the number of said vehicles passing said testing site during said testing period.

5,572,451

ORDERING OF NETWORK LINE SEGMENTS, IN PARTICULAR FOR CALCULATION OF INTERFERENCES BETWEEN LINES IN AN ELECTRICAL NETWORK

Stéphane Charruau, Eysines, France, assignor to Sextant Avionque, Meudon la Foret, France

Filed Apr. 22, 1993, Ser. No. 51,901

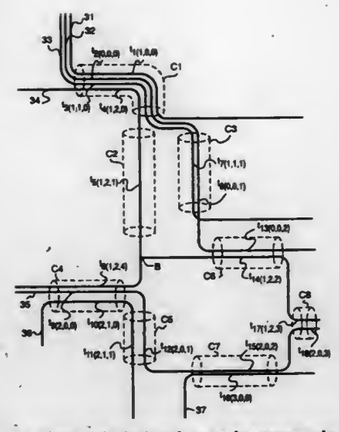
Claims priority, application France, Apr. 24, 1992, 92 05061

Int. Cl.[6] G06F *17/50;17/12;17/13*

U.S. Cl. 364—578 **10 Claims**

1. In a method for simulating crosstalk interference of adjacently situated network lines by analyzing non-zero elements of a global matrix having corresponding ordered network line segments, the ordering of line segments comprising the steps:

determining which segments experience interference;



assigning a single principal rank to each segment, the principal ranks between segments that interfere with one another being incremented and differing by no more than 1 thus simplifying the global matrix;

non-zero elements of the global matrix being grouped around a diagonal of the matrix;

the principal ranks of all segments of a single line being the same; and

an origin principal rank zero being assigned to the segments of a single line of the network, wherein at least one of the segments of the line experiences interference with at least one other segment in another line.

5,572,452

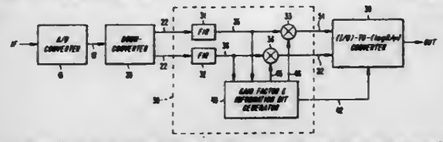
FILTER WITH FEED-FORWARD AGC

Leif T. Östman, SpÅnga; Magnus A. H. Gustafsson, and Anders W. Järleholm, both of Sollentuna, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Feb. 3, 1995, Ser. No. 383,589

Int. Cl.[6] G06F *7/38*

U.S. Cl. 364—724.16 **28 Claims**



1. A device for transferring a processed signal having a predetermined dynamic range comprising:

a signal converter for converting a digitized signal into a digitally sampled signal having baseband inphase and quadrature (I/Q) signal components;

a digital signal processor for developing the processed signal responsive to said digitally sampled signal input thereto, said digital signal processor including multiplying means for multiplying said digitally sampled signal by an amplification factor wben said digitally sampled signal is below a threshold value, and said digital signal processor generates an information bit on a sample to sample basis indicative of the processed signal being multiplied by said amplification factor; and

an (I/Q)-to-(logR/ϕ) converter for modifying the processed signal in response to said information bit generated by said digital signal processor so that the precision of the predetermined dynamic range of the processed signal is achieved.

VOL 1192 ISS 1 NO 5 1996 UMI

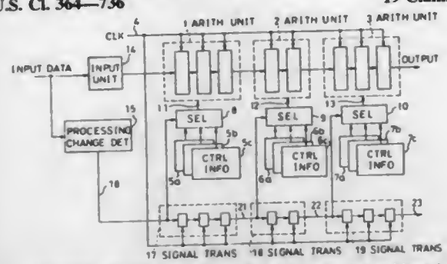
VOL 1192 ISS 1 NO 5 1996 UMI

5,572,453

PIPELINE SIGNAL PROCESSOR

Jiro Miyake; Kazuki Ninomiya, and Tamotsu Nishiyama, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 13, 1995, Ser. No. 387,241
Claims priority, application Japan, Feb. 14, 1994, 6-017363
Int. Cl.[6] G06F 7/48
U.S. Cl. 364—736 19 Claims



1. A signal processor for sequentially performing arithmetical processing on data carried by an input data signal, said signal processor comprising:

plural arithmetic units connected in series, each said arithmetic unit receiving data from a preceding stage, performing a process of arithmetical operations on said received data, and providing a result of said process to a subsequent stage;

plural hold circuits for holding control information;

plural transfer circuits connected in series for performing sequential transfer of a selection signal according to a flow of said data through said plural arithmetic units, each said transfer circuit receiving said selection signal from a preceding stage and delaying transfer of said received selection signal to a subsequent stage by a proportional interval of time to a processing time of a corresponding one of said plural arithmetic units; and

plural selection circuits for controlling the switching of said arithmetical operations in each said arithmetic unit according to said data flow, each said selection circuit receiving a selection signal identical with one inputted to a corresponding one of said plural transfer circuits, selecting among said plural hold circuits according to said received selection signal and fetching control information held in a selected one of said plural hold circuits, and providing said fetched control information to a corresponding one of said plural arithmetic units.

5,572,454

MODULO REDUCTION METHOD USING A PRECOMPUTED TABLE

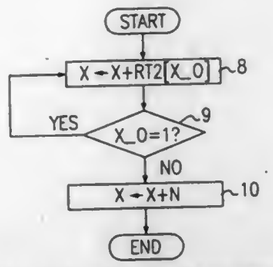
Yun H. Lee; Chung R. Jang, and Myung S. Lee, all of Seoul, Rep. of Korea, assignors to Korea Telecommunication Authority, Seoul, Rep. of Korea

Filed Dec. 5, 1994, Ser. No. 353,266
Claims priority, application Rep. of Korea, Dec. 6, 1993, 1993-26632
Int. Cl.[6] G06F 7/00
U.S. Cl. 364—746.1 3 Claims

1. A computer implemented method for modulo reduction of a first integer having k bits, larger than a second integer having n bits, the computer storing a precomputed table of numbers in memory, the method comprising:

(a) searching the precomputed table of values stored in memory with the computer for a stored upper k-n bits number of the first integer, and adding the stored upper k-n bits number of the first integer to a lower n bits number of the first integer with the computer;

(b) if the addition of the stored upper k-n bits number of the first integer with the lower n bits number of the first integer in step (a) produces an overflow, eliminating the overflow with the computer; and



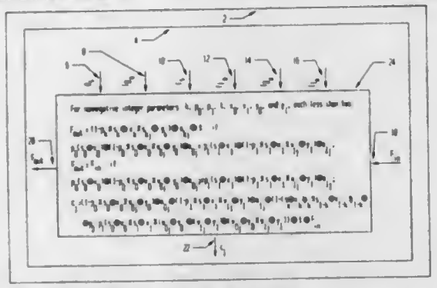
(c) if the addition of the stored upper k-n bits number of the first integer with the lower n bits number of the first integer in step (a) does not produce an overflow, adding the second integer to the result of the addition in step (a) with the computer.

5,572,455

ADDER-SUBTRACTOR DEVICE AND METHOD FOR MAKING THE SAME

Tadeusz Blichowski, 2718 W. Julia Ct., Chicago, Ill. 60647-4013

Continuation-in-part of Ser. No. 123,731, Dec. 1, 1993, abandoned. This application Nov. 2, 1994, Ser. No. 333,568
Int. Cl.[6] G06F 7/50
U.S. Cl. 364—746.2 27 Claims



1. An adder-subtractor device comprising:

a jth device for each bit position j for computing a result c for an expression $c=\pm a_0\pm a_1$ where a_0 and a_1 are binary numbers, the jth device being from a group consisting of devices defined by formulas using integer parameters k, p_0, p_1, t, x_0, x_1, y_0, and y_1, each said parameter having a nonnegative integer value that is less than two, the jth device including:

a line carrying an input s_0 representing x_0 when the sign at the a_0 number in the expression is positive, and representing $1-x_0$ when the sign at the a_0 number in the expression is negative;

a line carrying an input a_{0j} representing a jth digit of the a_0 number;

a line carrying an input s_1 representing x_1 when the sign at the a_1 number in the expression is positive, and representing $1-x_1$ when the sign at the a_1 number in the expression is negative;

a line carrying an input a_{1j} representing a jth digit of the a_1 number;

the jth device further including a line carrying an input $w_{0j}=1-y_0$ when $s_0=1-x_0$ and if any previous bit position of the a_0 number is 1, and $w_{0j}=y_0$ when $s_0=1-x_0$ and there is no 1 on any previous bit position, and w_{0j} has a nonnegative integer value that is less than 2 when $s_0=x_0$;

the jth device further including a line carrying an input $w_{1j}=1-y_1$ when $s_1=1-x_1$ and if any previous bit position of the a_1 number is 1, and $w_{1j}=y_1$ when $s_1=1-x_1$ and there is no 1 on any previous bit position, and w_{1j} has a nonnegative integer value that is less than 2 when $s_1=x_1$;

at least one line carrying a forward input F_{in};

at least one line carrying a forward output F_{out};

a line carrying an output c_j representing a jth digit of the result from computing the expression $\pm a_0\pm a_1$; and

a plurality of switches, between the lines, for directing to the forward output F_{out} a bit value, according to a first of said formulas:

$$F_{out}=(1-p_k)(s_k\oplus x_k)(w_{kj}\oplus y_k)\oplus a_{kj}\oplus t \text{ only if}$$

$$p_0(s_0\oplus x_0)\oplus(1-p_0)(s_0\oplus x_0)(w_{0j}\oplus y_0)\oplus a_{0j}=p_1(s_1\oplus x_1)\oplus(1-p_1)(s_1\oplus x_1)(w_{1j}\oplus y_1)\oplus a_{1j},$$

the plurality of switches also for directing the forward input F_{in} to the output c_j such that the output is according to a second of said formulas:

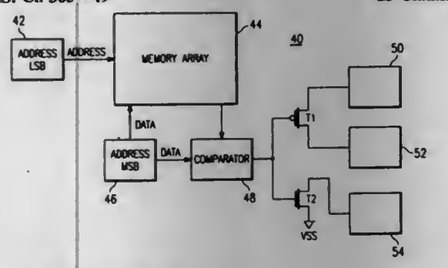
$$c_j=(1-p_0)(s_0\oplus x_0)(w_{0j}\oplus y_0)\oplus a_{0j}\oplus(1-p_1)(s_1\oplus x_1)$$
$$(w_{1j}\oplus y_1)\oplus a_{1j}\oplus(1-(s_k\oplus x_k)p_k(s_{1-k}\oplus x_{1-k})p_{1-k}\oplus t\oplus F_{in}$$
$$\oplus p_0 p_1(s_0\oplus x_0)(s_1\oplus x_1)((w_{0j}\oplus y_0)\oplus(w_{1j}\oplus y_1)\oplus(w_{0j}\oplus y_0)(w_{1j}\oplus y_1)).$$

5,572,456

DISTRIBUTED NOR TAG MATCH APPARATUS

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Aug. 31, 1993, Ser. No. 114,747
Int. Cl.[6] G11C 15/04
U.S. Cl. 365—49 23 Claims



1. A tag RAM comprising:

a first input for receiving a first portion of an address;

a second input for receiving data;

a first pin;

a second pin;

an output pin;

a memory array connected to the first and second inputs;

a comparator connected to the memory array and the second input, wherein the comparator has an output that produces an output signal in response to receiving a first signal from the second input and a second signal from the memory array;

a first transistor having a gate connected to the comparator output, a first source/drain connected to the first pin, and a second source/drain connected to the second pin; and

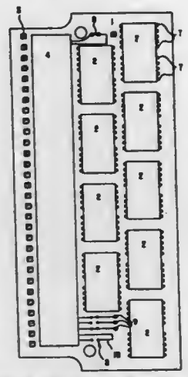
a second transistor having a gate connected to the comparator output, a first source/drain connected to the output pin, and a second source/drain connected to a lower power supply voltage source.

5,572,457

MODULE BOARD INCLUDING CONDUCTOR TRACKS HAVING DISCONNECTABLE CONNECTING ELEMENTS

Ewald Michael, Haar, Germany, assignor to Siemens Aktiengesellschaft, Muenchen, Germany

Filed Jul. 5, 1995, Ser. No. 498,165
Claims priority, application Germany, Jul. 5, 1994, 44 23 567.4
Int. Cl.[6] G11C 5/06
U.S. Cl. 365—52 9 Claims



1. A module board in the form of a circuit board, comprising:

at least one first integrated circuit;

terminal points for said at least one first integrated circuit;

external terminals for input/output signals;

conductor tracks having disconnectable connecting elements for connection between said external terminals and said terminal points; and

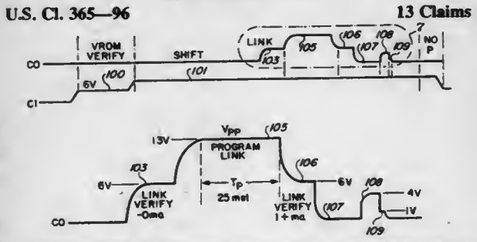
a second integrated circuit disposed between said external terminals and said terminal points for differently varying the input/output signals traveling between said terminal points and said external terminals in dependence on a status of said disconnectable connecting elements.

5,572,458

MULTI-LEVEL VROM PROGRAMMING METHOD AND CIRCUIT

Tyler M. Smith, Gilbert; Paul S. Levy, Chandler, both of Ariz., and James L. Hickey, Danville, Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 269,804, Jun. 30, 1994, Pat. No. 5,469,379. This application Nov. 3, 1995, Ser. No. 552,686
Int. Cl.[6] G11C 17/00
U.S. Cl. 365—96 13 Claims



1. A method for programming and verifying the programming of vROM memories fabricated with fusible links between two metal layers wherein a programming voltage greater than a normal operating voltage is used selectively to fuse links between said two metal layers, said method including the steps of:

selecting a fusible link in said memory to be programmed;

checking first current flow at a first voltage through said selected fusible link to determine whether said selected fusible link is already programmed;

applying a programming voltage higher than said first voltage across said selected fusible link for a predetermined time to fuse an electrically conductive link between said two metal layers at said selected fusible link;

allowing said fusible link to cool;

applying an annealing voltage not greater than said first voltage across said fusible link for a second predetermined period of time to re-establish said electrically conductive link in the event a fine filament fracture occurred during said cooling step; and

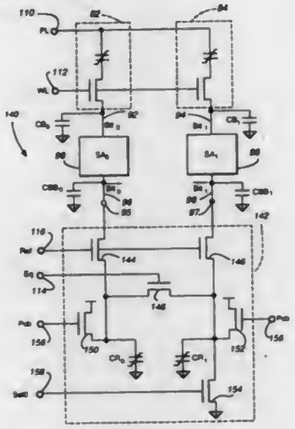
checking second current flow through said selected fusible link to verify said two metal layers are electrically interconnected at said selected fusible link.

5,572,459

VOLTAGE REFERENCE FOR A FERROELECTRIC 1T/1C BASED MEMORY

Dennis R. Wilson, Black Forest, and H. Brett Meadows, Colorado Springs, both of Colo., assignors to Ramtron International Corporation, Colorado Springs, Colo.

Filed Sep. 16, 1994, Ser. No. 306,686
Int. Cl.[6] G11C *11/22*
U.S. Cl. 365—145 **18 Claims**



1. A reference cell for use in a ferroelectric memory including an array of 1T-1C memory cells, the reference cell comprising:

first and second voltage reference outputs each coupled to a bit line in the array, each bit line in turn being coupled to a single sense amplifier in the array;

first and second ferroelectric capacitors;

means for coupling the first and second ferroelectric capacitors to the first and second voltage reference outputs;

means for establishing a charge on one of the ferroelectric capacitors; and

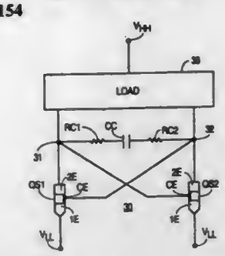
means for equally distributing the charge across both of the ferroelectric capacitors to create a substantially equal reference voltage on both of the voltage reference outputs.

5,572,460

STATIC RANDOM-ACCESS MEMORY CELL WITH CAPACITIVE COUPLING TO REDUCE SENSITIVITY TO RADIATION

Chuen-Der Lien, Mountain View, Calif., assignor to Integrated Device Technology, Inc., Santa Clara

Filed Oct. 26, 1993, Ser. No. 143,321
Int. Cl.[6] G11C *11/00*
U.S. Cl. 365—154 **35 Claims**



1. A static memory cell comprising:

like-polarity first and second storage transistors, each having a first flow electrode, a second flow electrode, and a control electrode for controlling current flow between the flow electrodes, the second flow electrodes of the first and second storage transistors being cross coupled with their control electrodes for storing a bit of information;

a load coupled to the second flow electrodes;

a non-parasitic capacitor coupled between the second flow electrodes; and

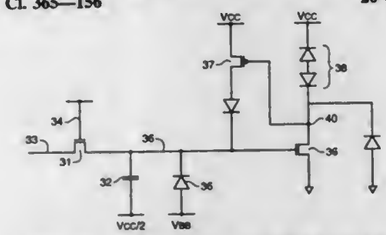
first and second resistors coupled between the second electrodes in series with the capacitor on opposite sides of the capacitor.

5,572,461

STATIC RANDOM ACCESS MEMORY CELL HAVING A CAPACITOR AND A CAPACITOR CHARGE MAINTENANCE CIRCUIT

Fernando Gonzalez, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Feb. 14, 1995, Ser. No. 388,873
Int. Cl.[6] G11C *11/00*
U.S. Cl. 365—156 **20 Claims**



1. A static random access memory cell fabricated on a silicon substrate, said substrate being held at a potential no greater than ground potential, said cell comprising:

(a) a first bus for receiving a power supply voltage;

(b) a second bus carrying a voltage no higher than ground potential;

(c) an access transistor having a first source/drain region which functions as a digit line contact, and a second source/drain region which functions as a storage node contact, said transistor also having channel controlled by a voltage applied to a control gate;

(d) a parasitic diode formed between the second source/drain region and the substrate, said parasitic diode having a leakage current within a characteristic range when said second source/drain region is brought to a voltage level of about ground potential;

(e) a resistive element;

(f) a pull-down transistor having a gate and a channel;

(g) a thin film transistor having a gate and a channel, the gate of said thin film transistor being coupled both to said first bus via said resistive element and to said second bus via the channel of said pull-down transistor, said thin film transistor having an "OFF" leakage current within a range that is less than the characteristic leakage current range of the parasitic diode; and

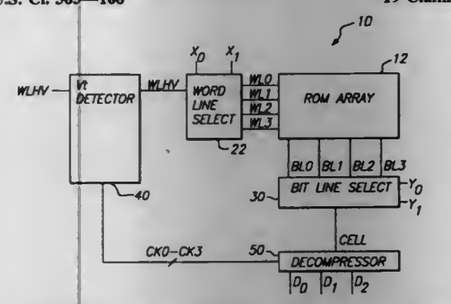
(h) a node for storing a high voltage level representative of a first digital data state or a low voltage level representative of a second digital data state, said node being coupled to the digit line contact via the channel of said access transistor, to the substrate via said parasitic diode, to the said pull-down transistor gate, and to said first bus via the channel of said thin film transistor.

5,572,462

MULTISTATE PROM AND DECOMPRESSOR

Peter W. Lee, Saratoga, Calif., assignor to Aplus Integrated Circuits, Inc., Saratoga, Calif.

Filed Aug. 2, 1995, Ser. No. 510,259
Int. Cl.[6] G11C *11/56*
U.S. Cl. 365—168 **19 Claims**



1. A multistate PROM and decompressor comprising the combination of:

a PROM array including a plurality of cells arranged to have a plurality of wordlines and a plurality of bitlines, where each cell is configured to have one of a plurality of threshold voltages;

a Vt-detector coupled to the PROM array, said Vt-detector configured to receive a high voltage wordline (WLHV) signal, configured to compare the WLHV signal to a plurality of predetermined thresholds and configured to output a detector word in response to the WLHV signal;

a wordline selector coupled to the PROM array, said wordline selector configured to receive the WLHV signal and configured to communicate the WLHV signal to a selected wordline in response to a wordline select signal;

a bitline selector coupled to the PROM array, said bitline selector configured to select a selected bitline carrying a bitline signal in response to a bitline select signal;

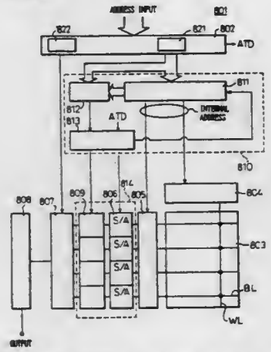
a decompressor coupled to said Vt-detector and said bitline selector and configured to receive said detector word and said bitline signal, and configured to generate a data signal when the bitline signal is activated.

5,572,463

NONVOLATILE SEMICONDUCTOR MEMORY WITH PRE-READ MEANS

Takao Akaogi; Masanobu Yoshida, both of Kawasaki; Yasushige Ogawa, Kasugai; Yasushi Kasa, and Shouichi Kawamura, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 268,580, Jul. 6, 1994, Pat. No. 5,487,036, which is a division of Ser. No. 996,942, Dec. 28, 1992, Pat. No. 5,490,107. This application Apr. 4, 1995, Ser. No. 416,281
Claims priority, application Japan, Dec. 27, 1991, 3-346663; May 28, 1992, 4-137080; Jul. 20, 1992, 4-191793; Sep. 17, 1992, 4-248023; Oct. 9, 1992, 4-271869; Oct. 13, 1992, 4-274355; Dec. 3, 1992, 4-324302; Dec. 4, 1992, 4-325544
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—185.01 **12 Claims**



1. A semiconductor memory having address buffer means, memory cell means, word line selection means, bit line selection means, an output buffer, first address generation means connected to the address buffer means, for providing an address for specifying a group of data pieces, and second address generation means for providing addresses for specifying the data pieces, respectively, the semiconductor memory comprising:

first read means for selecting and reading a group of data pieces through one of the word line selection means and bit line selection means according to an address provided by the first address generation means;

second read means for selecting the data pieces, which have been selected and read according to the address provided by the first address generation means, through one of the bit line selection means and word line selection means according to addresses provided by the second address generation means and providing them to the output buffer; and

pre-read means for reading another group of data pieces according to another address to be provided by the first address generation means while the preceding data pieces are being read according to the preceding address provided by the first address generation means and being selectively provided to the output buffer according to the addresses provided by the second address generation means.

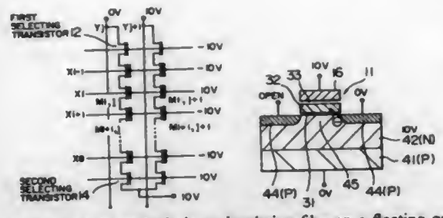
5,572,464

SEMICONDUCTOR MEMORY DEVICE AND METHOD OF USING THE SAME

Shoichi Iwasa, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 224,015, Apr. 6, 1994, abandoned. This application Apr. 3, 1995, Ser. No. 415,767
Claims priority, application Japan, Apr. 6, 1993, 5-103488
Int. Cl.[6] G11C *11/34*
U.S. Cl. 365—185.17 **4 Claims**

1. A method for using a semiconductor memory device having a plurality of memory cells series-connected to each other, each memory cell formed by a P-channel transistor in which a control



gate electrode is stacked via an insulating film on a floating gate electrode; a first selecting transistor having a source and a drain, one of the source and the drain being connected to one end of said plural memory cells series-connected to each other; a bit line connected to the other of the source and the drain of said first selecting transistor; a second selecting transistor having a source and a drain, one of the source and the drain being connected to the other end of said plural memory cells series-connected to the other; and a power source line connected to the other of the source and the drain of said second selecting transistor; said method comprising the steps of:

setting, to a positive value, a potential at a control gate electrode of a P-channel transistor forming a memory cell selected from said plurality of memory cells;

producing an avalanche breakdown at a drain junction of said P-channel transistor forming said selected memory cell; and

writing data into said selected memory cell by injecting electrons generated by the avalanche breakdown into a floating gate electrode of said P-channel transistor forming said selected memory.

5,572,465

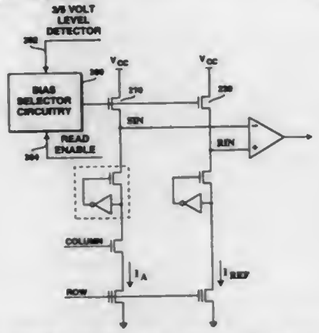
POWER SUPPLY CONFIGURED SENSING SCHEME FOR FLASH EEPROM

Amir Bashir, Folsom, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed May 25, 1995, Ser. No. 451,037

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.21 **17 Claims**



1. Bias selector circuitry for a memory cell sensing circuit, comprising:

a reference voltage generator;

a selector for providing a bias voltage to both a reference bitline load for controlling a reference bitline node voltage and a sense bitline load for controlling a sense bitline node voltage;

wherein the selector provides a first bias voltage to the reference and sense bitline loads if a power supply voltage is at a first level, wherein the selector selects the reference voltage generator to provide a second bias voltage to the reference and sense bitline loads if the power supply voltage is at a second level, wherein the reference bitline node voltage is maintained at approximately a midpoint of an operating range of the sense bitline node voltage.

5,572,466

FLASH MEMORY CHIPS

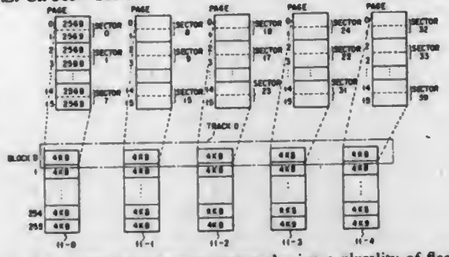
Hiroshi Sukegawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 6, 1993, Ser. No. 132,313

Claims priority, application Japan, Oct. 6, 1992, 4-267212

Int. Cl.[6] G11C *17/00*

U.S. Cl. 365—185.33 **10 Claims**



1. A semiconductor memory system having a plurality of flash EEPROM chips each having a function of write processing in response to a control signal, each memory area of said plurality of flash EEPROM chips being divided into a plurality of erasure blocks, said semiconductor memory system comprising:

assigning means for assigning sequential sector number sets to said plurality of erasure blocks so as to permit the sequential sector number sets to be sequentially assigned to said plurality of flash EEPROM chips according to the erasure block, a memory size of the each sequential sector number sets being equal to a memory size of the erasure block, and for holding address conversion information representing a correspondence of logical addresses having track numbers and sector numbers to real memory addresses of said plurality of flash EEPROM chips according to results of the assigning;

address converting means for converting the logical address designated by a host system, into the real memory address for accessing at least one of said plurality of flash EEPROM chips based on the address conversion information; and

control means for outputting the control signal to a first flash EEPROM chip of said plurality of flash EEPROM chips in accordance with the real memory address converted from the logical address by said address converting means and outputting the control signal to a second flash EEPROM chip of said plurality of flash EEPROM chips during write processing of the first flash EEPROM chip.

5,572,467

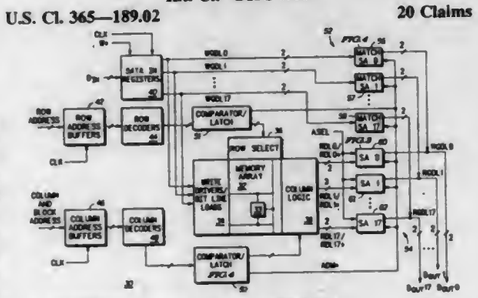
ADDRESS COMPARISON IN AN INTERGRATED CIRCUIT MEMORY HAVING SHARED READ GLOBAL DATA LINES

Hamed Ghasseml; Perry H. Pelley, III, and Scott G. Nogle, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 24, 1995, Ser. No. 426,995

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.02 **20 Claims**



1. An integrated circuit memory, comprising:

a memory array having a plurality of memory cells organized in a plurality of rows and a plurality of columns;

an input data register having an input terminal for receiving an input data signal, and an output terminal;

a first sense amplifier having an input terminal coupled to the output terminal of the input data register, and an output terminal;

a second sense amplifier having an input terminal coupled to the memory array, and an output terminal; and

a global data line, coupled to the output terminal of the first sense amplifier and to the output terminal of the second sense amplifier.

5,572,468

STORAGE READING APPARATUS

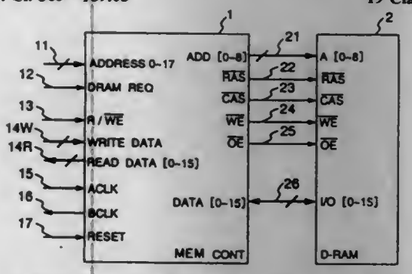
Iwao Ishinabe; Tadashi Saito, both of Koganei; Takashi Kataigi, Hamura; Yoshinobu Igarashi, Niiza, and Yukiko Midorikawa, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 3, 1995, Ser. No. 433,814

Claims priority, application Japan, May 19, 1994, 6-105479; Mar. 13, 1995, 7-052822; Apr. 19, 1995, 7-093867

Int. Cl.[6] G11C *7/00;8/00*

U.S. Cl. 365—189.05 **19 Claims**



1. A storage accessing circuit for accessing data in a storage means, said storage accessing circuit comprising:

means, connected to said storage means, for outputting an address signal to said storage means;

means for supplying a strobe signal indicating a signal timing for said address signal;

means for inputting data from said storage means, said data being valid during an assert period, while said strobe signal is outputted, and also during a non-assert period, while said strobe signal is not outputted, said data further being valid until subsequent data is outputted;

a data bus connected between said means for inputting data and said storage means;

a data write circuit connected to said data bus for outputting data via said data bus to said storage means;

a buffer means for separating said data write circuit from said data bus;

means for outputting predetermined data onto said data bus, during a period while said data write circuit is separated from said data bus, via said buffer means, said means for outputting predetermined data being connected to said data bus; and

a data input timing means for generating a data input timing signal, in accordance with said strobe signal, for inputting data from said storage means during said assert period and said non-assert period until the subsequent data is output from said storage means.

5,572,469

STATIC RANDOM ACCESS MEMORY DEVICE HAVING A SINGLE BIT LINE CONFIGURATION

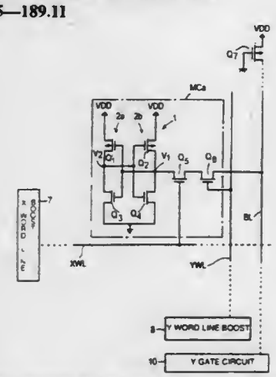
Kenji Anami; Toshihiko Hirose; Shuji Murakami; Kojiro Yuzuriha, and Tadato Yamagata, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 25,470, Mar. 3, 1993, Pat. No. 5,475,638. This application Jun. 6, 1995, Ser. No. 467,632

Claims priority, application Japan, Apr. 30, 1992, 4-111408; Jul. 29, 1992, 4-202603

Int. Cl.[6] G11C *11/40*

U.S. Cl. 365—189.11 **4 Claims**



1. The static random access memory device, comprising:

a memory cell array including a plurality of memory cells arranged in a plurality of rows and columns,

a plurality of bit lines, each being provided in a corresponding column in said memory cell array and connected to a memory cell in said corresponding one column,

wherein each of said memory cells comprises

data storage means having a single input/output node for storing a data signal provided via said input/output node,

said data storage means being applied with a supply voltage having a predetermined voltage level,

first and second field effect transistors connected in series between a bit line of a corresponding column and said input/output node,

first boosting means responsive to an externally applied write control signal for boosting the gate voltage of respective first field effect transistors in the memory cells of the row selected by a row address signal to a voltage level exceeding said supply voltage, and

second boosting means responsive to an externally applied write control signal for boosting the gate voltage of respective second field effect transistors in the memory cells of the column selected by a column address signal to a voltage level exceeding said supply voltage.

5,572,470

APPARATUS AND METHOD FOR MAPPING A REDUNDANT MEMORY COLUMN TO A DEFECTIVE MEMORY COLUMN

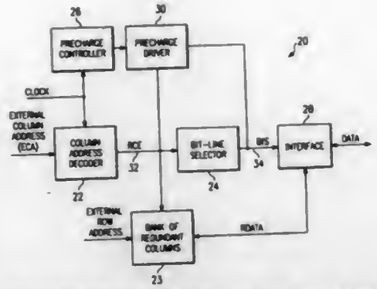
David C. McClure, Carrollton, and Thomas Teel, Austin, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed May 10, 1995, Ser. No. 438,349

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—200 **26 Claims**

1. Apparatus for mapping one of a plurality of redundant memory columns, each having a redundant memory cell, to an address of a defective memory column in a memory device that communicates with an external data bus having one or more data-bit lines and an address bus, comprising:



an address decoder operable to receive an address signal on said address bus and to generate an enable signal for enabling a redundant cell of said redundant column when the value of said address signal equals said address;

a bit-select bus having one or more bit-select lines each associated with one of said data-bit lines and operable to carry a bit-select signal;

a plurality of data-bit line selectors, each associated with one of said redundant columns, in communication with said bit-select bus, and, in response to said enable signal, operable to generate said bit-select signal on a bit-select line associated with a desired data-bit line; and

an interface circuit in communication with said external data and bit-select busses and operable to couple said redundant cell to said desired data-bit line in response to said bit-select signal.

5,572,471

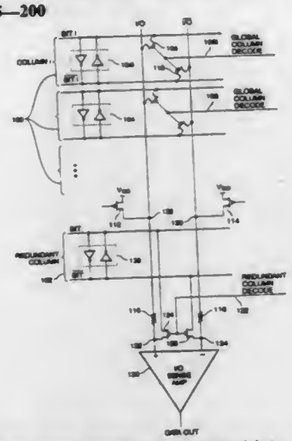
REDUNDANCY SCHEME FOR MEMORY CIRCUITS

Robert J. Proebsting, Los Altos Hills, Calif., assignor to Townsend and Townsend Khourie and Crew, San Francisco, Calif.

Division of Ser. No. 252,284, May 31, 1994, Pat. No. 5,495,445. This application Aug. 17, 1995, Ser. No. 515,616

Int. Cl.[6] G11C *11/40*

U.S. Cl. 365—200 **2 Claims**



1. A random access memory circuit comprising:

a main memory column select transistor for coupling a column line to a data line;

a data sense amplifier coupled to the data line; and

a redundant column select transistor for coupling a redundant column line to the data line,

wherein the redundant column select transistor has a larger channel width to length ratio than the main memory column select transistor, whereby a signal from the redundant column select transistor overrides a signal from the main memory column select transistor.

5,572,472

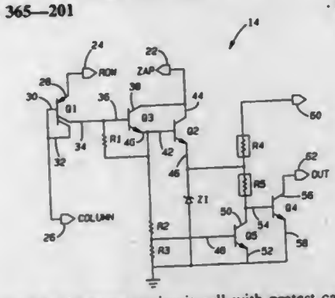
INTEGRATED ZENER-ZAP NONVOLATILE MEMORY CELL WITH PROGRAMMING AND PRETEST CAPABILITY

Mark B. Kearney, Kokomo; Dennis M. Koglin, Carmel; Douglas B. Osborn, Kokomo, and William P. Whitlock, Cicero, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Apr. 14, 1995, Ser. No. 421,774

Int. Cl.[6] G11C *29/00*

U.S. Cl. 365—201 **14 Claims**



1. An electronic memory circuit cell with pretest capability for testing an output of said memory cell prior to permanently programming said memory cell, comprising:

memory element means for storing binary information, said memory element means being permanently programmed when coupled to a programming voltage so as to provide a programmed binary signal at said output, said memory element means including a zener diode coupled to ground that is permanently overstressed when coupled to said programming voltage and functions as a low impedance shunt to ground;

voltage supply means operable for producing a pretest voltage and said programming voltage; and

test circuit means for producing said programmed binary signal at said output prior to permanently programming said memory element means and when coupled to said pretest voltage.

5,572,473

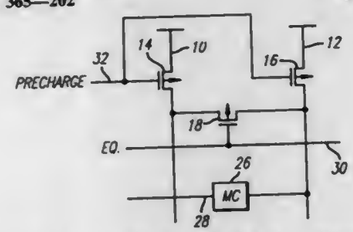
BIT LINE CONDITIONING CIRCUIT FOR RANDOM ACCESS MEMORY

Peter D. Robertson, Fremont, Calif., assignor to Sony Corporation of Japan, and Sony Electronics, Inc., Park Ridge, N.J.

Filed Nov. 29, 1994, Ser. No. 346,529

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—202 **8 Claims**



7. A method for conditioning bit lines in a random access memory with at least two bit line driver transistors, an equalization transistor coupled across the bit lines and a word line coupled to a memory cell, the method comprising the steps of:

providing an equalization signal to said equalization transistor such that said equalization transistor is turned on at the beginning of a memory access operation; and

while said equalization transistor is on, providing a precharge signal such that said driver transistors are off.

5,572,474

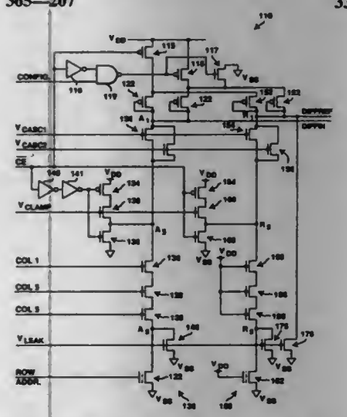
PSEUDO-DIFFERENTIAL SENSE AMPLIFIER

Ben Y. Sheen, Milpitas; Timothy M. Lacey, Cupertino, and Sammy Cheung, Pleasanton, all of Calif., assignors to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Jul. 18, 1995, Ser. No. 503,807

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—207 **33 Claims**



1. A sense amplifier for sensing a binary state of a memory device, the sense amplifier comprising:

an input stage comprising first and second cascode circuits, the first cascode circuit having a first load device and a first cascode device coupled in series with a memory cell storage device to be sensed, the second cascode circuit having a second load device and a second cascode device coupled in series with a memory cell reference device, wherein said memory cell reference device is of substantially the same construction as said memory cell storage device but in a predetermined logic state;

first and second clamping circuits coupled to said first and second cascode circuits, respectively, said first and second clamping circuits clamping a node of said first and second cascode circuits to one of a first voltage and a second voltage according to an enable input signal;

a differential stage comprising a differential amplifier circuit having first and second differential inputs coupled to receive signals from said first and second cascode circuits respectively; and

an output stage coupled to said differential stage to receive an output signal therefrom and for generating a logic level output signal in accordance with the signal received from said differential stage.

5,572,475

SENSE AMPLIFIER CONTROL CIRCUIT OF SEMICONDUCTOR MEMORY DEVICE

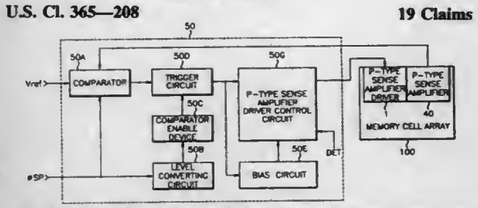
Sung-Min Yim, Pyeongtake-gun, and Jung-Hyuck Lee, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 27, 1995, Ser. No. 379,693

Claims priority, application Rep. of Korea, Jan. 27, 1994, 1465/1994

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—208 **19 Claims**



1. A semiconductor memory device having a sense amplifier operated by a given control signal and a first sense amplifier driver, said semiconductor memory device comprising:

a sense amplifier driver control circuit having an output line connected to a control terminal of said first sense amplifier driver for variably controlling current flow into said first sense amplifier driver by providing a driving element having a plurality of current paths for increased current flow when transmitting data of a RAM port to a SAM port;

a bias circuit having an output line connected to a control terminal of said driving element of said sense amplifier driver control circuit which assists in maintaining said current flowing into said driving element at a constant rate regardless of an increment or decrement of an external power supply voltage; and

means having an input line connected to a voltage applied to said sense amplifier and an output line connected to an input line of said sense amplifier driver control circuit and an input line of said bias circuit to drive said sense amplifier driver control circuit and said bias circuit.

5,572,476

APPARATUS AND METHOD FOR DETERMINING THE RESISTANCE OF ANTIFUSES IN AN ARRAY

Abdelshafy A. Eltoukhy, San Jose, Calif., assignor to Actel Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 255,160, Jun. 7, 1994, Pat. No. 5,469,396. This application May 2, 1995, Ser. No. 431,654

Int. Cl.[6] G11C *17/16*

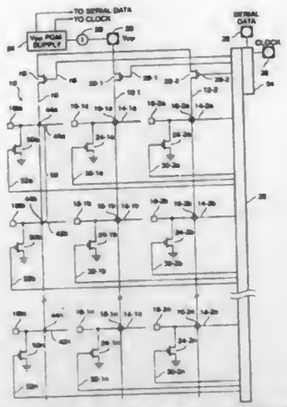
U.S. Cl. 365—210 **3 Claims**

1. An integrated circuit including a plurality of antifuses for selectively connecting together a plurality of interconnect conductors to provide programmed circuit paths for functional electronic circuits disposed on the integrated circuit, said integrated circuit further including:

programming circuit means comprising at least one of said interconnect conductors having an interconnect conductor resistance, one of said plurality of antifuses, and at least one programming transistor having an on-resistance, said programming circuit means for forming a programming series circuit between a first voltage potential node in said integrated circuit and a second voltage potential node in said integrated circuit;

reference circuit means comprising at least one reference conductor having a reference conductor resistance substantially equal to said interconnect conductor resistance, a via plug, and at least one reference transistor having an on-resistance substantially equal to the on resistance of said at least one programming transistor, said reference circuit means for forming a reference series circuit between said first and second voltage potential nodes; and

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programming circuit control means for selectively turning on said at least one programming transistor id response to signals identifying said one of said plurality of antifuses to create said programming series circuit and for selectively turning on said at least one reference transistor in response to signals identifying said via plug to create said reference series circuit.

5,572,477

VIDEO RAM METHOD FOR OUTPUTTING SERIAL DATA

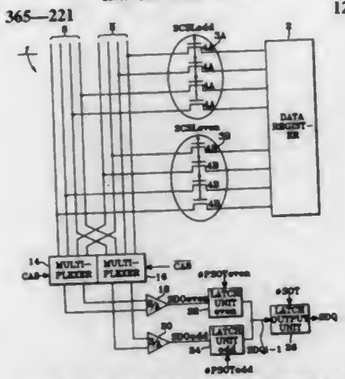
Seong-Ook Jung, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 31, 1995, Ser. No. 415,057

Claims priority, application Rep. of Korea, Mar. 31, 1994, 6760/1994

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—221 **12 Claims**



1. A video RAM having a data register for outputting serial data in response to the input of a serial address which is synchronized with a serial clock, said video RAM comprising:

a first data I/O line for transferring even serial data which is output from the data register;

a first column gate for synchronizing the even serial data stored in said data register with an even serial address and then transferring said even serial data to said first data I/O line;

a second data I/O line for transferring odd serial data which is output from the data register;

a second column gate for synchronizing the odd serial data stored in said data register with an odd serial address and then transferring said odd serial data to said second data I/O line; and

a multiplexer for multiplexing said even and odd serial data on said first and second data I/O lines in response to an input of a column address and then transferring said multiplexed data to an I/O sense amplifier, thereby selectively accessing said even and odd serial data on said first and second data I/O lines when said serial address is received.

5,572,478

POWER SUPPLY UNIT FOR AN IC MEMORY CARD

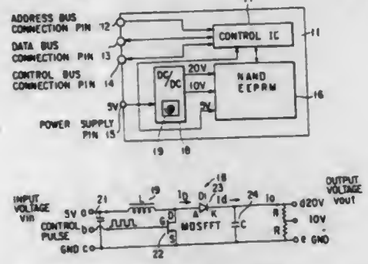
Toshiro Sato; Tomoharu Tanaka; Tetsuhiko Mizoguchi, and Yuji Ide, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 213,058, Mar. 15, 1994, Pat. No. 5,469,399. This application Mar. 31, 1995, Ser. No. 414,194

Claims priority, application Japan, Mar. 16, 1993, 5-056187

Int. Cl.[6] G11C *16/02*

U.S. Cl. 365—226 **10 Claims**



1. A one-chip power supply unit, comprising:

a DC-DC converter formed on a semiconductor substrate, for converting an input DC voltage to an output DC voltage by means of a switching converter scheme; and

a regulator for converting said output DC voltage to a predetermined DC power supply voltage for a semiconductor element;

wherein said DC-DC converter includes a thin and planar inductor comprising, stacked on said semiconductor substrate, a planar coil and magnetic thin films formed to sandwich said planar coil.

5,572,479

SEMICONDUCTOR INTEGRATED CIRCUIT HAVING A SYNCHRONOUS TYPE MEMORY

Mitsugu Satou, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

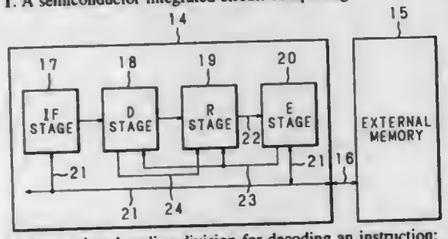
Filed Oct. 25, 1995, Ser. No. 548,068

Claims priority, application Japan, Mar. 6, 1995, 7-045520

Int. Cl.[6] G11C *7/00;8/00*

U.S. Cl. 365—230.06 **11 Claims**

1. A semiconductor integrated circuit comprising:



an instruction decoding division for decoding an instruction;

an instruction execution controlling division for generating a control signal controlling the execution of the instruction on the basis of the result decoded by the instruction decoding division; and

an instruction executing division for executing the instruction on the basis of the control signal but for generating a prohibiting signal when no preparation is made for receiving the control signal;

wherein the instruction execution controlling division includes:

a precharge control division for generating a precharge request signal but for stopping the generation of the precharge request signal in response to the prohibiting signal delivered from the instruction executing division; and

a synchronous type memory division including word lines selectable in accordance with the decoded result, bit lines, a precharge circuit for precharging a selected bit line in response to the precharge request signal, a ground line through which the precharged bit line is discharged, and a memory cell for generating the control signal, the memory cell being connected to the word lines, the bit lines and the ground line.

5,572,480

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND PROCESS FOR FABRICATING THE SAME

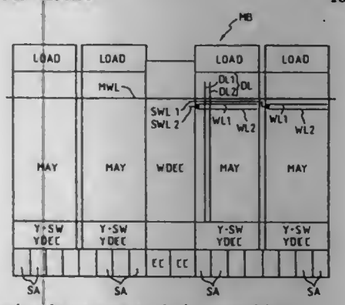
Shuji Ikeda, Koganei; Satoshi Meguro, Hinode-machi; Soichiro Hashiba, Hamura-machi; Isamu Kuramoto, Higashiyamato; Atsuyoshi Koike, Kokubunji; Katsuro Sasaki, Fuchuu; Koichiro Ishibashi, Tokyo; Toshiaki Yamanaka, Iruma; Naotaka Hashimoto, Hachioji; Nohuyuki Moriwaki, Sainomiya-machi; Shigeru Takahashi, Hitachiohta; Atsushi Hiraishi, Ohme; Yutaka Kobayashi, Katsuta, and Seigou Yukutake, Hitachi, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Division of Ser. No. 351,173, Nov. 30, 1994, which is a continuation of Ser. No. 11,249, Jan. 29, 1993, abandoned, which is a division of Ser. No. 653,493, Feb. 11, 1991, Pat. No. 5,239,196. This application Jun. 2, 1995, Ser. No. 459,961

Claims priority, application Japan, Feb. 9, 1990, 2-30451; Feb. 9, 1990, 2-30452; Feb. 9, 1990, 2-30454; Feb. 9, 1990, 2-30458; Mar. 2, 1990, 2-49312

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.06 **18 Claims**



1. A semiconductor memory device comprising:

a semiconductor substrate having a main surface;

first and second word lines formed over said main surface and extending in a first direction, wherein said first and second word lines are formed of the same level conductive layer;

a first decoder circuit for selecting said first and said second word lines;

a first memory cell array and a second memory cell array each including memory cells of a static random access memory which are arranged in said first direction and in a second direction perpendicular to said first direction,

wherein said first and said second word lines are coupled to said memory cells in said first and said second memory cell array, respectively,

wherein said first memory cell array is arranged adjacent to said second memory cell array in said first direction, and

wherein said first decoder circuit is arranged adjacent to said first memory cell array in said first direction in such a manner that said first memory cell array is arranged, in said first direction, between said first decoder circuit and said second memory cell array;

a first insulating film formed over said first and second memory cell array, and over said first and said second word lines so as to cover said main surface; and

third word lines formed over said first insulating film and extending in said first direction over said first memory cell array,

wherein said third word lines are electrically coupled between said first decoder circuit and said second word lines and have a resistance lower than that of said first and second word lines, and

wherein said first word lines are coupled to said first decoder circuit.

5,572,481

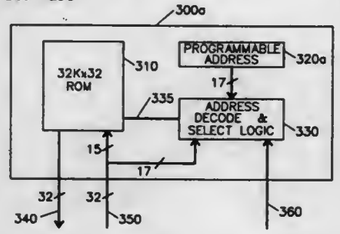
EFFICIENT LOCAL-BUS ROM MEMORY FOR MICROPROCESSOR SYSTEMS

Thomas J. Wilson, Pleasanton, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 132,726, Oct. 5, 1993, Pat. No. 5,477,503. This application Jun. 6, 1995, Ser. No. 466,809

Int. Cl.[6] G11C *8/02*

U.S. Cl. 365—231 **4 Claims**



1. A local bus read only memory for microprocessor systems, comprising:

an integrated circuit;

a read only memory on the integrated circuit, said read only memory having data outputs, first address inputs, and an enable signal input, said read only memory being operative to produce a data value on its data outputs corresponding to a first portion of an external address signal at its first address inputs when an enable signal is asserted;

a programmable address;

programmable address logic for programming the programmable address;

address decode and select logic on the integrated circuit;

comparison logic in the address decode and select logic for comparing a second portion of the external address signal to the programmable address;

monitoring logic in the address decode and select logic to detect a set of external control signals; and

logic for asserting the enable signal when the second portion of the external address signal matches the programmable address and a pre-determined combination of external control signals occurs.

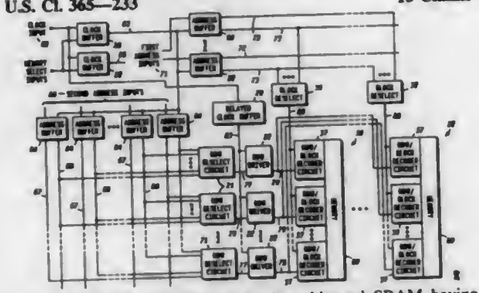
VOL 1192 ISS 1 NO 5 1996 UMI

5,572,482

BLOCK ARCHITECTED STATIC RAM CONFIGURABLE FOR DIFFERENT WORD WIDTHS AND ASSOCIATED METHOD FOR FORMING A PHYSICAL LAYOUT OF THE STATIC RAM

Gary W. Hoshizaki, Mesa; Jerome A. Grula, Chandler, and Nicholas J. Spence, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 345,876, Nov. 28, 1994. This application Jun. 12, 1995, Ser. No. 489,661
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—233 15 Claims



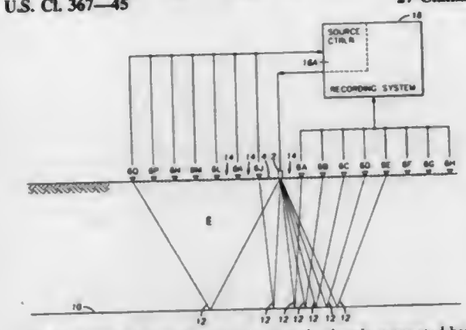
1. A method for clocking a block architected SRAM having block decode circuitry and row decode circuitry for respectively enabling a memory block of a plurality of memory blocks and a row of the memory block, the method comprising the steps of:
providing a first clock signal for synchronously starting a decode sequence;
initializing control signals of the block decode circuitry to enable each memory block of said plurality of memory blocks;
initializing control signals of the row decode circuitry to enable each memory row of each memory block;
providing an address corresponding to a memory word in the memory block to the block decode circuitry and the row decode circuitry when said first clock signal transitions to a first phase; and
preventing memory words of each memory block from being accessed with a second clock signal, said second clock signal is delayed from said first clock signal.

5,572,483

METHOD OF REDUCING NOISE IN SEISMIC SIGNALS BY ADAPTIVE FILTERING OF A NOISE REFERENCE

Ronald E. Chambers; Gary A. Sitton, both of Houston, and Josef Paffenholz, Missouri City, all of Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed Jul. 25, 1995, Ser. No. 507,653
Int. Cl.[6] G01J *1/36*
U.S. Cl. 367—45 27 Claims



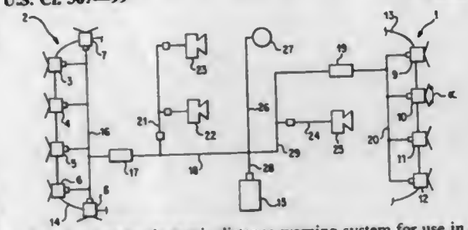
1. A method of reducing noise in seismic signals generated by a plurality of seismic sensors positioned at spaced apart locations from a seismic energy source, said signals represented by signal traces in a record section, said method comprising the steps of:
isolating said noise in said signal traces to generate noise-isolated traces;
time-aligning corresponding portions of said noise in said noise-isolated traces;
stacking said time-aligned noise-isolated traces to generate a stacked noise trace;
replicating said stacked noise trace at corresponding trace positions in said record section;
restoring said replicated traces to original time alignment by reversing said step of time-aligning, thereby generating noise signature traces;
comparing said noise signature traces to corresponding ones of said signal traces;
generating a filter for each said noise signature trace which is compared to said corresponding signal trace, said filter substantially minimizing a measure of the difference between said noise signature trace and said corresponding signal trace;
filtering said noise signature traces by said filters to generate filtered noise signature traces; and
subtracting said filtered noise signature traces from corresponding ones of said signal traces to generate noise-corrected signal traces.

5,572,484

SHORT RANGE ULTRASONIC DISTANCE WARNING SYSTEM FOR MOTOR VEHICLE

Hermann Gaus, Sillenbuch; Gerhard Franke, Weissach im Tal, and Wolfgang Stahl, Oberbolhingen, all of Germany, assignors to Mercedes-Benz AG, Germany

Filed Jul. 19, 1995, Ser. No. 504,109
Claims priority, application Germany, Jul. 19, 1994, 44 25 419.9
Int. Cl.[6] G01S *15/00*
U.S. Cl. 367—99 12 Claims



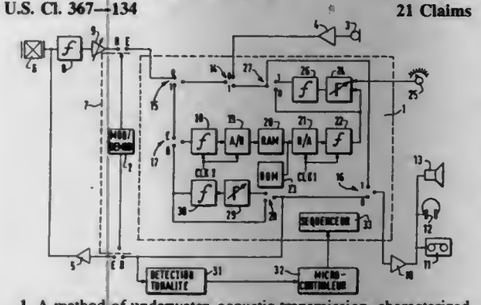
1. A short range ultrasonic distance warning system for use in a vehicle as a parking aid, comprising
a rear-end transmitter and receiver arrangement,
a front-end transmitter and receiver arrangement having at least one transmitter and receiver unit for a central front area of the vehicle and one transmitter and receiver unit for front corner areas of the vehicle,
a controller for activating and deactivating the transmitter and receiver arrangements and at least one of acoustic and optical warning elements which, when the transmitter and receiver arrangements are activated, are operatively associated therewith to generate warning signals as a function of the output signals thereof,
wherein the front-end and the rear-end transmitter and receiver arrangements are operatively configured to be activated when a reverse gear is active and speed of travel of the vehicle has not exceeded a prescribed first deactivation limiting value, only the front-end transmitter and receiver arrangement is activated when reverse gear is not active and the speed of travel has not exceeded a prescribed second deactivation limiting value, and transmitter and receiver arrangements are deactivated during all other driving conditions.

5,572,485

UNDERWATER ACOUSTIC TRANSMISSION METHOD AND EQUIPMENT TO IMPROVE THE INTELLIGIBILITY OF SUCH TRANSMISSIONS

Georges Troin, Mouans-Sartoux, and Claude Cazaoulou, Nice, both of France, assignors to Safare-Crouzet, Nice, France

Filed Jun. 28, 1994, Ser. No. 266,605
Claims priority, application France, Jul. 6, 1993, 93 08267
Int. Cl.[6] H04B *11/00*
U.S. Cl. 367—134 21 Claims



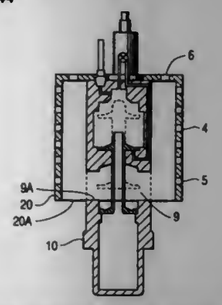
1. A method of underwater, acoustic transmission, characterized in that before being transmitted, a signal to be transmitted is sampled, digitized and stored and then un-sampled and un-digitized at a frequency less than the sampling frequency and thus is transmitted in analogue form, and in that at the receiving side said signal is correspondingly sampled, digitized and stored at the said un-sampling and un-digitizing frequency and then is re-read at the said sampling frequency in which, following its un-digitization, the transmitted signal is frequency-translated into a transmitter-compatible band.

5,572,486

SEISMIC AIRGUN ARRANGEMENT

Martin Landro, and Jan Langhammer, both of Trondheim, Norway, assignors to Den norske stats oljeselskap a.s, Stavanger, Norway

Filed Apr. 13, 1995, Ser. No. 367,314
Claims priority, application Norway, Aug. 25, 1992, 923314
Int. Cl.[6] H04R *23/00*
U.S. Cl. 367—144 10 Claims



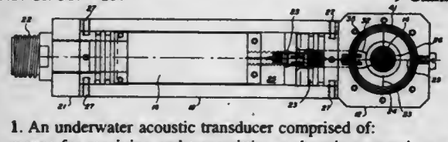
1. Seismic airgun arrangement for attenuating unwanted oscillations in the emitted signal, the airgun has one or more outlet ports for exhausting air in a generally radial direction from a central axis of the airgun, and a perforated screen of plate material is provided around the airgun for the attenuation mentioned,
wherein the volume generally delimitated within the screen is significantly smaller than the maximum bubble size which is normally generated by the airgun,
wherein the screen has an open side or end at a part of the screen that is adapted to face at least partially downwards in the normal operative position of the airgun, and
wherein at least edge portions of the screen along the open side or end are located substantially directly opposite the outlet port or ports.

5,572,487

HIGH PRESSURE, HIGH FREQUENCY RECIPROCAL TRANSDUCER

James A. Tims, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 24, 1995, Ser. No. 378,138
Int. Cl.[6] H04R *17/00*
U.S. Cl. 367—157 9 Claims



1. An underwater acoustic transducer comprised of:
means for receiving and transmitting a changing acoustic pressure in a frequency range of 100 kHz to 2 MHz having a first and second face;
means for amplifying an electrical signal;
in a receiving mode, said means for receiving and transmitting a changing acoustic pressure converts the changing acoustic pressure into an electrical signal which is applied to said means for amplifying the electrical signal;
in a transmitting mode a means for applying an input electrical signal directly to said means for receiving or transmitting, said means for receiving or transmitting converting the input electrical signal into an acoustic pressure wave for transmission into an acoustic medium;
a protective housing that is capable of withstanding hydrostatic pressures of at least 3000 psi comprised of a preamplifier section containing said means for amplifying, a sensor housing having a first and second face containing said means for receiving and transmitting, and a means for coupling said means for amplifying to said means for receiving or transmitting; and
the sensor housing is further comprised of a grommet surrounding said means for receiving and transmitting for damping the radial mode, acoustically transparent polymer cast on both faces of said means for receiving and transmitting using the grommet as a mold; a mounting ring of rigid polyurethane; a plurality of annealed iron wires attaching the sensing assembly to the mounting ring; an acoustically transparent window on the first and second faces of the sensor housing; and an acoustically transparent oil between the acoustically transparent windows on the first and second faces of the sensor housing surrounding the sensor element.

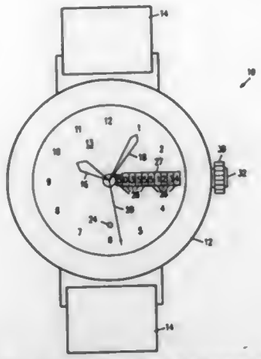
5,572,488

WRISTWATCH PAGING RECEIVER HAVING ANALOG MESSAGE DISPLAY

Takehide Yamada, Beaverton; Dimitri Dimitriadis, Lake Oswego, and Garold B. Gaskill, Tualatin, all of Oreg., assignors to Seiko Communications Holding N.V., Netherlands Antilles

Filed Dec. 17, 1993, Ser. No. 169,480
Int. Cl.[6] G04B *47/00;19/04;* H04B *7/00*
U.S. Cl. 368—10 5 Claims

1. A method of displaying a paging message using an analog watch mechanism having a disk with marks thereon, the method comprising the steps of:
(a) receiving a paging message; and
(b) moving the disk such that the mark is moved to a predetermined position,
wherein the analog watch mechanism includes a watch face having an aperture therethrough and the disk is located behind the watch



face, wherein the step of moving the disk includes moving the disk such that the mark is adjacent to the aperture.

5,572,489

TIMEPIECE WITH ROTATABLE OUTER RING

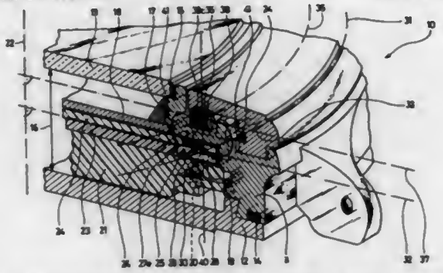
Jean-Jacques Born, Morges; Etienne Bornand, Boudry; Gérard Jaeger, Bionay, and René Vlennet, Neuchâtel, all of Switzerland, assignors to Asulab S.A., Bienne, Switzerland

Filed Apr. 5, 1996, Ser. No. 628,350

Claims priority, application Switzerland, Apr. 19, 1995, 01116/95; Dec. 13, 1995, 03533/95

Int. Cl.[6] G04B *19/22*

U.S. Cl. 368—21 **10 Claims**



I. A universal timepiece having a movement, at least one display means, a timepiece casing, at least one outer ring serving as a manually operable input means which is rotatable about an axis of rotation in relation to the timepiece casing and which is adapted to assume a plurality of pre-defined rotational positions and having a device for detecting the manually adjustable rotational positions of the outer ring, where this device has a plurality of elements of a first type arranged substantially along a first circumferential line extending about the axis of rotation and secured within the timepiece casing, and a plurality of elements of a second type, arranged substantially along a second circumferential line extending about the rotational axis concentric to the first and secured within the input means, whereby the elements of the second type move the elements of the first type into pre-defined binary states whereby the totality of these binary states is different for each defined rotational position of the input means, wherein the outer ring can be placed in any of twenty-four defined rotational positions each with a time zone allocated thereto, that from five to eight elements of the first type are provided and their states are determined in non-contact manner by the elements of the second type.

5,572,490

E-TYPE MAGNETIC HEAD FOR MAGNETO-OPTICAL RECORDING DEVICE

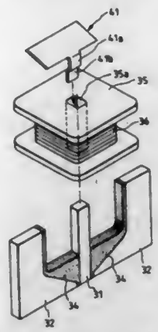
Toshio Kazama, Nagaoka, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Dec. 5, 1994, Ser. No. 349,233

Claims priority, application Japan, Dec. 9, 1993, 5-340763

Int. Cl.[6] G11B *11/00;5/60*

U.S. Cl. 369—13 **6 Claims**



1. A magnetic head apparatus comprising:

an elongated main core extending in a longitudinal direction, the elongated main core including first and second parallel portions extending in the longitudinal direction;

first and second side cores mounted on opposing sides of the main core such that the first portion of the main core and the first side core form a first gap, and the second portion of the main core and the second side core form a second gap; and

a coil formed around the main core for generating a magnetic field in a closed magnetic path extending via the main and side cores,

wherein the first and second portions of said main core are electrically insulated by an electrical insulating layer extending in the longitudinal direction.

5,572,491

MAGNETO-OPTICAL RECORDING DEVICE CAPABLE OF RECORDING TWO MAGNETO-OPTICAL DISCS

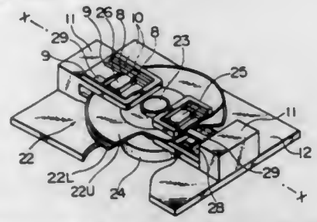
Haruyuki Karibe, and Ryuichi Asano, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,350

Claims priority, application Japan, Dec. 28, 1993, 5-349798

Int. Cl.[6] G11B *11/00*

U.S. Cl. 369—13 **5 Claims**



I. A magneto-optical disc recording and reproducing apparatus comprising:

a rotational member which is driven to rotate by a motor;

first and second non-overwrite magneto-optical disc recording media each having a recording area side and which are affixed to said rotational member a predetermined distance apart along the axial direction of said rotational member with the recording area sides facing away from each other;

a first magnetic field applying means disposed between the first and second magneto-optical disc recording media for applying a magnetic field of a first polarity to the first magneto-optical disc recording medium and for applying a magnetic field of an opposite, second polarity to the second magneto-optical disc recording medium;

a second magnetic field applying means disposed between the first and second magneto-optical disc recording media for applying a magnetic field of the second polarity to the first magneto-optical disc recording medium and for applying a magnetic field of the first polarity to the second magneto-optical disc recording medium;

a first optical pickup provided at a position facing the recording area side of the first magneto-optical disc recording medium, and aligned with the first magnetic field applying means on the opposite side of the first magneto-optical recording medium, for erasing data recorded on the first magneto-optical recording medium;

a second optical pickup provided at a position facing the recording area side of the second magneto-optical disc recording medium, and aligned with the first magnetic field applying means on the opposite side of the second magneto-optical recording medium, for recording data on the second magneto-optical recording medium;

a third optical pickup provided at a position facing the recording area side of the first magneto-optical disc recording medium, and aligned with the second magnetic field applying means on the opposite side of the first magneto-optical recording medium, for recording data on the first magneto-optical recording medium;

a fourth optical pickup provided at a position facing the recording area side of the second magneto-optical disc recording medium, and aligned with the second magnetic field applying means on the opposite side of the second magneto-optical recording medium, for erasing recorded data on the second magneto-optical recording medium.

5,572,492

OPTICAL RECORDING AND REPRODUCING METHOD UTILIZING RECORDING MEDIUM INCLUDING RECORDING REGIONS FORMED BY LOCALIZED CO-MELTED MIXTURE OF NON-REACTANT MATERIALS

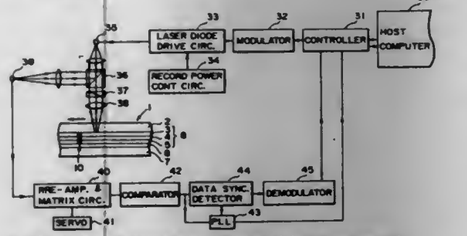
Yoshihiro Ogawa, Sagamihara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 360,130, Dec. 20, 1994, which is a continuation of Ser. No. 998,778, Dec. 29, 1992, abandoned, which is a continuation of Ser. No. 716,962, Jun. 18, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 468,197

Claims priority, application Japan, Jun. 19, 1990, 2-158746; Jun. 19, 1990, 2-158749

Int. Cl.[6] G11B *13/00;3/70*

U.S. Cl. 369—14 **11 Claims**



1. An optical recording method comprising the steps of:

providing a record blank comprising a substrate, a recording layer comprising a colorant which exhibits a first absorption maximum at a first wavelength, and a supplementary recording layer laminated on the substrate, the supplementary recording layer containing a polymer and a low-molecular compound having a polar group; and

irradiating the record blank with a recording light beam sufficient to locally form a mixture of material in the supplementary recording layer and the recording layer, the locally formed mixture being a co-melted mixture including colorant which non-reactively interacts with the polar group of the low-molecular compound to exhibit a second absorption maximum shifted to a shorter wavelength from the first wavelength of the first absorption maximum, thereby providing a difference in spectral characteristic detectable by a reproducing light beam.

5,572,493

OPTICAL DISK INFORMATION RECORDING APPARATUS AND REPRODUCING APPARATUS HAVING A PLURALITY OF READ OR WRITE BEAMS

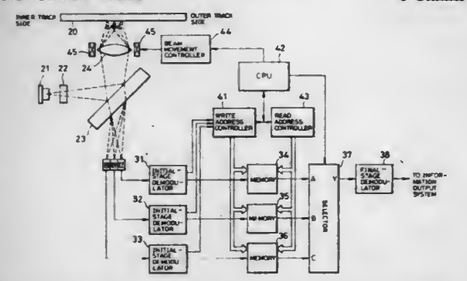
Takanori Maeda; Kiyoshi Tateishi, and Hajime Koyanagi, all of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Division of Ser. No. 162,842, Dec. 7, 1993, Pat. No. 5,457,670. This application Jun. 6, 1995, Ser. No. 467,024

Claims priority, application Japan, Dec. 9, 1992, 4-329388; Nov. 16, 1993, 5-286778

Int. Cl.[6] G11B *7/085*

U.S. Cl. 369—44.28 **6 Claims**



1. An optical disk recording apparatus for recording an information signal in a spiral form on a disk while rotating said disk, comprising:

a memory for storing a plurality of information signals to be recorded;

an optical head for irradiating a plurality of light beams having intensities changeable in accordance with each of said information signals and focusing said light beams as light spots at a plurality of different radial positions on said disk at a pitch of a predetermined number of tracks;

moving means for moving said light spots in a radial direction of said disk;

position detecting means for detecting positions of said light spots on said disk in a circumferential direction of said disk;

jump control means for controlling said moving means in such a way that said light spots make a predetermined number of track jumps for a predetermined number of rotations of said disk in accordance with a detection output of said position detecting means; and

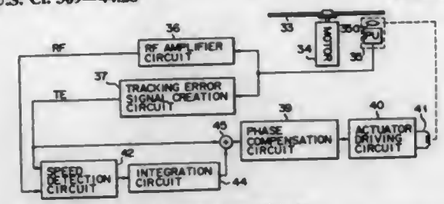
optical output control means for controlling output light levels of said light beams, wherein said optical output control means sets each of said output light levels to one of a recording mode level, a reproducing mode level and an off mode level in a cyclic sequence having a period of a predetermined number of rotations of said disk in accordance with said detection output of said position detecting means.

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5,572,494
DEVICE FOR DETECTING TRAVELING SPEED OF PICKUP

Hiroshi Nakane, and Taiji Inomata, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 330,096, Oct. 26, 1994, abandoned, which is a continuation of Ser. No. 5,266, Jan. 19, 1993, abandoned, which is a division of Ser. No. 765,894, Sep. 26, 1991, abandoned. This application Aug. 3, 1995, Ser. No. 510,638
Claims priority, application Japan, Sep. 28, 1990, 2-256877
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—44.28 **6 Claims**

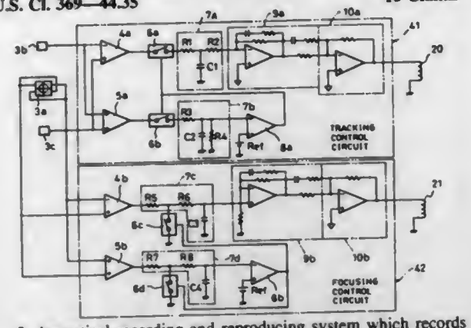


4. A disk reproducing device comprising:
a disk being an information signal recorded on a continuous track thereon;
a pickup element, which is supported movably in a radial direction of said disk, for reading out and outputting the information signal recorded on said disk by tracing the track of said disk;
tracking error signal generating means for generating a tracking error signal corresponding to a distance of said pickup element, which is moved from the track of said disk in the radial direction, on the basis of a signal output from said pickup element;
speed detecting means for generating a speed signal proportional to the relative movement speed of said pickup element with respect to said disk in a case where said pickup element is moved in the radial direction of said disk, on the basis of the tracking error signal generated from said tracking error signal generating means and the signal output from said pickup element, said speed detecting means including:
differentiating means for differentiating the tracking error signal generated by said tracking error signal generating means to output a differential signal,
detector means for detecting the signal output from said pickup element and for outputting an envelope detecting signal corresponding to an envelope of the signal,
comparing means for generating a signal representing an intermediate level between a peak level and a bottom level of the envelope detection signal output from said detector means, comparing the intermediate level signal with a current level of the envelope detection signal, and on the basis of the level comparison, generating a pulse signal representative of the envelope detection signal sliced at the intermediate level, and
rectifier means for rectifying the differential signal output from said differentiating means on the basis of the pulse signal generated by said comparing means, and for outputting the rectified differential signal as the speed signal;
integrating means for integrating the speed signal generated by said speed detecting means and for generating a position signal with a linear characteristic for showing a position of said pickup element;
adding means for outputting an added signal obtained by adding the position signal generated by said integrating means and the tracking error signal generated by said tracking error signal generating means; and
control means for controlling said pickup element in the radial direction of said disk such that said pickup element is located on a desired position, on the basis of the added signal generated by said adding means.

5,572,495
OPTICAL RECORDING AND REPRODUCING SYSTEM USING SERVO CONTROL, SWITCHES AND CONTROL CIRCUITRY

Koichi Yamazaki, Sakado; Kazuo Noda, Yokohama; Yonezo Furuya, Hatoyama, and Yasuyuki Kimura, Kawagoe, all of Japan, assignors to Nippon Conlux Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1994, Ser. No. 350,827
Claims priority, application Japan, Dec. 31, 1993, 5-350919
Int. Cl.[6] G11B 7/09
U.S. Cl. 369—44.35 **18 Claims**



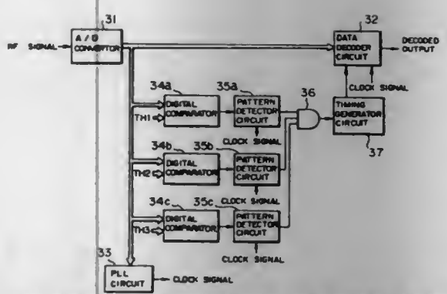
1. An optical recording and reproducing system which records and reproduces information onto and from an optical recording medium by irradiating laser light generated from a laser light source onto the optical recording medium, said optical recording and reproducing system comprising:
servo control means for detecting reflection of the laser light from the recording medium to provide an error signal on the basis of an amount of the detected reflection and controlling formation of the laser light to be irradiated onto the recording medium in response to the provided error signal;
first switch means for switch-control of the error signal;
first smoothing means for smoothing the error signal passed by said first switch means; and
controller means for monitoring the amount of the detected reflection and controlling switching action of said first switch means based on the monitored amount, such that a gain of a servo loop in said servo control means is controlled, wherein said controller means includes:
detection means for detecting the amount of the detected reflection to provide said monitored amount;
second switch means for switch-control of a detected light amount signal that is indicative of the amount of the detected reflection detected by said detection means;
second smoothing means for smoothing the detected light amount signal switch-controlled by said second switch means; and
switching control means for making a comparison between an output signal of said second smoothing means and a predetermined standard signal and controlling the switching action of each of said switch means on the basis of a result of the comparison.

5,572,496
APPARATUS FOR REPRODUCING AN ENCODED DIGITAL SIGNAL BASED ON A FRAME SYNCHRONIZATION SIGNAL

Hideki Hayashi, and Masaru Umezawa, both of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 31, 1995, Ser. No. 455,616
Claims priority, application Japan, Jun. 1, 1994, 6-120097
Int. Cl.[6] H04N 5/76
U.S. Cl. 369—59 **3 Claims**

1. An apparatus for reproducing an encoded digital signal comprising:

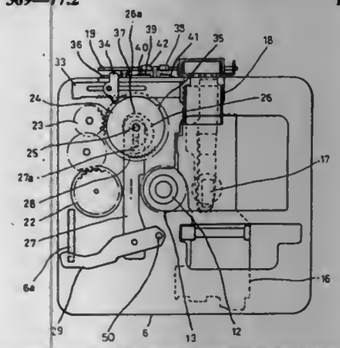


frame synchronization detecting means for generating a frame synchronization detection signal when detecting a frame synchronization signal from a read signal derived by reading an encoded digital signal from a recording medium which contains said encoded digital signal recorded thereon including frame synchronization signals and encoded data signals divided into frames by the frame synchronization signals, said frame synchronization signal having a code train pattern which is different from any patterns appearing in said encoded data signals; and
means for decoding said encoded data signal form said read signal based on a timing at which said frame synchronization detection signal is generated;
wherein said frame synchronization detecting means includes a plurality of binary-coding means for comparing said read signal with a respective threshold signal of each said binary coding means, each said threshold signal is different from each other, to generate at least two binary-coded signals;
first pattern detecting means for generating a first pattern detection signal when detecting a first predetermined code train pattern from one of said two binary-coded signals;
second pattern detecting means for generating a second pattern detection signal when detecting a second predetermined code train pattern from the other of said two binary-coded signals; and
means for generating said frame synchronization detection signal when both of said first and second pattern detection signals are generated.

5,572,497
SINGLE MOTOR DRIVING DEVICE FOR A MINI-DISC PLAYER

Kwang Kim, and Heui S. Seo, both of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 15, 1994, Ser. No. 356,463
Claims priority, application Rep. of Korea, Dec. 29, 1993, 30966/1993
Int. Cl.[6] G11B 17/04;5/54;21/02
U.S. Cl. 369—77.2 **11 Claims**

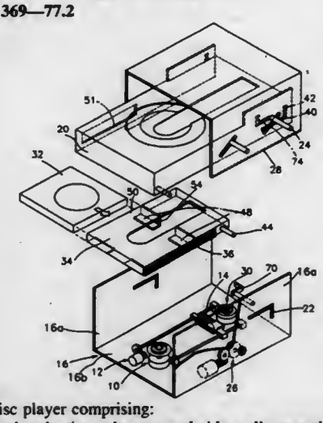


1. A driving device for a mini-disc player comprising:
a driving part having a motor fixed on a deck and connected to a gear train;
a cam having cam groove formed therein driven by the motor through the gear train;
a disc loading means having one end thereof inserted in the cam groove for varying the position of the disc loading means by following rotation of the cam;
a pick up operation part for operating a pick up according to the rotation of the cam continued after completion of the disc loading by the disc loading means; and
a magnetic head loading part moved interlocked with the rotation of the cam, wherein the magnetic head loading part includes,
an actuation lever rotatably coupled to the deck,
a projection piece provided at an underside of the cam for rotating the actuation lever under the condition that the pick up operation has been completed,
a toggle lever spring mounted at one end of the deck for moving interlocked with the rotation of the actuation lever,
a rotation plate for rotating in one direction according to the rotation of the toggle lever,
a guide bar for selectively coming off from actuation pieces on an upper surface of the rotation plate according to the rotation of the rotation plate, and
catching members for restricting the rotation plate so that the rotation plate rotates only in one direction.

5,572,498
DISC PLAYER THAT LOADS BOTH COMPACT DISC AND MINI-DISC

Hyungho Choi, Ahnyang, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jan. 18, 1995, Ser. No. 374,087
Claims priority, application Rep. of Korea, Jan. 19, 1994, 94-915
Int. Cl.[6] G11B 33/02
U.S. Cl. 369—77.2 **5 Claims**



1. A disc player comprising:
a base plate having a bottom and side walls extending upward from opposite sides of said bottom, and having a compact disc spindle assembly and a cartridge encased mini-disc spindle assembly disposed on said bottom and spaced from each other, and a pickup device respectively on said bottom;
a compact disc tray connected with said base plate in a horizontally and vertically movable state so that the compact disc can be loaded on the compact disc spindle assembly;
a moving plate which moves horizontally by a driving apparatus for transferring said compact disc tray;
a cartridge encased mini-disc tray connected with said compact disc tray in a horizontally and vertically movable state so that the cartridge encased mini-disc can be loaded on the cartridge encased mini-disc spindle assembly, the cartridge encased mini-disc tray being provided with a rack gear formed along

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the side wall of said cartridge encased mini-disc tray and at least one guide projection projected upward on a lower surface of the compact disc tray; and

a cartridge encased mini-disc tray conveying device provided between said compact disc tray and said cartridge encased mini-disc tray, in which said cartridge encased mini-disc tray is provided in the compact disc tray, the cartridge encased mini-disc tray conveying device being provided with:

a rack plate having at least one guide hole elongated along a cartridge encased mini-disc tray carrying direction, the rack plate being deposited on the lower surface of the compact disc tray with the guide projection inserted into the corresponding guide hole;

a spring of which one end is connected to a rear end of the rack plate and the other end of the spring is connected to a rear portion of the compact disc tray so that the rack plate can resiliently move against compact disc tray; and

a transfer gear having a first gear and a second gear in which the first gear engages with the rack gear formed on the side wall of rack plate and the second gear engages with the rack gear formed on the side wall of the cartridge encased mini-disc tray, the first gear and the second gear are integrally formed with each other, and a diameter of the second gear is larger than that of the first gear,

such that the cartridge encased mini-disc tray is transferred at a higher speed than a transfer speed of the compact disc tray in a loading or unloading operation.

5,572,499

IMAGE PROCESSING APPARATUS FOR STORING IMAGE DATA IN STORAGE MEDIUM AND/OR FOR REPRODUCING IMAGE STORED IN STORAGE MEDIUM

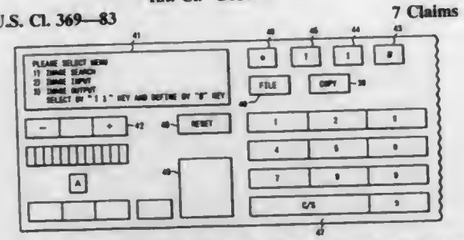
Hideto Kohtani; Yoshinobu Aiba, and Takahiro Ushiro, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 864,541, Apr. 7, 1992, abandoned. This application Sep. 20, 1994, Ser. No. 308,944

Claims priority, application Japan, Apr. 10, 1991, 3-104864; Jul. 31, 1991, 3-214736

Int. Cl.[6] G11B *27/00*

U.S. Cl. 369—83 **7 Claims**



1. An image processing apparatus for storing data in a storage medium, said processing apparatus comprising:

input means for inputting an original image;

mode setting means for setting an editorial processing mode to be executed on the input image;

processing means for performing editorial processing on the input image, in accordance with the editorial processing mode set by said mode setting means, to produce an edited image;

generating means for generating reproduction data, which is used for reproducing the original image in an unedited state by further processing the edited image;

storage control means for separately storing the edited image and the reproduction data in the storage medium; and

reproduction means for reading the edited image and the reproduction data from the storage medium and for processing the edited image in accordance with the reproduction data to reproduce the original image in an unedited state.

5,572,500

OPTICAL FILTER WITH LIGHT TRANSMITTANCE DEPENDENCY ON INCIDENT ANGLE

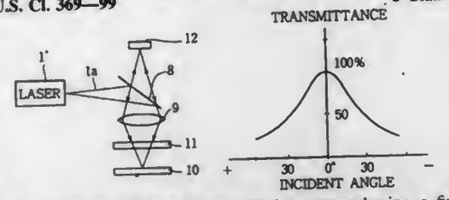
Tomoyoshi Ikeya; Mitsuru Itamochi, and Hidetoshi Yokosawa, all of Yamanashi-ken, Japan, assignors to Pioneer Electronic Corporation, Tokyo, and Pioneer Video Corporation, Yamanashi-ken, both of Japan

Filed Nov. 15, 1994, Ser. No. 340,874

Claims priority, application Japan, Nov. 17, 1993, 5-288411

Int. Cl.[6] G11B *7/121*

U.S. Cl. 369—99 **5 Claims**



1. An optical information reproducing system having a first optical path from a light source to an optical disc, and a second optical path from the optical disc to a photodetector, comprising:

an optical element provided in the first optical path for forming a non-collimated beam; and

a light intensity profile conversion filter having an incident angle dependent transmittance characteristic provided in the non-collimate beam.

5,572,501

OPTICAL PICKUP ACTUATOR FOCUS CONTROL WITH REFERENCE TO A FOCUS ZERO DETECTION SIGNAL AND A FOCUS SERVO DRIVE ZERO DETECTION SIGNAL

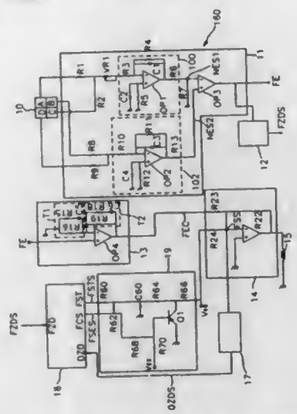
Goonjin Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 22, 1994, Ser. No. 361,647

Claims priority, application Rep. of Korea, Dec. 24, 1993, 93-29443

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—112 **3 Claims**



1. A focus servo circuit for an optical pickup actuator comprising:

a control unit for outputting a focus start signal and a focus start enable signal;

a focus error detection unit for generating a focus error signal in accordance with a focus error of an objective lens of the optical pickup actuator;

a compensation unit for outputting a phase-compensated focus error signal in compensation of the focus error signal;

a focus servo drive unit for generating a focus servo drive signal so as to perform a focusing operation with inputs of the phase-compensated focus error signal, focus start signal and focus start enable signal;

a focus zero detection unit for generating a focus zero detection signal to the control unit with a detection of a predetermined section including a zero crossing from the focus error signal, wherein the predetermined section of the focus error signal is a section that stably ensures a linear relationship in an output of the focus error signal according to the up-and-down displacement of the optical pickup actuator;

a drive signal zero detection unit for generating a focus servo drive zero detection signal to the control unit with a detection of a predetermined section including a zero crossing from the focus servo drive signal, wherein the predetermined section of the focus servo drive signal is a section that stably secures a linear relationship between the focus servo drive signal and the displacements of the optical pickup actuator; and

means for controlling the focus start enable signal and focus start signal thereby to start a focus servo of the optical pickup actuator with reference to both the focus zero detection signal and the focus servo drive zero detection signal.

5,572,502

OPTICAL DISK APPARATUS

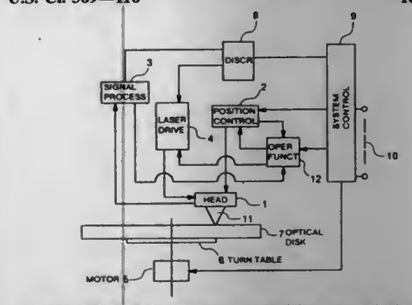
Atsuko Naruse, Hitachi; Yoshihito Maeda, Mito; Yoshimi Kato, Takahagi; Isao Ikuta, Iwaki; Hisashi Andoh, Hitachi; Masaichi Nagai, Hitachi; Yoshio Sato, Hitachi; Tetsuya Fushimi, Kokubunji; Hiroyuki Minemura, Kodaira, and Tatsuya Sugita, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 28, 1994, Ser. No. 313,803

Claims priority, application Japan, Sep. 28, 1993, 5-240935; Feb. 15, 1994, 6-018652; Feb. 18, 1994, 6-021282

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—116 **10 Claims**



1. An optical disk apparatus comprising an optical recording medium having a tracking guide, an optical pickup section disposed opposite to said recording medium, a signal processing section for processing a signal received from said optical pickup section, a semiconductor laser driving section for controlling the setting of a power for irradiation of said recording medium with light and the ON/OFF of irradiation, a position control section for controlling the position of an optical pickup, a recording medium driving section for rotating said recording medium, a turn table for supporting said recording medium, a light beam control section for performing a control for irradiation of said recording medium with a recording light beam, and a system control section for introducing a control for the whole of a system and receiving external information,

in which in accordance with a command from said position control section, said optical pickup is moved relative to a scanning center of a recording mark formed on a track of said recording medium in the direction of width of the track, a unit irradiation time or an irradiation start point defined at the time of formation of said recording mark is changed by said semiconductor laser driving section, and the intensity of irradiation light is changed by said light beam control section in accordance with a signal from said semiconductor laser driving section so as to enable recording of information.

5,572,503

CORRECTING NON-LINEAR DISTORTIONS OF OPTICAL INFORMATION WITH A NON-LINEAR EQUALIZER

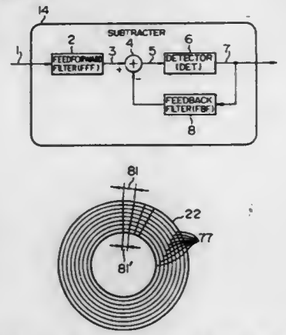
Naoki Satoh, Odawara; Takeshi Maeda, Kokubunji; Atsushi Saito, Ichikawa; Hisataka Sugiyama; Hirofumi Sukeda, both of Kodaira; Hiroyuki Tsuchinaga, Kokubunji, and Yasuhide Ouchi, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 13, 1994, Ser. No. 358,584

Claims priority, application Japan, Dec. 15, 1993, 5-314708

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—124 **13 Claims**



13. An optical disk device which uses a light spot for reproducing data, comprising:

photodetection means;

decoding means; and

non-linear equalizing means provided between said photodetection means and said decoding means for correcting non-linear distortions in a reproduced signal from an optical disk;

wherein a number of tracks through a radius of the optical disk is divided by a positive integer such that a line recording density is substantially constant at respective track positions of the tracks.

5,572,504

EARLY BRAKE DRIVING METHOD OF DISK SYSTEM AND CIRCUIT THEREOF

Kyoung-Seo Min, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Continuation of Ser. No. 286,992, Aug. 8, 1994, abandoned, which is a continuation of Ser. No. 42,791, Apr. 6, 1993, abandoned. This application May 9, 1995, Ser. No. 437,924

Claims priority, application Rep. of Korea, Apr. 6, 1992, 92-5672

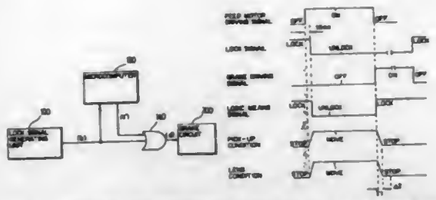
Int. Cl.[6] G11B *17/30;7/00*

U.S. Cl. 369—215 **6 Claims**

1. A swift brake driving circuit of a disk system for track seeking comprising:

a lock signal generating unit for outputting lock signals when Constant Linear Velocity is realized and outputting unlock signals when Constant Linear Velocity is not realized;

wherein said lock signal generating unit simultaneously outputs unlock signals and feed motor driving signals in order to move an optical pickup in a radial direction of a disk during a track seek, and after a lapse of a predetermined period of time beginning from a moment that the pickup and a lens are stopped, said lock signal generating unit outputs lock signals;



a microcomputer for outputting brake signals when a said feed motor driving signal of said feed motor driving signals stops and for moving said optical pickup in the radial direction of the disk during an unlock state;

a logic means which controls a vibration of the lens by simultaneously forcing the transition of a feed motor from said unlock state to a lock state using said brake signals outputted from the microcomputer, so that the feed motor is operated in a brake mode, said unlock state being maintained until the feed motor driving signal is rendered off; and

a brake circuit for maintaining the lock state during stoppage of the pickup.

5,572,505

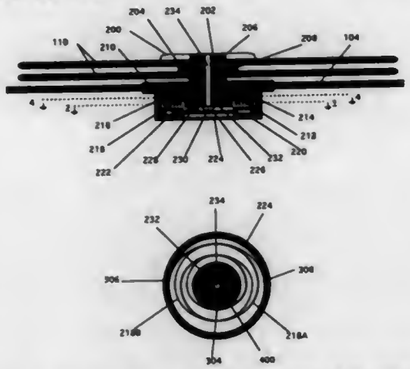
SPRING STARTER FOR A HARD DISK DRIVE PLATTER ASSEMBLY

William D. Llewellyn, 1484 Proud Dr., San Jose, Calif. 95132-2443

Filed Jul. 21, 1994, Ser. No. 278,182

Int. Cl.[6] G11B *23/00;25/00;* **F03G** *1/00*

U.S. Cl. 569—258 **12 Claims**



1. In a disk drive having a motor, a rotatable shaft coupled to impart rotational force to a data storage medium, and a starter means, said starter means comprising an energy storage means, an energy diverting means for selectively transferring rotational energy of said rotatable shaft into said energy storage means and transferring energy stored within said energy storage means to said rotational shaft as rotational energy, a holding means, and a control means for controlling the operation of said energy diverting means and said holding means, a method for starting of said shaft comprising the steps of:

applying force to said shaft with said motor until said shaft revolves at a final rotational speed in a first direction of rotation;

stopping rotation of said shaft by performing the substeps of:

diverting rotational energy from at least one complete revolution of said shaft corresponding to said first direction of rotation into said energy storage means by engaging said energy diverting means in response to a first signal received from said control means, thereby causing said shaft to come to a first stopped position;

diverting energy stored in said energy storage means into said shaft as rotational energy with said energy diverting means to produce at least one complete revolution of said shaft in a second direction of rotation, said second direction of rotation opposite to said first direction of rotation; and

diverting rotational energy from at least one complete revolution of said shaft corresponding to said second direction of rotation into said energy storage means with said energy diverting means, thereby causing said shaft to come to a second stopped position;

holding said shaft in said second stopped position with said holding means in response to a second signal received from said control means;

releasing said shaft from said second stopped position by releasing said holding means in response to a third signal received from said control means; and

diverting stored energy from said energy storage means to said shaft as rotational energy with said energy diverting means.

5,572,506

OPTICAL INFORMATION RECORDING MEDIUM WITH GAP AREA CAPABLE FOR PREFORMATTING WITH A SPECIFIED PATTERN

Ikuo Aoki, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

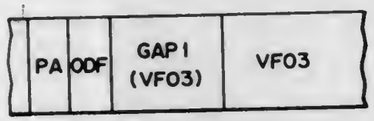
Division of Ser. No. 57,104, May 3, 1993, Pat. No. 5,414,692.

This application Jan. 17, 1995, Ser. No. 373,643

Claims priority, application Japan, May 8, 1992, 4-115963

Int. Cl.[6] G11B *7/24*

U.S. Cl. 369—275.3 **6 Claims**



1. An optical information recording medium in the form of a 90 mm ROM disk or a 90 mm magneto-optical recording disk including a partial ROM section, provided with a sector format which is preformatted in accordance with a mark edge recording method, wherein a specified data pattern is preformatted in the form of prepits in an unformatted area GAP with a specified byte.

5,572,507

OPTICAL DISC, DEVICE FOR CHECKING OPTICAL DISC, AND DEVICE FOR RECORDING INFORMATION ON OPTICAL DISC

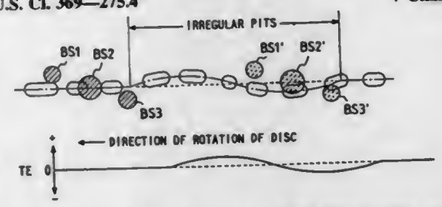
Kazuhisa Ozaki, Yokosuka; Kanji Kayanuma, Hadano, and Hirofumi Nagano, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 11, 1995, Ser. No. 526,190

Claims priority, application Japan, Sep. 22, 1994, 6-254804

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—275.4 **7 Claims**



1. An optical disc having a sequence of pits which extends along a track, the pit sequence representing a recorded signal divided into

data blocks, the pit sequence including a normal pit train and an unusual pit train, the normal pit train being symmetrical with respect to a center of the track, the unusual pit train being different from the normal pit train in at least one of shape and pit arrangement, the unusual pit train being at a position having a predetermined relation with the data blocks and causing a variation in symmetry of an RF signal.

5,572,508

OPTICAL DISC HAVING SQUARE INFORMATION PITS ARRANGED IN SYMMETRICAL PATTERNS

Makoto Satoh, and Hiroyuki Nakajima, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

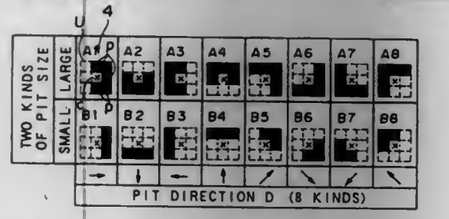
Continuation of Ser. No. 236,042, May 2, 1994, abandoned.

This application Sep. 18, 1995, Ser. No. 529,788

Claims priority, application Japan, May 6, 1993, 5-105711

Int. Cl.[6] G11B *7/24*

U.S. Cl. 369—275.4 **6 Claims**



1. An apparatus for reading an optical disc,

said optical disc comprising:

a substrate in a disc shape, having an information record surface on which information is recorded;

a track spirally formed on said information record surface in a circumferential direction of said optical disc, and having a predetermined track pitch in a radial direction of said optical disc;

a plurality of information units arranged in the circumferential direction of the track, each of which has a square shape, and has a predetermined unit length in the circumferential direction and a predetermined unit length in the radial direction; and

a plurality of surface deformed portions, each of which is formed in a respective one of said information units and comprises a plurality of surface deformed pieces having substantially the same size, said surface deformed portions having at least M different shapes (M≧2, M: natural number) and being disposed in M different directions on a plane of said information record surface, from a center point of its respective information unit by a combination of said surface deformed pieces, each of said surface deformed portions having a radial contour that is substantially symmetrical with respect to only one straight radial line passing through said center point of its respective information unit and that is asymmetrical with respect to all other straight radial lines passing through said center point, each of said surface deformed portions having a predetermined optical height or depth,

wherein all information recorded on said optical disc is in the form of only said plurality of surface deformed portions;

said apparatus comprising:

a light irradiating means for irradiating a laser light having a predetermined wavelength onto said information record surface under an optical condition of a predetermined numerical aperture;

an optical detecting means having M×K divided light receiving surfaces (K: natural number) such that a line parallel to said disc circumferential direction corresponds to one of division lines, for converting light incident on the light receiving surfaces into electric signals to output light detection signals respectively;

an optical system for directing the reflected laser light, which is diffracted and reflected by said surface deformed portions onto a center portion of said light receiving surfaces in case that the laser light is irradiated onto a center line of said track; and

an operating means for obtaining an information signal corresponding to the form of the surface deformed portion on the basis of the light detection signals to output the information signal;

wherein said operating means includes means for obtaining the symmetrical axis of the surface deformed portion on the basis of the light detection signals, and means for obtaining the direction of the surface deformed portion on the basis of the light detection signals, said operating means obtaining the information signal on the basis of the obtained symmetrical axis and the obtained direction.

5,572,509

METHOD FOR MOUNTING MAGNETIC PLATE TO DISC SUBSTRATE

Daiki Kobayashi, and Hiromichi Takano, both of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

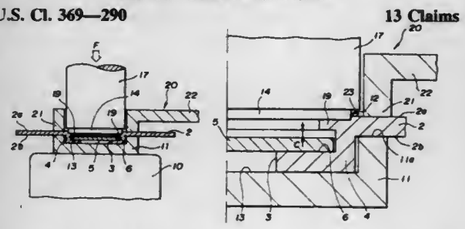
Continuation of Ser. No. 65,934, May 24, 1993, abandoned.

This application Feb. 16, 1995, Ser. No. 390,436

Claims priority, application Japan, May 26, 1992, 4-157306; Jul. 9, 1992, 4-204323

Int. Cl.[6] G11B *3/70;5/84;7/26*

U.S. Cl. 369—290 **13 Claims**



1. A method of mounting a magnetic plate on a disc substrate, comprising:

placing the magnetic plate within a recess of the disc substrate;

abutting an ultrasonic wave generating means on a rim of said recess of said disc substrate; and

generating substantially only a torsional ultrasonic wave having a frequency in the range of 15 to 50 kHz by operating the ultrasonic wave generating means, thereby ultrasonically forming a protrusion in contact with said disc substrate directed towards a radially inner space of said recess for mounting said magnetic plate between said protrusion and said disc substrate, wherein a clearance is formed between the magnetic plate and the protrusion, and further, wherein the magnetic plate is capable of movement relative to and is not rigidly affixed to the substrate.

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5,572,510
METHOD AND ARRANGEMENT FOR MEASURING THE CONDITION OF A BASE STATION

Vesa Koivu, Oulu, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

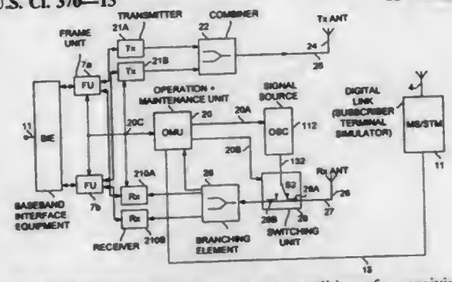
PCT No. PCT/FI94/00196, § 371 Date Mar. 8, 1995, § 102(e) Date Mar. 8, 1995, PCT Pub. No. WO94/27385, PCT Pub. Date Nov. 24, 1994

PCT Filed May 17, 1994, Ser. No. 374,626

Claims priority, application Finland, May 18, 1993, 932259

Int. Cl.[6] H04B *7/212;* **H04J** *3/16;* **H04Q** *7/20*

U.S. Cl. 370—13 **11 Claims**



6. An arrangement for measuring the condition of a receiving antenna of a base station in a TDMA radio system employing TDMA channel structures according to ETSI/GSM recommendation 05.02, said arrangement comprising:

means for sending a predetermined radio frequency test signal via an antenna line to the antenna during at least one time slot of an IDLE frame of a channel structure TCH/F+SACCH/TF or during at least one time slot of an IDLE frame of a channel structure SDCCH/8 according to ETSI/GSM recommendation 05.02;

first means for measuring the magnitude of a measuring signal component reflected from the antenna and propagated along a predetermined measuring path;

means for sending a measuring signal directly towards a receiver along said measuring path during at least one time slot of said IDLE frame;

second means for measuring the magnitude of the measuring signal sent directly along said measuring path; and

means for determining the condition of the antenna on the basis of the ratio between the measuring signal magnitudes measured by said first and second measuring means.

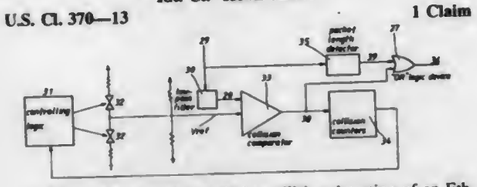
5,572,511
AUTO-ADJUSTMENT CIRCUIT FOR COLLISION DETECTION OF ETHERNET

Kenneth W. Ouyang, Taipei; Yin-Kung Huang, Ta-Yuan, and Phil Shieh, Taipei, all of Taiwan, assignors to Tamarack Microelectronics, Inc., Taipei, Taiwan

Filed Jan. 27, 1995, Ser. No. 378,824

Int. Cl.[6] H04L *12/413*

U.S. Cl. 370—13 **1 Claim**



1. An auto-adjustment circuit for collision detection of an Ethernet IEEE 802.3 network comprising a low-pass filter, a packet length detector, a collision comparator, collision counters, a controlling logic, level adjustors, and an OR gate;

said packet length detector receiving a signal from the network, and outputting to said OR gate a short packet length signal when a packet length of any signal on the network is lower than a normal length;

said low-pass filter receiving said signal from said network, filter said signal and sending a filtered signal to said collision comparator;

said collision comparator comparing said filtered signal to a reference voltage, determining if a collision signal has occurred, and outputting a result as a "collision" or "no collision" signal to said OR gate and said collision counters;

said collision counters receiving said "collision" and "no collision" signals from said comparator, and outputting an increase voltage signal when no collision has occured for a predetermined number of times, outputting a decrease voltage signal when a continuous collision has occurred a predetermined number of continuous times, and otherwise outputting a hold voltage signal;

said controlling logic receiving said increase, decrease and hold voltage signals, and controlling said level adjusters to increase, decrease, or hold voltage of said reference voltage respectively in response to said increase voltage signal, said decrease voltage signal, and said hold voltage signal; and

said OR gate outputting a collision report signal of true when receiving either said "collision" signal from said collision comparator or said short packet signal from said packet length detector.

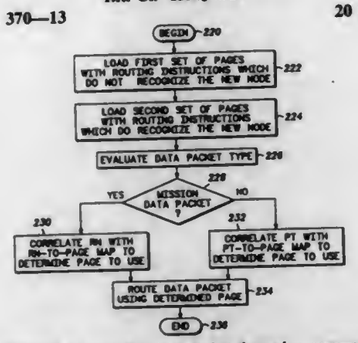
5,572,512
DATA ROUTING METHOD AND APPARATUS FOR COMMUNICATION SYSTEMS HAVING MULTIPLE NODES

Victor H. Cutler, Jr., Mesa, and Henry J. Happ, III, Gilbert, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 5, 1995, Ser. No. 498,213

Int. Cl.[6] H04J *3/24*

U.S. Cl. 370—13 **20 Claims**



1. A method for routing a data packet through a communication system comprising a selected node and neighboring nodes that communicate directly with the selected node, wherein the data packet has a packet destination variable that specifies an intended destination of the data packet, the method comprising the steps of:

a) generating, for a neighboring node, routing instructions comprising a first set of the routing instructions and a second set of the routing instructions, the first set having routing directions for assigned destination identifiers recognized by the communication system, wherein no routing direction of the first set instructs the neighboring node to route the data packet in a direction of the selected node, and the second set having the routing directions for the assigned destination identifiers, wherein at least one of the routing directions of the second set instructs the neighboring node to route the data packet in the direction of the selected node;

b) sending the routing instructions to the neighboring node;

c) receiving the data packet by the neighboring node, the data packet having a routing number and the packet destination variable, the routing number for determining which routing instruction of the first set or the second set to use, and the packet destination variable for correlating with the assigned destination identifiers in the first set and the second set;

d) evaluating the routing number to determine whether the data packet should be routed according to the first set or the second set;

e) if the data packet should be routed according to the first set, correlating the packet destination variable with the assigned destination identifiers of the first set to determine in which of the routing directions to route the data packet;

f) if the data packet should be routed according to the second set, correlating the packet destination variable with the assigned destination identifiers of the second set to determine in which of the routing directions to route the data packet; and

g) routing the data packet according to a direction determined in steps e) and f).

5,572,513
PATH PROTECTION SWITCHING DEVICE

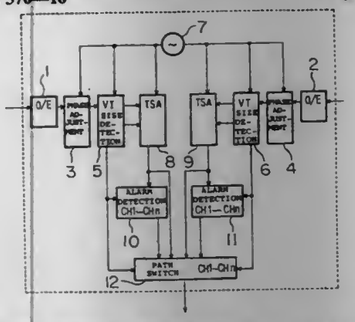
Kanta Yamamoto, and Hideaki Mochizuki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Nov. 22, 1994, Ser. No. 343,707

Claims priority, application Japan, Mar. 18, 1994, 6-048082

Int. Cl.[6] H04J *3/08;3/14*

U.S. Cl. 370—16 **9 Claims**



1. A path protection switching device for a SONET type transmitter-receiver for transmitting and receiving a synchronous byte multiplex signal obtained by multiplexing a plurality of VT signals and mapping a resulting multiplexer signal in a SONET STS-1 frame, the device comprising:

first receiving means for extracting from multiplex signals supplied thereto via one path, only first channel signals directed to a plurality of channels belonging to the transmitter-receiver associated with the device, and subjecting the extracted first channel signals to time-division multiplexing to obtain a first time-division multiplex signal;

second receiving means for extracting from multiplex signals supplied thereto via another path only second channel signals directed to said channels, and subjecting the extracted second channel signals to time-division multiplexing to obtain a second time-division multiplex signal; and

a path switch, coupled to said first receiving means and said second receiving means, for selecting one of the first and second channel signals supplied thereto at identical timing, from the first and second time-division multiplex signals output from said first and second receiving means while the first and second time-division multiplex signals remain multiplexed.

5,572,514
SPREAD SPECTRUM COMMUNICATION SYSTEM CAPABLE OF DETECTING OCCUPYING STATE OF CHANNEL BY OFF-COMMUNICATION TERMINAL

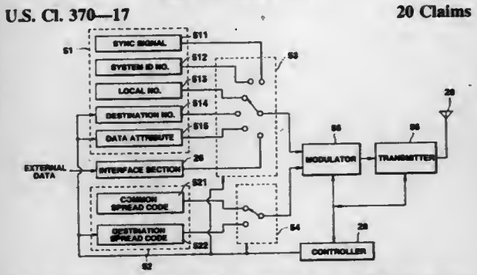
Masayasu Miyake, Fuchu, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1994, Ser. No. 268,832

Claims priority, application Japan, Jun. 30, 1993, 5-160743

Int. Cl.[6] H04J *13/04*

U.S. Cl. 370—17 **20 Claims**



4. A method for providing information regarding bow busy communication channels are, said method being applied to a spectrum spread communication system comprising a plurality of terminals which perform communication by use of radio signals of a same frequency band, said method comprising the steps of:

causing communicating terminals, which are among said terminals and communicate with each other, to exchange radio signals which are spread-modulated with respective individual spread codes, and to simultaneously transmit a radio signal which is spread-modulated with a common spread code that is common to all of said terminals; and

causing non-communicating terminals, which do not participate in communication, to receive a radio signal and decode the received radio signal by use of the common spread code, providing the information regarding how busy the communication channels are on the basis of results of demodulation.

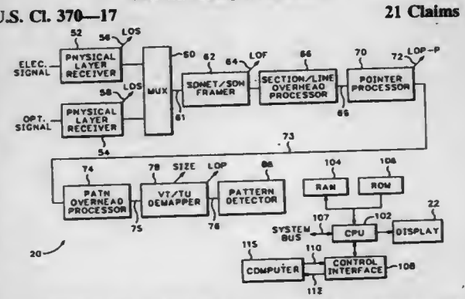
5,572,515
SONET/SDH SIGNAL RECOGNITION AND SELECTION

Alistair Williamson, and Robert J. Woolridge, both of Portland, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Dec. 28, 1994, Ser. No. 366,078

Int. Cl.[6] H04J *3/14;14/08*

U.S. Cl. 370—17 **21 Claims**



1. A method for configuring a measurement test instrument for analyzing an input Sonet/SDH signal, the signal having section, line and path overheads, a signal rate and at least one signal structure, the method comprising the steps of:

(a) detecting the presence of the input Sonet/SDH signal in a physical layer receiver configurable with scrambling and sensitivity settings;

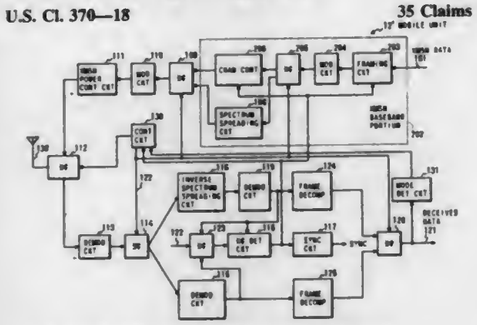
(b) determining the signal rate for the detected input Sonet/SDH signal by setting a framer at various frame rates for detecting a framed input Sonet/SDH signal with the framed input signal being a function of the signal structure;
(c) determining the signal structure for the framed input Sonet/SDH signal; and
(d) determining a mapping structure of the framed input Sonet/SDH signal.

5,572,516

MOBILE UNIT COMMUNICATION SYSTEM

Kazuyuki Miya, Machida, and Osamu Kato, Yokohama, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jan. 31, 1995, Ser. No. 381,488
Claims priority, application Japan, Jan. 31, 1994, 6-9611
Int. Cl.[6] H04J *13/00*
U.S. Cl. 370—18 35 Claims



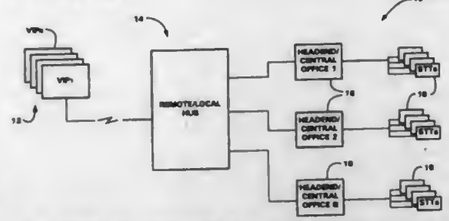
1. A mobile unit communication system comprising:
mobile units;
a first base station, having a first service area, for transmitting and receiving a first communication signal having a first frame to and from mobile units within said first service area, said first base station communicating with said mobile units through a plurality of first channels by a time division multiple access and time division duplex (TDMA/TDD) format through said first communication signal; and
a second base station, having a second service area adjacent to or overlapping said first service area, for transmitting and receiving a second communication signal having a second frame to and from mobile units within said second service area, said first and second frames having the same length, said second base station communicating with said mobile units within said second service area through a plurality of second channels by a code division multiple access and time division duplex (CDMA/TDD) format through said second communication signal, at least one of said first and second base stations having a frame synchronizing portion for detecting a phase between said first and second frames and synchronizing said first and second frames in accordance with said detected phase, each of said mobile units having:
a first communication circuit for communicating with said first base station through said first communication signal in a first mode; and
a second communication circuit for communicating with said second base station through said second communication signal in a second mode.

5,572,517

CONFIGURABLE HYBRID MEDIUM ACCESS CONTROL FOR CABLE METROPOLITAN AREA NETWORKS

Reem Safadi, Horsham, Pa., assignor to General Instrument Corporation, Hatboro, Pa.

Continuation-in-part of Ser. No. 395,325, Feb. 28, 1995. This application Mar. 10, 1995, Ser. No. 402,007
Int. Cl.[6] H04J *4/00*; H04H *1/02*
U.S. Cl. 370—50 32 Claims



1. A system for controlling access to a bi-directional cable television hybrid fiber-coax network having a plurality of upstream and downstream communication channels, each upstream channel supporting a different communication mode, the system comprising a headend unit and at least one subscriber unit:
said subscriber unit having:
means for receiving a request for transmitting over said network;
means for determining the type of communication to be transmitted;
means for selecting a communication mode, based upon said determination, for transmitting said communication;
means for transmitting a connection request over one of said upstream channels;
means for receiving a connection acknowledgment over one of said downstream channels, wherein said acknowledgement includes an authorized communication channel assignment; and
means for transmitting communications over said authorized channel; and
said headend unit having:
means for receiving said connection request from said subscriber unit;
means for monitoring communication traffic over an upstream channel associated with said selected communication mode;
means for configuring selected parameters of said communication mode, said configuring means being responsive to said monitoring means; and
means for transmitting a connection acknowledgment over said downstream channel to said subscriber unit.

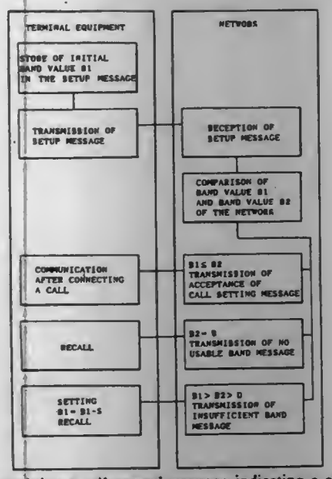
5,572,518

BAND MANAGEMENT SYSTEM IN COMMUNICATION

Maki Takama; Tetsuo Tachibana, and Emi Hata, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 909,019, Jul. 6, 1992, abandoned. This application May 1, 1995, Ser. No. 432,258
Claims priority, application Japan, Jul. 5, 1991, 3-165366
Int. Cl.[6] H04J *3/12*
U.S. Cl. 370—58.1 17 Claims

1. A band managing method in a communication system having terminal equipment connected to a communication network comprising the steps of:
(a) transmitting a first message including an initial band value B1 to be used by the terminal equipment from the terminal equipment to the network;
(b) comparing the initial band value B1 of the terminal equipment and an available band value B2 of the network;



(c) transmitting a call control message indicating a call setting from the network to the terminal equipment when the result of the comparison is B1≦B2;
(d) transmitting a call control message indicating no usable band from the network to the terminal equipment and releasing call setting from the network, when the result of the comparison is B2=0;
(e) transmitting a call control message indicating lack of usable band from the network to the terminal equipment and releasing call setting from the network, when the result of the comparison is B1>B2>0;
(f) cutting off the call when the terminal equipment receives the call control message indicating no band to use; and
(g) calculating a revised band value B3 which is less than the available band value B2, transmitting the revised band value B3 as the first message from the terminal equipment to the network.

5,572,519

Patent Not Issued For This Number

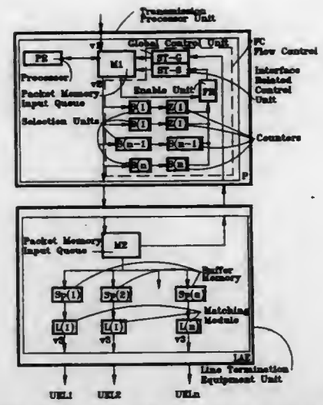
5,572,520

METHOD AND CIRCUIT ARRANGEMENT FOR CONTROLLING THE TRANSMISSION OF MESSAGE BLOCKS WITHIN A TRANSMISSION SYSTEM

Heinrich Schenk, and Stephan Knecht, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 13, 1995, Ser. No. 387,188
Claims priority, application Germany, Feb. 18, 1994, 44 05 262.6
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—60 11 Claims

1. A method for control of transmission of message blocks in a transmission system formed of a switching equipment unit which is connected to a plurality of transmission processor units, each transmission processor unit being connected to a respective line termination equipment unit, each line termination equipment unit being connected to a plurality of transmission lines via respective interfaces, and wherein said switching equipment unit transmits message blocks to each of the transmission processor units, comprising the steps of:
providing each transmission processor unit with an input queue for reducing a transmission rate of the received message blocks;



providing each line termination equipment unit with an input queue for reducing a transmission rate of message blocks to be sent to the respective interfaces and connected transmission lines at those interfaces on the respective line termination equipment unit;
providing a control signal from the line termination equipment unit input queue indicative of a filling degree of the input queue;
providing a flow control in the respective transmission processor unit which receives said control signal indicative of filling degree; and
employing said flow control to regulate message block flow through said input queue of said transmission processor unit such that
given presence of a defined filling degree of the input queue of the line termination equipment unit, message block flow through the input queue of the transmission processor unit is suppressed; and
a momentary load value is calculated for each of the individual interfaces and corresponding transmission lines for the respective line termination equipment unit connected to the respective transmission processor unit, said momentary load value being based on a number of message blocks respectively forwarded to the respective interface per unit time and on an outflow rate for the respective interface and respective transmission line, and given a crossing of a defined limit value by the momentary load value for the respective interface, output of message blocks in the input queue of the respective transmission processor unit to the respective interface and connected transmission line is suppressed.

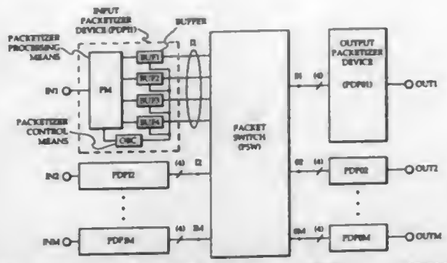
5,572,521

PACKETIZER ARRANGEMENT HAVING PACKETIZER CONTROL MEANS (OBC) FOR CONTROLLING A PACKETIZER PROCESSING MEANS (PM)

Bart J. G. Pauwels, Tessenderlo, and Filip Callens, Hoegaarden, both of Belgium, assignors to Alcatel NV, Netherlands

Filed Apr. 21, 1995, Ser. No. 426,026
Claims priority, application European Pat. Off., Apr. 22, 1994, 942001112
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—60 8 Claims

1. A packetizer arrangement including at least one packetizer device (PDPI1, . . ., PDPIM, PDPO1, . . . , PDPOM) having packetizer processing means (PM) for generating packets of respective individual packet streams from corresponding individual data streams (IDS1, . . . , IDSN) which are multiplexed and form part of an incoming data stream (CDS), each one of said packets including a set of subsequent data portions of a respective one of



said corresponding individual data streams (IDS1, . . . , IDSN), characterized in that said

at least one packetizer device (PDPI1, . . . , PDPIM, PDPO1, . . . , PDPOM) includes packetizer control means (OBC) adapted to control said packetizer processing means (PM) to determine a last data portion of the set of subsequent data portions as a data portion incoming substantially a time interval after an immediately preceding packet has been generated, said time interval corresponding to a length of said immediately preceding packet.

5,572,522

ASYNCHRONOUS TRANSFER MODE SWITCH WITH MULTICASTING ABILITY

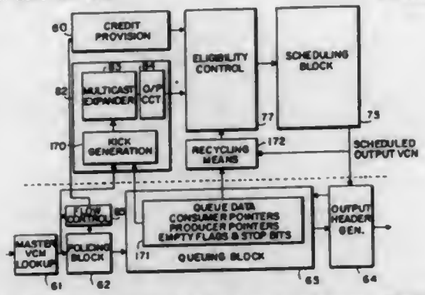
Costas Calamvokis, Bishopston, and David Banks, Redland, both of England, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 13, 1995, Ser. No. 422,122

Claims priority, application European Pat. Off., Apr. 28, 1994, 94303120

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—60.1 **9 Claims**



1. Apparatus for receiving at least one input stream of packets each having a packet body and multicasting this stream as a plurality of output streams of packets by copying across the packet bodies of the packets of the input stream into packets of the output streams, said apparatus comprising:

input means for receiving packets and determining to which input stream each packet belongs,

storage means for storing both the packet bodies of the packets received by the input means and a respective sequence data set for each input stream, each sequence data set serving to order the packet bodies received for the corresponding input stream in order of receipt, the storage means including an input control which upon a new packet body being stored, updates the sequence data set of the input stream to which the packet belongs as determined by said input means, and an output control for maintaining for each output stream a sequence position indicator referencing into the sequence data set of the corresponding input stream to indicate the next packet body to be sent on the output stream concerned, and

output means for scheduling output on said output streams, for communicating with the output control of the storage means to identify the packet body next to be output on the currently-scheduled output stream, and for retrieving and outputting the identified packet body on the scheduled output stream.

5,572,523

METHOD OF CONTROLLING COMMUNICATION NETWORK INCORPORATING VIRTUAL CHANNELS EXCHANGE NODES AND VIRTUAL PATHS EXCHANGE NODES

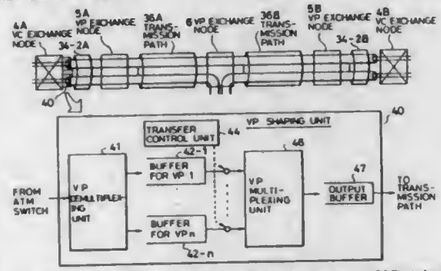
Yasuhiro Katsube, and Toshikazu Kodama, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 300,557, Sep. 6, 1994, Pat. No. 5,453,981, which is a continuation-in-part of Ser. No. 777,164, Oct. 16, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 472,484

Claims priority, application Japan, Oct. 16, 1990, 2-275381

Int. Cl.[6] H04L *12/56;* **H04J** *3/14*

U.S. Cl. 370—60.1 **18 Claims**



1. A method of controlling cell transfer from a VC (virtual channel) exchange node for carrying out cell exchange operations in units of VC in a communication network, comprising the steps of:

storing cells to be transmitted from the VC exchange node separately for each VP (virtual path) in at least logically divided shaping buffers;

controlling an output rate for each VP from the shaping buffers such that a cell flow of each VP is controlled within prescribed traffic characteristics specified to each VP;

multiplexing the cells outputted from the shaping buffers; and

storing the cells multiplexed at the multiplexing step in an output buffer, and outputting the cells stored in the output buffer to a physical transmission path according to a transmission rate of the physical transmission path.

5,572,524

DIGITAL-TRANSMISSION/ANALOG-TRANSMISSION CHANGEOVER APPARATUS

Yuichi Harada; Takayuki Iwasa, and Hitomi Akiyoshi, all of Nagoya, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Oct. 20, 1993, Ser. No. 139,426

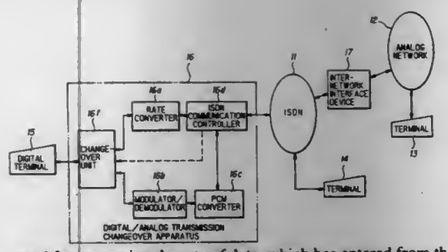
Claims priority, application Japan, Oct. 20, 1992, 4-281302

Int. Cl.[6] H04L *12/00*

U.S. Cl. 370—84 **8 Claims**

1. A digital-transmission/analog-transmission changeover apparatus in a communication system in which a digital transmission is performed between a digital terminal and a terminal accommodated by an integrated service digital network (ISDN), and an analog transmission is performed, via the ISDN and an analog network, between the digital terminal and a terminal accommodated by the analog network, the digital-transmission/analog-transmission changeover apparatus being connected between the digital terminal and the ISDN and comprising:

a rate converter for converting the rate of data, which has entered from the digital terminal, to a rate suited to the ISDN,



and for converting the rate of data, which has entered from the ISDN, to the rate of the digital terminal;

a modulator/demodulator for modulating digital data, which has entered from the digital terminal, into a first analog signal and demodulating a second analog signal into digital data;

a pulse code modulator (PCM) converter connected to the modulator/demodulator for converting the first analog signal, which has entered from said modulator/demodulator, into digital data at the rate suited to the ISDN, and converting digital data from the ISDN into the second analog signal and entering the second analog signal in said modulator/demodulator;

an ISDN communication controller connected to said rate converter and said PCM converter for performing communication control in accordance with an ISDN protocol; and

a connecting unit for selectively connecting the digital terminal to said rate converter or to said modulator/demodulator.

5,572,525

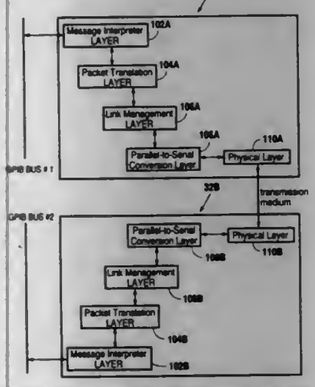
GPIB EXTENDER WITH FIND LISTENER PROTOCOL CAPABILITIES

Tian Shen, and Andrew C. Thomson, both of Austin, Tex., assignors to National Instruments Corporation, Austin, Tex.

Filed May 31, 1995, Ser. No. 455,507

Int. Cl.[6] H04L *12/40*

U.S. Cl. 370—85.1 **33 Claims**



1. A method for performing a find listeners protocol in an IEEE 488 instrumentation system including a first IEEE 488 bus, one or more devices coupled to the first IEEE 488 bus including one or more listener devices, a first bus extender coupled to the first IEEE 488 bus, a second IEEE 488 bus, one or more devices coupled to the second IEEE 488 bus including one or more listener devices, and a second bus extender coupled to the second IEEE 488 bus and also coupled to the first bus extender, wherein at least one of the devices in the system has the capability of being a controller, the method comprising:

the first bus extender determining that a talker is not currently active in the IEEE 488 instrumentation system;

the second bus extender determining that a talker is not currently active in the IEEE 488 instrumentation system;

the first bus extender not behaving as a listener in response to the first extender determining that a talker is not currently active in the IEEE 488 instrumentation system;

the second bus extender not behaving as a listener in response to the second extender determining that a talker is not currently active in the IEEE 488 instrumentation system; and

the controller performing a find listeners protocol in the IEEE 488 instrumentation system to determine addresses of the one or more devices coupled to the first IEEE 488 bus and the one or more devices coupled to the second IEEE 488 bus, wherein the first and second bus extenders do not behave as listeners during at least a portion of said step of performing the find listeners protocol.

5,572,526

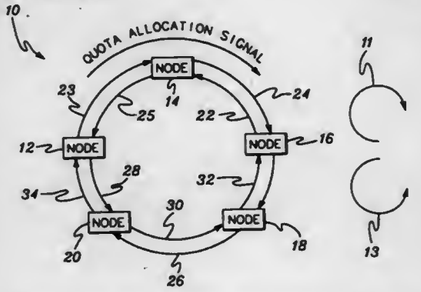
METHOD AND APPARATUS FOR IMPROVED THROUGHPUT IN A MULTI-NODE COMMUNICATION SYSTEM WITH A SHARED RESOURCE

Israel Cidon, Bronx; Leonidas Georgiadis, Chappaqua; Roch A. Guerin, Yorktown Heights, all of N.Y.; Yuval Y. Shavitt, Technion, Israel, and Andrew E. Slater, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 192,884, Feb. 7, 1994, Pat. No. 5,467,352. This application Jun. 6, 1995, Ser. No. 471,571

Int. Cl.[6] H04J *3/00*

U.S. Cl. 370—85.5 **3 Claims**



1. In a communication system having a plurality of nodes and a shared unidirectional communication path and employing an access quota scheme for node access to said shared unidirectional communication path, a method for non-quota access by a given node without quota to said shared unidirectional communication path without affecting quota access by one or more of the other of said plurality of nodes, said method comprising the steps of:

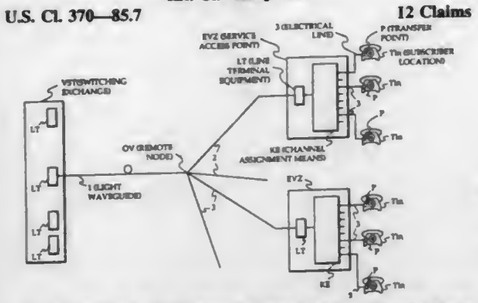
circulating on said unidirectional communication path a status indicator among said plurality of nodes, said status indicator indicating a status for each of said plurality of nodes as either currently starved or satisfied; and

updating said status indicator in response to arrival thereof at said given node to reflect said status of said given node.

5,572,527
SYSTEM FOR LINE-CONDUCTED DIGITAL DATA TELECOMMUNICATIONS

Michael Still, Langenhagen, and Ziaedin Chahabadi, Bad Münder, both of Germany, assignors to KE Kommunikations-Elektronik GmbH & Co., Hanover, Germany

Filed Apr. 22, 1994, Ser. No. 232,521
Claims priority, application Germany, Apr. 23, 1993, 43 13 340.1; Feb. 3, 1994, 44 03 319.2
Int. Cl.[6] H04J *3/02*
U.S. Cl. 370—85.7 **12 Claims**



1. A system for line-conducted digital data telecommunications between a switching exchange of a telecommunication network and subscribers connected to said telecommunication network, said system comprising:

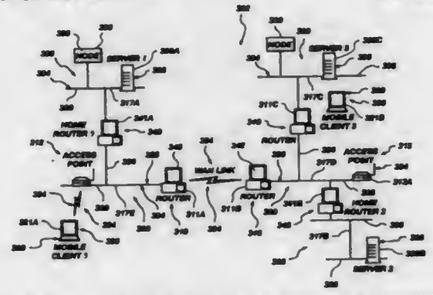
a digital transmission path for connecting each of said subscribers with a respective subscriber transfer point, so each of said subscribers can selectively connect devices for providing different services by free choice up to the full use of a maximum available transfer rate; and

each of said subscribers having a respective channel assignment means for communicating with the respective subscriber transfer point for switching respective transfer rates depending on individual services used by the subscribers, said channel assignment means being controllable by said switching exchange.

5,572,528
MOBILE NETWORKING METHOD AND APPARATUS

Pauline Shuen, Palo Alto, Calif., assignor to Novell, Inc., Provo, Utah

Filed Mar. 20, 1995, Ser. No. 408,230
Int. Cl.[6] H04L *12/46*
U.S. Cl. 370—85.13 **24 Claims**



1. For interconnecting devices in an internetwork comprising multiple networks, a system comprising:

a router for receiving, transmitting, and directing data over a plurality of networks, and for providing a first signal uniquely corresponding to a network of the plurality of networks;

a plurality of nodes associated with the network and positioned to communicate data with the router;

a carrier structure operably positioned between the router and the plurality of nodes for transmitting and receiving data between the router and the plurality of nodes;

a network card operably associated with a node of the plurality of nodes for transmitting and receiving data between the node and the carrier structure, and for providing to the node a second signal unique to the network card;

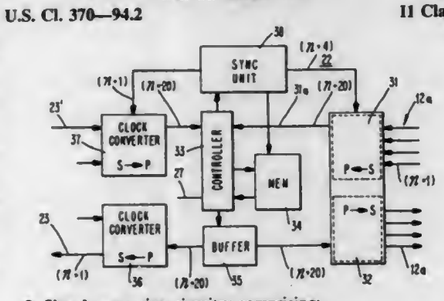
the node operably connected to the router to automatically receive the first signal and the second signal and to form, in accordance with the first and second signals, a local address corresponding to the node;

a home router programmed to automatically maintain session level connectivity between the node and the home router after the node is disconnected and reconnected to the carrier structure.

5,572,529
SIGNAL PROCESSING ARRANGEMENT

Karl S. M. Buhrgard, Vintertullstorget, and Tord L. Haulin, Hammarbygatan, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Oct. 11, 1994, Ser. No. 321,180
Claims priority, application Sweden, Oct. 12, 1993, 9303339
Int. Cl.[6] H04L *7/027*
U.S. Cl. 370—94.2 **11 Claims**



9. Signal processing circuitry comprising:

a node for receiving an input signal;

a synchronizing circuit for synchronizing an internal clock signal to said input signal;

a processing circuit for processing said input signal using said internal clock signal as a reference and generating a processed signal; and

an output circuit for receiving said processed signal and outputting an output signal which is synchronized to an external clock signal.

5,572,530
TECHNIQUE FOR EFFICIENT INTEGRATION OF INTEGRATED SERVICES DIGITAL NETWORK (ISDN) INTO SATELLITE SYSTEM

Dattakumar M. Chitre, Silver Spring, and Piya S. Bhaskar, North Potomac, both of Md., assignors to Comsat Corporation, Bethesda, Md.

Filed Oct. 7, 1994, Ser. No. 319,566
Int. Cl.[6] H04B *7/185*
U.S. Cl. 370—110.1 **11 Claims**

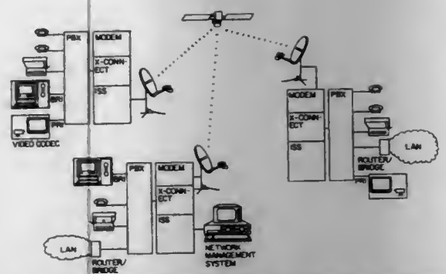
1. A satellite-based Integrated Services Digital Network (ISDN) communications system, comprising:

a satellite having associated satellite channels;

source and destination earth stations for communicating with one another over selected said satellite channels;

originating equipment for generating ISDN signaling messages and bearer traffic supported by ISDN;

destination equipment for receiving said ISDN signaling messages and said bearer traffic;



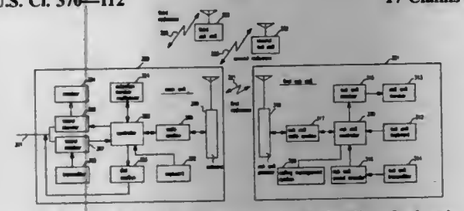
a source ISDN Satellite Switch (ISS) responsive to said ISDN signaling messages for generating resource messages having a predetermined first protocol and, responsive to received said bearer traffic from said originating equipment, for providing a protocol conversion function to thereby convert selected said received bearer traffic from a predetermined second protocol to a predetermined third protocol representing converted data, so as to permit transmission of said resource messages and said converted data from said source earth station to said destination earth station over one of said satellite channels; and

a destination ISS responsive to said resource messages received at said destination earth station via one of said satellite channels for regenerating said ISDN signalling messages for transmission to said destination equipment and for reconverting said converted data from said third protocol to said second protocol.

5,572,531
DIGITAL RADIOTELEPHONE SYSTEM

Koji Nitta, Fukuoka, and Yuji Sumi, Shime-machi, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Mar. 7, 1995, Ser. No. 399,485
Claims priority, application Japan, Mar. 7, 1994, 6-035664
Int. Cl.[6] H04Q *7/30*
U.S. Cl. 370—112 **17 Claims**



1. A digital radiotelephone system having a plurality of sub units and a main unit,

said main unit comprising:

a radio section for conducting radio communication with said plurality of sub units;

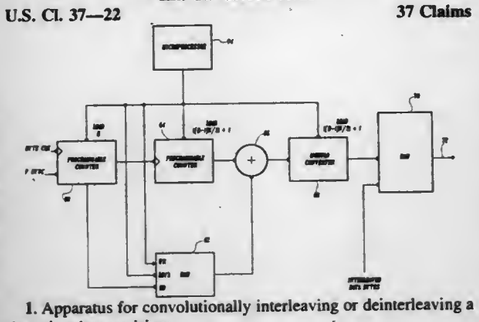
a number multiplexer for multiplexing a plurality of sub unit numbers to generate a calling information signal stream, wherein each sub unit number corresponds to one of said plurality of sub units and each sub unit number is represented by a respectively different portion of said signal stream;

a controller for controlling the transmission of the calling information signal stream to said plurality of sub units simultaneously.

5,572,532
CONVOLUTIONAL INTERLEAVER AND DEINTERLEAVER

Mark Fimoff, Hoffman Estates; Scott F. Halozan, Des Plaines, and Raymond C. Hauge, Fox River Grove, all of Ill., assignors to Zenith Electronics Corp., Glenview, Ill.

Continuation-in-part of Ser. No. 175,325, Dec. 29, 1993, abandoned. This application Sep. 29, 1994, Ser. No. 315,153
Int. Cl.[6] H03M *13/22*
U.S. Cl. 37—22 **37 Claims**



1. Apparatus for convolutionally interleaving or deinterleaving a data signal comprising:

means for generating ((B−1)N/2)+1 sequences of address signals, each of said sequences corresponding to a respective row of a B column matrix, the first column of said matrix comprising (B−1)N/2)+1 consecutively numbered values and each of the remaining columns comprising the preceding column rotated by a selected amount, where B and N are values related respectively to a selected interleave depth and a selected error correction block size of said data signal;

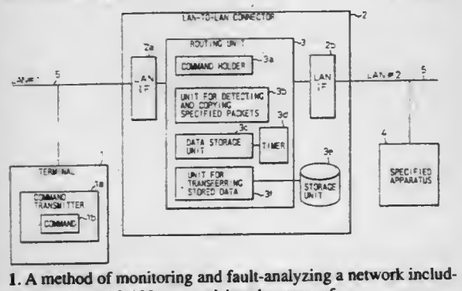
memory means having ((B−1)N/2)+1 storage locations; and

means for applying each of said address signals to said memory means for initially reading the data stored at the addressed memory location and for subsequently writing current data from said data signal into the addressed memory location.

5,572,533
METHOD AND APPARATUS FOR MONITORING AND FAULT-ANALYZING NETWORKS

Kazuhiro Sunada; Yutaka Yamada; Ken Hattori, and Katsushi Sakurane, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jun. 28, 1995, Ser. No. 496,207
Claims priority, application Japan, Oct. 14, 1994, 6-248987
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—20.1 **6 Claims**



1. A method of monitoring and fault-analyzing a network including a plurality of LANs, comprising the steps of:

sending a command from an optional terminal connected to an optional one of the LANs to LAN-to-LAN connectors, for copying a packet having a terminal address to be monitored and transferring the copy packet to a specified apparatus;

causing each of the LAN-to-LAN connectors receive the transfer command, detect packets each having the specified address

among packets received at a LAN interface thereof, copy the packets, store the copied packets in a storage unit, and transfer the stored data to the specified apparatus,

collecting and monitoring the data transferred from the LAN to-LAN connectors at the specified apparatus; and

adding, in each of the LAN-to-LAN connectors, the reception time of each copy packet and information of the LAN interface to the copy packet and storing the information-added copied packet in the storage unit.

5,572,534

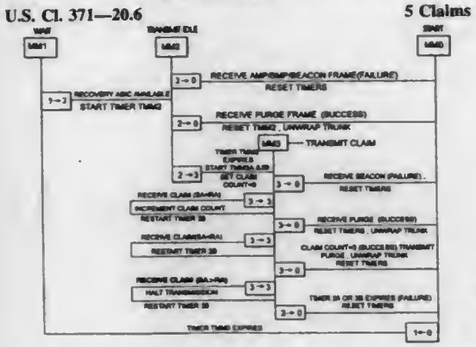
METHOD FOR MERGING WRAPPED MEDIA SEGMENTS ONTO A WORKING NETWORK

Bradley S. Trubey, Raleigh, and Anthony D. Walker, Rougemont, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 24, 1995, Ser. No. 449,866

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—20.6 **5 Claims**



1. In a dual token ring network which includes a plurality of station attachment hubs interconnected by ring segments to form the dual ring and each of said hubs includes means for wrapping a broken or failed segment to form a single operating ring thereby bypassing a broken or failed segment and means for transmitting predetermined media access control (MAC) signals onto said segment, a method for testing a wrapped segment to determine if the break has been healed and the segment can be merged onto the operating ring comprising the following steps:

starting a first timer and transmitting a plurality of idle signals onto the wrapped segment;

receiving signals on the wrapped segment;

repeating the above process steps upon receipt of an Active Monitor, Standby Monitor or Beacon frame during the pendency of the first timer;

unwrapping the segment upon receipt of a ring purge frame during the pendency of the first timer and exit the process;

upon the expiration of the first timer, discontinue transmitting the idle signals, transmit Claim Token flames on the segment and start a second timer;

repeating all of the above process steps if during the pendency of the second timer a Beacon frame is received or the second timer expires; and,

unwrapping the segment and exiting the process if during the pendency of the second timer a Ring Purge frame is received or when n Claim Token frames all having a predetermined source address are received.

5,572,535

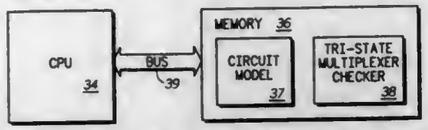
METHOD AND DATA PROCESSING SYSTEM FOR VERIFYING THE CORRECT OPERATION OF A TRI-STATE MULTIPLEXER IN A CIRCUIT DESIGN

Carl Pixley; Hyunwoo Cho; Bernard F. Plessler; Jesse R. Wilson, and Ralph McGarity, all of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jul. 5, 1994, Ser. No. 270,601

Int. Cl.[6] G06F *11/34*; G11C *29/00*

U.S. Cl. 371—22.1 **31 Claims**



27. A tester for testing a tri-state multiplexer for proper operation, the tester comprising:

means for reading a tri-state multiplexer circuit configuration from a computer memory;

means for reading a cone of logic configuration coupled to the tri-state multiplexer circuit;

means for iteratively generating a binary data structure then storing the binary data structure into the computer memory, each binary data structure iteratively generated being either a same size or larger in size than a previously-generated binary data structure since each binary data structure iteratively generated represents an iteratively larger portion of the cone of logic configuration on each iteration; and

means for analyzing the binary data structure which is iteratively generated to determine, in a minimal number of iterations, if the tri-state multiplexer is properly designed as connected in computer memory.

5,572,536

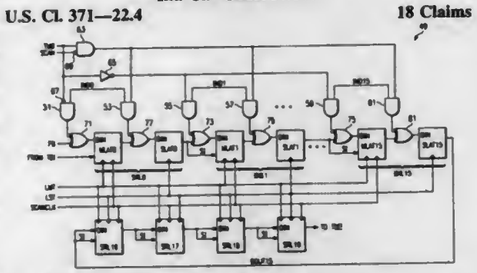
DIGITAL CIRCUITRY WITH IMPROVED PARALLEL SIGNATURE ANALYSIS CAPABILITY

Sudha Thiruvengadam, Sugarland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 26, 1994, Ser. No. 249,482

Int. Cl.[6] G01R *31/317*

U.S. Cl. 371—22.4 **18 Claims**



1. A data processing system, comprising:

a data processing device including data processing circuitry for performing data processing operations on data provided thereto;

a peripheral device connected to said data processing device for communication with said data processing device;

said data processing device having a parallel signature analysis circuit including a plurality of latch circuits arranged in a plurality of pairs, each said pair including first and second latch circuits which are respectively clocked by first and second clock signals, each said latch circuit including a data input and a data output;

a first said pair having said data input of said second latch circuit thereof coupled to said data output of said first latch circuit thereof, said first pair having said data output of said second latch circuit thereof coupled to the data input of the first latch circuit of a second said pair, and said first pair having said data input of said first latch circuit thereof coupled to the data output of the second latch circuit of a third said pair;

said parallel signature analysis circuit including first circuitry for selectively coupling a circuit node driven by said data processing circuitry to said data input of said first latch circuit of said first pair, and second circuitry for selectively coupling said circuit node to said data input of said second latch circuit of said first pair.

5,572,537

MODULATOR-DEMODULATOR DEVICE CAPABLE OF DETECTING AN UNSYNCHRONIZED FRAME STATE BASED ON HARD AND SOFT ERROR VALUES

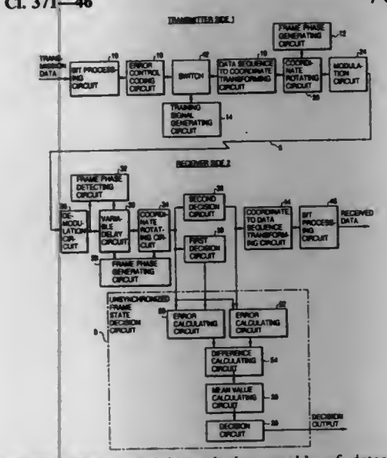
Yasunao Mizutani, Fuchu, and Takashi Kaku, Tama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 635,520, Feb. 13, 1991, Pat. No. 5,319,650. This application Apr. 29, 1993, Ser. No. 53,804

Claims priority, application Japan, Jun. 13, 1989, 1-151272; Jun. 27, 1989, 1-164624

Int. Cl.[6] H03M *13/12*

U.S. Cl. 371—46 **7 Claims**



1. A modulator-demodulator device capable of detecting an unsynchronized frame state, wherein a receiver device is connected to a network in which data to be transmitted is maximum likelihood coded, the coded data is phase modulated, and the phase modulated coded data is transmitted as a modulated signal, said receiver device comprising:

demodulator means for demodulating the modulated signal to produce a received signal point;

compensating means for compensating the received signal point for signal deterioration from rotation of the modulated signal to produce a compensated signal point;

proximate signal point determining means for determining a hard decision signal point by selecting one signal point from a plurality of ideal signal points in a predetermined proximity of the compensated signal point;

maximum likelihood signal point determining means for decoding the maximum likelihood coded data by determining a maximum likelihood signal point using the compensated signal point;

first comparing means for comparing the compensated signal point and the hard decision signal point and deriving a hard error value;

second comparing means for comparing the compensated signal point and the maximum likelihood signal point and deriving a soft error value; and

difference means for deriving a difference between the hard error and the soft error to output an unsynchronized frame state indication based on the difference.

5,572,538

LASER APPARATUS AND ACCESSIBLE, COMPACT COOLING SYSTEM THEREOF HAVING INTERCHANGEABLE FLOW RESTRICTING MEMBERS

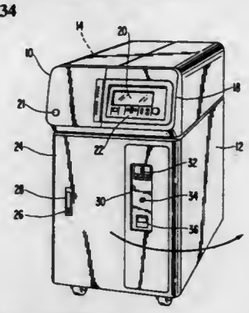
Minoru Saitoh; Akira Uesugi, and Takahiro Uchida, all of Chiba-ken, Japan, assignors to Miyachi Technos Corporation, Chiba-ken, Japan

Filed Jan. 14, 1993, Ser. No. 4,581

Claims priority, application Japan, Jan. 20, 1992, 4-006378; Jan. 21, 1992, 4-006360; Jan. 21, 1992, 4-030168

Int. Cl.[6] H01S *3/04*

U.S. Cl. 372—34 **4 Claims**



1. A laser system comprising:

an upper unit including a laser oscillator;

a lower unit integral with said upper unit, said lower unit including a compartment, power supply means for supplying electric power to said laser oscillator and cooling means for supplying cooling water to said laser oscillator disposed in said compartment side by side as spaced horizontally from one another, and a front panel mounted at the front of said compartment, said front panel being manually openable and closable to expose and cover the power supply means and the cooling means disposed in said compartment;

said cooling means including an ion exchanger which deionizes the cooling water, a filter which removes undesired materials from the cooling water, a storage tank in which the cooling water to be supplied to said laser oscillator is stored, piping connecting and forming a circuit with said laser oscillator and said storage tank, a pump which circulates the cooling water between said laser oscillator and said storage tank via said piping, and an external port connected to said piping and disposed at the front of said lower unit behind said front panel;

said ion exchanger and said filter being located in said storage tank below a normal level to which water fills the tank, said ion exchanger having an inlet connected to said piping and through which the cooling water enters said tank so as to form an inlet of said tank, and said filter having an outlet from which the cooling water flows out of said tank to said piping so as to form an outlet of said tank, and said ion exchanger having an outlet located in said tank such that cooling water flowing therefrom passes to said filter located in said tank; and

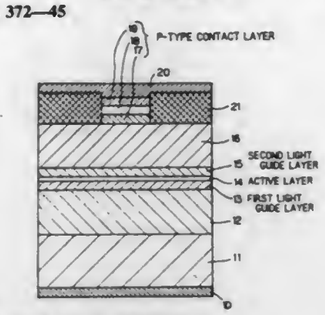
said power supply means including an external terminal disposed at the front of said lower unit behind said front panel.

5,572,539

II-VI SEMICONDUCTOR LASER WITH DIFFERENT GUIDE LAYERS

Kenji Kondo, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 27, 1995, Ser. No. 394,742
Claims priority, application Japan, Mar. 15, 1994, 6-071496
Int. Cl.[6] H01S 3/18
U.S. Cl. 372—45 7 Claims



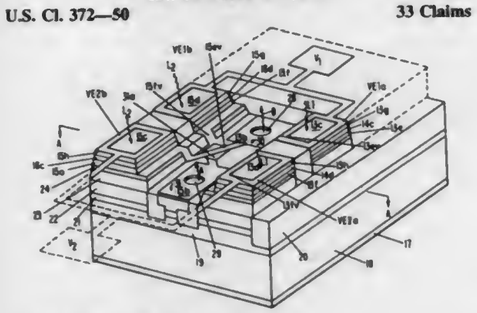
3. An optical device comprising:
a substrate made from a compound semiconductor;
a first light guide layer formed on said substrate and made from a II–VI compound semiconductor;
an active layer or a light waveguide layer formed on said first light guide layer and made from a II–VI compound semiconductor; and
a second light guide layer formed on said active layer or light waveguide layer and made from a II–VI compound semiconductor, said second light guide layer differing from said first light guide layer in thickness and composition.

5,572,540

TWO-DIMENSIONAL OPTO-ELECTRONIC SWITCHING ARRAYS

Julian Cheng, Albuquerque, N.M., assignor to University of New Mexico, Albuquerque, N.M.

Filed Aug. 11, 1992, Ser. No. 925,437
Int. Cl.[6] H01S 3/10;3/19
U.S. Cl. 372—50 33 Claims



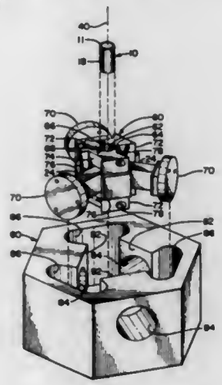
1. An electro-optic device comprising:
a) a substrate;
b) first lasing means including plural stacked layers on the substrate;
c) second means for producing electrical current responsive to radiation impinging thereon located on said substrate and horizontally displaced from said first lasing means, said second means having plural stacked layers, said stacked layers being physically, electrically and optically isolated from said first laser means;
d) third means electrically connecting said first and second means,
whereby in response to a predetermined level of radiation impinging on said second means, sufficient current may be produced in said second means to pass through said third means to provide sufficient bias to enable said first means to lase.

5,572,541

LASER ROD ASSEMBLY FOR SIDE PUMPED LASERS

Paul J. M. Suni, Longmont, Colo., assignor to Coherent Technologies, Inc., Lafayette, Colo.

Filed Oct. 13, 1994, Ser. No. 322,271
Int. Cl.[6] H01S 3/091
U.S. Cl. 372—70 54 Claims



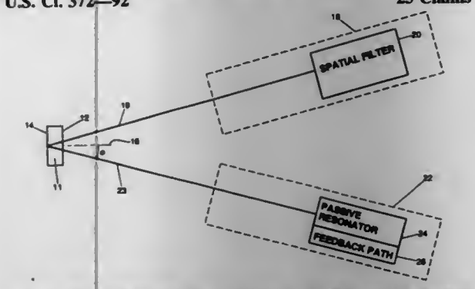
1. Laser rod apparatus, comprising:
an elongated rod having a longitudinal axis and a peripheral surface and which has an atomic structure that absorbs pump light of a first wavelength and emits radiation of a second wavelength in a laser beam that is substantially coaxial with said longitudinal axis of said rod;
said pump light source means positioned adjacent, but spaced a predetermined distance from, said rod for directing pump light substantially transversely into said rod;
reflection means substantially surrounding said peripheral surface of said rod for confining pump light in said rod, said reflection means having an aperture therein for allowing passage of pump light from said side pump light source means into said rod; and
a body portion positioned between said rod and said pump light source means and substantially surrounding said reflection means such that said body portion conducts heat away from said rod, said body portion having a slot extending radially through said body portion between said rod and said pump light source means in alignment with said aperture, said slot being configured as a light guide to conduct the pump light through the predetermined distance from the side pump light source means and to shape distribution of the pump light into the rod while said hotly portion adjacent said slot conducts heat away from said rod adjacent said aperture.

5,572,542

TECHNIQUE FOR LOCKING AN EXTERNAL CAVITY LARGE-AREA LASER DIODE TO A PASSIVE OPTICAL CAVITY

George J. Dixon, Indian Harbor Beach, Fla., assignor to AMOCO Corporation, Chicago, Ill.

Filed Apr. 13, 1995, Ser. No. 421,508
Int. Cl.[6] H01S 3/08
U.S. Cl. 372—92 25 Claims



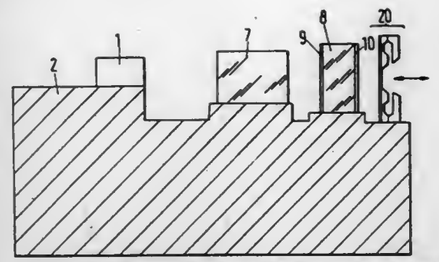
1. A laser comprising in combination: a large-area, non-taper semiconductor gain element having front and back facets for generating optical radiation at a frequency f_0, the front and back facets being characterized by relatively low and high reflectivities, respectively; an extended linear cavity for forming circulating laser power from the optical radiation generated by the gain element, wherein the circulating laser power enters and exits the gain element through the front facet at predetermined angles from the surface normal; a spatial filter for forcing the gain element to emit optical radiation in a near-diffraction-limited beam; a passive resonator for concentrating the circulating laser power at a resonant frequency f_R as resonator power inside the passive resonator; an optical coupling for introducing the optical radiation from the gain element into the passive resonator; and a feedback path for returning to the semiconductor gain element a portion of the resonator power in the passive resonator, the portion of the power returned to the semiconductor gain element being of sufficient magnitude to lock the frequency f_0 of the gain element to the resonant frequency f_R of the passive resonator, such that f_0 and f_R are substantially equal.

5,572,543

LASER SYSTEM WITH A MICRO-MECHANICALLY MOVED MIRROR

Stefan Heinemann, Munich; Axel Mehnert, Schongau; Walter Kroy, Ottobrunn; Peter Peuser, Riemerling; Nikolaus P. Schmitt, Munich, and Helmut Seidel, Starnberg, all of Germany, assignors to Deutsch Aerospace AG, Germany

PCT No. PCT/EP93/00829, § 371 Date Nov. 29, 1994, § 102(e) Date Nov. 29, 1994, PCT Pub. No. WO93/21553, PCT Pub. Date Oct. 28, 1993
PCT Filed Apr. 3, 1993, Ser. No. 318,665
Claims priority, application Germany, Apr. 9, 1992, 42 11 898.0; May 13, 1992, 42 15 797.8
Int. Cl.[6] H01S 3/08
U.S. Cl. 372—107 21 Claims



element and said mirror are displacable within said propagation path of said laser beam;
wherein said carrier element is actuatably coupled to said electro-mechanical means for physical displacement of said carrier element and said mirror, to regulate said propagation of said laser beam.

1. A laser microsystem of the type having at least one mechanically actuatable laser mirror arrangement disposed in a propagation path of a laser beam, for regulating propagation of said laser beam in said path, and at least one electro-mechanical means for physically displacing said mirror arrangement, wherein said laser mirror arrangement comprises:
a carrier element; and
a mirror element comprising an optical coating, said optical coating being deposited on said carrier element;
said carrier element being supported on a semiconductor substrate by means of at least an elastic suspension member formed by etching said semicoductor, whereby said carrier

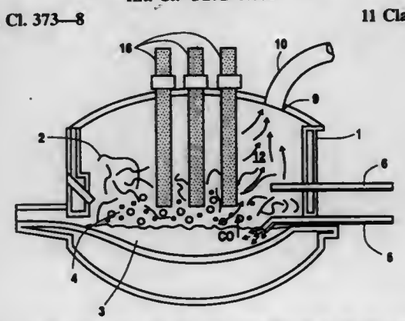
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5,572,544

ELECTRIC ARC FURNACE POST COMBUSTION METHOD

Pravin C. Mathur, White Plains; Zhiyou Du, Croton-on-Hudson, and Ronald J. Selines, North Salem, all of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Jul. 21, 1994, Ser. No. 278,203
Int. Cl.[6] F27D 17/00
U.S. Cl. 373—8 11 Claims



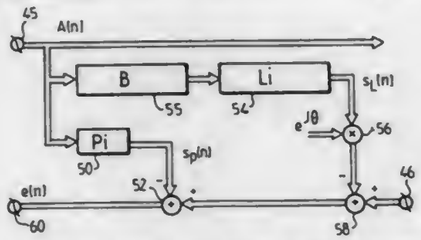
1. A method for carrying out post combustion in an electric arc furnace having at least one electrode and an exhaust port comprising:
(A) forming a molten metal bath comprising molten metal and carbon within the electric arc furnace;
(B) providing main oxygen into the molten metal through the upper portion of the molten metal bath and not providing any oxygen into the molten metal through the bottom of the molten metal bath, and reacting main oxygen with carbon within the molten metal to generate carbon monoxide within the furnace to provide heat to the furnace and to stir the bath;
(C) forming a gas stream within the furnace from where the main oxygen is provided into the molten metal to the exhaust port and passing carbon monoxide generated within the furnace toward the exhaust port within said gas stream;
(D) providing post combustion oxygen into the gas stream above the molten metal and close to the formation of the gas stream; and
(E) reacting said post combustion oxygen with said carbon monoxide within said gas stream and forming carbon dioxide in an exothermic reaction within the electric arc furnace.

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5,572,545
PROCESS FOR STARTING UP A MODEM CONTAINING A VARIABLE-PHASE ECHO CANCELLER AND MODEM IN WHICH SUCH A PROCESS IS IMPLEMENTED

Walid Hachem, Paris; Philippe Lamballe, La Baule, and Catherine Picart, Wissous, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 8, 1994, Ser. No. 302,565
Claims priority, application France, Sep. 13, 1993, 93 10871
Int. Cl.[6] H04B *3/23*
U.S. Cl. 375—222 **4 Claims**



1. A start-up method for a data modem having an echo cancellation loop coupled between a send port and a receive port thereof; said loop including a transversal filter having adjustable coefficients and a phase shifter in cascade therewith for producing an adjustable phase shift, said cascade producing a simulated echo signal from a send port data signal, a subtractor for deriving a possible echo error signal by subtracting the simulated echo signal from a receive port data signal received in response to the send port data signal, and a data processor for adjusting the coefficients of the transversal filter and the phase shift of the phase shifter so as to cancel said possible echo error signal; said method comprising the steps of:

(i) supplying a series of data samples at said send port;

(ii) iteratively adjusting the coefficient values of said filter in accordance with a gradient which results in an exponentially decreasing quadratic error of said coefficient values;

(iii) providing said echo cancellation loop with an adaptation gain α which results in a time constant τ of said decreasing quadratic error which is less than the period of a maximum frequency drift of said simulated error signal;

(iv) estimating the power of said error simulation signal over a time period corresponding to a predetermined number of said series of data samples at the send port;

(v) assigning the estimated power to a numerical quantization level; and

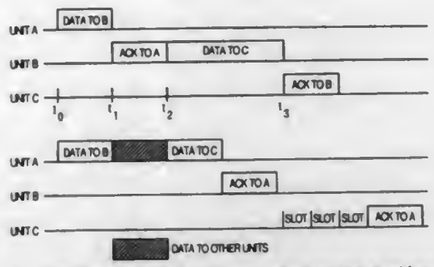
(vi) adjusting the phase shift produced by said phase shifter starting from an initial adjustment thereof determined by said numerical quantization level and a dynamic range K over which the power of said error simulation signal is estimated.

5,572,546
DATA COMMUNICATIONS SYSTEM WITH MULTILINK PROTOCOL

Salomon Serfaty, Doar Gaash; Haim Geller, Modi'in, and Llorah Abel, Hertselia, all of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1994, Ser. No. 362,359
Int. Cl.[6] H04B *1/38;* **H04L** *5/16*
U.S. Cl. 375—221 **6 Claims**

1. A method of operation of a data communications system comprising a plurality of communications units arranged for communication over a common communications channel, the method comprising the steps of:



transmitting from the first unit a message including an address of a destination unit and further including an acknowledgment priority parameter,

receiving the message at the destination unit,

transmitting an acknowledgment to the first unit and

transmitting, in sequence with the acknowledgment, a selected number of messages to a selected number of other units, where the number of other units is selected according to the acknowledgment priority parameter,

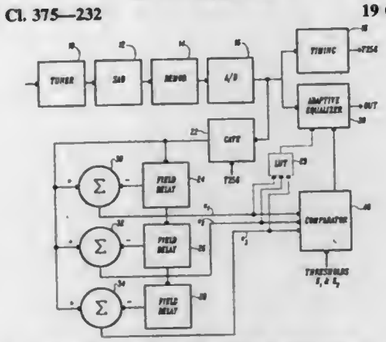
wherein the destination unit receiving the message with the acknowledgment priority parameter

waits a period dependent on the received acknowledgment priority parameter after the channel becomes free before transmitting, waiting a longer period when a lower acknowledgment priority parameter is received and a shorter period when a high acknowledgment priority parameter is received.

5,572,547
SYSTEM FOR CONTROLLING THE OPERATING MODE OF AN ADAPTIVE EQUALIZER

Richard W. Citta, Oak Park, and Larry E. Nielsen, Chicago, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Oct. 4, 1995, Ser. No. 539,149
Int. Cl.[6] H03H *7/30*
U.S. Cl. 375—232 **19 Claims**



1. A method of controlling an equalizer comprising:

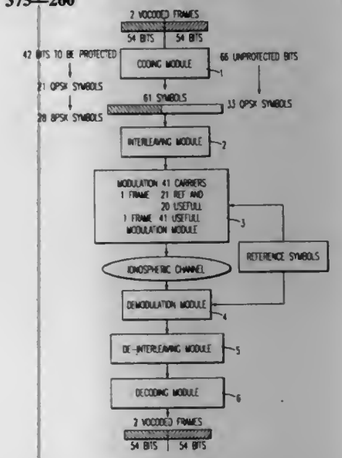
determining the difference between the current value of a received periodic reference component and each of a plurality of its previously received values; and

controlling the equalizer in response to the determined differences.

5,572,548
METHOD OF COHERENT MODULATION AND DEMODULATION FOR HIGH FREQUENCY DATA TRANSMISSION AT HIGH BIT RATE

Didier Pirez, Sannois, and Denis Gombault, Courbevoie, both of France, assignors to THOMSON-CSF, Puteaux, France

Filed Dec. 22, 1992, Ser. No. 994,912
Claims priority, application France, Dec. 26, 1991, 91 16165
Int. Cl.[6] H04L *27/18;27/26*
U.S. Cl. 375—260 **2 Claims**



1. A method of coherent modulation and demodulation for high frequency (HF) data transmission of information symbols at a high bit rate, comprising the steps of:

generating symbols including useful information symbols and reference information symbols;

coding the symbols according to a phase shift keying process, each symbol being represented by a signal having a predeterminated phase angle and amplitude;

modulating each coding symbol on a set of predetermined frequency channels having adjacent frequencies for obtaining a frequency frame for each symbol;

multiplexing in parallel frames of the reference symbols and frames of the useful information symbols, one frame of the reference symbol being inserted between two neighboring frames of the useful information symbols and each reference symbol being alternated with a useful information symbol in each frame of reference symbol;

transforming by a reverse Fourier transform resulting signals applied simultaneously on the channels during each frame;

transmitting on a HF channel a temporal signal obtained from the reverse Fourier transform;

and for demodulation:

recovering by a Fourier transform each frequency channel from the transmitted temporal signal;

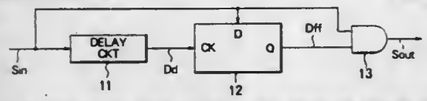
evaluating the HF channel on each frame of reference symbol by calculating a ratio between a corresponding received signal in each channel and a determined reference signal temporal filtering of the ratio by calculating filter coefficients that reduce a mean error of estimation for obtaining a mean value of the ratio, determinating instantaneous noise values by calculating for each channel a square of a difference between its noise affected value and its estimated filtered value; and

decoding each received symbol on each useful frame.

5,572,549
NOISE CANCEL CIRCUIT CAPABLE OF CANCELLING NOISE FROM A PULSE SIGNAL

Yuka Shimomura, and Yasushi Aoki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 27, 1995, Ser. No. 429,686
Claims priority, application Japan, Apr. 27, 1994, 6-90094
Int. Cl.[6] H04B *15/00*
U.S. Cl. 375—285 **7 Claims**



1. A noise cancel circuit for cancelling leading and trailing noise components from an input pulse signal comprising a sequence of input pulses each of which has a leading edge and a trailing edge and which is defined by a predetermined input pulse period and a predetermined input pulse width, said leading and said trailing noise components originating from said leading and said trailing edges, respectively, said noise cancel circuit producing an output pulse signal comprising a sequence of output pulses each of which is defined by an output pulse period equal to said predetermined input pulse period and an output pulse width equal to said predetermined input pulse width, said noise cancel circuit comprising:

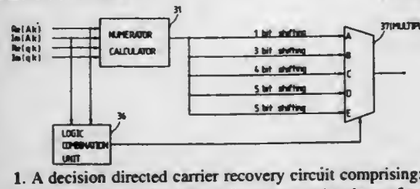
a leading noise cancel circuit supplied with said input pulse signal for cancelling said leading noise component from said input pulse signal to produce a leading noise cancelled signal; and

a trailing noise cancel circuit connected to said leading noise cancel circuit for cancelling said trailing noise component from said leading noise cancelled signal to produce a trailing noise cancelled signal as said output pulse signal.

5,572,550
DECISION DIRECTED CARRIER RECOVERY CIRCUIT USING PHASE ERROR DETECTOR

Sung K. Park, Seoul, Rep. of Korea, assignor to Hyundai Electronics Industries, Co., Ltd., Kyoungki-Do, Rep. of Korea

Filed Dec. 20, 1994, Ser. No. 359,585
Claims priority, application Rep. of Korea, Dec. 29, 1993, 93-30554
Int. Cl.[6] H03D *3/00;3/02;3/24*
U.S. Cl. 375—326 **3 Claims**



1. A decision directed carrier recovery circuit comprising:

a demodulator which adjusts a frequency and a phase of an input carrier to demodulate an original signal therefrom;

a signal decision unit which decides an output signal from said demodulator as a specified symbol;

a phase error detector which receives the output signal from said demodulator and an output signal from said signal decision unit and detects a phase error between the received signals using bit shifting instead of division;

a loop filter which low pass filters an output signal from said phase error detector; and

a voltage controlled oscillator which outputs a signal to adjust the frequency and phase of the input carrier to said demodulator in response to an output signal from said loop filter, wherein said phase error detector includes:

a numerator calculator which receives the output signal from said demodulator and the output signal from said signal

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decision unit and calculates a numerator of a phase error calculation expression on the basis of addition and multiplication;

a logic combination unit which logically combines first and second components of the output signal from said signal decision unit; and

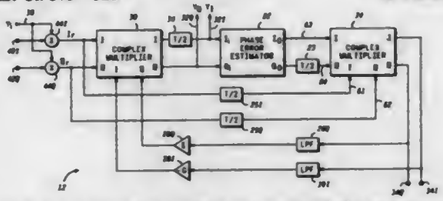
a multiplexer which receives, through a plurality of input terminals, values obtained by bit-shifting an output value from said numerator calculator respectively with respect to all possible values of a denominator of the phase error calculation expression and selecting one of the received values most approximate to an actual value in response to an output signal from said logic combination unit.

5,572,551

CARRIER LOOP ACQUISITION FOR STAGGERED PHASE SHIFT KEYING

Brian P. Kearney, Tempe, and Kurt A. Kallman, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 1, 1995, Ser. No. 522,887
Int. Cl.[6] H04L *27/14*
U.S. Cl. 375—326 **16 Claims**



1. An arrangement for acquiring an input signal, the arrangement comprising:

a first complex multiplier for receiving said input signal having first and second channels, said second channel being delayed with respect to said first channel by one-half of a symbol period, said first complex multiplier providing first and second multiplier output signals, said first complex multiplier having feed-back inputs and for rotating said first and second multiplier output signals;

a first delay coupled to said first complex multiplier for delaying said first multiplier output signal by a one-half of a symbol period;

a phase error estimator coupled to said first delay and to said first complex multiplier, said phase error estimator estimating an error related to said first multiplier output signal and said second multiplier output signal for producing first and second phase error estimator output signals;

said phase error estimator including:

a first summer coupled to said first channel for accumulation an error of said first channel;

a second summer coupled to said second channel for accumulation an error of said second channel;

a third summer coupled to said first and second channels for accumulation of said first and second phase error estimator output signals;

a second delay coupled to said phase error estimator and for delaying said second phase error estimator output signal by said one-half of a symbol period; and

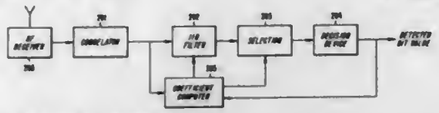
a second complex multiplier coupled to said second delay and to said phase error estimator, said second complex multiplier rotating said second phase error estimator output signal and said first phase error estimator output signal to produce third and fourth multiplier output signals, said second complex multiplier coupled to said feed-back inputs of said first complex multiplier for transmitting said third and fourth multiplier output signals to said first complex multiplier.

5,572,552

METHOD AND SYSTEM FOR DEMODULATION OF DOWNLINK CDMA SIGNALS

Paul W. Dent, Stehags, Sweden, and Gregory E. Bottomley, Cary, N.C., assignors to Ericsson GE Mobile Communications Inc., Research Triangle Park, N.C.

Filed Jan. 27, 1994, Ser. No. 187,062
Int. Cl.[6] H03D *1/00;* **H04B** *1/10*
U.S. Cl. 375—343 **29 Claims**



1. A receiver comprising:

means for receiving a composite signal and producing complex samples of the received composite signal;

means for correlating said complex samples to a known sequence to generate correlation values;

means for selectively filtering said correlation values using filtering coefficients to produce filtered values, one filtered value for each symbol period, based on symbol timing information;

means for comparing said filtered values to potential symbol values to determine a detected data sequence; and

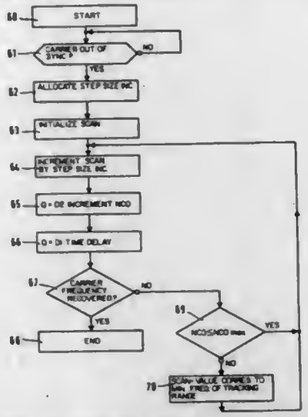
means for computing the filtering coefficients of said selective filtering means to maximize a signal-to-noise ratio of said filtered values accounting for colored interference.

5,572,553

DIGITAL APPARATUS FOR BROADBAND CARRIER-RECOVERY

Mani Kimiavi, Paris, and Alain Fargues, Conflans Ste Honorine, both of France, assignors to Alcatel Telspace, Nanterre Cedex, France

Filed Mar. 1, 1995, Ser. No. 396,724
Claims priority, application France, Mar. 16, 1994, 94 03059
Int. Cl.[6] H04L *27/233*
U.S. Cl. 375—344 **2 Claims**



2. A method of controlling digital carrier recovery apparatus designed to be integrated in a demodulation stage of a receiver for receiving a phase-modulated digital signal having at least two phase states, said carrier recovery apparatus including a correction module for rotating the constellation of the phase states of said digital signal as a function of data representative of the difference in angle of said constellation, said data being formulated on the basis of a phase error signal output by a loop filter including a phase accumulator which includes a summing circuit, a bistable circuit, and a switch coupled between said summing circuit and said bistable circuit, said demodulation stage further including carrier recovery detection apparatus, said method comprising the step of:

determining whether said carrier recovery apparatus is out of synchronization with said phase-modulated digital signal;

performing the following steps when the determining step determines that said carrier recovery apparatus is out of synchronization:

first controlling said switch to apply a control word signal to said bistable circuit;

second controlling said switch to apply an output of said summing circuit to said bistable circuit;

determining whether said carrier recovery apparatus is in synchronization with said phase-modulated digital signal; and

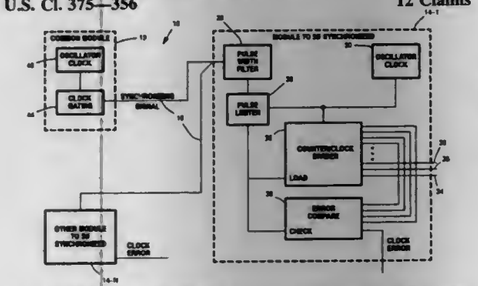
repeating the first and second controlling and synchronization determining step until said synchronization determining step determines that said carrier recovery apparatus is in synchronization with said phase-modulated digital signal.

5,572,554

SYNCHRONIZER AND METHOD THEREFOR

Daniel L. Heflin, Front Royal, Va., assignor to Loral Corporation, New York, N.Y.

Filed Jul. 29, 1994, Ser. No. 283,316
Int. Cl.[6] H04L *7/00*
U.S. Cl. 375—356 **12 Claims**



1. Apparatus for producing a synchronized clock signal, comprising:

synchronizing means for generating a synchronization signal;

clock means for generating a periodic clock signal having a period;

limiting means, receiving the synchronization signal and the periodic clock signal, for producing a plurality of synchronization pulses similar to the synchronization signal but no longer than one period of the periodic clock signal;

counting means, responsive to the synchronization pulses and the periodic clock signal, for producing at least one synchronized clock signal; and

fault detection means for comparing the synchronization pulses with at least one synchronized clock signal and producing an error signal indicative of whether an edge of at least one synchronized clock signal varies from an edge of one of the synchronization pulses by more than a preset tolerance.

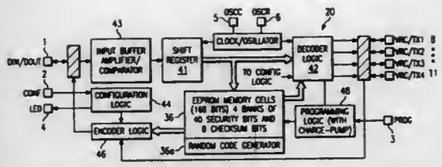
5,572,555

SERIAL CODE FORMAT OPTIMIZED FOR REMOTE CONTROL APPLICATIONS OVER NOISY COMMUNICATIONS CHANNEL

Eric G. Soenen, Plano, and Gregory B. Davis, Allen, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 15, 1994, Ser. No. 259,820
Int. Cl.[6] H04L *7/00;27/06;27/00*
U.S. Cl. 375—364 **3 Claims**

1. A method of decoding a data transmission in a remote control access system of a serial data stream comprising the steps of:



transmitting the serial data stream having a synchronization sequence and a data sequence, the synchronization sequence comprised of a plurality of high pulses and low pulses of about equal time length, the data sequence comprised of a plurality of high data pulses of time length L1 and low data pulses of time length L0, encoded into data symbols by three data pulses having a total time length L where L=L1+L0; and

decoding the serial data stream by:

recognizing said synchronization sequence when eight pair of consecutive high/low pulses are received for which 3/8 L≦L1≦5/8 L;

assigning a unit value UL to the time length of one high/low synchronization pulse of said synchronization sequence; and

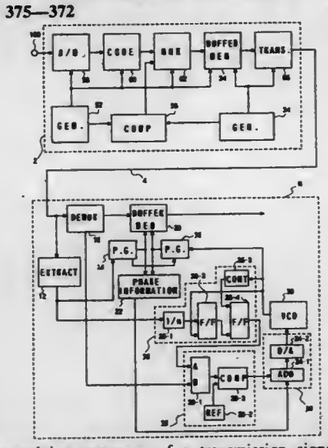
recognizing a data symbol of said data sequence according to 11/8 UL≦L≦13/8 UL.

5,572,556

METHOD AND SYSTEM FOR CONTROLLING OF REPRODUCTION OF SAMPLING SIGNAL

Yasuo Satoh, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 7, 1995, Ser. No. 399,546
Int. Cl.[6] H04L *7/00;25/36;25/40*
U.S. Cl. 375—372 **20 Claims**



1. A receiving apparatus of a transmission signal which is transmitted with a transmission path clock signal and includes a digital data and a transmission frequency difference data indicative of the difference in frequency between a sampling clock signal and the transmission path clock signal on a transmitting side, said apparatus comprising:

a buffer memory;

write means for extracting the transmission path clock signal from the transmission signal, for generating a region indication signal from the extracted transmission path clock signal, and for writing the digital data in said buffer memory in response to the extracted transmission path clock signal;

phase control signal generating means for detecting a start timing of a read operation from the region indication signal and an input read start signal and generating a phase control signal based on the detected start timing of the read operation;

frequency control signal generating means for producing a reception frequency difference data indicative of a difference in frequency between the extracted transmission path clock signal and a reproduced sampling clock signal, and generating a frequency control signal based on the transmission frequency difference data and the reception frequency difference data; and

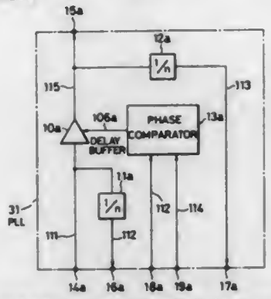
read means responsive to said frequency control signal and said phase control signal, for reproducing a sampling clock signal and generating a start signal to supply the generated start signal to said pbase control signal generating means, and reading out the digital data from said buffer memory in response to the reproduced sampling clock signal.

5,572,557

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE INCLUDING PLL CIRCUIT

Yasushi Aoki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 2, 1994, Ser. No. 253,062
Claims priority, application Japan, Jun. 2, 1993, 5-156297
Int. Cl.[6] H03D *3/24*
U.S. Cl. 375—376 **10 Claims**



1. A semiconductor integrated circuit device comprising:

a phase-locked loop (PLL) circuit receiving an input clock signal and producing an output clock signal having a constant phase shift relative to said input clock signal;

said PLL circuit having:

phase-shifting means for providing a variable phase shift to said input clock signal to make said output clock signal; and

a phase comparator for comparing in phase said input clock signal and said output clock signal and for supplying a control signal to said phase-shifting means based on the result of comparison, said phase-shifting means being controlled by said control signal so that said phase shift of said output clock signal is kept constant.

5,572,558

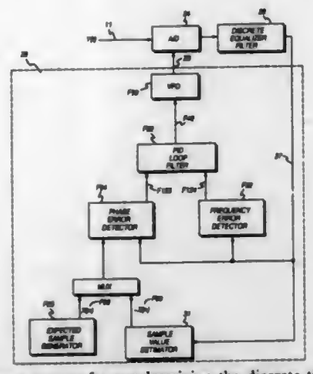
PID LOOP FILTER FOR TIMING RECOVERY IN A SAMPLED AMPLITUDE READ CHANNEL

Richard T. Behrens, Louisville, Colo., assignor to Cirrus Logic, Inc., Fremont, Calif.

Filed Nov. 17, 1994, Ser. No. 341,257
Int. Cl.[6] H03D *3/24*
U.S. Cl. 375—376 **19 Claims**

1. A sampled amplitude read channel for reading data from a magnetic medium by detecting digital data from a sequence of discrete time sample values generated by sampling pulses in an analog read signal from a magnetic read head positioned over the magnetic medium, comprising:

(a) a sampling device for sampling the analog read signal to generate the sequence of discrete time sample values; and



(b) timing recovery for synchronizing the discrete time sample values to a rate of the recorded data, comprising a loop filter comprising:

(a) a first discrete time input connected to receive a phase error control signal;

(b) a Gain path for generating a proportional signal proportional to the magnitude of the phase error control signal;

(c) an accumulation path for generating an accumulated signal that is an approximation of the integral of the phase error control signal;

(d) a difference path for Generating a difference signal that is an approximation of the derivative of the phase error control signal; and

(e) an adder for summing the proportional, accumulated, and difference signals into a discrete time output signal,

wherein:

(a) the data stored on the magnetic medium comprises an acquisition preamble and user data;

(b) the loop filter has programmable coefficients; and

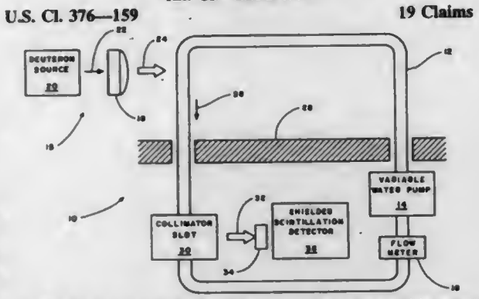
(c) the coefficients of the loop filter are programmed for an acquisition mode when the read channel is reading the acquisition preamble, and the coefficients are programmed for a tracking mode when the read channel is reading the user data.

5,572,559

RADIOGRAPHY APPARATUS USING GAMMA RAYS EMITTED BY WATER ACTIVATED BY FUSION NEUTRONS

Donald L. Smith, Plainfield, Ill.; Yujiro Ikeda, and Yoshitomo Uno, both of Ibaraki, Japan, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 28, 1995, Ser. No. 583,150
Int. Cl.[6] G21G *1/06*
U.S. Cl. 376—159 **19 Claims**



1. Radiography apparatus for determining the composition and/or thickness of a solid object, said apparatus comprising:

a circulating system of water;

a source of energetic neutrons located adjacent a first portion of said circulating water system for directing said energetic neutrons onto the water and activating oxygen in the water to a radioactive state, followed by decay of the activated water by the emission of substantially monoenergetic gamma rays;

collimator means disposed adjacent a second, remote portion of said circulating water system for directing a beam of said gamma rays onto an object; and

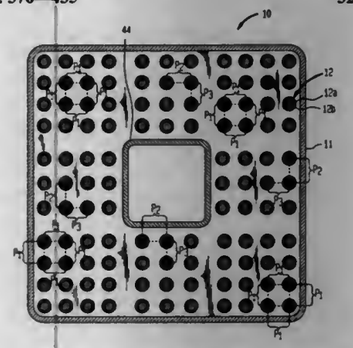
photodetector means disposed adjacent said second, remote portion of said circulating system of water for receiving said gamma rays after transitting the object for analyzing the composition and/or thickness of the object.

5,572,560

BWR FUEL ASSEMBLY HAVING FUEL RODS WITH VARIABLE FUEL ROD PITCHES

Charles A. Brown, Kennewick, Wash., assignor to Siemens Power Corporation, Richland, Wash.

Filed Jun. 29, 1995, Ser. No. 496,809
Int. Cl.[6] G21C *3/32*
U.S. Cl. 376—435 **32 Claims**



1. A nuclear fuel assembly for boiling water reactors, comprising:

(a) a plurality of elongated nuclear fuel rods;

(b) a lower tie plate for positioning the bottom ends of the plurality of nuclear fuel rods in a first array having a first at least one pitch;

(c) an upper tie plate for positioning the top ends of the plurality of nuclear fuel rods;

(d) an outer channel surrounding the plurality of nuclear fuel rods for conducting coolant/moderator about the plurality of nuclear fuel rods from the bottom of the assembly toward the top of the assembly;

(e) a spacer for providing support of the plurality of fuel rods over the length of the assembly and located between the upper and lower tie plates for positioning the plurality of fuel rods in a second array having a second at least one pitch, said plurality of fuel rods passing through apertures in the spacer and being retained in spaced apart relationship by said spacer; and

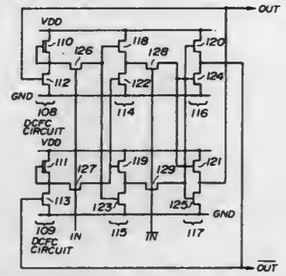
(f) an inner water channel having at least one wall for conducting coolant/moderator through the inner channel from the bottom of the assembly toward the top of the assembly.

5,572,561

FREQUENCY DIVIDING CIRCUIT

Kunihiro Usami, yAMANASHIgun, and Miki Kubota, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 6, 1995, Ser. No. 466,728
Claims priority, application Japan, Jun. 24, 1994, 6-142706
Int. Cl.[6] H03K *23/54;21/00*
U.S. Cl. 377—47 **10 Claims**



1. A frequency dividing circuit comprising:

a first inverter circuit supplied with a first frequency-divided signal;

a second inverter circuit supplied with a second frequency-divided signal which has a complementary relationship to the first frequency-divided signal;

a first pair of push-pull circuits;

a first switch circuit performing a first switching operation in response to a first input signal and selectively supplying output signals of the first and second inverter circuits to the first pair of push-pull circuits so that one of the first pair of push-pull circuits performs a pull-up operation when the other one thereof performs a pull-down operation;

a second pair of push-pull circuits; and

a second switch circuit performing a second switching operation in response to a second input signal which has a complementary relationship to the first input signal and selectively supplying output signals of the first pair of push-pull circuits to the second pair of push-pull circuits so that one of the second pair of push-pull circuits performs a pull-up operation when the other one thereof performs a pull-down operation,

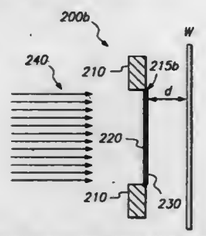
the first and second frequency-divided signals being output from the second pair of push-pull circuits.

5,572,562

IMAGE MASK SUBSTRATE FOR X-RAY SEMICONDUCTOR LITHOGRAPHY

Michael D. Rostoker, San Jose; Nicholas F. Pasch, Pacifica, and Joe Zelayeta, Saratoga, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 56,334, Apr. 30, 1993, abandoned.
This application Oct. 25, 1994, Ser. No. 328,555
Int. Cl.[6] G21K *5/00*
U.S. Cl. 378—34 **10 Claims**



1. A semiconductor lithography apparatus comprising:

a) an X-ray source emitting X-ray radiation in a direction downstream along a path;

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b) a semiconductor wafer disposed downstream of said X-ray source across said path; and

c) an image mask assembly comprising:

i) a peripheral beryllium carrier disposed along said path between said X-ray source and said wafer and spaced substantially parallel to said wafer;

ii) a beryllium substrate having a substantially planar surface and peripherally mounted to said beryllium carrier;

iii) a patterned metal masking material disposed on said substantially planar surface of said beryllium substrate, said patterned masking material further characterized as:

(1) relatively opaque to X-ray radiation,

(2) adherent to beryllium,

(3) insensitive to moisture,

(4) resistant to corrosion, and

(5) having a thermal coefficient of expansion substantially equal to said beryllium substrate and said beryllium carrier;

whereby said image mask assembly, comprising a beryllium carrier, beryllium mask substrate, and masking material having a thermal coefficient of expansion substantially equal to said beryllium carrier and mask substrate, will not be subject to thermal distortion due to the use of materials having matched thermal coefficients of expansion.

5,572,563

MIRROR UNIT AND AN EXPOSURE APPARATUS USING THE UNIT

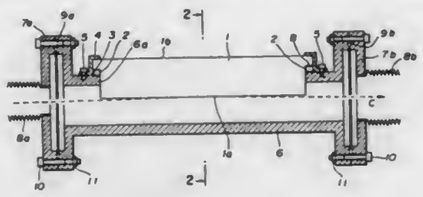
Kazuyuki Kasumi, Machida, and Yutaka Watanabe, Isehara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1994, Ser. No. 357,650

Claims priority, application Japan, Dec. 20, 1993, 5-319725

Int. Cl.[6] G21K *5/00*

U.S. Cl. 378—34 **16 Claims**



1. A mirror unit comprising:

a mirror having a reflecting surface;

a holding member for supporting said mirror; and

an airtight chamber incorporating said mirror, supported by said holding member, in an airtight state,

wherein one of said mirror and said holding member constitutes a portion of a side wall of said airtight chamber and said mirror is detachably mounted to said airtight chamber through an opening in the side wall.

5,572,564

REFLECTING PHOTO MASK FOR X-RAY EXPOSURE AND METHOD FOR MANUFACTURING THE SAME

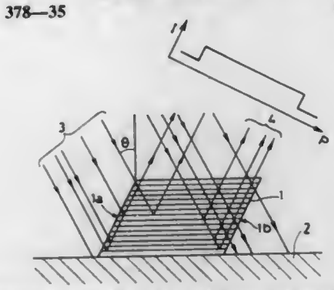
Katsubiko Murakami, Kanagawa, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 288,157, Aug. 9, 1994, abandoned, which is a continuation of Ser. No. 119,887, Sep. 10, 1993, abandoned, which is a continuation of Ser. No. 14,093, Feb. 4, 1993, abandoned, which is a continuation of Ser. No. 822,338, Jan. 17, 1992, abandoned. This application May 15, 1995, Ser. No. 441,660

Claims priority, application Japan, Jan. 23, 1991, 3-021461

Int. Cl.[6] G21K *5/00*

U.S. Cl. 378—35 **15 Claims**



6. Method of manufacturing a reflection-type mask for X-ray exposure using a beam of substantially parallel X-rays incident into the mask for generating reflected X-rays so as to form a mask pattern image, comprising:

(a) forming a multilayer structure of X-ray reflectable material upon a substrate composed of X-ray unreflectable material

(b) forming a resist pattern on the multilayer structure;

(c) irradiating a particle beam onto the resist pattern to effect etching of the multilayer structure in the form of a pattern following the resist pattern such that each patterned multilayer structure has an inclined surface along an edge thereof; and

(d) removing the resist pattern after the completion of the etching process.

5,572,565

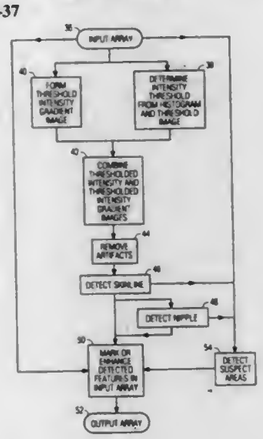
AUTOMATIC SEGMENTATION, SKINLINE AND NIPPLE DETECTION IN DIGITAL MAMMOGRAMS

Mohamed Abdel-Mottaleb, Ossining, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Dec. 30, 1994, Ser. No. 367,022

Int. Cl.[6] A61B *6/00*

U.S. Cl. 378—37 **3 Claims**



1. A method of producing a computer-enhanced mammogram comprising:

irradiating a breast of a subject being examined with X-ray radiation in a predetermined viewing direction;

receiving the X-ray radiation exiting the breast and its external surround from said viewing direction within a two-dimensional field;

producing digital signals as a function of the X-ray radiation received, which digital signals correspond to an input two-dimensional array of digital pixels;

in response to said signals, storing said input two-dimensional array of digital pixels in a digital memory means accessible to a computer;

with said computer, processing the stored two-dimensional array of digital pixels to detect a skinline and to produce an output two-dimensional array of digital pixels in which values of pixels in the output array corresponding to the detected skinline are set to values that mark the detected skinline;

wherein detection of the skinline includes a step of performing a coarse segmentation between the breast and its external surround including a union of first and second sets of pixels located at least in the vicinity of the skinline, the first set of pixels being of pixels having a measure of intensity exceeding a first threshold value and the second set of pixels being of pixels having a measure of intensity gradient exceeding a second threshold value.

3. A method of producing a computer-enhanced mammogram from an input mammogram stored in a digital memory means accessible to a computer as an input two-dimensional array of digital pixels in which the stored input two-dimensional array of digital pixels is processed with said computer to detect a skinline and to produce an output two-dimensional array of digital pixels in which values of pixels in the output array corresponding to the detected skinline are set to values that mark the detected skinline, wherein detection of the skinline includes a step of performing a coarse segmentation between the breast and its external surround in which for each pixel of a set of pixels located at least in the vicinity of the skinline, a measure of intensity at the pixel is compared with a first threshold value and a measure of intensity gradient at the pixel is compared with a second threshold value, and a binary image is formed in which only those pixels of the set for which the measure of intensity does not exceed the first threshold value and the measure of intensity gradient of the pixel does not exceed the second threshold value have a predetermined same one of two binary values.

5,572,566

X-RAY IMAGING APPARATUS AND X-RAY GENERATION DETECTOR FOR ACTIVATING THE SAME

Masakazu Suzuki; Keisuke Mori, both of Kyoto; Akifumi Tachibana, Uji, and Takao Makino, Otsu, all of Japan, assignors to J. Morita Manufacturing Corporation, Kyoto, Japan

Filed Sep. 29, 1994, Ser. No. 314,822

Claims priority, application Japan, Nov. 30, 1993, 5-300346; Nov. 30, 1993, 5-300411; Nov. 30, 1993, 5-300412; Nov. 30, 1993, 5-300413

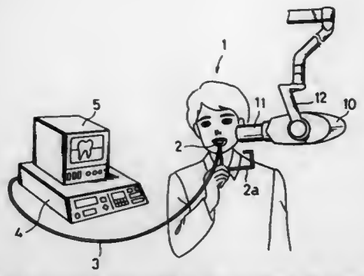
Int. Cl.[6] A61B *6/14*

U.S. Cl. 378—98.2 **1 Claim**

1. A dental X-ray imaging apparatus comprising:

an X-ray irradiator for irradiating X-rays to an intraoral region of a subject, said X-ray irradiator being provided outside the oral cavity of a subject, the X-ray irradiator including an X-ray generator, an X-ray tube for generating X-rays, a high voltage circuit for supplying a high voltage to the X-ray tube, and an X-ray controller for generating a trigger signal for activating the X-ray generator;

an imaging device including a charge coupled device for detecting an X-ray image of the intraoral region, said image device being provided in an intraoral region;



an image processor for reading and processing an X-ray image detected by the imaging device, and displaying the processed image on a monitor; and

a busy signal generating means for generating a busy signal indicating that the image processor is conducting processing of an X-ray image, said busy signal being sent to the X-ray controller during a processing period of the image processor, and when the X-ray controller receives the busy signal, supply of the high voltage is stopped and the trigger signal is not generated in response to the busy signal.

5,572,567

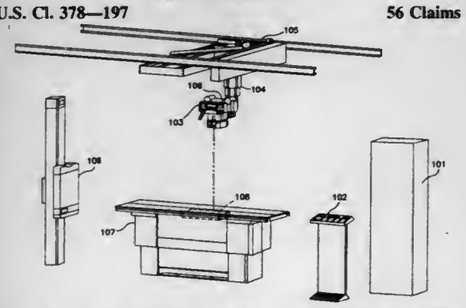
UNIVERSAL RADIOGRAPHIC ROOM

Oscar Khutoryansky; Dennis Bleser; Allan Kojro, all of Glenview; Thomas Simak, Warrenville, and Thomas Rosevear, Forest Park, all of Ill., assignors to Continental X-Ray Corp., Broadview, Ill.

Filed Dec. 8, 1994, Ser. No. 351,617

Int. Cl.[6] H05G *1/02*

U.S. Cl. 378—197 **56 Claims**



1. Radiographic apparatus operable in conventional radiographic mode or linear tomographic mode at operator discretion comprising:

x-ray tube means for controllably emitting x-rays;

support means for supporting the x-ray tube means and for enabling longitudinal and vertical motion of the x-ray tube means;

x-ray tube angulation means for varying the angle of incidence of the emitted x-rays;

examining table means for supporting a patient undergoing diagnostic radiography;

table bucky means for supporting radiographic media, said table bucky means including longitudinal drive means for moving the table bucky means in a longitudinal direction;

wall bucky means for vertically supporting radiographic media; and

controller means for receiving and implementing an instruction to operate the radiographic apparatus in conventional radiographic mode or linear tomographic mode, said controller means simultaneously controlling longitudinal motion, angulation of the x-ray tube means, and motion of the table bucky means when said linear tomographic mode is selected,

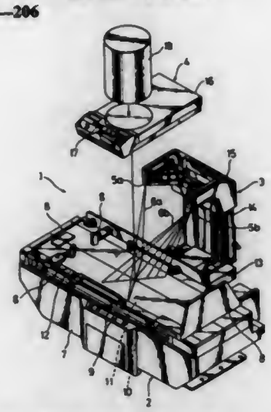
wherein the controller means includes a multi-axis motor controller means for controlling vertical motion of the x-ray tube means, means for sensing vertical position of the wall bucky means and coordinating motion of the x-ray tube means in response thereto and a table elevation controller means for controlling vertical motion of the examining table means in coordination with motion of the x-ray tube means.

5,572,568

X-RAY DIAGNOSTIC TABLE CAPABLE OF DISPLAYING A CENTER OF AN X-RAY VISUAL FIELD

Shingo Kanemitsu, Tochigiken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 7, 1995, Ser. No. 473,943
Claims priority, application Japan, Jun. 15, 1994, 6-132353
Int. Cl.[6] A61B *6/08*
U.S. Cl. 378—206 **5 Claims**



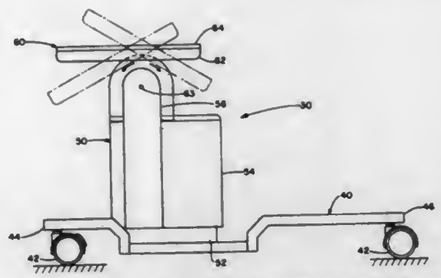
1. An X-ray diagnostic table, comprising:
an X-ray generating means positioned beneath a subject placed on a bed, for irradiating X-ray to the subject;
a spot shot photographing device positioned over said subject placed on said bed, and an upper part of which an image intensifier is provided on for picking up said X-ray through said subject as X-ray image;
a first light projecting means provided on said spot shot photographing device side and positioned on an outside of a photographic visual field of said a spot shot photographing device, for emitting first light along a central axis of an irradiation visual field of the X-ray; and
a second light projecting means provided on said spot shot photographing device side and positioned on an outside of a photographic visual field of said a spot shot photographing device, for emitting second light intersected with said first light emitted by said first light projecting means along said central axis.

5,572,569

TILTING IMAGING TABLE

P. Kevin Benoit, Bath; James M. Bradcovich, Akron, and Richard J. Frankovich, North Olmsted, all of Ohio, assignors to Beta Medical Products, Akron, Ohio

Filed Mar. 31, 1995, Ser. No. 414,373
Int. Cl.[6] A61B *6/04*
U.S. Cl. 378—209 **16 Claims**



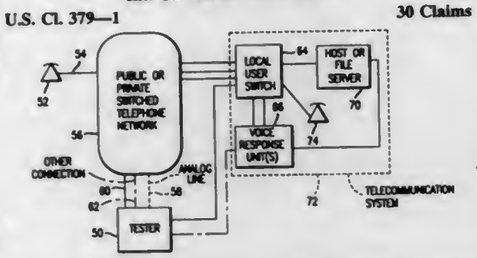
1. Apparatus for supporting a patient for medical diagnostic imaging purposes, said apparatus comprising:
(a) a base supported on casters whereby the apparatus is mobile;
(b) a column extending upwardly from said base, said column comprising a first column member affixed to said base and a second column member which is vertically reciprocable relative to said first member;
(c) longitudinally tiltable table top support means for supporting a removable table top in a position such that at least a portion of said table top is directly above said base, said table top support means being vertically reciprocable with said second column member and pivotally mounted on a second column member for rotation about transverse axis which passes directly above said base and through said second column member, said support means being tiltable about said axis between a head-high position and a head-low position;
(d) a removable longitudinally extending essentially radiolucent table top for medical imaging purposes, said table top being adapted to be detachably secured to said support means and to tilt longitudinally with said support member when secured thereto, at least a portion of said table top being directly above said base when secured to said support means, whereby 360° access to said table top is afforded; and
(e) securing means for detachably securing said table top to said support means.

5,572,570

TELECOMMUNICATION SYSTEM TESTER WITH VOICE RECOGNITION CAPABILITY

John F. Kuenzig, North Chelmsford, Mass., assignor to Teradyne, Inc., Boston, Mass.

Filed Oct. 11, 1994, Ser. No. 321,357
Int. Cl.[6] H04M *1/24;3/08;3/22*
U.S. Cl. 379—1 **30 Claims**



8. A method of testing a telecommunication system, the system having a speech interface and being connectable to a telecommunication network, comprising the steps of:
(a) receiving voice signals produced by the telecommunication system;
(b) transmitting test signals to the telecommunication system; and

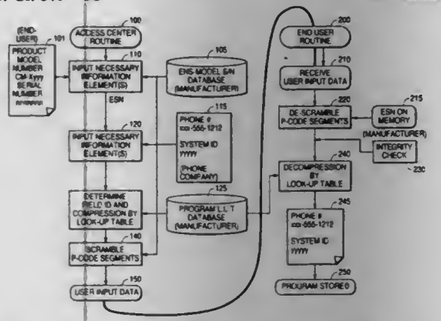
(c) evaluating voice response signals using the voice signals received in step (a), said voice response signals produced by the telecommunication system in response to the test signals transmitted in step (b), thereby determining whether the telecommunication system is operating properly.

5,572,571

PROGRAMMABLE CELLULAR TELEPHONE AND SYSTEM

Kazuhiko Shirai, San Diego, Calif., assignor to Sony Corporation, Japan, and Sony Electronics Inc., N.J.

Filed Dec. 30, 1994, Ser. No. 366,502
Int. Cl.[6] H04Q *7/32;7/38*
U.S. Cl. 379—58 **53 Claims**



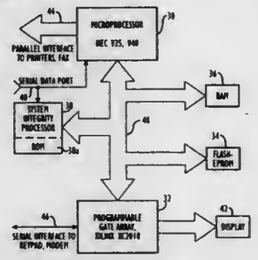
39. A code module for a cellular telephone comprising:
input means for receiving input signals from a keypad on said cellular telephone, wherein said input signals are generated by a sequence of keypad inputs encoding parameter information for activation of said cellular telephone; and
a processor means for processing said input signals to obtain said parameter information to cause said cellular phone to be activated on a telephone network based on said parameter information, wherein:
said input signals comprise a P-code sequence including a preamble, at least one scrambled P-code segment, a postamble, and a sequence terminator; and
said processing means comprises:
descrambling means for descrambling said at least one scrambled P-code segment based on ESN and key codes stored in said cellular phone to obtain at least one descrambled P-code field segment comprising a field identification number and corresponding P-code segment information;
checking means for checking the integrity of said P-code sequence entered in said cellular phone including said preamble, said at least one descrambled P-code segment, said postamble, and said sequence terminator; and
decompressing means for determining parameter information from each field identification number and corresponding P-code field segment of said at least one descrambled P-code segment and for transmitting said parameter information to a number assignment module NAM in said cellular telephone; whereby, required NAM information, optional NAM information, and optional personal settings information may be stored in the NAM to enable activation of the cellular phone on a local telephone network by the user.

5,572,572

COMPUTER AND TELEPHONE APPARATUS WITH USER FRIENDLY INTERFACE AND ENHANCED INTEGRITY FEATURES

Joseph C. Kawan, Hollywood; Melvin M. Takata, Hermosa Beach; Alfred S. Samulon, Malibu; Dilip J. Parekh, Los Angeles; Harvey Marks, Canoga Park; Douglas W. Caruthers, Marina Del Rey; Carol A. Medine, Los Angeles; Truc Nguyen, Cerritos; Lucilla Warren, Santa Barbara; Leslie Moss, Los Angeles; Sarkis A. Merguidijian, Glendale; Morris L. Tucci, Van Nuys; Shan Lee, Hacienda Heights; Jim Vollmer, Culver City, all of Calif.; Leo Ahlin, Etobicoke, Canada; Lawrence D. Weiss, Skaneateles, N.Y.; Leslie Roth, Planview, N.Y.; Kenneth Krieger, Northport, N.Y.; Marjorie Engber, New York, N.Y.; Edward Chin, Long Island City, N.Y., and Robert Haddock, New York, N.Y., assignors to Transaction Technology, Inc., Santa Monica, Calif.

Continuation of Ser. No. 84,319, Jun. 30, 1993, and Ser. No. 104,931, Aug. 12, 1993, Pat. No. 5,321,840, which is a continuation of Ser. No. 439,739, Nov. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 260,832, Oct. 21, 1988, Pat. No. 5,008,927, which is a continuation-in-part of Ser. No. 190,440, May 5, 1988, Pat. No. 4,991,199, said Ser. No. 84,319is a continuation of Ser. No. 433,825, Nov. 9, 1989, abandoned. This application Mar. 16, 1994, Ser. No. 213,791
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—98 **98 Claims**



1. A user-friendly personal communication device having means for operating as a personal computer and a simplified user interface, said personal communication device comprising:
a telephone dialer;
electronics for said telephone dialer;
a standard telephone keypad, said keypad providing output to said telephone dialer;
a microprocessor having an associated memory and a plurality of components, said microprocessor means being responsive to inputs from said standard telephone keypad and instructions maintained in said memory to perform computing and control functions; and
fixed logic means for defining interconnections among said components of said microprocessor and said associated memory.

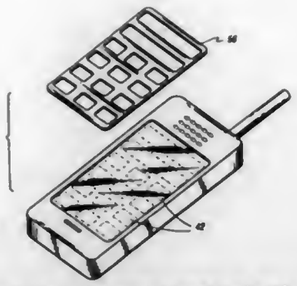
5,572,573

REMOVABLE USER INTERFACE FOR USE WITH INTERACTIVE ELECTRONIC DEVICES

Loren M. Sylvan, Westminster, and Adam N. Marx, Boulder, both of Colo., assignors to U S West Advanced Technologies, Inc., Boulder, Colo.

Filed Jan. 25, 1994, Ser. No. 186,202
Int. Cl.[6] H04Q *7/32;* **G09G** *5/00;* **G06F** *7/00;* **H03K** *17/94*
U.S. Cl. 379—61 **10 Claims**

1. For use with an interactive electronic device, a user interface, comprising:
a touch screen having a plurality of predetermined function labels; and
a raised overlay supported by the touch screen having a plurality of apertures of predetermined size, shape and location corre-



sponding to the predetermined plurality of touch screen function labels, the plurality of apertures for delineating said plurality of touch screen function labels into a plurality of context-sensitive task and information display regions and guiding the user to the appropriate region for direct user manipulated activation.

5,572,574

CORDLESS TELEPHONE REGISTRATION METHOD

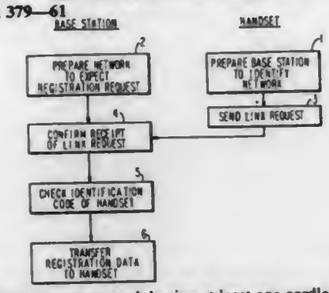
Nigel E. Barnes, Basingstoke, and Colin Corbett, Nottingham, both of United Kingdom, assignors to GPT Limited, United Kingdom

Continuation of Ser. No. 166,811, Dec. 14, 1993, abandoned, which is a continuation of Ser. No. 761,832, Sep. 11, 1991, abandoned. This application Mar. 7, 1995, Ser. No. 400,501

Claims priority, application United Kingdom, Nov. 11, 1989, 8925552

Int. Cl.[6] H04M *11/00;* **H04Q** *7/00*

U.S. Cl. 379—61 **5 Claims**



1. In a telephone network having at least one cordless telephone base station connected thereto, a method of on-air registration of a cordless telephone handset with the telephone network, the cordless telephone handset not being already registered with the telephone network, the cordless telephone handset having a unique identification number for the telephone network, the method comprising the steps of:

a) preparing the cordless telephone handset in advance to identify the telephone network with which registration is sought;

b) preparing the telephone network in advance to expect a registration request from the cordless telephone handset;

c) a user of the cordless telephone handset setting up a communications link between the cordless telephone handset and the telephone network by operating the cordless telephone handset to start transmitting a link request, and the base station that receives the link request operating responsively to confirm receipt of the link request; and

d) communicating over the communications link between the cordless telephone handset and the base station to complete the registration, including the steps of:

(i) determining whether the registration request from the cordless telephone handset is pending by checking the unique identification number of the cordless telephone handset attempting registration, and

(ii) automatically transferring registration data from the base station to the cordless telephone handset upon the successful determination that the registration request is pending, the registration data being permanent and independent of the base station and including the unique identification number of the cordless telephone handset.

5,572,575

CORDLESS TELEPHONE SYSTEM HAVING SPEAKER PHONE FUNCTION

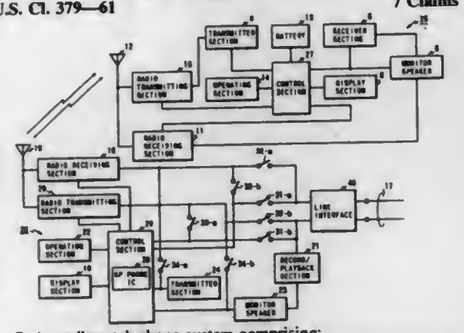
Ikuhiro Yamamoto, and Takashi Matsushiro, both of Kasuga, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Mar. 20, 1995, Ser. No. 406,391

Claims priority, application Japan, Mar. 24, 1994, 6-053956

Int. Cl.[6] H04Q *7/32;7/30*

U.S. Cl. 379—61 **7 Claims**



7. A cordless telephone system comprising:

a base station connected to a telephone line for transmitting and receiving audio signals, said base station having a speaker phone circuit, a radio transmitting section and a radio receiving section;

a handset unit having a radio transmitting section and a radio receiving section for executing radio communication with corresponding radio transmitting section and radio receiving section of said base station;

said handset unit having request means for generating a request signal indicating that said handset unit uses said speaker phone circuit of said base station;

said base station further comprising:

a monitor speaker, connected to an audio signal output terminal of said speaker phone circuit, for outputting voice in response to audio signals generated from said audio signal output terminal;

a microphone, connected to an audio signal input terminal of said speaker phone circuit, for converting user's voices into audio signals and then transmitting the converted audio signals to said audio signal input terminal of said speaker phone circuit;

communication path switching means for switching communication path;

speaker phone communication control means for controlling said communication path switching means in response to said request signal generated by said request means, in such a manner that audio signals of the speaker phone circuit are sent from an audio signal output terminal of the speaker phone circuit to said radio transmitting section of said base station, while audio signals received by said radio receiving section of the base station are sent to an audio signal input terminal of the speaker phone circuit; and

three-way communication control means for controlling said communication path switching means, when said handset unit designates a three-way communication to be executed among said base station, said handset unit and an external party through said telephone line, in such a manner that audio signals of the speaker phone circuit are sent from a telephone-line audio signal output terminal of the speaker phone circuit to said radio transmitting section of said base station and to said telephone line, while audio signals received by said radio receiving section of the base station and audio signals sent from said telephone line are both sent to a telephone-line audio signal input terminal of the speaker phone circuit, said-telephone-line audio signal input and output terminals being connected to the telephone line wherein said communication path switching means enables a communication path to be established between the hand set unit and the telephone line via the speaker phone circuit of said base station.

5,572,576

TELEPHONE ANSWERING DEVICE LINKING DISPLAYED DATA WITH RECORDED AUDIO MESSAGE

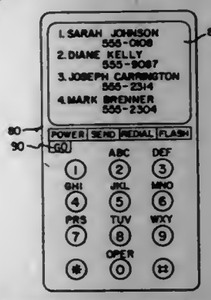
Judah Klausner, Sagaponack, N.Y., and Robert Hotto, La Jolla, Calif., assignors to Klausner Patent Technologies, Sagaponack, N.Y.

Continuation of Ser. No. 881,949, May 12, 1992, Pat. No. 5,390,236, which is a continuation-in-part of Ser. No. 860,699, Mar. 31, 1992, Pat. No. 5,283,818. This application Mar. 15, 1994, Ser. No. 188,200

The portion of the term of this patent subsequent to Feb. 1, 2011, has been disclaimed.

Int. Cl.[6] H04M *1/64;11/00*

U.S. Cl. 379—67 **21 Claims**



20. A telephone message system coupled to a telephone line for automatically storing and later retrieving information from incoming telephone calls, comprising:

(a) a telephone answering device, which comprises:

means for receiving and storing first signals from said telephone line, each of said first signals specifying a particular one of a plurality of callers;

means for receiving and storing voice messages, each voice message corresponding to a particular one of said plurality of callers on said telephone line;

means for linking each of said first signals with a corresponding one of said voice messages;

means for storing a predetermined list of names and associated stored identifying information;

means for comparing said first signals with said predetermined list;

means for identifying one or more caller names if the comparing means matches said first signals with any stored identifying information in said list; and

means for transmitting said identified caller names to a user remote access device for assisting in the selective retrieval of at least one of said stored voice messages;

(b) a remote access device which comprises:

means for receiving said identified caller names;

means for displaying the received identified caller names; and

means for selectively receiving, using at least one of said received identified caller names, at least one specific voice message linked to said at least one of said received identified caller names.

5,572,577

INFORMATION SYSTEM FOR A PABX

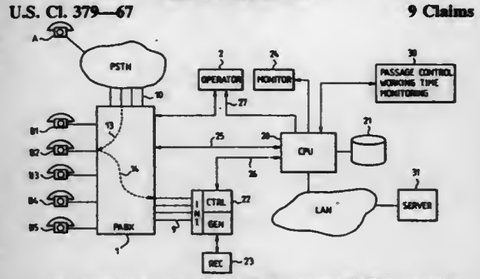
Raija Harrila, Espoo, Finland, assignor to ICL Data OY, Helsinki, Finland

Filed Nov. 8, 1994, Ser. No. 335,931

Claims priority, application Finland, Nov. 9, 1993, 934952

Int. Cl.[6] H04M *1/64*

U.S. Cl. 379—67 **9 Claims**



1. An information system for a PABX having PABX extensions, a control port, an operator switchboard for manual switching operations, and a direct inward dialling function for switching calls provided with a direct inward dialling code directly to the PABX extensions without assistance of the operator, the information system comprising

a database external to the PABX for maintaining status information on subscribers for the PABX extensions,

a monitor external to the PABX and associated with the operator switch-board for displaying the status information stored in the database,

a voice message unit external to the PABX, connected to predetermined ones of the PABX extensions for delivering and storing voice messages,

the PABX for receiving a call from a calling party to a called PABX extension and for automatically switching the calling party to one of said predetermined PABX extensions when there is no reply from the called PABX extension or when calls to the called PABX extension are blocked and, when an automatic switch occurs, for sending information to the control port identifying the called PABX extension and the one of the predetermined PABX extensions to which the automatic switch occurred,

a control unit external to the PABX, connected to the control port of the PABX, to the database and to the voice message unit, said control unit being responsive to said information at the control port of the PABX for retrieving status information of a subscriber of said called PABX extension from said database and providing control commands for the voice message unit on the basis of said retrieved status information, stored in the database, of a subscriber for said given PABX extension, and

the voice message unit being responsive to said control commands for generating voice messages to the calling party, said voice messages relating to the status of the subscriber of said called PABX extension and to the further handling of the call.

5,572,578

EXCHANGE OF INFORMATION BETWEEN INTERCONNECTED VOICE MAIL SYSTEMS

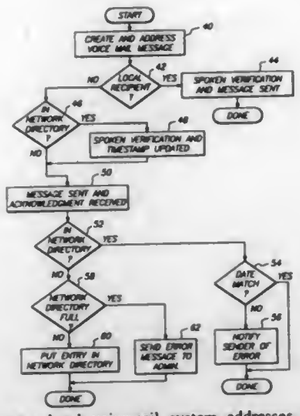
Frank C. H. Lin, 12056 Jamestown ct., Saratoga, Calif. 95070; Tzerng-Hong Lin, 579 Clauser Dr., Milpitas, Calif. 95035; Michael Chen, 1055 N. Capitol Ave. #160, San Jose, Calif. 95133, and Samir Dharia, 2850 Alwood Ct., San Jose, Calif. 95148

Continuation of Ser. No. 158,006, Nov. 26, 1993, abandoned. This application Jul. 28, 1995, Ser. No. 508,838

Int. Cl.[6] H04M *3/50;7/00*

U.S. Cl. 379—89 **3 Claims**

1. A method for selectively storing information related to users of a remote voicemail system and using said information when a



local user on a local voicemail system addresses a voicemail message to a user of a remote voicemail system, said local voicemail system including a storage device for storing said information related to users of a remote voicemail system said method comprising the steps of;

determining whether said storage device has stored therein said information on a particular user of a remote voicemail system, in response to a local user addressing a voicemail message to said particular user of said remote voicemail system;

if the storage device has stored therein said information on said particular user of said remote voicemail system, providing that information to the local user;

sending the voicemail message to the remote voicemail system whether or not the storage device has stored therein said information on said particular user;

receiving an acknowledgment message from the remote voicemail system, said acknowledgment message containing information on said particular remote voicemail user; and

storing the information contained in said acknowledgment message using the storage device.

5,572,579

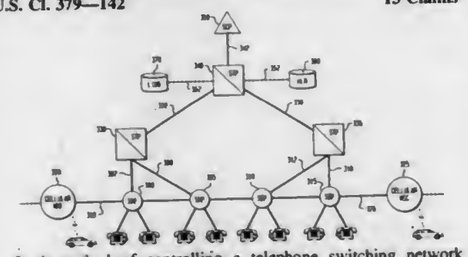
SYSTEM AND METHOD FOR PROVIDING PORTABLE TELEPHONE NUMBER SERVICE

Richard A. Orriss, Colts Neck; Margaret K. Balazs, Bridgewater; Laura L. T. Castrovinci, Pittstown; Kathleen D. Cebulka, Washington; Yea-Cheiung E. Chen, Edison, all of N.J.; Neal N. Crystal, Brooklyn, N.Y.; Kelly J. Gaylord, Washington, and George W. Hartley, Somerville, both of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

Filed Apr. 6, 1995, Ser. No. 417,542

Int. Cl.[6] H04M *15/00;15/06;3/42;7/00*

U.S. Cl. 379—142 **13 Claims**



1. A method of controlling a telephone switching network including a control processor connected to a storage device for storing data, an originating switching system, a destination switching system, a home location register at a Global Title Translation address, and a plurality of telephones in communication with the originating and destination switching systems, each telephone having a corresponding telephone number and capable of calling a called telephone number, the called telephone number being a geographically independent number, the method comprising the steps, executed by the control processor, of:

receiving from the originating switching system a switching query including a called number;

sending to the storage device a data query including the called number;

receiving from the storage device a data response, including at least an identification of the destination switching system, the Global Title Translation address of the home location register, or a routing number associated with the called number; and

sending to the originating switching system a switching response, including the identification of a destination switching system or the routing number associated with the called number.

5,572,580

COMMUNICATION APPARATUS WITH IMPROVED SUB-ADDRESS RECALL

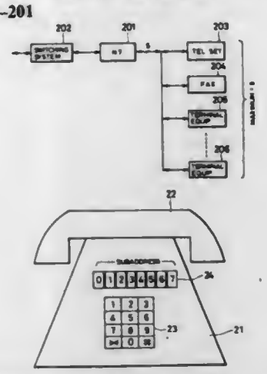
Yukihiko Ogata, Kawasaki, and Takuji Nakatsuma, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 369,271, Jan. 5, 1995, which is a continuation of Ser. No. 968,466, Oct. 29, 1992, which is a continuation of Ser. No. 582,785, Sep. 17, 1990, which is a continuation of Ser. No. 151,309, Feb. 1, 1988. This application Jun. 7, 1995, Ser. No. 476,346

Claims priority, application Japan, Feb. 10, 1987, 62-29034; Feb. 10, 1987, 62-29037; Feb. 10, 1987, 62-29038; Feb. 13, 1987, 62-31191; Feb. 13, 1987, 62-31192; Feb. 14, 1987, 62-31868

Int. Cl.[6] H04M *3/42*

U.S. Cl. 379—201 **8 Claims**



1. A communication apparatus comprising:

sending means for sending address data of a destination with or without sub-address data to a digital line, the destination having at least one communication terminal capable of being specified, and the sub-address data corresponding to a specified one of the at least one communication terminal of the destination so as to communicate with the specified communication terminal; and

detecting means for detecting a response from the digital line when said sending means sends the address data with the sub-address data to the digital line,

wherein said sending means resends the address data of the destination without the sub-address data on the basis of a detection of said detecting means.

5,572,581

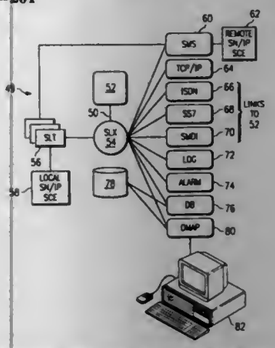
METHOD AND APPARATUS FOR DELIVERING CALLING SERVICES

Sohail Sattar, and Steven E. Polsky, both of Irving, Tex., assignors to InterVoice Limited Partnership, Reno, Nev.

Continuation of Ser. No. 151,543, Nov. 12, 1993, Pat. No. 5,469,500. This application Jul. 31, 1995, Ser. No. 508,392

Int. Cl.[6] H04M *3/42*

U.S. Cl. 379—201 **28 Claims**



1. A call processor operable in cooperation with a telephone network in which the network includes an intelligent peripheral to deliver calling services to parties communicating over the calling paths of the telephone network, said call processor comprising:

a service creation environment for generating call processing instructions, said call processing instructions pertaining to the provision of calling services over said calling paths;

a memory accessible by the service creation environment for storing therein generated ones of said call processing instructions;

a processor accessible to said memory, said processor operable to receive selection data from said telephone network over a data link and to execute selected ones of said call processing instructions in response to received selection data, said selected ones of the call processing instructions operable over said data link to deliver selected calling services; and

means operable for providing calling services in response to control data accepted from said intelligent peripheral and for providing calling services independent from control data accepted from said intelligent peripheral.

5,572,582

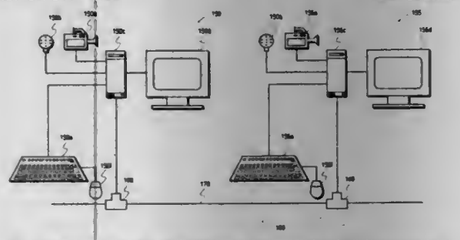
METHOD AND APPARATUS FOR ESTABLISHING COMMUNICATION BETWEEN TWO TELECONFERENCING ENDPOINTS

Guy G. Riddle, Los Gatos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Feb. 24, 1995, Ser. No. 393,693

Int. Cl.[6] H04M *3/56*

U.S. Cl. 379—202 **66 Claims**



41. An apparatus for establishing communication between two processing endpoints comprising:

a. a circuit in a first endpoint for transmitting a first message to a second endpoint indicating a desire to connect, said first message including communication capabilities of said first endpoint;

b. a circuit in a second endpoint for checking for a timeout value in said first message and for notifying said first endpoint of confirmation to connect via a second message; and

c. a circuit in said first and second endpoint for establishing communication according to said communication capabilities.

5,572,583

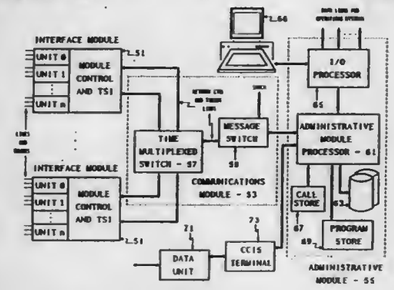
ADVANCED INTELLIGENT NETWORK WITH INTELLIGENT PERIPHERALS INTERFACED TO THE INTEGRATED SERVICES CONTROL POINT

David F. Wheeler, Jr., Silver Spring, Md., and Robert D. Farris, Sterling, Va., assignors to Bell Atlantic, Arlington, Va.

Continuation-in-part of Ser. No. 869,931, Apr. 17, 1992, Pat. No. 5,418,844. This application May 25, 1994, Ser. No. 248,980

Int. Cl.[6] H04M *3/42*

U.S. Cl. 379—207 **42 Claims**



1. A communication network, comprising:

local communication lines;

a plurality of separately located central office switching systems interconnected via trunk circuits for selectively providing switched call connections between at least two of the local communication lines;

a services control point, separate from the central office switching systems, comprising a database storing call processing data associated with a plurality of the local communication lines for control of call processing through one or more of the central office switching systems;

a first signalling communication system for two-way communications of data messages, said first signalling communication system interconnecting the central office switching systems and connecting the central office switching systems to the services control point;

a peripheral platform connected to at least one of the central office switching systems via a call connection channel, said peripheral platform comprising means for providing at least one auxiliary call processing capability via the call connection channel; and

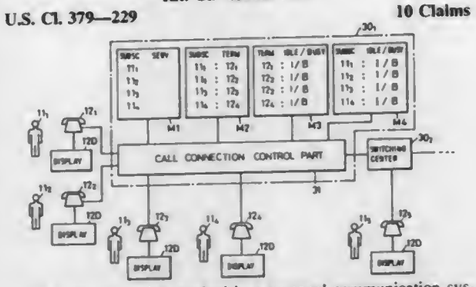
a second signalling communication system, separate from the first signalling communication system and the central office switching systems, for providing two-way communications of data messages between the peripheral platform and the services control point to control provision of the at least one call processing capability by the peripheral platform.

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5,572,584
CONNECTION CONTROL METHOD FOR PERSONAL COMMUNICATIONS

Masami Yabusaki, Iruma; Shoichi Hirata, Tokrozawa, and Yasuyuki Uchiyama, Chofu, all of Japan, assignors to NTT Mobile Communications Network Inc., Tokyo, Japan

Division of Ser. No. 182,355, Oct. 6, 1993, abandoned. This application May 15, 1995, Ser. No. 441,708
Claims priority, application Japan, Apr. 2, 1993, 5-076746
Int. Cl.[6] H04M *3/42*
U.S. Cl. 379—229 **10 Claims**



1. A call connection method in a personal communication system, said personal communication system including a plurality of switching centers, each of said plurality of switching centers comprising: a plurality of terminals; a plurality of subscribers each having a personal number unique thereto; terminal number sending/receiving means for sending and receiving terminal numbers to and from said plurality of terminals; personal number sending/receiving means for sending and receiving personal numbers to and from said plurality of terminals; terminal number transmitting means for sending and receiving to and from another switching center the terminal number of an originating terminal used by an originating subscriber to issue an outgoing call and the terminal number of a terminating terminal; personal number transmitting means for sending and receiving a personal number of an originating subscriber to and from another switching center; and terminal idle/busy memory means for storing terminal idle/busy information in correspondence with the terminal number of each terminal,

said call connection method comprising, when any one of the subscribers accommodated within one switching center performs a personal communication with any one of the subscribers accommodated within another switching center by using any one of the terminals accommodated within said one switching center, the steps of:

(A) performing an originating process by which an originating subscriber within said one switching center inputs the personal number of said originating subscriber and the terminal number of a terminating subscriber within said another switching center by using any one of the terminals within said one switching center as an originating terminal;

(B) at the originating terminal, sending the personal number of the originating subscriber and the terminal number of the terminating subscriber together with the terminal number of the originating terminal from said originating terminal to said one switching center;

(C) at said one switching center, receiving the personal number of the originating subscriber by use of the personal number sending/receiving means within said one switching center, and concurrently receiving both the terminal numbers of the originating terminal and the terminating subscriber by use of the terminal number sending/receiving means within said one switching center;

(D) at said one switching center, transmitting the personal number of the originating subscriber from said one switching center to said another switching center by use of the personal number transmitting means within said one switching center, and concurrently transmitting both the terminal numbers of the originating terminal and the terminating subscriber from said one switching center to said another switching center by use of the terminal number transmitting means within said one switching center; and

(E) at said another switching center, receiving the personal number of the originating subscriber by use of the personal number transmitting means within said another switching center, and concurrently receiving both the terminal numbers of the originating terminal and the terminating subscriber by use of the terminal nomber transmitting means within said another switching center, and when the terminating terminal corresponding to the received terminal number of the terminating subscriber is not busy as a result of retrieval of the terminal idle/busy memory means within said another switching center, calling the terminating terminal by use of the terminal number sending/receiving means within said another switching center and sending the received personal number of the originating subscriber and the received terminal number of the originating terminal by use of the personal number sending/receiving means and the terminal number sending/receiving means within said another switching center, respectively.

5,572,585
COMMUNICATION SYSTEM AND CALL PROCESSING METHOD

Yuichiro Tsutsui, Yokohama, Japan, assignor to Canon Kabushi Kaisha, Tokyo, Japan

Continuation of Ser. No. 965,576, Oct. 23, 1992, abandoned, which is a continuation of Ser. No. 588,460, Sep. 26, 1990, abandoned. This application Mar. 14, 1994, Ser. No. 212,695
Claims priority, application Japan, Sep. 28, 1989, 1-254608; Dec. 1, 1989, 1-312995; Dec. 1, 1989, 1-312996; Dec. 1, 1989, 1-312997; Dec. 1, 1989, 1-312998
Int. Cl.[6] H04M *3/00;11/00;* **H04J** *3/24;3/12*
U.S. Cl. 379—242 **73 Claims**

CLASS	PERMISSIBLE COMMUNICATION ATTRIBUTE
CLASS 1	VOICE COMMUNICATION ONLY
CLASS 2	VOICE + RS - 232C ASYNCHRONOUS / CIRCUIT SWITCHING STOP BIT : 1 / 1.5 / 2 DATA BIT LENGTH : 5 / 7 / 8 PARITY : NONE / EVEN / ODD RATE : 300 ~ 9600 bps
CLASS 2	SYNCHRONOUS / CIRCUIT SWITCHING RATE : 64 Kbps

1. A communication apparatus comprising:

recognition means for recognizing a communication attribute of an incoming call;

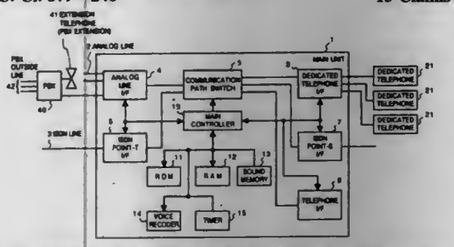
communication means for communicating via a communication channel which is used in common with other communication apparatus; and

display means for performing a common display in a case where a communication attribute of said communication means and the communication attribute of the incoming call are inconsistent, and in a case where the communication channel is used by said other communication apparatus.

5,572,586
COMMUNICATION CONTROL APPARATUS AND METHOD AND COMMUNICATION EXCHANGE APPARATUS AND METHOD

Masatomo Ouchi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1993, Ser. No. 35,191
Claims priority, application Japan, Mar. 27, 1992, 4-101705
Int. Cl.[6] H04M *3/00*
U.S. Cl. 379—246 **15 Claims**



1. A communication control apparatus connected to an exchange which exchange can generate different calling signals, comprising:

an analog line interface for receiving an incoming call and one of the different calling signals from the exchange;

a communication path switch for switching the incoming call received by said analog line interface among a plurality of communication terminals coupled to the exchange;

a controller for controlling said communication path switch;

a memory for storing switching information for switching said communication path switch according to one of the different calling signals; and

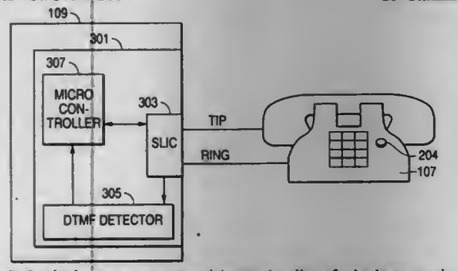
an input device for setting the switching information into said memory,

wherein said controller discriminates the one of the different calling signals received by said analog line interface, retrieves said switching information from said memory corresponding to the discriminated one of the different calling signals and controls said communication path switch to connect the incoming call to one of the communication terminals in accordance with the switching information retrieved from said memory.

5,572,587
TELEPHONE SYSTEM AND METHOD FOR EASING WAIT TIME IN QUEUE

Pranay Gaglani, Denver, Colo., assignor to Advanced Micro Devices, Sunnyvale, Calif.

Filed Mar. 8, 1995, Ser. No. 400,880
Int. Cl.[6] H04Q *3/64*
U.S. Cl. 379—266 **23 Claims**



1. A telephone system comprising a plurality of telephones and a switching network, the telephone system further comprising:

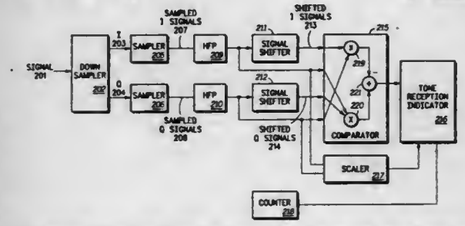
means for sending an initiation signal from a first telephone of two connected telephones to the switching network; and

means for sending a ready signal from the switching network to a second telephone of the two connected telephones in response to the initiation signal.

5,572,588
METHOD AND APPARATUS FOR DETECTING RECEPTION OF A TONE SIGNAL

Chia-Shiann Weng, and Kenneth C. Weng, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 5, 1994, Ser. No. 270,349
Int. Cl.[6] H04M *11/04*
U.S. Cl. 379—386 **16 Claims**



1. A method for detecting reception of a tone signal, the method comprising the steps of:

a) receiving an in-phase signal component and a quadrature signal component;

b) sampling the in-phase signal component with a first sampler to produce a plurality of sampled in-phase signal components;

c) sampling the quadrature signal component with a second sampler to produce a plurality of sampled quadrature signal components;

d) shifting the plurality of sampled quadrature signal components by a predetermined phase angle to produce a plurality of phase shifted quadrature components;

e) comparing a set of phase shifted quadrature components with a set of sampled in-phase signal components; and

f) when each phase shifted quadrature component of the set of phase shifted quadrature components substantially matches each corresponding sampled in-phase signal component of the set of the sampled in-phase signal components, indicating that the tone signal is being received.

5,572,589
DISC SERIALIZATION

Lester L. Waters, Bellevue, and Jonathan D. Lazarus, Mercer Island, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Dec. 9, 1993, Ser. No. 165,241
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—4 **25 Claims**

1. A method of serializing a read-only optical disc comprising the steps of:

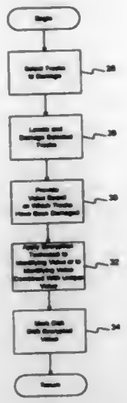
physically damaging a portion of the optical disc to create a pattern of damage;

encoding the pattern of damage in an identifying value to distinguish the optical disc from other optical discs;

encrypting the identifying value; and

marking the optical disc with the encrypted value.

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using a test selection algorithm, selecting a plurality of the test subsets, each selected test subset corresponding to a selected reference subset;

using a test information algorithm associated with each respective selected test subset, deriving characteristic test subset information from the respective selected test subset;

comparing the derived characteristic test subset information to the derived characteristic reference subset information to produce a set of differences; and

analyzing the set of differences in accordance with a set of rules to determine whether the set of digital information at test time is changed from the set of digital information at reference time and if changed to determine whether the change is considered malicious or innocent, each of said rules specifying a particular combination of the selected test subsets, and specifying a state for the characteristic information of each selected test subset of each said particular combination relative to the characteristic information of each corresponding selected reference subset, and specifying for each said particular combination having its selected test subsets in said specified stake either a malicious conclusion or an innocent conclusion.

5,572,590

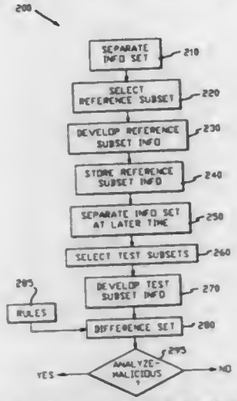
DISCRIMINATION OF MALICIOUS CHANGES TO DIGITAL INFORMATION USING MULTIPLE SIGNATURES

David M. Chess, Mohegan Lake, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 12, 1994, Ser. No. 226,610

Int. Cl.[6] G06B *3/28*; H04L *9/00*; H04K *1/00*

U.S. Cl. 380—4 **14 Claims**



1. A computer implemented method for determining whether changes to a set of digital information are innocent or malicious, comprising the steps of:

using a reference separation algorithm, separating the set of digital information into a plurality of reference subsets of digital information, the step of separating the set of digital information into reference subsets being done at a reference time;

using a reference selection algorithm, selecting a plurality of the reference subsets;

using a reference information algorithm associated with each respective selected reference subset, deriving characteristic reference subset information from the respective selected reference subset;

storing the derived characteristic reference subset information;

using a test separation algorithm, separating the set of digital information into a plurality of test subsets of digital information, the step of separating the set of digital information into test subsets being done at a test time, the test time being later than the reference time;

5,572,591

SOUND FIELD CONTROLLER

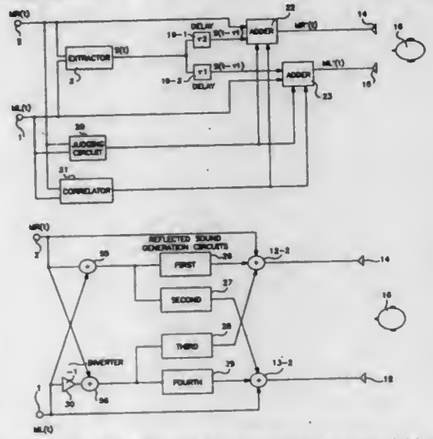
Hiroko Numazu; Masaharu Matsumoto; Akihisa Kawamura; Ryou Tagami, all of Osaka, and Mikio Oda, Yawata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 8, 1994, Ser. No. 207,960

Claims priority, application Japan, Mar. 9, 1993, 5-047708; Mar. 9, 1993, 5-047710; Apr. 15, 1993, 5-088397; May 25, 1993, 5-122519

Int. Cl.[6] H04R *5/00*; H03G *3/00*

U.S. Cl. 381—1 **6 Claims**



1. A sound field controller for reproducing a sound field with presence comprising;

input means for inputting an input audio signal having a first and a second channel signal,

signal extracting means for receiving and processing the input audio signal, and producing an extracted signal from the input audio signal,

first delay means, directly connected to the signal extracting means, for delaying the extracted signal by a first predetermined time, and producing a first delayed signal,

second delay means, directly connected to the signal extracting means, for delaying the extracted signal by a second predetermined time which is different from the first predetermined time, and producing a second delayed signal,

signal judging means for receiving the input audio signal and judging whether the input audio signal is a voice signal or a non-voice audio signal to output a detecting signal indicating the result,

correlation determining means for determining correlation ratio between the two channel signals of the input audio signal to output a determining signal,

first adding means for receiving the first channel signal, the first delayed signal, the detecting signal, and the determining signal, adding the first channel signal and the first delayed signal with a predetermined summation ratio based on the detecting signal and the determining signal, and producing a resulting first summed signal,

second adding means for receiving the second channel signal, the second delayed signal, the detecting signal, and the determining signal, adding the second channel signal and the second delayed signal with a predetermined summation ratio based on the detecting signal and the determining signal, and producing a resulting second summed signal,

first output means for reproducing the first summed signal, and second output means for reproducing the second summed signal.

5,572,592

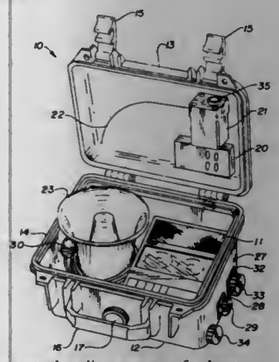
REMOTE CONTROL AUDIO APPARATUS FOR HUNTERS

Bruce Muckelrath, Rte. 1, Box 284-C2, Sheridan, Ark. 72150

Filed May 30, 1995, Ser. No. 452,885

Int. Cl.[6] H04R *21/00*

U.S. Cl. 381—56 **3 Claims**



1. A remote control audio apparatus for hunters, comprising:

a weather resistant enclosure having an exterior surface and an interior space;

audio means disposed within said interior space for reproduction and/or recording of predator calls, game calls and the like;

radio transmitter means for generating and transmitting operating radio signals under manual control;

radio receiver means for receiving said operating radio signals and generating electronic output signals responsive thereto;

control means disposed within said interior space and electronically communicating with said audio means and said radio receiver means, said control means being adapted to receiving said electronic output signals and to controlling operation of said audio means in response to said electronic output signal; and

an electronic plug connector disposed on said exterior surface and communicating electronically with said control means; and said radio receiver means further comprising a plug for detachable electronic connection to said plug connector whereby said electronic output signals are communicated to said control means.

5,572,593

METHOD AND APPARATUS FOR DETECTING AND EXTENDING TEMPORAL GAPS IN SPEECH SIGNAL AND APPLIANCES USING THE SAME

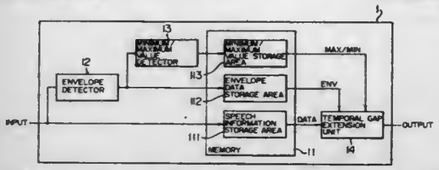
Yoshito Nejime; Hiroshi Ikeda, both of Hachioji, and Yukio Kumagai, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 23, 1993, Ser. No. 80,101

Claims priority, application Japan, Jun. 25, 1992, 4-167228

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—68 **37 Claims**



1. An apparatus for detecting and extending temporal gaps in a speech signal for the purpose of aiding an auditory sense organ, comprising:

temporal gap detection means for detecting temporal gaps in an input speech signal; and

temporal gap extension means for extending each temporal gap in said input speech signal detected by said temporal gap detection means in proportion to power of said input speech signal at a point in time immediately preceding a point in time at which said temporal gap occurred.

5,572,594

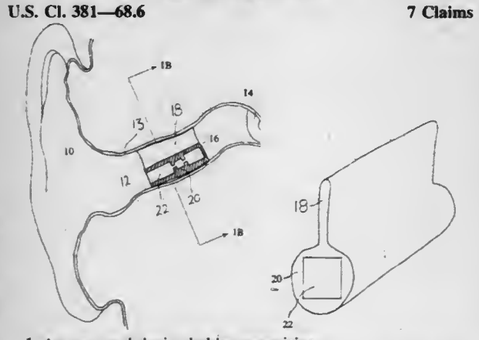
EAR CANAL DEVICE HOLDER

Lambert Devoe, 610 First St., Coronado, Calif. 92118; Seth Silverstein, 763 N. Kenter Ave., Los Angeles, Calif. 90049; Robert Hersbenfeld, 460 Driggs Ave., Brooklyn, N.Y. 11211, and Alan Devoe, 610 First St., Coronado, Calif. 92118

Filed Sep. 27, 1994, Ser. No. 312,701

Int. Cl.[6] H04L *25/00*

U.S. Cl. 381—68.6 **7 Claims**



1. An ear canal device holder comprising:

a body smaller than the ear canal that is suitable to substantially contain within itself a device much smaller than the ear canal;

a structural element that is integrally formed with said body so that said body and said structural element are monolithic, said structural element protruding substantially radially from a cross sectional center of said body and of said ear canal when said monolithic body and structural element are positioned within the ear canal, having a cross sectional height that is greater than or equal to the distance from the nearest edge of the body to the farthest cross sectional edge of the ear canal as the body rests against the opposite edge of the ear canal within the ear canal, a thickness and structural strength that will secure the weight of the device within the ear canal, a length that is about the length of said body, and subtending in

circumferential angular extent less than 1π radians about the cross-sectional center of said body and of said ear canal;

where in said structural element secures said body and any device contained within said body by exerting a force against the inner surface of the ear canal that opposes an equal but opposite force on the body against an opposite surface of the ear canal;

where in said integral structural element and body can be freely inserted into an external ear canal of the user and become wedged in the canal as the body and structural element press against the inner surface of the ear canal; and

wherein because the structural element subtends less than half the total 2π radians about the cross-sectional center of said body and of said ear canal, ample room is provided for sound to travel in said ear canal past said monolithic structural element and body, and past any device contained within said body.

5,572,595

METHOD OF DETECTING THE LOCATION OF A HUMAN BEING IN THREE DIMENSIONS

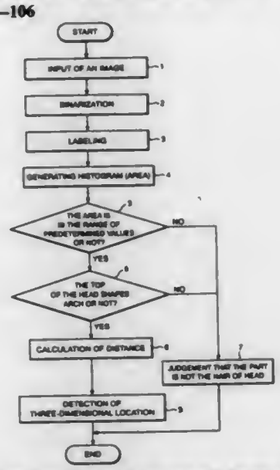
Ryobei Kumagai, and Zi Quan Hong, both of Tokyo, Japan, assignors to Yozan, Inc., Tokyo, Japan

Filed Dec. 7, 1992, Ser. No. 986,358

Claims priority, application Japan, Jan. 21, 1992, 4-030181

Int. Cl.[6] G06K *9/00;9/34;9/46;9/76*

U.S. Cl. 382—106 **9 Claims**



1. A method for detecting the location of a human being in three dimensions, the method comprising the steps of:

inputting a spatial image of an area using a lens, at least a head of hair on a person being located in the area

identifying at least one portion of the spatial image having density values within a predetermined range, the density values being based on brightness levels of the spatial image;

selecting at least one of the identified portions that has a top region forming the shape of an arch;

determining the width of the at least one selected portion;

calculating the distance from the lens to the person based on the horizontal width of the selected portion; and

calculating a horizontal coordinate value and a vertical coordinate value based on the distance from the lens to the person.

5,572,596

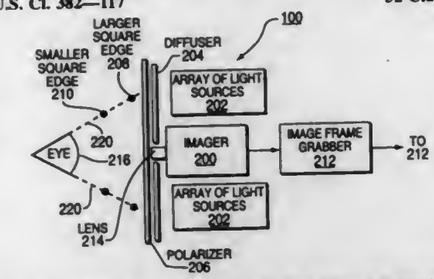
AUTOMATED, NON-INVASIVE IRIS RECOGNITION SYSTEM AND METHOD

Richard P. Wildes; Jane C. Asmuth; Keith J. Hanna, all of Princeton; Stephen C. Hsu, East Windsor; Raymond J. Kolczynski, Trenton; James R. Matey, Hamilton Township, and Sterling E. McBride, Lawrence Township, all of N.J., assignors to David Sarnoff Research Center, Inc., Princeton, N.J.

Filed Sep. 2, 1994, Ser. No. 300,678

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—117 **32 Claims**



1. In a system including an imager having a lens for deriving a focused image of an eye of a user of the system; the improvement comprising:

alignment means for permitting said user to self-position his or her eye into said imager's field of view without the need for any physical contact with said system, said alignment means comprises:

(a) first edge means having a given outline contour shape of a first given size that is substantially centered with respect to said lens, said first edge means being disposed a first distance in front of said lens; and

(b) second edge means having an outline contour shape of a second given size smaller than said first given size that is geometrically similar in shape to said given outline contour shape and is substantially centered with respect to said lens, said second edge means being disposed a second distance in front of said lens that is longer than said first distance by a specified amount, said specified amount being such that said lens forms a focused image of said user's eye when said user's eye is maneuvered to a point in space in front of said lens at which said outline contour of said first edge means is substantially totally occluded by said outline contour of said second edge means as viewed by said user's eye from the point.

5,572,597

FINGERPRINT CLASSIFICATION SYSTEM

Chung-Fu Chang, and Edward E. Hilbert, both of Litchfield Park, Ariz., assignors to Loral Corporation, New York, N.Y.

Division of Ser. No. 219,140, Mar. 29, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 468,832

Int. Cl.[6] G06K *9/66*

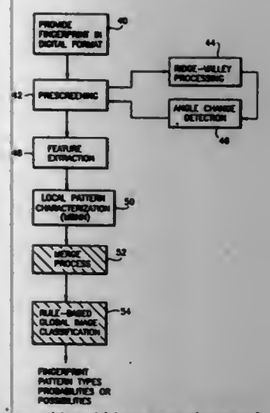
U.S. Cl. 382—125 **4 Claims**

1. A method for processing data representing an image of a fingerprint, comprising the steps of:

prescreening the data to determine locations of regions of interest in the fingerprint data;

for a determined location of a region of interest, extracting a set of feature vectors within an area that includes the determined location;

applying the extracted set of feature vectors to a plurality of input nodes of a multi-layer neural network, the plurality of input nodes comprising an input layer for inputting the extracted set of feature vectors, the multi-layer neural network further comprising a multi-node output layer, and at least one multi-node hidden layer, the multi-layer neural network operating in accordance with a set of weighting functions that are



mapped onto said multi-layer neural network for weighting inputs to the plurality of input nodes, for weighting inputs to the nodes of the at least one hidden layer, and for weighting inputs to the nodes of the output layer;

from an output of the multi-layer neural network, determining a set of probabilities that the set of feature vectors represent individual ones of a plurality of predetermined local pattern types; and

determining in accordance with a rule based classification technique, from most probable ones of the local pattern types for the identified regions of interest, and also from locations of the local pattern types within the image of the fingerprint, a most probable fingerprint type that the fingerprint data represents;

wherein the step of applying includes a preliminary step of predetermining values of individual ones of the set of weights in accordance with a supervised, Bayesian model-based training sequence wherein features indicative of a predetermined set of fingerprint local pattern types are clustered within a feature space, wherein

the multi-layer neural network operates in accordance with the expression:

$$L_{NN}(f/O_k) = a_k F_3\left[\sum_{j=1}^{J_k} b_j^k F_2\left[\sum_{i=1}^{d} c_i^{jk} F_1[G(f_i, m_i^{jk}, \sigma_i^{jk})]\right]\right]$$

wherein the step of determining a set of probabilities operates in accordance with the expression:

$$P_{rNN}(O_k/f) = \frac{L_{NN}(f/O_k)}{\sum_{i=1}^{K} L_{NN}(f/O_i)}$$

in which expressions $P_{rNN}(O_k/f)$ is the Bayesian a posteriori probability estimate for object O_k; a_k is the a priori probability; F_1, F_2, F_3 are the saturated forms of $F_1(x)=x$, $F_2(x)=e^x$, and $F_3(x)=0$ if $x<0$ and $F_3(x)=x$ if $x \geq 0$; b_j^k is the subgroup weightings; c_i^{jk}, m_i^{jk}, and σ_i^{jk} are respectively the relative weightings of the features f_i, the mean, and the standard deviation of the feature training values for feature f_i in subgroup j of the k-th object, and in which F_1, m_i^{jk} and σ_i^{jk} are associated with the input layer of the neural network, F_2 and c_i^{jk} are associated with the at least one hidden layer of the neural network and F_3 and b_j^K are associated with the output layer of the neural network; and wherein the function that applies weights to the plurality of input nodes of the multi-layer neural network is given by the expression:

$$G(f_i, m_i^{jk}, \sigma_i^{jk}) = -\frac{1}{2}\ln 2\pi - \ln \sigma_i^{jk} - \frac{1}{2}\left(\frac{f_i - m_i^{jk}}{\sigma_i^{jk}}\right)^2.$$

5,572,598

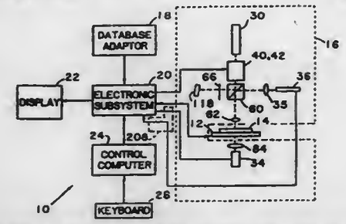
AUTOMATED PHOTOMASK INSPECTION APPARATUS

Mark J. Wihl, Tracy; Tao-Yi Fu, Fremont; Marek Zywno, San Jose, both of Calif.; Damon F. Kvamme, Ann Arbor, Mich., and Michael E. Fein, Mountain View, Calif., assignors to KLA Instruments Corporation, San Jose, Calif.

Continuation of Ser. No. 748,984, Aug. 22, 1991, abandoned. This application Feb. 25, 1994, Ser. No. 202,868

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—144 **49 Claims**



1. An optical inspection system for inspecting objects formed on substrates selected from the group consisting of photomasks, reticles, phase shift masks and semiconductor wafers, comprising:

stage means for carrying a substrate to be inspected such that a surface of said substrate moves in a particular manner within an inspection plane;

laser means for providing a pixel illuminating beam of light;

optical means defining a first optical axis intersecting said inspection plane and along which said pixel illuminating beam of light is initially passed, said optical means including a variable magnification subsystem for focusing said beam of light to a pixel defining spot on the substrate to be inspected;

beam deflecting means disposed along said first optical axis and operative to deflect said beam of light in oscillatory fashion whereby said pixel defining spot is caused to sweep across the surface of said substrate from one side to another of the path traced by the intersection of said optical axis with said substrate as said substrate is moved in said particular manner, and in a direction transverse to said path, as the substrate is carried along said path, the limits of deflection of said beam of light from one side of said path to the other defining the width of a scanning swath over a care area of the substrate including at least a portion of one of said objects;

light detecting means for detecting changes in the intensity of said beam of light caused by its intersection with the inspected substrate as said beam of light is either transmitted or reflected by said substrate, said light detecting means being responsive to the detected changes in intensity and operative to develop scan signals corresponding thereto, said light detecting means including sampling means for sampling said scan signals to produce pixel sample signals; and

electronic means for comparing said pixel sample signals to corresponding reference signals whereby differences therebetween may be used to identify defects in the inspected substrate.

5,572,599

MONOCHROME TO FULL COLOR SCALEABLE IMAGE PROCESSING SYSTEM FOR PRINTING SYSTEMS AND MACHINES

Francis K. Tse, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

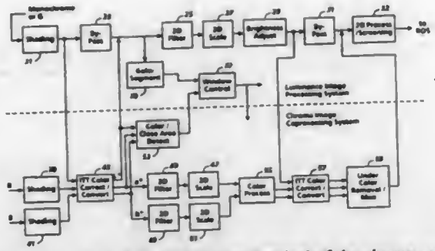
Filed Jul. 11, 1994, Ser. No. 273,261

Int. Cl.[6] G06K *9/48;* **H04N** *9/77*

U.S. Cl. 382—162 **11 Claims**

7. A method for converting a monochrome processing module to a full color image processing system, comprising the steps of:

(a) connecting a green image data input terminal of a chroma processing module to an output terminal of the monochrome processing module;



(b) connecting a luminance output terminal of the chroma processing module to an input terminal of the monochrome processing module;

(c) disengaging a first bypass circuit connected between the input and output terminals of the monochrome processing module;

(d) connecting a luminance input terminal of the chroma processing module to another output terminal of the monochrome processing module;

(e) connecting a color output terminal of the chroma processing module to another input terminal of the monochrome processing module; and

(f) disengaging a second bypass circuit connected between the another input and output terminals of the monochrome processing module.

5,572,600

COLOR IMAGE PROCESSING APPARATUS CAPABLE OF SUPPRESSING MOIRE

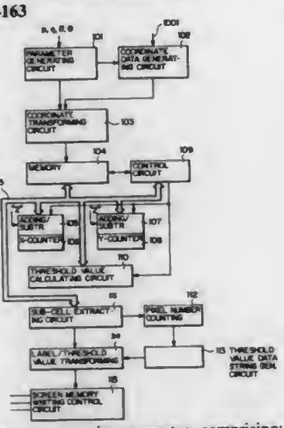
Joji Tajima; Mitsuo Kaji; Miki Ito; Akira Ito, all of Tokyo, and Youichi Sato, Kanagawa, all of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 22, 1994, Ser. No. 263,687

Claims priority, application Japan, Jun. 22, 1993, 5-150159; Jun. 14, 1994, 6-131533

Int. Cl.[6] H04N *1/40*

U.S. Cl. 382—163 **2 Claims**



1. A color image processing apparatus, comprising:

an image data generating circuit for generating multivalued image data for each color in accordance with density of each color of magenta (M), cyan (C) and yellow (Y);

an M-screen threshold value storing circuit for storing a plurality of first threshold values for comparison with said multivalued image data of magenta (M);

a C-screen threshold value storing circuit for storing a plurality of second threshold values for comparison with said multivalued image date of cyan (C);

a Y-screen threshold value storing circuit for storing a plurality of third threshold values for comparison with said multivalued image data of yellow (Y);

a comparing circuit for comparing said multivalued image data outputted from said image data generating circuit with said first to third threshold values outputted from said M-, C- and Y- screen storing circuits to output a comparison result in the form of a binary signal;

a threshold value generating circuit for generating said first second, and third threshold values; and

a control circuit for controlling writing and reading of said first to third threshold values into/from said M-, C- and Y- screen threshold value storing circuits;

wherein said M-screen threshold value storing circuit and said C-screen threshold value storing circuit store said first and second threshold values respectively assigned to each pixel of an M multi-cell and a C multi-cell constituted by square matrixes having screen angles of $\pm \tan^{-1}(q/p)$ and each side of $\beta \cdot p \cdot q$ (β is an integer), respectively, and p and q are any values of (11,3), (15,4) and (19,5), and said M multi-cell and said C multi-cell respectively consist of N (= p^2, $+q^2$) subcells arrayed continuously in directions of said screen angles of $\pm\tan^{-1}(q/p)$ and having threshold values in accordance with the predetermined number of gradations, respectively;

wherein said Y screen threshold value storing circuit stores said third threshold value assigned to a Y multi-cell constituted by a square matrix having a screen angle of 45 degrees and each side of $\beta \cdot p \cdot q$, and said Y multi-cell consists of $2(p-q)^2$ subcells arrayed continuously in a direction of said screen angle of 45 degrees and having threshold values in accordance with the predetermined number of gradations;

wherein said first to third threshold values are repeatedly outputted in a cycle of $\beta \cdot p \cdot q$ in synchronism with said multivalued image data of each color in accordance with control of said control circuit; and

wherein said threshold value generating circuit comprises:

coordinate data generating means for generating coordinate data X and Y of coordinates (X, Y) within a square region where a surplus region is added to image regions of said M multi-cell, said C multi-cell and said Y multi-cell:

first coordinate transformation means for transforming said coordinate data X and Y into coordinate data x and y of coordinates (x, y) on a virtual orthogonal screen plane in accordance with the affine transformation to output said coordinate data x and y;

second coordinate transformation means for transforming said coordinate data x and y into coordinate data x' and y' within a square region of $-j \leqq x \leqq j$ and $-j \leqq x \leqq j$ (j is an integer) to generate flags which discriminate the regions of said subcells of said M multi-cell, said C multi-cell and said BK multi-cell in association with said coordinate data x' and y';

threshold value output means responsive to said coordinate data x' and y' for outputting a threshold value t on the basis of $t=k\cdot(|x'|+|y'|)/2$ where k is an integer;

memory means for storing said threshold value t outputted from said threshold value output means in association with said flag:

threshold value replacing means for selecting said threshold value t associated with said flag within said region from said memory means to replace said threshold value t with another threshold value so as to express a smooth halftone; and

writing means for allowing said another threshold value replaced by said threshold value replacing means to be stored in each of said M-, C- and Y- screen threshold value storing circuits.

5,572,601

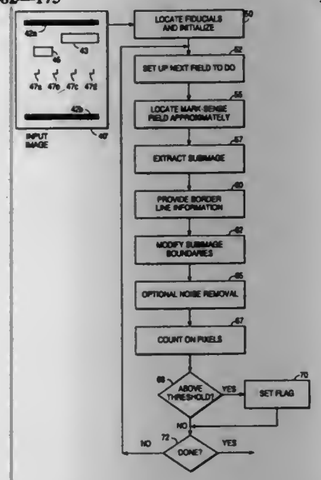
MARK SENSING ON A FORM

Dan S. Bloomberg, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 855,984, Mar. 20, 1992, Pat. No. 5,418,865. This application Oct. 19, 1994, Ser. No. 326,121

Int. Cl.[6] G06K *9/44*

U.S. Cl. 382—175 **26 Claims**



1. A method, performed by a processor-based machine on a bitmap input image, for registering to a field in the input image, the field having an associated border line of a particular thickness along a particular edge, the field assumed to be at a known location relative to a set of registration fiducials in the input image, the method comprising operating the processor-based machine to perform the steps of:

locating the set of fiducials;

determining the approximate location of the field on the basis of the locations of the fiducials;

extracting a portion of the input image that is expected to include the field, the portion being referred to as the subimage;

the subimage having a boundary, referred to as the particular subimage boundary, that corresponds in orientation and relative position to the particular edge;

determining the location of the smallest enclosing rectangle of the largest connected component in the subimage;

the smallest enclosing rectangle having a side, referred to as the particular rectangle side, that corresponds in orientation and relative position to the particular edge; and

moving the particular subimage boundary so that it is spaced inwardly from the particular rectangle side by a distance that exceeds the particular line thickness by a particular amount, thereby providing a modified subimage that (a) excludes the border line for cases when there is no mark in the field and for cases when there is a mark entirely in the field, and (b) does not exclude the border line for cases when a mark touches the border line and connected ON pixels from the mark extend outwardly from the border line by a perpendicular distance that exceeds the particular amount.

5,572,602

IMAGE EXTRACTION SYSTEM FOR EXTRACTING PATTERNS SUCH AS CHARACTERS, GRAPHICS AND SYMBOLS FROM IMAGE HAVING FRAME FORMED BY STRAIGHT LINE PORTIONS

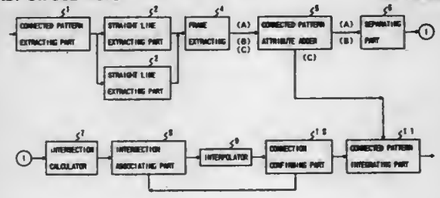
Satoshi Naoi; Maki Yabuki, and Atsuko Asakawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 7, 1994, Ser. No. 192,592

Claims priority, application Japan, Feb. 25, 1993, 5-036602; Apr. 28, 1993, 5-103257

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—178 **18 Claims**



1. An image extraction system for extracting patterns including at least one of characters, graphics and symbols from an image having a frame formed by straight line portions said image extraction system comprising:

connected pattern extracting means for extracting partial patterns having connected pixels from the image;

straight line extracting means for extracting straight line portions from the partial patterns;

attribute adding means for categorizing the partial patterns into a first pattern including only portions of the pattern which do not touch the frame and portions of the frame which do not touch the pattern, and a second pattern including portions of the pattern which touch the straight line portion extracted by said straight line extracting means;

separating means for separating the straight line portions from the second pattern;

intersection calculating means for calculating intersections of the patterns and the straight line portions from the second pattern;

intersection associating means for associating the intersections which are calculated by said intersection calculating means;

interpolating means for interpolating a region of the pattern within the straight line portions forming the frame based on the intersections which are associated by said intersection associated means; and

connection confirming means for confirming a connection of a pattern with respect to the extracted partial patterns of the pattern, said connection confirming means extracting a confirmed connection of the pattern and feeding back the portions of the pattern which cannot be confirmed to said intersection associating means, said intersection associating means re-associating the intersections calculated by said intersection calculating means with respect to the portion of the pattern fed back by said connection confirming means, said interpolating means interpolating a region of the pattern within the straight line portions forming the frame based on the intersections which are re-associated by said intersection associating means.

5,572,603

IMAGE PROCESSING METHOD AND DEVICE USING SUCH METHOD

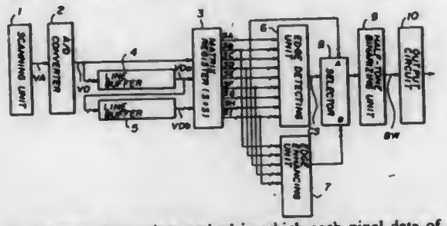
Kazumasa Koike, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 61,687, May 17, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 391,462

Claims priority, application Japan, May 20, 1992, 4-151156

Int. Cl.[6] G06K *9/48*

U.S. Cl. 382—199 **18 Claims**



1. An image processing method in which each pixel data of a gray-scale image, which data is obtained by means of scanning an original, is determined as either being or not being an edge pixel corresponding to an edge of a picture of the original, the method comprising the steps of:

a) preparing a 3*3 pixel matrix including a focus pixel to be processed, wherein said focus pixel is positioned in the center of the matrix and bordering pixels surround said focus pixel; and

b) determining said focus pixel as either being an edge pixel or not being an edge pixel, by performing a plurality of comparisons of an intensity of said focus pixel with three intensities of respective bordering pixels of a plurality of different sets containing three bordering pixels, the three bordering pixels in each set being arranged consecutively around said focus pixel to form three intensity differences for each one of said plurality of sets, wherein:

1) the three consecutively arranged border pixels in each set include either three consecutive co-linear border pixels, or three non-co-linear pixels including a corner border pixel; and

2) said focus pixel is determined to be an edge pixel when each of the three intensity differences between said focus pixel and each of said three respective bordering pixels in any set of bordering pixels is greater than a predetermined value.

5,572,604

METHOD FOR PATTERN RECOGNITION USING PROTOTYPE TRANSFORMATIONS AND HIERARCHICAL FILTERING

Patrice Y. Simard, Eatontown, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 156,344, Nov. 22, 1993, abandoned. This application Nov. 23, 1994, Ser. No. 344,791

Int. Cl.[6] G06K *9/62*

U.S. Cl. 382—224 **7 Claims**

1. A method for sorting articles bearing graphical patterns to be referred to as input patterns, the method comprising the steps of: converting each input pattern to a pixel array, storing the pixel array in a digital pattern-recognition machine, classifying each input pattern, and performing a prescribed physical manipulation of each article in response to the result of classifying the pattern borne by that article;

wherein the machine comprises a storage device and a library of prototype patterns stored within the storage device, each prototype pattern belongs to one of a multiplicity of known classes, and each prototype pattern is labeled with its respective class, and the classifying step comprises, in said machine:

a) for each input pattern, retrieving each of the prototype patterns from the storage device and evaluating a distance function d_1 between the input pattern and each of the prototype patterns, wherein d_1 is the first of a plurality of distance functions d_i, i=1, . . . , M, M a positive integer at least 2;

b) responsive to (a), keeping the K_1 closest prototype patterns and eliminating from consideration the rest of the prototype patterns, wherein K_1 is a positive integer less than the total number of prototype patterns in the library;

c) evaluating at least one further distance function d_j between the input pattern and at least some of the K_1 closest prototype patterns, wherein j is a positive integer at least 2 and at most M;

d) responsive to the evaluation of each further distance function d_i, i=2, . . . M, keeping the K_i closest prototype patterns and eliminating from consideration the rest of the prototype patterns, wherein K_i is a positive integer less than K_{i-1}; and

e) choosing the best class, according to an appropriate decision procedure, from the classes represented in a population of prototype patterns that is limited in response to the evaluation of the last distance function d_M, wherein:

f) each evaluation of step (c) is carded out between the input pattern and the K_{j-1} closest prototype patterns that were kept in response to the evaluation of the last preceding distance function d_{j-1};

g) at least one of the further distance functions d_i, i at least 2, such distance to be referred to as a tangent distance of complexity L_i, is evaluated with reference to a set of image transformations that are selected to leave the respective classes of the prototype patterns invariant, and such evaluation comprises the further steps of:

generating L_i tangent vectors from a subset of said image transformations, wherein L_i is at least 1, and the L_i tangent vectors define an input hyperplane containing the input pattern; and

evaluating a Euclidean distance with respect to a transformed pattern lying on the input hyperplane.

5,572,605

APPARATUS AND METHOD FOR INPUTTING, COMPRESSING AND OUTPUTTING CHARACTERS, ILLUSTRATIONS, DRAWINGS AND LOGOMARKS

Kazuo Toraichi, 14-2, Irumagawa 1-chome, Sayama-shi, Saitama-ken, Japan

Filed Sep. 1, 1993, Ser. No. 114,364

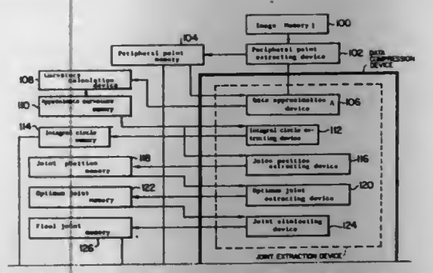
Claims priority, application Japan, Sep. 1, 1992, 4-259137; Sep. 11, 1992, 4-269646

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—241 **22 Claims**

1. An apparatus for inputting, compressing and outputting characters, illustrations, drawings and logomarks comprising:

an image scanner for reading in characters, illustrations, drawings or logomarks as an image on an image screen having pixels arranged in a matrix on which a two-dimensional coordinate is defined,



an image memory for memorizing the image as a binary image defined on the pixels,

a peripheral point extraction device for extracting peripheral points and peripheral point series from the memorized image and representing the peripheral points by the series number and the two-dimensional coordinate defined on the pixels, a peripheral point memory for memorizing the series number and the two-dimensional coordinate (X,Y) of the peripheral points,

a first data approximation device for approximating x-coordinates and y-coordinates of the peripheral points by piecewise polynomials $S_x(t)$ and $S_y(t)$ based upon Fluency functions having an intermediate variable t until an error between the coordinates and the approximating polynomials at the peripheral points decreases below a predetermined threshold,

a curvature calculation device for calculating curvatures at all peripheral points by differentiating the piecewise polynomials $S_x(t)$ and $S_y(t)$,

an integral circle extraction device for extracting integral circles from the curvatures,

a joint position extraction device for extracting temporary joints which are peripheral points having a larger curvature than a threshold,

a second data approximation device for approximating the peripheral lines between two neighboring joints by a straight line firstly and by an arc secondly,

the second data approximating device approximating x-coordinates and y-coordinates of the peripheral line by piecewise polynomials $S_x(t)$ and $S_y(t)$ based on Fluency functions of dimension M with an intermediate variable t, if an error of approximation by a straight line or an arc is larger than a predetermined constant,

the second data approximation device approximating the same line by higher dimensional piecewise polynomials, if the error is still larger than the constant, till the error decreases below a predetermined constant,

a compressed data memory for memorizing the coordinates of the joints and the parameters approximating the lines between neighboring joints,

a peripheral line reproduction device for reproducing the peripheral closed lines from the data of the joints and the parameters approximating the lines,

a reproduction device for reproducing characters, illustrations, drawings and logomarks by giving different colors to inner regions within the peripheral closed lines and to outer regions, and

a reproduction data output device for outputting the reproduced data as real characters, drawings, illustrations or logomarks on paper, plastic sheet or other medium.

5,572,606

IMAGE INFORMATION PROCESSING METHOD AND APPARATUS THEREFOR WITH MULTI-LEVEL DATA CAPABILITY

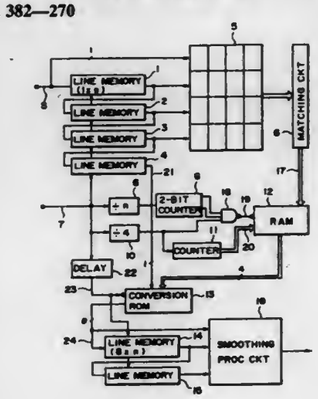
Hiroshi Tanioka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 59,343, May 12, 1993, abandoned, which is a continuation of Ser. No. 703,710, May 21, 1991, abandoned, which is a continuation of Ser. No. 325,020, Mar. 20, 1989, abandoned, which is a continuation of Ser. No. 918,914, Oct. 15, 1986, abandoned. This application Jun. 8, 1994, Ser. No. 257,428

Claims priority, application Japan, Oct. 18, 1985, 60-230945

Int. Cl.[6] G06K *9/38*

U.S. Cl. 382—270 **19 Claims**



1. An image information processing apparatus comprising:

input means for inputting a binary image signal and an image clock signal for each picture element, the binary image signal being one which has been binarization-processed using a predetermined matrix;

conversion means for converting the binary image signal input by said input means into a multi-level digital image signal of three or more levels, the multi-level digital image signal representing density data for each picture element, and said conversion means converting the binary image signal into the multi-level digital image signal without increasing the number of picture elements, wherein said conversion means further comprises line memories for delaying the binary image signal by a quantity corresponding to plural lines and performs the conversion in real time synchronously with the image clock signal using said line memories, and wherein said conversion means includes means for discriminating whether the binary image signal is a signal obtained by binarizing halftone portion or a signal obtained by binarizing a character portion and converts the binary image signal into a multi-level digital image signal in accordance with a discrimination result

smoothing means for the multi-level digital image signal obtained in said conversion means

wherein said smoothing means performs smoothing processing of the multi-level digital image signal for an area a size of which is smaller than a size of said predetermined matrix.

5,572,607

METHOD AND CIRCUIT ARRANGEMENT FOR ELECTRONIC RETOUCHING OF IMAGES

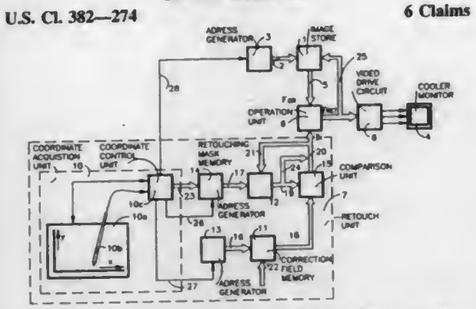
Rolf Behrends, Kiel, Germany, assignor to Linotype-Hell AG, Eschborn, Germany

Continuation of Ser. No. 120,340, Sep. 14, 1993, abandoned. This application Sep. 19, 1994, Ser. No. 306,433

Claims priority, application Germany, Sep. 30, 1992, 42 32 704.0

Int. Cl.[6] G06K *9/40*

U.S. Cl. 382—274 **6 Claims**



1. A method for electronic retouching of a color image, comprising the steps of:

scanning an original color image pixel-by-pixel to acquire color signals, digitizing the color signals into color values and storing said color values as original color values in an image store;

identifying coordinates of individual pixels for a correction field of original color values to be retouched in said image store by means of a marking device of a coordinate acquisition unit, said marking devices being used as a retouch brush and said correction field representing a size of said retouch brush;

defining correction intensity percentage values for said field of color values to be retouched and storing the defined correction intensity percentage values in a correction field memory of said coordinate acquisition unit;

simultaneously addressing said correction field memory and a retouching mask memory for storing correction intensity percentage values at corresponding locations by use of the coordinates identified with said marking device of said coordinate acquisition unit;

selecting in a comparison unit an extreme of an addressed correction intensity percentage value read out from said correction field memory and a simultaneously addressed correction intensity percentage value read out from said retouching mask memory;

correcting the original color values to be retouched in the image store by said selected correction intensity percentage values; and

feeding back said selected correction intensity percentage values from said comparison unit into said retouching mask memory to update the retouching mask memory to the selected correction intensity percentage values at currently addressed locations by said identified coordinates for subsequent selection of correction intensity percentage values by said comparison unit.

5,572,608

SINC FILTER IN LINEAR LUMEN SPACE FOR SCANNER

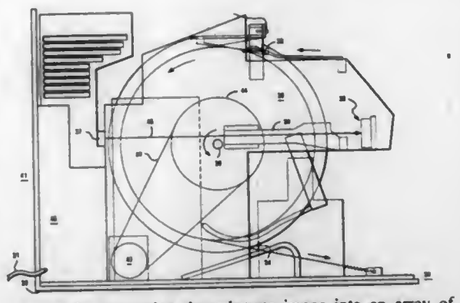
Albert D. Edgar, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 24, 1994, Ser. No. 295,317

Int. Cl.[6] G06K *9/20*

U.S. Cl. 382—321 **17 Claims**

1. A scanner for converting an image on a substrate comprising:



a sensor for converting the substrate image into an array of analog pixels at a first sampling frequency;

a digital converter for converting the array of analog pixels into a first array of digital pixels stored in a digital memory;

a sinc digital filter for converting digital pixel values contained in the first array of digital pixels which are linearly representative of the brightness of light as the image is intended to be displayed to digital pixel values stored in a second array of digital pixels at a second sampling frequency lower than the first sampling frequency; and

means for outputting from the scanner apparatus the digital pixel values of the second array of digital pixels.

5,572,609

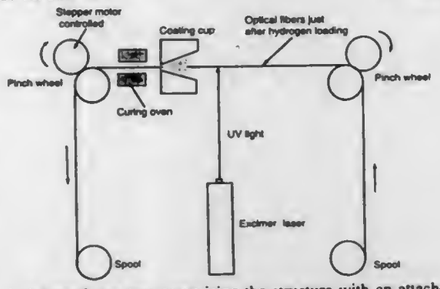
OPTICAL FIBER VIBRATION MODAL FILTER FOR FLEXIBLE STRUCTURES PRODUCED BY THE PHOTOREFRACTIVE EFFECT

Yaowen Li, Hyattsville, and James S. Sirkis, Burtonsville, both of Md., assignors to University of Maryland, College Park, Md.

Filed Sep. 1, 1995, Ser. No. 523,529

Int. Cl.[6] G02B *6/00*

U.S. Cl. 385—12 **9 Claims**



1. A sensed structure comprising the structure with an attached uniform cross-sectional non-grating type optical-fiber vibration modal filtering sensor,

the sensor is an optical fiber with permanent direct distributed photorefractive induced core changes along the fiber's length in an unstrained state forming a continuously modified light propagation constant distribution, the induced core changes are produced by focusing ultra-violet (UV) laser light in the fiber's core yielding the continuously modified light propagation constant distribution in the fiber's core, the continuously modified light propagation constant distribution is a modulated refractive index profile distribution without a superimposed grating profile distribution satisfying a weighting function of the sensor, the propagation constant distribution along the fiber's length is the weighting function of the sensor,

wherein the weighting function is defined by vibration modal analysis of the structure to which the sensor is attached which generates an a priori numerical representation of modal shape information of a selected vibration mode in the structure

which corresponds with the sensor's distributed photorefractive induced core changes along the fiber's length, whereby allowing flexibility and ease of use as to i) a selected optical arrangement for fabrication and ii) type of optical fiber used.

5,572,610

WAVEGUIDE-TYPE OPTICAL DEVICE AND IMPEDANCE MATCHING METHOD THEREOF

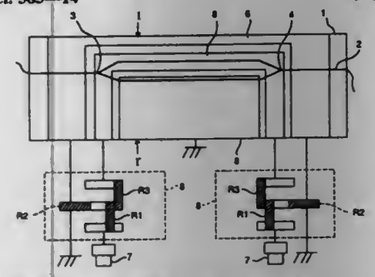
Atsushi Toyohara, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jun. 13, 1994, Ser. No. 259,056

Claims priority, application Japan, Jun. 15, 1993, 5-143560

Int. Cl.[6] G02B *6/12*

U.S. Cl. 385—14 **9 Claims**



4. A waveguide-type optical device comprising:

a base;

an optical waveguide formed on said base;

a buffer layer formed on said optical waveguide;

a signal electrode formed on said buffer layer;

a connector for supplying a control signal for controlling light waves propagating in said optical waveguide to said signal electrode; and

an impedance matching means coupled between said connector and said electrode for matching an impedance of said connector and an impedance of said signal electrode, wherein said impedance matching means is an impedance conversion circuit comprising resistors connected in T network.

5,572,611

OPTICAL SIGNAL PROCESSOR, METHOD OF ITS CONTROL, METHOD OF ITS DESIGNING, AND METHOD OF ITS PRODUCTION

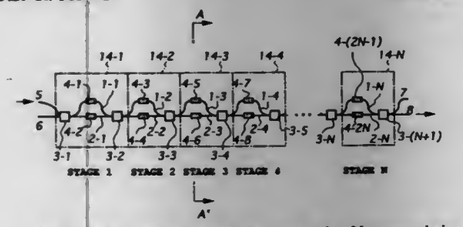
Kaname Jinguji; Masao Kawachi, and Koichi Takiguchi, all of Mito, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Jun. 20, 1994, Ser. No. 262,248

Claims priority, application Japan, Jun. 21, 1993, 5-149081; Aug. 11, 1993, 5-199490; Feb. 21, 1994, 6-022911

Int. Cl.[6] G02B *6/26;6/42*

U.S. Cl. 385—17 **73 Claims**



1. An N stage optical signal processor, the N stages being coupled in series such that the output of one stage provides the input to a next stage, each of the N stages comprising:

two optical waveguides;

a variable directional coupler, having an amplitude coupling rate which may range between a positive and negative amplitude coupling rate, which couples together the two optical waveguides at the output of the respective stage and which couples the respective stage to the two optical waveguides of a next stage, wherein an optical path difference of the two optical waveguides in each of the N stages is the same optical path difference; and

at least one phase controller for applying a desired phase shift provided on at least one optical waveguide of the two optical waveguides;

wherein a first stage of the N stage optical signal processor further comprises a further variable directional coupler which couples an input of the optical signal processor to the two optical waveguides of the first stage; and

wherein the variable directional coupler of the Nth stage provides an output of the optical signal processor.

5,572,612

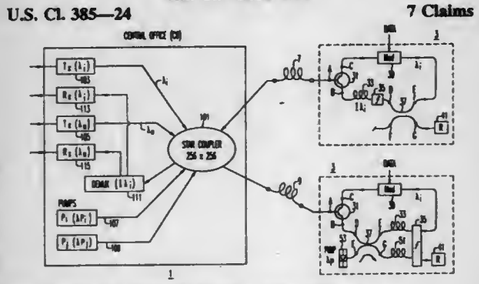
BIDIRECTIONAL OPTICAL TRANSMISSION SYSTEM

Jean-Marc P. Delavaux, Wescosville, Pa., and Philippe A. Perrier, Velizy Villa Coublay, France, assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 14, 1994, Ser. No. 355,943

Int. Cl.[6] G02B *6/28*

U.S. Cl. 385—24 **7 Claims**



5. An optical communications system comprising:

a plurality of transmitters;

a coupler connected to said plurality of transmitters and to at least one pump laser;

an optical fiber, said optical fiber being connected to said coupler;

an optical circulator having at least three ports, one of said ports being connected to said optical fiber;

a fiber amplifier optically coupled to at least one of said ports;

a modulator optically coupled to one of said ports and to said fiber amplifier; and

a multiplexer coupler optically connected to said fiber amplifier.

5,572,613

MULTIPLE LIGHTPIPE DEVICE

Mary E. Kingsbury, Taylor, Tex., assignor to Siemens Rolm Communications Inc., Santa Clara, Calif.

Filed Mar. 8, 1995, Ser. No. 400,644

Int. Cl.[6] G02B *6/28*

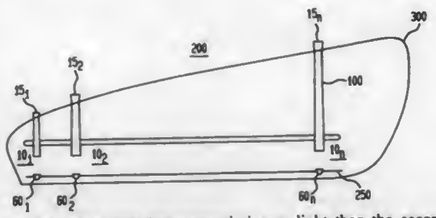
U.S. Cl. 385—24 **9 Claims**

4. A light transmission device comprising:

a plurality of lightpipes, the plurality of lightpipes including:

a first lightpipe having an input end and an output end, a surface of the input end including a first area and a second area, the first area being less transmissive to light than the second area; and

a second lightpipe having an input end and an output end, a surface of the input end of the second lightpipe including a first area and a second area, the first area of the second



lightpipe being less transmissive to light than the second area of the second lightpipe;

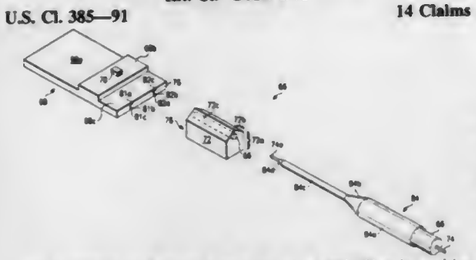
wherein the first lightpipe is shorter than the second lightpipe and wherein the size of the first area of the first lightpipe is larger than the size of the first area of the second lightpipe.

5,572,614

METHOD AND APPARATUS FOR ALIGNING A SEPARATELY SUPPORTED FIBER TIP AND FIBER COMMUNICATIONS CIRCUIT

Richard E. Lucas, Jr., Plano, Tex., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Nov. 4, 1994, Ser. No. 334,585
Int. Cl.[6] G02B 6/42
U.S. Cl. 385—91 14 Claims



12. A method of aligning a fiber tip of an optic fiber in position with respect to a fiber communications circuit disposed on a carrier having a planar surface, comprising the steps of:

supporting said optic fiber with a block having a planar surface such that a movement of said block causes a corresponding movement of said fiber tip;

placing said planar surface of said block in contact with said planar surface of said carrier, thereby defining a reference plane between said block and said carrier;

after said placing step, automatically establishing a first relative position between said block and said carrier along a first dimension of said reference plane, wherein said step of automatically establishing a first relative position comprises:

outputting a light signal from said communications circuit;

locating said block in said first dimension and relative to said carrier such that said fiber tip is located at a starting point of a scan width with respect to said communications circuit;

continuously moving said block in a first direction along said first dimension and relative to said carrier such that said fiber tip moves continuously through the scan width;

during said step of continuously moving in said first direction along said first dimension, measuring a coupled light signal from said fiber, wherein said coupled light signal is responsive to said light signal from said communications circuit;

continuously moving said block in a second direction along said first dimension and relative to said carrier such that said fiber tip moves continuously through the scan width; and

during said step of continuously moving in said second direction along said first dimension, measuring a coupled light signal from said fiber, wherein said coupled light signal is responsive to said light signal from said communications circuit;

after said placing step, automatically establishing a second relative position between said block and said carrier along a second dimension of said reference plane, wherein said second dimension is orthogonal to said first dimension; and

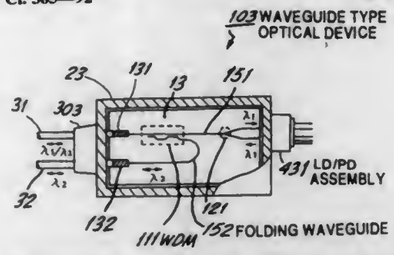
after said placing step, automatically establishing a third relative position between said block and said carrier along a third dimension of said reference plane, wherein said third dimension is orthogonal to said second dimension.

5,572,615

WAVEGUIDE TYPE OPTICAL DEVICE

Toshiyuki Emori, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed May 31, 1995, Ser. No. 453,126
Claims priority, application Japan, Sep. 6, 1994, 6-212627
Int. Cl.[6] G02B 6/00;6/36
U.S. Cl. 385—92 10 Claims



1. A waveguide type optical device connected with at least an optical fiber and electronic wires, for converting an optical signal transferred to the waveguide type optical device through the optical fiber to an electronic signal sent out from the waveguide type optical device through the electronic wire and an electronic signal sent to the waveguide type optical device through an electronic wire to an optical signal sent out from the waveguide type optical device through the optical fiber, said waveguide type optical device comprising:

an optical waveguide chip on which an optical waveguide circuit including at least a pair of waveguide terminals is formed;

a chip housing body for housing said optical waveguide chip; and

a light emitting and detecting device assembly fitted to said chip housing body, including at least a pair of a light emitting element and a light detecting element, the light emitting element and the light detecting element being arranged before said light emitting and detecting device assembly is fitted to said chip housing body, so that said the light emitting element and the light detecting element are optically connected with the waveguide terminals respectively after said light emitting and detecting device assembly is fitted to the chip housing body.

5,572,616

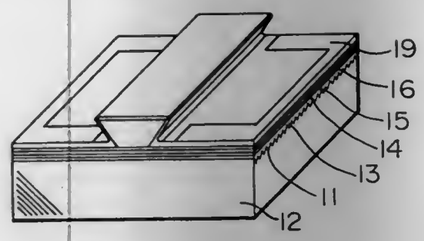
WAVEGUIDE DEVICE

Masahiro Aoki, Kokubunji; Tatemi Ido, Hachioji; Takayuki Tsutsui, Komoro; Kazuhisa Uomi, Hachioji; Tomonobu Tsuchiya, Kodaira; Makoto Okai, Tokorozawa, and Atsushi Nakamura, Komoro, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 30, 1995, Ser. No. 380,571
Claims priority, application Japan, Jan. 31, 1994, 6-009116; Mar. 10, 1994, 6-039442
Int. Cl.[6] G02B 6/10
U.S. Cl. 385—131 15 Claims

1. A waveguide device, including:

an indium phosphide ridge-waveguide formed above a substrate, wherein a side wall of said ridge-waveguide has a reversed mesa form.

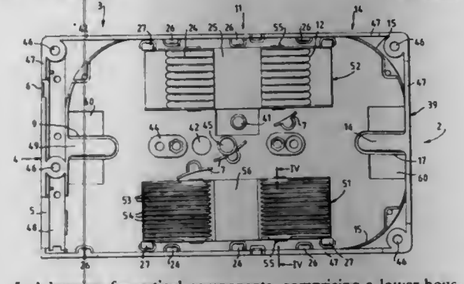


5,572,617

HOUSING FOR OPTICAL COMPONENTS

Susanne Bernhardt; Axel Thiel; Eberhard Kahle; Paul Oehlkers, and Peter Grugel, all of Berlin, Germany, assignors to Krone Aktiengesellschaft, Berlin-Zehlendorf, Germany

Filed Apr. 21, 1995, Ser. No. 427,288
Claims priority, application Germany, Apr. 26, 1994, 44 15 218.3
Int. Cl.[6] G02B 6/00
U.S. Cl. 385—135 16 Claims



1. A housing for optical components, comprising a lower housing portion; at least one holder for holding glass fibers, couplers or splices; said holder being provided as a component separate from said lower housing portion; and snap fit means provided on said lower housing portion and said holder, said snap fit means for snap fit of said holder into a bottom of said lower housing portion; said holder having a lower side comprising depressions, an upper side of said holder including a comb-type section defining guide grooves, said depressions extending in parallel to said guide grooves, said lower housing portion including depressions whereby said depressions of said lower housing portion cooperate with depressions of said holder to form channels between said lower housing portion and said holder.

5,572,618

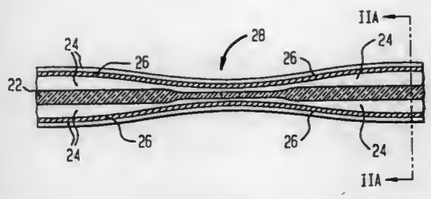
OPTICAL ATTENUATOR

David J. DiGiovanni, Montclair; Katherine T. Nelson, Gillette; Jay R. Simpson, Fanwood, and Kenneth L. Walker, New Providence, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 13, 1994, Ser. No. 274,597
Int. Cl.[6] G02B 6/00
U.S. Cl. 385—140 21 Claims

1. A passive optical attenuating device, comprising:

a single mode optical waveguide having a core and cladding and defining an absorbing region adapted to receive optical radiation and to absorb at least 0.2 dB/m of said received optical radiation, said radiation being absorbed along the length of said waveguide to provide attenuation which remains substantially constant below a predetermined optical power.

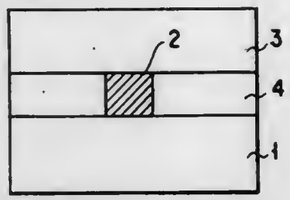


5,572,619

POLIMIDE OPTICAL WAVEGUIDE

Yasuko Maruo, Kodaira; Shigekuni Sasaki, Iruma; Toshiaki Tamamura, Atsugi; Tohru Matsuura, Yokohama; Shinji Ando, Tokyo; Shinsuke Matsui, Kodaira, and Fumio Yamamoto, Hoya, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Continuation of Ser. No. 213,918, Mar. 15, 1994, abandoned.
This application Apr. 19, 1995, Ser. No. 425,343
Claims priority, application Japan, Mar. 18, 1993, 5-082516; Jun. 29, 1993, 5-178574
Int. Cl.[6] G02B 6/00
U.S. Cl. 385—143 6 Claims



1. A polyimide optical waveguide comprising:

(a) a first one-layer cladding made of a first polyimide film; and

(b) a core produced by irradiating a portion of said first polyimide film of said first one-layer cladding with an electron beam to provide a predetermined value of a refractive index of said irradiated portion, said first one-layer cladding having a refractive index lower than that of said core; and

said first one-layer cladding and said core forming an embedded channel waveguide.

5,572,620

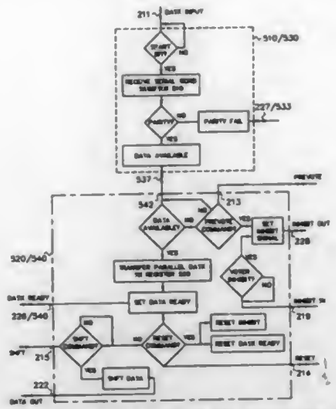
FAULT-TOLERANT VOTER SYSTEM FOR OUTPUT DATA FROM A PLURALITY OF NON-SYNCHRONIZED REDUNDANT PROCESSORS

Timothy J. Reilly, Plymouth, and Michael L. Sheffels, Brooklyn Park, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 98,685, Jul. 29, 1993, abandoned.
This application Jun. 8, 1995, Ser. No. 481,231
Int. Cl.[6] G06F 11/16
U.S. Cl. 395—182.09 6 Claims

1. A data message voter system for providing a voted output data message resulting from a vote on a processor data output message from each of a plurality of loosely synchronized redundant processors, each having their own processor clock generator, where each of said plurality of loosely synchronized redundant processors operates on common and simultaneously occurring input data messages, performs identical processing steps on said input data messages, and provides said processor data output message at a processor data output means within a fixed skew time relative to each other for a non-faulty redundant processor system, said data message voter system comprising:

a plurality of data receivers, one associated with each of said loosely synchronized redundant processors, where each of said plurality of data receivers is operative for (i) receiving said processor output data message from a corresponding one



of said loosely synchronized redundant processors, (ii) generating a data ready signal after said processor data output data message is received, and (iii) providing a receiver data output message, which is identical to said processor output data message, at a corresponding receiver data output means;

data message voting means including means for receiving said receiver data output message from each of said plurality of data receivers and generating voted data output message representative of a bit-for-bit vote of qualified ones of said receiver data output messages are only those of said receiver output data message originating from (i) those of said plurality of data receivers providing a data ready signal occurring no later than a first selected time after a timed occurring one of said data ready signals in which said timed occurring one of said data ready signals occurs no later than a second selected time after an initial one of said data ready signals corresponding to one of said input data messages, (ii) a one of said plurality of data receivers providing said initial one of said data ready signals, and (iii) a one of said plurality of data receivers providing said timed occurring one of said data ready signals; and

means independent of processor data output messages synchronizing the plurality of processors periodically at fixed time intervals.

5,572,621

SPEECH SIGNAL PROCESSING DEVICE WITH CONTINUOUS MONITORING OF SIGNAL-TO-NOISE RATIO

Rainer Martin, Aachen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 19, 1994, Ser. No. 308,768

Claims priority, application European Pat. Off., Sep. 21, 1993, 93115202

Int. Cl.[6] G10L *3/02*

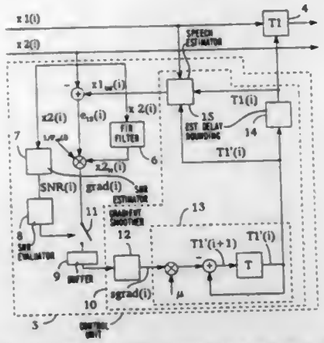
U.S. Cl. 395—2.36 **6 Claims**

1. A mobile radio set which comprises a speech processing device for processing speech signals having noise components and speech components, said device including a control unit for continuously forming estimates of the signal-to-noise ratio (SNR(i)) of the speech signals; said control unit comprising:

means for deriving digital samples (x(i)) of the speech signals;

means for determining and smoothing power values of the digital samples;

means for determining for each successive group of L samples the minimum of the L smoothed power values thereof, the groups uninterruptedly succeeding each other and L being a number which is at least sufficient so that all of the smoothed power values of a group which are associated with a random phoneme of the speech signal can be combined; and



means for estimating a present signal-to-noise ratio on the basis of the difference between a present smoothed power value and the most recently determined minimum smoothed power value.

5,572,622

REJECTED FRAME CONCEALMENT

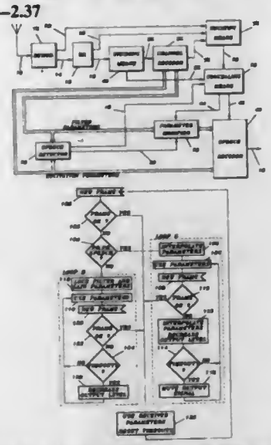
Karl T. Wigren, Uppsala; Rolf A. Bergström, Mölndal, and Fredrik K. J. Jansson, Sundbyberg, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jun. 10, 1994, Ser. No. 258,578

Claims priority, application Sweden, Jun. 11, 1993, 9302025; Dec. 6, 1993, 9304058; Apr. 28, 1994, 9401462

Int. Cl.[6] G10L *9/18;3/00*

U.S. Cl. 395—2.37 **18 Claims**



1. A method in a frame based radio communication system, for concealing rejected frames in a speech decoder of a receiver, which speech decoder is of the source-filter type and is controlled by received parameters representing audio signals transmitted over a communication channel on a frame by frame basis, said method comprising:

(a) accepting or rejecting received frames depending on whether the parameters contained therein are considered to represent proper audio signals;

(b) detecting whether accepted frames represent primarily speech or background sounds and;

(c) concealing rejected frames by updating the parameters contained therein in accordance with a first concealing algorithm if the last accepted frame primarily represented speech and in accordance with a second concealing algorithm if the last accepted frame contained primarily background sounds.

5,572,623

METHOD OF SPEECH DETECTION

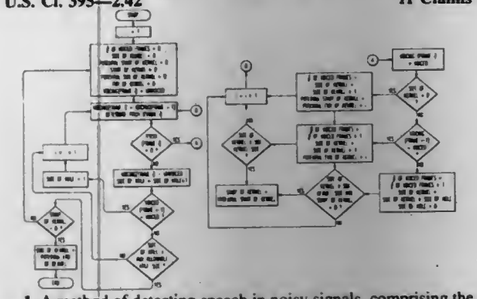
Dominique Pastor, St Loubes, France, assignor to Sextant Avionique, Meudon la Foret, France

Filed Oct. 21, 1993, Ser. No. 139,740

Claims priority, application France, Oct. 21, 1992, 92 12582

Int. Cl.[6] G10L *5/06*

U.S. Cl. 395—2.42 **11 Claims**



1. A method of detecting speech in noisy signals, comprising the steps of:

sampling plural speech frames including plural noise frames, at least one voiced frame and additional plural noise frames after said at least one voiced frame;

identifying said at least one voiced frame;

identifying said plural noise frames preceding said at least one voiced frame;

constructing an autoregressive model of noise and a mean noise spectrum based on said plural noise frames preceding said at least one voiced frame;

bleaching said plural noise frames preceding said at least one voiced frame by using a rejector filter;

removing noise by spectral noise removal from said plural noise frames preceding said at least one voiced frame;

finding an actual start of speech in the bleached plural noise frames;

extracting acoustic vectors used by a voice recognition system from the plural noise-removed frames lying between the actual start of speech and a first of said at least one voiced frame;

removing noise from and parameterizing said at least one voiced frame;

finding an actual end of speech; and

removing noise and parameterizing frames lying between a last of said at least one voiced frame and the actual end of speech.

5,572,624

SPEECH RECOGNITION SYSTEM ACCOMMODATING DIFFERENT SOURCES

Vladimir Sejnoha, Cambridge, Mass., assignor to Kurzweil Applied Intelligence, Inc., Waltham, Mass.

Filed Jan. 24, 1994, Ser. No. 185,500

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—265 **9 Claims**

1. A computer implemented method for generating translations from speech which accommodates different sources using a common set of vocabulary models, said method comprising:

a) inputting, from multiple sources, acoustic training data with associated phonetic transcriptions;

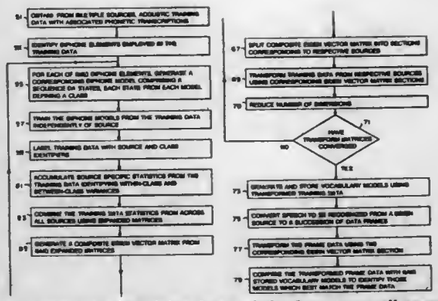
b) identifying multi-phone elements employed in said training data;

c) for each of said multi-phone elements, generating a corresponding multi-phone model comprising a sequence of states, each state from each model defining a class;

d) training said multi-phone models from said training data independently of source;

e) labeling training data with source and class identifiers;

f) accumulating source specific statistics from said training data identifying within-class and between-class variances;



g) combining said training data statistics from across all sources using expanded matrices;

h) generating a composite eigen vector matrix from said expanded matrices;

i) splitting said composite eigen vector matrix into sections corresponding to respective sources for use in transforming speech data obtained from the respective sources;

j) transforming training data from respective sources using corresponding eigen vector matrix sections;

k) repeating steps c through j using transformed training data for step d until transform matrices converge;

l) generating and storing vocabulary models using transformed training data;

m) converting speech to be recognized from a given source to a succession of data frames;

n) transforming the frame data using the corresponding eigen vector matrix section obtained in step i; and

o) comparing the transformed frame data with said stored vocabulary models to identify those models which best match the frame data.

5,572,625

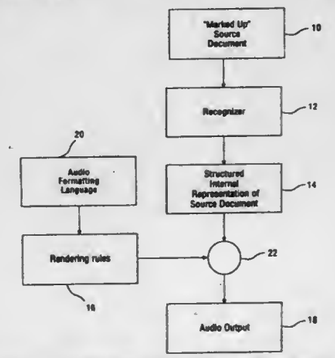
METHOD FOR GENERATING AUDIO RENDERINGS OF DIGITIZED WORKS HAVING HIGHLY TECHNICAL CONTENT

T. V. Raman, and David Gries, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Oct. 22, 1993, Ser. No. 141,348

Int. Cl.[6] G10L *5/02;9/00;3/00*

U.S. Cl. 395—2.69 **17 Claims**



1. A method of auditorially rendering mathematical expressions, formulas, tables, documents and language, comprising the steps of:

a) formatting mathematical information to be auditorially rendered;

b) transforming the mathematical information of step (a) into a structured representation having the form of a hierarchical tree; and

c) using an audio language and rendering rules for operating on the structured representation of the mathematical information of step (b) to produce an audio output, comprising stereo, multivoice parameters, including parameters for adjusting respective left and right volumes.

5,572,626

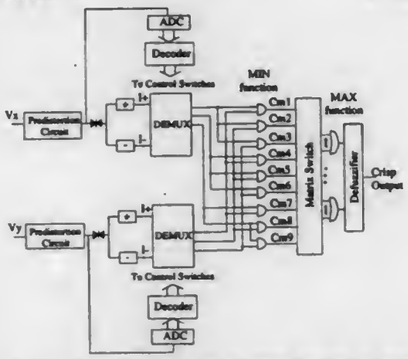
FUZZY MEMBERSHIP FUNCTION GENERATOR USING RESONANT TUNNELING DIODES

Hung C. Lin, 8 Schindler Ct., Silver Spring, Md. 20903; Sen-Jung Wei, 10659-C Maplewood Dr., Cupertina, Calif. 95014, and Hao Tang, 2205 Mark Ct., Silver Spring, Md. 20910

Filed May 19, 1994, Ser. No. 246,296

Int. Cl.[6] G06G *7/00*

U.S. Cl. 395—3 **10 Claims**



1. A fuzzy logic system having an input fuzzifier to generate membership functions for multiple number of labels for each antecedent and a defuzzifier to yield a crisp output from the membership functions of multiple number of output labels, comprising:

at least one single device with multiple folding voltage-curent (V-I) characteristics,

means for simulating the membership functions with the current of said charactersitics and said antecedent with the voltage of said charactersitics, wherein the overlapping sections of adjacent labels is obtained by:

means for adding a first current to the current of said device to obtain an additive folding V-I characterstic,

means for subtracting from a second current the current of said device to obtain a subtractive folding V-I characteristic, and

means for combining said additive folding folding V-I charcteristic and said subtractive folding V-I characteristic to obtain said overlapping membership functions.

5,572,627

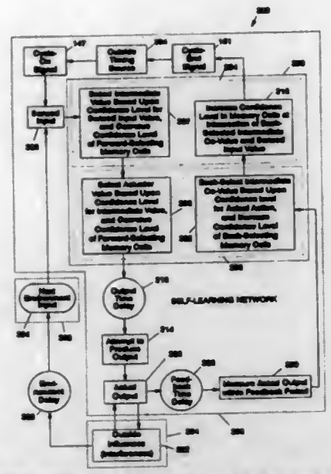
NETWORK THAT LEARNS WHAT IT ACTUALLY DOES

Robert A. Brown, 8 Foster St., Mattapoisett, Mass. 02739

Division of Ser. No. 155,587, Nov. 22, 1993. This application Mar. 23, 1995, Ser. No. 408,992

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—20 **7 Claims**



1. A bidirectional memory means useful in a self-learning machine with a network of memory means, said bidirectional memory means operating in a sequence of sensing and action periods, said bidirectional memory means comprising:

a. a timing means to herald a beginning and an end of a sensing and action period of predetermined duration, said sensing and action period being within said sequence of sensing and action periods, and

b. at least one of an input interface means to identify an extant value of said input interface means near a beginning of said sensing and action period, and

c. at least one of an output interface means to make a production of a forward-selected value of said output interface means within said sensing and action period, and

d. said output interface means also to identify an extant value of said output interface means after a predetermined delay from said production of said forward-selected value of said output interface means, and

e. said input interface means also to make a production of a back-selected value of said input interface means within said sensing and action period, and

f. said bidirectional memory means containing at least one of a bidirectional submatrix means made up of bidirectional memory cell means, wherein each said bidirectional submatrix means is connected to one said input interface means and one said output interface means uniquely, wherein

g. said bidirectional memory means is disposed to record a historical probability between said extant value of said input interface means and said extant value of said output interface means during said sequence of sensing and action periods, and

h. said bidirectional memory means also is disposed to make a forward-selection of said forward-selected value of said output interface means in said sensing and action period, said forward-selection being made on the basis of said a highest of said historical probability, and

i. said bidirectional memory means also is disposed to make a back-selection of said back-selected value of said input interface means in said sensing and action period, said back-selection being determined by said highest of said historical probability, whereby

j. said bidirectional memory means is a nodal unit means in a self-learning machine with a nodal network, and said bidirectional memory means is used in an actuator unit means in a self-learning machine with a duplex network, and a self-learning machine with a nodal network.

5,572,628

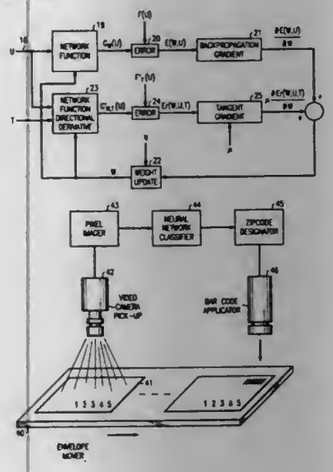
TRAINING SYSTEM FOR NEURAL NETWORKS

John S. Denker, Leonardo; Yann A. LeCun, Lincroft; Patrice Y. Simard, Eatontown, all of N.J., and Bernard Victorri, Paris, France, assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 16, 1994, Ser. No. 308,069

Int. Cl.[6] G06K *9/62*

U.S. Cl. 395—23 **1 Claim**



1. A neural network alphanumeric pattern recognition machine comprising:

means for receiving indicia of known and unknown alphanumeric symbols;

a data base for storing received indicia of the known alphanumeric symbols and classifying each of said alphanumeric symbols according to a known class of an alphanumeric symbol, thereby to assign an alphanumeric class to each known alphanumeric symbol;

an alphanumeric pattern classifier connected to said data base for determining alphanumeric classes of unknown symbols represented by input signals to said machine;

means for training said classifier to perform a recognition function in a manner that is invariant with respect to small transformations of each said known alphanumeric symbol, said means for training comprising:

means for expressing each said known alphanumeric symbol as a vector quantity;

means for computing one or more tangent vectors from each said vector quantity, each said tangent vector being an indicia of a particular small transformation of said known symbol;

means for combining said one or more tangent vectors, thereby to derive a combined value representative of an additional alphanumeric symbol which by definition is a member of the alphanumeric class of the known alphanumeric symbol from which derived; and

means for augmenting said data base with said additional alphanumeric symbols.

5,572,629

HIGH PERFORMANCE FUZZY LOGIC PROCESSING METHOD

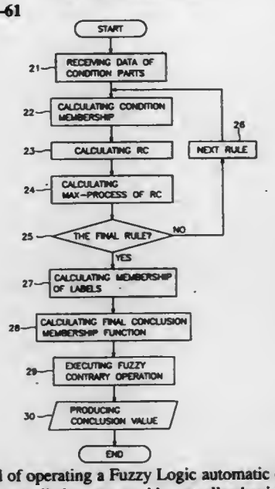
Sung-kuk Choi, Seoul, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Filed Dec. 29, 1993, Ser. No. 175,274

Claims priority, appilcation Rep. of Korea, Dec. 30, 1992, 92-26739

Int. Cl.[6] G06F *15/46*

U.S. Cl. 395—61 **3 Claims**



1. A method of operating a Fuzzy Logic automatic controller for controlling a controlled system, said controller having a plurality of channels each representing a condition, the method comprising the steps of:

receiving data corresponding to each of said plurality of channels;

determining a condition membership for each channel based on said data;

determining a rule contribution corresponding to each of a plurality of labels by selecting a minimum value among said condition memberships;

executing a maximum operation by selecting a maximum value among said rule contributions;

repeating said membership determining, rule contribution determining, and executing steps until a current control rule becomes a final control rule;

determining a conclusion membership function based on a final rule contribution representing each label;

determining a final conclusion membership function based on each conclusion membership function; and

utilizing said final conclusion membership function to control the controlled system.

5,572,630

IMAGE FORMING APPARATUS

Takashi Azuma, Yokohama; Tsutomu Ishiguro, Isehara, and Hiroshi Tanimoto, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 163,440, Dec. 8, 1993, abandoned. This application Dec. 21, 1995, Ser. No. 576,400

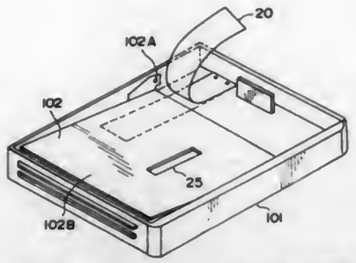
Claims priority, application Japan, Dec. 10, 1992, 4-352578; Dec. 10, 1992, 4-352579; Dec. 22, 1992, 4-357475

Int. Cl.[6] G06F *15/00*; H04N *1/00*

U.S. Cl. 395—111 **19 Claims**

1. An image forming apparatus comprising:

a sheets cassette which stores sheets;



a detector which detects whether a quantity of remaining sheets stored in said sheets cassette is less than a predetermined quantity or not;

a receiver which receives image data;

a recording device which records images on the sheets stored in said sheets cassette in accordance with said received image data; and

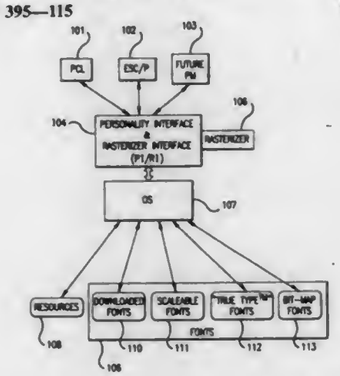
a controller which prohibits the recording of image data by the recording device based on the image data received by the receiver at an end of a currently recording job after the detector detects that said quantity of remaining sheets is less than the predetermined quantity.

5,572,631

COMMON FONT RASTERIZER AVAILABLE TO MULTIPLE PRINTER PERSONALITIES

Jitendra Kavathekar; Chris R. Gunning, and Cheryl S. Freeman, all of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 13, 1994, Ser. No. 242,210
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—115 **9 Claims**



8. A printer having a single font rasterizer and a plurality of printer personalities, said printer comprising:

an operating system;

a scaleable font connected to said operating system;

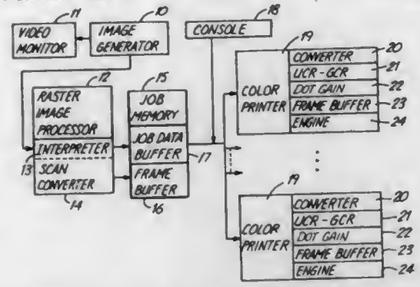
a personality interface means for allowing said plurality of personalities to communicate with said operating system, said personality interface means furthering allowing said plurality of personalities to communicate with said single font rasterizer.

5,572,632

UNIVERSAL FRAME BUFFER FOR A RENDERING DEVICE

Robert A. Laumeyer, Minneapolis, and Christopher J. Laurel, Watertown, both of Minn., assignors to Laser Master Corporation, Eden Prairie, Minn.

Filed Oct. 7, 1994, Ser. No. 319,491
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—116 **13 Claims**



1. A method of processing input color image data corresponding to an input image as specified by an input image forming device to be used in directing selected output image forming devices to form a corresponding output image, said method comprising:

generating in said input image forming device said input color image data having a portion corresponding to a specified output image based on said input image and a further portion corresponding to characteristics selected from those available in said output image forming devices;

storing that portion of said input color image data corresponding to characteristics selected from those available in said output image forming devices in a job memory;

converting in a processor that portion of said input color image data corresponding to said specified output image into values for up to three color coordinates of a selected intermediate color space for each pixel in said specified output image as determined from said selected characteristics; and

storing said intermediate color space color coordinate values for each pixel in said specified output image in portions allocated for that coordinate in an intermediate frame buffer memory, said intermediate color space color coordinate values differing from those color control values required for specifying colors to be provided by a said output image forming device having said selected characteristics in forming said corresponding output image. said job and intermediate frame buffer memories containing data insufficient to specify that one of alternative available conversion processes for converting said intermediate color space color coordinate values to said color control values which would result in a said output image forming device having said selected characteristics providing that one of those corresponding output images available therefrom that is colored to appear most like that of said specified input image.

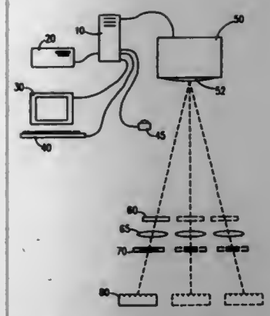
5,572,633

KEY-SUBJECT ALIGNMENT METHOD AND PRINTER FOR 3D PRINTING UTILIZING A VIDEO MONITOR FOR EXPOSURE

Allen K. W. Lo, Dunwoody, and Kenneth Q. Lao, Atlanta, both of Ga., assignors to Image Technology International, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 333,201, Nov. 2, 1994, which is a continuation-in-part of Ser. No. 1,025, Jan. 9, 1993, abandoned. This application Apr. 6, 1995, Ser. No. 418,016
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—117 **18 Claims**

1. A 3D printing method for producing 3D photographs from a plurality of 2D images of different views of a scene on lenticular



print material, said 2D images stored in a computer as digital files, each of said views having a key subject, said method comprising the steps of:

(a) visually selecting from the screen of a video monitor the key subject image from a first of said stored 2D images;

(b) electronically obtaining the location of said selected key subject image of said first 2 image;

(c) electronically determining the key subject image location in each of the other stored 2 images;

(d) electronically shifting each of said stored 2D images so that the key subject image location of each of said stored 2D images coincides with said obtained location of said selected key subject image;

(e) sequentially displaying said shifted 2D images on the screen of a video monitor; and

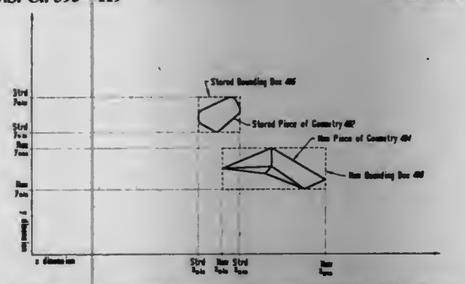
(f) exposing said displayed 2D images through at least one projection lens onto said lenticular print material.

5,572,634

METHOD AND APPARATUS FOR SPATIAL SIMULATION ACCELERATION

Jerome F. Duluk, Jr., Palo Alto, Calif., assignor to Silicon Engines, Inc., Palo Alto, Calif.

Filed Oct. 26, 1994, Ser. No. 329,226
Int. Cl.[6] G06T *15/00*
U.S. Cl. 395—119 **29 Claims**



1. A geometric content addressable memory (GCAM) for determining the occurrence of collisions between displayed representations of a stored three-dimensional object and a new three-dimensional object, said representation of said stored object being defined by n stored vertices, said GCAM comprising:

(a) a plurality of bus lines including an x bus, y bus, and z bus, wherein said x, y and z busses respectively supply a new x, y and z coordinate of a new vertex of said new object to every one of said identical memory cells simultaneously;

(b) n identical memory cells, wherein an nth one of said memory cells includes:

(i.) coordinate storage and arithmetic comparator fields X(n), Y(n) and Z(n) including register means for storing x, y and z coordinates of an nth one of said stored vertices, and arithmetic comparator means for simultaneously computing comparison results XComp(n), YComp(n) and ZComp(n) indicating whether said new x, y and z coordinate supplied respectively from said x, y and z bus is less than or greater than said x, y and z coordinates stored in said register means of said coordinate fields X(n), Y(n) and Z(n);

(ii.) a plurality of input lines carrying input signals including x-, y-, and z-coordinate vertex miss outputs XVrtxMsOut(n−1), YVrtxMsOut(n−1) and ZVrtxMsOut(n−1) from an $n-1^{th}$ one of said memory cells;

(iii.) coordinate miss detectors XMsDetect(n), YMsDetect(n) and ZMsDetect(n) that respectively compute vertex miss outputs XVrtxMsOut(n), YVrtxMsOut(n), ZVrtxMsOut(n) and polynomial miss signals XPlyMs(n), YPlyMs(n), ZPlyMs(n) based on said comparison results XComp(n), YComp(n) and ZComp(n), a new status signal, and said vertex miss outputs XVrtxMsOut(n−1), YVrtxMsOut(n−1) and ZVrtxMsOut(n−1) from a $n-1^{th}$ one of said memory cells, wherein a representative with x vertex miss output XVrtxMsOut(i) indicates whether a said new x coordinate misses (or is not in collision with) corresponding stored x coordinates of vertices 1 through i of said stored object, and a said polynomial miss signal is identical to a said vertex miss output;

(iv.) a polygon miss detector that determines, based on said polynomial miss signals XPlyMs(n), YPlyMs(n), ZPlyMs(n), said new status signal and a standard status signal whether said new vertex misses a polygon defined by said n vertices of said stored object; and

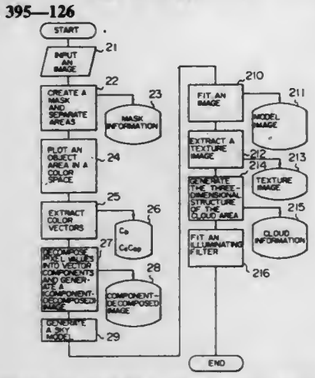
(v.) control means for synchronizing operations of said n^{th} cell with operations of said $n-1^{th}$ cell and a simulator display accelerator of which said GCAM is a part.

5,572,635

METHOD FOR CHANGING A NATURAL IMAGE BASED ON A LIGHT ENVIRONMENT IN THE NATURAL IMAGE

Yuri Takizawa, Machida; Shinichiro Miyaoka, Kawasaki, and Makoto Kato, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 3, 1992, Ser. No. 892,962
Claims priority, application Japan, Jun. 4, 1991, 3-132595
Int. Cl.[6] G06T *15/50*
U.S. Cl. 395—126 **23 Claims**



1. A method for changing a natural image comprising the steps of:

dividing a natural image into a sky area and an object area;

defining a sky model having at least one parameter selected from parameters representing (1) a position of a sun in a sky, (2) a color of sunlight from the sun, (3) a weather condition, and (4) a time of day;

generating a fundamental sky image approximating the sky area of the natural image based on the sky model, the step of generating a fundamental sky image including the step of assigning a value to the at least one parameter of the sky

model to enable the fundamental sky image to approximate the sky area of the natural image;

generating a texture image representing differences between values of pixels in the sky area of the natural image and values of corresponding pixels in the fundamental sky image;

changing the fundamental sky image by changing the value assigned to the at least one parameter of the sky model to a desired value;

generating an image of a changed sky area by adding together the changed fundamental sky image and the texture image;

generating a surface light source vector representing a color of a surface light source for illuminating the object area of the natural image from the changed fundamental sky image;

generating a main light source vector representing a color of a main light source for illuminating the object area of the natural image from the sky model after the value assigned to the at least one parameter of the sky model has been changed to the desired value; and

producing an image of a changed object area representing the object area of the natural image illuminated by the main light source and the surface light source by modifying values of pixels in the object area of the natural image in accordance with the main light source vector and the surface light source vector.

5,572,636

THREE-DIMENSIONAL GRAPHICS DRAWING APPARATUS

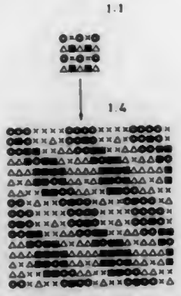
Takahiro Sakuraba, and Hiroshi Nakamura, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 61,087, May 13, 1993. This application Jun. 2, 1995, Ser. No. 460,804

Claims priority, application Japan, May 15, 1992, 4-122987; Aug. 31, 1992, 4-230756; Oct. 16, 1992, 4-278665; Apr. 20, 1993, 5-092695; Apr. 20, 1993, 5-092696

Int. Cl.[6] G06T *15/50*

U.S. Cl. 395—130 **12 Claims**



1. A 3-dimensional graphics drawing apparatus comprising:

texture pattern memory means for storing a texture pattern in an address designated by 2-dimensional ST texture coordinates (s, t), said texture pattern constructed by a set of a plurality of kinds of texture pixels;

display memory means for storing said texture pixels into an address designated by 2-dimensional XY display coordinates (X, Y) corresponding to a display screen and a 2-dimensional image of a surface shape of a 3-dimensional object formed by a set of polygons;

enlargement mode setting means for setting an enlargement mode of a magnification N in which each of a plurality of pixels constructing said polygons is increased by N in the vertical direction and by N in the lateral direction in said display memory means;

surface shape coordinate generating means for generating of 2-dimensional UV surface shape coordinates (u,v) defined by projecting a 3-dimensional object defined by set of said polygons which has been enlarged N times and to which said 2-dimensional texture pattern which has been enlarged N times has been adhered;

conversion coefficient generating means for generating initial values of ST texture coordinates (s_0, t_0) and increased amount values (K_1, K_2) for coordinate conversion between polygon vertex coordinate values (u, v) and vertex coordinate values for the ST texture coordinates (s, t) corresponding to said vertex coordinate values (u, v);

S coordinate register means for holding an S coordinate initial value (s_0);

S coordinate increased amount register means for holding an increased amount value (K_1);

S coordinate loop circuit means for adding the S coordinate initial value (s_0) and the increased amount value (K_1) each time an inputted coordinate value (u) of the UV surface shape coordinates (u, v) is between the vertexes, and for causing the result of the addition to be held as a new S coordinate initial value (s_0) in said S coordinate register means;

S coordinate variation selecting circuit means for selecting and outputting a variation amount (Δs) designated by XY display coordinates (x, y) corresponding to the UV surface shape coordinates (u, v) and giving a variation of random coordinate positions when said enlargement mode is set;

S coordinate variation adding means for supplying a stirred coordinate value ($s+\Delta s$) obtained by adding the variation value (Δs) to the S coordinate initial value (s_0) to said texture pattern memory means;

T coordinate register means for holding a T coordinate initial value (t_0);

T coordinate increased amount register means for holding an increased amount value (K_2);

T coordinate loop circuit means for adding the T coordinate initial value (t_0) and the increased amount value (K_2) each time an inputted coordinate value (v) of the UV surface shape coordinates is between the vertexes, and for causing the result of the addition to be held as a new T coordinate initial value (t_0);

T coordinate variation selecting circuit means for selecting and outputting a variation value (Δt) designated by XY display coordinates (x, y) corresponding to UV surface shape coordinates (u, v) and giving a variation of random coordinate positions when the enlargement mode is set; and

T coordinate variation adding means for supplying a stirred coordinate value ($t+\Delta t$) obtained by adding the variation value (Δt) to the T coordinate initial value (t_0) to said texture pattern memory means,

wherein the texture pixels are read out from said texture pattern memory means and display by the designation of said stirred coordinate values ($s+\Delta s$, $t+\Delta t$) of said S coordinate variation adding means and said T coordinate variation adding means, thereby making a random distribution in a boundary portion of each of the texture pixels which were enlarged to N times.

5,572,637

PROCESS FOR MERGING CAD VECTOR FILES AND AUTOMATICALLY REMOVING DUPLICATE AND OBSOLETE PATTERNS

Jerry R. Brown, Gardiner, and Paul J. Rich, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1994, Ser. No. 269,858

Int. Cl.[6] G06T *17/00*

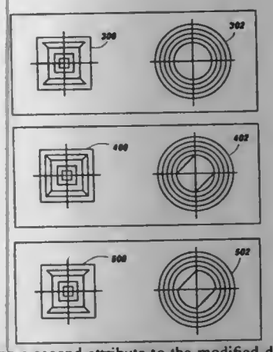
U.S. Cl. 395—133 **11 Claims**

1. A process for merging computer-aided-design (CAD) drawing files, comprising the steps of:

(a) providing an original drawing file having at least one original drawing shape having a shape-type, point coordinates and a point-type;

(b) assigning a first attribute to the original drawing shape;

(c) providing a modified drawing file based on the original drawing file and having at least one modified drawing shape having a shape-type, point coordinates and a point-type;



(d) assigning a second attribute to the modified drawing shape;

(e) merging the original drawing file with the modified drawing file to form a common drawing file that includes the original drawing shape and the modified drawing shape;

(f) searching the common drawing file for and retrieving a shape having the first attribute;

(g) searching the common drawing file for and retrieving a shape having the second attribute; and

(h) determining whether the shape-type, point coordinates and point-type of the shape having the first attribute match the shape-type, point coordinates and point-type, respectively of the shape having the second attribute;

(i) automatically deleting from the common drawing file the shape having the second attribute the entity having the second attribute is a duplicate of the entity having the first attribute when the shape-type, point coordinates and point-type of the shape having the first attribute match the shape-type, point coordinates and point-type, respectively, of the shape having the second attribute; and

(j) automatically deleting the entity having the first attribute if it has been modified in the modified drawing.

5,572,638

IMAGE FORMATION SYSTEM INVALIDATING OUTLINE CORRECTION WITHIN GRADATION IMAGE REGION

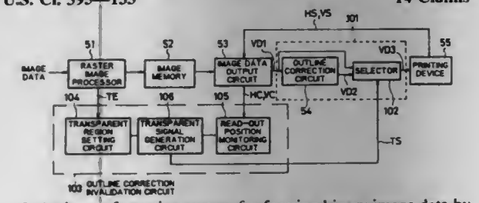
Shuji Fujii, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 361,570

Claims priority, application Japan, Dec. 24, 1993, 5-347899

Int. Cl.[6] G06T *15/00*

U.S. Cl. 395—133 **14 Claims**



1. An image formation system for forming binary image data by performing an outline correction on binary raster image data stored in an image memory, the binary raster image data including a gradation image region, the image formation system comprising:

transparent region setting means for setting the gradation image region as a transparent region in the binary raster image data;

read-position monitoring means for monitoring a read position of the binary raster image data read from the image memory;

decision means for deciding whether the read position of the binary raster image data falls within the transparent region or not; and

control means for controlling the outline correction such that the outline correction is invalidated when the read position of the binary raster image data is decided to fall within the transparent region.

5,572,639

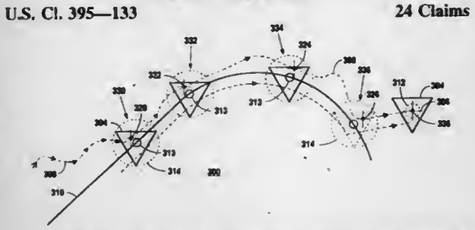
METHOD AND APPARATUS FOR INTERACTIVELY MANIPULATING AND DISPLAYING PRESUMPTIVE RELATIONSHIPS BETWEEN GRAPHIC OBJECTS

Brian D. Gantt, 8710 Brodie La., Austin, Tex. 78745

Filed May 8, 1995, Ser. No. 436,158

Int. Cl.[6] G06T *3/00*

U.S. Cl. 395—133 **24 Claims**



1. A method of operating a computer aided design system in presumptive mode, comprising the steps of:

moving a selected graphic object relative to a graphic pointing symbol;

determining when the selected graphic object is within a predetermined proximity of an underlying graphic object;

manipulating the selected graphic object into a geometric relationship with the underlying graphic object according to predetermined geometric rules; and

dynamically updating the geometric relationship based on movement of the graphic pointing symbol while the graphic pointing symbol remains within the predetermined proximity of the underlying graphic object.

5,572,640

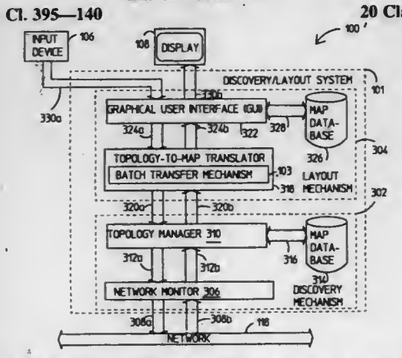
BATCH TRANSFER SYSTEM AND METHOD FOR HIGH PERFORMANCE GRAPHIC DISPLAY OF NETWORK TOPOLOGY

Robert D. Schettler, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 1, 1994, Ser. No. 347,914

Int. Cl.[6] G06F *15/62*

U.S. Cl. 395—140 **20 Claims**



1. A batch transfer system for enhancing the speed at which map data for a display is generated from topology data pertaining to a network, comprising:

(a) a processor;

(b) a discovery mechanism associated with said processor, said discovery mechanism configured to generate and store topol-

ogy data indicative of devices and interconnections of said network, said discovery mechanism configured to generate topology change events when a change in network topology occurs;

(c) a layout mechanism associated with said processor and in communication with said discovery mechanism, said layout mechanism configured to receive said topology data and said events from said discovery mechanism, said layout mechanism configured to drive said display based upon said topology data, said layout mechanism comprising:

(1) a translator configured to convert said topology data to said map data, said translator configured to receive said events and configured to change said map data based upon said events; and

(2) a graphical user interface configured to receive said map data from said translator and to drive said display based upon said map data; and

(d) wherein said translator is configured to access said processor periodically and wherein said translator accumulates said events between accesses and services a plurality of said events during a single access to said processor so that said map data is modified based upon said events and the speed for generating map data is increased by minimizing the number of said accesses of said translator to said processor.

5,572,641

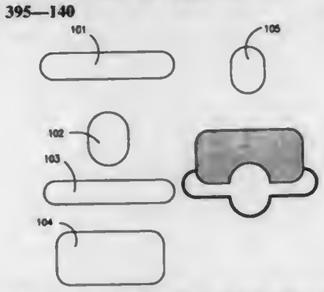
METHOD AND DEVICE FOR GRAPHS WITH DIFFERENT LAYERS

Yu-Hsia Kuo, No.1, Lane 276, Chu-Lin Road, Lin 4, Ching-Hu Village, Lin-Kou Hsiang, Taipei Hsien, Taiwan

Continuation of Ser. No. 1,664, Jan. 7, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 458,619

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—140 **8 Claims**



1. A method for creating graphs of variable shape and orientation using different layers in a computer in which each graph is made up of one or several icons of different patterns and colors in a format described as <number of icons> <icon> <icon 2> <icon 3> . . . etc, comprising the steps of:

representing each icon by a code and a set of variable parameters in the three groups— color attribute, coordinates and vector quantity—such that <icon> is represented by <code>, <color>, <location coordinates>, <vector quantity>, <icon 2> is represented by <code2>, <color2>, <location coordinates2>, <vector quantity2>, <icon 3> is represented by <code3>, <color3>, <location coordinates3>, <vector quantity3>, and so forth;

controlling the color of each icon by using the color attribute (<color>, <color2> . . . <color3> . . .) as the basis for coloring said icons;

controlling the location of each icon by locating each of said icons based on said coordinates (<location coordinates>, <location coordinates2>, <location coordinates3> . . .);

controlling the style of each icon, such as the icon's declination and width of stroke by using the vector quantity (<vector quantity>, <vector quantity2>, <vector quantity3 > . . .) as the basis for generating an icon frame having a selected style; and

overlaying each of the one or several icons of different patterns and colors to form said graph of variable shade and orientation.

5,572,642

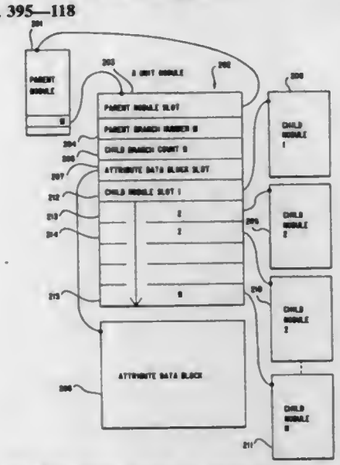
DATA INPUT DISPLAY SYSTEM FOR PREPARING AND EDITING STRUCTURAL DATA

Michiro Nasu, Fukaya, Japan, assignor to Baba Laboratory Inc., Saitama-ken, Japan

Continuation-in-part of Ser. No. 701,239, May 16, 1991, abandoned. This application May 3, 1994, Ser. No. 237,108

Int. Cl.[6] G06T *1/00*

U.S. Cl. 395—118 **2 Claims**



1. A data input display system for displaying text, symbols, and graphic data on a display screen and for editing data in a structural document having layout format constraint of constituent elements of mathematical formulae, chemical formulae, and other data of structure directed layout in the form of an editorial tree including a plurality of nodes wherein layout information is stored in each node without syntactic interpretation and reconstruction of said editorial tree, said data input display system comprising:

input means for inputting codes of a character, a digit, a symbol, an instruction code and serial strings of said codes;

construction means coupled to said input means for analyzing sequentially inputted codes and generating, deleting and memorizing said coded data collectively as a subtree of said editorial tree;

configuration means coupled to said construction means for calculating relative positions of said constituent elements in accordance with said layout information to conform to said layout format constraint of the editorial tree elements composed by said construction means, and for storing the resultant calculated layout information;

display means for reading out the layout information in the editorial tree stored by said construction means and configuration means, and selecting and displaying on said display screen only those graphic elements whose content and/or placement are changed in response to input; and

output means for converting the editorial tree elements stored by both of said construction means and configuration means to serial code strings, and for outputting the resultant codes to final output devices.

5,572,643

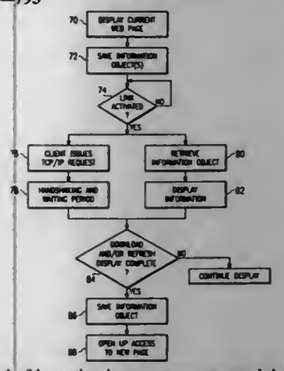
WEB BROWSER WITH DYNAMIC DISPLAY OF INFORMATION OBJECTS DURING LINKING

David H. Judson, 6823 Northport, Dallas, Tex. 75230

Filed Oct. 19, 1995, Ser. No. 543,876

Int. Cl.[6] G06F *19/00*

U.S. Cl. 395—793 **19 Claims**



1. A method of browsing in a computer network having at least one client connectable to one or more servers, the client having an interface for displaying a first hypertext document with at least one link to a second hypertext document located at a server, comprising the steps of;

contacting the server in response to activation of the link to initiate downloading of the second hypertext document from the server to the client;

in response to activation of the link, retrieving an information object that has been stored in the client prior to the activation of the link; and

displaying the retrieved information object on the interface during at least a portion of a time period between the activation of the link and completion of the downloading of the second hypertext document from the server to the client to provide information to a user during a process of linking from the first hypertext document to the second hypertext document;

wherein the information object is stored within the first hypertext document and is not displayed on the interface until after activation of the link that initiates downloading of the second hypertext document from the server to the client.

5,572,644

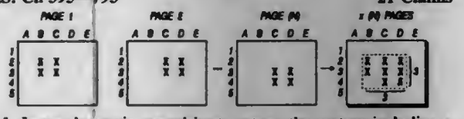
SYSTEM AND METHODS FOR MULTI-DIMENSIONAL INFORMATION PROCESSING

Welkuo Liaw, Santa Cruz; Percy L. Spencer, II, Scotts Valley, and David A. Orton, Santa Cruz, all of Calif., assignors to Borland International, Inc., Scotts Valley, Calif.

Continuation-in-part of Ser. No. 866,658, Apr. 8, 1992, Pat. No. 5,416,895. This application Mar. 10, 1993, Ser. No. 29,807

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—793 **21 Claims**



1. In an electronic spreadsheet system, the system including a processor for manipulating a multi-dimensional spread of information, and including a memory for representing the spread of information as an at least three-dimensional matrix of information cells, an improved method for allocating storage for the spread in the memory, the improvement comprising:

(a) arranging said at least three-dimensional matrix of information as a plurality of two-dimensional spreads;

(b) for each said two-dimensional spread having cells currently in use, said cells currently in use being referred to as active cells, determining a rectangle that encompasses the active cells for the spread;

(c) from all such rectangles determined in step (b), selecting a bounding rectangle that encompasses all such rectangles;

(d) determining a bounding block encompassing all active cells of the at least three-dimensional matrix by multiplying the number of cells in the bounding rectangle by a count of all two-dimensional spreads which have active cells; and

(e) utilizing information about the bounding block for allocating storage in the memory.

5,572,645

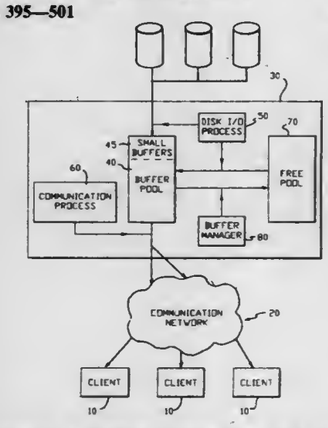
BUFFER MANAGEMENT POLICY FOR AN ON-DEMAND VIDEO SERVER

Asit Dan, West Harrison, and Dinkar Sitaram, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 1, 1994, Ser. No. 204,038

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—501 **10 Claims**



1. A method of managing memory buffer in a video server, wherein a plurality of clients are served from video streams provided from disks, comprising the step of:

determining buffer requirements of a plurality of the video streams, the buffer requirements being a number of frames separating each video stream from an immediately previous video stream carrying the same video;

creating a list of streams ordered by the buffer requirements;

allocating the buffer starting from a stream with a smallest buffer requirement and proceeding to streams with larger buffer requirements until the buffer requirement of a stream can not be satisfied;

retaining blocks of the immediately previous stream in the buffer allocated to a following stream and discarding the blocks from the buffer as they are read by a client viewing the following stream;

updating the list when any of starting, stopping, pausing and resuming of a video occurs; and,

responsive to the updating, reallocating the buffer starting from a stream with a smallest buffer requirement and proceeding to streams with larger buffer requirements until the buffer requirement of a stream can not be satisfied.

171–499 O.G.–96–25: QL3

5,572,646

APPARATUS FOR DISPLAYING IMAGES OF LIVING THINGS TO SHOW GROWING AND/OR MOVING OF THE LIVING THINGS

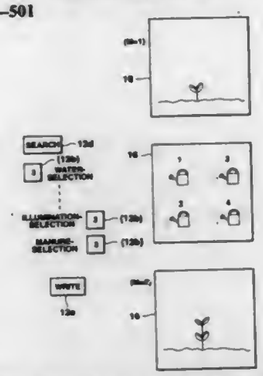
Yoshio Kawai, Higashiyamato; Shinichiro Sato, Fussa; Yuichi Kobayashi, Hamura, and Jun Oshima, Akigawa, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1994, Ser. No. 287,850

Claims priority, application Japan, Aug. 25, 1993, 5-210406; Nov. 25, 1993, 5-295072; Dec. 13, 1993, 5-312091

Int. Cl.[6] G06T *15/00*

U.S. Cl. 395—501 15 Claims



1. An image displaying apparatus for successively displaying images of a living thing to show how the living thing is growing up with a growing element applied thereto, comprising:

image-data storing means for storing plural image data of a living thing in the order of growth of the living thing, the plural image data of the living thing representing predetermined growing levels in a growing process of the living thing, respectively;

image-data displaying means for displaying one of the plural image data of the living thing stored in said image-data storing means;

element displaying means for displaying element data representative of growing elements for growing the living thing;

an externally operable switch adapted to be operated to apply the growing element to the living thing to grow same; and

display controlling means for reading out, upon operation of said externally operable switch, from among the plural image data of the living thing stored in said image-data storing means, image data of the living thing which is representative of a growing level next to the growing level represented by the image data that is displayed at present on said image-data displaying means, and for controlling said image-data displaying means to display the read out image data of the living thing in place of the image data previously displayed thereon, whereby it is shown on said image-data displaying means how the living thing grows with the growing elements applied upon operation of said externally operable switch.

5,572,647

VISIBILITY SEEKING SCROLL BARS AND OTHER CONTROL CONSTRUCTS

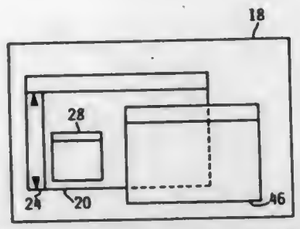
Jerry A. Blades, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 4, 1994, Ser. No. 334,732

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—326 28 Claims

1. In a data-processing system having a display device capable of displaying multiple objects, one of said objects being a window having an associated control construct and having a control device adapted to be used by an operator for controlling said multiple



objects including said control construct, apparatus for enhancing the visibility or controllability of said control construct, comprising:

presentation means for displaying said objects, including said window object and said control construct, on said display device;

electronic decision means for automatically determining that said control construct displayed on said display device is positioned so as to at least partially obscure said construct from a view of the operator or to prevent manipulation of said construct by the operator at said display device; and

electronic positioning means operable in response to said determination for automatically moving at least a portion of said control construct so as to render said control construct visible on said display device or controllable by said operator.

5,572,648

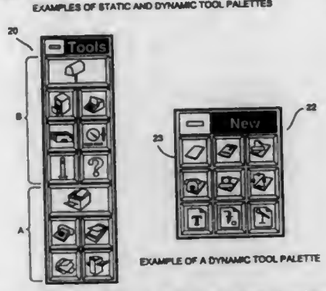
SYSTEM FOR SIMULTANEOUSLY DISPLAYING A STATIC TOOL PALETTE HAVING PREDEFINED WINDOWING TOOL FUNCTIONS AND A DYNAMIC TOOL PALETTE WHICH CHANGES WINDOWING TOOL FUNCTONS IN ACCORDANCE WITH A CONTEXT OF AN EXECUTED APPLICATION PROGRAM

Farzad Bibayan, Irvine, Calif., assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1993, Ser. No. 5,443

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—340 16 Claims



1. A method for displaying a static tool palette having predefined windowing tool functions and a dynamic tool palette having windowing tool functions, the function and number of windowing tool functions in the dynamic tool palette being determined in accordance with a currently-executing application program, the method comprising the steps of:

launching an application program from within the currently-executing application program, the application program including a static tool palette having predefined windowing functions;

specifying a context environment of the currently-executing application program;

examining the specified context environment of the currently-executing application program;

determining applicable windowing tool functions for the launched application program in accordance with the examined context environment; and

displaying the static tool palette having the predefined windowing tool functions and displaying, during execution of the launched application program, the dynamic tool palette which includes the applicable windowing tool functions determined in the determining step,

wherein the static tool palette is displayed simultaneously with, and separately from, the dynamic tool palette.

5,572,649

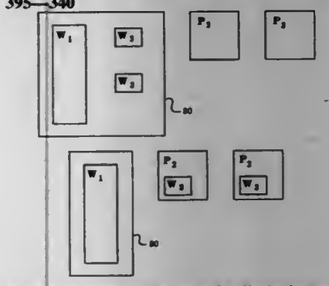
PROCESS FOR DYNAMICALLY SWITCHING BETWEEN A SINGLE TOP LEVEL WINDOW AND MULTIPLE TOP LEVEL WINDOWS

John D. Elliott, Aloha; Kevin A. Watts, Portland, and Rune A. Skarbo, Hillsboro, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Nov. 12, 1993, Ser. No. 151,282

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—340 38 Claims



1. A computer implemented method for displaying and operating upon a plurality of windows comprising the steps of:

generating and displaying a first top level window including a first child window and a second child window;

upon receiving an ungroup signal displaying a second top level window and reparenting said second child window to said second top level window;

displaying said first top level window having said first child window disposed therein and said second top level window having said second child window on said display.

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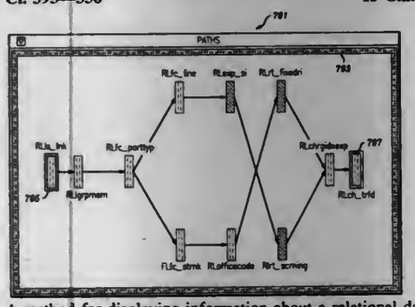
METHOD AND APPARATUS FOR DISPLAYING STRUCTURES AND RELATIONSHIPS OF A RELATIONAL DATABASE

Jacqueline M. Antis, Palos Park; Stephen G. Eick, and John D. Pyrce, both of Naperville, all of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 30, 1994, Ser. No. 269,221

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—356 15 Claims



1. A method for displaying information about a relational database comprising the steps of:

identifying each relation of a plurality of relations in the relational database;

determining for each relation a respective number of occurrences of a specific data item contained therein;

determining for each relation a key structural characteristic which can be used to access that relation;

categorizing each relation of the plurality of relations according to key structural characteristics of the respective relation;

visually displaying the plurality of relations in categories according to the key structural characteristics thereof;

visually displaying for each relation of the plurality of relations a respective bar that is representative of the number of occurrences of the specific data item contained therein;

coloring each display of each relation that has the same key structural characteristic with a common color that is different from the coloring of the relations of the other key structural characteristics;

visually displaying a cursor that is operator controllable over the display area; and

changing the coloring of a visual display of a relation with which the cursor is actively contacting to indicate a selection thereof for a display of further information.

5,572,651

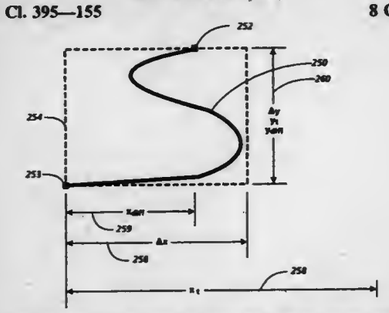
TABLE-BASED USER INTERFACE FOR RETRIEVING AND MANIPULATING INDICES BETWEEN DATA STRUCTURES

Karon A. Weber, San Francisco; Alex D. Poon, Mountain View, and Thomas P. Moran, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 15, 1993, Ser. No. 138,817

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—155 8 Claims



1. An interactive method for operating a processor-controlled system to modify a correlation between two data structures using a table image; the processor-controlled system including input circuitry connected to a user input device for producing graphical signals including strokes indicating actions of a system user; output circuitry connected to at least one display having at least one display area for presenting images; memory for storing data; a processor connected for receiving the graphical signals from the input circuitry connected for providing images to the output circuitry, and connected for accessing the data stored in the memory: the data stored in the memory including instruction data indicating instructions the processor executes; the method comprising:

operating the processor to obtain key object data items from a first data structure stored in the memory, and to obtain information data items from a second data structure stored in the memory; at least one of the information data items being associated with at least one respective key object data item such that the information data item is retrievable using the respective key object data item;

operating the processor to present a table image in the display area using the key object data items and the information data items; the table image including a plurality of first dimension identifier regions, a plurality of second dimension identifier regions, and a plurality of cell regions; the table image show-

ing a key object image in each of the first dimension identifier regions; each key object image representing one of the key object data items included in the first data structure; the table image further showing an information image in each of the second dimension identifier regions; each information image representing one of the information data items included in the second data structure; the table image further showing, in each cell region at the intersection of a first dimension identifier region and a second dimension identifier region, display features indicating whether the respective key object data item represented by the key object image and the information data item represented by the information image have an associative relationship indicated in the first and second data structures; the table image presenting a grid of key object data items by information data items and a graphical display of associative data structure relationships therebetween;

operating the processor to receive a first signal from the user input device indicating a selection action of one of the plurality of cell regions as a selected cell region in the table image; the first signal further including a modification signal indicating a request to modify an associative relationship between a respective key object data item in the first data structure and an information data item in the second data structure represented by the selected cell region;

operating the processor to respond to the first signal by:

modifying the first or second data structure to indicate a modified associative relationship therebetween using the key object data item and the information data item represented by the selected cell region; and

presenting an image in the selected cell region including display features showing the modified associative relationship between the key object data item and the information data item represented by the selected cell region.

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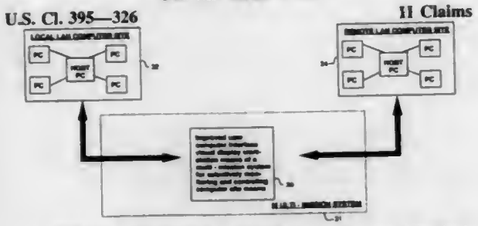
SYSTEM AND METHOD FOR MONITORING AND CONTROLLING ONE OR MORE COMPUTER SITES

John D. Robusto, Herndon, Va.; William H. Boswell, State College, Pa.; Mary E. Meckley, Las Vegas, Nev.; Deanna R. Niechwiadowicz, State College, Pa.; David J. Watt, Freeport, Pa.; Gorman N. Findley, Boalsburg, Pa., and Gretchen M. Lenze, State College, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 4, 1994, Ser. No. 223,406

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—326 **11 Claims**



1. Improved multimission monotoring system for selectively monitioring at least one computer site means for the purpose of assuring that the one computer site means is fulfilling its mission as to any monitored function thereof, the system comprising:

user computer interface workstation means having display monitor means and data base means, the display monitor means for simultaneously displaying a plurality of at least three predetermined section visual display means,

first predetermined section visual display means of the plurality always having at least one computer site means displayed therein, the one computer site means in being displayed having a plurality of relatively spaced user selection function button means arranged in both multi-rowwise and multi-colunmwise fashion relative to each other so as to provide an arrayed pattern of function button means of the plurality thereof where each function button means of the plurality of the one computer site means is for a particular designated function of the one computer site means that is to be monitored for the purpose of seeing if the selected function button means is satisfactorily carrying out its mission when it is selected by an authorized user during system use,

the one computer site means being displayed also having another function button means designated replace for selectively replacing the one computer site means being displayed in the first predetermined section visual display means with another computer site means from the data base means when an authorized system user selects the other function button means designated replace during system use,

second predetermined section visual display meansof the plurality having a second plurality of relatively spaced function button means arranged in single row-like fashion, one of the function button means of the second plurality being designated start for starting the monitoring of a user selected function button means of the first plurality of the one computer site means when the start designated function button means is selected by a user after the user has selected a function button means of the first plurality,

second function button means of the second plurality being designated status for providing a status menu being displayed in the third predetermined section visual display means of the plurality where the status means indicates the condition of various aspects of the function button means of the first plurality that is currently user selected,

third function button means of the second plurality being designated password such that when the password designated function button means is user selected it provides a password meanu in the third predetermined section visual display means such that the password menu permits the current user to change his/her password so as to minimize security risks in preventing any unauthorized user from having access to the monitoring system, and

fourth function button means of the second plurality being designated privileged such that when the privileged designated function button means is selected by a user of the system it provides a privileged functions menu in the third predetermined section of the visual display means where the privileged functions menu provides a series of at least three selectable privileged function submenus, one of the submenus of the series being designated user capabilities such that upon being selected by a user, the third predetermined section of the visual display means provides a user capabilities submenu for limiting the access level of any user as specified in the user capabilities sub menu to one or more or none of the series of three privileged function submenus and also for limiting the number of functions of any computer site means to be monitored by any user as specified in the user capabilities submenu; whereby the plurality of three predetermined section visual display means of the system not only permit user selectability for monitoring any function means of any computer site means being displayed but also control the password being used by any authorized user as well as the access level of any authorized user to the system.

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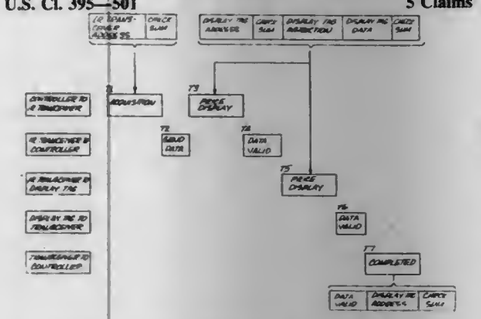
REMOTE ELECTRONIC INFORMATION DISPLAY SYSTEM FOR RETAIL FACILITY

William C. DeTemple, Upland, Calif.; Peter Abell, Amherst, N.H.; E. Frederick Bird, Verdugo City, Calif., and Milton L. Goff, Ramona, Calif., assignors to Rest Manufacturing, Inc., Ramona, Calif.

Continuation-in-part of Ser. No. 83,389, Jun. 28, 1993, abandoned, which is a continuation of Ser. No. 753,004, Aug. 23, 1991, abandoned, which is a continuation of Ser. No. 427,896, Oct. 24, 1989, abandoned, which is a continuation-in-part of Ser. No. 352,553, May 16, 1989, abandoned. This application Jan. 4, 1994, Ser. No. 176,781

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—501 **5 Claims**



1. An inproved energy efficient, electronic merchandise price display system having at least two levels of sequential addressability for a retail store having a plurality of point-of-purchase (POP) locations at which items of merchandise are available for purchase, the system comprising:

a plurality of individually addressable battery powered electronic price information display tags mounted at the respective locations, said display tags being normally maintained at a first low power mode and being temporarily switchable to a second high power mode in response to receipt of an infrared signal,

a store platform computer for coordinating price, product, and location data at the retail store;

a plurality of point-of-sale (POS) terminals linked to the computer;

a plurality of individually addressable infrared transmitters having different fields of view distributed above the store collectively to cover the store, each infrared transmitter having a unique address assigned thereto, wherein the number of transmitters is less than the number of display tags and each transmitter communicates with a plurality of display tags;

hardwired means for coupling the computer to the transmitters to transmit from the computer to the transmitters a signal having a first field in which an address assigned to one of the transmitters is stored and a second field in which price information and a tag address are stored;

means for controlling one of the transmitters to selectively transmit an infrared signal containing the second field to the tags responsive to the transmitter address in the first address field so only the transmitter designated by the address in the first field transmits the infrared signal;

means responsive to the receipt of the infrared signal to temporarily switch selected ones of said display tags to said second high power mode, and means at one of the display tags for displaying the price information from the second field responsive to the tag address in the second fiele.

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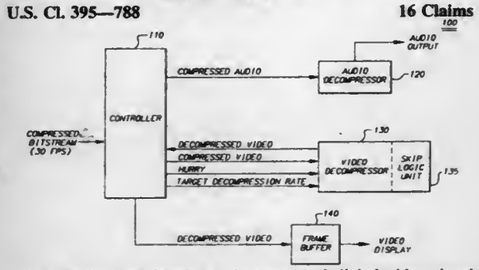
METHOD AND APPARATUS FOR GRACEFUL DEGRADATION OF IMAGE PLAYBACK FRAMES RATES

Rohan Coelho, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Apr. 29, 1994, Ser. No. 235,291

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—788 **16 Claims**



1. A method for forming a decompressed digital video signal from a compressed digital video signal representative of an input sequence of digital video frames, comprising the steps of:

(A) providing said compressed digital video signal to a video decompressor having a target frame decompression rate;

(B) generating, in response to said compressed digital video signal, a video decompressor output signal representative of an output sequence of digital video frames;

(C) monitoring said video decompressor output signal to determine whether said video decompressor is timely generating said output sequence of digital video frames;

(D) if said video decompressor is not timely generating said output sequence of digital video frames, then adjusting said video decompressor output signal by omitting from said output sequence at least one frame from said input sequence;

(F) generating a frames missed value in response to said at least one omitted frame;

(G) monitoring deviations in said frames missed value; and

(H) selectively adjusting downward said target decompression rate in accordance with said deviations in said frames missed value.

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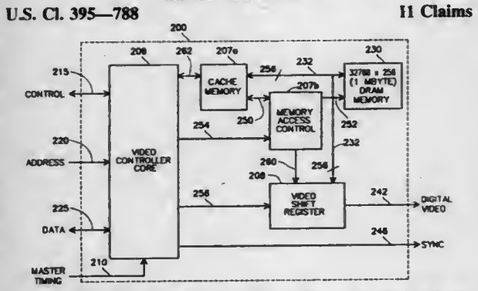
HIGH-PERFORMANCE INTEGRATED BIT-MAPPED GRAPHICS CONTROLLER

Shubha Tuljapurkar, Mountain View, and George Brecht, Milpitas, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 3,706, Jan. 12, 1993, abandoned. This application Jan. 27, 1995, Ser. No. 380,138

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—788 **11 Claims**



1. A computer bit-mapped video controller on a semiconductor die comprising:

a video controller functional block on the semiconductor die;

a video frame buffer memory on the semiconductor die, said video frame buffer memory being organized in an "n"-bit

wide format, wherein "n" is at least 128 bits, said video frame buffer memory being closely coupled to said video controller functional block by an "n" bit wide parallel bus, whereby the refresh rate of the video frame buffer memory is reduced;

an interface on the semiconductor die for interfacing between the video controller functional block and a host computer;

first means on the semiconductor die for retrieving pixel data from the video frame buffer memory in the "n"-bit wide format over the "n" bit wide parallel bus, wherein "n" is at least 128 bits, and providing said pixel data in a serial video format; and

second means on the semiconductor die for exchanging pixel data between the video controller functional block and the video frame buffer memory in the "n"-bit wide format over the "n" bit wide parallel bus, wherein "n" is at least 128 bits.

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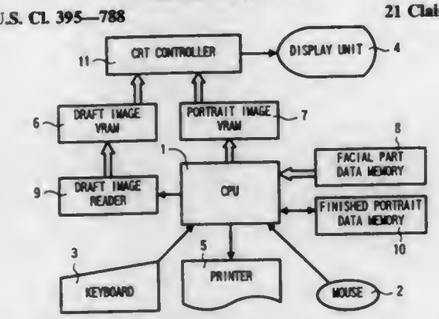
PORTRAIT DRAWING APPARATUS HAVING IMAGE DATA INPUT FUNCTION

Katsumi Iida, Aichi-ken; Takeshi Kawaguchi, Konan; Kazuyo Kokubo, Aichi-ken; Noriko Kagami, Toyota; Michiyo Amano, Gifu, and Yoshihisa Kayanaka, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 69,368, Jun. 1, 1993, abandoned. This application May 2, 1995, Ser. No. 434,329

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—788 **21 Claims**



1. A portrait drawing apparatus, comprising:

means for storing image data of desired base face patterns;

display means for displaying a desired base face pattern image;

memory means for storing base pattern data corresponding to a plurality of facial parts;

select means for selecting one of the base pattern data stored in said memory means;

display control means for displaying the base pattern data selected by said select means at a position of a facial part corresponding to the selected base pattern data in the desired face pattern image displayed on said display means; and

control means for checking that base pattern data is selected for each of the plurality of facial parts, wherein the display control means automatically superimposes the base pattern data selected by the select means at the position of a facial part corresponding to the selected base pattern data on the desired base face pattern image displayed on the display means.

5,572,657

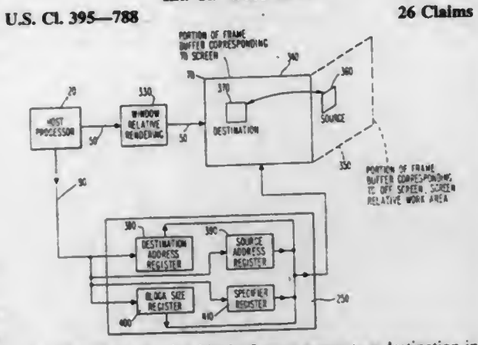
METHODS AND APPARATUS FOR GRAPHICS BLOCK MOVEMENT IN A MULTI-TASKING WINDOWS SYSTEM

David Pinedo; Darel N. Emmot; Ronald D. Larson; Byron A. Alcorn, all of Fort Collins, and Desi Rhoden, Boulder, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 33,090, Mar. 16, 1993, Pat. No. 5,420,980, which is a division of Ser. No. 900,535, Jun. 18, 1992, Pat. No. 5,224,210, which is a continuation of Ser. No. 387,510, Jul. 28, 1989, abandoned. This application Dec. 9, 1994, Ser. No. 353,489

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—788 **26 Claims**



1. A system for moving blocks from a source to a destination in a window graphics system having a frame buffer, comprising:

a plurality of first register means for storing source address data of a block in window relative address form;

a plurality of second register means interfaced with the plurality of first register means for storing destination address data of the block in frame buffer relative address form based on window offset addresses; and

block moving means interfaced with the first and second register means for moving the block from the source to the destination in accordance with the address data in the first and second register means and window offset addresses.

5,572,658

NETWORK INTERFACE

Thomas Mohr, Buehl; Claus Schmiederer, Renchen; Robert Kern, Sasbachwalden, and Gerhard Decker, Achern, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE93/00686, § 371 Date Feb. 27, 1995, § 102(e) Date Feb. 27, 1995, PCT Pub. No. WO94/06081, PCT Pub. Date Mar. 17, 1994

PCT Filed Aug. 5, 1993, Ser. No. 392,924

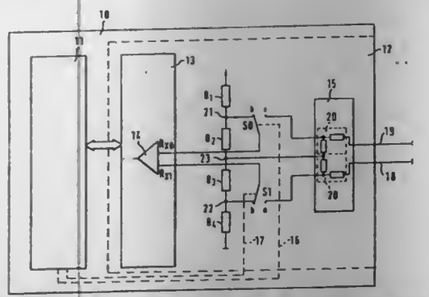
Claims priority, application Germany, Sep. 2, 1992, 42 29 175.5

Int. Cl.[6] G06F *11/16;11/00*

U.S. Cl. 395—182.02 **8 Claims**

1. A network interface of a serial bus having at least a first bus line and a second bus line, comprising a differential receiver; at least a first input line and a second input line to which said differential receiver is connected, each of said input lines being connected to one of the bus lines; means for recognizing error states in a digital transmission of data via the bus; first further means which set a magnitude of a voltage difference between said two input lines (RX0, RX1) during error-free operation to a different magnitude for both bit levels; second further means which set said first input line (RX1) to a first terminal potential UK0 in accordance with the formula:

$$UK0=(U_{RX1}(dom)+U_{RX1}(rec))/2$$



if the bus line connected to said first input line (RX1) is in an error state, said second further means setting said second input line (RX0) to a second terminal potential UK1 in accordance with the formula:

$$UK1=(U_{RX0}(dom)+U_{RX0}(rec))/2$$

if the bus line connected to said second input line (RX0) is in an error state, said first and second terminal potentials being different from each other such that $U_{RX1}(dom)$ and $U_{RX1}(rec)$ represent a respective input potential for one of the two bit levels on said first input line, and $U_{RX0}(dom)$ and $U_{RX0}(rec)$ represent a respective input potential for one of the two bit levels on said second input line.

5,572,659

ADAPTER FOR CONSTRUCTING A REDUNDANT DISK STORAGE SYSTEM

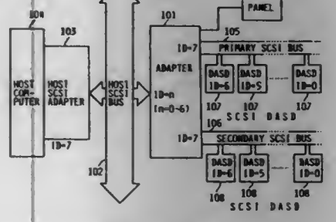
Hiroyuki Iwasa, Fujisawa; Hideo Asano, Machida, and Yutaka Shimizu, Fujisawa, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 58,703, May 7, 1993, abandoned. This application Mar. 16, 1995, Ser. No. 405,624

Claims priority, application Japan, May 12, 1992, 4-119226

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—182.04 **7 Claims**



BLOCK DIAGRAM SHOWING WHOLE CONFIGURATION

1. An adapter which is connected between a host computer and disk storage devices for constructing a redundant disk storage system, comprising:

a host interface for connecting to the host computer,

a primary device interface and a secondary device interface, each having the same interface design as said host interface, for connecting to a plurality of primary disk storage devices and a plurality of secondary disk storage devices, respectively, each of said disk storage devices being identified by a unique identification code in each of said primary and secondary device interfaces;

means for detecting failure of each of said primary and secondary disk storage devices based on information from said devices; and

control means for making a pair of said primary and secondary disk storage devices have the same identification code in each of said primary and secondary device interfaces, and when said pair of said primary and secondary disk storage devices are in normal operation, writing identical information from said host computer into said pair of said primary and secondary disk storage devices and reading out information from said primary disk storage device of said pair and sending it to said host computer, and when a failure occurs in one of said pair of said primary and secondary disk storage devices, reading or writing information only from or to the non-failed disk storage device of said pair of disk storage devices.

5,572,660

SYSTEM AND METHOD FOR SELECTIVE WRITE-BACK CACHING WITHIN A DISK ARRAY SUBSYSTEM

Craig S. Jones, Austin, Tex., assignor to Dell USA, L.P., Austin, Tex.

Continuation of Ser. No. 144,118, Oct. 27, 1993. This application Nov. 13, 1995, Ser. No. 557,671

Int. Cl.[6] G06F *12/16*

U.S. Cl. 395—182.04 **15 Claims**



1. A disk array subsystem for connection to a peripheral bus of a computer system comprising:

a plurality of disk drives coupled in parallel;

an array scheduler configured to receive a new write data sector and a composite write request signal from said peripheral bus and to determine a physical location within one of said plurality of disk drives which is addressed by said composite write request signal, and wherein said array scheduler is configured to generate a disk write request signal that causes said new write data sector to be written into said physical location of said one of said plurality of disk drives;

a parity control unit configured to read an old data sector from said physical location within said one of said disk drives before said new write data sector is written into said physical location, wherein said parity control unit is further configured to calculate a sector of new parity information based upon an exclusive-OR relationship of said new write data sector, said old data sector and a sector of old parity information;

a write-through cache unit coupled to receive said new write data sector and said disk write request signal, wherein said write-through cache unit is configured to control a storage and retrieval of said new write data sector to and from said one of said plurality of disk drives; and

a write-back cache unit coupled to a second of said plurality of disk drives for storing said sector of new parity information;

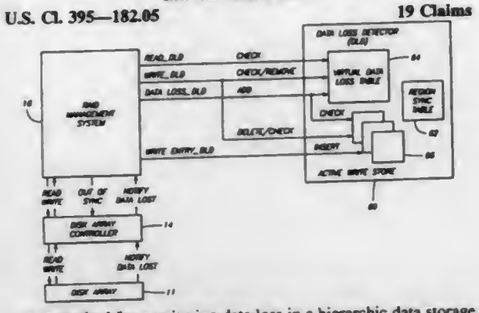
whereby a write-through caching policy is employed to store said new write data sector and a write-back caching policy is employed to store said sector of new parity information.

5,572,661

METHODS AND SYSTEM FOR DETECTING DATA LOSS IN A HIERARCHIC DATA STORAGE SYSTEM

Michael B. Jacobson, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 5, 1994, Ser. No. 319,331
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—182.05 **19 Claims**



1. A method for monitoring data loss in a hierarchic data storage system having multiple storage disks that define a physical storage space; the method comprising the following steps:

(a) mapping the physical storage space into a first virtual storage space which presents the physical storage space as multiple RAID areas that store data according to various RAID levels, individual RAID areas extending across multiple storage disks and comprising a region of physical storage space on individual storage disks, individual RAID areas being initially classified as an optimal RAID area in which data can be stored and retrieved with redundancy;

(b) mapping the first virtual storage space into a second virtual storage space which presents the physical storage space as multiple virtual blocks;

(c) monitoring the RAID areas to detect loss of stored data;

(d) upon detecting data loss within a first region of a RAID area, marking the first region as an invalid region and classifying the RAID area as a degraded RAID area in which data can be stored and retrieved in that RAID area, but without redundancy; and

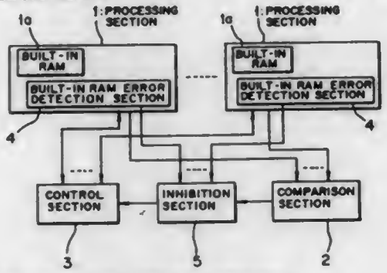
(e) upon detecting data loss within a second region of the degraded RAID area, classifying the RAID area as a dead RAID area in which data cannot be recovered from the first and second regions of that dead RAID area.

5,572,662

DATA PROCESSING APPARATUS

Hidenobu Obta, and Tatsumi Nakada, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 31, 1995, Ser. No. 455,723
Claims priority, application Japan, Aug. 23, 1994, 6-197125
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—182.09 **14 Claims**



1. A data processing apparatus, comprising:

a plurality of multiplex processing sections including a corresponding plurality of built-in RAMs for performing redundant operation;

a comparison section for comparing outputs of said processing sections to produce a result;

a control section for controlling said processing sections to perform the redundant operation, confirming based on the result of comparison by said comparison section that said processing sections are performing the redundant operation, and stopping the processing of said plurality of processing sections when the result of comparison by said comparison section indicates that the outputs of said processing sections do not coincide;

a built-in RAM error detection section for detecting an error in any of said built-in RAMs; and

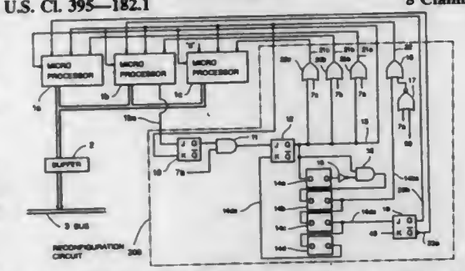
an inhibition section for inhibiting said comparison section from producing the result in response to the detecting of an error in any of said built-in RAMs by said built-in RAM error detection section.

5,572,663

HIGHLY RELIABLE INFORMATION PROCESSOR SYSTEM

Kazuhide Hosaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 18, 1992, Ser. No. 992,642
Claims priority, application Japan, Dec. 19, 1991, 3-336696
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—182.1 **8 Claims**



1. A highly reliable information processor system comprising:

a first microprocessor operating in an execution mode, second and third microprocessors operating in a monitor mode to check a signal output from said first microprocessor operating in the execution mode against signals output from said second and third microprocessors and said second and third microprocessors starting bus cycles in synchronization with the first microprocessor;

malfunction detecting means for detecting a malfunction in one of said microprocessors based on bus cycle start signals output by said first, second and third microprocessors for providing start timing information when said first, second and third microprocessors synchronously start said bus cycles by comparing said bus cycle start signals to find a discrepancy in the bus cycle start cycles;

reconfiguration means for being responsive to said malfunction detecting means whenever said malfunction detecting means judges that the first microprocessor in the execution mode has a malfunction, for logically isolating said first microprocessor in the execution mode and for switching either of the second or third microprocessors from the monitor mode into the execution mode for degrading a triple-processor configuration to a double-processor configuration, and for executing the bus cycles when said malfunction detecting means has detected said malfunction of said first microprocessor in the execution mode;

means for outputting a signal to instruct said microprocessors to retry the bus cycles when the malfunction signal for said first microprocessor is asserted and the bus cycles are issued by said second and third microprocessors;

isolation signal output means for outputting an isolation signal to logically isolate one of said first, second or third microprocessors synchronously with said retry instruction signal;

bus cycle termination signal output means for outputting a bus cycle termination signal to terminate a currently ongoing bus cycle based on said isolation signal;

means for outputting a switching signal to switch said second or third microprocessor from the monitor mode to the execution mode based on said bus cycle termination signal; and

means for inactivating said isolation signal based upon said switching signal.

5,572,664

SYSTEM FOR GENERATING FLOATING POINT TEST VECTORS

Norman Bujanos, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 252,026, Jun. 1, 1994, abandoned.
This application Nov. 27, 1995, Ser. No. 563,140
Int. Cl.[6] G01R *31/28*
U.S. Cl. 395—183.01 **45 Claims**



1. A method of generating a test vector, comprising the steps of:

providing a design functional unit which is designed to emulate a paradigm functional unit;

executing a plurality of program instructions on a processor which includes a fabricated circuit form of the paradigm functional unit, the program instructions including a plurality of instructions in a paradigm instruction set executed by the paradigm functional unit;

selecting a test instruction of the paradigm instruction set;

generating operand data which is operated upon by the paradigm functional unit executing the test instruction;

executing the test instruction operating upon the generated data;

accessing a storage stored by the fabricated circuit form of the paradigm functional unit within the processor to retrieve a test vector result; and

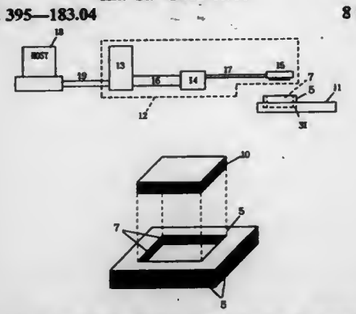
recording a test vector result of the test instruction execution for testing the design functional unit.

5,572,665

SEMICONDUCTOR INTEGRATED CIRCUIT FOR DEVELOPING A SYSTEM USING A MICROPROCESSOR

Takeo Nakabayashi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 230,932, Apr. 21, 1994, abandoned.
This application Nov. 1, 1995, Ser. No. 551,355
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—183.04 **8 Claims**



1. A semiconductor integrated circuit having a predetermined number of I/O terminals, connected to a system developing device and used for developing a system having a large scale semiconductor integrated circuit including a microprocessor core, peripheral circuitry and an input/output terminal, said microprocessor core having a different number of I/O terminals than said semiconductor integrated circuit, comprising:

first connecting means for connection to a board on which a system to be developed is mounted;

second connecting means for connecting said system developing device to said first connecting means; and

programmable integrated circuit means connected to said first and second connecting means and including means for implementing logic included in the large scale semiconductor integrated circuit, said means for implementing logic have a different number of I/O terminals, wherein

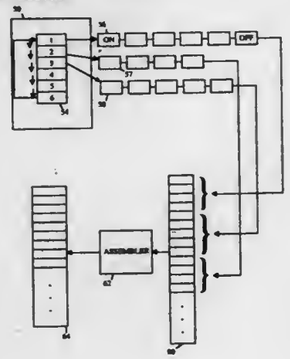
said programmable integrated circuit means enables said predetermined number of I/O terminals of the semiconductor integrated circuit to be connected with the different number of I/O terminals of the means for implementing logic.

5,572,666

SYSTEM AND METHOD FOR GENERATING PSEUDO-RANDOM INSTRUCTIONS FOR DESIGN VERIFICATION

Jeffrey D. Whitman, San Jose, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Mar. 28, 1995, Ser. No. 412,157
Int. Cl.[6] G06F *11/34;11/00*
U.S. Cl. 395—183.08 **27 Claims**



1. A system for outputting a sequence of processor instructions for execution on a target processor, the system comprising:

at least two executable test generators which when executed specify particular processor instructions to be used in said sequence of processor instruction for execution on said target processor; and

a test interpreter which at least partially shuffles the particular processor instructions from said at least two independent test generators and generates said sequence of processor instructions for execution on said target processor such that sequence includes two of said particular processor instructions from one test generator which are separated from one another by one or more particular processor instructions from the other test generator.

5,572,667

INTERRUPT PROCESSING DEVICE FOR CONTROLLING THE TIMING OF AN INTERRUPT SIGNAL INITIATED BY A DEBUGGING BREAK POINT IN AN INSTRUCTION CODE

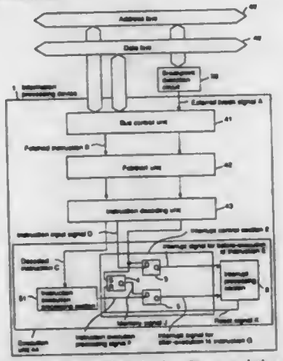
Masako Ideta, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jul. 1, 1994, Ser. No. 266,894

Claims priority, application Japan, Jul. 5, 1993, 5-165548

Int. Cl.[6] G06F *9/44;11/30*

U.S. Cl. 395—183.11 **19 Claims**



1. An information processing device for permitting generation of an interrupt signal requested by a break signal initiated by a breakpoint set in an instruction code, comprising:

means for outputting an execution completion signal indicating completion of execution of said instruction code; and

means for generating an interrupt signal using said break signal and said execution completion signal when said breakpoint is set in or after a second byte of said instruction code.

5,572,668

METHOD AND APPARATUS FOR UNIVERSAL NATIONAL LANGUAGE SUPPORT PROGRAM TESTING

Hiow-Tong See, Newark, and Makoto Hoketsu, San Mateo, both of Calif., assignors to Oracle Corporation, Redwood Shores, Calif.

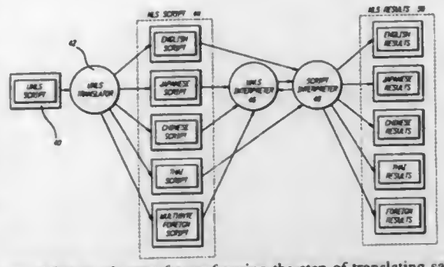
Filed Feb. 7, 1995, Ser. No. 385,192

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.14 **21 Claims**

1. A method for testing a computer program in conjunction with a plurality of NLS systems, said computer program being executed by a computer comprising the steps of:

generating a universal script comprising a desired sequence of test commands;



providing an element for performing the step of translating said universal script into an NLS script in a target language corresponding to one of said plurality of NLS systems;

providing an element for performing the step of providing said NLS script to a script interpreter for interpreting said NLS script and coupling said NLS script including said translated sequence of test commands to said computer for use by said computer program;

providing an element for performing the step of said computer executing said computer program using said translated sequence of test commands and providing test results.

5,572,669

BUS CYCLE SIGNATURE SYSTEM

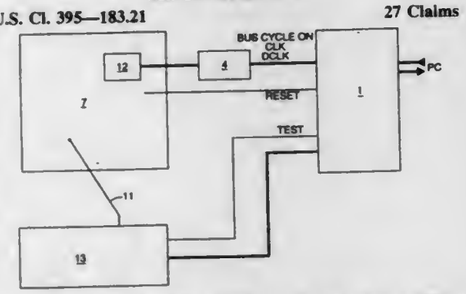
Sreenivasan R. Sabapathi, Chuan Park, and Robert S. L. NG, Pasir Ris Gardens, both of Singapore, assignors to QMax Technologies PTE. Ltd., Singapore

Filed May 2, 1994, Ser. No. 236,297

Claims priority, application United Kingdom, May 6, 1993, 9309300

Int. Cl.[6] H04B *17/00*

U.S. Cl. 395—183.21 **27 Claims**



1. An apparatus for testing a CPU based board having a CPU, a plurality of test points and at least one clock producing a CPU clock signal at a first clock speed, the apparatus comprising:

means for driving the CPU at the first clock speed;

probe means for measuring a first signal from a test point on the CPU based board;

means communicative with the CPU to provide a second signal indicative of the CPU performing a bus cycle;

sample means communicative with the CPU to provide a third signal associated with the CPU clock signal; and

storage means communicative with the probe means and the sample means, and operable to combine the first and the third signals when the second signal is indicative of the CPU performing a bus cycle thereby providing a signature in the storage means of the test point on the CPU based board.

5,572,670

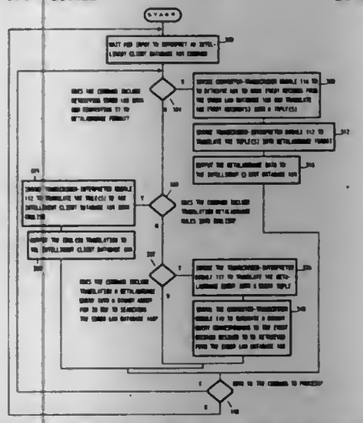
BI-DIRECTIONAL TRANSLATOR FOR DIAGNOSTIC SENSOR DATA

Timothy L. Puckett, Thornton, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Jan. 10, 1994, Ser. No. 179,583

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—183.22 **21 Claims**



1. A method for translating data comprising the following steps:

storing a plurality of data records, each said data record corresponding to an output of a rebated monitoring component for a system including a plurality of said monitoring components, wherein each said data record having a data format including a plurality of fields, a majority of said fields being identified by a position of the field in the data record;

inputting a first query into a means for translating data;

translating said first query, using said translating means, to yield a corresponding section query having a data format of at least one of said data records;

retrieving a selectable set of data records from said plurality of data records wherein data records of said selectable set satisfy said second query;

detecting redundant information in said selectable set;

determining a resulting translation, wherein said resulting translation includes a translation of information provided by said selectable set into a data representation having one or more data areas, and for each data area of a majority of said one or more data areas there is a natural language term for identifying the data area and wherein said resulting transition is provided for analyzing said system.

5,572,671

METHOD FOR OPERATING APPLICATION SOFTWARE IN A SAFETY CRITICAL ENVIRONMENT

Alan J. Eisenberg, Monmouth Junction, N.J., and Alexander M. Adelson, Cortlandt Manor, N.Y., assignors to Base Ten Systems, Inc., Trenton, N.J.

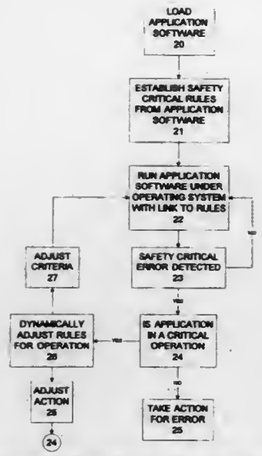
Filed Feb. 17, 1995, Ser. No. 389,858

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—184.01 **8 Claims**

1. A method for operating application software in a safety critical environment, comprising the steps of:

loading application software into a computing system and including a set of safety critical rules for the application software each corresponding to criteria for safety critical operations to be performed by the computing system and actions to be taken in response to a failure to satisfy the criteria;



linking the computing system to the set of safety critical rules to verify that the safety critical operations performed by the computing system satisfy said criteria;

running the application software in the computing system, wherein the application software performs a plurality of application specific operations having differing levels of safety criticality;

performing safety critical operations as background functions during the running of the application software;

detecting a failure to satisfy criteria for a safety critical operation;

determining the application specific operation being currently performed; and

adjusting the criteria, the action to be taken or both if the currently performed application specific operation is a predetermined operation.

5,572,672

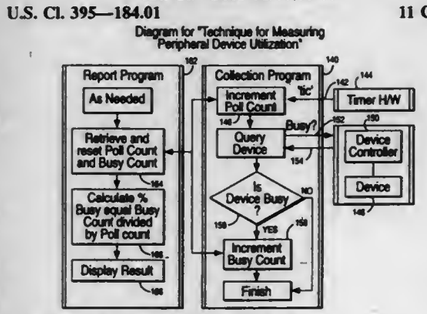
METHOD AND APPARATUS FOR MONITORING DATA PROCESSING SYSTEM RESOURCES IN REAL-TIME

Jimmie E. Dewitt, Georgetown; Timothy M. Holck, Austin; James H. Summers, Round Rock, and Samuel L. Emrick, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 263,153, Jun. 20, 1994, Pat. No. 5,463,775, which is a continuation of Ser. No. 713,484, Jun. 10, 1991, abandoned. This application Jul. 12, 1995, Ser. No. 500,656

Int. Cl.[6] G06F *12/00;13/00*

U.S. Cl. 395—184.01 **11 Claims**



1. An article of manufacture comprising:

a computer usable medium having computer readable program code means embodied therein for indicating resource utiliza-

tion of a data processing system having random access memory, a processor and at least one peripheral device, said computer readable program code means comprising:

computer readable program code means for monitoring usage of said random access memory, a portion of said monitoring being performed by a first device driver which computes a non-allocatable working amount of memory for a specific time period and then adds a portion of allocatable memory to said working memory when it is determined that the allocatable memory portion has been accessed by said processor more recently than said working memory;

computer readable program code means for determining, by a second device driver, usage of said at least one peripheral device by computing a ratio of a total number of hardware timer interrupt signal sent to said at least one peripheral device and a number of corresponding signals received from said device indicating that said device is busy;

computer readable program code means for measuring, by a third device driver, activity of said processor by initiating a process with a lowest possible priority on said processor and determining an amount of idle time when said low priority process is executing on said processor;

computer readable program code means for generating, by said data processing system, resource data, indicating usage of said random access memory, said processor and said at least one peripheral device; and

computer readable program code means for displaying in real time, by said data processing system, said resource data of said data processing system.

5,572,673

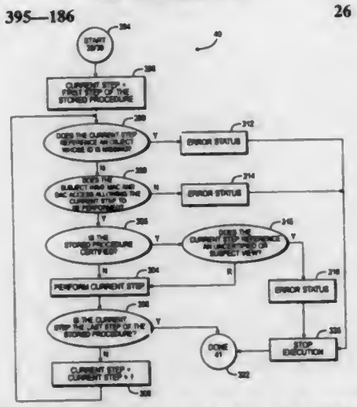
SECURE MULTI-LEVEL SYSTEM FOR EXECUTING STORED PROCEDURES

Scott A. Shurts, Walnut Creek, Calif., assignor to Sybase, Inc., Emeryville, Calif.

Filed Dec. 1, 1993, Ser. No. 162,341

Int. Cl.[6] G06F *12/14*

U.S. Cl. 395—186 **26 Claims**



1. A method of improving the security of a database in a computer system, the database comprising a plurality of stored objects, at least some of which are executable objects, said executable objects referencing other objects and having certification states, the method comprising the steps of:

if an executable object meets defined security criteria, certifying the executable object such that its certification state is certified;

if one or more defined security-relevant changes occur to one or more of the objects referenced by a certified executable object, automatically changing the certification state of the certified executable object from certified to suspect; and

preventing execution of the suspect executable object until its certification state is no longer suspect.

5,572,674

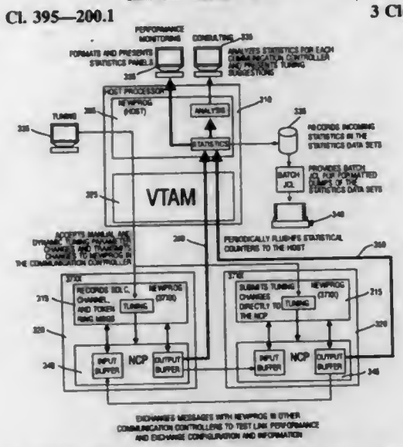
METHOD OF DYNAMICALLY ADJUSTING SNA NETWORK CONTROL PROGRAM PARAMETERS

Theodore R. Ernst, Sugar Land, Tex., assignor to BMC Software, Inc., Houston, Tex.

Continuation of Ser. No. 1,195, Jan. 7, 1993, abandoned. This application Oct. 16, 1995, Ser. No. 543,467

Int. Cl.[6] H04L *12/26*

U.S. Cl. 395—200.1 **3 Claims**



1. A tunable Systems Network Architecture network, referred to as a SNA network, comprising:

(a) a plurality of controllers each of which transmits messages to and receives messages from other said controllers via one or more communications links, each said link providing a communications path between two said controllers;

(b) a plurality of network control program control processes, referred to as NCP processes, each one of said plurality of NCP processes executing in one of said plurality of controllers and controlling said transmission and receipt of messages by said one of said plurality of controllers in accordance with at least one of a plurality of tunable parameters; and

(c) a plurality of controller-NEWPROG subprocesses, each one of said controller NEWPROG subprocesses executing as part of a respective one of said plurality of NCP processes, wherein each said controller-NEWPROG subprocess (1) monitors the messages transmitted and received by said respective controller and (2) alters one or more of said plurality of tunable parameters without regenerating said respective one of said plurality of NCP processes, wherein at least one of said plurality of tunable parameters is selected from the group consisting of Boundary PIU Pool, CWALL, SLODOWN, AVGPB, DATAMODE, GP3174, IRETRY, MAXDATA, MAXOUT, PASSLIM, RETRIES(n), RETRIES(t), TG Low Priority Threshold, TG Medium Priority Threshold, TG High Priority Threshold, TG Total Priority Threshold, Current Window Size, Minimum Window Size, Maximum Window Size, VR PIU Pool Threshold, DELAY, HDXSP, LSPRI, Multi-Link TG List, PAUSE, RETRIES(m), SERVLIM, and TRANSFR.

5,572,675

APPLICATION PROGRAM INTERFACE

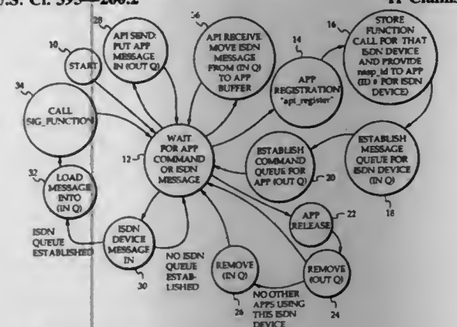
Frank Bergler, Niefern, Germany, assignor to Alcatel N.V., Rijswijk, Netherlands

Continuation-in-part of Ser. No. 885,119, May 18, 1992, abandoned. This application Apr. 22, 1994, Ser. No. 231,029

Claims priority, application Germany, May 29, 1991, 41 17 510.7

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.2 **11 Claims**



1. Signal processing apparatus comprising:

a signal processor for at least executing a plurality of application program modules (App1, App2, App3);

memory means, connected to said signal processor, for storing the plurality of application program modules (App1, App2, App3); and

an application program interface (API) for providing an exchange of messages between the plurality of application program modules (App1, App2, App3) and a network interface (ACID) of an integrated services digital network (ISDN) supporting a plurality of services, the ACID being connected to said signal processing apparatus, wherein the application program interface (API) includes a service program module (packet data, Telephony, Teletex, FAX Gr ¾) for each service of the network, each service program module containing a message set representing specified procedures for the individual network service.

5,572,676

NETWORK I/O DEVICE HAVING FIFO FOR SYNCHRONOUS AND ASYNCHRONOUS OPERATION

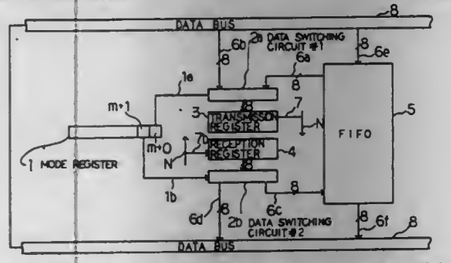
Kenji Ohnishi, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 865,015, Apr. 8, 1992, abandoned. This application Aug. 26, 1994, Ser. No. 296,994

Claims priority, application Japan, Apr. 10, 1991, 3-104856

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.2 **4 Claims**



1. A communications network input/output device for selectibly operating in either synchronous or asynchronous modes of operation comprising:

a first-in/first-out register having an output data line and an input data line, said first-in/first-out register connected to a bus;

a transmission register, coupled to said bus and to said output data line, and adapted to output data to the communication network;

a reception register, coupled to said bus and to said data line, and adapted to receive data from the communication network;

a control data output device for outputting control data signals to indicate either the synchronous or asynchronous operating mode of said input/output device;

a first data switching circuit, coupled to said control data output device, for connecting one of said bus or said output data line to said transmission register according to control data signals received from said control data output device; and

a second data switching circuit, coupled to said control data output device, for connecting one of said bus or said input data line to said reception register according to said control data signals received form said control data output device.

5,572,677

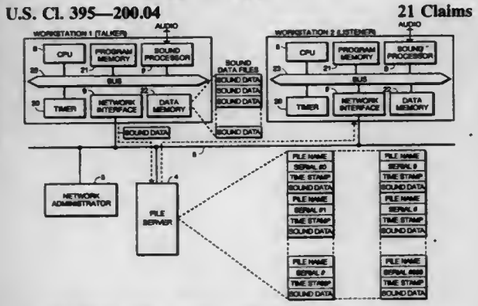
METHOD AND APPARATUS FOR CONVERSING OVER A NETWORK

Willis J. Luther, Irvine, and James A. Fontana, Mission Viejo, both of Calif., assignors to Canon Information Systems, Inc., Costa Mesa, Calif.

Filed Aug. 4, 1994, Ser. No. 285,521

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.04 **21 Claims**



1. A network sound channel comprising:

a local area network (LAN) having a plurality of connection nodes for connecting computer devices and including storage means for storing digital information transmitted over said LAN; and

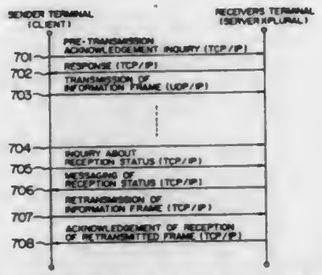
plural computer devices connected via respective connection nodes to said LAN, each computer device including a sound processor for converting sound into digital information and digital information into sound, each computer device being operable in (a) a talk mode in which the computer device attempts to grab a network semaphore from the storage means and in which, only if the device grabs the semaphore, the sound processor converts sound into digital information and the digital information is stored in said storage means over said LAN in serialized files having a predetermined naming convention, and (b) a listen mode in which, if certain serialized files having a predetermined naming convention are in said storage means, said certain serialized files are retrieved from said storage means over said LAN, transferred to a local memory and converted by the sound processor into sound in accordance with their serialization.

5,572,678

SYSTEM FOR SENDING FRAMES FROM SENDER TO RECEIVER USING CONNECTIONLESS PROTOCOL AND RECEIVING ACKNOWLEDGING FRAME AND RETRANSMISSION REQUEST FRAME FROM RECEIVER USING CONNECTION ORIENTED PROTOCOL

Koichi Homma, Yokohama; Keiji Oshima, Katsuta; Masao Sueki, Hitachi; Takashi Kasama, Yokohama, and Toshiya Kagawa, Kawasaki, all of Japan, assignors to Hitachi, Ltd., and Hitachi Microcomputer System, Ltd., both of Tokyo, Japan

Filed Jan. 25, 1993, Ser. No. 8,303
Claims priority, application Japan, Jan. 24, 1992, 4-010764
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.12 **20 Claims**



9. A data transmission system for transferring a large amount of data among a plurality of computer terminals through a network serving as a data transmission line to which said plurality of computer terminals are connected, comprising:

means for establishing on said network a first channel between a sender terminal and a receiver terminal, said first channel being a point-to-point channel;

first transmission means for sending from said sender terminal to said receiver terminal over a second channels on said network a plurality of information frames successively in accordance with a connectionless transmission protocol, said second channel being logically different from said first channel;

reception means for receiving from said receiver terminal over said first channel a reception acknowledging information frame or alternatively a retransmission request information frame in accordance with a connection-oriented transmission protocol ensuring high reliability; and

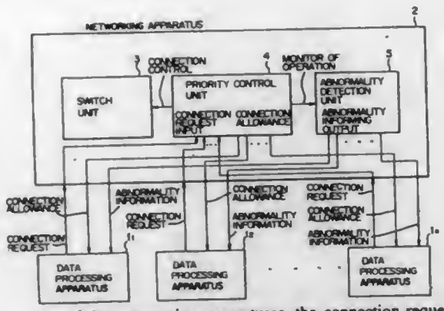
second transmission means for sending to said receiver terminal over said first channel a frame of data to be retransmitted in response to said retransmission request information frame, if issued, in accordance with said connection-oriented transmission protocol of high reliability.

5,572,679

MULTIPROCESSOR SYSTEM TRANSFERRING ABNORMALITY DETECTION SIGNAL GENERATED IN NETWORKING APPARATUS BACK TO PROCESSOR IN PARALLEL WITH DATA TRANSFER ROUTE

Kenichi Ishizaka, and Masayuki Katori, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 12, 1993, Ser. No. 105,174
Claims priority, application Japan, Nov. 30, 1992, 4-320030
Int. Cl.[6] H01J *13/00*
U.S. Cl. 395—200.12 **11 Claims**



1. A system for networking multiple data processing apparatuses, comprising:

a plurality of data processing apparatuses, each data processing apparatus including

a connection request information output unit which produces connection request information to request a connection to a different respective data processing apparatus of the plurality of data processing apparatuses, the connection request information produced by the connection request information output unit of a respective data processing apparatus including a connection request signal indicating whether the respective data processing apparatus has requested a connection,

a switch control information storage unit which stores switch control information,

a reading unit for reading the switch control information stored in the switch control information storage unit and for including the switch control information in the connection request information,

an other information finding unit, and

an other information output unit, where the connection request information output unit of a respective data processing apparatus of the plurality of data processing apparatuses, defined as a first data processing apparatus, produces connection request information to request a connection to a different respective data processing apparatus of the plurality of data processing apparatuses, defined as a second data processing apparatus; and

a network to which each of the plurality of data processing apparatuses is connected and which allows the first data processing apparatus to establish a connection through the network to the second data processing apparatus and then, once the connection is established, allows the first data processing apparatus to transfer data through the network to the second data processing apparatus, the connection request information produced by the first data processing apparatus indicating at least one requested route for connecting the first data processing apparatus to the second data processing apparatus through the network, the network comprising

a priority control unit receiving the connection request information from the first data processing apparatus and, based on the received connection request information and a predetermined priority order, determining a route from the at least one requested route indicated by the received connection request information which is available for connecting the first data processing apparatus to the second data processing apparatus,

a switch unit establishing the route determined by the priority control unit, the connection request information produced by the first data processing apparatus including switch control information stored in the switch control information storage unit of the first data processing apparatus for controlling the switch unit to establish the route determined by the priority control unit, and

an abnormality detecting unit monitoring the priority control unit to detect abnormalities in the operation of the priority control unit, generating an abnormality informing signal when an abnormality is detected and providing the generated abnormality informing signal to the first data processing apparatus, wherein

the other information finding unit of the first data processing apparatus receives the abnormality informing signal generated by the abnormality detecting unit and determines whether additional switch control information is stored in the switch control information storage unit of the first data processing apparatus for establishing a different route to the second data processing apparatus and,

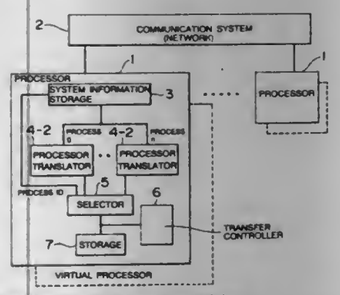
when the other information finding unit of the first data processing apparatus determines that there is additional switch control information for establishing a different route, the connection request information output unit of the first data processing apparatus produces new connection request information and the other information output unit of the first data processing apparatus includes the additional switch control information in the new connection request information.

5,572,680

METHOD AND APPARATUS FOR PROCESSING AND TRANSFERRING DATA TO PROCESSOR AND/OR RESPECTIVE VIRTUAL PROCESSOR CORRESPONDING TO DESTINATION LOGICAL PROCESSOR NUMBER

Masayuki Ikeda; Shigeru Nagasawa; Naoki Shinjo; Teruo Utsumi; Masami Dewa; Haruhiko Ueno; Kazushige Kobayakawa, and Kenichi Ishizaka, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Aug. 20, 1993, Ser. No. 109,598
Claims priority, application Japan, Dec. 18, 1992, 4-338503
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.15 **6 Claims**



1. A virtual processor system comprising:

a plurality of processor to execute processes in parallel including respective virtual processors and storing a plurality of logical processor numbers corresponding to destination processors of said plurality of processors;

main storage means, associated with said plurality of processors for storing data and system information; and

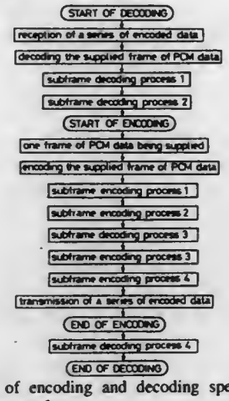
transfer processing means for transferring said data and system information among said plurality of processors by selecting a destination logical processor number of said plurality of logical processor numbers corresponding to a processor and a respective virtual processor of said plurality of processors, reading said data and system information from said main storage together with said processor and said respective virtual processor corresponding to said selected destination logical processor number and transferring said read data and system information to at least one of said processor and said respective virtual processor; wherein said transfer processing means associates said destination logical processor number with a physical processor valid flag, and when said physical processor valid flag indicates an invalid state, cancels communication of data designating the processor and, when said physical processor valid flag indicates a valid state, starts communication of data designating the processor.

5,572,681

SPEECH CODEC AND A METHOD OF PROCESSING A SPEECH SIGNAL WITH SPEECH CODEC

Makio Nakamura, and Akira Hioki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 16, 1993, Ser. No. 106,562
Claims priority, application Japan, Aug. 24, 1992, 4-247273
Int. Cl.[6] G10L *3/02*
U.S. Cl. 395—2.21 **1 Claim**



1. A method of encoding and decoding speech signal data, comprising the steps of:

decoding one frame of received encoded speech signal data;

successively decoding two subframes of received speech signal data divided from the decoded frame of received encoded speech signal data;

encoding one frame of received speech signal data;

successively encoding two subframes of received speech signal data divided from the encoded frame of received speech signal data;

decoding one subframe of received speech signal data divided from the decoded frame of received encoded speech signal data;

encoding one subframe of received speech signal data divided from the decoded frame of received encoded speech signal data;

encoding one subframe of received speech signal data divided from the encoded frame of received speech signal data;

encoding one subframe of received speech signal data divided from the encoded frame of received speech signal data, thus completing encoding of the subframes of received speech signal data contained in said one frame of received speech signal data; and

decoding one subframe of received speech signal data divided from the decoded frame of received encoded speech signal data, thus completing decoding of the subframes of received encoded speech signal data contained in said one frame of received encoded speech signal data.

5,572,682

CONTROL LOGIC FOR A SEQUENTIAL DATA BUFFER USING BYTE READ-ENABLE LINES TO DEFINE AND SHIFT THE ACCESS WINDOW

Raul A. Garibay, Jr., and Douglas E. Duschatko, both of Plano, Tex., assignors to Cyrix Corporation, Richardson, Tex.

Filed Apr. 3, 1992, Ser. No. 863,227
Int. Cl.[6] G06F *9/00;9/30*
U.S. Cl. 395—250 **8 Claims**



1. A sequential buffer with shift-based control logic for accessing sequences of X bytes out of a total of Y bytes in the sequential buffer (X<Y) to provide an X-byte transfer to a transfer requester, comprising:

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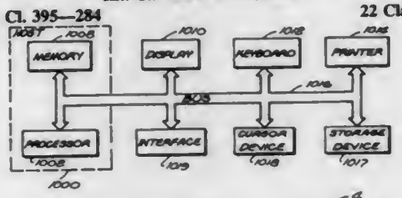
(a) shifter logic that defines an access window encompassing an X-byte sequence in the sequential buffer, including an index byte together with the next X−1 bytes in sequence, such that access to data in the buffer is limited to those bytes within the access window;
(b) for each byte of the sequential buffer, the shifter logic including a read-enables element that, when active, enables access to such byte;
(c) the shifter logic defining the access window by activating the read-enable element corresponding to an index byte together with the next X−1 read-enable elements corresponding to the next X−1 bytes, with the remaining read-enable elements being inactive; and
(d) access logic that, for each transfer operation, accesses the bytes in the sequential buffer within the access window for transfer to the transfer requester;
(e) the transfer requester initiating a transfer operation by providing a shift increment, such shift increment communicating the X bytes used in an immediately preceding transfer operation;
(f) for each transfer operation, (i) the shifter logic, responding to the shift increment, shifts the access window by the shift increment by activating and deactivating selected read-enable elements, such that a new index byte is shifted from a previous index byte by the shift increment, and (ii) the access logic accesses the corresponding bytes within the access window for transfer to the transfer requester.

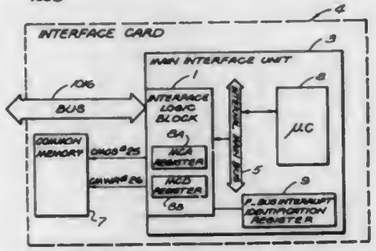
5,572,683

FIRMWARE SELECTABLE ADDRESS LOCATION AND SIZE FOR CIS BYTE AND ABILITY TO CHOOSE BETWEEN COMMON MEMORY MODE AND AUDIO MODE BY USING TWO EXTERNAL PINS

Carl J. Epolite, Phoenix, Ariz.; Michael Gley, Sacramento, and Nels Satterlund, Loomis, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 260,057, Jun. 15, 1994, abandoned. This application Jun. 22, 1995, Ser. No. 492,476
Int. Cl.[6] G06F *13/00; 12/02*
U.S. Cl. 395—284 **22 Claims**





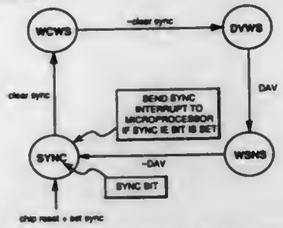
1. An interface card having an interface logic block adapted for interfacing a peripheral device with a computer host and for selecting between a common memory mode to communicate with an on-board common memory and an audio mode to communicate with an on-board audio communication device, said interface logic block comprising:
a plurality of registers including at least one register having a plurality of attribute memory range select (AMRS) bits which can selectively alter address locations of card information structure (CIS) bytes containing information about the interface card;
at least a first external pin coupled to said common memory and said audio communication device, said first external pin provides a common memory signal to said common memory when said common memory mode is selected by at least one of said plurality of registers and provides an audio signal to said audio communication device when said audio mode is selected by at least one of said plurality of registers; and
a logic circuit coupled to said plurality of registers and to said first external pin.

5,572,684

IEEE 488 INTERFACE AND MESSAGE HANDLING METHOD

Robert Canik, Cedar Park; Brian K. Odom, and William C. Nowlin, Jr., both of Austin, all of Tex., assignors to National Instruments Corporation, Austin, Tex.

Continuation of Ser. No. 548,293, Jul. 3, 1990, Pat. No. 5,287,528. This application Nov. 18, 1993, Ser. No. 154,867
Int. Cl.[6] G06F *13/42*
U.S. Cl. 395—286 **10 Claims**



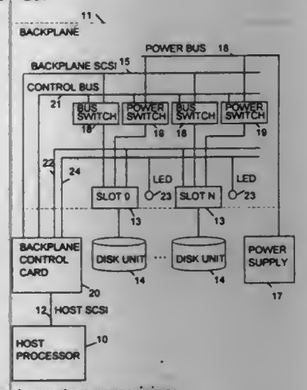
1. A bus interface which couples a microprocessor having a direct memory access controller to an IEEE **488** bus, the interface comprising:
a microprocessor port which transmits and receives data to and from said microprocessor; said microprocessor having an interrupt signal port; said microprocessor port including at least one line for transmitting interrupt signals to said interrupt signal port of said microprocessor;
an IEEE **488** bus; said IEEE **488** bus including data lines and a data valid (DAV) line;
listener circuit means, coupled to said microprocessor port and said IEEE **488** bus, for transmitting data from said IEEE **488** bus to said microprocessor via said microprocessor port; and
acceptor handshake means, coupled to said listener circuit means and said IEEE **488** bus, for detecting when the last byte of a data transfer has been received from said IEEE **488** bus while said listener circuit means is transmitting data to said microprocessor via said microprocessor port and for then transmitting a first interrupt signal to said interrupt signal port of said microprocessor via said microprocessor port:
synchronization means, coupled to said IEEE **488** bus, for detecting when a data valid signal previously asserted on said DAV line is unasserted, and for then transmitting a second interrupt signal to said interrupt signal port of said microprocessor via said microprocessor port;
wherein said previously asserted data valid signal is unasserted only when all devices coupled to said IEE **488** bus that are receiving said data transfer have received a datum, comprising a portion of said data transfer, from said IEEE bus; and
a synchronization interrupt enable switch for enabling said synchronization means to send said second interrupt signal to said microprocessor; wherein said synchronization means does not send said second interrupt signal when a data valid signal previously asserted on said DAV line is unasserted unless said synchronization interrupt enable switch is enabled; said synchronization interrupt enable switch coupled to said microprocessor via said microprocessor port so that said microprocessor can enable and disable said synchronization interrupt enable switch;
whereby said microprocessor is automatically notified by said first interrupt signal that the last byte of a data transfer has been transmitted by said interface from said IEEE **488** bus to said microprocessor and said microprocessor is automatically notified by said second interrupt signal that said IEEE **488** bus has completed transmission of said datum.

5,572,685

COMPUTER SYSTEM

John G. Fisher, Congleton; Stephen Gold, Camberley, and Philip Worsdale, Alsager, all of Great Britain, assignors to International Computers Limited, London, England

Filed Mar. 3, 1995, Ser. No. 398,577
Claims priority, application United Kingdom, Mar. 23, 1994, 9405855
Int. Cl.[6] G06F *13/36*
U.S. Cl. 395—287 **5 Claims**



1. A computer system comprising:
(a) a plurality of units;
(b) a bus, interconnecting said units;
(c) bus arbitration means connected to said bus for setting up a bus transfer between two of said units, and for then asserting a busy signal on said bus indicating that said bus is busy;
(d) isolation means, connected between said units and said bus, for selectively isolating said units from said bus; and
(e) control means connected to said bus and to said isolation means, for capturing identifiers from said bus identifying the two of said units that are participating in said bus transfer and for then instructing said isolation means to isolate from the bus all of said units other than the two of said units that are participating in said bus transfer, while said busy signal is asserted.

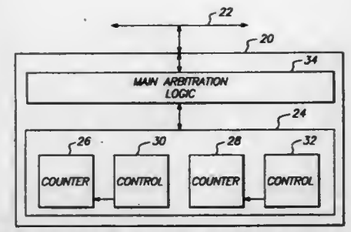
5,572,686

BUS ARBITRATION SCHEME WITH PRIORITY SWITCHING AND TIMER

Ann B. Nunziata, Cupertino; Riaz A. Moledina, Woodside, and Chi-Shing J. Ng, San Jose, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jun. 5, 1995, Ser. No. 461,745
Int. Cl.[6] G06F *13/36*
U.S. Cl. 395—296 **18 Claims**

10. A bus arbiter comprising:
a plurality of lines for receiving bus requests;
a plurality of lines for transmitting bus grants;
at least one line for receiving a signal for changing a priority associated with one of said bus requests;



arbitration logic for issuing a bus grant based upon a predetermined priority scheme associated with said bus requests, such that a highest priority pending bus request is granted, wherein said predetermined priority scheme is changed upon receipt of said signal for changing said priority associated with one of said bus requests; and
a counter which begins counting upon receipt of said one of said bus requests wherein said counter generates said signal for changing said priority of said one of said bus requests when said counter expires.

5,572,687

METHOD AND APPARATUS FOR PRIORITY ARBITRATION AMONG DEVICES IN A COMPUTER SYSTEM

Hussein Alnuweiri, Port Moody, Canada, assignor to The University of British Columbia, Vancouver, Canada

Continuation-in-part of Ser. No. 231,310, Apr. 22, 1994. This application Mar. 24, 1995, Ser. No. 409,658
Int. Cl.[6] G06F *13/374*
U.S. Cl. 395—303 **12 Claims**

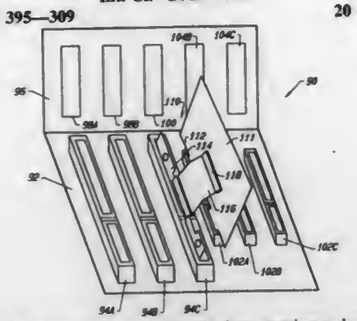
1. A method for priority arbitration among a plurality of modules in a computer system, said computer system comprising a multi-line arbitration bus comprising K bus lines bus{1}, . . . , bus{k}, said method comprising the steps of:
a) assigning to each of said modules a priority code P_j from a set D(r,K+1) consisting of r-digit radix K+1 numbers;
b) causing modules which are contending for access to a system resource to be active;
c) causing each active module having a priority code with a non-zero first digit, to write a logic value of "1" to a bus line bus{i} corresponding to said first digit;
d) performing a prefix-OR operation on said arbitration bus; and,
e) for each active module having a priority code with a first digit having a value i, with i≠K, reading a logic value on a bus line bus{i+1} and making said active module inactive if said logic value on said bus line bus{i+1} is "1".

5,572,688

PRIMARY BUS PROCESSING ELEMENT WITH MULTIFUNCTION INTERCONNECTION TO SECONDARY BUS

James T. Sytwu, Los Altos, Calif., assignor to Tyan Computer Corporation, Milpitas, Calif.

Filed Sep. 30, 1994, Ser. No. 315,979
Int. Cl.[6] G06F 13/00
U.S. Cl. 395—309 20 Claims



1. An apparatus to process signals from a primary bus and a secondary bus of a computer, said apparatus comprising:

a primary bus card configured for simultaneous positioning within a computer backplane aperture and a first motherboard slot electrically connected to said primary bus, said primary bus card obtaining primary bus signals, said primary bus card including a processing circuit to process said primary bus signals, and a bridge cable connector electrically connected to said processing circuit;

a secondary bus connector configured for positioning within a second motherboard slot electrically connected to said secondary bus, said secondary bus connector obtaining multiple function secondary bus signals associated with multiple functions performed by a plurality of functional elements connected to said secondary bus, said secondary bus connector including a vertical profile substantially equivalent to the vertical profile of said second motherboard slot such that said secondary bus connector does not obstruct the positioning of said primary bus card within said computer backplane aperture; and

a bridge cable vertically extending from said secondary bus connector to said bridge cable connector to convey said secondary bus signals to said processing circuit.

5,572,689

DATA PROCESSING SYSTEM AND METHOD THEREOF

Michael G. Gallup; L. Rodney Goke; Robert W. Seaton, Jr.; Terry G. Lawell; Stephen G. Osborn, and Thomas J. Tomazin, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 40,779, Mar. 31, 1993, abandoned. This application Mar. 21, 1995, Ser. No. 408,045
Int. Cl.[6] G06F 9/315
U.S. Cl. 395—376 8 Claims

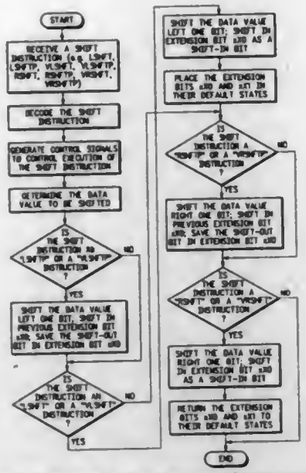
1. A method of executing a shift instruction in a data processor, comprising the steps of:

receiving the shift instruction having a source operand;

decoding the shift instruction to provide a plurality of control signals;

accessing a first extension bit from a first storage location and a second extension bit from a second storage location;

shifting a shift value into a first bit of the source operand to generate a shifted data value, the shift value being determined in response to both the first extension bit and the second extension bit; and



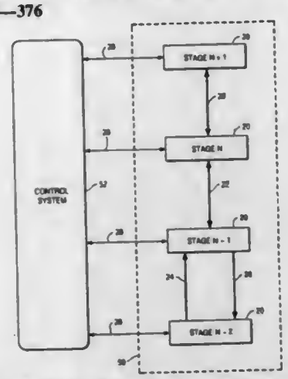
selectively modifying the first extension bit to provide a modified first extension bit in response to execution of the shift instruction.

5,572,690

CASCADED MULTISTAGE COUNTERFLOW PIPELINE PROCESSOR FOR CARRYING DISTINCT DATA IN TWO OPPOSITE DIRECTIONS

Charles E. Molnar, Webster Groves, Mo.; Ivan E. Sutherland, Santa Monica, Calif.; Robert F. Sproull, Newton, Mass., and Ian W. Jones, Saratoga, Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 140,654, Oct. 21, 1993, abandoned.
This application Jun. 6, 1995, Ser. No. 468,884
Int. Cl.[6] G06F 7/00
U.S. Cl. 395—376 39 Claims



1. A counterflowing data processing system capable of carrying distinct data elements in two directions, comprising:

a set of stages interconnected to form a pipeline;

circuitry configured to control the flow of a first group of distinct data elements in a first direction through the set of stages forming the pipeline;

circuitry configured to control the flow of a second group of distinct data elements in a second direction through the set of stages forming the pipeline;

one stage among the set of stages further including:

a dynamic selection circuit configured to determine if a first data element from the first group of distinct data elements and a second data element from the second group of distinct data elements are present at the one stage; and

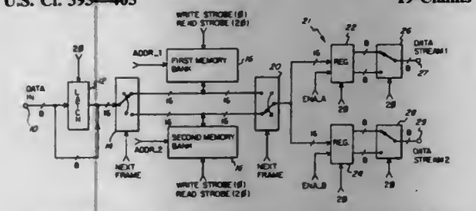
interaction circuitry configured to cause the first data element and the second data element to interact in the one stage when the first data element and the second data element are present in the one stage.

5,572,691

APPARATUS AND METHOD FOR PROVIDING MULTIPLE DATA STREAMS FROM STORED DATA USING DUAL MEMORY BUFFERS

Rabee Koudmani, San Diego, Calif., assignor to GI Corporation, Hatboro, Pa.

Filed Apr. 21, 1993, Ser. No. 47,541
Int. Cl.[6] G06F 12/02
U.S. Cl. 395—405 19 Claims



1. Apparatus for storing successive frames containing bytes of digital information and subsequently outputting an integer number N of different data streams for each frame, each of said N different data streams providing the same bytes for each or said frames but in a different order for subsequent processing, comprising:

first and second memory banks for respectively storing alternate ones of said successive frames, said first memory bank adapted to store bytes from an incoming frame while said second memory bank outputs bytes from a previous frame, and said second memory bank adapted to store bytes from an incoming frame while said first memory bank outputs bytes from a previous frame, wherein the previous frame bytes output by each memory bank are output in a plurality of different orders to provide said N different data streams for the previous frame;

means for controlling the inputting and outputting of bytes which represent said frames to and from said first and second memory banks, wherein said memory banks are responsive to read and write strobes and addresses provided by said controlling means for (i) storing incoming frame data in an order determined by write addresses at a rate of N bytes per write strobe and (ii) outputting N bytes of frame data specified by a read address for a next successive one of said N different data streams every read strobe, one write strobe occurring for every N read strobes, such that said output data bytes are provided in one of said plurality of different orders according to one of a corresponding plurality of different read address sequences; and

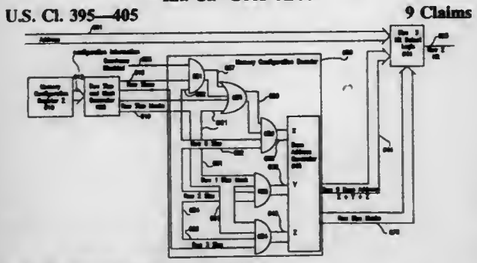
means for buffering the outputted frame data for each of said N different data streams to provide one byte per read strobe in each of said data streams.

5,572,692

MEMORY CONFIGURATION DECODING SYSTEM HAVING AUTOMATIC ROW BASE ADDRESS GENERATION MECHANISM FOR VARIABLE MEMORY DEVICES WITH ROW ACCESS INTERLEAVING

Robert N. Murdoch, Sacramento, and Mohammad Z. Khan, Citrus Heights, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 814,409, Dec. 24, 1991, abandoned.
This application Oct. 27, 1993, Ser. No. 143,984
Int. Cl.[6] G06F 12/06
U.S. Cl. 395—405 9 Claims



6. A computer system comprising:

a processor for sending a memory address and control signals for a memory access;

a bus coupled to said processor for carrying said memory address and said control signals;

a memory for storing bits of data, said memory comprising a plurality of memory rows;

a memory controller coupled to said bus and to said memory, for receiving said memory address and control signals, said memory controller including a memory configuration decoding system that automatically calculates a row base address corresponding to a first memory row in said plurality of memory rows, said memory controller using said row base address to determine if said memory address is in said first memory row; and

first means for receiving an interleave disable signal, said interleave disable signal indicating if said first memory row and a fourth memory row are interleaved, the row size of said first memory row being equal to a row size corresponding to said fourth memory row;

wherein the memory configuration decoding system comprises i) second means for receiving a row size corresponding to each of said memory rows, and ii) means for summing coupled to said second means for receiving, said means for summing generating said row base address by adding the row sizes corresponding to said memory rows whose row size is greater than the row size corresponding to said first memory row, and

wherein the means for summing comprises i) means for outputting a value corresponding to each of said memory rows, said value corresponding to a row size of the corresponding memory row if the row size of the corresponding memory row is greater than the row size of said first memory row, said value corresponding to zero if the row size of the correspoonding memory row is less than the row size corresponding to said first memory row, and ii) an adder means coupled to said means for outputting for adding a plurality of values respectively corresponding to each of said memory rows; and

wherein the means for outputting comprises i) means for generating a row size mask corresponding to said first memory row, said row size mask producing a zero when ANDed with row size of a second memory row smaller than the row size corresponding to said first memory row, said row size mask further producing row size of a third memory row when ANDed with row size of said third memory row, row size of said third memory row being greater than row size corresponding to said first memory row, and ii) means for produc-

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ing a logical AND function of the row size corresponding to each of said memory rows with said row size mask, the output of said logical AND function corresponding to the plurality of values respectively corresponding to each of said memory rows output in said step of outputting.

5,572,693

METHOD AND APPARATUS FOR CONTROLLING EXTENDED MEMORY CHIPS IN A RANDOM BLOCK ACCESS OPERATION

Go H. Choi, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

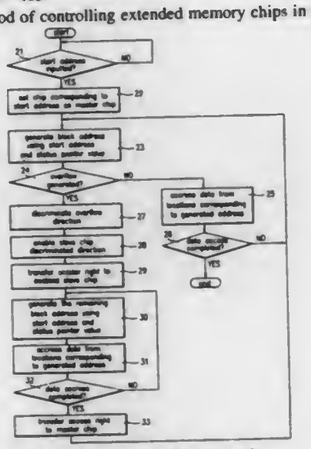
Filed Mar. 29, 1994, Ser. No. 219,142

Claims priority, application Rep. of Korea, Feb. 28, 1994, 3772/1994

Int. Cl.[6] G06F *12/06*

U.S. Cl. 395—405 **14 Claims**

1. A method of controlling extended memory chips in a random



block access operation, comprising the steps of:

(a) assigning one memory chip as a master chip and other memory chips as slave chips upon inputting a start address, the start address corresponding to an address within the master chip and each slave chip being referenced from the master chip using a direction;

(b) accessing a block of data in the master chip corresponding to the start address using the start address and a status pointer value until an overflow signal is generated in response to the status pointer value corresponding to an address outside the master chip, the status pointer value referencing memory addresses of the accessed data with respect to the start address;

(c) discriminating a direction corresponding to the generated overflow signal, if the overflow signal is generated at said step (b), and transferring an access right to the slave chip of the discriminated direction to allow access the data of the discriminated slave chip;

(d) accessing data of a remaining block portion in the slave chip to which the access right is transferred at said step (c) using the start address and the status pointer value until the data access is completed; and

(e) transferring the access right to the master chip if the data access to the remaining block portion in the slave chip is completed at said step (d).

5,572,694

VIRTUAL SYSTEM FOR DETECTING ACCESS PATHS BELONGING TO SAME GROUP FROM PLURALITY OF ACCESS PATHS TO REACH DEVICE DESIGNATED BY COMMAND WITH REFERENCE TO TABLE

Minoru Uchino, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

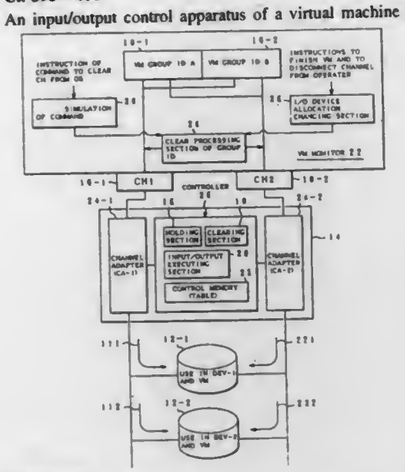
Filed Nov. 26, 1993, Ser. No. 157,417

Claims priority, application Japan, Nov. 25, 1992, 4-314685

Int. Cl.[6] G06F *15/02*

U.S. Cl. 395—406 **27 Claims**

7. An input/output control apparatus of a virtual machine sys-



tem, comprising:

a plurality of virtual machines which are realized on a real machine by a monitor section as a software to control the virtual machine system and which executes input/output controls by an independent operating system;

a plurality of input/output devices allocated to each of said plurality of virtual machines in a one-to-one corresponding manner;

an input/output control unit coupled to each of said plurality of input/output devices; and

at least two channel devices to couple said input/output control unit to said plurality of virtual machines,

wherein said input/output control unit has

group ID holding means for defining access paths forming logical couplings of a number as many as the number of said channel devices with respect to one of said input/output devices as access paths each of which starts from each of said plurality of virtual machines and reaches each of said plurality of input/output devices via the channel devices and the input/output control unit, and for holding each group ID set by each of said plurality of virtual machines for each of said plurality of access paths into a table,

clearing means for clearing a special group ID held in said table of said group ID holding means, and

input/output executing means for detecting the access paths belonging to the same group from among said plurality of access paths which reach the input/output device designated by a command with reference to the table in said group ID holding means and for executing input/output operations.

5,572,695

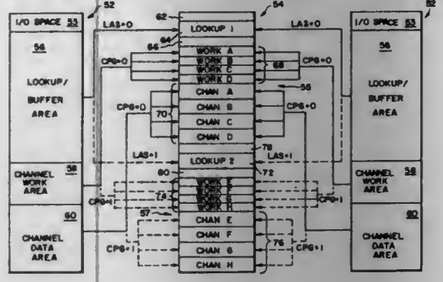
TRANSPARENT MEMORY MAPPING MECHANISM FOR A DIGITAL SIGNAL PROCESSING SYSTEM

Lawrence P. Andrews, Boca Raton; Derrick L. Arias, Miami; Judith M. Linger, Delray Beach; Baiju D. Mandalia, Boca Raton; Oscar E. Ortega, Miami, and John C. Sinibaldi, Pompano Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1994, Ser. No. 250,974

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—412 **6 Claims**



6. An addressable mode selectable digital information processing system comprising:

first and second digital processors each of which being operative to generate first and second logical addresses respectively for accessing a first plurality of memory locations,

first and second register means for containing first and second address mapping/mode information coupled to said first and second digital processors,

data storage means having a second plurality of memory locations each of which having a physical address, said second plurality being greater than said first plurality,

first and second logical memory mapping means coupled to said first and second digital processors respectively and to said data storage means, said first and second logical memory mapping means being operative to receive (i) said first and second logical addresses from said first and second digital processors respectively and (ii) said first and second address mapping/mode information respectively and generate first and second physical addresses corresponding to a mode selected

wherein said system is in a third mode,

said first memory mapping means being operative to map said first logical addresses from said first digital processor directly to a first page of memory in said data storage means,

said second memory mapping means being operative to map said second logical addresses from said second digital processor directly to a second page of memory in said data storage means such that said first and second processors can only access said first and second memory pages respectively

and, wherein said first register means includes a first map register having a mode bit, said second register means includes a second map register having a read only copy of said mode bit, said third mode being selected by said first digital processor by setting said mode bit to a first logic state when said second plurality of memory locations is equal to two times said first plurality of logically addressable memory locations.

5,572,696

SECRET INFORMATION PROTECTION SYSTEM ERASING SECRET INFORMATION UPON DETECTION OF AUTHORIZED USER-INITIATED EVENT

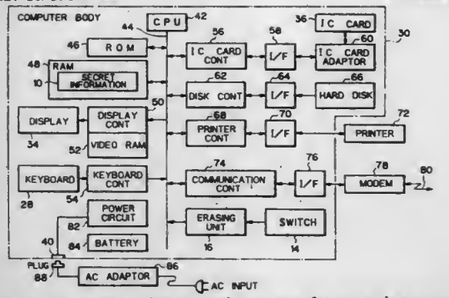
Masayuki Sonobe, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 24, 1992, Ser. No. 980,706

Claims priority, application Japan, Nov. 27, 1991, 3-312233

Int. Cl.[6] G06F *12/14*

U.S. Cl. 395—412 **10 Claims**



1. A secret information protection system for protecting secret information stored in an information processing system from access by an unauthorized user, the information processing system having an IC card for processing information, the secret information protection system comprising:

storage means for storing the secret information;

erasure instructing means for detecting removal of the IC card from the information processing system, and, when removal is detected, for generating an erasing instruction to erase the secret information from the storage means; and

erasure means, operatively connected to the storage means, for erasing the secret information in accordance with the erasing instruction from the erasure instructing means.

5,572,697

APPARATUS FOR RECOVERING LOST BUFFER CONTENTS IN A DATA PROCESSING SYSTEM

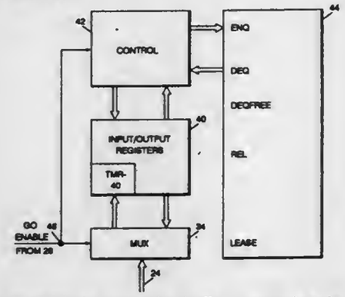
Denis Chevalier, La Colle Sur Loup; Jean Calvignac, La Gaude; Jean-Marie Munier, Cagnes-sur-Mer; Bernard Naudin, and Maurice Duault, both of Saint Laurent du Var, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1992, Ser. No. 992,314

Claims priority, application European Pat. Off., Mar. 2, 1992, 92480009

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—427 **4 Claims**



1. An apparatus for recovering buffer contents in a data processing system through which source and destination users exchange information comprising a memory divided into a plurality of buffers provided with buffer control blocks, buffer management means which are responsive to requests from users for allocating

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buffers to source users in order for said source users to store the information to be sent to the destination users, said buffer management means building buffer queues and dequeuing buffers from said queues to send the information contained therein to said destination users and for releasing said buffers afterwards, said apparatus comprising:

time mark storing means settable to n different values in a predetermined order, the value of said time mark storing means being changed at the expiration of a time period P,

time marking means for writing the current value of the time mark storing means into a time mark field of the buffer control blocks when the buffers are allocated to users,

state field writing means for writing into a state field of the buffer control blocks, a first value when the buffers are allocated to users, a second value when the buffers are released and a third value when the buffers Derrain to a queue,

scanning means for reading the contents of said buffer control blocks at regular time intervals t separated by said period P, and for testing if the state field of each buffer control block is set to said second value and, if not so set, for comparing said time mark field with the value said time mark storing means had at the time t-xP, where x is a number in the range $1<x<n$, and then releasing the corresponding buffer in case of equality,

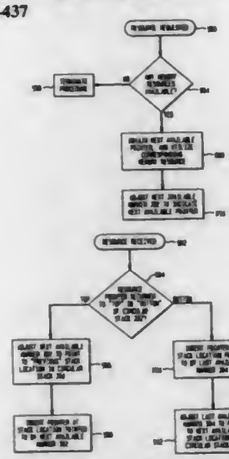
said scanning means further testing whether said state field of each buffer control block is set to said third value, and if so set dequeuing all said buffers of said queue to which said buffers pertain.

5,572,698

SYSTEM AND METHOD FOR ALLOCATING MEMORY RESOURCES WHERE THE CATEGORY OF A MEMORY RESOURCE DETERMINES WHERE ON A CIRCULAR STACK A POINTER TO THE MEMORY RESOURCE IS PLACED

Hsiang C. Yen, Cupertino, and Vasudha N. Bhaskara, Milpitas, both of Calif., assignors to Rolm Company, Santa Clara, Calif.

Filed Apr. 18, 1994, Ser. No. 228,989
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—437 **10 Claims**



9. A system for allocating a plurality of memory resources, each having an address in a private branch exchange (PBX) environment, comprising:

a local computer system, having a memory resource area comprising two or more memory pages;

a shared memory for receiving one or more commands, to which the PBX environment is responsive, from said local computer system;

said local computer system further comprising

a plurality of stack locations, wherein each stack location is uniquely linked to two other stack locations, and wherein said plurality of stack locations are linked in a circular fashion;

a plurality of pointers, wherein each said pointer is stored in said plurality of stack locations and points to a memory resource from the plurality of memory resources;

a next available marker for indicating a next available pointer in a first available stack location in said plurality of stack locations;

a last available marker for indicating a last available pointer in a last available stack location in said plurality of stack locations;

request detection means for detecting a request from the PBX environment for a requested memory resource from the plurality of memory resources;

resource access means, responsive to said request detection means, for obtaining said next available pointer indicated by said next available marker,

wherein the PBX environment is given said next available pointer and a first command is placed in a first memory resource from the plurality of memory resources indicated by said next available pointer, and wherein said next available marker is updated such that said next available marker indicates a pointer corresponding to a next available memory resource;

an engine driver for conveying said first command to said shared memory;

release detection means for detecting that a previously obtained memory resource which was previously obtained by the PBX environment, has been released;

resource placement means for placing a released pointer, corresponding to said previously obtained memory resource, into one of said stack locations, said resource placement means comprising

resource categorization means for determining whether a first address of said previously obtained memory resource belongs to a first category of memory pages or a second category of memory pages;

first category insertion means, responsive to said resource categorization means, for inserting said released pointer into a stack location indicated by said next available marker when the previously obtained memory resource belongs to the first category of memory pages;

second category insertion means, responsive to said resource categorization means, for inserting said released pointer into a stack location indicated by said last available marker when the previously obtained memory resource belongs to the second category of memory pages.

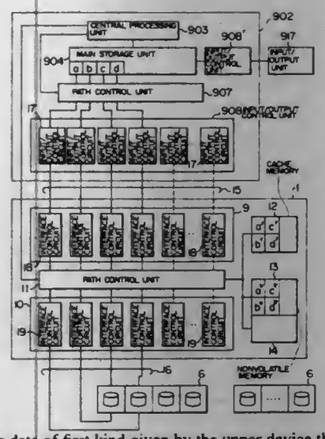
5,572,699

VARIABLE LENGTH DATA IN A PARALLEL DISK ARRAY

Yoshihisa Kamo, Musashimurayama; Hajime Aoi, Tachikawa; Hitoshi Kakuta, Kokubunji; Yoshito Tsunoda, Tokyo; Hiromichi Fujisawa, Tokorozawa; Yosuke Seo, Sagamihara, and Yasuhide Ouchi, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 406,581, Sep. 13, 1989, abandoned.
This application Mar. 15, 1993, Ser. No. 32,191
Claims priority, application Japan, Sep. 19, 1988, 63-232357; Sep. 28, 1988, 63-241104
Int. Cl.[6] G06F *12/04;17/30*
U.S. Cl. 395—441 **30 Claims**

1. In a disc array system which includes a plurality of disc storage devices and a disc array controller connected to an upper device by at least one upper path and to said plurality of disc storage devices by a plurality of lower paths, a method for controlling accesses to the plurality of disc storage devices comprising the steps, executed by the disc array controller, of:



dividing data of first kind given by the upper device through the one upper path into plural portions, the data of first kind being data for which the upper device has designated a division number which is larger than one;

not dividing data of second kind given by the upper device through the one upper path, the data of the second kind being data for which the upper device has not designated a division number which is larger than one;

writing said plural portions of said data of first kind in parallel into a plurality of regions belonging to plural ones of said disc storage device by plural ones of said plurality of lower paths; and

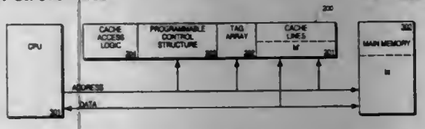
writing said data of second kind into one region belonging to one of the plurality of disc storage devices by one of the plurality of lower paths.

5,572,700

CACHE ACCESS CONTROLLER AND METHOD FOR PERMITTING CACHING OF INFORMATION IN SELECTED CACHE LINES

Kirk I. Hays, Hillsboro, and Wayne D. Smith, Portland, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Apr. 30, 1993, Ser. No. 55,962
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—466 **29 Claims**



1. In a computer system having a processor for performing memory access by specifying an address in a main memory, and a cache memory comprising cache lines, a cache access controller comprising:

a control circuit for producing a plurality of access values in response to said address, each access value associated with a corresponding one of said cache lines and having a true or a false state; and

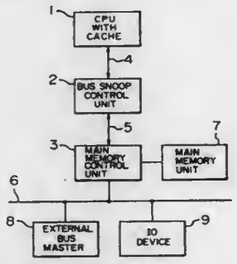
an access logic circuit for permitting caching of information associated with said address at one of said cache lines if its corresponding access value is true.

5,572,701

BUS SNOOP METHOD AND APPARATUS FOR COMPUTER SYSTEM HAVING CPU WITH CACHE AND MAIN MEMORY UNIT

Kazuhisa Ishida; Takashi Inagawa, and Katuya Banno, all of Owariasahi, Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Chubu Software, Ltd., Aichi-ken, all of Japan

Filed Apr. 19, 1994, Ser. No. 229,755
Claims priority, application Japan, Apr. 23, 1993, 5-097378
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—473 **6 Claims**



1. A computer system comprising:

a main memory unit, a bus master and an I/O device which are coupled to each other through a bus;

a main memory control unit which controls write/read to and from said main memory unit and, in response to an instruction for writing data to said main memory unit being issued, delivers a snoop request signal and an address at which data is to be written and effects the transfer of data to said main memory unit even when said bus is in a standby state;

a CPU which has a cache memory for holding data read out of said main memory unit and means responsive to the writing of data to an address of said main memory unit being carried out by said main memory control unit, for performing a snoop processing for cancelling an address in said cache memory corresponding to said address of said main memory unit where data has been written; and

a bus snoop control unit responsive to a snoop request signal and an address delivered out of said memory control unit, for buffering said address, for determining when said bus is in a standby state because said CPU occupies said bus and for causing said CPU to execute snoop processing using said buffered address when said bus is released from a standby state because it is no longer occupied by said CPU.

5,572,702

METHOD AND APPARATUS FOR SUPPORTING READ, WRITE, AND INVALIDATION OPERATIONS TO MEMORY WHICH MAINTAIN CACHE CONSISTENCY

Nitin V. Sarangdhar; Michael W. Rhodehamel, both of Beaverton, Oreg.; Amit A. Merchant, Citrus Heights, Calif.; Matthew A. Fisch, and James M. Brayton, both of Beaverton, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 28, 1994, Ser. No. 202,790
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—473 **30 Claims**

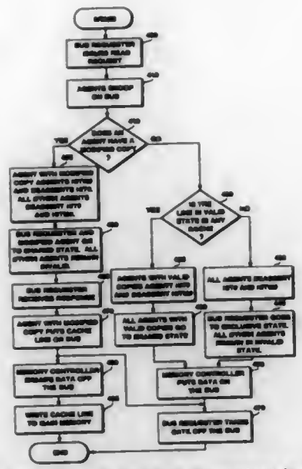
12. A method of operating a computer system which includes a bus coupled to a requesting agent, said requesting agent having a first cache, a snooping agent having a second cache, and a memory unit, said method comprising the steps of:

(a) issuing a read request as part of a pipelined transaction by said requesting agent, said read request having a target agent;

(b) snooping said bus by said snooping agent to determine whether said read request can be satisfied by accessing data corresponding to said read request contained in said second cache;

(c) issuing one of either a first signal or a second signal from said snooping agent to said requesting agent indicating said read request can be satisfied by accessing said cache, said first

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signal indicating that said data is contained in said second cache in a modified state, and said second signal indicating that said data is contained in said second cache in an unmodified state;

(d) placing said data from said second cache onto said bus during said pipelined transaction to satisfy said read request;

(e) taking said data from said cache off said bus by said memory unit; and

(f) updating, based on which of said first signal or said second signal is issued in said step (c), a state of a cache line of said first cache corresponding to said data and a state of a cache line of said second cache corresponding to said data.

5,572,703

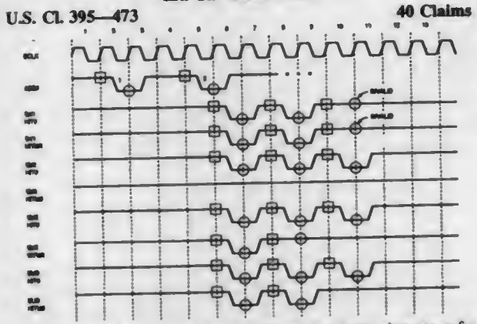
METHOD AND APPARATUS FOR SNOOP STRETCHING USING SIGNALS THAT CONVEY SNOOP RESULTS

Peter MacWilliams, Aloha; Nitin V. Sarangdhar; Matthew Fisch, Beaverton, and Amit Merchant, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Mar. 1, 1994, Ser. No. 203,802

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—473 **40 Claims**



1. In a computer system having at least one requesting agent for issuing bus transaction requests and at least one snooping agent for monitoring transaction requests and issuing bus signals on an external bus, wherein the bus transactions are timed by a bus clock signal having a plurality of cycles, a method for stretching the snoop phase of a bus transaction comprising the steps of:

during a first cycle, a first snooping agent asserting both a HIT# bus signal and HITM# bus signal together to indicate that the first snooping agent must delay assertion of valid snoop results for a predetermined snoop period;

during a later cycle, the first snooping agent deasserting the assertion of both the HIT# and HITM# bus signals together and asserting its valid snoop results.

5,572,704

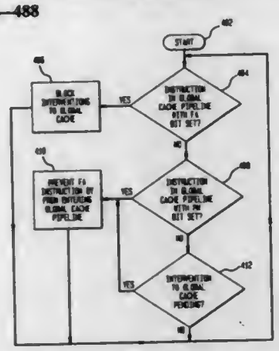
SYSTEM AND METHOD FOR CONTROLLING SPLIT-LEVEL CACHES IN A MULTI-PROCESSOR SYSTEM INCLUDING DATA LOSS AND DEADLOCK PREVENTION SCHEMES

Joseph P. Bratt, San Jose; John Brennan, Mountainview; Peter Y. Hsu, Freemont; William A. Huffman, Los Gatos; Joseph T. Scanlon, Sunnyvale, all of Calif., and Steve Clavagia, Williston, Vt., assignors to Silicon Graphics, Inc., Mountain View, Calif.

Filed Dec. 15, 1993, Ser. No. 167,005

Int. Cl.[6] G06F *12/16*

U.S. Cl. 395—488 **14 Claims**



1. A method of preventing data loss in a computer system comprising a plurality of processing units each having at least one cache, wherein multi-processor cache coherency is maintained in the computer system, at least one of the processing units including a split-level cache arrangement comprising a first level cache coupled to a second level cache, wherein integer store instructions enable data to be stored in both the first level cache and the second level cache, the first level cache being byte writable and the second level cache being word writable, the method comprising the steps of:

(a) monitoring a pipeline of the second level cache to determine whether a forced atomic (FA) instruction is in the second level cache pipeline, a FA instruction being an integer store instruction which requires allocation in the first level cache and which enables data of length other than a word multiple to be stored in the first level cache, wherein during execution of a FA instruction one or more bytes are read from the first level cache and written to the second level cache along with write data of the FA instruction, such that data of word length is written to the second level cache; and

(b) if a FA instruction is determined to be in the second level cache pipeline, then delaying interventions to the second level cache until the FA instruction exits the second level cache pipeline to thereby delay execution of cache memory access instructions responsible for generation of said interventions, such that data written by operation of said cache memory access instructions is not destroyed by operation of the FA instruction.

5,572,705

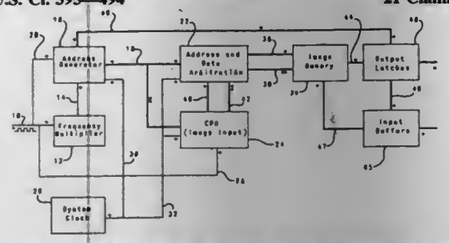
SYNCHRONOUS PHASE TRACKING PARALLEL ELECTRONIC TIMING GENERATOR

Daryl Carson, Plymouth, Mich., assignor to CAE, Inc., Hamburg, Mich.

Continuation of Ser. No. 780,805, Oct. 22, 1991, abandoned. This application Jan. 12, 1994, Ser. No. 180,848

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—494 **21 Claims**



1. A synchronous parallel electronic timing generator comprising,

means to generate a phase tracking multiple frequency from an external reciprocating signal, said multiple frequency being greater than the frequency of the external reciprocating signal and an equal multiple of each cycle of the external reciprocating signal,

means to repeatedly count each cycle of the multiple frequency during a selected portion of the external reciprocating signal and means to generate a unique address number corresponding to each count thereby providing a stream of unique address numbers,

a source of image data to output a stream of image data numbers,

an image memory wherein the stream of image data numbers in response to the stream of unique address numbers provides a stream of imaged unique data numbers,

means to generate a second set of address numbers initiated by the multiple frequency to allow at least one imaged unique data number to be multiply accessed from image memory during each cycle of the multiple frequency, and

one or more output latches wherein the second set of address numbers set the output latches within each cycle of the multiple frequency and the imaged unique data numbers are imposed to form an imaged output from the output latches.

5,572,706

ELECTRONIC EQUIPMENT HAVING CONTROLLABLE ACCESS TIMES FOR DETACHABLE CARTRIDGES

Kozo Matsumoto, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 839,686, Feb. 24, 1992, abandoned, which is a continuation of Ser. No. 532,563, Jun. 4, 1990, abandoned, which is a division of Ser. No. 282,890, Dec. 12, 1988, Pat. No. 4,956,804, which is a continuation of Ser. No. 690,643, Jan. 11, 1985, abandoned. This application Jul. 1, 1994, Ser. No. 269,623

Claims priority, application Japan, Jan. 20, 1984, 59-7057; Jan. 20, 1984, 59-7058

Int. Cl.[6] G06F *1/06;12/06*

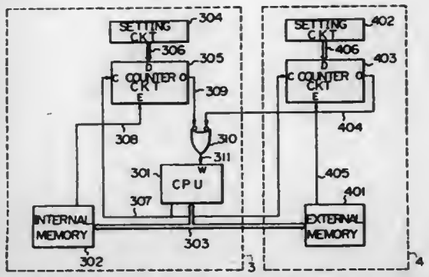
U.S. Cl. 395—494 **4 Claims**

1. An electronic equipment comprising:

a CPU having a wait terminal;

count means for counting a wait time of said CPU in accordance with a settable count value and for outputting a wait signal to the wait terminal;

mounting means for detachably mounting one of plural kinds of cartridges, each kind of said cartridges containing a semiconductor memory with a different respective access time and storing time data representing the respective access time of the contained semiconductor memory;



means for fetching the time data representing the access time of the contained semiconductor memory from a mounted cartridge;

setting means for setting in said count means a count value;

an internal memory; and

storing means for storing data representing an access time of said internal memory of said equipment,

wherein said setting means comprises means for selecting one of the data representing the access time of said internal memory stored in said storing means and the time data fetched from the mounted cartridge by said fetch means, said setting means setting the count value corresponding to the selected data in said count means.

5,572,707

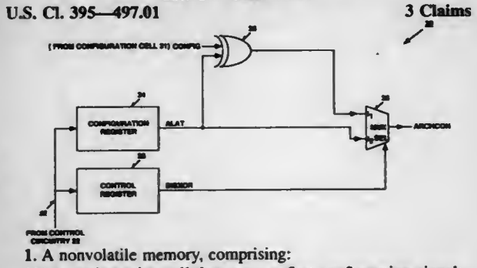
NONVOLATILE MEMORY WITH A PROGRAMMABLE CONFIGURATION CELL AND A CONFIGURATION LOGIC FOR TEMPORARILY RECONFIGURING THE MEMORY WITHOUT ALTERING THE PROGRAMMED STATE OF THE CONFIGURATION CELL

Rodney R. Rozman, Placerville; Michael P. Vital, Orangevale, and Peter K. Hazen, Auburn, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 68,641, May 27, 1993, abandoned. This application Aug. 22, 1995, Ser. No. 520,867

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—497.01 **3 Claims**



1. A nonvolatile memory, comprising:

(A) a configuration cell that stores a first configuration signal;

(B) a configuration register that stores a second configuration signal that can be at one of a first and a second state;

(C) a logic gate coupled to the configuration cell and the configuration register; and

(D) a multiplexer that selectively couples an output of one of (1) the configuration register and (2) the logic gate to a control circuit of the nonvolatile memory, wherein when the multiplexer couples the output of the configuration register to the control circuitry, the nonvolatile memory is configured by the second configuration signal, wherein when the multiplexer couples the output of the logic gate to the control circuit and the second configuration signal is at the first state, the logic gate passes the first configuration signal to the control circuit to configure the nonvolatile memory, wherein when the multiplexer couples the output of the logic gate to the control circuit and the second configuration signal is at the second state, the logic gate alters the first configuration signal without

reprogramming the configuration cell and passes an altered first configuration signal to the control circuit to configure the nonvolatile memory, wherein the configuration cell, the configuration register, the logic gate, and the multiplexer all reside on the same chip as the memory.

5,572,708

"HARDWARE SIMULATOR CAPABLE OF DEALING WITH A DESCRIPTION OF A FUNCTIONAL LEVEL"

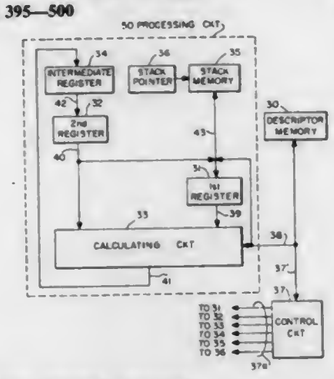
Shigeru Takasaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 486,705, Feb. 28, 1990, abandoned. This application Jun. 10, 1993, Ser. No. 74,725

Claims priority, application Japan, Feb. 28, 1989, 1-48225; May 24, 1989, 1-131079; Jun. 30, 1989, 1-166926; Dec. 7, 1989, 1-318102

Int. Cl.[6] G06F *15/20*

U.S. Cl. 395—500 **2 Claims**



1. A logic simulator comprising:

a descriptor memory for memorizing descriptors descriptive of a logic circuit as memorized descriptors, each descriptor of said memorized descriptors being one of variables and functional operators;

a first register connected to said descriptor memory for memorizing each variable of said memorized descriptors as a first datum;

a second register for memorizing a second datum, said second register being coupled to said first register via a signal path for selectively supplying said second datum from said second register to said first register;

calculating means connected to said first and said second registers and said descriptor memory for carrying out calculation on said first and said second data on the basis of one of said functional operators of said memorized operators to provide a result of calculation, said one of the functional operators joining said first and said second data;

refreshing means connected to said second register and said calculating means for carrying out refreshment of said second datum by said result of calculation; and

control means connected to said descriptor memory, said first and said second registers, said calculating means, and said refreshing means for controlling transfer of said each variable and said one of the functional operators from said descriptor memory to said first register, said calculating means, and said refreshing means, said control means controlling the transfer of said variables and functional operators to said first and second registers, and said calculating means sequentially in a serial fashion.

5,572,709

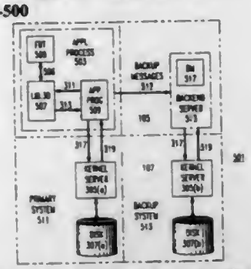
USING DYNAMICALLY-LINKED LIBRARIES TO ADD SIDE EFFECTS TO OPERATIONS

Glenn S. Fowler, Scotch Plains; Yennun Huang, Bridgewater, both of N.J.; David G. Korn, New York, N.Y., and Chung-Hwa H. Rao, Edison, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 18, 1993, Ser. No. 80,037

Int. Cl.[6] G06F *9/44;9/455*

U.S. Cl. 395—500 **13 Claims**



1. Apparatus for selectively adding a side effect to an operation which is performed by executing a function in a dynamically-linked library, the apparatus comprising:

means for associating an indication that the side effect is to be added with the operation; and

a dynamically-linked replacement library which replaces the dynamically-linked library and contains a replacement function, the replacement function performing the operation in the same manner as the function in the dynamically-linked library and further determining from the means for associating the indication whether the side effect is to be performed for the operation and performing the side effect when the means for associating the indication so indicates.

5,572,710

HIGH SPEED LOGIC SIMULATION SYSTEM USING TIME DIVISION EMULATION SUITABLE FOR LARGE SCALE LOGIC CIRCUITS

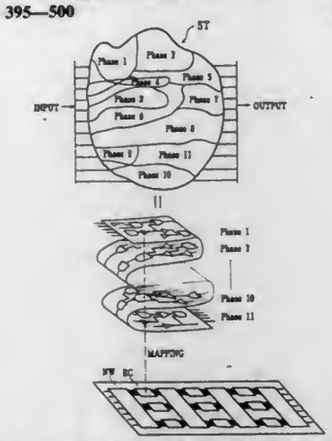
Shigehiro Asano; Shouzou Isobe; Jiro Amemiya, and Hirofumi Muratani, all of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 13, 1993, Ser. No. 120,220

Claims priority, application Japan, Sep. 11, 1992, 4-243755; Mar. 31, 1993, 5-073988

Int. Cl.[6] G06F *17/00;9/455*

U.S. Cl. 395—500 **26 Claims**



1. A logic simulation system for simulating a simulation target logic circuit, comprising:

a host computer having data of the simulation target divided into a plurality of sections defining different simulation phases to be executed sequentially in time division;

an emulator for emulating the simulation target, including:

a plurality of programmable emulation chip means for mapping the simulation target, each emulation chip means having memory means with a plurality of memory banks provided in correspondence to said plurality of sections for registering mapping data specifying a function to be realized by said each emulation chip means in emulating each of said plurality of sections;

programmable network means for interconnecting said plurality of emulation chip means; and

emulation control means for controlling said plurality of emulation chip means and the network means by sequentially switching the memory banks of the memory means of said each emulation chip means and changing connections among said plurality of emulation chip means provided by the network means in emulating each of said plurality of sections; and

interface means for interfacing the host computer and the emulator.

5,572,711

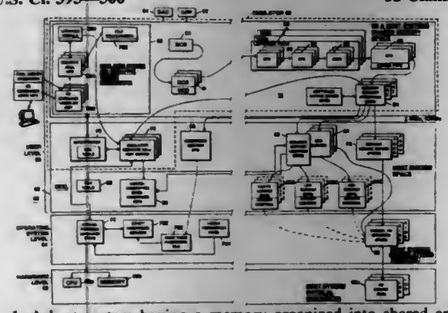
MECHANISM FOR LINKING TOGETHER THE FILES OF EMULATED AND HOST SYSTEM FOR ACCESS BY EMULATED SYSTEM USERS

Thomas S. Hirsch, Bedford; Richard S. Bianchi, Billerica, both of Mass., and Ron B. Perry, Wilton, N.H., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Continuation-in-part of Ser. No. 128,456, Sep. 28, 1993. This application Sep. 23, 1994, Ser. No. 311,646

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—500 **12 Claims**



1. A host system having a memory organized into shared and host memory areas and a hardware platform including a plurality of input/output devices operatively connected for executing host system instructions and for emulating the execution of emulated system instructions by an emulator running as an application process on said host system, said plurality of input/output devices including input/output devices for storing files contained within emulation system and host file systems, said emulator including a number of emulated system executive service components operating in said shared memory area comprising a command handler unit and file management component operatively coupled to said command handler unit for managing files of said emulated system file system and an interpreter, an emulator monitor call unit (EMCU) and server facilities operating in said host memory area, said host system further including operating system facilities for providing a number of services for host programs, said operating system facilities being coupled to said plurality of input/output devices and to said EMCU, said host system further including a link file facility for linking together files of said emulated file system and said host file systems, said link file facility comprising:

link file command handler means included within said command handler unit, said command handler means responsive to each link (LK) command specifying creating a link to a host file generating a standard file monitor call to said file management component accompanied by information coded in a predetermined manner for specifying characteristics of a host file for which said link is being created for writing as a directory link entry in a file of said emulated file system;

link file means included in said file management component in response to each standard file monitor call from said link file command handler means pertaining to accessing a file within said emulated file system associated with said link to said host file initializing predetermined data structures associated with said emulated system file operation in a predetermined manner for executing a special link operation and issuing an input/output request;

a user table (USTBL) mechanism located in said host memory area, said USTBL mechanism having a number of locations for storing unique user description entries generated by said EMCU for emulated system users whose identities were previously validated during login; and,

said server facilities including first server handler means including user security validation means, said security validation means in response to an input/output request generated by said file management component in response to an emulated system user request specifying access to the linked host file, performing a validation operation on an emulated system user by accessing said user table mechanism entry associated with said user requesting access to ascertain that access is being requested by a trusted user and would not compromise host system security and a second server means operatively coupled to said first server handler means, said second server means receiving said input/output request for executing a link file operation only when said validation operation confirms that the request was issued by a trusted user.

5,572,712

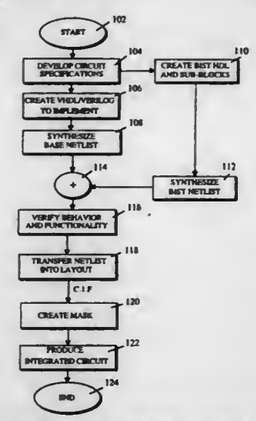
METHOD AND APPARATUS FOR MAKING INTEGRATED CIRCUITS WITH BUILT-IN SELF-TEST

Kamran Jamal, Sunnyvale, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Sep. 30, 1994, Ser. No. 315,460

Int. Cl.[6] G06F *17/00*

U.S. Cl. 395—500 **37 Claims**



1. A method for making a digital integrated circuit with built-in self-test comprising the steps of:

developing circuit specifications including base specifications describing base functionality and built-in self-test (BIST) specifications describing BIST functionality for a digital integrated circuit (IC);

describing said base specifications in a hardware description language (HDL) to create a base HDL and inputting said base HDL into a digital computer system;

creating on said digital computer system a BIST HDL utilizing both said base specifications and said BIST specifications;

synthesizing on said digital computer system a netlist derived from both said basic circuit HDL and said BIST HDL which specifies circuitry of said IC that includes both said base functionality and said BIST functionality; and

producing an IC as specified by said netlist comprising a semiconductor die including said circuitry of said IC, said semiconductor die having a plurality of I/O pads, a package enclosing said integrated circuit die, a plurality of leads extending from said package, and a plurality of conductors coupling said plurality of I/O pads of said semiconductor die to said plurality of leads.

5,572,713

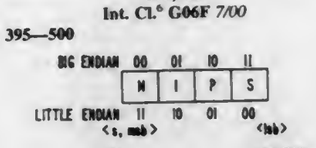
SYSTEM AND METHOD FOR OBTAINING CORRECT BYTE ADDRESSES BY USING LOGICAL OPERATIONS ON 2 LEAST SIGNIFICANT BITS OF BYTE ADDRESS TO FACILITATE COMPATIBILITY BETWEEN COMPUTER ARCHITECTURES HAVING DIFFERENT MEMORY ORDERS

Larry B. Weber, Palo Alto; Earl A. Killian, Los Altos, and Mark I. Himelstein, San Jose, all of Calif., assignors to Silicon Graphics, Inc., Mountain View, Calif.

Continuation of Ser. No. 127,105, Sep. 27, 1993, Pat. No. 5,398,328, which is a continuation of Ser. No. 564,923, Aug. 9, 1990, abandoned. This application Jan. 27, 1995, Ser. No. 379,710

Int. Cl.[6] G06F *7/00*

U.S. Cl. 395—500 **11 Claims**



LOW TWO BITS	<s, msb x lsb>		LOW TWO BITS XOR 3
00	N	S	11
01	I	P	10
10	P	I	01
11	S	N	00

1. A method for converting a program designed to be executed on a computer system employing a first predefined memory order to a program which is executable on a computer system employing a second predefined memory order different from said first predefined memory order, the method comprising the steps of:

finding all instructions in the program which operate on bytes of data, each of said bytes of data having a byte address, each byte address having two least significant bits;

operating on the two least significant bits of each byte address using a logic function to thereby generate two complementary bits for each byte address; and

replacing the two least significant bits of the byte address with two complementary bits to thereby generate a new byte address for each of said bytes of data.

5,572,714

INTEGRATED CIRCUIT FOR PIPELINE DATA PROCESSING

Yasuhiro Nakakura, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 21, 1993, Ser. No. 139,162

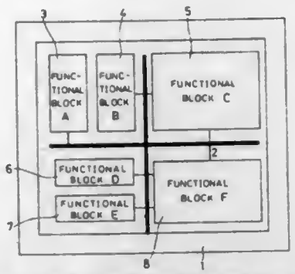
Claims priority, application Japan, Oct. 23, 1992, 4-285713

Int. Cl.[6] G06F *11/12*

U.S. Cl. 395—555 **15 Claims**

1. An integrated circuit comprising:

a timing adjustment means which receives a clock signal and changes an output timing of said received clock signal to



produce an adjusted clock signal, a time cycle of which is identical with that of said received clock signal;

a first latch which receives, as a first input clock signal, either said received clock signal or said adjusted clock signal, said first latch for latching data in synchronization with said first input clock signal and for transmitting output data which was latched in said first latch in a time interval of said first input clock signal;

a first logic element which receives said output data from said first latch, starts a first process with respect to said output data from said first latch, and outputs a processed result upon completion of said first process;

a second latch which receives, as a second input clock signal, either said received clock signal or said adjusted clock signal, whichever of said clock signals is not input to said first latch, said second latch for latching an output of said first logic element in synchronization with said second input clock signal, said second latch further transmitting output data which was latched in a time interval of said second input clock signal;

a second logic element which receives said output data from said second latch, starts a second process with respect to the output data from said second latch, and outputs a processed result upon completion of said second process,

wherein either said first or said second logic element has a shorter processing time than the time cycle of said received clock signal and said adjusted clock signal, while the other logic element has a longer processing time than the time cycle of said received clock signal and said adjusted clock signal,

whereby either said first or said second logic element, whichever has said shorter processing time, is completed during the time cycle of either said received or said adjusted clock signal, and said first or said second logic element, whichever has said longer processing time, is completed in a time cycle comprising a period of time remaining in the time cycle of either said received or said adjusted clock signal, after completion of said shorter processing time, in addition to the time cycle of the other clock signal.

5,572,715

ARCHITECTURE AND CIRCUITS FOR ELIMINATING SKEWS IN PLDS

Shiva P. Gowni, Mississippi, Miss., assignor to Cypress Semiconductor Corporation, San Jose, Calif.

Continuation of Ser. No. 657,094, Feb. 15, 1991, abandoned. This application Nov. 15, 1993, Ser. No. 151,469

Int. Cl.[6] G06F *13/00*

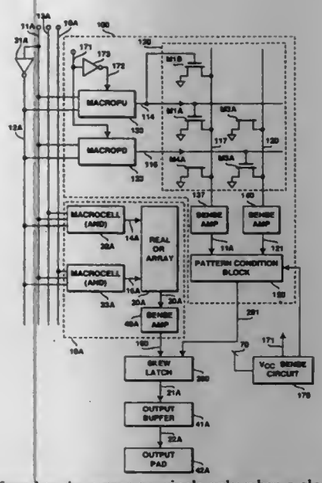
U.S. Cl. 395—555 **13 Claims**

1. A programmable logic device architecture for the elimination of timing skews in output data from the programmable logic device due to memory logic array pattern sensitivity, comprising:

input terminals, one of which receives a clock pulse and one of which receives an input signal;

an output circuit from said programmable logic device including a skew latch having output terminals;

a real signal path enabled by the clock pulse having an output and a worst case delay coupled between said input terminals and said skew latch, said skew latch causing real data to be



transferred to the output terminals only when a clock input of the skew latch is in one of two possible conditions but not when the clock input to the skew latch is in the other condition, thus preventing the input signal from arriving at the output terminals prior to a predetermined acceptable time as well as preventing the data at the output terminals from changing when the clock input to the skew latch is in the other of the two possible conditions;

an emulation signal path coupled between the signal input terminal and said skew latch, said emulation signal path generating at the output of the emulation signal path, only once during the clock pulse, a signal having a delay at least substantially equal to said worst case delay in said real signal path;

whereby an output signal from said skew latch can emerge only when enabled by a signal from said emulation signal path after a time equal to or greater than said worst case delay through said real signal path, thereby completely preventing timing skews in the output data from causing premature change of the data at the output terminals of the programmable logic device.

5,572,716

METHOD AND APPARATUS FOR DETERMINING TIME-RELATED OPERATING PARAMETERS FOR COMPUTERS

Michael G. Meisner, 1197 Fairfield, Santa Clara, Calif. 95050

Filed Mar. 25, 1994, Ser. No. 217,955

Int. Cl.[6] G06F *1/08*

U.S. Cl. 395—555 **30 Claims**

1. A method for determining input oscillator frequency for a computer having a CPU microprocessor and a communication bus with a bus cycle composed of X bus CLKs, comprising the steps of:

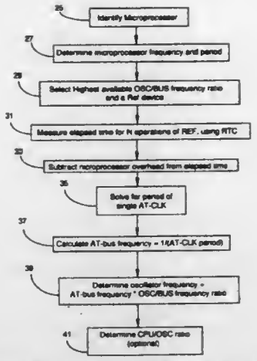
(a) identifying a frequency ratio R between the input oscillator and the bus;

(b) selecting a microprocessor-independent reference device connected to the bus;

(c) measuring elapsed time for a pre-programmed number of operations of the reference device using a timing reference independent of the input oscillator, each operation requiring X bus CLKs;

(d) calculating the period for a single bus CLK by dividing the elapsed time by the pre-programmed number of operations and by X;

(e) calculating the operating frequency of the bus by taking the inverse of the period for a single bus CLK; and



(f) determining the frequency of the input oscillator by multiplying the operating frequency of the bus by R.

5,572,717

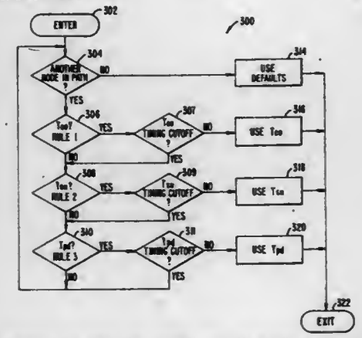
METHOD AND APPARATUS FOR ASSIGNING AND ANALYZING TIMING SPECIFICATIONS IN A COMPUTER AIDED ENGINEERING PROGRAM

Bruce Pedersen, San Jose, Calif., assignor to Altera Corporation, San Jose, Calif.

Filed Apr. 6, 1994, Ser. No. 223,914

Int. Cl.[6] G06F *15/60*

U.S. Cl. 395—555 **9 Claims**



1. A method for applying timing specifications in a logic design, wherein the logic design includes logic design inputs, logic design outputs and a plurality of logic elements coupled together to form at least one path from a logic design input to one or more logic design outputs via the plurality of logic elements, wherein a logic element includes at least one logic element input and at least one logic element output for coupling to other logic elements, the logic design inputs and the logic design outputs, wherein each logic element, logic element input, logic element output, logic design input and logic design output comprises a node, wherein one or more nodes exist on the paths, the method executing on a computer system operated by a human user, the computer system including a processor coupled to a user input device and an output device, the method comprising the steps of:

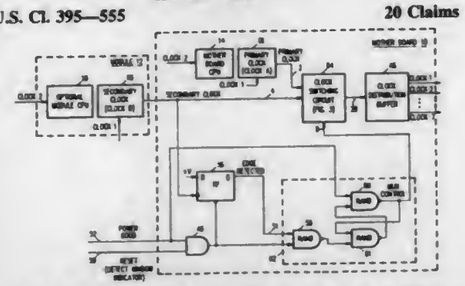
(a) inputting a timing specification by a user using the user input device, wherein the timing specification comprises a timing parameter assigned to a first user-selected node in a path;

(b) using the processor to identify a path that originates at a logic design input, passes through the first node, and terminates at a logic design output;

(c) using the processor to determine a timing property of an electrical signal transmitted through the identified path, wherein the timing property corresponds with the timing parameter;

(d) using the processor to compare the timing property of the identified path with the timing parameter; and
(e) using the output device to indicate the relationship of the identified path's timing property to the timing parameter.

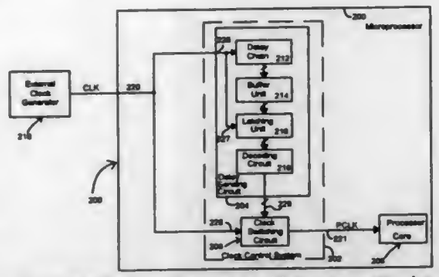
5,572,718
MECHANISM FOR DYNAMICALLY DETERMINING AND DISTRIBUTING COMPUTER SYSTEM CLOCKS
Mike Scriber, North Plains, and Bruce Young, Tigard, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.
Filed Jun. 14, 1994, Ser. No. 259,472
Int. Cl.[6] G06F *1/04*
U.S. Cl. 395—555 **20 Claims**



1. An apparatus for automatically selecting a clock during a power on sequence of a computer comprising:
a mother board having a clock A thereon;
said clock A having a clock A output;
a module having a clock B thereon;
said clock B having a dock B output;
said mother board including a socket for receiving said module;
said socket having a clock B socket terminus connected to said clock B output;
a clock switching circuit having a clock output;
said clock switching circuit being connected to said clock A output and to said clock B socket terminus;
a control line;
said clock switching circuit being connected to said control line;
said clock switching circuit causing said clock B output to be gated to said clock output upon a condition that said control line is asserted;
an edge detector connected to said clock B socket terminus;
said edge detector asserting an edge detected output upon a condition that an edge of said clock B output occurs;
a detection window indicator;
said detection window indicator being asserted upon a predetermined condition that occurs in response to power on; and,
a control circuit connected to said control line, to said edge detected output and to said detection window indicator;
said control circuit asserting said control line upon a condition that said edge detected output is asserted during a time said detection window indicator is asserted.

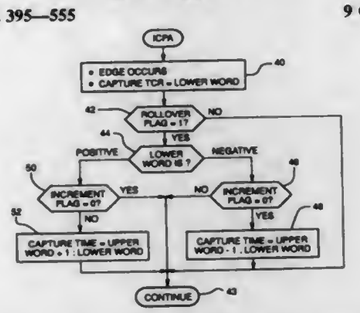
5,572,719
CLOCK CONTROL SYSTEM FOR MICROPROCESSORS INCLUDING A DELAY SENSING CIRCUIT
Randall P. Biesterfeldt, Austin, Tex., assignor to Advanced Micro Devices, Sunnyvale, Calif.
Filed Nov. 22, 1994, Ser. No. 343,646
Int. Cl.[6] G06F *1/08*
U.S. Cl. 395—555 **20 Claims**

1. A microprocessor comprising:
a processor core configured to execute a predetermined instruction set;



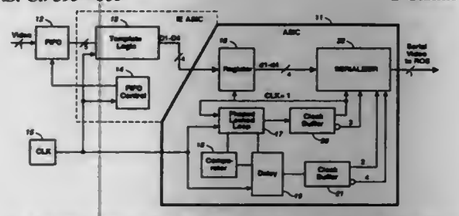
a clock switching circuit coupled to said processor core, wherein said clock switching circuit is configured to provide an internal clock signal to said processor core, and wherein said clock switching circuit is configured to selectively vary a frequency of said internal clock signal based on a control signal; and
a delay sensing circuit coupled to said clock switching circuit, wherein said delay sensing circuit is configured to generate said control signal dependent upon an extent of propagation of a given clock signal through said delay sensing circuit.

5,572,720
METHOD OF EXTENDING CAPACITY OF A MICROPROCESSOR TIMER
Raymond B. Reed, Noblesville, Ind.; Sandesh Malpure, Novi, Mich., and Larissa C. Chu, Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.
Filed Jan. 17, 1995, Ser. No. 373,690
Int. Cl.[6] G06F *1/14*
U.S. Cl. 395—555 **9 Claims**



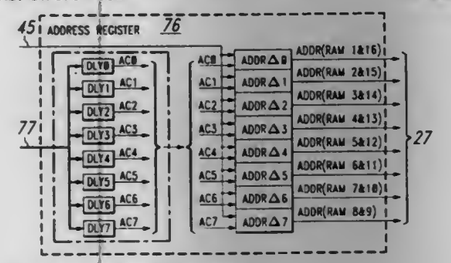
1. In a timer unit of a microprocessor having a hardware timer comprising a first register of fixed capacity, a software method of extending the timer capacity comprising the steps of:
detecting rollover of the first register;
incrementing a second register in response to detection of rollover of the first register;
upon reading the timer, checking the first and second register values for non-coherency;
when non-coherency is detected, adjusting one of the register values to achieve coherency; and
concatenating the first and second register values to represent the lower and upper words, respectively, of timer value.

5,572,721
HIGH SPEED SERIAL INTERFACE BETWEEN IMAGE ENHANCEMENT LOGIC AND ROS FOR IMPLEMENTATION OF IMAGE ENHANCEMENT ALGORITHMS
Farhad Rostamian, Los Angeles, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 13, 1994, Ser. No. 355,374
Int. Cl.[6] G06F *1/04;9/315*
U.S. Cl. 395—555 **2 Claims**



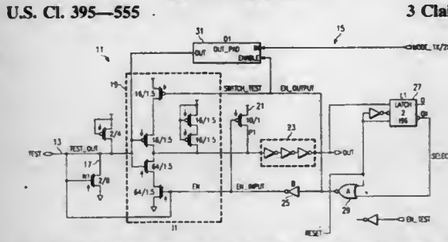
1. A circuit for receiving an input clock pulse, the time between input clock pulses being the time T, and n data bits per input clock pulse in parallel on n data lines, and for outputting said n data bits serially on a single output data line at the rate of n bits per input clock pulse, comprising:
means comprising a phased locked loop responsive to said input clock pulse for generating n output clocks, each output clock delayed T/n from the previous output clock, and
means responsive to said n data bits and said n output clocks for outputting one data bit for each output clock.

5,572,722
TIME SKEWING ARRANGEMENT FOR OPERATING RANDOM ACCESS MEMORY IN SYNCHRONISM WITH A DATA PROCESSOR
Wilbur C. Vogley, Missouri City, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 891,483, May 28, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 487,374
Int. Cl.[6] G06F *13/00;1/04*
U.S. Cl. 395—555 **1 Claim**



1. An address register comprising:
an address bus;
a plurality of register circuits, each for storing a bit of an address received by way of the address bus;
a lead for applying a clock signal;
a plurality of time delay circuits, having various time delays and responsive to the clock signal, and having a cycle period for producing a group of clock signals occurring at different times within the cycle period; and
ones of the group of clock signals being applied to the register circuits for enabling transmission of the address bits from the register circuits at the different times.

5,572,723
DYNAMIC CLOCK MODE INDICATOR
Kevin C. Parmenter, Carrollton, and Yutaka Takahashi, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 135,698, Oct. 12, 1993, abandoned. This application Dec. 14, 1995, Ser. No. 572,133
Int. Cl.[6] G06F *1/04*
U.S. Cl. 395—555 **3 Claims**



1. A clock mode indicator for indicating a clock mode of a processing system, selectable during assertion of a reset signal, comprising:
a pin, usable as an input;
an output circuit, connected to receive a clock mode signal and provide said signal to said pin;
an input circuit, connected to receive data on said pin and provide said data to said processing system;
selection means, responsive to the assertion of said reset signal and to a select signal asserted on said pin, for enabling said output circuit, disabling said input circuit and thereby selecting said pin for indicating clock mode when said reset signal is asserted and a first predetermined signal level of said select signal is asserted, and for, alternatively, enabling said input circuit. disabling said output circuit and thereby selecting said pin for use as an input when said reset signal is asserted and a second predetermined signal level of said select signal is asserted.

5,572,724
SYSTEM FOR CONTROLLING COMMUNICATIONS BETWEEN AN APPLICATION AND A REMOTE SYSTEM USING A PROTOCOL IDENTIFIER AND AN APPLICATION CONTEXT IDENTIFIER
Tetsuya Watanabe, Yokohama; Hiromichi Ishikawa, Fujisawa, and Masaaki Hatano, Osaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Seibu Software Co., Ltd., Osaka, both of Japan
Filed Oct. 12, 1993, Ser. No. 133,852
Claims priority, application Japan, Oct. 12, 1992, 4-272668
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—616 **16 Claims**

TABLE NAME	IDENTIFIER OF DESTINATION SYSTEM
TABLE 1	N 1
TABLE 2	N 0
TABLE 3	N 2

IDENTIFIER OF DESTINATION SYSTEM	IDENTIFIER OF PROTOCOL
N 1	ROA
N 2	RDA
N 2	RPC
N 3	RDA

1. A method for establishing a communications link between at least one pair of computer systems within a distributed system, which includes a plurality of computer systems interconnected to one another along a communications network, said method comprising the steps of:

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executing an applications program within a source system to extract therefrom destination information identifying a destination system;

determining a protocol identifier based on the destination information derived from execution of said applications program;

determining an application context identifier based on said protocol identifier;

completing a communications path between the source and destination systems based on said protocol and application context identifiers.

5,572,725

EPITAXIALLY STRENGTHENED SINGLE CRYSTAL ALUMINUM GARNET REINFORCEMENT FIBERS

Robert C. Morris; Devlin M. Gualtieri, both of Ledgewood; Dave Narasimhan, Flemington, and Philip J. Whalen, Sparta, all of N.J., assignors to AlliedSignal, Inc., Morris Township, N.J.

Continuation-in-part of Ser. No. 867,569, Apr. 13, 1992, abandoned. This application Oct. 29, 1993, Ser. No. 143,030

Int. Cl.[6] B22F *7/04;7/08*

U.S. Cl. 428—555 **23 Claims**

1. A reinforcement fiber comprising a fiber body formed from a single crystal aluminum garnet, said fiber body having deposited thereon an epitaxial aluminum garnet layer which provides a strain of from about 0.02 to about 0.40 percent on said single crystal fiber body.

5,572,726

ELECTRONIC FILING APPARATUS

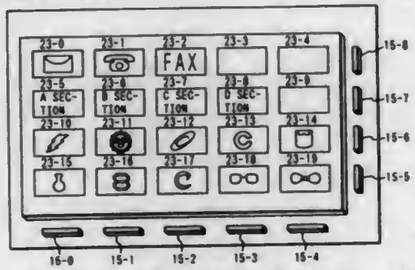
Kamon Hasuo, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 76,684, Jun. 15, 1993, abandoned, which is a continuation of Ser. No. 477,470, Feb. 9, 1990, abandoned. This application Sep. 16, 1994, Ser. No. 307,034

Claims priority, application Japan, Feb. 9, 1989, 1-30794; Mar. 7, 1989, 1-54557; Mar. 7, 1989, 1-54558

Int. Cl.[6] G06F *7/28;15/40*

U.S. Cl. 395—616 **26 Claims**



1. An electronic filing apparatus for retrieving desired image information from a storage medium storing a plurality of image information, said apparatus comprising:

storage means for prestoring a plurality of index images and relation data representative of a relation between each of the plurality of index images and each of the plurality of image information, the index image being an image of a predetermined size, representative of an index for retrieval of image information stored in said storage medium, each of the index images being able to be used as an index of the plurality of image information and being formed from an original image for index information;

display means having a plurality of display locations for displaying the index images read out from said storage means;

index image selection keys each provided for each row of the index images displayed by said display means, for tentatively selecting the index images of a row corresponding to each index image selection key;

a decision key for regularly selecting the index images tentatively selected by said index image selection keys;

display control means for changing a display mode of each of the index images of a row to be tentatively selected by said index image selection keys to a first display mode each time the index image selection key corresponding to the row is depressed, in order to indicate that the index image to be tentatively selected is changed and for changing the display mode of the index image displayed with the first display mode to a second display mode in response to depression of said decision key, in order to indicate that the index image displayed with the second display mode is regularly selected; and

retrieval means for retrieving more than one of the information stored in the storage medium according to the index images regularly selected by said decision key and the relation data stored in said storage means.

5,572,727

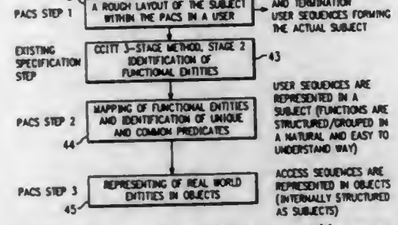
SOFTWARE STRUCTURE FOR TELECOMMUNICATION SWITCHING SYSTEMS

G. Hakan Larsson; Kerstin M. Odling; K. Ake Rosberg, all of Tyreso, and J. Hakan Karlsson, Stockholm, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Division of Ser. No. 289,997, Aug. 12, 1994, Pat. No. 5,388,258, which is a continuation of Ser. No. 800,537, Nov. 27, 1991, abandoned. This application Feb. 6, 1995, Ser. No. 383,817

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—616 **24 Claims**



1. A computer system containing executable program code developed with a declarative programming language, said computer system operating to provide telecommunications services, said system comprising:

a plurality of telecommunications hardware devices with device parameters and specifications for processing telecommunications data within said computer system;

a plurality of objects, each object including a sequence of executable instructions with necessary device parameters and specifications for controlling one of said hardware devices;

a plurality of device independent predicates, each predicate including a sequence of executable instructions with object parameters and specifications for invoking one or more of said objects to control the execution of a specific telecommunications function through one or more of said plurality of hardware devices; and

one or more device-and-object independent subjects, each subject including a sequence of executable instructions each invoking one or more predicates to, in turn, invoke one or more objects to control the execution of a specific telecommunications service through associated hardware devices and allowing each subject to control telecommunication service execution without specifying object parameters or specifications for any invoked objects or any device parameters or specifications for the associated hardware devices.

5,572,728

CONFERENCE MULTIMEDIA SUMMARY SUPPORT SYSTEM AND METHOD

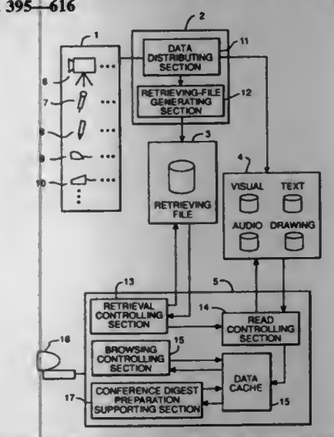
Katsumi Tada, Yokohama; Itaru Mimura, Sayama; Mitsuru Ikezawa, Kodaira, and Taizo Kinoshita, Tachikawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 363,820

Claims priority, application Japan, Dec. 24, 1993, 5-326822

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—616 **20 Claims**



1. A multimedia summary preparation supporting system, comprising:

data input means for inputting summary data;

data storing means for holding the summary data input by said data input means;

data registering means for storing the summary data input by the data input means into the data storing means, analyzing times of occurrence of events represented in the summary data, and generating a retrieving file containing information indicating summary data that meet a specified retrieval condition;

retrieving file storing means for storing the retrieving file generated by the data registering means; and

summary preparation supporting means for supporting the preparation of a summary by reading the summary data from the data storing means by reference to the retrieving file stored in the retrieving file storing means, for displaying the summary data, and for editing the summary data;

wherein the summary preparation supporting means simultaneously displays a retrieval and browsing area and a digest area.

5,572,729

METHOD FOR STATELESS RENAME PROPAGATION BETWEEN HIERARCHICAL FILE NAME SPACES

Claeton J. Giordano, Menlo Park, and Evan W. Adams, San Leandro, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

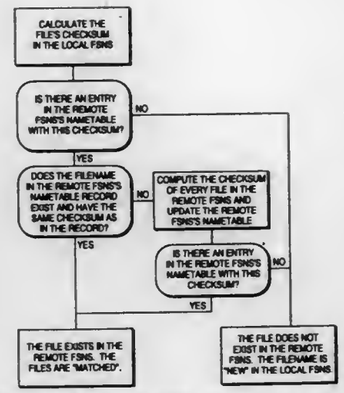
Filed Jan. 11, 1994, Ser. No. 180,041

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—616 **6 Claims**

1. A method for the propagation of a renamed filename from a first file system name space (FSNS) to a second FSNS, the method comprising the steps of:

matching the files, in the first FSNS, which have been renamed with those files, in the second FSNS, having the same checksum, wherein the checksum uniquely identifies each file regardless of its current name;



determining a rename state for each matched file of the first and second FSNS; and

propagating the renamed filename from the first FSNS to the second FSNS for each matched file for which the renamed filename has not already been propagated.

5,572,730

METHOD OF GARBAGE COLLECTION PERFORMED UPON COMPLETION OF FUNCTION EXECUTION

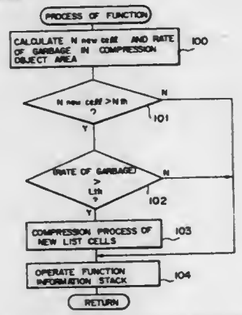
Toshihiko Oda, Sagamihara, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 906,481, Jun. 30, 1992, abandoned. This application Apr. 18, 1995, Ser. No. 425,216

Claims priority, application Japan, Jul. 4, 1991, 3-164199; Jul. 10, 1991, 3-169681; Dec. 24, 1991, 3-339188

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—616 **10 Claims**



1. A storage management method in an information processing system in which a program is executed, the program including functions which each treat list structure data, said storage management method comprising:

a) generating list cells in a cell storage area so that the list cells are successively arranged in said cell storage area while a function is being executed; and

b) upon completion of functions in the program, collecting from said cell storage area disused list cells constituting list cells which will not be used in the program, only when a ratio of:

space unused at function completion to

space used while the function is executed

crosses a threshold, so that said disused list cells in said cell storage area may be efficiently reclaimed.

5,572,731

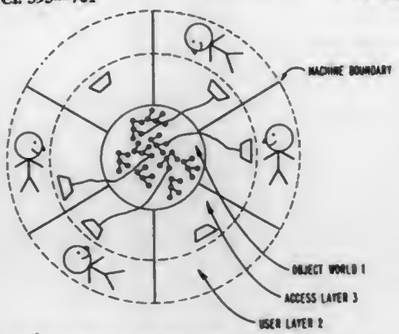
SEQUENTIALLY NAVIGATED OBJECT ORIENTED COMPUTER SYSTEM

William P. Morel, Redmond, Wash.; Christopher Robson, Corvallis, Oreg., and Hugh Duggan, Bristol, England, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 778,836, Dec. 30, 1992, abandoned. This application Jun. 29, 1993, Ser. No. 84,407

Int. Cl.[6] G06F 9/44

U.S. Cl. 395—701 10 Claims



1. An object based computer system comprising:

at least one computer programmed to support objects; and

a plurality of objects associated with said at least one computer, said plurality of objects comprising:

a plurality of semantic objects;

at least one viewer, the at least one viewer linked to one of the plurality of semantic objects; and

a sequence object having a stored navigational path data, the navigational path data being a temporal ordered listing of at least one of the semantic objects of the plurality of semantic objects, the sequence object linked to the at least one viewer to provide the navigational path data in a controlled manner to the at least one viewer so that the at least one viewer can navigate along a particular path, the temporal ordered listing of the at least one of the semantic objects of the plurality of semantic objects which comprise the navigational path data of the sequence object so that the at least one viewer can follow the particular path and view the at least one semantic object therealong.

5,572,732

METHOD AND SYSTEM FOR PROCESS EXPRESSION AND RESOLUTION INCLUDING A GENERAL METHOD OF DIRECT ASSOCIATION

Karl M. Fant, and Scott A. Brandt, both of Minneapolis, Minn., assignors to Theseus Research, Inc., Minneapolis, Minn.

Continuation of Ser. No. 837,641, Feb. 14, 1992, Pat. No. 5,355,496. This application Aug. 26, 1994, Ser. No. 296,809

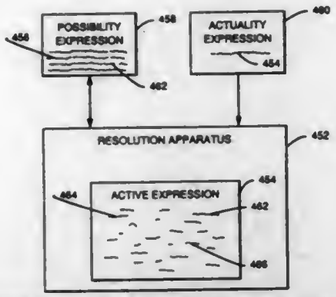
Int. Cl.[6] G06F 9/00

U.S. Cl. 395—701 8 Claims

1. A process expression and resolution system including a general method of direct association, comprising:

(a) a first language structure comprising a named result reference which is a destination for a result string for a directly associated correspondingly named resultant;

(b) a second language structure comprising a result link, a first end of the result link being located within a formal list of a definition, a second end of the result link being directly associated by list position and located within an actual list of an invocation; a third language structure comprising the resultant, the resultant being associated with a language element selected from the group consisting of the correspondingly named result reference and the correspondingly named result link; and



(d) resolution means for replacing the named result reference associated with the correspondingly named resultant with the resultant result string such that a language expression is resolved.

5,572,733

DATA PROCESSING SYSTEM WHICH EXECUTES COMPOSITE OBJECTS BY COMBINING EXISTING OBJECTS

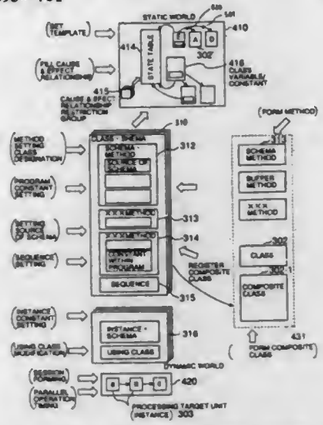
Tadamitsu Ryu; Hiroyuki Izumi; Masahiko Murakawa; Masanobu Toyota; Takeshi Adachi, all of Kawasaki, and Naomi Ichikawa, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 23, 1994, Ser. No. 247,695

Claims priority, application Japan, May 25, 1993, 5-122561

Int. Cl.[6] G06F 9/00

U.S. Cl. 395—701 6 Claims



1. A data processing system for executing a process, comprising:

means for forming classes and composite classes by combining methods;

means for forming instances which correspond to the classes and composite classes;

means for analyzing the real world as an object model which includes a static world, a dynamic world and a cause and effect relationship, the object model having a corresponding extension and a corresponding connotation, the connotation being in an information concealed region, and identification information identifies the extension and connotation;

means for creating a system mechanism with respect to the static world using the classes and composite classes, the system mechanism being a static model for the static world;

means for using the instances to form a session corresponding to motion with respect to the dynamic world, the session being a dynamic model for the dynamic world, the cause and effect relationship of the object model being generated from the dynamic model into the static model;

means for forming a functional model in the connotation, the functional model including composite objects formed from the methods, the classes, the composite classes and the session;

means for storing, in the connotation, a minimum number of methods, classes, and composite classes required to form the composite objects of the functional model;

means for using the identification information to assign object identifications to composite objects of the functional model, to identify composite objects of the functional model; and

means for executing a process by using the object identifications to identify composite objects of the function model for use in the process.

5,572,734

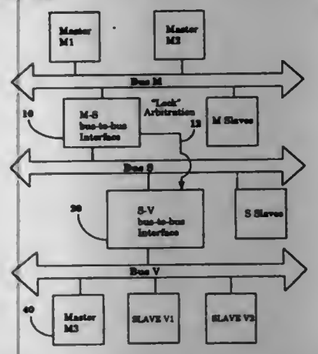
METHOD AND APPARATUS FOR LOCKING ARBITRATION ON A REMOTE BUS

Charles E. Narad, Santa Clara, and Neil MacAvoy, Redwood City, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 766,834, Sep. 27, 1991, abandoned. This application May 2, 1995, Ser. No. 432,887

Int. Cl.[6] H04L 12/28

U.S. Cl. 395—726 30 Claims



1. In a multiple processor, multiple bus computer system having a first bus, a second bus and a remote target slave bus intercoupled to a plurality of bus-to-bus interfaces, a method for preserving an indivisible sequence of bus operations on said remote target slave bus while contemporaneously releasing the first bus and the second bus for use by other devices within the computer system, said method comprising the steps of:

issuing a slave access signal including an operation command by an accessing master on the first bus directed to a target slave;

issuing an atomic sequence signal, together with the slave access signal, said atomic sequence signal indicating that an indivisible sequence of bus operations is beginning;

intercoupling said accessing master on the first bus to a multiplicity of buses;

initiating a transaction on the second bus by a first bus-to-bus interface, said first bus-to-bus interface coupling the first bus and the second bus;

using a remote target slave bus to couple a remote target slave bus-to-bus interface to a target slave, said remote target slave bus-to-bus interface coupling the second bus with the remote target slave bus;

transmitting the transaction along with the atomic sequence signal to the remote target slave bus-to-bus interface by the first-bus-to-bus interface when the first bus-to-bus interface has obtained control of the second bus;

receiving and storing the slave access signal and transaction on the remote target slave bus-to-bus interface;

transmitting a lock arbitration signal to the remote target slave bus-to-bus interface to lock arbitration on the remote target slave bus, thereby reserving said remote target slave bus for use only by the accessing master to access the target slave;

reserving said remote target slave bus for use only by said accessing master to access said target slave by transmitting a lock arbitration signal to the remote target slave bus-to-bus interface to lock arbitration on the remote target slave bus,

relinquishing the first bus, the second bus, the first bus-to-bus interface connecting said accessing master to said remote target slave bus-to-bus interface prior to completion of said indivisible sequence of bus operations, thereby releasing the first bus, the second bus, the first bus-to-bus interface for access by a master other than said accessing master during said indivisible sequence of bus operations; and

relinquishing the remote target slave bus and remote target slave bus-to-bus interface after said accessing master issues a final operation of the indivisible sequence of bus operations.

5,572,735

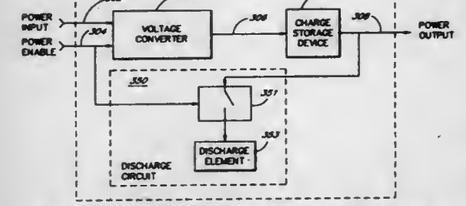
METHOD AND APPARATUS FOR DISCHARGING THE OUTPUT VOLTAGE OF A DC POWER SUPPLY

Roy K. Tanikawa, Irvine, Calif., assignor to AST Research, Inc., Irvine, Calif.

Filed May 27, 1994, Ser. No. 250,596

Int. Cl.[6] G06F 1/26

U.S. Cl. 395—750 3 Claims



1. A contrast power supply in a computer, said computer comprising an LCD panel, a CPU, and a main power supply, said contrast power supply comprising:

a voltage converter, said voltage converter connected to receive power from said main power supply on a first power line, said power on said first power line comprising a direct current voltage, said voltage converter further connected to receive a contrast enable signal, said contrast enable signal having a first state and a second state, said voltage converter responsive to said contrast enable signal to generate power on a second power line when said contrast enable signal is in said first state, wherein said voltage converter comprises a switching voltage regulator;

a charge storage device, said charge storage device connected to receive said power from said voltage converter on said second power line, said charge storage device further connected to accumulate a charge from said power on said second power line and to drive said LCD panel with the voltage from said accumulated charge, said charge storage device comprising a capacitor; and

a discharge circuit, said discharge circuit coupled to said charge storage device, said discharge circuit responsive to said contrast enable signal being in said second state to discharge the charge accumulated at said charge storage device within a time period that substantially avoids damage to said LCD panel while said LCD panel remains connected to said charge storage device, wherein said discharge circuit comprises:

a resistor; and

a switch, said switch responsive to said contrast enable signal, said switch configured to allow said charge storage device to discharge an accumulated charge through said resistor

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when said contrast enable signal is in said second state, said switch further configured to substantially prevent said charge storage device from discharging through said resistor when said contrast enable signal is in said first state, wherein said switch comprises at least one MOSFET,

wherein said switching regulator comprises:

a voltage regulator circuit, said voltage regulator circuit configured to generate a pulse width modulated signal, said pulse width modulated signal having a first state and a second state;

an inductor; and

a transistor, said transistor connected to receive said power on said first power line, said transistor further connected to receive said pulse width modulated signal from said voltage regulator circuit, said transistor responsive to said pulse width modulated signal to couple said power on said first power line to said inductor when said pulse width modulated signal is in said first state and to substantially isolate said power on said first power line from said inductor when said pulse width modulated signal is in said second state, said inductor configured to store energy when said inductor is coupled to said power on said first power line and to release energy when said inductor is isolated from said power on said first power line, said capacitor connected to receive said energy released by said inductor to accumulate said charge, said voltage regulator circuit responsive to said accumulated charge to adjust the pulse width of said pulse width modulated signal to generate a predetermined output voltage.

5,572,736

METHOD AND APPARATUS FOR REDUCING BUS NOISE AND POWER CONSUMPTION

Brian W. Curran, Saugerties, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

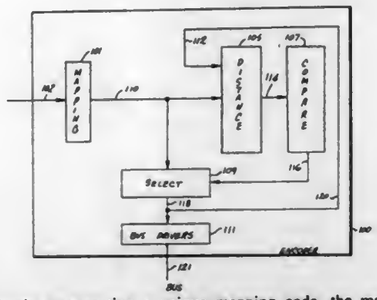
Filed Mar. 31, 1995, Ser. No. 414,554

Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—750 **8 Claims**

1. A data encoder circuit comprising:

a mapping circuit connected to a data bus and comprising a plurality of differing encoding circuits, each of the encoding



circuits representing a unique mapping code, the mapping circuit operative to generate a plurality of code words from a data word on the data bus comprising a predefined number of data bits, each of the code words being generated from the predefined number of data bits in accordance with a predetermined one of the mapping codes and comprising a plurality of bit positions;

a distance computation circuit connected to the mapping circuit and operative to generate a plurality of distance codes, each of the plurality of distance codes uniquely associated with one of the code words, each of the distance codes indicative of the number of bits positions of an associated code word which differ from corresponding bit positions of a previously transmitted code word;

a compare circuit connected to the distance computation circuit for comparing the distance codes and generating an output identifying a code word associated with one of the distance codes indicative of the fewest bit positions which differ from the corresponding bit positions of the previously transmitted control word; and

a select circuit connected to the mapping circuit and the compare circuit and having output terminals connectable to a plurality of bus driver circuits, the select circuit responsive to the output of the compare circuit to selective gate a code word identified by the compare circuit output to the bus drivers.

DESIGN PATENTS

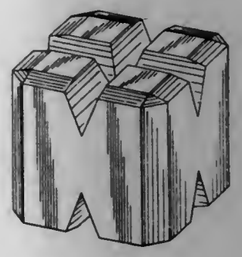
GRANTED November 5, 1996

ERRATA

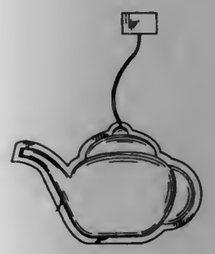
For CLASS	See PATENT NO.
D3–213	D375184

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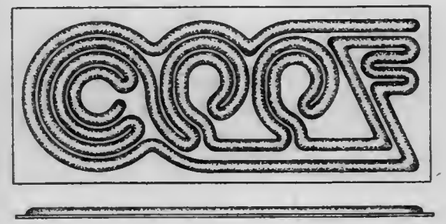
375,181
ANIMAL FEED BLOCK
David F. Tourney; Donald J. Blair; Melvin L. Maas, and Mark S. Eickelschulte, all of Quincy, Ill., assignors to Moorman Manufacturing Company, Quincy, Ill.
Filed Nov. 16, 1994, Ser. No. 31,060
Term of patent 14 years
U.S. Cl. D1—100



375,182
TEABAG WITH TEAPOT SHAPE
Karen A. Tillquist, 484 Country School Rd., West Dundee, Ill. 60118
Filed Jan. 25, 1996, Ser. No. 49,437
Term of patent 14 years
U.S. Cl. D1—106



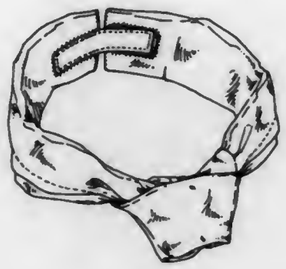
375,183
COMBINED FOOD PRODUCT AND SUPPORT BOARD THEREFOR
Timothy J. Gluszak, Eden Prairie, and Craig E. Zimmermann, Waconia, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.
Filed Dec. 4, 1995, Ser. No. 47,443
Term of patent 14 years
U.S. Cl. D1—125



375,184
BABY CARRIER
Frank Hickli, and C. Leanne Hickli, both of 256 Pensville Close S.E., Calgary, Alberta, Canada
Filed Nov. 21, 1994, Ser. No. 31,177
Term of patent 14 years
U.S. Cl. D3—213



375,185
NECKTIE WITH CHEF KNOT
Joseph W. DiPerri; Patricia E. DiPerri, both of 47 Lorraine Dr., Rhinebeck, N.Y. 12572; Scott C. Sharinn, 525 E. 86th St., Apt. 3G, New York, N.Y. 10028, and Edward O'Neill, 189 Rugby Rd., Brooklyn, N.Y. 11226
Filed Nov. 13, 1995, Ser. No. 46,281
Term of patent 14 years
U.S. Cl. D2—605



375,186
MAGNETIC BELT
Jong H. Kim, Northbrook, Ill., assignor to Unidex Group, nc., Des Plaines, Ill.
Filed Oct. 11, 1995, Ser. No. 45,157
Term of patent 14 years
U.S. Cl. D2—627



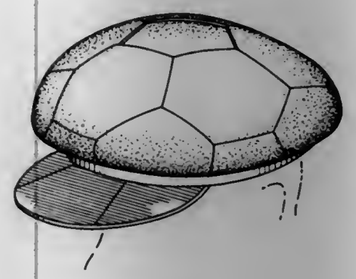
375,187
SHOULDER PAD FOR INFANT CARE
Evalyn K. Shoemate, Rte. 6 Box 106B, Paris, Tex. 75462
Filed Aug. 25, 1994, Ser. No. 27,613
Term of patent 14 years
U.S. Cl. D2—861



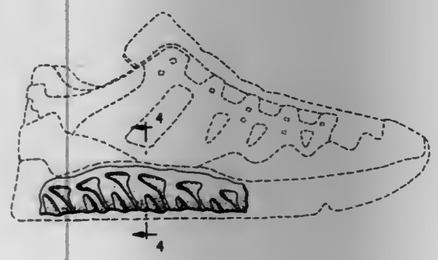
375,188
CAP
Gary Nickerson, 3195 Thorncrest Drive, Mississauga, Ontario, Canada
Filed May 31, 1995, Ser. No. 39,454
Claims priority, application Canada, Apr. 19, 1995, 1995-0835
Term of patent 14 years
U.S. Cl. D2—876



375,189
CAP
Richard Villalobos, 7528 Woodlake Ave., West Hills, Calif. 91364
Filed May 11, 1995, Ser. No. 38,855
Term of patent 14 years
U.S. Cl. D2—882



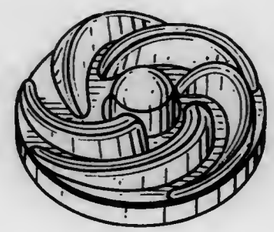
375,190
ELEMENT OF A SHOE MIDSOLE
Robert J. Lucas, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Feb. 8, 1996, Ser. No. 50,065
Term of patent 14 years
U.S. Cl. D2—947



375,191
SURFACE ORNAMENTATION FOR A PORTION OF A SHOE SOLE
Raymond Tonkel, Sudbury; Steven Smith, Taunton, and David Lacorazza, Quincy, all of Mass., assignors to Reebok International Ltd., Stoughton, Mass.
Filed Sep. 30, 1994, Ser. No. 29,237
Term of patent 14 years
U.S. Cl. D2—953

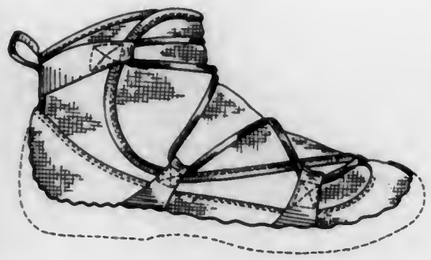


375,192
ALL TERRAIN SPIKE
Dale Bathum, 4610 E. Mercer Way, Mercer Island, Wash. 98040
Filed Jan. 16, 1996, Ser. No. 49,047
Term of patent 14 years
U.S. Cl. D2—962



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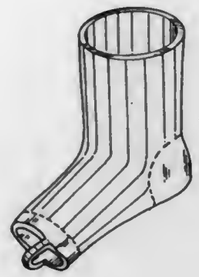
375,193
FOOTWEAR UPPER
Peter Kallen, Portland; Mark J. Smith, and Allen W. Van Noy, both of Beaverton, all of Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Filed Nov. 14, 1995, Ser. No. 46,440
Term of patent 14 years
U.S. Cl. D2—970



375,194
SIDE ELEMENT OF A SHOE UPPER
Tracy L. Teague, Aloha, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Nov. 13, 1995, Ser. No. 46,337
Term of patent 14 years
U.S. Cl. D2—972



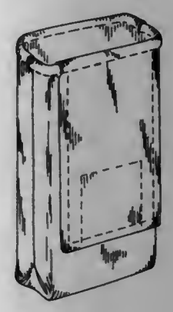
375,195
PEDICURE SOCK
Loretta Panassidi, 1 Birch Ct., Mariboro, N.J. 07746
Filed Dec. 14, 1994, Ser. No. 32,185
Term of patent 14 years
U.S. Cl. D2—989



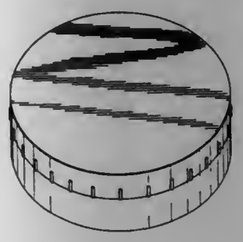
375,196
SOCK
Frederick Kluttz, and Lisa A. Kluttz, both of 3217 Cedar Ave. S., Minneapolis, Minn. 55407
Division of Ser. No. 11,337, Feb. 4, 1994, Pat. No. Des. 364,500. This application Aug. 23, 1995, Ser. No. 43,023
Term of patent 14 years
U.S. Cl. D2—993



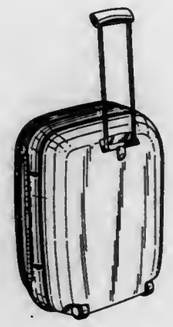
375,197
REMOVABLE CARRYING POUCH FOR A PORTABLE ELECTRONIC DEVICE
Dennis M. Laherty, 2571 Jongkind Park Rd., LaPorte, Ind. 46350
Filed Sep. 21, 1995, Ser. No. 44,275
Term of patent 14 years
U.S. Cl. D3—218



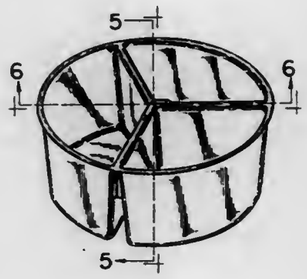
375,198
INK CARTRIDGE STORAGE CASE
Naoki Tashiro, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 42,235
Claims priority, application Japan, Feb. 6, 1995, 7-2763
Term of patent 14 years
U.S. Cl. D3—273



375,199
CART CASE
Adrian D. Stokes, Kingston Upon Thames; David Banham, Haslemere, and Wendy Flicker, London, all of United Kingdom, assignors to Carlton International PLC., Enfield, England
Filed Dec. 9, 1994, Ser. No. 31,950
Claims priority, application United Kingdom, Jun. 10, 1994, 2039629
Term of patent 14 years
U.S. Cl. D3—279

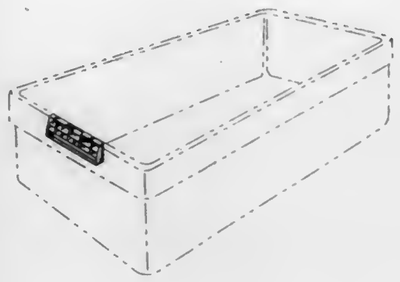


375,200
HARDWARE CONTAINER
Michael J. Nugent, P.O. Box 1829, Batavia, N.Y. 14021
Filed Mar. 17, 1995, Ser. No. 36,296
Term of patent 14 years
U.S. Cl. D3—313

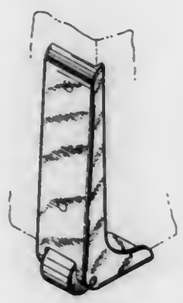


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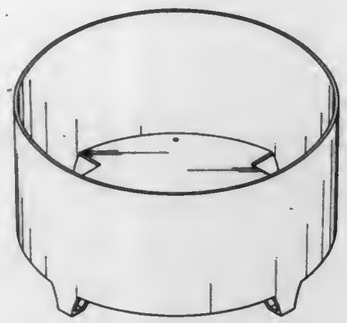
375,201
HANDLE FOR A STORAGE CONTAINER
Bruce B. Karr, and Clinton McDade, both of Charlotte, N.C., assignors to Schaefer Systems International, Charlotte, N.C.
Filed Jun. 6, 1994, Ser. No. 24,004
Term of patent 14 years
U.S. Cl. D3—318



375,202
WHEEL ASSEMBLY FOR AN ARTICLE OF LUGGAGE
Scott Vermillion, and Mark Kuruth, both of Chicago, Ill., assignors to High Sierra Sport Company, Vernon Hills, Ill.
Filed Mar. 3, 1995, Ser. No. 35,637
Term of patent 14 years
U.S. Cl. D3—318



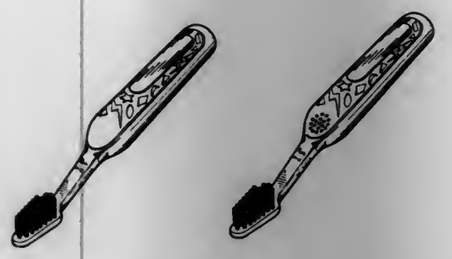
375,203
GOLF CLUB BAG BOTTOM
Jimmy A. LaPlante, Sr., 732 - 18th Ave., Clarkston, Wash. 99403
Filed Dec. 29, 1995, Ser. No. 48,460
Term of patent 14 years
U.S. Cl. D3—320



375,204
ELECTRIC TOOTHBRUSH HANDLE
Eiji Okada, 5-15-5, Nakanobu, Shinagawa-ku, Tokyo, Japan
Filed Dec. 21, 1994, Ser. No. 32,535
Term of patent 14 years
U.S. Cl. D4—101



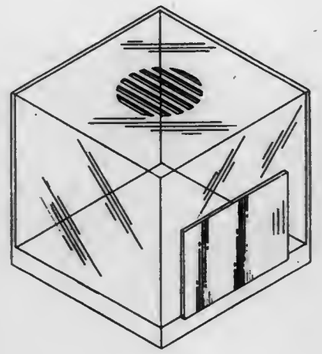
375,205
BRUSH
Martin Lewkowicz, Upper Montclair, N.J., assignor to Ranir/DCP Corporation, Grand Rapids, Mich.
Filed Oct. 12, 1994, Ser. No. 29,621
Term of patent 14 years
U.S. Cl. D4—104



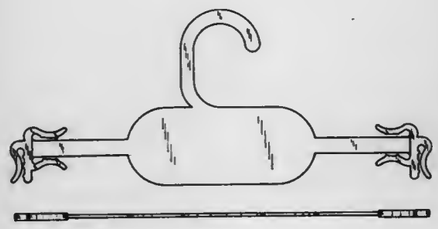
375,206
TOOTHBRUSH
Hans Halm, Herne, Germany, assignor to Lingner and Fischer, United Kingdom
Filed Nov. 14, 1994, Ser. No. 30,897
Claims priority, application United Kingdom, May 16, 1994, 2039089
Term of patent 14 years
U.S. Cl. D4—104



375,207
PHOTOGRAPH DISPLAY CUBE HAVING A VOICE RECORDING THEREIN
William J. Pempek, 5543 NW. 39th Ave., Coconut Creek, Fla. 33073
Filed Feb. 7, 1995, Ser. No. 34,543
Term of patent 14 years
U.S. Cl. D6—300



375,208
GARMENT HANGER
Stanley F. Gouldson, Northport, N.Y., assignor to Spotless Plastics Pty. Ltd., Victoria, Australia
Filed Jan. 13, 1995, Ser. No. 33,517
Term of patent 14 years
U.S. Cl. D6—326



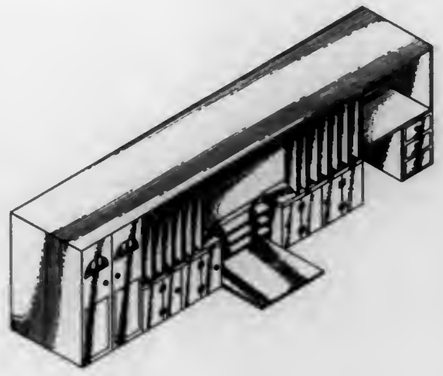
375,209
CHAIR
Jonathan Crinion, 25A Morrow Avenue, Suite 303, Toronto, Ontario, Canada
Filed Sep. 1, 1995, Ser. No. 43,342
Claims priority, application Canada, Mar. 3, 1995, 1995-0507
Term of patent 14 years
U.S. Cl. D6—379



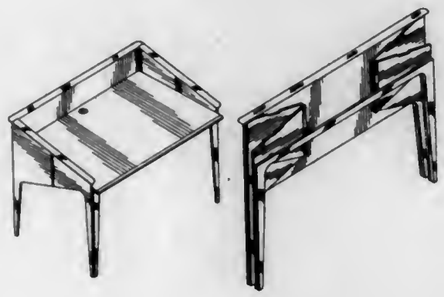
375,210
SEAT
Michael J. Paus, High Point, N.C., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Feb. 23, 1995, Ser. No. 35,284
Term of patent 14 years
U.S. Cl. D6—381



375,211
MODULAR BEDROOM STORAGE UNIT
Joseph A. Mizzi, 18992 Florida St., Apt. B-10, Huntington Beach, Calif. 92648
Filed Apr. 6, 1995, Ser. No. 37,186
Term of patent 14 years
U.S. Cl. D6—397



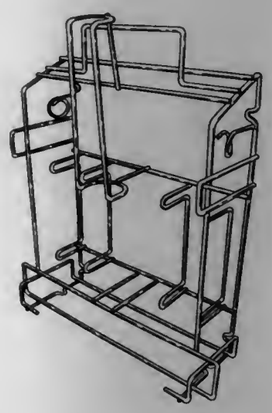
375,212
COLLAPSIBLE TABLE
Ross M. Colquhoun, 9600 26th Ave. NW., Seattle, Wash. 98117
Filed Feb. 21, 1995, Ser. No. 35,086
Term of patent 14 years
U.S. Cl. D6—429



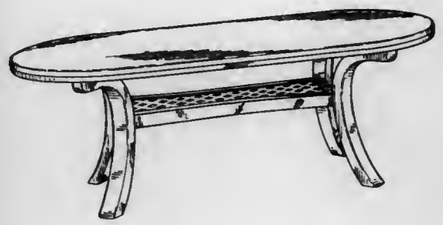
375,213
JEWELRY CASE
Don-Fong Yeh, 8F, No. 65, Sung-Chiang Rd., Taipei City, Taiwan
Filed Dec. 28, 1995, Ser. No. 48,435
Term of patent 14 years
U.S. Cl. D6—440



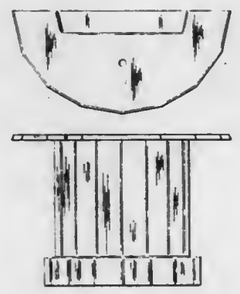
375,214
RACK FOR SUPPORTING CONTAINERS
James D. Decker; James L. Copeland, both of Apple Valley, and Scott R. Olson, Eagan, all of Minn., assignors to Ecolab Inc., St. Paul, Minn.
Filed Dec. 20, 1995, Ser. No. 48,085
Term of patent 14 years
U.S. Cl. D6—462



375,215
TABLE
Stephen T. Smith, Richmond, Australia, assignor to Hartman Leisure Australia Pty Ltd, Australia
Filed Sep. 23, 1994, Ser. No. 27,997
Claims priority, application Australia, Mar. 25, 1994, 955/94
Term of patent 14 years
U.S. Cl. D6—480



375,216
OUTDOOR CANOPY BAR
Alfred J. Intardonato, 1465 Strong Ave. S., Copiague, N.Y. 11726
Filed May 24, 1995, Ser. No. 39,212
Term of patent 14 years
U.S. Cl. D6—481

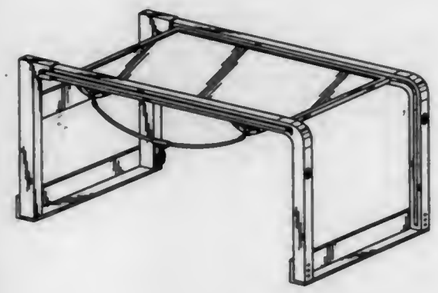


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375,217
TABLE
Rory Rehmert, Birmingham, Ala., assignor to Meadowcraft, Inc., Birmingham, Ala.
Filed May 16, 1994, Ser. No. 23,874
Term of patent 14 years
U.S. Cl. D6—487



375,218
ADJUSTABLE MIRROR
Bob A. Sharp, Box 119, Annabella, Utah 84711
Filed Apr. 20, 1995, Ser. No. 37,773
Term of patent 14 years
U.S. Cl. D6—503



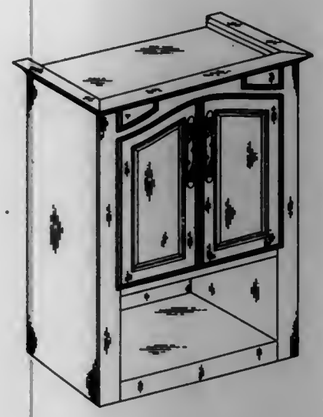
375,219
MAGNETIC SOAP HOLDER
Stan E. Selent, 80 Bona Vista Rd., Warragul Vic. 3820, Australia
Filed Oct. 18, 1995, Ser. No. 45,387
Term of patent 14 years
U.S. Cl. D6—538



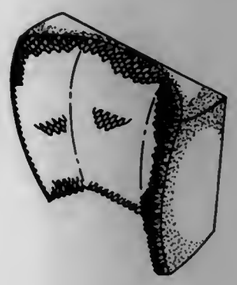
375,220
HAND SOAP DISPENSER
James L. Copeland, Apple Valley, Minn.; Jeff W. Peterson, Hudson, Wis., and Paul A. Pilosi, Minneapolis, Minn., assignors to Ecolab Inc., St. Paul, Minn.
Filed Aug. 7, 1995, Ser. No. 42,306
Term of patent 14 years
U.S. Cl. D6—545



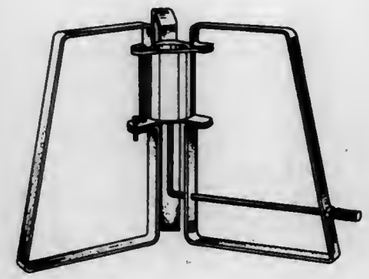
375,221
WALL LINEN CABINET
James J. Palka, 22351 W. Thornridge Dr., Kildeer, Ill. 60047
Filed Sep. 21, 1995, Ser. No. 44,236
Term of patent 14 years
U.S. Cl. D6—561



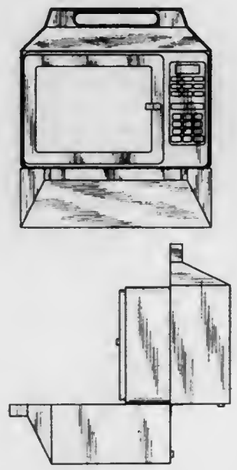
375,222
SYNTHETIC FOAM CHAIR CUSHION
Vincenzo A. Bonaddio, Boothwyn, Pa., and Feyyaz O. Baskent, Newport Beach, Calif., assignors to Foamex L.P., Linwood, Pa.
Filed Sep. 27, 1994, Ser. No. 29,000
Term of patent 14 years
U.S. Cl. D6—601



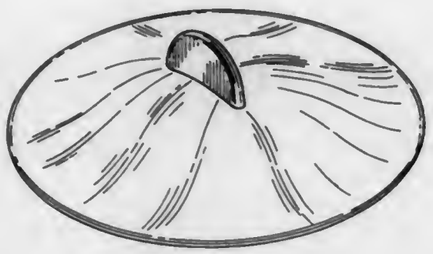
375,223
TRIPOD BURNER
Richie P. Parnell, 2269 Cochran Town Rd., Lucedale, Miss. 39452, and Joey D. Mixon, Rt. 6 Box 159A, Lucedale, Miss. 39452
Filed Jul. 22, 1994, Ser. No. 26,227
Term of patent 14 years
U.S. Cl. D7—337



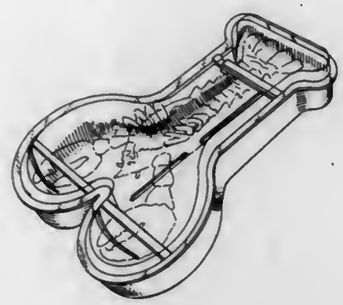
375,224
COMBINED OUTDOOR MICROWAVE OVEN AND WEATHERPROOF HOUSING
Robert V. Lilly, 18555 Roberts Rd, #35, Desert Hot Springs, Calif. 92241
Filed Dec. 22, 1995, Ser. No. 48,277
Term of patent 14 years
U.S. Cl. D7—351



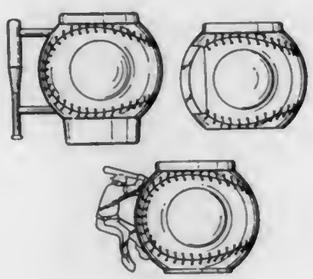
375,225
STEAMER LID
Morison S. Cousins, Winter Park, Fla., assignor to Dart Industries Inc., Deerfield, Ill.
Filed Oct. 23, 1995, Ser. No. 45,530
Term of patent 14 years
U.S. Cl. D7—391



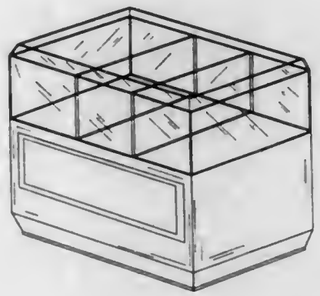
375,227
LOBSTER COOKING VESSEL FOR MICROWAVE OVENS
Samuel A. Cyr, Post Office box 480, St. Basile, New Brunswick, Canada
Filed Aug. 24, 1992, Ser. No. 933,512
Term of patent 14 years
U.S. Cl. D7—539



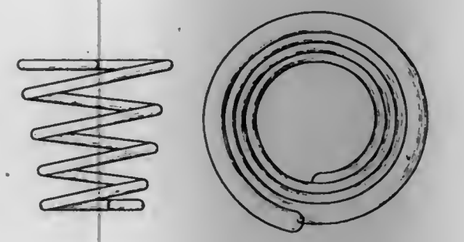
375,226
DRINK CONTAINER
Karl Blankenburg, 32131 Claeys Dr., Warren, Mich. 48093, and Karl V. Blankenburg, 61830 Lantern Cove, Washington, Mich. 48094
Filed Apr. 18, 1995, Ser. No. 37,757
Term of patent 14 years
U.S. Cl. D7—515



375,228
COMBINED SUGAR PACKET DISPENSER AND TRASH DISPOSAL UNIT
Barbara A. Rhodes, 5928 Mossbank Dr., Palos Verdes, Calif. 90274
Filed Mar. 24, 1994, Ser. No. 20,327
Term of patent 14 years
U.S. Cl. D7—590



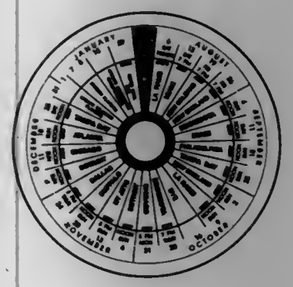
375,229
WEIGHTED CUPHOLDER
James DiBella, 286 Bay 19th St., Brooklyn, N.Y. 11214
Filed Dec. 12, 1994, Ser. No. 31,995
Term of patent 14 years
U.S. Cl. D7—619



375,231
FRUIT/VEGETABLE NETTING DISPLAY HAMMOCK
Christopher J. McArdle, Alta Loma, Calif., assignor to Prodyne Enterprises, Inc., Ontario, Canada
Filed Feb. 21, 1995, Ser. No. 35,127
Term of patent 14 years
U.S. Cl. D7—628



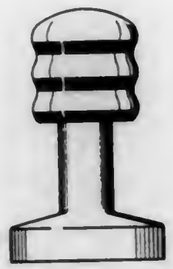
375,230
COASTER WITH RADIAL SCHEDULE
Gary L. Bezella, 916 Byrd Ave., Neenah, Wis. 54956, assignor to Gary L. Bezella, Neenah, Wis.
Filed Feb. 15, 1995, Ser. No. 34,900
Term of patent 14 years
U.S. Cl. D7—624



375,232
FLATWARE
Wolfgang Held, Holzlütweg 7, A-6971 Hard, Austria
Division of Ser. No. 14,616, Oct. 26, 1993, Pat. No. Des. 364,998. This application May 11, 1995, Ser. No. 38,792
Claims priority, application Germany, Apr. 26, 1993, M 93 03 109.2
Term of patent 14 years
U.S. Cl. D7—645



375,233
AUTOMATIC ESPRESSO TAMP
James A. Hirsch, 3758 Brenner Dr., Santa Barbara, Calif. 93101
Filed May 5, 1995, Ser. No. 38,575
Term of patent 14 years
U.S. Cl. D7—682



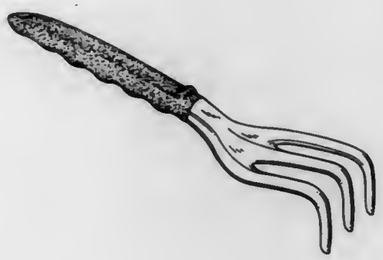
375,234
SPOON
Carsten Jørgensen, Kriens, Switzerland, assignor to P1-Design AG, Triegen, Switzerland
Filed Oct. 25, 1994, Ser. No. 30,252
Claims priority, application Denmark, Apr. 25, 1994, 337/94
Term of patent 14 years
U.S. Cl. D7—691



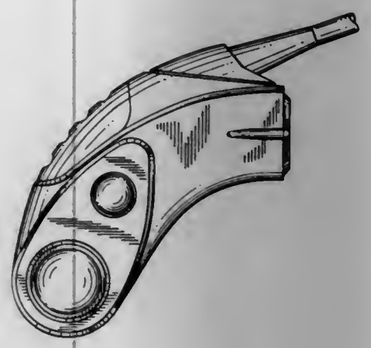
375,235
SLEIGH SHOVEL WITH WHEELS
Kenneth J, Spear, Vienna, and Peter T. Collins, Parkersburg, both of W. Va., assignors to O. Ames Co., Parkersburg, W. Va.
Filed Nov. 7, 1995, Ser. No. 46,096
Term of patent 14 years
U.S. Cl. D8—10



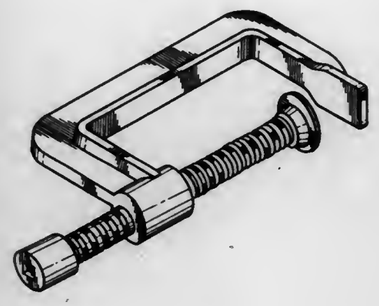
375,236
HAND CULTIVATOR
Kenneth J. Spear, Vienna; Frank G. Czerwinski, Parkersburg, both of W. Va., and Steven F. Brooker, Marietta, Ohio, assignors to O. Ames Co., Parkersburg, W. Va.
Filed Oct. 23, 1995, Ser. No. 45,517
Term of patent 14 years
U.S. Cl. D8—13



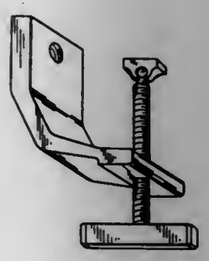
375,237
HYDRAULIC WRENCH
Paolo Pininfarina, Turin, Italy, assignor to Unex Corporation, Mahwah, N.J.
Filed Mar. 8, 1996, Ser. No. 51,385
Term of patent 14 years
U.S. Cl. D8—61



375,239
C-CLAMP
Rodney D. Hall, and Charlotte A. Hall, both of P.O. Box 30, Hazel Green, Ky. 41332
Filed Apr. 28, 1995, Ser. No. 38,162
Term of patent 14 years
U.S. Cl. D8—73



375,238
CLAMP
Scott A. Colley, Fort Wayne, Ind., assignor to Universal Consolidated Methods, Inc., Topeka, Ind.
Filed May 26, 1995, Ser. No. 39,544
Term of patent 14 years
U.S. Cl. D8—72

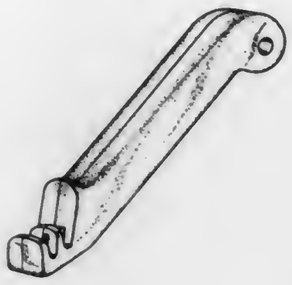


375,240
NAIL HOLDER FOR A HAMMER
Shawn W. Campbell, 1800 Angela Dr., Santa Cruz, Calif. 95065
Filed Feb. 21, 1995, Ser. No. 35,096
Term of patent 14 years
U.S. Cl. D8—80



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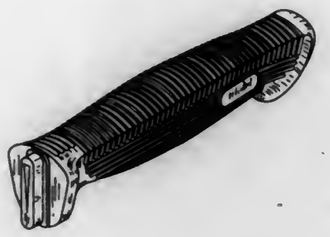
375,241
KNIFE SHARPENER
James M. Pigott, San Antonio, Tex., assignor to Rhino Industries, Inc., San Antonio, Tex.
Filed May 31, 1995, Ser. No. 39,594
Term of patent 14 years
U.S. Cl. D8—93



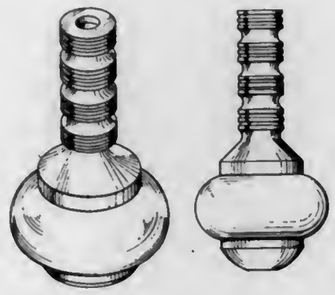
375,242
FOLDING KNIFE
Brett P. Seber, Escondido, and Roy L. Helton, Jr., San Diego, both of Calif., assignors to Buck Knives, Inc., El Cajon, Calif.
Continuation-in-part of Ser. No. 138,703, Oct. 18, 1993, abandoned, and a continuation-in-part of Ser. No. 138,670, Oct. 18, 1993, abandoned. This application Jul. 18, 1994, Ser. No. 26,044
The portion of the term of this patent subsequent to Apr. 30, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—99



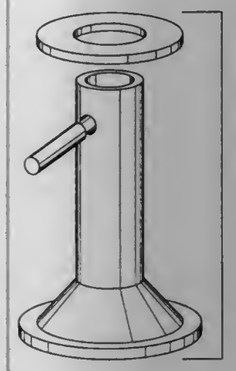
375,243
KNIFE HANDLE
Katsumi Hasegawa, Sagamihara, Japan, assignor to Kai R & D Center Co., Ltd., Gifu-ken, Japan
Filed May 22, 1995, Ser. No. 39,152
Term of patent 14 years
U.S. Cl. D8—107



375,244
PULL CHAIN DEVICE
Dennis Merino, El Dorado Hills, Calif., assignor to Trade Source International, El Dorado Hills, Calif.
Filed Jun. 8, 1994, Ser. No. 24,106
Term of patent 14 years
U.S. Cl. D8—310



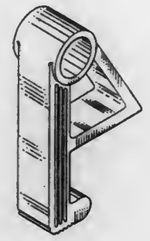
375,245
PISTOL LOCK
Thomas W. E. Irving, 2018 Victoria Street, RR1, Stroud, ON, Canada
Filed Aug. 18, 1995, Ser. No. 42,850
Term of patent 14 years
U.S. Cl. D8—331



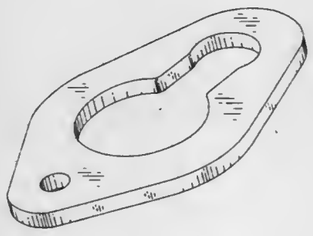
375,246
WINDOW LATCH MEMBER
Chandrahas O. Ganhdi, Butler County, Pa., assignor to CertainTeed Corporation, Valley Forge, Pa.
Continuation of Ser. No. 383,270, Feb. 3, 1995. This application Feb. 3, 1995, Ser. No. 34,475
Term of patent 14 years
U.S. Cl. D8—343



375,247
WINDOW LATCH MEMBER
Chandrahas O. Gandhi, Butler County, Pa., assignor to CertainTeed Corporation, Valley Forge, Pa.
Continuation of Ser. No. 383,270, Feb. 3, 1995. This application Feb. 3, 1995, Ser. No. 34,480
Term of patent 14 years
U.S. Cl. D8—343

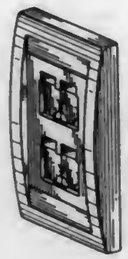


375,248
LOCKING PLATE FOR CONNECTING A TRAILER AND TOWING COUPLING BALL
Kermit Bryant, Arkadelphia, Ark., assignor to B & H Products, Inc., Friendship, Ark.
Filed Aug. 18, 1995, Ser. No. 42,846
Term of patent 14 years
U.S. Cl. D8—344

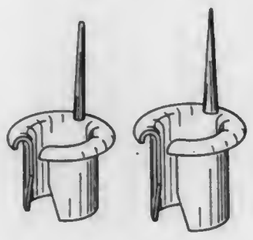


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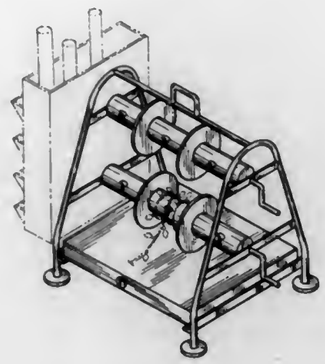
375,249
FACEPLATE
Craig Scherer, Wilmette, and Michael Thurma, Des Plaines, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.
Filed Jun. 20, 1994, Ser. No. 24,722
Term of patent 14 years
U.S. Cl. D8—353



375,250
ANTI-SHORT BUSHING
James C. Dollins, Bristol, R.I., assignor to WPFY, Inc., Wilmington, Del.
Filed Jun. 7, 1995, Ser. No. 39,905
Term of patent 14 years
U.S. Cl. D8—356



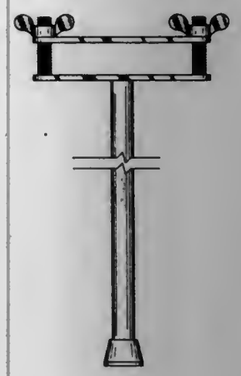
375,251
CHRISTMAS LIGHT STORAGE CADDY
Roger I. Stevens, and Paula Stevens, both of 910 N. Chester Rd., Malvern, Pa. 19355
Filed Aug. 11, 1995, Ser. No. 42,510
Term of patent 14 years
U.S. Cl. D8—359



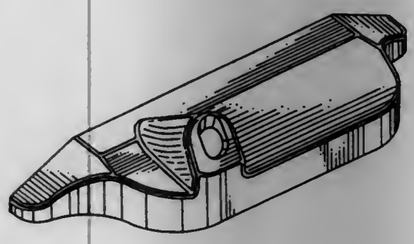
375,252
SPRING CATCH
Ramon Serra Fabregas, Antonio Gaudi, 6, Castellar Del Valles (Barcelona), Spain
Filed Aug. 22, 1994, Ser. No. 27,483
Claims priority, application Spain, Feb. 22, 1994, 132.000
Term of patent 14 years
U.S. Cl. D8—367



375,253
STAND
Vane L. Campbell, P.O. Box 100021, Alton, Utah 84710
Filed Jul. 14, 1995, Ser. No. 41,460
Term of patent 14 years
U.S. Cl. D8—380



375,254
OUTER SURFACE OF AN OPERATOR HOUSING
Todd A. Anderson, Albert Lea, and Douglas G. Johnson, Blooming Prairie, both of Minn., assignors to Truth Hardware Corporation, Owatonna, Minn.
Filed Dec. 19, 1995, Ser. No. 48,065
Term of patent 14 years
U.S. Cl. D8—400



375,255
COMBINED SPRAY BOTTLE AND CAP
Thomas Uhl, New Hope, Pa.; Ronald S. Elowitz, Watchung, and Robert C. Maxwell, Princeton, both of N.J., assignors to Schering-Plough Healthcare Products, Inc., Memphis, Tenn.
Filed May 31, 1995, Ser. No. 39,600
Term of patent 14 years
U.S. Cl. D9—300

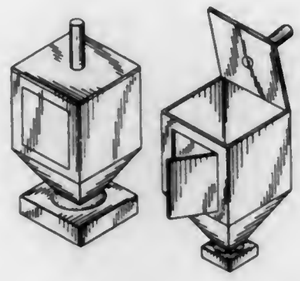


375,256
SALVE DISPENSING TUBE
Robert W. Chadfield, Sarasota, Fla., assignor to Federal Package, Ltd., Chaska, Minn.
Filed Jul. 20, 1995, Ser. No. 41,643
Term of patent 14 years
U.S. Cl. D9—302

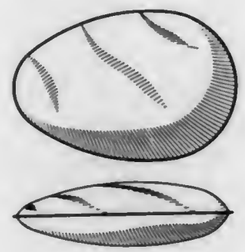


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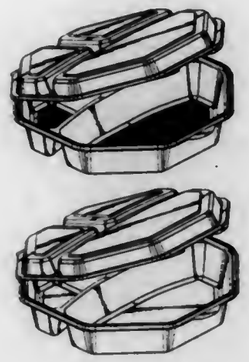
375,257
STORAGE UNIT
Jacklyn Kling, 473 Park St., Upper Montclair, N.J. 07043
Filed Jan. 6, 1995, Ser. No. 33,182
Term of patent 14 years
U.S. Cl. D9—307



375,258
CONTAINER
Donald E. Weder, Highland; Lisa Straeter, Breese; Ken Barker, Highland, and Sherry Hall, Lebanon, all of Ill., assignors to The Family Trust U/T/A, and Southpac Trust International, Inc., both of Highland, Ill.
Filed Aug. 17, 1993, Ser. No. 11,896
Term of patent 14 years
U.S. Cl. D9—329



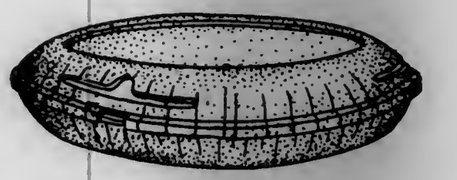
375,259
COVERED FOOD TRAY
Daniel T. Whitehead, Atlanta, Ga., assignor to DeSter Corporation, Atlanta, Ga.
Filed Aug. 31, 1995, Ser. No. 43,300
Term of patent 14 years
U.S. Cl. D9—347



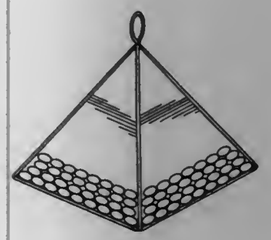
375,260
PACKAGING FOR CRESS
Gerrit Koppert, 6, Boedijnhof, 2692 AZ 's-Gravenzande, Netherlands
Filed Oct. 7, 1994, Ser. No. 29,495
Claims priority, application Hague Agreement, Sep. 2, 1994, DM/030601
Term of patent 14 years
U.S. Cl. D9—422



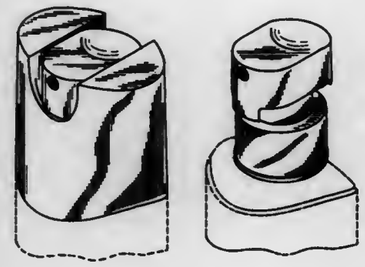
375,261
CIRCULAR CONTAINER
Mark V. Fiori, 28 Amethyst Crescent, Armadale, Australia
Filed Jan. 11, 1995, Ser. No. 33,372
Claims priority, application Australia, Jul. 12, 1994, 2189/94; Nov. 9, 1994, 3712/94; Nov. 9, 1994, 3713/94; Dec. 12, 1994, 4120/94; Dec. 12, 1994, 4121/94; Dec. 12, 1994, 4122/94
Term of patent 14 years
U.S. Cl. D9—428



375,262
CONTAINER OF BRIQUETTES FOR A BARBECUE
Leonard Swatkiewicz, 1513 Silver La., Palatine, Ill. 60067, assignor to Leonard Swatkiewicz
Filed Aug. 28, 1995, Ser. No. 43,184
Term of patent 14 years
U.S. Cl. D9—431



375,263
ACTUATOR FOR FLUID DISPENSER
Michael G. Knickerbocker, Crystal Lake, Ill., assignor to Aptar Group, Cary, Ill.
Filed May 8, 1995, Ser. No. 38,852
Term of patent 14 years
U.S. Cl. D9—448



375,264
CONTAINER CLOSURE
Benjamin Galarza, and Lucina R. Galarza, both of 17418 Tadmore, LaPuente, Calif. 91744
Filed Jun. 14, 1994, Ser. No. 24,476
Term of patent 14 years
U.S. Cl. D9—453



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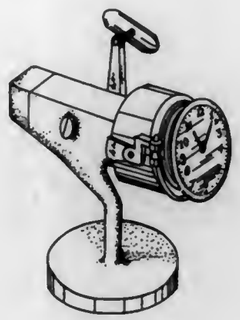
375,265
COMBINED BOTTLE AND CAP
Edward H. Meisner, 21 Elsway Rd., Short Hills, N.J. 07078; Roland Charriez, 317 Alpine Dr., Peekskill, N.Y. 10566; Adam Sherman, 1 Kilmer Rd., Larchmont, N.Y. 10538, and Peter Stagl, 3 Waverly Ct., Morris Plains, N.J. 07054
Filed Oct. 2, 1995, Ser. No. 44,882
Term of patent 14 years
U.S. Cl. D9—528



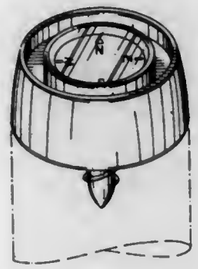
375,266
COMBINED COSMETIC BOTTLE AND CAP
Tetsuo Hiro; Tetsuo Togasawa, both of Tokyo, and Yotsuda Chieko, Yokohama, all of Japan, assignors to Shiseido Company, Ltd., Tokyo, Japan
Filed May 19, 1995, Ser. No. 39,387
Claims priority, application Japan, Nov. 21, 1994, 6-35104
Term of patent 14 years
U.S. Cl. D9—556



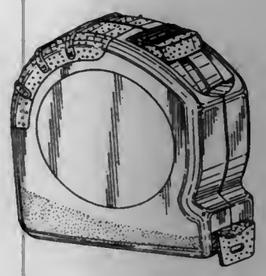
375,267
SPINNING REEL CLOCK
John Krobatsch, 3361 NE. 13 Ave., Pompano Beach, Fla. 33064
Filed May 1, 1995, Ser. No. 41,141
Term of patent 14 years
U.S. Cl. D10—6



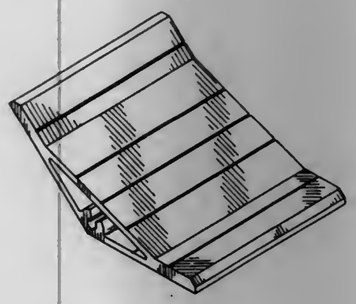
375,268
GOLF BREAK FINDING ACCESSORY FOR ATTACHMENT TO DIVERSE ARTICLES
Michael E. Stryczek, Phoenix, Ariz., assignor to StryStar International, L.L.C., Phoenix, Ariz.
Filed Dec. 13, 1995, Ser. No. 47,863
Term of patent 14 years
U.S. Cl. D10—68



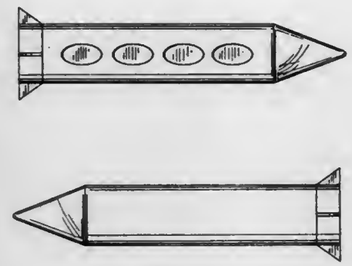
375,269
TAPE RULE
Greg D. Wertheim, Coventry, and David Kaiser, North Haven, both of Conn., assignors to The Stanley Works, New Britain, Conn.
Filed Mar. 4, 1996, Ser. No. 51,121
Term of patent 14 years
U.S. Cl. D10—72



375,270
COUPLING MEMBER FOR FRAMES
Shigekazu Nagai, and Koji Sugano, both of Ibaraki-ken, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 18, 1995, Ser. No. 37,747
Claims priority, application Japan, Oct. 19, 1994, 6-31730
Term of patent 14 years
U.S. Cl. D10—94



375,271
REMOTE CONTROL FOR AN AUTOMOBILE SECURITY SYSTEM
Ginger Battah, 7730 SW. 61st Ave., Miami, Fla. 33143
Filed Jun. 30, 1995, Ser. No. 41,004
Term of patent 14 years
U.S. Cl. D10—104

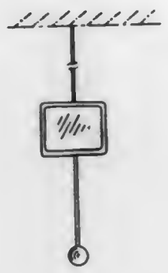


375,272
AIR TERMINAL
Kenneth P. Heary, Springville, N.Y., assignor to Heary Bros. Lightning Protection Co., Inc., Springville, N.Y.
Filed Jul. 27, 1995, Ser. No. 43,232
Term of patent 14 years
U.S. Cl. D10—105



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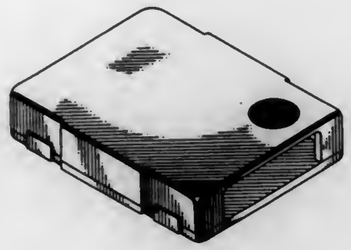
375,273
AUTOMOBILE POSITION INDICATOR
Bernard R. Wilson, 1296 Catchacoma Court, Mississauga, Ontario, Canada
Filed Dec. 2, 1994, Ser. No. 32,080
Term of patent 14 years
U.S. Cl. D10—109



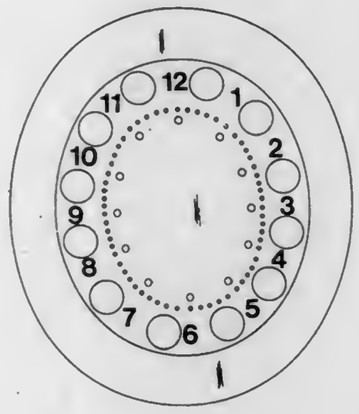
375,274
HAND-HELD BINGO FLAG
David Malone, II, and Mary J. Coffman-Malone, II, both of 11692 W. Third St., Cumberland, Md. 21502
Filed Nov. 17, 1995, Ser. No. 46,520
Term of patent 14 years
U.S. Cl. D10—109



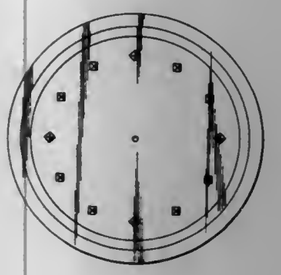
375,275
AUDIBLE SIGNAL FOR ALARM UNITS
Kazushi Suzuki, Shizuoka, Japan, assignor to Star Micronics Co., Ltd., Shizuoka-ken, Japan
Filed Mar. 10, 1995, Ser. No. 35,991
Claims priority, application Japan, Sep. 24, 1994, 6-28830
Term of patent 14 years
U.S. Cl. D10—116



375,276
CLOCK FACE
Geno Svast, 2113 S. Gunderson, Berwyn, Ill. 60402
Filed Mar. 30, 1994, Ser. No. 20,661
Term of patent 14 years
U.S. Cl. D10—126



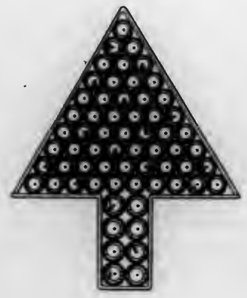
375,277
WATCH FACE
Jean-Louis Dumas, Paris, France, assignor to La Montre Hermes, Bienne, Switzerland
Filed Jul. 7, 1994, Ser. No. 25,653
Claims priority, application WIPO, Jan. 10, 1994, DM/028.347
Term of patent 14 years
U.S. Cl. D10—126



375,278
HOLIDAY DISPLAY WITH SONG BIRDS
Marc H. Segan, 1192 Park Ave., New York, N.Y. 10128; Gary Strauss, 222 Union Ave., Mamaroneck, N.Y. 10543, and Brenda Hardin, 111-55 77th Ave., Forest Hills, N.Y. 11375
Filed Nov. 4, 1994, Ser. No. 30,663
Term of patent 14 years
U.S. Cl. D11—121



375,279
CHRISTMAS TREE YARD DECORATION
Joseph G. Boeger, 5709 Lisette, St. Louis, Mo. 63109, assignor to Joseph G. Boeger, St. Louis, Mo.
Filed Jun. 15, 1995, Ser. No. 40,354
Term of patent 14 years
U.S. Cl. D11—121



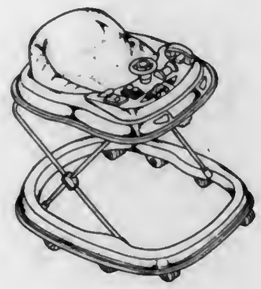
375,280
FLAT BOW
Aileen Murphy, 1715 Santa Cruz Ave., Menlo Park, Calif. 94025
Filed Oct. 25, 1994, Ser. No. 30,290
Term of patent 14 years
U.S. Cl. D11—184



375,281
MOTORCYCLE
Makoto Kitagawa, and Masamoto Ito, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 7, 1994, Ser. No. 26,951
Claims priority, application Japan, Apr. 7, 1994, 6-9516
Term of patent 14 years
U.S. Cl. D12—110

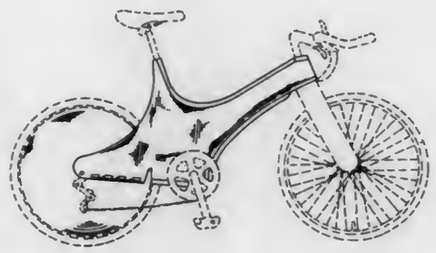


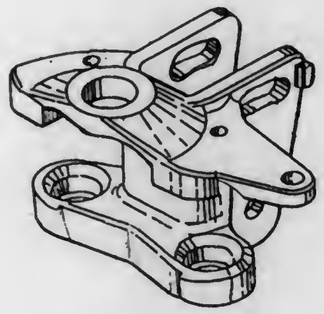
375,283
BABY WALKER
Li-Wei Lu, No. 59-16, Chiu She Road, Pei Tun Dist., Taichung, Taiwan
Filed Aug. 11, 1995, Ser. No. 42,557
Term of patent 14 years
U.S. Cl. D12—130



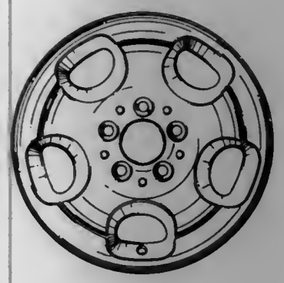
375,284
BALL MOUNT HEAD FOR TRAILER HITCH
John J. Kass, Granger, Ind., and Philip K. Hoopes, Union, Mich., assignors to Reese Products, Inc., Elkhart, Ind.
Continuation of Ser. No. 319,908, Oct. 7, 1994. This application Dec. 11, 1995, Ser. No. 47,726
Term of patent 14 years
U.S. Cl. D12—162

375,282
AERODYNAMIC BODY FOR A BICYCLE FRAME
Hsiao Y. Lee, 23, Lane 9, Yungho street, Taichung, Taiwan
Filed Feb. 3, 1995, Ser. No. 34,373
Term of patent 14 years
U.S. Cl. D12—117

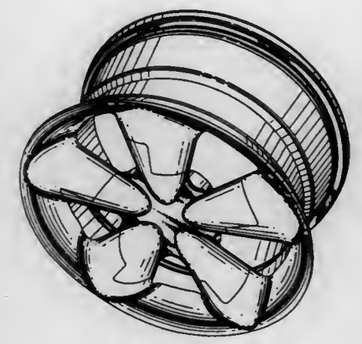




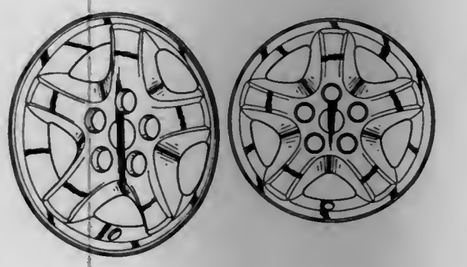
375,285
FRONT FACE OF A VEHICLE WHEEL
Gerhard Honer, Weil der Stadt, Germany, assignor to Mercede-Benz AG, Germany
Filed Sep. 2, 1994, Ser. No. 27,981
Claims priority, application Germany, Mar. 2, 1994, M 94 01 753.0
Term of patent 14 years
U.S. Cl. D12—209



375,287
VEHICLE WHEEL
Mark D. Neeper, Denver, Colo., assignor to Mobile Hi-Tech Wheels, Torrance, Calif.
Filed Oct. 31, 1994, Ser. No. 30,463
Term of patent 14 years
U.S. Cl. D12—211



375,286
VEHICLE WHEEL FRONT FACE SEGMENT
Glenn W. Abbott, Waterford, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.
Filed May 15, 1995, Ser. No. 38,804
Term of patent 14 years
U.S. Cl. D12—209



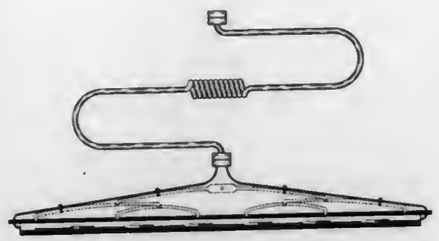
375,288
AUTOMOTIVE WASHER TANK
Hiroaki Tanaka, Kiryu, Japan, assignor to Mitsuba Electric Manufacturing Co., Ltd., Kiryu, Japan
Filed Jul. 24, 1995, Ser. No. 41,717
Claims priority, application Japan, Jun. 8, 1995, 7-16365
Term of patent 14 years
U.S. Cl. D12—218



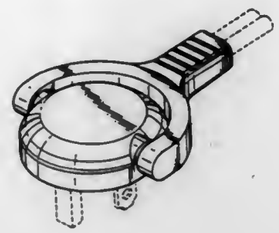
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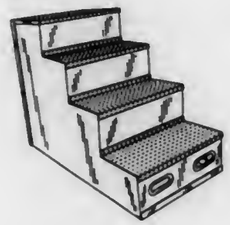
375,289
COMBINED ELECTRICALLY HEATED WINDSHIELD WIPER AND COILED ELECTRICAL CORD
Stanley M. Waselewski, P.O. Box 962, Howe, Tex. 75459; Charles S. Handley, P.O. Box 117, Tom Bean, Tex. 75489, and Bobby G. Martinek, 503 Bois 'D Arc, Whitesboro, Tex. 76273
Filed Jun. 17, 1994, Ser. No. 24,624
Term of patent 14 years
U.S. Cl. D12—219



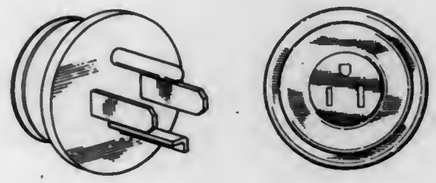
375,291
HOUSING FOR A PIVOTING ELECTRICAL PLUG
Tat Kwong Cheung, Kowloon, Hong Kong, assignor to Koontat Development Company Ltd., Hong Kong
Filed Feb. 27, 1996, Ser. No. 50,818
Term of patent 14 years
U.S. Cl. D13—138



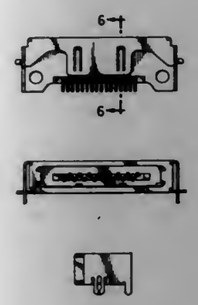
375,290
COMBINATION BOAT SIDE STEPS AND LOCKER
David E. Hall, 2085 S. Sylvan, West Linn, Oreg. 97068
Filed Oct. 16, 1995, Ser. No. 46,621
Term of patent 14 years
U.S. Cl. D12—318



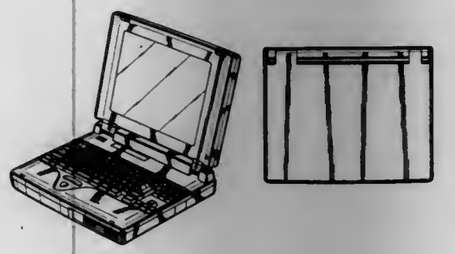
375,292
ELECTRICAL WALL OUTLET ADAPTOR
Domenic D'Amato, 313 Preston Dr., Oshawa, Ontario, Canada
Filed Mar. 14, 1994, Ser. No. 19,847
Term of patent 14 years
U.S. Cl. D13—139



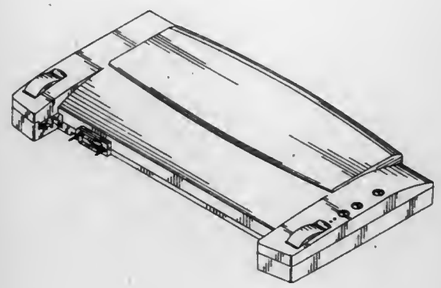
375,293
ELECTRICAL CONNECTOR
Akio Suzuki, Tokyo, Japan, assignor to Hirose Electric Co., Ltd., Tokyo, Japan
Filed Aug. 7, 1995, Ser. No. 42,317
Claims priority, application Japan, Feb. 16, 1995, 7-3718
Term of patent 14 years
U.S. Cl. D13—147



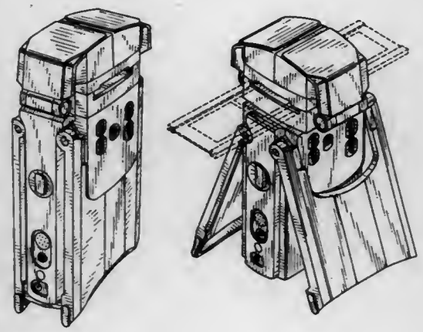
375,294
ELECTRONIC COMPUTER
Masaaki Iino, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 25, 1995, Ser. No. 41,814
Claims priority, application Japan, Feb. 2, 1995, 2198/1995
Term of patent 14 years
U.S. Cl. D14—106



375,295
DOCKING STATION
Michael D. Derocher, and Robert P. Bliven, both of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed May 4, 1995, Ser. No. 38,355
Term of patent 14 years
U.S. Cl. D14—107

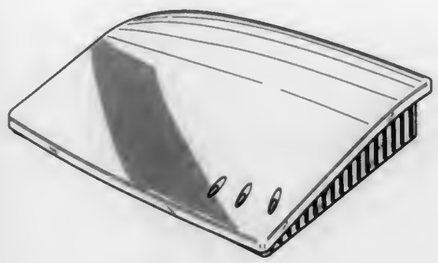


375,296
IMAGE READER
Shozo Kondo, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Sep. 29, 1995, Ser. No. 44,697
Claims priority, application Japan, Mar. 31, 1995, 7-9033
Term of patent 14 years
U.S. Cl. D14—107

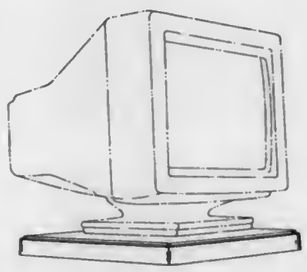


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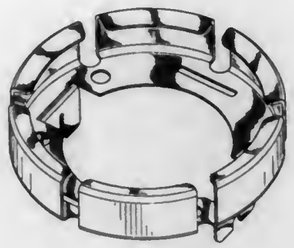
375,297
LOCAL AREA NETWORK WIRELESS DEVICE
Theresa L. Casarez, San Carlos; Mark Edwards, and Robin Chu, both of San Francisco, all of Calif., assignors to Proxim, Inc., Mountain View, Calif.
Filed Feb. 23, 1996, Ser. No. 50,716
Term of patent 14 years
U.S. Cl. D14—107



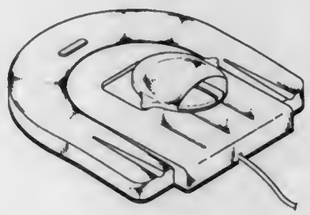
375,298
VIDEO DISPLAY PEDESTAL
Clifford T. Calfee, Tyler, Tex., assignor to Clifford T. Ramey, III et al., Tyler, Tex.
Filed Apr. 22, 1992, Ser. No. 873,035
Term of patent 14 years
U.S. Cl. D14—114



375,299
CONNECTOR FOR AN ELECTRONIC TOKEN
Nicholas M. G. Fekete, Richardson; Elaine J. Gattenby, Allen, and Michael L. Bolan, Dallas, all of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.
Filed Dec. 1, 1994, Ser. No. 31,607
Term of patent 14 years
U.S. Cl. D14—114



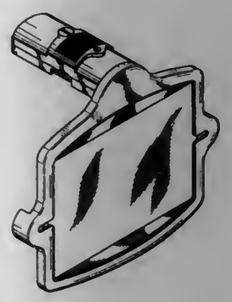
375,300
POINTER
Chun K. Wu, 14F-1, No. 1, Bao Sheng Road, Yuan Ho City, Taipei Hsien, Taiwan
Filed Jul. 7, 1995, Ser. No. 41,192
Term of patent 14 years
U.S. Cl. D14—114



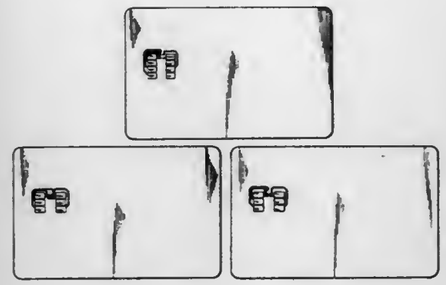
375,301
JOYSTICK
Torben B. Jensen, Soenderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Aug. 22, 1995, Ser. No. 42,971
Term of patent 14 years
U.S. Cl. D14—114



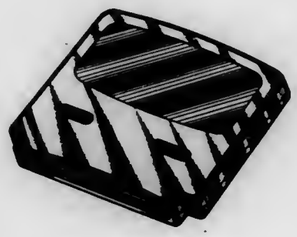
375,302
VIDEO MONITOR OVERLAY
Ivan H. Darius, Richardson; Staci Ault, Dallas, and Timothy W. Terleski, Garland, all of Tex., assignors to MTI, Inc., Dallas, Tex.
Filed Dec. 8, 1995, Ser. No. 47,600
Term of patent 14 years
U.S. Cl. D14—114



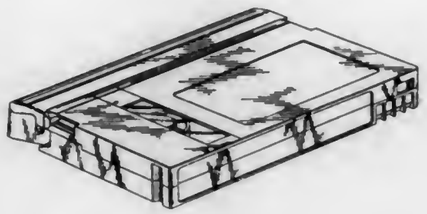
375,303
SMART CARD WITH PLURAL EXTERNAL CONTACT REGIONS
Michel Gaumet, Saint Denis En Val, France, assignor to SOLAIC (societe anonyme), France
Filed May 30, 1995, Ser. No. 39,507
Claims priority, application France, Nov. 30, 1994, 946 522
Term of patent 14 years
U.S. Cl. D14—117



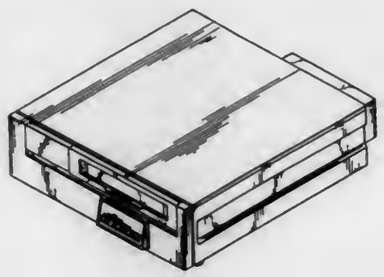
375,304
CARTRIDGE FOR A VIDEO GAME MACHINE WITH SEAL PRINTER
Kenji Takahata, Hino, and Tadahisa Sawano, Hachiohji, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 28, 1995, Ser. No. 48,431
Term of patent 14 years
U.S. Cl. D14—121



375,305
DIGITAL VIDEO CASSETTE
Takashi Hiraoka; Kazuhiro Ueda, both of Osaka; Sadayoshi Azuma, Kyoto; Akio Ohno; Hiroyuki Matsumoto, both of Osaka; Kunihiko Kaneda, Okayama, and Akihiro Nishimura, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 16, 1996, Ser. No. 48,737
Term of patent 14 years
U.S. Cl. D14—121



375,306
VIDEO TAPE RECORDER
Toshio Iribe, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jan. 9, 1995, Ser. No. 33,297
Claims priority, application Japan, Jul. 8, 1994, 6-20557
Term of patent 14 years
U.S. Cl. D14—135



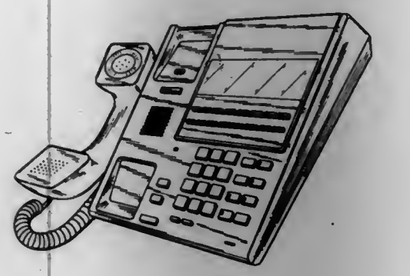
375,307
PUBLIC TELEPHONE
Jose L. P. Lamora, Zaragoza, Spain, assignor to Amper Electoronica Aragonesa, S.A., Zaragoza, Spain
Filed Jul. 28, 1995, Ser. No. 41,967
Claims priority, application Spain, Jan. 30, 1995, 134.304
Term of patent 14 years
U.S. Cl. D14—146



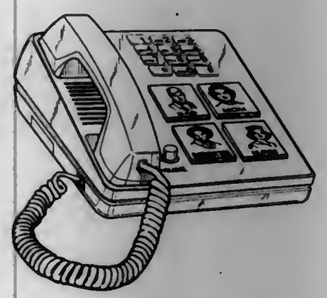
375,308
TELEHONE SET
Tadamine Toh, Kawasaki, Japan, assignor to Nitsuko Corporation, Kanagawa, Japan
Filed Apr. 21, 1995, Ser. No. 37,842
Term of patent 14 years
U.S. Cl. D14—151



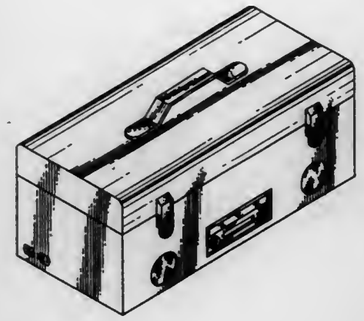
375,309
TELEPHONE SET
Tadamine Toh, Kawasaki, Japan, assignor to Nitsuko Corporation, Kanagawa, Japan
Filed Apr. 21, 1995, Ser. No. 37,845
Term of patent 14 years
U.S. Cl. D14—151



375,310
INTEGRATED TELEPHONE AUTODIALER HAVING A GRAPHIC USER INTERFACE
Clarence L. Wooldridge, 105 Acorn Dr., Rustburg, Va. 24588
Filed Nov. 29, 1995, Ser. No. 47,235
Term of patent 14 years
U.S. Cl. D14—151



375,311
COMBINED TOOLBOX, STEREO TUNER AND CASSETTE PLAYER
Werner Keseling, and Isabelle Keseling, both of 4072 Highland Dr., Prince George, B.C., CN V2k-2C2, Canada
Filed May 19, 1995, Ser. No. 39,086
Term of patent 14 years
U.S. Cl. D14—168

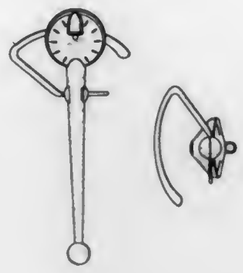


375,312
HEADPHONE
Ryuta Kanno, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Feb. 1, 1995, Ser. No. 38,147
Claims priority, application Japan, Aug. 1, 1994, 6-22883
Term of patent 14 years
U.S. Cl. D14—205

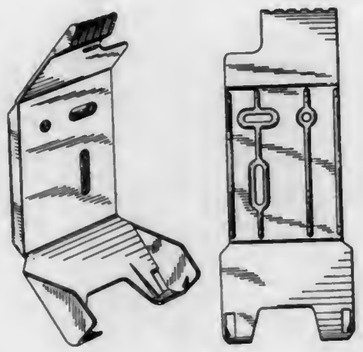


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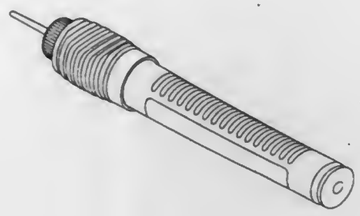
375,313
HEADSET WITH ADJUSTABLE EARHOOK
Finn Jensen, Struer, and Steve McGugan, Copenhagen, both of Denmark, assignors to GN Netcom A/S, Denmark
Filed Jun. 13, 1995, Ser. No. 40,234
Term of patent 14 years
U.S. Cl. D14—206



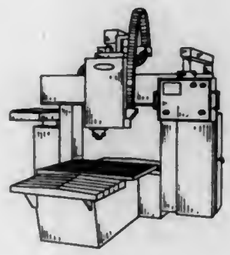
375,314
STAND FOR A CELLULAR TELEPHONE
Guillermo Tagliani, La Pampa 845 7mo A, Capital Federal, Argentina
Filed Jan. 17, 1996, Ser. No. 49,007
Claims priority, application Argentina, Jul. 19, 1995, 062476
Term of patent 14 years
U.S. Cl. D14—253



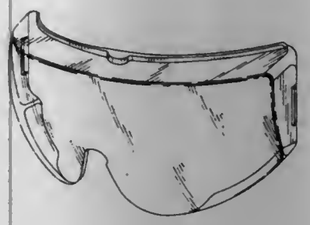
375,315
PUMP
Åsa Paul-Johansson, Viken, Sweden, assignor to Gecko AB, Sweden
Filed Dec. 14, 1995, Ser. No. 48,774
Claims priority, application Sweden, Jun. 16, 1995, 95-1233
Term of patent 14 years
U.S. Cl. D15—7



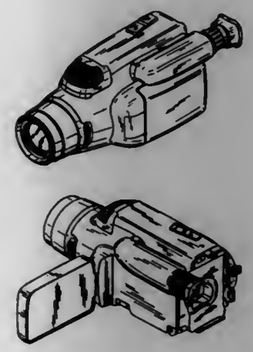
375,316
BRIDGE TYPE VERTICAL MACHINING CENTER
Peter T. H. Tsai, 30160 Matisse Dr., Rancho Palos Verdes, Calif. 90275
Filed Jul. 6, 1995, Ser. No. 41,160
Term of patent 14 years
U.S. Cl. D15—131



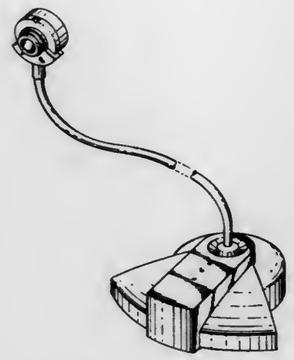
375,317
GOGGLE LENS
Richard W. Canavan, East Woodstock, Conn., assignor to Uvex Safety, Inc., Smithfield, R.I.
Filed Nov. 2, 1995, Ser. No. 45,897
Term of patent 14 years
U.S. Cl. D16—101



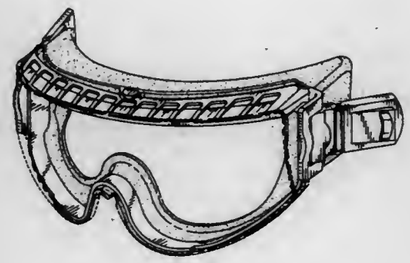
375,318
COMBINED VIDEO TAPE RECORDER AND CAMERA
Daisuke Ishii, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 3, 1995, Ser. No. 35,625
Term of patent 14 years
U.S. Cl. D16—202



375,319
TABLETOP VIDEO CAMERA
Ward C. Johnson, 4507 Moorland Ave.; Douglas S. Clapp, 4312 Branson St., both of Edina, Minn. 55424, and David E. Krekelberg, 8768 Cottonwood La., Maple Grove, Minn. 55369
Continuation of Ser. No. 27,914, Jul. 29, 1994, abandoned, which is a continuation of Ser. No. 7,749, Apr. 29, 1993, abandoned. This application Apr. 3, 1995, Ser. No. 37,064
Term of patent 14 years
U.S. Cl. D16—202



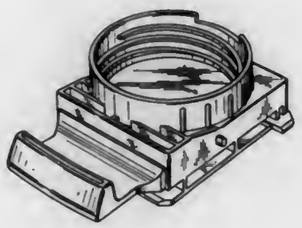
375,320
GOGGLE BODY
Richard W. Canavan, East Woodstock, Conn., assignor to Uvex Safety, Inc., Smithfield, R.I.
Filed Nov. 2, 1995, Ser. No. 46,750
Term of patent 14 years
U.S. Cl. D16—312



375,321
EYEGLASSES
Jey-Ching Lin, Taipei, Taiwan, assignor to Mao Lin Enterprise Co., Ltd., Taipei, Taiwan
Filed Oct. 27, 1995, Ser. No. 45,741
Term of patent 14 years
U.S. Cl. D16—327



375,322
TONER BOTTLE CAP FOR COPYING MACHINE
Toshiaki Nagashima; Ei Yamamoto, both of Yokohama, and Kunihiko Kitayama, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 27, 1995, Ser. No. 44,587
Claims priority, application Japan, Mar. 28, 1995, 7-8427
Term of patent 14 years
U.S. Cl. D18—40



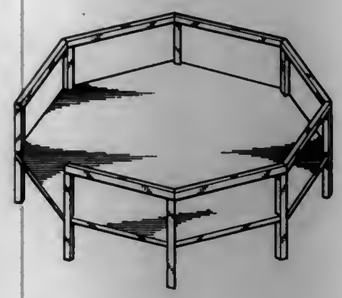
375,323
PEN
Brian Q. Young, P.O. Box 862469 Terminal Annex, Los Angeles, Calif. 90086-2469
Filed Jul. 5, 1994, Ser. No. 25,527
Term of patent 14 years
U.S. Cl. D19—49



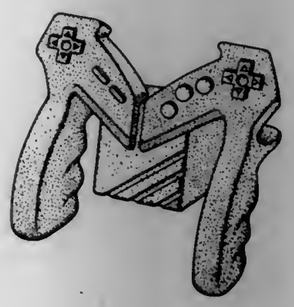
375,324
ADHESIVE-BACKED LABEL
Joseph J. Grass, Kettering, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio
Filed Mar. 20, 1995, Ser. No. 36,417
Term of patent 14 years
U.S. Cl. D20—11



375,325
DECK CONSTRUCTION GAME
Willa McClellan, 345 Martha Ave., Buffalo, N.Y. 14215
Division of Ser. No. 8,563, May 20, 1993, Pat. No. Des. 358,849. This application May 19, 1995, Ser. No. 39,023
Term of patent 14 years
U.S. Cl. D21—1



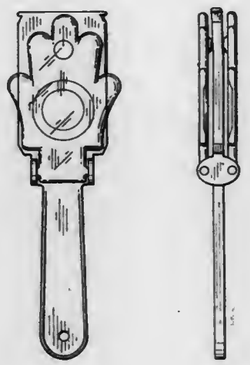
375,326
CONTROLLER FOR GAME MACHINE
Gunpei Yokoi, and Kenichi Sugino, both of Kyoto-fu, Japan, assignors to Nintendo Co., Ltd., Japan
Filed Oct. 31, 1994, Ser. No. 30,441
Claims priority, application Japan, May 2, 1994, 6-12834
Term of patent 14 years
U.S. Cl. D21—48



375,327
VIDEO CAPTURE ADAPTER FOR USE WITH A COMBINED VIDEO GAME MACHINE AND SEAL PRINTER
Atsushi Shigemura, Tokyo, and Kenji Takahata, Hino, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 28, 1995, Ser. No. 48,433
Term of patent 14 years
U.S. Cl. D21—48

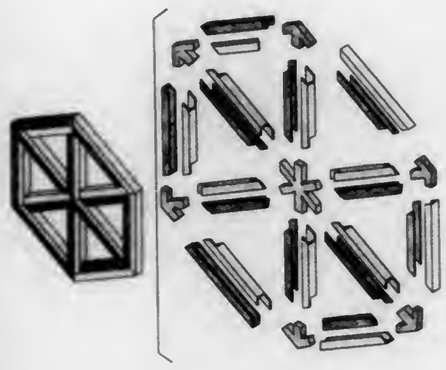


375,328
NOISEMAKER
Lloyd Gilbert, Jr., Broken Arrow, and Mark S. Hanna, Tulsa, both of Okla., assignors to Michael B. Fine, Tulsa, Okla.
Division of Ser. No. 10,985, Jul. 21, 1993, Pat. No. Des. 369,388, which is a continuation-in-part of Ser. No. 930,139, Aug. 14, 1992, abandoned. This application Dec. 29, 1995, Ser. No. 48,473
Term of patent 14 years
U.S. Cl. D21—64

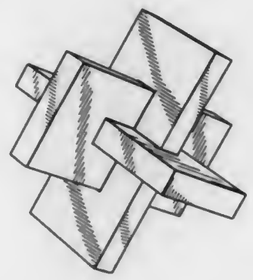


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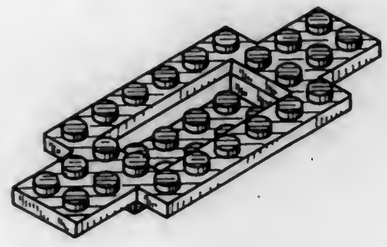
375,329
GEOMETRIC STRUCTURAL PUZZLE
Matthew F. Lennon, and Patricia A. Lennon, both of 3873 Evelyn Dr., Wilmington, Del. 19808
Filed Dec. 5, 1995, Ser. No. 47,460
Term of patent 14 years
U.S. Cl. D21—104



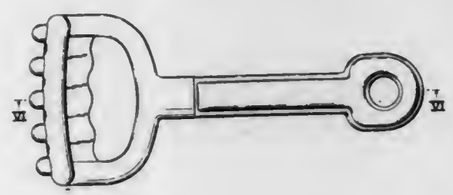
375,330
PUZZLE
Jerry Ritzman, 4326 S. 390 East, Murray, Utah 84107
Filed Mar. 3, 1994, Ser. No. 19,513
Term of patent 14 years
U.S. Cl. D21—107



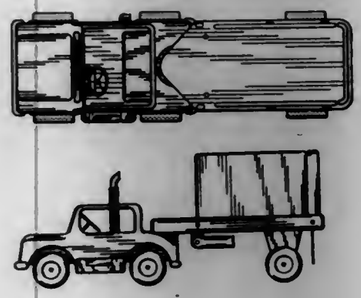
375,331
TOY BUILDING ELEMENT
Kim Pagel, Billund, Denmark, assignor to INTERLEGO AG, Baar, Switzerland
Filed Sep. 14, 1995, Ser. No. 43,981
Term of patent 14 years
U.S. Cl. D21—108



375,332
TOY RAKE
Moriya Kino, Yokohama, Japan, assignor to Royal Co., Ltd., Japan
Filed Jan. 27, 1995, Ser. No. 34,100
Claims priority, application Japan, Aug. 3, 1994, 6-23557
Term of patent 14 years
U.S. Cl. D21—120



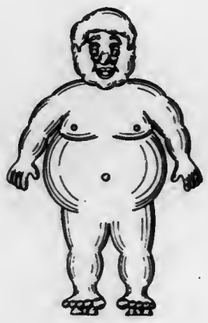
375,333
TOY TRUCK/TRAILER COMBINATION
Cary Golden, P.O. Box 2593, Athens, Tex. 75751
Filed Sep. 27, 1994, Ser. No. 29,013
Term of patent 14 years
U.S. Cl. D21—135



375,334
PUPPET
Amir Moghaddami, P.O. Box 281, Orlando, Fla. 32802
Filed Apr. 20, 1995, Ser. No. 37,800
Term of patent 14 years
U.S. Cl. D21—152



375,335
DOLL
Bruce A. Stone, 1244 N. 3000 W., Clinton, Utah 84015
Filed Dec. 8, 1995, Ser. No. 47,646
Term of patent 14 years
U.S. Cl. D21—166

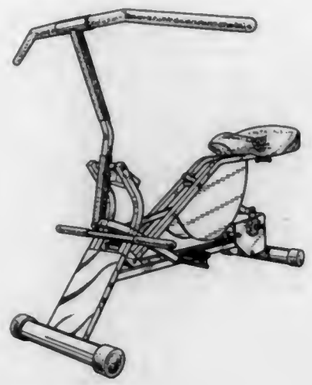


375,336
ETHNIC DOLL
Johnnie L. Birks, 442 Wesley La., Duncanville, Tex. 75137
Filed Jan. 20, 1995, Ser. No. 33,786
Term of patent 14 years
U.S. Cl. D21—180

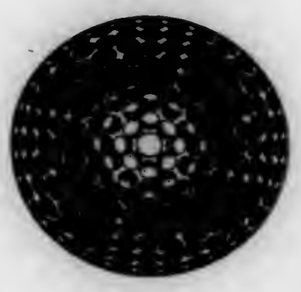


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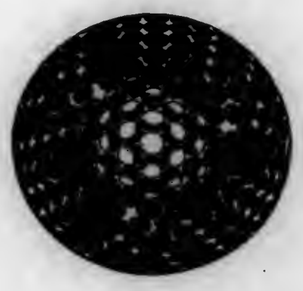
375,337
EXERCISE MACHINE
Joseph E. Adkins, and Jeffrey A. Adkins, both of P.O. Box 7758, Huntington, W. Va. 25776
Filed Dec. 20, 1995, Ser. No. 48,086
Term of patent 14 years
U.S. Cl. D21—195



375,338
GOLF BALL DIMPLE PATTERN
Joseph F. Stiefel, Ludlow, Mass., and Donald J. Bunger, Waterbury, Conn., assignors to Lisco, Inc., Tampa, Fla.
Filed Sep. 13, 1995, Ser. No. 43,875
Term of patent 14 years
U.S. Cl. D21—205



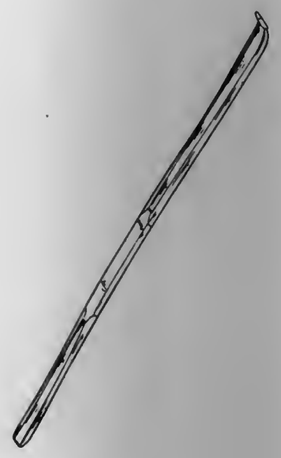
375,339
GOLF BALL DIMPLE PATTERN
Joseph F. Stiefel, Ludlow, Mass., and Donald J. Bunger, Waterbury, Conn., assignors to Lisco, Inc., Tampa, Fla.
Filed Sep. 13, 1995, Ser. No. 43,880
Term of patent 14 years
U.S. Cl. D21—205



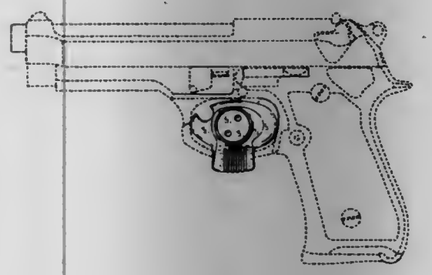
375,340
GOLF CLUB GRIP
Michael E. Stryczek, Phoenix, Ariz., assignor to StryStar International, L.L.C., Phoenix, Ariz.
Filed Dec. 13, 1995, Ser. No. 47,862
Term of patent 14 years
U.S. Cl. D21—222



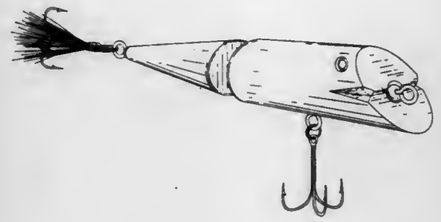
375,341
SKI
Hervé Andrevon, Doussard, and Thomas Sallet, Annecy, both of France, assignors to Salomon S.A., Metz-Tessy, France
Filed Aug. 4, 1994, Ser. No. 26,741
Term of patent 14 years
U.S. Cl. D21—229



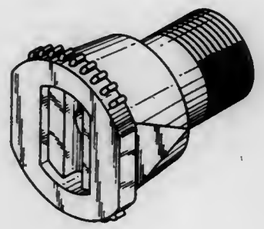
375,342
TRIGGER LOCK
David A. Collins, Hot Springs, Ark., assignor to DAC Technologies of America Inc, Little Rock, Ark.
Filed May 10, 1995, Ser. No. 38,676
Term of patent 14 years
U.S. Cl. D22—108



375,343
FISHING LURE
Orvin R. Jones, 13309 Dollarway Rd., Pine Bluff, Ark. 71602
Filed Aug. 18, 1995, Ser. No. 42,847
Term of patent 14 years
U.S. Cl. D22—128



375,344
FLOW NOZZLE
Dallas Simonette, Andover, Minn., assignor to General Pump/US, Inc., Mendota Heights, Minn.
Filed Jun. 2, 1995, Ser. No. 39,711
Term of patent 14 years
U.S. Cl. D23—218

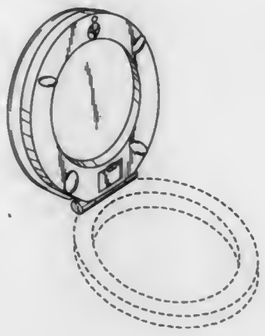


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375,345
FIXED SPOUT FAUCET
Jerome Warshawsky, Hewlett Harbor, N.Y., assignor to I.W. Industries, Inc., Melville, N.Y.
Filed Aug. 31, 1994, Ser. No. 27,870
Term of patent 14 years
U.S. Cl. D23—241



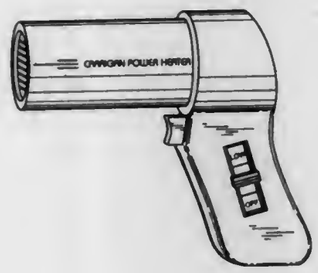
375,346
ILLUMINATED TOILET SEAT
Juan Garcia, 2499 Kapiolani Blvd., Apt. 1001, Honolulu, Hi. 96826
Filed Apr. 7, 1995, Ser. No. 37,252
Term of patent 14 years
U.S. Cl. D23—311



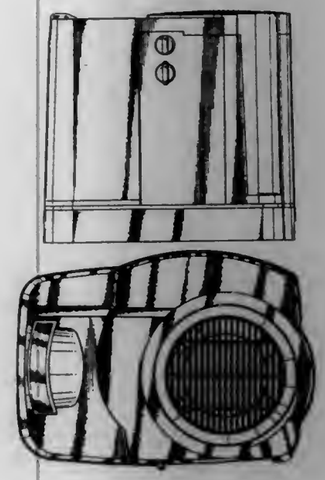
375,347
PORTABLE OUTDOOR FIREPLACE
Bernard F. Whalen, Macomb, and Paul Doubet, Farmington, both of Ill., assignors to Yetter Manufacturing Co., Colchester, Ill.
Filed Jan. 11, 1995, Ser. No. 33,375
Term of patent 14 years
U.S. Cl. D23—317



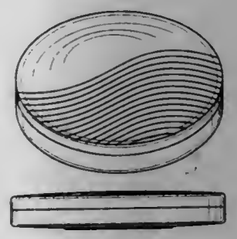
375,348
HEATED AIR BLOWER
Sonja Varrigan, 620 S. Grand West, Springfield, Ill. 62704
Filed Jan. 20, 1995, Ser. No. 33,796
Term of patent 14 years
U.S. Cl. D23—335



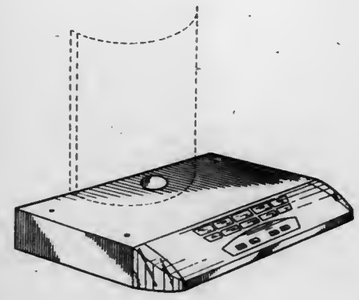
375,349
HUMIDIFIER
Leo Gonzales, c/o Lasko Metal Products, 820 Lincoln Ave., West Chester, Pa. 19380
Filed Aug. 23, 1995, Ser. No. 43,008
Term of patent 14 years
U.S. Cl. D23—356



375,350
MINIATURE DISPENSER FOR AIR TREATING MATERIAL
Manhar K. Patel, Saddle Brook; John M. Paulovich, Hewitt, both of N.J.; Earl Hoyt, Woodstock, N.Y., and Michael Lyons, Nechanic Station, N.J., assignors to Reckitt & Colman Inc., Montvale, N.J.
Filed Oct. 31, 1994, Ser. No. 30,511
Term of patent 14 years
U.S. Cl. D23—366



375,351
COMBINED SUCTION AND FILTERING HOOD FOR KITCHENS
Gabriele Conforti, Fabriano, Italy, assignor to TURBOAIR S.p.A., Italy
Filed Jul. 10, 1995, Ser. No. 41,236
Claims priority, application Italy, Jan. 12, 1995, TO95O0006
Term of patent 14 years
U.S. Cl. D23—372



375,352
DISPENSING VIAL FOR FEMININE HYGIENE PRODUCTS
William J. Bologna, New York, N.Y., assignor to Columbia Laboratories, Inc., Coconut Grove, Fla.
Continuation-in-part of Ser. No. 863,879, Apr. 6, 1992, Pat. No. Des. 345,211. This application Mar. 14, 1994, Ser. No. 19,916
Term of patent 14 years
U.S. Cl. D24—115

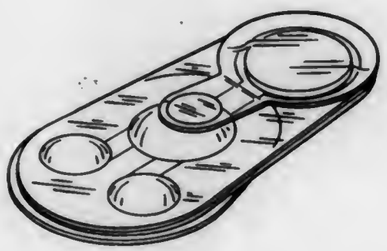


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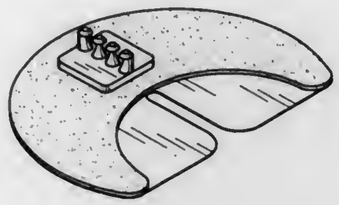
375,353
MEDICATION DOSING SPOON
Stephen H. Wolff, 35 W. 35th St., New York, N.Y. 10001
Filed Oct. 14, 1994, Ser. No. 29,721
Term of patent 14 years
U.S. Cl. D24—116



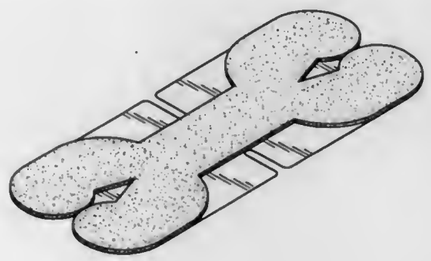
375,354
COMPACT APPLICATOR FOR A TOPICAL ASTRINGENT DISINFECTANT
Terry M. Haber, El Toro; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Lake Forest, Calif.
Filed Dec. 12, 1994, Ser. No. 31,980
Term of patent 14 years
U.S. Cl. D24—119



375,355
ANCHOR PAD WITH RELEASE LAYER
Steven F. Bierman, Del Mar, Calif., assignor to Venetec International, Inc., Mission Viejo, Calif.
Filed Mar. 14, 1995, Ser. No. 36,141
Term of patent 14 years
U.S. Cl. D24—128



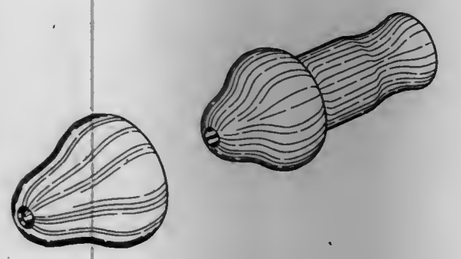
375,356
ANCHOR PAD WITH RELEASE LAYER
Steven F. Bierman, Del Mar, Calif., assignor to Venetec International, Inc., Mission Viejo, Calif.
Filed Apr. 27, 1995, Ser. No. 38,063
Term of patent 14 years
U.S. Cl. D24—128



375,357
TUBING CONNECTOR FOR A BREAST PUMP ASSEMBLY
Brian H. Silver, Cary, Ill., assignor to Medela, Inc., McHenry, Ill.
Filed Mar. 10, 1995, Ser. No. 36,040
Term of patent 14 years
U.S. Cl. D24—129



375,358
PENIS FORESKIN STRETCHING INSTRUMENT
Roland T. Clark, 22052 Islander La., Huntington Beach, Calif. 92646
Filed Mar. 18, 1994, Ser. No. 20,093
Term of patent 14 years
U.S. Cl. D24—133

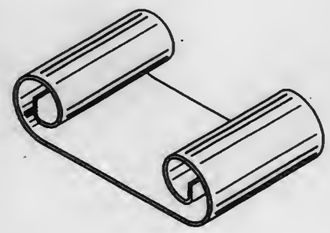


375,359
Patent Not Issued For This Number

375,360
ORTHODONTIC CLASP BRACKET
Harry W. Tepper, 535 Ocean Ave. #2B, Santa Monica, Calif. 90402
Filed Sep. 12, 1995, Ser. No. 43,770
Term of patent 14 years
U.S. Cl. D24—180

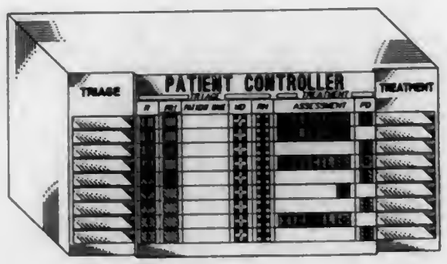


375,361
PROXITECTOR
Ole Østerby, Odense, Denmark, assignor to Ole Osterby, Odense, Denmark
Filed Apr. 21, 1995, Ser. No. 37,817
Claims priority, application Denmark, Oct. 28, 1994, 0973 1994
Term of patent 14 years
U.S. Cl. D24—181

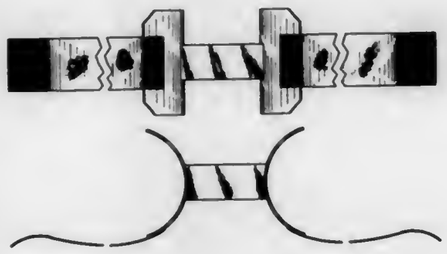


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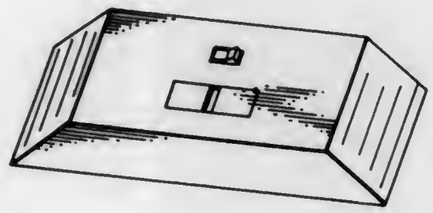
375,362
PATIENT MONITOR
Frank L. Brown, 803 Nathan Hale Dr., West Chester, Pa. 19382
Filed Apr. 25, 1994, Ser. No. 21,907
Term of patent 14 years
U.S. Cl. D24—186



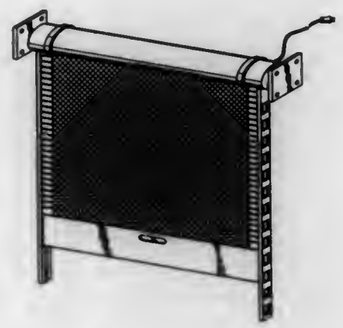
375,363
COMBINED UPPER LEG AND THIGH SPACER DEVICE FOR THE PHYSICALLY IMPAIRED
Francis E. Reynolds, 146 Canterbury La., Alpena, Mich. 49707
Filed Sep. 29, 1995, Ser. No. 44,754
Term of patent 14 years
U.S. Cl. D24—190



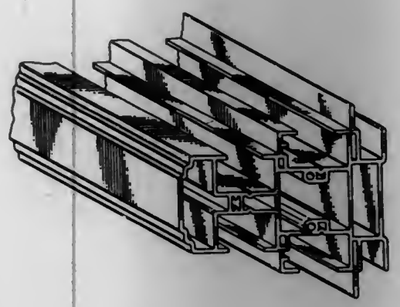
375,364
VIBRATING BODY MASSAGING DEVICE
Shemshon Lazari, 252 Omira Dr., San Jose, Calif. 95123
Filed Oct. 27, 1995, Ser. No. 45,737
Term of patent 14 years
U.S. Cl. D24—215



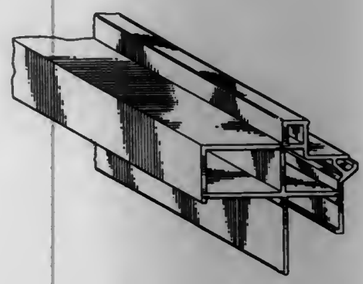
375,365
GARAGE DOOR SCREEN
Cliff Kinkade, and James Thurston, both of Rt. 1 Box 126, Noble, Ill. 62868
Filed Sep. 7, 1995, Ser. No. 43,596
Term of patent 14 years
U.S. Cl. D25—53



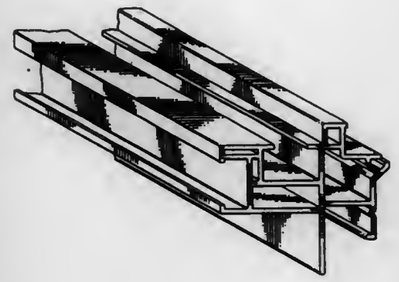
375,366
WINDOW MULLION
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Oct. 18, 1995, Ser. No. 45,361
Term of patent 14 years
U.S. Cl. D25—124



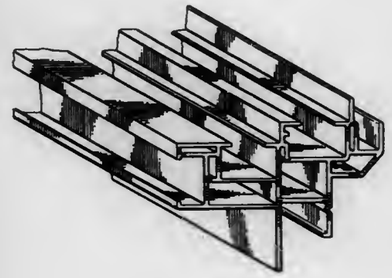
375,367
WINDOW HEADER
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Oct. 18, 1995, Ser. No. 45,366
Term of patent 14 years
U.S. Cl. D25—124



375,368
WINDOW JAMB
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Oct. 18, 1995, Ser. No. 45,404
Term of patent 14 years
U.S. Cl. D25—124

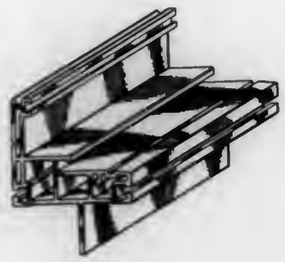


375,369
WINDOW JAMB
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Oct. 18, 1995, Ser. No. 45,405
Term of patent 14 years
U.S. Cl. D25—124

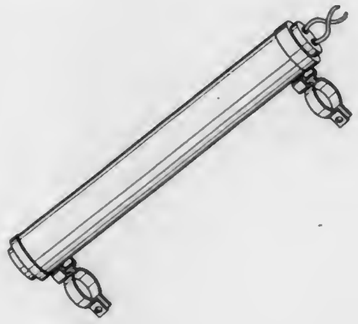


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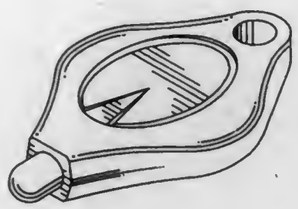
375,370
CASEMENT FRAME
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Oct. 19, 1995, Ser. No. 45,417
Term of patent 14 years
U.S. Cl. D25—124



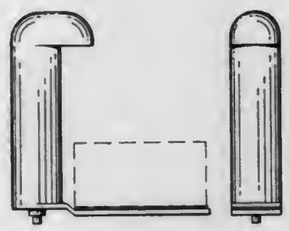
375,371
BIKE SAFETY LIGHT
Harold H. Dutton, Jr., 205 Southampton, Lower Front Apt., Buffalo, N.Y. 14208
Filed Oct. 23, 1995, Ser. No. 45,537
Term of patent 14 years
U.S. Cl. D26—28



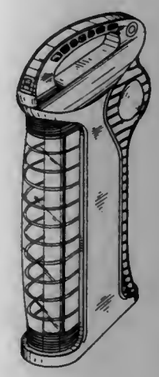
375,372
POCKET FLASHLIGHT
David M. Allen, P.O. Box 34, Blachly, Oreg. 97412-0034
Filed Mar. 21, 1995, Ser. No. 36,484
Term of patent 14 years
U.S. Cl. D26—37



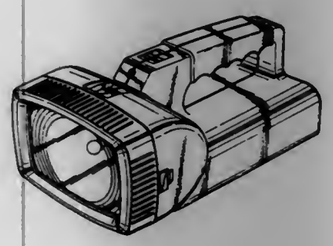
375,373
LIGHT FOR A REMOTE CONTROL DEVICE
Peter C. Mele, P.O. Box 533, Crown Point, N.Y. 12928
Filed Sep. 27, 1995, Ser. No. 44,606
Term of patent 14 years
U.S. Cl. D26—38



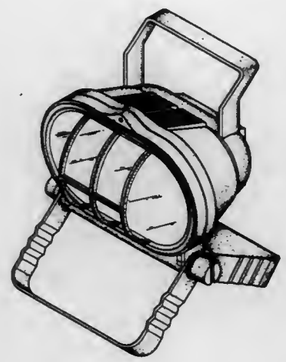
375,374
MULTI-FLUORESCENT LANTERN WITH EMERGENCY LIGHT
Se Kit Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Aug. 24, 1994, Ser. No. 27,536
Claims priority, application United Kingdom, Apr. 7, 1994, 2038248
Term of patent 14 years
U.S. Cl. D26—42



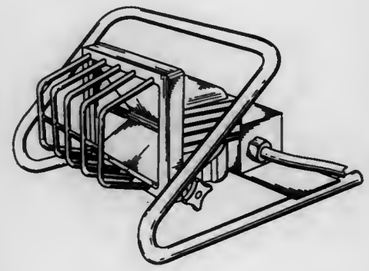
375,375
RECHARGEABLE FLASHLIGHT
Tit-ying Poon, Shatin, Hong Kong, assignor to Flying Dragon Development Ltd., Hong Kong
Filed Jan. 19, 1996, Ser. No. 49,215
Term of patent 14 years
U.S. Cl. D26—44



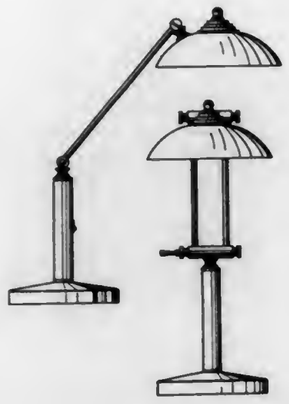
375,376
HOUSING FOR PORTABLE SEARCH LIGHT
Wei H. Shen, 6F, No. 416, Sec. 4, Jen Ai Rd., Taipei, Taiwan
Filed Sep. 8, 1994, Ser. No. 28,172
Term of patent 14 years
U.S. Cl. D26—63



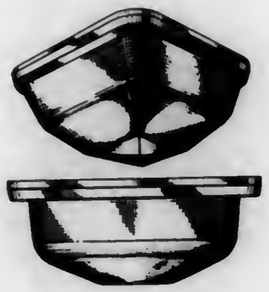
375,377
HALOGEN WORK LIGHT
Monte A. Leen, 1804 W. Lake Sammamish Pkwy. NE., Bellevue, Wash. 98008
Filed Mar. 17, 1995, Ser. No. 36,333
Term of patent 14 years
U.S. Cl. D26—63



375,378
LAMP
Chin-Shyang Wang, 41, Lane 343, Sec 5, Lu Ho Road, Ho Mei Town, Changhua Hsien, Taiwan
Filed Oct. 31, 1995, Ser. No. 45,841
Term of patent 14 years
U.S. Cl. D26—65



375,379
COMBINED LUMINAIRE LENS AND MOUNTING FRAME
Vincent C. DiCola, Cincinnati; Michael D. Wyatt, Hamilton, and Jerry F. Fischer, West Chester, all of Ohio, assignors to LSI Industries, Inc., Cincinnati, Ohio
Filed Aug. 17, 1995, Ser. No. 42,775
Term of patent 14 years
U.S. Cl. D26—85



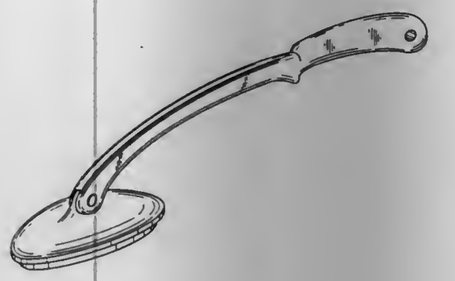
375,380
FLOOR LAMP
Sally S. Lewis, 715 N. Canon Dr., Beverly Hills, Calif. 90210
Filed Jul. 25, 1995, Ser. No. 41,825
Term of patent 14 years
U.S. Cl. D26—111



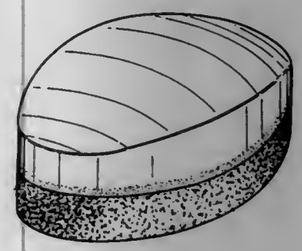
375,381
MULTI-POSITIONABLE DROP LIGHT CAGE ASSEMBLY
Edwin Carr, 15162 Carr Rd., Clayton, N.Y. 13624
Filed May 1, 1995, Ser. No. 38,195
Term of patent 14 years
U.S. Cl. D26—119



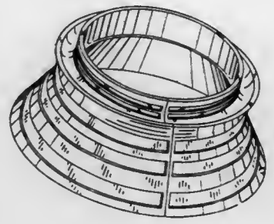
375,382
SKIN LOTION APPLICATOR
Daniel T. Beeler, and Cynthia L. Beeler, both of 5406 Carthage Ave., Norwood, Ohio 45212
Filed Oct. 6, 1995, Ser. No. 46,574
Term of patent 14 years
U.S. Cl. D28—7



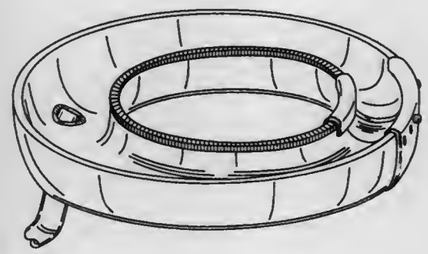
375,383
COMBINED SOAP PRODUCT AND EXFOLIATION PAD
Lendell J. Williams, St. Charles, Mich., assignor to Karlen Manufacturing, Inc., St. Charles, Mich.
Filed Sep. 9, 1994, Ser. No. 28,225
Term of patent 14 years
U.S. Cl. D28—8.1



375,384
HAIR STYLIST'S VACUUM CAPE
Peter Baker, 221 S. Haven Ave., Medford, N.Y. 11763-4072
Filed Jun. 23, 1995, Ser. No. 40,656
Term of patent 14 years
U.S. Cl. D28—9



375,385
SHAMPOO TRAY
Dora E. Mock, 9 Saxonney Cir., Flemington, N.J. 08822
Filed Aug. 7, 1995, Ser. No. 42,296
Term of patent 14 years
U.S. Cl. D28—20

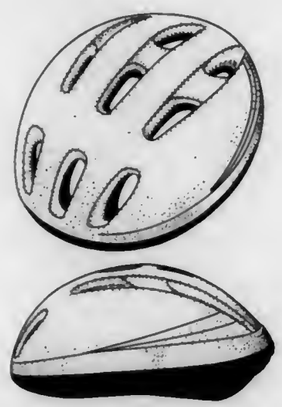


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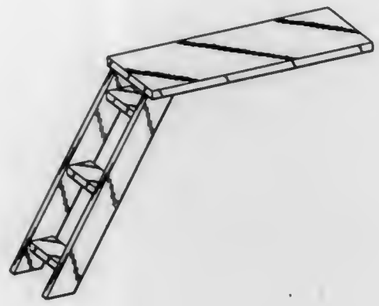
375,386
HAIR CONTROL PIECE
Suzanne C. Smith, 3925 Beech Ave., Baltimore, Md. 21211
Filed Feb. 21, 1995, Ser. No. 35,095
Term of patent 14 years
U.S. Cl. D28—41



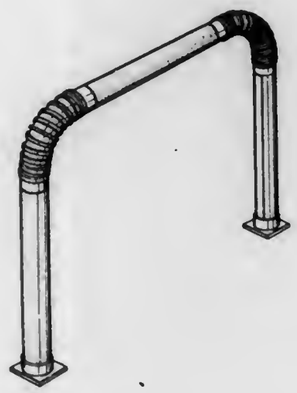
375,387
CYCLIST'S HELMET
Louis Garneau, St-Augustin-de-Desmaures, Canada, assignor to Cycle 2000 Inc., Canada
Filed Jan. 21, 1994, Ser. No. 17,755
Term of patent 14 years
U.S. Cl. D29—102



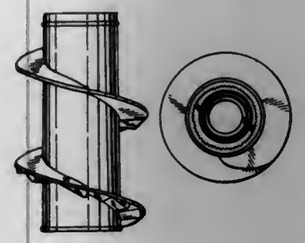
375,388
CAT VERANDA
Betty C. Tsugita, P.O. Box 391180, Mountain View, Calif. 94039-1180
Filed Apr. 27, 1995, Ser. No. 38,064
Term of patent 14 years
U.S. Cl. D30—118



375,389
ARCH FOR A VEHICLE WASH
Michael J. Belanger, Walled Lake, and Barry S. Turner, Livonia, both of Mich., assignors to Belanger, Inc., Northville, Mich.
Filed Dec. 12, 1994, Ser. No. 31,977
Term of patent 14 years
U.S. Cl. D32—4



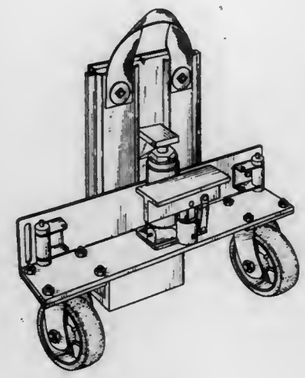
375,390
SCRUBBER AUGER AGITATOR FOR AN AUTOMATIC WASHER
Robert J. Pinkowski, Baroda, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Jul. 25, 1994, Ser. No. 26,343
Term of patent 14 years
U.S. Cl. D32—26



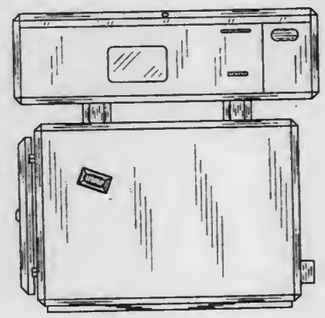
375,391
MOP HEAD
Todd A. Williams, Aliso Viejo, and Richard A. Williams, Dana Point, both of Calif., assignors to Economics in Technology, Costa Mesa, Calif.
Continuation-in-part of Ser. No. 30,610, Nov. 3, 1994, Pat. No. Des. 362,938. This application Apr. 25, 1995, Ser. No. 37,967
Term of patent 14 years
U.S. Cl. D32—50



375,392
PORTABLE DOLLY WITH HYDRAULIC LIFT
Michael L. Turnage, Riverside; Michael C. Totten, Hemet, and William D. Cohee, Riverside, all of Calif., assignors to High Desert Equipment Corp., Hemet, Calif.
Filed Jan. 10, 1995, Ser. No. 33,343
Term of patent 14 years
U.S. Cl. D34—28

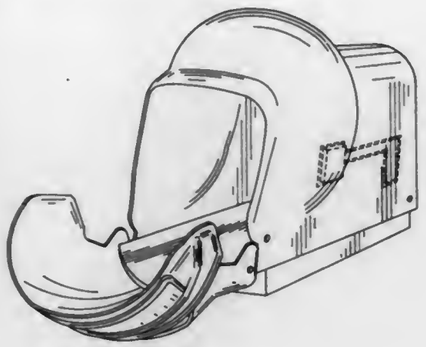


375,393
AUTOMATIC TELLER MACHINE
Henry H. H. Chak, Hong Kong, Hong Kong, assignor to Datatech International Inc., Villa Park, Ill.
Filed Dec. 2, 1994, Ser. No. 31,695
Term of patent 14 years
U.S. Cl. D99—28



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FOOTBALL HELMET MAILBOX
George S. Hodges, Berea, Ky., assignor to Sportsbox, Inc., Richmond, Ky.
Filed Jul. 19, 1994, Ser. No. 26,000
Term of patent 14 years
U.S. Cl. D99—30



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5th DAY OF NOVEMBER, 1996

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Abbott, Joe L. Method and apparatus for forming extruded metal tubes. 5,570,806, Cl. 220-604.000.
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Aboaf, Joseph A.; Dennison, Edward V.; Friedman, Jules D.; Kahwaty, Vincent N.; and Kluge, Herman C., to International Business Machines Corporation. Arbitrary pattern write head assembly for writing timing-based servo patterns on magnetic storage media. 5,572,392, Cl. 360-126.000.
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Ackermann, Robert A.; Herd, Kenneth G.; Laskaris, Evangelos T.; and Ranze, Richard A., to General Electric Company. Ceramic superconducting lead resistant to breakage. 5,571,606, Cl. 428-285.000.
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Cotreau, Gerald M., to Harris Corporation. Filter with reduced element ratings and method. 5,572,162, Cl. 327-552.000.
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Cotton, Christopher; and Pang, Yang, to Clark MXR, Inc. Optical system for stretching, compressing and amplifying ultrashort optical pulses. 5,572,355, Cl. 359-333.000.
Coufal, Hans J.; and Grygier, Robert K., to International Business Machines Corporation. Surgical cutting instrument. 5,571,106, Cl. 606-80.000.
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Cox, Paul: *See—*
LeMarbe, Edward S.; Van Nguyen, Sao; and Cox, Paul, 5,570,822, Cl. 222-459.000.
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Sekula, Bernard C.; Ziegert, Thaddeus R.; and Ferenz, Michael R., 5,571,935, Cl. 554-168.000.
Crabtree, Allen F., IV. Method and apparatus for manipulating, projecting and displaying light in a volumetric format. 5,572,375, Cl. 359-858.000.
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Creeron, Richard F.; Gershun, Aleksei V.; Woodward, Stephen M.; and Woyciesjes, Peter M., to Prestone Products Corporation. Cooling system change over apparatus and process. 5,571,420, Cl. 210-665.000.
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Comoglio, Paolo; Crepaldi, Tiziana; and Prat, Maria, 5,571,509, Cl. 424-94.500.
Cresco Inc., SA.: *See—*
Andoe, Graham C., 5,571,312, Cl. 106-18.320.
Crisman, Jill D.; Kanojia, Chaitanya; and Zeid, Ibrahim, to Northeastern University. Robot arm end effector. 5,570,920, Cl. 294-111.000.
Crocker, Michael, to Cardiovascular Dynamics, Inc. Low profile perfusion catheter. 5,571,089, Cl. 604-102.000.
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Cross, Barrington; Los, Marinus; Doehner, Robert F., Jr.; Ladner, David W.; and Johnson, Jerry L., to American Cyanamid Company. (2-imidazolin-2-yl) fused heteropyridine compounds intermediates for the preparation of and use said compounds as herbicidal agents. 5,571,773, Cl. 504-221.000.
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Iranmanesh, Ali A., 5,572,062, Cl. 257-530.000.
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Olsen, John N.; and Crowe, David E., 5,570,861, Cl. 248-74.100.
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Cruz, Cosme; Dow, Richard W.; and Quinn, David G. Multiple-lumen catheter. 5,571,093, Cl. 604-270.000.
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Orriss, Richard A.; Balazs, Margaret K.; Castrovinci, Laura L. T.; Cebulka, Kathleen D.; Chen, Yea-Cheiung E.; Crystal, Neal N.; Gaylord, Kelly J.; and Hartley, George W., 5,572,579, Cl. 379-142.000.
Crystallume: *See—*
Phillips, William; and Pinneo, John M., 5,571,616, Cl. 428-336.000.
Csabai, Julius S. Sport racket with string stabilization and friction coating. 5,570,883, Cl. 273-73.00D.
Cuevas, Jess A., to TRW Inc. Air bag inflator with movable container. 5,570,904, Cl. 280-737.000.
Cugnon de Sevricourt, Michel P.; Dacquet, Catherine G.; Finet, Michel A.; Le Marquer, Florence J.; Robba, Max F.; Tembo, Norbert O.; Yannic-Arnoult, Sylvie J.; and Torregrosa, Jean-Luc, to Innothera. Derivatives of indan-1,3-dione and indan-1,2,3-trione, methods of preparing them and therapeutic use thereof. 5,571,843, Cl. 514-590.000.
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Curran, Brian W., to International Business Machines Corporation. Method and apparatus for reducing bus noise and power consumption. 5,572,736, Cl. 395-750.000.
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Cutler, Victor H., Jr.; and Happ, Henry J., III, to Motorola, Inc. Data routing method and apparatus for communication systems having multiple nodes. 5,572,512, Cl. 370-13.000.
Cutrer, Robert E. Home security interlocking hinges and striker plates. 5,570,917, Cl. 292-346.000.
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Wernicke, Joachim F.; Terry, Reese S., Jr.; and Baker, Ross G., Jr., 5,571,150, Cl. 607-72.000.
Cymbal, William D., to General Motors Corporation. Adjustable steering column. 5,570,610, Cl. 74-493.000.
Cypress Semiconductor Corporation: *See—*
Gowni, Shiva P., 5,572,715, Cl. 395-555.000.
Sheen, Ben Y.; Lacey, Timothy M.; and Cheung, Sammy, 5,572,474, Cl. 365-207.000.
Cyr, Paul A. Wear blade for snowmobile endless track suspension. 5,571,275, Cl. 305-127.000.
Cyrix Corporation: *See—*
Garibay, Raul A., Jr.; and Duschatko, Douglas E., 5,572,682, Cl. 395-250.000.
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Gupta, Ram B., 5,571,915, Cl. 544-200.000.
Pierce, George E., 5,571,705, Cl. 435-174.000.
Santini, John J.; and Yankie, N. Alan, 5,571,862, Cl. 524-801.000.
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Wahhoud, Adnan; and Czura, Peter, 5,570,726, Cl. 139-434.000.
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Skaletz, Detlef; Czyborra, Ludger; Heckel, Horst; and Mehmke, Karin, 5,571,356, Cl. 156-166.000.
D & L Incorporated: *See—*
Starkey, Glenn, 5,571,539, Cl. 425-135.000.
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Daewoo Electronics Co, Ltd.: *See—*
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Choi, Hyungho, 5,572,498, Cl. 369-77.200.
Kim, Goonjin, 5,572,501, Cl. 369-112.000.
Moon, Sung-Dai, 5,570,999, Cl. 417-307.000.
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Dahlstrom, Richard C.; and Melrose, Clayton A. Oven apparatus. 5,570,627, Cl. 99-427.000.
Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
Shiraiwa, Tetsuo, 5,571,472, Cl. 264-439.000.
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Higuchi, Naoshige, 5,571,455, Cl. 252-513.000.
Dai Nippon Printing Co., Ltd.: *See—*
Utsumi, Minoru; Obata, Hiroyuki; Take, Seiji; Iijima, Masayuki; and Kamiyama, Hironori, 5,571,646, Cl. 430-48.000.
Daijavad, Shahrokh: *See—*

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Christensen, Bjørn E.; Lange, Niels K.; and Daimon, Kosaku, 5,571,719, Cl. 435-264.000.

Dainichiseika Color & Chemical Mfg. Co., Ltd.: *See*—
Kuriyama, Katsumi; Endoh, Takao; and Akita, Teruo, 5,571,623, Cl. 428-403.000.

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Izumi, Akira; and Matsuka, Takeshi, 5,571,375, Cl. 156-646.100.
Ueyama, Tsutomu; Adachi, Hideki; Matsumura, Yoshio; and Tanaka, Yasuhide, 5,571,325, Cl. 118-320.000.

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Carlson, Bruce N., 5,571,856, Cl. 524-446.000.

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Mayor, Gilbert H.; and D'Alecy, Louis G., 5,571,840, Cl. 514-567.000.

Daley, Chuck; Sweetman, Robert J.; and Lenny, Charlie, to Fusion Systems Corporation. Magnetron variable power supply with moding prevention. 5,571,439, Cl. 219-716.000.

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Kerampran, Patrick K., 5,571,389, Cl. 204-224.00R.

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Berke, Neal S.; and Dallaire, Michael P., 5,571,319, Cl. 106-802.000.

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Dalton, Dennis L.; Oppermann, Robert A.; and Chambers, Hayley, to Buckman Laboratories International, Inc. Synergistic combination of 2-(thiocyanomethylthio)benzothiazole and thiophanate compounds useful as fungicides. 5,571,443, Cl. 252-8.570.

Daman, Ernest L., to Foster Wheeler Development Corporation. Process and apparatus for supercritical water oxidation. 5,571,423, Cl. 210-761.000.

Dan, Asit; and Sitaram, Dinkar, to International Business Machines Corporation. Buffer management policy for an on-demand video server. 5,572,645, Cl. 395-501.000.

Dangelo, Carlos; Nagasamy, Vijay; and Ponukumati, Vijayanand, to LSI Logic Corporation. Method and system for creating and validating low level description of electronic design. 5,572,436, Cl. 364-489.000.

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Rostoker, Michael D.; Dangelo, Carlos; and Bair, Owen S., 5,572,437, Cl. 364-489.000.

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Danovaro, Enrico; and Ghini, Enrico. Device for bundling up containers, in particular beverage containers, into a unitary set. 5,570,787, Cl. 206-428.000.

Darrieux, Jean-Louis; Picosson, Christian; and Canfranc, Hugues, to Societe Anonyme Dite Aerospatiale Societe Nationale Industrielle. Method for producing hollow composite articles by winding/laying down on an expansible mandrel. 5,571,357, Cl. 156-173.000.

Dasch, James R.; Pace, Doran R., III; and Waegell, Wendy O., to Celtrix Pharmaceuticals, Inc. Monoclonal antibodies which bind both transforming growth factors β1 and β2 and methods of use. 5,571,714, Cl. 435-240.270.

Datta, Sudhin; Ravishankar, Periagaram S.; and Kaufman, Lawrence G., to Exxon Chemical Patents Inc. Calendered elastomeric articles. 5,571,868, Cl. 525-211.000.

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David, Jerry J., to Harnischfeger Corporation. Drive arrangement and method for installing such arrangement in a machine. 5,571,225, Cl. 37-307.000.

David Sarnoff Research Center, Inc.: *See*—
Wildes, Richard P.; Asmuth, Jane C.; Hanna, Keith J.; Hsu, Stephen C.; Kolczynski, Raymond J.; Matey, James R.; and McBride, Sterling E., 5,572,596, Cl. 382-117.000.

Davidson, Ryan L.; and Seymour, Mark S., to Seagate Technology. Test jig and method for probing a printed circuit board. 5,572,144, Cl. 324-755.000.

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Gallagher, Michael J.; and Nichols, Lawrence R., 5,571,597, Cl. 428-152.000.

Davis, Gregory B.: *See*—
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Davis, Karen M.: *See*—
Dobrin, George C.; Davis, Karen M.; and Weirich, David M., 5,571,096, Cl. 604-383.000.

Davis, Leighton I., Jr.; Matteson, Robert W.; and Dage, Gerhard A., to Ford Motor Company. Method and control system for controlling an automotive HVAC system for increased occupant comfort. 5,570,838, Cl. 236-49.300.

Davis, Richard E.; and Greenhoe, William J., to Medtronic, Inc. Surgical needle assembly. 5,571,091, Cl. 604-165.000.

Davis, Thomas L.; Hobbs, Alexander O.; and Roberts, Barney P., Jr., to Carolina Power & Light Company. Thermal energy storage tank containing submerged ice mass. 5,571,232, Cl. 62-59.000.

Dawson, Martin D.: *See*—
Bestwick, Timothy D.; Kean, Alistair H.; Dawson, Martin D.; and Duggan, Geoffrey, 5,571,376, Cl. 156-647.100.

Dayco Products, Inc.: *See*—
Tsai, M. Michael; Fletcher, David E.; and Zamm, Joseph W., 5,571,061, Cl. 474-135.000.

Deacon, Jim; Sussman, Glenn R.; and Weinschenk, Joseph I., III, to Allergan. IOL structured for post-operative re-positioning and method for post-operative IOL re-positioning. 5,571,177, Cl. 623-6.000.

de Angelis, Alberto: *See*—
Clerici, Mario G.; Perego, Carlo; de Angelis, Alberto; and Montanari, Luciano, 5,571,762, Cl. 502-155.000.

De Bastiani, Norman P.; and Boucher, Richard J., to Chartpak, Inc. Faux glass etch product and process of preparing same. 5,571,557, Cl. 427-152.000.

deBellefeuille, Jean: *See*—
Rogers, Frederick J.; and deBellefeuille, Jean, 5,571,965, Cl. 73-462.000.

DeCampli, William M. Scalpel handle having retractable blade support and method of use. 5,571,127, Cl. 606-167.000.

Deceder, Jeffrey S.: *See*—
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Decker, Gerhard: *See*—
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Decoster, Sandrine: *See*—
Beauquey, Bernard; and Decoster, Sandrine, 5,571,458, Cl. 510-125.000.

Deeb, Fouad M.: *See*—
Skinner, James W.; Skinner, William O.; Deeb, Fouad M.; Neuhaus, Ronald W.; and Miller, Michael R., 5,570,890, Cl. 277-101.000.

DeGregorio, Robert: *See*—
Miller, Bill L.; and DeGregorio, Rnbert, 5,571,542, Cl. 426-2.000.

Deguchi, Toshihisa: *See*—
Satoh, Tomoari; Tateno, Tatsuo; Furukawa, Yasuhito; and Deguchi, Toshihisa, 5,571,638, Cl. 429-248.000.

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Deisenhofer, Manfred: *See*—
Langer, Alfred; Genz, Andreas; Deisenhofer, Manfred; Keile, Walter; Lewandowski, Bernd; and Reichardt, Jürgen, 5,572,091, Cl. 313-636.000.

DeJonge, Stuart, to Primary Delivery Systems, Inc. Vertical ratchet dispenser device with anti-oozing pull-back mechanism. 5,570,821, Cl. 222-391.000.

DEKA Products Limited Partnership: *See*—
Kamen, Dean L.; and Faust, Valentine, 5,570,716, Cl. 137-223.000.

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Delavaux, Jean-Marc P.; and Perrier, Philippe A., to Lucent Technologies Inc. Bidirectional optical transmission system. 5,572,612, Cl. 385-24.000.

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May, Dennis J.; Norton, Eddie M.; Arnold, Samuel H.; Wilkins, Bryan E.; Digeso, Brian K.; and Chen, Kuo-Raid G., 5,570,561, Cl. 53-138.400.
Stoll, Thomas D.; and Bohr, William J., 5,571,005, Cl. 418-268.000.

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Kearney, Mark B.; Koglin, Dennis M.; Osborn, Douglas B.; and Whitlock, William P., 5,572,472, Cl. 365-201.000.
Reed, Raymond B.; Malpure, Sandesh; and Chu, Larissa C., 5,572,720, Cl. 395-555.000.

Dell USA, L.P.: *See*—
Jones, Craig S., 5,572,660, Cl. 395-182.040.
Mills, R. Steven, 5,572,403, Cl. 361-695.000.
Swamy, N. Deepak, 5,571,608, Cl. 428-246.000.
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Fouckhardt, Henning; and Delonge, Thomas, 5,572,328, Cl. 356-440.000.

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Parejo, Manuel, 5,570,763, Cl. 188-322.220.

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Delta Air Lines, Inc.: *See*—
Younger, Phillip E., 5,570,801, Cl. 220-1.500.

Deluca, Hector F.; and Ogura, Yosuke, to Wisconsin Alumni Research Foundation. Method of treating post menopausal osteoporosis with hexafluro-vitamin D. 5,571,802, Cl. 514-167.000.

Demirlioğlu, Esin K.; and Aronowitz, Sheldon, to National Semiconductor Corporation. Defect free CMOS process. 5,571,744, Cl. 437-57.000.

Demorest, Donald R., to General Motors Corporation. Engine airflow system and method. 5,571,242, Cl. 123-184.210.

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Landro, Martin; and Langhammer, Jan, 5,572,486, Cl. 367-144.000.

Denato, James L.: *See*—
Wittern, Francis A., Jr.; Hawkins, Paul L.; and Denato, James L., 5,570,811, Cl. 221-127.000.

Deng, Xiaoming, to Ford Motor Company. Variable park and wiping range mechanism for windshield wiper system. 5,570,488, Cl. 15-250.160.

Denker, John S.; LeCun, Yann A.; Simard, Patrice Y.; and Victorri, Bernard, to Lucent Technologies Inc. Training system for neural networks. 5,572,628, Cl. 395-23.000.

Dennison, Edward V.: *See*—
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Denny, William A.; Palmer, Brian D.; and Wilson, William R., to Cancer Research Campaign Technology Limited. Nitroaniline derivatives and their use as anti-tumour agents. 5,571,845, Cl. 514-619.000.

Dent, Paul W.; and Bottomley, Gregory E., to Ericsson GE Mobile Communications Inc. Method and system for demodulation of downlink CDMA signals. 5,572,552, Cl. 375-343.000.

Dentsply Research & Development Corp.: *See*—
Novak, Eugene J., 5,571,013, Cl. 433-132.000.

De Pinho Filho, Orlando J.; Eisemberg, Robert; Correia, Orlando de Brito; and Freitas, Ricardo M., to Petrolew Brasileiro S.A. - Petrobras. Integrated power and signal transmission system. 5,572,182, Cl. 340-310.020.

Derby, Richard: *See*—
Gruber, Bruce A.; and Derby, Richard, 5,571,857, Cl. 524-457.000.

DeRees, Delbert D.; and Kowall, David J., to Chrysler Corporation. Vehicle door assembly. 5,570,922, Cl. 296-146.600.

Derenthal, Ulrich, to Pannevis B.V. Belt filter with means to advance the belt responsive to a capacitance signal. 5,571,404, Cl. 210-97.000.

Derrick, Arthur P., to Laporte Industries Limited. Colloidal composition and its use in the production of paper and paperboard. 5,571,379, Cl. 162-168.100.

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Goble, Nigel M.; and Goble, Colin C. O., 5,571,100, Cl. 606-41.000.

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Habraken, Wilhelmus J. P.: *See—*
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Willms, Lothar; Bieringer, Hermann; Hacker, Erwin; and Kehne, Heinz, 5,571,772, Cl. 504-106.000.

Hackett, Steven S.: *See—*
Ressemann, Thomas V.; Hackett, Steven S.; and Keith, Peter T., 5,571,087, Cl. 604-96.000.

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McDonald, Henry H., 5,571,113, Cl. 606-107.000.

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Flüge, Thomas; and Forssmann, Wolf-Georg, 5,571,789, Cl. 514-12.000.

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Benecke, Wolfgang; Wagner, Bernhard; Fuhr, Günter; Hagedorn, Rolf; Glaser, Roland; and Gimsa, Jan, 5,572,076, Cl. 310-40.0MM.

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Hager, Johann: *See—*
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Hagiuda, Nobuyoshi, to Nikon Corporation. Vent valve for an amphibious equipment having a battery housing. 5,571,633, Cl. 429-100.000.

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Hailes, Anne M.; French, Christopher E.; and Bruce, Neil C., to MacFarlan Smith Limited. Morphinone reductase for the preparation of hydromorphone and hydrocodone. 5,571,685, Cl. 435-25.000.

Haines, Randall M.: *See—*
Loftus, James E.; Pellegrin, Michael T.; Ault, Patrick L.; Haines, Randall M.; and Morris, Virgil G., 5,571,610, Cl. 428-285.000.

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Hall, Rex B. Protective headgear for baseball fielders. 5,571,220, Cl. 2-424.000.

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Griffith, James E.; Totten, Patty L.; King, Bobby L.; and Chatterji, Jiten, 5,571,318, Cl. 106-725.000.
Heathman, James F.; Shelley, Robert F.; and Chatterji, Jiten, 5,572,021, Cl. 250-269.500.
Padgett, Paul O.; Crain, Stephen F.; Handke, Wayne A.; Logan, Jerry L.; Stegemoeller, Calvin L.; Covington, Ricky L.; Ritter, David W.; and Edgley, Kevin D., 5,570,743, Cl. 166-285.000.

Halligan, Francis: *See—*
Walsh, Daniel; and Halligan, Francis, 5,570,490, Cl. 16-87.40R.

Halling, Richard. Model airplane flight simulator. 5,571,038, Cl. 446-232.000.

Halnon, Jeffrey J.: *See—*
Lipton, Lenny; Halnon, Jeffrey J.; and Meyer, Lawrence D., 5,572,250, Cl. 348-43.000.

Halozan, Scott F.: *See—*
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Hamada, Masataka: *See—*
Kamiya, Makoto; Akagi, Katsuhito; Maekawa, Yukio; Kimura, Kazuo; Ohta, Yoshiharu; Nagano, Haruyuki; Yoshiyama, Ichiro; Hamada, Masataka; Hayashi, Kohtaro; and Yamazaki, Keiji, 5,572,361, Cl. 359-426.000.

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Hamasaki, Tatsumi: *See—*
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Hamedi Sangsari, Farid: *See—*
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Hamilton, Robert H.; Doyle, Thomas J.; and Brooks, Phillip R., to TPI Inc. Telecommunications booth comprising a telecommunications train having a plurality of wheeled housings. 5,572,005, Cl. 235-381.000.

Hammes, Friedhelm: *See—*
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Hamprecht, Gerhard; Münster, Peter; Gerber, Matthias; Walter, Helmut; and Westphalen, Karl-Otto, to BASF Aktiengesellschaft. Pyridine-2,3-dicarboximides, their preparation and their use for controlling undesired plant growth. 5,571,774, Cl. 504-246.000.

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Handberg, Ulf: *See—*
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Handke, Wayne A.: *See—*
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Haneda, Mitsuaki: *See—*
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Hannigan, Gail. Flexible tube floating sling. 5,571,036, Cl. 441-129.000.

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Blom, Eric D., 5,571,180, Cl. 623-9.000.

Hansen, Charles D., Jr.: *See—*
Draucker, James B.; Hansen, Charles D., Jr.; Newsome, Reginald W.; and Pham, Xuan M., 5,570,779, Cl. 206-246.000.

Hansen, Daniel J.: *See—*
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Helms, Randall D.; and Hansen, Daniel J., 5,571,564, Cl. 427-288.000.

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Hansen, Jutta: *See—*
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Hansen, Michael R.; and Young, Richard H., Sr., to Weyerhaeuser Company. Reactivatable binders for binding particles to fibers. 5,571,618, Cl. 428-359.000.

Hanson, Charles M.: *See—*
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Hanzlik, Edward J.: *See—*
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Happ, Henry J., III: *See—*
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Hara, Taizo: *See—*
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Harada, Takaaki: *See—*
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Harada, Yuichi; Iwasa, Takayuki; and Akiyoshi, Hitomi, to Fujitsu Limited. Digital-transmission/analog-transmission changeover apparatus. 5,572,524, Cl. 370-84.000.

Harashima, Shokichi; Takahashi, Hiroshi; Shinomiya, Kazuo; Kadota, Masakazu; and Yasuda, Kazutoyo, to Honda Giken Kogyo Kabushiki Kaisha. Motor vehicle vibrating system and method of controlling same. 5,572,440, Cl. 364-508.000.

Harder, Achim: *See—*
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Harding, Charles W., to Clawson Tank Company. Storage container assembly for combustible liquids. 5,570,805, Cl. 220-565.000.

Harding, Stephen S.; Mace, Jody L.; and Swiatek, Edward R., to International Business Machines Corporation. Method and apparatus for numeric-to-string conversion. 5,572,207, Cl. 341-62.000.

Hardman, Norman: *See—*
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Hardwick, Steven T.: *See—*
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Hargrave, Karl D.; Schmidt, Gunther, deceased (by Margaret Schmidt, legal representative); Engel, Wolfhard; and Schromm, Kurt, to Boehringer Ingelheim Pharmaceuticals, Inc. Dibenz[b,f][1,4]oxazepin(and thiazepin)-11(10H)-ones and-thiones and their use in the prevention or treatment of HIV infection. 5,571,806, Cl. 514-211.000.

Hargrave, Karl D.; Schmidt, Gunther, deceased (by Margaret Schmidt, legal representative); Engel, Wolfhard; Trummlitz, Gunther; and Eberlein, Wolfgang, to Boehringer Ingelheim Pharmaceuticals, Inc. The treatment of HIV-1 infection using certain pyridodiazepines. 5,571,809, Cl. 514-220.000.

Hargrave, Karl D.: *See—*
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Hariri, Farouk A.: *See—*
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Harkin, Gerard F.: *See—*
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Harley, Howard D. Surface effect vessel hull. 5,570,650, Cl. 114-61.000.

Harmenberg, Johan; Wahren, Britta; and Oberg, Bo. Synergistic antiviral nucleoside combinations. 5,571,798, Cl. 514-45.000.

Harmsen, Sven: *See—*
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Harner, Russell R. L.: *See—*
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Harnischfeger Corporation: *See—*
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Haroldsen, Michael: *See—*
Abbate, Richard; Rizk, Said; Haroldsen, Michael; and Kosa, Timothy D., 5,571,042, Cl. 451-59.000.

Harrila, Raija, to ICL Data OY. Information system for a PABX. 5,572,577, Cl. 379-67.000.

Harris Corporation: *See—*
Coureau, Gerald M., 5,572,162, Cl. 327-552.000.
Myers, Brent A., 5,572,161, Cl. 327-538.000.

Harris, Peter J.: *See—*
Meikrantz, David H.; Federici, Alfred G.; Macaluso, Lawrence L.; Harris, Peter J.; and Sams, H. William, III, 5,571,070, Cl. 494-22.000.

Harris, Timothy S., to Mattel, Inc. Multi-position electrical switch. 5,571,999, Cl. 200-565.000.

Harrison, Anthony G.; Meredith, William N. E.; and Higgins, David E., to Imperial Chemical Industries PLC. Polymeric packaging film coated with a composition comprising a layer mineral and a crosslinked resin. 5,571,614, Cl. 428-331.000.

Harrison, Rebecca. Backpack for carrying a foldable chair. 5,570,829, Cl. 224-651.000.

Harshbarger, John H., Jr.: *See—*
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Hart, Steven C.: *See—*
Behe, Thomas J.; Bray, Daniel M.; Folkins, Jeffrey J.; Hart, Steven C.; and Schram, Joseph G., 5,572,302, Cl. 399-235.000.

Harter, Wilfried, to Koenig & Bauer-Albert Aktiengesellschaft. Cylinder for a rotary press. 5,570,634, Cl. 101-375.000.

Hartlage, Robert P.: *See—*
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Hartley, Rolfe J.: *See—*
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Harweth, Ina-Maria: *See—*
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Hase, Kenichi: *See—*
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Hasegawa Bicoh Co., Ltd.: *See—*
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Hasegawa, Keizo, to Hasegawa Bicoh Co., Ltd. Nose pad device for glasses. 5,572,265, Cl. 351-137.000.

Hasegawa, Shuji; and Enoki, Masamitsu, to Paceco Corp. Cargo container transfer system for cranes. 5,570,986, Cl. 414-140.300.

Hasegawa, Yutaka: *See—*
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Hashiba, Soichiro: *See—*
Ikeda, Shuji; Meguro, Satoshi; Hashiba, Soichiro; Kuramoto, Isamu; Koike, Atsuyoshi; Sasaki, Katsuro; Ishibashi, Koichiro; Yamanaka, Toshiaki; Hashimoto, Naotaka; Moriwaki, Nobuyuki; Takahashi, Shigeru; Hiraishi, Atsushi; Kobayashi, Yutaka; and Yukutake, Seigou, 5,572,480, Cl. 365-230.060.

Hashimoto, Dai; Yamamoto, Shoji; and Iwata, Zensuke, to Furukawa Electric Co., Ltd., The. Method of manufacturing electric wire insulated with foamed plastic. 5,571,462, Cl. 264-45.900.

Hashimoto, Eiri: *See—*
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Hashimoto, Hideyuki: *See—*
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Hashimoto, Kenji; and Itaya, Nobuyuki, to Sumitomo Wiring Systems, Ltd. Device and method for measuring crimp height. 5,570,514, Cl. 33-784.000.

Hashimoto, Kenshiro: *See—*
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Hastings, Roger N.: *See—*
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Hasuo, Kamon, to Canon Kabushiki Kaisha. Electronic filing apparatus. 5,572,726, Cl. 395-616.000.

Hata, Emi: *See—*
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Hata, Jiro: *See—*
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Hatabu, Susumu: *See—*
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Hatakenaka, Kenji; Mineta, Kenichi; and Miyoshi, Akihiro, to Sumitomo Rubber Industries, Ltd. Studless tire. 5,571,351, Cl. 152-209.00R.

Hatanaka, Masanori: *See—*
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Hatayama, Katsuo: *See—*
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Kaneko, Yuji, to Sodick Co. Ltd. Electric discharge machining apparatus with pairs of low inductance and low capacitance conductors. 5,572,003, Cl. 219-69.130.

Kaneko, Yutaka: *See*—
Ishige, Osamu; Nakamura, Takesi; Sato, Naoki; and Kaneko, Yutaka, 5,571,661, Cl. 430-544.000.

Kanemitsu, Shingo, to Kabushiki Kaisha Toshiba. X-ray diagnostic table capable of displaying a center of an X-ray visual field. 5,572,568, Cl. 378-206.000.

Kanetis, Stefan: *See*—
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Kangas, Lauri V. M.: *See*—
Jalonen, Harry G.; Heikkilä, Tertu M.; Jalonen, Hannu U.; Kangas, Lauri V. M.; Lammintausta, Risto A. S.; and Kurkela, Kauko O. A., 5,571,534, Cl. 424-479.000.

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Kano, Kazuhiko: *See*—
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Kanojia, Chaitanya: *See*—
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Kanzaki Kokyukoki Mfg. Co., Ltd.: *See*—
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Kao Corporation: *See*—
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Kaplan, Aaron V.; Kermode, James R.; and Klein, Enrique J., to Localmed, Inc. Method and apparatus for sequentially performing multiple intraluminal procedures. 5,571,086, Cl. 604-96.000.

Kaplan, Jere K.; Tritschler, Wolfgang J.; and Clauson, Gary, to Ciba-Geigy Corporation. Process for the preparation of benzotriazoles. 5,571,924, Cl. 548-260.000.

Kaplan, Lawrence; and Laughlin, Robert, to Lawrence Factor, Inc. Pressurized air tank air quality tester. 5,571,948, Cl. 73-31.050.

Karcher, Thomas, to Hoechst Aktiengesellschaft. Process for the electrosynthesis of aldehydes. 5,571,400, Cl. 205-448.000.

Karellas, Andrew, to University of Massachusetts Medical Center. Fiber optic plates for generating seamless images. 5,572,034, Cl. 250-368.000.

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Karger, Barry L.; Foret, Frantisek; and Müller, Odilo, to Northeastern University. Precise capillary electrophoretic interface for sample collection or analysis. 5,571,398, Cl. 204-603.000.

Kargilis, Elizabeth M.; Salva, James P.; Geraci, Joseph M.; Mather, Carl; and Janosko, Robert J., to Chrysler Corporation. Vehicle adjustable and stowable rear seat. 5,570,931, Cl. 297-378.120.

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Kaul, Bansi L.; and Vougioukas, Angelos-Elie, to Sandoz, Ltd. Salts of metal-free anionic substituted-2-hydroxy-1-phenylazonaphthalene dyes having cations containing sterically hindered amine groups. 5,571,899, Cl. 534-728.000.

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Kauzlarich, James J., to University of Virginia Patent Foundation. Electronic viscometer. 5,571,952, Cl. 73-54.240.

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Kawano, Eiichiro: *See*—
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Kawano, Yukita; Matsui, Susumu; and Morita, Hideo, to Takara Shuzo Co., Ltd. Biologically pure culture of *Lyophyllum ulmarium* . 5,571,717, Cl. 435-254.100.

Kawasaki, Minoru; Sato, Akio; Kinoshita, Hitoshi; and Yamada, Koji, to Toyota Jidosha Kaboshiki Kaisha. Method and system for processing workpiece with laser seam, with oscillation of beam spot on the workpeiece and beam oscillating apparatus. 5,571,430, Cl. 219-121.780.

Kawasaki, Shuichi, to Mitsubishi Jukogyo Kabushiki Kaisha. Vibration detection and reduction system and vibration sensors for use in microgravity environment. 5,571,969, Cl. 73-649.000.

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Saito, Tetsuro: *See—*
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Saitoh, Minoru; Uesugi, Akira; and Uchida, Takahiro, to Miyachi Technos Corporation. Laser apparatus and accessible, compact cooling system thereof having interchangeable flow restricting members. 5,572,538, Cl. 372-34.000.

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Sakai, Norio: *See—*
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Sakai, Takashi: *See—*
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Sakai, Tetsuo: *See—*
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Sakamoto, Kazunori; and Umemoto, Kazuhiro, to International Business Machines Corporation. Tape carrier for LCD driver package with anchor holes on either side of and spaced 0.2 mm to 10 mm from the chip mounting site. 5,572,346, Cl. 359-88.000.

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Sakuma, Tsuyoshi, to Canon Kabushiki Kaisha. Encoder with varying width light receiver and apparatus having the encoder. 5,572,019, Cl. 250-231.160.

Sakumoto, Kazumi; and Ozawa, Fugio. Electronic analog watch with pager. 5,572,196, Cl. 340-825.440.

Sakuraba, Takahiro; and Nakamura, Hiroshi, to Fujitsu Limited. Three-dimensional graphics drawing apparatus. 5,572,636, Cl. 395-130.000.

Sakurai, Hiroshi: *See—*
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Sakurane, Katsushi: *See—*
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Salbeck, Gerhard, deceased (by Gisela Salbeck, heiress): *See—*
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Salimbeni, Aldo; Caliari, Saturnino; Fici, Francesco; and Manghisi, Elso, to Istituto Luso Farmaco d'Italia S.p.A. 1,5 benzothiazepinone dervatives their preparation and pharmaceutical use. 5,571,807, Cl. 514-211.000.

Salisbury, Darrell P.: *See—*
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Salk Institute For Biological Studies, The: *See—*
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Schiff, Peter, Sailing vessel with adjustable mast. 5,570,651, Cl. 114-91.000.

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Schlager, Karl M., to SGS–Thomson Microelectronics, Inc. Method and circuit for clamping the recirculation current in stator windings. 5,572,096, Cl. 318-254.000.

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Schloesser, Ulrike; and Mayer, Udo, to BASF Aktiengesellschaft. Basic dyes based on amides of j-acid (1-hydroxy-6-aminonaphthalene-3-sulfonic acid) and amides of j-acid. 5,571,898, Cl. 534-604.000.

Schmid, Michael: *See—*
Alt, Helmut G.; Palackal, Syriac J.; Zenk, Roland; Welch, M. Bruce; and Schmid, Michael, 5,571,880, Cl. 526-160.000.

Schmidt, Dieter, to Endress +Hauser Wetzer GmbH & Co. KG. Chart recorder. 5,572,240, Cl. 346-17.000.

Schmidt, Gunther, deceased (by Margaret Schmidt, legal representative): *See—*
Hargrave, Karl D.; Schmidt, Gunther, deceased; Engel, Wolfhard; and Schromm, Kurt, 5,571,806, Cl. 514-211.000.
Hargrave, Karl D.; Schmidt, Gunther, deceased; Engel, Wolfhard; Trummlitz, Gunther; and Eberlein, Wolfgang, 5,571,809, Cl. 514-220.000.

Schmidt, Herbert: *See—*
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Schmidt, Margaret, legal representative: *See—*
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Schmidt, Melvin C.: *See—*
Qian, Lingqian; Schmidt, Melvin C.; and Nobinger, Glenn L., 5,571,576, Cl. 427-574.000.

Schmidt, Michael R., to General Motors Corporation. Four-mode, input-split, paralell, hybrid transmission. 5,571,058, Cl. 475-5.000.

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Mohr, Thomas; Schmiederer, Claus; Kern, Robert; and Decker, Gerhard, 5,572,658, Cl. 395-182.020.

Schmitt, Nikolaus P.: *See—*
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Schmitt, Robert A.: *See—*
Aaseth, Allen; and Schmitt, Robert A., 5,571,464, Cl. 264-72.000.

Schmukler, Robert E., to United States of America, Health and Human Services. Switched implantable electrical stimulator leads. 5,571,156, Cl. 607-116.000.

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Gozdz, Antoni S.; Schmutz, Caroline N.; and Warren, Paul C., 5,571,634, Cl. 429-192.000.

Schneider, Alvin F.; Blumel, David B.; and Brous, Jack, to Fry's Metals, Inc. Rosin-free, low VOC, no-clean soldering flux and method using the same. 5,571,340, Cl. 148-23.000.

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Schneider, Thomas W.: *See—*
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Schoenherr, Curtis A., to Jay, Jr., James R. Gutter bracket. 5,570,860, Cl. 248-48.200.

Schoettle, Peter: *See—*
Bertling, Johannes-Gerhard; Boebel, Doris; and Schoettle, Peter, 5,570,951, Cl. 362-231.000.

Schöler, Horst-Dieter: *See—*
Sizov, Anatoly; Schöler, Horst-Dieter; and Meyer, Ulrich, 5,571,307, Cl. 75-512.000.

Scholl, Heinz; Friedrich, Hans-Georg; and Hammes, Friedhelm, to Saint-Gobain Vitrage International. Process for extruding a polymer onto a glazing. 5,571,461, Cl. 264-40.500.

Scholz, Wolfgang: *See—*
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Schönhöffer, Helmut, to Ulrich, Heinrich. Prosthetic vertebral implant. 5,571,192, Cl. 623-17.000.

Schotten, Theo: *See—*
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Schreiber, David E.: *See—*
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Schröder, Gerhard; Noske, Frank; and Rush, Gordon, to Paul Hettich GmbH & Co. Track assembly for a drawer. 5,570,943, Cl. 312-334.110.

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Schuch, Wolfgang W.: *See—*
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Schug, Martin, to ESKA Implants GmbH. Process for the production of a bone implant and a bone implant produced thereby. 5,571,185, Cl. 623-16.000.

Schuhmann, Detlef E.; Dries, Thomas; Wilheim, Adolf; Scheidecker, Dieter; Lohmann, Harald; Murschall, Ursula; Peiffer, Herbert; and Schloegl, Gunter, to Hoechst Aktiengesellschaft. Biaxially orientated polypropylene multilayer film, process for its production, and its use. 5,571,613, Cl. 428-323.000.

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Schulte, Dietmar. Handwear and footwear drying device. 5,570,515, Cl. 34-104.000.

Schultz, Gary V.; and Le Gault, Dennis J., to Appleton Mills. Methods of making papermaking felt and substrate. 5,571,590, Cl. 428-57.000.

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Schulz, Mark F.: *See—*
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Arldt, Roy L.; Boyko, Christina M.; Cayson, Burtran J.; Kozlowski, Richard M.; Kulesza, Joseph D.; Lauffer, John M.; Liu, Philip C.; Markovich, Voya R.; Mahmoud, Issa S.; Muska, James F.; Papathomas, Kostas; Sabia, Joseph G.; and Schumacher, Richard A., 5,571,593, Cl. 428-131.000.

Schutt, Ernest G.: *See—*
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Schwark, Jan-Robert: *See—*
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Schwartz, Jae C.; Zhou, Xaio-Guang; and Bier, Mark E., to Finnigan Corporation. Method and apparatus of increasing dynamic range and sensitivity of a mass spectrometer. 5,572,022, Cl. 250-282.000.

Schwartz, Robert S.: *See—*
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Schwarz, Theodore A.; Wolff, Robert E.; and Youngquist, Robert J., to Imation Corp. Direct file access system for magnetic tape. 5,572,378, Cl. 360-48.000.

Schwarzkopf, Werner: *See—*
Rumpf, Wolfhard; and Schwarzkopf, Werner, 5,570,790, Cl. 209-291.000.

Schwinghammer, Patrick A.: *See—*
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SciMed Life Systems, Inc.: *See—*
Ellis, Louis; and Hastings, Roger N., 5,570,701, Cl. 128-772.000.
Fraser, Phlayne M.; Burmeister, Paul H.; and Peterson, Dean A., 5,571,135, Cl. 606-198.000.
Ressemann, Thomas V.; Hackett, Steven S.; and Keith, Peter T., 5,571,087, Cl. 604-96.000.

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Scott, Van G., to Smokey Mountain Tops, Inc. Countertop for fume hood or similar applications. 5,570,939, Cl. 312-229.000.

Scriber, Mike; and Young, Bruce, to Intel Corporation. Mechanism for dynamically determining and distributing computer system clocks. 5,572,718, Cl. 395-555.000.

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Seagate Technology: *See—*
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Searer, Floyd A., to FAS Industries, Inc. Interlocking stapled flooring. 5,570,554, Cl. 52-539.000.

Seaton, Robert W., Jr.: *See—*
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Security Enclosures Limited: *See—*
Grant, John T., 5,572,033, Cl. 250-353.000.

Seder, Rufus B.; and Goldberg, Larry, to WGBH Educational Foundation. Reflected display system for text of audiovisual performances. 5,570,944, Cl. 353-98.000.

See, Hiow-Tong J.; and Hoketsu, Makoto, to Oracle Corporation. Method and apparatus for universal national language support program testing. 5,572,668, Cl. 395-183.140.

Seetharaman, Viswanath; and Baldauf, Dale L., to General Motors Corporation. Pressure regulator. 5,571,248, Cl. 137-625.650.

Segall, Judith M.: *See—*
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Segui, Prudimar S.: *See—*
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Seidel, Helmut: *See—*
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Seidler, Jack, to North American Specialties Corporation. Method of making an array of electrical components with leads attached and the product thereof. 5,571,034, Cl. 439-876.000.

Seikagaku Kogyo Co., Ltd.: *See—*
Fujii, Nobutaka; and Yamamoto, Naoki, 5,571,892, Cl. 530-326.000.

Seiko Communications Holding N.V.: *See—*
Yamada, Takehide; Dimitriadis, Dimitri; and Gaskill, Garold B., 5,572,488, Cl. 368-10.000.

Seiko Epson Corporation: *See—*
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Seiko Instruments Inc.: *See—*
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Seiko Precision Inc.: *See—*
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Sejnoha, Vladimir, to Kurzweil Applied Intelligence, Inc. Speech recognition system accommodating different sources. 5,572,624, Cl. 395-265.000.

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Seki, Motohiro: *See—*
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Seki, Shigeo, to Tamagawa Seiki Kabushiki Kaisha. Absolute signal detecting method and absolute encoder. 5,572,199, Cl. 340-870.010.

Sekiguchi, Kiyotoshi; Asakawa, Kaneji; Sakashita, Eiji; Hino, Kazuo; Shin, Sadahito; Tachikawa, Tetsuya; and Hirano, Hisanobu, to Otsuka Pharmaceutical Factory, Inc. Anti-EDA monoclonal antibody and a method for diagnosis of disease associated with the EDA region of fibronectin. 5,571,679, Cl. 435-71.000.

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Sekine, Masayoshi; Murakami, Junichi; Ogino, Shigeru; Takahara, Hiroyuki; Toyama, Masamichi; Tsuji, Sadahiko; Suda, Shigeyuki; and Tokumitsu, Jun, to Canon Kabushiki Kaisha. Optical apparatus provided with a driving unit for moving a lens. 5,572,372, Cl. 359-824.000.

Seko, Chisako: *See—*
Kurokawa, Tsutomu; Kuroshima, Ken-ichi; Yoshitomi, Sumie; and Seko, Chisako, 5,571,895, Cl. 530-399.000.

Sekula, Bernard C.; Ziegert, Thaddeus R.; and Ferenz, Michael R., to CPC International Inc. Process for producing esterified alkoxylated polyols with improved stability. 5,571,935, Cl. 554-168.000.

Selberg, Hans; and Balla, Gyula, to Tetra Laval Holdings & Finance S.A. Apparatus for heat-sealing thermoplastic materials. 5,571,370, Cl. 156-498.000.

Selbie, Lisa; Herzog, Herbert; and Shine, John, to Garvan Institute of Medical Research. Human neuropeptide Y-Y1 receptor. 5,571,695, Cl. 435-69.100.

Selcer, Kyle W.: *See—*
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Selines, Ronald J.: *See—*
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Sellers, Craig D., to Meyer/Glass Design. Noise making toy. 5,571,037, Cl. 446-188.000.

Sellers, Mike C.: *See—*
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Selman, Jan R.: *See—*
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Sematech: *See—*
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Sematech, Inc.: *See—*
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Semiconductor Energy Laboratory Co., Ltd.: *See—*
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Takemura, Yasuhiko, 5,572,046, Cl. 257-66.000.
Yamazaki, Shunpei; Konuma, Toshimitsu; and Hamatani, Toshiji, 5,572,345, Cl. 359-62.000.

Senbokuya, Takashi, to Bridgestone Corporation. Sheet material butt-joining apparatus. 5,571,371, Cl. 156-502.000.

Senju Pharmaceutical Co., Ltd.: *See—*
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Senn, Jürgen; and Strnad, Kurt, to Testo GmbH & Co. Measuring assembly for studying gaseous media. 5,571,947, Cl. 73-31.050.

Seo, Heui S.: *See—*
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Seo, Mi K.: *See—*
Bang, Chan S.; Yeo, Jae H.; Woo, Young M.; Lim, Jong C.; Yang, Deog H.; Kim, Se H.; Jeon, Jae H.; Seo, Mi K.; Kim, Sam S.; Lee, Tae H.; Kim, Yong Z.; and Oh, Hun S., 5,571,804, Cl. 514-203.000.

Seo, Yosuke: *See—*

Kamo, Yoshihisa; Aoi, Hajime; Kakuta, Hitoshi; Tsunoda, Yoshito; Fujisawa, Hiromichi; Seo, Yosuke; and Ouchi, Yasuhide, 5,572,699, Cl. 395-441.000.

Sepracor Inc.: *See—*
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Seragen, Inc.: *See—*
Rubin-Kelley, Vicki E.; Strom, Terry B.; Bach, Jean-Francois; and Nichols, Jean C., 5,571,507, Cl. 424-85.200.

Sercomp Corporation: *See—*
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Serfaty, Salomon; Geller, Haim; and Abel, Liorah, to Motorola, Inc. Data communications system with multilink protocol. 5,572,546, Cl. 375-221.000.

Sergio, Zanarella: *See—*
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Serowski, Andrew: *See—*
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Serpelloni, Michel; and Ribadeau-Dumas, Guillaume, to Roquette Freres. Process of sugarless hard coating and products obtained therefrom. 5,571,547, Cl. 426-103.000.

Serrette, Billy J. Drill bit for geological exploration. 5,570,748, Cl. 175-21.000.

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Sessa, Eugene: *See—*
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Seth, Jayshree, to Minnesota Mining and Manufacturing Company. Adhesive tape tab closure system. 5,571,097, Cl. 604-389.000.

Seto, Mitsuru; and Hirano, Yasuo, to Ricoh Company, Ltd. Intermediate image transfer element and image forming apparatus using the same. 5,572,304, Cl. 399-313.000.

Seufert, Frederick B.: *See—*
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Golia, Michel; and Francois, Jean-Michel, 5,572,203, Cl. 340-980.000.
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Seymour, Mark S.: *See—*
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SGS-Thomson Microelectronics, Inc.: *See—*
Cameron, Scott W., 5,572,097, Cl. 318-254.000.
Carobolante, Francesco, 5,572,099, Cl. 318-434.000.
Chen, Fusen E.; Dixit, Girish A.; and Miller, Robert O., 5,571,752, Cl. 437-189.000.
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Mohan, Muni, 5,572,415, Cl. 363-61.000.

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Diazzi, Claudio; Martignoni, Fabrizio; and Tarantola, Mario, 5,572,156, Cl. 327-109.000.

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Shafer, Mark E.; and Walther, Lawrence E., to Eastman Kodak Company. Image scanning device having direction-responsive programmable delay mechanism. 5,572,338, Cl. 358-474.000.

Shafer, Paul T.: *See—*
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Shaffer, Charles S.; and Priest, Mark A. Fish strike sensor. 5,570,532, Cl. 43-17.000.

Shah, Chandrakant K. Paper folding assembly with a cutting cylinder lap adjustment apparatus and method. 5,571,069, Cl. 493-357.000.

Shah, Tilak M., to Polygenex International, Inc. Dip molded polyurethane film methods. 5,571,567, Cl. 427-379.000.

Shaibani, Sanan B.; Khoobehi, Bahram; and Morvant, John S., Jr. Laser surgical apparatus for sculpting a cornea using a diffractive optical element and method of using the same. 5,571,107, Cl. 606-4.000.

Shan, Pao-Chuan: *See—*
Butler, Donald P.; Celik-Butler, Zeynep; and Shan, Pao-Chuan, 5,572,060, Cl. 257-467.000.

Shankar, Balakrishnan: *See—*
McNeil, Ken R.; Cantrell, Lee A.; and Shankar, Balakrishnan, 5,571,141, Cl. 607-5.000.

Shapiro, Henry. Safety surgical instrument. 5,571,128, Cl. 606-167.000.

Shapiro, Jeffrey M. Laryngoscope blade including means for dispensing topical anesthetic. 5,571,071, Cl. 600-187.000.

Sharp Corporation: *See—*
Fujimoto, Manabu; Suzuki, Katsumi; Enomoto, Youichi; and Tanaka, Shoji, 5,571,778, Cl. 505-329.000.

Sharp Kabushiki Kaisha: *See—*
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Kanayama, Yoshio; Yoshimura, Hisashi; and Ochi, Norihiro, 5,572,241, Cl. 347-7.000.

Nishio, Yukihito; Wakahara, Shirou; and Fujita, Hirokazu, 5,572,309, Cl. 399-389.000.
Tanaka, Kunio; Dohi, Yuji; Okamoto, Akira; Morimoto, Katsushi; and Kagiyama, Gouichi, 5,571,967, Cl. 73-587.000.
Teraguchi, Nobuaki, 5,571,391, Cl. 204-290.00R.
Watanabe, Masanori; Ohbayashi, Ken; Sasaki, Kazuaki; Yamamoto, Osumu; and Matsumoto, Mitsuhiro, 5,571,750, Cl. 437-129.000.
Yamasa, Hideo; Takai, Yasuhiro; Ueda, Atsushi; and Tanaka, Hirokazu, 5,572,300, Cl. 399-260.000.

Sharpe, Gary L. Disposable shipping and dispensing container. 5,570,856, Cl. 242-588.300.

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Shaw, Shyh-Yu: *See—*
Yang, Wen-Pin; Matsueda, Gary R.; and Shaw, Shyh-Yu, 5,571,708, Cl. 435-215.000.

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Cathey, Sara A.; Sellers, Mike C.; Spicuzza, Robert A.; and Stuckey, William C., 5,571,559, Cl. 427-224.000.

Stuerzel, John F., to Clean Room Products, Inc. Apparatus and method for fabricating breather bags. 5,571,361, Cl. 156-252.000.

Sturges, Jay, to Intel Corporation. Method and apparatus for routing in reduced switch matrices to provide one hundred percent coverage. 5,572,198, Cl. 340-827.000.

Sturm, Edward A.: *See—*
Stevens, Ward C.; and Sturm, Edward A., 5,571,621, Cl. 428-389.000.

Suarato, Antonino: *See—*
Angelucci, Francesco; Grandi, Maria; and Suarato, Antonino, 5,571,785, Cl. 514-8.000.

Subrahmanya, Venkatagiri: *See—*
Pal, Surendra; Lakshmeesha, Vodralli K.; Mahadevan, Vaidyanathan; Nicholas, Lourdnathan; Sadanandan, Kunhambu; Aswathnarayan, Subramaniam; Kumar, Manickam; Subramanya, Mallavalli L.; Subrahmanya, Venkatagiri; Subramanyam, Changantidurga V.; and Mallikarjunaiah, Thammaiahappa, 5,572,227, Cl. 343-727.000.

Subramanya, Mallavalli L.: *See—*
Pal, Surendra; Lakshmeesha, Vodralli K.; Mahadevan, Vaidyanathan; Nicholas, Lourdnathan; Sadanandan, Kunhambu; Aswathnarayan, Subramaniam; Kumar, Manickam; Subramanya, Mallavalli L.; Subrahmanya, Venkatagiri; Subramanyam, Changantidurga V.; and Mallikarjunaiah, Thammaiahappa, 5,572,227, Cl. 343-727.000.

Subramanyam, Changantidurga V.: *See—*
Pal, Surendra; Lakshmeesha, Vodralli K.; Mahadevan, Vaidyanathan; Nicholas, Lourdnathan; Sadanandan, Kunhambu; Aswathnarayan, Subramaniam; Kumar, Manickam; Subramanya, Mallavalli L.; Subrahmanya, Venkatagiri; Subramanyam, Changantidurga V.; and Mallikarjunaiah, Thammaiahappa, 5,572,227, Cl. 343-727.000.

Subramanyam, Ravi; Abbas, Syed H.; and Chopra, Suman K., to Colgate-Palmolive Company. Soap composition containing sodium pyrophosphate. 5,571,287, Cl. 510-150.000.

Suda, Masashi; and Sata, Junichi, to Canon Kabushiki Kaisha. Image forming apparatus with curl forming means. 5,572,308, Cl. 399-401.000.

Suda, Shigeyuki: *See—*
Sekine, Masayoshi; Murakami, Junichi; Ogino, Shigeru; Takahara, Hiroyuki; Toyama, Masamichi; Tsuji, Sadahiko; Suda, Shigeyuki; and Tokumitsu, Jun, 5,572,372, Cl. 359-824.000.

Sueki, Masao: *See—*
Homma, Koichi; Oshima, Keiji; Sueki, Masao; Kasama, Takashi; and Kagawa, Toshiya, 5,572,678, Cl. 395-200.120.

Suemasa, Hajime: *See—*
Tada, Hiroshi; Suemasa, Hajime; Matsumoto, Haruo; Maruyama, Takashi; Kato, Hideyuki; Yamada, Yasuo; Miyamoto, Hirohumi; and Tada, Hitoshi, 5,572,175, Cl. 333-206.000.

Suga, Shinjiro: *See—*
Jimbo, Makoto; Yoshikawa, Mamoru; Suga, Shinjiro; Yamaguchi, Yoshihisa; Niwa, Masahiro; Kobayashi, Eiko; and Kubo, Kunimichi, 5,571,879, Cl. 526-74.000.

Sugahara, Toshihiko: *See—*
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Sugahara, Yoshiyuki: *See—*
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Sugano, Hideo: *See—*
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Sugawara, Yoshitaka, to Hitachi, Ltd. Voltage-driven type semiconductor device. 5,572,048, Cl. 257-132.000.

Sugita, Tatsuya: *See—*
Naruse, Atsuko; Maeda, Yoshihito; Kato, Yoshimi; Ikuta, Isao; Andoh, Hisashi; Nagai, Masaichi; Sato, Yoshio; Fushimi, Tetsuya; Minemura, Hiroyuki; and Sugita, Tatsuya, 5,572,502, Cl. 369-116.000.

Sugiyama, Eiji: *See—*
Sato, Eichi; Kaku, Yoshihiro; Yokota, Yuji; Shibata, Hiroshi; Hatanaka, Masanori; Sugiyama, Eiji; Sonoda, Jun; and Numata, Tetsuaki, 5,570,766, Cl. 192-45.100.

Sugiyama, Hisataka: *See—*
Satoh, Naoki; Maeda, Takeshi; Saito, Atsushi; Sugiyama, Hisataka; Sukeda, Hirofumi; Tsuchinaga, Hiroyuki; and Ouchi, Yasuhide, 5,572,503, Cl. 369-124.000.

Suh, Kyung W.: *See—*
Hitchcock, Martin K.; Suh, Kyung W.; Bartz, Arnold M.; Paquet, Andrew N.; and Stobby, William G., 5,571,847, Cl. 521-56.000.

Sukeda, Hirofumi: *See—*
Satoh, Naoki; Maeda, Takeshi; Saito, Atsushi; Sugiyama, Hisataka; Sukeda, Hirofumi; Tsuchinaga, Hiroyuki; and Ouchi, Yasuhide, 5,572,503, Cl. 369-124.000.

Sukegawa, Hiroshi, to Kabushiki Kaisha Toshiba. Flash memory chips. 5,572,466, Cl. 365-185.330.

Sukup, Eugene G., to Sukup Manufacturing Company. Carriage return apparatus for a grain stirring device having multiple stirrers. 5,570,954, Cl. 366-261.000.

Sukup Manufacturing Company: *See—*
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Sullivan, Dana A.: *See—*
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Sullivan, Donald P.: *See—*
Mishra, Satchidanand; Yu, Robert C. U.; Carmichael, Kathleen M.; Grabowski, Edward F.; Horgan, Anthony M.; Limburg, William W.; Normandin, Sharon E.; Pai, Damodar M.; Post, Richard L.; Sullivan, Donald P.; and VonHoene, Donald C., 5,571,647, Cl. 430-58.000.
Mishra, Satchidanand; Yu, Robert C. U.; Sullivan, Donald P.; Carmichael, Kathleen M.; Grabowski, Edward F.; Horgan, Anthony M.; Limburg, William W.; Normandin, Sharon E.; Post, Richard L.; and VonHoene, Donald C., 5,571,648, Cl. 430-59.000.
Mishra, Satchidanand; Yu, Robert C. U.; Carmichael, Kathleen M.; Grabowski, Edward F.; Horgan, Anthony M.; Limburg, William W.; Normandin, Sharon E.; Pai, Damodar M.; Post, Richard L.; Sullivan, Donald P.; and VonHoene, Donald C., 5,571,649, Cl. 430-59.000.

Sumi, Kazuhiko: *See—*
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Sumi, Yuji: *See—*
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Sumida, Hitoshi, to Fuji Electric Co., Ltd. Insulated-gate bipolar transistor with reduced latch-up. 5,572,055, Cl. 257-343.000.

Sumitomo Bakelite Company Limited: *See—*
Ishida, Tamotsu; Sakamoto, Tsukasa; and Saito, Hidenori, 5,571,854, Cl. 524-342.000.

Sumitomo Bakelite Corporation Limited: *See—*
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Sumitomo Chemical Company Limited: *See—*
Satoh, Tomoari; Tateno, Tatsuo; Furukawa, Yasuhito; and Deguchi, Toshihisa, 5,571,638, Cl. 429-248.000.
Yoshida, Jiichirou; Nezu, Syoich; and Ono, Junichi, 5,571,585, Cl. 428-36.910.

Sumitomo Electric Industries, Ltd.: *See—*

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Takahashi, Toshiya; Ikegaya, Akihiko; Tanabe, Keiichiro; and Fujimori, Noaji, 5,571,236, Cl. 72-467.000.
Tanaka, So; and Iiyama, Michitomo, 5,571,777, Cl. 505-237.000.
Utumi, Yoshiharu; Imai, Takahiro; and Fujimori, Naoji, 5,571,603, Cl. 428-212.000.
Yoshida, Ichiro; Shigematsu, Masayuki; and Murata, Michio, 5,572,356, Cl. 359-341.000.

Sumitomo Rubber Industries, Ltd.: *See—*
Hatakenaka, Kenji; Mineta, Kenichi; and Miyoshi, Akihiro, 5,571,351, Cl. 152-209.00R.

Sumitomo Wiring Systems, Ltd.: *See—*
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Sumiya, Minoru: *See—*
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Summerell, David: *See—*
Altman, Louis; Summerell, David; and Turcotte, William E., II, 5,572,421, Cl. 395-203.000.

Summers, James H.: *See—*
Dewitt, Jimmie E.; Holck, Timothy M.; Summers, James H.; and Emrick, Samuel L., 5,572,672, Cl. 395-184.010.

Sun Company, Inc. (R&M): *See—*
Wijesekera, Tilak; Lyons, James E.; and Ellis, Paul E., Jr., 5,571,908, Cl. 540-145.000.

Sun It Corp.: *See—*
Cooper, Sandy, 5,570,863, Cl. 248-146.000.

Sun Microsystems, Inc.: *See—*
Giordano, Claeton J.; and Adams, Evan W., 5,572,729, Cl. 395-616.000.
Molnar, Charles E.; Sutherland, Ivan E.; Sproull, Robert F.; and Jones, Ian W., 5,572,690, Cl. 395-376.000.
Narad, Charles E.; and MacAvoy, Neil, 5,572,734, Cl. 395-726.000.
Reznikov, Naum; Nuttall, John C., deceased, 5,570,984, Cl. 411-551.000.
Whitman, Jeffrey D., 5,572,666, Cl. 395-183.080.

Sunada, Kazuhiro; Yamada, Yutaka; Hattori, Ken; and Sakurane, Katsushi, to Fujitsu Limited. Method and apparatus for monitoring and fault-analyzing networks. 5,572,533, Cl. 371-20.100.

Sunco Products, Inc.: *See—*
Yeung, Man F., 5,570,480, Cl. 4-487.000.

Sunds Defibrator Industries: *See—*
Fredriksson, Börje; and Svensson, Lennart, 5,571,383, Cl. 162-213.000.

Sung, Anne: *See—*
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Sung, Foyer; Sung, Niema; Sung, Gina; Sung, Anne; and Sung, Lina. Self-reply envelope. 5,570,835, Cl. 229-301.000.

Sung, Gina: *See—*
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Suni, Paul J. M., to Coherent Technologies, Inc. Laser rod assembly for side pumped lasers. 5,572,541, Cl. 372-70.000.

Sunright Limited: *See—*
Lim, Samuel S. S.; and Tan, Siew K., 5,572,140, Cl. 324-755.000.

Supcoe, Robert F.; and Felsen, Ira M., to United States of America, Navy. Formulation and preparation of a gel system for the promotion of rapid solvation in aqueous systems. 5,571,314, Cl. 523-175.000.

Superconductivity Research Laboratory of International Superconductivity Technology Center: *See—*
Fujimoto, Manabu; Suzuki, Katsumi; Enomoto, Youichi; and Tanaka, Shoji, 5,571,778, Cl. 505-329.000.

Suryadevara, Jogendra; and Nozad, Irandokht I., to Ethicon, Inc. Process for producing a polyamide suture. 5,571,469, Cl. 264-210.800.

Suspa Compart Aktiengesellschaft: *See—*
Bauer, Hans-Peter; and Bauer, Hans J., 5,570,873, Cl. 267-64.120.

Sussman, Glenn R.: *See—*
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Sutherland, Ivan E.: *See—*
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Suzuki, Hideki; and Kohda, Katsuhiro, to Fuji Photo Film Co., Ltd. Process for the preparation of radiation image storage panels. 5,571,364, Cl. 156-309.600.

Suzuki, Katsumi: *See—*
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Suzuki, Katsuyoshi: *See—*
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Suzuki, Kenji: *See—*
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Suzuki, Masaji: *See—*
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Suzuki, Masakazu; Mori, Keisuke; Tachibana, Akifumi; and Makino, Takao, to J. Morita Manufacturing Corporation. X-ray imaging apparatus and X-ray generation detector for activating the same. 5,572,566, Cl. 378-98.200.

Suzuki, Mikio: *See—*
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Suzuki, Minoru; Negishi, Kiyoshi; Kawamura, Katsumi; Horie, Mikio; Orita, Hiroshi; and Suzuki, Katsuyoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Thermal printer. 5,570,962, Cl. 400-120.160.

Suzuki, Shinichi; Yasukawa, Seiichi; Sato, Toshihiro; and Narisawa, Tsutomu, to Nikon Corporation. Photo-taking apparatus capable of making a photograph with flash by a flash device. 5,572,281, Cl. 396-121.000.

Suzuki, Shun: *See—*
Kawamichi, Genichiro; Tobita, Satoru; and Suzuki, Shun, 5,571,284, Cl. 400-322.000.

Suzumura, Toshihiro: *See—*
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Svensson, Lennart: *See—*
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Swamy, N. Deepak, to Dell USA, L.P. Apparatus and method of making laminate an embedded conductive layer. 5,571,608, Cl. 428-246.000.

Swamy, N. Deepak; Pecone, Victor K.; and Slupek, Darrell, to Dell USA, L.P. Trace conductor layout configuration for preserving signal integrity in control boards requiring minimum connector stub separation. 5,571,996, Cl. 174-261.000.

Swande, Jerker, to Orebroskenan Aktiebolag. Blade of an ice skate. 5,570,893, Cl. 280-11.180.

Swanson, Brian D.: *See—*
Chen, James C.; and Swanson, Brian D., 5,571,152, Cl. 607-92.000.

Swanson, Robert E.; Jagielinski, Tomasz; and Brock, George W., to Eastman Kodak Company. Passive data recording onto magnetic layers of photographic film. 5,572,267, Cl. 396-319.000.

Swanson, Robert E.: *See—*
Brock, George W.; Swanson, Robert E.; and Hower, Sheldon W., 5,572,269, Cl. 396-320.000.

Swartwout, James R.; and Corrigan, John J., to Morehouse Cowles, Inc. Modular high shear mixer. 5,570,955, Cl. 366-264.000.

Swedberg, Sally A.; Kaltenbach, Patrick; Witt, Klaus E.; Bek, Fritz; and Mittelstadt, Laurie S., to Hewlett Packard Company. Fully integrated miniaturized planar liqnid sample handling and analysis device. 5,571,410, Cl. 210-198.200.

Sweeney, Gary L. Laser light fire evacuation system. 5,572,183, Cl. 340-332.000.

Sweeney, Michael; and Jenkins, Michael P., to Rolls-Royce Power Engineering plc. Method and apparatus for observing a gap. 5,572,039, Cl. 250-559.300.

Sweeney, Paul; Prince, Colleen; and Owen, Andrew P., to BOC Group, Inc., The. Cryogenic refrigeration method for use in connection with a cryogenic temperature swing adsorption process. 5,570,582, Cl. 62-641.000.

Sweet, David B.: *See—*
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Sweetman, Robert J.: *See—*
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Swei, Gwo S.; Gaeta, Anthony C.; Yang, Wen L. P.; and Cercena, Jane L., to Norton Company. Dual-cure binder system. 5,571,297, Cl. 51-298.000.

Swenson, Larry E.; Vig, Michael A.; Sagaser, Thomas M.; and Kraft, Troy D., to Clark Equipment Company. Swing lock for a backhoe. 5,570,991, Cl. 414-685.000.

Swiatek, Edward R.: *See—*
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Swirhun, Stanley E.: *See—*
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Sybase, Inc.: *See—*
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Sybesma, Edward M.: *See—*
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Sydson & Cavaliers, Inc.: *See—*
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Sylvan, Loren M.; and Marx, Adam N., to U S West Advanced Technologies, Inc. Removable user interface for use with interactive electronic devices. 5,572,573, Cl. 379-61.000.

Symes, Walter J., Jr.: *See—*

Amidinophenylalanine derivatives, a process for their preparation, their use and compositions containing these as anticoagulants. 5,571,844, Cl. 514-602.000.

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Subramanya, Mallavalli L.: *See—*
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Sugiyama, Eiji: *See—*
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Sugiyama, Hisataka: *See—*
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Sullivan, Donald P.: *See—*
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Vicam, L.P.: *See—*
Powell, Ralph; Phillips, Alisa; and Jackson, Barbara, 5,571,481, Cl. 422-104.000.

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Victor Company of Japan, Ltd.: *See—*
Osada, Naomi; Kohno, Toshiro; and Kanbe, Satoshi, 5,570,961, Cl. 400-120.040.
Ozaki, Kazuhisa; Kayanuma, Kanji; and Nagano, Hirofumi, 5,572,507, Cl. 369-275.400.

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Maro, Nicholas, 5,570,940, Cl. 312-257.100.

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Walker, Stephen D.; Jewell, Jack L.; Olbright, Greg R.; and Swirhun, Stanley E., 5,570,697, Cl. 128-719.000.

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Vouyouka, Anastasia. Industrial pattern grading template. 5,570,533, Cl. 33-17.00A.

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Wada, Shinichi: *See—*
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Dasch, James R.; Pace, Doran R., III; and Waegell, Wendy O., 5,571,714, Cl. 435-240.270.

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Bhatt, Anilkumar C.; Ksenak, Gary S.; Papathomas, Kostas I.; Sburtleff, James A.; and Wagner, Jerome J., 5,571,417, Cl. 210-620.000.

Wagner, Ruedi, to Garaventa Holding AG. Garage for a continuous cable railway. 5,570,637, Cl. 104-27.000.

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Walbro Corporation: *See—*
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Walcott, Bruce L.: *See—*
Meister, Jack B.; and Walcott, Bruce L., 5,570,903, Cl. 280-735.000.

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Wallon, Edward J. Picture frame stand clip. 5,570,526, Cl. 40-748.000.

Wallstén, Hans I. Device for hyperthermia treatment. 5,571,153, Cl. 607-98.000.

Walsh, Brian J., to Aeroquip Corporation. Composite and tie layer therefor. 5,570,711, Cl. 138-137.000.

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Walsh, Melanie J.: *See—*
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Boschelli, Diane H.; Connor, David T.; Dyer, Richard D.; Khatana, Sonya S.; Kramer, James B.; and Roark, William H., 5,571,825, Cl. 514-332.000.

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Bang, Chan S.; Yeo, Jae H.; Woo, Young M.; Lim, Jong C.; Yang, Deog H.; Kim, Se H.; Jeon, Jae H.; Seo, Mi K.; Kim, Sam S.; Lee, Tae H.; Kim, Yong Z.; and Oh, Hun S., 5,571,804, Cl. 514-203.000.

Yesair, David W. Mixed lipid-bicarbonate colloidal particles for delivering drugs or calories. 5,571,517, Cl. 424-401.000.

Yeung, Man F., to Sunco Products, Inc. Inflatable floating spa. 5,570,480, Cl. 4-487.000.

Yeung, Siu Chin C.: *See*—
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YieldUP International: *See*—
Mohindra, Raj; Bhushan, Abhay; Bhushan, Rajiv; Puri, Suraj; Anderson, John H.; and Nowell, Jeffrey, 5,571,337, Cl. 134-25.400.

Yim, Sung-Min; and Lee, Jung-Hyuck, to Samsung Electronics Co., Ltd. Sense amplifier control circuit of semiconductor memory device. 5,572,475, Cl. 365-208.000.

YKK Corporation: *See*—
Takizawa, Toshiaki; and Murasaki, Ryuichi, 5,571,467, Cl. 264-167.000.

Yoganathan, Sittampalam: *See*—
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Yokohama Rubber Co., Ltd, The: *See*—
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Yokoi, Hidekazu; Sagawa, Yuichiro; and Wada, Shinichi, to Konami Co., Ltd. Target hitting game machine. 5,571,267, Cl. 273-446.000.

Yokoi, Hideo: *See*—
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Yokoi, Keiji, to Ebara Corporation. Plunger pump system with shuttle valve. 5,571,002, Cl. 417-507.000.

Yokokawa, Shuuho: *See*—
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Yokosawa, Hidetoshi: *See*—
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Yokota, Hidetaka; and Ishikawa, Tsuyoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Light projecting device with cylindrical lens. 5,572,368, Cl. 359-710.000.

Yokota, Motoo: *See*—
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Yokota, Yuji: *See*—
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Yokoyama, Hideaki; and Sugano, Hideo, to Fuji Oil Company, Limited. Hamburger type food material and process of making it. 5,571,545, Cl. 426-93.000.

Yokoyama, Yutaka, to NEC Corporation. Motion compensation estimating device and method achieving improved motion compensation. 5,572,258, Cl. 348-415.000.

Yoon, Byoung J.: *See*—
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Yoon, Hee Y., to Goldstar Electron Co., Ltd. Multi-meter. 5,572,117, Cl. 324-115.000.

Yoon, InBae. Implantable diagnostic device for indicating structural changes of internal anatomical tissue and system and methods therefor. 5,570,690, Cl. 128-630.000.

Yoon, InBae. Ligating instrument and methods of ligating tissue in endoscopic operative procedures. 5,571,120, Cl. 606-148.000.

Yoon, InBae. Penetrating instrument with sequential indication of entry into anatomical cavities. 5,571,133, Cl. 606-185.000.

Yoon, InBae. Safety penetrating instrument with penetrating member and safety member moving during penetration and triggered safety member protrusion. 5,571,134, Cl. 606-185.000.

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Yoshida, Ichiro; Shigematsu, Masayuki; and Murata, Michio, to Sumitomo Electric Industries, Ltd. Optical amplifier. 5,572,356, Cl. 359-341.000.

Yoshida, Jiichirou; Nezu, Syoich; and Ono, Junichi, to Sumitomo Chemical Company Limited. Resin-coated pipe. 5,571,585, Cl. 428-36.910.

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Yoshimura, Toshimi: *See*—
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Yoshino, Tomoyuki: *See*—
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Yoshiyama, Ichiro: *See*—
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Yoshizawa, Hiroshi: *See*—
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Yoshizawa, Yasuo, to Yoshiki Industrial Co., Ltd. Lever apparatus having stationary fulcrum, movable force point and movable action point, and machine which incorporates the same. 5,570,607, Cl. 74-110.000.

Yost, Vincent G.: *See*—
Jacobs, James P., 5,570,771, Cl. 194-200.000.

Young, Bruce: *See*—
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Young, James W.: *See*—
Barberich, Timothy J.; and Young, James W., 5,571,827, Cl. 514-356.000.

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Yu, Ruey J.; and Van Scott, Eugene J., to Tristrata Technology, Inc. Method of treating wrinkles using mandelic acid. 5,571,841, Cl. 514-570.000.
Yu, Seon-il: *See—*
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Zenith Electronics Corporation: *See—*
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Zhou, Xaio-Guang: *See—*
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5th DAY OF NOVEMBER, 1996

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bright Solutions, Inc.: *See—*
Henry, Richard G., Re. 35,370, Cl. 73-40.700.
Buckley, Robert G.: *See—*
Tallon, Jeffrey L.; Buckley, Robert G.; and Pooke, Donald M., Re. 35,376, Cl. 505-125.000.
Ducroux, Alain R. E.; and Novakovic, Miodrag, to Guilford (Delaware) Inc. Flooring system especially designed for facilities which house data processing equipment. Re. 35,369, Cl. 52-126.600.
Guilford (Delaware) Inc.: *See—*
Ducroux, Alain R. E.; and Novakovic, Miodrag, Re. 35,369, Cl. 52-126.600.
Henry, Richard G., to Bright Solutions, Inc. Leak detection in heating ventilating and air conditioning systems using an environmentally safe material. Re. 35,370, Cl. 73-40.700.
Houben, Jan P.; and Moolenaar, Antonie J., to S-B Power Tool Company. Apparatus for driving a drilling or percussion tool. Re. 35,372, Cl. 173-109.000.
Industrial Research Limited: *See—*
Tallon, Jeffrey L.; Buckley, Robert G.; and Pooke, Donald M., Re. 35,376, Cl. 505-125.000.
Kabushiki Kaisha Toshiba: *See—*
Seo, Yasutsugu, Re. 35,371, Cl. 128-661.090.
Kilgrow, Donald C.; and Pedersen, Melvin H. Vehicle tire deflator. Re. 35,373, Cl. 404-6.000.
Logan, James P., Jr. Spirally sliced boneless meat product. Re. 35,374, Cl. 426-641.000.
Moolenaar, Antonie J.: *See—*
Houben, Jan P.; and Moolenaar, Antonie J., Re. 35,372, Cl. 173-109.000.
Novakovic, Miodrag: *See—*
Ducroux, Alain R. E.; and Novakovic, Miodrag, Re. 35,369, Cl. 52-126.600.
Park, Dal H. Movable toy. Re. 35,375, Cl. 446-353.000.
Pedersen, Melvin H.: *See—*
Kilgrow, Donald C.; and Pedersen, Melvin H., Re. 35,373, Cl. 404-6.000.
Pooke, Donald M.: *See—*
Tallon, Jeffrey L.; Buckley, Robert G.; and Pooke, Donald M., Re. 35,376, Cl. 505-125.000.
S-B Power Tool Company: *See—*
Houben, Jan P.; and Moolenaar, Antonie J., Re. 35,372, Cl. 173-109.000.
Seo, Yasutsugu, to Kabushiki Kaisha Toshiba. Method and system for controlling ultrasound scanning sequence. Re. 35,371, Cl. 128-661.090.
Tallon, Jeffrey L.; Buckley, Robert G.; and Pooke, Donald M., to Industrial Research Limited. Metal oxide 247 superconducting materials. Re. 35,376, Cl. 505-125.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Abatement Technologies: *See—*
Travis, Terrell; Shagott, David; Kruse, Gary; Sutherland, Daniel; and Harber, Blair, Jr., B1 5,069,691, Cl. 96-57.000.
Auth, David C., to Heart Technology, Inc. Transluminal microdissection device. B1 4,990,134, Cl. 604-22.000.
Bertonee Inc.: *See—*
Iannini, Robert E., B1 4,742,278, Cl. 315-248.000.
Byker, Harlan J., to Gentex Corporation. Variable reflectance motor vehicle mirror. B1 5,128,799, Cl. 359-265.000.
Gentex Corporation: *See—*
Byker, Harlan J., B1 5,128,799, Cl. 359-265.000.
Harber, Blair, Jr.: *See—*
Travis, Terrell; Shagott, David; Kruse, Gary; Sutherland, Daniel; and Harber, Blair, Jr., B1 5,069,691, Cl. 96-57.000.
Heart Technology, Inc.: *See—*
Auth, David C., B1 4,990,134, Cl. 604-22.000.
Heinrich, Karl F.: *See—*
Kreft, Keith A.; and Heinrich, Karl F., B1 5,442,170, Cl. 250-229.000.
Iannini, Robert E., to Bertonee Inc. Single connection gas discharge display and driver. B1 4,742,278, Cl. 315-248.000.
Koshimura, Atsushi: *See—*
Sakumoto, Yukinori; Yokoyama, Shigeyuki; Shibuya, Akihiro; and Koshimura, Atsushi, B1 5,277,972, Cl. 428-355.000.
Kreft, Keith A.; and Heinrich, Karl F., to Snap-On Technologies, Inc. Programmable cable adaptor for connecting different automobile computers to diagnostic equipment. B1 5,442,170, Cl. 250-229.000.
Kruse, Gary: *See—*
Travis, Terrell; Shagott, David; Kruse, Gary; Sutherland, Daniel; and Harber, Blair, Jr., B1 5,069,691, Cl. 96-57.000.
Kyoto, Michihisa: *See—*
Ohsugi, Tetsuya; Kyoto, Michihisa; and Nishihagi, Kazuo, B1 5,249,216, Cl. 378-46.000.
Long, John A. Continuous form. B1 5,275,857, Cl. 428-43.000.
Nishihagi, Kazuo: *See—*
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Ohsugi, Tetsuya; Kyoto, Michihisa; and Nishihagi, Kazuo, to Sumitomo Electric Industries, Ltd.; and Technos Co., Ltd. Total reflectioo X-ray fluorescence apparatus. B1 5,249,216, Cl. 378-46.000.
Sakumoto, Yukinori; Yokoyama, Shigeyuki; Shibuya, Akihiro; and Koshimura, Atsushi, to Tomoegawa Paper Co., Ltd. Adhesive tapes. B1 5,277,972, Cl. 428-355.000.
Shagott, David: *See—*
Travis, Terrell; Shagott, David; Kruse, Gary; Sutherland, Daniel; and Harber, Blair, Jr., B1 5,069,691, Cl. 96-57.000.
Shibuya, Akihiro: *See—*
Sakumoto, Yukinori; Yokoyama, Shigeyuki; Shibuya, Akihiro; and Koshimura, Atsushi, B1 5,277,972, Cl. 428-355.000.
Snap-On Technologies, Inc.: *See—*
Kreft, Keith A.; and Heinrich, Karl F., B1 5,442,170, Cl. 250-229.000.
Sumitomo Electric Industries, Ltd.: *See—*
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WPFY, Inc.: *See—*
Dollins, James C., 375,250, Cl. D8-356.000.
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Wyatt, Michael D.: *See—*
DiCola, Vincent C.; Wyatt, Michael D.; and Fischer, Jerry F., 375,379, Cl. D26-85.000.
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Nagashima, Toshiaki; Yamamoto, Ei; and Kitayama, Kunihiko, 375,322, Cl. D18-40.000.
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Bloom, Alan H. V. Persicaria plant named Taurus. 9,682, Cl. Plt.-68.100.
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Vletter, Marinus, 9,686, Cl. Plt.-88.100.
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Olsen, Richard R.; and Olsen, Larry M., 9,681, Cl. Plt.-34.100.
Olsen, Richard R.; and Olsen, Larry M. Apple tree 'olsentwo Gala'. 9,681, Cl. Plt.-34.100.
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VandenBerg, Cornelis P., 9,684, Cl. Plt.-82.100.

LIST OF STATUTORY INVENTION REGISTRATIONS

APPLICANTS TO WHOM

STATUTORY INVENTION REGISTRATIONS WERE ISSUED ON THE 5th DAY OF NOVEMBER, 1996

Baldwin, James C.: *See—*
Rhein, Robert A.; and Baldwin, James C., H1,612, Cl. 528-34.000.
Campbell, William T.: *See—*
Welch, Robert G.; and Campbell, William T., H1,604, Cl. 510-441.000.
Deckard, Dennis D.; Herold, Stanley J.; LaGrange, Donald E.; Mitchell, Dennis L.; and Mulinix, David J., to United States of America, Navy. Flare with safe-and-arm ignition system. H1,603, Cl. 102-336.000.
Eastman Kodak Company: *See—*
Yang, Hsinjin; Yacobucci, Paul D.; and Weiss, David S., H1,607, Cl. 430-59.000.
Espy, Herbert H., to Hercules Incorporated. Polyamide-epichlorohydrin wet-strength resins with reduced content of epichlorohydrin-derived by-products in-situ solvent extraction. H1,613, Cl. 528-489.000.
Gelnovatch, Vladimir G.; and Jette, Bruce D., to United States of America, Army. Electronic quasi-passive identification system. H1,606, Cl. 340-505.000.
Hammons, John L.: *See—*
Mayer, Katherine L.; Lavash, Bruce W.; Hammons, John L.; and Lampson, Patricia L., H1,614, Cl. 604-385.100.
Hercules Incorporated: *See—*
Espy, Herbert H., H1,613, Cl. 528-489.000.
Herold, Stanley J.: *See—*
Deckard, Dennis D.; Herold, Stanley J.; LaGrange, Donald E.; Mitchell, Dennis L.; and Mulinix, David J., H1,603, Cl. 102-336.000.
Jette, Bruce D.: *See—*
Gelnovatch, Vladimir G.; and Jette, Bruce D., H1,606, Cl. 340-505.000.
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Kondo, Toshiya. Silver halide photographic emulsion. H1,609, Cl. 430-567.000.
Konica Corp.: *See—*
Nishio, Shoji; and Komatsu, Hideki, H1,608, Cl. 430-264.000.
LaGrange, Donald E.: *See—*
Deckard, Dennis D.; Herold, Stanley J.; LaGrange, Donald E.; Mitchell, Dennis L.; and Mulinix, David J., H1,603, Cl. 102-336.000.
Lammers, Karen M.: *See—*
Luo, Xiaochun; Lammers, Karen M.; and Oltmanns, Monica L., H1,610, Cl. 435-240.200.
Lampson, Patricia L.: *See—*
Mayer, Katherine L.; Lavash, Bruce W.; Hammons, John L.; and Lampson, Patricia L., H1,614, Cl. 604-385.100.
Lavash, Bruce W.: *See—*
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M-I Drilling Fluids Company: *See—*
Patel, Arvind D., H1,611, Cl. 507-103.000.
Mayer, Katherine L.; Lavash, Bruce W.; Hammons, John L.; and Lampson, Patricia L. Body fitting compound sanitary napkin. H1,614, Cl. 604-385.100.
Mitchell, Dennis L.: *See—*
Deckard, Dennis D.; Herold, Stanley J.; LaGrange, Donald E.; Mitchell, Dennis L.; and Mulinix, David J., H1,603, Cl. 102-336.000.
Mulinix, David J.: *See—*
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Rhein, Robert A.; and Baldwin, James C., to United States of America, Navy. Method for making silarylene-siloxane polymers. H1,612, Cl. 528-34.000.
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Army: *See—*
Gelnovatch, Vladimir G.; and Jette, Bruce D., H1,606, Cl. 340-505.000.
Leupold, Herbert A., H1,605, Cl. 335-216.000.
Navy: *See—*
Deckard, Dennis D.; Herold, Stanley J.; LaGrange, Donald E.; Mitchell, Dennis L.; and Mulinix, David J., H1,603, Cl. 102-336.000.
Rhein, Robert A.; and Baldwin, James C., H1,612, Cl. 528-34.000.
Weiss, David S.: *See—*
Yang, Hsinjin; Yacobucci, Paul D.; and Weiss, David S., H1,607, Cl. 430-59.000.
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ISSUED NOVEMBER 5, 1996

NOTE—First number, class; second number, subclass; third number, patent number

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69.13 5,572,003
69.17 5,571,426
75 5,571,427
121.64 5,571,428
121.68 5,571,429
121.78 5,571,430
130.01 5,571,431
202 5,571,432
413 5,571,433
464 5,571,434
544 5,571,435
604 5,571,436
607 5,571,437
625 5,571,438
716 5,571,439

CLASS 220
1.5 5,570,801
23.8 5,570,802
89.2 5,570,803
316 5,570,804
565 5,570,805
604 5,570,806
756 5,570,807

CLASS 221
34 5,570,808
73 5,570,809
86 5,570,810
127 5,570,811
211 5,571,258
233 5,570,812

CLASS 222
1 5,570,813
45 5,570,814
95 5,570,815
129.4 5,570,816
153.11 5,570,817
153.14 5,570,818
175 5,571,260
190 5,570,819
205 5,570,820
386.5 5,571,261
391 5,570,821
459 5,570,822
594 5,571,440

CLASS 224
160 5,570,823
240 5,570,824
495 5,570,825
524 5,570,826
587 5,570,827
627 5,570,828
651 5,570,829
676 5,570,830

CLASS 226
196 5,570,831

CLASS 227
81 5,570,832

CLASS 229
67.2 5,570,833
117.11 5,570,834
301 5,570,835

CLASS 232
16 5,570,836

CLASS 235
380 5,572,004
381 5,572,005
454 5,572,006
467 5,572,008
472 5,572,007
494 5,572,009
5,572,010

CLASS 236
46 R 5,570,837
49.3 5,570,838

CLASS 239
61 5,570,839
112 5,570,840
126 5,571,259
265.39 5,571,262
585.1 5,570,841
5,570,842
5,570,843

CLASS 241
19 5,570,844
21 5,570,845
5,570,846
23 5,570,847
172 5,570,848
186.4 5,570,849
207 5,570,850

CLASS 242
247 5,570,851
356 5,570,852
362.2 5,570,853
397 5,570,854
565 5,570,855
588.3 5,570,856

CLASS 244
108 5,570,857
115 5,570,858
213 5,570,859

CLASS 248
48.2 5,570,860
74.1 5,570,861
97 5,570,862
146 5,570,863
148 5,570,864
226.11 5,570,865
631 5,570,866
635 5,570,867

CLASS 250
201.2 5,572,011
201.6 5,572,012
201.8 5,572,013
208.1 5,572,015
208.2 5,572,014
227.15 5,572,016
227.25 5,572,017
229 B1 5,442,170
231.14 5,572,018
231.16 5,572,019
253 5,572,020
269.5 5,572,021
282 5,572,022
288 5,572,023
5,572,024
292 5,572,025
307 5,572,026
336.1 5,572,027
337 5,572,028
338.3 5,572,029
339.12 5,572,030
343 5,572,031
345 5,572,032
353 5,572,033
368 5,572,034
396 R 5,572,035
453.11 5,572,036
483.1 5,572,037
492.21 5,572,038
599.5 5,572,039

CLASS 251
14 5,570,868
129.04 5,570,869
208 5,570,870

CLASS 252
1 5,571,441
8.57 5,571,443
8.62 5,571,442
5,571,444
299.5 5,571,448
299.6 5,571,449
299.61 5,571,450
301.4 R 5,571,451
312 5,571,452
400.24 5,571,453
500 5,571,454
513 5,571,455
518 5,571,456
519 5,571,457
587 5,571,460

CLASS 254
29 A 5,570,871
350 5,570,872

CLASS 257
9 5,572,040
10 5,572,041
5,572,042
5,572,043
18 5,572,044
49 5,572,045
59 5,572,046
66 5,572,047
72 5,572,048
132 5,572,049
197 5,572,050
209 5,572,051
225 5,572,052
295 5,572,053
308 5,572,054
322 5,572,055
343 5,572,056
402 5,572,057
417 5,572,058
421 5,572,059
448 5,572,060
467 5,572,061
530 5,572,062
565 5,572,063
659 5,572,064
666 5,572,065
5,572,066
669 5,572,067
686 5,572,068
690 5,572,069
713 5,572,070
751 5,572,071
5,572,072

CLASS 264
40.5 5,571,461
45.9 5,571,462
5,571,463
72 5,571,464
121 5,571,465
167 5,571,467
187 5,571,468
210.8 5,571,469
255 5,571,470
401 5,571,471
439 5,571,472
510 5,571,473
534 5,571,474

CLASS 266
185 5,571,475

CLASS 267
64.12 5,570,873
95 5,570,874
140.13 5,571,263
140.14 5,571,264

CLASS 270
58.09 5,570,875

CLASS 271
119 5,570,876
5,571,265
186 5,570,877
203 5,570,878

CLASS 273
1.5 A 5,570,879
1.5 R 5,570,880
57.3 5,570,881
65 EG 5,570,882
73 D 5,570,883
261 5,570,887
317.5 5,570,888
346 5,570,889
400 5,571,266
446 5,571,267

CLASS 277
39 5,571,268
101 5,570,890
117 5,570,891
138 5,571,269
235 B 5,570,892

CLASS 280
11.18 5,570,893
11.22 5,570,894
47.19 5,570,895
284 5,570,896
491.1 5,571,270
495 5,570,897
656 5,570,898
728.2 5,570,899
729 5,570,900
730.1 5,570,901
731 5,570,902
735 5,570,903
737 5,570,904
741 5,571,271
743.2 5,570,905

CLASS 281
42 5,570,906
45 5,570,907

CLASS 285
14 5,570,908
90 5,570,909
308 5,570,910
364 5,570,911

CLASS 292
1.5 5,570,912
36 5,570,913
80 5,571,272
130 5,570,914
242 5,570,915
336.3 5,570,916
346 5,570,917

CLASS 293
132 5,570,918

CLASS 294
19.1 5,570,919
111 5,570,920

CLASS 296
39.1 5,570,921
146.6 5,570,922
164 5,570,923
175 5,570,924
177 5,570,925

CLASS 297
39 5,570,926
85 5,570,927
215.15 5,571,273
232 5,570,928
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342 5,570,930
378.12 5,570,931
411.38 5,571,274
479 5,570,932
483 5,570,933

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15 5,570,934

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155 5,570,935
170 5,570,936
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CLASS 305
127 5,571,275

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328 5,572,075

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40 MM 5,572,076
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90 5,572,078
90.5 5,572,079
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45 5,570,938
229 5,570,939
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334.6 5,570,941
5,570,942

CLASS 313
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479 5,572,087
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533 5,572,089
634 5,572,090
636 5,572,091

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-5.37 5,572,092
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289 5,572,093
308 5,572,094

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CLASS 320
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5,572,108
30 5,572,110

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273 5,572,111
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123 R 5,572,118
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27 5,572,146
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CLASS 329
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CLASS 330
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CLASS 331
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CLASS 333
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120 5,572,178
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CLASS 337
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CLASS 340
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870.02 5,572,200
902 5,572,201
917 5,572,202
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988 5,572,204

CLASS 341
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62 5,572,207
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144 5,572,210
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452 5,572,221

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CLASS 347
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42 5,572,244
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43 5,572,250
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CLASS 355
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444 5,572,336
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CLASS 359
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824 5,572,372
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827 5,572,374
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73.03 5,572,380
85 5,572,381
98.08 5,572,382
99.05 5,572,383
99.08 5,572,384
103 5,572,385
5,572,386
104 5,572,387
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126 5,572,392
130.21 5,572,393

CLASS 361
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93 5,572,396
119 5,572,397
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21 5,572,413
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CLASS 364
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514 R 5,572,441
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563 5,572,448
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571.02 5,572,450
578 5,572,451
724.16 5,572,452
736 5,572,453
746.1 5,572,454
746.2 5,572,455

CLASS 365
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52 5,572,457
96 5,572,458
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154 5,572,460
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189.11 5,572,469
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210 5,572,476
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226 5,572,478
230.06 5,572,479
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233 5,572,482

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10 5,570,953
139 5,571,282
143 5,571,283
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CLASS 367
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99 5,572,484
134 5,572,485
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157 5,572,487

CLASS 368
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21 5,572,489

CLASS 369
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14 5,572,492
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124 5,572,503
215 5,572,504
275.3 5,572,506
275.4 5,572,507
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CLASS 370
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13 5,572,510
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16 5,572,513
17 5,572,514
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18 5,572,516
50 5,572,517
58.1 5,572,518
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85.5 5,572,526
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94.2 5,572,529
110.1 5,572,530
112 5,572,531

CLASS 371
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20.6 5,572,534
22.1 5,572,535
22.4 5,572,536
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CLASS 372
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50 5,572,540
70 5,572,541
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107 5,572,543

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232 5,572,547
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356 5,572,554
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CLASS 376
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CLASS 377
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46 B1 5,249,216
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58 5,572,571
61 5,572,573
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5,572,575
67 5,572,576
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89 5,572,578
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246 5,572,586
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5,572,590

CLASS 381
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68 5,572,593
68.6 5,572,594

CLASS 382
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163 5,572,600
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178 5,572,602
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241 5,572,605
270 5,572,606
274 5,572,607
321 5,572,608

CLASS 384
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45 5,570,958

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17 5,572,611
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92 5,572,615
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135 5,572,617
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2.36 5,572,621
2.37 5,572,622
2.42 5,572,623
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513 5,572,272
630 5,572,273

CLASS 399

25 5,572,292
50 5,572,295
69 5,572,306
107 5,572,298
121 5,572,305
122 5,572,307
127 5,572,311
174 5,572,294
234 5,572,301
235 5,572,302
256 5,572,299
257 5,572,297
260 5,572,300
265 5,572,296
276 5,571,987
296 5,572,274
303 5,572,303
313 5,572,304
329 5,572,290
331 5,572,275
357 5,572,293
362 5,572,284
370 5,572,310
389 5,572,309
390 5,572,291
401 5,572,308

CLASS 400

56 5,570,959
74 5,570,960
120.04 5,570,961
120.16 5,570,962
197 5,570,963
322 5,571,284

CLASS 401

75 5,570,964
98 5,570,965
183 5,570,966
195 5,570,967

CLASS 403

109 5,570,968
268 5,570,969
374 5,570,970
381 5,570,971

CLASS 404

6 Re.35,373
5,570,972

CLASS 405

128 5,570,973
129 5,570,974
232 5,570,975
302.2 5,570,976

CLASS 406

88 5,570,977

CLASS 408

144 5,570,978

CLASS 409

134 5,570,979
232 5,570,980

CLASS 410

70 5,570,981

CLASS 411

355 5,570,982
386 5,570,983
551 5,570,984

CLASS 412

4 5,570,985

CLASS 414

43 5,571,499
140.3 5,570,986
416 5,570,987

498 5,570,988
537 5,570,989
543 5,570,990
685 5,570,991
744.3 5,570,992
783 5,570,993
786 5,570,994
5,570,995

CLASS 415

53.2 5,570,996

CLASS 416

117 5,570,997
186 R 5,570,998

CLASS 417

307 5,570,999
5,571,000
423.3 5,571,001
507 5,571,002

CLASS 418

1 5,571,003
107 5,571,004
268 5,571,005

CLASS 422

26 5,571,476
88 5,571,477
94 5,571,478
102 5,571,479
103 5,571,480
104 5,571,481
144 5,571,482
166 5,571,483
173 5,571,484
174 5,571,485
184.1 5,571,486
291 5,571,487
297 5,571,488

CLASS 423

53 5,571,489
244.01 5,571,490
245.3 5,571,491
263 5,571,492
308 5,571,493
338 5,571,494
598 5,571,495

CLASS 424

9.365 5,571,498
9.51 5,571,497
43 5,571,500
49 5,571,501
52 5,571,502
59 5,571,503
78.04 5,571,504
78.08 5,571,505
78.17 5,571,506
85.2 5,571,507
5,571,508
94.5 5,571,509
5,571,510
137.1 5,571,512
144.1 5,571,513
165.1 5,571,511
190.1 5,571,514
208.1 5,571,515
401 5,571,516
5,571,517
5,571,518
405 5,571,519
5,571,520
409 5,571,521
410 5,571,522
423 5,571,523
5,571,524
426 5,571,525
435 5,571,526
438 5,571,527
440 5,571,528
445 5,571,529
448 5,571,530
459 5,571,531
464 5,571,532
469 5,571,533
479 5,571,534
489 5,571,535
5,571,536

CLASS 425

72.2 5,571,537
87 5,571,538
135 5,571,539
343 5,571,540
393 5,571,541

CLASS 426

2 5,571,542
5 5,571,543
62 5,571,544

93 5,571,545
5,571,546
103 5,571,547
112 5,571,548
231 5,571,549
244 5,571,550
540 5,571,551
573 5,571,552
607 5,571,553
614 5,571,554
641 Re.35,374
659 5,571,555

CLASS 427

9 5,571,575
108 5,571,556
152 5,571,557
215 5,571,558
224 5,571,559
240 5,571,560
249 5,571,561
280 5,571,562
288 5,571,563
5,571,564
316 5,571,565
349 5,571,566
379 5,571,567
487 5,571,568
493 5,571,569
494 5,571,570
531 5,571,573
536 5,571,574
574 5,571,571
5,571,576
575 5,571,577
579 5,571,578
585 5,571,572

CLASS 428

1 5,571,579
5,571,580
31 5,571,581
35.5 5,571,582
35.7 5,571,583
5,571,584
36.91 5,571,585
41.3 5,571,586
43 5,571,587
B1 5,275,857
46 5,571,588
57 5,571,590
65.3 5,571,591
71 5,571,592
131 5,571,593
138 5,571,594
141 5,571,595
143 5,571,596
152 5,571,597
156 5,571,598
167 5,571,599
192 5,571,601
195 5,571,602
212 5,571,603
5,571,604
229 5,571,605
246 5,571,607
5,571,608
268 5,571,609
285 5,571,606
5,571,610
319.1 5,571,611
323 5,571,612
5,571,613
331 5,571,614
336 5,571,615
5,571,616
341 5,571,617
355 B1 5,277,972
359 5,571,618
364 5,571,619
375 5,571,620
389 5,571,621
391 5,571,622
403 5,571,623
5,571,624
447 5,571,625
457 5,571,626
458 5,571,627
555 5,572,725
605 5,571,628
694 DE 5,571,629

CLASS 429

26 5,571,630
94 5,571,632
100 5,571,633
188 5,571,600
192 5,571,634
194 5,571,635
209 5,571,640
218 5,571,636
5,571,637
248 5,571,638

CLASS 430

5 5,571,639
5,571,641
7 5,571,642
30 5,571,643
5,571,644
5,571,645
42 5,571,646
48 5,571,647
58 5,571,648
59 5,571,649
5,571,650
83 5,571,651
109 5,571,652
5,571,653
110 5,571,654
137 5,571,655
218 5,571,656
270.1 5,571,657
273.1 5,571,658
284.1 5,571,659
399 5,571,660
504 5,571,663
506 5,571,664
527 5,571,665
544 5,571,661
567 5,571,662

CLASS 431

11 5,571,006
13 5,571,007
125 5,571,008
328 5,571,009

CLASS 432

239 5,571,010

CLASS 433

71 5,571,011
123 5,571,012
132 5,571,013
141 5,571,014
173 5,571,015
5,571,016
174 5,571,017

CLASS 434

16 5,571,018
207 5,571,019
233 5,571,020

CLASS 435

2 5,571,666
5 5,571,667
6 5,571,669
5,571,670
5,571,671
5,571,672
5,571,673
5,571,674
5,571,675
5,571,676
5,571,677
7.1 5,571,678
7.4 5,571,680
7.6 5,571,681
7.9 5,571,682
14 5,571,683
18 5,571,684
25 5,571,685
29 5,571,686
5,571,687
5,571,688
68.1 5,571,689
69.1 5,571,690
5,571,691
5,571,692
5,571,693
5,571,695
5,571,696
69.3 5,571,694
69.7 5,571,697
5,571,698
70.1 5,571,700
71 5,571,679
71.3 5,571,701
91.2 5,571,702
105 5,571,703
123 5,571,704
172.3 5,571,705
174 5,571,708
215 5,571,709
235.1 5,571,710
240.1 5,571,711
240.2 5,571,712
5,571,713
240.27 5,571,714
244 5,571,715
252.1 5,571,716
252.3 5,571,718
254.1 5,571,717
264 5,571,719

286.1 5,571,720
305.1 5,571,721
320.1 5,571,722

CLASS 436

87 5,571,723
116 5,571,724
161 5,571,725
525 5,571,726
534 5,571,728
537 5,571,727
541 5,571,729

CLASS 437

21 5,571,730
31 5,571,731
5,571,732
34 5,571,733
40 5,571,734
41 5,571,735
43 5,571,736
44 5,571,737
5,571,738
48 5,571,739
51 5,571,740
5,571,741
52 5,571,742
5,571,743
57 5,571,744
5,571,745
60 5,571,746
81 5,571,747
107 5,571,748
113 5,571,749
129 5,571,750
187 5,571,751
189 5,571,752
192 5,571,753
209 5,571,754

CLASS 439

71 5,571,021
135 5,571,022
142 5,571,023
146 5,571,024
160 5,571,025
242 5,571,026
264 5,571,027
322 5,571,028
412 5,571,029
489 5,571,030
517 5,571,031
589 5,571,032
595 5,571,033
876 5,571,034
894 5,571,035

CLASS 441

129 5,571,036

CLASS 446

188 5,571,037
232 5,571,038
353 Re.35,375

CLASS 450

155 5,571,039

CLASS 451

11 5,571,040
37 5,571,041
59 5,571,042
87 5,571,043
385 5,571,044

CLASS 454

18 5,571,045

CLASS 463

27 5,570,885
36 5,571,057

CLASS 464

111 5,571,047

CLASS 473

228 5,571,048
298 5,570,884
300 5,571,050
302 5,571,051
336 5,571,053
345 5,570,886
367 5,571,054
398 5,571,055

CLASS 474

80 5,571,056
135 5,571,061

CLASS 475

5 5,571,058
313 5,571,052

CLASS 477

111 5,571,059
159 5,571,060

CLASS 482

54 5,571,062
57 5,571,063
74 5,571,065
129 5,571,064

CLASS 492

46 5,571,066

CLASS 493

30 5,571,067
357 5,571,069

CLASS 494

22 5,571,070
45 5,571,068

CLASS 501

32 5,571,755
5,571,756
87 5,571,757
92 5,571,758
96 5,571,759
97 5,571,760
134 5,571,761
139 5,571,767

CLASS 502

64 5,571,768
155 5,571,762
244 5,571,769
307 5,571,770
330 5,571,771
334 5,571,763
402 5,571,764

CLASS 503

227 5,571,765
5,571,766

CLASS 504

106 5,571,772
221 5,571,773
246 5,571,774
5,571,775

CLASS 505

123 Re.35,376
126 5,571,776
237 5,571,777
329 5,571,778

CLASS 508

153 5,571,779
189 5,571,445
582 5,571,780

CLASS 510

125 5,571,458
150 5,571,287
206 5,571,447
234 5,571,446
339 5,571,781
365 5,571,459
4 5,571,782

CLASS 514

2 5,571,783
5,571,784
8 5,571,785
5,571,786
12 5,571,787
5,571,788
5,571,789
5,571,790
5,571,791
18 5,571,792
19 5,571,793
23 5,571,794
26 5,571,795
42 5,571,796
44 5,571,797
45 5,571,798
47 5,571,799
50 5,571,800
59 5,571,801
167 5,571,802
203 5,571,804
210 5,571,805
211 5,571,806
5,571,807
212 5,571,808
220 5,571,809
231.5 5,571,810
252 5,571,811
254 5,571,812
257 5,571,813
258 5,571,814
269 5,571,815
275 5,571,816
284 5,571,817
291 5,571,818
303 5,571,819
304 5,571,820
312 5,571,821
5,571,822
317 5,571,823
332 5,571,825
342 5,571,826
356 5,571,827
373 5,571,828
383 5,571,829
395 5,571,830
399 5,571,831
408 5,571,832
414 5,571,833
423 5,571,834
428 5,571,835
459 5,571,836
473 5,571,837
564 5,571,839
567 5,571,840
570 5,571,841
590 5,571,843
602 5,571,844
618 5,571,842
619 5,571,845
620 5,571,846

CLASS 521

56 5,571,847
61 5,571,848
64 5,571,849

CLASS 523

160 5,571,850
175 5,571,314
212 5,571,851
215 5,571,852

CLASS 524

268 5,571,853
342 5,571,854
432 5,571,855
446 5,571,856
457 5,571,857
462 5,571,858
496 5,571,859
503 5,571,860
591 5,571,861
801 5,571,862

CLASS 525

44 5,571,863
88 5,571,864
98 5,571,865
5,571,866
99 5,571,867
211 5,571,868
322 5,571,869
331.6 5,571,870
337 5,571,871
384 5,571,872
391 5,571,873
420 5,571,874
425 5,571,875
437 5,571,876

CLASS 526

64 5,571,877
65 5,571,878
74 5,571,879
160 5,571,880
171 5,571,881
238.2 5,571,882
282 5,571,883
329.6 5,571,884
348 5,571,885

CLASS 528

143 5,571,886
217 5,571,887
287 5,571,888
310 5,571,891
328 5,571,889
342 5,571,890

CLASS 530

326 5,571,892
350 5,571,893
387.3 5,571,894
399 5,571,895
400 5,571,896

CLASS 534

15 5,571,897
604 5,571,898
728 5,571,899

CLASS 536

4.1 5,571,900
7.1 5,571,901
22.1 5,571,902
23.1 5,571,903
24.1 5,571,904
24.31 5,571,905
117 5,571,906
120 5,571,907

CLASS 540

145 5,571,908
222 5,571,909
230 5,571,910

456 5,571,911
495 5,571,912
532 5,571,913

CLASS 544

148 5,571,914
200 5,571,915
243 5,571,916
369 5,571,917

CLASS 546

18 5,571,918
146 5,571,919
5,571,920
198 5,571,803
199 5,571,921

CLASS 548

215 5,571,922
248 5,571,923
260 5,571,924
267.6 5,571,925
371.7 5,571,926
433 5,571,927
481 5,571,928
486 5,571,929

CLASS 549

30 5,571,930
374 5,571,931
455 5,571,932

CLASS 552

521 5,571,933

CLASS 554

70 5,571,934
168 5,571,935

CLASS 560

121 5,571,936
147 5,571,937
204 5,571,938
256 5,571,939

CLASS 562

556 5,571,940

CLASS 564

153 5,571,941
428 5,571,942
493 5,571,943

CLASS 569

258 5,572,505

CLASS 600

102 5,571,072
187 5,571,071

CLASS 601

6 5,571,074
152 5,571,075

CLASS 602

19 5,571,076
27 5,571,077
5,571,078
46 5,571,079
56 5,571,080

CLASS 604

4 5,571,081
5,571,082
22 B1 4,990,134
51 5,571,083
74 5,571,084
95 5,571,085
96 5,571,086
5,571,087
5,571,088
102 5,571,089
165 5,571,091
263 5,571,092
270 5,571,093
282 5,571,073
284 5,571,094
329 5,571,095
383 5,571,096
389 5,571,097

CLASS 606

4 5,571,107
10 5,571,108
15 5,571,098
17 5,571,099
41 5,571,100
45 5,571,101
61 5,571,102
5,571,109
62 5,571,103
72 5,571,104
74 5,571,105
80 5,571,106
88 5,571,110
91 5,571,111
107 5,571,112
5,571,113
108 5,571,114
119 5,571,115
139 5,571,116
5,571,117
144 5,571,090
146 5,571,119
148 5,571,120
157 5,571,125
158 5,571,121
159 5,571,122
166 5,571,124
167 5,571,126
5,571,127
5,571,128
170 5,571,129
171 5,571,130
182 5,571,132
184 5,571,131
185 5,571,133
5,571,134
198 5,571,135
205 5,571,136
207 5,571,137
218 5,571,138
219 5,571,285
232 5,571,139
236 5,571,140

CLASS 607

5 5,571,141
5,571,142
9 5,571,143
5,571,144
28 5,571,145
37 5,571,146
5,571,148
72 5,571,149
5,571,150

88 5,571,151
92 5,571,152
98 5,571,153
99 5,571,147
102 5,571,154
114 5,571,155
116 5,571,156
5,571,157
121 5,571,158
122 5,571,159
5,571,160
5,571,161
5,571,162
5,571,164
123 5,571,163
138 5,571,118
142 5,571,165

CLASS 623

1 5,571,166
5,571,167
5,571,168
5,571,169
5,571,170
5,571,171
5,571,172
5,571,173
2 5,571,174
5,571,175
3 5,571,176
6 5,571,177
8 5,571,178
5,571,179
9 5,571,180
11 5,571,181
5,571,182
5,571,183
13 5,571,184
16 5,571,185
5,571,186
5,571,187
5,571,188
17 5,571,189
5,571,190
5,571,191
5,571,192
18 5,571,193
5,571,194
5,571,195
20 5,571,196
5,571,197
22 5,571,198
5,571,200
5,571,201
23 5,571,202
5,571,203
5,571,204
24 5,571,205
27 5,571,206
5,571,207
32 5,571,208
33 5,571,209
38 5,571,210
5,571,211
48 5,571,212
52 5,571,213
65 5,571,214
66 5,571,215
5,571,216

CLASSIFICATION OF DESIGNS

D1— 100 375,181
106 375,182
125 375,183
D2— 605 375,185
627 375,186
861 375,187
876 375,188
882 375,189
947 375,190
953 375,191
962 375,192
970 375,193
972 375,194
989 375,195
993 375,196
D3— 213 375,184
218 375,197
273 375,198
279 375,199
313 375,200
318 375,201
375,202
320 375,203
D4— 101 375,204
104 375,205
375,206
D6— 300 375,207
326 375,208
379 375,209
381 375,210
397 375,211
429 375,212
440 375,213
462 375,214
480 375,215
481 375,216
487 375,217
503 375,218
538 375,219
545 375,220
561 375,221
601 375,222
D7— 337 375,223
351 375,224
391 375,225
515 375,226
539 375,227
590 375,228
619 375,229
624 375,230
628 375,231
645 375,232
682 375,233
691 375,234
D8— 10 375,235
13 375,236
61 375,237
72 375,238
73 375,239
80 375,240
93 375,241
99 375,242
107 375,243
310 375,244
331 375,245
343 375,246
375,247
D9— 300 375,255
302 375,256
307 375,257
329 375,258
347 375,259
422 375,260
428 375,261
431 375,262
448 375,263
453 375,264
528 375,265
556 375,266
D10— 6 375,267
68 375,268
72 375,269
94 375,270
104 375,271
105 375,272
109 375,273
375,274
116 375,275
126 375,276
375,277
D11— 121 375,278
375,279
184 375,280
D12— 110 375,281
117 375,282
130 375,283
162 375,284
209 375,285
375,286
211 375,287
218 375,288
219 375,289
318 375,290
D13— 138 375,291
139 375,292
147 375,293
D14— 106 375,294
107 375,295
375,296
375,297
114 375,298
375,299
375,300

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CLASSIFICATION OF PATENTS

		375,301			202	375,318			166	375,335	D24—		115	375,352			375,370	D29—	102	375,387
		375,302				375,319			180	375,336			116	375,353	D26—	28	375,371	D30—	118	375,388
	117	375,303			312	375,320			195	375,337			119	375,354		37	375,372	D32—	4	375,389
	121	375,304			327	375,321			205	375,338			128	375,355		38	375,373		26	375,390
		375,305	D18—		40	375,322				375,339				375,356		42	375,374		50	375,391
	135	375,306	D19—		49	375,323			222	375,340			129	375,357		44	375,375	D34—	28	375,392
	146	375,307	D20—		11	375,324			229	375,341			133	375,358		65	375,376	D99—	28	375,393
	151	375,308	D21—		1	375,325	D22—		108	375,342			180	375,360			375,377		30	375,394
		375,309			48	375,326			128	375,343			181	375,361		65	375,378			
		375,310				375,327	D23—		218	375,344			186	375,362		85	375,379			
	168	375,311			64	375,328			241	375,345			190	375,363		111	375,380			
	205	375,312			104	375,329			511	375,346			215	375,364		119	375,381			
	206	375,313			107	375,330			317	375,347	D25—		53	375,365	D28—	7	375,382			
	253	375,314			108	375,331			335	375,348			124	375,366		8.1	375,383			
D15—	7	375,315			120	375,332			356	375,349				375,367		9	375,384			
	131	375,316			135	375,333			366	375,350				375,368		20	375,385			
D16—	101	375,317			152	375,334			372	375,351				375,369		41	375,386			

CLASSIFICATION OF PLANTS

P—	1	9,680		68.1	9,682		82.1	9,684		88.1	9,686									
	34.1	9,681		74.1	9,683		86.1	9,685												

STATUTORY INVENTION REGISTRATIONS

102—	336	H1603	340—	505	H1606		264	H1608	435—	240.2	H1610	510—	441	H1604		489	H1613
335—	216	H1605	430—	59	H1607		367	H1609	507—	103	H1611	528—	34	H1612	604—	385.1	H1614

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01	:	5,570,589		5,570,685		5,571,130		5,571,677		5,572,148		5,572,598					
		5,570,703		5,570,691		5,571,141		5,571,680		5,572,158		5,572,601					
		5,571,076		5,570,693		5,571,146		5,571,681		5,572,159		5,572,634					
		5,571,155		5,570,706		5,571,148		5,571,684		5,572,170		5,572,644					
		5,571,220		5,570,738		5,571,157		5,571,692		5,572,172		5,572,648					
		5,571,514		5,570,747		5,571,161		5,571,696		5,572,198		5,572,651					
		5,571,703		5,570,753		5,571,172		5,571,702		5,572,212		5,572,653					
		5,571,862		5,570,784		5,571,174		5,571,706		5,572,213		5,572,655					
		5,571,924		5,570,785		5,571,177		5,571,714		5,572,215		5,572,666					
02	:	5,570,524		5,570,797		5,571,178		5,571,720		5,572,218		5,572,668					
		5,570,744		5,570,813		5,571,193		5,571,725		5,572,220		5,572,673					
		5,570,857		5,570,814		5,571,196		5,571,738		5,572,225		5,572,677					
04	:	5,570,895		5,570,816		5,571,215		5,571,741		5,572,228		5,572,686					
		5,570,904		5,570,818		5,571,244		5,571,744		5,572,235		5,572,688					
		5,570,918		5,570,829		5,571,247		5,571,751		5,572,238		5,572,691					
		5,571,018		5,570,830		5,571,266		5,571,752		5,572,239		5,572,692					
		5,571,374		5,570,847		5,571,282		5,571,787		5,572,250		5,572,698					
		5,571,497		5,570,854		5,571,336		5,571,794		5,572,261		5,572,704					
		5,571,992		5,570,865		5,571,337		5,571,800		5,572,267		5,572,707					
		5,571,997		5,570,876		5,571,353		5,571,801		5,572,269		5,572,712					
		5,572,097		5,570,906		5,571,369		5,571,821		5,572,341		5,572,713					
		5,572,211		5,570,912		5,571,394		5,571,893		5,572,344		5,572,716					
		5,572,247		5,570,914		5,571,401		5,571,902		5,572,363		5,572,717					
		5,572,392		5,570,915		5,571,410		5,571,903		5,572,370		5,572,721					
		5,572,420		5,570,950		5,571,411		5,572,010		5,572,386		5,572,729					
		5,572,435		5,570,953		5,571,412		5,572,014		5,572,404		5,572,734					
		5,572,450		5,570,955		5,571,429		5,572,022		5,572,407		5,572,735					
		5,572,458		5,570,963		5,571,431		5,572,031		5,572,408		5,442,170					
		5,572,482		5,570,964		5,571,448		5,572,038		5,572,409	08	:	5,570,643				
		5,572,512		5,570,978		5,571,471		5,572,040		5,572,422			5,570,697				
		5,572,551		5,570,984		5,571,493		5,572,042		5,572,436			5,570,849				
		5,572,597		5,570,986		5,571,510		5,572,049		5,572,437			5,570,973				
		5,572,683		5,570,990		5,571,525		5,572,054		5,572,442			5,570,977				
05	:	5,570,938		5,570,994		5,571,535		5,572,061		5,572,460			5,570,997				
		5,571,965		5,571,000		5,571,558		5,572,062		5,572,462			5,571,012				
		5,572,592		5,571,044		5,571,568		5,572,063		5,572,465			5,571,041				
06	:	5,570,472		5,571,050		5,571,576		5,572,064		5,572,471			5,571,650				
		5,570,480		5,571,051		5,571,587		5,572,067		5,572,473			5,571,796				
		5,570,481		5,571,057		5,571,598		5,572,069		5,572,474			5,571,956				
		5,570,509		5,571,071		5,571,607		5,572,070		5,572,476			5,571,980				
		5,570,529		5,571,086		5,571,615		5,572,074		5,572,481			5,572,016				
		5,570,530		5,571,089		5,571,616		5,572,090		5,572,505			5,572,092				
		5,570,542		5,571,094		5,571,624		5,572,096		5,572,528			5,572,100				
		5,570,555		5,571,106		5,571,630		5,572,099		5,572,562			5,572,193				
		5,570,581		5,571,113		5,571,639		5,572,108		5,572,571			5,572,246				
		5,570,585		5,571,114		5,571,667		5,572,127		5,572,572			5,572,393				
		5,570,653		5,571,121		5,571,670		5,572,129		5,572,578			5,572,400				
		5,570,677		5,571,127		5,571,673		5,572,144		5,572,582			5,572,459				
		5,570,682		5,571,128		5,571,675		5,572,145		5,572,594			5,572,541				

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Michael Kantor, *Secretary*
PATENT AND TRADEMARK OFFICE
Bruce Lehman, *Commissioner*

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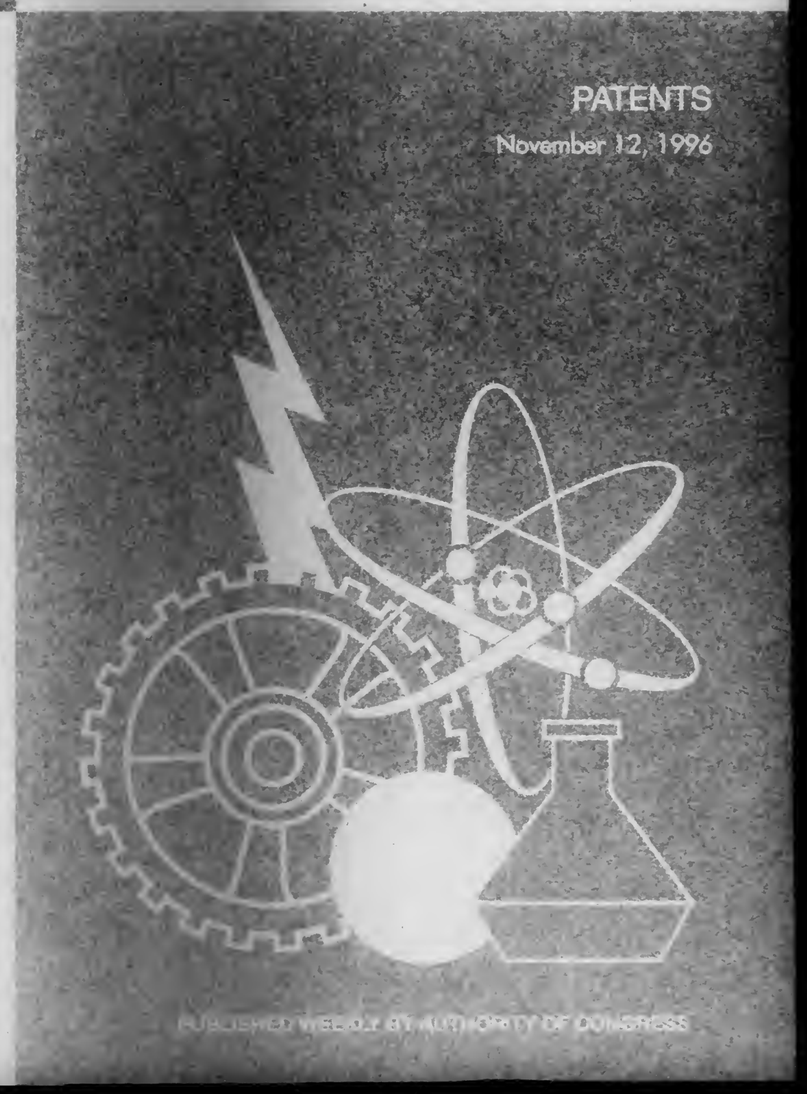
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UNITED STATES PATENT AND TRADEMARK OFFICE



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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1190 O.G. 3, on September 3, 1996.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on January 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1181 O.G. 49, on December 19, 1995.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective October 1, 1996, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	677.00
Basic supplemental fee (for each page over 30)	13.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	164.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	164.00
— Confirmation fee	82.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	207.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20.	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

Sept. 10, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on November 09, 1993 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,259,068 through 5,261,123
Reissue Patents based on the above identified patents.

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Attention is drawn to the patents which were issued on November 07, 1989 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,878,255 through 4,879,764
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on November 05, 1985 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,550,445 through 4,551,856
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED September 4, 1996
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,231	07/331,247	06/12/90
(4,469,239)	(06/542,263)	(09/04/84)
Re. 33,965	07/369,496	06/16/92
(4,767,805)	(07/012,236)	(08/30/88)
4,468,820	06/376,707	09/04/84
4,468,830	06/507,591	09/04/84
4,468,832	06/507,590	09/04/84
4,468,833	06/438,763	09/04/84
4,468,837	06/299,541	09/04/84
4,468,838	06/355,581	09/04/84
4,468,846	06/400,662	09/04/84
4,468,856	06/360,660	09/04/84
4,468,862	06/427,909	09/04/84
4,468,864	06/365,261	09/04/84
4,468,867	06/324,151	09/04/84
4,468,871	06/434,565	09/04/84
4,468,873	06/402,070	09/04/84
4,468,874	06/456,714	09/04/84
4,468,877	06/457,657	09/04/84
4,468,885	06/539,707	09/04/84
4,468,890	06/379,320	09/04/84
4,468,893	06/300,981	09/04/84
4,468,900	06/318,708	09/04/84
4,468,910	06/478,142	09/04/84
4,468,913	06/336,366	09/04/84
4,468,921	06/487,826	09/04/84
4,468,923	06/352,300	09/04/84
4,468,924	06/422,863	09/04/84
4,468,927	06/433,238	09/04/84
4,468,928	06/388,218	09/04/84
4,468,945	06/399,912	09/04/84
4,468,949	06/348,123	09/04/84
4,468,950	06/442,591	09/04/84
4,468,956	06/436,872	09/04/84
4,468,972	06/369,540	09/04/84
4,468,975	06/406,511	09/04/84
4,468,977	06/253,587	09/04/84
4,468,979	06/262,247	09/04/84
4,468,982	06/311,017	09/04/84
4,468,983	06/513,496	09/04/84
4,468,984	06/354,268	09/04/84
4,468,986	06/250,429	09/04/84
4,468,987	06/261,811	09/04/84
4,469,004	06/377,450	09/04/84
4,469,005	06/263,035	09/04/84
4,469,006	06/339,224	09/04/84
4,469,008	06/304,937	09/04/84
4,469,009	06/378,232	09/04/84
4,469,011	06/293,989	09/04/84
4,469,012	06/370,745	09/04/84
4,469,013	06/366,156	09/04/84
4,469,016	06/343,625	09/04/84
4,469,023	06/379,905	09/04/84
4,469,024	06/434,875	09/04/84
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5,143,347	07/820,387	09/01/92
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5,143,887	07/776,146	09/01/92
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5,143,984	07/822,797	09/01/92
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5,143,999	07/441,133	09/01/92
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5,144,004	07/625,244	09/01/92
5,144,006	07/714,659	09/01/92
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5,144,176	07/508,732	09/01/92
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5,144,538	07/803,107	09/01/92
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5,144,563	07/492,906	09/01/92
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5,144,569	07/548,124	09/01/92
5,144,577	07/661,221	09/01/92
5,144,587	07/722,581	09/01/92
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5,144,609	07/275,992	09/01/92
5,144,613	07/558,892	09/01/92
5,144,617	07/610,837	09/01/92
5,144,624	07/615,462	09/01/92
5,144,639	07/578,096	09/01/92
5,144,641	07/654,077	09/01/92
5,144,643	07/543,904	09/01/92
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5,144,652	07/492,444	09/01/92
5,144,655	07/356,214	09/01/92
5,144,660	07/401,032	09/01/92
5,144,674	07/420,934	09/01/92
5,144,677	07/607,393	09/01/92
5,144,680	07/622,191	09/01/92
5,144,684	07/501,806	09/01/92

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,315,548, Re. S.N. 08/652,008, May 23, 1996, Cl. 365/189, COLUMN SELECTING CIRCUIT IN SEMICONDUCTOR MEMORY DEVICE, Tsukasa Ooishi, et. al., Owner of Record: *Inventor*, Attorney or Agent: Edward J. Wise, Ex. Gp.: 2511

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Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,363,877, Reexam. No. 90/004,374, Aug. 15, 1996, Cl. 435/320.1, RECOMBINANT DNA TRANSFER VECTORS, Howard M. Goodman, et. al., Owner of Record: *The Regents of the University of California, Berkely, Calif.*, Attorney or Agent: Gary J. Sertich, Arnold White & Durkee, Houston, Tex., Ex. Gp.: 1816, Requester: Margaret B. Kelley, Rogers & Wells, New York, N.Y.

4,363,877, Reexam. No. 90/004,410, Sept. 30, 1996, Cl. 435/320.1, RECOMBINANT DNA TRANSFER VECTORS, Howard M. Goodman, et. al., Owner of Record: *The Regents of the University of California, Berkely, Calif.*, Attorney or Agent: Gary J. Sertich, Arnold White & Durkee, Houston, Tex., Ex. Gp.: 1816, Requester: Margaret B. Kelley, Rogers & Wells, New York, N.Y.

4,375,087, Reexam. No. 90/004,400, Sept. 30, 1996, Cl. 365/185.28, ELECTRICALLY ERASABLE PROGRAMMABLE READ ONLY MEMORY, Frank M. Wanlass, Owner of Record: *Hughes Electronics Corp.*, Attorney or Agent: Michael W. Sales, Hughes Electronics Corp., Los Angeles, Calif., Ex. Gp.: 2511, Requester: Owner

4,473,026, Reexam. No. 90/004,403, Oct. 3, 1996, Cl. 114/255, FISHING BOAT, Robert T. Bass, Owner of Record: *Inventor*, Attorney or Agent: David K. Friedland, Lott & Friedland, Coral Gables, Fla., Ex. Gp.: 3102, Requester: Watts Hoffmann Fisher & Heinke Co., Cleveland, Ohio

4,653,030, Reexam. No. 90/004,405, Oct. 4, 1996, Cl. 365/222, SELF REFRESH CIRCUITRY FOR DYNAMIC MEMORY, Tadashi Tachibana, et. al., Owner of Record: *Texas Instruments, Inc., Dallas, Tex.*, Attorney or Agent: Robert N. Rountree, Dallas, Tex., Ex. Gp.: 2511, Requester: Owner

4,871,189, Reexam. No. 90/004,398, Oct. 2, 1996, Cl. 280/711, TRUCK CAB SUSPENSION SYSTEM, Charles A. Van Breemen, Owner of Record: *Inventor*, Attorney or Agent: Myers Liniak & Berenato, Bethesda, Md., Ex. Gp.: 3106, Requester: National Seating Co., Inc., c/o John F. Flannery, Fitch, Even, Tabin & Flannery, Chicago, Ill.

4,907,610, Reexam. No. 90/004,406, Oct. 7, 1996, Cl. 134/56R, CLEANING SYSTEM FOR SWIMMING, Jonathan E. Meincke, Owner of Record: *Crystal Pools Inc., Irma, S.C.*, Attorney or Agent: Dority & Manning, Greenville, S.C., Ex. Gp.: 3405, Requester: Owner

4,992,754, Reexam. No. 90/004,338, Aug. 23, 1996, Cl. 330/149, PREDISTORTER FOR LINEARILATION OF ELECTRONIC AND OPTICAL SIGNALS, Henry A. Biauvelt, et. al., Owner of Record: *Botel Corp., Alhambra, Calif.*, Attorney or Agent: Richard D. Seibel, Christie Parker & Hale, Pasadena, Ex. Gp.: 2515, Requester: Owner

5,309,452, Reexam. No. 90/004,339, Aug. 23, 1996, Cl. 372/006, PRASEODYMIUM LASER SYSTEM, Yasutake Ohishi, et. al., Owner of Record: *Rutgers Univ., New Brunswick, N.J.*, Attorney or Agent: Peter K. Trzyna, Keck, Mahin & Cate, Chicago, Ill., Ex. Gp.: 2501, Requester: Stanley C. Spooner, Nixon & Vanderhye, Arlington, Va.

5,381,524, Reexam. No. 90/004,407, Oct. 7, 1996, Cl. 395/161, AUTOMATED DEVELOPMENT OF TIMING DIAGRAMS FOR ELECTRIC CIRCUITS, Lawrence E. Lewis, et. al., Owner of Record: *Chronology Corp., Redmond, Wash.*, Attorney or Agent: George H. Gates, Merchant Gould Smith Edell Welter & Schmidt, Los Angeles, Calif., Ex. Gp.: 2415, Requester: Daniel Notestein, Blacksburg, Va.

5,393,372, Reexam. No. 90/004,408, Oct. 7, 1996, Cl. 216/033, METHOD OF DISPLAYING INDICIA ON FOOTWEAR, Stephen D. Ammon, Owner of Record: *Fila USA, Inc., Hunt Valley, Md.*, Attorney or Agent: Davis Hoxie Faithful & Hapgood, New York, N.Y., Ex. Gp.: 1104, Requester: James R. Thein, Arlington, Va.

5,419,246, Reexam. No. 90/004,401, Oct. 1, 1996, Cl. 101/170, METHOD AND APPARATUS FOR LAYING A GRANULAR PATTERN, Kenneth Bibby, Owner of Record: *Inventor*, Attorney or Agent: Timothy H. French, Fish & Richardson, Boston, Mass., Ex. Gp.: 3307, Requester: William R. Robinson, Brooks, Haidt, Haffner & Delahunty, New York, N.Y.

5,465,749, Reexam. No. 90/004,402, Oct. 1, 1996, Cl. 137/359, TOP MOUNTING FAUCET ASSEMBLY, Bruce M. Sauter, et. al., Owner of Record: *Sterling Plumbing Group, Inc., Rolling Meadows, Ill.*, Attorney or Agent: Neil E. Hamilton, Quarles & Brady, Milwaukee, Wisc., Ex. Gp.: 3407, Requester: Owner

5,466,181, Reexam. No. 90/004,409, Oct. 7, 1996, Cl. 446/297, DOLL HAVING CONDUCTIVE OUTER SKIN AREAS AND INTERNAL BATTERY SUPPLY, Linda K. Bennett, et. al., Owner of Record: *Mattel Inc., El Segundo, Calif.*, Attorney or Agent: Roy A. Ekstrand, El Segundo, Calif., Ex. Gp.: 3301, Requester: Owner

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
JULY 15, 1996
DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
106,108	71/086,366	10/12/1915
106,119	71/079,947	10/12/1915
106,128	71/086,462	10/12/1915
106,144	71/087,047	10/12/1915
106,179	71/085,588	10/12/1915
328,854	71/362,918	10/08/1935
328,859	71/363,271	10/08/1935
328,870	71/363,744	10/08/1935
328,873	71/365,467	10/08/1935
328,894	71/364,823	10/08/1935
328,895	71/364,822	10/08/1935
328,918	71/365,761	10/08/1935
328,920	71/352,164	10/08/1935
328,941	71/364,408	10/08/1935
328,942	71/364,421	10/08/1935
328,955	71/366,796	10/08/1935
328,958	71/366,793	10/08/1935
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613,705	71/679,643	10/11/1955
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613,841	71/663,288	10/11/1955
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613,882	71/677,927	10/11/1955
613,883	71/678,004	10/11/1955
613,894	71/678,677	10/11/1955
613,897	71/679,037	10/11/1955
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613,927	71/680,347	10/11/1955
613,930	71/674,665	10/11/1955
613,944	71/652,683	10/11/1955
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613,963	71/663,556	10/11/1955
613,969	71/677,357	10/11/1955
613,972	71/669,209	10/11/1955
613,974	71/678,628	10/11/1955
613,984	71/641,707	10/11/1955
614,004	71/665,833	10/11/1955
614,009	71/668,502	10/11/1955
614,015	71/671,940	10/11/1955
614,017	71/673,694	10/11/1955
614,019	71/674,212	10/11/1955
614,026	71/674,753	10/11/1955
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614,036	71/675,684	10/11/1955
614,040	71/675,964	10/11/1955
614,043	71/676,768	10/11/1955
614,044	71/677,544	10/11/1955
614,046	71/677,762	10/11/1955
614,057	71/679,396	10/11/1955
614,062	71/663,202	10/11/1955
614,065	71/676,014	10/11/1955
614,068	71/667,832	10/11/1955
614,075	71/677,831	10/11/1955
614,076	71/677,941	10/11/1955
614,079	71/643,994	10/11/1955
614,084	71/656,424	10/11/1955
614,085	71/660,983	10/11/1955
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614,092	71/672,394	10/11/1955
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614,098	71/654,404	10/11/1955
614,103	71/668,039	10/11/1955
614,109	71/677,434	10/11/1955
614,116	71/656,077	10/11/1955
614,117	71/583,861	10/11/1955
614,122	71/641,997	10/11/1955
614,124	71/677,108	10/11/1955
614,138	71/649,415	10/11/1955
614,142	71/670,694	10/11/1955
993,490	73/001,365	09/24/1974
1,021,796	73/020,195	10/07/1975
1,021,804	73/038,477	10/07/1975
1,021,810	73/043,381	10/07/1975
1,021,815	73/012,625	10/07/1975
1,021,817	73/036,968	10/07/1975
1,021,820	73/024,228	10/07/1975
1,021,821	73/029,635	10/07/1975
1,021,822	73/030,076	10/07/1975
1,021,823	73/030,085	10/07/1975
1,021,827	73/035,061	10/07/1975
1,021,831	73/038,792	10/07/1975
1,021,832	73/038,798	10/07/1975
1,021,848	73/037,591	10/07/1975
1,021,852	73/042,880	10/07/1975
1,021,854	73/046,362	10/07/1975
1,021,855	73/046,366	10/07/1975
1,021,860	73/016,810	10/07/1975
1,021,867	73/039,777	10/07/1975
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1,021,880	73/041,794	10/07/1975
1,021,882	73/041,956	10/07/1975
1,021,888	73/042,120	10/07/1975
1,021,885	73/042,353	10/07/1975
1,021,886	73/042,881	10/07/1975
1,021,887	73/000,403	10/07/1975
1,021,890	73/021,800	10/07/1975
1,021,891	73/028,450	10/07/1975
1,021,898	73/037,880	10/07/1975
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1,021,909	73/037,095	10/07/1975
1,021,913	73/040,655	10/07/1975
1,021,918	73/000,476	10/07/1975
1,021,923	73/012,680	10/07/1975
1,021,925	73/013,634	10/07/1975
1,021,926	73/014,679	10/07/1975
1,021,927	73/017,304	10/07/1975
1,021,928	73/018,933	10/07/1975
1,021,930	73/019,888	10/07/1975
1,021,933	73/025,479	10/07/1975
1,021,937	73/027,839	10/07/1975
1,021,940	73/031,071	10/07/1975
1,021,943	73/034,596	10/07/1975
1,021,949	73/038,027	10/07/1975
1,021,950	73/038,030	10/07/1975
1,021,952	73/038,493	10/07/1975
1,021,954	73/038,725	10/07/1975
1,021,956	73/040,026	10/07/1975
1,021,960	73/041,305	10/07/1975
1,021,961	73/041,306	10/07/1975
1,021,962	73/041,544	10/07/1975
1,021,963	73/041,623	10/07/1975
1,021,964	73/041,624	10/07/1975
1,021,966	73/042,518	10/07/1975
1,021,967	73/042,292	10/07/1975
1,021,969	73/042,840	10/07/1975
1,021,973	73/043,460	10/07/1975
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1,021,982	73/044,951	10/07/1975
1,021,983	73/085,436	10/07/1975
1,021,984	73/045,471	10/07/1975
1,021,985	73/045,501	10/07/1975
1,021,986	73/013,700	10/07/1975
1,021,987	73/038,003	10/07/1975
1,021,993	73/023,220	10/07/1975
1,021,994	73/025,848	10/07/1975
1,021,995	73/026,400	10/07/1975
1,021,996	73/030,879	10/07/1975
1,021,998	73/037,282	10/07/1975
1,022,000	73/046,105	10/07/1975
1,022,006	73/029,665	10/07/1975
1,022,012	73/044,157	10/07/1975
1,022,014	73/044,383	10/07/1975
1,022,018	73/045,376	10/07/1975
1,022,019	73/045,926	10/07/1975
1,022,023	73/048,230	10/07/1975
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Reg. No.	Serial Number	Reg. Date
1,022,026	73/043,112	10/07/1975
1,022,028	73/037,641	10/07/1975
1,022,032	73/007,164	10/07/1975
1,022,035	73/026,515	10/07/1975
1,022,036	73/027,883	10/07/1975
1,022,039	73/030,194	10/07/1975
1,022,043	73/032,115	10/07/1975
1,022,051	73/040,356	10/07/1975
1,022,054	73/041,448	10/07/1975
1,022,055	73/041,449	10/07/1975
1,022,064	73/043,379	10/07/1975
1,022,069	73/045,379	10/07/1975
1,022,074	73/016,022	10/07/1975
1,022,075	73/024,664	10/07/1975
1,022,080	73/034,622	10/07/1975
1,022,082	73/038,412	10/07/1975
1,022,083	73/044,381	10/07/1975
1,022,089	73/041,154	10/07/1975
1,022,092	73/025,858	10/07/1975
1,022,096	73/031,173	10/07/1975
1,022,097	73/031,840	10/07/1975
1,022,098	73/032,692	10/07/1975
1,022,103	73/040,891	10/07/1975
1,022,108	73/002,522	10/07/1975
1,022,110	73/039,677	10/07/1975
1,022,112	73/016,484	10/07/1975
1,022,113	73/027,968	10/07/1975
1,022,120	73/037,250	10/07/1975
1,022,126	73/038,143	10/07/1975
1,022,143	73/042,852	10/07/1975
1,022,147	73/042,656	10/07/1975
1,022,152	73/031,931	10/07/1975
1,022,154	73/034,682	10/07/1975
1,022,156	73/040,720	10/07/1975
1,022,158	73/041,791	10/07/1975
1,022,164	73/015,324	10/07/1975
1,022,172	73/033,136	10/07/1975
1,022,176	73/039,058	10/07/1975
1,022,186	73/044,802	10/07/1975
1,022,187	73/045,267	10/07/1975
1,022,189	73/034,436	10/07/1975
1,022,192	73/040,220	10/07/1975
1,022,193	73/040,461	10/07/1975
1,022,194	73/040,587	10/07/1975
1,022,195	73/040,588	10/07/1975
1,022,196	73/041,058	10/07/1975
1,022,197	73/043,588	10/07/1975
1,022,199	73/046,391	10/07/1975
1,022,200	73/046,444	10/07/1975
1,022,204	73/016,176	10/07/1975
1,022,207	73/043,583	10/07/1975
1,022,208	73/586,783	10/07/1975
1,022,213	73/035,829	10/07/1975
1,022,215	73/039,784	10/07/1975
1,022,217	73/006,650	10/07/1975
1,022,218	73/014,601	10/07/1975
1,022,221	73/007,889	10/07/1975
1,022,228	73/040,376	10/07/1975
1,022,230	73/043,683	10/07/1975
1,022,233	73/029,023	10/07/1975
1,022,235	73/046,506	10/07/1975
1,022,246	73/046,928	10/07/1975
1,022,248	73/004,143	10/07/1975
1,022,254	73/023,041	10/07/1975
1,022,256	73/034,231	10/07/1975
1,022,265	72/455,022	10/07/1975
1,022,266	72/455,080	10/07/1975
1,022,267	72/460,296	10/07/1975
1,022,269	72/464,716	10/07/1975
1,022,271	72/379,366	10/07/1975
1,022,276	72/428,626	10/07/1975
1,022,277	72/433,434	10/07/1975
1,022,280	72/438,640	10/07/1975
1,022,284	72/453,799	10/07/1975
1,022,289	72/466,794	10/07/1975
1,022,290	72/400,530	10/07/1975
1,022,294	72/456,994	10/07/1975
1,022,295	72/416,877	10/07/1975
1,022,296	72/447,416	10/07/1975
1,022,298	72/457,067	10/07/1975
1,022,299	72/465,488	10/07/1975
1,022,302	81/022,302	10/07/1975
1,022,304	72/458,393	10/07/1975
1,022,305	72/442,671	10/07/1975
1,022,311	72/451,263	10/07/1975
1,022,314	72/379,454	10/07/1975
1,022,321	72/429,911	10/07/1975
1,022,325	72/463,782	10/07/1975
1,022,326	72/464,066	10/07/1975
1,022,327	72/464,527	10/07/1975
1,022,328	72/450,063	10/07/1975
1,022,330	72/461,817	10/07/1975
1,022,331	72/462,022	10/07/1975
1,022,332	72/464,539	10/07/1975
1,022,334	72/466,738	10/07/1975
1,022,336	72/321,253	10/07/1975
1,022,338	72/456,850	10/07/1975
1,022,340	72/461,974	10/07/1975
1,022,343	73/038,675	10/07/1975
1,022,344	73/025,942	10/07/1975
1,022,346	73/046,717	10/07/1975
1,022,347	73/014,392	10/07/1975
1,022,350	73/030,319	10/07/1975
1,022,352	73/010,845	10/07/1975
1,022,353	73/010,846	10/07/1975
1,022,354	73/031,249	10/07/1975
1,022,358	73/042,615	10/07/1975
1,022,360	72/463,373	10/07/1975
1,022,362	72/464,123	10/07/1975

Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office who have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before December 27, 1996.

Chotkowski, Karen J., 16142 Pin Oak Rd., Fayetteville, Ark. 72704

Croyle, Carlton R., 6625 Kirby Ct., Falls Church, Va. 22043

Mattix, Carla C., 1805 Crystal Dr., Unit 815, Arlington, Va. 22202

Novosad, Stephen J., 5204 Grinnell St., Fairfax, Va. 22032

Sanders, Andrew B., 1 West 67th St., #407, New York, N.Y. 10023

Stanzione, Patrick J., 37 Bonnyview St., Springfield, Mass. 01109

Trice, Ronald D., 74 Washington St., Concord, N.H. 03301

October 2, 1996 — KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Notice of Examination For Registration Wednesday, August 27, 1997

Pursuant to the provisions of 37 CFR §§ 10.5, 10.6 and 10.7, an examination for persons seeking registration before the U.S. Patent and Trademark Office as patent attorneys and agents

will be held on **Wednesday, August 27, 1997.** This date has been chosen to accommodate, wherever possible, the interests of the individuals expected to apply for the examination. The deadline for filing applications along with the **$40.00 nonrefundable fee and the $300.00** examination fee and all necessary showings required by 37 CFR § 10.7(a) and (b) is **May 2, 1997.**

With the exception of those persons who actively served four years or more in the patent examining corps of the U.S. Patent and Trademark Office for whom the examination may be waived, all persons who wish to become recognized to practice before the U.S. Patent and Trademark Office in patent cases must, pursuant to the above noted rules, pass the examination. Note that passing the examination does not qualify one for recognition for practice before the U.S. Patent and Trademark Office in trademark cases. Such recognition is governed by 37 CFR § 10.14 which does not require the passing of an examination.

Application forms may be obtained from the Office of Enrollment and Discipline, Crystal Park One, Room 518, 2011 Crystal Drive, Arlington, Va., by mail addressed to U.S. Patent and Trademark Office, Box OED, Washington, D.C. 20231, or by calling (703) 308-5316-x-18.

October 11, 1996 — KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Soren Shirt Company, Inc., New York, N.Y., Reg. No. 710,962, for the mark "LAURENS & DESIGN", Canc. No. 25,071.

Crane Co., New York, N.Y., Reg. No. 724,173, for the mark "CRANE TELEDYNE", Canc. No. 24,975.

JEAN BROWN
Technical Support Manager,
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Treatment of Correspondence Deposited as First Class Mail Pursuant to 37 CFR 1.8 and Returned by the U.S. Postal Service

Due to heightened security concerns, effective September 1, 1996, the United States Postal Service (USPS) is requiring that all *domestic first-class mail, bearing stamps and weighing sixteen ounces, or more*, be presented to a retail clerk at a USPS office. All such mail that is not presented to a retail clerk at a USPS office (*e.g.*, placed in a mailbox) will be returned by the USPS. The USPS has posted notice of this requirement on mailboxes. The "Express Mail" service of the USPS is not affected.

37 CFR 1.8 provides that certain correspondence will be considered timely filed by the Patent and Trademark Office (PTO) if, among other things, it is deposited with the USPS by the due date, and includes a certificate of mailing that sets forth the date the person signing the certificate reasonably expected the correspondence to be mailed. Correspondence must be deposited with the USPS as first class mail in compliance with any and all applicable requirements of the USPS to be considered "[d]eposited with the U.S. Postal service" within the meaning of 37 CFR 1.8(a)(1)(i)(A). Correspondence presented to the USPS in a manner that does not comply with the applicable requirements of the USPS is not "[d]eposited with the U.S. Postal service" within the meaning of 37 CFR 1.8(a)(1)(i)(A) and is not entitled to any benefit under 37 CFR 1.8.

To alleviate hardships caused by this change in USPS requirements, the PTO will treat correspondence returned by the USPS because of its size as "[d]eposited with the U.S. Postal service" within the meaning of 37 CFR 1.8(a)(1)(i)(A), so long as the correspondence was otherwise originally deposited with the USPS in compliance with 37 CFR 1.8(a)(1)(i) on or before December 1, 1996. Returned mailed that is either resubmitted to the USPS for delivery, or hand-delivered to the PTO, will be stamped by the PTO with the actual date of receipt in the PTO. The correspondence will, however, be accorded the benefit of any certificate of mailing under 37 CFR 1.8.

Correspondence mailed after December 1, 1996, and returned by the USPS as not mailed in compliance with USPS requirements concerning mail weighing sixteen ounces or more will not be entitled to any benefit under 37 CFR 1.8.

Because this change in USPS requirements does not affect the "Express Mail" service of the USPS, it does not affect correspondence filed in compliance with 37 CFR 1.10. Persons filing correspondence in a manner other than by the procedures set forth in 37 CFR 1.8 or 1.10 do so at their own risk.

Questions concerning this notice should be directed to Senior Legal Advisor Robert W. Bahr at (703) 305-9285.

October 10, 1996 — BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Registration To Practice

The following person successfully passed the registration examination that was held October 14, 1992, and has been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until applicant's registration certificate is mailed to applicant. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before December 27, 1996.

Kubovcik, Keiko T., 7527 Greenfield Rd., Annandale, Va. 22003

October 2, 1996 — KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Patents Available For License or Sale

4,910,500 — ELECTRONIC CATTLE GUARD SYSTEMS

Contact: Winifred G. Carr
6210 E. Arbor Ave., #331
Mesa, Ariz. 85206
(voice): (602) 854-0411

5,425,707 — METHOD FOR NON-SURGICAL TREATMENT OF CARPAL TUNNEL SYNDROME

Contact: Robert F. Zielinski
Wolf Block Schorr and Solis-Cohen
Twelfth Floor Packard Building
S.E. Corner 15th and Chestnut St.
Philadelphia, Pa. 19102-2678
(voice): (215) 977-2000
(fax): (215) 977-2334
(other): (215) 977-2346

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5,481,257 REMOTELY CONTROLLED VEHICLE CONTAINING A TELEVISION CAMERA

Contact: Curtis M. Brubaker
10560 Dolcedo Way
Los Angeles, Calif. 90077
(voice): (310) 472-4766
(fax): (310) 472-2977

5,533,526 METHOD AND APPARATUS FOR NON-SURGICAL TREATMENT OF CARPAL TUNNEL SYNDROME

Contact: Robert F. Zielinski
Wolf Block Schorr and Solis-Cohen
Twelfth Floor Packard Building
S.E. Corner 15th and Chestnut St.
Philadelphia, Pa. 19102-2678
(voice): (215) 977-2000
(fax): (215) 977-2334
(other): (215) 977-2346

Errata

1191 OG 50 October 8, 1996 the correct address for Patent Number 5,092,549 is: Ida Beech, 84 Koscuisko St., Rochester, N.Y. 14621.

Certificate of Correction For Week of November 12, 1996

B1 4,635,702	5,386,515	5,454,295	5,494,793
B1 5,044,705	5,387,610	5,455,268	5,496,562
P. 08,900	5,394,484	5,456,622	5,497,822
Re. 35,215	5,396,692	5,460,000	5,498,763
Re. 35,254	5,397,157	5,462,927	5,498,984
D. 370,021	5,398,262	5,463,027	5,499,093
D. 371,104	5,401,365	5,464,447	5,499,125
D. 373,087	5,401,510	5,464,841	5,499,581
D. 373,315	5,402,599	5,465,127	5,500,010
4,727,365	5,408,178	5,465,290	5,500,364
4,985,545	5,413,570	5,467,295	5,501,944
4,994,611	5,414,248	5,468,595	5,502,112
5,056,046	5,417,933	5,468,650	5,502,509
5,059,920	5,418,911	5,472,389	5,503,685
5,104,084	5,422,329	5,472,499	5,503,850
5,122,102	5,424,414	5,472,900	5,504,744
5,150,657	5,426,387	5,475,262	5,504,921
5,165,049	5,428,566	5,475,584	5,505,012
5,198,946	5,430,054	5,475,604	5,505,318
5,200,553	5,430,859	5,476,549	5,505,698
5,239,804	5,432,370	5,480,608	5,506,338
5,243,542	5,432,469	5,481,772	5,506,941
5,262,416	5,434,251	5,482,193	5,508,072
5,278,401	5,435,339	5,483,759	5,508,229
5,279,604	5,437,142	5,484,069	5,508,329
5,283,618	5,438,989	5,484,780	5,508,487
5,298,975	5,439,410	5,485,031	5,509,350
5,299,784	5,439,715	5,485,182	5,509,639
5,311,642	5,439,954	5,486,183	5,509,855
5,315,469	5,440,565	5,488,137	5,510,850
5,333,060	5,440,981	5,489,271	5,510,920
5,334,804	5,442,894	5,489,501	5,511,465
5,342,631	5,443,975	5,490,091	5,511,888
5,343,817	5,444,345	5,490,105	5,512,371
5,344,810	5,445,819	5,490,183	5,512,460
5,348,918	5,446,034	5,491,096	5,512,565
5,359,344	5,446,790	5,491,225	5,512,824
5,368,174	5,446,883	5,491,240	5,513,679
5,374,859	5,447,724	5,492,567	5,514,120
5,377,147	5,447,838	5,493,125	5,514,654
5,379,413	5,452,401	5,493,364	5,514,771
5,382,512	5,453,296	5,494,125	5,514,986
5,515,512	5,526,933	5,537,678	5,544,896
5,515,529	5,526,978	5,537,807	5,545,031
5,515,679	5,527,809	5,537,858	5,545,202
5,516,336	5,527,901	5,537,993	5,545,205
5,516,487	5,529,546	5,538,112	5,545,427
5,516,772	5,530,467	5,538,137	5,545,543
5,517,482	5,530,539	5,538,350	5,545,555
5,517,570	5,531,460	5,538,368	5,545,558
5,518,480	5,531,504	5,538,744	5,545,637
5,518,489	5,532,630	5,539,239	5,545,653
5,518,778	5,533,275	5,539,597	5,545,875
5,519,773	5,533,294	5,540,193	5,546,590
5,519,845	5,533,575	5,540,321	5,546,711
5,520,784	5,533,804	5,540,473	5,546,779
5,521,341	5,534,679	5,540,644	5,547,169
5,521,545	5,534,801	5,540,832	5,547,355
5,521,897	5,534,991	5,540,913	5,547,422
5,521,923	5,535,341	5,541,023	5,548,272
5,521,946	5,535,436	5,541,056	5,548,354
5,522,318	5,535,485	5,541,060	5,548,635
5,522,994	5,535,598	5,541,062	5,548,735
5,523,010	5,535,676	5,541,232	5,548,967
5,523,089	5,535,996	5,541,272	5,549,028
5,523,809	5,536,159	5,541,380	5,549,205
5,523,871	5,536,200	5,541,589	5,549,488
5,523,872	5,536,348	5,541,935	5,549,604
5,523,991	5,536,377	5,542,091	5,549,865
5,524,470	5,536,559	5,542,170	5,550,946
5,524,598	5,536,593	5,542,201	5,551,005
5,524,662	5,536,684	5,542,240	5,551,207
5,525,039	5,536,706	5,542,404	5,551,573
5,525,091	5,536,960	5,542,421	5,551,590
5,525,380	5,536,979	5,542,422	5,551,723
5,525,423	5,537,187	5,542,784	5,552,543
5,525,481	5,537,309	5,542,930	5,552,624
5,525,764	5,537,310	5,542,962	5,552,883
5,526,138	5,537,372	5,543,044	5,556,103
5,526,312	5,537,632	5,544,455	
5,526,461	5,537,660	5,544,500	

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
September 9-13, 1996

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
9-9	EX	74/349,711	PMC Bank Corp.	whether the matter asserted for registration is capable of functioning as a service mark for the services recited in the application and, therefore, registrable on the Supp. Reg.	Refusal Reversed		"BASIC PLAN" [banking services]		No
9-9	EX	74/263,931	Cabot Laboratories, Inc.	2(d)	Refusal Affirmed		"BIOCEL" [cosmetics, namely, cosmetic creams and lotions for face and body]	"BIO-CELLULAR" [cosmetics skin cream]	No
9-10	EX	74/461,350	Associated Grocers, Inc.	2(d)	Refusal Affirmed		"SPARKLE" [ice cream]	"SPARKLES" and "BRACHS SPARKLES" [candy]	No
9-11	OPP	87,577	Quality Stores, Inc. v. Essenburg Car Wash of Holland, Inc.	2(d); counterclaim for cancellation on grounds of non-use and abandonment	Opposition Sustained; counterclaim for cancellation dismissed	several marks incorporating the word "QUALITY" and/or "Q" [retail department store services specializing in the sale of automotive, home, and farm products]	"QUALITY" and "Q" design [car wash services, retail convenience store services and retail services of gasoline and petroleum products]		No
9-11	EX	74/475,823	SABH (U.S.) Water Heater Group, Inc.	2(d)	Refusal Affirmed		"TINY TITAN" [water heaters for domestic or commercial or industrial use]	"TITAN" [portable electric space heaters]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

▼ MISC68 111004 12:54:35 29-OCT-96

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
9-11	EX	74/423,025	John Fluevog Shoes, Ltd.	whether the matter asserted for registration functions as a trademark for applicant's goods or is, instead, merely ornamental matter	Refusal Reversed		configuration of seven angels spaced along the bottom surface or tread or outersole of a shoe or boot and encircling applicant's logo [shoes and boots]		No
9-13	OPP OPP	90,346 95,531	Slim N' Trim, Inc. v. Weight Watchers, Int'l.	2(d)	Both oppositions sustained	"SLIM" (and design) [non-fat milk]; "SLIM CHEEZ" [cottage cheese]; "SLIM FREEZ" [frozen ice milk dessert]; et al.	"WEIGHT WATCHERS SLIM SHAKE" [milk-based powdered mixes for making shakes; frozen yogurt]; "SLIM SHAKE" [meal replacement drinks]		No
9-13	EX	74/504,865	Guardian Royalty Corp.	2(d)	Refusal Affirmed		"GUARDIAN PERSONAL SECURITY PRODUCTS" [mail order catalog services featuring personal security equipment]	"THE GUARDIAN PROTECTION IDENTIFIER DEVICE PD" (and design) [non-lethal individual protection device containing calcium spray]	No
9-13	EX	74/246,176	Fonte Sole Holding AG	2(d)	Refusal Reversed		"SOLE" (and design) [mineral water, spring water, aerated water, natural fruit flavored mineral and spring water]	"SOLE" [wine]	No

[1]EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SJ) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR PATENT MAIL

Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

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Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
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Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
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Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
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	St. Louis Public Library	(314) 241-2288 Ext. 390
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Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
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New Hampshire	Concord: New Hampshire State Library	(603) 271-2239
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

PATENT EXAMINING CORPS

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	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
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	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
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	Lubbock: Texas Tech University	Not Yet Operational
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West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
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	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

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LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	11/17/94
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	08/01/94
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—BARRY S. RICHMAN, Director	308-0651	09/23/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	02/09/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	08/26/94
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	11/08/94
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	03/14/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	11/18/93
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	09/06/94
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	03/17/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	02/03/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	03/13/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	06/08/94
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	12/01/94
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	07/17/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	06/16/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	11/14/94

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

REEXAMINATIONS

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of October 1, 1996

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/27/96	08/05/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/27/96	05/07/96
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/04/96	07/15/96
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/10/96	07/17/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/06/96	06/04/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/10/96	07/23/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/04/96	07/22/96
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/15/96	04/19/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/10/96	08/06/96
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	07/01/96	—0—
Renewals (All Classes)	07/10/96	—0—
Section 12(c) Publications (All Classes)	04/20/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

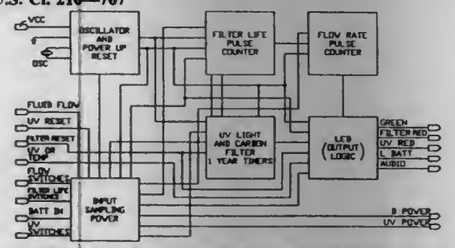
3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

NOVEMBER 12, 1996

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 5,089,144 (3053rd)
FILTER CONDITION INDICATOR HAVING MOVEABLE SENSOR AND AGGREGATE FLOW COUNTER
Aysegul Ozkahyaoglu, and Marty M. Zoerner, both of Reed City, Mich., assignors to Nartron Corporation, Reed City, Mich.
Reexamination Request No. 90/002,737, May 28, 1992.
Reexamination Certificate for Patent 5,089,144, issued Feb. 18, 1992, Ser. No. 447,794, Dec. 8, 1989.
Int. Cl.[6] B01D *35/143*
U.S. Cl. 210—767



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–14**, **17** and **18** is confirmed.

Claims **15** and **16** are cancelled.

7. A method for monitoring fluid flow through a fluid treatment filter placed in a fluid flow path leading to a faucet by use of circuitry and comprising the steps of:

a) positioning a fluid flow responsive, movable sensor in the fluid flow path adapted to move in response to fluid flow in the fluid flow path;

b) monitoring a position of the moveable sensor as a user opens and closes the faucet and providing a two-state signal output based on the position of a moveable member in the fluid flow path, one state of the two state signal output indicating that the fluid flow in the fluid flow path exceeds a threshold rate;

c) initializing a timer when the filter is installed in the flow path;

d) energizing said timer whenever said one state of the two state signal output is present; said timer providing a timer output related to an aggregate time of fluid flow through the filter of at least the threshold rate since installation of said filter;

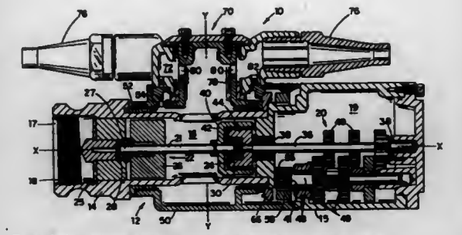
e) comparing the timer output with a predetermined value corresponding to a predetermined amount of filter use; and

f) when the timer output reaches the predetermined value, activating an indicator to indicate that a predetermined amount of filter use has occurred.

B1 5,092,523 (3054th)
MAGNETIC DRIVE TANK CLEANING APPARATUS
Jon A. Rucker, Avery; Bart D. Ancheta, San Mateo, and Raymond H. Brown, San Francisco, all of Calif., assignors to Sybron Chemicals Holdings Inc., Wilmington, Del.
Reexamination Request No. 90/004,092, Jan. 16, 1996.
Reexamination Certificate for Patent 5,092,523, issued Mar. 3, 1992, Ser. No. 613,925, Nov. 5, 1990.
Continuation of Ser. No. 312,182, Feb. 21, 1989, abandoned.
Int. Cl.[6] B05B *3/04*
U.S. Cl. 239—240

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–11** is confirmed.



7. A fluid driven tank cleaning apparatus comprising:

a housing having a fluid receiving chamber, an inlet for connecting said receiving chamber to a source of fluid under pressure, and a secondary chamber separated from said receiving chamber by a common wall;

a primary drive shaft rotatably mounted within said receiving chamber, said primary drive shaft having a forward end and a rearward end;

drive means connected to said primary drive shaft and disposed within said inlet for rotating said primary drive shaft in response to fluid entering said housing;

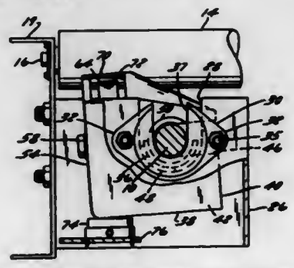
a secondary drive shaft rotatably mounted within said secondary chamber, said secondary chamber having a lubricating fluid disposed therein;

magnetic drive coupling means for magnetically coupling said primary shaft within said secondary shaft so as to cause said secondary shaft to rotate in response to rotation of said primary shaft;

a fluid nozzle assembly rotatably mounted to said housing and fluidly connected to said first receiving chamber; and

means for rotating said fluid nozzle assembly in response to rotation of said secondary shaft.

B1 5,375,696 (3055th)
HIGH-SPEED LINESHAFT-DRIVEN ACCUMULATING CONVEYOR
Ellsworth H. Collins, Mt. Washington; William A. Fultz, and James F. Mattingly, both of Louisville, all of Ky., assignors to Interlake Companies, Shepherdsville, Ky.
Reexamination Request No. 90/003,811, Apr. 26, 1995.
Reexamination Certificate for Patent 5,375,696, issued Dec. 27, 1994, Ser. No. 168,474, Dec. 16, 1993.
Continuation-in-part of Ser. No. 14,378, Feb. 5, 1993, Pat. No. 5,287,956.
Int. Cl.[6] B65G *13/06*
U.S. Cl. 198—781.04



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **8** and **11–13** are cancelled.

REISSUES

VOL 1192 ISS 2 NO 12 1996 UMI

Claims 1–3, 5 and 9 are determined to be patentable as amended.

Claims 4, 6, 7 and 10, dependent on an amended claim, are determined to be patentable.

New claims 14, 15 are added and determined to be patentable.

1. A conveyor, comprising:

a conveyor frame *defining elongated openings*;

at least one conveyor roller mounted *in said elongated openings* on said conveyor frame *and having an axis of rotation*;

a drive shaft extending along said conveyor frame;

at least one drive wheel rotatable about its axis and driven from said drive shaft, *the axis of said drive wheel being parallel to the axis of said conveyor roller at least when the driven wheel and roller are in driving engagement*;

wherein said conveyor roller and drive wheel are mounted for relative motion between them, such that, in a first position, said conveyor roller is driven from said drive wheel *by contact with the outer surface of the conveyor roller*, and, in a second position, said one conveyor roller is out of driving engagement with said drive wheel; *and further comprising an actuator which automatically moves said roller downwardly relative to said elongated openings, into driving contact with said drive wheel, and moves said roller upwardly relative to said elongated openings, out of driving engagement with said drive wheel.*

B1 5,407,668 (3056th)

CLEAR DEODORANT STICK COMPOSITIONS

David M. Kellner, Hollis, N.Y., assignor to Revlon Consumer Products Corp., New York, N.Y.

Reexamination Request No. 90/003,944, Aug. 30, 1995.
Reexamination Certificate for Patent 5,407,668, issued Apr. 18, 1995, Ser. No. 102,319, Aug. 5, 1993.
Int. Cl.[6] A61K *7/32:7/36*

U.S. Cl. 424—65

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 1 is determined to be patentable as amended.

claims 2–14 dependent on an amended claim, are determined to be patentable.

1. A clear deodorant stick composition comprising:

1–40% soap

0.01–10% antibacterial agent,

10–40% water,

40–90% polyhydric alcohol,

1–10% Pentadoxynol 200 (polyoxyethylene 200 3-pentadecyl ether)

1–20% of a clarity enhancing solubilizer which is a mixture of (a) and (b) wherein:

(a) is an alkanolamide of the formula:

wherein RCO is a fatty acid radical X is CHR_1CH_2OH wherein R_1 is H or lower alkyl; and Y is H, alkyl, alkanol, or CHR_1CH_2OH, and

(b) is an alkoxylated alcohol of the formula:

$$R_2(OCH_2CH_2)_nOH$$

wherein R_2 is H, $C_{4\text{-}22}$ straight or branched chain saturated or unsaturated alkyl, or a phenyl ring, or

$$R_3C(=O)OCH_2CHOHCH_2$$

wherein R_3 is a $C_{4\text{–}22}$ saturated or unsaturated alkyl and n is 2–200.

REISSUES

NOVEMBER 12, 1996

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,377

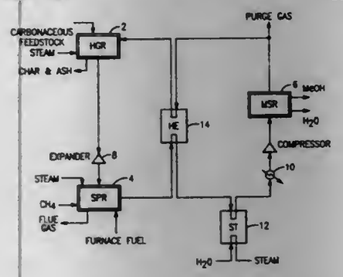
PROCESS AND APPARATUS FOR THE PRODUCTION OF METHANOL FROM CONDENSED CARBONACEOUS MATERIAL

Meyer Steinberg, 15 Alderfield La., Melville, N.Y. 11747, and Yuanji Dong, 101-1A Springset Dr., Cary, N.C. 27513

Original No. 5,344,848, dated Sep. 6, 1994, Ser. No. 68,400, May 27, 1993. Application for reissue Jun. 14, 1995, Ser. No. 490,223

Int. Cl.[6] C07C *27/06*

U.S. Cl. 518—704 **12 Claims**



1. An intergrated recycle process for the production of methanol from a condensed carbonaceous feedstock selected from the group consisting of coal, biomass, wood, agricultural products and municipal solid wastes comprising:

a) hydrogasifying said feedstock in a hydrogasification reactor with a recycled hydrogen rich gas stream to produce a process gas stream rich in methane;

b) steam pyrolyzing said process gas stream in a second stage steam pyrolysis reactor in the presence of a catalyst to produce a synthesis gas containing mainly carbon monoxide and hydrogen with small amounts of carbon dioxide;

c) reacting said carbon monoxide and hydrogen synthesis gas in a third stage methanol synthesis reactor in the presence of a catalyst to form a product gas stream containing methanol;

d) removing said methanol from said product gas stream leaving product gas stream rich in hydrogen; and

e) recycling said hydrogen rich product gas stream to supply the hydrogen needs for the above hydrogasifying step.

12. The process of claim 1 further comprising the step of providing additional steam and methane to the steam pyrolysis reactor from an external source.

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PLANT PATENTS

GRANTED NOVEMBER 12, 1996

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,687

MINIATURE ROSE PLANT NAMED 'POULROUGE'

Mogens N. Olesen, and Pernille Olesen, both of Fredensborg, Denmark, assignors to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Jan. 19, 1996, Ser. No. 588,053
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its compact but vigorous growth; its bright orange flower color; its long lived flowers; and its ease of rooting when produced from softwood cuttings.

9,688

FLORIBUNDA ROSE PLANT NAMED 'POULREK'

Mogens N. Olesen, and Pernille Olesen, both of Fredensborg, Denmark, assignors to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Jan. 19, 1996, Ser. No. 588,820
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—26 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its very even compact growth; its rapid repeat bloom; its resistance to powdery mildew and rust; its dark green glossy foliage; and its ease of propagation by budding and by softwood cuttings.

9,689

FLORIBUNDA ROSE PLANT VARIETY NAMED 'INTERPUR'

G. P. Ilsink, Doorn, Netherlands, assignor to DeVor Nurseries, Inc., Watsonville, Calif.

Filed Feb. 7, 1996, Ser. No. 597,901
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—27 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda rose class, substantially as shown and described.

9,690

CHRYSANTHEMUM PLANT NAMED 'MADERA'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 24, 1995, Ser. No. 547,325
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—79 **1 Claim**

1. A new and distinct Chrysanthemum plant named Madera, as described and illustrated.

9,691

IMPATIENS PLANT NAMED 'SALMON SUNRISE'

Ellen F. Leue, West Chicago, Ill., assignor to Geo. J. Ball, Inc., West Chicago, Ill.

Filed May 19, 1995, Ser. No. 445,373
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.6 **1 Claim**

1. A new and distinct cultivar of *Impatiens wallerana* plant named 'Salmon Sunrise' substantially as herein shown and described, which:

(a) exhibits attractive fully double salmon blooms in abundance,
(b) is early blooming,
(c) forms medium green foliage,
(d) exhibits a good basal-branching character, and
(e) exhibits an upright mounded growth habit.

9,692

CALATHEA PLANT NAMED 'ANGELA'

Magdalena J. M. van Rijn, Schipluiden, Netherlands, assignor to Van Rijn Plants, Am Schipluiden, Netherlands

Filed Aug. 2, 1995, Ser. No. 510,300
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Calathea plant named 'Angela,' as illustrated and described.

9,693

CALATHEA PLANT NAMED 'SILVIA'

Magdalena J. M. Van Rijn, Am Schipluiden, Netherlands, assignor to Van Rijn Plants, Am Schipluiden, Netherlands

Filed Aug. 2, 1995, Ser. No. 510,494
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Calathea plant named 'Silvia,' as illustrated and described.

9,694

DIEFFENBACHIA NAMED '61101'

Richard J. Henny, Tavares, Fla., assignor to Florida Foundation Seed Producers, Inc., Greenwood, Fla.

Filed Nov. 17, 1994, Ser. No. 341,679
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.2 **1 Claim**

1. A new and distinct Dieffenbachia plant, substantially as herein shown and described, characterized particularly as to novelty by the attractive silvery-grey foliage, highlighted by distinct small irregular white patches scattered across the leaf surface, a bright white leaf midrib that sets off the variegated areas within the leaf blade, and a dark green leaf margin that encases the entire variegated area.

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PATENTS

GRANTED November 12, 1996

ERRATA

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002–421	5,572,749
222–080	5,573,137
222–096	5,573,138
062–457	5,573,141
473–282	5,573,241
463–060	5,573,243
463–026	5,573,244
473–184	5,573,247
297–188	5,573,288
374–126	5,573,339
409–132	5,573,352
508–224	5,573,696
510–359	5,573,697
510–277	5,573,698
510–131	5,573,699
510–383	5,573,700
510–397	5,573,701
510–417	5,573,702
510–122	5,573,709
510–405	5,573,710
422–300	5,573,741
428–489	5,573,782
427–126	5,573,798
514–772	5,574,093
528–310	5,574,119
548–517	5,574,175
570–166	5,574,191
570–167	5,574,192
570–172	5,574,193
089–008	5,574,240
359–337	5,574,534
396–429	5,574,519
396–052	5,574,520
396–315	5,574,521
396–411	5,574,522

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ERRATA–CONTINUED

For CLASS	See PATENT NO.
396–435	5,574,523
396–411	5,574,524
396–538	5,574,525
396–133	5,574,526
399–009	5,574,527
396–536	5,574,528
396–568	5,574,529
396–604	5,574,530
396–033	5,574,531
396–626	5,574,532
396–639	5,574,533
355–071	5,574,537
399–071	5,574,538
399–062	5,574,539
399–171	5,574,540
399–171	5,574,541
399–380	5,574,542
399–059	5,574,543
399–060	5,574,544
399–270	5,574,545
399–276	5,574,546
399–251	5,574,547
399–240	5,574,548
399–262	5,574,549
399–313	5,574,550
399–045	5,574,551
386–046	5,574,564
386–081	5,574,565
386–109	5,574,566
386–046	5,574,567
386–112	5,574,568
386–095	5,574,569
386–103	5,574,570
419–002	5,574,959

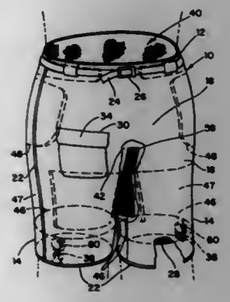
PATENTS

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GENERAL AND MECHANICAL

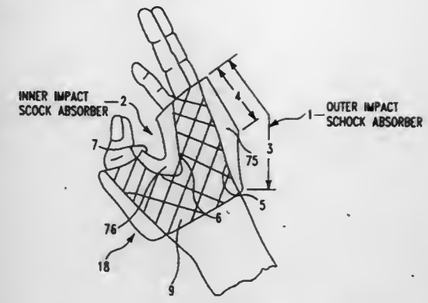
5,572,737
PADDED SKATING SHORTS
Steven F. Valice, 2126 Hollywood, Grosse Pointe Woods, Mich. 48236

Filed Dec. 12, 1994, Ser. No. 353,712
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—465 **19 Claims**



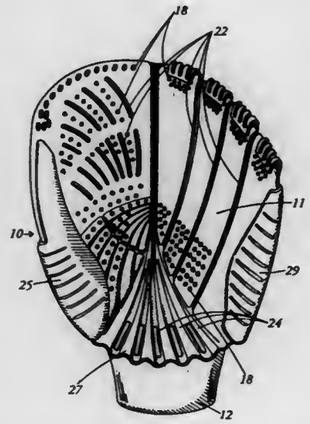
I. Padded skating shorts comprising:
a padded core shell including waist and leg portions, the waist portion completely encircling a waist of a wearer when worn and each of the leg portions terminating in a lower extremity;
an outside shell adapted to be worn over the core shell to prevent the core shell from damage and wear and tear and also including waist and leg portions, the waist portion of the outside shell being adapted to completely encircle the waist of the wearer, and each of the leg portions of the outside shell also terminating in a lower extremity; and
a fastening mechanism secured to the outside shell and the core shell for releasably fastening the core shell to the outside shell when the outside shell is worn over the core shell, wherein the fastening mechanism includes a first pair of fastening members secured to the lower extremities of the leg portions of the outside shell and a second pair of complementarily-formed fastening members secured to the lower extremities of the leg portions of the core shell wherein the first pair of fastening members are disposed in apposing relationship to the second pair of fastening members when the outside shell is worn over the core shell.

5,572,738
HAND PROTECTOR
Charles P. Melone, Jr., 62 W. 12th St., New York, N.Y. 10011
Continuation of Ser. No. 221,770, Apr. 1, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 484,543
Int. Cl.[6] A41D *13/10*
U.S. Cl. 2—16 **6 Claims**



1. Apparatus for protecting the hand from injuries comprising:
a) a shell surrounding the hand from approximately the carpometacarpal joints to beyond the knuckles;
b) an outer impact shock absorbing member attached to said shell on an outside surface thereof and covering the back of the hand to beyond the knuckles;
c) said outer shock absorbing member having an outer flat surface an inner surface molded with protrusions and indentations corresponding to the configuration of the knuckles;
d) an inner impact shock absorbing member attached to said shell on an outside surface thereof and covering the palm of the hand beyond the knuckles; and
e) said inner member having an outer surface configured to restrain excessive knuckle flexion and cooperating with said outer member to stabilize the knuckles and the carpometacarpal joints.

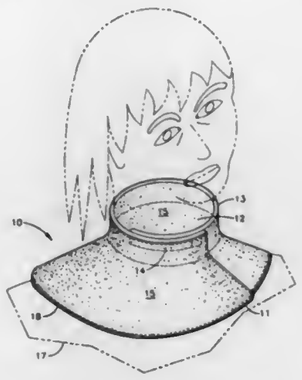
5,572,739
BALL GLOVE
Paul P. Kolada, Bexley, and Terry M. Birchler, Westerville, both of Ohio, assignors to Priority Designs, Inc., Gahanna, Ohio
Continuation-in-part of Ser. No. 916,477, Jul. 20, 1992, Pat. No. 5,402,537. This application Nov. 5, 1993, Ser. No. 148,834
Int. Cl.[6] A41D *13/10*
U.S. Cl. 2—19 **29 Claims**



1. A ball glove having a concave, frontal, ball receiving surface, a proximal edge adjacent a hand-receiving opening leading to finger-receiving cavities aligned in a general axial direction and having an opposite, generally laterally extending, peripheral, distal edge, the glove including:
a plurality of generally axially oriented ridges protruding outwardly from the frontal surface and extending to near the distal edge, the ridges further including ball retaining protrusions extending outwardly from the ridges further than contiguous portions of the ridges and having a shoulder formed at the proximal ends of the protrusions.

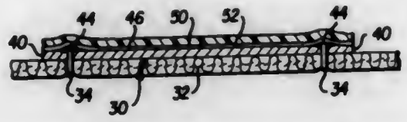
171–487 O.G.–96–2: QL3

5,572,740
BEAUTICIAN'S CAPE
Rosalind Geniesse, 486-A Longview Dr., Harrisonburg, Va. 22801
Filed Aug. 21, 1995, Ser. No. 517,431
Int. Cl.[6] A41D *27/12*
U.S. Cl. 2—46 16 Claims



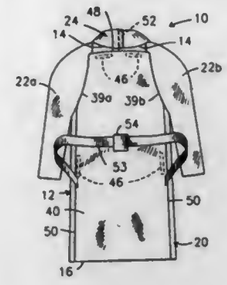
1. A garment for protecting clothing worn by a person, comprising a first flap, a second flap, a band, and a fastener for closing the band; the flaps each comprising at least one liquid absorbent layer superimposed on and substantially coextensive with a substantially liquid impermeable layer; the band comprising two liquid absorbent layers between which a substantially liquid impermeable layer is sandwiched; the flaps being connected to the band in opposition to one another with the liquid absorbent layer of each flap forming an exterior surface thereof.

5,572,741
FIREFIGHTER'S GARMENT WITH LABEL PROTECTOR
J. Robert Bowman, Hooksett, N.H., assignor to Globe Manufacturing Company, Pittsfield, N.H.
Filed May 15, 1995, Ser. No. 441,593
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—81 6 Claims



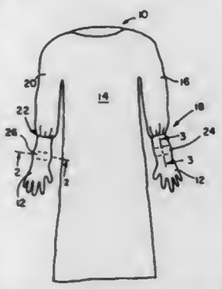
1. A firefighter's garment comprising an outer shell formed of fire retardant material and including a sheet of material having a surface, a label including an inner surface disposed adjacent said surface of the sheet of material and an outer surface having indicia thereon, stitching extending through said label and said sheet of material for attaching said label in place on said surface of the sheet of material, said stitching including portions extending outwardly of said outer surface of the label, and a transparent protective layer secured to said label and covering said outer surface of the label and said stitching portions, said protective layer being heat and abrasion resistant and being substantially waterproof.

5,572,742
GARMENT FOR THE DISABLED
Elizabeth B. McFadden, Tampa, Fla., assignor to Vansur Investments & Asociados, Tampa, Fla.
Filed Apr. 6, 1995, Ser. No. 417,802
Int. Cl.[6] A41D *10/00;13/12*
U.S. Cl. 2—114 6 Claims



1. A garment for the disabled comprising;
a body having a top edge and bottom edge, said body comprising a back section extending longitudinally from said top edge to said bottom edge, said back section being longitudinally separable thereby defining a first part and a second part, said first part of said back section further comprising a first part shoulder section and first part skirt section, said second part of said back section further comprising a second part shoulder section and a second part skirt section, each of said shoulder section include a portion of said top edge and extend to a respective said skirt section, and each of said skirt sections include a portion of said bottom edge and extend to a respective said shoulder section, said skirt section and said shoulder section of said first part each having a longitudinal edge that is joined to define a first longitudinal edge and said skirt section and said shoulder section of said second part each having a longitudinal edge that is joined to define a second longitudinal edge; said first longitudinal edge along said skirt section of said first part being spaced apart from said second longitudinal edge along said skirt section of said second part defining an opening through said back section; and
a back panel removable attachable to said body, such that said back panel covers at least a portion of said opening through said back section.

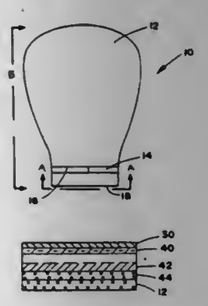
5,572,743
SURGICAL GOWN
Edward Q. Yavitz, 3828 Spring Creek Rd., Rockford, Ill. 61114
Filed Jun. 7, 1994, Ser. No. 255,095
Int. Cl.[6] A41B *7/08;* A41D *13/12*
U.S. Cl. 2—125 12 Claims



4. A sleeve assembly for use with a surgical garment, the sleeve assembly comprising:

a generally tubular section through which an arm of the wearer extends;
a wrist portion disposed at a distal end of the tubular section;
a plastic strip attached to the wrist portion; and
a stretchable, elastic surgical glove stretched over the wrist portion and the plastic strip, wherein the plastic strip resists the pressure applied by the stretchable, elastic surgical glove to reduce pressure against the wearer's wrist, wherein the wrist portion includes a flap which is folded back over the plastic strip to trap the plastic strip between the flap and the remainder of the wrist portion.

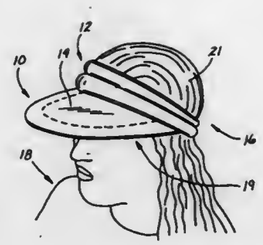
5,572,744
MITTEN SUITABLE FOR HEAT TRANSFER
Lawrence G. Reid, Jr., Germantown, and Eleanor B. Reid, Winston-Salem, both of N.C., assignors to Carolon Company, Rural Hall, N.C.
Filed Jul. 28, 1995, Ser. No. 508,863
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—158 14 Claims



12. A mitten adapted to cover the entire hand and wrist of a user, comprising:
an opening for providing access to the interior of the mitten and receiving the hand and wrist of the user;
a first pocket part for receiving a heat transfer material;
a second pocket part for receiving a second heat transfer material;
an outer covering defining the exterior of the mitten;
insulation material attached to the interior of the outer covering;
a soft cloth lining the interior of the mitten;
a liquid impervious material attached to an exterior side of the cloth lining and defining a first side of said first and second pocket parts; and
a heat transfer material provided in at least one of said first and second pocket parts.

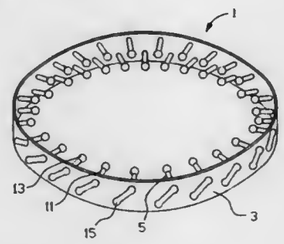
5,572,745
WEARING APPAREL INCLUDING A COOLING MATERIAL
Edward Mainus, Wilmington, Calif., assignor to Cool Wear Works, Inc., Long Beach, Calif.
Filed Sep. 23, 1994, Ser. No. 311,503
Int. Cl.[6] A42B *1/18*
U.S. Cl. 2—171.2 15 Claims

1. A visor adapted to be worn on the head of a user, the visor comprising:
a browband having a top surface and a bottom surface each extending between a first end and a second end of the browband;
attachment means extending between the first end and the second end of the browband and forming with the browband a headband, the attachment means having a variable length to facilitate snug engagement of the headband with the head of the user;



a sunshade extending outwardly from the bottom surface of the browband in a fixed relationship with the browband;
a first tube included in the browband and having a first axis, the first tube defining the top surface between the first end and the second end of the browband;
a second tube included in the browband and having a second axis, the second tube defining the bottom surface between the first end and the second end of the browband;
the first tube being disposed tangentially to the second tube with the first axis generally parallel to the second axis; and
a cooling material disposed in at least one of the first tube and the second tube.

5,572,746
COMBINED HAIRDO SPACER AND PROTECTIVE DEVICE
Lorraine Llnico, 314-A Rte. 31, R.R. #14, Flemington, N.J. 08822
Filed May 26, 1995, Ser. No. 450,483
Int. Cl.[6] A42C *5/02*
U.S. Cl. 2—182.1 18 Claims



9. A combined hairdo spacer and protective device which comprises the following elements:
(a) an elongate strip with a fastening means for fastening an end with another end to form an approximate circular shaped base headband, said base headband having a flexible characteristic and a circumference sized to fit around a person's head; and
(b) a spacing means for spacing said base headband, said spacing means including a plurality of probes wherein each probe includes a pin with a beaded end and wherein said spacing means forms a barrier between said base headband and a person's hair and when said device is pulled back over the hair from the forehead and placed under the hair at the neckline and when the hair pushed back from the forehead is placed over the device toward the forehead, the hair looks fuller.

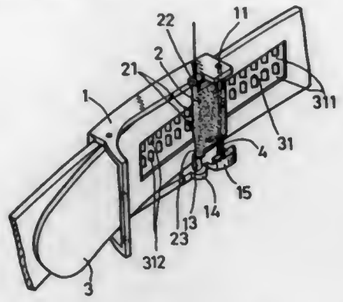
VOL 1192 ISS 2 NO 12 1996 UMI

5,572,747

BELT AND BUCKLE ASSEMBLY

Juei-Hsiang Cheng, No. 3, Alley 71, Lane 484, Chiu Hua Road, Sec. 1, Tainan, Taiwan

Filed Aug. 15, 1995, Ser. No. 515,308
Int. Cl.[6] A41F 9/00
U.S. Cl. 2—322 2 Claims



1. A belt and buckle assembly comprising:

a belt having a lead end and a tail end, and a buckle having one end fixed to the lead end of said belt and an opposite end mounted with a transverse pivot pin,

said buckle comprises a clamping plate turned about said transverse pivot pin to hold down the tail end of said belt as it is inserted between said buckle and said clamping plate, said buckle further comprises an inward flange at an outer side relative to said transverse pivot pin, a guide block means and a stop rod disposed at right angles adjacent to said transverse pivot pin, said stop rod limiting downward movement of said clamping plate; and

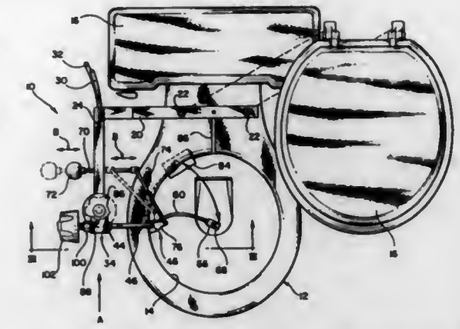
said belt comprises two longitudinal series of sloping teeth and a plurality of longitudinal rows of spaces alternatively disposed at a back side thereof near the tail; said clamping plate is supported on a torsional spring, having two teeth perpendicularly disposed at a first side remote from said transverse pivot pin for engagement with the sloping teeth of said belt, a belt guide block means corresponding to the guide block means of said buckle, and a finger strip opposite the guide block means of said clamping plate on which a user exerts force to move said clamping plate downward against said torsional spring to shift the teeth of said clamping plate from the sloping teeth of said belt to the plurality of longitudinal rows of spaces of said belt, said torsional spring having on end fastened to said clamping plate and an opposite end fastened to said inward flange of said buckle.

5,572,748

BIDET WITH ANTI-SCALDING VALVE ASSEMBLY

Ming Z. Nee, 8411-15, Old Mariboro Pike, Upper Mariboro, Md. 20772

Division of Ser. No. 235,537, Apr. 29, 1994, Pat. No. 5,431,187.
This application Apr. 24, 1995, Ser. No. 427,280
Int. Cl.[6] A47K 3/22
U.S. Cl. 4—420.2 12 Claims



1. A bidet assembly attachable to a toilet having a toilet bowl comprising:

a) mounting bracket configured to be attached to a toilet;

b) an anti-scalding valve assembly attached to the mounting bracket, the anti-scalding valve assembly having means to mix hot and cold inlet fluid and to automatically limit the temperature of outlet fluid emanating from the valve assembly to less than the temperature of the hot fluid, wherein the anti-scalding valve assembly comprises:

i) means defining a cold fluid control chamber and a hot fluid control chamber;

ii) an outlet conduit communicating with a fluid outlet;

iii) a first cold fluid conduit connecting a cold fluid inlet to the cold fluid control chamber;

iv) a second cold fluid conduit connecting the cold fluid control chamber and the outlet conduit:

v) a first hot fluid conduit connecting a hot fluid inlet to the hot fluid control Chamber;

vi) a second hot fluid conduit connecting the hot fluid control chamber and the outlet conduit:

vii) a first control valve operatively associated with the cold fluid control chamber to control the flow of cold fluid into the outlet conduit;

viii) a second control valve operatively associated with the hot fluid control chamber to control the flow of hot fluid into the outlet conduit;

ix) a bypass conduit connecting the hot fluid control chamber and the first cold fluid conduit upstream of the first control valve enabling cold fluid to pass into the hot fluid control chamber without passing through the cold fluid control chamber; and,

x) a third control valve operatively associated with the bypass conduit to control the flow of cold fluid through the bypass conduit,

c) a spray arm having a spray nozzle thereon, the spray arm defining a spray conduit operatively connected to the anti-scalding valve assembly such that outlet fluid from the anti-scalding valve assembly passes through the spray arm and exits through the spray nozzle;

d) means to attach the spray arm to the mounting bracket means such that the spray arm is movable between first and second positions; and,

e) actuating means connected to the mounting bracket means and the attaching means to move the spray arm between its first and second positions.

5,572,749

HELMET MOUNTING DEVICE AND SYSTEM

Andrew M. Ogden, Pasadena, Calif., assignor to The Walt Disney Company, Burbank, Calif.

Filed Jun. 28, 1994, Ser. No. 267,183
Int. Cl.[6] A42B 3/00
U.S. Cl. 2—421 29 Claims

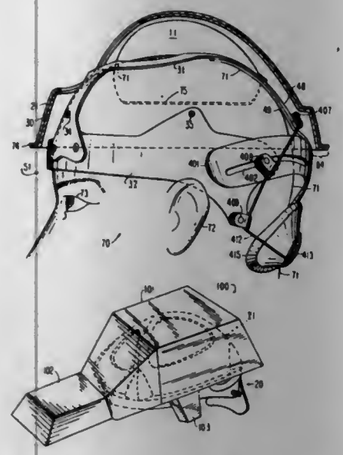
1. A helmet mounting device for mounting a helmet on a head of a user, said helmet mounting device comprising:

a substantially stiff frame for resting on said head for accepting said helmet thereon without positive attachment of said helmet to said frame;

a retention band depending from said frame for encircling said head to retain said frame on said head; and

a tightening mechanism for tightening said retention band to any one of a large number of substantially continuously spaced sizes after said retention band has been placed on said head; wherein:

said tightening mechanism includes a tensioning device for constricting said retention band uniformly about said head;



said tightening mechanism and said retention band include alignment portions for aligning said device in a predetermined orientation relative to said head; said helmet mounting device further comprising:

an alignment structure for aligning said helmet with said device, thereby aligning said helmet with said head, said alignment structure comprising at least three ridges extending upward from respective locations at lower outer extremities of said device, said helmet having grooves corresponding to said ridges, wherein:

each of said ridges has a cross section, said cross section having a peak, a respective sloping section on either side of said peak, and a respective tapered edge beyond each respective sloping section,

said peak has a first concavity,

each said respective sloping section has a second concavity in a direction opposite said first concavity, and

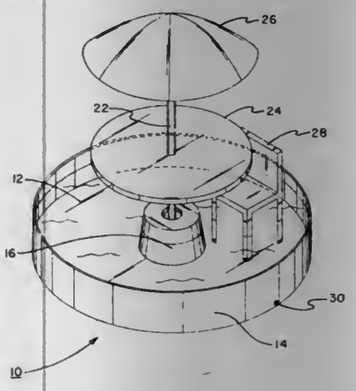
each said respective tapered edge has a third concavity in a same direction as said first concavity.

5,572,750

TABLE AND CHAIR POOL

Thomas M. Johnston, 20 Linden Ct., Jersey City, N.J. 07305

Filed Apr. 5, 1995, Ser. No. 417,261
Int. Cl.[6] E04H 4/00
U.S. Cl. 4—494 1 Claim



1. A table and chair pool comprising:

a bottom panel formed in a generally circular configuration and having a central aperture directed therethrough;

a perimeter side wall extending continuously about an outer periphery of the bottom panel and being coupled to the thereto so as to project substantially orthogonally and upwardly therefrom , the perimeter side wall being shaped so as to define a drain aperture directed therethrough;

a central side wall concentrically positioned relative to the perimeter side wall and being coupled to the bottom panel so as to extend about the central aperture directed therethrough;

a center stanchion having an upper end and a lower end, an anchor fabricated of concrete and positioned through the central aperture in the bottom panel and within the central side wall, the anchor including a receiving bore directed thereinto permitting the insertion of the lower end of the center stanchion into the anchor to support the center stanchion in a vertical orientation;

a table supported by said center stanchion between said upper and lower ends;

a plurality of chairs positioned between the central side wall and the perimeter and about the table;

a drain valve directed through the perimeter side wall for permitting selective draining of fluids from the pool, the drain valve comprising a plug extending through the drain aperture from an interior of the perimeter of the side wall; and

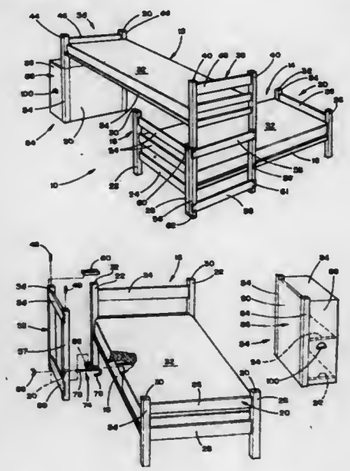
an umbrella being secured to the upper end of the center stanchion.

5,572,751

BUNK BED TRUNDLING SYSTEM

James C. Brandt, 4325 E. Clinton Trail, Eaton Rapids, Mich. 48827

Filed Apr. 21, 1995, Ser. No. 426,046
Int. Cl.[6] A47C 19/20
U.S. Cl. 5—9.1 11 Claims



1. Trundling apparatus for mounting an upper bed over a lower bed at right angles thereto, wherein the beds are supported on vertically oriented support posts at head and foot ends of the bed. the apparatus including:

a pair of support post extenders for raising the position of the upper bed, each support post extender comprising a pair of extender posts of predetermined height and means for connecting the extender posts rigidly together in parallel and spaced apart by the same distance as the support posts at the ends of the upper bed;

lower bed mounting means for releasibly connecting one extender to a side of the lower bed so that the plane of the

extender is oriented parallel to the longitudinal direction of the lower bed, the mounting means securely holding one of the extender posts of the extender to an outer side of a support post of the lower bed, the extender being maintained in an upright position by the lower bed mounting means such that the extender posts can support the support posts at one end of the upper bed in a raised position, the extender being easily removable from the lower bed when perpendicular bed stacking is not desired;

vertical support means for maintaining the other extender in an upright position where the extender posts thereof can support the support posts at an opposite end of the upper bed in a raised position; and

alignment means for holding the upper bed support posts in alignment on the extender posts.

5,572,752

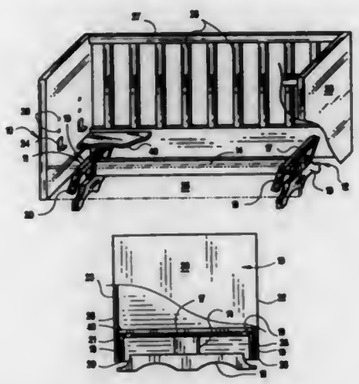
BED WITH AXIAL GLIDER MOVEMENT

Mickie L. W. McGee, 4515 21st St., Lubbock, Tex. 79407

Filed Nov. 29, 1995, Ser. No. 564,452

Int. Cl.[6] A47D *9/00;9/02*

U.S. Cl. 5—103 **3 Claims**



1. A bed apparatus comprising:

a) a stationary base assembly elongated upon a longitudinal axis between opposed front and rear extremities having paired upper support means symmetrically spaced about said axis, the locus of said upper support means being a rectangle disposed in a horizontal plane,

b) a tether arm rotatably held by each upper support means and directed downwardly therefrom, terminating in a lower extremity,

c) a bed frame comprised of opposed vertical side panels and vertical front and rear panels assembled in box-like rectangular configuration in surrounding relationship about said base assembly,

d) lower support means comprised of solid structural strips defining lower portions of said side panels directly beneath the corresponding upper support means and rotatably engaging the lower extremities of said tether arms, e) shelf means associated with said bed frame to secure a mattress in horizontal disposition,

f) a horizontally disposed guard panel positioned between said shelf means and base assembly, and removably secured to the structural strips and the front and rear panels, and

g) spaced apart bars connected to said structural strips, of a sufficient height to retain infants or invalids within the bed apparatus.

5,572,753

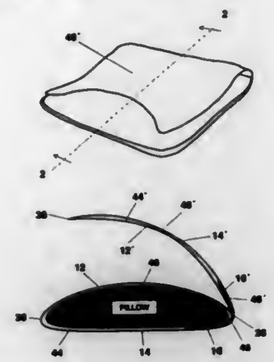
PILLOW CASE HEAD COVER

Peter A. Ruscitto, 1822 Wilderness Rd., Lancaster, Pa. 17603

Filed Mar. 14, 1996, Ser. No. 618,452

Int. Cl.[6] A47G *9/00*

U.S. Cl. 5—490 **12 Claims**



1. A pillow case head cover made from a single piece of substantially rectangular shaped fabric material, the long dimension of said fabric material divided along a bisecting line into substantially equal halves thereby creating near mirror image segments each comprised of an outer, middle, and inner panel, wherein the outer panels, dimensioned somewhat less in length than the adjacent middle panels, are folded upon the adjacent middle panels, said middle panels dimensioned somewhat less in length than the adjacent inner panels, the combination of said outer and said middle panels folded upon said adjacent inner panels, all panels thus folded being joined along both long dimension edges substantially perpendicular to said bisecting line, thereby creating two opposing primary envelopes closed on three sides by folding and joining, each with openings adjacent to and substantially parallel to said bisecting line and each of the primary envelopes having contained within secondary envelopes closed on three sides by folding and joining with the opening opposite in direction to that of the primary envelopes.

5,572,754

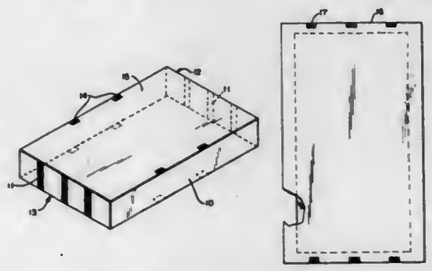
HOSPITAL BEDDING SYSTEM

Norma Lazar, and Albert G. Lazar, both of 1838 Camberley La., Hacienda Heights, Calif. 91745

Continuation-in-part of Ser. No. 143,865, Oct. 27, 1993, Pat. No. 5,367,729. This application Nov. 28, 1994, Ser. No. 345,629

Int. Cl.[6] A47G *9/02*

U.S. Cl. 5—494 **20 Claims**



1. A bedding system comprising (a) a mattress and (b) a rectangular bottom sheet releasibly connectable to the mattress via the agency of cooperating hook fasteners on the mattress and loop fasteners on the bottom sheet:

the mattress having opposite top and bottom major surfaces with opposite side edges and end edges and being bounded by head and foot end mattress surfaces and side mattress surfaces normal to the major surfaces, the mattress having a plurality of hook fasteners completely secured to the mattress head and foot end surfaces and side surfaces for connecting the bottom sheet, the fasteners being disposed in essentially identical predetermined patterns symmetrical about the midlength of each end surface and each side surface and extending substantially between the mattress major surfaces, whereby the patterns on the end surfaces and side surfaces are essentially the same relative to an actual mattress top surface, a mattress foot end surface, and a mattress side surface regardless of which major surface is the top surface and which end surface is the foot end surface;

the rectangular bottom sheet having obverse and reverse surfaces and opposite side edges and head and foot end edges, the distance between the side edges being the distance across the mattress major surface between its side surfaces and a selected amount sufficient to cover at least part of the side surfaces, the distance between the end edges being the distance across the mattress major surface between its end surfaces plus one and one half times the distance between the mattress major surfaces and having a plurality of loop fasteners secured to each end and to each side of the bottom sheet on the reverse surface proximate the end edges and side edges and disposed in a predetermined pattern related to the predetermined pattern of hook fasteners on the mattress end and side surfaces so that the loop fasteners on the end edges overlap at least a portion of the hook fasteners on the mattress end surfaces and so that loop fasteners on the side edges overlap at least a portion of the hook fasteners on the mattress side surfaces.

5,572,755

Patent Not Issued For This Number

5,572,756

AMBULANCE STRETCHERS FOR CARRYING PATIENTS

Martti Muuranen, Hatanpäänkatu 1 B, Fin-33100 Tampere, and Eero Vuorenoja, Vammala, Fin-38270 Sammaljuki, both of Finland

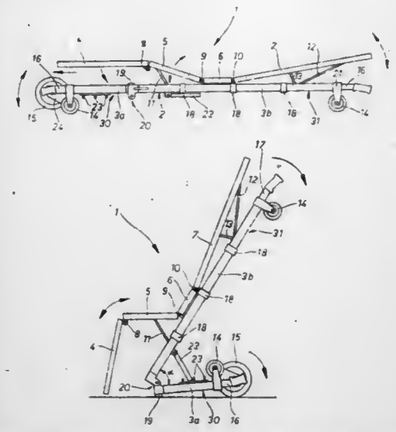
PCT No. PCT/FI93/00494, § 371 Date May 17, 1995, § 102(e) Date May 17, 1995, PCT Pub. No. WO94/12137, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 22, 1993, Ser. No. 436,232

Claims priority, application Finland, Nov. 20, 1992, 920695 U

Int. Cl.[6] A61G *1/02;1/017*

U.S. Cl. 5—626 **6 Claims**



1. An ambulance stretcher for transportation of patients comprising

two longitudinal frame beams with connecting cross-brackets, all of which together form a supporting frame, the frame having handles at each end of each beam: an adjustable patient bed mounted on top of the supporting frame, said patient bed having articulated or folding points for adjustment of the patient bed into a wanted position in its longitudinal direction;

a rigid frame rigidly fixed to said supporting frame, said rigid frame being located below and rigidly supporting a middle portion of the patient bed in the middle portion of the stretcher, said rigid frame having first articulated points for fixing said articulated or folding portions of the adjustable patient bed and further articulated points for fixing members supporting said articulated or folding portions of said patient bed; said frame beams extending rigidly through the region of said rigid frame to at least one end of the stretcher.

5,572,757

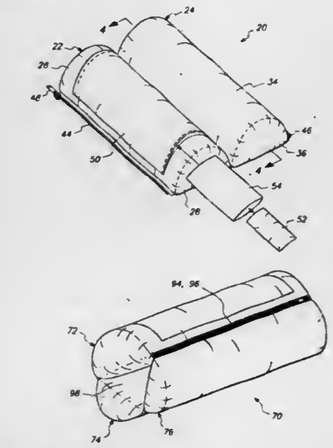
BODY SUPPORT HAVING HINGEDLY CONNECTED SEMI-CYLINDRICAL CUSHIONS

Dennis C. O'Sullivan, 774 Mays Blvd., #10, Incline Village, Nev. 89451

Filed Mar. 6, 1995, Ser. No. 399,964

Int. Cl.[6] A47G *9/00*

U.S. Cl. 5—636 **6 Claims**



1. A body support, comprising:

a first resilient cushion having a substantially semicylindrical shape defined by a semicylindrical top surface, two substantially semicircular end surfaces, and a substantially rectangular bottom surface having first and second long sides and two short sides, the first cushion containing a first quantity of stuffing such that the substantially rectangular bottom surface of the first cushion has a convex shape;

a second resilient cushion having a substantially semicylindrical shape defined by a semicylindrical top surface, two substantially semicircular end surfaces, and a substantially rectangular bottom surface having first and second long sides and two short sides, the second cushion having a diameter that is approximately equal to a diameter of the first cushion and

containing a second quantity of stuffing such that the substantially rectangular bottom surface of the second cushion has a convex shape, the first long side of the second cushion being hingedly connected to the second long side of the first cushion so that the first and second cushions can be rotated with respect to each other from an open position to a closed position in which the substantially rectangular bottom surface of the first cushion is in contact with the substantially rectangular bottom surface of the second cushion; and

a zipper having a first zipper section connected along substantially an entire length of the first long side of the first cushion and a second zipper section connected along substantially an entire length of the second long side of the second cushion so that the first and second zipper sections can be zipped together to sqeeze the convex shaped substantially rectangular bottom surfaces of the first and second cushions together in order to increase firmness of the first and second cushions when they are secured in the closed position.

5,572,758

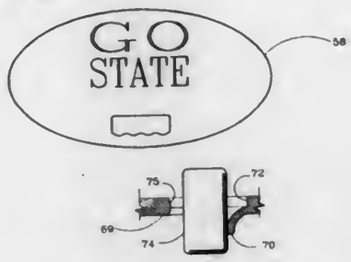
COMBINATION SEAT CUSHION AND CHEERING AID

Thomas C. Merritt, 1619 Clarendon, Longview, Tex. 75601

Continuation of Ser. No. 221,032, Mar. 29, 1994, abandoned, which is a continuation of Ser. No. 24,536, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 600,225, Oct. 19, 1990, Pat. No. Des. 336,200. This application May 22, 1995, Ser. No. 447,188

Int. Cl.[6] A47C *16/00*

U.S. Cl. 5—653 **5 Claims**



1. A combination seat cushion, cheering aid, and beverage holder comprising:

a resilient cushion having an obverse side and a reverse side, the faces bounded by an edge,

a hand hole extending through the faces,

insignia, having a top and a bottom side, on at least one of the faces oriented with the bottom side of the insignia toward the hand hole, and

at least one integral flexible tab extending into the hand hole, positioned to interfere with and grip a 2 inch diameter container inserted in the hand hole.

5,572,759

STORAGE AND MAINTENANCE SYSTEM

Kurt Zachhuber, Heubergstr. 4, D-83026, Rosenheim, Germany

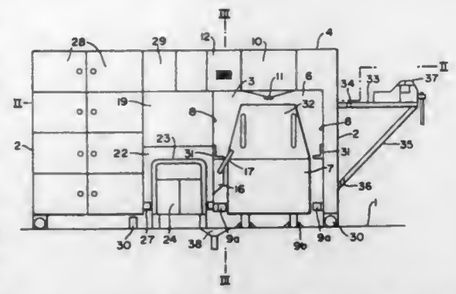
PCT No. PCT/EP93/02372, § 371 Date Apr. 21, 1995, § 102(e) Date Apr. 21, 1995, PCT Pub. No. WO94/05197, PCT Pub. Date Mar. 17, 1994

PCT Filed Sep. 3, 1993, Ser. No. 397,197

Claims priority, application Germany, Sep. 9, 1992, 42 30 197

Int. Cl.[6] B60S *5/00*

U.S. Cl. 15—1 **10 Claims**



1. A storage and maintenance system for a mobile cleaning machine, the system comprising:

an at least partially enclosed space for housing the cleaning machine;

guiding elements for accurate positioning of the cleaning machine in the space;

at least one compartment for holding spare, replacement, and wearing parts, the at least one compartment including locking means adapted to be opened by one of inserting a coin, inserting an individual user card, and entering a code;

a first supply unit for replenishing an energy source of the cleaning machine; and

a second supply unit for filling at least one container of the cleaning machine with consumable material

wherein

at least one of the first and second supply units includes at least one quick coupling unit for automatic connection to the cleaning machine when the machine is positioned into the storage and maintenance system.

5,572,760

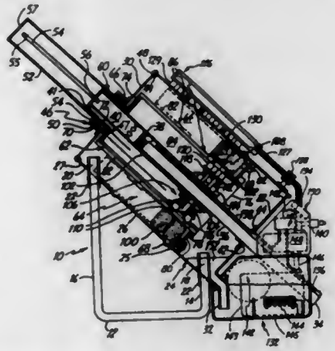
PORTABLE CLEANING AND SCRUBBING APPARATUS

Mark Patun, 316 Pearl, Owatonna, Minn. 55060

Filed Apr. 6, 1995, Ser. No. 418,597

Int. Cl.[6] B08B *3/06;* **A46B** *11/00*

U.S. Cl. 15—21.1 **18 Claims**



1. A cleaning apparatus for cleaning objects comprising:

(a) a housing having a first axis;

(b) first spray means engaged with the housing for directing a cleaning fluid into the housing and onto the objects to be cleaned;

(c) a rotatable frame mounted in the housing engaging the objects for rotation about the first axis, the rotatable frame being rotatable about the first axis by the cleaning fluid being directed against the objects; and

(d) a scrubber drive assembly in the housing for scrubbing the objects, the scrubber drive assembly having at least one scrubber.

5,572,761

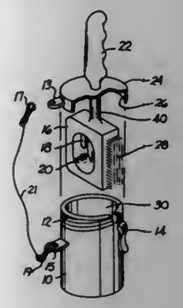
PORTABLE GOLF BALL AND CLUB CLEANER CUP

Roy Meyer, 7222 Charlie Hall St., Fort Meade, Md. 20755

Filed Feb. 22, 1995, Ser. No. 392,254

Int. Cl.[6] A63B *47/04*

U.S. Cl. 15—21.2 **18 Claims**



1. A golf ball and club cleaner, comprising:

a means having a lid portion and an open curved portion for receiving a liquid therein;

a ball holder means comprising a rectangular member having an opening therethrough and having an extender portion which is fixedly attached to the inside of said lid portion;

a removable bristle means for insertion into said open curved portion for scrubbing an object, wherein said removable bristle means comprises a mesh cage means having rows of bristles attached along its inner sides wherein said rows of bristles extend into the center of said open curved portion;

a clip means attached to said container for attachment to a golf bag; and

a handle fixedly attached to the top of the outside of said lid portion of said container means for manipulating said ball holder means against said removable bristle means within said open curved portion.

5,572,762

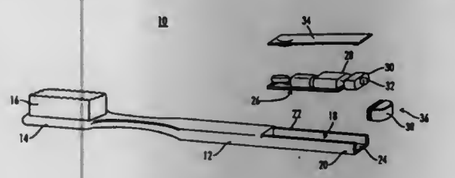
TOOTHBRUSH WITH SOUND GENERATOR

Jonathan Scheiner, 241 Muer Dago Rd., Topanga, Calif. 90290

Filed May 12, 1994, Ser. No. 241,737

Int. Cl.[6] A46B *9/04*

U.S. Cl. 15—105 **21 Claims**



1. A toothbrush comprising:

an elongated handle having a first end, a second end opposed to the first end, and an axial direction extending from the first end to the second end, the handle having a compartment within the handle, the compartment having an opening at the first end of the handle;

a set of bristles provided adjacent to the second end of the handle;

a sound generating device provided within the compartment adjacent to the first end of the handle; and

switch mechanism coupled to the sound generating device for selectively activating the sound generating device, the switch mechanism being disposed at the opening at the first end of the handle, the switch mechanism having at least a portion which extends through the opening and beyond the first end of the handle and which is moveable in the axial direction of the handle to activate the sound generating device.

5,572,763

TOOTHBRUSH

Yasuteru Eguchi, Tokyo, Japan, assignor to Kao Corporation, Tokyo, Japan

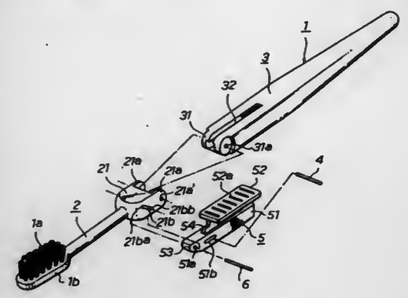
PCT No. PCT/JP94/01917, § 371 Date Jun. 29, 1995, § 102(e) Date Jun. 29, 1995, PCT Pub. No. WO95/14403, PCT Pub. Date Jun. 1, 1995

PCT Filed Nov. 11, 1994, Ser. No. 492,026

Claims priority, application Japan, Nov. 29, 1993, 5-063793 U

Int. Cl.[6] A46B *9/04*

U.S. Cl. 15—167.1 **4 Claims**



1. A toothbrush in which a basal end portion of a neck portion having a bristle portion at a distal end of said neck portion is pivotally connected to a distal end portion of a handle portion through a pivotal pin, and a slide member for fixedly maintaining the connected state between said basal end portion and said distal end portion is slidably arranged relative to said distal end portion through said pivotal pin, so that by sliding said slide member forwardly and backwardly relative to said handle portion, a bending angle of said neck portion relative to said handle portion can be adjusted,

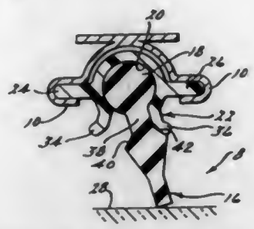
said basal end portion of said neck portion including a pair of linkage portions which are brought to outer sides of said distal end portion of said handle portion and connected to said distal end portion through said pivotal pin, said pair of linkage portions being each provided with a slant elongated-slit positionally offset toward said bristle portion from said pivotal pin,

said handle portion being provided with a slide guide groove for guiding said slide member,

said slide member including a slide basic body having an elongated-slit and slidably fitted in said slide guide groove, and a slide control plate integrally mounted on said slide basic body, said slide basic body being provided with a pair of fit-in projections formed respectively on opposite sides of said slide basic body at areas positionally offset toward said neck portion, said pivotal pin being allowed to pierce through said elongated-slit, said fit-in projections being slidably fitted respectively in said slant elongated-slits.

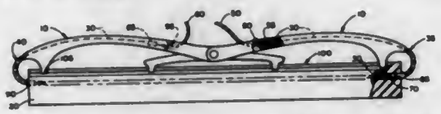
VOL 1192 ISS 2 NO 12 1996 UMI

5,572,764
ARTICULATED WINDSHIELD WIPER BLADE ASSEMBLY
Michel Fernandes, Freetown; Brian J. Driscoll, Hanover, both of Mass., and Peter H. Jeffer, New York, N.Y., assignors to New-View Windshield Wiper, Inc., New York, N.Y.
Filed Apr. 18, 1996, Ser. No. 634,346
Int. Cl.[6] B60S *1/38;1/04*
U.S. Cl. 15—250.361 **4 Claims**



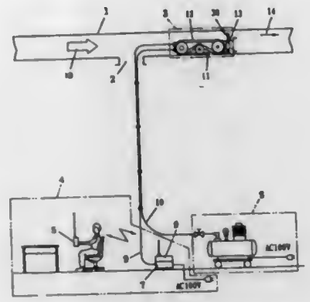
1. An articulated twin spline windshield wiper blade assembly for acceptance in claws of a conventional windshield wiper arm assembly, said blade assembly comprising:
an elongated relatively high durometer polymeric female spline having a cylindrical cbannel therein, a slot communicating with said channel and a pair of elongated oppositely radially outwardly directed flanges thereon lying in a plane containing the central axis of the cylindrical channel and engageable in the claws of the windshield wiper arm assembly, said flanges extending along the length of said female spline; and
a relatively low durometer elastomeric male spline of durometer less than said female spline, said male spline having an upwardly extending neck passing through said slot and terminating in a cylindrical portion complimentary to the channel in said female spline so as to be journaled for rotation therein about said axis and a wiping portion coupled with said neck with a pair of spaced wiping edges engageable, alternately, with a surface to be wiped upon rotation of said cylindrical portion of the male spline relative to said cylindrical channel of the female spline about said axis.

5,572,765
HEATED WIPER BLADE AND BLADE CARRIER EMPLOYING SINGLE HEATING ELEMENT
Ronald R. Guell, P.O. Box 216, Eden, Wis. 53019
Filed Feb. 2, 1996, Ser. No. 617,677
Int. Cl.[6] B60S *1/38*
U.S. Cl. 15—250.06 **1 Claim**



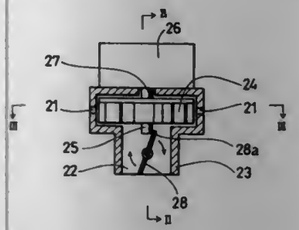
1. A heated wiper blade assembly adapted to be mounted to a wiper arm of a motor vehicle and adapted to be connected to a vehicle electrical system, said assembly comprising:
an elongated, tubular blade carrier which defines first and second hollow ends, said carrier includes clips thereon;
an elongated, wiper blade, said wiper blade comprised of an elongated, flexible blade body having first and second ends, a wiper blade bead and a wiper blade hinge connecting said body and head, said elongated body including a passageway extending entirely therethrough between the first and second ends thereof, said wiper blade head is coupled with and supported by said clips;
a first elongated, insulative sleeve has a first end received into the passageway at the first end of the body and a second end received into the first hollow end of the carrier;
a second elongated, insulative sleeve has a first end received into the passageway at the second end of the body and a second end received into the second hollow end of the carrier;
an elongated, one piece heating element of resistance wire having first and second ends and being of helical form intermediate said ends, said heating element is loosely received in the passageway of said body with said first end thereof extending through the first insulative sleeve into the first end of the carrier and with said second end thereof extending through the second insulative sleeve into the second end of the carrier wherein said heating element heats both the blade body and the elongated carrier, said first end of said heating element is connected with a first lead wire within said first insulative sleeve within said first end of said carrier and said second end of said heating element is connected with a second lead wire within said second insulative sleeve within said second end of said carrier.

5,572,766
IN-DUCT CLEANING APPARATUS
Kenji Matsuura, Moriyama, and Katsumi Toritani, Miki, both of Japan, assignors to Ataka Construction & Engineering Co., Ltd., Osaka, and Kobe Machatronics Co., Ltd., Kobe, both of Japan
Filed Oct. 28, 1992, Ser. No. 967,500
Claims priority, application Japan, Jul. 27, 1992, 4-220684
Int. Cl.[6] A47L *25/00*
U.S. Cl. 15—304 **7 Claims**



1. A system and apparatus for cleaning inside surfaces of a duct, comprising:
a traveling means having a longitudinal axis;
a driving means for driving said traveling means forwardly and backwardly in an interior of the duct to be cleaned;
a rotating duct-cleaning means secured to a forwardly extending rotatable shaft, said duct-cleaning means comprising in combination compressed air ejection throughholes that pass therethrough and brush bristles that extend radially therefrom, said rotating duct-cleaning means being supported at a forward end of said rotatable shaft and rotatable about said longitudinal axis, rotatably fixed to said traveling means and directed in a forward travel direction of said traveling means;
an electric motor means for rotating said rotating duct-cleaning means via said rotatable shaft;
an air compressor for supplying compressed air to said compressed-air ejection throughholes;
a control valve for controlling air flow through said rotating duct-cleaning means;
a remote electronic circuit connected to said electric motor, said control valve and said driving means for controlling said driving means, said electric motor means and said control valve, and
a remote control means for remotely controlling said remote electronic circuit.

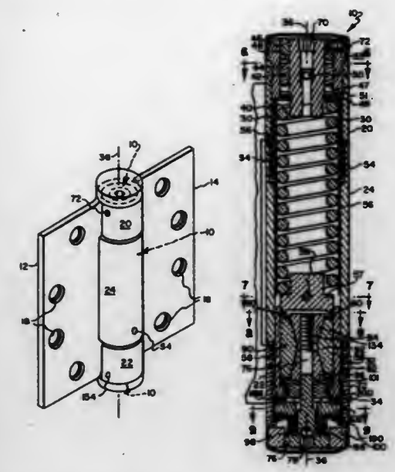
5,572,767
GENERATOR SYSTEM FOR A VACUUM CLEANER
Masahiro Ishikawa, Kyoto, Japan, assignor to Yashima Electric Co., Ltd., Japan
Filed Jul. 25, 1994, Ser. No. 280,122
Claims priority, application Japan, Jul. 26, 1993, 5-183749
Int. Cl.[6] A47L *9/28*
U.S. Cl. 15—319 **16 Claims**



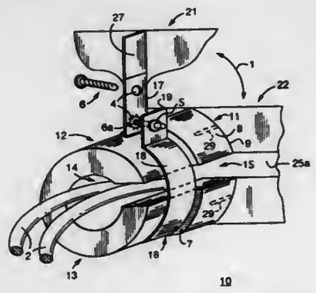
1. A vacuum cleaner comprising:
a suction hose section;
a motor for producing suction in the suction hose section;
a suction pipe defining an air passing path, a first opening at one end of the air passing path, and a second opening at an opposite end of the air passing such that the air passing path commmunicates with the suction hose section through the second opening, whereby suction produced in the suction hose section by the motor pulls air into the air passing path through the first opening, along the air passing path to the second opening, and out of the air passing path into the suction hose section through the second opening;
a rotatable runner provided in the air passing path, the runner being rotated by air flow along the air passing path;
an electric generator coupled to the runner such that the generator generates a voltage in response to rotation of the runner; and
a control valve provided in the air passing path, the control valve being arranged to move to close the air passing path when the suction produced in the suction hose section by the motor increases beyond a predetermined suction, and to move to open the air passing path when the suction produced in the suction hose section by the motor decreases below the predetermined suction.

5,572,768
DOOR CLOSER
Terrance E. Daul, Hamburg, N.Y., assignor to Enidine Incorporated, Orchard Park, N.Y.
Filed Apr. 13, 1994, Ser. No. 226,812
Int. Cl.[6] E05C *17/64;* **E05D** *11/08;* **E05F** *3/16;3/20*
U.S. Cl. 16—49 **32 Claims**

1. In a device for connecting a door to an adjacent structure such that the door pivots about an axis during opening and closing of the same and including spring means operatively connected to said door and to said structure for movement about said pivot axis to store energy during opening of said door and to release energy to provide closing power during closing of the door:
a) rotary friction damper means operatively coupled to said spring means and having an axis of rotation disposed substantially parallel to said pivot axis for controlling the door closing speed;
b) means operatively coupled to said damper means to vary the resistance of said damper means to movement of said spring means to produce a uniform closing speed of said door, said means to vary the resistance of said damper means being responsive to movement of said spring means so that maximum resistance of said damper means to movement of said spring means occurs when maximum closing power is applied by said spring means when said door is fully open and the resistance of said damper means to movement of said spring means is reduced as said door closes, the combination of damper resistance and door closing power producing a back-check function to provide controlled door opening speed and a cushioning effect as the door approaches a fully opened position; and
c) means operatively coupled to said damper means for reducing the resistance of said damper means to movement of said spring means when said door nears the closing position to allow said spring means to close said door in an unrestricted manner.



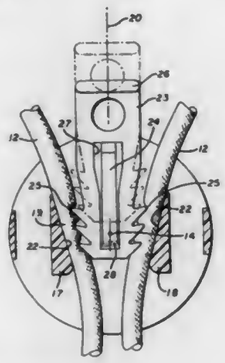
5,572,769
ADJUSTABLE CABLE-SUPPORTING HINGE ASSEMBLY
Lee Spechts, Billerica, and Paul Tirrell, Uxbridge, both of Mass., assignors to EMC Corporation, Hopkington, Mass.
Continuation-in-part of Ser. No. 20,175, Mar. 17, 1994, Pat. No. Des. 362,243. This application Dec. 22, 1994, Ser. No. 361,969
Int. Cl.[6] E05C *17/64;* **E05D** *11/08*
U.S. Cl. 16—337 **17 Claims**

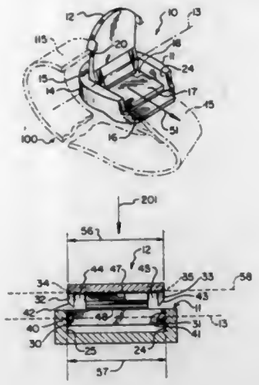


1. An adjustable cable-supporting hinge assembly for a pivotable support member, said adjustable cable supporting hinge assembly comprising:
a hollow cylindrical hub member having a first end, a second end, and a cable-receiving region extending from said first end to said second end, said first end fixably mountable to said pivotable support member, said cable-receiving region for receiving at least one cable extending from a first electronic component to a second electronic component supported by said pivotable support member; and

a clamp member including a mounting portion for mounting said clamp member to a support structure, and a hub member supporting portion having a generally cylindrically shaped hub member receiving region adapted to receive said hollow cylindrical hub member, wherein said hollow cylindrical hub member rotates in said generally cylindrical hub member receiving region.

5,572,770
SELF LOCKING CORD LOCK
Robert O. Boden, 1580 Gaywood Dr., Altadena, Calif. 91001
Filed Aug. 18, 1995, Ser. No. 516,999
Int. Cl.[6] F16G *11/04*
U.S. Cl. 24—136 R **24 Claims**





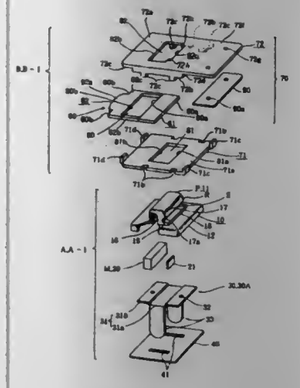
1. A cord lock comprising:
a cage containing a passage through which a cord or cords can extend and which forms a locking restriction;
a slide body received at least partially within said passage and which is movable relative to the cage between a locking position retaining the cord or cords against longitudinal movement in a predetermined direction and a released position permitting such movement;
said cage having a wall containing an opening at a side of said slide body; and
a spring projecting from said slide body into said opening and engaging and bearing against a shoulder on said cage, and which yieldingly urges the slide body toward said locking position relative to the cage, and yieldingly resists movement of the slide body toward said released position.

5,572,771
STRAP BUCKLE
Brian J. Kelleghan, 608 W. 9th Ave., Longmont, Colo. 80501
Filed Nov. 22, 1994, Ser. No. 343,234
Int. Cl.[6] A44B *11/12*
U.S. Cl. 24—170 **5 Claims**

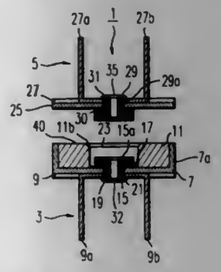
1. A buckle for releasably fastening the end of a flat and relatively wide web, said web having a width, a thickness, a first wide surface, and an second oppositely disposed wide surface that is generally parallel to said first wide surface, said buckle comprising:
a base member having a flexible surface adapted to receive the first surface of the web, said flexible surface defining an end insertion axis,
a pair of inward facing and spaced pivot posts formed as a portion of said base member,
said pivot posts being located on a common pivot axis that extends generally normal to said insertion axis and overhangs said flexible surface by a distance somewhat greater than the thickness of the web, each of said pivot posts having a terminal end,
an upward facing tapered surface formed on said terminal end of each of said pivot posts,
a buckle closing lever pivotally attached to said pivot posts by way of a pair of flexible tabs each having a pivot hole receiving one of said pivot posts,
said flexible tabs each having a downward facing tapered surface that mates with said upward facing tapered surfaces of said pivot posts during attachment of said lever to said base member,
said lever being positioned generally above said flexible surface, said lever being movable between a buckle-closed position and a buckle-open position, and
a relatively wide web engaging surface carried by said lever, said web engaging surface being spaced from said flexible surface when said lever is in said buckle-open-position, and said web engaging surface being located closely adjacent to said flexible surface when said lever is in said buckle-closed position,
movement of said lever from said buckle-open position to said buckle closed position operating to trap the web between said flexible surface and said web engaging surface.

5,572,772
MAGNETIC FASTNER
Tamao Morita, Tokyo, Japan, assignor to Tarmo Co., Ltd., Tokyo, Japan
Filed Dec. 28, 1994, Ser. No. 365,388
Claims priority, application Japan, Dec. 28, 1993, 5-349386
Int. Cl.[6] A44B *21/00*
U.S. Cl. 24—303 **7 Claims**

1. A fastener comprising:
a male member including an upstanding projection having a magnet source;
a female member including a housing member and an engagement member slideably received within the housing member, said engagement member comprising a first portion which is ferromagnetic and a second portion which is non-ferromagnetic or weakly magnetic;
wherein the housing member and the engagement member define openings through which the upstanding projection is removably insertable, and wherein after the projection is inserted into the openings an attraction force between the magnet source and the first portion causes the first portion to slide toward the magnet source until the engagement member is in a locking relationship with the projection;
wherein the second portion inhibits magnetic leakage from said magnet source.

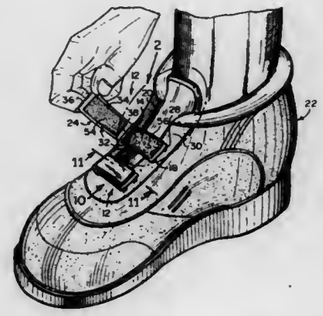


5,572,773
MAGNETIC SNAP LOCK
Irving Bauer, Rte. 4, Box Y23, Mount Kisco, N.Y. 10549
Filed Feb. 15, 1995, Ser. No. 389,189
Int. Cl.[6] A44B *21/00*
U.S. Cl. 24—303 **23 Claims**



1. A magnetic snap lock comprising:
(I) a female member including:
(a) a first plate having a first aperture;
(b) a second plate adjacent to a first side of said first plate and having a second aperture which is concentric to the first aperture of said first plate;
(c) a first rivet which holds said first plate and said second plate together, said first rivet extending through the first and second apertures of said first and second plates; and
(d) a magnetic member mounted on a second side of said first plate which is opposite said first side of said first plate, said magnetic member having a hole which is concentrically aligned with said first and second apertures and surrounds a first end portion of said first rivet; and
(II) a male member including:
(a) a third plate having a third aperture;
(b) a fourth plate adjacent to a first side of said third plate and having a fourth aperture which is concentric to the third aperture of said third plate; and
(c) a second rivet which holds said third plate and said fourth plate together, said second rivet extending through the third and fourth apertures of said third and fourth plates;
wherein:
at least one of said first and second rivets includes a small hole which extends from at least one end surface of said at least one rivet; and
said magnetic member of said female member magnetically attracts and magnetically fastens said male member to said female member by positioning a second end portion of said second rivet within said hole of said magnetic member and adjacent to said first end portion of said first rivet, causing said third plate of said male member to be magnetically fastened to said magnetic member; and
said magnetic member creates a magnetic circuit which passes at least through a periphery of said first rivet of said female member, with said small hole in said one of said first and second rivets increasing the magnetic attraction of said magnetic member by modifying a resistance to said magnetic circuit at said first and second rivets.

5,572,774
SHOE FASTENING ATTACHMENT DEVICE
Russell B. Duren, 3750 SW Masilunas St., Port St. Lucie, Fla. 34953
Filed Nov. 22, 1994, Ser. No. 343,619
Int. Cl.[6] A43B *11/00*; A43C *9/00*
U.S. Cl. 24—306 **1 Claim**



1. A shoe fastening attachment device comprising:
a) a buckle, said buckle including long upper and lower segments and short side segments, said buckle being fabricated out of a strong durable metal material, said long lower segment of said buckle having a longitudinal track slot therein;
b) means for mounting said buckle to a pair of eyelets on a first side flap of a shoe, said buckle mounting means consisting of a pair of spaced apart hooks on said long lower segment of said buckle, whereby said hooks will fit into and engage with the pair of eyelets on the first side flap of the shoe;
c) an elongated flexible strap, said elongated flexible strap being rectangular and fabricated out of a cloth material;
d) means for mounting a first end of said elongated flexible strap to a pair of eyelets on an opposite second side flap of the shoe, said strap mounting means consisting of a pair of spaced apart couplers on the first end, whereby said couplers will fit into and engage with the pair of eyelets on the second side flap of the shoe; and
e) means on an upper face of said elongated flexible strap for releasably securing portions of the upper face together, after a second end of said elongated flexible strap is inserted through said buckle and said elongated flexible strap is looped back upon itself in an overlapping manner, said releasably securing means including mating hook and loop pile fastener material pads affixed in a side by side arrangement on the upper face of an elongated flexible strip, and each said hook on said lower segment of said buckle having a disc-shaped head to ride in said track slot, so that each said hook can swivel and slide in an adjustable manner to make contact with the eyelets in different spaced apart relationships on the first side flap of the shoe.

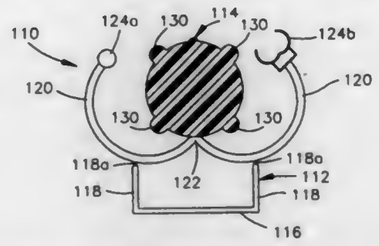
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5,572,775
CLOTHES HANGER CLIP
Steve Mailloux, 3438 Cunard Ct., San Jose, Calif. 95132, and Herb Neumann, 425 Pinehurst Ave., Los Gatos, Calif. 95032
Filed May 16, 1995, Ser. No. 442,271
Int. Cl.[6] A47F *5/00*
U.S. Cl. 24—339 3 Claims



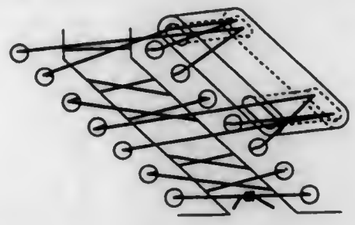
1. A hanger clip comprising:
an elongated main body, the main body being free from any depressions or projections that would impede the clip's progress through a series of hangers
a hanger securing means located at each end of the main body, the securing means including means to allow the clip to be urged over a wire hanger, and means to then secure the clip in position on the hanger; wherein
the hanger securing means each include a pair of gripping hooks, the gripping hooks are adapted to encircle the wire hanger on either side of a throat area of the hanger,
the gripping hooks include an essentially circular enclosing portion with an opening therein,
a terminal end of the enclosing portion includes a tapered inlet clip, the tapered inlet clip guides the hanger toward the opening in the gripping hooks,
the size of the opening being such that hangers of standard thickness must be slightly forced to pass through the opening, the clip being formed from a resilient material so that after the hanger is forced through the opening, the inlet clip rebounds to secure the clip in place on the hanger.

5,572,776
FASTENER EMPLOYING A BI-STABLE MECHANISM
Morgan D. Murphy, and Dale J. Igram, both of Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.
Filed Dec. 12, 1994, Ser. No. 353,744
Int. Cl.[6] F16B *7/00*; F16L *3/00*
U.S. Cl. 24—543 18 Claims



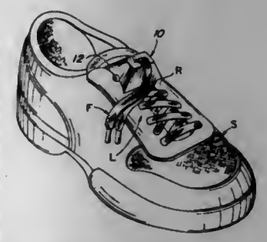
1. A snap-action fastener comprising:
first and second legs spaced apart and having a pair of complementary ends, each of the first and second legs being formed so as to be resilient in bending;
first and second arms flexibly attached to the pair of complementary ends of the first and second legs, respectively, so as to form first and second hinges, respectively, the first and second arms being flexibly attached to each other so as to form a third hinge intermediate the first and second hinges, the length of the first and second arms between the pair of complementary ends of the first and second legs being greater than the distance between the pair of complementary ends such that the third hinge provides a snap-action during operation of the snap-action fastener between a release position and a fastening position; and
a coupling member operatively associated with the first and second arms, the coupling member being configured to secure a first member to a second member when the first member is interconnected with the first and second legs and the snap-action fastener is in the fastening position, the coupling member comprising a plurality of resilient members projecting from a perimeter thereof so as to resiliently engage the first and second arms when the snap-action fastener is in the fastening position.

5,572,777
SHOE LACE TIGHTENING DEVICE
Billy R. Shelton, 5279 Salisbury Dr., Newark, Calif. 94560
Filed Jun. 21, 1994, Ser. No. 263,036
Int. Cl.[6] A43C *1/00*
U.S. Cl. 24—712 18 Claims



1. In combination:
a shoe having a shoelace and two approximately parallel rows of eyelets, and a shoelace tightening device comprising:
a shoe lacer body having a major axis and a minor axis,
a first passage through said shoe lacer body, said first passage being oriented transversely to said major axis of said shoe lacer body, said first passage being of sufficient size to allow said shoelace to be threaded through said first passage,
a second passage through said shoe lacer body, said second passage being spaced apart from and approximately parallel to said first passage, said second passage being of sufficient size to allow said shoelace to be threaded through said second passage wherein said shoe lacer body has a first position and a second position:
wherein in said first position said shoe lacer body is oriented with said major axis approximately parallel to and between said two approximately parallel rows of eyelets, said first passage through said shoe lacer body is positioned proximate the top of said shoe, and said shoelace is threaded through a first eyelet proximate the top of said shoe, through said first passage to a second eyelet proximate the top of said shoe, and said second passage through said shoe lacer body is positioned proximate the toe of said shoe, and said shoelace is threaded through a third eyelet proximate the toe of said shoe, through said second passage to a fourth eyelet proximate the toe of said shoe, said shoelace being relatively slack when said shoe lacer body is in said first position,
and wherein in said second position said shoe lacer body is oriented with said major axis approximately parallel to and between said two approximately parallel rows of eyelets, said first passage through said shoe lacer body is positioned proximate the toe of said shoe, and said shoelace is threaded through said first eyelet proximate the top of said shoe, through said first passage proximate the toe of said shoe to said second eyelet proximate the top of said shoe, and said second passage through said shoe lacer body is positioned proximate the top of said shoe, and said shoelace is threaded through said third eyelet proximate the toe of said shoe, through said second passage proximate the top of said shoe to said fourth eyelet proximate the toe of said shoe, said shoelace being relatively taut when said shoe lacer body is in said second position.

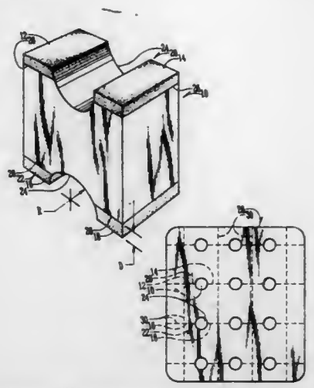
5,572,778
SHOELACE SECURING METHOD
John R. Stenner, deceased, late of Greeley, Colo.; by Richard H. Stenner, heir, and Doreen A. Stenner, heir, both of 2522 56th Ave., Greeley, Colo. 80634
Filed Jul. 14, 1994, Ser. No. 274,818
Int. Cl.[6] A43C *7/00*
U.S. Cl. 24—712.9 12 Claims



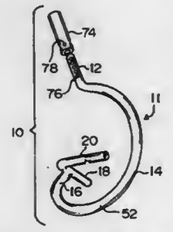
1. A shoelace securing method, comprising the steps of:
(a) threading free end portions of a pair of shoelaces emanating from a tightly laced region on a shoe upwardly through a main passageway formed in a securing device by passing into an open bottom end and out of an open top end of the main passageway of the securing device;
(b) routing said free end portions of said pair of shoelaces from said open top end of said main passageway of said securing device forwardly to and downwardly through an auxiliary passageway formed in a forward edge portion of said securing device; and
(c) tightly wrapping said free end portions of said pair of shoelaces around said pair of shoelaces adjacent to said open bottom end of said main passageway of said securing device between a bottom side of said securing device and said tightly laced region of said shoe.

5,572,779
METHOD OF MAKING AN ELECTRONIC THICK FILM COMPONENT MULTIPLE TERMINAL
Jeffrey T. Adelman; Thomas L. Veik, and Scott D. Zwick, all of Columbus, Nebr., assignors to Dale Electronics, Inc., Columbus, Nebr.
Filed Nov. 9, 1994, Ser. No. 336,538
Int. Cl.[6] H01G *7/00*
U.S. Cl. 29—25.42 13 Claims

2. A method of creating multiple terminals on monolithic chip components comprising the steps of:
constructing a wafer using a thick film printing technique, said wafer comprising a plurality of monolithic electronic components, said components each having at least one terminal end, said components formed proximate each other forming a matrix of parts wherein said terminal ends of at least two adjacent parts are proximate each other;
forming at least one hole in said wafer while said wafer is being printed by printing said components using a printing pattern which causes said hole to be formed in said wafer, said hole being proximate two adjacent components at a point where the terminal ends of the two adjacent components meet, thereby forming a separation on said terminal end of both of said adjacent components; and
separating said wafer into said plurality of monolithic electronic components.



5,572,780
PIN PULLING ASSEMBLY
Louis Haan, 3747 W. Rte. 64, Lot 17, Mt. Lorris, Ill. 61054
Division of Ser. No. 224,789, Apr. 8, 1994, Pat. No. 5,426,839.
This application Nov. 30, 1994, Ser. No. 346,692
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—267 4 Claims

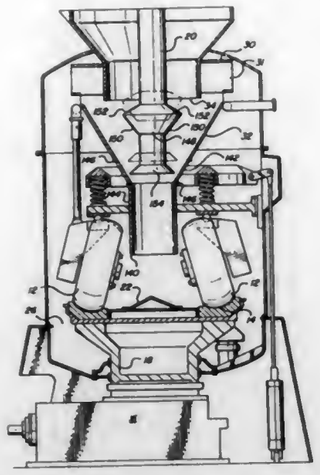


1. A pin pulling assembly comprising at least one active member having an open planar increasing radius spiral configuration having an inner center end and an outer radial end and having open-pin-head engaging means at the center end thereof and including a pin having a bore in a head portion thereof which engages the open-pin-head engaging means on the active member.

5,572,781
COAL PULVERIZER AND METHOD OF IMPROVING FLOW THEREIN
Rickey E. Wark, Longview, Tex., assignor to Sure Alloy Steel Corporation, Madison Heights, Mich.
Continuation-in-part of Ser. No. 135,726, Oct. 13, 1993, Pat. No. 5,386,619. This application Jan. 18, 1995, Ser. No. 374,005
Int. Cl.[6] B23P *17/04*; B02C *15/04*
U.S. Cl. 29—401.1 10 Claims

1. In a coal pulverizer having a classifier system, the system including a coal feedpipe to deliver raw coal to pulverizing structure from an outlet spaced above the pulverizing structure, a classifier cone positioned around the feedpipe to deliver oversize coal to the pulverizing structure from a classifier cone outlet spaced above the pulverizing structure, the pulverizer delivering

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ground coal to an upper end of the classifier cone by an upwardly-directed flow of air traveling around and above the pulverizing structure, the improvement comprising:

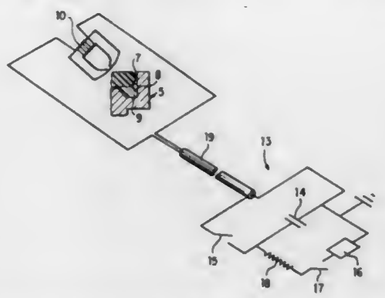
a classifier cone extension extending from the classifier cone outlet into the pulverizing structure to a point where coal flow from the classifier cone extension is not affected by the flow of air up and around the pulverizing structure from the pulverizing throat, the cone extension having a throat, and the feedpipe outlet being positioned within the cone extension above the throat.

5,572,782

FLEXIBLE BELT ASSEMBLY

William G. Herbert, Williamson; Abraham Cherian, and Ernest F. Matyi, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 1, 1993, Ser. No. 159,613
Int. Cl.[6] B23P *11/00;17/00*
U.S. Cl. 29—426.4 **14 Claims**



1. A process for preparing a flexible belt assembly, comprising the steps of:

(1) positioning an edge of a belt-shaped substrate in proximity to a metal filled gasket located within a groove of a support flange,

(2) applying an electromagnetic force to said gasket, thereby softening the metal, and

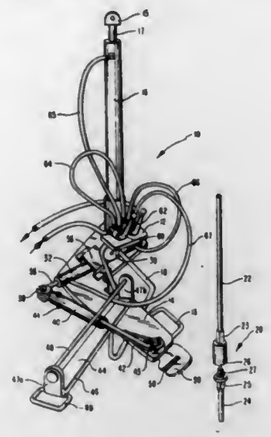
(3) causing the shape of the gasket to conform to the shape of said edge and said groove, thereby attaching said edge to said support flange.

5,572,783

METHOD FOR UTILIZING A ROD COUPLING TOOL FOR COUPLING AND DISASSEMBLING RODS IN A SUCKER ROD STRING

Samuel L. Wacker, Roosevelt, Utah, assignor to GCW Development, Bluebell, Utah

Division of Ser. No. 132,788, Oct. 7, 1993, Pat. No. 5,433,128.
This application May 4, 1995, Ser. No. 433,673
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—426.5 **3 Claims**



1. A method of assembling a coupling tool for turning a threaded joint between a sucker rod and a coupling comprising:

affixing a backup wrench to a base plate at a first regular orientation;

suspending said base plate from a control platform;

mounting said base plate to an inversion loop and inverting said base plate by inverting said inversion loop;

pivotally mounting a hydraulic piston to said base plate at second angular orientatioo relative to said first angular orientation of said backup wrench;

releasably engaging a friction wrench to said hydraulic piston at one end and to the coupling at the other end;

engaging the sucker rod with said backup wrench;

frictionally seizing the coupling with said friction wrench; and

twisting the coupling relative to the sucker rod by activating said hydraulic piston to rotationally move said friction wrench relative to said backup wrench.

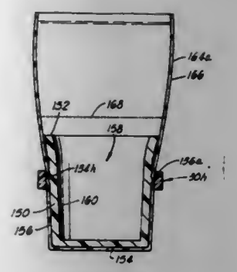
5,572,784

METHOD FOR PROVIDING A DECORATIVE COVER FOR A FLOWER POT USING A COLLAR

Donald E. Weder, Highland, Ill.; Franklin J. Craig, Valley Park, Mo.; William F. Straeter, Breese, and Joseph G. Straeter, Highland, both of Ill., assignors to Southpac Trust International, Inc., and The Family Trust U/T/A, both of Oklahoma City, Okla.

Division of Ser. No. 370,074, Jan. 9, 1995, Pat. No. 5,515,647, which is a division of Ser. No. 43,506, Apr. 6, 1993, Pat. No. 5,414,959, which is a division of Ser. No. 773,474, Oct. 9, 1991, Pat. No. 5,231,794, which is a division of Ser. No. 404,955, Sep. 8, 1989, Pat. No. 5,077,937, which is a continuation-in-part of Ser. No. 365,767, Jun. 13, 1989, abandoned, and Ser. No. 327,996, Mar. 21, 1989, Pat. No. 4,901,423, which is a continuation of Ser. No. 232,541, Aug. 11, 1988, Pat. No. 4,835,834, which is a continuation of Ser. No. 876,405, Jun. 20, 1986, abandoned. This application May 10, 1995, Ser. No. 437,904
Int. Cl.[6] B23P *11/02*
U.S. Cl. 29—451 **3 Claims**

1. A method for providing a decorative cover, the method comprising the steps of:



providing a flower pot having an upper end, an outer peripheral surface and an object opening sized and shaped to accommodate a floral grouping and forming an inner peripheral surface;

positioning the floral grouping in the object opening of the flower pot wherein the floral grouping extends from the upper end of the flower pot;

positioning a sheet of material about the outer peripheral surface of the flower pot such that a portion of the sheet of material extends about the floral grouping and forms a sleeve around the floral grouping for protecting the floral grouping, the portion of the sheet of material forming the sleeve being delineated relative to the other portion of the sheet of material such that the portion of the sheet of material forming the sleeve is selectively detachable from the other portion of the sheet of material; and

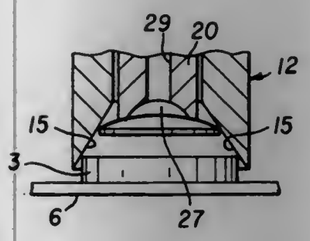
positioning a collar having an outer peripheral surface and an inner peripheral surface and an opening formed through a portion thereof about the outer peripheral surface of the flower pot with a portion of the sheet of material being disposed between the collar and the flower pot whereby the collar secures the sheet of material to the flower pot.

5,572,785

APPARATUS AND METHOD FOR AUTOMATED ASSEMBLY OF PRECISION COMPONENTS

Gary L. Tveit, Churchville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 27, 1994, Ser. No. 281,284
Int. Cl.[6] B23P *11/00;19/04*
U.S. Cl. 29—468 **16 Claims**



15. A method for automatically assembling a precision component to a mount, comprising:

biasing a gripping end of a piston member toward the precision component;

vacuum sealing the gripping end and the precision component;

overcoming said biasing during said vacuum sealing;

centering the precision component on said piston member;

delivering the precision component to the mount;

releasing the vacuum seal; and

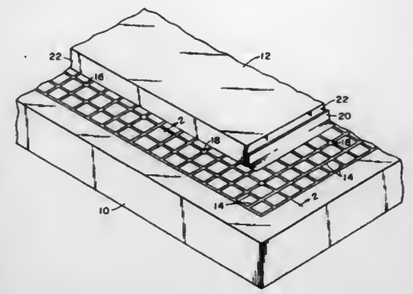
assembling the precision component to the mount.

5,572,786

METHOD FOR HOLDING A WORKPIECE BY VACUUM

Louis A. Rensch, Davenport, Iowa, assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 11, 1995, Ser. No. 526,298
Int. Cl.[6] B25B *11/00*
U.S. Cl. 29—559 **18 Claims**



1. A method for holding a workpiece having an upper surface, a lower surface and a peripheral edge, which method comprises:

(a) providing a bed that is adapted to support the workpiece, said bed having:

(i) a nonplanar supporting surface so that when the workpiece is supported thereby, a plurality of evacuation spaces are formed between the lower surface of the workpiece and the nonplanar surface of the bed; and

(ii) a plurality of vacuum ports that extend through the bed and are in fluid communication with the evacuation spaces so that at least one port communicates with each such space;

(b) adhesively securing a continuous flexible tape to and along the peripheral edge of the workpiece, said tape having a continuous flexible lip portion which curves generally outwardly from the edge of the workpiece;

(c) placing the workpiece with the tape secured thereto on the supporting surface of the bed so as to form a plurality of evacuation spaces between the lower surface of the workpiece and the nonplanar surface of the bed;

(d) blocking or closing vacuum ports in the bed that are located outside the periphery of the workpiece; and

(e) pulling a vacuum through the open vacuum ports and evacuation spaces beneath the workpiece so as to hold the workpiece on the bed, whereby the lip portion of the tape will seat on the surface of the bed so as to form a seal between the tape and the surface of the bed at the periphery of the workpiece.

5,572,787

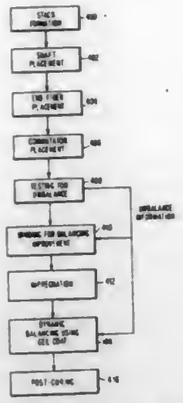
METHODS FOR PRODUCING DYNAMO-ELECTRIC MACHINE ARMATURES WITH IMPROVED BALANCE

Giuseppe Cardini, and Massimo Lombardi, both of Florence, Italy, assignors to Axis USA, Inc., Tampa, Fla.

Filed Aug. 30, 1993, Ser. No. 113,852
Int. Cl.[6] H02K *15/02*
U.S. Cl. 29—598 **12 Claims**

1. A method for producing an armature for a dynamo-electric machine, said armature having a central longitudinal shaft, a substantially cylindrical core mounted substantially concentrically on said shaft, and a plurality of coils of wire wound on said core, said coils of wire being made up of turns of wire which are substantially disposed in planes that are substantially parallel to but radially spaced from the central longitudinal axis of said shaft, said method comprising the steps of:

measuring any initial unbalance of said armature about said central longitudinal axis prior to winding at least some of said coils; and



winding at least one of said coils after performing said measuring step with a number of turns of wire that is selected to unbalance said coils about said central longitudinal axis so that the unbalance of said coils at least partly cancels said initial unbalance, wherein said measuring step comprises the steps of:

measuring the magnitude of said initial unbalance; and

determining the radial direction of said initial unbalance, and

wherein said winding step comprises the step of:

winding a first coil which has turns of wire substantially disposed in a first plane that is radially spaced from said central longitudinal axis in a direction opposite to said radial direction with a greater number of turns of wire than a second coil which has turns of wire substantially disposed in a second plane that is substantially parallel to said first plane but radially spaced from said central longitudinal axis in said radial direction.

5,572,788

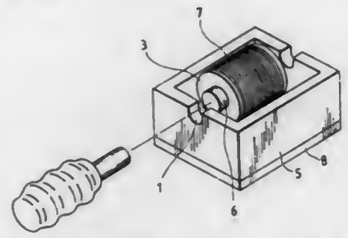
COIL DEVICE

Yutaka Saitoh; Shinichiro Ito, and Yukiharu Kinoshita, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation of Ser. No. 922,693, Jul. 30, 1992, Pat. No. 5,345,209. This application Jun. 1, 1994, Ser. No. 252,368

Int. Cl.[6] H01F *41/06*

U.S. Cl. 29—605 **9 Claims**



1. A method of adjusting inductance of a coil device, said method comprising the steps of:

forming a first access inlet in an outside magnetic substance, said outside magnetic substance forming an endless loop of magnetic circuit;

arranging an inside magnetic substance inside said outside magnetic substance;

winding a coil around a bobbin movably mounted on said inside magnetic substance;

forming a second access inlet in said outside magnetic substance so as to be adjacent said bobbin;

providing at least one gap in a position corresponding to said inlet between said outside magnetic substance and said inside magnetic substance;

measuring the inductance of said coil device;

adjusting the inductance of said coil device by inserting an adjustment tool through said access inlet in order to vary the size of said gap; and

further adjusting the inductance of said coil device by inserting said adjustment tool through said second access inlet in order to adjust the position of said bobbin.

5,572,789

PROCESS FOR FORMING A PROFILED ELEMENT

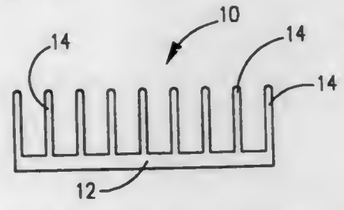
Francis E. Fisher, Shaw; Robin D. Johnson, Bath; David G. Gove, and Michael D. Wade, both of Plympton, all of United Kingdom, assignors to Redpoint Thermalloy, Ltd., Wiltshire, United Kingdom

Filed May 26, 1994, Ser. No. 249,393

Claims priority, application United Kingdom, May 27, 1993, 9310993

Int. Cl.[6] B21C *23/00*

U.S. Cl. 29—890.03 **11 Claims**



1. A process for forming a profiled element from a generally longitudinally extending extruded member having a plurality of transversely spaced longitudinally extending ribs upstanding therefrom, said process comprising the step of removing by transversely punching said ribs longitudinally spaced apart portions from at least some of said ribs.

5,572,790

METHOD OF MAKING A PAINT ROLLER

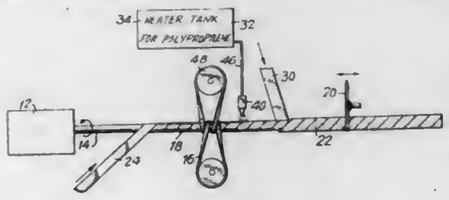
Chandra Sekar, 15 Jill Dr., Comack, N.Y. 11725

Continuation-in-part of Ser. No. 333,416, Nov. 2, 1994, which is a division of Ser. No. 159,856, Nov. 30, 1993, Pat. No. 5,398,409, which is a division of Ser. No. 971,455, Nov. 4, 1992, abandoned, which is a division of Ser. No. 897,579, Jun. 11, 1992, Pat. No. 5,195,242, which is a continuation of Ser. No. 806,809, Dec. 6, 1991, abandoned, which is a continuation of Ser. No. 660,970, Feb. 26, 1991, abandoned, which is a continuation of Ser. No. 512,795, Apr. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 394,073, Aug. 15, 1989, abandoned. This application May 24, 1995, Ser. No. 447,536

The portion of the term of this patent subsequent to Nov. 30, 2013, has been disclaimed.

Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—895.211 **16 Claims**



1. A method of making a paint roller, comprising the steps of:

helically winding a strip of thermoplastic material around a mandril so as to form a helically wound strip;

advancing the wound strip along the mandril;

applying a layer of adhesive onto an outer surface of the wound strip; and

helically wrapping a strip of cover material about the wound strip and over the layer of adhesive, thereby bonding the strip of cover material to the wound strip for forming the paint roller.

5,572,791

METHOD FOR POSITIONING A PICKUP ON AN ELECTRIC GUITAR

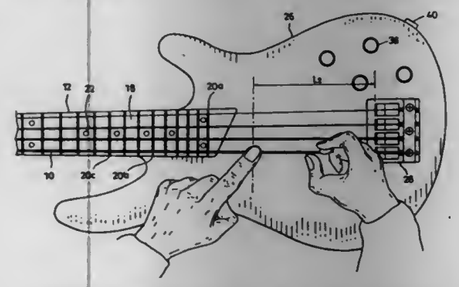
Kazushige Kojima, Nobakaneichi 703, 6-26, Yorikicho, Kitaku, Osaka, Japan

Division of Ser. No. 533, Jan. 4, 1993, abandoned, which is a continuation of Ser. No. 807,945, Dec. 10, 1991, abandoned, which is a continuation of Ser. No. 467,101, Jan. 18, 1990, abandoned. This application Apr. 20, 1994, Ser. No. 231,351

Claims priority, application Japan, Jan. 23, 1989, 1-14659

Int. Cl.[6] B29D *17/00*

U.S. Cl. 29—896.22 **4 Claims**



1. A method of positioning a pickup on an electric guitar having an elongated neck terminating in a head for accepting and winding up one end of at least one string, a body joined to said neck; a bridge fixed upon said body for securing another end of said at least one string in position to draw the string along and over a fingerboard with semitone frets installed on said neck; and said string being tuned to a predetermined note in an open state; said method comprising the step of:

locating the positions of phantom semitone frets by:

inhibiting vibration of said at least one string at a first position between the elongated neck and said bridge;

playing said at least one string at a second position between said first position and said bridge to emit an audible tone;

determining whether said audible tone corresponds to a predetermined phantom fret; and

varying said first position until said audible tone corresponds to said predetermined phantom fret; and

mounting said pickup on said body under said at least one string at said first position corresponding to said predetermined phantom fret.

3. A method for positioning an electric guitar pickup on an electric guitar having a body, a neck extending from said body and terminating in a head, said neck having a series of 1st through nth semitone frets, a bridge mounted on said body, and tuned strings installed between said head and bridge, said method comprising the steps of:

inhibiting vibration of one of said strings at a position between the nth semitone fret and the bridge;

playing said one string to induce vibration between said position and said bridge and thereby emit an audible tone;

varying said position while playing said one of said strings between said position and said bridge until said audible tone corresponds to a predetermined conventional semitone sound relationship to a sound resulting when playing said one of said strings as an open string; and

installing a pickup on said body beneath said position on said string.

5,572,792

BARBECUE UTENSIL SET

Thomas Garabedian, 4728 Robinhood Trail, Sarasota, Fla. 34232

Filed Jun. 13, 1994, Ser. No. 259,017

Int. Cl.[6] B25F *1/00*

U.S. Cl. 30—142 **2 Claims**



1. In combination a set of novelty barbecue utensils and a carryall therefor comprising:

a spatula, a brush and a fork each having an instrumental portion, a shank and a handle, each said shank and handle configured as a miniature golf club shank and grip, respectively;

a miniature golf club bag sized to enclose and carry said spatula, said brush and said fork with each said instrumental portion extending above an open upper end of said golf club bag;

a removable upper end enclosure connectable to said open upper end for preventing inadvertent removal of said utensils from said miniature golf club bag.

5,572,793

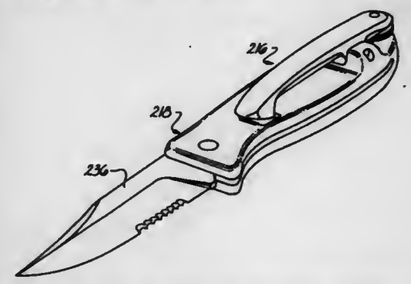
LOCKING KNIFE AND SHEATH

Walter W. Collins, P.O. Box 100, North, S.C. 29112, and Spencer Frazier, P.O. Box 1024, Edmonds, Wash. 98020

Continuation-in-part of Ser. No. 7,609, Jan. 22, 1993, Pat. No. 5,297,341. This application Mar. 29, 1994, Ser. No. 219,508

Int. Cl.[6] B26B *1/02*

U.S. Cl. 30—157 **18 Claims**



1. A clamping device for selectively attaching an elongated knife handle of a knife to an article, comprising:

an elongated clamping lever having a first end and a second end opposite said first end;

a receiver fixedly attached to the elongated knife handle, said clamping lever being pivotally connected to said receiver adjacent said first end of said clamping lever such that said clamping lever is carried for pivotal movement with respect to said receiver and to said knife handle;

said first end of said clamping lever defining a threaded bore therein;

an adjustment member having an elongated threaded portion and an enlarged purchase portion, said enlarged purchase portion having first and second opposing sides and being connected to said elongated threaded portion;

said elongated threaded portion being carried in and threadingly engaging said threaded bore of said clamping lever such that said enlarged purchase portion is positioned between said first end of said clamping lever and the knife handle;

said clamping lever being pivotal between an engagement position, for clamping the knife to the article, and a release position, for allowing removal of the knife from the article: and

said enlarged purchase portion being rotatable to a handle contact position for moving said clamping lever to said engagement position, wherein said enlarged purchase portion bears against the elongated knife handle, and to a handle clearance position for moving said clamping lever to said release position, wherein said enlarged purchase portion clears the elongated knife handle.

14. A folding knife, comprising:

an elongated knife handle having a first end and a second end opposite said first end, and a first side and a second side opposite said first side; said knife handle defining a blade receiving chamber therein;

at least one blade pivotally attached to said handle and movable between an extended position extending outwardly from said blade receiving chamber and a retracted position wherein said at least one blade is substantially within said blade receiving chamber;

an elongated clamping lever having a first end and a second end opposite said first end;

a receiver fixedly attached to said first side of said handle; said clamping lever being pivotally connected to said receiver adjacent said first end of said clamping lever such that said clamping lever is carried for pivotal movement with respect to said receiver and to said handle;

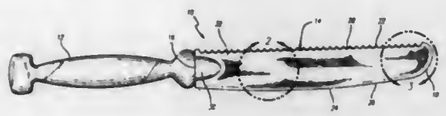
said first end of said clamping lever defining a threaded bore therein;

an adjustment member having an elongated threaded portion and an enlarged purchase portion, said enlarged purchase portion having first and second opposing sides and being connected to said elongated threaded portion; said elongated threaded portion being carried in and threadingly engaging said threaded bore of said clamping lever such that said enlarged purchase portion is positioned between said first end of said clamping lever and said first end of said handle;

said clamping lever being pivotable between an engagement position, for clamping the knife to an article, and a release position, for allowing removal of the knife from the article; and

said enlarged purchase portion being rotatable to a handle contact position for moving said clamping lever to said engagement position, wherein said enlarged purchase portion bears against said first side of said handle, and to a handle clearance position for moving said clamping lever to said release position, wherein said enlarged purchase portion clears said first side of said handle.

5,572,794
DOUBLE-EDGED KNIFE
Cindy Kalbern, 2452 Centinela, #1, Los Angeles, Calif. 90064
Filed Sep. 20, 1995, Ser. No. 530,567
Int. Cl.[6] B26B *9/02*
U.S. Cl. 30—353 **10 Claims**



1. A knife, comprising:

a handle;

a blade body associated with the handle defining a left face and a right face and including a first longitudinal end substantially adjacent to the handle, a second longitudinal free end, a first edge defining a length extending substantially from the first longitudinal end to the second longitudinal free end, and a second edge defining a length extending substantially from the first longitudinal end to the second longitudinal end and a second surface mid-point;

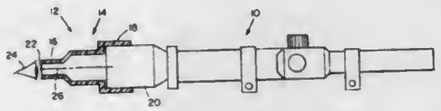
a first cutting surface associated with the first edge and extending along substantially the entire length of the first edge;

a second cutting surface associated with the second edge and extending from approximately the second longitudinal free end to a predetermined point located substantially between the second surface mid-point and the second longitudinal free end;

a substantially smooth surface associated with the second edge and extending from the predetermined point to the first longitudinal end; and

a finger depression located on at least one of the left face and right face of the blade body and substantially adjacent to the first longitudinal end.

5,572,795
MAGNIFICATION DEVICE LENS ASSEMBLY
Daniel J. Kregloh, 78 Parklawn Rd., West Roxbury, Mass. 02132
Filed Jul. 21, 1994, Ser. No. 278,177
Int. Cl.[6] G03B *13/02*; **G02B** *25/00*
U.S. Cl. 33—244 **29 Claims**

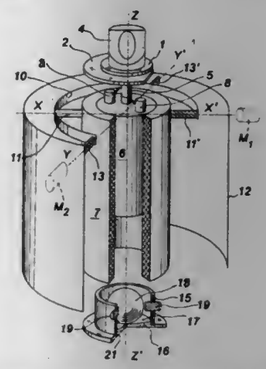


1. A telescope eyepiece assembly having a fire end for affixing to a telescope eyepiece and a second end through which a user views for sharpening the focus of the field of view of a telescope to provide greater accuracy, comprising:

a base portion having first and second apertured ends; said first end being interconnected with a telescope eyepiece; and

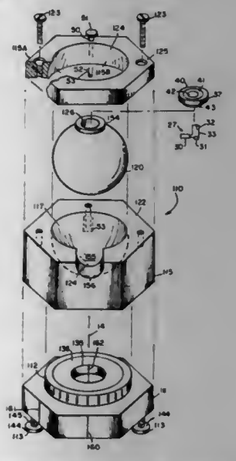
an extension portion extending outwardly from the second end of said base portion and having first and second apertured ends; the first end of said extension portion being interconnected with the second end of said base portion and the second end of said extension portion having an aperture located at the second end of the telescope eyepiece assembly for positioning proximate the user's eye with a diameter smaller than the diameter of said base portion and smaller than the diameter of the telescope eyepiece for sharpening the focus of the field of view of the telescope.

5,572,796
LASER BEAM PENDULAR LEVEL
Charles Breda, 5, rue de la Tour, 31150 Bruguleres, France
Filed Feb. 23, 1995, Ser. No. 393,288
Int. Cl.[6] G01C *5/02*; *15/02*
U.S. Cl. 33—283 **9 Claims**



1. A laser beam level comprising a support structure and a laser beam emitting assembly, said laser beam emitting assembly comprising laser beam emitting means adapted to emit a laser beam in a Z-axis, said assembly being mounted on said support structure so as to be pivotable in an X plane and a Y plane said base including a concave depression having an electrically conductive surface, a spherical member having an electrically conductive surface free to move within said concave depression and at least one electrical contact member mounted such that when said base is tilted with respect to a horizontal plane, said spherical member will contact said electrical contact to complete an electric circuit between said base and said electrical contact member.

5,572,797
IMPROVED OPTICAL PLUMB AND LEVELING APPARATUS
George Chase, P.O. Box 460, Rumney, N.H. 03266
Filed Sep. 23, 1994, Ser. No. 311,214
Int. Cl.[6] G01C *15/00*
U.S. Cl. 33—286 **27 Claims**



1. An optical plumb apparatus for use with a leveling device comprising:

A. a rotatable body having a circular cross section about a center point and including a recessed compartment formed in said rotatable body,

B. a socket unit including a cavity corresponding in form to a portion of said rotatable body whereby said rotatable body is adapted to rotate relative to said socket unit about the center point,

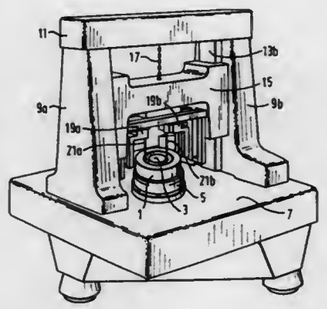
C. laser means located in said recessed compartment for projecting a laser beam along a laser projection axis that lies on a radius from the center point,

D. said rotatable body comprises means for receiving the leveling device whereby the leveling device indicates when said rotatable body is oriented with the laser projection axis in a predetermined direction; and

E. a base unit for supporting said socket unit, said base unit having means for adjusting the level thereof and a reference shelf thereon for receiving the leveling device;

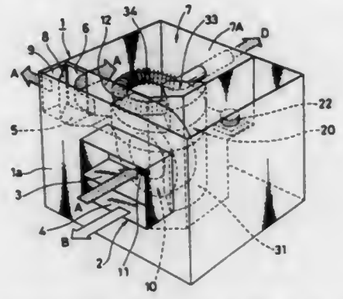
F. said base unit and said socket unit include complementary bearing means for enabling said socket unit to rotate about an axis of rotation that is vertical when said base unit is level.

5,572,798
METROLOGICAL APPARATUS
Anthony Barnaby, Markfield, Great Britain, assignor to Rank Taylor Hobson Limited, England
Filed Jul. 8, 1995, Ser. No. 256,324
Claims priority, application United Kingdom, Jan. 8, 1992, 9200280
Int. Cl.[6] G01B *5/00*
U.S. Cl. 33—549 **40 Claims**



1. Metrological apparatus comprising first and second bearing members extending substantially parallel to each other with a space between them, an arm extending between the bearing members and bearing on both of them for movement in the space between the bearing members, a stylus carried on the arm for contacting a workpiece, and bearings through which the arm bears on the bearing members, the bearing through which the arm bears on one of the bearing members tending to move the arm, to an extent dependent on the clearance between the arm and the bearing member, in a first direction parallel to the direction from one of the first and second bearing members to the other of the first and second bearing members, and the bearing through which the arm bears on the other bearing member tending to move the arm, to an extent dependent on the clearance between the arm and the bearing member, in a second direction, opposed to the first, so that the bearings determine the position of the arm taking into account its clearance from each bearing member.

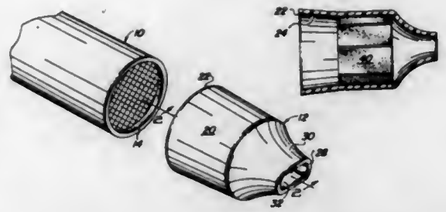
5,572,799
VENTILATOR/DRYER ASSEMBLY FOR ADSORBING WET AIR IN A ROOM
Hashimoto Masuyuki, Nitta-gun; Nakayama Toshio, Yamada-gun; Namatame Tatuo, Ashikaga, and Kunio Kayama, Ohta, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed May 23, 1995, Ser. No. 447,675
Claims priority, application Japan, Jul. 22, 1994, 6-171417; Nov. 25, 1994, 6-291263
Int. Cl.[6] F26B *21/06*
U.S. Cl. 34—80 8 Claims



1. A ventilator/dryer assembly for drying wet air in a room comprising:
a forced circulation mechanism housed in a case main body provided with an air inlet port and an air outlet port that communicates with the interior of the room;
a treatment chamber in said main body divided into a primary side section and a secondary side section;
a rotary drying device disposed between said primary and secondary side sections, the forced circulation mechanism comprising a single blower for drawing air from said air inlet port to the primary side section of the treatment chamber, passing it through the rotary drying device and sending it back into the room through the secondary side section of the treatment chamber and the air outlet port;
the rotary drying device having a drying position, a regenerating position and a heat recovering position sequentially in the sense of rotation, the rotary drying device adsorbing moisture from the air passing therethrough from the primary side section of said treatment chamber in the drying position, hot air being made to pass through the rotary drying device in the regenerating position to remove moisture adsorbed by the device in said drying position, cooled air being made to pass through the heated device in the heat recovering position to cool the device heated in said regenerating position, wherein said inlet port is disposed above said air outlet port and a guide path is provided in said case main body to guide air drawn from the room through the air inlet port to the primary side section of the treatment chamber and a damper is provided downstream to the guide path to discharge wet air directly out of said case main body without passing it through said treatment chamber.

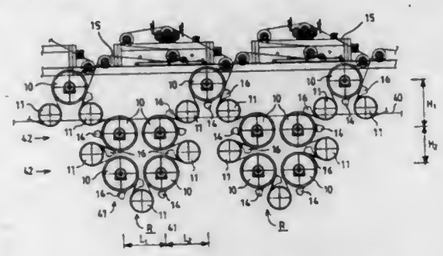
5,572,800
AIR FRESHENER DISPENSING ATTACHMENT FOR HAIR DRYERS
Charles D. West, Phoenix, Ariz., assignor to Christie Ann Deloach, Phoenix, Ariz.
Filed Aug. 21, 1995, Ser. No. 517,546
Int. Cl.[6] F26B *21/06*
U.S. Cl. 34—97 13 Claims

1. An air freshening dispenser for attachment to a hair dryer of the type having a barrel terminating at an air flow discharge, said dispenser comprising:



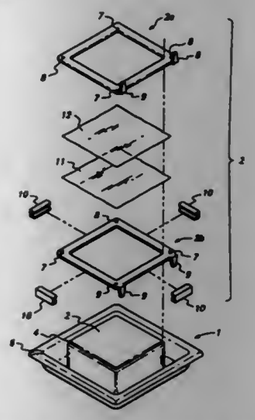
(a) a housing having an inlet and an outlet with an air passage therebetween;
(b) said inlet having means to detachably secure said housing at the discharge of said hair dryer barrel; and
(c) fragrance element means insertable in said passage, said fragrance element means including a vaporizable material which will release a fragrance into an airstream passing from the inlet to the outlet through said air passage.

5,572,801
DRYER SECTION FOR A PAPER MACHINE
Matti Ahokas, Jyskä, and Risto Lehosvuo, Säynätsalo, both of Finland, assignors to Valmet Corporation, Helsinki, Finland
Filed Jun. 1, 1995, Ser. No. 457,878
Claims priority, application Finland, Jun. 14, 1994, 942811
Int. Cl.[6] F26B *5/04*
U.S. Cl. 34—117 17 Claims



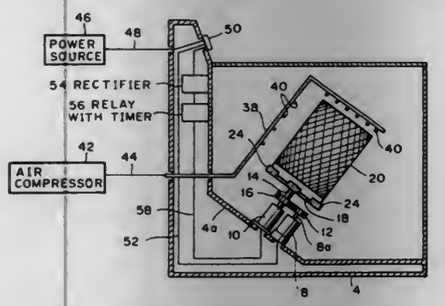
17. A dryer section for a paper machine, comprising
a plurality of dryer groups with single-wire draw, each of said single-wire draw groups including drying cylinders, reversing cylinders arranged in gaps between adjacent ones of said drying cylinders, and a drying wire for carrying a web into direct contact with outer surfaces of said drying cylinders and such that the drying wire is situated between the web and outer surfaces of said reversing cylinders,
at least one of said single-wire draw groups comprising
four drying cylinders, first and second ones of said four cylinders being arranged in a first horizontal level and third and fourth ones of said four cylinders being arranged in a second horizontal level above said first horizontal level such that the axes of said first and said third cylinders are situated in a first common substantially vertical column and the axes of said second and said fourth cylinders are situated in a second common substantially vertical column, and
at least one additional drying cylinder arranged at a horizontal level above said second horizontal level, and a tending platform, said four drying cylinders being arranged below said tending platform, said at least one additional drying cylinder being arranged substantially at the level of said tending platform, a portion of said reversing cylinders being arranged above said tending platform, said portion of said reversing cylinders arranged above said tending platform having a larger diameter than said reversing cylinders arranged at the level of said tending platform and below said tending platform.

5,572,802
APPARATUS FOR DRYING ELECTROPHORESIS GELS
William F. Alpenfels, Del Mar; Sheldon Engelhorn, Encinitas, and David J. Manis, Del Mar, all of Calif., assignors to Novel Experimental Technology, San Diego, Calif.
Continuation of Ser. No. 93,105, Jul. 16, 1993, Pat. No. 5,440,822. This application Aug. 4, 1995, Ser. No. 511,183
Int. Cl.[6] F26B *11/18;11/22*
U.S. Cl. 34—192 7 Claims



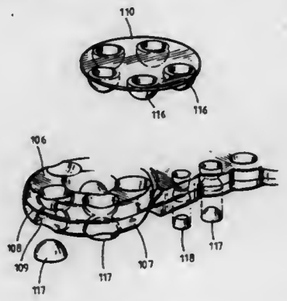
5. An apparatus for drying electrophoresis gels comprising a drying frame assembly and a base unit;
wherein said drying frame assembly is adapted to secure two porous gel support sheets in substantially parallel relation;
wherein said base unit comprises an elevated surface surrounded by a trough;
wherein said elevated surface is adapted to support said drying frame assembly horizontal during preparation of said drying frame assembly; and
wherein said trough is adapted to catch run-off liquid from said drying frame assembly.

5,572,803
DRYING DEVICE FOR WORKED METAL PARTS
Yasuo Moriya, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Apr. 20, 1995, Ser. No. 425,925
Claims priority, application Japan, Aug. 3, 1994, 6-182019
Int. Cl.[6] F26B *11/02*
U.S. Cl. 34—595 6 Claims



1. A drying device for worked metal parts, comprising:
a turntable rotatably mounted;
a cage detachably mounted on said turntable, for containing said worked metal parts;
driving means for rotating said turntable;
magnets fixed to said turntable; and
air nozzle means for blowing air toward said cage.

5,572,804
SHOE SOLE COMPONENT AND SHOE SOLE COMPONENT CONSTRUCTION METHOD
Joseph J. Skaja, San Antonio, Tex., and Martyn R. Shorten, Portland, Oreg., assignors to Retama Technology Corp., San Antonio, Tex.
Continuation-in-part of Ser. No. 766,736, Sep. 26, 1991, abandoned. This application May 3, 1993, Ser. No. 56,829
Int. Cl.[6] A43B *13/20*
U.S. Cl. 36—29 39 Claims



33. A shoe sole structure comprising:
(a) a flexible top sheet having a plurality of indentations therein;
a flexible bottom sheet having a plurality of indentations therein, the indentations in the bottom sheet abutting the indentations in the top sheet;
(c) a plurality of the indentations in one of the sheets having a hemispherical shape;
(d) a plurality of hemispherical shaped inserts insertable into the hemispberical shaped indentations and conforming to the surface of the indentations; and
(e) a web-like structure linking the inserts to each other.

5,572,805
MULTI-DENSITY SHOE SOLE
Erik O. Giese, and Roger J. Brown, both of Aspen, Colo., assignors to Comfort Products, Inc., Aspen, Colo.
Continuation-in-part of Ser. No. 55,935, Apr. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 649,525, Feb. 1, 1991, abandoned, which is a continuation of Ser. No. 871,017, Jun. 4, 1986, Pat. No. 5,025,573. This application Nov. 1, 1994, Ser. No. 333,585
The portion of the term of this patent subsequent to Jun. 25, 2008, has been disclaimed.
Int. Cl.[6] A43B *13/12;13/14*
U.S. Cl. 36—30 R 40 Claims



1. A composite shoe bottom having a toe area, arch area and heel area comprising:
a) a lower shaped layer of a material having a predetermined hardness and having a cross-sectional thickness which is increased around the periphery of the heel area and in the medial portion of the arch area to form a raised heel periphery and raised arch support and an irregular contoured upper stabilizing surface for the wearer's foot; and

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b) an upper cushioning layer of a material which is softer than the material of the lower layer and is superposed in face-to-face relation upon the upper surface of the lower layer, said upper layer having a varying thickness which is pre-shaped to a three-dimensional contour having an uppermost surface which is complementary to the bottom surface of the wearer's foot and an increased height around the periphery of the heel area and in the arch area, with the three dimensional contour in the arch area having a side-to-side height profile that varies along an arcuate path from a relatively lower point on the lateral portion of the layer to a relatively higher point on the medial portion of the layer to form a raised arch support, thereby providing an irregular contoured upper stabilizing surface for the wearer's foot;

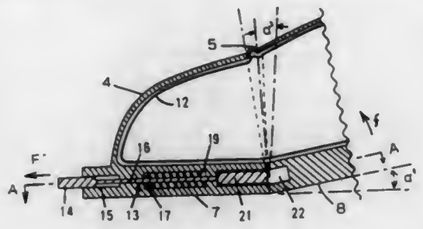
wherein the increased thickness of the lower layer in the heel area is positioned directly beneath the upper layer, the increased thickness of the raised arch support of the lower layer is positioned directly beneath the arch support of the upper layer, and the material of the upper and lower layers can flex, move and distort under the weight of the wearer without permanent deformation.

5,572,806

FLEXIBLE SKI BOOTS HAVING A PIVOTAL TOE PORTION

Kazuo Osawa, No. 3-4, 3-Chome, Tokyo 181, Japan

Filed Jan. 10, 1995, Ser. No. 370,622
Claims priority, application Japan, Dec. 3, 1994, 6-332794
Int. Cl.[6] A43B *5/04;13/14;13/00*
U.S. Cl. 36—117.4 **21 Claims**



1. A flexible alpine ski boot comprising:

a divided rigid thick sole and a hard flexible boot body, the divided rigid thick sole comprising a toe sole portion and a heel sole portion which is connected flexibly with a flexible connecting means therebetween;

the heel sole portion having disposed inwardly therein a receiving hole;

the toe sole portion having disposed inwardly therein a locking means for releasably connecting the toe sole portion with the receiving hole in the heel sole portion to provide a substantially rigid and continuous sole against stress added on the divided rigid thick sole during operation of the locking means;

the locking means having a spring means for urging a locking piece into the receiving hole;

the hard flexible boot body comprising a hard toe body portion, a soft elastic portion and a hard heel body portion joined with the divided rigid thick sole; and

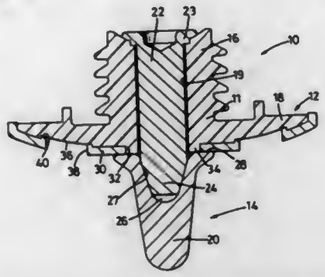
the ski boot being inwardly covered with a soft material to prevent invasion of foreign substances.

5,572,807

COMPOSITE, WEAR-RESISTANT STUD FOR SPORT SHOES

Paul A. Kelly, Atherstone, and William H. Parry, Groby, both of Great Britain, assignors to Trisport Limited, Tamworth, England

Continuation of Ser. No. 360,719, Dec. 9, 1994, abandoned.
This application Nov. 29, 1995, Ser. No. 563,869
Claims priority, application United Kingdom, Jun. 10, 1992, 9212274; WIPO, Dec. 23, 1992, PCT/GB92/02391
Int. Cl.[6] A43B *5/00*
U.S. Cl. 36—127 **14 Claims**



1. A stud for an article of footwear comprising stud-mounting means enabling the stud to be secured in the underside of the article, a ground-engaging nose which projects from said stud-mounting means, and a wear-resistant lamina which is held secured to overlie undersurfaces of said stud-mounting means and shield them from engagement with the ground,

said stud-mounting means comprising a first portion forming an externally screw-threaded spigot and a molded plastics second portion forming a broad flange which extends about said spigot and is arranged to engage undersurfaces of the article when said spigot is secured in the underside of the article, and

said wear-resistant lamina overlying undersurfaces of said plastics flange to shield them from the ground and being interlocked with said stud-mounting means to enable torque to be transmitted from said lamina to said stud-mounting means in securing the stud in an article of footwear,

the ground-engaging nose being of a hard wear-resistant material and being secured to said stud-mounting means by means of a metal stump which projects from the stud-mounting means, the nose being recessed to fit over the stump.

5,572,808

ORTHOPEDIC SHOE INSERT FOR CORRECTION OF THE ADDUCTION OF THE LARGE TOE

Josef Birke, Pirmasens/Pfalz, Germany, assignor to Solor Schuhforschung und Entwicklung-GmbH, Primasens/Pfalz, Germany

Filed May 28, 1992, Ser. No. 890,612
Claims priority, application Germany, May 31, 1991, 9106735 U
Int. Cl.[6] A61F *5/14;* **A43B** *13/38;23/00*
U.S. Cl. 36—140 **8 Claims**

1. An orthopedic shoe insert of plastic material for correcting the adduction of a large toe of a foot, comprising:

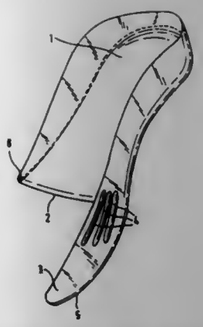
a generally horizontal rear foot shell having a front edge lying approximately beneath a ball of the large toe, the ball having a tread;

a rear edge and first and second side edges of the rear foot shell being integral with the bottom of a first portion of an approximately vertical wall;

a second portion of the wall being integral with the first portion and extending forward beyond the front edge;

the second portion being an approximately vertically standing thermoplastic material corrective lobe laterally supporting the large toe, wherein said corrective lobe is molded on a side of said rear foot shell for enabling lateral motion of the large toe, wherein the corrective lobe is inclined slightly; and

said corrective lobe having a slightly curved concave inside surface and a lower edge convexly curved for enabling the unimpeded rolling motion of the foot during walking.

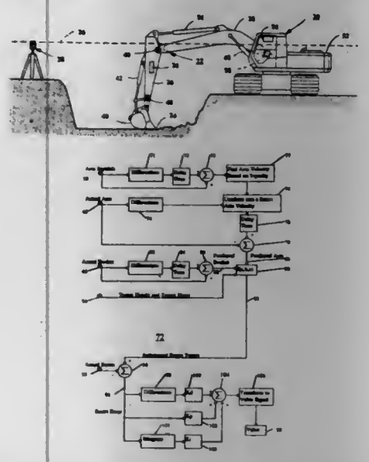


5,572,809

CONTROL FOR HYDRAULICALLY OPERATED CONSTRUCTION MACHINE HAVING MULTIPLE TANDEM ARTICULATED MEMBERS

Timothy E. Steenwyk, and Eric J. Walstra, both of Grand Rapids, Mich., assignors to Laser Alignment, Inc., Grand Rapids, Mich.

Filed Mar. 30, 1995, Ser. No. 414,991
Int. Cl.[6] G06G *7/64;* **G05D** *1/04;* **E02F** *3/43;9/20*
U.S. Cl. 37—348 **37 Claims**



4. A method of controlling a hydraulically operated construction machine, having a plurality of tandem articulated members, in a manner which moves said members in a predetermined pattern, wherein movement of a first one of said members is controlled in response to movement of a second one of said members, including:

determining anticipated future movement of said second member; and

controlling said first member as a function at least of said anticipated future movement of said second member;

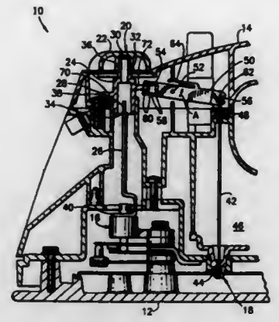
wherein said anticipated future movement of said second member is a function at least of present position and velocity of said second member and system delay in movement of said second member.

5,572,810

STEAM IRON WITH ROTATABLE TEMPERATURE CONTROL

Richard I. Farrington, Seymour, Conn., assignor to Black & Decker Inc., Newark, Del.

Filed Aug. 9, 1995, Ser. No. 512,852
Int. Cl.[6] D06F *75/26*
U.S. Cl. 38—77.7 **13 Claims**



1. In a steam iron having a steam valve and a rotatable temperature control operably connected to a thermostat, the improvement comprising:

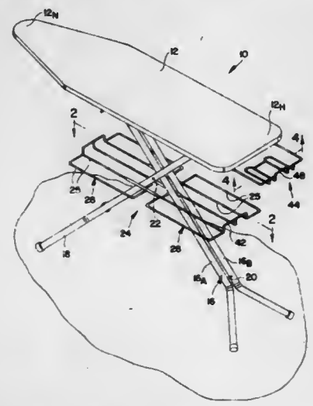
the rotatable temperature control having a cam member with an outwardly extending flange, at least a portion of the flange forming a worm thread section, the flange being operably connected to the steam valve by a pivotable rocker, the rocker having a channel with the flange located therein.

5,572,811

IRONING BOARD WITH TELESCOPING STORAGE RACKS

David Lehrman, 207 Barclay Cir., Cheltenham, Pa. 19012

Filed Jan. 6, 1995, Ser. No. 369,836
Int. Cl.[6] D06F *81/02*
U.S. Cl. 38—106 **21 Claims**



1. A collapsible ironing board comprising:

an ironing table with a nose portion and a heel portion;

a forward support leg connected to said ironing table structure and extending in a rearward direction;

an aft support leg connected to said ironing table aft of said forward support leg and extending in a forward direction;

said forward and aft support legs being attached to one another at a prescribed location along their respective lengths;

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said ironing board furthermore being foldable between an open position and a retracted position wherein said forward and aft support legs are folded against said ironing table in the retracted position;

a first rack portion pivotally mounted to said forward support leg and having at least one telescopic member;

a second rack portion pivotally mounted to said aft support leg and having at least one complimentary telescopic member which mates with said telescopic member on said first rack portion; and

wherein said telescopic member and complimentary telescopic member are telescopically engaged with one another such that the rack portions are restrained into motion substantially in one plane.

5,572,812

NUMBER PLATE INCLUDING LUMINOUS CHARACTERS

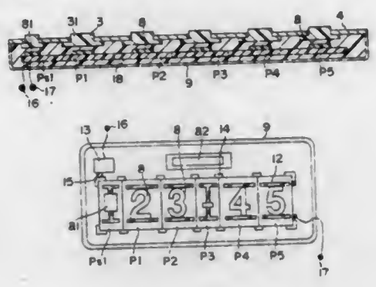
Masaaki Mastuoka, Tokyo, Japan, assignor to World Auto Plate Ltd., Tokyo, Japan

Filed Jun. 20, 1994, Ser. No. 262,221

Claims priority, application Japan, Jun. 25, 1993, 5-039279 U; Aug. 23, 1993, 5-050129 U

Int. Cl.[6] G09F *13/02*

U.S. Cl. 40—204 **6 Claims**



1. A number plate including luminous characters, comprising:

a front plate having a plurality of character portions punched therefrom for serving as a number plate.

a plurality of characters each molded of an at least light transmissive synthetic resin, said characters being adhesively fitted into said character portions,

a plurality of light emitting diode assemblies arranged on a rear surface side of said front plate at positions located corresponding to said character portions,

a cover secured to the rear surface of said front plate and having said light emitting diode assemblies accommodated in an interior of said cover, and

a transparent synthetic resin filled in the interior of said cover so as to allow said light emitting diode assemblies to be embedded in said transparent synthetic resin.

5,572,813

TAG TO BE ATTACHED ONTO A FISHING ROD

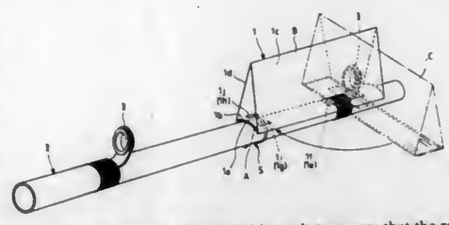
Teiji Matsubara, Chiba, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Filed Jun. 14, 1994, Ser. No. 261,121

Claims priority, application Japan, Jun. 25, 1993, 5-039718 U

Int. Cl.[6] G06F *3/10*

U.S. Cl. 40—299 **17 Claims**



1. A combination of a fishing rod and a tag to be mounted on said fishing rod, wherein the tag defines a rod receiving surface having given length and width; and includes mounting means for mounting the tag onto the fishing rod in such a manner that the rod receiving surface is kept in contact with a curved outer surface of the fishing rod:

wherein said tag includes a bottom part for defining the rod receiving surface, said bottom part being formed with an elongated hole having a length larger than a maximum lateral length of an eyelet provided on the fishing rod and a width smaller than the maximum lateral length of the eyelet.

5,572,814

HAND-HELD MICROFILM READERS

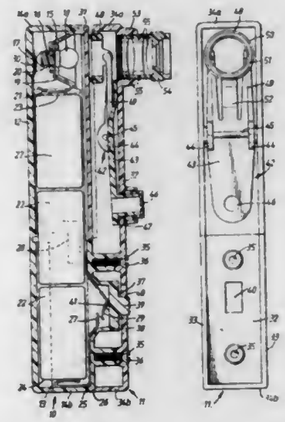
Frank Boram, 17 Kivernell Road, Milford on Sea, Lymington, Hampshire SO41 0PP , United Kingdom, and John M. Boram, Marden Lodge, Rhinefield Road, Brockenhurst, Hampshire SO42 7SQ, United Kingdom, assignors to Projectron Ltd.; Frank Boram, and John M. Boram, all of United Kingdom

Filed Nov. 3, 1994, Ser. No. 333,765

Claims priority, application United Kingdom, Dec. 24, 1993, 9326436; Sep. 28, 1994, 9419670

Int. Cl.[6] G02B *27/02*; F21V *33/00*

U.S. Cl. 40—362 **22 Claims**



1. A hand-held microfilm reader comprising:

an elongate body providing a U-section slot, having a first and second side, for receiving a sheet of microfilm, a first body portion located to said first side of said slot and a second body portion located to said second side of the slot, said first body portion being provided with a zone for receiving light;

said second body portion being provided with a magnifying system for viewing a portion of a sheet of microfilm on the light receiving zone;

a clamping device on said body movable between a first position spaced from said first body portion and a second clamping position against said first body portion to releasably clamp a sheet of microfilm on said light receiving zone in a required position relative to the magnifying system; and

a moving device provided on said clamping device for selectively moving said clamping device from said first position to allow positioning of the sheet of microfilm and said second clamping position to hold the sheet of microfilm in a selected position.

5,572,815

BUSINESS CARD HOLDER

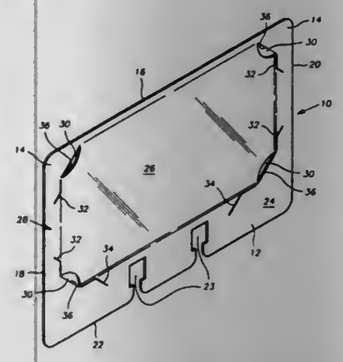
Spencer Kovner, 317 N. Soto St. 6 & 7, Los Angeles, Calif. 90033

PCT No. PCT/US93/00772, § 371 Date Jul. 13, 1994, § 102(e) Date Jul. 13, 1994

Continuation-in-part of Ser. No. 577,332, Aug. 31, 1990, abandoned, and Ser. No. 652,278, Feb. 7, 1991, Pat. No. Des. 343,638. This PCT application Jan. 15, 1993, Ser. No. 362,573

Int. Cl.[6] B42F *3/00*

U.S. Cl. 40—404 **3 Claims**



3. A business card holder for mounting a single business card and storing the holder with the business card mounted thereon within a card storage and retrieval system, said business card having a predetermined thickness,

the card holder comprising:

a thin rectangular sheet defining a planar surface and having an outer longitudinal top edge, a pair of opposed side edges, and a longitudinal bottom edge;

a rectangular area of the thin sheet recessed from the planar surface and is parallel to the planar surface and a marginal frame surrounding said rectangular area, each corner of the rectangular area having a hole adapted to receive a corner of the business card;

each hole being formed by a straight cut oriented at approximately 45 degrees to the side edges, with a portion of said rectangular area adjacent the cut being removed to allow the corners of the business card to be more easily inserted into the holes;

extending outward from each hole at an end of the cut a first slit which parallels an adjacent side edge and terminates at a second slit;

said second slit extending from the first slit at an angle of from 40 to 50 degrees outward towards a side edge;

extending outward from each hole adjacent the bottom edge a third slit which parallels the bottom edge and terminates at a forth slit,

said forth slit extending from the third slit at an angle from 40 to 50 degrees outward towards the bottom edge; and

at least one mounting cutout in the sheet for attaching the card holder to the storage and retrieval system.

5,572,816

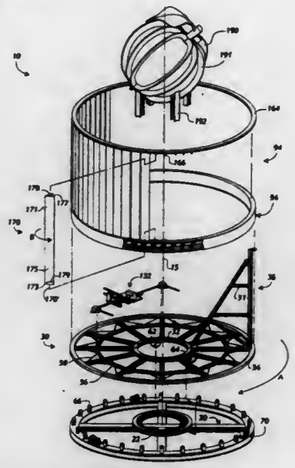
ROTATING ADVERTISING SIGN WITH ROTATING LOUVERS

Taz L. Anderson, Jr., Atlanta, and Todd W. Stalder, Alpharetta, both of Ga., assignors to Multimedia Technologies, Inc., Atlanta, Ga.

Filed Dec. 21, 1993, Ser. No. 171,924

Int. Cl.[6] G09F *11/02; 13/12*

U.S. Cl. 40—505 **26 Claims**



26. A revolving sign assembly comprising:

a frame structure having a generally polygonal shape;

said frame structure having an outer circumference and an inner circumference;

a carriage assembly for supporting and for permitting rotation of said frame structure, said carriage assembly including an outer circular beam for supporting said frame structure about said outer circumference and an inner circular beam concentrically positioned relative to said outer circular beam for supporting said frame structure about said inner circumference of said frame structure;

means for driving said frame structure to rotate upon said carriage assembly;

a plurality of elongated vertical panel members rotatably mounted about said outer circumference of said frame structure;

means for rotating said plurality of elongated members at predetermined angular increments.

5,572,817

MULTI-COLOR ELECTRO-LUMINESCENT LIGHT STRIP AND METHOD OF MAKING SAME

Tseng L. Chien, 8F, No. 29, Alley 73, Lin-Shen Street, Shi-Chi Town, Taipei, Hseng, Taiwan

Filed Sep. 15, 1994, Ser. No. 305,294

Int. Cl.[6] G09F *13/22*

U.S. Cl. 40—544 **11 Claims**

1. A multi-colored illuminated panel arrangement, comprising:

a first frontsheet layer having a plurality of windows;

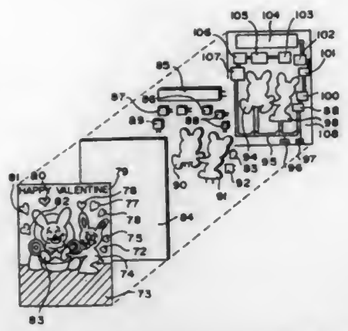
a transparent second frontsheet layer;

a backsheet layer having affixed thereto a plurality of discrete electro-luminescent light segments; and

electrical circuit means on the backsheet layer for electrically connecting the light segments respectively to a power supply,

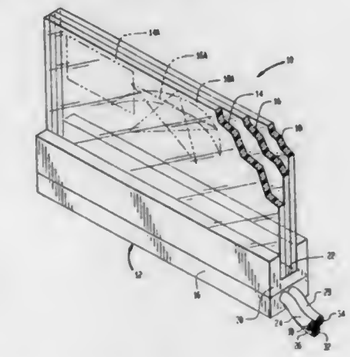
wherein said backsheet layer and said second frontsheet layer are sealed together with the light segments positioned therebetween, and the first frontsheet layer is affixed to and supported by the second frontsheet layer such that the light segments

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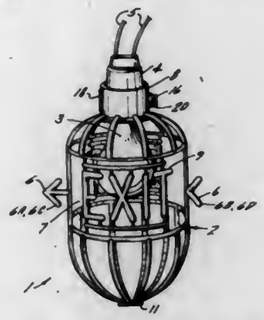
emit light through said transparent second frontsheet layer and through said windows in the first frontsbeet layer.

5,572,818
FIBER OPTIC LIGHT BAR FOR EDGE LIGHTED SIGNAGE
David L. Churchill, P.O. Box 215, Ellenton, Fla. 34222
Filed Mar. 21, 1995, Ser. No. 407,624
Int. Cl.[6] G09F *13/00*
U.S. Cl. 40—547 **1 Claim**



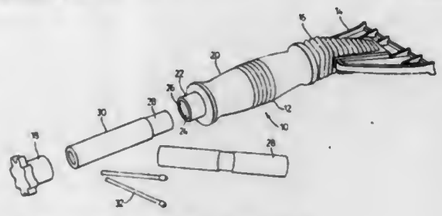
1. A fiber optic display sign, comprising:
an elongated U-shaped channel member having a generally flat bottom lighting surface;
a plurality of spaced openings forming rows, said rows extending in parallel arrangement along at least a portion of a length of said lighting surface and spaced transversely across a width of said lighting surface;
each of said plurality of spaced openings having an optically polished end of a discrete optical fiber bundle portion fixedly secured therein;
each of said optical fiber bundle portions of each said row divided from one of a first plurality of discrete optical fiber bundles;
each of said first optical fiber bundles extending from said channel member to a common optically polished second end of each said first optical fiber bundle;
a plurality of panels received in said channel member;
said channel member also having side walls spaced apart to supportively receive said plurality of panels therebetween, each said panel having one edge positioned and held against said lighting surface in alignment with one said row;
a sequencing means positioned between said second end of said first plurality of optical fiber bundles and a first end of a second plurality of optical fiber bundles for selectively allowing the transmittal of light between said first and second pluralities of optical fiber bundles;
a light source optically connected to a second end of said second plurality of optical fiber bundles;
said sequencing means including:
a rotatable disc having an opaque or colored transparent region thereon positioned and sized to sequentially interrupt or modify light transmittal between said first and second pluralities of optical fiber bundles as said disc is rotated.

5,572,819
LIGHT BULB OR LIGHTING ELEMENT PROTECTOR APPARATUS WITH ROTATABLY ADJUSTABLE CAGE ASSEMBLY AND WHICH PROVIDES INFORMATION
Ferdinand Topinka, 23 Louise Ct., Allendale, N.J. 07401, and John A. Jeneral, 16 Ridgecrest Cir., Westfield, Mass. 01085
Filed Aug. 25, 1994, Ser. No. 296,304
Int. Cl.[6] G09F *13/06*
U.S. Cl. 40—570 **6 Claims**



1. A protector apparatus for a light bulb, said apparatus comprising
a socket assembly for receiving said light bulb, said socket assembly including a ribbed portion disposed about at least a portion of the periphery of said socket assembly;
a cage assembly including means for protecting said light bulb, said means including a message area with indicia and means for latching said cage assembly to said socket assembly including a ribbed portion interengagable with said ribbed portion of said socket assembly so as to be rotatable relative thereto;
said cage assembly being fluorescent or phosphorescent.

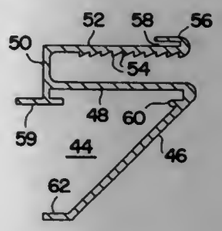
5,572,820
EMERGENCY KIT
John W. R. Mallory, Chatham, Canada, assignor to Mallory Industries Inc., Blenheim Ontario, Canada
Filed Feb. 17, 1995, Ser. No. 390,085
Int. Cl.[6] G09F *21/04*
U.S. Cl. 40—591 **5 Claims**



1. An emergency signalling kit comprising:

a foldable signalling banner having indicia thereon and mountable on a vehicle window;
a window cleaning device comprising:
a cleaning element having a generally straight forward edge for use in cleaning an exterior surface of said vehicle window;
an elongated handle extending longitudinally from said cleaning element and said handle having a length and a width;
said handle having an aperture extending to a cavity deposed in said handle defining a storage compartment to receive and store said banner.

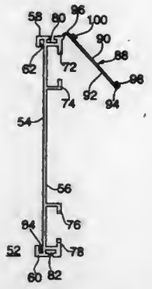
5,572,821
C-CHANNEL FRAME CONSTRUCTION FOR A SIGN
Kelly R. Coleman, 516 Belle Isle Ave., Belleair Beach, Fla. 34635
Continuation of Ser. No. 57,967, May 7, 1993, abandoned. This application May 5, 1995, Ser. No. 435,911
Int. Cl.[6] G09F *17/00*
U.S. Cl. 40—603 **20 Claims**



11. A peripheral edge frame for a sign which comprises an extruded elongated linear single piece body including a linear first wall and a linear second wall substantially parallel with said first wall, a closed end linear back wall (**50**) directly connected to a first end of each of said first and second walls with said second wall spaced from said first wall and a second end of each of said first and second walls extending in a same direction from said closed end linear back wall, said first and second walls forming a linear opening adapted to receive one extremity of a sign face, said first wall including integral angular teeth in which said teeth are angled toward said closed end linear back wall, a front wall (**46, 68, 76, 108**) integral with said second end of one of said first and second substantially parallel walls, said front wall having a first end defining a third wall portion, said third wall portion being substantially parallel with at least one of said linear first and second walls and defining an open cavity formed between one of said linear first and second walls and said third wall and confined by said front wall, and an unobstructed opening of said cavity opposite from said front wall is adapted to receive a structural element of a sign frame directed toward said front wall.

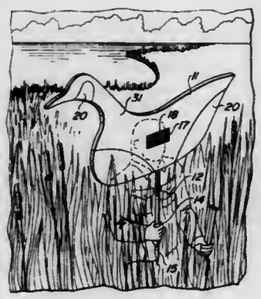
5,572,822
PRODUCT IDENTIFICATION AND EXHIBITING SYSTEM
Carol A. Lynch, Farmingdale, and Kurt L. Haverkost, Mt. Kisco, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Filed Aug. 9, 1994, Ser. No. 287,578
Int. Cl.[6] G09F *3/18*
U.S. Cl. 40—642 **16 Claims**

1. A product identification and exhibiting system for products contained in bins, comprising:
a) a base member having a first end, a second end, a top edge and a bottom edge together defining a geometrical shape, said base member having means to attach said base member to a bin containing products, said base member having first track means adjacent said top edge and second track means adjacent said bottom edge between said first end and said second end to attach a display member to said base member;



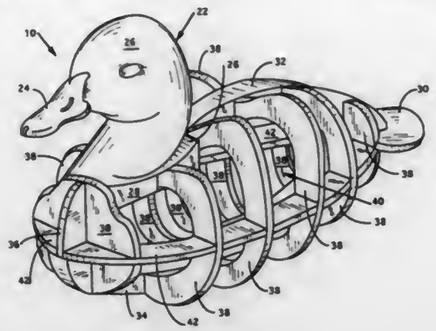
b) a display member having a top edge and a bottom edge to support and exhibit a representative sample of the products in the bin, said display member having first rail means adjacent said display member top edge and second rail means adjacent said display member bottom edge to engage, respectively, with said base member first track means adjacent said top edge and said base member second track means adjacent said bottom edge to permit said display member to be selectively moved along said first and second track means adjacent, respectively, said top edge and said bottom edge of said base member and be aligned with its associated bin; and
c) a plurality of apertures in said display member to receive fastening means therein to secure a representative sample to said display member.

5,572,823
HAND HELD DECOY AND HUNTER SHIELD
James R. Savaria, P.O. Box 751, Hailey, Id. 83333
Filed Mar. 20, 1995, Ser. No. 407,336
Int. Cl.[6] H01M *31/06*
U.S. Cl. 43—2 **10 Claims**



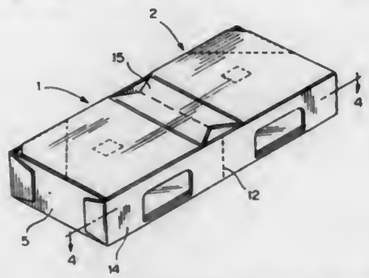
1. A decoy for game fowl which comprises:
a. a planar member contoured in the form of the silhouette of a game fowl, said member having a body portion which includes an opening therein;
b. a viewing screen mounted in the opening in said planar member, said screen permitting a viewer in proximity to the screen to view the surrounding area there through;
c. an elongated shaft attached to the planar member and having a free end, and
d. a hand grip located on the shaft to permit an observer to position the decoy as a shield while permitting viewing of the surrounding area.

5,572,824
WILDLIFE DECOY
John N. Szolis, 640 Pearce Mill Rd., Wexford, Pa. 15090
Filed Sep. 14, 1995, Ser. No. 528,354
Int. Cl.[6] A01M *31/06*
U.S. Cl. 43—3 **19 Claims**



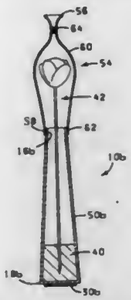
1. A wildlife decoy form comprising:
a head section;
a tail section;
at least one longitudinal support coupled to said head section and said tail section extending along a longitudinal, peripheral portion of said decoy form around a single hollow interior; and
a plurality of circumferential ribs attached to each said longitudinal support at spaced locations thereon, wherein each said circumferential rib extends along a peripheral portion of said decoy form around said single hollow interior, wherein said single hollow interior extends substantially the length of said decoy form between said head section and said tail section.

5,572,825
GLUE TRAP
Michael J. Gehret, Lititz, Pa., assignor to Woodstream Corporation, Lititz, Pa.
Filed Jan. 24, 1995, Ser. No. 377,264
Int. Cl.[6] A01M *1/14*
U.S. Cl. 43—114 **86 Claims**



32. A glue trap package comprising first and second glue traps for trapping vermin, each trap suitable for use in a corner location and comprising:
a trap housing defining an enclosure and having a base, a pair of side walls, an end wall, a top wall and an open end, each of said base, side walls, end wall and top wall having inner and outer surfaces, respectively;
a layer of non-drying adhesive supported by at least a portion of said base within said enclosure;
a right angled corner portion having a top opening positioned above said layer of adhesive;
a side opening formed in one of said side walls;
a surface area surrounding said layer of adhesive having a reduced coefficient of friction as compared to said adhesive;
means for attracting vermin; and
an integral connection between said open ends of each respective trap, said integral connection defined by a perforation line providing tear-away separation of said traps.

5,572,826
COLLAPSIBLE VASE FOR CONTAINING A FLORAL GROUPING
Donald E. Weder, 1111 Sixth St., Highland, Ill. 62249
Filed May 13, 1994, Ser. No. 242,524
Int. Cl.[6] A01G *5/00*
U.S. Cl. 47—41.12 **45 Claims**



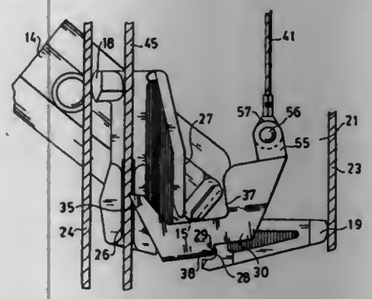
1. A container constructed from a flexible material for holding a floral grouping, the container comprising:
an upper end having an opening and a lower end having a closed base, the closed base having an outer surface and an inner surface;
a tubular body having an outer peripheral surface extending from the upper end to the outer surface of the closed base and an inner peripheral surface which encompasses and defines an interior space which extends from the opening to the inner surface of the closed base; and
a bonding material disposed upon a portion of the outer surface of the closed base for bondingly connecting to a surface;
and wherein the container is collapsible to a substantially flat position and expandable therefrom to an expanded form for receiving a portion of a floral grouping in the interior space and for supporting the floral grouping in a vertical position when the bonding material is bondingly connected to a surface.

5,572,827
METHOD FOR APPLYING HYDROGEL COATINGS TO EMBYONIC PLANTS
Robert S. Conrad, Wheaton, Ill., assignor to Ball Horticultural Company, West Chicago, Ill.
Filed May 5, 1995, Ser. No. 435,648
Int. Cl.[6] A01C *1/00;1/06;21/00*
U.S. Cl. 47—57.6 **18 Claims**

1. Method of applying a cross-linked hydrogel coating to embryonic plants to improve early plant growth by controlling the amount of cross-linking, comprising the steps of:
(a) first building up a dry coating around individual embryonic plants of a water-soluble hydrogel in powder form, said powder being capable of cross-linking reaction with polyvalent metal ions when hydrated to gel form;
(b) next introducing the powder-coated plants into a water bath free of polyvalent metal ions to partially hydrate the coatings;
(c) rapidly thereafter and before the coatings are fully hydrated, modifying said bath by dispersing cross-linking polyvalent metal ions therein;

(d) limiting the contact time of the coated plants with the modified bath so that the polyvalent metal ions diffuse into the coatings and form an inwardly decreasing concentration gradient therein, the outer portions of the coatings being more highly cross-linked than the inner portions;
(e) then separating the resulting coated plants from the modified bath, and thereafter redistributing and equilibrating the polyvalent metal ions in the coatings so that the resulting coatings throughout are in a uniformly partially cross-linked condition which promotes leaf emergence and plant vigor.

5,572,828
PIN LOCK FOR TILT SASH LOCK SHOE
Norman R. Westfall, deceased, late of Rochester, N.Y., assignor to Caldwell Manufacturing Company, Rochester, N.Y.
Filed Feb. 13, 1995, Ser. No. 387,455
Int. Cl.[6] E05D *15/22*
U.S. Cl. 49—181 **28 Claims**

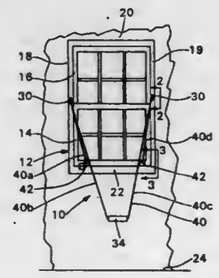


1. A combination of a tilt sash shoe carrying a shoe locking element biased into a locking position by a counterbalance element and a sash pin that engages the locking element to hold it out of the locking position when the sash is not tilted, the combination comprising:
a. the sash pin has a hook oriented toward the locking element;
b. the locking element has an edge engaged by the sash pin and oriented to confront the book for interlocking with the hook;
c. the locking element and the sash pin are arranged so that while the sash is not tilted, movement of the sash pin along a pivot axis of the pin in a direction to escape from engagement with the sash shoe brings the hook into interlock with the edge of the locking element to prevent escape of the sash pin from the sash shoe; and
d. the locking element and the sash pin are also arranged so that while the sash is not tilted and the sash pin holds the locking element out of the locking position, the counterbalance element biases the edge of the locking element into engagement with the sash pin so that the bias ensures that the hook confronting the edge of the locking element is held in interlocking engagement with the locking element edge.

5,572,829
POWER OPERATED GARAGE DOOR
Donald A. Stoltenberg, 419 N. Ashland Ave., Park Ridge, Ill. 60068
Filed Jun. 29, 1995, Ser. No. 498,244
Int. Cl.[6] E05D *15/18*
U.S. Cl. 49—200 **22 Claims**

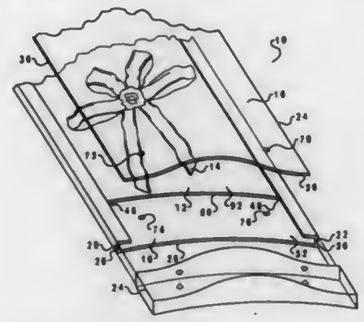
1. In a power operated garage door of a type having a one piece door supported for movement between a vertical closed position and a horizontal open position by a pair of vertical guide tracks and a pair of horizontal guide tracks with a pair of guides on the door engaging the vertical guide tracks and a pair of guides engaging the horizontal guide tracks and including power driven flexible cables connected to the door for drawing the door upwardly and downwardly between said open and closed positions, the combination comprising:
a one piece rectangular door having top and bottom edges and side edges and having a pair of guide and drive assemblies mounted on the bottom edge of the door which is a lowermost portion when the door is positioned in a vertical closed position in a garage opening, said door having an inside surface and an outside surface disposed vertically when said door is in the closed position,
each said drive and guide assembly including: (a) a guide appendage projecting laterally of said side edges for engagement with vertically extending guide tracks, (b) a cylindrical journal bearing which supports said guide appendage for rotation about a horizontal axis and (c) a mounting plate which is mounted on the bottom edge of said door and which supports said journal bearing below the bottom edge of said door and offset forwardly from said inside surface toward the outside surface on the bottom edge of said door,
a jack shaft extending horizontally above said door in the closed position and having a reversible drive means,
a pair of cable pulleys fixedly mounted beneath the bottom edge of said door in the vertical position adjacent said side edges,
a pair of drive cables each being connected to one of said drive and guide assemblies and driven by said jack shaft, each drive cable having a first portion extending vertically downwardly from said jack shaft to connection with said drive and guide assemblies and a second portion extending vertically downwardly from said jack shaft around one of said cable pulleys and then upwardly to a connection with one of said drive and guide assemblies, said drive cables being disposed between said door side edges and said vertically extending guide tracks when said door is in the vertical closed position.

5,572,830
FOOT-OPERATED, WINDOW-RAISING DEVICE FOR A WINDOW HAVING A SLIDING SASH AND METHOD
Arthur Freeman, 7914 Ivy La., Elkins Park, Pa. 19117
Filed Apr. 12, 1995, Ser. No. 421,578
Int. Cl.[6] E05F *13/04*
U.S. Cl. 49—273 **14 Claims**



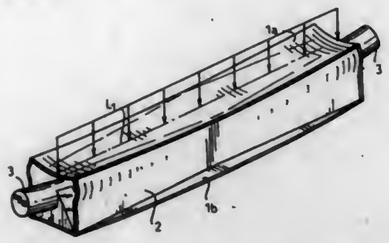
1. A foot operated window raising device in combination with a window having a sliding sash, the window being positioned a distance from a support surface, the device comprising:
at least one pulley mounted to a frame member adjacent to the window;
a moveable platform; and
a cord, threaded through the pulley, having a first end which is attached to the sliding sash at a point lower than the pulley, the cord is secured to and supports the platform such that movement of the platform in a first direction causes the cord to open the sliding sash, the cord having a length which positions the platform between the window and the support surface at a height which is accessible by a user's foot.

5,572,831
LOUVER ASSEMBLY WITH COVER AND CAP
Lisa A. Rafiqui, Coppell, Tex., assignor to Let's Rollit LLC, Coppell, Tex.
Filed Mar. 7, 1995, Ser. No. 399,756
Int. Cl.[6] E06B *7/08*
U.S. Cl. 49—403 **12 Claims**



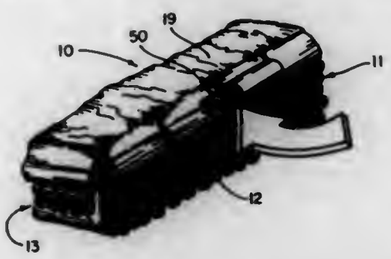
1. A louver assembly comprising:
an elongate louver having a front face, at least one end, and two opposing sides;
a pair of generally L-shaped side flanges, a first of said side flanges integrally formed on a first of said two opposing sides of said louver and a second of said side flanges integrally formed on a second of said two opposing sides of said louver, said first and said second side flanges extending inwardly toward one another over said front face of said louver;
an elongate cover overlaying said louver and having a pair of opposing sides and at least one end, a first of said sides of said cover being received within said first of said side flanges and a second of said sides of said cover being received within said second of said side flanges, wherein a cavity is formed between said cover and said louver; and
a cap secured to said cover and said louver, and surrounding said at least one end of said louver and said at least one end of said cover for enclosing said cavity; and
an elongate insert having a pair of opposing sides and being shaped and sized similarly to said louver, a first of said sides of said insert being received within said first of said side flanges and a second of said sides of said insert being received within said second of said side flanges, wherein said insert overlays said louver and said cover overlays said insert, further wherein said insert is included within said cavity.

5,572,832
SUPPORT STRUCTURE
Seppo Haavisto, Hämeenkyrö, and Risto Sutti, Vuorentausta, both of Finland, assignors to Tampella Papertech Oy, Tampere, Finland
Filed Sep. 30, 1994, Ser. No. 315,865
Int. Cl.[6] E04C *3/00*
U.S. Cl. 52—1 **21 Claims**



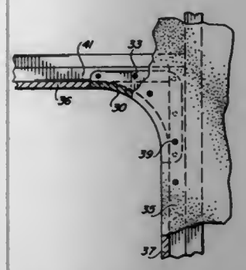
1. An elongated support structure having a longitudinal axis subjected to a load having a distribution which is at least partly continuous lengthwise along the elongated support structure, said support structure comprising first and second elements connected together and elastically deformable under the applied load, said elements being constructed and supported to undergo bending deformation produced by said load, said elements being constructed and connected to constitute means for producing deformation of said elements in inverse relation to one another by the load such that the net deformation of said first element along a longitudinal line therein disposed in a plane containing said load is a linear displacement in which said longitudinal line remains straight.

5,572,833
SELF-HOLDING FIREWOOD COVER
Dillis V. Allen, 240 Lincolnshire Court, Schaumburg, Ill. 60193
Filed Dec. 24, 1987, Ser. No. 137,729
The portion of the term of this patent subsequent to May 13, 2011, has been disclaimed.
Int. Cl.[6] B67D *63/04*
U.S. Cl. 52—3 **8 Claims**



1. A firewood cover for protecting a stack of firewood arranged generally in a facecord or less configuration, comprising; a generally rectangular panel having a central generally rectangular portion adapted to be placed over and cover the top of the firewood stack, said central portion having a length and width, said panel having a plurality of integral loops extending outwardly from the central portion, said loops being constructed to removably receive user installed logs from the same facecord so that the weighted loops extend downwardly from the central portion on the sides of the firewood stack, said loops having a width approximately equal to the width of the central portion of the panel to encompass, substantially cover and secure the logs in the loops against movement by wind or other causes.

5,572,834
CONSTRUCTION PREFORM FOR AN ARCHWAY
Darrel D. Lilly, 16510 W. Orangewood Ave., Litchfield, Ariz. 85340
Filed May 25, 1994, Ser. No. 249,304
Int. Cl.[6] E06B *1/14*
U.S. Cl. 52—85 **1 Claim**



1. An arch construction for the framed opening in a wall having overlays of wallboard forming the opposing exterior surfaces thereof which comprises:
a) a frame including spaced vertical support members and a header member extending therebetween, said members having a defined width equal to the spacing between the overlays of wallboard, and
b) an arch preform comprising:
i. first and second planar metal cheek members for placement adjacent to said support and header members and receiving an overlay of wallboard thereon, said cheek members each having two generally orthogonally disposed edges for affixation to a vertical support member and a header, each of said edges terminating in a free ends with a curvilinear edge extending between free ends;
ii. a curved throat member shaped to conform with said curvilinear edge and having a fixed width equal to the defined width of said support and header members; and
iii. first and second flanges extending along the curvilinear edges of the first and second cheek members respectively, said flange to be affixed to the throat member, the overlays of wallboard covering the first and second cheek members and forming the exterior surfaces of the arch construction.

5,572,835
TELESCOPING FLAGPOLE
Dallas R. Atkins, Eastlake, and Anthony M. Manfredi, Cleveland, both of Ohio, assignors to HMI Industries, Inc., Cleveland, Ohio
Filed Feb. 6, 1995, Ser. No. 383,999
Int. Cl.[6] F04H *12/34;* **G09F** *17/00*
U.S. Cl. 52—111 **15 Claims**

1. A telescoping flagpole assembly for displaying a flag, said assembly comprising:
a plurality of interengaging telescoping segments slidable between a retracted position and an extended position,
locking means for securing adjacent segments in said extended position,
means for engaging said flag on said segments including means for allowing said flag to rotate about said segments, said flag engaging means including means for preventing billowing of said flag, said billowing prevention means concentrically disposed about said flagpole, said rotatable flag engaging means including a first flag engaging ring and a second flag engaging ring, said billowing prevention means including means for stopping lateral movement of said rotatable flag engaging means and including pawl means on said first flag engaging ring for frictionally engaging one of said segments to prevent upward lateral movement along said telescoping segment, said first flag engaging ring including a cylindrical portion

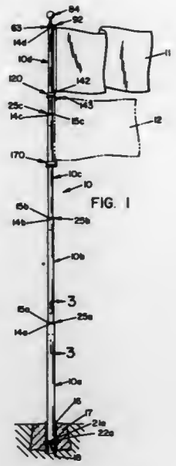
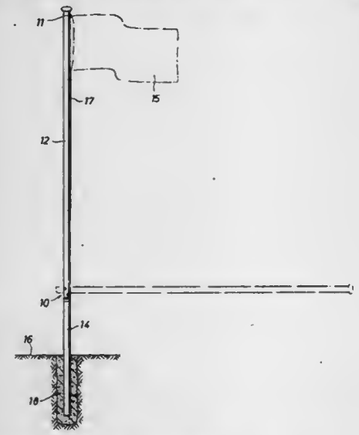


FIG. 1

disposed concentrically about said segment and said pawl means including a lever pivotably connected to said first flag engaging ring.

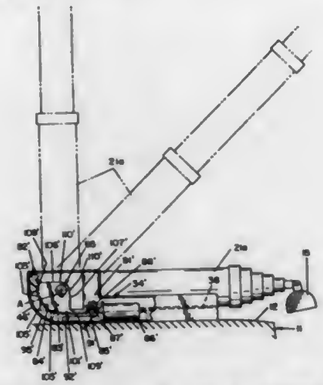
5,572,836
ROTATIONAL FLAGPOLE
Alton B. Parker, 3822 Olympia Dr., Houston, Tex. 77019
Continuation-in-part of Ser. No. 58,289, May 4, 1993, abandoned, which is a continuation of Ser. No. 690,166, Apr. 22, 1991, abandoned. This application Aug. 9, 1994, Ser. No. 287,782
Int. Cl.[6] F04H *12/34;* **G09F** *17/00*
U.S. Cl. 52—116 **8 Claims**



1. A rotational flagpole comprising:
a flagpole having a top end, a bottom end with a side, and having a slot in the bottom end thereof, the slot extending through the side of the bottom end of said flagpole;
a base having a top end and a tongue extending from the top end thereof, said flagpole being pivotally mounted to said base by receiving the tongue in the slot at a pivot transverse to and offset from the longitudinal axis of the flagpole and the base, such that the flagpole freely rotates around the pivot;
means for securing said flagpole in an upright position, said means locking the tongue and the slot in a constant relative

position to prevent rotation around the pivot until said means is removed, said means having at least one member having an axis parallel and offset from the pivot; and
and a lanyard mounted to the top end of the flagpole.

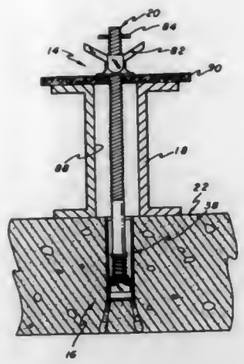
5,572,837
PNEUMATIC TELESCOPING MAST
Harry E. Featherstone, and Dennis B. Donahue, both of Wooster, Ohio, assignors to The Will-Burt Company, Orrville, Ohio
Filed Aug. 5, 1994, Ser. No. 286,269
Int. Cl.[6] E04H 12/18;12/34; F21V 21/22
U.S. Cl. 52—118 23 Claims



12. A pneumatically telescoping mast for mounting on the roof of a motor vehicle and adapted for supporting an electrical fixture, said mast mounted on base plate means for removably affixing to said roof of said vehicle, comprising means providing an axis about which said mast is adapted to pivot, said mast including adjacent telescoping sections slidable relative to one another between a retracted position and an extended position, means including pneumatic control means for pneumatically extending said mast from said retracted position to said extended position, and means for pivoting said mast between a generally horizontal position and a generally vertical position, said means for pivoting said mast including motor actuated drive means independently operable relative to said pneumatic control means, said drive means being movable in opposite directions, and means including linkage means interconnecting said drive means and said mast for movement of said drive means in one of said opposite directions to pivot said mast toward said vertical position and for movement of said drive means in the other of said opposite directions to pivot said mast toward said horizontal position, said drive means including a pinion having gear teeth and said linkage means including a rack means interengaging said gear teeth of said pinion and reciprocal in opposite directions by said pinion, said means for pivoting contained within a first housing on said base plate means, said pneumatic control means contained within a second housing on said base plate means.

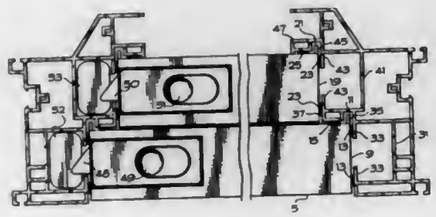
5,572,838
STRONGBACK ATTACHMENT SYSTEM
Robert E. Truitt, Carson, Calif., and Mark E. Kaler, Centerville, Ohio, assignors to Dayton Superior Corporation, Miamisburg, Ohio
Filed Jun. 28, 1995, Ser. No. 495,368
Int. Cl.[6] F04G 17/00
U.S. Cl. 52—127.2 24 Claims

1. A system for temporarily attaching a reinforcing beam or the like to a poured concrete structural member, comprising:



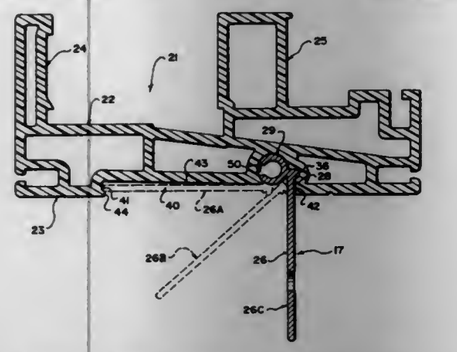
(a) an insert adapted to be set in a poured concrete member, said insert including:
(i) a body for creating a void in a concrete structural member, said body including an upper portion and a lower portion connected together along a mating surface; and
(ii) a base supporting said body in spaced relation above a floor of a concrete structural member, said base having a pair of leg members in which a portion of each leg member extends through said body;
(b) a bolt for securing said reinforcing beam to a concrete structural member, said bolt including a shaft with an end terminating in an engagement head releasably engaged by said leg member portions extending through said body; and
(c) wherein said upper and lower portions of said body each have a pair of aligned slots formed therein retaining said leg member portions extending through said body.

5,572,839
INTERLOCKING JAMB
Bruce F. Kinsey, P.O. Box 1936, Beaufort, S.C. 29901-1936
Filed Jun. 13, 1994, Ser. No. 258,735
Int. Cl.[6] E06B 3/32
U.S. Cl. 52—204.51 5 Claims



1. A window comprising:
a frame,
at least one sash slidable within said frame, said at least one sash having first and second side stiles, said frame having first and second opposite side jambs to which said stiles are interfitted, and
a connecting means connecting the stiles and jambs, the connecting means comprising a tongue and groove, both the tongue and groove extending in a front to back direction of said window and being elongated lengthwise of said window such that the connecting means allows the stiles and jambs to slide along one another and maintain the tongue within the groove as the window is opened and closed.

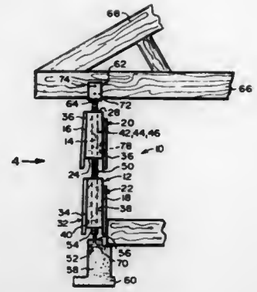
5,572,840
WINDOW FRAME WITH HINGED NAILING STRIP
William A. Fast; Richard M. Desautels, both of 485 Watt Street, Winnipeg, Manitoba, Canada, and David R. Campbell, 781 Lakeland Avenue, Stroud, Ontario, Canada
Filed Jan. 27, 1995, Ser. No. 379,395
Int. Cl.[6] E06B 1/04
U.S. Cl. 52—213 15 Claims



1. A window frame for mounting in an opening defined by a framing support structure of a building, the window frame comprising:
a plurality of elongate frame members connected together at corners of the window frame, each member having an inner surface facing inwardly toward an opposed one of the members and an outer surface opposed to the inner surface for engaging the framing support structure, the inner surface of each member having glazing support members thereon;
each frame member having a nailing strip mounted on the outer surface thereof for extending along the length thereof and outwardly therefrom for attachment to the framing support structure along an edge of the opening;
the nailing strip of each frame member comprising:
an elongate substantially planar rigid strip member formed separately from the frame member;
means for mounting the separate strip member on the frame member including a projecting bead portion of the strip member along one edge thereof and an elongate recess in the frame member into which the bead portion extends;
the bead portion being rotatable relative to the elongate recess about an axis longitudinal of the frame member so as to provide for the strip member a first transport position substantially flat against the outer surface of the frame member and a second erect position extending outwardly from the outer surface substantially at right angles thereto;
the outer surface of the frame member including a shallow recess therealong having the elongate recess on one side, the shallow recess being shaped for containing the strip member lying flat therein in the transport position.

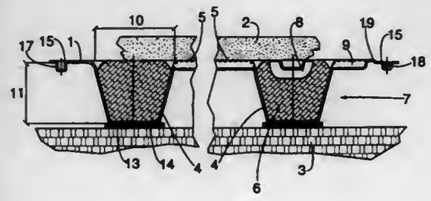
5,572,841
MODULAR WALL PANEL ASSEMBLY
Robert W. Buster, 812 E. 4th Ave., Big Timber, Mont. 59011
Filed Apr. 10, 1995, Ser. No. 419,433
Int. Cl.[6] E04B 1/02
U.S. Cl. 52—270 14 Claims

1. A modular wall panel assembly comprising:
a) a plurality of stacked generally rectangular shaped elongated horizontal slabs, each said slab having a series of vertical through-going apertures, a sloping outwardly front surface and a vertical rear surface lee;
b) a separate wallboard for each of said slabs;
c) first means for securing said wallboard to the rear surface of each said slab with each said wallboard overhanging a bottom edge of the slab and set back from the top edge of the slab;



d) a siding sheet for each of said slabs;
e) second means for securing said siding sheet to the front surface of each slab with each siding sheet overhanging the bottom edge of each slab, and a top edge of the secured siding sheet being flush with the top edge of the slab;
f) said slabs each being a module and stacked vertically with the vertical through-going apertures being aligned, the wallboard on each slab overlapping the slab immediately below, and the siding sheet for each slab overhanging a siding sheet on the slab immediately below; and
g) stay means extending through said aligned vertical through-going apertures for providing foundation support the bottom of said stacked plurality of slabs and structural support on the top of said plurality of stacked slabs.

5,572,842
HOLLOW FLOOR
Reinhard Stief, Weinheim; Manfred Wagner, Gorxheimertal, and Hans Heckmann, Weinheim, all of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany
Filed Jun. 27, 1995, Ser. No. 495,250
Claims priority, application Germany, Oct. 7, 1994, 44 35 895.4
Int. Cl.[6] E04B 5/00
U.S. Cl. 52—403.1 17 Claims



1. A hollow floor comprising a profiled intermediate floor which is arranged between a top floor having a flat upper surface and a sub floor and is designed to be plate-shaped, the intermediate floor having cup-shaped depressions therein, each depression extending from a bottom side to a top open end, the depressions being joined together by essentially flat edge areas disposed around the open ends of the depressions, wherein the depressions (4) are filled in with a sound-deadening filler material (6) up to the open ends thereof and the edge areas are flush with a top level of the filler material, the sound-deadening filler material being selected from the group consisting of polyurethane and rubber.

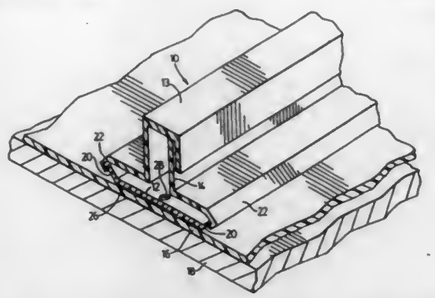
VOL 1192 ISS 2 NO 12 1996 UMI

5,572,843

FASTENING STRIP FOR SHEET ROOFING SYSTEMS

Franklin F. Jordan, Oakville, Canada, assignor to Jordan, Toronto, and Kornelow, Oakville

Filed Jul. 12, 1994, Ser. No. 273,681
Int. Cl.[6] E04B *5/00*
U.S. Cl. 52—410 **7 Claims**



1. A roof cladding system comprising a flexible waterproof sheet for overlaying a supporting roof surface; and a plurality of elongate feature strips to cover said flexible waterproof sheet;

each one of the feature strips comprising:

an elongate base member having a body attachable to said flexible waterproof sheet and elongate lips oppositely upstanding from the body at similar obtuse angle thereto similar upper edges thereof being spaced apart by a first distance greater than the width of the body and a snap-on elongate cap comprising a cover for the base member, the cover comprising a pair of cover portions spaced apart from each other and each extending oppositely from one another from a lower end of a U-shaped cap profile which forms part of the cover, each cover portion having an elongate in-turned flange depending from the cover, lower edges of the flanges being spaced apart by a second distance less than the first distance, the in-turned flanges being resiliently deformable so that they may be biased apart such that the second distance increases to greater than the first distance whereby the cap may be snapped over the elongate lips of the body.

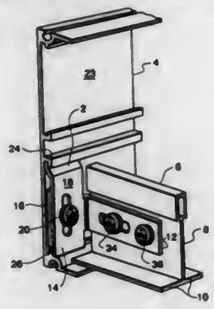
5,572,844

RUNNER-TRIM CONNECTOR

Richard D. Stackenwalt, Dallastown, and Brian E. Witmyer, Lititz, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Apr. 24, 1995, Ser. No. 426,831
Int. Cl.[6] E04D *5/00*
U.S. Cl. 52—506.07 **1 Claim**

1. A suspension ceiling comprising at least one grid tee with an adjacent wall, said grid tee including a central web with oppositely extending flanges along the lower portion of said web, trim connector mounted on said grid tee at the exposed edge thereof, a trim strip having a face portion and a back portion, said trim connector mounted on said trim strip, the improvement comprising said trim connector being a two part structure joined together with a separate fastener means, said trim strip back portion having upper and lower ribs forming upper and lower channels on the back portion of the trim strip, said one part of said trim connector being in one of said upper or lower channels, said second part of said trim connector being adjacent the rib forming the channel receiving said one part of said trim connector, the separate fastener means forcing said one part and said second part of the trim connector together to pinch the rib of the channel holding the one part in place with the pinching of the rib holding the trim connector in place on the trim strip.



exposed edge along at least one portion thereof spaced from an

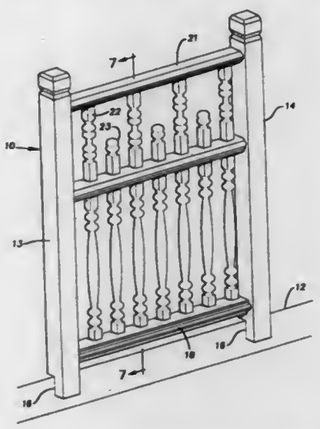
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5,572,845

WOOD RAIL ASSEMBLY AND METHOD OF ASSEMBLING SAME

Joseph DeSouza, North Royalton, Ohio, assignor to Action Sales and Marketing, Inc., Middleburg Heights, Ohio

Filed Oct. 5, 1994, Ser. No. 318,184
Int. Cl.[6] E04C *2/12*
U.S. Cl. 52—664 **20 Claims**



1. A wood railing assembly comprising a plurality of parallel extending wood balusters in a planar array, each of said balusters having top, bottom and middle zones each having identical non-circular cross-sections, parallel top and bottom rails extending the length of the assembly secured to the respective top and bottom zones of each of said balusters, a middle rail extending between and parallel to said top and bottom rails and having non-circular openings each closely receiving each of said baluster middle zones and being secured thereto by a fastener, each of said balusters having a maximum dimension in said zones, and said middle zone having a length greater than the thickness of said middle rail, whereby said middle rail may be secured at any point along the length of said middle zone.

5,572,846

POSTER RESISTANT POLE

Jesus M. Sosa, Rio Piedras, Puerto Rico, assignor to Sosa Architectural Metal Corporation, Puerto Rico

Continuation-in-part of Ser. No. 16,106, Dec. 7, 1993, Pat. No. Des. 357,988. This application Jan. 31, 1995, Ser. No. 381,440
Int. Cl.[6] E04C *3/30*
U.S. Cl. 52—736.4 **22 Claims**



12. A poster resistant pole comprising a support member and a backing plate having a plurality of rigid longitudinal ribs extending from the backing plate to protruding ends, the backing plate being coupled to the exterior surface of the support member and covering at least a portion of the outer surface of the support member to be rendered resistant to adhesive attachment of sheet materials, said longitudinal ribs being tapered in cross section, the protruding ends having an outer facing surface area less than twenty percent of an area of an imaginary smooth surface at a height equal to that of the protruding ends, and the ribs having a height at least twice a width of the protruding ends, thereby limiting an area available for contact of said sheet materials to the protruding ends of the ribs and preventing contact between the sheet materials and bottoms of the channels between the ribs.

5,572,847

RAPIDLY ERECTABLE, REMOVABLE, REUSABLE AND RAISABLE OUTDOOR ACOUSTICAL WALL SYSTEM

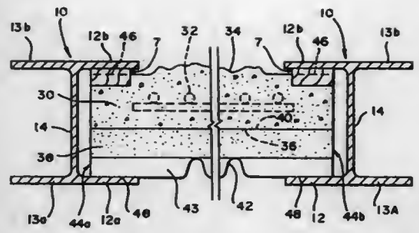
J. Thomas Elmore; Alan Veatch, both of Washington, D.C., and William C. Clements, Reston, Va., assignors to JTE, Inc., Lorton, Va.

Continuation-in-part of Ser. No. 176,953, Jan. 3, 1994, Pat. No. 5,392,572, which is a continuation of Ser. No. 935,895, Aug. 28, 1992, Pat. No. 5,274,971. This application Feb. 22, 1995, Ser. No. 392,476
Int. Cl.[6] E04B *1/61*
U.S. Cl. 52—766 **30 Claims**

1. A rapidly erectable, removable, and raisable post and panel outdoor wall system, comprising:

at least one wall panel having opposing side edges;

first and second spaced apart, elongate panel support posts, each of which includes first and second opposing flanges that define a longitudinally extending slot for receiving one of said side edges of said wall panel, and



at least one wedging means disposed between each side edge of said panel and said first flange and having inclined surfaces that face said first flange for wedgingly forcing the side edge against the second of said flanges of said pair by wedgingly engaging said first flange when said side edge of said wall panel is inserted into said longitudinally extending slot defined between said first and second opposing flanges,

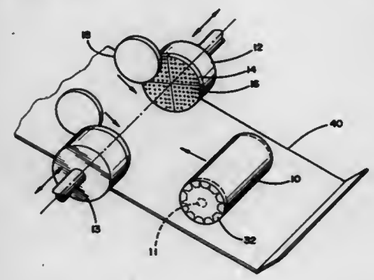
wherein each of said side edges of said panel includes a recess means that is complementary in shape to said wedging means for receiving, securing and maintaining said wedging means at a selected location on said side edge when the side edges of said panel are slidably inserted into the longitudinally extended slots defined by said first and second flanges.

5,572,848

ROLLED PAPER WRAPPING APPARATUS

Benjamin Wall, 19984 Woodlake Rd., Pierson, Mich. 49339

Continuation of Ser. No. 1,179, Jan. 6, 1993, Pat. No. 5,392,585. This application Feb. 27, 1995, Ser. No. 394,779
Int. Cl.[6] B65B *11/04;25/24*
U.S. Cl. 53—136.2 **1 Claim**



1. A header heat plate for a roll paper wrapping apparatus wherein a circular roll header is affixed to each end of a roll of paper by pressing the header against the end of the roll with a header plate, the improvement wherein the header heat plate is formed in a plurality of interchangeable header face plate sections mounted together edge to edge on a backing plate, the sections being individually changeable such that the entire header heat plate need not be replaced when one section becomes damaged or wears out and a single replacement section can be used to replace a plurality of sections of the header face plate.

VOL 1192 ISS 2 NO 12 1996 UMI

5,572,849

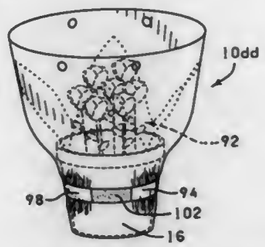
METHOD OF PACKAGING A POTTED PLANT

Donald E. Weder; Joseph G. Straeter, both of Highland, and William F. Straeter, Breese, all of Ill., assignors to The Family Trust U/T/A, and Southpac Trust International, Inc., both of Oklahoma City, Okla.

Continuation of Ser. No. 386,859, Feb. 10, 1995, Pat. No. 5,493,809, which is a continuation-in-part of Ser. No. 237,078, May 3, 1994, Ser. No. 313,675, Sep. 27, 1994, abandoned, and Ser. No. 218,952, Mar. 25, 1994, which is a continuation-in-part of Ser. No. 95,331, Jul. 21, 1993, Pat. No. 5,428,939, said Ser. No. 237,078is a continuation-in-part of Ser. No. 220,852, Mar. 31, 1994, and Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482, said Ser. No. 313,675is a continuation of Ser. No. 188,183, Jan. 28, 1994, Pat. No. 5,388,386, which is a continuation of Ser. No. 968,798, Oct. 30, 1992, Pat. No. 5,369,934, which is a continuation of Ser. No. 865,563, Apr. 9, 1992, Pat. No. 5,245,814, which is a continuation of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned. This application Jun. 1, 1995, Ser. No. 457,186

Int. Cl.[6] B65B *11/02;25/02;51/00*

U.S. Cl. 53—397 **26 Claims**



1. A method of packaging a potted plant, comprising:

providing a flexible sleeve, the flexible sleeve having a closed lower end, an upper end, an outer peripheral surface, and an inner peripheral surface surrounding an inner retaining space, the sleeve further comprising:

a lower portion having a space for enclosing a pot,

an upper portion connected to the lower portion and sized to substantially surround and encompass a floral grouping, the upper portion detachable from the lower portion via perforations positioned in a predetermined pattern, and

bolding means comprising an adhesive bonding material;

opening the flexible sleeve rendering accessible the inner retaining space of the sleeve; and

providing a pot containing a floral grouping, the pot having an outer peripheral surface; and

disposing the pot within the inner retaining space of the flexible sleeve wherein the lower portion of the flexible sleeve is positioned adjacent the pot and the upper portion of the sleeve extends upwardly from the pot, said upper portion substantially surrounding and encompassing the floral grouping, and the bolding means positioned adjacent a portion of the outer peripheral surface of the pot, the holding means holding the lower portion of the sleeve in a position about the pot.

5,572,850

STRETCH WRAPPING WITH FILM SEVERING

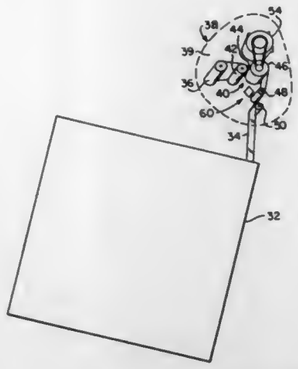
Patrick R. Lancaster, III; Yoram Gordon, both of Louisville, and Jeff Harrison, Lagrange, all of Ky., assignors to Lantech, Inc., Louisville, Ky.

Filed Mar. 8, 1994, Ser. No. 207,467

Int. Cl.[6] B65B *13/04;41/12;53/00*

U.S. Cl. 53—399 **24 Claims**

1. A process for stretch wrapping a load with a sheet of stretch wrap packaging material comprising:



feeding a sheet of stretch wrap packaging material through a stretch wrap dispenser having a prestretch portion, prestretching the sheet of stretch wrap packaging material in the prestretching portion, and dispensing the sheet from the dispenser;

providing relative rotation between the dispenser and the load to wrap the stretched sheet of stretch wrap packaging material around the load;

weakening a portion of the sheet of stretch wrap packaging material at a predetermined location downstream of the prestretching portion by puncturing the sheet of stretch wrap packaging material at the predetermined location during the relative rotation between the dispenser and the load after prestretching the sheet of stretch wrap packaging material; and

tensioning the weakened punctured sheet of stretch wrap packaging material during the relative rotation between the dispenser and the load to break the sheet of stretch wrap packaging material at the weakened punctured portion due to the relative rotation between the dispenser and the load.

5,572,851

PLANT PACKAGE HAVING A DETACHABLE SLEEVE AND METHODS

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., and The Family Trust U/T/A, both of Oklahoma City, Okla.

Continuation-in-part of Ser. No. 1,001, Jan. 6, 1993, Pat. No. 5,307,606, which is a continuation-in-part of Ser. No. 968,798, Oct. 30, 1992, Pat. No. 5,369,934, which is a continuation of Ser. No. 865,563, May 21, 1992, Pat. No. 5,245,814, which is a continuation of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application Mar. 31, 1994, Ser. No. 220,852

Int. Cl.[6] B65B *11/02;25/02;61/18*

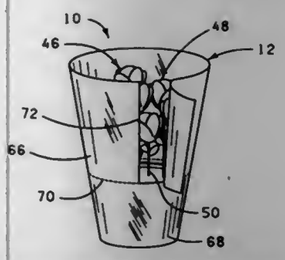
U.S. Cl. 53—399 **14 Claims**

1. A plant packaging method, comprising the steps of:

providing a pot containing a floral grouping;

providing a flexible sleeve having perforations at preselected areas, the sleeve further comprising an adhesive or cohesive bonding material, said sleeve being positionable about the pot and a lower decorative portion of the sleeve closely surrounding and encompassing the pot, an upper portion of the sleeve extending upwardly from the pot, said upper portion removable from the lower portion along the perforations;

disposing the pot within the flexible sleeve, wherein the lower portion of the flexible sleeve is positioned adjacent the pot,



and bondingly connecting at least a portion of the lower portion of the sleeve to the pot via the adhesive or cohesive bonding material, the upper portion of the sleeve extendingly upwardly from the pot, said upper portion substantially surrounding and encompassing the floral grouping; and

wherein the lower portion is positioned about the pot such that when the upper portion is detached from the lower portion along the perforations, the lower portion of the sleeve remains disposed about the pot, the lower portion of the sleeve forming a decorative plant cover which substantially surrounds and encompasses the pot.

5,572,852

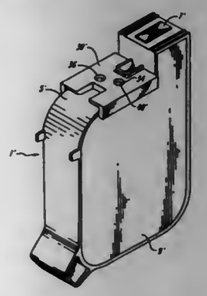
METHOD FOR OPENING, REFILLING AND SEALING A CARTRIDGE

Richard G. Crystal, 1091 Nottingham Way, Los Altos, Calif. 94024, and Sven Karlsson, 5369 Roxanne Dr., San Jose, Calif. 95124

Continuation of Ser. No. 166,718, Dec. 14, 1993, Pat. No. 5,400,573. This application Mar. 24, 1995, Ser. No. 413,127

Int. Cl.[6] B65B *3/00;7/28;43/40;* **B67B** *1/00*

U.S. Cl. 53—428 **2 Claims**



1. A method for opening, refilling and sealing a cartridge having an interior ink reservoir bounded by a pair of compliant sidewalls and coupled to a sealable access port defined by a nominally cylindrical wall extending from a reference surface of said cartridge, said access port having a nominally circular cross-section with diameter D extending a distance d along a port axis substantially perpendicular to reference surface, comprising the steps of:

A. providing a plunger having a shank, said shank extending along a plunger axis to a shoulder having a transverse cross-section with a maximum dimension greater than D, and having an elongated member extending a length L1 from said shoulder along said plunger axis, said elongated member having a transverse cross-section with a maximum dimension less than or equal to D;

B. providing a plate having a top surface and a bottom surface and having a thickness T_1 in a first region and having a first channel extending through said first region along a first channel axis substantially perpendicular to the principal plane of said plate and having a transverse cross-section with a minimum dimension in at least one direction equal to said bottom surface of said plate permitting alignment with said reference surface of said cartridge in a first orientation, said first channel axis being oriented with respect to said bottom surface in said first orientation in the same manner that said port axis is oriented with respect to said reference surface and including plug having a cross-section of diameter D nominally positioned within said first channel, and further including a second region having thickness T_2, where $T_2 < T_1$, and having a second channel extending through said second region along a second channel axis substantially perpendicular to the principal plane of said plate and having a transverse cross-section with a minimum dimension in at least one direction equal to D, said bottom surface of said plate permitting alignment with said reference surface of said cartridge in a second orientation, said second channel axis being oriented with respect to said bottom surface in said second orientation in the same manner that said port axis is oriented with respect to said reference surface, and including a plug having a cross-section of diameter D nominally positioned within said second channel,

wherein $L1 > T_2 + d - F$ and $T_1 - F < L1 < T_1 + d - F$, and wherein F is the distance from one end of said plug at along its axis to its nearest transverse cross-section having diameter D;

C. aligning said bottom surface of said plate with said reference surface of said cartridge in said second orientation, thereby aligning said second channel with said access port in said cartridge;

D. opening said sealed access port by inserting said elongated member into said second channel of said plate from said top surface until said shoulder meets said top surface, thereby pushing said elongated member of said plunger through said second channel into said port to penetrate the seal therein, and then withdrawing said plunger from said access port and removing said plate from said cartridge;

E. squeezing said sidewalls together to establish a pressure within said ink reservoir;

F. refilling said cartridge with a dispensable liquid substance through said access port;

G. aligning said bottom surface of said plate with said reference surface of said cartridge in said first orientation, thereby aligning said first channel with said access port in said cartridge; and

H. sealing said access port in said cartridge by inserting said elongated member into said first channel of said plate from said top surface until said shoulder meets said top surface, thereby pushing said plug into said access port, and then withdrawing said plunger and removing said plate from said cartridge.

5,572,853

METHOD AND APPARATUS FOR CONDITIONING POCKETED COIL SPRINGS

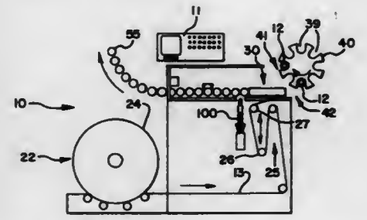
Albert R. St. Clair, Lilburn, and Paul H. Brannock, Duluth, both of Ga., assignors to Simmons Company, Atlanta, Ga.

Filed Aug. 15, 1994, Ser. No. 304,921

Int. Cl.[6] B65B *9/00;63/02;63/08*

U.S. Cl. 53—440 **24 Claims**

15. A method for manufacturing continuous strings of pocketed



coil springs for use in innerspring constructions, comprising the cyclical steps of:

a) forming at the rate of one per cycle a coil spring from wire such that said coil spring is at a first temperature;

b) inserting at the rate of one per cycle said coil spring into a conditioning carousel having at least one coilaccepting cavity, such that said coil spring is positioned within said cavity;
c) instantaneously raising the temperature of said coil spring while in said cavity such that said coil spring is at a second temperature higher than said first temperature, to reduce forming stresses created in said spring during step "a";
d) closing said cavity and allowing said coil spring to remain within said cavity and to soak for at least one cycle;
e) forming a tube from a thermally weldable fabric having a melt temperature;
f) opening said cavity and rapidly lowering the temperature of said coil spring while within said cavity to a temperature lower than said melt temperature;
g) ejecting said coil spring from said cavity at the rate of one per cycle;
h) placing said coil spring within said fabric tube; and
i) forming thermal welds in said tube to define a discrete pocket within which said spring is disposed.

5,572,854

APPARATUS AND METHOD FOR COLLECTING AND PACKAGING PACKAGES, USE OF THE APPARATUS AND PACKAGING SYSTEM

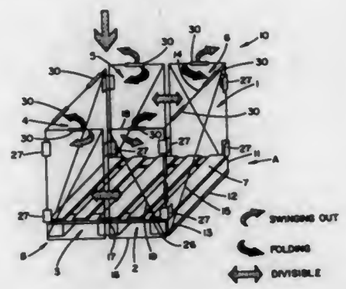
Christoph Greiner, Vörstetten; Dietmar Kern, Sexau, and Matthias Perner, Freiburg, all of Germany, assignors to Rhone-Poulenc Rhodia Aktiengesellschaft, Freiburg, Germany

Filed Dec. 16, 1994, Ser. No. 357,724

Claims priority, application Germany, Dec. 22, 1993, 43 43 960.8

Int. Cl.[6] B65B *67/12;67/04*

U.S. Cl. 53—459 **12 Claims**



1. An apparatus (**10**) for holding a collecting container (**20**) of low stiffness, said container collecting and packaging reusable packages for filter tow, said apparatus comprising a plurality of erectable side parts (**1**) to (**6**), said side parts after being erected outside of said collecting container, delimiting a space for accommodating said collecting container and encompassing the collecting container, and further comprising a holding device (**30**) connected with said side parts (**1**) to (**6**) for fastening the collecting container (**20**) on said side parts (**1**) to (**6**), after they have been erected, said side parts being divided into at least two groups (A) and (B), each one of said groups (A) and (B) having at least two side parts (**1**,**2**,**6**); (**3**,**4**,**5**) at right angle with respect to each other when in the erected condition, said side parts (**1**),(**2**),(**6**) and (**3**),(**4**),(**5**) being hingeably connected and at least one of said side parts (**1**) to (**6**) is foldable toward the outside away from the collecting container (**20**) whereby said collecting container (**20**) is removable from said apparatus (**10**) and when all said parts (**1**) to (**6**) are foldable, said apparatus is disassemblable.

5,572,855

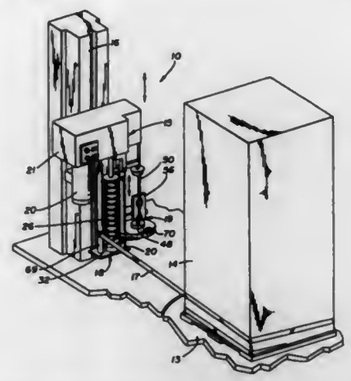
STRETCH WRAPPING TAPE DISPENSING APPARATUS

Lawrence P. Reigrut, Youngstown, and Robert Simons, Newton Falls, both of Ohio, assignors to Liberty Industries, Girard, Ohio

Filed Jan. 9, 1995, Ser. No. 370,421

Int. Cl.[6] B65B *53/00;11/04*

U.S. Cl. 53—556 **10 Claims**



1. An improvement in pre-stretch wrapping machine for dispensing a web of wrapping material from a feed stock roll through a pre-stretch head to a non-symmetrical load supported on a turn table, the improvement comprises; a pair of movable carriage assemblies, a first carriage assembly having a pair of drive rollers, a first drive roller engaging a tape web of wrapping material and pulling the tape web from the feed stock roll, a second drive roller engaging the tape web of wrapping material from the first drive roller and pre-stretching said tape web between said first and second rollers, means for driving said first and second drive rollers, an infeed web guide bar between said first and second drive roller and the feed stock roll, an outfeed guide bar between said first drive roller and said load, a second carriage assembly within said first carriage assembly, said drive rollers having longitudinally spaced intersecting deep spiral grooves within said second carriage assembly comprising a tape supporting frame movably positioned on drive rails, a tape web mounting chuck on said tape supporting frame, means on said tape supporting frame for linear driving engagement with said drive rails, means for rotatably driving said drive rails, one of said drive rollers having an area of smooth noo-resistant material inwardly from one end thereof, and a release clutch assembly on one of said drive rollers for selective roller engagement with said tape web.

5,572,856

REMOTELY CONTROLLED LAWN MOWER

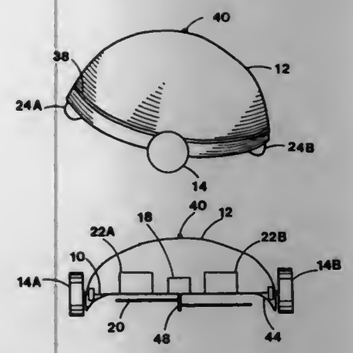
Chingyu J. Ku, P.O. Box 2432, Sugar Land, Tex. 77487-2432

Continuation-in-part of Ser. No. 198,487, Feb. 18, 1994, abandoned. This application Aug. 21, 1995, Ser. No. 517,285

Int. Cl.[6] A01D *34/64;34/73;34/78;34/84*

U.S. Cl. 56—10.2 A **17 Claims**

1. A remotely controlled mower comprising:
(a) a frame
(b) a pair of drive wheel means mounted on the right and left sides of said frame for providing propelling and steering functions,
(c) a pair of gear reducing motor means, each of which is connected to a drive wheel means and operates independently in its rotating directions, for said mower to go forward, backward and to turn to any directions desired with unlimited turning angles,
(d) electric motor means mounted on said frame for producing rotational energy to cut grass,



(e) cutting means for cutting grass,
(f) power means for providing energy to operate said mower,
(g) control means for remotely controlling mower functions and movements,
whereby a user can mow lawns by remotely controlling said mower and convert it to an edger, a trimmer and a leaf blower.

5,572,857

SHEAR WITH ADJUSTABLE BLADE SPACING

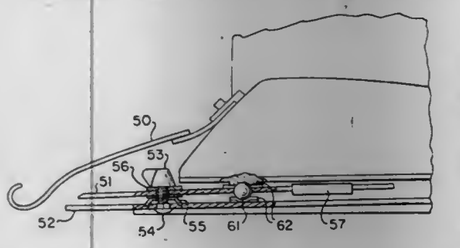
Robert D. Barrett, 10261 Canterbury St., Westchester, Ill. 60154-3640

Filed Apr. 6, 1995, Ser. No. 417,942

Int. Cl.[6] A01D *1/08*

U.S. Cl. 56—298 **14 Claims**

1. A shear functioning to cut weeds and to bend grass comprising:



a first shear blade;
a second shear blade oscillating proximate to the first shear blade;
a spring means between said first shear blade and said second shear blade functioning to maintain a separation between said first and second shear blades; and
an adjustment means functioning to modulate a tension in the spring means, thereby controlling the separation between said first and second shear blades so as to cut weeds which are relatively thicker than the surrounding grass and permit the grass to bend between the first and second shear blades.

5,572,858

RAKE HEAD MOUNTING STRUCTURE

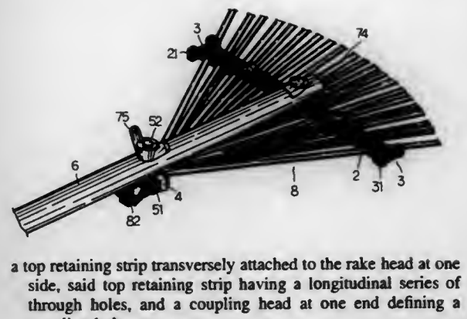
Han-Chin Sun, 53, Lane 45, Tung An Road, Tien Chung Town, Changhua, Taiwan

Filed Jul. 11, 1995, Ser. No. 500,689

Int. Cl.[6] A01D *7/06*

U.S. Cl. 56—400.17 **2 Claims**

1. A rake head mounting structure for fastening a rake head to a rake handle, comprising:



a top retaining strip transversely attached to the rake head at one side, said top retaining strip having a longitudinal series of through holes, and a coupling head at one end defining a coupling hole;
a bottom retaining strip transversely attached to the rake head at an opposite side, said bottom retaining strip having a longitudinal series of studs respectively fitted into the through holes on said top retaining strip, each stud defining a respective screw hole for connection to the through holes on said top retaining strip and a through hole on the rake handle by a respective screw; and
a locating device secured to the rake head by a clamping plate to hold the rake handle, said locating device comprising a flat plastic base, and a T-screw fastened to said plastic base for securing to a through hole on the rake handle by a wing nut, a cross head of said T-screw being nested within said flat plastic base said flat plastic base having two coupling holes at two opposite ends, said clamping plate having two opposite ends respectively extending through the coupling holes and fastened on said plastic base to secure said locating device to said rake head and fastening means for fastening said rake handle to said top and bottom retaining strip.

5,572,859

INDIVIDUAL-MOTOR DRIVE FOR SPINNING-MACHINE SPINDLE

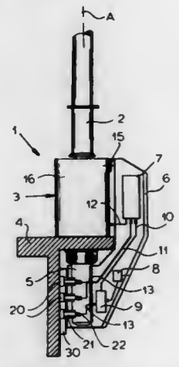
Josef Derichs, Mönchengladbach; Friedrich Dinkelmann, Maitis; Günter Neuburger, Geislingen; Ernst Halder, Wäschenbeuren, and Ewald Nägele, Göppingen, all of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Germany

Filed Jul. 10, 1995, Ser. No. 500,190

Claims priority, application Germany, Jul. 11, 1994, 44 24 349.9

Int. Cl.[6] D01H *13/00;13/18*

U.S. Cl. 57—100 **14 Claims**



1. In a spinning- or twisting-machine having
an elongated spindle bank;
a row of rotatable spindles supported on the bank;

respective individual drive motor on the bank for each spindle;
respective electrical control circuits connected to the respective motors and electrically energizable to power the respective motor; and
a plurality of electricity-supply conductors extending along the bank past the spindles,
the improvement comprising:
a respective housing support part for each spindle carrying the respective electrical control circuit and provided with electrical-input contacts; and
mounting means engaged between the housing part and the spindle bank for movement of the housing part on the bank between a closed position in which the housing part surrounds and protects the respective circuit and in which the contacts conductively engage the supply conductors and an open position in which it exposes the respective circuit and disengages the contacts from the supply conductors.

5,572,860
FUSIBLE ADHESIVE YARN

Shigenobu Mitsumoto, Wakayama, and Takeo Okumoto, Osaka, both of Japan, assignors to Nitto Boseki Co., Ltd., Japan, and Shima Seiki Co., Ltd., Japan

Continuation of Ser. No. 221,998, Apr. 4, 1994, abandoned, which is a continuation of Ser. No. 948,427, Sep. 22, 1991, abandoned. This application Feb. 7, 1995, Ser. No. 386,129
Claims priority, application Japan, Dec. 11, 1991, 3-109547
Int. Cl.[6] D02G *3/02;3/06*
U.S. Cl. 57—224 **7 Claims**

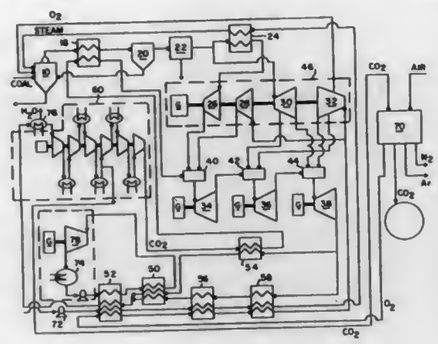


1. Fusible adhesive yarn comprising spun core yarn having a melting point of about 150°–230° C. and heat fusible yarn wrapped about the spun core yarn having a melting point about 110°–130° C., said spun core yarn including elastic yarn and non-elastic short fiber assembly extending in the direction of said elastic yarn so that said non-elastic short fiber assembly encloses the circumference of said elastic yarn as a core, and wherein the elastic yarn is in a relaxably tensioned state due to a tensioned extension applied thereto during wrapping of the heat fusible yarn about the spun core yarn, the elastic yarn in said tensioned state forming a means for loosening the short fiber assembly via expansion and bending thereof by contraction of said elastic yarn due to a relaxation of the tensioned extension of the elastic yarn, in a manner providing air gaps therein into which dots of the heat fusible yarn, created upon thermal setting thereof, can enter so as to be substantially covered by the short fiber assembly.

5,572,861
S CYCLE ELECTRIC POWER SYSTEM

Yulin Shao, 35 Lincoln St., Stoneham, Mass. 02180

Filed Apr. 12, 1995, Ser. No. 420,485
Int. Cl.[6] F02C *3/28*
U.S. Cl. 60—39.02 **4 Claims**

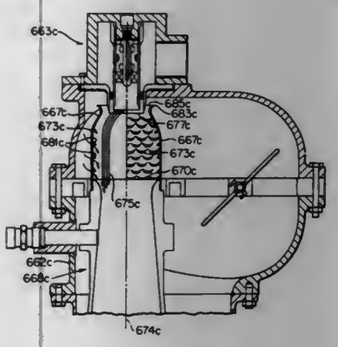


1. A method for generating power which comprises:
a) introducing steam, oxygen and coal into a reaction chamber;
b) forming a fuel gas in the reaction chamber;
c) flowing the fuel gas through a first heat exchanger;
d) heating carbon dioxide flowing through the first heat exchanger the carbon dioxide formed in a carbon dioxide source;
e) flowing the fuel gas through a second heat exchanger to heat steam flowing through the second heat exchanger, the steam subsequently introduced into the reaction chamber;
f) flowing the fuel gas from the second heat exchanger to a first compressor;
g) flowing the fuel gas to a first turbine to produce power;
h) flowing compressed fuel gas from the first compressor to a first combustor, flowing the carbon dioxide from the first heat exchanger to the first combustor, and flowing oxygen from an oxygen source to the first combustor;
i) flowing combustion gases from the first combustor to a first gas turbine to drive the turbine to produce power;
j) flowing the expanded fuel gas from the first turbine to a second combustor, flowing oxygen to the second combustor, and flowing the expanded gases from the first gas turbine to the second combustor;
k) flowing the combustion gases from the second combustor to a second gas turbine to produce power;
l) flowing water through a third heat exchanger to form steam, the steam flowing through the second heat exchanger and then to the reaction chamber;
m) flowing water comprising the exhaust from a steam turbine through said third heat exchanger to convert the water flowing therethrough to the steam, the steam turbine producing power; and
n) flowing the carbon dioxide from its source to a separation and condensation unit to form liquid carbon dioxide; and
o) flowing oxygen formed in the separation and condensation unit through the third heat exchanger and into the second turbine the oxygen expanding through the second turbine, a portion thereof flowing into the reaction chamber and another portion flowing to the second combustor.

5,572,862
CONVECTIVELY COOLED, SINGLE STAGE, FULLY PREMIXED FUEL/AIR COMBUSTOR FOR GAS TURBINE ENGINE MODULES

R. Jan Mowill, c/o Opra B.V. Opaalstraat 60-P.O. Box 838, 7550 AV Hengelo, Netherlands

Continuation-in-part of Ser. No. 264,844, Jul. 5, 1994, which is a continuation-in-part of Ser. No. 261,256, Jun. 14, 1994, Pat. No. 5,481,866, which is a continuation of Ser. No. 86,833, Jul. 7, 1993, abandoned. This application Nov. 29, 1994, Ser. No. 348,829
Int. Cl.[6] F02C *7/22*
U.S. Cl. 60—39.23 **19 Claims**



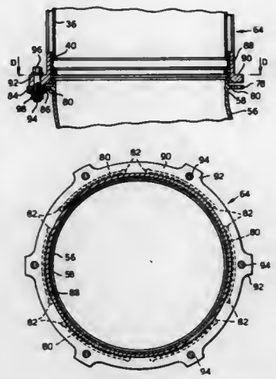
1. Apparatus for premixing liquid fuel and compressed air from respective sources for delivery to the combustor of a gas turbine engine module, the apparatus comprising:
a venturi having an inlet and also having an axis, said venturi inlet being operatively connected to said source of compressed air to define a compressed air flow path into said venturi inlet;
a fuel nozzle operatively connected to the fuel source and having an exit positioned to deliver a spray of fuel into said venturi inlet region, wherein said nozzle exit is longitudinally spaced upstream from a plane defined by said venturi inlet along said venturi axis; and
a perforated member positioned in said compressed air flow path to surround said venturi inlet and said fuel nozzle exit.

5,572,863
RESILIENT ANNULAR MOUNTING MEMBER FOR A TRANSITION DUCT OF A COMBUSTION CHAMBER

David W. Wrightham, Leicestershire, and David Pritchard, Coventry, both of England, assignors to Rolls-Royce plc, London, England

Filed Jun. 21, 1995, Ser. No. 493,141
Claims priority, application United Kingdom, Sep. 15, 1994, 9418576
Int. Cl.[6] F02C *3/00*
U.S. Cl. 60—39.37 **18 Claims**

1. A combustion chamber assembly comprising at least one tubular combustion chamber having an axis and having an upstream end and a downstream end, the upstream end of the tubular combustion chamber having means to introduce fuel and air into the tubular combustion chamber, a transition duct having an upstream end and a downstream end, the upstream end of the transition duct having a generally circular cross-section, the upstream end of the transition duct being arranged coaxially with the downstream end of the tubular combustion chamber, means to mount the upstream end of the transition duct on a support structure, the mounting means comprising an annular resilient member having an inner diameter secured to the upstream end of the transition duct and having an outer diameter duct secured to the support structure to restrict relative movement in radial directions

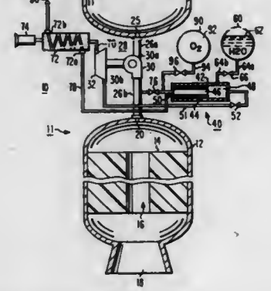


relative to the axis of said combustion chamber between the transition duct and the support member, the annular resilient member having at least two circumferentially extending slots with a length greater in the circumferential direction than the radial direction to allow thermally induced articulation between the upstream end of the transition duct and the support structure.

5,572,864
SOLID-FUEL, LIQUID OXIDIZER HYBRID ROCKET TURBOPUMP AUXILIARY ENGINE

Herbert S. Jones, St. Tammany Parish, La., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Sep. 16, 1994, Ser. No. 308,036
Int. Cl.[6] F02K *9/28*
U.S. Cl. 60—220 **19 Claims**



1. A propulsion engine, comprising:
a solid-fuel main rocket engine including a first housing and a grain of solid fuel contained therein, and an inlet for oxidizer;
a tank of liquid oxidizer;
a turbine-driven pump including an oxidizer inlet port coupled to said tank of liquid oxidizer and an oxidizer outlet port coupled to said inlet of said first housing, and also including a turbine input port for accepting flow of turbine drive fluid, whereby the flow of said turbine drive fluid through said turbine causes a pumped flow of said oxidizer to said solid fuel, whereby said oxidizer and said fuel react to generate rocket thrust;
an auxiliary engine including a second housing, a grain of solid fuel contained therein, and an outlet at which at least a portion of said drive fluids are generated during operation of said

auxiliary engine, a phase of said solid fuel of said auxiliary engine reacting with a phase of said oxidizer for generating heat and reaction products, said second housing also including an inlet for oxidizer coupled to said oxidizer outlet port of said turbine-driven pump, whereby, when said pump is operating, oxidizer is pumped from said tank to said main rocket engine for generating thrust, and oxidizer is also pumped from said tank to said auxiliary engine for reacting with said grain in said auxiliary engine for generating said drive fluids for driving said turbine-driven pump, whereby said propulsion engine may not start reliably because said liquid oxidizer tends to cool said solid fuel as said liquid oxidizer becomes gaseous, and thereby tends to prevent reaction of said fuel with said oxidizer;

a tank of gaseous oxidizer; and

gaseous oxidizer coupling means coupled to said tank of gaseous oxidizer and to said inlet port of said second housing, for providing gaseous oxidizer to said grain of solid fuel contained in said second housing, at least during start-up, whereby liquid oxidizer does not cool said solid fuel, thereby allowing said fuel to more readily react with said oxidizer, to thereby generate heat to aid said solid fuel to generate flammable vapor.

5,572,865

SATELLITE PROPULSION AND POWER SYSTEM

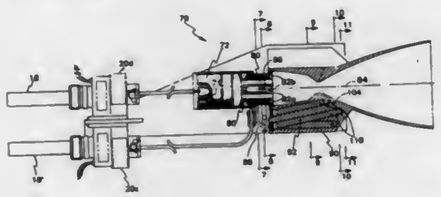
Robert L. Sackheim; Dale L. Hook, both of Rancho Palos Verdes, and Gary W. Joseph, Torrance, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 748,990, Aug. 21, 1991, Pat. No. 5,417,049, which is a continuation-in-part of Ser. No. 511,153, Apr. 19, 1990, Pat. No. 5,282,357. This application Sep. 1, 1994, Ser. No. 299,782

Claims priority, application United Kingdom, Apr. 18, 1991, 9108327

Int. Cl.[6] F02K *9/68*

U.S. Cl. 60—260 **13 Claims**



1. A thruster for a spacecraft comprising:

a thruster body having a first portion defining a first reaction chamber having therein a catalytic bed of decomposition material, said thruster body having a second portion defining a second reaction chamber, downstream of the first reaction chamber, for receiving reaction gases from the first reaction chamber;

means for feeding a liquid propellant to the first reaction chamber to react with the catalytic bed of decomposition material and produce reaction gases which flow from the first reaction chamber into the second reaction chamber, said reaction gases serving to heat the second portion of the thruster body defining the second reaction chamber;

at least one passageway formed in the second portion of the thruster body surrounding the second reaction chamber, said passageway having an inlet for receiving an oxidizer, with the liquid oxidizer flowing through the passageway and serving to cool the thruster body; and

means for feeding the oxidizer from the outlet of the passageway into the second reaction chamber to react as a gas with the reaction gases flowing from the first chamber.

5,572,866

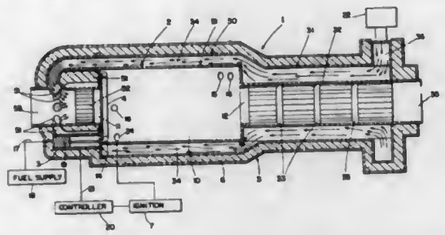
POLLUTION ABATEMENT INCINERATOR SYSTEM

Ronald E. Loving, North Kingstown, R.I., assignor to Environmental Thermal Oxidizers, Inc., North Kingston, R.I.

Filed Apr. 29, 1994, Ser. No. 235,566

Int. Cl.[6] F01N *3/26*

U.S. Cl. 60—274 **17 Claims**



1. A pollution abatement incinerator system, to continuously remove pollutants from a flow of a gaseous mixture, comprising:

a. an outer housing of metal;

b. an interior insulating layer disposed within the outer housing;

c. an incinerator spaced inwardly from the interior insulating layer within the outer housing with a chamber for heating, an inlet duct for receiving fresh air and exhaust from a pollution source, and an output duct that expels exhaust in which virtually all the undesirable and harmful compounds have been eliminated by the application of sufficient heat within the incinerator;

d. the incinerator chamber operates at a temperature of between about 600° to about 1750° F.;

e. a recuperator within the interior insulating layer within the outer housing and surrounding the incinerator to provide an air passageway to enable the recovery of waste heat from the incinerator, said recuperator also extends rearward of the incinerator to recover heat from the hot exhaust exiting from the incinerator;

f. a forced fresh air supply mechanism connected to the outer housing which forces air through the air passageway of the recuperator into the incinerator;

g. a fuel injection and heating mechanism, connected to a fuel supply, for vaporizing fuel and injecting the vaporized fuel into the incinerator chamber, comprising a ring injector disposed just inside the input duct of the incinerator which receives vaporized fuel, further heats it and disperses and expels the vaporized fuel into the incinerator chamber and a fuel converter, connected to a fuel supply line, containing a heating element, that injects vaporized fuel into the ring injector;

h. an ignition mechanism which ignites the vaporized fuel in the incinerator chamber on initial system startup; and

i. a controller connected to the outer housing which senses the temperature and pressure within the incinerator and issues instructions to the forced fresh air supply mechanism, the fuel injection and heating mechanism, and the ignition mechanism, to initialize the incinerator and maintain proper operating temperatures within the incinerator.

5,572,867

EXHAUST AIR RAIL MANIFOLD

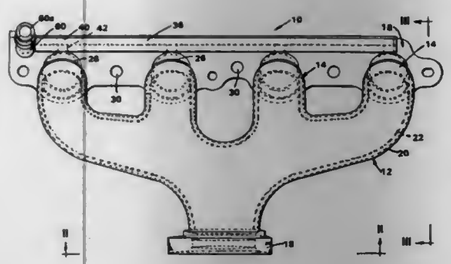
Mark W. Bekkering, Byron Center; Ernest C. Thomas, Kent City, and Earl W. Mattson, Cedar Springs, all of Mich., assignors to Benteler Industries, Inc., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 151,556, Nov. 12, 1993, Pat. No. 5,349,817. This application Dec. 30, 1994, Ser. No. 366,465

Int. Cl.[6] F01N *3/30*

U.S. Cl. 60—305 **10 Claims**

1. An engine exhaust manifold comprising:



a manifold log and a plurality of runners extending from said manifold log, each runner having an exhaust gas inlet opening for conducting exhaust gases from an engine to said manifold log;

said manifold log having an exhaust gas outlet;

an elongated inlet connecting flange extending over said runners at said runner openings, and having an elongated corner;

an elongated cover wall over said elongated corner and welded to said inlet connecting flange along its length to enclose an elongated passageway;

said elongated passageway extending adjacent all of said runners; and

a connector on said flange in flow-communication with said elongated passageway, and connecting channels between said passageway and said exhaust gas inlet openings, whereby combustion air can be injected through said connector, said passageway and said connecting channels to said runners and manifold for chemical conversion of residual combustible components remaining in engine exhaust gases.

5,572,868

EXHAUST MANIFOLD

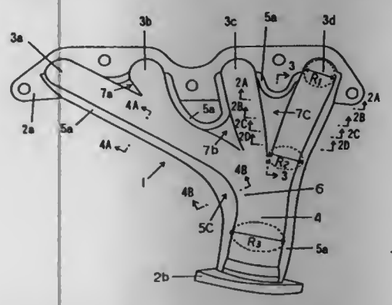
Masami Okamoto; Yoshifumi Sogo; Eiji Nawata, all of Toyota; Naofumi Masuda, Nagoya, and Wataru Ozawa, Toyota, all of Japan, assignors to Aisin Takaoka Co., Ltd., Toyota, Japan

Filed Feb. 21, 1995, Ser. No. 391,003

Claims priority, application Japan, Feb. 21, 1994, 6-061988

Int. Cl.[6] F01N *7/10*

U.S. Cl. 60—323 **14 Claims**



1. An exhaust manifold having an inlet side and an outlet side in which a plurality of branch tubes disposed at the inlet side are connected to a collecting tube disposed at the outlet side and in which fluid flows in a flowing direction from said branch tubes to said collecting tube,

wherein a volumetric chamber is provided between at least a pair of said branch tubes and is in communication with said pair of branch tubes, said volumetric chamber having a cross-sectional area that generally increases as viewed in a plane normal to the flowing direction of said fluid.

5,572,869

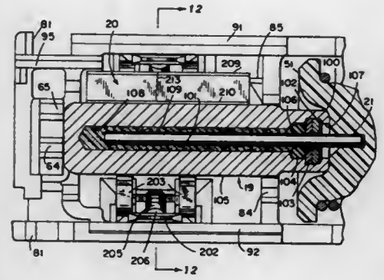
ACTUATOR ASSEMBLY FOR USE IN APPLIANCES

Spencer C. Schantz, Dousman; Steve L. Sagar, Muskego, both of Wis.; Kenyon A. Hapke, Libertyville, Ill., and William E. Bargholtz, Palmyra, Wis., assignors to U. S. Controls Corporation, New Berlin, Wis.

Filed Nov. 30, 1994, Ser. No. 346,969

Int. Cl.[6] F03G *7/06*

U.S. Cl. 60—528 **26 Claims**



1. A casing for holding a thermally-responsive actuator with a stem that moves a plunger with substantial force against a compression spring in response to the actuator being heated, wherein the compression spring is compressed between a flange end of the plunger and a spring-bearing end wall of the casing, the casing comprising:

two longitudinally extending casing sections forming a base end wall at one end of the casing and forming a spring-bearing end wall at an opposite end of the casing, the casing sections having arcuate projections extending longitudinally from the spring-bearing end wall into an interior of the casing;

said spring-bearing end wall of the casing forming a groove adjacent the arcuate projections, said compression spring having a portion of at least one coil that is received in said groove to closely fit around the arcuate projections to hold the casing sections together.

23. A thermally responsive mechanical actuator comprising an expansive wax-like material confined within a sealed system comprising a hardened shaft, sealed to a thermally heated pressure vessel by a combination of a seal plate of softer material than the shaft cooperating with a flexible membrane tightly fitting the diameter of the shaft and an O-ring underneath supported by a shelf in said pressure vessel.

5,572,870

BOOSTED BRAKE DEVICE WITH CONCEALED TRAVEL AND GUARANTEED GAIN

Philippe Castel, Paris, and Olivier Castello, Bondy, both of France, assignors to AlliedSignal Europe Services Techniques, Drancy, France

PCT No. PCT/FR94/01187, § 371 Date Nov. 21, 1994, § 102(e) Date Nov. 21, 1994, PCT Pub. No. WO95/14597, PCT Pub. Date Jun. 1, 1995

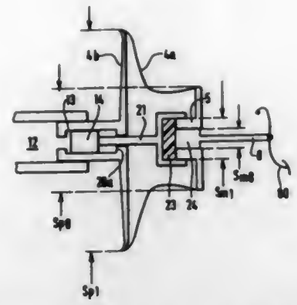
PCT Filed Oct. 13, 1994, Ser. No. 341,544

Claims priority, application France, Nov. 29, 1993, 93 14225

Int. Cl.[6] B60T *13/20;* **F15B** *9/10*

U.S. Cl. 60—553 **2 Claims**

1. A brake device for a motor vehicle, comprising, a master cylinder and a pneumatic booster, said master cylinder being filled with a brake fluid and having a first hydraulic piston for receiving an actuation force composed of an input force and a boost force to develop an output force, said pneumatic booster having a rigid casing separated in leaktight fashion into first and second chambers by means of at least one movable partition, capable, under the effect of a pressure difference established between the first and second chambers by opening a valve, said valve moving in the



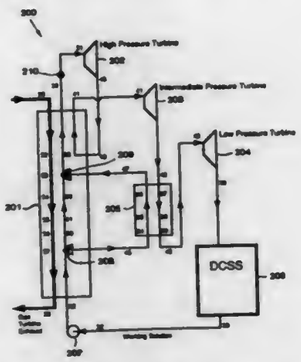
same direction as a pneumatic piston carrying said valve and also moving with respect to the casing, said pneumatic booster being activated by applying an input force to said control rod for opening of said valve, in order to exert the said actuation force on said lust hydraulic piston, said input force being transmitted via a reaction disk on which said pneumatic piston also bears in order to supply said hydraulic piston with a part of said actuation force, characterised in that said movable partition is mounted to slide freely with respect to said pneumatic piston, said first hydraulic piston of the master cylinder having a hollow movable cylinder secured to the movable partition and with a bore therein in which slides, in leaktight fashion and a second hydraulic piston capable of receiving at least the said input force coming from the reaction disk, said free sliding of said movable partition with respect to said pneumatic piston being limited by movement of the second hydraulic piston by said movable cylinder.

5,572,871

SYSTEM AND APPARATUS FOR CONVERSION OF THERMAL ENERGY INTO MECHANICAL AND ELECTRICAL POWER

Alexander I. Kalina, Hillsborough, Calif., assignor to Exergy, Inc., Hayward, Calif.

Filed Jul. 29, 1994, Ser. No. 283,091
Int. Cl.[6] F01K *25/06*
U.S. Cl. 60—649 **8 Claims**



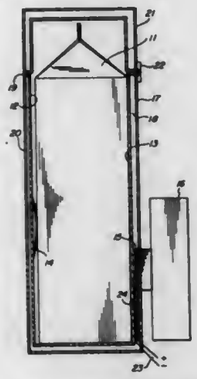
1. A method for implementing a thermodynamic cycle comprising the steps of:
expanding a gaseous working fluid to transform its energy into useable form and generating a spent stream;
condensing the spent stream producing a condensed stream;
generating from the condensed stream a first stream having a higher percentage of a low boiling component than is included in the condensed stream, a second stream having a lower percentage of a low boiling component than is included in the condensed stream, and a third stream having the same percentage of a low boiling component as is included in the condensed stream;
subjecting said first, second, and third streams to multiple distillation operations to generate a liquid working fluid; and
evaporating the liquid working fluid to generate the gaseous working fluid.

5,572,872

LIQUID COOLING, STORING AND DISPENSING DEVICE

Robert A. Hlavacek, 42 Visconti Dr., Naugatuck, Conn. 06770

Filed Aug. 15, 1994, Ser. No. 290,494
Int. Cl.[6] F25B *21/02*
U.S. Cl. 62—3.6 **14 Claims**



1. A cooling device for a package of liquid comprising:
(a) a container for holding a single package of liquid, said container adapted to receive and hold said single package in a close fitting relationship, said container having thermal insulation and a closable opening, and
(b) a refrigerating unit, said refrigerating unit having a cooling portion, said cooling portion in thermal contact with the liquid,
wherein the cooling portion provides cooling for the liquid in the package in the container, wherein the liquid within the package is no more than about one gallon, the closable opening further comprising a thermally insulated top portion of the container attached to a thermally insulated bottom portion of the container, allowing for easy opening of the container to load, dispense or pour the liquid out of the package.

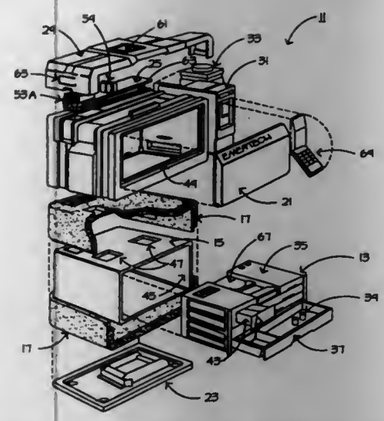
5,572,873

CARRIER METHOD AND APPARATUS FOR MAINTAINING PHARMACEUTICAL INTEGRITY

Robert A. Lavigne, Tucson, Ariz., and Robert C. Kellow, Alvarado, Tex., assignors to Emertech Incorporated, Tucson, Ariz.

Filed Mar. 2, 1995, Ser. No. 397,572
Int. Cl.[6] F25B *21/02;49/00*
U.S. Cl. 62—3.62 **30 Claims**

3. A carrier apparatus for maintaining proper temperatures of pharmaceuticals, comprising:
a) a substantially enclosed and thermally insulated first structure having a port which opens to provide access to a first cavity located within said first structure, said first cavity containing first pharmaceuticals;
b) a first heat pump coupled to said first structure so as to pump heat between an exterior of said first structure and said first cavity;



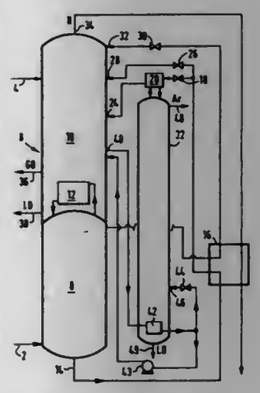
c) a substantially enclosed and thermally insulated second structure having a port which opens to provide access to a second cavity located within said second structure, said second structure being located inside of said first cavity, said second cavity, containing second pharmaceuticals;
d) a second heat pump coupled to said second structure so as to pump heat into and out of said second cavity.
e) means for controlling said first and second heat pumps so as to maintain a first storage temperature of said first cavity within a first predetermined range and so as to maintain a second storage temperature of said second cavity within a second predetermined range.

5,572,874

AIR SEPARATION

Thomas Rathbone, Farnham, England, assignor to The BOC Group, plc, Windlesham Surrey, England

Filed Jun. 9, 1995, Ser. No. 488,920
Claims priority, application United Kingdom, Jun. 17, 1994, 9412182
Int. Cl.[6] F25J *3/04*
U.S. Cl. 62—645 **20 Claims**



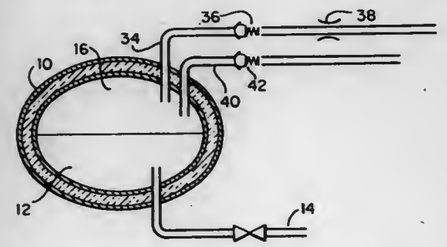
1. A method of separating argon and oxygen products from oxygen-enriched air, comprising:
forming a stream of oxygen-enriched air at a temperature suitable for its separation by rectification;
separating the stream into oxygen and nitrogen in a low pressure rectification column;
supplying liquid nitrogen reflux to the low pressure rectification column;
creating a flow of reboiled oxygen upwardly through the low pressure rectification column;
withdrawing an argon-enriched oxygen vapour stream from an intermediate mass transfer region of the low pressure rectification column;
at least partially condensing the argon-enriched oxygen vapour stream;
reducing the pressure of at least part of the condensed argon-enriched stream;
introducing the resulting pressure-reduced stream into an intermediate mass exchange region of an argon column and separating argon-enriched and argon-depleted fluids therefrom;
the argon-enriched oxygen stream being condensed by indirect heat exchange with argon-depleted liquid separated in the argon column;
and returning another part of the condensed argon-enriched oxygen stream to the low pressure rectification column.

5,572,875

RELIEF VALVE CONSTRUCTION TO MINIMIZE IGNITION HAZARD FROM CRYOGENIC STORAGE TANKS CONTAINING VOLATILE LIQUIDS

Keith W. Gustafson, Waleska, Ga., assignor to Minnesota Valley Engineering, Inc., New Prague, Minn.

Filed Apr. 28, 1994, Ser. No. 234,129
Int. Cl.[6] F17C *7/04;9/02*
U.S. Cl. 62—48.1 **13 Claims**



1. A storage system for a flammable cryogenic liquid, comprising:
a) a storage tank holding a quantity of flammable liquid cryogen and a vapor head;
b) means for delivering liquid cryogen from the tank; and
c) means for venting flammable vapor from the tank when the pressure therein exceeds a first value, said venting means delivering vapor to atmosphere at a velocity exceeding the flame propagation rate of the vapor, whereby the vapor, if ignited, is self-extinguishing.

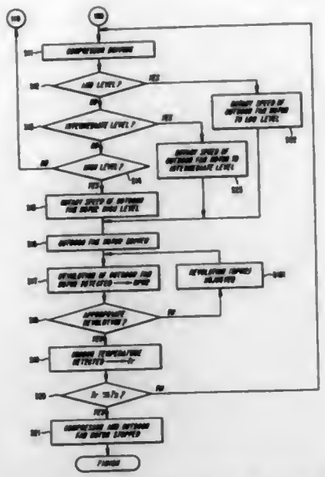
5,572,876

OPERATIONAL CONTROL METHOD AND APPARATUS FOR AN AIR CONDITIONER

Kyung-Yong Um, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 27, 1995, Ser. No. 495,793
Claims priority, application Rep. of Korea, Jun. 27, 1994, 94-14891
Int. Cl.[6] F25D *17/06;* **F25B** *1/00*
U.S. Cl. 62—89 **11 Claims**

11. A method for controlling an air conditioner, comprising the steps of:
setting a target air flow rate and a target temperature;
driving an indoor fan at a speed based on the target air flow rate;



determining whether to drive an outdoor fan based on an indoor temperature and the target temperature;

driving the outdoor fan at a speed based on the speed of the indoor fan;

driving a compressor at a speed based on the indoor temperature and the target temperature.

5,572,877

AIR CONDITIONER FOR VEHICLES

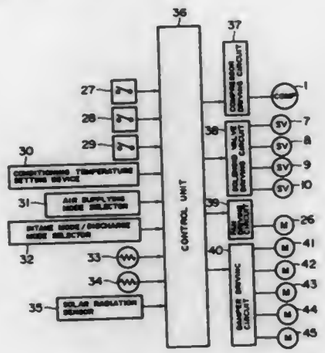
Susumu Ikeda; Toshimi Isobe, both of Isesaki; Akihiro Tajiri, Wako; Mitsuru Ishikawa, Wako; Choji Sakuma, Wako, and Nobuyuki Yuri, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, and Sanden Corporation, Gunma, both of Japan

Filed Jun. 7, 1995, Ser. No. 477,920

Claims priority, application Japan, Jul. 6, 1994, 6-155032

Int. Cl.[6] F25D *21/06;* **B60S** *1/54*

U.S. Cl. 62—155 **7 Claims**



1. An air conditioner for vehicles for operating in a dehumidifying-operation mode including at least one of either a dry-cooling or a dry-heating mode comprising:

a plurality of discharge ports including a defroster discharge port and discharge port switching means;

defroster discharge port opening means for opening at least said defroster discharge port for a predetermined time when said dehumidifying-operation mode is selected; and

first discharge port return means for opening a non-defroster discharge port determined in accordance with an operation mode of said air conditioner and the like after said predetermined time has elapsed.

5,572,878

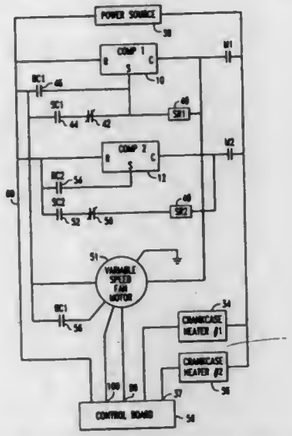
AIR CONDITIONING APPARATUS AND METHOD OF OPERATION

Surendra Kapoor, North Olmsted, Ohio, assignor to York International Corporation, York, Pa.

Filed Oct. 31, 1994, Ser. No. 332,821

Int. Cl.[6] F25B *1/10*

U.S. Cl. 62—175 **17 Claims**



1. An air conditioning apparatus comprising a first and second motor operated compressor having a common suction line and a common indoor coil;

a control board having a first stage and a second stage thermostat input, said inputs being energized in response to the closing of a respective first and second contact of a thermostat, and having first and second compressor output terminals that are energized selectively to operate the respective first and second compressors;

means responsive to the energization of the first stage thermostat input for energizing the first compressor output terminal;

means responsive to the energization and deenergization of the second stage thermostat input for respectively energizing and deenergizing the second compressor output terminal at times when the first compressor output terminal is energized;

means responsive to the deenergization of the first stage thermostat input at times when the second compressor output terminal is energized for deenergizing both the first and second compressor output terminals.

5,572,879

METHODS OF OPERATING A REFRIGERATION UNIT IN PREDETERMINED HIGH AND LOW AMBIENT TEMPERATURES

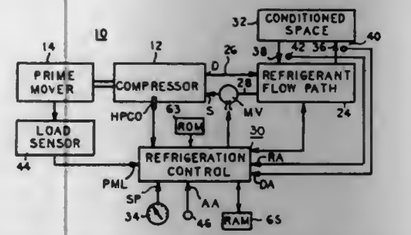
Robert L. Harrington, and Alan D. Gustafson, both of Eden Prairie, Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed May 25, 1995, Ser. No. 450,763

Int. Cl.[6] F25B *41/04*

U.S. Cl. 62—217 **18 Claims**

1. A method of controlling refrigerant pressure during elevated ambient temperature conditions in a refrigeration unit having a refrigerant compressor driven by a prime mover, with the refrigerant compressor having discharge and suction ports connected to a refrigerant flow path which includes controllable suction line modulation, comprising the steps of:



detecting the actual load PML on the prime mover,

sensing the ambient temperature AA,

providing a dynamic load limit DLL as a function of the ambient temperature AA,

comparing the actual load PML with the dynamic load limit DLL,

and changing the suction line modulation as a function of the comparison step, to change the load on the prime mover in an attempt to maintain the refrigerant pressure of the refrigeration unit below a predetermined value.

5,572,880

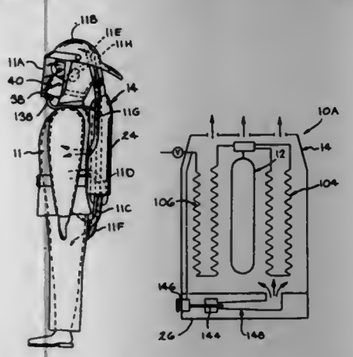
APPARATUS FOR PROVIDING A CONDITIONED AIRFLOW INSIDE A MICROENVIRONMENT AND METHOD

Dominick J. Frustaci, Williamsville, and James P. Dominiak, Cheektowaga, both of N.Y., assignors to Figgie International Inc., Willoughby, Ohio

Filed Apr. 21, 1995, Ser. No. 426,022

Int. Cl.[6] F25D *23/12;* **F17C** *9/02;9/04;* **A61M** *15/06*

U.S. Cl. 62—259.3 **31 Claims**



1. An air conditioning apparatus used in conjunction with a breathing apparatus to condition air in a microenvironment, which comprises:

a) supply means for a breathable fluid;

b) heat exchanger means provided outside the supply means and in fluid flow communication with the inside thereof, wherein the breathable fluid is movable from the supply means and through the heat exchanger means to provide a breathable gas stream;

c) respirator means connected to the heat exchanger means to deliver the breathable gas stream to the user to support the user's total respiratory requirements;

d) conduit means connected to the breathable gas stream downstream of the heat exchanger means, the conduit means including a diverter means intermediate the heat exchanger means and the respirator means to divert a portion of the breathable gas stream to an ejector means for expanding the diverted portion of the breathable gas stream to create a motive gas stream;

e) venturi means for receiving the motive gas stream to in turn create a reduced pressure zone at the venturi means; and

f) housing means for admitting microenvironment air or ambient air or both therein wherein the reduced pressure zone draws the microenvironment air or the ambient air into the housing means to flow across and contact the heat exchanger means to cool and dehumidify the microenvironment air or the ambient air or both and thereby create a conditioned airflow, and wherein the combined conditioned airflow and the motive gas stream are expelled into the microenvironment to cool the user.

5,572,881

AIR CONDITIONING SYSTEM SUITABLE FOR USE IN AN ELECTRIC VEHICLE

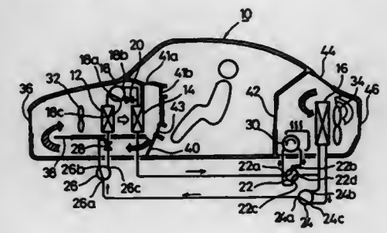
Yoshihiko Hotta, and Akihiro Tajiri, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 229,965, Apr. 19, 1994, which is a continuation of Ser. No. 982,384, Nov. 25, 1992, Pat. No. 5,305,613. This application Feb. 8, 1995, Ser. No. 385,525

Claims priority, application Japan, Nov. 27, 1991, 3-312822; Nov. 27, 1991, 3-312823; Nov. 27, 1991, 3-312824; Jan. 24, 1992, 4-011421

Int. Cl.[6] F25B *47/02*

U.S. Cl. 62—278 **9 Claims**



1. An air conditioning system for an electric vehicle, comprising:

a heat pump system for heating and cooling a vehicle room for passengers, which heat pump system comprises a compressor, an external air heat exchanger disposed outside the vehicle room, a fan for circulating air through said external air heat exchanger, an expansion valve, an internal air heat exchanger disposed in communication with the inside of the vehicle room, a fan for circulating air through said internal air heat exchanger and a four-way directional change-over valve;

a first means for selectively introducing exhaust air from the vehicle room to the external air heat exchanger;

a second means for selectively introducing external air directly to the external air heat exchanger; and

a control means for controlling said first and second means to close at least said second means during a defrosting operation of said external air heat exchanger in a heating mode.

5,572,882

LOW PRESSURE AIR CYCLE COOLING DEVICE

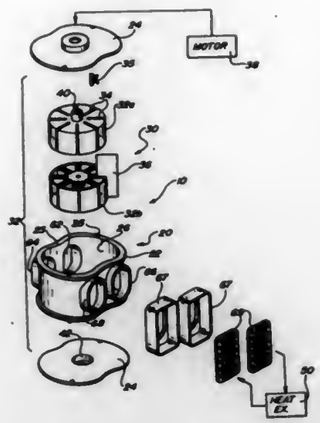
James P. Schafer, Issaquah, Wash., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Jul. 21, 1995, Ser. No. 505,496

Int. Cl.[6] F25D *9/00*

U.S. Cl. 62—402 **4 Claims**

1. A low-pressure, air cycle cooling device, for incrementally cooling the ambient air within a space, comprising:



a cooling chamber, generally drum-like in form, having a chamber housing and end caps disposed over the open ends thereof to define a chamber interior, said chamber housing having an inner wall;

a rotor assembly, including a generally cylindrical rotor body, carried by said end caps for driven rotary motion within said chamber, and further including

a plurality of circumferentially spaced radial slots formed in said rotor body;

rotor vanes slidingly carried in said radial slots, dimensioned to enable a said vane to extend radially toward said housing body inner wall while carried in a said slot;

drive means operatively connected to said rotor body;

wherein said chamber inner wall includes

an inlet port zone in which said wall includes a first pinch point lying at a radial distance substantially equal to the radius of said rotor body, such that a close clearance fit exists between said first pinch point and said rotor body; an inwardly concave curved portion; and an outwardly convex portion;

a compression intake zone, adjacent said inlet port zone in the direction of rotation of said rotor body, the chamber wall within said compression intake zone having a substantially constant radius;

a compressioo zone, adjacent said compression intake zone in the direction of rotation of said rotor body, the chamber wall within said compression zone having a radius that decreases;

a compression outlet zone, adjacent said compression zone in the direction of rotation of said rotor body, and having a second pinch point lying at a radial distance substantially equal to the radius of said rotor body, such that a close clearance fit exists between said second pinch point and said rotor body; an inwardly concave curved portion; and an outwardly convex portion;

an expansion inlet port zone adjacent to and symmetrical with said compression outlet zone;

an expansion intake zone, adjacent said expansion inlet port zone in the direction of rotation of said rotor body, the chamber wall within said expansion intake zone having a substantially constant radius;

an expansion zone, adjacent said expansion intake zone in the direction of rotation of said rotor body, the chamber wall within said expansion zone having a radius that increases;

an outlet port zone adjacent to and symmetrical with said inlet port zone;

an inlet port formed in said chamber wall of said inlet port zone, providing fluid communication between said inlet port zone and the space;

a compression outlet port formed in said chamber wall of said compression outlet zone;

an expansion inlet port formed in said chamber wall of said expansion inlet port zone; and

an outlet port formed in said chamber wall of said outlet port zone, providing fluid communication between said outlet port zone and the space; and

heat exchanger means in fluid communication with said compression outlet port zone and said expansion inlet port zone through said compression outlet port and said expansion inlet port.

5,572,883

COLD STORAGE APPARATUS

Linda Roberts, Warrington, United Kingdom, assignor to EA Technology Limited, United Kingdom

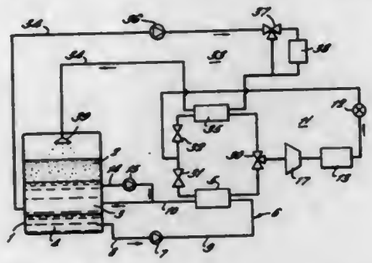
PCT No. PCT/GB93/01234, § 371 Date Dec. 6, 1995, § 102(e) Date Dec. 6, 1995, PCT Pub. No. WO93/25858, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 10, 1993, Ser. No. 351,231

Claims priority, application United Kingdom, Jun. 11, 1992, 9212444

Int. Cl.[6] F25D *12/02*

U.S. Cl. 62—434 **29 Claims**



1. Cold storage apparatus comprising a vessel containing a storage liquid and a heat transfer liquid in direct contact with said storage liquid to transfer heat thereto or therefrom, said liquids being immiscible and of different densities, said heat transfer liquid remaining liquid during heat transfer, said storage liquid comprising a liquid which solidifies when sufficiently cooled by said heat transfer liquid, the solidified storage liquid having a different density to said storage liquid, said liquids forming by gravity sequentially within said vessel a first layer of said heat transfer liquid, a second layer of said storage liquid, and a third layer of said solidified storage liquid; said cold storage apparatus including heat transfer liquid circulating means to deliver said heat transfer liquid to and from said vessel, said heat transfer liquid circulating means being arranged to deliver said heat transfer liquid directly into said second layer at a temperature below the freezing point of said storage liquid, and including feed means to inject said storage liquid from said second layer into said heat transfer liquid in said heat transfer liquid circulating means at a position before said heat transfer liquid enters said second layer.

5,572,884

HEAT PUMP

Richard N. Christensen, Columbus, Ohio, and Srinivas Garimella, Kalamazoo, Mich., assignors to The Ohio State University Research Foundation, Columbus, Ohio

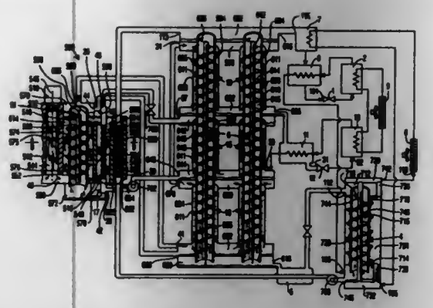
Filed Nov. 4, 1994, Ser. No. 334,412

Int. Cl.[6] F25B *15/00;15/12*

U.S. Cl. 62—476 **99 Claims**

1. An absorption refrigeration machine comprising:

a) a first loop comprising a first generator, a first rectifier, a first condenser, a first evaporator, and a first absorber operatively connected together;



b) a second loop comprising a second generator, a second condenser, a second evaporator and a second absorber operatively connected together, wherein said first generator and said first rectifier have a higher operating temperature than said second generator; and wherein

c) said first rectifier and said second generator are in heat exchange relation.

5,572,885

SHROUDED COILED CRESTED TUBE DIABATIC MASS EXCHANGER

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Filed Jun. 6, 1995, Ser. No. 465,828

Int. Cl.[6] F25B *15/12;37/00*

U.S. Cl. 62—484 **20 Claims**

16. A process for diabatic countercurrent vapor-liquid contact comprising:

a) providing a coil of crested tubing contained between two shrouds

b) distributing liquid to the top of the outside of said coil;

c) supplying vapor to the bottom of the outside of said coil; and

d) flowing heat transfer fluid through said tubing.

5,572,886

THIN METAL FOIL JEWELRY

Ernest Katz, 1755 55th St., Brooklyn, N.Y. 11204

Filed Oct. 25, 1994, Ser. No. 328,653

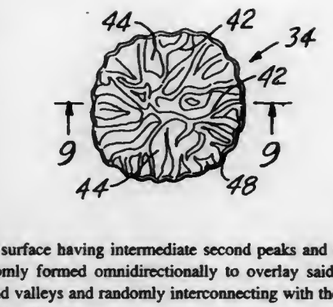
Int. Cl.[6] A44C *25/00*

U.S. Cl. 63—2 **8 Claims**

1. An item of jewelry, comprising:

a thin metal piece having a surface worked from a planar portion of thin foil having a first closed periphery to a shape having a second periphery;

said surface having first peaks and valleys randomly formed omnidirectionally to randomly intersect and cross each other and



said surface having intermediate second peaks and valleys randomly formed omnidirectionally to overlay said first peaks and valleys and randomly interconnecting with the first peaks and valleys.

5,572,887

MAGNETIC JEWELRY CHAIN CLOSURE

James Geswelli, Florham Park, N.J., assignor to Ultimate Trading Corporation, Roseland, N.J.

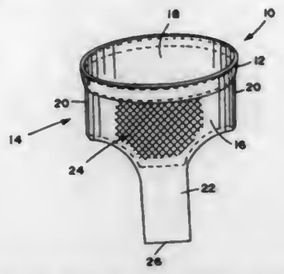
Filed Jun. 9, 1995, Ser. No. 489,265

Int. Cl.[6] A44C *5/00*

U.S. Cl. 63—3 **13 Claims**

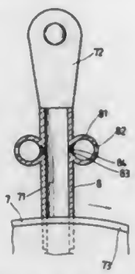
1. A closure for a jewelry chain or necklace, the chain or necklace having a pair of ends, said closure comprising a pair of mating first and second components, said first component being arranged for being fixedly secured to one end of the chain or necklace and comprising a projection having a first central axis, said second component being arranged for being fixedly secured to the other end of the chain or necklace and comprising a circular well having a second central axis, one of said first and second components comprising a tab fixedly positioned with respect thereto and extending in a plane perpendicular to said central axis thereof, and the other of said first and second components comprising a recess extending in a plane perpendicular to said central axis thereof, said projection being arranged to be magnetically received within said well with said first and second central axes being substantially coincident and with said tab and said recess being in a common plane, said first and second components being rotatable with respect to each other about said coincident axes to a predetermined orientation while said projection is magnetically received within said well, whereupon said rotation of said first and second components with respect to each other to said predetermined orientation automatically causes said tab of said one component to enter said recess of said other component to mechanically releasably secure said components together.

5,572,888
GARMENT BLANK, LOWER TORSO GARMENT AND METHOD OF MAKING
George A. Browder, Jr., Winston-Salem, and William R. Higgins, High Point, both of N.C., assignors to Sara Lee Corporation, Winston-Salem, N.C.
Filed Jul. 19, 1995, Ser. No. 504,129
Int. Cl.[6] D04B 1/24; A41B 9/00
U.S. Cl. 66—171 11 Claims



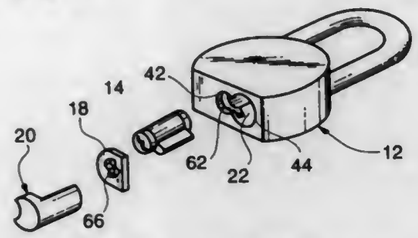
1. A circular knit blank having a plurality of courses and wales for use in the manufacture of panties comprising: a welt portion, a tubular knit body having front, back and side portions with continuous courses of plain jersey stitch loops; a single ply panel continuously knit from the front portion, the front portion having a spot control area containing a first yarn forming plain jersey stitch loops on all needles of all courses and a second heavier yarn forming plain jersey stitch loops on alternate needles of alternate courses and tuck loop on intervening needles of alternate courses, the tuck loops in the spot control area being formed on even numbered needles of one alternate course and odd numbered needles on adjacent alternate courses, and the spot control area extending from the welt down the front portion to the single ply panel.

5,572,889
GEARSHIFT STICK LOCK FOR AUTOMOBILES
Wu Ping-Hua, P.O. Box 82-144, Taipei, Taiwan
Filed Nov. 16, 1994, Ser. No. 340,712
Int. Cl.[6] B60R 25/06
U.S. Cl. 70—247 1 Claim



1. A gearshift stick lock for an automobile having a transmission case, comprising:
a lock body;
a shackle including two legs engageable with said lock body;
a sleeve for wholly fitting over a gearshift stick of said automobile and extending downwardly into the transmission case, said sleeve including two threaded holes and two rings having a hole aligned with respective one of said threaded holes; and
two screws each extending through a respective one of said threaded holes to bear against the gearshift stick of said automobile thereby fixedly mounting said sleeve on said gearshift stick;
said legs of said shackle being inserted through said lugs to engage said lock body so as to lock said gearshift stick in place.

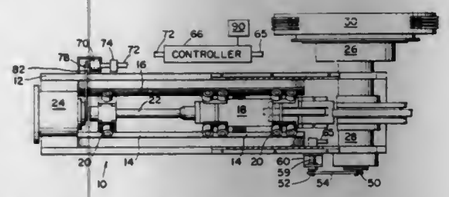
5,572,890
HIGH SECURITY LOCK SYSTEM INCLUDING COVER PLATE
Larry L. Carpenter, Olympia Fields, Ill., assignor to American Lock Company, Crete, Ill.
Filed Oct. 14, 1994, Ser. No. 324,282
Int. Cl.[6] E05B 9/04;67/22
U.S. Cl. 70—371 12 Claims



1. A high security lock apparatus comprising:
(a) a lock cylinder, including an interchangeable lock core having first and second lobes;
(b) a lock housing defining a key receiving surface, said lock housing having cavity walls defined by first and second intersecting cavities which are generally cylindrical and extend approximately the length of said lock housing for receiving said first and second lobes of said lock cylinder;
(c) a cover plate having an opening through which a key may pass;
(d) a cover plate receiving recess which is formed by a generally U-shaped groove aligned parallel and adjacent to said key receiving surface within said first cavity, and which slidably receives said cover plate, wherein said cover plate covers a portion of said interchangeable lock core;
(d) a retaining shield received by said second cavity, said retaining shield including a post portion having first and second ends and a shield cover portion attached to said first end of said post and which partly covers said cover plate, said post portion having a flat abutment surface which abuts an end of said cover plate and thereby prevents said cover plate from being slidably removed from said U-shaped recess and a cut away portion defining a slot for receiving one of said lobes of said cylinder and thereby preventing movement of said cylinder within said cavity;
(e) said second post end has a threaded retaining hole; and
(f) a U-shaped shackle, the U-shaped shackle having first and second shackle legs, said first and second shackle legs being formed to be received in said first and second shackle bores, respectively, wherein said second shackle cylinder bottom has formed therein a clearance hole, said clearance hole being aligned with said threaded retaining hole; and
(g) a retaining screw, said retaining screw capable of being driven through said clearance hole into said threaded retaining hole to retain said retaining shield in a fixed position.

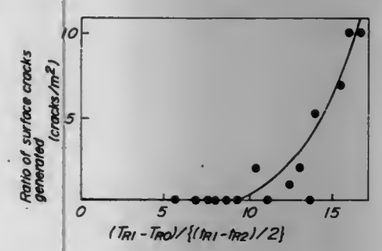
5,572,891
CAN BODY MAKING APPARATUS
Greg Klein, Fairfield, and Allen Omernick, Cincinnati, both of Ohio, assignors to OKL Can Line, Cincinnati, Ohio
Filed Dec. 1, 1994, Ser. No. 347,609
Int. Cl.[6] B21D 24/10
U.S. Cl. 72—20.5 7 Claims

1. An improved can body making apparatus, comprising:
a) a base;



b) a way system supported by the base;
c) a punch ram reciprocally movable on the way system, the punch ram being adapted for contacting a preformed cup blank and forcing the cup blank through one or more dies;
d) a first drive system for moving the punch ram on the way system, the first drive system being mechanically interconnected to the punch ram for reciprocally moving the punch ram through a range of movement relative to the base;
e) a locating structure for locating a cup blank at a position to be contacted by the punch ram at a predetermined position within the punch ram's range of movement;
f) a feeder mechanism for moving cup blanks into the locating structure;
g) a second drive system for moving the feeder mechanism in timed phased relationship to the movement of the punch ram, the second driving system being mechanically connected to the feeder mechanism but being mechanically uncoupled to the first drive system;
h) an encoder for generating a control signal representative of the position of the punch ram; and
i) a controller for controlling movement of the second drive system, the controller being responsive to the control signal generated by the encoder and being operative to control the timed phased relational movement of the second drive system relative to the movement of the punch ram.

5,572,892
METHOD OF PRODUCING SILICON STEEL HOT ROLLED SHEETS HAVING EXCELLENT SURFACE PROPERTIES
Mineo Muraki; Toshito Takamiya, and Satoshi Koseki, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan
PCT No. PCT/JP93/01901, § 371 Date Aug. 25, 1994, § 102(e) Date Aug. 25, 1994, PCT Pub. No. WO94/14549, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 27, 1993, Ser. No. 295,621
Claims priority, application Japan, Dec. 28, 1992, 4-348646
Int. Cl.[6] B21B 1/26
U.S. Cl. 72—39 11 Claims



1. A method of producing silicon steel hot rolled sheets having excellent surface properties by subjecting a slab of silicon steel containing Si: 2.0–4.5 wt % to a rough hot rolling through a first stand to form a steel sheet, having opposing surfaces, and then subjecting said steel sheet to a finish hot rolling, characterized in that rolling at said first stand in the rough hot rolling is carried out so that a relation of thickness at entrance side of said first stand t_{R1} (mm), thickness at delivery side thereof t_{R2} (mm), surface temperature of said steel sheet at gripping T_{R0} (° C.) and temperature at the depth of $(t_{R1}-t_{R2})/2$ (mm) from at least one opposing surface of said steel sheet at gripping T_{R1} satisfies the following equation:

$$(T_{R1}-T_{R0})/\{(t_{R1}-t_{R2})/2\} \leqq 10 \text{ (° C./mm)}.$$

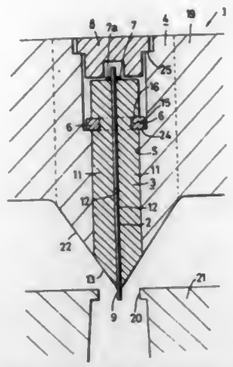
5,572,893
METHOD OF NECKING AND IMPACT EXTRUDED METAL CONTAINER
Mark E. Goda, 404 Water St., Fredonia, Pa. 16124, and Charles Faloney, 122 Sunset Dr., Jamestown, Pa. 16134
Filed Dec. 1, 1994, Ser. No. 347,888
Int. Cl.[6] B21D 51/26
U.S. Cl. 72—254 16 Claims



1. A method of forming a metal container of predetermined diameter and having an elongated, narrowed neck, said method comprising:
(a) impact extruding a slug to form a container having an open end, said open end being defined by an encircling first edge,
(b) trimming a portion from the length of said container at said open end to define a second encircling edge, said portion being at least 20 mm long so that the metal of said container at said second edge comprises metal which is substantially more formable than the metal of said container at said first edge,
(c) inserting said container sequentially into a series of necking dies to form said elongated, narrowed neck at said open end.

5,572,894
DIE FOR EXTRUDING ELONGATE ARTICLES HAVING LONGITUDINAL ORIFICES
Sadahide Yano, Osaka, Japan, assignor to Yugen Kaisha Yano Engineering, Osaka, Japan
Filed Dec. 21, 1994, Ser. No. 360,927
Claims priority, application Japan, Dec. 27, 1993, 5-331385
Int. Cl.[6] B21C 25/04
U.S. Cl. 72—269 6 Claims

1. A die for extruding elongated articles each having a longitudinal orifice, comprising:
a male die having an orifice forming portion and a female die having a forming hole, said male die being combined with said female die so as to locate said orifice forming portion within said forming hole, said male die including
a thin rod-shaped mandrel being uniform in cross-section over its full length and having a diameter of 3 mm or less, a leading end portion of said thin rod-shaped mandrel constituting said orifice forming portion;
a gripper composed of gripping segments each having a straight groove formed in an inner surface thereof to form a mandrel-gripping bore in said gripper, wherein a diameter of said mandrel-gripping bore is slightly smaller than that of said mandrel so as to fit forcibly and sideways on said



thin rod-shaped mandrel at adjustable positions along a direction of an extrusion; and

a mandrel holder having an axial bore for receiving and holding said gripper;

wherein said thin rod-shaped mandrel is tightly surrounded and gripped by said gripping segments of said gripper being placed in said axial bore of said mandrel holder with said orifice forming portion protruding a predetermined distance forwardly from said gripper, wherein an inner peripheral surface of said axial bore is shrinkage-fitted, interference-fitted or otherwise fixedly fitted on outer peripheral surfaces of said gripping segments, thereby urging said gripping segments to prevent said thin rod-shaped mandrel from slipping off said gripping segments longitudinally thereof during an extruding process.

5,572,895

METHOD OF MUTUALLY DISPLACING AT LEAST TWO PARTS OF AN ACTUATOR, AND ACTUATOR FOR USE IN SUCH A METHOD

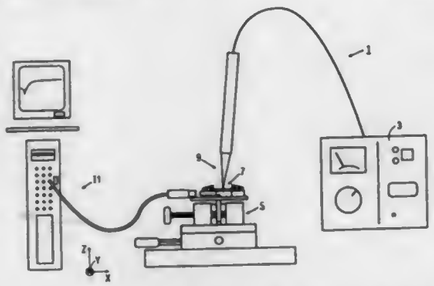
Willem Hoving; Johannes A. M. Van Hout; Marcellinus A. M. Grooten; Piet C. J. Van Rens; Marinus P. Koster, and Marten Westerhof, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 4, 1994, Ser. No. 286,124

Claims priority, application Belgium, Aug. 11, 1993, 09300828

Int. Cl.[6] B21D *37/16*

U.S. Cl. 72—342.94 **15 Claims**



1. A method of mutually displacing at least two parts of an actuator through local heating and cooling-down of the actuator, whereby the actuator is plastically deformed locally and the parts are moved relative to one another, characterized in that a bridge connecting the two parts and extending parallel to a main surface is locally heated substantially uniformly through substantially its entire thickness transversely to the main surface with a temperature gradient which is minimized transversely to the main surface, and is subsequently cooled down whereby the length of the bridge between the parts is reduced as a result of the plastic deformation which takes place, so that the parts interconnected by means of the bridge are displaced relative to one another in a direction parallel to the main surface.

5,572,896

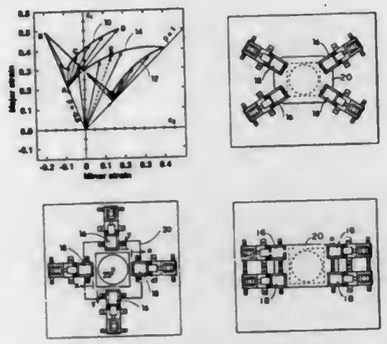
STRAIN PATH CONTROL IN FORMING PROCESSES

James M. Story, Plum Boro, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 25, 1994, Ser. No. 201,894

Int. Cl.[6] B21D *22/00;22/21*

U.S. Cl. 72—350 **11 Claims**



1. A method of forming a generally planar sheet metal workpiece into a three-dimensional object by subjecting the workpiece to a stretch forming process employing at least two strain paths that have slopes of opposite sign, said strain paths defining a point on a forming limit curve that is shifted substantially from a forming limit curve generated by linear strain paths, the method comprising:

choosing at least two strain paths that have slopes of opposite sign for stretching the workpiece in a manner that will shift substantially the position of the forming limit curve from that of a forming limit curve generated by stretching the workpiece along linear strain paths,

said shift allowing a substantially higher strain state to be reached in the workpiece in comparison to a strain state achievable using linear strain paths to attain the same strain state in flowing workpiece metal into a die cavity under forces that restrain the periphery of the workpiece; and

forming the three-dimensional object from the sheet metal workpiece by flowing workpiece metal into a die cavity in a manner that selectively controls the position and magnitude of forces restraining the periphery of the workpiece such that the metal flow into the die cavity takes place selectively along the strain paths having the slopes of opposite sign.

5,572,897

METHOD OF OBTAINING HOLLOW FORGINGS BY RADIAL FORGING OF SOLID BLANKS

Tjurin V. Aleksandrovich, Trofimov Str. 9/117, 112321 Moscow; Kuroles V. Ivanovich, Planernaya Str. 12/1/255, 123481 Moscow; Lazorkin V. Andreyevich, Zadneprovskaya Str. 16a/100, 330096 Zaporozhye, and Volodin A. Mikhaylovich, Engels Str. 41/8/18, 390010 Kurgan Ryazan, all of Russian Federation

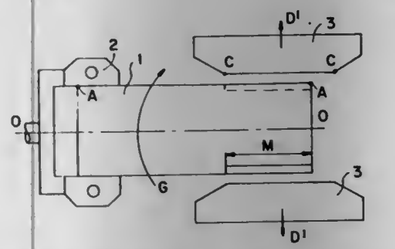
PCT No. PCT/RU93/00124, § 371 Date Jun. 16, 1994, § 102(e) Date Jun. 16, 1994, PCT Pub. No. WO93/24256, PCT Pub. Date Sep. 12, 1993

PCT Filed Jun. 2, 1993, Ser. No. 244,925

Claims priority, application Russian Federation, Jun. 4, 1992, 5045887/27

Int. Cl.[6] B21K *21/00*

U.S. Cl. 72—368 **7 Claims**



1. A method of obtaining hollow forgings by radial forging of solid blanks including the steps of:

interposing a solid blank longitudinally between working surfaces of at least one set of forging tools;

said forging tools swaging said blank in a radial direction to form contact areas on the blank;

rotating said blank around its longitudinal axis;

said forging tools again swaging said blank in a radial direction to form additional contact areas on the blank;

each swaging of the blank by said forging tools having a fixed deformation rate of 3–8% of the initial cross-sectional dimension of said blank with the resulting widths of said contact areas being approximately within 0.121–0.124 of said initial cross-sectional dimension.

5,572,898

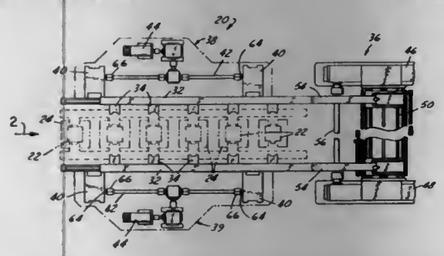
MODULAR DIE TRANSFER SYSTEM

Boice F. Horde, Westland, and Robert L. Decheim, Fenton, both of Mich., assignors to Livernois Die and Automation, Dearborn, Mich.

Filed Oct. 20, 1995, Ser. No. 546,536

Int. Cl.[6] B21D *43/05*

U.S. Cl. 72—405.16 **8 Claims**



1. In a die transfer system for transferring workpieces between successive die stations in a stamping press, and including elongated bar means having spaced means for engaging workpieces at successive die stations, first means for reciprocating said bar means longitudinally for transferring workpieces between successive die stations, and second means for reciprocating said bar means horizontally into and out of engagement with workpieces at the die stations and vertically upwardly and downwardly with respect to the die stations, said second means comprising:

at least one drive module coupled to said bar means, drive shaft means coupled to said drive module, and means coupled to said drive shaft means for operating said drive shaft means and said drive module in synchronism with operation of the stamping press, said drive module comprising:

crank arm means, second shaft means mounted for rotation about a fixed axis within said drive module and having said crank arm means rotatably coupled thereto, means operatively coupling said second shaft means to said drive shaft means for rotating said second shaft means and said crank arm means about said fixed axis parallel to said bar means, cam plate means coupled to said bar means and mounted for movement laterally of said axis both horizontally and vertically with respect to said axis, cam slot means extending along said cam plate, and cam follower means disposed in said slot means and coupled to said crank arm means,

the improvement bar preventing motion of said cam plate means and said bar means in one direction during motion thereof in the orthogonal direction comprising means on said cam plate capturing said second shaft means in one direction during motion of said cam plate means in the orthogonal direction so that said second shaft means cooperates with said capturing means to prevent said orthogonal motion of said cam plate means and said bar means.

5,572,899

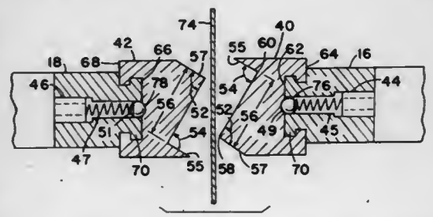
BENDING METHOD USING COOPERATING JAWS HAVING ANGLED PLANAR FACES

Andrew Balaity, Wayne, and Rocco R. Borzone, Emerson, both of N.J., assignors to Howmedica Inc., New York, N.Y.

Filed Aug. 8, 1994, Ser. No. 287,456

Int. Cl.[6] B21D *37/10*

U.S. Cl. 72—413 **6 Claims**



1. A method for accurately and quickly repairing a facial fracture on a patient having particular facial dimensions, said method comprising:

(a) measuring with a template an offset length L required to fit and correct said facial fracture;

(b) selecting a bending jaw from a set of bending jaws having offset increments of 1 millimeter and offset lengths L between 2 millimeters and 11 millimeters; and

(c) bending a facial bone plate simultaneously at two positions separated by said offset length L, said method of bending comprising:

(A) inserting said plate of metal into a plate bender comprising:

(a) a first replaceable bending jaw attached to a first pliers jaw, said first replaceable jaw comprising:

(1) a first planar face having a groove therein which engages a corresponding protrusion of said first pliers jaw and;

(2) a second planar face spaced apart from said first planar face and angled with respect to said first planar face and having a cross-section having an offset length L which is bounded both by a first plane and a second plane spaced at an angle α_1 and α_2 with respect to each other; and

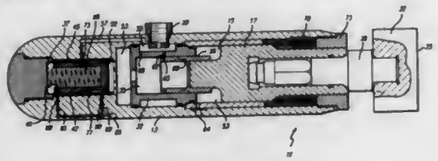
(b) a second replaceable jaw attached to a second pliers jaw, said second replaceable jaw comprising:
(1) a third planar face having a groove therein which engages a corresponding protrusion of said second pliers jaw and;
(2) a fourth face spaced apart from said third face and angled with respect to said third face and having a cross-section having an offset length L which is bounded by both a third plane and a fourth plane spaced at an angle α_3 and α_4 with respect to each other, and
(B) pressing said first bending jaw and said second bending jaw together with said metal sheet therebetween, so as to bend said metal sheet simultaneously with two angles spaced apart by said offset length L.

5,572,900

REDUCED RECOIL BUCKING BAR

Tokunbo I. Ayeni, Anaheim, Calif., assignor to The Deutsch Company, Los Angeles, Calif.

Filed Aug. 1, 1994, Ser. No. 283,579
Int. Cl.[6] B21J *15/40*
U.S. Cl. 72—453.19 **18 Claims**



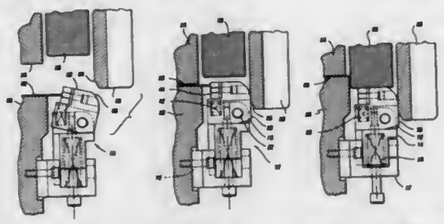
1. A recoilless bucking bar comprising:
a housing;
a driven member movable with respect to said housing;
structure defining a first pressure chamber;
a piston fixed to said driven member, said piston exposed to gas pressure within said first pressure chamber;
structure defining an exhaust port for releasing pressure from said first pressure chamber to the atmosphere;
structure defining a second pressure chamber; and
a shuttle having two sides, said shuttle being exposed on one side to pressure from within said first pressure chamber and on the other side to pressure from within said second pressure chamber.

5,572,901

LOCATOR FOR METAL FLANGING APPARATUS

Matthew L. Wilhelm, Rochester Hills, Mich., assignor to Active Design, Inc., Warren, Mich.

Filed Apr. 21, 1995, Ser. No. 426,225
Int. Cl.[6] B21D *5/04*
U.S. Cl. 72—461 **17 Claims**



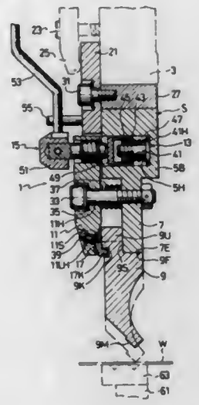
1. An adjustable locator device for locating a sheet metal workpiece laterally on a metal forming die, the die including a stationary die member, a flanging member movable in a longitudinal direction for forming the sheet metal, and a driver movable with the flanging member, the locator device comprising:
a base adapted for attachment to the stationary die member;
a translational member movably mounted to said base for movement along a first axis;
a locator portion pivotally mounted to said translational member about an axis transverse of the first axis, and said locator portion including a workpiece stop surface.

5,572,902

UPPER TOOL HOLDER APPARATUS FOR PRESS BRAKE AND UPPER TOOL ATTACHABLE THERETO

Susumu Kawano, Atsugi, Japan, assignor to Amada Metrecs Company, Limited, Kanagawa, Japan

Continuation of Ser. No. 177,988, Jan. 6, 1994, Pat. No. 5,390,527. This application Jan. 20, 1995, Ser. No. 375,734
Claims priority, application Japan, May 18, 1993, 5-115655; May 18, 1993, 5-115665; Aug. 25, 1993, 5-210344
Int. Cl.[6] B21D *37/04*
U.S. Cl. 72—482.91 **9 Claims**



1. A press brake, comprising:
a lower table to which a lower tool is attached, an upper table, and
an upper tool holder attached to said upper table for removably supporting an upper tool, said upper tool being adapted to cooperate with said lower tool for bending a workpiece disposed therebetween;
said upper tool holder comprising:
a holder body attached to said upper table and provided with a support plate at a lower end thereof,
a tool clamp attached to said holder body in such a way as to be pivotal about a center portion of said holder body, a lower portion of said tool clamp being adapted to clamp said upper tool onto said support plate,
an elastic member provided between said holder body and an upper portion of said tool clamp for urging said upper portion of said tool clamp away from said holder body, and
a wedge-shaped member vertically movably provided between said lower portion of said tool clamp and said upper tool.

5,572,903

SHAKER FOR COT, STROLLER AND BABY CARRIAGE

Yun S. Lee, 56, Min Sheng Street, Fengyuan, Taiwan

Filed Jun. 5, 1995, Ser. No. 488,750
Int. Cl.[6] F16H *21/20;21/32;* **A47D** *9/02*
U.S. Cl. 74—44 **5 Claims**

1. A shaker for cots, strollers and baby carriages having:
a clamping unit which has a front jaw, a corresponding rear jaw, and a lever;

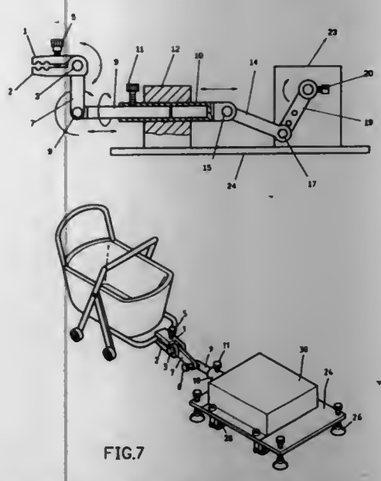


FIG.7

a reciprocating unit which has a reciprocating rod and a rod sleeve, a rear portion of said reciprocating rod being positioned in said rod sleeve adjustably;
a crank unit which has a front link and a rear link;
a power unit which has a motor with an axle;
a bottom plate;
said two jaws being positioned on a top portion of said lever pivotedly;
a lower portion of said lever connected to a front portion of said reciprocating rod via a screw;
a sleeve seat which is positioned on said bottom plate supporting said rod sleeve;
a rear portion of said rod sleeve connected to a front portion of said front link via a pin;
a rear portion of said front link connected to a front portion of said rear link via a hexagonal screw;
a rear portion of said rear link connected to said axle of said motor pivotedly; and
a plurality of wheels disposed beneath said bottom plate.

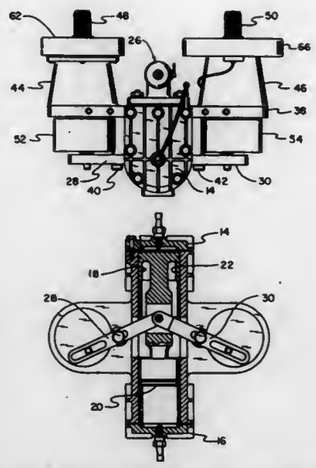
5,572,904

OSCILLATION LEVER ARM ENGINE

Mihai C. Minculescu, 52 Tamarack Ct., Newtown, Pa. 18940

Filed Jan. 5, 1995, Ser. No. 369,153
Int. Cl.[6] F16H *21/34;* **F02B** *75/32*
U.S. Cl. 74—45 **5 Claims**

1. An oscillating lever arm engine comprising:
an elongated cylinder having a hollow cylindrical interior;
a mounting plate fixedly secured to said elongated orthogonally to a longitudinal length of said elongated cylinder;
a first cylinder head sealingly coupled to a first end of said elongated cylinder, and a second cylinder head sealingly coupled to a second end of said elongated cylinder;
a first piston movably mounted within said elongated cylinder, and a second piston movably disposed within said elongated cylinder and positioned in an opposed direction relative to said first piston;
a connecting rod extending between said first and second piston;
a first output shaft rotatably mounted to said mounting plate;
a first flywheel mounted to said first output shaft;
a first lever arm pivotally mounted at a first end thereof to said connecting rod and projecting exteriorly of said cylinder, said first lever arm being pivotally mounted at a medial portion thereof to said mounting plate, said first lever arm being movably coupled at a second end thereof to said first flywheel such that an oscillating movement of said first lever arm imparts a rotational motion to said first flywheel;



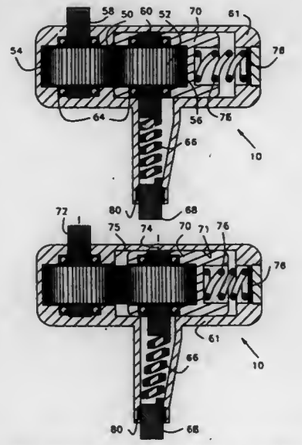
a second output shaft rotatably mounted to said mounting plate; and
a second flywheel mounted to said second output shaft; and a second lever arm pivotally mounted at a first end thereof to said connecting rod and projecting exteriorly of said cylinder, said second lever arm being mounted at a medial portion thereof to said mounting plate, said second lever arm being movably coupled at a second end thereof to said second flywheel such that an oscillating movement of said second lever arm imparts a rotational motion to said second flywheel.

5,572,905

DISPLACEABLE SPUR GEAR TORQUE CONTROLLED DRIVER AMD METHOD

Joseph S. Cook, Jr., Webster, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 10, 1994, Ser. No. 288,112
Int. Cl.[6] F16H *35/06;35/10;* **B25B** *23/14*
U.S. Cl. 74—411 **21 Claims**



1. A driver for applying torque to a fastener, comprising:
a driver housing;

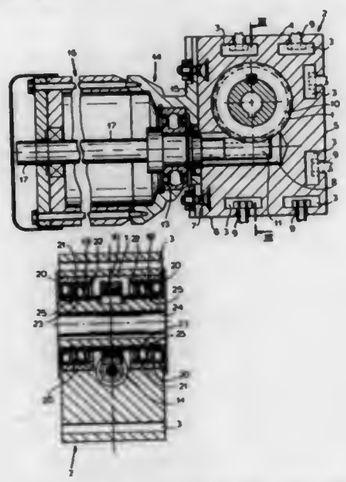
a first shaft carried by said driver housing having a first shaft axis extending longitudinally therethrough;
a first gear carried by said first shaft for rotation about said first shaft axis, said first gear having first gear teeth mounted around a circumferential portion thereof;
a displaceable gear support member for displacement having a lateral component with respect to said first shaft axis between an engaged position and a disengaged position;
a biasing assembly to bias said displaceable gear support member toward said engaged position;
a second gear carried by said displaceable gear support, said second gear having second gear teeth mounted around a circumferential portion thereof, said second gear teeth and said first gear teeth meshing when said displaceable gear support member is in said engaged position, at least one of said first and second gear teeth defining a tooth profile that is angled to produce a separating force in response to torque transfer between said first and second gears for moving said displaceable gear support member to said disengaged position to thereby limit torque transferred between said first and second gears and to said fastener.

5,572,906

TRANSMISSION HOUSING

Helmut Jörg, Roffeelgasse 25, A-1200 Vienna, Austria

PCT No. PCT/AT93/00076, § 371 Date Jan. 3, 1995, § 102(e) Date Jan. 3, 1995, PCT Pub. No. WO93/22584, PCT Pub. Date Nov. 11, 1994
PCT Filed May 3, 1993, Ser. No. 335,831
Claims priority, application Austria, May 4, 1992, 903/92
Int. Cl.[6] F16H *57/02;1/14;1/16*
U.S. Cl. 74—425 **13 Claims**



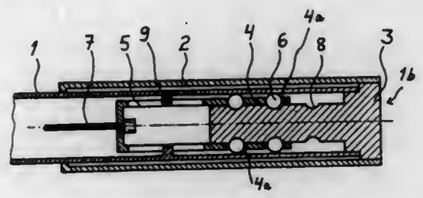
1. In combination with a drive unit having a drive gear rotatable about a drive-gear axis, an angle transmission comprising:
a housing formed unitarily of one piece with a throughgoing passage centered on a longitudinal axis,
a plurality of substantially planar outer faces each extending substantially parallel to the axis, one of the outer faces bearing flatly on the drive unit,
a transverse bore opening at and extending between the one face and the passage along an axis transverse to the longitudinal axis, and
a plurality of undercut grooves extending longitudinally the full length of the housing and opening at least at the one outer surface, each of the grooves being substantially narrower at the respective outer face than inward therefrom measured in a direction transverse to itself and parallel to the respective outer face;
a main gear rotatable in the passage about the longitudinal axis;
a drive gear in the transverse bore in mesh with the main gear and rotatable about the transverse axis; and
a plurality of bolts seated in the drive unit and each having an enlarged end in a respective one of the grooves of the one face, the bolts clamping the drive unit and housing together parallel to the transverse axis.

5,572,907

ACTUATOR ASSEMBLY IN HANDLE-BAR

Pekka Kaakinen, Järvikatu 8-10 G, FIN-33710 Tampere, Finland

PCT No. PCT/FI93/00106, § 371 Date Sep. 20, 1994, § 102(e) Date Sep. 20, 1994, PCT Pub. No. WO93/19309, PCT Pub. Date Sep. 30, 1993
PCT Filed Mar. 22, 1993, Ser. No. 307,630
Claims priority, application Finland, Mar. 23, 1992, 921244
Int. Cl.[6] B62K *23/04;* **F16H** *25/22*
U.S. Cl. 74—489 **8 Claims**



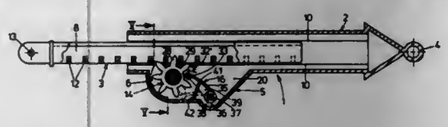
1. An actuator for producing mechanical power for performing a function in a handlebar-steered device, said handlebar-steered device having a handlebar tube with an open outer end, said actuator comprising:
a tubular twisting grip mounted on an open outer end of a handlebar tube;
a screw element having a spiral ball groove, said screw element being fixedly attached to said twisting grip for rotation therewith, said screw element extending axially within said twisting grip and extending axially within said open outer end of said handle bar tube;
means for converting twisting rotation of the twisting grip into linear motion comprising:
a tubular sleeve element surrounding said screw element, said sleeve element being mounted on said screw element for axial motion within the handlebar tube relative to said screw element;
means preventing rotation of said screw element within said handlebar tube; and
balls positioned in holes in said tubular sleeve element, said balls being in rolling contact with the inner surface of the handlebar tube and with the spiral groove of said screw element, said balls centering said screw element in said handlebar tube, whereby twisting said twisting grip causes rotation of said screw element which causes axial motion of said sleeve element in said handlebar tube, said axial motion of said sleeve element providing said mechanical power.

5,572,908

RATCHET MECHANISM FOR TELESCOPE DEVICES ON TOY VEHICLES

Paul H. Bruder, Fürth-Burgfarrnbach, Germany, assignor to Bruder Spielwaren GmbH & Co KG, Germany

Filed Dec. 19, 1994, Ser. No. 359,077
Claims priority, application Germany, Jan. 27, 1994, 9401371 U
Int. Cl.[6] G05G *5/18*
U.S. Cl. 74—577 R **12 Claims**



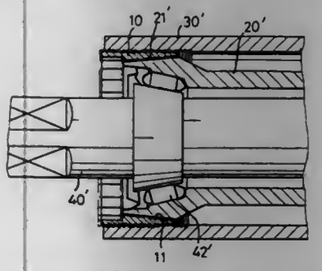
1. A ratchet mechanism for telescope devices on toy vehicles, in particular for telescope supports (1) of crane jibs on toy crane trucks, comprising:
a manually drivable driving gearwheel (14) rotatably positioned on a telescope base body (2),
a rack-type row of teeth (rack 12) engaging with the driving gearwheel (14) and disposed on a telescope arm (3) which is lodged for longitudinal displacement in the telescope base body (2), and
a pawl (16) being in ratcheting engagement with a tooth gap (29) between two teeth (28) of the driving gearwheel (14) for the telescopic arm (3) to be fixed in different positions of displacement on the telescope base body (2),
wherein the pawl (16) consists of elastically flexible plastics so that on the one hand, upon actuation of the driving gearwheel (14) for an extraction of the telescopic arm (3), it ratchets over the teeth (28) of the driving gearwheel (14) while being deflected counter to a direction of engagement (E), and on the other hand, upon actuation of the telescopic arm (3) in a direction of retraction by a force exceeding a limit, it is elastically deformable in a defined manner such that the pawl (16) again ratchets over the teeth (28) of the driving gearwheel (14) while releasing the telescopic arm (3) in the latter's direction of retraction.

5,572,909

COUPLING MEANS FOR ENGAGEMENT BETWEEN A HOUSING AND A TUBE IN A BOTTOM BRACKET

Yi C. Chi, No. 139-5, An Mei Rd., Mei Shan Village, Hou Li Hsiang, Taichung Hsien, Taiwan

Filed Jan. 26, 1994, Ser. No. 188,058
Int. Cl.[6] F16C *19/08*
U.S. Cl. 74—594.1 **1 Claim**



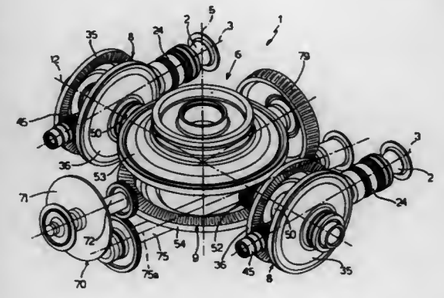
1. A structure of a bottom bracket comprising:
a housing having first and second ends, each of said ends having a thread portion formed in an inner peripheral surface thereof;
a tube having first and second ends, said first end of said tube having a thread portion formed in an outer peripheral surface thereof for engagement with said thread portion of said first end of said housing;
an axle rotatably extending through said tube with bearings being disposed therebetween, the improvement comprising:
a tapered outer peripheral surface being formed on an outer peripheral surface of said second end of said tube and a cap having a first end and a second end, a thread portion being formed in an outer peripheral surface of said first end of said cap for engagement with said second end of said housing, a tapered inner peripheral surface being formed on an inner peripheral surface of said first end of said cap for engagement with said outer peripheral surface of said tube.

5,572,910

APPLICATION OF FACE GEARS TO HELICOPTER TRANSMISSIONS

Luigi Tomaselli, Turin; Valter Bologna, Grugliasco, and Giovanni Oddone, Predosa, all of Italy, assignors to Studio Torta, Turin, Italy

Filed Sep. 14, 1994, Ser. No. 306,005
Claims priority, application Italy, Sep. 17, 1993, T093A0687
Int. Cl.[6] F16H *37/06*
U.S. Cl. 74—665 F **23 Claims**



1. A helicopter transmission comprising an outer casing, at least an input shaft and a main output shaft rotating about respective axes and able to be connected respectively to an engine and a main rotor of the helicopter; and gear transmission means interposed between the input shaft and the main output shaft, said gear transmission means comprise a first and second reduction unit interposed between said shafts, and each presenting one reduction stage; said first reduction unit comprising a floating first pinion rotating about its axis and connected in angularly integral manner to said input shaft; an intermediate shaft rotating about its axis; a first and second gear coaxial with each other and with said intermediate shaft and presenting respective teeth meshing with the teeth of said first pinion, said first gear being fitted to said intermediate shaft, and said second gear being idle in relation to the intermediate shaft; and at least a second pinion presenting teeth meshing with those of said gears, and rotating about its axis which is fixed in relation to the axis of the input shaft; characterized in that at least the first reduction unit comprises a first supporting body for supporting said first and second gears; said first supporting body being housed inside said outer casing and coaxially with said intermediate shaft; and each of said first and second gears being connected to said first supporting body by means of a respective single first bearing.

VOL 1192 ISS 2 NO 12 1996 UMI

5,572,911

STRIPPING DEVICE

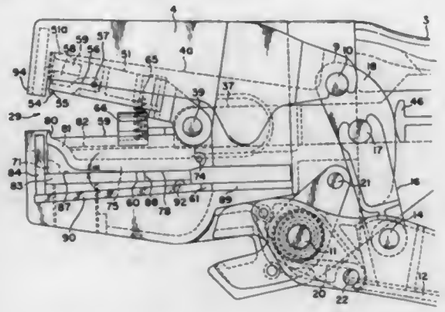
Hartmut Schmode, Blomberg; Ulrich Wiebe, Dorentrup; Armin Herzog, Detmold; Joachim Kornfeld, Vlotho; Bernd David, Detmold; Detlev Hetland, Detmold; Günther Hanning, Detmold; Siegmund Gernot, Detmold, and Thorsten Bornefeld, Schlangen, all of Germany, assignors to Weidmuller Interface GmbH & Co., Detmold, Germany

Filed Jun. 7, 1995, Ser. No. 478,771

Claims priority, application Germany, Jun. 8, 1994, 44 20 050.1

Int. Cl.[6] H02G *1/12*

U.S. Cl. 81—9.43 **20 Claims**



1. A device for stripping conductor ends comprising:

clamping jaws;

two stripping devices arranged in a mouth formed by said clamping jaws, said two stripping devices being displaceable in a longitudinal direction of said mouth;

a plurality of laminates located side-by-side to form a stack of laminates positioned on at least one of said two stripping devices, said stack of laminates being displaceable in a direction transverse to said longitudinal direction of said mouth, each laminate having a cutting edge for penetrating insulation of a conductor held by said clamping jaws when said mouth is closed; said laminates being displaceable relative to each other in said traverse direction and

a laminate guidance means which is matched to a profile of a conductor for providing relative transverse displacement of said laminates in accordance with the profile.

5,572,912

ANTI-CRIMP WRENCH FOR A GARDEN HOSE WITH A KNURLED COUPLING

Pasquale Gasparre, East Patchogue, N.Y., assignor to Creative Designs in Woodworking and Metal, East Patchogue, N.Y.

Filed May 5, 1995, Ser. No. 435,209

The portion of the term of this patent subsequent to Jun. 1, 2013, has been disclaimed.

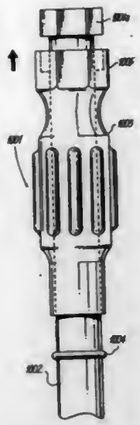
Int. Cl.[6] B25B *13/06*

U.S. Cl. 81—121.1 **19 Claims**

1. A hose and wrench combination for a garden hose, comprising:

a. a hose having a threaded male end and a threaded female end, said threaded female end having a coupling portion for tightening and loosening said threaded female end about a remote complimentary threaded male end; and

b. a body sleeve wrench portion slidably receivable about said hose between said threaded male end and said threaded female end; said body sleeve wrench portion having a complimentary coupling portion at one end sized to slidably engage and rotatably turn a coupling portion of said threaded female end of said hose, to selectively tighten and loosen said threaded female end of said hose from the remote complimentary threaded male end.



5,572,913

THREADING INITIATION TOOL

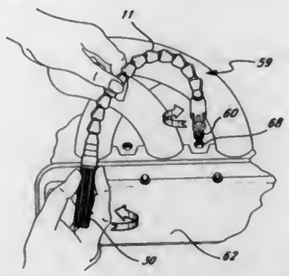
Gustav Nasiell, 746 Q Avenida Majorca, Laguna Hüls, Calif. 92653

Division of Ser. No. 71,662, Jun. 2, 1993, Pat. No. 5,455,997, which is a continuation-in-part of Ser. No. 25,328, Feb. 19, 1993, abandoned. This application May 15, 1995, Ser. No. 441,021

Claims priority, application Sweden, Aug. 31, 1992, 9202449

Int. Cl.[6] B25B *23/16*; B25G *1/02*

U.S. Cl. 81—177.6 **8 Claims**



1. A tool for grasping the head of a fastener and initiating the threading of the fastener to a threaded counterpart element which is in a difficult-to-access location, including

a grasping member which releasably holds the fastener in an orientation that enables the fastener to be positioned at the difficult-to-access counterpart element until said fastener is manually attached to the counterpart element,

said grasping member being attached to an end of a flexible arm which has a proximal end and a distal end and an elongated passageway extending therethrough between the proximal end and the distal end of said arm,

said flexible arm being manually twistable into a configuration that enables the grasping member with the fastener held thereby to be moved into a position adjacent the difficult-to-access threaded counterpart element, so that the fastener may be attached to said difficult-to-access threaded counterpart element,

said flexible arm comprising a plurality of individual links connected end to end and movable relative to each other, enabling the arm to be manually twisted into numerous different shapes and, solely by friction between said links without the aid of an additional mechanical mechanism to hold the links in position, to be maintained in a selected one of said different shapes suited to access said difficult-to-access location until twisted into another shape, said connected links forming the elongated passageway extending between the proximal end and the distal end of said arm, and

a flexible shaft extending along the passageway and having one end coupled to the grasping member and another end which is remote and accessible to enable the shaft to be manually rotated, thereby rotating the grasping member and the fastener held thereby.

5,572,914

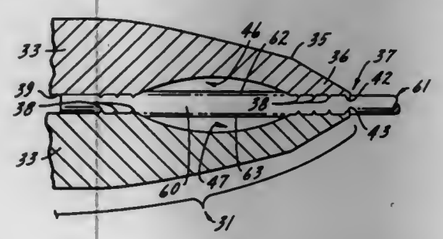
TWEEZER-PLIERS HAVING MULTIPLE GRIPPING MEANS

Kenneth J. Coleman, P.O. Box 71, Crystal Lake, Ill. 60039-0071

Filed Apr. 5, 1995, Ser. No. 417,300

Int. Cl.[6] B25B *7/02*

U.S. Cl. 81—424.5 **9 Claims**



1. A pressure type gripping tool for gripping and maintaining non-slipping gripping engagement between said tool and a workpiece during hand applied gripping pressure, said tool being capable of gripping smooth fibrous surfaces, said tool including, in combination,

two gripping members which are movable toward and away from one another from an open, pressure released position to a closed, gripping pressure applied position, each of said gripping members having a longitudinal axis and an inside base reference surface, the inside base reference surfaces of each of said gripping members being in abutting engagement with each other when the gripping members are in the closed, gripping pressure applied position, each of said gripping members also having

firstly a plurality of high points and low points which extend along a portion of each of said gripping members, said high points extending outwardly from a reference base line defined by the inside base reference surface of each of said gripping members and being arranged to provide gripping contact with a workpiece when the gripping members are moved toward one another into the closed, gripping pressure applied position and

secondly, pincer point means at the farthest point on the gripping member, said pincer point means being formed and contoured to form a pincer point when the gripping members are in abutting engagement with one another,

said pincer point means having a member formed on each gripping member and extending outwardly from said gripping member's reference base a distance greater than the adjacent high points extend outwardly from said reference base,

whereby said pincer point means penetrates a workpiece to be gripped to a greater depth than the said high points on the gripper members adjacent thereto.

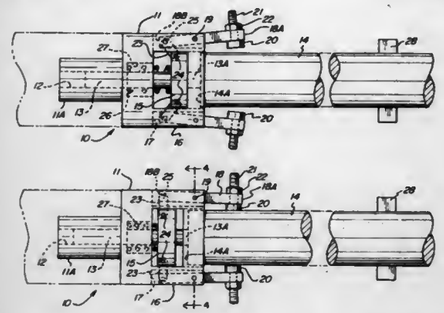
5,572,915

PULL BAR GRIPPER ASSEMBLY

Millo Bertini, 679 Garden St., Trumbull, Conn. 06611

Filed Oct. 17, 1994, Ser. No. 323,753

U.S. Cl. 82—127 **12 Claims**



1. A pull bar gripper assembly for use on a tool machine operative between a gripping and non-gripping position comprising:

a body member,

a pusher adapted to engage a workpiece, slidably mounted within said body member for relative movement with respect thereto,

a spring means for biasing said pusher relative to said body member,

gripping means pivotally mounted on said body member for movement between a gripping and non-gripping position,

and link means interconnecting said gripping means to said pusher whereby said gripping means are actuated into gripping position to lock onto a workpiece to be indexed as the pusher is advanced toward and engages a secured workpiece, and whereby said gripping means are actuated to a non-gripping position when said body member is pulled away from and relative to a secured workpiece.

5,572,916

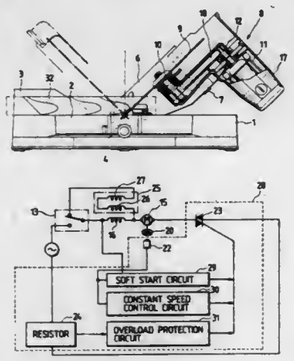
DESK-TOP CUTTING MACHINE

Shinji Takano, Fukushima, Japan, assignor to Hitachi Koki Haramachi Co., Ltd., Fukushima, Japan

Filed Oct. 20, 1994, Ser. No. 326,192

Int. Cl.[6] B26D *5/00*

U.S. Cl. 83—74 **5 Claims**



1. A desk-top cutting machine, comprising:

a base for supporting a workpiece;

a cutting blade portion which is provided above said base so as to be swingable vertically against said base, said cutting blade

portion including a cutting blade, a motor and a driving force transmitting means for transmitting the driving force of said motor to said cutting blade, said driving force transmitting means including an endless belt;

soft start means for slowly boosting the rotation of said motor when starting said motor to control the torque of said motor during acceleration;

rpm detecting means for detecting one of the rpm of said motor and said cutting blade;

load current detecting means for detecting the load current of said motor;

motor control means which receives signals from said rpm detecting means and said load current detecting means during motor driving to control the rpm and torque of said motor so that the rpm and torque thereof do not exceed a permissible rpm and permissible transmission torque of said endless belt, respectively; and

braking means for stopping the rotation of said motor by a deceleration torque which does not exceed the permissible transmission torque of said endless belt when power supply to said motor is stopped.

5,572,917

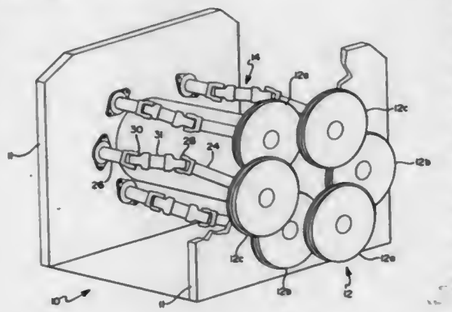
APPARATUS FOR PERFORATING CORRUGATED TUBING AT HIGH SPEEDS AND METHOD OF USING SAME

Dale Truemner, 1390 S. Brown Rd., Pigeon, Mich. 48755, and Richard Booms, 2581 Sand Beach Rd., Bad Axe, Mich. 48413

Filed Feb. 5, 1992, Ser. No. 831,690

Int. Cl.[6] B26D *1/28;3/14*

U.S. Cl. 83—322 **8 Claims**



7. An apparatus for driving corrugated tubing and for cutting perforations in the corrugated tubing as the tubing passes along an axial path of the apparatus, the apparatus comprising:

(a) at least one pair of feeder cutter wheel, each feeder cutter wheel comprising:

(1) a worm,

(2) a helical threading disposed at a helical angle upon the worm to drive the tubing, and

(3) at least one cutter disposed within the threading to cut the tubing,

each feeder-cutter wheel being adapted to continuously intersect the corrugation of the tubing;

(b) at least one pair of drive shafts, each drive shaft having one of the feeder-cutter wheels axially mounted thereon, each of the drive shafts being deployed at an angle relative to the axial path; and

(c) means for rotating the drive shafts;

wherein the feeder-cutter wheels are operable to drive the tubing along an axial path thru the apparatus and to cut the perforations in the corrugation of the tubing;

the apparatus further comprising means for perforating tubing of different diameters without requiring re-calibration or re-alignment of the drive shafts or wheels.

5,572,918

MULTI-FUNCTIONAL VALVE

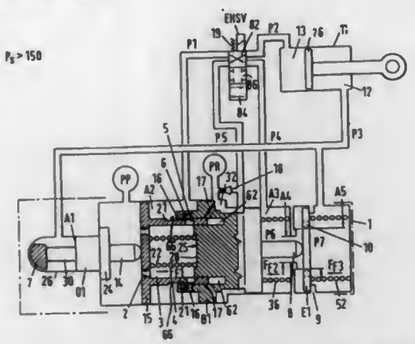
Manfred Grundke, Dichtelbach, and Roland Pfaff, Hafenlohr, both of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Germany

Filed Apr. 25, 1995, Ser. No. 428,876

Claims priority, application Germany, Apr. 25, 1994, 44 14 779.1

Int. Cl.[6] F15B *15/17;11/08*

U.S. Cl. 91—417 R **8 Claims**



1. In an hydraulic system including a high-pressure differential cylinder having a piston dividing said cylinder into a retraction chamber and an extension chamber, an electro-hydraulic servo valve including means for resetting said valve, a first connecting conduit for connecting said differential cylinder and said electro-hydraulic servo valve, a plurality of second conduits, a valve housing, and a multi-functional valve positioned within said valve housing and hydraulically connected to said differential cylinder via said plurality of second conduits and said servo valve, said multi-functional valve comprising a plurality of correcting elements positioned in said housing along a functional axis of said multi-functional valve, said plurality of correcting elements including a differential piston centrally disposed within said valve housing and movable along the functional axis of said multi-functional valve free of transverse forces, a first spring, a disc seat valve movable against a force of said first spring between an open and a closed position, a tappet positioned between the differential piston and the disc seat valve, a stop, a second spring coupled to said differential piston; and a damping and control element positioned between said differential piston, and said stop so that, in an unpressurized mode, said second spring exerts an adjusting force on said differential piston to hold said differential piston and said damping and control element in a rest position against said stop and, in a pressurized mode, said differential piston overcomes said adjusting force of said second spring and a force applied by said first spring on said disc seat valve to move said disc seat valve into said open position via said first tappet.

5,572,919

APPARATUS FOR CONTROLLING PRESSURE IN A CYLINDER CHAMBER OF A HYDRAULIC PUMP-MOTOR

Naoki Ishizaki, Kanagawa, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP93/01862, § 371 Date Jun. 16, 1995, § 102(e) Date Jun. 16, 1995, PCT Pub. No. WO94/15097, PCT Pub. Date Jul. 7, 1994

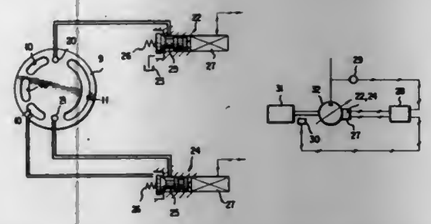
PCT Filed Dec. 22, 1993, Ser. No. 495,646

Claims priority, application Japan, Dec. 22, 1992, 4-87894

Int. Cl.[6] F04B *1/26*

U.S. Cl. 91—499 **4 Claims**

1. An apparatus for controlling pressure in a cylinder chamber of a hydraulic pump-motor, the hydraulic pump-motor comprising a



rotatable cylinder block having a bore therein defining a cylinder chamber, a piston in the bore, a port communicating with the cylinder chamber and a valve plate having a high pressure port and a low pressure port, whereby the port communicating with the cylinder chamber is alternately opened to the high pressure port and the low pressure port upon rotation of the cylinder block, said apparatus comprising:

a first switching port formed at a top dead point side of the valve plate;

a tank communicating with said first switching port through a first open-close valve;

a second switching port formed at a bottom dead point side of the valve plate communicating with the high pressure port through a second open-close valve;

a rotational speed detecting means for detecting the rotational speed of the cylinder block;

a pressure detection means for detecting a maximum pressure in the cylinder chamber; and

a control means for controlling timing of the opening and closing and opening magnitude of said first and second open-close valves in response to the rotational speed and the maximum pressure detected by said rotational speed detecting means and said pressure detection means.

5,572,920

CYLINDER LINER SECURING APPARATUS

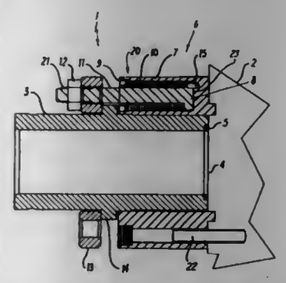
George Kennedy, Kilmacolm, and Stephen J. Flindall, Glengarnock, both of United Kingdom, assignors to T.M. Kennedy & Company Limited, Kilmacolm, United Kingdom

Filed Dec. 9, 1994, Ser. No. 353,512

Claims priority, application United Kingdom, Dec. 11, 1993, 9325388

Int. Cl.[6] F01B *29/00;* **F16J** *15/18*

U.S. Cl. 92—128 **7 Claims**



1. An apparatus for securing a cylinder liner to a pumping module in a reciprocating pump, said apparatus comprising a plurality of arrangements each having a piston slidable within a hydraulic cylinder, said piston having a rod adapted to receive a nut, said rod extending beyond its respective cylinder and being passed through a respective aperture in a member adapted to grip said cylinder liner, wherein retraction of said piston and nut causes said member to forcibly compel said cylinder liner towards said pumping module.

5,572,921

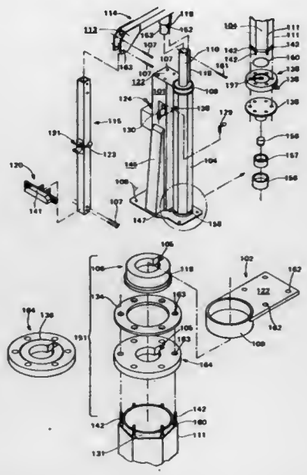
LIFT FOR THE HANDICAPPED

Keith Krumbeck, 3405 Jack Dr., Missoula, Mont. 59802, assignor to Keith Krumbeck, and Cindy Krumbeck, both of Missoula, Mont.

Filed Feb. 22, 1995, Ser. No. 394,665

Int. Cl.[6] F16J *15/18*

U.S. Cl. 92—165 R **19 Claims**



1. A lift apparatus to assist access to and egress from a pool or spa comprising:

a hydraulic lift system including:

a hollow cylinder housing having a substantially uniform cross section in the shape of an equilateral polygon;

a cylinder having a substantially uniform round cross section;

said cylinder being disposed in a compression fit within said cylinder housing; and

a piston operatively disposed within said cylinder.

5,572,922

ACTUATING PLUNGER OF AN ELECTROMAGNETIC PUMP

Sung-Dai Moon, Kyeongsangbuk-do, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 21, 1995, Ser. No. 493,286

Claims priority, application Rep. of Korea, Nov. 16, 1994, 94-30019

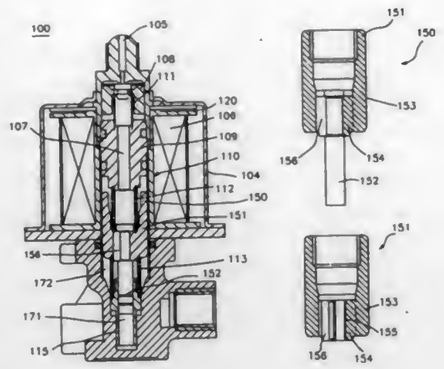
Int. Cl.[6] F01B *31/00*

U.S. Cl. 92—181 P **10 Claims**

1. An electromagnetic pump including a first cylinder, a second cylinder fixed at a lower end of the first cylinder, and an actuating plunger moving up and down in the first cylinder so as to pressurize oil and supply the oil into the first cylinder, the oil being exhausted from the first cylinder, the actuating plunger comprising:

a plunger head having a cylindrical side wall and a plurality of shoulders protruding inwards from a lower end of the cylindrical side wall; and

a piston fixed to the plunger head and extending downwards from the plunger head to be slidably fitted in the second cylinder, wherein the piston fixed to the plunger head, the plurality of shoulders and the cylindrical side wall defines a plurality of oil paths, and the oil flows between a first space above the plunger head and a second space under the plunger head through the plurality of oil paths when the actuating plunger moves up and down.



5,572,923

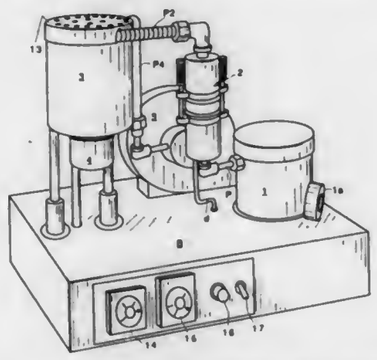
HEALTH BEVERAGE THAT AN EXTRACTED INGREDIENT FROM PLANT, ANIMAL OR MINERAL IS MAJOR INGREDIENT, AND MANUFACTURING METHOD AND APPARATUS THEREFOR

Nobuyoshi Kuboyama, 96 Litchfield Dr., Carlisle, Mass. 01741

Continuation-in-part of Ser. No. 286,001, Aug. 4, 1995. This application Jun. 26, 1995, Ser. No. 495,068

Int. Cl.[6] A47J *31/34*

U.S. Cl. 99—287 6 Claims



1. Apparatus for extracting an ingredient from a raw material selected from the group consisting of plant, animal and mineral, comprising:

pulverizing minute particle generating means comprising a water tank, means for heating water to a predetermined temperature, and means for pulverizing said water;

extracting means in fluid communication with said pulverizing minute particle generating means, said extracting means containing said raw material;

condensing means in fluid communication with said extracting means, said condensing means comprising a liquid-cooled conduit;

a reserve tank in fluid communication with said liquid-cooled conduit for containing product that has been liquified by said condensing means; and

blower means in fluid communication with said condensing means and with said pulverizing minute particle generating means.

5,572,924

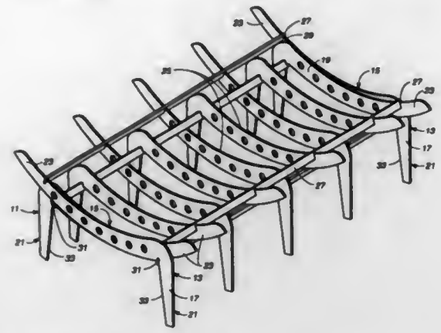
ROASTING RACK

Mihailo Crnjanski, 1616-B Fernside Blvd., Alameda, Calif. 94501

Filed Feb. 20, 1996, Ser. No. 605,971

Int. Cl.[6] A47J *37/04;43/18*

U.S. Cl. 99—426 20 Claims



1. A roasting rack comprising

a first framework,

a second framework,

each of said first and second frameworks having

a base end for supporting the base end of said framework on a support surface,

a plurality of elongated grate members extending away from said base end and having flee ends which form an unsupported distal end of said framework,

follower support means on the unsupported distal end of said framework,

at least one of the grate members of said framework including a continuous bearing support surface for receiving the follower support means of the other framework,

the grate members of said first framework being insertable into the grate members of the second framework to join said first and second frameworks such that the grate members of said first framework interleave with the grate members of said second framework, and such that the follower support means of each of said frameworks is supported on and adjustably movable along the bearing support surface of the grate members of the other framework,

whereby the distal end of each of said frameworks is supported above a support surface by the other framework and a self-supporting rack is formed having an infinitely adjustable width that is characterized by the position of the follower support means of each framework on the bearing support surface of the other framework.

5,572,925

MULTIPLE COLUMN CHEESE BLOCK FORMER

Stephen J. Van Pay; Thomas L. Niermann, both of Green Bay, and Blake A. Halderson, Valders, all of Wis., assignors to Stoelting, Inc., Kiel, Wis.

Filed Sep. 7, 1995, Ser. No. 524,603

Int. Cl.[6] A01J *11/06;25/00;25/11;* A23C *19/00*

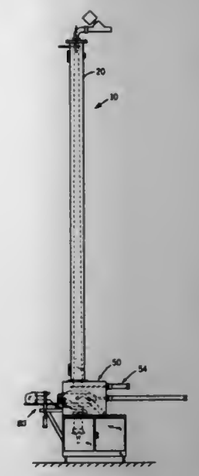
U.S. Cl. 99—454 6 Claims

1. Cheese block former comprising:

a. a housing defining a chamber therein, said housing having a first opening and a second opening;

b. a hollow tower, said tower having a top end and a bottom end, said bottom end formed with an opening therein, the bottom end of said tower attached to said housing such that said tower is disposed above the first opening in said housing;

c. a removable tubular, perforated lining hanging within said tower, said lining having a top end with an opening therein, a bottom end with an opening therein, and a flange disposed at the top end of said lining, said flange provided for free



hanging said lining at the top of said tower and providing removably of the lining, wherein said lining extends substantially the full length of said tower;

d. a drainage passage formed between said tower and said lining;

e. a guillotine having a blade movable between a closed position in which said blade closes the lower end of said tower and an open position in which said blade is withdrawn from the lower end of said tower so as to leave the lower end of said tower open to said housing;

f. means for introducing cheese curd into top of said tower; and

g. an elevator positioned below said tower.

5,572,926

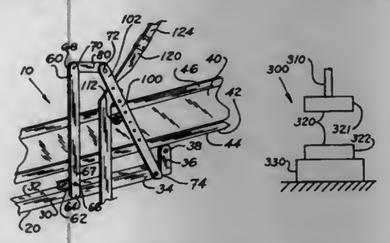
PRESS UNLOADER FOR UNLOADING PRESSES

Peter Bachhuber, 368 Park St., Mayville, Wis. 53050

Filed Jan. 19, 1995, Ser. No. 375,444

Int. Cl.[6] B30B *15/32*

U.S. Cl. 100—35 9 Claims



5. A method for unloading workpieces from a press having a ram mechanism capable of moving in a predetermined manner using an apparatus including an attachment linkage extending substantially from a support structure to the ram mechanism and including an engagement structure; a linkage mechanism having a bearing surface engaged with a portion of the support structure, a substantially fixed connection to a workpiece receiving structure, a bearing structure capable of both engaging and disengaging the engagement structure, and a lever mechanism; the lever mechanism being connected to the linkage mechanism and extending substantially from a portion of the linkage mechanism to a portion of the attachment linkage, the method comprising the steps of:

moving the ram so that the engagement structure engages the bearing structure of the linkage mechanism so that the workpiece receiving structure is moved a predetermined distance, in a predetermined direction, into the press;

disengaging the bearing structure from the engagement structure with the lever mechanism after the workpiece receiving structure has moved the predetermined distance, in the predetermined direction into the press;

sliding the workpiece receiving structure out of the press on the bearing surface engaged with the portion of the support structure.

5,572,927

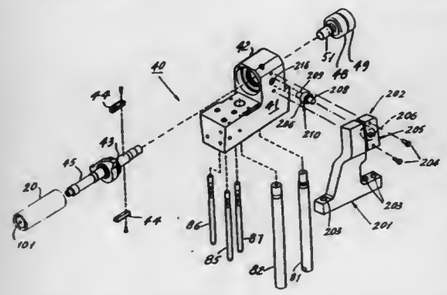
VERTICAL TRACK FOR MANDREL ASSEMBLY OF CONTINUOUS MOTION CAN DECORATORS

Enn Sirvet, Washington Township, N.J., assignor to Sequa Corporation, Hackensack, N.J.

Filed Aug. 31, 1995, Ser. No. 521,979

Int. Cl.[6] B41F *17/22*

U.S. Cl. 101—40 20 Claims



1. Apparatus for decorating cylindrical articles, said apparatus including:

a carrier mounted for continuous rotation on a main axis;

a plurality of mandrel subassemblies mounted on said carrier in an array about said main axis as a center and equal angular center-to-center spacings between adjacent ones of mandrel subassemblies;

decorating means past which said subassemblies move as said carrier rotates;

a stationary cam track disposed about said main axis;

each of said subassemblies including a base, a cylindrical article receiving cantilevered mandrel having a free end and another end opposite said free end, said mandrel being loaded and unloaded at said free end, said mandrel being rotationally supported on said base at said another end, with a rotational axis for said mandrel being parallel to and laterally offset from said main axis, a cam follower on said base cooperating with said stationary cam track to radially position said subassembly so that normally an article on said mandrel is in operative engagement with said decorating means during a predetermined range of angular movement for said subassembly about said main axis;

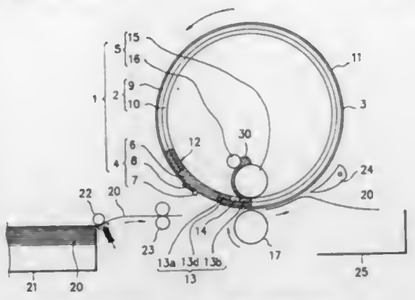
said operative engagement between said article on said mandrel and said decorating means during said predetermined range of angular movement for said subassembly about said main axis generating a reaction force that is directed against said mandrel in a direction tending to tilt said mandrel by driving its said free end radially inward relative to said main axis about a fulcrum established by engagement between said cam follower and said cam track; and

a bracing device to resist tilting of said mandrel by said reaction force, said device including a first section that is fixed axially and radially relative to said main axis and a second section that is connected to said base and is movable therewith;

while an article on said mandrel is in engagement with said decorating means, said first and second sections being in sliding engagement with each other at a location outward radially of said carrier and said second section exerting an opposing force against said first section, with said opposing force increasing and decreasing in relation to increases and decreases in said reaction force.

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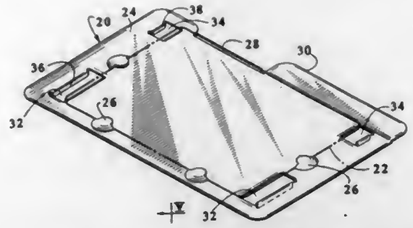
5,572,928
ROTARY STENCIL PRINTING MACHINE
Hideo Negishi, Tokyo, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan
Filed Mar. 9, 1995, Ser. No. 402,062
Claims priority, application Japan, Mar. 14, 1994, 6-042655
Int. Cl.[6] B41L *13/06*
U.S. Cl. 101—119 4 Claims



1. A rotary stencil printing machine, comprising:
a cylindrical member including a first ink-pervious member; a second ink-pervious member disposed beneath the first ink-pervious member; a center axis, said cylindrical member being rotatable around the center axis; a cylindrical peripheral surface adapted to mount thereon a stencil sheet having leading and trailing edge portions and an image forming area situated between the leading and trailing edge portions, said stencil sheet being wrapped on the first ink-pervious member; a first ink-pervious area formed on the peripheral surface on which the image forming area of the stencil sheet is disposed; at least one second ink-pervious area formed on the peripheral surface on which the trailing edge portion of the stencil sheet is disposed, said second ink-pervious area having an elongated shape continuously extending parallel to the center axis of the cylindrical member and being formed in the second ink-pervious member; at least two first ink-impervious areas formed on the peripheral surface, said first ink-impervious areas sandwiching the second ink-pervious area and being formed in the second ink-pervious member; a third ink-pervious area and a second ink-impervious area situated adjacent to the third ink-pervious area, said third ink-pervious area and second ink-impervious area being formed in the first ink-pervious member; a fourth ink-pervious area formed in the second ink-pervious member, said third and fourth ink-pervious areas forming said first ink-pervious area and said second ink-impervious area of the first ink-pervious member covering said at least one second ink-pervious area,
a clamping device formed on the peripheral surface of the cylindrical member, said clamping device clamping the leading edge portion of the stencil sheet,
ink supply means for supplying ink inside the cylindrical member, and
back-up means provided outside the cylindrical member, said backup means adapted to grip a printing sheet together with the cylindrical member to transfer the same.

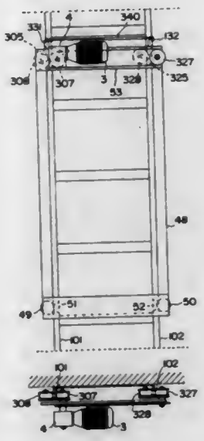
5,572,929
ROOM JACKET FOR PATIENT IDENTIFICATION CARD
Rodney G. Lacy, 1221 Heatherton Dr., Naperville, Ill. 60563, assignor to Rodney G. Lacy, Naperville, Ill.
Filed Jun. 15, 1995, Ser. No. 490,672
Int. Cl.[6] B41L *47/02*
U.S. Cl. 101—368 14 Claims

1. A card holder jacket for use with a card on an anvil of an imprinting apparatus having card edge engaging members projecting perpendicular from an anvil surface, the card having four edges, comprising:



a substantially planar body having an anvil engaging lower surface and a card engaging surface opposite said anvil engaging surface, and having means defining openings for placement over the card edge engaging members so that the card edge engaging members extend through said openings to engage the card;
flaps cut free at three sides at said openings and bent along a fourth side in a first direction extending from said anvil engaging surface, said flaps being a single layer of material, said flaps engaging opposing sides of the card edge engaging members to secure said substantially planar body in position on the anvil relative to the card edge engaging members;
a plurality of card engaging slit forms elevated from said card engaging surface and arranged to engage three edges of the card, said card engaging slit forms being spaced from an edge of said substantially planar body;
a raised tab on said substantially planar body for accepting raised indicia, said raised tab being at a fourth edge of the card when the card is engaged by said card engaging slit forms and including a raised card engaging edge elevated from said card engaging surface for bearing against the fourth edge of the card.

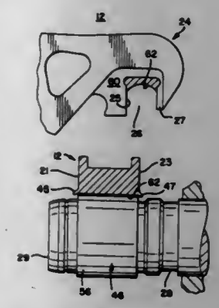
5,572,930
ELEVATOR SYSTEM
Wilfried Hein, Werraweg 117, D-4800 Bielefeld 11, Germany
Continuation of Ser. No. 949,480, Oct. 14, 1992, abandoned.
This application Feb. 23, 1995, Ser. No. 392,627
Claims priority, application Germany, Feb. 14, 1991, 41 04 512.2; Jul. 10, 1991, 41 22 855.3
Int. Cl.[6] B61B *5/00*
U.S. Cl. 104—128 17 Claims



1. An elevator system comprising:
a first rail extending in a vertical direction and secured to a vertical wall;

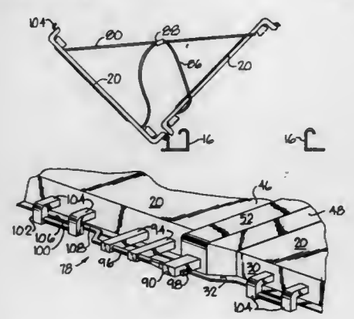
an elevator car, including a frame, that is moveable up and down along said rail;
a first pair of rollers disposed on opposite sides of said first rail;
coupling means for coupling said first pair of rollers to said frame;
pressing means for pressing the rollers of said first pair against said first rail from opposite directions to create friction between said first rail and the rollers of said first pair, wherein the rollers of said first pair contact said first rail only by friction;
drive means coupled to at least one roller of said first pair for selectively rotating the said at least one roller so as to act as a first drive roller, wherein said pressing means creates sufficient friction between said drive roller and the first rail that, in response to actuation of said drive means, said elevator car moves up or down, as the other roller of said first pair rotates, due to rotation of said first drive roller;
a second, vertically extending rail which is secured to a vertical wall and which is spaced from said first rail, a second pair of rollers disposed on opposite sides of said second rail, coupling means for coupling said second pair of rollers to said frame, and pressing means for pressing the rollers of said second pair against said second rail from opposite directions to create friction between said second rail and the rollers of said second pair, wherein the rollers of said second pair contact the respective rail only by friction;
wherein said coupling means includes a pair of swivel plates, pivotally coupled to said frame about swivel axes, for supporting the weight of said elevator car, and a pair of said rollers are rotatably mounted on each said swivel plate; and
wherein said pressing means creates sufficient frictional force between said rollers and the respective rails to support the weight of said elevator car, and said pressing means includes a spring means that engages said swivel plates at locations spaced from the respective swivel axes to urge said swivel plates to rotate about their respective axes.

5,572,931
RAILCAR TRUCK BEARING ADAPTER CONSTRUCTION
Glen F. Lazar, Palatine; V. Terrey Hawthorne, Lisle, and Norman A. Berg, Wheaton, all of Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.
Filed Dec. 8, 1994, Ser. No. 351,775
Int. Cl.[6] B61F *5/00*
U.S. Cl. 105—219 11 Claims



1. In a three-piece railway truck assembly having a first side frame and a second side frame generally parallel to each other,
each said first and second side frame having a longitudinal axis, a first end and a second end,
a bolster transverse to said side frame longitudinal direction and connecting said first and second side frames,
a first axle and a second axle generally parallel to each other and transverse to said longitudinal direction,
a plurality of bearing assemblies,
each said first and second axle having a first axle end and a second axle end, a journal bearing assembly mounted on each said axle end,
each said side frame having a pedestal at each of said side frame first end second ends with an integrally cast jaw, said jaw having a roof, a first depending leg and a second depending leg, each said first and second depending legs generally vertically extending from said roof and having a lower end, said jaw open at said lower end,
the improvement comprising:
said jaw roof, first depending leg and second depending leg cooperating to define an integral bearing adapter in said open jaw at each said pedestal end, each said bearing assembly and axle end directly engaging one said bearing adapter and secured in said adapter against angling and lateral movement between said bearing assembly and said pedestal jaw to maintain each said axle and axle end, and an associated mated side-frame end at approximately a fixed position to reduce railcar track warping and consequent railcar truck hunting.

5,572,932
RAILCAR HATCH COVER
Stephen R. Early, Olathe, Kans., assignor to Aero Transportation Products, Independence, Mo.
Continuation-in-part of Ser. No. 948,116, Sep. 21, 1992, Pat. No. 5,355,808. This application Oct. 18, 1994, Ser. No. 325,029
Int. Cl.[6] B61D *39/00*
U.S. Cl. 105—377.07 4 Claims



1. A hatch assembly for railcars having at least one opening therein extending in a longitudinal direction, comprising:
a plurality of covers, each having lateral sides and a first and a second longitudinal end, said covers being arranged in a longitudinal series along the longitudinal direction and oriented in a common manner such that said longitudinal ends have the same orientation for each of said covers, adjacent covers having associated longitudinal ends in proximity to each other in closed position to therefore define at least one set of adjacent longitudinal ends;
hinge means selectively permitting pivoting of each of said covers from its closed position in overlying relation to said opening to a partially open position in a generally vertical plane, and further to a fully open position providing access to said opening, said pivoting being about an axis substantially parallel to said longitudinal direction; and
opening assist means for permitting free movement of a first of said covers from said closed to said partially open position, and for causing opening movement of an adjacent one of said covers to said partially open position in response to continued movement of said first cover to said fully open position,
said assist means including a rotary coupling member movable with said first cover and extending generally longitudinally therefrom, said member having operating means engageable with said adjacent one cover when said first cover reaches

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said partially open position for effecting said opening movement of said adjacent one cover as the first cover continues movement to its fully open position.

5,572,933

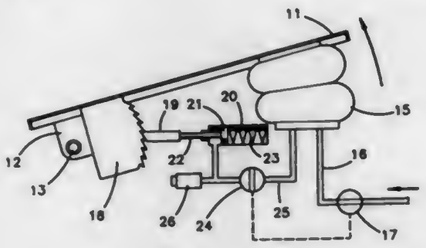
SAFETY LOCKING SYSTEM FOR AIR-OPERATED TILT TABLES

Ronald J. Thompson, Holland, Mich., assignor to International Material Control Systems Inc., Zeeland, Mich.

Continuation-in-part of Ser. No. 220,749, Mar. 31, 1994, Pat. No. 5,431,112. This application Jul. 11, 1995, Ser. No. 500,705

Int. Cl.[6] A47F *5/12*

U.S. Cl. 108—7 **4 Claims**



1. A safety locking system for a fluid operated tilt table wherein the tilt table comprises a tilting table top pivotally mounted on a base for movement between a horizontal position and an upwardly inclined position, the tilt table further comprising a fluid operated lift means for lifting and lowering the table top with respect to the base, the lift means being such that there is an elevated internal fluid pressure in the lift means when the table top is supported in an elevated position above the base by the lift means, the safety locking system comprising:

a releasable mechanical latch means for preventing the table top from lowering from a raised position toward the base when the latch means is engaged, the latch means comprising a one-way ratchet latch that allows the table top to be raised but not lowered when the latch means is engaged and permits the table top to be lowered only when the latch means is released; and

latch actuator means for engaging and releasing the latch means, the latch actuator means including:

resilient biasing means for urging the latch means toward its engaged position; and

fluid operated latch release means for urging the latch means toward its released position, the latch release means being actuated so as to cause the latch means to become released when the latch release means is pressurized with sufficient fluid pressure to overcome the resilient biasing means, the latch means holding the table top in its elevated position and preventing the table top from falling down if fluid pressure is lost in the lift means while pressure is being applied to the lift means, the latch release means being actuated to release the latch when the table is lowered.

5,572,934

SEAFOOD EATING AND CLEANING TABLE

Richard Aldridge, and Kathy Aldridge, both of 841 Ginette Dr., Gretna, La. 70056

Filed Nov. 30, 1995, Ser. No. 564,864

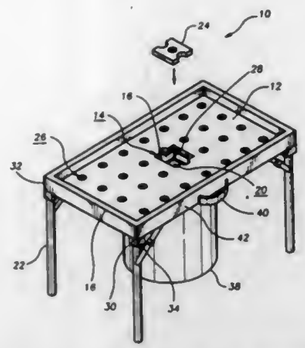
Int. Cl.[6] A47B *85/00*

U.S. Cl. 108—25 **10 Claims**

1. A seafood eating and cleaning table comprising:

a perforated table top forming a hatch therethrough;

a rail formed about a perimeter of said perforated table top;



a sloped drip pan connected beneath said perforated table top that slopes toward an aperture formed therethrough, said aperture being in alignment with said hatch;

legs attached to said perforated table top for supporting said perforated table top a sufficient height for disposing a trash receptacle beneath said aligned hatch and aperture; and

a perforated hatch door removably seatable within said hatch.

5,572,935

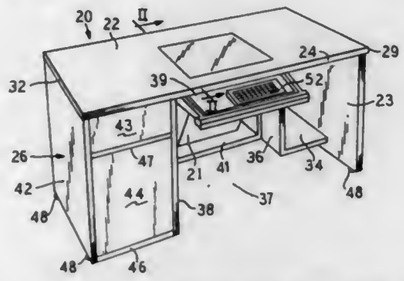
ADJUSTABLE MONITOR SUSPENDING ASSEMBLY

Edward C. Schairbaum, Fort Worth, Tex., assignor to Nova Solutions, Inc., Effingham, Ill.

Continuation of Ser. No. 885,570, May 19, 1992, Pat. No. 5,410,972. This application May 2, 1995, Ser. No. 432,820

Int. Cl.[6] A47B *35/00*

U.S. Cl. 108—50 **7 Claims**



1. A monitor suspending assembly for mounting within a desk-like structure that has a top surface member with a transparent portion through which the screen of a monitor that is suspended by said monitor suspending assembly is viewable, said monitor suspending assembly comprising:

(a) fastening means for independent association with each of the forward upper region of said monitor and the rearward upper region of said monitor; and

(b) suspending means associated with said fastening means and including mounting means for connecting said suspending means with the underside of said top surface member, said suspending means including adjustment means for regulating the tilt angle of said monitor relative to said transparent portion about a laterally extending axis;

(c) said suspending means including:

a forward suspending portion held by a portion of said mounting means for connecting said forward suspending portion to said underside, and

a rearward suspending portion held by a portion of said mounting means for connecting said rearward suspending portion to said underside, said rearward suspending portion including elongated arm means, and said arm means being associated with said adjustment means;

(d) said fastening means for said monitor forward upper region and said forward suspending portion being cooperative with each other to suspend said monitor forward upper region and also to define said laterally extending axis relative to which said monitor is tiltable so that said monitor tilt angle is adjustable relative to said transparent portion; and

(e) said fastening means for said monitor rearward upper region and said rearward suspending portion being cooperative with each other to suspend said monitor rearward upper region with said monitor being positionable at a particular tilt angle by said elongated arm means and said adjustment means.

5,572,936

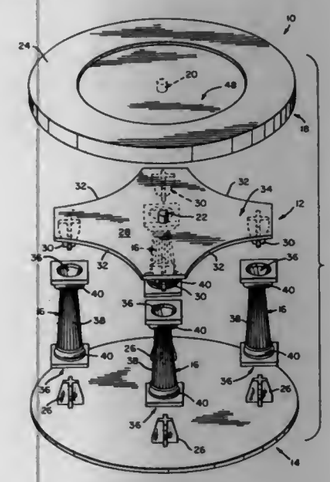
ROTATING CAKE SUPPORT

Helenice Chroniger, 96 Meade Dr., Gettysburg, Pa. 17325

Filed Jun. 23, 1994, Ser. No. 264,519

Int. Cl.[6] A47B *57/00*

U.S. Cl. 108—94 **18 Claims**



1. A rotating cake support, comprising:

an upper pallet having an upper surface and a lower surface and including a plurality of first, radially-spaced, angularly-disposed projections extending downwardly from said lower surface and a peg extending upwardly from the center of said upper surface, said plurality of first projections and said peg being integrally molded with said upper pallet from a thermoplastic material;

a lower pallet having a top surface and a bottom surface and including a plurality of second, radially-spaced, angularly-disposed projections extending upwardly from said top surface, said plurality of second projections corresponding in number to said first projections;

a plurality of vertical pillars adapted to support said upper pallet at a predetermined height above said lower pallet, each said pillar having top and bottom end sockets to engage a corresponding pair of said first and said second projections; and,

a cake plate disposed upon and rotatably supported by said upper pallet, said cake plate having a central bore adapted to rotatably accommodate said peg.

5,572,937

RECIPROCATING GRATE COOLER

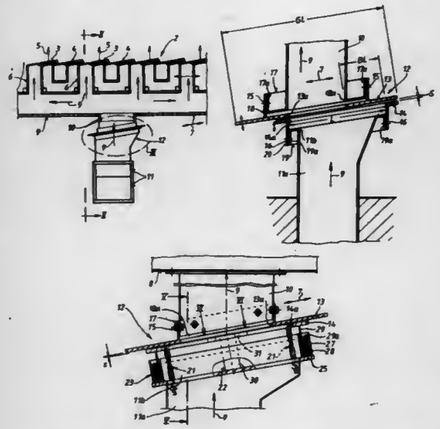
Gert Tegtmeier, Oelde; Manfred Strohbusch; Bernd Henrich, both of Ennigerloh; Pedro G. Palma, Lippetal, and Andreas Halbleib, Beckum, all of Germany, assignors to Krupp Polysius AG, Germany

Continuation of Ser. No. 368,038, Jan. 3, 1995. This application Jan. 22, 1996, Ser. No. 589,427

Claims priority, application Germany, Jan. 24, 1994, 44 01 931.9; Jun. 20, 1994, 44 21 552.5

Int. Cl.[6] F23H *3/00*

U.S. Cl. 110—300 **18 Claims**



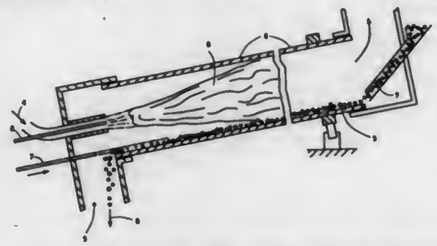
1. Reciprocating grate cooler apparatus comprising a stationary housing; a plurality of fixed and movable grate plates; means mounting said fixed grate plates in said housing; means supporting the movable grate plates in said housing for reciprocating movements relative to said housing and to said fixed grate plates along a path having a selected stroke length; stationary cooling gas delivery means supported in said housing for receiving cooling gas from a source thereof; movable cooling gas delivery means carried by said supporting means for movements therewith and relative to said stationary gas delivery means along said path for receiving cooling gas from said stationary gas delivery means and discharging said cooling gas toward said grate plates; and compensating means communicating with said stationary and movable gas delivery means for delivering cooling gas from said stationary gas delivery means to said movable gas delivery means, said compensating means comprising first and second frame plates mounted on said stationary and movable gas delivery means respectively, each of said frame plates having a cooling gas passage therethrough in communication with the cooling gas passage of the other of said frame plates, said frame plates being spaced apart from one another by a gap of such width as to avoid contact between said frame plates and provide a dynamic seal between said stationary and movable gas delivery means during said relative movement thereof.

14. Reciprocating grate cooler apparatus comprising a plurality of fixed and movable grate plates; means mounting said fixed grate plates in a fixed position; means supporting the movable grate plates for reciprocating movements relative to said fixed grate plates along a path having a selected stroke length; stationary cooling gas delivery means supported in a position to receive cooling gas from a source thereof and having an outlet; movable cooling gas delivery means carried by said supporting means for movements therewith and relative to said stationary gas delivery means along said path and having an inlet for receiving cooling gas from the outlet of said stationary gas delivery means and discharging said cooling gas toward said grate plates; a first frame mounted on said stationary gas delivery means and having a gas passage therethrough; a second frame mounted on said movable gas delivery means and having a passage therethrough in communication

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with said inlet and with the passage in said first frame; said frames being spaced apart by a gap of such width as to avoid contact between said frames and provide a dynamic seal between Said stationary and movable gas delivery means during said relative movement thereof.

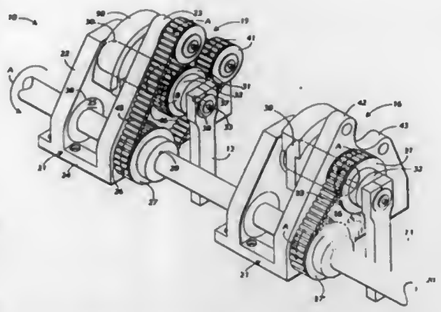
5,572,938
OXYGEN LANCING FOR PRODUCTION OF CEMENT CLINKER
Christopher B. Leger, White Plains, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.
Filed Feb. 13, 1995, Ser. No. 387,542
Int. Cl.[6] F23B *7/00;14/00*
U.S. Cl. 110—346 **12 Claims**



6. A method for processing solid aggregate material comprising:
(A) providing solid aggregate material into a rotary kiln, rotating the kiln, and forming a bed comprising solid aggregate material within the kiln, said bed having a high side and a low side due to the rotating action of the kiln;
(B) combusting fuel and main oxidant within the kiln in a main combustion reaction to provide heat for processing solid aggregate material within the kiln;
(C) lancing primary oxygen into the kiln at a flowrate which is maintained substantially constant for at least a portion of the time that the main combustion reaction is occurring, and intermixing the primary oxygen with the main combustion reaction;
(D) lancing secondary oxygen into the kiln separately from the primary oxygen at a flowrate which is adjusted one or more times during the time the flowrate of the primary oxygen is maintained substantially constant, and passing the secondary oxygen along the low side of the bed; and
(E) recovering processed aggregate material from the kiln.

5,572,939
TUFTING MACHINE DRIVE ASSEMBLY
Paul E. Beatty, Chattanooga, Tenn., assignor to Card-Monroe Corp., Chattanooga, Tenn.
Filed Apr. 21, 1995, Ser. No. 426,804
Int. Cl.[6] D05C *15/20;* **F16C** *3/04*
U.S. Cl. 112—80.4 **21 Claims**

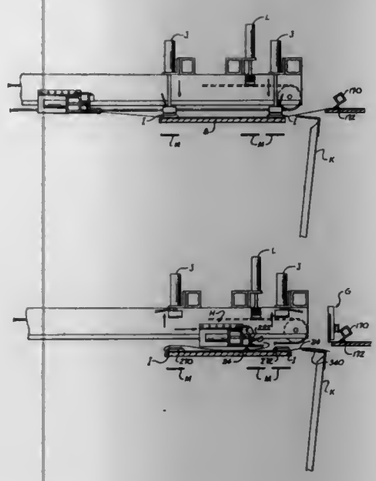
1. A tufting machine of the type having a frame having a head, a main drive shaft supported for rotation about its axis within said frame, a plurality of transversely spaced, parallel, push rods carried by said head, said push rods protruding through said head and having their lower ends terminated outside of said head, and loopers disposed in said frame below said head for cooperating respectively with said needles for engaging and holding loops of yams sewn through a backing material passed between said needles and said loopers, wherein the improvement comprises:
(a) a plurality of spaced supports within said head;
(b) a plurality of spaced aligned stub shafts carried by said supports within said head, the axes of said stub shafts being parallel to said axis of said main drive shaft, said stub shales being respectively supported by said supports for rotation about their axes;



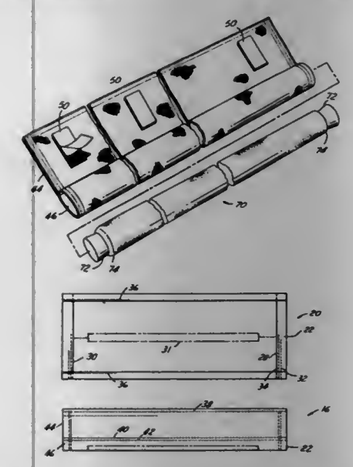
(c) drive sheaves respectively on said stub shafts;
(d) idle sheaves respectively adjacent certain of said sheaves;
(e) cranks connected to said stub shafts;
(f) spaced drive wheels on said main drive shaft;
(g) belts extending around said drive wheels and around certain of said drive sheaves, for rotating said certain of said drive sheaves in one direction;
(h) belts extending around other of said drive wheels and over a portion of said idler sheaves and around portions of the other of said drive sheaves on other of said stub shafts for rotating said other of said drive sheaves in a direction opposite to the direction of rotation of said certain of said drive sheaves;
(i) crank pins carried respectively by said cranks in offset relationship to their stub shaft axes for movement in opposite orbital paths when said stub shafts are rotated; and
(j) connecting rods connected respectively by their upper portions to said crank pins and by their lower portions to the ends of said push rods for simultaneously actuating said push rods so that the upper portions of certain of said connecting rods are moved by their crank pins in first orbital paths in the same directions and the upper portions of other of said connecting rods are moved in second orbital paths in opposite directions to the first orbital paths.

5,572,940
FOLDING AND SEWING APPARATUS
Perry E. Burton, Marietta, and John V. Noonan, Greenville, both of S.C., assignors to Burton & Noonan, Easley, S.C.
Filed May 27, 1994, Ser. No. 250,797
Int. Cl.[6] D05B *19/00;35/02*
U.S. Cl. 112—470.16 **20 Claims**

8. A folding station for receiving a reserve of cloth and for folding the cloth in a preselected sequence, said folding station comprising:
a folding table having a cloth receiving end and a cloth extending end opposite said receiving end;
a cloth puller movably suspended above said folding table, said cloth puller for engaging a free end of a cloth at said cloth receiving end of said folding table and for withdrawing said cloth over said folding table;
at least one folding die releasably suspended above said folding table by at least one corresponding die lifter, wherein, when said cloth is drawn over said folding table, said folding die is adapted to be released onto said cloth; and
folding means for contacting at least one free end of said cloth and for folding said at least one free end over said at least one folding die.

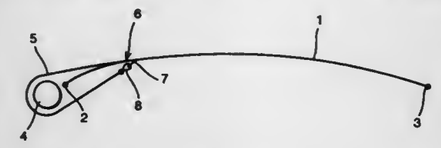


5,572,941
HAND/WRIST REST SUPPORT AND METHOD OF MAKING SAME
Tom J. Arnos, 996 Guildwood Blvd., London, Ontario, Canada
Filed Nov. 30, 1994, Ser. No. 347,285
Int. Cl.[6] B68G *5/00;* **B41J** *29/00*
U.S. Cl. 112—475.06 **14 Claims**



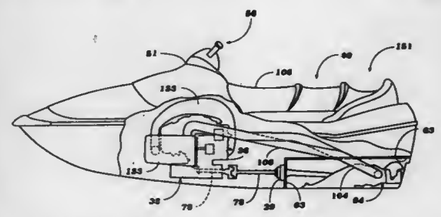
1. The method of making a band/wrist rest support for a keyboard comprising the steps of:
a) forming a generally rectangular base having a longitudinal axis, said base being made from one or more sheets of flexible materials, with the base having a pair of parallel longitudinal edges and a pair of parallel transverse end edges;
b) folding the parallel end edges over adjacent portions of said base to form end edges of double thickness;
c) stitching the folded ends to said base;
d) folding the parallel longitudinal edges over adjacent portions of said base to form longitudinal edges of double thickness;
e) stitching the folded longitudinal edges to said base;
f) folding the base in half at the longitudinal axis so that one half of the base lies on the other half of the base;
g) stitching the two halves of said base together along the longitudinal edges and part way along the parallel transverse end edges;
h) stitching the two halves of said base together at a fixed distance from the longitudinal axis to divide said base into a tubular cover portion and a flap portion; and
i) inserting an elongated core of yieldable material into said tubular cover portion to provide a cushion for the wrists of the user of the keyboard.

5,572,942
FORESAIL
Axel Lage, Elbchaussee 266, 22606 Hamburg, Germany
Filed Mar. 7, 1995, Ser. No. 399,619
Claims priority, application Germany, Mar. 21, 1994, 9404724 U
Int. Cl.[6] B63H *9/04*
U.S. Cl. 114—106 **4 Claims**



1. Sail apparatus comprising:
a first foresail, a rotatable forestay for roller furling said first foresail about said forestay, a second foresail having a luff, a flap extending along said second foresail adjacent said luff and secured to and along one side of said second foresail, said flap having a leading edge, and a plurality of first elements extending along the opposite side of said second foresail and engaging with cooperable second elements along the leading edge of said flap for securing said flap to said opposite side of said second foresail with said flap extending about and substantially encompassing said roller furled first foresail.

5,572,943
PERSONAL WATERCRAFT WITH V-TYPE ENGINE
Noboru Kobayashi, and Yoshiyuki Kaneko, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Division of Ser. No. 195,354, Feb. 10, 1994. This application Jun. 7, 1995, Ser. No. 474,256
Claims priority, application Japan, Feb. 15, 1993, 5-25811
Int. Cl.[6] B63B *35/00*
U.S. Cl. 114—270 **39 Claims**



1. A watercraft comprised of a hull, a propulsion device carried by said hull for propelling said watercraft, an internal combustion engine positioned within said hull and driving said propulsion device, an exhaust system for delivering exhaust gases from an exhaust port of said engine to the atmosphere comprising conduit means extending from said engine to a watertrap device carried by said hull on one side of said engine exhaust port and an atmo-

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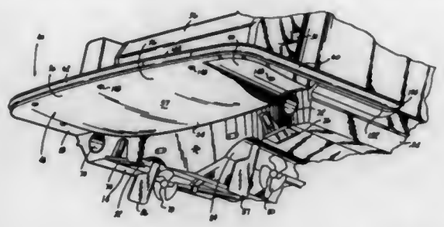
spheric discharge end positioned rearwardly of said engine and through said hull, and a fuel tank for said engine positioned within said hull and disposed on the other side of said exhaust port from said watertrap device.

5,572,944

BOAT HAVING STERN MOUNTED SWIM PLATFORM

David A. Slikkers, and John A. Garland, both of Holland, Mich., assignors to S2 Yachts, Inc., Holland, Mich.

Filed May 27, 1994, Ser. No. 250,362
Int. Cl.[6] B63B *17/00*
U.S. Cl. 114—343 30 Claims



1. A swim platform adapted to be mounted to the stern of a boat having a bow and port and starboard sides extending between the bow and the stern, said swim platform comprising:

a forward wall;

a rear edge spaced from the forward wall;

a substantially planar top surface extending between the forward wall and the rear edge; and

a bottom surface extending between the forward wall and the rear edge, at least a portion of the bottom surface sloping upwardly from the forward wall toward the rear edge so that the swim platform is substantially thicker adjacent the forward wall than adjacent the rear edge and at least a portion of the bottom surface is convex both laterally and longitudinally so that water striking said portion of the bottom surface is diffused into multiple directions.

5,572,945

OMNIDIRECTIONAL WIND INDICATOR

Reginald C. Eastaugh, Perris, Calif., assignor to Constance D. Kennedy, Perris, Calif.

Filed Aug. 26, 1994, Ser. No. 296,655
Int. Cl.[6] G09F *17/00*
U.S. Cl. 116—173 8 Claims

1. A wind indicator comprising, in combination:

a) a three-edged fabric flag including a curvilinear edge;

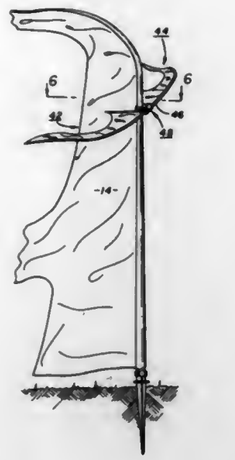
b) a substantially straight elongated mast of resilient and flexible material;

c) said mast being rotatably received at a lower end on a base;

d) said mast being tapered from its lower to its upper end;

e) a sleeve located along said curvilinear edge of said flag for receiving said resilient mast; and

f) said resilient mast being loaded into said curvilinear sleeve whereby said mast assumes a matching curved alignment that exerts a tension force upon a portion of said flag.

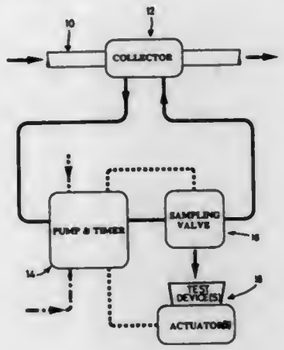


5,572,946

MILKING SAMPLING FOR DIAGNOSTIC PURPOSES

Michael Holroyd, Royston, United Kingdom, assignor to R J Fullwood and Bland Limited, Shropshire, United Kingdom

Division of Ser. No. 104,789, Aug. 10, 1993, Pat. No. 5,388,549. This application Feb. 14, 1994, Ser. No. 195,817
Int. Cl.[6] A01J *3/00*
U.S. Cl. 119—14.01 20 Claims



1. A method of extracting a sample of milk from a milk line to which a vacuum is applied for extracting milk from an animal, comprising the steps of:

diverting a portion of milk in a milk/air mixture flowing in a milk line through a by-pass,

providing in the by-pass a vacuum operated milk sample extraction means,

operating the milk sample extraction means by at least one of a fixed vacuum and a pulsating vacuum, whereby to separate a sample of milk from the milk flowing in the by-pass,

and

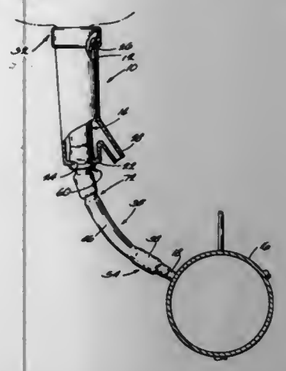
operating the milk sample extraction means over a timed operating cycle.

5,572,947

MILKING INFLATION

Leigh R. Larson, Johnson Creek, and Reed A. Larson, Watertown, both of Wis., assignors to Hi-Life Rubber Inc., Johnson Creek, Wis.

Filed Mar. 29, 1995, Ser. No. 412,517
Int. Cl.[6] A01J *5/06*
U.S. Cl. 119—14.51 10 Claims



1. A milking inflation for use with a teat cup assembly including a rigid shell having a lower end, said inflation being made from an elastomeric material and having a tubular milking tube section extendable from the lower end of the shell, said milking tube section including

an elongated stem portion having an exterior wall including an outer surface, upper and lower end portions and an inner wall defining a flow passage therethrough;

a circumferentially-extending first groove in the outer surface of said exterior wall of said stem portion at a location below and spaced from the lower end of the shell and adjacent a thicker part or an internally supported part of said stem portion, said first groove being arranged to permit substantial angular bending of said teat cup assembly relative to said stem portion for attachment to a cow's teat without substantial crimping which causes a reduction in the cross-sectional area of said flow passage; and

a second circumferentially-extending groove in the outer surface of said exterior wall of said stem portion axially spaced from said first groove in a direction toward said lower end portion and being arranged to cooperate with said first groove to permit the teat cup assembly to be folded over toward said stem portion to a folded over position where said stem portion is sufficiently crimped in the vicinity of said second groove to substantially close said flow passage and where the teat cup assembly can be laid on a generally horizontal support surface and remain in a folded over position.

5,572,948

RATITE BIRD FEEDER

George E. Womack, 826 E. Main St., Gallatin, Tenn. 37066

Filed Aug. 10, 1994, Ser. No. 288,352
Int. Cl.[6] A01K *39/00*
U.S. Cl. 119—53 9 Claims

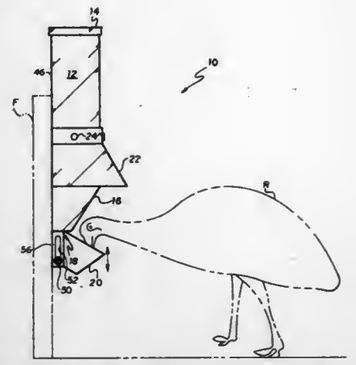
1. A feeder for ratite birds, comprising:

a receptacle for storing food having an open top;

a removable cap covering said open top, said removable cap having a downwardly projecting peripheral wall which grips said receptacle by friction;

a tapered feed dispensing chute disposed below said receptacle, said feed dispensing chute having a dispensing opening;

a valve disposed in said dispensing opening for controlling the rate of food dispensation, said valve including a gate movably attached to said chute by a threaded fastener; and



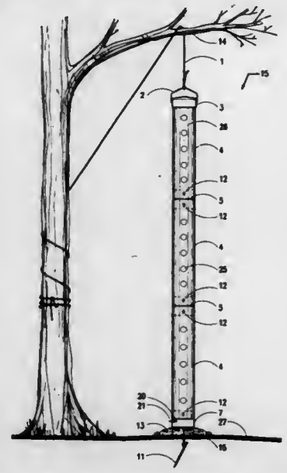
a food receiving cup disposed in communication with said dispensing opening, said cup including a floor having a plurality of holes therein, for enabling escape of fine particles of food, while retaining food pellets in said cup.

5,572,949

EMERGENCY FEEDER FOR HERBIVOROUS WILDLIFE

Walter L. Bryant, Jr., 100 Perkins Ranch La., and Walter L. Bryant, Sr., 89 Perkins Ranch South, both of Columbiana, Ala. 35051-5007

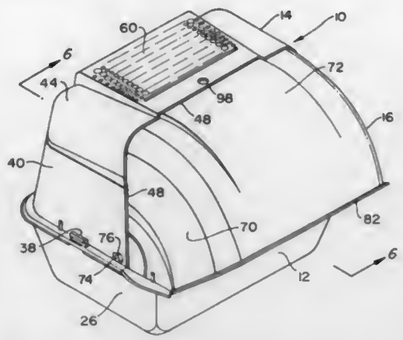
Filed Feb. 24, 1995, Ser. No. 393,479
Int. Cl.[6] A01K *5/00*
U.S. Cl. 119—57.9 5 Claims



1. A linear, vertically suspendable, non-corrosive wildlife feeder consisting of a vertically extended tubular feed reservoir of uniform exterior vertical contours in size and shape consistent and uninterrupted in profile by any other constructive features along its exterior length made up of two or more matching uniform interchangeable sections joined together internally with joint inserts and fastened together with removable mechanical fasteners; having a base component joined internally and mechanically fastened to the bottom of the lowest said reservoir section with feed outlet apertures and an incased loosely coiled anti-clog spring component positioned above and over the feed outlet apertures configured with a spring leg penetrating downward along the vertical center line of the feeder through said base component with a hooked bend at the bitter end with a tether attached linking to an anchor secured into the ground.

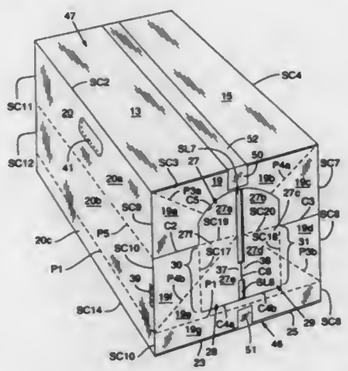
VOL 1192 ISS 2 NO 12 1996 UMI

5,572,950
CAT LITTER BOX ASSEMBLY HAVING A COVER AND A RETRACTABLE HOOD
Anthony O'Rourke, 27420 Winding Way, Malibur, and Kevin Koloszvari, 21995 Kingshill, Mission Viejo, both of Calif.
Filed Mar. 9, 1995, Ser. No. 403,231
Int. Cl.[6] A01K *1/035*
U.S. Cl. 119—165 **39 Claims**



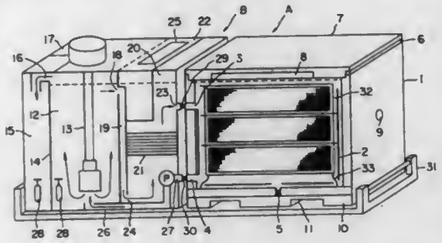
2. A cat litter box assembly comprising a litter box tray having front, rear and side walls, a cover removably securable on said tray so as to project upwardly therefrom and extend over and about a portion of said tray, so secured said cover defines an open forward end disposed rearwardly of said front wall of said tray, and a hood having a forward edge portion and being movably mountable on said cover between an extended position wherein said hood projects forwardly of said cover and wherein said forward edge portion cooperates with said front wall of said tray to define a cat entry area therebetween, and a retracted position wherein said hood is disposed in substantial juxtaposition with said cover providing unobstructed access to the interior of said litter box tray.

5,572,951
COLLAPSIBLE ANIMAL BOX
Riley Evans, 1856 NW. Kint Dr., Bremerton, Wash. 98311, and Kelly Rotroff, 320 Chinook Ave. #H9, Enumclaw, Wash. 98022
Filed Feb. 28, 1995, Ser. No. 397,661
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—168 **5 Claims**



1. An animal box blank suitable for assembly into a collapsible animal box comprising:
a front panel having at least one fold line and a door opening sized and positioned to permit an animal to enter and exit the animal box once assembled;
a rear panel having at least one fold line;
a first side panel hingedly connected to the front and rear panels and having at least one fold line;
a second side panel hingedly connected to the front or rear panel and having at least one fold line;
at least one roof subpanel hingedly connected to one or more of the front, rear and side panels;
at least one subpanel floor hingedly connected to one or more of the front, rear and side panels;
wherein the first and second side panels have respective substantially parallel, horizontal fold lines extending centrally thereacross, and the front and rear panels each have a plurality of diagonally extending fold lines starting at panel margins and extending toward respective center regions of the panels; and
wherein the fold lines in the front panel, rear panel, and first and second side panels permit the roof and floor of the assembled animal box to be collapsed toward one another.

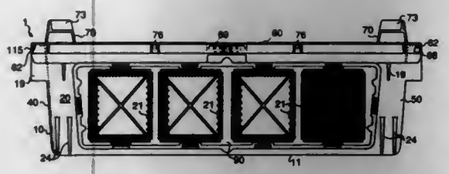
5,572,952
METHOD FOR TRANSPORTING LIVE FISH AND CONTAINER FOR USE IN THE SAME
Hiromichi Manome, Chiba, Japan, assignor to Japan Airlines Co., Ltd., Tokyo, Japan
Division of Ser. No. 856,168, Apr. 2, 1992, Pat. No. 5,310,427.
This application Dec. 3, 1993, Ser. No. 160,784
Claims priority, application Japan, Aug. 3, 1990, 2-205122
Int. Cl.[6] A01K *63/02;63/06*
U.S. Cl. 119—203 **18 Claims**



1. A container apparatus for transporting live fish comprising:
a vessel made of heat insulating material,
a panel mounted on an inner surface of the vessel for heating a content in the vessel,
a lid made of heat insulating material and used to close the vessel,
one or more cages capable of containing live fish, the cage or cages being placed or stacked in the vessel, and
means for admitting or discharging a cooling medium into and out of the vessel.

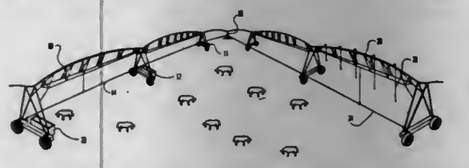
5,572,953
ANIMAL TOTE
Richard S. Phelan, Germantown, N.Y., and Barry Jamison, Fairfield, Ohio, assignors to Taconic Farms, Inc., Germantown, N.Y.
Filed May 2, 1995, Ser. No. 432,856
Int. Cl.[6] A01K *1/03*
U.S. Cl. 119—496 **12 Claims**

1. An animal tote comprising:
a unitary injection molded plastic container having a bottom wall, opposed side walls and opposed end walls with an open top;



a lid for covering the open top of said container, said lid having a substantially planar mid portion and a peripheral flange that engages a rim of said container for securing said lid to said container;
airflow passages formed in said lid and at least of one said side and end walls, said airflow passages including an array of minute holes; and
an air filter material bolding means disposed adjacent said airflow passages for holding a filter material in contact with said array of minute holes for filtering airflow into an interior of said container through said airflow passages.

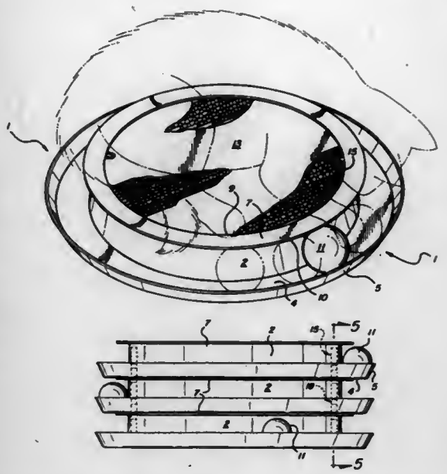
5,572,954
APPARATUS FOR CONTROLLED GRAZING AND PASTURE IRRIGATION
Gerald A. Elkins, HCR 2, Box 53, Hart, Tex. 79043
Filed Oct. 18, 1994, Ser. No. 324,926
Int. Cl.[6] A01K *3/00*
U.S. Cl. 119—502 **15 Claims**



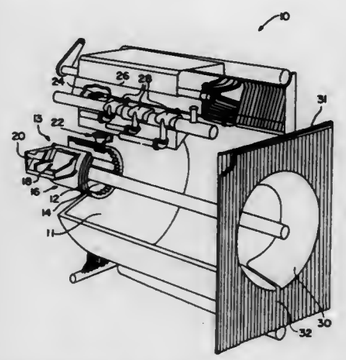
1. An apparatus for controlled grazing and irrigation, comprising:
a center-pivot having a preceding radial arm and a succeeding radial arm, each of said radial arms being independently rotatably coupled to said center-pivot for revolution thereabout;
a variable spacing angle being defined between said preceding radial arm and said succeeding radial arm, said spacing angle being alterable by varying at least one of said arm's speed of rotation about said center-pivot; and
a stationary fence located about said center-pivot and said radial arms thereby defining a pie-shaped confining area within said stationary fence and said radial arms.

5,572,955
ANIMAL AMUSEMENT AND EXERCISING DEVICE
Ricky L. Boshears, Broken Arrow, Okla., assignor to Fambo, Inc., Broken Arrow, Okla.
Filed Jul. 8, 1994, Ser. No. 272,143
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—706 **18 Claims**

1. An animal amusement and exercising device comprising a body having an upstanding annular wall having lower and upper ends; a lower flange joined to and extending outwardly from the lower end of said wall and terminating at its outer edge in an upturned lip member, said wall, said lower flange and said lip member together forming an endless, unobstructed track for the accommodation of a spherical ball; an upper flange member joined to and extending outwardly from the upper end of said wall and substantially parallel to said lower flange, said upper flange member overlying said lower flange and having a width less than that of said lower flange so that said track extends outwardly beyond said upper flange member; and coupling means carried by said wall for enabling said body to be stacked and removably secured with a like body.



5,572,956
CYCLONE AFTER-BURNER FOR CYCLONE REBURN NO_x REDUCTION
Joseph E. Hallstrom, Mogadore, and Peter H. Schueler, Richfield, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Oct. 27, 1995, Ser. No. 549,140
Int. Cl.[6] F22B *37/10*
U.S. Cl. 122—247 **7 Claims**



1. A cyclone after-burner for NO_x reduction in a cyclone furnace having a primary air inlet, a secondary air inlet and at least one of a natural gas, oil and pulverized coal supply communicating with a cyclone chamber having a lance opening at a first end thereof, and a re-entrant throat opening at a second end thereof, the after-burner comprising:
a fuel injection lance extending through the lance opening substantially longitudinally through the cyclone chamber to the re-entrant throat opening;
means for mounting said fuel injection lance securely at the lance opening; and
means for providing a fuel from the supply and primary air from the inlet to the fuel injection lance.

5,572,957

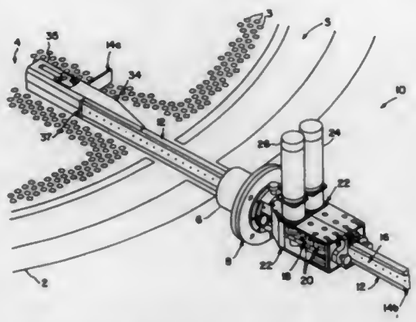
AUTOMATED SLUDGE LANCE

James P. Vandenberg, Cambridge, Canada, assignor to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 189,619, Feb. 1, 1994, abandoned. This application Feb. 23, 1995, Ser. No. 392,652

Int. Cl.[6] F22B 37/18

U.S. Cl. 122—379 3 Claims



1. A remote control system for a sludge lance, comprising:

mounting means for fastening the system to a flange on an outside wall of a steam generator;

engaging means for manipulating the sludge lance inside the steam generator;

a first servo motor attached to a bracket and constructed to receive a lance guide for manipulating said lance guide to a predetermined position therein, said first servo motor having a pulley that drives a second pulley with a belt, said belt including pins constructed to engage a plurality of holes in a waterlance and said lance guide;

a second servo motor attached to a bracket and constructed to receive said lance guide with said waterlance movably situated therein for manipulating said waterlance to a first predetermined position with said lance guide and then to at least a second predetermined position therefrom at a selected angle for insertion and retraction between tubes of the steam generator, said second servo motor having a pulley that drives a second pulley with a belt, said belt including pins constructed to engage the plurality of holes in said waterlance and said lance guide; and

electronic means for controlling said first and second servo motors.

5,572,958

COOLING ARRANGEMENT FOR A LIQUID-COOLED MOTOR VEHICLE INTERNAL-COMBUSTION ENGINE

Reinhard Mader, Pfaffenhofen, and Norbert Deussen, Muenchen, both of Germany, assignors to Bayerische Motoren Werke AG, Germany

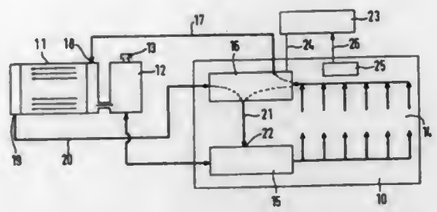
Filed Jun. 20, 1995, Ser. No. 492,811

Claims priority, application Germany, Jun. 24, 1994, 44 22 272.6

Int. Cl.[6] F01P 7/14

U.S. Cl. 123—41.1 6 Claims

1. A cooling arrangement for a liquid-cooled internal-combustion engine of a motor vehicle, comprising a coolant circuit having a forward flow pipe, a return flow pipe, a radiator operatively connected to the forward flow pipe and return flow pipe of the coolant circuit, and having one of a closable feed opening and a fluidic connection with an expansion tank with a closable feed opening, a temperature-controlled thermostatic valve configured such that coolant is one of completely and partially guided through one of the radiator and past the radiator by a short-circuit pipe between the forward flow pipe and the return forward pipe, and is



electrically heatable to limit or reduce coolant temperature in the coolant circuit to a value which is lower in comparison to an unheated condition thereof, and means for heating the thermostatic valve, wherein means is provided for comparing a distance covered by the motor vehicle after the vehicle start with a limit distance determined such that, when a limit distance is covered in a predetermined normal driving operation, the coolant temperature in the coolant circuit remains clearly below the opening temperature of the thermostatic valve to which current is not then supplied, and thus remains below a boiling temperature, and current is supplied to the thermostatic valve from a vehicle start when the distance covered after the motor vehicle start is shorter than the limit distance.

5,572,959

METHOD FOR CONTROLLING THE WORKING CYCLE IN AN INTERNAL COMBUSTION ENGINE AND AN ENGINE FOR PERFORMING SAID METHOD

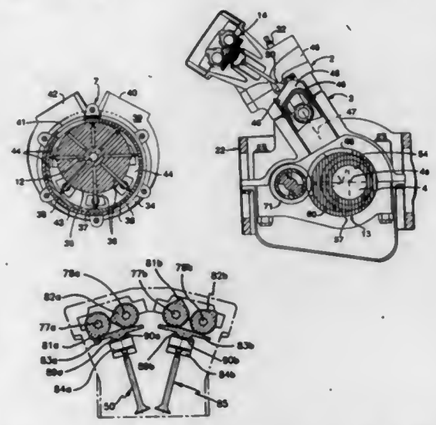
Lars Hedelin, Djursholm, Sweden, assignor to Fanja Ltd., St. Heller, United Kingdom

Filed Feb. 28, 1995, Ser. No. 362,443

Claims priority, application Sweden, Jun. 30, 1992, 9202019

Int. Cl.[6] F01L 1/34; F02B 75/04

U.S. Cl. 123—48 C 23 Claims



1. Process for controlling the operating cycle of an internal combustion piston engine (1), said engine having one or more cylinders (45), each with a reciprocating piston (46), an intake system (5) for supplying air to each of the cylinders (45), and exhaust system (6) for removing combustion products from each of the cylinders (45), and valves (50, 85) in each of the cylinders for regulating the passage between each cylinder (45) and the intake system (5) and between each cylinder and the exhaust system (6), said process comprising regulation of the amount of air supplied to the engine (1) dependent on the engine air requirement by means of a charging unit (7) in the intake system (5), characterized in that for each Operating cycle in each of the engine cylinders (45), a specific amount of air is delimited by means of the charging unit (7) and is fed in the delimited state into the engine intake system (5), that the size of this specific amount of air is regulated depending on the current engine air requirement, and that the compression ratio in the engine is regulated in relation to the size of the specific amount of ait, so that the condition of the amount of air in the combustion chamber (48) of the cylinder (45) at the end of the compression stroke is essentially uniform regardless of the engine load conditions.

5,572,960

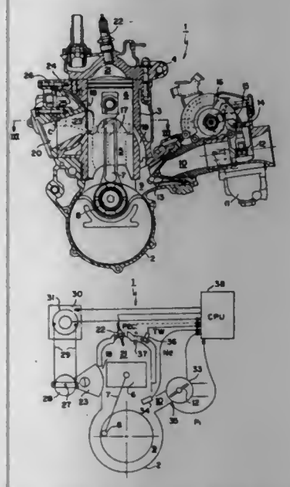
TWO-CYCLE ENGINE OF THE SPARK IGNITION TYPE

Yuji Tsushima; Takaharu Kurosaki; Kenjiro Saito, and Yoichi Ishibasi, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 359,291

Int. Cl.[6] F01N 3/28

U.S. Cl. 123—65 PE 18 Claims



1. A two-cycle engine of the spark ignition type wherein a mixture obtained by mixing fuel with air in advance is supplied to a combustion chamber and the mixture in said combustion chamber is compressed and self-ignited at least in a low load operation condition by being activated by heat energy of burnt gas remaining in the combustion chamber by positively controlling an ignition time preferable for operation of the engine to effect activated heat atmosphere combustion comprising:

exhaust air passage opening ratio adjustment means for adjusting an opening ratio of an exhaust air passage to control a compression starting in-cylinder pressure;

ignition timing adjustment means for adjusting the ignition timing; and

control means for driving said exhaust air passage opening adjustment means to an exhaust air passage opening ratio corresponding at least to an engine speed and a throttle valve opening to control the compression starting in-cylinder pressure to a predetermined compression starting in-cylinder pressure wherein the mixture in said combustion engine is compressed and self-ignited at an ignition timing in a preferred operation of said engine and for operating said ignition timing adjustment means in a predetermined transition operation region between the activated heat atmosphere combustion operation region and a predetermined ordinary spark ignition combustion operation region to cause spark ignition to occur at a timing earlier than a spark ignition timing in the predetermined ordinary spark ignition combustion operation region to control a combustion starting timing by the spark ignition to a timing in the proximity of the top dead center positioning of a piston operatively positioned within said combustion chamber.

5,572,961

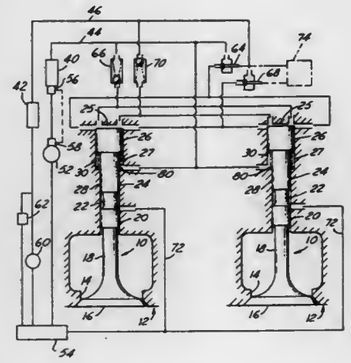
BALANCING VALVE MOTION IN AN ELECTROHYDRAULIC CAMLESS VALVETRAIN

Michael M. Schechter, Farmington Hills, and Michael B. Levin, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 5, 1995, Ser. No. 417,364

Int. Cl.[6] F01L 9/02

U.S. Cl. 123—90.12 3 Claims



1. A hydraulically operated valve control system for an internal combustion engine having at least one cylinder, the system comprising:

a high pressure source of fluid and a low pressure source of fluid;

a cylinder head member adapted to be affixed to the engine and including an enclosed bore and chamber for each engine valve;

a set of engine valves of a same function for the cylinder shiftable between a first position and a second fully open position within a respective said enclosed cylinder head bore and chamber;

a hydraulic actuator having a set of valve pistons, with each one of the valve pistons coupled to a corresponding one of the engine valves and reciprocates within the enclosed chambers which thereby form first and second cavities in each chamber that vary in volume as the engine valves move;

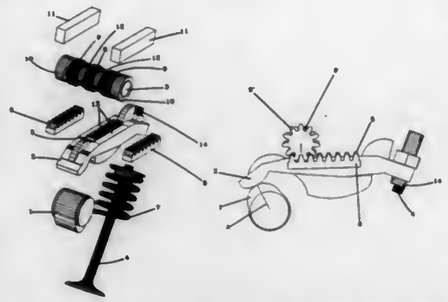
a high pressure line extending within the cylinder head between the first and second cavities of each of the chambers and the high pressure source of fluid, and a low pressure line extending between the first cavities of each of the chambers and the low pressure source of fluid;

a high pressure valve and a low pressure valve for respectively regulating the flow of fluid in each of the first cavities;

control means cooperating with the high and low pressure valves for selectively coupling each of the first cavities to the high pressure and low pressure source to oscillate the set of engine valves in timed relation to engine operation; and

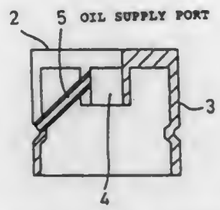
a set of balancing springs, each balancing spring of the set of balancing springs operatively engaging a respective one of the valve pistons wherein each of the balancing springs of the set of balancing springs exerts a spring force on its respective valve piston, between the first and second valve positions inclusive, that is less than the hydraulic forces acting on that valve piston from the first and second cavities.

5,572,962
VARIABLE VALVE LIFT MECHANISM FOR INTERNAL COMBUSTION ENGINE
Michael B. Riley, Fort Collins, Colo., assignor to Motive Holdings Limited, Bouvet Island
Continuation-in-part of Ser. No. 246,274, May 19, 1994, Pat. No. 5,456,224, which is a continuation-in-part of Ser. No. 122,223, Sep. 15, 1993, Pat. No. 5,365,895, which is a continuation-in-part of Ser. No. 800,920, Dec. 3, 1991, Pat. No. 5,341,771. This application Nov. 23, 1994, Ser. No. 344,826
Int. Cl.[6] F01L *13/00*
U.S. Cl. 123—90.16 12 Claims



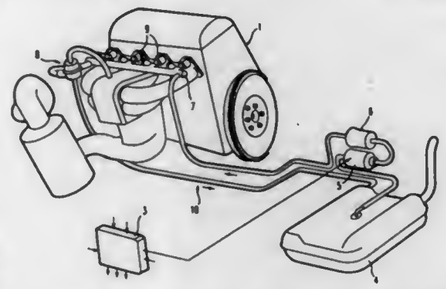
1. A method for operating an internal combustion engine having a combustion volume with at least one valve, the valve being operable to a predetermined extent by a rocker arm, the rocker arm having one end engaged with the valve to control the extent of the valve opening and the rocker arm having an opposite end responsive to a cam on a rotating camshaft to control the phase of the valve opening, the rocker arm being pivotable on a pivot shaft, the method comprising: rolling the pivot shaft along a pivot shaft bearing surface to adjust the position of the pivot shaft in relation to the rocker arm to vary the extent of the valve opening and simultaneously shifting the rocker arm in a longitudinal direction to adjust the position of the rocker arm in relation to the cam to vary the phase of the valve opening.

5,572,963
HYDRAULIC TAPPET
Keiji Kawasaki, Chiryu, and Shinichi Miwa, Tajimi, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan
Filed Mar. 16, 1994, Ser. No. 213,529
Claims priority, application Japan, Mar. 30, 1993, 5-072577
Int. Cl.[6] B60K *17/00*; F01L *1/16;1/24*
U.S. Cl. 123—90.51 3 Claims



1. A hydraulic tappet for a valve mechanism of an internal combustion engine, said hydraulic tappet comprising a cam sliding portion, a skirt portion, a spring holding portion disposed downwardly under the cam sliding portion, and an oil supply port provided between said spring holding portion and said skirt portion and formed from a metal tube, said port connecting said spring holding portion and said skirt portion, and wherein the cam sliding portion, skirt portion and spring holding portion are formed of an integrated ceramic.

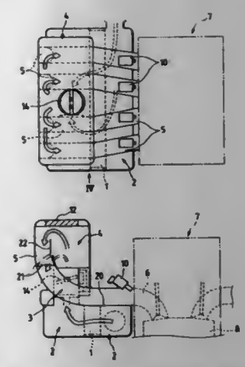
5,572,964
CONTROL PROCESS FOR AN INTERNAL COMBUSTION ENGINE FUEL PUMP
Francis Cogneville, St-Germain-Les-Arpajon; Gerard Saint-Leger, Villejuif, and Pierre Vaillard, Igny, all of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt Cedex, France
Filed Oct. 31, 1994, Ser. No. 332,407
Claims priority, application France, Oct. 29, 1993, 93 12924
Int. Cl.[6] F02M *17/00;37/04*
U.S. Cl. 123—179.17 25 Claims



1. A method for controlling a fuel delivery system, comprising the steps of:
activating an engine control system which is connected to an engine;
determining if the fuel delivery system is in at least a partially empty condition;
determining if an operator has manually set an input device, indicating that an electric fuel pump is to run for an extended period of time;
operating the electric fuel pump for a first predetermined period of time, when the fuel delivery system is in at least a partially empty condition and the operator has manually set the input device to indicate that the electric fuel pump is to run for the first predetermined period of time; and
operating the electric fuel pump for a second predetermined period of time which is less than the first predetermined period of time, when at least one of the fuel delivery system is not in at least a partially empty condition and the operator has not manually set the input device to indicate that the electric fuel pump is to run for the first period of time.

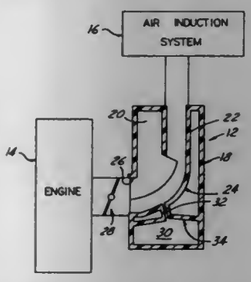
5,572,965
INTAKE PIPE FOR INTERNAL COMBUSTION ENGINE
Minoru Ohsuga; Jun'ichi Yamaguchi, both of Hitachinaka; Ryoichi Komuro, Hitachi; Yasushi Sasaki, Urizura-machi, and Teruhiko Minegishi, Hitachinaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Automotive Engineering Co., Ltd., Ibaraki, both of Japan
Filed May 1, 1995, Ser. No. 432,073
Claims priority, application Japan, May 9, 1994, 6-094899
Int. Cl.[6] F02M *35/10*
U.S. Cl. 123—184.42 15 Claims

1. An air intake system for an internal combustion engine comprising: an intake assembly to which air supplied via an intake passage from an air cleaner flows in accordance with the opening of a throttle valve disposed in said intake passage, and independent intake pipes in which air in the intake assembly is distributed into each cylinder of the internal combustion engine,



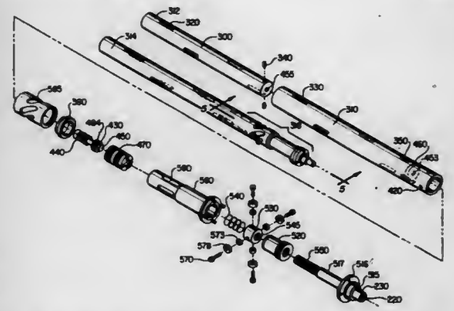
wherein the intake passage between the air cleaner and the throttle valve is arranged next to and is separated by a partition wall from at least one of a negative pressure part of the intake passage on the downstream side of the throttle valve, the intake assembly provided in communication with the negative pressure part and the independent intake pipes, whereby independent air intake spaces communicating with a path of the flow of air are formed on either side of the partition wall.

5,572,966
METHOD AND COMPOSITE RESONATOR FOR TUNING AN ENGINE AIR INDUCTION SYSTEM
David C. Doddy, Charing Cross, and Stephen E. Brackett, Blenheim, both of Canada, assignors to Siemens Electric Limited, Chatham, Canada
Filed Sep. 30, 1994, Ser. No. 315,466
Int. Cl.[6] F02M *35/10*
U.S. Cl. 123—184.57 16 Claims



1. A composite air induction tuning device, in combination with an internal combustion engine having a combustion air intake system, and comprising:
a housing defining an expansion chamber;
an inlet via which combustion air enters the expansion chamber and an outlet via which combustion air exits the expansion chamber for passage to the engine;
a Helmholtz resonator also defined by said housing and comprising a port via which the Helmholtz resonator is placed in communication with the expansion chamber;
the expansion chamber having a construction coacting with the engine wherein an engine torque vs. engine speed plot comprises a dip in torque over a particular portion of a range of engine operating speeds;
said Helmholtz resonator having a construction providing resonance at the particular portion of the engine speed range to counteract the dip in engine torque; the device further including a curved deflector baffle disposed in said expansion chamber and having a curved surface for directing air flow that has entered the expansion chamber towards said outlet, said outlet extending in a transverse direction from said inlet, and wherein said Helmholtz resonator comprises a Helmholtz chamber located on a side of said deflector baffle adjacent the curved surface of the deflector baffle and said port extends from the Helmholtz resonator chamber through said deflector baffle and into communication with said expansion chamber.

5,572,967
VARIABLE ROLLER VALVE SYSTEM FOR INTERNAL COMBUSTION ENGINE
Robert D. Donaldson, Jr., Dallas, Tex., assignor to Three Star Enterprises, Inc., Savannah, Ga.
Filed Aug. 26, 1994, Ser. No. 296,439
Int. Cl.[6] F01L *5/04*
U.S. Cl. 123—190.12 11 Claims



1. In an internal combustion engine having a fuel intake manifold, an exhaust manifold, and at least one combustion chamber whose piston is connected to a crankshaft, a variable roller valve assembly, comprising:
an inner roller received slidably inside an outer roller, the inner roller and the outer roller each being substantially cylindrical and substantially hollow, the inner roller and the outer roller each also having an outer circumference, the hollow interior of the inner roller either (1) in fuel flow communication with the fuel intake manifold or (2) in exhaust flow communication with the exhaust manifold;
a linkage means rotatably connecting the outer roller to the engine crankshaft, the linkage means rotating the outer roller with torque from the crankshaft while simultaneously synchronizing the rotation of the outer roller with the rotation of the crankshaft;
at least one inner gas port provided in the inner roller and at least one outer gas port provided in the outer roller, the at least one inner gas port and the at least one outer gas port provided in corresponding pairs, one pair provided for and assigned to each combustion chamber in the engine, each pair of inner gas ports and outer gas ports located on the inner roller and the outer roller respectively such that all pairs of inner gas ports and outer gas ports may be simultaneously co-located when the inner roller is in a predetermined position with respect to the outer roller, the outer roller allowing each outer gas port to be in gas flow communication with its assigned combustion chamber at least once during one complete revolution of the outer roller;
at least one roller locating slot, the at least one roller locating slot provided in the outer roller, the at least one roller locating slot being straight and extending longitudinally along the outer roller;
at least one pin, the at least one pin and the at least one roller locating slot provided in corresponding pairs, each pin connected rigidly to the outside of the inner roller and received slidably within its paired roller locating slot in the outer roller, the pins when received in their roller locating slots preventing

relative rotational displacement of the inner roller with respect to the outer roller but nonetheless permitting relative reciprocating longitudinal displacement thereof, said reciprocating longitudinal displacement consisting of reciprocating movement of the inner roller with respect to the outer roller in opposite longitudinal directions, said reciprocating movement arrested by a first limit in one direction and a second limit in the opposite direction, the pins as received within their roller locating slots modulating said reciprocating movement between the first limit and second limit according to the sliding travel of the pins within their roller locating slots, the pairs of pins and roller locating slots located on the inner and outer rollers relative to the pairs of inner gas ports and outer gas ports so that each pair of inner gas ports and outer gas ports become co-located when the reciprocating movement reaches a predetermined choice of either the first limit or the second limit;

a chamber divider received into the outer roller, the chamber divider providing a cylindrical recess in one end, a circular pressure plate received into the cylindrical recess, the pressure plate in contact with an aperture control return spring, the pressure plate also rigidly connected to the inner roller;

a first hydraulic fluid intake means, the first hydraulic fluid intake means available to introduce hydraulic fluid into the cylindrical recess so as to displace the pressure plate and compress the aperture control return spring;

a substantially cylindrical phase control casing received into the outer roller, the phase control casing having an outer circumference and a first end, a thrust ring means located between the phase control casing and the outer roller at their points of contact;

a splined member received into the phase control casing, the splined member having a first end, the splined member providing splines, the splines being straight and extending longitudinally along the splined member at the first end thereof;

an annular piston slidably received over the splined member, the annular piston in communication with a phase control return spring, the annular piston and the phase control return spring being separated by a sliding collar, the sliding collar also slidably received over the splined member, the sliding collar having an inside cylindrical surface and an outside cylindrical surface, the inside cylindrical surface having internal grooves, the internal grooves slidably engaging the splines on the splined member;

a second hydraulic fluid intake means, the second hydraulic fluid intake means available to introduce hydraulic fluid into the phase control casing so as to displace the annular piston against the phase control return spring, the displacement of the annular piston also causing the internal grooves of the sliding collar to slide over the splines;

at least one longitudinal phase slot provided in the outer circumference of the phase control casing and at least one helical phase slot provided in the outer roller, the at least one longitudinal phase slot and the at least one helical phase slot provided in corresponding pairs;

each longitudinal phase slot extending straight between a first end thereof and a second end thereof, each longitudinal phase slot also extending longitudinally along the phase control casing;

each helical phase slot extending arcuately between a first end thereof and a second end thereof according to an identical predetermined arc;

the first ends of all longitudinal phase slots and the first ends of all helical phase slots being oriented towards the first end of the phase control casing, each pair of longitudinal phase slots and helical phase slots located on the phase control casing and the outer roller respectively such that the first end of the longitudinal phase slot and the first end of the horizontal phase slot in all corresponding pairs thereof may be simultaneously co-located when the phase control casing is in a predetermined position with respect to the outer roller;

at least one fastener means, the at least one fastener means rigidly connected to the outside cylindrical surface of the sliding collar, one fastener means being provided for each pair of longitudinal phase slots and helical phase slots, the at least one fastener means located on a pitch around the outside cylindrical surface of the sliding collar to match the pitch of the longitudinal phase slots around the outer circumference of the phase control casing, each fastener means rotatably retaining an inner bearing and an outer bearing, each inner bearing being received into one longitudinal phase slot in the phase control casing, each outer beating being simultaneously received into one helical phase slot in the outer roller;

whereby activation of the first hydraulic intake means causes longitudinal reciprocating displacement between the inner and outer gas ports to constrict or enlarge combined gas port aperture, and activation of the second hydraulic intake means causes rotational displacement of the entire valve roller assembly with respect to the crankshaft, all such displacement available independently and continuously while the crankshaft is rotating the entire valve roller assembly.

5,572,968

INTERNAL-COMBUSTION ENGINE HAVING AN OIL RETURN SYSTEM

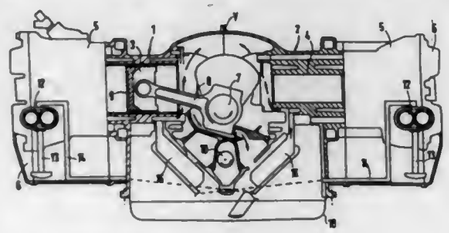
Hans-Joachim Esch, Heimsheim; Albrecht Reustle, Walheim, and Winifried Distelrath, Stuttgart, all of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany

Filed Jul. 10, 1995, Ser. No. 499,993

Claims priority, application Germany, Jul. 9, 1994, 44 24 248.4

Int. Cl.[6] F01M *1/02; 1/10;* **F16N** *9/00*

U.S. Cl. 123—196 M **18 Claims**



1. An internal-combustion engine comprising:

two cylinder banks inclined with respect to a vertical line, each cylinder bank having a cylinder head;

a crankshaft disposed in a crankshaft case;

an oil reservoir;

at least one camshaft arranged in each cylinder head and operationally coupled to the crankshaft by at least one driving device disposed in a housing which connects the interior of the crankcase and the interior of the respective cylinder head; and

a lubricant pump arranged on each cylinder head, having a suction duct leading into the cylinder head and having a delivery side which is communicated with the oil reservoir via a return duct fixed to the housing, the lubricant pump being driven via the camshaft.

5,572,969

ENGINE SHUT-OFF SWITCH

Todd J. Coughlin, Coleman Box 25, Prince Edward Island, Canada

Filed Feb. 5, 1996, Ser. No. 596,742

Int. Cl.[6] F02D *11/06;* **H01H** *35/02;* **B60K** *28/14*

U.S. Cl. 123—198 DC **8 Claims**

1. An engine shutoff switch for terminating the electrical supply to an ignition within the vehicle comprising in combination:

a generally V-shaped pipe having a first pipe end and a second pipe end, each pipe end being sealed with a circular disc fixedly attached thereto, the pipe having a diameter between about 1 to 2 inches with each disc having a diameter slightly greater than the diameter of the pipe, the pipe having a length between about 3 to 5 inches, the pipe having a rectangular mounting bracket fixedly attached to an underside of the pipe, the mounting bracket capable of being mounted to a firewall between an engine and a vehicle cab;

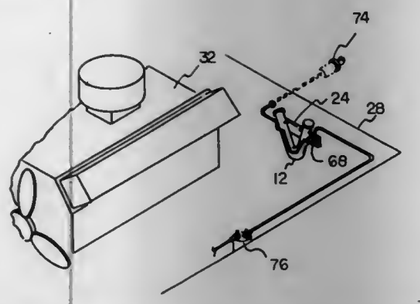
a solid ball being in frictionless contact with an interior surface area of the pipe, the ball having a high density and a spherical diameter of about ½ to 1 inches;

a pair of L-shaped holding pins with each pin having an interior end, an exterior end and a bridge therebetween, one of the holding pins being positioned on an inner side wall of the pipe while another of the holding pins being positioned on another inner side wall of the pipe, each exterior end having a pin head, the exterior end of each holding pin projects from the inner side wall of the pipe, the interior end of each bolding pin being fixedly attached to the interior surface of one of the inner side walls, the bridge of each holding pin being capable of being moved back and forth in relationship to the interior surface of the inner side wall by pulling the pin head;

a pair of toggle switches with each switch being attached to an opposite outer side wall of the pipe and having a connecting wire therebetween, the pair of switches forming a first switch and a second switch, the first switch being in electrical contact with an ignition switch of a vehicle, the second switch being in electrical contact with an ignition mechanism;

each toggle switch having a bias spring-like lever being attached to the inner surface of the outer side wall, each lever being opposite the bridge of one of the L-shaped holding pins and forming a gap therebetween, each lever having a projecting member being capable of movement between the inner surface of the pipe and the tpggle switch, each toggle switch having a switching arm being capable of forming a contact bridge for passing current therethrough when the ignition switch being turned on; and

each lever being capable of interrupting the current passing across the contact bridge by allowing the projecting member to push against the switching arm, the projecting member pushes against the switching arm when the vehicle being rolled over to a side and the ball being capable of passing through the gap to roll over the lever, whereby the ball being capable of maintaining a constant force against the lever when the bridge of one of the holding pins and the force of the lever lockingly secures the ball adjacent a respective end of the pipe.



5,572,970

SYSTEM FOR CONTROLLING OUTPUT POWER OF INTERNAL COMBUSTION ENGINE WITH A PLURALITY OF CYLINDERS

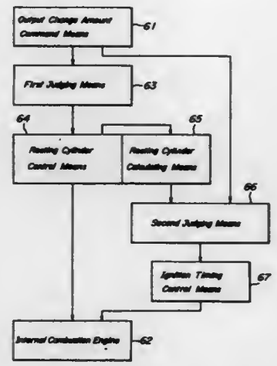
Tomohiro Fukumura, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 22, 1994, Ser. No. 310,750

Claims priority, application Japan, Sep. 28, 1993, 5-241485

Int. Cl.[6] F02B *77/00*

U.S. Cl. 123—198 F **20 Claims**



1. A system for controlling an output torque of an internal combustion engine having a plurality of cylinders comprising:

a command means for generating a control command to increase or decrease an output torque of the internal combustion engine;

a judging means responsive to the control command for providing a first control command for controlling operation of the cylinders of the engine and a second control command for controlling a retard of an ignition timing;

a first control means responsive to said first control command for bringing one or more cylinders of the engine in a resting state;

a second control means responsive to said second control command for retarding the ignition timing for cylinders which are not in the resting state;

whereby when said first control command requires a change in the number of cylinders in the resting state, the retardation of the ignition timing to be performed by said second control command is delayed for a given delay time.

5,572,971

EXHAUST BRAKE SYSTEM FOR A MOTOR VEHICLE

Fumiyoshi Yokoyama, Shioya-gun, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1995, Ser. No. 534,716

Claims priority, application Japan, Sep. 30, 1994, 6-261093

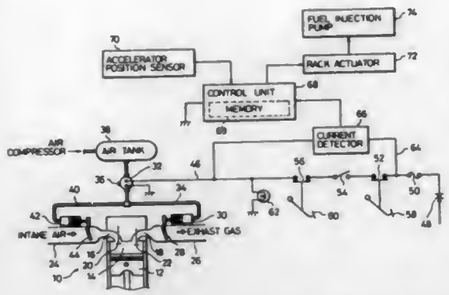
Int. Cl.[6] F02D *9/04;41/40*

U.S. Cl. 123—323 **12 Claims**

1. An exhaust brake system for a motor vehicle, comprising:

a valve inserted in an exhaust passage extending from an engine of the motor vehicle, said valve having an open position at which the exhaust passage is opened, and a closed position at which the exhaust passage is closed;

actuating means for actuating said valve so as to switch between the open position and the closed position;



switch means for operating said actuating means to cause said valve to switch from the open position toward the closed position;

releasing means for operating said actuating means to cause said valve to switch from the closed position toward the open position when an accelerator pedal of the motor vehicle is depressed while said valve is in the closed position; and

control means for reducing an amount of fuel to be supplied to a combustion chamber of the engine to a value smaller than a required amount of fuel determined based on depression of the accelerator pedal, during a predetermined control period from a release time at which said actuating means is operated by said releasing means.

5,572,972

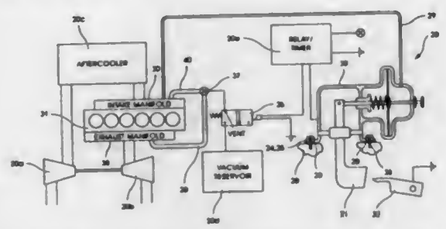
MECHANICAL AIR-FUEL CONTROL FOR FEEDBACK CONTROL OF EXTERNAL DEVICES

Todd A. Sheridan, Franklin; Rod Radovanovic, and Angela R. May, both of Columbus, all of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jun. 10, 1994, Ser. No. 257,874

Int. Cl.[6] F02D *31/00*

U.S. Cl. 123—357 **14 Claims**



1. A control system for a vehicle engine arranged to create an electrical signal for controlling engine-related functions, said control system comprising:

a fuel pump governor disposed within a governor housing;

an air-fuel cam housing mounted to said governor housing and receiving therein an air-fuel cam stop, a portion of said air-fuel cam stop extending beyond said governor housing;

electrical isolation means for electrically isolating said air-fuel cam housing from said governor housing;

an electrically grounded rack finger which is moveable into contact with said air-fuel cam stop via a connecting linkage in response to engine speed, wherein the contact of said air-fuel cam stop by said rack finger creates an electrical signal, said electrical signal being suitable to control the operational state of an engine-related function; and

a full load cam stop disposed within said governor housing, wherein the portion of said air-fuel cam stop that extends beyond said governor housing is positioned adjacent to said full load cam stop.

5,572,973

METHOD FOR CYLINDER IDENTIFICATION IN AN INTERNAL COMBUSTION ENGINE WHEN IDLING

Klaus Schenk, Bietigheim-Bissingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

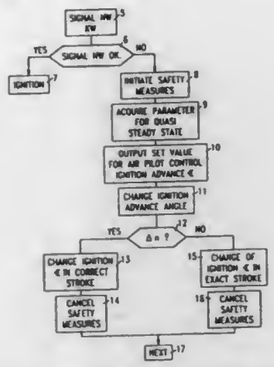
PCT No. PCT/DE93/01134, § 371 Date Mar. 6, 1995, § 102(e) Date Mar. 6, 1995, PCT Pub. No. WO94/13951, PCT Pub. Date Jun. 23, 1994

PCT Filed Nov. 27, 1993, Ser. No. 397,105

Claims priority, application Germany, Dec. 16, 1992, 42 42 419.4

Int. Cl.[6] F02P *5/00*

U.S. Cl. 123—414 **9 Claims**



1. A method for identifying cylinders of an internal combustion engine in a quasi steady-state condition of the engine and for controlling at least one cyclically repeating operation of the engine, comprising the steps of:

detecting an arc of a rotation of a crankshaft using a sensor associated with the crankshaft, and generating a first signal based thereon;

detecting a reference mark applied to the crankshaft using the sensor, and generating a second signal based thereon;

processing the first and second signals;

altering an ignition-advance angle of at least one cylinder of the engine for a predetermined number of ignition cycles;

detecting a change in a speed of rotation of the engine;

assigning an ignition having the altered ignition-advance angle to a compression stroke of the at least one cylinder;

assigning the reference mark to a reference cylinder of the engine; and

controlling the at least one cyclically repeating operation of the engine in accordance with the assignment of the reference mark to the reference cylinder.

5,572,974

COMBINED START BYPASS AND SAFETY PRESSURE RELIEF VALVE FOR A FUEL SYSTEM

Russell J. Wakeman, Newport News, Va., assignor to Siemens Automotive Corporation, Auburn Hills, Mich.

Filed Feb. 21, 1995, Ser. No. 391,739

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—497 **10 Claims**

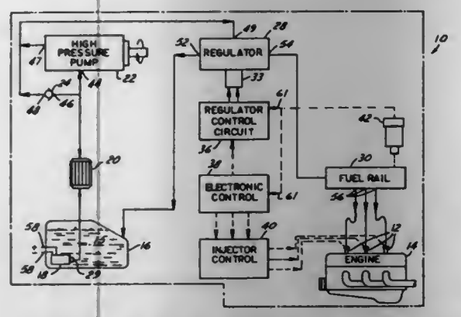
1. An integral start bypass and pressure relief valve for use in a fuel system having a high pressure pump with a pump inlet and a pump outlet, the valve comprising:

a housing;

a valve inlet in said housing coupled to the pump inlet;

a valve outlet in said housing coupled to the pump outlet;

a first bypass valve means disposed in said housing between said valve inlet and said valve outlet to allow the fuel to flow from said valve inlet to said valve outlet when a fluid pressure difference across said valve inlet end said valve outlet exceeds



a first limit, thereby allowing the fuel to bypass the high pressure pump when the high pressure pump is not providing highly pressurized fuel at the pump outlet; and

a second bypass valve means disposed in said housing between said valve outlet and said valve inlet, said valve allowing the fuel to flow from the pump outlet to the pump inlet when the fluid pressure difference across said valve inlet and said valve outlet reaches a second limit.

5,572,975

DEVICE AND METHOD OF REGULATING THE START OF FUEL INJECTION IN AN OTTO ENGINE

Peter Gillbrand, Stockholm, and Lars Tegnelius, Strängnäs, both of Sweden, assignors to Saab Automobile Aktiebolag, Sweden

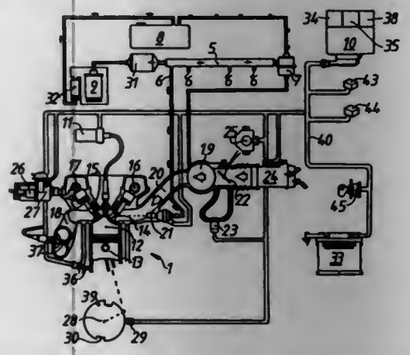
PCT No. PCT/SE93/00593, § 371 Date Jan. 4, 1995, § 102(e) Date Jan. 4, 1995, PCT Pub. No. WO94/01669, PCT Pub. Date Jan. 20, 1994

PCT Filed Jun. 30, 1993, Ser. No. 362,558

Claims priority, application Sweden, Jul. 7, 1992, 9202097

Int. Cl.[6] F02D *41/34*

U.S. Cl. 123—478 **9 Claims**



1. A device for regulating the start of fuel injection in an internal combustion engine having at least one cylinder with at least one inlet valve selectively openable and closeable during repetitive cycles of the engine to control the introduction of fuel into the cylinder, which device comprises:

means for determining the stroke position of the engine;

fuel injection means selectively activatable during respective cycles of the engine for injecting fuel towards the inlet valve; and

control means for controlling the activation and deactivation of the fuel injection means in accordance with a fuel amount demand, the control means including a memory for storing the fuel amount demand during one cycle of operation as a base value, the control means activating the fuel injection means at a subsequent cycle of operation of the engine at a predetermined stroke position of the engine as determined by the stored base value and deactivating the injection means when the inlet valve begins to open.

5,572,976

AUTOMOBILE ENGINE CONTROL SYSTEM

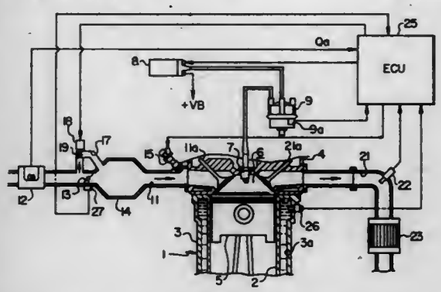
Kunitomo Minamitani; Yasuyoshi Hori, and Hiromi Yoshioka, all of Hiroshima-ken, Japan, assignors to Mazda Motor Corporation, Aki-gun, Japan

Filed Jan. 23, 1995, Ser. No. 376,361

Claims priority, application Japan, Jan. 21, 1994, 6-005052; Jul. 11, 1994, 6-158316

Int. Cl.[6] F02M *51/00*

U.S. Cl. 123—478 **15 Claims**



1. An engine control system for an automotive vehicle for controlling output of an engine according to an amount of intake air taken into the engine, said amount of intake air being introduced into the engine at an end of an intake stroke and being estimated based on a change in an amount of intake air actually introduced into the engine before said end of an intake stroke, said engine control system comprising:

an air amount sensor for detecting an actual amount of intake air introduced into an engine;

engine operating condition detecting means for detecting engine operating conditions within a specified range which cause pulsations of intake air at levels higher than a specified level; and

control means for (1) detecting a change in an actual amount of intake air detected prior to an end of an intake stroke by said air amount sensor, (2) estimating a required amount of intake air to be introduced at said end of an intake stroke based on said change, (3) imposing a restriction on estimation of said required amount of intake air when said engine operating condition detecting means detects engine operating conditions in said specified range, and (4) controlling output of said engine based on said estimation of said required amount of intake air.

5,572,977

FUEL INJECTION CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Hiroshi Shibata, Kariya; Yoichi Nishiyori, Anjo; Kenichi Maki, Ichinoiya, and Hiroshi Kondo, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 22, 1994, Ser. No. 293,460

Claims priority, application Japan, Aug. 23, 1993, 5-207754

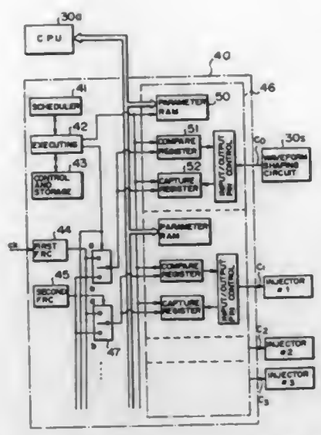
Int. Cl.[6] F02D *41/10;41/26*

U.S. Cl. 123—480 **9 Claims**

1. A fuel injection control system comprising:

a central processing unit for calculating fuel injection date including a fuel injection start position and a fuel injection time depending on operating conditions of an internal combustion engine;

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storage means for storing said fuel injection data calculated by said central processing unit; and

timer means for performing fuel injection control based on said fuel injection data without interrupting processes performed by said central processing unit so that a fuel injection is started and finished at timings which are defined by said fuel injection data stored in said storage means;

said central processing unit being adapted to:

determine whether there is a request for an asynchronous injection,

calculate an asynchronous injection time if said asynchronous injection is requested, and

set data in said storage means at a predetermined level and for setting said calculated asynchronous injection time in said storage means;

said timer means detecting said data at said predetermined level stored in said storage means and controlling said fuel injection in accordance with said asynchronous injection time stored in said storage means if said asynchronous injection is requested, wherein said timer means includes:

an executing portion;

a first counter which is counted up at a predetermined time interval;

a second counter which is counted up at a predetermined crank angular interval of said internal combustion engine;

a compare register in which said fuel injection data stored in said storage means through processes performed by said executing portion are set and which compares a value of one of said first and second counter with said fuel injection data; and

output means for outputting an injection signal at one of a high and a low level to execute and cut off a fuel injection when said compare register indicates that said fuel injection data agrees with a value in one of said first and said second counter.

5,572,978

FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

ken Ogawa, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

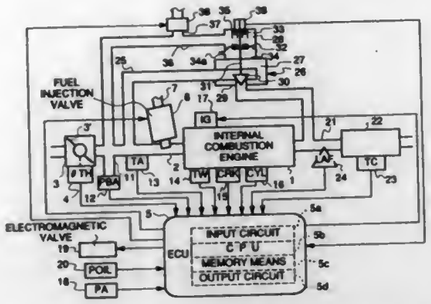
Filed Sep. 19, 1995, Ser. No. 530,406

Claims priority, application Japan, Sep. 21, 1994, 6-252873

Int. Cl.[6] F02D *41/06*

U.S. Cl. 123—491 **6 Claims**

1. In a fuel injection control system for an internal combustion engine having an intake passage and at least one combustion chamber, said intake passage having an inner wall surface, said fuel injection control system including:



fuel supply amount-calculating means for calculating an amount of fuel to be supplied to said engine, based on operating conditions of said engine including at least load on said engine;

adhering fuel amount-calculating means for calculating an amount of fuel adhering to said inner wall surface of said intake passage of said engine, by the use of adhering fuel parameters representative of transfer characteristics of fuel injected into said intake passage;

carried-off fuel amount-calculating means for calculating an amount of fuel to be carried off from said fuel adhering to said inner wall surface of said intake passage into said at least one combustion chamber, by the use of said adhering fuel parameters;

fuel injection amount-correcting means for correcting said amount of fuel to be supplied to said engine according to said amount of fuel adhering to said inner wall surface of said intake passage and said amount of fuel to be carried-off from said fuel adhering to said inner wall surface to calculate a corrected fuel injection amount; and

fuel injection control means for injecting fuel in said corrected fuel injection amount into said intake passage;

the improvement comprising starting condition-detecting means for detecting a starting condition of said engine, and

wherein when said starting condition-detecting means detects that said engine is in said starting condition, and at the same time said corrected fuel injection amount is below a predetermined value, said fuel injection control means injects fuel into said intake passage in an amount at least larger than said predetermined value.

5,572,979

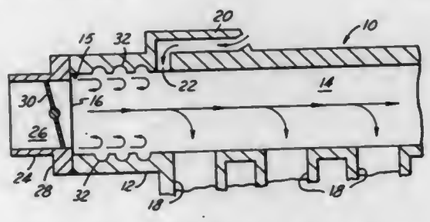
ENGINE AIR INDUCTION SYSTEM

Gerald H. Czadzeck, Bloomfield Twp., Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 5, 1995, Ser. No. 498,162

Int. Cl.[6] F02B *47/08*

U.S. Cl. 123—568 **13 Claims**



1. An air induction system for use in an internal combustion engine comprising:

a throttle body having an airflow surface defining a main airflow bore and a throttle plate mounted in the bore;

an intake manifold housing mounted to the throttle body, downstream of the throttle body, with the housing including an air flow surface defining a main airflow passage aligned with the throttle body main bore, an incoming flow passage intersecting the main airflow passage, and a plurality of intake runners having intake passages and the intake runners intersecting the main airflow passage; and

turbulence means, located downstream of the throttle plate and upstream of the incoming flow passage, for causing turbulence in the main air flow passage.

5,572,980

FUEL SUPPLY CONTROL SYSTEM FOR AN ENGINE

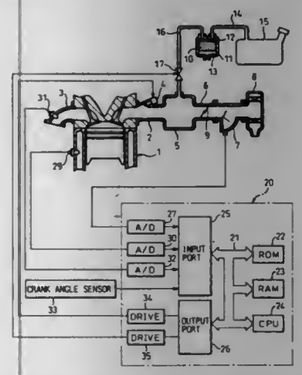
Norihisa Nakagawa, Numazu, and Hiroki Matsuoka, Susono, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Oct. 24, 1995, Ser. No. 547,162

Claims priority, application Japan, Oct. 25, 1994, 6-260353

Int. Cl.[6] F02D *41/14*; **F02M** *25/08*

U.S. Cl. 123—681 **16 Claims**



1. A fuel supply control system for an engine having an intake passage and a throttle valve arranged in the intake passage, the system comprising:

a canister for temporarily storing fuel vapor, the canister being connected to the intake passage downstream of the throttle valve through a purge passage;

a purge control valve arranged in the purge passage for controlling an amount of a purge gas fed into the engine through the purge passage, the purge control valve being cyclically opened and closed, and being adapted to be duty controlled to make an opening ratio of the purge control valve equal to a duty ratio in each duty cycle;

first duty ratio calculating means for calculating a duty ratio for every duty cycle of the duty control of the purge control valve, required to make the amount of the purge gas equal to a target amount of the purge gas determined in accordance with the engine operating condition, first duty ratio calculating means calculating the duty ratio before the corresponding duty cycle starts in accordance with an engine operating condition at that time;

driving means for driving the purge control valve to make the opening ratio of the purge control valve equal to the duty ratio calculated by the first duty ratio calculating means in each duty cycle;

second duty ratio calculating means for calculating a duty ratio for the duty control of the purge control valve, required to make the amount of the purge gas equal to the target amount of the purge gas, second duty ratio calculating means calculating the duty ratio when the corresponding duty cycle is in process in accordance with an engine operating condition at that time; and

control means for controlling driving means so that driving means drives the purge control valve to make the opening ratio of the purge control valve equal to the duty ratio calculated by the second duty ratio calculating means during the corresponding duty cycle.

5,572,981

METHOD FOR MONITORING THE FUNCTIONAL CAPABILITY OF A TANK VENTING SYSTEM FOR A MOTOR VEHICLE

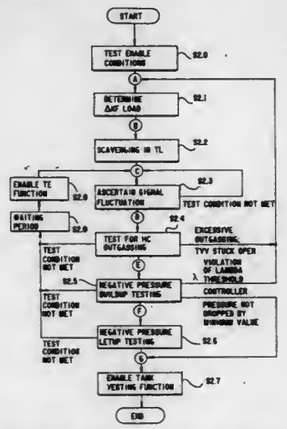
Hartmut Pfleger, Braunschweig; Manfred Wier, Wenzenbach, and Klaus Bayerle, Regensburg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 3, 1995, Ser. No. 510,744

Claims priority, application Germany, Aug. 4, 1994, 44 27 688.5

Int. Cl.[6] B60K *15/03*; **G01M** *15/00*; **F02D** *41/14*

U.S. Cl. 123—698 **14 Claims**



1. In a method for monitoring functional capability of a tank venting system trapping fuel fumes and leading to an internal combustion engine for a motor vehicle, on the basis of a negative pressure generated in the tank venting system, including:

a fuel tank, a container adsorbing fuel fumes, a venting line through which the container communicates with the fuel tank, an intake tube of the engine, and a regeneration line through which the container communicates with the intake tube;

an aeration line communicating with the atmosphere, and a shutoff valve for closing the aeration line to monitor the tank venting system;

a pressure sensor detecting a system pressure of the tank venting system; and

a tank venting valve being disposed in the regeneration line, being opened for supplying fuel fumes stored in the container and for building up a negative pressure in the tank venting system;

the method which comprises:

classifying the tank venting system as currently nonfunctional if a pressure gradient upon buildup of the negative pressure is below a threshold or a pressure gradient upon letup of the negative pressure is above a further threshold;

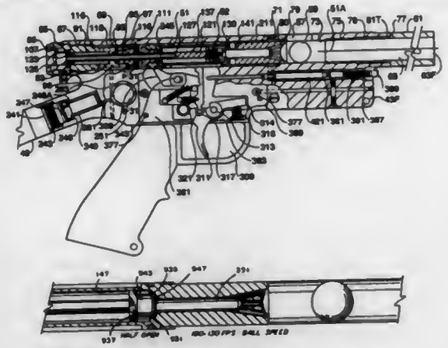
monitoring operating variables of the vehicle including the engine and the tank venting system, and discontinuing the method if predetermined operating variable values at which a reliable statement about the functional capability is possible, are not attained; and

monitoring the dynamic behavior of the pressure course in the tank venting system during the entire performance of the method; by:

detecting chronologically successive pressure values;

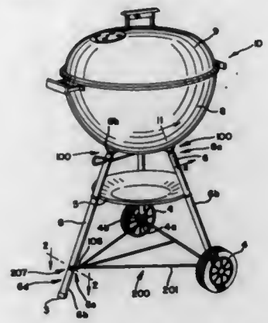
forming a mean value of two of the pressure values; and
discontinuing the method if an amount of a difference between the mean value and a current pressure value is outside a predetermined dynamic range.

5,572,982
PAINT BALL GUN WITH CRACK VALVE
Robert A. Williams, 2721 White Settlement Rd., Fort Worth, Tex. 76107
Continuation-in-part of Ser. No. 210,010, Mar. 17, 1994, Pat. No. 5,505,188. This application Sep. 21, 1995, Ser. No. 532,001
Int. Cl.[6] F41B *11/06; 11/02*
U.S. Cl. 124—74 **1 Claim**



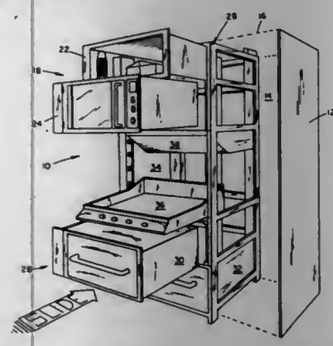
1. A gun for firing balls, comprising:
a body having an elongated chamber with a front end and a rear end,
a gun barrel supported by said body and having an aperture extending from said front end of said chamber to a forward open end such that said chamber and aperture form a continuous bore,
a ball inlet extending into said bore near said front end of said chamber for allowing a ball to enter said bore for movement in said bore forward of said inlet and out of said forward open end of said barrel,
a bolt located in said chamber for movement between rear and forward positions,
said bolt comprises side wall structure having a rear end and a front end with a central opening extending therethrough,
said central opening of said bolt comprising a front opening portion and a rear opening portion with an annular seat located between said front and rear opening portions and facing rearward,
in said rear position of said bolt, said front end of said bolt being located rearward of said inlet,
a valve member located in said chamber for movement between rear and forward positions,
said valve member having a rear end and a forward end with a valve opening extending into said valve member from said rear end to a forward position,
said forward end of said valve member being located in said rear opening portion of said bolt with said valve opening being in fluid communication with said rear opening portion of said bolt,
said valve member being movable relative to said bolt,
said valve member having valve structure adapted to engage said seat of said bolt when said bolt and said valve members are in said rearward positions and form a seal with said seat,
stop structure secured to the rear end of said valve member,
a stop member located in said rear portion of said chamber for engaging said stop structure of said valve member for limiting forward movement of said valve member,
a main channel for allowing pressurized gas to flow into said rear portion of said chamber, through said opening of said valve member and into said rear opening portion of said bolt,
a sear for holding said bolt in its rear position,
a trigger mechanism for releasing said sear for allowing pressurized gas in said rear portion of said chamber to move said valve member forward for moving said bolt forward for allowing said valve structure and said seat to separate for allowing pressurized gas to flow through said forward opening of said bolt for forcing a ball in said bore out of said forward open end of said gun barrel, and
said bolt comprising a first annular chamber extending rearward from said seat and expanding outward to a second annular chamber,
said valve structure of said valve comprising a forward surface adapted to engage said seat of said bolt when said bolt and said valve member are in said rearward position and form a seal with said seat, and an annular member extending rearward of said forward surface and adapted to be located in said first annular chamber of said bolt,
said valve structure and said bolt being movable relative to each other between a closed position wherein said forward surface engages said seat and a fully open position wherein said forward surface is located in said second annular chamber,
said annular member having a diameter sufficient to allow the flow of a relatively small amount of gas from said rear opening of said bolt between said annular member and said first annular chamber and into said front opening as said forward surface of said valve and said seat begin to separate and while said annular member is in said first annular chamber, with the amount of gas flowing from said rear opening of said bolt into said front opening increasing in said fully open position wherein said forward surface is located in said second annular chamber.

5,572,983
LEG ENHANCEMENTS FOR BARBECUE GRILL
Erich J. Schlosser, Barrington, and Ewald Sieg, Palatine, both of Ill., assignors to Weber-Stephen Products Co., Palatine, Ill.
Filed May 5, 1995, Ser. No. 435,341
Int. Cl.[6] F24B *3/00*
U.S. Cl. 126—25 R **6 Claims**



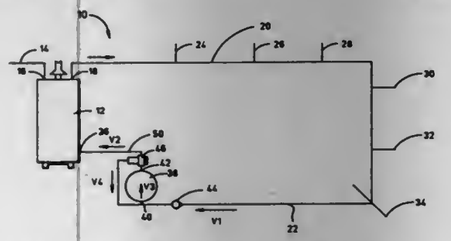
1. A barbecue grill assembly having a bottom bowl for cooking with a plurality of supporting legs maintaining the bowl above the ground, the supporting legs further having an exterior surface and an interior surface and comprising:
a mounting element at an upper end of each leg cooperating with the bottom bowl to interconnect the bottom bowl to the leg; and,
a support member interconnecting the legs and attached adjacent a lower end of each leg and further adapted for engaging at least one internal surface of one leg, the support member including a hook having a cross-sectional diameter, a hook diameter, and a distal end and the one leg includes an opening therein, the opening having a diameter greater than the cross-sectional diameter and less than the hook diameter, the hook being adapted for first threading into the opening then by manipulation of the one leg being fed into the one leg such that when the one leg is attached to the bowl, the distal end of the hook contacts the inner surface of the one leg.

5,572,984
MODULAR FOOD SERVICE KIOSK
Lorne B. Alden, Shelburne; James T. Cole, Essex Junction, both of Vt., and George McMahon, Manchester, N.H., assignors to G.S. Blodgett Corporation, Burlington, Vt.
Filed Jan. 24, 1995, Ser. No. 377,564
Int. Cl.[6] F24C *15/20*
U.S. Cl. 126—299 R **9 Claims**



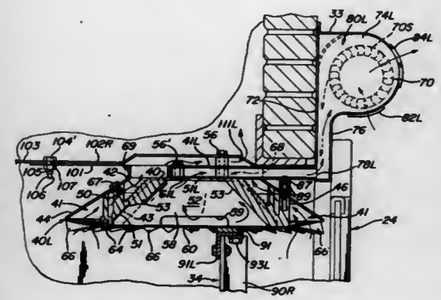
1. A modular kiosk for food service preparation and storage comprising a first structural unit being rectangular in cross section and having upstanding side and rear walls and a horizontal roof and an open front;
horizontal upper, middle and lower sections formed in said unit each section adapted to slidably receive a service unit for preparing, cooking or storing food, said middle section including a ventilation hood mounted therein and cooking means disposed in said middle section below said hood for cooking food, the service unit in at least one of said lower or upper section including dry storage drawer means for storing supplies
utility hook-up means mounted on the back wall of said unit for coupling appliances to a source of energy; and
flue hook-up means carried by said unit for coupling said hood to an external flue.

5,572,985
RECIRCULATING SYSTEM WITH BY-PASS VALVE
Roger A. Benham, P.O. Box 830, San Diego, Calif. 92112
Filed Dec. 12, 1995, Ser. No. 571,111
Int. Cl.[6] F24H *1/00*
U.S. Cl. 126—362 **16 Claims**



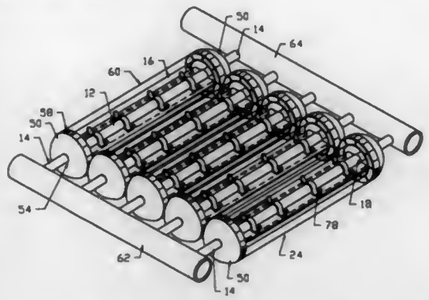
1. A recirculating hot water system comprising:
a water heater for heating a continuous supply of hot water;
a recirculating water line comprising a supply line connected to an outlet of said heater for conveying water from said heater to at least one use station and a return line for returning water not consumed at said station to said heater;
a circulating pump in said return line for continuously circulating water in said water line;
a by-pass circuit for by-passing said recirculating line connected at an outlet of said pump and an inlet to said pump; and
a by-pass valve in said recirculating line at said by-pass line for directing water at a predetermined temperature through said by-pass line.

5,572,986
FIREPLACE HEAT EXCHANGER
H. Alfred Eberhardt, 1100 S. Collier Blvd., Marco Island, Fla. 33937
Filed Feb. 7, 1995, Ser. No. 384,832
Int. Cl.[6] F24B *1/189*
U.S. Cl. 126—515 **17 Claims**



1. For use with a fireplace comprising a combustion chamber having a front opening and a back wall, a chimney flue connected to a top portion of the combustion chamber for discharging combustion gases therefrom, a hearth, heating means supported at the bottom of the combustion chamber for providing heating gases in response to combustion, and a fire screen assembly or the like for closing off the front opening of the fireplace, the combination comprising
a heat exchanger assembly including a heat exchanger,
means for mounting said heat exchanger at the top portion of the combustion chamber to extend horizontally across the location where the chimney flue connects with the top portion of the combustion chamber,
said heat exchanger comprising means defining a first heat exchange passage for the flow of room air across an upper portion of the combustion chamber, means defining a second heat exchange passage for the flow of combustion gases vertically up from said combustion chamber to the fireplace flue, said first and second heat exchange passages being in heat exchange relationship so that the hot combustion gases passing through said second heat exchange passage heat up the room air flowing through said first heat exchange passage, said second heat exchange passage being constructed and arranged to induce a vortex flow of the combustion gases about a vertical axis, and having a generally annular configuration encircling said first heat exchange chamber, said second heat exchange passage having a generally truncated, conical configuration converging in the vertical direction to cause said upwardly flowing vortex flow of combustion gases to accelerate as said flow rises within said second heat exchange passage.

5,572,987
SOLAR ENERGY SYSTEM
Jose M. Moratalla, P.O. Box 2603, Dunedin, Fla. 34697-2603; Robert W. Yobo, 5812 Toucan Pl., Clearwater, Fla. 34620, and Richard L. Glueck, 1102 62nd St., Pasadena Estates, Fla. 33707
Filed Jul. 18, 1994, Ser. No. 276,449
Int. Cl.[6] F24J *2/50*
U.S. Cl. 126—652 **19 Claims**



1. A new and improved solar energy system, formed from a plurality of components, each component comprising, in combination:

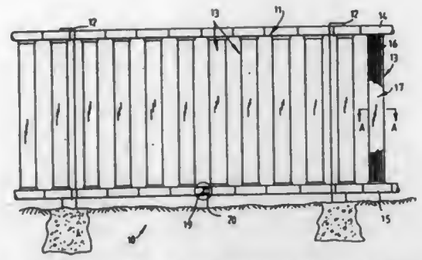
a heat absorber having a tubular conduit located in a linear path along at least a central portion of its extent, the tubular conduit having a linear axis extending therethrough, the heat absorber also having a fin along the length of the conduit with end sections and a central section therebetween for supporting the conduit, the conduit and fin being fabricated of a dark color for collecting solar energy from the sun and transferring such solar energy by the black body effect to a liquid flowing through the conduit;

an extruded housing of a cylindrical configuration throughout its entire length surrounding the conduit, the cylindrical housing including an interior heat collecting tube with a cross section greater than the cross section of the conduit, the housing also including an exterior heat collecting tube with a cross section greater than the cross section of the interior tube with the exterior tube and the interior tube and the tubular conduit all having a common axis, the interior tube having an interior surface contacting and supporting the end sections of the fin, the interior tube and the exterior tube being fabricated of a transparent material for the receipt and entrapment of solar energy by the greenhouse effect;

radial spacers located between the interior tube and the exterior tube along the lengths thereof to divide the space between the tubes into axial segments; and

a plurality of end caps, each end cap coupled with respect to one end of the conduit with an aperture formed in each end cap for the passage of the conduit therethrough.

5,572,988
SOLAR ABSORBER ASSEMBLIES
Robert N. Walton, Nerang, Australia, assignor to Neumann Steel PTY, Ltd., Queensland, Australia
PCT No. PCT/AU92/00481, § 371 Date Aug. 16, 1994, § 102(e) Date Aug. 16, 1994, PCT Pub. No. WO93/18353, PCT Pub. Date Sep. 16, 1993
PCT Filed Sep. 9, 1992, Ser. No. 284,469
Claims priority, application Australia, Mar. 9, 1992, 12106/92
Int. Cl.[6] F24J *2/50*
U.S. Cl. 126—652 **11 Claims**



1. A solar absorber assembly, comprising

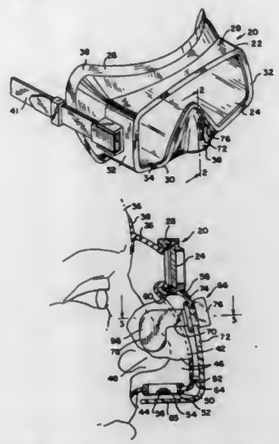
an upper connector and a lower connector, through which water passes for solar heating of the same,

at least one heat absorber tube extending between and sealably connected to said upper and lower connectors in fluid communication therewith whereby water passes between said connectors through said tube,

a glazing assembly comprised of opposed first and second glazing members formed of translucent or transparent plastic material and which, when assembled, enclose said heat absorber tube, and means on said upper and lower connectors for receiving and supporting said glazing members in their assembled position, and

wherein said first and second glazing members are formed with interengable connecting parts for maintaining said members in assembled position enclosing said tube.

5,572,989
PRESSURE EQUALIZING MECHANISM FOR A DIVING MASK
James R. Lutz, Round Lake Beach; Keith D. Alaberg, Chicago; James F. Caruso, Evanston; Paul J. Doczy, Chicago; Robert S. Gelick, Evanston, and Craig Scherer, Wilmette, all of Ill., assignors to Johnson Worldwide Associates, Sturtevant, Wis.
Filed Oct. 31, 1995, Ser. No. 550,607
Int. Cl.[6] A62B *18/02*; **B63C** *11/02*;*11/16*; **A61F** *9/02*
U.S. Cl. 128—201.18 **19 Claims**



1. A diving mask for use by a diver, the diving mask creating an interior pocket of air bounded by an interior of the mask and at least part of the face of the diver when worn by the diver, comprising:

a frame;

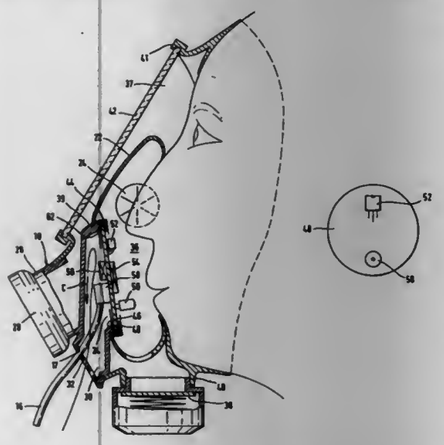
a lens sealingly mounted in the frame;

a flexible skirt mounted to the frame, the flexible skirt including a nosepiece configured to fit over the nose of the diver;

a bracket mounted to the frame and disposed at least partially over the nosepiece; and

an actuator connected to the bracket and including a nose pinching element, the actuator being movable, wherein upon sufficient movement of the actuator, the nosepiece is squeezed inwardly by the nose pinching element to a position that would restrict airflow through the diver's nose when positioned within the nosepiece.

5,572,990
RESPIRATORY MASK AND MICROPHONE MOUNT FOR USE THEREIN
Florence Berlin, 1C Rue Beau Site, CH-1203 Geneva, Switzerland
Filed May 31, 1995, Ser. No. 455,065
Claims priority, application Germany, Jun. 8, 1994, 9409320 U
Int. Cl.[6] A62B *18/08*
U.S. Cl. 128—201.19 **35 Claims**



1. A respiratory mask having an inner mask for covering mouth and nose, wherein the inner mask has at least one inhalation valve, an exhalation valve and a voice aperture to be placed opposite the mouth and in which there is located in the inner mask at least one microphone connectable to a transceiver apparatus or an intercom, characterized in that, in the inner mask a microphone mount is removably attached over the voice aperture, on the inside of the microphone mount a first directional microphone is so attached that when the respiratory mask is worn the first directional microphone is positioned opposite the mouth and the first directional microphone has a directional pattern oriented substantially toward the mouth for picking up ambient noise and speech but favoring speech pick up, on the inside of the microphone mount a second directional microphone is attached and is spaced from the first microphone and has a second directional pattern oriented substantially toward the inhalation valve for picking up mainly ambient noise.

5,572,991
AIR FLUSH SYSTEM FOR A FIREFIGHTER'S GARMENT
William L. Grilliot, and Mary L Grilliot, both of West Milton, Ohio, assignors to Morning Pride Mfg. Inc., Dayton, Ohio
Filed Sep. 9, 1994, Ser. No. 303,467
Int. Cl.[6] A62B *17/00*
U.S. Cl. 128—201.29 **58 Claims**

1. A flush system for a protective garment adapted to be worn by a person, comprising:



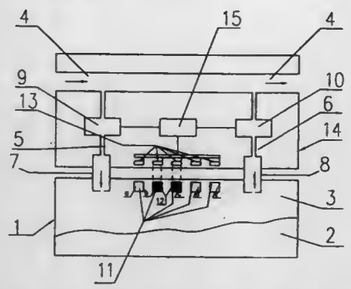
(a) a garment having a plurality of layers, a space being located between two of the layers;

(b) a source of compressed gas carried by a person;

(c) means for delivering gas from the source to a face mask for inhalation by a person; and

(d) means for delivering gas exhaled by a person from the mask directly to the space by way of a closed conduit.

5,572,992
METHOD AND APPARATUS FOR IDENTIFYING AN ANESTHETIC FLUID CONTAINER AND/OR FOR DETECTING A CONNECTION BETWEEN THE CONTAINER AND A CONDUIT SUPPLYING A GAS TO A PATIENT
Jukka Kankkunen, Helsinki, and Pertti Puukangas, Espoo, both of Finland, assignors to Instrumentarium Corp., Finland
Filed Mar. 2, 1995, Ser. No. 397,611
Claims priority, application Finland, Mar. 4, 1994, 941059
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—203.14 **25 Claims**



1. In anesthesia apparatus, the improvement comprising:

a body member (14) having a connecting element (8) for detachably connecting an anesthetic container (1) to the apparatus to supply anesthetic to a patient through a conduit connected to the connecting element;

a selected one of a plurality of anesthetic containers, each of which contains an anesthetic of differing properties, said body member and container being relatively movable to place the container in a position in which the container has a desired operative connection to the connecting element;

magnetic-field producing means (12) provided in association with each container of said plurality of containers, said magnetic-field producing means establishing a unique magnetic characteristic for each of the containers;

magnetic-field detecting means (13) provided in association with the body member;

said magnetic-field producing means (12) and said magnetic-field detecting means (13) being positioned so as to be magnetically couplable when a container is proximate to the body member so that said magnetic-field detecting means detects the magnetic characteristic of said magnetic-field producing means of the container, said magnetic-field producing means and magnetic-field detecting means having a particular magnetic coupling state only when the container is in said operative connection position; and

an identification element (15) having means for receiving a signal from said magnetic-field detecting means and, in response to the received signal, identifying which one of the plurality of anesthetic containers is proximate to the body member and whether the container is in said operative connection position.

5,572,993

APPARATUS FOR ASSISTING IN VENTILATING THE LUNGS OF A PATIENT

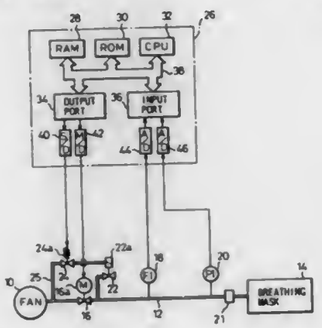
Kanji Kurome; Atsushi Asahina; Yoshihito Hashimoto; Yoshiki Nakagawa, all of Ibaraki; Harutomo Wakou, Sendai, and Yoshitaka Oku, Sakyo-ku, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jul. 6, 1995, Ser. No. 498,751

Claims priority, application Japan, Jul. 6, 1994, 6-154759; Jul. 6, 1994, 6-154760; Jul. 6, 1994, 6-154761; Mar. 13, 1995, 7-052490

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—204.23 **21 Claims**



1. An apparatus for assisting in ventilating the lungs of a patient comprising:

a respiratory gas source means for supplying the respiratory gas to a patient;

a breathing mask means for introducing the respiratory gas into the lungs of a patient, the breathing mask being suitable to be put on the face of a patient;

a conduit means for fluidly connecting the respiratory gas source means to the breathing mask for delivering the respiratory gas from the respiratory gas source means to the breathing mask;

a means for regulating the pressure within the conduit means;

a flow meter means for detecting the flow rate of the respiratory gas from the respiratory gas source to the breathing mask;

a pressure sensor means for detecting the pressure within the conduit adjacent to the breathing mask;

a means for obtaining a flow impedance parameter of the flow system downstream of the pressure sensing means, including the airways and the lungs of the patient, based on the flow rate and pressure detected by the flow meter and the pressure sensor means;

a means for storing the relationship between the operation of the pressure regulating means, the flow impedance parameter, and the pressure within the conduit means;

a means for predicting the flow impedance parameter after a predetermined time interval within a respiratory cycle;

a means for generating a target pressure signal to which the pressure regulating means regulates the pressure within the conduit; and

a means for controlling the operation of the pressure regulating means such that the pressure within the conduit adjacent to the breathing mask becomes substantially the target pressure during the respiratory cycle based on the predicted flow impedance parameter and the relationship between the operation of the pressure regulating means, the flow impedance parameter, and the pressure within the conduit means.

5,572,994

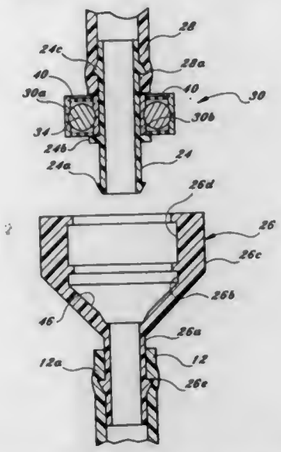
OCCLUSION RESISTANT OXYGEN SUPPLY CONDUIT FOR A NASAL CANNULA

Steven W. Smith, 1077 NE. 35th St., Oakland Park, Fla. 33334

Filed Jun. 7, 1995, Ser. No. 479,941

Int. Cl.[6] A61M *15/08;* **A62B** *9/04*

U.S. Cl. 128—207.18 **6 Claims**



1. An oxygen delivery supply conduit that resists occlusion or pinching for connecting a means for supplying oxygen to a nasal cannula comprising:

a first flexible oxygen supply tube connected at a first end to means for supplying oxygen;

a second flexible oxygen supply tube connected at a first end to a nasal cannula;

a rotatable coupling means having an oxygen inlet conduit connected to a second end of said first oxygen supply tube and an oxygen outlet conduit connected to a second end of said second oxygen supply tube and in fluid communication sealably to the second end of said first oxygen supply tube, said rotatable coupling having a means for permitting rotation of said inlet conduit relative to said outlet conduit said inlet and outlet conduits move rotationally relative to each other preventing occlusion or pinching of said oxygen supply conduit; and

said oxygen inlet conduit including a tubular portion ending in a tapered flange and said oxygen outlet conduit including a conical portion sized to rotatably receive said tapered flange;

said rotatable coupling including a rotatable bearing and a housing that includes a cylindrical recessed portion and a tubular end portion in fluid communication, said housing including said cylindrical recessed portion sized to sealably receive an outer diameter of said rotatable bearing;

said oxygen inlet conduit sealably connected within an inner diameter of said rotatable bearing.

5,572,995

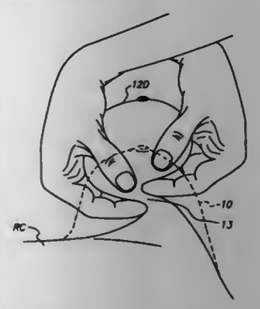
FLOATATION ENHANCED SELF-EXAMINATION SYSTEM

Roderick G. Rohrberg, 2742 W. 234th St., Torrance, Calif. 90505

Continuation-in-part of Ser. No. 123,490, Sep. 17, 1993, Pat. No. 5,474,064. This application Jun. 1, 1995, Ser. No. 456,438

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—630 **12 Claims**



1. A method of examining a portion of the human body of a person comprising the steps of:

immersing said portion of the human body in a bath of hot water which relaxes the tissues of said portion of the human body while said person is in a generally upright position;

examining said portion of the human body under the levitating influence caused by the immersion of said portion of the human body in said bath of hot water;

applying a random, repetitive, palpating and probing pressure using the tips of the fingers (FT) from both of the examiner's hands; and

applying pressure using the finger tips (FT) to form an "S-curve" deflection of said portion of the human body which is placed between said finger tips (FT) which occupy generally opposed positions.

5,572,996

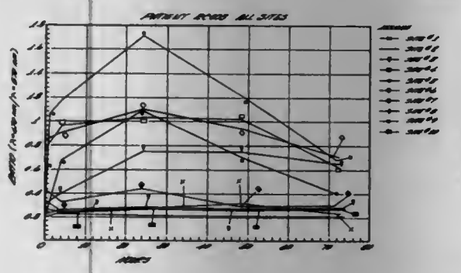
IN VIVO PHARMACOKINETICS OF PHOTOSENSITIVE DRUGS AND METHOD

Daniel R. Doiron, Santa Ynez, and John B. Dunn, Buellton, both of Calif., assignors to PDT Systems, Inc., Goleta, Calif.

Continuation-in-part of Ser. No. 308,288, Sep. 19, 1994, abandoned. This application Jan. 17, 1996, Ser. No. 587,547

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—633 **2 Claims**



1. A method for measuring a temporal change in a concentration of an exogenous chromophore in a target tissue in the presence of an endogenous chromophore in the target tissue within the body of an animal comprising the steps of:

(a) establishing a concentration of the exogenous chromophore within the target tissue of the animal;

(b) illuminating the target tissue with excitation light having a first wavelength which is absorbed by the exogenous chromophore and the endogenous chromophore and wherein the absorption of the excitation light by the exogenous chromophore and the endogenous chromophore causes the exogenous chromophore to emit fluorescence light having a maximum intensity at a second wavelength and the endogenous chromophore to emit fluorescence light having a third wavelength and wherein the second and third wavelengths are unequal;

(c) directing the fluorescence light into a fluorescence light detection apparatus operable for separating a portion of the fluorescence light having the second wavelength from a portion having the third wavelength;

(d) detecting and measuring the intensity of the portions of the fluorescence light emanating from the target tissue at the second wavelength and the third wavelength;

(e) dividing the intensity of the fluorescence light at said second wavelength by the intensity of the fluorescence light at said third wavelength, the resulting quotient being a measure of the concentration of exogenous chromophore in the target tissue; and

(f) repeating steps b–e above over an interval of time to measure the rate of change of the quotient with time, the rate of change of the quotient with time providing a measure of the temporal change in the concentration of the exogenous chromophore in the target tissue during the interval of time.

5,572,997

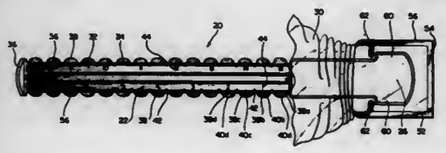
COAGULATION TIMER

Rowland W. Kanner, Guntersville, and Fred E. Williams, Jr., Arab, both of Ala., assignors to Ryder International Corporation, Arab, Ala.

Filed Jun. 14, 1994, Ser. No. 259,517

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—637 **11 Claims**



1. A device for use in monitoring the bleeding time of a patient by administering an incision through the skin and then blotting the blood at predetermined intervals to determine the amount to time to achieve clotting, said device comprising:

a carrier member having a handle portion and a support portion extending therefrom;

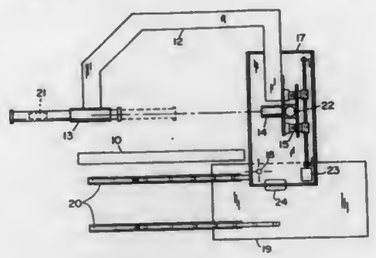
an absorbing medium for use in blotting blood from the incision through the skin, said absorbing medium being affixed to said support portion;

a bag member overlying said absorbing medium, said bag member being affixed to the handle portion, retractable around said handle portion to uncover the absorbing medium, and replaceable to cover said absorbing medium.

5,572,998
METHOD OF SCANNING THE SPINE OF A PATIENT TO DETERMINE BONE DENSITY ALONG TWO DIFFERENT AXES

William O'Neill, Ann Arbor, Mich., and James R. Warne, Washington, Pa., assignors to Hologic, Inc., Waltham, Mass.

Continuation of Ser. No. 947,247, Sep. 18, 1992, abandoned, which is a continuation-in-part of Ser. No. 360,347, Jun. 5, 1989, Pat. No. 5,165,410, which is a continnation-in-part of Ser. No. 204,513, Jun. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 50,726, May 15, 1987, abandoned. This application Aug. 22, 1994, Ser. No. 295,171
Int. Cl.[6] A61B 6/00
U.S. Cl. 128—653.1 8 Claims

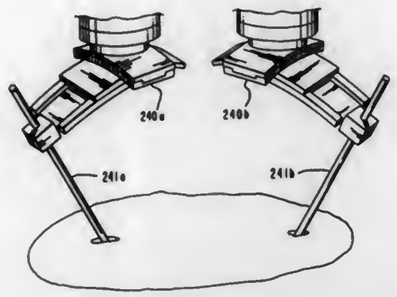


1. A method of scanning the spine of a patient comprising:
positioning a human patient on a support surface, the spine of the patient extending along an axis of the support surface;
providing a C-shaped member mounted relative to the support surface, the C-shaped member rigidly aligning a radiation source and detector and being selectively driven in a first direction along the axis of the support surface by a motor;
scanning a region of a patient's spinal column at a first angle with the C-shaped member, source and detector to detect with the detector radiation at two energies that is transmitted through the region from the source while the C-shaped member is being driven along the axis of the support surface by the motor, the source emitting radiation at said two energies;
determining bone density in the spinal column from radiation detected with the detector at the two energies during the scanning at the first angle;
rotating the C-shaped member, the radiation source and detector about the support surface to a second angle such that the source and detector are aligned laterally through the spinal region at an angle different from the first angle;
scanning a region of the spinal column with the C-shaped member, source and detector, the detector receiving radiation from the source that is transmitted laterally through the region to the detector at the second angle while the C-shaped member is being driven along the axis of the support surface by the motor; and
generating an image of the scanned region of the spinal column on a display from at least one of: (1) radiation detected with the detector at the first angle; and (2) radiation detected with the detector at the second angle.

5,572,999
ROBOTIC SYSTEM FOR POSITIONING A SURGICAL INSTRUMENT RELATIVE TO A PATIENTS BODY

Janez Funda, Valhalla; David A. LaRose, Croton on Hudson, and Russell H. Taylor, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 889,215, May 27, 1992, Pat. No. 5,417,210. This application Jan. 26, 1995, Ser. No. 378,433
Int. Cl.[6] A61B 17/00; 1/00
U.S. Cl. 128—653.1 7 Claims

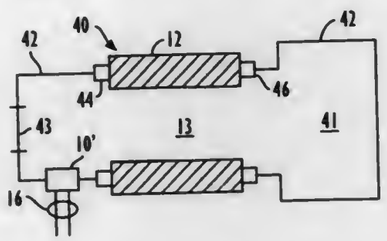


1. A system for positioning a surgical instrument relative to a patient's body, comprising:
a robotic manipulator having at least one controlled degree of freedom;
a controller controlling the robotic manipulator;
an instrument holder attaching a first surgical instrument to the robotic manipulator;
a second surgical instrument held by a surgeon;
a surgeon input device mounted on the second surgical instrument, the surgeon input device permitting the the surgeon to specify desired motions of the first surgical instrument to the controller so that the robotic manipulator moves the first surgical instrument to a position relative to the patient's body as specified by the surgeon using the surgeon input device.

5,573,000
RADIO-FREQUENCY INTERFERENCE SHIELD IN MRI SYSTEMS

Amit Goffer, Kiryat Tivion, and Yuval Tzuk, Haifa, both of Israel, assignors to Elscint Ltd., Haifa, Israel

Continuation of Ser. No. 151,874, Nov. 15, 1993, abandoned. This application Feb. 2, 1995, Ser. No. 384,464
Claims priority, application Israel, Nov. 17, 1992, 103769
Int. Cl.[6] A61B 5/055
U.S. Cl. 128—653.2 9 Claims

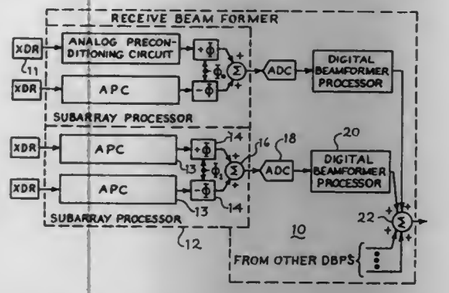


1. A magnetic resonance imaging system, said system comprising:
a magnet for creating a magnetic field,
said magnet having a bore therein for receiving patients for imaging, said bore having a front opening and a rear opening,
gradient coils for selectively varying the magnetic field,
radio-frequency (RF) coils to produce RF signals in the bore of said magnet at desired radio frequencies to generate image data,
RF shielding for prevent external RF signals from contaminating the RF signals in the bore, and
said RF shielding including a first RF shield external to said magnet, and special conductive elements for electrically coupling said first RF shield to said magnet to include said magnet as an integral part of the RF shielding so that said RF shielding comprises the magnet conductively coupled to said first RF shield.

5,573,001
ULTRASONIC RECEIVE BEAMFORMER WITH PHASED SUB-ARRAYS

Joseph G. Petrofsky, Sunnyvale; Samuel H. Maslak, Woodside, and Christopher R. Cole, Cupertino, all of Calif., assignors to Acuson Corporation, Mountain View, Calif.

Filed Sep. 8, 1995, Ser. No. 524,993
Int. Cl.[6] A61B 8/00
U.S. Cl. 128—661.01 33 Claims

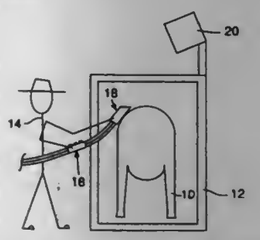


1. In an ultrasonic receive beamformer of the type comprising a plurality of digital beamformer processors and a plurality of transducers, each transducer forming a respective receive signal, the improvement comprising:
a plurality of sub-array processors, each sub-array processor comprising at least one phase shifter and a summer, each phase shifter responsive to at least one of the receive signals to shift the receive signal by a respective phase angle and to apply the shifted receive signals to the summer, each phase shifter dynamically updatable during dynamic focusing of the digital beamformer processors, each of the summers supplying a summed sub-array signal to a respective one of the beamformer processors, wherein the phase angles for any one of the sub-array processors form a sum substantially equal to zero.

5,573,002
METHOD AND APPARATUS FOR MEASURING INTERNAL TISSUE CHARACTERISTICS IN FEED ANIMALS

William C. Pratt, Canyon, Tex., assignor to Micro Chemical, Inc., Amarillo, Tex.

Filed Feb. 27, 1995, Ser. No. 395,931
Int. Cl.[6] A61B 8/00
U.S. Cl. 128—660.07 25 Claims

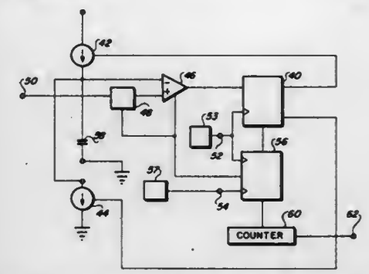


1. A system for measuring internal tissue characteristics in livestock, comprising:
a stall for positioning livestock;
a reservoir containing a conductive liquid;
an ultrasonic transducer; and
a handpiece which is liquidly connected to the reservoir, the handpiece further comprising a dispenser for dispensing liquid from a reservoir onto livestock positioned in the stall.

5,573,003
LOW-POWER DELTA MODULATOR FOR INTRACARDIAL SIGNAL MONITORING IN A CARDIAC DEVICE

Brian M. Mann, Beverly Hills, and Min-Yaug Yang, Monterey Park, both of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.

Filed Jan. 27, 1995, Ser. No. 379,067
Int. Cl.[6] A61B 5/0402
U.S. Cl. 128—696 38 Claims



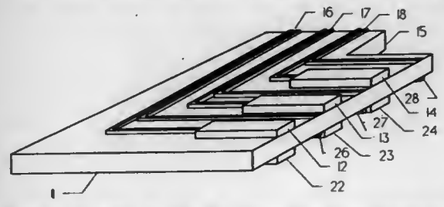
1. A low-power delta modulator for use in a cardiac stimulating device for monitoring intracardial signals, the low-power delta modulator comprising:
input logic for sampling an analog input signal and providing a sampled input signal;
means for providing a reference voltage responsive to control signals;
a first clock;
a counter; and
control means for providing the control signals to the means for providing a reference voltage, the means for providing a reference voltage adjusting the reference voltage from an initial reference voltage to substantially equal the sampled input signal in accordance with the control signals, wherein while the means for providing a reference voltage adjusts the reference voltage, the control means simultaneously causes the counter to count at the rate of the first clock until the reference voltage has been adjusted to substantially equal the sampled input voltage, such that a count is reached that is proportional to the voltage difference between the initial reference voltage and the sampled input signal, the control means further providing a directional signal that is indicative of the direction in which the reference voltage was adjusted, and the directional signal and the count being provided as a digital output signal representative of the analog input signal.

5,573,004
ELECTRICALLY STABLE ELECTRODE AND SENSOR APPARATUS

Allen W. Groenke, Bloomington, Minn., assignor to EdenTec Corporation, Eden Prairie, Minn.

Filed Oct. 6, 1994, Ser. No. 319,238
Int. Cl.[6] A61B 5/087
U.S. Cl. 128—724 18 Claims

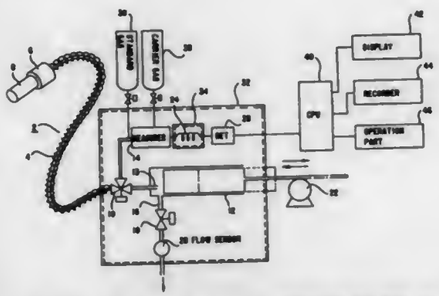
1. In a sensor apparatus including an insulative substrate having



a first side, and a first thermal responsive impedance path attached to the first side of the substrate, the improvement comprising:

a. a second side of the substrate opposite to the first side;
b. a second thermal responsive impedance path attached to said second side of the substrate; and
c. electrical conductive path means on the first and second sides of the substrate for electrically connecting said first and second impedance paths.

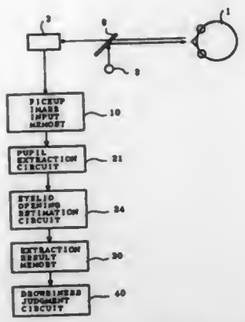
5,573,005
EXPIRATION COLLECTING METHOD AND AUTOMATIC EXPIRATION COLLECTOR
Hideo Ueda, Osaka; Mitsuo Hiromoto, Kyoto; Meng Gang, Kyoto, and Yutaka Yamasaki, Kyoto, all of Japan, assignors to Kyoto Dai-ichi Kagaku Co. Ltd., Kyoto, Japan
Filed Oct. 24, 1994, Ser. No. 327,585
Claims priority, application Japan, Oct. 25, 1993, 5-290132
Int. Cl.[6] A61B *5/097*
U.S. Cl. 128—730 **9 Claims**



1. An expiration collecting method, comprising the steps of:
receiving expiration from a subject into a sample collecting vessel having a volume smaller than a single expiration volume under atmospheric pressure and larger than a volume required for analysis and replacing precedently blown expiration in said sample collecting vessel by subsequently blown expiration through an expiration inlet and an expiration outlet; and
collecting a constant amount of end-tidal air of said expiration from said sample collecting vessel upon completion of a single exhalation into said sample collecting vessel and guiding said constant amount of end-tidal air of said expiration to an analyzer.

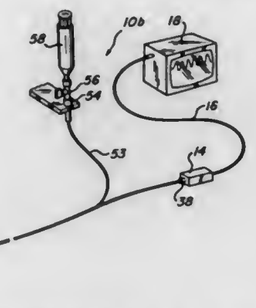
5,573,006
BODILY STATE DETECTION APPARATUS
Mitsuo Shimotani; Minoru Nishida; Akira Okada; Toshihide Satake; Shoichi Washino; Futoshi Okawa, and Hiromi Terashita, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 27, 1994, Ser. No. 330,322
Claims priority, application Japan, Mar. 10, 1994, 6-039887
Int. Cl.[6] A61B *13/00*
U.S. Cl. 128—745 **15 Claims**

1. A bodily state detection apparatus comprising:
optical input means for receiving images of a predetermined area including the face of a subject person;
illumination means for illuminating said subject person, said illumination means being positioned so that at least near said subject person, the direction of illumination substantially coincides with an optical axis from said subject person to said optical input means;
pupil extraction means for extracting at least one of pupil position and pupil shape of said subject person based upon brightest locations of the images output from said optical input means; and



bodily state judgment means for judging the bodily state of said subject person by use of the result of the pupil extraction performed by said pupil extraction means.

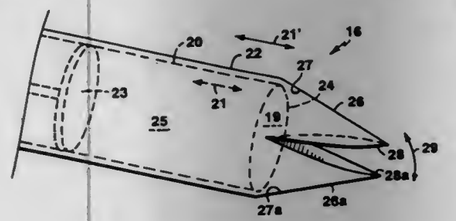
5,573,007
GAS COLUMN PRESSURE MONITORING CATHETERS
Donald E. Bobo, Sr., Fountain Valley, Calif., assignor to Innerspace, Inc., Santa Ana, Calif.
Filed Aug. 8, 1994, Ser. No. 287,195
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—748 **55 Claims**



1. A gas-column catheter for monitoring intravascular pressure within the vein or artery of a mammalian body, said catheter comprising:
a catheter body having a proximal end, a distal end, and an outer surface and being of a size and shape to fit within the vein or artery of said mammalian body;
a gas-filled lumen extending longitudinally through at least a portion of said catheter body;
a gas-filled membrane-wailed chamber at a fast location on said catheter body, said chamber being in gaseous communication with said lumen and being of a size and shape to fit within the vein or artery of said mammalian body and to monitor said intravascular pressure, said chamber being defined at least in pan by a flaccid membrane having an inner surface and an outer surface, said membrane being configured and positioned such that:
an increase in pressure against the outer surface of said membrane will cause said membrane to move inwardly, thereby increasing the pressure of gas within said chamber and said lumen;
and a decrease in pressure against the outer surface of said membrane will allow said membrane to move outwardly, thereby decreasing the pressure of gas within said chamber and said lumen;
said gas filled lumen being thereby operable to transmit, in the proximal direction, changes in intravascular pressure exerted

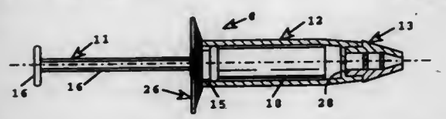
within the vein or artery and against the outer surface of said flaccid membrane; and
a catheter-inflating connector apparatus connectable to said catheter, said apparatus being constructed such that connection of said catheter thereto will automatically cause a prescribed volume of gas to be entrapped within said catheter.

5,573,008
MULTIPLE BIOPSY SAMPLING CORING DEVICE
Donald E. Robinson, Hopkinton, Mass., and Michael S. Banik, Cincinnati, Ohio, assignors to Boston Scientific Corporation, Natick, Mass.
Filed Oct. 29, 1993, Ser. No. 146,447
Int. Cl.[6] A61B *10/00*
U.S. Cl. 128—754 **5 Claims**



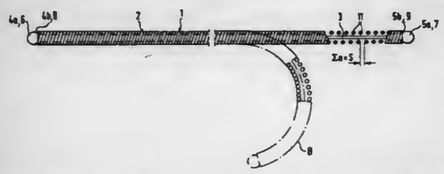
1. A device for collecting from a tissue surface, a sample of tissue, including tissue specimens, polyps, or the like, the device being flexible and elongated for introduction to a biopsy site deep within the body, comprising:
a device body having a distal end defining a forward-facing tissue receiving opening of substantially predetermined width through which a core portion of tissue may pass when said opening is near said tissue surface,
a separate severing element actuatable across the width of said tissue receiving opening when tissue from said surface extends through said opening for severing said core portion of tissue from said tissue surface, wherein said severing element comprises a set of moveable, jaw-like cutting members actuatable to be opened and closed for severing tissue from said surface to take said sample,
said cutting members being coaxially disposed over said device body and axially positionable with respect to said tissue receiving opening such that said device is positionable between a first configuration in which the cutting members are proximal of said opening for receiving tissue through said opening and a second configuration in which the cutting members are distal of said opening where said cutting members can be closed to sever tissue and take said sample,
a storage space within said device body at a location proximal of and adjacent said opening for storage of multiple successively taken samples by repeatedly passing tissue through said opening and actuating said severing element and
a sample stop positioned within said storage space and being axially positionable with respect to said tissue receiving opening such that said stop is positionable between a first position in which said stop defines a proximal end of said storage space and a second position distally located with respect to said first position for retrieving samples from said storage space by pushing said samples distally through said opening.

5,573,009
ORAL SAMPLE COLLECTION METHOD
Thomas Thieme, Independence; Andrew Goldstein; Stephen Placentini, both of Portland, and Nanette Klimkow, Beaverton, all of Oreg., assignors to Epitope, Inc., Beaverton, Oreg.
Continuation of Ser. No. 99,926, Aug. 3, 1993, Pat. No. 5,479,937, which is a continuation-in-part of Ser. No. 935,845, Aug. 25, 1992, Pat. No. 5,339,829, which is a continuation-in-part of Ser. No. 865,054, Apr. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 641,739, Jan. 15, 1991, Pat. No. 5,103,836, which is a continuation-in-part of Ser. No. 486,415, Feb. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 410,401, Sep. 21, 1989, Pat. No. 5,022,409.
This application Jun. 1, 1995, Ser. No. 457,233
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—760 **8 Claims**



1. A method for obtaining oral fluid that contains substances for testing comprising:
providing a device which comprises an absorbent pad for recovering a test substance from oral fluid; a syringe having a barrel, a plunger having an inner end to which the absorbent pad is attached, a fluid passageway at the outlet end of the barrel, and a detection reagent means contained in said passageway, effective to be released into the oral fluid when oral fluid is expelled from the barrel;
applying oral fluid to said absorbent pad;
extracting said oral fluid from said pad by depressing said plunger; and
causing said oral fluid to pass through said passageway whereby said detection reagent means is released into said oral fluid.

5,573,010
PROBE FOR MEDICAL PROCEDURES IN CAVITIES OF THE BODY
Peter Pflugbeil, Munich, Germany, assignor to Eckart Frimberger, Munich, Germany
PCT No. PCT/EP92/02606, § 371 Date Aug. 1, 1994, § 102(e) Date Aug. 1, 1994, PCT Pub. No. WO93/09835, PCT Pub. Date May 27, 1993
PCT Filed Nov. 12, 1992, Ser. No. 240,715
Claims priority, application Germany, Nov. 18, 1991, 41 37 950.0
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—772 **12 Claims**



1. A probe (1) for the implementing of medical procedures in cavities of the body, consisting of an elastically flexible sheath (2), which is formed by a plurality of relatively movable sheath elements (11) arranged in sequence along the longitudinal direction of said sheath, and a core (3), first positional setting means (5*a*, 5*b*) being located between the sheath (2) and the core (3) in a rearward proximal region of the probe, and second positional setting means (4*a*, 4*b*) being arranged between the sheath (2) and the core (3) in a forward distal region of the probe and which facilitate the presence of a displacement tolerance (S) between sheath (2) and core (3), whereby by bending (B) of the probe (1) in the rearward

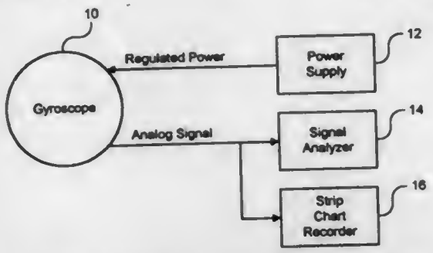
proximal region thereof which projects out of the body cavity, there is effected a relative displacement between the sheath (2) and the core (3) or a pushing or pulling force between the sheath (2) and the core (3) so as to stiffen the probe (1) in said forward distal region in that the sheath elements (11) are caused to lie against one another along the inner side of the bend (B) causing the displacement tolerance (S) to be taken up, and along the outside of the bend the sheath elements are spaced further apart from one another such that the strength or rigidity of the stiffening effect is selectively determined by the degree of the bending and the length of the bend (B).

5,573,011

SYSTEM FOR QUANTIFYING NEUROLOGICAL FUNCTION

Gary W. Felsing, 133 Carlisle Way, Benicia, Calif. 94510

Filed Apr. 8, 1994, Ser. No. 224,939
Int. Cl.[6] A61B *5/10*
U.S. Cl. 128—782 **23 Claims**



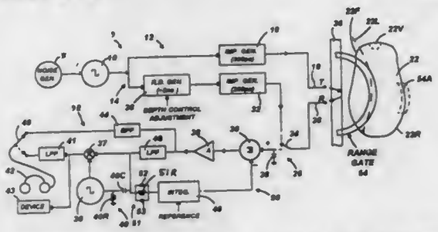
1. A system for quantifying neurological function, comprising:
a gyroscope for sensing the angular rate of human or animal neurological movement disorders and producing an output signal indicative of the movement; and
a signal analyzer for analyzing the output signal.

5,573,012

BODY MONITORING AND IMAGING APPARATUS AND METHOD

Thomas E. McEwan, Livermore, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Aug. 9, 1994, Ser. No. 287,746
Int. Cl.[6] A61B *5/11*
U.S. Cl. 128—782 **23 Claims**



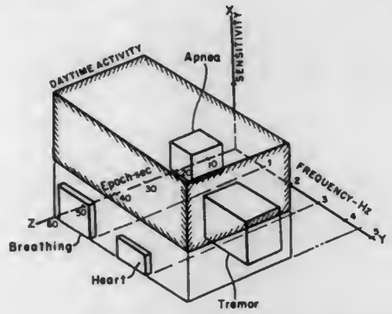
1. A monitor for detecting the movement of one or more body parts, comprising;
(a) a pulse generator for producing and simultaneously inputting a sequence of pulses to a transmit path and a gating path;
(b) an impulse generator connected to said pulse generator for producing corresponding transmit pulses;
(c) a transmit antenna connected to impulse generator to transmit said transmit pulses toward the one or more body parts;
(d) a range delay generator connected to said pulse generator for generating timed gating pulses;
(e) a receive antenna;
(f) a sampling receiver connected to said receive antenna in a receive path;
(g) said range delay generator being connected to said sampling receiver and producing timed gating pulses at a fixed range corresponding to the location of the one or more body parts so that said timed gating pulses cause said sampling receiver to selectively sample pulses reflected from the one or more body parts and received by said receive antenna to produce an averaged sampled signal;
(h) a signal processor connected to said sampling receiver for detecting changes in the averaged sampled signal and providing an output signal indicative of motion of said one or more body parts.

5,573,013

METHOD OF MONITORING BODY MOVEMENTS USING ACTIVITY MONITORING APPARATUS

Robert W. Conlan, Niceville, Fla., assignor to Precision Control Design, Inc., Fort Walton Beach, Fla.

Continuation of Ser. No. 341,316, Nov. 16, 1994, abandoned, which is a continuation of Ser. No. 38,629, Mar. 29, 1993, abandoned, which is a continuation of Ser. No. 716,853, Jun. 17, 1991, Pat. No. 5,197,489. This application Jun. 7, 1995, Ser. No. 479,822
The portion of the term of this patent subsequent to Jun. 17, 2011, has been disclaimed.
Int. Cl.[6] A61B *5/103*
U.S. Cl. 128—782 **7 Claims**



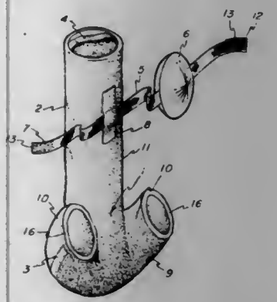
1. A method of automatically monitoring predetermined body movements of a patient subject over time by isolating said predetermined body movements from general body movements, said method comprising:
providing an activity monitor capable of producing an analog electrical signal responsive to body movements of said patient subject, said activity monitor being capable of detecting said predetermined body movements by isolating said predetermined body movements from general body movements by adjusting characteristics of said analog electrical signal to enhance relevant signal information indicative of said predetermined body movements while removing irrelevant signal information indicative of general body movements;
defining within said activity monitor a mutually orthogonal, three-dimensional coordinate axis system having a sensitivity axis, a frequency axis and an epoch axis previously known to be specific for said predetermined body movements being monitored;
three-dimensionally tuning said activity monitor by selectively adjusting amplitude and frequency characteristics of said analog electrical signal in order to remove said irrelevant signal information and to enhance said relevant signal information in order to provide an enhanced signal indicative of said predetermined body movements rather than said general body movements;
affixing said activity monitor onto said patient subject's body,
recording said analog electrical signal over a monitoring period
by processing said enhanced signal by passing said enhanced signal through a converter means for selectively sampling said tuned, enhanced signal with respect to an appropriate predetermined real time epoch selected according to the type of predetermined body movements being monitored to obtain resultant data signals, if any, which fall within regions defined in said, three-dimensional coordinate axis system which signals are indicative of said predetermined body movements and not of general body movements.

5,573,014

COMPLETE (BED-TIME) BACK SUPPORT SYSTEM

Ronald L. Ginter, 1817 Sheltering Tree, West Carrollton, Ohio 45449

Continuation-in-part of Ser. No. 79,403, Jun. 21, 1993, abandoned. This application Dec. 15, 1994, Ser. No. 356,155
Int. Cl.[6] A61G *15/00*
U.S. Cl. 128—845 **8 Claims**



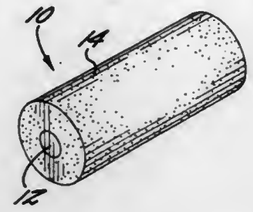
1. A complete back support system that, while at rest in a horizontal position in combination with any flat surface, positions the spine of the user to a straight alignment, hence, relieving pressure of the lumbar region, and helps to maintain said alignment whether said user is lying in either a supine or a lateral decubitus position, comprising:
a cushion, said cushion having
an elongated portion with a sufficient length to extend from the chest of said user to just below the knees of said user and defining first circumference transverse to said length, and
a knee support joining said elongated portion with a sufficient extension to extend from approximately the outside point of one knee to approximately the outside point of the second knee of said user and defining a second circumference transverse to said extension, said second circumference being equal to said first circumference;
said elongated portion being adapted to restrict said user from lying directly prone as well as to provide support while said user is in a lateral decubitus position, hence forcing a straight spine alignment;
wherein said cushion includes a first foam rubber material at least substantially surrounding a second foam rubber material less compressible than the first foam rubber material to provide durability combined with comfort and to allow for blood circulation of the user.

5,573,015

EXTRUDED EAR PLUG

Colin D. Williams, 9218 Hampton Oaks La., Charlotte, N.C. 28270

Filed Mar. 20, 1995, Ser. No. 412,283
Int. Cl.[6] A61F *11/00*
U.S. Cl. 128—864 **24 Claims**



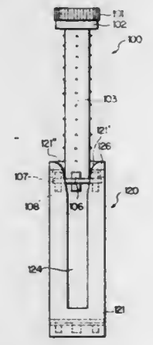
11. An earplug sized for being received in the human ear canal and comprising
a rod-shaped core component composed of a relatively rigid elastomeric material,
a sheath component coaxially surrounding said core component and being composed of a relatively non-rigid and soft elastomeric material,
and with the core component and the sheath component being bonded together along the entire length of said core component by cohesive forces between the respective elastomeric materials.

5,573,016

TWO-PARTITE HAIR CURLER ASSEMBLY

Carol A. Graves, 3400 Tilden St., Brentwood, Md. 20722

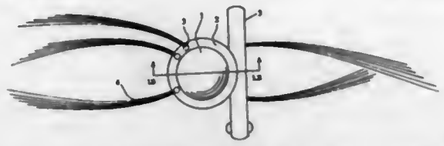
Filed Jun. 6, 1995, Ser. No. 469,694
Int. Cl.[6] A45D *2/24;2/26;2/30*
U.S. Cl. 132—254 **42 Claims**



1. A two-partite hair curler, comprising a first relatively fixed part and a second relatively movable part movable between an axially extended and retracted position relative to said first part, said second part including a cap member and curler surface means on which hair is adapted to be wound in the extended position of said first part, and locking means on said first and second parts for disengageably locking said second part in the extended and retracted positions thereof.

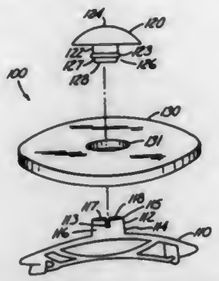
VOL 1192 ISS 2 NO 12 1996 UMI

5,573,017
OPTICAL ORNAMENT
James M. Post, 303 N.E. 8th Ave., Gainesville, Fla. 32601
Filed Jul. 27, 1995, Ser. No. 507,891
Int. Cl.[6] A45D *8/12*
U.S. Cl. 132—275 **10 Claims**



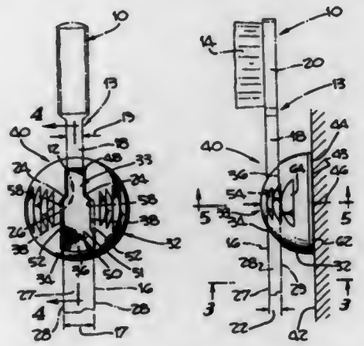
1. An optical ornament requiring no added electrical energy for operation comprising:
a) means for fastening the ornament to a person's hair, clothing, shoes, body, to an object, or to an animal;
b) at least one light receiving and focusing means attached to said fastening means in such a way that light in the surroundings of the person, animal, or object to which said ornament is fastened will impinge on and be focused at a focal point by said at least one light receiving and focusing means;
c) at least a single optical fiber attached to said fastening means such that the proximal end(s) of said optical fiber(s) are situated proximate the focal point of said at least one light receiving and focusing means such that focused light enters said proximal end(s) of the optical fiber(s) and is conducted from said proximal end(s) towards the distal end(s) of said optical fiber(s) such that the conducted light emanates from said distal end(s); and
d) a housing Which acts as a support structure for maintaining said light receiving and focusing means and said optical fibers in appropriate juxtaposition with respect to each other and the light in the surroundings of said person, animal or object to which said ornament is attached so that the light emanating from the distal ends of said optical fibers is displayed.

5,573,018
HAIR BARRETTE WITH REPLACEABLE ORNAMENTS
Destrina D. Johnson, 630-½ S. Broadway Apt. #1, Menomonie, Wis. 54751
Filed Aug. 3, 1995, Ser. No. 510,746
Int. Cl.[6] A45D *8/12*
U.S. Cl. 132—275 **4 Claims**



1. A hair barrette for securing ornamental appendages to a tress of hair, comprising:
(a) a hair clamp for clamping said tress of hair;
(b) a stem assembly coupled to said hair clamp, said stem assembly comprising a first end, a second end, said second end further comprising at least one slot extending substantially lengthwise along said stem assembly, a first outer surface and a first inner surface, said inner surface further comprising at least one recess;
(c) an ornamental button assembly comprising an ornamental head and a shaft, said ornamental head having a diameter substantially larger than the diameter of said shaft, said shaft comprising a second outer surface; and
(d) a connecting means for coupling said stem assembly to said ornamental button assembly, said connecting means having at least one rib coupled to said second outer surface, said at least one rib capable of being removably contained within said at least one recess, said connecting means allowing for rapid replacement, removal and addition of a plurality of said ornamental appendages.

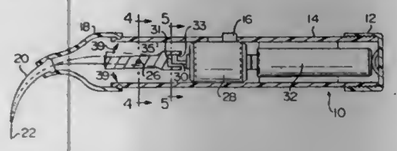
5,573,019
HYGIENIC FRICTIONAL TOOTHBRUSH HOLDER
Jeffrey D. Hempel, 33710 Santiago Rd., Acton, Calif. 93510
Filed Oct. 24, 1994, Ser. No. 328,039
Int. Cl.[6] A45D *44/18*; A46B *17/02*; A47B *81/02*
U.S. Cl. 132—310 **13 Claims**



1. A hygienic toothbrush mounting system, comprising:
a toothbrush; and
a toothbrush holder;
said toothbrush including bristles and a handle;
said handle having a relatively uniform thickness and a front surface, a rear surface, and side surfaces;
said handle including a head portion, a body portion, a relatively narrow neck portion disposed between said head portion and said body portion and a shoulder region having shoulder surfaces where said neck portion adjoins said body portion;
said bristles being mounted on said head portion;
said shoulder region having a shoulder surface contour comprising said shoulder surfaces, a portion of said front surface associated with each of said neck portion and said body portion, a portion of said rear surface associated with each of said neck portion and said body portion, and a portion of said side surfaces associated with each of said neck portion and said body portion;
said toothbrush holder including a mounting portion and a mounting plate including a flange;
said mounting portion having a rigid geometric shape;
said geometric shape having a thickness exceeding said toothbrush handle thickness;
said mounting portion including a recess and an inset;
said recess providing a recess surface contour comprising a slot and opposing grip regions;
said slot having a rear surface and side surfaces;
said slot including a relatively wide body opening adapted to receive said body portion of said toothbrush, a relatively narrow neck opening disposed above said body opening and adapted to receive said neck portion of said toothbrush, and shoulder portions disposed symmetrically on each side of said slot adjoining said neck opening and said body opening;
said opposing grip regions being disposed symmetrically on each side of said body opening of said slot and also being disposed substantially near a front portion of said slot;

each of said opposing grip regions partially overlapping a front opening of said body opening portion of said slot and further inducting a grip surface facing substantially in an opposing direction to said rear surface of said slot;
said grip surface including a gradual taper;
said inset comprising a ledge at a rear of said mounting portion;
said mounting plate flange engaging said inset providing a lapped corner joint for securing said mounting plate to a mounting member;
said holder being adapted to be fixed to a vertical surface in contact with said mounting plate with said neck opening of said slot oriented upwardly and with said body opening of said slot oriented downwardly; and
said toothbrush being secured in said toothbrush holder by substantially engaging said shoulder surface contour in said recess surface contour by sliding said shoulder region into said recess using a linear motion of said handle.

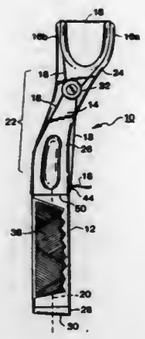
5,573,020
DENTAL FLOSSING DEVICE AND METHOD THEREFOR
Dane Q. Robinson, 6015 E. Quartz Mountain Rd., Paradise Valley, Ariz. 85253
Continuation-in-part of Ser. No. 1,521, Jan. 7, 1993, abandoned. This application Jul. 16, 1993, Ser. No. 93,188
Int. Cl.[6] A61C *15/00*
U.S. Cl. 132—322 **56 Claims**



1. Apparatus for cleaning the surfaces of teeth underlying the inter-dental papilla portion of the gums in a human mouth by effecting a flossing action, comprising:
a flexible, resilient, non-abrasive elongated member;
said elongated member including a base portion, an elongated intermediate portion of predetermined cross-sectional configuration, and a tip;
said intermediate portion and said tip being capable of being received between adjacent teeth without traversing any contact areas between the teeth from at least the front of the mouth and being capable of effecting the flossing action therebetween; and
at least the intermediate portion being capable of being received in the sulcus between a tooth and the adjacent inter-dental papilla portion of the gum for effecting the flossing action therein; and
a motive source; and
a coupling connecting the base portion of the elongated member to the motive source to effect motion of the elongated member.

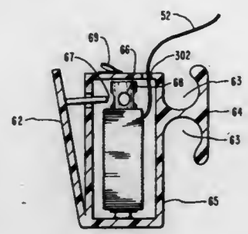
5,573,021
COMBINED FLOSSER AND FLOSS DISPENSER DEVICE
Deborah A. Grofcisk, Wilmington, Del.; John W. Dolan, Boothwyn, Pa., and John W. Spencer, Jr., Rising Sun, Md., assignors to W. L. Gore & Associates, Inc., Newark, Del.
Filed Feb. 3, 1995, Ser. No. 383,335
Int. Cl.[6] A61C *15/00*
U.S. Cl. 132—324 **16 Claims**

1. A flosser device for use in holding a length of floss comprising
a handle having a longitudinal axis, a pair of tines, and a transition segment attaching the pair of tines to the handle;



the pair of tines comprising a forked configuration so as to position a length of floss attached between the tines perpendicular to the longitudinal axis of the handle;
the transition segment between the handle and the pair of tines comprising a double bend between the handle and the pair of tines said double bend lying in a plane of said longitudinal axis so as to offset both of the tines to one side of the longitudinal axis of the handle.

5,573,022
ROTATIONALLY ADVANCED DENTAL FLOSS HOLDER AND APPLICATOR ASSEMBLY
Steven N. Winters, 2605 E. Commonwealth Ave., Salt Lake City, Utah 84109
Filed Oct. 26, 1994, Ser. No. 329,217
Int. Cl.[6] A61C *15/04*
U.S. Cl. 132—325 **28 Claims**



1. A hand-held dental floss dispenser held in one hand for feeding dental floss to the other hand or a take-up member held in the other hand and providing an anchor for tensioning the floss during flossing, the dental floss dispenser comprising:
(a) a dispenser body capable of being gripped by at least one of the lower fingers of the hand leaving the remaining fingers free to manipulate the floss during flossing;
(b) a freely rotatable spool of dental floss rotatably attached to the dispenser body and capable of being locked;
(c) a locking means to lock the freely rotatable spool to a relative position to the dispenser base thereby allowing the dental floss to be tensioned between the dental floss dispenser .and the other hand or take-up member held in the other hand.

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5,573,023

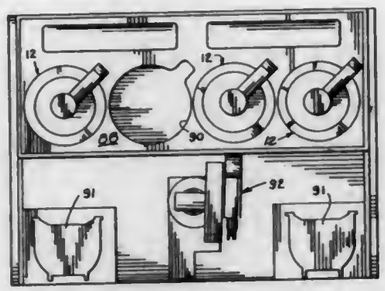
SINGLE WAFER PROCESSOR APPARATUS

Raymon F. Thompson, and Aleksander Owczarz, both of Kalispell, Mont., assignors to Semitool, Inc., Kalispell, Mont.

Continuation of Ser. No. 27,863, Mar. 8, 1993, Pat. No. 5,445,172, which is a continuation of Ser. No. 640,204, Jan. 11, 1991, Pat. No. 5,222,310, which is a continuation of Ser. No. 526,243, May 18, 1990, Pat. No. 5,168,887. This application Jun. 8, 1995, Ser. No. 489,142

Int. Cl.[6] B08B *3/10*

U.S. Cl. 134—66 **16 Claims**



1. A wafer processing apparatus, comprising:
a frame;
a plurality of processing bases supported upon the frame;
a plurality of processing heads, each of said processing heads being capable of a complementary relationship with at least one processing base to form a processing station with an enclosure in which wafers are processed;
said processing heads and processing bases being mounted to allow relative movement between the processing heads with respect to a complementary processing base between an open position and a closed position; and
at least one wafer transfer means supported upon the frame for moving wafers between at least two processing stations.

5,573,024

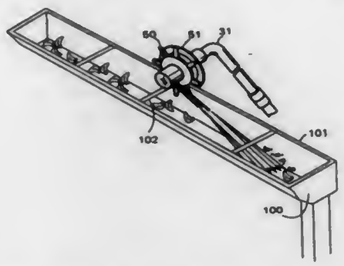
GUTTER WASHER

Danny L. DeVaney, 2925-57th St. S.E., Auburn, Wash. 98092, and William DeVaney, 20522-13th Dr. S.E., Bothell, Wash. 98012

Filed Dec. 14, 1995, Ser. No. 572,728

Int. Cl.[6] B08B *3/02*

U.S. Cl. 134—167 R **22 Claims**



1. A gutter washer for attachment to a water source such as a garden hose, the gutter washer adapted to roll on a rim of a roof gutter and step over gutter support spikes typically attaching a gutter to a roof to passing transversely through the gutter into the roof, the improvement comprising
a circular wheel member including a hub member with a concentric hole therethrough and a circumference,
a plurality of lugs projecting radially from the wheel hub member,
a guide also projecting radially from the hub member and spaced apart from the plurality of lugs forming a circumferential track therebetween,
a water nozzle including a head with a spray hole and a cylindrical section extending from the head and terminating in a free end, the cylindrical section passing axially through the wheel member hole providing a wheel member axis of rotation,
means for restraining the wheel member to the nozzle cylindrical section,
means for attaching a water source to the water nozzle in fluid communication with the spray hole.

5,573,025

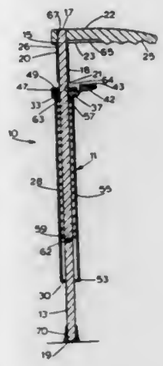
CANE WITH ENGAGING MEMBER

Gerald D. Atlas, 2940 W. Balmoral, Chicago, Ill. 60625

Filed Nov. 13, 1995, Ser. No. 557,959

Int. Cl.[6] A45B *1/00*

U.S. Cl. 135—65 **23 Claims**



1. In combination:
a walking aid;
and means for securing said walking aid in a vertical disposition to a downwardly facing surface without having to preset said securing means to the approximate estimated height of said downwardly facing surface, said securing means comprising an engaging member and means for moving the engaging member upwardly from a position below said downwardly facing surface until engaged with said downwardly facing surface;
said walking aid being devoid of structure capable of stopping upward movement of said securing means before said securing means engages said downwardly facing surface.

5,573,026

BOAT LIFT CANOPY

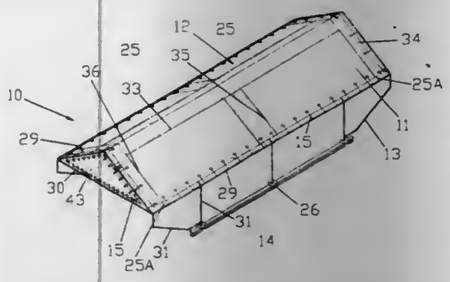
Gary Griffith, 3000 Shannon Dr., Punta Gorda, Fla. 33982

Filed Mar. 29, 1995, Ser. No. 412,692

Int. Cl.[6] E04H *15/18;15/34*

U.S. Cl. 135—122 **3 Claims**

1. A pre-fabricated canopy for sheltering a boat supported above the water by a boat lift comprising:
a boat lift having a pair of parallel, steel, "I" beams mounted on, and supported by, piles,
a canopy frame constructed of multiple sections of tubing joined together to form a plurality of horizontal tubes running the length of the canopy, a plurality of "A" frames spanning the width of said frame and joined to said horizontal tubes, said canopy frame having a length greater than the length of said "I" beams, and said frame being supported at opposite ends by angular truss members,
a plurality of vertical support legs, each having an upper end and a lower end, each of said upper ends joined to said canopy frame, and each of said lower ends affixed to said "I" beams for supporting said canopy frame, said truss members being fastened to said support legs near said lower ends,
a top cover and end covers placed over said canopy frame and attached to said canopy frame with elastic cords, and
a partial cover placed over said top cover and attached to said canopy frame with elastic cords and nylon line,
whereby said partial cover deflects the wind and reduces wind pressure on said canopy.



5,573,027

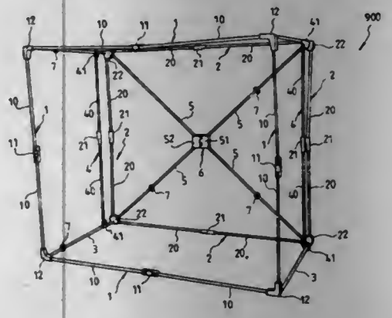
FOLDABLE TENT FRAME STRUCTURE

Yu-Kuang Hsiung, Hsi-K'eng No. 1-1, 18 Lin, Tsao-Ch'iao Ts'un, Tsao-Ch'iao Hsiang, Mao Li Hsien, Taiwan

Filed Mar. 28, 1995, Ser. No. 411,984

Int. Cl.[6] E04H *15/46*

U.S. Cl. 135—142 **10 Claims**



1. A foldable tent frame structure comprises a front sub-frame comprising four front poles rotatably connected at ends to four front corner members at four corners and a rear sub-frame comprising four rear poles rotatably connected at ends to four rear corner members at four corners with a length-adjustable horizontal pole rotatably connected to each of the front corner members and the associated rear corner member to have the rear sub-frame spaced from and corresponding to the front sub-frame, each of the rear corner members having a reinforcing bar rotatably connected at one end thereto to extend therefrom in a diagonal direction to rotatably connect to a common central joint member at the other end, the central joint member being constituted by two halves to be rotatable relative to each other, each of the front poles being constituted by two sections with one end thereof rotatably connected to the respective front corner member and the other end pivoted to a front joint member, each of the rear poles being constituted by two sections with one end thereof rotatably connected to the respective rear corner member and the other end detachably connected to a rear joint member, each of the length-adjustable horizontal pole comprising an elongated pole body having two open ends and two opposite extension bars respectively rotatably connected at one end to one of the front corner members and the associated rear corner member to have the other ends slidably fit into the open ends of the pole body, retainer means being provided to retain the pole body at a pre-determined position relative to each of the extension bars and release means being provided to break the retaining engagement between the extension bars and the pole body.

5,573,028

STABLE TENT

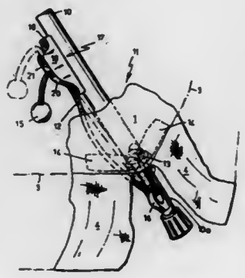
Aart J. W. van der Stigchel, Wassenaar, Netherlands, assignor to T. A. Pelsue Company, Denver, Colo.

Filed Feb. 22, 1994, Ser. No. 199,941

Claims priority, application Netherlands, Feb. 22, 1992, 9300324

Int. Cl.[6] F04H *15/48*

U.S. Cl. 135—147 **3 Claims**



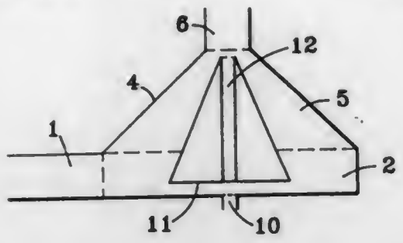
1. A collapsible shelter comprising a cloth of supple, sheet-like material and at least one frame for stretching the sheet-like material,
said frame being provided with at least one hub and with rods having high bending strength,
said rods being hingably connected to the hub so that the rods may move in a plane perpendicular to the hub and to a position relative to the hub beyond a dead center,
at least a number of said rods being connected at their free ends with the sheet-like material,
a pull cord which is secured at one of its ends to said sheet-like material, said pull cord being positioned through a cord eyelet which is mounted at the free end of a rod so that the sheet-like material can be pulled outward from the hub toward the free end of said rod and
a cord clamp, located on the rod, between said cord eyelet and said hub, for connecting the other end of said pull cord to the rod when the sheet-like material has been pulled outward to provide stability to the shelter where the rods are in the position past dead center relative to the hub and for releasing the pull cord from said rod to permit freely hingable movement of the rods past dead center relative to the hub.

5,573,029

METHOD AND DEVICE FOR A PIPE FLOW UNDER PRESSURE WHICH IS TO BE DIVERTED OR BRANCHED

Robert Freimann, Ahamer Str. 63, 84453 Mühldorf, Germany

PCT No. PCT/EP94/03315, § 371 Date Jun. 1, 1995, § 102(e) Date Jun. 1, 1995, PCT Pub. No. WO95/11387, PCT Pub. Date Apr. 27, 1995
PCT Filed Oct. 7, 1994, Ser. No. 446,823
Claims priority, application Germany, Oct. 19, 1993, 43 35 595.1
Int. Cl.[6] F15C 1/16
U.S. Cl. 137—1 22 Claims



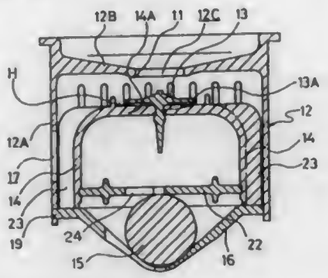
1. Method, in which a tangential incoming pipe flow under pressure is imparted a spiral movement and subsequently an axial pipe flow is obtained, the incoming flow, characterized in that, to achieve virtually any spiral movement distributed over the cross-sectioo, the incoming flow is diverted or branched, by the outgoing axial flow, which leaves, through an axial pipe, perpendicularly to the tangential incoming flow, being brought about from the latter by directing the flow, and in that a flowthrough area for the flow is tapered in the direction of the axial flow and, in a region where swirl is applied, the flow is guided around a built-in flow guide and straightener which is adjustable with regard to the eccentricity in relation to a swirl chamber axis.

5,573,030

STOP VALVE

Hiroshi Ohsaki, and Shinji Hojo, both of Sashima-gun, Japan, assignors to Kyosan Denki Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,304
Claims priority, application Japan, Dec. 29, 1993, 5-353886
Int. Cl.[6] F16K 17/36
U.S. Cl. 137—43 2 Claims



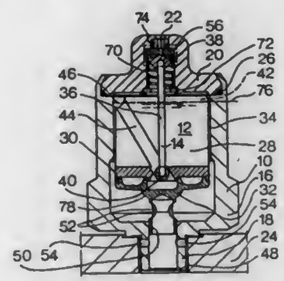
1. A stop valve comprising:
a case;
a float provided in said case so as to move vertically, wherein a valve seat is closed by a valve body when said float moves upward while said valve seat is open when said float moves downward; and
a pedestal provided under said case for placing a spherical weight thereon;
characterized in that said pedestal has radial slits thereon and said float has radial slits at the bottom wall thereof.

5,573,031

AIR BLEED VALVE

Helmut Mertens, Saarbrücken, Germany, assignor to HYDAC Technology GmbH, Sulzbach/Saar, Germany

PCT No. PCT/EP94/00082, § 371 Date Mar. 7, 1995, § 102(e) Date Mar. 7, 1995, PCT Pub. No. WO94/18480, PCT Pub. Date Aug. 18, 1994
PCT Filed Jan. 13, 1994, Ser. No. 397,200
Claims priority, application Germany, Feb. 10, 1993, 43 03 799.2
Int. Cl.[6] F16K 24/04;31/24
U.S. Cl. 137—202 12 Claims



1. An air bleed valve, comprising:
a valve housing having an interior chamber and an outlet opening;
a float movably mounted in said interior chamber of said housing and having a guide therein, said guide including a guide channel extending in said float and extending obliquely and longitudinally along and relative to said float;
a value plate movable mounted in said value housing for opening and closing said outlet opening, said value plate having at least one projection extending toward said outlet opening forming a pivot about which said value plate can tilt;
a biasing means forcing said value plate in a direction for closing said outlet opening; and
lever means, coupled to said valve plate, for tipping and moving said valve plate in directions for opening and closing said outlet in a continuous cycle, said lever means including a lever arm supporting said valve plate at a first end of said lever arm, a second end of said lever arm being pivotally connected, received and guided in said guided in said channel in said float.

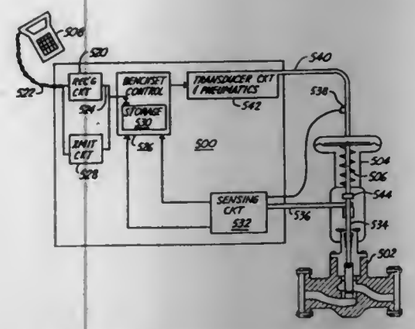
5,573,032

VALVE POSITIONER WITH PRESSURE FEEDBACK, DYNAMIC CORRECTION AND DIAGNOSTICS

Gary A. Lenz, Eden Prairie; Gregory C. Brown, Minnetonka, and Jogesh Warrior, Chanhassen, all of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Division of Ser. No. 112,694, Aug. 25, 1993. This application Jun. 7, 1995, Ser. No. 478,506
Int. Cl.[6] F16K 31/126
U.S. Cl. 137—486 2 Claims

1. A valve positioner for providing a control pressure to an actuator diaphragm mechanically coupled to a valve spring, the valve spring requiring a preload force in order for the positioner to drive a valve stem between a first control pressure and a first corresponding valve stem position and a second control pressure and a second corresponding valve stem position, the positioner comprising:



means for receiving communications representative of the first and second control pressures and their corresponding valve stem positions;
means for sensing the valve position and the control pressure;
transducer means receiving a supply of air, for providing the control pressure as a function of a command output;
benchsetting means receiving the sensed position and control pressure, the benchsetting means providing a command output corresponding to the first and the second control pressures and ramping therebetween, the benchsetting means storing the sensed control pressure at predetermined stem positions, and for providing the preload force as a function of the stored control pressures, the first and second control pressures and their corresponding positions; and
means for transmitting the preload force to a master; wherein the benchsetting means calculates a spring constant according to the equation,

$$K_S = \frac{(P_S - P_R)A_E - F_S - F_D}{y_s - y_0}$$

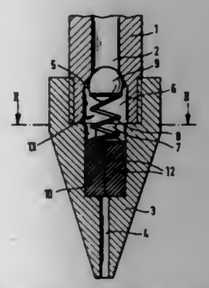
where y_s is the valve position at 100% of stroke, y_0 is the valve position at 0% of stroke, A_E is the effective area of the diaphragm, P_S is the control pressure at 100% stroke and P_R is the control pressure at 0% stroke, F_S is the static frictional force and F_D is the dynamic frictional force.

5,573,033

NON-DRIP VALVE

Rolf Litzel, Bad Wiessee, Germany, assignor to Loctite Europa EEIG, Germany

Filed Jun. 20, 1995, Ser. No. 492,646
Claims priority, application Germany, Jun. 20, 1994, 9409973 U
Int. Cl.[6] F16K 15/14;21/04
U.S. Cl. 137—512.3 13 Claims



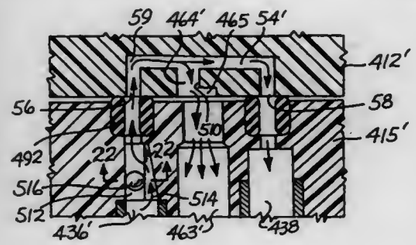
9. A non-drip valve for discharging a fluid comprising:
(a) a valve body including a flow-through channel having a first and second end and defining a flow-path therethrough;
(b) a first valve including a compression spring, a spherical stopper element and a seat for said stopper element, wherein said spherical stopper element is braced against said seat when said valve is closed;
(c) a second valve located downstream including at least one elastomeric member which is contractable and expandable to open and close respectively in response to fluid pressure;
wherein said first and second valves cooperatively open and close under substantially the same fluid pressure.

5,573,034

CENTER POSITION BIASED SLIDE AIR VALVE

Denny Gabrlik, Seattle, and John M. Morris, Auburn, both of Wash., assignors to GT Development Corporation, Tukwila, Wash.

Division of Ser. No. 178,669, Jan. 7, 1994, Pat. No. 5,447,178. This application May 31, 1995, Ser. No. 456,153
Int. Cl.[6] F16K 11/065;47/08
U.S. Cl. 137—625.25 9 Claims



1. An air valve comprising a housing including an inlet air port and an outlet air port, and a valve member including an internal air passageway with an inlet portion and an outlet portion; said valve member having a first position in which said valve member blocks communication between said ports, and a second position in which said inlet portion is in communication with said inlet air port and said outlet portion is in communication with said outlet air port to allow air flow through said passageway from said inlet air port to said outlet air port; said inlet air port including a passage with an essentially constant cross section, and a tapered groove extending along and opening onto said passage and tapering toward said inlet portion; said valve including a plug positioned in said passage to define, together with said groove, a metered aperture to control air flow through said inlet air port into said passageway and thereby control air pressure in said outlet air port; and said plug being adjustable in position along said passage to permit adjustment of the size of said aperture to adjust air pressure in said outlet air port.

5,573,035

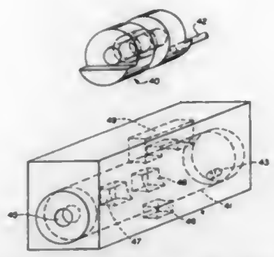
GUIDED VANES HYDRAULIC POWER SYSTEM

Norbert J. Kunta, 68 Ronald St., Devonport, Tasmania 7310, Australia

Division of Ser. No. 969,197, Feb. 15, 1993, Pat. No. 5,328,337. This application Apr. 22, 1994, Ser. No. 231,315
Int. Cl.[6] F16K 11/07
U.S. Cl. 137—625.43 1 Claim

1. A selector valve comprising:
a valve chamber having a fluid inlet thereto and a fluid outlet therefrom, said valve chamber including a valve chamber wall;
first port means and second port means in communication with said valve chamber, said port means being adapted for connection to external fluid passages;
diversion passageway means for linking two sections of the valve chamber;

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valve member means movable in said valve chamber relative to said fluid inlet and said fluid outlet between a first and a second position, said valve member means having a first passageway and a second passageway, which in any position of said valve is always in communication with said outlet of said valve chamber;

two circumferential lands in sealing engagement with the valve chamber wall and said second passageway is an annular recess formed between said lands;

wherein in said first position of said valve member means, said first passageway connects said fluid inlet to said first port and said second passageway connects said second port to said outlet;

wherein in said second position of said valve member means said first passageway is blocked, said second port means is in communication with said fluid inlet and said first port means is connected by the second passageway to said outlet; and

wherein in an intermediate position said first and second lands block the first and second port means and said inlet is connected through said first passageway to said diversion passageway which is connected to said second passageway and hence to the outlet.

5,573,036

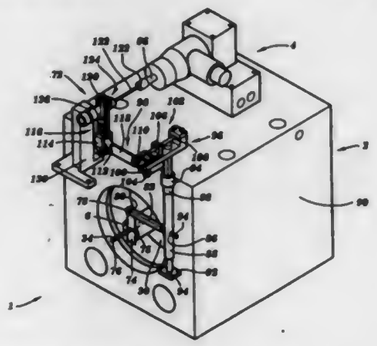
ELECTRO-HYDRAULIC SERVOVALVE HAVING MECHANICAL FEEDBACK

Don B. Porter, Avra Valley, and Stephen B. Currey, Tucson, both of Ariz., assignors to Sargent Controls & Aerospace/ Dover Diversified Inc., Tucson, Ariz.

Filed Jan. 11, 1996, Ser. No. 585,360

Int. Cl.[6] F15B *13/043*

U.S. Cl. 137—625.63 **25 Claims**



1. An electro-hydraulic servovalve comprising:

a main stage that includes a valve means having a slide means that is translatable within a complementary ported cylinder and controls delivery of pressurized fluid from a fluid supply to a load dependent on the location of the slide means within the cylinder;

a pilot stage that includes a valve means that is connected to the main stage in a manner whereby said pilot stage valve means is capable of creating an unbalanced force on at least one end of the main stage slide means to thereby cause said main stage slide means to translate within its associated cylinder;

an actuator that is operatively connected to and can affect the pilot stage valve means;

a feedback mechanism that is operatively connected to the main stage slide means and to the pilot stage valve means and functions to cause a change in the pilot stage valve means in response to movement of the main stage slide means and wherein said feedback mechanism includes a portion that is located exterior to a fluid boundary of the servovalve, wherein said exterior portion of the feedback mechanism includes an adjustment means and wherein the feedback mechanism has gain and null point parameters and wherein a user can employ said adjustment means to adjust at least one of said parameters; and

wherein the feedback mechanism includes a drive plate that is engaged to the main stage slide means, wherein said feedback mechanism also includes a transfer bar that is rotatably secured to the servovalve and wherein a connecting means connects the drive plate to the transfer bar and causes said transfer bar to rotate as the main stage slide means moves in a linear manner within its associated cylinder.

5,573,037

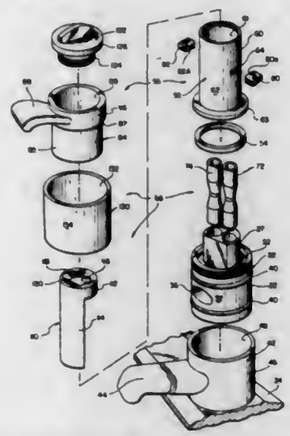
FAUCET VALVE WITH EXTERNAL CAM AND PINCH TUBES

George S. Cole, Pebble Beach, Calif., and Harry W. Edwards, Barrington, Ill., assignors to George S. Cole & Associates, Incorporated, Pebble Beach, Calif.

Filed Nov. 27, 1995, Ser. No. 562,821

Int. Cl.[6] F16K *7/06;11/14*

U.S. Cl. 137—636.4 **20 Claims**



1. A valve cartridge comprising:

a cartridge retainer having a cartridge axis and a generally cylindrical sidewall having a top end, a bottom end and an opening;

a pinch tube having a length and disposed within the cartridge retainer, the pinch tube having a tube axis running the length thereof and substantially parallel to the cartridge axis and an axial bore therethrough;

a poppet disposed in the opening and movable in a direction not parallel with the tube axis for engagement with the pinch tube;

an actuator rotatable about and movable along the cartridge axis and encircling the cartridge retainer, the actuator having an interior surface engaging the poppet, the interior surface having a cylindrical portion having an inside diameter which, when engaged with the poppet, holds the poppet against the pinch tube for closing the bore, and an eccentric portion tapering outwardly from the cylindrical portion which, when engaged with the poppet, permits variations in the cross sectional area of the axial bore to control the rate of flow through the pinch tube upon at least one of rotational movement of the actuator about the cartridge axis and movement of the actuator along the cartridge axis; and

a cap connected to the top end of the sidewall, the cap having an annular flange with an outside diameter greater than the inside diameter of the cylindrical portion, whereby the flange limits the movement of the actuator in a first axial direction along the cartridge axis.

5,573,038

PRESSURE-RESISTANT HELICAL CORRUGATED PIPE INCLUDING A THIN METAL REINFORCING PLATE

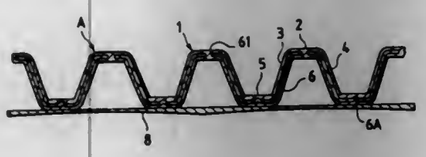
Shiro Kanao, No. 9-18, Nanpeidai 4-chome, Takatsuki-shi, Osaka, Japan

Division of Ser. No. 807,649, Dec. 16, 1991, Pat. No. 5,316,047, which is a continuation of Ser. No. 439,963, Nov. 21, 1989, abandoned. This application Feb. 2, 1994, Ser. No. 191,193

Claims priority, application Japan, Dec. 27, 1988, 63-333131

Int. Cl.[6] F16L *9/16;9/06*

U.S. Cl. 138—122 **7 Claims**



1. A pressure-resistant helical corrugated pipe, comprising:

a helical corrugated pipe wall formed of a top portion, opposite side wall portions extending from said top portion in an inner radial direction of the pipe, and a bottom portion disposed radially inwardly relative to said top portion;

a helically wound belt plate formed of a thin metal plate of a generally U-shaped transverse cross-section having a base and opposite side portions which extend upwardly to tip end portions, said base of said belt plate being disposed in said bottom portion, and said opposite side portions being disposed in at least a portion of said opposite side wall portions, respectively, which extend radially outwardly from opposite ends of said bottom portion, and said belt plate serving as a constituent element of said pipe wall, wherein said base of said metal belt plate, which is disposed at said bottom portion of said pipe wall, has at least one reinforcement rib which is continuous in a circumferential direction so as to extend helically along said bottom portion, said at least one reinforcement rib protruding from said bottom portion for a distance that is substantially less than a distance between said top portion and said bottom portion of said pipe wall; and

a connective portion provided between adjacent tip end portions of said metal belt plate and integrally formed of one of a synthetic resin material and a rubber material.

5,573,039

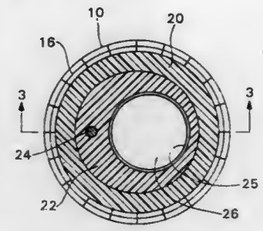
KINK-RESISTANT FUEL HOSE LINER

Warren Mang, Haddonfield, N.J., assignor to Markel Corporation, Norristown, Pa.

Continuation-in-part of Ser. No. 78,016, Jun. 16, 1993, abandoned. This application Mar. 2, 1995, Ser. No. 396,496

Int. Cl.[6] F16L *9/14*

U.S. Cl. 138—141 **20 Claims**



1. A flexible, kink-resistant hose, suitable for use with lubricant, fuel, and coolant systems, comprising a flexible polymeric tube showing a longitudinal axis, comprising a wall portion and a kink-resistant, flexible resilient member fixedly disposed parallel to the longitudinal axis and within said wall portion of said tube, and further Comprising an inner arc and outer arc when said tube is flexed, said resilient member having a tensile strength sufficiently greater than the tensile strength of the polymeric material of said tube, to ensure that said resilient member substantially conforms to the inner arc of said tube during flexing, wherein the bending load developed during flexing is substantially carried by said resilient member.

5,573,040

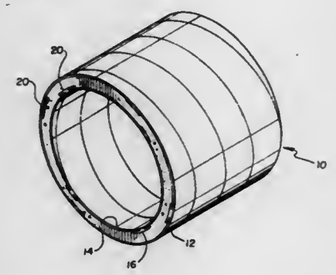
INTERLOCKED PLASTIC-ENCASED CONCRETE PIPE

Mark W. Schumacher, Eagan, and Raymond L. Sterling, Minneapolis, both of Minn., assignors to Pipeform LLC, Mendota Heights, Minn.

Continuation-in-part of Ser. No. 255,314, Jun. 7, 1994. This application Feb. 20, 1996, Ser. No. 603,205

Int. Cl.[6] F16L *9/14*

U.S. Cl. 138—147 **3 Claims**



1. A composite pipe comprising:

(a) a concrete core pipe having an inner and an outer surface;

(b) an outer layer of plastic spirally wound about and mechanically locked into said concrete core outer surface via a plurality of ribs in said outer plastic layer, said ribs being arranged such that the ribs run across the longitudinal axis of the pipe; and

(c) an inner layer of plastic spirally wound about and mechanically locked into said concrete core inner surface via a plurality of ribs in said inner plastic layer, said ribs being arranged such that the ribs run across the longitudinal axis of the pipe, said inner layer of plastic having interlocking, sealed edges.

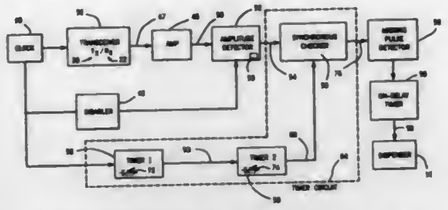
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5,573,041

DISPENSER CONTROL WITH ULTRASONIC POSITION DETECTION

Daniel G. Skell, and Eric D. Skell, both of Cedarburg, Wis., assignors to Electro-Pro, Inc., Cedarburg, Wis.

Filed Aug. 1, 1994, Ser. No. 284,004
Int. Cl.[6] B65B *1/04;3/04*
U.S. Cl. 141—1 35 Claims



1. An ultrasonic detecting and dispensing control for detecting when an object is in a desired position and activating a dispenser in response to object position detection, the control comprising:

a clock circuit;

a transceiver connected to the clock circuit and having a transmitter portion and a receiver portion, the transmitter portion emitting ultrasonic signals having a cone-shaped dispersion path, the receiver portion receiving ultrasonic signals reflected by an object in the cone-shaped dispeiob reflected ultrasonic signals having an amplitude proportional to the distance between the object and the transceiver;

an amplitude detector connected to the transceiver to produce an amplitude signal when the amplitude of a reflected ultrasonic signal has a given relationship to a predetermined reference signal; and

a timer circuit connected to the clock circuit and the amplitude detector, the timer circuit eating a timing window and producing a dispense signal suppliable to a dispenser for activating same-when the amplitude signal occurs within the timing window/and

an arrangement in which the transceiver is placed to reflect ultrasonic signals from a substantial portion of the object to be detected when the object is in a target space below the dispenser, the target space being defined by the timing window and the predetermined reference siqnat such that the target space has minimum and maximum boundaries in which an object sufficiently within those boundaries activates the dispenser.

5,573,042

PROCESS FOR THE PREPARATION OF PREFILLED SYRINGES WITHOUT RESIDUAL GAS BUBBLES

Christoph De Haen, Milan, Italy, assignor to Dibra S.p.A., Milan, Italy

Filed May 24, 1995, Ser. No. 448,845
Claims priority, application Italy, May 16, 1995, MI95A0988
Int. Cl.[6] B65B *1/04;3/04*
U.S. Cl. 141—2 5 Claims

1. A process for the production of prefilled syringes free from residual gas or air bubbles in a dangerous amount for the patient's health, characterized by the following steps:

a syringe nozzle is temporarily sealed with a suitable removable cap,

from an opposite opened end of said syringe at least 80% of a desired volume/dosage solution to be injected is loaded, then a plunger-piston is inserted under vacuum,

the syringe is turned, the cap is removed and, through the nozzle, the syringe is completely filled with a remaining quantity of said solution to be injected,

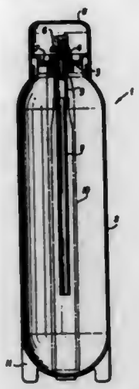
the syringe is re-sealed by re-inserting the cap on the tip of said syringe nozzle, optionally under vacuum.

5,573,043

CLOSURE CUP FOR A PRESSURE DISPENSER

Charles Fuehrer, Scarsdale, N.Y., assignor to Stoffel Seals Corporation, Tuckahoe, N.Y.

Filed Dec. 23, 1994, Ser. No. 362,976
Int. Cl.[6] B65D *83/00*
U.S. Cl. 141—20 16 Claims



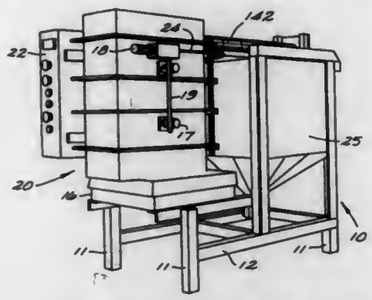
1. A closure cup for interfused connection with a pressure dispenser comprising an essentially rigid and pressure resistant outer container made of a fusible synthetic organic polymer composition; said closure cup consisting essentially of a synthetic organic polymer composition capable of interfusion with said outer container and being adapted for receiving and holding a valve assembly comprising a valve housing means and a displaceable valve outlet means; said closure cup comprising a sealing means capable of forming a permanent closure of an opening of said closure cup by interfusion.

5,573,044

VACUUM APPARATUS FOR FILLING BAGS WITH PARTICULATE MATERIAL

Emmanuel Mechalas, 123 N. Hazel, Danville, Ill. 61832

Filed Sep. 21, 1994, Ser. No. 309,734
Int. Cl.[6] B65B *1/26;1/18;3/17*
U.S. Cl. 141—83 15 Claims



1. A bag filling machine for particulate matter comprising powders and other finely divided material comprising:

a supply hopper supplying particulate matter for bagging, a fill line extending from said hopper for transfer of particulate matter,

a first valve actuatable to control the flow particulate matter from the hopper through said fill line,

a shroud connected to said fill line to receive particulate matter therefrom,

said shroud providing a chamber for receiving a bag during the filling thereof and having hingeably connected segments which open to permit introduction and removal of the bags being fille · a second valve in fluid communication with

said shroud actuatable to apply a vacuum to the interior of said shroud, via a conduit having a diameter substantially equal to the diameter of said fill line, surrounding the bag supported therein and said fill line to draw particulate matter from said hopper into the bag positioned on said spout on opening of said first valve,

said fill line between said first valve and said shroud being of a predetermined length sufficient to conduct a vacuum to the outlet from said first valve sufficient to cause said particulate matter to reach speeds great enough to impinge one particle upon another, causing a tighter fill or a breaking of particles to suit the fill requirements,

weighing means positioned beneath and supporting a bag for weighing a selected amount of particulate matter dispensed into the bag,

a feed spout having an outlet end for insertion into the mouth of a bag positioned therein for filling,

means for applying a vacuum to the interior of said shroud surrounding the bag supported therein to draw particulate matter from said hopper into the bag positioned on said spout.

a dust collector connected between said shroud and vacuum-applying means to collect particulate matter in the air withdrawn from said shroud during said filling operation,

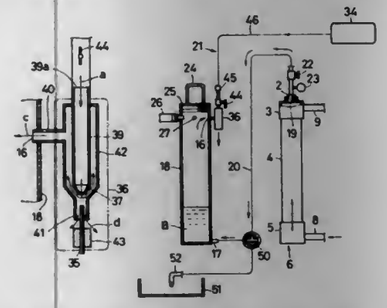
said dust collector including back flushing means and container means receiving particulate matter released from said collector in back flushing, and conduit means connected from said container means for recycling particulate matter therefrom into the bar being filled.

5,573,045

ENGINE COOLANT CHANGING APPARATUS

Yasumasa Akazawa, 2-8-14, Higashi-shinmachi, Matsubara shi, Osaka, Japan

Filed Jan. 17, 1995, Ser. No. 373,136
Claims priority, application Japan, Dec. 15, 1994, 6-333900
Int. Cl.[6] F01P *11/06*
U.S. Cl. 141—92 5 Claims



1. An engine coolant changing apparatus comprising:

coolant storing means possession at least one pressure action port, at least one liquid inlet, and at least one outlet;

detaching means to be attached or detached to or from a radiator;

communicating means for communicating between the at least one liquid inlet and at least one outlet of the coolant storing means and the detaching means; and

pressure action means for applying a negative pressure to the at least one pressure action port to overheat the coolant to a low temperature by driving an engine when discharging the coolant from an engine coolant system and applying a positive pressure to the at least one pressure action port when feeding a fresh liquid;

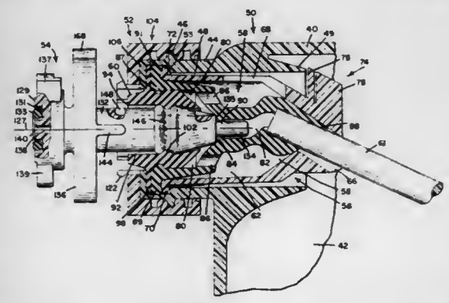
wherein said communicating means comprises passage changeover means provided in an intermediate point of the communicating means for communicating between the at least one liquid inlet and outlet and the detaching means when discharging the coolant and feeding fresh liquid, and for communicating between the at least one liquid inlet and outlet and a recovery passage when recovering the discharged coolant into a recovery means.

5,573,046

VALUE HOUSING FOR A FLUID DELIVERY SYSTEM

Ronald J. Venooker, Franklin; John A. Scavitto, Mendon; Peter N. Karkantis, Acton; David T. Healey, Reading, and Richard L. Travers, Scituate, all of Mass., assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.

Division of Ser. No. 165,137, Dec. 9, 1993, abandoned. This application Aug. 11, 1995, Ser. No. 513,698
Int. Cl.[6] B65D *47/00*
U.S. Cl. 141—285 9 Claims

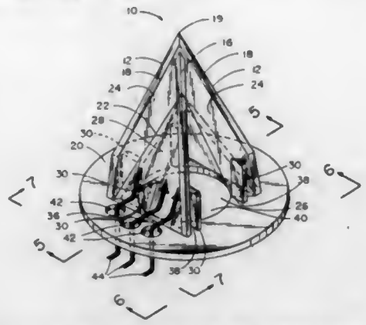


5. A valve housing for a fluid delivery system for aspirating liquid from a bottle and conveying the liquid to an analyzing instrument, said bottle having an interior space, a bottom wall, a side wall and a cylindrical tubular neck portion which extends substantially horizontally from said side wall, said neck portion having a bore, said bore having an inner opening to the interior space and an outer opening to the outside of the bottle, said fluid delivery system having an elongated tube and an elastomeric valve, said valve having a flexible neck portion which contains a socket for receiving one end of said tube, said valve housing comprising:

(a) a cylindrical main body portion for insertion into the horizontal neck portion of a bottle, said main body portion having a substantially horizontal central longitudinal axis, an outer free end which has an outer opening, an inner opening, and a primary bore which extends along said axis from said outer opening to said inner opening said main body having an air vent to said primary bore at the top of said main body portion when said housing is at a predetermined angular position relative to said central longitudinal axis; and

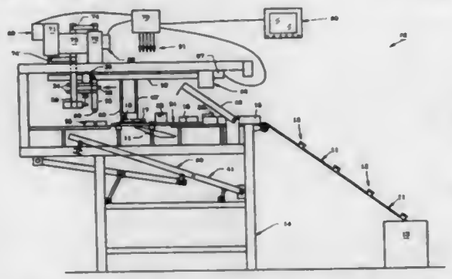
(b) an inner end portion which is connected to said main body portion, said inner end portion having an inner free end which has an inner opening and a secondary bore which extends at a downward angle relative to said axis from the inner opening of said primary bore to the inner opening of said free end when said housing is at said predetermined angular position relative to said axis said valve housing being constructed to be able to receive said elastomeric valve and said tube extends at a downward angle relative to said axis from said socket through said secondary bore.

5,573,047
SEAL-PIERCING INSERT FOR A BOTTLED WATER DISPENSER
Richard M. Akin, 1567 Andover Dr., Dunedin, Fla. 34698
Filed Jul. 3, 1995, Ser. No. 497,852
Int. Cl.[6] B65B *1/04*
U.S. Cl. 141—330 **7 Claims**



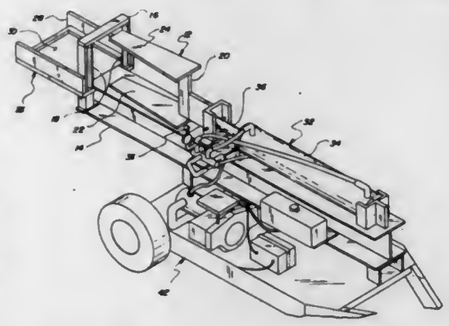
7. Apparatus for piercing a flexible seal closing a mouth of an inverted bottle, the apparatus comprising:
a base having a central throughhole therethrough;
a pyramidal array of three or more upstanding blades extending upwards from the base and slanting therefrom towards an axis of the apparatus, at least two of the blades having a cutting edge on an upper surface thereof, each cutting edge piercing the seal when the inverted bottle is placed upon the apparatus;
a closed pyramidal face extending upwards from the base intermediate a first adjacent pair of blades of the pyramidal array thereof;
an open pyramidal face extending upwards from the base intermediate a second adjacent pair of blades of the pyramidal array thereof,
three spreaders adjacent the base, each of a first two of the spreaders respectively extending outwards from one of the second pair of blades and thereby partially obstructing the open face, the third spreader extending outward from the closed face.

5,573,048
LIQUID FILLING DEVICE AND METHOD
Jonathan E. Moon, Greensboro, N.C.; Karl E. Zemlin, Richmond, Ind., and Richard R. Hadgkiss, Greensboro, N.C., assignors to ABCO Automation, Inc., Browns Summit, N.C.
Filed Dec. 5, 1994, Ser. No. 349,241
Int. Cl.[6] B65B *1/04;3/00*
U.S. Cl. 141—370 **23 Claims**



1. A liquid filling head comprising a tubular body portion, said tubular body portion having a bottom end, a nozzle, said nozzle joined to said bottom end of said tubular body portion, a liquid inlet, said liquid inlet communicating with the interior of said tubular body portion, a movable fluid conduit, said movable fluid conduit having a lower end, said fluid conduit disposed within said tubular body portion wherein said lower end of said fluid conduit is positioned proximate said nozzle, and a valve, said valve comprising a ball valve, said ball valve comprising an upper ball seat, said upper ball seat defining a plurality of openings, said openings communicating with said interior of said fluid conduit, said valve positioned proximate said lower end of said fluid conduit to control fluid movement therethrough.

5,573,049
TIRE RIM SEPARATOR
Herman W. Rutter, 416 Harrison Ave., Lancaster, Ohio 43130
Filed Jun. 1, 1995, Ser. No. 456,301
Int. Cl.[6] B60C *25/122*
U.S. Cl. 157—1.21 **15 Claims**



1. A tire rim separator comprising:
an elongated rim;
a separating gate secured to an end of the elongated rail, the separating gate includes a pair of spaced vertical rollers rotatably mounted within the separating gate, the vertical rollers being spaced from one another a distance substantially less than a diameter of a rim to be separated from a tire such that a forcing of the rim and tire through the separating gate will cause the spaced vertical rollers to engage opposed sides of an assembled tire and rim so as to inwardly deform the tire and rim during passing thereof through the separating gate;
means for engaging the assemble tire and rim such that the assembled tire and rim can be forced through the separating gate to effect diametrical compression of the tire and rim, whereby the rim resiliently expands subsequently to passing through the separating gate, with the rim maintaining the compressed shape.

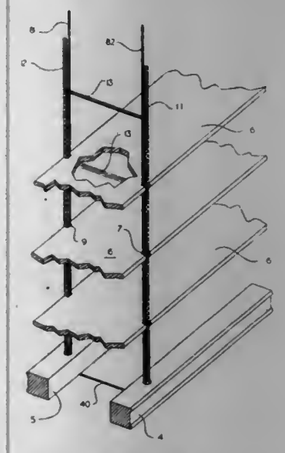
5,573,050
LOCKING DEVICE FOR A SLATTED ROLL-UP GATE OR DOOR
Johann Henkenjohann, Oesterwieher Strasse 80, D-33415 Verl, Germany
Filed Dec. 14, 1994, Ser. No. 358,564
Claims priority, application Germany, Dec. 17, 1993, 43 43 310.3
Int. Cl.[6] E06B *9/08*
U.S. Cl. 160—133 **27 Claims**

1. Apparatus for closing an opening, comprising:
a frame forming an opening disposed in a vertical plane;
a stationary guide mounted adjacent said frame and defining a pair of horizontally spaced, vertical guide channels, at least one of said guide channels including a recess extending laterally relative to said vertical plane;



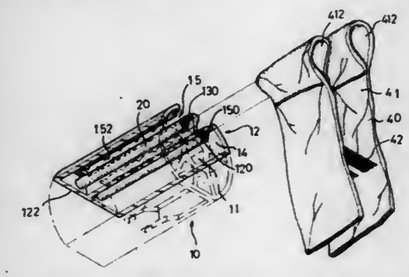
a roll-up closure including a plurality of horizontally extending, vertically adjacent slats, each slat including opposite ends slidably movable in respective ones of said guide channels, a lowermost one of said slats including a cavity extending along the complete horizontal length of said lowermost slat from one said end to the other, said cavity disposed in a plane oriented parallel to a plane in which said recess is disposed;
a raising mechanism for raising said closure;
a locking catch pivotably mounted in said cavity for pivotal movement about a horizontal axis and extending substantially parallel to said length of said lowermost slat and having opposite ends vertically slidable in respective ones of said guide channels, said catch being biased to project out of said cavity and into said recess when said closure is in a closed position covering said opening, said catch when projecting into said recess, being positioned to engage a portion of said guide to prevent raising of said closure; and
releasing means for retracting said catch out of said recess and into said cavity for enabling said closure to be raised.

5,573,051
VENETIAN TYPE BLINDS
Ren Judkins, 46 Newgate Rd., Pittsburgh, Pa. 15202
Filed Feb. 6, 1995, Ser. No. 384,136
Int. Cl.[6] E06B *9/30*
U.S. Cl. 160—168.2 **17 Claims**



1. A venetian type blind comprising:
a bottomrail;
a plurality of slats above the bottomrail, each slat having an inside edge and an outside edge and a first pair of oppositely disposed slots on the outside edge and one slot on the inside edge and a second pair of oppositely disposed slots one slot on the inside edge and one slot on the outside edge, the first pair of slots being laterally spaced apart from the second pair of slots;
a first ladder having opposite cord type rails and rungs extending therebetween, the rails positioned near the first pair of slots and connected to the bottomrail;
a first pair of lift cords adjacent to the first ladder, and connected to the bottomrail, one lift cord running through slots in the inside edge of the slats and one lift cord running in the slots on the outside edge of the slats;
a second ladder having opposite cord type rails and rungs extending therebetween, the rails positioned near the second pair of slots and connected to the bottomrail;
a second pair of lift cords adjacent to the second ladder, and connected to the bottomrail, one lift cord running through slots in the inside edge of the slats and one lift cord running though the outside edge of the slats;
a headrail above the bottomrail and the plurality of slats through which the lift cords pass; and
a tilt mechanism attached to the headrail to which tilt mechanism the lift cords are connected and to which tilt mechanism the first and second ladders are attached wherein the tilt mechanism moves rails of the ladders and the lift cords in each pair of lift cords together and in opposite directions at the tilt mechanism and adjacent the slats when the blind is changed from an open position to a closed position.

5,573,052
POSITIONING DRUM DEVICE FOR A VENETIAN BLIND
Tai-ping Llu, No. 15, Alley 8, Lane 3, Kuochi St., Lungching Hsiang, Taichung Hsien, Taiwan
Continuation-in-part of Ser. No. 370,316, Jan. 10, 1995, Pat. No. 5,538,068. This application Dec. 28, 1995, Ser. No. 580,362
Int. Cl.[6] E06B *9/38*
U.S. Cl. 160—177.2 **3 Claims**



1. A positioning drum device for a Venetian blind (3) which comprises a headrail (32) having a substantially U-shaped cross-section, at least one positioning base (30) fixedly mounted in said headrail (32), said positioning drum device rotatably mounted in said positioning base (30) and comprising a body (10) which includes a hollow top section (12) having a first closed end portion (122) and a second open end portion (124) and having a top plate (13), a mediate section, and a lower section, a passage (11) longitudinally defined through the mediate section of said body (10), two channels (14) each longitudinally defined in the top section (12) of said body (10) and each terminating at the first closed end portion (122) thereof, two grooves (15) each longitudinally defined in said top plate (13) of said top section (12) of said body (10), each being defined by two sides, and each communicating with a corresponding one of said two channels (14), a flange (130) longitudinally formed on said top plate (13) and located between said two grooves (15), a plurality of wedge-shaped teeth (152) formed on each of the two sides of each of said two grooves (15), and two elongated rods (20) each disposed in a corresponding

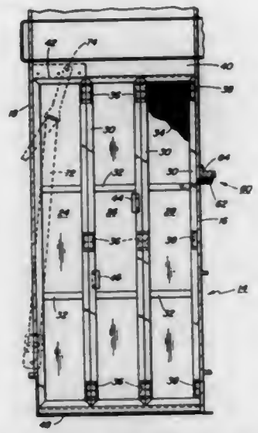
one of said two channels (14) and located below an associated groove (15), and each having one distal end fixedly mounted on the first closed end portion (122) of the top section (12) of said body (10).

5,573,053

COMBINATION SWING AND SLIDE TRI-FOLD DOOR SYSTEM FOR RECREATIONAL VEHICLES OR THE LIKE

Jacobus N. Hanemaayer, Kitchener, Canada, assignor to Hanmar Motor Corporation, Ontario, Canada

Filed Jun. 26, 1995, Ser. No. 494,967
Claims priority, application Canada, Jul. 14, 1994, 2128041
Int. Cl.[6] E05D 15/26
U.S. Cl. 160—206 14 Claims



1. A tri-fold door system comprising a pair of spaced uprights defining a door opening, and a door including three vertically oriented panels which are, a distal panel, an intermediate panel and a proximal panel, said panels being hinged together for movement relative to one another from a door closed position wherein said panels lie in the plane of the door opening to a door open position wherein said panels are folded in close juxtaposition to each other, said proximal panel being hinged to a first one of said uprights defining said door opening, a track-way extending from the other one of said uprights part-way toward said first upright and adapted to receive and guide said distal panel in a path lying in the plane of the door opening away from or toward said other one of the uprights as the door is being opened or closed respectively while the remaining two panels pivot relative to one another between positions which are co-planar relative to each other and folded positions in close juxtaposition with each other.

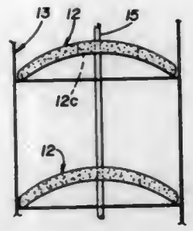
5,573,054

VENETIAN BLIND SLAT

Cletis F. Swopes, Madison, Wis., assignor to Springs Window Fashions Division, Inc., Middleton, Wis.

Filed Jan. 12, 1995, Ser. No. 371,991
Int. Cl.[6] E06B 9/00
U.S. Cl. 160—236 6 Claims

1. An elongate venetian blind slat having a longitudinally extending transversely convex upper surface and an opposed longitudinally extending edge surfaces, the slat consisting of a rigid thermoplastic resin and having a cellular core and in integral solid skin along the longitudinally extending upper and lower surfaces and edge surfaces of the slat, the slat having a density from 0.4 to 0.6 g/cc, the upper and lower surfaces having a radius of curvature



less than the width of the slat, the upper and lower surfaces having substantially the same radius of curvature.

5,573,055

WATER DISPERSIBLE MOULDS

Richard Melling, Nr Ruthin, and Nigel Challand, Mold, both of United Kingdom, assignors to Borden (UK) Limited, England

PCT No. PCT/GB91/01793, § 371 Date Jun. 15, 1993, § 102(e) Date Jun. 15, 1993, PCT Pub. No. WO92/06808, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 15, 1991, Ser. No. 39,147
Claims priority, application United Kingdom, Oct. 19, 1990, 9022754
Int. Cl.[6] B22C 9/00
U.S. Cl. 164—15 36 Claims

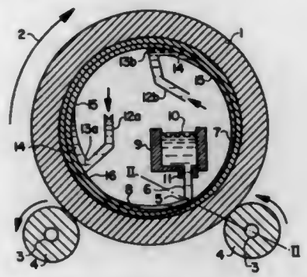
1. A water-dispersible mould for making a casting, the mould comprising a water-insoluble particulate material and a binder therefor, wherein the binder contains at least one matrix former selected from the group consisting of polyphosphate chains derived from water-soluble phosphate glass and borate ions.

5,573,056

PROCESS AND DEVICE FOR PRODUCING METAL STRIP AND LAMINATES

Heinrich K. Feichtinger; Derek H. Feichtinger, both of Hinteregg, and Markus O. Speidel, Birmenstorf, all of Switzerland, assignors to Ilse H. Feichtinger, Hinteregg, Switzerland

PCT No. PCT/CH92/00096, § 371 Date Feb. 28, 1994, § 102(e) Date Feb. 28, 1994, PCT Pub. No. WO93/23187, PCT Pub. Date Nov. 25, 1993
PCT Filed May 18, 1992, Ser. No. 182,019
Int. Cl.[6] B22D 11/06;23/00;27/04
U.S. Cl. 164—46 18 Claims



1. A process for manufacturing a metal film, comprising the steps of:

(a) directing at least one stream of overheated metal melt in a direction towards an inner surface of a mould body while rotating the mould body about an axis which is transverse to said stream direction, so that said stream impinges on said surface and forms thereon a metal film which is liquid while being formed;

(b) applying a liquid coolant onto said metal film via at least one nozzle, and thereby causing cooling of the metal film to within a solidification temperature range as said coolant evaporates.

9. Apparatus for manufacturing a metal film, comprising:

at least one container for receiving a metal melt, each said container having at least one pouring nozzle for pouring overheated metal melt from the respective said container in a stream along a direction;

a hollow mould body having an inner concave wall surface; the hollow mould body being supported for rotation in a direction about an axis about which said wall surface is concave;

each said pouring nozzle being arranged to cause said stream to impinge on said wall surface and form an initially liquid coalescent metal which can solidify upon cooling to form said metal film; and

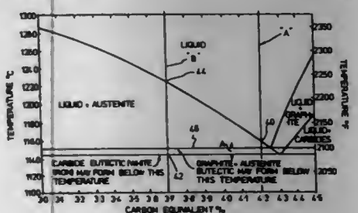
at least one coolant container, each having at least one coolant nozzle, each coolant nozzle being aimed in relation to said wall surface so as to apply coolant thereto at a site which is rotationally offset around said axis so as to trail in said direction relative to where said stream impinges on said wall surface.

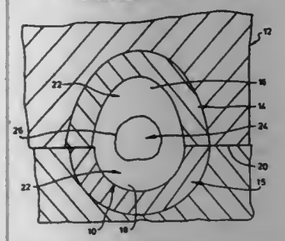
5,573,057

CAMSHAFT AND METHOD FOR CASTING THE CAMSHAFT

Alexander K. McDonald, Woolaston, United Kingdom, assignor to Lydmet Limited, Lydney, England

PCT No. PCT/GB92/01665, § 371 Date Mar. 15, 1994, § 102(e) Date Mar. 15, 1994, PCT Pub. No. WO93/05908, PCT Pub. Date Apr. 1, 1993
PCT Filed Sep. 11, 1992, Ser. No. 204,365
Claims priority, application United Kingdom, Sep. 19, 1991, 9120021
Int. Cl.[6] B22D 15/00;27/20
U.S. Cl. 164—58.1 6 Claims





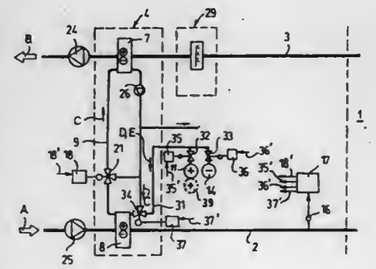
1. A method of producing a cast-iron camshaft from an iron material containing between 0.3 wt % and 1.2 wt % of chromium by a chill cashing technique, the camshaft having a region of white iron structure formed adjacent chill inserts in a casting mold and a region of grey iron structure in substantially all other regions remote from the chill inserts said all other regions comprising a central core, the method comprising the steps of (1) assembling a casting mold having a camshaft shaped cavity and also having chill inserts adjacent cavity regions where white iron is desired, said chill inserts forming a contact surface for cast molten metal around at least part of an outer periphery of a cam portion of said camshaft, (2) preparing a molten metal charge of cast iron having a carbon equivalent lying in the range from 3.5 up to 4.0, (3) adding an amount of nucleant material to said molten metal charge prior to a metal pouring step, said amount of nucleant material being in excess of that theoretically required to cause still molten metal remote from said chill inserts lying within the white iron region to solidify as grey iron; and (4) casting said molten charge of cast iron into said casting mold, said excess amount of nucleant material serving to ensure that undercooling of residual liquid remaining in said central core of said camshaft after solidification of the white iron region around said residual liquid and adjacent the chill inserts remains above an iron-cemenite eutectic temperature so that it solidifies as said region of grey iron structure wherein carbon is present as free graphite, whereby to ensure that said central core of said camshaft is substantially froe of white iron structure.

5,573,058

AIR-CONDITIONING INSTALLATION FOR ROOM SPACES

Ingmar Rolin, Espoo, Finland, assignor to ABB Flakt Aktiebolag, Stockholm, Sweden

PCT No. PCT/FI92/00306, § 371 Date May 20, 1994, § 102(e) Date May 20, 1994, PCT Pub. No. WO93/10403, PCT Pub. Date May 27, 1993
PCT Filed Nov. 11, 1992, Ser. No. 244,170
Claims priority, application Finland, Nov. 22, 1991, 915511
Int. Cl.[6] F25B 29/00; F24F 12/00;5/00;3/00
U.S. Cl. 165—210 8 Claims



1. Air-conditioning installation for room spaces (1), comprising

a heat transfer device (4) including a circulation pipeline system (9) for transferring heat from exhaust air (B) removed from the room spaces into supply air (A) to be supplied into the room spaces;

a heating means connected to a heating source (11) for further heating the supply air;

cooling means connected to a cooling source (14) for cooling the supply air; and

adjusting means (16, 17, 18, 21, 32, 33, 34) for sensing the temperature of the supply air and for controlling the heat transfer device and the heating and cooling means on the basis of the sensed temperature; characterized in that

the heating and cooling sources (11, 14) are connected by means of a common line (31) to the circulation pipeline (9) for heat transfer fluid (C) of the heat transfer device (4) between the supply air (A) and the exhaust air (B) so that the heat transfer, further heating and cooling of the supply air (A) take place through the common heat transfer device (4).

5,573,059

AIR CONDITIONING MACHINE

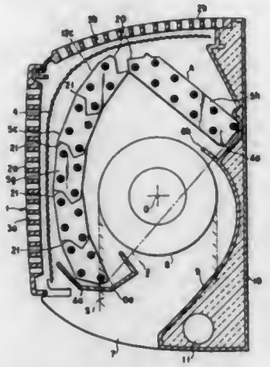
Shotaro Hamamoto, Funabashi; Shigeru Niki, Fuji; Atsushi Nagasawa, Mishima; Masao Isshiki, Fuji; Yoichiro Kobayashi, Fuji, and Jitsuo Ikeya, Fuji, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Sep. 15, 1994, Ser. No. 305,942

Claims priority, application Japan, Feb. 21, 1994, 6-022742; Mar. 18, 1994, 6-048046; Mar. 18, 1994, 6-048047; Mar. 18, 1994, 6-048048; Mar. 18, 1994, 6-048049

Int. Cl.[6] F28F *13/12*

U.S. Cl. 165—124 **17 Claims**



1. An air conditioning machine comprising:

an air conditioning main body having an inlet port and an outlet port;

an air blowing fan, provided in the air conditioning main body, for introducing air in a room into the air conditioning main body through the inlet port and blowing the air into the room through the outlet port, the air blowing fan having a circular cross section; and

a heat exchanger provided in an indoor air introducing side of the air blowing fan, bent at a portion along a longitudinal direction of the heat exchanger at an acute angle, and having a front side heat exchanger located on a front side of the air conditioning machine and curved along the circular cross section of the air blowing fan and a rear side heat exchanger located on a rear side thereof,

the air blowing fan is a cross flow fan in which a plurality of blades are arranged at regular intervals in a circumferential direction;

the heat exchanger comprises a number of heat radiating fins arranged in parallel at small intervals and heat exchanging pipes inserted through the heat radiating fins; and

each of the heat radiating fins has a cut portion, which is bent at an acute angle so as to form the front side heat exchanger and the rear side heat exchange,

each of the heat radiating fins constituting the front side heat exchanger having a number of cut portions or notch portions and being curved in a plurality of stages by bending the cut portions or notch portions.

5,573,060

HEAT EXCHANGER

le; SqColin I. Adderley, Derby; John O. Fowler, Lancashire, and Michael F. Wignall, Derbyshire, all of England, assignors to Rolls-Royce And Associates Limited, Derby, and Rolls-Royce plc, London, both of England

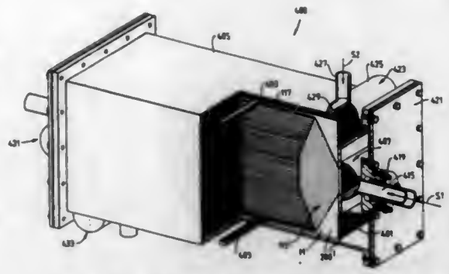
Continuation of Ser. No. 107,781, Aug. 23, 1993, Pat. No. 5,465,785. This application Apr. 14, 1995, Ser. No. 421,911

Claims priority, application United Kingdom, Feb. 27, 1991, 9104156

Int. Cl.[6] F28F *3/14*

U.S. Cl. 165—166 **4 Claims**

1. A heat exchanger for facilitating exchange of heat between at least first and second process streams, comprising



a matrix of heat exchange elements arranged in side-by-side spaced apart relationship,

metal jacket means enclosing the matrix of heat exchange elements,

first and second process stream inlet and outlet manifolds for passing the process streams through the metal jacket to and from the matrix of heat exchange elements,

a first set of flow passages for the first process stream, the first set of flow passages being defined between adjacent heat exchange elements,

a second set of flow passages within the heat exchange elements for the second process stream, and

each heat exchange element having edge locations and at said edge locations of each heat exchange element, an inlet passage and an outlet passage for the second process stream being provided, the inlet and outlet passages being connected to the second set of flow passages and to the corresponding inlet and outlet manifolds for flow of the second process stream therethrough;

wherein each heat exchange element comprises a diffusion bonded stack of metal sheets having a superplastically expanded internal core structure defining the second set of flow passages for the second process stream;

said inlet and outlet manifolds for at least the second process stream comprising:

plate elements having projecting edge portions which define slot-shaped inlet and outlet means for flow of at least the second process stream through said plate elements, and

a manifold with wall means having slots therethrough, the projecting edge portions of the plate elements being secured in said slots such that the process stream flow can occur between said manifold with wall means and the interior of said plate elements.

5,573,061

HEAT EXCHANGER AND ARRANGEMENT OF TUBES THEREFOR

Tomohiro Chiba, Isesaki, and Hisao Aoki, Maebashi, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Continuation of Ser. No. 297,154, Aug. 29, 1994. This application Jun. 2, 1995, Ser. No. 460,156

Claims priority, application Japan, Aug. 30, 1993, 5-235880

Int. Cl.[6] F28F *9/22*

U.S. Cl. 165—176 **3 Claims**

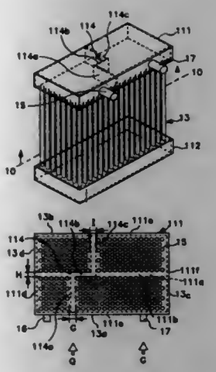
1. A heat exchanger through which a heat transfer medium flows, wherein the heat exchanger is exposed to an air flow which flows in a direction, said heat exchanger comprising:

a first tank having an inlet to allow the heat transfer medium to enter the heat exchanger and an outlet to allow the heat transfer medium to exit the heat exchanger;

a first partition disposed in said first tank to divide said first tank into a first number of chambers, wherein said first number of chambers is at least two;

a second tank spaced apart from said first tank

a second partition disposed in said second tank to divide said second tank into a second number of chambers, said second number of chambers being one less than said first number of chambers; and



a plurality of closely packed heat transfer tubes, each connected at a first end to said first tank and at a second end to said second tank,

wherein each of said first and second partitions has at least one portion which is angularly offset from the direction of the air flow, and wherein each said at least one portion of said first and second partitions is perpendicular to the direction of the air flow so that no portion of the airflow can pass through the heat exchanger in a straight line without striking at least one of the plurality of heat transfer tubes

and wherein said plurality of closely packed heat transfer tubes is arranged in a plurality of rows, at least one row being adjacent to each of said perpendicular portions of said first and second partitions, and wherein each said perpendicular portion extends past at least two heat transfer tubes of said at least one adjacent row.

5,573,062

HEAT TRANSFER TUBE FOR ABSORPTION REFRIGERATING MACHINE

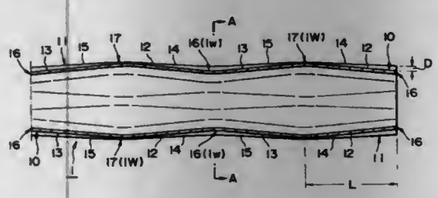
Kazuhiko Ooba; Tatsuo Yoshisue; Takeshi Nishizawa, and Gou Isobe, all of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Japan

Filed Dec. 27, 1994, Ser. No. 365,472

Claims priority, application Japan, Dec. 30, 1992, 5-352880; Feb. 28, 1994, 6-029830; Jul. 27, 1994, 6-175512

Int. Cl.[6] F28F *1/08;1/42*

U.S. Cl. 165—177 **6 Claims**



1. A heat transfer tube for an absorption refrigerating machine, said tube having a circumferential surface and defining a central axis and comprising:

a large number of concave portions formed in a plurality of circumferential rows on the circumferential surface of the tube at predetermined angular intervals, each concave portion including a gently down-grade surface extending in the direction of and gradually approaching said central axis at an angle of 0.5° to 7°, and a gently up-grade surface continuously extending from said gently down-grade surface in the direction of and gradually diverging from said central axis at an angle of 0.5° to 7°.

5,573,063

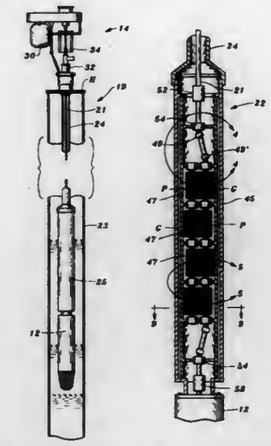
DEEP WELL PUMPING APPARATUS

William B. Morrow, Bakersfield, Calif., assignor to Harrier Technologies, Inc., Bakersfield, Calif.

Filed Jul. 5, 1995, Ser. No. 498,376

Int. Cl.[6] E21B *43/00*

U.S. Cl. 166—68.5 **14 Claims**



1. A fluid recovery system for use in producing oil and water from a relatively deep, subsurface deposit, comprising, in combination:

a high capacity pump, said pump being immersed within said deposit;

a well casing extending from the surface above the deposit and into the deposit;

a source of motive power, disposed on the surface, for producing rotary motion;

power transmission means interconnecting said power source and said pump within said well casing, said power transmission means including a step up transmission, a rod string, said rod string interconnecting said power source and said transmission for delivering rotary motion to said transmission, and said transmission being connected to said pump so as to deliver a relatively higher speed rotary power to said pump.

5,573,064

AUTOMATIC CATCH APPARATUS AND METHOD

Jack C. Hisaw, Carencro, La., assignor to Specialty Machine & Supply, Inc., Scott, La.

Filed May 24, 1995, Ser. No. 448,783

Int. Cl.[6] E21B *47/00;23/01*

U.S. Cl. 166—250.07 **11 Claims**

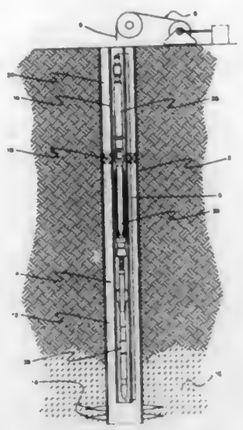
1. An apparatus for use in a well bore comprising:

a mandrel;

a housing slidable disposed on said mandrel, said housing having a window;

engaging means, positioned within said window of said housing, for engaging the walls of the well bore, and wherein said engaging means comprises a first arm and a second arm, said first arm and said second arm having a first end and a second end, with the first end having a series of grooves and the second end being pivotally attached to said housing and wherein said mandrel contains a first end and a second end, and wherein said first end includes a conical section formed thereon so that as said conical section is urged into contact with said arms, said arms extend outward through said window and into engagement with the walls of said well bore;

urging means, disposed about said mandrel, for urging said mandrel into contact with said engaging means;



biasing means, positioned at the second end of said first and second arm, for biasing the first and second arm into contact with each other.

5,573,065

SPRAY HEAD PROVIDED WITH A PRESSURE SENSITIVE VALVE

Göran Sundholm, Ilmari Kiannon kuja 3, FIN-04310 Tuusula, Finland

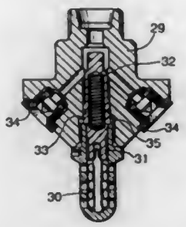
PCT No. PCT/FI94/00046, § 371 Date Nov. 23, 1994, § 102(e) Date Nov. 23, 1994, PCT Pub. No. WO94/16771, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 31, 1994, Ser. No. 307,827

Claims priority, application Finland, Jan. 29, 1993, 930417

Int. Cl.[6] A62C *37/14*

U.S. Cl. 169—37 **5 Claims**



1. A spray head comprising a housing, an inlet in the housing, nozzles (**34**) on the housing, a release ampoule (**30**) in the housing, a spring (**32**) in the housing, and a spindle element (**33**) pressed against the inlet of the housing by the spring (**32**); the spring (**32**) having such a spring force that the spindle element (**33**) keeps the inlet closed against a stand-by pressure but yields to high pressure extinguishing liquid for delivering the liquid to the nozzles (**34**) of the housing while the release ampoule (**30**) remains intact even when the force of the spring acts on the release ampoule.

5,573,066

REMOTE FUEL STATION

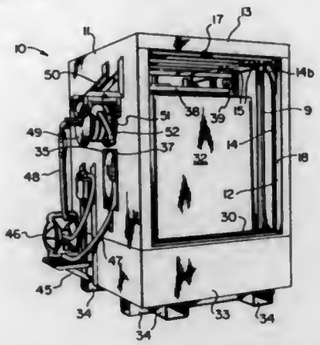
Greg Vaillancourt, Val Caron, and Donald Sissons, Azilda, both of Canada, assignors to Valcom Mechanical Limited, Ontario, Canada

Filed Jan. 13, 1995, Ser. No. 372,382

Claims priority, application Canada, Jan. 13, 1994, 2113399

Int. Cl.[6] A62C *3/06*

U.S. Cl. 169—49 **11 Claims**



1. A fuel station comprising a rigid fire-resistant shell having an interior that defines a chamber adapted to receive a liquid fuel container;

containment means in said shell interior below said chamber providing a holding tank having a capacity sufficient to receive the entire contents of any fuel container which may be placed in said chamber;

an opening in said sbell providing access for insertion or removal of said fuel container with respect to said chamber; and

a door mounted on said shell to be movable from an open condition providing access to said chamber and a closed position wherein it closes said opening and effectively isolates the interior of said shell from surrounding atmosphere.

5,573,067

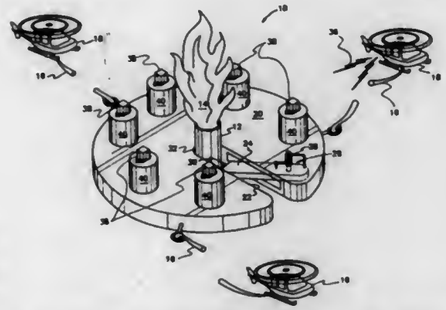
APPARATUS FOR EXTINGUISHING AN OIL WELL FIRE

Naum Fiterson, 2823 W. 12th St. Apt. 15H, Brooklyn, N.Y. 11224

Filed Oct. 4, 1994, Ser. No. 317,714

Int. Cl.[6] A62C *3/06*

U.S. Cl. 169—52 **8 Claims**



1. An apparatus for extinguishing an oil well fire, said apparatus comprising:

means including cables for supporting a platform for engaging and latching to an outside of a vertical tube of an oil well from which flames and hot gasses are jetting, said platform comprising a flat solid member of lightweight metal having a central opening for surrounding said vertical tube and a radial slot extending outwardly from said central opening to permit said platform to be maneuvered into place for being positioned with said vertical tube passing through said central opening extending above said platform with a top opening of said vertical tube remaining uncovered, said slot including means for automatically locking said vertical tube in said central opening after said locking means slides past said tube, said cables being attached to said member along an outer edge thereof at points spaced apart from each other; and

a plurality of storage receptacles surrounding said central opening mounted on and secured to said platform containing a cryogenic, inflammable fluid which is a gas at ambient pressures and temperatures above the ignition threshold temperature of hydrocarbons, said storage receptacles including remotely operated means for releasing said cryogenic, inflammable fluid from said receptacles into the atmosphere around the outside of said vertical tube to be drawn into the jetting flames and hot gasses for displacing oxygen from the oil well fire and simultaneously cooling the oil well below the ignition threshold temperature of hydrocarbons.

5,573,068

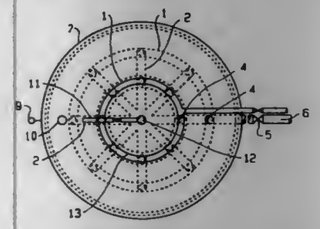
APPARATUS FOR EXTINGUISHING FIRES IN OIL STORAGE TANKS

Tribhuvan P. Sharma; B. B. Lal; Jagbir Singh, and R. S. Chimote, all of Roorkee, Ind., assignors to Council of Scientific & Industrial Research, Rafi Marg, Ind.

Filed Jun. 14, 1994, Ser. No. 259,777

Int. Cl.[6] A62C *3/06*

U.S. Cl. 169—68 **6 Claims**



1. A device for extinguishing fires in a storage tank (**7**) by injecting at least one extinguishant from the group consisting of foam and dry chemical powder, said device comprising:

one or more annular pipe rings (**1**) fixed horizontally, concentrically and equidistantly from each other, inside and just above a bottom of said storage tank (**7**), an outermost annular pipe ring of said annular pipe rings being connected to means (**5** and **6**) for supplying said at least one extinguishant;

two or more cross-member pipes (**2**) diametrically connected across said annular pipe rings;

vertical discharge pipes (**3**) provided at junctions of said annular pipe rings and said cross-member pipes (**2**), top ends of said vertical discharge pipes being above a highest level (**14**) of a flammable liquid (**15**) in said storage tank (**7**); and

discharge nozzles (**4**) fixed to said top ends for uniformly discharging said at least one extinguishant onto a surface of said flammable liquid (**15**) in said storage tank (**7**),

wherein the number of said annular pipe rings is equivalent to the cube root of a diameter, in meters, of said storage tank.

5,573,069

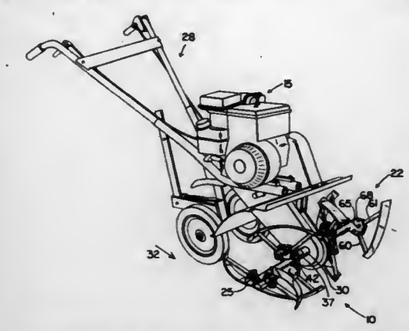
APPARATUS FOR A ROTO-SHEARING TILLER

John Shipley, 1200 N. Wenas Rd., Selah, Wash. 98942

Filed Nov. 21, 1994, Ser. No. 342,758

Int. Cl.[6] A01B *33/02*

U.S. Cl. 172—42 **15 Claims**



1. An apparatus for pulverizing compacted surfaces comprising:

a rotational shaft;

a plurality of support members, each of the support members having a first end and a second end, the second end of each of the support members mounted to the rotational shaft for rotation therewith; and

a plurality of elongated, curvilinear shearing blades, each of the elongated, curvilinear shearing blades having a first end and a second end, a leading edge and a trailing edge, a first surface and a second surface, the leading edge having a constant radius of curvature, the trailing edge having a radius of curvature that decreases from the first end of the elongated, curvilinear shearing blade to the second end thereof, each of the elongated, curvilinear shearing blades axially disposed about the rotational shaft, the second surface of each of the elongated, curvilinear shearing blades mounted intermediate of the leading edge and trailing edge thereof to the first end of at least one of the support members.

5,573,070

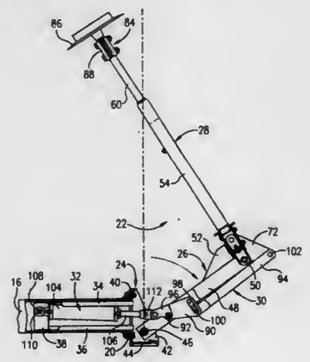
LOW-PROFILE FOLDING MARKER FOR SEED PLANTERS AND THE LIKE

Roger L. Meek, and J. Michael McClure, both of Salina, Kans., assignors to Great Plains Manufacturing Incorporated, Assaria, Kans.

Continuation of Ser. No. 274,986, Jul. 13, 1994, abandoned. This application Mar. 1, 1996, Ser. No. 609,891

Int. Cl.[6] A01B *35/32*

U.S. Cl. 172—131 **9 Claims**



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1. A low profile folding row marker apparatus for use with an agricultural implement presenting a generally hollow, tubular, transverse frame element, the apparatus comprising:

an elongated marker mount including a first end sized for receipt within the frame element of the implement and a second end protruding from the frame element;

an inboard arm assembly connected to the second end of the marker mount for relative pivotal movement about a first horizontal axis between a raised generally vertical storage position and a lowered generally horizontal use position;

an outboard arm assembly presenting a first end connected to the inboard arm assembly for pivotal folding and unfolding movement relative to the inboard arm assembly about a second horizontal axis parallel to the first axis, and an opposed free end,

the outboard arm assembly being moveable through a range of about 90° relative to the inboard arm assembly between a folded storage position perpendicular to the inboard arm assembly and an unfolded use position generally parallel to the inboard arm assembly;

a marker carried on the free end of the outboard arm assembly and adapted to engage the ground when the inboard and outboard arm assemblies are in the use position; and

actuating mechanism for sequentially moving the inboard and outboard arm assemblies between the storage and use positions,

said actuating mechanism including a fluid actuated cylinder secured to the mount and an operating linkage having at least two link members operably connected between the cylinder and the outboard arm assembly for folding and unfolding the outboard arm assembly relative to the inboard arm assembly,

one of said link members having a pivotal connection with said inboard arm assembly whereby the cylinder also raises and lowers said inboard arm assembly relative to the mount,

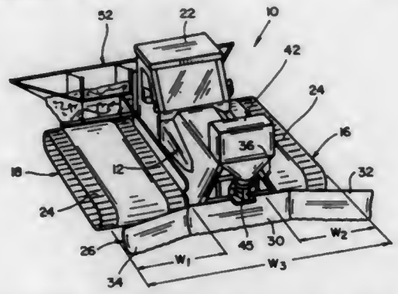
said cylinder and said one link member being so disposed that the line of action of the cylinder causes the linkage to keep the outboard arm assembly folded during raising and lowering of the inboard arm assembly unless the inboard arm assembly is below a predetermined point in its path of travel, below which point the line of action of the cylinder causes the linkage to fold or unfold the outboard arm assembly concurrently with raising or lowering of the inboard arm assembly depending upon whether the inboard arm assembly is being raised or lowered.

5,573,071

APPARATUS FOR CULTIVATING SOIL ON TERRAIN WITH STEEP SLOPES

Donald J. Wilson, Butte, and Troy C. Smith, Whitehall, both of Mont., assignors to Golden Sunlight Mines, Inc., Whitehall, Mont.

Filed Mar. 7, 1995, Ser. No. 399,919
Int. Cl.[6] A01C *3/06*
U.S. Cl. 172—438 **4 Claims**



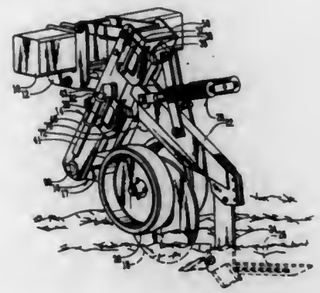
1. Apparatus for cultivating soil on terrain with steep slopes while sowing and bedding granular material into the soil, the apparatus comprising the combination of a tractor which includes a chassis extending lengthwise between first and second ends, and track means mounted on the chassis for supporting the apparatus for movement along a path over the terrain, said track means comprising first and second endless tracks carried on opposite sides of the chassis, said first and second endless tracks having respective lateral widths of W_1 and W_2 and with the track means having an overall lateral width W_3, and further wherein W_1 plus W_2 is in the range of 65% to 80% of W_3; a support structure having a pair of arms mounted on the chassis with said arms having distal ends extending forwardly from said first end; a scraper blade carried on the distal ends of the arms for scraping and pushing soil along the path; broadcaster means carried on the scraper blade for broadcasting the material outwardly from the tractor along the path and onto the soil; and soil working and bedding means carried by said second end of the chassis for working the soil along the path and for bedding the broadcasted material into the soil.

5,573,072

OPERATING POSITION ADJUSTMENT LEVERS FOR CULTIVATOR TOOLS

James R. Evans, Iowa Falls, and James D. Tuttle, Sheffield, both of Iowa, assignors to Sukup Manufacturing Company, Sheffield, Iowa

Filed Mar. 17, 1995, Ser. No. 405,965
Int. Cl.[6] A01B *15/00*
U.S. Cl. 172—744 **12 Claims**



1. An apparatus for adjusting the operating position of a cultivator tool on a cultivator, the apparatus comprising:

a tool bar mounted on the cultivator;

a frame secured to the tool bar;

a tool arm pivotally mounting the cultivator tool on the frame;

a bracket mounted on the frame and having a plurality of spaced first positioning members thereon;

a lever arm mechanism pivotally mounted on the frame adjacent the bracket, and including a lever having a first end portion constituting a handle, a second end portion opposite the handle, and a second positioning member adapted for engagement with the first positioning members;

a spring means operatively attached to one of the bracket and the lever for yieldingly urging the bracket and the lever toward each other and thereby the second positioning member into engagement with one of the spaced first positioning members aligned therewith and maintaining said engagement in the absence of outside forces; and

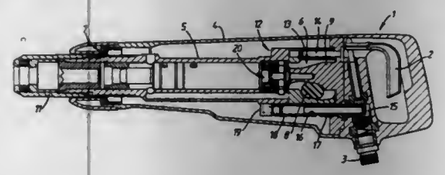
means connecting the tool arm with the second end portion of the lever such that the operating positioning of the tool is adjusted when the lever is pushed away from the bracket pivoted, and set in a new position, the connecting means comprising a torsional spring operatively interposed between the lever arm mechanism, the tool bar, and the frame, whereby the torsional force of the spring and thereby the down pressure on the tool arm is varied depending on the position of the handle.

5,573,073

COMPRESSED FLUID OPERATED TOOL WITH FLUID METERING DEVICE

John H. L. Schofield, Lancashire; David A. Hill, Manchester; Graham Dewhurst, Lancashire, and Paul J. Fairhurst, Wigan, all of England, assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jan. 9, 1995, Ser. No. 370,043
Claims priority, application United Kingdom, Jan. 11, 1994, 9400403
Int. Cl.[6] B25D *1/12*
U.S. Cl. 173—17 **13 Claims**



1. A compressed fluid operated tool having a working part and a fluid metering device, the fluid metering device comprising: a tube having a peripheral wall and first and second ends, said first end of the tube being partly closed; at least one aperture in the peripheral wall of the tube adjacent said first end; a bush; part of the length of the tube being slidably mounted in said bush in sealing manner and being supported for reciprocating motion between a first position and a second position therein; means to reciprocate said tube in said bush; and a source of compressed fluid, said tube being connected to said source of compressed fluid, which fluid is transmitted through the tube to the working part of the tool;

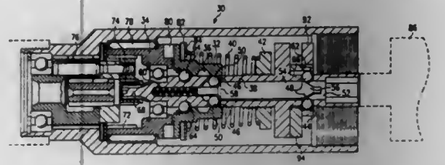
wherein said aperture, in said first position of the tube within the bush, is sealed by the bush and wherein, in said second position of the tube within the bush, is exposed; said means to reciprocate said tube in said bush being comprised by said compressed fluid to urge the tube to said first position; the tube being linked to said working part of the tool so that pressure applied to said working part urges the tube towards said second position; whereby, in said first position of the tube, the compressed fluid supplied to the working part of the tool is restricted, thereby causing the tool to idle, and in said second position of the tube the compressed fluid supply is increased by opening of said at least one aperture to operate the working part of the tool.

5,573,074

GEAR SHIFTING POWER TOOL

Bruce A. Thames, Cypress, and Robert A. Pennison, Bellville, both of Tex., assignors to GPX Corp., Las Vegas, Nev.

Filed Feb. 13, 1995, Ser. No. 387,227
Int. Cl.[6] B25B *23/14*
U.S. Cl. 173—178 **42 Claims**



1. A rotatably-driven, torque-responsive, gear shift device for use in power tool, the gear shift device comprising:

a drive spindle having a first tapered end, a second tapered end, and a partially hollow interior volume;

a plunger positioned within the partially hollow interior volume of the drive spindle;

a reset biasing means for urging the plunger in the partially hollow interior volume of the drive spindle away from the second end;

an inertial device coupled to the drive spindle;

a drive clutch member drivably engaged to the drive spindle; and

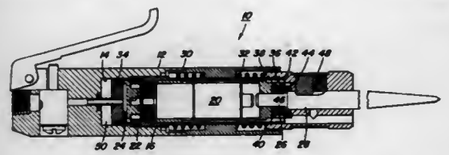
a biasing means between the drive spindle and the drive clutch member.

5,573,075

PNEUMATIC IMPACT TOOL HAVING IMPROVED VIBRATION AND NOISE ATTENUATION

Edgar G. Henry, Kirtland; Frank W. Schossler, Willoughby Hills, and Donald K. Kuhl, Chesterland, all of Ohio, assignors to T.C. Service Company, Highland Heights, Ohio

Filed Jul. 5, 1995, Ser. No. 498,369
Int. Cl.[6] B25D *17/11*
U.S. Cl. 173—211 **15 Claims**



1. A pneumatic powered impact tool having improved vibration attenuation which comprises:

(a) a housing member having a central passageway with front and back ends,

(b) a closed end hollow sleeve member having front and back ends which is slidably engaged in the central passageway of said housing member and which includes a free piston member movably disposed therein with respect to both sleeve and housing members,

(c) a reciprocating impact member closing the front end of said sleeve member for cyclical engagement with said free piston member,

(d) vibration isolating means interposed between the front end of said sleeve member and said reciprocating impact member, said vibration isolating means having a laminar configuration formed with a first outer layer of solid elastomeric material, a rigid inner layer and a second outer layer of solid elastomeric material,

(e) a pair of oppositely biased mechanical spring means disposed intermediate the ends of said sleeve member for engagement therewith so as to be alternately compressed when the sleeve member moves,

(f) a pneumatic valve mechanism closing the back end of said sleeve member for axially exerting pressurized fluid against opposite ends of said free piston member,

(g) the back end of the central passageway in said housing member forming a pneumatic vibration dampening chamber devoid of mechanical spring means and with a volume which is compressed by rearward movement of said sleeve member, and

(h) resilient seal means disposed at the back end of said sleeve member for cooperative association with said vibration dampening chamber.

5,573,076

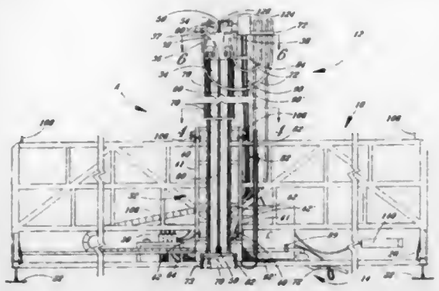
AUTOMATED DRILL

W. A. McCannon, Jr., 2168 Jaudon Rd., Elberton, Ga. 30635

Filed Jun. 19, 1995, Ser. No. 492,402
Int. Cl.[6] F21B *44/00*
U.S. Cl. 175—24 **30 Claims**

1. A method of automatically drilling a selected number of longitudinally spaced holes in a mineral surface comprising:

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(a) providing a support frame carrying a drill assembly for vertical and longitudinal movement, said drill assembly including at least one drill carrying a drill steel;
(b) positioning said support frame over said mineral surface;
(c) moving said drill assembly from a raised position into a drilling position adjacent said surface;
(d) activating said drill to drill a hole of prescribed depth and deactivating said drill upon completion of drilling said hole;
(e) activating said drill assembly to retract said drill and to return to said raised position;
(f) indexing said drill assembly along said support frame; and,
(g) repeating steps c–f until said selected number of holes have been drilled.

5,573,077

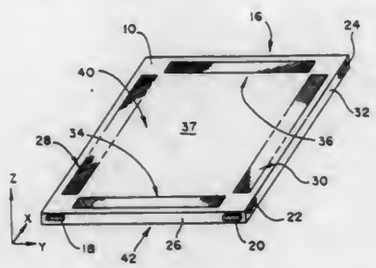
ACOUSTIC TOUCH POSITION SENSOR

Terence J. Knowles, Exzec, Inc., 1840 Oak Ave., Evanston, Ill. 60201

Continuation-in-part of Ser. No. 17,827, Feb. 16, 1993, Pat. No. 5,329,070, which is a continuation of Ser. No. 820,517, Jan. 14, 1992, Pat. No. 5,243,148, which is a continuation-in-part of Ser. No. 615,030, Nov. 16, 1990, Pat. No. 5,177,327. This application Jun. 7, 1994, Ser. No. 255,334

Int. Cl.[6] G08C *21/00*

U.S. Cl. 178—19 **20 Claims**



1. A touch panel comprising:
a substrate capable of propagating a shear wave, said substrate having at least one touch surface;
a first transducer coupled to said substrate for imparting a shear wave into said substrate for propagation along a first path, a touch on said substrate touch surface forming a perturbation in said shear wave;
a second transducer coupled to said substrate for receiving a shear wave propagating along said first path to provide a signal representative thereof.

5,573,078

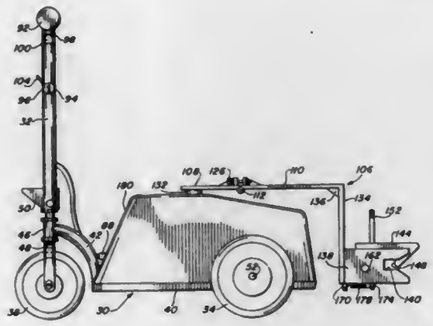
STEERABLE, SELF-POWERED SHOPPING CART TOWING APPARATUS AND METHOD FOR MAKING SAME

Calvin R. Stringer, 35606 Anthony Rd., Saugus, Calif. 91350, and Calvin D. Stringer, 2610 Fairfield Ave., Palmdale, Calif. 93550

Continuation-in-part of Ser. No. 292,310, Aug. 18, 1994, abandoned. This application Jun. 23, 1995, Ser. No. 494,613

Int. Cl.[6] B62D *51/04*

U.S. Cl. 180—19.2 **16 Claims**



1. A towing and guiding device for pulling a plurality of shopping carts connected in a line or other like load, said towing and guiding service comprising:
a chassis member having a front end thereof and a rear end thereof;
a pair of drive wheels rotatably mounted on opposite sides of said chassis member relatively nearer to the rear of said chassis than to the front of said chassis;
means for driving said drive wheels to propel said towing and guiding device;
a single front wheel rotatably mounted by support apparatus at the front of said chassis, said support apparatus being moveable to turn said front wheel to steer said towing and guiding device;
a control handle having a first end and a second end, said control handle being operatively connected at said first end thereof to said support apparatus to control the steering of said towing and guiding device by turning said front wheel in a desired direction;
control means for operating said driving means to selectively cause said driving means to propel said towing and guiding device;
retaining means mounted on said chassis member for removably engaging the plurality of shopping carts connected in a line or other like load behind said towing and guiding device;
battery means for supplying electrical power stored in said battery means;
an electric motor for operation by electrical power derived from said battery means;
power transmitting means connected between said electric motor and said drive wheels for driving said drive wheels when said electric motor is operated;
a battery charger for charging said battery means, said battery charger being mounted on said chassis member; and
a recharging cord retractor mechanism mounted on said chassis member, said recharging cord retractor mechanism containing a cord connected at one end to said battery charger and having a plug located at the other end for connected to a source of electrical power for recharging said battery means.

5,573,079

ELECTRICALLY OPERATED STEERING APPARATUS

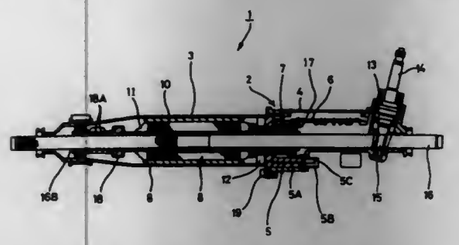
Hitoshi Suda; Satoshi Shimada; Susumu Ohta; Junichi Yoshida, and Yoshio Kakizaki, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Japan

Filed Jun. 7, 1995, Ser. No. 473,367

Claims priority, application Japan, Jul. 13, 1994, 6-161531

Int. Cl.[6] B62D *5/04*

U.S. Cl. 180—444 **18 Claims**



1. An electrically operated steering apparatus comprising;
a housing;
a shaft disposed in said housing for movement to steer steerable wheels coupled to the shaft;
an electric motor disposed in said housing and coupled to said shaft for moving said shaft;
a power supply disposed outside of said housing for supplying electric energy;
motor controlling means disposed in said housing for generating a motor control signal;
motor driving means disposed in said housing for energizing said electric motor with the electric energy supplied from said power supply based on said motor control signal; and
an insert-molded board disposed in said housing and electrically interconnecting said electric motor, said motor controlling means, and said motor driving means, said insert-molded board comprising electric conductors and a body of synthetic resin molded around said electric conductors.

5,573,080

WORK CAR

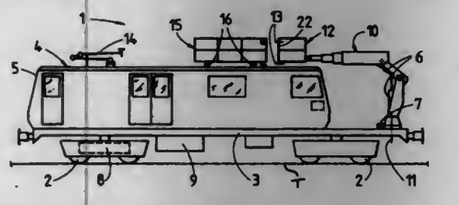
Josef Theurer, Vienna; Leopold R. Gruber, Scheibbs, and Friedrich Oellerer, Linz, all of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Jan. 9, 1995, Ser. No. 370,001

Claims priority, application Austria, Jan. 12, 1994, 34/94

Int. Cl.[6] B66F *11/04*

U.S. Cl. 182—63 **7 Claims**



1. A track-bound work car, comprising:
a machine frame supported on undercarriages for mobility in an operating direction on a track and carrying a body structure housing an operator's cab;
a vertically adjustable first working platform supported on said machine frame;
a second working platform;
fastening means for securing said second working platform to said body structure; and
coupling means mounted to said first and second working platforms for allowing a selective connection of said first and second working platforms with each other.

5,573,081

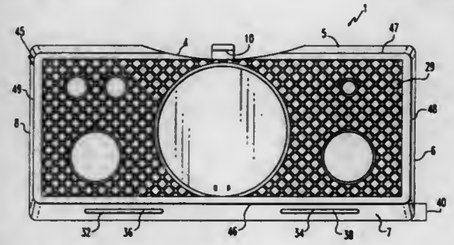
LADDER TOP WITH BAIL RECESS

Frederick J. Bartnicki, and Lauren S. Sherbondy, both of Greenville, Pa., assignors to Werner Co., Greenville, Pa.

Continuation of Ser. No. 7,908, Jan. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 906,587, Jun. 30, 1992, Pat. No. 5,259,480, which is a continuation of Ser. No. 471,129, Jan. 26, 1990, Pat. No. Des. 340,773, which is a continuation-in-part of Ser. No. 100,432, Sep. 24, 1987, Pat. No. Des. 310,884. This application Jun. 29, 1994, Ser. No. 267,857

Int. Cl.[6] E06C *1/00*

U.S. Cl. 182—129 **12 Claims**



1. A top for a ladder comprising:
a top panel having a perimeter, said perimeter having at least a first edge, a second edge, a third edge and a fourth edge, said top panel having a topside and an underside disposed between the first, second, third and fourth edges; and
a first side wall extending in an integral fashion from the underside along the first edge, the first side wall having a pair of elongate slots through which accessories of the ladder can be attached, an opposing second side wall extending in an integral fashion from the underside along the second edge, said second side wall having an arcuate depression with an outer surface and a hook extending from said outer surface, a third side wall extending in an integral fashion from the underside along the third edge and in juxtaposition with the first and second side walls, and a fourth side wall opposing said third side wall and extending in an integral fashion from the underside along the fourth edge and in juxtaposition with the first and second side walls, said ladder adapted to be connected to the ladder top through said third and fourth side walls.

5,573,082

MANUAL FOOD SERVICE SYSTEM

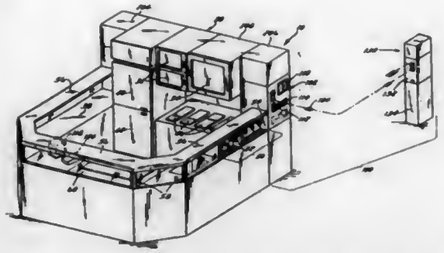
John T. Conlan, and Thomas J. Conlan, both of Milwaukee, Wis., assignors to Diner-Mite, Inc., Milwaukee, Wis.

Division of Ser. No. 483,940, Feb. 23, 1990, which is a continuation-in-part of Ser. No. 87,612, Aug. 20, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 472,440

Int. Cl.[6] A47F *10/06*

U.S. Cl. 186—44 **2 Claims**

1. A modular food service unit in which an operator assembles food preparations for a customer, said unit comprising a first module forming one side wall of the service unit,
a second module mounted in a parallel spaced relation to said first module and forming the other side wall of the service unit, said second module forming an assembly and service counter,
a third module abutting one end of said first module and said second module, said third module including a cooking device, and



a fourth module abutting the other end of said first module and said second module to form a service area within said modules, said fourth module including a back wall for supporting an oven and a refrigeration unit, a storage unit positioned at the intersection of the second module with the fourth module, said first module including a self-service beverage station remote from the service area, and an order and payment module outside of said first, second, third and fourth modules whereby the operator may assemble unwrapped comestibles for delivery to the customer without contacting any item transferred from the customer to the order and payment module.

5,573,083

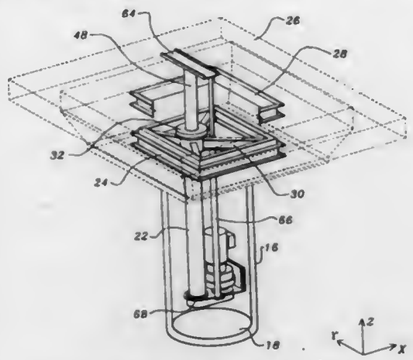
IN-GROUND AUTOMOTIVE LIFT SYSTEM

Robert H. Fletcher, 5215 Fiore Ter., San Diego, Calif. 92122, and Glenn Felpel, 4917 Macmont Cir., Powell, Tenn. 37849

Continuation-in-part of Ser. No. 194,058, Feb. 8, 1994, Pat. No. 5,404,968. This application Mar. 6, 1995, Ser. No. 398,992

Int. Cl.[6] B66F *7/00*

U.S. Cl. 187—205 **14 Claims**



1. An automotive lift system, comprising:

(a) a vertically elongated in-ground environment-defining canister having an upwardly directed mouth thereof;

(b) an automotive lift means;

(c) means for selectable detachable suspension of said lift means situated substantially upon and about said mouth of said canister, said lift means comprising an assembly having an extensible mode and a contracted mode, an upper circumferential end of said lift means including flange means complementally positionable about a journal of said suspension means to effect a suspension of lift means within said journal, said lift means further including vehicle interface means secured upon an upper end of said extensible assembly; and

(d) means for in-ground anchoring of said suspension means relative to reactive forces generated by said lift means and communicated thereto through said suspension means.

5,573,084

ELEVATOR DRIVE MACHINE PLACED IN THE COUNTERWEIGHT

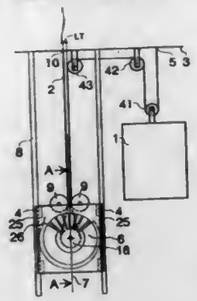
Harri Hakala, Hyvinkää, Finland, assignor to Kone Oy, Helsinki, Finland

Filed Jun. 23, 1994, Ser. No. 264,341

Claims priority, application Finland, Jun. 28, 1993, 932974

Int. Cl.[6] B66B *11/04*

U.S. Cl. 187—252 **23 Claims**



14. Counterweight of a rope-suspended elevator movable along guide rails and an elevator motor placed at least partially inside the counterweight, said motor comprising a traction sheave, a bearing, a shaft, an element supporting the bearing, a stator provided with a winding and a rotating disc-shaped rotor, a diameter (2*Rs) of the stator of the motor being larger than a diameter (2*Rv) of the traction sheave, the stator forming a generally circular sector and the elevator ropes passing between sides of the circular sector.

5,573,085

WASTE COLLECTION DEVICE

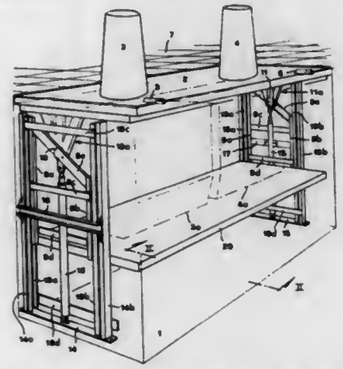
Giancarlo Galeazzi, Via Roma 76- 46049, Volta Mantovana (Province of Mantova), and Angelo Fusaro, Via Roma 78-46049, Volta Mantovana (Province of Mantova), both of Italy

Filed Aug. 29, 1994, Ser. No. 297,278

Claims priority, application Italy, Sep. 7, 1993, MN93A0015

Int. Cl.[6] B66B *13/24*

U.S. Cl. 187—337 **3 Claims**



1. Waste collection device comprising a pit provided with a lid that is openable and walkable in closed position at the level of the surrounding paving, said lid being associated with the upper edge of said pit and furthermore having a lifting unit that is suitable to move at least one waste container, which rests on a platform included in said lifting unit, from a position in which it is fully inserted in the pit to a position in which it is fully extracted from it, wherein said lid, which is provided with at least one pillar to allow users to insert waste into the at least one container, has a monolithic configuration, is pivoted to the edge of the pit at one of the

sides, and is kinematically connected to said lifting unit so as to perform the opening and closing motions respectively during the ascending and descending movements of the lifting unit,

wherein said lifting unit comprises means which are suitable to cause at least part of the rising motion of the lid before the ascending motion of the platform that supports the at least one waste container has begun, and to complete the closing motion of the lid only after said platform has reached the lower stroke limit.

5,573,086

DISK BRAKE APPARATUS HAVING NON-CIRCULAR BRAKE LEVER BORE AND MATCHING CAMSHAFT CONNECTION PORTION

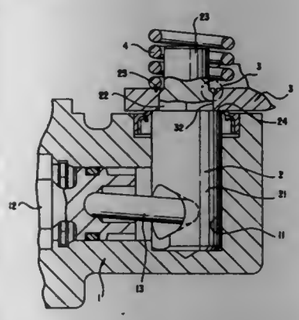
Yoshihiro Tatsumi; Noriyuki Toriyama; Toshiyuki Harinaga, and Masataka Fukuda, all of Nagoya, Japan, assignors to Nisshinbo Industries Inc., Tokyo, Japan

Filed Oct. 18, 1994, Ser. No. 324,510

Claims priority, application Japan, Oct. 22, 1993, 5-061863

Int. Cl.[6] F16D *65/16*

U.S. Cl. 188—72.9 **3 Claims**



1. A disk brake mechanism for a wheel of a motor vehicle including a rotor rotationally supported by the wheel of the motor vehicle, friction pads arranged on both planar sides of the rotor, a caliper for mounting on the motor vehicle extending over the circumferential portion of the rotor and carrying the friction pads, a pushing element in the caliper for engaging the friction pads with the rotor to effect braking of the motor vehicle, a camshaft rotatably mounted in a bearing bore in a portion of the caliper away from the friction pads and having an exposed portion and a column portion, said camshaft having a first step which separates said column portion from said exposed portion, the pushing element engaging the camshaft to be moved axially toward and away from the friction pads by rotation of the camshaft, a brake lever attached to said exposed portion, and a return spring biasing the brake lever in one rotational direction, said exposed portion having a second step, said exposed portion including a connection portion defined between said first step and said second step, said connection portion having a non-circular radial cross-section, said brake lever having a corresponding non-circular bore engaging said connection portion, said brake lever having an axial thickness greater than the axial distance between said first step and said second step, and at least a portion of said brake lever being deformed so as to overlap said second step, thereby affixing said brake lever to said camshaft.

5,573,087

CALIPER ASSEMBLY FOR A DISC BRAKE OF A VEHICLE

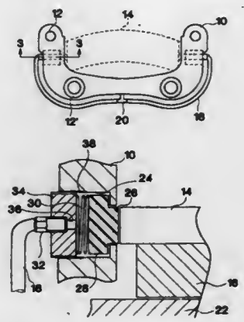
Gyu-Tae Bae, Kyungnam-do, Rep. of Korea, assignor to Hyundai Motor Company, Ltd., Seoul, Rep. of Korea

Filed Dec. 29, 1995, Ser. No. 580,647

Claims priority, application Rep. of Korea, Oct. 29, 1994, 94-28451

Int. Cl.[6] F16D *65/38*

U.S. Cl. 188—73.39 **4 Claims**



1. A caliper assembly of a disc braking system for a vehicle, comprising:

a body member and a carrier member attached to said body member, said body member including a cylindrical cavity formed therein, and said carrier member having a U-shaped configuration and including a pair of symmetrical walls,

a main piston slidably disposed within said cylindrical cavity of the body member, said main piston having an annular main seal disposed on an outer circumferential surface thereof for forming a seal between the outer circumferential surfaces of the piston and an inner wall of the cylinder,

a disc positioned within said carrier,

a pair of main pads attached to main pad plates positioned on opposing sides of said disc, said pair of main pads attached to main pad plates disposed in the lower portion of said carrier,

two pairs of recesses disposed in the upper portion of said symmetrical walls and positioned on opposing sides of the carrier, each of said pairs of recesses including:

a player nut fixed to an outer portion thereof,

a T-shaped piston slidably inserted within an inner portion thereof,

a resilient member positioned between said player nut and said piston,

an annular seal disposed on an outer circumferential surface of said piston,

a fluid passage formed through said player nut,

a pressure fluid bose connected to said fluid passage through a nipple,

a pad plate having an outer peripheral edge surface operatively engageable with an operating portion of said piston, and

a pad secured to said pad plate for applying friction to a side planar surface of said disc, whereby upon pressing a brake pedal, friction is applied to both side planar surfaces of the rotating disc by the main pads and simultaneously friction is applied to the circumferential edge surface of the spinning disc by two pairs of pistons, so that the caliper assembly effectively eliminates noise and highly increases braking efficiency.

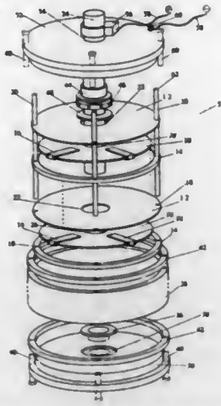
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5,573,088

CONTROLLABLE RESISTANCE DEVICE AND FORCE DAMPENER, AND VEHICLE UTILIZING THE SAME

John J. Daniels, 325 Roosevelt Dr., Seymourry, Conn. 06483

Filed May 10, 1994, Ser. No. 240,884
Int. Cl.[6] F16F 15/03
U.S. Cl. 188—267 22 Claims



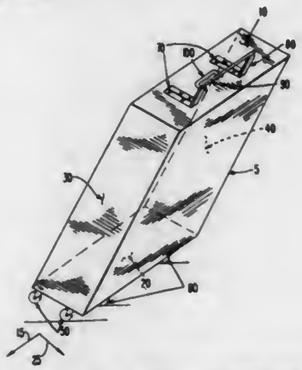
1. A resistance device, comprising: a variable viscosity material capable of undergoing a change in flow characteristics in response to an applied field; a moving member having at least one surface in contact with the-variable viscosity material so that the change in flow characteristics of the variable viscosity material variably resists movement of the moving member depending on the applied field; applying means for applying the applied field to the variable viscosity material; an opposing member disposed in opposing facing relationship with the moving member; a spacer member disposed for maintaining a gap between the moving member and the opposing member, the spacer member having a variable thickness for selectively varying the gap between the moving member and the opposing member.

5,573,089

LATERALLY MOVABLE WHEELED SUITCASE WITH IMPROVED HANDLE

Joseph Liang, P.O. Box 1060, Alpine, N.J. 07620

Filed Jul. 1, 1994, Ser. No. 270,175
Int. Cl.[6] A45C 5/14;13/26
U.S. Cl. 190—18 A 9 Claims



1. An article of luggage for rolling movement along an underlying support surface in a user-selectable direction, said article comprising:

a top surface;

a bottom surface having a transverse edge and disposed in confronting opposition to the underlying support surface for rolling movement of the article of luggage along the support surface;

a front surface and a back surface defining from said front to said back surface an axis of normal rolling movement of the article along the support surface;

first rolling means for facilitating user-selected rolling movement of the article along the support surface along said axis, said first rolling means comprising a plurality of rollers projecting outwardly from said bottom surface to a first height from said bottom surface so that the article is self-standingly supported on said first rolling means when the article is in an upright orientation with said first rolling means in engagement with the support surface;

second rolling means for facilitating user-selected rolling movement of the article in a lateral direction substantially transverse to said axis, said second rolling means being located on said bottom surface more closely proximate said transverse edge of said bottom surface than said first rolling means, said second rolling means projecting from said bottom surface to a second height from said bottom surface less than said first height so that said second rolling means is noncontactingly spaced from the underlying support surface when said article is in said upright orientation self-standingly supported by said first rolling means and so that, when the article is laterally tilted about said second rolling means in a direction substantially transverse to said axis, the article is supported on both said first and second rolling means; and

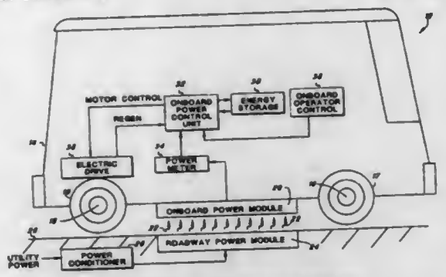
handle means for user-initiated selective movement of the article along the support surface in said lateral direction substantially transverse to said axis with said article laterally tilted about said second rolling means in said direction substantially transverse to said axis.

5,573,090

RAODWAY-POWERED ELECTRIC VEHICLE SYSTEM HAVING ONBOARD POWER METERING AND COMMUNICATION CHANNEL FEATURES

Howard R. Ross, Richmond, Calif., assignor to H. R. Ross Industries, Inc., Richmond, Calif.

Filed May 5, 1994, Ser. No. 238,826
Int. Cl.[6] B60L 11/16;9/02
U.S. Cl. 191—10 18 Claims



1. A roadway-powered electric vehicle comprising:

a vehicle frame supported by front and rear suspension systems, including front and rear wheels;

an onboard power receiving module mounted on an underneath side of said vehicle frame that receives electrical power coupled thereto from a roadway power transmitting module embedded in a roadway over which the electric vehicle travels;

an onboard energy storage means for storing and delivering electrical energy;

an electric drive means coupled to at least one of said front or rear suspension systems for driving at least one of said front and rear wheels;

an onboard power controller means for receiving electrical power from said onboard power receiving module and directing it to said energy storage means, and for selectively delivering electrical energy from said energy storage means to said electric drive means in order to provide operating power for said electric vehicle; and

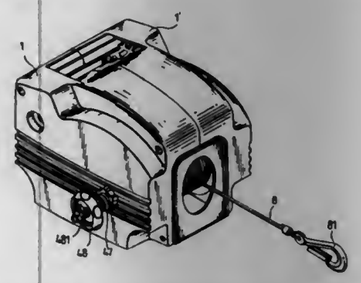
an onboard power meter electrically connected to the onboard power receiving module to monitor the electrical power received through said onboard power receiving module from said roadway power transmitting module, said onboard power meter thereby providing a measure of the amount of electrical power that has been coupled to the electric vehicle.

5,573,091

ELECTRICALLY POWERED OR MANUALLY DRIVEN CLUTCH AND BRAKE ASSEMBLY FOR ELECTRIC WINCH

Michael Hung, 9-16, Nan Kan Hsia, Nan Kan, Lu Chu Hsiang, Tao Yuan County, Taiwan

Filed Dec. 9, 1994, Ser. No. 352,517
Int. Cl.[6] B60K 41/24
U.S. Cl. 192—12 R 2 Claims



1. An electrically powered or manually operable clutch and brake assembly for an electric winch, said assembly comprising:

a mounting base;

a motor mounted on said mounting base and having a rotatable output shaft having thereon a gear;

a reel shaft mounted on said mounting base;

a clutch mechanism including a clutch shaft mounted on said mounting base, a large clutch gear mounted on said clutch shaft and meshing with said gear on said motor output shaft, said large clutch gear having a clutch plate with a lining plate, a clutch pinion gear mounted on said clutch shaft, a clutch hand wheel adjustably mounted on said clutch shaft, and a compression spring positioned between said clutch pinion gear and said clutch hand wheel and urging said clutch pinion gear toward said clutch large gear with a compression force that is variable as a function of the relative adjusted position of said clutch hand wheel on said clutch shaft;

a brake mechanism including a brake disc mounted on said motor output shaft by a unidirectional bearing enabling relative rotation between said brake disc and said motor output shaft in a first direction and preventing relative rotation therebetween in an opposite second direction, and brake pads mounted on said mounting base and operable to clamp therebetween opposite sides of said disc brake; and

a transmission mechanism for transmitting rotation of said motor output shaft, via said clutch mechanism, to said reel shaft, said transmission mechanism including a first shaft mounted on said mounting base, a large gear mounted on said first shaft and in meshing engagement with said clutch pinion gear, a pinion gear mounted on said first shaft, a transmission shaft mounted on said mounting base, a transmission gear mounted on said transmission shaft and in meshing engagement with said pinion gear on said first shaft, a transmission pinion gear mounted on said transmission shaft, and a reel gear mounted on said reel shaft and in meshing engagement with said transmission pinion gears

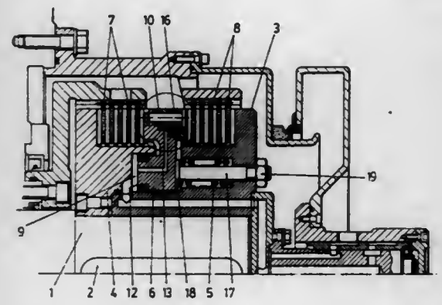
whereby loosening of said clutch hand wheel enables detachment of clutching drive of said clutch pinion gear and interruption of rotation of said reel shaft, and tightening of said clutch hand wheel enables engagement of clutching drive of said clutch pinion gear and transmission of rotation thereof by said transmission mechanism to said reel shaft.

5,573,092

HYDRAULIC BRAKE CLUTCH

Francisco L. Gabilondo, Anzuola, Spain, assignor to Goizper, S. Coop. Ltda., Anzuola, Spain

Filed Feb. 2, 1995, Ser. No. 382,697
Claims priority, application Spain, Feb. 7, 1994, 9400215
Int. Cl.[6] F16D 67/04
U.S. Cl. 192—18 A 2 Claims



1. A hydraulic brake clutch coupled to a machine shaft and comprising:

a clutch having a clutch body,

a brake comprising a brake disc packet,

a piston fitted between said clutch and said brake,

a plurality of springs which permanently bias said piston against the brake disc packet, said plurality of springs secured on the clutch body, said piston being hydraulically movable against said springs towards the brake disc packet,

characterised in that said piston is split into a main piston and a secondary piston operating in sequence,

the secondary piston is mounted upon the main piston and has axial movement but no angular travel with respect to said main piston,

the secondary piston defines an operative surface acted upon by hydraulic pressure, that is smaller than an operative surface of the main piston,

pressurized fluid enters a secondary piston chamber through a duct within the main piston, and further comprising:

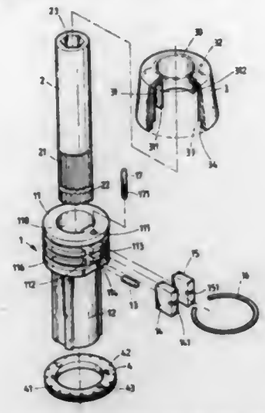
a plurality of limiting bolts by which the secondary piston is connected to the main piston, each of the limiting bolts having a head and mounting one of a plurality of respective springs which bias the secondary piston against the main piston so that, in a connection operation, the pressurized fluid arrives first, through the duct within the main piston, to the operative surface of the secondary piston and causes the secondary piston to approach the clutch without actually contacting the clutch, contact between the secondary piston and the clutch occurring only after the main piston begins to move and the brake is released so that when said main piston begins to move, only the secondary piston acts upon the clutch, the tension generated by the respective springs works with the main piston, and the pressurized fluid returns towards the main chamber until both the main piston and the secondary piston contact each other axially, contact between the main piston and the secondary piston occurring when all pressure received by the main piston is conveyed to the clutch.

5,573,093

RATCHET TRANSMISSION CONTROL MECHANISM OF A SCREWDRIVER

Song M. Lee, P.O. Box 82-144, Taipei City, Taiwan

Filed Oct. 6, 1995, Ser. No. 540,584
Int. Cl.[6] B25B *15/04*; F16D *41/18*
U.S. Cl. 192—43.2 3 Claims



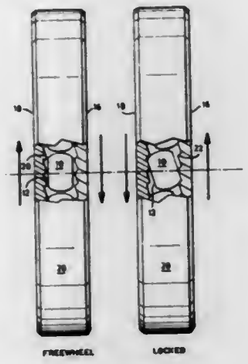
1. A ratchet transmission control mechanism comprising:
a cylindrical casing having a head at one end and a cylindrical body at an opposite end, said head comprising an axial center hole, a circularly recessed hole inside said axial center hole, a steel ball revolvably mounted within said circularly recessed hole, at least one outside annular groove around the periphery, a first side slot and a second side slot disposed in a parallel relation in communication with said axial center hole, a radial pin hole in communication with said axial center hole;
a shaft having ahexagonal socket at one end for mounting a bit, a toothed portion at one end inserted into the axial center hole of the head of said casing and supported on said steel ball, and an annular groove around a part of said toothed portion;
a pin inserted into the pin hole of the head of said casing and engaging the annular groove of said shaft to stop said shaft from axial movement relative to said casing;
a left stop block inserted into the first side slot of the head of said casing;
a right stop block inserted into the second side slot of the head of said casing;
a C-shaped clamp mounted in one outside annular groove of the head of said casing to hold said left stop block and said right stop block in said first side slot and said second side slot respectively;
an adjusting cap mounted around said shaft and covered over the head of said casing, said adjusting cap comprising a center through hole, which receives said shaft, an inside suspension flange inserted into the axial center hole of the head of said casing, said inside suspension flange having a left stop edge and a right stop edge at two opposite sides corresponding to said left stop block and said right stop block, and an inner thread, an inside projecting portion; and
a locating ring mounted around the cylindrical body of said casing to hold said adjusting cap in place, said locating ring comprising an outer thread threaded into the inner thread of said adjusting cap, a plurality of recessed portions at a top side thereof for engagement with the inside projecting portion of said adjusting cap for indexing the positioning of said adjusting cap by producing a sound upon the engagement of the inside projecting portion of said adjusting cap with one recessed portion;
wherein said shaft can be turned by said casing clockwise as well as counter-clockwise, when said adjusting cap is turned relative to the head of said casing to a first position to disconnect said left stop edge and said right stop block, for permitting said left stop block and said right stop block to be forced into engagement with the toothed portion of said shaft by said C-shaped clamp; said shaft can be turned counter-clockwise by said casing and will not be turned clockwise upon a clockwise rotation of said casing, when said adjusting cap is turned relative to the head of said casing to a second position to force said right stop block away from the toothed portion of said shaft by said right stop edge, and to let said left stop block be maintained engaged with the toothed portion of said shaft; said shaft can be turned clockwise by said casing and will not be turned counter-clockwise upon a counter-clockwise rotation of said casing, when said adjusting cap is turned relative to the head of said casing to a third position to force said left stop block away from the toothed portion of said shaft by said left stop edge, and to let said right stop block be maintained engaged with the toothed portion of said shaft.

5,573,094

COMBINATION BEARING/FREEWHEEL CLUTCH

John E. Roberts, Los Altos, Calif., assignor to GTE Government Systems Corporation, Del.

Filed Mar. 7, 1995, Ser. No. 399,861
Int. Cl.[6] F16D *41/061;41/069*
U.S. Cl. 192—45 1 Claim



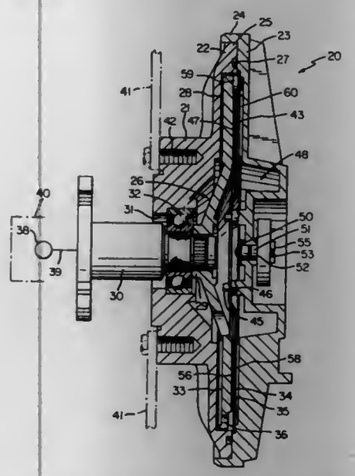
1. A bearing/freewheel clutch comprising:
an inner race member defining an inner race surface;
an outer race member defining an outer race surface concentric with said inner race surface;
a raceway between said inner and outer races;
said inner race member and the outer race member each having a series of substantially radially oriented sawtooth inclines, said sawtooth inclines being at substantially right angles to said raceway surfaces; and
a plurality of bearings disposed in said raceway between said inner and outer race members, said bearings providing rotational support between said outer race surface and said inner race surface;
said bearings having substantially flat poles for engaging said sawtooth inclines to prevent relative rotation of said inner and outer race members in one direction of rotation for transmitting a torque between said inner and outer races, and to allow said race members to freewheel in the other direction of rotation, functioning as a one way clutch.

5,573,095

FAN CLUTCH CONSTRUCTION AND METHOD OF MAKING THE SAME

Neil T. Houters, Arlington, and James A. Jennings, Azle, both of Tex., assignors to Dayco Products, Inc., Dayton, Ohio

Filed Apr. 28, 1994, Ser. No. 233,910
Int. Cl.[6] F16D *35/02*
U.S. Cl. 192—58.7 14 Claims



1. In a fan clutch construction comprising a housing means having a chamber therein, a drive plate rotatably mounted in said chamber, and a scoop plate rotatably mounted in said chamber, and a scoop plate disposed in said chamber and being operatively interconnected to said housing means to cause rotation of said housing means when said scoop plate is rotated by the rotation of said drive plate, said scoop plate having a dam thereon that cooperates with said drive plate to cause rotation of said scoop plate through a fluid coupling drive arrangement with said drive plate, said dam having a surface means that provides a substantially zero clearance with said drive plate when relative movement is provided between said drive plate and said scoop plate, said dam comprising a part that is initially separate from said scoop plate and then is secured thereto, said scoop plate having an opening passing therethrough, said dam having a section thereof extending through said opening of said scoop plate, and a clip attached to said section to secure said dam to said scoop plate, said scoop plate having opposite sides, said dam having an enlarged head disposed against one of said opposite sides of said scoop plate and having said surface means thereon, the improvement wherein said section of said dam is integral and one-piece with said enlarged head and has an annular groove therein that is disposed outboard of said opening of said scoop plate, said clip having a portion thereof received in said annular groove and another portion thereof disposed against the other of said opposite sides of said scoop plate.

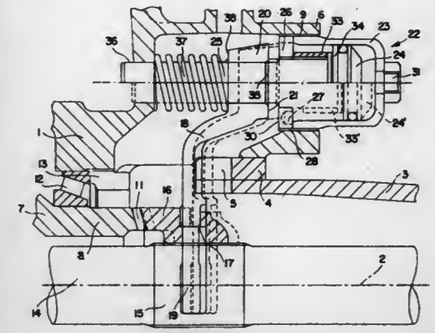
5,573,096

SHIFTING DEVICE FOR A POSITIVELY ENGAGING CLUTCH AND A PROCESS FOR ITS ADJUSTMENT

Friedrich Eriebach, Steyr, Austria, assignor to Steyr-Daimler-Puch AG, Wien, Austria

Filed Feb. 8, 1995, Ser. No. 385,313
Claims priority, application Austria, Feb. 10, 1994, 255/94
Int. Cl.[6] F16D *11/10;25/08*
U.S. Cl. 192—110 R 8 Claims

1. Shifting device for a positively engaging clutch having first and second positively engaging coupling elements, said shifting device comprising
a housing,



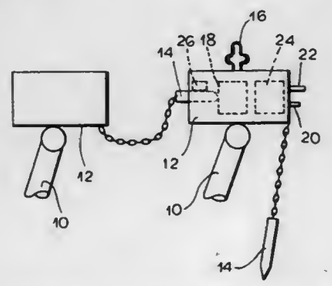
a shift fork having a fork element engageable against said first coupling element for axial displacement of said first coupling element into engagement with said second coupling element, and a hub, said fork element and said hub being integral parts of said shift fork,
an actuator including an actuator rod which supports said shift fork and causes it to engage against said first coupling element, and
an adjusting element disposed between said actuator and said hub of said shift fork, said adjusting element having a surface facing said hub of said shift fork and which constitutes a first stop for said hub, the axial position of said adjusting element being adjustable by means of threads on said adjusting element.

5,573,097

SHOPPING OR LUGGAGE CART WITH LOCK

Horst Merchel, Bietigheim-Bissingen, Germany, assignor to Vendoret Holding S.A., Luxemboug-Hesperange, Luxembourg

Filed Sep. 16, 1994, Ser. No. 308,089
Claims priority, application Germany, Sep. 18, 1993, 43 31 753.7
Int. Cl.[6] G07F *17/10*
U.S. Cl. 194—212 4 Claims



1. In combination with a shopping- or luggage cart and an anchor element, a lock comprising:
a housing fixed on the cart;
a retaining member movable on the housing between a locked position engaging the anchor element and securing the cart thereto and an unlocked position disengaged from the anchor element;
a first actuating mechanism in the housing including means connected to the retaining member for displacing it between its positions on actuation of the first mechanism by a card, coin, or token;
a key; and

a second actuating mechanism in the housing into which the key can be fitted and including

means connected to the retaining member for displacing it between its positions on actuation of the second mechanism by the key when fitted in the second mechanism, and

means connected to the retaining member for retaining the key in the second mechanism when the retaining member is in the unlocked position.

5,573,098

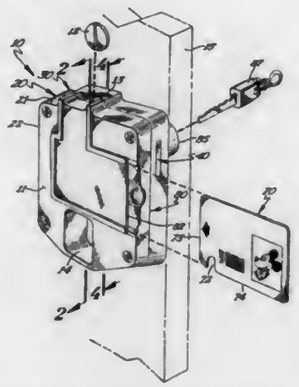
CARD-ACTIVATED LOCK MECHANISM

Stanley W. Widmer, Browerville, Minn., assignor to Minnesota Lock, Inc., Rochester, Minn.

Filed Mar. 1, 1995, Ser. No. 397,301

Int. Cl.[6] E05B *35/08*; G07F *17/14*

U.S. Cl. 194—212 **16 Claims**



13. A lock adapted to be actuated by insertion of an activator card, a token, or a coin, said lock comprising:

a front housing segment and a rear housing segment;

a bolt movable along a slide path from a normally open position to a fully locked position;

a card housing constructed and arranged to receive the activator card;

a lockout member having a first blocking means normally disposed so as to block said bolt from moving into said locked position unless the card has been properly inserted into said card housing;

said lockout member also having engaging means for engaging the properly inserted card;

a second blocking means blocking said bolt from traveling unless the coin, the token, or the card has been properly inserted into said card bousing, the slidable insertion of the card into the card housing engaging and de-actuating said second blocking means;

whereby when said engaging means engages said passage means, said bolt may be moved freely to said locked position.

5,573,099

APPARATUS AND METHOD FOR IDENTIFYING METALLIC TOKENS AND COINS

Donald W. Church, and Ove K. Gashus, both of Halifax, Canada, assignors to J. J. Mackay Canada Limited, Canada

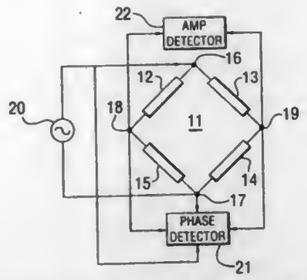
Filed Jan. 12, 1995, Ser. No. 371,997

Claims priority, application Canada, Jan. 14, 1994, 2113492

Int. Cl.[6] G07D *5/08*

U.S. Cl. 194—317 **14 Claims**

1. An apparatus for detecting the presence and identity of coins/tokens, comprising:



a bridge including two inductors of equal value and two impedances of equal value, one in each arm of said bridge, said bridge having a pair of input nodes and a pair of output nodes, said bridge producing a normally balanced output signal in the absence of coins/tokens in the vicinity of said bridge and an unbalanced signal in the presence of coins/tokens;

signal generating means for applying a sequence of signals of different predetermined frequencies to said input nodes;

phase detection means for receiving said input and output signals and detecting a predetermined phase shift between said input and output signals; and

amplitude detection means for producing a "coin in" signal when said output signal exceeds a predetermined threshold;

means for detecting at least two parameters of said bridge when said phase detection means detects said predetermined phase shift and comparing said parameters with corresponding predetermined parameters of known coins/tokens and identifying the coin/token when a match is detected.

5,573,100

DEVICE FOR CHECKING METALLIC PIECES, IN PARTICULAR COINS

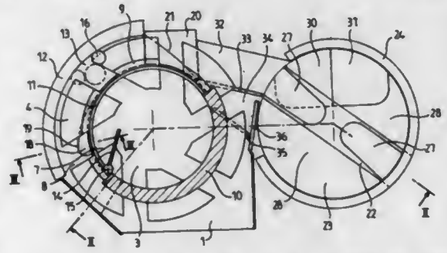
Robert Vergne, Riom, and Pascal Flocom, Massy, both of France, assignor to CSEE-Peage, Paris, France

Filed Apr. 20, 1995, Ser. No. 425,366

Claims priority, application France, Apr. 22, 1994, 94 04893

Int. Cl.[6] G07D *5/08*

U.S. Cl. 194—318 **10 Claims**



1. Device for checking metallic pieces, in particular coins, characterized in that it includes:

two motorized, integral, concentric disks (3, 4) rotating in a plane that is inclined in relation to the horizontal, namely:

an internal, so-called separating disk (3), onto which the pieces are thrown in loose condition, and which is provided with substantially radial edges (7) for separating the pieces, and

an outer, so-called piece-recognition disk (4), the periphery of which is provided with alveoles (8), located in prolongation of the edges (7) of the internal disk (7), for receiving the pieces thus separated, the said pieces being held in the said alveoles (8) by a sliding plate (13) located under the outer disk (4), and by a circular border (12) partially surrounding the said outer disk (4);

a fixed semi-circular barrier (10) disposed at the separation between the inner disk (3) and the outer disk (4) for retaining the pieces on the inner disk (3) in the lower portion thereof, and

a piece-recognition device comprising a number of sensors (16) disposed on the path of the alveoles (8) of the outer disk (4).

5,573,101

METHOD AND EQUIPMENT FOR SORTING GOODS HANGING ON HANGERS

Josephus J. Ouwejan, Veenedaal, Netherlands, assignor to Franz Gaertner, Unterelsbach, Germany

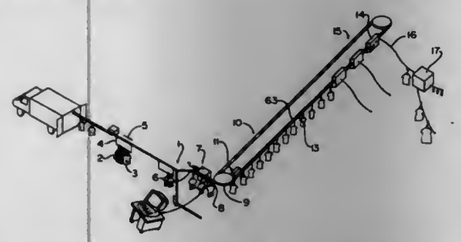
PCT No. PCT/EP92/01825, § 371 Date Jun. 13, 1994, § 102(e) Date Jun. 13, 1994, PCT Pub. No. WO93/03985, PCT Pub. Date Mar. 4, 1993

PCT Filed Aug. 11, 1992, Ser. No. 193,169

Claims priority, application Germany, Aug. 12, 1991, 41 26 615.3

Int. Cl.[6] B65G *37/00*

U.S. Cl. 198—349 **33 Claims**



1. Method for automatic sorting of articles transported in file hanging on hangers and provided with codes, in particular garments hanging on coat hangers, comprising the steps of:

hanging a hanger on an intermediate hanger;

lifting and hanging the intermediate hanger on a carrier attached to an endless chain belt;

continuously driving the endless chain belt;

guiding the carrier with the intermediate hanger hooked thereon through a delivery stretch provided with several delivery stations; and

discharging the hanger in a programmed manner based upon a code associated therewith, including:

unhooking the intermediate hanger from the carrier in a predetermined one of the delivery stations so that the intermediate hanger falls onto an inclined sorting bar; and

permitting the intermediate hanger to roll, by force of gravity, along the sorting bar in a rolling engagement provided by a roll on the intermediate hanger engaging with the sorting bar.

5,573,102

SCRAPER STRIP FOR BELT STRIPPERS USED FOR CLEANING CONVEYOR BELTS

Adam Puchalla, Marl, Germany, assignor to Vulka Industrie-Vulkanisation GmbH, Unna, Germany

Filed Jun. 5, 1995, Ser. No. 416,878

Claims priority, application Germany, Aug. 27, 1993, 9312877 U

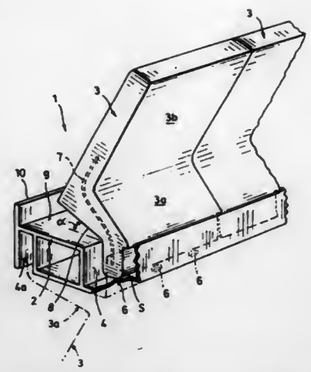
Int. Cl.[6] B65G *45/12*

U.S. Cl. 198—497 **7 Claims**

1. A conveyor belt scraper strip, comprising:

a plurality of approximately S-shaped wear strips having each a free end portion defining an insertion footing; and

a support strip for supporting the wear strips and having a main hollow section having a support bottom surface for supporting the scraper strip on an appropriate support and a top surface, and a first pocket section arranged sidewise of the main section and having a plurality of pockets for receiving insertion footings of the plurality of wear strip, each pocket having a top opening for enabling insertion and withdrawal of an insertion footing of a respective wear strip.



5,573,103

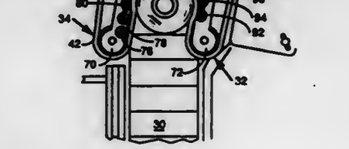
SPEED ADJUSTING APPARATUS FOR CONTAINERS

John Novak, Butler, and Lloyd Stivison, West Sunbury, both of Pa., assignors to AGR International, Inc., Butler, Pa.

Filed Oct. 24, 1994, Ser. No. 328,479

Int. Cl.[6] B65G *15/14*

U.S. Cl. 198—604 **8 Claims**



1. Container handling means comprising

container speed adjusting means,

drive means for sequentially delivering a plurality of said containers into contact with said container speed adjusting means,

said container speed adjusting means having endless belt means for contacting said containers,

pulley means disposed within and supporting and engaging said belt means,

said pulley means including a plurality of primary pulleys disposed within said belt means adjacent ends thereof and having at least one of said primary pulleys driven,

said pulley means including a plurality of resiliently compressible secondary pulleys to provide shock absorption and support for said belt means,

said container speed adjusting means having a first speed adjusting unit and a second speed adjusting unit spaced from said first speed adjusting unit with a path for travel of said containers disposed therebetween,

said path of travel having a container entry and a container exit, and

said container speed adjusting means having means for altering the speed of travel of said containers as they move from said container entry to said container exit.

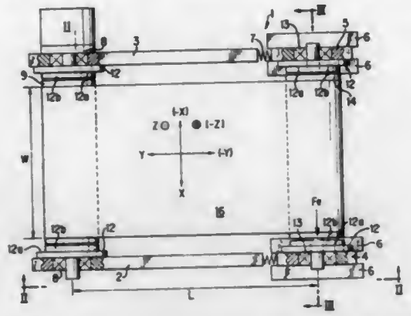
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5,573,104

BELT FEEDING DEVICE

Susumu Kibayashi; Junichi Murakami; Tsutomu Matsuzaki; Kunimasa Aoshima; Mamoru Kido, and Naohisa Fujita, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1995, Ser. No. 422,260
Claims priority, application Japan, May 12, 1994, 6-098903
Int. Cl.[6] B65G *21/20*
U.S. Cl. 198—840 **8 Claims**



1. A belt feeding device comprising a plurality of belt feeding rolls rotatably arranged in spaced relationship from each other, driving means for rotating one of said rolls, a belt wrapped around said rolls, and at least a pair of guide members each having an edge guide surface against which either side edge of said belt abuts when said belt moves in a crosswise direction thereof, wherein:

said guide members are supported to frames for supporting shafts of said rolls;

each of said guide members has a belt supporting cylindrical surface projecting from said edge guide surface;

an outer circumferential surface of each of said rolls is formed with a plurality of ring-shaped slits axially spaced a distance w from each other, each of said slits having a depth h and a width m; and

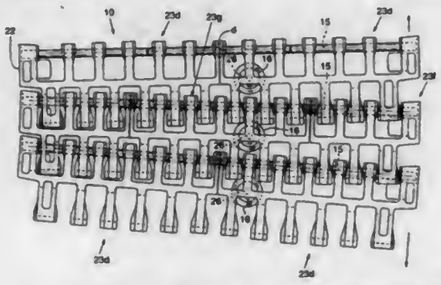
values of said depth h, said width m, and said distance w are set so that a load to an axial displacement of said belt wrapped around said rolls at a position of said each guide member becomes 80 N/mm or less.

5,573,105

RADIUS CONVEYOR WITH GUIDE ROLLERS

Karl V. Palmaer, 6525 Puerto Dr., Rancho Murietta, Calif. 95683

Filed Nov. 8, 1995, Ser. No. 555,317
Int. Cl.[6] B65G *17/06*
U.S. Cl. 198—853 **12 Claims**



1. In a plastic modular conveyor belt capable of following a path including straight and curving sections and including a series of connected and serially interdigited elongated molded plastic belt module rows being connected by rods extending transversely to the length of the conveyor belt, each belt module row having a set of first aligned spaced projections or link ends extending in one direction from the row and a set of second aligned spaced projections or link ends extending in an opposition direction, the first and second projections of serially adjacent module rows being longitudinally overlapping and juxtaposed when the modules are connected serially in the conveyor belt by the connecting rods extending through transverse openings in the projections, the transverse openings of one of said sets of spaced projections being longitudinally elongated slotted holes to accommodate lateral curves wherein the module rows become angularly shifted and collapse together at the inside of the curve, with substantially all longitudinal tension in the belt from module to module carried generally at the outside of a curve, and including stationary belt supporting structure supporting the belt for movement, the improvement comprising,

a series of guide rollers mounted generally centrally on the undersides of at least some of the belt modules, with low-friction bearing means supporting the guide rollers on the modules, and

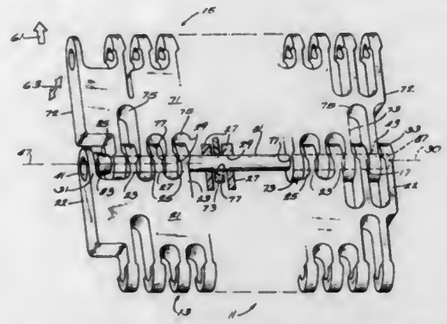
a stationary roller guide rail secured to the stationary belt supporting structure, the roller guide rail being positioned through a curving section of the path of the conveyor belt and having a roller engaging surface which is spaced away from the inside edge of the belt so as to present a smooth surface for engagement by the series of guide rollers to maintain the belt modules on a prescribed curving path through the curving section, thereby providing for smooth and low-friction traversal of the curving section by the conveyor belt modules.

5,573,106

MODULAR CONVEYOR CHAIN INCLUDING HEADED HINGE PINS

James C. Stebnicki, Whitefish Bay, Wis., assignor to Rexnord Corporation, Milwaukee, Wis.

Filed Feb. 5, 1996, Ser. No. 596,455
Int. Cl.[6] B65G *17/06*
U.S. Cl. 198—853 **18 Claims**



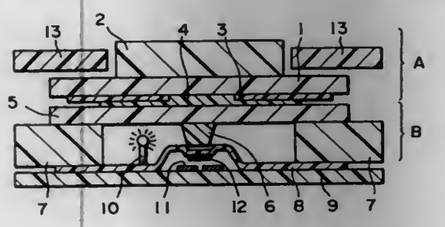
1. A conveyor comprising a first conveyor element including a series of eyes spaced from each other, defining therebetween a series of spaces, and including a sub-series of centrally located eyes respectively including therein openings aligned with respect to each other, and an end eye adjacent one end of said sub-series of centrally located eyes and including therein an opening located in partial registry with said openings of said sub-series of centrally located eyes, and an abutment area adjacent said opening in said end eye, a second conveyor element fabricated of resilient material and including a series of eyes spaced from each other, extending into said spaces between said eyes of said first conveyor element, defining therebetween a series of spaces receiving said eyes of said central sub-series of eyes of said first conveyor element, and respectively including therein openings aligned with respect to each other and with respect to said openings of said centrally located sub-series of eyes, and having a dimension, and a hinge pin including a central portion extending in said openings of said sub-series of centrally located eyes of said first conveyor element and in said openings of said eyes of said second conveyor element, and an enlarged end portion located between said end eye of said first conveyor element and said eyes of said second conveyor element and in interfering alignment with said abutment area of said end eye of said first conveyor element and having a dimension greater than said dimension of said openings of said eyes of Said second conveyor element.

5,573,107

INTERNALLY-ILLUMINABLE PUSH-BUTTON SWITCH UNIT

Sadao Nakano; Mikio Kiyosawa; Noboru Nakafuji, and Toshihiro Motoki, all of Nagano-ken, Japan, assignors to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1995, Ser. No. 512,554
Claims priority, application Japan, Aug. 10, 1994, 6-188106
Int. Cl.[6] H01H *9/00*
U.S. Cl. 200—314 **3 Claims**



1. An internally-illuminable push-button switch unit which comprises, as an assembly:

(a) an upper sheet member integrally consisting of a first elastic sheet having such a light-transmissivity as to ensure image-visibility therethrough and a key-top part made from a light-transmitting synthetic resin having a Shore D hardness of at least 40 and protruded on an upper surface of the first elastic sheet;

(b) a lower sheet member integrally consisting of a second-light transmitting elastic sheet having an upper and a lower surface, and a click-plate presser made from a light-transmitting material and protruded on the lower surface of the second elastic sheet, the lower sheet member being positioned below the upper sheet member;

(c) a light-conducting plate having an upper surface adjacent the lower surface of the second light-transmitting elastic sheet and a lower surface positioned below the second light-transmitting elastic sheet;

(d) a click plate having an upper surface adjacent the lower surface of the light conducting plate and a lower surface positioned below the lower sheet member;

(e) a circuit board having an upper surface adjacent the lower surface of the click plate; and

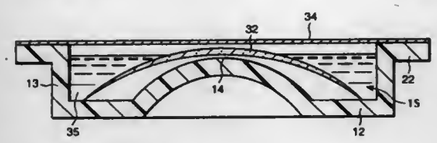
(f) a light source positioned below the lower sheet member and above the circuit board, at least either one of the first and second elastic sheets being provided on at least one of the surfaces with a colored layer.

5,573,108

DISPOSABLE CONTACT LENS PACKAGE

Ronald S. Hamilton, Winchester, and William E. Seden, Fareham, both of England, assignors to British Technology Group Ltd., London, England

Continuation of Ser. No. 899,471, Jun. 16, 1992, abandoned, which is a division of Ser. No. 620,722, Dec. 3, 1990, Pat. No. 5,143,660. This application Apr. 26, 1994, Ser. No. 233,722
Claims priority, application United Kingdom, Nov. 2, 1988, 8825650; Mar. 2, 1989, 8904720
Int. Cl.[6] A45C *11/04*
U.S. Cl. 206—5.1 **2 Claims**



1. A contact lens package comprising:

i) a male mould part including:

a convex mold surface upwardly extending from a bottom surface,

said bottom surface being an annular surface surrounding said convex mold surface to define a trough region,

an annular wall extending outwardly from said annular surface defining said trough region, and

a flange extending from an end of said annular wall;

ii) a contact lens having a concave surface thereof disposed facing said convex mold surface within said package and an outer periphery thereof disposed generally along said trough region;

iii) a sealing cover destructively removably sealed to said flange to sealingly cover said contact lens within the package; and

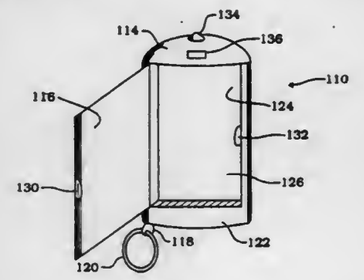
iv) a saline solution sealed within said package to maintain said contact lens in sterile condition.

5,573,109

MULTI-FUNCTION CONTAINER WITH A LIGHT SOURCE

Bruce P. Isacson, 4533 Gentry Ave., Studio City, Calif. 91607

Continuation-in-part of Ser. No. 100,505, Jul. 20, 1993, Pat. No. 5,318,177. This application Mar. 25, 1994, Ser. No. 217,686
Int. Cl.[6] A61J *1/00;* **B65D** *85/58;* **F21V** *33/00*
U.S. Cl. 206—38.1 **3 Claims**



1. A multi-function container, comprising:

a unitary housing with an interior portion having an impermeable closed top end wall forming a barrier with a coupling surface that is on an opposite side of the interior portion, and the housing also including a side adjacent to the closed top end wall and having an opening leading to the interior portion of the housing and which is oriented oblique to the closed end wall;

a hinged resealable closure adapted to be coupled and secured to the opening leading to the interior portion of the housing to cover and seal off the interior portion of the housing;

an exterior light source containing at least one light generating source and which is coupled to the coupling surface of the impermeable closed end wall of the container, wherein the light source is capable of being operatively coupled to a power source contained between the light generating source and the impermeable closed end wall of the housing; and

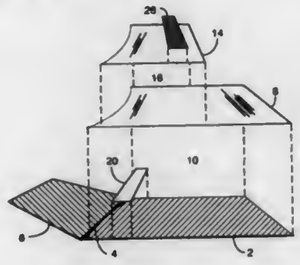
a key ring support coupled to an exterior surface of the container.

5,573,110

GAME CARD HOLDER

Viet Nguyen, Boonton, N.J., assignor to Advanced Products Development, Inc., Morristown, N.J.

Filed May 3, 1993, Ser. No. 57,178
Int. Cl.[6] B65D *11/18*
U.S. Cl. 206—39 **16 Claims**



11

1. A game card holder, comprising:

(a) an outer cover having a crease and a folding flap;

(b) a first pocket cover permanently bound along three edges to said outer cover and defining therewith a first pocket having an opening therein for receiving a plurality of large game cards, said first pocket cover having a length substantially equal to the length of said outer cover minus the length of said flap;

(c) a second pocket cover permanently bound along three edges to said first pocket cover and forming therewith a second pocket for receiving a plurality of small game cards, said second pocket having a length less than the length of said first pocket; and

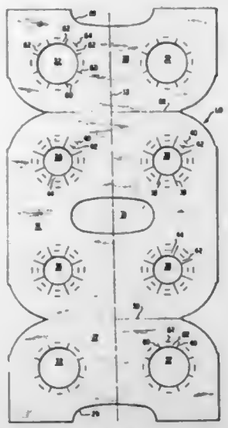
(c) a pocket divider having a pair of opposite edges permanently bound between said outer cover and said first pocket cover for dividing said opening of said first pocket in half.

5,573,111

PAPERBOARD BOTTLE CARRIER

Robert L. Gordon, Monroe, and Linda A. Bernstein, Campbell Hall, both of N.Y., assignors to International Paper, Purchase, N.Y.

Filed Jun. 13, 1995, Ser. No. 489,884
Int. Cl.[6] B65D *71/40*
U.S. Cl. 206—151 **8 Claims**



1. A bottle carrier formed from a unitary paperboard blank, said blank including an upper panel having a plurality of bottle neck receiving openings, said upper panel openings each having a plurality of cut lines extending through said paperboard and extending radially outwardly from said respective openings to thereby define a plurality of radially extending upper fingers, tips of said radially extending upper fingers terminating at respective said openings, each of said radially extending upper fingers having a base slit at its base or widest portion, each of said radially extending upper fingers having an intermediate slit about midway along its length, said blank including a reinforcing, apertured lower paperboard panel folded and glued beneath said upper panel, said reinforcing, apertured lower panel having openings which are concentric with respective said openings of said upper panel, each of said openings of said lower reinforcing panel having radially extending reinforcing fingers therearound, said reinforcing lower fingers being congruent with portions only of said upper panel fingers, said reinforcing lower fingers extending from said lower reinforcing panel and terminating at respective said intermediate slits of respective said upper panel fingers, said lower reinforcing fingers being in surface contact with respective said upper fingers.

7. A bottle carrier having upper and lower paperboard panels, said paperboard upper panel having a plurality of bottle neck receiving upper openings each annularly surrounded by radially extending upper fingers having tips terminating at respective said upper openings, each said upper finger also having a base remote from its tip, each said upper finger having a slit between its tip and its base, said lower layer having a plurality of bottle receiving lower openings concentric with respective said upper openings, each said lower opening surrounded by radially extending lower, reinforcing fingers having tips terminating at respective said lower openings, the diameter of said lower openings being substantially the same as the diameter of an imaginary circle on which said slits of said upper fingers lie.

5,573,112

GOLF BAG WITH INSERTED SYMMETRICAL FULL LENGTH DIVIDER

Jin C. Kim, 4647 Clubview Dr., Westlake Village, Calif. 91362

Filed Nov. 22, 1995, Ser. No. 561,896
Int. Cl.[6] A63B *55/00*
U.S. Cl. 206—315.6 **34 Claims**

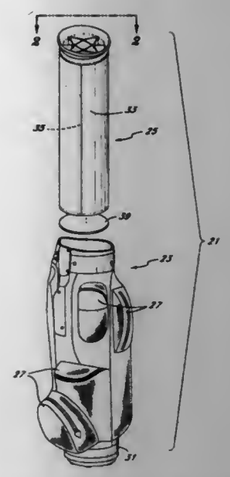
1. A golf bag divider assembly comprising:

a central divider having four planar portions each planar portion oriented at right angles to adjacent planar portions and forming a rectangular cylinder having a vertical axis, corners, and having outwardly disposed outer edges;

a main divider section associated with each corner of each of said planar portion of said central divider and folded about a middle edge, and having a first outer edge, a second outer edge, each divider section's middle edge joined to a different corner of said central divider, the first outer edges of each divider section joined with the second outer edges Of an adjacent divider section;

a side divider section associated with each main divider section, each side divider section having a first edge joined said middle edge of said main divider section and a second edge;

a length of covering material attached to and along said first and second edges of said main divider sections and to and along said second edges of said side divider sections; and a collar attached to a portion of said first and second edges of said main divider sections and said second edges of said side divider sections, and to a portion of said length of covering material.

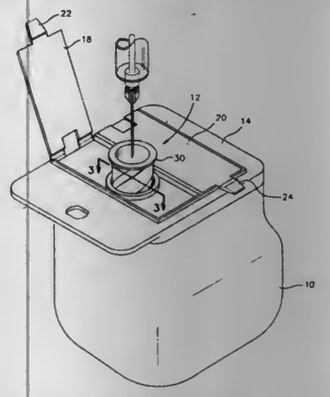


5,573,113

NEEDLE REMOVAL DEVICE FOR BLOOD COLLECTION HOLDERS

Richard A. Shillington, Leucadia, and Kenneth R. McCord, Encinitas, both of Calif., assignors to Med-Safe Systems, Inc., Oceanside, Calif.

Filed Jan. 3, 1995, Ser. No. 367,594
Int. Cl.[6] B65D *85/20*
U.S. Cl. 206—366 **22 Claims**



1. A needle removal apparatus, comprising:

a support member having a generally planar top surface and a throughbore defined by structure extending entirely below said top surface, said top surface being normally horizontal in use;

an elongated tubular sleeve having an inner end and an outer end, said sleeve reciprocally mounted in said throughbore for movement from an outermost position, wherein a portion of said sleeve including said outer end extends above said top surface, to an innermost position wherein most of the sleeve portion is substantially below said top surface and said outer end is adjacent said top surface;

biasing means for normally biasing said sleeve to the outermost position;

a helical groove formed in an outer surface of said sleeve;

a follower member fixed to said support member at said throughbore and engaging said helical groove for constraining said sleeve to rotate during movement between said outermost position and said innermost position; and

coupling means on said inner end of said sleeve for direct coupling to a needle hub for unthreading said needle hub from an end of a tubular barrel during movement with said sleeve toward said innermost position.

11. A needle removal apparatus comprising:

a support member having a throughbore;

a tubular sleeve reciprocally mounted in said throughbore for movement from an outermost position to an innermost position;

biasing means comprising a coil spring in tension for normally biasing said sleeve to the outermost position;

helical means comprising a separate helical groove on each side of said sleeve, and pair of spaced apart opposed followers engaging said grooves for constraining said sleeve to rotate during movement between said outermost position and said innermost position; and

coupling means at an inner end of said sleeve comprising a slot for receiving a spline on a hub of a needle for coupling to a needle hub for unthreading said needle hub from an end of a tubular barrel during movement with said sleeve to said innermost position.

14. A needle removal apparatus for a disposable container, comprising:

frame means for mounting on an opening defined by a peripheral rim of a substantially rigid container;

said frame means having a throughbore;

a tubular sleeve having a central axis reciprocally mounted in said throughbore movement from an outermost position to an innermost position;

biasing means for normally biasing said sleeve to the outermost position;

a helical groove formed in opposite sides of said sleeve;

a pair of followers on said frame means for engaging said helical grooves and constraining said sleeve to rotate during movement between said outermost position and said innermost position; and

an inwardly projecting flange mounted within an inner end of said sleeve, being adapted to revolve about the central axis of the sleeve as it moves from the outermost position to the innermost position and having a slot for direct coupling to a needle hub for unthreading said needle hub from an end of a tubular barrel during movement with said sleeve to said innermost position.

5,573,114

LENS-GATE DIVIDER SYSTEM FOR CAMERA BAGS

Ryan Cyr, Hidden Hills, Calif., assignor to Tamrac, Inc., Chatsworth, Calif.

Filed Feb. 7, 1995, Ser. No. 385,311
Int. Cl.[6] B65D *85/38*
U.S. Cl. 206—316.1 **20 Claims**

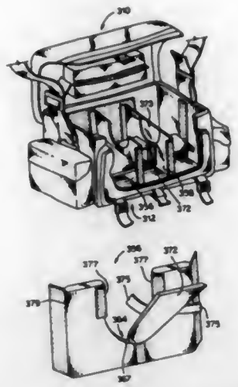
1. A camera bag for holding photographic equipment which has a body and a protruding lens attached thereto and extending laterally from the body, the camera bag comprising:

a. a generally rectangular base wall and a pair of end walls connected at their ends to a pair of sidewalls, the walls extending upwardly from the base wall to form an enclosure with a top opening;

b. a cover secured to said enclosure and adapted to be positioned to span and enclose said top opening of said enclosure for restraining and protecting said photographic equipment;

c. at least one vertical divider attachable to and extending between said sidewalls of said enclosure and spaced from said

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end walls of said enclosure, the divider having a top end and a bottom end, the top end of the divider having a U-shaped cutout portion for closely receiving and supporting said protruding lens while said protruding lens is attached to said camera body, the U-shaped cutout portion having two inner opposite vertical edges and an inner curved edge merging with the two inner vertical edges to form a continuous edge;

d. said cutout portion being spaced vertically above said base wall of said camera bag far enough to permit storage of said photographic equipment below said cutout portion; and

e. a pair of swinging gates for covering said U-shaped cutout portion of said at least one vertical divider, one of the pair of swinging gates hingeably attached to one of said two vertical edges of said U-shaped cutout portion, and the other one of the pair of swinging gates hingeably attached to the opposite one, of said two vertical edges of said U-shaped cutout portion, where the pair of swinging gates can be swung open to allow said protruding lens being placed within said U-shaped portion of said first vertical divider and further protect said protruding lens from two lateral sides and further prevent said protruding lens from lateral movement, and the pair of swinging gates can be swung closed when there is no lens being placed within said U-shaped cutout portion and transform said at least one vertical divider into a full length divider without opening.

5,573,115

MERCHANDISING AND SHIPPING BOX

William A. Fuller, Springfield, Ohio, assignor to Vining Industries, Inc., Springfield, Ohio

Filed Jul. 28, 1995, Ser. No. 508,436

Int. Cl.[6] B65D *85/20*

U.S. Cl. 206—362.4 **15 Claims**

1. A merchandising and shipping box for implements having a handle and a head portion, said box comprising:

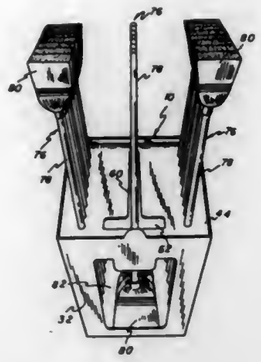
a plurality of vertical panels having top edges, and side edges connected to define an enclosure;

a top panel connected to said vertical panels adjacent to said top edges;

a plurality of apertures formed in said top panel for receiving handles of implements with head portions of the implements positioned above said top panel;

an elongated slot in said top panel for receiving a plurality of handles of implements; and

a transverse slot portion extending transversely to a direction of extension of said elongated slot, said transverse slot portion facilitating insertion of head portions of the implements past said elongated slot and into said enclosure.



5,573,116

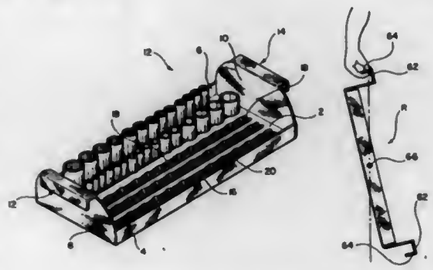
TOOL TRAY FOR ORGANIZING AND CARRYING SOCKETS

Paul D. Zink, 136 McConnell Ave., Wintersville, Ohio 43952

Filed Nov. 22, 1994, Ser. No. 345,743

Int. Cl.[6] B65D *85/28*

U.S. Cl. 206—378 **17 Claims**



1. A tool tray for organizing and carrying sockets, comprising:

a) a bottom wall;

b) first and second side walls extending upwardly from said bottom wall;

c) first and second end walls extending upwardly from said bottom wall;

d) first and second handles secured respectively to said first and second end walls and disposed above said bottom wall;

e) said first and second handles each including a member for permitting a user to securely carry said tray with one hand;

f) a plurality of rails disposed on said bottom wall, said rails are disposed parallel to each other; and

g) a plurality of clips secured to each of said rails, said clips for removably securing the sockets.

5,573,117

PRODUCT SHIPPING AND DISPLAY SYSTEM

William E. Adams, Portersville, Pa., assignor to Adams Mfg. Corp., Portersville, Pa.

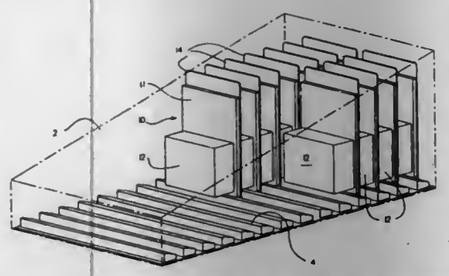
Filed Jun. 1, 1995, Ser. No. 456,728

Int. Cl.[6] B65D *1/34*

U.S. Cl. 206—449 **6 Claims**

1. A system for displaying packaged goods comprising:

a. an insert sized to be placed on a bottom surface of a packaging carton, the insert having a plurality of alternating peaks and valleys, each peak comprised of a front wall, a rear wall



and a top extending from the front wall to the rear wall, each valley being sized to receive a bottom portion of a blister package; and

b. a plurality of blister packages arranged in a front to back relationship, each blister package having:

i. a back portion containing a cavity;

ii. a front portion containing a blister; and

iii. a bottom edge located within a valley in the insert such that for each pair of adjacent blister packages at least a portion of the blister of one blister package is fitted within the cavity of the adjacent blister package.

5,573,118

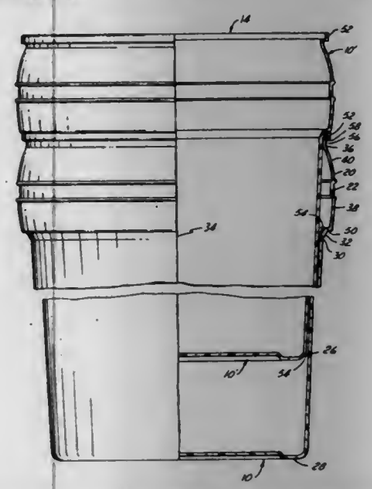
NESTABLE OPEN HEAD DRUM

Harley L. Cramer, Swanton; Robert A. Huebner, Toledo, both of Ohio; Stephen E. Kipp, Mapelton, Ga., and Gary J. Toska, Rossford, Ohio, assignors to Walbro Corporation, Cass City, Mich.

Filed Mar. 5, 1996, Ser. No. 611,130

Int. Cl.[6] B65D *21/00*

U.S. Cl. 206—505 **13 Claims**



1. A nestable container comprising a base, a generally cylindrical, tapered sidewall attached to said base, a first transitional section adjacent the top of said tapered sidewall and generally inclined outwardly at an acute included angle relative to the axis of the tapered sidewall, a nesting seat adjacent said first transitional section and extending outwardly thereof substantially radially, a generally arcuate nesting ring adjacent said seat, a second transitional section adjacent the upper edge of said nesting ring and inclined inwardly at an acute included angle relative to the axis of the tapered sidewall, a recess formed in said container adjacent said second transitional section, a ledge adjacent to and extending generally radially outwardly from the root of said recess and constructed to be engaged by a tension ring used to secure a lid on the container and a rim extending generally axially from said ledge and defining the upper most portion of said container, said rim being constructed to contact the nesting seat of a second container to limit the insertion of the second container into the container to maintain a clearance between the tapered sidewalls of the containers thereby substantially limiting the frictional engagement of the containers when nested.

5,573,119

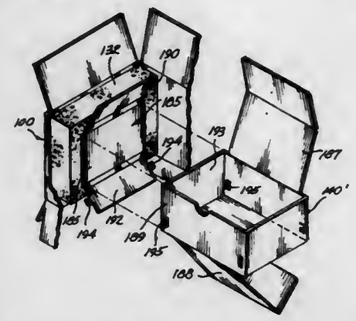
SHOCK ABSORBING SHIPPING PACKAGE

Howard L. Luray, 15730 Beach Dr. NE., Seattle, Wash. 98155

Continuation-in-part of Ser. No. 92,595, Jul. 15, 1993, abandoned. This application May 26, 1994, Ser. No. 249,673

Int. Cl.[6] B65D *81/07*

U.S. Cl. 206—583 **27 Claims**



1. A shock absorbing package for an article comprising an outer support member having a hollow interior and opposite ends spaced apart, a cushion secured to each of said opposite ends and projecting into said interior, said cushion at each end having an inner face opposing and spaced apart from the inner face of the cushion at the other end, and an article carrier having opposite ends joined to said inner faces of said cushions for resilient support of said article carrier on said cushions, whereby shock absorbing motion of said inner carrier is accomplished by resilient deformation of said cushions, said outer support member being a rectangular box, each cushion being a pad of resilient foam having an outer face secured to an end of said box and an inner face connected to an end of said article carrier, said article carrier being a rectangular box having a top opening flap, and including a connection bracket having a portion secured to the inner face of each cushion and foldable flap members insertable into said article carrier for mechanically connecting said article carrier to said resilient pads.

6. A shock absorbing package for an article comprising an outer rectangular box having an open interior including opposing interior end faces, two end cushions secured, respectively, to the interior end faces of said outer box, said cushions having respective outer faces joined to said end faces of said box and interior faces opposite said outer faces which interior faces are spaced apart lengthwise of said box, and an inner article carrier having planar end faces secured, respectively, to said interior faces of said cushions, said outer box and inner carrier having corresponding tops, bottoms and sides spaced apart, said carrier being connected to said outer box solely through said end cushions for enabling shock absorbing movement of said inner carrier member relative to said outer box by reciprocal action of said cushions at the opposite ends of said box, said box having four corners each approximately aligned with one of said outer faces of said cushions and parallel first score lines approximately aligned with said interior faces of said cushions for enabling said box with said cushions secured therein to be folded in parallelogram fashion into substantially flat condition.

16. A shock absorbing package for an article comprising an outer support member having a hollow interior and opposite ends

spaced apart, a cushion secured to each of said opposite ends and projecting into said interior, said cushion at each end having an inner face opposing and spaced apart from the inner face of the cushion at the other end, and an article carrier having opposite ends joined to said inner faces of said cushions for resilient support of said article carrier on said cushions, whereby shock absorbing motion of said article carrier is accomplished by resilient deformation of said cushions, and including a connection bracket having a portion secured to the inner face of each cushion and at least one foldable flap member connectable to said article carrier for securing said article carrier to said cushions.

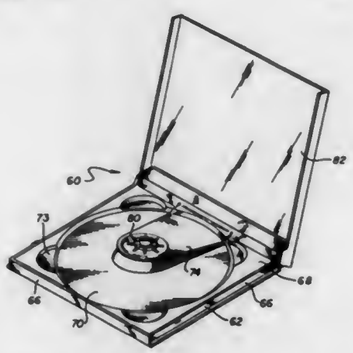
25. A shock absorbing package for an article comprising an outer rectangular box having an open interior including opposing interior end faces, two end cushions for supporting the article and secured, respectively, to the interior end faces of said outer box, said cushions having respective outer faces joined to said end faces of said box and interior faces opposite said outer faces which interior faces are spaced apart lengthwise of said box, said box having four comers each approximately aligned with one of said outer faces of said cushions and parallel first score lines approximately aligned with said interior faces of said cushions for enabling said box with said cushions secured therein to be folded in parallelogram fashion into substantially flat condition.

5,573,120

STORAGE CONTAINER FOR COMPACT DISCS AND THE LIKE

Harrison Kaufman, Studio City, and Michael B. Palmer, Los Angeles, both of Calif., assignors to Pop-Pak, Limited, Vernon, Calif.

Continuation-in-part of Ser. No. 52,974, Apr. 27, 1993, abandoned. This application Feb. 28, 1994, Ser. No. 203,776
Int. Cl.[6] B65D *85/57*
U.S. Cl. 206—755 **105 Claims**



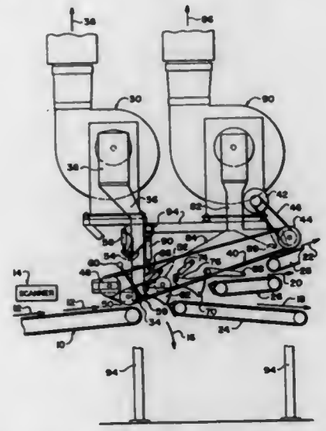
1. A compact disc storage container, comprising:
a box having a bottom, sidewalls, and an open top, said bottom and said sidewalls together defining a generally central, recessed compact disc storage space which is accessible from said top;
a compact disc mover underlying said storage space, said mover including a tongue having a tongue free end and a tongue opposite end, said opposite end being integrally formed with and hinged to said box, said free end being biased upwardly due to an elastic memory connection of said tongue to said box, said tongue having a central, upraised compact disc hole receiver spaced from said opposite end to releasably hold a compact disc in the central hole thereof in said storage space; and
holding means for releasably holding said free end generally in said storage space, generally below said top and against the upward bias of the elastic memory, said free end automatically moving upwardly above said top upon release of said bolding means for facilitating manual removal of the disc from said mover, and thus from said box, by gripping only the outer peripheral edges of the disc.

5,573,121

VENEER SORTING APPARATUS

Daryl G. McKay, Collierville; Jimmy R. Richardson, Eads, both of Tenn.; Brian G. Rooney, Vancouver, Canada; John L. Nalley, Southaven, Mass.; Hugh M. Waldrop, Memphis, Tenn., and Peter W. Gibson, Maple Ridge, Canada, assignors to Durand-Raute Industries Ltd., New Westminster, Canada

Filed Nov. 3, 1994, Ser. No. 334,514
Int. Cl.[6] B07C *5/14*
U.S. Cl. 209—518 **11 Claims**



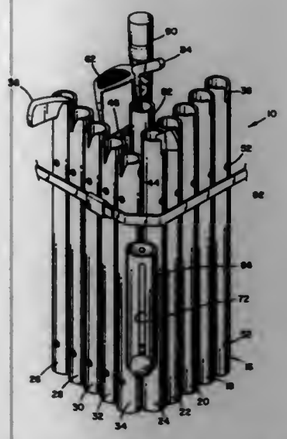
1. Veneer sorting apparatus for sorting a moving stream of variable width veneer pieces conveyed into said apparatus, by deflecting said respective pieces into one of three output paths in response to a signal representative of width of said respective pieces such that each of said paths contains substantially only veneer pieces having a selected width range, said apparatus comprising:
(a) a first vacuum source;
(b) a first plurality of vacuum ports coupled to said first vacuum source, positioned closely proximate to said conveyed moving stream and spaced transversely across said conveyed moving stream to draw said veneer pieces toward a first one of said output paths;
(c) a plurality of dampers coupled to said respective first vacuum ports and responsive to said signal to temporarily decouple said first vacuum ports from said first vacuum source if a veneer piece having a width less than a first selected width is adjacent any of said first vacuum ports;
(d) a first pivotable finger downstream of said first vacuum ports and responsive to said signal to sort veneer pieces having a width less than a second selected width by deflecting said pieces having a width less than said second selected width into a second one of said output paths; and,
(e) a second pivotable finger downstream of said first finger and responsive to said signal to sort veneer pieces having a width less than said first selected width and greater than said second selected width by deflecting said pieces having a width less than said first selected width and greater than said second selected width into a third one of said output paths.

5,573,122

GOLF CLUB ORGANIZER ASSEMBLY

Ron Williams, 506 E. Happy Valley St., Cave City, Ky. 42127

Filed Sep. 28, 1994, Ser. No. 313,876
Int. Cl.[6] A63B *55/00*
U.S. Cl. 211—70.2 **12 Claims**



1. A golf club organizer for removable mounting on a rear deck of a conventional golf cart comprising
a first plurality of elongated, hollow tubes disposed next to and extending parallel with one another to form a first row of said first tubes,
a second plurality of elongated, hollow tubes disposed next to and extending parallel with one another to form a second row of said second tubes, each of said first and second tubes being of a different length from that of all of the other of said first and second tubes and having an interior sized to loosely confine the shaft of a golf club therein, each of said tubes defining a notch in an upper end portion thereof for confining the head of a golf club therein, which golf club head is selected from the group consisting of irons and wedges, one end of said first row being disposed next to one end of said second row to form an apex of an angle between said first and said second row, a base of each of said tubes lying in a single plane for mounting on a flat supporting surface, and
reinforcing means attached to each of said tubes for maintaining the disposition of each of said tubes relative to one another in said first and said second row, said reinforcing means comprising a closed sided structure having a plurality of sides forming a plurality of interior angles and an open area enclosed by said sides, said first row and said second row being aligned against two adjacent sides of said reinforcing means outside of said open area.

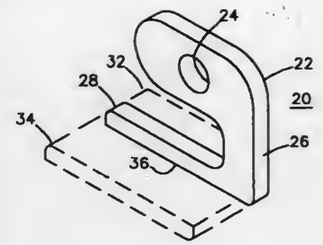
5,573,123

CANTILEVERED BOTTLE SUPPORT CAPABLE OF INCORPORATING ANY DESIRED SHAPE OR GRAPHIC DESIGN

Aaron D. LaLonde, 39392 Blacow Rd., Fremont, Calif. 94539

Filed Aug. 18, 1994, Ser. No. 292,833
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—74 **16 Claims**

1. A bottle support for cantilevered support of a bottle in two orthogonal directions, comprising:
a body having means for holding at least one bottle in a first cantilevered position; and
a support arm disposed at a first predetermined angle to said body for supporting said body at a second cantilevered position orthogonal to said first cantilevered position.

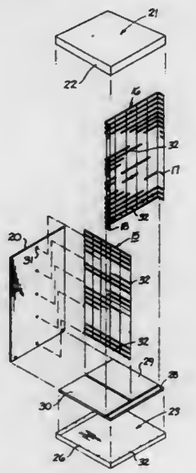


5,573,124

HIGH DENSITY SHOWROOM STORAGE AND DISPLAY RACK

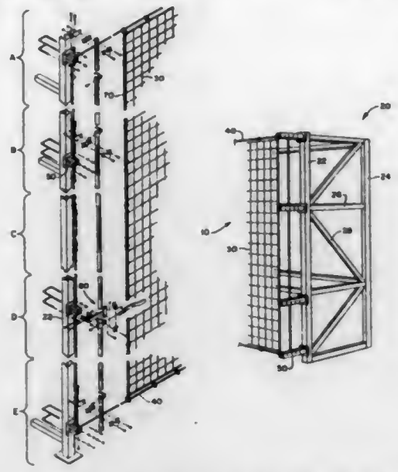
Michael J. Frost, P.O. Box 307, Cliffside, N.C. 28024

Filed Nov. 8, 1994, Ser. No. 337,497
Int. Cl.[6] A47F *5/14*
U.S. Cl. 211—181 **7 Claims**



1. A display rack, comprising in combination:
a stably mounted T-shaped framework of only two open-mesh lightweight vertically disposed leg and front crossbar panels formed of interconnected wire members, said panels being firmly connected together to form the framework and comprising spaced horizontal wire members adapted to receive merchandise holding members,
generally rectangular back, top and bottom panels by which said framework is stably supported forming therewith a generally self supporting display cabinet configuration,
a plurality of horizontally disposed basket-like wire mesh shelves disposed on opposite sides of the leg panel and intermeshed with the leg panel for storing and displaying merchandise, thereby providing a substantially bottom to top merchandise display at two sides, and
having merchandise of variable configurations removably hung upon the crossbar framework panel by fittings intermeshing with said horizontal wire members of said front crossbar panel.

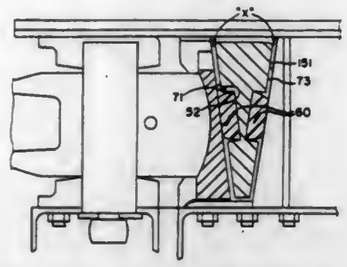
5,573,125
HORIZONTAL RETRACTING PALLET RACK GUARD
David S. Denny, Middle Haddam, Conn., assignor to The SINCO Group, Inc., East Hampton, Conn.
Filed Feb. 22, 1995, Ser. No. 393,081
Int. Cl.[6] A47F 5/00
U.S. Cl. 211—183 23 Claims



1. A rack guard for a pallet rack having a plurality of horizontally spaced upright posts and having at least a first side, the rack guard comprising:
a plurality of mounting means, each of said mounting means having a base member mountable on one of the upright posts and a cable suspension extension offset from said base;
cable means comprising a cable mountable to said mounting means extensions to form a pair of generally horizontal sections;
a plurality of carrier means mountable on said cable and horizontally displaceable therealong;
net means mountable to said carrier means and expandable for spanning an area across the pallet rack first side to form a barrier for the pallet rack and retractable to permit access to the pallet rack first side; and
latch means for latching said net means in a fixed position.

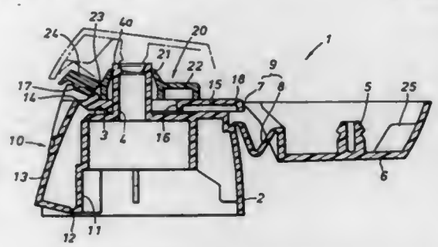
5,573,126
GRAVITY WEDGE FOR A SLACKLESS RAILCAR CONNECTOR ASSEMBLY
Richard G. Beauclerc, New South Wales, Australia; Charles P. Spencer, Staunton, Ill., and Franklin S. McKeown, Jr., St. Louis, Mo., assignors to AMSTED Industries Incorporated, Chicago, Ill.
Continuation of Ser. No. 333,429, Nov. 2, 1994, abandoned.
This application Apr. 10, 1996, Ser. No. 627,802
Int. Cl.[6] B61G 9/00; F16F 7/00
U.S. Cl. 213—62 R 8 Claims

1. In a railcar connector assembly which includes a coupler member, a wedge member, a pocket casting member having an end wall and a pocket forward of said end wall, and a follower block member, said connector assembly having a longitudinal axis and undergoing tensile and compressive loading along said axis, said wedge member having a first fully seated position and a second fully seated position, said first fully seated position defining a first wedge location wherein said wedge is longitudinally aligned with and in simultaneous contact with said follower block and said pocket casting end wall as said connector assembly undergoes tensile loading, said second fully seated position defining a second wedge location wherein said wedge is again longitudinally aligned



with and in simultaneous contact with said follower block and said pocket casting end wall as said connector assembly undergoes compressive loading, said wedge comprising:
a front wall; a back wall; a top end; a bottom end; at least two bore openings in each of said front wall and said back wall, each of said bore openings formed by a back face and walls extending inwardly from the surface of said front wall and said back wall, with a resilient supporting means inserted into each of said bore openings for vertically supporting said wedge at a holding position during tensile loading to eliminate a build-up of forces which could occur within said connector assembly by preventing said wedge from dropping into said first fully seated position during tensile loading, said holding position located above said first fully seated position, the height of each of said resilient means and the depth of each of said bore openings being such that said resilient means extends from the surface surrounding the bore opening by about 0.125 inch when uncompressed and the relative volume of each of said resilient means and the volume of each of said bore openings is such that each of the resilient means almost fills the bore opening when fully compressed.

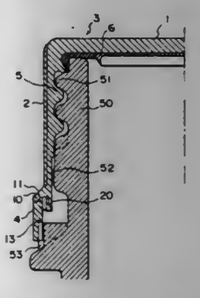
5,573,127
CAP FOR LIQUID CONTAINERS
Norio Takahashi, and Yukio Ojima, both of Kanagawa-ken, Japan, assignors to Nifco, Inc., Kanagawa-ken, Japan
Filed Dec. 12, 1995, Ser. No. 570,796
Claims priority, application Japan, May 16, 1995, 7-142484
Int. Cl.[6] B65D 39/00
U.S. Cl. 215—237 8 Claims



1. A container cap, comprising:
a primary cap provided with an outlet opening in a top wall thereof, and fitted to a mouth of a container;
a secondary cap having an end attached to said top wall of said primary cap via a hinge so as to be rotatable around a hinge axis extending substantially perpendicularly to an axial line of said outlet opening between a closing position for closing said outlet opening and an opening position for exposing said outlet opening;
a slide member which slidably overlies an upper surface of said primary cap, and includes a ramp projection projecting vertically therefrom and a lateral projection extending laterally therefrom, said lateral projection being adapted to engage an

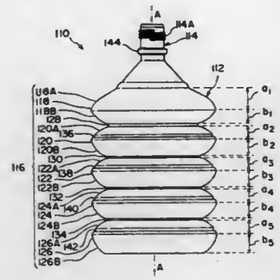
inner surface of said hinge to force said secondary cap in an opening direction; and
a cover member which overlies said slide member, and is adapted to move vertically to force said secondary cap in an opening direction when engaged by said ramp projection.

5,573,128
TAMPER-EVIDENT PLASTIC CAP WITH ENGAGING STOPPER PIECES
Yoichi Tsujiguchi, and Osamu Ishii, both of Hiratsuka, Japan, assignors to Japan Crown Cork Co., Ltd., Tokyo, Japan
Filed Mar. 1, 1995, Ser. No. 396,783
Claims priority, application Japan, Apr. 27, 1994, 6-090289; Apr. 27, 1994, 6-090290
Int. Cl.[6] B65D 41/34
U.S. Cl. 215—252 7 Claims



1. A plastic cap comprising a cap body made of a top panel and a side wall portion hanging down from the peripheral edge of the top panel, and a peripheral band portion which is provided at the lower end of said side wall portion and having an outer diameter which is substantially larger than the outer diameter of said side wall portion, wherein:
the inner surface at the upper portion of said side wall portion is threaded so as to be brought into threaded engagement with the outer periphery at the neck portion of a container, the lower end of the side wall portion is outwardly protruding, and said peripheral band portion is downwardly extending from the protruded portion at said lower end via a breaking line that is circumferentially formed leaving a plurality of bridge portions;
protrusions are formed on the inner peripheral surface on a lower portion of said peripheral band portion so as to come into engagement with engaging protrusions that are formed on the outer peripheral surface at the neck portion of a container;
a first stopper piece is formed on the side wall portion wherein said first stopper piece extends downwardly from the inner surface of the protruded portion and is spaced radially inwardly of the peripheral band portion and a second stopper piece formed at an upper portion of said peripheral band portion; and
said second stopper piece is disposed on a side of closing the cap with respect to said first stopper piece, said first stopper piece comes into contact with said second stopper piece at the time of closing the cap, and said cap body and said peripheral band portion turn together.

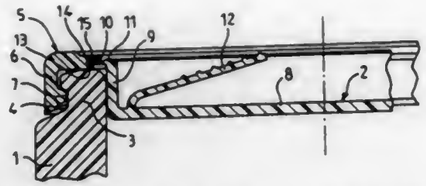
5,573,129
COLLAPSIBLE CONTAINER FOR A LIQUID
Masayoshi Nagata; Satoshi Hori; Mishi Gomori, and Nobuyoshi Yoshida, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 18, 1994, Ser. No. 199,343
Claims priority, application Japan, Feb. 19, 1993, 5-030664; Jun. 14, 1993, 5-142394; Jun. 14, 1993, 5-142399
Int. Cl.[6] B65D 1/02; 1/32; 25/14
U.S. Cl. 215—382 8 Claims



1. A container for a liquid comprising:
a flexible container main body having a bellows portion at at least an axial direction portion of said container main body; and
a rigid opening portion formed integrally with said container main body so as to protrude from said container main body in an axial direction, wherein
said bellows portion is formed of a plurality of annular convex portions which are disposed at predetermined intervals along the axial direction of said container main body, each of said annular convex portions having, at an intermediate portion thereof in the axial direction, an annular maximum protruding portion which protrudes a maximum amount from a central axis in a direction orthogonal to the axial direction, and
wherein a cross section in a direction orthogonal to the axial direction of each of said annular convex portions is substantially rectangular, and said annular maximum protruding portions of said annular convex portions have a same size and a same configuration so as to be set in a superposed arrangement when viewed from the axial direction, and an axial direction dimension of one of an opening portion side of said annular maximum protruding portion and a side of said annular maximum protruding portion opposite to the opening portion side is greater than an axial direction dimension of the other one of the opening portion side of said annular maximum protruding portion and the side of said annular maximum protruding portion opposite to the opening portion side.

5,573,130
CLOSURE ELEMENT FOR CONFINING A PRODUCT IN A POT IN A TAMPERPROOF MANNER, AND METHOD FOR MANUFACTURING SUCH A CLOSURE ELEMENT
Cyrille Chanal, Charenton-Le-Pont, and Jacques Playe, Brunoy, both of France, assignors to L'Oreal, Paris, France
Filed Sep. 16, 1994, Ser. No. 306,976
Claims priority, application France, Sep. 17, 1993, 93 11104
Int. Cl.[6] B65D 45/32
U.S. Cl. 220—319 7 Claims

1. Closure element for a container equipped with a neck in order to confine a product in a tamperproof manner, the closure element comprising:
(a) a fastening ring substantially non-removably fixed to the neck of the container, this fastening ring being produced from a first plastic and including an annular groove; and
(b) a cap produced from a second, different plastic to include a peripheral edge,



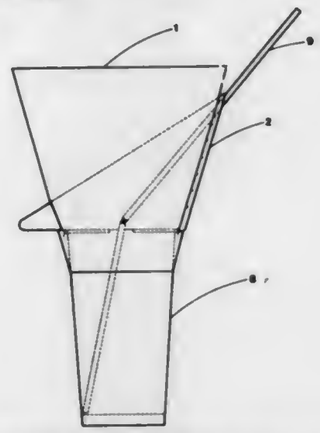
wherein the peripheral edge of the cap is received in the annular groove formed in the ring,
wherein the first and second plastics are incompatible so that no connection is formed between them by thermofusion,
wherein the groove in the ring has dimensions including an axial thickness and a radial depth which are such that the closure produced by the element fitted on the container is leaktight,
wherein the peripheral edge of the cap is separated from the groove of the ring in order to open the container,
wherein, after the peripheral edge is separated from the groove, the peripheral edge cannot be fitted back into the groove, and
wherein the cap includes a flat central part and a skirt for penetrating into the neck of the container, a portion of this skirt including the peripheral edge in the form of a collar-shaped extension situated in a plane substantially parallel to the flat central part of the cap.

5,573,131

APPARATUS FOR FORMING A CONTAINER TO HOLD A DRINKING CUP AT THE BOTTOM END OF THE CONTAINER AND TO HOLD FOOD IN THE UPPER PORTION OF THE CONTAINER

Pejman A. Berjis, Albany, Calif., assignor to Devine Holdings, LLC, Los Angeles, Calif.

Filed Oct. 26, 1994, Ser. No. 329,227
Int. Cl.[6] B65D *21/02*
U.S. Cl. 220—4.03 **7 Claims**



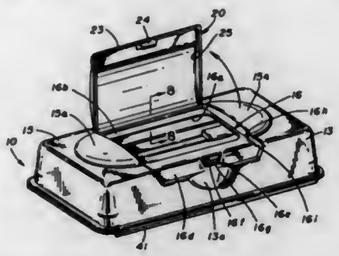
1. An apparatus for forming a container to hold food and used in conjunction with a drinking cup having a lid, the apparatus comprising:
a. a generally frusto-conical shaped body having a bottom end with a bottom opening and a wider top end with a top opening, a chamber between the two openings, and a sidewall, the sidewall having a first opening and having an oppositely disposed second opening; and
b. a partition means having a first end with retaining means thereon and an oppositely disposed second end with retaining means thereon such that the partition means can be inserted through the second opening in said sidewall and into said first opening in said sidewall and the retaining means on the partition means serve to retain the partition means in said sidewall of said frusto-conical shaped body;
c. whereby, said cup is first inserted through said frusto-conical shaped body and through said bottom opening such that a portion of the cup lies below the bottom end of the frusto-conical shaped body and a portion of the cup lies above the bottom end of the frusto-conical shaped body and is gripped by the sidewall at the bottom end, and the lid rests within the frusto-conical shaped body and forms a bottom to the chamber and the partition is inserted as described to retain the cup and lid in its position and prevent the cup and lid from sliding out of the frusto-conical shaped body.

5,573,132

DISPENSING CONTAINER

Joseph S. Kanfer, 2825 N. Walnut Ridge, Akron, Ohio 44313; Ronald F. Bell, 13040 Oakwood Ave., N.W., Uniontown, Ohio 44685; Rodney D. Borst, Oregon, Wis. 53575; Thomas Kearnes, 3750 W. Streetsboro Rd., Richfield, Ohio 44286, and Gregg S. Lewis, 1701 Henry St., Middleton, Wis. 53562

Filed Nov. 25, 1994, Ser. No. 345,870
Int. Cl.[6] B65D *43/00*
U.S. Cl. 220—4.23 **12 Claims**



1. A reclosable container, comprising:
a) a body including opposed end walls, opposed front and rear walls and a top wall to form an interior chamber;
b) said top wall having an access opening located therein;
c) a cover hingedly connected to said body and removable between covering and uncovering relationship with said opening;
d) a base, hingedly connected to said front wall for selectively opening and closing off said interior chamber;
e) first locking means for securing said cover to said body in covering relationship thereto and carried by said body and said cover;
f) second locking means carried by said base and said rear wall for securing said base in a position closing off said interior chamber;
g) said base having a concave surface area; and
h) said top wall and said cover having convex surface areas whereby adjacent containers may be nested with respect to each other.

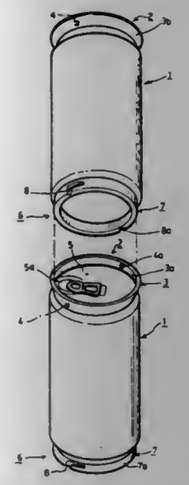
5,573,133

CAN STRUCTURE FOR DETACHABLE COUPLING OF CANS

Jong S. Park, 7-406 Nungkum Apartment 195-1, Bonri-dong, Dalseo-ku Taegu, Rep. of Korea

Filed Jul. 25, 1994, Ser. No. 277,318
Int. Cl.[6] B65D *21/032*
U.S. Cl. 220—4.27 **8 Claims**

1. A can capable of detachably coupling to another can, said can comprising:



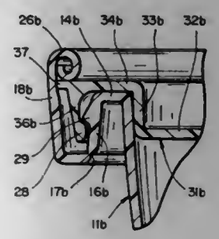
(a) a plurality of grooves each of which has a vertical section and a horizontal section recessed into a surface of a bottom peripheral ring such that each of them shows an L-shaped profile having a bent portion and an end and
(b) a plurality of projections extending from a surface of a top peripheral flange at positions corresponding to said plurality of grooves,
(c) wherein each of said plurality of grooves is formed in such a manner that the depth of its horizontal section is gradually reduced in the direction from its bent portion to its end and the width of its horizontal section is gradually reduced in the direction from its bent portion to its end,
whereby two cans may be detachably coupled to each other by inserting the projections of one can in the vertical sections of the corresponding grooves of the other can and turning the two cans in opposed directions.

5,573,134

CONTAINER WITH CURLED TAMPER-EVIDENT BAND TO RETAIN CLOSURE

Rawson L. Chenault, San Jose, and Daniel Luch, Morgan Hill, both of Calif., assignors to Portola Packaging, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 35,408, Mar. 23, 1993, Pat. No. 5,398,836, and Ser. No. 190,270, Feb. 2, 1994, Pat. No. 5,528,814, which is a continuation of Ser. No. 957,402, Oct. 6, 1992, Pat. No. 5,283,940, which is a division of Ser. No. 741,650, Aug. 7, 1991, Pat. No. 5,163,575. This application Mar. 24, 1994, Ser. No. 217,610
Int. Cl.[6] B65D *17/40;45/30*
U.S. Cl. 220—276 **18 Claims**



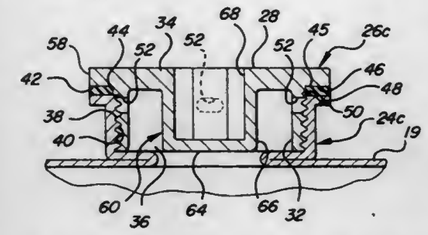
1. A container for use with a lid having a peripheral outer portion, said container comprising:
a body having an open end and a lip surrounding said open end, said body having an exterior,
a band surrounding said body vicinal said open end, said band having a proximal portion and a distal portion, and
frangible means frangibly attaching said proximal portion of said band to said body,
said distal portion being deformable to an inward extending orientation shaped and positioned to extend inwardly across said peripheral outer portion of said lid when said lid is applied to said container, whereby said distal portion retains said lid on said container, said distal portion having a terminus spaced outward of said lip when said distal portion is deformed to said inward extending orientation.

5,573,135

PORTABLE LIQUID TANK WITH MANHOLE COVER, LIQUID MIXER AND UNIVERSAL PRESSURE RELIEF BUNG

George P. Stolzenfeld, 9465 Deerpark Ct., Fenton, Mich. 48430

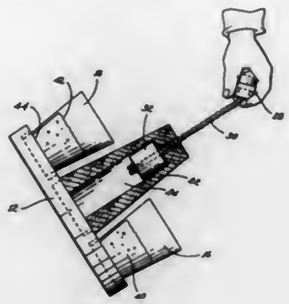
Filed Apr. 1, 1994, Ser. No. 221,761
Int. Cl.[6] B65D *51/00*
U.S. Cl. 220—601 **8 Claims**



1. In combination, a portable liquid mixing tank having a top wall with an opening therein, a manhole cover adapted to readily releasably connect to said tank and sealingly close said opening and requiring a certain minimum amount of time to be disconnected from said tank, a liquid mixer mounting cover adapted to readily releasably connect to said tank and sealingly close said opening and requiring a certain minimum amount of time to be disconnected from said tank, wherein air trapped in said tank while either said manhole cover or said mounting cover is in place increases in pressure with increasing ambient temperature and has the capacity to blow off said manhole cover and said mounting cover when they are freed from said tank, a bung flange with an internal threaded hole therethrough on said top wall and said manhole cover and said mounting cover respectively, all of said internal threaded holes in said bung flanges being similar, a bung screwed in each said bung flange and adapted to fit the other bung flanges, at least one of said bungs being a pressure relief bung having an integral head and hollow cylindrical section, said hollow cylindrical section having a closed end at said head and an open end and a male thread extending from said open distal end toward said head, said male thread adapted to individually engage the internal threaded hole of all of said bung flanges and close same, a sealing ring received on said hollow cylindrical section adjacent said male thread, said sealing ring having one side adapted to seal against said head and an opposite side adapted to seal against all of said bung flanges, said hollow cylindrical section having a plurality of elongated vent holes in a common plane spaced a distance from said head and adapted to communicate the interior of said tank with atmosphere through said open end of said hollow cylindrical section on initial turning of said pressure relief bung to disengage from the respective said bung flanges from a closed and sealed relationship therewith, said elongated vent holes having a cross-section elongated along said plane and collectively providing a total vent area that starts opening on partial turning of said pressure relief bung and is fully open at about one full turn of said pressure relief bung, and said sealing ring having a thickness narrower than said distance between said vent holes and said head to require

additional turning of said pressure relief bung after release of the seal from said sealing ring before venting of the tank through the vent holes will occur.

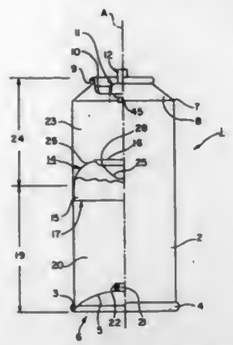
5,573,136
PENDULOUS BEVERAGE SERVER
Calvin A. Page, P.O. Box 7, So. Wellfleet, Mass. 02633
Filed Feb. 22, 1996, Ser. No. 603,295
Int. Cl.[6] A45F *3/00*
U.S. Cl. 220—754 **9 Claims**



1. A pendulous beverage server employed for spill-free transporting open containers having liquid contents, fragile items and spillable items comprising;
a) a tray for receiving open containers;
b) a tower assembly mounted on said tray extending upwardly along said central axis comprising;
i) a frustum consisting of a truncated cone characterized by a central hollow chamber; and
ii) mounting means for attaching the tower assembly to the tray
c) pendulum means for movably supporting the tray comprising flexible cord having a handle at one end and a weight at the other end, said weight configured to move said pendulum means between an extended transport position and a retracted position; wherein said flexible cord is employed for movably supporting the tray when in the extended position with a swinging, pendulous motion whereby a centrifugal force is imparted to liquid contents of said open containers and items.

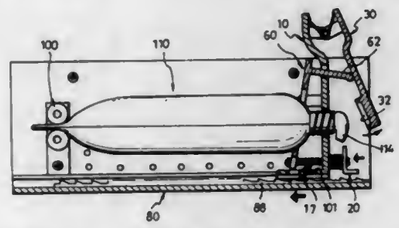
5,573,137
PRESSURIZED CAN FOR FOAM EXPLUSION
Mathias Pauls, Appenzell, Switzerland, assignor to Rathor AG, Appenzell, Switzerland
Filed Nov. 23, 1994, Ser. No. 347,113
Claims priority, application European Pat. Off., Nov. 25, 1993, 93118963
Int. Cl.[6] B65D *83/14*
U.S. Cl. 222—80 **16 Claims**

1. A pressurized can for the expulsion of building foams comprising
a body, which includes:
a cylinder;
a pushed-in bottom;
a dome-like top section with a valve to expel the can contents comprised of a product component and a propellant;
a floating plunger mounted on an interior wall of the cylinder which separates a propellant gas chamber from the product component and which includes a cavity in an upper side wherein a reactive component which is reactive with the product component is sealed off from the product component by a seal; and



a trigger device placed in the dome-like top section which opens the seal when the plunger reaches a position immediately below the dome-like top section.

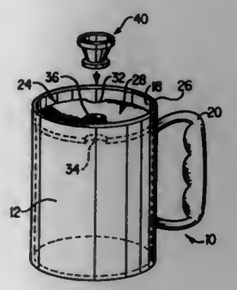
5,573,138
APPARATUS FOR SQUEEZING FLUID OUT OF A COLLAPSIBLE TUBE
Hsia-Sen Lin, No. 27, Ing Min 1 lane, Tao Ing Road, Bar Der City, TaoYuan, Taiwan
Filed Feb. 12, 1996, Ser. No. 600,188
Int. Cl.[6] B65D *35/28;35/54*
U.S. Cl. 222—96 **10 Claims**



1. An apparatus for squeezing fluid out of the neck of a collapsible tube installed therein, the apparatus comprising:
a base frame having two longitudinal tracks, and a longitudinal rack between said longitudinal tracks;
a L-shaped supporting frame moved in said base frame along said longitudinal tracks, said L-shaped supporting frame including a vertical face plate and a horizontal bottoms plate connected at right angles, said horizontal bottom plate having two opposite projections respectively moved in said longitudinal tracks, said vertical face plate comprising a front side, a back side, a first through hole, a supporting hole, and at least one second through hole;
an actuating plate pivotably connected to the back side of said vertical face plate, said actuating plate having a center opening, and a push rod inserted through the first through hole of said vertical face plate;
a cover board pivotably connected to the front side of said vertical face plate and having a cover portion covering the neck of the collapsible tube; and
a push plate suspending below said cover board in front of the front side of said vertical face plate, having at least one connecting element inserted through the at least one second through hole of said vertical face plate and connected to said actuating plate;
a plurality of rollers stationarily affixed at one end of the base frame opposite said L-shaped supporting frame for receiving a closed end of the collapsible tube for applying a squeezing force thereto;

wherein depressing the push plate moves the actuating plate causing the push rod of said actuating plate to push said cover board away from the neck of the collapsible tube and said L-shaped supporting frame along with said tube is simultaneously moved toward said rollers to squeeze the collapsible tube, thereby causing fluid to be forced out of the collapsible tube.

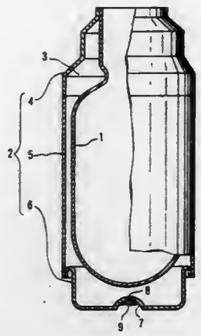
5,573,139
DRINKING MUG WITH LID AND MUG BODY FORMED FROM ONE PIECE
Frank Yeh, 1019 N. Mayflower St., Anaheim, Calif. 92801
Filed Jul. 5, 1995, Ser. No. 498,150
Int. Cl.[6] B65D *51/16*
U.S. Cl. 220—360 **17 Claims**



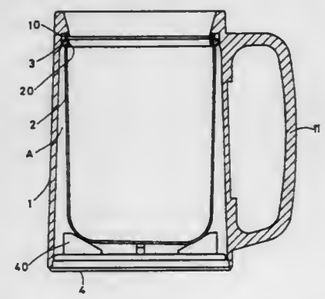
1. A drinking mug, comprising:
a mug body comprising a side wall and a bottom wall unitarily formed as one piece so that the material of the side wall and the bottom wall merge into each other, the side wall having an outer wall, an inner wall, an upper rim and a mouth defined by the upper rim; and
a lid comprising a substantially flat panel formed unitarily in one piece with said side wall so that the material of the lid and the side wall merge into each other and extending radially inwardly from the side wall, the flat panel recessed axially inwardly from the upper rim and covering the mouth of the mug body, the flat panel comprising an outer periphery and a first opening provided along the outer periphery of the flat panel adjacent the side wall.

5,573,140
METALLIC VACUUM DOUBLE-WALLED CONTAINER
Yasuhiko Satomi; Seiichi Itoh; Eiji Otsuka; Jun Yamaki, and Takashi Kato, all of Tokyo, Japan, assignors to Nippon Sanso Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 165,405, Dec. 10, 1993. This application Aug. 7, 1995, Ser. No. 511,961
Claims priority, application Japan, Dec. 24, 1992, 4-344927
Int. Cl.[6] B65D *90/04*
U.S. Cl. 220—420 **1 Claim**

1. A vacuum double-walled container comprising an outer container of austenitic stainless steel and a metallic inner container that are joined at their respective mouth portions to form an integrated double-walled structure having a vacuum insulation layer between said outer container and said inner container, wherein said austenitic stainless steel of said outer container has been cold worked at a cold working ratio of 10–50% to a Vickers hardness of 250–600 Hv, heated to a temperature between 200°–600° C. and allowed to cool to room temperature, to provide said outer container with increased mechanical strength in comparison to an outer container of similar thickness formed from untreated austenitic stainless steel.



5,573,141
DOUBLE WALLED COOLING MUG
Wen-Yen Chen, P.O. Box 90, Tainan, Taiwan
Filed Sep. 11, 1995, Ser. No. 527,812
Int. Cl.[6] B65D *23/02;8/06;8/22;* **F25D** *3/08*
U.S. Cl. 62—457.3 **2 Claims**



1. A mug comprising:
an outer body made of plastic, having a sloped cylindrical wall with an inner surface defining a hollow cavity, an upper opening, a bottom opening, a first annular groove extending around said upper opening the first annular groove opening toward said bottom opening, and a handle extending from an outer surface of said cylindrical wall;
an inner body configured to receive a liquid and made of metal located in said hollow cavity of said outer body, the inner body having a second annular groove around an upper circumferential edge;
an anti-leak gasket in said annular groove of said inner body;
a refrigerant material located in a chamber between said outer body and said inner body;
a bottom plate adhered to a bottom end of said outer body so as to cover said bottom opening, the bottom plate having a plurality of spaced apart seats on an upper surface thereof in contact with a bottom of said inner body so that the upper edge of said inner body engages said first annular groove of said outer body, such that said gasket seals against the inner surface of said outer body and the second annular groove in the inner body, whereby said refrigerant cools a liquid poured in said inner body quickly because of fast heat transmitting function of the metal material of the inner body.

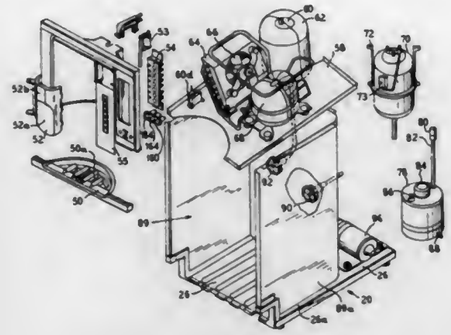
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5,573,142

BOTTLED WATER DISPENSING CABINET

Paul J. Morellato, Cambridge; Don Terkalas, Brampton, both of Canada, and Keith E. Carr, Pluderhausen, Germany, assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 17, 1994, Ser. No. 323,872
Int. Cl.[6] B67D *5/56*
U.S. Cl. 222—129.1 **16 Claims**



1. A water dispensing apparatus for holding a water bottle and dispensing water therefrom, comprising:
- a tubular means adapted to be inserted into a water bottle for drawing water from the water bottle;
- a reserve tank flow connected to said tubular means for drawing water from the water bottle and having an elevated vent having a check vale located above a maximum water level in the water bottle;
- a dispensing spout arranged to dispense water into a container;
- a pump means for drawing water from said reserve tank and delivering water to said dispensing spout.

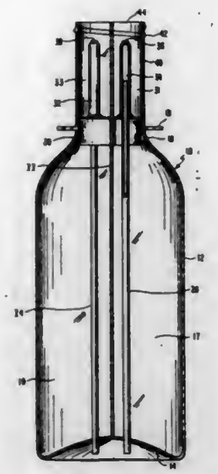
5,573,143

BLOW MOLDED MULTI-CHAMBER CONTAINERS WITH DISPENSER/DOSER

Lawrence R. Deardurff, Waterville; Daniel J. Durham, Toledo, both of Ohio; Adam Sherman, Brooklyn, N.Y.; Salvatore N. Del'Re, Marlboro, and James C. McKinney, Cranbury, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Sep. 21, 1994, Ser. No. 310,557
Int. Cl.[6] B67B *5/00*
U.S. Cl. 222—153.14 **19 Claims**

1. A plastic blow molded container, said container having sidewalls, a base at one end of said sidewalls with a dispensing means at an other end of said sidewalls to define the body of said container, a dispensing means exit for the removal of substances from said dispensing means, a plurality of separate chambers within said container, each chamber being separate from the base through the dispensing means, continuous webs within said container and extending from said-base to said dispensing means exit separating said container into said plurality of separate chambers, said continuous webs formed along with said container during the blow molding of said container and being of a lesser thickness at about a midpoint region thereof so that said webs flex when said sidewalls of said container are compressed to deliver product from said container body to said dispensing means.

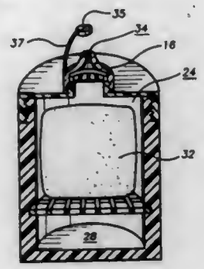


5,573,144

SOAP SAVING DEVICE

Sidney J. Steib, Jr., and Gayle A. Steib, both of 163 Miano La., Garyville, La. 70051

Filed May 9, 1995, Ser. No. 437,812
Int. Cl.[6] B65D *37/00*
U.S. Cl. 22—189.08 **10 Claims**



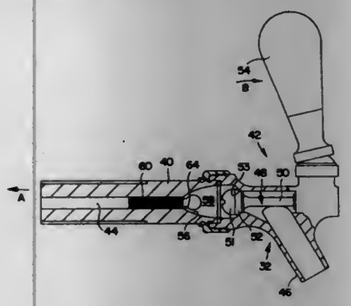
1. A soap saving device comprising:
- a container member having an interior sidewall defining a first chamber within said container member, said first chamber being accessible through a container opening at a top portion of said container member, said container opening being of a size sufficient to allow a bar of soap to be inserted therethrough into said first chamber, said interior sidewall having an annular channel formed circumferentially therearound spaced a distance of at least two inches from said container opening, said first chamber being of a size between said container opening and said annular channel sufficient to receive therein the bar of soap;
- a cap member sealingly securable over said container opening in a manner to retain the bar of soap and a quantity of fluid within said first chamber when said cap member is sealingly secured and said container member is shaken, said cap member having a centrally located, threaded fitting having a lip defining a dispensing aperture therethrough, said dispensing aperture being in fluid communication with said first chamber;
- a first screen member positioned over said dispensing aperture and having a plurality of first screen apertures therethrough, said first screen member having an area sufficient to cover said dispensing aperture;
- a spout member having an internally threaded connecting end companionately threaded to mate with said threaded fitting, said spout member further including a fluid pathway therethrough in fluid communication at one end thereof with said connecting end and fluid communication with a second end thereof with a spout orifice open to an exterior of said soap saving device;
- a spout orifice sealing member securable over said spout orifice in a manner to seal said spout orifice from the passage of fluid therethrough; and
- a second screen member having a plurality of second screen apertures formed therethrough and including a perimeter portion sized and dimensioned to allow said perimeter portion to be captively held within said annular channel in a manner such that said second screen member divides said first chamber into a soap holding chamber and a water holding chamber, said perimeter portion of said second screen member being captively disposed within said annular channel, said second screen apertures being sized in a manner to prevent passage of spherical objects therethrough that have a radius greater than two-tenths of an inch.

5,573,145

APPARATUS FOR CONTROLLING FOAMING AND FLOWRATE IN BEVERAGE DISPENSING SYSTEMS

James K. Groh, Lombard, Ill., assignor to Banner Equipment, Franklin Park, Ill.

Continuation-in-part of Ser. No. 94,471, Jul. 19, 1993, Pat. No. 5,368,205. This application Sep. 7, 1994, Ser. No. 301,850
Int. Cl.[6] B67D *5/58*
U.S. Cl. 222—189.11 **42 Claims**



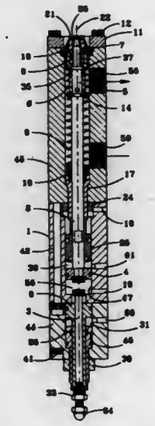
1. A beverage dispensing system, for delivering and dispensing beverages having dissolved gases therein, under pressure, which beverages are capable of breaking up and releasing said dissolved gases in the form of foam, said beverage dispensing system comprising:
- source means for storing said beverage in a substantially controlled environment;
- at least one beverage transport member, operably associated with said source means, for transporting said beverage, under pressure, away from said source means;
- at least one faucet means, operably associated with said at least one beverage transport member, for enabling delivery of said beverage into containers for consumption,
- said at least one faucet means including
- a shank portion, operably connected in fluid communication with said at least one beverage transport member, for receiving and beverage from said at least one beverage transport member and having a flow passage way disposed therein,
- a valve portion, operably configured to be selectively positionable between open and closed configurations, to start and stop flow of said beverage through said beverage dispensing system, and
- a nozzle portion, for directing flow of said beverage into said containers; and
- flow regulator means for substantially precluding the break up of said beverage and release of said dissolved gases, so as to prevent foaming, said flow regulator means having a longitudinal axis and being operably arrangeable substantially within said shank portion of said at least one faucet means,
- including a flow regulator member, operably insertable into said flow passageway of said shank portion, upstream from a transition position between said shank portion and said valve portion of said at least one faucet means, said flow regulator member being in the form of a substantially cylindrical coil,
- said flow regulator member further including a tab portion, distinct from the overall geometric shape and dimension of said flow regulator member, operably disposed at a position proximate a downstream end of said substantially cylindrical coil,
- said tab portion further including a flattened portion substantially parallel to the longitudinal axis for facilitating grasping of said flow regulator means toward facilitated insertion and removal of said flow regulator means from said shank portion.

5,573,146

ADJUSTABLE PNEUMATIC LIFT DEVICE FOR DUAL FLOW VALVE

Richard K. Gardner, Montpelier, Ohio, assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jan. 9, 1995, Ser. No. 370,078
Int. Cl.[6] G01F *11/06*
U.S. Cl. 222—309 **6 Claims**



1. An adjustable lift device for a dual orifice dual flow valve comprising:
- a reciprocating flow control stem operatively connected to a first piston reciprocating in a cylinder between defined limits of a forward stop and a rearward stop;
- a movable stop operatively connected to a second piston reciprocating in a second cylinder between defined limits of a forward position and a rearward position;
- said movable stop being reciprocated to said forward position redefines the limit of said rearward stop;
- said reciprocating flow control stem directly operates a low flow orifice; and
- lost motion means deployed between said reciprocating flow control stem and a high flow orifice for accumulating a difference in motion for deployment of a low flow orifice and a high flow orifice dispensing means.

5,573,147
CONTAINER IN COMBINATION WITH A REMOVABLE CAP

Hugo Nilsson, Gunstorp, Tutaryd, S-341 96 Ljungby, and Karl-Eric Johnsson, Aby, S-340 14 Lagan, both of Sweden

PCT No. PCT/SE93/00677, § 371 Date Jan. 27, 1995, § 102(e) Date Jan. 27, 1995, PCT Pub. No. WO94/04422, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 12, 1993, Ser. No. 374,760
Claims priority, application Sweden, Aug. 12, 1992, 9202342
Int. Cl.[6] B65D *88/54*
U.S. Cl. 222—327 20 Claims



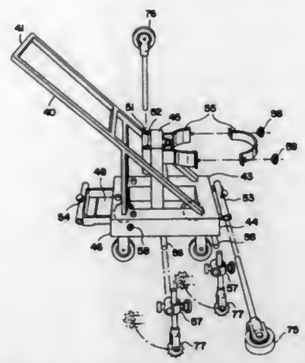
1. A container (1) in combination with a cap (3) for sealing off at least one end (4) of the container containing at least one of a viscous substance, a paste-like substance, a lubricant, silicon, and a food substance comprising:
a container (1) comprising a generally cylindrical tube (2) having a radially extending end flange (5) on a first end (4) thereof, the end flange (5) extending radially inwardly from an interior cylindrical surface (7) of the tube (2), forming an interior flange (9) having a radially extending delimitation surface (11) defining a free radially extending end surface of said first tube end (4);
a cap (3) comprising a bottom (19) located in the first tube end (4); and
an interior ring part (17) extending substantially axially from an outer periphery of the bottom (19) terminating in a radially outwardly extending annular ring part (16) that abuts against the end surface of the first tube end (4);
wherein a side of the interior flange (9) facing a second end of the tube, remote from the first tube end (4), is terminated by an undercut surface (13) that is one of straight and concave to form a pointed annular edge (18) on the radially inner edge of the interior flange (9) facing the second tube end to create an enhanced sealing effect between the tube (2) and the cap (3).

5,573,148
AIR POWERED CAULKING APPARATUS

C. Allen Poole, 423 Lee Vaughan Rd., Simpsonville, S.C. 29681, and Bonner N. York, 102 Weatherby Dr., Greenville, S.C. 29615

Filed Dec. 16, 1994, Ser. No. 359,032
Int. Cl.[6] B67D *5/54*
U.S. Cl. 222—611.1 19 Claims

1. A dispenser for dispensing a flowable sealant material, comprising, in combination:
a nozzle,
an extruder;

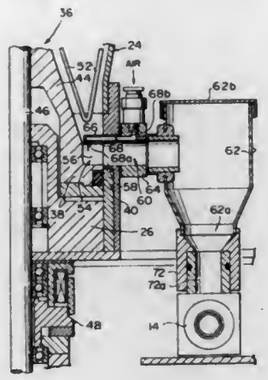


a sealant tank with an outlet located at one end, which is operatively connected to said nozzle, and whereby said extruder acts on said sealant stored in the sealant tank forcing said sealant through said nozzle,
a frame having a proximal and distal end, a top, a bottom and two longitudinal sides, said frame supporting said sealant tank and said nozzle,
at least one toothed guide wheel carried by said frame for guiding said dispenser along a joint,
a regulator for controlling said extruder,
a handle attached to said frame which extends upwards and away from said frame, said regulator is attached to said handle,
at least two wheels attached to the bottom of said frame,
and wherein said frame supports said nozzle along a pivot on one of said longitudinal sides of said frame.

5,573,149
STORETANK FOR POWDER SUPPLY AND POWER COATING EQUIPMENT WITH STORETANK FOR POWDER SUPPLY

Eiji Saito, Tokyo, Japan, assignor to Ransburg Industrial Finishing K.K., Tokyo, Japan

Filed Mar. 24, 1995, Ser. No. 410,618
Claims priority, application Japan, Apr. 1, 1994, 6-065234
Int. Cl.[6] B67D *5/00*
U.S. Cl. 222—636 20 Claims



10. Powder coating equipment, comprising:
a tank, for storing powder particles, which has a substantially cylindrical side wall; a bottom portion, and an axis;

a powder outlet, for discharging said powder particles, which is defined within the lower end portion of said side wall of said tank;
a plurality of recesses, having substantially the same volume, defined upon a rotary member, rotatably disposed within said bottom portion of said tank, and equally spaced with respect to each other in a circumferential array about said axis of said tank;
driving means for rotating said rotary member about said axis of said tank;
a canopy which extends substantially radially inwardly from said powder outlet and toward the inside of said tank so as to cover one of said plurality of recesses when said one of said plurality of recesses is disposed opposite said powder outlet and thereby define with said rotary member a substantially enclosed cavity containing a predetermined amount of said powder particles;
an air port which is defined within said tank for ejecting air toward said cavity disposed opposite said powder outlet so as to discharge said predetermined amount of said powder particles out from said substantially enclosed cavity and through said powder outlet;
a venturi mechanism for receiving said powder particles discharged from said powder outlet of said tank; and
powder coating means, connected to said venturi mechanism, for discharging said powder particles, delivered by said venturi mechanism, toward an article to be coated.

5,573,150
WIRE-FORM MANNEQUIN

Juan M. Trujillo, 5746 Florence Ave., South Gate, Calif. 90280

Filed Aug. 15, 1995, Ser. No. 515,237
Int. Cl.[6] A47G *25/02*
U.S. Cl. 223—66 12 Claims

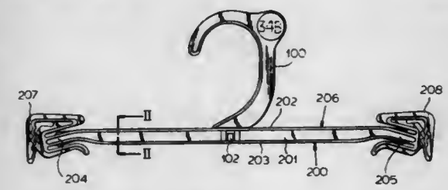


10. A wire-form mannequin comprising a wire bent to provide a plurality of portions including a first lateral hook, a second lateral hook, a first lateral support portion, a second lateral support portion, a first hip portion, a second hip portion and a torso end loop portion, a chest support wire, an abdominal support wire, a holder connecting wire, and a cylindrical stand holder,
a non-hook end of said first lateral hook having a first curved tail which is extended into one end of said first lateral support portion,
a non-hook end of said second lateral hook having a second curved tail which is extended into one end of said second lateral support portion,
another end of said first lateral support portion being extended into one end of said first hip portion,
another end of said second lateral support portion being extended into one end of said second hip portion,
another end of said first hip portion and another end of said second hip portion being extended to form the torso end loop portion,
said chest support wire having one end being connected to where said end of said first shoulder support portion meets said end of said first lateral support portion, and having another end being connected to where said end of said second shoulder support portion meets said end of said second lateral support portion,
said abdominal support wire connecting said first lateral support portion and said second lateral support portion, said abdominal support wire having one end being connected to where said end of said first lateral support portion meets said end of said first hip portion, and having another end being connected to where said end of said second lateral support portion meets said end of said second hip portion,
said holder connecting wire having one end being connected to said first hip portion and having another end being connected to said second hip portion, and
said cylindrical stand holder being attached to a middle position of said holder connecting wire.

5,573,151
GARMENT HANGER WITH WAISTBAND AND STRAP CLIPS

Gerhard Fildan, Wohnpark Alte Erlaa, Anton-Baumgartner-Str.44, C 2 21 01, A-1232 Vienna, Austria

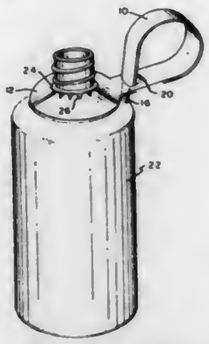
Filed Aug. 18, 1994, Ser. No. 292,380
Int. Cl.[6] A41D *27/22*; G09F *3/00*
U.S. Cl. 223—96 11 Claims



1. A garment hanger, comprising:
a molded one-piece bar having a substantially straight body formed on opposite ends with respective garment clips engageable with a waistband of a garment and with hanging straps of a garment, each of said clips comprising:
a downwardly turned extension of said bar inclined at an obtuse angle to said body,
a head transverse to said extension and coplanar therewith,
an upper strap retainer extending from said head parallel to and above said extension,
a horizontal member extending from an inner end of said upper strap retainer substantially parallel to said body outwardly and beyond said head, said head having a vertical array of teeth for engagement with a waistband,
a descending member formed with teeth complementary to said array of teeth on said horizontal member and extending downwardly from said horizontal member,
a lower strap retainer extending from said head below and parallel to said extension, each of said retainers having at least one tooth extending toward said extension, and
a continuous stiffening rib extending over only part of a width of said clip and running from a free end of said lower strap retainer, along said lower strap retainer adjacent said tooth thereof, along said head opposite said teeth thereof, along said upper retainer adjacent said tooth thereof, along an inner edge of said horizontal member and along said vertical member following the teeth thereof to a free end of said vertical member;
a hook connected to said body and enabling said body to be suspended from said hook, said body being formed with ribs along opposite longitudinal sides thereof and running along said extensions to said heads, the rib on an upper side of said body having a width greater than the rib on a lower side thereof; and

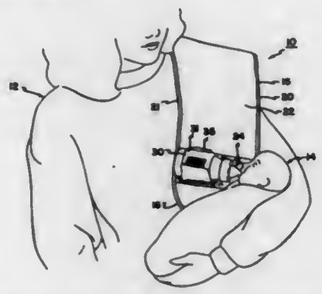
coupling means on said body and said hook for detachably mounting said hook on said body.

5,573,152
BOTTLE STRAP
Jamie Arnold, 4 Roven Rd., Wesley Hills, N.Y. 10952-1117
Filed Jan. 24, 1994, Ser. No. 195,653
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—148.4 3 Claims



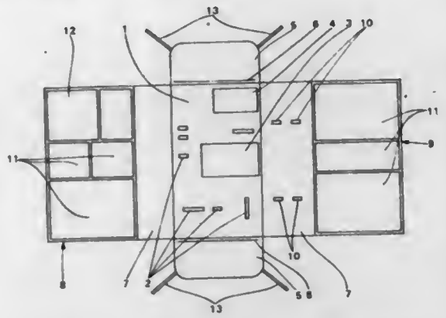
1. A bottle strap adapted for detachable engagement with the neck of a bottle, said neck having a bottle neck ring with a neck region disposed below the ring, said strap comprising:
a flat elongated flexible thin member having two opposite ends with an enlargement at one end, the enlargement having an opening therein, the opening having a serrated periphery defining a sunburst shape and being adapted to be snap fitted over said bottle neck ring so that the enlargement is firmly secured to said neck region, the other end of the member being adapted to detachably engage said member at a position intermediate its ends, thereby forming a closed loop.

5,573,153
FEEDING CLOTH
Penny S. Stillman, New Hope, Minn., assignor to Mother In Motion, Inc., New Hope, Minn.
Filed Feb. 9, 1995, Ser. No. 389,275
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—148.6 2 Claims



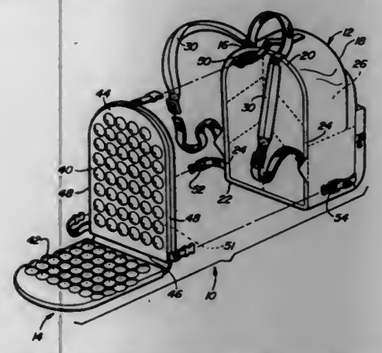
1. A feed cloth and beverage container comprising:
an absorbent cloth extending from a first end to a second end and having a transverse dimension from a first side edge to a second side edge, said cloth having a first surface and an opposite back surface, said transverse dimension sized for said first side edge to be disposed over a shoulder surface of one of a user's shoulders, the shoulder surface having a length laterally extending from the base of the user's neck adjacent the one shoulder to an outer, upper point of the user's arm adjacent the one shoulder and furtherst from the base of the neck, said transverse dimension being substantially uniform over the length of said cloth between said first and second ends and being greater than said shoulder length such that said first side edge lies directly adjacent the base of the user's neck and the second side edge laterally extends beyond the point when said cloth is worn by the user;
an area of said first surface adjacent said first end provided with at least a first one of a hook and loop type fastener fabric, said area sized to extend substantially an entire width of said traverse dimension;
a strap sized to extend around a beverage container and having an exterior surface of a second one of said hook and loop type fastener fabric;
a beverage container with said strap snugly fitted on said container and with said second one of said hook and loop type fastener fabric exposed surrounding said container;
said cloth aized to substantially cover and drape over a user's shoulder with said first end facing said user's chest and with said second end facing said user's back and with a friction of said cloth against said user restricting movement of said cloth relative to said user in response to a weight of said container on said cloth.

5,573,154
BACKPACK FOR HOLDING IMPLEMENTS FOR EMERGENCY MEDICAL CARE
Bernd Tietze, Gelnhausen, Germany, assignor to Heraeus Med GmbH, Hanau, Germany
Filed Feb. 17, 1995, Ser. No. 390,847
Claims priority, application Germany, Feb. 24, 1994, 44 05 951.5
Int. Cl.[6] A45F *4/02*
U.S. Cl. 224—153 7 Claims



1. Backpack for holding implements for emergency medical care comprising an approximately rectangular rear wall part, a front wall part that swings open and that is joined with the rear wall part by means of a first side wall part, the front wall part corresponding approximately to the rear wall part in terms of its surface area, a second side wall part arranged on the rear wall part opposite the first side wall part, an intermediate wall part which is joined to said second wall part and is adapted to swing open, two end flaps arranged opposite each other at free sides of the rear wall part, the backpack being adapted to be moved from a first, closed configuration to a second, open configuration, with the front, intermediate, side and rear wall parts and the flaps forming a single flat surface in the open configuration, and the flaps at least partially overlap the side wall parts and the front wall part when the backpack is closed, and implements for emergency medical care, said implements being secured to at least the rear wall part, the intermediate wall part and the front wall part by means for securing the implements for emergency medical care.

5,573,155
BACKPACK ASSEMBLY
Stephen Sadler, 232 Edgewater Blvd., St. Clair Beach, Ontario, Canada
Filed Jun. 5, 1995, Ser. No. 461,508
Int. Cl.[6] A45F *4/02*
U.S. Cl. 224—155 6 Claims



1. A backpack assembly adapted to be carried on the back of a person comprising
a pack having a front panel, a back panel and a chamber between said panels, said front panel having a top, a bottom and two sides,
a pair of shoulder straps secured to said pack such that, with said straps positioned over the shoulders of the person, said front panel faces and is generally parallel to the back of the person,
a pad assembly having a first generally planar pad and a second generally planar pad, each pad having a top, a bottom and two sides,
means for pivotally securing said bottoms of said pads together between a first position in which said first pad overlies and is substantially parallel to said second pad and a second position in which a plane of said first pad is substantially perpendicular to a plane of said second pad,
means for securing the top of said first pad to the top of said front panel, and
means for securing said sides of said first pad to adjacent sides of said front panel comprising a pair of straps, one strap extending from each side of said first pad closely adjacent said pad bottom and each said adjacent side of said front panel, wherein said bottom of said first pad is unattached to said pack and dimensioned to receive a chair back between said pad assembly and said pack.

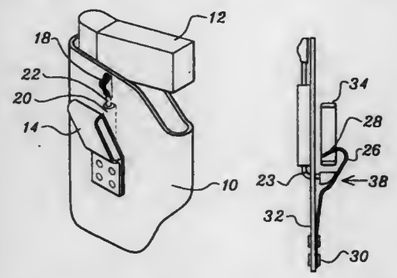
5,573,156
INFANT SEAT SLING APPARATUS
Thomas E. McConnell, 1568 Calzada Ave., Santa Ynez, Calif. 93460
Filed May 22, 1995, Ser. No. 445,659
Int. Cl.[6] A61G *1/00;5/00*
U.S. Cl. 224—158 4 Claims

1. An infant seat sling apparatus for carrying an infant seat having an infant child seated thereon, said apparatus comprising:
a receptacle sufficiently collapsible to be alternately deployed in:
i) an open configuration wherein said receptacle is configured to receive and hold an infant seat having said infant child positioned thereon; and
ii) a collapsed configuration wherein said receptacle is stowable within a storage pouch;



said receptacle having a floor, at least one sidewall, and an opening formed therein;
a resilient frame member associated with said receptacle, said frame member being biased to urge said receptacle toward said open configuration, and said frame member being sufficiently bendable to permit said receptacle to be voluntarily deployed in said collapsed configuration;
a shoulder strap attached to said receptacle and passable over the shoulder of an adult human being such that said receptacle will be suspended therefrom;
wherein said floor of said receptacle comprises a flat panel having an upper surface, a lower surface and an outer peripheral edge, and wherein said sidewall of said receptacle has an upper edge and a lower edge, the lower edge of said sidewall being conjoined to the peripheral edge of said floor such that said sidewall extends generally upward about the periphery of said floor;
with the apparatus further comprising an elastic member positioned about said sidewall, near the upper edge thereof, to elastically draw said sidewall inwardly such that said sidewall will conform about an infant seat positioned on the floor of said receptacle.

5,573,157
SECURITY MEANS FOR A PISTOL HOLSTER
Gerald Mauriello, 29 Landcaster Rd., Colonia, N.J. 07067, and Patrick Carrow, 735 Park Ave., East Orange, N.J. 07017
Filed Jun. 13, 1994, Ser. No. 258,838
Int. Cl.[6] F41C *33/02*
U.S. Cl. 224—244 2 Claims



1. In a pistol holster, an improved security system for a trigger guard of a pistol, the system comprising:
(a) a segment of a resilient material having a first end that is free and a second end rigidly affixed to a lower internal co-planar holster surface of said holster facing away from a torso of a user thereof, said first end defining a substantially U-shaped portion within a plane substantially transverse to said internal surface of said holster, said U-shaped portion proportioned, in geometry and resilience, to engage said trigger guard respon-

sive to an application of downward pressure upon said first end of said segment by said trigger guard; and

(b) an L-shaped rigid member, slidably secured between said holster and said torso, having a button-like element at a top of a vertical portion of a lower horizontal portion engageable with said U-shaped portion of said segment upon depression of said top of said vertical portion of said L-shaped rigid member,

whereby a depression of said top of said L-shaped rigid member urges said segment off of said trigger guard.

5,573,158

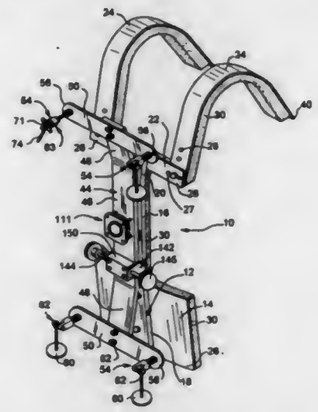
SPINNING DRUM CARRIER

Henry A. Penn, 305 Weldon Rd., Brandenburg, Ky. 40108

Continuation-in-part of Ser. No. 13,805, Oct. 4, 1993, Pat. No. Des. 354,975. This application Jan. 30, 1995, Ser. No. 380,365

Int. Cl.[6] A45F *3/10*

U.S. Cl. 224—265 **20 Claims**



1. A spinning drum carrier for carrying and rotatably positioning a drum having a round curvature and rims around the periphery thereof, comprising:

a carrier frame including a curved abdomen support plate attached to a vertical support member, said vertical support member being curved inwardly slightly at the bottom end toward the wearer and being angled inwardly at the top end toward the wearer, said vertical support member having a removably and adjustably attached lateral support bar attached at the top end thereof and normal thereto, said lateral support bar including a pair of shoulder strap support members adjustably attached to respective distal ends thereof for fitting over the shoulders of a wearer to support said drum and said spinning drum carrier;

a drum support frame including a longitudinal main member having a straight center section and angled end portions extending outwardly away from the wearer to conform to the curvature of the drum, said longitudinal main member including a pair of spaced apart drum holding members mounted normal to the distal ends respectively of said longitudinal main member, and having adjustable drum attachment means extending from the distal ends of each of said drum holding members and adapted to engage the drum rims for bolding the rims to the support frame;

a spindle assembly rotatably connecting said drum support frame and said carrier frame; and

a latching mechanism removably mounted to said drum support frame providing a means for selectively allowing the support frame to rotate relative to said carrier frame.

5,573,159

ROOF RAILING FOR MOTOR VEHICLES

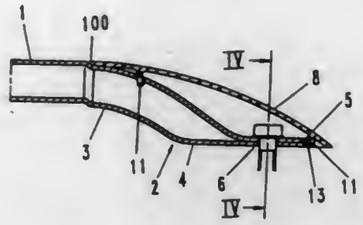
Fritz Fisch; Karl-Heinz Lumpe, and Klaus Kolodziej, all of Wuppertal, Germany, assignors to Happich Fahrzeug-Dachsysteme GmbH, Germany

Filed Nov. 10, 1994, Ser. No. 337,278

Claims priority, application Germany, Nov. 23, 1993, 43 39 879.0

Int. Cl.[6] B60R *9/04;9/05*

U.S. Cl. 224—309 **17 Claims**



1. A roof railing for a motor vehicle roof, the railing comprising:

a rail having opposite ends;

a respective support foot on at least one of the ends of the rail for resting on the roof; the support foot comprising an extruded tubular profile, the foot including a descending curved portion extending out from the respective end of the rail and terminating in a support surface which is spaced below but is substantially parallel to the rail;

the profile including a flattened wall region which rests on top of the support surface;

a hole passing through the support surface and the wall region and a fastening element for passing through the hole in the support surface and the wall region; and

a cover cap on the support foot, said railing extending along the longitudinal direction of the vehicle roof when mounted thereon.

5,573,160

SKI-CARRIER MODULE WITH MODULE ATTACHMENT APPARATUS

Michael Dixon, Fremantle, Australia; B. James Hudson, Laguna Hills, and Apogee Jon, Mira Loma, both of Calif., assignors to Sport Carriers, Incorporated, Colton, Calif.

Division of Ser. No. 25,313, Mar. 1, 1993, Pat. No. 5,490,621. This application Nov. 1, 1995, Ser. No. 551,379

Int. Cl.[6] B60R *9/00*

U.S. Cl. 224—319 **3 Claims**

1. A method of attaching an interchangeable module onto a bar of a modular vehicle rack system using an attachment apparatus comprising the steps of:

placing a first wrap-around attachment anchor around said rack bar closer to the center of a vehicle roof-top,

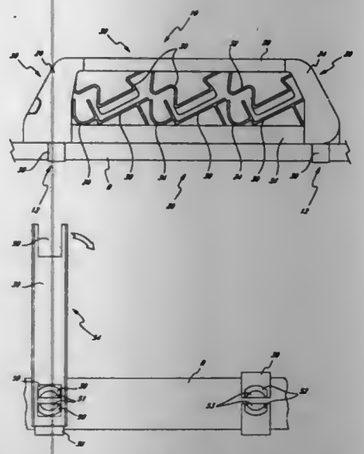
placing a second wrap-record attachment anchor around said roof rack bar closer to the side-edge of said vehicle roof-top,

an anchor head aperture formed on an underside of a lower arm of an interchangeable module being placed over a first wrap-around attachment anchor head, said aperture receiving said first anchor head when said interchangeable module is non-parallel to said roof rack bar,

rotating said module towards said bar such that said bar and said lower arm are parallel,

wherein said aperture is sized such that rotation of said bar secures said attachment anchor head within said aperture when said lower arm is brought to a parallel position relative to said bar, and

said second wrap-around attachment anchor head being inserted into an anchor head slot of said module,



wherein said anchor head slot being sized such that said second wrap-around attachment anchor head is secured vertically within said slot when inserted into said slot, and

said second wrap-around attachment anchor head being retained in said slot horizontally by a lock assembly which encloses said anchor head in said slot.

5,573,161

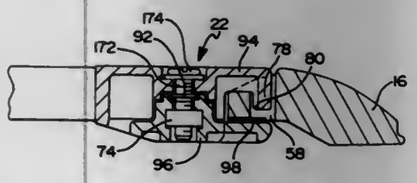
ARTICLE CARRIER CROSSBAR WITH SPLIT STANCHION CLAMP

Craig A. Stapleton, 995 Muer St., Troy, Mich. 48084

Filed Dec. 22, 1994, Ser. No. 362,277

Int. Cl.[6] B60R *9/045*

U.S. Cl. 224—321 **13 Claims**



1. A crossbar for an article carrier including a pair of side rails, wherein each of said side rails includes a lip, said crossbar comprising:

a bar having first and second ends for supporting the bar to extend across the pair of side rails; and

at least one of said ends comprising a clamp having a movable jaw and a fixed jaw wherein each said jaw has a jaw surface engageable with one of the rail lips;

said clamp having a threaded stem carried by said movable jaw and extending through said fixed jaw, whereby said movable jaw is movable in a plane substantially parallel to an adjacent surface of the one rail lip, said clamp supporting said movable jaw between a first position where said movable jaw surface is in registration with said adjacent surface on the one lip when said fixed jaw surface is in registration with the one lip and a second position in said plane where said movable jaw surface is not in registration with the one lip when said fixed jaw member is in registration with the one lip,

wherein said movable jaw pivots in a plane generally parallel to the lip,

wherein said clamp includes a stop restricting rotation of said movable jaw at said first and second positions.

5,573,162

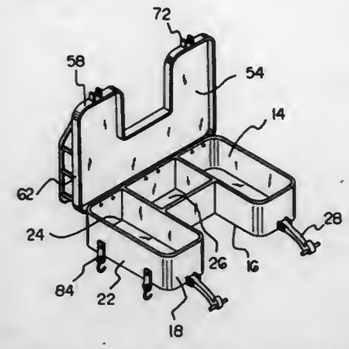
UTILITY BOX FOR AN ATV VEHICLE

Ted M. Spencer, and Ted F. Lohse, both of P.O. Box 86, Artois, Calif. 95913

Filed Mar. 10, 1995, Ser. No. 402,531

Int. Cl.[6] B62J *7/02;7/06*

U.S. Cl. 224—401 **1 Claim**



1. A utility box for an all terain vehicle for providing storage for items carried while on the all terrain vehicle, the all terrain vehicle having front and rear portions wherein the front portion has a rack secured thereto, said box comprising, in combination:

a U-shaped container portion having an open top, a closed bottom, a front wall, a back wall, and two side walls, the container portion having a compartmented interior defining two large outer containers and a small inner container, the U-shaped container portion having two securement latches pivotally secured to the front wall, the U-shaped container portion dimensioned for positioning on the front portion on the ATV vehicle whereby free ends of the U-shaped container extending around the front portion of the all terrain vehicle to allow access thereto while a user drives the all terrain vehicle;

a U-shaped lid portion having an upper surface, a lower surface, and a lip portion extending downwardly from an outer periphery thereof, the lip portion having a front wall, a back wall, and two side walls, the U-shaped lid portion adapted for removable securement over the open top of the U-shaped container portion, the back wall of the lip portion of the U-shaped lid portion being hingedly secured to the back wall of the U-shaped container portion, the front wall of the lip portion having two securement portions, the two securement portions adapted for engagement with the two securement latches of the front wall of the U-shaped container portion for securing the U-shaped lid portion over the U-shaped container portion, the upper surface of the U-shaped lid portion having a non-skid surface, the upper surface having a U-shaped fence portion extending around an outer periphery thereof;

four securement portions, each of the four securement portions having an elastic strap, each elastic strap having an upper end and a lower end, the lower end having a hook portion pivotally secured thereto, two of the upper ends secured to one of the two side walls of the U-shaped container portion, two of the other upper ends secured to an opposing side wall of the U-shaped container portion, the four securement portions adapted to secure the U-shaped container portion to the utility rack of the ATV vehicle.

5,573,163

MOUNTING DEVICE FOR CYCLE PACKS

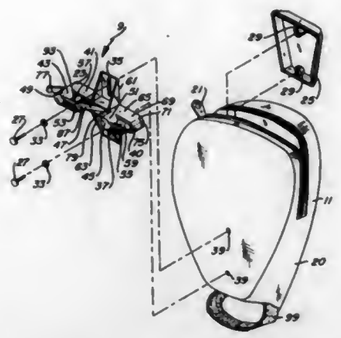
Brandon A. Lee, Daly City, Calif., and Gregory S. Hine, Boulder, Colo., assignors to HS Industries, Inc., Louisville, Colo.

Filed Feb. 10, 1995, Ser. No. 386,625

Int. Cl.[6] B62J *9/00*

U.S. Cl. 224—427 **18 Claims**

1. A device for mounting a pack to a cycle comprising:



a clip adapted to be attached to the pack and including first and second hanger members each having a support with a leg extending therefrom, said legs oriented to define a space between each of said legs and the pack when said clip is attached, the space configured to receive structural member of the cycle thereat; and

a movable member having a mounting portion, a manually manipulable portion, and a middle portion between said mounting portion and said manually manipulable portion, said mounting portion affixed to said clip below said second hanger member, said middle portion extending from said mounting portion and having a barrier surface biased toward said leg of said first hanger member so that an entrapment for the structural member when received at said space between said leg of said first hanger member and the pack is defined with the structural member between said barrier surface of said middle portion of said movable member and said support of said first hanger member, and said manually manipulable portion extending from said barrier surface and through said support of said first hanger member to an end.

5,573,164

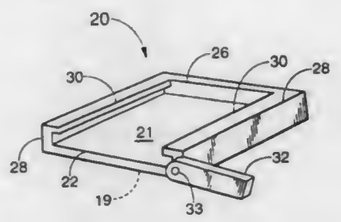
INTERCHANGEABLY MOUNTED ACCESSORIES FOR VEHICULAR USE

Carl F. Law, 1829 Cumberland Trail, Plano, Tex. 75023-3046

Continuation-in-part of Ser. No. 180,203, Jan. 11, 1994, abandoned. This application Jun. 1, 1995, Ser. No. 457,163

Int. Cl.[6] B60R *7/06*

U.S. Cl. 224—483 **20 Claims**



1. A family of accessories for mounting on a supporting surface in an automobile comprising:

at least two holders, each of said holders having a different utility and having an upper portion and a base portion, said base portion having a flat, extended bottom flange;

a base mount including means for selectively receiving and supporting one of said flat, extended bottom flanges and means fitting above said one bottom flange for confinement thereof against upward movement; and

means for attaching said base mount to the supporting surface;

said upper portion of each said holder being selected from a group comprising:

(a) a cup shaped liquid containing means;

(b) means configured to receive an electronic accessory having a top surface provided with suction cup means for mounting the electronic accessory to said top surface;

(c) a block shaped stationery holding means having external means for holding office papers and means for holding at least one pencil; and

(d) a rectangular cosmetic holding means having a compartmented interior and hinged lid means for covering said compartmented interior;

wherein said upper portion of the first of said at least two holders is different than said upper portion of the second of said at least two holders.

5,573,165

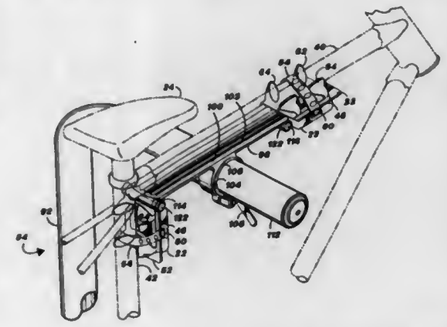
MULTI-FUNCTIONAL BRACKET FOR CARRIER RACK

John M. Bloemer, Madison, Wis., and John M. Kaloustian, Northville, Mich., assignors to Graber Products, Inc., Madison, Wis.

Filed Feb. 17, 1995, Ser. No. 392,547

Int. Cl.[6] B60R *9/10;9/12*

U.S. Cl. 224—523 **11 Claims**



1. A bracket for mounting recreational equipment on vehicle mounted carrier having at least one rearwardly extending carrier arm, the bracket comprising:

a) body having a first side and an opposed second side;

b) at least two opposed members which extend from the first side for engaging the frame of a bicycle;

d) a restraining strap mounted to the body and selectably extendable across either the first side or the second side, the strip adapted to be used to hold a bicycle when extended across the first side and to hold at least one ski when extended across the second side;

e) a fastener which extends from the body, and which is engageable with the strap; and

f) portions of the body defining a pivotal mount adapted for releasable attachment to the carrier arm, wherein the body may be positioned on the arm in an orientation to selectably present the bracket first side or the bracket second side for engagement with the frame of the bicycle or the at least one ski, respectively, wherein the second side has a unit of rails extending perpendicular to a plane defined by said second side and wherein the rails are spaced apart to position the at least one ski therebetween.

5,573,166

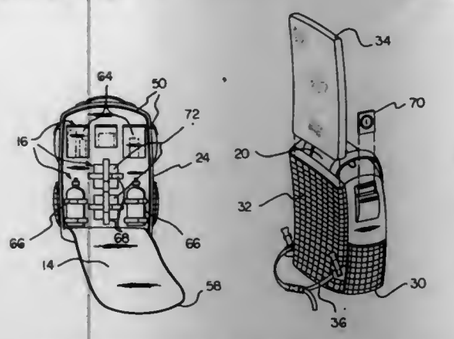
HIKER'S DAY PACK

Laurie A. Leja, S. Main St., P.O. Box 155, Rindge, N.H. 03461

Filed Feb. 16, 1995, Ser. No. 390,211

Int. Cl.[6] A45F *3/04*

U.S. Cl. 224—630 **1 Claim**



1. A new and improved hiker's day pack comprising, in combination:

a backpack formed in an essentially hollow rectangular shaped configuration, the backpack having a front wall, a rear wall, two side walls, a roof and a floor, each of the walls being positioned vertically in an operative orientation, each wall having an upper region and a lower region, the lower region of each side wall including a generally rectangular shaped mesh fabric sack positioned thereupon, each sack permitting the placement of supplies therein, the front wall including a mesh fabric pouch, the pouch extending essentially the entire height and width of the front wall, a foam pad being formed in a planar generally rectangular configuration and dimensioned to be positioned within the mesh pouch, the upper region of each side wall including a generally rectangular shaped pocket, the pockets including coupling means to permit securing of various items therein, the roof of the backpack including a handle, the front wall having adjustable waist straps affixed to its lower region, the straps adapted to be positioned around a user's waist, an uppermost extent of the front region having two shoulder straps extending therefrom, the shoulder straps having a wide upper segment and a thin lower segment, the upper segment adapted to be positioned across the user's shoulders, the lower segment being coupled to the waist straps, the floor of the back pack including a plurality of blanket roll straps, the periphery of the rearward extent of the roof and sidewalls of the backpack including closure means, the closure means including a covering to prevent damage from adverse weather conditions;

a majority of the rear wall being formed as a generally rectangular shaped retractable flap with an inner surface and an outer surface, a lowermost extent of the flap being formed contiguously with the rear wall, the perimeter of the flap having closure means affixed thereto, the closure means of the flap adapted to be coupled with the closure means on the roof and sidewalls of the backpack, the outer surface of the flap having two generally rectangular shaped pockets affixed thereto, the pockets including coupling means to securely retain items positioned therein, the lower region of the outer surface of the rear wall including a large pocket;

the interior surface of the front wall having two side regions and a central region therebetween, each side region including at least one large snack pocket and at least one parallel pair of VELCRO, a pile type fastener, coupling means, the central region including at least one perpendicular pair of VELCRO, a pile type fastener, coupling means, the VELCRO, a pile type fastener, coupling means permitting releasable coupling of various objects therein;

camping supplies being included with the apparatus, the camping supplies including a compass dimensioned to be positioned in a pocket of the apparatus, at least four sandwich containers dimensioned to be positioned within the perpendicular pairs of VELCRO, a pile type fastener, coupling means, at least four insulated water bottles formed in a generally cylindrical configuration, two fluid bottles dimensioned to be positioned within the parallel pairs of coupling means in the interior of the backpack, two fluid bottles dimensioned to be positioned in the mesh pockets of the side walls of the apparatus.

5,573,167

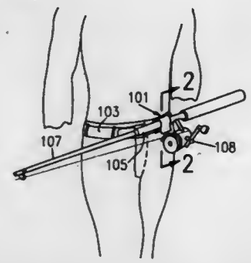
HOLDER AND METHOD OF USE

David Bebb, 11 Floramar, Rancho Santa Margarita, Calif. 92688, and Jack B. Lovley, II, 21886 Michigan La., Lake Forest, Calif. 92630

Division of Ser. No. 273,735, Jul. 12, 1994, abandoned. This application Feb. 14, 1996, Ser. No. 601,382

Int. Cl.[6] A45F *5/00;* **A01K** *97/10*

U.S. Cl. 224—666 **12 Claims**



1. A method of securing a fishing rod about a designated point on a user's body, said rod having a balance point along its length about which said rod is evenly balanced when held in a generally horizontal orientation, comprising the steps of:

providing a generally U-shaped rod clip having a pair of opposed, longitudinally extending legs, each of said legs having an upper and a lower end, the upper ends of said legs being connected and the lower ends of said legs being separated so as to form a mouth into which said fishing rod may be inserted so as to rest between said legs;

mounting said rod clip at said designated point with said mouth facing generally downwardly; and

inserting said fishing rod into said downwardly facing rod clip at said balance point, with the weight of said rod being fully supported by the pressure of said legs thereon.

5,573,168

DISPENSER FOR PLASTIC BAGS

Charles P. Kannankeril, North Caldwell, N.J., and Bruce A. Cruikshank, Wilton, Conn., assignors to Sealed Air Corporation, Saddle Brook, N.J.

Filed Dec. 29, 1993, Ser. No. 175,292

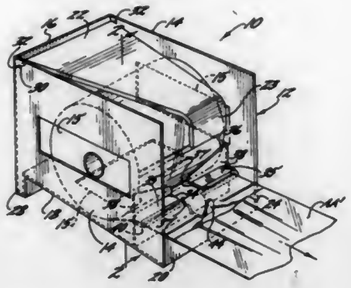
Int. Cl.[6] B26F *3/02*

U.S. Cl. 225—106 **23 Claims**

1. A dispensing apparatus for serially dispensing plastic bags from a wound roll of continuous flexible plastic bags, wherein adjacent plastic bags are joined along a perforated severance line, said apparatus comprising:

a container adapted to receive the wound roll of plastic bags, said container including a pair of opposed side panels, a rear panel located between said pair of side panels, a front panel located opposite said rear panel, and a bottom panel supporting the wound roll;

separating means located on said container for engaging the severance line of the plastic bags and separating the plastic bags from the wound roll;



guide means located on said container upstream of said separating means for guiding the plastic bags along a substantially confined path defining a first axis from the wound roll toward said separating means; and

threading means located on said container upstream of said guide means for threading the plastic bags from the wound roll received in said container into said guide means along a second axis generally transverse to said first axis.

5,573,169

APPARATUS FOR APPLYING TWO-PART SURGICAL FASTENERS IN LAPAROSCOPIC OR ENDOSCOPIC PROCEDURES

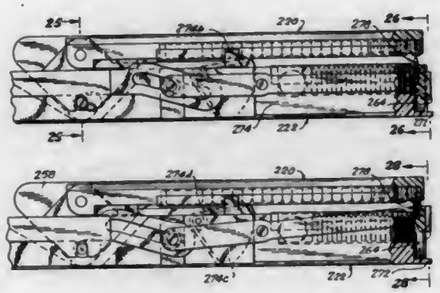
David T. Green, Westport; Henry Bolanos, East Norwalk; Michael S. Kolesa, Norwalk, all of Conn., and Kenneth Toso, Port Chester, N.Y., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 955,828, Oct. 2, 1992, abandoned. This application Jun. 2, 1994, Ser. No. 253,208

The portion of the term of this patent subsequent to Mar. 8, 2013, has been disclaimed.

Int. Cl.[6] A61B *17/068*

U.S. Cl. 227—177.1 **24 Claims**



1. Apparatus for endoscopic application of two-part surgical fasteners, each two-part surgical fastener including a fastener portion and a retainer portion, which comprises:

a) a handle assembly;

b) an endoscopic portion extending distally from said handle assembly and defining a longitudinal axis;

c) first and second support means for respectively supporting a plurality of fastener portions and retainer portions in respective opposed positions along the longitudinal axis;

d) means for simultaneously advancing such fastener portions and retainer portions in a distal direction along said longitudinal axis while maintaining the opposed positions thereof;

e) fastener applying means for individually moving such fastener portions toward such retainer portions in a direction which is generally transverse to the direction of simultaneous advancement and into engagement with one another for application to body tissue; and

f) means for sealing the apparatus to obstruct the passage of gaseous media.

5,573,170

BUMP FORMING APPARATUS

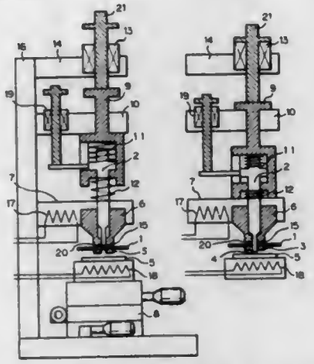
Junichi Sasaki; Masataka Itoh; Hiroshi Honmou, and . Yoshinobu Kaneyama, all of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Dec. 9, 1994, Ser. No. 353,134

Claims priority, application Japan, Dec. 14, 1993, 5-313317; Jun. 27, 1994, 6-144279

Int. Cl.[6] B23K *20/02;28/02*

U.S. Cl. 228—14 **7 Claims**



6. An apparatus for punching a metallic sheet to stamp out a bump and to bond said bump to a substrate, said apparatus comprising:

a punch and a die for punching the metallic sheet to form a bump and for bonding the resulting bump to the substrate;

a first drive force for driving said punch; and

a second drive force for further pressing said bump against the substrate, after the bump has been stamped out;

said punch and said first and second drive sources having axes of operation which are aligned with each other.

5,573,171

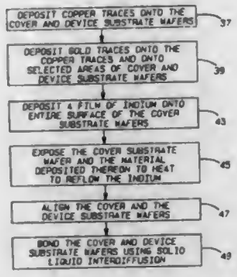
METHOD OF THIN FILM PATTERNING BY REFLOW

Alvin M. W. Kong, Los Angeles, and Chan A. Tu, West Covina, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Feb. 16, 1995, Ser. No. 389,367

Int. Cl.[6] H01L *21/50;21/52*

U.S. Cl. 228—123.1 **17 Claims**



1. A method of thin film patterning, comprising the steps of:

depositing a first metal trace onto a surface of a substrate in a predetermined pattern;

depositing a second metal trace onto the deposited first metal trace;

depositing a thin film of a third metal onto the entire surface of the substrate and onto the deposited first and second metal traces; and

heating the substrate and associated deposited metals to cause the deposited thin film of the third metal to flow and bead onto the second metal trace.

6. A method of bonding two substrates, comprising the steps of:

depositing a trace of a first metal in a predetermined pattern onto a surface of a first substrate;

depositing a trace of the first metal in substantially the same predetermined pattern onto a surface of a second substrate;

depositing a film of a second metal onto the surface of the first substrate;

heating the first substrate and associated deposited metals to cause the deposited thin film of the second metal to flow and bead onto the first metal trace;

aligning the surface of the first substrate with the surface of the second substrates in accordance with the predetermined patterns;

initiating a bond between the second metal of the first substrate and the first metal of the second substrate to bond the first and second substrates.

5,573,172

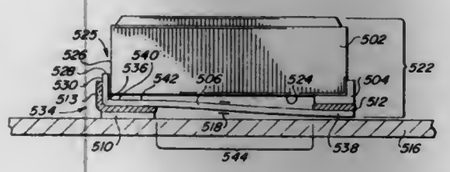
SURFACE MOUNT STRESS RELIEF HIDDEN LEAD PACKAGE DEVICE AND METHOD

John G. Gore, Sorrento, Fla., assignor to Sawtek, Inc., Orlando, Fla.

Continuation-in-part of Ser. No. 148,292, Nov. 8, 1993, Pat. No. 5,369,551. This application Nov. 29, 1994, Ser. No. 346,131

Int. Cl.[6] H05K *3/34*

U.S. Cl. 228—180.22 **20 Claims**



1. A method for mounting a surface mount package onto a printed circuit board, the method useful in preventing cracking of solder joints used in mounting the package, the method comprising the steps of:

brazing a lead first end to a package contact pad, the contact pad positioned on an underside of the package along a package side portion;

extending the lead across the package underside by placing a lead second end at an opposing side portion for affixing the lead second end to a printed circuit board pad;

positioning the package for affixing the lead second end to a printed circuit board pad; and

soldering the lead second end to the printed circuit board pad for mounting the package onto the printed circuit board, thereby forming a solder joint wherein movement of the lead during temperature excursions is sufficient for relieving movement of the solder joint thereby preventing cracking within the joint.

5,573,173

VACUUM TUBE COMPRISING A CERAMIC ELEMENT AND A METHOD OF INTERCONNECTING A CERAMIC ELEMENT AND A CONDUCTIVE ELEMENT

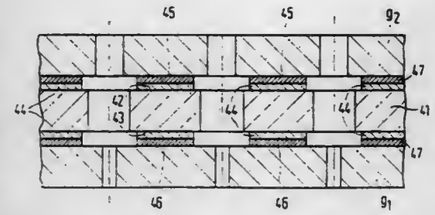
Ronald van der Wilk; Theodorus H. M. Stevens, and Josephus J. van Moorsel, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 146,513, Nov. 1, 1993, Pat. No. 5,479,067. This application Jun. 7, 1995, Ser. No. 487,618

Claims priority, application European Pat. Off., Nov. 2, 1992, 92203361

Int. Cl.[6] H01J *9/18*

U.S. Cl. 228—194 **16 Claims**



1. A method of interconnecting a ceramic element and a conductive element comprising the steps of:

a. applying to the ceramic element a first layer of a material including a metal and a filler comprising a bonding agent for bonding the first layer to the ceramic element;

b. applying to the conductive element a second layer of a material including a metal; and

c. pressing the first and second layers together to form a diffusion bond.

5,573,174

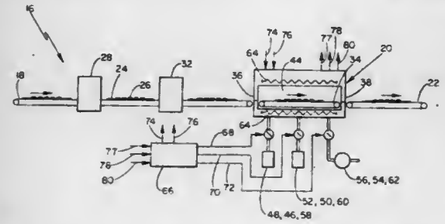
AUTOMATIC REFLOW SOLDERING SYSTEM

Robert Pekol, 3102 Aspen Ct., Eau Claire, Wis. 54703

Filed Aug. 15, 1994, Ser. No. 290,074

Int. Cl.[6] B23K *1/012;* **H05K** *3/34*

U.S. Cl. 228—219 **20 Claims**



1. A process for connecting electrical circuit components to printed circuit boards, including the steps of:

(a) conveying a plurality of printed circuit boards in sequence and at a controlled rate along a path;

(b) applying a solder paste to each of the printed circuit boards as it travels along the path;

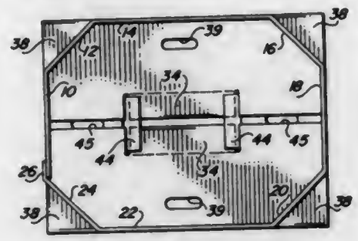
(c) after applying the solder paste, placing an electrical circuit component onto the printed circuit board as the printed circuit board travels along the path;

(d) directing each successive printed circuit board and circuit component, in sequence, to a different one of a plurality of soldering containers;

(e) with each said printed circuit board and circuit component inside of its associated container, closing the container to form a fluid-tight seal between the inside of the container and the environment outside of the container;

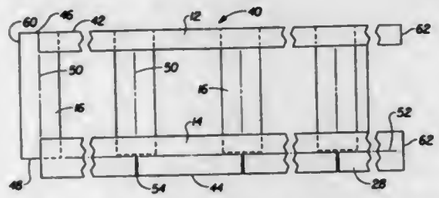
(f) while each container is closed, controllably altering the environment within the container to perform a solder reflow operation on the associated printed circuit board and circuit component;
(g) after each reflow soldering operation, opening each of the containers to permit removal of the associated printed circuit board and circuit component, and conveying the printed circuit boards and circuit components away from the soldering station in sequence and at said controlled rate.

5,573,175
OCTAGONAL CONTAINER WITH LOCK BOTTOM
Gustave O. Straub, Milwaukee, and Jeffrey D. Schneider, Menomonee Falls, both of Wis., assignors to Jefferson Smurfit Corporation, Clayton, Mo.
Continuation of Ser. No. 200,004, Feb. 22, 1994, abandoned. This application Dec. 21, 1994, Ser. No. 361,161
Int. Cl.[6] B65D *5/06*
U.S. Cl. 229—109 **2 Claims**



1. A one-piece, collapsible, octagonal, bulk, shipping container formed from a unitary blank of foldable sheet material, such as paperboard, comprising:
(a) pairs of opposed major side wall panels, minor side wall panels, corner side wall panels, and an attaching panel foldably joined to each other, along parallel vertical fold lines, to form a tubular structure open at the ends;
(b) said major side wall panels extending parallel to each other and normal to said minor side wall panels, and said corner side wall panels extending diagonally between adjacent of said major and minor side wall panels;
(c) inner closure flaps foldably joined to lower edges of said major side wall panels and folded inboardly toward each other;
(d) said inner closure flaps each having a width greater than that of the major side wall panel to which it is joined and having side portions which underlie and are partly formed from material cut from adjacent of said corner side wall panels;
(e) said inner closure flaps also having, in opposed side edges thereof, diagonal slots receiving lower portions of adjacent of said corner side wall panels;
(f) a pair of outer closure flaps foldably joined to lower edges of said minor closure panels and folded inboardly therefrom, and normal thereto toward each other, and underlying portions of said inner closure flaps;
(g) said outer closure flaps each having a pair of laterally spaced openings extending inwardly from a free edge thereof that define therebetween a lock tongue formed from material of a portion of said outer closure flap and extending from a remaining portion of said inner closure flap;
(h) said lock tongue being foldably joined to said outer closure flap remaining portion along a fold line extending between said laterally spaced openings and parallel to a fold line joining said outer closure flap to a related of said side wall panels;
(i) said inner closure flaps each having a pair of laterally spaced openings extending inwardly from a free edge thereof that define therebetween a lock tab formed from material cut from a portion of said inner closure flap and foldably joined to and extending rigidly from a remaining portion of said inner closure flap;
(j) said inner closure flap lock tabs being positioned to extend downwardly through related of said outer closure flap openings and underlying said outer closure flap lock tongues;
(h) said outer closure flap lock tongues being arranged and disposed to prevent said inner closure flap lock tabs from lying completely flat against the underside of said outer closure flaps, whereby a positive cushioning effect is achieved by said inner closure flap lock tabs;
(l) each of said inner closure flaps including portions overlying portions of said outer closure flaps and having inboard edges spaced laterally from each to define an opening therebetween; and
(m) each of said outer closure flap portions having extending therethrough a centrally disposed, elongated, vent hole extending in a direction normal to a fold line joining said inner closure flap to a related of said side wall panels, so that when said container is erected said vent hole will be positioned between the inboard edges of said overlying outer closure flaps portions in alignment with the opening between said inboard edges.

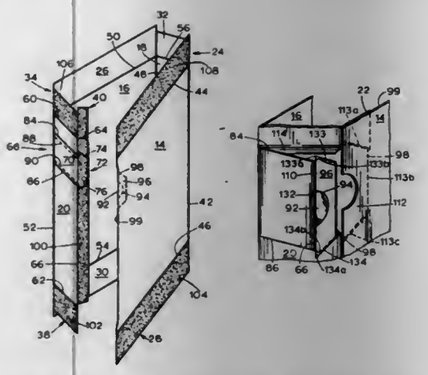
5,573,176
MINIMAL SHIPPING CONTAINER AND METHOD OF CONSTRUCTION
Stephen S. Applegate, Milford, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sep. 22, 1994, Ser. No. 310,605
Int. Cl.[6] B65D *25/54*
U.S. Cl. 229—162 **7 Claims**



1. A corrugated shipping container blank comprising a unitary and substantially flat ladder-shaped structure made of substantially rectangular-shaped interfitting strips of corrugated cardboard, said interfitting strips of corrugated cardboard being fastened together by a bonding means at overlapping areas of said strips to form substantially open areas in said ladder-shaped structure, said ladder-shaped structure having two ends, said ladder-shaped structure having fold lines so as to be foldable at said interfitting strips and connectable at said two ends to form a shipping container.

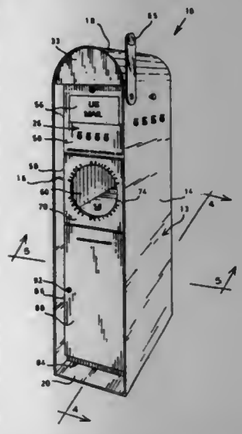
5,573,177
RECLOSABLE HINGED FLAP
Graham Hough, Chicago, Ill., assignor to Field Container Company, L.P., Elk Grove Village, Ill.
Filed Sep. 19, 1995, Ser. No. 530,071
Int. Cl.[6] B65D *5/54*
U.S. Cl. 229—207 **24 Claims**

1. A blank for forming a carton, comprising:
a first main panel;
a second main panel connected to the first main panel;
a side panel connected to the second main panel along a line;
a glue flap connected to the side panel;
a reclosable hinged flap extending across the side panel and into the glue flap, the reclosable hinged flap having a head portion and a neck portion connected to the head portion, wherein the head portion has a first height and separation of the neck



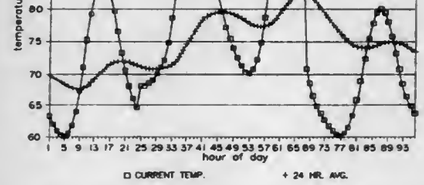
portion from the side panel creates an opening having a second height which is less than the first height;
a disengaging tab integrally formed in the first main panel; and
a plurality of end panels secured to the panels.

5,573,178
COMBINED MAIL, NEWSPAPER AND PARCEL DELIVERY BOX
Thomas C. Worden, 4608 Wye Way La. SW, Knoxville, Tenn. 37920
Continuation-in-part of Ser. No. 17,542, Jun. 4, 1993, Pat. No. 5,387,311. This application Jan. 17, 1995, Ser. No. 371,528
Int. Cl.[6] B65D *91/00*
U.S. Cl. 232—24 **9 Claims**



1. A delivery system for receiving postal service mail delivered by a governmental postal authority, and postal service mail to be collected for delivery by a governmental postal authority and for receiving direct delivery items, said delivery system comprising:
an incoming mail receptacle for receiving said postal service mail delivered by said governmental postal authority, said incoming mail receptacle defining a primary access opening and being provided with a first closure pivotally secured to said incoming mail receptacle for being selectively received over and at least partially cover said primary access opening, said first closure being provided with a lock for securing said first closure and with a secondary access opening through which said postal service mail delivered by said governmental postal authority is received, said first closure being provided with a secondary closure for selectively covering said secondary access opening; and
a housing defining a postal service mail receptacle compartment for receiving and housing said incoming mail receptacle, and further defining a direct delivery compartment for receiving said direct delivery items, said housing including first and second sidewalls, a top wall and a rear wall, said mail receptacle compartment being defined by a portion of said first and second sidewalls, said top wall, a portion of said rear wall, and a first partition which extends between said first and second sidewalls, and wherein said housing is provided with support members for supporting said incoming mail receptacle within said receptacle compartment above and selectively spaced from said first partition.

5,573,179
METHOD FOR CONTROLLING ENVIRONMENTAL CONDITIONS OF LIVING ORGANISMS BASED UPON TIME INTEGRATED VARIABLES
Michael B. Timmons, Ithaca, N.Y., and Richard S. Gates, Wilmore, Ky., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.
Continuation of Ser. No. 167,016, Dec. 16, 1993, abandoned. This application Sep. 9, 1994, Ser. No. 303,875
Int. Cl.[6] A01K *31/18;* **F24F** *7/00*
U.S. Cl. 236—6 **6 Claims**



1. A method for controlling environmental conditions of living organisms comprising the steps of:
a) selecting at least one environmental variable having a direct effect on a living organism which is exposed to said variable;
b) selecting a time interval length over which the living organism is directly affected by the average value of the variable over said time interval known as the time integrated average value of the selected environmental variable;
c) selecting a range of time integrated average values of the selected variable which provides the optimum environment for the living organism;
d) selecting a desired range of instantaneous values of the selected environmental variable;
e) determining the time integrated average value of the selected environmental variable over said time interval length;
f) comparing the determined time integrated average value to the selected range of time integrated average values;
g) sensing the instantaneous value of the selected environmental variable;
h) comparing the sensed instantaneous value with the desired range of instantaneous values; and,
i) controlling operation of at least one environmental control device for the selected environmental variable to raise the instantaneous value of the environmental variable if either the sensed instantaneous value is below the desired range of instantaneous values or the determined time integrated average value is below the selected range of time integrated

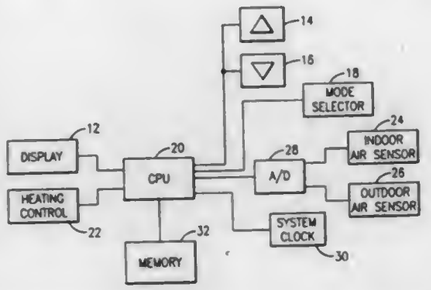
average values and the sensed instantaneous value is not above the desired range of instantaneous values; and alternatively, to lower the instantaneous value of the selected environmental variable if either the sensed instantaneous value is above the desired range of instantaneous values or the determined time integrated average value is above the selected range of time integrated average values and the instantaneous value is not below the desired range of instantaneous values.

5,573,180

PROTECTIVE THERMOSTAT

Laurie L. Werbowsky, Jamesville, N.Y.; William F. Van Ostrand, Indianapolis, Ind.; Peter G. Pierret, Fayetteville, N.Y., and Hall Virgil, Jr., Brownsburg, Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 3, 1995, Ser. No. 510,682
Int. Cl.[6] F25B *29/00*; G05D *23/00*
U.S. Cl. 236—46 R **14 Claims**



1. A thermostat for controlling the activation of a heating unit in response to questionable indoor temperature readings, said thermostat comprising:

an indoor temperature sensor;

an outdoor temperature sensor;

a heating control for activating a heating apparatus; and

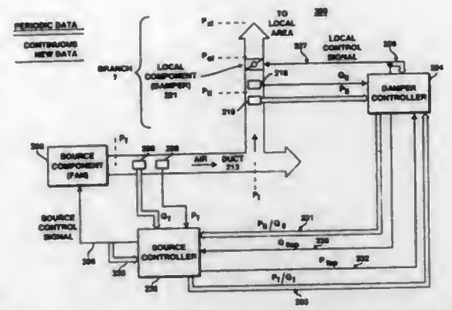
a processor interfacing with said indoor temperature sensor, said outdoor temperature sensor, and said heating control, said processor being operative to read the indoor temperature from said indoor temperature sensor and to compare the read indoor temperature with an acceptable range of indoor temperature values, said processor being furthermore operative to read the outdoor temperature from the outdoor temperature sensor when the indoor temperature reading is not within the acceptable range of indoor temperature values, said processor being furthermore operative to transmit a signal activating said heating control when the outdoor temperature reading is below a predefined value of outdoor temperature.

5,573,181

GLOBAL CONTROL OF HVAC DISTRIBUTION SYSTEM

Osman Ahmed, Buffalo Grove, Ill., assignor to Landis & Gyr Powers, Inc., Buffalo Grove, Ill.

Filed Jan. 6, 1995, Ser. No. 369,425
Int. Cl.[6] F24F *7/00*; *3/00*
U.S. Cl. 236—49.3 **24 Claims**



1. A controller for controlling a component of a heating, ventilation and air-conditioning (HVAC) fluid distribution system, the controller comprising:

means for identifying characteristics related to the component of the HVAC fluid distribution system utilizing system variables comprising a measured static pressure and a measured flow of the fluid to produce identified characteristics of the component; and

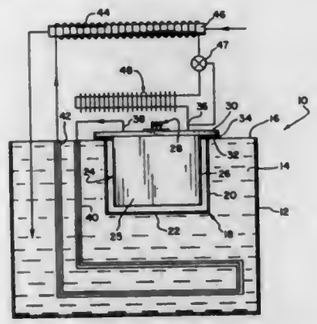
means, operatively coupled to the means for identifying, for controlling the component based, in part, on the identified characteristics.

5,573,182

HEAT PUMP HOT WATER HEATER

Edwin L. Gannaway, and Frank J. Scire, both of Adrian, Mich., assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Aug. 22, 1995, Ser. No. 518,079
Int. Cl.[6] F25B *27/00*
U.S. Cl. 237—2 B **19 Claims**



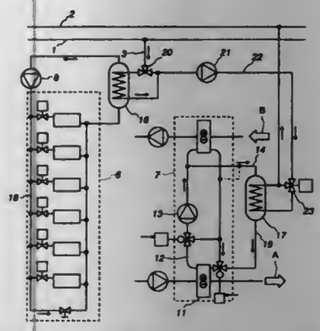
1. A water heater comprising a hot water tank having a wall defining a water chamber therewithin, said wall including structure defining a well within said water chamber, a hermetic compressor heat transfer mechanism within said well for heating the water in said tank, said compressor mechanism cooperating with said structure to define a volume therebetween, and a resilient mounting member for mounting the compressor mechanism within said well, said resilient member yieldably supporting said compressor mechanism in said well, said resilient member including at least one vent opening for venting said volume.

5,573,183

METHOD AND APPARATUS FOR HEATING BUILDING AND VENTILATION AIR

Seppo Leskinen, Västerskog, Finland, assignor to ABB Flakt AB, Stockholm, Sweden

PCT No. PCT/FI93/00085, § 371 Date Sep. 7, 1994, § 102(e) Date Sep. 7, 1994, PCT Pub. No. WO93/18350, PCT Pub. Date Sep. 16, 1993
PCT Filed Mar. 10, 1993, Ser. No. 295,849
Claims priority, application Finland, Mar. 10, 1992, 921034
Int. Cl.[6] F24D *3/02*
U.S. Cl. 237—8 R **17 Claims**



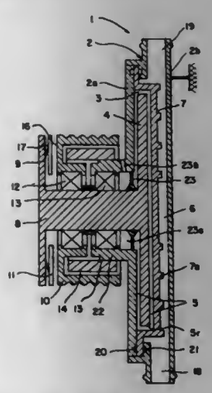
6. An apparatus for heating room space of a building, comprising heat exchanging means for conveying heat from a district heating liquid to a heating liquid flowing in heating circuits for heating the building and ventilation air, wherein, in order to obtain low temperature of the district heating liquid after said conveying, the heating circuits for heating the building and the ventilation air are connected in series, and said heating liquid flowing in the heating circuits is arranged to flow in the apparatus in such a manner that it conveys heat needed for the heating of the building and thereafter, when it is colder, heat needed for the ventilation air.

5,573,184

HEATING DEVICE FOR MOTOR VEHICLES

Hans Martin, Wartbergstrasse 27, 70191 Stuttgart, Germany

Filed Jun. 15, 1995, Ser. No. 490,626
Claims priority, application Germany, Jun. 15, 1994, 44 20 841.3
Int. Cl.[6] F24C *9/00*
U.S. Cl. 237—12.3 R **19 Claims**



1. A heating device, and heating device comprising:

a fixed housing;

a working chamber having an inner wall provided in said fixed housing, said working chamber comprising a closed chamber for containing a viscous fluid;

a cooling chamber provided in said housing and adapted to have a cooling fluid flow therethrough;

an intermediate wall that forms a heat-conducting connection between said working chamber and said cooling chamber;

a rotor rotatably mounted in said working chamber, said rotor and said inner wall of said working chamber forming at least one gap; and

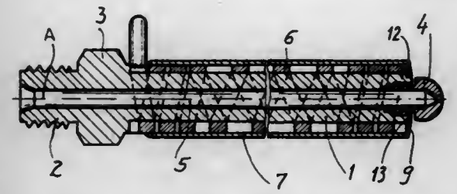
a switchable clutch to selectively drive said rotor.

5,573,185

ELECTRICALLY HEATED NOZZLE FOR INJECTION-MOLDING MACHINE

Eugen Schwarzkopf, Lüdenscheid, Germany, assignor to Hotset Heizpatronen u. Zubehohr GmbH, Ludenscheid, Germany

Filed Jan. 6, 1995, Ser. No. 369,793
Claims priority, application Germany, Jan. 7, 1994, 9400152 U
Int. Cl.[6] B05B *1/24*
U.S. Cl. 239—135 **4 Claims**



1. A nozzle for an injection-molding machine, the nozzle comprising:

an elongated body centered on an axis and formed with

an axially and longitudinally throughgoing passage,

a threaded rear end,

an outer wall, and

a front end formed with a step having an axially forwardly directed annular end face and a radially outwardly directed, frusto-conical, and rearwardly tapered annular side surface set in from the outer wall;

a removable nozzle element in the passage at the front end;

an electrical heating element on the outer wall;

a protective sleeve coaxial with the body and surrounding and enclosing the body and heating element and having a front end at the body front end;

an end ring set on the step and having an inner periphery formed with a cylindrical inner surface juxtaposed with the annular side surface and forming therewith a triangular-section gap and an outer periphery juxtaposed with the sleeve front end; and

respective inner and outer annular weld joints between the inner periphery and the annular side surface and between the outer periphery and the sleeve front end, the outer weld filling the gap.

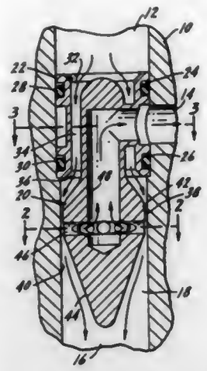
5,573,186

STATIONARY VENTURI DIVERTER VALVE

Todd C. Loschelder, Macedonia, Ohio, assignor to Moen Incorporated, North Olmsted, Ohio

Filed Mar. 20, 1995, Ser. No. 406,480
Int. Cl.[6] B05B *1/32*
U.S. Cl. 239—445 **6 Claims**

1. A faucet diverter valve for directing water to either a faucet discharge or to an alternate water flow device including a valve body having an inlet, a faucet outlet, and an alternate water flow



device outlet, a chamber in said valve body, said chamber having a wall, said inlet and outlets opening into said chamber, a stationary valve member positioned within said chamber, a portion of said valve member and said chamber wall forming a restricted water flow passage therebetween, water passage means in said valve member connecting said valve body inlet and the upstream side of said restricted passage, said alternate water flow device outlet being located at the downstream side of said restricted passage, said valve member having openings therein positioned adjacent to and in communication with said restricted water flow passage, and a flow path in said valve member connecting said valve member openings and said faucet outlet, when there is no water flow to an alternate water flow device, water from said valve body inlet flows to said restricted water flow passage, through said valve member openings to said valve body faucet outlet, when there is flow to an alternate water flow device, water flows through said restricted passage and past and not into said valve member openings because of the increased velocity of water flow through said restricted water flow passage.

5,573,187

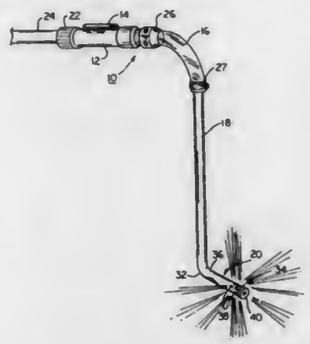
SPRAYING APPARATUS AND METHOD FOR CLEANING HOLDING TANKS OF RECREATIONAL VEHICLES AND OTHER VEHICLES WITH A COMMODE

Ronnie E. Proctor, P.O. Box 1423, High Point, N.C. 27261

Filed Nov. 21, 1994, Ser. No. 342,728

Int. Cl.[6] B60B *9/02*

U.S. Cl. 239—532 **11 Claims**



1. A spraying apparatus for cleaning holding tanks with a commode, comprising:

a conduit having a valve for controlling fluid flow;

a viewport connected to the distal end of the conduit by a connector;

an extended tube having first and second ends with the first end connected to the viewport by a connector, and an elbow positioned near the second end; and

a radial spray nozzle positioned at the second end of the extended tube and comprising: a nozzle member including a cylindrical shaft portion having one end open to receive a flow of fluid; openings positioned radially about the shaft portion so as to produce a circumferential spray pattern; and an end cap enclosing the other end opposite the open end to limit axial flow.

5,573,188

PROCESS FOR GRINDING CALCIUM CARBONATE IN AQUEOUS MEDIA

Hubert Bousquet, Caluire; Georges Ravet, Saint-Genis-Les-Ollieres, and Jacky Rousset, Saint-Trivier-Sur-Molgnans, all of France, assignors to Coatex S.A., Caluire, France

Continuation of Ser. No. 942,799, Sep. 10, 1992, abandoned, which is a continuation of Ser. No. 718,930, Jun. 25, 1991, Pat. No. 5,181,662, which is a continuation of Ser. No. 470,897, Jan. 26, 1990, abandoned. This application Nov. 23, 1994, Ser. No. 348,082

Claims priority, application France, Jan. 27, 1989, 89 01317

The portion of the term of this patent subsequent to Jun. 25, 2011, has been disclaimed.

Int. Cl.[6] B01J *2/30*

U.S. Cl. 241—16 **10 Claims**

1. In a process for grinding coarse calcium carbonate in the presence of a water-soluble polymeric grinding agent composed of at least one acidic polymer or copolymer obtained from at least one carboxylated ethylenic monomer selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, crotonic acid, fumaric acid, maleic anhydride, isocrotonic acid, aconitic acid, mesaconic acid, sinapic acid, undecylenic acid, angelic acid, and a-hydroxyacrylic acid to produce an aqueous suspension of at least 75% by weight of calcium carbonate having a particle size no larger than about 2 μm and at least 60% of the particles having a particle size below 1 μm, the improvement which comprises:

maintaining the temperature of the aqueous suspension below 60° C. during the grinding step, wherein the grinding agent is introduced into the aqueous medium at an amount of 0.05% to 0.73% by weight relative to the dry weight of calcium carbonate.

5,573,189

HIGH APPLICATION RATE EXTRUDABLE POLYMERS AND METHOD OF MANUFACTURE

Brian J. Ward, Valley Falls; Edward M. Jeram, Burnt Hills; Richard A. Striker, Wynantskill, and Lawrence M. Wichelns, Clifton Park, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 165,219, Dec. 10, 1993, abandoned. This application Jul. 24, 1995, Ser. No. 506,244

Int. Cl.[6] B02C *23/18*

U.S. Cl. 241—21 **9 Claims**

1. A method for manufacturing an extrudable material formed of a blend of component (A), a liquid polymer, and component (B), a finely divided fumed silica filler, said finely divided fumed silica filler having an initial aggregate size, said method comprising the steps of:

a) combining component (A) and component (B) and

b) mixing component (A) and component (B) whereby said initial aggregate size of said finely divided fumed silica filler is reduced by an amount from about one-half to about two thirds said initial aggregate size of said finely divided fumed silica filler.

5,573,190

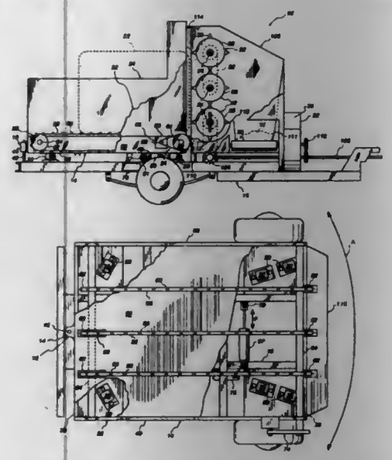
METHOD AND APPARATUS FOR SHREDDING A LARGE BALE

Louis Goossen, Beatrice, Nebr., assignor to Goossen Industries & Construction, Beatrice, Nebr.

Filed Feb. 10, 1995, Ser. No. 387,022

Int. Cl.[6] B02C *23/02*

U.S. Cl. 241—27 **15 Claims**



15. A method of shredding a large bale of forage, bedding, or mulching material the method comprising the steps of:

moving a bale cutting tool in a cutting action to shred a bale;

oscillating the bale relative to the cutting tool to induce an additional action as the cutting tool shreds the bale; and

moving the bale into the cutting tool as the bale is oscillated to progressively shred the bale; and

adjusting at least one of the rate at which the bale is oscillated and the rate at which the bale is moved into the cutting tool depending on a characteristic of the shredding of the bale.

5,573,191

DEVICE FOR THE EJECTION OF REMNANT PACKAGES AND EMPTY BOBBINS ON A CREEL

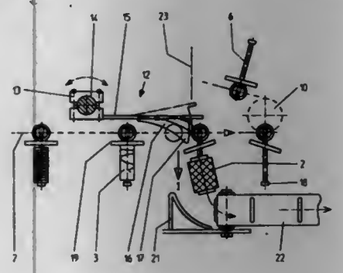
Martin Fuhr, Oberuzwil, Switzerland, assignor to Benninger AG, Uzwil, Switzerland

Filed Sep. 15, 1994, Ser. No. 305,308

Claims priority, application Switzerland, Nov. 10, 1993, 3381/93

Int. Cl.[6] B65H *67/02*; **D03J** *5/08*

U.S. Cl. 242—41 **12 Claims**



1. Device for ejecting remnant packages or empty bobbins from a creel (1), said device comprising

a package carrier device (5) on which numerous spindles (6) are arranged in rows for the accommodation of packages, the package carrier device being able to travel from an operating position (8) for unwinding of the packages into a changing position (9) for reloading of the spindles,

a plurality of striker elements, one for each row of spindles, arranged in the area of movement of the package carrier device (5), each said striker element comprising a spring for storing energy, cocking means for storing energy in the spring in response to movement of the package carrier device, trigger means for releasing the spring device so that the striker element imparts a force impulse (I) in the direction of and at a trigger position adjacent one of said spindles (6), to thereby eject a remnant package (2) or empty bobbin therefrom.

5,573,192

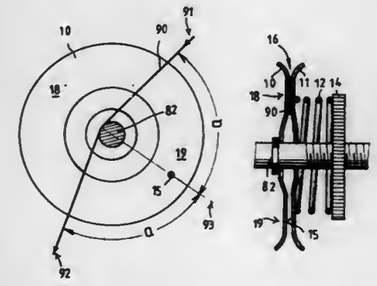
THREAD TENSIONING DEVICE FOR A SEWING MACHINE

Hsien-Chang Tseng, 9th Floor, No. 13-4, Section 1, Da Ching Street, Taichung, Taiwan

Filed Aug. 15, 1995, Ser. No. 515,258

Int. Cl.[6] B65H *59/22*

U.S. Cl. 242—150 R **1 Claim**



1. A thread tensioning device for a sewing machine, said thread tensioning device comprising:

a shaft,

a pair of plates engaged on said shaft for clamping a thread therebetween, said plates each including a first portion for receiving the thread therebetween and each including a second portion opposite to said first portion, the thread being engaged over said shaft and being bent so as to include a bisector,

means for biasing said plates toward each other, and

a first of said plates including a projection extended from said second portion thereof and extended toward said second portion of a second of said plates so as to separate said second portions of said plates away from each other and so as to form a closely contacted outer peripheral portion in said first portions, and in order to force the thread toward said shaft, said projection being located in the bisector.

5,573,193

FISHING REEL WITH ENCLOSED SPOOL AND LINE RETAINING DEVICE

Jean Bernard, Scionzier, and Alain Plestan, Marignier, both of France, assignors to Mitchell Sports, France

Filed Sep. 13, 1994, Ser. No. 305,031

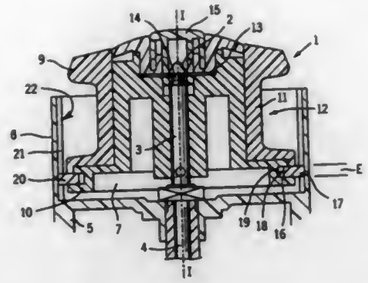
Claims priority, application France, Sep. 14, 1993, 93 11062

Int. Cl.[6] A01K *89/00*

U.S. Cl. 242—319 **16 Claims**

1. A fishing reel comprising:

a spool having a peripheral groove for stowing a line flanked by anterior and posterior flanges, the spool being carried by a



support shaft, said spool being reciprocated longitudinally, said spool having a peripheral annular groove;

a flyer carrying a retractable laying finger and including a cylindrical side wall radially surrounding said spool and longitudinally enclosing a portion of said spool, said flyer having a plurality of longitudinal grooves on an inside surface of the cylindrical side wall; and

a ring having an outside diameter greater than the diameter of said posterior flange, said ring being rotatably mounted in said peripheral annular groove and including a plurality of protrusions extending radially therefrom, each of said protrusions extending with clearance into a corresponding longitudinal groove in said flyer, whereby said ring is free to rotate with respect to the spool when driven by engagement of the protusions in the longitudinal grooves and is free to reciprocate with the with resist to the flyer when driven by the spool by engagement of the ring in the peripheral annular groove to impede entry of line between said spool and said flyer.

5,573,194

TAPE TENSION CONTROLLING APPARATUS FOR A REEL SHIFT DECK MECHANISM

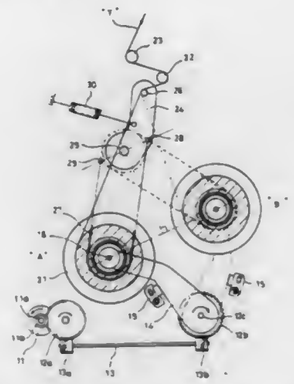
Gun Soon Park, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Jun. 7, 1995, Ser. No. 487,653

Claims priority, application Rep. of Korea, Jun. 13, 1994, 13239

Int. Cl.[6] **G11B** *15/32;15/43*

U.S. Cl. 242—334.6 **4 Claims**



1. A tape tension controlling apparatus for a reel shift deck mechanism comprising:

a link lever rotatably connected to a shaft;

driving means for driving the link lever;

reel means carried on said link lever so as to be displaceable between predetermined first and second positions according to a corresponding size of a cassette;

a tension arm rotatable about a point located on a line perpendicularly bisecting a segment line described between rotation centers of the reel means when displaced in said first and second predetermined positions; and

a tension band provided between said reel means and said tension arm in order to maintain a tape tension force when said reel means is located in each of said first and second positions.

5,573,195

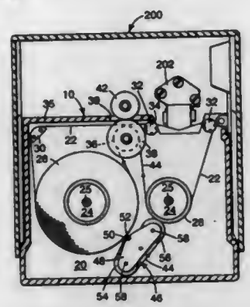
DATA CARTRIDGE WITH PIVOTING ROLLER YOKE

John F. Runyan, and Jerry L. Alexander, both of St. Paul, Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Feb. 24, 1995, Ser. No. 394,372

Int. Cl.[6] **G11B** *23/087*

U.S. Cl. 242—340 **25 Claims**



1. A tape cartridge comprising:

first and second hubs mounted for rotation on a housing, wherein tape is wound in opposite directions around the hubs to form two tape packs;

a drive roller rotatably mounted on the housing;

first and second tension control rollers, one mounted adjacent each tape pack for rotation on a shaft constrained in a yoke, a third roller mounted for rotation between said first and second tension control rollers on a third shaft constrained in the yoke, wherein the third roller contacts the first and second tension control rollers, and wherein said yoke articulates about a pivot located in a region between the drive roller and a line projected through the shafts of said tension control rollers and parallel to a plane of said cartridge housing; and

an elastic belt stretched around the drive roller and the tension control rollers and engaging the tape packs.

5,573,196

CARTRIDGE AND METHOD FOR ATTACHING OR DETACHING A FILMSTRIP TO A FILM CARTRIDGE

Thomas C. Merle, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1993, Ser. No. 171,947

Int. Cl.[6] **G03B** *23/02*

U.S. Cl. 242—348.1 **8 Claims**

1. A method of attaching a filmstrip to a film cartridge, said cartridge having a spool rotatably mounted therein and a discharge opening through which said filmstrip passes when said cartridge is in the assembled condition, said cartridge having a movable section with respect to said cartridge without substantially effecting the operation of said spool, means for locking and unlocking said movable section with respect to said cartridge, said means for unlocking and locking comprising a flexible section provided on said movable section and having a projection designed to engage a locking opening on said cartridge, said flexible section being designed to deflect a sufficient distance to allow disengagement of said movable section by being pushed inward, comprising the steps of:

unlocking said movable section by pushing axially inward upon said flexible member;

opening said movable section so as to form an access opening for allowing attachment of the filmstrip to the spool while said spool is within said cartridge, said access opening being of greater dimension than said discharge opening;

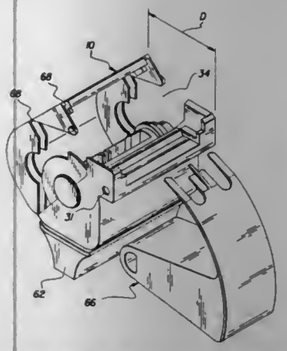
providing a tool for attaching a filmstrip to said spool;

moving said tool into said cartridge through said access opening to a position which would allow the filmstrip to be secured to said spool;

inserting the film into said cartridge through said access opening and attaching said filmstrip to said spool;

removing said tool from said cartridge; and

closing said movable section so as to return said cartridge to its normally closed position.



5,573,197

REEL DISC DRIVING DEVICE FOR A VIDEO CASSETTE RECORDER

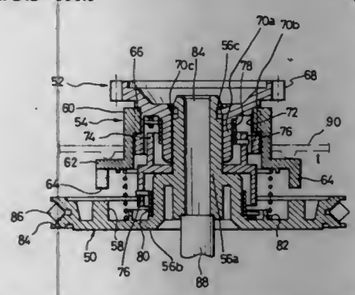
Yoo-Kil Choi, Incheon, Rep. of Korea, assignor to Ltd. Daewoo Electronics Co, Seoul, Rep. of Korea

Filed Dec. 28, 1994, Ser. No. 365,725

Claims priority, application Rep. of Korea, Dec. 30, 1993, 93-31704

Int. Cl.[6] **G11B** *15/32;* **G03B** *1/04*

U.S. Cl. 242—356.6 **4 Claims**



1. A reel disc driving device for use in a VCR, capable of operating in a variety of operating modes, having an idler for selectively transmitting the driving force of a capstan motor therethrough to one of a supply and a take-up reel discs rotatably mounted to a deck of the VCR, which comprises:

a driving pulley having a cylindrical hub rotatably mounted to a support shaft of the deck and a flange extending from a lower part of the hub in a generally perpendicular relationship with each other;

a driving gear having an inner cylinder inserted around an upper part of the hub, an outer cylinder concentrically and radially spaced from the inner cylinder, and a gear portion integrally formed at the outer cylinder and meshed with said idler;

a clutch wheel disposed between said pulley and said gear for a selective engagement with said pulley, said clutch wheel including a ring member axially slidably and nonrotatably coupled to the outer cylinder of said gear and an annular web outwardly extended from a lower portion of the ring member;

means provided on said annular web for non-rotatably engaging said pulley flange when said clutch wheel is at a downward position;

means for biasing the clutch wheel upward to disengage it from said flange; and

means mounted to the hub of said pulley for variably generating a torque required for driving said gear depending on an operating mode selected, wherein said torque generating means includes a cylindrical, stepped spring holder having a plurality of slits formed at upper and lower portions thereof, a first one-way clutch spring inserted around the inner cylinder of said gear, opposite ends of said first clutch spring being fixed to one of the upper slits and to the inner cylinder of the gear, respectively, and a second one-way clutch spring inserted around the lower part of the hub which has a greater diameter than that of the inner cylinder, one end of said second clutch spring being fixed to one of the lower slits and the other end being fixed to the lower part of the hub, said second spring having a greater diameter than that of said first spring, wherein said respective clutch springs are activated in an opposite relationship with each other in a switching of operating mode, thereby allowing the first one-way clutch spring to bind the inner cylinder of the gear, while allowing the second one-way clutch spring to release the lower part of the hub and vice versa.

5,573,198

TAPE ROLL REWIND DEVICE AND METHOD FOR REWINDING TAPE ON A TAPE ROLL

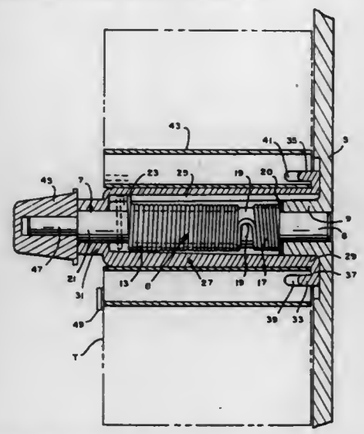
Arnold Fassman, Westport; John R. Nobile, Fairfield; Victor C. Riccardi, Stamford; William A. Ross, Darien, and William A. Salancy, Norwalk, all of Conn., assignors to Pitney Bowes, Stamford, Conn.

Filed Feb. 2, 1995, Ser. No. 382,749

Int. Cl.[6] **B65H** *16/00;18/10;75/48*

U.S. Cl. 242—375 **8 Claims**

1. A tape roll rewind device comprising:



a rotatable tape spool with tape wound thereon; and

means for 1) storing energy in response to rotation of said tape spool in a first direction, 2) storing a maximum amount of energy regardless of the amount of rotation of tape spool in said first direction, and 3) utilizing said stored energy to rotate

said tape spool in a second direction to rewind tape onto said tape spool upon the ending of rotation of said tape spool in said first direction, wherein said energy storing means includes a spring operatively connected to said tape spool, said spring having a torsion spring portion and a wrap spring slip clutch portion which are connected to each other to form a continuous spring device.

5,573,199

Patent Not Issued For This Number

5,573,200

HOOK TYPE COIL WINDING MACHINE

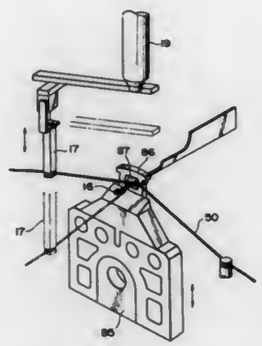
Kazuhiro Sato, Kanagawa; Hiroyuki Watanabe, and Takashi Shoji, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 8, 1994, Ser. No. 224,863

Claims priority, application Japan, Apr. 13, 1993, 5-109937

Int. Cl.[6] B65H *81/02;* **H01F** *7/06*

U.S. Cl. 242—434.8 **6 Claims**



1. A hook type coil winding machine, comprising:

supporting means for supporting thereon a core which has a core hole formed therein such that a wire to be wound on the core can be threaded through the core hole;

a chuck operable to grasp and move the wire to a predetermined position;

a hook operable to move through the core hole of the core supported on said supporting means to catch the wire at the predetermined position and then move back through the core hole to thread the wire through the core hole; and

lift position adjustment means for moving said supporting means in a vertical direction to adjust a vertical position of the core on said supporting means to an adjusted position upon the movement of said hook back through the core hole and upon the movement of said chuck which results in a winding of the wire on the core at the adjusted position.

5,573,201

PHOTOGRAPHIC FILM CASSETTE AND APPARATUS AND METHOD OF LOADING AND REMOVING PHOTOGRAPHIC FILM IN ASSOCIATION WITH THE CASSETTE

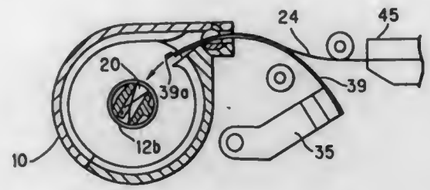
Koichi Takahashi; Tetsuya Takatori; Haruo Ichikawa; Akimasa Kaya, and Tomoyuki Takahashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 91,626, Jul. 15, 1993, abandoned. This application Mar. 11, 1996, Ser. No. 613,655

Claims priority, application Japan, Jul. 15, 1992, 4-212135

Int. Cl.[6] B65H *75/28;* **G03B** *17/26*

U.S. Cl. 242—532.4 **27 Claims**



1. An apparatus for loading photographic film into a cassette, said cassette including a spool provided with a retaining structure for retaining a trailer of said photographic film and a cassette shell having a spool chamber defined therein for containing said spool in a rotatable manner and a photographic film passage port extending between said spool chamber and an outside of said cassette shell, said photographic film loading apparatus comprising:

holding means for holding said cassette shell in a predetermined orientation so as to position said passage port in a predetermined direction;

an inserter member for inserting said trailer into said cassette shell, said inserter member being moveable through a path between an inserting position, where said inserter member extends through said passage port and is proximate said spool, and a standby position, where said inserter member is removed from said passage port;

a pickup end portion formed on said inserter member and engageable with said trailer, so as to engage said trailer on said retaining structure and pull said trailer through said passage port when said inserter member moves from said standby position to said inserting position in a continuous motion;

feeder means for feeding said photographic film to position said trailer in a pickup position which is in said path and between said stand-by position and said inserting position wherein said trailer can become engaged with said pickup end portion of said inserter member when said pickup end portion passes said pickup position; and

spool rotating means for rotating said spool in order to wind said photographic film around said spool.

5,573,202

SYSTEM AND METHOD FOR CONTROLLING THE WINDING OF A RIBBON ON A RECEIVER REEL

Paul Morgavi, La Ciotat, France, assignor to Gemplus Card International, Gemenos, France

Filed Feb. 23, 1995, Ser. No. 394,015

Claims priority, application France, Feb. 24, 1994, 94 02118

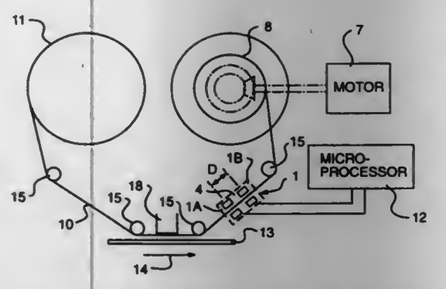
Int. Cl.[6] B65H *18/08;26/06*

U.S. Cl. 242—534.2 **5 Claims**

1. An apparatus for regulating the speed of a ribbon linearly passing between supply and receiver spools and comprising:

a stepping motor for driving the receiver spool;

a plurality of indicators formed on the ribbon at regularly spaced intervals;



a first detection device mounted in registry with the ribbon for sensing passage of an indicator thereacross;

a second detection device mounted in registry with the ribbon and displaced from the first detection device by a predetermined distance for sensing passage of the indicator on the ribbon across the predetermined distance;

microprocessing means for counting the steps of the stepping motor that have occurred to cause the ribbon to traverse the predetermined distance, and for computing the number of pulses to be applied to the stepping motor per unit time that regulates the ribbon speed to a constant value.

5,573,204

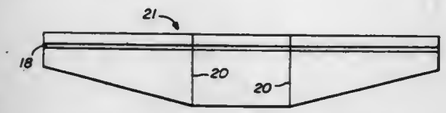
LANDING GEAR FOR AIRCRAFT CONSTRUCTED WITH EXTRUDED FLUTED PLASTIC SHEET

George S. Barker, and Lawrence H. Ragan, both of Richardson, Tex., assignors to Hobbico, Inc., Champaign, Ill.

Division of Ser. No. 215,410, Mar. 18, 1994, which is a continuation of Ser. No. 740,491, Aug. 5, 1991, abandoned. This application Nov. 14, 1994, Ser. No. 339,586

Int. Cl.[6] B64C *25/06*

U.S. Cl. 244—100 R **4 Claims**



1. A compound landing gear for an aircraft comprising:

a flexible landing means having at least first and second spaced substantially parallel flexible walls connected to each other by plurality of spaced substantially parallel webs so that landing gear provides damping of the aircraft during a landing; and

spring means for supporting the aircraft wherein the spring means is interposes between the walls of webs so that the spring means is maintained in a position to support at least a portion of the aircraft.

5,573,203

RELEASABLE ATTACHMENT FOR CONNECTING FILM STRIP TO A FILM CASSETTE

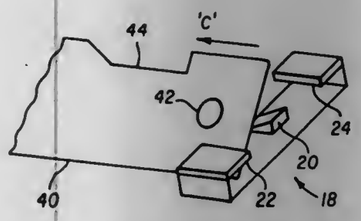
Edward C. Glover, London, and Anthony Earle, Middlesex, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 21, 1995, Ser. No. 517,522

Claims priority, application United Kingdom, Aug. 24, 1994, 9417099

Int. Cl.[6] G03B *23/02*

U.S. Cl. 242—584.1 **2 Claims**



1. A method of releasably attaching a film strip to a film cassette spool (**10**), the cassette spool (**10**) comprising a body portion (**12**) having a slot (**18**) formed therein, the slot (**18**) having retaining means (**20**) for retaining an end (**40**) of the film strip, the method comprising the steps of:

a) inserting the end (**40**) of the film strip in a first direction into the slot (**18**) in the body portion (**12**);

b) engaging the end (**40**) of the film strip with the retaining means (**20**) to effect attachment of the film strip to the spool (**10**); and

c) withdrawing the film strip in a direction which is the reverse to the first direction from the slot (**18**) to effect detachment of the film strip from the spool (**10**);

characterised in that step c) includes the step of:

d) further inserting the end (**40**) of the film strip into the slot (**18**) in the first direction to disengage the end (**40**) of the film strip from the retaining means (**20**) and partially from the slot (**18**) prior to withdrawal of the film strip from the slot (**18**).

5,573,205

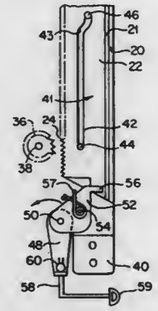
PULL CORD TENSION TRANSMITTING DEVICE USING DUAL RACK-PINION

Armand J. Arrone, Massapequa, N.Y., assignor to Grumman Aerospace Corporation, Los Angeles, Calif.

Filed Dec. 8, 1994, Ser. No. 352,234

Int. Cl.[6] B64D *25/11*

U.S. Cl. 244—122 A **5 Claims**



1. A rack mechanism for transferring manual pulling movement, the mechanism comprising:

a system support fitting secured to a stationary object;

a rack support fitting journaled within the support fitting;

the first rack slidably mounted in the support fitting and having rack teeth extending outwardly from an edge of the support fitting;

means for normally maintaining the rack in stationary relation within the support fitting, allowing them to move together;

a slot formed in the rack support fitting;

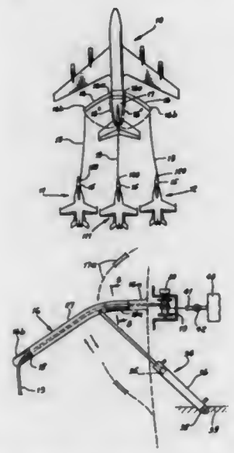
at least on guide pin extending from the rack through the slot for guiding sliding motion of the rack within the support fitting after their relative displacement;

a pinion positioned in normally disengaged relation from the rack, and in engaged relation after relative displacement between the rack and the support fitting;

a first link connected at a first end thereof to a pulled tensioning member;

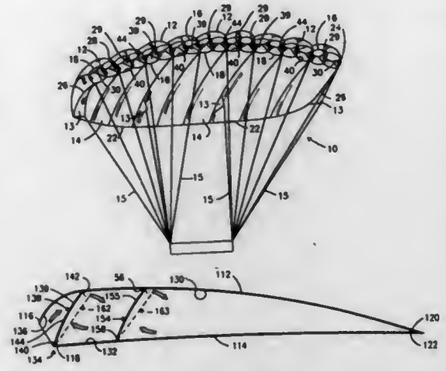
a second end of the first link being connected to the first end of a second link;
the second link being displaced upon pulling of the tensioning member and correspondingly causing the rack to swing away from the support fitting and into driving engagement with the pinion;
a second rack positioned in parallel spaced relation to the first rack, the second rack normally engaging the pinion;
the driving engagement of the pinion by the first rack causing commensurate displacement of the second rack; and
means attached to the second rack for actuating a utilization device upon displacement of the second rack.

5,573,206
HOSE AND DROGUE BOOM REFUELING SYSTEM, FOR AIRCRAFT
Elmer F. Ward, Santa Ana, Calif., assignor to Able Corporation, Yorba Linda, Calif.
Filed Aug. 19, 1994, Ser. No. 293,177
Int. Cl.[6] B64D *37/16*
U.S. Cl. 244—135 A **8 Claims**



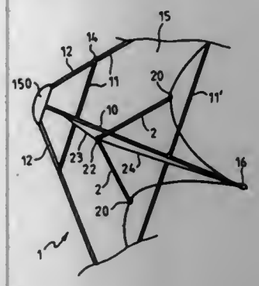
1. In an aerial refueling system for refueling aircraft in flight from a tanker airplane, via a fuel supply hose and drogue, the tanker having a fuselage extending lengthwise of the aircraft, the combination comprising
a) an elongated boom having inboard and outboard end portions, and having pivotal support means at said inboard end portion to accommodate pivoting of the boom between retracted position directly adjacent the airplane lengthwise extending fuselage and extended position in which the boom projects away from the fuselage,
b) the boom having a hose and drogue guide at said boom outboard end portion to guide endwise extension and retraction of the hose and drogue, to and from aircraft refueling deployed position,
c) and hose and drogue control means carried by the aircraft fuselage for effecting storage, and hose and drogue endwise extension and retraction, via said guide,
d) the boom having a drag-reducing, elongated, streamline fairing surface to face in a forward direction toward the oncoming air flow relative to the tanker airplane direction of forward flight, during boom extension and retraction,
e) said cootrol means including a hose storage reel, there being a compartment within the fuselage, said control means including a hose storage reel located within said compartment, said compartment having a side opening adjacent which the boom extends in said retracted positioo thereof,
f) said boom pivotal support means having an axis offset from the reel.

5,573,207
VALVE APPARATUS FOR RAM-AIR WINGS
Brian S. Germain, 4804 6th St., Zephyrhills, Fla. 33541
Continuation-in-part of Ser. No. 401,774, Mar. 10, 1995. This application Mar. 15, 1996, Ser. No. 617,471
Int. Cl.[6] B64D *17/04*
U.S. Cl. 244—145 **32 Claims**



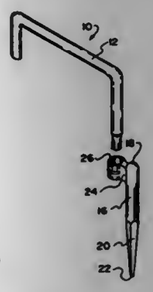
1. A ram-air inflatable wing comprising:
a top skin having a front edge, a rear edge and a pair of generally opposed lateral edges;
a bottom skin having a front edge, a rear edge and a pair of generally opposed lateral edges;
a plurality of elongated ribs, each having an upper edge, a lower edge and a front edge, each pair of adjacent said ribs being spaced apart a predetermined distance, with at least a portion of said upper edge being affixed to said top skin and at least a portion of said lower edge being affixed to said bottom skin;
a plurality of elongated cells, each cell defined by said top skin, said bottom skin, and a pair of adjacent said ribs, each said cell having an inlet defined by said front edge of said top skin, said front edge of said bottom skin and said front edge of a pair of adjacent said ribs;
at least one first valve positioned within at least one of said plurality of cells, each said first valve comprising a panel of flexible material having a bottom edge positioned adjacent said bottom skin, a top edge positioned adjacent said top skin and a pair of generally opposed side edges spaced apart from one another a distance at least generally equal to the distance between said adjacent ribs with at least a portion of each of said pair of side edges being affixed to a respective one of said pair of adjacent ribs, at least one of said top edge and said bottom edge being moveable such that said moveable edge of the panel may be urged into generally sealing engagement with the respective adjacent said skin at a point substantially rearwardly of said front edge of said adjacent skin when the air pressure inside said cell is greater than the air pressure outside said cell and may be urged away from the respective adjacent said skin when the air pressure outside said cell is greater than the air pressure inside said cell, whereby each cell having a valve remains substantially inflated when the air pressure inside the cell is greater than the air pressure outside the cell inhibiting deformation of the air wing; and
a chamber having a volume defined by said first valve, a pair of adjacent ribs forward of said first valve, said top skin positioned between said pair of said adjacent ribs forward of said engagement point and said inlet, such that a substantial part of said volume is maintained when said moveable edge engages the respective said adjacent skin.

5,573,208
PAPER KITE WITH FRAME
Andre Cassagnes, Vitry, France, assignor to Palmpol Volles, S.A., Palmpol, France
Filed Jul. 22, 1994, Ser. No. 278,944
Claims priority, application France, Jul. 23, 1993, 93 09099
Int. Cl.[6] B64D *37/00*
U.S. Cl. 244—153 R **10 Claims**



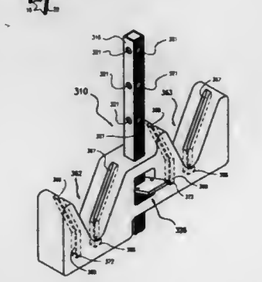
1. A kite (1) comprising at least one sail (15) and a main frame made up of a plurality of longitudinal and transverse rods (10, 11, 11', 12, 13) that stretch said sail (15), and a secondary frame comprising whiskers (2) that stretch the rear edge of the sail (15) to shape the sail (15), said whiskers (2) being supported on a structure (23 to 25, 3) at a junction point (22) located in a median plane of symmetry (P) of the kite (1).

5,573,209
DOWNSPOUT ANCHOR AND METHOD OF MAKING SAME
Jonas T. Lindquist, 5120 Suffield Ct., Skokie, Ill. 60077
Filed Oct. 26, 1994, Ser. No. 329,445
Int. Cl.[6] E04D *13/00*
U.S. Cl. 248—48.2 **9 Claims**



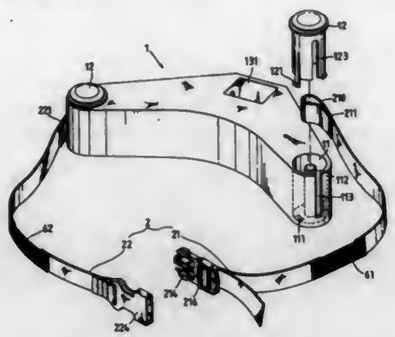
1. A downspout anchor of the type used for supporting a generally vertically oriented hollow downspout against a building wall and comprising:
a hook section and a spike section permanently secured to said hook section, disposed in a common plane therewith and extending in the same direction;
said hook section being of a size and a configuration for embracably engaging the downspout with said spike section penetrating into said building wall;
said hook section having a pair of generally parallel spaced arms and a bridging portion unitary therewith;
said spike section being an elongate member with an impact end, a piercing terminal end and an outwardly extending arm unitary with said member located between said impact and piercing terminal ends;
a collar formation carried by said outwardly extending arm as a through cross-bore formed therein and located offset from said elongate member,
one of said pair of generally parallel arms of said hook section being seated within said cross-bore with said collar formation compressed thereabout permanently securing said hook section to said spike section; and,
said impact end of said spike section being offset from said one of said pair of arms enabling said piercing terminal end of said spike section to be driven into the building wall without damage to the hollow downspout with the hook section opening toward the hollow downspout while said spike section is disposed within said building wall and said hook section embracably is engaged about the downspout.

5,573,210
PIPE HANGER AND METHOD
Randall R. Hendrix, 1422 Mundy's Mill Rd., Jonesboro, Ga. 30236, and William H. Tittle, Hampton, Ga., assignors to Randall R. Hendrix, Jonesboro, Ga.
Filed Apr. 18, 1995, Ser. No. 423,879
Int. Cl.[6] F16L *3/00*
U.S. Cl. 248—59 **16 Claims**



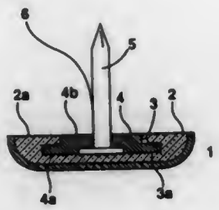
1. A pipe hanger for hanging a pipe from a floor structure, comprising:
an elongated hanger rail adapted to be mounted to the floor structure;
a said bracket member having a pipe support for supporting the pipe, and a latch securing said bracket member to said hanger rail, said latch being actionable to permit movement of said bracket member also on said rail and to permit securing of said bracket member at discrete increments along said hanger rail, wherein said latch allows said bracket member to freely slide in one direction along said hanger rail, and prevents said bracket member from moving in an opposite direction along said hanger rail unless said latch is actuated.

5,573,211
STRUCTURE OF GOLF BAG CRADLE ASSEMBLY
Ching-Chang Wu, No. 35-1, Jih Hsin Street, Tu Cheng Hsiang, Taipei Hsien, Taiwan
Continuation-in-part of Ser. No. 216,318, Mar. 23, 1994, Pat. No. 5,465,930. This application Dec. 6, 1994, Ser. No. 354,727
Int. Cl.[6] A63B *55/00*
U.S. Cl. 248—96 1 Claim



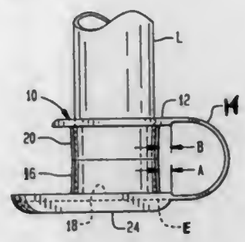
1. A golf bag cradle assembly for a golf cart of the type comprising a bag cradle having two upright posts in two recessed holes thereof and two side slots on two opposite ends thereof respectively communicated with said recessed holes, a first strap, a second strap, said first and second straps having each one end terminating in a loop respectively mounted on said upright posts and an opposite end connected to each other by a male strap connector and a female strap connector to hold down a golf bag on said bag cradle, and two plug caps respectively fastened to said recessed holes by hooks to hold the loops of said first and second straps in place, wherein said first and second straps have a respective eleastic strap section in the middle respectively connected between the loops of said first and second straps and said male and female strap connector.

5,573,212
GLIDE BLOCK FOR MOVING LOADS
Rocco Palazzolo, Brunoy, France, assignor to Ereis Distributing, Paris, France
Filed Jul. 20, 1994, Ser. No. 277,915
Claims priority, application France, Sep. 1, 1993, 93 10421
Int. Cl.[6] A47B *91/00*
U.S. Cl. 248—188.9 5 Claims



1. A glide block which comprises:
a cup of synthetic material having a low friction bottom surface for supporting a load,
an elastomeric body within said cup having a defined opening therein communicating with lateral offsets,
a stud of synthetic material having side projections for fitting into said lateral offsets of said body to detachably secure said elastomeric body to the stud, the elastomeric body being of sufficient elastomeric properties to permit removal and replacement of the body from the stud, and
means for attaching said stud to the bottom of a piece of furniture.

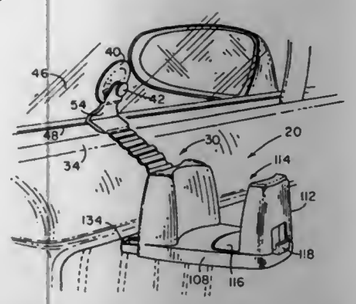
5,573,213
WALKER GLIDE
Richard E. Henderson, and Kathleen O'Brien, both of 107 Whispering Sands Clr., Sarasota, Fla. 34242
Filed Apr. 24, 1995, Ser. No. 426,970
Int. Cl.[6] A47B *91/06*
U.S. Cl. 248—188.9 3 Claims



1. A self-retaining glide for a lower end of each rear leg of a walker comprising:
a molded elongated main member having first and second spaced tubular supports extending orthogonally from one surface of said main member;
said first and second tubular supports each sized in diameter for snug slidable engagement onto the lower end of the leg;
said first tubular support open at each end thereof and positioned adjacent a first end of said main member, said second tubular support open at a distal end thereof and having a closed bottom end defined by a portion of said one surface adjacent a second end of said main member;
a plurality of spaced parallel elongated fins positioned and extending orthogonally from another surface of said main member opposingly from said second tubular support;
said plurality of fins defining a lower ground or carpet engaging surface;
said main member having a semi-flexible central portion between said first and second tubular supports whereby, said first tubular support is slidably positionable onto the rear leg and spaced upwardly from the lower end, and said central portion is resiliently flexed into a generally U-shape, said second tubular support is slidably positionable onto the lower end of the leg to secure said glide for use, said plurality of fins being generally aligned fore-and-aft with respect to the walker.

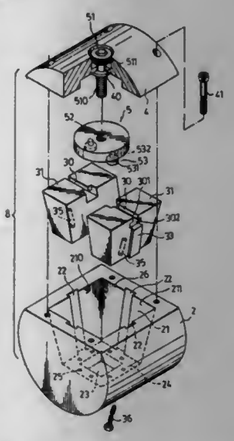
5,573,214
CUP HOLDER FOR USE IN VEHICLES
Stephen W. Jones, Emporia; Don G. Sneed, Overland Park; David D. McCormick, Prairie Village, and Donald L. Rohrs, Overland Park, all of Kans., assignors to Jasco, Inc., Emporia, Kans.
Filed Nov. 1, 1994, Ser. No. 333,067
Int. Cl.[6] A47K *1/08*
U.S. Cl. 248—311.2 24 Claims

1. A cup holding assembly for use in a vehicle having a door provided with a window and a space for receiving the window, the assembly comprising:
a strap including opposed upper and lower ends;
a cup holder including support means for coupling said cup holder with said strap to support said cup holder on said strap; and



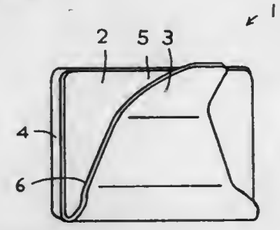
a mounting means provided adjacent said upper end of said strap for mounting said strap on the door of the vehicle, said mounting means including
a tongue protruding downward from said upper end of said strap to define a hook by which said strap and said cup holder are suspended, said tongue being configured for insertion into the space of the door,
a suction cup, and
a clip means for connecting said suction cup to said upper end of said strap distally from said hook relative to the cup holder so that said suction cup may be affixed to the window to support said strap and holder on the door when said tongue is inserted into the space of the door.

5,573,215
CLIP ASSEMBLY FOR CLAMPING A TEST-PIECE WITH TWO END PORTIONS WHICH FORM AN ANGLE THEREBETWEEN
Ming-Hwa R. Jen, Dept. of mechanical engineering, National Sun Yae-Sen University, Kaohsiung, Taiwan, and Weihwang Lin, Dept. of military engineering, Chinese Military Academy, Feng-Shan, Taiwan
Filed Feb. 1, 1995, Ser. No. 382,244
Int. Cl.[6] A47G *1/10*
U.S. Cl. 248—316.2 8 Claims



1. A clip assembly comprising:
a main rigid block with an open top having an internal wall and a bottom portion which cooperates with said internal wall to confine a receiving space therein, said internal wall tapering gradually from said open top toward said bottom portion, said bottom portion being provided with an opening providing communication between said receiving space and an exterior of said rigid block;
a pair of symmetric clamps received slidably in said receiving space and defining a gap therebetween for clamping one end portion of a test-piece which is to be inserted into said gap from said exterior via said opening of said bottom portion, each of said pair of clamps further defining an elongated engaging groove extending transversely to said gap, said elongated grooves being aligned with one another and receiving respectively and engageably a connector which has a connecting rod extending out from said engaging groove, a disc being disposed above said pair of clamps and having a threaded through-hole and connected securely with each of said connecting rods of said connectors adjacent to said threaded through-hole;
a cover member mounted securely on said rigid block so as to cover said open top of said rigid block, said cover member having a through-hole formed therethrough aligned with said threaded through-hole of said disc; and
a regulating screw having a threaded portion engaged threadedly in said threaded through-hole of said disc and a head portion engaged rotatably by a periphery which confines said through-hole of said cover member so as to prevent said head portion from moving axially when said regulating screw is rotated about its axis.

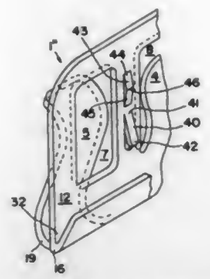
5,573,216
BOX HOLDER
Akitada Kuroda, 2-13-4 Mitake Togo-cho, Aichi-gun, Aichi-ken, Japan
Filed Mar. 7, 1994, Ser. No. 207,720
Int. Cl.[6] A47G *1/10*
U.S. Cl. 248—316.7 2 Claims



1. A box holder comprising:
a base having two ends, one of said ends having a slope surface defining a guide means;
an elongated insert portion having an end attached to the base extending towards the slope surface and above the base defining a space between the insert portion and the base, said insert portion having a tip at its end near the slope surface, said tip defining a cutter adapted to be inserted into a box;
and an attaching portion fixed to said base for attaching the base to a wall;
wherein
the space between the insert portion and the base is greater near the slope surface than at the attached end such that the box can be clipped between said insert portion and said base.

5,573,217
SPECTACLES HOLDER
David K. Garvey, 53 Church Road, Smethwich, Warley, West Midlands B67 6HA, England, and Lawrence Garvey, 75 Cheshire Road, Smethwick, Warley, West Midlands B67 6DW, England
Filed Jul. 8, 1994, Ser. No. 272,234
Int. Cl.[6] G02C *11/00*
U.S. Cl. 248—316.7 18 Claims

2. A spectacles holder for holding a pair of spectacles comprising restraining means which comprises a pocket having an elon-



gate length, and force-applying means adapted to urge spectacles when in said pocket, said force-applying means comprising at least one resilient finger which has substantially less width in the direction of an elongate width of said pocket than does said pocket, and said finger having a surface such that in use engagement of spectacles when in contact with said surface tends to urge said spectacles into said pocket so as to restrain said spectacles, when present spectacles being gripped between said force-applying means and said restraining means, said pocket receiving a lower portion of at least an eyepiece of spectacles when present and stop means adapted to retain the arms of a pair of spectacles when a pair of spectacles is mounted in said holder, said stop means comprising a pair of ramps, one to either side of said resilient finger, said stop means co-operating in use with said resilient finger so as to resist movement of the arms of spectacles away from said pocket in a direction perpendicular to said elongate direction of said pocket.

5,573,218

APPARATUS FOR THE THREE-DIMENSIONAL ORIENTATION OF AN OBJECT

Wilhelmus M. H. Vaassen, and Albert Groenenboom, both of Hengelo, Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

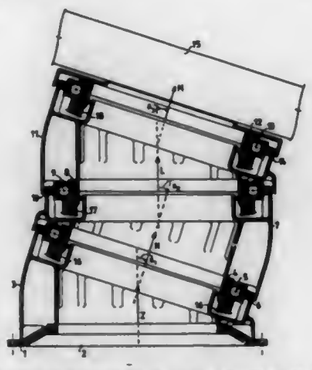
PCT No. PCT/EP93/02377, § 371 Date Mar. 10, 1995, § 102(e) Date Mar. 10, 1995, PCT Pub. No. WO94/07081, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 3, 1993, Ser. No. 392,749

Claims priority, application Netherlands, Sep. 17, 1992, 9201609

Int. Cl.[6] A47G *29/00*

U.S. Cl. 248—371 **13 Claims**



1. Apparatus for orientating an object mounted on a first plane with reference to a second plane, comprising:

a first housing attached to the second plane;

a second housing rotatably mounted on the first housing around a first axis N which forms an angle B1 with a normal Z on the second plane;

a third housing rotatably mounted on the second housing around a second axis L which forms an angle B2 with the first axis N, wherein the third housing comprises a rotatable upper surface with a third rotation axis M which forms an angle B3 with the second axis L and wherein the first housing, the second housing and the third housing bave a substantially annular shape;

drive means, arranged to rotate the second housing, the third housing and the rotatable upper surface of the third housing about their respective axes, wherein the angles B1, B2 and B3 are not equal to zero, and

wherein the drive means comprises:

a first motor mounted on the first housing, arranged to rotate the second housing with respect to the first housing,

a second motor mounted on the second housing, arranged to rotate the third housing with respect to the second housing, and

a third motor mounted on the third housing,

arranged to rotate the upper surface of the third housing with respect to the third housing;

angle indicators for measuring the angular rotation of the second housing, the third housing and the rotatable upper surface of the third housing; and

control means connected to the angle indicators and the first, second and third motors for controlling the first and second motor for orientating the first plane with respect to the second plane and for controlling the third motor for rotating the object in the first plane, thereby compensating for possible rotations introduced by the rotations of the second and third housing in combination.

5,573,219

LIFTER MOUNTING STRUCTURE ON SEAT SLIDE RAIL

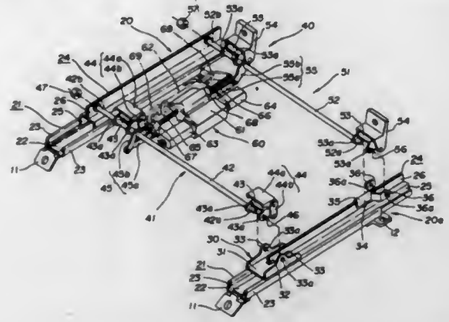
Isamu Chinomi, Ayase, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Dec. 27, 1994, Ser. No. 364,222

Claims priority, application Japan, Dec. 28, 1993, 5-335015

Int. Cl.[6] F16M *13/00*

U.S. Cl. 248—421 **3 Claims**



1. A lifter mounting structure adapted for mounting a seat lifter, comprising:

at least one pair of seat slide rail unit on which the seat lifter is to be mounted, the seat slide rail unit including a lower stationary guide rail adapted for rigidly mounting to a floor panel and an upper slidable guide rail having a sliding-contact section slidably fitted to the lower stationary guide rail;

a mounting bracket fixedly connected to said upper slidable guide rail and having a pair of opposing side wall sections;

a laterally extending shaft member adapted to be provided beneath a bottom of a seat, said laterally extending shaft member being rotatably linked to said upper slidable guide rail through said mounting bracket;

a seat support link disposed between said laterally extending shaft member and the bottom of the seat for moving the seat upwardly and downwardly, said seat support link having a substantially C-shaped member formed with a pair of opposing side wall sections; and

means for positioning said seat support link to said mounting bracket, said positioning means including a pivotal hole formed at one of said side wall sections of said mounting bracket and one shaft end of said laterally extending shaft member being integrally fixed to one side wall section of said C-shaped member of said support link and loosely fitted to said pivotal hole,

wherein said shaft end of said laterally extending shaft member is integrally fixed to said one side wall section of said C-shaped member such that said shaft end penetrates through said one side wall section of said C-shaped member by a predetermined length for positioning said seat support link relative to said mounting bracket by slightly inserting said shaft end into said pivotal hole of said one side wall section of said mounting bracket, and

wherein the other side wall section of said C-shaped member is pivotally received in a pivotal hole formed at the other side wall section of said mounting bracket by rotatably mounting the other side wall section of said C-shaped member on the other side wall section of said mounting bracket through a bolt having a shorter length than said predetermined length, under a condition in which said shaft end is completely inserted into said pivotal hole of said one side wall section of said mounting bracket.

5,573,220

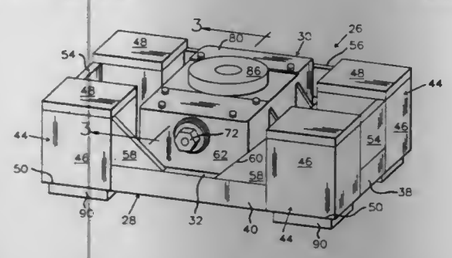
ADJUSTING VIBRATION ABSORBING MACHINERY FOUNDATION MOUNT AND METHOD FOR TUNING THE SAME

Wayne H. Whittaker, Horton; Miles A. Shadley, Jackson; Richard A. Haase, Jackson, and David L. Curtis, Jackson, all of Mich., assignors to Unisorb Inc., Jackson, Mich.

Filed May 30, 1995, Ser. No. 454,578

Int. Cl.[6] F16M *3/00*

U.S. Cl. 248—638 **13 Claims**



1. An adjustable heavy duty vibration absorbing machinery mount comprising, in combination, a substantially rigid platform having an upper surface and a lower surface, said platform being of a rectangular configuration having four corners, a vibration absorbing leg mounted upon said platform at each corner extending below said lower surface for engagement with a supporting surface, each of said legs comprising a vertically extending pocket having an upper closed end, a lower open end, a vibration absorbing material within said pocket extending below and from the associated pocket lower open end, a leveler having a base mounted upon said platform upper surface, a riser mounted on said base for vertical adjustment thereon, and a riser operator mounted upon said base selectively vertically adjusting said riser with respect to said base.

5,573,221

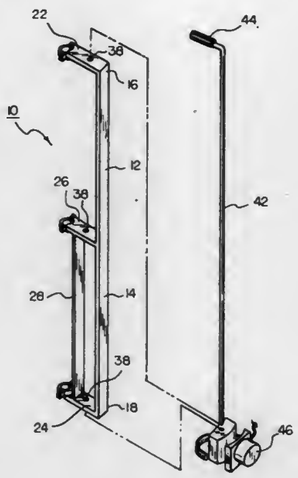
APPARATUS FOR SUPPORTING A DEPTH FINDING TRANSDUCER FOR ROTATION INDEPENDENT OF A TROLLING MOTOR

Stephen W. Reeves, 34550 Clinton Allen Rd., Denham Springs, La. 70726

Filed Mar. 28, 1994, Ser. No. 219,079

Int. Cl.[6] F16M *11/32*

U.S. Cl. 248—640 **5 Claims**



1. A new and improved apparatus for supporting a depth finding transducer for rotation independent of a trolling motor comprising, in combination:

a bracket adapted to be secured to the front end of a boat, the bracket having a vertically disposal elongated end plate with an upper end positionable above the water and a lower end positionable beneath the water, the bracket having a horizontal upper plate secured at right angles from the upper end of the end plate, a horizontal lower plate secured at a right angle from the lower end of the end plate and a horizontal intermediate plate secured at a right angle from an intermediate position of the end plate;

a collar secured to the end of each horizontal plate remote from the end plate for mounting on a trolling motor shaft;

an aperture extending through each of the horizontal plates intermediate its collar and the end plate;

a rod extending through the apertures with a handle at its upper end for rotating the rod and a depth finding transducer at its lower end adapted to be repositioned with the rotation of the rod independent of movement of the trolling motor shaft;

bearing members coupled between the rod and the apertures to preclude axial movement of the rod while allowing rotation therebetween; and

a washer secured to the upper surface of the upper horizontal plate with upstanding bemispherical projections oriented in a circumferential array and with a cooperable spring-urged resilient finger secured to the rod to effect a relative coupling between the rod and the upper horizontal plate to abate inadvertent rotation of the rod with respect to the washer.

5,573,222

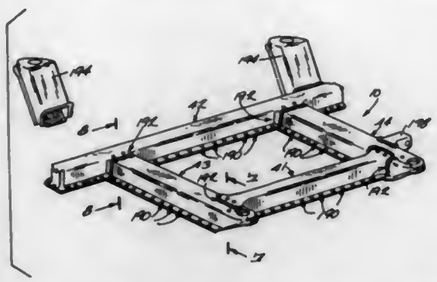
METHOD OF MANUFACTURING ENGINE CRADLES

Phillip C. Ruehl, Elm Grove; Stephen L. Kretschmer, Mequon, and Richard J. Behrmann, Colgate, all of Wis., assignors to A. O. Smith Corporation, Milwaukee, Wis.

Division of Ser. No. 110,031, Aug. 20, 1993, Pat. No. 5,487,219. This application Jun. 1, 1995, Ser. No. 457,067

Int. Cl.[6] F16M *1/00*

U.S. Cl. 248—647 14 Claims



1. A structural member comprising

a first top sheet member formed so as to have a top, one side wall extending downwardly from said top, and another side wall extending downwardly from said top, and

a second top sheet member having a first generally vertically extending side wall, a top, and a second side wall extending downwardly from said top and having a lower edge,

integral extensions of said side walls of said first member being bent outwardly and overlapping said side wall of said second member, and integral extensions of said first side wall of said second member being bent outwardly and extending inside said side walls of said first member, and

a first closing sheet member secured to said flanges of said first top sheet member, and a second closing sheet member secured to said flanges of said second top sheet member.

5,573,223

METHOD AND APPARATUS FOR CONTROLLING THE FLOW OF FLUIDS

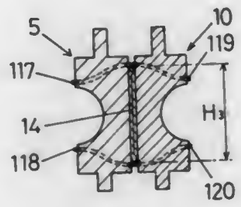
Ryu Kawabe, 3-7-301, Nagayama 3-chome, Tama, Japan

Division of Ser. No. 178,893, Jan. 7, 1994, Pat. No. 5,462,251, which is a division of Ser. No. 940,374, Sep. 3, 1992, Pat. No. 5,372,350. This application Jun. 7, 1995, Ser. No. 477,629

Claims priority, application Japan, Sep. 3, 1991, 3-250353; Jul. 28, 1992, 4-0220617

Int. Cl.[6] F16K *7/02*

U.S. Cl. 251—4 11 Claims



1. An apparatus for controlling the flow rate of a fluid flowing through a fluid path at least partially defined by a resiliently deformable conduit portion, comprising:

a casing having said resiliently deformable conduit portion extending therethrough;

a first roller rotatably supported in said casing by a rotary shaft and a retainer in said casing, said first roller and said retainer having said resiliently deformable conduit portion therebetween; and

a control surface defined on said first roller for pressing said resiliently deformable conduit portion toward said retainer to control fluid flow through said conduit portion, said control surface comprising a first surface portion that is curved as viewed in section, the section being taken perpendicular to said rotary shaft, and said first surface portion engaging and closing said resiliently deformable conduit portion in a closed position of said first roller, and a second surface portion that is curved as viewed in section, the section being taken perpendicular to said rotary shaft, said second surface portion being positioned along one side of said resiliently deformable conduit portion in an open position of said first roller;

wherein said first roller has a guide track thereon defining the axial extent of said first and second surface portions of said control surface in the axial direction of said first roller.

5,573,224

WATER-SUPPLY VALVE OF A WASHING MACHINE

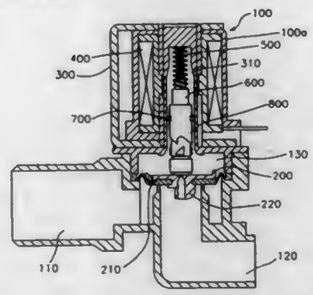
Jinsoo Kim, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 30, 1994, Ser. No. 366,507

Claims priority, application Rep. of Korea, May 31, 1994, 94-12204

Int. Cl.[6] F16K *31/04;31/385;31/40*

U.S. Cl. 251—30.04 8 Claims



1. A water-supply valve of a washing machine comprising:

a valve body including an actuator chamber defined in middle part thereof, and a reservoir defined beneath the actuator chamber and interconnected to the actuator chamber;

a water-introducing tube interconnected to the reservoir to introduce water thereunto;

a water-supply tube having one end thereof interconnected to the reservoir and the water-introducing tube, and an other end thereof interconnected to a washing tub of the washing machine;

an actuator rod movable up and down in the actuator chamber and the reservoir, the actuator rod including circumferential strips attached on an outer periphery thereof, guide grooves extending vertically and defined between every two of the circumferential strips, and guide pieces respectively disposed below the circumferential strips and guide grooves;

protuberances protruding from an inner wall of the actuator chamber and selectively guided along different sections of the circumferential strips, guide pieces, and the guide grooves during movement of the actuator rode to different positions for selectively opening and closing the water-supply valve;

a first means for applying a downward biasing force to the actuator rod;

a second means for elevating the actuator rod against the downward biasing force; and

a bellows disposed movably up and down in the reservoir according to ascent and descent of the actuator, the bellows having a water-inflow port, and a water-exhaust port, the water-inflow port interconnecting the water-introducing tube and the reservoir, and the water-exhaust port interconnecting the water-supply tube and the reservoir, respectively when the actuator rod is in close contact with the bellows to separate the reservoir from the water-introducing tube and the water-supply tube, the exhaust-port being blocked off by the actuator rod at its lowermost position, and when the actuator rod moves upward to interconnect the water-introducing tube and the water-supply tube, the water introduced into water-introducing tube pushing up the bellows,

wherein the protuberances are guided along the guide grooves, the circumferential strips, and the guide pieces, and accordingly the water-supply tube is switched between opened and closed states, whenever the actuator rod is elevated to its uppermost position by only one time by the second means.

5,573,225

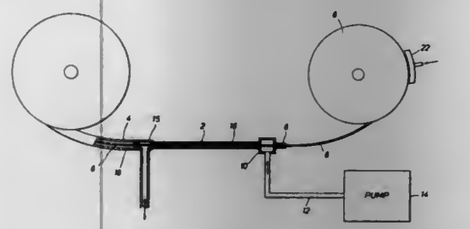
MEANS FOR PLACING CABLE WITHIN COILED TUBING

Bruce W. Boyle, Sugar Land, and Laurent E. Muller, Stafford, both of Tex., assignors to Dowell, a division of Schlumberger Technology Corporation, Houston, Tex.

Filed May 6, 1994, Ser. No. 239,198

Int. Cl.[6] B66F *3/24*

U.S. Cl. 254—134.4 16 Claims



1. Apparatus adapted for use in connection with wellbore operations, comprising:

means for installing an electrical cable having a first diameter into one end of a coiled tubing adapted to be disposed in a wellbore, the coiled tubing having a first internal diameter which is larger than the first diameter of the cable, the means for installing including,

a wireline lubricator including a seal through which the cable passes,

a small diameter pipe attached to the wireline lubricator having a second internal diameter which is at least larger than the first diameter of the cable and smaller than the first internal diameter of the coiled tubing, the small diameter pipe including a fluid coupling,

a further coupling connecting said small diameter pipe to said one end of said coiled tubing, said further coupling being in fluid communication with said one end of said coiled tubing, and

a pump connected to said fluid coupling of said small diameter pipe and in fluid communication with said small diameter pipe via said fluid coupling,

said fluid coupling providing a fluid communication between said pump and a first annular space between the cable and the small diameter pipe and between said first annular space and a second annular space between the cable and the coiled tubing: and

a wellbore apparatus adapted to be mechanically connected to said coiled tubing and adapted to be electrically connected to said electrical cable when said electrical cable has been installed into said coiled tubing by the means for installing.

5,573,226

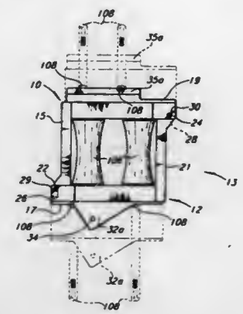
APPARATUS FOR GUIDING AN ENLOGATED ITEM

Jackson A. Smith, P.O. Box 1058 Aldergrove, British Columbia, Canada .

Filed Apr. 29, 1994, Ser. No. 235,175

Int. Cl.[6] B66D *3/08;* B65H *59/00;57/00;23/04*

U.S. Cl. 254—395 30 Claims



11. An apparatus for guiding an elongated item, comprising;

a first frame member having first and second legs angled with respect to each other;

a second frame member having first and second legs angled with respect to each other, the first legs being pivotally coupled together to pivotally connect the first frame member to the second frame member, and wherein the second legs are releasably coupled together, thereby forming a releasably enclosed frame enclosing a guiding aperture defined by the first and second legs of the first and second frame members; and

a guide member, supported by one of the frame members, for guiding the elongated item through the guiding aperture of the enclosed frame.

24. An apparatus for guiding an elongated item, comprising;

a frame having an enclosure defined by at least three legs, one of the legs supporting a guiding surface for guiding the elongated item through the frame enclosure;

a first frame coupling having first and second connection members, the first connection member releasably coupling the first frame coupling to a first leg of the frame legs, the second connection member being adapted to couple the first frame coupling to a first mount; and

a second frame coupling having first and second connection members, the first connection member releasably coupling the second frame coupling to a second leg of the frame legs, the first connection members of the first and second frame couplings being structurally equivalent to each other such that each first connection member can be releasably coupled to either of the first and second legs of the frame, the second connection member being adapted to couple the second frame coupling to a second mount.

5,573,227

GUARDRAIL STANCHION MOUNTED ONTO BUILDING FRAME

Thomas J. Hemauer, 629 Canary St., and David Gasch, N. 4962 McHugh Rd., both of Chilton, Wis. 53014

Filed Jun. 13, 1995, Ser. No. 489,812

Int. Cl.[6] E04G *3/12*

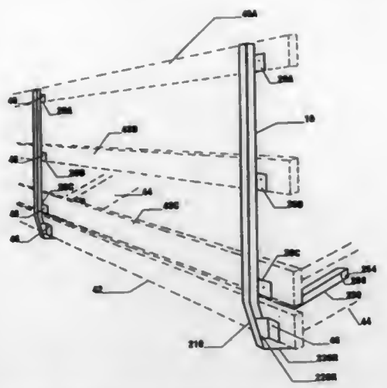
U.S. Cl. 256—65 18 Claims

1. A stanchion comprising:

a post having an upper end and a lower end;

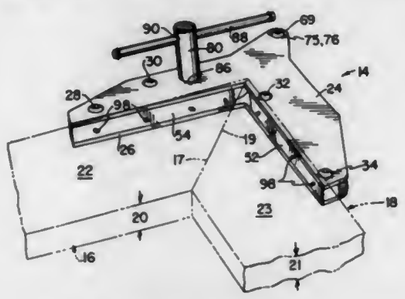
the post also including protection means for attaching at least one fall preventing device to the post; and

attachment means, attached to the lower end of the post, for attaching the post to a rafter, wherein the attachment means



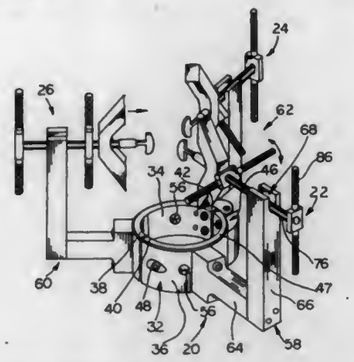
includes embracement means positioned between the upper and lower ends for embracing a facia board.

5,573,228
MITER CLAMP
William J. Chestnut, 44 Pickwick St., Fairfield, Conn. 06430
Filed Jan. 10, 1995, Ser. No. 370,610
Int. Cl.[6] B25B *1/20*
U.S. Cl. 269—41 12 Claims



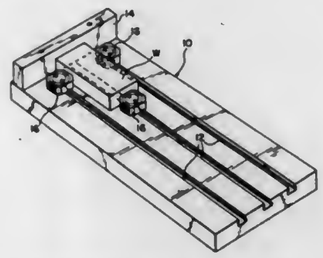
1. A miter joint clamp assembly, comprising:
a. a first elongated clamp gripping member for engaging a first workpiece having a miter cut segment formed therein;
b. a second elongated clamp gripping member for engaging a second workpiece having a miter cut segment formed therein;
c. support means for mounting said first and second clamp gripping members in an assembly for receiving and maintaining the miter cut segmeots of said first and second workpieces in engagement between said clamp gripping members;
d. said support means comprising first and second spaced apart plates each extending parallel to a first plane and said clamp gripping members are mounted between said plates;
e. said first clamp gripping member rigidly mounted between said first and second plates and said second clamp gripping member is positioned for engaging said pivot means for rotary motion of said second member;
f. said support means including a pivot means for enabling rotary motion of at least one of said clamp gripping members relative to the other member in a direction parallel to said first plane;
g. an actuating means, including an actuating member extending transverse to said first plane for manually applying a rotary force to one of said clamp gripping members for causing rotary movement of said clamp gripping members toward each other and clamping engagement of said workpieces; and,
h. said actuating means including a cam body rotably mounted between said first and second plates at a location for engaging and imparting rotary motion to said second clamp gripping member upon rotation of said cam.

5,573,229
FIXTURE FOR ALIGNING AND CLAMPING PIPES
Goodwin A. Lycan, P. O. Box 23, Stevensville, Mich. 49127
Filed Feb. 21, 1995, Ser. No. 393,160
Int. Cl.[6] B23Q *1/00*
U.S. Cl. 269—49 26 Claims



1. Fixture for aligning and clamping pipes end to end to enable joining of the pipes by welding at the juncture of the pipes comprising a collar circumscribing one of said pipes, circumferentially spaced arms extending from said collar toward said juncture, and a clamping member supported on each of the arms for holding said pipes together end to end, each of the arms terminating in support means engaging the clamping member support by the arm, said support means and said clamping members having a sliding connection therebetween permitting the collar and said arms to slide along said pipe away from said clamping members after the latter have been installed to hold the pipes together.

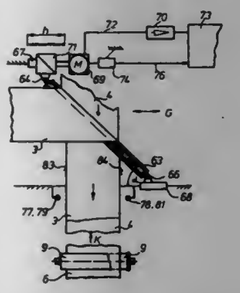
5,573,230
DEVICE FOR BLOCKING A PIECE ON A SUPPORT PLANE LIKE A TABLE FOR OPERATING MACHINES
Giuseppe Lambertini, Settimo Milanese, Italy, assignor to Officina Meccanica Lombarda S.R.L., Travaco' Siccomario, Italy
Filed Jan. 26, 1995, Ser. No. 378,731
Int. Cl.[6] B25B *1/08*
U.S. Cl. 269—235 20 Claims



1. Device for blocking a piece (W) on a support plane (10), comprising:

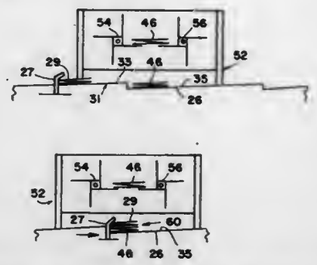
a central pin (18) provided with means (24, 34) for securely blocking said pin (18) to said support plane (10) with an axis (A) of the pin (18) perpendicular to the plane itself:
an annular hub (20), freely rotatable around the pin (18), said hub (20) defining a rotatable means (60) for said annular hub (20), said hub (20) having an external screw thread; and
a ring nut (22) having an internal screw (52) thread coupleable to said external screw thread of hub (20), said ring nut (22) presenting on its periphery at least a face (54, 56) for rotation about said axis (18) and laterally engaging the piece (W), the threads of said hub (20) and of the ring nut (22).

5,573,231
FOLDING APPARATUS
Rudolf Stab, Frankenthal, Germany, assignor to Albert-Frankenthal Aktiengesellschaft, Frankenthal, Germany
Filed Dec. 15, 1994, Ser. No. 356,722
Claims priority, application Germany, Dec. 15, 1993, 43 42 718.9; Dec. 24, 1993, 43 44 364.8
Int. Cl.[6] B41F *13/06*; B65H *45/28*
U.S. Cl. 270—43 3 Claims



1. A folding apparatus for folding signatures in a printing machine, said folding apparatus comprising:
a collecting cylinder having signature gripper systems and folding blade systems and being rotatable about a central axis, said collecting cylinder having a peripheral surface with a maximum working width;
a folding jaw cylinder cooperating with said collecting cylinder to cross-fold signatures, said folding jaw cylinder having folding jaw systems;
a belt guide system having a plurality of spaced, parallel, driven guide belts, said guide belts each having a belt width, said belt guide system being in contact with said collecting cylinder and said folding jaw cylinder, each of said guide belts being spaced from adjacent ones of said guide belts in said guide belt system by a belt spacing less than said belt width;
a plurality of signatures to be folded, said signatures each having a signature width less than said maximum working width of said collecting cylinder; and
means to displace said signatures in the direction of said axis of rotation of said collecting cylinder prior to engagement of said signatures with said signature gripper system an amount equal to at least said belt width of one of said guide belts.

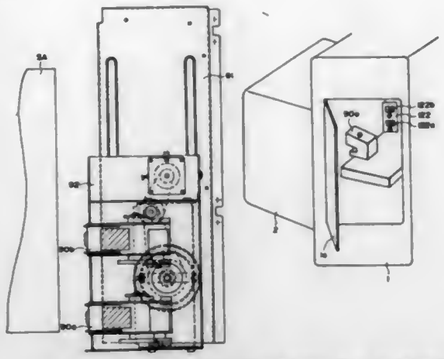
5,573,232
PARALLEL SHEET PROCESSING APPARATUS
Edward M. Ifkovits, 2 Schermerhorn Dr., New Fairfield, Conn. 06812; Karel J. Janatka, 32A Heritage Cir., Southbury, Conn. 06488, and Joseph F. Zuzick, Jr., 108-3 Lantern Park Dr., Naugatuck, Conn. 06770
Filed Jun. 9, 1995, Ser. No. 489,097
Int. Cl.[6] B42C *1/10*
U.S. Cl. 270—51 7 Claims



1. Apparatus for folding paper sheets of the same length emanating from more than one web and for combining the folded sheets into a single collation, comprising:
a first, right angle paper path for folding paper sheets from a first web of paper; and
a second, straight paper path for folding paper sheets from a second web of paper, wherein
A. said first, right angle paper path includes a first accumulator for receiving a first plurality of paper sheets and aligning said first plurality of paper sheets into a first collation, a first folder downstream of said first accumulator for folding said first collation, a right angle transfer for receiving said first, folded collation and for feeding said first, folded collation out of said transfer in a direction perpendicular from the direction of entry of said first, folded collation into said transfer without changing the orientation of said first, folded collation, and a drop feeder downstream of said right angle transfer for dropping said first, folded collation onto said second, straight paper path, and
B. said second, straight paper path intersects with the drop feeder of the first, right angle paper path, and said second, straight paper path includes a second accumulator for receiving a second plurality of paper sheets and aligning said second plurality of paper sheets into a second collation, a second folder downstream of said second accumulator for folding said second collation differently than said first collation, means for receiving said second, folded collation and said first, folded collation at a registration location, and means for conveying said combined first and second, folded collations downstream from said receiving means.

5,573,233
SHEET POST-PROCESSING APPARATUS WITH MALFUNCTION OPERATION
Katsuaki Hirai, and Yoshifumi Takehara, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 9, 1995, Ser. No. 437,678
Claims priority, application Japan, May 10, 1994, 6-121763
Int. Cl.[6] B65H *31/00*; G03G *15/00*
U.S. Cl. 270—58.08 11 Claims

1. A sheet post processing apparatus comprising:
a plurality of movable post-processing means for effecting a predetermined post-processing for a set of sheets;
malfunction detecting means for detecting malfunction for each of said post-processing means;
control means, responsive to said malfunction detecting means, for controlling said post-processing means to place, at a



position where said post-processing means is to be placed if the malfunction did not occur, another one of said post-processing means free of the malfunction.

10. A sheet post-processing apparatus comprising:

a plurality of movable post-processing means for effecting a predetermined post-processing for a set of sheets;

malfunction detecting means for detecting malfunction for each of said post-processing means;

common malfunction display means for displaying the malfunction detected by said detecting means;

malfunction post-processing means displaying means for individually displaying the malfunction post-processing means detected by said detecting means; and

control means for operating said malfunction displaying means and said malfunction post-processing means displaying means;

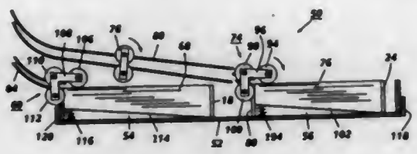
wherein said malfunction displaying means is provided outside a main assembly of said apparatus, and malfunction post-processing means displaying means is provided in said apparatus.

5,573,234

DUAL MODE SHEET FEEDER

Ermanno C. Petocchi, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 23, 1994, Ser. No. 344,058
Int. Cl.[6] B65H *3/44*
U.S. Cl. 271—9.01 16 Claims



1. An apparatus for feeding sheet material, including:

a tray having a first sheet storing section and a second sheet storing section, said tray being adapted to support a first stack of sheet material in the first sheet storing section and a second stack of sheet material in the second sheet storing section, and, in the absence of he first stack of sheet material and the second stack of sheet material, a third stack of sheet material in the first sheet storing section with at least a portion thereof overlapping into the section sheet storing section;

a first sheet feeder adapted to be operatively associated with the first stack of sheet material or the third stack of sheet material disposed in the first sheet storing section of said tray, said first sheet feeder being in a non-operative relationship with the second stack of sheet material disposed in the second sheet storing section of said tray;

a second sheet feeder adapted to be operatively associated with the second stack of sheet material disposed in the second sheet storing section of said tray, said second sheet feeder being in a non-operative relationship with the first stack of sheet material and the third stack of sheet material,

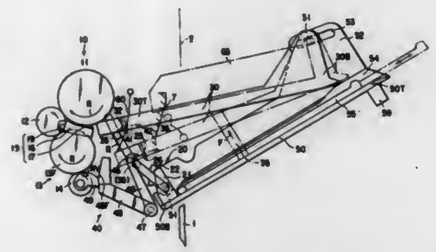
a removable partition interposed between the first sheet storing section and the second sheet storing section of said tray, said second sheet feeder being mounted on said removable partition for removal therewith from said tray when loading the third stack of sheet material therein.

5,573,235

PAPER SHEET FEEDER DEVICE

Yosinori Asai, Shizuoka-ken, Japan, assignor to Kabushiki Kaisha TEC, Shizuoka, Japan

Filed Mar. 29, 1995, Ser. No. 412,763
Claims priority, application Japan, Mar. 30, 1994, 6-061383
Int. Cl.[6] B65H *3/52*
U.S. Cl. 271—121 13 Claims



1. A paper sheet feeder device for a printer apparatus, the paper sheet feeder device comprising:

a paper feeder plate on which a stack of paper sheets is mounted, said paper feeder plate having a front end and a rear end;

a paper feeder roller arranged above the front end of said paper feeder plate and which is rotated to pick up the paper sheets one by one from the paper feeder plate;

supporting means for supporting the paper feeder plate to cause the paper sheets to be in contact with the paper feeder roller; and

a paper sheet separator pad arranged adjacent to the front end of the paper feeder plate to introduce the paper sheets from the paper feeder plate to a certain position on an outer circumference of the paper feeder roller and to cooperate with the roller to separate a top one of the paper sheets from the stack of paper sheets;

wherein said supporting means includes a support section for swingably supporting the rear end of said paper feeder plate while keeping said rear end projected outside through an opening formed in a side of the printer apparatus, and an urging section for urging the paper feeder plate to the roller; and

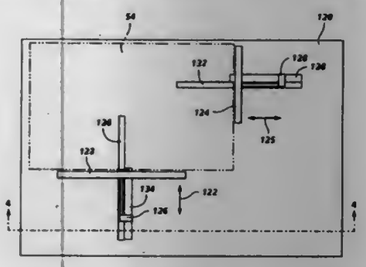
wherein said support and urging sections are provided on a cover which is swingably attached to a lower end of said opening of the printer apparatus.

5,573,236

VARIABLE SHEET GUIDE POSITION SENSOR

Ermanno C. Petocchi; Norman D. Robinson, Jr., both of Rochester; Thomas Acquaviva, Penfield, and David E. Damouth, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 5, 1994, Ser. No. 286,352
Int. Cl.[6] B65H *7/02*
U.S. Cl. 271—265.02 4 Claims



1. An apparatus for detecting the size of a sheet, comprising:

an optical sensor;

a sheet position indicator;

a variable scale operatively associated with said optical sensor so that different sized sheets are positioned at different positions along said variable scale, wherein said sensor generates a signal uniquely indicative of the position of the sheet relative to said variable scale to provide an indication of the sheet size;

a second optical sensor;

a second sheet position indicator; and

a second variable scale operatively associated with said second optical sensor so that different sized sheets are positioned at different positions along said second variable scale, wherein said second sensor generates a signal uniquely indicative of the position of the sheet relative to said second variable scale to provide an indication of the sheet size; and

a first wiper member operatively associated with said first mentioned optical sensor to prevent contamination of said first mentioned variable scale.

5,573,237

TELESCOPING POLE BASKETBALL STANDARD

Edward G. Van Nimwegen, North Ogden, and David C. Winter, Layton, both of Utah, assignors to Lifetime Products, Inc., Clearfield, Utah

Continuation-in-part of Ser. No. 191,339, Feb. 3, 1994, Pat. No. 5,375,835, which is a continuation-in-part of Ser. No. 100,054, Jul. 30, 1993, Pat. No. 5,354,049, which is a continuation-in-part of Ser. No. 13,611, Feb. 4, 1993, Pat. No. 5,248,140. This application Jul. 15, 1994, Ser. No. 275,779
Int. Cl.[6] A63B *63/08*
U.S. Cl. 273—1.5 R 42 Claims

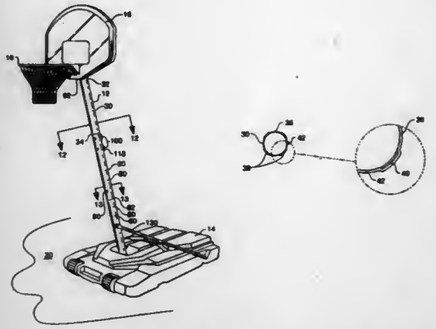
1. An adjustable basketball pole capable of assembly for use in a portable basketball system which includes a backboard, a goal attachable to the backboard, and a base, said basketball pole connectable to the backboard and to the base, said pole comprising a tubular inner pole section, a tubular outer pole section, and at least one fastener capable of assembly with said pole sections to form said pole;

said inner pole section having a backboard end and an insertion end, said inner pole section connectable to the backboard at said backboard end, said inner pole section having an outwardly extending flare adjacent said insertion end, said outwardly extending flare comprising a plurality of outward projections connected by substantially circular-arc-shaped portions of said inner pole section, said inner pole section having a plurality of bolt guides located at successive positions along the length of said inner pole section, each of said bolt guides comprising a region of said inner pole section having a pair of opposing bolt holes;

said outer pole section having a top end and a base end, said outer pole section connectable at said base end to the base, a substantial portion of said outer pole section having an inner diameter larger than the outer diameter of said inner pole section, an inwardly extending neck of said outer pole section adjacent said top end having an inner diameter less than the outer diameter of said outwardly extending flare, said outer pole section having at least one fastener site adjacent said top end, said fastener site comprising a region of said outer pole section having a pair of opposing bolt holes;

said fastener configured to releasably engage at least four of said bolt holes to thereby secure said inner pole section in position relative to said outer pole section;

said basketball pole further characterized by said inner pole section being movable among a plurality of predetermined positions by telescoping movement within said outer pole section, said pole being fixable at a predetermined length if said bolt holes of said inner section and said bolt holes of said outer section are aligned and said fastener is placed at least partially within said aligned bolt holes.

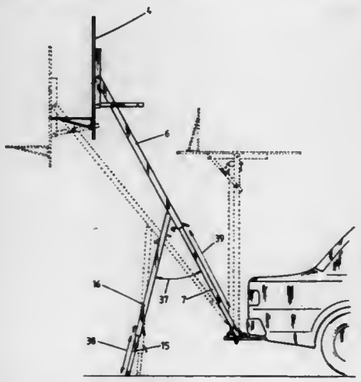


5,573,238

PORTABLE BALL RING

Jamie D. Aaron, Unit 1, 13 Shelton Drive, Athelstone, State of South Australia, Australia, and Scott R. Loveday, 11 Yaralinda Court, Demancourt, State of South Australia, Australia

Filed Apr. 21, 1995, Ser. No. 426,138
Int. Cl.[6] A63B *63/08*
U.S. Cl. 273—1.5 R 14 Claims



1. A portable collapsible ball ring assembly used with a vehicle including;

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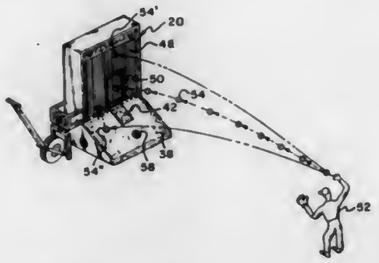
an extendible main support frame rotatably attached to said vehicle;
an extendible secondary support frame rotatably attached to the main support frame and adapted to provide ground engaging base support for said main support frame when in an extended position;
and a ball ring rotatably attached to the main support frame;
wherein said assembly is foldable and collapsible into a storage position to form a compact structure while still attached to the vehicle without engaging the ground and;
wherein said assembly maybe unfolded and extended into a playing position whereby the assembly holds and supports said ball ring with the secondary support frame providing ground support allowing one to use said ball ring to play various sports such as basketball or netball.

5,573,239

APPARATUS TO CATCH DETERMINE ACCURACY AND THROW BACK A BALL

Kenneth H. Ryker, 401 Kirkwood Ave., Stratford, N.J. 08084, and Ronald D. Hawn, 1B Maynard Dr., Erial, N.J. 08081

Filed Apr. 7, 1995, Ser. No. 418,505
Int. Cl.[6] A63B *69/40*
U.S. Cl. 273—26 A **26 Claims**



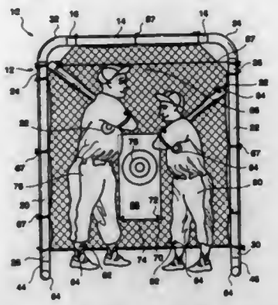
1. An apparatus at which a ball is thrown to determine the accuracy of the throw, catch the ball and throw the ball back to a source, the apparatus comprising:
(a) a housing enclosing an inner chamber, the housing comprising a front opening bounded by a frame comprising side edges, an upper edge and a lower edge,
(b) a ramp inclined downwardly and frontwardly from the lower edge of the frame, the ramp comprising a front surface,
(c) a first opening through the front surface of the ramp,
(d) door means to alternatively open and close the first opening,
(e) ball throwing means disposed rearwardly of the ramp to throw a ball out through the first opening when the door closing means is open,
(f) a shock absorbing pad of a shape to define a target hanging inside the chamber behind the front opening,
(g) first sensing means on the shock absorbing pad to sense a ball hitting said pad and close an electrical circuit each time said means senses a ball hit,
(h) apparatus sensing means on the apparatus to sense a ball hitting the apparatus at any location other than the shock absorbing pad and close an electrical circuit each time said means senses a ball hit,
(i) registering means to recognize the electrical circuit closures, record them, and display a record, and
(j) means to deliver a ball from the chamber to the ball throwing means.

5,573,240

BASEBALL BACKSTOP FOR PITCHING TRAINING

Geoffrey Humboldt, 4343 Grand Ave., Gurnee, Ill. 60031

Filed Nov. 8, 1995, Ser. No. 555,280
Int. Cl.[6] A63B *63/00*
U.S. Cl. 273—26 A **12 Claims**



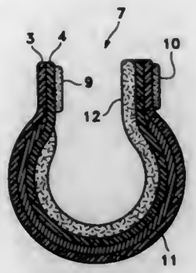
1. A baseball backstop for stopping baseballs thrown at the backstop and for audibly indicating whether a thrown ball has hit the backstop in a strike zone comprising:
a frame;
a netting attached to said frame;
a first piece of material placed directly in front of said netting and attached to said netting and/or to said frame;
said piece of material being a relatively heavy deformable piece of material, such that when a thrown ball hits said first piece of material, a popping or thumping noise is made by the ball hitting said first piece of material indicating that the thrown ball is a "strike", the thrown ball being stopped by said piece of material and falling to the ground in an area proximate to said frame for easy retrieval of the thrown ball;
said netting being made of a meshed material such that when a thrown ball hits said netting alone, and not said first piece of material, no popping or thumping noise is made indicating that the thrown ball is a "ball" and the thrown ball stopped by said netting falls to the ground in an area proximate to said frame for easy retrieval of the thrown ball.

5,573,241

PROTECTOR FOR A GOLF CLUB SHAFT

Doc A. Anderson, 1972 Rue Chateau, Chula Vista, Calif. 91913

Filed Oct. 14, 1994, Ser. No. 323,269
Int. Cl.[6] A63B *53/00*
U.S. Cl. 473—282 **5 Claims**



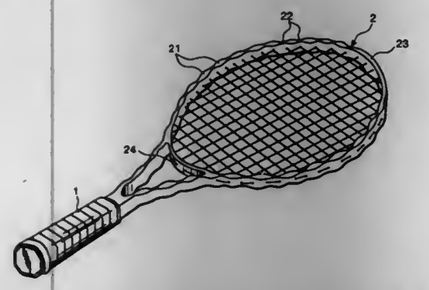
1. A golf club and golf club shaft protector assembly comprising, a golf club having a shaft and a golf club shaft protector, said protector comprising:
a protective component comprising an outer surface, an inner surface and a rigid element, wherein said rigid element is disposed between and is more rigid than said outer surface and said inner surface; and
a fastening component, said fastening component being attached to said protective component, such that when said fastening component is in the fastened position, said protective component closely surrounds said golf club shaft;
wherein the length of said protector extends less than the full length of the golf club shaft.

5,573,242

RACKET WITH RUGGED FRAME

Suk Ho Yoo, 9-903 Gaspo 1st Woosung Apt., 503 Daechi Dong, Kangnam-Gu, Seoul, Rep. of Korea

Filed Apr. 10, 1995, Ser. No. 419,535
Claims priority, application Rep. of Korea, Apr. 11, 1994, 94-7465
Int. Cl.[6] A63B *49/02*
U.S. Cl. 273—73 C **6 Claims**



1. A racket comprising a handle and a frame, further comprising:
power reinforcing portions and flexible portions formed along at least a part of the frame with at least some of said portions on the head of the frame in an alternating manner, the power reinforcing portions being constituted by a plurality of convex arc-shaped, protruded frame portions extending opposite to each other above and below a plane of the frame, said power reinforcing portions each having equal relatively large frame thickness as measured in a direction perpendicular to the plane of the frame and the flexible portions being constituted by a plurality of opposite concave arc-shaped, depressed frame portions disposed between said power reinforcing portions, said flexible portions each having equal relatively small frame thickness as measured in a direction perpendicular to a plane of the frame;
wherein there are 10 to 25 power reinforcing portions and 10 to 25 flexible portions alternately along the frame.

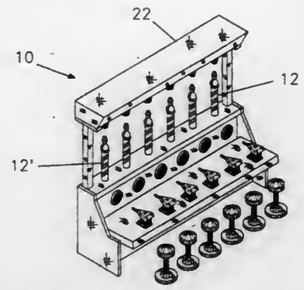
5,573,243

WATER DRIVEN ROTATING FIGURINE AMUSEMENT GAMES

Dennis Bartosik, 5705 Jason Lee Pl., Sarasota, Fla. 34233

Continuation-in-part of Ser. No. 339,836, Nov. 15, 1994, Pat. No. 5,480,148. This application Aug. 31, 1995, Ser. No. 521,976
Int. Cl.[6] A63F *9/14*
U.S. Cl. 463—60 **17 Claims**

1. A water activated rotatable column game system for use by people for fun and amusement and prizes comprising in combination:
a game housing having an open rear face and open side faces and an enclosed top roof and an enclosed bottom floor and an open front face for the people to participate in the game and observe the progress of the game;
a plurality of rotatable columns and a plurality of figurines disposed within the game housing in an upstanding orientation, each rotatable column being oriented to travel upwardly from a start line;



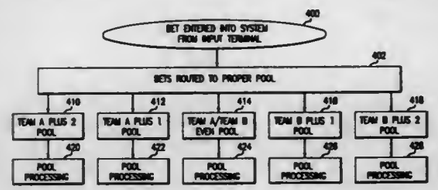
a plurality of game consoles disposed adjacent to the game housing and outside the front face, each game console for activating and controlling the upwards travel of one of the rotatable columns;
a plurality of finish bumpers and a plurality of motor means disposed in the game housing and adjacent to the rotatable columns, each motor means being electrically coupled to one rotatable column for moving the rotatable column upwards towards the finish bumper;
a plurality of switch means, each switch means being disposed in one of the game consoles and further being therebetween one of the consoles and one of the rotatable columns for moving the rotatable column upwards towards the finish bumper when in a closed status and halting the rotatable column when in an open status;
a second plurality of switch means, each second switch means being disposed in the finish bumper and for illuminating the winning finish bumper when a winning figurine reaches the finish bumper; and
movement means for urging smooth upward rotating movement of the rotatable column.

5,573,244

SYSTEM AND METHOD FOR WAGERING AT FIXED HANDICAPS AND/OR ODDS ON A SPORTS EVENT

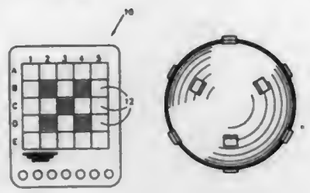
Barry M. Mindes, Wayne, N.J., assignor to International Sports Wagering, Inc., Little Falls, N.J.

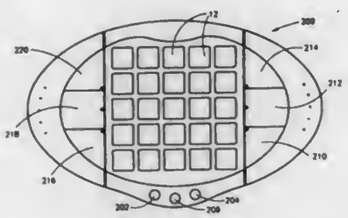
Filed Feb. 28, 1994, Ser. No. 203,213
Int. Cl.[6] G06F *155/00;* **A63F** *9/24*
U.S. Cl. 463—26 **36 Claims**



2. A computer-based data processing system for maintaining a betting pool during a contest, the betting pool having certain fixed betting terms, comprising:
central processor means for processing data derived from the betting pool;
storage means for storing data representative of the certain fixed betting terms;
first means for calculating an imbalance of the betting pool;
second means, responsive to the first means, for determining on the basis of predetermined criteria whether to change the certain fixed betting terms; and
third means, responsive to the second means, for changing the certain fixed betting terms.

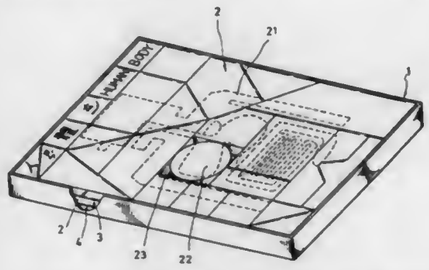
5,573,245
PUZZLE AND GAME BOARD DEVICE
Avish J. Weiner, 12 Boyer, 69127 Tel Aviv; Avraham Y. Olti, 2/35 Misgav, 20100 Karmiel; Gyoray M. P. Benedek, 43 Weizmann, Kiryat Bialik, and Michael Ganor, 27 Shocken, 66532 Tel Aviv, all of Israel
Continuation-in-part of Ser. No. 225,291, Apr. 8, 1994, Pat. No. 5,417,425. This application May 5, 1995, Ser. No. 437,076
Int. Cl.[6] A63F *9/00*
U.S. Cl. 273—153 R **30 Claims**





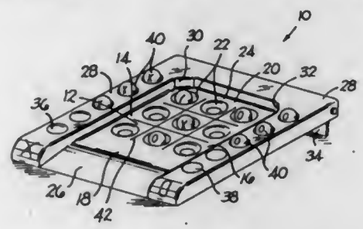
1. A puzzle device, comprising:
(a) an array of indicators, each of said indicators capable of alternately indicating a first state or a second state;
(b) means for selecting one of said indicators;
(c) means for changing, upon the selection of said one of said indicators, the state of at least one of the other of said indicators based on a pre-determined geometrical pattern, wherein said geometrical pattern is wrapped around.

5,573,246
BUILDING BLOCK-JIGSAW PUZZLE
Chi-Yang Liao, P.O. Box 1-394, Chungho, Taipei Hsien, Taiwan
Filed May 22, 1995, Ser. No. 446,460
Int. Cl.[6] A63F *9/10*
U.S. Cl. 273—157 R **1 Claim**



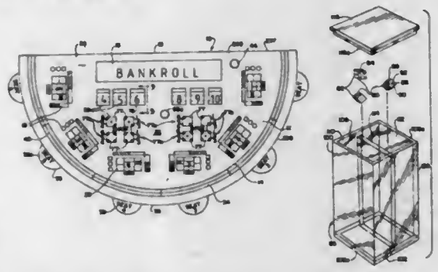
1. A building block-jigsaw puzzle comprising a case, a first layer of building blocks, a second layer of building blocks and a third layer of building blocks, each said layer of building blocks having a plurality of divided building blocks and placed inside said case, said building blocks of each layer can be combined to form a picture, each said layer of building blocks having respectively a circular building, block, between each said circular building blocks and the other building blocks and situated around said circular building block are some gaps so that each said layer of building blocks can be taken out easily from said gaps, furthermore said first layer of building blocks shoving the title of the picture, as said first layer of building blocks being taken out, player can combined said second layer of building blocks to form a picture the same with the first layer picture, furthermore the second layer picture showing a brief explanation concerning every part of the title, as said second layer of building blocks being taken out, player can combined said third layer of building blocks, therefore player can find the detailed explanation and function to every part of the title in the third layer picture.

5,573,247
PUTTING GAME
William Ridge, Elizabethtown, Ky., assignor to Club Pro Products, Inc., Louisville, Ky.
Filed Sep. 26, 1995, Ser. No. 534,054
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—184 **6 Claims**



1. A game board for a golf putting game to be played on the floor, comprising:
a playing surface having left, right, front and rear sides and including a plurality of indentations for receiving golf balls;
a ramp leading downward from the front side to engage the floor
a raised frame around the left, right and rear sides, said raised frame having a top surface;
said raised frame including indentations in its top surface for holding golf balls to be used in the game.

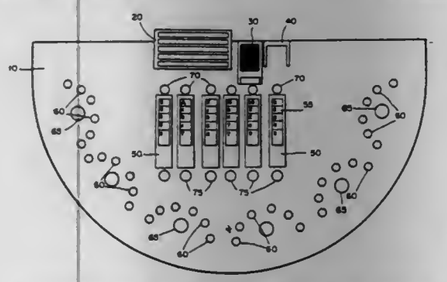
5,573,248
USING THREE DICE AND PLAYED ON A SEMICIRCULAR GAMING TABLE
Anthony C. Parra, and Debra Parra, both of 1101 Iroquois Ave., Apt. 1204, both of Naperville, Ill. 60563
Filed May 15, 1995, Ser. No. 441,046
Int. Cl.[6] A63F *3/00;9/04*
U.S. Cl. 273—274 **4 Claims**



1. A dice game apparatus comprising:
a game board having a generally semicircular peripheral edge about which a plurality of players are located, the game board

having designated thereon a series of crap bet placing boxes corresponding to each of the players and positioned in a repetitive pattern along a peripheral portion of the game board, the crap bet placing boxes designating the only place on which the players may place a bet;
a set of at least two dice having six faces with numerical representations thereon and a shake container with the dice being enclosed in the shake container, the shake container is configured and adapted so that each of the die randomly registers one of the faces after a shaking of the container; and
a third die formed with six faces, each of the faces having a representation corresponding to a number on one of the faces of each of the die in the set of dice wherein the shake container forms at least two compartments with the set of dice being enclosed in a first compartment, and the third die being enclosed in the second compartment.

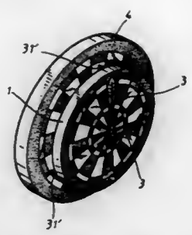
5,573,249
CARD GAME
Phillip Johnson, 4222 E. Brown, Lot 16, Mesa, Ariz. 85205
Filed Aug. 26, 1994, Ser. No. 296,441
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—292 **8 Claims**



1. A method of playing a card game comprising the steps of:
providing a plurality of indicia of conventional playing cards
providing at least one player with an opportunity to place a wager;
displaying a first plurality of at least five playing card indicia for each of a plurality of partial card hands, none of said partial card hands sharing playing card indicia;
allowing said at least one player to assign said wager to one of said plurality of partial card hands;
displaying an additional plurality of indicia of playing cards for each hand to complete each display of said partial card hands thereby forming a plurality of complete card hands, and none of said complete hands sharing playing card indicia;
comparing said plurality of complete card hands according to a predetermined hierarchy of winning card hands in order to determine which of said hands has a particular value; and
providing a winning payout to a player if said player had assigned a wager to the hand with said particular value.

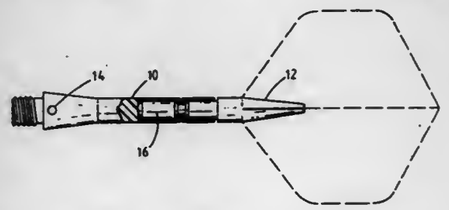
5,573,250
DARTBOARD CLOCK
Kevin Kuo, No. 13-1, Lane 338, Sec. 2, Feng-Shin Rd., Shin-Tien Village, Tan Tzu Hsiang, Taichung Hsien, Taiwan
Filed Feb. 6, 1996, Ser. No. 595,859
Int. Cl.[6] F41J *3/00*
U.S. Cl. 273—408 **8 Claims**

1. A dartboard clock comprising a face member having a disk plate having a front surface and a back surface, a circumferential flange extending from the back surface of the face member and having mounted thereon anchoring means adapted to anchor the dartboard clock to a pierceable article, the face member having a



central through hole provided on the disk plate, a timing device having a rotating shaft extending therefrom to extend through and retained within the central hole of the disk plate with a remote end of the rotating shaft projecting out of the front surface of the face member for engaging timing hands which run on the front surface.

5,573,251
DART FLIGHT STEM
Eric Beard, Roydon; Gary Plummer, Harlow, and Christopher Thorburn, Hoddesdon, all of Great Britain, assignors to Target Sports Limited, United Kingdom
Filed Aug. 5, 1994, Ser. No. 286,346
Claims priority, application United Kingdom, May 4, 1994, 9408845
Int. Cl.[6] A63B *65/02*
U.S. Cl. 273—416 **4 Claims**

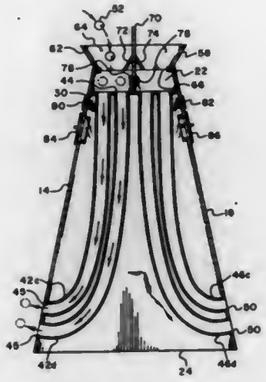


1. A dart flight stem comprising a root portion adapted for attachment to a dart barrel and a flight-holding portion mounted on the root portion for rotation about the longitudinal axis of the flight stem, wherein the rotational mounting of said flight-holding portion on said root portion comprises a shaft extending axially from one said portion into a complementary bore extending axially from the adjoining end of the other said portion, said shaft being slightly longer than said bore and said bore having an end face, said shaft having a free end for cooperation with said end face to form a thrust bearing, so that movement of said flight holding portion forwards relative to said root portion, and thus towards the dart barrel, is limited by engagement of said free end of said shaft with said end face of said bore, said shaft having a circumferential groove and said bore being bounded by a peripheral metal wall of said other portion, said peripheral metal wall being locally crimped radially inwardly to form projection means on the peripheral surface of said bore which projects into said circumferential groove, whereby the flight holding portion is held captive on said root portion.

4. A method of making a dart flight stem, comprising providing a root portion having attachment means at a front end for attachment to a dart barrel, providing a flight-holding portion mountable at the rear end of said root portion, providing an axial blind bore extending into one said portion and providing a shaft on the other said portion, said shaft being of a diameter to be a rotating fit within said bore, providing a circumferential groove around said shaft, inserting said shaft into said bore and crimping the wall of said bore radially inwardly locally at the position of said groove to form projection means in the wall of said bore, to hold the flight portion captive on said root portion and thereafter turning down the

exterior of the portion formed with said bore to remove any indentation on the exterior of said portion formed with said bore.

5,573,252
TRAINING DEVICE
Gary M. Simmons, 60 Winchester Ct., Reading, Pa. 19606
Filed Jan. 19, 1996, Ser. No. 589,056
Int. Cl.[6] A63B *22/00*
U.S. Cl. 273—454 10 Claims

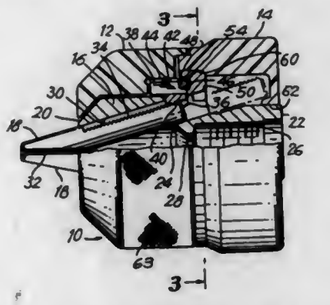


1. A training device for developing a child's motor skills comprising:
a housing having a front wall, an open top end and a bottom end, said housing further having a plurality of openings formed in said front wall adjacent said bottom end thereof;
a plurality of tube means, each of said tube means being secured in said housing and having an upper end and a lower end, said lower end of each of said tube means being associated with a different one of said openings formed in said front wall of said housing,
an object adapted to pass through one of said tube means;
guide means secured to said open top end of said housing, said guide means serving to direct said object toward said open top end of said housing so that said object can randomly enter and pass through one of said tube means and out said associated opening in said front wall of said housing.

5,573,253
PACKING RINGS, METHOD FOR PRODUCTION OF THE PACKING RINGS, AND SEAL DEVICE USING THE PACKING RINGS
Kazumasa Naitou; Shosuke Naito, both of Kitakoma-gun; Takahisa Ueda, and Masaru Fujiwara, both of Sanda, all of Japan, assignors to Kitz Corporation, Chiba-ken, and Nippon Pillar Packing Co., Ltd., Osaka-fu, both of Japan
Division of Ser. No. 252,351, Jun. 3, 1991, Pat. No. 5,522,603.
This application Dec. 12, 1995, Ser. No. 571,234
Claims priority, application Japan, Jan. 31, 1994, 6-25937
Int. Cl.[6] F16J *15/20*
U.S. Cl. 277—1 1 Claim

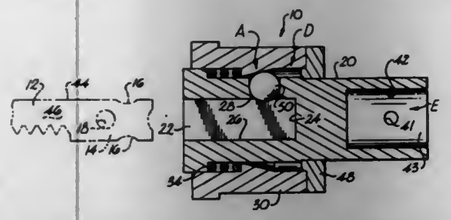
1. A method for production of a packing ring, said method comprising the steps of:
spirally winding a ribbon of expanded graphite into a roll;
compressing molding said roll into a packing;
disposing an annular mass of superposed sheets of expanded graphite at a position in said packing; and
compressing molding a resultant composite within a molding die so as to give rise to at least one packed part having a higher density than said packing in at least one of an inner peripheral part and an outer peripheral part of said packing.

5,573,254
NON-IMPACT KEYLESS CHUCK
Robert O. Huff, Piedmont; Paul T. Jordan, Seneca, and William F. Forquer, West Union, all of S.C., assignors to Power Tool Holders Incorporated, Wilmington, Del.
Continuation of Ser. No. 322,356, Oct. 13, 1994, Pat. No. 5,452,906, which is a continuation of Ser. No. 234,227, Apr. 28, 1994, abandoned, which is a continuation of Ser. No. 99,160, Jul. 29, 1993, Pat. No. 5,330,204, which is a continuation of Ser. No. 884,205, May 18, 1992, Pat. No. 5,253,879, which is a division of Ser. No. 449,722, Dec. 11, 1989, Pat. No. 5,125,673. This application Jun. 7, 1995, Ser. No. 476,896
Int. Cl.[6] B23B *31/10*
U.S. Cl. 279—62 32 Claims



1. A single sleeve hand actuatable chuck for use with a manual or powered driver having a lockable rotatable drive shaft, said chuck comprising:
a generally cylindrical body member, said body member having a forward section and a rearward section, said rearward section having an axial bore formed therein to mate with said lockable drive shaft of said driver and said forward section having an axial bore formed therein and a plurality of angularly disposed passageways formed therethrough and intersecting said axial bore;
a plurality of jaws slidably positioned in each of said angularly disposed passageways, each of said jaws having a jaw face formed on one side thereof and threads formed on the opposite side thereof;
a jaw engaging mechanism rotatably mounted relative said body so as to engage said jaw threads;
a hand actuatable sleeve member received over the forward section of said body and extending toward the rearward section, said sleeve member being in driving engagement with said jaw engaging mechanism, said sleeve member having a forward portion tapered toward the forward section axial bore and substantially cylindrical portion extending rearwardly from said forward section;
and further including a retaining member located on the forward section of said body and retaining said sleeve member to said body.

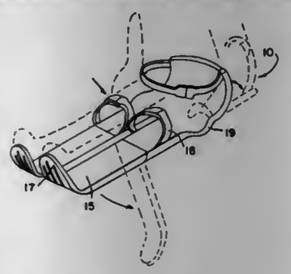
5,573,255
QUICK RELEASE CHUCK DEVICE FOR SAW BLADES
Glenn L. Salpaka, Salem, S.C., assignor to Power Tool Holders, Inc., Wilmington, Del.
Filed May 5, 1995, Ser. No. 435,473
Int. Cl.[6] B23B *31/107;31/22*
U.S. Cl. 279—75 23 Claims



1. A quick release chuck device for holding saw blades having flat rectangular shank portions, said chuck device comprising:
a body member, said body member having an internal longitudinal bore defined therein, said longitudinal bore being substantially rectangular in cross section and having short sides and long sides so as to accept a conventional saw blade to be inserted into said bore;
at least one radial bore defined in said body member, said radial bore defined substantially radially opposite one of said longitudinal bore short sides and being in communication with said longitudinal bore through said short side;
an engaging device disposed in said radial bore, said engaging device being radially movable within said radial bore so that at least a portion of said engaging device extends radially into said longitudinal bore in a locking mode of said chuck device;
a spring biased outer sleeve member disposed about at least a portion of said body member, said outer sleeve member movable longitudinally relative to said body member between a released position and a locking position, said outer sleeve member comprising an engaging surface having a portion contacting said engaging member and forcing said engaging member radially inward in said locking position to engage with a recess defined in an edge of a saw blade inserted into said longitudinal bore, said engaging surface allowing said engaging member to move radially outward in said released position to release a saw blade from said chuck device; and
a spring member operably disposed relative to said outer sleeve member and said body member to bias said sleeve member to said locking position.

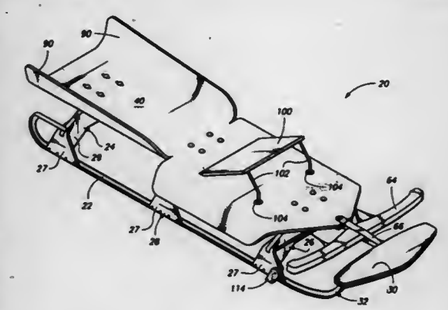
5,573,256
SLED PANTS
Brent L. Farley, 4213 Conneticut Ave., Baltimore, Md. 21229
Filed May 26, 1995, Ser. No. 452,031
Int. Cl.[6] B62B *15/00*
U.S. Cl. 280—18 15 Claims

1. An apparatus to be worn during sledding comprising:



a seat portion having spaced apart sides;
a leg portion having spaced apart sides, a first end pivotally attached to the seat portion and a second curved end opposite the first, wherein the first end enables the leg portion to reciprocate between an operable sledding position and a walking position, and the second end enables the leg portion to ride over protuberances associated with the path of travel while sledding; and
the leg portion further comprises a pair of spaced apart independently reciprocating leg troughs each of which is configured to receive one leg of the wearer; and
the sled further includes a curved back section that is flexible and can move between a curved sledding position and a flat walking position with sled attachment members that attach to the midsection of the user so that the sled can be constantly attached to the user when sledding and walking.

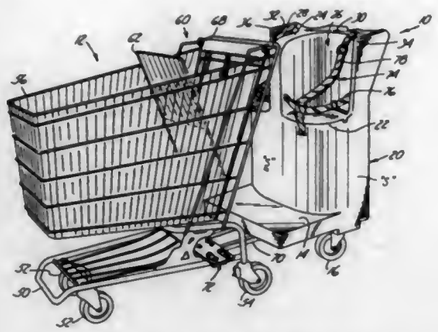
5,573,257
FLEXIBLE RUNNER SLED
Benson H. Olivieri, 6420 Holliday Way, Post Falls, Id. 83854
Filed Dec. 27, 1994, Ser. No. 364,132
Int. Cl.[6] B62B *13/06;13/12*
U.S. Cl. 280—22 27 Claims



1. A coaster comprising:
a pair of longitudinally-extending flexible rail laterally-spaced apart by a plurality of struts, said flexible rails defining a path for the coaster along a ground surface;
a longitudinally-extending body support board;
at least one pivot joint joining at least one of said struts and said support board, said pivot joint mounting the body support board along the flexible rails for pivotal movement of the body support board, relative to the flexible rails, about a longitudinal axis;
gearing connected to said body support board and a rack connected to one of said struts, said gearing responsive to pivoting of said body support board, said gearing driving said one of said struts by said rack laterally with respect to said at least one of said struts thereby causing the flexible rails to arc and to thereby curve the path of the coaster.

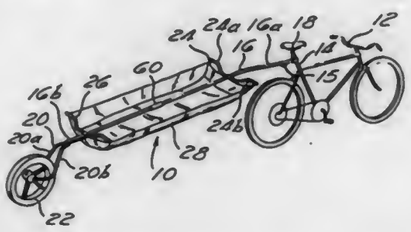
5,573,258
CHILD CARRIER ACCESSORY ATTACHABLE TO A SHOPPING OR LUGGAGE CART
Mary J. Reiland, Apple Valley, and Kenneth H. Reiland, Burnsville, both of Minn., assignors to Four D, Inc., Apple Valley, Minn.
Filed May 27, 1994, Ser. No. 250,550
Int. Cl.[6] B62B *3/02;3/14*
U.S. Cl. 280—33.993 19 Claims

1. A child carrier accessory attached to a cart, the cart having a base frame supported by at least one rear wheel, the base frame supporting a carrying location thereon, the child carrier accessory comprising;



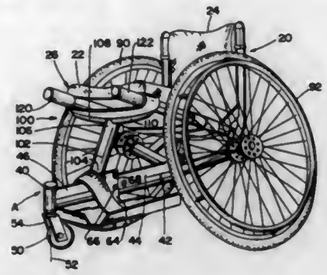
a platform supported by at least one platform wheel;
a carrier body located on the platform having at least one seat area;
a carrier handle attached to the carrier body for pushing the child carrier accessory; and
connector means rigidly connectable to the child carrier accessory and the cart so that the cart and the child carrier accessory are steered by the carrier handle, pivoting on an axis of the at least one rear wheel, the connector means maintaining the child carrier accessory a fixed distance from the cart when rigidly connected thereto, the fixed distance defining a space therebetween that permits a child to get off and on the child carrier accessory.

5,573,259
BICYCLE TRAILER
Michael S. Castillo, 2138 Via Teca, San Clemente, Calif. 92673, and Edward L. Castillo, 25781 Dillon Rd., Laguna Hills, Calif. 92653
Filed Jul. 1, 1994, Ser. No. 270,124
Int. Cl.[6] B62J *7/00*
U.S. Cl. 280—204 **15 Claims**



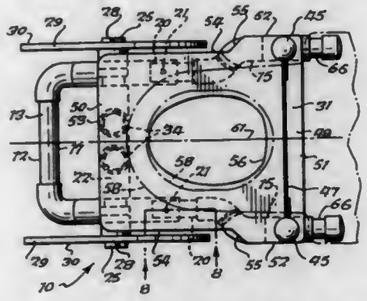
1. A bicycle trailer configured for attachment to a bicycle frame, said bicycle trailer comprising:
(a) an elongate support member having proximal and distal ends and at least one wheel rotatably connected to said distal end;
(b) first and second rack members attached to said support member in spaced relation;
(c) a utility storage bag having a first end attached to said first rack member and a second end attached to said second rack member such that said utility storage bag is suspended from and extends longitudinally beneath said support member; and
(d) a connector rigidly mountable to said bicycle frame, the proximal end of said support member being pivotally connected to said connector and selectively detachable therefrom.

5,573,260
SPORT WHEELCHAIR HAVING A T-FRAME
Christopher J. Peterson, and Mary C. Peterson, both of Tierra Verde, Fla., assignors to Invacare Corporation, Elyria, Ohio
Filed Oct. 12, 1993, Ser. No. 135,745
Int. Cl.[6] B62M *1/14*
U.S. Cl. 280—250.1 **13 Claims**



1. A wheelchair comprising:
a seat;
first and second rear wheels;
a small diameter front wheel;
a frame having a first member centrally located between the rear wheels and extending forwardly toward the front wheel, second and third members extending substantially perpendicularly from operative connection adjacent a first end of the first member and rotatably receiving the first and second rear wheels on distal ends of the second and third members, respectively, the first member angling downwardly relative to horizontal from the first end thereof toward a second end that pivotally receives the front wheel, and a seat support assembly extending upwardly from the first member and receiving the seat thereon at a location disposed between the rear wheels; and
first and second handles extending from opposite sides of the seat support assembly and having outer terminal ends disposed outwardly from and in substantially the same plane as the seat.

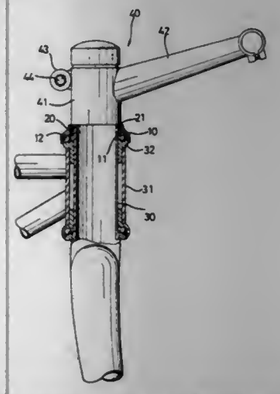
5,573,261
NARROW MANUALLY USER-PROPELLED WHEELCHAIR
S. David Miller, 20 Deer Run Rd., Williamsville, N.Y. 14221
Filed Nov. 1, 1994, Ser. No. 332,859
Int. Cl.[6] A47K *11/04*; A61G *5/02*; B62M *1/14*
U.S. Cl. 280—250.1 **23 Claims**



1. A wheelchair comprising a frame, a seat on said frame, said seat having a central longitudinal axis and a substantially horizontal front portion for placement proximate the knees of a patient and a substantially horizontal rear portion for placement proximate the hips of a patient, said rear portion being wider than said front

portion, rear wheels on said frame, and hand drivable front wheels proximate said front portion of said seat, each of said front wheels being rotatable in a respective fixed single substantially vertical plane and oriented relative to said rear portion of said seat so that each of said vertical planes is substantially parallel to said central longitudinal axis of said seat and passes through said rear portion of said seat.

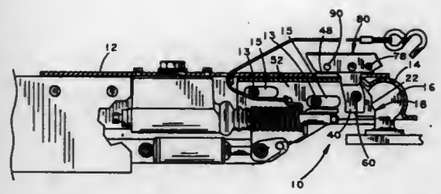
5,573,262
STEERING BEARING ASSEMBLY FOR A WHEELED VEHICLE
Yi Chen Chi, No. 139-5, An Mei Rd., Mei Shan Village, Hou Li Hsiang, Taichung Hsien, Taiwan
Filed Aug. 16, 1994, Ser. No. 291,679
Int. Cl.[6] B02K *21/06*
U.S. Cl. 280—279 **2 Claims**



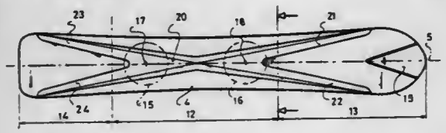
1. A steering bearing assembly for a wheeled vehicle, having a head tube, a steerer tube passing through said head tube with at least one bearing assembly therebetween, said beating assembly comprising:
an upper race and a lower race having a plurality of balls rotatably received therebetween said lower race connected to the head tube such that the steerer tube passes through said lower race, said upper race having an inner wall extending around and substantially parallel to the steerer tube and having a flange extending inwardly from the inner wall toward said steerer tube from a lower end thereof, the inner wall of the upper race spaced from the steerer tube so as to form a generally annular space therebetween with the flange forming a bottom of the space;
a resilient absorbing element extending around said steerer tube and located on the flange within said generally annular space between said steerer tube and said upper race; and,
a force exerting element attached to said steerer tube and exerting a downward force on said resilient absorbing element to compress the resilient element against the upper race and the steerer tube so as to securely position said upper race on said steerer tube.

5,573,263
AUTOMATIC TRAILER HITCH LOCK
Martin L. Denny, Des Moines, Iowa, and Alan Maddaford, Farmington Hills, Mich., assignors to DICO, Inc., Des Moines, Iowa
Filed Jul. 7, 1994, Ser. No. 271,799
Int. Cl.[6] B60D *1/06*
U.S. Cl. 280—509 **12 Claims**

1. A self-latching trailer hitch for engaging and securing a hitch ball, in which a socket of said hitch is capable of engaging the hitch ball upon insertion of the hitch ball into the socket as well as is capable of automatically securing the hitch ball for transport, said self-latching trailer hitch comprising:
a ball catch;
support means operably and pivotally attached to said ball catch by pivot means for alternatively supporting said ball catch in a release position, and permitting said ball catch to pivotally rotate to a securement position upon insertion of the hitch ball into the socket;
said support means including bias means operably interposed between said support means and said ball catch for maintaining said ball catch in said release position;
said pivot means enabling said ball catch to pivot, upon insertion of the hitch ball into the socket and upon overcoming said bias means, toward repositioning said ball catch to said securement position;
automatic locking means operably positioned between said ball catch and said support means for automatically and positively locking said ball catch into said securement position, upon insertion of the hitch ball into the socket, relative to said support means to preclude against inadvertent migration and repositioning of said ball catch from said securement position, said automatic locking means being a pin operably coupled to said hitch in a manner which allows said pin to move from a position resting upon said ball catch to a position interposed between said ball catch and said support means upon insertion of the hitch ball into the socket where by said ball catch is prevented from pivoting toward said release position; and
release means operably connected to said automatic locking means for releasing said automatic locking means and allowing said bias means to pivot said ball catch upon removal of the hitch ball out of the socket, toward repositioning said ball catch to said release position, where said ball catch is maintained by said bias means.



5,573,264
SNOWBOARD
Dominique Deville, Annecy Le Vieux; Vincent Forest, and Maurice Legrand, both of Annecy, all of France, assignors to Salomon S.A., Metz-Tessy, France
Filed Apr. 26, 1994, Ser. No. 233,747
Claims priority, application France, Apr. 30, 1993, 93 05397
Int. Cl.[6] A63C *5/07*
U.S. Cl. 280—602 **17 Claims**



1. A snowboard adapted to support a user's feet which are to be retained on the snowboard by longitudinally spaced apart binding elements, said snowboard comprising:
a longitudinally elongated base structure having a shape of a plate, said base structure having a front end, a rear end, a sole layer forming a bottom, and an upwardly turned shovel at said front end of said base structure;
said base structure further comprising a central zone, a front zone and a rear zone, said front zone being located longitudi-

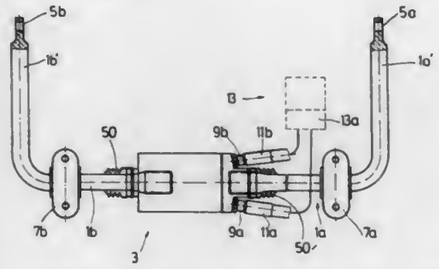
nally forwardly of said central zone, said rear zone being located longitudinally rearwardly of said central zone;
said central zone containing two longitudinally spaced apart mounting zones for having attached to said mounting zones respective ones of said binding elements;
at least one longitudinally elongated reinforcement extending from the vicinity of at least one of said front end and said rear end of said base structure to at least one of said mounting zones to thereby form at least one reinforced base structure surface extending from the vicinity of at least one of said front end and said rear end of said base structure to at least one of said mounting zones, said longitudinally elongated reinforcement further extending between said mounting zones, said longitudinally elongated reinforcement being positioned no lower than said bottom;
said longitudinally elongated reinforcement comprising means for increasing at least one of torsional resistance and flexional resistance of said base structure at least with respect to said reinforced surface, said reinforcement comprising a stiffness between said mounting zones that is less than a stiffness between said one of said mounting zones and said one of said front end and said rear end of said base structure;
said base structure further comprising a pair of laterally opposed front corners and a pair of laterally opposed rear corners; and
said at least one reinforcement comprising a pair of longitudinally extending branches converging from the vicinity of said pair of laterally opposed front corners to at least one of said mounting zones and a pair of longitudinally extending branches converging from the vicinity of said pair of laterally opposed rear corners to at least one of said mounting zones.

5,573,265

STABILIZER SYSTEM FOR A MOTOR VEHICLE SUSPENSION SYSTEM WITH A ROTARY ACTUATOR

Robert Pradel, Röthlein, and Stefan Schiffler, Schonungen, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Oct. 28, 1994, Ser. No. 330,934
Claims priority, application Germany, Nov. 5, 1993, 43 37 821.8; Oct. 4, 1994, 44 35 491.6
Int. Cl.[6] B60G *21/00*
U.S. Cl. 280—689 **18 Claims**



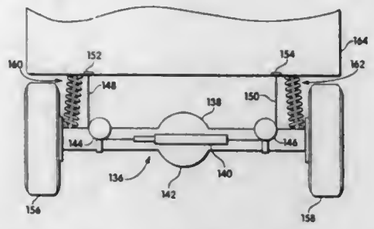
3. A vehicular stabilizer system for stabilizing a vehicle during turning, said vehicular stabilizer system comprising:
a first stabilizer bar;
a second stabilizer bar;
an actuator;
said actuator comprising a first member and a second member;
said first stabilizer bar being attached to said first member;
said second stabilizer bar being attached to said second member;
means for connecting hydraulic lines to one of said first member and said second member;
said means for connecting comprising means for minimizing twisting, during actuation of said actuator, of hydraulic lines along the length of hydraulic lines being connected to one of said first member and said second member;
at least one of said first member and said second member being rotatable with respect to the other;
means for rotating, with hydraulic fluid pressure, at least one of said first member and said second member with respect to the other;
at least one said first member and said second member being rotatable about an axis of rotation;
said means for minimizing twisting of hydraulic lines connected to one of said first member and said second member comprising means for providing movement of hydraulic lines, connected to one of said first member and said second member, substantially solely in a plane transverse to said axis of rotation during actuation of said rotary actuator;
said means for minimizing twisting further comprising: clamp means;
said clamp means being connected to a portion of said automobile suspension system that remains substantially stationary relative to one of said first member and said second member;
a first hydraulic line for permitting the flow of hydraulic fluid;
said first hydraulic line comprising a first portion and a second portion;
a second hydraulic line;
said second hydraulic line comprising a first portion and a second portion;
said clamp means comprising means for attaching said first hydraulic line and disposing said first portion of said first hydraulic line in a plane transverse to said axis of rotation; and
said clamp means comprising means for attaching said second hydraulic line and disposing said first portion of said second hydraulic line in a plane transverse to said axis of rotation.

5,573,266

VEHICLE BODY LOWERING SYSTEM

Wojciech T. Zalewski, Belmont; Guy Steele, Shrewsbury, both of Mass., and Christopher J. Mackenize, Chandler, Ariz., assignors to Safe-T-Vans, Inc., Cambridge, Mass.

Filed Feb. 13, 1995, Ser. No. 387,474
Int. Cl.[6] B60G *11/26*
U.S. Cl. 280—704 **19 Claims**



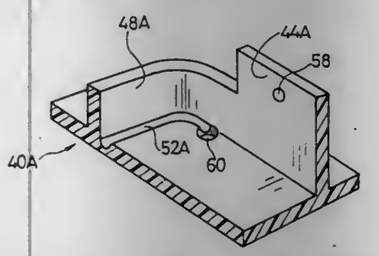
13. In a motor vehicle having a carriage including at least one axle, a wheel at the end of said axle, and an axle housing, a load compartment body, and a spring suspension component near each of said wheels for the buoyant support of said body above said carriage between a lower position and an upper position, an assembly for facilitating ingress and egress of a load from said motor vehicle, comprising:
(a) a hydraulic cylinder having a shell and a piston extending from said shell;
(b) a power source;
(c) a manually actuated control for energizing and deenergizing said power source;
(d) a means for permanently anchoring an end of said shell to the underside of said vehicle body at an anchor point such that the direction of travel of said piston is less than or equal to approximately 45° from vertical; and
(e) a flexible, constant length line having a first end being fastened to said piston, and a second end being attached to said axle housing near said wheel;
(f) whereby, when said assembly is activated, said piston retracts into said shell, pulling said flexible attachment means, and causing said spring suspension component to compress, thus lowering said vehicle body at said wheel.

5,573,267

LID FOR AIR BAG DEVICE

Kazuhiko Yamakawa, and Takayasu Zushi, both of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Jun. 9, 1995, Ser. No. 489,289
Claims priority, application Japan, Jun. 13, 1994, 6-130333
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.3 **5 Claims**



1. A mechanism for covering a casing accommodating an air bag therein, comprising:
a lid covering said casing;
first and second tear lines, formed in a back surface of said lid, allowing said lid to be torn along said first and second tear lines, said first tear line extending in the width direction of a vehicle body of a vehicle, said second tear lines being connected to said first tear line and extending in a direction to intersect said first tear line;
mounting pieces protruding from the back surface of the lid for mounting said lid to said casing; and
high strength portions disposed outside each of said second tear lines near connecting corners between said first tear line and each of said second tear lines, said high strength portions being formed of ribs disposed on the back surface of the lid and projecting therefrom such that the second tear lines extend along the ribs, said ribs continuing from the mounting pieces to thereby prevent a tear, which has traveled along said first tear line, from further traveling sideways at said connecting corners.

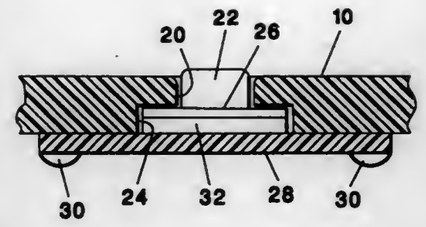
5,573,268

DRIVER'S SIDE AIRBAG COVER INCORPORATING FUNCTION SWITCHES

F. Paul Leonelli, Ogden, Utah, assignor to Morton International, Inc., Chicago, Ill.

Filed Jul. 19, 1995, Ser. No. 503,975
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—731 **4 Claims**

1. A driver's side airbag module having a single cover means comprising a one-piece airbag housing cover having an outer surface and an inner surface, a region of said cover being rupturable along tear lines to create at least one door to release said airbag during inflation, and further comprising:
a keypad opening extending through said cover within the door-creating region thereof wherein said keypad opening comprises an opening portion extending through the outer surface of said cover and a recess portion of larger area extending through the inner surface of said cover;



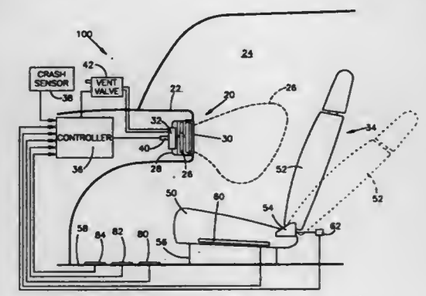
a keypad mounted within said opening accessible to the driver;
wherein said keypad includes a base larger than said opening portion housed within said recess portion;
a panel more rigid than said cover mounted on the inner surface of said cover and extending, under said keypad and keypad opening; and
a function switch mounted between said keypad and panel for actuation by the driver upon depression of said keypad.

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APPARATUS AND METHOD FOR SENSING AND RESTRAINING AN OCCUPANT OF A VEHICLE SEAT

Scott B. Gentry, Romeo; Brian K. Blackburn, Rochester, and Joseph F. Mazur, Washington, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Dec. 2, 1993, Ser. No. 161,772
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—735 **41 Claims**



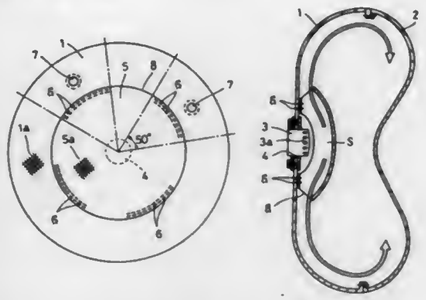
1. Apparatus comprising:
means for sensing a sensed weight of an occupant of a vehicle seat, said sensed weight differing from the actual weight of the occupant;
means for sensing a characteristic which affects the difference between said sensed weight and the actual weight of the occupant; and
controller means for determining a computed weight of the occupant as a function of both said sensed weight and said characteristic.

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AIRBAG WITH INFLATION GAS DIFFUSER

Hidehito Sogi, Nagoya; Toru Ozaki, Toyota; Shigeyoshi Fukushima, Nagoya, and Tomohiro Sugiura, Okazaki, all of Japan, assignors to Toyo Tire & Rubber Co., Ltd., Osaka, Japan

Filed Nov. 28, 1994, Ser. No. 345,491
Claims priority, application Japan, Nov. 26, 1993, 5-320970; Jan. 12, 1994, 6-014910; Mar. 18, 1994, 6-073947; Jul. 7, 1994, 6-180957; Sep. 30, 1994, 6-261815
Int. Cl.[6] B60R 21/26
U.S. Cl. 280—740 23 Claims



4. An airbag for use in a vehicle occupant restraint system, the vehicle occupant restraint system including an inflator for releasing gas, said airbag including:

a generally circular first cloth having a selected size, a central opening for receiving gas from the inflator and an outer perimeter;

a second cloth having approximately the same size and shape of said first cloth and an outer perimeter, said second cloth being located over said first cloth so as to be directed toward a vehicle occupant and being bound at said outer perimeter thereof to said outer perimeter of said first cloth so as to define an airbag space for containing gas released by the inflator; and

an internal cloth having a generally circular shape, a size smaller than said size of said first cloth and having an outer perimeter, said internal cloth being located over said first cloth central opening and having a plurality of sections along said outer perimeter thereof that are seamed to said first cloth and a plurality of sections along said outer perimeter thereof that are not attached to said first cloth, wherein said non-attached sections located between said seamed sections so that said non-attached sections define flow passageways through which the gas released by the inflator can flow from underneath said internal cloth and into said airbag space.

5,573,271

SIDE IMPACT AIR BAG INFLATOR

Paul S. Headley, Mesa, Ariz., assignor to TRW Inc., Lyndhurst, Ohio

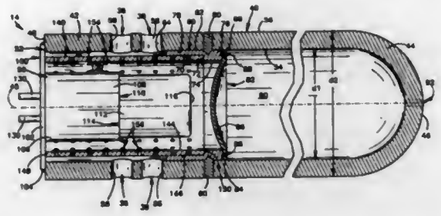
Filed Nov. 18, 1994, Ser. No. 342,367
Int. Cl.[6] B60R 21/28
U.S. Cl. 280—741 17 Claims

1. Apparatus comprising:

an elongated tubular member having a longitudinal central axis and an annular end surface defining an open end of said tubular member centered on said axis, said tubular member further having a closed end portion and a plurality of outlet openings;

a support member fixed to said tubular member at a location axially between said outlet openings and said closed end portion;

a rupturable closure wall fixed to said support member;



a quantity of inflation fluid contained under pressure within said tubular member between said closure wall and said closed end portion;

initiator means for releasing said inflation fluid to flow outward through said outlet openings, said initiator means including an initiator containing pyrotechnic material which, when ignited, produces combustion products which rupture said closure wall, said initiator having a base extending across said open end of said tubular member to close said open end of said tubular member; and

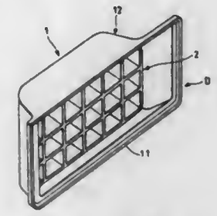
filter means for blocking the passage of particulate combustion products through said outlet openings, said filter means comprising a tubular cylindrical filter having an axially inner end portion abutting said support member and an axially outer end portion abutting said base of said initiator.

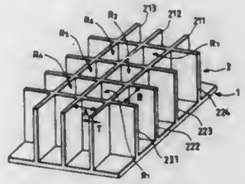
5,573,272

VEHICLE UPHOLSTERY MEMBER

Kouya Teshima, Aichi, Japan, assignor to Inoac Corporation, Nagoya, Japan

Filed Aug. 30, 1995, Ser. No. 521,574
Claims priority, application Japan, Aug. 30, 1994, 6-230774
Int. Cl.[6] B60R 21/04
U.S. Cl. 280—751 14 Claims





1. A vehicle upholstery member mounted on an indoor side of a vehicle door, comprising:

an outer shell attached to said indoor side of said vehicle door, said outer shell extending into said vehicle;

a shock absorber disposed in at least one part of said outer shell, said shock absorber having a plurality of ribs which are substantially orthogonal to said vehicle door and which form a plurality of substantially rectangular lattices;

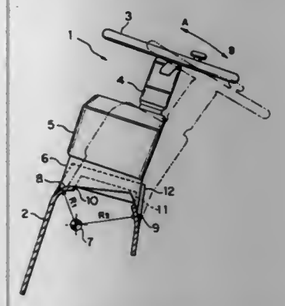
wherein each of said lattices has two sides each of which is 20–180 mm in length, and each of said ribs is 0.5–3 mm in thickness.

5,573,273

TILT STEERING DEVICE

Nobuyasu Ito, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed May 30, 1995, Ser. No. 453,881
Claims priority, application Japan, Jun. 3, 1994, 6-122814
Int. Cl.[6] B62D 1/18; B60K 37/04
U.S. Cl. 280—775 25 Claims



1. A tilt steering device comprising:

an instrument panel comprising an upper surface having a front panel portion, a rear panel portion and an inserting hole;

a steering column projecting upwardly from said instrument panel through the inserting hole, said steering column being tiltable in the forward and rearward directions about a center of rotation defined by a fulcrum located within a region defined by the instrument panel;

a meter box mounted on said steering column above and spaced from said instrument panel, said meter box having a lower portion; and

a seal member fixed to said lower portion of said meter box to cover the space between said instrument panel and said meter box, said seal member having a lower end portion disposed slidably with respect to the upper surface of said instrument panel when said steering column is tilted, said lower end portion having a front sealing portion and a rear sealing portion wherein the front sealing portion slides on the front panel portion and the rear sealing portion slides on the rear panel portion; and

the front sealing portion and the front panel portion each have essentially a same first radius of curvature centered on the fulcrum, and the rear sealing portion and the rear panel portion each have essentially a same second radius of curvature centered on the fulcrum, the second radius of curvature being different from the first radius of curvature.

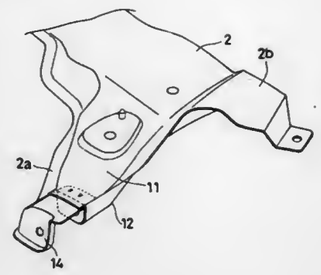
5,573,274

AUTOMOBILE SUB-FRAME STRUCTURE

Toshiaki Koketsu, Hamamatsu, Japan, assignor to Suzuki Motor Corporation, Japan

Filed Dec. 21, 1994, Ser. No. 361,051
Claims priority, application Japan, Dec. 24, 1993, 5-325673
Int. Cl.[6] B62D 21/00
U.S. Cl. 280—781 3 Claims

1. An automobile sub-frame structure disposed on the lower surface of an engine room and having a pair of suspension lower arm support portions at both sides of said structure, which comprises an arm bracket of hat-shaped longitudinal cross-section having a pair of opposed lateral surfaces joined by an upper surface, said bracket arranged to support one of said suspension lower arm support portions, an upper member disposed to overlap part of the upper surface of said arm bracket, a lower member disposed in abutting contact with a first lateral surface of said arm bracket, and a reinforcement having a top joined to said insert member, and a bottom joined to said lower member, said reinforcement abutting against the first lateral surface of said arm bracket.

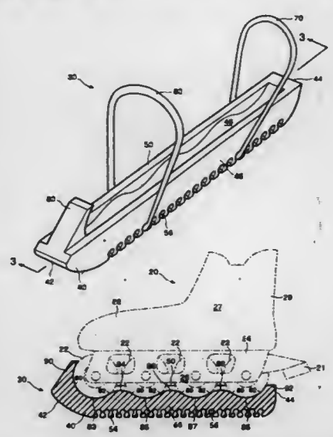


5,573,275

IN-LINE SKATE GUARD

Bruce C. Smith, 26 Rowley Avenue, Toronto, Ontario, Canada, and Christopher A. Hardie, 120 Everden Road, Toronto, Ontario, Canada

Filed Jul. 7, 1995, Ser. No. 499,655
Int. Cl.[6] A63C 17/20
U.S. Cl. 280—825 16 Claims



1. A guard for use on an in-line roller skate having a series of wheels rotatably mounted in an in-line configuration on a wheel receiving frame having two substantially parallel elongate rail portions and being secured to a boot having a toe portion and a rear portion, said guard permitting the wearer of an in-line roller skate to be safely ambulant and comprising:

a main body portion having a front end and a back end and comprising a generally horizontally disposed substantially solid base member, opposed left and right substantially rigid side walls extending upwardly from said generally horizontally disposed base member so as to define a wheel-receiving trough above said generally horizontally disposed base member, and a ground contacting bottom surface;

a first loop-shaped securing member operatively connected to said main body portion, such that when said guard is in place on said in-line roller skate, said first loop-shaped securing member is oriented in upwardly projecting relation for looped engagement around the toe portion of the boot of an in-line roller skate;

a second loop-shaped securing member operatively connected to said main body portion, such that when said guard is in place on said in-line roller skate, said second loop-shaped securing member is oriented in upwardly and rearwardly projecting relation for looped engagement around the rear portion of the boot of an in-line roller skate;

wherein, when said guard is in place on said in-line roller skate, at least one of said first and second loop-shaped securing members is elastically deformable so as to provide snug attachment of said guard to an in-line roller skate; and

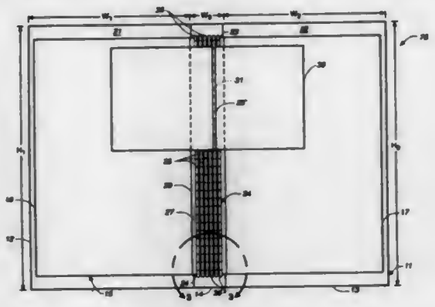
forward and rearward blocking means extending upwardly from said base member such that when said guard is in place on said in-line roller skate, said forward and rearward blocking means are disposed forwardly and rearwardly, respectively, of at least one of the wheels of said in-line roller skate in intimately contacting relation therewith, so as to generally preclude fore and aft rolling motion, respectively, of said in-line roller skate along said generally horizontally disposed base member of the guard.

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GREETING CARD HOLDER APPARATUS AND METHOD

Lisa M. Nomura, 137 W. Central Ave. #D, Monrovia, Calif. 91016, and Ron W. Schneberger, Tigard, Oreg., assignors to Lisa M. Nomura, Los Angeles, and Rundel Products, Inc., Portland, Oreg.

Filed Jun. 7, 1994, Ser. No. 255,093
Int. Cl.[6] B42D *3/00*
U.S. Cl. 281—48 **5 Claims**



1. A method of forming a greeting card holding and displaying apparatus comprising the steps of:

providing a folder including a front panel, a rear panel, and a central spine foldably joining said front panel to said rear panel in a spaced apart manner along respective height dimensions of said front panel and said rear panel;

providing a single continuous sheet of inner lining material including a front section, a rear section, and a central section foldably joining said front section to said rear section in a spaced apart manner and defining an upper edge and an opposing lower edge each extending between said front section and said rear section;

forming a series of continuous loops from a plurality of thermoplastic strands in a side-by-side manner;

melting said strands together at a melted portion thereof substantially transverse the side-by-side loops to form a single unit;

sliding said single unit of strands around said lining material in a side-by-side manner until each loop encircles said central section of said lining material from said upper edge to said lower edge, each loop being of sufficient length to be supported on said central section in a relatively taut manner, said sliding step being oriented such that said melted portion is positioned proximate said central section backside surface;

affixing said front section to an interior surface of said front panel to cover at least a portion thereof such that said front section extends substantially along said front panel height dimension proximate said spine; and

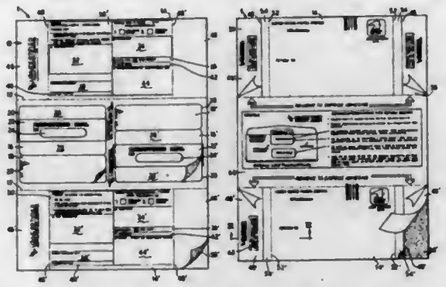
affixing said rear section to an interior surface of said rear panel to cover at least a portion thereof such that said rear section extends substantially along said front panel height dimension proximate said spine.

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MAILPIECE AND/OR SHIPPING ITEM FOR SPECIAL MAILING AND A METHOD FOR ASSEMBLING A MAILPIECE AND/OR SHIPPING ITEM REQUIRING SPECIAL SERVICES

Glenn Petkovsek, 20 Tortoise Park Cove, Little Rock, Ark. 72211-2349, assignor to Gleen Petkovsek, Little Rock, Ark.

Continuation-in-part of Ser. No. 206,018, Mar. 4, 1994, abandoned. This application Jul. 28, 1994, Ser. No. 281,634
Int. Cl.[6] G09F *3/04*
U.S. Cl. 283—79 **27 Claims**



1. A label/form for printing and addressing information relating to mail and shipping handling on a mailpiece or shipping item, the label/form comprising:

a multi-layer sheet, each layer having a front side and a back side wherein only the front side of a first layer and the back side of a second layer of the multi-layer sheet receive the information and further wherein the front side of the first layer and the back side of the second layer of the multi-layer sheet has a plurality of distinct sections vertically displaced from one another;

a plurality of parts associated with the multi-layer sheet wherein at least one of the plurality of parts is non-removably secured to the multi-layer sheet and at least one other of the plurality of parts in each of the plurality of distinct sections is removably secured to the sheet having an adhesive backing;

an adhesive layer on the back side of the first layer for removably securing at least one of the plurality of parts from the front side of the first layer of the multi-layer sheet; and

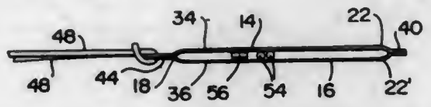
an identifier on at least one of the plurality of parts uniquely identifying the mailpiece or shipping item.

5,573,278

IDENTIFICATION AND INFORMATION CARRYING ASSEMBLY

Robert M. Clemens, 3441 Damascus Rd., Brookeville, Md. 20833

Filed Dec. 13, 1994, Ser. No. 355,040
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—109 **8 Claims**



1. An identification and information carrying assembly for use with a fire/rescue personnel accountability system, said assembly comprising:

a folded sheet of predetermined material defining first and second portions connected together along a folded edge in said material, each of said first and second portions further defining three additional edges;

said first and second portions each defining front and rear surfaces, said rear surface of said first portion facing and in contact with said front surface of said second portion when said first and second portions are folded together in closed relationship about said folded edge;

personal identification information located on said front surface of said first portion and/or on said rear surface of said second portion;

personal medical information located on said rear surface of said first portion and/or on said front surface of said second portion;

a first transparent sheet of thermoplastic material covering and extending beyond the edges of said first portion, and a second transparent sheet of thermoplastic material covering and extending beyond the edges of said second portion, said first and second sheets fused together along margins thereof adjacent to said edges of said first and second portions;

said fused transparent sheets defining an opening within a predetermined one of said fused margins adjacent to said folded edge;

a cord extending through said opening and fastened to said transparent sheets;

a connector attached to said cord; and

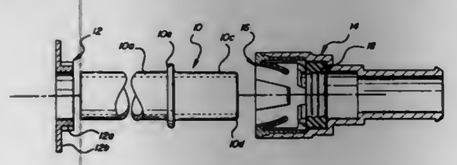
medication positioned and removably held between said folded first and second portions.

5,573,279

QUICK CONNECT COUPLING

Perry J. Rea, Bloomfield Hills; Michael R. Miller, Rochester Hills; Dennis G. Kinder, Clarkston; Christopher J. Kargula, Sterling Heights, and William E. Stevens, Ypsilanti, all of Mich., assignors to Form Rite Corporation, Auburn Hills, Mich.

Continuation-in-part of Ser. No. 176,243, Jan. 3, 1994, Pat. No. 5,462,313. This application Jun. 7, 1995, Ser. No. 471,905
Int. Cl.[6] F16L *21/08*
U.S. Cl. 285—21.1 **28 Claims**



1. A quick connect coupling comprising:

a tubular male connector member including a front end pilot portion and an external annular bead defined at the rear end of the pilot portion;

a first female connector member defining a capture bore sized to slidably receive the pilot portion, a seal counterbore positioned forwardly of the capture bore, and a further counter bore extending forwardly from the seal counter bore and having a substantially constant diameter and cross-sectional configuration; an annular elastomeric seal positioned in the seal counterbore and defining a forward annular edge; and

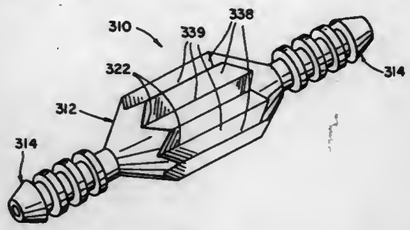
a second female connector member including a main body annular portion having a substantially constant diameter and cross-sectional configuration corresponding generally to the diameter and cross-sectional configuration of the further counterbore and positioned telescopically and fixedly in said further counterbore, a plurality of resilient finger portions extending rearwardly and radially inwardly from the front end of the main body portion and defining free rearward ends for engagement with the rear annular face of the bead with the members in coupled relation, and seal retainer means extending radially inwardly from the rear end of the main body portion and defining a rear face coacting with the forward annular edge of the seal to maintain the seal in the seal counterbore and a front face seating against the front annular face of the bead with the members in coupled relation.

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TUBING END-PIECE AND CONNECTOR

Peter W. Salter, Tehachapi; James N. Curti, Bakersfield; Duane D. Kazal, Tahachapi, and Laurence McGann, Woodland Hills, all of Calif., assignors to Salter Labs, Arvin, Calif.

Filed Feb. 28, 1995, Ser. No. 395,984
Int. Cl.[6] F16L *35/00*
U.S. Cl. 285—38 **2 Claims**



1. A connector, comprising:

(a) a generally cylindrically shaped body structure extending along a longitudinal axis from a first end to a second end and having a hole extending longitudinally through said body structure and between said first and second ends and being oriented centrally about said longitudinal axis, said body structure having an outer body surface extending longitudinally along and disposed radially from said longitudinal axis at a first radial distance and wherein said body structure includes a pair of conical end portions, each of said conical end portions tapering from said outer body surface towards a respective one of said first and second ends and wherein said body structure includes a plurality of ridges extending longitudinally along and projecting radially outwardly from said outer body surface relative to said longitudinal axis and each of said ridges is configured in cross-section in a shape of an inverted "V" and consecutive ones of said plurality of inverted V-shaped ridges are spaced apart from one another by a V-shaped channel extending longitudinally along said body structure; and

(b) a pair of tube structures, each of said tube structures defining a conduit extending therethrough and having a distal end and a proximal end, each of said tube structures connected to a respective one of said first and second ends of said body structure at said proximal end whereby said conduit is oriented centrally about said longitudinal axis so that said conduits and said hole form a continuous passageway between said distal ends of said pair of tube structures and through said pair of tube structures and said body structure, each of said tube structures having an outer tube surface extending longitudinally along and radially from said longitudinal axis a second radial distance, said first radial distance being greater than said second radial distance.

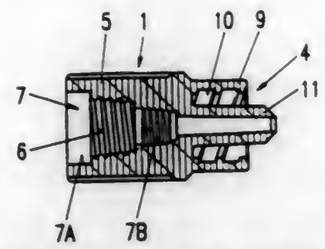
5,573,281

ADAPTER

Wilhelm A. Keller, Ohstgartenweg 9, CH-6402 Merlischachen, Switzerland

Continuation-in-part of Ser. No. 216,328, Mar. 23, 1994, Pat. No. 5,462,317. This application Oct. 30, 1995, Ser. No. 550,396
Int. Cl.[6] F16L *25/00;* **B65D** *5/72*
U.S. Cl. 285—40 **17 Claims**

1. An adapter for attachment to an outlet of a device selected from the group consisting of a mixing device and a dispensing device, comprising a connecting part for attachment to said outlet and an outlet portion, wherein said outlet has an external stepped surface, wherein said connecting part has an internal surface which is stepped, wherein said stepped internal surface comprises at least two approximately frusto-conical internal surface parts, each approximately frusto-conical internal surface part having a self-cutting thread for attachment onto the external surface of said



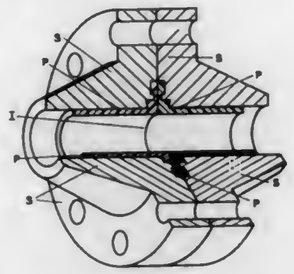
outlet of said device, and wherein the stepped internal surface acts as a guide for cooperating with the external stepped surface of said outlet.

5,573,282

LOW TURBULENCE JOINT FOR LINED SLURRY PIPELINE

Randall H. Egner, and Dale A. Kneller, both of Durango, Colo., assignors to United Pipeline System, USA, Inc., Durango, Colo.

Filed Feb. 16, 1995, Ser. No. 390,244
Int. Cl.[6] F16L *9/14*
U.S. Cl. 285—55 25 Claims



1. A flange connection for a lined pipe having an axial direction of orientation and comprising a pipe end with an annular pipe flange and a liner end within the inside diameter of said pipe end, said liner end having an annular coaxial flange with an annular end face on one side of the liner flange which abuts a surface on another structure to which the pipe flange and liner flange are tightly clamped in the axial direction of the connection in a clamped configuration of the connection,

said annular pipe flange having a face engaging an opposite side of the liner flange to clamp the annular liner end face against said another structure, said annular pipe end flange having a first axially recessed annular portion with a bottom face and located radially outwardly spaced from the inside diameter of the pipe end,

said annular liner flange having a first annular liner flange portion of a first axial thickness extending from said end face to the bottom face of said recessed annular portion and held in axial compression in said recessed annular portion in said clamped configuration of the connection,

said annular liner flange having a second annular liner flange portion of a second axial thickness located radially inwardly of and next to said first annular liner flange portion,

said second axial thickness being less than said first axial thickness of said first annular liner flange portion with said second annular liner flange portion being held between said another structure and a second annular portion of said pipe flange face radially inwardly of and next to said first annular recessed portion,

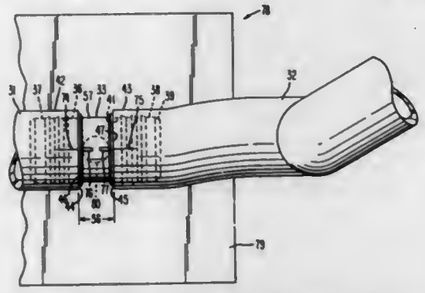
said annular liner flange having respective clamped and unclamped thicknesses of said first and second annular liner flange portions whereby the axial forces during clamping to the clamped configuration create a greater reduction in thickness of said first annular liner flange portion to its respective clamped thickness than any reduction in thickness in the second annular liner flange portion as it is clamped to its respective clamped thickness.

5,573,283

BRANCHED HOSE CONSTRUCTION, PART THEREFOR AND METHODS OF MAKING THE SAME

Randall E. Sellers, Candler, and Philip K. Loyer, Waynesville, both of N.C., assignors to Dayco Products, Inc., Dayton, Ohio

Filed Jan. 23, 1995, Ser. No. 376,502
Int. Cl.[6] F16L *41/00*
U.S. Cl. 285—93 20 Claims



1. In a branched hose construction comprising a T-Connector that has a body portion provided with two opposite ends and a branch end extending outwardly therefrom intermediate said opposite ends, two hose sections that have been cut from a length of hose so as to respectively have cut ends, said cut ends of said two hose sections respectively telescoped onto said opposite ends of said T-connector, and a sleeve-like member injection molded from a polymeric material over said cut ends of said two hose sections and a part of said T-connector body that is exposed between said cut ends of said two hose sections to form said sleeve-like member through which said branch end extends and which holds said cut ends of said two hose sections on said opposite ends of said T-connector, the improvement comprising a mark disposed on said length of hose that straddles the location where said hose is cut into said two hose sections, said cut forming two parts of said mark respectively on said cut ends of said two hose sections, orienting means provided on said T-connector, said parts of said mark aligned with said orienting means when said cut ends of said two hose sections are tele-scoped onto said opposite ends of said T-connector to provide an oriented relation of said sections so that such oriented relation is permanently maintained by said sleeve-like member.

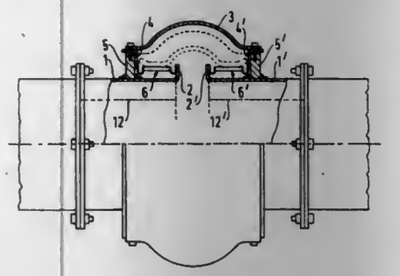
5,573,284

EXPANSION JOINT FOR HOT PIPES

Claude Boyer, L'Hay les Roses, and Dominique Nolleau, Paris, both of France, assignors to GEC Alsthom Stein Industrie, Velizy-Villacoublay, France

Filed Sep. 13, 1995, Ser. No. 527,728
Claims priority, application France, Sep. 14, 1994, 94 10973
Int. Cl.[6] F16L *27/02*
U.S. Cl. 285—298 5 Claims

1. Expansion joint for connecting the ends of two pipes adapted to convey a hot fluid, each end having an end flange, the joint including a sleeve made up of a flexible strip straddling the two adjacent ends and fastened at its respective edges to a cold flange fastened to a nesting device in a retaining arrangement fastened to



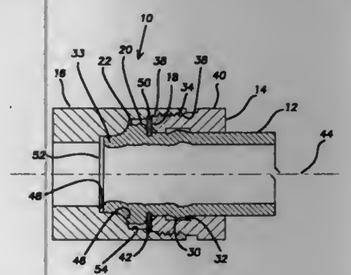
the corresponding pipe and further including a coupling arrangement connecting said end flange and the corresponding cold flange, wherein said coupling arrangement comprises at least two members connected together, one fastened to said cold flange and the other fastened to said end flange, a first member being a corrugated sheetmetal sleeve the undulations of which are parallel to the longitudinal direction of said pipe and a second member being flexible and deformable in the longitudinal direction of said pipe.

5,573,285

HIGH-TEMPERATURE, DOUBLE-BEAD, TUBE-FITTING ASSEMBLY

Ralph G. Ridenour, Mansfield, Ohio, assignor to Universal Enterprises, Inc., Mansfield, Ohio

Filed Jan. 11, 1995, Ser. No. 371,357
Int. Cl.[6] F16L *19/02*
U.S. Cl. 285—353 20 Claims



1. A tube-fitting assembly comprising:

a tube having at least one first annular bead near an end of said tube and a second annular bead contiguous with said first annular bead and located between said end and said first annular bead;

a first threaded fitting member encircling said tube and having a radially inwardly extending first shoulder, said first and second beads being located between said end and said first shoulder;

a second threaded fitting member having an annular second shoulder at an acute angle to a longitudinal axis of said tube, said second fitting member surrounding said end of said tube and being in threaded engagement with said first threaded member such that said first and second annular beads are compressed between said first shoulder and said second shoulder to establish a first seal between said tube and one of said first fitting member and said second fitting member for preventing leakage of fluid pressure; and

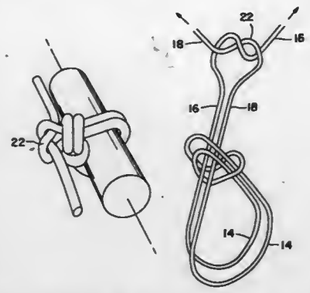
a sealing member encircling said tube and engaging said second threaded fitting member and at least one of said first and second beads to establish a second seal for preventing leakage of fluid pressure at a temperature which breaks said first seal.

5,573,286

KNOT

Chaim Rogozinski, 3223 Front Rd., Jacksonville, Fla. 32217

Filed Mar. 15, 1995, Ser. No. 405,011
Int. Cl.[6] D04G *5/00*; B65H *69/04*
U.S. Cl. 289—12 11 Claims



7. A knot comprising strand in the form of a lark's head including two loops and a pair of free ends, both of said free ends passing around an object to be secured by said knot and then through said two loops in series, and a reverse knot formed in at least one of said free ends of said pair to resist forces tending to pull said at least one free end back through said loops,

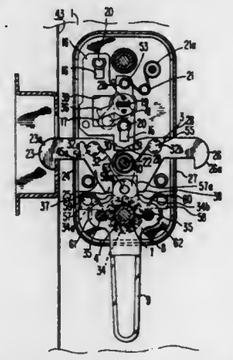
wherein said knot can be progressively tightened to achieve and maintain a desired tension by pulling said free ends after passage around said object and through said two loops.

5,573,287

BILATERAL-TYPE DOOR LOCKING HANDLE ASSEMBLY

Kazuhide Takimoto, Tokyo, Japan, assignor to Takigen Manufacturing Co. Ltd., Tokyo, Japan

Filed Jul. 10, 1995, Ser. No. 500,346
Claims priority, application Japan, Jul. 29, 1994, 6-197212
Int. Cl.[6] E05C *3/30*
U.S. Cl. 292—29 2 Claims



1. A bilateral-type door locking handle assembly, comprising:

a front casing (**2**) fixedly mounted on a front side of a door (**1**);

a rear casing (**3**) fixedly mounted on a rear side of said door (**1**);

a front handle (**6**) having its base-end portion (**5**) rotatably mounted on a stationary shaft (**4**) passing through both said front casing (**2**) and said rear casing (**3**);

a rear handle (**9**) having its base-end portion (**8**) rotatably mounted on said stationary shaft (**4**);

a base plate (**10**) which is received in said rear casing (**3**), fixedly mounted on said door (**1**);

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a lock unit (12) which is fixedly mounted on said base plate (10) and has its front-end portion received in a through-hole (11) of said front casing (2);

a thumb turn (15) having its base-end shaft portion (14) mounted rotatably in a bearing portion (13) of said rear casing (3);

an operating lever (17) connected with said base-end shaft portion (14) of said thumb turn (15);

a position-retaining spring (21) which is interposed between a portion of said operating lever (17) and said rear casing (3), and reversible in its force-exerting direction with a corresponding change in angular position of the operating lever (17) in rotation so as to urge said operating lever (17) to its locking position or its unlocking position;

a lock plate (18) which is housed in said rear casing (3), and vertically guided slidably by a guide pin (20) which is fixedly mounted on said rear casing (3) so as to pass through an elongated hole (16) of said lock plate (18);

a cam projection (41) provided in a front-end portion of said operating lever (17) so as to urge a lower-edge portion of a follower hole (39) of said lock plate (18);

an operating-arm plate (36) fixedly mounted on a rotor (19) of said lock unit (12) so as to have a lower side of its front-end portion urge an upper side of said cam projection (41) downward;

a left-side latch plate (25) which has its base-end portion rotatably mounted on a fixed pivot (22) of said rear casing (3), and has a front-end hook portion (23) thereof projected from a left-side opening (24) of said rear casing (3);

a right-side latch plate (28) which has its base-end portion rotatably mounted on a fixed pivot (22) of said rear casing (3), and has a front-end hook portion (26) thereof projected from a right-side opening (27) of said rear casing (3);

a locking notch (30) provided in a shoulder portion of said left-side latch plate (25) so as to engage with a left-side surface of a locking-plate portion (29) of a lower-end portion of said lock plate (18);

a locking notch (31) provided in a shoulder portion of said right-side latch plate (28) so as to engage with a right-side surface of said locking-plate portion (29) of said lower-end portion of said lock plate (18);

a spring (32) disposed between said left-side latch plate (25) and said right-side latch plate (28) in said rear casing (3) so as to bias both said left-side latch plate (25) and right-side latch plate (28) into their locking position;

an interlocking shaft (35) through which said front handle (6) and said rear handle (9) are integrally rotated;

a driving plate (40) which is provided in an upper-end portion of said rear handle (9) so as to project therefrom and abut against each of a follower arm portion (37) of said left-side latch plate (25) and a follower arm portion (38) of said right-side latch plate (28);

a spring (33) disposed between said front casing (2) and said front handle (6) so as to bias said front handle (6) into its locking position;

a spring (34) disposed between said rear casing (3) and said rear handle (9) so as to bias said rear handle (9) into its locking position;

a key (42) which is inserted into said rotor (19) of said lock unit (12) and operated so as to slidably move said lock plate (18) into its locking position through said operating-arm plate (36);

a socket piece (45) provided in a left-side post wall (44) of a doorway (43) so as to be engaged with and disengaged from said front-end hook portion (23) of said left-side latch plate (25); and

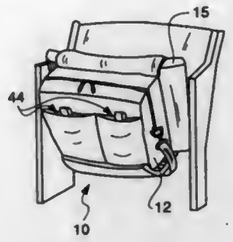
a socket piece (47) provided in a right-side post wall (46) of said doorway (43) so as to be engaged with and disengaged from said front-end hook portion (26) of said right-side latch plate (28).

5,573,288

PORTABLE SEAT CUSHION AND STORAGE DEVICE

George T. Raffensperger, Boulder, Colo., assignor to SIF Products Group Inc., Denver, Colo.

Filed Dec. 19, 1994, Ser. No. 358,239
Int. Cl.[6] A47C 7/62
U.S. Cl. 297—188.12 16 Claims



1. A seat storage device comprising:

a) a first member for placement on top of a seat;

b) a connecting member operatively interconnected with a front portion of said first member and designed to be placed in front of a front edge of said seat;

c) a storage member designed for horizontal placement below a bottom of said seat wherein a top portion of said storage member is operatively interconnected with said connecting member; and

d) a releasable rear connecting member designed to be placed behind a back edge of said seat and designed to interconnect a rear portion of said first member with said storage member to form a closed loop around at least portions of the top, rear edge, bottom, and front edge of said seat, wherein said rear connecting member has means for releasably connecting with said storage member including hook and loop fabric fastener devices secured directly to a back of the releasable rear connecting member and to a front portion of the storage member in such a manner as to allow the storage device to accommodate various seat lengths.

5,573,289

ENTRY WAY SECURITY CHAIN

Lawrence L. Littlefair, 2906 S. 1175 East, Hagerman, Id. 83332

Filed Sep. 1, 1995, Ser. No. 523,036
Int. Cl.[6] E05C 17/36
U.S. Cl. 292—264 1 Claim



1. A doorway security system for attachment to and across a door frame comprising:

a section of chain having links and first and second ends;

a fitting adapted to pass through a link of the section of chain having anchor means for anchoring said fitting to a first side element of a door frame;

a clevis hook swivel having a body segment and a hook pivotally connected to said body segment for connectively engaging and tensioning the section of chain; and

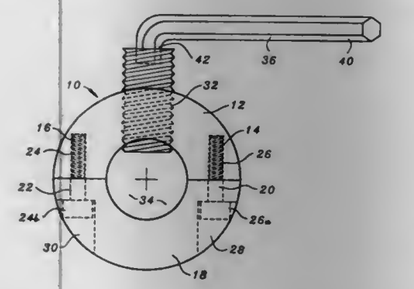
a fitting adapted to pass through the body segment of the clevis hook swivel having anchor means for anchoring said fitting to a second side element of a door frame.

5,573,290

HYDRAULIC CYLINDER RETAINER

Edward J. Smith, 295 Rte. 31, Oxford, N.J. 07863

Filed Aug. 25, 1993, Ser. No. 111,704
Int. Cl.[6] E05C 17/44; B25G 3/00
U.S. Cl. 292—338 2 Claims



1. A retaining device kit for locking a piston, said piston having a slidable arm and a body into which said slidable arm retracts, said retaining device kit having:

(a) a first ring portion, said first ring portion having:

(i) an interior circumferential surface,

(ii) an exterior circumferential surface,

(iii) a pair of end surfaces joining said interior and exterior circumferential surfaces at opposite ends of said first ring portion, wherein each end surface comprises a threaded receiving area extending towards said exterior circumferential surface of said first ring portion, and

(iv) a threaded holding means receiving area, said holding means receiving area extending from said exterior circumferential surface to said interior circumferential surface of said first ring portion;

(b) a plurality of second ring portions, each second ring portion having:

(i) an interior circumferential surface,

(ii) an exterior circumferential surface,

(iii) a pair of end surfaces joining said interior and exterior circumferential surfaces at opposite ends of said second ring portion, wherein each end surface comprises a fastening means insert area extending from each end surface through said second ring portion to said exterior circumferential surface thereof, wherein said interior circumferential surfaces of each second ring portion are of different circumferential dimensions;

(c) a holding means, said holding means having a second end dimensioned to be in threadable connection with said threaded holding means receiving area;

(d) a handle means, said handle means being connected to a first end of said holding means opposite said second end of said holding means; and

(e) a pair of threaded fastening means dimensioned to be insertable into said fastening means insert areas of said end surfaces of each of said second ring portions and to be in threadable connection with said threaded receiving areas of said end surfaces of said first ring portion;

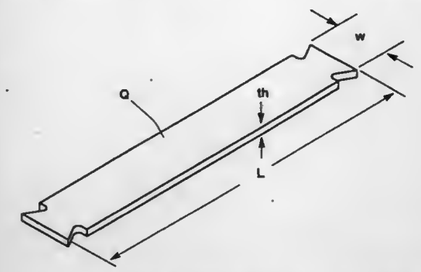
so that said end surfaces of said first ring portion may be joined to said end surfaces of each second ring portion to form a collar having an interior area that will vary depending upon the interior circumferential dimension of the second ring portion joined to said first ring portion.

5,573,291

PROBE FOR UNJAMMING HIGH-SPEED DOCUMENT PROCESSING SYSTEMS

Thomas L. Raupp, Riverview; J. Michael Spall, Plymouth, and Kimberly A. Gearns, Northville, all of Mich., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Mar. 25, 1994, Ser. No. 218,091
Int. Cl.[6] B25B 33/00
U.S. Cl. 294—1.1 26 Claims



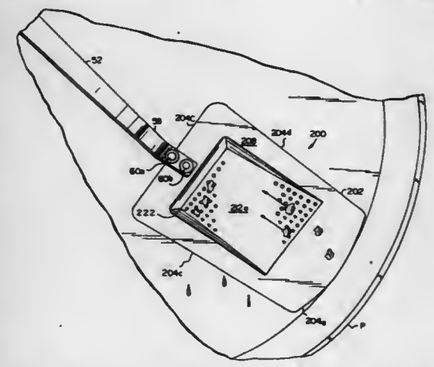
1. A probe implement for removing jam debris, including documents, and foreign objects from prescribed document transport track segments of a document processing machine; said implement being constructed of planar, flat, elongate thin dielectric material, and being so formed, shaped and constructed as to allow a user to remotely contact and engage such documents, debris or foreign objects and to facilitate removal thereof from the track without disturbing, opening or demounting said track; said implement being further designed, constructed and adapted to be sufficiently flexible in such use to be maneuvered along said track segments, to be sized to readily fit into the minimum contemplated track size, while being sufficiently stiff to engage/dislodge such debris; said implement being relatively strip-shaped with at least one end having a pair of like concave corner indentations adapted to form an external hook.

5,573,292

COMBINATION TURNER/STRAINER KITCHEN UTENSIL

Salvatore Citino, 1013 Sampler Way, Potomac, Md.

Continuation of Ser. No. 929,528, Aug. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 717,809, Jun. 19, 1991, abandoned. This application Dec. 29, 1994, Ser. No. 366,424
Int. Cl.[6] A47J 43/28
U.S. Cl. 294—7 2 Claims



1. A combination strainer/turner including a thin, substantially flat blade means having a front leading edge, said blade means for

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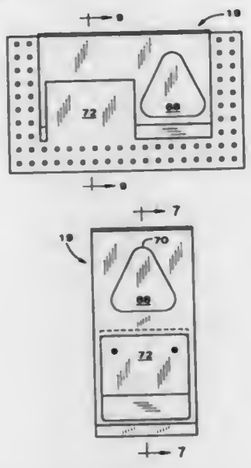
flipping large food pieces, an inclined trough means being formed in said blade means, plural small openings being defined within said trough means, said trough means for trapping tiny food particles while allowing cooking liquid to pass through and escape, wherein said trough means includes a substantially flat bottom surface having small holes substantially evenly distributed thereover.

5,573,293

SIDE LATCH ASSEMBLY FOR LIFTING TRAILERS AND CONTAINERS

James A. Baumann, Orland Park; Joel G. Kuchcik, Crete, and John J. Lanigan, Sr., Orland Park, all of Ill., assignors to Mi-Jack Products, Inc., Hazel Crest, Ill.

Division of Ser. No. 229,721, Apr. 19, 1994, Pat. No. 5,470,189. This application Nov. 7, 1995, Ser. No. 553,146
Int. Cl.[6] B65D 90/00
U.S. Cl. 294—68.1 12 Claims



1. A side fitting connection member for attachment to an external surface of an upper side wall of a load carrying structure used for intermodal transportation comprising

a generally rectangularly shaped body member,

borizontal flange means extending outwardly from the body member at a direction normal thereto,

said body member having formed therein at an upper half thereof a generally triangularly shaped cavity means wherein an apex is disposed adjacent to an upper horizontal edge of the body member,

said body member having formed therein at a lower half thereof a generally rectangularly shaped box-like receptacle means including vertical side walls, an upper horizontal notch means and a back wall having a ramp wall section merging with said back wall, and

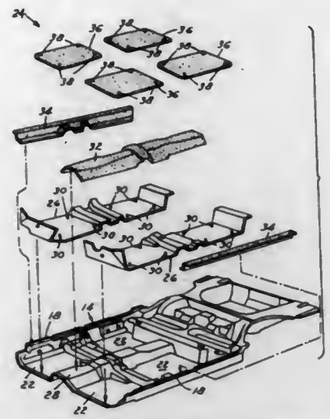
said back wall having an upper horizontal edge merging with said upper horizontal notch means.

5,573,294

AUTOMOTIVE FLOOR CARPET ARRANGEMENT

Kenneth S. Mack, Bloomfield Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Continuation of Ser. No. 140,912, Oct. 25, 1993, abandoned. This application Dec. 2, 1994, Ser. No. 348,710
Int. Cl.[6] B60N 3/04
U.S. Cl. 296—97.23 3 Claims



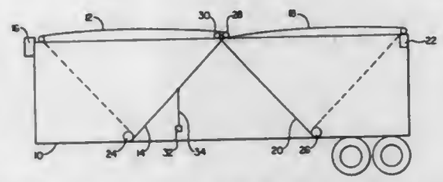
1. A modular carpet arrangement for use on a vehicle underbody having an inverted U-shaped center section intermediate oppositely disposed longitudinally aligned pairs of depressed sections, said carpet arrangement comprising a pair of longitudinally extending vapor barriers, each formed to include front and rear sections mountable in said respective aligned pairs of depressed sections, a longitudinal inverted U-shaped carpet segment mountable on the inverted U-shaped center section, a separate longitudinal carpet segment mountable on each of oppositely disposed longitudinal edges of the underbody, and four removable reversible carpet segments mountable in front and rear pairs on said respective front and rear sections of said longitudinally extending vapor barriers over said aligned pairs of depressed sections, and projections formed on each of said front and rear sections of said vapor barriers adjacent the four corners of each depressed section, and holes formed in each of said four removable reversible carpet segments adjacent the corners thereof adapted to fit around the respective projections.

5,573,295

DOUBLE PIVOT ARM COVER SYSTEM

Edward N. Haddad, Jr., Worcester, Mass., assignor to Pioneer Consolidated Corporation, North Oxford, Mass.

Filed Feb. 9, 1995, Ser. No. 385,777
Int. Cl.[6] B60P 7/02
U.S. Cl. 296—100 12 Claims



1. A cover mechanism for a trailer having an opening defined by the perimeter of said trailer, said opening having a first end and a second end, and a first side and a second side, comprising:

a first flexible cover;

a first device securable to said first flexible cover and said trailer, said first device adapted to cover and uncover a first portion of said opening with said first flexible cover, wherein said first portion extends from said first side to said second side and from said first end to a first point between said first end and said second end;

a second flexible cover; and

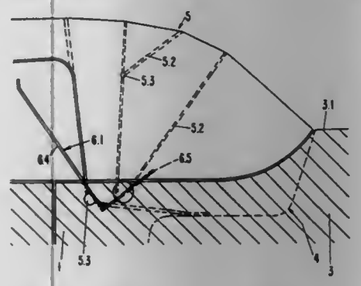
a second device securable to said second flexible cover and said trailer, said second device adapted to cover and uncover a second portion of said trailer with said second cover, wherein said second portion extends from said first side to said second side and from said first point to said second end.

5,573,296

CONVERTIBLE TOP COVER

Joerg Lienenkamp, Fleyer Strasse 86,, D-58097 Hagen, Germany

Continuation of Ser. No. 119,183, Sep. 23, 1993, abandoned. This application Mar. 16, 1995, Ser. No. 406,093
Claims priority, application Germany, Jan. 24, 1992, 42 01 874.9
Int. Cl.[6] B60J 7/20
U.S. Cl. 296—136 4 Claims



1. A cover for a convertible top of an automobile, comprising:

a rod assembly having first and second ends, a first hinge attached to the first end, and a second hinge attached to the second end;

a middle portion, pivotably mounted to the automobile using said rod assembly, having a plate and a strip, the strip shaped to the plate at approximately a right angle for covering a front and a top, respectively, of a storage compartment between a seat and a trunk of the automobile, the first hinge being fastened to the middle portion in a region of the right angle, and the second hinge being fastened to a bottom of the storage compartment, the convertible top being stored in the storage compartment when the convertible top is open, the middle portion having a first covering position when the convertible top is stored in the storage compartment, being pivotable through an intermediate position for allowing the convertible top to pass the middle portion when the top is being closed and being pivotable to a second covering position when the convertible top is closed, the second covering position being shifted forward relative to the first covering position; and

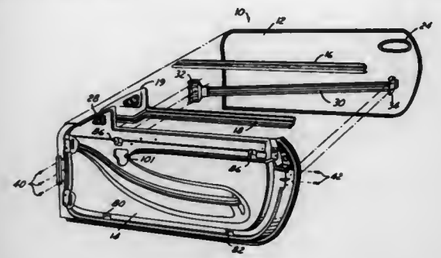
side portions, arranged symmetrically with respect to a longitudinal axis of the automobile, for covering the storage compartment with the middle portion when the middle portion is in the first covering position, each side portion being individually removable from covering the storage compartment and are accommodated in the storage compartment when the middle portion is in the second covering position.

5,573,297

VEHICLE DOOR ASSEMBLY

Delbert D. DeRees, Romeo, and David J. Kowall, Hartland, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 155,367, Nov. 22, 1993, Pat. No. 5,505,024. This application Jun. 6, 1995, Ser. No. 470,284
Int. Cl.[6] B60J 5/04
U.S. Cl. 296—146.6 3 Claims



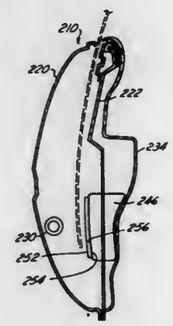
1. A vehicle door assembly comprising an outer contoured panel, an inner contoured panel having front and rear end walls, the panels being connected at their front, rear and bottom peripheral edges, a structural impact beam mounted intermediate the outer and inner panels and connected at respective front and rear ends thereof to a separate longitudinally oriented single front mounting plate secured by laterally extending fasteners to said front end wall, and to a separate laterally oriented rear mounting plate secured by longitudinally extending fasteners to said rear end wall of the inner contoured panel, and wherein said separate longitudinally oriented front mounting plate includes an opening into which the front end of said structural impact beam is extended.

5,573,298

ENERGY ABSORBING VEHICLE DOOR WITH GUARD BEAM LOAD DISTRIBUTOR

Lee A. Walker, Shelby Township; Srinivasan Sundararajan, Belleville; Geoffrey D. Fletcher, Detroit, and Daniel J. Dillmann, Belleville, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 363,079, Dec. 23, 1994, Pat. No. 5,542,738. This application Apr. 29, 1996, Ser. No. 639,666
Int. Cl.[6] B60J 5/04
U.S. Cl. 296—188 12 Claims



1. An energy absorbing vehicle door, comprising:

an outer panel;

an inner panel joined to the outer panel;

a guard beam mounted on the door laterally outward of the inner panel;

a trim panel mounted on the inner panel and having energy absorbing means attached thereto generally laterally adjacent the guard beam; and

at least one load distribution plate mounted to the energy absorbing means for distributing a load imparted to the guard beam evenly across the energy absorbing means so as to preserve the energy absorption means in a substantially undeformed state prior to occupant contact with the door during a side impact type collision.

5,573,299

MODULE CARRIER STRUCTURE FOR VEHICLE FRONT END HAVING A GROOVE FOR A WIRE HARNESS

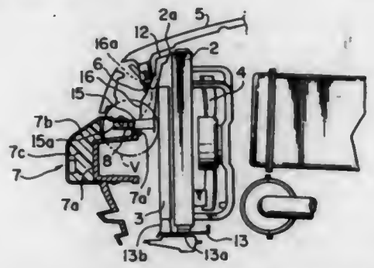
Toshio Masuda, Ashikaga, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1994, Ser. No. 327,473

Claims priority, application Japan, Oct. 25, 1993, 5-062067 U; Aug. 24, 1994, 6-199358

Int. Cl.[6] B62D *25/08*

U.S. Cl. 296—194 **10 Claims**



1. A module carrier structure for a front end of a vehicle having a front bumper with a rear bumper beam connected to said front end, a radiator in an engine compartment behind said front bumper, a condenser of an air conditioner, and a wire harness for providing electric current to equipment of said vehicle, said module carrier structure comprising:

a radiator assembly frame for mounting said radiator and said condenser therein, said frame comprising

a horizontal upper frame portion,

a horizontal middle frame portion below said upper frame portion, and

harness fitting groove means extending horizontally on said middle frame portion for receiving and securing said wire harness;

wherein said harness fitting groove means comprises at least one forwardly facing, approximately U-shaped groove.

5,573,300

UTILITY VEHICLES WITH INTERCHANGEABLE EMERGENCY RESPONSE MODULES

Michael C. Simmons, 6306 Debbie Cir., Rowlett, Tex. 75088

Filed Dec. 19, 1994, Ser. No. 358,255

Int. Cl.[6] B60P *3/00*

U.S. Cl. 296—197 **12 Claims**

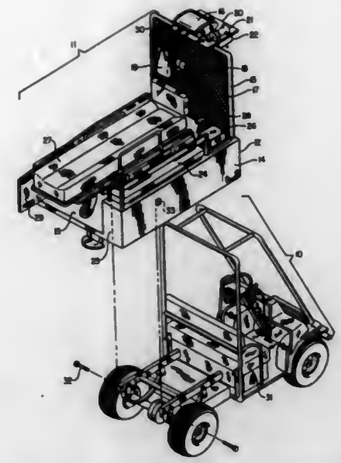
1. Apparatus for use in responding to emergencies, comprising:

a) a small utility vehicle having a chassis, engine and drivetrain, driver's seat, and a body;

b) a module having a structural framework defining an enclosure separate from said small utility vehicle;

c) a plurality of equipment for use in response to a particular type of emergency disposed within and on said module;

d) means for joining said module framework to said small utility vehicle chassis; and



e) a console, said console including a siren, emergency warning light, and a control panel for controlling said siren and said emergency warning light, said console being attached to a forward portion of said module framework and extending generally orthogonally and forwardly therefrom and vertically overlying said vehicle driver's seat,

whereby, said module may be conveniently joined to said module such that said console extends over said driver's seat for controlling said siren and said emergency warning light.

5,573,301

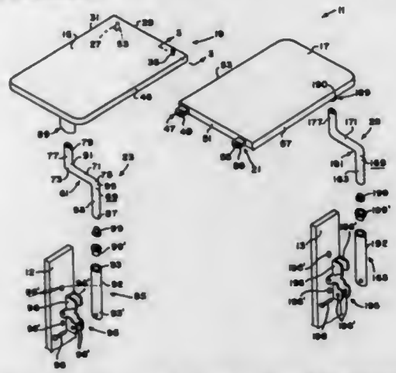
TABLE FOR CHAIR

Donald G. Scott, Tupelo, Miss., assignor to Charles S. Fox, Tupelo, Miss.

Filed May 16, 1995, Ser. No. 434,576

Int. Cl.[6] A47B *39/00*

U.S. Cl. 297—173 **8 Claims**



1. In combination, a chair frame including a first frame portion and a second frame portion, and a table, said table comprising:

(a) a table top, said table top including a first table top half and a second table top half;

(b) first holding means on said first table top half and second holding means on said second table top half for detachably holding said first table top half and said second table top half together to establish a unitary condition of said table top;

(c) first mounting means mounting said first table top half from said first portion of said frame, said first mounting means comprising:

i. first crank means for rotatably supporting said first table top half for rotation about a first substantially vertical axis;

ii. first attachment means for attaching said first mounting means to said first portion of said frame and for rotatably supporting said first crank means for rotation about a second substantially vertical axis offset horizontally from said first vertical axis;

(d) second mounting means mounting said second table top half from said second portion of said frame, said second mounting means comprising:

i. second crank means for rotatably supporting said second table top half for rotation about a third substantially vertical axis;

ii. second attachment means for attaching said second mounting means to said second portion of said frame of said chair and for rotatably supporting said second crank means for rotation about a fourth axis horizontally offset from said third vertical axis.

5,573,302

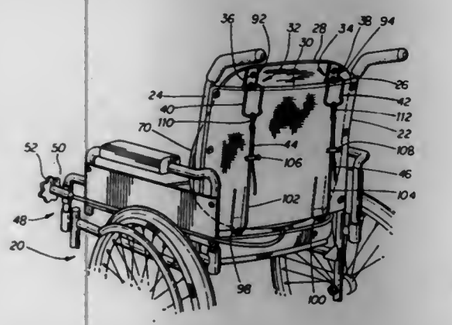
LOWER BACK SUPPORT

Patrick N. Harrison, 14425 Bayview Avenue, Aurora, Ontario, Canada, and Nenad B. Medjedovic, 83 Reiner Drive, Downsview, Ontario, Canada

Filed Nov. 8, 1994, Ser. No. 337,484

Int. Cl.[6] A47C *7/46*

U.S. Cl. 297—230.14 **14 Claims**



1. The combination of an auxiliary backrest and an adjustable attachment for suspending the backrest from a chair having a fixed backrest and an upper edge on the fixed backrest;

the auxiliary backrest normally being arranged to extend vertically and having a front, a back, a top and a bottom; and

the adjustable attachment comprising:

an elongate receiver attached to the back of the auxiliary backrest and defining with the auxiliary backrest a vertically extending passage, the receiver further including a plurality of openings placed along the receiver and providing access into the passage and a hanger having an inner part adapted to be engaged through a respective one of said openings and positionable longitudinally of the receiver, a bridge attached orthogonally to the hanger for positioning in said one of said openings with the inner part so positioned, and an outer part extending generally in parallel with the inner part and attached to the bridge whereby in use the hanger can be engaged through a selected one of the openings until the bridge is positioned in the opening whereupon the hanger extends along the length of the receiver and the outer part can be engaged downwardly over said upper edge until the bridge meets the upper edge so that the auxiliary backrest is then hanging from the fixed backrest held in position by the adjustable attachment.

5,573,303

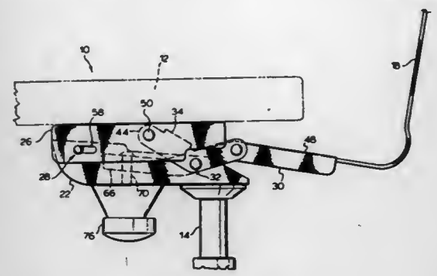
CHAIR SEAT TILTING MECHANISM

Frank Doerner, Kitchener, Canada, assignor to Doerner Products Ltd., Waterloo, Canada

Filed May 16, 1995, Ser. No. 441,772

Int. Cl.[6] A47C *1/032*

U.S. Cl. 297—300.5 **8 Claims**



1. A chair seat tilting mechanism comprising:

a support for mounting to a chair spindle;

a lever arm for mounting to a chair seat, said lever arm pivotally mounted at a pivot mount to said support such that, when said lever arm is mounted to said chair seat, pivoting said lever arm about said lever arm pivot mount tilts said chair seat forwardly;

a link arm pivotally mounted to said support at a pivot mount, said link arm having a camming end located at one side of said link arm pivot mount such that said camming end is positioned for camming said lever arm at a point between said lever arm pivot mount and said link arm pivot mount, said link arm for supporting a chair back at a side of said link arm pivot mount which is opposite from said one side such that when said chair back is tilted backwardly, said camming end is raised thereby pivoting said lever arm about said lever arm pivot mount in order to tilt said chair seat forwardly.

5,573,304

ACTIVE DYNAMIC SEAT

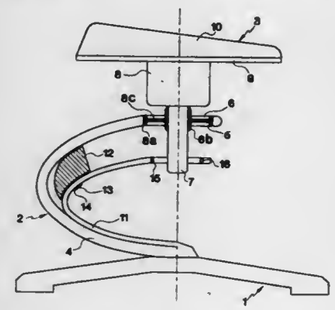
Josef Glöckl, Ammerseestrasse 6, D-8011 Kirchheim, Germany

Division of Ser. No. 150,107, Feb. 24, 1995. This application Mar. 23, 1995, Ser. No. 409,155

Claims priority, application Germany, Mar. 27, 1992, 42 10 099.2

Int. Cl.[6] A47C *3/32;3/18*

U.S. Cl. 297—314 **18 Claims**



1. An active dynamic seat comprising:

a base;

an intermediate piece connected to the base;

a seat part; and

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at least one elastic device connecting the seat part to the intermediate piece, wherein

the intermediate piece is connected to the base, is resilient in a vertical direction, and includes a first arcuate resilient part substantially U-shaped having a lower arm and an upper arm, the first arcuate part lower arm being connected to the base, and the first arcuate part upper arm supporting the seat part, and

the at least one elastic device connects the seat part to the intermediate piece.

5,573,305

CUSHION PORTION AND PROCESS FOR THE PRODUCTION THEREOF

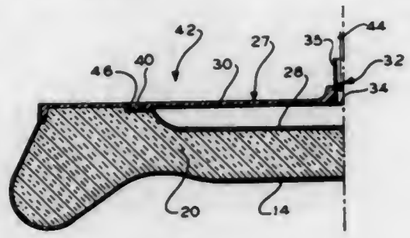
Helmut Storch, Amberg, Germany, assignor to Grammer AG, Amberg, Germany

Filed Mar. 20, 1995, Ser. No. 406,553

Claims priority, application Germany, Apr. 14, 1994, 44 12 849.5

Int. Cl.[6] A47C *7/02*

U.S. Cl. 297—452.41 **6 Claims**



1. A cushion portion including a cushion core having a front side and a rear side; a covering means which is stable in respect to shape at the rear side of the core; an intermediate structure means disposed between the rear side of the core and the covering means, said intermediate structure means comprising first and second foils which lie against each other loosely to provide at least one inflatable space, wherein the first foil is adjacent the core and has a larger surface area than the second foil, said second foil being adjacent the covering means, said second foil being disposed on said first foil such that said first foil forms an edge portion that extends beyond said second foil, said edge portion of said first foil being fixedly connected to said covering means, and at least one tube means having first and second end portions and operatively associated with said at least one inflatable space, said first end portion of said tube means opening between the foils of the intermediate structure means into said at least one space, and said second end portion of said tube means extending out of said cushion portion.

5,573,306

NON-SLIP SEAT BELT COVER

Evan M. Galloway, and K. Maria Davis, both of 112 Sunridge Park, Gulfport, Miss. 39507

Filed May 30, 1995, Ser. No. 452,958

Int. Cl.[6] B60R *22/14*

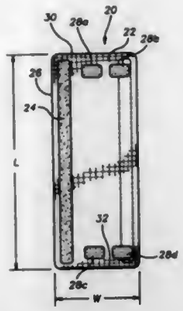
U.S. Cl. 297—482 **3 Claims**

1. A non-slip seat belt cover comprising:

an elongated, rectangular section of covering material having an interior surface and an exterior surface;

a first fastening mechanism attached, along a first longer edge of said section, to said interior surface;

a second fastening mechanism attached, along a second longer edge of said section, to said exterior surface; and



a securing mechanism including first, second, third, and fourth cleat pads, said first and second cleat pads being spaced apart and having substantially planar bases secured to said interior surface adjacent a first shorter edge thereof, said third and fourth cleat pads being spaced apart and having substantially planar bases secured to said interior surface adjacent a second shorter edge thereof, each said first, second, third, and fourth cleat pad including a plurality of pointed prong members that extend from a a respective one of said substantially planar bases away from said interior surface to which said respective one of said bases is secured at an angle of between twenty-five and sixty degree with respect to said one of said substantially planar bases, said first and second cleat pads being oriented in a manner such that points of said prong members extending therefrom are oriented away from said first shorter edge, said third and fourth cleat pads being oriented in a manner such that points of said prong members extending therefrom are oriented away from said second shorter edge.

5,573,307

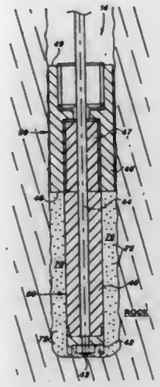
METHOD AND APPARATUS FOR BLASTING HARD ROCK

G. Mark Wilkinson, and Steven G. E. Pronko, both of San Diego, Calif., assignors to Maxwell Laboratories, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 193,233, Jan. 21, 1994, Pat. No. 5,425,570. This application Jun. 6, 1995, Ser. No. 468,795

Int. Cl.[6] E21C *37/18*; **E21B** *7/15*

U.S. Cl. 299—14 **26 Claims**



11. A method for blasting hard rock comprising the steps of:

(a) placing a prescribed volume of a fuel mixture in communication with a pair of electrodes proximate the rock formation,

the fuel mixture having a sufficiently high metal content so as to form a plurality of fusible metal paths between the electrodes;

(b) applying a moderately high electrical energy discharge to the volume of the fuel mixture;

(c) fusing the plurality of metal paths to form a resistive arc channel between electrodes within the fuel mixture thereby producing a sufficiently high electrical resistance; and

(d) dissipating a sufficient amount of heat from the resistive arc to the fuel mixture to initiate an exothermic reaction of the fuel mixture generating a rapidly expanding gas causing the fracturing and break up of the hard rock.

5,573,308

CUTTING ELEMENT AND HOLDER FOR A COAL CUTTING MACHINE

Dieter Simons, Buchholz, and Bernd Holl, Wled-Fernthall, both of Germany, assignors to Wirtgen GmbH, Germany

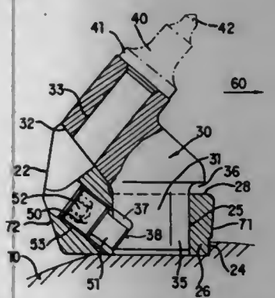
PCT No. PCT/EP94/02165, § 371 Date May 26, 1995, § 102(e) Date May 26, 1995, PCT Pub. No. WO95/02113, PCT Pub. Date Mar. 6, 1995

PCT Filed Jul. 1, 1994, Ser. No. 397,095

Claims priority, application Germany, Jul. 6, 1993, 43 22 402.4

Int. Cl.[6] E21C *35/193*

U.S. Cl. 299—102 **13 Claims**



1. In a cylindrical cutting element for a coal cutting machine having a reamer-conveyor worm or reamer spiral for cutting, disposed projecting at a distance from the surface of the cutting element and comprising a plurality of base elements attached at uniform distances, a chisel holder with an exchangeable chisel connected to each said base element, said chisel holder having a plug-in connector inserted into a socket of the base element and maintained therein by a pressure screw,

the improvement comprising:

the surface of said cutting element forming a plurality of receiver pockets (**27**) along the reamer-conveyor worm or reamer spiral at uniform distances;

an underside of each of said base elements (**20**) terminating in a base (**26**) whose cross section corresponds to said plurality of receiver pockets (**27**); and

each of said base elements (**20**) disposed by means of the base (**26**) in one of said receiver pockets (**27**) and fixedly connected thereto.

5,573,309

IN-LINE ROLLER SKATE WHEEL ASSEMBLY

George J. Bekessy, Post Falls, Id., assignor to All American Aviation & Mfg. Inc., Post Falls, Id.

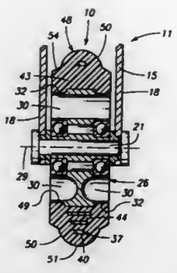
Filed Oct. 21, 1994, Ser. No. 327,291

Int. Cl.[6] B60B *5/02*

U.S. Cl. 301—5.3 **18 Claims**

1. An in-line roller skate wheel, comprising:

a wheel hub having:



(a) a hub core including a central axle bore formed along a wheel axis;

(b) substantially cylindrical tire receiving shoulders concentric with the bore;

(c) a tapered tire deflection controlling rim extending circumferentially about the shoulders and having rim side walls extending radially outward and tapering from a wide base at the shoulders to a narrow continuous and unbroken peripheral surface; and

an annular resilient tire mounted to the wheel hub, engaging the tire receiving shoulders and encasing the tapered tire deflection controlling rim.

5,573,310

WHEEL OR ENDLESS TRACK

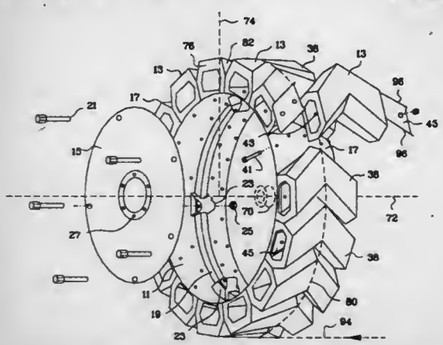
Phillip J. Rollinson, West Perth, Australia, assignor to Altrack Limited, Australia

Continuation of Ser. No. 806,738, Dec. 12, 1991, abandoned, which is a continuation of Ser. No. 380,909, Jul. 17, 1989, Pat. No. 5,078,454. This application Feb. 17, 1994, Ser. No. 198,541

Claims priority, application Australia, Jul. 19, 1988, PI9369; Sep. 16, 1988, PJ0444

Int. Cl.[6] B60C *7/08*

U.S. Cl. 301—43 **6 Claims**



1. A non-pneumatic, composite tire for a wheel having a wheel rim, a circumference and a rotation axis, said composite tire comprising multiple, ventilated, one-piece, resilient ground-engaging tire elements assemblable around said wheel circumference in interlocking relationship, each said tire element having:

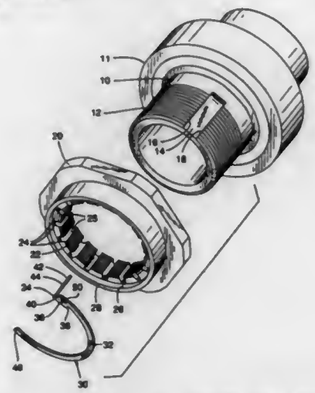
a) a tubular, hollow body to extend axially across said wheel and having ends positionable in parallel alignment with said wheel rotation axis, said tubular body being configured with a circumferentially displaced formation intermediate said ends such that the circumferentially displaced formation of one element can be accommodated between said ends of a neighboring element whereby neighboring elements can interfit and interengage one with another;

b) having a radially inner, rim-engaging portion;

UMI

c) having a radially outer, ground-engageable pad; and
d) having resiliently deformable side walls supporting said outer ground-engageable pad under a ground-engaging load;
wherein said tire elements are each compressible under ground-engaging loads with radial, inward movement of said pad, and with deformation of said side walls to shed said ground-engaging load laterally to adjacent said tire elements.

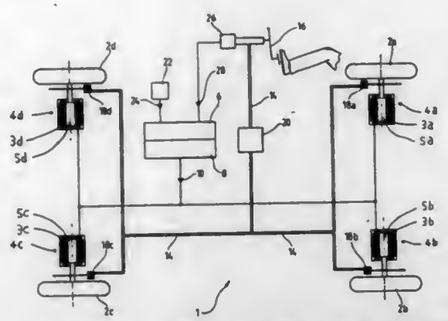
5,573,311
ANTI-ROTATION DEVICE FOR WHEEL SPINDLE NUT
Kip E. Clohessy, Milwaukie, Oreg., assignor to Warn Industries, Inc., Milwaukie, Oreg.
Filed Jul. 5, 1994, Ser. No. 270,365
Int. Cl.[6] B60B *27/06*
U.S. Cl. 301—105.1 **5 Claims**



1. In combination with a wheel spindle and a spindle nut, a device for preventing rotation of the spindle nut relative to the spindle, comprising:
a wheel spindle having a threaded end of a first diameter;
a key way formed on the threaded end;
a spindle nut having internal threads and axial grooves formed in the threads, said spindle nut threadably installable on the threaded end of the spindle for alignment of one of the grooves with the key way;
a preformed retainer having a body portion that is partially circular in configuration with an internal diameter at least equal to said first diameter to partially surround the spindle end, and a leg portion that extends normal to the body portion and configured to fit the aligned groove and key way, said retainer mountable to the spindle and spindle nut when said nut is mounted on said spindle, said retainer leg portion in engagement with said aligned groove and said key way and said body portion abutting the spindle nut and surrounding said spindle to thereby prevent rotation of said spindle nut relative to said spindle while providing easy installation and detection of the retainer.

5,573,312
VEHICLE HAVING AN ELECTRIC AND MECHANICAL BRAKING SYSTEM
Jacques Müller, Reconviller; René Jeanneret, Merzligen, and Antoine Toth, Delémont, all of Switzerland, assignors to SMH Management Services AG, Biel, Switzerland
Filed May 18, 1994, Ser. No. 245,459
Claims priority, application France, May 18, 1993, 93 06096
Int. Cl.[6] B60T *13/74*
U.S. Cl. 303—3 **15 Claims**

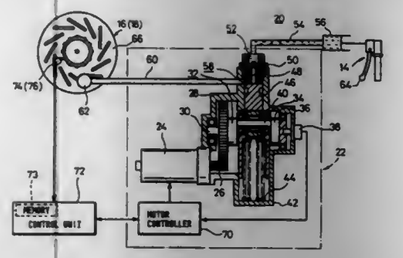
1. A vehicle having:
a wheel;



an electric motor having a stator and a rotor magnetically coupled to said stator and rotationally fixed to said wheel;
control means disposed to cause said electric motor to operate in an electric braking mode in response to a set point signal;
a mechanical braking device associated with said wheel so that said mechanical braking device is capable of exerting a mechanical braking torque on said wheel; and
braking means operable by a driver of said vehicle between two extreme positions defining a braking travel of said braking means, said braking means providing, when they are actuated by said driver, said set point signal to said control means, the position of said braking means within said braking travel determining the value of said set point signal and the value of said mechanical braking torque;
said electric motor being of the asynchronous type, said stator having a stator winding arranged so as to produce a magnetic field rotating at a stator frequency determined by said control means, said rotor rotating at a rotor frequency in response to said rotating magnetic field, the vehicle also having electric supply means arranged so that said electric motor can function as a generator or as a motor in said braking mode, and measuring means to produce a reference signal corresponding to a reference frequency approximately equal to said rotor frequency when said wheel has a speed equal to the speed of said vehicle and wherein, when the speed of said vehicle lies within a range of given values and said braking means are actuated within a determined range of said braking travel, said mechanical braking device is activated and said electric motor simultaneously functions in said electric braking mode, said control means responding to said reference signal to determine said stator frequency so that said stator frequency is greater than zero and less than said reference frequency.

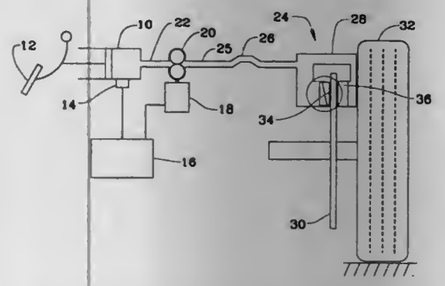
5,573,313
METHOD OF AND SYSTEM FOR CONTROLLING BRAKES
Osamu Suzuki; Keishin Tanaka; Tatsuo Hayashi; Takushi Matsuto; Chiaki Kumagai; Takeshi Sakurai, and Atsuo Ota, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 281,559, Jul. 28, 1994, which is a division of Ser. No. 958,166, Oct. 8, 1992, Pat. No. 5,365,444. This application May 22, 1995, Ser. No. 447,230
Claims priority, application Japan, Oct. 8, 1991, 3-260853; Oct. 16, 1991, 3-267939; Oct. 24, 1991, 3-278062
Int. Cl.[6] B60T *8/42*
U.S. Cl. 303—115.2 **16 Claims**

1. An apparatus for controlling brakes having a master cylinder transmitting caliper pressure to a caliper cylinder depending on an input supplied by operating a brake lever or a brake pedal, thereby effecting normal braking for applying a braking force to a wheel, said apparatus comprising:
a cut valve connected to the master cylinder and the caliper cylinder;
driving means, including a crank shaft and crank pin, for driving an expander piston toward and away from said cut valve so as



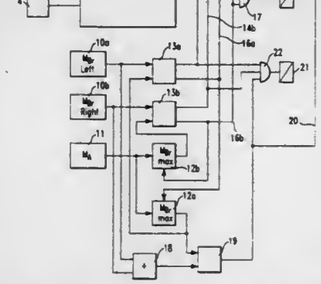
to interrupt caliper pressure from the master cylinder to the caliper cylinder and to adjust a volume of an output hydraulic chamber which communicates with the caliper cylinder to effect antilock braking;
means for controlling said driving means to control the caliper pressure which is applied to each wheel to thereby effect the antilock braking; and
wherein said means for controlling controls the caliper pressure such that, when changing from the antilock braking to normal braking, said means for controlling repeatedly changes a crank angle of said crank pin between respective crank angles θ_1 and θ_2 so as to repeatedly open and close said cut valve at respective time intervals T_1 and T_2, wherein said crank angle is maintained at θ_1 for said time interval T_1 and at θ_2 for said time interval T_2, thereby increasing the caliper pressure at a target pressure increasing rate.

5,573,314
HYDRAULIC BRAKE SYSTEM WITH ARRANGEMENT FOR IMPROVING THE BRAKE ACTUATION RESPONSE TIME
Tokihiko Akita, Davis, and Andrew A. Frank, El Macero, both of Calif., assignors to Imra America, Inc., Ann Arbor, Mich.
Filed Feb. 22, 1995, Ser. No. 394,613
Int. Cl.[6] B60T *13/16*
U.S. Cl. 303—10 **20 Claims**



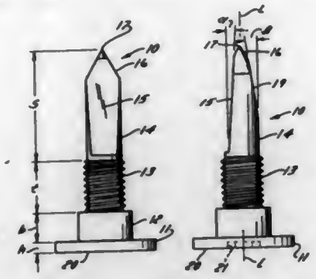
1. A hydraulic brake system for a vehicle comprising:
a master cylinder supplying brake pressure through operation of an operating member of the vehicle;
a wheel cylinder mountable adjacent a rotatable brake disk of the vehicle, said wheel cylinder including a brake caliper;
a bi-directional pump disposed between the master cylinder and the wheel cylinder for pumping hydraulic fluid to the wheel cylinder
a tubular member connecting the pump to the wheel cylinder, said tubular material being made of compliant material which expands when brake pressure is supplied to the wheel cylinder by the pump;
a brake pad mounted on the brake caliper and movable toward the brake disk as a result of brake pressure to impart a braking force to the brake disk, said brake pad being movable with the brake disk when the brake pad is urged against the brake disk;
a pressure increasing element positioned adjacent the brake pad and movable toward and away from the brake pad;
means for causing the pressure increasing element to move away from the brake pad when the brake pad is urged against and moves with the brake disk to effect a relatively fast increase in brake pressure downstream of the pump and thereby achieve a relatively fast filling in of a volumetric increase in the tubular member caused by expansion of the compliant material; and
a pressure controller operatively associated with the bi-directional pump to increase the brake pressure supplied by the master cylinder during operation of the operating member and thereby increase the brake pressure supplied to the wheel cylinder.

5,573,315
SYSTEM FOR PREVENTING SLIP OF DRIVEN WHEELS
Johannes Schmitt, Markgröningen, and Ralf Donath, Ditzingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
PCT No. PCT/DE93/00965, § 371 Date Jun. 30, 1995, § 102(e) Date Jun. 30, 1995, PCT Pub. No. WO94/10824, PCT Pub. Date May 11, 1994
PCT Filed Oct. 12, 1993, Ser. No. 256,188
Claims priority, application Germany, Oct. 24, 1992, 42 36 004.8
Int. Cl.[6] B60T *8/00*
U.S. Cl. 303—141 **9 Claims**



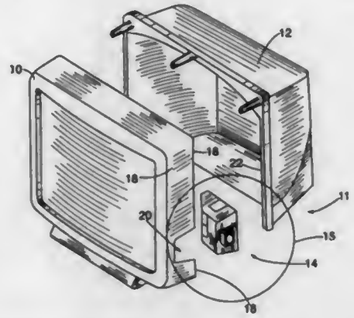
1. Drive slip control system for a vehicle having at least two driven wheels, an engine which provides drive torque M_A for said driven wheels, and brake means which provide brake torque M_{Br} for said driven wheels, said system comprising
means for determining when drive slippage of a driven wheel occurs,
ASR means responsive to said drive slippage for producing braking torques at the driven wheels,
means for determining the braking torques M_{Br} at the driven wheels,
means for determining the drive torque M_A provided by the engine,
means for determining a maximum braking torque M_{Brmax} in dependence on said engine torque M_A, where $M_{Brmax}=0$ when $M_A<0$ and M_{Brmax} increases as M_A increases,
means for at least one of (1) limiting the braking torques produced by said ASR means to M_{Brmax} when M_{Br} exceeds M_{Brmax}, and (2) increasing the drive torque M_A when M_{Br} exceeds M_{Brmax}.

5,573,316
LIGHTWEIGHT SNOWMOBILE TRACTION STUD
Russell A. Wankowski, W293 N3112 Poplar Dr., Pewaukee, Wis. 53072
Filed Jun. 2, 1995, Ser. No. 459,306
Int. Cl.[6] B62D *55/26*
U.S. Cl. 305—180 16 Claims



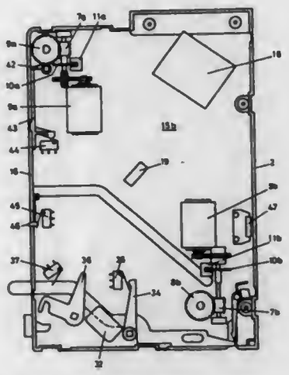
1. A snowmobile traction stud comprising:
a T-bolt configuration comprising:
a relatively wide annular bead;
a cylindrical base portion adjacent to the head;
an externally threaded portion adjacent to the base portion;
a substantially cylindrical shank adjacent to the threaded portion, with the shank having at least one milled flat surface; and,
a pointed conical end portion.

5,573,317
BRACKET APPARATUS FOR A CABINET
Barry A. Cavanaugh, and Arthur H. Ozaki, both of Escondido, Calif., assignors to Sony Corporation, Tokyo, Japan, and Sony Electronics Inc., Park Ridge, N.J.
Filed May 10, 1995, Ser. No. 438,597
Int. Cl.[6] A47B *5/00;81/06*
U.S. Cl. 312—7.2 10 Claims



1. A bracket for a cabinet, said cabinet having a notch formed in a side wall, said notch including a first flange having a predetermined flange thickness, comprising:
a housing having at least one rib and a mounting flange having an aperture, wherein said rib is spaced apart from said mounting flange by a predetermined distance which is less than said flange thickness, such that upon insertion of said housing in said notch, said first flange is inserted between said rib and said mounting flange to form a press fit between said first flange, said rib and said mounting flange for removably securing said rib and said mounting flange to said first flange;
said housing further including at least one clip element for removably securing within said housing a device having activation means for activating or deactivating said device, wherein said activation means extend through said aperture.

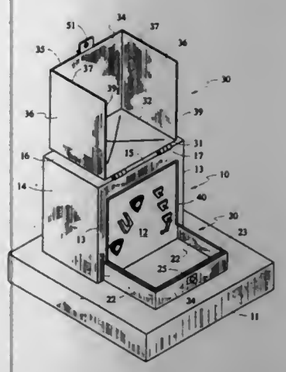
5,573,318
TOWEL DISPENSER
Sandro Arabian, Vaduz, Liechtenstein, and Manfred Baumann, Diepoldsau, Switzerland, assignors to CWS International AG, Baar, Switzerland
Continuation of Ser. No. 820,662, Mar. 16, 1992, abandoned.
This application Jun. 13, 1995, Ser. No. 489,828
Claims priority, application Switzerland, May 15, 1990, 1681/90
Int. Cl.[6] B65H *19/00*
U.S. Cl. 312—34.11 8 Claims



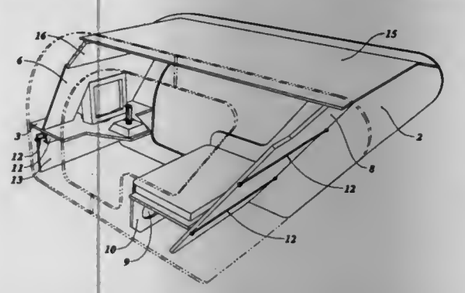
1. A towel dispenser comprising:
(a) a housing defining at least one orifice;
(b) a first electrically driven transport device for providing an unused towel portion through said at least one orifice;
(c) a second electrically driven transport device for retracting a used towel portion through said at least one orifice;
(d) control means for controlling said first electrically driven transport device and said second electrically driven transport device;
(e) a movement sensor electrically connected to said control means, said movement sensor including:
(i) a touch-contact element; and
(ii) a piezoelectric element having a first contact region operatively associated with said touch-contact element and a second contact region operatively associated with said housing.

5,573,319
TRANSFORMER CABINET HAVING FORMED CHANNEL EDGES
Neal Dirk, Whitefish Bay, Wis., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Mar. 28, 1995, Ser. No. 411,482
Int. Cl.[6] A47B *81/00*
U.S. Cl. 312—100 20 Claims

1. A tamper-resistant transformer cabinet, comprising:
a tank including a front plate, for housing a transformer, said front plate including upper, lower and side edges;
a riser extending from said front plate, said riser including two sides and a front;
a cabinet door including a rear top edge, two rear side edges, two lower side edges, and a lower front edge;
said door including an integral U-shaped channel along each of said edges, each channel having three sides, said channel sides being defined by said door, a channel bottom and an inner sidewall, respectively, said channel bottom being lowermost along said lower edges and rearmost along said rear edges when said door is in its closed position.

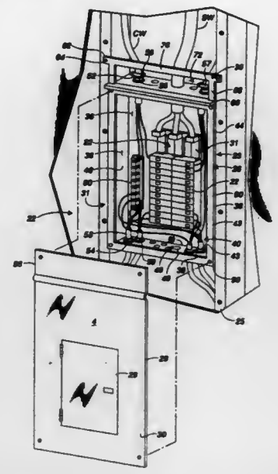


5,573,320
ENCLOSED SEAT FOR VIDEO GAME PLAY
Brian R. Shearer, P.O. Box 5060, Mills River, N.C. 28742
Filed Mar. 15, 1995, Ser. No. 404,453
Int. Cl.[6] A47B *97/06*
U.S. Cl. 312—223.3 2 Claims



1. A floor-standing seat enclosure, comprising a left side member and a right side member, each side member having integral support means therein, said integral support means of said side members directly supporting a monitor support shelf, a monitor support shelf brace, a vertical front piece, a brow piece, a seat bottom, a seat back, a speaker mount, a monitor surround and a top member, respectively, said side members being joined together by transverse braces which extend through and are removably fastened to said left side member and said right side member, said transverse braces being located behind the seat back and underneath the monitor support shelf and supporting said seat back and said monitor support shelf while maintaining said seat enclosure in a rigid relationship with respect to said integral support means, said monitor support shelf being slidingly supported within said integral support means which are of a length greater than the depth of said monitor support shelf, said monitor support shelf including a central extension of a trapezoidal shape.

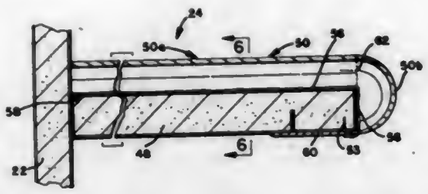
5,573,321
ACCESS FRAME FOR ELECTRICAL ENCLOSURE
George W. Bell, Jr., 1529 Woolfolk Rd., Fort Valley, Ga. 31030
Filed Jun. 21, 1995, Ser. No. 493,260
Int. Cl.[6] A47B *67/02*
U.S. Cl. 312—242 6 Claims



1. An electrical enclosure of the type used as a load center for building wiring in a hollow wall structure comprising a planar wall panel adapted to surround said electrical enclosure, said electrical enclosure comprising:
a rear panel;
a plurality of sidewalls defining sidewall edges, an interior sidewall surface, and an external sidewall surface, said sidewalls extending substantially perpendicularly from said rear panel to define an interior enclosure volume and an enclosure opening; and
an access frame, said access frame comprising:
a frame mount adapted for mounting the access frame to the electrical enclosure;
an elongate support bar spaced from said frame mount; and
at least one support leg connecting said elongate support bar to said frame mount, wherein
said frame mount, elongate support bar, and at least one support leg define an access opening between said support bar and said electrical enclosure such that said support bar can support the planar wall panel adjacent the wall panel opening, said access opening being configured to provide access to said external sidewall surface externally of said electrical enclosure to facilitate installing wiring into said electrical enclosure.

5,573,322
STORAGE SYSTEM WITH PROTECTIVE SHELVING
Keith A. Wrobel, Plymouth, Minn., assignor to LSI Corporation of America, Inc., Minneapolis, Minn.
Continuation of Ser. No. 195,733, Feb. 14, 1994, abandoned.
This application Sep. 18, 1995, Ser. No. 529,907
Int. Cl.[6] A47B *17/00;96/00;* A47F *5/08*
U.S. Cl. 312—400 28 Claims

11. A protective shelf for use in a storage system, which comprises:
a generally rectangular, substantially rigid undercore having top and bottom surfaces, front and back ends, and left and right longitudinal sides;
said undercore being formed from a predetermined solid material;



a substantially semi-rigid overlay covering said undercore, said overlay having top and bottom surfaces and being relatively thinner than said undercore;

said overlay including a top portion covering the top surface of said undercore and a nose portion covering the front end of said undercore, with alternate longitudinal ribs and longitudinal grooves therein extending substantially continuously between the front and back ends of said undercore; and

means for securing said overlay to said undercore at predetermined spaced apart locations.

5,573,323

REFRIGERATOR HAVING A PRESSURE EQUILBRIUM APPARATUS

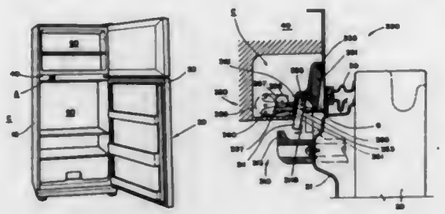
Myoung W. Kim, Seoul; Hyo S. Kang, Suwon, and Suk Bang, Kyungki-do, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 18, 1994, Ser. No. 343,906

Claims priority, application Rep. of Korea, Nov. 30, 1993, UM93-25779; Feb. 4, 1994, UM94-2166; Feb. 4, 1994, UM94-2169

Int. Cl.[5] A47B *91/00*

U.S. Cl. 312—405 **20 Claims**



1. A refrigerator, comprising:

a body forming a refrigeration compartment;

a door hinged to said body for opening and closing said compartment; and

a pressure equalizing mechanism for creating a substantial equalization of pressures inside and outside of said compartment to facilitate a subsequent opening of said door, comprising:

passage-forming means forming a passage communicating said compartment with ambient air outside of said compartment following a closing of said door, and

closing means for automatically closing said passage after a predetermined time period following the closing of said door for achieving said substantial equalization of pressures.

5,573,324

IMAGE PROJECTION SYSTEM

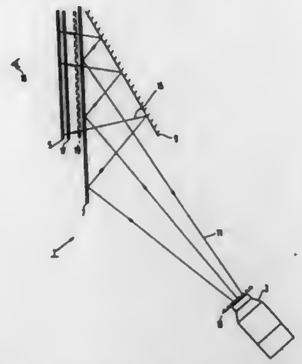
Adrianus J. S. M. De Vaan, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 25, 1994, Ser. No. 248,945

Claims priority, application Belgium, Dec. 10, 1993, 09301368

Int. Cl.[6] G03B *21/28*

U.S. Cl. 353—77 **13 Claims**



7. An image projection system comprising a projector for supplying a projection beam which is modulated with the image to be projected, an image projection screen and a folding system arranged between the image projector and the image projection screen, the folding system comprising a beam splitter for at least partly reflecting the projection beam from the projector and a reflector for receiving the part of the projection beam reflected by the beam splitter and for reflecting said part to the beam splitter again, characterized in that the beam splitter is a cholesteric filter, and a polarizer is arranged between the image projection screen and the beam splitter.

5,573,325

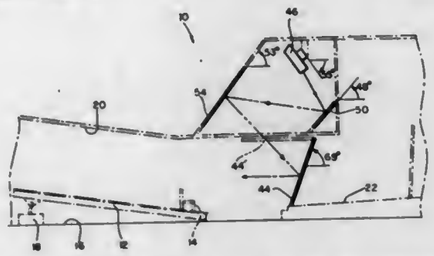
MULTI-SENSORY THEATRICAL PRESENTATION STRUCTURE

Andrew J. Lekowski, Thousand Oaks, Calif., assignor to Encountarium, Inc., Glendale, Calif.

Filed Jun. 8, 1994, Ser. No. 255,489

Int. Cl.[6] G03B *21/28*

U.S. Cl. 353—79 **23 Claims**



15. A multi-media theatrical presentation structure comprising:

an audience area for bolding an audience;

a stage for presenting a live performance, said stage including a center zone and several lateral zones separated from said center zone by scrims;

sensory means for providing sensory impressions to said audience associated with said live performance, said sensory means including an imaging screen, projecting means for projecting an image on said imaging screen and a beam splitter for projecting said image to said audience, said image as viewed by said audience being superimposed on said stage, wherein said projecting means is disposed at allocation between said stage and said audience.

5,573,326

OPTICAL AXIS ADJUSTING DEVICE OF VEHICLE LAMP

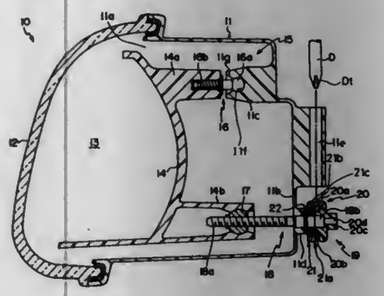
Takayuki Iijima, Isehara, Japan, assignor to Ichikoh Industries Ltd., Tokyo, Japan

Filed May 18, 1995, Ser. No. 444,367

Claims priority, application Japan, Nov. 8, 1994, 6-273448

Int. Cl.[6] B60Q *1/06*

U.S. Cl. 362—66 **13 Claims**



1. An optical adjusting device of a vehicle lamp, comprising:

a reflector tiltably fixed to a lamp housing by means of a joint member;

an aiming screw, turnably laid between said lamp housing and said reflector, for tilting said reflector;

a drive gear fastened to an end of said aiming screw;

a racing gear facing said drive gear, said racing gear being mounted on said aiming screw so as to rotate relatively with said aiming screw;

toothed parts formed in respective surfaces of said drive and racing gears facing each other; and

a guide, said guide being formed on a rear surface of said lamp housing, for guiding a tool to be engaged with said toothed parts, wherein said tool is inserted into a space between said drive gear and said racing gear, along said groove from a direction perpendicular to a direction of an axial line of said aiming screw.

5,573,327

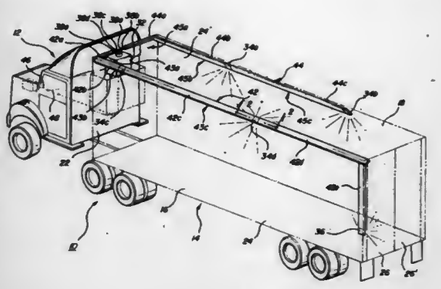
CARGO AREA LIGHTING SYSTEM FOR TRUCKS

O. K. Dealey, Jr., 33751 Heritage Hill, Farmington Hills, Mich. 48331; John L. Stratford, 5014 Lauderdale Ave., LaCrescenta, Calif. 91214, and John A. Robbins, 24722 Eldamar Ave., Lake Forest, Calif. 92630

Continuation of Ser. No. 327,202, Oct. 21, 1994, Pat. No. 5,483,427. This application Nov. 1, 1995, Ser. No. 548,329

Int. Cl.[6] B60Q *3/00*

U.S. Cl. 362—80 **13 Claims**



13. A method for illuminating the interior cargo space of a truck using a fiber optic lighting system where the truck includes a truck body for cargo and where the fiber optic lighting system includes an electrically energized light source, a plurality of lighting fixtures supported in spaced relation with each other, each fixture including a housing and a light distributing lens, a plurality of light guides each having an input end and an output end and being adapted to transmit light received at the input end to and emitting said light from the output end; said method comprising the steps of:

mounting the electrically-energized light source on the truck body,

mounting the lighting with the light fixture lenses exposed to the cargo space,

optically coupling each light guide input end to the light source,

mounting each light guide to the body between the light source and a selected one of the lighting fixtures, and

optically coupling each light guide output end with the lens of the selected fixture.

5,573,328

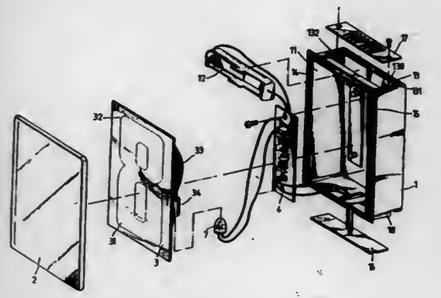
HOUSE NUMBER LIGHT BOX

Steven Hwang, 4F., No. 6-6, Alley 11, Lane 147, Hsin Yi Road, Sec. 3, Taipei, Taiwan

Filed Mar. 30, 1995, Ser. No. 407,361

Int. Cl.[6] F21L *7/00*

U.S. Cl. 362—183 **2 Claims**



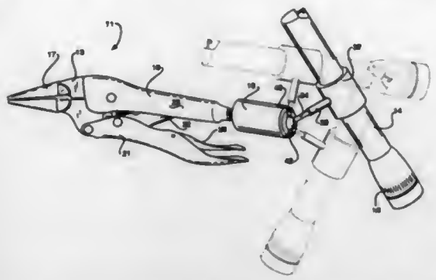
1. A house number light box comprising:

a housing having an opening on one side, a recess at an opposite side, and a transparent front covering; a battery box located inside of said housing beneath said opening; a solar cell located within said recess;

a control circuit mounted within said housing, said control circuit comprising a battery mounted inside said battery box, a switch circuit, an oscillatory circuit, and a light source, said switch circuit having an input terminal connected to said solar cell and connected to said battery through a diode and a current limiting resistor, and an output terminal connected to said oscillatory circuit, said oscillatory circuit having an input terminal connected to said switch circuit and an output terminal connected to said light source; and

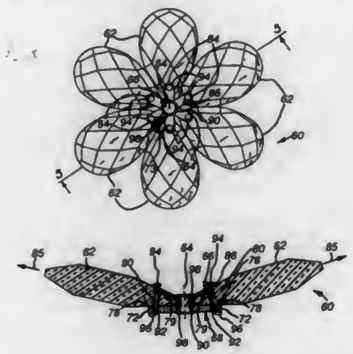
a house number panel mounted within said housing behind said transparent front covering, said house number panel comprising a front side bearing a house number, a plurality of through holes arranged along a border of said house number, and a back side; a plurality of optical fiber tubes, each having one end abutted to said light source and an opposite end fastened to said house number panel in alignment with one of said through holes on said house number panel.

5,573,329
LIGHT SOURCE HOLDER
Jan van Gennep, 715 Laurel Ave., Menlo Park, Calif. 94025
Filed Dec. 22, 1994, Ser. No. 361,594
Int. Cl.[6] F21L 7/00
U.S. Cl. 362—191 19 Claims



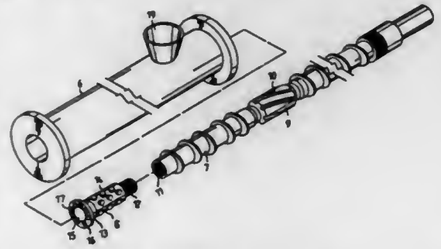
1. An adapter facilitating the holding of an instrumentality at a desired location comprising, in combination:
(a) an interface unit securable to a gripping device which can grip a structure adjacent said location, said gripping device having a pair of jaws which are lockable in a set position relative to one another for gripping said structure and including an adjustment mechanism for changing the location of said lockable, set position, said adjustment mechanism having a projectioo and said interface unit being securable directly to said projection of said adjustment mechanism so as not to interfere with use of said adjustment mechanism; and
(b) a connector for said instrumentality, attachable to said interface unit, said connector including an orientation change mechanism which enables the orientation of said instrumentality relative to said gripping device to be changed.

5,573,330
JOINING DEVICE FOR CHANDELIER ORNAMENTS
John M. Lucas, Cadyville, N.Y., assignor to Schonbek Worldwide Lighting Inc., Plattsburgh, N.Y.
Filed Jun. 16, 1995, Ser. No. 491,264
Int. Cl.[6] F21S 13/06
U.S. Cl. 362—405 24 Claims



1. A joining device for chandelier ornaments comprising:
a first ornament having a first mounting hole;
a first retaining plate engaging the first ornament adjacent the first mounting hole on a first side of the first ornament;
a second retaining plate engaging each of the first ornament adjacent the first mounting hole on a second side of the first ornament;
a first projection interconnected with at least one of the first retaining plate and the second retaining plate and engaging the first mounting hole; and
wherein the first retaining plate comprises a spring material and the first retaining plate is in a deformed state wherein the first retaining plate exerts a spring force on the first ornament to forcibly retain the first ornament in a predetermined orientation relative to the first retaining plate and the second retaining plate.

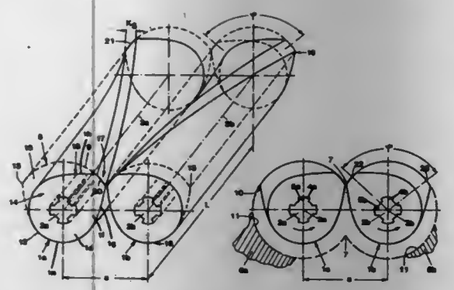
5,573,331
MULTIPLE-STAGE SCREW FOR BLENDING MATERIALS
Ping H. Lin, No. 2, Alley 54, Lane 747, Chung Cheng Pei Rd., Young Kang, Tainan, Taiwan
Filed Sep. 8, 1995, Ser. No. 525,052
Int. Cl.[6] B29B 7/42; B01F 7/08
U.S. Cl. 366—81 2 Claims



1. A multiple-stage extruder comprising:
a main body and a screw,
said screw includes at a middle part a first-stage blending shaft, said first-stage blending shaft includes on a circumferential surface thereof a plurality of obliquely positioned grooves,
a part of the screw that connects to a second-stage blending shaft includes inner threads to receive a threaded male connecting rod at a first end of said second-stage blending shaft,
said second-stage blending shaft comprises a unitary body, a portion of said second-stage blending shaft adjacent to said connecting rod includes a plurality of irregularly positioned round protrusions, said second-stage blending shaft includes a recessed groove near a second end of said second-stage blending shaft, said second end of said second-stage blending shaft includes a protruding flange, an outer side of which includes a supporting disk, said flange further including a plurality of openings.

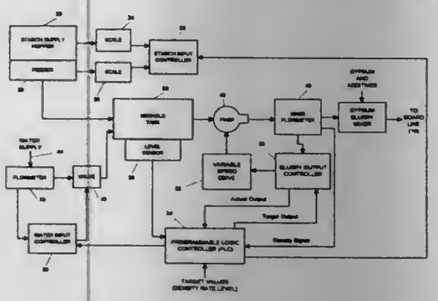
5,573,332
SCREW ELEMENT FOR A SCREW-LIKE EXTRUSION MACHINE
Gerhard Weihrich, Illingen, and Werner Wiedmann, Stuttgart, both of Germany, assignors to Werner & Pfleiderer GmbH, Stuttgart, Germany
Continuation-in-part of Ser. No. 292,876, Aug. 19, 1994, abandoned. This application Feb. 28, 1996, Ser. No. 607,920
Claims priority, application Germany, Sep. 2, 1993, 43 29 612.2
Int. Cl.[6] A21C 1/06; B01F 7/08; B28C 1/16
U.S. Cl. 366—85 14 Claims

1. A teardrop screw element for a screw-type apparatus to condition and process plastics or elastomers comprising;
said teardrop a screw element having a central bore to attach said teardrop screw element to a drive shaft,
said teardrop screw element has a teardrop shape cross-section, said cross-section has a segmented cylindrical base and an upper portion with a flat apex,
said apex forming an outer periphery ridge that extends longitudinally and at a constant diameter for the length of said screw element,



said outer periphery ridge baving an angle of twist as measured by its length that is less than 180°, and
said outer periphery ridge being shaped and sized to mesh with a corresponding adjacent teardrop screw element when said teardrop screw element and said adjacent teardrop screw element rotate in the same direction.

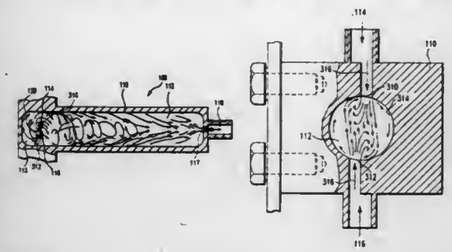
5,573,333
DEMAND RESPONSIVE, CONTINUOUS PREPARATION OF STARCH SLURRY FOR USE IN MANUFACTURING GYPSUM PRODUCTS
Donald P. Dahlman, Lakewood, Calif., assignor to National Gypsum Company, Charlotte, N.C.
Filed Aug. 22, 1994, Ser. No. 293,445
Int. Cl.[6] B01F 15/04; G05D 11/06
U.S. Cl. 366—132 37 Claims



1. A system for delivering a proper proportion of water and starch to form a slurry on a continuous basis responsive to a rate required for the production of gypsum board, comprising:
a starch supply hopper for storage of dry starch;
a mix/hold tank for combining water and starch into a slurry;
a water input controller for delivering water at an adjustable rate to the mix/hold tank;
a starch input controller for delivering starch at an adjustable rate from the hopper to the mix/hold tank;
a slurry output controller for delivering slurry at an adjustable rate and a measurable density from the mix/hold tank to a gypsum board production line; and
control means for calculating a difference between an actual slurry output density and a target slurry output density and signalling the starch input controller to adjust the starch input rate to the mix/hold tank based on the difference.

5,573,334
METHOD FOR THE TURBULENT MIXING OF GASES
Roger N. Anderson, San Jose, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.
Division of Ser. No. 984,403, Dec. 2, 1992, Pat. No. 5,523,063.
This application May 31, 1995, Ser. No. 454,762
Int. Cl.[6] B01F 3/02; 5/04
U.S. Cl. 366—162.4 3 Claims

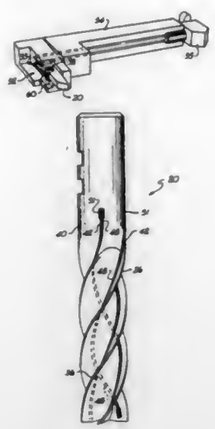
1. A method for the turbulent mixing of gases, comprising the



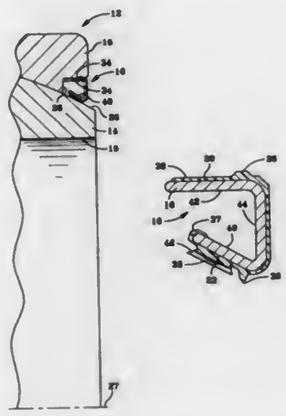
steps of:
a) causing each gas or gas mixture which is to be mixed to flow through an orifice or jet into a tubular enclosure in which said turbulent mixing occurs;
b) positioning each orifice or jet along the surface of said tubular enclosure so that a portion of the gas or gas mixture flowing from one of said orifices or jets forms a cone shaped pattern having a flow which impacts directly an overlapping portion of flow from a cone shaped pattern of a different gas or gas mixture flowing from an opposing orifice or jet, with the remaining portion of gas or gas mixture flow from each of the opposing orifices or jets, which does not overlap, continuing to flow toward a surface of said tubular enclosure, whereby a swirling action is created adjacent said surface of said tubular enclosure; and
c) causing a mixture of gases created in step b) to flow through said tubular enclosure for a distance necessary to provide a gas mixture having the desired uniformity of composition, under conditions which avoid compressible flow.

5,573,335
THIN FILM TEMPERATURE SENSING DEVICE FOR MEASURING THE OPERATING TEMPERATURE OF A CUTTING TOOL
Robert Schinazi, 750 Hunter Mill Rd., Apt. 9300e, Blacksburg, Va. 24060
Filed May 25, 1994, Ser. No. 248,733
Int. Cl.[6] G01K 1/14;13/00; B26D 5/00; B23Q 17/09
U.S. Cl. 374—141 31 Claims

1. A direct temperature sensing cutting tool for use with a machine tool, said cutting tool directly sensing and providing feedback of the temperature of its cutting environment, said cutting tool comprising:
a base body, said base body defining at least one cutting edge of said cutting tool;
at least a first protective coating generally surrounding said base body, said protective coating providing a friction reducing surface for said cutting tool;
at least one thin film temperature sensing device disposed on said base body at a distance from said cutting edge, said temperature sensing device being encapsulated within said protective coating;
an electrical connection defined through said protective coating in electrical communication with said temperature sensing device, and
wherein said cutting tool is configurable with said machine tool so that said temperature sensing device is in communication with a conversion device of said machine tool, the conversion device converting an electrical signal from said temperature sensing device to a readable temperature indication of the temperature sensed by said temperature sensing device.

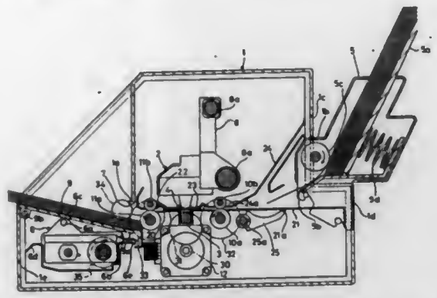


5,573,336
SEAL FOR A SPHERICAL PLAIN BEARING
Michael E. Maroney, Anderson, S.C., assignor to The Torrington Company, Torrington, Conn.
Filed Aug. 31, 1995, Ser. No. 521,769
Int. Cl.[6] F16J *15/32*
U.S. Cl. 384—146 18 Claims



1. The combination of a seal and a spherical plain bearing, the combination comprising:
a spherical member;
an outer ring or bearing housing, the outer ring or bearing housing having a bore about an axis;
an annular metallic support member having a cylindrical surface and a conical surface, the cylindrical surface being mounted within the bore of the outer ring or bearing housing such that the conical surface overlies the spherical member;
an annular elastomeric seal lip mounted on the conical surface of the metallic support member such that the elastomeric seal lip contacts the spherical member; and
an elastomeric seal body mounted on the conical surface of the metallic support member, axially inward of the elastomeric seal lip, such that the elastomeric seal body contacts the spherical member.

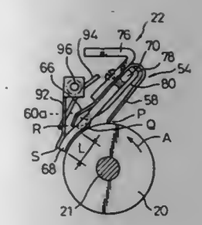
5,573,337
PRINTER WITH DEVICE FOR NOISE LEAKAGE REDUCTION
Tadashi Yasuoka, Tokyo, Japan, assignor to Seiko Precision Inc., Tokyo, Japan
Continuation of Ser. No. 217,326, Mar. 24, 1994, abandoned.
This application May 18, 1995, Ser. No. 444,843
Claims priority, application Japan, Mar. 24, 1993, 5-065589; Mar. 24, 1993, 5-065590
Int. Cl.[6] B41J *11/50;29/08*
U.S. Cl. 400—605 3 Claims



1. A printer including an opening portion for cut paper for manually feeding sheets of cut paper into a printing portion between a printing head and a platen inside the printer and continuous paper feeding means for feeding continuous paper into said printing portion to selectively use manually-fed cut paper and continuous paper for printing, characterized in that:
the printer has a manually-fed paper guide plate which during manual paper-feeding guides cut paper into the opening portion and forms the opening portion between said guide plate and a part of the printer housing;
said guide plate is mounted on said printer housing, means being provided for moving said guide plate between a distant position where it is distant from the part of said printer housing and forms said opening portion and a closed position where it abuts with the part of said printer housing and closes said opening portion; and
said continuous paper feeding means engages with said guide plate, means being provided for moving said feeding means between a first position at which said guide plate is moved into said distant position and a second position at which said guide plate is moved into said closed position.

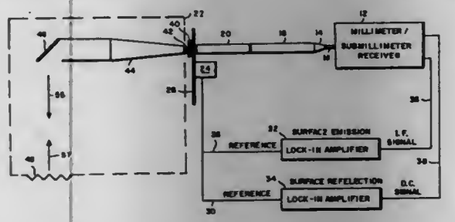
5,573,338
AUTOMATIC PAPER FEEDER AND FRAME STRUCTURE OF DOCUMENT INPUT DEVICE
Shuichi Morikawa; Masahiko Futatsuka; Satoshi Ishida; Yasunori Miyauchi, and Minoru Masuda, all of Kahoku-gun, Japan, assignors to PFU Limited, Ishikawa, and Fujitsu Limited, Kanagawa, both of Japan
Filed Aug. 24, 1995, Ser. No. 507,292
Claims priority, application Japan, Dec. 27, 1993, 5-330267; Dec. 28, 1993, 5-336651; Mar. 17, 1994, 6-95775; Apr. 8, 1994, 6-73839; May 11, 1994, 6-123009; May 13, 1994, 6-124234
Int. Cl.[6] B41J *11/26*
U.S. Cl. 400—611 24 Claims

1. An automatic paper feeder comprising:
a pick roller disposed at a position where it comes into contact with a leading end of a paper to be taken out, the pick roller having a roller axis and a predetermined conveying direction;
a separator pad disposed come into contact with said pick roller and having a width in the axial direction of said roller;
a first pair of pick springs disposed to come into contact with said pick roller;



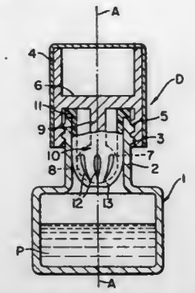
a second pick spring disposed to come into contact with said pick roller;
said first pick springs and said second pick spring being disposed to come into contact with said pick roller at different positions in said conveying direction; and
said first pick springs being disposed in both regions on the outside of the width of said separator pad in the axial direction of the roller, said second pick spring being disposed in a region of the width of said separator pad in the axial direction of the pick roller, the pick spring of said first and second pick springs located on the upstream side in said conveying direction being brought into contact with said pick roller with a force smaller than a force with which the pick spring is brought into contact with the pick roller located on the downstream side.

5,573,339
ACTIVE RADIOMETER FOR SELF-CALIBRATED FURNACE TEMPERATURE MEASUREMENTS
Paul P. Woskov, Bedford; Daniel R. Cohn, Chestnut Hill, both of Mass.; Charles H. Titus, Newtown Square; J. Kenneth Wittle, Chester Springs, both of Pa., and Jeffrey E. Surma, Kennewick, Wash., assignors to Electro-Pyrolysis, Inc., Wayne, Pa.; Massachusetts Institute of Technology, Cambridge, Mass., and Battelle Memorial Institute, Richmond, Wash.
Filed Jan. 14, 1994, Ser. No. 181,706
Int. Cl.[6] G01J *5/08;5/62*
U.S. Cl. 374—126 11 Claims



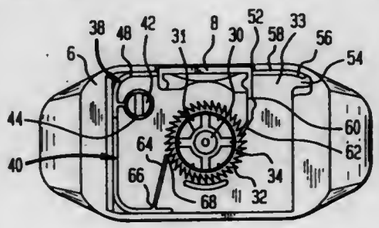
1. Radiometer system for temperature measurement comprising:
a heterodyne millimeter/sub-millimeter-wave receiver including a millimeter/submillimeter-wave continuous probe beam source for generating a probe beam towards a surface whose temperature is to be measured and toward a room temperature reference, wherein said probe beam is continuously incident on said surface or said reference, the receiver adapted to receive radiation from the surface, the radiation including a surface emission portion and a surface reflection portion including the probe beam energy reflected from the surface, the surface emission portion being related to the surface temperature and the surface reflection portion being related to the emissivity of the surface, and signal processing means for determining the surface temperature only from the radiation including both the surface emission portion and the surface reflection portion.

5,573,340
DEVICE FOR DISPENSING A LIQUID OR POWDERY PRODUCT
Jean-Louis Gueret, Paris, France, assignor to L'Oreal, Clichy Cedex, France
Filed Jan. 26, 1995, Ser. No. 377,079
Claims priority, application France, Feb. 4, 1994, 94 01265
Int. Cl.[6] A45D *34/00;40/20*
U.S. Cl. 401—126 32 Claims



1. A device for dispensing a liquid or powdery product comprising
a container for a product, the container having a neck equipped with a pouch made of a deformable elastic substance, the pouch having at least one slit that is substantially closed in an at rest position and capable of opening when subjected to a force; and
a stopper for sealing the neck of the container when the stopper is in a sealing position, the stopper being equipped with an applicator member, such that when stopper is in the sealing position the pouch houses the applicator member, the applicator member immerses in the container and the applicator member subjects a wall of the pouch to a thrust force that opens the slit.

5,573,341
COSMETIC COMPOSITION DISPENSER
Mark Iaia, West Nyack, N.Y., assignor to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Oct. 26, 1994, Ser. No. 329,569
Int. Cl.[6] A45D *40/06;40/04*
U.S. Cl. 401—172 12 Claims



1. A dispenser comprising:
a container for storing a dispensable chemical product, the container having a dispensing end and a closed end which are opposite one another and located along a longitudinal axis traversing a length of the container;
an elevator having a cross-section congruent to an internal cross-section of the container and mounted for axial movement within the container;
a rotatable shaft attached to the elevator for imparting upward movement thereto, the shaft being parallel to the longitudinal axis of the container;

a housing located below the elevator at the closed end of the container; and

a means for axially advancing the elevator within the container, the means being received within the housing and including:

a ratchet wheel with a plurality of teeth circumferentially surrounding the wheel, the wheel being orthogonally oriented and attached to an end of the shaft;

a means to rotate the ratchet wheel including a flexible arm unitarily formed as a single plastic element comprising a central area as a button and left and right wings flanking the central area, at least one of the wings being curved and the arm acting as a spring returning the button from an inwardly to an outwardly position; and

a pawl engagable with teeth of the ratchet wheel, the pawl being connected to the flexible arm.

5,573,342

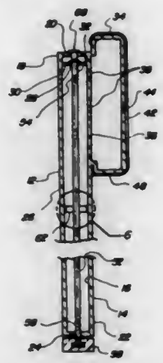
BODY LOTION APPLICATOR SYSTEM

Christine S. Patalano, 264 Fruit Hill Ave., #2, North Providence, R.I. 02911

Filed Jun. 20, 1995, Ser. No. 493,220

Int. Cl.[6] A45D *34/00;40/06*

U.S. Cl. 401—175 **1 Claim**



1. A new and improved body lotion applicator system to enable a user to conveniently apply hand cream and other skin preparations to the back and other hard-to-reach areas of the body comprising, in combination:

a reservoir in a tubular configuration with an exterior surface and an interior surface and having a circular cross-section, the reservoir having a closed upper end with a filling aperture therein and having a closed lower end with a first bearing aperture therethrough and with an intermediate extent therebetween, the reservoir also having a bearing plate interior thereof adjacent the upper end and with passages therethrough and with a second bearing aperture therethrough;

an application box secured to the exterior surface of the reservoir adjacent to the upper end, the application box including a common wall with the reservoir and formed with a plurality of feed holes extending therethrough for the passage of lotion to the application box from the reservoir, the application box also having rectangular peripheral side walls and an exterior wall remote from the common wall with a dispensing hole therethrough for the passage of lotion to the body of a user from the application box during operation and use;

a removable pad positionable over the side walls and front wall of the application box for the dissemination of lotion therethrough;

a jack screw having an upper end rotatably received in the second bearing aperture and having a lower end rotatably received in the first bearing aperture and extending through the lower end of the reservoir with a rotatable handle secured to the jack screw beneath the lower end;

a circular washer axially slidable within the reservoir and having a threaded interior received on the jack screw and having an elastomeric O-ring in sealing contact around the periphery of the washer and movable along the interior surface of the reservoir; and

a fill cap removably secured by a flexible strap with respect to the filling aperture in the upper end of the reservoir for allowing the addition of lotion to the upper extent of the reservoir above the washer for being dispensed through the fill holes of the common wall and then the dispensing hole of the application box and pad during operation and use.

5,573,343

HYDROSTATIC RELEASE DEVICE

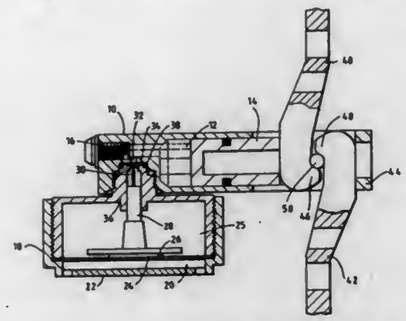
Paul D. Davis, and Thomas S. Floate, both of Southhampton, United Kingdom, assignors to Simon Cash-Read, Chalvington, United Kingdom

Filed Apr. 6, 1995, Ser. No. 418,003

Claims priority, application United Kingdom, Apr. 7, 1994, 9406886

Int. Cl.[6] B63B *22/14;23/70*

U.S. Cl. 403—31 **13 Claims**



1. A release device comprising a reciprocable member, a chamber containing liquid, a release element, and a pressure sensor, the reciprocal member having at one end thereof a piston head contacting the liquid in the chamber and at the other end a surface bearing against the release element to prevent operation thereof; the liquid filled chamber including a normally closed opening; the pressure sensor being adapted on detecting a predetermined pressure to open the normally closed opening thereby to release liquid from the liquid-filled chamber, allow movement of the reciprocable member, and allow operation of the release element.

5,573,344

HIGH DAMPING COMPOSITE JOINT FOR MECHANICAL VIBRATION AND ACOUSTIC ENERGY DISSIPATION

Roger M. Crane, Arnold; Douglas C. Loup, Pasadena, both of Md.; John W. Gillespie, Jr., Hockessin, Del.; Stephen M. Andersen, Fremont, Calif., and Daniel D. Coppens, Newark, Del., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 17, 1994, Ser. No. 323,948

Int. Cl.[6] F16L *13/10*

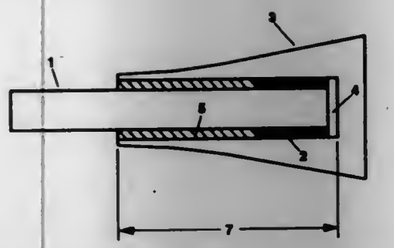
U.S. Cl. 403—179 **28 Claims**

1. A high damping joint, comprising:

a coupling having a length, a front end, a back end and a cavity, said cavity having a lengthwise side surface area and a crosswise back surface area, said cavity commencing at said front end and terminating at said crosswise back surface area;

a structural extremity fitting within said cavity so as to provide for an adjacent region and a clearance, said adjacent region being between said structural extremity and said lengthwise side surface area, said clearance being between said structural extremity and said crosswise back surface area, said clearance being shaped so as to permit displacement of said structural extremity toward said crosswise back surface area; and

bonding material in said adjacent region, said adjacent region including a first segment and a second segment which are in lengthwise series, said bonding material including adhesive material and viscoelastic material, said adhesive material occupying said first segment, said viscoelastic material occupying said second segment.



5,573,345

CONNECTION OF STRUCTURAL COMPONENT PARTS IN ADJUSTING DEVICES FOR SEATS, INPARTICULAR FOR MOTOR VEHICLES SEATS

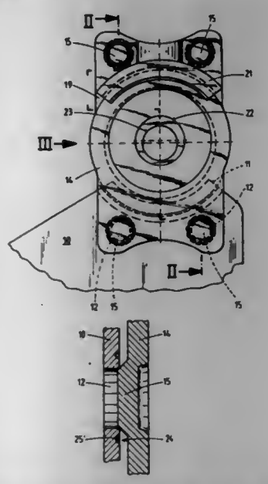
Heinz Voss, Leverkusen; Dirk Angermann, Cologne; Harald Griebe, Rockenhausen, and Hans-Juergen Honecker, Remscheid, all of Germany, assignors to Keiper Recaro GmbH & Co., Remscheid, Germany

Filed Nov. 8, 1994, Ser. No. 336,171

Claims priority, application Germany, Nov. 22, 1993, 43 39 508.2

Int. Cl.[6] B25G *3/34;* **F16B** *11/00;* **B60N** *2/02;* **B23K** *9/00*

U.S. Cl. 403—271 **21 Claims**



1. A connection assembly in adjusting devices for seats, wherein parts to be connected are welded to one another, comprising:

a structural first component part having a beveled projection on one side of said component part, said beveled projection having a first cross-section; and

a structural second component part provided with a hole receiving said beveled projection of said first component part, said hole having a second cross-section geometrically similar to said first cross-section,

at least one of said first component part and said second component part being provided, in a region about said beveled projection and said hole, with collector means including a collecting pocket for receiving material displaced from at least one of said first component part and said second component part during a capacitor impulse welding process, said collecting pocket being a substantially annular depression disposed in said second component part, said depression surrounding said bole and facing said first component part.

5,573,346

TUBE AND CONNECTOR COMBINATION

David Goodwin, Surrey, United Kingdom, assignor to Kee Klamps Limited, London, England

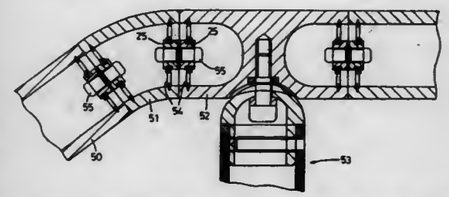
PCT No. PCT/GB93/01633, § 371 Date Feb. 13, 1995, § 102(e) Date Feb. 13, 1995, PCT Pub. No. WO94/04778, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 3, 1993, Ser. No. 381,905

Claims priority, application United Kingdom, Aug. 15, 1992, 9217423

Int. Cl.[6] F16B *7/18*

U.S. Cl. 403—282 **23 Claims**



1. A tube and connector combination comprising a tube and a connector for insertion in an end of the tube, wherein the tube is internally splined and the connector comprises: a substantially planar disc-like cutter for insertion in the end of the internally splined tube; abutment means offset from the center of the cutter whereby application of torque to the abutment means causes the cutter to rotate about a major axis passing through the center of the cutter, and at least three protruding tooth formations at the radially outer edge of the cutter, each formation having a cutting edge which faces radially outwards and extends substantially in a circumferential direction relative to the major axis of the cutter, whereby rotation of the cutter about said major axis causes the tooth formations to cut into the internal splines of the tube.

5,573,347

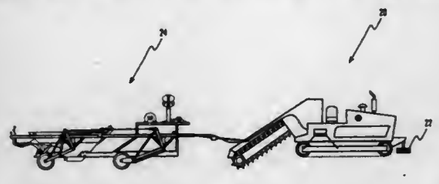
DRAIN PREPARATION APPARATUS AND METHOD OF USING SAME

Robert K. Miles, 2182 Fort Jackson Rd., and C. Ray Miles, 1505 Portercross Rd., both of Lugoff, S.C. 29078

Filed May 31, 1994, Ser. No. 250,903

Int. Cl.[6] F16L *1/02;* **E02B** *11/00*

U.S. Cl. 405—43 **38 Claims**



1. An apparatus for preparing a drain from a trench in a single pass through the trench by lining the trench with an unrolling

length of filter fabric, a first layer of bulk material, a drain pipe and a second layer of bulk material, the apparatus comprising:

a fabric guide chute for guiding the unrolling filter fabric into the trench, the filter fabric being positioned in the trench adjacent the bottom and one side wall thereof;

a pipe chute, having an exit portion, for laying the drain pipe on the first layer of bulk material in the trench; and

a hopper, said hopper being provided with the bulk material therein and having a first opening in a forward section of the hopper through which the first layer of bulk material is poured into the trench onto the filter fabric, and having a second opening in a rearward section of the hopper through which the second layer of bulk material is poured into the trench onto the drain pipe.

5,573,348

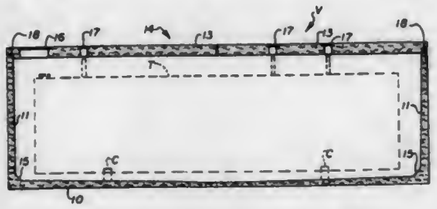
STRUCTURAL MEMBERS

J. P. Pat Morgan, P.O. Box 1089, St. George, Utah 84771

Continuation-in-part of Ser. No. 58,483, May 6, 1993, Pat. No. 5,391,019, which is a continuation-in-part of Ser. No. 757,813, Sep. 11, 1991, Pat. No. 5,209,603. This application Dec. 13, 1993, Ser. No. 166,244

Int. Cl.[6] B65G *5/00*

U.S. Cl. 405—52 **23 Claims**



1. An improved structural member having a wall comprised of a cement-based infiltrated fiber composite material, the improvement comprising;

a structural member having a cement-based infiltrated fiber composite wall section of predetermined length and thickness shaped to enclose or support an object and formed of

a preplaced uniform continuous mass of individual interlocked fibers having a fiber volume density in the range of from about 2% to about 25% subsequently completely infiltrated by a cementious matrix mixture by weight of from about 30% to about 90% cement selected from the group consisting of Portland cement and blended cement, from about 10% to about 20% fly ash, water in a ratio of water to the sum of cement and fly ash of from about 0.20 to about 0.45, and a water-reducing superplasticizer in a ratio of superplasticizer to the sum of cement and fly ash of from 0 to about 40 ounces per 100 pounds of the sum of cement and fly ash.

5,573,349

SEDIMENT DIKE WITH ABSORBER APPARATUS

John A. Paoluccio, P.O. Box 1316, 5038 Salida Blvd., Salida, Calif. 95368

Filed Oct. 20, 1994, Ser. No. 328,112

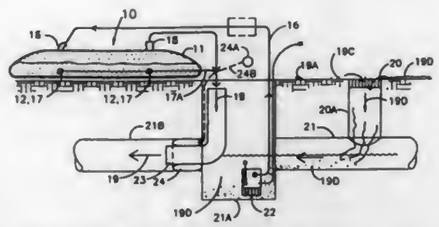
Int. Cl.[6] E02B *13/00*

U.S. Cl. 405—52 **31 Claims**

1. Apparatus for decontamination of water disposed within a storm drain having an associated inlet and an associated outlet, which comprises:

a sump pump disposed within the associated storm drain;

a filtration assembly disposed at grade elevation above the storm drain, said filtration assembly having an inlet communicating with said sump pump to receive liquid from the associated storm drain, said filtration assembly having an outlet communicating with the outlet of the associated storm drain, said outlet of said filtration assembly having a seal dimensioned and configured for sealing engagement with the associated outlet of the associated storm drain;



said filtration assembly including a flexible outer envelope, means for directing a liquid into said outer envelope, means for directing a liquid out of said envelope, said means for directing said liquid out of said envelope including an axial section of perforate duct and means for absorbing contaminants disposed around said axial section of perforate duct, said means for absorbing and said axial section of perforate duct being disposed within said outer envelope.

5,573,350

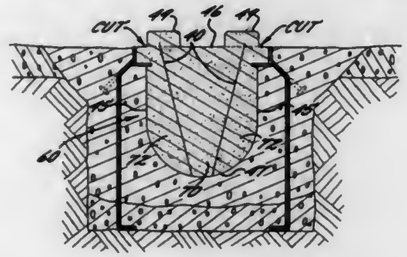
METHOD FOR CUTTING COMPLEXLY SHAPED FOAMED PLASTIC BODIES FROM A WORKPIECE AND FOAM BODY PRODUCTS

Lannie L. Stegall, Versailles, Ky., assignor to ABT, Inc., Troutman, N.C.

Filed Jul. 13, 1994, Ser. No. 274,627

Int. Cl.[6] E02B *5/00*

U.S. Cl. 405—119 **4 Claims**



1. A plurality of sets of foamed plastic form bodies, each set of foamed plastic form bodies comprising:

a plurality of elongate form bodies of predetermined shapes adapted for assembly into an elongate drain form, each elongate form body having a top surface and an opposed bottom surface, each elongate form body also having a substantially identical length and width and substantially matching sidewall surfaces in profile;

each elongate form body having been cut from a portion of a foamed plastic workpiece as one of a pair of complementary shaped and sized form bodies cut from the foamed plastic workpiece, each elongate form body having an equally sloped bottom surface relative to the respective top surface;

each of the elongate form bodies also having correspondingly sloped bottom surfaces such that the longitudinal profile of each form body is taller at one end and shorter at the other and wherein the collective end profiles of the set of form bodies vary in height from a predetermined tallest height to a predetermined shortest beight, and, with the exception of the tallest and the shortest end profiles, each end profile is substantially matching in height with an end profile on another form body; and wherein

the heights of each of the taller and shorter end profiles, respectively, on each form body are complementary to the heights of the shorter and taller end profiles, respectively, of another of the form bodies of the plurality of sets of form bodies such that the sums of the heights of all of the complementary end profiles are substantially the same.

5,573,351

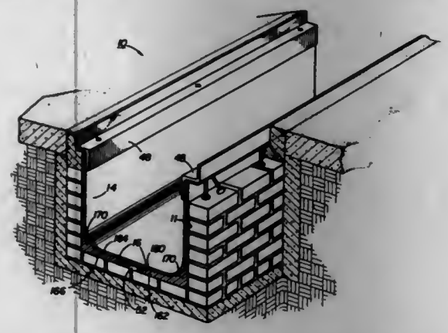
METHOD AND APPARATUS FOR RELINING OR FORMING A TRENCH

John V. Beamer, Atlanta, Ga., assignor to Hoosier Group, L.L.C., Atlanta, Ga.

Filed Aug. 9, 1994, Ser. No. 287,654

Int. Cl.[6] E02B *5/00*

U.S. Cl. 405—119 **11 Claims**



1. A trench liner system for lining a trench having at least two walls and a bottom, comprising:

a. primary liner means, with an interior surface and an exterior surface, extending along the length of the trench;

b. means for separating the primary liner means from the trench walls, having a first surface open to the interior of the trench and an opposed second surface along the length of the trench;

c. means disposed between the primary liner means and the separating means for spacing the exterior surface of the primary liner means from the first surface of the separating means, wherein the primary liner means and the separating means are allowed to expand and contract independently from each other; and

d. means for holding the primary liner means and the separating means to the trench walls.

5,573,352

UNITARY DOOR ROUTING TEMPLATE

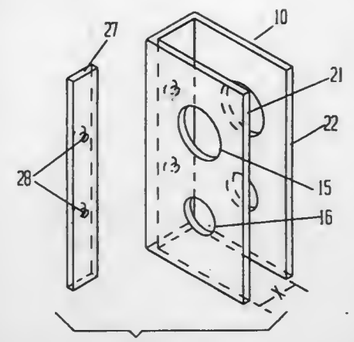
Joseph Matadobra, Upland, Calif., assignor to Trimco Finish, Inc., Santa Ana, Calif.

Filed Aug. 8, 1994, Ser. No. 287,490

Int. Cl.[6] B27C *5/10*; B23B *49/02*; B23C *9/00*

U.S. Cl. 409—132 **16 Claims**

1. A router template combination of a one-piece door router template comprising a channel-shaped plastic member having two elongated, opposing sides having planar, unobstructed interior surfaces integrally formed with and extending generally perpendicular to an end plate having a mono-planar inside surface and including at least one end plate spotting hole through said end plate; at least one router guide hole having a minimum diameter of at least about one inch in at least one of said elongated, opposing, planar surfaces for guiding the collar of a router bit, and an auxiliary mono-planer spacer plate of a predetermined thickness received within said template against the mono-planar surface of said end plate with a spacer plate spotting hole through said spacer plate aligned with said end plate spotting hole.



9. A method for forming at least one opening for mounting hardware in a door comprising: placing over the edge of an uncut door a one-piece router template comprising an end plate having a mono-planar surface to engage the edge of said door and at least one end plate hole therethrough, and dependent therefrom, two elongated, planar, unobstructed, opposing side plates which engage the front and back sides of said door proximate to the edge thereof; said opposing side plates having at least one router guide hole having a minimum diameter of about one inch; locating the position of said at least one router guide hole relative to the edge of said door by inserting or removing an auxiliary spacer plate within said template and bearing against said substantially mono-planar surface of said end plate; plunging a router bit through at least said one hole in said side of said template and into said door and guiding said router against said router guide hole to cut in said door an opening defined by said at least one router guide hole.

5,573,353

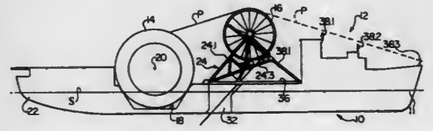
VERTICAL REEL PIPE LAYING VESSEL

Carlos E. Recalde, Irvine, Calif., assignor to J. Ray McDermott, S.A., New Orleans, La.

Filed May 24, 1994, Ser. No. 248,324

Int. Cl.[6] F16L *1/18*

U.S. Cl. 405—168.3 **13 Claims**



1. A vertical reel pipelaying vessel, comprising:

a vertical pipe storage reel rotatably positioned aft of midship for rotation about a horizontal axis;

a vertical aligner wheel positioned forward of said reel for receiving pipe from said storage reel and for rotation about a horizontal axis;

support means supporting said aligner wheel on said vessel for rotational movement about said axis of said wheel;

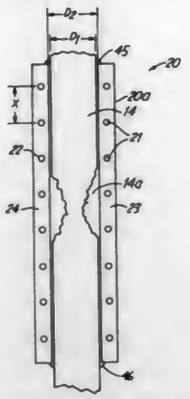
a moon pool positioned forward of said reel;

direction means secured to said support means and being extensible for moving said aligner wheel to allow a pipe take-off forward of said axis of said aligner wheel, whereby the angle of pipe take-off from said aligner wheel may vary between almost vertical for deep depth pipe laying to less than perpendicular for shallower depths.

5,573,354
TIMBER PILE REPAIR SYSTEM

James L. Koch, Forest Lake, Minn., assignor to Restoration Technologies, Inc., Minneapolis, Minn.

Filed Feb. 8, 1995, Ser. No. 385,652
Int. Cl.[6] E02D 5/06
U.S. Cl. 405—216 15 Claims



1. A method for repairing bridge supports with a pile splice comprising the steps of:

removing a section of decayed wood from a portion of a wood pile supporting a bridge to leave a top undecayed region and a bottom undecayed region of the wood pile in substantially cylindrical shape and an intermediate region with a substantial portion of the wood pile removed;

fastening a first rigid semi-cylindrical pile-protector and reinforcer-member having a flange with a plurality of openings therein and an interior surface to a first side of the wood pile, with a first end of the first semi-cylindrical pile protector and reinforcer extending onto a first side of the top undecayed region of the wood pile and the a second end of the first semi-cylindrical pile protector and reinforcer extending onto a first side of the bottom undecayed region of the wood pile;

fastening a second semi-cylindrical pile-protector and reinforcer-member having a flange with a plurality of openings therein and an interior surface to a second side of the wood pile, with a first end of the first semi-cylindrical pile protector and reinforcer extending onto a second side of the top undecayed region of the wood pile and a second end of the first semi-cylindrical flange extending onto a second side of the bottom undecayed region of the wood pile, with the flanges of the first semi-cylindrical pile protector and reinforcer and the second semi-cylindrical pile protector and reinforcer oppositely disposed and spaced from one another;

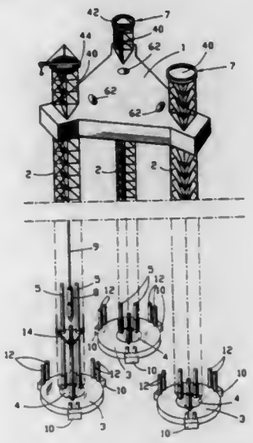
squeezing a first portion of the first semi-cylindrical pile-protector and reinforcer-member and the second semi-cylindrical flanged pile-protector and reinforcer-member around the wood pile through a plurality of compression members extending through the flanges until a top end of the first semi-cylindrical flanged pile-protector and reinforcer-member and a top end of the second semi-cylindrical flanged pile-protector and reinforcer-member firmly engage but do not crush the top undecayed region of wood in the wood pile and squeezing a second portion of the first semi-cylindrical protector and reinforcer-member and the second semi-cylindrical flanged pile-protector and reinforcer-member around the wood pile through a plurality of further compression members extending through the flanges until a bottom end of the first semi-cylindrical flanged pile-protector and reinforcer-member and a bottom end of the second semi-cylindrical flanged pile-protector and reinforcer-member firmly engage but do not crush the bottom region of undecayed wood in the wood pile to thereby simultaneously form a mechanical link around the undecayed top and bottom portions of the wood pile to resist flexing and torsional forces on the wood pile and a cavity between the wood pile and the pile-protector and reinforcer-members;

injecting an epoxy filler under sufficient pressure through an opening in the first semi-cylindrical pile-protector and reinforcer-member and into the cavity to thereby fall the cavity with epoxy to form a plug to support the wood pile during a compression loading of the wood pile so that the wood pile is strengthen from torsional and flexing forces by the reinforcer-members and from compression by the plug.

5,573,355
OFFSHORE OIL DRILLING AND PRODUCING PLATFORM PROVIDED WITH IMPROVED MEANS FOR ANCHORING IN THE SEA BED

Pierre-Armand Thomas, Puteaux, France, assignor to TECHNIP Geoproduction, Paris, France

Filed Aug. 16, 1995, Ser. No. 515,621
Claims priority, application France, Aug. 30, 1994, 94-10432
Int. Cl.[6] E02B 17/02
U.S. Cl. 405—227 14 Claims



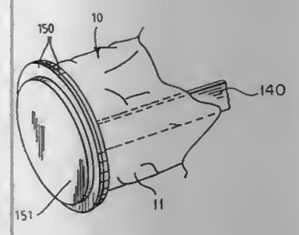
1. Offshore oil drilling or producing platform comprising legs each provided with a foot adapted to rest on the sea bed, a hull carried by said legs, each of said legs having walls which define a space opening onto the corresponding foot, piles within each space for anchoring the respective leg carried by said foot, support means in the upper part of each leg in vertical alignment with said piles within said space, and a device supported by said support means for driving said piles into the ground below said sea bed.

5,573,356
FLEXIBLE CARRIER WITH REINFORCING RIBS FOR USE IN AN AIR TUBE CONVEYOR

Fraser Henderson, Victoria, Australia, assignor to Air Tube Conveyors Limited, West Midlands, England

Filed Jan. 14, 1994, Ser. No. 181,055
Int. Cl.[6] B65G 51/06
U.S. Cl. 406—186 3 Claims

1. A carrier for an air tube conveyor having an internal diameter, said carrier comprising a body having a cylindrical side wall and end walls, the body being of a flexible material with longitudinally extending spaced reinforcing ribs, at least one end wall of the body comprising at least one circular sheet secured across the side wall of the body and including at least one accelerator ring of flexible material, the at least one accelerator ring having a diameter slightly

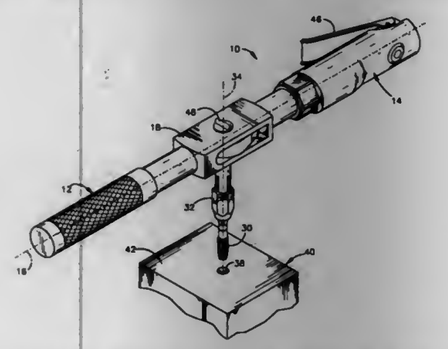


greater than the internal diameter of the air tube conveyor, each end wall comprising a disc of substantially non-flexible material secured to at least one larger disc of flexible material, and the at least one larger disc having a periphery defining the accelerator ring.

5,573,357
PORTABLE, HANDHELD, POWER TOOL

David A. Miriles, Westlake, Ohio, assignor to Boar Tools, Inc., North Olmsted, Ohio

Filed Apr. 27, 1995, Ser. No. 429,947
Int. Cl.[6] B23B 45/04;45/12; B23G 1/16
U.S. Cl. 408—1 R 14 Claims



1. A portable, handheld, power tool for threading an opening in a workpiece with a tap, said power tool comprising:

a housing;

a first longitudinally extending handle having an inner end portion connected with said housing and an outer end portion which is spaced from said housing, said first handle having a manually engageable outer side surface with a longitudinal central axis extending through said housing and through said inner and outer end portions of said first handle, said first handle extends away from said housing to said outer end portion of said first handle in a first direction which is parallel to the longitudinal central axis of said manually engageable outer side surface of said first handle;

a second longitudinally extending handle having an inner end portion connected with said housing and an outer end portion which is spaced from said housing, said second handle having a manually engageable outer side surface with a longitudinal central axis extending through said housing and through said inner and outer end portions of said second handle, said second handle extends away from said housing to said outer end portion of said second handle in a second direction which is opposite to the first direction and is parallel to the longitudinal central axis of said manually engageable outer side surface of said second handle;

chuck means for holding a tap, said chuck means being connected with and rotatable relative to said housing about an axis which extends transverse to said longitudinal central axes of said manually engageable outer side surfaces of said first and second handles;

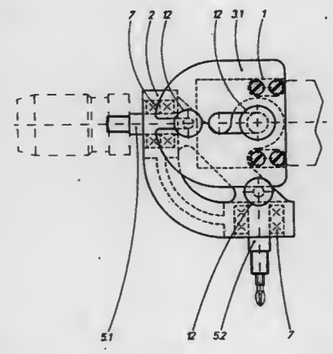
a motor is disposed within said first handle and is enclosed by said manually engageable outer side surface of said first handle, said motor includes a rotor which is rotatable about an axis extending parallel to the longitudinal central axis of said manually engageable outer side surface of said first handle; and

a control member connected with said motor and actuatable to effect operation of said motor.

5,573,358
DUAL TOOL-CARRIER FOR HAND DRILLS

Walter Gobbers, Hirschhaldestr. 3, 89542 Herbrechtingen, and Dieter Gobbers, Steigstr. 49, 89520 Heidenheim, both of Germany

Filed Sep. 8, 1994, Ser. No. 302,171
Claims priority, application Germany, Sep. 9, 1993, 9313602 U
Int. Cl.[6] B23B 45/00
U.S. Cl. 408—35 8 Claims



1. Dual tool-carrier for hand drills with the following features:

two shafts are provided each for mounting one tool;

the shafts form an angle with one another which swivels the tool not being used out of the working area;

a fixture is provided, said fixture frictionally connects alternately the shafts with the driving shaft of the drill;

wherein the improvement comprises:

the shafts and the driving shafts of the drill form a plane;

the two shafts are provided and can be rotated about an axis vertical to said plane;

a driver is provided connected to the driving shaft fixed in their rotational movement;

a bell-shaped sleeve is provided, said bell-shaped sleeve is firmly connected to the machine housing;

a swivel bearing is provided driven by the bellshaped sleeve;

the two shafts are supported in the swivel bearing;

at least one coulisse guide is provided for the swivel bearing, said coulisse bearing guides the swivel movement of the swivel bearing so that the respective shaft in the operating position is connected to the drive fixed in their rotational movement; and,

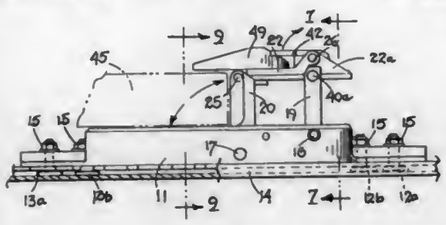
a mechanical catch is provided, said catch prevents unintentional swivelling of the swivel bearing.

5,573,359

CARGO SECURING DEVICE

Edward Moradians, Canoga Park, Calif., assignor to Ancra International Corporation, Hawthorne, Calif.

Filed May 8, 1995, Ser. No. 438,052
Int. Cl.[6] B63B *25/22*
U.S. Cl. 410—69 **6 Claims**



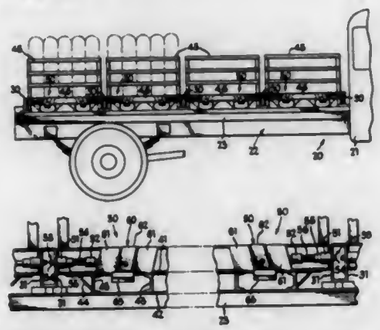
1. A device for securing cargo on the floor of a vehicle comprising:
a base frame,
means for removably securing said base frame to the vehicle floor,
opposing front and rear wall portions pivotally mounted on said base frame,
a plate interconnecting the tops of said front and rear wall portions, said plate being pivotally attached to said wall portions,
dog member means mounted on said plate for restricting the movement of cargo,
spring means for urging said front and rear portions and said plate towards a retracted flat position,
means for retaining said front and rear wall portions and said plate in an upright position against the urging of said spring means comprising a pair of locking pins, said plate and said rear wall portions having opposing channels into which said locking pins are fitted in a manner so as to form a locking bridge between said plate and said rear wall portion, and
means for actuating said retaining means to permit said spring means to drive said front and rear portions and said plate to said retracted flat position.

5,573,360

PALLET LATCHING MECHANISM

Richard C. Bennett, 710 - 2 Diamond Lake Rd., Mundelein, Ill. 60060

Filed Mar. 16, 1995, Ser. No. 405,516
Int. Cl.[6] B60P *7/08*
U.S. Cl. 410—84 **8 Claims**



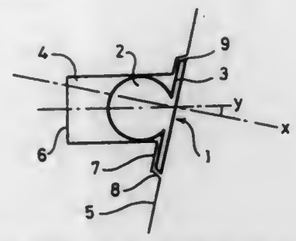
1. A latching mechanism to retain a pallet on a support having a keeper, comprising a bolt movable substantially horizontally between a latching position in the keeper and an unlatching position outside the keeper, spring means for urging said bolt to the latching position thereof, an actuator movable substantially upwardly and substantially downwardly, a link mounted for rotation about a fixed point, first coupling means including a slot in said link and a pin passing therethrough and attached to said bolt for coupling said bolt to said link, second coupling means for coupling said actuator to said link, and engaging means on said actuator for being engaged by the fork of a lift truck for moving said actuator substantially upwardly to move said bolt to the unlatching position thereof.

5,573,361

SOCKET CLOSURE ARRANGEMENT FOR A SOCKET IN AN ARTICLE

Brian D. Dyson, Thorpe Bay; Martin Burgess, Beckenham, and Ian J. Fullbrook, Billericay, all of England, assignors to Ford Motor Company, Dearborn, Mich.

Filed May 31, 1994, Ser. No. 251,063
Claims priority, application United Kingdom, Jun. 3, 1993, 93/11489
Int. Cl.[6] F16B *19/00*
U.S. Cl. 411—373 **1 Claim**



1. A closure arrangement in combination with an article, comprising:
a socket of circular cross-section formed in the article, the socket having a longitudinal axis and having an open end;
a plug inserted into said socket open end and having spherical surfaces formed thereon rotatably engageable within said socket to permit rotative orienting movement of said plug with respect to said socket about said socket longitudinal axis;
a disk-like flange attached substantially tangentially to said plug and overlying said socket open end upon insertion of said plug into said socket; and
a surface recess formed at least partly around the open end of the socket, and having an axis at an angle to said socket longitudinal axis, the recess substantially receiving said disk-like flange.

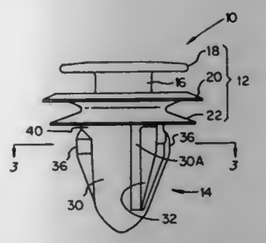
5,573,362

FASTENER INCLUDING ELASTIC LEGS FOR RETAINING THE FASTENER IN A MOUNTING HOLE

Goro Asami, Machida, and Eiji Ueno, Utsunomiya, both of Japan, assignors to NIFCO Inc., Japan

Filed Jun. 7, 1995, Ser. No. 487,688
Claims priority, application Japan, Aug. 16, 1994, 6-192581
Int. Cl.[6] F16B *19/00;37/04*
U.S. Cl. 411—509 **16 Claims**

1. A fastener having a head portion for abutting a mounting panel in which a mounting hole is formed, and a leg portion extending from said head portion for insertion into the mounting hole, said leg portion comprising:
a leg plate which extends from said head portion, said leg plate having a distal end which is tapered, and opposing transverse sides that extend along a longitudinal direction of the leg plate;
elastic legs integrally connected to the transverse sides of the leg plate, and circumferentially projecting from said transverse sides of said leg plate such that hollow portions are formed between said elastic legs and said leg plate, wherein distal ends of said elastic legs are integral with said leg plate to form a conical insertion portion, and proximal ends of said elastic legs are connected to said head portion; and
pawl portions protruding from outer peripheral surfaces of said elastic legs, said pawl portions having outer curved surfaces having curvatures that are larger than a curvature of the mounting hole of the mounting panel, wherein said elastic legs project circumferentially past an axial center of said leg plate and project past a cutting line which divides said leg plate in half in a transverse direction thereof, said pawl portions reaching a maximum protrusion such that the protrusions point-contact an inner peripheral surface of the mounting hole of the mounting panel upon insertion into the mounting hole, whereby frictional force with the mounting hole is reduced-and insertion force is reduced.

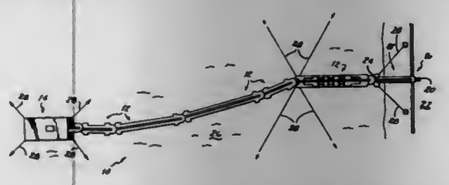


5,573,363

FLOATING CONVEYOR SYSTEM

Jochen Rohr, 1 Field La., Cincinnat, Ohio 45208

Filed Jun. 21, 1994, Ser. No. 262,938
Claims priority, application Germany, Jun. 22, 1993, 9309251 U
Int. Cl.[6] B63B *27/00;* **B65G** *67/60*
U.S. Cl. 414—138.9 **16 Claims**



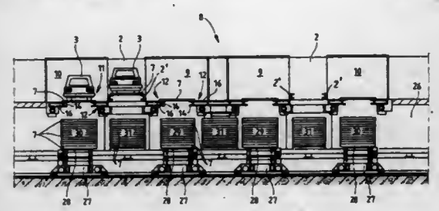
1. A system for transporting material from a floating dredge to a land based station, the system comprising:
a plurality of individual serially connected conveyor units, each said unit having a conveyor for transporting the material thereon;
a coupler between adjacent said conveyor units, each said coupler cardanically joining said adjacent conveyor units to permit independent movement of said adjacent conveyor units in first and second planes which are perpendicular to each other;
a catwalk on each said conveyor unit, said catwalk including an elevated platform section at each end of said conveyor unit, each said elevated platform section mating with an elevated platform section of an adjacent conveyor unit to provide a safe walkway on and between said conveyor units; and
at least one separate float on each said conveyor unit for floating said unit upon water.

5,573,364

AUTOMATED PARKING SYSTEM FOR MOTOR VEHICLES

Volker R. Schneider, Siegen; Karl Schepp, Kreuztal, and Hans-Peter Kobelitz, Cologne, all of Germany, assignors to Siemag Transplan GmbH, Netphen, Germany

Filed Nov. 14, 1994, Ser. No. 338,067
Claims priority, application Germany, Nov. 12, 1993, 43 38 717.9
Int. Cl.[6] E04H *6/12*
U.S. Cl. 414—234 **6 Claims**



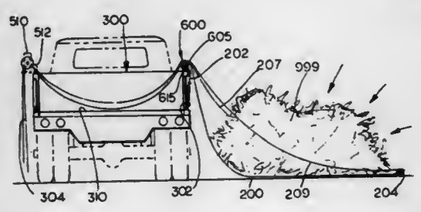
1. A parking system for motor vehicles, comprising:
a plurality of parking spots arranged as a multi-level rack storehouse;
at least one parking station comprising a parking box for receiving a motor vehicle to be transported to an empty one of the plurality of parking spots;
at least one unparking station comprising an unparking box for receiving a motor vehicle to be transported thereto from an occupied one of the plurality of parking spots for discharging same; and
means for transporting motor vehicles from the parking box to the plurality of parking spots and from the plurality of parking spots to the unparking box; wherein the parking box and the unparking box each includes an arrangement for handling empty pallets on which the motor vehicles are received, each handling arrangement comprising a pallet-receiving device including two pallet supports extending in a longitudinal direction of a motor vehicle and means for moving the two pallet supports toward and away from each other in a direction transverse to the longitudinal direction, and a displaceable pallet-stacking device for delivering the empty pallets into the parking box and for removing the empty pallets from the unparking box,
wherein the pallet stacking device comprises lift means, and
wherein the lift means comprises a rotatable frame.

5,573,365

TARP LOADER AND RELATED METHOD

Daniel T. Michalski, 2270 W. Laskey Rd., Toledo, Ohio 43613

Filed Apr. 28, 1995, Ser. No. 431,914
Int. Cl.[6] B65G *65/00*
U.S. Cl. 414—417 **16 Claims**



16. A loading device for moving bulk material from an external position into an open-top receptacle, said receptacle having a pair of opposing sides extending between opposed ends, said device comprising:

an elongate roller extending along and generally coextensive with one of said sides;

a flexible sheet for loading and covering said material, said sheet having a width generally coextensive with said sides of said receptacle, said sheet having a length measured transverse to said sides and extending between a leading edge and a trailing edge;

means for releasably securing said trailing edge of said sheet to one of said sides of said receptacle;

means for driving said roller in a first direction to wrap said sheet thereupon whereby entrapping said bulk material below said sheet into said receptacle; and,

means for driving said roller in a second direction for causing said sheet to unwrap therefrom.

5,573,366

HYDRAULIC DEVICE WITH SYNCHRONOUSLY OPERATING JACKS

Sjoerd Meijer, No. 894, Oude Bildtdijk, 9079 NG St.Jacobiparochie, Netherlands

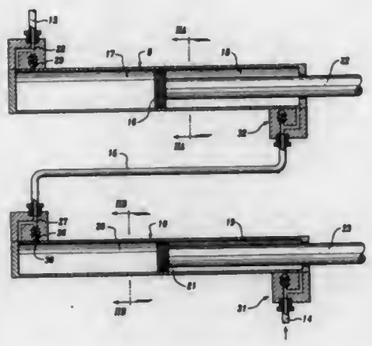
PCT No. PCT/NL93/00077, § 371 Date Aug. 9, 1994, § 102(e) Date Aug. 9, 1994, PCT Pub. No. WO93/20354, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 29, 1993, Ser. No. 284,565

Claims priority, application Netherlands, Mar. 30, 1992, 9200589

Int. Cl.[6] F15B *11/22*

U.S. Cl. 414—664 **10 Claims**



1. Hydraulic device comprising at least two cylinder-piston assemblies (**8**, **10**) which are each of the double-action type with a front chamber (**18**, **19**) and a rear chamber (**17**, **20**) on either side of a piston (**16**, **21**) and wherein the chambers of the cylinder-piston assemblies (**8**, **10**) are connected in series in a hydraulic control circuit such that the front chamber (**20**) of the first assembly (**10**) has a direct connection (**15**) to the rear chamber of the second assembly (**8**), wherein at least one (**10**) of the cylinder-piston assemblies is provided with valve means comprising a non-return valve and accomodated in a bypass (**27**) bypassing a piston (**21**) of said first assembly (**10**) when the piston of said first assembly is at the top of its stroke and wherein effective piston surfaces are at the same realitive positions in the chambers mutually connected by the direct connection and wherein the piston (**21**) of said first assembly actuates the valve means thereby opening the bypass (**27**) when the piston (**21**) is situated close to the direct connection, charecterized in that the non return valve (**26**) is arranged such that it permits flow through the bypass (**27**) towards the direct connection (**15**) and in that associated with further valve means (**30**) for opening the bypass (**27**).

5,573,367

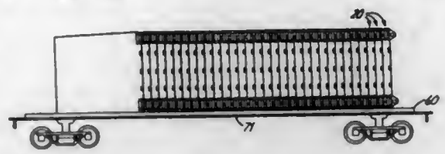
NESTABLE CONTAINER FOR HAULING MATERIALS

Stewart E. Erickson, Hudson, Wis., and Daniel J. Halvorson, Eagan, Mich., assignors to SEEC, Inc., Mendota Heights, Minn.

Filed Nov. 16, 1994, Ser. No. 340,836

Int. Cl.[6] B65G *67/02*

U.S. Cl. 414—786 **8 Claims**



1. A method of hauling materials, comprising:

a) providing a plurality of nestable containers at a collection site, each container having a bottom wall, a plurality of sidewalls extending upwardly and being sloped outwardly from the bottom wall to define an interior of the container and each sidewall having an upper perimeter defining an opening that is larger than the bottom wall, a lifting member attached to at least one of the sidewalls, the lifting member having a fitting for engaging a crane and a flange for engaging a vertical wall of a rail car, wherein the bottom wall, sidewalls and lifting member of each container are configured so that the container may be substantially received in another similar container;

b) filling the containers with materials at a collection site;

c) placing the containers in a majority of the rail cars of a train such that the flange rests on an upper surface of a vertical wall of one of said rail cars;

d) transporting the containers in the rail cars to a processing site located remotely from the collection site for at least a distance on the back haul leg of a rail route;

e) lifting the containers out of the rail cars by engaging the fittings of the lifting members with a crane and emptying the containers at the processing site;

f) nesting the empty containers at the processing site so that several empty containers may be carried on a single rail car; and

g) hauling the nested empty nestable containers on a minority of the rail cars of the train and non-waste material on a majority of the rail cars of the train back to the collection site.

5,573,368

COMMISSIONING DEVICE

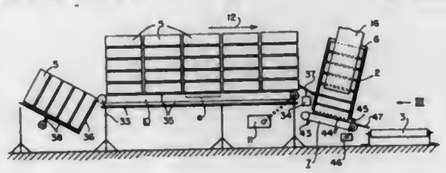
Karl Freudelsperger, Hart bei Graz, Austria, assignor to Knapp Logistik Automation Gesellschaft M.B.H., Hart bei Graz, Austria

Filed Mar. 28, 1995, Ser. No. 411,318

Claims priority, application Austria, Mar. 28, 1994, 666/94

Int. Cl.[6] B65G *59/06*

U.S. Cl. 414—795.8 **26 Claims**



1. A commissioning device comprising:

a conveying means;

a plurality of shift-out magazines disposed along said conveying means and arranged to accommodate items in stacked relationship, said shift-out magazines including insert spaces for introduction of said items in item stacks and shift-out spaces into which said item stacks are transferred from said insert spaces;

a shifting device associated with the shift-out spaces of said shift-out magazines and arranged to shift the items accommodated in said shift-out spaces individually from a respective one of the shift-out spaces onto the conveying means;

said conveying means arranged to collect collectives of items shifted out of the shift-out magazines according to composition orders of individual commissions and delivering said collectives of items;

an item stack throughput storage means provided for each shift-out magazine upstream thereof, an intermittently operated advancing means associated with said item stack throughput storage means and arranged for advancing a row of item stacks present in said item stack throughput storage means in an advance direction by one receiving space each time said advancing means is operated, at least the foremost one of the item stacks present in said item stack throughput storage means being introduced into the insert space of the shift-out magazine associated with said item stack throughput storage means by said advancing means,

said insert spaces being arranged beside said shift-out spaces in said shift-out magazines with one passageway each provided between said insert spaces and said shift-out spaces for successive movement of the item stacks through said passageway in a transverse direction perpendicular to said advance direction from an insert space into the respective shift-out space,

a transverse slide provided in said insert space and having an automatic drive for shifting the item stacks in said transverse direction,

a supply sensor being provided in each shift-out space to trigger a transverse shifting step of said transverse slide for transferring an item stack from said insert space into the respective shift-out space as soon as the supply of items present in the shift-out space of the respective shift-out magazine has fallen below a certain limit due to successive shifting out of items and room has become available for introduction of a further item stack,

an end position switch being provided to trigger the advancing means of the item stack throughput storage means for introduction of at least one item stack into the insert space of the respective shift-out magazine as soon as said transverse slide has reached an end position close to a shift-out space during transfer of item stacks and thus an insert space has been cleared.

5,573,369

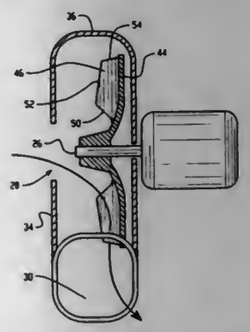
IMPELLER FOR VACUUM CLEANER WITH TAPERED BLADES

Wei Du, North Olmsted, Ohio, assignor to The Scott Fetzer Company, Westlake, Ohio

Filed Nov. 8, 1995, Ser. No. 555,116

Int. Cl.[6] F04D *29/66;29/30*

U.S. Cl. 415—119 **6 Claims**



1. A fan assembly for a vacuum cleaner comprising:

a fan motor having a shaft;

a fan housing having housing surfaces including a front wall, a back wall and a volute, and also an inlet for receiving air, an outlet for discharging air;

an impeller mounted to said shaft and retained with said fan housing, said impeller centrifugally creating an airflow which draws air in through the inlet and driving air out through the outlet, said impeller comprising;

a hub for connecting to said shaft;

a backplate formed integrally with the hub;

a plurality of blades, formed integrally with the backplate and the hub, wherein each of said blades has a straight top edge substantially proximate to the front wall of the fan housing, and a straight trailing edge substantially proximate to the volute, wherein each of said edges are tapered so as to be non-parallel with the respective housing surface and thereby define a non-uniform air passage between the impeller and the fan housing, which effectively muffles any generated sound.

5,573,370

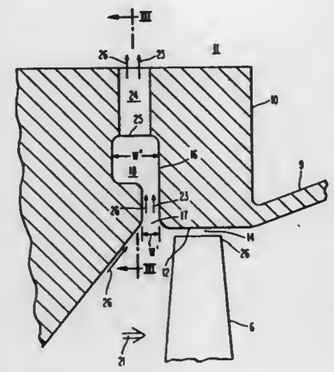
STEAM TURBINE

Lewis Gray, and John C. Groenendaal, Jr., both of Winter Springs, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 407,204, Mar. 20, 1995, Pat. No. 5,494,405. This application Oct. 19, 1995, Ser. No. 545,321

Int. Cl.[6] F01D *25/32*

U.S. Cl. 415—169.4 **20 Claims**



1. A steam turbine, comprising:

a) a rotor mounted for rotation and having a circumferentially extending row of rotating blades attached thereto, each of said rotating blades having a tip portion;

b) a cylinder enclosing at least a portion of said rotor, said cylinder and said rotor forming a flow path therebetween for directing a flow of steam through said steam turbine, said cylinder having:

(i) a radially inward facing surface encircling said tips of said rotating blades, said cylinder surface and said blade tips defining a clearance therebetween,

(ii) a flow guide having means for directing said flow of steam away from said cylinder, said flow guide being integrally formed with said cylinder and disposed downstream from said cylinder surface, and

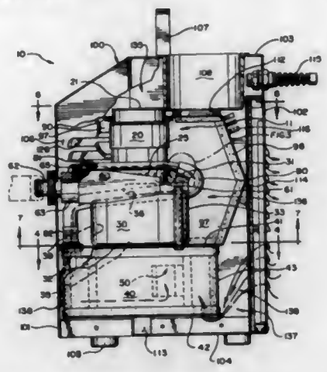
(iii) means for removing moisture from said flow of steam, said moisture removing means comprising a circumferentially extending slot formed in said cylinder upstream from said cylinder surface and a plurality of radially oriented holes formed in said cylinder extending from said circumferential slot.

5,573,371

PAINT SPRAYER WITH VENTING SILENCER

Joseph W. Kieffer, Maple Grove, Minn., assignor to Wagner Spray Tech Corporation, Minneapolis, Minn.

Division of Ser. No. 36,539, Mar. 22, 1993, Pat. No. 5,423,395.
This application Apr. 11, 1995, Ser. No. 420,148
Int. Cl.[6] F04D 17/00
U.S. Cl. 415—182.1 13 Claims



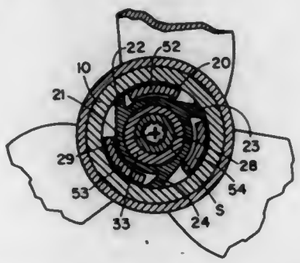
1. A quieted air compressor comprising:
(a) a pressurizing enclosure defining an air compression chamber and having a primary air intake port and a primary air discharge port,
(b) a conduit in fluid communication with the air discharge port for directing the flow of pressurized air from the compression chamber; the conduit having a venting port through a sidewall thereof which is effective for continuously venting pressurized air from the conduit during operation of the compressor, and
(c) a tube in sealed fluid communication with the venting port for directing the flow of vented pressurized air from the conduit; the tube having an increasing internal diameter as the tube extends away from the venting port such that the internal diameter of the tube is increased by a factor of at least about 1.5.

5,573,372

EMERGENCY ENABLEMENT DEVICE FOR A BOAT PROPELLER

Michael H. Badger, 8100 N. Mopac, Number 279, Austin, Tex. 78759

Filed Jun. 3, 1994, Ser. No. 253,962
Int. Cl.[6] B63H 1/20;20/26
U.S. Cl. 416—93A 10 Claims



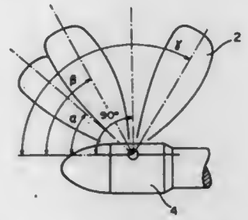
1. An apparatus for emergency or temporary enablement of a disabled boat propeller having a tubular body from which propeller blades project and inwardly spaced hub means for attachment to a propeller shaft, said hub means being concentrically supported within said tubular body by a plurality of radially or spirally emanating support members between which are a plurality of elongated passages, said hub means including a tubular sleeve of resilient material for absorbing shock and transmitting power from said propeller shaft to said tubular body and blades but being shearable or separateable upon application of abnormal torsional forces thereto so that said tubular body will no longer rotate in response to rotation of said shaft, said emergency enabling apparatus comprising:
a drive plate having an aperture at the center thereof for receiving and engaging one end of said propeller shaft;
a central mounting plate having an aperture at the center thereof for receiving said one end of said propeller shaft;
attachment means for attaching together the mounting plate and drive plate in such a manner that said one end of the propeller shaft may be received through the mounting plate aperture and received into and engaged with the drive plate aperture;
a plurality of cantilevered members the proximal ends of which are fixed at spaced intervals around the periphery of said central mounting plate, wherein the plurality of cantilevered members extend perpendicular to the central mounting plate for disposal within the elongated passages between the support members upon fixed engagement of the drive plate aperture with said one end of the propeller shaft to restore operational response of said tubular body to rotation of said propeller shaft after shearing or separation of said tubular sleeve of said resilient material, and wherein the attachment means fails during application of abnormal torsional forces to the propeller of tubular body.

5,573,373

PROPELLAR HAVING OPTIMUM EFFICIENCY IN FORWARD AND REWARDED NAVIGATION

Steen C. Olesen, Fredericia, and Sune Ehrenskjöld, Kolding, both of Denmark, assignors to Gori marine as, Kolding, Denmark

PCT No. PCT/DK93/00188, § 371 Date Feb. 9, 1995, § 102(e) Date Feb. 9, 1995, PCT Pub. No. WO93/24360, PCT Pub. Date Sep. 12, 1993
PCT Filed May 28, 1993, Ser. No. 343,544
Claims priority, application Germany, May 29, 1992, 0718/92
Int. Cl.[6] B63H 1/24
U.S. Cl. 416—131 8 Claims



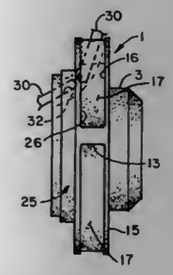
1. A propeller for a ship, said propeller having a hub, blades mounted on the hub of the propeller, pivot means connecting the blades to the hub to enable the blades to pivot to and fro in an axial plane between forward and rearward positions characterized in that the blades are designed such that, in an area extending at least between innermost and outermost end parts of the blade, each of the blade profiles, formed as the intersecting face between a cylinder face coaxial with the propeller and a blade, being substantially symmetrical about a straight line extending between edges of the profile in a position between said forward and rearward positions, each of the blade profiles, formed as the intersecting face between a cylinder face coaxial with the propeller and a blade, having a convex surface facing the direction of movement of the ship when the blades are pivoted to forward and rearward positions on opposite sides of the position of the blades when the blade profile is substantially symmetrical.

5,573,374

MONOLITHIC SHROUDED IMPELLER

Melbourne F. Giberson, 5 Spring Mill La., Haverford, Pa. 19041

Division of Ser. No. 153,646, Nov. 17, 1993, Pat. No. 5,438,755. This application Jun. 30, 1995, Ser. No. 497,413
Int. Cl.[6] F04D 29/22
U.S. Cl. 416—186 R 4 Claims



1. A shrouded, monolithic, forged impeller made from a forged, monolithic blank in the following steps:
(1) turning and boring the blank to an impeller profile circular in elevation, with an annular outer surface and a central eye, between which passageways are to extend, said passageways being defined by surfaces out of a line of sight between said central eye and said outer surface through which said passageways are to open;
(2) removing as much material as possible from what will be said passageways in the impeller, and defining leading and trailing edge zones of vanes, by removing material in direct line of sight from the annular outer surface in a direction toward the eye and from the eye toward the annular outer surface of the impeller;
(3) roughly defining said passageways and vanes by forming a hole through a central zone of each said passageway; and
(4) removing any unwanted remaining material in the passageways by three-dimensional planing controlled by a CNC machine.

5,573,375

TURBINE ENGINE ROTOR BLADE PLATFORM SEALING AND VIBRATION DAMPING DEVICE

William K. Barcza, Palm City, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 14, 1994, Ser. No. 355,576
Int. Cl.[6] F01D 5/26
U.S. Cl. 416—193 7 Claims

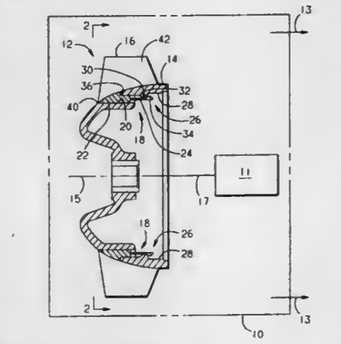
1. A turbine blade, comprising:
a root, having means for attaching said blade to a disc;
an airfoil; and
a platform, extending outward from said blade in a transition area between said root and said airfoil, said platform having:
a length;
a width; and
a seal pocket, for receiving an end of a platform seal;
wherein said seal pocket maintains said platform seal in a position to be received by an adjacent blade during assembly, and thereby prevent misalignment of said platform seal.

5,573,376

BLADED DEVICE AND METHOD OF MANUFACTURING SAME

Christopher T. Hayden, and Jon A. Hixson, both of San Diego, Calif., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 29, 1995, Ser. No. 536,813
Int. Cl.[6] F04D 29/34
U.S. Cl. 416—193 A 30 Claims



1. A bladed device comprising:
a hub rotatable about an axis; and
a blade attached to said hub by insertion and retention means integrally formed with said hub and said blade and configured for axially directed insertion of said blade into said hub and self-locking retention therein against both axially and radially directed forces acting on said blade.

18. In a bladed device including:
a hub rotatable about an axis; and
a blade attached to said hub by insertion and retention means integrally formed with said hub and said blade and configured for axially directed insertion of said blade into said hub and self-locking retention therein against both axially and radially directed forces acting on said blade;
wherein said insertion and retention means include:
an axially opening and directed blade retention slot in said hub; and
a blade root fitting integrally joined to said blade at a radially inner end thereof and configured to enter said blade retaining slot of said hub in an axial direction, with said root fitting and slot being configured in a complimentary manner to provide retention of said blade within said slot against radially directed forces on said blade;
said root fitting including a radially flexible, snap-action, locking tang extending axially therefrom into said hub; and
said locking tang and hub including axial positioning and detent means for locking said blade into said hub against

the action of axially directed forces operating on said blade with respect to said hub; and

wherein said detent means are configured to deflect said locking tang radially inward during insertion of the blade into said hub at an axial position prior to a predetermined axial engagement location of said blade with respect to said hub and to allow said locking tang to snap radially outward at said engagement location for locking said blade into said hub; a method of manufacturing said bladed device including the step of:

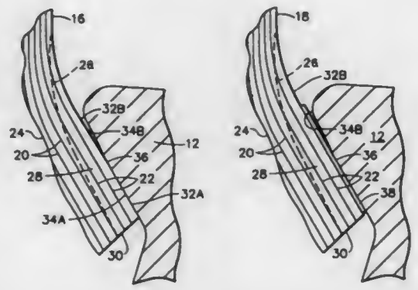
(a) inserting said blade into said blade retention slot of said hub in an axial direction to said engagement location.

5,573,377

IMPROVED ASSEMBLY OF A COMPOSITE BLADE ROOT AND A ROTOR

Nigel M. Bond, Loveland, and Martin C. Hemsworth, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 21, 1995, Ser. No. 426,205
Int. Cl.[6] F01D *5/14*
U.S. Cl. 416—229 A **4 Claims**



1. In combination, a rotor assembly comprising a plurality of composite blades carried by a rotor as a support member, each composite blade including a plurality of bonded composite plies comprising an airfoil and a blade root shaped to be carried by the rotor, the blade root having a composite root outer pressure pad disposed on the root and carried by the rotor, the composite root outer pressure pad comprising a plurality of non-metallic composite piles bonded together and with the blade root, the improved combination wherein:

the rotor includes a plurality of circumferentially disposed blade root receiving slots having a slot wall at least a portion of which is shaped to receive a blade root, the slot wall including a radially inward portion and a radially outward portion and shaped to receive and carry at least a portion of a root outer pressure face of the composite root pressure pad;

the blade including a root outer pressure face on the composite root outer pressure pad, the pressure face having a radially inner surface, extending from a root end, and a radially outer surface, extending from a junction with the inner surface toward the blade airfoil, the inner surface being in contact with and carried by the slot wall radially inward portion to carry the blade root when assembled with the rotor; and,

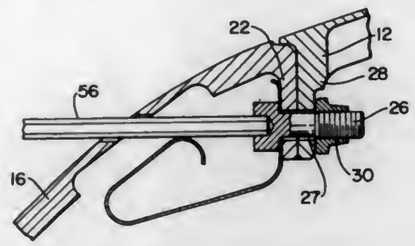
the root pressure face radially outer surface and the slot wall radially outward portion, when assembled, being in diverging spaced apart juxtaposition beginning at the junction between the root pressure face inner and outer surfaces and generally diverging radially outwardly therefrom in a diverging amount which is a function of a predetermined amount of centrifugal loading on the blade during operation of the rotor assembly, to allow at least a portion of the radially outer surface of the root outer pressure face to be in contact with the slot wall radially outward surface during operation.

5,573,378

GAS TURBINE NOSE CONE ATTACHMENT

William K. Barcza, Palm City, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 10, 1995, Ser. No. 499,987
Int. Cl.[6] B64C *11/14*
U.S. Cl. 416—245 R **10 Claims**



1. A nose cone for a gas turbine engine, comprising:

a flange on the nose cone, the flange extending radially inward from an outer surface on the nose cone;

a first hole in said flange;

a second hole in the nose cone, said second hole providing access to said first hole; and

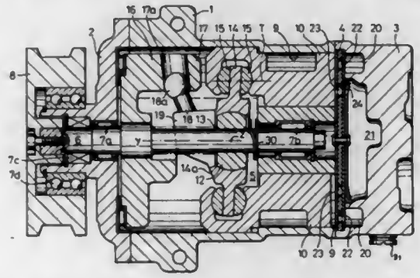
means for providing a resiliently displaceable cover for said second hole, said means being attached to said flange.

5,573,379

VARIABLE CAPACITY SWASH PLATE TYPE COMPRESSOR

Kazuya Kimura; Takahiro Morol, and Kayukawa Hiroaki, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Apr. 18, 1995, Ser. No. 423,956
Claims priority, application Japan, Apr. 21, 1994, 6-083388
Int. Cl.[6] F04B *1/29*
U.S. Cl. 417—222.2 **6 Claims**



1. A variable capacity swash plate type refrigerant compressor including:

a housing assembly having a cylinder block, a front housing, and a rear housing; said housing assembly defining therein a suction chamber, a discharge chamber, a crank chamber, and a plurality of cylinder bores;

a plurality of reciprocatory pistons received in said plurality of cylinder bores;

a drive shaft supported in said housing assembly so as to rotate about an axis of rotation thereof upon receipt of a drive force;

a rotor mounted on said drive shaft so as to be rotated together in said crank chamber, said rotor having a guide means disposed in said crank chamber;

a swash plate arranged around said drive shaft in said crank chamber and having a guided means engaged with said guide means of said rotor at a position corresponding to a top dead center of said swash plate so as to be rotated together with said rotor to thereby perform a nutating motion, said swash plate being disposed to be pivoted about a pivoting axis to thereby change an angle of inclination thereof from a plane perpendicular to the axis of rotation of said drive shaft, said pivoting axis of said swash plate being perpendicular to a plane which is defined by said axis of rotation of said drive shaft and said top dead center of said swash plate;

a connecting means for connecting said swash plate to said respective pistons within said crank chamber so that the nutating motion of said swash plate is converted into reciprocating motion of said respective pistons; and

a control means for controlling an angle of inclination of said swash plate by adjustably changing a pressure prevailing in said crank chamber to thereby change the capacity of said compressor,

wherein said compressor comprises:

means for setting an extent of change in an angle of inclination of said swash plate in such a manner that said swash plate can be pivoted to a 0° inclination position thereof; and

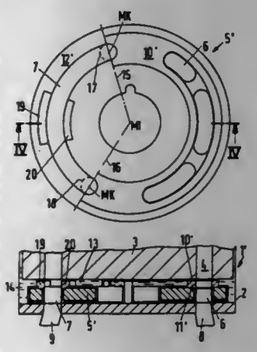
means for setting a product of inertia of said swash plate with regard to a rectangular coordinate system having an origin positioned at a crossing point between said axis of rotation of said drive shaft and a plane which is perpendicular to said axis of rotation of said drive shaft and contains therein said pivoting axis of said swash plate, and one of rectangular axes thereof corresponding to said axis of rotation of said drive shaft, said setting of the product of inertia being performed in such a manner that when said angle of inclination of said swash plate is 0°, a moment is generated to increase said angle of inclination of said swash plate to thereby increase the capacity of said compressor in response to the rotation of said swash plate.

5,573,380

HYDRAULIC PISTON MACHINE

Lars Martensen, Sønderborg, and Ove T. Hansen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Apr. 20, 1995, Ser. No. 425,437
Claims priority, application Germany, May 13, 1994, 44 17 011.4
Int. Cl.[6] F04B *1/12;27/08*
U.S. Cl. 417—269 **10 Claims**



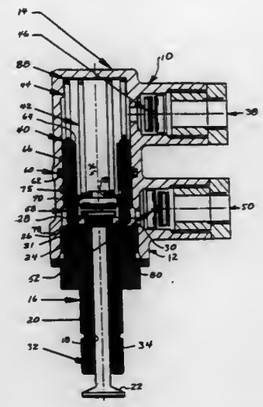
1. A hydraulic piston machine having a cylinder drum and a control plate, which control plate has at least one high-pressure kidney and at least one low-pressure kidney and also a contact surface against which the cylinder drum bears in operation, at least the contact surface being provided with a friction-reducing layer, and in which the contact surface in the region of the low-pressure kidney has a recessed region forming a gap between the cylinder drum and the control plate.

5,573,381

INTERNALLY REGULATED SELF PRIMING FUEL PUMP ASSEMBLY

Michael F. Pane, Lake Ariel, Pa.; James J. Grinsteiner, Union, and Martin R. Zielke, Lockport, both of Ill., assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed Jun. 20, 1995, Ser. No. 492,505
Int. Cl.[6] F04B *49/00*
U.S. Cl. 417—284 **9 Claims**



1. A fuel pump assembly comprising:

a housing having an internal cavity including a primary chamber for receiving fuel through an inlet thereto and a pumping chamber having an outlet therefrom;

a cylindrical outer piston slidably disposed in said housing between said primary chamber and said pumping chamber, said outer piston having a central bore;

a regulator spring disposed in said primary chamber between said housing and said outer piston to bias said outer piston toward said pumping chamber;

an inner piston slidably disposed between said primary chamber an said pumping chamber and within said central bore of said outer piston;

a check valve disposed in said inner piston, said check valve permitting flow only from said primary chamber to said pumping chamber;

a pumping spring disposed in said primary chamber between said housing and said inner piston to bias said inner piston toward said pumping chamber;

reciprocating drive means for moving said inner piston toward said primary chamber and allowing said pumping spring to bias said inner piston toward said pumping chamber.

5,573,382

MULTI-SPEED ELECTRIC FAN

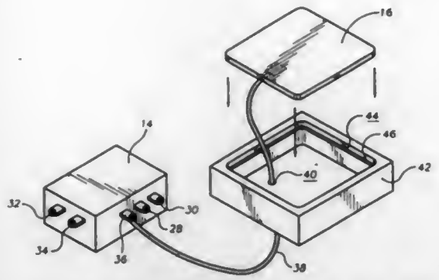
Furness W. Girard, 41 Davenport St., Waggaman, La. 70094

Filed Jan. 23, 1995, Ser. No. 376,782
Int. Cl.[6] F04B *17/00*
U.S. Cl. 417—326 **1 Claim**

1. An electric fan comprising:

an assembly including a blade housing, an electric fan motor mounted within said blade housing having a rotating element and at least two electrical supply inputs, and a plurality of fan blades in connection with said rotating element;

a variable power controller having a first power terminal, a second power terminal, and an input signal terminal; one of said first and second terminals being wired in series with one of said electrical supply inputs of said fan motor, said variable power controller being responsive to an input signal placed on



said input signal terminal in a manner to vary the power supplied to said electric fan motor in response to said input signal; and

an electrostatically actuated signal generating means, in electrical connection with said input signal terminal of said variable mower controller, for generating a signal to said variable power controller, said signal generating means including a conducting plate, having an insulated conducting lead, and an isolation housing, having an open top; said conducting plate being installed within said isolation housing in a manner such that said conducting plate is electrically isolated from said blade housing of said fan assembly, said conducting lead being in electrical connection with said signal generating means, said isolatioo housing including an aperture through a section thereof of a size sufficient to allow said insulated conducting lead to pass therethrough, said conducting plate being substantially rectangular shaped metal plate having rounded corners, said isolation housing including a recessed, conducting plate receiving notch located adjacent a peripheral lid section defining said open top; said receiving notch being dimensioned in a manner such that said conducting plate is secured within said isolation housing, said variable power controller supplying at least four predetermined power levels to said electric fan motor, said variable power controller stepping through said four predetermined power levels in a sequence from lowest to highest power level in response to said signal from said signal generating means.

5,573,383

BLOWER ASSEMBLY INCLUDING CASING HOUSING A FAN AND A MOTOR

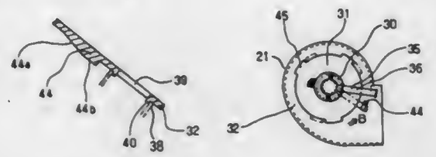
Yukio Uemura; Kazushi Shikata, both of Kariya, and Hiroshi Nonoyama, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 14, 1995, Ser. No. 404,081

Claims priority, application Japan, Mar. 16, 1994, 6-046185

Int. Cl.[6] F04B *17/00*

U.S. Cl. 417—360 **7 Claims**



1. A blower comprising:

a fan for blowing air;

a motor for driving said fan;

a casing for housing said fan and forming a passage for air blown by said fan, said casing having an air intake port on a surface at one axial end side of said fan, a first open portion for receiving said motor on a surface at another axial end side of said fan and being formed in a substantially circular configuration, and a second open portion for introducing cooling air to said motor on a surface at another axial end side of said fan so as to open at an outer peripheral position from said first open portion;

a disc-shaped flange portion provided integrally on an outer periphery of said motor so as to extend in a radial direction of said motor, having a disc-shaped outer peripheral portion fixed on a perimeter portion of said first open portion for receiving said motor, said flange portion forming therein a cooling-air passage to pass cooling air for said motor;

wherein between said perimeter portion of said first open portion for receiving said motor and said outer peripheral portion of said flange portion is provided a rotational type retaining structure which causes said casing and said flange portion to be connected by means of relative rotational movement in the circumferential direction of said casing and said flange portion and also causes said second open portion for cooling said motor and said cooling-air passage to be engaged

wherein said casing includes:

a taper-shaped guide rib formed on a surface at another axial end side of said fan at an immediately upstream side of said second open portion against a rotational direction of said flange portion a height of said guide rib increasing gradually to said second open portion, so that an end portion of said cooling-air passage of said flange portion is guided over said guide rib to be engaged with said second open portion.

5,573,384

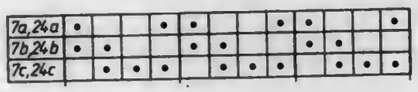
PUMP FOR CONVEYING PASTE-LIKE FLOWABLE MATERIALS

Klaus Ernsberger, Friedrichshafen, Germany, assignor to Kaltenbach & Voigt GmbH & Co., Biberach, Germany

Filed Apr. 25, 1995, Ser. No. 428,047

Int. Cl.[6] F04B *43/00*

U.S. Cl. 417—392 **5 Claims**



1. A pump (1) for conveying flowable paste-like materials, including a conveyor line (2) comprising a plurality of conveyor elements (3*a* to 3*d*) sequentially arranged in the longitudinal direction of the conveyor line (2) and being movable transversely of the conveyor line selectively displace and release at least a part of the volume of material conveyed by said conveyor line, said pump having a working chamber (7) consisting of an annular chamber externally bounded by a housing (5) of the pump (1) and interiorly by a cylinder (17), the conveyor elements (3*a* to 3*d*) comprising bellows elements (24*a* to 24*d*) each in the form of a ring of an elastically extensible material acted upon by a pressure medium at a side opposite the material being conveyed, said bellows elements being formed by a common hose-like bellows (24) which is retained on an inner wall (5*a*) of the housing (5), a support ring (23*a* to 23*d*) being located between respectively each of the bellows elements (24*a* to 24*d*) for retaining the bellows (24) on said inner wall (5*a*), pressure lines (18*a* to 18*d*) located between said support rings (23*a* to 23*d*) and passing through the housing (5) to open into said annular chamber, a control means (4) for causing a pressure source (22) and a vacuum source (21) to be alternatively connectable with the pressure lines, the housing (5) being closed by two end walls (9, 11) in each of which there is selectively provided at least one of an input and output opening (12, 13).

5,573,385

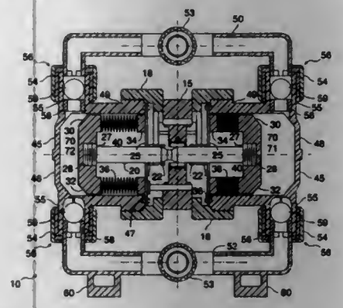
DUAL CHAMBER PUMP

Yves Chevallier, La Garenne Colombes, France, assignor to Asti SAE, Courbevoie, France

Continuation of Ser. No. 63,626, May 19, 1993, Pat. No. 5,480,292. This application Jun. 7, 1995, Ser. No. 480,980

Int. Cl.[6] F04B *15/04*

U.S. Cl. 417—393 **19 Claims**



1. A pump comprising:

a central core;

first and second body members connected to said central core, each having an interior at least a portion of which defines a first and a second pumping chamber respectively;

first and second driven members each including a deformable element disposed at least partially within a corresponding first and second pumping chamber respectively, said first and second driven members drivable between retracted and extended positions, and said deformable elements deformable in response thereto;

a fluid inlet and a fluid outlet in fluid communication with each of said first and second pumping chambers fluid inlet and outlet valves between respective fluid inlet and fluid outlets and the interior of each pump body member;

means operative to drive each of said first and second driven members alternately between its respective retracted and extended positions, whereby fluid is alternately drawn into one of said first and second pumping chambers and simultaneously expelled from the other through respective fluid inlets and fluid outlets;

all elements of said pump being of a formable, nonmetallic material which is resistant to chemical corrosion.

5,573,386

RECIPROCATING PISTON PUMP

Edgar Schmitt, Vaihingen; Barbara Schwind-Greilmann, Wiernsheim, and Harald Ott, Ditzingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

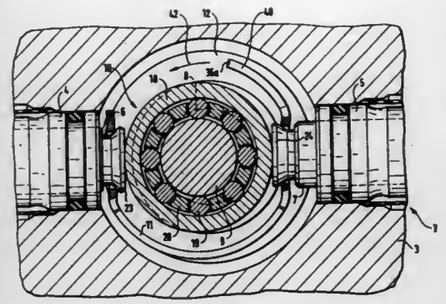
Filed Jan. 18, 1995, Ser. No. 374,366

Claims priority, application Germany, Jan. 29, 1994, 44 02 650.1; Aug. 4, 1994, 44 27 612.5

Int. Cl.[6] F04B *1/02;53/14*

U.S. Cl. 417—521 **20 Claims**

1. A reciprocating piston pump having a housing, oppositely disposed displaceable pistons operative in the housing, an eccentric between the pistons, a shaft that carries and drives the eccentric, annular grooves machined into piston ends directed toward the eccentric which define piston necks, a hoop spring which is curved in a circumferential direction of the eccentric, said hoop spring has spring ends with recesses that engage the annular grooves of said pistons and press the piston ends toward the eccentric, said hoop spring includes on a side toward the eccentric shaft, a substantially striplike continuation (40, 40*a*) that forms one hoop spring end which continuation is located juxtaposed an associated stop disk (12) aligned transversely to the shaft (8), said stop disk is made of low-wear material and acts as a pivoting angle limiter for the hoop spring (11, 11*a*).



5,573,387

VACUUM PUMPS

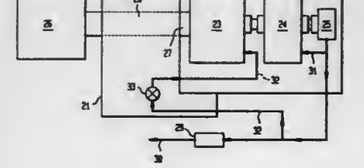
Alan E. K. Holbrook, Brighton, England, assignor to The BOC Group plc, Windlesham, England

Continuation of Ser. No. 151,089, Nov. 10, 1993, abandoned. This application Dec. 5, 1994, Ser. No. 349,697

Claims priority, application United Kingdom, Nov. 13, 1992, 9223804

Int. Cl.[6] F01C *11/00*

U.S. Cl. 41 E—13 **3 Claims**



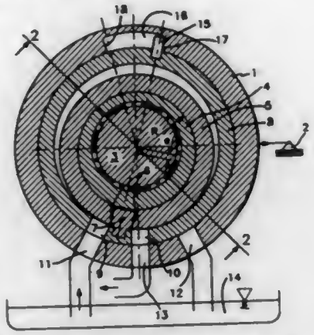
1. A rotary vacuum pump comprising: a low vacuum stage; a high vacuum stage; each of the low and high vacuum stages including a stator body having a bore and a rotor mounted eccentrically in the bore to form a cavity between the stator body and the rotor; the rotor of each stage having two vanes slidably positioned in diametrically opposed slots defined in the rotor; the two vanes being substantially in contact with an inner wall of the stator body during rotation of the rotor; the stator body of each of the low and high vacuum stages having an inlet and an outlet to allow fluid being pumped to enter into and to be expelled from the cavity by the rotating vanes; means for injecting oil into the low vacuum stage and into the high vacuum stage; said oil injection means having a user operated switch to selectively cut off oil flow to said high vacuum stage; and means for supplying ballast gas to the low vacuum stage, said ballast gas supply means having selective flow control means for selectively controlling ballast gas flow rate, at and above a zero flow rate.

5,573,388

ECCENTRIC PUMP WITH LOCK VALVE AND WITH BIDIRECTIONAL ROTATIONAL OPERATION

Lóránt Tar; László Légmán, and Ilbor Végh, all of Győr, all of Hungary, assignors to Raba Magyar Vagon-es Gepgyar Rt., Gyor, Hungary

Filed Feb. 23, 1995, Ser. No. 393,263
Claims priority, application Hungary, Feb. 24, 1994, P9400537
Int. Cl.[6] F04C *2/04;15/04*
U.S. Cl. 418—15 7 Claims



1. Eccentric pump with lock valve and with bidirectional rotational operation, mainly for lubricant circulation of drives comprising:

a stationary outer casing having two parallel side walls and a cylindrical inner surface between the side walls, and further having inlet and outlet openings being sealingly separated and terminating in the cylindrical inner surface,

a middle shaft arranged within the casing concentrically to the cylindrical inner surface and having a cylindrical surface being eccentric to the middle shaft as well as to the cylindrical inner surface of the casing,

a circular sealing ring being sealingly displaceable in respect of the eccentric surface of the shaft as well as to inner wall portions of the casing, and further having a radial slot having limiting surfaces, and a stationary pin disposed in said slot in contact with said limiting surfaces, wherein:

an inner slide member is arranged between the casing and the circular sealing ring, the slide member being sealingly but moveably attached to inner surfaces of the casing, and means to rotate the slide member between a first position and a second position, and

the casing has two said inlet openings and at least one said outlet opening, and the slide member has two through bores, the first through bore is in communication with one inlet opening, the second through bore with at least one outlet opening, in the first position of the slide member, and the first through bore is in communication with at least one outlet opening, the second through bore with the other inlet opening, in the second position of the slide member, and

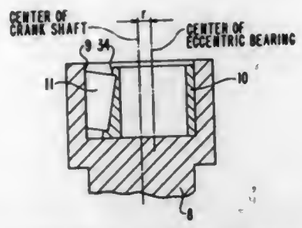
the pin is fixed to the slide member and is sealingly separating the through bores from each other.

5,573,389

SCROLL COMPRESSOR HAVING MEANS FOR BIASING AN ECCENTRIC BEARING TOWARDS A CRANK SHAFT

Hiroyuki Fukuhara; Sadayuki Yamada, both of Otsu; Shigeru Muramatsu, Kusatsu, and Tatsuya Hori, Fujisawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Sep. 18, 1995, Ser. No. 529,641
Claims priority, application Japan, Sep. 19, 1994, 6-222851
Int. Cl.[6] F01C *1/04*
U.S. Cl. 418—55.5 11 Claims



1. In a scroll compressor comprising a compression mechanism having a stationary scroll and an orbiting scroll in engagement with each other, a crank shaft for causing orbiting of the orbiting scroll relative to the stationary scroll, a bearing member for rotatably supporting the crank shaft and having a thrust bearing for axially supporting the orbiting scroll, an electric motor for driving the crank shaft, and an eccentric bearing radially movably accommodated within a recess defined in an end portion of the crank shaft, said orbiting scroll having a shaft journaled in the eccentric bearing, the improvement comprising:

a biasing means interposed between said eccentric bearing and a side wall of said recess for pressing said eccentric bearing radially outwardly; and

said eccentric bearing having inclined planes defined on an external surface thereof for receiving a biasing force of said biasing means so that an axial component of the biasing force of said biasing means is directed towards said crank shaft.

5,573,390

COATED SLIDING MATERIAL

Katsuhiro Takeuchi; Shogo Muramatsu, both of Aichi; Yoichiro Toyama, Kumamoto, and Hirokazu Kondo, Aichi, all of Japan, assignors to Surtec Kariya Co., Ltd., and Taiho Kogyo Co., Ltd, both of Aichi, Japan

PCT No. PCT/JP93/00359, § 371 Date Jan. 27, 1995, § 102(e) Date Jan. 27, 1995
PCT Filed Mar. 25, 1993, Ser. No. 338,507
Int. Cl.[6] F04C *18/344;18/356;* B32B *15/04;15/20*
U.S. Cl. 418—178 10 Claims



1. A vane of a compressor, comprising a coated sliding material wherein said coated sliding material comprises: an aluminum alloy, an electroless Ni-P plating coating having a thickness from 0.5 to 50 μm provided on the surface thereof and an electroless Ni-B plating coating provided on the Ni-P plating coating.

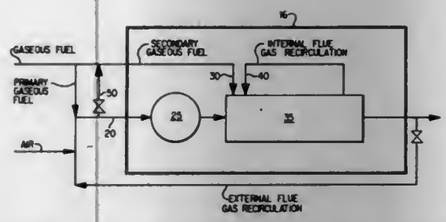
5,573,391

METHOD FOR REDUCING NITROGEN OXIDES

Charles E. Benson, Windham, N.H.; Peter J. Loftus, Somerville, Mass.; Robert Cole, and William A. Wiener, both of Parsons, Kans., assignors to Gas Research Institute, Chicago, Ill.

Filed Oct. 13, 1994, Ser. No. 322,758
Int. Cl.[6] F24C *5/00*
U.S. Cl. 431—8 14 Claims

1. A method for reducing nitrogen oxides formed during combustion of gaseous fuel, the method comprising:



forming a fuel/oxidant mixture of primary gaseous fuel and excess oxidant;

introducing the fuel/oxidant mixture into a primary combustion zone;

combusting the fuel/oxidant mixture within the primary combustion zone thereby forming primary combustion products;

introducing the primary combustion products into a secondary combustion zone;

introducing secondary gaseous fuel into the secondary combustion zone;

combusting the secondary gaseous fuel and the primary combustion products in the secondary combustion zone thereby forming secondary combustion products;

recirculating a portion of the secondary combustion products to the secondary combustion zone; and

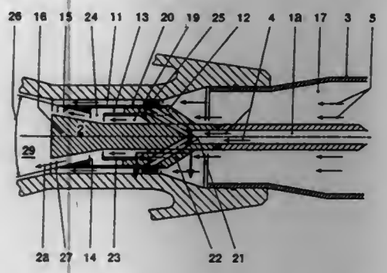
bypassing at least a portion of the fuel/oxidant mixture to the secondary combustion zone.

5,573,392

METHOD AND DEVICE FOR DISTRIBUTING FUEL IN A BURNER SUITABLE FOR BOTH LIQUID AND GASEOUS FUELS

Bettina Paikert, Oberrohrdorf, Switzerland, and Peter Senior, Stoney Stanton, Great Britain, assignors to ABB Research Ltd., Zurich, Switzerland

Filed Jun. 28, 1995, Ser. No. 496,190
Claims priority, application Germany, Jul. 13, 1994, 44 24 639.0
Int. Cl.[6] F23Q *9/00*
U.S. Cl. 431—9 6 Claims



1. A method for distributing fuel in a liquid and gas fueled burner having an airblast nozzle at an inlet to the burner, comprising the steps of:

directing liquid fuel at a predetermined flow rate, velocity and swirl into a settling chamber of an airblast nozzle;

reducing the flow velocity and swirl velocity of the liquid fuel as it moves from the settling chamber to a prefilming lip of the airblast nozzle, wherein, the liquid fuel forms a fluid film on the prefilming lip;

introducing blast air into the airblast nozzle at a flow rate ratio of less than 1:1 to the flow rate of the liquid fuel;

dividing the blast air into a flow on a radially inner side of the prefilming lip and a flow on a radially outer side of the prefilming lip;

atomizing the liquid fuel at a tip of the prefilming lip by air passing on radially inner and radially outer sides of the tip, and

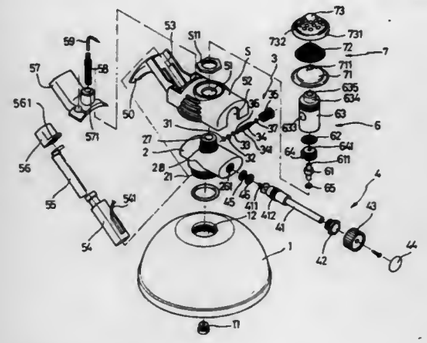
injecting the atomized fuel as a constituent of a combustion mixture into an inner space of the burner.

5,573,393

BURNER

Chin-Lin Tsai, 3F, No. 94, Sec. 4, Chung Hsin Road, San Chung City, Taipei Hsien, Taiwan

Filed Mar. 2, 1995, Ser. No. 397,755
Int. Cl.[6] F23D *14/28;* F23Q *7/12*
U.S. Cl. 431—255 11 Claims



1. A burner comprising:

a storage tank having a bottom portion with a refill nozzle and a top portion with an opening for connection with a gas outflow means;

said gas outflow means having a bottom portion which extends to form a protrusion for connection with said opening of said storage tank, said protrusion being internally provided with a vertically oriented hole which is connected to a horizontally oriented pressure regulating hole which is connected with a horizontally disposed gas passage communicating with a chamber, an upper part of said chamber being provided with an opening, an outer periphery of said gas flow means having a mounting joint for connection with a gas ejecting base after passing through a hood;

a pressure regulating means accommodated within said pressure regulating hole and consisting of a plurality of copper sheets with notches and a sponge for concealing said hole of said gas outflow means, a regulating rod for controlling the flow amount of fuel gas, and a detent button for preventing said regulating rod from slipping out from said pressure regulating hole;

a control means having a control rod fitted into said chamber of said gas outflow means, said control rod having a pointed element at a front end thereof cooperating with said gas passage in said gas outflow means for controlling the flow amount of fuel gas, a detent bolt inserted on said control rod to lock with threads at a rear end of said chamber, and a control knob being connected to a rear end of said control rod;

said hood having an opening provided in an upper end thereof for insertion of said mounting joint which locks with said hood by means of a locking nut, one side of said hood being provided with a compartment for accommodating a piezo-electric device, a conductive sheet and a push-button, a wire of said piezo-electric device being passed into an opening of a cover to contact a conductive tube provided at an upper part of said opening of said cover, said cover sealing said compartment, and a conductive joint being fitted with said conductive tube; and

said gas ejecting base having a relay joint fitted into said opening of said chamber of said gas outflow means, said relay

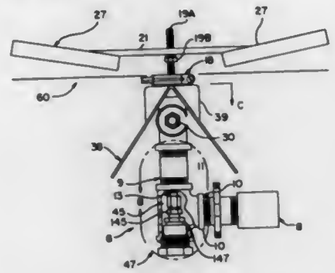
joint having a hole communicating with said opening of said chamber, a gas nozzle being connected to an interior of a mixing compartment, and said mounting joint being united with a mixing seat, said gas nozzle having a spout and communicating with said mixing compartment, said mixing seat having an insert joint provided at an upper part thereof, said insert joint having a cylindrical hole and being fitted with a gas diffusion burner head.

5,573,394

LOW PROFILE BURNER ASSEMBLY

John C. Pershina, 2124 Freeland Rd., Freeland, Md. 21053

Filed Oct. 21, 1994, Ser. No. 327,264
Int. Cl.[6] F23Q 7/06
U.S. Cl. 431—258 18 Claims



1. A fuel burner with pilot assembly for automatically generating a flame suited for live fire fighting training, the fuel burner assembly comprising:

a pipe fitting shell defining a chamber and having a fuel inlet to said chamber for inputting combustible fuel, an air inlet to said chamber for inputting air to be mixed with said fuel prior to ignition, a first port and an opposing second port, and a main burner outlet from said chamber for outputting an air/fuel mixture for combustion;

an ignition assembly including a spark plug with a spark gap section protruding into the chamber of said pipe fitting shell through said first port;

an optical probe assembly having an optical sensor element protruding into the chamber of said pipe fitting shell through said second port facing said spark gap;

a fuel distribution tube connected to the fuel inlet of said pipe fitting shell and extending interiorly therethrough for distributing said fuel within said chamber, said distribution tube having a pilot orifice along its length near said spark gap for flowing a pilot portion of said fuel to said spark gap, and said distribution tube having at least one main burner outlet along its length and downstream of said spark gap for outputting a balance of the fuel, whereby the pilot portion of fuel is to maintain a pilot flame for igniting and combusting the balance of said fuel;

a deflector/transport assembly supported over the main burner outlet of said chamber and having a chimney to pass the combusting fuel, said deflector/transport assembly otherwise shielding said main burner outlet to protect the pilot flame; and

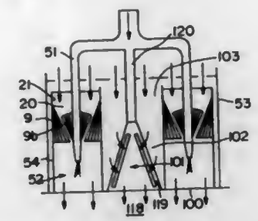
a flame spreader assembly supported over the chimney of said deflector/transport assembly for channeling the combusting fuel passing therethrough into a flame.

5,573,395

PREMIXING BURNER

Rolf Althaus, Kobe, Japan, and Yau-Pin Chyou, Taipei, Taiwan, assignors to ABB Management AG, Baden, Switzerland

Filed Feb. 3, 1995, Ser. No. 383,580
Claims priority, application Germany, Apr. 2, 1994, 44 11 623.3
Int. Cl.[6] F23Q 9/00
U.S. Cl. 431—278 7 Claims



1. A premixing burner, comprising:

a centrally arranged pilot burner having a mixing space with an outlet and means for introducing air and fuel into the mixing space for mixing before exiting through the outlet;

a plurality of main burners each having a duct for guiding a gaseous main flow of air, the main burners being arranged around the pilot burner;

means for injecting at least one of a gaseous and liquid fuel into the duct of each of the main burners as a secondary flow into the gaseous main flow for mixing the fuel and main flow in the duct; and,

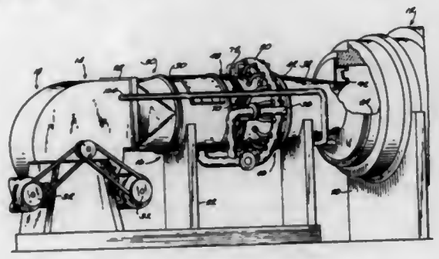
a plurality of vortex generators mounted in the duct of each of the main burners upstream of an outlet of the main burner, the vortex generators arranged next to one another around a circumference of the duct, each vortex generator comprising a body projecting into the main burner duct and having a shape for creating vortices with an axis substantially parallel to a flow axis of the main burner.

5,573,396

LOW EMISSIONS BURNER

Malcolm L. Swanson, Chickamauga, Ga., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Filed Nov. 3, 1994, Ser. No. 333,970
Int. Cl.[6] F27B 7/02
U.S. Cl. 432—106 25 Claims



1. A burner assembly for a dryer drum, comprising:

(A) a premix burner;

(B) an air source which supplies combustion air to said premix burner; and

(C) a fuel source which supplies gaseous fuel to said premix burner, wherein said premix burner includes

(1) a primary nozzle having an inlet and having an outlet for discharging an uncombusted air/gaseous fuel mixture into said dryer drum,

(2) a burner duct having an inlet connected to said air source and an outlet connected to said inlet of said primary nozzle, and

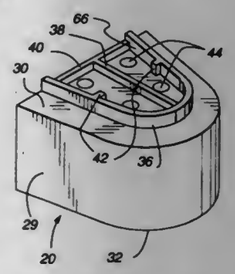
(3) a fuel injection system including a plurality of nozzles spaced around said duct between said inlet and said outlet, each of said nozzles a) extending into said duct, b) having an inlet connected to said fuel source, c) and terminating in an injection orifice opening into said duct, wherein said air source supplies to said premix burner substantially all combustion air required for complete combustion of all fuel supplied by said fuel source.

5,573,397

METHOD FOR CREATING A UNIVERSAL MOUNT FOR DENTAL ARTICULATORS

Robert Silva, Lakewood, Colo., assignor to S-Tec, Inc., Lakewood, Colo.

Continuation-in-part of Ser. No. 85,812, Jul. 6, 1993, Pat. No. 5,352,117. This application Sep. 21, 1994, Ser. No. 310,921
Int. Cl.[6] A61C 11/00
U.S. Cl. 433—56 10 Claims



1. A method of mounting dental models on a calibrated articulator movable between open and closed positions, comprising the steps of:

releasably attaching identical mounting plates to a replica of upper and lower dental models;

fixing the mounting plates to opposing upper and lower frame members of the articulator when said frame members are in a closed position substantially parallel to one another;

detaching the replica from the mounting plates;

releasably attaching a first dental model to the mounting plate fixed to one of said upper or lower frame members of the articulator;

releasably attaching a base plate to the mounting plate fixed to the other of said upper or lower frame members of the articulator; and

fixing a second dental model to the base plate so that said first and second dental models are properly aligned with one another when the upper and lower frame members of the articulator are in the closed position.

5,573,398

DENTAL HYGIENE DEVICE AND CLEANING SOLUTION

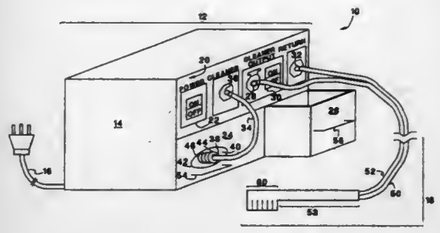
Lawrence E. Towle, 14721 Caminito Orense Oeste, San Diego, Calif. 92129, and Richard A. Cloonan, 16109 Lofty Trail Dr., San Diego, Calif. 92127

Filed Jun. 10, 1994, Ser. No. 259,917
Int. Cl.[6] A61G 17/02; A61H 9/00
U.S. Cl. 433—80 15 Claims

1. A dental hygiene device including:

an irrigation/suction brush including,

a handle having a suction conduit passing longitudinally through the handle and an irrigation conduit also passing longitudinally through the handle,



a brush head coupled to a head end of the handle, the brush head having two parallel rows of bristles protruding from the brush head,

a suction port that is interposed between the two parallel row of bristles at one end of the two parallel row of bristles, the suction port being coupled to the suction conduit at a head end of the suction conduit,

an irrigation port that is interposed between the two parallel rows of bristles at another end of the two parallel rows of bristles, the irrigation port being coupled to the irrigation conduit at a head end of the irrigation conduit,

a suction tube coupled to the suction conduit at a handle end of the suction conduit, and

an irrigation tube coupled to the irrigation conduit at a handle end of the irrigation conduit; and

a portable control unit including:

an irrigation outlet coupled to the irrigation tube,

an irrigation pump coupled to the irrigation outlet,

a supply reservoir coupled to the irrigation pump, the supply reservoir containing a dental hygiene solution, the irrigation pump drawing the dental hygiene solution from the supply reservoir and pumping the dental hygiene solution through the irrigation outlet into the irrigation tube, the irrigation tube transmitting the dental hygiene solution to the irrigation conduit and to the irrigation port, the dental hygiene solution being expelled through the irrigation port,

a suction inlet coupled to the suction tube,

a suction pump coupled to the suction inlet,

a waste reservoir coupled to the suction pump, the suction pump suctioning a portion of the dental hygiene solution into the suction port to the suction tube, the suction tube transmitting the portion to the suction inlet, the suction pump drawing the portion from the suction inlet and expelling the portion into the waste reservoir;

whereby the dental hygiene solution is expelled from the irrigation port from between and at the one end of the two rows of bristles; and

whereby the portion of the dental hygiene solution is simultaneously suctioned into the suction conduit from between and at the other end of the two rows of bristles.

5,573,399

APPLICATION FOR APPLYING A BLEACHING AGENT TO TEETH AND METHOD THEREFOR

Robert A. McClintock, II, 6525 Esplanade St., Playa Del Rey, Calif. 90293

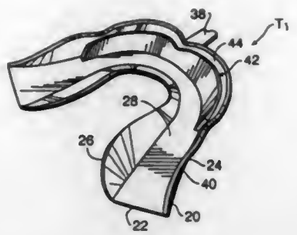
Filed Oct. 24, 1994, Ser. No. 327,977
Int. Cl.[6] A61G 17/02;5/00;9/00
U.S. Cl. 433—80 29 Claims

1. A bleaching tray for applying a bleaching composition to the teeth of a user, said tray comprising:

a) an arch-shaped outer wall adapted to extend around the exterior surface of the teeth of a user in the arch of the user;

b) an arch-shaped inner wall connected to said outer wall and adapted to extend around and substantially engage the interior surface of the teeth in the arch of the user; and

c) said inner and outer walls being sized and shaped to form a recess which receives and substantially engages and retentively holds the tray when in use on the arch of the user, the



interior surface of said outer wall being slightly spaced from the exterior surface of the teeth in the frontal portion of the arch;

d) said tray being formed of a flexible and pliable plastic material which is capable of being molded; and

e) an insert removably located in said recess and which has an upstanding insert wall spaced apart from an inner surface of the outer wall by a small distance to define a bleaching agent receiving reservoir when removed, said insert being present in said recess when the tray is fitted to a user and removed thereafter so that when used on a user with a bleaching composition the interior surface of the outer wall is spaced from the exterior surface of the teeth in the frontal portion of the arch, such that the bleaching agent receiving reservoir around the front of the teeth allows the bleaching agent introduced into the reservoir to be in contact with the teeth.

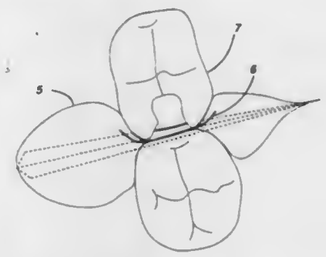
5,573,400

EXPANDING DENTAL WEDGE

Randall S. Asher, 8756 S. Aberdeen Cir., Highlands Ranch, Colo. 80126

Filed Dec. 6, 1994, Ser. No. 350,430
Int. Cl.[6] A61C *5/14*
U.S. Cl. 433—136 **1 Claim**

1. A method for preventing moisture contamination of dental



cavity preparations comprising the steps of:

a. securing a matrix band against the tooth by inserting a device composed of compressed hydrophilic material into proximal tooth areas, securing the matrix band against the tooth by reciprocal pressure against each tooth, and

b. decreasing moisture contamination by absorbing potential moisture with said device before said moisture can contaminate the cavity preparation, and

c. wherein pronounced expansion of the compressed material provides reciprocal pressure to all points of the matrix band along the proximal surface resulting in a close adaption of the matrix band to the tooth surface.

5,573,401

BIOCOMPATIBLE, LOW MODULUS DENTAL DEVICES

James A. Davidson, Germantown; Ajit K. Mishra, Memphis, both of Tenn.; Kenneth P. Daigle, Olive Branch, Miss., and Paul Kovacs, Memphis, Tenn., assignors to Smith & Nephew Richards, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 36,414, Mar. 23, 1993, Pat. No. 5,509,933, which is a continuation-in-part of Ser. No. 986,280, Dec. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 647,453, Jan. 28, 1991, Pat. No. 5,169,597, which is a continuation of Ser. No. 454,181, Dec. 21, 1989, abandoned. This application Jun. 16, 1994, Ser. No. 260,707
Int. Cl.[6] A61C *8/00*
U.S. Cl. 433—201.1 **40 Claims**



1. A low modulus, corrosion resistant dental implant, said implant comprising:

an implant body shaped for implantation beneath gingival tissue of a mouth, cooperation with a jaw bone, and stable fixation relative to said jaw bone, the implant body made of a predominantly alpha-prime hexagonal close packed titanium alloy comprising:

titanium;

from about 10 to about 20 wt. % as the sum of metals selected from the group consisting of niobium and tantalum; and

up to 50 wt. % zirconium,

wherein the alloy is free from deliberately added toxic elements.

5,573,402

SYSTEM AND METHOD FOR COLORING POLYGON USING DITHERING

Norman S. Copperman, Palo Alto; Alan S. Gray, Sunnyvale, and Wade O. Winblad, Hayward, all of Calif., assignors to Atari Games Corporation, Milpitas, Calif.

Division of Ser. No. 888,375, May 22, 1992, Pat. No. 5,366,376. This application Nov. 21, 1994, Ser. No. 342,711
Int. Cl.[6] G09B *9/00;19/16*
U.S. Cl. 434—69 **24 Claims**

1. In a computer having a video display and a storage, a method of hazing a plurality of polygons, comprising the steps of:

selecting one of the polygons from the storage;

calculating a haze value as:

$$\text{haze value}=(z*kval)/dimval$$

where

z is the distance between a camera position and the selected polygon,

kval is a constant, and

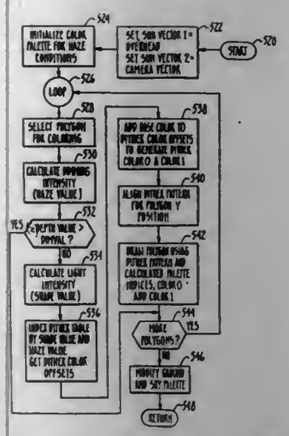
dimval is the distance for full hazing;

calculating a shade value as the dot product of a sun vector and the normal to the polygonal plane;

indexing a dither table with the haze and shade values for dither color offsets;

adding a base color to the dither color offsets for dither colors;

determining a dither pattern of dither colors based on the position of the selected polygon; and



drawing the selected polygon on the video display using the dither pattern.

24. A system for coloring a polygon to indicate a hazing condition, comprising:

a computer accessing a storage;

an input device connected to the computer capable of selecting a polygon;

a color palette for the polygon wherein each color of the palette is associated with a different shade and haze value, said palette stored in the storage;

a plurality of simulated light sources generated by the computer;

a haze value determined by a dimming distance value (dimval) and a polygon distance (z) between an observer and the polygon;

a shade value representative of the relationship between the light sources and a normal to the polygonal plane;

a selector of color offsets into the color palette using the haze and shade values;

a visual display connected to the computer;

a dither pattern selected by the computer; and

a modifier to change the color of the polygon in response to the selected color offset and dither pattern;

wherein said modified polygon is drawn on the visual display.

5,573,403

AUDIO FREQUENCY CONVERTER FOR AUDIO-PHONATORY TRAINING

Isi Beller, 6, rue de Savoie, F 75006 Paris, and Boris Fradin, 7, Chemin du Croison, F 77123 Noisy sur Ecole, both of France

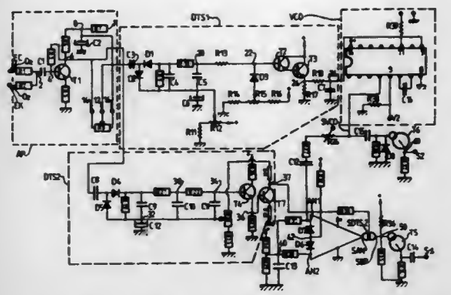
PCT No. PCT/FR93/00056, § 371 Date Jul. 21, 1994, § 102(e) Date Jul. 21, 1994, PCT Pub. No. WO93/14482, PCT Pub. Date Jul. 22, 1993
PCT Filed Jan. 20, 1993, Ser. No. 256,703
Claims priority, application France, Jan. 21, 1992, 92 00603
Int. Cl.[6] H04R *3/12*
U.S. Cl. 434—185 **14 Claims**

1. An audio frequency converter apparatus for audio-phonatory training of subjects adapted to provide, starting from an audio frequency signal provided at an input, a parametric signal applied, through an intermediatory of an electric acoustic transducer, to a person to be treated, the apparatus comprising:

input amplification means for receiving the audio frequency signal having a frequency and an amplitude and to output an amplified signal at a voltage;

first threshold sensor means, connected to the output of the input amplification means, for subtracting a threshold voltage from the voltage supplied by the input amplification means, after rectification;

second threshold sensor means, connected to the output of the input amplification means, for adding the threshold voltage to



the voltage supplied by the input amplification means, after rectification, said second threshold sensor means having a time constant which is at least equal to that of the first threshold sensor means;

voltage controlled oscillator means, connected to the output of the first threshold sensor means, for providing an oscillating output having a frequency that decreases with an increase in said output of said first threshold sensor means;

modulator means, comprising first and second inputs which are respectively connected to the outputs of the second threshold sensor means and the voltage controlled oscillator means, and comprising an output supplying said parametric signal having a frequency oscillating with said frequency of said first input to said modulator means and having an envelope amplitude that increases with an increase in an amplitude of said second input to said modulator means; and

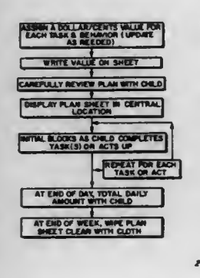
variator means for varying at least one characteristic of a first group formed by the envelope amplitude and the frequency of the parametric signal, as a function of at least one characteristic of a second group formed by a logarithm of the amplitude and the frequency of the audio frequency signal.

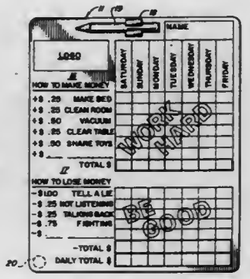
5,573,404

DEVICE AND PROCESS FOR MODIFYING BEHAVIOR OF CHILDREN

Willard S. Stawski, II, 796 Eastridge Dr. NE., Grand Rapids, Mich. 49546

Filed Feb. 1, 1994, Ser. No. 189,920
Int. Cl.[6] G09B *19/00*
U.S. Cl. 434—238 **9 Claims**





4. A process for modifying the behavior of a child comprising the steps of:

displaying on a visible record keeping implement a list identifying positive behavior and negative behavior;

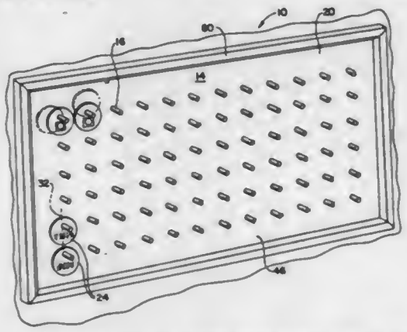
specifying on the record keeping implement specific monetary rewards or penalties for each behavior;

reviewing with the child the positive and negative behavior and the specific rewards and penalties for each;

recording when the child earns rewards and penalties for the respective behaviors for each day on the implement;

providing spaces on the implement for recording the net rewards and penalties earned for each day of the week;
recording on the implement with a marker the net reward or penalty for each day of the week for a week;
paying or extracting from the child the net reward or punishment for the week; and
repeating the process weekly until the behavior is modified permanently.

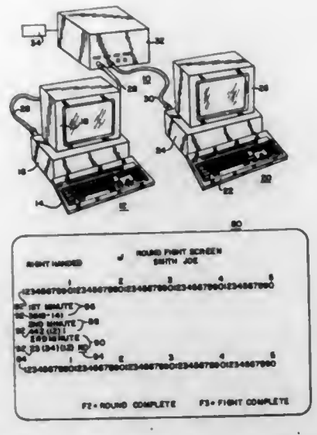
5,573,405
BEHAVIOR MONITORING AND TRAINING DEVICE
Suzanne Evans, 222 Richards St., Geneva, Ill. 60134
Filed Jun. 3, 1994, Ser. No. 254,407
Int. Cl.[6] G09B *19/00*
U.S. Cl. 434—238 **16 Claims**



1. A behavior training and modification device, comprising:
a board having a front face;
a plurality of pegs extending outwardly from said front face of said board and being arranged in a predetermined pattern;
a first set of indicator plates being marked to provide a visual indication, each of said indicator plates including an aperture sized to slidably engage onto said pegs;
a second set of indicator plates each indicator plate in said second set having a transparent area, an indicator area, and an aperture sized to slidably engage onto said pegs; and
wherein when indicator plates from said second set are stacked onto a peg proximal to an indicator plate from said first set, the visual indication on the indicator plate from said first set is visible through the transparent areas of the plates from said second set stacked on said peg.

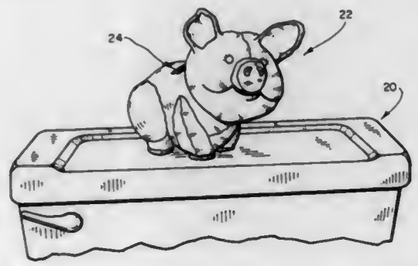
5,573,406
METHOD AND SYSTEM FOR DISPLAYING SYMBOLS REPRESENTING INDICIA OF TRAITS IDENTIFYING TRENDS FOR A PARTICIPANT IN A BOXING EVENT
Carl Fowler, 1545 W. 120th St., Chicago, Ill. 60643
Filed May 5, 1993, Ser. No. 57,737
Int. Cl.[6] G09B *25/00*
U.S. Cl. 434—207 **13 Claims**

1. A method of identifying indicia of traits of a first participant in an event with the aid digital computer, said method comprising the steps of:
providing said computer with a database for said indicia of traits including at least, a plurality of predetermined characteristics corresponding to traits of said participant;
entering serially each of said predetermined characteristics using an input device connected to said computer as often as occurring in the event;
converting and outputting said serially entered input to a plurality of predefined symbols; and
displaying said predefined symbols in a plurality of predefined display formats;



actuating a means for timing a predetermined interval, said timing means being actuated using said input means;
serially entering each of said predetermined characteristics;
said step of serially entering each of said predetermined characteristics further includes the step of:
entering a characteristic for the occurrence of each of the punches of a jab, a cross, a hook, a dominant hook, an uppercut and a dominant uppercut said step of serially entering each of said predetermined characteristics further includes the step of:
entering a characteristic for the occurrence of a body punch;
entering a characteristic of a grouping upon the occurrence of a combination of said predetermined characteristics;
said predefined display formats further comprising a first screen having unit, relative proportion and time indications for said traits for said first participant, a second screen having both unit and relative proportion indicators for said traits for said first participant and a second participant and a third screen having both unit and relative proportion indications for the totals of said traits for said first participant and for said second participant.

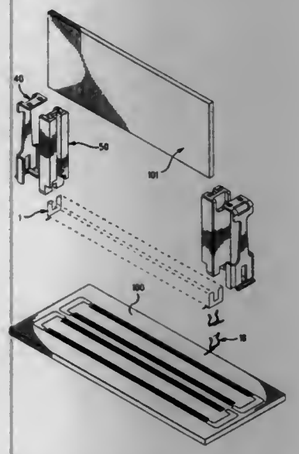
5,573,407
TOILET TRAINING APPARATUS AND METHOD
Beverly Dunford, 213 E. 300 S., Logan, Utah 84321
Filed Oct. 25, 1995, Ser. No. 547,859
Int. Cl.[6] G09B *19/00*
U.S. Cl. 434—262 **14 Claims**



1. A method of training a child to complete a toilet training experience, comprising the steps of:
providing a toilet for toilet training a child;
providing an object adjacent the toilet, the object including a device for emitting a musical sound;

rewarding the child with a token upon completion of an appropriate toilet activity by the child;
placing the token into the object;
causing the musical sound to be emitted from the object in response to placing the token into the object.

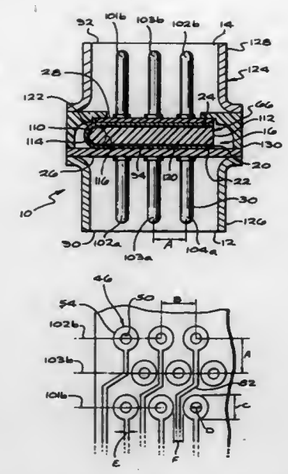
5,573,408
MICROPITCH CARD EDGE CONNECTOR
Michael F. Laub, Etters, and William J. Schnoor, Hummelstown, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Filed Jun. 30, 1994, Ser. No. 269,255
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—62 **6 Claims**



1. An electrical edge connector housing comprising:
(a). a first housing comprising:
(i). opposing side members creating a first substrate receiving groove,
(ii). a first end, and
(iii). a second end having a fastening section,
(b). a second housing comprising:
(i). opposing side members creating a second substrate receiving groove,
(ii). a first end, and
(iii). a second end having a complementary fastening section engageable with said fastening section,
wherein, when said fastening section engages said complementary fastening section, said first and second substrate receiving grooves align to create a single uninterrupted substrate receiving groove.

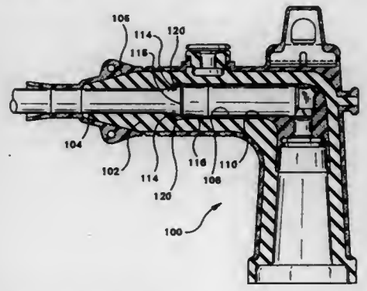
5,573,409
INTERCONNECTOR
Robert J. Shiley, Riverside, and Gary C. Bethurum, Laguna Niguel, both of Calif., assignors to ITT Corporation, Secaucus, N.J.
PCT No. PCT/US91/07660, § 371 Date Dec. 12, 1991, § 102(e) Date Dec. 12, 1991
PCT Filed Nov. 17, 1991, Ser. No. 777,290
Int. Cl.[6] H01R *31/06*
U.S. Cl. 439—76.1 **6 Claims**

1. A connector of the type that has a first mating face part with a first plurality of rows of contacts and a second mating face part with a second plurality of rows of contacts, and a flexible circuit board assembly that extends between said mating face parts and



that has first and second opposite board faces with electrically conductive terminations and multiple board conductors that each lie on a board face with said conductors connecting together a plurality of terminations at each of said mating face parts, said flexible board assembly having first and second end portions and said terminations being arranged in a plurality of rows at each end portion with each termination electrically connected to one of said contacts and to one of said board conductors, characterized by:
said first and second plurality of contacts are each arranged in at least three rows, said board conductors include first and second groups of row conductors that each extend along said first board face at each of said end portions with at least some of said conductors extending in a zig-zag pattern around some of said terminations, with only one of said conductors extending and lying between two terminations of the same row, and said board conductors include a third group of board conductors that each extend along said second board face at each of said end portions.

5,573,410
VARIABLE SIZE ENTRY INSERT FOR CABLE ACCESSORIES AND METHOD
Frank M. Stepniak, Andover, N.J., assignor to Amerace Corporation, Hackettstown, N.J.
Filed Mar. 2, 1995, Ser. No. 396,477
Int. Cl.[6] H01R *4/58*
U.S. Cl. 439—88 **5 Claims**



1. An insert for use in the manufacture of a high voltage cable accessory having a body portion with a first bore therein, said first bore having a first end and a second end, said insert comprising:

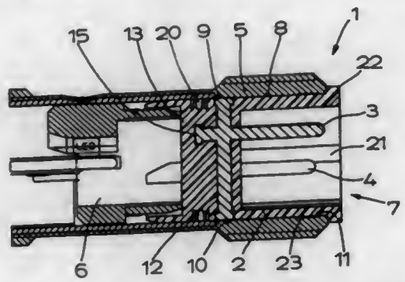
a) a first end and a second end, said first end of said insert positioned in said body portion adjacent said second end of said first bore;
b) said insert having a second bore therethrough and communicating with said first bore of said body portion;
c) an annular recess in said insert adjacent said second bore and adjacent said first end of said insert to define a weakened region; and
d) the portion of said insert between said annular recess and said first end of said insert being deflectable towards the central longitudinal axis of said insert to control the diameter of the entry into said second bore, said deflectable portion of said insert being fixed in position by the formation of said body portion about said insert.

5,573,411

BUILT-IN PLUG WITH A GROUNDING WIRE CONTACT PIN

Josef Bartosz, Markdorf, and Wolfgang Mehnert, Lindau, both of Germany, assignors to i f m electronic GmbH, Germany

Filed May 31, 1995, Ser. No. 455,853
Claims priority, application Germany, May 31, 1994, 44 19 023.9
Int. Cl.[6] H01R *4/66*
U.S. Cl. 439—95 **19 Claims**



1. Built-in plug comprising a plug housing with a carrier wall, a grounding wire contact pin which projects on a plug side of said housing, which is located in said plug housing; wherein the grounding wire contact pin is electrically connected to a grounding wire element by a connecting element which is molded within said carrier wall and routed to an outer surface of the plug housing as a means for electrically connecting the grounding wire contact pin to a conductive housing of a part into which the built-in plug is incorporated; and wherein the grounding wire contact pin is formed as one piece with the grounding wire element and connecting element.

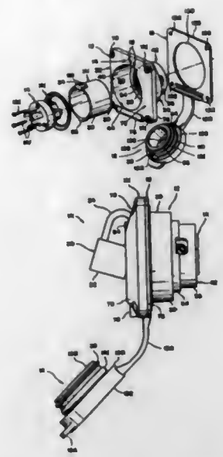
5,573,412

ELECTRICAL CONNECTOR HOUSING

John C. Anthony, Fairfield, Conn., assignor to Hubbell Incorporated, Orange, Conn.

Filed May 17, 1995, Ser. No. 442,896
Int. Cl.[6] H02G *3/18*
U.S. Cl. 439—133 **20 Claims**

1. An electrical connector housing for an electrical enclosure, comprising:
a tubular body portion having a first open end and a second open end with an inner surface extending therebetween, said tubular body portion being adapted to house a set of electrical contacts and receive a mating electrical connector therein;
a flange portion extending outwardly from said tubular body portion at said first open end, said flange portion having an interior surface and an exterior surface with a notched section intersecting with said tubular body portion; and



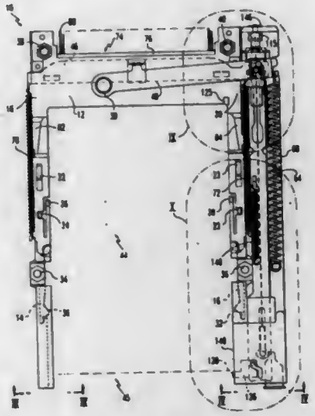
a tubular shroud concentrically coupled within said tubular body portion, said tubular shroud having a first end positioned adjacent said first open end of said tubular body portion and a second end coupled to said tubular body portion, said first end of said tubular shroud having a lockout hole formed therein being sized to receive a locking mechanism therein, said first end of said tubular shroud having said lockout hole located adjacent said notched section of said outer surface for receiving a locking mechanism therein.

5,573,413

EJECT ACTIVATION MECHANISM FOR A MEMORY CARD CONNECTOR AND METHOD OF USE

James J. David, Mechanicsburg; Scott S. Duesterhoeft, Etters; John M. Spickler, Marietta, all of Pa., and Naoki Hiyama, Yokohama, Japan, assignors to Berg Technology, Inc., Reno, Nev.

Filed Dec. 7, 1994, Ser. No. 349,185
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—159 **17 Claims**



1. A connector for a card-like data processing medium, said
(a) a frame having a rear transverse end element and opposed longitudinal elements extending forward from said rear transverse element and spaced at an interval substantially equal to the width of said card-like data processing medium, said

opposed longitudinal elements defining a storage space, one end of said frame defining an insertion inlet for inserting the card-like data processing medium into the storage space;
(b) a header positioned adjacent the rear transverse element of the frame opposite the insertion inlet;
(c) a eject plate movably mounted on the frame and operable to slide toward the header to allow engagement of the card-like data processing medium with the header and away from the header eject the card-like data processing medium;
(d) a link arm having a pivot point where the link arm is pivotally connected to the frame to move from a rearward position to a forward position to move the eject plate in a forward direction; and
(e) means for moving the link arm from said rearward position to said forward position, locking means for restraining said link arm in said rearward position, said locking means comprising a vertical pin having a head with an enlarged diameter and said pin being at least in part superimposed over an elongated timing bar having front and rear apertures and a connecting slot, and trigger means for releasing said locking means, wherein the longitudinally directed force causes a rotational force transfer means to move the vertical pin out of engagement with the link arm.

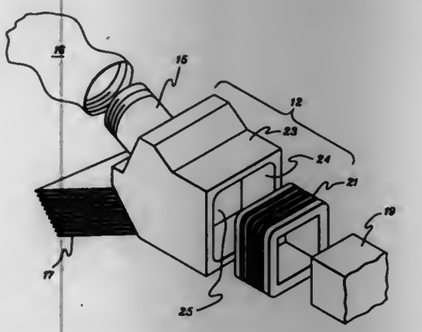
5,573,414

TWO PIECE ELECTRICAL AND FLUIDIC CONNECTOR AND INSTALLATION METHOD THEREFORE

James K. Taillon, High Ridge, and Frank R. Reidelberger III, Chesterfield, both of Mo., assignors to Mechanical Dynamics & Analysis, Inc., Scotia, N.Y.

Filed Mar. 16, 1995, Ser. No. 405,225
Int. Cl.[6] H01R *4/60*
U.S. Cl. 439—191 **21 Claims**

1. A method for providing an electrical and fluidic connector on



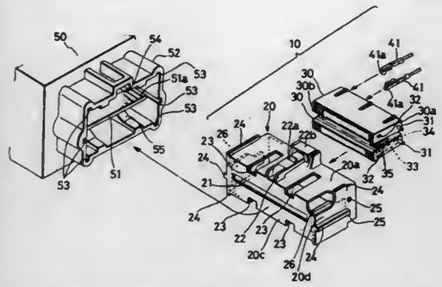
an electro-fluidic conductor, said electrical and fluidic connector having a first member and a second member that are separate and both electrically conductive, said second member having a fluid port that facilitates fluidic connection to a fluid conductor and said second member being configured to facilitate electrical connection to an electrical conductor, said method comprising the steps of:
(a) securing said first member to said electro-fluidic conductor such that said first member encircles an end portion of said electro-fluidic conductor and forms a fluid tight seal thereto, and electrically connects therewith; and
(b) matably connecting said first member to said second member such that said first member and said second member define a hollow inner chamber that comprises a fluid tight chamber for passing fluid between said electro-fluidic conductor and said fluid port of said second member, and wherein said first member and said second member themselves define an electrical connection between said electro-fluidic conductor and said electrical conductor when said electrical conductor is attached to said second member.

5,573,415

CARD EDGE CONNECTOR AND METHOD FOR CONNECTING SAME

Mitsuhiro Fujitani, and Yasuo Matsushita, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Nov. 14, 1994, Ser. No. 338,853
Claims priority, application Japan, Nov. 17, 1993, 5-312748
Int. Cl.[6] H01R *23/68*
U.S. Cl. 439—260 **9 Claims**



1. A card edge connector for holding a plurality of terminals, and for connecting the terminals to upper and lower surfaces of a card edge, the card edge connector comprising:
a pair of inner housings for holding the terminals in opposed relation;
an outer housing adapted to rotatably mount the inner housings, said outer housing having a card edge insertion opening sized for insertion of the card edge, and an outer housing opening sized for insertion of the inner housings, said outer housing opening being located on a side formed on the outer housing that is opposite to a side on which the card edge insertion opening is formed;
a rotation regulating mechanism for regulating a rotatable range of the inner housings so that the inner housings do not interfere with said insertion of the card edge into the card edge insertion opening of the outer housing, the rotation regulating mechanism including projected portions formed on one of inner walls of the outer housing that engage the inner housings and outer walls of the inner housings that engage the outer housing; and
a rotating mechanism for rotating the inner housings so that the terminals of the inner housings abut against the upper and lower surfaces of the card edge terminals after the card edge has been initially inserted between the terminals.

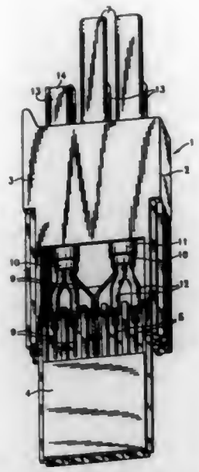
5,573,416

CONNECTOR FOR SHIELDED CABLES

Danny Morlion, St. Amandsberg; Luc Jonckheere, Dilbeek; Jan P. K. Van Koetsem, Zwijndrecht, and Eddy K. Creëlle, Dendermonde, all of Belgium, assignors to Framatome Connectors International, Paris, France

Filed Nov. 16, 1994, Ser. No. 340,212
Claims priority, application Netherlands, Nov. 19, 1993, 9302005
Int. Cl.[6] H01R *13/28*-
U.S. Cl. 439—291 **17 Claims**

1. A connector for shielded cables, said cables each having an outer jacket, said connector comprising a housing with signal and ground contacts mounted in said housing, said housing having an upper wall with inlet openings for the cables and at least one strain relief member joining the inlet openings, each strain relief member being integrally formed with the upper wall of the housing and projecting from said upper wall, wherein each strain relief member comprises a support projecting from the upper wall and having a support face adapted to receive the outer jacket of at least one of the cables, a pressing member being provided for pressing at least



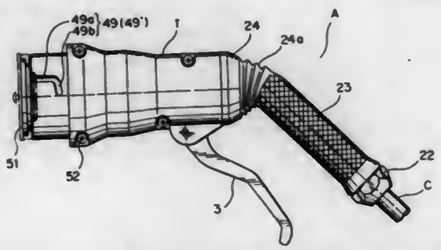
one of the cables with its outer jacket against the support face of the strain relief member.

5,573,417

FEEDING CONNECTOR

Shigemi Hashizawa; Shigemitsu Inaba, and Toshiaki Hasegawa, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Division of Ser. No. 165,827, Dec. 14, 1993, abandoned. This application Apr. 11, 1995, Ser. No. 419,935
Claims priority, application Japan, Dec. 18, 1992, 4-338738; May 12, 1993, 5110186
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—310 3 Claims



1. An electrical connector comprising a feeding connector half and a receiving connector half, wherein said feeding connector half comprises:

a case having a front half portion and a rear half portion;

a connector main body slidably mounted within said front half portion of said case, said connector main body having terminal accommodating cavities for housing a plurality of terminals;

a handle including a main body portion and a slider, wherein said slider is slidably mounted in a drilled hole in a partition wall within said case for causing said connector main body to slide and said slider is integrally formed with said main body portion of said handle to form a dog-legged shape;

a rotatable lever having a working portion, an intermediate portion and an operating portion, said intermediate portion being between said working portion and said operating portion, said working portion being rotatably attached to one end of said handle within said case and said operating portion projecting out of said case;

a preliminary locking means comprising a pair of guide channels on a front end portion of said feeding connector half and rolling pins on a front end portion of a connector main body of said receiving connector half, said guide channels having a straight introducing channel extending from an open end of said feeding connector half in a direction parallel to a longitudinal axis of said feeding connector half and a locking channel circumferentially curved from an end of said introducing channel; and

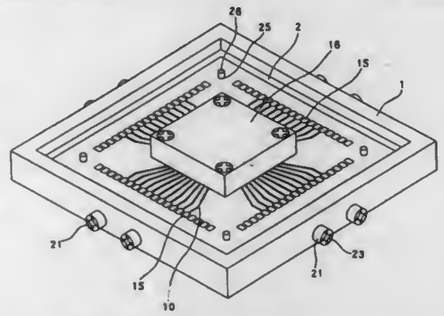
a secondary locking means attached to said handle and adjacent to said rotatable lever for locking and unlocking said rotatable lever wherein said rotatable lever is locked after said feeding connector half and said receiving connector half are preliminarily locked to each other and then said rotatable lever is rotated to a position where said operating portion of said rotatable lever is rotated towards and near said handle so that said feeding connector half is completely locked to said receiving connector half.

5,573,418

PRESS-IN CONNECTION TYPE STRUCTURE FOR ELECTRIC PART

Noriyuki Matsuoka, Yokohama, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1994, Ser. No. 362,856
Claims priority, application Japan, Dec. 28, 1993, 5-354667
Int. Cl.[6] H01R *13/62*
U.S. Cl. 437—331 10 Claims



1. A connection apparatus comprising:

a substrate formed of an electrically insulating material, said substrate having a sheet-receiving portion with a sheet-receiving seat facing in a first direction, and an IC receiving portion disposed at a central portion of said sheet-receiving portion for receiving an IC having IC contact elements, said IC receiving portion having an opening which opens through said sheet-receiving seat in said first direction;

an IC supporting seat disposed in said IC receiving portion, facing in said first direction and offset from said sheet-receiving seat in a second direction opposite said first direction;

a flexible wiring sheet supported on said sheet-receiving seat, said wiring sheet having at least two rows of first contact elements disposed at a central portion thereof corresponding in position to said IC receiving portion and on a side of said wiring sheet facing in said second direction, said wiring sheet further having at least two rows of second contact elements disposed generally radially outwardly of said at least two rows of first contact elements, respectively, said first contact elements being arranged at a smaller pitch than said second contact elements;

a pressing device disposed on a side of said wiring sheet facing in said first direction; and

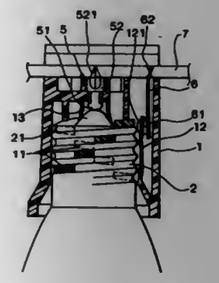
wherein said pressing device comprises a pressing cover and at least two coil springs operably secured to said pressing cover for resiliently pressing said central portion of said wiring sheet in said second direction to cause said first contact elements of said wiring sheet to be pressed into contact with the IC contact elements of the IC when the IC is supported on said IC supporting seat, said coil springs being disposed with their central axes parallel to said wiring sheet and extending along said rows of said first contact elements, respectively.

5,573,419

SAFETY LAMPHOLDER FOR CHRISTMAS TREE LIGHT SETS AND THE LIKE

Ming-hsiung Chen, 16, Alley 3, Lane 227, Nung-an Street, Taipei, Taiwan

Filed Dec. 22, 1994, Ser. No. 362,844
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—340 1 Claim



1. A safety lampholder comprising an inner screwthread for the mounting of a lamp screw base of a lamp, a top center hole, a pointed center contact mounted in said top center hole, and a pointed side contact, said center contact and said side contact being respectively disposed in contact with ring and tip contacts of the lamp when the lamp screw base of the lamp is threaded into the inner screwthread, wherein:

said lampholder further comprises two opposite, springy sloping walls extending bilaterally outwards from the periphery of the bottom side of said top center hole to protect said center contact from being touched by fingers, an insulative spring strip extending upwardly from an inside wall thereof near the bottom opening and terminating in a U-notch and two raised portions at two opposite side of said U-notch, and a plurality of separated steps having a uniform chambered angle R and defining said screwthread for mounting the lamp screw base;

said center contact comprises a cylindrical bottom section fitted into said top center hole, and a circularly curved top section raised from one side of said bottom section, said top section having a folding flange spaced above said bottom section and fitted into a sector groove on said lampholder to hold down said bottom section in said top center hole and a sharp top edge for piercing the insulator of the electric wire; and

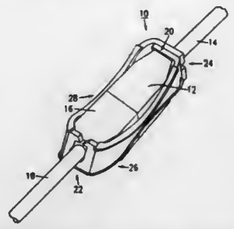
said side contact has a projecting contact portion at one side near a bottom end thereof and spaced behind the U-notch of said insulative spring strip, and a sharp edge for piercing the insulator of the electric wire, said projecting contact portion of said side contact being disposed in said U-shaped notch to make an electric contact with the ring contact of the lamp screw base when the lamp screw base is threaded into the lampholder.

5,573,420

ELECTRICAL CORD AND ELECTRICAL PLUG SECURER

Patrick J. Grosswendt, 28954 Crest Dr., Agoura, Calif. 91301

Filed Dec. 20, 1994, Ser. No. 360,996
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—371 24 Claims



1. A securing device suitable for securing together a plurality of cords and for securing together a plurality of loops of one or more cords, comprising:

(a) a disk-shaped first connector disposed within a reference plane, the first connector comprising two adjoined layers and being substantially inflexible and substantially nonelastic, the connector defining:

(i) a central opening; and

(ii) an access notch capable of allowing a member disposed perpendicular to the reference plane to be inserted into the central opening;

(b) a first strip attached to the first connector, the first strip being substantially flexible and elastic; and

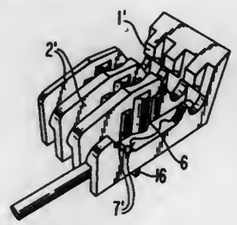
whereby a plurality of cords or cord loops can be secured by wrapping the securing device around the plurality of cords or cord loops and by thereafter attaching the first connector to the first strip by inserting a portion of the first strip into the central opening via the access notch, the first strip being retained within the first connector by the opposing teeth.

5,573,421

CONDUCTOR CONNECTING APPARATUS FOR WEAK-CURRENT SYSTEM

Hans Reichle, Wetzikon, Switzerland, assignor to Reichle + De-Massari AG, Wetzikon, Switzerland

Filed Oct. 13, 1994, Ser. No. 322,327
Claims priority, application Switzerland, Oct. 18, 1993, 03 140/93
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—409 6 Claims



1. A conductor connecting apparatus comprising:

a casing part including a casing portion and defining a plurality of parallel groove-like longitudinal ducts disposed in the casing portion, each of the longitudinal ducts having a duct longitudinal axis and being configured to receive a conductor of a cable, each conductor having a conductor longitudinal axis adapted to extend parallel to the duct longitudinal axis of a corresponding longitudinal duct when the conductor is received within the corresponding longitudinal duct; and

contacting means adapted to contact each conductor by projecting into a corresponding longitudinal duct and extending in a direction having a component transverse to the conductor longitudinal axis, the contacting means including:

a plurality of contact pins disposed in the longitudinal ducts, each of the contact pins including a contact blade having a contact surface for contacting a corresponding conductor at a corresponding contact surface thereof by stripping insulation from the conductor, a distance defined between the conductor longitudinal axis and the contact surface of the conductor being smaller than a radius of the conductor; and

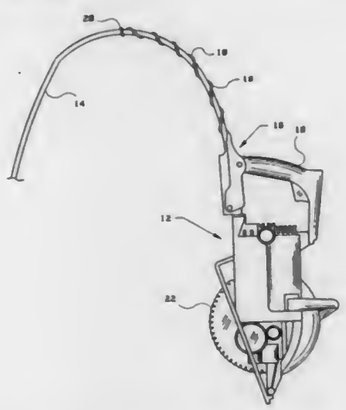
a clamping means including clamping cams formed on walls of the longitudinal ducts, each clamping cam comprising a clamping surface for contacting a corresponding conductor at a corresponding clamping surface thereof by stripping insulation from the conductor, a distance defined between the conductor longitudinal axis and the clamping surface of the conductor being smaller than or equal to the radius of the conductor, the clamping means being adapted to cooperate with the contact blade for effecting a predetermined contact pressure on the conductor, the casing part further including a lid adapted to be mated with the casing portion for pressing respective conductors into respective ones of the longitudinal ducts thereby effecting contact between the conductors and corresponding ones of the contact pins and the clamping cams.

5,573,422

ELECTRICAL CORD RETAINING AND PROTECTION SYSTEM

Ryan Lawliss, Cathedral City, Calif., assignor to Ryan J. Lawliss, Cathedral City, Calif.

Filed Aug. 21, 1995, Ser. No. 517,066
Int. Cl.[6] H01R *13/56*
U.S. Cl. 439—448 **14 Claims**



1. A cord retaining system for securing a section of electrical cord of a given diameter, adjacent to and extending from an electric power tool, the power tool including an electric motor, the system comprising:

a substantially flat, longitudinal base plate providing a first end and a second end and providing a means of attachment to at least one side of a power tool;

a rigid rod-like member forming an elongated coil with a plurality of turns with an internal bend diameter greater than the given diameter of the electrical cord, the turns formed around at least one curvilinear central axis, the member providing a first end and a second end, wherein the pitch of the turns are greater than the sum of the given diameter of the electrical cord plus the diameter of the rod-like member and the first end being continuous with the second end of said base plate; and

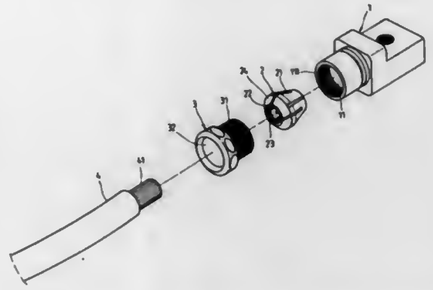
a clamp on the second end thereof, the clamp comprising a segment of a single coil in which the pitch and the bend diameter are less than the remainder of the coils, whereby said base plate can be mounted to the handle of the power tool and the electrical cord extending therefrom passes through said coils, being contained therein, and is secured to the power tool by said clamp, thereby extending said cord away from the tool and preventing interference between the cord and the tool.

5,573,423

INNOVATIVE DISTRIBUTION CABLE MOUNTING DEVICE

Kuang-Ts'an Lin, and Shih-Tzung Liang, both of No. 360, Sec. 1, Min-Sheng N. Rd., Kuei-Shan Hsiang, Taoyuan County, Taiwan

Filed Jan. 18, 1995, Ser. No. 374,120
Int. Cl.[6] H01R *13/58;4/38*
U.S. Cl. 439—462 **1 Claim**



1. An innovative distribution cable mounting device, comprising:

a longitudinally extended junction block, said junction block having a tapered junction hole formed longitudinally therein, said tapered junction hole having an internal thread formed therein;

a tapered plug member disposed within said tapered junction hole and having a pair of opposing first and second conically shaped tapered ends, said tapered plug member having a through bore extending between said first and second ends for receiving an electrical cable therein, said through bore being of a larger diameter at said first end than a diameter at said second end and having serrations formed on an inner wall surface of said through bore at said first end for engaging an insulative covering portion of the electrical cable, said diameter at said second end being adapted to receive a conductor portion of the electrical cable, said tapered plug member having a plurality of parallel spaced slits respectfully extending from said first and second ends thereof;

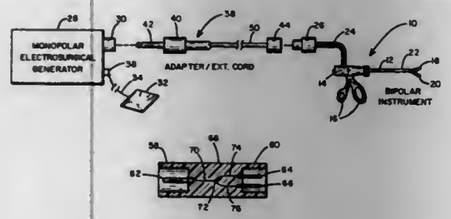
a longitudinally extended hollow screw member having a thread formed on an external surface of one end thereof for threaded engagement with said internal thread of said tapered junction hole, said hollow screw member having an inner wall surface defining a longitudinal opening extending therethrough for passage of the electrical cable into said tapered plug member, said inner wall surface having a conically shaped portion at said one end of said hollow screw member for engaging said first end of said tapered plug member as said engagement of said hollow screw member within said tapered junction hole is advanced to cause said first and second ends of said tapered plug member to clampingly engage respective insulative covering and conductor portions of the electrical cable.

5,573,424

APPARATUS FOR INTERFACING A BIPOLAR ELECTROSURGICAL INSTRUMENT TO A MONOPOLAR GENERATOR

R. Keith Poppe, Minneapolis, Minn., assignor to Everest Medical Corporation, Minneapolis, Minn.

Filed Feb. 9, 1995, Ser. No. 386,296
Int. Cl.[6] H01R *29/00*
U.S. Cl. 439—502 **3 Claims**



1. Apparatus for interfacing a bipolar electrosurgical instrument to a monopolar electrosurgical generator comprising:

(a) a first connector having a monopolar contact for mating with a terminal of said monopolar electrosurgical generator;

(b) a second connector having a pair of bipolar contacts for mating with a pair of conductors extending from the bipolar electrosurgical instrument; and

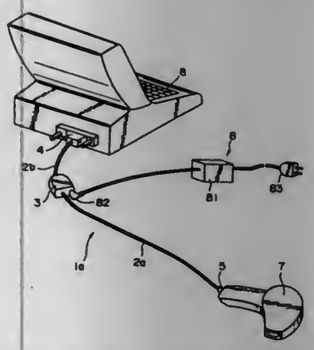
(c) means for electrically joining the monopolar contact to each of the pair of bipolar contacts.

5,573,425

COMMUNICATION CABLE USED IN A COMPUTER SYSTEM

Tahei Morisawa; Nobuhiro Tani, and Harumi Aoki, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1994, Ser. No. 325,924
Claims priority, application Japan, Oct. 18, 1993, 5-061041 U
Int. Cl.[6] H01R *11/00*
U.S. Cl. 439—502 **8 Claims**



1. A communication cable for connecting a peripheral device to a computer, said communication cable comprising:

a first cable enclosing a first set of data lines and a first set of power lines;

a second cable enclosing a second set of data lines and a second set of power lines;

a patch unit including a socket having first, second and third contacts;

said patch unit connecting said first set of data lines to said second set of data lines;

one of said first set of power lines being connected to said first contact and another of said first set of power lines being connected to said second contact;

one of said second set of power lines being connected to said first contact and another of said second set of power lines being connected to said third contact;

said third contact being selectively connected to and disconnected from said second contact based on the absence and presence, respectively, of power supplied to said first and second contacts by an external power source;

said first cable connecting said peripheral device to said patch unit;

said second cable connecting said patch unit to said computer;

whereby when power is applied from said external source to said first and second contacts, said power is supplied from said first and second contact to said peripheral device; and

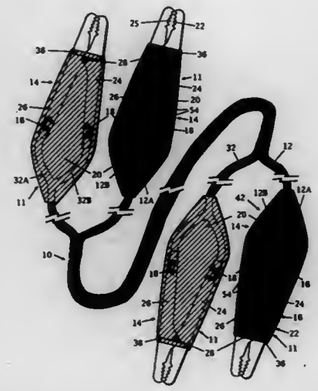
whereby when said external power source is absent, power is supplied to said peripheral device from said computer through said first and second sets of power lines.

5,573,426

COVERED AUTOMOTIVE JUMPER CABLES

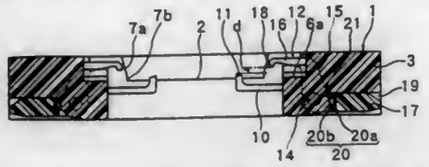
George E. Grant, 11739 NE. 128th Ave., Okeechobee, Fla. 34972

Filed Mar. 28, 1995, Ser. No. 411,553
Int. Cl.[6] H01R *11/24*
U.S. Cl. 439—504 **9 Claims**



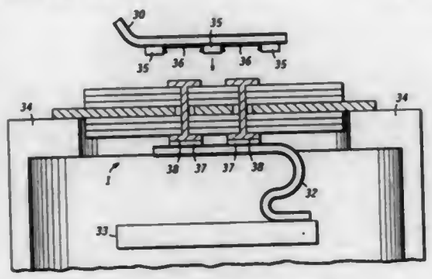
1. Automotive jumper cables comprising a first cable for carrying a negative electrical current, a second cable for carrying a positive electrical current, a handle on each end of the cables; each of the handles comprising a first elongated member, an electrical connector rigidly attached to the first elongated member, a second elongated member, a second electrical connector rigidly attached to the second elongated member, means for carrying an electrical current through each elongated member comprising split ends of a predetermined distance on each end of each cable, the split ends consisting of a first component and a second component, the first component of the split ends being aligned with and attached to the electrical connector inside the first elongated member; the second component of the split ends being aligned with and attached to the electrical connector inside the second elongated member; each of the handles further comprising a pivot pin; a spring entwined about the pivot pin; aligned matching holes in the sides of the first elongated member and the sides of the second elongated member, through which the pivot pin extends providing a means by which the elongated members are joined together and upon which they pivot, the spring forcing the elongated members to close at one end while forming an open end at the opposite end of the elongated members; the jumper cables further comprising a flexible covering over the open ends of each of the handles.

5,573,427
IC CARRIER
Hideki Sagano, Kawasaki, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan
Filed Jan. 21, 1994, Ser. No. 183,937
Claims priority, application Japan, Jan. 22, 1993, 5-27592
Int. Cl.[6] H05K *1/00*
U.S. Cl. 439—526 10 Claims



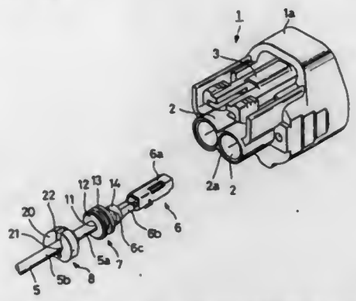
1. An IC carrier for use in mounting an IC package having electrical leads in an IC socket having electrical contacts, said IC carrier being devoid of electrical contacts and comprising:
an IC receiving body having a substantially rectangular IC receiving portion formed therein;
a plurality of support members having upwardly facing support surfaces, said support members being mounted to said IC receiving body and positioned at respective corners of said substantially rectangular IC receiving portion to engage and apply a push-up force to a lower edge or lower surface of an IC package positioned in said IC receiving portion;
a plurality of engagement members having downwardly facing engagement surfaces, said engagement members being mounted to said IC receiving body and positioned at respective corners of said substantially rectangular IC receiving portion to engage and apply a push-down force to an upper edge or upper surface of the IC package positioned in said IC receiving portion;
wherein said support members are elastic members and elastically support the IC package when the IC package is positioned in said IC receiving portion.

5,573,428
HERMETIC ELECTRICAL CONNECTOR
Bradley M. Biggs, Gilbert; Christopher F. Norton, Laveen, and Louis P. Farace, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 24, 1994, Ser. No. 265,368
Int. Cl.[6] H01R *13/658*; H05K *1/00*
U.S. Cl. 439—566 14 Claims



1. A hermetic electrical connector comprising:
a conductive layer with opposite first and second conductive layer surfaces;
an inner electrical isolation layer coupled to the first conductive layer surface through a first inner adhesive layer;
an outer electrical isolation laver coupled to the second conductive layer surface through a first outer adhesive layer;
a first contact coupled to the inner electrical isolation layer through a second inner adhesive layer;
a second contact coupled to the outer electrical isolation layer through a second outer adhesive layer; and
a contact interconnector electrically coupling the first contact and the second contact through the inner electrical isolation layer, the conductive layer, and the outer electrical isolation layer without electrically contacting the conductive layer, wherein the second inner adhesive layer, the inner electrical isolation layer, the first inner adhesive layer, the conductive layer, the first outer adhesive layer, the outer electrical isolation layer, and the second outer adhesive layer are each substantially planar and of uniform thickness.

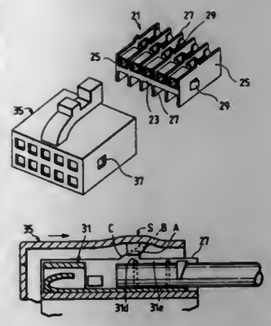
5,573,429
WIRE HOLDER FOR A WATER-PROOF CONNECTOR HAVING A U-SHAPED HOLDER MEMBER AND RUBBER PLUG
Sho Miyazaki, and Eiji Saijo, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan
Filed Aug. 31, 1994, Ser. No. 298,661
Claims priority, application Japan, Sep. 20, 1993, 5-257649
Int. Cl.[6] H01R *13/40*
U.S. Cl. 439—587 5 Claims



1. A wire holder for a water-proof connector which is coupled to an electrical wire which is inserted into a housing of the water-proof connector, said wire holder comprising:
a sealing rubber plug fitted on the electrical wire for sealing between the electrical wire and the housing of the water-proof connector; and
a U-shaped holder member including a regulating portion which is fixedly arranged behind said rubber plug and fitted and clamped on the electrical wire extended from said housing to regulate a bending position of the electrical wire, the U-shaped holder member having two side portions connected by a hinge piece.

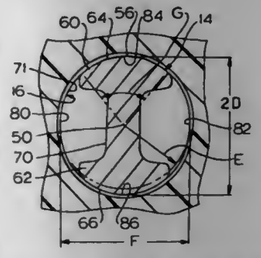
5,573,430
PRESSURE CONNECTOR
Yuji Hatagishi, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Aug. 3, 1995, Ser. No. 510,774
Claims priority, application Japan, Aug. 17, 1994, 6-193358
Int. Cl.[6] H01R *13/502*
U.S. Cl. 439—701 4 Claims

1. A pressure connector, comprising:
a horizontal board;
partition walls erecting on said horizontal board, said horizontal board and said partition walls constituting a housing;
terminal accommodating chambers defined by said horizontal board and said partition walls;
pressure terminals accommodated in said terminal accommodating chambers, electric wires extending from said pressure terminals and being led out of rear portions of said terminal accommodating chambers;



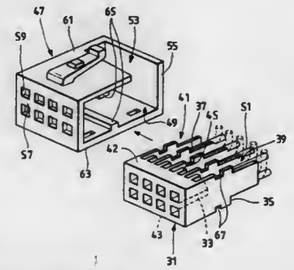
a boxlike cover releasably fitted to an outside of said housing, said cover being fitted onto said housing from a front portion of said housing;
contact projections formed on an inner surface of said cover, said contact projections being located above said partition walls when said cover is fitted to said housing;
vibration preventing projections formed on said inner surface of said cover, said vibration preventing projection being located in said terminal accommodating chambers and brought into contact with said electric wire at the time when said cover is fitted to said housing; and
guide projections formed on upper edges of said partition walls, respectively, said guide projection coming in contact with said contact projections at the time when said cover is being fitted onto said housing so that a portion of said cover on which said vibration preventing projections are formed is elastically deformed to thereby cause said vibration preventing projections to move away from said pressure terminal.

5,573,431
SOLDERLESS CONTACT IN BOARD
Woody Wurster, 502 W. Robinson, Carson City, Nev. 89703
Filed Mar. 13, 1995, Ser. No. 403,267
Int. Cl.[6] H01R *13/42*
U.S. Cl. 439—751 6 Claims



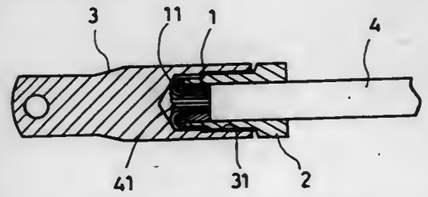
1. A combination of a circuit board which has at least one hole with substantially cylindrical hole walls extending along a vertical axis, and an electrical contact that has a press-fit section, said press-fit section having at least one transition portion and having a middle portion, said middle portion lying in interference fit in said hole and said electrical contact having a top section projecting generally upwardly above the hole, characterized by:
said middle portion of said press-fit section has a plurality of outer faces that are each of about the same radius of curvature as said hole and that lie facewise against the walls of said hole along a total angle of at least 90° but less than 270° about said axis, and the middle of said press-fit section forming a rigid structure extending between said faces and preventing said faces from moving toward each other, with the deflection of said hole walls away from said axis being greater than any deflection of said faces toward said axis.

5,573,432
PRESS-CONNECTING CONNECTOR
Yuji Hatagishi, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Jul. 12, 1995, Ser. No. 501,291
Claims priority, application Japan, Jul. 22, 1994, 6-171349
Int. Cl.[6] H01R *13/514*
U.S. Cl. 439—752 6 Claims



1. A connector, comprising:
a housing having a terminal receiving chamber for receiving a terminal including an electrical contact portion and a wire connecting portion for connecting a wire, said terminal receiving chamber being defined by partition walls on opposite sides thereof, a horizontal base plate and an outer wall;
a retaining member, for retaining said electrical contact portion, formed at said outer wall;
an outer cover for accommodating said housing;
a terminal receiving hole formed to correspond to said terminal receiving chamber through a front wall of said outer cover;
a housing insertion window, for receiving said housing, formed in a side wall of said outer cover; and
a wire passage window formed in an upper wall adjacent an upper edge of a rear wall of said outer cover, said wire being passed through said wire passage window to allow said wire to bend around said rear wall such that said wire assumes an S-shape and said rear wall absorbs a tension to said wire.

5,573,433
ELECTRIC WIRE CONNECTOR
Kuang-Ts'an Lin, and Shih-Tsung Liang, both of No. 10, Lane 31, Ta-Feng St., Lu-Chu Hsiang, Taoyuan County, Taiwan
Filed Nov. 13, 1995, Ser. No. 556,653
Int. Cl.[6] H01R *4/38*
U.S. Cl. 439—805 1 Claim



1. An improved electric wire connector comprising:
a hollow tubular fitting element having external threads provided at a middle section thereof for enabling said fitting element to be screwably fitted into a screw hole of a conductive element, and

a hollow tubular plug element for insertion into a front end of said fitting element, said plug element having an annular curved rim at an end thereof for pressing against the front edge of said fitting element after said plug element is inserted into the front end of said fitting element, wherein

after said plug element is inserted into the front end of said fitting element, an electric wire with the plastic skin at a front portion thereof stripped to expose a suitable length of wire strands is inserted into said fitting element via a rear end thereof such that the stripped plastic skin of said electric wire just presses against a rear end portion of said plug element and said wire strands pass out through a rear end of said plug element to be exposed on the outside of said plug element, said wire strands being bent inwardly to lie against said curved rim and prevented from possible breaking or damage due to friction when said fitting element together with said plug element is inserted into said conductive element since said wire strands may be firmly held between said curved rim and said conductive element.

5,573,434

FEMALE ELECTRICAL CONTACT MEMBER

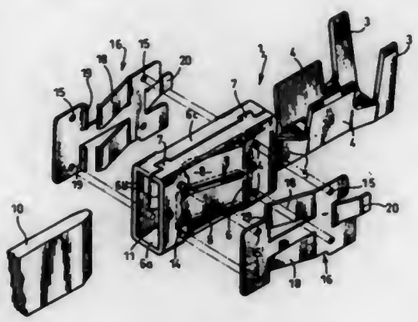
Jean Ittah, Villeneuve La Garenne, and Olivier Plessis, Chaville, both of France, assignors to Connecteurs Cinch, Montigny Le Bretonneux, France

Filed Mar. 2, 1995, Ser. No. 397,878

Claims priority, application France, Mar. 21, 1994, 94 03281

Int. Cl.[6] H01R *13/18*

U.S. Cl. 439—839 **20 Claims**



1. Female electrical contact member, comprising:

a metal blank cut out and bent to shape so as to comprise a first end and a second end;

electrical conductor fixing elements at said first end;

a rectangular section passage at said second end, said rectangular section passage defining an interior and an insertion opening, and comprising a bottom wall, a top wall, and two side walls;

elastic bars cut out from said two side walls and bent towards the interior of said rectangular section passage to form a clamp capable of gripping a male tongue when inserted through the insertion opening; and

an attached, initially separate, member comprising bracing bars cooperating with and strengthening said elastic bars, said attached member comprising two plates fixed against said side walls and from which said bracing bars are cut out.

5,573,435

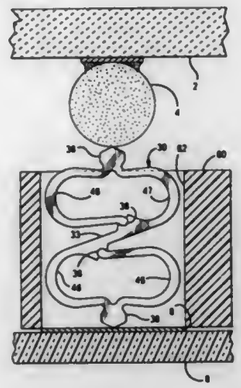
TANDEM LOOP CONTACT FOR AN ELECTRICAL CONNECTOR

Dimitry G. Grabbe, Middletown, and Iosif Korsunsky, Harrisburg, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 31, 1995, Ser. No. 521,721

Int. Cl.[6] H01R *4/48;9/09*

U.S. Cl. 439—862 **6 Claims**



1. An electrical contact for use in a connector between electrical interfaces comprising:

a generally flat contact body formed as a monolithic unit, the body having a central member and a pair of compliant sections on opposite sides of the central member, each of the compliant sections having a contact section at an end remote from the central member, the body being resiliently compressible along an axis of deflection extending through the central member and the contact sections, each of the compliant sections extending along a looping course which originates at the central member and terminates at a respective distal end having a convex surface, the central member having a pair of pockets each with a concave surface which is shaped complementary to the convex surface of a respective one of the distal ends, the distal ends residing in their respective pockets and being held in the central member during deflection of the contact body.

5,573,436

SEMI-SUBMERSIBLE OUTBOARD MOTOR COVER WITH AIR PASSAGE

Douglas A. Trudeau, Lake Villa, Ill.; Charles T. Rogan, Kenosha, and Mark C. Noble, Pleasant Prairie, both of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed May 23, 1995, Ser. No. 448,191

Int. Cl.[6] B63H *20/32*

U.S. Cl. 440—77 **9 Claims**

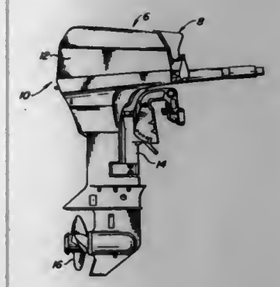
1. A motor cover for an outboard motor having an upper cowl which covers the power head of the motor, the cowl having at least one forward facing air inlet, said cover comprising:

a generally hollow shell mounted to the cowl and having an opening on one side thereof in communication with the air inlet of the cowl of the outboard motor;

an air passage penetrating another side of said hollow shell;

water diversion means within said hollow shell for diverting water entering said air passage into a collection chamber formed when said hollow shell is mounted to the cowl of the outboard motor; and

water discharge means in a lower part of said hollow shell for discharging water collected within said collection chamber.



5,573,437

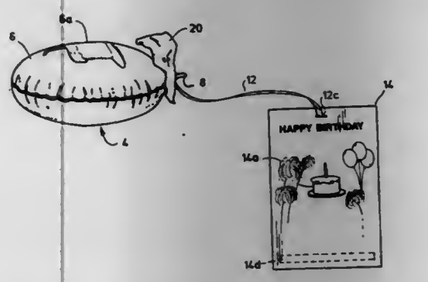
PACKAGED BALLOON AND GREETING CARD

Mark J. Van Dyke, Mundelein, Ill., and Ernst R. Reiter, Temse, Belgium, assignors to CTI Industries Corporation, Barrington, Ill.

Continuation of Ser. No. 59,054, May 6, 1993, abandoned, which is a continuation-in-part of Ser. No. 908,287, Jul. 2, 1992, abandoned. This application Mar. 23, 1994, Ser. No. 217,185

Int. Cl.[6] A63H *33/04;33/16;3/06*

U.S. Cl. 446—75 **20 Claims**



1. A packaged balloon and greeting card comprising:

a balloon having an uninflated body and a filler neck extending from said body;

a greeting card proximal said balloon; and

a packaging envelope receiving said uninflated balloon body and said card, said packaging envelope having an opening through which said balloon filler neck extends outside said envelope for communication to a source of inflating gas, said envelope being so constructed as to be burst by inflation of said uninflated balloon body while it resides in said envelope, whereby unpackaging of said balloon from said envelope is facilitated.

5,573,438

BOOK INCLUDING CANDY AS A PART OF THE PAGES

Deborah D'Andrea, 110 Twin Oaks Rd., Akron, Ohio 44313

Filed Apr. 25, 1995, Ser. No. 428,686

Int. Cl.[6] A63H *33/38*

U.S. Cl. 446—149 **8 Claims**

1. A book comprising:

at least one piece of edible candy releasably attached to an outer surface of said at least one illustrated page, such that said at least one peice of edible candy forms a part of an illustration on said at least one illustrated page.

5,573,439

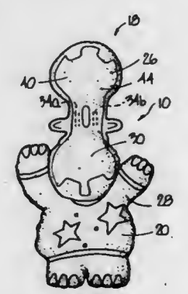
INFLATABLE BALLOON WITH AT LEAST ONE FLAP MEMBER FOR CONCEALING OR EXPOSING A GRAPHIC DESIGN

Cheryl S. Turner; Eli J. Turner, both of Wimberly, Tex., and Lisa M. Van Dusen, Wichita, Kans., assignors to Van Dusen assigned to Continental American Corporation, Wichita, Kans.

Filed Dec. 5, 1994, Ser. No. 349,536

Int. Cl.[6] A63H *3/06*

U.S. Cl. 446—226 **18 Claims**



13. An inflatable balloon, comprising:

a. an inflatable chamber having a first wall and a second wall;

i. said first wall having an interior side and an exterior side;

ii. said second wall having an interior side and an exterior side;

iii. said interior side of said first wall being proximate to said interior side of said second wall;

b. a graphic design on at least a portion of said exterior side of said first wall of said inflatable chamber;

c. at least one non-inflated flap member adjoining said exterior side of said first wall of said inflatable chamber;

d. said flap member having a first position and a second position, wherein

i. said first position hangs down limply over a portion of said inflatable chamber and conceals at least a portion of said graphic design on said exterior side of said first wall of said inflatable chamber to yield a concealed portion and a non-concealed portion; and

ii. said second position allows said concealed portion of said graphic design to be exposed; and

e. said flap member comprised of:

i. a front face and a back face, said back face being proximate to said exterior side of said first wall of said inflatable chamber when said flap member is in said first position;

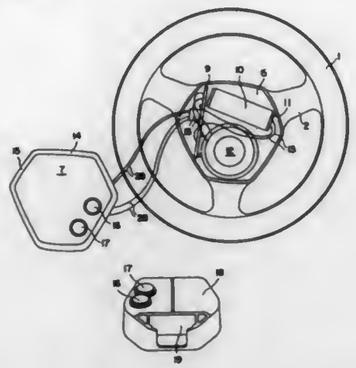
ii. at least a portion of said front face of said flap member having a graphic design complimentary to at least a portion of said graphic design on said exterior side of said first wall of said inflatable chamber.

5,573,440

AUDIO PLAYBACK SYSTEM FOR STEERING WHEEL OF CHILD'S VEHICLE

Frank Schneider, Neustadt/Coburg, and Ulrich Ewringmann, Taufkirchen, both of Germany, assignors to Franz Schneider GmbH & Co. KG, Germany

Filed Jan. 30, 1995, Ser. No. 380,293
Claims priority, application Germany, Jan. 31, 1994, 9401559 U
Int. Cl.[6] A63H *5/00*
U.S. Cl. 446—404 4 Claims



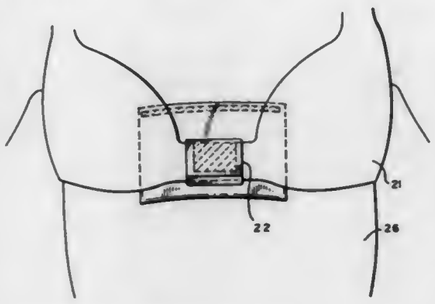
1. An audio playback system for the steering wheel of a child's vehicle, said system comprising a central housing in said steering wheel having an open top, a self-contained audio playback module removably contained in said housing, said module comprising an enclosure and sound producing elements in said enclosure and an open battery compartment attached to said enclosure, and cover means removably mounted over the open top of said housing for retaining said playback module in a water tight manner.

5,573,441

SECURITY POUCH WORN UNDERNEATH A BRASSIERE OR SIMILAR GARMENT

Cynthia D. Smith, 8383 Oak Hollow Dr., Pasadena, Md. 21122

Filed Dec. 22, 1994, Ser. No. 362,174
Int. Cl.[6] A41C *3/00*
U.S. Cl. 450—89 2 Claims



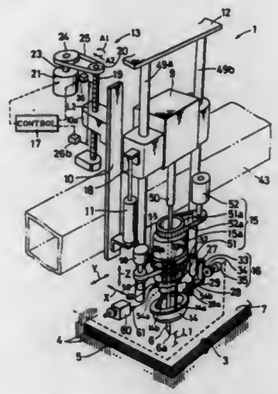
1. In combination, a brassiere and detachable pouch comprising;
a brassiere having a pair of cups, straps attached to said cups and a center piece extending between and connecting the cups,
a pouch having a front wall sued back wall, each of said walls having a bottom edge, top edge and a pair of side edges,
a closure along the top edges of the walls,
a strap having opposed ends and opposed side edges, said attached intermediate said ends to the back wall, said side edges being substantially parallel to the side edges of the walls,
mating fasteners attached to the ends of the strap,
the strap encircling the center piece of the brassiere and secured thereto by the mating of the fasteners.

5,573,442

APPARATUS FOR MEASURING A CUTTING BLADE WIDTH IN A CUTTING APPARATUS

Toshiaki Morita, Kaiso, and Toshiro Ochi, Wakayama, both of Japan, assignors to Shima Seiki Manufacturing Limited, Wakayama, Japan

Filed Aug. 22, 1994, Ser. No. 292,225
Claims priority, application Japan, Aug. 20, 1993, 5-206740
Int. Cl.[6] B24B *49/00*
U.S. Cl. 451—8 19 Claims



1. An apparatus for measuring a cutting blade width comprising:
a movable head block to be mounted on a support frame and adapted to receive a cutting blade;
a detector to be mounted on a support member and operable to detect a predetermined radial orientation of a cutting blade;
a head block positioning device to be mounted on a support member and being operatively connected to said head block for moving said head block between a retracted position and a cutting position; and
a cutting blade edge detector to be mounted on a support member and operable to contact a cutting blade edge to detect the position thereof.

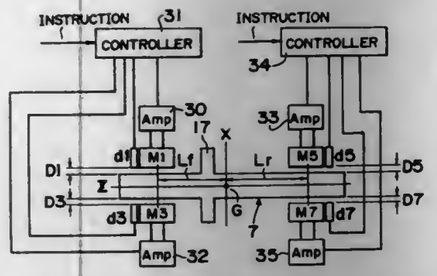
5,573,443

SPINDLE AND METHOD FOR DRIVING THE SAME

Issei Yasuda, Katano; Masayuki Takahashi, and Toru Nakagawa, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Oct. 26, 1993, Ser. No. 141,219
Claims priority, application Japan, Oct. 26, 1992, 4-287342
Int. Cl.[6] B24B *49/02*
U.S. Cl. 451—11 8 Claims

5. A method of operating a spindle arrangement for use in holding a workpiece or mounting a work tool on a rotary shaft in a cutting or grinding process, said method comprising the steps of:
rotatably supporting the rotary shaft with radially directed electromagnetic forces of a plurality of electromagnetic bearings;
providing first, second, third and fourth pairs of displacement sensors radially about a rotational axis such that said first and second pairs of said displacement sensors are provided at a



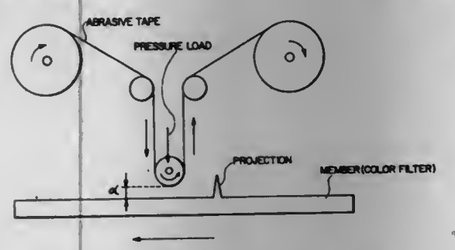
first axial location, said third and fourth pairs of said displacement sensors are provided at a second axial location spaced axially away from said first axial location, said first pair of said displacement sensors are located in diametrically opposite positions with respect to said rotation axis, said second pair of said displacement sensors are located in diametrically opposite positions with respect to said rotation axis, said diametrically opposite positions of said second pair of said displacement sensors are angularly displaced by 90 degrees relative to said diametrically opposite positions of said first pair of said displacement sensors, said third pair of said displacement sensors are located in diametrically opposite positions with respect to said rotation axis, said fourth pair of said displacement sensors are located in diametrically opposite positions with respect to said rotation axis, and said diametrically opposite positions of said fourth pair of said displacement sensors are angularly displaced by 90 degrees relative to said diametrically opposite positions of said third pair of said displacement sensors;
measuring amounts of positional displacement of the rotary shaft using said first, second, third and fourth pairs of displacement sensors; and
comparing positional displacement amounts measured by said displacement sensors with a corresponding displacement command, and changing the electromagnetic forces of said electromagnetic bearings based on results of the comparison so as to cause agreement between the measured amount and the command.

5,573,444

POLISHING METHOD

Katsumi Ryoke; Keisuke Yamada, and Masaaki Fujiyama, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 22, 1994, Ser. No. 263,728
Claims priority, application Japan, Jun. 22, 1993, 5-150380
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—28 2 Claims



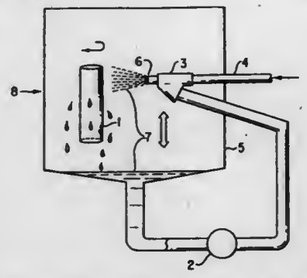
1. A method of polishing a surface of a member having intrinsic projections thereon to remove the intrinsic projections, characterized in that an abrasive tape comprising a substrate and an abrasive layer formed thereon and said member are slid in substantially opposite directions with the abrasive layer and the surface of the member kept in contact with each other, the abrasive layer primarily containing abrasive grains and a binder, in which said member is a color filter for a liquid crystal display;
and in which said binder of the abrasive layer is composed of an urethane resin and a polyisocyanate, and the proportion of the urethane resin: the polyisocyanate is in the range of 60 to 95:5 to 40 in % by weight.

5,573,445

LIQUID HONING PROCESS AND COMPOSITION FOR INTERFERENCE FRINGE SUPPRESSION IN PHOTOSENSITIVE IMAGING MEMBERS

Yonn K. Rasmussen, Fairport; Larry Sciarratta, Rochester, and Ronald T. Kosmider, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 31, 1994, Ser. No. 298,802
Int. Cl.[6] B24B *1/00*; B24C *1/00*; G03G *5/04*
U.S. Cl. 451—39 14 Claims



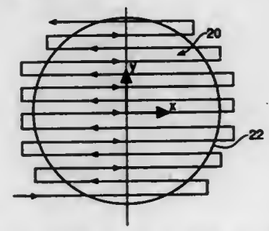
1. A process for roughening a substrate surface in an electrophotographic imaging member, comprising providing a wet honing composition comprising deionized water and substantially spherical glass beads and spraying said wet honing composition against said substrate surface at a spraying pressure of between about 3.0 and about 4.0 kg/cm^2 to form a scalloped pattern on said substrate surface, wherein said substrate comprises aluminum or aluminum alloy and wherein said glass beads have:
a Knoop hardness of about 300 to about 750 kg/mm^2,
a radius of curvature greater than about 10 micrometers and less than about 35 micrometers, and
a specific gravity of about 1.8 to about 3.2.

5,573,446

ABRASIVE AIR SPRAY SHAPING OF OPTICAL SURFACES

Thomas W. Dey, Springwater, and Matthew F. Walsh, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 16, 1995, Ser. No. 390,397
Int. Cl.[6] B24B *1/00*; B24C *1/00*
U.S. Cl. 451—39 10 Claims



1. A method of shaping an optical surface an optical element, comprising directing a stream of gas and particles in a scanning

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path on the surface at a velocity sufficient to controllably remove material from the surface to shape the surface to the desired curvature.

5,573,447

METHOD AND APPARATUS FOR GRINDING BRITTLE MATERIALS

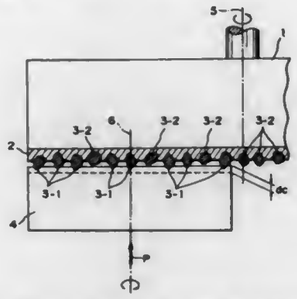
Takashi Kozakai, Tokyo; Hironori Yamamoto, Chigasaki; Nobuo Nakamura; Junji Takashita, both of Yokohama, and Toru Imanari, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1994, Ser. No. 266,350

Claims priority, application Japan, Jul. 13, 1993, 5-173307; Jun. 8, 1994, 6-126388

Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—41 **26 Claims**



1. A brittle-material machining method for grinding or polishing a worked surface of a workpiece having a brittle material, comprising the steps of:

effecting relative movement between the workpiece and a grinding tool comprising innumerable abrasive grains provided on a support base; and

bringing the grinding tool into pressured contact with the worked surface at an overall load P during the relative movement to perform grinding or polishing, wherein the grinding or polishing is performed while satisfying a condition $P<N_{MAX}p_c$, where:

N_{MAX} represents a maximum number of active abrasive grains present in an area of contact between the grinding tool and the workpiece when the grinding tool has cut into the worked surface in such a manner that a depth of cut d, into the worked surface, of active abrasive grains among the innumerable number of abrasive grains that participate in the grinding or polishing attains a critical depth of cut d_c, which is a minimum depth of cut at which brittle fracture is produced in the workpiece, and

p_c represents a critical load per one abrasive grain when the one abrasive grain has cut into the worked surface at the critical depth of cut d_c.

5,573,448

METHOD OF POLISHING WAFERS, A BACKING PAD USED THEREIN, AND METHOD OF MAKING THE BACKING PAD

Yukio Nakazima, Nagano, and Itsuo Kuroyanagi, Chiba-ken, both of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

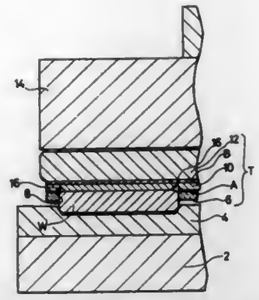
Filed Aug. 18, 1994, Ser. No. 292,248

Claims priority, application Japan, Aug. 18, 1993, 5-204098

Int. Cl.[6] B24B *37/04*

U.S. Cl. 451—41 **5 Claims**

1. A method of polishing a plurality of wafers at one time, of the type in which the wafers are polished while they are fitted in a



plurality of circumferentially spaced engagement holes in a template blank, respectively, with the backsides of the wafers held by a backing pad, wherein the improvement comprises:

holding the backsides of the respective wafers being polished while relieving a stress concentrated on a peripheral portion of each of the wafers, said holding including providing a backing pad which has a surface next to said template blank and a plurality of annular grooves formed in said surface and each extending along an inner peripheral edge of a corresponding one of the engagement holes of the template blank.

5,573,449

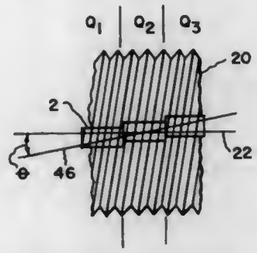
THREADED GRINDING WHEEL, METHOD OF DRESSING, AND GRINDING A WORKPIECE THEREWITH

Roman Mackowsky, East Brunswick, N.J., assignor to The Gleason Works, Rochester, N.Y.

Filed Mar. 16, 1994, Ser. No. 214,885

Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—47 **7 Claims**



1. A method of grinding the tooth surfaces of spur and helical gears with a threaded grinding wheel, said tooth surfaces having a length and said grinding wheel having an axis of rotation, a width extending in the direction of said axis, and at least one ribbed grinding surface having two flank surfaces, a top surface, and a root portion with said ribbed grinding surface being generally helically arranged about said grinding wheel and extending along said width, said method comprising:

providing said grinding wheel with a plurality of grinding sections arranged along said width, each of said sections comprising a particular grinding profile formed on the flanks of the grinding surface in the respective section,

rotating said grinding wheel and a work gear in a synchronous manner,

traversing said work gear tangentially across the width of said grinding wheel at an angle to said axis of rotation of said grinding wheel whereby contact between said grinding surface and the tooth surface of said work gear shifts along the length of said tooth surface during said traversing thereby providing for successive portions along said tooth surface length to be ground, respectively, by a different grinding

profile as said work gear is traversed through each of said grinding sections of the grinding wheel resulting in tooth surfaces comprising a plurality of flank profile surfaces arranged along the length of said tooth surfaces.

5,573,450

ABRASIVE BLASTING DEVICE

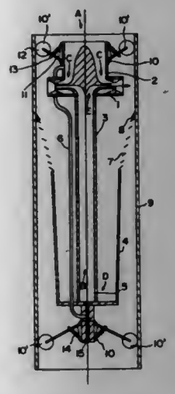
Ivan Markocic , Goriska c. 5, 65212 Dobrovo, Slovenia, and Aleksander Gerbec, Zali breg 12, 65212 Dobrovo, Slovenia

Filed Jun. 4, 1993, Ser. No. 70,960

Claims priority, application Slovenia, Jun. 19, 1992, P-9200122; Apr. 19, 1993, P-9300204

Int. Cl.[6] B24C *9/00*

U.S. Cl. 451—76 **7 Claims**



1. An abrasive blasting device comprising: means for throwing abrasive material generally radially outwardly relative to a longitudinal axis of said device to a surface of a workpiece, characterized by collector means of the abrasive material being arranged directly under said abrasive throwing means for collecting the abrasive materials; said collecting means includes sieve means having an axis which is generally coaxial with said longitudinal axis of said throwing means for collecting abrasive particles after the particles have been impinged against the workpiece surface; conduit means being generally coaxial with said longitudinal axis for connecting a bottom of said collector means with said abrasive throwing means so that abrasive material can be conveyed from the bottom of said collector means to said abrasive throwing means; and, conveying means operative for conveying abrasive material in the bottom of said collector means to said abrasive throwing means.

5,573,451

CYLINDRICAL GRINDING MACHINE

Urs Tschudin, Bachtelenstrasse 79, 2540 Grenchen, Switzerland

Filed Jun. 13, 1994, Ser. No. 258,980

Claims priority, application Switzerland, Jun. 28, 1993, 1923/93

Int. Cl.[6] B24B *5/00*

U.S. Cl. 451—243 **12 Claims**

1. A cylindrical grinding machine, comprising:

a machine base;

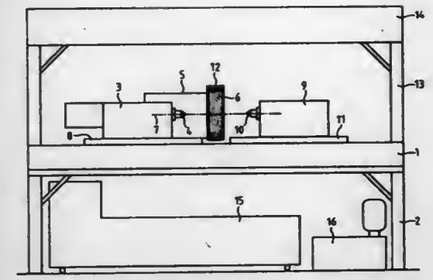
a driven workhead to turn a workpiece about a rotational axis;

a driven wheelhead to grind the workpiece; and

at least one slide drive, for providing relative movement of the workpiece and the wheelhead;

the machine base being a fixed heavy solid plate;

the wheelhead comprising a grinding wheel;



said at least one slide drive including a longitudinal slide drive mounting at least one of said workhead and said wheelhead for providing first relative movement of the workpiece and the grinding wheel in the direction of said rotational axis, and a cross slide drive mounting at least one of said workhead and said wheelhead for providing second relative movement of the workpiece and the grinding wheel perpendicularly to said rotational axis; and

said longitudinal slide drive and said cross slide drive being mounted separately on said fixed heavy solid plate so as to enable said first and second relative movements to be made independently of one another.

5,573,452

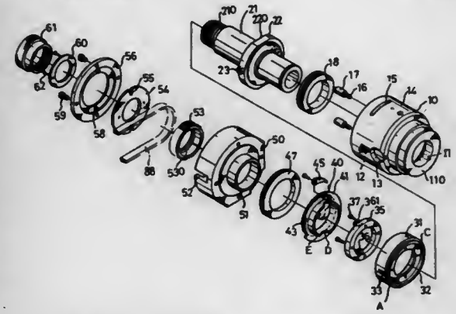
DRILL GRINDER

Yu-chieh Liu, 1st Fl., No. 124, Yung Cheng Rd., Taiping Hisang, Taichung Hsien, Taiwan

Filed Jul. 18, 1995, Ser. No. 503,709

Int. Cl.[6] B24B *3/26*

U.S. Cl. 451—246 **2 Claims**



1. A drill grinder comprising:

a grinding wheel means including a motor and a grinding wheel which is operated by said motor;

a feed means including a first casing which has a first end and a second end, a first slot and a second slot respectively defined in said first casing and not parallel with each other, a hole defined in said first casing and a key diametrically and oppositely disposed in an inner periphery of said first casing, a flange extending inwardly from said second end of said first casing and having at least two first recesses defined in said flange so as to receive a spring and a block therein, said first casing having a pivotal block engaged to an under side thereof;

a sleeve having a first end and a second end, said first end thereof having a threaded portion defined in an outer periphery thereof and a shoulder portion formed adjacent to said threaded portion, a disk securely mounted to said sleeve and said disk having a plane portion diametrically defined in an outer periphery thereof, two first wheels rotatably disposed to said disk facing to said first end and each of said first wheels

having an axis perpendicular to a longitudinal axis of said sleeve, said second end of said sleeve inserted into said first casing with a first anti-thrust bearing mounted thereto which contacts said blocks and said disk located corresponding to said hole of said first casing, a drill disposed to said second end of said sleeve which extends out from said second end of said first casing;

a first cam being a ring element mounted to said sleeve and having a first curved wall extending longitudinally from a second end of said first cam and said first cam having two second wheels rotatably disposed to a first end of said first cam, each of said second wheels having an axis perpendicular to an axis of said first cam, a second recess defined diametrically and longitudinally in an outer periphery of said first cam for receiving said corresponding key of said first casing therein;

a second cam being a ring element mounted to said sleeve and having a first end and a second end, said second end thereof having a second curved wall extending longitudinally therefrom for said second wheels of said first cam to roll thereon, said second end of said second cam having a ratchet wheel securely engaged thereto and said ratchet wheel corresponding to said second slot of said first casing, a flange extending radially from said second cam and a stud extending from said flange, said stud corresponding to said first slot of said first casing, a first ratchet pinned to said flange to engage with said ratchet and a second anti-thrust bearing disposed to a first end of said second cam;

a second casing having a first end and a second end, said second end having a tubular portion extending therefrom on which said second anti-thrust bearing and said second cam are mounted, said second casing mounted to said sleeve by extending said sleeve through said tubular portion, said second casing having two cut-aways defined therein, a ring-type gear received in said second casing and said ring-type gear having a flange extending inwardly from a side thereof for engagement with said shoulder portion of said sleeve;

a set of fixing rings including a first ring, a second ring and a third ring, said first ring having two cavities defined diametrically opposite therein, said second ring having two bosses extending longitudinally therefrom for engagement with said cavities and having four holes defined therein for bolts to extend therethrough and engage said second ring to said first end of said second casing, said third ring and said first ring engaged to said side of said ring-type gear by bolts; and

an end cap threadedly engaged to said threaded portion of said sleeve;

a base having two lugs extending vertically therefrom, said two lugs being parallel with each other and said two lugs having a first angle with respect to a longitudinal axis of said first casing, a pivotal block of said first casing pivotally engaged between said two lugs;

a belt wrapped around said ring-type gear and a rotating means via said two cut-aways, said rotating means disposed beside said base;

an inspecting means having a probe extending therefrom and said probe extending through said hole of said first casing and contacting said disk, a spring connected between said inspecting means and said pivotal block engaged to said first casing, a second ratchet pivotally engaged to said inspecting means and inserted through the second slot of said first casing and engaged with said ratchet wheel;

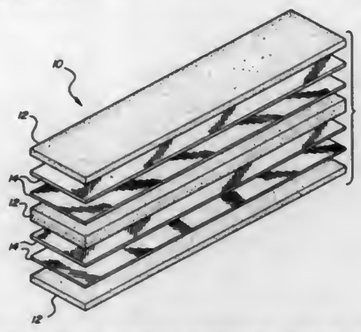
a start means disposed beside said first casing, said start means having a fork extending therefrom and said fork inserted through said first slot for engagement to said stud of said second cam.

5,573,453

FIBER REINFORCED ABRASIVE MOLD AND DIE FINISHING TOOLS

Lawrence W. Tiefenbach, Jr., Traverse City, Mich., assignor to B.O.T.S.G., Inc., Traverse City, Mich.

Filed Aug. 21, 1995, Ser. No. 517,449
Int. Cl.[6] B24D *11/00*
U.S. Cl. 451—533 **9 Claims**



1. A fiber reinforced abrasive polishing and finishing tool comprising:

a multi layer laminate comprised of a first abrasive layer and a second abrasive layer, and

a layer of adhesive resin matrix containing fiber reinforcing material between the abrasive layers wherein all of the layers are secured together at least in part by the adhesive resin matrix,

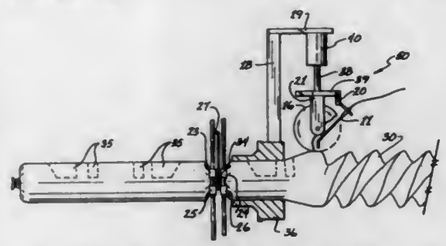
wherein the tool is comprised of a thin polishing tool laminate having a flexural strength exceeding the individual layers, as initially provided, by a factor of at least 3.5 times the flexural strength of the individual layers.

5,573,454

METHOD AND APPARATUS FOR ALIGNING LABELS ON SHIRRED FOOD CASINGS

Mark L. Fox, Pleasant Valley, and Mark D. Kelley, Kansas City, both of Mo., assignors to Devro-Teepak, Inc., Westchester, Ill.

Filed Jun. 17, 1994, Ser. No. 261,659
Int. Cl.[6] A22C *13/00*
U.S. Cl. 452—29 **8 Claims**



1. In a method for the continuous automated manufacture of stuffed food casings containing imprinted labels, wherein tubular material for said casings from a supply source is axially shirred into sections and said sections are stuffed with food emulsion into divided off portions, the improvement comprising:

measuring linear motion of said casing as said portions are filled with food emulsion;

inputting said measured motion to a programmable logic controller;

within said programmable logic controller, calculating an approximate distance between eye-mark bars separating said individual portions, where said calculation is based upon a known distance between eye-mark bars;

based upon said calculated approximate distance and said measured motion, selectively sensing eye-mark bars which separate individual casings while ignoring printed label material between eye-mark bars; and,

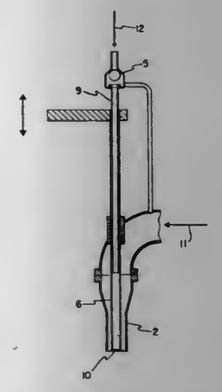
clipping individual sections of said casing closed at precise locations in response to said sensing of eye-mark bars to accurately position said labels between end-clips secured to ends of each of said portions.

5,573,455

PROCESS FOR FORMING FOODSTUFFS IN SACKS, IN PARTICULAR MORTADELLA

Luigi Barilli, Fidenza, Italy, assignor to I.B.I.S. Industria Busetana Insaccati Suini S.P.A., Busseto, Italy

Filed Aug. 4, 1995, Ser. No. 511,314
Claims priority, application Italy, Feb. 26, 1993, PR93A0006
Int. Cl.[6] A22C *11/02*
U.S. Cl. 452—35 **13 Claims**



1. A process for formation of foodstuffs in sacks, in particular mortadella, comprising: extruding of a principal mixture in a flexible or elastic sack by a first extruder until said sack is full; inserting a second extruder into said sack and then along the entire length thereof; causing said second extruder to inject a second, identifying mixture inside, and preferably centrally of, the principal mixture withdrawing said second extruder from said sack to cause said identifying mixture to extend along said entire length of the sack.

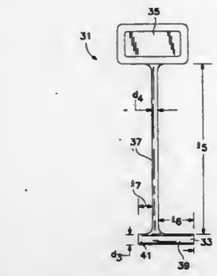
5,573,456

PLASTIC FASTENER

James C. Benoit, Needham; Frank T. McCarthy, Lowell, and Gary Buchholz, Winchendon, all of Mass., assignors to Avery Dennison Corporation, Pasadena, Calif.

Filed Jun. 8, 1995, Ser. No. 488,622
Int. Cl.[6] G09F *3/08;* **B65C** *7/00*
U.S. Cl. 452—198 **6 Claims**

1. A plastic fastener for use in tagging meat or other similar object, said fastener comprising an elongated filament having a first end and a second end and a transverse bar disposed at the first end of said elongated filament, said transverse bar being insertable into said meat or other similar object and said transverse bar being interconnected to said filament in a T-shaped configuration wherein the portion of the transverse bar on one side of the filament is shorter than the portion of the transverse bar on the other side of the filament so as to reduce the likelihood that the transverse bar will break off from the filament on withdrawal of the fastener from said meat or other similar object.

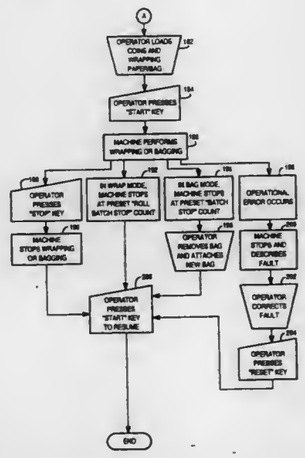


5,573,457

COIN WRAPPING SYSTEM WITH TOUCH SCREEN DEVICE

Gary P. Watts, Buffalo Grove; Richard A. Mazur, Naperville, and John F. Weggesser, Lake in the Hills, all of Ill., assignors to Cummins-Allison Corp., Mt. Prospect, Ill.

Filed Mar. 7, 1995, Ser. No. 399,770
Int. Cl.[6] B65B *11/02*
U.S. Cl. 453—31 **24 Claims**



21. A method for operating a coin wrapping system including (a) a coin wrapping mechanism forming a coin stack containing a predetermined number of coins of a preselected denomination and wrapping a wrapping material about the coin stack to form a wrapped roll of coins, (b) an operator interface panel including a display and a touch screen mounted over the display, and (c) a controller coupling the operator interface panel to the coin wrapping mechanism, the controller causing the display to display keys thereon, the controller operably coupling the touch screen to the displayed keys, the method comprising the steps of:

displaying, under direction of the controller, data and a set of keys on the display associated with one of a plurality of controller operation modes;

actuating the touch screen at a position above one of the displayed keys; and

executing, under direction of the controller, a coin wrapping mechanism function associated with the one of the displayed keys.

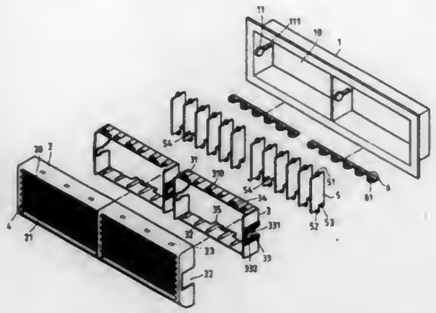
VOL 1192 ISS 2 NO 12 1996 UMI

5,573,458

AIR-CONDITIONER OUTLET

Chia-Chuan Chu, 14F-3, No. 214, Fu-Hsing N. Road, Taipei, Taiwan

Filed Mar. 6, 1996, Ser. No. 611,959
Int. Cl.[6] F24F *13/075*
U.S. Cl. 454—315 5 Claims



1. An air-conditioner outlet comprising:

a base seat (1) having multiple openings (10), on the inside wall of which, pivotal shaft (11) is provided corresponding to one another, and said pivotal shaft (11) extending backward forming a blocking plate (111);

a cover means (2), being so configured and confined with side walls and upper and lower walls that said cover means (2) may be inserted into said openings (10) of said base seat (1), having a plurality of wind outlets (20) with a horizontal slot (21) provided therein, for slidably receiving a pushing button (4) within said slot (21), wherein said pushing button is provided with an adjusting rod (41) on both side walls, a notch (22) is provided thereon, and on both the upper and the lower walls, multiple openings (23) are provided thereon;

an assembling seat (3) having the configuration to be inserted into said cover means (2) and a plurality of exterior buttons (34) corresponding to said openings (23) of said cover means (2) for securely connecting said assembling seat (3) with said cover means (2) through the connection between said exterior buttons (34) and said openings (23), on the upper side of said assembling seat (3), a plurality of upper holes (310) corresponding to a plurality of lower holes (32) provided on the lower side of said assembling seat (3) are provided, on both sides of said assembling seat (3), a hole (331) is provided for receiving said pivotal shaft (11) of said base seat (1), and on the lower side of said assembling seat (3), a side plate (35) is provided;

a link (6) having a series of holes (61) provided thereon;

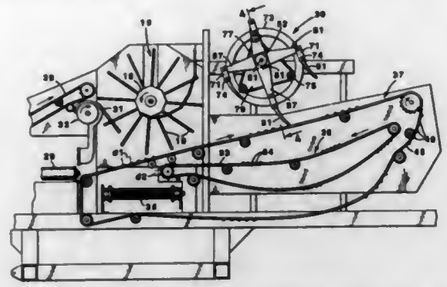
multiple movable leaves (5) having upper protrusions (51) corresponding to said upper holes (310) of said assembling seat (3) and first lower protrusions (52) corresponding to said lower holes (32) of said assembling seat (3), which respectively are provided at the center of the upper part and the lower part, on the other side of the lower part, second lower protrusions (53) corresponding to said holes (61) of said link (6) are provided for connecting with said holes (61), furthermore, one of said movable leaves (5) closest to said pushing button (4) is provided with an adjusting hole (54) for providing space enough for receiving said adjusting rod (41) when said adjusting rod (41) is moved to adjust said movable leaves (5) through the linkage with said link (6) to have a horizontal angle change result of said movable leaves (5).

5,573,459

TWO STAGE SHAKER

David J. Meester, Fresno, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed May 19, 1995, Ser. No. 444,639
Int. Cl.[6] A01D *46/00*
U.S. Cl. 460—145 17 Claims



1. A harvester for harvesting and separating fruits from vines, comprising:

a shaker brush;

a vine reel horizontally spaced apart from the shaker brush;

means for providing fruit and vines to the shaker brush a first time, wherein the means for providing is adjacent to the shaker brush; and

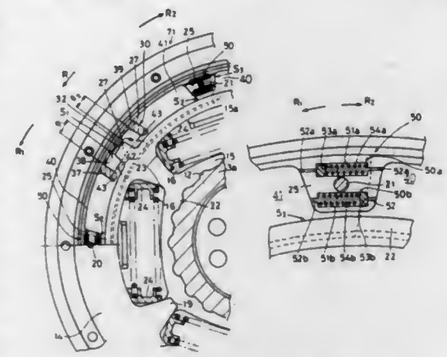
a shaker conveyor positioned to catch fruit and vines, which are provided to the shaker brush a first time and conveying the fruit and vines into engagement with the shaker brush a second time and subsequently conveying the fruit and vines into engagement with the vine reel, wherein the shaker conveyor extends trader the shaker brush and the vine reel.

5,573,460

TORSIONAL VIBRATION DAMPENING DEVICE HAVING MULTIPLE DAMPENING FORCE LEVELS WITH TRANSITIONAL DAMPENING MEANS BETWEEN MULTIPLE DAMPENING FORCE LEVELS

Mitsuo Toji, Osaka, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Oct. 6, 1994, Ser. No. 318,941
Claims priority, application Japan, Oct. 13, 1993, 5-255427
Int. Cl.[6] F16D *3/12*
U.S. Cl. 464—24 13 Claims



1. A torsional vibration dampening device comprising:

a first flywheel formed with an annular fluid filled recess, and a plurality of fluid filled chambers defined within said annular recess;

a second flywheel coupled to said first flywheel for limited rotary displacement;

a first choke defined within said annular recess allowing restricted flow of fluid between a first pair of said chambers in response to displacement of said flywheels in a first rotary displacement range;

a second choke defined within said annular recess allowing restricted flow of fluid between a second pair of said chambers in a second displacement range larger that said first displacement range, said second choke providing a fluid flow resistance greater that a fluid flow resistance of said first choke;

an annular fluid chamber housing which partially defines said annular chamber, and wherein said second pair of chambers are separated by a dam formed on an inner radial surface of said chamber housing, said dam partially defining said second choke;

a transitional dampening mechanism formed in said dam between said second pair of fluid chambers for dampening a transition between the respective resistances of said first choke and said second choke in response to displacement between said first and said second displacement ranges;

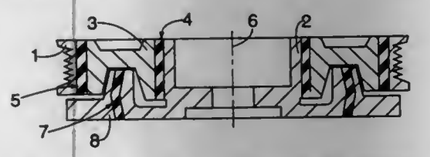
said transitional dampening mechanism comprises a first aperture and a second aperture. both of said apertures extending through said dam to each of said second pair of chambers, each of said apertures having a central chamber, said first aperture chamber having a piston and biasing spring disposed therein for movement of said piston in response to fluid flow in a first direction, said second aperture chamber having a piston and biasing spring disposed therein for movement of said piston in response to fluid flow in a second direction.

5,573,461

TORSIONAL VIBRATION DAMPER WITH DEFLECTABLE SPOKES

Terry Colford, Queniborough, England, assignor to Firma Carl Freudenberg, Weinheim, Germany

Filed Jun. 15, 1994, Ser. No. 260,438
Claims priority, application Germany, Jun. 24, 1993, 43 20 938.6
Int. Cl.[6] F16D *3/62*; F16F *15/12*; F16H *55/36*
U.S. Cl. 464—83 2 Claims



1. A torsional vibration damper for damping vibrations of a rotating body, said torsional vibration damper comprising:

an outside ring;

an inside ring surrounded by said outside ring;

a plurality of spokes connecting said inside and said outside rings, said spokes being connected to the inside ring and to the outside ring by intermediate layers of an elastic material, said intermediate layers allowing circumferential displacement of said outside ring relative to said inside ring, said spokes having a dumbbell-shaped profile.

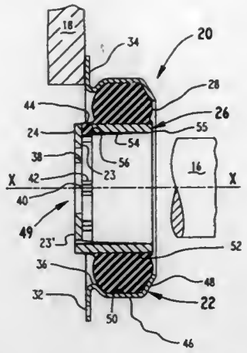
5,573,462

FLEXIBLE DUAL-RATE COUPLING

Shannon K. Sweeney, and Andrew B. Swoyer, Jr., both of Erie, Pa., assignors to Lord Corporation, Cary, N.C.

Filed Dec. 6, 1993, Ser. No. 162,558
Int. Cl.[6] F16D *3/76*
U.S. Cl. 464—90 7 Claims

1. A coupling, comprising:



a) a flanged outer member for attaching to a first member and including an inner surface;

b) a cylindrical intermediate member having an outer surface, an inner surface, and an end surface;

c) a slip-torque elastomer section exhibiting a first spring rate disposed between said inner surface of said flanged outer member and said outer surface of said cylindrical intermediate member, said slip-torque elastomer section having a shear elastomer section which has an interference fit with a pocket formed on said inner surface of said flanged outer member and where said shear elastomer section slips within said pocket upon exceeding a relative torque limit;

d) a plate member adjacent said end surface of said cylindrical intermediate member and including an inward-facing surface facing toward said end surface of said cylindrical intermediate member and an outward-facing surface opposed to said inward-facing surface;

e) a shear sandwich elastomer section exhibiting a second spring rate which is disposed between said end surface of said cylindrical intermediate member and said inward-facing surface of said plate member, said shear sandwich elastomer section being arranged in series-spring relationship to said slip-torque elastomer section and resulting in a series spring rate for said coupling;

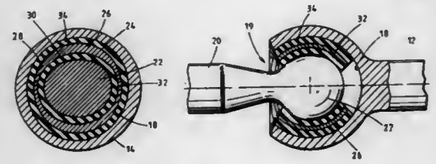
f) a snubber including multiple tabs formed on said plate member for intermeshing with multiple recesses formed on said cylindrical intermediate member for delimiting said shear sandwich elastomer section under high loads such that said resulting spring rate equals said spring rate of said slip-torque elastomer section only.

5,573,463

ELASTOMERIC DRIVE LINE COUPLING FOR TRANSMITTING TORQUE AND SIMULTANEOUSLY ACCOMODATING SHAFT MISALIGNMENTS AND ANGULAR DEFLECTIONS

Edward J. Arit, Arlington, Tex., assignor to Continental Emsco Company, Houston, Tex.

Filed May 20, 1994, Ser. No. 247,011
Int. Cl.[6] F16D *3/56;3/64*
U.S. Cl. 604—90 4 Claims



1. A drive line coupling, comprising:

an input drive shaft having a longitudinal axis and terminating at one end with a housing,the housing having an inner contoured surface which has a non-circular elliptical shape in a plane transverse to the longitudinal axis of the input drive shaft, said elliptical shape having an major axis and a minor axis and a circular shape in a plane parallel to the longitudinal axis of the input drive shaft; and

an output drive shaft having a longitudinal axis and terminating at one end with a coupling member the coupling member having an outer contoured surface which has a non-circular elliptical shape in a plane transverse to the longitudinal axis of the output drive shaft said elliptical shape having a major axis and a minor axis, and a circular shape in a plane parallel to the longitudinal axis of the output drive shaft; and

at least one elastomeric layer disposed between the inner contoured surface of the housing and the outer contoured surface of the coupling member; and

wherein the major axis of the non-circular ellipse of the housing is out of a phase with the major axis of the non-circular ellipse of the coupling member; and

wherein said at least one elastomeric layer deforms in compression to transmit torque from the input drive shaft to the output drive shaft and deforms in shear to facilitate angular deflection of the output drive shaft relative to the input drive shaft in at least one plane.

5,573,464

TRIPOD JOINT WITH A PROJECTION OR BEAD FOR SECURING A ROLLER ASSEMBLY TO A RESPECTIVE ARM

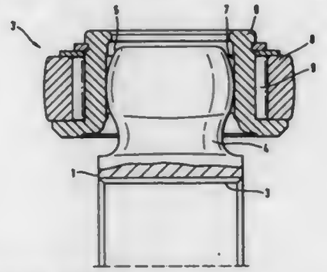
Norbert Hofmann, Ronneburg, and Michael Ricks, Bad Vilbel, both of Germany, assignors to Löhr & Bromkamp GmbH, Offenbach am Main, Germany

Filed Aug. 17, 1994, Ser. No. 292,075

Claims priority, application Germany, Aug. 17, 1993, 43 27 606.7

Int. Cl.[6] F16D *3/205*

U.S. Cl. 464—111 **6 Claims**



1. A tripod joint comprising:

an outer joint part provided with three axially extending longitudinal recesses with circumferentially opposed tracks;

an inner joint part with three radial circumferentially distributed arms which each engage one of the longitudinal recesses and carry roller assemblies each including a roller carrier and a roller element, said roller elements rollingly guided in the axial direction in the longitudinal recesses of the outer joint part on the tracks, with each roller carrier provided with a cylindrical inner recess and guided on a spherical arm end of a respective one of said arms so as to be pivotable and longitudinally movable relative to an axis of the respective arm, said roller element rotatably supported on the roller carrier, and said roller assemblies each including the roller carriers and the roller elements being supported on the outer joint part to prevent the roller assemblies from tilting around the longitudinal axis of the inner joint part; and having

a radially inwardly directed edge of the inner recess of each roller carrier including at least one elastically deformable projection or an elastic deformable bead said projection or bead may be guided past the respective arm end in being elastically deformed without being destroyed, wherein said projection or bead provides a form-fitting resistance to prevent said roller assembly from axial removal from its respective arm.

5,573,465

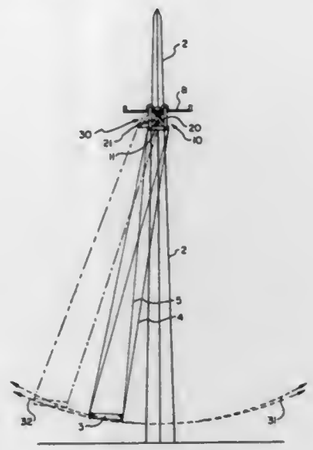
PENDULUM DAMPER

William J. Kitchen, 10385 Sailor Ct., Longmont, Colo. 80501, and Kenneth G. Bird, 605 E. 12, Casper, Wyo. 82609

Continuation of Ser. No. 361,185, Dec. 21, 1994, abandoned. This application Feb. 13, 1996, Ser. No. 600,902

Int. Cl.[6] A63G *9/00*

U.S. Cl. 472—118 **22 Claims**



1. A pendulum damping apparatus comprising:

a pendulum having a support line affixed to a moving pivot means;

said moving pivot means having a horizontal vector of motion; and

an externally powered damping means corrected to said pivot means and functioning to counter the horizontal vector of motion, thereby reducing the angular movement of the pendulum.

5,573,466

Patent Not Issued For This Number

5,573,467

GOLF CLUB AND SET OF GOLF CLUBS

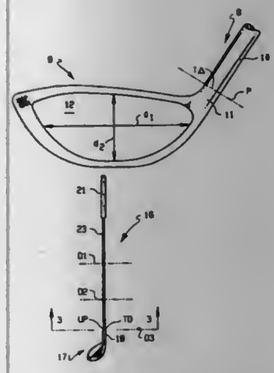
Arthur C. P. Chou, Oceanside, and Thomas M. Olsavsky, Escondido, both of Calif., assignors to Acushnet Company, Fairhaven, Mass.

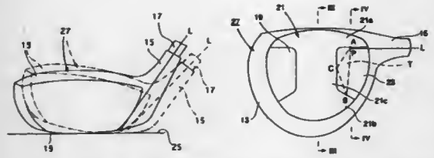
Filed May 9, 1995, Ser. No. 438,421

Int. Cl.[6] A63B *53/02;53/04;53/10*

U.S. Cl. 473—289 **15 Claims**

1. A golf club comprising a head and a shaft, wherein the head has an extension and the shaft is joined to the extension and extends therefrom at a shaft tip, the shaft tip having a diameter of 0.370–0.4 inch and the head is approximately 220 cc or greater.





when said club head is positioned substantially horizontal in relation to said ground surface;

wherein when said heel portion is brought toward said ground surface such that said lie angle is reduced within a range of between five to twenty degrees from said normal lie angle, said sole portion contacts said ground surface at at least three distinct points, a peripheral line connecting said distinct points defines a planar area, and said axis of said hosel intersecting said planar area at an intersection point.

5,573,468

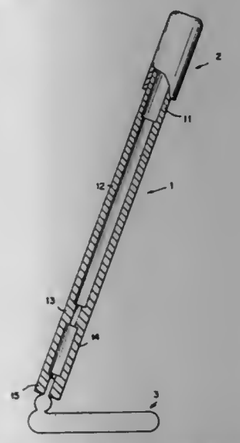
GOLF PUTTER

Peter Baumann, 1351 Ridge Dr., Yreka, Calif. 96097

Filed Nov. 30, 1995, Ser. No. 565,071

Int. Cl.[6] A63B *53/12;53/02*

U.S. Cl. 473—312 **11 Claims**



1. A golf putter, comprising a putter shaft having two opposite ends including a grip end and a head end; a grip attached to said grip end of said putter shaft; and a putter head attached to said end of said putter shaft, said putter shaft having a substantially uniform outer diameter and a wall thickness which is smaller in a region of said grip and greater in a region of said putter head.

5,573,469

GULF CLUB HEAD

Shoichi Dekura, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Filed Aug. 1, 1995, Ser. No. 509,857

Claims priority, application Japan, Aug. 5, 1994, 6-184722

Int. Cl.[6] A63B *53/04*

U.S. Cl. 473—314 **9 Claims**

1. A golf club head having a heel side, a toe side, a face side, and a back side, said club head comprising;

a sole portion; and

a hosel portion for receiving a shaft, said hosel portion having an axis which is angled with respect to a ground surface to define a lie angle; said lie angle further defining a normal lie angle

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5,573,470

JOINING DEVICE FOR CONVEYOR BELTS AND METHOD

Horst Jakob, Deaux, France, assignor to ASER, Saint-Chamond, France

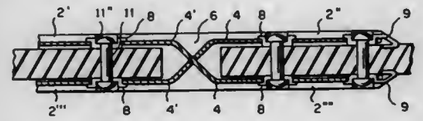
PCT No. PCT/FR94/01206, § 371 Date Jun. 13, 1995, § 102(e) Date Jun. 13, 1995, PCT Pub. No. WO95/11393, PCT Pub. Date Apr. 27, 1995

PCT Filed Oct. 18, 1994, Ser. No. 454,232

Claims priority, application France, Oct. 20, 1993, 93 12522

Int. Cl.[6] F16G *3/00*

U.S. Cl. 474—255 **21 Claims**



1. A joining device for conveyor belts having generally an H profile lateral shape, a central part of which, corresponding to the bar of the H profile, is extended by two pairs of arms forming the branches of the H profile, the arms having in the longitudinal direction an extension several times longer than the space between two parallel arms and located on the same side of the central part, the central part as well as the arms being made up of a flexible and elastic material, the flexibility and elasticity of which are close to those of the constituent material of the conveyor belts for which the joining device is provided, comprising

flexible reinforcement means extending in the arms and in the central part, wherein the reinforcement means present a certain elasticity; and

means for the reinforcement means to yield themselves longitudinally up to a certain limit, when submitted to forces acting in the longitudinal direction, and for being brought back to their initial dimension by the constituent elastic material of the joining device, when these forces are decreasing.

5,573,471

TRANSMISSION FOR AN OFF-HIGHWAY IMPLEMENT

Vladimir D. Shubinsky, Northbrook, and Leslie L. Pagel, Jr., Naperville, both of Ill., assignors to Case Corporation, Racine, Wis.

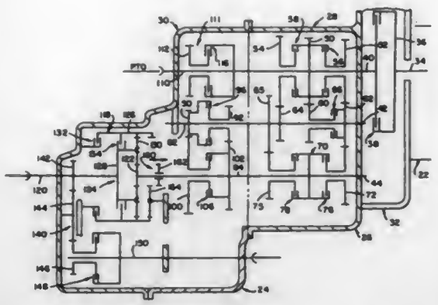
Filed Mar. 17, 1995, Ser. No. 404,493

Int. Cl.[6] F16M *37/02*

U.S. Cl. 475—207 **46 Claims**

1. A transmission for an off-highway implement, said transmission comprising:

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a multi-speed transmission section including an input drive shaft, a countershaft, and a third shaft rotatably arranged in parallel relation within a housing, with a series of gears arranged in operative association with the shafts and a series of hydraulically actuated clutch assemblies for selectively controlling an output of the multi-speed transmission as a function of which clutch assembly is operated;

a multi-range transmission section that is coupled to the multi-speed transmission section and includes rotatable shafts that are axially aligned with said shafts on the multi-speed transmission section, said multi-range transmission section further including a series of gears arranged in operative association with the shafts in the multi-range transmission section and a series of hydraulically actuated clutch assemblies for selectively controlling rotation of an output shaft of the multi-range transmission section as a function of which clutch assembly is operated;

a transmission output drive shaft;

a planetary gear assembly arranged in operative association with the multi-range transmission section output shaft, said planetary gear assembly comprising a sun gear that rotates with said multi-range transmission section output shaft, a planetary gear set operably associated with said transmission output drive shaft, a first hydraulically actuated clutch assembly for controlling rotation of said planetary gear set relative to the transmission output drive shaft thereby developing a first predetermined speed ratio between the turning output of said multi-range transmission section output shaft and said transmission output drive shaft, a ring gear mounted for rotation in said housing, and a second hydraulically actuated clutch assembly for controlling rotation of said ring gear relative to said housing thereby developing a second predetermined speed ratio between the turning output of said multi-range transmission section output shaft and said transmission output drive shaft; and

a drive system selectively operated to impart rotation to the ring gear of said planetary gear assembly thereby developing a third predetermined speed ratio between the turning output of said multi-range transmission section output shaft and said transmission output drive shaft.

5,573,472

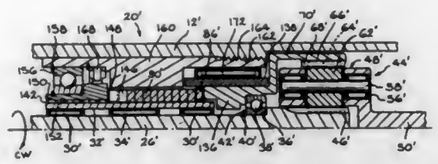
WRAP SPRING DOWNSHIFT MECHANISM

Donald A. Ciolli, 2588 Eaton Rd., University Heights, Ohio 44118

Continuation-in-part of Ser. No. 72,106, Jun. 7, 1993, Pat. No. 5,399,129. This application Feb. 16, 1995, Ser. No. 389,357

Int. Cl.[6] F16D *43/12;* **F16H** *5/10*

U.S. Cl. 475—301 **23 Claims**



1. A wrap spring shift mechanism comprising, in combination,

a housing,

an input member,

a planetary gear assembly having a ring gear disposed in a ring gear hub, a carrier having an output member, at least one planet gear disposed in said carrier in engagement with said ring gear, and a sun gear in engagement with said planet gear and driven by said input member,

a wrap spring assembly having a drive drum, a first overrunning clutch disposed between said input member and said drive drum and a wrap spring disposed about said drive drum,

means on said ring gear hub for engaging one end of said wrap spring,

collar means for engaging the other end of said spring,

a second overrunning clutch operably disposed between said collar means and said housing.

5,573,473

APPARATUS AND METHOD FOR CONTROLLING LOCK-UP CLUTCH

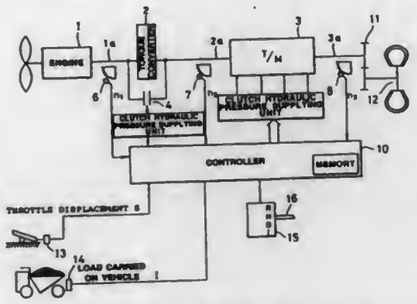
Yoshio Asayama, Chigasaki; Makio Tsubota, Hiratsuka; Yasunori Okura, Hiratsuka, and Takayuki Sato, Hiratsuka, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Japan

Continuation of Ser. No. 444,123, Jun. 18, 1991, Pat. No. 5,417,622. This application Feb. 17, 1995, Ser. No. 360,218

Claims priority, application Japan, May 30, 1987, 62-135838; May 22, 1987, 62-127318; May 22, 1987, 62-127319; May 29, 1987, 62-135783; May 29, 1987, 62-135784

Int. Cl.[6] F16H *61/14*

U.S. Cl. 477—63 **15 Claims**



1. A controller for a speed changing device which receives an engine output through a torque converter and which includes a transmission having a plurality of speed changing clutches for selecting speed stages, a lock-up clutch for directly connecting the engine output to the transmission, and solenoid controlled valves each being connected to the lock-up clutch and the plurality of speed changing clutches respectively, and which releases the lock-up clutch at the time of speed changing, each of the plurality of speed changing clutches being provided with filling completion detecting means for detecting completion of filling of the speed changing clutch, the controller comprising:

first control means for issuing, at the time when a speed changing command is issued, an electric command to a solenoid controlled valve of a speed changing clutch to be engaged next so as to start the supply of oil, and

second control means, when the completion of filling of the speed changing clutch to be engaged next is detected based on a detection result of the filling completion detection means, for turning off the solenoid controlled valve relative to the lock-up clutch at the time of detection of the completion of filling, raising up a hydraulic pressure of the speed changing clutch to be engaged next to a predetermined pressure at the time of detection of the completion of filling, starting a hydraulic pressure gradual increase control of the raised up hydraulic pressure, and issuing an electric command for turning off the solenoid controlled valve of the speed changing clutch being currently engaged at the time of detection of the completion of filling.

15. A method of controlling a lock-up clutch wherein the lock-up clutch is connected directly to an input shaft and an output shaft of a torque converter disposed between an engine and a transmission including a plurality of speed changing clutches, a piston back pressure part of the lock-up clutch being exerted with an inner pressure of the torque converter, the lock-up clutch being provided with a pressure control valve adapted to be actuated in response to an electric command, the pressure control valve being controlled in the following manner:

(a) When a start command is input and an engine revolution number increases more than a predetermined lock-up minimum revolution number, a lock-up clutch hydraulic pressure is lowered to a predetermined value which is slightly greater than the inner pressure of the torque converter after keeping the lock-up clutch hydraulic pressure in a high pressure state for a predetermined period of time, and thereafter, until the completion of filling of the lock-up clutch is detected, the lock-up clutch hydraulic pressure is maintained at the predetermined value;

(b) When the completion of filling of the lock-up clutch is detected, gradual increase of the lock-up clutch hydraulic pressure is started at this time point, and subsequently the gradual increase of the hydraulic pressure is stopped at the time when a predetermined set time elapsed from the start of the gradual increase of the hydraulic pressure; and

(c) After the gradual increase of the hydraulic pressure is stopped, an engine output torque is successively calculated, and if the engine revolution number is greater than the predetermined lock-up minimum revolution number, control is made so that the lock-up clutch hydraulic pressure becomes the calculated value of the engine output torque or a hydraulic pressure value corresponding to a value slightly greater than the calculated value of the engine output torque.

5,573,474

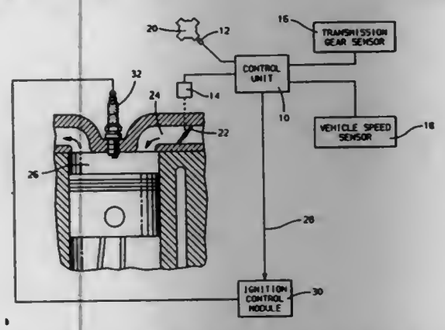
METHOD FOR CONTROLLING IGNITION TIMING FOR AN INTERNAL COMBUSTION ENGINE

Richard A. Marsh, Beverly Hills; David P. Garrett, Sylvan Lake; Paul A. Bauerle, Dewitt, and David S. Mathews, Okemos, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 28, 1994, Ser. No. 267,320

Int. Cl.[6] B60K *41/06;41/28;* **F02P** *5/15*

U.S. Cl. 477—9.1 **5 Claims**



1. A method for controlling ignition timing of an internal combustion engine for a vehicle having a transmission, the engine having a throttle plate for controlling the rate of flow of air flow into the engine, the method minimizing vehicle vibrations during engine accelerations and comprising the steps of:

sensing an engine rotational speed;

sensing an engine throttle plate position;

calculating a change in the sensed engine throttle plate position over a first predetermined time period;

calculating a change in the sensed engine rotational speed over a second predetermined time period when the change in the sensed engine throttle plate exceeds a predetermined value, the change in the sensed engine rotational speed having a generally sinusoidal waveform with decreasing amplitudes over time, representative of vehicle vibration during engine acceleration.;

retarding ignition timing by adding a first variable-dependent amount to the ignition timing for a variable-dependent time period when the change in sensed engine throttle plate position exceeds the predetermined value, and thereafter gradually removing the first variable-dependent amount from the ignition timing, the first variable-dependent amount having a predetermined constant value dependent upon vehicle operational parameters; and

advancing and retarding ignition timing by adding a second variable-dependent amount to the ignition timing when the change in the sensed engine throttle plate position exceeds the predetermined value, the second variable-dependent amount being a function of a phase-shifted inverse of the change in the sensed engine rotational speed, the second variable-dependent amount having a generally sinusoidal waveform with decreasing amplitudes over time and being phase-shifted by an amount, dependent upon vehicle operational parameters, to provide for an optimal canceling effect of vehicle vibration.

3. A method for controlling ignition timing of an internal combustion engine for a vehicle having a transmission, the engine having a throttle plate for controlling the rate of flow of air flow into the engine, the method minimizing vehicle vibrations during engine accelerations and comprising the steps of:

sensing an engine rotational speed;

sensing an engine throttle plate position;

determining a transmission operational state, the transmission operational state comprising one of a plurality of transmission gears being engaged and transmitting engine torque, or idle if not transmission gears are engaged;

calculating a change in the sensed engine rotational speed over a first predetermined time period;

calculating a change in the sensed engine throttle plate position over a second predetermined time period;

determining a bias value and bias delay time as a function of the transmission operational state and sensed throttle plate position;

retarding ignition timing by adding the bias value to the ignition timing at the conclusion of the bias delay time, the bias delay time commencing when the change in sensed engine throttle plate position exceeds a predetermined value, the bias value being gradually removed commencing at the conclusion of a third predetermined time period;

determining a phase delay time as a function of the transmission operational state and sensed throttle plate position;

determining a gain factor as a function of the change in the sensed engine rotational speed, transmission operational state and sensed throttle plate position;

calculating an ignition timing correction quantity as the change in the sensed engine rotational speed multiplied by the gain factor;

storing the ignition timing correction quantity in a shift register for a period corresponding to the phase delay time; and

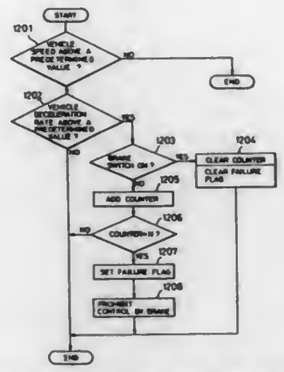
advancing and retarding ignition timing by adding the ignition timing correction quantity to the ignition timing at the conclusion of the phase delay time and thereafter gradually removing the ignition timing correction quantity from the ignition timing at the conclusion of a third predetermined time period.

5,573,475

FAILURE DETECTING SYSTEM AND METHOD FOR AUTOMATIC TRANSMISSION

Ryuzo Sakakiyama, Tokyo; Kiminaga Shirakawa, Kitatsuru, and Kazunari Tezuka, Niiza, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 282,310, Jul. 29, 1994, Pat. No. 5,486,147.
This application Jun. 16, 1995, Ser. No. 491,593
Claims priority, application Japan, Jul. 29, 1993, 5-188196; Jul. 29, 1993, 5-188197; Aug. 30, 1993, 5-214284; Dec. 27, 1993, 5-332180
Int. Cl.[6] B60K *41/00;41/26*
U.S. Cl. 477—94 14 Claims



1. A failure detecting system for an automatic transmission of a vehicle having a vehicle speed sensor mounted on said vehicle for sensing a vehicle speed and for generating a vehicle speed signal indicative thereof, comprising:

a brake switch mounted on said vehicle for detecting whether a brake system is operated or not and for generating a brake signal indicative thereof; and

transmission control prohibiting means, responsive to said vehicle speed signal and said brake signal, for prohibiting control of said automatic transmission based on said brake signal when a first predetermined number of times is counted while said vehicle speed decreases from a predetermined speed to a zero speed without detecting operation of said brake system, thereby indicating a failure in said brake system.

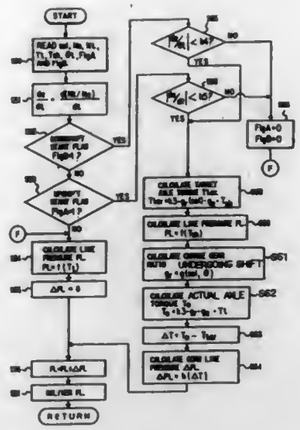
5,573,476

DRIVING FORCE CONTROL SYSTEM FOR A VEHICLE

Toshimichi Minowa, Ibaraki-ken; Hiroshi Kimura; Junich Ishii, both of Katsuta; Takashi Shiraishi, Ibaraki-ken, and Naoyuki Ozaki, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Division of Ser. No. 120,552, Sep. 14, 1993. This application Jun. 6, 1995, Ser. No. 470,450
Claims priority, application Japan, Sep. 16, 1992, 4-246720; Nov. 17, 1992, 4-307169
Int. Cl.[6] B60K *41/08;* F16H *61/00*
U.S. Cl. 477—109 6 Claims

1. A driving force control system for a vehicle which controls an automatic transmission system of the vehicle having a torque converter connected to an output shaft of an engine, a stepped automatic transmission mechanism connected to an output shaft of the torque converter, and a hydraulic circuit for actuating the stepped automatic transmission mechanism, and by which line pressure control means for controlling an oil line pressure in the hydraulic circuit is supplied with a line pressure command value so as to control said stepped automatic transmission for controlling a torque of a driving axle connected to the stepped automatic transmission mechanism; comprising:



shift signal output means for delivering a shift signal which indicates a gear shift position of said stepped automatic transmission mechanism;

engine r.p.m. detection means for detecting r.p.m. of said engine shall be also termed "engine r.p.m.");

torque-converter output shaft r.p.m. detection means for detecting r.p.m. of said output shaft of said torque converter (hereinbelow, the r.p.m. shall be also termed "torque-converter output shaft r.p.m.");

input torque calculation means for calculating an input torque of said stepped automatic transmission mechanism on the basis of the engine r.p.m. detected by said engine r.p.m. detection means, the torque-converter output shaft r.p.m. detected by said torque-converter output shaft r.p.m. detection means, and torque converter characteristics prepared beforehand;

shift start recognition means for recognizing an actual mechanical shift start timing of said stepped automatic transmission mechanism in accordance with a change of the input torque calculated by said input torque calculation means, on condition that the shift signal delivered from said shift signal output means has changed;

shift end recognition means for recognizing a timing which is earlier than an actual mechanical shift end timing of said stepped automatic transmission mechanism, as a shift end;

a standard line pressure calculation portion for calculating that oil line pressure in said hydraulic circuit which is required for performing a gear shift operation, in accordance with said input torque at the change of said shift signal;

target axle torque setting means for setting a target axle torque of said driving axle, at least, under the gear shift operation dependent on a situation of said vehicle;

axle torque determination means for determining an actual axle torque of said driving axle;

axle torque deviation calculation means for calculating a deviation between the target axle torque and the actual axle torque during said gear shift operation;

line-pressure correction magnitude calculation means for calculating a correction magnitude of said oil line pressure in said hydraulic circuit in accordance with the deviation calculated by said axle torque deviation calculation means; and

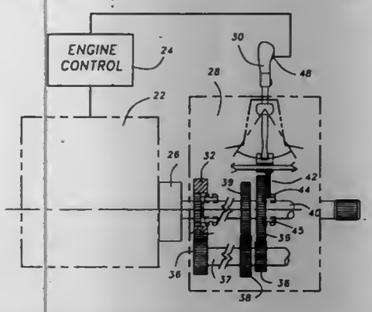
a command line pressure calculation portion which adds up the oil line pressure calculated by said standard line pressure calculation portion and the correction magnitude calculated by said line-pressure correction magnitude calculation means, and which supplies said line pressure control means with a sum value of the addition as the line pressure command value for a time period from the shift start timing to the shift end timing such that said oil line pressure in said hydraulic circuit becomes the sum value.

5,573,477

METHOD AND APPARATUS FOR ASSISTING IN SHIFTING TRANSMISSION TO NEUTRAL

Thomas Desautels, West Bloomfield; Edward M. Bacon, Northville, and Steve M. Weisman, Farmington Hills, all of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jul. 27, 1995, Ser. No. 508,155
Int. Cl.[6] B60K *41/08*
U.S. Cl. 477—109 20 Claims



1. A vehicle drive comprising:

an engine having an output shaft;

a transmission selectively connected to said engine output shaft, said transmission having several selectively actuated speed ratios, said transmission having a transmission output shaft, said selected speed ratios controlling the ratio of the input speed from said engine output shaft to the output speed of said transmission output shaft; and

an engine control to control a parameter of said engine, said engine control including an operator input to allow an operator to signal a desire to eliminate torque between said engine output shaft and said transmission output shaft, said operator signal requesting said engine control determine a zero torque parameter value for said engine output shaft that approximates a zero torque load on the connection between said engine and said transmission, and said engine control being operable to control said engine to achieve said zero torque parameter value.

5,573,478

QUICK SHIFT HYDRAULIC CONTROL FOR A TWO STAGE JUMP SHIFT

Kazumasa Tsukamoto, Toyota; Masahiko Ando, Okazaki; Masahiro Hayabuchi, Anjo; Yoshihisa Yamamoto, Nishio, and Toshihiro Kano, Anjo, all of Japan, assignors to Aisin Aw Co., Ltd., Japan

Filed Sep. 29, 1994, Ser. No. 315,065
Claims priority, application Japan, Sep. 29, 1993, 5-243366
Int. Cl.[6] F16H *61/00*
U.S. Cl. 477—130 10 Claims

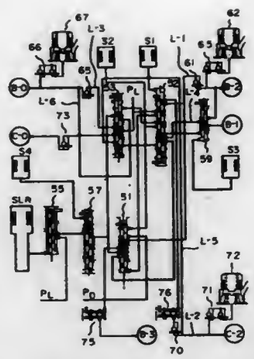
1. A controller for an automatic transmission mounted in a vehicle, comprising:

a first hydraulic servo to which oil is supplied to make a gear change jump from a current gear stage directly to a targeted gear stage which is at least two gear stages different from said current gear stage;

a second hydraulic servo to which oil is supplied to make a gear change from the current gear stage to an intermediate gear stage which is only one gear stage different from said current gear stage;

a source of line pressure;

pressure governing means for changing the line pressure into a controlled pressure and for governing said controlled pressure;



a limited supply oil circuit, including oil flow limiting means for limiting oil flow supplied therethrough, for supplying the line pressure to one of said first hydraulic servo and second hydraulic servo;

a quick supply oil circuit, bypassing said oil flow limiting means, for supplying said controlled pressure to one of said first hydraulic servo and said second hydraulic servo; and

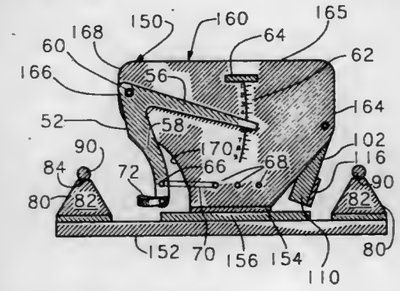
oil path switching means for switching between said limited supply oil circuit and said quick supply oil circuit to supply oil either to said first hydraulic servo to make said gear change jump to said targeted gear stage or to second hydraulic servo to make said gear change to said intermediate gear stage.

5,573,479

FINGER EXERCISING APPARATUS

Clyde T. Harris, 131 S. Bay Way, Port Ludlow, Wash. 98365

Filed Aug. 15, 1994, Ser. No. 290,066
Int. Cl.[6] A63B *23/16*
U.S. Cl. 482—44 6 Claims



3. A finger exerciser comprising:

a. a first moveable member;

b. a first finger contact means on said first moveable member;

c. a first fastening means on said finger exerciser and positioned away from said first moveable member;

d. a second fastening means on said first moveable member;

e. a first tensioning means operatively connecting with said first fastening means and with said second fastening means for resisting movement of said first moveable member;

f. an upright support;

g. a first connecting means operatively connecting said first moveable member to said upright support;

h. said first moveable member being positioned on said first connecting means and being capable of rotating on said first connecting means;

i. a base;

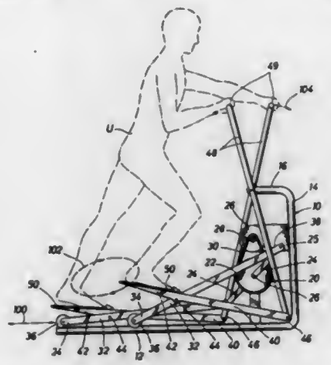
j. a platform mounted on said base;
k. said upright support being mounted on said platform;
l. a hand rest juxtapositioned to said first moveable member;
m. a scale on said upright support;
n. said hand rest having a hand support for receiving a hand and a finger;
o. said first moveable member and said scale being capable of moving with respect to each other;
p. said first finger contact means being of a configuration for receiving a finger and for permitting the finger to rotate said first moveable member;
q. said upright support having a first side and a second side;
r. said first connecting means operatively connecting said first moveable member to said upright support on said first side;
s. said first moveable member comprising a first arm and a second arm;
t. said first finger contact means being on said first arm;
u. a second moveable member having a third arm and a fourth arm;
v. a second connecting means operatively connecting said second moveable member to said upright support on said second side;
w. said second moveable member being positioned on said second connecting means and being capable of rotating on said second connecting means;
x. a second finger contact means being on said third arm;
y. a third fastening means on said finger exerciser and being positioned away from said second moveable member;
z. a fourth fastening means on said second moveable member;
aa. a second tensioning means operatively connecting with said third fastening means and with said fourth fastening means for resisting movement of said second moveable member;
bb. said first finger contact means being of a configuration for receiving a finger for moving said first moveable member towards the hand on which the finger is attached; and,
cc. said second finger contact means being of a configuration for receiving a finger for moving said second moveable member away from the hand on which the finger is attached.

5,573,480

STATIONARY EXERCISE APPARATUS

Robert E. Rodgers, Jr., Houston, Tex., assignor to CCS, LLC, Denver, Colo.

Filed Jan. 25, 1995, Ser. No. 377,846
Int. Cl.[6] A63B *69/16;22/04*
U.S. Cl. 482—57 **30 Claims**



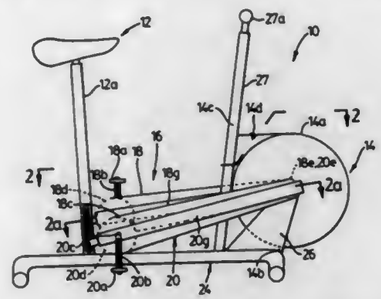
1. An apparatus for exercising comprising:
a frame having a base portion adapted to be supported by a floor;
first and second reciprocating members, each reciprocating member having a first end and a second-end, a portion of said first and second reciprocating members adapted for substantially linear motion;
a coupling member having (i) a pulley supported by said frame defining a pivot axis, and (ii) means for attaching said second ends of said first and second reciprocating members to said pulley so that rotation of said pulley results in the rotation of said second ends of said first and second reciprocating members in a substantially circular path about said pivot axis while a portion of each of said first and second reciprocating members distal said second end of each said first and second reciprocating member moves in a reciprocating pattern; and
first and second pivotal linkage assemblies for orienting the bottom of the feet of the user of the apparatus so that each foot of the user follows a substantially elliptical path during operation of the apparatus.

5,573,481

FOOT OPERATED THERAPEUTIC DEVICE

William Piercy, deceased, late of Millbrook, Canada; by Jean Piercy, legal representative, RR# 3, Millbrook, Ontario, Canada, and Eric Whiteley, 611 Weller St., Peterborough, Ontario, Canada

Filed Aug. 22, 1995, Ser. No. 517,796
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—57 **15 Claims**



1. A foot operated therapeutic exercise device comprising;
a saddle, a load and drive means to propel said load;
said drive means further including a pair of pedal mechanisms, each of said pedal mechanisms including a pedal and a pedal support, said pedal support being mounted for rotation about a pedal axis;
a pair of coupling means, each to independently couple a corresponding one of said pedals to said support in a manner to allow the position of said pedal to be adjusted relative to said pedal axis, according to the range of motion of a corresponding knee of a patient;
adjustment means to independently adjust the pedal axis of each of said pedal mechanisms relative to said saddle, according to the corresponding leg of the patient, thereby allowing the exercise regimen for each leg to be adjusted according to its individual limitations.

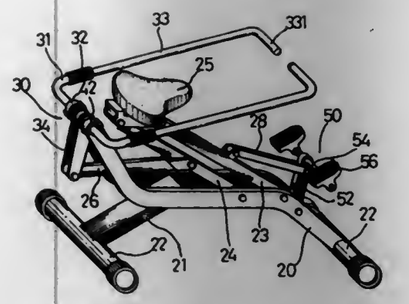
5,573,482

EXERCISING APPARATUS

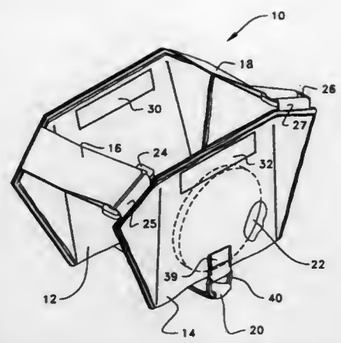
Leao Wang, and Peter Wu, both of Taichung Hsien, Taiwan, assignors to Greenmaster Industrial Corp., Taichung Hsien, Taiwan

Filed Jun. 26, 1995, Ser. No. 494,520
Int. Cl.[6] A63B *69/06*
U.S. Cl. 482—96 **4 Claims**

1. A riding type exercising apparatus comprising:
a) a pair of parallel main frames, each main frame having a rear end extending upwardly for forming a support post and a front end extending downwardly for forming a front leg member;



b) a support frame including an upper end and a lower end, the upper end of the support frame being secured to the main frames between the upper and lower ends of the main frames;
c) a pair of horizontal tubes for supporting the apparatus on a ground surface, one horizontal tube being secured to the lower end of the support frame and the other horizontal tube being secured to the front leg member of the main frames;
d) a front seat bar and a rear seat bar disposed in parallel, each seat bar including an upper end and a lower end, the lower ends of the seat bars being pivotally connected to the main-frames between the upper and lower ends of the main frames, the seat bars being inclined upwardly towards the rear end of the main frames;
e) a seat pivotally connected to the upper ends of the seat bars;
f) a first transmission bar including a front end and a rear end, the front end being pivotally connected to the rear seat bar between the upper and lower ends of the rear seat bar;
g) a hand driven mechanism pivotally supported on the support posts of the main frames and pivotally connected to the rear end of the first transmission bar, the hand driven mechanism including a pair of handles extending from the hand driven mechanism past the seat and toward the front ends of the main frames, each handle terminating in a grip for engagement by the hands of a user, the grips being positioned forwardly of the seat when the apparatus is not being used;
h) a second transmission bar including a front end and a rear end, the rear end being pivotally connected to the front seat bar between the upper and lower ends of the front seat bar;
i) a leg driven mechanism pivotally mounted to the main frames adjacent the front ends thereof, the front end of the second transmission bar being pivotally connected to the leg driven mechanism, and a pair of pedals mounted on the leg driven mechanism for engagement by the feet of a user; and
j) wherein when a user sits on the seat, pushes the pedals in a downward and forward direction, and pulls the handles in an upward and rearward direction, the grips undergo an arcuate displacement about the center of a circle defined by the pivotal support of the hand driven mechanism to simultaneously move the handles rearwardly and the seat upwardly and forwardly in opposite directions for providing unrestricted arm movements by the user during exercising.



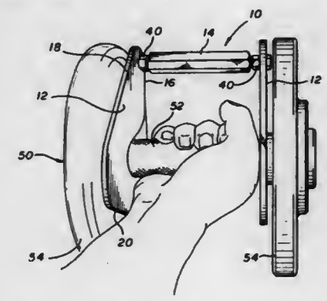
tioned and adjustable to tighten said pockets on the leg and weights in the said weight receiving pockets.

5,573,484

WEIGHTED AUXILIARY HANDLE FOR DUMBBELL

David P. Carpenter, Dunkirk, Md., assignor to M. Michael Carpenter, Los Angeles, Calif.

Filed Feb. 27, 1995, Ser. No. 394,892
Int. Cl.[6] A63B *21/072*
U.S. Cl. 482—108 **10 Claims**



1. An exercise device for use with a dumbbell, said dumbbell having a bar with weighted disks at each end thereof, comprising:
a handle;
a pair of weighted hooks, each having a hook opening for engaging said bar;
a pair of threaded members, each extending between said handle and said pair of weighted hooks;
said threaded members arranged to move said pair of weighted hooks into engagement with said disks upon rotation of said handle.

5,573,483

KNEE WEIGHT FOR ABDOMINAL EXERCISE

Herschel D. Nay, 144 W. 4575 S., Ogden, Utah

Filed Nov. 3, 1995, Ser. No. 552,985
Int. Cl.[6] A63B *21/06*
U.S. Cl. 482—105 **4 Claims**

1. A knee weight for abdominal exercise comprising of a pair of weight receiving pockets; a flexible means interconnecting said pairs of weight receiving pockets and having an opening to receive the knee of a user when said weight receiving pockets are positioned on said user's leg at opposite sides of the knee; strap means interconnecting said pair of weight receiving pockets positioned to pass beneath the when said weight receiving pockets are so posi-

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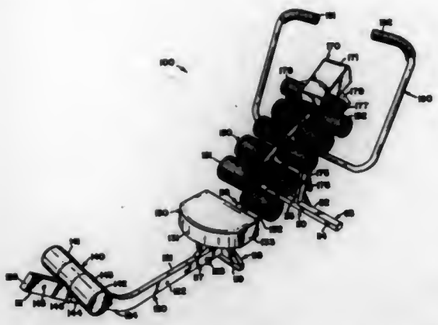
5,573,485

EXERCISING AND STRETCHING APPARATUS

Robert C. Geschwender, 3855 Orchard St., Lincoln, Nebr. 68503

Filed May 31, 1995, Ser. No. 457,270
Int. Cl.[6] A63B *21/008*
U.S. Cl. 482—112 **38 Claims**

1. An exercise apparatus, comprising:
a frame designed to rest upon a floor surface;
a first plurality of back supporting members having respective longitudinal axes and mounted on said frame;
a second plurality of back supporting members having respective longitudinal axes and mounted on said frame proximate



said first plurality of back supporting members, wherein said first and second pluralities of back supporting members cooperate to support a person's back; and

an adjusting means, associated with said frame, for adjusting said first plurality of back supporting members relative to said second plurality of back supporting members between a first relative position, in which back supporting members in said first plurality are coaxially aligned relative to corresponding back supporting members in said second plurality, and a second relative position, in which said back supporting members in said first plurality are out of coaxial alignment with said corresponding back supporting members in said second plurality.

5,573,486

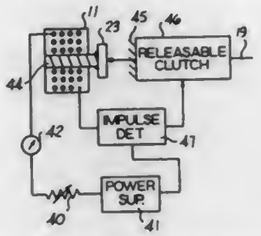
SAFETY CONTROLS FOR MUSCLE DEVELOPMENT EXERCISE MACHINE

Evgeni Beliakov, 3412 Farthing Dr., Wheaton, Md. 20906

Filed Jan. 23, 1995, Ser. No. 377,105

Int. Cl.[6] A63B *23/00*

U.S. Cl. 482—120 **5 Claims**



1. A muscular development machine for an athlete for producing a restraining force which must be overcome by the athlete in the initial portion of an exercise stroke, comprising in combination:

an electromagnetic restraining device comprising an electromagnet member and a retained magnetic member disposed statically in place adjacent each other by magnetic force,

a muscular operated linkage coupled between the magnetic member and the athlete operable by the athlete to break the retained magnetic member away from the electromagnet by overcoming a predetermined restraining force exerted by the electromagnet upon said retained magnetic member with an exercise stroke of a body member of the athlete,

release means for substantially decoupling the athlete from the restraining device when the magnetic force is overcome by the exercise stroke, and

electrically variable current control means for producing an electromagnetic restraining force between said magnetic members of predetermined variable magnitude selectable by said athlete.

5,573,487

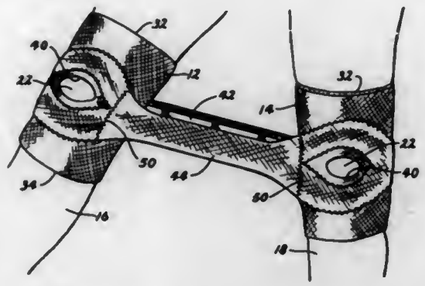
METHOD AND APPARATUS FOR EXERCISING THE LEGS

Frank X. Wallner, 1698 Taylor Ave., St. Paul, Minn. 55104

Filed Mar. 1, 1994, Ser. No. 203,379

Int. Cl.[6] A63B *21/02*

U.S. Cl. 482—124 **5 Claims**



1. An exercise device for use by a person having a right leg and a left leg, the right leg and the left leg being capable of rearward angular flexion and forward angular extension relative to a frontal plane of the user, said exercise device comprising:

a first collar for encircling the right leg of the user, said first collar having means for selectively securing said first collar in a predetermined position relative to the right leg;

a second collar for encircling the left leg of the user, said second collar having means for selectively securing said second collar in a predetermined position relative to the left leg; and

at least one resistance member extending between and connected to each of said first collar and said second collar, said at least one resistance member providing increasing resistance against the angular separation of the left leg and the right leg of the use;

wherein each collar includes an opening therein to accommodate the user's patella, the distance between said openings defining a linear separation and wherein said at least one resistance member has an unstretched position and a stretched position, said unstretched position corresponding to said linear separation being on the order of 6° or less and said stretched position corresponding to said linear separation being on the order of 14° or more;

whereby the left leg and the right leg of the user may be flexed or extended by the user, and said at least one resistance member will increase the resistance applied against such motion to the right leg and the left leg through said first collar and said second collar generally proportionally to the separation of said first collar and said second collar due to the combined flexion and extension of the right leg and the left leg of the user.

5,573,488

METHOD AND DEVICE FOR EXCHANGING TOOLS FOR A PRESS

Jean P. Steiner, Crissier, and Charly Varidel, Le Mont, both of Switzerland, assignors to Bobst SA, Lausanne, Switzerland

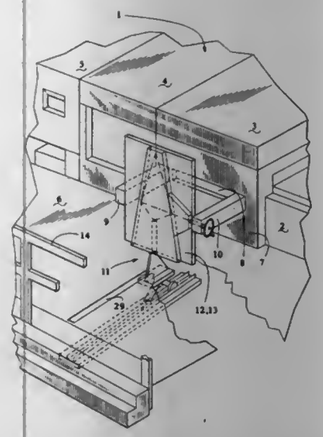
Filed Sep. 20, 1994, Ser. No. 309,980

Claims priority, application Switzerland, Sep. 22, 1993, 02857/93

Int. Cl.[6] B23Q *3/155*

U.S. Cl. 483—1 **11 Claims**

1. A method of exchanging cutting tools in a platen press by means of a movable carriage, said method including loading a replacement tool in a vertical orientation on a support frame of a movable carriage which is in a retracted position; removing the tool to be extracted from the platen press by moving the tool onto arms extending from the press, rotating the tool to be extracted into



a vertical orientation around a horizontal axis, moving the carriage close to the arms, and transferring the tool to be replaced onto the carriage by raising the carriage to lift the tool from the ends of the arm; withdrawing the carriage, rotating the carriage 180° around the vertical axis to present the new tool; and then inserting the new tool into the press by placing the new tool on the ends of the arms by lowering the new tool onto the arms, then pivoting the new tool 90° around a horizontal axis into the horizontal plane, and moving the new tool into the press when the tool is locked in position in the press.

5,573,489

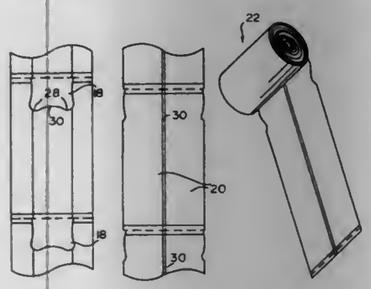
INTEGRAL HANDLED LAYFLAT THERMOPLASTIC BAG

Carl R. Letendre, Fairport, N.Y., and Earle R. Powell, Jacksonville, Ill., assignors to Tenneco Plastics Company, Evanston, Ill.

Filed Dec. 22, 1993, Ser. No. 172,368

Int. Cl.[6] B31B *23/86;23/14*

U.S. Cl. 493—194 **5 Claims**



1. A method for forming ungusseted handle-containing bags in roll-form comprising:

a) forming a continuous collapsed tube having opposing marginal edges;

b) forming pairs of closely spaced seals transverse to said marginal edges of said tube at bag length distances apart such that one of said pairs of seals is spaced at a bag length distance apart from an adjacent one of said pairs of seals;

c) forming a transverse line of weakness between each pair of seals;

d) simultaneously or thereafter longitudinally folding the marginal edges of said tube inwardly toward each other only once to provide said tube with a pair of single-folded side regions and a non-folded central region between said pair of single-folded side regions;

e) after said step of longitudinally folding the marginal edges of said tube inwardly toward each other only once, forming and removing a cut-out region at one end of each sealed segment of said tube, said cut-out region including a portion of said non-folded central region and adjacent portions of said pair of single-folded side regions so that removal of said cut-out region yields loop handles and a bag mouth region in each bag;

f) again longitudinally folding marginal edges of said pair of side regions of said tube inwardly toward each other without overlapping said pair of side regions; and

g) convolutely winding said tube to form several bags on a roll.

5,573,490

METHOD AND APPARATUS FOR ERECTING A FOLDING BOX AND FOLDING ITS CLOSURE TABS

Ralf Steinbrenner, Frankenhardt; Walter Dietrich, Weinstadt, and Andreas Geiger, Althutte, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

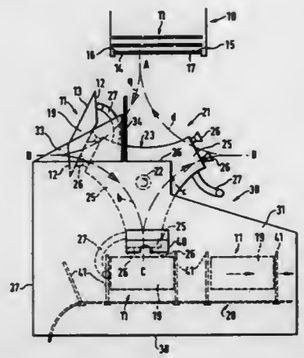
Continuation of Ser. No. 130,483, Oct. 1, 1993, abandoned.

This application Feb. 21, 1995, Ser. No. 391,288

Claims priority, application Germany, Dec. 19, 1992, 42 43 139.5

Int. Cl.[6] B31B *3/80;5/78*

U.S. Cl. 493—315 **7 Claims**



1. A method for removing a folded box (**11**) from a magazine and erecting the box from a folded condition to an open position in a cartoning machine simultaneously with bending closure flaps at right angles to sides of the box when the box is transferred between said magazine and a box conveying device, said box having side walls and first, second, third and fourth closure flaps (**14–17**) that are joined with said side walls along fold lines (**32**) in a same plane with the side walls of the folded box, which comprises engaging one of the folded boxes and transferring the folded box (**11**) along a transfer path composed of a plurality of fixed curved path segments (a–d) to erect the side walls and fold the flaps at a right angle to the side walls to erect the folded box, successively erecting the side walls and folding the first, second, third and fourth closure flaps (**14–17**), at right angles to the side walls (**12, 13**) along the fold lines in a continuous movement of said box thereby forming an opening (**19**) during erecting and transferring the folded box along the transfer path, successively folding the first, second, third and fourth closure flaps (**14–17**) to surround the opening (**19**) along the fold lines during movement of the box relative to stationary folder elements (**31, 33, 34**) during the erecting and transferring process between the removal of the folded box (**11**) from the magazine (**10**) and transfer of the box to the conveyor device (**20**) of the cartoning machine, wherein the first, second, third and fourth closure flaps (**14–17**) are folded in

succession in the order of their arrangement in the direction of motion of the folded box (11) along the transfer path relative to the stationary folder elements (31, 33, 34), beginning with a lower closure flap, the lower closure flap is folded first outwardly at a right angle relative to the side walls with the remainder of the closure flaps folded at a right angle to respective side walls in succession.

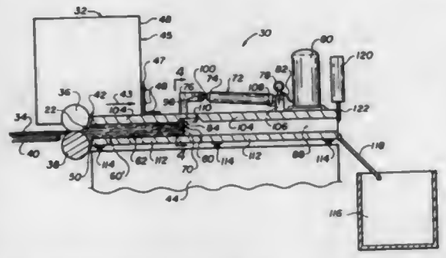
5,573,491
METHOD AND APPARATUS FOR PRODUCING A RESILIENT PRODUCT

Johnny M. Parker, Washington, D.C., assignor to Ranpak Corp., Concord Township, Ohio

Continuation of Ser. No. 171,344, Dec. 21, 1993, Pat. No. 5,403,259, which is a continuation of Ser. No. 971,046, Nov. 3, 1992, abandoned, which is a division of Ser. No. 538,181, Jun. 14, 1990, Pat. No. 5,173,352, which is a continuation-in-part of Ser. No. 430,861, Nov. 2, 1989, Pat. No. 5,088,972. This application Dec. 21, 1994, Ser. No. 360,384

Int. Cl.[6] B31F *1/00;5/02;1/12;* B30B *15/08*

U.S. Cl. 493—352 **57 Claims**



1. A method of producing a product from a sheet of material having a natural resilience, said method comprising the steps of:

slitting the sheet of material into a plurality of strips to form a body of such strips, said slitting being performed by a slitting device; and

sequentially folding each of the strips into a zig-zag shape, wherein said sequentially folding step is accomplished by advancing the plurality of strips against a restriction acting on the body of strips in such a manner that the natural resilience of the material produces substantially uniform adjacent opposite folds thereby causing each of the strips to assume substantially the same zig-zag shape.

5,573,492
DIGITALLY MEASURING SCOPES USING A HIGH RESOLUTION ENCODER

Andreas E. Dianna, Hicksville, and James G. Costello, Huntington, both of N.Y., assignors to Olympus America Inc., Lake Success, N.Y.

Filed Dec. 28, 1994, Ser. No. 365,636

Int. Cl.[6] A61B *1/04*

U.S. Cl. 600—117 **49 Claims**

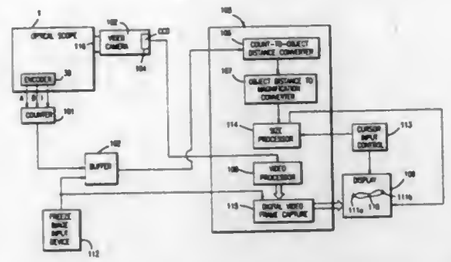
1. A system for determining a dimension of a detail, the system comprising:

a) an optical scope for gathering an image of the detail, the optical scope including

i) a focusing device for adjusting a focal position of the image of the detail,

ii) a device for providing a focus position signal based on a position of the focusing device, and

iii) an image-to-video converter for producing a video signal of the detail from the image of the detail having its focal position adjusted by the focusing device;



b) an image scaling device for providing a scaled image size; and

c) a processor, the processor

i) converting the focus position signal into at least one of an object distance signal and a magnification signal, and

ii) determining a dimension of a detail based on the scaled image size and based on the at least one of the object distance signal and the magnification signal.

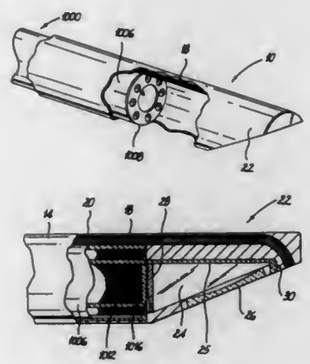
5,573,493
ENDOSCOPE ATTACHMENT FOR CHANGING ANGLE OF VIEW

Jude S. Sauer, Pittsford; Roger J. Greenwald, Holley; Michael G. Oravecz, Rochester, and Alex Kobilansky, Pittsford, all of N.Y., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 8, 1993, Ser. No. 134,536

Int. Cl.[6] A61B *1/04;1/06*

U.S. Cl. 600—121 **40 Claims**



22. A system for changing an angle of view of imaging optics of an endoscope, which comprises:

an endoscopic sheath including a proximal end portion and a distal end portion and defining a longitudinal axis, said proximal end portion configured and dimensioned to substantially enclose an endoscopic portion of an endoscope, said distal end portion sealingly attached to said proximal end portion and being configured and dimensioned to be positioned adjacent a distalmost portion of an endoscope imaging optics, said distal end portion of said endoscopic sheath including means for changing the angle of view of the endoscope imaging optics to provide an inclined angle of view relative to the longitudinal axis;

illumination means integral with said endoscopic sheath for providing illuminating light to said distal end portion of said endoscopic sheath, said illumination means extending from said distal end portion of said endoscopic sheath to at least said proximal end portion of said endoscopic sheath;

means associated with said illumination means for directing light emitted by said illumination means in general alignment with the inclined angle of view: and

connecting means for connecting said illumination means to an external light source.

5,573,494
ENDOSCOPE COVER-SHEATHED ENDOSCOPE IN WHICH AN ENDOSCOPE-COVER COVERABLE ENDOSCOPE TO BE SHEATHED WITH AN ENDOSCOPE COVER IS STRUCTURED TO SHUT OUT WATER TIGHTLY

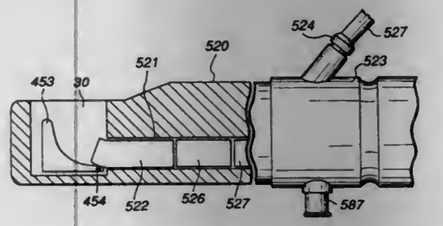
Hisao Yabe, Hachioji; Yoshihiro Iida, Tama; Akira Suzuki; Hideo Ito, both of Hachioji; Yoshio Tashiro, Hino; Minoru Yamazaki; Osamu Tamada, both of Hachioji, and Takahiro Kishi, Yokohama, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 36,175, Mar. 23, 1993, abandoned. This application Mar. 29, 1995, Ser. No. 412,848

Claims priority, application Japan, Feb. 23, 1993, 5-6274 U; Feb. 23, 1993, 5-6275 U; Feb. 23, 1993, 5-6276 U

Int. Cl.[6] A61B *1/00*

U.S. Cl. 600—121 **16 Claims**



2. An endoscope cover-sheathed endoscope, comprising:

an endoscope cover including a forceps channel into which forceps are insertable and a raise mechanism serving as a guide for changing the direction in which the terminal of said forceps is projected through an opening at the terminal of said forceps channel; and

an endoscope-cover coverable endoscope adaptable to be sheathed with said endoscope cover, including an insertional part and a structure for tightly shutting out water, wherein an outer surface of said endoscope-cover coverable endoscope is coated with a chemical-proof material.

5,573,495
ABDOMINAL WALL ELEVATOR DEVICE EMPLOYING ROTATABLE ARMS

David T. Adler, Manhasset, N.Y., assignor to Flexbar Machine Corp., Central Islip, N.Y.

Filed Aug. 19, 1994, Ser. No. 293,076

Int. Cl.[6] A61B *17/02*

U.S. Cl. 600—204 **11 Claims**

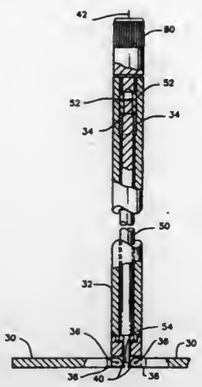
1. An abdominal wall elevator device comprising:

a cylindrical tube having an internally threaded first end, an oppositely positioned second end, and a central axis;

a pair of retractor arms;

a pair of hinges respectively coupled to said pair of retractor arms for hinging each of said arms to said tube at said second end, with said hinges including a pair of tenons having oppositely slanted face surfaces of substantially equal angle;

a push-rod inserted within said tube at said first end, said push-rod terminating in a flat tip at a first end thereof and edges of said tip bearing against said slanted face surfaces of said pair of tenons;



wherein clockwise rotation of said push-rod results in said pair of retractor arms rotating to a position perpendicular to said central axis and wherein counterclockwise rotation of said push-rod results in said pair of retractor arms rotating to a position parallel to said central axis and extending distally from said tube;

wherein said push-rod is rotatable to open and close said pair of retractor arms in use as said tip edges bear against said slanted face surfaces;

and wherein said retractor arms are of a dimension to enter the port of a trocar used in laparoscopic surgery.

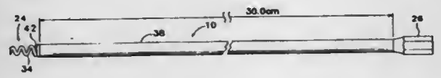
5,573,496
METHOD OF USING A COIL SCREW SURGICAL RETRACTOR

William E. McPherson, 14605 Anchoret Rd., Tampa, Fla. 33624; William B. Saye, 4614 Chattahoochee Crossing, Marietta, Ga. 30067, and Eddie J. Reddick, 904 Fireside Ct., Brentwood, Tenn. 37027

Division of Ser. No. 909,223, Jul. 2, 1992, Pat. No. 5,437,266. This application Jun. 7, 1995, Ser. No. 473,447

Int. Cl.[6] A61B *17/02;17/5*

U.S. Cl. 600—217 **10 Claims**



1. A method for using a surgical retractor assembly to retract an organ in the body of an animal, said method comprising:

(a) providing a retractor assembly comprising an elongate tubular sheath, and a shaft having a proximal end and a distal end, and a coil screw attached to said distal end of said shaft, said coil screw comprising an elongate wire wound into a coil and terminating with a substantially flat outer surface at said tip, a sharp edge being formed on said coil member at said tip by the intersection of said flat surface and the round surface of said wire;

(b) inserting said sheath into the body of an animal;

(c) introducing said shaft into said body of said animal by inserting it through said sheath, distal end first;

(d) positioning said coil screw adjacent said organ;

(e) rotating said retractor so as to screw said coil screw into said organ; and

(f) manipulating said organ by moving said retractor after it has been screwed into said organ.

5,573,497

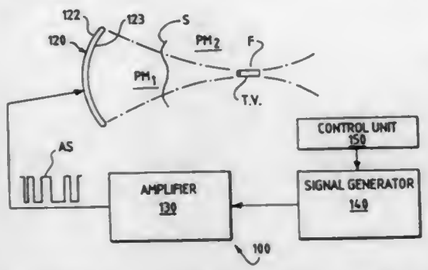
HIGH-INTENSITY ULTRASOUND THERAPY METHOD AND APPARATUS WITH CONTROLLED CAVITATION EFFECT AND REDUCED SIDE LOBES

Jean-Yves Chapelon, Villeurbanne, France, assignor to Technomed Medical Systems and Institut National, Vaux en Velin

Continuation-in-part of Ser. No. 307,719, Nov. 30, 1994. This application Feb. 28, 1995, Ser. No. 396,160

Int. Cl.[6] A61B *17/00*

U.S. Cl. 601—2 12 Claims



1. A method for generating high power the therapeutic ultrasound waves in a propagation medium, said ultrasound waves produced by an ultrasonic transducer having at least one ultrasound transducer element, the method comprising the steps of:

activating the at least one ultrasound transducer element with an electronic signal supplied by a signal generator;

said signal generator supplying a wideband electronic signal to said at least one ultrasound transducer element for reducing or preventing cavitation phenomena resulting from the propagation of the ultrasound waves emitted by the at least one ultrasound transducer element within the propagation medium; and

said wideband electronic signal being a Golay coded pseudo-random type signal.

5,573,498

CHEST ENCLOSURES FOR VENTILATORS

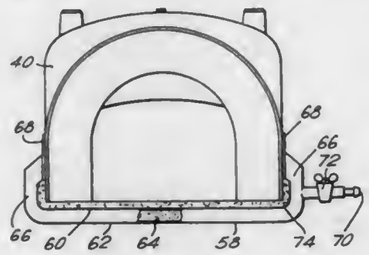
Zamir Hayek, London, England, assignor to Dranez Anstalt, Vaduz, Liechtenstein

Continuation of Ser. No. 858,141, Mar. 27, 1992, abandoned. This application Dec. 7, 1994, Ser. No. 350,738

Claims priority, application United Kingdom, Mar. 28, 1991, 9106717

Int. Cl.[6] A61H *31/00*

U.S. Cl. 601—41 22 Claims



19. A chest enclosure for use in producing assisted ventilation of the lungs of a patient comprising a chest covering shell for fitting over a patient's chest, said shell having an air passageway to said enclosure for connection in use to an air oscillator, and backing means connected to said shell for location behind a patient in use, wherein the said backing means comprises an evacuatable envelope having an opening for the evacuation of air therefrom and containing a multitude of small particles such that the envelope is normally flexible and able to be conformed to a patient's body but upon evacuation of air therefrom becomes stiff.

5,573,499

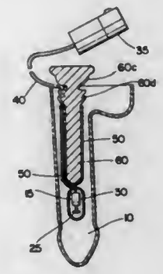
VIBRATOR SYSTEM

Ron McAllister, North Hollywood, Calif., assignor to Health Devices Corporation, North Hollywood, Calif.

Continuation of Ser. No. 41,357, Apr. 1, 1993, abandoned, which is a continuation of Ser. No. 791,449, Nov. 13, 1991, abandoned. This application Nov. 28, 1994, Ser. No. 346,318

Int. Cl.[6] A61H *1/00;19/00*

U.S. Cl. 601—70 11 Claims



11. A vibrator comprising:

a first body of substantially resilient material formed such that said first body has an outer surface constituting the outer surface of the vibrator and has a hollow passage spaced inwardly of the outer surface and separated from the outer surface by a region filled with resilient material, the passage being defined by an interior surface of the body, the passage having an open end via which the passage is accessible from outside the vibrator and a closed end, the passage having a first portion adjacent the closed end and a second portion extending from the first portion to the open end;

a second body comprising a casing and further comprising a motor and an unbalanced weight enclosed by said casing, the motor being drivable by an electric current to cause said unbalanced weight to produce vibratory motion, said casing having an outer surface which corresponds in shape to the first portion of the passage and being tightly fitted into the first portion of the passage; and

means for closing the passage, said means having an outer surface substantially conforming to the second portion of the passage and fitting tightly in the second portion of the passage to close the open end of the passage, said means being a structure which is separate from said second body and contacting said casing for holding said second body in position in said first portion of said passage;

wherein said means for closing the passage comprises a plug having a shaft portion and a sheath having an outer surface which substantially conforms to the second portion of the passage, wherein the shaft portion of the plug fits intimately into the sheath;

wherein the sheath includes a substantially tubular open channel;

wherein the open channel is disposed on the outer surface of the sheath.

5,573,500

SOLE MASSAGE DEVICE

Tatsuo Katsunuma; Tomio Fujikawa, and Selya Mabuchi, all of Kashiwa, Japan, assignors to Bioplt Co., Ltd., Kashiwa, Japan

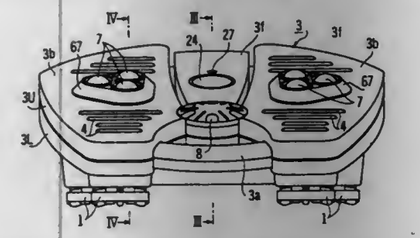
Filed Sep. 22, 1994, Ser. No. 310,578

Claims priority, application Japan, Mar. 24, 1994, 6-079428; Mar. 24, 1994, 6-079429

Int. Cl.[6] A61H *23/02*

U.S. Cl. 601—111 25 Claims

21. A foot sole massaging device including:



a housing having an upper section, said housing upper section defining an inclined surface that extends along a selected plane, said inclined surface defining at least one foot rest surface;

a mass block disposed in said housing by an elastic means for flexibly suspending said mass block from said housing upper section;

a gear box disposed in said mass block by at least one resilient vibration damping member;

a plurality of impact rods slidably mounted in said gear box and extending axially upward toward said at least one footrest surface;

a plurality of impact heads, each said impact head being attached to a top end of a separate one of said impact rods so as to be located above and adjacent said at least one footrest surface;

a cam assembly disposed in said gear box, said cam assembly including: a rotating cam formed with a camming surface; a cam follower slidably mounted to each of said impact rods, said cam followers being positioned to abut said camming surface; a stop ring secured to each said impact rod restricting movement of said cam follower along one axial direction of said impact rod; a plurality of biasing springs, each said biasing spring connected to a separate one of said impact rods for urging said associated cam follower against said camming surface; and a plurality of buffer springs, each said buffer spring being positioned to urge a separate one of said cam followers against said associated stop ring, wherein said camming surface is shaped so that when said cam is actuated, said impact rods are reciprocally displaced in a predetermined pattern;

an electric motor disposed in said mass block and a gear reduction unit connected to said motor and disposed in said gear box and connected to said cam assembly for actuating said cam;

a speed adjuster for providing a speed control signal to said electric motor, said speed adjuster having a dial for manually establishing said speed control signal, said dial projecting from said housing inclined surface; and

a control circuit for regulating the application of drive current to said motor, said control circuit including: a power switch for controlling the application of power to said motor; a timer connected to said power switch for generating a signal for a predetermined time period upon the closing of said power switch; an optical sensor mounted to said mass block for sensing the placement of a foot on said foot rest surface and for producing a foot placed signal when a foot is so positioned; a logic gate connected to receive said timer signal and said foot placed signal that in response to receipt of said signals, asserts a driver_on signal, wherein said electric motor is connected to receive said driver_on signal and is activated in response to receiving said driver_on signal.

5,573,501

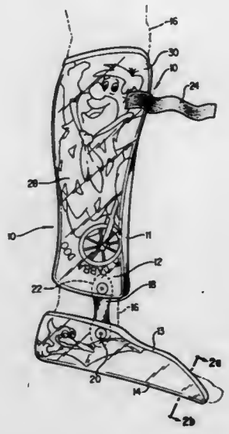
ORTHOTIC WITH INDICIA BEARING LAYER

Joseph L. Ruscito, 414 Anthony Ave., Toms River, N.J. 08753, and Frank P. Scarnati, 10 Hamilton Ct., Old Bridge, N.J. 08857

Filed Sep. 7, 1993, Ser. No. 117,820

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—7 10 Claims



1. A preformed multilayered composite material ankle foot orthotic device having a greaves portion and a plantar portion comprising;

a substantially transparent outer layer including a thermoplastic resin;

an image bearing layer adjacent thereto, said image bearing layer comprising at least one preselected graphic image; and

a base structure layer;

wherein said outer layer and said base structure layer are bonded together within a transparent thermoplastic resin and said at least one preselected graphic image is visible through said outer layer of said device.

5,573,502

DISPLAY PANEL AND CONTROLS FOR BLOOD MIXTURE DELIVERY SYSTEM

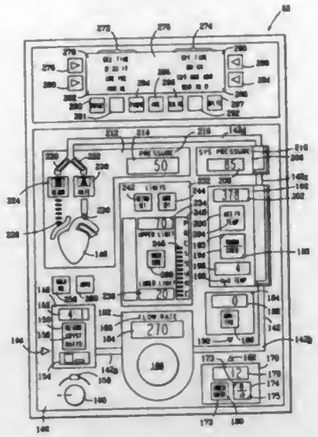
Andrew D. LeCocq, Hurst; Thomas C. Thompson; Kenneth A. Jones, both of McKinney; Martyn Abbott, Richardson; Albert M. Davis, Richardson, and Andrew P. Mattson, Richardson, all of Tex., assignors to Quest Medical, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 67,683, May 26, 1993, Pat. No. 5,385,540. This application Mar. 1, 1994, Ser. No. 204,532

Int. Cl.[6] A61M *37/00;31/00;1/00*

U.S. Cl. 604—4 61 Claims

1. A blood mixture fluid delivery system, said system defining a fluid flow path from at least one source to a patient, said system having a display panel, a mechanism for infusing a blood mixture fluid to said patient along said fluid flow path and a control mechanism for controlling a plurality of controllable characteristics of said blood mixture fluid delivery system via a plurality of control elements located at a plurality of locations within said fluid flow path, said display panel of said fluid delivery system comprising:



(a) a panel, having depicted thereon a visible schematic representation of said fluid flow path originating from at least one source, through said blood mixture fluid delivery system, to said patient; and

(b) two or more visible displays, each visible display representing at least one of said plurality of controllable characteristics of said blood mixture fluid delivery system, each visible display taking a position with respect to said visible schematic representation analogous to a location of at least one associated control element within said fluid flow path.

5,573,503

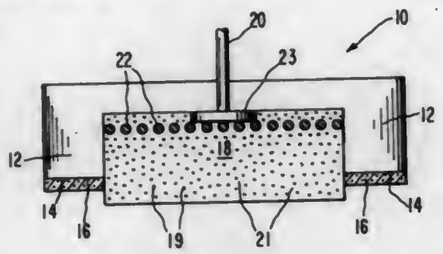
IONTOPHORETIC DRUG DELIVERY

Darrel F. Untereker, Cedar; Joseph B. Phipps, Plymouth, and Gary A. Lattin, Forest Lake, all of Minn., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 459,043, Dec. 19, 1989, abandoned, which is a division of Ser. No. 154,566, Feb. 10, 1988, Pat. No. 5,135,477, which is a continuation-in-part of Ser. No. 665,698, Oct. 29, 1984, Pat. No. 4,744,787, which is a continuation-in-part of Ser. No. 665,699, Oct. 29, 1984, Pat. No. 4,474,819. This application Apr. 30, 1993, Ser. No. 55,394

Int. Cl.[6] A61N *1/30*

U.S. Cl. 604—20 23 Claims



1. An iontophoretic electrode for delivery of as an ionic drug having a positive charge, comprising:

a reservoir containing a positively charged ioaic drug compounded with a negatively charged counterion, said reservoir comprised of a hydrophilic polymer, which when hydrated is permeable to said ionic drug, and which is substantially free of competing cations;

an electrically conductive member comprising a material that is readily oxidizable to form a positively charged ionic species differing from said positively charged ionic drug, when said conductive member is in contact with said reservoir and a positive voltage is applied to said conductive reservoir.

5,573,504

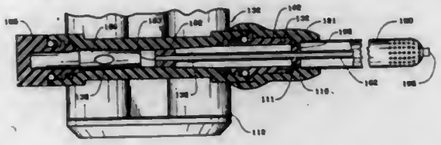
COMPOSITE IRRIGATION AND SUECTION PROBE AND VALVE

James H. Dorsey, III, Delray Beach, Fla., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 844,551, Mar. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 470,771, Jan. 26, 1990, Pat. No. 5,188,591. This application Apr. 22, 1993, Ser. No. 52,080

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—35 25 Claims



1. A surgical valve in combination with a composite irrigation and suction probe, said composite probe releasably attached to said surgical valve for the delivery of a source of irrigation and suction, said surgical valve in combination with said probe comprising:

a single valve body having a common channel communicating with a plurality of valve chambers and at least one probe attachment end in fluid flow communication with the common channel, said valve body also including a plurality of valve means, each of said valve means operatively associated with a respective valve chamber, said common channel having an irrigation port and a suction port, said valve allowing for simultaneous suction and irrigation;

an inner cannula having a first end and a second end, said inner cannula having an internal passageway extending from said first end to said second end, the first end of said inner cannula disposed within the common channel between said suction port and said irrigation port of the common channel when said composite probe is removably attached to said surgical valve;

an outer cannula having a first end and a second end, said outer cannula having an internal passageway extending from said first end to said second end of said outer cannula, a portion of said inner cannula disposed within the internal passageway of said outer cannula;

means for properly orientating said inner cannula with respect to said outer cannula;

means for releasably attaching said outer cannula to said probe attachment end; and

means for isolating said irrigation port and said suction port.

5,573,505

VARIABLE RATIO BLOOD-ADDITIVE SOLUTION DEVICE AND DELIVERY SYSTEM

Gilbert H. Johnson, 2024 Hatch St., Eau Claire, Wis. 54701; Stephen R. Straus, 7195 Tara Ave., Las Vegas, Nev. 89117, and Joseph D. Giordano, 2416 Enchantment Cr., Henderson, Nev. 89014

Continuation of Ser. No. 26,277, Mar. 4, 1993, Pat. No. 5,322,500. This application Jun. 17, 1994, Ser. No. 262,332

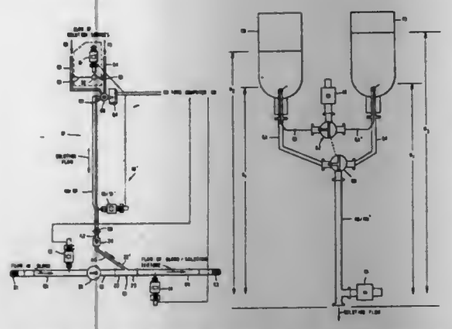
Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—56 18 Claims

1. A method for mixing blood and solution, for monitoring and for dispensing the mixture toward a site of perfusion comprising:

(a) providing at least one source of blood and at least one source of solution;

(b) flowing said blood and flowing said solution together to form a flowing mixture having a predetermined ratio corresponding to the flow rates of said blood and said solution;



(c) delivering said flowing mixture of blood and solution at a predetermined rate of flow to a site of perfusion; and

(d) monitoring a ratio of blood to solution in said mixture by a method which comprises:

measuring the rate of flow within at least two of said flowing blood, said flowing solution, and said flowing mixture for calculation of the ratio of blood to solution.

5,573,506

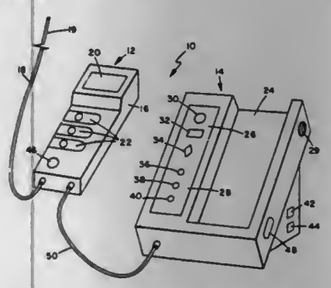
REMOTELY PROGRAMMABLE INFUSION SYSTEM

Robert S. Vasko, San Diego, Calif., assignor to Block Medical, Inc., Carlsbad, Calif.

Filed Nov. 25, 1994, Ser. No. 344,973

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—65 31 Claims



1. A remotely programmable medical dispensing system having a programmable protocol, said remotely programmable medical dispensing system being programmable by both a local and a remote touch-tone transceiver, the medical dispensing system comprising:

an electronically controllable dispensing device connectable with a patient;

a memory for storing said programmable protocol;

a voice storage unit for storing a voice signal;

a remote communication port for connection to said remote touch-tone transceiver for sending said voice signal to said remote touch-tone transceiver and for receiving a remote programming signal from said remote touch-tone transceiver;

a processor, coupled to said remote communication port, to said voice storage unit and to said memory, for accessing said voice signal from said voice storage unit, for accessing said programmable protocol from said memory, and for processing said programmable protocol in response to receiving said remote programming signal;

said processor also arranged for coupling to said local touch-tone transceiver for receiving local touch and voice signals used in the processing said programmable protocol; and

said processor connectable to said dispensing device to actuate the dispensing in response to the processing of said programmable protocol.

5,573,507

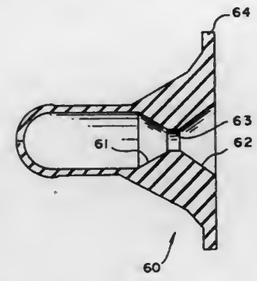
MULTI-USE INFANT-FEEDING NIPPLE SYSTEM

Ramon Moser, 1110 Meadow Lake Way, Apt. #100, Water Springs, Fla. 32708, and Gustayo Moser, Lomas De La Lagunita Qta Guarandinga, Caracas, Venezuela

Continuation-in-part of Ser. No. 774,732, Oct. 9, 1991, Pat. No. 5,395,322, which is a continuation of Ser. No. 494,962, Mar. 16, 1990, abandoned. This application Mar. 7, 1995, Ser. No. 399,539

Int. Cl.[6] A61J *9/00*

U.S. Cl. 604—77 17 Claims



1. An infant-feeding nipple system comprising:

a flexible elastomeric nipple body having a hollow interior, a tip end, and a base end, and a longitudinal axis extending through the body from the base end through the tip end;

said base end having a reduced diameter opening extending longitudinally therethrough, defining means which is elastomerically yieldable for effecting a sliding seal with an end of a tubular conduit inserted longitudinally into the base end, whereby the nipple may be attached to one end of a conduit that can be extended at its other end into a source of liquid so that an infant can use the nipple and conduit to drink liquid from a source remote from the infant, said elastomerically yieldable mean enabling conduits of different diameters to be selectively slidably sealed to the nipple;

said tip end having normally closed opening means therethrough that opens in response to sucking action on the nipple to enable flow of liquid from a source of the liquid outwardly from the nipple through the opening means, and that closes when sucking action thereon ceases, thereby defining a one-way check valve that prevents ingress of air into the nipple through the opening means; and

the diameter of the conduit received in the base end of the nipple being related to the flexibility of the nipple and to the size of the opening means such that the opening means remains closed and the liquid does not drain from the nipple and conduit back into the container when sucking action is terminated and the nipple is at a higher elevation than the liquid in the container, thereby maintaining liquid primed in the conduit and nipple and preventing ingestion of air by an infant when sucking action on the nipple by the infant is stopped and then resumed.

5,573,508

CATHETER WITH AN EXPANDABLE PERFUSION LUMEN

Troy L. Thornton, San Francisco, Calif., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Nov. 22, 1994, Ser. No. 343,182

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—96 20 Claims

1. A perfusion dilatation catheter comprising

a) an elongated catheter shaft having proximal and distal ends, an inflation lumen extending within a proximal shaft section and a distal shaft section to a discharge location in the distal shaft section spaced proximally from the distal end of the catheter shaft, a perfusion lumen extending at least within the distal shaft section from one or more proximal perfusion



openings spaced proximally from the discharge location to an opening in the distal end of the catheter shaft;

b) an inflatable dilatation member on the distal shaft section having an interior in fluid communication with the inflation lumen at the discharge location; and

c) expandable tubular means disposed within at least part of the perfusion lumen which has a helical coil having proximal and distal ends, an elongated high strength tubular member having proximal and distal ends and an inner lumen extending therein, with the distal end of the high strength tubular member secured to the proximal end of the helical coil, and an operating shaft having proximal and distal ends, extending within the inner lumen of the high strength tubular member and within the helical coil and having the distal end of the operating shaft secured to the distal end of the coil to increase the transverse cross-sectional area of the perfusion lumen and to thereby increase the flow of blood therethrough.

5,573,509

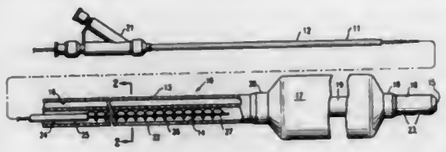
CATHETER WITH AN EXPANDABLE PERFUSION SLIT

Troy L. Thornton, San Francisco, Calif., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Nov. 22, 1994, Ser. No. 343,183

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—102 **14 Claims**



1. A perfusion dilatation catheter comprising:

a) an elongated catheter shaft having proximal and distal ends, a port in the distal end, proximal and distal shaft sections, an inflation lumen extending within the proximal shaft section and the distal shaft section to a discharge location in the distal shaft section spaced proximally from the distal end of the catheter shaft having a discharge port therein, a perfusion lumen extending at least within the distal shaft section to the port in the distal end of the catheter shaft and at least one elongated perfusion opening in the catheter shaft which has closed proximal and distal ends and which is in fluid communication with the perfusion lumen;

b) an inflatable dilatation member having an elongated cylindrically shaped working section and tapered proximal and distal ends which is disposed on the distal shaft section distal to the elongated perfusion opening in the catheter shaft having an interior in fluid communication with the inflation lumen at the discharge location; and

c) means to increase at least one transverse dimension of the perfusion lumen underlying the elongated perfusion opening in the catheter shaft to open the elongated perfusion opening between the closed ends thereof to facilitate the flow of blood therethrough into the perfusion lumen, through the perfusion lumen to the port in the distal end of the catheter shaft when the dilatation member is inflated within a patient's artery.

5,573,510

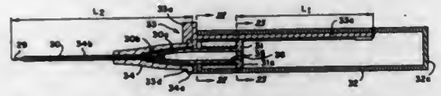
SAFETY INTRAVENOUS CATHETER ASSEMBLY WITH AUTOMATICALLY RETRACTABLE NEEDLE

Dennis R. Isaacson, 239 Wymount Ter., Provo, Utah 84604

Continuation-in-part of Ser. No. 202,729, Feb. 28, 1994, abandoned. This application Sep. 30, 1994, Ser. No. 315,880

Int. Cl.[6] A61M *5/178*

U.S. Cl. 604—158 **12 Claims**



1. A safety intravenous catheter assembly with retractable needle, comprising an elongate safety receptacle for needle retraction following intravenous catheter emplacement; a catheter having a slim forward end portion for receiving a sharp venipuncturing end portion of an intravenous needle and for intravenous emplacement following needle puncturing of a vein of a patient and having a rearward end portion; an elongate needle received by and having a sharp, venipuncturing end portion protruding forwardly from said forward end portion of the catheter and having a needle stem portion extending backwardly therefrom into said safety receptacle; coupling means securing the catheter to the safety receptacle, said coupling means having a forward portion and an elongate coupling stem portion that extends backwardly into said safety receptacle; means normally removably fastening said catheter to said coupling means, with the rearward face of the former to the forward face of the latter, whereby pushing said catheter forwardly following venipuncture of a vein will emplace said forward end of the catheter in the vein; needle-stopping means positioned within said safety receptacle to normally prevent retraction of said needle; means for automatically releasing said needle-stopping means when the related placement of said coupling means and said safety receptacle is changed to enable displacement of said needle-stopping means from needle-stopping position; and resilient means for automatically forcing retraction of said needle into said safety receptacle upon displacement of said needle-stopping means from needle-stopping position.

5,573,511

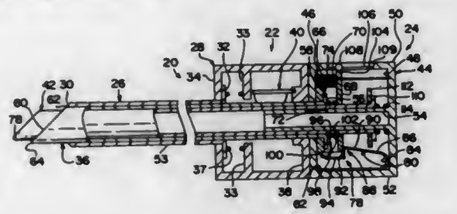
RETRACTABLE SAFETY PENETRATING INSTRUMENT WITH SAFETY PROBE

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation-in-part of Ser. No. 247,205, May 20, 1994, and Ser. No. 245,007, Aug. 10, 1994, Pat. No. 5,478,317, which is a continuation of Ser. No. 800,507, Nov. 27, 1991, abandoned, said Ser. No. 247,205is a division of Ser. No. 800,507. This application Feb. 28, 1995, Ser. No. 395,609

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—164 **42 Claims**



1. A safety penetrating instrument for establishing a portal in the wall of an anatomical cavity comprising

a housing;

an elongate portal sleeve having a proximal end mounted by said housing and a distal end for introduction in the anatomical cavity;

a hollow penetrating member disposed within said portal sleeve and having a distal end for penetrating the anatomical cavity wall, said penetrating member being movable relative to said portal sleeve between an extended position where said distal end of said penetrating member protrudes distally from said distal end of said portal sleeve and a retracted position proximally spaced from said extended position;

a safety probe disposed within said penetrating member, said safety probe being movable relative to said portal sleeve between an extended safety probe rest position protecting said penetrating member distal end when said penetrating member is retracted and a safety probe retracted position exposing said penetrating member distal end when said penetrating member is extended;

safety probe bias means for biasing said safety probe distally toward said safety probe rest position;

retracting means for moving said penetrating member from said penetrating member extended position to said penetrating member retracted position;

means for manually moving said penetrating member from said penetrating member retracted position to said penetrating member extended position;

locking means for locking said penetrating member in said penetrating member extended position while permitting a predetermined amount of proximal movement of said penetrating member during penetration of the anatomical cavity wall;

penetrating member bias means for biasing said penetrating member distally in said locked penetrating member extended position to permit said penetrating member to move proximally during penetration of the anatomical cavity wall and distally upon introduction into the anatomical cavity; and

releasing means responsive to penetration of said safety penetrating instrument into the anatomical cavity for triggering release of said locking means to permit said retracting means to move said penetrating member to said penetrating member retracted position.

5,573,512

INFUSION OR TRANSFUSION NEEDLE ASSEMBLY

Abraham van den Haak, Eesergroen, Netherlands, assignor to Advanced Protective Injection Systems B.V., Eesergroen, Netherlands

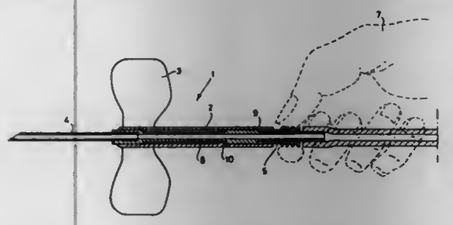
PCT No. PCT/NL91/00144, § 371 Date Apr. 19, 1993, § 102(e) Date Apr. 19, 1993, PCT Pub. No. WO92/04073, PCT Pub. Date Mar. 19, 1992

PCT Filed Aug. 2, 1991, Ser. No. 39,288

Claims priority, application Netherlands, Sep. 5, 1990, 9001958; Nov. 22, 1990, 9002552

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—171 **12 Claims**



1. An infusion or transfusion needle assembly comprising:

a hollow needle;

a tubular needle holder having a first end connected to said needle and a second end adapted to be connected to a hose;

a tubular sheath coaxially surrounding at least a portion of said needle holder so as to be axially slidable relative to said needle holder and needle between an extended position wherein the needle extends from the sheath and is ready for use, and a retracted position wherein the needle is protectively covered by the sheath;

releasable detent locking means mounted on at least one of said needle holder and said sheath for releasably locking said sheath in said extended position and preventing axial movement of said sheath from said extended position to said retracted position;

an unlocking element mounted on at least one of said needle holder and said sheath and selectively moveable into or out of engagement with said releasable detent locking means for releasing said releasable detent locking means to permit axial movement of said sheath from said extended position to said retracted position; and

permanent detent locking means mounted on at least one of said needle holder and said sheath for permanently locking said sheath in said retracted position upon said sheath being moved from said extended position to said retracted position.

5,573,513

PREFILLED CARTRIDGE SYRINGE WITH NEEDLE SYSTEM

Robert M. Wozencroft, Surbiton, England, assignor to Sterimatic Holdings Limited, Tortola, Virgin Islands (Br.)

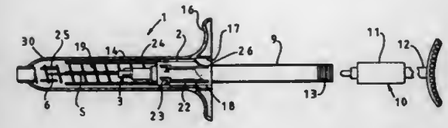
PCT No. PCT/GB93/01087, § 371 Date Dec. 14, 1994, § 102(e) Date Dec. 14, 1994, PCT Pub. No. WO93/25254, PCT Pub. Date Dec. 23, 1993

PCT Filed May 26, 1993, Ser. No. 356,210

Claims priority, application United Kingdom, Jun. 16, 1992, 9212742

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—198 **10 Claims**



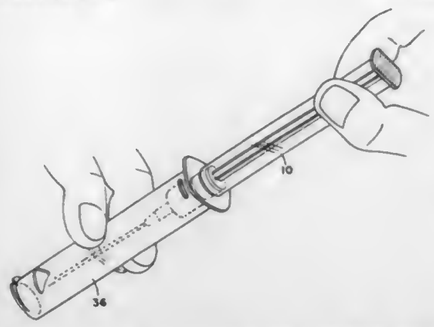
1. A syringe system comprising an elongated hollow cylindrical barrel (2) having an outlet (3) at one end of the barrel, a hollow pointed needle (5) connected to said one end of the barrel in fluid communication with the outlet, a plunger (12) within the barrel which is axially movable by manual depression of the plunger from an outer extreme position outside the barrel to an inner extreme position within the barrel to expel liquid through the outlet (3) and along the needle (5), a protective sleeve (4) having an apertured end (15) and mounted on the barrel (2) so as to be slidable along the barrel between a contracted position in which the needle (5) projects through the apertured end (15) of the sleeve (14) to enable skin puncturing to be effected and an extended position in which the needle (5) is located within the sleeve (14) to shield the point of the needle, first retaining means (22, 24, 26) on the barrel and the sleeve operable to retain the sleeve (14) in the extended position to shield the point of the needle (5), biasing means (19) mounted on the barrel and resiliently biasing the sleeve (14) towards its extended position whereby the sleeve (14) automatically assumes its extended position, and is retained therein by the first retaining means (22, 24, 26), on release of pressure applied in the direction of contracting movement, and second retaining means (23, 24) on the barrel and the sleeve operable to retain the sleeve (14) in the contracted position and to be automatically released by the beginning of depression of the plunger (12) out of said outer extreme position to a position short of said inner extreme position.

5,573,514

HOLDER FOR CARTRIDGE-NEEDLE UNIT

Mark A. Stiehl, Rochester; William A. Bergstresser, Prattsburgh, both of N.Y., and John J. Niedospial, Princeton Junction, N.J., assignors to Sterling Winthrop Inc., New York, N.Y.

Continuation of Ser. No. 128,934, Sep. 29, 1993, abandoned. This application Mar. 4, 1996, Ser. No. 610,511
Int. Cl.[6] A61M 5/32
U.S. Cl. 604—198 8 Claims



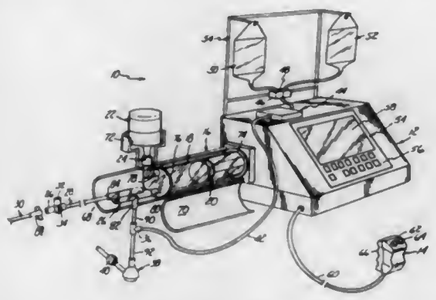
1. A holder for use in combination with a pre-filled cartridge-needle unit, said holder comprising:
a hollow body sized for housing the cartridge-needle unit therein having proximal and distal ends said body comprising a pair of squeeze pads disposed on the distal end thereof; and
means for permitting said body to move axially relative to the cartridge-needle unit between use and safe positions;
wherein the distal end of said body is elliptical in cross-section, said ellipse having a major axis substantially longer than its minor axis, and the proximal end of said body is circular in cross-section and said body is tapered from said elliptical end to said proximal end and comprises a first pair of retaining slots at the distal end thereof and a second pair of retaining slots at the proximal end thereof, said slots being sized to accept a circumferential ring of the cartridge-needle unit and positioned to hold the cartridge-needle unit in use and safe positions.

5,573,515

SELF PURGING ANGIOGRAPHIC INJECTOR

Robert F. Wilson, Shoreview, and Jiyan Liu, Roseville, both of Minn., assignors to Invasatec, Inc., Eden Prairie, Minn.

Filed Apr. 20, 1995, Ser. No. 425,577
Int. Cl.[6] A61M 5/315
U.S. Cl. 604—236 14 Claims



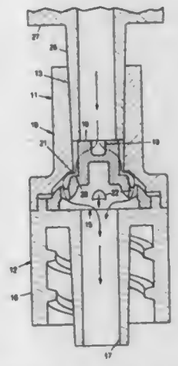
1. An apparatus for delivering medical fluid from a fluid reservoir to a patient, the apparatus comprising:
an inlet port for connection to the fluid reservoir;
a syringe having a syringe body and a piston; and
a first valve connected in a flow path between the inlet port and the syringe, the first valve having a first state which permits medical fluid to be drawn from the fluid reservoir through the inlet port and the flow path to the syringe when the piston moves in a first direction within the syringe body, the first valve having a second state which permits air to be expelled from the syringe through the flow path to the inlet port when the piston moves in a second direction within the syringe body but which blocks flow of the medical fluid through the flow path from the syringe back to the inlet port.

5,573,516

NEEDLELESS CONNECTOR

Clifford A. Tyner, Grass Valley, Calif., assignor to Medical Connexions, Inc., San Rafael, Calif.

Filed Sep. 18, 1995, Ser. No. 529,929
Int. Cl.[6] A61M 5/00
U.S. Cl. 604—249 10 Claims



1. A needleless connector, comprising:
a housing having a interior chamber, an inlet to the chamber, and an outlet from the chamber;
a valve seat formed in the chamber and proximate the inlet; and
a resilient conical valve head mounted in the chamber, the valve head having a shoulder biased against the valve seat to form a fluid barrier between the inlet and the chamber, and an elongated tip portion positioned in the inlet having a transverse slot arranged thereon;
whereby a tubular fitting inserted into the inlet engages the tip portion to deform and collapse the conical valve head onto itself to move the shoulder away from the valve seat to permit fluid passage from the inlet, through the chamber, to the outlet.

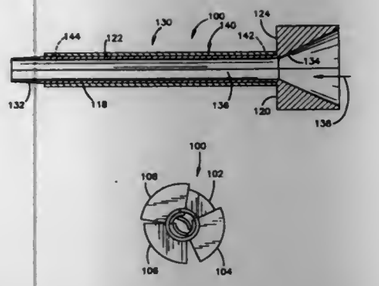
5,573,517

EXPANDABLE CANNULAS

Peter M. Bonutti, 1303 W. Evergreen Plz., Effingham, Ill. 62401, and James S. Hawkins, Urbana, Ill., assignors to Peter M. Bonutti, Effingham, Ill.

Division of Ser. No. 13,942, Feb. 4, 1993, Pat. No. 5,320,611. This application Jun. 6, 1994, Ser. No. 254,368
Int. Cl.[6] A61B 17/02
U.S. Cl. 604—264 4 Claims

1. An expandable cannula having a contracted condition and being expandable from the contracted condition to an expanded condition, said expandable cannula comprising a tube having a longitudinally extending central passage for receiving surgical instruments and the like, said tube being expandable under the influence of force applied against an inner side surface of the central passage to increase the cross sectional area of the central passage upon expansion of said cannula from the contracted condition to the expanded condition, and a plurality of members enclosed by said tube, a first member of said plurality of members having an outer side surface area which is disposed in abutting engagement with the inner side surface of the longitudinally extending central passage in said tube when said cannula is in the contracted condition, a second member of said plurality of members having an outer side surface area which is at least partially spaced apart from the inner side surface of the longitudinally extending central passage in said tube when said cannula is in the contracted condition, said outer side surface areas on said members of said plurality of members being disposed in abutting engagement with the inner side surface of the longitudinally central passage in said tube when said cannula is in the expanded condition, said first member of said plurality of members having an inner side surface area and longitudinally extending edge portions which extend between said inner and outer side surface areas on said first member, said second member of said plurality of members having an inner side surface area and longitudinally extending edge portions which extend between said inner and outer side surface areas on said second member, one of said edge portions on said second member being disposed in engagement with said inner side surface area on said first member when said cannula is in the contracted condition, said one of said edge portions on said second member being disposed in engagement with one of said edge portions on said first member upon expansion of said cannula from the contracted condition.



5,573,518

SHEATH FOR WOUND CLOSURE CAUSE BY A MEDICAL TUBULAR DEVICE

John R. Hanga, 3409 N. Hilltop, Chagrin Falls, Ohio 44022

Continuation of Ser. No. 219,169, Mar. 28, 1994, Pat. No. 5,447,502, which is a continuation of Ser. No. 84,135, Jul. 1, 1993, Pat. No. 5,330,445, which is a division of Ser. No. 896,588, Jun. 10, 1992, Pat. No. 5,254,105, which is a continuation-in-part of Ser. No. 787,518, Nov. 4, 1991, Pat. No. 5,195,988, which is a division of Ser. No. 514,769, Apr. 26, 1990, Pat. No. 5,080,655, which is a division of Ser. No. 288,858, Dec. 23, 1988, Pat. No. 4,936,835, which is a continuation-in-part of Ser. No. 199,130, May 26, 1988, Pat. No. 4,838,280. This application Apr. 3, 1995, Ser. No. 415,331
Int. Cl.[6] A61M 5/32
U.S. Cl. 604—265 7 Claims

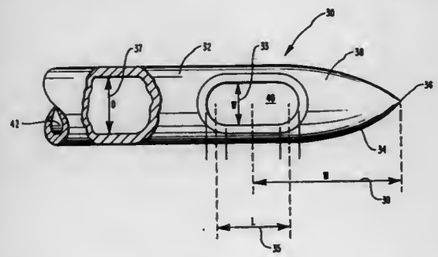
1. In a surgical procedure that employs insertion of a needle-form instrument through the skin and along a path to a deeper lying site, the puncture at said site creating a risk of hemorrhage, the step of completing the procedure comprising providing a hemostatic element comprised of hemostatic material, said element having its exterior constructed to directly, slidably engage tissue bounding said path, locating said hemostatic element at said site by pushing said element to slide along an elongated member disposed in said path as the exterior of said element slidably engages said tissue bounding said path, withdrawing said elongated member, blood from said site thereafter causing said hemostatic element to swell in the region previously occupied by said elongated member to prevent hemorrhage.

5,573,519

ATRAUMATIC NEEDLE FOR LUMBAR PUNCTURE

Walter A. Zohmann, P.O. Box 681180, Park City, Utah 84068-1180

Continuation of Ser. No. 118,870, Sep. 9, 1993, Pat. No. 5,449,351. This application Sep. 11, 1995, Ser. No. 526,379
Int. Cl.[6] A61M 5/32
U.S. Cl. 604—272 16 Claims



1. An improved spinal needle for the delivery of an anesthetic to the subdura, said subdura comprising a cerebrospinal space surrounding the spine, the cerebrospinal space being defined at its outer contour by the arachnoid, the cerebrospinal space having a depth of at least approximately 2.0 mm, said improved spinal needle being configured as an elongated, hollow needle having a lumen, said lumen having a first cross sectional area, the improvement comprising:
a relatively small gauge for said hollow needle,
a point on a distal end of said elongated, hollow needle;
a shoulder circumscribing said elongated, hollow needle at the juncture of said point and said elongated, hollow needle;
a side port in said elongated, hollow needle, said side port being located adjacent said shoulder and having a second cross sectional area substantially equal to said first cross sectional area of said lumen of said elongated hollow needle;
said side port having a first edge nearest said point, a second edge furthest from said point and parallel side edges therebetween defining the boundary of said side port, the location of said side port with respect to said point, the size of said side port in the axial direction of said needle being of such dimension that when said spinal needle is inserted in a conventional manner in a patient to effect delivery of an anesthetic, the side port is entirely located within the cerebrospinal space.

VOL 1192 ISS 2 NO 12 1996 UMI

5,573,520

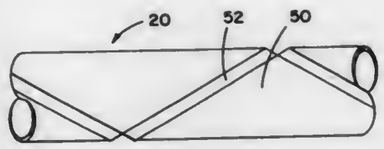
FLEXIBLE TUBULAR DEVICE FOR USE IN MEDICAL APPLICATIONS

Robert S. Schwartz; David R. Holmes, both of Rochester; Frederick S. Halverson, North Oaks; James V. Donadio, III, Chaska, all of Minn., and David Berry, Longmont, Colo., assignors to Mayo Foundation for Medical Education and Research, Rochester, Minn.

Continuation of Ser. No. 940,657, Sep. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 755,614, Sep. 5, 1991, abandoned. This application Oct. 26, 1994, Ser. No. 329,691

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—282 18 Claims



1. An apparatus for use as a biocompatible medical device for insertion into vessels of the body comprising:

a) a self-supporting tube having a plurality of apertures formed therein to increase the flexibility of the tube; and

b) an encasing covering the tube so as to provide a fluid-tight seal.

5,573,521

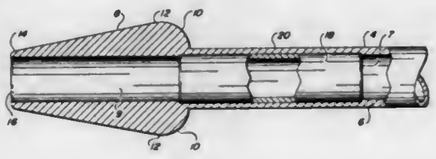
REINFORCED CHOLANGIOGRAM CATHETER

Richard H. McFarlane, 2571 Kaneville Rd., Geneva, Ill. 60134

Continuation of Ser. No. 712,033, Jun. 7, 1991, abandoned. This application Feb. 17, 1995, Ser. No. 390,110

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—282 13 Claims



1. A reinforced catheter having a main length and a distal section, said distal section comprising:

(a) an elongate, flexible tube section having a substantially uniform exterior and interior diameter;

(b) a head member integrally formed with said tube section, said head member being of a generally larger exterior diameter than said tube section and forming a shoulder therebetween; and

(c) substantially rigid tubular support means disposed within said distal section, said tubular support means extending generally from said head member a predetermined distance within said tube section, said tubular support means defining an uncollapsible section of said tube section, said tubular support means being structured and dimensioned to reinforce said uncollapsible section such that said uncollapsible section cannot be compressed along any part thereof.

5,573,522

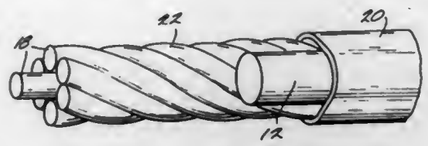
SPRING ASSEMBLY FOR CATHETER

Russell A. Houser, Livermore, and Russell B. Thompson, Los Altos, both of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 320,322, Oct. 11, 1994, abandoned. This application Sep. 14, 1995, Ser. No. 528,254

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—282 5 Claims



4. A catheter having a proximal portion and a distal portion terminating in a distal tip, a spring assembly contained within said distal tip portion for providing a bias against side to side deflection of said distal tip,

said assembly comprising a central wire having a first diameter, said central wire extending from said proximal portion of said catheter to said distal portion, and a plurality of wires secured to said central wire adjacent the distal end thereof,

each of said wires being twisted helically around said central wire and having a second diameter substantially smaller than said first diameter.

5,573,523

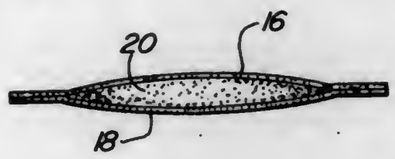
FLUSHABLE SANITARY MINI-PAD

Johanna B. Whalen, 5904 Jaybird Clr., Davenport, Iowa 52807, and Trudy Battaille, Tembroek 1, B-1540 Herne, Belgium

Filed Feb. 9, 1995, Ser. No. 386,030

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—374 9 Claims



1. A totally biodegradable sanitary pad which may be safely disposed of into a sewage system, comprising:

(a) a first panel of biodegradable material, fabricated from tissue paper; and

(b) a second panel of biodegradable material, fabricated from tissue paper; and

(c) a fluid-absorbent biodegradable filler fabricated from shredded tissue paper sandwiched between said first panel and said second panel, said first panel and said second panel being mechanically bonded about their circumference.

5,573,524

DISPOSABLE DIAPER WITH REFRESH ASSEMBLY

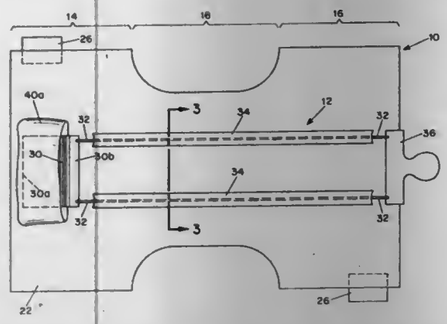
Nicholas Sardo, 25 Bayview Ave. East, Lindenhurst, N.Y. 11757

Filed Jul. 6, 1995, Ser. No. 498,608

Int. Cl.[6] A61F *13/00*

U.S. Cl. 604—385.1 8 Claims

1. A disposable diaper of the type including waist traversing first and second diaper sections extending between side fastening portions and a transversal section extending between said first and second diaper sections, said disposable diaper having an outer



liquid impervious layer and at least one inner liquid absorbent layer and additionally including a diaper refresh assembly, comprising:

an extendible panel having two ends, with a first end fixed to said first diaper section and a length stored in a non-extended condition interior to said first diaper section, said extendible panel including liquid absorbent material;

at least one flexible pull line attached to said second end of said extendible panel and extending along said transversal section to said second diaper section, said at least one flexible pull line including a grip portion stored adjacent to said second diaper section; and

a line guide structure extending interior to said transversal section and arranged to preliminarily constrain said at least one flexible pull line and to enable activation of said pull line to extend said extendible panel between said liquid absorbent layer of said diaper and a wearer, while said disposable diaper is worn by said wearer.

5,573,525

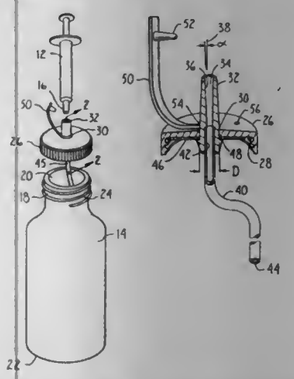
BOTTLE WITH CLOSURE ELEMENT FOR RECEIVING SYRINGE AND METHOD THEREFOR

Thomas L. Watson, and Jaleh Shaban-Watson, both of 12318 Rue Fontainbleau, San Diego, Calif. 92121-2261

Division of Ser. No. 174,874, Dec. 28, 1993, abandoned. This application Feb. 13, 1995, Ser. No. 388,135

Int. Cl.[6] A61B *19/00*

U.S. Cl. 604—403 5 Claims



1. In a medicament bottle having liquid medicament therein, wherein the bottle is formed with a neck defining an opening and a closed bottom distanced therefrom, a device for receiving a hub of a needleless syringe, comprising:

a cap formed with a passageway therethrough, the cap being threadably engageable with the bottle to block the opening;

a hollow fitting positioned in the passageway and configured for receiving the hub of the needleless syringe;

a plug selectively engageable with the hollow fitting and formed with a plug end for blocking the hollow fitting and an engagement end attached to the cap; and

a tube having a proximal end in fluid communication with the hollow fitting and a distal end positionable adjacent the bottom of the bottle,

wherein the syringe can be engaged with the fitting for drawing liquid from the bottle into the syringe without inverting the bottom of the bottle over the neck of the bottle.

5,573,526

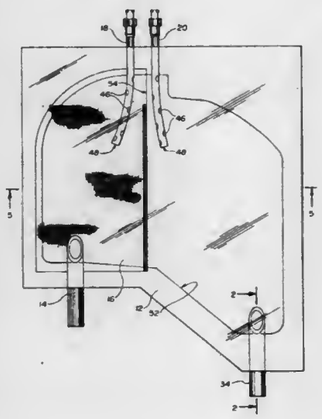
SOFT SHELL RESERVOIR

Paul H. Hess, Plymouth, Minn., assignor to Minntech Corporation, Minneapolis, Minn.

Filed May 8, 1995, Ser. No. 436,827

Int. Cl.[6] A61B *19/00*

U.S. Cl. 604—408 10 Claims



1. A soft shell reservoir comprising:

first and second flexible layers secured together about a periphery thereof to define a container having a fluid receiving compartment defined therewithin, said first and second layers respectively defining front and rear walls of said container;

an inlet port and an outlet port operatively coupled to said container, a fluid flow path being defined through said fluid receiving compartment to extend from the inlet port to the outlet port;

a microscreen element mounted so as to extend across at least a portion of said fluid receiving compartment, said microscreen element intersecting said flow path, thereby to define an upstream, filter compartment and a downstream compartment, said upstream compartment being disposed between said inlet and said microscreen element and said downstream compartment being disposed between said microscreen element and said outlet, said microscreen permitting liquid to pass therethrough but inhibiting passage of gas bubbles, said inlet being in flow communication with said upstream compartment,

said filter element being positioned and arranged within said container so as to define a bypass flow passage around said microscreen element at a vertically upper portion of said upstream compartment leading into a vertically upper portion of said downstream compartment; and

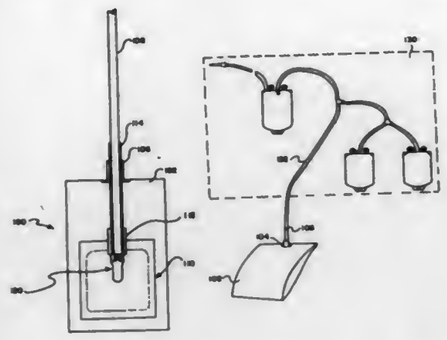
at least one vent tube operatively coupled to a vertically upper portion of said container.

5,573,527

DOCKABLE BAG SYSTEM AND METHOD

Agilio E. Macabasco, and Renato R. Salumbides, both of San Dimas, Calif., assignors to Pall Corporation, East Hills, N.Y.

Division of Ser. No. 157,686, Nov. 24, 1993, Pat. No. 5,458,593. This application Jun. 2, 1995, Ser. No. 456,652
Int. Cl.[6] A61B 19/00
U.S. Cl. 604—410 15 Claims



1. A method of sterile docking a plurality of bag units, comprising:
providing a sterile docking system, comprising:
a pouch manufactured from a vapor transmission resistant material;
a first bag system, including at least one bag unit containing an amount of sterile solution and a predetermined amount of tubing connected to the bag unit, contained within the pouch, said tubing, extending exteriorly from the pouch; and
at least one external tube fitting attached at one end of the pouch and having an amount of the tubing inserted therethrough;
sterile docking an additional bag system including at least one additional bag unit to the tubing connected to the bag unit of the first bag system and extending exteriorly from the pouch;
sterile transferring an amount of the sterile solution from the first bag system, through the tube fitting and tube fitted therein, to the additional bag system.

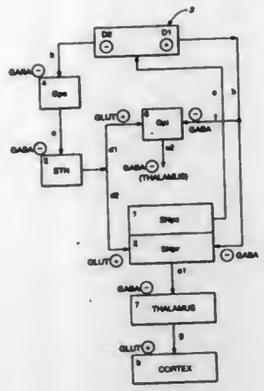
5,573,528

IMPLANTING DEVICES FOR THE FOCAL RELEASE OF NEUROINHIBITORY COMPOUNDS

Patrick Aebischer, Barrington, and Patrick A. Tresco, Wakefield, both of R.I., assignors to Brown University Research Foundation, Providence, R.I.

Division of Ser. No. 912,463, Jul. 13, 1992, which is a continuation-in-part of Ser. No. 369,296, Jun. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 121,626, Nov. 17, 1987, Pat. No. 4,892,538. This application Jun. 5, 1995, Ser. No. 461,301
Int. Cl.[6] A61K 9/22
U.S. Cl. 604—891.1 19 Claims

1. A method for decreasing activity of at least one abnormally overactive output neuron in an abnormally active portion of a neural pathway in an individual having that condition, comprising
implanting a static device adjacent at least one target neuron having neural activity,
said target neuron being positioned presynaptically to said output neuron having abnormal over-activity,
said target neuron receiving functional synaptic input,
said static device focally releasing at least one compound which acts to inhibit neural activity in said target neuron,
said inhibition decreasing said abnormal over-activity in said output neuron.

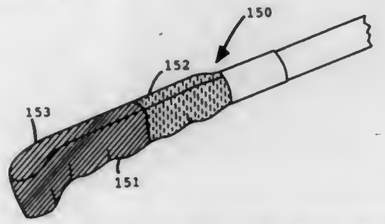


5,573,529

COLOR CODED MEDICAL INSTRUMENTS

Benjamin A. Haak, 506 N. Home, and James T. Diffendal, 1112 S. Lincoln, both of Park Ridge, Ill. 60068

Filed Oct. 31, 1994, Ser. No. 332,115
Int. Cl.[6] A61B 17/00
U.S. Cl. 606—1 44 Claims



1. A method of identifying sets of metal medical instruments comprising the steps of:
a. selecting a color plan for identifying metal medical instruments for use for a specified medical procedure;
b. providing at least one medical instrument having a metal portion;
c. electro-depositing at least one colored water-borne polyurethane coating on said metal portion in accordance with said plan, each said coating being resistant to sterilization conditions, each said color of said coating contrasting with said instrument and, where more than one colored coating has been electro-deposited with any other said colored coating; and
d. allowing each said coating to cure at a temperature in the range of 270° F. to 350° F. for a time period in the range of 2 minutes to 50 minutes.

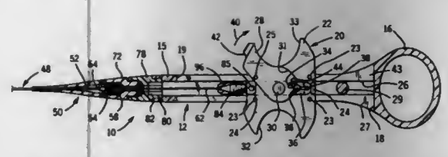
5,573,530

HANDLE FOR A SURGICAL INSTRUMENT INCLUDING A MANUALLY ACTUATED BRAKE

Michael T. Fleury, Racine, and Dean A. Erickson, Greenfield, both of Wis., assignors to Cabot Technology Corporation, Wilmington, Del.

Filed Dec. 15, 1994, Ser. No. 356,829
Int. Cl.[6] A61B 17/00
U.S. Cl. 606—1 33 Claims

1. A surgical instrument comprising:
an effector assembly having a sheath with a control member extending therethrough, wherein the control member has



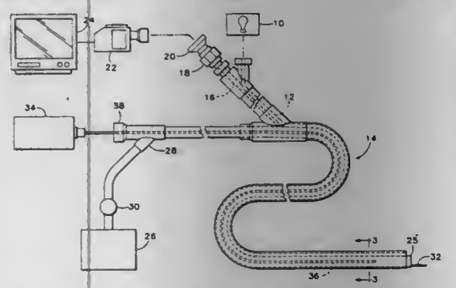
proximal and distal ends, and having an effector element formed at the distal end of the control member;
a handle having a first end with an aperture through which the control member passes;
an actuator movably connected to said handle and having a connector that attaches to the proximal end of the control member; and
a brake having a lever pivotally coupled to one of said handle and said actuator, and having a brake shoe engaged by the lever to selectively apply a force between said handle and said actuator to restrict movement of said actuator with respect to said handle.

5,573,531

FLUID CORE LASER ANGIOSCOPE

Kenton W. Gregory, 9155 SW. Barnes Rd., Suite 204, Portland, Oreg. 97225

Filed Jun. 20, 1994, Ser. No. 262,926
Int. Cl.[6] A61B 17/36
U.S. Cl. 606—14 20 Claims



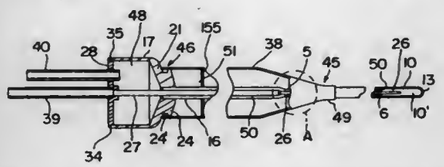
1. A liquid core laser optical scope for illuminating, viewing, and delivering laser energy to a site in a lumen of an animal or human body, the liquid core laser optical scope comprising:
a flexible tube having a distal end for insertion into the lumen;
a conduit housed within the tube;
means for coupling a flow of light transmissive liquid from an external source into the conduit for discharge from the conduit into the lumen at the distal end of the tube;
means defining a first light path through the tube for transmitting visible light from an external source through the tube to the distal end to illuminate the site in the lumen through the light transmissive fluid discharged into the lumen at the distal end of the tube;
means, disposed in the distal end of the tube, for imaging the illuminated site using light reflected back through the light transmissive fluid from the site in the lumen, and means defining a second light path through the tube and coupled to the imaging means for transmitting a visible image of the illuminated site from the site back through the tube to an external viewing port; and
means defining a third light path for transmitting laser energy from an energy source into the conduit, the conduit having a sidewall capable of internally reflecting light into the liquid in the conduit so that the liquid waveguides the laser energy through the distal end of the conduit to the site
the flow of light transmissive liquid discharging from the distal end of the tube to displace body fluids from the site and serve as an extension of said first, second and third light paths beyond said distal end to enable simultaneous optical illumination and imaging and laser energy irradiation of the illuminated site through a single temporary liquid core, liquid clad light channel with the distal end located at a position in the lumen spaced from the site.

5,573,532

CRYOGENIC SURGICAL INSTRUMENT AND METHOD OF MANUFACTURING THE SAME

Zhao H. Chang, Poolesville, Md.; John Baust, Candor, N.Y., and J. J. Finkelstein, Bethesda, Md., assignors to Cryomedical Sciences, Inc., Rockville, Md.

Filed Jan. 13, 1995, Ser. No. 372,121
Int. Cl.[6] A61B 17/36
U.S. Cl. 606—26 26 Claims



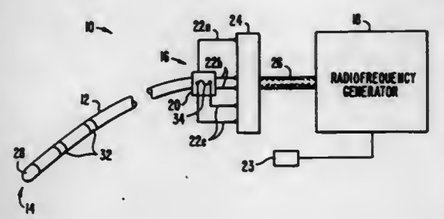
14. In a cryogenic probe comprising an elongated handle portion, a probe shaft portion extending from one end of said handle portion, said probe shaft portion having a closed tip at the distal end thereof, cryogenic fluid connection means on said handle portion, cryogenic supply and return tubes longitudinally coaxial within said handle portion and said shaft portion and extending to said closed probe tip, said handle portion and said shaft portion defining a space about said cryogenic supply and return tubes, the distal end of said shaft being sealed from said space, and said cryogenic fluid connection means and said cryogenic supply and return tubes forming a fluid circuit extending through said handle portion and said probe shaft, the improvement comprising;
said parts forming said probe being fluid tightly and smoothly joined by vacuum brazing.

5,573,533

METHOD AND SYSTEM FOR RADIOFREQUENCY ABLATION OF CARDIAC TISSUE

Bruno Strul, Palo Alto, Calif., assignor to Medtronic Cardio-Rhythym, San Jose, Calif.

Filed Apr. 10, 1992, Ser. No. 866,683
Int. Cl.[6] A61B 17/39
U.S. Cl. 606—34 17 Claims



1. A system for radiofrequency ablation of cardiac tissue, said system comprising:
a catheter having a proximal end, a distal end, an electrode near said distal end, and a temperature sensor near said distal end, said electrode being coupled to an electrode connection wire extending to said proximal end, and said temperature sensor being coupled to a temperature sensor connection wire extending to said proximal end; and

a radiofrequency power generator connectable to the proximal end of the catheter, said generator including:
(a) a power source which delivers radiofrequency power to the electrode based on a power output signal;
(b) means for measuring radiofrequency power from the power source to produce an actual power signal;
(c) an analog temperature controller which receives a temperature set point signal and an actual temperature signal from the temperature sensor and based on a difference therebetween produces power set point signal;
(d) an analog power controller coupled to the means for measuring radiofrequency Dower and to the analog temperature controller, wherein the analog power controller receives the power set point signal and the actual power signal and based on a difference therebetween produces the power output signal; and
means for connecting said power source to said electrode connection wire and for connecting said temperature controller to said temperature sensor connection wire.

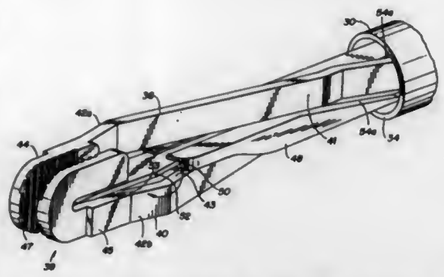
5,573,534
BIPOLAR ELECTROSURGICAL INSTRUMENTS
Corbett Stone, Newtown, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.
Continuation of Ser. No. 58,575, May 6, 1993, abandoned. This application Apr. 24, 1995, Ser. No. 427,489
Int. Cl.[6] A61B *17/38*
U.S. Cl. 606—48 **23 Claims**



1. A bipolar electrosurgical instrument comprising:
a handle assembly;
a body portion attached to said handle assembly and extending distally therefrom;
a tool mechanism operatively associated with a distal end of said body portion, said tool mechanism including first and second jaw members, each jaw member having a grooved portion formed therein, at least one of said jaw members movable between open and closed positions in response to movement of said handle assembly, said jaw members being fabricated from electrically insulating material;
a first conductive pathway in said grooved portion of said first jaw member;
a second conductive pathway in said grooved portion of said second jaw member, said first and second conductive pathways being electrically isolated from one another; and
means for respectively electrically connecting said first and second conductive pathways to an electrical power supply.

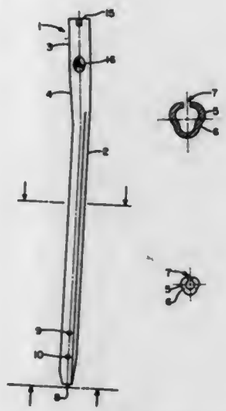
5,573,535
BIPOLAR SURGICAL INSTRUMENT FOR COAGULATION AND CUTTING
Mark C. Viklund, New Milford, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.
Filed Sep. 23, 1994, Ser. No. 311,072
Int. Cl.[6] A61B *17/39*
U.S. Cl. 606—51 **19 Claims**

1. A bipolar electrosurgical instrument comprising:
a handle assembly;



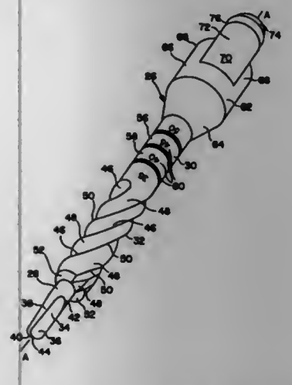
an endoscopic portion attached to said handle assembly and extending distally therefrom, the endoscopic portion having a lumen extending therethrough defining a longitudinal axis;
an insulating member longitudinally disposed within the lumen of the endoscopic portion and including a bore disposed therethrough;
a pair of conductors disposed within the lumen of the endoscopic portion and separated by the insulating member, the conductors terminating at a distal end in a tool mechanism; and
a cutting member disposed within the bore of the insulating member and movable from a first position disposed within the insulating member toward the tool mechanism to a second position at least partially exterior the insulating member.

5,573,536
LOCKING NAIL FOR TREATING FEMORAL FRACTURES
Arsene J. Grosse, Strassbourg, France, and Hans E. Harder, Probsteierhagen, Germany, assignors to Howmedica GmbH, Schoenkirchen, Germany
Continuation of Ser. No. 153,831, Nov. 17, 1993, abandoned, which is a continuation of Ser. No. 926,086, Aug. 6, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 486,154
Claims priority, application Germany, Aug. 9, 1991, 9109883 U
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—60 **6 Claims**



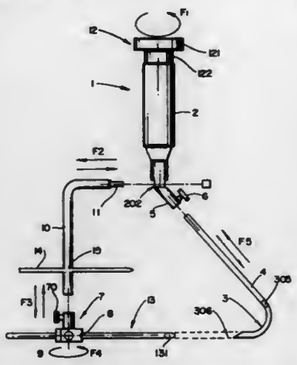
1. A tubular locking nail extending along a longitudinal axis for treating femoral fractures in the medium and trochanter region comprising:
(a) a proximal portion having a closed generally cylindrical shape generally concentric with said longitudinal axis to be positioned in the femur marrow space, said proximal portion having an oblique bore for positioning and guiding a femoral neck screw and having a diameter D and
(b) a distal nail portion with at least one cross bore for receiving a bone screw, said distal nail portion having an annular cross-section with a diameter d and including an axial longitudinal slot resulting in an open distal nail portion profile, and
(c) a transition portion located between said proximal portion and said distal portion, said transition portion tapering continuously from said diameter D to said diameter d,
wherein said diameter D is larger than said diameter d and wherein said axial longitudinal slot in said distal portion extends substantially from said transition portion to a tip of said distal portion.

5,573,537
INSTRUMENT FOR PROBING AND REAMING A PEDICLE
Chaim Rogozinski, 3223 Front Rd., Jacksonville, Fla. 32217
Filed Feb. 10, 1995, Ser. No. 386,765
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—80 **2 Claims**



1. A method for providing a screw hole in a pedicle, said pedicle having a relatively hard cortical outer portion and a relatively soft cancellous inner portion wherein said method comprises:
(i) providing a unitary instrument, said instrument having
(a) an elongated probe member,
(b) a side-cutting reamer member, and
(c) an end member for rotatable connection to a rotating power source
wherein said side-cutting reamer member is positioned between said probe member and said end member, and
wherein said probe member, said reamer member and said end member rotate as a unit when said end member is operatively connected to an activated rotating power source;
(ii) identifying a location for a screw hole on the surface of said relatively hard cortical outer portion of said pedicle;
(iii) providing, at said location for a screw hole, an opening for said probe member in said relatively hard cortical outer portion of said pedicle;
(iv) introducing said probe member into said opening and urging said probe member to penetrate said relatively soft cancellous inner portion of said pedicle; and
(v) rotating said unitary instrument,
wherein probe and reamer member are self-centered to provide a screw hole in said pedicle, said self-centering being consequent from deflection, as said rotating proceeds, by said relatively hard outer cortical portion of said pedicle, of said elongated probe member and said side-cutting reamer member.

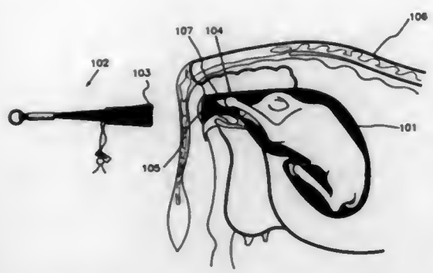
5,573,538
ANCILLARY INSTRUMENT SET FOR THE RECONSTRUCTION OF THE POSTERIOR CRUCIATE KNEE LIGAMENT
Jacques P. Laboureau, Dijon, France, assignor to Societe Lars S.A., Arc-sur-Tille, France
Filed Feb. 17, 1995, Ser. No. 351,404
Claims priority, application France, Jun. 23, 1992, 92 07786
Int. Cl.[6] A61B *17/17*
U.S. Cl. 606—96 **20 Claims**



1. Ancillary instrument set for reconstruction of a posterior cruciate knee ligament including protection elements when a tip of a drill emerges from a posterior surface of an upper end of the tibia in an operation performed from the anterior of the knee, said instrument set comprising:
a mounting arm comprising a far end;
an aiming device comprising an aiming block affixed to said far end of said mounting arm, said aiming block comprising parallel drill tubes for aligning and guiding the drill for drilling at least one trans-tibial channel for inserting the posterior cruciate knee ligament through the tibia;
a locking handle comprising a distal end, said mounting arm being rigidly affixed onto said handle;
an extension rigidly affixed onto said handle;
at least one wire guide tube positioned within said aiming block for replacing the drill within said aiming block and through the at least one trans-tibial channel after the channel has been drilled, said at least one wire guide tube comprising a longitudinal axis;
at least one bent, hollow tube having a first end and a distal end, said first end being affixed to said extension, said distal end extending from said extension, and said at least one bent tube is curved toward said at least one wire guide tube, to form a continuous channel for guiding a metallic loop for drawing the posterior cruciate knee ligament from an anterior surface of the tibia to a femur insertion point; and
said aiming block being positioned on said mounting arm to align and guide the drill and the at least one wire guide in a plane perpendicular to a plane passing through said handle and said extension, and oriented so that the longitudinal axis of said at least one wire guide tube intersects said distal end of said at least one bent tube.

5,573,539
DEVICE FOR ASSISTING IN THE BIRTH OF LIVESTOCK
Gary E. Alexander, Baton Rouge, La., assignor to Medisys Technologies, Inc., Baton Rouge, La.
Filed Jun. 6, 1994, Ser. No. 254,120
Int. Cl.[6] A61B *17/42*
U.S. Cl. 606—122 **9 Claims**

1. A device for applying traction force to the forelegs of a bovine, equine, or ovine unborn fetus or any unborn animal fetus whose legs have a hoof and fetlock, comprising:



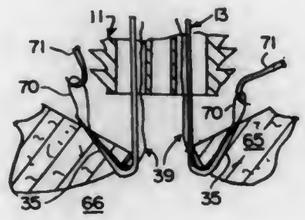
an elongated member having an open first end and a second end connected by a passageway, said elongated member constructed of braid material comprising loosely interwoven series of fibers, said series of fibers being folded at the opening of said open first end, said series of fibers extending back toward said second end to form a double-layer of said series of fibers, said series of fibers being in slidable relation with one another to permit said elongated member to exert axial gripping forces when pulled from said second end, said open first end and said passageway sized to receive therein the foreleg of an unborn animal fetus.

5,573,540

APPARATUS AND METHOD FOR SUTURING AN OPENING IN ANATOMICAL TISSUE

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Filed Jul. 18, 1994, Ser. No. 276,670
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—139 **29 Claims**



1. An apparatus for suturing together anatomical tissue adjacent an opening comprising

at least one length of suture material;

a plurality of hooks having sharp tissue penetrating tips for passing said at least one length of suture material through the anatomical tissue adjacent the opening;

a housing adapted to fit in the opening to define a portal through the anatomical tissue for passage of said hooks; and

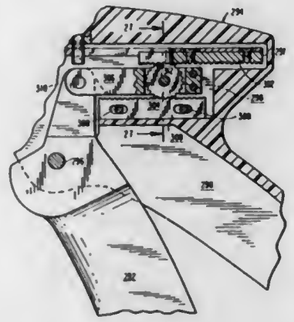
operating means coupled with said hooks for advancing said hooks from a retracted position within said housing to a deployed position where said tips extend radially outward of said housing to permit said hooks to be retracted proximally relative to the anatomical tissue adjacent the opening to pass said at least one length of suture material through the anatomical tissue when said hooks are in said deployed position and for repositioning said hooks for withdrawal from the opening with said penetrating tips after said at least one length of suture material has been passed through the anatomical tissue.

5,573,541

APPARATUS AND METHOD FOR SUBCUTICULAR STAPLING OF BODY TISSUE

David T. Green, Westport, and Henry Bolanos, East Norwalk, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 959,242, Oct. 9, 1992, Pat. No. 5,389,102, which is a continuation-in-part of Ser. No. 842,448, Feb. 27, 1992, Pat. No. 5,292,326, which is a continuation-in-part of Ser. No. 630,224, Dec. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 581,776, Sep. 13, 1990, abandoned. This application Feb. 3, 1995, Ser. No. 383,718
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—143 **25 Claims**



1. A surgical apparatus for attaching at least two end portions of cutaneous body tissue adjacent an opening which comprises:

a) a support frame;

b) a pair of elongated members pivotally attached at proximal end portions thereof;

c) a jaw attached to the distal end of each elongated member, each jaw supporting a plurality of sharp tissue engaging members, the tissue engaging members on each jaw generally facing the tissue engaging members on the other jaw such that when the elongated members are pivoted such that the distal ends move toward each other, the tissue engaging members face each other in generally opposed adjacent relation;

d) a fastener cartridge adapted to store a plurality of rod-like fasteners in stacked relation, the lowermost fastener positionable adjacent an opening through which the fasteners may be individually advanced generally distally;

e) at least one handle pivotally attached to the frame and pivotal toward and away from the fixed handle;

f) a rack having a plurality of teeth; and

g) a drive member operative with the pivotal handle and having a plurality of teeth dimensioned and adapted to mesh with the teeth of the rack and arranged for engagement with the teeth of the rack such that when the pivotal handle is pivoted toward the fixed handle, the engagement of the teeth of the rack by the teeth of the drive member causes the rack to move distally.

5,573,542

ENDOSCOPIC SUTURE PLACEMENT TOOL

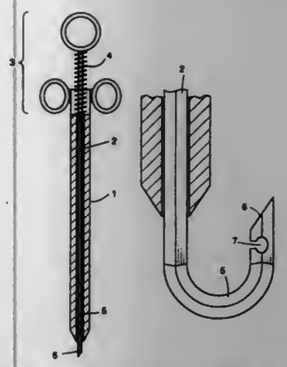
Jon A. Stevens, Condado, Puerto Rico, assignor to Tahoe Surgical Instruments-Puerto Rico, San Juan, Puerto Rico

Filed Aug. 17, 1994, Ser. No. 292,088
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—144 **7 Claims**

1. A surgical tool including:

(1) a tubular, elongated housing having a proximal end, a distal end, and a passage defining a rod axis therethrough;

(2) a suture tip including a ligature holding eyelet;



(3) a suture tip drive rod positioned within said passage, and movable along the length thereof from a drive rod retracted position to a drive rod extended position;

(4) biasing means for forcing said drive rod to said retracted position;

(5) handle means for positioning said drive rod within said housing and forcing said rod from said retracted to said extended position;

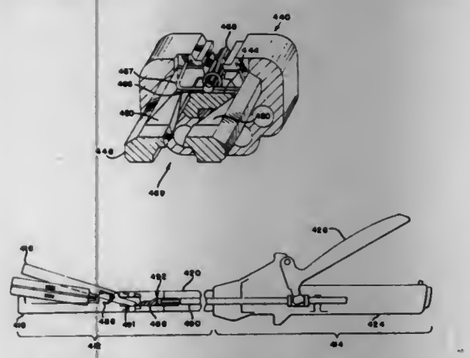
(6) deflecting means comprising a shape memory alloy portion secured on a first end to a distal portion of said drive rod and on a second end to said suture tip for deflecting said suture tip from said axis and forming an arc of substantially semicircular shape in said shape memory alloy portion when said rod is in said extended position.

5,573,543

ENDOSCOPIC SURGICAL INSTRUMENT AND STAPLES FOR APPLYING PURSE STRING SUTURES

Ernest Akopov; Vytchesalv F. Astashov; Nikolai Tvorogov, and Sergei Udaiov, all of Moscow, Russian Federation, assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 117,260, Sep. 3, 1993, Pat. No. 5,484,451, which is a continuation-in-part of Ser. No. 881,010, May 8, 1992, Pat. No. 5,242,457. This application Mar. 22, 1995, Ser. No. 408,757
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—144 **22 Claims**



1. A surgical stapler for endoscopic use comprising:

an endoscopic portion being insertable through a trocar cannula, said endoscopic portion including a pair of jaws, at least one of said jaws being movable between an open position and a closed position;

a handle portion connected to said endoscopic portion;

a staple cartridge in each jaw, each said cartridge holding a plurality of purse string staples and a length of suture;

a closer mechanism in each cartridge for closing said staples;

a jaw actuator in said handle portion for moving said movable jaw between said open and closed positions;

a trigger mechanism in said handle portion for actuating said closer mechanism;

wherein said cartridge includes an interior portion for housing said closer mechanism, a central longitudinal slot for permitting passage of said suture out of said cartridge, and a plurality of staple receiving slots for permitting passage of said staples out of said cartridge;

wherein said closer mechanism includes a staple base for releasably holding said staples and a staple pusher bar, said stapler pusher bar being movable between an open position wherein said staples are open and a closed position wherein said staples are closed; and

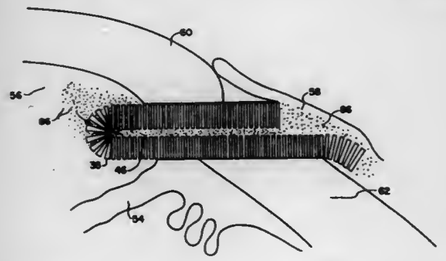
wherein said staple pusher bar comprises means movable in a longitudinal direction.

5,573,544

ARTIFICIAL MESHWORK FILTER FOR GLAUCOMA SURGERY

Gabriel Simon; Jean-Marc Legeais; William Lee, and Jean-Marie Parel, all of Miami, Fla., assignors to University Of Miami, Miami, Fla.

Division of Ser. No. 34,870, Mar. 19, 1993, Pat. No. 5,342,370. This application Jun. 3, 1994, Ser. No. 253,696
Int. Cl.[6] A61B *17/08; 19/00*
U.S. Cl. 606—151 **21 Claims**



21. A filtering member for treating a eye comprising:

a sheet of polymer material which has been folded along a fold line to define a bent edge, a front portion having side edges and an end edge remote from said bent edge, and a back portion having side edges and an end edge remote from said bent edge, said polymer material being biocompatible with eye tissues and being porous, the side edges of said front portion being welded to respective side edges of the back portion, the welded sides and the bent edge defining three sides of the filtering member a fourth side of the filtering member, remote from the bent edge, being defined by said end edges of the front portion and the back portion, wherein the filtering member has a hook at each end of the bent edge.

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5,573,545

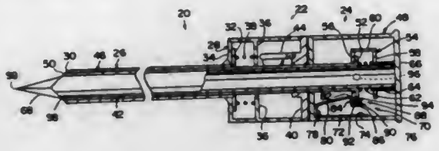
SAFETY PENETRATING INSTRUMENT WITH SAFETY MEMBER AND CANNULA MOVING DURING PENETRATION AND TRIGGERED CANNULA AND/OR SAFETY MEMBER PROTRUSION

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation-in-part of Ser. No. 83,220, Jun. 24, 1993, Pat. No. 5,431,635, and a continuation-in-part of Ser. No. 83,728, Jun. 29, 1993, Pat. No. 5,466,224, and a continuation-in-part of Ser. No. 115,152, Sep. 2, 1993. This application Sep. 30, 1994, Ser. No. 316,335

Int. Cl.[6] A61M *5/20*

U.S. Cl. 606—185 **54 Claims**



1. A safety penetrating instrument for establishing a portal in the wall of an anatomical cavity comprising

a housing;

an elongate cannula mounted by said housing and having a distal end for introduction in the anatomical cavity and a proximal end for positioning externally of the anatomical cavity;

a penetrating member disposed in said cannula and having a distal end for penetrating the anatomical cavity wall;

a safety member disposed within said cannula and having a distal end, said safety member being movable relative to said housing between an extended rest position and a safety member retracted position relative to said penetrating member distal end;

cannula extending means for moving said cannula distally relative to said housing from a retracted position where said cannula distal end is disposed proximally of said penetrating member distal end to an extended position where said cannula distal end protrudes distally from said penetrating member distal;

means for manually moving said cannula proximally relative to said housing from said cannula extended position to said cannula retracted position;

cannula locking means for locking said cannula in said cannula retracted position to prevent distal movement of said cannula relative to said housing beyond said cannula retracted position while permitting proximal movement of said cannula relative to said housing during penetration of the anatomical cavity wall;

cannula bias means for biasing said cannula distally relative to said housing in said cannula retracted position to permit said cannula to move proximally relative to said housing from said cannula retracted position during penetration of the anatomical cavity wall and distally relative to said housing toward said cannula retracted position upon introduction into the anatomically cavity;

safety member bias means for biasing said safety member distally relative to said housing toward said safety member rest position and for permitting proximal movement of said safety member relative to said housing during penetration of the anatomical cavity; and

releasing means responsive to penetration of said safety penetrating instrument into the anatomical cavity for triggering release of said cannula locking means to permit said cannula extending means to move said cannula distally relative to said housing from said cannula retracted position to said cannula extended position.

5,573,546

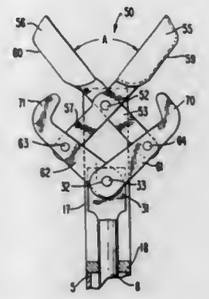
BIOPSY EJECTING FORCEPS

Naomi L. Nakao, 303 East 57th St., New York, N.Y. 10022

Filed Mar. 7, 1995, Ser. No. 399,453

Int. Cl.[6] A61B *17/28*

U.S. Cl. 606—205 **15 Claims**



1. A biopsy forceps for retrieving a tissue sample from an organ, comprising:

a flexible, hollow cable with a proximal end and a distal end;

a plurality of opposing cups pivotally attached to said distal end of said hollow cable for severing the tissue sample from the organ;

a first wire slidably disposed within said hollow cable and operably connected to said cups;

a second wire slidably disposed within said hollow cable;

tissue sample ejecting means operably attached to said second wire for ejecting the tissue sample from said cups;

first means on said proximal end of said cable for moving said first wire from a first position whereby said cups are closed to a second position whereby said cups are opened;

second means on said proximal end of said cable for sliding said second wire to activate said tissue sample ejecting means.

5,573,547

BRUSH FIXATION METHOD FOR ATTACHMENT OF TISSUES AND OCCLUSION OF BLOOD VESSELS

Harry H. LeVeen, 321 Confederate Cir., Charleston, S.C. 29407; Eric G. LeVeen, 19 Palmetto Rd., Charleston, S.C. 29407, and Robert F. LeVeen, 815 S. 94th St., Omaha, Nebr. 68114

Filed Oct. 19, 1993, Ser. No. 138,689

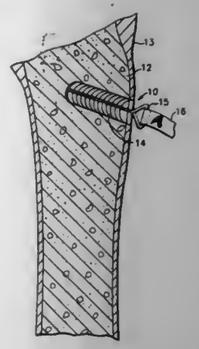
Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—232 **39 Claims**

1. A device for fixing a tissue to a bone, comprising;

a brush including first and second ends;

said brush further including a stem and a plurality of elongated bristles attached to said stem in a spaced apart manner over at least a portion of a length thereof, said plurality of elongated bristles arranged crosswise to said stem, an average distance between ends of opposed ones of said plurality of elongated bristles defining a brush diameter;



said brush further including means for permitting resilient angular deflection of at least end portions of said plurality of elongated bristles away from an original orientation thereof, such that when said brush is inserted into a receiving hole in the bone, the receiving hole having a diameter less than said brush, said at least end portions of said plurality of elongated bristles are angularly deflected in a direction opposite a direction of insertion; and

a cloth in captive engagement with said first end of said brush and extending therefrom, at least a portion of said cloth including a widened surface for receiving the tissue in overlapping engagement therewith, for joining of the tissue and said cloth, one to the other.

5,573,548

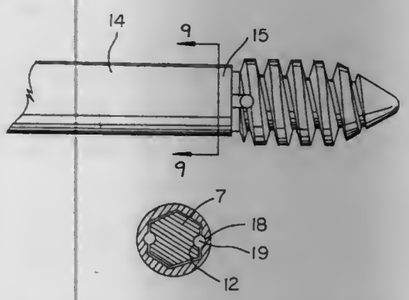
SUTURE ANCHOR

Aniruddha A. Nazre, Warsaw; Steven L. Krebs, Fort Wayne, both of Ind., and S. Kyle Hayes, Laguna Niguel, Calif., assignors to Zimmer, Inc., Warsaw, Ind.

Filed Jun. 9, 1994, Ser. No. 257,762

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—232 **4 Claims**



1. A suture anchor for attaching a suture to a bone, the suture anchor being driven by a driver, the suture anchor comprising:

a shaft, the shaft having a longitudinal axis and a proximal end and a distal end;

a screw thread extending from the shaft and spiraling from the proximal end to the distal end, the shaft containing a cross-hole near the proximal end, the cross-hole extending through the shaft and the screw thread; and

a driven portion formed adjacent to the proximal end, the driven portion being adapted for positive engagement with the driver so as to facilitate the transmission of torsional loads from the driver to the driven portion wherein the shaft forms a tapering minor diameter of the suture anchor, the shaft tapering linearly from a larger diameter near the proximal end to a smaller diameter near the distal end, the thread having a constant diameter over most of its length, the cross-hole extending through the shaft and the screw thread at the location of the larger diameter.

5,573,549

Patent Not Issued For This Number

5,573,550

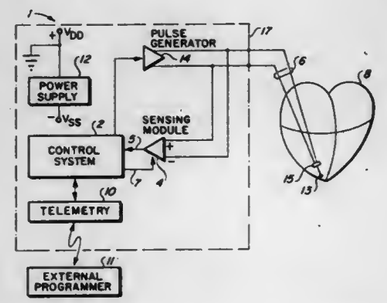
IMPLANTABLE STIMULATION DEVICE HAVING A LOW NOISE, LOW POWER, PRECISION AMPLIFIER FOR AMPLIFYING CARDIAC SIGNALS

Ali E. Zadeh, Sierra Madre, and Wayne A. Morgan, Granada Hills, both of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.

Filed Apr. 28, 1995, Ser. No. 431,363

Int. Cl.[6] A61N *1/00*

U.S. Cl. 607—28 **22 Claims**



1. An implantable stimulation device, the stimulation device having pulse generating means for generating stimulation pulses, sensing means for sensing cardiac signals, and control means for controlling the pulse generating means to generate stimulation pulses to a heart in the absence of cardiac depolarizations, and for inhibiting the pulse generating means in the presence of cardiac depolarizations, the sensing means comprising:

linear amplifying means, having a first gain associated therewith, for amplifying the cardiac signals, the linear amplifying means having input means for receiving the cardiac signals, the linear amplifying means further having output means for producing a first output signal;

a switched-capacitor amplifier, having a second gain associated therewith, for amplifying the first output signal of the linear amplifying means, the switched-capacitor amplifier having input means for receiving the first output signal, the switched-capacitor amplifier further having an output for producing a second output signal having a noise content produced substantially entirely in the switched-capacitor amplifier; and

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threshold detecting means for detecting when the second output signal exceeds a prescribed threshold corresponding to an occurrence of a cardiac depolarization.

5,573,551

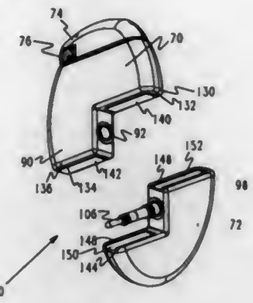
IMPLANTABLE MEDICAL DEVICE WITH DETACHABLE BATTERY OR ELECTRONIC CIRCUIT

Jack H.-Z. Lin, Lake Jackson, and Richard A. Walkuski, Sr., Angelton, both of Tex., assignors to Intermedics, Inc., Angleton, Tex.

Continuation-in-part of Ser. No. 146,904, Nov. 1, 1993, Pat. No. 5,411,538. This application Dec. 21, 1994, Ser. No. 360,586

Int. Cl.[6] A61N *1/375*

U.S. Cl. 607—33 14 Claims



1. An implantable medical device comprising

an electronic circuit;

a first container enclosing said electronic circuit said first container having a bottom side with at least a first substantially planar section and a second substantially planar section, said first and second planar sections of said bottom surface being offset from each other and being substantially parallel to each other;

a battery;

a second container enclosing said battery said second container having a top side with at least a first substantially planar section and a second substantially planar section, said first and second planar sections of said top surface being offset from each other and being substantially parallel to each other;

means for detachably coupling said electronic circuit and said battery; and

means for mechanically coupling said first container to said second container, said means for mechanically coupling having interengagable track means along said substantially planar sections for connecting said containers by sliding said planar sections along each other from a disengaged position to an engaged position, said track means comprising a dovetail tongue on one of said substantially planar sections and a dovetail groove on another of said substantially planar sections.

5,573,552

ELECTROTHERAPEUTIC APPARATUS

Achim Hansjurgens, Rebbergweg 1, D-76229 Karlsruhe, Germany

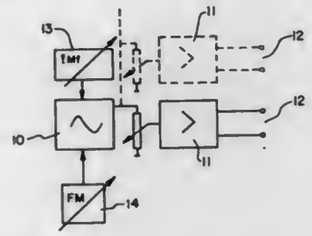
PCT No. PCT/DE93/00789, § 371 Date Mar. 2, 1995, § 102(e) Date Mar. 2, 1995, PCT Pub. No. WO94/05370, PCT Pub. Date Mar. 17, 1994

PCT Filed Aug. 26, 1993, Ser. No. 392,866

Claims priority, application Germany, Sep. 5, 1992, 42 29 693.5

Int. Cl.[6] A61N *1/32*

U.S. Cl. 607—68 12 Claims



1. An apparatus for electrotherapeutic applications operating in a medium-frequency range between 1000 Hz and 100,000 Hz comprising;

a circuit capable of generating a medium-frequency current of constant amplitude;

a modulator operatively coupled to said circuit and capable of frequency modulating the medium frequency output of said circuit;

two electrodes operatively coupled to said circuit to receive the modulated output of said circuit, the modulated output having a modulation interval of one thousand to several thousand Hz (corner frequencies) with a modulation frequency of >0 to several hundred Hz (for instance 200 Hz) in order to generate in synchronism with the modulation frequency action potentials in the treatment area.

5,573,553

METHOD FOR IMPROVING THE BLEACH RESISTANCE OF DYED TEXTILE FIBER AND PRODUCT MADE THEREBY

Daniel T. McBride, Chesnee, S.C., and Terry M. Fannon, LaGrange, Ga., assignors to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 21,912, Feb. 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 873,463, Apr. 24, 1992, abandoned. This application Aug. 28, 1995, Ser. No. 520,037

Int. Cl.[6] D06M *13/332;15/00*

U.S. Cl. 8—115.56 20 Claims

1. A method for treating a dyed synthetic textile fiber to improve its bleach resistance, comprising the steps of applying a solution of monomers to said dyed textile fiber, wherein said monomers are a primary amine and a carboxylic acid, and the molecular weight of each of said monomers is less than 1,000, and drying said textile fiber at a temperature of from 20° C. to 200° C. to form a non-volatile, polymeric salt film on said textile fiber, without forming a polyamide from said monomers.

5,573,554

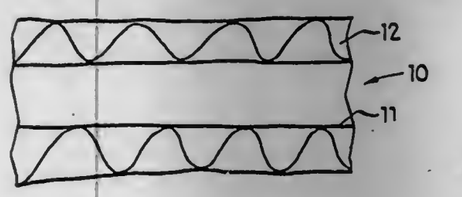
CURRENT COLLECTOR DEVICE AND METHOD OF MANUFACTURING SAME

Denis G. Fauteux, Acton, and Arthur A. Massucco, Natick, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Division of Ser. No. 396,626, May 1, 1995, which is a continuation-in-part of Ser. No. 325,994, Oct. 19, 1994. This application Jul. 25, 1995, Ser. No. 506,682

Int. Cl.[6] H01M *4/04*

U.S. Cl. 29—623.5 7 Claims



1. A method of manufacturing an aluminum current collector for an electrolytic cell, wherein the aluminum current collector includes a layer and a native oxide layer thereon, the method comprising the steps of:

applying a coating of material to the surface of the aluminum current collector, wherein the coating of material includes lithium, at least one other metal and an acid;

allowing the acid in the coating of material to modify the native oxide layer on the aluminum current collector to, in turn, lower interfacial resistance of the aluminum current collector;

evaporating the acid in the coating of material after the modification of the native oxide layer, and, in turn, bonding the remainder of the coating of material to the surface of the aluminum current collector, wherein the bonded remainder of the coating of material acts as at least one of a primer material or an electrode material, wherein the electrode material enables electrochemical activity with particular ions in an electrolyte associated with the electrolytic cell.

5,573,555

DOWN BURNING SOLID FUEL BODY

Jong-Hyun Kim, Moonkyung, and Mun-Sik Kim, Kyungkido, both of Rep. of Korea, assignors to Brian Ann, San Dimas, Calif.

Filed Feb. 6, 1996, Ser. No. 595,906

Claims priority, application Rep. of Korea, Dec. 8, 1995, 1995-47755

Int. Cl.[6] C10L *5/38*

U.S. Cl. 44—533 1 Claim

1. A down burning solid fuel body including a fire-igniting layer, a fire-catching layer and a body portion, wherein the content ratio among the fire-igniting layer, fire-catching layer and body portion is 20 to 50:40 to 45:30 to 40 based on the weight ratio, the fire-igniting layer has a composition essentially consisting of 50 to 55 wt % fine charcoal, 25 to 30 wt % barium, 5 to 10 wt % potassium nitrate, 0.3 to 0.5 wt % zeolite, 0.3 to 0.5 wt % alum, and 5 to 10 wt % starch, the fire-catching layer has a composition essentially consisting of 60 to 65 wt % fine charcoal, 20 to 25 wt % barium, 5 to 10 wt % potassium nitrate, 0.1 to 0.3 wt % zeolite, 0.1 to 0.3 wt % alum, and 5 to 10 wt % starch, and the body portion has a composition essentially consisting of 85 to 90 wt % fine charcoal and 10 to 15 wt % starch.

5,573,556

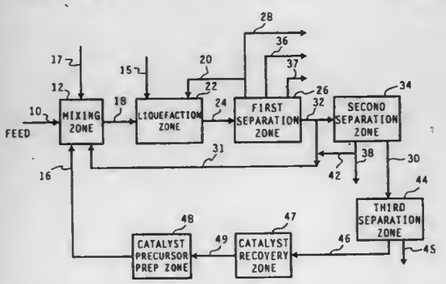
CONVERSION OF SOLID CARBONACEOUS MATERIAL USING POLYOXOANIONS

Michael Y. Wen, Baton Rouge, La., assignor to Exxon Research And Engineering Company, Florham Park, N.J.

Filed Nov. 3, 1994, Ser. No. 333,811

Int. Cl.[6] C10L *1/02;* C10G *1/00*

U.S. Cl. 44—620 7 Claims



1. A process for converting a naturally occurring solid carbonaceous material to normally liquid products, which process comprises:

(a) forming a mixture comprised of said solid carbonaceous material, a hydrocarbonaceous solvent, a sulfur-containing compound, and at least one catalyst precursor represented by the formula:

$[(C_nH_{2n+1})_4N]_aM_bO_cH_d$, where n=1 to 8, a=2 to 6, b= 2 to 12, c=7 to 48, and d=0 to 3, and M is a metal selected from Groups VB and VIB of the Periodic Table of the Elements:

(b) heating said mixture at an effective temperature and pressure to convert the catalyst precursor to the corresponding catalyst;

(c) introducing the mixture into a liquefaction zone operated at liquefaction conditions including a temperature from about 340° to 510° C. and a pressure from about 300 to 3,000 wherein an effluent product is produced;

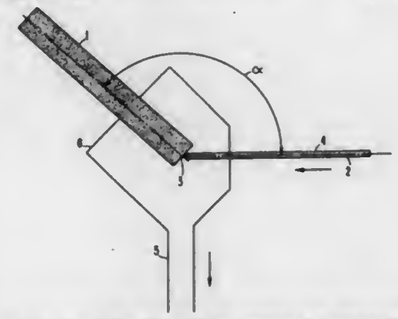
(d) separating a normally liquid and gaseous product from the effluent product in a first separation zone thereby leaving a bottoms fraction including a gas oil fraction and a spent catalyst fraction;

(e) separating said gas oil from said bottoms fraction in a second separation zone thereby leaving a remaining bottoms fraction which contains said spent catalyst fraction;

(f) separating at least a portion of said spent catalyst fraction from said remaining bottoms fraction in a third separation zone;

(g) recovering said spent catalyst from said spent catalyst fraction; and
(h) forming a catalyst precursor by mixing together said spent catalyst with the catalyst precursor of step (a) above.

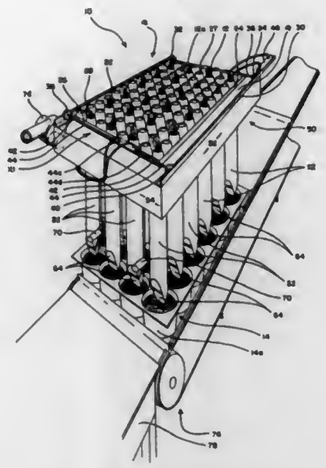
5,573,557
DEVICE FOR ADDING ADDITIVES TO LIQUID FUELS IN THE FUEL STREAM
Walter Thünker, Bottrop; Gabriele Lohmann, Lünen, and Arnim Marschewski, Gelsenkirchen, all of Germany, assignors to Chemische Betriebe Pluto GmbH, Herne, Germany
Filed Sep. 28, 1994, Ser. No. 313,812
Claims priority, application Germany, Sep. 28, 1993, 43 32 933.0
Int. Cl.[6] C10L *1/30;5/00*
U.S. Cl. 44—639 10 Claims



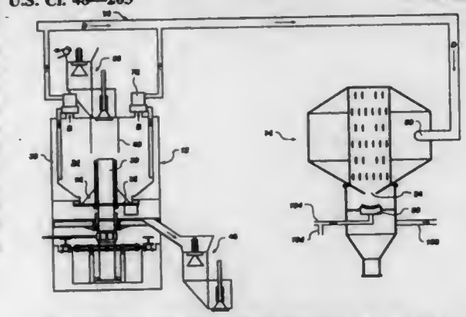
1. A device in a part of a fuel line system of an automobile for direct addition of additive solids to liquid fuel wherein the solids are soluble in the fuel, which comprises a housing, a hollow body at least partially filled with particles of the fuel-soluble solids located at least partially in the housing, a fuel line extending into said housing, said hollow body having a lengthwise axis that is at an angle α of 130° to 170° to a stream of inflowing fuel introduced by an end of said fuel line and a lower end of the body being irrigated by inflowing fuel and having at least one opening through which the fuel can enter and leave the hollow body to enable the particles of the solids to be dissolved in the inflowing fuel, and a header connected to the housing for conducting the additive-containing fuel from the housing to an end of a fuel line connected to an engine; said at least one opening being smaller than sizes of the particles and acting to prevent the particles from being removed from the hollow body.

5,573,558
AUTOMATIC TRANSPLANTING SYSTEM
Barney K. Huang, 3332 Manor Ridge Dr., Raleigh, N.C. 27603
Continuation-in-part of Ser. No. 136,764, Oct. 15, 1993, abandoned, which is a division of Ser. No. 667,188, Mar. 11, 1991, Pat. No. 5,254,140. This application Jan. 7, 1994, Ser. No. 178,797
Int. Cl.[6] A01G *9/08*
U.S. Cl. 47—1.01 14 Claims

1. A plant transfer system:
a) a plant tray support for receiving a plant tray and wherein the plant tray support includes an opening formed therein for permitting a plant from the plant tray to pass from the plant tray through the opening within the plant tray support;
b) a plant drop tube extending from the opening within the plant tray support; and
c) an impulse and intermittent pressure source for periodically inducing a plant from the plant tray, through the opening within the plant tray support, and through the plant drop tube into an underlying planting area.



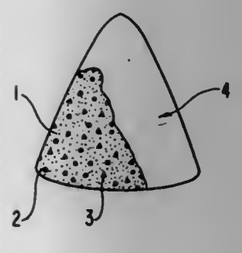
5,573,559
METHOD FOR MUNICIPAL WASTE GASIFICATION
Wesley P. Hilliard, Huntington, and Scott Barney, Ferron, both of Utah, assignors to Emery Recycling Corporation, Castle Dale, Utah
Division of Ser. No. 222,625, Apr. 4, 1994, Pat. No. 5,484,465, which is a continuation-in-part of Ser. No. 100,249, Aug. 2, 1993, abandoned. This application Oct. 20, 1995, Ser. No. 546,294
Int. Cl.[6] C10J *3/14*
U.S. Cl. 48—203 13 Claims



1. A method of waste gasification comprising the steps Of:
(a) feeding waste material into a first combustion chamber, said combustion chamber having a rotatable tuyere with a central column extending from a base of the tuyere toward a means for feeding the waste material, the tuyere supporting an annular column of waste material;
(b) introducing an oxidizer into the column of waste material;
(c) rotating the rotatable tuyere so as to shear the annular column of waste material;
(d) igniting the waste material within the first combustion chamber;
(e) controlling the feed rate of the waste material and of the oxidizer so as to maintain a temperature within the first combustion chamber in the range from about 600° F. to 2100° F.;
(f) withdrawing combustion gases from an upper portion of the first combustion chamber often passing upwardly therethrough and feeding the combustion gases to a second combustion chamber, said second combustion chamber including a restricting orifice smaller in cross-sectional area than the cross-sectional area of the second combustion chamber, such

that the combustion gases pass through said restricting orifice and strike a target provided downstream of the restricting orifice, said target having an impingement surface that faces the restricting orifice;
(g) introducing an oxidizer into the second to cause combustion reactions to occur at the target combustion chamber near the target;
(h) withdrawing a relatively clean producer gas from the second combustion chamber.

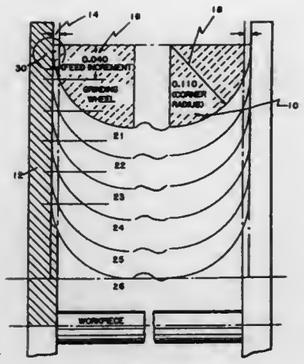
5,573,560
ABRASIVE MEDIA CONTAINING A COMPOUND FOR USE IN BARREL FINISHING PROCESS AND METHOD OF MANUFACTURE OF THE SAME
Hisaminc Kobayashi, Nagoya, and Hironari Murase, Tokai, both of Japan, assignors to Tipton Corporation, Aichi, Japan
Filed Dec. 22, 1994, Ser. No. 361,553
Claims priority, application Japan, Dec. 22, 1993, 5-324556
Int. Cl.[6] B24D *3/34;17/00*
U.S. Cl. 51—293 8 Claims



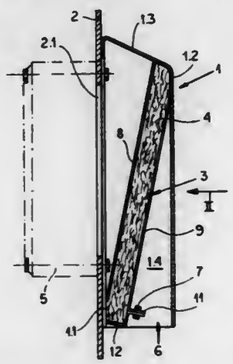
1. Abrasive media for use in a barrel finishing process, said media consisting essentially of:
20% to 90% by weight of synthetic resin selected from the group consisting of polyester resins, epoxy resins, aramid resins, and polycarbonate resins, and combinations thereof;
0.1% to 10% by weight of a compound comprising at least a surfactant and a material selected from the group consisting of anticorrosives, chelating agents, and detergent builders, and combinations thereof; and
10% to 80% by weight of an abrasive selected from the group consisting of alumina, silica, and silicon carbide, and combinations thereof;
wherein said synthetic resin, compound, and abrasive are formed into a shape.

5,573,561
SOL-GEL ALUMINA ABASIVE WHEEL WITH IMPROVED CORNER HOLDING
David A. Sheldon, Millbury; Robert S. Lundberg, Charlton City, both of Mass., and Xiaoming Li, Cheswick, Pa., assignors to Norton Company, Worcester, Mass.
Continuation-in-part of Ser. No. 100,519, Jul. 30, 1993, Pat. No. 5,401,284. This application Jul. 20, 1994, Ser. No. 278,529
Int. Cl.[6] B24D *3/02;* C03C *3/085*
U.S. Cl. 51—308 6 Claims

1. An abrasive grinding wheel comprising sol-gel alumina abrasive and a vitreous bond wherein the vitreous bond after firing comprises greater than 47 weight % SiO_2, less than about 16 weight % Al_2O_3, from about 0.5 to about 2.5 weight % K_2O, from about 7 to about 11% Na_2O from about 2.0 to about 10.0 weight % Li_2O and from about 9 to about 16 weight % B_2O_3.



5,573,562
WATERTIGHT FILTER FOR ELECTRICAL EQUIPMENT VENT
Erwin Schauwecker, Schwendi-Wörenhausen, and Erwin Kohler, Wain, both of Germany, assignors to Hawa Programmgehause und Komponenten GmbH & Co. KG, Wain, Germany
Filed Dec. 16, 1994, Ser. No. 357,451
Claims priority, application Germany, Dec. 24, 1993, 43 44 659.0
Int. Cl.[6] B01D *46/00*
U.S. Cl. 55—385.4 6 Claims



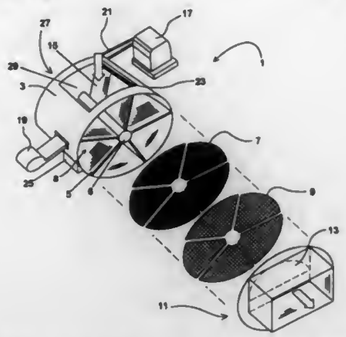
1. In combination with a piece of electrical equipment having a vertical and generally planar side wall formed with a vent opening, a filter assembly comprising:
a housing secured to the side wall at the opening thereof and having a closed top side, a closed front wall, and a pair of closed end walls, the end and front walls forming below the vent opening a downwardly opening mouth;
a panel of air-pervious filter material in the housing having a lower edge below the vent opening, a generally planar back face turned toward the side wall at the vent opening and an opposite and generally planar front face turned away from the side wall and extending substantially parallel to the pack face; and
a holder in the housing securing the filter panel therein with the back face operatively engaging the equipment side wall at the lower panel edge below the opening and above the mouth and an upper edge of its front face engaging the housing front wall and with the back face of the panel diverging upwardly away from the equipment side wall.

5,573,563

MICRO-ROTARY SCREENER

Horace L. Odom, Richmond, and Kenneth A. Odom, Midlothian, both of Va., assignors to Product Engineered Systems, Inc., Richmond, Va.

Filed Jun. 7, 1995, Ser. No. 474,466
Int. Cl.[6] B01D *33/15;33/48*
U.S. Cl. 55—301 14 Claims



1. A filtration device for removing airborne materials from an airstream, comprising:

shell means for defining a generally drum-shaped shell, said shell means comprising a first passageway for receiving said airstream and a second passageway for discharging cleaned air;

multi-blade rotating air lock means within said shell means, said multi-blade rotating air lock means comprising an odd number of radially-oriented rotor lock blades for defining an odd number of pockets into which said airstream is directed;

drive means for causing said multi-blade rotating air lock means to rotate;

seal means for contacting said rotor lock blades and inner portions of said shell means, whereby airflow is restricted between said odd number of pockets;

filtration means operably connected to said rotor lock blades, and rotating therewith, for filtering said airborne materials and for releasing filtered materials during rotation of said multi-blade rotating air lock means; and,

means for receiving said filtered materials after said filtered materials have been released from said filtration means.

5,573,564

GLASS MELTING METHOD

Ray S. Richards, Sylvania, Ohio, assignor to Stir-Melter, Inc., Perrysburg, Ohio

Division of Ser. No. 122,914, Sep. 16, 1993, Pat. No. 5,364,426, which is a division of Ser. No. 862,328, Apr. 2, 1992, Pat. No. 5,273,567, which is a division of Ser. No. 665,894, Mar. 7, 1991, Pat. No. 5,120,342. This application Aug. 10, 1994, Ser. No. 288,478
Int. Cl.[6] C03B *5/24*
U.S. Cl. 65—29.13 5 Claims

1. A method of vitrifying ash comprising the steps of:

depositing ash into a vessel containing a molten glass bath;

adding glass formers, glass modifiers, and fluxing agents as necessary to the molten glass bath;

stirring the molten glass bath to disperse the ash and said glass formers, glass modifiers and fluxing agents into the molten glass bath;

heating the molten glass bath to maintain the molten glass bath at a temperature above its melting point;

removing a portion of said molten glass bath from the vessel for cooling to form glass; and

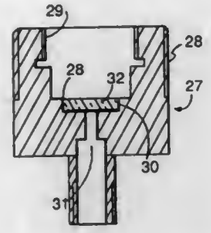
monitoring emissions from the vessel for lead, zinc and cadmium and other hazardous or toxic material.

5,573,565

METHOD OF MAKING AN INTEGRAL WINDOW HERMETIC FIBER OPTIC COMPONENT

Rick D. Dalton, Miamisburg; Daniel P. Kramer, Centerville; Richard T. Massey, Hamilton, and Damon A. Waker, Bellbrook, all of Ohio, assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jun. 17, 1994, Ser. No. 262,125
Int. Cl.[6] C03C *27/02;* B23B *31/26*
U.S. Cl. 65—59.1 1 Claim



1. A method of hermetically sealing a transparent glass window to a metal shell, comprising:

a) placing an aluminoborosilicate glass preform in a cup-like cavity in a metal shell, said cup-like cavity having a minor opening through its floor;

b) heating the preform and shell in a belt furnace by first passing them consecutively through four heating zones with temperatures of about 700°, 855°, 865°, and 625° C., respectively, for an overall furnace residence period of about 2.5 hours and then rapidly through a cooling zone;

wherein said glass is selected from the group consisting of an aluminoborosilicate glass containing, in parts by weight: silica, 49.8; boron oxide, 16.9; alumina, 12.2; potassium oxide, 5.4; fluorine, 1.8; calcium oxide, 0.5; and zinc oxide, 0.7; and an aluminoborosilicate glass containing, on a weight basis; silica, 48.8; boron oxide, 16.6; sodium oxide, 14.4; alumina, 11.9; potassium oxide, 5.3; fluorine, 2.0; calcium oxide, 5.0; and zinc oxide, 0.7;

and wherein said metal is selected from the group consisting of high strength nickel-based corrosion resistant alloys and corrosion resistant nickel-chromium alloys.

5,573,566

METHOD OF MAKING A QUARTZ DOME REACTOR CHAMBER

Dane H. Anderberg, Phoenix, and Lewis C. Barnett, Tempe, both of Ariz., assignors to Advanced Semiconductor Materials America, Inc., Phoenix, Ariz.

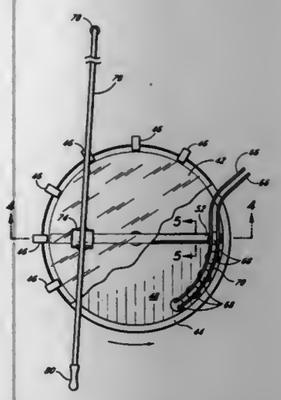
Filed May 26, 1995, Ser. No. 451,926
Int. Cl.[6] C03B *23/023*
U.S. Cl. 65—102 20 Claims

1. A method of making a dome surface for a reactor chamber, said method comprising:

providing a rigid disk made of material which will soften with heat;

supporting an outer edge of said disk on a circular frame;

positioning a wiper blade within said frame spaced beneath said disk;



producing relative rotation between said disk and said wiper blade; and

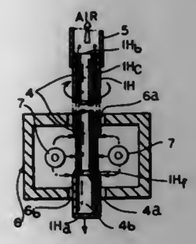
heating said disk to cause said disk to slump and contact said wiper blade to form a dome for said chamber.

5,573,567

METHOD OF MANUFACTURING SAMPLE TUBE FOR NUCLEAR MAGNETIC RESONANCE

Masahiro Shigezane, Tokyo, Japan, assignor to Shigemi Co., Ltd., Allison Park, Pa.

Continuation of Ser. No. 268,029, Jun. 29, 1994, abandoned. This application Dec. 12, 1995, Ser. No. 571,285
Claims priority, application Japan, Jun. 30, 1993, 5-187001
Int. Cl.[6] C03B *23/04*
U.S. Cl. 65—108 4 Claims



1. A method for manufacturing a sample tube for the use in a nuclear magnetic resonance apparatus comprising the steps of:

inserting a core bar into a tubular body made of glass or quartz, said core bar having a stepped portion and a remaining portion, that portion of said core bar with the stepped portion corresponding to a sample receiving chamber being larger in diameter than the remaining portion;

gradually inserting said tubular body into an electric furnace for heating while allowing suction from a vacuum pump to act on the interior of said tubular body, thereby the whole tubular body being intimately attached for shaping to and along an outer peripheral surface of said core bar;

withdrawing said core bar outside from a lower end opening of said tubular body;

sealing by heating said lower end opening of said tubular body to form a bottom of the tube; and

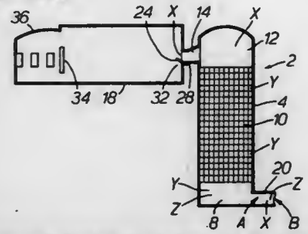
grinding the peripheral surface so that the whole tubular body will be equal in outer diameter.

5,573,568

METHOD FOR REDUCING NOX EMISSIONS FROM A REGENERATIVE GLASS FURNACE

Richard Quirk, Ormskirk; David A. Bird, Rufford; Ian N. W. Shulver, Southport, and Robin M. McIntosh, Newburgh, all of United Kingdom, assignors to Pilkington Glass Limited, United Kingdom

Filed Nov. 18, 1993, Ser. No. 153,990
Claims priority, application United Kingdom, Nov. 27, 1992, 9224852; May 25, 1993, 9310720
Int. Cl.[6] C03B *5/167*
U.S. Cl. 65—134.6 11 Claims



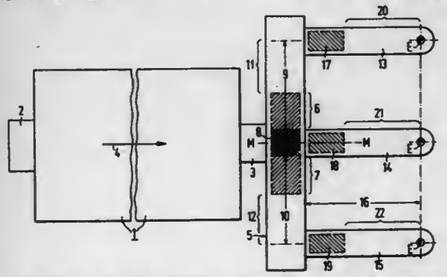
1. A method of operating a regenerative glass furnace for melting glass for the manufacture of shaped glass articles so as to minimize emission of NOx in waste gases leaving the furnace, the furnace including a melting chamber and including sealed regenerators which act as heat exchangers, the method comprising melting glass in the melting chamber, to which fuel and combustion air are supplied, under substantially stoichiometric conditions, and supplying excess fuel to the waste gases as they leave the melting chamber and enter the sealed regenerators such that waste gases in the sealed regenerators contain combustible material available to react with NOx in the waste gases, and thereafter reacting said combustible material with sufficient air to ensure that the waste gases leaving the furnace through the regenerators and exiting to atmosphere contain permissible levels of combustible material and contain permissible levels of NOx.

5,573,569

METHOD FOR CONDITIONING AND HOMOGENIZING A GLASS STREAM

Helmut Sorg, Glattbach, and Richard Sims, Lohr am Main, both of Germany, assignors to Beteiligungen Sorg GmbH & Co. KG, Lohr/Main, Germany

Continuation of Ser. No. 175,283, Dec. 29, 1993, abandoned. This application Aug. 31, 1995, Ser. No. 524,165
Claims priority, application Germany, Jun. 15, 1993, 43 19 776.6
Int. Cl.[6] C03B *5/18;5/225;5/23*
U.S. Cl. 65—135.1 15 Claims



1. A method of conditioning and homogenizing a continuously flowing stream of glass along a conditioning stretch located in one of a working end, a distribution channel, a feeder or a forehearth, the conditioning stretch extending from an entry side either of said working end, distribution channel, feeder or forehearth to at least one extraction point at the end of said conditioning stretch and at

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the beginning of said conditioning stretch there is a cooling zone to which a homogenizing zone for the glass temperature is connected, whereby the glass temperature in the conditioning stretch is reduced from an entry temperature T1 to an extraction temperature T2, comprising the steps of:

arranging for a vertical cross section of the glass stream in the cooling zone to have a depth/width ratio D/W of a maximum 0.6, whereby a maximum depth Dmax of the glass stream amounts to

(a) 300 mm when the cooling zone is situated in said working end or in said distribution channel; and

(b) 150 mm when the cooling zone is situated in said feeder or in said forehearth; and

removing at least 30% of that amount of energy which corresponds to a temperature difference between T1 and T2 from the glass stream per meter of flow along the conditioning stretch at the beginning of the cooling zone.

5,573,570

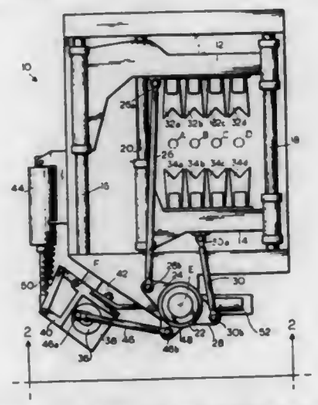
GLASS GOB SHEARING APPARATUS

D. Wayne Leidy, Perrysburg, and Carl E. Denlinger, Maumee, both of Ohio, assignors to Owens-Brockway Glass Container Inc., Toledo, Ohio

Filed Oct. 13, 1994, Ser. No. 322,121

Int. Cl.[6] C03B *7/10*

U.S. Cl. 65—334 **9 Claims**



1. Apparatus for shearing a plurality of streams of molten glass from a glass feeder into individual gobs of molten glass for processing into glass containers in a forming machine, said apparatus comprising:

first shearing means comprising a first plurality of knife elements;

second shearing means comprising a second plurality of knife elements;

mounting means for mounting said first shearing means for motion toward and away from said second shearing means and for mounting said second shearing means for parallel motion toward and away from said first shearing means;

a unidirectionally acting servo motor; and

connecting means connecting said servo motor to said first shearing means and to said second shearing means for simultaneously moving said first shearing means and said second shearing means toward one another and then away from one another, said connecting means comprising:

a bell crank having a central axis;

first connecting rod means connecting said servo motor to said bell crank for imparting oscillating motion to said bell crank about its central axis;

second connecting rod means connecting said bell crank to said first shearing means for imparting reciprocating motion to said first shearing means; and

third connecting rod means connecting said bell crank to said second shearing means for imparting reciprocating motion to said second shearing means;

said second connecting rod means and said third connecting rod means being pivotally attached to said servo motor at diametrically spaced apart locations thereof.

5,573,571

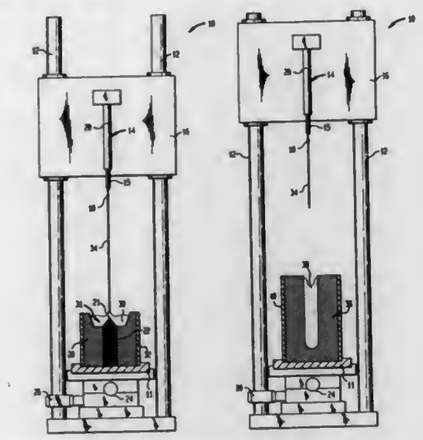
METHOD FOR MAKING OPTICAL FIBER PREFORMS AND OPTICAL FIBERS FABRICATED THEREFROM

Nonna Kopylov, Scotch Plains, and Ahmet R. Kortan, Warren, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 1, 1994, Ser. No. 347,978

Int. Cl.[6] C03B *37/02*

U.S. Cl. 65—388 **21 Claims**



20. A method of making an optical fiber utilizing a movable fiber drawing member and comprising the steps of:

a) axially aligning said fiber drawing member and a first containment vessel having a molten core material contained therein;

b) moving at least an end portion of said fiber drawing member into said first containment vessel so as to contact the molten core material;

c) increasing the viscosity of the core material to at least about 10^5 poises;

d) removing said end portion of said fiber drawing member from said first containment vessel so as to form a core fiber from said core material;

e) cleaving said core fiber at a predetermined location spaced from said end portion of said fiber drawing member to form a core fiber having a predetermined length;

f) aligning said predetermined length of said core fiber and a second containment vessel having a molten cladding material contained therein;

g) moving said fiber drawing member toward said second containment vessel and introducing said predetermined length of core fiber into an inner portion of said molten cladding material to form an optical fiber preform; and

h) drawing said preform into an optical fiber.

5,573,572

PROCESS FOR THE PRODUCTION OF TANTALUM-NIOBIUM CONCENTRATES

Joachim Eckert, Bad Harzburg; Kurt Tolle, Bad Säckingen; Jochen Weber, Laufenburg, and Klaus Rieger, Bad Säckingen, all of Germany, assignors to H. C. Starck, GmbH & Co. KG, Goslar, Germany

Filed Mar. 28, 1995, Ser. No. 412,071

Claims priority, application Germany, Apr. 27, 1994, 44 14 571.3

Int. Cl.[6] C22B *34/24*

U.S. Cl. 75—10.61 **5 Claims**

1. Process for the production of niobium-tantalum concentrates with high-tantalum content relative to niobium from low-tantalum, high-niobium raw materials with an Nb_2O_5/Ta_2O_5 ratio of 5 to 15, and a multiple metals content in the form of oxides of the metal including iron oxide content in excell of 4 wt-%, in a pyrometallurgical process comprising the steps of:

(a) smelting the raw materials in an electric arc in the presence of reducing agent material comprising carbon and slag forming material comprising fluxes, to yield a ferroniobium-tantalum alloy product,

(b) separating the alloy product from slag,

(c) mechanically processing the ferroalloy product to a desired size,

(d) calcining the alloy product at 800°–1,000° C. under oxidizing conditions,

(e) resmelting the alloy in an electric arc in the presence of reducing agent material comprising carbon to produce a metal phase with one or more metals therein including most of the original niobium of the raw material, and a tantalum-niobium oxide concentrate product that is easily separatable from the metal phase.

5,573,573

ELECTRIC ARC FURNACE ARRANGEMENT FOR PRODUCING STEEL

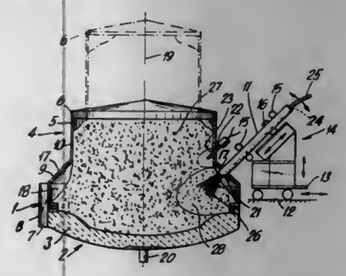
Harald Berger; Peter Mittag, both of Linz; Johannes Steins, Gallneukirchen, and Gert Pfeiffer, Leonding, all of Austria, assignors to Voest-Alpine Industrieanlagenbau GmbH, Linz, Austria

Division of Ser. No. 974,792, Nov. 12, 1992, Pat. No. 5,471,495. This application Jun. 7, 1995, Ser. No. 478,483

Claims priority, application Austria, Nov. 18, 1991, 2282/91; Dec. 16, 1991, 2490/91

Int. Cl.[6] H05B *11/00*

U.S. Cl. 75—10.63 **8 Claims**



1. A process for producing steel from scrap using an electric arc furnace arrangement including a furnace vessel having a furnace vessel lower part and a furnace vessel upper part as well as a furnace vessel bottom and adapted to receive said scrap, at least one graphite electrode projecting into said furnace vessel lower part from aside and being displaceable in its longitudinal direction, an enlargement provided in said furnace vessel lower part in the region of said at least one graphite electrode, said enlargement radially protruding outwardly relative to said furnace vessel upper part, wherein said at least one graphite electrode is designed as a hollow electrode defining an electrode cavity, and a solid matter supply duct is connectable with said electrode cavity, which process comprises

charging said scrap into said furnace vessel,

igniting an electric arc between said at least one graphite electrode and said scrap, and

supplying organic substances to said electric arc through said electrode cavities to decompose said organic substances in said electric arc.

5,573,574

ELECTROREFINED ALUMINIUM WITH A LOW CONTENT OF URANIUM, THORIUM AND RARE EARTHS

Michel Leroy, St. Egreve, France, assignor to Aluminium Pechiney, Courbevoie, France

PCT No. PCT/FR94/00862, § 371 Date Jun. 13, 1995, § 102(e) Date Jun. 13, 1995, PCT Pub. No. WO95/03434, PCT Pub. Date Feb. 2, 1995

PCT Filed Jul. 11, 1994, Ser. No. 381,883

Claims priority, application France, Jul. 22, 1993, 93 09254

Int. Cl.[6] C22B *9/00;21/00*

U.S. Cl. 75—406 **6 Claims**

1. A process for obtaining aluminum of purity above 99.998%, comprising the steps of:

a) subjecting a liquid aluminum raw material to fractional crystallization to obtain prepurified aluminum crystals in a yield of between 50 and 80% and a liquid aluminum portion of lesser purity;

b) subjecting the prepurified aluminum crystals to a three-layer electrolysis in which a lowermost layer comprises an anodic aluminum-copper alloy layer, an uppermost layer comprises a cathodic purified aluminum layer and a layer therebetween comprises molten salts; and

c) removing from said uppermost layer said aluminum of purity above 99.998% in a yield of above 90%, having a total rare earth content of less than 100 ppb, and a total content of U+Th of less than 20 ppb.

5,573,575

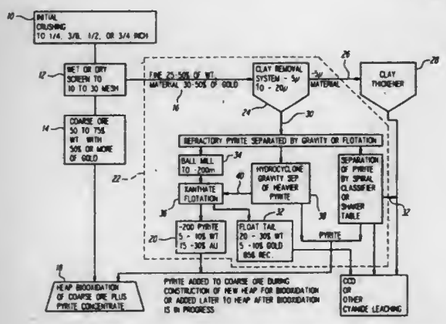
METHOD FOR RENDERING REFRACTORY SULFIDE ORES MORE SUSCEPTIBLE TO BIOOXIDATION

William J. Kohr, San Mateo, Calif., assignor to Geobiotics, Inc., Hayward, Calif.

Continuation-in-part of Ser. No. 161,742, Dec. 3, 1993, Pat. No. 5,431,717. This application Nov. 16, 1994, Ser. No. 343,888

Int. Cl.[6] C22B *3/18*

U.S. Cl. 75—712 **13 Claims**



1. A method for recovering precious metal values from a crushed precious metal bearing refractory sulfide ore, the process comprising:

a. separating the crushed refractory sulfide ore into a fines fraction and a coarse fraction;
b. forming a beap with the coarse fraction of the refractory sulfide ore;
c. producing a concentrate of refractory sulfide minerals from the fines fraction;
d. adding the concentrate of refractory sulfide minerals to the heap;
e. biooxidizing the ore in the heap, including the concentrate of refractory sulfide minerals; and
f. bydrometallurgically treating the biooxidized ore to recover precious metal values.

5,573,576

METHOD OF TREATING STEEL MILL WASTE

David Krofchak, Oakville, Canada, assignor to International Solidification, Inc., Ontario, Canada

Continuation-in-part of Ser. No. 327,761, Oct. 24, 1994, Pat. No. 5,439,505. This application Jun. 26, 1995, Ser. No. 494,661

Int. Cl.[6] C22B *1/243*

U.S. Cl. 75—773 15 Claims

1. A method of treaing steel mill waste containing iron oxides and silica comprising:

reacting said steel mill waste with an alkali aqueous solution in an amount sufficient to raise the pH to at least about 7 to solubilize silica to form soluble silicate compounds and silica gels and thereby produce a chemically reactive mixture, and reacting said mixture with an alkaline silicic compound to produce a solid, stable, non-polluting material.

5,573,577

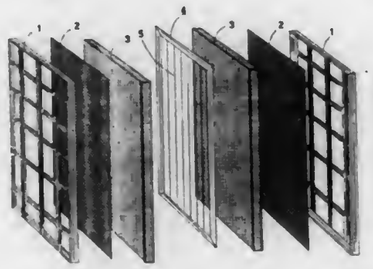
IONIZING AND POLARIZING ELECTRONIC AIR FILTER

Constantinos J. Joannou, 49 Mill Street, Unit 4, Carleton Place, Ontario, Canada

Filed Jan. 17, 1995, Ser. No. 373,072

Int. Cl.[6] B03C *3/41*

U.S. Cl. 96—66 13 Claims



9. A filter cartridge for use in an ionizing air filter comprising:

(a) first and second pads of fibrous, non-conducting, dielectric material each having inner and outer sides, said inner sides being juxtaposed to each other;

(b) a conductive path provided with the first of said pads on the inner side of said pad; and

(c) electrical coupling means attached to said conductive path for receiving an electrical potential from a high voltage source,

the conductive path comprising a conductive filament having multiple, exposed filament ends distributed along its length to form, when electrically charged to an ionizing potential, an electrical gradient that produces ionization in air that surrounds said filament.

5,573,578

STENCIL PRINTING EMULSION INK

Sadanao Okuda, Tokyo, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Filed Sep. 25, 1995, Ser. No. 533,098

Claims priority, application Japan, Sep. 29, 1994, 6-235524

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—20 R 4 Claims

1. A water-in-oil stencil printing emulsion ink containing in an oil phase 1 to 50% by weight, based on the weight of a water phase, of a volatile solvent having a distillation starting temperature of 275° C. or higher and having a viscosity of 10 mm^2/s·40° C. or less, and having a weight ratio of the oil phase/water phase of 20 to 50/80 to 50.

5,573,579

METHOD FOR PRODUCING FRICTION MATERIAL

Keita Nakanishi, Kobe, and Takuo Ishihara, Osaka, both of Japan, assignors to Osaka Gas Company, Ltd., Osaka, Japan

Filed Mar. 13, 1995, Ser. No. 403,108

Claims priority, application Japan, Mar. 17, 1994, 6-087111

Int. Cl.[6] C09K *3/14*

U.S. Cl. 106—36 5 Claims

1. A method for producing friction material having pills with a largest dimension no greater than 2 mm comprising:

mixing carbon fibers having a weighted mean fiber length of at least 0.3 mm, an effective amount of a binder to bind the carbon fibers, and an effective amount of a friction modifier to provide a sufficient and stable friction coefficient to a resulting friction material together with an effective amount of a dispersing medium to disperse the carbon fibers, the binder and the friction modifier, and forming a dispersion with a solid content concentration of 0.5 to 50% by weight,

removing the dispersing medium from the dispersion by filtering the dispersion through a filter fabric and forming a filter cake on the filter fabric,

drying the filter cake, and

molding the filter cake.

5,573,580

BLACK WASH FOR PRODUCING MOULD COATINGS

Dietmar Bartsch, Laatzen; Klaus Seeger, Hanover, and Hans-Dieter Kaiser, Burgdorf, all of Germany, assignors to Huttenes-Albertus Chemische Werke GmbH, Germany

PCT No. PCT/DE94/00555, § 371 Date Jan. 5, 1995, § 102(e) Date Jan. 5, 1995, PCT Pub. No. WO94/26440, PCT Pub. Date Nov. 24, 1994

PCT Filed May 17, 1994, Ser. No. 362,523

Claims priority, application Germany, May 17, 1993, 93 07 468.9 U

Int. Cl.[6] B28B *7/36*

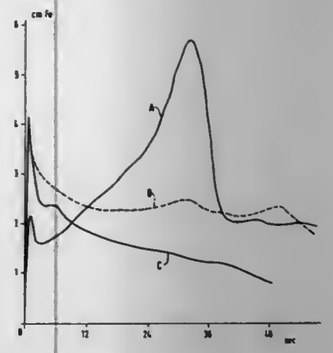
U.S. Cl. 106—38.27 11 Claims

1. A refractory wash for producing mould coatings, said wash having improved gas permeability and comprises:

a carrier liquid;

finely divided inorganic platelet-shaped refractory materials; and

inorganic gas-filled hollow spheres, wherein said inorganic spheres are present in an amount of from 1 to 40% by weight based upon the weight of the refractory wash.



5,573,581

COATING COMPOSITION FOR TREATING COLOR SENSITIVITY OF A COLOR PICTURE TUBE

Cheeyoul Youn, Pusan, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Dec. 21, 1995, Ser. No. 575,997

Claims priority, application Rep. of Korea, Oct. 10, 1995, 95-34705

Int. Cl.[6] C09D *183/02;5/24*

U.S. Cl. 106—287.16 4 Claims

1. A composition for improving colour sensitivity and preventing electrification of a colour picture tube, comprising:

a solution which is prepared by dissolving ethylsilicate, antimony chloride, tin chloride and a pigment in a solvent consisting of isopropyl alcohol and n-butanol;

0.6 to 12% by weight of methyl cellosolve based on the total weight of the composition; and

0.1 to 6% by weight of dimethylfluoroamide based on the total weight of the composition.

5,573,582

PROCESS FOR PREPARING FINE-PARTICULATE METAL HYDROXIDE COMPRISING ALUMINUM HYDROXIDE AND METAL OXIDE COMPRISING ALUMINUM OXIDE

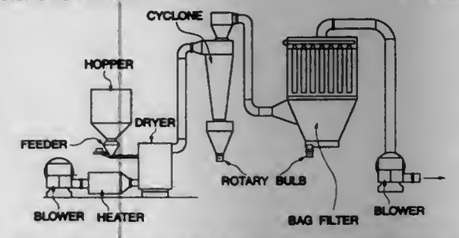
Masamichi Inui; Yoshiaki Takeuchi; Yasushi Teshima; Koji Yamamoto; Makio Kimura, and Takahiro Ishida, all of Nihama, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Jun. 23, 1995, Ser. No. 493,456

Claims priority, application Japan, Jun. 24, 1994, 6-143678; Jun. 24, 1994, 6-143682; Jun. 24, 1994, 6-143683

Int. Cl.[6] C01F *7/00;* C04B *35/10*

U.S. Cl. 106—287.17 16 Claims



1. A process for preparing a fine-particulate metal hydroxide comprising aluminum hydroxide as a major component which comprises continuously supplying water and a mixture comprising an aluminum alkoxide and at least one alkoxide of a metal selected from the group consisting of Mg, Ca, La, Fe, Si, Ti and Zr, to a high shear rate stirring area to form a metal hydroxide slurry.

5,573,583

METHOD OF ACTIVATION OF CLAY AND ACTIVATED CLAY

Mitsuji Kondo, Tochigi, Japan, assignor to Hojun Kogyo Co., Ltd., Gunma, Japan

Filed Apr. 20, 1995, Ser. No. 425,533

Claims priority, application Japan, Dec. 20, 1994, 6-316913

Int. Cl.[6] C09C *1/42*

U.S. Cl. 106—287.17 12 Claims

1. A method for activating a smectite clay comprising treating a smectite clay with at least one aprotic polar solvent having a higher relative permittivity than that of methanol to make the smectite clay swellable and/or dispersable in an aqueous electrolyte solution.

10. A method for activating a smectite clay to be swollen and/or dispersed in an aqueous electrolyte solution which comprises first adding the smectite clay to an aqueous electrolyte solution to obtain a suspension of the smectite clay and then adding to the suspension of the smectite clay at least one aprotic polar solvent having a higher relative permittivity than that of methanol, wherein said aprotic polar solvent is selected from the group consisting of N,N-dimethylformamide, N,N-dimethylacetamide, ethylene carbonate, propylene carbonate, and dimethyl sulfoxide.

5,573,584

INTERFERENCE PIGMENTS FOR PREPARING FORGERYPROOF DOCUMENTS

Werner Ostertag, Gruenstadt, and Helmut Schmidt, Osthofen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP93/03351, § 371 Date Apr. 21, 1995, § 102(e) Date Apr. 21, 1995, PCT Pub. No. WO94/13489, PCT Pub. Date Jun. 23, 1994

PCT Filed Nov. 30, 1993, Ser. No. 325,178

Claims priority, application Germany, Dec. 11, 1992, 42 41 753.8

Int. Cl.[6] C04B *14/20*

U.S. Cl. 106—417 5 Claims

1. A process for preparing forgeryproof documents comprising printing said documents with interference pigments based on multiply coated platelet-shaped silicatic substrates comprising:

A) a first layer comprising a colorless or selectively absorbing metal oxide with a high refractive index,

B) a second, non-selectively absorbing, semitransparent layer consisting essentially of carbon, a metal or a metal oxide, and optionally

C) a third layer comprising a colorless or selectively absorbing metal oxide in combination with scattering color pigments which are complementary in color to the reflection color of the interference pigments.

5,573,585

MOLECULAR SIEVES CONTAINING AZO DYES

Guenter Lauth, Grosskarlbach; Wolfgang Hoelderich, Mannheimer Strasse 18c, 67227 Frankenthal; Gerhard Wagenblast, Wachenheim; Bernhard Albert, Maxdorf; Gunther Lamm, Hassloch; Helmut Reichelt, Neustadt; Clemens Grund, Mannheim, and Sabine Gruettner-Merten, Bensheim, all of Germany, assignors to Wolfgang Hoelderich, Frankenthal, Germany

PCT No. PCT/EP93/00459, § 371 Date Sep. 12, 1994, § 102(e) Date Sep. 12, 1994, PCT Pub. No. WO93/17965, PCT Pub. Date Sep. 16, 1993

PCT Filed Feb. 27, 1993, Ser. No. 295,679

Claims priority, application Germany, Mar. 11, 1992, 42 07 745.1

Int. Cl.[6] C09B *27/00*

U.S. Cl. 106—496 10 Claims

1. Crystalline molecular sieves which are thermally stable up to 500° C. and contain one or more chromophores of the class of the

mono- or polyazo dyes that are devoid of acidic groups, except those monoazo dyes of the azobenzene series with a diphenylamine coupling component.

5,573,586

ASBESTOS-FREE, ASPHALT ROOFING COMPOSITIONS ESPECIALLY ADAPTED FOR COLD APPLICATIONS

Michael L. Yap, Oldsmar; Raymond T. Hyer, and Barton J. Malina, both of Tampa, all of Fla., assignors to Gardner Asphalt Corporation, Tampa, Fla.

Filed Jan. 19, 1996, Ser. No. 588,879

Int. Cl.[6] C08L *95/00;* **C04B** *7/12;24/36;* **C09D** *195/00*

U.S. Cl. 106—668 **3 Claims**

1. An asbestos-free roofing composition adapted for cold application consisting essentially of: cutback asphalt, the asphalt having a penetration, according to ASTM D5, at 77 degrees F° dmm: ranging from about 5 to about 300 dmm; non-asbestos inert fiber; water, and fly ash, having a particle size in the range of about 5–80 microns to impart a viscosity in the range of about 5,000 to 2,000,000 centipoise, the parts by weight of the components being about:

	Parts By Weight % (Based On Total Composition)
cut back asphalt	20–80
fly ash	5–60
non-asbestos inert fiber	0.5–10
water	0.5–15.

5,573,587

PROCESS FOR PRODUCING BUILDING MATERIALS FROM PAINT SLUDGE

Daniel M. St. Louis, West Bloomfield, Mich., assignor to Haden Schweitzer Corporation, Madison Heights, Mich.

Filed Jun. 14, 1994, Ser. No. 259,969

Int. Cl.[6] C04B *18/04*

U.S. Cl. 106—697 **10 Claims**

1. A process for treating paint sludge containing water and paint solids to produce building materials containing lime, comprising the steps of:

a. mixing the paint sludge with quick-lime to chemically react the quick-lime with at least a portion of the water within the paint sludge to form a mixture of hydrated lime and paint solids, resulting in an exothermic reaction permitting at least some of the water to boil;

b. further mixing the paint sludge to minimize the presence of concentrations of the paint solids in the mixture; and

c. adding one or more materials to the mixture to produce building materials containing lime.

5,573,588

CONCRETES CONTAINING CLASS C FLY ASH THAT ARE STABLE IN SULPHATE ENVIRONMENTS

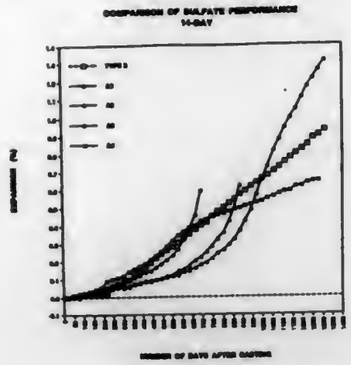
Ramon L. Carrasquillo, Austin, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 195,268, Feb. 14, 1994. This application Jun. 7, 1995, Ser. No. 472,559

Int. Cl.[6] C04B *7/04;7/13;28/04*

U.S. Cl. 106—705 **18 Claims**

1. A Class C fly ash containing cementitious mixture for use in producing a sulfate resistant hardened concrete, the cementitious mixture comprising:



(a) 25 wt % to 70 wt % Class C fly ash, said fly ash containing compounds selected from the group consisting of calcium aluminate, calcium hydroxide and iron oxides,

(b) 70 wt % to 25 wt % portland cement clinker, and

(c) 5 wt % to 10 wt % of gypsum such that at least an amount of sulfate is present to convert the calcium aluminate to ettringite;

wherein the cementitious mixture is produced by a process comprising the step of dry milling together said Class C fly ash, portland cement clinker and gypsum; and

wherein the cementitious mixture, when admixed with an aggregate and water, forms a sulfate resistant hardened concrete substantially free of any calcium aluminate, calcium hydroxide and iron oxide compounds that react with sulfate ions from sulfate containing environments to form volume expanding compositions that lead to stress failure of the hardened concrete.

5,573,589

CEMENT COMPOSITIONS CONTAINING A SULFATED POLYSACCHARIDE AND METHOD

Yoshio Tanaka; Toshiyuki Uryu, both of Tokyo, and Minoru Yaguchi, Fujisawa, all of Japan, assignors to Sandoz Ltd., Basle, Switzerland

Continuation-in-part of Ser. No. 381,582, Jan. 30, 1995, abandoned, which is a continuation of Ser. No. 207,644, Mar. 8, 1994, abandoned. This application Mar. 9, 1995, Ser. No. 402,452

Claims priority, application Japan, Mar. 10, 1993, 5-87717; Mar. 9, 1994, 6-75239

Int. Cl.[6] C04B *24/38;24/16;24/20*

U.S. Cl. 106—804 **32 Claims**

1. A hardenable cementitious composition comprising cement and an amount of a sulfated polysaccharide effective to maintain desired fluidity of the cementitious composition, said sulfated polysaccharide comprising dextran sulfates, starch sulfates, natural gum sulfates or curdlan sulfates.

5,573,590

FOLDING TABLE

Douglas B. Soper, North York, Canada, assignor to Ino - Products, Inc., North York, Canada

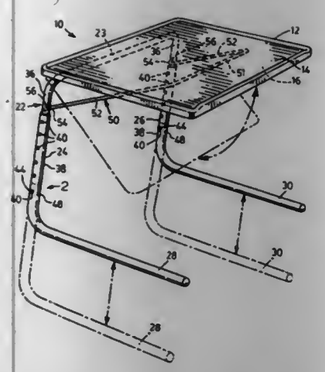
Continuation of Ser. No. 136,186, Oct. 15, 1993, Pat. No. 5,417,168. This application Mar. 24, 1995, Ser. No. 409,572

Int. Cl.[6] A47B *3/00*

U.S. Cl. 108—124 **9 Claims**

1. A folding table comprising:

a table top of synthetic plastic material having an upper working surface and an underside,



said underside having at least one rearwardly located leg retainer and at least one forwardly located strut retainer,

a leg assembly comprising an elongated connecting member and a pair of straight legs extending from opposite ends of the connecting member, each straight leg having a foot member extending perpendicularly from a lower end thereof remote from the connecting member whereby in use the straight legs are vertical and the foot members extend forwardly therefrom, and

an angularly movable strut pivotally secured at the rear to at least one of the legs and releasably engageable at the front with the strut retainer,

said strut being angularly movable between a working position in releasable engagement with the strut retainer to maintain the tabletop in a working position and a retracted position between the legs when released from the strut retainer,

each leg retainer retaining the connecting member in engagement therewith while permitting angular movement of the table top between a working position and a folded position in which the table top is substantially parallel to the legs,

said legs each having upper and lower portions in telescoping engagement, the lower leg portions being securable at different longitudinal positions relative to the upper portions to vary the length of the legs,

the lower leg portions being angularly movable relative to the upper leg portions about the longitudinal axes of the legs to enable the lower leg portions to be securable in working positions in which the foot members are parallel to one another and folded positions in which the foot members extend in opposite directions side-by-side one another.

5,573,591

METHOD OF EXHAUSTING SILICON OXIDE

Kazuhiro Ikezawa; Hiroshi Yasuda; Akira Tanikawa; Hiroyuki Kojima; Koji Hosoda, all of Tokyo, and Yoshifumi Kobayashi, Saitama, all of Japan, assignors to Mitsubishi Materials Silicon Corporation, and Mitsubishi Materials Corporation, both of Tokyo, Japan

Division of Ser. No. 187,551, Jan. 28, 1994. This application Apr. 20, 1995, Ser. No. 425,444

Claims priority, application Japan, Jan. 28, 1993, 5-12668

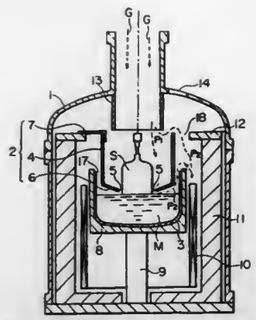
Int. Cl.[6] C30B *15/20*

U.S. Cl. 117—20 **6 Claims**

1. A silicon oxide exhaust method for guiding a carrier gas, supplied from the top of a pulling chamber for pulling up a monocrystal according to the Czochralski technique, to a surface of a melt of a material for forming a monocrystal and exhausting to the outside of said pulling chamber silicon oxide vaporized from the surface of the melt accommodated in a crucible,

said silicon oxide exhaust method comprising

defining by a carrier gas branching means a bottom gap between a circumference of the pulled monocrystal and the surface of said melt and defining a top gap between said crucible and a heat retaining tube provided at the outside of the same,



defining a first flow path through which said carrier gas flows toward said bottom gap between said carrier gas branching means and pulled monocrystal,

defining a second flow path comprised of a flow path of the carrier gas passing through said top gap and a flow path of said carrier gas passing from said first flow path through said bottom gap and then passing between the surface of said silicon melt and a flow controller,

forming the bottom gap and the top gap so that the amount of the carrier gas flowing through said bottom gap becomes greater than the amount of the carrier gas flowing through said top gap, and

exhausting said silicon oxide together with said carrier gas through said second flow path to the outside of the pulling chamber.

5,573,592

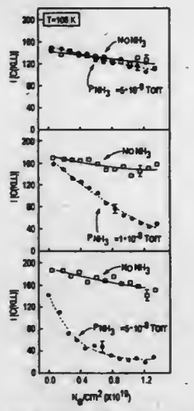
METHOD FOR FORMING PURE GROUP III-V COMPOUND SEMI-CONDUCTOR FILMS

Andreas Hübner, Hameln, Germany; Scott R. Lucas, Pittsburgh, Pa.; William D. Partlow, Export, Pa.; W. J. Choyke, Pittsburgh, Pa.; J. A. Schäfer, Baunatal, Germany, and John T. Yates, Jr., Allison Park, Pa., assignors to University of Pittsburgh of the Commonwealth system of Higher Education, Pittsburgh, Pa.

Filed Dec. 22, 1994, Ser. No. 361,838

Int. Cl.[6] C30B *25/20*

U.S. Cl. 117—89 **9 Claims**



1. A method of "synthesizing" a Group III-V compound semiconducting film from a Group III metal alkyls and a Group V hydrides, the method comprising:

a. providing a vacuum chamber in which the synthesis takes place;

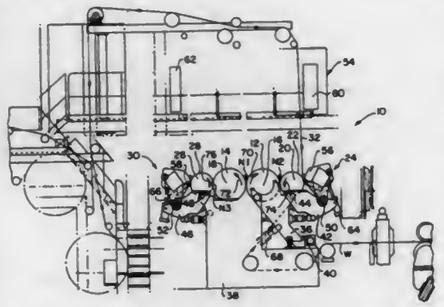
b. adsorbing at least one monolayer of said Group III metal alkyl on an inert substrate surface to form a film on said inert surface in said chamber;
c. backfilling said chamber with said Group V hydride;
d. adsorbing said Group V hydride on said surface;
e. providing atomic hydrogen atoms from electron-induced dissociation of said Group V hydride adsorbed on said surface;
f. inducing an electron-induced depletion of carbon dependent on the pressure and surface coverage of said Group V hydride;
g. retaining substantially all said Group III metal on said inert substrate surface; and
h. producing a thermally stable Group III-V compound semiconducting film on said inert substrate surface.

5,573,593

COATING APPARATUS FOR SELECTIVELY COATING EITHER OR BOTH SIDES OF A TRAVELING PAPER WEB

Graham W. Sutton, Chorley, England, assignor to Beloit Technologies, Inc., Wilmington, Del.

Filed Jan. 17, 1995, Ser. No. 373,661
Int. Cl.[6] B05C *1/00*
U.S. Cl. 118—262 **4 Claims**



1. A coating apparatus for selectively coating either, or both, sides of a traveling web of paper, said apparatus comprising:
a frame means;
a first and second roll mounted in the frame means, the first and second rolls having axes of rotation disposed parallel relative to each other such that said rolls defined therebetween a first nip for selective passage therethrough of the web;
a backing roll mounted in the frame means, the backing roll having a peripheral surface which cooperates with said first roll for defining therebetween a second nip;
coating means mounted in the frame means, the coating means cooperating with said peripheral surface for applying coating material to the web when the web is selectively guided by said surface and disposed between said surface and said coating means;
a further backing roll mounted in the frame means, the further backing roll having a further peripheral surface which cooperates with said second roll for defining therebetween a third nip; and
further coating means mounted in the frame means, the further coating means cooperating with said further peripheral surface for applying coating material to the web when the web is selectively guided by said further surface and disposed between said further peripheral surface and said further coating means;
the coating means and further coating means cooperating with the said backing roll and further backing roll, respectively, when the web is selectively passed through the first nip, such that the coating is applied from the backing roll and the further backing roll to the first and second rolls for coating both sides of the web passing through the first nip;
the frame means being so constructed and arranged that the first roll is selectively moveable relative to the second roll, the backing roll is selectively moveable relative to the first roll, the further backing roll is selectively moveable relative to the second roll, and the coating means and further coating means are selective moveable relative to the backing roll and the further backing roll, respectively, such that the web selectively in a first coating mode is guided by said surface for coating a first side of the web, and selectively in a second coating mode, the web is guided by said further surface for coating a second side of the web, and selectively in a third coating mode, the web is guided through said first nip for simultaneously coating said first and second sides of the web wherein the coating apparatus is constructed and arranged so as to permit the web to travel upwardly in any of the three modes to be coated on either of its sides, or both sides, thereof in the first, second or third modes; and further including heating means disposed above said first and second rolls, and moveable to be selectively associated with a respective one of the three modes, for permitting drying of the web when the coating apparatus is in any of said three modes.

5,573,594

COATING APPARATUS AND MACHINING METHOD THEREFOR

Masahiro Morikawa; Hideaki Usui, and Kimiaki Miyamoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 20, 1994, Ser. No. 246,718
Claims priority, application Japan, May 31, 1993, 5-129051
Int. Cl.[6] B05C *3/12*
U.S. Cl. 118—410 **1 Claim**

1. A coating apparatus having a manifold defining a width and for widthwise spreading a coating composition, and a slit for making said coating composition flow out in a flowing-out direction while forming a layer of said coating composition all over the width of said manifold to thereby coat a continuously moving web with said coating composition flowed from said slit, wherein:
a liquid inlet of said coating composition is disposed in a lateral side of said manifold; and
said slit has a length in the flowing-out direction of said coating composition which is made gradually shorter from said lateral side of said manifold in which said liquid inlet is disposed toward the side opposite to said liquid inlet,
wherein said manifold and said slit share a common curved boundary which is upwardly convex so as to define a substantially tapered configuration of said slit in the flowing-out direction, said upwardly convex common curved boundary being parabolic in shape.

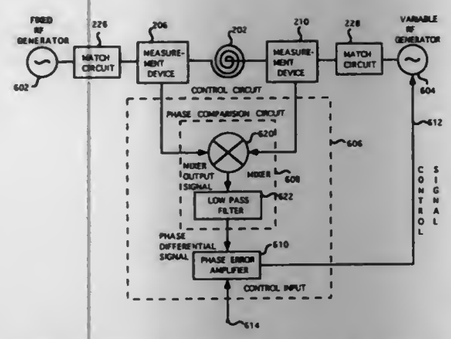
5,573,595

METHODS AND APPARATUS FOR GENERATING PLASMA

Robert D. Dible, Fremont, Calif., assignor to Lam Research Corporation, Fremont, Calif.

Filed Sep. 29, 1995, Ser. No. 536,574
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 MP **23 Claims**

1. A device for generating plasma for use in semiconductor fabrication, comprising:
a first radio frequency excitation source for outputting a first excitation current having a first phase and a first amplitude;
a second radio frequency excitation source for outputting a second excitation current having a second phase and a second amplitude;
a plasma generating element having a first end and a second end for receiving respectively said first excitation current and said second excitation current; and
a control circuit having a control input, said control input receiving a user-variable signal indicative of a desired phase



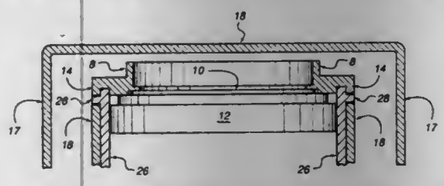
difference between said first phase and said second phase, said control circuit, responsive to said control input, outputs a control signal to one of said first radio frequency excitation source and said second radio frequency excitation source for controlling respectively one of said first phase and said second phase, thereby causing an actual phase difference between said first phase and said second phase to substantially approximate said desired phase difference, whereby said device becomes essentially an inductive coupling device when said first phase and said second phase are opposite in phase, said device becomes essentially a capacitive coupling device when said first phase and said second phase are in phase, said device becomes a combination inductive and capacitive coupling device when said first phase and said second phase differs by an angle that is between in phase and opposite in phase.

5,573,596

ARC SUPPRESSION IN A PLASMA PROCESSING SYSTEM

Gerald Z. Yin, Cupertino, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed Jan. 28, 1994, Ser. No. 188,287
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 E **30 Claims**



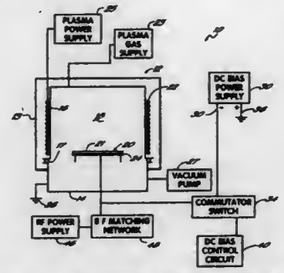
1. An etching system defining a controlled subatmospheric environment containing ionizable gas, and for use with a high frequency power source, comprising:
a cathode within said controlled subatmospheric environment coupled to the high frequency power source and capable of exciting a plasma;
a shield structure disposed adjacent to and about at least a portion of said cathode, wherein said shield structure may be maintained at an electrical potential different from said cathode; and
an insulating structure disposed between said cathode and shield structure,
with any gaps within said insulating structure, or between said insulating structure and said cathode or shield structure, which may define a gas conduction path between said cathode and shield structure being limited over at least a portion of any such path to less than the threshold thickness which would allow the generation of a secondary plasma within such a path.

5,573,597

PLASMA PROCESSING SYSTEM WITH REDUCED PARTICLE CONTAMINATION

Alexander D. Lantsman, Middletown, N.Y., assignor to Sony Corporation, Tokyo, Japan, and Materials Research Corp., Orangeburg, N.Y.

Filed Jun. 7, 1995, Ser. No. 478,950
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 MP **26 Claims**



1. A plasma processing system for processing a substrate comprising:
a processing chamber having a processing space therein for containing a substrate to be processed with a plasma;
an electrical element operable to couple electrical energy into at least a portion of the processing space for generating a plasma therein to process the substrate and operable to interrupt power to the processing space so that the plasma is extinguished;
a plasma energizing source, including an electrical coupling element coupling electrical energy into at least a portion of the processing space to generate a plasma therein when said element is energized, said source being electively operable to de-energize said element and extinguish said plasma;
an electrode positioned inside the chamber and electrically coupled to the substrate;
a DC bias power supply coupled to the electrode for selectively supplying DC power to the electrode to bias the substrate; and
a DC bias control circuit coupled to the DC bias power supply for selectively controlling the biasing of the substrate during a plasma processing cycle, the DC bias control circuit operable to briefly supply DC power to the electrode and substrate, approximately at the time when the coupling element is de-energized, to momentarily DC bias the substrate such that, as the plasma is extinguished, charged contaminant particles suspended within the plasma are repelled away from the biased substrate to prevent contamination of the substrate.

5,573,598

METHOD OF CLEANING PRESSING AND/OR CURING APPARATUS

Roger E. Koch, St. Charles, Ill., assignor to Masonite Corporation, Chicago, Ill.

Filed Mar. 6, 1995, Ser. No. 398,913
Int. Cl.[6] B08B *7/04*
U.S. Cl. 134—7 **16 Claims**

1. A method of cleaning undesirable by-products from a pressing apparatus and/or a curing apparatus used in producing composite cellulosic materials, said method comprising the steps of:
(a) forming a cleaning mat comprising cellulosic material, said mat having a face surface and a back surface and a moisture content of less than about 30 weight percent;
(b) placing said cleaning mat on at least one interior surface of said apparatus;
(c) applying a cleaning composition to at least one substantially entire surface of said cleaning mat that contacts said surface of said apparatus; and
(d) subjecting the cleaning mat to at least one of elevated temperature and pressure in said apparatus to cause undesir-

able by-products to detach from said surface of said apparatus and become adhered to said cleaning mat.

5,573,599

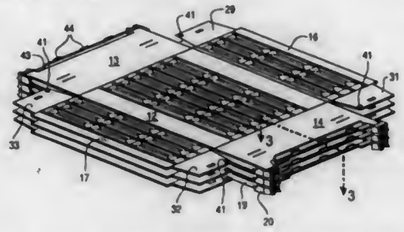
METHOD OF CLEANING A REUSABLE COLLAPSIBLE CONTAINER

Mark O. Ultz, 1050 Crest View Dr., Mountain View, Calif. 94040

Division of Ser. No. 125,488, Sep. 23, 1993, Pat. No. 5,450,962. This application May 12, 1995, Ser. No. 440,527

Int. Cl.[6] B08B *7/00*

U.S. Cl. 134—16 **2 Claims**



1. A method of cleaning a reusable plastic container for commodities, which container has (1) a bottom wall defining a plane and having at least two pairs of opposing edges; (2) a pair of end wall structures, each of which projects in a direction from an associated edge of one of said pair of opposed edges of the bottom wall essentially in the same direction relative to said bottom wall as the other one of said end wall structures; (3) a pair of side wall structures, each of which projects in a direction from an associated edge of the other one of said pair of opposed edges of said bottom wall essentially in the same direction relative to said bottom wall as said end wall structures; and (4) hinge means made of plastic connecting each of said wall structures to its associated bottom edge permitting said wall structure to be moved between a position defining with said wall structures and said bottom wall a container cavity for a commodity, and a flattened position in which said wall structure is adjacent to and essentially parallel to the plane of said bottom wall when said container is flat; said method comprising the steps of:

(a) flattening said container after use of such container to hold a commodity by moving each of said end wall structures to said position in which it is adjacent to and essentially parallel to said plane of said bottom wall;

(b) stacking a plurality of flattened plastic containers; and

(c) cleaning said plurality of reusable plastic containers while said containers are in flattened condition.

5,573,600

SOLAR POWER SYSTEM

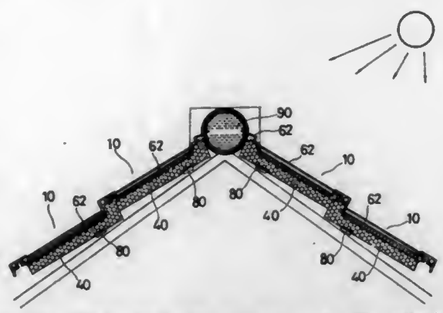
Shao-Kuang Hoang, No. 29, 36th Rd., Kung Yeh Dist., Taichung, Taiwan

Filed Apr. 5, 1995, Ser. No. 417,247

Int. Cl.[6] H01L *31/058;* **E04D** *13/18*

U.S. Cl. 136—248 **5 Claims**

1. A solar power system comprising a plurality of solar collector units connected one another and covered over the roof frame of a building, and a thermal-storage tank connected to said solar collector units to collect heat energy, wherein each solar collector unit comprises a heat-insulative base frame, a transparent, channel-like lateral mounting frame, a heat-absorber plate, a transparent protective cover plate, and a channel-like front mounting frame, said heat-insulative base frame comprising a top receiving chamber having two opposite side grooves bilaterally disposed on the inside, a top convection chamber disposed at one side by said top receiving chamber and having two opposite side grooves bilaterally disposed on the inside, a series of screw holes inside said top



receiving chamber above one side groove, an outer mounting groove at one lateral side thereof adjacent to said top receiving chamber, a plurality of front pin holes on a front side thereof, and a top mounting rail raised from a rear side thereof, said channel-like lateral mounting frame having one lateral side fitted into said outer mounting groove on said base frame and an opposite lateral side made with a series of mounting holes for connection to the screw holes on another solar collector unit, said transparent protective cover plate being inserted into the side grooves on said top receiving chamber, comprising an insulative bottom layer, an electric energy output interface board, and a plurality of photovoltaic cells mounted above said insulative bottom layer and connected to said electric energy output interface board, said heat-absorber plate being inserted into the side grooves on said top convection chamber and having a collector tube connected to said thermal-storage tank, said channel-like front mounting frame having a plurality of upright pins at a back side thereof respectively fitted into said front pin holes on said base frame and a bottom mounting groove for engagement with the top mounting rail of another solar collector unit.

5,573,601

PIN AMORPHOUS SILICON PHOTOVOLTAIC ELEMENT WITH COUNTER-DOPED INTERMEDIATE LAYER

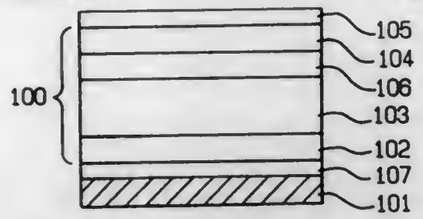
Keishi Saitoh; Tatsuyuki Aoike; Yasushi Fujioka; Masafumi Sano, and Mitsuyuki Niwa, all of Nagahama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 951,046, Sep. 24, 1992, abandoned, which is a continuation of Ser. No. 598,111, Oct. 16, 1990, abandoned. This application Oct. 14, 1994, Ser. No. 323,063

Claims priority, application Japan, Oct. 17, 1989, 1-268257; Oct. 17, 1989, 1-268258; Oct. 17, 1989, 1-268259

Int. Cl.[6] H01L *31/0288;31/0392;31/075*

U.S. Cl. 136—258 **17 Claims**



1. A pin type photovoltaic element comprising an electroconductive substrate and at least a cell comprising a stack of an n-type semiconductor layer composed of a silicon-containing non-single crystal material, a dopant free i-type semiconductor layer composed of a non-single crystal material containing silicon atoms as the matrix and hydrogen atoms and a p-type semiconductor layer composed of a silicon-containing non-single crystal material disposed in this order, said photovoltaic element further comprising an intermediate layer composed of a non-single crystal material containing silicon atoms as the matrix, and at least (a) atoms of an element belonging to Group IIIA of the periodic table in an amount of at least 1000 atomic ppm, (b) atoms of an element belonging to Group VA of the periodic table in an amount of at least 1000 atomic ppm and (c) hydrogen atoms, said intermediate layer being disposed between said i-type semiconductor layer and said p-type semiconductor layer, or between said i-type semiconductor layer and said n-type semiconductor layer, wherein the amount of said hydrogen atoms contained in said intermediate layer is greater than the amount of the hydrogen atoms contained in said i-type semiconductor layer.

5,573,602

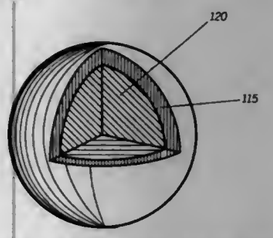
SOLDER PASTE

Kingsbuk Banerji, and Edwin L. Bradley, III, both of Plantation, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 19, 1994, Ser. No. 358,489

Int. Cl.[6] B23K *35/34*

U.S. Cl. 148—24 **20 Claims**



1. A solder paste, comprising solder particles dispersed in a flux and a vehicle, the solder particles having a first solder coating surrounding a nucleus of a compositionally distinct second solder, the first solder coating having a melting temperature that is lower than the melting temperature of the second solder.

5,573,603

METHOD OF MAKING A SOLID MAGNETIC MATERIAL FROM SM_2 FE_{17} N_{3-X} TYPE INTERMETALLIC NITRIDE POWDER

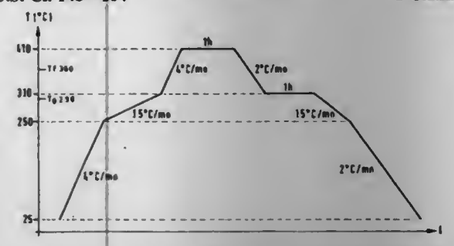
Philippe Mocaer, Jouy en Josas; Patrick Dubots, Neauphle le Chateau, and Christian Belouet, Sceaux, all of France, assignors to Alcatel Alsthom Compagnie Generale d'Electricite, Paris Cedex, France

Filed Mar. 1, 1995, Ser. No. 396,722

Claims priority, application France, Mar. 2, 1994, 94 02389

Int. Cl.[6] H01F *1/057*

U.S. Cl. 148—104 **2 Claims**



1. A method of making a solid magnetic material from Sm_2 Fe_{17} N_{3-x} intermetallic nitride powder, where $0 \leqq x \leqq 1$, comprising the steps of:

forming a mixture by mixing said powder intimately with glass powder having a conversion temperature Tg between 260° C. and 310° C. and a softening temperature Tf less than 400° C., the proportion of glass powder being between 10% and 30% of the total volume;

compressing the mixture to obtain a solid; and

subjecting the solid obtained in a neutral gas atmosphere to a heat cycle during which a temperature not less than Tf+5° C. and not more than 420° C. is maintained for at least one hour.

5,573,604

PROCESS FOR MANUFACTURING A TURBINE BLADE MADE OF AN (ALPHA/BETA)-TITANIUM BASE ALLOY

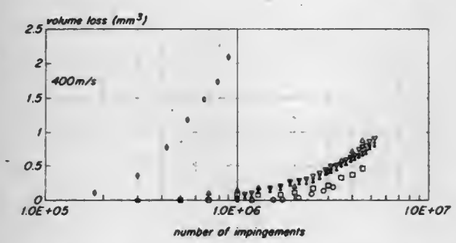
Claus Gerdes, Baden-Rütihof, Switzerland, assignor to ABB Management AG, Baden, Switzerland

Filed Jun. 28, 1995, Ser. No. 496,188

Claims priority, application European Pat. Off., Aug. 17, 1994, 94112802

Int. Cl.[6] C23C *8/20*

U.S. Cl. 148—237 **20 Claims**



1. A process for manufacturing an erosion-resistant turbine blade made of a vanadium-containing (α/β)-titanium base alloy by remelt alloying a blade section, which is situated in the region of the blade tip and comprises the leading edge of the blade, in a boron-, carbon- and/or nitrogen-containing gas atmosphere with the aid of a high-power energy source, a protective layer being formed which is made of a material which is more erosion-resistant than the titanium base alloy and is based on a titanium boride, titanium carbide and/or titanium nitride, which process comprises the remelt alloyed blade section being subjected to a heat treatment at a temperature between 600° and 750° C. with the formation of a vanadium-rich β-titanium phase.

5,573,605

HIGH-TEMPERATURE STEEL FOR BOILER MAKING

Walter Bendick, Duisburg; Klaus Haarmann, Ratingen, and Ingo Von Hagen, Krefeld, all of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Mar. 7, 1995, Ser. No. 399,857

Claims priority, application Germany, Mar. 9, 1994, 44 08 640.7; May 6, 1994, 44 16 794.6

Int. Cl.[6] C22C *38/22;38/24;38/28*

U.S. Cl. 148—334 **1 Claim**

1. A high-temperature steel for boiler making consisting essentially of the following melt analysis (wt. %):

C 0.050 to 0.095%
Si 0.15 to 0.45%
Mn 0.30 to 0.70%
P ≦0.020%
S ≦0.010%
Al ≦0.020%
Cr 2.20 to 2.60%
Mo 0.90 to 1.10%
V 0.20 to 0.30%
Ti 0.05 to 0.10%
B 0.0015 to 0.0070%
N ≦0.01%

the balance of which being comprised of iron and ordinary impurities the steel having been annealed for a period of 30 to 60 minutes at 980° C. to 1,040° C., thereupon cooled in oir, and then tempered for at least one hour at 730° C. to 760° C.

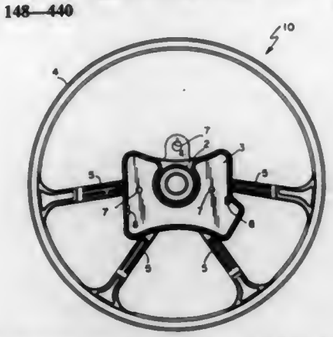
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5,573,606

ALUMINUM ALLOY AND METHOD FOR MAKING DIE CAST PRODUCTS

James M. Evans; Richard J. Hagan, both of Evansville; William C. Routh, Newburgh, all of Ind., and Roland N. Gibbs, Anderson, Ky., assignors to Gibbs Die Casting Aluminum Corporation, Henderson, Ky.

Filed Feb. 16, 1995, Ser. No. 391,402
Int. Cl.[6] C22C *21/06*
U.S. Cl. 148—440 **8 Claims**



1. An aluminum based alloy having an elongation value of at least 18%, said alloy comprising
2.7–4.0% by weight magnesium;
a maximum of 0.6% by weight manganese;
a maximum of 0.6% by weight iron;
a maximum of 0.45% by weight silicon;
a maximum of 0.10% by weight copper;
less than 0.003% by weight beryllium;
the remainder being aluminum.

5,573,607

METAL MATRIX COMPOSITES OF ALUMINUM, MAGNESIUM AND TITANIUM USING SILICON BORIDES

Samuel C. Weaver, Knoxville, Tenn., assignor to Millennium Materials, Inc., Knoxville, Tenn.

Filed May 6, 1995, Ser. No. 467,188
Int. Cl.[6] C22C *21/00*
U.S. Cl. 148—437 **20 Claims**

1. A metal matrix composite formed from a molten metal selected from the group consisting of aluminums magnesium, titanium and mixtures thereof, and particles of a silicon boride composition selected from the group consisting of silicon tetraboride and silicon hexaboride, said silicon boride composition being present in a range of about 0.1 to about 80 wt. % in the metal.

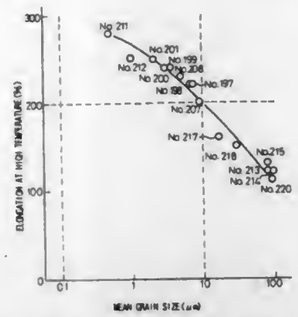
5,573,608

SUPERPLASTIC ALUMINUM ALLOY AND PROCESS FOR PRODUCING SAME

Yoshiharu Miyake, Susono, and Tetsuya Suganuma, Nagoya, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Division of Ser. No. 186,160, Jan. 25, 1994. This application May 25, 1995, Ser. No. 450,554
Claims priority, application Japan, Jan. 27, 1993, 5-11679; Jun. 29, 1993, 5-159348; Jul. 14, 1993, 5-174415; Aug. 23, 1993, 5-207823; Sep. 7, 1993, 5-222377; Sep. 30, 1993, 5-245075; Nov. 30, 1993, 5-300365
Int. Cl.[6] C22F *1/04*
U.S. Cl. 148—552 **9 Claims**

9. A process for producing a superplastic aluminum alloy, comprising a step of melting and casting an aluminum alloy comprising



from 4 to less than 7% by weight of Mg, from 0.1 to 1.0% by weight of one or more elements selected from the group consisting of misch metal (Mm), Zr, V, W, Ti, Nb, Ca, Co, Mo and Ta and the balance being Al and unavoidable impurities, and working the resultant ingot at a temperature of less than 400° C. to give a working ratio of at least 10%, a step of precipitation treating the product at a temperature from 400° to 560° C. for from 4 to 20 hours, and a step of subjecting the resultant product to a second hot working at a temperature of less than 300° C. to give a working ratio of at least 40% in the second hot working alone, so that said superplastic aluminum alloy has a controlled structure which contains from 0.1 to 4.0% by volume fraction of spheroidal precipitates composed of intermetallic compounds of the elements mentioned above and having a particle size from 10 to 100 nm, and which has a mean grain size from 0.1 to 10 μm.

5,573,609

HOT ISOSTATIC PRESSING OF SINGLE CRYSTAL SUPERALLOY ARTICLES

Leslie G. Fritzemeier, Reseda, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Mar. 30, 1987, Ser. No. 33,324
Int. Cl.[6] C21D *1/78*
U.S. Cl. 148—262 **3 Claims**

1. A method for the densification of a shaped nickel base single crystal alloy article comprising the sequential step of:
(a) solution heat treatment of the article to homogenize an alloy microstructure of the article;
(b) transferring the solution beat treated article to a hot isostatic pressing vessel;
(c) beating the vessel and article contained therein to about the center of the solution heat treatment range at about 5,000 psi until article casting pores are removed and internal recrystallization is avoided;
(d) homogenizing and cooling the article while avoiding reopening pores; and
(e) recovering the article so formed.

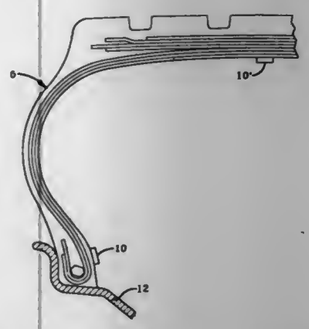
5,573,610

TIRES CONTAINING A MONITORING DEVICE FOR MONITORING AN ENGINEERING CONDITION THEREIN

Russell W. Koch, Hartville, Ohio; John L. Turner, Nashville, Tenn.; Guy J. Walenga, Mt. Juliet, Tenn.; Hiroyoshi Takigawa, Nashville, Tenn., and Keizo Okamoto, Murfreesboro, Tenn., assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Division of Ser. No. 253,885, Jun. 3, 1994, Pat. No. 5,500,065.
This application May 30, 1995, Ser. No. 453,414
Int. Cl.[6] B60C *23/00*; G08C *17/02*; G01D *21/00*
U.S. Cl. 152—152.1 **6 Claims**

1. A tire having means for monitoring at least one engineering condition of the tire, comprising:



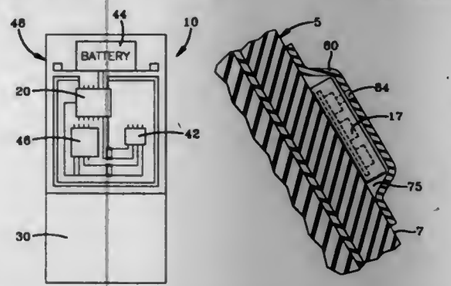
the tire mounted on a rim defining a pressurizable cavity between the tire and said rim;
a monitoring device, said monitoring device in fluid communication with said pressurizable cavity and located on a boundary of said pressurizable cavity so as to minimize stress, strain, cyclic fatigue, impact and vibration, said monitoring device including a battery, a circuit for data band switching, an integrated circuit including means for storing data, at least one sensor for sensing each engineering condition, means for converting each of said sensed conditions to data for storing, means for energizing the circuit for data band switching to activate the battery from a passive mode to an active mode, means for transmitting said data responsive to a signal while the battery is active, and means for energizing the circuit for data band switching to deactivate the battery from the active mode to the passive mode after transmitting said data.

5,573,611

METHOD OF MONITORING CONDITIONS OF VEHICLE TIRES AND TIRES CONTAINING A MONITORING DEVICE THEREIN

Russell W. Koch, Hartville, Ohio; John L. Turner, Nashville, Tenn.; Guy J. Walenga, Mt. Juliet, Tenn.; Hiroyoshi Takigawa, Nashville, Tenn., and Keizo Okamoto, Murfreesboro, Tenn., assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Division of Ser. No. 253,885, Jun. 3, 1991, Pat. No. 5,500,065.
This application May 30, 1995, Ser. No. 453,416
Int. Cl.[6] B60C *23/00*; G08C *17/02*; G01D *21/00*
U.S. Cl. 152—152.1 **10 Claims**



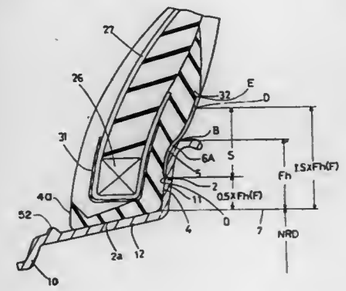
1. An apparatus for monitoring an engineering condition of a tire comprising:
a flexible housing having a hardness of from about 50 to about 95 on the Shore A scale, said housing including a first surface which can be adhered to a second surface located within a pressurizable cavity of a tire so as to minimize stress, strain, cyclic fatigue, impact and vibration; and
a monitoring device positioned within said housing, said monitoring device including a battery having an active mode and a dormant mode, a circuit for data band switching, an integrated circuit including data storage, sensors for sensing the engineering condition, means for converting said sensed condition to data;
means for energizing the circuit for data band switching to activate the battery from the passive mode to the active mode; and
means for transmitting said data responsive to a signal while the power source is active;
means for energizing the circuit for data band switching to deactivate the battery from the active mode to the passive mode after transmitting said data.

5,573,612

TIRE AND RIM COMBINATION WITH EXHAUST MEANS IN TIRE BEAD

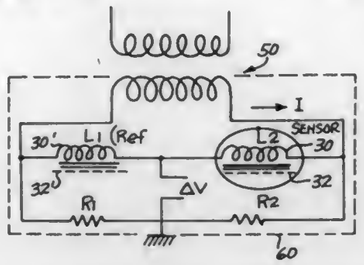
Kenji Tagashira; Yoshiaki Uemura, both of Kobe, and Masanao Yoshida, Akashi, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Continuation of Ser. No. 203,590, Mar. 1, 1994, abandoned, which is a division of Ser. No. 923,621, Aug. 3, 1992, Pat. No. 5,318,089. This application Jul. 27, 1995, Ser. No. 507,936
Claims priority, application Japan, Aug. 9, 1991, 3-224730; Jun. 16, 1992, 4-183250
Int. Cl.[6] B60C *15/02*; *15/024*
U.S. Cl. 152—544 **20 Claims**



1. A tire and rim combination, the tire being mounted on the rim and the rim being a normal rim, the tire comprising a pair of bead parts each having a bead bottom surface seating on a rim seat of the normal rim, a bead outside surface connecting with the bead bottom surface and abutting against a rim flange of the normal rim, and a bead inside surface opposite to the bead outside surface and adjacent the bead bottom surface, the rim seat extending to a rim protrusion on an axially inner side thereof,
said bead outside surface in each bead part having exhaust means extending outwardly in a radial direction from an inner end of the exhaust means so as to form at least one air passage for escape of air between the rim flange and the bead outside surface during rim assembly, the bead outside surface contacting air-tightly with the rim flange from a bead heel to the inner end of the exhaust means,
said inner end of the exhaust means in each bead part being positioned within a region remote from a bead base line by a distance of 0.5 to 1.5 times a separating point height Fh defined as a height in the radial direction from a bead base line to a separating point at which the bead outside surface separates from the rim flange, and
the tire between the bead inside surface and the bead bottom surface in each bead part being spaced from and out of engagement with the rim protrusion.

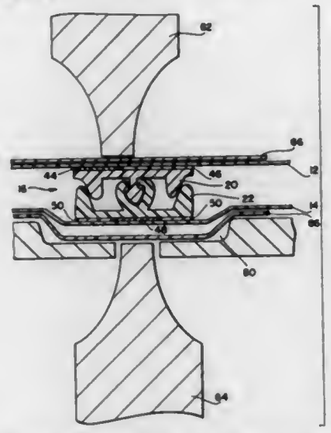
5,573,613
INDUCTION THERMOMETRY
C. David Lunden, 37131-8th Ave. S., Federal Way, Wash. 98003
Filed Jan. 3, 1995, Ser. No. 367,969
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—64 16 Claims



7. In a process for inductively welding thermoplastic pads together using a work coil moving over a bond line between said pads while projecting an alternating magnetic field into said pads and around a foraminous susceptor in said bond line to induce eddy currents in said susceptor that heat said susceptor to soften said thermoplastic material in the faying surfaces at said bond line, the improvement comprising:

regulating said bond line weld temperature using a temperature control system having a dual-function induction-heater/induction thermometer built around a high-power bridge-fed work coil.

5,573,614
METHOD FOR STABILIZING A PLASTIC ZIPPER DURING ATTACHMENT TO A FILM
Paul A. Tilman, New City; Richmond M. Scott, Pleasantville, and Zdenek Machacek, Nanuet, all of N.Y., assignors to Minigrip, Inc., Orangeburg, N.Y.
Continuation-in-part of Ser. No. 249,144, May 25, 1994, Pat. No. 5,462,360, and a continuation-in-part of Ser. No. 337,569, Nov. 10, 1994, which is a continuation-in-part of Ser. No. 174,273, Dec. 28, 1993, Pat. No. 5,368,394. This application Feb. 14, 1995, Ser. No. 388,621
Int. Cl.[6] B31B *1/90;* B65B *33/24*
U.S. Cl. 156—66 7 Claims



1. A method for stabilizing and aligning interlocked male and female profiles of a plastic zipper strip during attachment of the strip to a polymeric film comprising the steps of:

providing a first profile having a first base with first and second surfaces, said first profile having a male interlocking member and a pair of first stabilizers, one on each of two sides of said male interlocking member, on said first surface of said first base thereof;

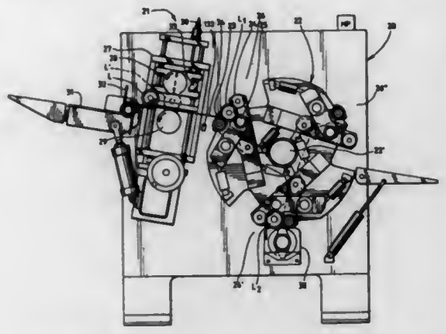
providing a second profile having a second base with first and second surfaces, said second profile having a female interlocking member and a pair of second stabilizers, one on each of two sides of said female interlocking member, on said first surface of said second base thereof;

joining said first and second profiles together by interlocking their respective male and female interlocking members to bring each one of said pair of first stabilizers on said first profile into a position substantially adjacent to one of said pair of second stabilizers on said second profile and to maintain said second surface of said first base substantially parallel to said second surface of said second base; and

contacting each one of said pair of first stabilizers with its respective one of said pair of second stabilizers while attaching said second surfaces of said first and second bases of said first and second profiles, respectively, to polymeric sheet material,

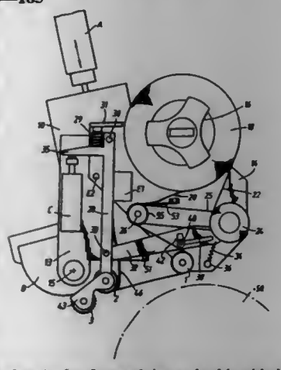
so that said sheet material will be attached thereto in a consistent and uniform manner as a consequence of the substantial parallelism of said second surfaces.

5,573,615
METHOD AND APPARATUS FOR TAIL SEALING OF CONVOLUTELY WOUND WEBS
Richard J. Vigneau, Green Bay; Gerald W. Buxton, Shawano, and Richard C. Dvorak, Green Bay, all of Wis., assignors to Paper Converting Machine Company, Green Bay, Wis.
Filed May 9, 1995, Ser. No. 437,810
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—184 35 Claims



1. A method for sealing the tail of a convolutely wound log comprising the steps of providing a turret rotatably mounted in a frame and having a plurality of circumferentially spaced apart three-roll clusters, feeding a log into a first cluster while positioning an immediately previously fed log with a draped tail in another cluster adjacent glue apparatus and while ejecting an even earlier fed log now rewound from still another cluster.

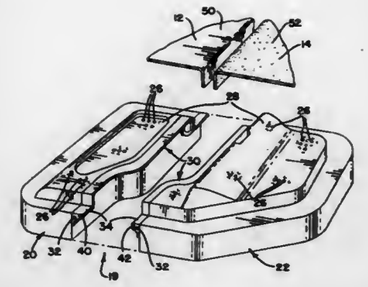
5,573,616
DEVICE AND METHOD FOR APPLYING ADHESIVE TAPE
Jozef De Roeck, St. Katelijne-Waver, Belgium, assignor to Afga-Gevaert N. V., Mortsel, Belgium
Continuation of Ser. No. 175,583, Dec. 30, 1993, abandoned. This application Nov. 6, 1995, Ser. No. 554,393
Claims priority, application European Pat. Off., Jan. 8, 1993, 93200044
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—185 12 Claims



1. A dispensing device for applying a double-sided adhesive tape around the periphery of a winding core of a web processing machine which is rotatable in a given direction, which device comprises a support means adapted to be moved bodily towards and away from an operative position adjacent the periphery of the winding core, support positioning means for moving said support means bodily towards and away from said operative position, means on said support means for holding a supply roll of double-sided adhesive tape for unwinding of the tape therefrom, first and second applicator rollers rotatively carried on said support means for contact when said support means is in said operative position with the core periphery at circumferentially spaced apart points thereon, said tape when said rollers are moved to said operative position extending from said supply roll to said first roller and then to said second roller and pressed thereby against said core periphery, with said second roller situated downstream of said first roller in the direction of core rotation, said second applicator roller being mounted on said support means for limited independent bodily movement relative to the first applicator roller in a direction generally tangential to said core periphery at the point of contact thereon of said second roller, and actuator means operative to move said second roller away from said first roller in said generally tangential direction a sufficient distance to separate said second applicator roller from said core periphery and from said tape while the tape is held against the core periphery by said first roller, whereby the adhesive adherence of the tape to the second roller exerts on the tape during the independent movement of the second roller a substantially tensile force promoting continued adhesion of the tape to the core periphery during separation of the tape from said second applicator roller.

5,573,617
METHOD OF MAKING A TWO-TONE INTERIOR VEHICLE TRIM PANEL SKIN
Donald L. Franck, Warren; Thomas L. Richter, Sterling Heights; Manhar K. Sheth, Troy; Thomas C. Mack, Northville, all of Mich., and Ballard Parsons, Jr., Franklin, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 13, 1995, Ser. No. 421,171
Int. Cl.[6] B29C *51/10;65/02;65/18;65/74*
U.S. Cl. 156—196 3 Claims

1. A method for making a two-tone vinyl skin cover for an automotive interior trim panel comprising:



heating a first member vinyl skin to a working temperature;

heating a second member vinyl skin to a working temperature;

stretching the first vinyl skin over a first male vacuum mold, the first mold having a first welding blade along a translationally separable part line;

applying a vacuum via the first mold to the first vinyl skin;

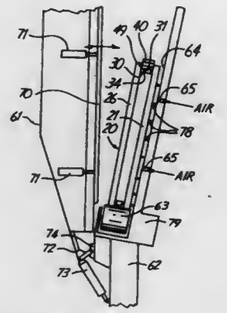
stretching the second vinyl skin over a second male vacuum mold, the second male mold having a second welding blade along a translationally separable part line aligned with the translationally separable part line of the first mold;

applying a vacuum via the second mold to the second vinyl skin;

heating the first and second vinyl skins through the first and second welding blades; and

abutting the first and second welding blades together under a pressure force to heat weld the first and second vinyl skins together until such time as the first and second vinyl skins are welded to one another while maintaining the vacuum applied thereto.

5,573,618
METHOD FOR ASSEMBLING CUSTOM GLASS ASSEMBLIES
Eric W. Rueckheim, Muscoda, Wis., assignor to Cardinal IG Company, Minnetonka, Minn.
Filed Dec. 23, 1994, Ser. No. 363,250
Int. Cl.[6] B32B *17/06;31/16;* C03C *27/06*
U.S. Cl. 156—104 6 Claims



1. A method for assembling a small number of custom multipane glass assemblies and filling the assemblies with an insulating gas, comprising:

providing an assembly line having a lay-up station, a gas exchange chamber and roller means for transporting a glass assembly from the lay-up station to the gas exchange chamber, the gas exchange chamber having a support surface to receive the glass assembly and at least one movable platen;

providing first and second glass panes, each pane having a bottom edge, a top portion, an interior surface and an exterior surface, a spacer, a resilient member having a width larger than the width of the spacer and a supply of a sealant;

partially assembling the glass assembly by adhering the panes to the spacer while maintaining a gap between a portion of the spacer and one of the panes, and positioning the resilient member between the panes outwardly of the spacer to maintain the gap;

translating the partially assembled glass assembly into the gas exchange chamber;

drawing a vacuum within the gas exchange chamber so as to remove substantially all of the air within an interpane space through the gap;

admitting to the gas exchange chamber a gas having a coefficient of thermal conductivity lower than that of air, the gas filling the interpane space;

moving the at least one platen within the gas exchange chamber so as to compress the resilient member and sealingly adhere the interior surface of the second pane to the spacer, thereby eliminating the gap and substantially sealing the interpane space; and

removing the resilient member from the glass assembly.

5,573,619

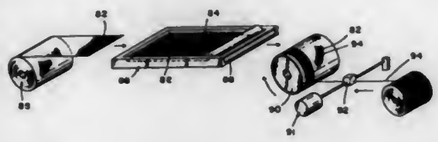
METHOD OF MAKING A COATED ABRASIVE BELT WITH AN ENDLESS, SEAMLESS BACKING

Harold W. Benedict, Cottage Grove; Diana D. Zimny, St. Paul, and Donna W. Bange, Eagan, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 919,541, Jul. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 811,784, Dec. 20, 1991, abandoned. This application Oct. 29, 1993, Ser. No. 145,773

Int. Cl.[6] B65H *81/00*

U.S. Cl. 156—137 **32 Claims**



1. A method for preparing a coated abrasive belt having an endless, seamless backing; the method comprising:

(a) providing a support structure having an outer periphery

(b) preparing a loop of liquid organic polymeric binder material having nonmetallic fibrous reinforcing material engulfed therein, in extension around the outer periphery of a support structure, comprising winding at least two fibrous reinforcing strands of at least two different nonmetallic compositions around the outer periphery of the support structure;

(c) solidifying the liquid organic polymeric binder material to form a flexible, solidified, endless, seamless backing loop having about 40–99 wt-% solidified organic polymeric binder material with fibrous reinforcing material engulfed therein, generally parallel side edges, and inner and outer surfaces having generally no fibrous reinforcing material protruding therefrom;

(d) applying an abrasive coating to the backing loop; and

(e) moving the backing loop from the support structure.

5,573,620

METHOD OF MANUFACTURING CERAMIC MULTILAYER CIRCUIT COMPONENT AND HANDLING APPARATUS FOR CERAMIC GREEN SHEET

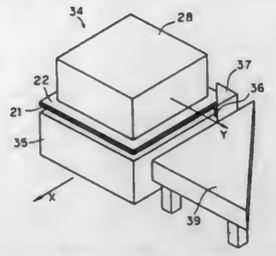
Norio Sakai; Tsuyoshi Saitoh; Yoshikatsu Nakayama, and Akihiko Kamada, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Division of Ser. No. 182,286, Jan. 14, 1994, Pat. No. 5,466,330. This application Oct. 17, 1994, Ser. No. 324,342

Claims priority, application Japan, Jan. 14, 1993, 5-4755

Int. Cl.[6] B32B *31/04*

U.S. Cl. 156—249 **9 Claims**



1. A method of manufacturing a ceramic multilayer circuit component, comprising the steps of:

forming a ceramic green sheet on a carrier film;

applying conductor paste for supplying a conductive path to said ceramic green sheet;

then attracting said ceramic green sheet on said carrier film by an attracting head;

then separating said carrier film from said ceramic green sheet so that the as-separated portion gradually extends over the entire region from one end of said ceramic green sheet; and

then moving said attracting head, thereby stacking said ceramic green sheet successively with other ceramic green sheets

wherein said ceramic green sheet is in the form of a rectangle, said step of separating said carrier film being carried out diagonally or substantially diagonally from one corner portion of said ceramic green sheet.

5,573,621

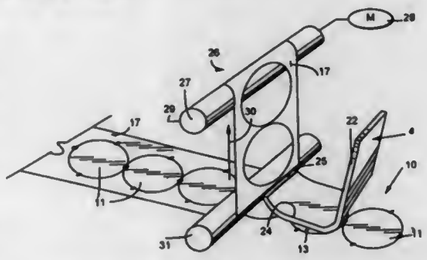
NON-QUADRATE LINERLESS LABEL CONSTRUCTION, METHODS OF USE AND APPLICATION

Jeffrey J. Boreali, North Tonawanda, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Nov. 30, 1994, Ser. No. 351,221

Int. Cl.[6] B65B *1/02*

U.S. Cl. 156—256 **14 Claims**



1. A method of acting on an individual non-quadrate linerless label in a string of in-line non-quadrate pressure sensitive adhesive linerless labels connected together, and to a surrounding matrix, by ties, using a burster having a first pair of low speed rolls, and a second pair of high speed rolls, with a stationary blade between the roller pairs, comprising the steps of:

(a) moving the string of non-quadrate pressure sensitive adhesive linerless labels, in a first direction, toward the first pair of rolls;

(b) separating the leading labels from the matrix;

(c) continuously automatically pulling the matrix in a second direction, distinct from the first direction, while physically engaging the label string so that the labels are not pulled with the matrix but instead are fed to the first pair of low speed rolls separated from the matrix;

(d) feeding the labels, one at a time, in sequence from the low speed rolls to the high speed rolls so that a tie connecting two consecutive labels of the string is positioned between the pairs of rolls;

(e) acting on a leading label of the string with the high speed rolls to cause the string to be tensioned and the tie between the roll pairs to engage the stationary blade and burst; and

(f) discharging the leading label, burst from the string in step (e), from the high speed rolls.

5,573,622

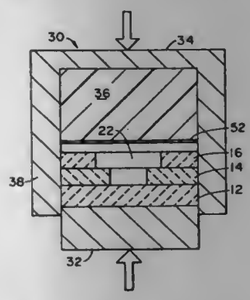
APPARATUS FOR FABRICATING MULTILAYER STRUCTURES

Allan R. Hass, San Diego, Calif., and Joseph M. Dynys, New Kensington, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 203,840, Feb. 28, 1994, which is a continuation of Ser. No. 897,791, Jun. 12, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 465,017

Int. Cl.[6] B32B *31/20*

U.S. Cl. 156—289 **12 Claims**



1. A press unit comprising:

an upper platen and lower platen; and

a block of resilient, complaint material having a thickness greater than a cavity in an object to be pressed, said resilient, compliant material located between said upper and lower platens, said resilient, compliant material being capable of conforming to the shape of said cavity.

5,573,623

APPARATUS FOR CONTACTLESS REAL-TIME IN-SITU MONITORING OF A CHEMICAL ETCHING PROCESS

Steven G. Barbee, Dover Plains; Tony F. Heinz, Chappaqua; Leping Li, Poughkeepsie, and Eugene H. Ratzlaff, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 269,860, Jun. 30, 1994, Pat. No. 5,480,511. This application Sep. 20, 1995, Ser. No. 531,259

Int. Cl.[6] G01N *27/00*

U.S. Cl. 156—345 **38 Claims**

1. A contactless in-situ chemical etch monitor for providing an indication of a prescribed condition of an etching process during etching of a workpiece with a wet chemical etchant, said monitor comprising:

a) at least two toroidal windings, wherein each toroidal winding has a principal axis through a respective hollow center portion thereof, and further wherein one of said at least two toroidal windings comprises a generator winding and wherein another of said at least two toroidal windings comprises a detector winding;

b) means for positioning said at least two toroidal windings in the wet chemical etchant to be proximate to but not in contact with the workpiece; and

c) means for monitoring an electrical characteristic of the workpiece and the wet chemical etchant between said at least two toroidal windings, wherein a prescribed change in the electrical characteristic is indicative of the prescribed condition of the etching process.

5,573,624

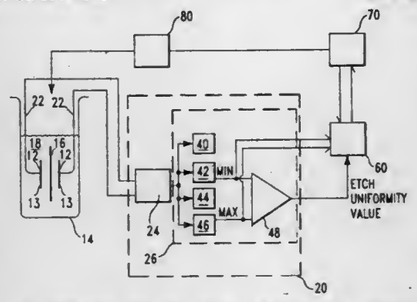
A CHEMICAL ETCH MONITOR FOR MEASURING FILM ETCHING UNIFORMITY DURING A CHEMICAL ETCHING PROCESS

Steven G. Barbee, Dover Plains; Tony F. Heinz, Chappaqua, both of N.Y.; Yiping Hsiao, San Jose, Calif.; Leping Li, Poughkeepsie; Eugene H. Ratzlaff, Hopewell Junction, both of N.Y., and Justin W. Wong, South Burlington, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 985,413, Dec. 4, 1992, Pat. No. 5,338,390. This application Jun. 30, 1994, Ser. No. 269,861

Int. Cl.[6] C23F *1/02*

U.S. Cl. 156—345 **10 Claims**



1. A contactless real-time in-situ chemical etch monitor for providing an indication of a particular condition of an etching process during etching of at least one wafer in a wet chemical etchant bath, said monitor comprising:

a) two conductive electrodes;

b) a means for positioning said two conductive electrodes inside the wet chemical etchant bath proximate to but not in contact with the at least one wafer;

c) a means for monitoring an electrical characteristic between the two electrodes as a function of time in the etchant bath of the at least one wafer, wherein a particular change in the

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electrical characteristic is indicative of a particular condition of the etching process;

d) a means for detecting a minimum value of said electrical characteristic during etching;

e) a means for determining the time at which the minimum value of said electrical characteristic is measured;

f) a means for detecting a maximum value of said electrical characteristic during etching, which maximum value occurs after the onset of etching;

g) a means for determining the time at which the maximum value of said electrical characteristic is measured; and

h) a means for comparing the time of said minimum value and the time of said maximum value and determining a film etching uniformity value therefrom.

5,573,625

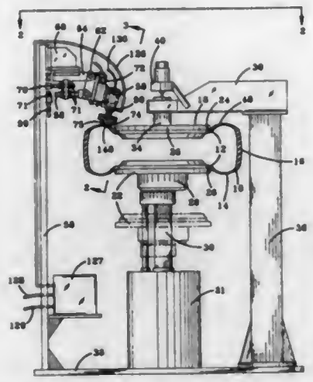
APPARATUS FOR APPLYING POLYURETHANE LAYER TO TIRE SIDEWALL

John A. Lovell, Munroe Falls; Charles L. Makinson, North Canton; Charles J. Pearson; Robert K. Rossi, both of Akron, all of Ohio, and David A. Du Vernay, Algonac, Mich., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 57,075, May 5, 1993, abandoned, which is a division of Ser. No. 690,646, Apr. 24, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 461,094

Int. Cl.[6] B29D *30/72*; **B05D** *1/26*

U.S. Cl. 156—356 **6 Claims**



1. Apparatus for applying a sidewall stripe to a sidewall surface in a circumferentially continuous groove in a sidewall of a tire comprising:

a) a support for holding said tire with said groove in a generally exposed position;

b) means to control the shape of said tire;

c) a nozzle mounted over said groove on a frame supported for radial movement in a radial positioning assembly for flowing a productive urethane composition fluid sidewall material into said groove;

d) means to provide adjustment of the relative angular position between said nozzle and said sidewall surface;

e) means for moving said nozzle and said tire closer together for moving said nozzle into a predetermined position in close proximity with said groove and for separating said nozzle and said tire to remove said nozzle from close proximity with said groove, and nozzle position control means including said frame supported for radial movement responsive to the position of at least one side of said groove to track the position of said nozzle relative to said groove;

f) height control means connected to said nozzle and responsive to the distance between said nozzle and said sidewall surface for maintaining a predetermined distance between said nozzle and said sidewall;

g) means for mixing a diisocyanate prepolymer with a compounded polyol base to produce a productive urethane composition having a viscosity of from about 5,000 to about 25,000 centipoise at a temperature of 120° F. (49° C.).

h) means to communicate said productive urethane composition fluid sidewall material to said nozzle;

i) means to continuously flow said productive urethane composition fluid sidewall material into said groove from said nozzle during relative movement of said nozzle and said tire over the circumferential length of said groove; and

j) means to terminate flow of said productive urethane composition fluid sidewall material to said groove and joining the ends to form an uncured sidewall stripe after application over the length of said groove.

5,573,626

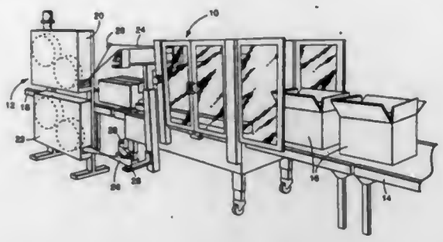
TAPE SUPPLY AND APPLICATOR SYSTEM INCLUDING A TAPE SPLICING MECHANISM

Steven J. Rossini, Hugo; Keith T. Pinckney, Bloomington; Karl M. Kropp, St. Paul, all of Minn., and Robert A. Luhman, City of Deer Park, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 437,516, May 9, 1995, abandoned, which is a continuation of Ser. No. 67,240, May 26, 1993, abandoned. This application Oct. 18, 1995, Ser. No. 544,856

Int. Cl.[6] B32B *31/00*; **B65H** *26/00*

U.S. Cl. 156—361 **15 Claims**



1. A tape applicator machine having an indexing demand cycle for tape and a continuous tape supply apparatus for supplying adhesive tape to said tape applicator machine in accordance with a tension profile of the applicator machine characterized by a fluctuating tension within the adhesive tape during its demand cycle including intermittent rest periods between periods of demand, said continuous tape supply apparatus comprising:

a) a support;

b) a first tape source station provided on said support for receiving a first tape supply source and from which tape of the tape supply source can be dispensed;

c) a second tape source station provided on said support for receiving a second tape supply source and from which tape of the tape supply source can be dispensed;

d) guide means for guiding tape from said first and second tape source stations to be selectively supplied from the continuous tape supply apparatus to said tape applicator machine;

e) a splicing station provided on said support and along said guide means for splicing tape from said second tape source station to tape from said first tape source station so as to change the supply of tape from the first tape supply source to the second tape supply source;

f) control means for causing the splicing station to change the supply of tape from the first tape supply source to the second tape supply source upon the occurrence of a determined event; and tension control means for providing the tape from the continuous tape supply apparatus to said tape applicator machine at a substantially even tension over a demand cycle of said tape applicator machine under the indexing demand for tape from said tape applicator machine.

5,573,627

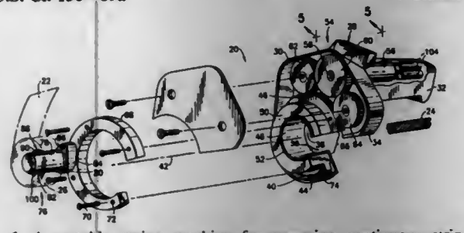
PORTABLE TAPING MACHINE

Cuong T. Vuong, Fountain Valley, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Feb. 15, 1995, Ser. No. 389,535

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—392 **6 Claims**



1. A portable taping machine for wrapping continuous strip material onto and around an elongated article comprising:

a housing having an outer surface and including handle means adapted to be gripped by an operator and defining an internal cavity for reception therein of the elongated article and a passageway extending between said outer surface and the internal cavity; taping head means mounted on said housing for rotation relative thereto about a first longitudinal axis extending through the internal cavity, said taping head means being of generally C-shaped configuration having a peripheral discontinuity for lateral reception therethrough of the elongated article into the internal cavity when the peripheral discontinuity is coextensive with the passageway in said housing, said taping head means preventing entry of the elongated article into the internal cavity or egress of the elongated article from the internal cavity when the peripheral discontinuity is substantially non-coextensive with the passageway in said housing;

spindle means on said taping head means for removable reception thereon of a supply roll of the continuous strip material, said spindle means having a second longitudinal axis generally parallel with and spaced from the first longitudinal axis, said spindle means including an elongated shaft for releasable reception thereon of the supply roll extending between a base end and a free end, an integral eccentric lobe at said base end extending laterally therefrom, and pin means for pivotally attaching said eccentric lobe to said taping head means enabling movement of the second longitudinal axis relative to the first longitudinal axis to accommodate a plurality of supply rolls having a range of diameters and to accommodate the reduction in the diameter of the supply roll as the strip material is wrapped onto the elongated article; and

drive means for rotating said taping head means about the first longitudinal axis after an end of the continuous strip material has been initially attached to the elongated article to thereby wrap a finite length the elongated article as the operator simultaneously advances said taping machine along the length of the elongated article.

5,573,628

DEVICE FOR APPLYING SEALING LABELS TO CONTAINERS

Fulvio Boldrini, Ferrara, Italy, assignor to G. D Societa Per Azioni, Bologna, Italy

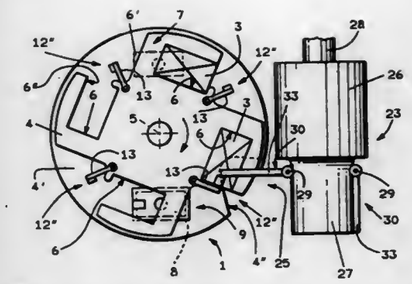
Filed Dec. 15, 1994, Ser. No. 356,873

Claims priority, application Italy, Dec. 23, 1993, B093A0518

Int. Cl.[6] B65C *9/36*

U.S. Cl. 156—483 **15 Claims**

1. A device for applying sealing labels to containers; a portion of each said container (**3**) being defined by two substantially parallel faces (**10**), and by a further face (**11**) connecting said two faces (**10**); said device comprising conveying means (**4**) for feeding containers (**3**) to a labelling station (**25**), said conveying means (**4**) comprising a rotary conveyor (**4**) having a number of angularly equidistant seats (**6**) each adapted to house a respective said container (**3**) with said further face (**11**) facing downstream in relation to a traveling direction of the conveyor (**4**); supply means (**23**) for feeding labels (**19**) to said labelling station (**25**), said supply means comprising a rotary supporting element (**27**) rotating about an axis (**23'**) perpendicular to a rotation axis of said rotary conveyor (**4**), and retaining means (**30, 34**) for retaining two opposite end portions of at least one said label (**19**); and actuating means (**39**) for moving said retaining means (**30, 34**) between a position, assumed at least at said labelling station (**25**), of interference with the path of each container (**3**) conveyed by said conveying means (**4**), so as to adhere respective portions of said label (**19**) to corresponding portions of said parallel faces and said further face (**10, 11**), and a position of non-interference with said path.



5,573,629

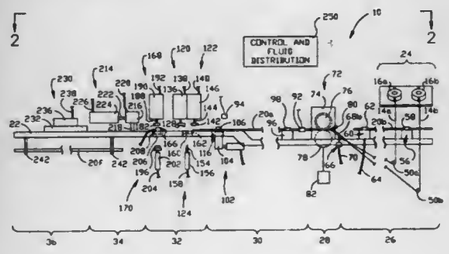
TAPE APPLICATION APPARATUS

Reinhold Rock, Westlake, and Josef Schuessler, Brecksville, both of Ohio, assignors to Herd Manufacturing, Inc., Cleveland, Ohio

Filed Aug. 3, 1994, Ser. No. 285,649

Int. Cl.[6] B32B *31/18*

U.S. Cl. 156—522 **26 Claims**



21. An apparatus for cutting a continuous strip of adhesive tape which is attached to first and second spaced apart workpieces, said apparatus comprising:

first stop means;

first mover means for moving the first and second workpieces which are interconnected by a portion of the continuous strip of tape until an end of the second workpiece engages said first stop means;

first sever means for severing the continuous strip of tape adjacent to the end of the second workpiece;

second stop means;

second mover means for moving the first workpiece until an end of the first workpiece adjacent to the portion of the tape engages said second stop means; and

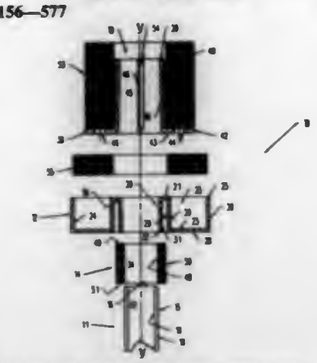
second sever means for severing the tape associated with the first workpiece such that an affixed portion of the tape is separated from a tail portion which extends beyond the first work piece.

VOL 1192 ISS 2 NO 12 1996 UMI

5,573,630
WALLPAPER APPLICATOR

Judy L. Edney; Dennis J. Edney; Clayton Cottrell, and Louise Cottrell, all of Morgantown, N.C., assignors to Shur-Line Inc., Lancaster, N.Y.

Filed Aug. 15, 1995, Ser. No. 515,375
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—577 **9 Claims**

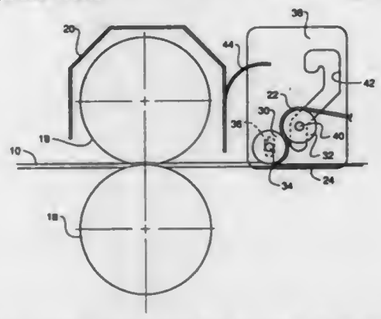


1. An applicator for rolled wallpaper, comprising:
an elongated shaft;
an annular cup-shaped member movably mounted on said shaft and functioning as a reservoir for excess fluid from said wallpaper;
a spindle journaled on said shaft, said spindle having a tubular portion surrounding said shaft and a flange portion extending outwardly therefrom, said tubular portion having a longitudinal slit; and
abutment means positioned on said shaft preventing movement of said cup-shaped member along said shaft in one direction;
whereby said wallpaper is adapted to rest on said spindle flange wound about said tubular portion, and said wallpaper has an end placed through said slit to reduce slippage of said wallpaper while being dispened, and whereby excess fluid from said wallpaper collects in said cup-shaped member.

5,573,631
MANUALLY-OPERABLE DE-LAMINATOR APPARATUS

Colin C. Campbell, Rochester, N.Y., and Lawrence P. Pate, Amersham, England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 1, 1994, Ser. No. 347,927
Int. Cl.[6] B32B *35/00*
U.S. Cl. 156—583.1 **11 Claims**

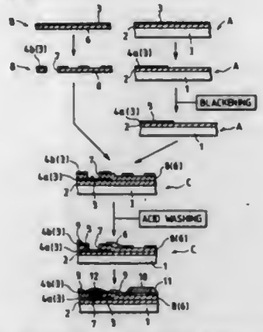


1. A laminating system for bonding, to receiver stock, a lamination sheet of the type including a carrier and a material to be applied to the receiver stock, and for subsequently de-laminating the carrier from the receiver stock after the material has been applied to the receiver stock, said laminating system comprising:
a fuser through which a sandwich of receiver stock and lamination sheet, with material to be applied to the receiver stock between the carrier of the lamination sheet and the receiver stock, is fed to apply the material to the receiver stock, the leading edge of the carrier being separable from the receiver stock as the leading edge of the sandwich emerges from the fuser; and
a pair of guide members through which a first portion of the carrier may be directed as the sandwich emerges from the fuser to direct the carrier away from the receiver stock so that operator attention is thereafter not needed to separate the remainder of the carrier and receiver stock, said guide members being configured to form the carrier into a generally S-shaped curve after it is stripped from the receiver stock, whereby the separated carrier continues away from the guide members along a path generally parallel to the path of the receiver stock.

5,573,632
MULTILAYER PRINTED-CIRCUIT SUBSTRATE, WIRING SUBSTRATE AND PROCESS OF PRODUCING THE SAME

Masakazu Shimizu; Hiroshi Shimamura, and Hidetaka Kumota, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Division of Ser. No. 482,921, Feb. 22, 1990. This application Jun. 5, 1995, Ser. No. 460,885
Claims priority, application Japan, Feb. 23, 1989, 1-44975; Mar. 30, 1989, 1-76635; Sep. 29, 1989, 1-252175
Int. Cl.[6] B32B *31/12;31/14*
U.S. Cl. 156—629.1 **9 Claims**

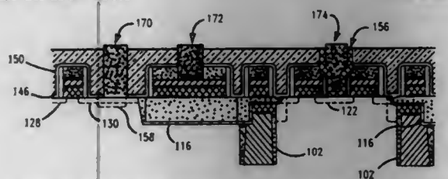


1. A process of producing a multilayer printed-circuit substrate, comprising the steps of:
forming a first laminate having a substrate sheet and a metallic electrically conductive circuit laminated on an upper surface of said substrate sheet and etched so as to form a predetermined circuit pattern;
forming a second laminate having a half-hardened insulating resin sheet showing a stable half-hardened condition and a metallic electrically conductive circuit laminated on an upper surface of said half-hardened insulating resin sheet and etched so as to form a predetermined circuit pattern;
stacking said second laminate on said first laminate, adhering said first and second laminates together by application of heat and pressure, and hardening said half-hardened insulating resin sheet of said second laminate; and
forming an electrically conductive portion for electrically connecting said electrically conductive circuit of said second laminate to said electrically conductive circuit of said first laminate by filling a throughhole formed in said second laminate with conductive material, whereby said electrically conductive circuits are laminated together,
wherein, before the stacked said first and second laminates are adhered together by application of heat and pressure, said electrically conductive circuit of said first laminate is subjected to blackening treatment so that a blackening-treated film is formed on the surface of said electrically conductive circuit of said first laminate; and
after said first and second laminates are adhered together and before said throughhole is filled with said conductive material, said blackening-treated film exposed at a bottom of said throughhole is removed by acid washing.

5,573,633
METHOD OF CHEMICALLY MECHANICALLY POLISHING AN ELECTRONIC COMPONENT

Jeffrey P. Gambino, Gaylordsville, Conn.; Mark A. Jaso, Yorktown Heights, N.Y., and Larry A. Nesbit, Wallingford, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 14, 1995, Ser. No. 557,225
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—636.1 **11 Claims**

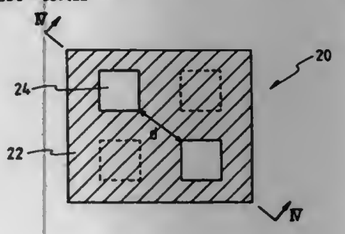


1. A method of forming interlevel studs in an insulating layer on a semiconductor wafer, said studs being of at least two different materials, said method comprising the steps of:
a) forming a layer of insulating material on a semiconductor wafer;
b) planarizing said insulating layer;
c) forming a first group of vias through said insulating layer;
d) forming a layer of a first conducting material on said insulating layer;
e) forming a second group of vias through said first conducting material layer and said insulating layer;
f) forming a layer of a second conductive material, said layer of second conducting material filling said first and second group of vias;
g) removing said second conductive layer to expose said first conductive material layer, such that said second conductive material remains only in said first and second via groups; and,
h) removing said exposed first conductive material layer.

5,573,634
METHOD FOR FORMING CONTACT HOLES OF A SEMICONDUCTOR DEVICE

Young M. Ham, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co. Ltd., Kyoungki-do, Rep. of Korea

Filed Dec. 22, 1994, Ser. No. 362,145
Claims priority, application Rep. of Korea, Dec. 23, 1993, 93 29273
Int. Cl.[6] H01L *21/47*
U.S. Cl. 156—659.11 **1 Claim**

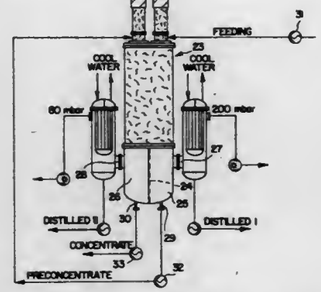


1. A method for forming a plurality of contact holes in a semiconductor device, the contact holes being arranged in an array of rows and columns comprising diagonal rows of contact holes, wherein the spacing of the contact holes is such that during a photolithography step used to expose a photoresist film at the positions of the contact holes constructive interference occurs and causes a relative maximum of light intensity which exposes portions of the photoresist layer between the contact holes, comprising the steps of:
forming an insulating film over a semiconductor substrate;
coating the photoresist film over the insulating film;
exposing the photoresist film to light using a first exposure mask having windows arranged such that portions of the photoresist film corresponding to positions of the contact holes arranged in diagonal rows which are not adjacent each other are exposed to the light during the photolithography step;
exposing the photoresist film to the light using a second exposure mask having windows arranged to expose the photoresist film at the remaining positions of the contact holes using the photolithography step;
removing the exposed portion of the photoresist to expose the contact hole positions; and
removing the insulating layer at the contact hole positions, thereby forming the contact holes.

5,573,635
THIN FILM EVAPORATING DEVICE

Rolf Van Der Piepen, Butzbach, Germany, assignor to Buss AG, Prattein, Switzerland

Filed Jun. 3, 1994, Ser. No. 253,338
Claims priority, application Germany, Mar. 15, 1993, 9303760 U
Int. Cl.[6] B01D *1/06;1/22*
U.S. Cl. 159—6.1 **5 Claims**



1. A thin film evaporating device comprises a housing having a sidewall, a top wall and a bottom wall, said sidewall, top wall and bottom wall together defining a space; a plurality of elongated tubes located within said space and extending from said top wall to said bottom wall; shaft means having a plurality of radially extending vanes rotatably mounted within each of said plurality of elongated tubes; feed inlet means and withdrawal outlet means associated with each of said plurality of elongated tubes for feeding product to be concentrated to said tubes and removing concentrate and vapor from said tubes; separating means downstream of said withdrawal outlet means and at least one collection means in said separating means for receiving said concentrate and vapor; first and second means associated with said separating means for removing said concentrate and said vapor respectively; and means for feeding a flowable heating medium to and from said space for heating said plurality of tubes; at least one partition subdividing the separating means into a plurality of separate subspace means each receiving concentrate and vapor from one of said plurality of tubes, each of said subspace means has a first outlet and a second outlet above the first outlet and wherein the first outlet of one of the subspace means from one of the tubes is communicated with the

inlet of another of said plurality of tubes so as to connect the plurality of elongated tubes in series.

5,573,636

RECYCLABLE SUPPORT MATERIAL

Wieland Sack, Bissendorf; Karl-Hermann Krauss, Leipzig; Reiner Mehnert, Markkleeberg, and Peter Klenert, Leipzig, all of Germany, assignors to Felix Schoeller jr Papierfabriken GmbH & Co. KG, Osnabruck, Germany

Filed Feb. 1, 1994, Ser. No. 190,651

Claims priority, application Germany, Feb. 1, 1993, 43 02 678.8

Int. Cl.[6] D21C *5/02*

U.S. Cl. 162—5 **14 Claims**



1. A recyclable support material comprising a cellulose containing, generally flat carrier and at least one polymeric water resistant layer, said layer comprising at least one radiation cured bonding agent, and a solid material in said layer which is substantially insoluble in said bonding agent, said solid material is present in an amount of 3–80% by weight of the polymeric water resistant layer, and wherein said solid material is selected from the group consisting of starch, starch derivatives, gelatin, microcrystalline-cellulose, cellulose ether, mannogalactane, polyvinyl alcohol, polyacrylamide, polyvinylidene chloride, polyolefin wax, polyamide, melamine resin, urea resin, acrylate polystyrene and inorganic pigments completely encapsulated with at least one of said solid materials or silicones.

5,573,637

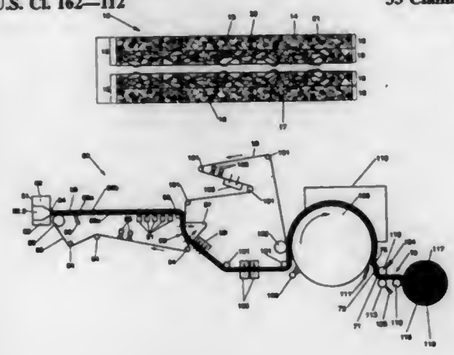
TISSUE PAPER PRODUCT COMPRISING A QUATERNARY AMMONIUM COMPOUND, A POLYSILOXANE COMPOUND AND BINDER MATERIALS

Robert S. Ampulski, Fairfield; Joel K. Monteith, Bethel; Ward W. Ostendorf; Dean Van Phan, both of West Chester, and Paul D. Trokhan, Hamilton, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 19, 1994, Ser. No. 359,124

Int. Cl.[6] D21H *21/22;17/13*

U.S. Cl. 162—112 **33 Claims**



1. A multi-layered tissue paper product comprising

a) paper making fibers;

b) from about 0.01% to about 3.0% of a quaternary ammonium compound;

c) from about 0.01% to about 3.0% of a polysiloxane compound; and

d) from about 0.01% to about 3.0% of binder materials, either wet strength binders and/or dry strength binders,

wherein said multi-layered tissue paper product of comprises at least two plies, wherein each of said plies comprises at least two superposed layers, an inner layer and an outer layer contiguous with said inner layer,

said plies being oriented in said tissue so that said outer layer of each ply forms one exposed surface of said multi-layered tissue and each of said inner layers of said plies are disposed toward the interior of said facial tissue paper web,

wherein the majority of the quaternary ammonium compound and the majority of the polysiloxane compound is contained in at least one of said outer layers.

5,573,638

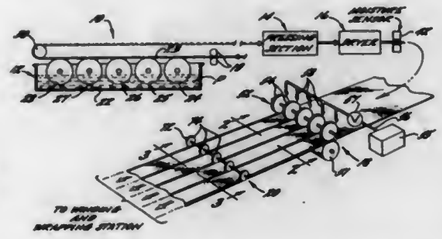
PAPERBOARD FOR MANUFACTURING SINGLE-LAYER PAPERBOARD TUBE-FORMING PLIES

George E. Lennon, Newport, Tenn.; Jerry S. Hall, Hartsville, S.C.; Kevin R. Merritt, Hartsville, S.C., and Henry L. King, Hartsville, S.C., assignors to Sonoco Products Company, Hartsville, S.C.

Filed Jun. 27, 1994, Ser. No. 266,033

Int. Cl.[6] D21F *11/08;11/04*

U.S. Cl. 162—123 **11 Claims**



1. A method of producing an elongated paperboard sheet for forming a plurality of continuous tube-forming paperboard plies comprising the steps of:

forming at least one elongated full width paperboard layer of substantially constant thickness and having a first predetermined width;

forming a second layer comprising a substantially planar array of parallel, spaced-apart elongated narrow paperboard webs, each having a second predetermined width less than that of the width of the full width paperboard layer;

superposing said full width paperboard layer and said array of narrow paperboard webs in intimate face to face contact to form a paperboard sheet comprising integrally formed thin sections extending longitudinally along the sheet length; and

compressing at least a portion of each of said thin sections continuously along the length of said sheet.

5,573,639

ANTIFALSIFICATION PAPER HAVING A THREAD- OR BAND-SHAPED SECURITY ELEMENT

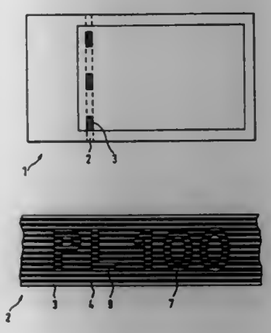
Christian Schmitz, Fischbachau, and Armin Weingartner, Pullach, both of Germany, assignors to Giesecke & Devrient GmbH, Munich, Germany

Filed Dec. 16, 1994, Ser. No. 358,153

Claims priority, application Germany, Dec. 23, 1993, 43 44 298.6

Int. Cl.[6] D21H *27/00;21/42;* **B44F** *1/12*

U.S. Cl. 162—140 **16 Claims**



1. An antifalsification paper having at least one security element in the form of threads or bands, said antifalsification paper comprising:

at least one transparent plastic film portion;

an at least partly opaque coating formed on said transparent plastic film portion defining at least one opaque coating area adjacent to and alternatingly disposed with at least one transparent area; and

visually or machine readable characters or patterns for displaying information to be conveyed by said security element, wherein said visually or machine readable characters or patterns are formed on and defined by said adjacent and alternatingly disposed opaque coating and transparent areas whereby said characters or patterns extend from said opaque areas into said transparent areas.

5,573,640

PAPER MADE WITH CELLULOSE FIBERS HAVING AN INNER CORE OF CELLULOSE ACETATE

Tim J. Frederick; Melvin G. Mitchell, and Lee R. Partin, all of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Jul. 28, 1995, Ser. No. 506,986

Int. Cl.[6] D21H *13/02*

U.S. Cl. 162—146 **9 Claims**

1. A paper comprising from about 99 to about 10 weight percent cellulose fibers and from about 1 to about 90 weight percent cored cellulose fibers uniformly dispersed in said paper, and wherein said cored cellulose fibers

comprise a cellulose sheath being from about 4 to about 15 weight percent of the weight of said cored cellulose fiber and a cellulose acetate core;

contain no substantial crimp; and

have an average length from about 1 to about 7 mm, a density from about 1.20 to about 1.35 gm/cc, a denier from about 1 to about 30 grams per 9,000 meters, and a uniform dispersion index of less than 0.15.

5,573,641

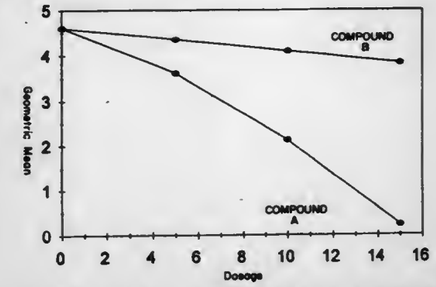
METHOD FOR PREVENTING MICROBIAL DEPOSITS IN THE WET END OF PAPERMACHINES USING ETHYLENE OXIDE/PROPYLENE OXIDE COPOLYMER

Robert J. Meade, Naperville; Linda R. Robertson, St. Charles, and Nicole R. Taylor, Berkeley, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Apr. 28, 1995, Ser. No. 430,629

Int. Cl.[6] D21H *17/52*

U.S. Cl. 162—158 **5 Claims**



1. A method of preventing the build-up of deposit-forming microorganisms and inorganic materials in a papermachine fluid, the method consisting of the step of treating the paper machine fluid with an aqueous solution consisting of 0.1 to 100 parts per million of an ethylene oxide/propylene oxide copolymer, wherein the percent of the ethylene oxide in the copolymer is from about 5 to 30% and wherein the copolymer has a molecular weight of from about 2550 to about 3550 daltons.

5,573,642

METHOD AND DEVICE FOR EVENING OUT THE BASIC WEIGHT CROSS SECTION BY SECTIONING THE SCREEN CIRCUIT

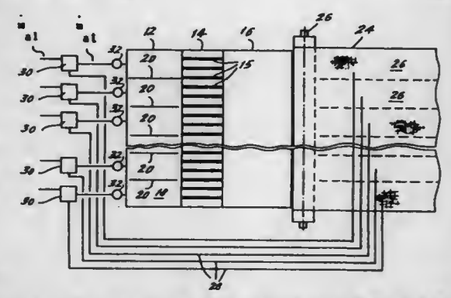
Ulrich Begemann, Leonberg, Germany, assignor to J.M. Voith GmbH, Germany

Filed Nov. 24, 1993, Ser. No. 157,891

Claims priority, application Germany, Nov. 26, 1992, 42 39 647.6

Int. Cl.[6] D21F *1/66*

U.S. Cl. 162—190 **12 Claims**



1. A method for evening out the basis weight profile of a fiber suspension used for producing a web in a paper making machine, comprising the following steps:

fiber suspension from an outlet of the paper making machine headbox and onto at least one screen through which liquid is drained from the fiber suspension in order to produce a web, wherein the headbox is divided into individual first sections arranged across the width of the machine and the fiber suspension is fed to first sections of the headbox and wherein the at least one screen is divided into individual second sections arranged across the width of the machine;

permitting the fiber suspension to lay on the at least one screen so that an amount of liquid in the fiber suspension drains through the at least one screen wherein the liquid is a filtrate and the filtrate which is drawn off the at least one screen is collected with respect to its position relative to the second section of the at least one screen from which the filtrate was drawn off producing a sectional filtrate, and wherein each of the second,sections in which the filtrate is drawn off at least generally corresponds in its position across the width of the machine to a respective first section of the headbox;

recycling the sectional filtrate from each second section to the respective corresponding first section of the headbox for mixing the recycled filtrate with the fiber suspension then being distributed by the respective first section of the headbox.

5,573,643

TWIN WIRE WEB FORMER IN A PAPER MACHINE

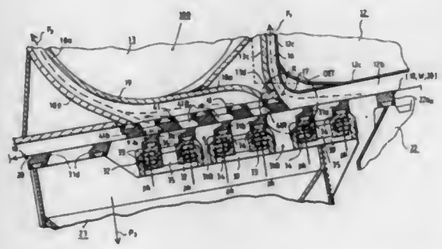
Jyrki Jaakkola, Korpilahti; Seppo Kiviranta, Jyväskylä; Ari Linsuri, Muurame; Michael Odell, Jyväskylä; Antti Poikolainen, Jyväskylä, and Samppa Salminen, Jyväskylä, all of Finland, assignors to Valmet Corporation, Helsinki, Finland

Continuation-in-part of Ser. No. 6,372, Jan. 19, 1993, Pat. No. 5,395,484. This application May 18, 1994, Ser. No. 246,176

Claims priority, application Finland, Jan. 17, 1992, 920228; May 18, 1993, 932265

Int. Cl.[6] **D21F** *1/00*

U.S. Cl. 162—203 **18 Claims**



16. A method for dewatering a web in a twin-wire forming zone defined between first wire and second wires and including a forming shoe comprising a curved ribbed deck arranged in a loop of said first wire, comprising the steps of:

drawing water that has been removed from the web in the area of said curved ribbed deck into a first dewatering chamber via a first drain duct,

providing a first set of ribs in a loop of said second wire,

drawing water from the web through gap spaces defined between ribs in said first set of ribs into a second dewatering chamber via a second drain duct, said second dewatering chamber being arranged after said first dewatering chamber in the running direction of the twin-wire zone,

arranging a second set of ribs in a loop of said first wire substantially opposite to said first set of ribs,

loading said second set of ribs to press said first wire and force water from the web,

arranging a form rib proximate said first drain duct and spaced from the twin-wire zone such that said replaceable form rib does not contact either one of said first and second wires said form rib defining the size and shape of said first drain duct and

detachably connecting said form rib to a lower wall of Said first dewatering means by connecting a fastening base to said lower wall and arranging a corresponding dovetail joint in conjunction with said form rib.

5,573,644

APPARATUS FOR GUIDING A WIRE

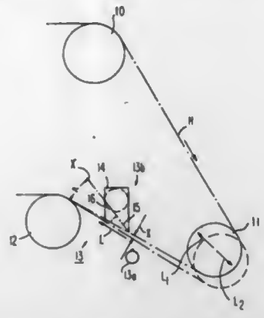
Antti Poikolainen, and Kari Lamminmäki, both of Jyväskylä, Finland, assignors to Valmet Corporation, Helsinki, Finland

Filed Dec. 5, 1994, Ser. No. 350,273

Claims priority, application Finland, Dec. 3, 1993, U930584

Int. Cl.[6] **D21F** *1/32*

U.S. Cl. 162—278 **18 Claims**



1. In an apparatus for washing and guiding a wire comprising means for producing and directing a washing jet at a wire and means for removing washing mist from the wire including a suction box situated on an opposite side of the wire from said washing jet producing and directing means, said suction box including an inlet chamber and a duct through which washing mist produced from the washing jet is passed into said inlet chamber, said duct being arranged at an angle relative to a running direction of the wire over said suction box and having an opening in a lower surface of said suction box facing the wire, the improvement comprising

an elongate list arranged in conjunction with said means for removing washing mist, said list having a wide face in a direction transverse to its longitudinal direction such that at least a portion of said list continuously contacts the wire, said list projecting from said lower surface of said suction box to define a space between the wire and said opening of said duct in said lower surface of said suction box and to deflect the wire such that a direction of arrival of the wire at said list differs from a direction of departure of the wire from said list.

5,573,645

PROCESS AND APPARATUS FOR THE SEPARATION OF AROMATIC HYDROCARBONS

John L. Pickering, Jr., Kingwood, Tex., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 29, 1995, Ser. No. 496,562

Int. Cl.[6] **B01D** *3/00;* **C07C** *7/04*

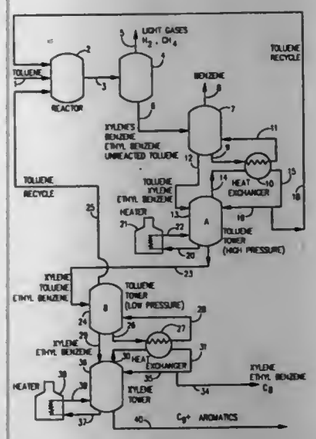
U.S. Cl. 203—25 **15 Claims**

1. An improved distillation process for recovering xylene from an aromatic hydrocarbon stream which comprises:

feeding the hydrocarbon stream to separator tower to remove overhead C_8^- hydrocarbon fraction and withdraw a liquid hydrocarbon bottom fraction containing benzene, toluene, xylene, ethyl benzene and C_9^+ aromatic hydrocarbons;

feeding the separator tower liquid hydrocarbon bottom fraction to a benzene distillation tower to remove overhead a benzene fraction and to withdraw a benzene tower liquid bottom fraction containing toluene, xylene, ethyl benzene and C_9^+ aromatic hydrocarbons;

feeding the benzene tower liquid bottom fraction to a first toluene distillation tower operated at elevated temperature and elevated pressure to remove overhead a first toluene tower overhead fraction and withdraw a first toluene tower liquid bottom fraction containing remaining toluene, xylene, ethyl benzene and C_9^+ aromatic hydrocarbons;



feeding said first toluene overhead fraction to a benzene tower heat exchanger to provide the heat needed to distill the benzene in the benzene distillation tower;

condensing in the benzene lower heat exchanger the first toluene overhead fraction to obtain a first toluene overhead liquid stream;

recycling a portion of the first toluene overhead liquid stream to provide reflux for the first toluene distillation tower, and removing overhead the remaining portion of first toluene overhead liquid stream;

feeding the first toluene tower liquid bottom fraction to a second toluene distillation tower operated at reduced pressure to flash vaporize at least a portion of the toluene, and to

remove overhead a second toluene fraction, and withdraw a second liquid bottom fraction containing xylene, ethyl benzene and C_9^+ aromatic hydrocarbons;

feeding the second toluene liquid bottom fraction to a xylene distillation tower to remove overhead a stream containing xylene and ethyl benzene and to withdraw a xylene tower liquid bottom fraction containing C_9^+ aromatic hydrocarbons;

feeding the xylene distillation tower overhead fraction to a second toluene tower heat exchanger to provide heat for the distillation of the toluene in the second toluene distillation tower;

condensing the xylene tower overhead stream in the second toluene tower heat exchanger and recycling a portion of the condensed overhead stream to provide: reflux for the xylene distillation tower;

removing the remainder of the condensed xylene overhead stream containing xylene and ethyl benzene; and

separating the xylene from the ethyl benzene in said condensed xylene overhead stream.

9. An apparatus for a distillation process to recover xylene from an aromatic hydrocarbon stream comprising a separator tower to separate C_8^- hydrocarbons fractions overhead and withdraw a bottom fraction containing benzene, toluene, xylene, ethyl benzene and C_9^+ aromatic hydrocarbons, connecting means for feeding said liquid bottom fraction to a benzene distillation tower; means for beating and distilling the benzene in the benzene distillation tower and for removing an overhead benzene fraction; means for withdrawing a liquid bottom fraction containing toluene, xylene, ethyl benzene and C_9^+ aromatic hydrocarbons; a benzene tower heat exchanger operably connected to the benzene distillation tower to cycle said bottom fraction from said benzene tower to said benzene heat exchanger to provide heat to said bottom fraction to distill said benzene; connecting means for connecting the benzene tower to a first toluene distillation tower to feed the bottom fraction withdrawn from said benzene distillation tower to the first toluene distillation tower operated at elevated temperature and pressure; means for removing a toluene first tower overhead fraction and means for withdrawing a first toluene tower liquid bottom fraction;

connecting means for feeding said first toluene overhead fraction to said benzene distillation tower heat exchanger to provide heat to distill the benzene;

connecting means for feeding the first toluene distillation tower liquid bottom fraction containing toluene, xylene, ethyl benzene and C_9^+ aromatic hydrocarbons to a second toluene distillation tower and to remove overhead a second toluene distillation tower overhead fraction and to withdraw a second toluene distillation tower liquid bottom fraction;

a second toluene heat exchanger means operably connected to said second toluene distillation tower to provide heat needed to distill toluene from said second toluene distillation tower;

connecting means for feeding the second toluene distillation tower liquid bottom fraction to a xylene distillation tower to remove overhead a xylene fraction and to withdraw a xylene tower bottom fraction;

means for feeding a portion of the xylene overhead fraction to the second toluene distillation tower heat exchanger to condense the overhead fraction and heat the bottom fraction in the second toluene distillation tower heat exchanger and distill the toluene in the second toluene distillation tower;

means for withdrawing the bottom fraction from the xylene distillation tower containing C_9^+ aromatic hydrocarbons; and

means for removing the xylene overhead fraction; and

means for separating the xylene from the ethyl benzene in the recovered xylene overhead fraction.

5,573,646

ELECTROCHEMICAL FLUID DELIVERY DEVICE

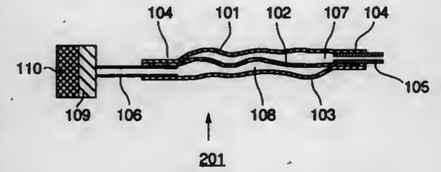
Satoshi Saito, and Yuko Fujita, both of Kyoto, Japan, assignors to Japan Storage Battery Co., Ltd., Kyoto, Japan

Filed Jul. 14, 1995, Ser. No. 502,361

Claims priority, application Japan, Jul. 14, 1994, 6-194503

Int. Cl.[6] **C25B** *9/00;11/03;13/04;15/08*

U.S. Cl. 204—266 **17 Claims**



1. An electrochemical fluid delivery device comprising:

an electrochemical cell part for generating gas when direct current is applied;

a flexible bladder including a flexible peripheral wall portion and a flexible partition disposed within said flexible peripheral wall portion and which divides said flexible bladder into a first chamber for reservoiring fluid therein and a second chamber to which the gas generated by said electrochemical cell part is introduced, said flexible peripheral wall portion of said flexible bladder and said flexible partition between said first and second chambers being formed of flexible sheet material; and

a fluid delivery port provided in said first chamber, wherein the fluid in said first chamber which is compressed by a pressure of the gas introduced into said second chamber, is delivered through said fluid delivery port.

12. An electrochemical fluid delivery device according to claim **1**, wherein said electrochemical cell part includes an anode and cathode each comprising a porous metal electrode; and a solid polymer cation exchange membrane, said anode and cathode being joined on one side and the other side of said solid polymer cation exchange membrane, respectively, and operative to contact water;

further wherein at least one of oxygen and hydrogen gas generated from at least one of said anode and cathode is introduced into said second chamber.

5,573,647

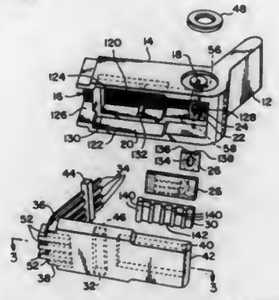
ELECTRICAL CONTACT

Thomas C. Maley, Medway; Mark W. Boden, Millbury; Paul A. D'Orazio, Mendon; Bonnie C. Dalzell, Sherborn; Peter G. Edelman, Franklin; James E. Flaherty, Attleboro; Robert B. Green, Hopkinton; Steven C. Lepke, Danvers; Richard W. Mason, Millis; Robert R. McCaffrey, Franklin, and John A. Zalenski, Mendon, all of Mass., assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.

Division of Ser. No. 266,824, Jun. 27, 1994, Pat. No. 5,494,562. This application Sep. 15, 1995, Ser. No. 508,270

Int. Cl.[6] G01N 27/26

U.S. Cl. 204—406 4 Claims



1. In an electrochemical sensor mounted in a housing and having a plurality of electrical contacts spaced close to each other, and a plurality of elongated axially extending electrically conductive leads with individual leads connected to said contacts, the improvement comprising:

said leads being spaced apart out of electrical contact with each other by a stabilizer bar attached to said leads and which stabilizer bar positively positions said leads in proper position to electrically contact said electrical contacts,

said stabilizer bar being supported on said housing to provide for said electrical contact.

5,573,648

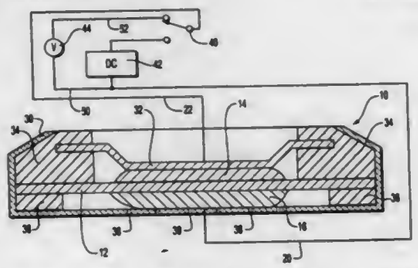
GAS SENSOR BASED ON PROTONIC CONDUCTIVE MEMBRANES

Yousheng Shen; Franco Consadori, both of Salt Lake City, and D. George Field, Pleasant Grove, all of Utah, assignors to Atwood Systems and Controls, Salt Lake City, Utah

Filed Jan. 31, 1995, Ser. No. 381,718

Int. Cl.[6] G01N 27/407

U.S. Cl. 204—412 78 Claims



1. An electrochemical gas sensor for quantitative measurement of a gas in an ambient atmospbere comprising:

a porous mixed ionic-electronic conductive sensing electrode having both an electronic conducting material and an ionic conducting material;

a porous mixed ionic-electronic conductive counter electrode having both an electronic conducting material and an ionic conducting material;

a first protonic conductive electrolyte membrane in between and in contact with the sensing and counter electrodes, and having a thickness in the range of approximately 0.1 mm to 1 mm;

the sensing electrode reacting with the gas to produce a change in an electrical characteristic between the sensing electrode and the counter electrode;

means for electrical measurement;

said sensing and counter electrodes each having a diameter in the range of approximately 1 mm to 15 mm, and being electrically connected to said electrical measurement means;

whereby, in a positive ambient concentration of said gas, said electrical measurement means detects changes in said electrical characteristic.

5,573,649

MINIATURIZED OXYGEN ELECTRODE AND PROCESS OF PRODUCING SAME

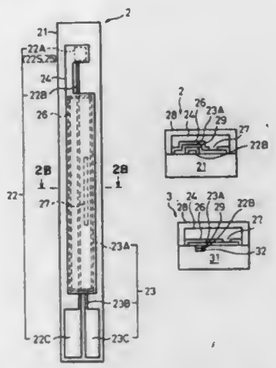
Akio Sugama; Hiroaki Suzuki, and Naomi Kojima, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 145,277, Nov. 3, 1993, which is a division of Ser. No. 850,834, Mar. 13, 1992, Pat. No. 5,281,323. This application Apr. 28, 1995, Ser. No. 430,318

Claims priority, application Japan, Mar. 20, 1991, 3-57220; May 28, 1991, 3-123787

Int. Cl.[6] G01N 27/26

U.S. Cl. 204—415 29 Claims



1. A miniaturized oxygen electrode comprising:

an insulating substrate;

a first electrode pattern on the substrate and having a first active section, a first terminal section for external connection, and a first lead wire portion electrically interconnecting the first active section and the first terminal section;

a second electrode pattern on the substrate and having a second active section, a second terminal section for external connection, and a second lead wire portion electrically interconnecting the second active section and the second terminal section;

a layer of an electrolyte-containing material which contacts and electrically interconnects said first and second active sections;

an oxygen-permeable membrane covering said electrolyte-containing material;

said first lead wire portion being elongated and being disposed to extend beneath said second active section; and

an insulating layer disposed between the first lead wire portion and the second active section.

5,573,650

GAS SENSOR

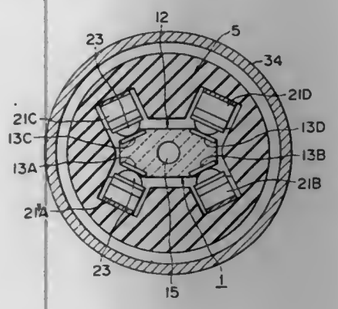
Kenji Fukaya, Chiryu; Masatoshi Suzuki, Nagoya; Masahiro Hamaya, Anjo, and Makoto Hori, Ogaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 26, 1994, Ser. No. 186,586

Claims priority, application Japan, Jan. 28, 1993, 5-034718; May 27, 1993, 5-148562

Int. Cl.[6] G01N 27/407

U.S. Cl. 204—424 12 Claims



1. A gas sensor comprising:

a gas sensor plate for detecting a condition of a gas, said gas sensor plate having a first end portion that is exposed to the gas to be measured and a second end portion of a polygonal-sided pillar;

a plurality of electrodes, each of said electrodes provided on a respective side surface of the polygonal-sided pillar;

a tubular housing for receiving said gas sensor plate; and

a plurality of contact terminals, each of said contact terminals electrically connected and corresponding to one of said electrodes of said gas sensor plate, said contact terminals applying pressing forces in directions toward said corresponding electrodes, the directions of said pressing forces of each of said contact terminals opposing the directions of the pressing forces of said contact terminals on the opposite side surface of said polygonal-sided pillar to hold said gas sensor plate within said tubular housing.

5,573,651

APPARATUS AND METHOD FOR FLOW INJECTION ANALYSIS

Purnendu K. Dasgupta, and Shaorong Liu, both of Lubbock, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 423,619, Apr. 17, 1995, abandoned. This application May 31, 1995, Ser. No. 455,581

Int. Cl.[6] G01N 27/26;27/447

U.S. Cl. 204—601 3 Claims

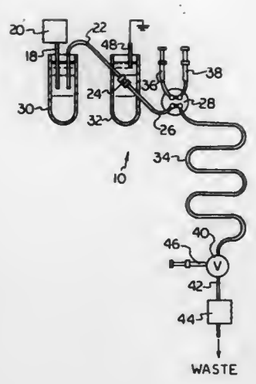
1. A flow injection analysis apparatus, comprising:

(a) an electroosmotic pump having a grounding joint;

(b) a means for introducing a sample into a carrier stream, the means for introducing a sample into a carrier stream being in fluid communication with the grounding joint by way of a conduit;

(c) a dispersion means in fluid communication with the means for introducing the sample into the carrier stream; and

(d) a detector, the detector being in fluid communication with the dispersion means wherein the means for introducing a sample is positioned between the grounding joint and the detector.



5,573,652

APPARATUS FOR CONTINUOUSLY DISSOLVING METAL POWDER FOR USE IN PLATING AND METHOD OF DISSOLVING NICKEL METAL USING SAME

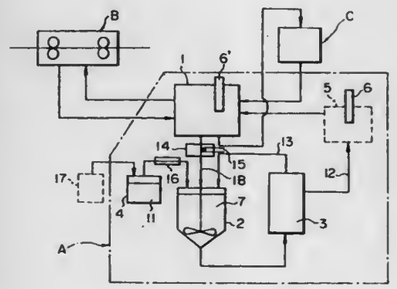
Syuji Kiyama; Osamu Shin; Kaoru Mizumoto; Takashi Sekita; Hiroshi Ogaki; Akio Sakurai; Takao Ikenaga; Ichiro Tanokuchi, and Naoki Sakai, all of Okayama, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Feb. 28, 1995, Ser. No. 395,971

Claims priority, application Japan, Feb. 28, 1994, 6-029467; Sep. 28, 1994, 6-233194

Int. Cl.[6] C25B 15/00; C25D 21/06;21/16;21/18

U.S. Cl. 205—98 12 Claims



1. An apparatus for continuously dissolving nickel metal powder for use in plating, comprising:

a dissolving tank for dissolving nickel metal powder used in a plating solution in a solvent;

filtering means for separating a liquid into an undissolved residue and a recovered filtrate;

a recovery tank for holding said recovered filtrate; and

a plating solution storing tank for supplying said recovered filtrate to the dissolving tank, wherein said filtering means is a porous substance having a plurality of liquid passages in an axial direction thereof, and said filtering means is provided with a circuit for returning the liquid solution containing the undissolved residue passed through said passages to said dissolving tank and a pipeline for leading the filtrate to said recovery tank.

5,573,653
ELECTROCHEMICAL PROCESS FOR THIOCYANATING AMINOBENZENE COMPOUNDS

Baldev K. Bandlish, Charlotte, N.C., assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 273,255, Jul. 11, 1994, abandoned. This application Apr. 18, 1995, Ser. No. 423,175
Int. Cl.[6] C25B *3/00*
U.S. Cl. 205—413 **20 Claims**

1. An electrochemical process for thiocyanating an aminobenzene compound which comprises subjecting to direct current at the anode of an electrolytic cell, at a temperature of about 10° to 25° C., an aqueous acidic electrolyte medium comprising the aminobenzene compound, a source of thiocyanate ion, and an alcohol, wherein said electrolyte medium is adjusted such that:
(i) thiocyanate ion, is present in the electrolyte medium in an amount such that (A) there are at least 2.5 moles of thiocyanate ion per mole of aminobenzene compound, and (B) thiocyanate ion comprises at least 7% by weight of the electrolyte medium; and
(ii) acid concentration in moles per kg. of electrolyte medium is 0.5 n–1.25n where n is the number of equivalents of acid needed to neutralize one mole of thiocyanate ion; and
(iii) water concentration is no greater than 10 moles of water per kg. of electrolyte medium.

5,573,654
PROCESS FOR MAKING HEXAFLUOROPROPANE AND PERFLUOROPROPANE

Yuri Cheburkov, Woodbury, and John C. Hansen, Lakeland, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Mar. 4, 1994, Ser. No. 205,636
Int. Cl.[6] C25B *3/08;* **C07C** *19/08;21/18*
U.S. Cl. 205—430 **12 Claims**

10. A process for making perfluoropropane comprising:
A. making a current-conducting liquid mixture of hexafluoropropane, 1,1,1,3,3-pentafluoropropene and hydrogen fluoride in an electrolysis cell containing an anode; and
B. electrolyzing said liquid mixture under the following conditions: pressure in the range of about atmospheric pressure to 250 kPa; temperature to maintain a boiling liquid phase in the cell; average current density of about 50 to 300 amps per square meter of anode surface area; and a voltage insufficient to generate free fluorine but which is causes fluorination of the hexafluoropropane and 1,1,1,3,3-pentafluoropropene to perfluoropropane.

5,573,655
ELECTROCHEMICAL CELL AND ITS USE IN THE SEPARATION OR ELECTROCHEMICAL EXTRACTION OF OXYGEN

Gaetan Mairesse; Jean-Claude Boivin, both of Villeneuve D'Ascq; Gilles Lagrange, Forges les Bains, and Panayotis Cocolios, le Chesnay, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris; Universite des Sciences et Technologies de Lille, and Ecole National Superieure de Chimie de Lille, both of Villeneuve D'Ascq, all of France

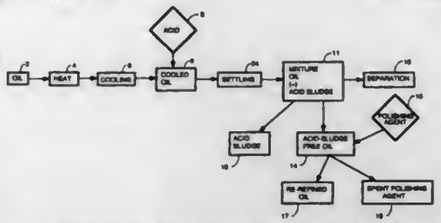
PCT No. PCT/FR93/00871, § 371 Date Jul. 28, 1994, § 102(e) Date Jul. 28, 1994, PCT Pub. No. WO94/06544, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 13, 1993, Ser. No. 244,030
Claims priority, application France, Sep. 14, 1992, 92 10903
Int. Cl.[6] C25B *1/02*
U.S. Cl. 205—634 **23 Claims**

1. Electrochemical cell comprising:
a solid electrolyte which conducts O^{2-} anions comprising a $Bi_4V_2O_{11}$ composition wherein at least one of Bi and V is substituted by at least one substituting element which maintains gamma structural phase and charge equilibrium of said $Bi_4V_2O_{11}$;
an anode and a cathode, of compositions identical to or different from each other in contact with said electrolytic solid, at least one of said anode and cathode being an electrically conductive material and including one of said substituting elements, wherein this element is in a metallic or cationic state.

5,573,656
PROCESS FOR CONVERTING ACID SLUDGE TO ASPHALT

Benjamin Santos, P.O. Box 1170, Manilla, Philippines

Continuation-in-part of Ser. No. 71,775, Jun. 4, 1993, Pat. No. 5,514,272, which is a continuation-in-part of Ser. No. 879,634, May 7, 1992, abandoned, and a continuation of Ser. No. 879,642, May 7, 1992, Pat. No. 5,288,392. This application Feb. 16, 1994, Ser. No. 198,189
Int. Cl.[6] C10G *17/02*
U.S. Cl. 208—13 **39 Claims**



1. A process for converting acid sludge to asphalt comprising:
raising the pH of said acid sludge to a target pH in the range from 3 to 7 by mixing a pH elevating agent including at least water with said acid sludge, said target pH being high enough that said acid sludge does not become sandy and un-meltable at temperatures from approximately from 70° F. up to approximately 275° C., thereby creating a mixture comprising a layer of mostly water and a layer of intermediate sludge;
separating said intermediate sludge from substantially all said water thereby creating a body of intermediate sludge with some water content;
performing a low temperature heating step by heating said intermediate sludge to a temperature between 100° C. to 275° C. for a time long enough to remove the remaining water content thereby creating soft asphalt.

5,573,657
HYDROGENATION PROCESS

Thomas F. Degnan; Richard C. Dougherty, both of Moorestown; George H. Hatzikos, Mantua; Stuart S. Shih, Cherry Hill, all of N.J., and Tsoung Y. Yan, Philadelphia, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 177,693, Jan. 5, 1994, abandoned, which is a continuation of Ser. No. 734,990, Jul. 24, 1991, abandoned. This application Sep. 20, 1994, Ser. No. 309,288
Int. Cl.[6] C10G *45/00*
U.S. Cl. 208—144 **25 Claims**

1. A process for hydrogenating a lubricant hydrocarbon which comprises contacting a hydrocarbon lubricant feed having a bromine number greater than 5 in the presence of hydrogen with a hydrogenation catalyst containing a noble metal hydrogenation component on a support comprising an inorganic, porous crystalline phase material having pores with diameters of at least about 13 Angstrom Units and exhibiting, after calcination, an X-ray diffraction pattern with at least one peak at a d-spacing greater than about 18 Å with a relative intensity of 100, to produce a lubricant product having a bromine number less than 3.

5,573,658
LOW BRIGHTNESS FUNCTIONAL PIGMENT FROM PROCESS BY-PRODUCT

Albert C. Kunkle; Robert E. Hardy, both of Macon, and Bobby R. Skipper, Cochran, all of Ga., assignors to J. M. Huber Corporation, Macon, Ga.

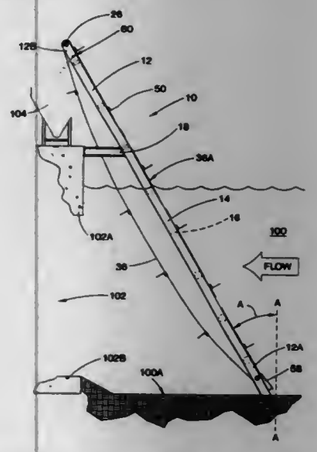
Continuation of Ser. No. 875,792, Apr. 27, 1992, Pat. No. 5,385,239, which is a division of Ser. No. 643,885, Jan. 18, 1991, Pat. No. 5,154,767. This application Dec. 28, 1994, Ser. No. 365,627
Int. Cl.[6] B03B *1/04;5/62;7/00;* **C09C** *1/24*
U.S. Cl. 209—164 **8 Claims**

1. A method for producing a kaolin suspension of a low brightness fraction kaolin clay from a kaolin clay containing iron-stained TiO_2 and employing particles in said suspension as a pigment in a coating applied to paper or paper board, the method comprising:
(a) dispersing the kaolin clay in water to form a kaolin dispersion;
(b) separating the kaolin dispersion into an aqueous high brightness fraction and an aqueous lower brightness fraction, the lower brightness fraction; and
(c) concentrating only the lower brightness fraction to form a low brightness fraction kaolin suspension by the steps of:
(1) flocculating at least a portion of the iron-stained TiO_2 particles and the kaolin particles from the lower brightness fraction with a flocculating agent to form a flocculent; and
(2) recovering the flocculent containing the TiO_2 and kaolin particles by hydroseparation to form the low brightness fraction kaolin suspension having a TiO_2 content substantially between 5–12% by weight dry clay and an Fe_2O_3 content substantially between 0.5–2.5% by weight dry clay and employing said recovered particles from the low brightness fraction as a pigment in a coating applied to paper or paper board.

5,573,659
FILTER APPARATUS

Ronald L. Johnson, Jr., 205 Meadow La., Midland, Mich. 48640

Filed May 4, 1994, Ser. No. 237,821
Int. Cl.[6] B01D *33/04;33/76*
U.S. Cl. 210—159 **33 Claims**

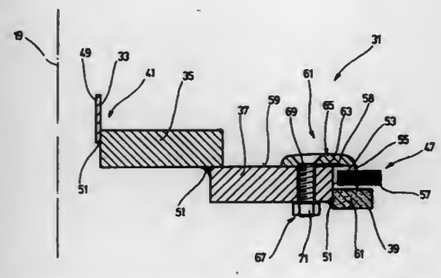


1. An apparatus for removing debris from a free flowing water system, which comprises:
(a) a rail means having vertically oriented members defining an inclined path between the members, the rail means having a top and a bottom with the bottom extendable downward into the water system;
(b) a continuous belt means having a plurality of chain links horizontally and vertically connected together in a plane of the belt means to form the belt means and having a plurality of openings extending horizontally across the belt means, wherein the belt means extends between and around the top and the bottom of the rail means and is moveable upward along the path;
(c) a first sprocket cylinder means mounted at the top of the rail means having a first longitudinal axis and with a plurality of first sprocket teeth which extend into the openings of the belt means across the belt means during movement of the belt means around the top of the rail means to clean the opening of the belt means;
(d) a second sprocket cylinder means mounted at the bottom of the rail means having a second longitudinal axis parallel to the first longitudinal axis and with a plurality of second sprocket teeth which engage the links of the belt means to move the belt means around the bottom of the rail means;
(e) a plurality of debris engaging means tiltably mounted on the belt means, wherein the debris engaging means extend horizontally across the belt means and tilt by moving the chain links of the belt means away from the path in response to debris of excessive weight which dumps the debris back into the water system, wherein when one debris engaging means tilts, the debris engaging means horizontally aligned across the belt means with the one debris engaging means also tilt; and
(f) motor means mounted adjacent the top of the rail means and connected to the first sprocket cylinder means for moving the belt means around the rail means.

5,573,660
SCREW CONVEYOR

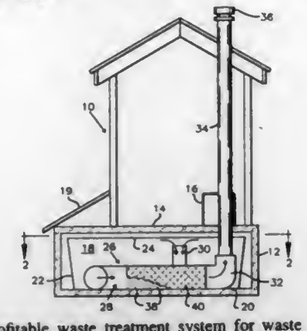
Peter Eicker, Rinteln, and Kurt Ebeling, Auetal, both of Germany, assignors to Noggerath Holding GmbH & Co. KG., Ahnsen, Germany

Filed Jun. 1, 1995, Ser. No. 457,071
Claims priority, application Germany, Jun. 3, 1994, 44 19 612.1
Int. Cl.[6] B01D *29/94;35/02;* **E02B** *5/08;8/02*
U.S. Cl. 210—162 **18 Claims**



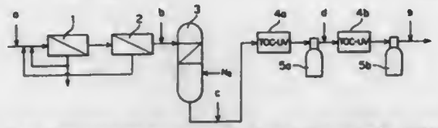
1. A screw conveyor for transporting solid materials, comprising:
a feed screw formed at least partially as a shankless screw, said screw defining an axis;
a jacket surrounding the feed screw; and
a brush cooperating with an inner surface of the jacket;
wherein the feed screw includes a plurality of substantially band-shaped screw threads extending along an imaginary helical line and arranged, when viewed in a transporting direction, one behind another with an ever increasing distance from the screw axis so that each two adjacent screw threads form a step therebetween, and wherein the brush is arranged on the step formed by two outmost screw threads.

5,573,661
RETROFIT WASTE VAULT SYSTEM
Alexander L. Rachak, Wellington, Colo., assignor to The Shane Group, Inc., Hillsdale, Mich.
Filed Oct. 18, 1995, Ser. No. 544,605
Int. Cl.[6] C02F *1/04*
U.S. Cl. 210—170 13 Claims



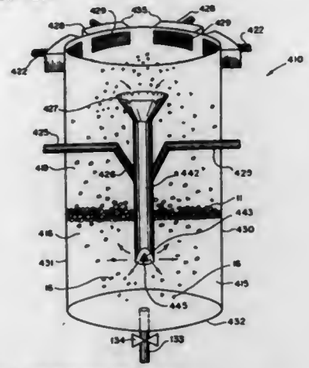
1. A retrofitable waste treatment system for waste vaults, the vault comprising a receptacle receiving liquids and solids having a substantially horizontal bottom, upstanding sides and an upper region, comprising, in combination, a conduit system within the receptacle having an evaporation portion, an inlet portion and an outlet portion, said evaporation portion being substantially horizontal and being located adjacent the receptacle bottom for exposure to liquid within the receptacle, liquid pervious filter means defined in said conduit system evaporation portion permitting liquid within the receptacle to enter said evaporation portion while excluding solid waste therefrom, and air flow inducing means associated with at least one of said inlet and outlet portions producing air flow through said evaporation portion to evaporate liquid therein.

5,573,662
APPARATUS FOR TREATMENT OF LOW-CONCENTRATION ORGANIC WASTE WATER
Mitsugu Abe, Hadano, and Senri Ojima, Sendai, both of Japan, assignors to Nomura Micro Science Co., Ltd., Kanagawa-ken, Japan
Filed Sep. 12, 1994, Ser. No. 302,462
Claims priority, application Japan, Sep. 13, 1993, 5-227184
Int. Cl.[6] C02F *1/42;1/72;3/02*
U.S. Cl. 210—188 9 Claims



1. An apparatus for the treatment of a low-concentration organic effluent, the apparatus regenerating a low-concentration organic effluent used in a process of production of semiconductor devices and having a TOC concentration of from 0.5 to 3 ppm, and the apparatus obtaining a substantially pure water having a TOC concentration of not more than 1 ppb, the apparatus comprising:
- a first treating system comprising at east one reverse osmosis membrane means for transforming a low-concentration organic effluent having a TOC concentration of from 0.5 to 3 ppm into a low-concentration organic effluent having a TOC concentration of from 60 to 200 ppb; and a vacuum deaeration column means for admitting an inert gas at a volumetric feed flow rate in the range of from 0.001 to 1.0 based on the volume of the effluent under treatment at a vacuum degree of not more than 35 Torre; and
- a second treating system comprising at least a pair of low-pressure ultraviolet decomposition means for emitting an ultraviolet light of a wavelength of 184.9 nm; and an ion-exchange column wherein the low pressure ultraviolet decomposition means and the ion-exchange column are disposed sequentially in order.

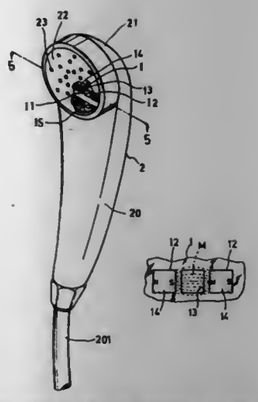
5,573,663
FLUID FILTER USING FLOATING MEDIA
John H. Junius, and Anna H. Junius, both of 79465 Highway 1083, Bush, La. 70431
Filed Jan. 10, 1994, Ser. No. 179,452
Int. Cl.[6] B01D *24/46*
U.S. Cl. 210—189 13 Claims



1. A filter apparatus comprising:
(a) tank means for containing a volume of fluid;
(b) influent means for introducing the fluid into the tank means;
(c) effluent means for allowing filtered fluid to exit the tank means;
(d) a filter media, buoyant in water, for filtering predetermined matter out of the fluid;
(e) a filter zone in the tank means, where the filter media is relatively tightly packed;
(f) a mixing zone in the tank means where the filter media is relatively loosely packed;
(g) a quiet zone in the tank means adjacent the mixing zone, the mixing zone being below the filter zone and the quiet zone being below the mixing zone; and
(h) conveyer means including a vertical tube, having a top, through which the filter media are conveyed for conveying filter media from the filter zone down to the quiet zone, and a funnel at the top of the vertical tube, wherein;
the conveyer means further includes pipe means for directing influent into the vertical tube, wherein the influent means is connected to the pipe means such that influent entering the vertical tube via the pipe means causes a suction at the funnel, drawing fluid, filter media, and particulates into the vertical tube.

5,573,664
WATER MAGNETIZATION APPARATUS HAVING INSERTABLE MAGNETIZING UNIT
Dai-Ming Kuo, C/O Hung Hsing Patent Service Center P.O. Box 55-1670, Taipei, Taiwan
Filed Jun. 5, 1995, Ser. No. 488,751
Int. Cl.[6] C02F *1/48*
U.S. Cl. 210—222 3 Claims

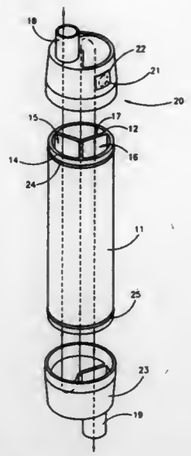
1. A water magnetization apparatus comprising:
a magnet-carrying member made of non-magnetic material having a longitudinal axis at a longitudinal center of the magnet-carrying member and first and second ends spaced apart along said longitudinal axis, a plurality of water through holes and magnet sockets longitudinally and juxtapositionally formed through said magnet carrying member to form an array consisting of a plurality of rows and columns of said water through holes and said magnet sockets as viewed from said first and second ends of said magnet-carrying member, said plurality of magnet sockets and said plurality of water through holes formed in the magnet member being parallel to the longitudinal axis, each of said water through holes extending through said first and second ends, each said magnet socket being open at said first end and having a closed bottom portion formed at the second of the magnet-carrying member for seating a magnet inserted in each said magnet socket;



a plurality of magnets respectively secured in said magnet sockets with each said water through hole sandwiched between every two adjacent magnets, each of said two adjacent magnets having two opposite magnetic poles facing each other and facing the respective water through hole sandwiched therebetween for magnetizing a water stream flowing through a respective said water through hole;
a packing cover on the first end of the magnet-carrying member having a plurality of holes formed in the cover corresponding to the water through holes for passing water streams through and having the remaining cover portion covering the magnets in the magnet sockets;
a coupling portion formed on said second end of the magnet-carrying member;
a handle connected with a water hose to deliver a water stream through a water opening formed in the handle;
a shower head formed on the handle and having a plurality of protrusions to engage a plurality of recesses formed in an inner portion of the coupling portion of the magnet-carrying member;
a nozzle cap formed with perforations therein and secured with the shower head to fasten the packing cover in between the nozzle cap and the magnet carrying member, the perforations in said nozzle cap communicating with said water through holes in the magnetizing unit and communicated with the water opening in the handle of the holding means for spraying the water outwardly.

5,573,665
THREE CHAMBER CONSECUTIVE FLOW WATER TREATMENT DEVICE
Moshe A. Frommer, Rehovot, and Israel Dalven, Emmanuel, both of Israel, assignors to Purotech Ltd., Tel-Aviv, Israel
Filed Feb. 2, 1995, Ser. No. 382,624
Int. Cl.[6] B01D *24/18*
U.S. Cl. 210—232 5 Claims

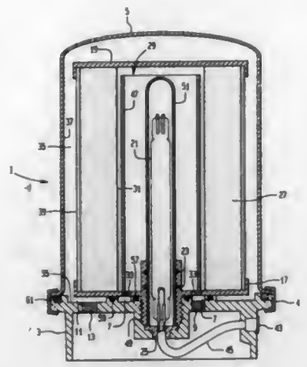
1. A water purification through-flow device, comprising;
an elongated cylindrical shell disposed about a central axis, having a first end and a second end defining an internal volume, said internal volume being divided, along its entire axial length, into three sectors, by three walls extending along the entire axial length of said cylindrical shell and being connected along said central axis;



at least one purification means being contained within each of said sectors;
a first cover at said first end of said cylindrical shell, said first cover defining an inlet being in fluid communication with a first of said three sectors when placed on said first end of said cylindrical shell;
a second cover fitting said second end of said cylindrical shell, said second cover defining an outlet being in fluid communication with a third of said three sectors when placed on said second end of said cylindrical shell, said first cover additionally defining a fluid passage placing a second of said sectors in fluid communication with said third sector, and said second cover defining a fluid passage placing said first sector in fluid communication with said second sector such that water entering said inlet consecutively passes through the purification means in said first sector, the purification means in said second sector . the purification means in said third sector and through said outlet.

5,573,666
REPLACEABLE INTEGRATED WATER FILTRATION AND STERILIZATION CARTRIDGE AND ASSEMBLY THEREFOR
Amon Korin, 16 Mountainview Rd., Weston, Conn. 06883
Continuation-in-part of Ser. No. 310,955, Sep. 23, 1994, Pat. No. 5,529,689. This application Mar. 15, 1995, Ser. No. 406,338
Int. Cl.[6] C02F *1/48*
U.S. Cl. 210—232 67 Claims

1. An integrated filtration and sterilization cartridge which comprises:
a first end plate;
an ultraviolet lamp affixed to said first end plate; and
a filtration member being affixed to said first end plate and disposed about said ultraviolet lamp such that a permeate chamber is formed between said ultraviolet lamp and the inner surface of said filtration member, wherein said first end plate, said first filtration member and said ultraviolet lamp form an integrated unit that is removable and replaceable as a single cartridge.



5,573,667

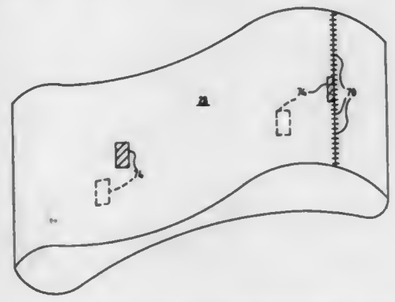
BELT FILTER MEDIUM

Steve C. Benesi, 611 McClay Rd., Novato, Calif. 94947

Division of Ser. No. 316,120, Sep. 30, 1994, Pat. No. 5,510,025, which is a continuation-in-part of Ser. No. 864,524, Apr. 7, 1992, Pat. No. 5,292,434. This application Jun. 6, 1995, Ser. No. 466,338

Int. Cl.[6] B01D *33/04*

U.S. Cl. 210—400 2 Claims



1. A belt filter medium for use with a filter apparatus for pressure filtering fluid slurry materials containing liquid and solid materials in a filter chamber and for creating a substantially dry filter cake of said solid materials, said apparatus having mechanical means for opening and closing said filter chamber and for maintaining said chamber closed and under pressure during filtering operations and for opening said chamber after filtering has been completed, belt drive means for positioning said belt filter medium within said filter chamber when said chamber is opened and pressure sealed within said chamber when said chamber is closed, said belt drive means including sensing means positioned with respect to said filter chamber for sensing the position of said belt filter medium with respect to said upper and lower plate members and for controlling operation of said belt drive means, said belt filter medium characterized by:

a continuous belt,

said continuous belt filter medium including a plurality of detectable marking means along the length of said belt, said plurality of marking means being separated by a distance larger than the largest lateral dimension of said filter chamber, and said marking means being adapted to cooperate with sensing means of said belt drive means for controlling operation of said belt drive means to position said detectable marking means and for controlling operation of said belt drive means.

5,573,668

HYDROPHILIC MICROPOROUS MEMBRANE FOR DRUG DELIVERY DEVICES AND METHOD FOR PREPARING SAME

Sharon K. Grosh, Woodbury, and David R. Gagnon, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 122,807, Sep. 16, 1993, Pat. No. 5,443,727, which is a continuation of Ser. No. 775,969, Nov. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 605,834, Oct. 30, 1990, abandoned, Ser. No. 605,754, Oct. 30, 1990, abandoned, Ser. No. 605,948, Oct. 30, 1990, abandoned, Ser. No. 605,921, Oct. 30, 1990, abandoned, Ser. No. 605,828, Oct. 30, 1990, abandoned, and Ser. No. 605,757, Oct. 30, 1990, abandoned. This application Jun. 1, 1995, Ser. No. 457,964

Int. Cl.[6] B01D *71/38*

U.S. Cl. 210—490 20 Claims



1. A microporous drug delivery membrane having a hydrophilic, polymeric shell, comprising:

a supporting structure having a complex geometric configuration and surfaces about said structure and an extremely thin, self-interlocking, tactic, hydrophilic poly(vinyl alcohol) shell enveloping at least a portion of said surfaces while substantially retaining said complex geometric configuration.

5,573,669

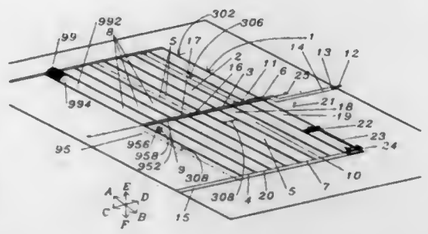
METHOD AND SYSTEM FOR WATER PURIFICATION BY CULTURING AND HARVESTING ATTACHED ALGAL COMMUNITIES

Kyle R. Jensen, 1168 Woodland Ter. Trail, Altamonte Springs, Fla. 32714

Continuation-in-part of Ser. No. 893,246, Jun. 2, 1992. This application Mar. 6, 1995, Ser. No. 399,204

Int. Cl.[6] C02F *3/32*

U.S. Cl. 210—602 14 Claims



1. A floway for cleansing low-pH water of pollutants, the floway having an upstream end, a downstream end, a length, and a width and comprising:

means for admitting water to be treated at the upstream end, the admitting means movable between an open position and a closed position;

means for discharging treated water at the downstream end, the discharging means movable between an open position and a closed position;

means for adding calcium phosphate at the upstream end;

a pair of spaced-apart curb means extending in a generally parallel fashion longitudinally between the admitting means and the discharging means for defining the sidewalls of the floway, the distance between the curb means comprising the width of the floway; and

a water-impervious bottom surface disposed between the curb means and extending from the upstream end to the downstream end and having a generally downward slope from the upstream end to the downstream end, the bottom surface having a texture conducive for growing a bed of algae to form an algal turf;

wherein, in use, water is admitted into the floway by the admitting means, is permitted to flow over the algal turf, the algal turf serving as means for bioassimilating pollutants from the water to be treated and thereby cleansing the water, and is discharged by the discharging means in a cleansed condition; and

wherein, in use, the calcium phosphate added at the upstream end causes the pH to rise, permitting algae growth, and further provides nutrient phosphorus to the algae.

12. A method for controlling an undesirable microorganism population level in an algal turf floway, the method comprising the steps of:

providing a floway having an upstream end, a downstream end, a length, a width, a water-impervious bottom surface having a texture conducive for growing a bed of algae to form an algal turf, and a pair of spaced-apart curb means extending in a generally parallel fashion longitudinally between the upstream end and the downstream end for defining the sidewalls of the floway;

growing an algal turf on the bottom surface, the algal turf comprising and algal species and an undesirable microorganism population;

discharging water from the downstream end of the floway;

harvesting mature algal turf from the bottom surface of the floway; and

permitting the culture surface to dry for a time sufficient to significantly reduce the population level of the undesirable microorganism but insufficient to eradicate the algal species in the algal turf.

5,573,670

METHOD FOR TREATMENT OF WASTE WATER BY ACTIVATED SLUDGE PROCESS

Yoshimi Nagasaki, and Hidetsugu Nakazawa, both of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation of Ser. No. 239,928, May 9, 1994, abandoned, which is a continuation of Ser. No. 780,306, Oct. 22, 1991, abandoned. This application Dec. 21, 1994, Ser. No. 361,455

Claims priority, application Japan, Nov. 7, 1990, 2-299851; Oct. 2, 1991, 3-254856

Int. Cl.[6] C02F *3/12*

U.S. Cl. 210—614 8 Claims

1. In a method for treatment of waste water by an activated sludge process the equipment for which is provided with an aeration tank unit comprised of three tanks of a first tank, a second tank and a third tank, said waste water and microorganisms being fed into the first tank while the ratio of aeration in the first tank ranges from 0.5 to 0.8 by volume/minute relative to the amount of liquid in the first tank, the ratio of aeration in the second tank ranges from 0.1 to 0.4 by volume/minute relative to the amount of liquid in the said second tank and the ratio of aeration in the third tank ranges from 0. 1 to 0.3 by volume/minute relative to the amount of liquid in the third tank, the improvement which comprises carrying out said treatment by passing air containing ozone in an amount of from 0.01 to 0.16 wt. % relative to the amount of oxygen in the air during the aeration into the first tank.

5,573,671

METHOD OF AND APPARATUS FOR WATER PURIFICATION

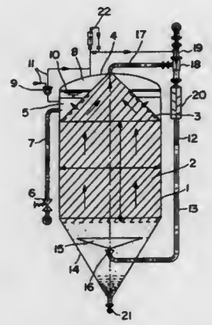
Hans-Ulrich Klein, Bad Kissingen, Germany, assignor to Hans Brochier GmbH & Co., Nurnberg, Germany

Filed Dec. 7, 1994, Ser. No. 350,650

Claims priority, application Germany, Dec. 8, 1993, 43 41 805.8

Int. Cl.[6] C02F *3/06*

U.S. Cl. 210—617 20 Claims



1. In a method for the biological purification of impure water, the method including the flowing of the impure water through a porous filter medium comprising a bed of individual granules having a specific gravity which is less than that of the impure water, the filter medium bed being disposed within a vessel, a biological process occurring at the surfaces of the granules, the biological process being supported by a reaction gas, a collection zone for purified liquid being established in the vessel at the upper side of the filter medium bed, the improvement comprising the steps of:

delimiting the upper side of the filter medium bed by means of a conical shaped sieve plate, the apex of the sieve plate being directed generally upwardly, the collection zone being located above the sieve plate;

continuously supplying to the vessel, at a point below the filter medium bed, a stream of impure water having entrained therein a reaction gas necessary for said biological process;

withdrawing purified water from the collection zone to establish a flow of impure water with entrained reaction gas upwardly through the filter medium bed;

establishing a continuous washing flow of purified water from the region of the apex of the sieve plate at the upper side of the filter medium bed;

entraining filter medium granules in the established washing flow of purified water;

injecting the washing flow of purified water with entrained granules into the stream of impure water with entrained reaction gas upstream of the vessel in such a manner as to cause impurities adhering thereto to be washed from the surfaces of the granules, the washed granules thereafter being returned to the lower side of the filter medium bed by the stream of impure water supplied to the vessel; and

collecting impurities washed from the granules in a sludge collection zone at the bottom of the vessel.

5,573,672

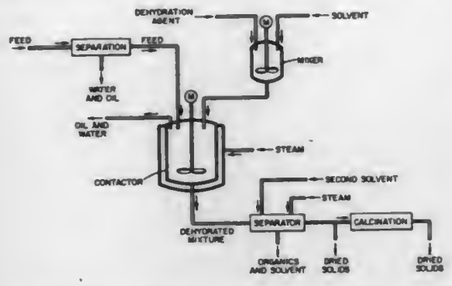
WATER MANAGED SOLVENT EXTRACTION PROCESS FOR THE ORGANIC WASTES

Alkis S. Rappas, 17180 PennyLane, Bainbridge, Ohio 44023; Stephen C. Paspek, 459 Quail Run, Broadview Hts., Ohio 44147, and David S. Davies, 1890 Co's Post Run, Westlake, Ohio 44145

Continuation of Ser. No. 67,453, May 24, 1993, abandoned. This application Mar. 21, 1995, Ser. No. 411,351

Int. Cl.[6] B01D *15/04*

U.S. Cl. 210—638 22 Claims



1. A process for separating extractable organic material from a feed composition comprising said extractable organic material intermixed with solids and water, the process comprising the steps of:

(a) contacting said feed composition with a first organic solvent to extract at least a portion of said extractable organic material, and with a dehydration additive selected from the group consisting of alkaline earth metal oxides, aluminum oxides, calcined dolomite, pozzalime, and combinations thereof, which operates by chemical means to combine with water in said feed composition to dehydrate said feed composition and form a hydrated additive; and

(b) separating at least part of the first organic solvent containing extractable organic material from said solids and hydrated additive.

5,573,673

HYDROUS COMPOSITE CERIUM-PHOSPHORUS OXIDE FOR IMMOBILIZATION OF STRONTIUM IONS IN SOLUTION

Hiromichi Hayashi; Yoshio Onodera, both of Sendai; Takashi Iwasaki, Tagajo; Osamu Itabashi, and Kazuo Torii, both of Sendai, all of Japan, assignors to Agency of Industrial Science and Technology, Japan

Filed Mar. 14, 1995, Ser. No. 404,097

Claims priority, application Japan, May 6, 1994, 6-117621

Int. Cl.[6] C01F *17/00;* C02F *1/42*

U.S. Cl. 210—682 7 Claims

1. A hydrous composite oxide of cerium and phosphorus having a chemical composition expressed by the formula

$$Ce(HPO_4)_x{\cdot}yH_2O.$$

in which the subscript x is a positive number in the range from 1.8 to 2.1 and y is a positive number in the range from 1 to 4, and exhibiting an X-ray diffractometric diagram showing a pattern with a strongest line at a lattice spacing d of 1.10 nm and two broad peaks at lattice spacings d of about 0.35 nm and 0.52 nm.

3. A method for the preparation of a hydrous composite oxide of cerium and phosphorus having a chemical composition expressed by the formula:

$$Ce(HPO_4)_x{\cdot}yH_2O$$

in which the subscript x is a positive number in the range from 1.8 to 2.1 and y is a positive number in the range from 1 to 4, and exhibiting an X-ray diffractometric diagram showing a pattern with diffraction lines at lattice spacings d of 0.526 nm, 0.350 nm and 1.05 nm, which comprises the steps of:

(a) mixing together an aqueous solution of a water-soluble cerium (IV) salt and phosphoric acid to form precipitates in an aqueous precipitation medium; and

(b) heating the precipitates in an aqueous medium at a temperature in the range from 100° C. to 300° C. for a length of time of at least 0.5 hour to form said hydrous composite oxide of cerium and phosphorus.

4. A method for the immobilization of strontium ions in an aqueous solution which comprises the steps of:

(a) bringing an adsorbent which is a hydrous composite oxide of cerium and phosphorus having a chemical composition expressed by the formula

$$Ce\ (HPO_4)_x{\cdot}yH_2O.$$

in which the subscript x is a positive number in the range from 1.8 to 2.1 and y is a positive number in the range from 1 to 4, into contact with the aqueous solution containing strontium ions under a hydrothermal condition at a temperanire in the range of from 100° C. to 300° C. for at least one hour, to effect adsorption of the strontium ions on to the adsorbent; and

(b) separating the adsorbent from the aqueous solution.

5,573,674

ACTIVATED SILICA SOL

Christopher B. Lind, Syracuse, N.Y., and Michael A. Ware, Mississauga, Canada, assignors to General Chemical Corporation, Del.

Filed Oct. 27, 1995, Ser. No. 549,558

Int. Cl.[6] C02F *1/52;* B01J *13/00*

U.S. Cl. 210—702 12 Claims

1. A stable, activated silica sol solution comprising the reaction product of sodium aluminum sulfate and a member selected from the group consisting of colloidal silica and sodium silicate solutions.

5,573,675

CLARIFICATION OF DEINKING PROCESS WATERS USING POLYMERS CONTAINING VINYLAMINE

Anthony G. Sommese, Naperville; Karen R. Tubergen, Mt. Prospect, both of Ill., and Daniel K. Chung, Burlington, Canada, assignors to Nalco Chemical Company, Naperville, Ill.

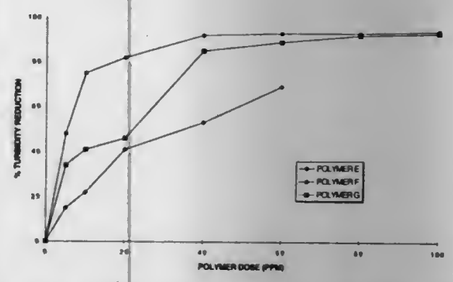
Filed May 11, 1995, Ser. No. 439,547

Int. Cl.[6] C02F *1/56*

U.S. Cl. 210—705 3 Claims

1. A method for clarifying recycled paper deinking effluent containing flexographic ink, comprising

1) adding to the effluent with a polymer coagulant containing vinylamine in an amount of from about 0.01 to about 300 parts per million to produce a coagulated effluent, said polymer coagulant being selected from the group consisting of a copolymer of about 5 to 30% by weight of vinylamine and from about 95 to 70% by weight vinylalcohol having an average molecular weight of about 40,000 to 3,000,000, a polyvinylamine homopolymer having an average molecular weight of about 300,000 to 3,000,000, and a copolymer of



70% by weight vinylamine and 30% by weight diallyl dimethyl ammonium chloride having an average molecular weight of about 500,000 to 3,000,000;

2) adding to the coagulated effluent a high molecular weight acrylamide flocculant having a molecular weight of from about 3 million to about 20 million daltons in an amount of from about 0.01 to 50 parts per million; and

3) effecting solid-liquid separation, wherein the solid-liquid separation is carried out by dissolved air flotation.

5,573,676

PROCESS AND A DEVICE FOR THE DECOMPOSITION OF FREE AND COMPLEX CYANIDES, AOX, MINERAL OIL, COMPLEXING AGENTS, COD, NITRITE, CHROMATE, AND SEPARATION OF METALS IN WASTE WATERS

Karl F. Massholder, Altneudorf; Wilfried Werz, and Erwin Ecker, both of Heidelberg, all of Germany, assignors to Ultra Systems GmbH UV-Oxidation, Heidelberg, Germany

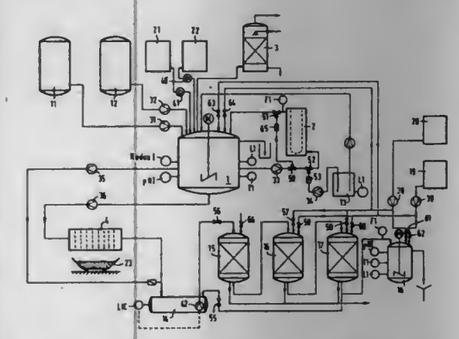
PCT No. PCT/EP93/01087, § 371 Date Feb. 24, 1995, § 102(e) Date Feb. 24, 1995, PCT Pub. No. WO93/22249, PCT Pub. Date Nov. 11, 1993

PCT Filed May 5, 1993, Ser. No. 331,638

Claims priority, application Germany, May 6, 1992, 42 14 974.6

Int. Cl.[6] C02F *1/48;1/62;1/70;1/72*

U.S. Cl. 210—759 13 Claims



1. A process for treating waste water that contains metal contaminants comprising the sequential steps of:

a first stage of treating the waste water with a combination of hydrogen peroxide and UV-light irradiation sufficient to effect cyanide-complex decontamination;

a second stage of treating the waste water with a reducing agent that is sufficient to effect chromate decontamination; and

a third stage of precipitating the metallic contaminants and separation of the precipitants from the waste water.

5,573,677

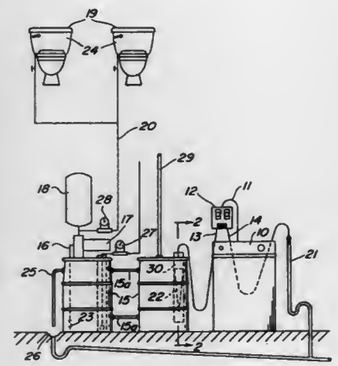
WASHING MACHINE RINSE WATER RECOVERY APPARATUS AND METHOD

Edward Dembrosky, 1012 Telegraph Rd., Perkasie, Pa. 18944

Filed Jun. 30, 1994, Ser. No. 268,968

Int. Cl.[6] C02F *1/68*

U.S. Cl. 210—764 12 Claims



1. A cloudy water conservation apparatus attachable to a clothes washing machine having a water outlet, a wash cycle producing wash water and a rinse cycle producing rinse water comprising:

a.) electronic controller means in fluid communication with the outlet of said washing machine for separating said rinse water from said wash water with said wash water being directed down a drain;

b.) rinse water storage means in fluid communication with said controller for collecting and storing said rinse water which was directed to said storage means by said controller;

c.) a trap having a lint screen, said trap attached to said rinse water storage means and said trap in fluid communication with said controller;

d.) a pumping means in fluid communication with said rinse water storage means;

e.) a pressurized container in fluid communication with said pumping means for receiving rinse water pumped by said pumping means from said rinse water storage means; and

f.) supply means in fluid communication with said pressurized container for supplying said pressurized rinse water to at least one toilet flush tank where said rinse water is used to flush at least one toilet.

12. A water conservation process comprising:

a.) separating water produced by a clothes washing machine into wash water and rinse water;

b.) disposing of said wash water;

c.) collecting said rinse water;

d.) straining said rinse water of step c) to remove lint;

e.) treating said rinse water of step d) with dye and bactericide;

f.) pressurizing said rinse water of step e) by pumping said rinse water to a pressurized storage tank;

g.) conveying said rinse water of step f.) from said pressurized storage tank to an toilet flush water storage tank; and

h.) recycling said rinse water of step g) by flushing a toilet attached to said toilet flush water storage tank.

5,573,678

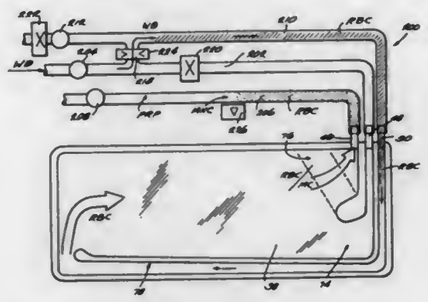
BLOOD PROCESSING SYSTEMS AND METHODS FOR COLLECTING MONO NUCLEAR CELLS

Richard I. Brown, Northbrook, and Kyungyoon Min, Arlington Heights, both of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 814,403, Dec. 23, 1991, abandoned, and Ser. No. 748,244, Aug. 21, 1991, Pat. No. 5,322,620, which is a continuation of Ser. No. 514,995, May 26, 1989, Pat. No. 5,104,526, which is a continuation of Ser. No. 9,179, Jan. 30, 1987, Pat. No. 4,834,890. This application Jun. 7, 1995, Ser. No. 472,750

Int. Cl.[6] B01D *21/26*

U.S. Cl. 210—782 13 Claims



1. A blood separation system comprising

a chamber for rotation about a rotational axis comprising first and second spaced apart walls forming a separation zone having a low-G side located closer to the rotational axis than the other, high-G side, the separation zone including an inlet region where whole blood enters the separation zone for separation into red blood cells, a plasma constituent carrying platelets, and an interface carrying mono nuclear cells between the red blood cells and plasma constituent, and an exit region spaced from the inlet region where red blood cells collect during separation, and

a controller operable in a first mode to convey whole blood into the inlet region for flow toward the exit region while removing red blood cells and the plasma constituent from the chamber and while retaining the interface substantially within the chamber, the controller further operable in a second mode to backflow red blood cells into the exit region for back flow toward the inlet region while removing the interface from the chamber.

5,573,679

FABRICATION OF A SURFACE MICROMACHINED CAPACITIVE MICROPHONE USING A DRY-ETCH PROCESS

Alan W. Mitchell, Rio Rancho, N.M.; Yuebin B. Ning, and R. Niall Tait, both of Edmonton, both of Canada, assignors to Alberta Microelectronic Centre, Edmonton, and Harris Canada Inc., Calgary, both of Canada

Filed Jun. 19, 1995, Ser. No. 492,320

Int. Cl.[6] B44C *1/22*

U.S. Cl. 216—2 34 Claims

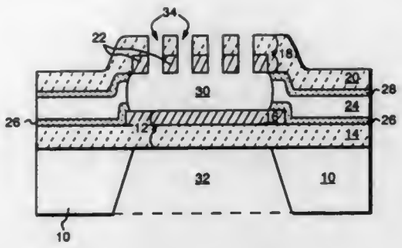
1. A method of fabricating a capacitive microphone, said method comprising the steps of:

A. providing a silicon layer;

B. positioning a diaphragm and a backplate on opposite sides of the silicon layer;

C. forming holes in the backplate; and

D. introducing a dry etchant through the holes to form a cavity between the backplate and diaphragm by removing part of the silicon layer.



5,573,680

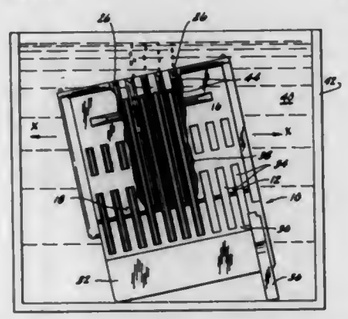
METHOD FOR ETCHING A SEMICONDUCTOR MATERIAL WITHOUT ALTERING FLOW PATTERN DEFECT DISTRIBUTION

Roger W. Shaw, Kirkwood, and Joseph C. Holzer, Manchester, both of Mo., assignors to MEMC Electronic Materials, Inc., St. Peters, Mo.

Filed Aug. 1, 1994, Ser. No. 283,782

Int. Cl.[6] H01L *21/02*

U.S. Cl. 216—85 6 Claims



1. A method of etching a generally planar surface of a semiconductor material to reveal defects on the surface, the method comprising:

placing the material in a canted position, ranging from about 5° to about 35° from vertical, such that the generally planar surface of the material faces upwardly;

immersing the material so positioned into a stagnant etchant solution; and

etching the surface of the material such that bubbles nucleating at defects on the surface of the canted material are released directly into the otherwise stagnant etchant solution.

5,573,681

TRAVELING WIRE ELECTRIC DISCHARGE MACHINING APPARATUS CAPABLE OF WORKPIECE LOCATION DETERMINING AND ENERGY LEVEL ADJUSTMENT

Yuji Ishibashi, and Masayuki Iwai, both of Aichi-ken, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 20, 1994, Ser. No. 277,797

Claims priority, application Japan, Jul. 20, 1993, 5-178881

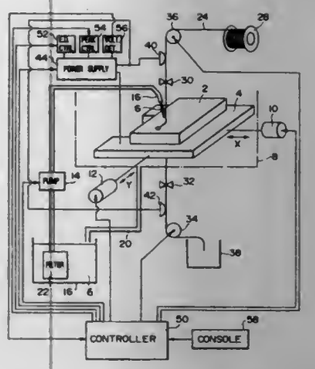
Int. Cl.[6] B23H *7/04;7/06*

U.S. Cl. 219—69.12 16 Claims

1. A traveling wire electric discharge machining apparatus comprising:

a wire for machining a workpiece to a predetermined shape according to a predetermined machining program;

a moving table for moving said workpiece relative to said wire;



an electric discharge unit for applying a periodic voltage pulse to said wire;

means for determining a location on said workpiece, said location determined in accordance with at least one predetermined parameter, and said location being positioned before a change in a machining direction point of said predetermined machining program; and

means for changing a characteristic of said periodic voltage pulse to gradually decrease the machining energy, while said wire is moving relative to said workpiece, from when said wire is at said location until prior to said wire reaching said machining direction change point.

5,573,682

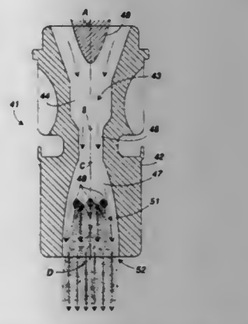
PLASMA SPRAY NOZZLE WITH LOW OVERSPRAY AND COLLIMATED FLOW

George P. Beason, Jr., Arab; Timothy N. McKechnie, Huntsville, and Christopher A. Power, Guntersville, all of Ala., assignors to Plasma Processes, Huntsville, Ala.

Filed Apr. 20, 1995, Ser. No. 426,621

Int. Cl.[6] B23K *10/00*

U.S. Cl. 219—121.5 10 Claims



1. A supersonic plasma spray nozzle for use in the plasma spray deposition of a coating onto a target substrate, said spray nozzle comprising:

a nozzle body formed of a resilient heat resistant material and having a first end and a second end;

said body defining a central passageway having a longitudinal axis, said passageway extending through said nozzle body from said first end to said second end thereof;

means in said passageway for heating a flow of gas through the passageway to temperatures sufficient to ionize the gas flow and transform the gas flow into a heated plasma flow;

means in said passageway for injecting a material to be spray deposited, in powder form, into a plasma flow moving through said passageway;

said passageway having an upstream section adjacent said first end of said nozzle body, a throat section intermediate said first and second ends of said nozzle body, and a downstream section adjacent said second end of said nozzle body;

said upstream section of said passageway converging in cross sectional area from said first end of said nozzle body to said throat section and said downstream section of said passageway diverging in cross sectional area from said throat section to said second end of said nozzle body;

said diverging downstream section having a bell-shaped contour defined by continuously curving concave walls, said walls diverging outwardly from said throat section of said passageway and being substantially parallel to said longitudinal axis of said passageway at said second end of said nozzle body, whereby a plasma flow issuing from said nozzle is ideally and isentropically expanded as it moves through said bell-shaped downstream section of said passageway to exhibit reduced shock phenomena and consequent reduced overspray.

5,573,683

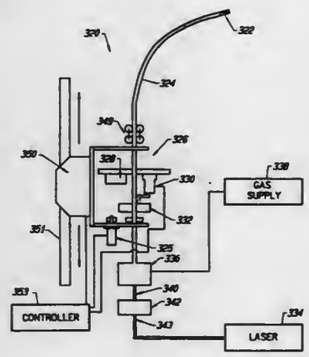
METHOD OF FORMING A CLAD WELD ON THE INTERIOR SURFACE OF A TUBE WITH A SYNCHRONOUSLY ROTATING WELDING APPARATUS

Shane J. Findlan; Gregory J. Frederick, both of Harrisburg; Artie G. Peterson, Jr., Locust, all of N.C., and Wylie J. Childs, Belmont, Calif., assignors to Electric Power Research Institute, Palo Alto, Calif.

Division of Ser. No. 192,556, Feb. 7, 1994, Pat. No. 5,514,849, which is a continuation-in-part of Ser. No. 18,644, Feb. 17, 1993, Pat. No. 5,430,270. This application May 12, 1995, Ser. No. 440,004

Int. Cl.[6] B23K *26/08*

U.S. Cl. 219—121.64 3 Claims



1. A method of clad welding a tube including an interior surface, said method comprising the steps of:

delivering a rotating filler metal wire to a selected weld location within said tube; and

directing laser energy through a fiber optic cable, synchronously rotating with said filler metal wire, to said selected weld location to fuse said filler metal wire to said interior surface of said tube to produce a clad weld within said tube.

5,573,684

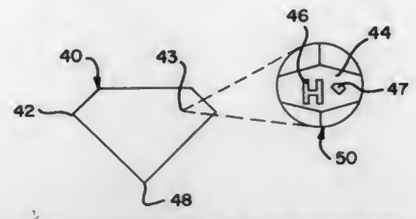
METHODS FOR PRODUCING INDICIA ON DIAMONDS

Ronald H. Winston, Scarsdale, and Necip Alev, Bronxville, both of N.Y., assignors to Harry Winston, S.A., Geneva, Switzerland

Division of Ser. No. 770,446, Oct. 8, 1991, Pat. No. 5,410,125, which is a continuation-in-part of Ser. No. 595,861, Oct. 11, 1990, Pat. No. 5,149,938. This application Sep. 29, 1994, Ser. No. 315,253

Int. Cl.[6] B23K *26/00;26/06*

U.S. Cl. 219—121.85 **3 Claims**



1. A method of producing a marking comprising two marks on a diamond, the method comprising the steps of:

positioning a mask between an output of a source of laser energy in the ultraviolet range and a first portion of a surface of the diamond to be marked;

directly irradiating the first portion of the surface of the diamond with the laser energy source through the mask so as to permit the radiation itself to create a first of the two marks, in a pattern defined by the mask, by effecting a removal of a small amount of material from the surface of the diamond, said step of irradiating including passing the laser radiation through cut-out areas in the mask;

positioning a second mask between the output of the source of laser energy and a second portion of the surface of the diamond to be marked, the second portion being a subset of the first portion of the surface of the diamond to be marked; and

directly irradiating the second portion of the surface of the diamond with the laser energy source through the second mask so as to permit the radiation itself to create a second of the two marks, in a pattern defined by the second mask, by effecting a removal of a small amount of material from the surface of the diamond, said step of irradiating including passing the laser radiation through cut-out areas in the mask.

5,573,685

REMOTE CONTROL ANTIFREEZE DEVICE FOR A VECHILE LOCKING UNIT

Paul J. Boncaldo, 4780 Young Rd., Stow, Ohio 44224-2113

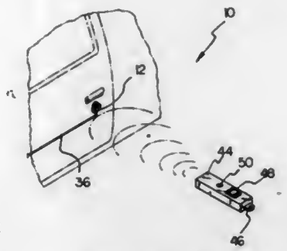
Filed Feb. 5, 1996, Ser. No. 596,604

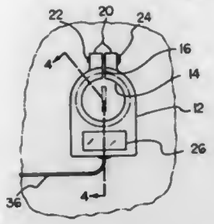
Int. Cl.[6] E05B *17/00;* **H05B** *3/00*

U.S. Cl. 219—201 **1 Claim**

1. A new and improved remote control antifreeze device for a vehicle locking unit comprising, in combination:

a heated locking unit comprising a housing having an upper end with a cylindrical configuration, the upper end having a bore formed therein, a slot formed between the bore and a top surface thereof for allowing the bore to be situated about a conventional cylindrical locking unit and further secured thereto, a pair of protrusions extending upwardly from the top surface with a threadedly lined aperture formed in each of the protrusions, and a coupling screw for providing screwable coupling between the apertures thereby allowing the housing to be secured to the locking unit, wherein the upper end has a depth sized to encompass the entire outer surface of the locking mechanism; and a lower end with a rectangular configuration, the lower end having an interior space formed





therein, an open front face, and a power line aperture formed on a lower surface thereof, the housing constructed of a heat conductive material;

a helical heating element situated in a serpentine configuration within the upper end of the housing adjacent to a periphery of the bore, the heating element having a pair of ends extending into the interior space of the lower end of the housing and a thin electrical insulator sheath positioned about a surface thereof, the heating element adapted to radiate heat energy upon the supply of current thereto, wherein the heating element extends from one of the free ends to one side of the slot and forms a U-shaped configuration thereat and further extends around the periphery of the bore to the other end of the slot where the heating element forms another U-shaped configuration for providing maximum heat transfer;

a control receiver switch situated within the interior space of the housing and connected to a conventional vehicle battery via a power line extending through the power line aperture with a grommet situated about the power line for precluding the severing thereof, the control receiver switch comprising a receiver element positioned in the open front face of the housing for receiving an actuation signal, the control receiver switch further comprising control circuitry coupled to the power line, the receiver element, and the ends of the heating element, the receiver control circuitry switch adapted to supply current to the heating element upon the receipt of the actuation signal; and

a portable remote control transmitter with a rectangular configuration, the transmitter comprising a housing with an upper half, a lower half, and an interior space whereby the upper half and lower half are separatable for allowing access to the interior space, an eyelet formed on an end of the housing for receiving a conventional key ring, a manually operated switch button situated on the upper half of the housing and adapted to activate upon the depression thereof, a light emitting diode adapted to light upon the actuation thereof, and transmitter circuitry situated with in the housing and connected to the switch button, light emitting diode, and battery power source, the transmitter circuitry adapted to transmit an actuation signal and further actuate the light emitting diode only during the activation of the switch button.

5,573,686

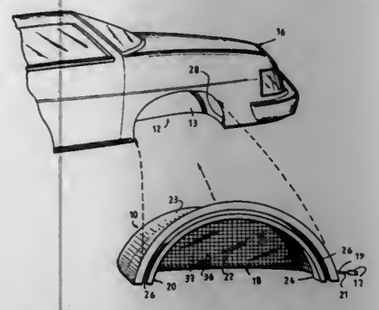
LAMP/HEATER FOR A WHEEL WELL IN A MOTOR VEHICLE

Mickey Lavicska, 2009 Sunset Ave., Utica, N.Y. 13502

Filed Aug. 18, 1995, Ser. No. 516,795

Int. Cl.[6] B60L *1/02*

U.S. Cl. 219—202 **12 Claims**



1. A multipurpose wheel well apparatus for a wheel well of a motor vehicle having an electrical system and having tires with treads comprising:

a) a protecting structure having an inner surface and an outer surface, said protecting structure configured to fit inside of a wheel well of a motor vehicle for protecting the wheel well from stone, salt and moisture damage;

b) attachment means for securing the protecting structure of the multipurpose wheel well apparatus within the wheel well of a vehicle and above a tire located therein; and

c) means for supplying electromagnetic radiation to the wheel well.

5,573,687

FIBROUS ELECTRIC CABLE ROAD HEATER

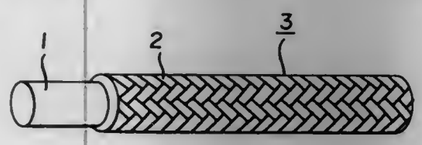
Kunio Tanaka, Ibaraki, Japan, assignor to Teijin Limited, Osaka, Japan

Filed Mar. 3, 1995, Ser. No. 398,083

Claims priority, application Japan, May 13, 1994, 6-005165 U

Int. Cl.[6] H05B *1/00*

U.S. Cl. 219—213 **9 Claims**



1. A road heater, comprising:

(1) a linear heater which is comprised of a linear heating element and a flexible electrically insulating layer formed on the entire periphery of the linear heating element, and (2) an outer textile structure which covers the entire periphery of the linear heater; said road heater having a compressive yield load (Lc) of at least 1,000 kg; and said outer textile structure is made of a thermoplastic synthetic fiber having a melting point of at least 200° C. and a single fiber fineness of at least 1,000 deniers;

wherein the linear heating elements comprises a flexible heat-generating mixed spun yarn which is composed of 20 to 80 weight % of stainless steel fibers having a limited length and 80 to 20 weight % of heat-resistant electrically non-conductive fibers and which is capable of generating heat due to contact resistance among the stainless steel fibers when an electric current is applied thereto.

5,573,688

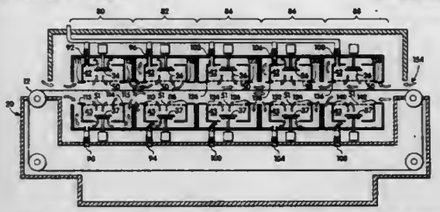
CONVECTION/INFRARED SOLDER REFLOW APPARATUS

Albert Chanasyk, Hampton Falls, N.H.; Walter J. Hall, Waltham, Mass.; J. Robert Maxwell, Londonderry, N.H.; Russell G. Shaw, Contoocook, N.H.; Roy J. Palhof, Somersworth, N.H., and Phillip D. Bourgelais, Newmarket, N.H., assignors to Vitronics Corporation, Newmarket, N.H.

Division of Ser. No. 945,232, Sep. 15, 1992, Pat. No. 5,345,061. This application Jul. 5, 1994, Ser. No. 270,822

Int. Cl.[6] B23K *1/00*

U.S. Cl. 219—388 **15 Claims**



1. A method for soldering surface mounted devices to a printed circuit board, said method comprising the steps of:

conveying a printed circuit board with devices and solder disposed thereon sequentially through a plurality of heating zones in an oven;

heating the printed circuit board and the devices in each of the plurality of zones in sequence, the gas temperatures in some of the heating zones being cooler than gas temperatures in others of the heating zones having higher gas temperatures; and

controlling a flow of gas between the heating zones in the oven to produce a net flow of gas out of the heating zones having cooler gas temperatures and into zones having higher gas temperatures.

5,573,689

FLUIDIZED BED REACTOR FOR PREPARING METAL NITRIDE

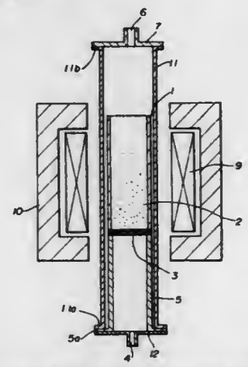
Hirofumi Fukuoka; Yoshiharu Konya; Masanori Fukuhira, all of Annaka, and Ichiro Ishizaka, Tokyo, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1996, Ser. No. 594,156

Claims priority, application Japan, Feb. 7, 1995, 7-042509

Int. Cl.[6] F27B *5/14*

U.S. Cl. 219—390 **4 Claims**



1. A fluidized bed reactor for preparing a metal nitride by mixing metal powder with a non-oxidizing gas containing N_2 or NH_3 to form a fluidized bed and heating the fluidized bed at a temperature of at least 1,200° C. for nitriding the metal powder, said reactor comprising

a reaction tube in which the fluidized bed is formed,

an envelope enclosing the reaction tube for preventing the surrounding atmosphere from entering the reaction tube, and a means disposed outside the envelope for heating said fluidized bed to a temperature of at least 1,200° C.

5,573,690

CERAMIC ARTICLES

Kazuhiro Nobori, Haguri-gun; Koichi Umemoto, Toyota; Ryusuke Ushikoshi, Tajimi, and Shinji Yamaguchi, Amagun, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 1, 1995, Ser. No. 396,139

Claims priority, application Japan, Mar. 2, 1994, 6-032230; Feb. 28, 1995, 7-039816

Int. Cl.[6] H05B *3/74*

U.S. Cl. 219—457 **16 Claims**





1. A ceramic article comprising:
- a monolithic, substantially planar ceramic substrate having a functional member integrally molded therewith and embedded therein;
- a terminal extending from one surface of said substrate into an interior thereof; and
- a conductive wire embedded in said substrate and providing electrical communication between said functional member and said terminal, wherein a portion of said conductive wire extending from said functional member to a connection point with said terminal is curved.

5,573,691

COMPUTERIZED COOKING DEVICE

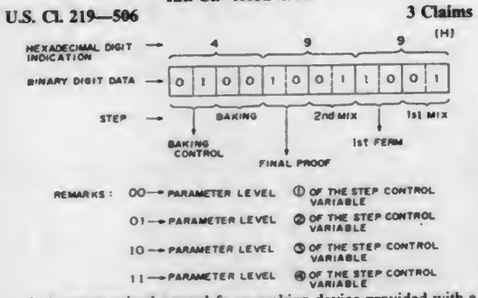
Shinji Yoshida; Yasumasa Hironaka, and Akinori Okazaki, all of Osaka, Japan, assignors to Funai Electric Co., Ltd., Osaka, Japan

Filed May 31, 1995, Ser. No. 455,066

Claims priority, application Japan, Jun. 1, 1994, 6-140727

Int. Cl.[6] H05B *1/02*

U.S. Cl. 219—506 **3 Claims**



1. A computerized control for a cooking device provided with a control circuit means for automatically programming a sequence of programmed steps to cook a selected menu of food, consisting of required cycles of steps and selectable parameters including time and heating temperature at each step, said circuit control means comprising: a CPU for performing digital processing; a conversion means connected to said CPU for converting an inputted menu number to binary digit data having a predetermined bit length including information representing each step for cooking a food selected by the menu input means; and memory means connected to said CPU for storing table data which establishes a relationship between a parameter level of each step and control data for running the corresponding steps and the parameter level corresponds to the code being read by the binary digit data with reference to said conversion means; a control data preparation means connected to said CPU for executing each step when the above binary digit data having fixed bit length is converted by the above conversion means are grouped into a predetermined number of bytes each including a fixed bit number, each Of these binary digit data bytes corresponding to a plurality of codes which represent selectable parameters, whereby the control data is used for executing each step by said data table.

5,573,692

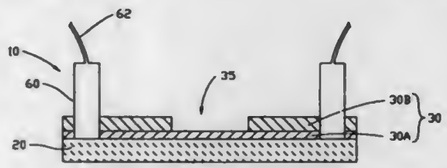
PLATINUM HEATER FOR ELECTRICAL SMOKING ARTICLE HAVING OHMIC CONTACT

Amitabh Das; Peter J. Lipowicz, both of Midlothian, and W. Randolph Sweeney, Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 105,346, Aug. 10, 1993, Pat. No. 5,479,548, and a continuation-in-part of Ser. No. 118,665, Sep. 10, 1993, Pat. No. 5,388,594, which is a continuation-in-part of Ser. No. 943,504, Sep. 11, 1992, Pat. No. 5,505,214, which is a continuation-in-part of Ser. No. 666,926, Mar. 11, 1991, abandoned. This application Sep. 28, 1994, Ser. No. 314,463

Int. Cl.[6] H05B *3/16*

U.S. Cl. 219—543 **29 Claims**



1. A heater adapted for use in an electrical smoking article to heat tobacco flavor medium, the heater comprising:
- a ceramic substrate;
- a heater layer deposited on said ceramic substrate, said heater layer comprising primarily platinum; and
- copper contacts deposited on the platinum heater layer which are eutectically bonded to said platinum heater layer and said ceramic layer, and form an ohmic contact between the copper and platinum.

5,573,693

FOOD TRAYS AND THE LIKE HAVING PRESS-APPLIED COATINGS

Matthew W. Lorence; David H. Scherpf; Brian D. Hopkins, all of Omaha, Nebr., and William E. Archibald, Fullerton, Calif., assignors to Conagra, Inc., Omaha, Nebr.

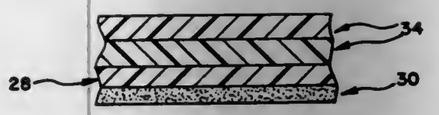
Continuation-in-part of Ser. No. 889,461, May 27, 1992, abandoned. This application Jul. 15, 1993, Ser. No. 92,268

Int. Cl.[6] H05B *6/80*

U.S. Cl. 219—730 **28 Claims**

1. A package for food having a moisture content of at least 75% comprising:

a) a paper-based substrate; and



b) at least one grease and moisture resistant, liquid coating press-applied to said paper-based substrate, said coating comprising an aqueous-based dispersion including an acrylic-based material to define a food-contacting surface of the package having a dry basis weight in a range of about 0.1 to 5 lbs./1000 ft^2.

5,573,694

MICROEMULSIONS OF AMINOPOLYSILOXANES

Bernard Danner, Riedisheim, France, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 171,782, Dec. 21, 1993, abandoned, which is a division of Ser. No. 878,790, May 5, 1992, abandoned, which is a continuation of Ser. No. 579,422, Sep. 7, 1990, abandoned. This application Mar. 3, 1995, Ser. No. 398,316

Claims priority, application Germany, Sep. 7, 1989, 39 29 757.8; Aug. 17, 1990, 40 26 029.1

Int. Cl.[6] D06M *11/77*

U.S. Cl. 252—8.63 **20 Claims**

1. An aqueous microemulsion of an aminopolysiloxane (α), comprising 5 to 60 pans by weight of an amphoteric surfactant (β) for every 100 parts by weight of (α), and an acid (ϵ) to produce a pH≦7.

5,573,695

COMPOSITIONS FOR REMOVAL OF WRINKLES IN FABRICS

Eugene F. Targosz, 1717 E. Union Hills Dr., Phoenix, Ariz. 85024

Filed Dec. 19, 1995, Ser. No. 574,591

Int. Cl.[6] D06B *1/00;* **D06M** *13/46*

U.S. Cl. 252—8.91 **38 Claims**

1. A wrinkle-removing composition for treatment of a textile fabric formed of fibers, comprising:
- a solvent/carrier selected from the group consisting of deionized water having a resistivity of between 1 and 15 megohms, deionized water having a resistivity of between 1 and 15 megohms and isopropyl alcohol, deionized water having a resistivity of between 1 and 15 megohms and a mixture of ethyl and isopropyl alcohol, and deionized water having a resistivity of between 1 and 15 megohms and a mixture of ethyl, isopropyl and propyl alcohols;
- a surfactant component for reducing the surface tension of the solvent/carrier to less than 20 dynes, the surfactant component being present in the composition in an effective surface tension reducing amount; and,
- a vegetable oil based cationic quaternary ammonium surfactant having moieties ranging from 8 to 18 carbon atoms with a majority of the moieties being in the range of 12 to 14 carbon atoms, the quaternary ammonium surfactant being present in the composition in an effective wrinkle-reducing amount.

5,573,696

OIL-SOLUBLE PHOSPHORUS- AND NITROGEN-CONTAINING ADDITIVES

Joe Hughes, Ballwin, Mo.; Rolfe J. Hartley, Glen Allen, and Vasudevan Balasubramaniam, Richmond, both of Va., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 422,407, Mar. 31, 1995, Pat. No. 5,500,140. This application Feb. 29, 1996, Ser. No. 609,039

Int. Cl.[6] C10M *125/20*

U.S. Cl. 508—224 **22 Claims**

1. An oil-soluble phosphorus- and nitrogen-containing composition having limited slip properties formed by (i) reacting (a) an O,O-di-hydrocarbyl phosphorodithioic acid wherein at least 50 mole % of the hydrocarbyl groups are secondary acyclic hydrocarbyl groups free of acetylenic unsaturation and the balance, if any, of the hydrocarbyl groups are primary acyclic hydrocarbyl groups free of acetylenic unsaturation with (b) a vegetable oil epoxide selected from the group consisting of epoxidized soybean oil, methyl epoxy soyate, butyl epoxy soyate, octyl epoxy soyate, epoxidized linseed oil, methyl epoxy linseedate, butyl epoxy linseedate, and octyl epoxy linseedate to form a product, (ii) reacting such product with phosphorus pentoxide to produce an acid phosphate intermediate, and (iii) neutralizing at least a major proportion of the intermediate with at least one amine.

5,573,697

PROCESS FOR MAKING HIGH ACTIVE, HIGH DENSITY DETERGENT GRANULES

Eric F. Riddick, and Judith A. Lakes, both of The Procter & Gamble Company, Ivorydale Technical Center, 5299 Spring Grove Ave., Cincinnati, Ohio 45217

Filed May 31, 1995, Ser. No. 455,781

Int. Cl.[6] C11D *11/04;17/06;* **B29C** *67/00*

U.S. Cl. 510—359 **16 Claims**

1. A continuous process for producing high active, high density detergent granules consisting essentially of the following steps:

(a) preparing a mixture in a high-speed mixer having a shaft that rotates at a speed of from about 300 rpm to about 1800 rpm, the mixture being prepared from components fed to the mixer consisting essentially of the following:

(1) from about 15% to about 35% by weight anionic surfactant acid, having a moisture content of less than about 0.3% by weight, selected from the group consisting of alkylbenzene sulfonic acid, alkyl sulfuric acid, and mixtures thereof;

(2) from about 5% to about 65% by weight phosphate builder, having a moisture content of less than about 2% by weight, selected from the group consisting of polyphosphate, pyrophosphate and mixtures thereof; and

(3) from about 10% to about 65% by weight particulate carbonate, having a moisture content of less than about 2% by weight, selected from the group consisting of sodium carbonate, potassium carbonate, and mixtures thereof, the amount of carbonate being at least about 2 times that amount theoretically needed to neutralize the anionic surfactant acid;

wherein the average residence time of the mixture in the high-speed mixer is from about 2 seconds to about 30 seconds;

(b) agglomerating the mixture from step (a) in a moderate-speed mixer having a shaft that rotates at a speed of from about 40 rpm to about 160 rpm, wherein the average residence time of the mixture in the moderate-speed mixer is from about 20 seconds to about 300 seconds;

whereby the acid is neutralized by the carbonate, and the resulting detergent granules have a bulk density of greater than about 550 g/l and a water content of less than about 5% by weight.

5,573,698

RETURNABLE CONTAINER CONTAINING DETERGENT, CLEANING AGENT, DISINFECTANT AND/OR PRESERVATIVE

Gunter Mandler, Heuchelheim; Wolfram Rieber, Neuhofen; Richard Sander, Pfinztal-Berghausen, and Jürgen Kompan, Römerberg, all of Germany, assignors to ECOPACK GmbH & Co., Heuchelheim, Germany

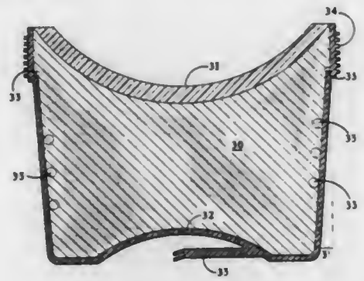
PCT No. PCT/EP92/02540, § 371 Date Oct. 24, 1994, § 102(e) Date Oct. 24, 1994, PCT Pub. No. WO93/16166, PCT Pub. Date Aug. 19, 1993

PCT Filed Nov. 5, 1992, Ser. No. 290,852

Claims priority, application Germany, Feb. 14, 1992, 42 04 489.8

Int. Cl.[6] C11D *17/00;* B65D *21/04;85/84*

U.S. Cl. 510—277 11 Claims



1. An environmentally sound product containing dispenser package comprising:

a product container including a unitary molded stackable container body having a closed bottom end, an opposed end, a releasable cover member for selectively closing the open end of the container body, an external thread connecting said container with said cover, and an upwardly and outwardly angled upstanding peripheral side wall having a stacking angle of from about 2° to about 7° extending between the bottom end and the open end, said container body defining a smooth, rounded, frusto-conical product receiving cavity having no undercut portions, said closed bottom end further including an inwardly and upwardly directed domed-shaped region therein including a handle grip portion defined in an outwardly facing side of the domed-shaped region opposite the product receiving cavity;

a known quantity of product disposed in the product receiving cavity, said product being a shaped block of a pre-moistened, compacted, finely-divided powder comprising an agent selected from the group consisting of detergents, cleaning agents, disinfectants, preservatives and mixtures of any of the foregoing, compacted under application pressures of between about 1×10^4 to about 1×10^6 Pa to provide a shaped block wherein powder structure is still recognizable; and

means for maintaining the product in the cavity in an open topped condition even upon inversion of the container body so that the open end faces downwardly, whereby the product dispenser package may be opened, inverted and loaded into a flushing chamber of a product dispenser apparatus without spilling and wasting the product and without causing human contact with the product, said product being fully removable on flushing contact with a flushing media sprayed into said open end to provide a residue free reusable, recyclable container.

5,573,699

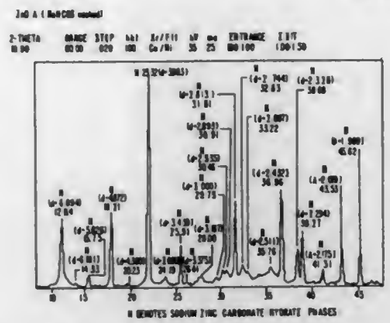
DEODORANT SOAP OR DETERGENT COMPOSITION

Keith A. Jones, Lambertville; Janet G. Gardella, Howell, both of N.J., and Todd W. Domke, Newtown, Pa., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 129,427, Sep. 30, 1993, Pat. No. 5,403,506. This application Mar. 29, 1995, Ser. No. 412,369

Int. Cl.[6] C11D *9/00;9/18*

U.S. Cl. 510—131 10 Claims



1. A toilet deodorant soap or detergent composition comprising a surfactant and as a deodorizing component, about 1 to 25 wt. % based on the total surfactant of sodium zinc carbonate hydrate complex salt.

5,573,700

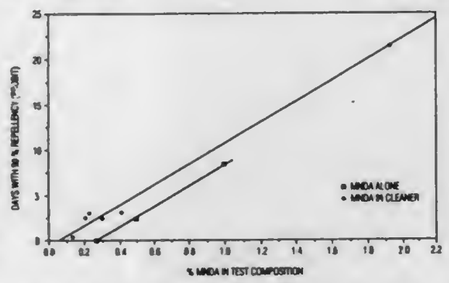
LIQUID HOUSEHOLD CLEANING COMPOSITION WITH INSECT REPELLENT

Robert J. Steltenkamp, Somerset; John H. Puckhaber, Jr., Flemington; Daniel Colodney, Hampton, and Thomas C. Hendrickson, South River, all of N.J., assignors to Colgate-Palmolive Co., New York, N.Y.

Continuation of Ser. No. 290,446, Aug. 15, 1994, which is a continuation of Ser. No. 44,138, Apr. 8, 1993, which is a continuation-in-part of Ser. No. 755,276, Sep. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 734,830, Jul. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 685,329, Apr. 15, 1991, Pat. No. 5,258,408, which is a continuation of Ser. No. 612,747, Nov. 13, 1990, Pat. No. 5,182,304, which is a continuation of Ser. No. 267,141, Nov. 4, 1988, Pat. No. 5,006,562, which is a continuation-in-part of Ser. No. 894,985, Aug. 8, 1986, abandoned, which is a continuation-in-part of Ser. No. 71,305, Jul. 16, 1987, Pat. No. 4,804,683. This application May 15, 1995, Ser. No. 440,598

Int. Cl.[6] A01N *25/00;* C11D *1/00*

U.S. Cl. 510—383 9 Claims



1. An aqueous liquid detergent composition for cleaning a household hard surface and for repelling insects therefrom comprising

(i) a detersive proportion of a surface active detergent compound selected from the group consisting of anionic, nonionic, cationic and amphoteric detergent compounds and mixtures thereof;

(ii) at least about 50%, by weight, water; and

(iii) an effective amount of an insect repellent material which is sufficient to repel insects from such hard surface after application of the liquid detergent composition thereto, said liquid detergent composition being free of an insecticide.

5,573,701

LIQUID DETERGENT COMPOSITION

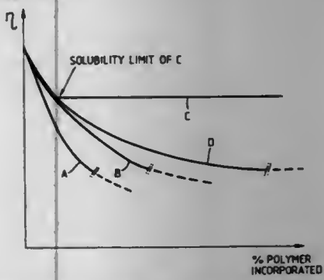
Mario Bulfari, and Johannes C. Van De Pas, both of Vlaardingen, Netherlands, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation of Ser. No. 471,654, Jan. 22, 1990, abandoned, which is a continuation-in-part of Ser. No. 225,406, Jul. 28, 1988, abandoned. This application Jun. 14, 1993, Ser. No. 76,494

Claims priority, application United Kingdom, Jul. 31, 1987, 718216; Jun. 9, 1988, 8813689

Int. Cl.[6] C11D *3/395;3/37*

U.S. Cl. 510—397 13 Claims



1. A liquid detergent composition comprising an internal active-structured phase containing detergent active material, dispersed in an aqueous phase containing dissolved electrolyte, and 0.5 to 4.5% by weight of a viscosity reducing polymer, the electrolyte containing aqueous phase being such that the polymer is dissolved therein at a level 8% to 49% by weight and the composition having a pH of 8.0 or above said composition further comprises a suspended solid particulate material selected from the group consisting solely of builders, abrasives, and bleaches and further comprising a second polymer which is different from the viscosity reducing polymer in an amount of 0.05 to 20% of the composition and having a molecular weight of 1,200 to 30,000.

5,573,702

LIQUID CLEANING COMPOSITIONS WITH GREASE RELEASE AGENT

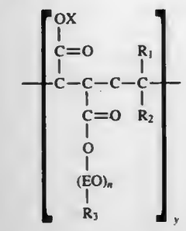
Genevieve Bonnechere, Awans; Georges Yianakopoulos, Liege; Marianne Mahieu, Ferrieres; Anne-Marie Misselyn, Villers-l'eveque, and Rita Erilli, Liege, all of Belgium, assignors to Colgate-Palmolive Co., Piscataway, N.J.

Continuation-in-part of Ser. No. 277,292, Jul. 21, 1994, abandoned, and Ser. No. 336,935, Nov. 15, 1994, Pat. No. 5,486,307, which is a continuation-in-part of Ser. No. 155,358, Nov. 22, 1993, abandoned. This application Aug. 9, 1995, Ser. No. 512,972

Int. Cl.[6] C11D *1/02;3/37;3/18;3/20*

U.S. Cl. 510—417 28 Claims

1. A stable microemulsion composition comprising approximately by weight 0.1% to 20% of an anionic surfactant , 0.1% to 50% of a cosurfactant, selected from the group consisting of polypropylene glycol, C_1–C_4 alkyl ethers and esters of ethylene glycol or propylene glycol, aliphatic mono- and di-carboxylic acids containing 3 to 6 carbons in the molecule, C_5–C_{15} alkyl ether polyethenoxy carboxylic acids of the structural formula $R(OCH_4)_nOXCOOH$ wherein R is C_9–C_{15} alkyl, n is a number from 4 to 12 and X is selected from the group consisting of CH_2, $C(O)R_1$ and C(O), wherein R_1 is a C_1–C_3 alkylene group and mono- and di- and triethyl phosphate, 0.1% to 10% of a grease release agent, 0.4% to 10% of a water insoluble hydrocarbon or a perfume and the balance being water, wherein said grease release agent is:



wherein x is hydrogen or an alkali metal cation and n is a number from 2 to 16, R_1 is selected from the group consisting of methyl or hydrogen, R_2 is a C_1 to C_{12}, linear or branched chained alkyl group and R_3 is a C_2 to C_{16}, linear or branched chained alkyl group and y is of such value as to provide a molecular weight about 5,000 to about 15,000, wherein the composition does not contain more than 2 wt. % of a fatty acid or fatty acid soap.

5,573,703

FERROELECTRIC LIQUID CRYSTAL DEVICE AND LIQUID CRYSTAL APPARATUS USING IT

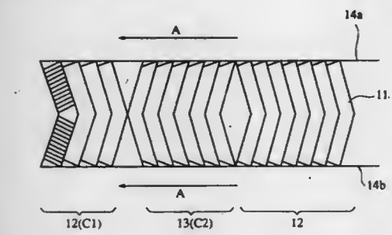
Masahiro Terada, Atsugi; Shosei Mori, Hiratsuka, and Masataka Yamashita, Chigasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1994, Ser. No. 320,525

Claims priority, application Japan, Oct. 13, 1993, 5-280436; Sep. 22, 1994, 6-254379

Int. Cl.[6] C09K *19/52;19/34;19/20;* G02F *1/15*

U.S. Cl. 252—299.01 18 Claims



1. A ferroelectric liquid crystal device comprising:

a pair of substrates comprising electrodes for applying a voltage, said pair of substrates having been subjected to a uniaxial orientation treatment, and being oriented at a distance opposite to each other such that the uniaxial orientation axes cross each other at a predetermined angle; said display device further comprising a liquid crystal material disposed between said pair of substrates exhibiting at least two stable states, said liquid crystal material having a cone angle, a pretilt angle, a tilt angle and an apparent tilt angle, wherein:

said liquid crystal material having an orientation state which satisfies the conditions represented by

$$\Theta<\alpha+\delta,\delta<\alpha, \text{ and } \Theta>\Theta_\alpha>\Theta/2$$

in which Θ denotes said cone angle, α denotes said pretilt angle, δ denotes said tilt angle and Θ_α denotes said apparent tilt angle

wherein the phase of said liquid crystal changes from isotropic phase via cholesteric phase and smectic A phase to chiral smectic C phase as said liquid crystal cools from said isotropic phase and said liquid crystal has a temperature range in which said cholesteric phase and said smectic A phase exist at the same time.

5,573,704

LIQUID CRYSTAL POLYMERS

Mark A. Verrall; Simon Greenfield, and David Coates, all of Poole, United Kingdom, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, United Kingdom

PCT No. PCT/GB93/01016, § 371 Date Dec. 6, 1994, § 102(e) Date Dec. 6, 1994, PCT Pub. No. WO93/25632, PCT Pub. Date Dec. 23, 1993

PCT Filed May 19, 1993, Ser. No. 347,372

Claims priority, application United Kingdom, Jun. 5, 1992, 9212003

Int. Cl.[6] C09K *19/52;19/30;19/12;19/20*

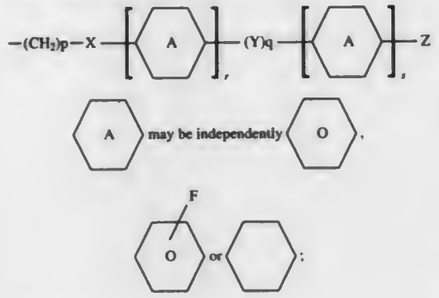
U.S. Cl. 252—299.01 **1 Claim**

1. A LCP material of the formula I:

Formula I

$$R_1-O_2C-\underset{\displaystyle CH_2}{\overset{\displaystyle |}{C}}-CH_2-CO_2-R_2$$

wherein R_1 and R_2may or may not be the same and have the following structure:



p is 2 to 14;
q is 0 or 1;
r is 1 or 2;
s is 1 or 2;
X is O, CO_2, O_2C or CH_2;
Y is C_2H_4, O, CO_2 or O_2C;
Z is CN, halogen, R, CO_2R, OR or O_2CR, wherein R contains from 1–20 carbon atoms and may be branched or straight chain alkyl;
excluding X being 0 or X being CH_2 when A is phenyl, r and s are both 1, Y is CO_2 or O_2C, q is 1 and Z is CN, R, CO_2R or OR; and excluding X being CO_2 when A is phenyl, r and s both being 1, Y is CO_2 or O_2C, q is 1 and Z is OR.

5,573,705

SILACYCLOHEXANE COMPOUND, A METHOD OF PREPARING IT AND A LIQUID CRYSTAL COMPOSITION CONTAINING IT

Tatsushi Kaneko; Takeshi Kinsho; Takaaki Shimizu; Tsutomu Ogihara; Ryuichi Saito, all of Niigata-ken, and Hideshi Kurihara, Kawasaki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1994, Ser. No. 362,964

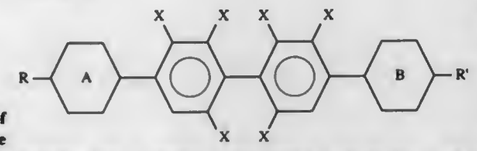
Claims priority, application Japan, Dec. 24, 1993, 5-347889

Int. Cl.[6] C09K *19/34;* **C07F** *7/08*

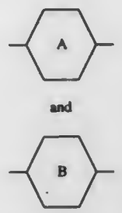
U.S. Cl. 252—299.61 **3 Claims**

1. A silacyclohexane compound represented by the following formula (I):

(I)



wherein R and R' denote a linear-chain alkyl group with a carbon number of 1–10, a mono- or di-fluoroalkyl group with a carbon number of 1–10, a branched-chain alkyl group with a carbon number of 3–8, an alkoxyalkyl group with a carbon number of 2–7, or an alkenyl group with a carbon numer of 2–8; wherein at least one of



denotes a trans-1-sila-1, 4-cyclohexylene or a trans-4-sila-1, 4-cyclohexylene group whose silicon at positions 1 or 4 has a substititional group of H, F, Cl or CH_3, and the other denotes a trans-1-sila-1, 4-cyclohexylene or a trans-4-sila-1, 4cyclohexylene group whose silicon at positions 1 or 4 has a substitutional group of H, F, Cl or CH_3, or a trans-1, 4-cyclohexylene group; and neither 0–2 of the substitutional groups X on the aromatic rings are F and the remaining X's are H's.

5,573,706

GEL FORMERS AND GELS, THEIR PREPARATION AND USE

Wulf von Bonin, Odenthal, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 26, 1993, Ser. No. 143,427

Claims priority, application Germany, Nov. 2, 1992, 42 36 936.3; Mar. 11, 1993, 43 07 631.9

Int. Cl.[6] B01J *13/00;* **C09K** *21/00;* **C04B** *16/00*

U.S. Cl. 252—315.01 **7 Claims**

1. A gel former which consists essentially of

(a) an acidic aluminum phosphate in the form of a salt of 0.01 to 4 mols of an alkanolamine with a mol of aluminum phosphate,

(b) a reaction product of boric acid with an alkanolamine, and

(c) 0.5 to 80% by weight of water wherein

(a) and (b) are present in a weight ratio of 100:55 to 100:0.5, calculated as solids, and the aluminum, boron, phosphorus and alkanolamine in atomic or molar ratios of

Al	B	P	alkanolamine
1	1.2 to 1.8	2.3 to 3.7	2.3 to 3.7.

5,573,707

PROCESS FOR REDUCING FOAM IN AN AQUEOUS ALKYL POLYGLYCOSIDE COMPOSITION

Howard Cole; Kristina W. Erler, both of Charlotte, N.C.; Kenneth L. Smith, Fort Mill, S.C.; Brian C. Francois, Charlotte, N.C.; Billy W. Noble, Greenville, S.C., and Stephen F. Gross, Hatfield, Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 337,589, Nov. 10, 1994. This application Jan. 25, 1995, Ser. No. 378,153

Int. Cl.[6] C11D *1/722*

U.S. Cl. 252—321 **3 Claims**

1. A process of reducing foam in an aqueous alkyl polyglycoside composition comprising adding to said composition an effective amount of an ethylene oxide-propylene oxide copolymer of the formula II

$$R^1[(EO)_b(PO)_c(EO)_d(PO)_f]_p \qquad \text{(II)}$$

wherein R^1 is an ethylenepolyamino group of the formula

$$-NH-(CH_2CH_2-\underset{\displaystyle |}{\overset{\displaystyle (EO)_b(PO)_c(EO)_d(PO)_f}{N}})_k-CH_2CH_2-NH-$$

and wherein each of b and f is 0 or a number having a value of at least 1, and each of c and d is a number having a value of at least 1, with the proviso that when f is 0, b is at least 1 and when b is 0, f is at least 1; p is an integer from 2 to 5; and k is an integer from 0 to 3 and EO is $-CH_2CH_2-O-$ and PO is $-CH_2CH(CH_3)-O-$.

5,573,708

RUST INHIBITOR

Otomo Shigeru, Abiko, Japan, assignor to Union Chemical Co., Ltd., Saitama-ken, Japan

Division of Ser. No. 317,778, Oct. 4, 1994, Pat. No. 5,487,846, which is a continuation of Ser. No. 46,305, Apr. 15, 1993, abandoned. This application Jul. 20, 1995, Ser. No. 504,950

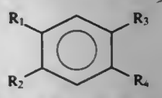
Claims priority, application Japan, May 15, 1992, 4-148837

Int. Cl.[6] C23F *11/12;11/14;11/16*

U.S. Cl. 252—389.61 **11 Claims**

1. A method of inhibiting rust comprising applying to a substrate a rust inhibiting compound of the formula (1):

(1)



wherein, R_1 is a perfluoroalkyl group having one to six carbon atoms; R_2 is a hydrogen atom or a group defined for R_1; R_4 is an acid group selected from —OH—COOH, —SH, $—SO_2OH$, $—PO(OH)_2$, $—SCH_2COOH$, $—SO_2NHCH_2COOH$ or a salt thereof; R_3 is a hydrogen atom or a group defined for R_4; or R_3 and R_4 together form an acid group selected from —N——N—NH—, —CH——N—N—, $—CO_2$—NH—CO—, —S—C(SH)——N' or a salt thereof.

5,573,709

SHAMPOO COMPOSITIONS WITH SILICONE AND CATIONIC ORGANIC POLYMERIC CONDITIONING AGENTS

Robert L. Wells, Cincinnati, Ohio, assignor to Procter & Gamble, Cincinnati, Ohio

Continuation of Ser. No. 129,486, Sep. 29, 1993, abandoned, which is a continuation of Ser. No. 778,765, Oct. 21, 1991, abandoned, which is a continuation of Ser. No. 622,699, Dec. 5, 1990, abandoned. This application Feb. 13, 1995, Ser. No. 388,120

Int. Cl.[6] C11D *1/65;1/62;3/37;1/82*

U.S. Cl. 510—122 **19 Claims**

1. A liquid hair conditioning shampoo composition comprising:

(a) from about 5% to about 50%, by weight, of an anionic surfactant component;

(b) from about 0.1% to about 10%, by weight, of a dispersed, insoluble, nonvolatile, nonionic silicone hair conditioning agent;

(c) from about 0.05% to about 10%, by weight, of a soluble, organic, cationic hair conditioning polymer having an open chain backbone and a charge density of about +3.0 meq/gram or less, said cationic hair conditioning polymer being a copolymer of water soluble n-vinyl pyrrolidone spacer monomers and cationic vinyl quaternary ammonium monomers selected from the group consisting of halide and sulfate salts of C_1–C_3 alkyl vinyl pyridinium and C_1–C_3 alkyl vinyl imidazolium; and

(d) an aqueous carrier.

5,573,710

MULTISURFACE CLEANING COMPOSITION AND METHOD OF USE

James A. McDoneli, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 327,481, Oct. 21, 1994, abandoned, which is a continuation of Ser. No. 39,632, Mar. 30, 1993, abandoned. This application Jan. 16, 1996, Ser. No. 587,246

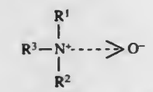
Int. Cl.[6] C11D *1/75;1/62;3/43;3/44*

U.S. Cl. 510—405 **28 Claims**

1. An aqueous, substantially non-streaking multi-surface cleaning composition, consisting essentially of:

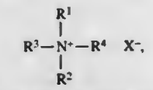
(a) a surfactant system consisting of amine oxides within the general formula (I)

I



or quaternary amine salts within the general formula (11)

II



or combinations of the foregoing amine oxides and quaternary amine salts;

(b) a very slightly water-soluble polar organic compound having a water solubility ranging from about 0.1 to 1.0 weight percent, the very slightly water-soluble polar organic compound present at a weight ratio of said compound to the surfactant system ranging from about 0.1:1 to about 1:1; and

(c) water soluble organic compound in an amount effective to reduce streaking, said water soluble organic compound selected from water soluble glycol ethers and water soluble alkyl alcohols, said water soluble organic compound having a water solubility of at least 14.5 weight percent, the weight ratio of said surfactant system to said water soluble organic compound ranging from about 0,033:1 to about 0.2:1; wherein R^1 and R^2 are the same or different and are selected from the group consisting of methyl, ethyl, propyl, isopropyl, hydroxyethyl and hydroxypropyl, R^3 is selected from the group con-

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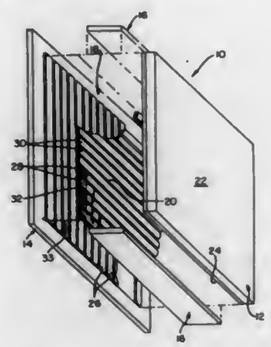
sisting of straight chain alkyls, branched chain alkyls, straight chain heretroalkyls, branched chain heteroalkyls and alkyl ethers, each having from about 10 to 20 carbon atoms, R^4 is selected from the group consisting of alkyl groups having from 1 to about 5 carbon atoms, and X is a halogen atom.

5,573,711

PLANAR FLUORINATED DIELECTRIC SUSPENSIONS FOR ELECTROPHORETIC IMAGE DISPLAYS AND RELATED METHODS

Wei-Hsin Hou, Holbrook; Frederic E. Schubert, Shoreham, and George Semertzidis, Glen Head, all of N.Y., assignors to Copytele, Inc., Huntington Station, N.Y.

Continuation of Ser. No. 249,855, May 26, 1994. This application Nov. 21, 1995, Ser. No. 561,091
Int. Cl.[6] H01B *3/22;3/24*
U.S. Cl. 252—572 **26 Claims**



1. A electrophoretic dielectric suspension that is environmentally acceptable and chlorine-free comprising:

a suspension medium including at least one chlorine-free fluorinated solvent and at least one hydrocarbon solvent, said at least one chlorine-free fluorinated solvent comprising approximately 54.42 to 75.20 weight percent of said electrophoretic dielectric suspensioo and said at least one hydrocarbon solvent comprising approximately 22.50 to 44.25 weight percent of said electrophoretic dielectric suspension;

a plurality of pigment particles dispersed in said suspension medium, said plurality of pigment particles comprising approximately 0.70 to 1.20 weight percent of said suspension medium;

a fluid dye dissolved in said suspension medium for providing a contrast with said pigment particles, said fluid dye comprising approximately 0.008 to 0.50 weight percent of said suspension medium; and

a fluorosurfactant absorbed on said pigment particles for preventing said pigment particles from agglomerating, said fluorosurfactant comprising approximately 0.10 to 1.50 weight percent of said suspension medium.

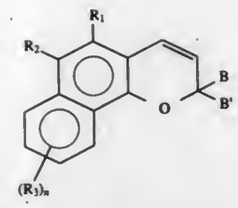
5,573,712

SUBSTITUTED NAPHTHOPYRANS

Anil Kumar, Pittsburgh; Barry V. Gemert, Murrysville, and David B. Knowles, Apollo, all of Pa., assignors to Transitions Optical, Inc., Pinellas Park, Fla.

Division of Ser. No. 164,187, Dec. 9, 1993, Pat. No. 5,658,814. This application Mar. 21, 1995, Ser. No. 407,830
Int. Cl.[6] G02B *5/23;27/00;* **C07D** *311/92*
U.S. Cl. 252—586 **26 Claims**

1. A naphthopyran compound represented by the following graphic formula:



wherein,

(a) R_1 is the group, —C(O)W, W being —OR_4 or —$N(R_5)R_6$, wherein R_4 is hydrogen, allyl, C_1–C_6 alkyl, phenyl, mono(C_1–C_6)alkyl substituted phenyl, mono(C_1–C_6)alkoxy substituted phenyl, phenyl(C_1–C_3)alkyl, mono(C_1–C_6)alkyl substituted phenyl(C_1–C_3)alkyl, mono(C_1–C_6)alkoxy substituted phenyl(C_1–C_3)alkyl, (C_1–C_6)alkoxy(C_2–C_4)alkyl, or C_1–C_6 haloalkyl, and wherein R_5 and R_6 are each selected from the group consisting of hydrogen, C_1–C_6 alkyl, C_5–C_7 cycloalkyl, phenyl, mono-substituted phenyl and di-substituted phenyl, said phenyl substituents being C_1–C_6 alkyl or C_1–C_6 alkoxy, and said halo substituents being chloro or fluoro;

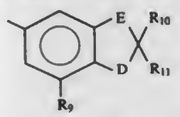
(b) R_2 and each R_3 are hydrogen, C_1–C_6 alkyl, C_3–C_7 cycloalkyl, substituted or unsubstituted phenyl, the group —OR_7, wherein R_7 is hydrogen, (C_1–C_6)alkyl, phenyl(C_1–C_3)alkyl, mono(C_1–C_6)alkyl substituted phenyl(C_1–C_3)alkyl, mono(C_1–C_6)alkoxy substituted phenyl(C_1–C_3)alkyl, (C_1–C_6)alkoxy(C_2–C_4)alkyl, C_3–C_7 cycloalkyl, mono(C_1–C_4)alkyl substituted C_3–C_7 cycloalkyl, C_1–C_6 haloalkyl, allyl, the group, —$CH(R_8)X$, wherein X is CN, CF_3, halogen, or —C(O)W and R_8 is hydrogen or C_1–C_6 alkyl, or R_7 is the group, —C(O)Y, wherein Y is hydrogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, the substituted or unsubstituted aryl groups phenyl or naphthyl, phenoxy, C_1–C_6 mono- or di-alkyl substituted phenoxy, C_1–C_6 mono-or di-alkoxy substituted phenoxy, C_1–C_6 alkylamino, phenylamino, C_1–C_6 mono- or di-alkyl substituted phenylamino, or C_1–C_6 mono- or di-alkoxy substituted phenylamino, said aryl substituents being selected from C_1–C_6 alkyl or C_1–C_6 alkoxy, said halogen or halo substituents being chloro or fluoro and n is selected from the integers 0, 1, 2, or 3; and

(c) B and B' are each selected from the group consisting of:

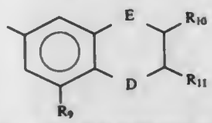
(i) the substituted or unsubstituted heterocyclic aromatic groups pyridyl, furanyl, benzofuranyl, thienyl, and benzothienyl, said heterocyclic substituents being selected from the group consisting of hydroxy, C_1–C_6 alkyl, C_1–C_6 haloalkyl, C_1–C_6 alkoxy, (C_1–C_6)alkoxy(C_1–C_4)alkyl, acryloxy, methacryloxy and halogen, said halogen or (halo) groups being fluoro or chloro;

(ii) the groups represented by the following graphic formulae:

IIA



IIB



wherein D is oxygen or substituted nitrogen and E is carbon or oxygen, provided that when D is substituted nitrogen, E is carbon, said nitrogen substituents being selected from the group consisting of hydrogen, C_1–C_6 alkyl, and C_1–C_5 alkylcarbonyl; R_{10} and R_{11} are each hydrogen or C_1–C_6 alkyl; and R_9 is hydrogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, hydroxy or halogen, said halogen being chloro or fluoro;

(iii) C_1–C_6 alkyl, C_1–C_6 haloalkyl, (C_1–C_6) alkoxy(C_1–C_4)alkyl, C_3–C_6 cycloalkyl, mono(C_1–C_6) alkoxy(C_3–C_6)cycloalkyl, and halo(C_3–C_6)cycloalkyl, said halo group being fluorine or chlorine;

(iv) the substituted or unsubstituted aryl groups phenyl and naphthyl, said aryl substituents being selected from the group consisting of hydroxy, C_1–C_6 alkyl, C_1–C_6 hydroalkyl, C_1–C_6 alkoxy, (C_1–C_6)alkoxy(C_1–C_4)alkyl, acryloxy, methacryloxy and halogen, said halogen or (halo) groups being fluoro or chloro, provided that only one of B and B' is said aryl group; and

(v) B and B' taken together form the saturated bicyclic ring compounds selected from the group consisting of adamantylidene, bornylidene, and norbornylidene.

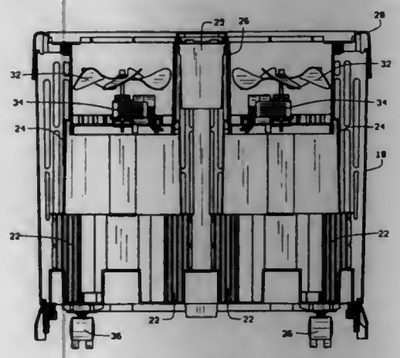
4. A photochromic article comprising an organic host material and a photochromic amount of at least one photochromic naphthopyran compound of claim 1.

5,573,713

HUMIDIFIER HAVING MULTI-STAGE FANS

Mark J. Tomasiak, O'Fallon; Terrence L. Stanek, Bridgeton, both of Mo., and John F. Moody, Bunker Hill, Ill., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jun. 6, 1995, Ser. No. 466,584
Int. Cl.[6] B01F *3/04*
U.S. Cl. 261—23.1 **22 Claims**



1. A humidifier comprising a water reservoir, a humidification system for converting water from the water reservoir into moist air within the humidifier, and at least two air moving devices mounted relative to the humidification system for transporting the moist air outside the humidifier, the at least two air moving devices being controlled by means providing staged operation from a low moist air transport to a high moist air transport or from a high moist air transport to a low moist air transport.

5,573,714

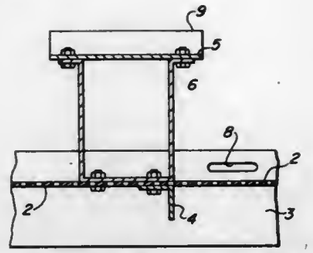
SPLICE SUPPORT CONSTRUCTION OF MULTIPLE DOWNCOMER FRACTIONATION TRAY

Daniel R. Monkelbaan, Amherst; Michael R. Resetarits, Depew, and Lawrence S. Graczyk, Orchard Park, all of N.Y., assignors to UOP, Des Plaines, Ill.

Filed Jun. 15, 1995, Ser. No. 490,687
Int. Cl.[6] B01F *3/04*
U.S. Cl. 261—114.5 **5 Claims**

1. A fractionation tray having an upper first side and a lower second side and which comprises:

a. a downcomer which extends across a major horizontal vapor-liquid contacting surface of the tray, which surface is defined by a number of decking plates comprising substantially flat perforated decking material;



b. at least one horizontal support brace extending between the downcomer and another point on the tray, with the support brace being located on the lower second side of the tray;

c. a plurality of antipenetration pans located on the upper first side of the tray, with each antipenetration pan comprising a perforated plate parallel to the major surface of the fractionation tray formed by the decking plates; and,

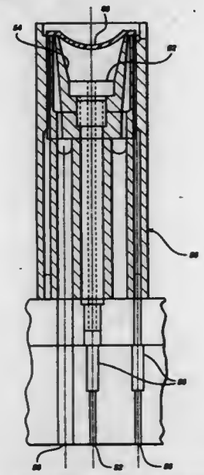
d. a plurality of vertical support members retaining each antipenetration pan a preset distance away from the major surface of the fractionation tray, with support members attached to an upper first side of the tray by a fastener which also attaches the decking plate to the horizontal support brace.

5,573,715

METHOD FOR TREATING AN OPHTHALMIC LENS MOLD

Jonathan P. Adams, Jacksonville; Edmund C. Rastrelli; John C. Heaton, both of Atlantic Beach; Kenneth J. Weber, and Thomas J. Wagner, both of Jacksonville, all of Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Continuation-in-part of Ser. No. 992,884, Dec. 21, 1992, Pat. No. 5,326,505. This application Apr. 8, 1994, Ser. No. 225,293
Int. Cl.[6] B29D *11/00*
U.S. Cl. 264—1.36 **9 Claims**



1. A method of separating a molded, polymerized ophthalmic lens formed by a mold from the mold, said mold comprised of at least two pieces:

a. a female piece having an arcuately shaped concave section and

b. a male piece having an arcuately shaped convex section

wherein at least one piece has a flange surrounding the arcuately shaped section and a cavity is formed between the female and male pieces when the pieces are mated,

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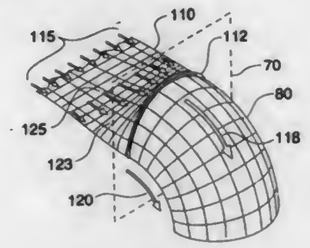
wherein the lens, when formed, has excess material surrounding the lens and the excess material is outside the mold cavity and in contact with the flange on a surface thereof, said method comprising:
causing an oxygen-bearing gas to flow over at least a portion of the flange surface,
causing an inert gas to flow over the arcuately shaped section of the mold piece which has the flange,
keeping the oxygen-bearing gas and the inert gas from intermixing,
increasing the surface energy of at least a portion of the flange surface exposed to oxygen,
filling the female piece of said mold with monomer,
mating the male piece of the mold onto the monomer-containing female piece and expelling excess monomer from the mold cavity and into contact with the flange surface having an increased surface energy,
polymerizing said monomer, and
separating the mold pieces,
removing the lens from the mold while retaining the excess material on the flange surface having an increased surface energy.

5,573,716

CONTINUOUS FORMING OF COMPLEX MOLDED SHAPES

Theodore L. Jacobson, Pacifica, Calif., assignor to Continuous Molding, Inc., Pacifica, Calif.

Continuation-in-part of Ser. No. 775,642, Oct. 10, 1991, Pat. No. 5,266,021. This application Nov. 30, 1993, Ser. No. 159,337
Int. Cl.[6] B29C *53/00*
U.S. Cl. 264—40.7 **21 Claims**



1. A method of forming a material into a predetermined shape comprising the steps of:
establishing relative motion between the material and a transition surface through which the material passes;
imparting cross-sectional dimensions to the material as the material passes through the transition surface, the cross-sectional dimensions conforming to those of the predetermined shape;
varying, as the material passes through the transition surface, at least one of the group of variables consisting of the cross-sectional dimensions of the material, the rates-of-change of the cross-sectional dimensions of the material, the rates of movement of the material relative to the transition surface, the differential rates of movement of the material relative to the transition surface, the instantaneous angles of movement of the material relative to the transition surface, and the instantaneous differential angles of movement of the material relative to the tradition surface;
abruptly stabilizing the material substantially as it achieves the desired cross-section and angle of movement through the transition surface so that the material, as it is stabilized, becomes an addition to a stabilized portion of the formed shape; and
controlling the position, orientation, and velocity of the formed shape relative to the transition surface.

5,573,717

ORIENTED POLYOLEFIN FILM WITH AMORPHOUS POLYMER, A PROCESS FOR ITS PRODUCTION AND ITS USE

Herbert Peiffer, Mainz; Ursula Murschall, Nierstein; Gunter Schloegl; Frank Osan, both of Kelkheim, and Thomas Dries, Schwabenheim, all of Germany, assignors to Hoechst Aktiengesellschett, Germany

Filed Mar. 23, 1995, Ser. No. 409,164
Claims priority, application Germany, Mar. 26, 1994, 44 10 559.2
Int. Cl.[6] B32B *3/26*
U.S. Cl. 264—45.1 **11 Claims**

1. A process for producing a non-transparent oriented polyolefin layer, comprising:
blending an olefin polymer and an amount, not exceeding about 40% by weight, based on the weight of the layer, of an amorphous void-initiating polymer, and
compressing and heating the resulting blend in an extruder such that a polymer melt is formed, and extruding a said melt through a die at an extrusion temperature above the glass transition temperature or the Vicat softening point of the amorphous polymer, to form a layer, and
drawing off the layer thus obtained on one or more rollers, and stretch-orienting the layer to form a stretch-oriented, void-containing layer, each void containing a particle of said amorphous polymer.

5,573,718

PROCESS FOR PRODUCING α-ALUMINA FIBERS

Han-Chang Shih, 56, Lane 103, Sec. 1, Hsin-Sheng S. Rd.; Yuan-Horng Chiou, 6th Fl., No. 20, Alley 6, Lane 118, Sec. 2, Ho-Ping E. Rd., both of Taipei, and Mu-Tsuan Tsai, 99, Wu-Lin St., Tou-Liu, all of Taiwan

Filed May 25, 1994, Ser. No. 248,711
Int. Cl.[6] B28B *1/00*
U.S. Cl. 264—56 **7 Claims**

1. A process for producing α-alumina fibers, comprising the following steps of:
(a) preparing a reaction mixture including aluminum nitrate [$Al(NO_3)_3 .9H_2O$], water and aluminum particles;
(b) refluxing the reaction mixture until the aluminum particles are completely dissolved to give an aluminum hydroxide sol;
(c) aging the aluminum hydroxide sol to a viscosity suitable for spinning;
(d) spinning the viscous sol obtained from step (c) into fibers; and
(e) drying and sintering the fibers obtained from step (d) to give α-alumina fibers.

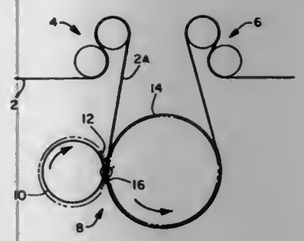
5,573,719

PROCESS OF MAKING HIGHLY ABSORBENT NONWOVEN FABRIC

Steven W. Fitting, Acworth, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 30, 1994, Ser. No. 346,792
Int. Cl.[6] B29C *55/06;69/00*
U.S. Cl. 264—129 **15 Claims**

1. A process for producing a highly absorbent, high strength wiper, which comprises the steps of:



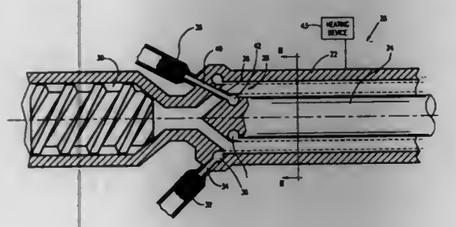
a) providing a bonded nonwoven web selected from the group consisting of spunbond fiber webs and staple fiber webs,
b) stretching said nonwoven web by applying a stretching tension in at least one direction,
c) aperturing said nonwoven web while maintaining said stretching tension, and
d) relaxing the apertured web, thereby returning the apertured nonwoven web substantially to its pre-stretched dimensions and forming said wiper,
wherein said process is conducted at a temperature below the softening point of said nonwoven web.

5,573,720

EXTRUSION OF THERMALLY CROSS-LINKABLE MATERIALS

Moshe Kotzer, Post Karkur, Israel, assignor to Pipex Ltd., Israel

PCT No. PCT/GB94/00606, § 371 Date Jul. 19, 1995, § 102(e) Date Jul. 19, 1995, PCT Pub. No. WO94/21441, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 23, 1994, Ser. No. 492,052
Claims priority, application Israel, Mar. 24, 1993, 105159
Int. Cl.[6] B29C *47/06*
U.S. Cl. 264—171.150 **9 Claims**



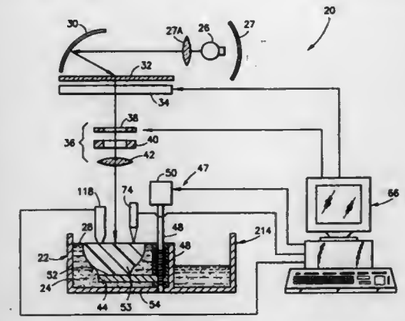
1. A process for the extrusion of plastic comprising:
a first step of extruding which comprises extruding at least one layer (**28***a*) of a thermally cross-linkable material in an extrusion apparatus (**20**) having at least one die wall (**22**);
a second step of extruding, performed simultaneously with said first step of extruding, and which comprises extruding at least one layer (**28***b*) of thermoplastic material in the extrusion apparatus between the thermally cross-linkable material and the at least one die wall (**22**); and
heating the thermally cross-linkable material, thereby to provide at least a rate of cross-linking thereof during said steps of extrusion of the plastic, such that said at least one layer (**28***a*) of thermally cross-linkable material becomes more than minimally cross-linked to the extent that high frictional resistance to its movement through the extruder die would be encountered in absence of said at least one layer (**28***b*) of thermoplastic material.

5,573,721

USE OF A SUPPORT LIQUID TO MANUFACTURE THREE-DIMENSIONAL OBJECTS

Paul C. Gillette, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 16, 1995, Ser. No. 389,514
Int. Cl.[6] B29C *35/08;41/02;41/52*
U.S. Cl. 264—401 **53 Claims**



19. A method of producing from a reactive liquid medium capable of being solidified a three dimensional object constructed from a plurality of successive layers of the solidified reactive liquid medium when subjected to appropriate synergistic stimulation, said method comprising the steps of:
(a) providing a reservoir containing a reactive liquid medium capable of being solidified and an underlying non-reactive liquid medium substantially immiscible with the reactive liquid medium for supporting the reactive liquid medium;
(b) providing a platform within the reservoir having an upper surface and being initially positioned at a depth which is substantially equal to a uniform thickness of that part of a first layer to be solidified to begin forming the object and continuing to support the object being constructed on the platform within the reservoir;
(c) directing a source of synergistic stimulation toward the reactive liquid medium to be solidified;
(d) operating imaging means for selectively controlling the size and shape of that part of a new two dimensional layer of the reactive liquid medium to be solidified;
(e) controlling operation of the imaging means utilizing coordinate information defining a three dimensional object of required configuration;
(f) solidifying at least part of the new two dimensional layer of the reactive liquid medium;
(g) providing a further layer of the reactive liquid medium having a substantially uniform thickness overlying the new solidified layer on the object and equivalent to the thickness of that part of the next succeeding two dimensional layer to be solidified; and repeating steps (c) through (g) until all of the layers of the solidified reactive liquid medium define the three dimensional object being constructed;
wherein step (g) includes the step of:
(h) adjusting the thickness of the further layer of the reactive liquid medium to achieve the further layer of step (g); and
wherein the reactive liquid medium is confined within an enclosed area in the reservoir; and wherein step (h) includes the step of:
(i) altering the size of the enclosed area of the further layer of the reactive liquid medium so as to maintain a thickness thereof equivalent to the thickness of that part of the next succeeding two dimensional layer to be solidified.

VOL 1192 ISS 2 NO 12 1996 UMI

5,573,722

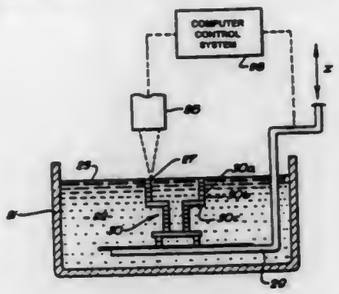
METHOD AND APPARATUS FOR PRODUCTION OF THREE-DIMENSIONAL OBJECTS BY STEREOLITHOGRAPHY

Charles W. Hull, Arcadia, Calif., assignor to 3D Systems, Inc., Valencia, Calif.

Continuation of Ser. No. 299,878, Sep. 1, 1994, abandoned, which is a division of Ser. No. 967,303, Oct. 20, 1992, Pat. No. 5,344,298, which is a continuation of Ser. No. 749,125, Aug. 23, 1991, Pat. No. 5,174,943, which is a continuation of Ser. No. 637,999, Jan. 4, 1991, abandoned, which is a continuation of Ser. No. 493,498, Mar. 14, 1990, abandoned, which is a division of Ser. No. 340,894, Apr. 19, 1989, Pat. No. 4,929,402, which is a continuation of Ser. No. 161,346, Feb. 19, 1988, abandoned, which is a continuation of Ser. No. 792,979, Dec. 9, 1985, abandoned, which is a division of Ser. No. 638,905, Aug. 8, 1984, Pat. No. 4,575,330. This application Jun. 7, 1995, Ser. No. 484,582

Int. Cl.[6] B29C *35/08;41/02*

U.S. Cl. 264—401 **26 Claims**



1. A method for producing a three-dimensional object from a medium capable of altering its physical state when subjected to prescribed stimulation, said method comprising the steps of:

containing a body of medium capable of altering its physical state in response to prescribed stimulation;

exposing a surface of said medium with a prescribed pattern of said described stimulation to provide a cross-sectional lamina;

coating over any previously formed cross-sectional lamina with a successive layer of said medium;

repeating said exposing and coating steps to form a plurality of such laminae in succession at said surface such that each successive lamina is formed integrally with the immediately preceding lamina to buildup the three-dimensional object;

detecting a position of said surface of said medium to obtain an actual position of said surface of said medium; and

adjusting said actual position of said surface of said medium to a desired level such that the actual position is substantially at said desired level during the step of exposing.

5,573,723

PROCESS FOR PREPARING BIAXIALLY ORIENTED POLYPROPYLENE FILM SUITABLE FOR TWIST WRAPPING

Herbert Peiffer, Mainz-Finthen; Ursula Murschall, Nierstein, and Gunter Schloegl, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

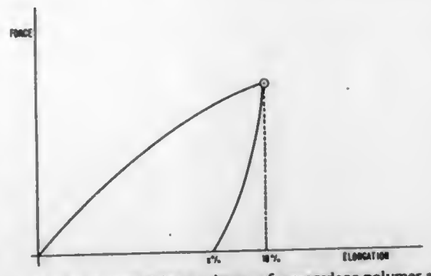
Division of Ser. No. 137,496, Oct. 15, 1993, Pat. No. 5,451,455, which is a continuation of Ser. No. 769,222, Oct. 1, 1991, abandoned. This application May 9, 1995, Ser. No. 438,207

Claims priority, application Germany, Oct. 2, 1990, 40 31 125.2

Int. Cl.[6] B29C *35/10*

U.S. Cl. 264—448 **19 Claims**

1. A process for producing a biaxially oriented, transparent, multilayered film suitable for twist wrapping having:



a) a base layer comprising a mixture of a propylene polymer and a resin having a softening point of about 130° to about 180° C., in an amount effective to improve the mechanical properties of the film, and

b) at least one additional layer comprising a material which can be readily subjected to corona treatment, the process comprising the steps of:

i) coextruding through a slot die layers a) and b) of the film so as to produce a multilayer film,

ii) solidifying the multilayer film by chilling, and

iii) orienting the multilayer film by stretching in the longitudinal and transverse directions, wherein the stretching ratio in the longitudinal direction is about 6 to about 9 and the stretching ratio in the transverse direction is about 6 to about 9 and the stretching ratios are similar, such that the film is imparted with isotropic properties in each direction, and such that the permanent deformation of the film in both of the longitudinal and transverse direction is more than about 60%.

5,573,724

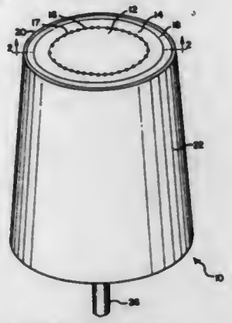
LADLE PORT ASSEMBLY

Madjid Soofi, St. Charles, and George M. Connors, Chicago, both of Ill., assignors to Magneco/Metrel, Inc., Addison, Ill.

Filed Jul. 29, 1994, Ser. No. 283,229

Int. Cl.[6] C21C *5/48*

U.S. Cl. 266—265 **21 Claims**



1. A ladle port assembly, comprising:

an inner refractory member including a fired high alumina refractory material of at least about 75% by weight alumina;

a middle refractory member adjacent to and surrounding the inner refractory member, the middle refractory member including a fired high alumina refractory material of at least about 75% by weight alumina;

an outer refractory member adjacent to and surrounding the middle refractory member; and

a plurality of essentially straight nonintersecting openings at an interface between the inner refractory member and the middle refractory member defined by channels formed in at least one of the inner and middle refractory members and permitting the passage of gas between the inner refractory member and the middle refractory member;

wherein the inner and middle refractory members have been fired to a temperature of at least about 2000° F. to cause hardening.

5,573,725

CORROSION INHIBITION SYSTEM FEATURING THE REACTION PRODUCT OF A POLYTHIOETHER POLYOL AND FATTY ACID

Michael J. Incorvia, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed May 12, 1989, Ser. No. 350,868

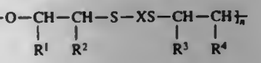
Int. Cl.[6] C23F *11/10*

U.S. Cl. 422—7 **13 Claims**

1. A water-dispersible corrosion inhibiting solution, comprising:

a solvent; and

about 10 ppm by volume to about 5% by volume of a corrosion inhibiting acid catalyzed condensation reaction product of a fatty acid and a polythioether polyol, said polythioether polyol represented by the formula:

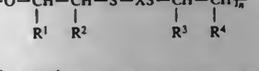


where R^1, R^2, R^3, and R^4 are H, a methyl group, or an ethyl group, X is a divalent organic radical selected from the group consisting of $—C_2H_4—$, $—C_4H_8—$, $—C_2H_4SC_2H_4—$, and n is about 2 to about 40.

2. A water-dispersible corrosion inhibiting solution, comprising:

a solvent; and

about 10 ppm by volume to about 5% by volume of a mixture of an aromatic solvent, an ester, and a corrosion inhibiting acid catalyzed condensation reaction product of a fatty acid and a polythioether polyol, said polythioether polyol represented by the formula:



where R^1, R^2, R^3, and R^4 are H, a methyl group, or an ethyl group, X is a divalent organic radical selected from the group consisting of $—C_2H_4—$, $—C_4H_8—$, $—C_2H_4SC_2H_4—$, and n is about 2 to about 40.

5,573,726

USE OF AMIDOAMINES IN OPHTHALMIC COMPOSITIONS

Nissanke L. Dassanayake, Arlington; Ronald L. Schlitzer, Fort Worth, and Joonsup Park, Arlington, all of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 381,889, Feb. 24, 1995, which is a continuation-in-part of Ser. No. 125,629, Sep. 22, 1993, Pat. No. 5,393,491. This application Feb. 27, 1995, Ser. No. 395,017

Int. Cl.[6] A01N *33/02;* **A61L** *2/18;* **C11D** *3/30;* **A61K** *31/13*

U.S. Cl. 422—28 **24 Claims**

12. A method of disinfecting a contact lens which comprises immersing the lens in an antimicrobial composition for a time sufficient to disinfect the lens, said composition comprising 0.00005 to 0.1 wt. % of a compound of the following formula:

(I)

wherein: X is or ;

Y is or ;

Z is oxygen or NR^4;

R^1 is C_6–C_{18} saturated or unsaturated alkyl, alkylaryl, or alkoxyaryl;

m is zero to 16;

n is 2 to 16;

R^2, R^3, and R^4 are independently hydrogen, C_1–C_8 saturated or unsaturated alkyl or hydroxyalkyl, or a pharmaceutically acceptable salt thereof.

5,573,727

AUTOMATIC STAINING APPARATUS FOR SLIDE SPECIMENS

Raymond A. Keefe, Merbourne, Australia, assignor to Australian Biomedical Corporation Ltd., Australia

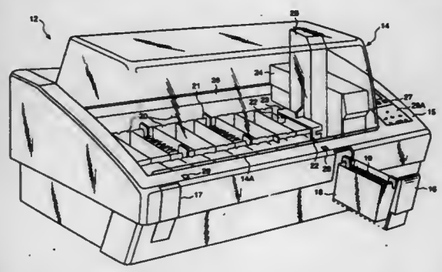
PCT No. PCT/AU93/00219, § 371 Date Mar. 13, 1995, § 102(e) Date Mar. 13, 1995, PCT Pub. No. WO93/23732, PCT Pub. Date Nov. 25, 1993

PCT Filed May 13, 1993, Ser. No. 331,662

Claims priority, application Australia, May 13, 1992, PL2401

Int. Cl.[6] B05C *3/02*

U.S. Cl. 422—63 **15 Claims**



1. Automatic tissue staining apparatus for staining tissue slide specimens, said apparatus comprising a housing including a closeable cover assembly, a plurality of slide racks each containing a plurality of individual slides containing specimens, a plurality of baths each containing chemicals for treating said specimens, means for moving a said slide rack from one of said plurality of baths to another of said plurality of baths, and a control system including a programmable microprocessor, said control system including means for inputting a schedule of said baths, thereby defining a programmed staining schedule and for selecting a programmed staining schedule for a slide rack inserted into said apparatus, said control system providing selectable control over said moving means to control slide rack movement through a programmed sequence through said plurality of baths, defined by said staining schedule, said microprocessor being programmable to iteratively determine movement timing of each slide rack within said plurality of slide racks whereby multiple schedules of movement of various ones of said plurality of slide racks can operate simultaneously, means for inputting additional slide racks and means for withdrawing processed slide racks, said control system further including means for indicating the insertion of additional slide racks into said apparatus and the withdrawal of slide racks from said apparatus, said control system including means for establishing a staining schedule for each slide rack and for reestablishing the staining schedule when a slide rack is inserted into or removed from said apparatus.

5,573,728
DEVICE FOR SELECTIVE DETECTION OF GAS

Muriel Loesch, Paris; Francis Menil, La Brede; Claude Lucat, Cestas; Pascale Dutronc, Paris, and Véronique Marteau, Survilliers, all of France, assignors to Gaz de France, Paris, France

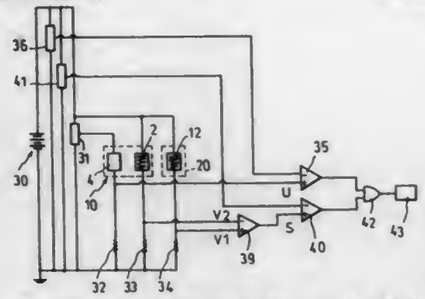
PCT No. PCT/FR93/00534, § 371 Date Jan. 28, 1994, § 102(e) Date Jan. 28, 1994, PCT Pub. No. WO93/24827, PCT Pub. Date Dec. 9, 1993

PCT Filed Jun. 4, 1993, Ser. No. 185,806

Claims priority, application France, Jun. 4, 1992, 92 06791

Int. Cl.[6] G01N *27/04;27/14;27/16*

U.S. Cl. 422—90 **17 Claims**



1. A device for selective detection of gas, enabling a first gas to be detected relative to a second gas, one of said gases being combustible, the device comprising a solid state sensor provided with an insulating substrate having a first face and a second face, a heater element disposed on the first face of said substrate, and a semiconductor layer formed on the second face of said substrate, the semiconductor layer having a resistance which varies in the presence of one of said gases; a reference sensor provided with an insulting substrate having a first face and a second face and a heater element disposed on the first face of said substrate; means for determining a voltage U representative of the resistance of the semiconductor layer of the solid state measurement sensor; means passing sufficient current through the beater elements to permit combustion of said combustible gas; means for determining the voltage difference S between a voltage representative of the temperature of the beater element of said solid state measurement sensor and a voltage representative of the temperature of the beater element of the reference sensor; means providing a first threshhold voltage; means providing a second threshold voltage; first means for comparing the voltage U with the first threshhold voltage; and second means for comparing the voltage difference S with the second threshold voltage.

5,573,729
REPETITION PIPETTE

Herbert Belgardt; Klaus Schürbrock, both of Hamburg, and Rolf-Günter Meyer, Bendestorf, all of Germany, assignors to Eppendorf-Netheler-Hinz GmbH, Hamburg, Germany

Filed Apr. 20, 1995, Ser. No. 425,521

Claims priority, application Germany, Apr. 27, 1994, 44 14 744.9

Int. Cl.[6] B01L *3/02*

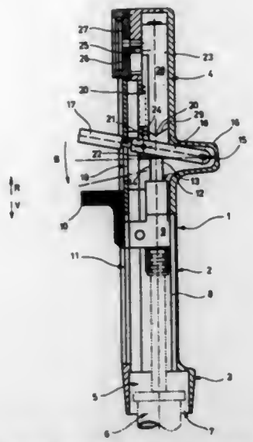
U.S. Cl. 422—100 **3 Claims**

1. A repetition pipette including a syringe receiving section (5) for a mounting portion of a syringe (6), a receiving member (9) having a piston receiving portion for the mounting portion of a syringe piston, piston returning means (10) for moving said receiving member away from said syringe receiving section, piston advancing means (13, 17, 22) for advancing said receiving member towards said piston receiving portion, the piston advancing means comprising a rack having a toothing (13) connected to said receiving member, and an actuating element (17) movable along an actuation path (B), and a pawl (22) pivotally mounted thereto, said pawl being movable into engagement with the toothing (14) of the rack so as to drive the rack for an advancing step when the actuating element is advanced, and is moved out of engagement with the rack when the actuating element is returned, means (23,27) for adjusting a step width of the advancing step, the step width adjusting means comprising a sleeve-shaped withholding element (23) displaceable along the rack by an adjusting element (27) for preventing the pawl from engaging the rack, and stroke length limiting means (29,29') controlled by the step width adjusting means (23,27) so as to increase a stroke length (B) of the actuating element (17) when the step width increases and to decrease the stroke length of the actuating element when the step width decreases;

wherein said stroke length limiting means includes an abutment (29,29') limiting the stroke length (B) of the actuating element (17) at the beginning of the stroke length, said abutment being adjustable by the step width adjusting means (23,27) both in an advancing and a returning direction (V and R) of the actuating element;

wherein the withholding element (23) comprises a lateral shoulder (29,29') forming said abutment; and

wherein said actuating element (17) includes a pair of parallel legs, (18,18') with one leg extending transversely across one side of said rack (13), and the withholding element (23) has said shoulder (29) on said one side of the rack (13).



5,573,730
METHOD AND APPARATUS FOR TREATING AIRBORNE RESIDUES

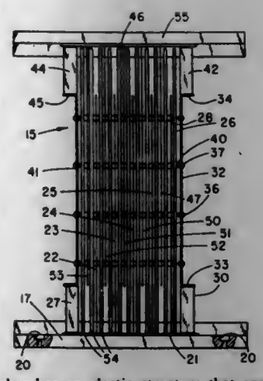
Theodore J. Gillum, 10 Forest Rd., Budd Lake, N.J. 07828

Filed May 9, 1995, Ser. No. 438,008

Int. Cl.[6] A62B *7/08*

U.S. Cl. 422—123 **6 Claims**

1. Apparatus for mixing ozone with an environmental contaminant that is emitted from a source in order to neutralize the contaminant into at least one atmospherically releasable compound comprising an ozone generator for producing ozone, a blower for flowing air through said ozone generator, a mixing chamber in fluid communication with said blower for mixing ozone with an environmental contaminant to produce a mixture with an atmospherically releasable compound 1 means for selectively discharging said compound from said mixing chamber, a sensor for measuring the concentration of the environmental contaminant remaining in said mixture that is selectively discharged from said mixing chamber, an ozone modulation controller responsive to said sensor for increasing and decreasing ozone produced by said ozone generator in response to said sensor measurement of the environmental contaminant concentration in said mixture, a retention chamber in selective fluid communication with said mixing chamber to enable ozone to neutralize a contaminant wherein said



retention chamber has an elastic structure that expands and contracts in response to said flowing air.

5,573,731
ELECTRICALLY HEATED CATALYTIC CONVERTER FOR AN ENGINE

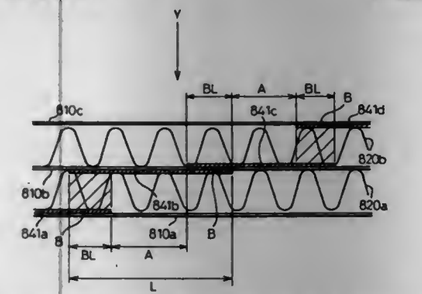
Kouji Yoshizaki, Numazu; Masahiko Ogai, Toyota; Takuzou Kako, Tokyo; Yuuji Nakajima, Kimitsu; Kenji Fujino, Kimitsu; Kazunori Itoh, Kimitsu; Shohgo Konya, Kawasaki, and Keiji Sato, Futtsu, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, and Nippon Steel Corporation, Tokyo, both of Japan

Filed May 24, 1995, Ser. No. 449,325

Claims priority, application Japan, May 30, 1994, 6-116674; Feb. 14, 1995, 7-025457

Int. Cl.[6] F01N *3/28*

U.S. Cl. 422—174 **6 Claims**



1. An electrically heated catalytic converter for an engine comprising:

(a) a substrate supporting a three-way reducing and oxidizing catalyst, the substrate including a laminated assembly of layers, each layer having:

(1) a plain metal sheet,

(2) a corrugated metal sheet,

(3) a thin insulating layer interposed between said plain metal sheet and said corrugated sheet, the thin insulating layers being made of an oxide of a first metal, and

(4) a local conductive connection including strips of solder foil which electrically connect the plain metal sheet in said each layer to the corrugated metal sheet in said each layer through the thin insulating layer, and electrically connect the plain metal sheet in said each layer to the corrugated metal sheet in the layer adjoining said each layer through the thin insulating layer, said strip of solder foil being made of a soldering material containing a second metal having a larger reducing capability than said first metal, wherein said strips of solder foil are arranged in such a manner that the strips of solder foil disposed on both sides of the corrugated metal sheet overlap each other by only a portion when viewed from a direction perpendicular to said each layer;

(b) a first electrode, wherein said laminated assembly of layers includes an inside layer electrically connected to the first electrode; and

(c) a second electrode, wherein said laminated assembly of layers includes an outside layer electrically connected to the second electrode.

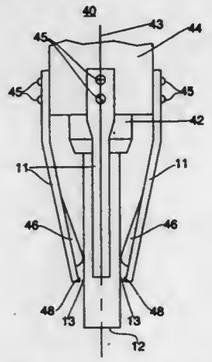
5,573,732
METHOD AND APPARATUS FOR STERILIZING MEDICAL DEVICES USING GLOW DISCHARGES

Herbert A. Waggener, Pottersville, and Kazimierz Przydzial, Clark, both of N.J., assignors to Waggener, Przydzial and Associates, Chippewa Falls, Wis.

Filed Sep. 8, 1994, Ser. No. 302,621

Int. Cl.[6] B01J *19/08*

U.S. Cl. 422—186.06 **29 Claims**



1. Apparatus for sterilizing an electrically conductive portion of a medical device comprising:

an electrode; and

means for positioning the electrode a predetermined distance from the electrically conductive portion of the medical device, the electrode and the conductive portion of the medical device being separated by a gap which is sufficient, with an appropriate potential difference applied between the electrode and the medical device, to facilitate an electrical path between the electrode and the medical device so as to produce a glow discharge adjacent the outer surface of the medical device such that the portion of the medical device contacted by the glow discharge is sterilized.

5,573,733
INNER ELECTRODE FOR AN OZONE GENERATOR, OZONE GENERATOR CONTAINING SAID ELECTRODE AND METHOD OF USE OF SAID OZONE GENERATOR

Amir Salama, Granby, Canada, assignor to Poptec Ltee, Quebec, Canada

Filed Dec. 7, 1992, Ser. No. 987,200

Claims priority, application Canada, Nov. 8, 1992, 2075789

Int. Cl.[6] B01J *19/08*

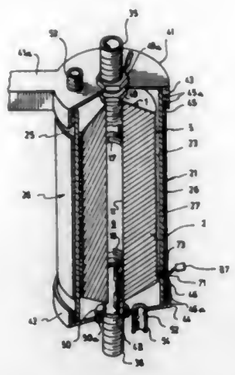
U.S. Cl. 422—186.18 **34 Claims**

1. An electrode for an ozone generator, having an outer surface and an inner surface, comprising:

a member of heat and electric conducting material whose at least a portion of the outer surface is provided a plurality of protrusions defining a plurality of points;

at least one inner duct having opposite opened ends, provided in the member and defining the inner surface to the electrode,

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the inner duct being intended to allow a flow of cooling gas to circulate therethrough and contact the inner surface of the electrode;

wherein the electrode is a cylinder having a density varying from 0.5 to 0.9 and with the outer surface is being that the electrode works as a heat sink to collect heat generated at the outer surface and bring heat at the outer surface of the electrode at a heat flow to the inner surface of the electrode where the heat is collected by the cooling gas.

33. A method for generating ozone, comprising the steps of:

providing an ozone generator, comprising:

an outer electrode made of dielectric material, having an inner surface and having an outer surface comprising an electric conducting material;

an inner electrode having an outer surface, said inner electrode being concentrically positioned inside the outer electrode;

a gap positioned between said inner and outer surfaces;

means for circulating an oxygen containing gas through said gap;

means for applying a potential difference between said inner and outer surfaces;

means for cooling the inner electrode;

means for cooling the outer electrode; and

wherein said inner electrode comprises:

a member of heat and electric conducting material whose at least a portion of the outer surface comprises is provided with a plurality of protrusions defining a plurality of points;

at least one inner duct having opposite ends, provided in the member and defining an inner surface to said inner electrode, said inner duct being intended to allow a flow of cooling gas to circulate therethrough and contact said inner surface; and

means for circulating said cooling gas through said inner duct; and

said inner electrode being a cylinder having a density varying from 0.5 to 0.9 and with the outer surface of the inner electrode being that the inner electrode works as a heat sink to collect heat generated at the outer surface of the inner electrode and bring the heat at the outer surface of the inner electrode at a heat flow to the inner surface of the inner electrode where the heat is collected by the cooling gas;

circulating a flow of an oxygen containing gas in a gap of a reactor cell of the ozone generator, from an inlet to an outlet of the ozone generator; and

applying a potential difference between the inner and outer surfaces of said electrodes so that electric arcs pass from the inner surface of the outer electrode to the protrusions of the outer surface of the inner electrode through the oxygen containing gas to thus generate an oxygen containing gas enriched at the outlet of the reactor cell.

5,573,734

PLANT FOR THE PRODUCTION OF UREA IN REACTION SPACES WITH DIFFERENT YIELDS

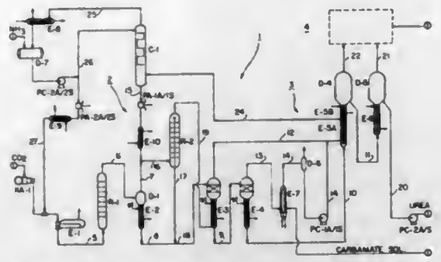
Giorgio Pagani, Milan, Italy, assignor to Urea Casale S.A., Lugano-Besso, Switzerland

Continuation of Ser. No. 236,574, May 2, 1994, Pat. No. 5,523,482. This application Jun. 5, 1995, Ser. No. 462,635

Claims priority, application Switzerland, May 14, 1993, 01-471/93

Int. Cl.[6] C07C *273/04*

U.S. Cl. 422—189 **5 Claims**



1. A plant for producing urea comprising:

(A) a first urea synthesis reactor (R-1);

(B) a second urea synthesis reactor (R-2);

(C) a recovery section (3) of urea, ammonia and carbamate, respectively;

(D) an apparatus (E-2) for thermal decomposition of carbamate connected to said first urea synthesis reactor (R-1), to said second urea synthesis reactor (R-2), and to said recovery section (3) of urea, ammonia and carbamate, respectively;

(E) at least one conduit (15, 16) for recycling the carbamate obtained in said recovery section (3) to said second urea synthesis reactor (R-2); and

(F) a means (E-10) on said at least one conduit (15, 16) for regulating the temperature of the carbamate recycled to the second urea synthesis reactor (R-2).

5,573,735

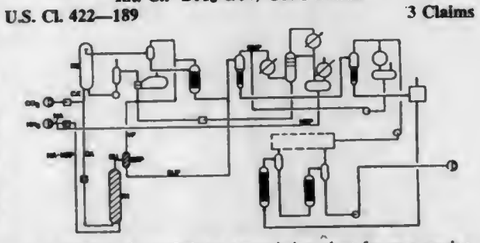
METHOD OF RETROFITTING UREA PRODUCTION PLANT

Giorgio Pagani, Milan, Italy, assignor to Urea Casale, S.A., Lugano, Switzerland

Division of Ser. No. 354,482, Dec. 12, 1994, which is a division of Ser. No. 41,944, Apr. 2, 1993, Pat. No. 5,403,956. This application Jun. 7, 1995, Ser. No. 478,693

Int. Cl.[6] B01J *8/04*; **C07C** *273/04*

U.S. Cl. 422—189 **3 Claims**



1. A method of retrofitting a pre-existing plant for urea production including:

a first urea synthesis reactor;

means for feeding high purity ammonia and carbon dioxide to said first reactor;

a carbamate condenser downstream of said first urea synthesis reactor;

an isobaric stripper downstream of said first urea synthesis reactor;

a recovery section for separating urea produced in the first urea synthesis reactor from an aqueous solution of unreacted products, said recovery section comprising:

a medium pressure section downstream of said isobaric stripper, for distilling an urea solution produced in the first urea synthesis reactor;

a rectification column, downstream of said medium pressure section, for separating high purity ammonia and said aqueous solution of unreacted products out of a vapor stream leaving said medium pressure section;

conduit means for recycling said aqueous solution of unreacted products leaving the rectification column to said carbamate condenser;

conduit means for recycling said high purity ammonia leaving the rectification column to said first urea synthesis reactor;

said method comprising the steps of:

a) providing a second urea synthesis reactor upstream of said recovery section;

b) disconnecting said means for feeding high purity ammonia and said conduit means for recycling said high purity ammonia leaving the rectification column from the first urea synthesis reactor and connecting the same to the second urea synthesis reactor;

c) connecting means for feeding high purity carbon dioxide to said second reactor;

d) providing a flash separator downstream of said second urea synthesis reactor;

e) providing conduit means for feeding to said carbamate condenser a vapor stream leaving said flash separator;

f) providing conduit means for feeding to said medium pressure section a urea stream leaving said flash separator.

5,573,736

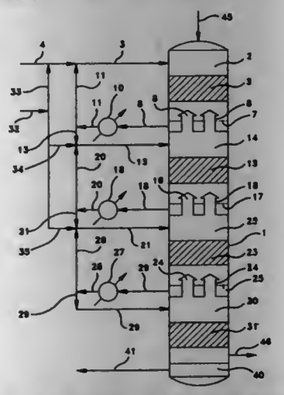
CATALYTIC REACTOR

John C. Jubin, Jr., West Chester, Pa., assignor to ARCO Chemical Technology, L.P., Greenville, Del.

Division of Ser. No. 310,546, Sep. 22, 1994, Pat. No. 5,466,836, which is a continuation of Ser. No. 171,144, Dec. 20, 1993, abandoned. This application Jun. 29, 1995, Ser. No. 496,702

Int. Cl.[6] B01J *8/04*; **C07D** *301/12*

U.S. Cl. 422—191 **5 Claims**



1. A catalytic reactor suitable for the production of propylene oxide by the exothermic reaction of propylene and hydrogen peroxide comprised of a series of separate zones each containing a packed bed of solid catalyst, means of introduction reaction liquid into each zone and passing the liquid through the bed of solid catalyst contained therein at exothermic reaction conditions, means for removing all reaction liquid from each zone, means for cooling all of the removed reaction liquid from each zone and recycling 60–90% of the cooled liquid to the zone from which it was removed, means for passing 10–40% of the cooled liquid to the next succeeding zone, and means for withdrawing liquid product from the last of the said separate zones.

5,573,737

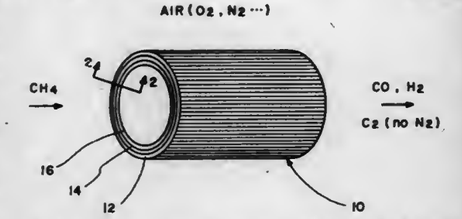
FUNCTIONALLY GRADIENT MATERIAL FOR MEMBRANE REACTORS TO CONVERT METHANE GAS INTO VALUE-ADDED PRODUCTS

Uthamalingam Balachandran, Hinsdale; Joseph T. Dusek, Lombard; Mark S. Kleefisch, Napersville, and Thadeus P. Kobylinski, Lisle, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 27, 1994, Ser. No. 313,622

Int. Cl.[6] B01J *8/02;19/00*; **A47G** *19/22*; **B32B** *9/00*

U.S. Cl. 422—211 **6 Claims**



1. A bollow tube reactor for partial oxygenation of hydrocarbon fuels to high-value-added products comprising:

a) an outer tube of a perovskite having the general formula ABO_3, where A and B are cations, and B is a transition metal having mixed electronic and ionic conductivity;

b) an inner tube of doped-zirconium oxide; and,

c) a middle tube bonded between the outer tube and the inner tube, the middle tube transitioning from an excess of perovskite at its boundary with the outer tube to an excess of zirconium oxide at its boundary with the inner tube;

whereby oxygen in air which passes over the outer tube is transported through the outer, middle, and inner tubes where it reacts with methane gas passing through the inner tube, generating partial oxidation products.

5,573,738

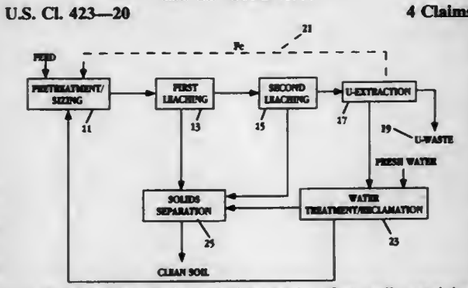
METHOD FOR REMOVING DEPLETED URANIUM FROM CONTAMINATED SOILS

Jonathan K. Ma, Henderson, Nev.; Andrea W. Chow, Los Altos, Calif.; Scott A. Ranger, St. George, Utah; David W. Peters, West Cliffe, Colo., and Ronald F. May, Las Vegas, Nev., assignors to Lockheed Martin Corporation, Bethesda, Md.

Filed Jul. 8, 1994, Ser. No. 272,193

Int. Cl.[6] C01G *43/00*

U.S. Cl. 423—20 **4 Claims**



1. A method for use in removing uranium from soil containing metallic uranium billets, soil particles greater than about ⅜ inch in size, and soil particles less than about ⅜ inch in size, comprising the steps of:

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a) removing from the soil, soil particles greater than ¼ inch in size,
b) scrubbing the removed soil particles from step (a),
c) removing the metallic uranium billets by gravimetric separation,
d) crushing the remaining soil particles to 10 mesh or less,
e) forming a first slurry of the crushed soil particles in an aqueous medium containing water, acid, hydrogen peroxide and iron, thereby to leach uranium from said particles,
f) removing coarse particles in the first slurry,
g) after said removing, treating the first slurry to produce a first uranium-containing supernatant and fine particles,
h) forming a second slurry composed of the fine particles in an aqueous medium containing water, acid, hydrogen peroxide and iron, thereby to leach uranium from the fine particles,
i) removing the fine particles in the second slurry to form a second supernatant,
j) extracting uranium from the first and second supernatants, and,
k) after said extracting, treating said first and second supernatants for reuse as reclaimed water in at least one of steps (e) and (h).

5,573,739

SELECTIVE BISMUTH AND ANTIMONY REMOVAL FROM COPPER ELECTROLYTE

Viken P. Baboudjian, Pointe-Claire, and Jack S. Stafiej, Dorval, both of Canada, assignors to Noranda, Inc., Toronto, Canada

Filed Oct. 28, 1994, Ser. No. 330,794
Int. Cl.[6] C22B *15/14*
U.S. Cl. 423—87 **7 Claims**

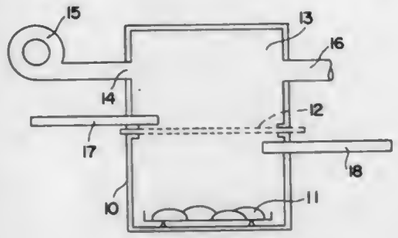
1. A process for selectively removing antimony, bismuth, or both, dissolved in an acidic solution, which process comprises:
providing a solution in which antimony, bismuth, or both are dissolved in an acidic solution having substantially no solids;
submitting the solution to oxidizing conditions in an autoclave thereby causing the selective precipitation of antimony and bismuth in the form of oxides;
filtering precipitated antimony and bismuth oxides; and
submitting the oxidized solution to reducing conditions.

5,573,740

METHOD AND APPARATUS FOR GENERATING PHOSPHINE

Henry J. Banks, Pialligo, and Colin J. Waterford, McGregor, both of Australia, assignors to Commonwealth Scientific aand Industrial Research Organization, Campbell, Australia

PCT No. PCT/AU91/00264, § 371 Date Feb. 11, 1993, § 102(e) Date Feb. 11, 1993, PCT Pub. No. W091/19671, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 21, 1991, Ser. No. 956,778
Claims priority, application Australia, Jun. 29, 1990, PK0918/90; Jun. 21, 1991, PK0732/90
Int. Cl.[6] C01B *25/00;* **B01J** *16/00*
U.S. Cl. 423—299 **45 Claims**



1. A method of generating phosphine, said method comprising the steps:
(a) providing a first container, containing water;
(b) mounting, on top of said first container and in spaced relationship thereto, a second container, the second container containing a plurality of tablets or pellets of a phosphide formulation;
(c) periodically removing one of the tablets or pellets of the phosphide formulation from the second container and depositing the removed tablet or pellet in said first container, whereby the tablet or pellet contacts and reacts with the water in the first container to form phosphine; and
(d) removing the phosphine so produced from the first container.

6. Apparatus for generating phosphine, said apparatus comprising
(a) a chamber adapted to contain water, said chamber having a gas outlet port above the level of water normally within the chamber, said chamber being closed by a top wall having an inlet port therein;
(b) a hopper adapted to contain a plurality of tablets or pellets of a phosphide formulation, said hopper being mounted above said chamber, said hopper having a tablet or pellet outlet;
(c) tablet or pellet transfer means mounted between said hopper and said chamber, said transfer means comprising a disc member having at least one aperture therein, said or each aperture being dimensioned to receive one of said tablets or pellets, said disc member being moveable so that said or each aperture may be periodically positioned at a first location in which the or each aperture is directly below the tablet or pellet outlet of the hopper, and at a second location in which said or each aperture is directly above the inlet port of said chamber, whereby a pellet or tablet deposited in the aperture at the first location is discharged from the aperture and into said chamber when the aperture is at said second location; and
(d) means to cause the movement of said disc member;
whereby, when the apparatus is in use, each tablet or pellet of phosphide formulation which falls from (the or an) aperture in the disc member into said chamber reacts with water in the chamber to produce phosphine, said phosphine being removed from the chamber through the gas outlet port.

28. A method of generating phosphine comprising the steps of
(a) providing a housing in which is located a quantity of a metal phosphide formulation, the housing being closed by a membrane that is permeable to water and phosphine; and
(b) establishing, outside the housing but adjacent to the membrane, a flow of gas which contains water vapour or liquid water;
whereby water from said gas flow permeates through the membrane and reacts with the phosphide formulation to form phosphine, the phosphine then permeating through the membrane and entering said gas flow.

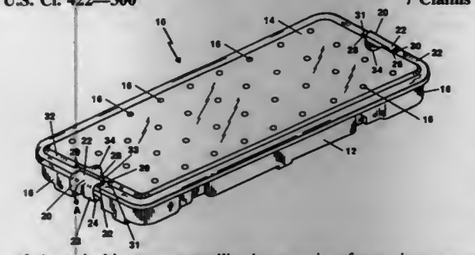
30. Apparatus for the generation of phosphine comprising:
(a) a housing constructed of a water-impermeable material, said housing being adapted to contain a quantity of a metal phosphide formulation;
(b) a closure member for said housing, said closure member comprising a membrane that is permeable to water or water vapor and is also permeable to phosphine;
(c) a chamber located adjacent to said housing, said membrane comprising at least part of a common wall of said chamber and said housing;
(d) means to establish a flow of gas containing water vapor or liquid water through said chamber; and
(e) a blanking plate operatively connected to said chamber, said blanking plate being movable adjacent to said membrane, to cover a portion of said membrane.

5,573,741

SURGICAL INSTRUMENT STERILIZATION CONTAINER WITH IMPROVED LATCHING MECHANISM

Edward D. Riley, 16 Brookside Dr., Falmouth, Me. 04105

Filed Jun. 20, 1995, Ser. No. 492,712
Int. Cl.[6] A61L *2/20;* **B65D** *45/16*
U.S. Cl. 422—300 **7 Claims**



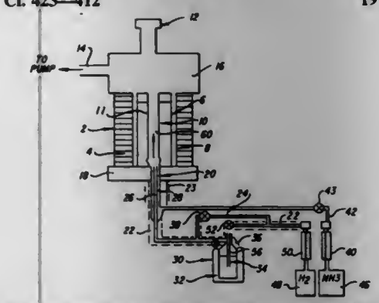
6. A surgical instrument sterilization container for use in a steam autoclave, said container comprising:
a base unit forming a bottom of said sterilization container and having a wall, the base unit perforated to permit steam from the autoclave to pass through the base unit;
a cover unit forming a top of said sterilization container and having an end and a first locking means located at the end; and
a generally C-shaped tab having an upper portion and a lower portion separated by a center portion, the upper portion having a second locking means for interfitting with the first locking means and the lower portion including an edge, a notch extending inwardly from the edge and two collinear pivot studs projecting from the edge in opposite directions,
wherein the wall of said base unit comprises an indentation constructed to receive the lower portion of the tab, the indentation having two spaced-apart, collinear slots such that the edge of the tab may be positioned between the slots with the pivot studs being received in the slots thereby allowing the tab to pivot between a locked position in which the second locking means interfits with the first looking means and an open position in which the second locking means is spaced from the first locking means, and
further wherein the tab is capable of being removed from the base unit by squeezing the two pivots studs together as provided by the notch so that the pivot studs may be removed from the corresponding slots in the indentation.

5,573,742

METHOD FOR THE PREPARATION OF HIGH PURITY ALUMINUM NITRIDE

Joseph J. Gebhardt, Malvern, Pa., assignor to Martin Marietta Corporation, East Windsor, N.J.

Filed Oct. 29, 1987, Ser. No. 114,691
Int. Cl.[6] C01B *21/072*
U.S. Cl. 423—412 **19 Claims**



1. A process for making high purity aluminum nitride, comprising the steps of:
a) placing in a reaction zone a substrate material selected to have a coefficient of thermal expansion closely matching that of aluminum nitride;
b) conducting, a heated, gaseous aluminum-containing organic compound into said reaction zone;
c) introducing ammonia gas into said reaction zone;
d) mixing said heated, gaseous aluminum-containing organic compound and said ammonia gas in said reaction zone, whereby high purity aluminum nitride is produce on said substrate.

5,573,743

METHOD FOR PRODUCING CHLORINE DIOXIDE AND REMOVING CHLORINE DIOXIDE USING CHEMICALLY IMPREGNATED ZEOLITE

Fred Klatte, San Francisco, Calif.; James Aamodt, Wilsonville, Oreg., and David Biswell, Kingsburg, Calif., assignors to Klatte Inc., Petaluma, Calif.

Continuation-in-part of Ser. No. 382,601, Feb. 2, 1995, which is a continuation-in-part of Ser. No. 150,438, Nov. 10, 1993, Pat. No. 5,464,598, which is a continuation-in-part of Ser. No. 975,680, Nov. 13, 1992, Pat. No. 5,278,112. This application May 19, 1995, Ser. No. 445,076
Int. Cl.[6] C01B *11/02*
U.S. Cl. 423—477 **12 Claims**

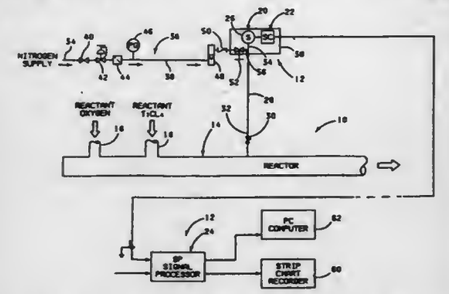
1. A method for reacting a fluid with chemically impregnated zeolite crystals, including the steps of:
(a) moving the fluid through a first bed of impregnated zeolite crystals, which include zeolite crystals impregnated with sodium chlorite;
(b) moving the fluid through a second bed of impregnated zeolite crystals, which are impregnated with at least one of the following impregnating agents: phosphoric acid, acetic acid, and citric acid, thereby producing chlorine dioxide gas; and
(c) moving the fluid through a third bed of impregnated zeolite crystals, which are impregnated with one of the following impregnating agents: potassium hydroxide, sodium sulfite, sodium bisulfite, and ferrous sulfate, thereby removing at least some of the chlorine dioxide gas by chemical reaction with the third bed.

5,573,744

METHOD FOR ENHANCING PRODUCTION OF TITANIUM DIOXIDE

Vernon D. Gebben, Oklahoma City, Okla., and Walter D. Bruce, Columbus, Miss., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Continuation of Ser. No. 156,005, Nov. 23, 1993, abandoned. This application Feb. 17, 1995, Ser. No. 390,190
Int. Cl.[6] C01G *23/047*
U.S. Cl. 423—613 **22 Claims**



1. A method for producing TiO_2 by reacting O_2 and $TiCl_4$ in a tube, which includes providing a flow of $TiCl_4$ to the tube and providing a flow of O_2 to the tube; the improvement comprising:

sensing fluid pressure fluctuations in the tube to detect amplitudes of subaudible acoustic waves and outputting signals proportional to the sensed fluctuations;

amplifying the output signals and providing signals substantially free of frequency components not related to subaudible acoustic waves resulting from uneven combustion within said tube;

controlling the flow of at least one of the $TiCl_4$ or O_2 through the tube in response to amplitudes of subaudible acoustic waves exceeding a set value, thereby increasing the efficiency of the reaction between the $TiCl_4$ and the O_2 when compared to a reaction of $TiCl_4$ and O_2 without such responsive flow control;

reacting the $TiCl_4$ and O_2, the flow of at least one of which has been controlled; and

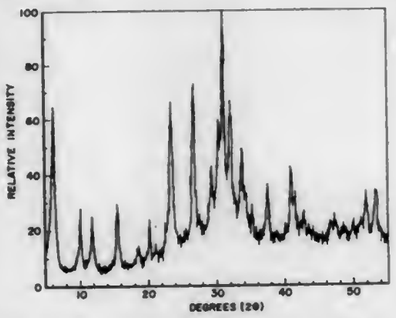
recovering the TiO_2 formed by the reaction.

5,573,745

HIGH MICROPORE VOLUME LOW SILICA EMT-CONTAINING METALLOSILICATES

Hong-Xin Li, Allentown; Charles G. Coe, Macungie; Thomas R. Gaffney, Allentown, all of Pa.; Yanliang Xiong, Belgium Hevertee, Belgium; Johan A. Martens, Huldenbert, Belgium, and Pierre A. Jacobs, Gooik, Belgium, assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 12, 1994, Ser. No. 241,833
Int. Cl.[6] C01B *39/20*
U.S. Cl. 423—700 **4 Claims**



1. The method of synthesizing a crystalline metallosilicate composition having an intergrowth of EMT and FAU structures, comprising; forming a first gel containing $M_{2/n}O$, Al_2O_3, >1.5 SiO_2 in water wherein M is a metal cation other than lithium, ageing said first gel at a temperature below the crystallization temperature of its constituents, forming a second gel containing $M_{2/n}O$, Al_2O_3, SiO_2 in water wherein M is a metal cation other than lithium, mixing said first gel and said second gel, crystallizing said intergrowth of EMT and FAU structures and recovering it from the mixture of the first and second gels.

5,573,746

ZEOLITE SYNTHESIS WITH AMINO ACID DIRECTING AGENTS

Catherine S. H. Chen, Berkeley Heights, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

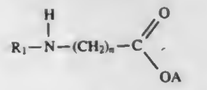
Filed Jnn. 6, 1995, Ser. No. 469,180
Int. Cl.[6] C01B *39/26;39/40*
U.S. Cl. 423—705 **11 Claims**

1. A method for synthesizing a porous inorganic solid selected from the group consisting of ZSM-5 and mordenite, comprising the steps of:

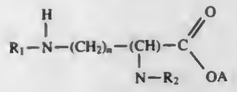
(a) forming a reaction mixture containing water, an alumina source, a silica source, an alkali metal oxide source, and an amino acid compound, R, having the formula:

SEM OF ZSM-5 SYNTHESIZED WITH 6-AMINOHEXANOIC ACID IN EXAMPLE 14





or



wherein R_1 and R_2 are the same or different diamondoid groups, A is hydrogen or a metal ion, and n is from about 1 to about 11; and

(b) recovering the porous inorganic solid from said reaction mixture of step (a).

5,573,747

METHOD FOR PREPARING A PHYSIOLOGICAL ISOTONIC PET RADIOPHARMACEUTICAL OF ^{62}CU

Jeffrey L. Lacy, 15019 Penn Hills, Houston, Tex. 77062

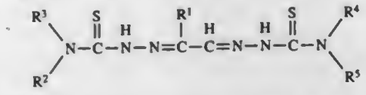
Filed May 19, 1995, Ser. No. 444,957
Int. Cl.[6] A61K *51/00;* **A01N** *47/34*
U.S. Cl. 424—1.65 **8 Claims**

1. A method for preparing a radiopharmaceutical in a form suitable for intravenous bolus injection, comprising:

eluting ^{62}Cu from a column of anion exchange resin loaded with ^{62}Zn in an amount to provide a radioactivity level of from about 0.1 to about 1000 mCi of ^{62}Zn by forcing an eluant having a pH of less than 2.0 and a chloride ion content of from about 0.5 to about 4.0M over said anion exchange resin to provide an eluate having a radioactivity of from about 1 to about 1000 mCi;

buffering said eluate to a pH value of from about 5.0 to about 7.0 by addition of sodium acetate to provide a buffered eluate having a radioactivity of from about 1 to about 1000 mCi;

mixing the buffered eluate with a ligand solution comprising as a ligand a compound of the formula:



wherein R^1 is a lower alkyl radical and R^2, R^3, R^4 and R^5 are each independently a hydrogen or a lower alkyl radical and as a solvent water containing from about 5 to about 50 volume % ethanol, said ligand being present in said solvent in a concentration of from about 0.1 to about 10.0 μg/ml, and the ligand solution being present in an amount to provide from about 0.1 to about 10 μg of ligand compound; and

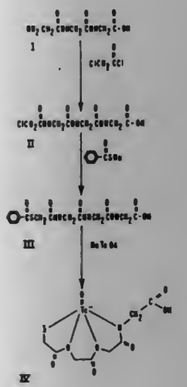
adding water to the buffered eluate-ligand solution mixture in an amount sufficient to produce a physiologically isotonic solution acceptable for intravenous injection.

5,573,748

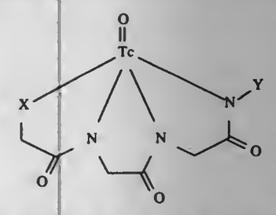
RADIOLABELED TECHNETIUM CHELATES FOR USE IN RENAL FUNCTION DETERMINATIONS

Alan Fritzberg, Edmonds, Wash., assignor to University of Utah Research Foundation, Salt Lake City, Utah

Division of Ser. No. 389,188, Aug. 3, 1989, Pat. No. 5,322,929, which is a continuation of Ser. No. 733,481, May 14, 1985, Pat. No. 4,980,147, which is a continuation-in-part of Ser. No. 624,098, Jun. 24, 1984, abandoned. This application Jun. 20, 1994, Ser. No. 262,947
Int. Cl.[6] A61K *51/08*
U.S. Cl. 424—1.69 **6 Claims**

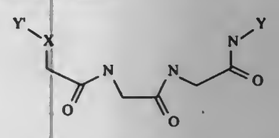


1. A prepackaged kit for use in preparing a compound comprising technetium-99m, said compound having the general formula



and water-soluble salts thereof, said prepackaged kit comprising:

A container containing a selected quantity of a ligand of the general formula



wherein X is S or N; and wherein Y^1 is —H or a group which protects the sulfur from oxidation where X is S, or wherein Y^1 is $—H_2$ where X is N; and wherein Y is —H or wherein Y is



and where R_1 is —H, $—CH_3$, or $—CH_2CH_3$; R_2 is —H, $—CH_2CO_2H$, $—CH_2CONH_2$, $—CH_2CH_2CO_2H$, $—CH_2CH_2CONH_2$, $—CH_3$, $—CH_2CH_3$, or $—CH_2OH$; and Z is —H, $—CO_2H$, $—CONH_2$, $—SO_3H$, $—SO_2NH_2$, or $—CONHCH_2CO_2H$; a suitable amount of a water soluble stannous salt to induce the reaction of said ligand with a technetium-99m pertechnetate salt; and a suitable amount of an intermediate exchange ligand to complex with said suitable amount of soluble stannous salt, wherein said container has sufficient volume for accepting a suitable amount of a water soluble technetium-99m pertechnetate salt to provide a desired level of radioactivity.

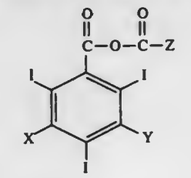
5,573,749

NANOPARTICULATE DIAGNOSTIC MIXED CARBOXYLIC ANHYDRIDES AS X-RAY CONTRAST AGENTS FOR BLOOD POOL AND LYMPHATIC SYSTEM IMAGING

Carl R. Illig, Phoenixville, Pa., assignor to Nano Systems L.L.C., Collegeville, Pa.

Filed Mar. 9, 1995, Ser. No. 401,397
Int. Cl.[6] A61K *49/04;* **C07C** *69/96;63/68*
U.S. Cl. 424—9.45 **7 Claims**

1. A method of medical x-ray diagnostic imaging the blood pool, liver, spleen, or lymph system of a mammal comprising administering to the mammal a contrast effective amount of a mixed carbonic anhydride contrast agent having the structure



wherein

X is H, NR^1R^2 or $CONR^1R^3$,

R^1 is H or alkyl,

R^2 is COR^3,

R^3 is H, alkyl or aryl,

Y is NR^1R^2 or $CONR^1R^3$, and

Z is alkyl.

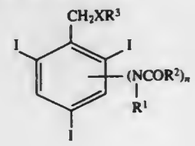
5,573,750

DIAGNOSTIC IMAGING X-RAY CONTRAST AGENTS

Baldev Singh, Collegeville, Pa., assignor to NanoSystems L.L.C., Collegeville, Pa.

Filed May 22, 1995, Ser. No. 447,133
Int. Cl.[6] A61K *49/00;* **G01N** *33/15*
U.S. Cl. 424—9.45 **11 Claims**

1. A compound having the structure:



wherein:

X is O, S or NR^4;
R^4 is alkyl containing 1 to 4 carbon atoms, aryl or heteroaryl;
R^3 is alkyl containing 1 to 17 carbon atoms or $(CH_2)_wCO_2R^5$;
R^1 is H or alkyl containing from 1 to 4 carbon atoms;
R^2 is alkyl having from 1 to 6 carbon atoms, aryl or heteroaryl;
R^5 is alkyl having from 1 to 6 carbon atoms;
n is 1 or 2 and
w is 1 to 6.

5,573,751

PERSISTENT GASEOUS BUBBLES AS ULTRASOUND CONTRAST MEDIA

Steven C. Quay, Los Angeles, Calif., assignor to Sonus Pharmaceuticals, Inc., Bothell, Wash.

Division of Ser. No. 71,377, Jun. 4, 1993, Pat. No. 5,393,524, which is a continuation of Ser. No. 761,311, Sep. 17, 1991, abandoned. This application Dec. 21, 1994, Ser. No. 361,118
Int. Cl.[6] A61K *49/02*
U.S. Cl. 424—9.52 **22 Claims**

1. Contrast media for ultrasound imaging comprising gaseous microbubbles selected from the group consisting of hexafluoropropylene, octafluoropropane, octafluoro-2-butene, hexafluoro-2-butyne, hexafluorobuta-1,3-diene, octafluorocyclobutane and decafluorobutane.

5,573,752

ARMOATIC AMIDE COMPOUNDS AND METAL CHELATES THEREOF

Ramachandran S. Ranganathan, Princeton; Edmund R. Marinelli, Lawrenceville; Radhakrishna Pillai, Kendall Park, and Michael F. Tweedle, Princeton, all of N.J., assignors to Bracco International B.V., Amsterdam

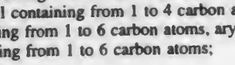
Continuation of Ser. No. 225,210, Apr. 8, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 585,290
Int. Cl.[6] A61B *5/055*
U.S. Cl. 424—9.363 **16 Claims**

1. A compound of the following formula I:

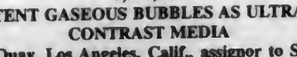


I

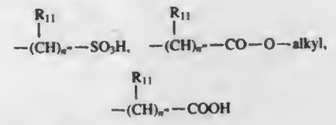
wherein
Q is a polyaza macrocyclic group containing at least one aminocarboxylate, aminophosphonate and/or aminohydroxamate chelating group;
A_1 is $(CH_2)_m'$, $(CH_2)_m—O—(CH_2)_n'$ or a single bond;
$(CH_2)_m$ and $(CH_2)_m'$ may be independently substituted with alkyl or hydroxyalkyl;
R is



or $—\{(CH_2)_2—Y\}—R_{13}$;
X is —OH, —O-alkyl or $—NHR_{12}$;
Y is —O— or —NH—;
R_1 and R_2 are each independently hydrogen, alkyl, cycloalkyl, aryl, arylalkyl, $—NO_2$, $—NH_2$,



—COOH, $—N—N^+\equiv N^-$, $—NR_3COR_9$, haloalkyl, C_{1-8} alkoxy, aryloxy, cycloalkyloxy, or a functional group capable of forming a conjugate with a biomolecule or of forming a multimer of said compound of the formula I, or R_1 and R_2 together with the phenyl ring to which they are bonded form a naphthyl group, with the proviso that at least one of R_1 or R_2 must be other than hydrogen;
R_3 and R_4 are independently hydrogen, alkyl, arylalkyl, aryl, alkoxy or hydroxyalkyl, or R_3 and R_4, together with the nitrogen atom to which they are bonded, form a maleimide group;
R_9 is alkyl or hydroxyalkyl;
each R_{11} is independently hydrogen or alkyl;
R_{13} is $—CH_2COOH$ or $—CH_2CONHR_{12}$;
R_{12} is hydrogen, alkyl, $—NH_2$,



or hydroxyalkyl;
n, m', n, n' and n'' are independently 1 to 5;
or a salt and/or a multimeric form thereof.

5,573,753

METHOD OF PREPARING SUNSCREENS

Carole A. M. Tapley, Cleveland, Great Britain, assignor to Tioxide Specialties Limited, and Tioxide House, United Kingdom

Filed Sep. 30, 1992, Ser. No. 953,265
Claims priority, application United Kingdom, Oct. 4, 1991, 9121153
Int. Cl.[6] A61K *7/42;7/40;7/021;7/025*
U.S. Cl. 424—59 **35 Claims**

1. A method for the preparation of a sunscreen composition containing a zinc oxide dispersion comprising milling a particulate zinc oxide in an oil in the presence of a particulate grinding medium and an organic dispersing agent for said zinc oxide in said oil to form a dispersion, continuing said milling for a period of time such that the particulate zinc oxide has a average size of from 0.005 to 0.15 micron and that the dispersion is substantially transparent to visible light and has an absorbance for ultraviolet light such that the extinction coefficient (E(308)) at a wavelength of 308 nm is at least 9 liters per gram per centimeter, the extinction coefficient (E(360)) at a wavelength of 360 nm is at least 9 liters per gram per centimeter and the ratio E(360):E(308) is in the range 0.75:1 to 1.5:1, separating the particulate grinding medium from the dispersion and mixing the dispersion with one or more cosmetically acceptable materials.

5,573,754

PHOTOPROTECTIVE COMPOSITIONS

Rupali A. Kulkarni, Huntington, and George E. Deckner, Trumbull, both of Conn., assignors to Richardson-Vicks Inc., Shelton, Conn.

Continuation of Ser. No. 23,852, Feb. 26, 1993, abandoned, which is a continuation of Ser. No. 732,954, Jul. 19, 1991, abandoned, which is a continuation of Ser. No. 445,313, Dec. 4, 1989, abandoned. This application Dec. 28, 1993, Ser. No. 174,590
Int. Cl.[6] A61K *7/42;7/40*
U.S. Cl. 424—59 **14 Claims**

1. A sunscreen composition having enhanced photoprotective effect comprising:
(a) from about 0.1% to about 2% allantoin;
(b) from about 0.1% to about 5% panthenol;
(c) from about 0.1% to about 5% Vitamin E, Vitamin E acetate, or mixtures thereof;
(d) from about 1% to about 30% of one or more sunscreen agents; and

(e) from about 60% to about 99% of a pharmaceutically-acceptable sunscreen carrier material;
and wherein further said sunscreen composition has an SPF value of about 8 or greater.

5,573,755

SUNSCREEN AGENTS

Kevin R. Franklin, Merseyside, Great Britain, and Charles C. Nunn, Rutherford, N.J., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Aug. 11, 1994, Ser. No. 289,042
Claims priority, application United Kingdom, Aug. 13, 1993, 9316901
Int. Cl.[6] A61K *7/42;31/315;31/30*
U.S. Cl. 424—59 **8 Claims**

1. Hydroxy salt of the formula

$$\{M(OH)_{(2-a)}\}^{a+}X^{b-}_{a/b}.zH_2O$$

wherein M is Zn, Cu or a combination of both, and X denotes anions at least some of which display ultraviolet absorption over at least a portion of the wavelength range from 290 to 400 nanometers.

5,573,756

SHAMPOO CONDITIONER AND SOFTGEL FILLED THEREWITH

John Lambrechts, Burbank, Calif., assignor to Banner Pharmacaps Inc., Chatsworth, Calif.

Filed Jan. 25, 1995, Ser. No. 377,378
Int. Cl.[6] A61K *7/075;9/48*
U.S. Cl. 424—70.24 **19 Claims**

1. A hair care product comprising a shampoo conditioner composition encapsulated in a gelatin shell, said shampoo conditioner composition comprising
about 10 to about 40 wt % of a concentrated surfactant selected from the group consisting of sodium laureth sulfate, sodium lauryl sulfate, ammonium lauryl sulfate, sodium oleyl succinate, triethanolamine oleate and combinations thereof,
about 1 to 5 wt % of a quaternary ammonium salt cationic conditioner, and
about 35–60 wt % of a polyethylene glycol carrier having a weight average molecular weight from about 200 to about 800,
said composition having a viscosity from about 5000 to 8000 cps, an equilibrium relative humidity between about 65% and 35%, and less than 3 wt % free water.

12. A hair care product comprising a shampoo conditioner composition encapsulated in a gelatin shell, said shampoo conditioner composition comprising
about 10 to about 40 wt % of a concentrated surfactant selected from the group consisting of sodium, magnesium, ammonium and mono-, di- and triethanolamine salts of sulfated fatty alcohols, sodium, magnesium, ammonium and mono-, di- and triethanolamine salts of sulfonated alkaryl compounds and combinations thereof, said compounds having a total of from 12 to 21 carbon atoms and combinations thereof,
about 1 to 5 wt % of a cationic conditioner selected from the group consisting of quaternary ammonium salts, amine salts, quaternary imidazoline compounds and combinations thereof, and
about 35–60 wt % of a polyalkylene glycol carrier having a weight average molecular weight from about 200 to about 800,
said composition having a viscosity from about 5000 to 8000 cps, an equilibrium relative humidity between about 65% and 35%, and less than 3 wt % free water.

5,573,757

VISCOELASTIC COMPOSITIONS CONTAINING CONCENTRATED FLUORINATED COMPOUNDS THEIR METHOD OF PREPARATION AND THEIR USES

Jean G. Riess, Falicon, and Marie-Pierre Krafft, Nice, both of France, assignors to Alliance Pharmaceutical Corp., San Diego, Calif.

Filed Oct. 3, 1994, Ser. No. 316,731
Claims priority, application France, Oct. 4, 1993, 93 00786
Int. Cl.[6] A61K *31/74;31/025*
U.S. Cl. 424—78.02 **45 Claims**

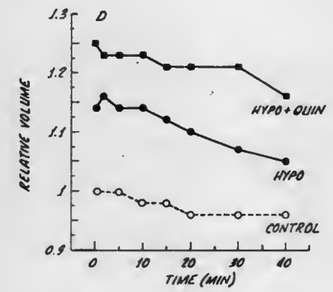
1. A composition comprising fluorinated organic compounds, in the form of a viscoelastic gel, comprising:
an oily phase comprising at least one linear, branched, or cyclic fluorinated hydrocarbon compound, or derivative thereof, wherein at least about 30% of the hydrogen atoms of the compound are substituted by fluorine, the fluorinated hydrocarbon compound representing from about 75 to 99.7% (v/v) of the composition;
an aqueous phase representing from about 0.3 to 25% (v/v) of the composition;
at least one surfactant chosen from the group consisting of fluorinated surfactants, alone or in a mixture with at least one hydrocarbon surfactant, the surfactant or combined surfactants representing from about 0.1 to 10% (w/v) of the composition.

5,573,758

METHOD FOR REDUCING INTRAOCULAR PRESSURE IN THE MAMMALIAN EYE BY ADMINISTRATION OF POTASSIUM CHANNEL BLOCKERS

Joseph S. Adorante, Irvine; Elizabeth WoldeMussie, Laguna Niguel, and Guadalupe Ruiz, Corona, all of Calif., assignors to Allergan, Waco, Tex.

Filed Apr. 28, 1995, Ser. No. 431,170
Int. Cl.[6] A61K *31/74*
U.S. Cl. 424—78.04 **10 Claims**



1. A pharmaceutical composition useful for reducing intraocular pressure in the eye of a mammal in need thereof, by blocking Ca^{2+}-gated Maxi potassium channels, the composition comprising as its active ingredient a therapeutically effective amount of one or more compounds selected from the group consisting essentially of Penitrem A, paspalicine, charybdotoxin and iberiotoxin.

5,573,759

USE OF SALICYLIC ACID FOR REGULATING SKIN WRINKLES AND/OR SKIN ATROPHY

Roy L. Blank, Spring Valley, N.Y., assignor to Richardson-Vicks Inc., Shelton, Conn.

Division of Ser. No. 434,250, May 3, 1995, abandoned, which is a continuation of Ser. No. 28,756, Mar. 9, 1993, which is a continuation of Ser. No. 796,750, Nov. 25, 1991. This application Jun. 5, 1995, Ser. No. 465,027

Int. Cl.[6] A61K *7/42;7/40*

U.S. Cl. 424—60 8 Claims

1. A method for regulating wrinkles or atrophy in mammalian skin comprising treating the skin with a safe and effective amount of a composition comprising:

a) a safe and effective amount of salicylic acid; and

b) a pharmaceutically-acceptable carrier.

5,573,760

METHODS AND COMPOSITIONS TO MONITOR AND CONTROL TERMITES

Barbara L. Thorne, 4306 Woodbury St., University Park, Md. 20782-1173, and James F. A. Traniello, 11 Smith Ave., Lexington, Mass. 02173

Continuation-in-part of Ser. No. 941,472, Sep. 8, 1992, abandoned. This application Dec. 7, 1993, Ser. No. 163,228

Int. Cl.[6] A01N *25/00*

U.S. Cl. 424—84 11 Claims

1. A composition for controlling termites comprising a pesticidally effective amount of a pesticide and a monitoring composition; wherein the monitoring composition comprises, on a weight basis, about 20% to about 95% of a substantially nontoxic, highly palatable cellulose source for monitoring termites selected from the group consisting of decayed birch, partially decayed birch, processed cellulose, purified cellulose and a combination thereof, said cellulose source being effective for an early diagnosis of termite activity or termite infestation, about 0.25% to about 5% of an exogenous nitrogen source utilizable by termites selected from the group consisting of urea and uric acid, 0% to about 75% water and 0% to about 1% of a binding medium.

5,573,761

AGENT FOR REDUCING NEPHROTOXICITY DUE TO MEDICINE

Michihito Ise, Saitama, and Hideo Hayashi, Tokyo, both of Japan, assignors to Kureha Chemical Industry Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1995, Ser. No. 556,084

Claims priority, application Japan, Nov. 15, 1994, 6-305428

Int. Cl.[6] A61K *33/44*

U.S. Cl. 424—125 4 Claims

1. A method for reducing nephrotoxicity caused by a platinum complex compound while retaining anti-tumor activity of said platinum complex compound, comprising the step of administering an effective amount of an activated spherical carbon to a mammal during treatment of said mammal with said platinum complex compound, wherein said method is carried out without forced addition of water or administration of a diuretic to said mammal.

5,573,762

USE OF LEUKEMIA INHIBITORY FACTOR SPECIFIC ANTIBODIES AND ENDOTHELIN ANTAGONISTS FOR TREATMENT OF CARDIAC HYPERTROPHY

Napoleone Ferrara, San Francisco; Kathleen King, Pacifica; Elizabeth Luis, San Francisco; Jennie P. Mather, Millbrae, and Nicholas F. Paoni, Belmont, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Filed Apr. 24, 1995, Ser. No. 428,002

Int. Cl.[6] A61K *39/395;38/12*

U.S. Cl. 424—145.1 10 Claims

1. A method for treating a mammal experiencing heart failure to lessen hypertrophy comprising administering chronically to a mammal in need of such treatment a therapeutically effective amount of an antagonist antibody to leukemia inhibitory factor and a cyclic pentapeptide endothelin antagonist.

5,573,763

FAMILY OF CSF-L PROTEINS

Steven C. Clark, Winchester, and Gordon G. Wong, Jamaica Plain, both of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Division of Ser. No. 940,362, Dec. 11, 1986, Pat. No. 4,868,119, which is a continuation-in-part of Ser. No. 860,377, May 6, 1986, Pat. No. 4,879,227. This application Aug. 14, 1989, Ser. No. 393,435

Int. Cl.[6] C07K *14/53;* A61K *38/19*

U.S. Cl. 424—85.1 3 Claims

1. An isolated CSF-1 protein which comprises a homodimer having two subunits, each of said subunits having an amino acid sequence encoded by a DNA sequence of nucleotides 146 through 1810 of FIG. 1 or by a DNA sequence differing from said DNA sequence of nucleotides 146 through 1810 due to the degeneracy of the genetic code, said protein having the ability to stimulate the formation of colonies of macrophage colonies in the standard human bone marrow assay.

5,573,764

USE OF INTERLEUKIN-12 TO PREVENT GRAFT VERSUS HOST DISEASE

Megan Sykes, Charlestown, and Stanley F. Wolf, Arlington, both of Mass., assignors to Genetics Institute, Inc., Cambridge, and The General Hospital Corporation, Boston, both of Mass.

Filed Jan. 21, 1994, Ser. No. 186,529

Int. Cl.[6] A61K *45/05*

U.S. Cl. 424—85.2 10 Claims

1. A method of preventing graft-versus-host disease which comprises administering to a mammal, at the time of bone marrow transplantation, a therapeutically effective amount of interleukin-12.

5,573,765

COMPOSITION AND METHOD FOR TREATMENT OF VAGINAL YEAST INFECTIONS

Mark S. Reinhard, 1148 Tillers Ridge Dr., Richmond, Va., and Byron T. Burlingham, Greenville, N.C., assignors to Mark S. Reinhard, Richmond, Va.

Continuation-in-part of Ser. No. 892,615, Jun. 1, 1992, Pat. No. 5,340,836, which is a continuation of Ser. No. 657,522, Feb. 19, 1991, abandoned. This application Aug. 13, 1994, Ser. No. 294,378

Int. Cl.[6] A01N *63/00;* A61K *31/70;31/495;31/50*

U.S. Cl. 424—93.45 12 Claims

1. A method of allowing normal vaginal flora to be restored, comprising douching with a composition comprising a buffered solution of a yeast-inhibitory agent and cells of a *Lactobacillus* species, said yeast-inhibitory agent selected from one or more members of the group consisting of ethylene glycol, propylene glycol, and glycerol, said solution buffered with 10–500 mM acetate to maintain the vaginal pH in the range of from pH above 4 to about pH 7, for sufficient time to permit flushing of the vagina while permitting normal vaginal growth to occur in the vagina and enhancing growth of vaginal bacteria as compared to growth of said bacteria a normal vaginal pH.

5,573,766

BACILLUS THURINGEINSIS STRAINS PRODUCING INSECTICIDALLY ACTIVE TOXINS

Robert G. Blenk, Sunnyvale, Calif.; Susan Ely, Marlow, England; Ravindra H. Tailor, Berkshire, England, and Janet M. Tippett, Reading, England, assignors to Imperial Chemical Industries PLC, London, England

Filed May 9, 1990, Ser. No. 520,228

Claims priority, application United Kingdom, May 9, 1989, 8910624

Int. Cl.[6] A01N *63/02;* A61K *39/07*

U.S. Cl. 424—93.461 8 Claims

1. An insecticidal formulation for combating species of the order Lepidoptera and the genus *Diabrotica* which comprises as active ingredient an insecticidal δ-endotoxin produced by either of the strains JHCC 4353 and JHCC 4835.

5,573,767

METHOD FOR IMPROVING THE ORGANOLEPTIC QUALITIES OF THE MEAT FROM UNCASTRATED MALE DOMESTIC ANIMALS, VACCINES WHICH ARE USABLE IN THIS METHOD, NEW PEPTIDE, IN PARTICULAR FOR PRODUCING THESE VACCINES AND VACCINATION KIT RELATING THERETO

Raymond Dufour, Lyons; Claude Roulet, Venissieux; Claire Chouvet, Lyons, and Michel B. Bonneau, Montfort, all of France, assignors to Societe Anonyme, Lyons, France

Continuation of Ser. No. 946,495, Nov. 9, 1992, abandoned. This application Nov. 17, 1994, Ser. No. 343,883

Claims priority, application France, Mar. 1, 1991, 91 02513; Dec. 10, 1991, 91 15289

Int. Cl.[6] A61K *38/09;39/385;* C07K *7/23*

U.S. Cl. 424—195.11 18 Claims

1. A method for the production of meat having improved organoleptic qualities, comprising the fattening of uncastrated male animals selected from the group consisting of cattle, sheep and pigs, and possessing androgenic steroids and non-androgenic steroids, while permitting the development of the male character of said animals and shortly before slaughter of said animals subjecting said animals to anti-LHRH active immunoneutralization to substantially abolish the action of said androgenic and non-androgenic steroids only shortly before slaughter, the method comprising one administration before or during the fattening of the animals of an anti-LHRH vaccine designed to induce a primary, low-intensity immune response without a significant or even measurable effect on gonadal steroid secretion to permit the development of the male character of the animals and then, shortly before slaughter, the administration of an anti-(LHRH) vaccine, to induce an anti-LHRH immunoneutralization substantially abolishing the action of the androgenic and non-androgenic steroids.

5,573,768

COSMETIC COMPOSITION IN THE FORM OF AN AQUEOUS GEL

Isabelle Afriat, Paris; Pierre Fodor, Garches, and Francoise Pouget, Fontenay-Sous-Bois, all of France, assignors to L'Oreal, Paris, France

Filed May 2, 1994, Ser. No. 236,138

Claims priority, application France, May 3, 1993, 93 05238

Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—401 8 Claims

1. An aqueous gel cosmetic composition comprising an aqueous gel containing a gelling agent and an aqueous medium, said gelling agent consisting of

(a) a partially neutralized, crosslinked acrylic acid polymer having a molecular weight of between 700,000 and 4,500,000 and present in an amount ranging from 0.1 to 1 percent by weight of said composition;

(b) a neutralized copolymer of acrylic acid and a vinyl monomer bearing amine, amidine and nitrile functions and obtained by hydrolysis of polyacrylonitrile, said copolymer having a molecular weight of between 100,000 and 200,000 and present in an amount ranging from 0.1 to 1 percent by weight of said composition; and

(c) a polyethylene glycol having a molecular weight of between 10^5 and 3×10^7 and present in an amount ranging from 0.01 to 1 percent by weight of said composition.

5,573,769

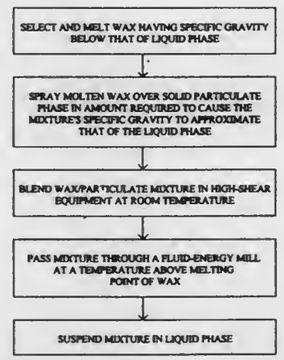
METHOD FOR SUSPENDING PARTICULATES IN LIQUIDS AND PRODUCTS RESULTING THEREFROM

David C. Creech, and Jon S. Bach, both of Yuma, Ariz., assignors to Gowan Company, Yuma, Ariz.

Filed Mar. 18, 1994, Ser. No. 185,210

Int. Cl.[6] A01N *25/04;63/00;59/06;* B01J *13/00*

U.S. Cl. 424—403 26 Claims



1. A method for improving the stability of a sol suspension consisting of a particulate solid phase dispersed in a liquid phase, wherein the solid phase has a specific gravity greater than a specific gravity of the liquid phase, comprising the following steps:

(a) selecting a wax or petroleum jelly coating medium having a specific gravity less than the specific gravity of the liquid phase;

(b) coating the particulate solid phase in a dried state with said coating medium so as to entrap gaseous matter adhering to said particulate solid phase and cause the particulate solid phase so produced having entrapped gas to acquire an apparent specific gravity approximately equal to the specific gravity of the liquid phase; and

(c) dispersing the coated particulate solid phase having entrapped gas in the liquid phase to produce a stabilized suspension.

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5,573,770

FORMULATION AND PROCESS FOR CONTROLLING SOCIAL INSECTS

Manfred Kern, Lörzweiler, Germany, assignor to Hoechst Schering AgrEvo GmbH, Germany

Filed Jan. 31, 1995, Ser. No. 381,701

Claims priority, application Germany, Feb. 2, 1994, 44 03 062.2

Int. Cl.[6] A01N *25/086*

U.S. Cl. 424—405 14 Claims

1. An insecticidal formulation for controlling social insects, which insects are selected from the group consisting of the family of the Formicidae, the superfamily of the Vespoida, and the superfamily of the Apoidea, which formulation comprises between 0.00002% and 0.25% by weight silafluofen as the sole insecticide, and which formulation further comprises at least one additional component which attracts the insects, and a carrier therefor, the silafluofen content of the formulation being such that the formulation has no acutely lethal effect on those individual insects which pick up the formulation.

5,573,771

MEDICINAL BONE MINERAL PRODUCTS

Peter Geistlich, Stansstad, and Rolf W. Pfirrmann, Lucerne, both of Switzerland, assignors to Osteomedical Limited, Dublin, Ireland

Continuation of Ser. No. 258,361, Jun. 10, 1994, abandoned, which is a continuation of Ser. No. 115,792, Sep. 3, 1993, abandoned, which is a continuation of Ser. No. 876,114, Apr. 29, 1992, abandoned, which is a continuation of Ser. No. 469,609, Jun. 19, 1990, abandoned. This application Feb. 21, 1995, Ser. No. 391,247

Claims priority, application United Kingdom, Aug. 19, 1988, 8819755

Int. Cl.[6] A61F *13/00;* A61K *9/16*

U.S. Cl. 424—422 8 Claims

1. A particulate bone mineral product for use in medicine comprising porous bone mineral particles derived from natural bone having a crystal structure of natural bone and substantially free from all endogenous organic material, the particles having an average diameter in the range of 0.1 to 10 mm, and having at least at the surface thereof resorbable, physiologically compatible, collagen fibers in an amount which increases the strength of the bone mineral particles wherein the weight ratio of said collagen fibers to said porous bone mineral particles is at least 1:20.

5,573,772

METHODS FOR PROTECTING TISSUES AND ORGANS FROM ISCHEMIC DAMAGE

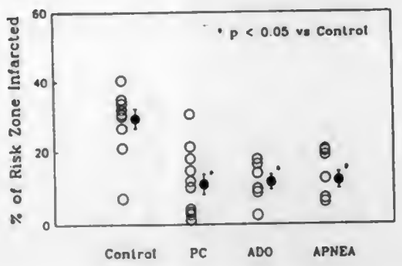
James M. Downey, Mobile, Ala., and Kevin M. Mullane, Del Mar, Calif., assignors to Gensia, Inc., San Diego, Calif., and South Alabama Medical Science Foundation, Mobile, Ala.

Continuation-in-part of Ser. No. 33,310, Mar. 15, 1993, Pat. No. 5,443,836. This application Mar. 17, 1994, Ser. No. 214,942

Int. Cl.[6] A61F *2/02;* A61K *9/48;9/20;9/14*

U.S. Cl. 424—423 35 Claims

1. A method for reducing ischemic damage to an organ having A3 adenosine receptors for those patients at risk of ischemic damage, comprising the step of:



administering to the organ a therapeutic amount of an agonist to the A3 adenosine receptor, wherein the A3 adenosine receptor agonist is administered orally.

5,573,773

STABLE HIGHLY CONCENTRATED FORMULATIONS OF FLUORESCEIN DERIVATIVES

Gyoergy L. Kis, Triboltingen, and Ernst D. Wachsmuth, Binningen, both of Switzerland, assignors to Ciba Geigy Corporation, Tarrytown, N.Y.

PCT No. PCT/EP93/02367, § 371 Date Mar. 6, 1995, § 102(e) Date Mar. 6, 1995, PCT Pub. No. WO94/05331, PCT Pub. Date Mar. 17, 1994

PCT Filed Sep. 2, 1993, Ser. No. 392,993

Claims priority, application Germany, Sep. 10, 1992, 928 10 695.4

Int. Cl.[6] A61F *2/02;* A61K *31/715;47/40;* C07H *15/04*

U.S. Cl. 424—423 21 Claims

1. A formulation comprising:

(a) a fluorescein diester; and

(b) a partially etherified β-cyclodextrin, wherein the ether substituents of said β-cyclodextrin are selected from the group consisting of hydroxyethyl groups, hydroxypropyl groups, dihydroxypropyl groups, methyl groups, and ethyl groups.

5,573,774

NICOTINE METABOLITES, NICOTINE DEPENDENCE AND HUMAN BODY WEIGHT

Robert M. Keenan, 2901 Boston St. #209, Baltimore, Md. 21224

Division of Ser. No. 12,379, Feb. 2, 1993, and Ser. No. 236,190, May 2, 1994. This application Jun. 6, 1995, Ser. No. 470,676

Int. Cl.[6] A61F *2/74;* A61K *9/68;9/70;9/48*

U.S. Cl. 424—423 17 Claims

1. An article of manufacture comprising: packaging material and a unit dosage form of a pharmaceutical agent contained within said packaging material, said pharmaceutical agent comprises a nicotine metabolite or combination of nicotine metabolites or their pharmaceutically acceptable salts thereof in an amount in the range of 1 to 100 milligrams per kilograms of body weight of a nicotine-experienced human user per day calculated as the nicotine metabolite or combination of nicotine metabolites in the free base form can be used by the nicotine-experienced human for suppressing appetite, preventing weight gain or inducing weight loss in nicotine-experienced humans.

5,573,775

PHARMACEUTICAL COMPOSITIONS AND METHODS OF TREATMENT OF THE CORNEA FOLLOWING LASER IRRADATION

Stella M. Robertson, Arlington, and Herman M. Kunkle, Jr., Mansfield, both of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 279,765, Jul. 25, 1994, Pat. No. 5,401,510, which is a continuation of Ser. No. 218,393, Mar. 28, 1994, abandoned, which is a division of Ser. No. 101,862, Aug. 4, 1993, Pat. No. 5,360,611, which is a continuation of Ser. No. 866,730, Apr. 10, 1992, Pat. No. 5,271,939, which is a continuation of Ser. No. 531,179, May 31, 1990, Pat. No. 5,124,392, which is a continuation-in-part of Ser. No. 253,009, Oct. 3, 1988, Pat. No. 4,939,135. This application Mar. 16, 1995, Ser. No. 405,333

Int. Cl.[6] A61F *9/00*

U.S. Cl. 424—427 8 Claims

1. A method for treating a corneal wound caused by laser irradiation and resulting photoablation and volumetric removal of corneal tissue, comprising: applying to an affected cornea a composition containing between about 2.0 wt. % and 10.0 wt. % of an immunomodulator selected from the group consisting of cyclosporin A, cyclosporin G, leflunomide, N-(4-trifluoromethylphenyl)-N-(2-cyano-1-hydroxy-1-propen-1-yl)carboxamide, interferon-γ, interferon- α and interferon-β and a pharmaceutically acceptable carrier therefor.

5,573,776

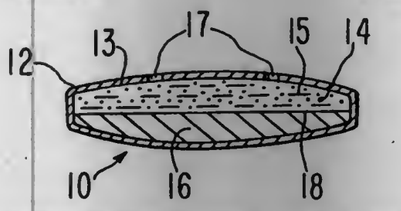
ORAL OSMOTIC DEVICE WITH HYDROGEL DRIVING MEMBER

Juan M. E. Harrison, Mountain View; Brian L. Barclay, Sunnyvale; Jerry D. Childers, Menlo Park; Jeri D. Wright, Dublin, all of Calif.; Virgil A. Place, Kawaihae, Hi., and Patrick S. L. Wong, Palo Alto, Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 984,391, Dec. 2, 1992, abandoned. This application Sep. 8, 1994, Ser. No. 303,288

Int. Cl.[6] A61K *9/24*

U.S. Cl. 424—435 16 Claims



1. An osmotic device for the controlled delivery of an ergot alkaloid to a mouth of an animal over an extended delivery period, the device comprising:

a wall sized and shaped for comfortably retaining the device in the oral cavity for the extended delivery period, wherein the size and shape for comfortably retaining the device in the oral cavity over the extended delivery period includes a smooth oval shape with an aspect ratio in the range of about 1.2:1 to about 3:1, a height of about 0.5 to about 10 mm, and a volume of less than about 2 cm^3, the wall surrounding and forming a compartment containing (i) a layer of a dose of the ergot alkaloid agent and a gelling agent, and (ii) a layer of a hydrophilic polymer, and a passageway in the semipermeable wall communicating with the layer of the ergot alkaloid in the compartment and with the exterior of the device, the wall being formed of a semipermeable material which is (i) permeable to the passage of the aqueous fluid and (ii) impermeable to the passage of the hydrophilic polymer, wherein the device includes a mechanism for visually signaling the animal when the dose of the ergot alkaloid has been delivered from the device.

5,573,777

PULVERULENT MANNITOL OF MODERATE FRIABILITY AND PROCESS FOR ITS PREPARATION

Michel Serpelloni, Beuvry les Bethune, and Jean-Philippe Boonaert, Laventie, both of France, assignors to Roquette Freres, Lestrem, France

Filed Sep. 26, 1994, Ser. No. 311,791

Claims priority, application France, Sep. 28, 1993, 93 11513

Int. Cl.[6] A61K *9/14*

U.S. Cl. 424—440 28 Claims

1. Pulverulent mannitol having:

(a) a friability according to a Test I of between about 40% and about 80%, said Test I comprising subjecting about 15 g of pulverulent mannitol to be tested, having a particle size within a range of about 100 and about 200 microns, for about 15 minutes to mechanical action in a ERWEKA TAP friabilimeter, rotating at a uniform rotational speed of 25 revolutions per minutes, into which 5 substantially identical steel bells with a diameter of about 17 mm and with a weight of about 18.87 g have been introduced, the friability according to this test being a percentage of powder not retained after the test on a sieve with a mesh size of 100 microns;

(b) an apparent density, for a particle size cut within the range of about 100 to about 200 microns, of between about 300 and about 525 g/l;

(c) less than approximately 30% of particles with a size within the range of about 0 and about 75 microns; and

(d) a rate of dissolution according to a Test II of between about 0 and about 30 seconds, said Test II comprising introducing into about 150 g of demineralized and degassed water maintained at about 20° C. and subjected to stirring at 200 rpm in a 250 ml low form beaker, exactly 5 g of a particle size cut, within the range of about 100 and 200 microns, of the powder to be tested, the rate of dissolution being the time necessary after introduction of the particle size cut to obtain perfect visual clarity of the suspension thus prepared.

5,573,778

DRUG FLUX ENHANCER-TOLERANT PRESSURE SENSITIVE ADHESIVE COMPOSITION

Donald J. Therriault, and Kenneth W. Rodgers, both of York, Pa., assignors to Adhesives Research, Inc., Glen Rock, Pa.

Filed Mar. 17, 1995, Ser. No. 405,872

Int. Cl.[6] A61F *13/02*

U.S. Cl. 424—448 15 Claims

1. In a transdermal delivery system for administering at least one pharmacologically active agent comprising a flexible backing material impermeable to said active agent and an adhesive layer on at least a portion of said backing material, the improvement wherein said adhesive layer comprises a pressure sensitive adhesive composition comprised of (1) a percutaneous penetration enhancer to increase permeability of skin to transdermally administered pharmacologically active agents in admixture with (2) a macromer reinforced base polymer, said base polymer component comprising a phase separated graft copolymer comprised of copolymerized monomers A and B to form a backbone polymer having polymeric moieties grafted thereto, wherein monomer A is a monomeric acrylic or methacrylic ester of a non-tertiary alcohol having from 1 to 14 carbon atoms, with the average number of carbon atoms being in the range of about 4 to 12, and monomer B is a polar monomer which is copolymerizable with monomer A, said percutaneous penetration enhancer being present in said composition in an amount of up to 40 percent by weight based on the weight of the composition.

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5,573,779

LIPOSOME COMPOSITION

Shuji Sato; Iwao Nozawa, and Katsuhiko Akiyama, all of Tsukuba, Japan, assignors to Hisamitsu Pharmaceutical Co., Inc., Tosu, Japan

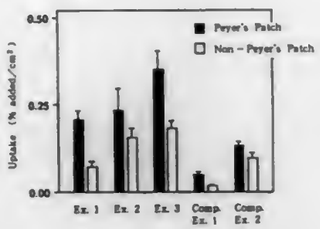
PCT No. PCT/JP93/00460, § 371 Date Sep. 30, 1994, § 102(e) Date Sep. 30, 1994, PCT Pub. No. WO93/20801, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 9, 1993, Ser. No. 313,231

Claims priority, application Japan, Apr. 10, 1992, 4-118025

Int. Cl.[6] A61K *9/127*

U.S. Cl. 424—450 1 Claim



1. The method of treatment of a living subject in need of a hydrophilic or hydrophobic physiologically substance active on migrating to the aggregate of lymph nodules present in the jejunum or ileum called Peyer's glands, said physiologically active substance is asteroid, muramyldipeptide, interferon, interleukin-2, mite antigen or cedar pollen antigen, which consists of administering orally to said living subject a liposome composition migrating to the Peyer's glands of a living subject, which consists essentially of

(a) four lipid components consisting of 1) dipalmitoylphosphatidylcholine, 2) cholesterol, 3) phosphatidylinositol and 4) phosphatidylserine, wherein the molar ratio of said component 1) to component 2) ranging from 7:0.5 to 7:7, and the contents of said components 3) and 4) are each from 0.1 to 50% by mol of the total amount of said four lipid components; and

(b) a physiologically active substance encapsulated in said liposomes which is a steroid, muramyldipeptide, interferon, interleukin-2, mite antigen or cedar pollen antigen.

5,573,780

STABLE SOLID FORMULATION OF ENALAPRIL SALT AND PROCESS FOR PREPARATION THEREOF

Bernard C. Sherman, Willowdale, Canada, assignor to Apotex USA Inc., Buffalo Grove, Ill.

Filed Aug. 4, 1995, Ser. No. 511,297

Int. Cl.[6] A61K *9/20*

U.S. Cl. 424—464 9 Claims

1. A process of manufacture of a pharmaceutical solid composition comprising enalapril sodium, which process comprises the steps of:

i) a) mixing enalapril maleate with an alkaline sodium compound and at least one other excipient, adding water sufficient to moisten, and mixing to achieve a wet mass, or

b) mixing enalapril maleate with at least one excipient other than an alkaline sodium compound, adding a solution of an alkaline sodium compound in water, sufficient to moisten and mixing to achieve a wet mass; thereby to achieve a reaction without converting the enalapril maleate to a clear solution of enalapril sodium and maleic acid sodium salt in water.

ii) drying the wet mass, and

iii) further processing the dried material into tablets.

5,573,781

METHODS AND COMPOSITIONS FOR THE TREATMENT OF A HOST WITH A CELLULAR PROLIFERATIVE DISEASE

Dennis M. Brown, Menlo Park; Richard E. Jones, Palo Alto; Richard Maskiewicz, Sunnyvale, and Shawnya K. Michaels, Pacifica, all of Calif., assignors to Matrix Pharmaceutical, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 175,156, Dec. 29, 1993, abandoned. This application Dec. 29, 1994, Ser. No. 365,664

Int. Cl.[6] A61K *9/14;9/50;37/00*

U.S. Cl. 424—484 36 Claims

1. A pharmaceutically acceptable, substantially anhydrous, intralesionally injectable, semi-solid cytostatic composition to act as a depot in the treatment of a host with a cellular proliferative disease susceptible to a cytostatic agent, said composition comprising:

(a) a carrier composition comprising a water immiscible, fatty acid ester matrix; and

(b) said cytostatic agent in an amount to slow the growth of said cellular proliferative disease.

5,573,782

TIN-ACRYLATE-CONTAINING POLYMERS AS ALGICIDAL AGENTS IN BUILDING MATERIALS

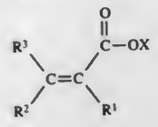
W. Stuart Bigham, Woodbury; Christine A. Sobon, Ramsey, both of Minn., and Billy L. George, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 50,835, Apr. 21, 1993, Pat. No. 5,427,793. This application Apr. 17, 1995, Ser. No. 423,640

Int. Cl.[6] B32B *11/00*

U.S. Cl. 428—489 7 Claims

1. An algicidal composite sheet body suitable for use as building material comprising a bituminous sheet material having a firmly adherent surfacing of granular material, said granular material comprising ceramic-coated base granules, and said granular material adhered to said bituminous sheet material by a composition containing calcium, said granular material and said composition forming an exterior surface on said composite sheet body, said composite sheet body exterior surface having an algicidal topical coating thereon, wherein said algicidal topical coating comprises an organic oil and a tin-acrylate polymer dispersed therein, the tin-acrylate polymer being derived from a monomer composition comprising free-radical polymefizable units independently selected from the group consisting of:



wherein:

X is selected from the group consisting of $SnR^4R^5R^6$ and hydrogen; R^1–R^3 inclusive are the same or different and independently selected from the group consisting of hydrogen and organic radicals having from 1 to about 20 carbon atoms; and

R^1–R^6 inclusive are the same or different and independently selected from the group consisting of hydrogen and alkyl groups having from 1 to about 7 carbon atoms;

with the provisos that R^1–R^6 inclusive are selected so that the tin-acrylate polymer has a weight average molecular weight ranging from about 5,000 to about 50,000, and said tin-acrylate polymer has an effective amount of said SnR^4 R^5 groups to render said granular material algicidal; and

wherein said organic oil is selected from the group consisting of slate oil, rock oil, coal oil, and seneca oil, and wherein said tin-acrylate polymer is present at a weight percentage ranging from about 0.5 to about 15 as a percentage of total weight of said organic oil and said tin-acrylate polymer.

5,573,783

REDISPERSIBLE NANOPARTICULATE FILM MATRICES WITH PROTECTIVE OVERCOATS

Mark A. Desieno, Gilbertsville, and Gregg Stetsko, Harleysville, both of Pa., assignors to Nano Systems L.L.C., Collegeville, Pa.

Filed Feb. 13, 1995, Ser. No. 387,651

Int. Cl.[6] A61K *9/16;9/50*

U.S. Cl. 424—490 28 Claims

1. A solid pharmaceutical composition comprising a capsule shell containing carrier particles, each particle having on its surface a film comprising nanoparticles of a low solubility drug associated with a steric stabilizer and a film dispersing agent, wherein dissolution of the solid pharmaceutical composition results in substantial redispersion of the drug nanoparticles.

5,573,784

GRAFT FOR PROMOTING AUTOGENOUS TISSUE GROWTH

Stephen F. Badylak; Leslie A. Geddes, both of W. Lafayette; K. Donald Shelbourne, Indianapolis; Gary C. Lantz, Lafayette, and Arthur C. Coffey, Indianapolis, all of Ind., assignors to Purdue Research Foundation, West Lafayette, and Methodist Hospital of Indiana, Inc., Indianapolis, both of Ind.

Continuation of Ser. No. 167,579, Dec. 15, 1993, Pat. No. 5,445,833, which is a continuation of Ser. No. 764,818, Sep. 24, 1991, Pat. No. 5,281,422. This application Apr. 18, 1995, Ser. No. 423,411

Int. Cl.[6] A61K *35/38*

U.S. Cl. 424—551 1 Claim

1. A tissue graft material formed from a segment of intestinal tissue of a warm-blooded vertebrate, said segment of intestinal tissue comprising the tunica submucosa delaminated from both the tunica muscularis and the luminal portion of the tunica mucosa of vertebrate intestine, said graft material formed by conditioning the segment of intestinal tissue so that the graft material has a strain of no more than 20%.

5,573,785

COSMETIC COMPONENT INCLUDING WATER SOLUBLE FIBER

Lawrence J. Murphy, Harvard, Ill., assignor to R.I.T.A. Corporation, Woodstock, Ill., and Mountain Lake Manufacturing, Mountain Lake, Minn.

Continuation of Ser. No. 966,637, Oct. 23, 1992, abandoned. This application Feb. 23, 1995, Ser. No. 393,047

Int. Cl.[6] A61K *7/075;7/40;7/48*

U.S. Cl. 424—70.1 24 Claims

1. A cosmetic component produced by a method consisting essentially of the steps of:

a) placing a water-soluble fiber consisting essentially of about 4 to 6 wt. % modified or unmodified beta-glucan, about 1 to 5 wt. % fat, about 80 to 94 wt. % carbohydrates, and less than about 8 wt. % protein in hot water for a time sufficient to form a dispersion;

b) mixing said dispersion for time sufficient to form a gel; and

c) cooling said gel to form a cosmetic component.

5,573,786

PERPARATION FOR SKIN AND MUCOUS MEMBRANE

Michael Grabo; Christian Stähli, both of Basel; Rudolf Meyer, Wahlen; René Glauser, Basel, all of Switzerland, and Murray Weiner, Cincinnati, Ohio, assignors to Solco Basel AG, Basel, Switzerland

Filed Jun. 23, 1994, Ser. No. 264,687

Claims priority, application Switzerland, Jun. 23, 1993, 1887/93

Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—718 18 Claims

1. A stable and reproducible composition based on an aqueous solution of nitric acid, containing nitrate reduction products, for the local treatment of superficial changes in skin and mucous membrane and of superficial infections of the skin and mucous membrane, characterized in that said composition consists essentially of 1–5.5M aqueous nitric acid, nitrate reduction products in a concentration corresponding to from 0.1 to 6 mg of nitrite per ml of solution, and C_1-C_5-alkanoic acid in a concentration of not more than 170 mmol per l of solution, said composition being enclosed in a container with a gastight closure and having constant concentrations of the nitric acid, nitrate reduction products and alkanoic acid which are essentially independent of temperature and storage time.

5,573,787

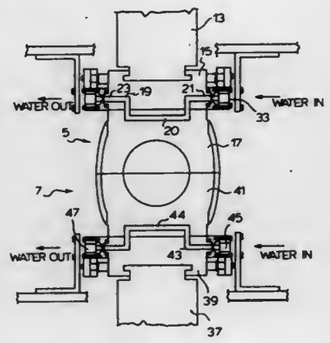
MOLD APPARATUS WITH COOLING CHANNELS

Manfred A. A. Lupke, 92 Elgin Street, Thornhill, Ontario, Canada, and Stefan A. Lupke, 32 Vintage Lane, Thornhill, Ontario, Canada

Filed Sep. 28, 1995, Ser. No. 535,942

Int. Cl.[6] B29C *33/04;53/30*

U.S. Cl. 425—233 11 Claims



1. A mold apparatus having a plurality of sets of mold block

parts which move to and from a product forming mold tunnel along said apparatus, each set of mold block parts having at least one liquid receiving channel, a liquid supply for supplying cooling liquid to said channel, said channel having opposite ends which are respectively open for feeding the cooling liquid into one end and draining the cooling liquid from the other end of said channel when said mold block parts are in said mold tunnel, and sealing means being provided to seal said opposite ends of said channel and to prevent leakage of any cooling liquid trapped in said channel when said mold block parts are away from said mold tunnel.

5,573,788

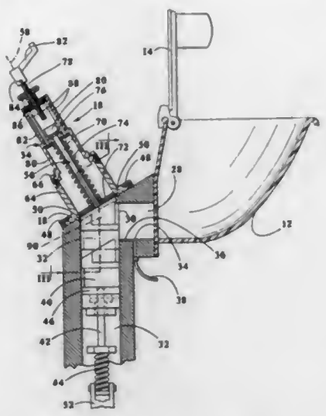
MEASURING CUP APPARATUS FOR DOUGH DIVIDER

Thomas A. Atwood, Dolton, Ill., assignor to AM Manufacturing Company, Inc., Dolton, Ill.

Continuation of Ser. No. 217,855, Mar. 25, 1994, abandoned. This application May 25, 1995, Ser. No. 451,041

Int. Cl.[6] A21C *5/02*

U.S. Cl. 425—238 **18 Claims**



1. In a dough dividing machine having a reciprocating piston for incrementally pumping predetermined amounts of dough and a measuring cup assembly for receiving said predetermined amount of said dough wherein said measuring cup assembly comprises a plunger guide, a stop cover, and a measuring cylinder having a common central axis and a plunger slidable axially within said plunger guide, the improvement comprising:

said plunger guide and said stop cover being secured together in a fixed and nonadjustable manner, and said plunger guide and said measuring cylinder being secured together in a fixed and nonadjustable manner, said stop cover having an interior surface defining a cover chamber, said plunger guide having an interior surface defining a plunger chamber and said measuring guide having an interior surface defining a measuring chamber;

a stopping mechanism secured at the axis of said stop cover for contacting said plunger Within said cover chamber to limit motion of said plunger within said measuring chamber and said plunger chamber; and

a resilient bushing secured to said plunger for contacting said stopping mechanism Within said cover chamber.

5,573,789

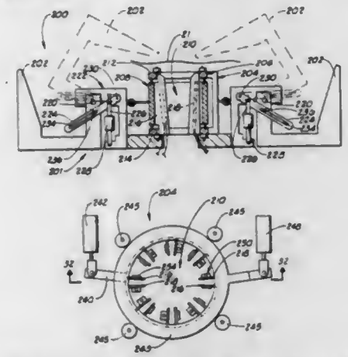
APPARATUS HAVING BLADES AND PLATES FOR FORMING SHEET MATERIAL INTO A FLOWER POT COVER HAVING OUTWARD FINS

Donald E. Weder, Highland, Ill.; Franklin J. Craig, Valley Park, Mo., and Joseph G. Straeter, Highland, Ill., assignors to Southpac Trust International, Inc., and The Family Trust U/T/A, both of Oklahoma City, Okla.

Continuation of Ser. No. 80,906, Jun. 21, 1993, which is a continuation-in-part of Ser. No. 805,419, Dec. 10, 1991, Pat. No. 5,221,248, which is a continuation-in-part of Ser. No. 422,653, Oct. 17, 1989, Pat. No. 5,073,161, which is a continuation-in-part of Ser. No. 397,114, Aug. 22, 1989, Pat. No. 5,029,412, said Ser. No. 422,653is a continuation-in-part of Ser. No. 366,588, Jun. 15, 1989, Pat. No. 5,111,613, and a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned, said Ser. No. 422,653is a continuation-in-part of Ser. No. 367,098, Jun. 15, 1989, Pat. No. Des. 318,030, which is a continuation-in-part of Ser. No. 283,014, Dec. 8, 1988, which is a continuation of Ser. No. 652,903, Sep. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 613,053, May 22, 1984, Pat. No. Des. 293,244, said Ser. No. 805,419is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, and a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989, Pat. No. Des. 358,113, and a continuation-in-part of Ser. No. 411,247, Sep. 22, 1989, and a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 479,982

Int. Cl.[6] B29C *51/08;* **B31B** *1/46*

U.S. Cl. 425—394 **15 Claims**



1. An apparatus for forming a sheet of material into a flower pot or flower pot cover having outwardly extending fins, the apparatus comprising:

a female tool having an upper end, a lower end and a female opening extending from the upper end toward the lower end thereof, the female opening having a central axis extending from the upper end to the lower end of said female tool, said female tool including an inner cage and an outer frame, said inner cage having a plurality of cage plates extending laterally into the female opening and a plurality of cage slots therethrough alternating with the cage plates and said outer frame having a plurality of frame plates extending laterally into the female opening, each frame plate extending through a corresponding one of the cage slots;

means for rotating said inner cage relative to said outer frame about the central axis of said female tool between an open position wherein each cage plate is spaced a distance from a corresponding frame plate to define a fin-forming space therebetween and a closed position wherein each cage plate and the corresponding frame plate are substantially together;

a plurality of blades positioned around said female tool, each blade corresponding to one of the fin-forming spaces; and

means for moving each one of said blades between a storage position wherein each blade is spaced a distance from the female opening and a forming position wherein each blade is disposed in the corresponding fin-forming space;

wherein a sheet of material disposed over the female opening is formed into a flower pot or flower pot cover having outwardly extending fins when said blades are moved into the forming position to push a portion of the sheet of material into the corresponding fin-forming space and said cage is rotated to move each cage plate into the closed position with the corresponding frame plate.

5,573,790

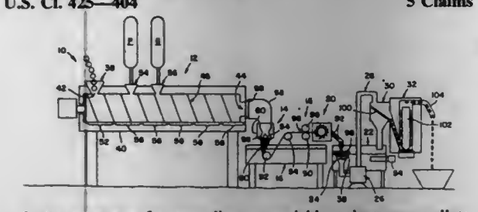
APPARATUS FOR MANUFACTURING EXPANDABLE POLYSTYRENE (EPS) PELLETS

Erik W. Wehtje, Greenwich, and Erik T. Anderlind, Riverside, both of Conn., assignors to Polysource Inc., Greenwich, Conn.

Division of Ser. No. 120,736, Sep. 14, 1993, abandoned, which is a division of Ser. No. 882,001, May 13, 1992, Pat. No. 5,267,845. This application Jun. 1, 1994, Ser. No. 251,956

Int. Cl.[6] B29C *71/02*

U.S. Cl. 425—404 **5 Claims**



1. An apparatus for annealing expandable polystyrene pellets, said apparatus comprising:

a quencher tank having a volume of hot water therein;

water vortex means, disposed in said quencher tank, for receiving hot water from said quencher tank to form a cascading water vortex, for receiving expandable polystyrene pellets, and for forming a cascading vortex slurry of hot water and pellets;

a quenching loop; and

a slurry pump in fluid communication with said water vortex means and said quenching loop for pumping the slurry of hot water and pellets formed by said water vortex means through said quenching loop to anneal the pellets.

5,573,791

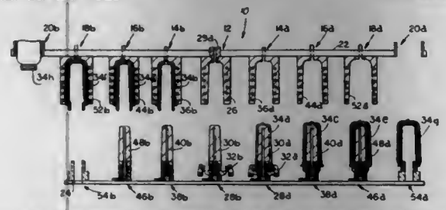
APPARATUS FOR FORMING A PARISON HAVING MULTIPLE RESIN LAYERS

Paul Marcus, 6 Bayberry Dr., Saddle River, N.J. 07458

Division of Ser. No. 322,436, Oct. 13, 1994. This application Aug. 23, 1995, Ser. No. 518,618

Int. Cl.[6] B29C *49/22*

U.S. Cl. 425—523 **27 Claims**



1. An apparatus for forming a parison having multiple resin layers comprising:

a first parison layer injection molding station for forming a first parison layer of reduced thickness;

a pair of second parison layer injection molding stations for forming a second parison layer of reduced thickness on a first parison layer with one of the second parison layer injection molding stations being on opposed sides of the first parison layer injection molding station;

indexing means for moving a first of the first parison layer from the first parison layer injection molding station to one of the second parison layer injection molding stations and a second of the first parison layer to the other of the second parison layer injection molding stations, the second of the first parison layer being injection molded at the first parison layer injection molding station while the first of the first parison layers is at the one of the second parison layer injection molding stations for receiving a second parison layer thereon to form a first two layered parison.

5,573,792

METHOD OF GROWING FISH OR CRUSTACEANS AT INCREASED CONVERSION, GROWTH AND SURVIVAL RATES

Arne Dessen, London, England, assignor to ISP Investments Inc., Wilmington, Del.

Continuation of Ser. No. 337,696, Nov. 10, 1994, abandoned, which is a continuation-in-part of Ser. No. 71,914, Jun. 3, 1993, abandoned. This application Jun. 22, 1995, Ser. No. 493,731

Int. Cl.[6] A23L *1/326*

U.S. Cl. 426—2 **5 Claims**

1. A method of growing fish or crustaceans at increased conversion, growth and survival rates comprising feeding the fish or crustacean with a particulate foodstuff composition which consists essentially of at least 30% fish meal and at least 0.01 to up to 5% by weight of polyvinylpyrrolidone (PVP) having a K-value of 15–120 to bind said foodstuff in the form of a pellet of sufficient strength and hardness in water to remain intact in water, to prevent any ingredient therein from escaping therefrom, and to enable the fish or crustaceans to feed effectively on said pelletized composition during both their early and late growth stages.

5,573,793

FOOD COMPOSITION AND METHOD OF MAKING A COOKIE OR A CHOCOLATE SHELL CONTAINING A FERMENTED FILLING BASED ON A DAIRY PRODUCT

Michel Saintain, Fontenay Les Briis, France, assignor to Compagnie Gervais Danone, France

Filed Feb. 23, 1995, Ser. No. 393,225

Claims priority, application France, Feb. 23, 1994, 94 02036

Int. Cl.[6] A23C *9/12;9/133;* **A23L** *1/09*

U.S. Cl. 426—34 **37 Claims**

1. A food composition of the type containing a cookie or a chocolate shell and a filling based on a fermented dairy product containing live lactic acid bacteria,

wherein the filling had a water activity (Aw) of between 0.75 and 0.86 before being brought into contact with the cookie or the shell,

wherein said food composition is equilibrated at an Aw of between 0.75 and 0.81 and

wherein the filling is in the form of a water-in-oil type emulsion.

5,573,794
PROCESS FOR TREATING A SOLUBLE GLUCOSE POLYMER AND PRODUCT THUS OBTAINED
Pierrick Duflot, Richebourg, France, assignor to Roquette Freres, Lestrem, France
Filed Nov. 21, 1994, Ser. No. 345,827
Claims priority, application France, Nov. 22, 1993, 93 13943
Int. Cl.[6] A23L *1/015*
U.S. Cl. 426—48 10 Claims

1. A method for treating a soluble glucose polymer containing free glucose in order to obtain an improved glucose polymer which is substantially colorless, which has reduced bitterness, and which has a lower caloric content by reducing the original content of free glucose, said method comprising:
subjecting the polymer containing free glucose to the action of an effective amount of a glucose oxidase under conditions resulting in the oxidation of glucose to gluconic acid;
treating the polymer so obtained with an anion exchanger in hydroxyl anion form so as to bind said gluconic acid; and
recovering an improved glucose polymer which is substantially colorless, which has reduced bitterness, and which has a lower caloric content than said glucose polymer containing free glucose.

5,573,795
METHOD FOR TREATMENT OF POTATO FRUIT WATER
Hans S. Olsen, Holte, Denmark, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark
PCT No. PCT/DK93/00030, § 371 Date Jul. 8, 1994, § 102(e) Date Jul. 8, 1994, PCT Pub. No. WO93/15616, PCT Pub. Date Aug. 19, 1993
PCT Filed Jan. 28, 1993, Ser. No. 256,323
Claims priority, application Denmark, Feb. 6, 1992, 0141/92
Int. Cl.[6] A23B *7/10;* A23K *1/14;* A23L *1/09;* A23J *1/16*
U.S. Cl. 426—53 13 Claims

1. Method for treatment of potato fruit water, wherein the potato fruit water is subjected to a heat treatment to at least 125° C. for at least 3 minutes, whereafter the heat treated potato fruit water is cooled to a temperature, at which enzymes are relatively stable, then enzymatically treated with a proteinase, and finally concentrated to microbial stability.

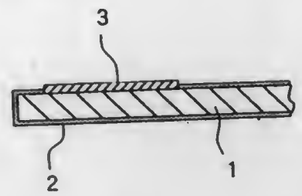
5,573,796
METHOD OF MAKING SHEET DOUGH FOR LONG-LIFE FRESH PASTA PRODUCTS
Roberto Guarneri, Parma, Italy, assignor to Barilla G. E R. F.LLI - Societa per Axioni, Parma, Italy
Filed Jul. 17, 1990, Ser. No. 553,308
Claims priority, application Italy, Feb. 12, 1990, 19344-A/90
Int. Cl.[6] A21D *2/02*
U.S. Cl. 426—94 5 Claims

1. Method of making sheet dough for use in the production of long-life fresh pasta products, comprising the sequential steps of:
providing a dough stock from ingredients which include durum wheat flour and eggs, and incorporating salt therein in an amount between 2.5% and 4% by weight and providing said dough stock with a water content in the 30% to 32% range;
forming from said dough stock a web of sheet dough whose fibers are mainly oriented in the longitudinal direction thereof;
lapping said sheet dough into plural overlaid layers; and
rolling and calibrating said overlaid layers in a cross direction to the main orientation of the fibers in said sheet dough such that said cross rolled sheet dough is free of tears and cracks.

5,573,797
FILM AND METHOD FOR SURFACE TREATMENT OF FOODSTUFFS WITH ANTIMICROBIAL COMPOSITIONS
Darrel L. Wilhoit, Plainfield, Ill., assignor to Viskase Corporation, Chicago, Ill.
Continuation of Ser. No. 804,141, Dec. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 472,731, Feb. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 312,840, Feb. 21, 1989, abandoned. This application Apr. 23, 1993, Ser. No. 51,258
Int. Cl.[6] A23L *3/3463*
U.S. Cl. 426—106 32 Claims

1. A food packaging film comprising a polymeric film or a regenerated cellulosic film containing a heat resistant, Pediococcus-derived bacteriocin or synthetic equivalent, antibacterial agent in synergistic combination with a chelating agent in an amount effective to inhibit or kill Listeria monocytogenes upon contact, wherein said film encloses a foodstuff.

5,573,798
METHOD OF MANUFACTURING AN ELECTRODE FOR MEASURING PH
Akihiko Kato; Masaharu Yamasato; Tomio Taguchi; Yoshiki Yanagida, all of Saitama-ken, and Teruaki Katube, Tokyo, all of Japan, assignors to Toa Electronics Ltd., Tokyo, Japan
Division of Ser. No. 255,627, Jun. 9, 1994, Pat. No. 5,480,534, which is a continuation-in-part of Ser. No. 747,885, Aug. 19, 1991, Pat. No. 5,320,735. This application Jun. 5, 1995, Ser. No. 463,438
Claims priority, application Japan, Aug. 22, 1990, 2-220733; Aug. 22, 1990, 2-220861; Jul. 30, 1991, 3-214523
Int. Cl.[6] G01N *27/333;* C23C *14/10;14/34*
U.S. Cl. 427—126.5 9 Claims



7. A method of producing pH measuring electrodes, comprising the step of:
forming a pH sensitive film on a surface of an electrically insulative ceramics substrate, said pH sensitive film comprising iridium oxide, the ratio of iridium to oxygen in said iridium oxide being from 1:2.5 to 1:3.5.

5,573,799
STABILIZING CURED MEAT COLOR WITH ENCAPSULATED IRON SALTS
Dominique Villot, Helsingborg, and Christer Zander, Angelholm, both of Sweden, assignors to Nestec S.A., Vevey, Sweden
Filed Jan. 12, 1995, Ser. No. 371,990
Claims priority, application European Pat. Off., Feb. 17, 1994, 94102350
Int. Cl.[6] A23B *4/02*
U.S. Cl. 426—262 11 Claims

1. In a process for obtaining a cured comminuted meat wherein a curing medium is incorporated into the comminuted meat and the comminuted meat is cured by the medium, the improvement comprising curing a comminuted meat with a curing medium containing an edible iron salt encapsulated in an edible thermoresistant and oxygen-permeable gelled material.

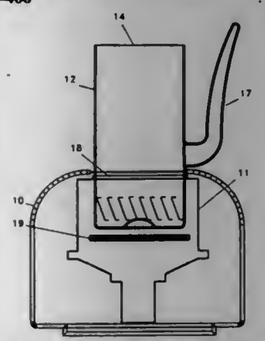
5,573,800
ANTIMICROBIAL COMPOSITION FOR SURFACE TREATMENT OF FOODSTUFFS
Darrel L. Wilhoit, Joliet, Ill., assignor to Viskase Corporation, Chicago, Ill.
Continuation of Ser. No. 804,156, Dec. 6, 1991, abandoned, and a continuation-in-part of Ser. No. 472,731, Feb. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 312,840, Feb. 21, 1989, abandoned. This application Apr. 23, 1993, Ser. No. 51,259
Int. Cl.[6] A23L *3/3463*
U.S. Cl. 426—326 16 Claims

1. A bactericidal food preservation preparation composition comprising a mixture adapted for coating a food product for preservation thereof, said mixture having a Pediococcus-derived bacteriocin or synthetic equivalent antibacterial agent in combination with a chelating agent in an amount effective to kill pathogenic Listeria monocytogenes upon contact wherein said composition is a solid-in-liquid suspension or a liquid mixture having a pH≦6 and wherein said chelating agent is present in an amount of at least 0.8 weight of said mixture.

5,573,801
SURFACE TREATMENT OF FOODSTUFFS WITH ANTIMICROBIAL COMPOSITIONS
Darrel L. Wilhoit, Plainfield, Ill., assignor to Viskase Corporation, Chicago, Ill.
Continuation of Ser. No. 804,878, Dec. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 472,731, Feb. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 312,840, Feb. 21, 1989, abandoned. This application Apr. 23, 1993, Ser. No. 51,260
Int. Cl.[6] A23L *3/3463*
U.S. Cl. 426—326 40 Claims

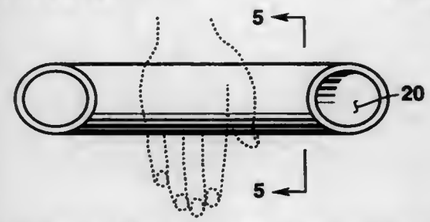
1. A method of controlling the contamination of processed meat products by undesirable microorganisms which method involves treating the surface of said meat product with a lanthionine bacteriocin after it has been heat treated.

5,573,802
COFFEE ROASTER OVEN CHAMBER
Brian Porto, Washington, D.C., assignor to The Hugo Gepo Co., Inc., Silver Spring, Md.
Continuation-in-part of Ser. No. 404,651, Mar. 14, 1995, Pat. No. 5,500,237. This application Feb. 6, 1996, Ser. No. 588,616
Int. Cl.[6] A23F *5/00;* A23N *12/00*
U.S. Cl. 426—466 10 Claims



7. A method of roasting coffee, including the steps of:
placing at least part of a removable oven chamber into a plenum;
creating a fluidized bed of coffee beans within said removable oven chamber by forcing air from said plenum into said removable oven chamber via openings in said removable oven chamber; and
roasting the coffee beans comprising said fluidized bed by the concurrent application of radiation from an incandescent heater through said removable oven chamber and air previously heated by said incandescent heater as it passed through said plenum.

5,573,803
VEGETABLE PEELER
Benjamin Omessi, 11710 Doral Ave., Northridge, Calif. 91326
Filed Jun. 6, 1994, Ser. No. 254,695
Int. Cl.[6] A23L *1/10;1/216;* A23P *1/00*
U.S. Cl. 426—483 6 Claims



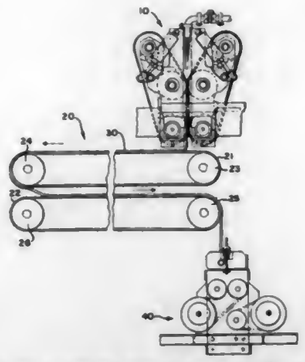
1. A method for peeling food with an outer skin using a food peeler which comprises a tubular body with open ends made from a flexible material with an adhering inside surface, said method comprising the steps of:
(a) inserting food to be peeled into the tubular body through the open ends;
(b) compressing the tubular body to a deformed flattened shape against an external surface for the adhering inside surface to grip the outer skin of inserted food to be peeled;
(c) rolling said compressed tubular body back and forth against the external surface until all outer skin has been peeled from inserted food; and
(d) removing inserted food and peeled outer skin from the tubular body through the open ends.

5,573,804
PREPARATION OF INTERWINED PASTA PRODUCTS
Jau Y. Hsu, Brookfield, Conn., assignor to Nestec S.A., Vevey, Switzerland
Filed Sep. 28, 1994, Ser. No. 313,766
Int. Cl.[6] A23L *1/16;1/162;3/40;* A21D *6/00*
U.S. Cl. 426—496 16 Claims

1. A process for the production of a pasta product comprising steaming a dry uncooked folded, intertwined long pasta to surface-gelatinise the pasta to obtain a surface-gelatinised pasta, contacting the surface-gelatinised pasta with water to obtain a wet pasta and steaming the wet pasta to obtain a pasta product.

5,573,805
METHOD FOR PRODUCING SHREDDED CHEESE
Orville C. Feger; Scott G. Andrews, both of Green Bay; Dennis R. Ferdon, Abrams; David J. Garnett, and Matthew T. Stenzel, both of Green Bay, all of Wis., assignors to Schreiber Foods, Inc., Green Bay, Wis.
Continuation of Ser. No. 106,330, Aug. 12, 1993, abandoned. This application Jul. 12, 1995, Ser. No. 501,777
Int. Cl.[6] A23C *19/00*
U.S. Cl. 426—515 2 Claims

1. A method for producing cheese shreds of predetermined dimensions in a unified operation comprising the following steps in the order of:
forming a continuous sheet of cheese of substantially uniform thickness by extruding cheese in substantially liquid form;



advancing the continuous sheet of cheese relative to a shearing element;

shearing the advancing continuous sheet of cheese into continuous shreds of substantially uniform width using the shearing element, the shearing element having a plurality of cutting edges, the distance between cutting edges defining the width of said shreds of cheese;

removing the continuous shreds of cheese from between the cutting edges by providing a plurality of projections extending between the cutting edges; and

cutting the advancing continuous shreds of cheese into shreds of substantially uniform length.

5,573,806

CALIFORNIA COOKING CHEESE

Nana Y. Farkye, and B. Bhanu Prasad, both of San Luis Obispo, Calif., assignors to California Polytechnic State University Foundation, San Luis Obispo, Calif.

Continuation-in-part of Ser. No. 152,457, Nov. 12, 1993, Pat. No. 5,445,845. This application Aug. 14, 1995, Ser. No. 514,559

Int. Cl.[6] A23C *19/045*

U.S. Cl. 426—582 **14 Claims**

1. A heat-stable cheese comprising about 48–55% moisture, about 20–22% protein, about 300–600 milligrams calcium per 100 grams cheese, about 18–21% fat and having a pH of about 5.1–5.5 produced by adding acid directly to milk to form a curd and then removing the whey.

5,573,807

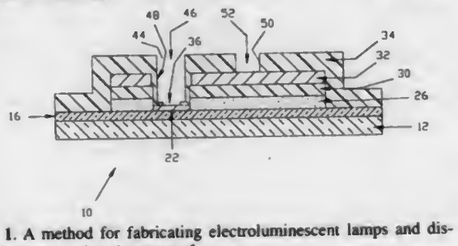
METHOD FOR FABRICATING ELECTROLUMINESCENT LAMPS AND DISPLAYS

Bradley J. LaPointe, Shorewood, Minn., assignor to Leading Edge Industries, Inc., Minnetonka, Minn.

Division of Ser. No. 189,989, Jan. 31, 1994, Pat. No. 5,410,217. This application Mar. 16, 1995, Ser. No. 405,801

Int. Cl.[6] B05D *5/06*

U.S. Cl. 427—66 **7 Claims**



1. A method for fabricating electroluminescent lamps and displays comprising the steps of:

providing a polymer film having a peripheral edge, said polymer film having a transparent first conductive film forming a front electrode;

depositing a phosphor layer defining a display region of said front electrode, said phosphor layer leaving exposed a phosphor free contact region of said front electrode and terminating before said peripheral edge of said polymer film, leaving exposed a continuous phosphor free band of said front electrode;

depositing a first dielectric layer onto said phosphor layer, said first dielectric layer being co-extensive with said phosphor layer, and leaving exposed said phosphor free contact region and said continuous phosphor free band of said front electrode;

depositing a second conductive layer, forming a back electrode onto at least a portion of said first dielectric layer, said back electrode being co-extensive with said first dielectric layer, leaving said phosphor free contact region of said front electrode exposed and electrically isolated therefrom, said back electrode also leaving said continuous phosphor free band of said front electrode exposed and electrically isolated; and

depositing a second dielectric layer over said back electrode, leaving a back electrode contact exposed, said second dielectric layer extending beyond said back electrode forming a dielectric deposit on all exposed regions of said phosphor layer, said second dielectric bonding to said continuous phosphor free band of said front electrode and to said phosphor free contact region of said front electrode.

5,573,808

METHOD FOR PRODUCING A MULTILAYER CIRCUIT

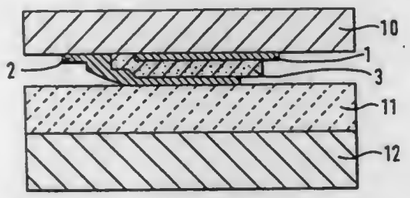
Werner Gruenwald, Gerlingen; Walter Roethlingshoefer; Ulrich Goebel, both of Reutlingen; Ralf Haug, Leonberg; Manfred Moser, Reutlingen- Sickenhausen, and Annette Seibold, Rutesheim, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 22, 1996, Ser. No. 589,234

Claims priority, application Germany, Mar. 16, 1995, 1 95 09 554.5

Int. Cl.[6] B05D *5/12*; B41M *3/12*

U.S. Cl. 427—79 **4 Claims**



1. A method for producing a multilayer circuit, comprising the steps of:

providing a dielectric arranged between first and second electrodes on a carrier, thereby forming a capacitor;

pressing the capacitor into a first green ceramic sheet;

separating the carrier from the structures after the capacitor is pressed into the first green ceramic sheet; and

firing the first green ceramic sheet with a second green ceramic sheet in a stack formation.

5,573,809

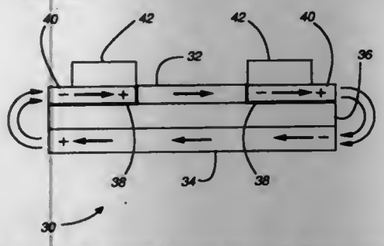
PROCESS FOR FORMING A MAGNETORESISTIVE DEVICE

J. Lamar Nix, and Guy F. Ruse, both of Boulder, Colo., assignors to Quantum Peripherals Colorado, Inc., Boulder, Colo.

Filed Jun. 5, 1995, Ser. No. 461,873

Int. Cl.[6] B05D *5/12*

U.S. Cl. 427—123 **22 Claims**



1. A process for forming a magnetoresistive device comprising the steps of:

providing a substrate;

firstly forming a soft adjacent layer on said substrate;

secondly forming a magnetic spacer layer on said soft adjacent layer;

thirdly forming a magnetoresistive layer on said magnetic spacer layer;

patterning a photoresist region on said magnetoresistive layer;

removing portions of said magnetoresistive layer surrounding said photoresist region to define a magnetoresistive mesa;

fourthly forming first and second separation layer portions on said magnetic spacer layer and adjoining side portions of said magnetoresistive mesa;

fifthly forming first and second permanent magnet layer portions on said first and second separation layer portions respectively;

sixthly forming first and second conductive layer portions on said first and second permanent magnet layer portions respectively; and

removing said photoresist region from said magnetoresistive layer.

5,573,810

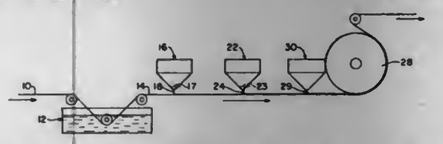
METHOD OF APPLYING MICROORGANISM RESISTANT GRANULES TO A CONTINUOUSLY MOVING STRIP OF ASPHALT COATED MATERIAL

Lawrence J. Grubka, Heath, Ohio, assignor to Owens-Corning Fiberglas Technology Inc., Summit, Ill.

Filed Sep. 21, 1994, Ser. No. 309,707

Int. Cl.[6] B05D *1/12*; *1/36*; B32B *11/12*

U.S. Cl. 427—186 **19 Claims**



1. A method of manufacturing a microorganism resistant roofing shingle comprising the steps of:

supplying an asphaltic strip material with a tacky surface having at least one prime lane;

applying prime granules onto said at least one prime lane of said asphaltic strip material to substantially cover said at least one prime lane so that approximately all of said prime granules adhere to said asphaltic strip material;

applying an excessive amount of backfall granules onto said at least one prime lane on top of said prime granules; and

prior to applying said prime granules onto said at least one prime lane of said asphaltic strip material, applying anti-microorganism granules onto said at least one prime lane so that nearly 100 percent of the anti-microorganism granules adhere to said asphaltic strip material.

5,573,811

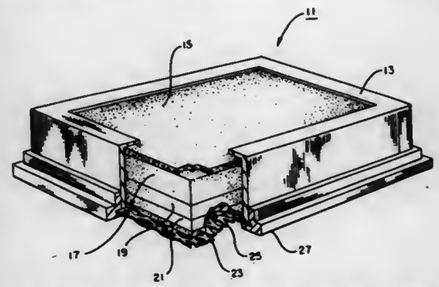
AIR FILTER AND METHOD OF CONSTRUCTION

David M. Townsley, McKinney, Tex., assignor to S.T. Technologies, Inc., Plano, Tex.

Division of Ser. No. 102,350, Aug. 5, 1993, Pat. No. 5,437,701. This application Jul. 31, 1995, Ser. No. 509,527

Int. Cl.[6] B01D *46/00*

U.S. Cl. 427—244 **9 Claims**



1. A method for producing an improved reticulated foam air filter for filtering a dirty incoming stream of air entering a vehicle engine, the method comprising the steps of:

contacting the reticulated foam with a controlled migration treatment medium;

allowing the treatment medium to coat the foam; and

wherein the controlled migration treatment medium which contacts the reticulated foam is characterized as having a saybolt universal viscosity in the range from about 8,500 to 36,000 SUS and wherein the reticulated foam which is contacted with the controlled migration treating medium is further characterized as having a residual amount of controlled migration treatment medium, after removal of solvent, if solvent is present, in the range from about 0.25 to about 2.0 grams of treatment medium per cubic inch of untreated reticulated foam filter material.

5,573,812

MULTI-LAYER COATING COMPOSITION INCORPORATING MIGRATORY CATALYST

Wynn Moy, Orland Park, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Division of Ser. No. 157,585, Nov. 24, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 483,652

The portion of the term of this patent subsequent to Nov. 24, 2013, has been disclaimed.

Int. Cl.[6] B05D *7/14*

U.S. Cl. 427—333 **7 Claims**

1. A process for coating a substrate with a multi-layer decorative and/or protective coating which process comprises:

(a) applying to the substrate at least one first coat which is substantially free of isocyanate functionality and which comprises:

(i) a film-forming composition capable of curing or drying; and

(ii) a catalyst for the reaction of isocyanate groups and active hydrogen groups; and

(b) applying to the first coat, prior to the complete cure of said first coat an intermediate coat which is not catalyzed by the catalyst contained in said first coat; and

(c) applying to the intermediate coat, prior to the complete cure of said intermediate coat a second coat which second coat comprises:

(i) an active hydrogen functional compound; and
(ii) a polyisocyanate;
whereby upon application of said second coat, a reaction between the polyisocyanate and the active hydrogen functional compound of the second coat is catalyzed.

5,573,813

METHOD AND APPARATUS FOR IMPREGNATING FIBERS WITH HIGHLY VISCOUS MATERIALS AND ARTICLE MADE THEREWITH

Milton F. Custer, Byron; Kenneth E. Vicknair, Pleasanton, and William R. Sherwood, Bethel Island, all of Calif., assignors to Hexcel Corporation, Dublin, Calif.

Filed Mar. 2, 1990, Ser. No. 487,554
Int. Cl.[6] B05D *3/12*
U.S. Cl. 427—346 **30 Claims**

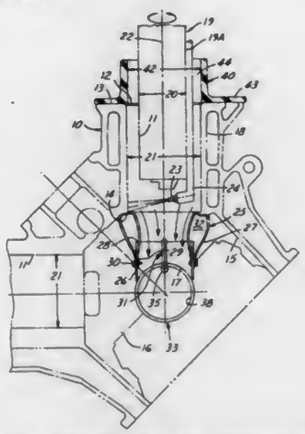
1. A method for fully impregnating multiple closely adjacent, resin-free fibers which together define an exterior surface with a normally viscous resin having linear long chain molecules, the method comprising the steps of applying the resin to the exterior surface on at least two, opposite portions of the surface; subjecting the resin applied to the surface portions to relatively low pressure urging it towards the fibers; and generating shear stresses in a layer of the resin proximate the surface portions so that the long chain molecules become aligned with the fibers; whereby the shear stresses reduce the viscosity of the resin in the vicinity of the fibers so that the resin, under the applied pressure, migrates past the surface portions into contact with the fibers.

5,573,814

MASKING CYLINDER BORE EXTREMITIES FROM INTERNAL THERMAL SPRAYING

David A. Donovan, Chelsea, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 30, 1995, Ser. No. 550,475
Int. Cl.[6] B05D *1/08;1/32*
U.S. Cl. 427—448 **7 Claims**



1. A method of masking cylinder bore extremities from internal thermal spraying by use of a rotary gun inserted from one end of the bore, the method comprising the steps of:
(a) supporting one or more inflatable mask members adjacent an end of the bore wall; and
(b) pressurizing the inflatable mask member to expand and annularly engage such end of the bore wall, said mask member being constituted of an inflatable and collapsible air tight bag of heat resistant cloth coated on opposite sides with a sacrificial heat resistant non-stick coating.

5,573,815

PROCESS FOR MAKING IMPROVED METAL STENCIL SCREENS FOR SCREEN PRINTING

Allan Cairncross, Hockessin, and Chester A. Thayer, II, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 206,377, Mar. 7, 1994, Pat. No. 5,447,757.
This application May 30, 1995, Ser. No. 454,487
Int. Cl.[6] C08J *7/04*
U.S. Cl. 427—504 **4 Claims**

1. A process for making a metal stencil screen with a polyimide ledge, said stencil screen comprising solid areas which prevent printing and penetrable areas through which printing can occur, said penetrable areas being selected from (i) mesh, (ii) open areas bridged with tie lines and combinations of (i) and (ii), said process comprising the steps:
(a) forming a layer of electrically conducting silver on a polyimide support in a pattern corresponding to a stencil screen by silver salt photographic imaging, said silver layer having a surface resistance of less than 200,000 ohms as measured between two point probes separated by one centimeter,
(b) plating the layer of silver with a second metal to form a metal-plated silver pattern, and
(c) applying a liquid to completely remove the polyimide support in penetrable areas of the stencil screen while leaving the polyimide support only partially etched in solid areas to form the polymeric ledge.

5,573,816

FRICTION COATING FOR FILM BACKINGS

Anthony C. Gaeta, Rockport, and Gwo S. Swei, East Amherst, both of N.Y., assignors to Norton Company, Worcester, Mass.

Filed Jun. 6, 1995, Ser. No. 467,499
Int. Cl.[6] B05D *3/06*
U.S. Cl. 427—510 **6 Claims**

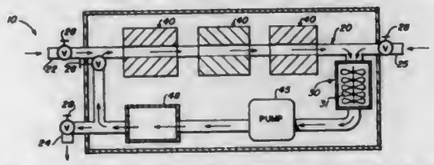
1. A process for producing a film backed coated abrasive which comprises coating the non-abrading surface of the film backing with a friction promoting layer comprising a radiation-curable binder, a particulate material and at least 20% of a liquid carrier medium, drying and curing said friction-promoting layer whereby said layer is caused to shrink in volume by from about 20 to about 60%.

5,573,817

METHOD AND APPARATUS FOR DELIVERING A SUBSTANCE INTO A MATERIAL

William C. Reed, 5753 Whistlewood Cir., Sarasota, Fla. 34232

Continuation-in-part of Ser. No. 180,432, Jan. 12, 1994, Pat. No. 5,415,900. This application May 16, 1995, Ser. No. 441,978
The portion of the term of this patent subsequent to Jan. 12, 2014, has been disclaimed.
Int. Cl.[6] B05D *3/00*
U.S. Cl. 427—561 **22 Claims**



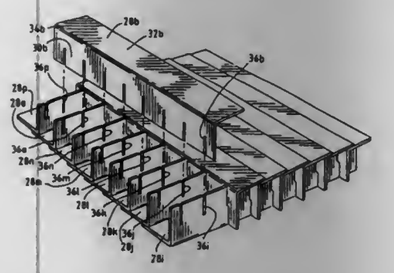
1. A method of delivering a substance into a material mass comprising the steps of:
a) measuring at least one quantity of at least one liquid material to be delivered,
b) applying a polarized magnetic field to said liquid material until fluid molecules of said liquid material are rearranged from a normal agglomerated state to a more linear and organized state, thereby increasing a permeability and effectiveness thereof, and
c) introducing said magnetically influenced liquid material to the material mass for penetrating therein and direct, substantial absorbing of said magnetically influenced liquid material by the material mass.

5,573,818

COLLAPSIBLE VOID FILLER

Gerald A. Haywood, Hohenwald, and Gregory S. King, Mount Pleasant, both of Tenn., assignors to Shippers Paper Products, Glenview, Ill.

Filed Dec. 21, 1994, Ser. No. 361,222
Int. Cl.[6] B32B *3/12*
U.S. Cl. 428—12 **9 Claims**



1. A void filler device, comprising:
a plurality of interlocked members which form an open cell construction and which are movable with respect to each other while interlocked with each other such that said void filler device is expandable and collapsible,
wherein each one of said members comprises a first leg and a second leg, said first and second legs are disposed at a predetermined angle with respect to each other, said first leg of each one of said members has means thereon for interlocking said members together, and said second leg of each one of said members overlaps said first legs of said plurality of interlocked members, when said void filler is disposed in an expanded state, such that said first and second leg members cooperate together so as to provide said void filler device with a bearing surface upon which a load can be placed and supported.

5,573,819

BARRIER COATINGS

Richard M. Nugent, Jr.; Ken W. Niederst, both of Allison Park, and Jerome A. Seiner, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 168,286, Dec. 17, 1993, Pat. No. 5,489,455, which is a division of Ser. No. 767,458, Sep. 30, 1991, Pat. No. 5,300,541, which is a continuation-in-part of Ser. No. 656,662, Feb. 19, 1991, abandoned, which is a division of Ser. No. 367,992, Jun. 19, 1989, Pat. No. 5,008,137, which is a continuation of Ser. No. 152,176, Feb. 4, 1988, abandoned. This application Oct. 27, 1995, Ser. No. 549,291
Int. Cl.[6] B32B *27/08;33/00*
U.S. Cl. 428—34.8 **5 Claims**

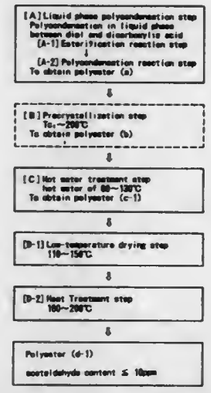
1. A multilayer packaging material comprising:
(a) at least one layer of a gas-permeable polymeric material; and
(b) at least one layer of a barrier material comprised of a reaction product of polyamine and polyepoxide, the barrier material containing at least seven percent by weight amine nitrogen basis total weight of polymeric barrier material.

5,573,820

PROCESS FOR PREPARING POLYESTER

Hirofumi Harazoe, Kuga-gun, and Masayuki Sakai, Ichihara, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,092
Claims priority, application Japan, Dec. 28, 1993, 5-338681; Dec. 28, 1993, 5-338682
Int. Cl.[6] B32B *1/08;* **C08G** *63/18*
U.S. Cl. 428—35.7 **24 Claims**



1. A process for preparing a polyester consisting essentially of:
[A] (A) a liquid phase polycondensation step in which a dicarboxylic acid compound selected from the group consisting of terephthalic acid, its lower alkyl ester and its phenyl ester and a diol compound selected from the group consisting a ethylene glycol and its monocarboxylic ester are subjected to polycondensation reaction in liquid phase under heating in the presence of a polycondensation catalyst to produce a polyester (a) having an intrinsic viscosity, as measured in o-chlorophenol, of 0.7 to 1.5 dl/g,
[[C]] (C) a hot water treatment step in which the polyester (a) is contacted with hot water of 60° to 130° C. for 5 minutes to 10 hours,
[[D-1]] (D-1) a drying step in which the polyester (c-1) having passed the hot water treatment step is dried at a temperature of 110° to 150° C. for 30 minutes to 6 hours, and
[[D-2]] (D-2) a heat treatment step in which the polyester (c-1) having passed the drying step is heated at a temperature of 160° to 200° C. for 1 to 10 hours; wherein
the finally obtained polyester [(d-1)] (d-2) has an acetaldehyde content of not more than 10 ppm.

5,573,821

Patent Not Issued For This Number

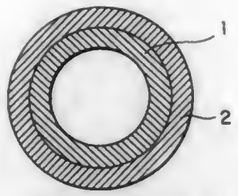
5,573,822

CROSSLINKED TUBE AND HEAT-SHRINKABLE TUBE

Shinya Nishikawa, and Hiroshi Hayami, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 100,924, Aug. 3, 1993, abandoned. This application Jan. 26, 1995, Ser. No. 378,098
Claims priority, application Japan, Aug. 5, 1992, 4-227793
Int. Cl.[6] B29D *23/00*
U.S. Cl. 428—36.9 **5 Claims**

1. A heat-shrinkable Lichtenberg discharge marks free tube comprising a crosslinked ionomer resin composition layer,



said ionomer resin layer being crosslinked by electron beam irradiation and consisting essentially of a blend of (a) an ionomer resin having a structure in which a copolymer of ethylene and acrylic or methacrylic acid has been intermolecularly crosslinked with potassium ions and (b) an ionomer resin having a structure in which a copolymer of ethylene and acrylic or methacrylic acid has been intermolecularly crosslinked with one or both of sodium ions and zinc ions, the proportion of said ionomer resin (a) to said ionomer resin (b) being from 100/0 to 50/50 by weight.

5,573,823

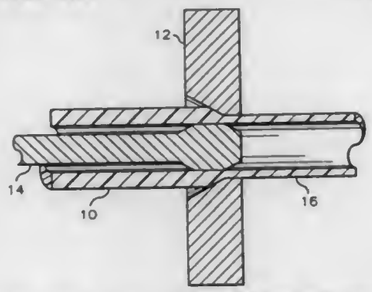
PHENYLENE SULFIDE/BIPHENYLENE SULFIDE COPOLYMER PIPE

Jerry O. Reed, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 556,685, Jul. 23, 1990, Pat. No. 5,151,235. This application Jun. 30, 1992, Ser. No. 906,639

Int. Cl.[6] B29D *23/00*

U.S. Cl. 428—36.92 **11 Claims**



1. A molecularly oriented pipe that is flexible and ductile after orienting comprised of an essentially amorphous phenylene sulfide/biphenylene sulfide copolymer.

5,573,824

HIGH STRENGTII, HIGH MODULUS CONTINUOUS POLYMERIC MATERIAL FOR DURABLE, IMPACT RESISTANT APPLICATIONS

Paul Klocek, Dallas, Tex.; William J. MacKnight, Amherst; Richard J. Farris, Leeds, both of Mass., and Christian Lietzau, Mt. Vernon, Ind., assignors to Texas Instruments, Dallas, Tex., and University of Massachusetts, Amherst, Mass.

Filed May 11, 1994, Ser. No. 241,218

Int. Cl.[6] B32B *27/36*

U.S. Cl. 428—38 **18 Claims**



1. A protective coating material which is transmissive to infrared radiation which comprises:

(a) a woven fabric of polymeric fibers having a strength of from about 10,000 to about 100,000 psi and an elastic (Young's) modulus of at least 25 GPa (3.6×10^6 psi); and

(b) a matrix of polymeric material having an elastic modulus in the range from about 0.2 to about 3×10^6 psi disposed in the interstices between said fibers, having a lower melting temperature than said polymeric fibers and transmissive to infrared radiation;

(c) said coating material being more compliant in a direction normal to the surface of said coating than in a direction along the surface of said coating.

5,573,825

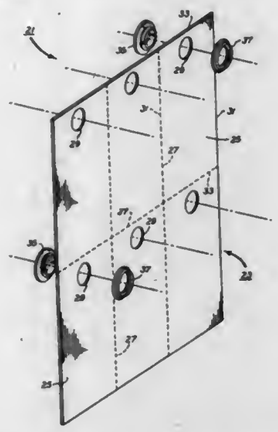
LASER IMPRINTABLE DATA-TAG SYSTEM

Blair M. Brewster, Brooklyn Heights, N.Y., assignor to Permar System, Inc., Wolcott, N.Y.

Filed Jul. 14, 1994, Ser. No. 275,135

Int. Cl.[6] B65D *65/28;* **G09F** *3/00*

U.S. Cl. 428—43 **18 Claims**



1. A reinforced data-tag system which can be serially printed in a laser printer in a continuous manner for use in attaching to equipment to provide a warning to users consisting of:

a rectangular shaped sheet of a thermally stable, polyester substrate about 3 to 7 mils (0.075 to 0.175 mm) thick for being fed through said laser printer, said polyester substrate having a receiving layer coated thereon for receiving toner images from the laser printer, said sheet having an array of tear lines for forming a matrix of a plurality of generally rectangular shaped data-tags having opposite ends and opposite sides and for enabling separation of the data-tags, wherein each of the data-tags has a mounting hole extending through the substrate for receiving a reinforcer; and

a plurality of non-conducting, locking, two-piece, plastic snap-grommets for individually mounting in said mounting hole for reinforcing the hole and receiving a fastener therein, each of the two-piece plastic snap-grommets consisting of a male and a female part, said male part comprising a flange and a locking projection for inserting into the female part, said locking projection having at least one generally U-shaped slot therein for enabling deflection of the projection and aiding insertion of the male part through the substrate mounting hole into the female part by hand, said female part comprising a flange and a receiving portion for locking with the male locking projection;

wherein the assembled reinforced data-tag has the individual coated substrate sandwiched between the flanges of the male and female parts of the snap-grommet.

5,573,826

Patent Not Issued For This Number

5,573,827

FINE DOT-LIKE TONE DECORATIVE LAMINATES CONTAINING PIGMENTED FIBERS

Yoshikazu Kubota; Sunao Matsushima, both of Fujinomiya; Shigeo Takashima, Aichi-ken; Tsuneo Mitsuhasi, Aichi-ken, and Takashi Kamiya, Aichi-ken, all of Japan, assignors to Kohjin Co., Ltd., Tokyo, and Aica Kogyo Co., Ltd., Aichi-ken, both of Japan

Continuation of Ser. No. 921,253, Jul. 29, 1992, abandoned. This application Jul. 21, 1994, Ser. No. 277,291

Claims priority, application Japan, Jul. 31, 1991, 3-214792

Int. Cl.[6] B32B *5/16;* **D21F** *11/00*

U.S. Cl. 428—143 **16 Claims**

1. Decorative laminate comprising decorative paper having a fine dot appearance, in which the decorative paper contains natural pulp and powdery pigmented fibers having a mean fiber length of from 50 to 2000 μm.

5,573,828

WRINKLE FINISH POWDER COATING

Paul R. Horinka, Reading; E. Susanne Delbert, Kenhorst; Diane K. Pennington, Reading, and Gerald T. Werner, Jr., Birdboro, all of Pa., assignors to Morton International, Inc., Chicago, Ill.

Division of Ser. No. 207,772, Mar. 8, 1994. This application Mar. 30, 1995, Ser. No. 413,308

Int. Cl.[6] B32B *3/00;* **C08K** *3/26*

U.S. Cl. 428—152 **10 Claims**

1. A fused powder coating having a wrinkle finish which comprises a thermoset product of the reaction between a hydroxyl-functional resin having a hydroxyl functionality greater than 2, an aminoplast resin as a curing agent, cyclamic acid as the sole catalyst for the reaction as modified by a basic inorganic filler.

5,573,829

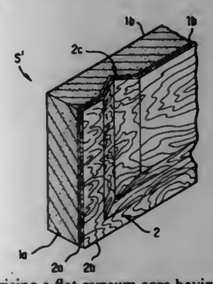
LAMINATED BOARD HAVING GYPSUM CORE AND WOOD VENEER LAMINATION WITH DEBOSSED DESIGNS

Dennis E. Decker, Landover, Md., assignor to Pittcon Industries, Bronx, N.Y.

Filed Feb. 7, 1991, Ser. No. 651,860

Int. Cl.[6] B32B *3/30;13/06;13/10*

U.S. Cl. 428—156 **16 Claims**



1. A board comprising a flat gypsum core having at least two flat opposed sides, an outer paper covering bonded to at least one of said two sides, a metal foil bonded to said outer paper covering and a wood veneer bonded to said metal foil, wherein decorative designs are debossed into the surface of the board, said board being formed by a process comprising the steps of:

providing a gypsum board having said outer paper covering bonded to said gypsum cora at least on one side of said board;

applying a softening agent to said outer covering of said board to moisten said board;

applying a mixture of adhesive and said softening agent to one side of a wood veneer laminate which has said metal foil bonded thereto;

placing said one side of said wood veneer laminate with said metal foil over said moistened outer covering of said board;

moistening said wood veneer laminate to soften said wood veneer; and

simultaneously pressing a decorative pattern into said wood veneer laminate and said board by applying pressure and heat to the exposed outer surface of said wood veneer laminate,

whereby said heat and pressure applied to the surface of the wood veneer laminate cause said wood veneer laminate to bond with said gypsum board, and simultaneously form decorative debossed patterns into said wood veneer laminate and into the gypsum board, said heat causing the moistened wood veneer to become elastic and vaporizing said softening agent which penetrates through said outer covering and into said gypsum core to cause said outer covering to become elastic and said gypsum core to become plastic, wherein said metal foil minimizes breaking of the wood during said pressing step.

5,573,830

HIGH BULK EMBOSSED TISSUE WITH NESTING PREVENTION

Galyn A. Schulz, Appleton, Wis., assignor to The James River Corporation, Richmond, Va.

Division of Ser. No. 416,348, Apr. 4, 1995, which is a continuation-in-part of Ser. No. 169,628, Dec. 20, 1993, and Ser. No. 999,414, Dec. 24, 1992, Pat. No. 5,436,057. This application Jun. 7, 1995, Ser. No. 478,852

Int. Cl.[6] D04H *1/64;* **B32B** *31/20*

U.S. Cl. 428—156 **7 Claims**



1. A nonwoven fibrous web having an emboss element thereon comprising:

a nonwoven fibrous web the majority thereof defining a base plane;

a crenulated emboss element formed therein and extending upwardly from said base plane, said crenulated emboss element having an upper and a lower portion;

said lower portion being continuous between said base plane and a first plane, said first plane defining the upper edge of said lower portion and the lower edge of said upper portion; and

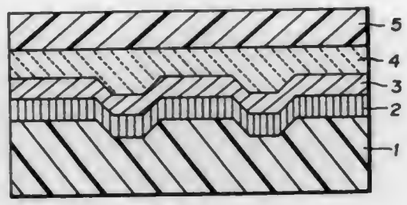
said upper portion having at least two crenels and and at least one merlon extending between a second plane defining the uppermost edge of said element and said first plane, said crenels and merlons being spaced on the upper edge of said lower portion of said crenulated emboss element.

5,573,831

OPTICAL RECORDING MEDIUM

Yuko Suzuki, Kamakura; Shin Aihara, and Sumio Hirose, both of Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Oct. 17, 1994, Ser. No. 322,527
Claims priority, application Japan, Oct. 18, 1993, 5-259547
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—64.1 33 Claims



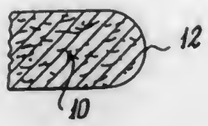
1. An optical recording medium comprising:
a transparent substrate;
a recording layer on the transparent substrate;
a metal reflective layer; and
at least one protective layer having a thickness of 1 to 100 μm;
these layers being laminated successively on the transparent substrate, the outermost protective layer being formed of an ultraviolet curable resin containing an organic filler and/or an inorganic filler having water absorbency and/or oil absorbency, said filler being present in an amount of from 1 to 80 parts by weight so that the protective layer has a printable surface.

5,573,832

METHOD FOR PRODUCING COATED WOOD-BASED PANELS WITH ROUNDED EDGES AND PANELS OBATINED THEREBY

Dante Frati, Mantova, Italy, assignor to Bipan S.P.A., Bicinicco Udine, Italy

Filed Oct. 2, 1995, Ser. No. 538,129
Claims priority, application Italy, Sep. 30, 1994, M194A2005
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—192 16 Claims



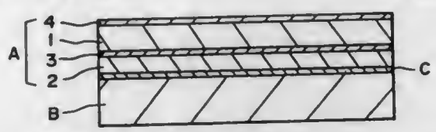
1. Method for industrially producing a coated wood-based panel with at lest one rounded edge from a two-sided starting panel of fiberboard or chipboard, comprising the steps of:
applying at least one coating formed
from a base of at least one unsaturated resin of a type curable by ionizing radiation to said two sides of said starting panel,
curing said coating by ionizing radiation, and
mechanically bending said cured coating to conform to and overlie said t least one rounded edge of said starting panel.

5,573,833

THERMAL TRANSFER SHEET

Hirokatsu Imamura; Masafumi Hayashi; Kouichi Nakamura; Hirokazu Kaneko; Shigeki Umise; Kenichiro Suto, and Hiromi Watanabe, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Division of Ser. No. 799,391, Nov. 27, 1991, Pat. No. 5,427,840. This application Mar. 30, 1995, Ser. No. 413,268
Claims priority, application Japan, Nov. 29, 1990, 2-325468; Feb. 12, 1991, 3-39038; Feb. 25, 1991, 3-50111; Feb. 27, 1991, 3-53698
Int. Cl.[6] B41M *5/26;5/40*
U.S. Cl. 428—195 4 Claims



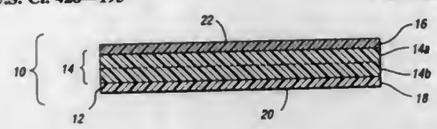
1. A thermal transfer sheet comprising:
a substrate film, one side surface of which is provided with a heat-fusible ink layer, and
a synthetic paper including minute voids and a high smoothness which is peelably bonded to the heat-infusible ink layer by the medium of an adhesive layer wherein the synthetic paper has a smoothness of at least 2000 sec.

5,573,834

WEB FOR GRAPHICS TRANSFER TO GARMENT

Ted A. Stahl, 41612 Clairpointe, Harrison Township, Mich. 48045

Filed Jun. 13, 1995, Ser. No. 489,847
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—195 13 Claims



1. A web suitable for transfer of graphics to a fabric substrate at an elevated temperature sufficient to bond said graphics to said fabric substrate, comprising:
release layer of a transparent or translucent polymer which maintains its integrity at said elevated temperature;
a transfer layer of pigmented, non-carboxylated PVC disposed on said first, release, said transfer layer further comprising one or more weakening agents, said weakening agents effective to split said transfer layer into a release layer-adherent transfer layer and a fabric substrate-adherent transfer layer when said relaese layer is pulled away from said transfer layer while hot but which does not split into said release layer-adherent layer and said fabric substrate-adherent layer when said release layer is pulled away from said transfer layer after cooling; and
a top layer comprising one or more heat activatable adhesives adhered to the outer surface of said transfer layer.

5,573,835

Patent Not Issued For This Number

5,573,836

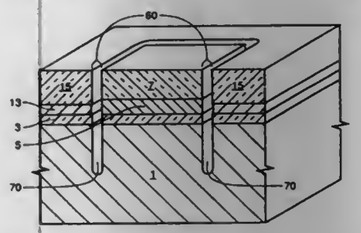
Patent Not Issued For This Number

5,573,837

MASKING LAYER HAVING NARROW ISOLATED SPACINGS AND THE METHOD FOR FORMING SAID MASKING LAYER AND THE METHOD FOR FORMING NARROW ISOLATED TRENCHES DEFINED BY SAID MASKING LAYER

Ceredig Roberts, and Alan R. Reinberg, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 86,412, Jun. 30, 1993, abandoned, which is a division of Ser. No. 872,747, Apr. 22, 1992, Pat. No. 5,254,218. This application Mar. 14, 1995, Ser. No. 405,552
Int. Cl.[6] H01L *21/306*
U.S. Cl. 428—210 10 Claims



1. An etch mask comprising:
a) a first layered segment overlying a starting substrate;
b) a second layered segment overlying the starting substrate and surrounding a perimeter of said first layered segment and separated from said first layered segment by a separation distance; and
c) a spacer layer having a thickness equal to the separation distance, said spacer layer interposed between and adjacent to a first portion of said first layered segment and a first portion of said second layered segment, a void formed between a second portion of said first layered segment and a second portion of said second layered segment, wherein said first and second layered segments are inorganic.

5,573,838

Patent Not Issued For This Number

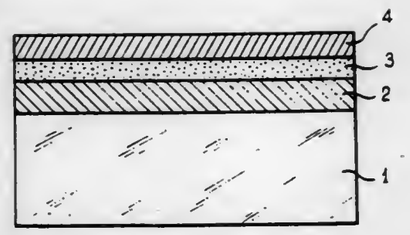
5,573,839

GLASS SUBSTRATE COATED WITH THIN MULTIFILMS FOR PROTECTION AGAINST SOLAR RADIATION

Jean-Pierre Beaufays, Jemeppe S/Sambre; Jean-Marc Halleux, Meux, and Roland Devigne, Falisolle, all of Belgium, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Continuation of Ser. No. 875,815, Apr. 30, 1992, abandoned. This application May 31, 1994, Ser. No. 251,285
Claims priority, application France, Apr. 30, 1991, 91 05328; Apr. 30, 1991, 91 05329; Apr. 30, 1991, 91 05330
Int. Cl.[6] C03C *17/34*
U.S. Cl. 428—216 7 Claims

1. A monolithic glazing glass composite, comprising a glass substrate on which is deposited a stack of layers, said stack of layers consisting of three films, as follows:
a first or underlying film deposited on said glass substrate of titanium oxide, tin oxide or tantalum oxide, having a thickness of from about 10 to 220 nm;
a second or functional film, deposited on the underlying film, of a nitrided alloy of nickel and chromium, having nickel and chromium in amounts of about 70/30 to 30/70 by weight, respectively, and having a thickness of up to about 100 nm; and



a third or overlying film deposited on the functional film of titanium nitride, having a thickness of up to and including 100 nm,
wherein said glass composite has a light transmission, T_L, of 8% to 35%.

5,573,840

POLYMERIC INSULATING MATERIAL AND FORMED ARTICLE MAKING USE OF THE MATERIAL

Takeo Inone; Shigeru Kimura; Tutomu Iwatani; Takayuki Yamada; Yukio Ishii, and Ryuichi Sugimoto, all of Osaka, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 73,676, Jun. 8, 1993, Pat. No. 5,476,709. This application May 26, 1995, Ser. No. 451,394
Claims priority, application Japan, Jun. 15, 1992, 4-154850; Dec. 15, 1992, 4-334393; Dec. 16, 1992, 4-335974; Dec. 17, 1992, 4-337309
Int. Cl.[6] B32B *7/02*
U.S. Cl. 428—216 15 Claims

1. A polymeric insulating material having a high dielectric breakdown voltage, comprising polypropylene which has been obtained in a yield of at least 300,000 g/g-Ti based on titanium in a catalyst upon polymerization, contains ash in an amount not greater than 40 ppm by weight when analyzed by completely burning the polypropylene in air, said ash containing titanium in an amount not greater than 1 ppm by weight based on the weight of polypropylene, and also contains chlorine in an amount not greater than 2 ppm by weight based on the weight of polypropylene and boiling n-beptane soluble matter in an amount not smaller than 1 wt. % but not greater than 10 wt. % based on the weight of polypropylene.

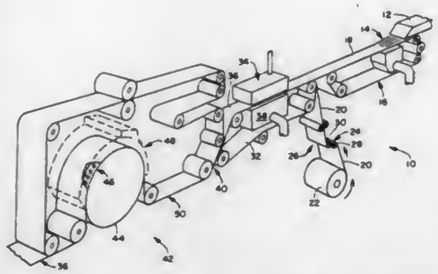
5,573,841

HYDRAULICALLY ENTANGLED, AUTOGENOUS-BONDING, NONWOVEN COMPOSITE FABRIC

Gabriel H. Adam, Roswell; James D. Cotton, Marietta; Donald F. Durocher, Roswell, and Richard M. Peterson, Marietta, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 4, 1994, Ser. No. 222,771
Int. Cl.[6] D04H *1/04*
U.S. Cl. 428—219 22 Claims

1. A hydraulically entangled, autogenous-bonding, nonwoven composite fabric comprising:
a matrix of substantially continuous thermoplastic polymer filaments; and



at least one substantially non-thermoplastic fibrous material integrated in the matrix,

wherein the composite fabric is adapted to autogenously bond to itself upon application of heat.

5,573,842

POLYVINYLBUTYRAL FILMS HAVING IMPROVED OPTICAL PROPERTIES

Matthias Gutweiler, Taunusstein, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Jul. 5, 1994, Ser. No. 270,840

Claims priority, application Germany, Jul. 19, 1993, 43 24 167.0

Int. Cl.[6] B32B *17/10*; C08J *5/18*

U.S. Cl. 428—220 **17 Claims**

1. A plasticized polyvinylbutyral film comprising plasticizer, polyvinylbutyral, and an amount of optical brightener effective to improve the optical properties and reduce the yellowing of the film,

wherein the optical brightener is selected from the group consisting of 4,4'-bis(2-methoxystyryl) diphenyl; 2,5-bis(7-tert.-butyl benzoxazol-2-yl) thiophene; disodium 4(2H-naphto(1,2-d) triazol-2-yl) stilbene-2-sulfonate; and disodium 4,4 '-bis (4-anilano-6-morpholine-S-triazine -2-ylamino) -2.2'-stilbene disulfonate.

5,573,843

FIBER-REINFORCED PLASTIC COMPOSITE MATERIAL FOR FASTENING PALLETS AND PROCESS FOR PRODUCING THE SAME

Yutaka Mitoh, and Noaya Fujiwara, both of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jul. 26, 1994, Ser. No. 279,844

Claims priority, application Japan, Aug. 5, 1993, 5-194827

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—240 **4 Claims**

1. A solder resistant fastening pallet suitable to transfer printed circuit boards, comprising a fiber-reinforced plastic composite material, said composition material having a surface resistivity of from about 2×10^5 to 8×10^5, a flexural strength of from about 29.9 to 37.7 kg/mm^2, and a flexural modulus of from about 1,722 to 1,966 kg/mm^2, and being a thermosetting resin having incorporated therein 50–80 wt % reinforcing fibers and 5–90 parts by weight of an electrically conductive filler selected from the group consisting of $K_2Ti_8O_{17}$, SnO_2, Sb_2O_3, Sb_2O_5, ZnO, TiO_2 and mixtures thereof.

5,573,844

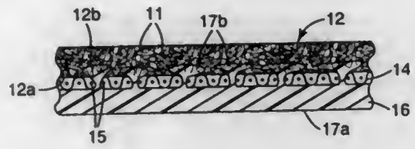
CONFORMABLE SURFACE FINISHING ARTICLE AND METHOD FOR MANUFACTURE OF SAME

Mary B. Donovan, St. Paul, and Timothy J. Pieggenkuhle, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 6, 1995, Ser. No. 369,933

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—240 **27 Claims**



1. A surface finishing article, comprising:

a nonwoven three dimensional lofty web of fibers having at least one major surface, said fibers bonded to one another at their points of mutual contact;

a stretch resistant porous reinforcing fabric having first and second major surfaces, said first major surface of said fabric disposed on and along said one major surface of said nonwoven web;

a layer comprising a flexible polymer coated over and coextensive with said second major surface of said fabric, said layer having a low friction exposed surface and portions extending through said reinforcing fabric encapsulating fibers along said one major surface of said web.

5,573,845

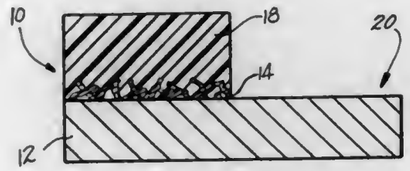
SUPERFICIAL COATING LAYER HAVING ACICULAR STRUCTURES FOR ELECTRICAL CONDUCTORS

Arvind Parthasarathi, North Branford, and William L. Breneman, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 9, 1994, Ser. No. 352,663

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—306.6 **11 Claims**



1. An electrical assembly, comprising:

an electrical conductor having a metallic core with a desired surface finish and an essentially transparent superficial coating layer in the form of a plurality of acicular structures having an average length of from about 0.01 micron to about 1 micron and a length to diameter aspect ratio of from about 3:1 to about 8:1, said superficial coating layer having an apparent thickness, which is defined as the thickness of the metal if all voids and interstices were absent and the coating had a density of 100% of the theoretical density of that coating material, of less than 275 angstroms adjacent to at least a first portion of said metallic core and said superficial coating layer is removable from said metallic core without appreciable change to said surface finish; and

a polymer bonded to said first portion and mechanically locked to said superficial coating layer.

5,573,846

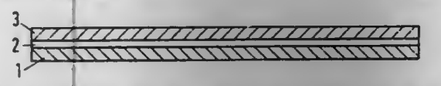
POLYFLUOROCARBON COATED METAL BEARING

Friedrich Harig, Willich, Germany, and Dominique Petit, Blegny, Belgium, assignors to Norton Pampus GmbH, Worcester, Mass.

Continuation of Ser. No. 781,900, Oct. 24, 1991, abandoned. This application Dec. 8, 1993, Ser. No. 164,668

Int. Cl.[6] F16C *33/20*

U.S. Cl. 428—323 **14 Claims**



1. A maintenance-free sliding bearing comprising a metal support layer, an intermediate layer which is directly applied thereto by pressure and heat and which consists of a copolymer of ethylene—tetrafluoroethylene, and a sliding layer of plastic, wherein the intermediate layer and the sliding layer resist delamination from the metal support layer at shear forces of 77 to 125 N/cm^2 at 100° C.

5,573,847

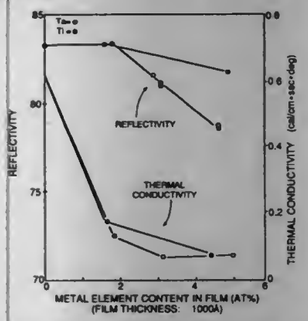
MAGNETO-OPTIC DISK EXHIBITING A PHASE SHIFT BETWEEN PLUS AND MINUS TWELVE DEGREES AND A REFLECTIVITY BETWEEN FIFTEEN AND TWENTY-FIVE PERCENT

David Treves, Palo Alto, and Tu Chen, Monte Sereno, both of Calif., assignors to Komag, Inc., Milpitas, Calif.

Continuation of Ser. No. 615,560, Nov. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 582,719, Sep. 14, 1990, abandoned. This application Nov. 2, 1994, Ser. No. 333,582

Int. Cl.[6] G11B *5/66*; B32B *5/16*

U.S. Cl. 428—332 **8 Claims**



1. A magneto-optic storage medium for storing and retrieving data by exposure to a polarized light beam, said storage medium comprising a quadrilayer structure arranged in the following sequence and bonded to a transparent substrate:

a first dielectric layer having a thickness in the range of 250 Å to 1150 Å and comprising a material having a refractive index greater than 1.9;

a magneto-optic layer having a thickness in the range of 150 Å to 350 Å;

a second dielectric layer having a thickness in the range of 50 Å to 400 Å and comprising a material having a refractive index greater than 1.4; and

a metal reflecting layer having a thickness in the range of 150 Å to 500 Å;

the actual thickness of each of said layers within said respective ranges and the refractive index of each of said first and second dielectric layers being selected such that said storage medium exhibits a reflectivity in the range of 15% to 25% and a phase shift in the range of −12 degrees to +12 degrees in the presence of said polarized light beam.

5,573,848

ARTICLE AND METHOD FOR APPLYING A TEMPERATURE INDICATING COMPOSITION

Dirk J. Van Praet, Willebroek, Belgium, assignor to NV Raychem SA, Kessel-Lo, Belgium

PCT No. PCT/GB93/01045, § 371 Date Nov. 21, 1994, § 102(e) Date Nov. 21, 1994, PCT Pub. No. WO93/24816, PCT Pub. Date Dec. 9, 1993

PCT Filed May 21, 1993, Ser. No. 338,559

Claims priority, application United Kingdom, May 22, 1992, 9210968

Int. Cl.[6] B32B *7/12*

U.S. Cl. 428—354 **7 Claims**



1. An article for applying a temperature indicating composition onto a surface of a heat-recoverable substrate comprising:

(i) a backing layer,

(ii) a meltable release material which (a) is mounted on one surface of the backing layer and (b) has a melting temperature $T_{m(rl)}$,

(iii) a temperature indicating composition which changes its visual appearance when heated above a pre-selected temperature T_c, and

(iv) a heat activatable adhesive layer for bonding the temperature indicating composition to a surface of a heat-recoverable article, said adhesive layer having an activating temperature $T_{a(al)}$,

wherein the temperature indicating composition is positioned between the release material and the adhesive layer, and wherein T_c is higher than the melting temperature $T_{m(rl)}$ of the release material, which is the same as or higher than the activating temperature $T_{a(al)}$ of the adhesive layer.

5,573,849

Patent Not Issued For This Number

5,573,850

ABRASION RESISTANT QUASI MONOFILAMENT AND SHEATHING COMPOSITION

David V. Cunningham, Midlothian, Va.; Sheldon Kavesh, Whippany, N.J., and Christopher P. Griffin, Chester, Va., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Mar. 24, 1995, Ser. No. 410,248

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—373 **15 Claims**



1. A quasi monofilament comprising:

a. a core of polyethylene multi-filament yarn having a tenacity of at least 15 g/d and a tensile modulus of at least 500 g/d; and adhered thereto

b. an abrasion resistant sheath, comprising a first polymer having ethylene crystallinity, a density of at least 0.94 g/cm^3, and a melt index of less than 0.1 g/10 min.

5,573,851

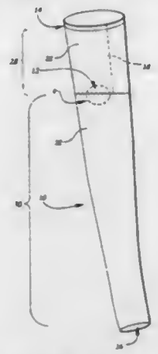
ULTRAVIOLET-DETECTABLE MARKING YARN AND A TEXTILE FABRIC PRODUCT THEREWITH

Hans L. Lengers, Lancaster, S.C.; Gerhard Storandt, Newland, N.C.; James McCormick, Newland, N.C.; William M. Secrest, Newland, N.C., and Michael D. Horney, Newland, N.C., assignors to U.S. Textile Corporation, Lancaster, S.C.

Filed May 16, 1994, Ser. No. 243,456

Int. Cl.^{6} D02G *3/00*; D03D *3/00*

U.S. Cl. 428—378 **7 Claims**



1. A marking yarn detectible by an ultraviolet sensor for selective use in formation of a textile fabric to designate a predetermined location in the textile fabric for subsequent detection in a handling operation performed on the fabric, the yarn comprising an elongate strand-like yarn base at least partially coated with a material which is detectible by an ultraviolet sensor, the yarn base being formed of a material which is soluble in water for dissolution of the yarn from the textile fabric in a wet processing operation performed subsequent to the fabric handling operation for removal of both the yarn base and the coating material from the textile fabric.

5,573,852

TENSIONING BUNDLES COMPRISING A PLURALITY OF TENSIONING MEMBERS SUCH AS STRANDED WIRES, RODS OR SINGLE WIRES

Hermann Thal, Mondsee, Austria, assignor to Vorspann-Technik Gesellschaft m.b.H., Salzburg, Austria

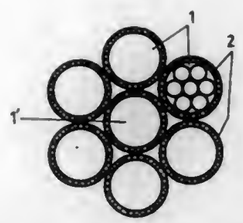
Continuation of Ser. No. 985,507, Dec. 2, 1992, abandoned, which is a continuation of Ser. No. 507,499, Apr. 11, 1990, abandoned. This application May 26, 1995, Ser. No. 451,384

Claims priority, application Austria, Apr. 12, 1989, 863/89; Jun. 6, 1989, 1383/89

Int. Cl.^{6} D02G *3/00*

U.S. Cl. 428—378 **11 Claims**

1. A tensioning bundle comprises a plurality of tensioning members running parallel to one another, each tensioning member being formed as a stranded wire provided with a lubricant coating tightly enclosing at least an outside thereof, all of said tensioning members in said tensioning bundle being jointly covered by at least one covering consisting essentially of synthetic resin material, said at least one covering being extruded by means of an extruder and forming a covering tightly enclosing the plurality of tensioning members, wherein said tensioning members in the tensioning



bundle are disposed together for tensioning individually and jointly within said at least one covering.

5,573,853

Patent Not Issued For This Number

5,573,854

COMPOSITES MADE FROM MULTIDIMENSIONAL OLIGOMERS

Clyde H. Sheppard, Bellevue, Wash., and Hyman R. Lubowitz, Rolling Hills Estates, Calif., assignors to The Boeing Company, Seattle, Wash.

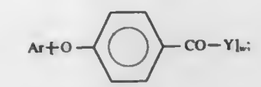
Division of Ser. No. 38,750, Mar. 26, 1993, Pat. No. 5,463,076, which is a division of Ser. No. 605, Jan. 5, 1987, Pat. No. 5,210,213, and a continuation-in-part of Ser. No. 810,817, Dec. 17, 1985, abandoned, which is a continuation-in-part of Ser. No. 726,258, Apr. 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 519,394, Aug. 1, 1983, abandoned, and a continuation-in-part of Ser. No. 673,229, Nov. 20, 1984, Pat. No. 4,584,364, which is a continuation of Ser. No. 576,790, Feb. 6, 1984, abandoned, which is a continuation-in-part of Ser. No. 321,119, Nov. 13, 1981, abandoned, and a continuation-in-part of Ser. No. 536,350, Sep. 27, 1983, abandoned, which is a continuation-in-part of Ser. No. 519,394, Aug. 1, 1983, abandoned, and a continuation-in-part of Ser. No. 505,348, Jun. 17, 1983, Pat. No. 4,536,559, and a continuation-in-part of Ser. No. 651,826, Sep. 18, 1984, abandoned, which is a continuation-in-part of Ser. No. 536,350, Sep. 27, 1983, abandoned, and a continuation-in-part of Ser. No. 505,348, Jun. 17, 1983, Pat. No. 4,536,559. This application Jun. 5, 1995, Ser. No. 463,329

Int. Cl.^{6} C08J *5/24*; B32B *31/04*

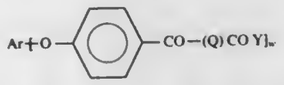
U.S. Cl. 428—411.1 **10 Claims**

1. A composite comprising fiber reinforcement and a matrix being a cured oligomer having a multidimensional morphology, the oligomer being selected form the group consisting of:

$$AR+P-Y]_w;$$



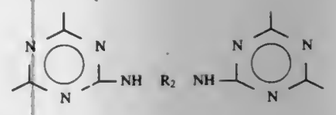
or



wherein

W=an integer greater than 2 and not greater than the available number of substitutable hydrogens on the Ar group;

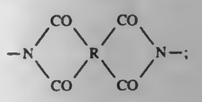
Ar=phenylene, biphenylene, azalinylene, naphthylene, or a triazine derivative of the formula:



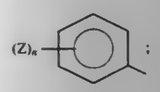
wherein

R_2= a divalent hydrocarbon residue containing 1–12 carbon atoms, and wherein, if Ar is a triazine derivative, P= NHCO—.

P= —NHCO—, —CONH—, —O—, —COO—, —OOC—, or

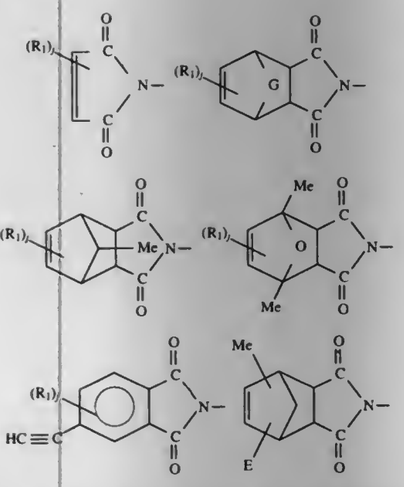


Y=



n=1 or 2;

Z=



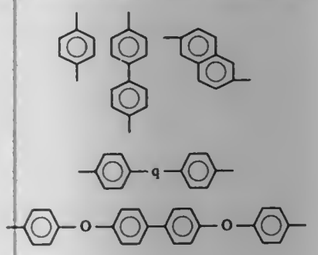
R_1= any of lower alkyl, lower alkoxy, aryl, or substituted aryl;

j=0, 1, or 2;

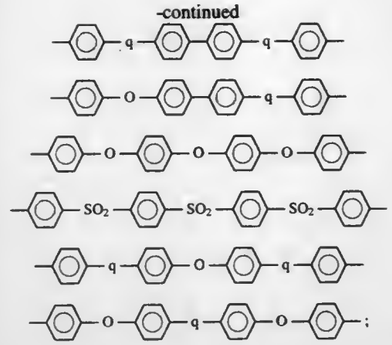
G=—CH_2—, —S—, —O—, or —SO_2—;

E=allyl or methallyl;

Q= a radical selected from the group consisting of:



-continued



q=—SO_2—, —CO—, —S—, or —$(CF_3)_2C$—; and

R=a residue of a dianhydride, the dianhydride being selected from the group consisting of: pyromellitic dianhydride; benzophenonetetracarboxylic dianhydride; and 5-(2,4-diketotetrahydrofuryl)-3-methyl-3-cyclohexene-1,2-dicarboxylic anhydride.

5,573,855

POLYMER CONCRETE COATING FOR PIPE, TUBULAR SHAPES, OTHER METAL MEMBERS AND METAL STRUCTURES

Bang T. Tran, Sugar Land; Thomas J. Toerner, The Woodlands, and Paul E. Titus, Houston, all of Tex., assignors to Power Lone Star, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 39,521, Mar. 29, 1993, Pat. No. 5,464,886, which is a continuation of Ser. No. 600,543, Oct. 19, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 467,211

Int. Cl.^{6} B32B *15/08*

U.S. Cl. 428—418 **3 Claims**

1. A protective coating for metal members, comprising:

a continuous, uniform, substantially even layer of a mixture of: an organic resin comprising between about 86–90% by weight of a bisphenol A based epoxy and between about 10–14% by weight of a polyglycol diepoxide;

a filler material wherein the ratio by weight of said filler material to said organic resin is between about 1:1 and about 7:3; and

an amine curing agent including phenol and trimethylhexamethylenediamine.

5,573,856

POLYPROPYLENE RESIN COMPOSITION HAVING AN IMPROVED COMPATIBILITY WITH PAINT-COATINGS AND A PAINT-COATED ARTICLE THEREOF

Hideo Shinonaga, Chiba, and Satoru Sogabe, Sodegaura, both of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Division of Ser. No. 161,274, Dec. 3, 1993, Pat. No. 5,462,987. This application May 23, 1995, Ser. No. 447,918

Claims priority, application Japan, Dec. 8, 1992, 4-327733; Sep. 13, 1993, 5-227491

Int. Cl.^{6} B32B *27/00;27/32;27/28;27/20*

U.S. Cl. 428—424.8 **4 Claims**

1. A paint-coated article of a polypropylene composition which is produced by molding into a shaped article a polypropylene composition comprising:

(A) 60–95 parts by weight of a crystalline polypropylene, which is a propylene-ethylene block copolymer containing ethylene-propylene random copolymer units and crystalline polypropylene homopolymer units wherein the amount of said ethylene-propylene random copolymer units is 5 to 20% by weight

relative to the total weight of the propylene-ethylene block copolymer, the ethylene content in the ethylene-propylene random copolymer units is 20 to 60% by weight, and the crystalline polypropylene homopolymer units have an intrinsic viscosity [η] measured with tetralin solution at 135° C. of 0.8 to 20 dl/g, a Q value, weight average molecular weight/number average molecular weight, measured by GPC of 3.0 to 5.0 and a content of xylene-soluble portion at 20° C. of not more than 1.5% by weight,

(B) 5–40 parts by weight of an ethylene-propylene random copolymer rubber containing 10–70 weight % of propylene and having a Mooney viscosity, ML_{1+4} 100° C., of 10–100, the mixture of (A) and (B) being 100 parts by weight,

(C) 1–15 parts by weight, per 100 parts by weight of the mixture of said crystalline polypropylene and ethylene-propylene random copolymer rubber, of a hydroxyl group-containing propylene oligomer having a number-average molecular weight of 2,000–20,000 and a hydroxyl value of 10–60, and

(D) an inorganic filler in an amount of up to 40 parts by weight per 100 parts by weight of the mixture of said crystalline polypropylene and ethylene-propylene random copolymer rubber,

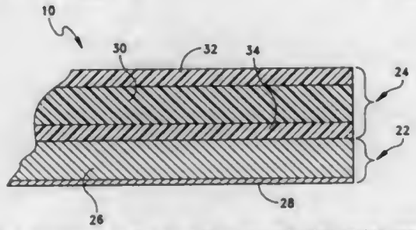
treating the resulting shaped article with water or a non-halogenated organic solvent, applying thereon a paint and baking the paint-applied article.

5,573,857

LAMINATED SHIELDING TAPE

Thomas J. Auger, Putnam, Conn., assignor to NEPTCO Incorporated, Pawtucket, R.I.

Filed Sep. 29, 1995, Ser. No. 537,127
Int. Cl.[6] H05K 9/00; B32B 27/36
U.S. Cl. 428—480 **11 Claims**



1. A shielding tape for use with communication wiring susceptible to cross talk and electromagnetic interference, said shielding tape comprising a protective component having a metallic layer for shielding and protecting the communication wiring from cross talk and electromagnetic interference, and a structural component having a layer of tear resistant reinforcing material disposed between two protective layers, said protective component and structural component being laminated together to form a sheet.

5,573,858

Patent Not Issued For This Number

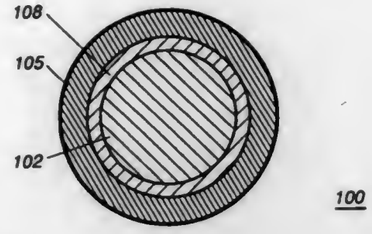
5,573,859

AUTO-REGULATING SOLDER COMPOSITION

Anthony B. Suppelsa, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 5, 1995, Ser. No. 523,449
Int. Cl.[6] B22F 7/04
U.S. Cl. 428—553 **15 Claims**

1. A soldering composition having an auto-regulating temperature, comprising:



a central core of a non-magnetic metal;

a magnetic material coating the central core, the magnetic material having a Curie temperature substantially corresponding to the auto-regulating temperature; and

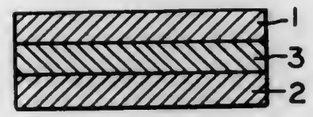
a solder layer overlying the magnetic material, the solder layer having a melting temperature that is lower than the Curie temperature.

5,573,860

BIMETAL

Kenji Hirano, Osaka; Masaaki Tomita, Souraku-gun, and Masaaki Ishio, Osaka, all of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan

Filed May 5, 1994, Ser. No. 238,527
Claims priority, application Japan, Dec. 27, 1993, 5-350291
Int. Cl.[6] B32B 15/18
U.S. Cl. 428—617 **17 Claims**



1. A bimetal comprising a low thermal expansion alloy bonded to a high thermal expansion alloy, said low thermal expansion alloy consisting essentially of 32 to 34 wt % Ni, 6 to 8.5 wt % Co, wherein $38.5 \leqq Ni + Co \leqq 40$ 0.5 wt % and residual Fe, and having a transition point of at least 250° C. and a transition temperature of no more than −70° C.

5,573,861

HIGH PURITY ALUMINUM CONDUCTOR USED AT ULTRA LOW TEMPERATURE

Akihiko Takahashi, Ryugasaki; Hitoshi Yasuda, Tsukuba, both of Japan; Karl T. Hartwig, College Station, Tex.; Lacy C. McDonald, Bryan, Tex., and Hong Zou, College Station, Tex., assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan, and The Texas A & M University Systems, College Station, Tex.

Filed Jul. 6, 1993, Ser. No. 88,032
Int. Cl.[6] B32B 7/02; 15/01
U.S. Cl. 428—621 **9 Claims**

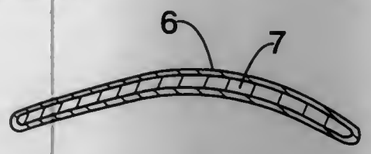
1. A high purity aluminum conductor of a cryostatic stabilizer used at an ultra low temperature of 30° K. or lower which is provided on and around a superconductor, consisting essentially of 99.99 to 99.9999 weight percent aluminum, wherein the aluminum conductor has a polycrystal structure consisting of crystal grains wherein most of said grains have a specific crystal axis of <100>, <111> or both of <100> and <111>, each of which is essentially oriented to the longitudinal direction of the aluminum conductor.

5,573,862

SINGLE CRYSTAL OXIDE TURBINE BLADES

Devlin M. Gualiteri; Robert C. Morris, both of Ledgewood; Dave Narasimhan, Flemington, and Philip J. Whalen, Sparta, all of N.J., assignors to AlliedSignal Inc., Morris Township, N.J.

Filed Apr. 13, 1992, Ser. No. 867,566
Int. Cl.[6] B32B 9/00
U.S. Cl. 428—688 **18 Claims**



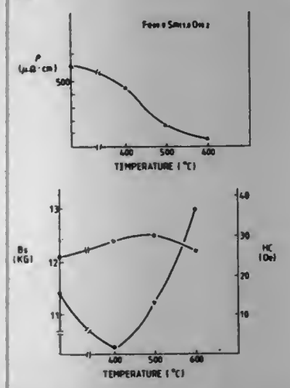
1. A blade for use in turbine engines comprising a single crystal aluminum garnet body, said body having deposited thereon an epitaxial aluminum garnet layer having a lattice constant larger than that of the single crystal garnet body sufficient to provide a compressive strain of from about 0.02 to about 0.15 percent, wherein the surface of said single crystal garnet body has been subjected to a polishing treatment before deposition of said epitaxial garnet layer.

5,573,863

SOFT MAGNETIC ALLOY AND PLANE MAGNETIC ELEMENT

Ysuo Hayakawa, Nagaoka; Akinori Kojima, Sendai, and Akihiro Makino, Nagaoka, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1994, Ser. No. 201,831
Claims priority, application Japan, Mar. 5, 1993, 5-045557; Dec. 28, 1993, 5-338333
Int. Cl.[6] G11B 5/66
U.S. Cl. 428—684 T **10 Claims**



1. A soft magnetic alloy film comprising:

a crystalline phase having an average grain size of 10 nm or less and consisting essentially of Fe having a b-c-c structure; and

an amorphous phase consisting of:

Fe,

at least one element from the group consisting of rare earth elements, Ti, Zr, Hf, V, Nb, Ta and W, and

O (oxygen);

wherein said crystalline phase and amorphous phase exist in a mixed state, the crystalline phase and the amorphous phase constituting an entire soft magnetic alloy film structure, and

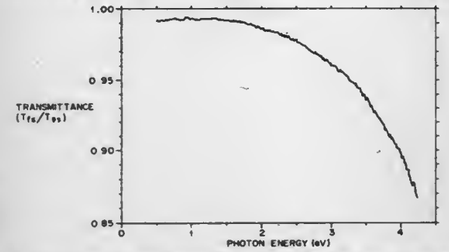
wherein the proportion of said crystalline phase to the entire soft magnetic alloy film structure is 10 to 50%.

5,573,864

TRANSPARENT CARBON NITRIDE FILMS AND COMPOSITIONS OF MATTER COMPRISING TRANSPARENT CARBON NITRIDE FILMS

Kenneth G. Kreider, Potomac, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Oct. 25, 1994, Ser. No. 328,806
Int. Cl.[6] B32B 9/00
U.S. Cl. 428—698 **9 Claims**



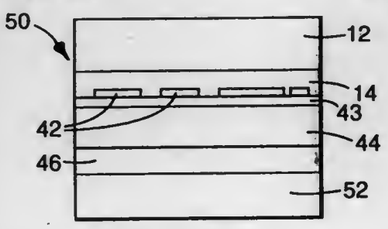
1. A transparent carbon nitride film having a nitrogen content of about 36% and having a transmittance of at least 95% compared to glass for photons having energies of 0.5 to 3 eV when said film has thickness of 40 nm.

5,573,865

GRAPHICS TRANSFER ARTICLE

Ronald S. Steelman, Woodbury, and Loren R. Schreader, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 388,298, Feb. 14, 1995. This application May 24, 1995, Ser. No. 449,212
Int. Cl.[6] B32B 9/00
U.S. Cl. 428—40.9 **6 Claims**



1. An imaged composite comprising:

(A) a receptor selected from the group consisting of acrylic, polycarbonate, vinyl and metal, and

(B) a graphics transfer article laminated to the receptor, wherein the graphics transfer article comprises:

(1) a protective layer having an innermost surface and an outermost surface,

(2) a premask layer laminated to the outermost surface of the protective layer, and

(3) an adhesive layer having an innermost surface and an outermost surface with the outermost surface of the adhesive layer laminated to the innermost surface of the protective layer and the innermost surface of the adhesive layer laminated to the receptor, wherein:

(a) the protective layer is a hard coat component,

(b) the premask layer has an elastic modulus as measured by ASTM D882 of between 10,000 and 2,000,000 psi,

(c) the bond strength between the premask layer and the protective layer is between about 50 to 700 grams/inch width as measured by ASTM D-1000, and

(d) the relative bond strength between (i) the protective layer and the premask layer of the graphic overlay com-

posite, and (ii) the adhesive layer and the receptor, are such that the protective layer remains intact and bonded to the receptor upon delamination of the premask from the composite, under ambient conditions, and

(C) an image positioned between the receptor and the protective layer.

5,573,866

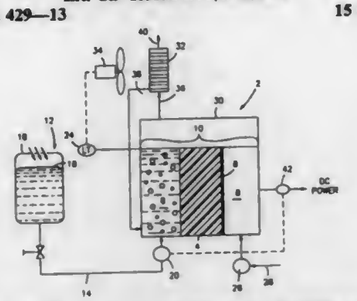
DIRECT METHANOL OXIDATION POLYMER ELECTROLYTE MEMBRANE POWER SYSTEM

Leslie L. Van Dine, Manchester, and Donald L. Maricle, Glastonbury, both of Conn., assignors to International Fuel Cells Corp., South Winosor, Conn.

Filed Aug. 8, 1995, Ser. No. 437,267

Int. Cl.[6] H01M *8/10;8/02;8/04*

U.S. Cl. 429—13 **15 Claims**



1. A fuel cell power plant assembly which is adapted for utilizing liquid methanol as a fuel source, said assembly comprising:

a) a solid polymer electrolyte membrane;

b) an anode reactant chamber disposed on one side of said electrolyte membrane;

c) a cathode reactant chamber disposed on a side of said electrolyte membrane opposite to said anode reactant chamber;

d) a water-methanol solution disposed in said anode chamber;

e) a cathode catalyst disposed in said cathode reactant chamber, said cathode catalyst being formed from a catalytic composition which does not significantly oxidize methanol that enters said cathode reactant chamber from said anode reactant chamber by diffusion through said electrolyte membrane;

f) a source of oxygen disposed in said cathode chamber, wherein said source of oxygen is a stream of air which flows through said cathods reactant chamber and sweeps product water and diffused water and methanol out of said cathode reactant chamber to cool the latter; and

g) a condenser for receiving an effluent stream of bumidified air from said cathode reactant chamber, said condenser being operable to condense liquid water and liquid methanol from said effluent cathode reactant chamber air stream.

5,573,867

PURGE GAS PROTECTED TRANSPORTABLE PRESSURIZED FUEL CELL MODULES AND THEIR OPERATION IN A POWER PLANT

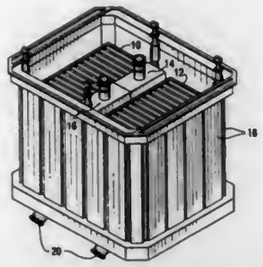
Paolo R. Zafred, Pittsburgh; Jeffrey T. Dederer, Valencia; James E. Gillett, Greensburg; Richard A. Basel, Plub Borough, and Annette B. Antenucci, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 31, 1996, Ser. No. 594,214

Int. Cl.[6] H01M *8/04;8/24*

U.S. Cl. 429—17 **25 Claims**

1. A fuel cell generator apparatus, comprising at least one fuel cell stack module containing a plurality of fuel cells, each fuel cell having electrolyte between an oxidant electrode and a fuel electrode; where the module is enclosed by a module housing capable



of withstanding temperatures over 600° C.; where the module housing is surrounded by an axially-elongated pressure vessel having two ends, such that there is a purge gas volume between the module housing and the pressure vessel; where the pressure vessel has a fuel gas inlet connecting to a module fuel gas inlet, an oxidant gas inlet connecting to a module oxidant gas inlet, an exhaust gas outlet connecting to a module exhaust gas outlet, and a purge gas inlet connecting to the purge gas volume between the module housing and the pressure vessel; and where the purge gas volume is effective to control any unreacted fuel gas flow from the module by dilution with purge gas.

5,573,868

MATERIAL FOR GENERATING ELECTRIC ENERGY

Teruo Umemoto, Tsukuba; Naoaki Izutani, Takatsuki, and Ikuko Takahasi, Tsukuba, all of Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

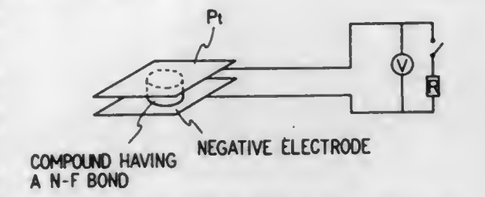
PCT No. PCT/JP94/00656, § 371 Date Mar. 22, 1995, § 102(e) Date Mar. 22, 1995, PCT Pub. No. WO94/24712, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 20, 1994, Ser. No. 356,245

Claims priority, application Japan, Apr. 22, 1993, 5-095997; Dec. 29, 1993, 5-351211

Int. Cl.[6] H01M *10/44*

U.S. Cl. 429—50 **33 Claims**



1. A process for generating electricity by electrochemical reaction between a compound having a N—F bond and a compound giving electrons to the compound.

5,573,869

MODULAR BATTERY PACK

B. Chester Hwang, Alpharetta; Jose M. Fernandez, Lawrenceville; Vernon Meadows, Lilburn, and Simon Thomas, Lawrenceville, all of Ga., assignors to Motorola, Inc., Schaumburg, Ill.

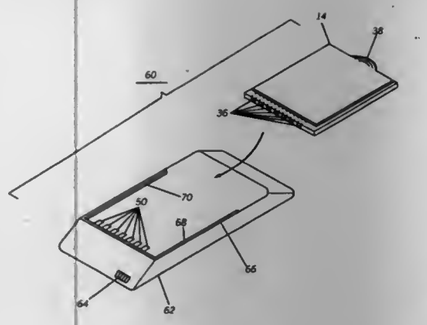
Division of Ser. No. 561,736, Nov. 22, 1995, Pat. No. 5,534,366. This application Apr. 22, 1996, Ser. No. 636,110

Int. Cl.[6] H01M *2/10*

U.S. Cl. 429—91 **7 Claims**

1. A battery pack system for powering an electrical device, comprising:

a circuit cartridge, comprising a battery circuit and circuit contacts disposed on said circuit cartridge;



a housing having at least one battery cell disposed therein, battery contacts disposed on said housing for electrically connecting said battery pack system with said electrical device, circuit receiving contacts disposed on said housing, and a means for receiving said circuit cartridge whereby said circuit cartridge can be attached to said housing; and

wherein said circuit contacts and said circuit receiving contacts correspondingly engage when said circuit cartridge is attached to said housing such that said battery circuit is electrically interconnected with said at least one battery cell.

5,573,870

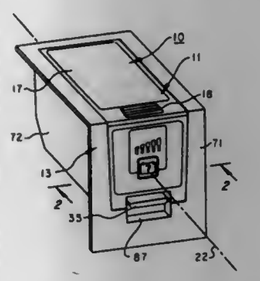
QUICK CHANGE BATTERY PACK ASSEMBLY

Jonathan N. Andrews, Monmouth, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 29, 1996, Ser. No. 639,665

Int. Cl.[6] H01M *2/10*

U.S. Cl. 429—96 **16 Claims**



1. A battery pack assembly, comprising in combination:

a rectangular pocket having a longitudinal axis, a base, an open forward end and a rearward wall;

a plurality of electrical connectors mounted at the rearward wall of the pocket;

a slot formed in the base near the forward end of the pocket perpendicular to the axis;

a pair of shoulders near the forward end of the pocket on opposite sides of the axis, spaced from and facing the base;

a removable battery housing for holding a battery, the housing having a forward wall, a rearward wall and a base;

a plurality of electrical connectors located at the rearward wall of the housing;

the base of the housing having a pair of laterally spaced-apart flanges on each side of the axis and a cantilevered resilient tab located between the flanges at the forward wall of the housing, the tab having a protruding detent; and wherein the housing latches into the pocket by placing the base of the housing in contact with the base of the pocket and sliding the housing rearwardly, causing the electrical connectors of the housing and the pocket to insert into one another, the flanges to slide between the base of the housing and the shoulders, and the detent to snap into the slot as the rearward wall of the housing reaches the rearward wall of the pocket.

5,573,871

ELECTROCHEMICAL CELL

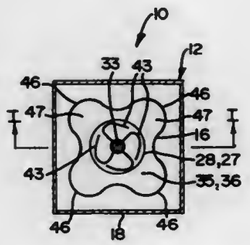
Klaus Von Benda, Ulrich von Ensingen Str 3, D-72622 Nürtingen, Germany

Filed Jan. 3, 1995, Ser. No. 368,771

Claims priority, application South Africa, Jan. 5, 1994, 94/0054

Int. Cl.[6] H01M *4/36*

U.S. Cl. 429—103 **25 Claims**



1. A method of making a precursor of a high temperature rechargeable electrochemical cell of the kind which comprises a housing containing an anode and a cathode, the housing having an interior divided by a solid electrolyte separator into an anode compartment and a cathode compartment, containing respectively the anode and the cathode, the anode comprising, when the cell is in its charged state and at its operating temperature, molten sodium the separator comprising a conductor of sodium ions, and the cathode comprising, at said operating temperature and in said charged state, an electronically conductive porous electrolyte-permeable matrix having a porous interior impregnated with a sodium aluminium chloride molten salt electrolyte which is molten and in which the atomic ratio of Al cations:Na cations does not exceed 1:1, with the matrix containing, dispersed in its porous interior, active cathode material comprising at least one metal chloride selected from the group of nickel, iron, chromium, cobalt, manganese, copper and antimony chlorides the housing being in the form of a metal canister, and the separator being a hollow operatively upright electrode holder defined, in cross-section, by a plurality of peripherally spaced radially outwardly projecting ribs or lobes, said cross-section being normal to the longitudinal axis of said housing, with the operatively lower end a closure having an opening smaller than its cross-sectional dimension, with a metallic current collector being disposed in said electrode holder, the method comprising the steps of:

1) inserting the current collector, in a first inoperative configuration, into the electrode holder through the opening in the upper end closure of the electrode holder;

2) extending at least part of the current collector, or allowing at least part of the current collector to extend, into at least one of the lobes of the electrode holder, so that the current collector assumes a second operative configuration in which the current collector has a shape of larger cross-section than the opening in the electrode holder upper end closure; and

3) loading into the cathode compartment of the housing the electronically conductive porous electrolyte-permeable matrix, the sodium aluminium chloride molten salt electrolyte, and the active cathode material, dispersed in the matrix.

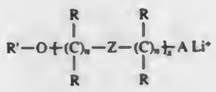
5,573,872

SOLID ELECTROLYTES WITH NOVEL ELECTROLYTE SALTS AND ELECTROLYTIC CELLS PRODUCED THEREFROM

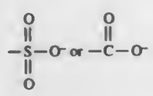
Dale R. Shackle, 17135 Oak Leaf Dr., Morgan Hill, Calif. 95037

Filed Nov. 22, 1995, Ser. No. 561,724
Int. Cl.[6] H01M *6/18*
U.S. Cl. 429—192 **23 Claims**

1. A solid electrolyte which comprises:
a solid polymeric matrix; and
an electrolyte composition comprising an effective amount of an electrolyte salt having the structure:



where A is either



where Z is oxygen, —O—, sulfide —SH_2—, or amine



x is 1 to about 10;
where Ris selected from the group consisting of an alkyl group having 1 to about 5 carbon atoms, and an unsubstituted or substituted aromatic group having from 6 to about carbon atoms, and wherein n is independently an integer from 1 to about 5 and R is independently selected from the group consisting of hydrogen, an alkyl group having 1 to about 5 carbon atoms, and an unsubstituted or substituted aromatic group having from 6 to about 11 carbon atoms provided that when A is —SO_3', Z is sulfide or amine.

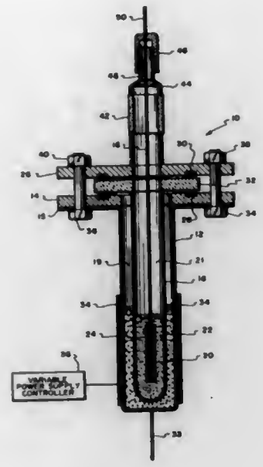
5,573,873

LONG LIFE NA/NICL$_2$ CELLS

Ratnakumar V. Bugga, Arcadia; Subbarao Surampudi, Glendora, and Gerald Halpert, Pasedena, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washinton, D.C.

Filed Aug. 16, 1994, Ser. No. 291,792
Int. Cl.[6] H01M *4/32*
U.S. Cl. 429—223 **13 Claims**

1. An electrode for a Na/$NiCl_2$ secondary battery comprising



$NiCl_2$ containing a dispersion of from 1 to 25 percent by weight of particles of a transition metal having a lower potential than nickel.

5,573,874

Patent Not Issued For This Number

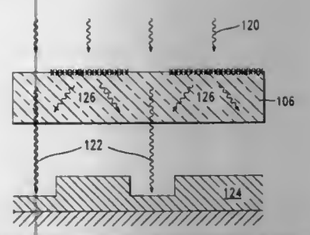
5,573,875

LASER ABLATION MASK AND METHOD OF FABRICATION

Leon H. Kaplan, Yorktown Heights, and Doris P. Pulaski, Holmes, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 220,759, Mar. 30, 1994, abandoned. This application Dec. 8, 1995, Ser. No. 569,321
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **25 Claims**

1. A method of forming a laser ablation mask, said method comprising the steps of:



a) forming a protective layer on one surface of a plate;
b) forming within said protective layer a defining pattern, the defining pattern for selectively defining on the one surface of the plate a plurality of exposed areas and a plurality of protected areas, the exposed areas corresponding to the mask areas intended to scatter laser light, the protected areas corresponding to mask areas intended to pass laser light;
c) substantially covering said one surface at said exposed areas with random facets, so as to form scattering areas for scattering laser light projected thereon; and,
d) removing said defining pattern, thereby forming the laser ablation mask.

5,573,876

METHOD FOR MANUFACTURING COLOR FILTER AND LIQUID CRYSTAL DISPLAY

Tameyuki Suzuki, Zushi, and Akira Kubo, Kobe, both of Japan, assignors to Shinto Paint Co., Ltd., Amagasaki, Japan

Filed Feb. 24, 1995, Ser. No. 393,651
Claims priority, application Japan, Mar. 18, 1994, 6-073855
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—7 **9 Claims**

1. A method for manufacturing a color filter having colored coating films and functional coating films in the gaps between the colored coating films on a transparent substrate, which comprises step (a) of forming the colored coating films by an electrodeposition method using a transparent substrate having transparent electroconductive circuits on the surface thereof and an electrodeposition bath containing a photosensitive material selected from the group consisting of:
(i) polymers having photosensitivity and function as a binder in electrodeposition, and
(ii) compositions comprising a photosensitive compound and a polymer having function as a binder in electrodeposition,
and step (b) of forming the functional coating films by forming a coating film using a photosensitive, functional coating film-forming resin composition on whole surface of the substrate including the colored coating films, if any, and then exposing the coating film to light emitted from the opposite side of the circuits-carrying surface of the substrate, followed by development, the steps (a) and (b) being carded out in this order or vice versa.

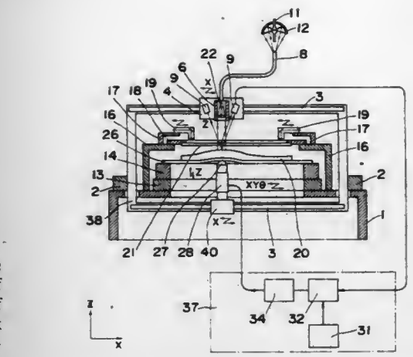
5,573,877

EXPOSURE METHOD AND EXPOSURE APPARATUS

Takashi Inoue, Sakai; Hiroyuki Nagano, Katano, and Yoshimichi Ishii, Neyagawa, all of Japan, assignors to Matsusbita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Mar. 15, 1995, Ser. No. 404,768
Claims priority, application Japan, Mar. 15, 1994, 6-044050; Mar. 15, 1994, 6-044051
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—30 **10 Claims**

1. An exposure method for irradiating a mask from above the mask held in proximity to a substrate positioned below the mask to transfer a mask pattern of the mask to a photosensitive layer of the substrate by exposing the photosensitive layer to a light beam, comprising:



a first step of using a gap-measuring device to measure a gap between a portion of the mask to be locally irradiated and a portion of the substrate to be locally irradiated;
a second step of comparing a value measured by the gap-measuring device with a preset value;
a third step of locally deforming at least one of the portion of the mask and the portion of the substrate to be locally irradiated according to a difference between the value measured by the gap-measuring device and the preset value so as to cause the gap to approach a predetermined value;
a fourth step of locally irradiating with a light beam the portion of the mask to be locally irradiated; and
a fifth step of scanning the mask by repeating said first through fourth steps at each of plural different portions of the mask.

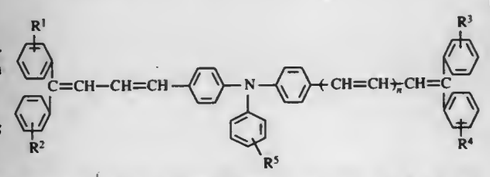
5,573,878

TRIPHENYLAMINE DERIVATIVE, CHARGE-TRANSPORTING MATERIAL COMPRISING THE SAME, AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Toshimitsu Hagiwara; Hiroshi Sugiyama; Yoshimasa Matsushima, and Tohru Kobayashi, all of Kanagawa, Japan, assignors to Takasago International Corporation, Tokyo, Japan

Filed Nov. 1, 1994, Ser. No. 333,295
Claims priority, application Japan, Nov. 2, 1993, 5-295965
Int. Cl.[6] G03G *5/06;* **C07C** *211/13*
U.S. Cl. 430—59 **8 Claims**

1. A triphenylamine derivative represented by the following general formula (1):



(1)

wherein R^1, R^2, R^3, R^4 and R^5 may be the same or different and each represents a hydrogen atom, a alkyl group, an alkoxy group, a halogen atom, or an aryl group which may have a substituent, or R^1 and R^2 and/or R^3 and R^4 may be taken together to form a ring, and n represents 0 or 1.

5,573,879

ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Eiichi Kato, and Kazuo Ishii, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

PCT No. PCT/JP92/00579, § 371 Date Nov. 2, 1993, § 102(e) Date Nov. 2, 1993, PCT Pub. No. WO92/20015, PCT Pub. Date Nov. 12, 1992

PCT Filed May 1, 1992, Ser. No. 146,001

Claims priority, application Japan, May 2, 1991, 3-128343; Jun. 3, 1991, 3-157432; Aug. 7, 1991, 3-221296; Sep. 12, 1991, 3-260530; Nov. 20, 1991, 3-329619; Nov. 22, 1991, 3-332887; Apr. 1, 1992, 4-105252

Int. Cl.[6] G03G *5/087;5/09*

U.S. Cl. 430—95 **11 Claims**

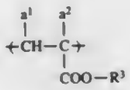
1. An electrophotographic light-sensitive material having a photoconductive layer containing at least an inorganic photoconductive substance, a spectral sensitizing dye and a binder resin, wherein the binder resin comprises at least one resin (A) and at least one resin (B):

resin (A):

a resin having a weight average molecular weight of from 1×10^3 to 2×10^4 and containing not less than 30% by weight of a polymer component corresponding to a repeating unit represented by the general formula (I) described below and from 0.5 to 15% by weight of a polymer component containing at least one polar group selected from the group consisting of $-PO_3H_2$, $-SO_3H$, —COOH,



(wherein R^1 is selected from the group consisting of a hydrocarbon group and $-OR^2$ (wherein R^2 represents a hydrocarbon group)) and a cyclic acid anhydride-containing group;



formula (I)

(wherein a^1 and a^2 each is selected from the group consisting of a hydrogen atom, a halogen atom, a cyano group, a hydrocarbon group, $-COOR^4$ and $-COOR^4$ bonded via a hydrocarbon group (wherein R^4 represents a hydrocarbon group); and R^3 represents a hydrocarbon group;

resin (B):

a starlike polymer having a weight average molecular weight of from 3×10^4 to 1×10^6 and comprising an organic molecule having bonded thereto at least three polymer chains each containing a polymer component containing at least one polar group selected from the group consisting of the specified polar groups as described in the resin (A) above and a polymer component corresponding to a repeating unit represented by the general formula (I) as described in the resin (A) above, wherein the polymer contains the polymer component containing a polar group in an amount of from 0.01 to 10% by weight and the polymer component corresponding to the general formula (I) in an amount not less than 30% by weight.

5,573,880

CARRIER FOR ELECTROPHOTOGRAPHY, PROCESS FOR ITS PRODUCTION, TWO-COMPONENT TYPE DEVELOPER, AND IMAGE FORMING METHOD

Shinya Mayama, Yamato; Takeshi Ikeda; Yuko Sato, both of Kawasaki; Yoshinobu Baba, Yokohama; Hiroshi Aoto; Yasuko Hayashi, both of Kawasaki; Hitoshi Itabashi, and Yuzo Tokunaga, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 363,959

Claims priority, application Japan, Dec. 29, 1993, 5-351644; Dec. 29, 1993, 5-351645; Dec. 29, 1993, 5-351646; Dec. 14, 1994, 6-332405

Int. Cl.[6] G03G *9/10*

U.S. Cl. 430—106.6 **65 Claims**

1. A carrier for use in electrophotography, comprising carrier particles, wherein;

said carrier particles each comprise a carrier core particle having a resistivity of 7×10^7 Ωcm to 4×10^{10} Ωcm and a resin for coating the carrier core particle and having a resistivity of 10^{10} Ωcm or above under conditions of a temperature of 23° C. and a humidity of 50% RH;

said carrier particles have an average particle diameter of not larger than 100 μm;

said carrier particles have a resistivity of 10^{10} Ωcm or above; and

said carrier particles comprise not less than 80% by number of resin-coated carrier particles whose carrier core particles are each coated with a resin in a coverage of not less than 90%.

5,573,881

TONER COMPOSITION FOR ELECTROPHOTOGRAPHY

Shoji Kawasaki; Nobuhiro Hirayama; Kenji Uchiyama; Hisatomo Sato; Hiromi Akiyama, and Katuo Uramoto, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Continuation of Ser. No. 105,652, Aug. 13, 1993, abandoned, which is a continuation of Ser. No. 717,010, Jun. 18, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 476,042

Claims priority, application Japan, Jun. 25, 1990, 2-164032; Jun. 25, 1990, 2-164033

Int. Cl.[6] G03G *9/00*

U.S. Cl. 430—110 **13 Claims**

1. A heat-fixable toner composition for electrophotography which comprises a binder and a coloring material wherein the binder comprises a resin mixture prepared by heating at a temperature ranging from 100° C. to 250° C. a resin solution comprising (i) a styrene resin having a weight-average molecular weight ranging from 10,000 to 300,000, (ii) a block copolymer and/or a hydrogenated product thereof containing a styrene moiety in the block copolymer in an amount ranging from 5 to 70% by weight and (iii) at least one solvent therefor selected from the group consisting of toluene, xylene, ethylbenzene, mineral spirit, n-butyl alcohol, iso-butyl alcohol, amyl alcohol, cyclohexyl alcohol, methylisobutyl alcohol, cyclohexanone and butyl acetate and removing said solvent wherein the block copolymer comprises at least one block of styrene and at least one kind of block selected from ethylenic hydrocarbons and conjugated diene hydrocarbons and wherein the block copolymer is in an amount ranging from 0.1 to 20 parts by weight per 100 parts by weight of the styrene resin.

5,573,882

LIQUID DEVELOPER COMPOSITIONS WITH CHARGE DIRECTOR BLOCK COPOLYMERS

James R. Larson, Fairport, and John W. Spiewak, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 25, 1995, Ser. No. 519,265

Int. Cl.[6] G03G *9/13*

U.S. Cl. 430—115 **22 Claims**

1. A negatively charged liquid developer consisting essentially of a nonpolar liquid, thermoplastic resin particles, pigment, a charge adjuvant, and a BAB polymer charge director wherein A and B represent the polar and nonpolar polymer segments, respectively.

5,573,883

METHOD FOR DEVELOPING AN LATENT IMAGE WITH LIQUID DEVELOPER HAVING A MIXTURE OF A HIGH VAPOR PRESSURE CARRIER FLUID AND A LOW VAPOR PRESSURE CARRIER FLUID

John S. Berkes, Webster; Stewart W. Volkers, Williamson, and Dexter A. Dyer, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 5, 1995, Ser. No. 461,829

Int. Cl.[6] G03G *13/11*

U.S. Cl. 430—116 **14 Claims**

1. An imaging method, comprises:

forming an electrostatic latent image;

developing the electrostatic latent image with the liquid developer comprising a mixture of a hihh vapor pressure carrier fluid and a low vapor pressure carrier fluid; a thermoplastic resin; and a pigment;

removing the high vapor pressure carrier fluid from the developed electrostatic latent image; and

transferring from about 80 to about 100 percent of the developed electrostatic latent image to paper.

5,573,884

IMAGE-FORMING MEMBER FOR ELECTROPHOTOGRAPHY

Toshiyuki Komatsu, Kawasaki; Yutaka Hirai, and Katsumi Nakagawa, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 171,979, Dec. 23, 1993, abandoned, which is a continuation of Ser. No. 44,881, Apr. 7, 1993, abandoned, which is a continuation of Ser. No. 873,889, Apr. 24, 1992, abandoned, which is a continuation of Ser. No. 716,768, Jun. 19, 1991, abandoned, which is a continuation of Ser. No. 449,310, Dec. 6, 1989, abandoned, which is a continuation of Ser. No. 333,759, Apr. 5, 1989, abandoned, which is a continuation of Ser. No. 104,584, Oct. 2, 1987, abandoned, which is a continuation of Ser. No. 912,699, Sep. 29, 1986, abandoned, which is a continuation of Ser. No. 719,445, Apr. 3, 1985, abandoned, which is a continuation of Ser. No. 561,161, Dec. 14, 1983, abandoned, which is a continuation of Ser. No. 418,293, Sep. 15, 1982, Pat. No. 4,565,731, which is a continuation of Ser. No. 36,226, May 4, 1979, Pat. No. 4,471,042. This application Jun. 6, 1995, Ser. No. 471,156

Claims priority, application Japan, May 4, 1978, 53-53605; May 4, 1978, 53-53606

Int. Cl.[6] G03G *5/082*

U.S. Cl. 430—126 **9 Claims**

1. An electrophotographic process comprising the steps of:

(a) charging an image-forming member for electrophotography comprising a substrate and a layer provided thereon, which layer comprises an amorphous material comprising silicon atom as a matrix, 1 to 40 atomic percent of hydrogen atoms and 0.1 to 30 atomic percent of at least one element selected from the group consisting of oxygen, carbon and nitrogen;

(b) image-wise exposing the charged image-forming member; and

(c) developing the exposed image-forming member to form a toner image.

5,573,885

IMAGE FORMING METHOD AND RECORDING MEDIUM

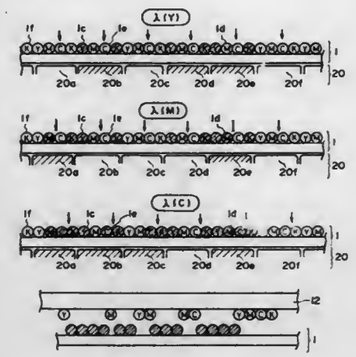
Toshiharu Inui; Haruhiko Moriguchi, both of Yokohama; Norio Ohkuma, Machida; Masanori Takenouchi, and Masashi Miyagawa, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 774,657, Oct. 15, 1991, abandoned, which is a continuation of Ser. No. 611,472, Nov. 13, 1990, abandoned, which is a continuation of Ser. No. 228,505, Aug. 5, 1988, abandoned. This application Nov. 1, 1994, Ser. No. 331,869

Claims priority, application Japan, Aug. 7, 1987, 62-197963

Int. Cl.[6] G03C *1/72;8/00;11/12;* **B32B** *3/00*

U.S. Cl. 430—138 **12 Claims**



1. An image forming method, comprising the steps of:

providing a recording medium comprising a substrate and a distributed layer disposed thereon, said distributed layer comprising a plurality of first particulate image forming elements and a plurality of second particulate image forming elements;

said first image forming elements comprising at least two species of material having different coloring characteristics, said at least two species of material decreasing their transferabilities under at least two energy application conditions, each said species of material decreasing its transferability under a particular and corresponding energy application condition which involves the application of light energy and heat energy, each said energy application condition being associated with a particular said species of material;

said second image forming elements being capable of decreasing their transferability under any one of said at least two energy application conditions,

said first and second image forming elements being capable of being hardened to decrease their transferabilities, said second image forming elements having a coloring characteristic which is different from that of said first image forming elements;

imparting light energy and heat energy to the recording medium in accordance with a recording information signal to selectively obtain said energy application condition to decrease the transferability of said first image forming elements so that the transferability of said second image forming elements is decreased along with decrease of transferability of the first image forming elements of at least one coloring characteristic, whereby a transferable image pattern is formed in said distributed layer; and

transferring the transferable image pattern of the distributed layer to a transfer-receiving medium, thereby forming an image corresponding to the transferable image pattern of the transfer-receiving medium.

5,573,886

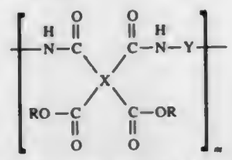
PHOTOSENSITIVE RESIN COMPOSITION COMPRISING A POLYIMIDE PRECURSOR AND METHOD FOR MAKING A POLYIMIDE FILM PATTERN FROM THE SAME

Hideto Kato, Takasaki, and Satoshi Toyoda, Annaka, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 20, 1995, Ser. No. 375,837
Claims priority, application Japan, Jan. 21, 1994, 6-021951
Int. Cl.[6] G03F *7/023;7/40*
U.S. Cl. 430—192 **17 Claims**

1. A photosensitive resin composition which comprises:

(A) a polyimide resin precursor of recurring units of the following general formula (1)



(1)

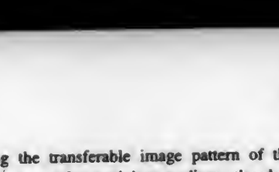
wherein R's may be the same or different and independently represent a silyl group of the following general formula (2)



(2)

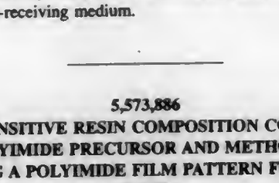
wherein R^1's may be the same or different and independently represent a hydrogen atom or a monovalent organic group having from 1 to 8 carbon atoms, X represents a tetravalent organic group, Y represents a divalent organic group, and m is an integer of from 5 to 80;

(B) at least one member selected from the group consisting of photosensitive diazoquinone compounds of the following formulas (3) and (4)



(3)

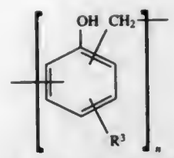
wherein R^2 represents an organic group having from 1 to 50 carbon atoms and i is an integer of from 1 to 7



(4)

wherein R^2 has the same meaning as defined above and i is an integer of from 1 to 7; and

(C) a phenolic novolac resin of the following general formula (5)



(5)

wherein R^3's may be the same or different and independently represent a hydrogen atom or an organic group having from 1 to 6 carbon atoms, and n is an integer of from 2 to 100.

15. A method for forming a polyimide film pattern which comprises applying a photosensitive composition defined in claim 1 onto a substrate, drying the applied composition, exposing the resultant film to light in an imagewise pattern, and subjecting the exposed film to alkali development to form a relief pattern, and curing the resultant film pattern on the substrate thereby forming a polyimide film.

5,573,887

METHOD OF TRANSFERRING IMAGES USING AN INTERMEDIATE CARRIER

Karl Genz, Finstersee, Switzerland, assignor to Intron Ingenieur-Unternehmung AG, Dubendorf, Switzerland

Continuation-in-part of Ser. No. 107,503, Aug. 17, 1993, abandoned. This application Oct. 31, 1994, Ser. No. 331,940
Claims priority, application European Pat. Off., May 3, 1993, 93107178
Int. Cl.[6] G03C *8/00;* **G03G** *13/14*
U.S. Cl. 430—199 **9 Claims**

1. A method of transferring images from a master pattern to a surface of a carrier using an intermediate carrier, consisting essentially of:

copying the image of the master pattern onto a foil or film intermediate carrier, wherein the image transferred to the intermediate carrier is formed by a material selected from the group consisting of toners and pigments; and

transferring the material forming the image on the intermediate carrier onto a treated surface of the carrier under the action of heat and pressure,

characterized in that

the surface of the carrier destined to receive the material forming the image is provided with a layer of a lacquer of polyvinylchloride or a vinylchloride-vinylidenechloride copolymer and that during the transfer of the material forming the image onto the carrier, beat is supplied softening the lacquer layer for the transfer of the material forming the image and after-baking the lacquer layer after the transfer.

5,573,888

IMAGE TRANSFER METHOD

Arata Imabayashi, and Yasuhiro Tanaka, both of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1993, Ser. No. 155,198
Claims priority, application Japan, Mar. 18, 1993, 5-058883
Int. Cl.[6] G03C *11/12*
U.S. Cl. 430—256 **5 Claims**

1. An image transfer method which comprises imagewise exposing an image-forming material consisting essentially of a substrate, a photosensitive layer formed on the substrate and a protection film attached to the photosensitive layer, peeling off the protection film, and subsequently bringing the image-forming material into contact with an image receptor so that the photosensitive layer of the image-forming material and the image receptor come into contact with each other to selectively transfer part of the photosensitive layer to the image receptor to thus obtain a transfer image,

the said method employing an image forming material which is prepared by attaching the protection film to the photosensitive layer under tension at right angles to the axial direction of a platen to which the image-forming material is attached, and the substrate of the image-forming material on which the photosensitive layer is formed having a greater elastic strain percentage than the protection film.

5,573,889

PROCESS FOR ADJUSTING THE SENSITIVITY TO RADIATION OF PHOTOPOLYMERIZABLE COMPOSITIONS

Manfred Hofmann, Marly, Switzerland; Bernd Klingert, Inzlingen, Germany; Max Hunziker, Düdingen, Switzerland; Rolf Wiesendanger, Basel, Switzerland; Adrian Schulthess, Tentlingen, Switzerland, and Paul Bernhard, Fribourg, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 234,499, Apr. 28, 1994, abandoned, which is a continuation of Ser. No. 603,032, Oct. 24, 1990, abandoned. This application May 9, 1995, Ser. No. 437,737
Claims priority, application Switzerland, Oct. 27, 1989, 3901/89
Int. Cl.[6] G03F *7/028;* **C08F** *2/50*
U.S. Cl. 430—285.1 **15 Claims**

1. A process for the preparation of a photopolymerizable composition to be used in the production of a three-dimensional object by means of stereolithography, which process comprises providing a photopolymer formulation containing at least one photopolymerizable compound and the following steps in the indicated temporal order:

1) selecting a specific UV/VIS laser light source with a set of different emission lines, by the radiation of which emission lines the photopolymerizable composition is to be polymerized;

2) selecting a plurality of photoinitiators, the absorption spectrum of each of the photoinitiators overlapping with at least one of the emission lines intended to cause photopolymerisation of the photopolymerizable composition, with the proviso that no photoinitiator of any pair of two photoinitiators of the selected plurality has a greater extinction coefficient for radiation of the same one of the said emission lines as the other photoinitiator of the pair;

3) defining a ratio for the concentrations of each of the photoinitiators in the composition such that the optical densities of a layer of any given thickness of the composition only differ from one another, for radiation of the defined different emission lines, by +/−20% based on the arithmetic mean of the optical densities, and

4) mixing said plurality of photoinitiators at said concentration ratio into said photopolymer formulation to produce said composition.

6. A process according to claim 1, wherein the photopolymerizable compound of the photopolymerizable composition is a compound which can be polymerized by free radicals or a mixture of such compounds.

7. A process according to claim 6, wherein the compound which can be polymerized by free radicals contains 2 to 5 acrylate ester and/or methacrylate ester groups.

5,573,890

METHOD OF OPTICAL LITHOGRAPHY USING PHASE SHIFT MASKING

Christopher A. Spence, Sunnyvale, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jul. 18, 1994, Ser. No. 276,734
Int. Cl.[6] G03F *7/20*
U.S. Cl. 430—311 **11 Claims**

1. In an i-line stepper lithography method for phase shift mask patterning for forming the levels of an integrated circuit (IC) on a semiconductor wafer, said lithography method including use of different masks to pattern the layout of different levels, one such level being the gate level and a second such level being the active regions, said active regions being spatially defined by an active region layout pattern, said gate level being spatially defined by a gate level pattern having first and second gate level layout portion, said first gate level layout portion being a standard non-phase shift mask pattern having opaque and non-opaque regions and said second gate level layout portion having areas containing phase shift regions, said method comprising:

performing a comparative analysis of said active regions layout pattern and said first gate level layout portion to spatially establish the location of Intersection regions corresponding to the regions on the IC where said active region layout pattern and said first gate level layout portion overlay, said Intersection regions being rectangles having a pair of parallel long sides and a pair of parallel short sides;

constructing a transmissive light field phase shift mask (PSM) having various phase shifted regions and opaque regions for patterning said gate level, said PSM comprising said gate level layout pattern, said gate level layout pattern being identical to said first gate level layout portion except in the regions on said PSM corresponding to said Intersection regions, said gate level layout pattern including zero degree phase shift regions which are contiguous with one said side of each said pair of parallel long sides of said regions corresponding to Intersection regions and a 180 degree phase shift region contiguous with each of the other side of said pair of parallel long sides of said regions corresponding to said Intersection regions, said opaque pattern of said transmissive light field PSM corresponding to said Intersection regions and to said opaque regions of said first gate level layout portion; and

aligning said PSM in said i-line stepper and exposing a positive resist on said wafer with a light source directed through said transmissive light field PSM by focussing with said lens system the said light which transmits through said PSM onto said positive resist on said wafer.

5,573,891

METHOD AND APPARATUS FOR FINE PROCESSING

Yasue Sato, Kawasaki; Toshiyuki Komatsu, Hiratsuka, and Shinichi Kawate, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 164,822, Dec. 9, 1993, Pat. No. 5,409,802, which is a division of Ser. No. 853,435, Mar. 18, 1992, abandoned. This application Feb. 23, 1995, Ser. No. 393,562
Claims priority, application Japan, Mar. 20, 1991, 3-080651; Mar. 20, 1991, 3-080652; Mar. 9, 1992, 3-050792
Int. Cl.[6] G03C *5/00*
U.S. Cl. 430—323 **37 Claims**



1. An apparatus for fine processing comprising:

a holding base for supporting a material to be processed;

an active layer forming chamber for forming an active layer on the surface of said material, said chamber comprising a light source for irradiating said material with ultraviolet rays in a reaction gas and an inlet portion for the reaction gas;

a latent image forming chamber comprising a light source for selectively irradiating said active layer with energy to form a latent image and an inlet portion for a reaction gas to be utilized for forming the latent image;

a shield mask forming chamber comprising an inlet portion for reation gas to be utilized for removing either said lateot image layer or said active layer to form a shield mask;

an etching chamber comprising an inlet portion for an etching gas for etching the portion other than a masked portion using the portion left unetched as a shield mask, and a plasma generating portion; and

a conveying portion for conveying said holding base to said active layer forming chamber, said latent image forming chamber, said shield mask forming chamber and said etching chamber.

5,573,892

USE OF YELLOW COUPLERS OF THE INDOLO [3,2-B] GUINOLINE TYPE IN A COLOUR PHOTOGRAPHIC DEVELOPMENT PROCESS

Günther Schenk, Bergisch Gladbach, Germany, assignor to AGFA-Gevaert AG, Germany

Filed Oct. 25, 1995, Ser. No. 547,771

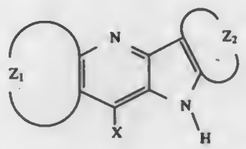
Claims priority, application Germany, Nov. 4, 1994, 44 39 329.6

Int. Cl.[6] G03C *7/46*

U.S. Cl. 430—388 **10 Claims**

1. A photographic color development process comprising exposing a color photographic recording material having at least one silver halide emulsion layer with an image, developing in the presence of a color coupler compound and a color developer compound, wherein the color coupler compound is of the formula I

(I)



in which:

Z_1 and Z_2 are the same or different and mean residues to complete 5-, 6- or 7-membered aromatic or heteroaromatic rings; these rings substituted with substituents R^1, R^2, R^3 and R4; R^1, R^2, R^3 and R^4 are identical or different and are a hydrogen atom or a substituent;

means H or a substituent which is released under chromogenic development conditions.

5,573,893

METHOD FOR PROCESSING A SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Hiroshi Fujimoto; Takatoshi Ishikawa, and Kazuaki Yoshida, all of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 797,990, Nov. 26, 1991, abandoned. This application Aug. 24, 1994, Ser. No. 295,155

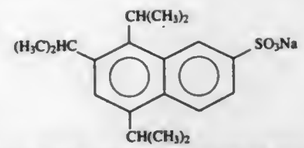
Claims priority, application Japan, Nov. 28, 1990, 2-326211

Int. Cl.[6] G03C *7/42*

U.S. Cl. 430—393 **7 Claims**

1. A method for processing a silver halide color photographic material, which comprises processing a silver halide color photographic material having a plurality of photographic layers, the degree of swelling of which is 1.2 to 3.0, by a color developer containing at least one compound represented by the following Formula (I) in an amount of 0.01 to 10 g/l of said color developer, the color developer being replenished with a replenisher in an amount of 25 to 150 ml per m^2 of the photographic material:

Formula (I)



wherein, after the above color development processing, desilvering is effected with a bleach-fixing solution that contains a concentration of carbonate ions of 2.0×10^{-1} mol/l to 3.0×10^{-2} mol/l.

5,573,894

METHOD AND APPARATUS FOR EXPOSING PHOTOSENSITIVE MATERIALS

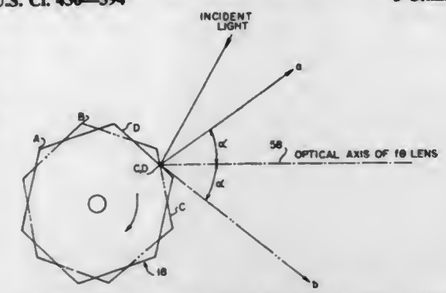
Kenichi Kodama, and Kensuke Goda, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 21, 1994, Ser. No. 262,983

Claims priority, application Japan, Jun. 21, 1993, 5-149372

Int. Cl.[6] G03C *1/70;* **H04N** *1/41;1/58*

U.S. Cl. 430—394 **5 Claims**



1. A method for exposing silver halide photosensitive material by using a light source comprising the steps of:

exposing a silver halide photosensitive material in a main scanning direction by reflecting a beam from said light source through one or more fθ lenses toward the silver halide photosensitive material by means of a rotatable polygon mirror; and

moving the silver halide photosensitive material in a sub-scanning direction;

wherein said polygon mirror and said fθ lenses are arranged, with respect to the beam from said light source, such that reflection point corresponding to both ends of beam scanning on reflection surfaces of said polygon mirror pass through an identical point on an optical axis of said fθ lenses and light beams at the both ends of beam scanning have line symmetry with respect to the optical axis of said fθ lenses.

5,573,895

RECYCLING METHOD FOR PHOTOGRAPHIC PROCESSING WASTE LIQUID

Yoshimasa Komatsu; Masao Ishikawa; Moeko Hagiwara; Kenji Ishida; Hiroshi Yoshimoto, and Shinsaku Nagaoka, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

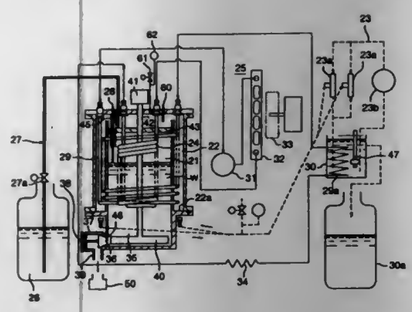
Continuation of Ser. No. 77,286, Jun. 14, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 473,125

Claims priority, application Japan, Jun. 12, 1992, 4-153788; Jun. 15, 1992, 4-155131; Jun. 15, 1992, 4-155132; Jun. 15, 1992, 4-180304; Jun. 18, 1992, 4-159577; Jun. 19, 1992, 4-161335; Jun. 19, 1992, 6-161338; Jun. 29, 1992, 4-171245

Int. Cl.[6] G03C *3/00;5/18;5/26;5/38*

U.S. Cl. 430—398 **18 Claims**

1. A recycling method for photographic processing waste liquid wherein the processing waste liquid is subjected to evaporative



concentration under a reduced pressure of not higher than 700 mmHg and at a temperature of not higher than 90° C., and the resulting distillate is used as a solvent for photographic processing agents or as an evaporation compensator for processing tanks of an automatic processing machine, and wherein the photographic processing waste liquid contains an aliphatic monobasic acid, an amino acid monobasic acid, an aromatic monobasic acid, an aliphatic dibasic acid, an amino acid dibasic acid or an aromatic dibasic acid, but substantially no acetic acid.

5,573,896

METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC ELEMENTS USING PROCESSORS HAVING LOW VOLUME THIN TANK DESIGNS

Jerel R. Carli, Penfield; David G. Foster, West Henrietta; Edgar P. Gates, Honeoye; David L. Patton, Webster; John H. Rosenburgh, Hilton, and Sheridan E. Vincent, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 221,711, Mar. 31, 1994, Pat. No. 5,436,118. This application Apr. 3, 1995, Ser. No. 390,594

Int. Cl.[6] G03C *5/18;5/26;5/00;* **G03D** *3/02*

U.S. Cl. 430—399 **20 Claims**

11. A method of processing an imagewise exposed color silver halide photographic element comprising developing said photographic element in a developing solution, in a processor having either a rack and tank or automatic tray design, said processor comprising a narrow processing channel, wherein said developing solution is replenished by direct replenishment,

said photographic element being processed in said narrow processing channel of said processor, which narrow processing channel has a thickness equal to or less than 100 times the thickness of said photographic element being processed,

the total amount of said developing solution used in said narrow processing channel being at least 40% of the total volume of the processing solution in said processor, and

said developing solution being delivered to said narrow processing channel via a nozzle according to the following formula:

$$1 \leqq F/A \leqq 40$$

wherein F is the flow rate of said developing solution through said nozzle in gallons per minute, and A is the cross-sectional area of said nozzle in square inches.

5,573,897

METHOD OF APPLYING A TRANSPARENT MAGNETIC LAYER TO A WEB OR SHEET MATERIAL

Hartwig Andries, Mortsel, Belgium; Werner Krafft, Leverkusen, Germany; Willem Muës, Tremelo, and Jan Gilleir, Mortsel, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Nov. 28, 1994, Ser. No. 348,962

Claims priority, application European Pat. Off., Dec. 24, 1993, 93203673

Int. Cl.[6] G03C *1/76*

U.S. Cl. 430—501 **16 Claims**

1. A method for applying a transparent magnetic layer onto a support of a polymeric sheet or web material comprising the steps of

(a) simultaneously coextruding a coating solution to form a non-magnetic "dummy" layer and a coating solution to form a magnetic layer onto said polymeric sheet or web material, both said dummy layer and said magnetic layer being at the same side of the support and said non-magnetic "dummy" layer being closest to the support and

(b) drying said layers characterised in that

(i) said dummy layer has a wet coating thickness (Th_{dum}) and said magnetic layer has a wet coating thickness (Th_{mag}) fulfilling the following equations I and II:

$$25\ \mu m \leqq Th_{dum}+Th_{mag} \leqq 100\ \mu m \qquad I$$

and

$$0.01 \leqq Th_{mag}/Th_{dum} \leqq 1 \qquad II$$

(ii) said coating solution for said dummy layer comprises between 3 and 15% of a polymeric binder,

(iii) said polymeric binder is a reaction product of polyvinylalcohol and at least one aliphatic aldehyde having 2 to 6 carbon atoms and

(iv) said coating solution for said dummy layer has a tg(d) between 1 and 10.

5,573,898

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Hidekazu Sakai, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 29, 1994, Ser. No. 313,587

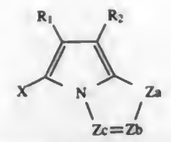
Claims priority, application Japan, Sep. 30, 1993, 5-265477

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—503 **13 Claims**

1. A silver halide color photographic material having, on a reflective support, at least one yellow dye-forming coupler-containing silver halide emulsion layer, at least one magenta dye-forming coupler-containing silver halide emulsion layer and at least one cyan dye-forming coupler-containing silver halide emulsion layer each having a different color sensitivity, wherein said reflective support is composed of a base and two or more waterproof resin coat layers each having a different white pigment content, the resin coat layers being provided on the surface side of the base where the silver halide emulsion layers are coated thereover, the waterproof resin coat layer that is nearest to the base having a lower white pigment content than at least one of the waterproof resin coat layers positioned farther from the base;

wherein said yellow dye-forming coupler-containing silver halide emulsion layer is adjacent to the waterproof resin coat layer that is farthest away from said base; said cyan dye-forming coupler-containing silver halide emulsion layer contains at least one cyan dye-forming coupler compound of the following general formula (Ia); and the coated layers of the photographic material, combined, have a pH that falls within the range of from 4.0 to 6.5:



(Ia)

wherein Za represents —NH— or —CH(R$_3$)—;

Zb and Zc each represent —C(R$_4$)= or —N=;

R$_1$, R$_2$ and R$_3$ each represent an electron-attracting group having a Hammett's substituent constant σp of 0.20 or more, provided that the sum of the σp values of R$_1$ and R$_2$ is 0.65 or more;

R$_4$ represents a hydrogen atom, a halogen atom, an aliphatic group, an aryl group, a heterocyclic group, an alkoxy group, an aryloxy group, a heterocyclic-oxy group, an alkyl-, aryl- or heterocyclic-thio group, an acyloxy group, a carbamoyloxy group, a silyloxy group, a sulfonyloxy group, an acylamino group, an alkylamino group, an arylamino group, an ureido group, a sulfamoylamino group, an alkenyloxy group, a formyl group, an alkyl-, an aryl- or heterocyclic-acyl group, an alkyl-, aryl- or heterocyclic-sulfonyl group, an alkyl-, aryl- or heterocyclic-sulfinyl group, an alkyl-, aryl- or heterocyclic-oxycarbonyl group, an alkyl-, aryl- or heterocyclic-oxycarbonylamino group, a sulfonamido group, a carbamoyl group, a sulfamoyl group, a phosphonyl group, a sulfamido group, an imido group, a hydroxyl group, a cyano group, a carboxyl group, a nitro group, a sulfo group or an unsubstituted amino group, provided that when the formula has two R$_4$'s, they are the same or different;

X represents a hydrogen atom or a group capable of splitting off from the compound by the coupling reaction with an oxidation product of an aromatic primary amine color developing agent; and

when R$_1$, R$_2$, R$_3$, R$_4$ or X is a divalent group, the compound may be a dimer or a higher polymer, or the divalent group may be bonded to a polymer chain to form a homopolymer or copolymer.

5,573,899

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Akira Kase, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

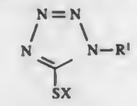
Continuation of Ser. No. 974,479, Nov. 12, 1992, abandoned. This application May 17, 1994, Ser. No. 245,071

Claims priority, application Japan, Nov. 15, 1991, 3-326685

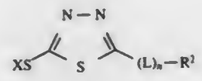
Int. Cl.^{6} G03C *1/83;1/825;1/09;1/34*

U.S. Cl. 430—517 **10 Claims**

1. A silver halide photographic material comprising a reflective support having provided thereon a light-sensitive emulsion layer containing a silver halide emulsion wherein said silver halide emulsion contains silver chloride grains or silver chlorobromide grains having a silver chloride content of 90 mol % or more, wherein said grains are tellurium-sensitized with a tellurium sensitizing agent, and wherein said light-sensitive emulsion layer or a non-light-sensitive emulsion layer on the reflective support contain at least one compound represented by formula (I), (II) or (III):

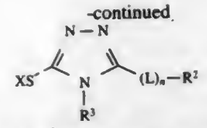


(I)



(II)

-continued



(III)

in formula (I), R^1 represents an alkyl group, an alkenyl group or an aryl group; and X represents a hydrogen atom, an alkali metal, an ammonium group or a precursor which is a group capable of yielding a hydrogen or an alkali metal under an alkaline condition;

in formula (II), L represents a divalent linking group; R^2 represents a hydrogen atom, an alkyl group, an alkenyl group or an aryl group; X has the same meaning as that in formula (I); and n represents 0 or 1; and

in formula (III), X has the same meaning as that in formula (I); L, R^2 and n each has the same meaning as in formula (II); R^3 has the same meaning as R^2 and may be the same or different from R^2,

wherein an anti-halation layer is provided between the reflective support and the light-sensitive emulsion layer,

wherein the anti-halation layer comprises a light-absorbing agent which is fixed to said anti-halation layer before photographic processing,

wherein the light-absorbing agent is a colloidal silver or a solid dispersion dye which is substantially water-insoluble at a pH of 6 or less and substantially water-soluble at a pH of 8 or more.

5,573,900

DISPERSION METHOD OF HYDROPHOBIC, PHOTOGRAPHICALLY USEFUL COMPOUND

Naoyuki Kawanishi; Kazuhiko Fujiwara, and Tomokazu Yasuda, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

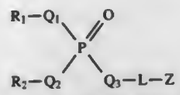
Filed May 19, 1995, Ser. No. 445,293

Claims priority, application Japan, May 20, 1994, 6-107060

Int. Cl.^{6} G03C *1/38*

U.S. Cl. 430—546 **10 Claims**

1. A method for dispersing a water-insoluble phase containing at least one hydrophobic, photographically useful compound in water or a hydrophilic colloid composition with an anionic surface active agent, which comprises dispersing said at least one hydrophobic, photographically useful compound in water or a hydrophilic colloid composition in the presence of an anionic surface active agent containing a hydrophobic group having from 8 to 30 carbon atoms and a group represented by —SO$_3$M or —OSO$_3$M (where M represents a cation capable of forming a salt with a sulfonic acid or a sulfuric acid) and a surface active compound represented by formula (I):



(I)

wherein R$_1$ represents an aliphatic group, an alicyclic compound group, an aromatic group or a heterocyclic ring, R$_2$ represents an aliphatic group, an alicyclic compound group, an aromatic group, a heterocyclic ring or a group represented by —L—Z, Q$_1$, Q$_2$ and Q$_3$ each represents a mere bond, an oxygen atom, a sulfur atom or a group represented by —N(R$_3$)— or —N(R$_3$)—CO— (where R$_3$ represents a hydrogen atom or a group represented by R$_2$), L represents a divalent linking group and Z represents an ionic group, to form a dispersion of the water-insoluble phase containing a hydrophobic, photographically useful compound in water or a hydrophobic colloid composition.

5,573,901

SILVER HALIDE PHOTOGRAPHIC MATERIAL AND SILVER HALIDE PHOTOGRAPHIC EMULSION USED THEREFOR

Seiji Yamashita; Tetsuro Kojima; Hiroyuki Mifune; Mikio Ihama, and Hirotomo Sasaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 402,557, Mar. 13, 1995, which is a continuation of Ser. No. 197,570, Feb. 17, 1994, which is a continuation of Ser. No. 866,515, Apr. 10, 1992, abandoned. This application Apr. 3, 1995, Ser. No. 416,072

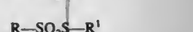
Claims priority, application Japan, Apr. 11, 1991, 3-105035; Jun. 28, 1991, 3-183863

Int. Cl.^{6} G03C *1/035;1/09*

U.S. Cl. 430—567 **6 Claims**

1. A silver halide photographic emulsion comprising tabular grains having an aspect ratio of 3 or more, which account for 70% or more of the sum of the projected areas of all silver halide grains present, wherein said tabular grains are subjected to a reduction sensitization followed by a selenium sensitization and a gold sensitization,

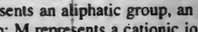
wherein at least one of the following thiosulfonic acid compounds represented by formula (VI), (VII) or (VIII) is added at a step of forming grains and/or at a step of chemically sensitizing the emulsion



(VI)



(VII)



(VIII)

wherein R, R^1 and R^2 may be the same or different and each represents an aliphatic group, an aromatic group, or a heterocyclic group; M represents a cationic ion; L represents a divalent linkage group; m represents 0 or 1; and the compounds of formula (VI) to (VIII) may be polymers having divalent groups derived from structures represented by formulas (VI) to (VIII) as a repetitive unit.

5,573,902

TABULAR GRAIN EMULSIONS WITH SENSITIZATION ENHANCEMENTS

Richard L. Daubendiek; Joseph C. Deaton, both of Rochester; Donald L. Black, Webster; Timothy R. Gersey; Joseph G. Lighthouse, both of Rochester; Myra T. Olm, Webster; Xin Wen, and Robert D. Wilson, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 15, 1995, Ser. No. 441,491

Int. Cl.^{6} G03C *1/035*

U.S. Cl. 430—567 **14 Claims**

1. A radiation-sensitive emulsion comprised of

(1) a dispersing medium,

(2) silver halide grains including tabular grains, tabular grains

(a) having {111} major faces,

(b) containing greater than 70 mole percent bromide and at least 0.25 mole percent iodide, based on silver,

(c) accounting for greater than 90 percent of total grain projected area,

(d) exhibiting an average equivalent circular diameter of at least 0.7 μm, and

(e) exhibiting an average thickness in the range of from less than 0.3 μm to at least 0.07 μm,

(3) latent image forming chemical sensitization sites on the surfaces of the tabular grains, and

(4) a spectral sensitizing dye adsorbed to the surfaces of the tabular grains,

wherein

the tabular grains contain less than 10 mole percent iodide and the surface chemical sensitization sites include epitaxially deposited silver halide protrusions of a face centered cubic crystal lattice structure of the rock salt type forming epitaxial junctions with the tabular grains, the protrusions

(a) being restricted to those portions of the tabular grains located nearest peripheral edges of and accounting for less than 50 percent of the {111} major faces of the tabular grains,

(b) containing a silver chloride concentration at least 10 mole percent higher than that of the tabular grains, and

(c) including at least 1 mole percent iodide, based on silver forming the protrusions.

5,573,903

SILVER HALIDE PHOTOGRAPHIC MATERIAL AND SILVER HALIDE PHOTOGRAPHIC EMULSION USED THEREFOR

Seiji Yamashita; Tetsuro Kojima; Hiroyuki Mifune; Mikio Ihama, and Hirotomo Sasaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 197,570, Feb. 17, 1994, abandoned, which is a continuation of Ser. No. 866,515, Apr. 19, 1992, abandoned. This application Mar. 13, 1995, Ser. No. 402,557

Claims priority, application Japan, Apr. 11, 1991, 3-105035; Jun. 28, 1991, 3-183863

Int. Cl.^{6} G03C *1/09;1/34*

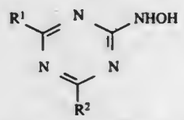
U.S. Cl. 430—600 **9 Claims**

1. A silver halide photographic material comprising:

a support having provided thereon at least one light-sensitive silver halide emulsion layer containing a silver halide emulsion,

wherein the silver halide emulsion has been subjected to a chemical sensitization with a selenium compound, and

wherein (1) the silver halide emulsion layer provided on said support contains a compound represented by formula (III), which compound has been added to said silver halide emulsion layer after said chemical sensitization, or (2) another layer provided on said support contains a compound represented by formula (III):



(III)

wherein R^1 and R^2 may be the same or different and each represents a hydroxy group, an amino group, an alkoxy group, a phenoxy group, an alkyl group, an aryl group, an alkylthio group, or a phenylthio group.

5,573,904

5(6)-METHYL SUBSTITUTED FLUORESCEIN DERIVATIVES

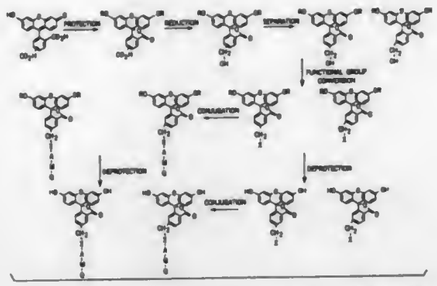
Phillip G. Mattingly, Grayslake, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 421,143, Apr. 13, 1995, Pat. No. 5,496,925, which is a continuation of Ser. No. 260,578, Jun. 16, 1994, abandoned, which is a division of Ser. No. 859,775, Mar. 30, 1992, Pat. No. 5,352,803. This application May 22, 1995, Ser. No. 445,978

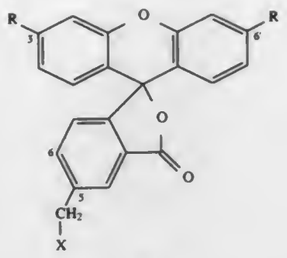
Int. Cl.^{6} C12Q *1/00;* **G01N** *33/53;21/76;* **C07D** *311/82*

U.S. Cl. 435—4 **1 Claim**

1. An indicator reagent useful for detecting the presence of an analyte which may be present in a test sample which comprises a specific binding member for the analyte attached to a fluorescein derivative of the following formula

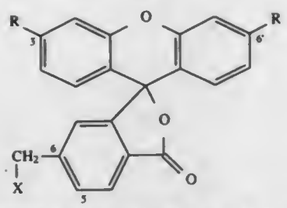


FORMULA I



and

FORMULA II



wherein R is selected from the group consisting of hydroxy and protected hydroxy; and

wherein X is selected from the group consisting of hydroxy, protected hydroxy, amino, protected amino, thiol, protected thiol, a leaving group, a Michael acceptor, phosphoramidate, phosphonate and a linking group.

5,573,905

ENCODED COMBINATORIAL CHEMICAL LIBRARIES

Richard Lerner, La Jolla; Kim Janda, San Diego, both of Calif., and Sydney Brenner, Cambridge, England, assignors to The Scripps Research Institute, La Jolla, Calif.

Filed Mar. 30, 1992, Ser. No. 860,445

Int. Cl.[6] C12Q *1/68;* G01N *33/53*

U.S. Cl. 435—6 **5 Claims**

1. A method for identifying a biochemical polymer that participates in a preselected binding interaction with a biologically active molecule to form a binding reaction complex, the method comprising the steps of:

a) providing a library of bifunctional molecules, each bifunctional molecule having the formula A-B-C, wherein A is the biochemical polymer, B is a linker molecule operatively linked to A and C, and C is an identifier oligonucleotide comprising a sequence of nucleotides which encodes and identifies the biochemical polymer A; then

b) admixing in solution said library of bifunctional molecules of said step (a) with the biologically active molecule under binding conditions for a time period sufficient to form the binding reaction complex; then

c) isolating the binding reaction complex formed in said step (b); then

d) amplifying the identifier oligonucleotide C of the bifunctional molecule within the binding reaction complex isolated in said step (c) by means of PCR; and then

e) sequencing and decoding the identifier oligonucleotide C amplified in said step (d) for identifying the biochemical polymer that participated in the preselected binding interaction.

5,573,906

DETECTION OF NUCLEIC ACIDS USING A HAIRPIN FORMING OUGONUCLEOTIDE PRIMER AND AN ENERGY TRANSFER DETECTION SYSTEM

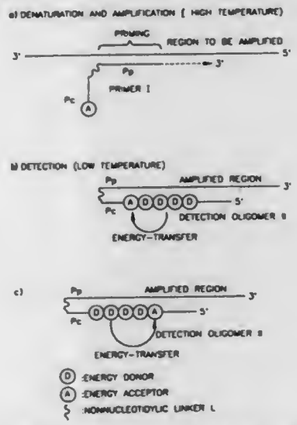
Wilhelm Bannwarth, Upper Saddle River, N.J., and Francis Muller, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 22, 1993, Ser. No. 35,010

Claims priority, application European Pat. Off., Mar. 23, 1992, 92104956

Int. Cl.[6] C12Q *1/68;* C12P *19/34;* C07H *21/04*

U.S. Cl. 435—6 **21 Claims**



1. A process for detecting the presence or absence of at least one specific nucleic acid sequence in a sample suspected of containing said sequence, which process comprises:

a) amplifying the nucleic acid sequence to be detected by means of a chain extension reaction utilizing a first oligonucleotide primer of general formula

5'-X-Pc-L-Pp-3' (I)

wherein Pp is an oligonucleotide sequence substantially complementary to a part of one strand of the nucleic acid sequence to be detected, Pc is an oligonucleotide sequence substantially complementary to and not longer than the sequence Pp, L is a non-nucleotidylic linker group selected so as to allow efficient backfolding between sequences Pc and Pp, and X is an energy donor or acceptor,

and a second oligonucleotide primer substantially complementary to a part of the other strand of the nucleic acid sequence to be detected, and wherein primer extension occurs at a temperature which is high enough to prevent complete internal backfolding of Pc to Pp, utilizing a thermostable enzyme;

b) separating after a last amplification cycle the primer extension products of step (a) from their complementary sequences to produce single-stranded molecules containing a primer of formula I;

c) treating said single-stranded molecules containing a primer of formula I with an oligonucleotide probe of the general formula

3'-Y-Pr-5' (II)

wherein Y is an energy acceptor when X in the primer of formula I is an energy donor, or is an energy donor when X in the primer of formula I is an energy acceptor, and Pr is an oligonucleotide sequence complementary to a part of the amplified single-stranded molecules containing the primer of formula I above and selected so as to guarantee a distance between X and Y that allows for energy transfer between X and Y after backfolding of the sequence Pc and hybridization of the sequence Pr to said single-stranded molecules such that an energy transfer can take place,

under conditions allowing hybridization of the sequences Pc to Pp by backfolding and of Pr to said single-stranded molecules containing a primer of formula I; and

d) determining whether an energy transfer takes place as a means for detecting the presence or absence of the nucleic acid sequence to be detected.

5,573,907

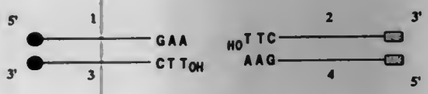
DETECTING AND AMPLIFYING TARGET NUCLEIC ACIDS USING EXONUCLEOLYTIC ACTIVITY

John J. Carrino, Gurnee, Ill.; Uwe Spies, Limburg, Germany; Laurie A. Rinehardt, Kenosha, Wis., and Edward K. Pabich, Chicago, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 925,402, Aug. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 634,771, Jan. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 470,674, Jan. 26, 1990, abandoned. This application Aug. 4, 1993, Ser. No. 101,877

Int. Cl.[6] C12Q *1/68;* C12P *19/34;* C07H *21/04*

U.S. Cl. 435—6 **59 Claims**



1. A method for assaying a target nucleic acid sequence comprising the steps of:

(a) under hybridizing conditions exposing a sample suspected of containing the target nucleic acid sequence in single stranded form to an excess of a first set of oligonucleotides comprising a first upstream probe and a first downstream probe, both probes having sequences substantially complementary to portions of a target nucleic acid sequence, the 3' terminus of the first upstream probe hybridizing proximate to the 5' terminus of the first downstream probe, wherein the 5' end of the first downstream probe is modified to be ligation incompetent absent correction, thereby hybridizing the first set of oligonucleotides to the target nucleic acid sequence, if present;

(b) correcting the 5' end of the downstream probe when the downstream probe is hybridized to target, said correction including nucleolytic degradation of said 5' end, whereby the correction renders this 5' end ligation competent;

(c) ligating the corrected downstream probe to the upstream probe to form a ligated product; and

(d) determining to what extent the correction and ligation steps occur as a measure of the target nucleic acid in the sample.

171-487 O.G.-96-14: QL3

5,573,908

ADRENERGIC RECEPTOR AS A PROTO-ONCOGENE

Lee F. Allen; Robert J. Lefkowitz; Marc G. Caron, and Susanna Cotecchia, all of Durham, N.C., assignors to Duke University, Durham, N.C.

Continuation of Ser. No. 808,322, Dec. 16, 1991, abandoned. This application Dec. 20, 1993, Ser. No. 170,684

Int. Cl.[6] C12Q *1/68;* C12N *5/10*

U.S. Cl. 435—6 **8 Claims**

1. An in vitro assay procedure, comprising:

contacting a test compound to a recombinant cell, the recombinant cell comprising a mammalian host cell containing a heterologous DNA molecule, the heterologous DNA molecule comprising vector DNA and DNA which encodes a mammalian α_1-adrenergic receptor, wherein said mammalian α_1-adrenergic receptor is expressed in said host cell, and wherein said recombinant cell undergoes proliferation in response to activation of said mammalian α_1-adrenergic receptor; and

detecting whether or not said test compound inhibits the proliferation of said recombinant cell.

5,573,909

FLUORESCENT LABELING USING MICROPARTICLES WITH CONTROLLABLE STOKES SHIFT

Victoria L. Singer, and Richard P. Haugland, both of Eugene, Oreg., assignors to Molecular Probes, Inc., Eugene, Oreg.

Continuation-in-part of Ser. No. 882,299, May 13, 1992, Pat. No. 5,362,692. This application May 20, 1994, Ser. No. 247,108

Int. Cl.[6] C12Q *1/68;* G01N *33/545*

U.S. Cl. 435—6 **30 Claims**

1. A method of applying a fluorescent label to a target specific binding pair member in a sample, comprising the steps of;

a) combining the sample thought to contain the target specific binding pair member with a suspension of one or more microparticle-labeled probes, wherein each microparticle probe comprises

a polymeric microparticle incorporating randomly dispersed therein a series of fluorescent dyes having an initial donor dye with a desired excitation peak and an ultimate acceptor dye with a desired emission peak, where each dye of the series has spectral overlap sufficient to allow for significant energy transfer of excitation energy to occur resulting in an effective Stokes shift; and

a complementary specific binding pair member that binds to the target specific binding pair member and is covalently or non-covalently bound to the microparticle; and;

b) allowing sufficient time for one or more microparticle-labeled probes to form a complex with the target specific binding pair member.

5,573,910

DETECTION OF CONVERSION TO MUCOIDY IN PSEUDOMONAS AERUGINOSA INFECTING CYSTIC FIBROSIS PATIENTS INVOLVING THE ALGU GENE

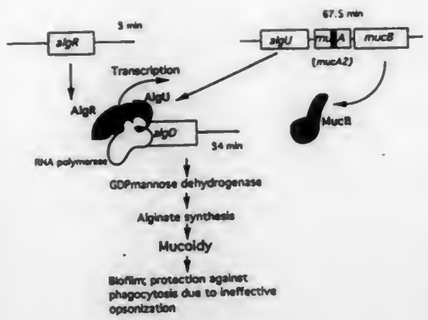
Vojo Deretic, and Daniel W. Martin, both of San Antonio, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 17,114, Feb. 12, 1993. This application Jun. 15, 1994, Ser. No. 260,202

Int. Cl.[6] C12Q *1/68;* C12P *19/36;* C07H *21/02;21/04*

U.S. Cl. 435—6 **27 Claims**

1. An isolated nucleic acid segment encoding the amino acid sequence of SEQ ID NO:19.



5,573,911
METHODS AND MATERIALS FOR DETECTING AUTOIMMUNE ANTIBODIES

Jacob Victor, Passaic, N.J., and Lisa M. Pieti, Norwalk, Conn., assignors to Lifecodes Corp., Stamford, Conn.

Filed Oct. 3, 1994, Ser. No. 330,147
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 **22 Claims**



1. A method for co-immobilizing double-stranded DNA and at least one preselected protein to separate and discrete areas on a single membrane matrix, wherein said membrane matrix comprises a matrix composition other than nitrocellulose, said method comprising the sequential steps of:

(a) immobilizing said at least one preselected protein to a first discrete area on said membrane matrix by electrophoretically transferring an electropherogram of a first protein solution containing said at least one preselected protein to said membrane matrix, wherein said at least one preselected protein is identifiable by its location on said electropherogram;

(b) applying a second solution comprising said double-stranded DNA onto a second discrete area on an end of said membrane matrix that does not have transferred proteins thereon, wherein said second solution does not contain detectable amounts of single-stranded DNA;

(c) baking said membrane matrix for an effective period of time and at a sufficient temperature to fix said double-stranded DNA to said membrane matrix; and

(d) exposing said membrane matrix to an effective amount of UV light to covalently bind said double-stranded DNA to said membrane matrix, wherein said double-stranded DNA remains double-stranded during and after said exposure to said UV light.

5,573,912
PROCESS OF SELECTING AND/OR OBTAINING PROBES CAPABLE OF DETECTING NEW VARIABLE NUMBER TANDEM REPEAT REGIONS

Jerome Buard, Paris; Dominique Gauguier, St. Mande, and Gilles Vergnaud, Paris, all of France, assignors to Etat Francais represente par le Deleque General pour L'Armement, Armees, France

Filed Oct. 31, 1994, Ser. No. 331,910
Claims priority, application France, Oct. 29, 1993, 93.12923
Int. Cl.[6] C07H *21/04;* **C12Q** *1/68;* **C12P** *19/34*
U.S. Cl. 435—6 **28 Claims**

1. A process of obtaining new probes for detecting new variable number tandem repeat regions in the genome of a given species, comprising:

(a) preparing a set of restriction fragments from genomic DNA of a first individual of said species, said set of restriction fragments being obtained by: enzymatic hydrolysis of a sample including at least a part of said genomic DNA of said individual with at least one restriction enzyme that cuts at an essentially constant distance from a site recognized by said enzyme; and separating restriction fragments thus obtained by size;

(b) repeating the steps of step (a) on additional samples of genomic DNA from said first individual to obtain a plurality of such restriction fragment sets;

(c) preparing probes by: enzymatic hydrolysis of DNA of a genome bank of said species with at least one restriction enzyme that cuts at an essentially constant distance from a site recognized by said enzyme; separating restriction fragments thus obtained by size; selecting fragments longer than 1.5 kb; and labeling said fragments, wherein said labeled fragments having the same size constitute a probe;

(d) placing each of the probes obtained in step (c) in contact, under hybridization conditions, with a set of restriction fragments obtained in step (a) or (b);

(e) selecting from the probes of step (d) at least one probe which, under hybridization conditions, is capable of hybridizing with restriction fragments of at least a given length from said set of restriction fragments in step (d); and

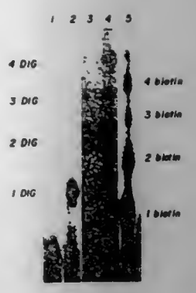
(f) selecting from the probes of step (e) at least one probe which, when hybridized with a set of DNA restriction fragments as obtained in step (a), does not give a hybridization profile identical to hybridization profiles obtained by hybridizing known VNTR-recognizing probes with an identical set of restriction fragments from the same individual, thus obtaining new probes for detecting new variable number tandem repeat regions in the genome of the species.

5,573,913
3'-RNA LABELLING WITH TERMINAL TRANSFERASE

Viola Rosemeyer, Riedvochel; Rudolf Seibl, Penzberg, and Andreas Laubrock, Kiel, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Feb. 28, 1995, Ser. No. 396,148
Claims priority, application Germany, Feb. 28, 1994, 44 06 524.8
Int. Cl.[6] C12Q *1/68;1/70;* **C12P** *19/34;* **C07H** *21/04*
U.S. Cl. 435—6 **43 Claims**

1. Process for introducing nucleotides which carry a non-radioactive marker group into nucleic acids, wherein



at least one non-radioactively labelled deoxynucleotide is attached by terminal deoxynucleotidyl transferase (EC 2.7.7.31) to the 3' end of a nucleic acid acceptor molecule with at least one 3'-terminal ribonucleotide.

5,573,914
DNA/RNA TARGET AND SIGNAL AMPLIFICATION

Jack D. Love, Rockville, Md., assignor to Gen Trak, Inc, Plymouth Meeting, Pa.

Continuation of Ser. No. 226,940, Apr. 13, 1994, abandoned, which is a continuation of Ser. No. 756,600, Sep. 10, 1991, abandoned. This application May 15, 1995, Ser. No. 441,678
Int. Cl.[6] C12Q *1/68;* **C12P** *19/34*
U.S. Cl. 435—6 **13 Claims**

1. A process for detecting the presence or absence of at least one specific nucleic acid in a sample containing a nucleic acid or mixture of nucleic acids, which process comprises:

(a) immobilizing said specific nucleic acid to be detected,

(b) treating the sample with a first oligonucleotide under hybridizing conditions such that a portion of said first oligonucleotide hybridizes to the 3' end of said specific nucleic acid to be detected and a portion of said first oligonucleotide does not hybridize to said specific nucleic acid to be detected, wherein said portion of said first oligonucleotide which does not hybridize to said specific nucleic acid to be detected forms a double-stranded RNA polymerase binding site and a nucleotide sequence transcribing RNA when hybridized to a complementary nucleotide sequence in the absence of nucleic acid extension,

(c) treating the sample to remove any of the first oligonucleotide which is not hybridized to said specific nucleic acid to be detected,

(d) treating the sample with a second oligonucleotide under hybridizing conditions such that said second oligonucleotide hybridizes to said portion of said first oligonucleotide which does not hybridize to said specific nucleic acid to be detected and forms a double-stranded RNA polymerase binding site and nucleotide sequence transcribing RNA,

(e) treating the sample with RNA polymerase and nucleotide triphosphates such that said nucleotide sequence formed between a portion of said first oligonucleotide and a portion of said second oligonucleotide results in the synthesis of RNA transcripts from the nucleotide sequence transcribing RNA wherein the sequence of the nucleic acid to be detected is not transcribed, and

(f) determining whether said RNA transcripts were synthesized.

5,573,915
DETERMINING THE ABILITY OF A COMPOUND TO INHIBIT THE CYCLPROPANTION OF MYCOLICACIDS IN PATHOGENIC MYCOBATERIA

Clifton Barry, III, Hamilton, and Ying Yuan, Missoula, both of Mont., assignors to United States of American, U.S. Army

Filed Jun. 1, 1995, Ser. No. 457,245
Int. Cl.[6] C12Q *1/68;* **C12N** *9/00*
U.S. Cl. 435—6 **4 Claims**

1. A method to determine the ability of a compound to inhibit the cyclopropanation of mycolic acids in pathogenic mycobacteria comprising the steps of:

(a) contacting said compound with a composition capable of producing cyclopropanated mycolic acids; and

(b) detecting changes in mycolic acid cyclopropanating enzyme (MACE) activity and thereby determining the ability of said compound to inhibit the cyclopropanation of mycolic acids in pathogenic myobacteria.

5,573,916
IMMUNOGENIC CONSTRUCTS COMPRISING B-CELL AND T-CELL EPITOPES ON COMMON CARRIER

John C. Cheronis, Lakewood, and Claire Coeshott, Denver, both of Colo., assignors to Coretech, Inc., Denver, Colo.

Filed May 19, 1994, Ser. No. 246,278
Int. Cl.[6] G01N *33/53;* **C07K** *1/00;* **A61K** *39/12;39/21*
U.S. Cl. 435—7.1 **10 Claims**

1. A construct capable of inducing IgG, IgA, or IgE antibodies to a B-cell epitope comprising:

a carrier having a molecular weight of at least about 100 KDa;

at least about 20 copies of said B-cell epitope attached to said carrier; and

at least one copy of a T-cell epitope, said T-cell epitope being separate and distinct from said B-cell epitope, attached to said carrier at a site distinct from the attachment site of said B-cell epitope.

5,573,917

Patent Not Issued For This Number

5,573,918
PROCESS AND REAGENT FOR SPECIFIC DETERMINATION OF PANCREATIC ALPHA AMYLASE

Helmut Lenz, Tutzing; Martin Gerber, Weilheim-Unterhausen, and Winfried Albert, Pähl, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Continuation of Ser. No. 657,607, Feb. 19, 1991, abandoned, which is a continuation of Ser. No. 556,871, Jul. 20, 1990, abandoned, which is a continuation of Ser. No. 886,240, Jul. 16, 1986, abandoned. This application Sep. 19, 1991, Ser. No. 762,646
Claims priority, application Germany, Jul. 19, 1985, 35 25 926.4
Int. Cl.[6] G01N *33/573;* **C07K** *16/40*
U.S. Cl. 435—7.4 **18 Claims**

1. Method for the specific determination of pancreatic alpha amylase in the presence of salivary alpha-amylase in a body fluid sample comprising reacting said body fluid sample with a system for the detection of alpha-amylase and a monoclonal antibody reagent which inhibits salivary alpha amylase, wherein said monoclonal antibody reagent comprises a first monoclonal antibody which specifically inhibits the salivary alpha amylase by more than 70% and less than 93% and a second monoclonal anti-salivary alpha amylase antibody which inhibits salivary alpha amylase by less than 10% so as to inhibit said salivary alpha amylase and

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determining a reaction between said system and said alpha amylase, wherein reaction therebetween is indicative of pancreatic alpha amylase and not salivary alpha amylase.

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ASSAY USING AN ABSORBENT MATERIAL

Kevin Kearns, Lawrenceville, and Richard McPartland, Belle Mead, both of N.J., assignors to Carter-Wallace, New York, N.Y.

Continuation of Ser. No. 610,012, Nov. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 253,554, Oct. 5, 1988, abandoned, which is a continuation-in-part of Ser. No. 201,584, Jun. 2, 1988, abandoned. This application May 24, 1993, Ser. No. 66,627

Int. Cl.[6] G01N *33/53;33/542*

U.S. Cl. 435—7.9 **7 Claims**

1. A device comprising:

a porous ceramic absorbent material, said porous ceramic absorbent material being microporous throughout and being free of macropores, and said porous ceramic absorbent material having a uniform porsity throughout said material to enable said material to retain non-charged particles having a size of at least 0.1 microo and no greater than 10 microns.

4. In an assay for an analyte wherein a sample containing analyte is applied to an absorbent material and an analyte is determined, the improvement comprising:

applying sample containing analyte to a surface of a porous ceramic absorbent material being microporous throughout and being free of macropores, and said porous ceramic absorbent material having a uniform porosity throughout said material to enable said material to retain non-charged particles having a size of at least 0.1 micron and no greater than 10 microns and determining analyte retained on said surface.

5,573,920

NOVEL ANTIBODIES, AND METHODS FOR THEIR USE

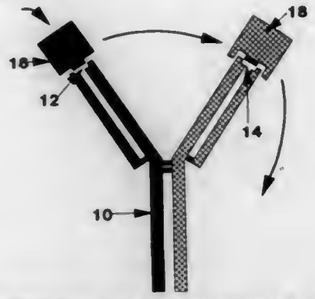
Beverley J. Randle, Bristol, England, assignor to Surface Active Limited, England

Filed Oct. 18, 1993, Ser. No. 133,079

Claims priority, application United Kingdom, Apr. 26, 1991, 9108954; Apr. 1, 1992, 9207192; WIPO, Apr. 24, 1992, PCT/GB92/00769

Int. Cl.[6] G01N *33/535;33/577*

U.S. Cl. 435—7.9 **30 Claims**



1. An immunoassay method for determining the presence or absence of a first antigen in a sample, the method comprising:

contacting the sample with at least one antibody arranged to provide a first and a second antigen binding site, said first antigen binding site being arranged to bind a first antigen and said second antigen binding site being arranged to bind a second antigen wherein binding of said first antigen to said first antigen binding site causes release of said second antigen bound to said second antigen binding site: and

measuring the amount of second antigen released.

5,573,921

IMMUNOCHEMICAL DISPLACEMENT FOR DETERMINING AN ANALYTE

Andreas Behnke, Bad Schwartau; Andreas Manns, Lübeck; Thomas Wuske, Malente, and Klaus P. Rindt, Lübeck, all of Germany, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Germany

Filed Aug. 25, 1993, Ser. No. 111,727

Claims priority, application Germany, Sep. 4, 1992, 42 29 591.2

Int. Cl.[6] G01N *33/543;33/558*

U.S. Cl. 435—7.92 **13 Claims**

1. An immunological process for determining a concentration of an analyte in a sample, the process comprising the steps of:

providing a test strip with an antibody which is specific to the analyte, said test strip being formed of porous material including a measurement area spaced from one end of said test strip, said antibody being bound and immobilized to said test strip in said measurement area, said antibody being bound to an analyte analog (tracer), said antibody having a higher affinity for the analyte than said analyte analog (tracer);

providing a test solution including the sample, said test solution including a reaction partner being an enzyme conjugate bindable to said analyte analog (tracer);

bringing said one end of the test strip into contact with said test solution to cause said test solution to move through said test strip and through said measurement area by capillary migration, said moving of said test solution through said measurement area causing any analytes present in the test solution to displace said analyte analog (tracer) from said measurement area;

removing said test strip from said test solution;

washing said test strip after said removing from said test solution to remove said displaced analyte analog (tracer);

bringing said test strip into contact with a developing solution for enzyme reactions, said developing solution including members of a signal-generating system able to generate a detectable signal as a variation in color of said measurement area as a function of a concentration of the analyte in the sample, said detectable signal being generated by an enzyme reaction between said developing solution and said analyte analog (tracer) remaining on said antibody in said measurement area with said reaction partner bound to said analyte analog (tracer);

comparing said detectable signal from said measurement area with a comparison standard relating different variations in colors of said detectable signal with a concentration of the analyte in the sample;

detecting which of said different colors of said comparison standard said detectable signal most closely matches in order to determine the concentration of the analyte. .

5,573,922

IMMUNOLOGICAL DETECTION METHOD FOR TRIAZINES

Eva Hoess, Starnberg; Erasmus Huber, Finning; Christine Markert-Hahn, Seeshaupt, and Wolfgang Rollinger, Polling, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Apr. 29, 1994, Ser. No. 235,393

Claims priority, application Germany, Apr. 29, 1993, 43 14 091.2

Int. Cl.[6] G01N *33/545*

U.S. Cl. 435—7.93 **12 Claims**

1. An immunological method for the determination of triazine atrazine, simazine, amedryne, propazine, terbutylazine, cyanazine, desethylterbutylazine, desethylatrazine or deisopropylatrazine by a competitive immunoassay, comprising the steps of:

reacting a sample and a labelled triazine with a polyclonal antibody,

binding said polyclonal antibody to a solid phase,

separating the solid phase and any unbound labelled triazine present in a liquid phase, and

determining any label present in the solid or liquid phase as a measure of the triazine, atrazine, simazine, amedryne, propazine, terbutylazine, cyanazine, desethylterbutylazine, desethylatrazine or deisopropylatrazine present in said sample,

wherein said polyclonal antibody is obtained by immunization of an immunologically competent animal with a 2-chloro-4-tert.butylamino-S-triazine bound to an immunogenic carrier via the 6 position, and wherein said labelled triazine is a conjugate comprising a label and 2-chloro-4-amino-S-triazine which is bound to the label via the 6 position.

5,573,923

METHOD FOR REMOVING N-TERMINAL DIPEPTIDES FROM PRECURSOR POLYPEPTIDES WITH IMMOBILIZED DIPEPTIDYLAMINOPEPTIDASE FROM DICTYOSTELIUM DISCOIDEUM

Paul R. Atkinson, Indianapolis, and Lisa K. Foster, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 22, 1993, Ser. No. 172,501

Int. Cl.[6] C12P *21/06;* **C12N** *9/48;9/58*

U.S. Cl. 435—68.1 **20 Claims**

1. A method for removing an amino-terminal dipeptide from a precursor polypeptide to produce a polypeptide product, which precursor polypeptide comprises a dipeptide extended from a peptide bond, which is to be, after removal of said dipeptide, an amino terminus of said polypeptide product, said method comprising:

a) immobilizing onto a suitable support surface an approximately 225 kilodalton dipeptidylaminopeptidase (dDAP) which is isolated from *Dictyostelium discoideum* and has a pH optimum of approximately 3.5;

b) contacting said precursor polypeptide with said immobilized dDAP under conditions sufficient to allow the action of said immobilized dDAP to remove said amino-terminal dipeptide from said precursor polypeptide to produce said polypeptide product; and

c) recovering the polypeptide product.

5,573,924

CD27 LIGAND

M. Patricia Beckmann, Poulsbo; Raymond G. Goodwin; Judith G. Giri, both of Seattle, and Richard J. Armitage, Bainbridge Island, all of Wash., assignors to Immunex Corporation, Seattle, Wash.

Continuation-in-part of Ser. No. 941,648, Sep. 8, 1992, abandoned. This application Aug. 13, 1993, Ser. No. 106,507

Int. Cl.[6] C12N *15/19;* **C07K** *14/52*

U.S. Cl. 435—69.5 **12 Claims**

1. An isolated DNA sequence encoding a non-antibody CD27L polypeptide stimulates T cell proliferation and T cell lytic activity, wherein the DNA sequence is selected from the group consisting of:

(a) cDNA obtained from the coding region of the sequence shown in Sequence I.D. No. 1; and

(b) DNA sequences that are degenerate as a result of the genetic code to a DNA sequence of (a).

5,573,925

P53 PROTEINS WITH ALTERED TETRAMERIZATION DOMAINS

Thanos D. Halazonetis, Philadelphia, Pa., assignor to The Wistar Institute of Anatomy and Biology, Phildelphia, Pa.

Filed Nov. 28, 1994, Ser. No. 347,792

Int. Cl.[6] A61K *31/70;* **C07H** *21/04;* **C12P** *21/04;* **C07K** *19/00*

U.S. Cl. 435—69.7 **15 Claims**

1. A nucleotide sequence encoding a modified p53 protein, said modified p53 protein comprising:

a p53 sequence consisting of amino acid residues 1 to between about 290 to about 334 of human p53 and a heterologous tetramerization domain consisting of a modified leucine zipper sequence containing isoleucines and positions d of the coiled coil and leucines at positions a,

said modifications providing said protein with the inability to hetero-oligomerize with wild-type p53 or tumor-derived mutant p53 proteins, and said modifications not interfering with the native tumor-suppression function of the protein or with its ability to form tetramers.

5,573,926

PROCESS FOR OBTAINING AROMA COMPONENTS AND AROMAS FROM THEIR PRECURSORS OF A GLYCOSIDIC NATURE, AND AROMA COMPONENTS AND AROMAS THEREBY OBTAINED

Ziya Gunata; Sylvaine Bitteur, both of Montpellier; Raymond Baumes, St. Gely du Fesc; Jean-Marc Brillouet, Montpellier; Claude Tapiero, Montpellier; Claude Bayonove, Montpellier, and Robert Cordonnier, Montpellier, all of France, assignors to Gist-brocades, N.V., Netherlands, and Institute National de la Recherche Agronomique, France

Continuation of Ser. No. 681,520, Jul. 5, 1991, abandoned. This application Jul. 18, 1994, Ser. No. 276,779

Claims priority, application European Pat. Off., Sep. 7, 1989, 89202271

Int. Cl.[6] C12P *19/44*

U.S. Cl. 435—74 **19 Claims**

1. A method for obtaining aroma components and aromas from their glycosidic precursors said method comprising:

hydrolyzing a glycosidic substrate comprising a β-apioside glycosidic precursor with a first enzyme composition comprising a β-apiosidase capable of cleaving a 1,6-glycosidic bond of said β-apioside glycosidic precursor, whereby at least one monoglycoside product is obtained; and

hydrolyzing said monoglycoside product with a second enzyme composition comprising at least one enzyme capable of cleaving an aglycone-carbohydrate linkage bond, whereby said aroma components and aromas are obtained.

5,573,927

ANTIBIOTIC SUSCEPTIBILITY TEST

Wilfred H. Nelson, 166 Little Rest Rd., Kingston, R.I. 02881

Filed Nov. 18, 1992, Ser. No. 977,670

Int. Cl.[6] C12Q *1/18;* **C12N** *13/00;* **G01J** *3/00*

U.S. Cl. 435—32 **2 Claims**

1. A method for determining the effectiveness of an antibiotic against a bacteria which comprises:

displaying Raman spectra of a first set of target cells of an initially cultured bacteria *E. coli;*

culturing said target cells of a second set in a growth medium free of antibiotic;

displaying the Raman spectra of the cells of the second set prior to mitosis;

culturing said target cells of a third set in a growth medium containing an antibiotic of interest;

displaying the Raman spectra of the target cells of the third set prior to mitosis; and

displaying ribosome peaks and comparing the ribosome peaks of the spectra of the second and third sets.

5,573,928
PORCINE VASOACTIVE INTESTINAL PEPTIDE RECEPTOR AND DNA

Hansen M. Hsiung, Carmel; Dennis P. Smith, and Xing-Yue Zhang, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 25, 1993, Ser. No. 112,817
Int. Cl.[6] C07K *14/705;* **C12N** *15/12;15/62*
U.S. Cl. 435—69.1 **9 Claims**

2. An isolated DNA encoding the pVIP Receptor of Sequence ID#2.

5,573,929
SECRETION VECTOR FOR HIRUDIN OR HIRUDIN ANALOG PRODUCTION

Satoru Misawa; Hitoshi Matsuda; Yoshifumi Inoue, and Hideyuki Furuya, all of Toda, Japan, assignors to Japan Energy Corporation, Tokyo, Japan

Division of Ser. No. 910,528, Jul. 8, 1992. This application Nov. 28, 1994, Ser. No. 348,972
Claims priority, application Japan, Nov. 8, 1990, 2-303096; Feb. 13, 1991, 3-041271
Int. Cl.[6] C12P *21/06;* **C12N** *15/63;1/20*
U.S. Cl. 435—69.1 **15 Claims**

1. An expression vector for making secreted hirudin or hirudin analog, comprising a DNA sequence comprising a replication origin of a pUC plasmid, a tac or a trp promoter, a DNA sequence encoding a signal peptide, and a DNA sequence encoding said hirudin or a hirudin analog which is a polypeptide exhibiting thrombin inhibiting activity, having a spherical structured N-terminal region with three disulfide bonds and an acidic C-terminal region abundant in acidic amino acid residues downstream from said DNA sequence encoding said signal peptide, all linked in an operable manner.

5,573,930
DNA ENCODING VARIOUS FORMS OF COLONY STIMULATING FACTOR-1

Martha B. Ladner, Oakland; Janelle A. Noble; George A. Martin, both of Berkeley, all of Calif.; Ernest S. Kawasaki, Waltham, Mass.; Mazie Y. Coyne, Danville, Calif.; Robert F. Halenbeck, San Rafael, Calif., and Kirston E. Koths, El Cerrito, Calif., assignors to Cetus Oncology Corporation, Emeryville, Calif.

Continuation-in-part of Ser. No. 799,039, Nov. 27, 1991, abandoned, and Ser. No. 799,411, Nov. 27, 1991, abandoned, each which is a continuation of Ser. No. 39,657, Apr. 16, 1987, abandoned, and Ser. No. 105,261, Oct. 13, 1987, abandoned, each which is a continuation-in-part of Ser. No. 923,067, Oct. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 876,819, Jun. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 821,068, Jan. 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 756,814, Jul. 18, 1985, abandoned, which is a continuation-in-part of Ser. No. 744,924, Jun. 14, 1985, abandoned, which is a continuation-in-part of Ser. No. 728,834, Apr. 30, 1985, abandoned, which is a continuation-in-part of Ser. No. 698,359, Feb. 5, 1985, abandoned, said Ser. No. 105,261is a continuation-in-part of Ser. No. 39,654, Apr. 16, 1987, abandoned. This application Dec. 28, 1992, Ser. No. 999,298
Int. Cl.[6] C07K *14/53;* **C12N** *1/21;15/27*
U.S. Cl. 435—69.5 **17 Claims**

1. An isolated DNA that encodes a human NV3 CSF-1 polypeptide, said polypeptide consisting of amino acids 4–522 of the sequence shown in (SEQ ID NO: 2).

5. An isolated DNA in accordance with (SEQ ID NO: 1), said DNA encoding for an NV3 mutein of a CSF-1 in accordance with (SEQ ID NO: 2) with the provisos that the codons that encode the amino acid residue of position 59 of (SEQ ID NO: 2) encode Tyr or Asp, and that the codons that encode the amino acid residue of position 52 of (SEQ ID NO: 2) encode Gln.

5,573,931
METHOD FOR MAKING SUCCINIC ACID, BACTERIAL VARIANTS FOR USE IN THE PROCESS, AND METHODS FOR OBTAINING VARIANTS

Michael V. Guettler, Holt; Mahendra K. Jain, Okemos, and Denise Rumler, Leslie, all of Mich., assignors to Michigan Biotechnology Institute, Lansing, Mich.

Filed Aug. 28, 1995, Ser. No. 520,348
Int. Cl.[6] C12P *7/46;1/04*
U.S. Cl. 435—145 **6 Claims**

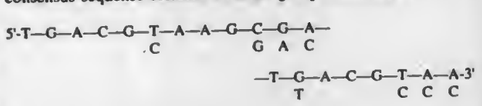
1. In the method of preparing succinic acid by the fermentation of a nutrient medium containing fermentable carbon with a microorganism, the improvement which comprises employing as the microorganism a mutant of strain 130Z (ATCC No. 55618) which produces succinic acid in concentrations of about 80 g/l to about 110 g/l and which is resistant to levels of sodium monofluoroacetate of about 1 g/l to about 8 g/l.

5,573,932
OCS ELEMENT

Jeff G. Ellis, Macquarie; Daniel J. Llewellyn, O'Connor; W. James Peacock, Deakin; Elizabeth Dennis, Yarralumla, all of Australia, and David Bouchez, Versaille, France, assignors to Mycogen Plant Scieoces, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 11,614, Feb. 6, 1987, abandoned. This application May 18, 1990, Ser. No. 525,897
Int. Cl.[6] C12N *15/29;15/32;15/82;15/84*
U.S. Cl. 435—172.3 **17 Claims**

1. A recombinant DNA molecule comprising a DNA fragment which fragment is a plant enhancer element capable of being bound by an OCS transcription factor and displaying the upper band binding pattern characteristic of the wild-type ocs enhancer in gel retardation assays, said fragment consisting essentially of a consensus sequence selected from the group consisting of



and its reverse sequence, in combination with

(a) a plant-expressible promoter heterologous to said plant enhancer element wherein said promoter is placed 3' to said enhancer element, and

(b) a plant-expressible structural gene wherein said gene is placed 3' to said promoter and under the regulatory control of said enhancer element and said plant-expressible promoter.

10. A method for enhancing expression of a plant-expressible structural gene in a transformable plant cell, said method comprising inserting a DNA fragment which is a plant enhancer element of claim 1 into the genome of said plant cell such that said plant expressible structural gene is under regulatory control in said plant cell of said plant enhancer element and a promoter heterologous to said enhancer element.

5,573,933
TRANSGENIC PIGS

Robert F. Seamark, and Julian R. E. Wells, both of Adelaide , Australia, assignors to Luminis Pty, Ltd., Australia

Continuation of Ser. No. 808,194, Dec. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 294,562, Dec. 14, 1988, abandoned. This application Apr. 12, 1994, Ser. No. 226,408
Claims priority, application Australia, Apr. 14, 1987, PI1427; Nov. 10, 1987, PI5326
Int. Cl.[6] C12N *15/00*
U.S. Cl. 435—172.3 **14 Claims**

1. A method for preparing a transgenic pig which overexpresses porcine growth hormone transgenic pigs, said method comprising the steps of:

(a) obtaining a recently fertilized pig ovum;

(b) isolating a first DNA sequence encoding a human metallothionine IIA promoter;

(c) inserting the first DNA sequence into a plasmid cloning vector;

(d) isolating a second DNA sequence encoding porcine growth hormone, said second DNA sequence being an EcoRI fragment of approximately 814 base pairs;

(e) inserting the second DNA sequence into the plasmid cloning vector at suitable site such that the first DNA sequence can act as a promoter for expression of the second DNA sequence upon transgenesis;

(f) isolating a third DNA sequence including the 3' end of the porcine growth hormone gene, said DNA sequence including a SmaI/BamHI fragment of approximately 1000 base pairs;

(g) modifying the 3' end of the third DNA sequence by treatment with Bal31 to delete regions identified as repeated sequences;

(h) inserting the modified third DNA sequence into a SmaI site in the second DNA sequence to generate a plasmid expression vector;

(i) introducing the plasmid expression vector or a linerized insert therefrom comprising the first, second and third DNA sequences into the male pronucleus of said fertilized pig ovum prior to fusion with the female nucleus to form a single cell embryo; and,

(j) subsequently implanting the ovum into a female pig and allowing the embryo, resulting from introduction of the plasmid cloning vector into the ovum, to develop to maturity.

5,573,934
GELS FOR ENCAPSULATION OF BIOLOGICAL MATERIALS

Jeffrey A. Hubbell, Austin, Tex.; Chandrashekhar P. Pathak, Waltham; Amarpreet S. Sawhney, Newton, both of Mass.; Neil P. Desai, Los Angeles, Calif.; Jennifer L. Hill-West, and Syed F. A. Hossainy, both of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 958,870, Oct. 7, 1992, Pat. No. 5,529,914, which is a continuation-in-part of Ser. No. 870,540, Apr. 20, 1992, abandoned. This application Mar. 1, 1993, Ser. No. 24,657
Int. Cl.[6] C12N *11/02;11/04;5/06;11/08*
U.S. Cl. 435—177 **16 Claims**

1. A method for encapsulating, sealing, coating or supporting a biological material comprising:

a) contacting a solution of a non-toxic free radical polymerization initiator selected from the group consisting of visible or long wavelength ultraviolet light-activatable free radical initiators, thermal activatable free-radical initiators with a biological material selected from the group consisting of mammalian cells, components of mammalian cells, aggregates of mammalian cells, and mammalian tissues, to allow binding of the initiator to the biological material;

b) removing the unbound initiator;

c) adding to the biological material a water soluble biocompatible macromer comprising at least two free radical polymerizable end groups, wherein the macromer is non-toxic and has a molecular weight of at least 400, and

d) exposing the mixture to an agent activating the initator to cause polymerization of the macromers to form a polymeric gel with a degree of polymerization greater than 10.

5,573,935
PROTEIN TYROSINE KINASE A6

John F. Beeler, Bethesda; William Larochelle, Gaithersburg, both of Md., and Stuart A. Aaronson, Great Falls, Va., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jan. 18, 1994, Ser. No. 184,252
Int. Cl.[6] C12N *9/12;15/54;15/70;15/74*
U.S. Cl. 435—194 **10 Claims**

1. An isolated polynucleotide encoding the human A6 protein tyrosine kinase.

9. Isolated human A6 protein tyrosine kinase having a molecular weight of about 40,000 daltons.

5,573,936
PROCESS FOR PURIFYING ECHINOCANDIN B DEACYLASE

Adam J. Kreuzman, Indianapolis, and Wu-Kuang Yeh, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 534,394, Jun. 7, 1990. This application May 18, 1995, Ser. No. 444,126
Int. Cl.[6] C12N *9/16*
U.S. Cl. 435—196 **1 Claim**

1. A process for preparing purified Echinocandin B deacylase, an enzyme that is a heterodimer of approximately 81-kilodaltons molecular weight; whose approximately 63-kilodalton subunit has the amino-terminal sequence: Ser-Asn-Ala-Tyr-Gly-Leu-Gly-Ala-Gln-Ala-Thr-Val-Asn-Gly-Ser-Gly-Met-Val-Leu-Ala-Asn-Pro-His-Phe-Pro; whose approximately 18-kilodalton subunit has the amino-terminal sequence: His-Asp-Gly-Gly-Tyr-Ala-Ala-Leu-Ile-Arg-Arg-Ala-Ser-Tyr-Gly-Val: and whose optimal catalytic activity for deacylation of echinochandin B is at about pH 6, at 60° C.; which comprises the steps;

(a) solubilizing the enzyme from *Actinoplanes utahensis* cells to produce a soluble extract;

(b) heating the soluble extract of step (a), buffered at about pH 6, for about one hour at a temperature of about 60° C.; and removing precipitate;

(c) adding to the heat-treated extract of step (b) $(NH_4)_2SO_4$ to a final concentration of about 14% (weight/volume) and KCl to a final concentration of about 1.2M KCl;

(d) loading the solution of step (c) onto a hydrophobic interaction chromatography resin equilibrated with pH 6 buffer containing about 14% (weight/volume) $(NH_4)_2SO_4$ and 1.2M KCl, and eluting bound ECB deacylase activity with a simultaneous linear gradient of KCl from 1.2 to 0.1M and $(NH_4)_2SO_4$ from 14 to 0% in pH 6 buffer, to produce a hydrophobic interaction eluate;

(e) adding to the hydrophobic interaction eluate of step (d) $(NH_4)_2SO_4$ to a concentration of about 10% of saturation, removing precipitate, adding $(NH_4)_2SO_4$ to a final concentration of about 36% of saturation, and recovering the precipitate to produce a 10–36% $(NH_4)_2SO_4$ precipitate;

(f) dissolving the 10–36% $(NH_4)_2SO_4$ precipitate of step (e) in pH 6 buffer containing 0.8M KCl, gel filtering the dissolved 10–36% $(NH_4)_2SO_4$ precipitate using a gel chromatography resin equilibrated with pH 6 buffer containing 0.8M KCl, and combining eluate containing deacylase activity;

(g) chromatographing the eluate of step (f) on cation-exchange chromatography resin equilibrated in pH 5.6 buffer containing 0.05M KCl, eluting a first and a second peak of deacylase activity from said cation-exchange chromatography resin

using a linear gradient of KCl from 0.05M to 0.5M in pH 5.6 buffer, and combining cation-exchange chromatography eluate from the first peak containing deacylase activity;

(h) adjusting the KCl concentration of the combined elute of step (g) to about 0.05M, loading the combined eluate onto a dye-ligand chromatography resin, wherein the dye-ligand is Procion Red, equilibrated in pH 6 buffer containing 0.05M KCl, eluting said dye-ligand chromatography resin using a step-wise gradient of KCl from 0.05M to 2M to 3.3M, and combining eluate containing deacylase activity;

(i) gel filtering the dye-ligand chromatography eluate of step (h) using a gel chromatography resin equilibrated with pH 6 buffer containing 0.2M KCl;

(j) adjusting the KCl concentration of the gel filtration eluate of step (i) to about 0.04M KCl and about pH 7, chromatographing the gel filtration eluate using a cation-exchange chromatography resin equilibrated in pH 7 buffer containing 0.04M KCl, and eluting with successive steps of KCl concentration of 0.04M, 0.5M, and 2M; and

(k) recovering purified Echinocandin B deacylase by combining eluate from the cation-exchange chromatography resin of step (j) containing deacylase activity.

5,573,937

SERUM FREE CULTURE MEDIUM

Hiroshi Shinmoto, and Shun-ichi Dousako, both of Saitama-ken, Japan, assignors to Snow Brand Milk Products Co., Ltd., Hokkaido, Japan

Continuation of Ser. No. 759,424, Sep. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 616,903, Nov. 21, 1990, abandoned. This application Jan. 9, 1995, Ser. No. 370,218

Claims priority, application Japan, Dec. 7, 1989, 1-318439

Int. Cl.[6] C12N *5/12;5/02;5/00*

U.S. Cl. 435—240.1 **8 Claims**

1. A serum free basal synthetic culture medium solely for culturing hybridoma HB-8852, said medium consisting essentially of a mixture of ethanolamine, sodium selenite, RPMI 1640, Dulbecco's Modified Minimum Essential Medium and Ham's F12 (ES-ERDF), and containing at least one inorganic iron compound selected from the group consisting of ferrous sulfate, ferric nitrate and ferrous chloride, and wherein the concentration of the inorganic iron compound is about 80 μM of said basal synthetic culture medium.

5,573,938

MODIFIED TRANSCRIPTION CONTROL UNIT AND USES THEREOF

David T. Berg, Beech Grove, and Brian W. Grinnell, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 484,082, Feb. 23, 1990, abandoned. This application Dec. 1, 1993, Ser. No. 160,450

Int. Cl.[6] C12N *15/09;5/10*

U.S. Cl. 435—240.2 **16 Claims**

1. A recombinant DNA vector that comprises a modified transcription control unit, said modified transcription control unit comprising the sequence:

AAGCTTTTCT CATTAAGGGA AGATTTCCCC AGGCAGCTCT TTCAAGGGAT CCTCGAGAAT TCACACACAC ACACACACAC ACACACACAC ACACACACAC ACACTCGAGG ATCCCTAAAA GGTCCATGAG CTCCATGGAT TCTTCCCTGT TAAGAACTTT ATCCATTTTT GCAAAAATTG CAAAAGAATA GGGATTTCCC CAAATAGTTT TGCTAGGCCT CAGAAAAAGC CTCCACACCC TTACTACTTG AGAGAAAGGG TGGAGGCAGA GGCGGCCTCG GCCTCTTATA TATTATAAAA AAAAAGGCCA CAGGGAGGAG CTGCTTACCC ATGGAATGCA GCCAAACCAT GACCTCAGGA AGGAAAGTGC ATGACTGGGC AGCCAGCCAG TGGCAGTTAA TAAGCAGCCA GACAGACATT TGCTTACCCA TGGAATGCAG CCAAACCATG ACCTCAGGAA GGAAAGTGCA TGACTGGGCA GCCAGCCAGT GGCAGTTAAT AAGCAGCAGC CAGACAGACA TGTTTTGCGA GCCTAGTCGC CCTCTTCGGC ATCAAGGAAG GTGATTGGTT TATAGGTGTA GGCCACGTGA CCGGGTGTTC CTGAAGGGGG GCTATAAAAG GGGGTGGGGG CGCGTTCGTC CTCACTCTCT TCCGCATCGC TGTCTGCGAG GGCCAGCTGT TGGGCTCGCG GTTGAGGACA AACTCTTCGC GGTCTTTCCA GTACTCTTGG ATCGGAAACC CGTCGGCCTC CGAACGTACT CCGCCACCGA GGGACCTGAG CGAGTCCGCA TCGACCGGAT CGGAAAACCT CTCGAGAAAG GCGTCTAACC AGTCACAGTC GCAAGCTT.

5,573,939

DNA ENCODING MAMMALIAN RETINOL BINDING PROTEIN RECEPTOR, AND CORRESPONDING VECTORS AND TRANSFORMED CELLS

Claes O. Båvike, and Ulf Eriksson, both of Stockholm, Sweden, assignors to Ludwig Institute For Cancer Research, New York, N.Y.

Continuation of Ser. No. 883,539, May 15, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 200,807

Int. Cl.[6] C12N *15/12;15/63;5/10*

U.S. Cl. 435—240.2 **10 Claims**

1. Isolated nucleic acid molecule, the complementary sequence of which hybridizes to the nucleotide sequence set forth in SEQ ID NO: 1. under stringent conditions, wherein said isolated nucleic acid molecule codes for a mammalian retinol binding protein receptor which has a molecular weight of about 63 kilodaltons as determined by SDS-PAGE, wherein the mammalian retinol binding protein receptor binds to retinol binding protein, and said mammalian, retinol binding protein receptor is isolatable from mammalian retina.

5,573,940

CELLS EXPRESSING HIGH LEVELS OF CD59

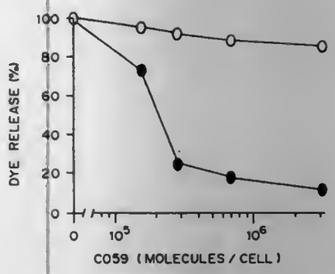
Peter J. Sims, Mequon, Wis., and Alfred L. M. Bothwell, Guilford, Conn., assignors to Oklahoma Medical Research Foundation, Oklahoma City, Okla., and Yale University, New Haven, Conn.

Continuation of Ser. No. 729,926, Jul. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 365,199, Jun. 12, 1989, Pat. No. 5,135,916. This application Jul. 7, 1994, Ser. No. 271,562

Int. Cl.[6] C12N *5/10*

U.S. Cl. 435—240.2 **6 Claims**

1. A non-primate mammalian cell expressing greater than 1×10^3 CD59 molecules or greater than one CD59 molecules per square micron on its surface in an amount effective to inhibit human complement mediated cytolysis, said cell having stably incorporated a gene encoding human CD59, wherein the CD59 molecule comprises an amino acid sequence that consists of amino acid residue member 1 to residue number 77 SEQ. ID. No. 1.



5,573,941

CALLUS FORMATION VANILLA PLANIFOLIA

Gayle Davidonis, Metairie, La.; Dietrich W. Knorr, Newark, and Lynn G. Romagnoli, Greenville, both of Del., assignors to University of Delaware, Newark, Del.

Continuation of Ser. No. 745,783, Aug. 16, 1991, abandoned, which is a continuation of Ser. No. 353,282, May 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 169,639, Mar. 17, 1988, abandoned, which is a continuation-in-part of Ser. No. 169,641, Mar. 17, 1988, abandoned. This application Oct. 14, 1993, Ser. No. 136,091

Int. Cl.[6] C12N *5/04;* **A01H** *4/00;* **C12P** *1/00*

U.S. Cl. 435—240.4 **11 Claims**

1. The process of increasing the quantity of vanillin produced by *Vanilla plainifolia* callus derived from shoot tissue which comprises supplying to the same a ferulic acid solution having a concentration of about 1 mM of ferulic acid.

5,573,942

METHOD FOR ARRANGING CELLS IN A CULTURE MEDIUM

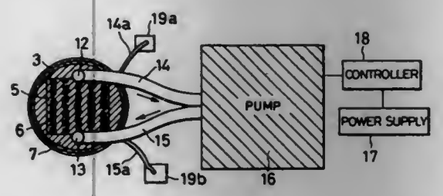
Shigeyuki Miyamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 318,086, Oct. 5, 1994. This application May 5, 1995, Ser. No. 435,788

Claims priority, application Japan, Oct. 6, 1993, 5-250250

Int. Cl.[6] C12N *5/00*

U.S. Cl. 435—240.243 **2 Claims**



1. A method for arranging cells using a substrate having first and second patterns on a surface thereof, said first pattern being more adhesive for said cells than said second pattern, said method comprising the step of shaking or circulating liquid culture medium in a container within all or a part of a period of time for incubating cells, to attach said cells to said first pattern and prevent said cells from attaching to said second pattern.

5,573,943

CLONING AND EXPRESSION OF A RHOPTRY ASSOCIATED PROTEIN OF P. FALCIPARUM

Allan J. Saul, The Gap; Juän A. Cooper, Alderly, and David Owen, Lane Cove, all of Australia, assignors to Saramane Pty. Ltd., Victoria, Australia

PCT No. PCT/AU91/00338, § 371 Date Apr. 1, 1993, § 102(e) Date Apr. 1, 1993, PCT Pub. No. WO92/02623, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 1, 1991, Ser. No. 971,759

Claims priority, application Australia, Aug. 2, 1990, PK1525/90

Int. Cl.[6] C12N *1/21;* **C07H** *21/04;* **C07K** *14/445*

U.S. Cl. 435—252.3 **8 Claims**

1. A recombinant DNA molecule comprising the nucleotide sequence of SEQ ID NO:19, or a fragment of said nucleotide sequence encoding an antigenic fragment of the *Plasmodium falciparum* 42 kDa rhoptry-associated protein (RAP-2).

5,573,944

YEAST CELL EXPRESSING HETEROLOGUS RECEPTOR KINASE

Marc W. Kirschner, Newton, and Noriyuki Kinoshita, Boston, both of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Jul. 22, 1994, Ser. No. 279,217

Int. Cl.[6] C12N *1/19;15/81*

U.S. Cl. 435—252.3 **34 Claims**

1. A yeast cell containing an expressible copy of a gene encoding a heterologous transmembrane receptor, the intracellular domain of the heterologous transmembrane receptor exhibiting tyrosine kinase activity in response to ligand binding.

5,573,945

MUTANT AND METHOD FOR PRODUCING L-GLUTAMIC ACID BY FERMENTATION

Eiji Ono; Nobuharu Tsujimoto; Kazuhiko Matsui, and Osamu Kurahashi, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Jan. 9, 1995, Ser. No. 370,193

Claims priority, application Japan, Jan. 10, 1994, 6-000825

Int. Cl.[6] C12N *1/21;15/67;15/70;* **C12P** *13/14*

U.S. Cl. 435—252.33 **6 Claims**

1. A mutant of the genus Escherichia which produces L-glutamic acid, the α-ketoglutarate dehydrogenase activity of which is deficient or reduced, and the phosphoenol pyruvate carboxylase and glutamate dehydrogenase activities of which are amplified.

5,573,946

BIOLOGICALLY PURE CULTURE OF *STREPTOMYCES HYGROSCOPICUS* ATCC 53718 CAPABLE OF PRODUCING ANTIBIOTIC COMPOUNDS

Mark A. Haxell, Broadstairs; David A. Perry, Sandwich, both of England; Hiroshi Maeda, Aichi, and Junsuke Tone, Chita, both of Japan, assignors to Pfizer Inc., New York, N.Y.

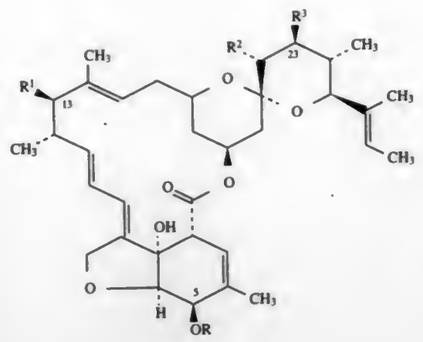
Division of Ser. No. 378,997, Jan. 27, 1995, Pat. No. 5,510,372, which is a continuation of Ser. No. 703,578, May 20, 1991, abandoned, which is a continuation of Ser. No. 314,734, Feb. 23, 1989, abandoned. This application Nov. 7, 1995, Ser. No. 553,129

Claims priority, application United Kingdom, Feb. 25, 1988, 8804440

Int. Cl.[6] A01N *63/00;* **C12N** *1/00;1/20;* **C12P** *1/06*

U.S. Cl. 435—253.5 **2 Claims**

1. A biologically pure culture of *Streptomyces hygroscopicus* having all of the identifying characteristics of ATCC 53718 or a mutant thereof capable of producing a compound of the formula



wherein R is H;
R^1 is H or $OCOCH(CH_3)_2$;
R^2 is OH; and
R^3 is H or $OCOCH(CH_3)_2$; and R^1 and R^3 may not both be H, upon cultivation in an aqueous nutrient medium containing assimilable sources of carbon, nitrogen and inorganic salts.

5,573,947

SELECTIVE MEDIUM CONTAINING LITHIUM AND A POLYOL OR ANTIBIOTIC FOR COUNTING PROPIONIC BACTERIA

Marie-Noëlle Madec; Annette Rouault, both of Rennes; Jean-Louis Maubois, Pace, and Anne Thierry, Romille, all of France, assignors to Institut National de la Recherche Agronomique, Paris, France

PCT No. PCT/FR94/00082, § 371 Date Sep. 22, 1994, § 102(e) Date Sep. 22, 1994, PCT Pub. No. WO94/17201, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 24, 1994, Ser. No. 302,930
Claims priority, application France, Jan. 27, 1993, 93 00823
Int. Cl.[6] C12N *1/00;1/20*
U.S. Cl. 435—253.6 **18 Claims**

1. A composition useful for counting propionic bacteria under anaerobic conditions and which composition comprises a complex medium for culturing said propionic bacteria supplemented with a) at least one lithium compound and b) at least one polyol or antibiotic selected from antibiotics to which the propionic bacteria are resistant.

5,573,948

METHOD AND PLANT FOR PROCESSING OF POTATOES AND USE OF A POTATO PROCESSING PLANT

Hans S. Olsen, and Erik C. Wormslev, both of Holte, Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK93/00029, § 371 Date Jul. 7, 1994, § 102(e) Date Jul. 7, 1994, PCT Pub. No. WO93/16109, PCT Pub. Date Aug. 19, 1993
PCT Filed Jan. 28, 1993, Ser. No. 256,327
Claims priority, application Denmark, Feb. 6, 1992, 0140/92
Int. Cl.[6] C12S *3/18;3/14;3/12*
U.S. Cl. 435—271 **8 Claims**

1. A method for processing potatoes to obtain potato starch and potato fodder protein comprising processing said potatoes in a potato processing plant to produce potato starch and potato fodder protein wherein said potato processing plant comprises heating equipment to heat said potatoes and in which said heating equipment can also be used for processing rape, at least one enzyme reactor to enzymatically treat said heated potatoes and in which said enzyme reactor can also be used for processing rape, and an oil separator for processing rape.

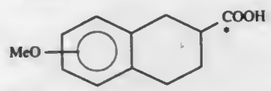
5,573,949

ENZYMATIC PROCESS FOR THE PREPARATION OF OPTICALLY ACTIVE TETRAHYDRO-2-NAPHTHOIC ACIDS

Roberto Cecchi; Laura Barzaghi, and Umberto Guzzi, all of Milan, Italy, assignors to Sanofi, Paris, France

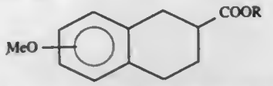
Filed Apr. 20, 1995, Ser. No. 425,743
Claims priority, application European Pat. Off., Apr. 21, 1994, 94400863
Int. Cl.[6] C12P *41/00*
U.S. Cl. 435—280 **8 Claims**

1. A process for the preparation of compounds of formula (I) in optically active form:



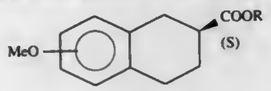
(I)

which comprises the steps of
(a) hydrolyzing a racemic ester of formula:



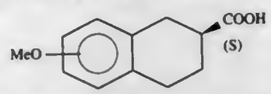
(II)

in which R is a C_1–C_3-alkyl, with porcine pancreatic lipase; then
(b) when about 50% of the ester has been hydrolyzed to an acid, interrupting the hydrolysis by inactivation of the lipase and recovering unreacted ester of (S) configuration of formula:



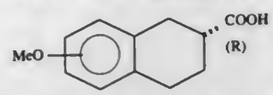
(II')

and finally
(c) either hydrolyzing said ester of formula (II') and isolating an acid of (S) configuration of formula:



(I')

or isolating an acid of (R) configuration of formula:



(I")

as obtained from the lipase hydrolysis reaction after interruption of the hydrolysis in step (b).

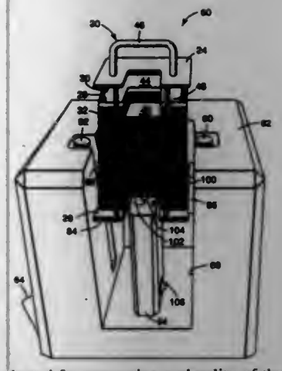
5,573,950

CASSETTE FOR DISPOSABLE MICROORGANISM CULTURING MEDIA AND AUTOMATED SCANNING SYSTEM

Josef A. Graessle, Kaarst; Werner R. Schwarz, Leverkusen, and Theo N. Wildt, Titz, all of Germany, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 11, 1994, Ser. No. 240,846
Int. Cl.[6] C12M *1/34*
U.S. Cl. 435—287.3 **11 Claims**

1. An apparatus for detecting microorganism colonies on at least one disposable microorganism culturing medium having a substantially planar substrate, said apparatus comprising:



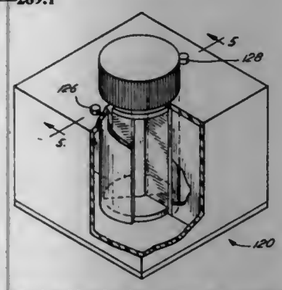
a cassette adapted for supporting a plurality of the substantially planar substrates, the cassette comprising
(a) an enclosure having two ends;
(b) a plurality of plates, disposed within but not rigidly affixed to said enclosure;
(c) means for retaining said plates within said enclosure; and
(d) means for supporting said plates at least a minimum distance from each other;
imaging means for detecting colonies on the substantially planar substrate;
cassette positioning means for moving said cassette so that the substantially planar substrates supported within said cassette are moved sequentially into a predetermined position relative to said imaging means; and
ejecting means for ejecting a substantially planar substrate in said predetermined position from said cassette and into an imaging position adjacent said imaging means.

5,573,951

DUAL CHAMBER BLOOD CULTURE BOTTLE WITH ROTATING INLET VALVE ASSEMBLY

Peter P. Gombrich, Chicago; Richard A. Domanik, Libertyville, and William J. Mayer, South Barrington, all of Ill., assignors to AccuMed, Inc., Chicago, Ill.

Filed Jun. 7, 1995, Ser. No. 475,380
Int. Cl.[6] C12M *1/36*
U.S. Cl. 435—289.1 **4 Claims**



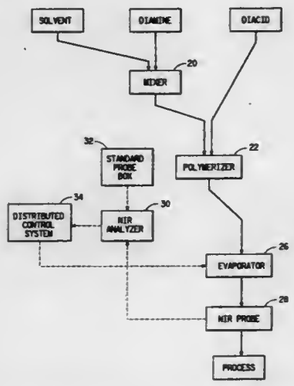
1. A multi-chamber blood culture apparatus comprising, in combination:
a sample vial assembly for receiving a predetermined quantity of blood, said sample vial assembly comprising first and second sample vials;
at least a pair of culture chambers substantially surrounding said sample vial assembly for holding at least two different growth media and for receiving blood from said sample vial assembly;
a cover adjacent said sample vial assembly and said culture chambers for isolating said blood and growth media within said apparatus from outside contaminants; and
a valve assembly for shifting said sample vial assembly between a loading position for receiving blood into said sample vials, a sealed position for holding blood in said sample vials, and an activation position for releasing blood from said sample vials into said culture chambers.

5,573,952

PROCESS FOR CONTROLLING CONCENTRATION OF A SOLUTION OF A SOLVENT AND POLYMER

Richard C. Moessner, Midlothian, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 12, 1994, Ser. No. 289,558
Int. Cl.[6] G01N *21/35*
U.S. Cl. 436—8 **4 Claims**

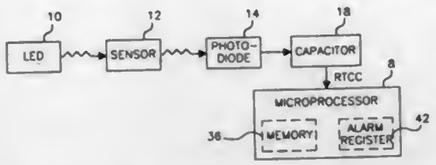


1. A process for measuring and controlling the concentration of a solution at an aim point of an amide solvent and aramid polymers having aromatic and aliphatic carbon-hydrogen bonds that overlap using a near-infrared analyzer, said process comprising the steps of:
a) obtaining averaged absorbance spectra of the solution for the wavelengths where the contributions to the spectrum by aromatic and aliphatic carbon-hydrogen bonds overlap;
b) making a baseline correction to the spectra;
c) determining area-based contributions, A1, to the spectra from aromatic carbon-hydrogen bonds;
d) determining area-based contributions, A2, to the spectra from aliphatic carbon-hydrogen bonds;
e) computing a ratio (A1–C2)/(A2–C3) by utilizing a ratio-based algorithm with the area-based contributions of the aromatic and aliphatic carbon-hydrogen bonds as inputs wherein C2 and C3 are constants;
f) scaling the ratio, (A1–C2)/(A2–C3) from step e) using known polymer concentrations and multiple linear regression to provide a corrected slope and intercept so that the percent of aromatic polymer solids dissolved in the solvent is determined; and
g) adjusting the amount of solvent by removing excess solvent from the solution in accordance with percent aromatic polymer solids dissolved in the solution as determined in step f).

5,573,953
METHOD FOR ENHANCING THE RESPONSE OF A BIOMIMETIC SENSOR

Glenn Marnie, Oceanside; Earl M. Dolnick, Encinitas, and Ivan J. Nelson, San Diego, all of Calif., assignors to Quantum Group, Inc., San Diego, Calif.

Filed Sep. 9, 1994, Ser. No. 303,357
Int. Cl.[6] G01N *21/01*
U.S. Cl. 436—164 12 Claims



1. A method for enhancing the response of a biomimetic sensor for sensing the presence of airborne toxins, the method comprising the steps of:
intermittently measuring optical characteristics of the sensor;
differentiating the measured characteristics to determine the rate of change of the measured characteristics of the sensor as a result of the toxins sensed by the sensor, wherein the differentiating step comprises:
making a plurality of initial readings of the sensor;
making a plurality of subsequent readings of the sensor, each subsequent reading being made a predetermined time after an adjacent initial reading;
subtracting the initial readings from adjacent subsequent readings to produce a plurality of differences; and
summing a predetermined number of the differences to produce a sum of differences; and
changing an alarm state as a function of the rate of change of the measured characteristics when the sum of differences differs from a predefined alarm point.

5,573,954
METHOD OF OBTAINING SMALL REPRESENTATIVE SOLID-PHASE SAMPLES

Malbone W. Greene, Vista; Don Isenberg, Carlsbad, and Charles Walbourn, Encinitas, all of Calif., assignors to Microbics Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 853,109, Mar. 18, 1992, Pat. No. 5,426,035. This application Jun. 6, 1995, Ser. No. 467,207
Int. Cl.[6] G01N *1/00*
U.S. Cl. 436—174 14 Claims

1. A method of obtaining small representative solid-phase samples from a large solid-phase particulate sample, which method comprises the steps of:
mixing an initial solid-phase particulate sample to assure homogeneity;
selecting a portion of said mixed solid-phase particulate sample to provide a representative intermediate size sample;
suspending said intermediate particulate sample in a volume of liquid diluent in a first vessel;
agitating said suspension to promote separation of such solid particles as may be adhering to other particles to obtain a homogeneous suspension;
transferring a fraction of said homogeneous suspension to a second vessel in order to provide a representative small particulate sample; wherein said agitating is carried out using a magnetic stirring bar in the first vessel to create a magnetic stirring zone; and wherein said stirring is carried out at a speed such as to create a vortex cone height equal to 30% to 70% of the greater depth of the suspension at the outer edge region of said stirring zone and said small representative solid-phase particulate sample is removed while stirring under such conditions.

5,573,955
REDUCING TYRAMINE INTERFERENCE IN IMMUNOASSAYS FOR AMPHETAMINE AND METHAMPHETAMINE

Pyare Khanna, Fremont, and Theresa Medlin, San Ramon, both of Calif., assignors to Microgenics Corp., Concord, Calif.

Filed Jun. 5, 1995, Ser. No. 465,366
Int. Cl.[6] G01N *33/53*
U.S. Cl. 436—501 7 Claims

1. In an immunoassay method for determining amphetamine or methamphetamine in a biological sample suspected of containing said amphetamine or methamphetamine, wherein any tyramine present in said sample would interfere with said determination, the improvement comprising treating said sample with an amount of tyramine oxidase sufficient to reduce interference from said tyramine in said immunoassay.

5,573,956
ASSAY METHOD BASED UPON REFRACTIVE INDEX CHANGES AT A SOLID OPTICAL SURFACE

Anders Hanning, Fjällvägen 6B, S-191 46 Sollentuna, Sweden

PCT No. PCT/SE92/00558, § 371 Date Feb. 18, 1994, § 102(e) Date Feb. 18, 1994, PCT Pub. No. WO93/04357, PCT Pub. Date Mar. 4, 1993
PCT Filed Aug. 19, 1992, Ser. No. 193,128
Claims priority, application Sweden, Aug. 20, 1991, 9102397; Mar. 25, 1992, 9200917
Int. Cl.[6] G01N *33/543*
U.S. Cl. 436—518 14 Claims

1. A method of determining the specific binding of a refractive index-enhancing species to a substance on or release of a refractive index-enhancing species from a sensing surface, respectively, comprising:
measuring a change in refractive index at the sensing surface caused by said specific binding of the refractive index-enhancing species to a substance on or release of the refractive index-enhancing species from said sensing surface, wherein the binding or release of said refractive index-enhancing species causes a change in refractive index that varies with wavelength and said measurement is performed using light having a wavelength at or near the maximum of the negative derivative of the absorptivity with respect to wavelength of said refractive index-enhancing species.

5,573,957
MONOCLONAL ANTIBODY TO HUMAN CARDIAC MYOGLOBIN

Beatrice Cardone, Etobicoke, and George Jackowski, Inglewood, both of Canada, assignors to Spectral Diagnostics, Inc., Toronto, Canada

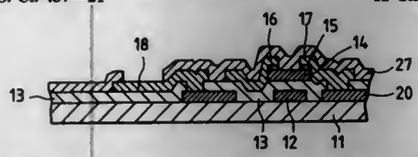
Filed Sep. 28, 1994, Ser. No. 314,044
Int. Cl.[6] G01N *33/553*
U.S. Cl. 436—518 4 Claims

3. A method of detecting myoglobin in a sample using a monoclonal antibody produced by hybridoma cell line 5Mb-64, deposited with American Type Culture Collection under Accession Number HB 11708, which comprises contacting the sample with an anti-myoglobin polyclonal antibody, to produce a polyclonal antibody-myoglobin complex; contacting the complex with the monoclonal antibody to produce a polyclonal antibody-myoglobin-monoclonal antibody complex, wherein the monoclonal antibody is irreversibly immobilized on a solid phase support; and detecting the polyclonal antibody-myoglobin-monoclonal antibody complex.

5,573,958
METHOD OF FABRICATING A THIN FILM TRANSISTOR WHEREIN THE GATE TERMINAL IS FORMED AFTER THE GATE INSULATOR

Hirofumi Fukui, Taiwa-machi; Masanori Miyazaki, Sendai; Hitoshi Seki, Sendai; Makoto Sasaki, Sendai, and Yasuhiko Kasama, Sendai, all of Japan, assignors to Frontec Incorporated, Sendai, Japan

Filed Nov. 14, 1994, Ser. No. 338,713
Claims priority, application Japan, Nov. 16, 1993, 5-311365
Int. Cl.[6] H01L *29/784*
U.S. Cl. 437—21 12 Claims

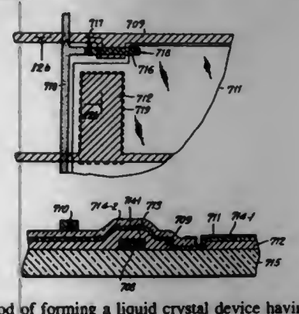


1. A method of manufacturing a thin film transistor device comprising the steps of:
forming a gate electrode and a gate wiring on a substrate;
depositing a gate insulator on the gate electrode, the gate wiring and the substrate;
forming a contact hole through said gate insulator to expose a portion of the gate wiring;
depositing a conductive material layer over the gate insulator and the exposed portion of the gate wiring; and
etching the conductive material layer to form a source electrode, a drain electrode, a source wiring, a source terminal, and a gate terminal, the gate terminal being electrically connected to said gate wiring through the contact hole.

5,573,959
METHOD OF FORMING A LIQUID CRYSTAL DEVICE

Toshimoto Kodaira; Hiroyuki Oshima, and Toshihiko Mano, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 237,521, May 3, 1994, Pat. No. 5,474,942, which is a continuation of Ser. No. 14,053, Feb. 5, 1993, Pat. No. 5,365,079, which is a continuation of Ser. No. 803,699, Dec. 4, 1991, abandoned, which is a continuation of Ser. No. 484,466, Feb. 22, 1990, abandoned, which is a continuation of Ser. No. 285,292, Dec. 15, 1988, abandoned, which is a continuation of Ser. No. 894,432, Jul. 16, 1986, abandoned, which is a continuation of Ser. No. 489,986, Apr. 29, 1983, abandoned. This application May 19, 1995, Ser. No. 445,030
Claims priority, application Japan, Apr. 30, 1982, 57-074014; Apr. 30, 1982, 57-074015; May 6, 1982, 57-075814
Int. Cl.[6] H01L *21/84*
U.S. Cl. 437—21 6 Claims

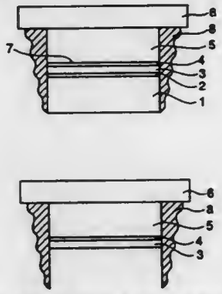


1. A method of forming a liquid crystal device having an array of picture elements arranged in a matrix, each of the picture elements having a thin film transistor as a switching element for driving each of the picture elements, a picture element driving electrode connected to said thin film transistor and a display capacitor, the method comprising:
forming a plurality of gate lines and a first electrode of each of the display capacitors, the plurality of gate lines being connected to gate electrodes of the thin film transistors on a substrate;
forming a first non-conductive film over the plurality of gate lines and the first electrode of each of the display capacitors;
forming a second non-conductive film over said first non-conductive film and over the first electrode of each of the display capacitors;
removing the second non-conductive film formed over the first electrode of each of the display capacitors;
forming a plurality of source lines connected to source electrodes of the thin film transistors and crossing the plurality of gate lines; and
forming a second electrode of each of the display capacitors over the first electrode of each of the display capacitors and over said first non-conductive film to form the display capacitors, wherein the first and second non-conductive films are overlapped at crossing portions of the source and gate lines.

5,573,960
METHOD OF MANUFACTURING SEMICONDUCTOR LAYERS BY BONDING WITHOUT DEFECTS CREATED BY BONDING

Shigekazu Izumi, and Norio Hayafuji, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 10, 1995, Ser. No. 500,247
Claims priority, application Japan, Jul. 11, 1994, 6-158465
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—21 14 Claims



1. A method of manufacturing a semiconductor layer structure comprising:
preparing a first substrate having a surface and comprising a crystalline semiconductor having a heat conductivity;
forming an etch stopping layer on the surface of the first substrate;
forming an active layer as a constituent of a semiconductor device on the etch stopping layer;
forming a crystalline semiconductor defect reducing layer on the active layer;
preparing a second substrate having a surface and comprising a material having a heat conductivity higher than the heat conductivity of the first substrate;
bonding the defect reducing layer to the surface of the second substrate at an elevated temperature, the defect reducing layer preventing crystalline defects caused by the bonding from extending to the active layer;
selectively etching the first substrate to expose the etch stopping layer; and
selectively etching the etch stopping layer to expose the active layer, whereby the active layer is supported by the second substrate with the defect reducing layer therebetween so that crystalline defects caused by the bonding are confined to the defect reducing layer and do not extend to the active layer.

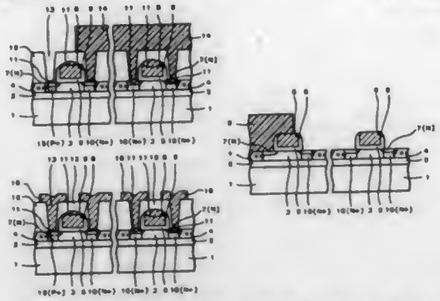
VOL 1192 ISS 2 NO 12 1996 UMI

5,573,961

METHOD OF MAKING A BODY CONTACT FOR A MOSFET DEVICE FABRICATED IN AN SOI LAYER

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Filed Nov. 9, 1995, Ser. No. 565,201
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—21 26 Claims



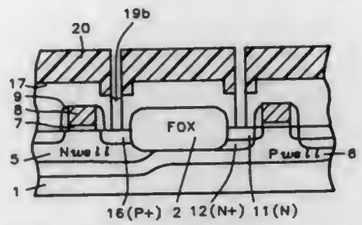
1. A method for fabricating a silicon device in silicon on insulator layer, on a semiconductor substrate, with a contact to said silicon on insulator layer, comprising the steps of:
providing said semiconductor substrate;
providing said silicon on insulator layer, on said semiconductor substrate;
growing field oxide regions in specific areas of said silicon on insulator layer;
growing a first insulator layer the in surface of said silicon on insulator layer, not covered by said field oxide regions;
depositing a polysilicon layer on said first insulator layer and on said field oxide regions;
ion implanting a first imparting dopant of a first conductivity type into said polysilicon layer;
patterning of said polysilicon layer to form a polysilicon gate structure;
ion implanting a second imparting dopant of the first conductivity type into said silicon on insulator layer, not covered by said polysilicon gate structure, and not covered by said field oxide regions;
deposition of a second insulator layer;
anisotropic etching of said second insulator layer to form an insulator sidewall spacer, on the sides of said polysilicon gate structure;
first photoresist masking, to expose a first specific region of said silicon on insulator layer;
ion implantation of a third imparting dopant of the first conductivity type into said first specific region of said silicon on insulator layer, not covered by said first photoresist masking, not covered by said polysilicon gate structure, not covered by said insulator sidewall spaced, and not covered by said field oxide regions;
removal of said first photoresist masking;
deposition of a first metal;
annealing of said first metal to form metal silicide layers on areas where said metal interfaced bare silicon surfaces, while leaving said first metal, unreacted, on areas where said first metal interfaced insulator surfaces;
removal of unreacted said first metal;
deposition of a third insulator layer;
opening contact holes in said third insulator layer, to said first specific regions of said silicon on insulator layer, and to a second specific region of said silicon on insulator layer;
second photoresist masking to expose only second specific region of said silicon on insulator layer;
ion implanting a fourth imparting dopant of a second conductivity type into said second specific region of said silicon on insulator layer, not covered by said second photoresist masking, not covered by said third insulator layer;
removal of said second photoresist masking;
annealing of said semiconductor substrate;
deposition of a second metal; and
forming metal contact structures to said first specific regions of said silicon on insulator layer, and to said second specific regions of said silicon on insulator layer.

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LOW CYCLE TIME CMOS PROCESS

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Filed Dec. 15, 1995, Ser. No. 572,810
Int. Cl.[6] H01L *21/8238*
U.S. Cl. 437—34 30 Claims



1. A method for fabricating complimentary metal oxide semiconductor, (CMOS), devices, on a semiconductor substrate, comprising the steps of:
forming a field oxide region in a portion of said semiconductor substrate;
growing a first insulator layer on first and second regions of said semiconductor substrate, not covered by said field oxide region;
forming a photoresist well pattern on said first region of said semiconductor substrate;
firsts ion implanting a first conductivity imparting dopant into area of said semiconductor substrate, not covered by said photoresist well pattern, to form N well region;
second ion implanting a second conductivity imparting dopant through said photoresist well pattern into said semiconductor substrate, to form a P well region in said semiconductor substrate, underlying said photoresist well pattern and said N well region, while not interfering with said N well region, in area of said semiconductor substrate, not covered by said photoresist well pattern;
removing said photoresist well pattern after said second implanting;
third ion implanting a third conductivity imparting dopant into said semiconductor substrate including said well regions, not covered by said field oxide region;
removing of said first insulator layer after said third implanting;
growing a second insulator layer on said semiconductor substrate including said well regions, not covered by said field oxide region, to be used as a gate insulator;
depositing a polysilicon layer on said gate insulator, and on said field oxide regions;
fourth ion implanting a fourth conductivity imparting dopant into said polysilicon layer;
patterning said implanted polysilicon layer to form polysilicon gate structure;
depositing a third insulator layer on said polysilicon gate structure, on said gate insulator not covered by said polysilicon gate structure, and on said field oxide region;
anisotropic etching of said third insulator layer to form an insulator sidewall spacer on sides of said polysilicon gate structure;
forming a photoresist P well pattern on said N well region and to expose said P well region;
fifth ion implanting a fifth conductivity imparting dopant into said P well region, not covered by said polysilicon gate structure, but including ion implantation under said insulator sidewall spacer, to form lightly doped source and drain regions;
sixth ion implanting a sixth conductivity imparting dopant into said P well region, not covered by said polysilicon gate structure, and not covered by said insulator sidewall spacer, to form heavily doped source and drain regions;
removing of said photoresist P well pattern after said sixth implanting;
growth of a thick fourth insulator layer on said heavily doped source and drain regions, in said P well region, while growing a thinner fourth insulator layer in N well region, not covered by said polysilicon gate structure;
removing said thinner fourth insulator layer from said N well region, while leaving some said thick fourth insulator layer on said heavily doped source and drain regions in said P well region;
deposition of a borosilicate glass layer on same said thick fourth insulator layer, over said heavily doped source and drain regions, in said P well region, and on said N well region;
rapid thermal annealing to form heavily doped source and drain regions in N well region, not covered by said polysilicon gate structure;
removing said borosilicate glass layer, and some said thick fourth insulator layer, over said heavily doped source and drain regions in P well region after said annealing;
depositing a fifth insulator layer on said P well, and said N well regions;
forming an initial phase photoresist pattern on said fifth insulator layer, with a wide opening in a first photoresist layer, directly overlying said heavily doped source and drain regions of both said N well region, and said P well region;
anisotropic etching, to remove only a top portion of said fifth insulator layer, in said wide opening in said first photoresist layer, to create a wide hole opening, extending partially into said fifth insulator layer;
removing said initial phase, photoresist pattern after forming said wide hole opening;
forming a second phase photoresist pattern on said fifth insulator layer, with a narrow opening in a second photoresist layer, exposing said wide hole opening in said fifth insulator layer, directly overlying said heavily doped source and drain regions of both said N well region, and said P well region;
anisotropic etching of said fifth insulator layer, in said narrow opening in said second photoresist layer, to create a contact hole to said heavily doped region in said N well region, and to said heavily doped source and drain regions in said P well region, with a narrow opening at the bottom of said contact hole, and a wide opening at the top of said contact hole;
removing said second phase, photoresist pattern after forming said contact hole; and
depositing a metallization layer, and etching said metallization layer to a metal structure.

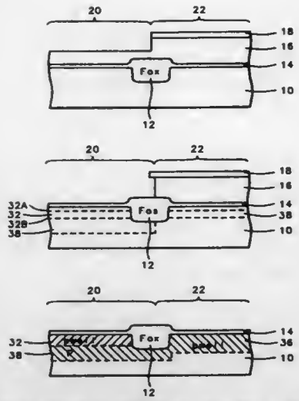
5,573,963

METHOD OF FORMING SELF-ALIGNED TWIN TUB CMOS DEVICES

Jan M. Sung, Yang-Mei, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Filed May 3, 1995, Ser. No. 642,320
Int. Cl.[6] H01L *21/8238*
U.S. Cl. 437—34 23 Claims

1. A method of fabricating a self aligned twin well in a semiconductor substrate, said twin well comprising a first type well and second type well, comprising the steps of:
a) forming spaced field oxide regions in said substrate, said spaced field oxide regions defining a first region and a second region;
b) forming a first oxide layer over a substrate surface including said first and second regions;
c) forming a BPSG masking layer and then a barrier Layer over said field oxide regions and said first oxide layer;



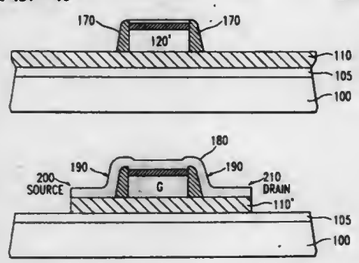
d) removing a portion of said barrier layer and a portion of said masking layer over said first region exposing said first oxide layer by anisotropically etching said barrier layer and an upper portion of said masking layer over said first region, and selectively wet etching a lower portion of a remaining masking layer over said first region exposing said first oxide layer;
e) first implanting first conductivity type impurities into said first region forming a first type well using remaining portions of said barrier layer and said masking layer over said second region as a mask;
f) second implanting second type conductivity impurities through said mask into said substrate, said second conductivity type impurities forming a second conductivity type layer beneath said first type well and forming a second type well in said second region;
g) removing said barrier layer, said masking layer, and said first oxide layer after said second implanting; and
h) annealing said substrate to drive in the implanted said first conductivity and second conductivity type impurities thereby completing said first type well and said second type well.

5,573,964

METHOD OF MAKING THIN FILM TRANSISTOR WITH A SELF-ALIGNED BOTTOM GATE USING DIFFUSION FROM A DOPANT SOURCE LAYER

Louis L. Hsu, Fishkill; Mary J. Saccamango, Poughquag, and Joseph F. Shepard, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 17, 1995, Ser. No. 559,809
Int. Cl.[6] H01L *21/84*
U.S. Cl. 437—40 17 Claims



1. A method of making a thin film transistor comprising the steps of:
- providing a substrate with an insulating layer on top;
- forming a dopant source layer containing dopants on the insulating layer;

- forming a first layer of polysilicon on top of said dopant source layer;
- forming a layer of gate insulator on said polysilicon;
- patterning said polysilicon and said gate insulator to form a gate stack consisting of a gate electrode and gate insulator of said thin film transistor;
- forming a sidewall spacer adjacent to and in contact with said gate stack on top of said dopant source layer;
- forming a second layer of polysilicon so as to be on top and in contact with exposed surfaces of said gate stack, and said dopant source layer;
- patterning said second layer of polysilicon to form a channel region, offset regions, source and drain regions of said thin film transistor; and
- heating to diffuse said dopants from said dopant source layer into said source, drain regions and said gate electrode of said thin film transistor.

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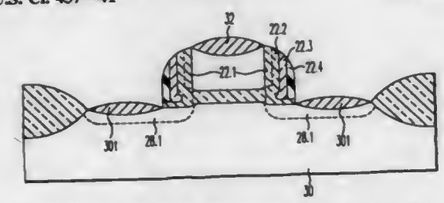
METHOD OF FABRICATING SEMICONDUCTOR DEVICES AND INTEGRATED CIRCUITS USING SIDEWALL SPACER TECHNOLOGY

Min-Liang Chen, Allentown; Sailesh Chittipeddi, Whitehall; Taeho Kook, Lower Macungie Township; Richard A. Powell, Lower Milford Township, and Pradip K. Roy, Allentown, all of Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 678,561, Mar. 27, 1991, abandoned. This application Dec. 17, 1993, Ser. No. 169,482

Int. Cl.[6] H01L *21/31;21/335*

U.S. Cl. 437—41 **17 Claims**



1. A method of fabricating an integrated circuit comprising

forming a gate stack, including a gate dielectric, on a single crystal silicon substrate, said stack having sidewalls comprising silicon, and

forming a spacer having a base layer adjacent at least one of said sidewalls, characterized in that said base layer forming step includes the steps of:

thermally growing a first oxide layer on said sidewall,

depositing an oxygen-permeable dielectric layer on said first oxide layer, and

thermally growing a second oxide layer between said gate stack and said first oxide layer by exposing said layers to an oxygen ambient at a pressure and temperature sufficient to cause oxygen to penetrate through said dielectric layer and said first oxide layer.

5,573,966

METHOD FOR MAKING A READ-ONLY MEMORY DEVICE HAVING TRENCHES

Chen-Chung Hsu, Taichung, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

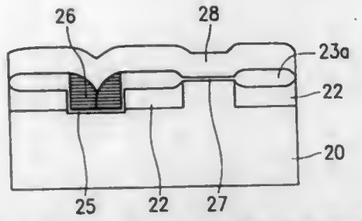
Filed Sep. 25, 1995, Ser. No. 533,103

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—48 **10 Claims**

1. A process for fabricating memory cells of a read-only memory device (ROM), comprising the steps of:

implanting impurities into a silicon substrate to form a plurality of parallel strip-shaped source and drain regions extending along a first direction to constitute bit-lines of the memory device, thereby forming channel regions between the bit-lines;



oxidizing to form a first oxide layer overlying the bit-lines and the channel regions, a portion of the first oxide layer over the bit-lines having a thickness greater than that of a portion of the first oxide layer over the channel regions;

etching portions of the channel regions designated for coding to form trenches;

forming a second oxide layer on a bottom and sidewalls of the trenches;

forming an insulating layer to fill the trenches;

removing a portion of the first oxide layer over the channel regions without said trenches and forming a gate oxide layer over the channel regions; and

forming a plurality of parallel strip-shaped gate electrodes extending along a second direction orthogonal to the first direction on the gate oxide layer and the first oxide layer to constitute word-lines of the memory device, the intersecting region of one word-line with two abutting bit-lines constituting a memory cell of the ROM device.

5,573,967

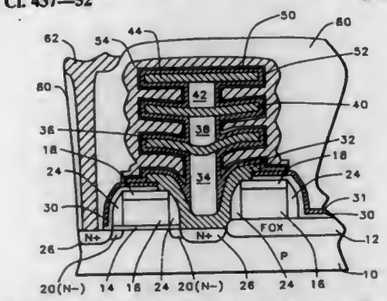
METHOD FOR MAKING DYNAMIC RANDOM ACCESS MEMORY WITH FIN-TYPE STACKED CAPACITOR

Horng-Huei Tseng, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Dec. 20, 1991, Ser. No. 811,537

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 437—52 **16 Claims**



1. A method for fabricating a dynamic random access memory having a high capacitance stacked capacitor comprising:

selectively forming relatively thick field oxide areas on the surface of a semiconductor substrate while leaving device areas for fabrication of field effect devices;

forming a gate dielectric layer on said substrate in the said device areas;

depositing a relatively thick first layer of polysilicon on the said field oxide areas and said device areas;

removing portions of said first polysilicon layer while leaving portions thereof for the gate structure in said device areas, and portions over said field oxide areas;

forming source/drain structures within said device areas of said semiconductor substrate associated with said gate structures;

forming a first insulator layer composed at least in part of silicon nitride over said device and field oxide areas and patterning the layer to leave source/drain structures open in the said device areas where electrical contact is desired to said stacked capacitors; and forming said stacked capacitors by,

depositing a second polysilicon layer over the device and field oxide areas,

depositing a second insulator layer over said second polysilicon layer,

depositing a third polysilicon layer over the second insulator layer,

depositing a third insulator layer over said third polysilicon layer,

depositing a fourth polysilicon layer over said third insulator layer,

patterning and anisotropical etching the stack of said second and third insulators layers, and said second, third and fourth polysilicon layers to form the basis of said stacked capacitor,

controlably and laterally isotropic etching the exposed edges of said second and third insulator layers to increase the planned surface area of the capacitor while leaving a central portion of said second and third insulator layers,

depositing a fifth polysilicon layer over the device and field oxide areas to complete the lower electrode of said stacked capacitor,

forming a capacitor dielectric layer over the said lower electrode of said stacked capacitor, and

depositing a top polysilicon electrode layer to complete said stacked capacitors.

5,573,968

METHOD FOR FABRICATING STACKED CAPACITORS OF SEMICONDUCTOR DEVICE

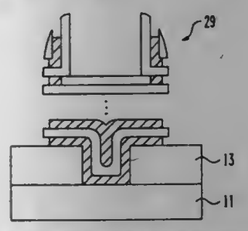
Young J. Park, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Feb. 23, 1996, Ser. No. 606,199

Claims priority, application Rep. of Korea, Feb. 27, 1995, 95-3907

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 437—52 **16 Claims**



1. A method for fabricating capacitors of a semiconductor device comprising the steps of:

partially removing a lower insulating layer formed over a semiconductor substrate, thereby forming a contact hole, through which a portion of the semiconductor substrate is exposed;

forming doped amorphous conduction films and undoped amorphous conduction films in an alternating manner over the resulting structure obtained after forming the contact hole, thereby forming a first amorphous conduction layer having a multi-layer structure such that an uppermost one of the doped amorphous conduction films constitutes an uppermost portion of the multi-layer structure;

forming an insulating film pattern on the uppermost doped amorphous conduction film in accordance with an etch process using a storage electrode mask;

forming undoped amorphous conduction films and doped amorphous conduction films in an alternating manner over the resulting structure obtained after forming the insulating film pattern, thereby forming a second amorphous conduction layer;

etching the first and second amorphous conduction layers under a condition that the insulating film pattern and lower insulating layer are used as an etch barrier;

removing the insulating film pattern in accordance with a wet etch process;

annealing the first and second amorphous conduction layers, thereby forming first and second crystallized conduction layers without diffusing an impurity;

etching doped portions of the first and second crystallized conduction layers with a wet etch process, thereby providing an irregularity structure at the first and second crystallized conduction layers; and

doping impurity ions in undoped portions of the first and second crystallized conduction layers, thereby forming a cylindrical storage electrode having the irregularity structure at each side wall thereof.

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METHOD FOR FABRICATION OF CMOS DEVICES HAVING MINIMIZED DRAIN CONTACT AREA

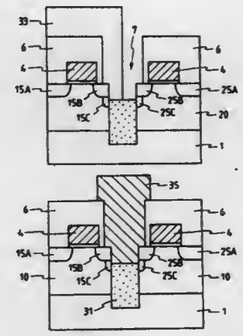
Jae K. Kim, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Jan. 19, 1995, Ser. No. 375,551

Claims priority, application Rep. of Korea, Jan. 19, 1994, 94-974

Int. Cl.[6] H01L *21/70*

U.S. Cl. 437—57 **6 Claims**



1. A method for the fabrication of a semiconductor device, comprising the steps of:

forming a trench for well isolation in a predetermined area of a semiconductor substrate;

filling said trench for well isolation with an insulating film, completely;

forming an N-well and a P-well in the semiconductor substrate, said trench for well isolation being between said N-well and said P-well;

forming a gate oxide and a gate electrode on the N-well and on the P-well, in sequence;

forming a P^+ type source and a P^+ type drain in said N-well and an N^+ type source an N^+ type drain in said P-well, said P^+ type and N^+ type drains being adjacent to said trench;

forming a blanket interlayer insulating layer over the resulting structure;

etching said interlayer insulating layer and a portion of said insulating film filled in said trench by use of a contact mask, to form a contact hole which exposes a side of said interlayer insulating layer, said P^+ type and N^+ type drains adjacent to said trench and an upper side wall of said trench; and

forming a conductive wire in said contact hole, to interconnect said P^+ type and N^+ type drains adjacent to said trench with each other.

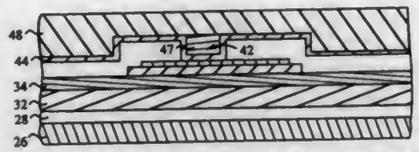
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5,573,970
METHOD FOR REDUCING CONTAMINATION OF ANTI-FUSE MATERIAL IN AN ANTI-FUSE STRUCTURE

Dipankar Pramanik, Saratoga, and Subhash R. Nariani, San Jose, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Division of Ser. No. 275,187, Jul. 14, 1994, Pat. No. 5,493,146. This application Jun. 6, 1995, Ser. No. 477,311
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—60 **19 Claims**

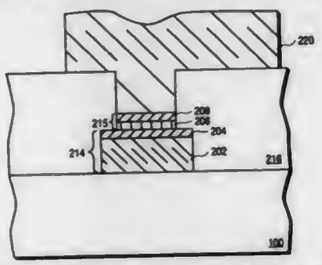


1. A method for making an anti-fuse structure comprising the steps of:
forming a conductive base layer;
forming a layer of anti-fuse material over said conductive base layer;
forming an insulating layer over said anti-fuse layer;
forming a via bole having sides and having a lateral dimension no greater than about 0.8 microns through said insulating layer to said anti-fuse layer; and
forming a conductive barrier layer consisting of a barrier material selected from the group consisting of TiW, TiN, and chromium, said conductive barrier layer having a first portion overlying said anti-fuse material, a second portion extending upward along said sides of said via hole and a third portion overlying a portion of said insulating layer;
providing a conductive non-Al plug above said first portion of said conductive barrier layer;
such that said anti-fuse structure may be programmed by providing a programming voltage between said conductive base layer and said conductive barrier layer, and may be read by providing a sensing voltage, which is lower than said programming voltage, between said conductive base layer and said barrier layer.

5,573,971
PLANAR ANTIFUSE AND METHOD OF FABRICATION

James M. Cleeves, Redwood City, Calif., assignor to Cypress Semiconductor, Corporation, San Jose, Calif.

Filed Dec. 29, 1995, Ser. No. 580,938
Int. Cl.[6] H01L *21/441*
U.S. Cl. 437—60 **8 Claims**

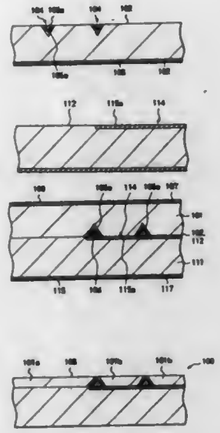


1. A method of forming an antifuse comprising the steps of:
depositing a first conductive layer over said substrate;
depositing a capping layer onto said conductive layer;
depositing an antifuse layer onto said capping layer;
depositing a barrier layer onto said antifuse layer;
patterning said first conductive layer, said capping layer, said antifuse layer, and said barrier layer into a patterned metal stack;
forming a disposable post on said barrier layer on said patterned metal stack;
etching said barrier layer and said antifuse layer substantially in alignment with said disposable post to form a first metal interconnect;
forming an insulating layer over said substrate including said first metal interconnect and said disposable post wherein said insulating layer is substantially planar with said disposable post;
removing said disposable post to form an aperture in said insulating layer; and
depositing a second conductive layer into said aperture and onto said barrier layer.

5,573,972
METHOD FOR MANUFACTURING A SILICON BONDED WAFER

Kenya Kobayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 28, 1995, Ser. No. 506,980
Claims priority, application Japan, Jul. 29, 1994, 6-177876
Int. Cl.[6] H01L *21/76*
U.S. Cl. 437—63 **22 Claims**

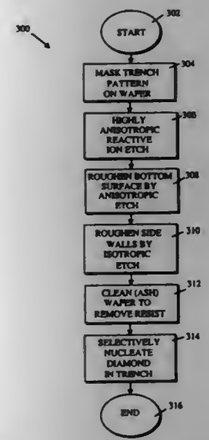


1. A method for manufacturing a silicon bonded wafer including the steps of: preparing a first silicon substrate having a first silicon surface and a second silicon surface opposing the first silicon surface, the first silicon surface having at least one groove therein, at least the surface of the groove being covered by an insulator; preparing a second silicon substrate having a third silicon surface and a fourth silicon surface opposing the third silicon surface, the third silicon surface having a first portion covered by an insulating film and a second portion exposing a silicon surface, the surface of the insulating film being flush with the surface of the second portion; bonding said first silicon substrate and said second silicon substrate together, such that a portion of the first silicon surface contacts the exposed silicon surface and such that the groove is located on the surface of the insulating film; grinding said first silicon substrate at the side of the second surface thereof to provide a fifth surface exposing therein the insulator of the groove through the bottom of the groove.

5,573,973
INTEGRATED CIRCUIT HAVING A DIAMOND THIN FILM TRENCH ARRANGEMENT AS A COMPONENT THEREOF AND METHOD

Rakesh B. Sethi, Campbell, and Cheng-Chen Hsueh, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 34,560, Mar. 19, 1993, abandoned. This application Nov. 14, 1994, Ser. No. 339,970
Int. Cl.[6] H01L *21/76*
U.S. Cl. 437—67 **18 Claims**



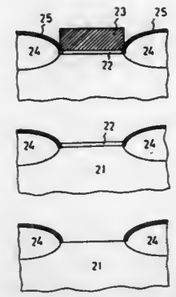
1. In the manufacture of an integrated circuit including a semiconductor substrate, a method of preparing said semiconductor substrate having a diamond coated trench, the method comprising the steps of:
etching a trench in a semiconductor substrate such that said trench has a bottom surface and sidewalls surrounded by a circumferential top surface segment of said semiconductor substrate;
uniformly toughening said bottom surface and said sidewalls;
prior to toughening at least said bottom surface, masking on said circumferential top surface segment a masking material such that said circumferential top surface segment is prevented from being toughened; and
selectively nucleating a diamond layer on said rough bottom surface and on said rough sidewalls inside said trench.

5,573,974
METHOD FOR ISOLATING SEMICONDUCTOR ELEMENTS

Hyunsang Hwang, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed May 16, 1995, Ser. No. 442,058
Claims priority, application Rep. of Korea, Jan. 11, 1995, 95-393
Int. Cl.[6] H01L *21/76*
U.S. Cl. 437—69 **5 Claims**

1. A method for isolating semiconductor elements, comprising the steps of:
(1) forming a pad oxide layer on a surface of a silicon substrate, and depositing g silicon nitride layer;
(2) carrying out a photo etching process to remove the silicon nitride layer of a field region as a region other than an active region;
(3) carrying out a field oxidation process to form a field oxide layer on said field region;
(4) carrying out a heat treatment under an NH_3 atmosphere to form an oxynitride layer on said field oxide layer; and

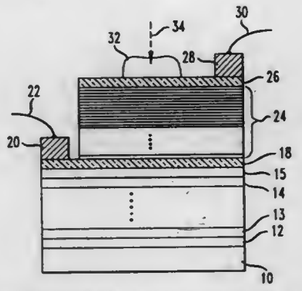


(5) removing said nitride layer, growing a sacrificial oxide layer, and removing said sacrificial oxide layer by applying an etching method to expose a portion of said surface of said substrate, said oxynitride layer extends to said portion of said surface of said substrate.

5,573,975
SURFACE-NORMAL SEMICONDUCTOR OPTICAL CAVITY DEVICES

John E. Cunningham, Lincroft, and Keith W. Goossen, Aberdeen, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 334,821, Nov. 4, 1994, Pat. No. 5,444,270. This application Apr. 6, 1995, Ser. No. 417,878
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—129 **7 Claims**



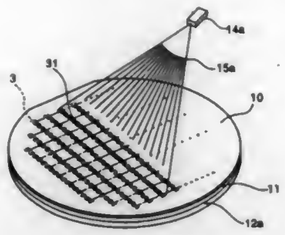
1. A method for fabricating a semiconductor optical cavity device, comprising:
successively depositing layers that constitute a mirror structure onto a substrate;
successively depositing layers that constitute a multi-layer region onto said mirror structure;
providing a partial antireflective coating over said multi-layer region such that said coating has a thickness variation over its extent that is equal in sign to, but greater in magnitude than, thickness variations in the multi-layer region and the mirror structure.

5,573,976
METHOD OF FABRICATING SEMICONDUCTOR LASER

Manabu Kato, and Takashi Motoda, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1995, Ser. No. 555,417
Claims priority, application Japan, Nov. 16, 1994, 6-281816
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—129 **27 Claims**

1. A method of fabricating a semiconductor laser comprising:



preparing a semiconductor substrate having a front surface and a rear surface; and

forming an active layer comprising a compound semiconductor material on the front surface of the semiconductor substrate, the compound semiconductor material having a band gap energy that monotonically increases as growth temperature rises above a certain growth temperature, forming of the active layer being conducted at a temperature above the certain growth temperature so that a window structure forming region including at least a region that serves as a waveguide in the proximity of a laser resonator facet has a higher temperature than a region outside the window structure forming region and, therefore, the window structure forming region has a larger band gap energy than the region outside the window structure forming region.

5,573,977

Patent Not Issued For This Number

5,573,978

METHOD OF FORMING A METAL WIRE IN A SEMICONDUCTOR DEVICE

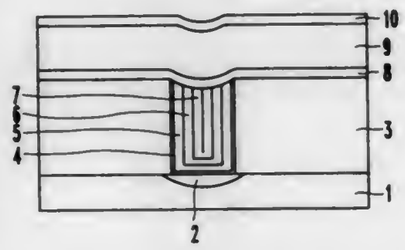
Gyeong S. Cho, Seoul, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Sep. 15, 1994, Ser. No. 305,307

Claims priority, application Rep. of Korea, Sep. 15, 1993, 93-18527

Int. Cl.[6] H01L *21/44*

U.S. Cl. 437—192 **2 Claims**



1. A method of forming a metal wire in a semiconductor device comprising:

providing a silicon substrate which has an overlying oxide layer and a junction area;

forming a contact hole by removing a portion of the oxide layer overlaying said silicon substrate, thereby exposing the junction area on said silicon substrate but leaving at least one surface of said oxide layer;

forming a titanium layer on the resulting silicon substrate including said contact hole and said at least one surface, said layer formed by a chemical vapor deposition process;

forming a first titanium nitride layer on said titanium layer;

exposing the resulting silicon substrate including said first titanium nitride layer to the atmosphere;

forming a second titanium nitride layer on said first titanium nitride layer by a chemical vapor deposition process;

exposing the resulting silicon substrate including said second titanium nitride layer to the atmosphere;

forming a third titanium nitride layer on said second titanium nitride layer by a chemical vapor deposition process;

exposing the resulting silicon substrate including said third titanium nitride layer to the atmosphere;

removing said titanium layer and said first, second and third titanium nitride layers overlaying said at least one surface of said oxide layer so as to expose said one surface of said oxide layer and first surfaces of said first, second and third layers;

sequentially depositing a titanium-containing tungsten layer, an aluminum alloy layer and a fourth titanium nitride layer on the resulting one surface of said oxide layer and first surfaces of said first, second and third layers; and

removing a portion of said titanium-containing tungsten layer, said aluminum alloy layer and said fourth titanium nitride layer to form a metal wire.

5,573,979

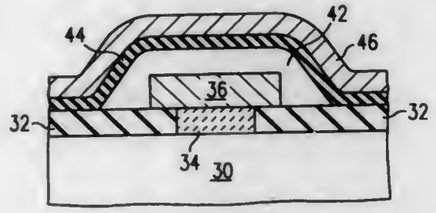
SLOPED STORAGE NODE FOR A 3-D DRAM CELL STRUCTURE

Robert Y. Tsu, Plano, and Wei-Yung Hsu, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 13, 1995, Ser. No. 387,509

Int. Cl.[6] H01L *21/44*

U.S. Cl. 437—195 **19 Claims**



1. A method of forming a microelectronic structure, said method comprising steps:

(a) forming a conductive barrier layer on a principal surface of a microelectronic substrate where said conductive barrier layer comprises a lateral surface and an upper surface forming a corner edge;

(b) forming an unreactive layer on said barrier layer,

(c) patterning photoresist on said unreactive layer,

(d) etching said unreactive layer by dry plasma etch with at least partial horizontal etching to form sloped lateral sides on said unreactive layer, overlying said corner edge on said barrier layer wherein said sloped lateral sides are at an angle of less than 80 degrees from the substrate surface; and

(e) depositing a high-dielectric-constant material layer on said unreactive layer.

5,573,980

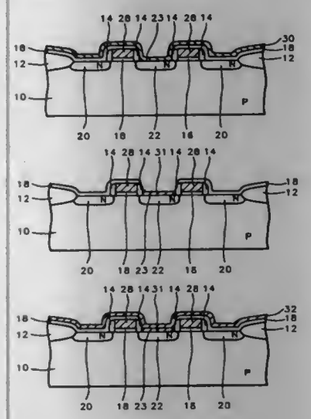
METHOD OF FORMING SALICIDED SELF-ALIGNED CONTACT FOR SRAM CELLS

Chue-San Yoo, Hsin-Chu, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed Apr. 22, 1996, Ser. No. 583,917

Int. Cl.[6] H01L *21/28*

U.S. Cl. 437—200 **19 Claims**



1. A method of forming self-aligned silicide contacts, comprising the steps of:

providing a semiconductor substrate having devices and a first contact region formed therein;

providing a number of gate oxide regions formed on said semiconductor substrate;

providing a number of gate electrodes equal to the number of said gate oxide regions wherein each one of said gate electrodes is formed on one of said gate oxide regions;

forming a first dielectric layer on said semiconductor substrate covering said gate electrodes;

forming a first contact opening in said first dielectric layer directly over said first contact region thereby exposing said first contact region;

forming a layer of polysilicon having a first polysilicon region and a second polysilicon region on said semiconductor substrate after said first contact opening has been formed, thereby covering said first dielectric layer and said first contact region, wherein said first polysilicon region is that part of said layer of polysilicon directly over said first contact region and said second polysilicon region is the remainder of said layer of polysilicon;

etching away said second polysilicon region using photolithographic techniques;

forming a metal layer having a first metal region and a second metal region on said semiconductor substrate after etching away said second polysilicon region, thereby covering said first polysilicon region and said first dielectric layer, wherein said first metal region is that part of said metal layer covering said first polysilicon region and said second metal region is the remainder of said metal layer;

performing a first rapid thermal annealing of said first metal region, said first polysilicon region, and said first contact region thereby forming a metal silicide at the interface of said first polysilicon region and said first metal region;

stripping said second metal region; and

performing a second rapid thermal annealing of said first metal region, said first polysilicon region, and said first contact region after stripping said second metal region;

forming a second dielectric layer on said semiconductor substrate after performing said second rapid thermal annealing;

forming a number of second contact openings in said second dielectric layer; and

filling said second contact openings with contact metal.

5,573,981

METHOD OF REMOVING RESIDUAL CHARCES OF AN ELECTRO STATIC CHUCK USED IN A LAYER DEPOSITION PROCESS

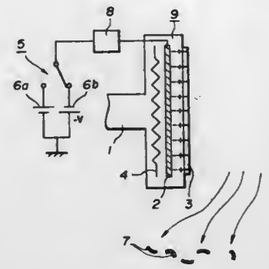
Junichi Sato, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 20, 1994, Ser. No. 309,873

Claims priority, application Japan, Sep. 21, 1993, 5-234724

Int. Cl.[6] H01L *21/00;* **H05F** *3/00;* **B25B** *11/00*

U.S. Cl. 437—225 **7 Claims**



1. A method depositing a layer onto a wafer, comprising the steps of:

affixing the wafer to a wafer support within a deposition chamber by using a single-pole electrostatic chuck;

depositing a layer onto a surface of the wafer by plasma CVD using a deposition gas having at least two reactive component gases;

exhausting the deposition gas from the deposition chamber;

introducing a charge removal gas composed of at least one of the reactive component gases of the deposition gas into the deposition chamber after the exhausting step; and

forming a residual charge removing plasma by discharging the charge removal gas to remove residual charges remaining on the single-pole electrostatic chuck.

5,573,982

SLURRY COMPOSITION, SHAPING METHOD USING THE SAME, AND FIRED BODY

Naoyuki Katoh; Kumehiko Sanada, and Hiroshi Muto, all of Mie, Japan, assignors to Mitsubishi Chemical BASF Company Limited, and Miyawo Company Ltd., both of Yokkaichi, Japan

Filed Mar. 3, 1995, Ser. No. 398,649

Claims priority, application Japan, Mar. 5, 1994, 6-060062; Jul. 29, 1994, 6-197742

Int. Cl.[6] C04B *35/00*

U.S. Cl. 501—1 **10 Claims**

1. A slurry composition consisting essentially of 100 parts by weight of a raw mineral material comprising raw mineral material for white ware, raw mineral material for advanced ceramics, or mixtures thereof; from 0.5 to 20 parts by weight of a re-dispersible resin powder obtained by spray-drying an emulsion of a polyvinyl acetate, a vinyl acetate copolymer or an acrylic resin; and water.

5,573,983

FINE SILICA TUBE AND PROCESS FOR MAKING SAME

Hidenori Nakamura, Kawasaki; Yasushi Matsui, Yokohama, and Takao Goto, Ichihara, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1995, Ser. No. 554,715

Claims priority, application Japan, Nov. 8, 1994, 6-298849; Jan. 25, 1995, 7-028851

Int. Cl.[6] C03C *13/00;3/06*

U.S. Cl. 501—12 28 Claims



1. A fine silica tube which composed of silica gel and which has an outer diameter of 0.05 to 2 μm, a length of 1 to 500 μm. and a radial thick thickness of 0.015 μm about ⅓ of the outer diameter of the tube.

5,573,984

POROUS BODY FOR THE STORAGE AND REGULATED RELEASE OF VAPORIZABLE SUBSTANCES

Klaus Breitenbücher, Nackenheim, and Hermann Schuster, Taunusstein, both of Germany, assignors to Schott Glaswerke, Mainz, Germany

Filed May 22, 1995, Ser. No. 445,729

Claims priority, application Germany, May 20, 1994, 44 17 739.9

Int. Cl.[6] A61L *9/12*

U.S. Cl. 501—39 12 Claims

1. A vapor-releasing device comprising a vaporizable liquid stored in an open-pored sintered glass body, wherein at least 90% of the pores are open pores, the glass body posses a pore volume of 30%–85 % and a mean pore size of 10–350 μm, and the vaporizable liquid is a perfume, an air freshener, an insecticide or a pheromone.

5,573,985

CERAMIC MATRIX COMPOSITES USING STRENGTHENING AGENTS OF SILICON BORIDES OF THE FORM SI-B-C

Samuel C. Weaver, Knox County, Tenn., assignor to Millennium Materials, Inc., Knoxville, Tenn.

Filed Sep. 18, 1995, Ser. No. 531,552

Int. Cl.[6] C04B *35/577;35/58*

U.S. Cl. 501—96 16 Claims

16. A strengthened and toughened ceramic composite formed from a mixture of a matrix ceramic powder selected from the group consisting of oxides, carbides, nitrides and combinations thereof, and a dispersed phase of 0.1 to about 80 wt. % of particles of a Si-B-C composition, said ceramic powder being about 15 micrometer in size, said Si-B-C composition being SiB_6 containing about 0.1 to about 25 wt. % carbon and having a particle size of about 0.1 to about 20 micrometers, said mixture being consolidated into said composite.

5,573,986

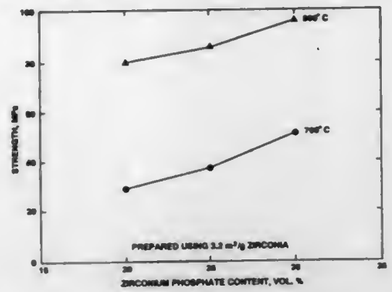
ELECTROMAGNETIC WINDOW

Inna G. Talmy, Silver Spring; Curtis A. Martin, Germantown, both of Md.; Deborah A. Haught, Sterling, Va., and Anh H. Le, Gaithersburg, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 387,548, Feb. 13, 1995, abandoned. This application Mar. 13, 1996, Ser. No. 615,658

Int. Cl.[6] C04B *35/584*

U.S. Cl. 501—97 13 Claims



1. A ceramic electromagnetic window comprising Si_3N_4 particles which are bonded together by a metal phosphate binder that is an $AlPO_4$ binder, a ZrP_2O_7 binder, or mixtures thereof, wherein the Si_3N_4 particles comprise from 55 to 85 volume percent of the ceramic material of the electromagnetic window with the metal phosphate binder comprising the remainder.

5,573,987

REFRACTORY CERAMIC MASS AND ITS USE

Harald Harmuth, Villach; Roland Heindl, and Josef Deutsch, both of Leoben, all of Austria, assignors to Veitsch-Radex Aktiengesellschaft fur feuerfeste Erzeugniss, Vienna, Austria

Filed Feb. 7, 1995, Ser. No. 385,046

Claims priority, application Germany, Feb. 8, 1994, 44 03 868.2

Int. Cl.[6] C04B *35/04*

U.S. Cl. 501—108 9 Claims



1. Refractory ceramic mass comprising 70 to 95 wt. % of a pure magnesia component A and 5 to 30 wt. % of a component B, wherein component B comprises pure magnesia granules with a coating of a refractory material other than magnesia, said refractory coating material having a granule size that is finer than the pure magnesia granules of component B, said refractory coating material

a) being inert with respect to the pure magnesia granules or,

b) comprises components which form spinels with the magnesia granules, or

c) comprises components which form spinels with one another, or

d) comprises components which form spinels with one another and with the magnesia granules.

5,573,988

CATALYST REGENERATION PROCESS

Blaise Didillon, Rueil-Malmaison, France, assignor to Institut Francais Du Petrole, Rueil-Malmaison, France

Continuation of Ser. No. 348,235, Nov. 28, 1994, abandoned. This application Dec. 18, 1995, Ser. No. 573,658

Claims priority, application France, Nov. 26, 1993, 93 14281

Int. Cl.[6] B01J *38/44*

U.S. Cl. 502—37 16 Claims

1. A process for the regeneration of a catalyst containing at least one metallic element selected from the group formed by platinum, palladium, ruthenium, rhodium, osmium, iridium and nickel on a refractory oxide based support, said catalyst having been deactivated by coke deposition, said process comprising burning off of deposited coke, and conducting oxychlorination, by simultaneously effecting oxychlorination whenever burning off deposited coke, by treating the catalyst with a gas containing at least chlorine and molecular oxygen, at a temperature generally between 20° C. and 800° C. and a total gas flow rate, expressed in liters of gas per hour per gram of catalyst, of between 0.05 and 20.

5,573,989

PROCESS FOR PRODUCING OLEFIN OXIDES

Keisuke Sugita, Takatsuki, and Toshikazu Yagi, Ibaraki, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 5, 1994, Ser. No. 286,337

Claims priority, application Japan, Aug. 6, 1993, 5-196040

Int. Cl.[6] B01J *29/04*

U.S. Cl. 502—64 21 Claims

1. A catalyst for oxidizing an olefin having 2 to 5 carbon atoms which consists essentially of a crystalline metallosilicate having supported thereon at least one salt selected from the group consisting of alkali metal salts of nitric acid, alkaline earth metal salts of nitric acid, silver salts of nitric acid and silver salts of nitrous acid, wherein said catalyst is obtained by impregnating the crystalline metallosilicate with an aqueous solution of the salt and subjecting the same to drying and calcining at a temperature of 150° to 200° C.

5,573,990

PROCESS FOR THE CONVERSION OF METHANOL TO LIGHT OLEFINS AND CATALYST FOR SUCH PROCESS

Wang Gongwei; Ying Muliang; Wang Xingchun, and Chen Guoquan, all of Dalian, China, assignors to Dalian Institute of Chemical Physics, Dalian, China

Division of Ser. No. 54,591, Apr. 29, 1993, Pat. No. 5,367,100. This application Aug. 9, 1994, Ser. No. 287,677

Claims priority, application China, May 3, 1992, 92106213.3

Int. Cl.[6] B01J *29/40*

U.S. Cl. 502—77 5 Claims

1. A method for preparing a ZSM-5 based catalyst adapted to be used in the catalytic conversion of methanol or dimethyl ether to light olefins comprising the following consecutive steps:

mixing a zeolite ZSM-5 with silica sol and ammonium nitrate solution,

kneading, moulding, drying and calcining the mixture,

exchanging the modified zeolite with a solution of HCl at 70°–90° C.,

drying and calcining the H-modified zeolite,

impregnating the H-modified zeolite with phosphoric acid under reduced pressure,

drying and calcining the P-modified zeolite,

impregnating the P-modified zeolite with a solution of rare earth elements under reduced pressure,

drying and calcining the P-rare earths-modified zeolite,

hydrothermally treating the P-rare earths-modified zeolite at 500°–600° C. with water vapour, and

calcining the modified zeolite.

5,573,991

PREPARATION OF METAL CARBIDE CATALYST SUPPORTED ON CARBON

Fawzy G. Sherif, Stony Point, and Anantha N. Desikan, Cortland Manor, both of N.Y., assignors to Akzo Nobel N.V., Arnhem, Netherlands

Continuation-in-part of Ser. No. 201,475, Feb. 24, 1994, Pat. No. 5,451,557. This application May 20, 1994, Ser. No. 246,533

Int. Cl.[6] C07C *27/22*

U.S. Cl. 502—177 8 Claims

1. A process for forming a supported metal carbide catalyst which comprises the calcination of a carbon support that has been impregnated with a metal carbide precursor which comprises a water soluble salt of: (1) a cation comprising nitrogen-hydrogen bonded moieties; and (2) an anion comprising metal-oxygen bonded moieties, so that upon calcination the product formed is the metal carbide and the by-products comprise ammonia and carbon dioxide.

5,573,992

PROCESS FOR THE CALCINATION/ACTIVATION OF V/P/O CATALYST

Rashmikant M. Contractor, Wilmington; Donald I. Garnett, Hockessin; Harold S. Horowitz, Wilmington, all of Del., and Arthur W. Sleight, Philomath, Oreg., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 28, 1994, Ser. No. 330,762

Int. Cl.[6] B01J *27/198*

U.S. Cl. 502—209 7 Claims

1. A process for preparing a highly active and selective V/P/O catalyst comprising the steps of:

(a) calcining a hydrated V/P/O or V/P/O-SiO_2 catalyst precursor at a temperature range of 375° to 400° C. for sufficient time to dehydrate said catalyst precursor while simultaneously and continuously controlling the oxygen level such as to maintain the Vox in the range of 3.825 to 4.175; and

(b) activating the dehydrated catalyst precursor of step (a) by further heating at a range of 340° to 500° C. in the presence of a gaseous atmosphere containing n-butane at a partial pressure not exceeding 0.020 atm while simultaneously and continuously controlling the oxygen level such as to maintain the Vox in the range of 3.95 to 4.15; thus, inducing a topotactic phase transition of $(VO)_2H_4P_2O_9$ to $(VO)_2P_2O_7$.

5,573,993

PROCESS FOR THE PREPARATION OF A CATALYST FOR THE POLYMERIZATION OF OLEFINS AND CATALYST OBTAINED THEREBY

Benoît Koch, Hannut, Belgium, assignor to Solvay(Société-Anonyme), Brussels, Belgium

Continuation of Ser. No. 958,156, Oct. 9, 1992, abandoned. This application Jul. 8, 1994, Ser. No. 272,287

Claims priority, application Belgium, Oct. 14, 1991, 09100942

Int. Cl.[6] B01J *23/26*

U.S. Cl. 502—319 15 Claims

1. A process for the preparation of an activated catalyst for the polymerization of olefins, which process does not include a heat treatment in a non-oxidizing atmosphere, the process comprising:

a) mixing, in the absence of a solvent, at least one chromium salt with a support composition comprised of at least one compound (A) which is an inorganic, oxygen-containing compound of at least one element selected from the group consisting of Group IVb, IIIa and IVa, and at least one compound (B) which is an inorganic compound containing at least one element selected from the group consisting of Group IVb and IIIa, the at least one compound (B) being different from the at least one compound (A);

b) preactivating the mixture by heating for a period ranging from 0.5 to 18 hours without calcining in an oxidizing atmosphere to a temperature ranging from at least 30° C. above room temperature to a temperature which is lower than the decomposition temperature of the at least one chromium salt and which is 5° C. below the melting temperature of the at least one chromium salt to obtain a catalyst precursor; and

c) activating the catalyst precursor by calcining in an oxidizing atmosphere at a temperature ranging from 300° to 1200° C. and under conditions such that at least part of the chromium is converted to hexavalent chromium.

5,573,994

SUPERABSORBENT FOAMS, AND METHOD FOR PRODUCING THE SAME

Bhagwati G. Kabra, Ft. Worth, Tex., and Stevin H. Gehrke, Cincinnati, Ohio, assignors to University of Cincinnati, Cincinnati, Ohio

Filed May 13, 1994, Ser. No. 242,548

Int. Cl.[6] B01J *20/26*

U.S. Cl. 502—402 **37 Claims**

1. A method for producing a microporous, absorbent foam, comprising the steps of:

(a) mixing a cross-linkable polymer and a first solvent to form a stable solution, wherein said stable solution can be induced to phase separate;

(b) inducing said stable solution to phase separate into a polymer-concentrated phase and a polymer-dilute phase;

(c) inducing chemical crosslinking of said polymer, so that said polymer will crosslink in said concentrated phase during said phase separation to thereby form a microporous material; and

(d) drying said microporous material to produce said absorbent foam.

5,573,995

METHOD FOR MAKING AN IMAGE USING A DIRECT THERMAL IMAGING ELEMENT

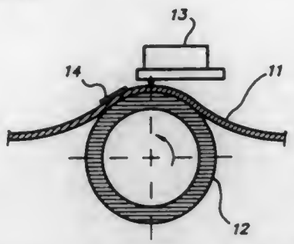
Robert Janssens, Geel, and David Tilemans, Lier, both of Belgium, assignors to AGFA-Gevaert, Mortsel, Belgium

Filed Apr. 14, 1994, Ser. No. 227,445

Claims priority, application European Pat. Off., Apr. 27, 1993, 93201206

Int. Cl.[6] B41M *5/26*

U.S. Cl. 503—201 **5 Claims**



1. A method for making an image by means of a direct thermal imaging element, comprising on a support a thermosensitive layer incorporating an organic silver salt and further comprising a reducing agent contained in said thermosensitive layer and an outermost anti-frictional or protective layer, said imaging element being imagewise heated by means of a thermal bead having energisable heating elements, characterised in that the activation of the heating elements is executed line by line with a line duty cycle Δ representing the ratio of activation time to total line time, such that the following equation is satisfied

$$P \leq P_{max} = 3.3\ W/mm^2 + (9.5\ W/mm^2 \times \Delta)$$

wherein P_{max} is the maximal value over all heating elements of the time averaged power density P expressed in W/mm^2 dissipated by a heating element during a line time.

5,573,996

REVERSIBLE HEAT-SENSITIVE RECORDING MEDIUM AND MAGNETIC CARD USING THE SAME

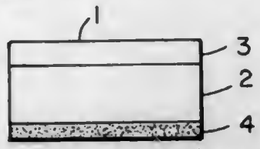
Yasushi Inoue, Ibaraki, Japan, assignor to Nitto Denko Corporation, Osaka, Japan

Filed Mar. 15, 1995, Ser. No. 404,562

Claims priority, application Japan, Mar. 15, 1994, 6-71421; Apr. 22, 1994, 6-107525; Jul. 19, 1994, 6-189852

Int. Cl.[6] B41M *5/36*

U.S. Cl. 503—208 **5 Claims**



1. A reversible heat-sensitive recording medium comprising a transparent substrate having a reversible heat-sensitive recording layer formed on one surface of the substrate and having a colored layer formed on the other surface of the substrate, wherein the reversible heat-sensitive recording layer contains organic low molecular weight materials and a crosslinked resin matrix, and prints in a white turbid state and erases in a transparent state, and the colored layer contains a magnetic material.

5,573,997

HERBICIDAL COMPOSITION CONSISTING ESSENTIALLY OF ACETIC ACID AND CITRIC ACID

John S. Lojek, Elmira, Canada, assignor to Ecoval Inc., Montreal, Canada

PCT No. PCT/CA92/00342, § 371 Date Jul. 18, 1994, § 102(e) Date Jul. 18, 1994, PCT Pub. No. WO93/02555, PCT Pub. Date Feb. 18, 1993

PCT Filed Aug. 6, 1992, Ser. No. 190,201

Claims priority, application United Kingdom, Aug. 8, 1991, 9117114

Int. Cl.[6] A01N *37/02;37/04*

U.S. Cl. 504—142 **13 Claims**

1. An aqueous herbicidal composition for application to vegetative growth to achieve a selective or complete kill of the vegetative growth, consisting essentially of, in use, from about 1 to about 5 wt. % of acetic acid and from about 0.25 to about 2.5 wt. % of citric acid and wherein the weight ratio of said acetic acid to said citric acid is about 4:1 to about 2:1.

5,573,998

AQUEOUS DISPERSIONS OF SULFONEDIAMIDE HERBICIDES SUCH AS AMIDOSULFURON

Gerhard Frisch, Wehrheim/Taunus, and Thomas Maier, Frankfurt am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 183,252, Jan. 19, 1994, abandoned, which is a continuation of Ser. No. 883,692, May 15, 1992, abandoned. This application May 25, 1995, Ser. No. 450,372

Claims priority, application Germany, May 18, 1991, 41 16 441.5

Int. Cl.[6] A01N *25/30;41/06;43/54;47/34*

U.S. Cl. 504—211 **12 Claims**

1. An aqueous herbicidal preparation in the form of a suspension or suspoemulsion comprising 0.1–60% by weight of at least one herbicidal active substance from the series of sulfonediamide derivatives, 0.5–20% by weight of at least one surfactant from the class of the alkali metal or ammonium salts of polyacrylic acid derivatives, and 0.01–12% by weight of a dodecyl- or tridecylbenzenesulfonate, and 0–25% by weight of conventional adjuvants from the series of the wetting agents, dispersants, defoamers, thickeners, preservatives and antifreeze agents.

5,573,999

β-SUBSTITUTED CINNAMIC ACID DERIVATIVE

Hubert Sauter, Mannheim; Herbert Bayer, Ludwigshafen; Klaus Oberdorf, Heidelberg; Horst Wingert, Mannheim; Wolfgang Von Deyn, Neustadt; Wassilios Grammenos, Ludwigshafen; Hartmann Koenig, Limburgerhof; Harald Rang; Franz Roehl, both of Ludwigshafen; Gisela Lorenz, Neustadt, and Eberhard Ammermann, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

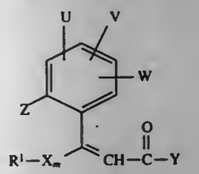
Continuation of Ser. No. 173,936, Dec. 28, 1993, abandoned, which is a continuation of Ser. No. 919,270, Jul. 27, 1992, abandoned. This application May 15, 1995, Ser. No. 441,639

Claims priority, application Germany, Jul. 27, 1991, 41 24 989.5

Int. Cl.[6] A01N *37/10*

U.S. Cl. 504—266 **12 Claims**

1. A β-substituted cinnamic acid derivative of the formula I,



(I)

where

R^1 is unsubstituted or halogen-, C_1–C_6-alkoxy-, C_1–C_6-alkylthio- or C_3–C_6-cycloalkyl-substituted C_1–C_8-alkyl, C_2–C_8-alkenyl, C_3–C_8-alkynyl, C_3–C_8-cycloalkyl or C_3–C_8-cycloalkenyl,

—X— is —O—, —S—,



m is 1,

—Y is $—OR^4$, $—O—N{=}CR^5R^6$, $—NR^7R^8$, $—N(OR^9)R^{10}$ or $—SR^{11}$, where the substituents R^2 to R^{11} are, independently of one another, identical or different and each is unsubstituted or halogen-, C_1–C_6-alkoxy-, C_1–C_6-alkylthio- or C_3–C_6-cycloalkyl-substituted, C_1–C_8-alkyl, C_2–C_8-alkenyl, C_2–C_8-alkynyl, C_3–C_8-cycloalkyl or C_3–C_8-cycloalkenyl,

Z is halogen, nitro, cyano, unsubstituted or substituted alkyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted aralkyl, unsubstituted or substituted aryloxyalkyl, unsubstituted or substituted arylthioalkyl, unsubstituted or substituted hetarylalkyl, unsubstituted or substituted hetaryloxyalkyl, unsubstituted or substituted hetarylthioalkyl, unsubstituted or substituted alkenyl, unsubstituted or substituted aralkenyl, unsubstituted or substituted aryloxyalkenyl, unsubstituted or substituted arylthioalkenyl, unsubstituted or substituted hetarylalkenyl, unsubstituted or substituted hetaryloxyalkenyl, unsubstituted or substituted hetarylthioalkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted arylalkynyl, unsubstituted or substituted hetarylalkynyl, unsubstituted or substituted aryl, unsubstituted or substituted hetaryl, unsubstituted or substituted arylazo, unsubstituted or substituted acylamino, $—OR^{12}$, $—SR^{13}$, $—SOR^{14}$, $—SO_2R^{15}$, $—COOR^{16}$, $—CONR^{17}R^{18}$, $—COR^{19}$, $—CR^{20}{=}NR^{21}$, $—N{=}CR^{22}R^{23}$, $—CR^{24}{=}N—OR^{25}$, $—CR^{25}R^{26}—O—N{=}CR^{27}R^{28}$, $—CH_2—OCOR^{39}$ or $—NR^{37}R^{38}$, provided that when U, V and W are simultaneously hydrogen, Z is not methoxy,

where R^{12} to R^{28} and R^{38} and R^{39} are identical or different and are hydrogen, unsubstituted or substituted alkyl, unsubstituted or substituted alkenyl, unsubstituted or substituted alkynyl, unsubstituted or substituted cycloalkyl, unsubstituted or substituted cycloalkylalkyl, unsubstituted or substituted aryl, unsubstituted or substituted hetaryl, unsubstituted or substituted aralkyl, unsubstituted or substituted hetarylalkyl, unsubstituted or substituted aryloxyalkyl, unsubstituted or substituted arylthioalkyl, unsubstituted or substituted hetaryloxyalkyl or unsubstituted or substituted hetarylthioalkyl, and R^{37} is hydrogen or C_1–C_4-alkyl,

and where

U, V and W are identical or different and are hydrogen or have one of the meanings specified for Z,

or where

two of the groups Z, U, V or W in adjacent positions on the phenyl ring may together with the carbon atoms to which they are attached form an unsubstituted or substituted five- or six-membered aromatic or aliphatic ring which is fused onto the phenyl ring and may contain one to three hetero atoms (N, S, O), provided that said derivative of formula I does not include 3-methylmercapto-3-(1-naphythyl)acrylic acid ethyl ester and an alkyl ester of (p-terphenyl)-2'-carboxylic acid-3-(2-carboxy-1-methoxy vinyl)-2'-methyl ester.

5,574,000

CYCLOHEXENONE OXIME ETHERS, THEIR PREPARATION AND THEIR USE AS HERBICIDES

Juergen Kast, Iggelheim; Dieter Kolassa, Ludwigshafen; Norbert Meyer, Ladenburg; Ulrich Schirmer, Heidelberg; Albrecht Harreus, Ludwigshafen; Jochen Wild, Deidesheim; Karl-Otto Westphalen, Speyer, and Bruno Wuerzer, Otterstadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

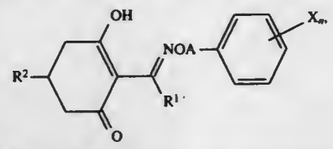
Division of Ser. No. 5,428, Jan. 19, 1993, Pat. No. 5,411,936, which is a continuation of Ser. No. 640,220, Jan. 11, 1991, abandoned, which is a division of Ser. No. 429,451, Oct. 31, 1989, Pat. No. 5,022,914. This application Nov. 17, 1994, Ser. No. 341,661

Claims priority, application Germany, Nov. 1, 1988, 38 38 309.8

Int. Cl.[6] A01N *43/08;* **C07D** *327/06;327/04;307/12*

U.S. Cl. 504—292 **4 Claims**

1. A cyclohexenone oxime ether of the formula I



(I)

where R^1 is C_1–C_6-alkyl,

A is a C_4-alkylene or C_4 alkenylene chain and these chains are optionally substituted by from one to three C_1–C_3-alkyl groups or halogen atoms,

X is nitro, cyano, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, carboxyl, C_1–C_4-alkoxycarbonyl, benzyloxycarbonyl or phenyl, and said aromatic radicals are unsubstituted or optionally substituted by from one to three of the following substituents: nitro, cyano, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl, C_1–C_4-haloalkyloxy, carboxyl, C_1–C_4-alkoxycarbonyl or benzyloxycarbonyl,

n is from 0 to 3 or from 1 to 5 when X is halogen,

R^2 is a 5-membered saturated heterocyclic radical which contains one or two oxygen or sulfur atoms as heteroatoms and are unsubstituted or optionally substituted by from one to three of the following groups: C_1–C_4-alkyl, C_1–C_4-alkoxy,

C_1–C_4-alkylthio or C_1–C_4-haloalkyl, a dihydrothiopyranyl or tetrahydrothiopyranyl radical which is unsubstituted or optionally substituted by from one to three of the following substituents: hydroxy, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, or C_1–C_4-haloalkyl,

a 5-membered heteroaromatic radical containing one or two nitrogen atoms and an oxygen or a sulfur atom, and this ring is unsubstituted or optionally substituted by from one to three of the following substituents: halogen, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl, C_2–C_6-alkenyl, C_2–C_6-alkenyloxy, C_2–C_6-haloalkenyl or C_1–C_4-alkoxy-C_1–C_4-alkyl, with the proviso that R^2 may not be isoxazolyl, optionally substituted,

and their agriculturally useful salts and the esters of I with C_1–C_{10}-carboxylic acids or inorganic acids.

5,574,001

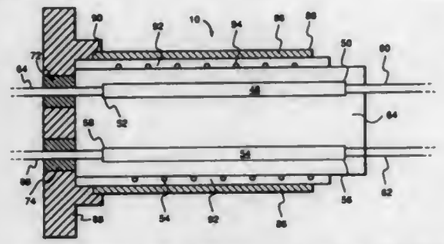
CERAMIC SUPERCONDUCTING LEAD RESISTANT TO BREAKAGE

Robert A. Ackermann, Schenectady; Kenneth G. Herd, Niskayuna; Evangelos T. Laskaris, Schenectady, and Richard A. Ranze, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 329,919, Oct. 27, 1994, abandoned. This application May 11, 1995, Ser. No. 439,170

Int. Cl.[6] B32B *9/00*

U.S. Cl. 505—231 **1 Claim**



1. In combination with a superconductive device cooled by a cryocooler coldhead having a first stage and a second stage, a superconductive lead assembly comprising:

a) a first ceramic superconductive lead having a first end thermally connected to said first stage and a second end thermally connected to said second stage;

b) a jacket comprising an open cell material having a coefficient of thermal conductivity not exceeding that of glass reinforced epoxy at a temperature of 50 Kelvin, said jacket in surrounding compressive contact with said first ceramic superconductive lead;

c) a rigid support tube surrounding said jacket, having a coefficient of thermal conductivity not exceeding that of stainless steel at a temperature of 50 Kelvin, having a first end, and having a second end thermally connected to said second stage;

d) a glass-reinforced-epoxy jacket overwrap in general surrounding contact with and attached to said jacket, and wherein said rigid support tube is in general surrounding contact with and attached to said glass-reinforced-epoxy jacket overwrap;

e) a metallic wire disposed within said rigid support tube and generally helically wound around said jacket binding it, wherein said metallic wire has a coefficient of thermal expansion generally equal to that of said rigid support tube, and wherein said glass-reinforced-epoxy jacket overwrap is also attached to said metallic wire; and

f) a second ceramic superconductive lead generally identical to and spaced apart from said first ceramic superconductive lead, said second ceramic superconductive lead having a first end flexibly, dielectrically, and thermally connectable to said first stage and a second end flexibly, dielectrically, and thermally connectable to said second stage, with said jacket also in general surrounding compressive contact with said second ceramic superconductive lead.

5,574,002

CLEANING AGENT COMPOSITION

Tohru Shiino, Hirakata; Kenichi Nobuta, Ikoma, and Yoshikazu Yamagata, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 16, 1995, Ser. No. 389,593

Claims priority, application Japan, Feb. 17, 1994, 6-020143

Int. Cl.[6] C11D *7/26;7/50*

U.S. Cl. 510—202 **3 Claims**

1. A cleaning agent composition consisting essentially of 100 parts by weight component A, 40–200 parts by weight component B, and 1–200 parts by weight component C; wherein

component A contains at least one member selected from the group consisting of propylene glycol monoalkyl ether having an alkyl group containing from 4 to 6 carbon atoms and dipropylene glycol monoalkyl ether having an alkyl group containing from 3 to 6 carbon atoms;

component B contains at least one member selected from the group consisting of methanol, ethanol, 1-propanol and 2-propanol; and

component C is water.

5,574,003

DETERGENT COMPOSITIONS INHIBITING DYE TRANSFER IN WASHING

James P. Johnston, Overijse, Great Britain, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 211,691, Apr. 13, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 466,024

Claims priority, application Japan, Oct. 14, 1991, 3-20265516

Int. Cl.[6] C11D *3/386;3/395*

U.S. Cl. 510—301 **8 Claims**

1. A composition for inhibiting dye transfer in a wash, comprising:

a) an iron catalyst which is ferric tetrasulfonated tetraphenylporphin; wherein the concentration of said catalyst in the wash is 10^{-6} molar to 10^{-4} molar; and

b) an enzymatic system capable of generating hydrogen peroxide, said enzymatic system comprising

(i) an oxidase selected from the group consisting of glucose oxidase and ethanol oxidase, present in an amount of 0.1 to 1,000 units per ml or per gram of said compositions; and

(ii) from 0.5 to 50% by weight of said composition of a substrate selected from the group consisting of glucose and C_{1-4} alkanols.

5,574,004

CARBONATE BUILT NON-BLEACHING LAUNDRY DETERGENT COMPOSITION CONTAINING A POLYMERIC POLYCARBOXYLATE AND A ZINC SALT

Charles D. Carr, Yardley, Pa., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Filed Nov. 15, 1994, Ser. No. 340,064

Int. Cl.[6] C11D *3/10;3/04;3/60;17/06*

U.S. Cl. 510—361 **16 Claims**

1. A non-bleaching laundry detergent composition wherein the solids content comprises an active surfactant, at least about 70 wt. % of a water-soluble alkaline carbonate, about 0.05 to 5 wt. % of a completely or partially neutralized polymeric polycarboxylate having a number average molecular weight of 1000 to 10,000, and about 0.01 to about 1.5 wt. % of elemental zinc in the form of a water soluble salt, said surfactant being a synthetic anionic, nonionic, amphoteric, or zwitterionic detergent active compound, or a mixture thereof, and said polymeric polycarboxylate being selected from the group consisting of 1) homopolymers of each of the following unsaturated acid monomers: acrylic acid, methacrylic acid, diacids selected from the group consisting of maleic acid, itaconic acid, fumaric acid, mesoconic acid and citraconic acid, and monoesters of any of said diacids with an alkanol having 1–8 carbon atoms; 2) copolymers of more than one of said unsaturated acid monomers; 3) copolymers of at least about 50 mol % of at least one of said unsaturated acid monomers with at least one of the following non-carboxylic acid unsaturated monomers: styrene, ethylene, propylene, butene-1, vinyl acetate, vinyl chloride, vinyl alcohol, alkyl acrylates, vinyl pyridine, vinyl pyrrolidone, and amides of any of said unsaturated acid monomers; and 4) mixtures thereof.

5,574,005

PROCESS FOR PRODUCING DETERGENT AGGLOMERATES FROM HIGH ACTIVE SURFACTANT PASTES HAVING NON-LINEAR VISCOELASTIC PROPERTIES

Robert G. Welch, Cincinnati; David N. Githuku, Mason, both of Ohio; Lester J. Hollihan, Alexandria, Ky., and Charles A. Jackson, Fayetteville, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 7, 1995, Ser. No. 399,790

Int. Cl.[6] C11D *11/00*

U.S. Cl. 510—444 **12 Claims**

1. A process for preparing detergent agglomerates comprising the steps of:

(a) providing a non-linear viscoelastic surfactant paste including, by weight of said surfactant paste, from about 70% to 95% of a detersive surfactant and from about 5% to about 30% of water, wherein said surfactant paste is a shear thinning paste meeting the following relation

$$\sigma = K\dot{\gamma}^n$$

where σ=Shear Stress (dynes/cm^2), K is a Consistency value of from about 50,000 to about 250,000 cPoise.sec^{n-1}, $\dot{\gamma}$=Shear Rate (sec^{-1}), and n=Rate Index varying from about 0.05 to about 0.25;

(b) regulating the amount of sodium carbonate within the range from about 0.01% to about 0.6% by weight in said surfactant paste such that said surfactant paste has a Maximum Shear Rate of from about 40 sec^{n-1} to about 180 sec^{-1} so that said surfactant paste is processable;

(c) charging said surfactant paste into a high speed mixer/densifier;

(d) inputting from about 1% to about 70% by weight of aluminosilicate into said high speed mixer/densifier; and

(e) agglomerating said surfactant paste and said aluminosilicate by treating said surfactant paste and said aluminosilicate initially in said high speed mixer/densifier and subsequently in a moderate speed mixer/densifier so as to form said detergent agglomerates.

5,574,006

NASALLY ADMINISTRABLE PEPTIDE COMPOSITIONS ON HYDROXYAPATITE CARRIERS

Akira Yanagawa, Yokohama, Japan, assignor to Dott Research Laboratory, Yokohama, Japan

Filed Oct. 18, 1994, Ser. No. 325,652

Claims priority, application Japan, Oct. 19, 1993, 5-284423; Jun. 15, 1994, 6-155456

Int. Cl.[6] A61K *9/14;38/23;38/28;47/02*

U.S. Cl. 514—3 **7 Claims**

4. A method for nasally administering a physiologically active peptide and hydroxyapatite, comprising

nasally administering to a subject in need of such treatment a physiologically effective amount of said physiologically active peptide which is dispersed homogeneously in and adsorbed homogeneously onto said hydroxyapatite, said hydroxyapatite having a mean particle size from 20 μm to 250 μm.

5,574,007

POLYPEPTIDE CAPABLE OF INTERACTING WITH THROMBIN

Michitaka Zushi, Numazu; Komakazu Gomi, Kawasaki; Shuji Yamamoto, Fuji; Koji Suzuki, Tsu, and Akio Matsuda, Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 740,492, Aug. 5, 1991, abandoned. This application Jun. 15, 1994, Ser. No. 261,206

Claims priority, application Japan, Aug. 3, 1990, 2-204978

Int. Cl.[6] C07K *14/435;14/46;* **A61K** *38/17*

U.S. Cl. 514—12 **12 Claims**

1. A substantially pure polypeptide essentially free of other human proteins, said polypeptide consisting of an amino acid sequence represented by the following formula (amino acids 368–480 of SEQ. ID No. 59)

(X)—Pro—Cys—Phe—Arg—Ala—Asn—Cys—Glu—Tyr—Gln—Cys—Gln—Pro—Leu—Asn—Gln—Thr—Ser—Tyr—Leu—Cys—Val—Cys—Ala—Glu—Gly—Phe—Ala—Pro—Ile—Pro—His—Glu—Pro—His—Arg—Cys—Gln—Met—Phe—Cys—Asn—Gln—Thr—Ala—Cys—Pro—Ala—Asp—Cys—Asp—Pro—Asn—Thr—Gln—Ala—Ser—Cys—Glu—Cys—Pro—Glu—Gly—Tyr—Ile—Leu—Asp—Asp—Gly—Phe—Ile—Cys—Thr—Asp—Ile—Asp—Glu—Cys—Glu—Asn—Gly—Gly—Phe—Cys—Ser—Gly—Val—Cys—His—Asn—Leu—Pro—Gly—Thr—Phe—Glu—Cys—Ile—Cys—Gly—Pro—Asp—Ser—Ala—Leu—Val—Arg—His—Ile—Gly—Thr—Asy—Cys

wherein X is selected from the group consisting of Glu, Gla, Asp—Asp, Asp—Asp—Asp, Glu-Asp and Gla-Asp, wherein Gla represents a γ-carboxyglutamic acid residue.

5,574,008

BIOLOGICALLY ACTIVE FRAGMENTS OF GLUCAGON-LIKE INSULINOTROPIC PEPTIDE

William T. Johnson, and Fatima E. Yakubu-Madas, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 30, 1994, Ser. No. 297,731

Int. Cl.[6] A61K *38/00;38/26;* **C07K** *14/605*

U.S. Cl. 514—12 **22 Claims**

1. A GLP-1 fragment of the formula:

R^1-Ser-Tyr-Leu-Glu-Gly-Gln-Ala-Ala-Lys-Glu-Phe-Ile-Ala-TrP-Leu-Val-X-Gly-Arg-R^2 (SEQ ID NO:1)

wherein R^1 is selected from the group consisting of:

a) H_2N-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Val-Ser (SEQ ID NO:7); and,

b) H_2N-Ala-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Val-Ser (SEQ ID NO:8);

X is selected from the group consisting of Lys and Arg;

and wherein R^2 is selected from the group consisting of NH_2, OH, Gly-NH_2, and Gly-OH, with the proviso that when R^1 is b) and R^2 is Gly-NH_2 or Gly-OH, X must be Arg.

5,574,009

METHOD OF STIMULATING MYELINATION OF CELLS

Jeffrey A. Cohen, Bala Cynwyd; Mark L Greene, Penn Valley, and William V. Williams, Havertown, all of Pa., assignors to Trustees of the University Of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 42,167, Apr. 2, 1993, abandoned, which is a division of Ser. No. 541,779, Jun. 21, 1990, Pat. No. 5,219,837. This application Oct. 20, 1994, Ser. No. 326,817

Int. Cl.[6] A61K *38/00;38/02;* **C07K** *5/00;7/00*

U.S. Cl. 514—12 **5 Claims**

1. A method of inducing myelin formation by myelin forming cells expressing reovirus type 3 receptors comprising the step of administering to such cells an amount of a peptide bindable with the reovirus type 3 receptor effective to induce myelin formation, wherein said peptide:

a) consists of less than 75 amino acid residues; and,

b) comprises the amino acid sequence Lys-Pro-Gly-Lys-Thr-Asn-Lys-Leu-Ile-Tyr-Ser-Gly-Ser-Thr-Leu-Gln.

5,574,010

TREATMENT OF PANCREATIC TUMORS WITH PEPTIDE YY AND ANALOGS THEREOF

David W. McFadden, Los Angeles, Calif., assignor to The Regents of The University of California, Oakland, Calif.

Filed Nov. 14, 1994, Ser. No. 338,395

Int. Cl.[6] A61K *38/00;* **C07K** *5/00;7/00*

U.S. Cl. 514—12 **18 Claims**

1. A method of inhibiting proliferation of pancreatic tumors in mammals, said method comprising the step of administering to said mammal an effective amount of PYY or a PYY agonist.

5,574,011

COMPOSITIONS AND METHODS FOR THE TREATMENT OF MALE-PATTERN BALDNESS

Henry C. Tien, 5660 SW. 58 Pl., Miami, Fla. 33143

Filed Apr. 4, 1995, Ser. No. 416,190

Int. Cl.[6] A61K *37/24*

U.S. Cl. 514—14 **43 Claims**

1. A composition for the treatment of male-pattern baldness comprising a therapeutically effective amount of a non-steroidal, polypeptide analog of LHRH capable of suppressing testosterone formation in patients in the active phases of male pattern baldness and a pharmaceutically acceptable carrier thereof.

5,574,012

ANALOGS OF HIRUDIN HAVING ANTI-PLATELET ACTIVITY

John L. Krstenansky, 3455 Rambow Dr., Palo Alto, Calif. 94306, and Robert J. Broersma, Jr., 1233 Willow Way, Noblesville, Ind. 46060

Continuation of Ser. No. 255,846, Jun. 8, 1994, abandoned, which is a continuation of Ser. No. 714,547, Jun. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 557,289, Jul. 24, 1990, abandoned. This application May 19, 1995, Ser. No. 444,618

Int. Cl.[6] A61K *38/00;* **C07K** *5/00;7/00*

U.S. Cl. 514—14 **22 Claims**

1. A method of reducing platelet aggregation in a patient in need thereof which comprises administering to the patient an antiplatelet effective amount of a pepside analog of the formula

$$X—A_1A_2A_3A_4A_5A_6\ A_7A_8A_9A_{10}A_{11}—Y$$

wherein

X is an amino terminal residue selected from aminomethylbenzoyl, guanidinomethylbenzoyl, guanidinomethylchyclohexylcarbonyl, aminomethylcyclohexylcarbonyl, alkyl substituted guanidino or alkyl substituted amino;

A_1 is Gly or a bond;

A_2 is ASP;

$A_3$is Phe, Trp or Tyr(OCH_3);

A_4 is Glu;

A_5 is Pro or Glu;

A_6 is Ile;

A_7 is Pro;

A_8 is Glu;

A_9 is Glu;

A_{10} is Ala-Cha;

A_{11} is glu; and

Y is a carboxy terminal residue selected from OH, C_1–C_6 alkoxy, amino, mono- or di-(C_1–C_4)alkyl substituted amino or benzylamino;

or a pharmaceutically acceptable salt thereof.

5,574,013

N-SUBSTITUTED CYCLOALKYL AND POLYCYCLOALKYL ALPHA-SUBSTITUTED TRP DERIVATIVES

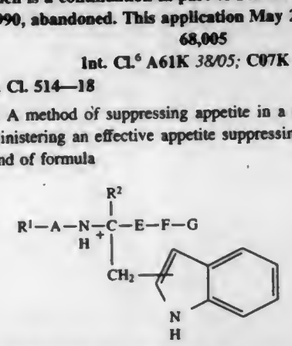
David C. Horwell; Maryin C. Pritchard, both of Cambridge, and Edward Roberts, Newmarket, all of England, assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 726,652, Jul. 12, 1991, Pat. No. 5,264,419, which is a continuation-in-part of Ser. No. 576,024, Aug. 31, 1990, abandoned. This application May 27, 1993, Ser. No. 68,005

Int. Cl.[6] A61K *38/05;* **C07K** *5/00*

U.S. Cl. 514—18 **12 Claims**

1. A method of suppressing appetite in a mammal comprising administering an effective appetite suppressing amount of a compound of formula

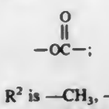


1

or a pharmaceutically acceptable salt thereof wherein:

R^1 is a 2-adamantyl or 1-(S)-2-endobornyl;

A is



R^2 is $—CH_3$, $—CH_2CO_2H$, or $—CH_2{=}CH$;

E is —CONH—;

F is a bond or is a des-N form of alanine, substituted β-alanine, glycine, isoleucine, leucine, methionine, or valine; and

G is OH, NH_2, $—NHCOCH_2CH_2CO_2H$, $—NHCOCH_2CH_2COCH_2C_6H_5$, $—NHCOCH_2CO_2H$, $—NHCOCH{=}CHCO_2H$, $—CH_2CO_2H$, $—OCOCH_2CH_2CO_2H$, $—CH_2SCH_2CO_2H$, or $—CH_2SCH_2CH_2CO_2H$, and

G cannot be hydrogen when F is a bond.

5,574,014

INHIBITORS OF TRYPSIN-LIKE ENZYMES

Goran Claeson, London, England; Manfred H. W. Philipp, Scarsdale, N.Y., and Rainer Metternich, Inzlingen, Germany, assignors to Thrombosis Research Institute, London, United Kingdom

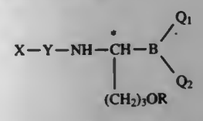
Continuation of Ser. No. 998,632, Dec. 30, 1992, abandoned, which is a continuation of Ser. No. 795,219, Nov. 20, 1991, abandoned, which is a continuation of Ser. No. 680,496, Apr. 4, 1991, abandoned, which is a continuation of Ser. No. 406,663, Sep. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 181,511, Apr. 28, 1988, abandoned. This application May 10, 1994, Ser. No. 240,606

Claims priority, application United Kingdom, Feb. 2, 1989, 8902304

Int. Cl.[6] A61K *38/00;* **C07K** *5/00;7/00;16/00*

U.S. Cl. 514—18 **14 Claims**

1. A method of inhibiting thrombin in the treatment of disease comprising administering to a mammal a therapeutically effective amount of a compound of the formula:



in which X=H or is an N-protecting group; Y is Phe-Pro; Q1 and Q2 taken together represent the residue of a diol; R is C_{1-4} alkyl; and the asymmetric carbon atom marked * may have the D- or L- configuration.

5,574,015

ISOSTERIC ANTIHERPES PEPTIDE DERIVATIVES

Pierre L. Beaulieu, Montréal; Robert Déziel, Ville Mont-Royal; Neil Moss, and Raymond Plante, both of Laval, all of Canada, assignors to Bio-Mega/Boehringer Ingelheim Research Inc., Laval, Canada

Continuation of Ser. No. 25,507, Mar. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 849,918, Mar. 12, 1992, abandoned. This application Oct. 17, 1994, Ser. No. 324,434

Int. Cl.[6] A61K *38/06*

U.S. Cl. 514—18 **14 Claims**

1. A peptide of formula 1

A-B-D-CH_2CH{CH_2C(O)R^1}C(O)—NHCH{$CR^2(R^3)$COOH}C(O)—E, Formula 1

wherein

A is phenylacetyl, phenylpropionyl, (4-aminophenyl)-propionyl, (4-fluorophenyl)propionyl, (4-hydroxyphenyl)propionyl, (4-methoxyphenyl)-propionyl, 2-(phenylmethyl)-3-phenylpropionyl, 2-{(4-fluorophenyl)methyl}-3-(4-fluorophenyl)propionyl, 2-{(4-methoxyphenyl)methyl}-3-(4-methoxyphenyl)propionyl or benzylaminocarbonyl;

B is (N-Me)-Val or (N-Me)-Ile;

or A and B together form a saturated or unsaturated alkylaminocarbonyl selected from the group of butyl-aminocarbonyl, 1-methylethylaminocarbonyl, 1-methylpropylaminocarbonyl, 1-ethylpropylaminocarbonyl, 1,1-dimethylbutylaminocarbonyl, 1-ethylbutylaminocarbonyl, 1-propylbutylaminocarbonyl, 1-ethylpentylaminocarbonyl, 1-butylpentylaminocarbonyl, 2-ethylbutylaminocarbonyl, 2-ethylpentylaminocarbonyl, 1-methyl-1-propylbutylaminocarbonyl, 1-ethyl-1-propylbutylaminocarbonyl, 1,1-dipropylbutylaminocarbonyl, (1-propylcyclopentyl)aminocarbonyl, (1-propylcyclohexyl)-aminocarbonyl, 1-(2-propenyl)-3-butenylaminocarbonyl, 1-methyl-1-(2-propenyl)-3-butenylaminocarbonyl and 1-ethyl-1-(2-propenyl)-3-butenylaminocarbonyl;

D is Val, Ile or Tbg;

R^1 is 1-methylethyl, 1,1-dimethylethyl, 1-methylpropyl, 1,1-dimethylpropyl, 2,2-dimethylpropyl, cyclobutyl, cyclopentyl, cyclohexyl, 1-methylcyclopentyl, NMe_2, NEt_2, pyrrolidino or morpholino;

R^2 is hydrogen,

R^3 is methyl, ethyl, 1-methylethyl, 1,1-dimethylethyl, propyl, 2-propenyl or benzyl, and the carbon atom bearing R^2 and R^3 has the (R)-configuration,

or R^2 and R^3 each independently is methyl or ethyl, or R^2 and R^3 together with the carbon atom to which they are attached form a cyclobutyl, cyclopentyl or cyclohexyl; and

E is NHR^9 wherein R^9 is 2-methylpropyl, 2,2-dimethylpropyl, 1(R),2,2trimethypropyl, 1,1,2,2-tetramethylpropyl, 1(R)-ethyl-2,2-dimethylpropyl, 2-(R,S)-methylbutyl, 2,2-dimethylbutyl, 3,3-dimethylbutyl, 1(R),2,2-trimethylbutyl, 1(R),3,3-trimethylbutyl, 2-ethylbutyl, 2,2-diethylbutyl, 2-ethyl-1(R)-methylbutyl, 2-ethyl-2methylbutyl, 1(R)-ethyl-3,3-dimethylbutyl, 2,2-dimethylpentyl, cis- or trans-2-methylcyclohexyl, 2,2-dimethylcyclohexyl or cyclohexylmethyl; or E is $NHNR^{10}R^{11}$ wherein R^{10} is hydrogen, methyl or ethyl and R^{11} is 1,1-dimethylethyl; or E is $NHCH(R^{12})$—Z wherein the carbon atom bearing R^{12} has the (S)-configuration, R^{12} is 1,1-dimethylethyl, 1-methylpropyl, 2-methylpropyl, 2,2-dimethylpropyl or cyclohexylmethyl and Z is CH_2OH, C(O)OH, $C(O)NH_2$ or $C(O)OR^{13}$ wherein R^{13} is methyl, ethyl or propyl;

or a pharmaceutically acceptable salt thereof.

5,574,016

PEPTIDE COMPOUND AND A PROCESS FOR THE PREPARATION THEREOF

Hisashi Takasugi, Osaka; Akito Tanaka, Takarazuka; Hiroyoshi Sakai, Uji, and Takatoshi Ishikawa, Ikeda, both of Japan, assignors to Fujisawa Pharmaceutical co., Ltd., Osaka, Japan

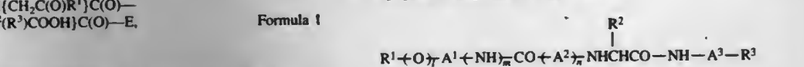
Continuation of Ser. No. 148,403, Nov. 8, 1993, abandoned, which is a continuation of Ser. No. 881,720, May 12, 1992, abandoned. This application May 22, 1995, Ser. No. 446,288

Claims priority, application United Kingdom, May 13, 1991, 9110298; Feb. 3, 1992, 9202260

Int. Cl.[6] A61K *38/00;* **C07K** *5/00;7/00;17/00*

U.S. Cl. 514—18 **7 Claims**

1. A peptide compound of the formula



wherein

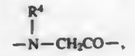
R^1 is phenyl substituted by one or more members selected from the group consisting of amidino and amidino substituted by a member selected from the group consisting of ar(C1–C6)alkyl; (C1–C6)alkanoyl; (mono, di, or tri)-halo(C1–C6)alkanoyl; (mono, di, or tri)-halo(C1–C6)alkoxycarbonyl; (C1–C6)alkoxycarbonyl; benzoyl; toluoyl; xyloyl; naphthoyl; ar(C1–C6)alkanoyl; aryloxycarbonyl; aryloxy(C1–C6) alkanoyl; arylglyoxyloyl; ar(C1–C6)alkoxycarbonyl which may be unsubstituted or substituted by nitro or (C1–C6)alkoxy; thienylacetyl; imidazolylacetyl; furylacetyl; tetrazolylacetyl; triazolylacetyl; thiadiazolylacetyl; thienylpropionyl; thiadiazolylpropionyl; (C1–C6)alkylsulfonyl; arylsulfonyl; and ar(C1–C6)alkylsulfonyl;

R^2 is carboxy(C1–C6)alkyl or esterified carboxy(C1–C6)alkyl,

R^3 is carboxy or esterified carboxy,

A^1 is (C1–C12)alkylene which may be unsubstituted or substituted by amino or amino substituted by (C1–C6)alkanoyl;

A^2 is a group of the formula



wherein R^4 is (C1–C6)alkyl,
or a group of the formula

—NHCH$_2$CH$_2$CO—;

A^3 is (C1–C6)alkylene which may be unsubstituted or substituted by from 1 to 3 substituents selected from the group consisting of (C1–C6)alkyl; ar(C1–C6)alkyl which may be unsubstituted or substituted by from 1 to 3 substituent(s) selected from the group consisting of hydroxy, (C1–C6)alkoxy, ar(C1–C6)alkoxy, (C1–C6)alkanoyloxy, (mono, di, or tri)-halo(C1–C6)alkanoyloxy, (mono, di, or tri)-halo(C1–C6)alkoxycarbonyloxy, (C1–C6)alkoxycarbonyloxy, benzoyloxy, toluoyloxy, xyloyloxy, naphthoyloxy, ar(C1–C6)alkanoyloxy, aryloxycarbonyloxy, aryloxy(C1–C6)alkanoyloxy, arylglyoxyloyloxy, ar(C1–C6)alkoxycarbonyloxy which may be unsubstituted or substituted by nitro or (C1–C6)alkoxy, thienylacetyloxy, imidazolylacetyloxy, furylacetyloxy, tetrazolylacetyloxy, triazolylacetyloxy, thiadiazolylacetyloxy, thienylpropionyloxy, thiadiazolylpropionyloxy, (C1–C6)alkylsulfonyloxy, arylsulfonyloxy, and ar(C1–C6)alkylsulfonyloxy; hydroxy(C1–C6)alkyl; (C1–C6)alkoxy(C1–C6)alkyl; ar(C1–C6)alkoxy(C1–C6)alkyl; acyloxy(C1–C6)alkyl, wherein acyl is a member selected from the group consisting of (C1–C6)alkanoyl, (mono, di, or tri)-halo(C1–C6)alkanoyl, (mono, di, or tri)-halo(C1–C6)alkoxycarbonyl, (C1–C6)alkoxycarbonyl, benzoyl, toluoyl, xyloyl, naphthoyl, ar(C1–C6)alkanoyl, aryloxycarbonyl, aryloxy(C1–C6)alkanoyl, arylglyoxyloyl, ar(C1–C6)alkoxycarbonyl which may be unsubstituted or substituted by nitro or (C1–C6)alkoxy, thienylacetyl, imidazolylacetyl, furylacetyl, tetrazolylacetyl, triazolylacetyl, thiadiazolylacetyl, thienylpropionyl, thiadiazolylpropionyl, (C1–C6)alkylsulfonyl, arylsulfonyl, and ar(C1–C6)alkylsulfonyl; cyclo(C5–C6)alkyl-(C1–C6)alkyl; and heterocyclic(C1–C6)alkyl, wherein heterocyclic is a member selected from the group consisting of unsaturated 3 to 8-membered heteromonocyclic groups containing 1 to 4 nitrogen atoms, saturated 3 to 8-membered heteromonocyclic groups containing 1 to 4 nitrogen atoms, unsaturated condensed heterocyclic groups containing 1 to 5 nitrogen atoms, unsaturated 3 to 8-membered heteromonocyclic groups containing 1 to 2 oxygen atoms and 1 to 3 nitrogen atoms, saturated 3 to 8-membered heteromonocyclic groups containing 1 to 2 oxygen atoms and 1 to 3 nitrogen atoms, unsaturated condensed heterocyclic groups containing 1 to 2 oxygen atoms and 1 to 3 nitrogen atoms, saturated 3 to 8-membered heteromonocyclic groups containing 1 to 2 sulfur atoms and 1 to 3 nitrogen atoms, unsaturated 3 to 8-membered heteromonocyclic groups containing a sulfur atom, unsaturated condensed heterocyclic groups containing 1 to 2 sulfur atoms and 1 to 3 nitrogen atoms, unsaturated 3 to 8-membered heteromonocyclic groups containing 1 to 2 oxygen atoms, saturated 3 to 8-membered heteromonocyclic groups containing 1 to 2 oxygen atoms, and unsaturated condensed heterocyclic groups containing 1 to 2 oxygen atoms;

l, m and n are each the same or different and are an integer of 0 or 1;

with the proviso that A^2 is not a group of the formula

—NHCH$_2$CH$_2$CO—

when l is an integer of 0.

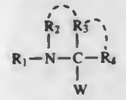
5,574,017

ANTIBACTERIAL AGENTS

William G. Guthell, 7 Ocean View Dr. Apt. 710, Boston, Mass. 02125

Filed Jul. 5, 1994, Ser. No. 270,818
Int. Cl.[6] A61K *38/05;38/04;31/69*
U.S. Cl. 514—19 **21 Claims**

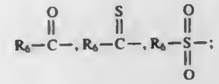
1. A method of treating a bacterial infection in an animal, which method comprises administering to said animal an antibacterial amount of a compound sufficient to to inhibit bacterial cell wall biosynthesis by a penicillin binding protein. of bacteria causing the infection, the compound represented by the general formula



wherein

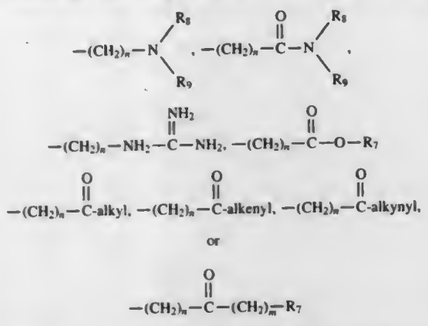
W represents BY_1Y_2, or C(=O)R_5;

R_1 represents a C-terminally linked amino acid residue or amino acid analog, or a C-terminally linked peptide or peptide analog, o



R_2 represents hydrogen, an alkyl, an alkenyl, an alkynyl, —(CH_2)m-R_7, —(CH_2)m-OH, —(CH_2)m-O-alkyl, —(CH_2)m-O-alkenyl, —(CH_2)m-O-alkynyl, —(CH_2)m-O-C(=O)-alkyl, —(CH_2)m-O-C(=O)-alkenyl, —(CH_2)m-O-C(=O)-alkynyl —(CH_2)m-O-C(= O)-(CH_2)m-R_7;

R_3 and R_4 each represent hydrogen, a alkyl, a alkenyl, a alkynyl, —(CH_2)m-R_7, —(CH_2)n-OH, —(CH_2)n-O-alkyl, —(CH_2)n-O-alkenyl, —(CH_2)n-O-alkynyl, —(CH_2)n-O-(CH_2)m-R_7, —(CH_2)n-SH, —(CH_2)n-S-alkyl, —(CH_2)n-S-alkenyl, —(CH_2)n-S-alkynyl, —(CH_2)n-S-(CH_2)m-R_7, an α-carbon linked side chain of an amino acid or an amino acid analog,



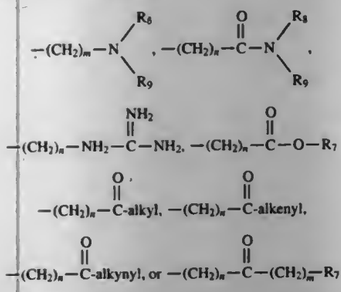
R_2 and R_3 taken together can complete a ring having from 4 to 8 atoms in the ring structure,

or, provided R_2 and R_3 are not taken together forming a ring, R_3 and R_4 taken together can complete a ring having from 3 to 8 atoms in the ring structure,

Y_1 and Y_2 can independently or together be OH, or a group capable of being hydrolyzed to a hydroxyl group, including cyclic derivatives where Y_1 and Y_2 are connected via a ring having from 5 to 8 atoms in the ring structure,

R_5 represents H, an alkyl, an alkenyl, an alkynyl, —(CH_2)m-R_7, —(CH_2)n-OH, —CH_2)n-O-alkyl, —(CH_2)n-O-alkenyl, —(CH_2)n-O-alkynyl, —(CH_2)n-O-(CH_2)m-R_7, —(CH_2)n-SH, —(CH_2)n-S-alkyl, —(CH_2)n-S-alkenyl, —(CH_2)n-S-alkynyl, —(CH_2)n-S—(CH_2)m-R_7, —CH_2O-R_{10},

R_6 represents hydrogen, a halogen, a alkyl, a alkenyl, a alkynyl, an aryl, —(CH_2)m-R_7, —(CH_2)m-OH, —(CH_2)m-O-alkyl, —(CH_2)m-O-alkenyl, —(CH_2)m -O-alkynyl, —(CH_2)m -O-(CH_2)m-R_7, —(CH_2)mSH, —(CH_2)m-S-alkyl, —(CH_2)m-S-alkenyl, —(CH_2)mS-alkynyl, —(CH_2)m-S-(CH_2)m-R_7,

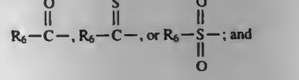


R_7 represents an aryl, a cycloalkyl, a cycloalkenyl, or a heterocycle;

R_8 and R_9 each independently represent hydrogen, alkyl, alkenyl, —(CH_2)m-R_7, —C(=O)-alkyl, —C(=O)-alkenyl, —C(=O)-alkynyl, —C(=O)-(CH_2)m-R_7,

or R_8 and R_9 taken together with the N atom to which they are attached complete a heterocyclic ring having from 4 to 8 atoms in the ring structure;

R_{10} represents represents a C-terminally linked amino acid residue or amino acid analog, or a C-terminally linked peptide or peptide analog,



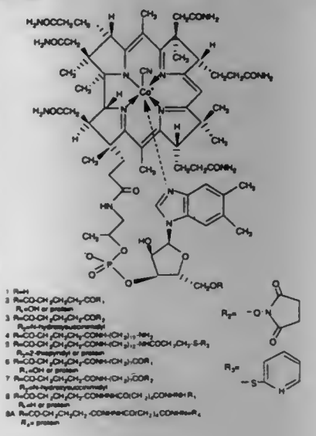
m is zero or an integer in the range of 1 to 8; and n is an integer in the range of 1 to 8.

5,574,018

CONJUGATES OF VITAMIN B12 AND PROTEINS

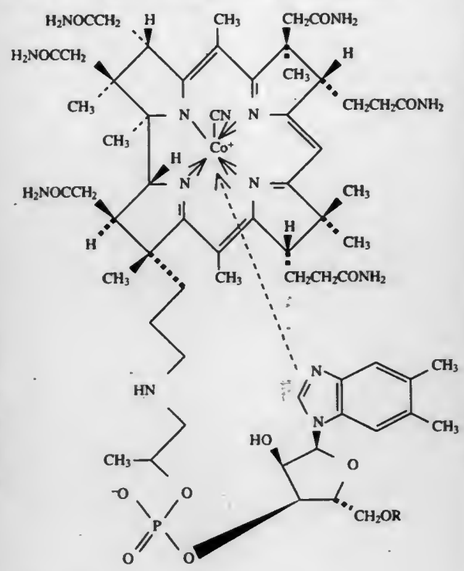
Alan D. Habberfield, Pacific Palisades; Olaf B. Kinstler, and Colin G. Pitt, both of Thousand Oaks, all of Calif., assignors to Amgen Inc., Thousand Oaks, Calif.

Filed Jul. 29, 1994, Ser. No. 282,384
Int. Cl.[6] A61K *31/68;38/41;* **C07H** *23/00;* **C07K** *14/00*
U.S. Cl. 514—21 **24 Claims**



1. A biologically active conjugate of vitamin B_{12} and a therapeutic protein in which the therapeutic protein is covalently linked to a dicarboxylic acid derivative of the primary (5') hydroxyl group of the ribose moiety of vitamin B12.

2. A biologically active conjugate of vitamin B_{12} and a therapeutic protein according to claim 1, which has the formula:



in which R is

(1) CO—(CH_2)$_n$—COR_1 wherein R_1 is the protein, or

(2) CO—(CH_2)$_n$—CONH—(CH_2)$_{12}$-NHCOCH$_2$CH$_2$—S—R_3 wherein R_3 is the protein, or

(3) CO—(CH_2)$_n$—CONH—(CH_2)$_7$$COR_1$ wherein R_1 is the protein, or

(4) CO—(CH_2)$_n$—CONHNHCO(CH_2)$_4$ CONHNHR_1 wherein R_1 is the protein, or

(5) CO—(CH_2)$_n$—CONHNHCO(CH_2)$_4$CONHN=R_4 wherein R_4 is the protein,

and n is an integer from 1 to 12.

5,574,019

METHOD OF PERFUSING A PRIMATE

Paul E. Segall; Hal Sternberg, and Harold D. Waitz, all of Berkeley, Calif., assignors to Biotime, Inc., Berkeley, Calif.

Continuation of Ser. No. 860,703, Apr. 1, 1992, abandoned, which is a continuation-in-part of Ser. No. 687,841, Apr. 19, 1991, abandoned. This application Sep. 10, 1993, Ser. No. 119,962
Int. Cl.[6] A01N *43/04;25/00;* **A61M** *37/00;5/00*
U.S. Cl. 514—23 **33 Claims**

1. A method for maintaining a blood-substituted primate, comprising the steps of:

reducing the subject's temperature to a temperature below normal and above −2.5° C.;

arresting the subject's heart beat;

maintaining the subject in a reduced temperature state from which the subject can be revived by circulating into the cooled subject with arrested heart a single solution consisting essentially of a polysaccharide oncotic agent, a physiologically compatible buffer providing a buffering capacity in a pH range of between about 7.2 to about 7.9, a simple hexose sugar, dissolved chloride salts of calcium, sodium and magnesium, and sodium gluconate, wherein the solution does not

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contain potassium ions or potassium salt and further wherein the solution has an osmolarity about that of physiologically normal plasma; and

reinfusing the subject with warm blood while warming the subject to a point where the subject is revised.

5,574,020

TILMICOSIN FORMULATION

Paul R. Klink, and Thomas D. Thomson, both of Greenfield, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 747,221, Aug. 19, 1991, abandoned, which is a continuation of Ser. No. 414,037, Sep. 28, 1989, abandoned. This application Jan. 13, 1995, Ser. No. 372,697

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—30 **3 Claims**

1. An aqueous injectable tilmicosin formulation comprising:

tilmicosin 250–350 mg/ml and

propylene glycol 250 mg/ml, and having a pH adjusted to 6.

5,574,021

METHODS OF TREATMENT USING 2',3'-DIDEOXY-2',2'-DIFLUORONUCLEOSIDES

Larry W. Hertel, and Julian S. Kroin, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 173,256, Dec. 27, 1993, which is a continuation of Ser. No. 394,382, Aug. 15, 1989, abandoned, which is a continuation-in-part of Ser. No. 295,321, Jan. 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 156,116, Feb. 16, 1988, abandoned. This application Jun. 2, 1995, Ser. No. 458,110

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—45 **2 Claims**

1. A method for treating leukemia in a mammal comprising administering to a mammal in need of such treatment an effective amount of a 2',3'-dideoxy-2',2'-difluoronucleoside compound, said amount being about 0.1 mg to about 1200 mg per kilogram of body weight per day, and said compound being selected from the group consisting of

β-1'-(4-amino-2-oxo-1H-pyrimidin-1-yl)-2',3'-dideoxy-2',2'-difluororibose,

β-1'-(2,6-diamino-9H-purin-9-yl)-2',3'-dideoxy-2',2-difluororibose,

β-1'-(2-amino-6-oxo-9H-purin-9-yl)-2',3'-dideoxy-2',2-difluororibose,

β-1'-(5-methyl-2,4-dioxo-1H,3H-pyrimidin-1-yl)-3'-azido-2',3'-dideoxy- 2',2'-difluororibose,

β1'-(5-methyl-2,4-dioxo-1H,3H-pyrimidin-1-yl)-2',3'-dideoxy-2',2'-difluororibose,

α-1'-(6-amino-9H-purin-9-yl)-3'-azido-2',3'-dideoxy-2',2'-difluororibose,

β-1'-(6-amino-9H-purin-9-yl)-3'-azido-2',3'-dideoxy-2',2'-difluororibose,

α-1'-(4-amino-2-oxo-1H-pyrimidin-1-yl)-3'-azido-2',3'-dideoxy-2',2'-difluororibose, and

β-1'-(4-amino-2-oxo-1H -pyrimidin-1-yl)-3'-azido-2',3'-dideoxy-2',2'-difluororibose or

a pharmaceutically acceptable salt thereof.

5,574,022

METHOD OF ATTENUATING PHYSICAL DAMAGE TO THE SPINAL CORD

Eugene Roberts, Monrovia, Calif., and Lloyd Guth, Ford's Colony, Va., assignors to the Center for Innovative Technology, Herndon, Va.; the College of William and Mary, Williamsburg, Va., and City of Hope, Duarte, Calif.

Filed Apr. 14, 1994, Ser. No. 227,533

Int. Cl.[6] A61K *31/715;31/60;31/56*

U.S. Cl. 514—54 **8 Claims**

1. A method for attenuating physical damage to a spinal cord of a patient and promoting recovery of motor functions, wherein said patient has a trauma of the spinal cord which is less than severing and which is sufficient to cause loss of motor function, comprising the steps of:

subcutaneously administering to said patient a therapeutically effective amount of pregnenolone or pregnenolone sulfate;

administering to said patient together with said pregnenolone or pregnenolone sulfate provided by said subcutaneously administering step therapeutically effective amounts of

(I) a substance that stimulates secretion of cytokines by macrophages, and

(II) a non-steroidal antiinflammatory drug,

said pregnenolone or pregnenolone sulfate provided in said subsutaneously administering step, said substance that stimulates secretion of cytokines provided in said administering step, and said non-steroidal antiinflammatory drug administered in said administering step being sufficient to repair physical damage to said patient's spinal cord and restore motor functions to said patient.

5,574,023

INTRAMOLECULARLY CROSSLINKED (1→3)-β-D-GLUCANS

Yuko Shibata; Jun Aketagawa, and Shigenori Tanaka, all of Tokyo, Japan, assignors to Seikagaku Kogyo Kabushiki Kaisha (Seikagaku Corporation), Tokyo, Japan

Continuation of Ser. No. 926,394, Aug. 10, 1992, abandoned. This application Jan. 6, 1995, Ser. No. 369,321

Claims priority, application Japan, Aug. 8, 1991, 3-222451

Int. Cl.[6] A01N *43/04;* **A61K** *31/715;* **C07G** *3/00;* **C12P** *19/04*

U.S. Cl. 514—54 **6 Claims**

1. A method of producing an islolated (1→3)-β-D-glucan that is intramolecularly crosslinked to have a stable single helix conformation which method comprises:

(a) forming a single helix conformation of an isolated (1→3)-β-D-glucan having at least 20 D-glucoside units having hydroxyl groups, wherein the hydrogen atoms of at least part of the hydroxyl groups are substituted with functional groups that are reactive with a bifunctional crosslinking agent, and

(b) intramolecularly crosslinking the glucan between the functional groups described in said step (a) by using said crosslinking agent in the presence of polyethylene glycol, polyvinyl alcohol, polyvinylpyrrolidone or water-soluble copolymers that contain at least one of polyethylene glycol, polyvinyl alcohol, or polyvinylpyrrolidone as principal constituents, which are not reactive with the functional groups described in said step (a) so as to prevent intermolecular crosslinking.

5,574,024

METHYLENE PHOSPHONOALKYLPHOSPHINATES, PHARMACEUTICAL COMPOSITIONS, AND METHODS FOR TREATING ABNORMAL CALCIUM AND PHOSPHATE METABOLISM

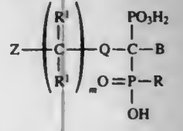
Frank H. Ebetino, Norwich Eaton Pharmaceuticals, Inc., Woods Corners, P.O. Box 191, Norwich, N.Y. 13815-0191

Continuation of Ser. No. 672,149, Mar. 19, 1991, abandoned, which is a continuation of Ser. No. 69,666, Jul. 6, 1987, abandoned. This application Jun. 3, 1994, Ser. No. 253,818

Int. Cl.[6] A61K *31/44;31/445;* **C07F** *9/58;9/59*

U.S. Cl. 514—89 **26 Claims**

1. A methylene phosphonoalkylphosphinic acid compound having the following structure:



wherein

(a) m is an integer from 0 to 10;

(b) Q is NR^2; where R^2 is selected from the group consisting of hydrogen, lower alkyl, and lower alkyl acyl, or is replaced by a second bond between the nitrogen which it is on and an adjacent atom capable of accepting a second bond;

(c) is a moiety selected from the group consisting of hydrogen and unsubstituted and substituted alkyl; wherein said substituents in the substituted alkyl include halogen, unsubstituted and substituted phenyl, unsubstituted and substituted pyridinyl, unsubstituted amino, amino substituted with one or two lower alkyl groups, hydroxy, carboxy, and chemically-stable combinations thereof;

(d) B is a moiety selected from the group consisting of hydrogen; unsubstituted and substituted lower alkyl; unsubstituted and substituted cycloalkyl having from 3 to 7 atoms in the ring; unsubstituted and substituted heterocycles having 5 or 6 atoms in the ring and 1—3 heteroatoms selected from O, S, P, or N; unsubstituted and substituted phenyl; —CO_2H, the pharmaceutically-acceptable salts thereof, the pharmaceutically-acceptable lower alkyl esters thereof, the unsubstituted amide thereof, and the amide thereof substituted with one or two lower alkyl groups;

wherein said substituted alkyls and substituted C_1–C_6 cycloalkyls are substituted with with a member selected from the group consisting of alkyl; halogen; nitro; cyano; heterocycle; aryl; heteroaryl; unsubstituted amino, the alkyl amides thereof, the heterocycle amides thereof, the aryl amides thereof, or the heteroaryl amides thereof; amino substituted with one alkyl, heterocycle, aryl or heteroaryl group and the alkyl amides thereof; amino substituted independently with one alkyl group and one alkyl, heterocycle, aryl or heteroaryl group; hydroxy, the alkyl esters thereof, the heterocycle esters thereof, the aryl esters thereof, or the heteroaryl esters thereof; ether having an alkyl, heterocycle, aryl or heteroaryl group; thiol, alkyl thiol esters, heterocycle thiol esters, aryl thiol esters, and heteroaryl thiol esters; thioether having an alkyl, heterocycle, aryl or heteroaryl group; —SO_3H, the pharmaceutically-acceptable salts thereof, the pharmaceutically-acceptable alkyl esters thereof, the unsubstituted amide thereof, and the amide thereof substituted with one or two alkyl groups; —CO_2H, the pharmaceutically-acceptable salts thereof, the pharmaceutically-acceptable alkyl esters thereof, the unsubstituted amide thereof, and the amide thereof substituted with one or two alkyl groups; PO_3H_2, the pharmaceutically-acceptable salts thereof, the pharmaceutically-acceptable alkyl esters thereof, the unsubstituted amide thereof, and the amide thereof substituted with one or two alkyl groups; —(R^8)PO_2H (where R^8 is hydrogen or unsubstituted lower alkyl), the pharmaceutically-acceptable salts thereof, the pharmaceutically-acceptable alkyl esters thereof, the unsubstituted amide thereof, and the amide thereof substituted with one or two alkyl groups; aldehyde; ketone having an alkyl group; carbamate, unsubstituted or substituted with one or two alkyl groups; and combinations thereof; and

wherein said substituted heterocycles are substituted halogen; nitro; cyano; heterocycle; aryl; heteroaryl; unsubstituted amino, the alkyl amides thereof, the heterocycle amides thereof, the aryl amides thereof, or the heteroaryl amides thereof; amino substituted with one alkyl, heterocycle, aryl or heteroaryl group and the alkyl amides thereof; amino substituted independently with one alkyl group and one alkyl group and one alkyl, heterocycle, aryl or heteroaryl group; hydroxy, the alkyl esters thereof, the heterocycle esters thereof, the aryl esters thereof, and the heteroaryl esters thereof; ether having an alkyl, heterocycle, aryl or heteroaryl group; thiol, alkyl thiol esters, heterocycle thiol esters, aryl thiol esters, and heteroaryl thiol esters; thioether having an alkyl, heterocycle, aryl or heteroaryl group; —SO_3H, the pharmaceutically-acceptable salts thereof, the pharmaceutically-acceptable alkyl esters thereof, the unsubstituted amide thereof, and the amide thereof substituted with one or two alkyl groups; —CO_2H, the pharmaceutically-acceptable salts thereof, the pharmaceutically-acceptable alkyl esters thereof, the unsubstituted amide thereof, and the amide thereof substituted with one or two alkyl groups; PO_3H_2, the pharmaceutically-acceptable salts thereof, the pharmaceutically-acceptable alkyl esters thereof, the unsubstituted amide thereof, and the amide thereof substituted with one or two alkyl groups; —(R^8)PO_2H (where R^8 is hydrogen or unsubstituted lower alkyl), the pharmaceutically-acceptable salts thereof, the pharmaceutically-acceptable esters thereof, the unsubstituted amide thereof, and the amide thereof substituted with one or two alkyl groups; aldehyde; ketone having an alkyl group; carbamate, unsubstituted or substituted with one or two alkyl groups; and combinations thereof; and

wherein when the B moiety is substituted with a heterocycle, said heterocycle has 5 to 6 atoms in the ring and 1–3 heteroatoms selected from O, S, P or N; and wherein when the B moiety is substituted with an aryl, said aryls have 6–7 atoms in the ring; and wherein when the B moiety is substituted with a heteroaryl, said heteroaryl has 5 or 6 atoms in the ring and 1–3 heteroatoms selected from N, O, P or S;

(e) Z is unsubstituted or substituted pyridyl; wherein the Z moiety substituents are selected from the group consisting of halogen; lower alkyl; unsubstituted amino, and the lower alkyl amide thereof; amino substituted with one lower alkyl group, and the lower alkyl amide thereof; amino substituted independently with two lower alkyl groups; hydroxy, or the lower alkyl esters thereof; ether having a lower alkyl group; —CO^2H, the pharmaceutically acceptable salts thereof, the pharmaceutically-acceptable lower alkyl esters thereof, the unsubstituted amide thereof, and the amide thereof substituted with one or two lower alkyl groups; nitro; and combinations thereof; and

(f) each R^1 is independently selected from the group consisting of hydrogen, halogen, lower alkyl, unsubstituted amino or the lower alkyl amide thereof, amino substituted with one lower alkyl group or the lower alkyl amide thereof; amino independently substituted with two lower alkyl groups, hydroxy or the lower alkyl ester thereof, —CO_2H or the pharmaceutically-acceptable salts thereof or the pharmaceutically-acceptable lower alkyl esters thereof or the unsubstituted amide thereof or the amide thereof substituted with one or two lower alkyl groups, ether having a lower alkyl group, —PO_3H_2 or the pharmaceutically-acceptable salts thereof, and nitro, two R^1's on the same carbon atom being =O or =NR^9 (where R^9 is unsubstituted lower alkyl or may be hydrogen when there is another nitrogen atom attached to the same carbon atom as the =NR^9 moiety), and two R^1's on adjacent carbon atoms being replaced by an additional bond between the carbon atoms;

and the pharmaceutically-acceptable salts thereof.

171-487 O.G.–96–15: QL3

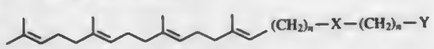
5,574,025

INHIBITORS OF PRENYL-PROTEIN TRANSFERASES

Neville J. Anthony, Hatfield; Robert P. Gomez, Perkasie, and Charles A. Omer, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 26, 1994, Ser. No. 329,587
Int. Cl.[6] A61K *31/66; C07F 9/40;9/38;9/24*
U.S. Cl. 514—129 4 Claims

1. A compound which inhibits geranylgeranyl protein transferase type I having the formula I:



wherein:
X is CH_2, CH(OH)C=O, CHOR, $CH(NH_2)$, CH(NHCOR), NH, NHCO, OCNH, NHP(O) OH;
p is 0, 1 or 2;
Y is PO_3 RR_1;
R is H, lower alkyl, $CH_2CH_2N^+ME_3A^-$;
R_1 is H, lower alkyl, $CH_2CH_2N^+Me_3A^-$;
A is a pharmaceutically acceptable anion;
n is 0, 1, 2 or 3;
or the pharmaceutically acceptable salts thereof.

5,574,026

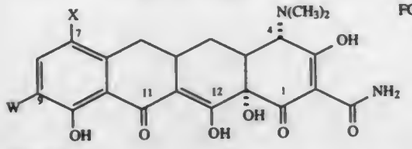
METHODS FOR INHIBITING ANGIOGENESIS PROLIFERATION OF ENDOTHELIAL OR TUMOR CELLS AND TUMOR GROWTH

Joseph M. Backer, Tenafly, N.J.; Peter Bohlen, Cortland Manor, and Phaik-Eng Sum, Pomona, both of N.Y., assignors to American Cyanamid Company, Madison, N.J.

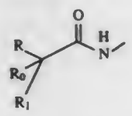
Filed Dec. 13, 1994, Ser. No. 355,392
Int. Cl.[6] A61K *31/65;31/025*
U.S. Cl. 514—152 6 Claims

1. A method for inhibiting angiogenesis and endothelial cell proliferation which comprises administering an effective inhibitory amount of a compound of formula I:

FORMULA I



wherein:
X is halogen selected from chlorine, bromine, fluorine or iodine;
W is hydrogen or a formula of the moiety:



wherein:
R and R_0 are the same or different and are selected from hydrogen and straight or branched $(C_1–C_4)$alkyl;
R_1 is $(C_3–C_5)$azacycloalkane or $(C_3–C_6)$cycloalkyl amino; or a pharmaceutically acceptable salt thereof; alone of in combination with a therapeutic agent used in the treatment of an angiogenic disorder;
to a warm blooded animal having a disorder characterized by the undesired proliferation of endothelial cells.

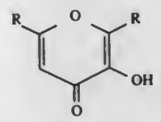
5,574,027

PHARMACEUTICAL COMPOSITIONS OF GALLIUM COMPLEXES OF 3-HYDROXY-4-PYRONES

Lawrence R. Bernstein, 380 Willow Rd., Menlo Park, Calif. 94025

Continuation of Ser. No. 309,624, Sep. 21, 1994, abandoned, which is a continuation of Ser. No. 104,623, Aug. 11, 1993, abandoned, which is a continuation of Ser. No. 782,434, Oct. 25, 1991, Pat. No. 5,258,376, which is a continuation-in-part of Ser. No. 656,016, Feb. 14, 1991, abandoned, which is a continuation of Ser. No. 440,277, Nov. 22, 1989, abandoned. This application Jul. 21, 1995, Ser. No. 505,037
Int. Cl.[6] A61K *31/555*
U.S. Cl. 514—184 8 Claims

1. A pharmaceutical composition for ingestion by a mammal which composition comprises a neutral 3:1 gallium complex of a 3-hydroxy-4-pyrone wherein said 3-hydroxy-4-pyrone has the formula:



wherein each R is independently selected from the group consisting of hydrogen, and alkyl of from 1 to 6 carbon atoms which composition is formulated in a form to slow the release of the 3:1 composition until the small intestine is reached with the proviso that such formulation does not include the use of excess maltol.

5,574,028

METHOD FOR TREATING ANXIETY

Neil C. Bodick, Indianapolis; Franklin P. Bymaster, Brownsburg; Walter W. Offen, Indianapolis, and Harlan E. Shannon, Carmel, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 31, 1994, Ser. No. 333,088
Int. Cl.[6] A61K *31/395*
U.S. Cl. 514—210 1 Claim

1. A method for treating anxiety in a human in need thereof, comprising administering to said human an antianxiety amount of a compound of the formula:

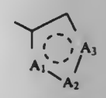


in which Z is a heterocyclic group



in which Q represents a 3-membered divalent residue completing a 5-membered aromatic ring and comprises one or two heteroatoms selected from oxygen, nitrogen and sulphur, or three nitrogen atoms, any amino nitrogen being substituted by a C_{1-2} alkyl,

cyclopropyl or propargyl group, and any ring carbon atom being optionally substituted by a group R_1; or
Z is a group



in which A_1, A_2 and A_3 complete a 5-membered aromatic ring and A_1 is oxygen or sulphur, one of A_2 and A_3 is CR_2, and the other is nitrogen or CR_3; or A_2 is oxygen or sulphur, one of A_1 and A_3 is CR_2 and the other is CR_3; and R_1, R_2 and R_3 are independently selected from hydrogen, halogen, CN, OR_4, SR_4, $N(R_4)_2$, $NHCOR_4$, $NHCOOCH_3$, $NHCOOC_2H_5$, $NHOR_4$, $NHNH_2$, NO_2, COR_4, COR_5, cyclopropyl, C_{2-5} straight chain alkenyl, C_{2-5} straight chain alkynyl or C_{1-5} straight chain alkyl optionally terminally substituted with OR_4, $N(R_4)_2$, SR_4, CO_2R_4, $CON(R_4)_2$ or one, two or three halogen atoms; each R_4 is independently hydrogen or C_{1-3} alkyl;
R_5 is OR_4, NH_2or NHR_4; or
z is a group $—C(R_7)=NR_6$;
R_6 is a group OR_8;
R_7 is hydrogen or C_{1-4} alkyl;l
R_8 is C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, or $—OCOR_9$;
R_9 is hydrogen, R_8, or a group NHR_{10} or $NR_{11}R_{12}$;
R_{10}, R_{11} and R_{12} are independently C_{1-2} alkyl; subject to the proviso that, when R_6 is $OCOR_9$ or NHR_{10}, R_7 is C_{1-4} alkyl; or a pharmaceutically acceptable salt or solvate thereof.

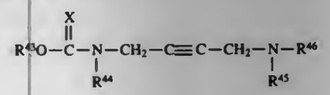
5,574,029

METHOD FOR TREATING ANXIETY

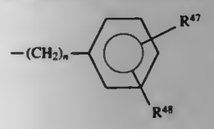
Neil C. Bodick, Indianapolis; Franklin P. Bymaster, Brownsburg; Walter W. Offen, Indianapolis, and Harlan E. Shannon, Carmel, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 333,088, Oct. 19, 1994. This application May 23, 1995, Ser. No. 448,002
Int. Cl.[6] A61K *31/395;31/55;31/54;31/535;31/445;31/40;31/27*
U.S. Cl. 514—210 1 Claim

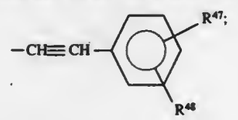
1. A method for treating anxiety in a human in need thereof, comprising administering to said human an antianxiety amount of a compound of the formula:



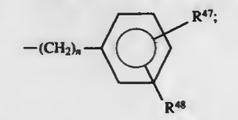
wherein
X is oxygen or sulfur;
R^{43} is
alkyl of from one to six carbon atoms,
alkyl of from one to six carbon atoms substituted with hydroxy or alkoxy of from one to four carbon atoms,
alkenyl of from two to six carbon atoms,
alkenyl of from two to six carbon atoms substituted with hydroxy or alkoxy of from one to four carbon atoms,
alkynyl of from two to six carbon atoms,
alkynyl of from two to six carbon atoms, substituted with hydroxy or alkoxy of from one to four carbon atoms,
cycloalkyl of from three to six carbon atoms,



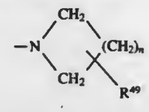
wherein
n is zero or an integer of one to eight;
R^{47} and R^{48} are independently hydrogen, fluorine, chlorine, bromine, hydroxy, alkyl of from one to three carbon atoms, or alkoxy of from one to four carbon atoms, or



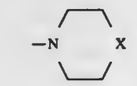
R^{44} is
alkyl of from one to six carbon atoms,
alkyl of from one to six carbon atoms substituted with hydroxy or alkoxy of from one to four carbon atoms,
alkenyl of from three to six carbon atoms
alkenyl of from three to six carbon atoms substituted with hydroxy or alkoxy of from one to four carbon atoms,
alkynyl of from three to six carbon atoms,
alkynyl of from three to six carbon atoms substituted with hydroxy or alkoxy of from one to four carbon atoms,
cycloalkyl of from three to six carbon atoms, or



R^{45} and R^{46} are each independently hydrogen,
alkyl of from one to twenty carbon atoms,
alkyl of from one to twenty carbon atoms substituted with hydroxy or alkoxy of from one to four carbon atoms,
alkenyl of from three to twenty carbon atoms,
alkenyl of from three to twenty carbon atoms substituted with hydroxy or alkoxy of from one to four carbon atoms,
alkynyl of from three to twenty carbon atoms,
alkynyl of from three to twenty carbon atoms substituted with hydroxy or alkoxy of from one to four carbon atoms,
cycloalkyl of from three to eight carbon atoms,
phenyl,
phenyl substituted with alkyl of from one to four carbon atoms, alkyl of from one to four carbon atoms substituted with hydroxy or alkoxy of from one to four carbon atoms, alkoxy of from one to four carbon atoms, chlorine, bromine, hydroxy, nitro or trifluoromethyl; or
R^{45} and R^{46} taken together with the nitrogen atom to which they are attached form a ring denoted by

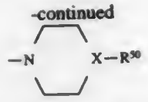


wherein R^{49} is hydrogen, alkyl of from one to ten carbon atoms, alkyl of from one to ten carbon atoms substituted with hydroxy or alkoxy of from one to four carbon atoms, alkenyl of from two to ten carbon atoms, alkenyl of from two to ten carbon atoms substituted with hydroxy or alkoxy of from one to four carbon atoms, alkynyl of from two to ten carbon atoms substituted with hydroxy or alkoxy of from one to four carbon atoms,



or

-continued



wherein R^{50} is hydrogen or alkyl of from one to six carbon atoms;
or a pharmaceutically acceptable salt or solvate thereof.

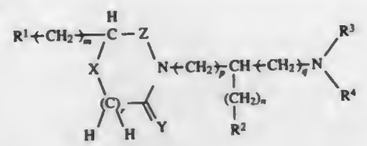
5,574,030

N-AMINOALKYL-SUBSTITUTED NITROGEN-CONTAINING FIVE MEMBERED HETEROCYCLIC COMPOUNDS

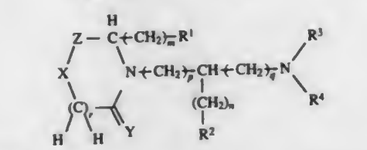
Mitsuo Masaki, Chiba; Norihisa Miyake, Saitama; Atsushi Tendo, Saitama; Hiromitsu Takeda, Saitama; Michiko Ishida, Saitama, and Haruhiko Shinozaki, Saitama, all of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 55,969, Apr. 30, 1993, abandoned. This application Jul. 13, 1993, Ser. No. 91,219
Claims priority, application Japan, Jul. 14, 1992, 4-209713
Int. Cl.[6] C07D *233/32;233/42;* **A61K** *31/505;31/54*
U.S. Cl. 514—212 **18 Claims**

1. An alkylenediamine derivative represented by the formula (1) or (2):



(1)



(2)

wherein
R^1 represents a phenyl, naphthyl or aromatic heterocyclic group each of which is unsubstituted or substituted with the same or different 1 to 5 substituent groups selected from those consisting of alkyl groups, halogen atoms, haloalkyl groups, hydroxyl group, alkoxyl groups, aryloxy groups, aralkyloxy groups, nitro group, amino group, cyano group, alkylamino groups, aralkylamino groups, arylamino groups, acylamino groups, carboxyl group, alkoxycarbonyl groups, aralkyloxycarbonyl groups, aryloxycarbonyl groups, carbamoyl group, sulfo group, alkoxysulfonyl groups, aralkyloxysulfonyl groups, aryloxysulfonyl groups, sulfonamide group and 1H-tetrazol-5-yl group; R^2 represents a phenyl, naphthyl or aromatic heterocyclic group each of which is unsubstituted or substituted with the same or different 1 to 5 substituent groups selected from those consisting of alkyl groups, halogen atoms, haloalkyl groups, hydroxyl group, alkoxyl groups, aryloxy groups, aralkyloxy groups, nitro group, amino group, cyano group, alkylamino groups, aralkylamino groups, arylamino groups, acylamino groups, carboxyl groups, alkoxy carbonyl groups, aralkyloxycarbonyl groups, aryloxycarbonyl groups, carbamoyl group, sulfo group, alkoxysulfonyl groups, aralkyloxysulfonyl groups, aryloxysulfonyl groups, sulfonamide group and 1H-tetrazol-5-yl group; each of R^3 and R^4 independently represents hydrogen atom, an alkyl group, an aralkyl group or an aryl group, or R^3 and R^4 are combined to form one of 5- to 7-membered cyclic groups which may contain oxygen atom, sulfur atom or nitrogen atom besides the nitrogen atom connected to both of R^3 and R^4 and each of which is unsubstituted or substituted with the same or different 1–5 substituent groups selected from those consisting of alkyl groups, aralkyl groups, phenyl group, hydroxyl group, alkoxyl groups, carboxyl group, alkoxycarbonyl groups, aralkyloxycarbonyl groups, aryloxycarbonyl groups, acyl groups and carbamoyl group; X represents oxygen atom, sulfur atom or imino group; Y represents oxygen atom or sulfur atom; Z represents —CH_2—, —CO— or —CS—; m is an integer of 0–4; n is an integer of 0–4; r is 0; and each of p and q independently represents an integer of 0–5 provided that p plus q is 1–5.

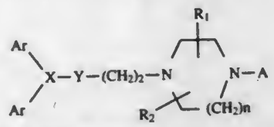
5,574,031

PIPERAZINE CARBOXAMIDES

Lisbeth Abramo, Bjärred; Torbjörn Lundstedt, Löddeköpinge; Curt Nordvi, Malmö; Knut G. Olsson, Malmö, and Martin Brodszki, Malmö, all of Sweden, assignors to Pharmacia Aktiebolag, Stockholm, Sweden

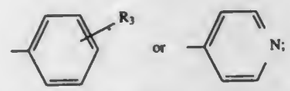
PCT No. PCT/SE93/00639, § 371 Date Jan. 31, 1995, § 102(e) Date Jan. 31, 1995, PCT Pub. No. WO94/03436, PCT Pub. Date Feb. 17, 1994
PCT Filed Jul. 22, 1993, Ser. No. 374,797
Claims priority, application Sweden, Jul. 31, 1992, 9202266
Int. Cl.[6] A61K *31/495;31/55;* **C07D** *295/195;243/08*
U.S. Cl. 514—212 **9 Claims**

1. A compound having the formula (I)



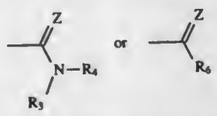
(I)

wherein Ar are the same or different and selected from



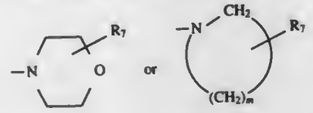
or

R_3 is halogen or hydrogen;
R_1 and R_2 are the same or different and selected from hydrogen or lower alkyl;
n is 1 or 2;
X is nitrogen or methine;
when X is nitrogen Y is methylene and when X is methine Y is selected from NH or oxygen;
A is selected from the following carboxylic derivatives:



or

wherein R_4 and R_5 are the same or different and selected from hydrogen, alkyl, cycloalkyl or aryl, Z is selected from sulfur or oxygen, R_6 is selected from



or

wherein m is 1, 2, 3 or 4; and R_7 is selected from hydrogen or lower alkyl; and pharmacologically active salts thereof.

9. A method of treating psychosis, depression, anxiety or drug abuse, which comprises the step of administering to a patient in need thereof an effective amount of the compound having the formula (I) as claimed in claim 1.

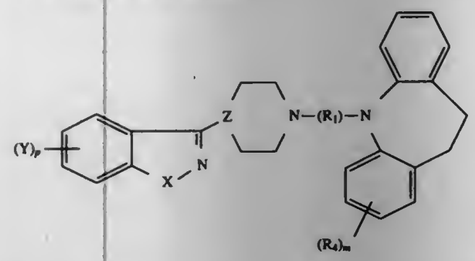
5,574,032

N-[(4-(HETEROARYL)-1-PIPERAZINYL)ALKYL]-10,11-DIHYDRO-5H-DIBENZ[BFS]AZEPINES AND RELATED COMPOUNDS AND THEIR THERAPEUTIC UTILITY

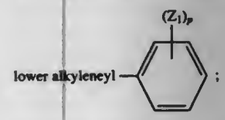
Joseph T. Strupczewski, Flemington; Grover C. Helsley, Stockton; Edward J. Glamkowski, Warren; Yulin Chiang, Covent Station, all of N.J.; Kenneth J. Bordean, Kintnersville, Pa.; Peter A. Nemoto, Raritan, and John J. Tegeler, Bridgewater, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 466,765
Int. Cl.[6] A61K *31/495;31/55;* **C07D** *401/00;403/00;417/00;419/00;221/04;275/04*
U.S. Cl. 514—217 **16 Claims**

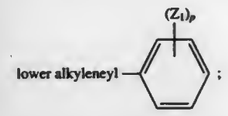
1. A compound of the formula:



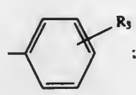
wherein,
X is —O—, —S—, —NH—, or —N(R_2);
R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C_3–C_{10}) cycloalkyl, aroyl, (C_2–C_{18}) alkanoyl, (C_1–C_{18}) alkoxycarbonyl and phenylsulfonyl groups;
aryl is as defined hereinafter;
p is 1 or 2;
Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;
R_1 is —$CR_{24}R_{27}$—$(CR_{23}R_{27})_n$— where n is 0,1,2 or 4; or
—CHR_{24}CH=CH—CHR_{24}—,
—CHR_{24}—C≡C—CHR_{24}—,
—CHR_{24}—CH=CH—$CR_{23}R_{24}$—CHR_{24}—,
—CHR_{24}—$CR_{23}R_{24}$—CH=CH—CHR_{24}—,
—CHR_{24}—C≡C—$CR_{23}R_{24}$—CHR_{24}—, or
—CHR_{24}—$CR_{23}R_{24}$—C≡C—CHR_{24},
the —CH=CH— bond being cis or trans;
R_{23} is hydrogen, (C_1–C_{18}) linear alkyl, phenyl, hydroxy, (C_1–C_{18})alkoxy, aryloxy, aryl(C_1–C_{18})alkyloxy, (C_1–C_{18})alkanoyloxy, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl (C_1–C_6)alkyloxy, aryl(C_1–C_{18})alkyloxy(C_1–C_6)alkyl, (C_1–C_{18})alkanoyloxy(C_1–C_6)alkyl or



where Z_1 is lower alkyl, —OH, lower alkoxy, —CF_3, —NO_2, —NH_2, or halogen, and p is as previously defined;
R_{24} is hydrogen, (C_1–C_{18}) linear alkyl, phenyl, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl (C_1–C_6)alkyloxy, aryl(C_1–C_{18})alkyoxy(C_1–C_6)alkyl; (C_1–C_{18})alkanoyloxy(C_1–C_6)alkyl or



where Z_1 and p as previously defined;
R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C=O or C=S;
R_4 is hydrogen, lower alkyl, lower alkoxy, hydroxy, tri(C_1–C_6)alkylsilyloxy, hydroxy lower alkyl, alkanoyloxy lower alkyl, amino, mono- or dialkylamino, (C_1–C_{18})acyl amino, (C_1–C_{18})alkanoyl, trifluoromethyl, chlorine, fluorine, bromine, —O—C (=O)—(C_1–C_{18}straight or branched chain-)alkyl or —C(=O)—aryl;
in which aryl is phenyl or



where R_5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy; and
m is 1, 2, or 3;
all geometric, optical, and stereoisomers thereof, or a pharmaceutically acceptable acid addition salt thereof.

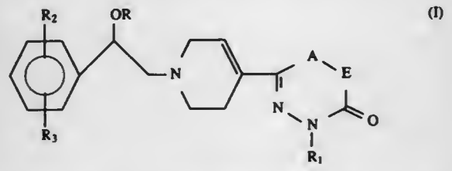
5,574,033

HETEROCYCLIC COMPOUND AND CARDIOTONIC AGENT CONTAINING THE SAME AS EFFECTIVE COMPONENT

Hideshi Kobayashi, Tokyo; Kimitomo Yoshioka, Kiyose, and Hiroaki Yamazaki, Fujishiro-machi, all of Japan, assignors to Zenyaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 244,195, May 27, 1994, Pat. No. 5,446,042. This application Jul. 21, 1995, Ser. No. 505,112
Claims priority, application Japan, Nov. 29, 1991, 3-340273
Int. Cl.[6] A61K *31/54;* **C07D** *285/16;253/06;237/04*
U.S. Cl. 514—222.5 **15 Claims**

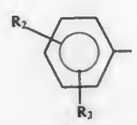
1. A heterocyclic compound represented by the formula (I) or a pharmaceutically-acceptable acid addition salt thereof:



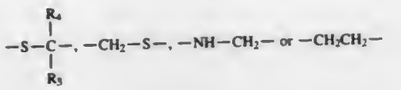
(I)

wherein R and R_1 represent hydrogen or lower alkyl; R_2 and $R_3$are independently the same or different and each represents hydrogen, lower alkyl, lower alkoxy, trifluoromethyl, halogen, nitro, amino, cyano or hydroxyl, or R_2 and R_3 are joined to

form methylenedioxy or a group of the formula:



to form a naphthalene ring; and A–E represents:



wherein R_4 and R_5 represent hydrogeo or lower alkyl; or racemates or optical isomers thereof.

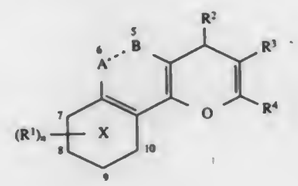
5,574,034

PYRROLYL NAPHTHOPYRANS

Andrew C. Williams, Camberley, United Kingdom, assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 215,344, Mar. 21, 1994, Pat. No. 5,514,699. This application Jun. 5, 1995, Ser. No. 463,838
Claims priority, application United Kingdom, Mar. 24, 1993, 9306062
Int. Cl.[6] A61K *31/535*
U.S. Cl. 514—232.8 **11 Claims**

1. A compound of the formula:



in which

A - - - B is CH_2—CH_2 or CH=CH;

X is a benzene ring;

n is 0, 1 or 2 and when A - - - B is CH_2—CH_2, R^1 is attached at any of the positions 7 to 10, and when A - - - B is CH=CH, R^1 IS attached at any of the positions 5 to 10;

each R^1 is halo, carboxy, trifluoromethyl, hydroxy, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, hydroxy-C_{1-4} alkyl, hydroxy-C_{1-4} alkoxy, pyridyl, piperidino, pyrrolidino, morpholino, nitro, trifluoromethoxy, —$COOR^5$ where R^5 is an alkyl group, —COR^6, —$CONR^6R^7$ or —NR^6R^7 where R^6 and R^7 are each hydrogen or C_{1-4} alkyl;

R^2 is phenyl substituted by —$O(CH_2)_mO$— where m is 1, 2, or 3;

R^3 is nitrile, carboxy, —$COOR^8$ where R^8 is an alkyl group, or —SO_2R^{11} where R^{11} is C_{1-4} alkyl; and

R^4 is 1-pyrrolyl;

and salts thereof.

5,574,035

S-TIMOLOL HEMIHYDRATE COMPOSITION AND METHOD OF PREPARATION THEREFOR

Markku Peräläampi, Katajatie 30 B 3, SF-36200 Kangasala, Finland

Division of Ser. No. 910,789, Jul. 8, 1992, Pat. No. 5,354,860, which is a division of Ser. No. 663,853, Apr. 19, 1991, Pat. No. 5,231,095. This application Oct. 7, 1994, Ser. No. 319,868
Claims priority, application Finland, Oct. 20, 1988, 884838
Int. Cl.[6] A61K *31/535*
U.S. Cl. 514—236.2 **6 Claims**

1. A pharmaceutical composition for the topical application to the eye of a subject comprising S—(—) -3-morpholino-4-(3-tert-butyl-amino-2-hydroxypropoxy)- 1,2,5-thiadiazole hemihydrate.

3. Process for making a composition for topical treatment of a subject comprising the steps of:

crystallizing S—(—)-3-morpholino-4-(3-tert-butyl-amino-2-hydroxypropoxy)- 1,2,5-thiadiazole hemihydrate from an aqueous solution containing S-timolol base and at least one organic solvent;

selecting one or more pharmaceutically acceptable adjuvants for topical administration to the subject; and

admixing the selected adjuvants with the S—(—)-3-morpholino 4-(3-tert-butyl-amino-2-hydroxypropoxy)- 1,2,5-thiadiazole hemihydrate.

5,574,036

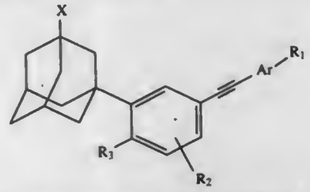
ADAMANTYL-SUBSTITUTED POLYCYCLIC ACETYLENE COMPOUNDS AND PHARMACEUTICAL/ COSMETIC COMPOSITIONS COMPRISED THEREOF

Jean-Michel Bernardon, Le Rouret, and Bruno Charpenter, Biot, both of France, assignors to Centre International De recherches Dermatologiques Galderma, Valbonne, France

Filed Apr. 26, 1995, Ser. No. 429,045
Claims priority, application France, Apr. 26, 1994, 94-05018
Int. Cl.[6] A61K *31/19;31/535;* **C07C** *63/64;* **C07D** *295/112*
U.S. Cl. 514—239.2 **42 Claims**

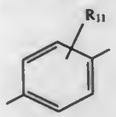
1. An adamantyl-substituted polycyclic acetylene compound having the structural formula (I):

(I)

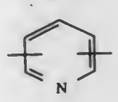


in which X is a hydrogen atom or a halogen atom; R_1 is a hydrogen atom, a —CH_3 radical, a —CH_2—O—R_4 radical, a —CH_2—O—CO—R_5 radical, an —O—R_6 radical, an —O—$(CH_2)_m$—$(CO)_n$—R_7 radical, a —$(CH_2)_p$—CO—R_8 radical, a —$(CH_2)_p$—CO—O—R_9 radical or an —S $(O)_p$—R_{10} radical, wherein m, n and p and the radicals R_4 to R_{10} are as defined below; Ar is a radical selected from among those of the following formulae (a)–(f):

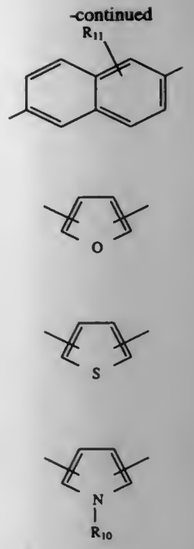
(a)



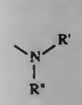
(b)



-continued



wherein R_{10} and R_{11} are as defined below; R_2 is a hydrogen atom or a halogen atom, a linear or branched alkyl radical having from 1 to 20 carbon atoms, an —O—CH_2—O—CH_2—CH_2—O—CH_3 radical or an —O—R_{13} radical, wherein R_{13} is as defined below; R_3 is an —O—CH_2—O—CH_2—CH_2—O—CH_3 radical, a —$(Y)_n$—$(CH_2)_q$—R_{14} radical, a —$(CH_2)_m$—Y—$(CH_2)_q$—R_{14} radical or a —CH=CH—$(CH_2)_t$—R_4, radical, wherein m, n, q and t and the Y and R_{14} radicals are as defined below; m is an integer equal to 1, 2 or 3, n is an integer equal to 0 or 1, p is an integer equal to 0, 1, 2 or 3, q is an integer ranging from 0 to 12, inclusive, and t is an integer ranging from 0 to 10, inclusive; R_4 is a hydrogen atom or a lower alkyl radical; R_5 is a lower alkyl radical; R_6 is a hydrogen atom or a lower alkyl radical; R_7 is a lower alkyl radical or a heterocycle; R_8 is a hydrogen atom, a lower alkyl radical, or a radical:



in which R' and R", which may be identical or different, are each a hydrogen atom, a lower alkyl radical, a mono- or polyhydroxyalkyl radical, an optionally substituted aryl radical or an amino acid or peptide or sugar residue, with the proviso that R' and R" may together form, with the nitrogen atom from which they depend, a nitrogen-containing heterocycle; R_9 is a hydrogen atom, a linear or branched alkyl radical having from 1 to 20 carbon atoms, an alkenyl radical, a mono- or polyhydroxyalkyl radical, an optionally substituted aryl or aralkyl radical, or a sugar residue or an amino acid or peptide residue; R_{10} is a hydrogen atom or a lower alkyl radical; R_{11} is a hydrogen atom, a halogen atom, a lower alkyl radical, a hydroxyl radical, or an —O—R_{12} or —O—COR_{12} radical, wherein R_{12} is as defined below; R_{12} is a lower alkyl radical; R_{13} is a hydrogen atom or a linear or branched alkyl radical having from 1 to 20 carbon atoms; R_{14} is a hydrogen atom, a lower alkyl radical, an alkenyl radical, an alkynyl radical, a C_3–C_6 cycloaliphatic radical, a mono- or polyhydroxyalkyl radical, said hydroxyls optionally being protected as methoxy, acetoxy or acetonide groups, an aryl or aralkyl radical, a —CO—R_8 radical, a —$COOR_9$ radical, an —$S(O)_p$—R_{10} radical, a radical:

(c)



or, but only in the event that n is equal to 0 and R_3 is —$(Y)_n$—$(CH_2)R_{14}$, a hydroxyl radical, an —O—R_{12} radical or an —O—COR_{12} radical; and Y is an oxygen or sulfur atom or an —$S(O)_p$ radical; or a pharmaceutically/cosmetically acceptable salt or optical or geometric isomer thereof.

(d)

5,574,037

(e)

AMINO 1,3,5-TRIAZINE DERIVATIVES AS AGENTS FOR CARDIOVASCULAR SYSTEM

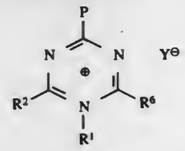
Stuart D. Mills, Macclesfield; Rodney B. Hargreaves, Poynton, and Bernard J. McLoughlin, Macclesfield, all of United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

(f)

Continuation of Ser. No. 240,443, May 10, 1994, which is a division of Ser. No. 621,677, Dec. 3, 1990, Pat. No. 5,332,737. This application Jun. 7, 1995, Ser. No. 488,458
Claims priority, application United Kingdom, Dec. 5, 1989, 8927462; Dec. 22, 1989, 8929020
Int. Cl.[6] A61K *31/53;* **C07D** *251/40;251/48*
U.S. Cl. 514—245 **11 Claims**

1. A compound of the formula I

(I)



wherein:

P is a group of formula II

(II)



R^1 is (1–10C)alkyl, (3–8C)cycloalkyl, (3–8C)cycloalkyl(1–4C)alkyl, phenyl or phenyl (1–4C)alkyl;

R^2 is hydrogen or, (1–4C)alkyl

R^3 and R^4 are independently hydrogen, (1–4C) alkyl, phenyl or benzyl, the latter two optionally bearing one or two substituents selected from (1–4C)alkyl, (1–4C)alkoxy and halogeno;

R^6 is (1–4C) alkyl, amino or (1–6C)alkylamino;

C and D are independently ethylene or trimethylene;

Z is a direct bond between C and D, or an oxy, thio, carbonyl, methylene, ethylenedioxymethylene, ethylidene, or isopropylidene link, or Z is a group of the formula =N.R^5 in which R^5 is (1–6C)alkyl, phenyl or benzyl, the phenyl moiety of the latter two optionally bearing one or two substituents selected from (1–4C)alkyl, (1–4C)alkoxy and halogeno;

Y is a physiologically acceptable anion;

and wherein any one or more of said phenyl or benzene moieties in R^1 may optionally be unsubstituted or bear one or more substituents independently selected from halogeno, (1–4C)alkyl, (3–6C)alkenyl, (1–4C)alkoxy, cyano, trifluoromethyl, nitro, amino, hydroxy, (1–4C)alkylamino, dialkylamino of up to six carbon atoms, (1–4C)alkylthio, (1–4C)alkylsulphinyl, (1–4C)alkylsulphonyl and (1–4C)alkylenedioxy.

5,574,038

5,6-CYCLICIMIDAZO [1,5-9] QUINOXALINES

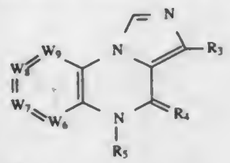
E. Jon Jacobsen, Plainwell, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 166,037, Dec. 13, 1993, Pat. No. 5,541,324, which is a continuation-in-part of Ser. No. 843,650, Feb. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 715,930, Jun. 14, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 466,959

Int. Cl.[6] C07D *241/36;* A61K *31/495*

U.S. Cl. 514—249 11 Claims

1. Imidazo[1,5-a]quinoxalines of formula (I)



(I)

where R_3 is

(A) —$COOR_{3-1}$ where R_{3-1} is

(1) —H,

(2) C_1–C_9 alkyl,

(3) C_3–C_7 cycloalkyl,

(4) —$(CH_2)_{n6}$—O—R_{3-3} where n_6 is 2 thru 4 and R_{3-3} is —H, C_1–C_4 alkyl or C_3–C_7 cycloalkyl,

(5) —$(CH_2)_{n6}$—$NR_{3-4}R_{3-5}$ where R_{3-4} is —H, C_1–C_4 alkyl, C_3–C_7 cycloalkyl or —ϕ, R_{3-5} is —H, C_1–C_6 alkyl or C_3–C_7 cycloalkyl and where R_{3-4} and R_{3-5} are taken together with the attached nitrogen atom to form a heterocyclic ring

—N^*—$(CHR_{3-8})_{n4}$—$(CH_2)_{n1}$—R_{3-6}—$(CH_2)_{n2}$—$(C^*HR_{3-9})_{n8}$—

—N^*—$(CH_2)_{n1}$—$(CHR_{3-8})_{n4}$—R_{3-6}—$(CHR_{3-9})_{n8}$—$(C^*H_2)_{n2}$—

where R_{3-8} is —H or C_1–C_3 alkyl, n_4 is 1 or 2, n_1 is 0 thru 2, n_2 is 0 thru 2, R_{3-9} is —H or C_1—C_3 alkyl, n_8 is 1 or 2, where the atoms marked with an asterisk (*) are bonded to each other resulting in the formation of a ring, with the proviso that the ring not contain more than 5 atoms, and where R_{3-6} is

—O—,

—S—,

—CO—

—$CR_{3-61}R_{3-62}$ where R_{3-61} and R_{3-62} are the same or different and are —H or C_1—C_3 alkyl,

—NR_{3-7} where R_{3-7} is

—H,

C_1–C_4 alkyl,

C_3–C_7 cycloalkyl,

—$(CH_2)_{n7}$—ϕ where n_7 is 0 thru 4 and ϕ is optionally substituted with 1, 2 or 3 R_{3-2} where R_{3-2} is selected from the group consisting of

—F,

—Cl,

—Br,

—I,

—CN,

—NO_2,

—O—CO—R_{3-2a} where R_{3-2a} is —H, C_1–C_4 alkyl or C_3–C_7 cycloalkyl,

—$(CH_2)_{n30}$—CF_3 where n_{30} is 0 thru 3,

—O—CF_3,

C_1–C_6 alkyl,

C_3–C_7 cycloalkyl,

—CH_2—(C_3–C_7 cycloalkyl),

—$CH_2CH(CF_3)CH_3$,

—$C(OH)(CH_2OH)(CH_2CH_3)$,

—$C(OH)(CH_2OH)CH_3$,

—$C(CH_3)(OH)(CH_2OH)$,

—$CH(OH)(CH_2OH)$,

—$CH(OH)(CH_3)$,

—CH_2CH_2OH,

—$C(CH_3)_2(CH_2OH)$,

—$CH(CH_2OH)_2$,

—$C(CH_2—OH)_3$,

—$C(CH_3)_2$—OH,

—$C(CH_3)_2$—F,

—NR_{3-2b}—CO—R_{3-2c} where R_{3-2b} is —H or C_1–C_4 alkyl, and where R_{3-2c} is

—H,

C_1–C_6 alkyl,

—ϕ,

—CH_2—ϕ,

—$(CH_2)_{n8}$—OR_{3-2d} where n_8 is 0 thru 3 and R_{3-2d} is —H or C_1–C_4 alkyl,

—$(CH_2)_{n21}$—OH where n_{21} is 3 thru 4,

—$(CH_2)_{n22}$—ϕ where n_{22} is 0 thru 3 and

where —ϕ is optionally substituted with —F, —Cl, —Br, —I or C_1–C_4 alkyl,

—$(CH_2)_{n8}$—$N(R_{3-2d})_2$ where n_8 and R_{3-2d} are as defined above and where the two R_{3-2d}'s may be taken together with the attached nitrogen atom to form a ring selected from the group consisting of 1-pyrrolidinyl, 1-piperidinyl, 1-piperazinyl, 4-morpholinyl, 1-(4-methyl)piperazinyl,

—S—R_{3-2d} where R_{3-2d} is as defined above,

—SO_2—$N(R_{3-2e})_2$ where R_{3-2e} is —H or C_1–C_4 alkyl,

—CO—$N(R_{3-2e})_2$ where R_{3-2e} is as defined above and where the two R_{3-2e}'s may be taken together with the attached nitrogen atom to from a ring selected from the group consisting of 1-pyrrolidinyl, 1-piperidinyl, 1-piperazinyl, 4-morpholinyl, 1-(4-methyl)piperazinyl,

—$NR_{3-2f}R_{3-2g}$ where R_{3-2f} and R_{3-2g} are the same or different and are —H or C_1–C_4 alkyl and where R_{3-2f} and R_{3-2g} can be taken together with the attached nitrogen atom to form a ring, which may contain an additional heteroatom, selected from the group consisting of piperazine, morpholine, pyrrolidine or piperidine,

with the proviso that when R_{3-6} is —O—, —S— or —NR_{3-7}—, n_1 and n_2 are 1 or 2,

(6) aryl, where aryl is

—ϕ optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

1-naphthyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

2-naphthyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

2-imidazolyl optionally substituted with one or two R_{3-2} and R_{3-12} where R_{3-2} and R_{3-12} are as defined above,

4-imidazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above and where R_{3-12} is —H, C_1–C_4 alkyl or —CHO,

3-isoxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

4-isoxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

5-isoxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

3-pyrazolyl optionally substituted with one or two R_{3-2} where R_{3-12} and R_{3-2} are as defined above,

4-pyrazolyl optionally substituted with one or two R_{3-2} where R_{3-12} and R_{3-2} are as defined above,

5-pyrazolyl optionally substituted with one or two R_{3-2} where R_{3-12} and R_{3-2} are as defined above,

2-oxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

4-oxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

2-thiazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

4-thiazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

2-furanyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

3-furanyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

2-thienyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

3-thienyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

2-pyrrolyl optionally substituted with one or two R_{3-2} where R_{3-12} and R_{3-2} are as defined above,

3-pyrrolyl optionally substituted with one or two R_{3-2} where R_{3-12} and R_{3-2} are as defined above,

1,2,4-oxadiazol-3-yl optionally substituted with one R_{3-2} where R_{3-2} is as defined above,

1,2,4-oxadiazol-5-yl optionally substituted with one R_{3-2} where R_{3-2} is as defined above,

1,2,4-thiadiazol-3-yl optionally substituted with one R_{3-2} where R_{3-2} is as defined above,

1,2,4-thiadiazol-5-yl optionally substituted with one R_{3-2} where R_{3-2} is as defined above,

1,2,4-triazol-3-yl optionally substituted with one or two R_{3-2} where R_{3-12} and R_{3-2} are as defined above,

1,2,4-triazol-5-yl optionally substituted with one R_{3-2} where R_{3-12} and R_{3-2} are as defined above,

1,2,3,4-tetrazol-5-yl substituted with R_{3-12} where R_{3-12} is as defined above,

5-oxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

5-thiazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

(B) —CO—$NR_{3-10}R_{3-11}$ where R_{3-10} and R_{3-11} are the same or different and are C_1–C_4 alkyl, C_3–C_7 cycloalkyl or —ϕ,

(C) —CN,

(D) aryl, where aryl is as defined above,

(E) —C—C≡R_{3-1} where R_{3-1} is as defined above,

(F) —CO—R_{3-1} where R_{3-1} is as defined above,

(G) —CS—R_{3-1} where R_{3-1} is as defined above,

(H) —CO—R_{3-13} where R_{3-13} is selected from the group consisting of

1-imidazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

1-pyrrolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

1-pyrazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

1,2,3-triazol-1-yl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

1,2,4-triazol-1-yl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

1-tetrazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

2-furanyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

3-furanyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

2-thienyl optionally substituted with one or two or two R_{3-2} where R_{3-2} is as defined above,

3-thienyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

2-oxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

4-oxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

5-oxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

3-isoxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

4-isoxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

5-isoxazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

2-thiazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

4-thiazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

5-thiazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

3-isothiazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

4-isothiazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above,

5-isothiazolyl optionally substituted with one or two R_{3-2} where R_{3-2} is as defined above;

(I) —C^*=N—$C(R_{3-14})_2$—$[C(R_{3-15})_2]_{n23}$—R^*_{3-16} where the atoms marked with an asterisk (*) are bonded to each other resulting in the formation of a ring,

where the R_{3-14}'s are the same or different and are —H or C_1–C_3 alkyl,

where n_{23} is 1 thru 3,

where the R_{3-15}'s are the same or different and are —H or C_1–C_3 alkyl,

where R_{3-16} is —O—, —S—, —$C(R_{3-14})_2$—, —NR_{3-12} where R_{3-12} and R_{3-14} are as defined above,

(J) —$CH(OH)R_{3-1}$ where R_{3-1} is as defined above,

(K) —CH_2—O—R_{3-1} where R_{3-1} is as defined above,

(L) —CH_2—$NR_{3-4}R_{3-5}$ where R_{3-4} and R_{3-5} are as defined above;

where R_5 and R_6 are taken together to form a heterocyclic ring selected from the group consisting of

(R_6 end) —$(CH_2)_{n13}$—R_{56-7}—$(CH_2)_{n14}$—CO—$(CH_2)_{n15}$ (R_5 end) where n_{13} is 0 thru 3, n_{14} is 0 thru 3, n_{15} is 0 thru 2, R_{56-1} is 'O—, —S—, —CH_2—, —CH=CH—, —$C(R_{56-3})_2$ where the R_{56-3}'s are the same or different and are C_1–C_3 alkyl, or —NR_{56-2} where R_{56-2} is —H, C_1–C_6 alkyl, C_3–C_7 cycloalkyl, —$(CH_2)_{n17}$—OH where n_{17} is 2 thru 4, —$(CH_2)_{n16}$—ϕ where n_{16} is 0 thru 4 and —ϕ is optionally substituted with —F, —Cl, —Br, —I, C_1–C_4 alkyl,

(R_6 end) —R_{56-1}—CO—CO— (R_5 end)

where R_{56-1} is as defined above,

where R_4 is α-R_{4-3}:β-R_{4-4} where R_{4-3} and R_{4-4} are the same or different and are —H , —OH or C_1–C_4 alkyl, with the proviso that only one of R_{4-3} and R_{4-4} may be —OH at any one time;

where W_6 is —C=;

where W_7 is —N= or —CR_7= where R_7 is:

—H—,

—Fm

—Cl,

—Br,

—I,

—CN,

—NO_2,

—O—CO—R_{7-1} where R_{7-1} is —H, C_1–C_4 alkyl or C_3–C_7 cycloalkyl,

—CF_3,

—O—CF_3,

C_1–C_6 alkyl,

C_3–C_7 cycloalkyl,

CH_2CH_2OH,

—NR_{7-2}—CO—R_{7-3} where R_{7-2} is —H or C_1–C_4 alkyl, and where R_{7-3} is

—H,

C_1–C_6 alkyl,

—ϕ optionally substituted with —F, —Cl, —Br, —I or C_1–C_4 alkyl,

—CH_2—ϕ,

—$(CH_2)_{n24}$—OR_{7-4} where n_{24} is 0 thru 3 and R_{7-4} is C_1–C_4 alkyl,

—$(CH_2)_{n25}$—OH where n_{25} is 2 thru 4,

—$(CH_2)_{n26}$—ϕ where n_{26} is 0 thru 3,
—$(CH_2)n_{24}$—$N(R_{7\text{-}4})_2$ where n_{24} and $R_{7\text{-}4}$ are as defined above,
—S—$R_{7\text{-}4}$ where $R_{7\text{-}4}$ is as defined above,
—SO_2—$N(R_{7\text{-}5})_2$ where $R_{7\text{-}5}$ is —H or C_1–C_4 alkyl,
—CO—$N(R_{7\text{-}5})_2$ where $R_{7\text{-}5}$ is as defined above,
—CO_2—$R_{7\text{-}4}$ where $R_{7\text{-}4}$ is as defined above,
—$NR_{7\text{-}6}R_{7\text{-}7}$ where $R_{7\text{-}6}$ and $R_{7\text{-}7}$ are the same or different and are —H or C_1–C_4 alkyl and where $R_{7\text{-}6}$ and $R_{7\text{-}7}$ may be taken together with the attached nitrogen atom to form a ring, which may contain an additional heteroatom, selected from the group consisting of piperazine, morpholine, pyrrolidine or piperidine, the R_7, R_8 and R_9 may be the same or different;
where W_8 is —N= or —CR_8= where R_8 is as defined for R_7, the R_7, R_8 and R_9 may be the same or different;
where W_9 is –N= or —CR_9= where R_9 is as defined for R_7, the R_7, R_8 and R_9 may be the same or different;
with the proviso that not more than two of W_7, W_8 and W_9 can be –N= at any one time; and pharmaceutically acceptable salts thereof where such exist.

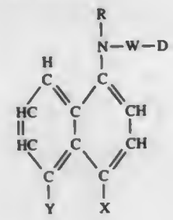
5,574,039

ANTIPROLIFERATIVE COMPOUNDS HAVING NITROGEN-CONTAINING TRICYCLIC RING SYSTEMS AND PHENYL SUBSTITUENTS

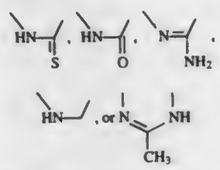
Michael D. Varney, La Costa; Gifford P. Marzoni, San Diego; Cynthia L. Palmer, La Mesa; Judith P. Deal, and Terence R. Jones, both of San Diego, all of Calif., assignors to Agouron Pharmaceuticals, Inc., La Jolla, Calif.

Division of Ser. No. 583,970, Sep. 17, 1990, abandoned. This application Sep. 22, 1994, Ser. No. 310,387
Int. Cl.[6] A61K *31/505;31/40;* **C07D** *239/70;209/64*
U.S. Cl. 514—257 **20 Claims**

1. A compound of the formula



wherein:
W is an alkylene group;
D is a structure having two rings which are fused or linked via a linking group —SO_2— that are unsubstituted or substituted, where (i) one ring is a phenyl ring and (ii) the other ring is a phenyl ring or a 6-membered heterocyclic ring;
R is a hydrogen atom or an alkyl group; and
X and Y together form



; or a pharmaceutically acceptable salt thereof.

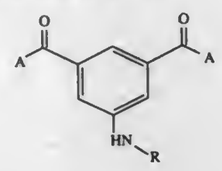
5,574,040

PYRIMIDINE COMPOUNDS AND METHODS OF USE TO DERIVATIZE NEIGHBORING LYSINE RESIDUES IN PROTEINS UNDER PHYSIOLOGIC CONDITIONS

Michael I. Bukrinsky, Glenwood Landing; Anthony Cerami, Shelter Island, both of N.Y., and Peter Ulrich, Old Tappan, N.J., assignors to Picower Institute for Medical Research, Manhasset, N.Y.

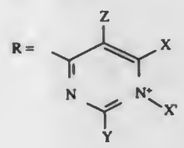
Filed Jan. 6, 1995, Ser. No. 369,830
Int. Cl.[6] A61K *31/505;* **C07D** *239/48*
U.S. Cl. 514—275 **12 Claims**

1. A compound according to the formula:

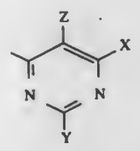


wherein A=CH_3 or CH_2CH_3 and

(1)

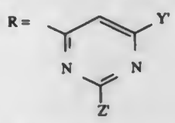


(2)



wherein X=NH_2, CH_3 or CH_2CH_3; X'=CH_3 or CH_2CH_3; Y=NH_2, $NHCH_3$, $N(CH_3)_2$; and Z=H, CH_3 or CH_2CH_3; or

(3)



wherein Y' and Z', indepedently, =H, NH_2, $NHCH_3$, $N(CH_3)_2$ or $N^+(CH_3)_3$; and salts thereof.

5,574,041

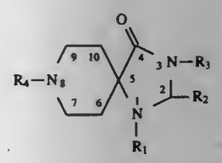
USE OF SPIPERONE DERIVATIVES AS IMMUNOSUPPRESSANT AGENTS

Richard J. Sharpe, Newtonville; Kenneth A. Arndt, Newton Centre; Stephen J. Galli, Winchester; Peter C. Meltzer, Lexington; Raj K. Razdan, Belmont, and Howard P. Sard, Arlington, all of Mass., assignors to Beth Israel Hospital Association, Boston, Mass.

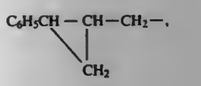
Continuation-in-part of Ser. No. 815,283, Dec. 27, 1991, Pat. No. 5,290,783, which is a continuation-in-part of Ser. No. 494,740, Mar. 16, 1990, abandoned. This application Jun. 4, 1992, Ser. No. 893,534
Int. Cl.[6] A61K *31/445;31/415*
U.S. Cl. 514—278 **38 Claims**

1. A method for treating a mammal in need of immunosuppression, comprising administering to the mammal an effective amount

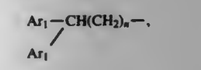
of a spiperone derivative of the formula:



wherein:
R_1=H; alkyl, Y—$CH_2(CH_2)_n$— or Ar_1,
R_2=H or C_1 to C_{20} alkyl;
R_3=H; alkyl,
$CN(CH_2)_2$—; X—$(CH_2)_n$—; X—$(CH_2)_nCO$—;
$NH_2C(NH)NHC(NH)(aryl)(CH_2)_n$—; or X—(aryl)-$(CH_2)_n$—;
R_4=H, $C_6H_5CH(CH_2CH_3)CH_2$—, $C_6H_5CH(CH_3)(CH_2)_2$—, $C_6H_5CH_2CH(CH_3)CH_2$—, $C_6H_5CH_2CH_2CH(CH_3)$—, $C_6H_5CH(CH_3)(CH_2)_3$—, (2, 3, or 4)-(alkyl)—$C_6H_4CH(CH_3)(CH_2)_3$—, (2, 3, or 4)-(alkyloxy)—$C_6H_4CH(CH_3)(CH_2)_3$, $C_6H_5CH(OCH_3)(CH_2)_2$—,



$C_6H_5CO(CH_2)_3$—, $C_6H_5CO(CH_2)_4$—, (2, 3, or 4)-(alkyl)—$C_6H_4CO(CH_2)_3$—, (2, 3, or 4)-(alkyl-oxy)—$C_6H_4CO(CH_2)_3$—, (2, 3, or 4)—X—C_6H_4-alkyl— (2, 3, or 4)—X—$C_6H_4CO(CH_2)_n$—, 2-thienyl—CO—$(CH_2)_3$—,



(2, 3, or 4)—X—$C_6H_4C(CH_3)CH(CH_2)_2$—, where the conformation about the double bond is cis or trans,
(2, 3, or 4)—X—$C_6H_4C(CH_3)CHCH_2$—, where the conformation about the double bond is cis or trans,
(2, 3, or 4)—X—C_6H_4COCH=$CHCH_2$—,
Y—$CH_2(CH_2)_n$—, Ar_1—$(CH_2)_n$—, C_1 to C_{20} alkyl, X—$(CH_2)_nCO$—, or X—$(CH_2)_n$—;
n=1 to6;
p is 1 to 20;
X= is independently F, Cl, Br, I, OCH_3, SO_3^-, NH_2, H, —OH, —COOH, —COOR, —SO_3H, —CN, —$NHSO_3H$, —NO_2, or —SO_2NH_2;
Y=H, F, Cl, Br, I, SO_3, —$PO_4^=$, —OH, —SH, —SCH_3, —$CH_3SO_2^-$, —NH_2, or —CO_2^-; and
Ar_1 is, independently, aryl, (2, 3, or 4—X—C_6H_4—), (2, 3, or 4)-$(CH_2X)C_6H_4$—, (2, 3, or 4)-$(CX_3)C_6H_4$—, (2, 3, or 4)-$(CHX_2)C_6H_4$—, 2-thienyl, or (2, 3, or 4)—X—$C_6H_4CH_2$—;
or its pharmaceutically acceptable salt, including a quaternary ammonium salt.

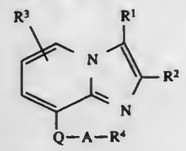
5,574,042

IMIDAZO [1,2–A] PYRIDINES AND THEIR PHARMACEUTICAL USE

Teruo Oku; Hiroshi Kayakiri; Shigeki Satoh, all of Tsukuba; Yoshito Abe, Inashiki; Yuki Sawada, Tsukuba, and Hirokazu Tanaka, Takarazuka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd, Osaka, Japan

Continuation of Ser. No. 235,632, Apr. 29, 1994, abandoned, which is a continuation-in-part of Ser. No. 142,967, Oct. 29, 1993, abandoned. This application May 16, 1995, Ser. No. 441,786
Claims priority, application United Kingdom, Nov. 2, 1992, 9222947; Mar. 3, 1993, 9304249
Int. Cl.[6] A61K *31/44;* **A01N** *43/42;* **C07D** *471/02*
U.S. Cl. 514—300 **11 Claims**

1. A compound of the formula:



wherein R^1 is halogen,
R^2 and R^3 are each hydrogen, lower alkyl, halo(lower)alkyl or acyl,
R^4 is aryl substituted with at least two substituents selected from the group consisting of:
halogen;
halo(lower)alkyl;
acyl;
aryl;
aryl substituted with halogen or cyano;
ar(lower)alkyl substituted with hydroxy;
lower alkoxy;
nitro;
amino;
amino substituted with substituents selected from the group consisting of lower alkyl, acyl, ar(lower)alkyl, heterocyclic(lower)alkyl, carboxy(lower)alkyl, lower alkylaminomethylene and N-methylpyrrolidinylidene;
a beterocyclic group and
a heterocyclic group substituted with oxo; or
R^4 is a heterocyclic group substituted with at least two substituents selected from the group consisting of:
halogen;
lower alkyl;
halo(lower)alkyl;
acyl;
aryl;
aryl substituted with halogen or cyano;
ar(lower)alkyl substituted with hydroxy;
lower alkoxy;
oxo;
nitro;
amino;
amino substituted with substituent(s) selected from the group consisting of lower alkyl, acyl, ar(lower)alkyl, heterocyclic(lower)alkyl, carboxy(lower)alkyl, lower alkylaminomethylene and N-methylpyrrolidinylidene;
a heterocyclic group and
a heterocyclic group substituted with oxo;
Q is O or N—R^{11}, in which R^{11} is hydrogen or acyl, and
A is lower alkylene,
and pharmaceutically acceptable salts thereof.

5,574,043

CERTAIN [1,2,5-THIADIAZOL-4-YL]-1-AZABICYCLO [3.2.1]OCTANE DERIVATIVES AND THEIR PHARMACEUTICAL USES

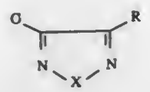
Per Sauerberg, Farum, and Preben Olesen, Copenhagen, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Division of Ser. No. 204,832, Mar. 2, 1994, Pat. No. 5,527,813, which is a continuation-in-part of Ser. No. 26,943, Mar. 5, 1993, Pat. No. 5,418,240, which is a continuation-in-part of Ser. No. 744,160, Aug. 13, 1991, Pat. No. 5,260,314. This application May 26, 1995, Ser. No. 452,033

Int. Cl.[6] C07D *451/02*; A61K *31/46*

U.S. Cl. 514—304 **67 Claims**

1. A compound of formula I

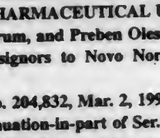


wherein

X is oxygen or sulphur;

R is hydrogen, amino, halogen, —CHO, $—NO_2$, $—OR^4$, $—SR^4$, $—SOR^4$, SO_2R^4, C_{3-7}-cycloalkyl, C_{4-8}-(cycloalkylalkyl, —Z—C_{3-7}-cycloalkyl or —Z—C_{4-8}-(cycloalkylalkyl) wherein R^4 is straight or branched C_{1-15}-alkyl, straight or branched C_{2-15}-alkenyl, straight or branched C_{2-15}-alkynyl, each of which is optionally substituted with one or more halogen(s), $—CF_3$, —CN, —OH, phenyl or phenoxy wherein the phenyl or phenoxy is optionally substituted with halogen, $—CF_3$, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, $—OCF_3$, $—CONH_2$ or $—CSNH_2$; or R is phenyl or benzyloxycarbonyl, each of which is optionally substituted with halogen, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, $—OCF_3$, $—CONH_2$ or $—CSNH_2$; or R is $—OR^5Y$, $—SR^5Y$, $—OR^5ZY$, — SR^5ZY, —O—R^4—Z—R^5 or —S—R^4—Z—R^5 wherein Z is oxygen or sulphur, R^5 is straight or branched C_{1-5}-alkyl, straight or branched C_{2-15}-alkenyl, straight or branched C_{2-15}-alkynyl, and Y is a heterocyclic group selected from the group consisting of thienyl, tetrazolyl, thiazolyl, thiadiazolyl, benzothiazolyl, phthalimido, pyridyl and 1,3-dioxolanyl wherein the heterocyclic group is optionally substituted at a carbon or nitrogen atom with straight or branched C_{1-5}-alkyl, phenyl or benzyl; and

G is an azabicyclic ring of formula II



wherein the thiadiazole or oxadiazole ring is attached at any carbon atom of the azabicyclic ring;

R^1 and R^2 may be present at any appropriate position and independently are hydrogen, straight or branched C_{1-5}-alkyl, straight or branched C_{2-5}-alkenyl, straight or branched C_{2-5}-alkynyl, straight or branched C_{1-10}-alkoxy, —OH, halogen, $—NH_2$, carboxy or straight or branched C_{1-5}-alkyl substituted with —OH; m is 1, n is 2 and p is 1; and ⎓ is a single or double bond; or

a pharmaceutically acceptable salt thereof.

5,574,044

MUSCARINE ANTAGONISTS

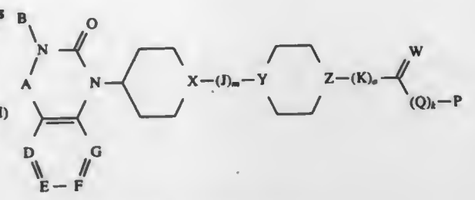
Wayne J. Thompson, Lansdale; Michael F. Sugrue, Blue Bell; Richard W. Ransom, New Britian; Pierre J. Mallorga, Lansdale; Ian M. Bell, North Wales, and Anthony M. Smith, Green Lane, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 27, 1994, Ser. No. 329,757

Int. Cl.[6] A61K *31/445*; C07D *401/14*

U.S. Cl. 514—316 **6 Claims**

1. A compound of the structural formula I:



or a pharmaceutically acceptable salt thereof,

wherein:

X, and Z are N;

Y is CH;

J, K and Q are CB_2;

W is O or H_2;

A is absent;

m, o & k are 0, 1 or 2!

B is H, Me, Et, Pr

P is phenyl or heterocycle ring unsubstituted or substituted with Me, Et, Pr, Bu, hydroxyl, alkoxy, F, Cl, Br, I, alkylsulfonyl, phenyl or heterocyclic;

D, E, F & G are CR

where:

R is independently, H, lower alkyl, branched alkyl, halo, alkoxy, OH, amino, dialkylamino, or alkylamino.

5,574,045

ORAL PHARMACEUTICAL COMPOSITION OF PIPERIDINOALKANOL COMPOUNDS IN SOLUTION FORM

Thomas T. Ortyl, Kansas City, Mo.; Paul F. Skultety, Leawood, and Gail H. Hurst, Stilwell, both of Kans., assignors to Hoechst Marion Roussel, Inc., Cincinnati, Ohio

Filed Jun. 6, 1995, Ser. No. 469,392

Int. Cl.[6] A61K *31/445*

U.S. Cl. 514—317 **10 Claims**

I. An oral pharmaceutical composition in solution form, comprising,

a) a therapeutically effective amount of a piperidinoalkanol compound or a pharmaceutically acceptable salt thereof; and

b) a suitable solvent system, the solvent system comprising about 95.0% to about 99.9% propylene glycol by weight of the solvent system and about 0.1% to about 5.0% glacial acetic acid by weight of the solvent system.

5,574,046

HETEROARYL AMINES AS NOVEL ACETYLCHOLINESTERASE INHIBITORS

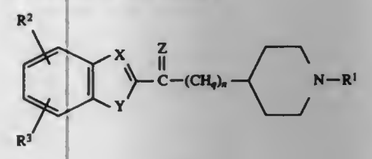
Yuhpyng L. Chen, Waterford, and Arthur A. Nagel, Gales Ferry, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Mar. 9, 1994, Ser. No. 211,044

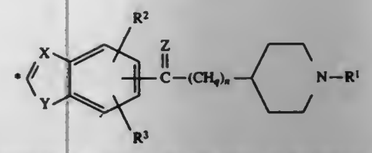
Int. Cl.[6] A61K *31/445*; C07D *277/62*;*417/06*

U.S. Cl. 514—321 **7 Claims**

I. A compound of the formula



or



wherein one of R^2 and R^3 may optionally be attached to the carbon atom designated by an asterisk in formula IA' rather than to the benzo ring;

R^1 is phenyl, phenyl-(C_1–C_6)alkyl, cinnamyl or heteroarylmethyl, wherein the heteroaryl moiety of said heteroarylmethyl is selected from imidazolo, thiazolo, thieno, pyrido and isoxazolo, and wherein said phenyl and said heteroaryl moiety may optionally be substituted with one or two substituents independently selected from (C_1–C_6)alkyl, (C_1–C_6)alkoxy and halo;

R^2 and R^3 are independently selected from hydrogen, (C_1–C_6)alkoxy, (C_1–C_6)alkyl optionally substituted with from one to three fluorine atoms, benzyloxy, hydroxy, phenyl, benzyl, halo, nitro, cyano, $COOR^4$, $CONHR^4$, NR^4R^5, NR^4COR^5, or SO_pCH_3-phenyl wherein p is 0, 1 or 2;

R^4 and R^5 are independently selected from hydrogen and (C_1–C_6)alkyl, or R^4 and R^5, when part of said NR^4R^5, optionally form, together with the nitrogen to which they are attached, a ring containing four to eight members wherein one atom of the ring is nitrogen and the others are carbon, oxygen or nitrogen, or R^4 and R^5, when part of said NR^4COR^5, optionally form, together with the nitrogen and carbon to which they are attached, a four to eight membered lactam ring;

X is nitrogen;

Y is sulfur;

R^6 is hydrogen, (C_1–C_6)alkyl, $CO(C_1$–$C_6)$alkyl or SO_2—, phenyl, wherein the phenyl moiety of said SO_2-phenyl may optionally be substituted with from one to five substituents independently selected from (C_1–C_4) alkyl;

n is an integer from 1 to 4;

each q is independently 1 or 2; and

Z is oxygen or sulfur;

with the proviso that any CH_q group wherein q is 1 must be attached to one and only one other CH_q group wherein q is 1, and with the further proviso that n cannot be 1 in compounds of the formula IA;

or a pharmaceutically acceptable salt of such compound.

5,574,047

METHODS OF INHIBITING IMPERFECT TISSUE REPAIR

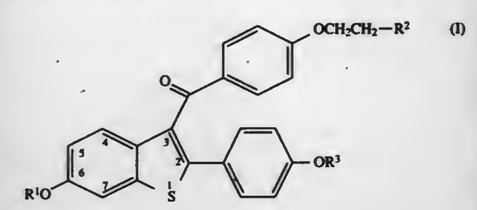
Thomas F. Bumol, Carmel, and George J. Cullinan, Trafalgar, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 21, 1993, Ser. No. 171,150

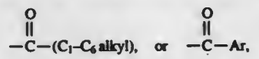
Int. Cl.[6] A61K *31/445*

U.S. Cl. 514—324 **5 Claims**

1. A method of inhibiting imperfect tissue repair comprising administering to a human in need thereof an effective amount of a compound having the formula



wherein R^1 and R^3 are independently hydrogen, $—CH_3$,



wherein Ar is optionally substituted phenyl;

R^2 is piperidino; or a pharmaceutically acceptable salt of solvate thereof.

5,574,048

METHODS OF INHIBITING HIRSUTISM AND ALOPECIA IN WOMEN

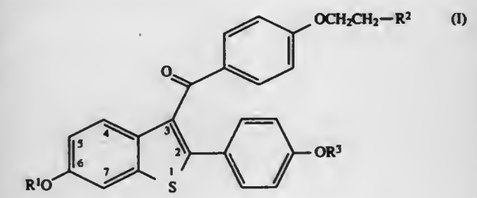
George J. Cullinan, Trafalgar, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 21, 1993, Ser. No. 171,089

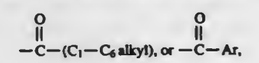
Int. Cl.[6] A61K *31/445*;*31/38*

U.S. Cl. 514—324 **4 Claims**

1. A method of inhibiting hirsutism in a woman comprising administering to a female human in need of treatment an effective amount of a compound having the formula



wherein R^1 and R^3 are independently hydrogen, $—CH_3$,



wherein Ar is optionally substituted phenyl;

R^2 is selected from the group consisting of hexamthylenemino, and piperidino; or a pharmaceutically acceptable salt of solvate thereof.

5,574,049

2,2-DIALKYL- AND 2,2-DIALKYL-3,4-DIHYDRO-3-HYDROXY-2H-1-BENZOPYRANS

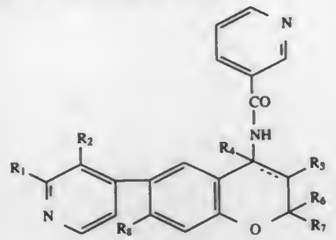
Paul W. Manley, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 256,803, Jul. 22, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 470,667

Int. Cl.[6] A61K *31/44;* **C07D** *407/14*

U.S. Cl. 514—383 **20 Claims**

1. A compound having the formula



wherein

R_1 and R_2 are, independently, hydrogen, C_{1-5}alkyl, C_{1-5} hydroxyalkyl or C_{1-5}(alkoxyalkyl), whereby at least one of R_1 and R_2 is other than hydrogen,

R_4 is hydrogen and R_5 is hydroxy in the trans position with respect to the pyridine carboxamido moiety, or

R_4 and R_5 together represent an additional bond as indicated by the dotted line,

R_6 and R_7 are, independently, C_{1-5}alkyl, and

R_8 is hydrogen or C_{1-5}alkyl,

or an N-oxide thereof, or an acid addition or quaternary ammonium salt of such a compound or N-oxide.

5,574,050

HYDROXYL IONS AS UNIQUE THERAPEUTIC AGENTS AND PROCESSES FOR PREPARING THEM

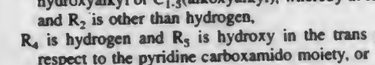
Delton R. Carrell, and Edward J. Cragoe, Jr., both of Nacogdoches, Tex., assignors to FHJ Scientific, Inc., Houston, Tex.

Division of Ser. No. 134,137, Oct. 8, 1993. This application Jun. 24, 1994, Ser. No. 265,347

Int. Cl.[6] C11D *3/26;* **A61K** *31/195*

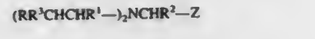
U.S. Cl. 514—357 **18 Claims**

1. A process for the preparation of a composition comprising a hydroxyl ion modulating component selected from the group of compounds having the formula:



and mixtures thereof, wherein each R is independently selected from the group consisting of H, alkyl, hydroxyalkyl, cycloalkyl, aryl and substituted counterparts thereof; each R^1 is independently selected from the group consisting of H, alkyl, hydroxyalkyl and substituted counterparts thereof; each R^2 is independently selected from the group consisting of H, alkyl, cycloalkyl, aryl, aralkyl, heterocyclic including at least one heteroatom selected from the group consisting of N, S and O, heterocyclicalkyl including at least one heteroatom selected from the group consisting of N, S and O and substituted counterparts thereof; each R^3 is independently selected from the group consisting of H, alkyl, hydroxyalkyl, hydroxy, aryl and substituted counterparts thereof; and Y^+ is selected from the group consisting of Na^+, K^+, Li^+, $(CH_3)_4N^+$, $(C_2H_5)_4N^+$, $(CH_3CH_2CH_2CH_2)_4N^+$, $C_6H_5(CH_3)_3N^+$, and guanidinium, said process comprising:

contacting a compound having the formula



wherein Z is selected from the group consisting of COOH and $COOR^4$, —CN, $—CONH_2$, —CONHalkyl, $—CON(alkyl)_2$, $—C(=NH)NH_2$ and $—CONHNH_2$, R^4 being selected from the group consisting of alkyl, with at least about 1.1 to about 1.35 molar equivalents of YOH at effective reaction conditions to react said compound with YOH and form a reaction product, provided that when Z is other than COOH, said compound is contacted with YOH under aqueous hydrolytic conditions.

5,574,051

CERTAIN-[3-ARYL-PROP-2-YNYL]-5-(ARYLSULFONYL) THIAZOLIDINE -2,4-DIONE DERIVATIVES

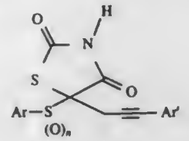
Jay E. Wrobel, Lawrenceville; Zenan Li, Plainsboro, and Arlene J. Dietrich, Delran, all of N.J., assignors to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 207,980, Mar. 8, 1994, abandoned. This application May 24, 1995, Ser. No. 449,063

Int. Cl.[6] A61K *31/44;* **C07D** *417/06;417/12*

U.S. Cl. 514—340 **9 Claims**

1. A 5-[3-Aryl-prop-2-ynyl]-5-(arylsufonyl)thiazolidine-2,4-dione or 5-[3-Aryl-prop-2-ynyl]-5-(arylsulfonyl)thiazolidine-2,4-dione of the formula:



wherein

Ar is 3-pyridnyl, 4-pyridnyl or 2-pyridinyl optionally substiuted by $—CH_3$, n is 0 or 2; and

Ar' is phenyl optionally substituted by halogen, $—CF_3$, $—OCF_3$, $—SCH_3$, $—CH_3$, or $—OCH_3$;

or a pharmaceutically acceptable salt thereof.

5,574,052

AGONIST-ANTAGONIST COMBINATION TO REDUCE THE USE OF NICOTINE AND OTHER DRUGS

Jed E. Rose, Venice, and Edward D. Levin, Los Angeles, both of Calif., assignors to Robert J. Schaap, Los Angeles, Calif.

Continuation of Ser. No. 54,144, Apr. 30, 1993, which is a continuation of Ser. No. 855,868, Mar. 23, 1992, Pat. No. 5,316,759, which is a continuation of Ser. No. 231,092, Aug. 11, 1988, abandoned, which is a continuation-in-part of Ser. No. 840,072, Mar. 17, 1986, Pat. No. 4,846,199. This application Apr. 29, 1994, Ser. No. 235,454

Int. Cl.[6] A61K *31/44;31/465*

U.S. Cl. 514—343 **41 Claims**

1. A method of treating and reducing drug dependency on an abused drug whose addictive effects result at least in part from activation of nicotine receptors, said method comprising:

a) administering to a subject a nicotine receptor activating drug which causes nicotine receptors which are responsive to that activating drug to become activated and opened, said drug being present in an amount which would normally provide some of the desired pharmacologic effects provided by the abused drug to reduce the need or perceived need for the drug and to provide a sustained level of the nicotine receptor activating drug in the bloodstream of the user and at least partially saturate the nicotine receptors in the subject to whom the nicotine receptor activating drug is administered and which thereby satiates the need or perceived need for the abused drug by the subject, the nicotine receptor activating drug also being present in a sustained amount in the bloodstream of the user sufficient to result in a reduction of satisfaction of a need or perceived need for the abused drug obtained from the subsequent administration of the abused drug, and

b) administering to the subject an antagonist to the nicotine receptor activating drug which blocks effects of the agonist which activates these receptors and which receptors are also sensitive to the antagonist, the antagonist being present in an amount sufficient to at least partially block the pharmacologic effects of the nicotine receptor activating drug while there is a substantial systemic amount of the nicotine receptor activating drug present, such that the administration of the nicotine receptor activating drug is complemented by the antagonist by occupying a greater number of receptors of the user of the nicotine receptor activating drug than would be occupied by the nicotine receptor activating drug alone and with a lesser number of receptors left available to respond to the abused drug, thereby insulating the user from the reinforcing effects of the abused drug, the nicotine receptor activating drug and the antagonist having opposing effects with regard to receptor stimulation but common effects with respect to attenuation of response to the abused drug due to receptor occupancy, at least the nicotine receptor activating drug having a delivery mode for delivering to the receptors of the user which is different from that previously employed with the abused drug.

5,574,053

METHOD FOR TREATING ANXIETY

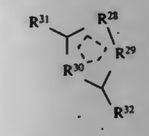
Neil C. Bodick, Indianapolis; Franklin P. Bymaster, Brownsburg; Walter W. Offen, Indianapolis, and Harlan E. Shannon, Carmel, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 333,088, Oct. 31, 1994. This application May 23, 1995, Ser. No. 448,015

Int. Cl.[6] A61K *31/41;31/44;31/395;31/55*

U.S. Cl. 514—364 **1 Claim**

1. A method for treating anxiety in a human in need thereof comprising administering to said human, an antianxiety amount of a compound of the formula:



wherein one of R^{28}, R^{29} or R^{30} is an oxygen atom and tile other two are nitrogen atoms, and the dotted circle represents aromaticity (two double bonds) thus forming a 1,3,4-oxadiazole or 1,2,4-oxadiazole nucleus; R^{31} represents a non-aromatic '927azacycle or '927azabicyclic ring' system; and R^{32} represents a substituent which is convertable in vivo to an amino group; or a pharmaceutically acceptable salt or solvate thereof.

5,574,054

QUATERNARY AMMONIUM SALTS AND USE THEREOF AS MEDICINE

Osamu Kitagawa; Katsuyuki Ishii; Seiichi Niwa; Sigeru Ueki, and Masao Seiki, all of Konanmachi, Japan, assignors to Zeria Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/00607, § 371 Date Jan. 12, 1995, § 102(e) Date Jan. 12, 1995, PCT Pub. No. WO93/23360, PCT Pub. Date Nov. 25, 1993

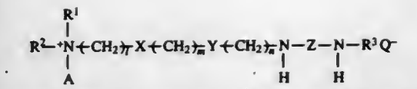
PCT Filed May 10, 1993, Ser. No. 325,338

Claims priority, application Japan, May 12, 1992, 4-145062

Int. Cl.[6] C07D *277/28;307/52;333/22;* **C07C** *211/63*

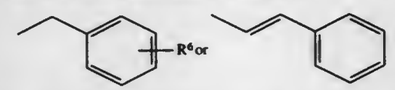
U.S. Cl. 514—365 **4 Claims**

1. A quaternary ammonium salt represented by the following formula (I):

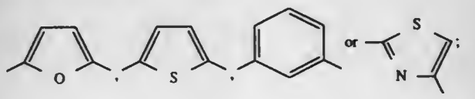


(I)

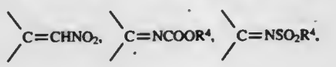
wherein R^1 and R^2 represent lower alkyl groups which may be the same or different from each other; R^3 represents hydrogen, lower alkyl, phenyl, benzyl, or $—COOR^4$, wherein R^4 represents lower alkyl; A represents lower alkyl, lower alkenyl, lower alkynyl, $—(CH_2)_p—COOR^5$, wherein R^5 represents hydrogen or lower alkyl, and p represents an integer of from 1 to 5,

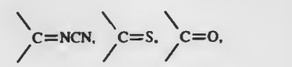


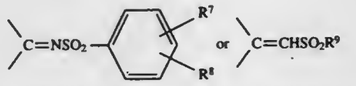
wherein R^6 represents hydrogen, hydroxyl, nitro, lower alkyl, $—COOR^5$, or $—SO_3R^5$; Q^- represents a counter anion of quaternary ammonium salt; X represents



Y represents methylene, oxygen or sulfur; Z represents







wherein R^7 and R^8 are the same or different from each other and independently represent hydrogen, halogen, nitro, lower alkyl or lower alkoxyl, and R^9 represents lower alkyl or phenyl; l and m each represent an integer of 1 or 2; and n represents an integer of from 1 to 3.

5,574,055

OXAZOLIDINONE DERIVATIVES

Janos Borgulya, Basel; Hans Bruderer, Biel-Benken, both of Switzerland; Roland Jakob-Roetne, and Stephan Röver, both of Inzlingen, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

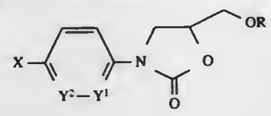
Filed Dec. 2, 1994, Ser. No. 349,119

Claims priority, application Switzerland, Dec. 13, 1993, 3701/93; Sep. 27, 1994, 2927/94

Int. Cl.[6] A61K *31/42*

U.S. Cl. 514—376 **18 Claims**

1. A compound of the formula



wherein

R is hydrogen or lower alkyl;
Y^1 is —CH═;
Y^2 is —CH═, —C(OH)═, —$C(NO_2)$═, —$C(NH_2)$, or —C(Hal)═;
X is C_3–C_7 cycloalkenyl; unsubstituted bicyclo[2.2.1]hept-2-yl; bicyclo[2.2.1]hept-2 -yl substituted by phenyl-2-oxo-5-methoxymethyloxazolidinyl; bicyclo[2.2.1]-hept-5-en-2-yl; adamantyl; unsubstituted C_3–C_7 cycloalkyl; or C_3–C_7 cycloalkyl substituted by halogen, amino, lower alkyl, nitrilo, oxo, hydroxyimino, ethylenedioxy, —OR^1, ═CR^2R^3, —$(CH_2)_nR^4$, —COR^5, or —NR^6R^7,
wherein
R^1 is $CH(C_6H_5)_2$, —$(CH_2)_nC_6H_5$, lower alkyl, hydrogen, —$(CH_2)_nNHCOCH_3$, —$(CH_2)_nNH_2$, —$(CH_2)_nCN$, —$(CH_2)SCH_3$, —$(CH_2)_nSO_2CH_3$, —CO-lower alkyl, or —COC_6H_5;
R^2 is hydrogen or lower alkyl;
R^3 hydrogen, nitrilo, lower alkyl, phenyl or COO-lower-alkyl;
R^4 is nitrilo, amino, —$NHCOCH_3$, —COC_6H_3Hal, phenyl or hydroxy;
R^5 is lower alkyl, —CH═CH—C_6H_5, —$C_6H_5CF_3$, —O—$C(CH_3)_3$ or —O-lower-alkyl;
R^6 is hydrogen or —$COCH_3$;
R^7 is —$COCH_3$, benzyl or —$(CH_2)_nNHCOC_6H_4Hal$; and
n is 1–3;
or a pharmaceutically acceptable acid addition salt thereof.

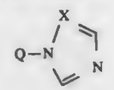
5,574,056

FUNGICIDAL AZOLE DERIVATIVES

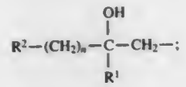
Shih-Yu Ma, and Robert A. Davis, both of Cheshire, Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Division of Ser. No. 234,856, Apr. 28, 1994. This application Jun. 5, 1995, Ser. No. 464,439
Int. Cl.[6] A01N *43/653;* **C07D** *405/06*
U.S. Cl. 514—383 **9 Claims**

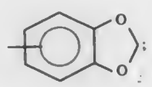
1. A compound having the formula



wherein Q is



R^1 is C_1–C_8 alkyl;
R^2 is



X is nitrogen; and
n is 2, 3 or 4,
or a stereoisomer thereof.

5,574,057

NAAMIDINE A EXTRACTED FROM SEA SPONGES AND METHODS FOR ITS USE AS AN ANTI-TUMOR AGENT

Chris M. Ireland, Sandy, Utah; Brent R. Copp, Christchurchl, New Zealand, and Craig R. Fairchild, Yardley, Pa., assignors to University of Utah Research Foundation, Salt Lake City, Utah

Continuation of Ser. No. 13,030, Feb. 3, 1993, abandoned. This application May 26, 1994, Ser. No. 249,688
Int. Cl.[6] A61K *31/415*
U.S. Cl. 514—390 **10 Claims**

1. A method for inhibiting the growth of tumors which are dependent on epidermal growth factor, said method comprising the administration by injection to a person or animal in need of tumor growth inhibition of a pharmaceutical composition comprising substantially pure naamidine A and a nontoxic, pharmaceutically acceptable carrier or diluent, said naamidine A being present in an amount effective to inhibit the growth of tumors dependent on epidermal growth factor which are sensitive to treatment with naamidine A.

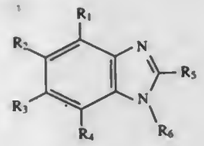
5,574,058

POLYSUBSTITUTED BENZIMIDAZOLES AS ANTIVIRAL AGENTS

Leroy B. Townsend, and John C. Drach, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 607,899, Nov. 1, 1990, Pat. No. 5,248,672. This application May 3, 1993, Ser. No. 50,470
Int. Cl.[6] A01N *43/52;* **C07D** *235/04;235/22;* **A61K** *31/415*
U.S. Cl. 514—394 **13 Claims**

1. An antiviral compound selected from the group consisting of compounds having the following general formula, and pharmaceutically acceptable salts thereof:



where
R_1 is Cl, R_2 is Cl, R_3 is Cl, R_4 is Cl, R_5 is Cl and R_6 is (1,3-dihydroxy-2-propoxy)methyl (denoted compound 155 in the text);
R_1 is Cl, R_2 is Cl, R_3 is Cl, R_4 is Cl, R_5 is NH_2 and R_6 is (1,3 -dihydroxy-2-propoxy)methyl (denoted compound 156 in the text);
R_1 is Cl, R_2 is Cl, R_3 is Cl, R_4 is Cl, R_5 is OCH_3 and R_6 is 2-hydroxyethoxymethyl (denoted compound 166a in the text);
R_1 is Cl, R_2 is Cl, R_3 is Cl, R_4 is Cl, R_5 is NH_2 and R_6 is 2-hydroxyethoxymethyl (denoted compound 167 in the text); and
R_1 is H, R_2 is Cl, R_3 is Cl, R_4 is H, R_5 is NH_2 and R_6 is benzyl (denoted compound 182 in the text).

5,574,059

TREATING DISORDERS MEDIATED BY VASCULAR SMOOTH MUSCLE CELL PROLIFERATION

Soundararajan Regunathan, Avenel, N.J., and Donald J. Reis, New York, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Oct. 27, 1995, Ser. No. 548,973
Int. Cl.[6] A61K *31/415*
U.S. Cl. 514—397 **8 Claims**

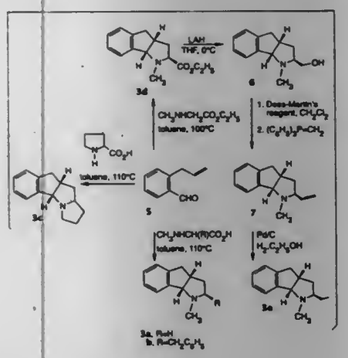
1. A method of inhibiting the proliferation of vascular smooth muscle cells in a patient in need of such inhibiting, comprising administering to the patient a vascular smooth muscle cell antiproliferative effective amount of an I_2-imidazoline receptor agonist.

5,574,060

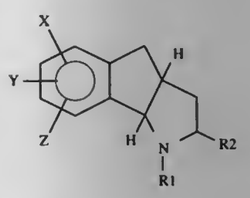
SELECTIVE INHIBITORS OF BIOGENIC AMINE TRANSPORTERS

Richard Rothman, Silver Spring, Md.; Frank J. Carroll, Durham, N.C.; Bruce Blough, Raleigh, N.C., and Samuel W. Mascarella, Hillsborough, N.C., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.; Office of Technology Transfer, Bethesda, Md., and Research Triangle Institue, Research Triangle Park, N.C.

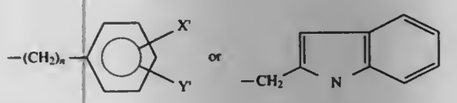
Continuation-in-part of Ser. No. 105,747, Aug. 12, 1993, abandoned. This application Feb. 28, 1994, Ser. No. 203,222
Int. Cl.[6] A61K *31/40;31/47;* **C07D** *403/06;471/08*
U.S. Cl. 514—411 **36 Claims**



1. A compound having the structure:



wherein X, Y, and Z are independently H or OCH_3; R1 is H or an alkyl group having 1 to 6 carbon atoms; and R2 is



wherein n is 1 to 6. X' and Y' are independently H, Cl, F, OCH_3, OH and OCF_3.

5,574,061

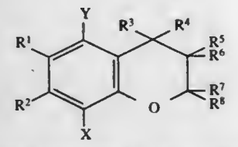
BENZOPYRAN DERIVATIVE, PROCESS FOR PRODUCING THE SAME AND PHARMACEUTICAL COMPOSITION CONTAINING THE SAME

Tatsuki Shiota; Takumi Takeyasu; Kenichiro Kataoka; Tsutomu Mochizuki; Hirofumi Tanabe; Mikio Ota, and Hisao Yamaguchi, all of Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 966,166, Jan. 25, 1993, abandoned. This application Mar. 23, 1994, Ser. No. 216,779
Claims priority, application Japan, Jul. 25, 1990, 2-194857; Oct. 22, 1990, 2-281863; Apr. 11, 1991, 3-105180
Int. Cl.[6] A61K *31/35;* **C07D** *311/04*
U.S. Cl. 514—456 **15 Claims**

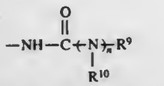
1. A benzopyrran derivative represented by the formula (I) or its pharmaceutically acceptable salt:

(I)

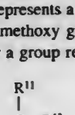


wherein either one of X and Y represents the following formula (A):

(A)



and the other of X and Y, which is not according to formula (A), represents a substituent as defined for R^1 and R^2;
R^1 and R^2 each independently represent a hydrogen atom, a halogen atom, an unsubstituted C_1–C_6 lower alkyl group, or an unsubstituted C_1–C_6 lower alkoxy group;
R^3 and R^4 combine to represent an oxygen atom;
R^5, R^6, R^7 and R^8 each independently represent a hydrogen atom or an unsubstituted C_1–C_3 lower alkyl group;
R^9 represents a phenyl group substituted with a halogen atom or a methoxy group, an unsubstituted C_5–C_{10} cycloalkyl group, or a group represented by the formula:



wherein R^{11} and R^{12} each independently represent a hydrogen atom or an unsubstituted C_1–C_6 lower alkyl group, provided that R^{11} and R^{12} may be combined with each other to form a C_3–C_7 carbon ring; and
R^{13} represents a C_5–C_{19} chain alkyl or alkenyl group optionally substituted with a halogen atom, an unsubstituted phenyl group, a C_7–C_{12} arylalkyl group optionally substituted with a methoxy group, a C_1–C_5 lower alkyl group or a dimethylamino group, or a group represented by the formula:

—A—Z—B

wherein A represents a C_1–C_8 alkyl group, Z represents an oxygen atom or a group represented by the formula:



wherein R^{14} represents a hydrogen atom, a C_1–C_6 lower alkyl group, or a C_1–C_6 lower acyl group; and

B represents an unsubstituted C_1–C_8 alkyl group, a phenyl group optionally substituted with a C_1–C_6 lower alkyl group or a halogen atom;
R^{10} represents a hydrogen atom or a C_1–C_6 lower alkyl group; and
n is 0 or 1.

5,574,062

COUMARIN DERIVATIVE AND USE THEREOF

Koichi Hashimoto, Yokohama; Akio Yamada, Chigasaki; Hirokazu Hamano, Isehara; Shigehiro Mori, Zama, and Hisako Moriuchi, Yokohama, all of Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/00615, § 371 Date Dec. 13, 1994, § 102(e) Date Dec. 13, 1994, PCT Pub. No. WO94/24119, PCT Pub. Date Oct. 27, 1994

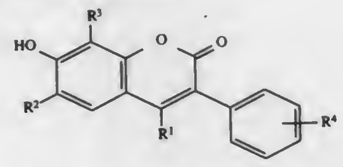
PCT Filed Apr. 12, 1994, Ser. No. 347,467

Claims priority, application Japan, Apr. 13, 1993, 5-108766; Jun. 28, 1993, 5-182028; Aug. 13, 1993, 5-222104; Sep. 8, 1993, 5-247379

Int. Cl.[6] A61K *31/37;* **C07D** *311/20*

U.S. Cl. 514—457 **12 Claims**

1. A compound of the formula:



wherein R^1 is selected from this group consisting of hydrogen and lower alkyl, R^2 and R^3 are selected from the group consisting of hydrogen and hydroxy, wherein R^2 and R^3 are not hydrogen at the same time, and R^4 is selected from the group consisting of lower alkyl, lower alkoxy, halogen, trifluoromethyl and cyano.

5,574,063

METHOD AND COMPOSITIONS FOR TOPICAL APPLICATION OF ASCORBIC ACID FATTY ACID ESTERS FOR TREATMENT AND/OR PREVENTION OF SKIN DAMAGE

Nicholas V. Perricone, 35 Pleasant St. - Suite 2A, Meriden, Conn. 06450

Continuation-in-part of Ser. No. 24,890, Mar. 1, 1993, Pat. No. 5,409,693, which is a continuation of Ser. No. 732,444, Jul. 18, 1991, abandoned, which is a continuation of Ser. No. 420,287, Oct. 12, 1989, abandoned. This application Mar. 17, 1995, Ser. No. 407,413

Int. Cl.[6] A61K *31/20;7/42*

U.S. Cl. 514—474 **25 Claims**

1. A method for the treatment of skin disorders which arise because of depleted or inhibited collagen synthesis which comprises topically applying to affected skin areas a composition containing ascorbyl fatty acid ester in a dermatologically acceptable, fat-penetrating carrier such that the ester is percutaneously delivered to lipid-rich layers of the skin in amounts effective to accelerate collagen synthesis.

5,574,064

AMINO-ACID AMIDE DERIVATIVES, AGRICULTURAL OR HORTICULTURAL FUNGICIDES, AND METHOD FOR PRODUCING THE SAME

Masaru Shibata; Kazuhiko Sugiyama; Norihisa Yonekura, all of Iwata-gun; Junetsu Sakai, Ogasa-gun; Yoshiyuki Kojima, Kakegawa, and Shigeru Hayashi, Ogasa-gun, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., and Ihara Chemical Industry Co., Ltd., both of Tokyo, Japan

PCT No. PCT/JP94/00708, § 371 Date Dec. 28, 1994, § 102(e) Date Dec. 28, 1994, PCT Pub. No. WO94/25432, PCT Pub. Date Nov. 10, 1994

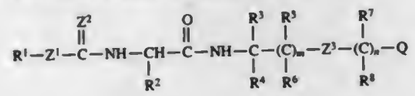
PCT Filed Apr. 27, 1994, Ser. No. 356,316

Claims priority, application Japan, Apr. 28, 1993, 5-125455

Int. Cl.[6] A01N *37/18;* **C07C** *271/22;333/04*

U.S. Cl. 514—542 **9 Claims**

1. An amino-acid amide represented by the formula:



wherein R^1 represents
a lower alkyl group (optionally having at least one same or different substituent selected from the group consisting of a halogen atom, an alkoxy group, and a cyano group),
a lower alkenyl group,
a lower alkynyl group,
a cycloalkyl group (optionally having at least one same or different substituent selected from the group consisting of methyl group and a halogen atom),
a cycloalkylalkyl group,
a cycloalkenyl group,
an alkylene oxide group,
an aralkyl group (optionally having at least one same or different substituent selected from the group consisting of a methyl group, a cyano group, and a nitro group),
a phenyl group (optionally having at least one same or different substituent selected from the group consisting of
a halogen atom,
a lower alkyl group which may be substituted with a same or different halogen atom,
a lower alkoxy group which may be substituted with a same or different halogen atom,
a cyano group, and
a nitro group), or
a heterocyclic group,
R^2 represents an ethyl group, an n-propyl group, an isopropyl group, an isobutyl group, a sec-butyl group, a tert-butyl group, an alkenyl group, a cycloalkyl group, a phenyl group (optionally having at least one substituent of halogen atom),
R^3 represents a hydrogen atom or a lower alkyl group,
R^4 represents a hydrogen atom, a lower alkyl group, or a cyano group,
R^5, R^6, and R^7 independently represent a hydrogen atom or a lower alkyl group,
R^8 represents a hydrogen atom, a lower alkyl group, an aralkyl group, a phenyl group, an alkoxycarbonyl group, or a cyano group,
Z^1 and Z^2 independently represent an oxygen atom or a sulfur atom,
Z^3 represents
an oxygen atom,

a group N—R^{10} (wherein R^{10} represents a hydrogen atom, a methyl group, a methylcarbonyl group, a phenylcarbonyl group, a methoxycarbonyl group, or a methoxymethyl group),
a sulfinyl group,
a sulfonyl group,
a group COO,
a group CONR[11] (wherein R^{11} represents a hydrogen atom or a lower alkyl group),
Q represents
a phenyl group (optionally having at least one same or different substituent selected from the group consisting of
a halogen atom,
a lower alkyl group which may be substituted with at least one same or different halogen atom,
a lower alkoxy group which may be substituted with a same or different halogen atom,
a cyano group,
a nitro group,
a lower alkoxycarbonyl group,
a methylsulfonyl group,
a methylsulfinyl group,
a methylthio group which may be substituted with a halogen atom,
a dimethylamino group,
a phenylsulfonyl group,
a acyl group, and
a phenyl group),
m represents an integer from 0 to 2, and
n represents 0 or 1.

5,574,065

METHOD AND COMPOSITION FOR NORMALIZING INJURY RESPONSE

Susan Trimbo, Evanston, Ill., assignor to Clintec Nutrition Co., Deerfield, Ill.

Filed Apr. 21, 1994, Ser. No. 230,592

Int. Cl.[6] A61K *31/22;31/225;31/19;31/20*

U.S. Cl. 514—546 **22 Claims**

1. A lipid composition comprising:
medium chain triglycerides, the medium chain triglycerides comprise approximately 25% by weight of the composition;
an omega-3 fatty acid source, the omega-3 fatty acid source comprises approximately 35% by weight of the composition; and
an omega-6 fatty acid source, the omega-6 fatty acid source comprises approximately 40% by weight of the composition.

5,574,066

INTRAOCULAR PRESSURE REDUCING 15-ACYL PROSTAGLANDINS

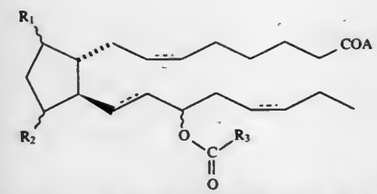
Ming Fai Chan, San Diego; David F. Woodward, El Toro, both of Calif., and Charles Gluchowski, Wayne, N.J., assignors to Allergan, Waco, Tex.

Continuation of Ser. No. 175,476, Dec. 12, 1993, abandoned, which is a continuation of Ser. No. 967,586, Oct. 28, 1992, abandoned. This application Sep. 21, 1995, Ser. No. 531,488

Int. Cl.[6] A61K *31/557*

U.S. Cl. 514—548 **6 Claims**

1. A method of treating ocular hypertension which comprises applying to the eye in an ophthalmically acceptable excipient an amount sufficient to treat ocular hypertension of the compound:



wherein A is —OH or a pharmaceutically acceptable salt thereof; R_1 and R_2 combined are —OH/—OH; R_3 is an acyclic hydrocarbon, saturated or unsaturated, having from 1 to 20 carbon atoms, the C-5 and C-13 bonds are cis and trans respectively and each R_1 and R_2 and the 15-acyl group are group in the α configuration.

5,574,067

METHOD OF TREATING WRINKLES USING GLUCONIC ACID OR GLUCONOLACTONE

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 179,190, Jan. 10, 1994, Pat. No. 5,470,880, which is a continuation of Ser. No. 89,101, Jul. 12, 1993, Pat. No. 5,389,677, which is a division of Ser. No. 8,223, Jan. 22, 1993, abandoned, which is a continuation of Ser. No. 812,858, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 469,738, Jan. 9, 1990, abandoned, which is a continuation of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 467,001

Int. Cl.[6] A61K *7/48;31/19;31/70*

U.S. Cl. 514—557 **10 Claims**

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising gluconic acid or a topically effective salt thereof, or gluconolactone in an amount and for a period of time sufficient to visibly reduce said wrinkle, wherein said wrinkle is a facial wrinkle.

5,574,068

S-NITROSOTHIOLS AS SMOOTH MUSCLE RELAXANTS AND THERAPEUTIC USES THEREOF

Jonathan Stamler, Chapel Hill, N.C.; Joeseph Loscalzo, Dedham, Mass.; Adam Slivka, Randolph, Mass.; Daniel Simon, Waban, Mass.; Robert Brown, Natick, Mass., and Jeffrey Drazen, Winchester, Mass., assignors to Brigham and Woman's Hospital, Boston, Mass.

Continuation of Ser. No. 943,834, Sep. 14, 1992, Pat. No. 5,380,758, which is a continuation-in-part of Ser. No. 804,665, Dec. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 676,691, Mar. 29, 1991, abandoned. This application Nov. 14, 1994, Ser. No. 338,893

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—562 **62 Claims**

1. A method of treating an individual to relax non-vascular smooth muscle which comprises treating an individual with S-nitrosothiol which transfers substantially exclusively charged nitric oxide species to relax non-vascular smooth muscle by administering a S-nitrosothiol which transfers substantially exclusively charged nitric oxide species to their site of action in said individual.

5,574,069

SUBSTITUTED BENZENESULFONYLUREAS AND -THIOUREAS- PROCESSFOR THEIR PREPARATION AND THEIR USE AS PHARMACEUTICALS

Heinrich Englert, Hofheim; Dieter Mania, Konigstein; Jens Hartung, Rodgau; Heinz Gogelein; Joachim Kaiser, both of Frankfurt am Main; Wolfgang Linz, Mainz, all of Germany, and David Wettlaufer, Phillipsburg, N.J., assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

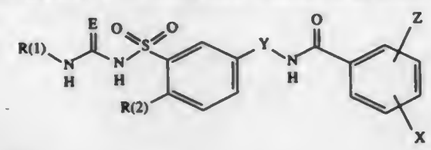
Continuation of Ser. No. 198,048, Feb. 18, 1994, abandoned. This application Feb. 23, 1995, Ser. No. 393,027

Claims priority, application Germany, Feb. 23, 1993, 43 05 450.1

Int. Cl.[6] A61K *31/17;* C07C *311/58;335/42*

U.S. Cl. 514—586 11 Claims

1. A substituted benzenesulfonylurea or-thiourea of the formula I



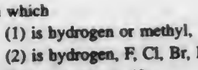
in which

(1) is hydrogen or methyl,

(2) is hydrogen, F, Cl, Br, I, (C_1–C_6)-alkoxy,

E is oxygen or sulfur,

Y is a hydrocarbon chain of the formula:



where R(3)=H or (C_1–C_2)-alkyl and n=1, 2, 3 or 4,

X is hydrogen, F, Cl, Br, I or (C_1–C_6)-alkyl and

Z is F, Cl, Br, I, NO_2, (C_1–C_4)-alkoxy or (C_1–C_4)-alkyl.

5,574,071

METHOD OF LOWERING CHOLESTEROL

Johannes Aebi; Philipe Guerry, both of Basel; Synése Jolidon, Birsfelden, all of Switzerland, and Olivier Morand, Hegenheim, France, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 261,615, Jun. 17, 1994, Pat. No. 5,495,048. This application Jun. 6, 1995, Ser. No. 468,114

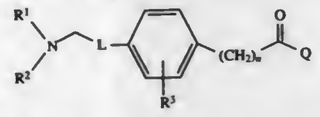
Claims priority, application Switzerland, Jul. 14, 1993, 2107/93; Apr. 28, 1994, 1320/94

Int. Cl.[6] A61K *31/135*

U.S. Cl. 514—648 14 Claims

1. A method of lowering cholesterol which comprises administering to a host requiring such treatment an effective amount of

I



wherein

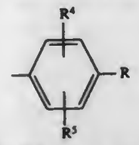
one of R^1 and R^2 is C_{1-7}-alkyl and the other is C_{1-7}-alkyl or C_{2-6}-alkenyl-methyl;

L is C_{1-11}-alkylene or C_{2-11}-alkenylene optionally bonded to the phenyl group via an O atom or L is 1,4-phenylene;

n is 0 or, when L contains an O atom, n is 0 or 1;

Q is C_{1-7}-alkyl, C_{2-10}-alkenyl or a group of formula

Q'



wherein R is H, halogen, CF_3, CN or NO_2;

R^3 and R^4 are H, C_{1-4}-alkyl or halogen; and

R^5 is H or, when R is H, R^5 is H or halogen;

or a pharmaceutically acceptable acid addition salt thereof.

5,574,070

SUBSTITUTED GUANIDINES HAVING HIGH BINDING TO THE SIGMA RECEPTOR AND THE USE THEREOF

John F. W. Keana, Eugene, Oreg., and Eckard Weber, Laguna Beach, Calif., assignors to State of Oregon, acting by and through the Oregon State Board of Higher Education, acting for and on behalf of the Oregon Health Sciences University, and The University of Oregon, both of Eugene, Oreg.

PCT No. PCT/US91/03594, § 371 Date Jan. 22, 1993, § 102(e) Date Jan. 22, 1993, PCT Pub. No. WO91/18868, PCT Pub. Date Dec. 12, 1991

Continuation-in-part of Ser. No. 657,759, Feb. 21, 1991, abandoned, and a continuation-in-part of Ser. No. 528,216, May 25, 1990, abandoned. This PCT application May 22, 1991, Ser. No. 952,849

Int. Cl.[6] A61K *31/155*

U.S. Cl. 514—634 19 Claims

1. A pharmaceutical composition, in unit dosage form, which comprises, per unit dose, an amount effective to alter the sigma brain receptor modulated activity of a human being, of a water soluble N,N'-disubstituted guanidine which displaces in vitro N,N'-di-(4-[^{3}H]-2-methylphenyl)guanidine bound to isolated mammalian brain membrane, wherein said N,N'-disubstituted guanidine is selected from the group consisting of:

N-(adamantan-1-yl)-N'-(2-trifluoromethylphenyl)guanidine; and

N-(adamantan-1-yl)-N'-(2-trifluoromethyl-4-fluorophenyl)guanidine.

5,574,072

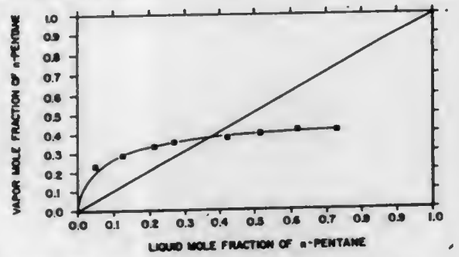
AZEOTROPIC COMPOSITIONS OF 1,1,1,4,4,4-HEXAFUOROBUTANE AND N-PENTANE AND THE USE THEREOF IN THE PRODUCTION OF FOAMS

Joachim Werner, Bethel Park, Pa.; Scott A. Kane, Wellsburg, W. Va.; Herman P. Doerge, Pittsburgh, Pa., and Eric F. Boonstra, Oakdale, Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Division of Ser. No. 457,244, Jun. 1, 1995, Pat. No. 5,488,073, which is a division of Ser. No. 410,469, Mar. 24, 1995, Pat. No. 5,472,989. This application Sep. 27, 1995, Ser. No. 534,532

Int. Cl.[6] H01L *29/76*

U.S. Cl. 521—131 3 Claims



1. An azeotropic composition consisting essentially of

a) from about 73 to about 87% by weight of 1,1,1,4,4,4-hexafluorobutane and

b) from about 13 to about 27% by weight of n-pentane.

5,574,073

CURABLE SILICONE COMPOSITIONS WHICH ARE FOAMS OR ELASTOMERS

Donnie R. Juen, Sanford; William R. Nicholson, Midland, and Lawrence J. Rapson, Bay City, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 17, 1996, Ser. No. 587,625

Int. Cl.[6] C08J *9/04*

U.S. Cl. 521—134 7 Claims

1. A curable silicone composition comprising

A. a non-resinous-siloxane base polymer system in which the polymers contain at least two vinyl groups per molecule which is a combination of:

(i) high molecular weight siloxane polymers containing vinyl groups only on the terminal ends thereof and,

(ii) second siloxane polymers containing vinyl groups selected from the group consisting essentially of:

a. low molecular weight siloxane polymers having vinyl groups which are located only pendant thereon;

b. low molecular weight siloxane polymers having vinyl groups which are located both pendant and on the terminal ends thereof;

c. high molecular weight siloxane polymers having vinyl groups which are located only pendant thereon;

d. high molecular weight siloxane polymers having vinyl groups which are located both pendant and on the terminal ends thereof, and

e. low molecular weight siloxane polymers containing vinyl groups only on the terminal ends thereof;

B. a silicon-containing crosslinker for the silicone base polymer system, said crosslinker containing at least two —SiH groups per molecule;

C. a platinum group catalyst sufficient for curing the silicone composition and,

D. a blowing agent for the composition.

5,574,074

FOAMABLE ORGANIC POLYMER COMPOSITION AND PRODUCTION OF FOAMED ARTICLE

Toshihiro Zushi; Takashi Higashikubo; Tamotsu Kaide; Takuma Takai; Makoto Wada, all of Amagasaki, and Kaneharu Suga, Itami, all of Japan, assignors to Mitsubishi Cable Industries, Inc., Amagasaki, Japan

Filed Feb. 17, 1994, Ser. No. 197,884

Claims priority, application Japan, Feb. 19, 1993, 5-030507; Jul. 6, 1993, 5-166714

Int. Cl.[6] C08J *9/10*

U.S. Cl. 521—143 6 Claims

1. A foamable organic polymer composition comprising a mixture of organic polymers, at least one member selected from the group consisting of organic fine powder and an inorganic fine powder having a tan δ increase of not more than 0.3×10^{-4} as a nucleator in a proportion of 0.3–10 parts by weight based on 100 parts by weight of said mixture of organic polymers, and at least one member selected from the group consisting of rare gases and carbon dioxide as a physical foaming agent; said mixture comprising a low density polyethylene having a density falling within the range of from 0.89 to 0.935 and a high density polyethylene having a density falling within the range of from 0.94 to 0.96; and the weight ratio of the low density polyethylene; the high density polyethylene is from 100:10 to 10:100.

5,574,075

MATERIAL AS A STARTING MATERIAL FOR THE PREPARATION OF BONE CEMENT, PROCESS FOR ITS PREPARATION AND PROCESS FOR THE PREPARATION OF BONE CEMENT

Klaus Draenert, Gabriel-Max-Str. 3, W-8000 Munchen 90, Germany

PCT No. PCT/EP91/02000, § 371 Date Jun. 8, 1993, § 102(e) Date Jun. 8, 1993, PCT Pub. No. WO92/06717, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 21, 1991, Ser. No. 39,359

Claims priority, application Germany, Oct. 19, 1990, 40 33 343.4

Int. Cl.[6] A61L *25/00;* C08F *20/10*

U.S. Cl. 523—116 32 Claims

1. A bone cement polymer component as a starting material for preparing bone cement, wherein the polymer component comprises a three-dimensional conglomerate of polymer particles and wherein the polymer component is a solid and contains a pore system.

5,574,076

SUCROSE BENZOATE AS A TACKIFIER FOR WATER SENSITIVE OR BIODEGRADABLE HOT MELT ADHESIVES

Matthew L. Sharak, Franklin Park, and Charles W. Paul, Madison, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed May 3, 1995, Ser. No. 433,285

Int. Cl.[6] C08K *5/12;5/521;* C08L *91/06;93/04*

U.S. Cl. 523—128 9 Claims

1. A hot melt adhesive composition comprising 10 to 90% by weight of a water sensitive or biodegradeable thermoplastic adhesive polymer selected from the group consisting of hydroxybutyrate/hydroxyvalerate polymers, polylactide homo- or copolymers, hydroxypropyl cellulose, cellulose or starch esters having a degree of substitution less than 2.5 and hydroxy functional or aliphatic polyesters; 5 to 80% by weight sucrose benzoate, 0 to 80% by weight of a plasticizing diluent selected from the group consisting of phthalate plasticizers, liquid plasticizers, benzoate plasticizers, phosphate plasticizers, poly(ethylene glycols) methyl esters of hydrogenated rosins having Ring and Ball melting points below about 60° C., vegetable and animal oils and the polymerization products thereof; 0 to 50% by weight of a wax selected from the group consisting of N-(2-hydroxyethyl)-12-hydroxy stearamide, hydrogenated castor oil, oxidized synthetic waxes, polyethylene oxide) having a weight average molecular weight above about 1000 and functionalized synthetic waxes, and 0 to 3% by weight antioxidant.

5,574,077

MICROWAVE-ABSORBING MATERIALS CONTAINING POLAR ICOSAHEDRAL MOLECULAR UNITS AND METHODS OF MAKING THE SAME

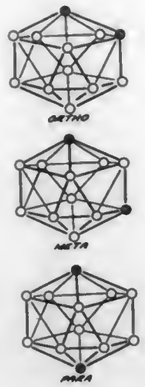
Thomas K. Dougherty, 7600 Manchester #1417, Playa Del Rey, Calif. 90293; Norman H. Harris, 22931 8th St., Newhall, Calif. 91321; James R. Chow, 507 N. 2nd St. Unit "E", Alhambra, Calif. 91801; Brian M. Pierce, 22501 Sheffield Dr., Moreno Valley, Calif. 92557, and David A. Whelan, 10212 Laramie Ave., Chatsworth, Calif. 91311

Division of Ser. No. 870,023, Apr. 17, 1992, Pat. No. 5,317,058. This application Nov. 30, 1993, Ser. No. 159,277

Int. Cl.[6] G21F *1/10;* C08K *3/38*

U.S. Cl. 523—137 17 Claims

1. A microwave-energy-absorbing material, comprising orientationally mobile, polar icosahedral molecular units as the source of dielectric loss at microwave frequencies, and a host matrix, said polar icosahedral molecular units blended with said matrix, wherein said molecular units comprise polar carboranes with elec-



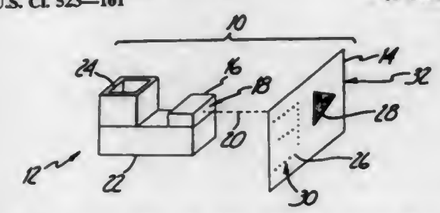
tronegative substituents on the carborane cage borons opposite to the carbons of said molecular units, wherein said substituent is bromine.

5,574,078

THERMAL COMPOSITIONS

Hamdy A. Elwakil, Chanhassen, Minn., assignor to Lasermaster Corporation, Eden Prairie, Minn.

Filed Nov. 10, 1994, Ser. No. 337,295
Int. Cl.[6] C09D *5/00;11/00*
U.S. Cl. 523—161 **65 Claims**



1. A color concentrate, the color concentrate comprising a dye and an ionomer.

5,574,079

METHOD FOR THE PREPARATION OF WATER-BORNE COATING COMPOSITIONS USING THERMOPLASTIC POLYHYDROXYETHER RESINS HAVING NARROW POLYDISPERSITY

Robert F. Eaton, Belle Mead, N.J., and Robert N. Johnson, Phoenixville, Pa., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Dec. 21, 1994, Ser. No. 363,632
Int. Cl.[6] C08F *283/06*
U.S. Cl. 523—423 **9 Claims**

1. In a method of preparing water-borne thermoplastic polyhydroxyether dispersions, comprising:
(a) dissolving a thermoplastic polyhydroxyether in a water-miscible solvent;
(b) grafting one or more ethylenically unsaturated monomers onto said thermoplastic polyhydroxyether; and
(c) blending said grafted thermoplastic polyhydroxyether with water and a water-miscible base to form a water-borne dispersion of said grafted thermoplastic polyhydroxyether:
the improvement wherein;
(i) the thermoplastic polyhydroxyether has a polydispersity of <4.0 and M_n between 7,000 and 12,000, and
(ii) an amount of water-miscible solvent is used in step (a) to provide the water-borne dispersion in step (c) with from about 20% to about 30% of said grafted thermoplastic polyhydroxyether without the removal of said solvent.

5,574,080

BUILDING MATERIAL SHEETING

Darwin J. Longhart, 3786 Rosemary La., Conyers, Ga. 30208

Filed Dec. 26, 1995, Ser. No. 578,215
Int. Cl.[6] C08L *89/06;27/04;77/02;77/04*
U.S. Cl. 524—11 **5 Claims**

1. A new and improved building material sheeting for use as siding and underlayment comprising in combination:
reclaimed leather in a portion of about 20% to about 35% by volume, neoprene in a proportion of about 10% to about 25% by volume, nylon in a proportion of about 45% to 60% by volume, and a polymeric adhesive in a proportion of about 5% to 30% by volume.

5,574,081

WATERBORNE CLAY-CONTAINING EMULSION PAINTS WITH IMPROVED APPLICATION PERFORMANCE

Gijsbert Kroon, Sliedrecht, Netherlands, assignor to Aqualon Company, Wilmington, Del.

Filed Oct. 11, 1994, Ser. No. 324,189
Int. Cl.[6] C08K *5/15;3/26;* **C08L** *5/00*
U.S. Cl. 524—56 **24 Claims**

1. A paint composition consisting essentially of a hydrophilic clay containing pigment system, a latex binder, a polysaccharide thickener and 0.005% to 2%, based upon the weight of the pigment, of a blocking agent selected from the group consisting of poly(ethylene oxide), poly(ethylene glycol), poly(propylene oxide), poly(propylene glycol), poly(vinyl alcohol), poly(acrylic acid), salts of poly(acrylic acid), salts of poly(methacrylic acid), acrylic acid, methacrylic acid, and non-ionic surfactants selected from the group consisting of alkylarylethoxylates and alkylethoxylates which serves to prevent more than 20% of the polysaccharide thickener from being absorbed onto the clay pigment surface whereby the paint composition exhibits improved appearance and application performance.

5,574,082

PROPYLENE POLYMER COMPOSITIONS HAVING IMPROVED COLOR AND STABILIZERS THEREFOR.

Douglas D. Keller, Cincinnati, and Morgan L. Gibbs, Loveland, both of Ohio, assignors to Quantum Chemical Company, Cincinnati, Ohio

Filed May 25, 1995, Ser. No. 450,097
Int. Cl.[6] C08K *5/15;5/09;5/10;5/12*
U.S. Cl. 524—110 **11 Claims**

1. An improved propylene polymer composition having increased resistance to discoloration consisting essentially of:
(a) a propylene homopolymer or copolymer of propylene and a comonomer selected from the group consisting of ethylene and C_{3-6} αolefins;
(b) 400 to 4000 ppm of a mixture of calcium salts of steafic and lactic acids, the weight ratio of calcium stearate to calcium lactate ranging from 10:1 to 1:10; and
(c) 250 to 2500 ppm of a mixture consisting essentially of α-tocopherol, glycerin, polyethylene glycol having an average molecular weight of about 300 and glycerol monocaprylate; said composition being substantially free of phosphites and phosphonites.

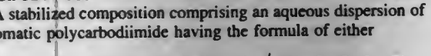
5,574,083

AROMATIC POLYCARBODIIMIDE CROSSLINKERS

Ward T. Brown, and James C. Day, both of North Wales, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

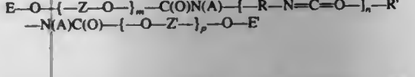
Continuation-in-part of Ser. No. 75,448, Jun. 11, 1993, abandoned. This application Apr. 29, 1994, Ser. No. 235,585
Int. Cl.[6] C07C *267/00;271/32;* **C08G** *18/00;* **C08L** *75/04;* **C08K** *5/13;5/29;5/16;5/32*
U.S. Cl. 524—186 **1 Claim**

1. A stabilized composition comprising an aqueous dispersion of an aromatic polycarbodiimide having the formula of either



E—O—{—Z—O—}$_m$—C(O)N(A)—{—R—N=C=O—}$_n$—R'
—N(A)C(O)—{—O—Z'—}$_p$—O—E'

or



E—O—{—Z—O—}$_m$—C(O)N(A)—[(—R—N=C=O—)$_q$—R'
—N(A)C(O)—B—C(O)N(A)—]$_t$—R"—N(A)C(O)—{—O—
Z'—}$_p$—O—E'

wherein m is an integer of from 5 to 10; n is an integer of from 2 to 7; p is an integer of from 5 to 10; q is an integer of from 1 to 5 and t is an integer of from 1 to 5, wherein the product of q and t is from 4 to 10; A is hydrogen; B is a group which does not contain carbodiimide groups; E and E' are CH_3; R, R', and R" are independently selected from arylene, alkyl-substituted arylene, biarylene alkylene, or alkyl-substituted biarylene alkylene; and Z and Z' are C_1 –C_6 alkyl groups; and a stabilizer in an amount effective to enhance the stability of said polycarbodiimide, wherein said stabilizer is selected from the group consisting of hindered phenols, hindered nitroxyls, and mixtures thereof.

5,574,084

ETHYLENE BASED HOT MELT ADHESIVES AND MODIFIERS FOR THOSE HOT MELT ADHESIVES

Andrew J. Peacock, Houston, Tex., assignor to Exxon Chemical Patents, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 48,705, Apr. 16, 1993, abandoned. This application Nov. 14, 1994, Ser. No. 339,312
Int. Cl.[6] C08J *3/00;* **C08K** *3/20;* **C08L** *31/00;33/00*
U.S. Cl. 524—270 **27 Claims**

1. A hot melt adhesive composition consisting essentially of a blend of:
(a) a copolymer of ethylene and from 1 to 60 weight percent of an alkylmethacrylate, an alkylacrylate, an alkylmethacrylic acid, an alklyacrylic acid, or a vinyl acetate, based upon the weight of the copolymer;
(b) a tackifier in an amount ranging from 20 to 80 weight percent of the composition; and
(c) a modifier comprising a linear or branched chain aliphatic hydrocarbon having from five to twenty carbon atoms and one of the group consisting of alcohol, ester, amide, amine, ketone, ether, or aldehyde group attached to the terminus of the aliphatic structure, said modifier present in an amount ranging from 0.05 to 20 weight percent of the composition.

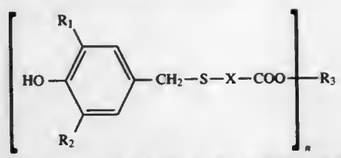
5,574,085

STABILISATION OF BLACK-FILLED RUBBER

Gerrit Knobloch, Magden, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 364,034, Dec. 27, 1994, abandoned, which is a continuation of Ser. No. 109,418, Aug. 19, 1993, abandoned. This application Aug. 21, 1995, Ser. No. 518,477
Claims priority, application Switzerland, Aug. 25, 1992, 2639/92
Int. Cl.[6] C08K *5/37*
U.S. Cl. 524—289 **13 Claims**

1. A composition comprising
a) a substantially uncrosslinked black-filled rubber homopolymer, copolymer or terpolymer based on diene monomers, and
b) at least one compound of formula (I)



(I)

wherein n is **1**, **2**, **3** or **4**, R and R_2 are each independently of the other C_1–C_4alkyl or C_5–C_8cycloalkyl, X is methylene or ethylene and, when n is **1**, R_3 is C_1C_{20}alkyl, C_3–C_{20}alkyl which is interrupted by —O— and/or —S—; C_3C_{20}alkenyl, C_5C_{12}cycloalkyl, C_1–C_4alkyl-substituted C_5–C_{12}cycloalkyl; phenyl, C_1C_4alkyl-substituted phenyl; C_7–C_{10}phenylalkyl or C_7–C_{10}phenylalkyl which is substituted in the phenyl moiety by C_1–C_4alkyl; when n is 2, R_3 is C_2–C_{10}alkylene, C_4–C_{10} alkylene which is interrupted by —O— and/or —S—, C_6–C_{12}cycloalkylene or phenylene; when n is **3**, R_3 is C_3–C_8alkanetriyl and,
when n is 4, R_3 is C_4–C_8alkanetetrayl, and with the proviso that the composition is substantially free of sulfur or peroxide.

5,574,086

GRANULAR VINYL CHLORIDE RESIN COMPOSITION AND PROCESS FOR ITS PRODUCTION

Yukio Noro, Yokkaichi, Japan, assignor to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Jul. 21, 1994, Ser. No. 278,498
Claims priority, application Japan, Jul. 23, 1993, 5-182715
Int. Cl.[6] C08K *9/04;5/12*
U.S. Cl. 524—296 **22 Claims**

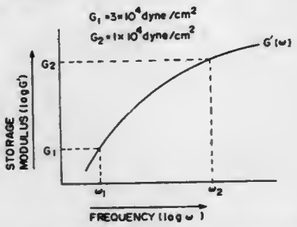
1. A granular vinyl chloride resin composition in the form of spherical or cylindrical granules having a size of from 0.05 to 20 mm which is obtained by extrusion-granulating or rolling-granulating a mixture comprising, as the main components, 100 parts by weight of fine vinyl chloride resin particles having a particle size of from 0.01 to 3 μm obtained from a vinyl chloride polymer latex obtained by emulsion polymerization or fine suspension polymerization, said mixture further comprising coarse vinyl chloride resin particles in an amount of 30 to 100 parts by weight, said coarse vinyl chloride resin particles having a particle size of from 5 to 65 μm, and from 10 to 400 parts by weight of a filler.

5,574,087

MOLDED PROTECTIVE STRIP FOR AUTOMOBILES

Yutaka Kobayashi, Ichihara; Takayuki Onda, Wako; Kenji Hamabe, Wako, and Osamu Aoki, Wako, all of Japan, assignors to Idemitsu Petrochemical Co., Ltd., and Honda Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Mar. 29, 1995, Ser. No. 413,176
Claims priority, application Japan, Mar. 30, 1994, 6-060713
Int. Cl.[6] C08K *3/22;* **C08L** *53/00*
U.S. Cl. 524—451 **6 Claims**



1. A molded protective strip for automobiles prepared by the gas injection molding of a resin composition which comprises:

(A) 55 to 70% by weight of propylenic polymer selected from the group consisting of isotactic propylene homopolymer and propylene block copolymer,
(B) 18 to 30% by weight of ethylene-propylene copolymer rubber, and
(C) 10 to 20% by weight of talc; has a ratio $(MI)_{PP}/(MI)_{EPR}$ of 10 or less, wherein $(MI)_{PP}$ represents a melt index of the polypropylene of component (A) and $(MI)_{EPR}$ represents a melt index of the ethylene-propylene copolymer rubber of component (B); and
has a polydispersity index of 45 to 70, wherein the polydispersity index is calculated from a frequency-storage modulus curve obtained with a composition consisting of components (A), (B), and (C) alone at the temperature of 230° C. and wherein said molded protective strip is prepared by gas injection molding.

5,574,088

INCREASING THE RESISTANCE OF FIBER MATERIAL TO OXIDIZING AGENTS

Yassin Elgarby, Laval, Canada, assignor to Tichromatic Carpet Inc., Canada

Continuation-in-part of Ser. No. 348,715, Dec. 2, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 465,439
Claims priority, application Canada, Nov. 24, 1994, 2136578
Int. Cl.[6] D06L *3/08*; D21C *9/16*; C08L *61/28*
U.S. Cl. 524—542 **25 Claims**

1. In a process of chemically oxidizing cellulosic wood pulp prior to manufacture of paper from the wood pulp in which wood pulp is supported on a porous, self-supporting carrier sheet of polyamide or polyester fibers and the wood pulp and the carrier sheet are exposed to a chemical oxidizing agent for bleaching the wood pulp to increase the whiteness or brightness of paper subsequently produced from the bleached wood pulp and in which the polyamide or polyester fibers of the carrier sheet are deleteriously affected by the oxidizing agent, the improvement wherein said carrier sheet is pretreated with a composition which increases the resistance of the polyamide or polyester fibers of the carrier sheet to the oxidizing agent, said composition comprising
a) an organosiloxane modified with amino groups,
b) a melamine formaldehyde resin,
c) a catalyst for complexing said melamine formaldehyde resin; and
d) water.

5,574,089

WATER-BASED LATEX COMPOSITIONS CONTAINING BORIC ACID

John M. Goga, 15 Wildflower Dr., Newark, Del. 19711

Filed Aug. 7, 1995, Ser. No. 512,174
Int. Cl.[6] C08L *31/04*; A01N *25/04*
U.S. Cl. 524—556 **17 Claims**

1. A water-based latex composition comprising:
a) a water-based latex emulsion; and
b) boric acid.

5,574,090

METAL FREE EMULSION POLYMERS FOR HIGH PERFORMANCE AQUEOUS COATINGS

Richard T. Gray, Levittown; Joseph M. Owens, Hatboro, and Harrison S. Killam, Holland, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jan. 16, 1990, Ser. No. 464,844
Int. Cl.[6] C08L *33/06;33/02*
U.S. Cl. 524—560 **13 Claims**

1. An aqueous alkaline detergent resistant coating comprising emulsion of film-forming polymer particles that contain polymer functional groups that interact with chemical swellants and which polymer particles are covalently crosslinked with multifunctional monomer or reagent before film formation to a degree effective to impede interparticle attachments during film formation, said polymer particles containing an amount of said functional groups greater than the amount effective to absorb sufficient chemical swellant to expand the particles to a degree that disrupts interparticle and film/substrate attachments in said film to an extent that permits removal of the film.

5,574,091

AQUEOUS DISPERSIONS OF OLEFIN COPOLYMERS

Brian W. Walther, and Jim R. Bethea, both of Baton Rouge, La., assignors to The Dow Chemical Comapny, Midland, Mich.

Filed Jun. 5, 1995, Ser. No. 463,150
Int. Cl.[6] C08L *9/00*
U.S. Cl. 524—570 **6 Claims**

1. A film-forming, artificial latex comprising an aqueous dispersion of a copolymer of ethylene and a C_3–C_{20} alpha-olefin, the olefin polymer being characterized by having:
a) an absence of polar groups;
b) a polydispersity index from about 1.5 to about 2.5;
c) an I_{10}/I_2 of at least 6;
d) a critical shear rate at onset of surface melt fracture of at least 50 percent greater than the critical shear rate at the onset of surface melt fracture of a linear olefin polymer having the same I_2 and polydispersity index;
e) a weight average molecular weight of at least 45,000; and
f) a density of about 0.85 to about 0.9 g/cm^3.

5,574,092

THERMOPLASTIC POLYURETHANES CONTAINING UNITS DERIVED FROM AN AROMATIC DIOL

Steven R. Oriani, Houston, Tex., and Richard W. Oertel, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 26, 1995, Ser. No. 533,888
Int. Cl.[6] C08J *3/00*; C08K *3/20*; C08L *75/00*; C08G *18/00*
U.S. Cl. 524—590 **16 Claims**

1. A rigid thermoplastic polyurethane comprising a sufficient concentration of units of an aromatic diol selected from the group consisting of resorcinol, catechol, hydroquinone, dihydroxynaphthalenes, dihydroxyanthracenes, bis(hydroxyaryl) fluorenes, dihydroxyphenanthrenes, dihydroxybiphenyls, and bis(hydroxyphenyl) propanes to lower the temperature at which the rigid thermoplastic polyurethane can be melt processed, wherein the thermoplastic polyurethane has a T_g of at least 50° C.; and with the proviso that the concentration of the units of the aromatic diol does not exceed an amount that causes the tensile elongation at break of the rigid thermoplastic polyurethane to be less than 5 percent.

5,574,093

ODOR-REDUCING, NUTRIENT-ENHANCING COMPOSITION

John B. States, Sr., Parkesburgh, Pa., and Robert A. Turpin, Jr., Washington, D.C., assignors to Pyrocap International Corporation, Springfield, Va.

Filed Jun. 10, 1994, Ser. No. 258,079
Int. Cl.[6] A61K *47/30;47/17;47/18*
U.S. Cl. 514—772.1 **23 Claims**

1. An aqueous composition, comprising an effective amount of a non-ionic surfactant, an anionic surfactant, a carboxylic acid, a volatile oil, an amine, a nitrogen source, and water, sufficient for reducing foul odors during the formation of compost.

5,574,094

POLYOLEFIN COMPOSITIONS AND PROCESS FOR THEIR PREPARATION

Decio Malucelli, Ferrara; Fausto Cocola, Turin, both of Italy, and Francesco Forcucci, Königstein, Germany, assignors to Montell North America Inc., Wilmington, Del.

Filed Oct. 28, 1992, Ser. No. 967,891
Claims priority, application Italy, Oct. 31, 1991, MI91A2910
Int. Cl.[6] C08L *1/02*
U.S. Cl. 525—54.3 **1 Claim**

1. A polyolefin composition consisting essentially of (a) a polymer material selected from the group consisting of crystalline polymers and copolymers of 1-olefins, linear or branched, containing 2–10 carbon atoms, the melt flow index (ASTM D 1238, Condition L) of which is 25–1000 g/10 min., (b) 0.1 to 10% by weight, with respect to the total weight of the composition, of polypropylene grafted with maleic anhydride as a compatibilizing agent, and (c) wood powder, the bulk density of which is 0.05–0.3 g/cm^3, and the particles of which have average dimensions of 0.01–5 mm, at a concentration of 10–70% by weight of the composition.

5,574,095

METHOD FOR PRODUCING ASPHALTS CONTAINING AN EPOXY-CONTAINING POLYMER AND POLYAMINE

Johannes C. van der Werff, Sugarland, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 28, 1995, Ser. No. 431,239
Int. Cl.[6] C08L *95/00*
U.S. Cl. 525—54.5 **14 Claims**

1. A method of making an asphalt composition comprising:
a. admixing an asphalt base and an epoxy-functional glycidyl-containing ethylene copolymer having a melt flow index in the range 0.1 to 2,000 as determined by ASTM D1238-65T, Condition E, thereby producing a first asphalt composition comprising a polyepoxy polymer-linked-asphalt thermoplastic, having a loss tangent of less than 50 at 60° C. and less than 100 at 80° C., wherein substantially all of the epoxide moieties are reacted within the polymer-linked-asphalt thermoplastic and wherein the epoxy-functional copolymer content of said first asphalt composition is from 0.05 to 20 weight percent, based on the weight of said first asphalt composition;
b. admixing a non-polymeric ethylene polyamine with said first asphalt composition at a temperature of mixing in a range of from about 100° C. to about 250° C., wherein the polyamine has a boiling point above the temperature of mixing, thereby producing a final asphalt composition comprising highly-cross-linked polymer-polyamine-asphalt wherein the weight ratio of copolymer to polyamine is from about 20:1 to about 1:1; and
c. recovering said final asphalt composition.

5,574,096

GAS BARRIER FILM AND PRODUCTION PROCESS THEREOF

Hideaki Tanaka; Hiroyuki Oba, both of Ibaraki-ken, and Kazuhiko Hirose, Chiba-ken, all of Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Filed Sep. 22, 1994, Ser. No. 310,749
Claims priority, application Japan, Sep. 27, 1993, 5-262958
Int. Cl.[6] C08L *29/04;33/02*
U.S. Cl. 525—57 **21 Claims**

1. A gas barrier film formed from a mixture containing polyvinyl alcohol and a partially neutralized product of poly(meth) acrylic acid having a degree of neutralization within a range of 0.1–20% in a weight ratio of 95:5 to 10:90, and having an oxygen permeability constant of 1.25×10^{-3} ml(STP)·cm/m^2·h·atm{Pa} or smaller as measured under conditions of 30° C. and 80% relative humidity and being insoluble in boiling water, said degree of neutralization being determined by the following equation:

Degree of neutralization=(A/B)×100

wherein A means the total number of moles of carboxyl groups neutralized in 1 g of the partially neutralized poly(meth) acrylic acid, and B denotes the total number of moles of carboxyl groups in 1 g of the poly(meth)acrylic acid before the partial neutralization.

5,574,097

CHEMICAL COMPOUNDS

Jo Klaveness, Oslo; Keith Redford, Hagan; Jan Solberg, Eiksmarka, and Per Strande, Oslo, all of Norway, assignors to Nycomed Imaging AS, Oslo, Norway

PCT No. PCT/GB93/00469, § 371 Date Jan. 10, 1995, § 102(e) Date Jan. 10, 1995, PCT Pub. No. W093/18070, PCT Pub. Date Sep. 16, 1993
PCT Filed Mar. 5, 1993, Ser. No. 290,875
Claims priority, application United Kingdom, Mar. 6, 1992, 9204918
Int. Cl.[6] C08F *8/00*
U.S. Cl. 525—61 **21 Claims**

1. Biodegradable non-crosslinked polymers of low or zero water-solubility comprising a non-polypeptide polymer backbone carrying side chains, at least a proportion of the said side chains containing lipophilic moieties bonded to the polymer backbone by way of methylene diester units of formula (I)



(I)

(where R^1 and R^2, which may be the same or different, each represent a hydrogen atom or a carbon-attached monovalent organic group or R^1 and R^2 together form a carbon-attached divalent organic group), whereby the said lipophilic moieties are biodegradatively cleavable to yield a water-soluble polymer.

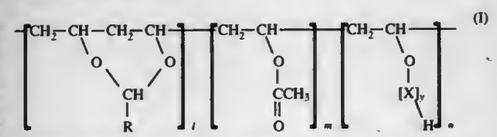
5,574,098

LACTONE-MODIFIED POLYVINYL ACETAL RESIN AND PROCESS FOR THE PREPARATION THEREOF

Toshio Endo; Takaaki Fujiwa, both of Otake; Tomohisa Isobe, Iwakuni, and Kazushi Watanabe, Otake, all of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Oct. 6, 1994, Ser. No. 319,452
Claims priority, application Japan, Oct. 7, 1993, 5-251887; Jan. 10, 1994, 6-000761; Jan. 10, 1994, 6-000764; Aug. 1, 1994, 6-180333; Sep. 12, 1994, 6-217564
Int. Cl.[6] C08F *8/00*
U.S. Cl. 525—61 **8 Claims**

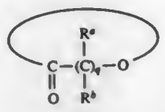
1. A lactone-modified polyvinyl acetal resin represented by the following formula (I),



(I)

wherein the molar ratio l/m/n is from 81.5 to 50%/ from 0 to 10%/ from 10 to 50%, respectively, y is an integer ranging from more

than 0 up to 50, R is any one of hydrogen, a methyl group, and a propyl group, and X is a structural unit derived from the ring-opening reaction of a lactone compound represented by the following formula,



wherein q is an integer ranging from 4 to 8, and R^a and R^b are each an independent hydrogen atom or a methyl group.

5,574,099

RUBBER-REINFORCED STYRENE RESIN COMPOSITION AND PROCESS FOR PRODUCING THE SAME

Masahiko Noro; Noriaki Ijuin; Akio Matsuda, and Tateki Furuyama, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 123,118, Sep. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 853,269, Mar. 18, 1992, abandoned. This application Jan. 20, 1995, Ser. No. 376,655

Claims priority, application Japan, Mar. 18, 1991, 3-077247

Int. Cl.[6] C08L *51/04*

U.S. Cl. 525—71 **35 Claims**

1. A rubber-reinforced styrene resin composition consisting essentially of:

(1) 2–30% by weight of a grafted rubbery polymer having grafting degree of 5 to 25% by weight wherein 5–25 parts by weight of a polymer of a monomer component (A) consisting of (a) 10–95% by weight of at least one aromatic alkenyl compound, (b) 1–60% by weight of at least one alkenyl cyanide compound and (c) 0–89% by weight of at least one other copolymerizable monomer, in which (a)+(b)+(c)=100% by weight, is grafted onto 100 parts by weight of a rubbery polymer (I) which is a conjugated diene rubber having a weight average particle size of 0.28–0.45 μm and a gel content of 40–75% by weight;

(2) 5–40% by weight of a grafted rubbery polymer having a grafting degree of 40–120% by weight wherein 40–120 parts by weight of a polymer of a monomer component (A') consisting of (a') 10–95% by weight of at least one aromatic alkenyl compound, (b') 1–60% by weight of at least one alkenyl cyanide compound and (c') 0–89% by weight of one other copolymerizable monomer in which (a')+(b')+(c')=100% by weight, is grafted onto 100 parts by weight of a rubbery polymer (II) which is a conjugated diene rubber having a weight average particle size of 0.28–0.45 μm and a gel content of 40–75% by weight; and

(3) 40–93% by weight of a styrene copolymer of a monomer component (A") consisting of (a") 10–95% by weight of at least one aromatic alkenyl compound, (b") 1–60% by weight of at least one alkenyl cyanide compound and (c") 0–89% by weight of at least on other copolymerizable monomer, in which (a")+(b")+(c")=100% by weight, said styrene copolymer having an intrinsic viscosity of 0.2–0.8 dl/g as measured at 25° C. in methyl ethyl ketone,

wherein (1)+(2)+(3)=100% by weight; the difference between the grafting degree of the component (1) and the grafting degree of the component (2) is 20% by weight or more; and the ratio of the particle size of the component (1) to that of the component (2) is 0.9–1.2.

22. A process for producing a rubber-reinforced styrene resin composition of claim 1, which comprises compounding:

(1') 5–40% by weight of a graft copolymer obtained by graft-polymerizing, in the presence of 5–80 parts by weight of a rubbery polymer (I) having a weight average particle size of 0.28–0.45 μm and a gel content of 40–75% by weight, 95–20 parts by weight of a monomer component (A) consisting of (a) 10–95% by weight of at least one aromatic alkenyl compound, (b) 1–60% by weight of at least one alkenyl cyanide compound and (c) 0–89% by weight of at least one other copolymerizable monomer wherein (a)+(b)+(c)=100% by weight, and (I)+(A)=100 parts by weight, the grafting degree of the grafted rubbery polymer contained in the graft copolymer ranging from 5 to 25% by weight,

(2') 5–80% by weight of a graft copolymer obtained by graft-polymerizing, in the presence of 5–80 parts by weight of a rubbery polymer (II) having a weight average particle size of 0.28–0.45 μm and a gel content of 40–75% by weight, 95–20 parts by weight of a monomer component (A') consisting of (a') 10–95% by weight of at least one aromatic alkenyl compound, (b') 1–60% by weight of at least one alkenyl cyanide compound and (c') 0–89% by weight of at least one other copolymerizable monomer wherein (a')+(b')+(c')=100% by weight and (II)+(A')=100 parts by weight, the grafting degree of the grafted rubbery polymer contained in the graft copolymer ranging from 40–120% by weight,

(3') 0–60% by weight of a styrene polymer obtained by copolymerizing of a monomer component (A'") consisting of (a'") 10–95% by weight of at least one aromatic alkenyl compound, (b'") 0–60% by weight of at least one alkenyl cyanide compound, (c"–1) 0.5–80% by weight of at least one maleimide compound and (c"–2) 0–80% by weight of at least one other copolymerizable monomer wherein (a")+(b")+(c"–1)+(c"–2)=100% by weight, and

(4') 0–60% by weight of a styrene polymer obtained by copolymerizing of a monomer component (A'") consisting of (a'") 10–95% by weight of at least one aromatic alkenyl compound, (b'") 1–60% by weight of at least one alkenyl cyanide compound and (c'") 0–89% by weight of at least one other copolymerizable monomer wherein (a'")+(b'")+(c'")=100% by weight, wherein (1')+(2')+(3')+(4')=100% by weight;

said styrene polymer components (3') and (4') having an intrinsic viscosity of 0.2–0.8 dl/g as measured at 25° C. in methyl ethyl ketone, the difference between the grafting degree of component (1') and the grafting degree of component (2') is 20% by weight or more; and the ratio of the particle size of component (1') to that of component (2') is 0.9–1.2.

5,574,100

POLYMER COMPOSITION AND CORE-SHELL ELASTOMER USED THEREFOR

Toshihiro Sagane, Tokyo; Masayuki Okabe, and Masahiro Kishine, both of Yamaguchi-ken, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan, and Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Mar. 9, 1995, Ser. No. 401,911

Claims priority, application Japan, Mar. 9, 1994, 6-038860; Apr. 22, 1994, 6-084833

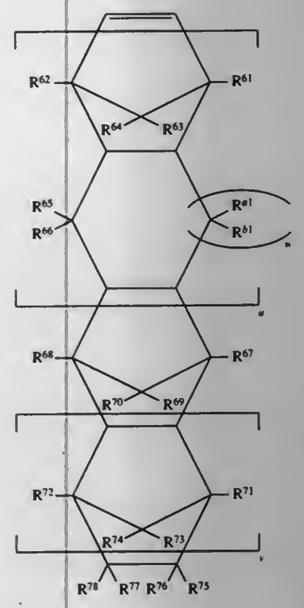
Int. Cl.[6] C08L *51/04;* **C10M** *143/16*

U.S. Cl. 525—75 **7 Claims**

1. A polymer composition comprising:

[A] a cyclic structure-containing polymer which is selected from the group consisting of

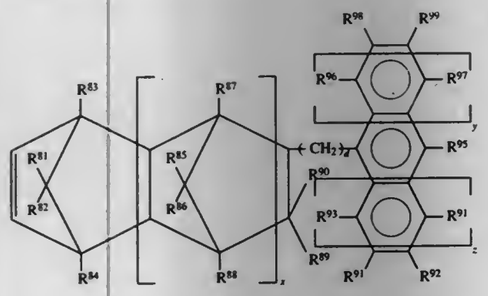
[A-1] a cyclic olefin random copolymer obtained by copolymerizing (i) at least one α-olefin having 2 or more carbon atoms with (ii) at least one cyclic olefin represented by the following formula [I]:



[I]

wherein u is 0 or 1, v is 0 or a positive integer, w is 0 or 1, R^{61} to R^{78} and R^{a1} and R^{b1} are independently selected from the group consisting of a hydrogen atom, a halogen atom and a hydrocarbon group, R^{75} to R^{78} may be bonded together to form a single ring or multiple rings, the single ring or the multiple rings may have a double bond, and R^{75} and R^{76}, or R^{77} and R^{78} may form an alkylidene group,

or the following formula [II]:



[II]

wherein x and d are 0 or an integer of 1 or more, y and z are each 0, 1 or 2, R^{81} to R^{99} are independently selected from the group consisting of a hydrogen atom, a halogen atom, an aliphatic hydrocarbon group, an alicyclic hydrocarbon group, an aromatic hydrocarbon group and an alkoxy group, the carbon atom to which R^{89} and R^{90} are bonded and the carbon atom to which R^{99} is bonded or the carbon atom to which R^{91} is bonded may be bonded together directly or via an alkylene group having 1 to 3 carbon atoms, and R^{95} and R^{92}, or R^{95} and R^{99} may be bonded together to form a single aromatic ring or multiple aromatic rings when y=z=0,

[A-2] a ring-opening polymer of at least one cyclic olefin represented by the above formula [I] or [II]. and

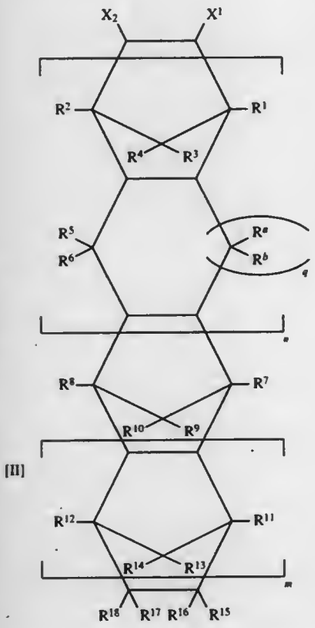
[A-3] a hydrogenated, ring-opening polymer of at least one cyclic olefin represented by the above formula [I] or [II], and which has an intrinsic viscosity [η], measured in decalin at 135° C., of 0.05 to 5.0 dl/g, a glass transition temperature (Tg), measured by DSC, of 70° C. or more, and a refractive index (n_D), measured at 25° C. of 1.500 to 1.650; and

[B] a core-shell elastomer which contains

[B-1] 40 to 85 parts by weight of a core component which comprises a styrene-butadiene copolymer rubber containing 50% or less by weight of styrene unit and

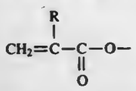
[B-2] 15 to 60 parts by weight of a shell component which comprises a (co)polymer having a unit derived from a monomer or a monomer mixture consisting of

(b-1) 20 to 100% by weight of at least one acrylate or methacrylate monomer having an alicyclic skeleton and selected from the group consisting of compounds represented by the following general formula [III]:



[III]

wherein n is 0 or 1, m is 0 or a positive integer, q is 0 or 1, R^1 to R^{18} and R^a and R^b are independently selected from the group consisting of a hydrogen atom, a halogen atom and a hydrocarbon group, R^{15} to R^{18} may be bonded together to form a single ring or multiple rings, the single ring or the multiple rings may have a double bond, R^{15} and R^{16} or R^{17} and R^{18} may form an alkylidene group, either one of X^1 and X^2 is an acryloyloxy group or a methacryloyloxy group represented by the following formula [X]:

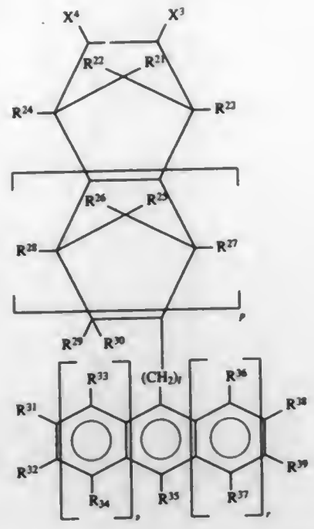


[X]

wherein R is a hydrogen atom or a methyl group,

and the other is a hydrogen atom or an alkyl group; compounds represented by the following general formula [IV]:

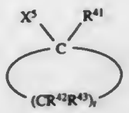
[IV]



wherein p and l are each 0 or an integer of 1 or more, r and s are 0, 1 or 2, R^{21} to R^{39} are independently selected from the group consisting of a hydrogen atom, a halogen atom, an aliphatic hydrocarbon group, an aromatic hydrocarbon group and an alkoxy group, the carbon atom to which R^{29} and R^{30} are bonded and the carbon atom to which R^{33} is bonded or the carbon atom to which R^{31} is bonded may be bonded together directly or via an alkylene group having 1 to 3 carbon atoms, R^{35} and R^{32}, or R^{35} and R^{39} may be bonded together to form a single aromatic ring or multiple aromatic rings when r=s=0, either one of X^3 and X^4 is an acryloyloxy group or a methacryloyloxy group represented by the above formula [X], and the other is a hydrogen atom or an alkyl group;

and compounds represented by the following formula [V]:

[V]



wherein t is 4 or 5, R^{41} to R^{43} are independently selected from the group consisting of a hydrogen atom, a halogen atom and a hydrocarbon group and X^5 is an acryloyloxy group or a methacryloyloxy group represented by the above formula [X],

(b-2) 0 to 70% by weight of a monovinyl aromatic monomer,

(b-3) 0 to 70% by weight of other monovinyl monomer, and

(b-4) 0 to 3% by weight of a polyfunctional monomer, the total of the core component [B-1] and the shell component [B-2] being 100 parts by weight; and which has an average diameter of primary particles of 100 to 300 nm,

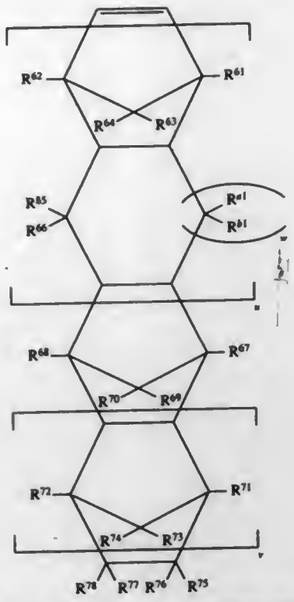
wherein the weight ratio of the component [A] to the component [B] is in the range of 40/60 to 95/5.

5. A polymer composition comprising:

(A) a cyclic structure-containing polymer which is selected from the group consisting of

(A-1) a cyclic olefin random copolymer obtained by copolymerizing (i) at least one α-olefin having 2 or more carbon atoms with (ii) at least one cyclic olefin represented by the following formula (I)

[I]

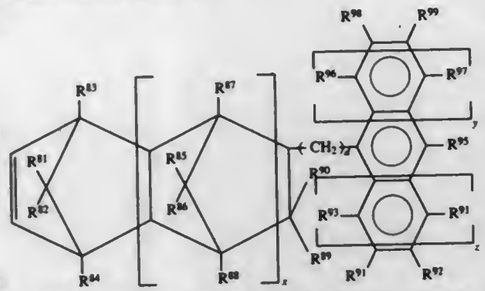


wherein u is 0 or 1, v is 0 or a positive integer,

w is 0 or R^{61} to R^{78} and R^{a1} and R^{b1} are independently selected from the group consisting of a hydrogen atom, a halogen atom and a hydrocarbon group, R^{75} to R^{78} may be bonded together to form a single ring or multiple rings, the single ring or the multiple rings may have a double bond, and R^{75} and R^{76}, or R^{77} and R^{78} may form an alkylidene group,

or the following formula (II):

[II]



wherein x and d are 0 or an integer of 1 or more, y and z are each 0, 1 or 2, R^{81} and R^{99} are independently selected from the group consisting of a hydrogen atom, a halogen atom, an aliphatic hydrocarbon group, an alicyclic hydrogen group, an aromatic hydrocarbon group and an alkoxy group, the carbon atom to which R^{89} and R^{90} are bonded and the carbon atom to which R^{93} is bonded or the carbon atom to which R^{91} is bonded may be bonded together directly or via an alkylene group having 1 to 3 carbon atoms, and R^{95} and R^{92}, or R^{95} and R^{99} may be bonded together to form a single aromatic ring or multiple aromatic rings when y=z=0,

(A-2) a ring-opening polymer of at least one cyclic olefin represented by the above formula (I) or (II), and

(A-3) a hydrogenated, ring-opening polymer of at least one cyclic olefin represented by the above formula (I) or (II), and which has an intrinsic viscosity (η), measured in decalin at 135° C., of 0.05 to 5.0 dl/g, a glass transition temperature (Tg), measured by DSC, of 70° C. or more, and a refractive index (n_D), measured at 25° C., of 1.500 to 1.650;

(B') a core-shell elastomer which contains

(B'-1) 40 to 85 parts by weight of a core component which comprises styrene-butadiene copolymer rubber including or less by weight of styrene unit and

(B'-2) 15 to 60 parts by weight of a shell component which comprises a copolymer having a unit derived from a monomer mixture consisting of (b-2) 20 to 80% by weight of a monovinyl aromatic monomer, (b-3) 20 to 80% by weight of other monovinyl monomer, and (b-4) 0 to 3% by weight of a polyfunctional monomer,

the total of the core component (B'-1) and the shell component (B'-2) being 100 parts by weight, and which has an average diameter of primary particles in the range of 100 to 300 nm; and

(C) a fluid lubricant,

the weight ratio of the component (A) to the component (B') being in the range of 40/60 to 95/5, and the component (C) being contained in an amount of 1 to 20 parts by weight based on 100 parts by weight of the total of the components (A) and (B').

5,574,101

ACRYLIC RESIN COMPOSITION

Kiyoshi Kawakami; Yuzuru Ishibashi, and Toshio Suzuki, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 157,085, Dec. 7, 1993, abandoned. This application May 26, 1995, Ser. No. 453,070

Claims priority, application WIPO, Apr. 9, 1992, PCT/JP92/00445

Int. Cl.[6] C08L *67/02*

U.S. Cl. 525—92 A **6 Claims**

1. An acrylic resin composition comprising

(A) 70 to 97% by weight of an acrylic resin based on the total weight of the acrylic resin composition,

(B) 3 to 30% by weight of at least one polyamide elastomer based on the total weight of the acrylic resin composition, and

(C) 0 to 10% by weight of at least one electrolyte selected from the group consisting of organic sulfonates and organic phosphates based on the total weight of the acrylic resin composition;

wherein the component (B) polyamide elastomer comprises (a) polyamide segments and (b) polyether segments, and the content of the constituent (a) polyamide segments is 25 to 60% by weight based on the total weight of component (B), and

wherein the constituent (b) polyether segments comprise polyoxyalkylene residues containing 30 to 99% by weight of polyoxyethylene residues, based on the total weight of the polyoxyalkylene residues, and have a number average molecular weight of 500 to 4000.

5,574,102

IMPACT-RESISTANT COMPOSITION

Hajime Tanigami, Osaka; Hiroshi Mashima, Chiba, and Makoto Ozaki, Kanagawa, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed May 19, 1993, Ser. No. 63,563

Claims priority, application Japan, May 27, 1992, 4-160137; Jun. 19, 1992, 4-272339

Int. Cl.[6] C08G *18/80;18/42;* **C08L** *75/06;* **C08F** *8/30*

U.S. Cl. 525—124 **20 Claims**

1. An impact-resistant composition dissolved or dispersed in an organic solvent or water, said composition consisting essentially of

(A) a polyisocyanate in which the active isocyanate groups have been blocked obtained from a polycaprolactone-modified diol bonded to an isocyanate compound, wherein said isocyanate compound has a structure selected from biuret or isocyanurate structures; and

(B) at least one hydroxyl group-containing compound containing two or more hydroxyl groups per one molecule, said hydroxyl group-containing compound being selected from the group consisting of

(1) a hydroxyl group-containing acrylic resin,

(2) a hydroxyl group-containing polyester resin,

(3) a diol of an aliphatic hydrocarbon having 2 to 8 carbon atoms, and

(4) a hydroxyl group-containing epoxy resin.

5,574,103

AMINORESIN BASED COATINGS CONTAINING 1,3,5-TRIAZINE TRIS-CARBAMATE CO-CROSSLINKERS

Kuang-Jong Wu, Shelton, Conn., and Doris C. O'Toole, Carmel, N.Y., assignors to Cytec Technology Corp., Wilmington, Del.

Filed Dec. 29, 1992, Ser. No. 998,313

Int. Cl.[6] C08L *61/28;61/26*

U.S. Cl. 525—127 **14 Claims**

1. A curable composition, comprising:

(a) a polyfunctional hydroxy group containing material;

(b) an aminoresin crosslinking agent;

(c) a co-crosslinking agent comprising a 1,3,5-triazine-2,4,6-tris-carbamate of the formula $C_3N_3(NHCOOR)_3$ or an oligomer thereof; and

(d) an acid cure catalyst,

wherein the weight ratio of (a) to the sum of (b) and (c) is in the range of from 99:1 to 0.5:1, wherein the weight ratio of (b) to (c) is in the range of from 99:1 to 0.2:1, and wherein (d) is present in an amount of from 0.01 weight percent to 3 weight percent based on the sum of (a), (b) and (c).

5,574,104

CHAIN EXTENDED LOW MOLECULAR WEIGHT POLYOXIRANES AND ELECTROSTATIC DISSIPATING BLEND COMPOSITIONS BASED THEREON

Edmond G. Kolycheck, Lorain; Elaine A. Mertzel, Rocky River; Francis R. Sullivan, Cleveland Heights; Gary F. Wilson, Grafton, and Timothy E. Fahey, North Ridgeville, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 265,568, Jun. 24, 1994, abandoned, which is a continuation of Ser. No. 717,949, Jun. 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 461,606, Jan. 5, 1990, abandoned. This application Sep. 26, 1995, Ser. No. 533,877

Int. Cl.[6] C08L *75/08;77/00;69/00;71/12*

U.S. Cl. 525—130 **14 Claims**

1. An electrostatic dissipating polymeric composition having a volume resistivity of less than 1×10^{13} Ohm-cm comprising a blend of from about 3 to about 80 parts of an ESD agent blended with 100 parts of a matrix polymer, said ESD agent comprising the reaction product of:

a) a homopolymer or copolymer of polyethylene glycol comprising either a homopolymer of ethylene glycol having a weight average molecular weight from about 1000 to about 2000 and comprising repeating ethylene ether units wherein the number of repeat units is from about 20 to about 45 or a copolymer of ethylene glycol and another glycol, said copolymer having a weight average molecular weight from about 1000 to about 5000 and comprising repeating ethylene ether units wherein the number of repeat units is from about 20 to about 115;

b) a non-hindered diisocyanate which is an aromatic or cyclic aliphatic diisocyanate;

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c) an extender glycol having from 2 to 10 carbon atoms and containing only primary alcohol groups wherein said diisocyanate is reacted at from 0.95 to 1.06 moles per mole of polyethylene glycol and extender glycol; and

said base polymer being one or more polymers selected from the group consisting of polyurethanes, polyamides, polycarbonates, polyolefins, polyphenylene oxide, polyacetal and styrene polymers, and blends and copolymers thereof; with the provisos that said ESD agent and said base polymer are not identical.

5,574,105

THERMOPLASTIC ELASTOMERS HAVING IMPROVED HIGH TEMPERATURE PERFORMANCE

Krishna Venkataswamy, Akron, Ohio, assignor to Advanced Elastomer Systems, L.P., Akron, Ohio

Filed May 12, 1995, Ser. No. 439,738

Int. Cl.[6] C08F *8/00;8/42;* **C08L** *77/04*

U.S. Cl. 525—179 **17 Claims**

1. A thermoplastic elastomer composition comprising a blend of

(a) from about 10 to about 50 parts by weight of a thermoplastic engineering resin;

(b) from about 90 to about 50 parts by weight of a preformed alloy comprising a polyolefin matrix having dynamically vulcanized elastomer particles dispersed therein and comprising

(i) a thermoplastic olefinic polymer, and

(ii) an elastomeric copolymer having reactive cure sites; and

(c) from about 2 to about 35 parts by weight of an interfacially active compatibilizer for (a) and (b).

5,574,106

ACRYLIC POLYMERS AND THEIR USE IN STAIN RESISTANT POLYAMIDE TEXTILE PRODUCTS

Adrian S. Allen, Skipton, England, assignor to Allied Colloids Limited, England

Continuation of Ser. No. 693,562, Apr. 30, 1991, abandoned. This application Jan. 17, 1995, Ser. No. 373,881

Claims priority, application United Kingdom, May 1, 1990, 9000723

Int. Cl.[6] C08L *77/00;* **D06M** *15/693*

U.S. Cl. 525—183 **5 Claims**

1. A polyamide product that has undyed dyeable dye sites and in which all the undyed dyeable dye sites are blocked by a non-coloring polymeric composition that is soluble or dispersible in aqueous acid and that comprises an addition polymer that is formed from (a) styrene, substituted styrene or phenolic monomer, (b) ethylenically unsaturated strong acid monomer having a pKa below 2 and (c) ethylenically unsaturated weak acid monomer having a pKa of 3–11, characterized in that the weight percentages of the monomers are on or within PQRST of the ternary diagram of FIG. 1 and are 20 to 32% by weight monomer a, 3 to 12% by weight monomer b and 57 to 72% by weight monomer c and which addition polymer has Mn=1000 to 100000.

5,574,107

SOLID GOLF BALL

Hidenori Hiraoka, and Yoshimasa Koizumi, both of Kobe, Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Continuation of Ser. No. 121,529, Sep. 16, 1993, abandoned, which is a division of Ser. No. 53,235, Apr. 28, 1993, abandoned. This application Feb. 16, 1995, Ser. No. 389,690

Claims priority, application Japan, Apr. 28, 1992, 4-135772

Int. Cl.[6] A63B *37/02*

U.S. Cl. 525—193 **4 Claims**

1. A two or more piece solid golf ball comprising an inner core and a cover covering said inner core, said inner core comprising either a single piece of one uniform rubber material, or a combination of a center and one or more outer layers disposed over the center, wherein said inner core, or one or more portions thereof is formed from a rubber composition comprising

(a) 100 parts by weight of a butadiene rubber having at least 40% of cis-1,4-construction as a base rubber,

(b) 1 to 35 parts by weight of vulcanized rubber powder,

(c) 5 to 50 parts by weight of a metal salt of an α,β-ethylenically unsaturated carboxylic acid as a co-crosslinking agent,

(d) 0.1 to 6 parts by weight of an organic peroxide as a vulcanizing agent, and

(e) a filler

wherein said vulcanized rubber powder has a particle size of 0.1 to 1,000 μm and is prepared by pulverizing a vulcanized rubber having a JIS-C hardness of 40 to 95.

5,574,108

EXTRUDABLE ADHESIVE COMPOSITIONS AND METHODS RELATING THERETO

Vladimir Antonov, Wilmington; David D. Zhang; Stephen R. Tanny, both of Newark, and Alister M. Soutar, Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 221,150, Mar. 31, 1994, abandoned. This application Apr. 18, 1995, Ser. No. 424,756

Int. Cl.[6] C08L *33/02*

U.S. Cl. 525—221 **7 Claims**

1. A thermoplastic sealant composition for adhering polystyrene to metal, the improvement comprising:

a) a random polymerized, unneutralized, acid copolymer having an acid content of from about 5 to about 20 percent by weight; and

b) a substantially saturated, non polar hydrocarbon tackifier having an acid number of about 0;

wherein:

i. the weight ratio of a:b is in the range of about 20–90:80–10;

ii. the final sealant composition is substantially free of halogen, cation, epoxy or silane moieties; and

iii. the final sealant composition defines a melt index in the range of about 0.3–30 g/10 min (ASTM D 1238 E).

5,574,109

AMINOALKYLLITHIUM COMPOUNDS CONTAINING CYCLIC AMINES AND POLYMERS THEREFROM

David F. Lawson, Uniontown; Thomas A. Antkowiak, Wadsworth; James E. Hall, Mogadore; Mark L. Stayer, Jr., Suffield, and John R. Schreffler, Clinton, all of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

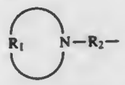
Filed Feb. 1, 1995, Ser. No. 382,358

Int. Cl.[6] C08F *293/00*

U.S. Cl. 525—280 **15 Claims**

1. A functionalized polymer comprising:

a polymer molecule having the general formula AYLi, prior to quenching, where A is a cyclic amine-containing radical having the general formula



wherein R_1 is a divalent alkylene, an oxy- or amino-alkylene having from 6 to about 20 carbon atoms; R_2 is a linear-, branched-, or cyclo-alkylene having from about 2 to about 20 atoms; and Y is a divalent polymer radical comprising at least one monomer selected from the group consisting of conjugated dienes having from about 4 to about 12 carbon atoms, monovinyl aromatic monomers having 8 to 18 carbon atoms and trienes, and Li is a lithium atom bonded to a carbon atom of Y.

5,574,110

PROCESSES FOR PREPARING POLYMERIC GLOSS MODIFIERS AND THERMOPLASTIC RESIN COMPOUNDS CONTAINING SAME

Jin-Nyoung Yoo; Dong-Ok Kim; Yeong-Rae Chang; Myung-Man Kim, and Jong-Kee Yeo, all of Daejeon, Rep. of Korea, assignors to Lucky Limited, Seoul, Rep. of Korea

Filed Apr. 19, 1994, Ser. No. 229,971

Claims priority, application Rep. of Korea, Apr. 22, 1993, 93-6819; Oct. 20, 1993, 93-22080

Int. Cl.[6] C08F *257/02;265/06;* **C08L** *51/00*

U.S. Cl. 525—296 **4 Claims**

1. A process for preparing a polymeric gloss modifier, which comprises:

(A) Optionally emulsion polymerizing a monomeric mixture including an acrylic monomer, an ethylenically unsaturated cyanide compound and, optionally, an aromatic vinyl monomer to obtain a polymeric latex having a linear structure;

(B) emulsion polymerizing a monomeric mixture including an aromatic vinyl monomer, an acrylic monomer, an ethylenically unsaturated grafting agent and, optionally, the linear polymer latex obtained in step (A), an ethylenically unsaturated cyanide compound, and/or an ethylenically unsaturated crosslinking agent to obtain a core latex having a crosslinked structure;

(C) conducting a graft emulsion polymerization of the core latex obtained in step (B) with an addition of a monomeric mixture including an acrylic monomer, an interparticle crosslinking agent and, optionally, an aromatic vinyl monomer and/or an ethylenically unsaturated cyanide compound to produce a polymer latex having a core/shell structure; and

(D) coagulating and interparticle crosslinking the polymer latex obtained in step (C) with an addition of an acid to obtain the polymeric gloss modifier.

5,574,111

PROPYLENE POLYMER AND COPOLYMERS GRAFTED WITH VINYLPOLYBUTADIENE AND THEIR PREPARATION PROCESS

Corrado Brichta, Milan; Francesco Mascia, Como; Amodio Di Somma, Milan; Gabriele Torregiani, Varese, and Antonio Addeo, Novara, all of Italy, assignors to Centro Sviluppo Settori Impiego S.r.l., Italy

Division of Ser. No. 974,849, Nov. 10, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 470,625

Claims priority, application Italy, Nov. 12, 1991, MI91A3011

Int. Cl.[6] C08F *255/02;* **C08L** *23/10*

U.S. Cl. 525—313 **4 Claims**

1. A process for preparing a propylene (co)polymer grafted with vinylpolybutadiene having at least 10% of 1,2 units, said process comprising submitting said (co)polymer to a thermal treatment at a temperature of from 200° C. to 350° C. in the presence of:

(a) vinyl polybutadiene having at least 10% of units with 1,2 structure;

(b) an anti-oxidant; and

(c) a non-peroxidic free-radical initiator.

5,574,112

PROCESS FOR THE PREPARATION OF POWDER COATINGS OF EPOXIDE RESIN, POLYMERIC POLYCARBOXYLIC ACID AND POLYOL

Wolfgang Kranig, Erlengrund 42, 48308 Senden; Klaus Cibura, Am Schütthook 159, 48167 Münster; Joachim Woltering, Rudolphstrasse 24, 48145 Münster, and Christopher Hilger, Goebenstrasse 33, 48151 Münster, all of Germany

PCT No. PCT/EP93/02122, § 371 Date Mar. 6, 1995, § 102(e) Date Mar. 6, 1995, PCT Pub. No. WO94/04590, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 10, 1993, Ser. No. 379,520

Claims priority, application Germany, Aug. 20, 1992, 42 27 580.6

Int. Cl.[6] C08L *33/14;63/02*

U.S. Cl. 525—327.3 **2 Claims**

1. Process for the preparation of powder coatings, comprising the steps of homogenizing, in the molten state, a mixture of:

A) a binder selected from the group consisting of epoxide group-containing synthetic resins and mixtures thereof, and

B) a crosslinking agent selected from the group consisting of compounds which contain on statistical average at least two carboxyl groups and at least one acid anhydride group per molecule, and mixtures of such compounds,

and cooling and solidifying the resulting homogenized melt to form a solidified coating, then reducing the solidified coating to a powder, wherein the mixture of A) and B) is admixed before or during the melt homogenization process with:

C) a compound selected from the group of polyols consisting of hexanediol, 2,2-dimethylolproprionic acid, trimethylolpropane, pentaerythritol and mixtures thereof in such an amount that from 0.1 to 0.9 hydroxyl groups of component C) are present per acid anhydride group of component B).

5,574,113

POLYCOCONDENSATES BASED ON ASPARTIC ACID, THEIR PREPARATION AND THEIR USE

Matthias Kroner, Eisenberg; Gunnar Schornick, Neuleiningen; Walter Denzinger, Speyer; Richard Baur, Mutterstadt; Alexander Kud, Eppelsheim; Birgit Potthoff-Karl, Ludwigshafen, and Volker Schwendemann, Neustadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/00660, § 371 Date Sep. 13, 1995, § 102(e) Date Sep. 13, 1995, PCT Pub. No. WO94/21695, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 5, 1994, Ser. No. 513,859

Claims priority, application Germany, Mar. 17, 1993, 43 08 426.5

Int. Cl.[6] C08F *8/30;20/62;20/66*

U.S. Cl. 525—327.6 **5 Claims**

1. A polycocondensate based on aspartic acid, consisting essentially of a polycondensate obtained by condensing

(a) aspartic acid in the presence of

(b) polymers containing carboxyl groups, which contain at least 10 mol % of a monoethylenically unsaturated carboxylic acid in copolymerized form and have a molecular weight of at least 300, in the weight ratio (a):(b) from 1,000:1 to 2:1.

5,574,114

MIXTURE OF ISOCYANATE-TERMINATED POLYURETHANE PREPOLYMERS

Charles W. Stobbie, IV; John C. Tangen, and Lani S. Kangas, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 258,611, Jun. 10, 1994, Pat. No. 5,436,302, which is a continuation of Ser. No. 54,460, Apr. 27, 1993, abandoned, which is a continuation of Ser. No. 515,113, Apr. 27, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 459,761

Int. Cl.[6] C08L *75/06;75/08*

U.S. Cl. 525—440 **21 Claims**

1. A moisture curable hot-melt adhesive, coating and/or sealant composition comprising:

(a) from 10 to 90 parts by weight of a first isocyanate-terminated, crystalline polyurethane prepolymer comprising the reaction product of a polybexamethylene adipate (PHA) having a number average molecular weight (Mn) of at least 2,400, with a polyisocyanate,

(b) correspondingly, from 90 to 10 parts by weight of a second isocyanate-terminated polyurethane prepolymer comprising the reaction product of a polytetramethylene ether glycol (THF) having a number average molecular weight (Mn) of at least 500 with a polyisocyanate, and

(c) a third isocyanate-terminated polyurethane prepolymer comprising the reaction product of a hydroxy-functional polymer other than PHA or THF with a polyisocyanate,

wherein the composition has an isocyanate group to hydroxyl group ratio greater than 1.

5,574,115

PROCESS FOR POLYMERIZATION WITH SUPPRESSED POLYMER SCALE FORMATION

Toshihide Shimizu, Urayasu; Mikio Watanabe, and Toshihiko Nakano, both of Kamisu-machi, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 149,774, Nov. 10, 1993, abandoned. This application Dec. 12, 1994, Ser. No. 355,281

Claims priority, application Japan, Nov. 10, 1992, 4-324885

Int. Cl.[6] C08F *2/20*

U.S. Cl. 526—62 **3 Claims**

1. A process for producing a polymer of a monomer having an ethylenically unsaturated double bond, which comprises polymerizing the monomer in a polymerization vessel having a coating on its inner wall surfaces, whereby polymer scale is prevented from being deposited,

wherein said coating has been formed by applying an alkaline solution containing:

(A) a condensation product of

(A-1) a condensate of acetone with a hydroxybenzene compound having at least two hydroxyl groups, and

(A-2) an aldehyde compound,

(B) an inorganic colloid, and

(C) a water-soluble polymeric compound, followed by drying.

5,574,116

PROCESS FOR THE PREPARATION OF A CATALYST FOR THE POLYMERIZATION OF OLEFINS

Karel Bujadoux, Lens; Jean-Michel Brusson, Lambersart; Francis Petit, Villeneuve-d' Ascq, and Andre Mortreux, Hem, all of France, assignors to Nosolor, Paris-la Defense Cedex, France

Division of Ser. No. 844,931, Mar. 4, 1992, Pat. No. 5,320,994, which is a continuation of Ser. No. 477,805, Feb. 22, 1990, abandoned. This application Mar. 18, 1994, Ser. No. 214,691

Claims priority, application France, Jun. 23, 1988, 88 08448

Int. Cl.[6] C08F *4/654;10/00*

U.S. Cl. 526—116 **5 Claims**

1. Process for the polymerization of olefins, in the presence of (i) a catalyst and (ii) at least one organometallic activator from groups I, II or III of the periodic classification, at a temperature of between 20° and 350° C., either at a temperature of between 20° and 250° C., under a pressure of up to 200 bar, in solution or in suspension in an inert liquid hydrocarbon having at least 6 carbon atoms, or at a temperature of between 160° and 350° C., under a pressure of between 400 and 3000 bar, in a continuous manner in a reactor in which the mean residence time of the catalyst is between 1 and 150 seconds:

wherein the catalyst comprises at least one titanium compound, at least one halogen-containing organoaluminum compound and at least one inorganic magnesium compound in suspension in at least one α,ω-dihaloalkane, characterized in that the titanium compound is essentially a titanium (III) compound, the total content of titanium (II) and titanium (IV) being less than or equal to 15% of the total content of titanium; and

wherein the catalyst is obtained by a process comprising, in a first step, the reduction of a titanium (IV) compound in an α,ω-dihaloalkane by means of a molar excess of at least one halogen-containing organoaluminum compound, in the absence of an ether, and, in a second step, the addition to the reaction mixture of a compound which forms a magnesium halide in situ without supplementary reduction of the titanium compound obtained in the first step, wherein the molar ratio of the α,ω-dihaloalkane to the titanium compound is between 5 and 180, the molar ratio of the halogen-containing organoaluminum compound to the titanium compound is greater than 1, the molar ratio of the compound which forms a magnesium halide in situ to the titanium compound is between 1 and 15, and the molar ratio of the halogen-containing organoaluminum compound to the compound which forms a magnesium halide in situ is between 0.3 and 2.

5,574,117

ACRYLIC POLYMER, ITS USE AND PROCESS FOR PRODUCING IT

Masatoshi Yoshida, Nara; Masaya Uchida; Hiroyuki Ishida, both of Osaka; Kenji Minami, Shiga; Masuji Izubayashi, Hyogo, and Yasumasa Tanaka, Osaka, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Continuation of Ser. No. 177,796, Jan. 5, 1994, abandoned, which is a division of Ser. No. 86,909, Jul. 7, 1993, abandoned. This application Nov. 7, 1995, Ser. No. 551,762

Claims priority, application Japan, Jul. 10, 1992, 4-183997; Jul. 13, 1992, 4-185519; Jul. 30, 1992, 4-204129; Apr. 21, 1993, 5-094404

Int. Cl.[6] C08F *2/02*

U.S. Cl. 526—224 **35 Claims**

1. A process for producing an acrylic polymer, comprising:

providing a monomer component that contains 51 to 100 percent by weight of an acrylic monomer having a CH_2=CHCO— structure;

providing a sulfur compound in proportion of 0.001 to 20 parts by weight per 100 parts by weight of said monomer component, wherein said sulfur compound is at least one member selected from the group consisting of a mercaptan, a disulfide compound, a thiuram compound and a trisulfide compound;

mixing said monomer component and said sulfur compound to obtain a mixture; and

heating the mixture, in the presence of an inactive gas and in the presence of a polymerization initiator in proportion by weight of one-third or less on the weight of the sulfur compound, to a temperature in the range of from 100° C. to 150° C. that results in a bulk polymerization reaction of said monomer component, and maintaining said temperature between 100° C. to 150° C. until the bulk polymerization reaction has been completed.

5,574,118

OLEFIN POLYMERS CONTAINING BOUND ANTIOXIDANT

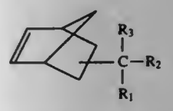
Errol J. Olivier, Baton Rouge, La., assignor to DSM Copolymer, Inc., Baton Rouge, La.

Continuation of Ser. No. 245,808, May 17, 1994, abandoned, which is a continuation of Ser. No. 120,639, Sep. 13, 1993, abandoned, which is a continuation of Ser. No. 7,653, Jan. 22, 1993, abandoned, which is a continuation of Ser. No. 608,292, Nov. 2, 1990, abandoned. This application Mar. 6, 1995, Ser. No. 398,930

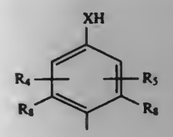
Int. Cl.[6] C08F *232/04*

U.S. Cl. 526—281 **38 Claims**

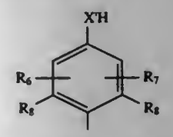
1. A polyolefin prepared by Ziegler polymerization of an olefin selected from the group consisting of an alpha-olefin, a diene, a mixture of alpha-olefins, and a mixture of alpha-olefins and a diene or polyene with a polymerizable antioxidant monomer having the formula:



wherein R_1 is an antioxidant-imparting substituent having the formula:



and R_2 is either a hydrogen atom, a group having the definition set forth in R_1 or the formula below:



wherein each X and X' is selected from the group consisting of a divalent oxygen atom and a divalent sulfur atom; and R_4 and R_6 are each independently alkyl containing 1–8 carbon atoms or hydrogen, R_5 and R_7 are alkyl containing 1–8 carbon atoms, R_8 is either hydrogen, methyl, ethyl or mixtures thereof, and R_3 is either hydrogen or an alkyl containing 1–4 carbon atoms, wherein the polymerization is carried out in the presence of a Ziegler catalyst and no prereaction between the polymerizable antioxidant monomer and the Ziegler catalyst is effected.

171–487 O.G.–96–16: QL3

5,574,119

THERMOPLASTIC RESIN FILM AND A METHOD FOR PRODUCING THE SAME

Toshirou Yamada, and Chisato Nonomura, both of Ohtsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Ohtsu, Japan

Division of Ser. No. 135,852, Oct. 13, 1993, Pat. No. 5,411,695, which is a continuation of Ser. No. 890,366, May 26, 1992, abandoned, which is a continuation of Ser. No. 584,465, Sep. 18, 1990, abandoned. This application Jan. 23, 1995, Ser. No. 376,250

Claims priority, application Japan, Oct. 16, 1989, 1-269366; Dec. 22, 1989, 1-333777; Jan. 22, 1990, 2-13085; Jul. 17, 1990, 2-189172

Int. Cl.[6] B32B *27/34*

U.S. Cl. 528—310 **4 Claims**

1. A biaxially oriented polyamide film, wherein the boiling water shrinkage distortion factors (%) at any different two points on a straight line in the transverse direction, and the molecular orientation angles at any different two points on a straight line in the transverse direction measured by microwave techniques satisfy the following formula VIII:

$$\Delta BS \times \Delta\Theta_{\omega} / Wf^2 \leqq 44.0 \qquad \text{(VIII)}$$

wherein ΔBS is, in terms of absolute value, the difference between said boiling water shrinkage distortion factors (%) measured at said two points; $\Delta\Theta_{\omega}$ is, in terms of absolute value, the difference between said molecular orientation angles measured at said two points, and Wf is the distance (m) between the points of measurement of said molecular orientation angle,

said boiling water shrinkage distortion factor at each of said points being the value obtained by measuring the boiling water shrinkage factors (%) at +45° and −45° from the longitudinal axis of the film, clockwise rotation around the longitudinal axis being regarded as positive, and subtracting said boiling water shrinkage factor in the −45° direction from said factor in the +45° direction, and

wherein the polyamide film has a thermal shrinkage factor in the transverse direction measured at a temperature that is 40° C. higher than the glass transition temperature of the polyamide of 3.8% or less.

5,574,120

PROCESS FOR THE PREPARATION OF DICARBOXYLIC ACID TERPOLYMERS FOR DETERGENTS AND CLEANING AGENTS

Klaus Heidel, Marl; Wulf Ruback, Dülmen, and Frank Krause, Kleve, all of Germany, assignors to Chemische Fabrik Stockhausen GmbH, Krefeld, Germany

Filed Nov. 6, 1995, Ser. No. 554,348

Claims priority, application Germany, Nov. 9, 1994, 44 39 978.2

Int. Cl.[6] C08F *22/02;22/26;22/06;* **C11D** *3/37*

U.S. Cl. 526—318.2 **10 Claims**

1. Process for the preparation of terpolymers by free radical polymerization in an aqueous medium, the component a, a monoethylenically unsaturated C_4- to C_6-dicarboxylic acid, its alkali metal salt and/or its ammonium salt, being initially introduced, the component b, a monoethylenically unsaturated C_3- to C_5-monocarboxylic acid, its alkali metal salt and/or its ammonium salt, being metered in, the component c, an ethylenically unsatur-

ated monomer containing no free carboxyl groups, being initially introduced and/or metered in, and 30 to 80 mol % of components a and b together being present in salt form, characterized in that the polymerization is carried out in the presence of surfactant compounds.

5,574,121

PROCESS FOR PREPARING AN ABSORBENT RESIN CROSSLINKED WITH A MIXTURE OF TRIMETHYLOLPROPANE DIACRYLATE AND TRIACRYLATE

Yoshio Irie, Himeji; Nobuyuki Harada, Yamadahigashi Suita; Kinya Nagasuna, Himeji; Kohichi Hirota, Kobe; Yoshihiko Masuda, Takarazuka; Hideaki Nagano, and Hideyuki Kubo, both of Himeji, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Jun. 17, 1994, Ser. No. 262,065

Claims priority, application Japan, Jun. 18, 1993, 5-147533; Dec. 28, 1993, 5-335810

Int. Cl.[6] C08F *236/22*

U.S. Cl. 526—318.44 **29 Claims**

1. A process for preparing an absorbent resin comprising the steps of:

providing trimethylolpropane and acrylic acid;

producing a crosslinking agent by mixing and esterifying the trimethylolpropane and acrylic acid so that a ratio in weight percent of trimethylolpropane triacrylate and trimethylolpropane diacrylate is from 95/5 to 50/50; and

polymerizing a hydrophilic unsaturated monomer having at least one carboxyl group in the presence of said crosslinking agent, thereby producing a crosslinked polymer.

5,574,122

LOW SURFACE ENERGY POLYISOCYANATES AND THEIR USE IN ONE-OR TWO-COMPONENT COATING COMPOSITIONS

Philip E. Yeske; Edward P. Squiller, both of Pittsburgh, Pa., and William E. Slack, Moundsville, W. Va., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Sep. 29, 1995, Ser. No. 536,556

Int. Cl.[6] C08G *18/61;18/77;* **C07C** *269/02;* **C07F** *7/10*

U.S. Cl. 528—28 **20 Claims**

1. A polyisocyanate mixture

i) having an NCO content of 5 to 35% by weight and prepared from an organic diisocyanate,

ii) containing up to 25% by weight of isocyanurate groups (calculated as N_3, C_3, O_3, MW 126),

iii) containing allophanate groups in an amount such that there are more equivalents of allophanate groups than urethane and urea groups and such that the polyisocyanate mixture remains stable and homogeneous in storage for 3 months at 25° C., provided that the maximum content of allophanate groups is 35% by weight, and

iv) containing siloxane groups (calculated as SiO, MW 44) in an amount of 0.002 to 50% by weight,

wherein the preceding percentages are based on the solids content of the polyisocyanate mixture, excluding any unreacted organic diisocyanate, and wherein the siloxane groups are incorporated by reacting an isocyanate group with a compound containing one isocyanate-reactive group directly attached to a carbon atom and one or more siloxane groups.

5,574,123

HEAT CURABLE, ONE-COMPONENT POLYURETHANE REACTIVE COMPOSITIONS

Manfred Bock, Leverkusen; Holger Casselmann, Bergisch Gladbach; Werner Drouvé; Gerhard Grögler, both of Leverkusen; Richard Kopp, and Heinrich Hess, both of Köln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 24, 1995, Ser. No. 396,182

Claims priority, application Germany, Mar. 7, 1994, 44 07 490.5

Int. Cl.[6] C08G *18/42;18/50;18/80*

U.S. Cl. 528—45 **4 Claims**

1. A heat curable, one-component polyurethane reactive composition containing

A) surface-modified, particulate polyisocyanates, which are solid at room temperature, in which 0.1 to 25 equivalent percent, based on the total number of NCO groups, of the NCO groups are deactivated and

B) a mixture of compounds having isocyanate-reactive groups and a molecular weight of 400 to 16,000 comprising

1) 5 to 40 wt. %, based on the weight of component B), of one or more aliphatic polyether polyamines and

2) 60 to 95 wt. %, based on the weight of component B), of a polyol mixture containing

i) 10 to 60 wt. %, based on the weight of component B2), of at least one polyester polyol and

ii) 40 to 90 wt. %, based on the weight of component B2), of at least one polyether polyol with predominantly primary hydroxyl groups,

wherein surface-modified, particulate polyisocyanates A) are present as a heterogeneous suspension in the polyamine and polyol components B).

5,574,124

ISOCYANATE PREPOLYMERS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Lutz Schmalstieg, Köln; Rainer Rettig, Körten; Ulrich Walter, Hilden, all of Germany, and Edwin R. Hortelano, Houston, Tex., assignors to Bayer Aktiengesellschaft, Leverkusen, Germany, and Bayer Corporation, Pittsburgh, Pa.

Filed Aug. 3, 1995, Ser. No. 510,887

Claims priority, application Germany, Aug. 17, 1994, 44 29 076.4

Int. Cl.[6] C08G *18/42;18/44;18/48;* **C07C** *269/02*

U.S. Cl. 528—59 **14 Claims**

1. An isocyanate prepolymer which has an NCO content of 1.5 to 5.0 wt. % and a monomeric diisocyanate content of less than 0.5 wt. %, and is the reaction product of

A) an isocyanate component consisting essentially of one or more aromatic or cycloaliphatic diisocyanates and

B) a polyol component consisting essentially of a mixture of

B1) one or more polyether polyols having a molecular weight of 1000 to 3000 and an average hydroxyl functionality of 2 to 4 and

B2) one or more polyester carbonate diols having a molecular weight of 700 to 3000 and prepared from (i) one or more diols having a maximum molecular weight of 200, (ii) ε -caprolactone and/or ε-hydroxycaproic acid and (iii) diaryl carbonates, wherein components (i) and (ii) are present in a molar ratio of 4:1 to 1:3,

wherein component B1) and B2) are present in a weight ratio of 0.25:1 to 1.5:1.

5,574,125

ENERGETIC NITRO PREPOLYMER

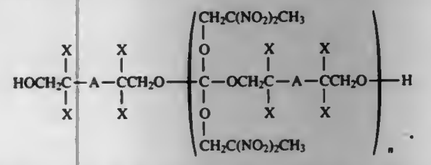
G. William Lawrence, Silver Spring, and William H. Gilligan, Ft. Washington, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 23, 1985, Ser. No. 754,897

Int. Cl.[6] C08G *18/44*

U.S. Cl. 528—66 **6 Claims**

1. A hydroxy-terminated poly(2,2-dinitropropyl)polynitroorthocarbonate prepolymer of the formula



where n>1, X is selected from the group consisting of F and NO_2, and wherein when X is F, —A— is selected from the group consisting of $—CF_2—$, $—CF_2CF_2—$, $—CF_2CF_2CF_2—$, and $—CF_2CF_2CF_2CF_2—$, but when X is NO_2, —A— is selected from the group consisting of $—CH_2CH_2—$, $—CH_2OCH_2—$, and $—CH_2OCH_2OCH_2—$.

5,574,126

ENERGETIC FLUORONITRO PREPOLYMER

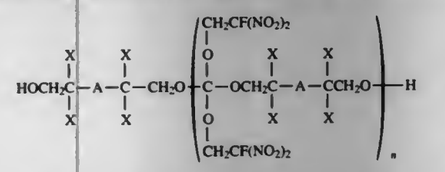
G. William Lawrence, Silver Spring, and William H. Gilligan, Ft.Washington, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 23, 1985, Ser. No. 754,898

Int. Cl.[6] C08G *18/44*

U.S. Cl. 528—66 **6 Claims**

1. An energetic hydroxy-terminated poly(2-fluoro-2,2dinitroethyl) polynitroorthocarbonate prepolymer of the formula



wherein n>1, X is selected from the group consisting of F and NO_2 , and wherein when X is F, -A- is selected from the group consisting of $—CF_2—$, $—CF_2CF_2—$, $—CF_2CF_2CF_2—$, and $—CF_2CF_2CF_2CF_2—$, but when X is NO_2, -A- is selected from the group consisting of $—CH_2CH_2—$. $—CH_2OCH_2—$, and $—CH_2OCH_2OCH_2—$.

5,574,127

HYDROPHOBICALLY MODIFIED POLY(ACETAL-POLYETHERS)

Arjun C. Sau, Newark, Del., assignor to Aqualon, Wilmington, Del.

Filed Apr. 5, 1995, Ser. No. 417,368

Int. Cl.[6] C08G *8/02*

U.S. Cl. 528—125 **38 Claims**

1. A water-soluble polymer composition comprising a backbone of poly(acetal- or ketal-polyether) which has ends that are capped with hydrophobic groups independently selected from the group consisting of alkyl, aryl, arylalkyl, cycloaliphatic, perfluoroalkyl, carbosilyl, polycyclyl, and complex dendritic groups wherein the alkyl, perfluoroalkyl, and carbosilyl hydrophobic groups comprise 1 to 40 carbons.

5,574,128

POLYMERS COMPRISING BOTH POLYAMIDE-DIACID/POLYETHERDIOL BLOCKS AND POLYAMIDE-DIACID/POLYETHERDIAMINE BLOCKS, AND THEIR PREPARATION

Didier Judas, Paris, and Jean-Marc Sage, Oullins, both of France, assignors to Elf Atochem S.A., France

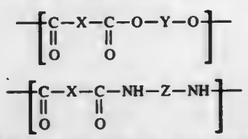
Filed Aug. 10, 1994, Ser. No. 288,531

Claims priority, application France, Aug. 20, 1993, 93 10140

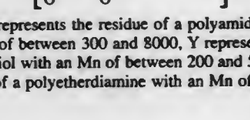
Int. Cl.[6] C08G *69/44;* **C08L** *77/12*

U.S. Cl. 528—288 **26 Claims**

1. Polyetheresteramides, characterized in that they comprise both of the following repeating entities:



A



B

in which X represents the residue of a polyamide-diacid oligomer with an Mn of between 300 and 8000, Y represents the residue of a polyetherdiol with an Mn of between 200 and 5000, Z represents the residue of a polyetherdiamine with an Mn of between 200 and 5000.

5,574,129

PROCESS FOR PRODUCING LACTIC ACID POLYMERS AND A PROCESS FOR THE DIRECT PRODUCTION OF SHAPED ARTICLES FROM LACTIC ACID POLYMERS

Rika Miyoshi; Tadamoto Sakai; Noriaki Hashimoto; Yukihiro Sumihiro; Kayoko Yokota, and Kunihiko Koyanagi, all of Hiroshima, Japan, assignors to The Japan Steel Works, Ltd., Tokyo, Japan

Filed May 5, 1995, Ser. No. 436,010

Claims priority, application Japan, May 10, 1994, 6-096021; Nov. 25, 1994, 6-290879

Int. Cl.[6] C08G *63/08*

U.S. Cl. 528—354 **16 Claims**

1. A process for producing lactic acid polymer comprising the steps of:

polycondensing lactic acid to a lactic acid prepolymer having a weight-average molecular weight of 10,000–50,000 in a batch-type polymerization reactor; and

polycondensing said lactic acid prepolymer to polylactic acid having a weight-average molecular weight of at least 100,000 by means of a screw-type extruder which forms a second reactor.

5,574,130

FUNCTIONALIZED POLYLACTIDE

Lukas Haeussling, Laubenheim, and Gregor Brodt, Heppenheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 238,881, May 6, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 469,783

Claims priority, application Germany, May 11, 1993, 43 15 611.8

Int. Cl.[6] C08G *63/08*

U.S. Cl. 528—354 **5 Claims**

1. Polylactide of the formula structure I

$$(R^1—OCONH)_n—R^2 \qquad (I)$$

where
R^1 is a polylactide residue with a degree of polymerization, based on lactic acid units, of about 5 to 5500 and
R^2 is the n-functional radical of a tri-, tetra- or higher polyisocyanate, wherein n is the number of isocyanate groups originally on R^2.

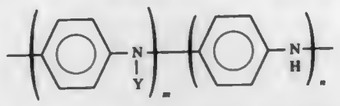
5,574,131

POLYTANILINE DERIVATIVES AND THEIR PRODUCTION PROCESS

Osamu Oka, Shizuoka, Japan, assignor to Tomoegawa Paper Co., Ltd., Shizuoka-ken, Japan

Continuation of Ser. No. 693,867, Apr. 30, 1991, Pat. No. 5,254,670. This application Aug. 10, 1993, Ser. No. 103,958
Claims priority, application Japan, May 2, 1990, 2-115163; May 11, 1990, 2-119699; Mar. 25, 1991, 3-83023; Mar. 25, 1991, 3-83024; Mar. 25, 1991, 3-83025
Int. Cl.[6] C08L *79/00*
U.S. Cl. 528—422 **3 Claims**

1. A polyaniline comprising units of the following formula:



wherein Y defines a group represented by the following formula: R_1CO—, R_1 being a cycloalkyl group having at least 4 carbon atoms or an alkenyl group having at least 4 carbon atoms or 2-methyl heptyl, and n and m independently represent polymerization degrees and are integers satisfying the following equations:

$$m/(n+m)=0.01 \text{ to } 1;$$

and

$$n+m=20 \text{ to } 1000,$$

said polyaniline being soluble in organic solvents.

5,574,132

PEPTIDES AND MIXTURES THEREOF FOR DETECTING ANTIBODIES TO HEPATITIS C VIRUS (HCV)

Martial Lacroix, Brossard, Canada, assignor to BioChem Immunosystems Inc., Quebec, Canada

Filed Apr. 5, 1991, Ser. No. 681,701
Int. Cl.[6] C07K *7/02;7/08;14/18*
U.S. Cl. 530—323 **7 Claims**

1. A mixture comprising two or more peptides having the formula

$$a—X—c—Z—b$$

wherein:
X and Z are independently selected from the group of amino acid sequences consisting of:

(SEQ ID NO:1)	-MSTNPKPQRKTKRNTNRRPQDVKFPG-	(BCH-423)
(SEQ iD NO:5)	-PQDVKFPGGGQIV-	(BCH-436)
(SEQ ID NO:6)	-KRNTNRRPQDVKFPGGGQIV-	(BCH-437)
(SEQ ID NO:7)	-KPQRKTKRNTNRRPQDVKFPGGGQIV-	(BCH-438)
(SEQ ID NO:8)	-MSTNPKPQRKTKRNTNRRPQDVKFPGGGQIV-	(BCH-439)
(SEQ ID NO:10)	-RGSRPSWGPNDPRRRSRNLGKVIDTLT-	(BCH-443)
(SEQ ID NO:11)	-KFPGGGQIVGGVYLLPRRGPRLGV-	(BCH-446)
(SEQ ID NO:12)	-RGRRQPIPKARRPEGRTWAQPGY-	(BCH-448)
(SEQ ID NO:14)	-GPRLGVRATRKTSERSQPRGRRQPI-	(BCH-461)
(SEQ ID NO:13)	-SSIVYEAADVIMHAPGSVPSVR-	(BCH-458)

and wherein:
a is an amino acid terminus, one to eight amino acids or a substituent effective to facilitate coupling or to improve the immunogenic or antigenic activity of the peptide; and
b is a carboxy terminus, one to eight amino acids or a substituent effective to facilitate coupling or to improve the immunogenic or antigenic activity of the peptide; and
c is a linker of one or two amino acids or a substituent effective to facilitate coupling of the two peptides in tandem or to improve the immunogenic or antigenic activity of the tandem peptide.

5,574,133

ANTI-OBESITY PROTEINS

Richard D. DiMarchi, Carmel; David B. Flora, Greenfield; William F. Heath, Jr., Fishers; James A. Hoffmann, Greenwood; James E. Shields, Noblesville, and David L. Smiley, Greenfield, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 31, 1995, Ser. No. 381,049
Int. Cl.[6] A61K *38/00;* C07K *7/10;7/00*
U.S. Cl. 530—324 **8 Claims**

1. A biologically active peptide of the formula: SEQ ID NO: 1 or a pharmaceutically acceptable salt thereof.

5,574,134

POLYPEPTIDE MONOMERS, LINEARLY EXTENDED AND/OR CROSSLINKED FORMS THEREOF, AND APPLICATIONS THEREOF

J. Herbert Waite, Lewes, Del., assignor to University of Delaware, Newark, Del.

Continuation of Ser. No. 378,599, Jul. 11, 1989, abandoned. This application Feb. 19, 1992, Ser. No. 839,745
Int. Cl.[6] A61K *38/04*
U.S. Cl. 530—328 **12 Claims**

1. An isolated and purified polypeptide containing at least one of the amino acid sequences set forth below:
(A) Gly-Dop-Lys
(B) Thr-Gly-Dop-Ser-Ala-Gly-Dop-Lys
(C) Gln-Thr-Gly-Dop-Val-Pro-Gly-Dop-Lys
(D) Gln-Thr-Gly-Dop-Asp-Pro-Gly-Tyr-Lys
(E) Gln-Thr-Gly-Dop-Leu-Pro-Gly-Dop-Lys
wherein the above three-letter symbols are defined as follows:
Gly is a glycine residue,
Dop is a 3,4-dihydroxyphenylalanine residue,
Lys is a lysine residue,
Gln is a glutamine residue,
Thr is a threonine residue,
Ser is a serine residue,
Ala is an alanine residue,
Val is a valine residue,
Pro is a proline residue,
Asp is an aspartic acid residue,
Tyr is a tyrosine residue and
Leu is a leucine residue.

5,574,135

PROCESS FOR MAKING VANCOMYCIN

Alexander H. T. Chu, Buffalo Grove, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 128,328, Sep. 28, 1993, abandoned, which is a continuation of Ser. No. 871,610, Apr. 20, 1992, abandoned, which is a continuation of Ser. No. 550,774, Jul. 10, 1990, abandoned. This application Feb. 10, 1995, Ser. No. 387,961
Int. Cl.[6] C07K *1/14;9/00*
U.S. Cl. 530—344 **5 Claims**

1. A process for the manufacture of crystalline vancomycin without causing discoloration thereof comprising:
a) passing a vancomycin broth through a first adsorbent;
b) passing the vancomycin broth produced by step a) through a second adsorbent;
c) adding a solution of base to the product of step b) to produce a solution having a pH of above 9.0 to about 9.5;
d) crystallizing vancomycin base from the solution of step c);
e) substantially separating the crystals from the solution;
f) dissolving the crystallized vancomycin from step e) in an acid solution to produce a solution with a pH of about 3.0 to about 3.5;
g) adding to the solution of step f) a base solution in an amount sufficient to increase the pH of the solution to above 9.0 to about 9.5 to recrystallize the vancomycin base; and
h) substantially separating vancomycin base crystals from the solution.

5,574,136

DNA ENCODING GRANULOCYTE COLONY-STIMULATING FACTOR RECEPTOR AND PROTEIN THEREOF

Shigekazu Nagata, Suita, and Rikiro Fukunaga, Minoo, both of Japan, assignors to Osaka Bioscience Institute, Japan

PCT No. PCT/JP91/00375, § 371 Date Sep. 22, 1992, § 102(e) Date Sep. 22, 1992, PCT Pub. No. WO91/14776, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 22, 1991, Ser. No. 923,976
Claims priority, application Japan, Mar. 23, 1990, 2-74539; Jul. 3, 1990, 2-176629
Int. Cl.[6] C12N *15/12;* C07K *14/705;14/715*
U.S. Cl. 530—350 **5 Claims**

1. An isolated DNA encoding murine G-CSF receptor which encodes the amino acid sequence in SEQ ID NO.: 2.

5,574,137

RECOMBINANT GAMMA INTERFERONS HAVING ENHANCED STABILITY AND METHODS THEREFOR

Patrick W. Gray, San Francisco, and Ernst H. Rinderknecht, San Carlos, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 127,990, Sep. 27, 1993, abandoned, which is a continuation of Ser. No. 969,786, Oct. 29, 1992, abandoned, which is a continuation of Ser. No. 93,455, Sep. 4, 1987, abandoned, which is a division of Ser. No. 584,217, Feb. 27, 1984, Pat. No. 4,855,238, which is a continuation-in-part of Ser. No. 562,009, Dec. 16, 1983, abandoned. This application Sep. 23, 1994, Ser. No. 311,765
Int. Cl.[6] C07K *14/57*
U.S. Cl. 530—351 **3 Claims**

1. A polypeptide consisting of the amino acid sequence, extending from the N-terminus:

X—	Y—	ASP—	PRO—	TYR—	VAL—	LYS—	GLU—	ALA—							
1	2	3	4	5	6	7	8								
								GLU—	ASN—	LEU—	LYS—	LYS—	TYR—	PHE—	
								9	10	11	12	13	14	15	
ASN—	ALA—	GLY—	HIS—	SER—	ASP—	VAL—	ALA—								
16	17	18	19	20	21	22	23								
								ASP—	ASN—	GLY—	THR—	LEU—	PHE—	LEU—	
								24	25	26	27	28	29	30	
GLY—	ILE—	LEU—	LYS—	ASN—	TRP—	LYS—	GLU—								
31	32	33	34	35	36	37	38								
								GLU—	SER—	ASP—	ARG—	LYS—	ILE—	MET—	
								39	40	41	42	43	44	45	
GLN—	SER—	GLN—	ILE—	VAL—	SER—	PHE—	TYR—								
46	47	48	49	50	51	52	53								
								PHE—	LYS—	LEU—	PHE—	LYS—	ASN—	PHE—	
								54	55	56	57	58	59	60	
LYS—	ASP—	ASP—	GLN—	SER—	ILE—	GLN—	LYS—								
61	62	63	64	65	66	67	68								
								SER—	VAL—	GLU—	THR—	ILE—	LYS—	GLU—	
								69	70	71	72	73	74	75	
ASP—	MET—	ASN—	VAL—	LYS—	PHE—	PHE—	ASN—								
76	77	78	79	80	81	82	83								
								SER—	ASN—	LYS—	LYS—	LYS—	ARG—	ASP—	
								84	85	86	87	88	89	90	
ASP—	PHE—	GLU—	LYS—	LEU—	THR—	ASN—	TYR—								
91	92	93	94	95	96	97	98								
								SER—	VAL—	THR—	ASP—	LEU—	ASN—	VAL	
								99	100	101	102	103	104	105	
GLN—	ARG—	LYS—	ALA—	ILE—	HIS—	GLU—	LEU—								
106	107	108	109	110	111	112	113								
								ILE—	GLN—	VAL—	MET—	ALA—	GLU—	LEU—	
								114	115	116	117	118	119	120	
SER—	PRO—	ALA—	ALA—	LYS—	THR										
121	122	123	124	125	126										

wherein X is a methionine residue or hydrogen and Y is a glutamine residue or where X is hydrogen, Y is either a glutamine or a pyroglutamate residue.

5,574,138

EPITHELIUM-DERIVED T-CELL FACTOR

Kenneth H. Grabstein, Mercer Island; Dirk M. Anderson; June R. Eisenman, both of Seattle; Victor Fung, Redmond, and Charles Rauch, Bainbridge Island, all of Wash., assignors to Immunex Corporation, Seattle, Wash.

Continuation-in-part of Ser. No. 233,606, Apr. 22, 1994, abandoned, which is a continuation-in-part of Ser. No. 31,399, Mar. 8, 1993. This application Feb. 22, 1995, Ser. No. 393,305
Int. Cl.[6] A61K *38/20;* C07K *14/54*
U.S. Cl. 530—351 **7 Claims**

1. An isolated biologically active epithelium-derived T-cell factor polypeptide wherein said polypeptide is selected from the group consisting of:
(a) a polypeptide comprising the amino acid sequence of SEQ ID NO 3;
(b) a polypeptide comprising the amino acid sequence of SEQ ID NO 6; and
(c) a polypeptide encoded by an isolated nucleic acid selected from the group consisting of:
(i) DNA comprising nucleotides 145 through 486 of the DNA sequence of SEQ ID NO 1 and 4;
(ii) DNA that detectably hybridizes to the DNA of (i) or their complementary strands under conditions of high stringency and upon expression encode mammalian epithelium-derived T-cell factor; and

(iii) DNA that, due to degeneracy of the genetic code, encode a polypeptide encoded by any of the foregoing DNA sequences.

5,574,139

METHOD AND APPARATUS FOR THE PRODUCTION OF A WATERSOLUBLE, LOW-IRON PROTEIN PRODUCT FROM BLOOD CELL RAW MATERIAL, AND A LOW-IRON, WATERSOLUBLE PROTEIN PRODUCT PRODUCED BY HYDROLYSIS OF BLOOD CELL RAW MATERIAL

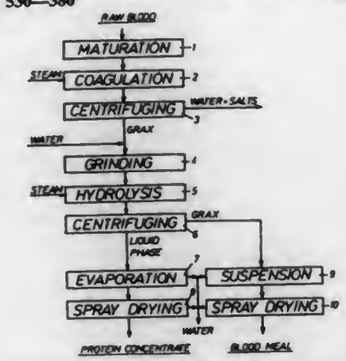
Bjarne Holm-Jensen, Hedensted, Denmark, assignor to daka a.m.b.a, Denmark

Filed Nov. 9, 1994, Ser. No. 336,806

Claims priority, application Denmark, Nov. 17, 1993, 9301295

Int. Cl.[6] C07K *1/12;14/745;* **A23K** *1/04;* **A61K** *35/14*

U.S. Cl. 530—380 **23 Claims**



1. A method for the production of a watersoluble, low-iron protein product from a blood cell raw material, wherein an aqueous blood cell material is subjected to hydrolysis at a temperature of between 140° and 190° C. to form a hydrolyzed material and the hydrolyzed material is separated into a low-iron, liquid phase containing soluble proteins and an iron-rich, solid phase containing insoluble proteins, the liquid phase optionally being concentrated or dried to a low-iron protein product.

5,574,140

HYDRAZINO-TYPE N_2S_2CHELATORS

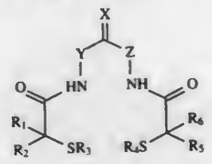
Alfred Pollack, Toronto; Robert A. Kirby, Acton, and Robert Dufault, Bramalea, all of Canada, assignors to Resolution Pharmaceutical Inc., Mississauga, Canada

Division of Ser. No. 116,504, Sep. 3, 1993, abandoned. This application Jul. 14, 1994, Ser. No. 274,850

Int. Cl.[6] C07F *13/00;* **C07C** *281/00;* **A61K** *51/08*

U.S. Cl. 534—10 **12 Claims**

1. A compound of the general formula:



wherein

R_1, R_2, R_5 and R_6 are independently selected from a group consisting of H; carboxyl; C_{1-3} alkyl; and C_{1-3} alkyl substituted with a group selected from hydroxyl, sulfhydryl, halogen, carboxyl and aminocarbonyl; and a conjugating group having a targetting molecule attached thereto;

R_3 and R_4 are independently selected from a group consisting of H and a sulfur protecting group; X is selected from O or a conjugating group having a targetting molecule attached thereto;

Y and Z are each NR_7 with the proviso that NR_7 is NH for at least one of Y or Z; and

R_7 is selected from the group consisting of H, carboxyl, C_{1-3} alkyl substituted with hydroxyl, carboxyl and halogen;

wherein at least one of R_1, R_2, R_5, R_6 or X is a conjugating group having a targetting molecule attached thereto.

5,574,141

FUNCTIONALIZED CARRIER MATERIALS FOR THE SIMULTANEOUS SYNTHESIS AND DIRECT LABELING OF OLIGONUCLEOTIDES AS PRIMERS FOR TEMPLATE-DEPENDENT ENZYMATIC NUCLEIC ACID SYNTHESES

Hartmut Seliger, Elchingen, Germany; Wojciech Markiewicz, Poznan, Poland; Gabriele Gröger, Elchingen, Germany; Rudi Rösch, Ulm, Germany, and Margit Klotz, Schelklingen, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

PCT No. PCT/EP92/01932, § 371 Date Feb. 28, 1994, § 102(e) Date Feb. 28, 1994, PCT Pub. No. WO93/05060, PCT Pub. Date Mar. 18, 1993

PCT Filed Apg. 22, 1992, Ser. No. 199,248

Claims priority, application Germany, Aug. 28, 1991, 41 28 480.1

Int. Cl.[6] C07H *19/00;21/00;* **C12P** *19/34;* **C12Q** *1/68*

U.S. Cl. 536—22.1 **14 Claims**

1. A polymeric carrier covalently bound to a nucleoside or nucleotide or a precursor thereof via an anchor group and a spacer group, wherein said spacer group contains an ethylenedioxy group, wherein said nucleoside or nucleotide or precursor thereof is covalently linked or linked via a spacer to a labeling group, and wherein said labeling group is covalently linked to the nucleobase of said nucleoside or nucleotide or precursor thereof.

5,574,142

PEPTIDE LINKERS FOR IMPROVED OLIGONUCLEOTIDE DELIVERY

Rich B. Meyer, Jr., Woodinville; Alexander A. Gall, Bothell, and Michael W. Reed, Seattle, all of Wash., assignors to MicroProbe Corporation, Bothell, Wash.

Filed Dec. 15, 1992, Ser. No. 991,199

Int. Cl.[6] C07H *21/04;* **C07K** *4/00*

U.S. Cl. 536—23.1 **12 Claims**

1. An oligonucleotide-peptide-carrier conjugate wherein the oligonucleotide, peptide and carrier moieties are covalently linked to one another, and wherein:

the oligonucleotide is selected from a group consisting of antisense oligonucleotide, antigene oligonucleotide, protein binding oligonucleotide and ribozyme which selectively binds to a desired sequence of RNA, DNA or protein in a target cell, and which by binding to the desired RNA, DNA or protein sequence brings about a desired therapeutic effect, the oligonucleotide optionally being modified relative to naturally occurring oligonucleotides to increase binding to the desired RNA, DNA or protein sequence or to increase resistance to nuclease enzymes;

the peptide is cleavable by protease enzymes within the lysosomes of a target cell, and

the carrier is a lysosomotropic carrier which is capable of facilitating transport of the oligonucleotide-peptide-carrier conjugate into the target cell.

5,574,143

RIBOZYMES

James P. Haseloff, O'Connor; Wayne L. Gerlach, Hughes; Philip A. Jennings, West Chatswood, and Fiona H. Cameron, Forestville, all of Australia, assignors to Gene Shears Pty. Ltd., Neutral Bay, Australia

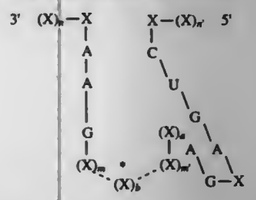
Continuation of Ser. No. 967,693, Oct. 27, 1992, Pat. No. 5,494,814, which is a continuation of Ser. No. 926,148, Aug. 5, 1992, Pat. No. 5,254,678, which is a continuation of Ser. No. 536,625, Aug. 14, 1990, abandoned. This application Feb. 8, 1994, Ser. No. 195,735

Claims priority, application Australia, Dec. 15, 1987, PI5911/87; Aug. 19, 1988, PI9950/88; Sep. 9, 1988, PJ0353/88; Nov. 4, 1988, PJ1304/88; Nov. 7, 1988, PJ1333/88

Int. Cl.[6] C12N *9/10;15/54;15/64;* **A61K** *38/45*

U.S. Cl. 536—23.2 **7 Claims**

1. A compound having the formula:



wherein each X represents a ribonucleotide which may be the same or different;

wherein each of $(X)_n$ and $(X)_{n'}$ represents an oligoribonucleotide having a predetermined sequence which is capable of hybridizing with an RNA target sequence to be cleaved, and (b) does not naturally occur covalently bound to the sequences X-A-A-G- and X-C-U-G-A-, respectively, such RNA target sequence not being present within the compound;

wherein each of n and n' represents an integer which defines the number of ribonucleotides in the oligoribonucleotide with the proviso that the sum of n+n' is greater than 6 and sufficient to allow the compound to stably interact with the RNA target sequence through base pairing;

wherein each * represents base pairing between the nucleotides located on either side thereof;

wherein each solid line represents a chemical linkage providing covalent bonds between the ribonucleotides located on either side thereof;

wherein a represents an integer which defines a number of ribonucleotides with the proviso that a may be 0 or 1 and if 0, the A located 5' of $(X)_a$ is bonded to the G located 3' of $(X)_a$;

wherein each of m and m' represents an integer which is greater than 1;

wherein each of the dashed lines independently represents either a chemical linkage providing covalent bonds between the ribonucleotides located on either side thereof or the absence of any such chemical linkage; and

wherein $(X)_b$ represents an oligoribonucleotide which may be present or absent with the proviso that b represents an integer which is greater than or equal to 4 if $(X)_b$ is present.

5,574,144

KAINATE-BINDING, HUMAN CNS RECEPTORS OF THE EAA4 FAMILY

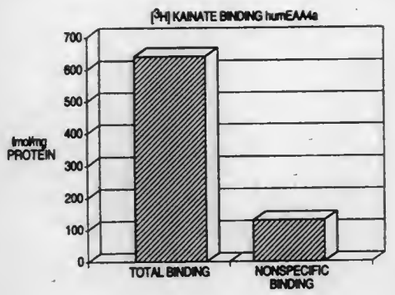
Rajender Kamboj, Mississauga; Candace E. Elliott, and Stephen L. Nutt, both of Etobicoke, all of Canada, assignors to Allelix Biopharmaceuticals, Inc., Mississauga, Canada

Filed Jun. 24, 1992, Ser. No. 903,456

Int. Cl.[6] C07H *21/02;21/04;* **C12N** *5/10;15/85*

U.S. Cl. 536—23.5 **18 Claims**

1. An isolated polynucleotide that codes for the human EAA4 receptor that has the amino acid sequence of amino acids 1–877 of SEQ ID NO: 2.



5,574,145

ISOLATED NUCLEIC ACID MOLECULES TARGETED TO THE REGION INTERMIDIATE TO THE 16S AND 23SR RNA GENES USEFUL AS PROBES FOR DETERMINING BACTERIA

Thomas G. Barry, County Galway; Bernard F. X. Gannon, and Richard Powell, both of Galway, all of Ireland, assignors to Bioresearch Ireland, Dublin, and University College Galway, Galway, both of Ireland

Division of Ser. No. 830,465, Feb. 6, 1992, abandoned, which is a continuation of Ser. No. 510,853, Apr. 18, 1990, abandoned. This application Dec. 22, 1993, Ser. No. 173,639

Claims priority, application Ireland, Apr. 20, 1989, 1287/89

Int. Cl.[6] C07H *21/04*

U.S. Cl. 536—24.32 **11 Claims**

1. An isolated nucleic acid molecule, useful as a probe for specifically determining *Clostridium difficile* in the presence of other microorganisms, wherein said probe hybridizes to a variable intergenic region intermediate to the 16S and 23S rRNA genes of *Clostridium difficile* and is selected from the group consisting of

(i) nucleotide sequence

AGAGAACCTGCCGTTGAATCACCTC-
CTTTCTAAGGAGAATAGA AAGAAGAAAAT-
TCTTTCTAAAGGCTGAATTCTCTGTTTAATTT
TGAGAGACCATTCTCTCAAAAT-
TGAAACTTCTAATAAAATTGG GAAGTAGCTGAT-
CATCACCAAATCGTAAATTTTGGATGCCTAG
CTACGTTCTTTGAAAATTGCACAGT-
GAATAAAGTAAAGCTAA AGGTATATAAAAATC-
CTTTGTAAGAATCAATTTAAGGTCAAG CTA-
CAAAGGGCGCAT,

(ii) the nucleotide sequence complementary to (i);

(iii) a portion of the nucleotide sequence (i) of sufficient length to specifically determine *Clostridium difficile* in the presence of other microorganisms, and

(iv) the nucleotide sequence complementary to (iii).

5,574,146

OLIGONUCLEOTIDE SYNTHESIS WITH SUBSTITUTED ARYL CARBOXYLIC ACIDS AS ACTIVATORS

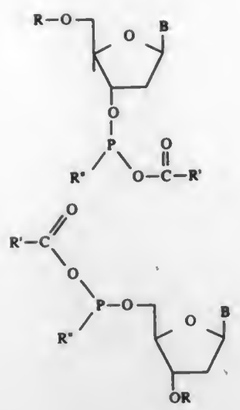
M. Parameswara Reddy, and Firdous Farooqui, both of Brea, Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Aug. 30, 1994, Ser. No. 298,545

Int. Cl.[6] C07H *21/00;21/04;1/00*

U.S. Cl. 536—25.34 **13 Claims**

1. A composition comprising a secondary amine and an in situ generated compound of formula Ia or Ib:



wherein: B is a purine or pyrimidine base; R is a hydroxyl-protecting group; R' is a substituted aryl; R" is selected from the group consisting of lower alkyl, lower alkoxy, $NCCH_2CH_2O$—, $NCCH_2CH_2MeO$—, $NCCH_2CMe_2O$—, Cl_3CCH_2O—, Cl_3CCMe_2O—, $C_6H_3SO_2CH_2CH_2O$—, $MeSO_2CH_2CH_2O$—, and $NO_2C_6H_4CH_2CH_2O$—.

5,574,147

Patent Not Issued For This Number

5,574,148

RAPID SYNTHESIS OF RADIOLABELED PYRIMIDINE NUCLEOSIDES OR NUCLEOTIDES

Amin I. Kassis, Chestnut Hill; Catherine F. Foulon, Brookline, and S. James Adelstein, Waban, all of Mass., assignors to President U Fellows of Harvard College, Cambridge, Mass.

Filed Feb. 2, 1995, Ser. No. 382,892

Int. Cl.[6] C07H *19/067;19/073*

U.S. Cl. 536—28.52 **45 Claims**

1. A method of making a radiolabeled pyrimidine nucleoside or nucleotide, the method comprising contacting in an aqueous solution (i) a radioactive iodide, bromide, chlorine or astatide ion and (ii) a water soluble halomercuri pyrimidine nucleoside or nucleotide with an oxidizing agent, whereby a water soluble pyrimidine nucleoside or nucleotide labeled with radioactive iodine, bromine, chlorine or astatine is formed.

40. A kit suitable for forming a radiolabeled pyrimidine nucleoside or nucleotide, the kit comprising an apyrogenic sterilizing filter adjacent to an ion exchange membrane on which is immobilized a premeasured amount of a water soluble halomercuri pyrimidine nucleoside or nucleotide.

45. Water soluble 5-chloromercuri-2'-deoxyuridine having a melting point of 230° C. and solubility in water of about 1 mg/ml.

5,574,149

METHOD OF TREATING HIV INFECTIONS WITH 2',3'-DIDEOXY-3'-FLUORO-5-CHLOROURIDINE

Joel Van Tuttle, Durham; Susan M. Daluge, Chapel Hill; Charlene L. Burns, Durham; George W. Koszalka, and Thomas A. Krenitsky, both of Chapel Hill, all of N.C., assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 709,083, May 30, 1991, abandoned, which is a continuation of Ser. No. 267,244, Nov. 4, 1988, abandoned. This application May 17, 1993, Ser. No. 62,591

Claims priority, application United Kingdom, Nov. 7, 1987, 8762136

The portion of the term of this patent subsequent to Oct. 16, 2007, has been disclaimed.

Int. Cl.[6] A61K *31/70;* **C07H** *19/073*

U.S. Cl. 536—50 **8 Claims**

1. A method of treating an HIV infection in a human having an HIV infection which comprises orally administering to said human in a capsule or tablet unit dose, 1 to 15 mg per kilogram human body weight per day of the compound 5-chloro-1-(2,3-dideoxy-3-fluoro-β-D-erythro-pentofuranosyl)uracil, said compound being given to said human 2 to 6 times per day and each capsule or tablet containing 10 to 1500 mg of the compound.

5,574,150

EXCIPIENT HAVING HIGH COMPACTABILITY AND PROCESS FOR PREPARING SAME

Yoshihito Yaginuma; Sueo Nagatomo, and Hiroto Miyamoto, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 3, 1994, Ser. No. 176,623

Claims priority, application Japan, Jan. 5, 1993, 5-000216

Int. Cl.[6] C08B *37/00*

U.S. Cl. 536—56 **11 Claims**

1. An excipient having high compactability, comprising white powdery microcrystalline cellulose obtained by subjecting a cellulosic material to hydrolysis with acid or oxidative degradation with alkali, said microcrystalline cellulose having an average degree of polymerization of from 100 to 375 and an acetic acid bolding capacity of 280% or more, and having a compression characteristic satisfying an equality of formula (1):

$$P \cdot \frac{V_o}{V_o - V_p} = \frac{1}{a \cdot b} + \frac{P}{a} \quad (1)$$

wherein a is from 0.85 to 0.90, b is from 0.05 to 0.10, P represents the compression pressure (kgf/cm^2) applied to said microcrystalline cellulose, V_o represents the apparent specific volume (cm^3/g) of said microcrystalline cellulose, and V_p represents the specific volume (cm^3/g) of said microcrystalline cellulose at said compression pressure P,

wherein said white powdery microcrystalline cellulose has an apparent specific volume of from 4.0 to 6.0 cm^3/q, a tapping apparent specific volume of 2.4 cm^3/q or more and a specific surface area of less than 20 m^2/g, and a content of particles having a diameter of 355 μm or more of 5% by weight or less, and has an average particle diameter of from 30 to 120 μm, and

wherein said white powdery microcrystalline cellulose is further characterized such that when 500 mg of said microcrystalline cellulose is compressed at 100 kqf/cm^2 for 10 seconds to form a cylindrical tablet having a circular cross-sectional area of 1 cm^2, said tablet has a breaking strength of 10 kqf or more in a diametric direction thereof, and exhibits a disintegration time of 100 seconds or less, and

wherein said acetic acid holding capacity means the amount of acetic acid which can be held by the pores of the powdery microcrystalline cellulose when the powdery microcrystalline cellulose is equilibrated with acetic acid, and is expressed in a weight percentage of the acetic acid which can be held by the microcrystalline cellulose, relative to the weight of the microcrystalline cellulose in a dry state, and wherein said tapping apparent specific volume is measured by a method in which a glass cylinder containing the white powdery microcrystalline cellulose lightly packed therein is subjected to tapping onto a stand made of a relatively soft material from a height of several centimeters in an approximately vertical direction until the packing density of the white powdery microcrystalline cellulose is not increased by tapping any more, and the volume of the resultant white powdery microcrystalline cellulose is measured and divided by the weight of the white powdery microcrystalline cellulose.

5,574,151

PROCESS FOR THE PREPARATION OF SENNOSIDES A AND B

Jarmo Toikka, Turku, Finland, assignor to Leiras Oy, Turku, Finland

Filed Dec. 16, 1994, Ser. No. 357,443

Claims priority, application Finland, Dec. 17, 1993, 935715

Int. Cl.[6] C07H *1/00;* **A61K** *31/70*

U.S. Cl. 536—124 **9 Claims**

1. A process for the preparation of sennosides A and B, wherein rhein-9-anthrone-8-glucoside is oxidized with oxygen or an oxygen source to the sennosides A and B, wherein the oxidation is carried out using active carbon as a catalyst.

5,574,152

4-(1,1-DIALKOXYCARBONYLALKYL) AZETIDIN-2-ONE DERIVATIVE AND PROCESS FOR PRODUCING 4-(1-CARBOXYALKYL) AZETIDIN-2-ONE DERIVATIVE USING THE SAME

Takashi Miura; Toshiyuki Murayama; Akifumi Yoshida, and Toyohiko Kobayashi, all of Tokyo, Japan, assignors to Takasago International Corporation, Tokyo, Japan

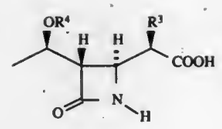
Division of Ser. No. 987,779, Dec. 9, 1992, Pat. No. 5,371,214. This application Jul. 25, 1994, Ser. No. 277,319

Claims priority, application Japan, Dec. 9, 1991, 3-324737; Dec. 20, 1991, 3-338673

Int. Cl.[6] C07D *705/08;* **C07B** *37/06*

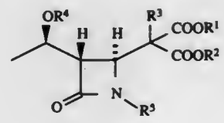
U.S. Cl. 540—200 **2 Claims**

1. A process for preferentially producing a 4-(1-carboxyalkyl)azetidin- 2-one derivative represented by formula (IIβ):



(IIβ)

wherein R^3 represents a lower alkyl group and R^4 represents a hydrogen atom or a hydroxy-protective group, which comprises deesterifying and decarboxylating a 4-(1,1-dialkoxycarbonylalkyl) azetidin-2-one derivative represented by formula (I):



(I)

wherein R^1 and R^2 are identical or different and each represents an alkyl group, an alkenyl group, or an aralkyl group, R^3 and R^4 each has the meaning as defined above, and R^5 represents an amino-protective group, and after that, eliminating the amino-protective group from the derivative;

wherein said 4-(1-carboxyalkyl)azetidin-2-one derivative of formula (IIβ) is present in an amount of at least 61% by mol of all 4-(1-carboxyalkyl)azetidin-2-one derivatives produced.

5,574,153

OXIME DERIVATIVES OF CEPHALOSPORANIC STRUCTURE

Maurizio Zenoni, Leffe; Mario Leone, Pioltello, and Riccardo Colombo, Sesto San Giovanni, all of Italy, assignors to ACS Dobfar S.p.A., Milan, Italy

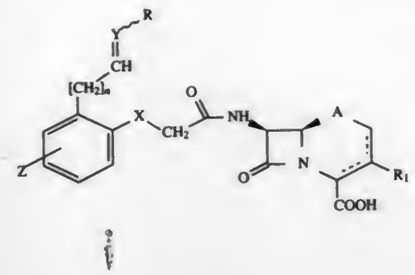
Filed Jul. 27, 1994, Ser. No. 281,170

Claims priority, application Italy, Aug. 9, 1993, MI93A1808

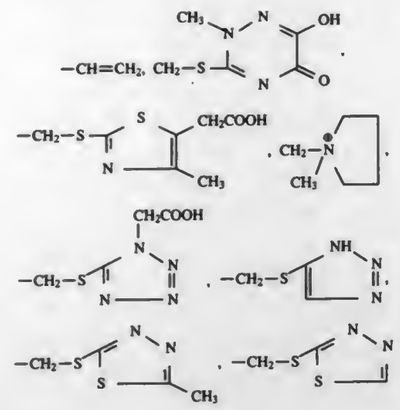
Int. Cl.[6] C07D *501/34;501/32;501/60*

U.S. Cl. 540—222 **7 Claims**

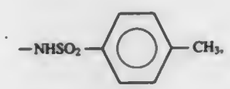
1. An oxime compound having antibacterial activity and having the formula (I):



(I)

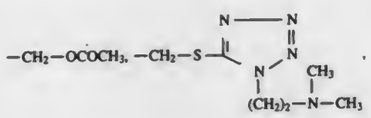


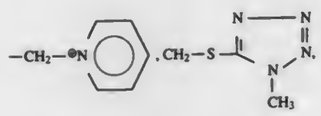
wherein:
X is a direct bond, —O—, —S—, —SO— or SO_2;
Y is =N—;
Z is —H, —halogen, —OH, C_1–C_5 O-alkyl, —OCH_2CONH_2, $OCONH_2$, —OSO_2NH_2, —OCH_2CN, —NH_2 either unsubstituted or substituted with C_1–C_6 alkyl, —$NHCOCH_3$, —$HNSO_2CH_3$,



amides of C_1–C_4 linear acids, amides of benzene and toluene, —NO_2, —NO, —CHO, —CH_2OH, —COOH, —SH, —SOH, —SO_2H, —SO_3H, C_1–C_3 S-alkyl or —CF_3;
R is —OH, C_1–C_5O-alkyl which is unsubstituted or substituted by halogen, —$OCH_2CH_2NH_2$, —OCH_2CH_2NH—CH_3, —OCH_2(o-, m- or p-) pyridinyl, —OCH_2CN, —OCH_2CONH_2 or —$OCH_2SO_2NH_2$;
n is a value of 0 to 4;

A is —S—, —SO— or —SO_2—;
R_1 is —H, —Cl, —OCH_3, —$CH_2OCH_2NH_2$, —CH_2OCH_3, —CH_3, —CH=CH—CH_3, —CF_3, —CO_2R_2 or —SO_2R_2, where R_2 is alkyl or aryl,





or pharmaceutically acceptable salts thereof or C_6- or C_7-epimers thereof.

5,574,154

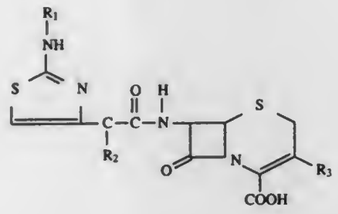
PROCESS FOR THE PREPARATION OF CEPHALOSPORANIC COMPOUNDS

Omar Abu-Nasrieh, Amman, Jordan, assignor to Alnejma Bulk Pharmaceutical Co. A.B.P.C., Amman, Jordan

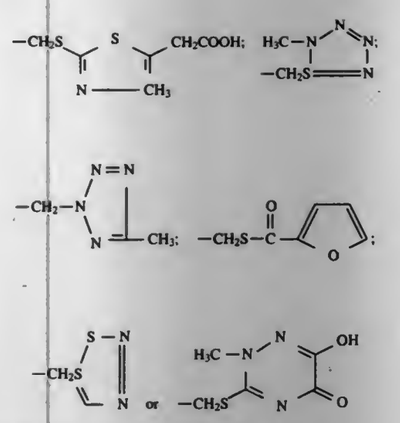
Filed Sep. 29, 1994, Ser. No. 315,329
Int. Cl.[6] C07D *501/06*
U.S. Cl. 540—222 10 Claims

1. A process for the preparation of a compound of formula I or salts thereof

I

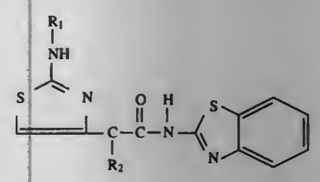


wherein R_1 is hydrogen or trityl, R_2 is =$NOCH_3$, R_3 is hydrogen, —CH_2COCH_3,



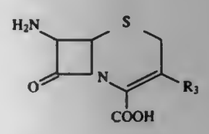
comprising (a) mixing a compound of the formula II

II



wherein R_1 and R_2 are as defined above with a compound of the formula III

III



wherein R_3 is as defined above in the presence of a solvent; (b) refluxing the resulting mixture at about 30°–45° C. in the presence of a base selected from the group consisting of an alkali metal carbonate and a tertiary organic amine to produce a condensate; (c) precipitating a compound of the formula I from the condensate; and, (d) if required, converting the compounds of formula I so obtained into salts thereof.

5,574,155

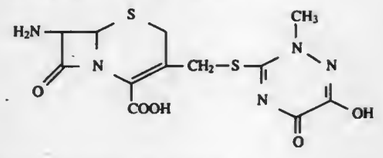
PROCESS FOR THE SYNTHESIS OF THE DISODIUM SALT HEMIHEPTAHYDRATE OF CEFTRIAXONE

Johann Dankl maier, Vomp; Ingolf Macher, and Bernhard Prager, both of Wörgl, all of Austria, assignors to BIOCHEMIE Gesellschaft m.b.H., Austria

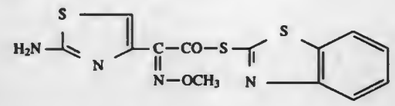
Filed Feb. 19, 1993, Ser. No. 19,735
Claims priority, application Austria, Feb. 20, 1992, 309/92
Int. Cl.[6] C07D *501/36*
U.S. Cl. 540—227 13 Claims

1. A process for synthesizing the disodium salt hemiheptahydrate of ceftriaxone comprising

(i) reacting the compound of the formula



with the compound of the formula



in aqueous acetone in the presence of an organic base that does not contain sodium ions,
(ii) adding a source of sodium ions, and
(iii) adding additional acetone to precipitate the disodium salt hemiheptahydrate of ceftriaxone.

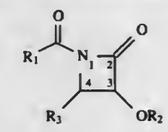
5,574,156

β-LACTAMS USED IN PREPARING TAXOL

Robert A. Holton, Tallahassee, Fla., assignor to Florida State University, Tallahassee, Fla.

Division of Ser. No. 968,003, Oct. 26, 1992, Pat. No. 5,336,785, which is a continuation of Ser. No. 415,028, Sep. 29, 1989, Pat. No. 5,175,315, which is a continuation-in-part of Ser. No. 359,634, May 31, 1989, abandoned, which is a continuation of Ser. No. 967,998, Oct. 26, 1992, abandoned, which is a division of Ser. No. 415,028, Sep. 29, 1989, Pat. No. 5,175,315, which is a continuation-in-part of Ser. No. 359,634, May 31, 1989, abandoned, said Ser. No. 967,998is a division of Ser. No. 949,107, Sep. 22, 1992, abandoned. This application Jun. 6, 1994, Ser. No. 254,561
Int. Cl.[6] C07D *205/08;305/14;* C07C *233/87*
U.S. Cl. 540—357 19 Claims

1. A cis diastereomer of a β-lactam having the formula:



wherein R_1 is phenyl, naphthyl, substituted phenyl, alkyl, alkenyl, or alkynyl; R_2 is ethoxyethyl, 2,2,2-trichloroethoxymethyl or other hydroxyl protecting group; and R_3 is phenyl, naphthyl, substituted phenyl, alkyl, alkenyl, or alkynyl.

5,574,157

Patent Not Issued For This Number

5,574,158

COMPOUNDS

Barry P. Clark, Hampshire, and John R. Harris, Surrey, both of United Kingdom, assignors to Lilly Industries Limited, Basingstoke, England

Division of Ser. No. 347,546, Nov. 30, 1994. This application Feb. 20, 1996, Ser. No. 603,829

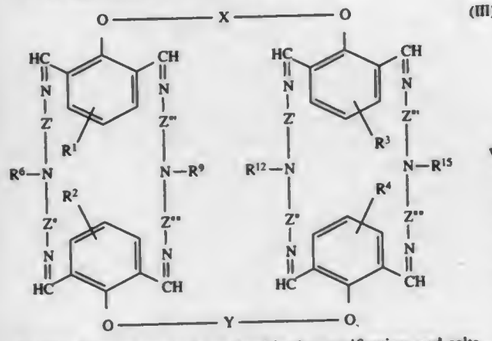
Claims priority, application United Kingdom, Dec. 3, 1993, 9324871

Int. Cl.[6] C07D *273/08*

U.S. Cl. 540—469 2 Claims

1. An intermediate compound of the formula:

(III)



in which the symbols are as defined in the specification, and salts thereof.

5,574,159

OPIOID COMPOUNDS AND METHODS FOR MAKING THEREFOR

Kwen-Jen Chang, Chapel Hill; Dulce G. Bubacz, Cary; Ann O. Davis, Raleigh; Robert W. McNutt, Jr., and Michael J. Bishop, both of Durham, all of N.C., assignors to Delta Pharmaceuticals, Inc., Chapel Hill, N.C.

Division of Ser. No. 285,313, Aug. 3, 1994, which is a continuation-in-part of Ser. No. 169,879, Dec. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 98,333, Jul. 30, 1993, abandoned. This application Apr. 28, 1995, Ser. No. 430,677

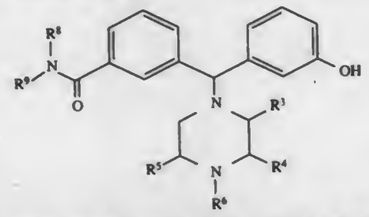
Claims priority, application United Kingdom, Feb. 3, 1992, 9202238

Int. Cl.[6] C07D *403/10*

U.S. Cl. 544—396 8 Claims

1. A process for the preparation of a compound of formula (I)

(I)



or a pharmaceutically acceptable ether, ester or salt thereof or a physiologically functional derivative thereof, wherein:

R^3, R^4, R^5=hydrogen or methyl, where the total number of methyl groups is one or two;

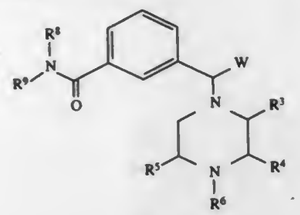
R^6=hydrogen, C_1–C_6-alkyl, C_2-C_6methoxyalkyl, or C_3–C_6cycloalkyl;

R^8 and R^9 may be the same or different, and may be hydrogen, C_1–C_6alkyl, C_3–C_6 cycloalkyl, C_5–C_{10}aryl, or C_5–C_{10}aryl C_1–C_6alkyl, or R^8 and R^9 together may form a ring of 5 or 6 atoms;

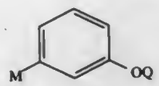
said process comprising

reacting a compound of formula (VI), with a phenylmetallic compound of formula (VII):

(VI)



(VII)



wherein:

R^3 and R^6 and R^8 and R^9 are as defined above;

Q is a hydroxy-protecting group;

M is a metal species;

W is 1-benzotriazolyl or trichlorotitaniumoxy;

deprotecting the hydroxy group; and

optionally derivatizing the phenol of the resulting compound of formula (I) to provide a pharmaceutically acceptable ether, ester or salt thereof or a physiologically functional derivative thereof.

5,574,160

SYNTHEIS OF BENZOQUINOLINONES

James E. Audia; James J. Droste; Perry C. Heath, and Leland O. Weigel, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

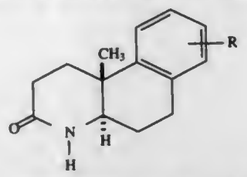
Continuation-in-part of Ser. No. 249,582, May 26, 1994, abandoned. This application May 18, 1995, Ser. No. 443,994

Int. Cl.[6] C07D *215/227*

U.S. Cl. 546—110 15 Claims

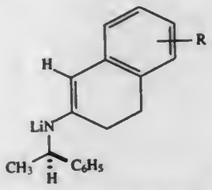
1. A process for preparing a compound of the formula

I



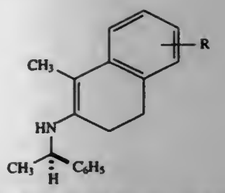
wherein R is hydrogen, methylthio, chloro, bromo or fluoro, and is located at the 7-, 8- or 9-position; comprising reacting a compound of the formula

II



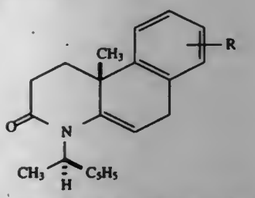
with methyl iodide in an ether solvent to prepare a compound of the formula

III



combining acrylic anhydride or acryloyl chloride with the reaction mixture comprising the compound of formula III to prepare a compound of the formula

IV



quenching the reaction with sodium bicarbonate, evaporating the organic solution comprising the compound of formula IV;

and combining the residue comprising the compound of formula IV with a trialkylsilane and trifluoroacetic acid in the absence of a solvent to prepare the compound of formula I.

5,574,161

7-(AMINOMETHYL-OXA-7-AZA-BICYCLO[3.3.0]OCT-7-YL)QUINOLONECARBOXYLIC AND 7-(AMINOMETHYL-OXA-7-AZA-BICYCLO[3.3.0]OCT-7-YL NAPHTHYRIDONECARBOXYLIC ACID DERIVATIVES

Uwe Petersen, Leverkusen; Thomas Schenke, Bergisch Gladbach; Klaus Grohe, Odenthal; Klaus-Dieter Bremm, Wuppertal; Rainer Endermann, Wuppertal, and Karl G. Metzger, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 124,129, Sep. 20, 1993, Pat. No. 5,395,944. This application Oct. 7, 1994, Ser. No. 320,035

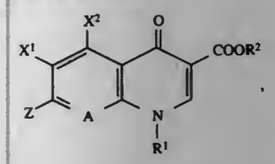
Claims priority, application Germany, Sep. 25, 1992, 42 32 172.1

Int. Cl.[6] C07D *491/048;497/06;498/06;* A61K *31/47;31/535;31/54*

U.S. Cl. 546—167 8 Claims

1. A compound of the formla (I)

(I)



in which

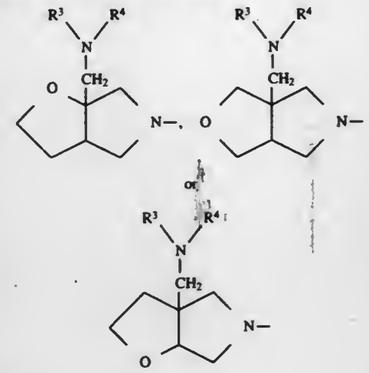
X^1 represents halogen or nitro,

X^2 represents hydrogen, amino, alkylamino having 1 to 4 carbon atoms, dialkylamino having 1 to 3 carbon atoms per alkyl group, hydroxyl, alkoxy having 1 to 4 carbon atoms, mercapto, alkylthio having 1 to 4 carbon atoms, arylthio, halogen or methyl,

R^1 represents alkyl having 1 to 4 carbon atoms, alkenyl having 2 to 4 carbon atoms, cycloalkyl having 3 to 6 carbon atoms, which is optionally substituted by halogen, bicyclo[1.1.1]pent- 1-yl, 1,1-dimethylpropargyl, 3-oxetanyl, 2-hydroxyethyl, 2-fluoroethyl, methoxy, amino, methylamino, ethylamino, dimethylamino, or phenyl which is optionally substituted by 1 or 2 fluorine atoms,

R^2 represents hydrogen, alkyl having 1 to 4 carbon atoms, which is optionally substituted by hydroxyl, methoxy, amino, methylamino or dimethylamino, or (5-methyl-2-oxo-1,3-dioxol-4-yl)-methyl,

Z represents a residue of the structure



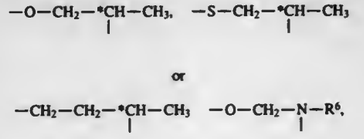
in which

R^3 represents hydrogen, methyl or ethyl,

R^4 represents hydrogen, acyl having 1 to 3 carbon atoms, alkoxycarbonyl having 1 to 4 carbon atoms in the alkyl moiety, or methyl, and

A represents N or C—R^5, in which

R^5 represents hydrogen, halogen, methyl, alkenyl having 2 to 3 carbon atoms, alkinyl having 2 to 3 carbon atoms, hydroxyl or methoxy, or, together with R^1, can form a bridge of the structure



or

in which R^6 denotes hydrogen, methyl or formyl, and their pharmaceutically suitable hydrates and acid additions salts.

5,574,162

NON-MIGRATING 1-HYDROCARBYLOXY HINDERED AMINE DERIVATIVES AS POLYMER STABILIZERS

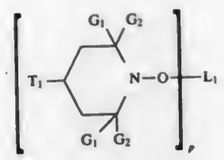
James P. Galbo, Hartsdale; Ramanathan Ravichandran, Nannet, both of N.Y.; Peter J. Schirmann, Fairfield, and Andrew Mar, Norwalk, both of Conn., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 284,959, Aug. 2, 1994, Pat. No. 5,442,071, which is a division of Ser. No. 179,652, Jan. 7, 1994, Pat. No. 5,359,069, which is a division of Ser. No. 903,699, Jun. 24, 1992, Pat. No. 5,286,865, which is a division of Ser. No. 480,173, Feb. 14, 1990, Pat. No. 5,145,893, which is a continuation-in-part of Ser. No. 326,702, Mar. 21, 1989, abandoned. This application May 31, 1995, Ser. No. 456,212

Int. Cl.[6] E07D *401/12*

U.S. Cl. 546—188 6 Claims

1. A 1-hydrocarbyloxy substituted hindered amine compound having the formula V.



(V)

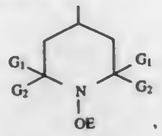
where

p is 2 to 10,

L_1 is a p-valent radical of an alkane or alkene of 1 to 18 carbon atoms, a p-valent radical of a cycloalkane or cycloalkene of 5 to 12 carbon atoms, a p-valent radical of a saturated or unsaturated bicyclic or tricyclic hydrocarbon of 7 to 12 carbon atoms or a p-valent radical of an aryl, alkyl substituted aryl or aralkyl hydrocarbon of 6 to 15 carbon atoms, with the proviso that the N-O groups are not necessarily attached to the same carbon atom in L_1,

T_1 is —OH, —NHR_2, —NCO, —O—glycidyl or $Si(OR_1)_3$,

G_1 and G_2 are independently alkyl of 1 to 4 carbon atoms, or G_1 and G_2 together are pentamethylene, where R_1 is hydrogen or alkyl of 1 to 12 carbon atoms, where R_2 is hydrogen, alkyl of 1 to 12 carbon atoms, or



and where

E is alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, alkenyl of 2 to 18 carbon atoms, propargyl, cycloalkenyl of 5 to 12 carbon atoms, aralkyl of 7 to 15 carbon atoms, a radical of a saturated or unsaturated bicyclic or tricyclic hydrocarbon of 7 to 12 carbon atoms or aryl of 6 to 10 carbon atoms or said aryl substituted by alkyl.

5,574,163

PROCESS FOR THE PREPARATION OF N-OXYL HINDERED AMINE ESTERS

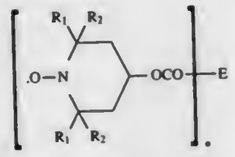
John J. Luzzi, Carmel, N.Y., assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Aug. 31, 1994, Ser. No. 298,898

Int. Cl.[6] C07D *211/46*

U.S. Cl. 546—242 **23 Claims**

1. An improved process for the preparation of an N-oxyl compound of formula I



(I)

wherein

n is 1,2,3 or 4,

R_1 and R_2 are independently methyl or ethyl, or R_1 and R_2 together are pentamethylene,

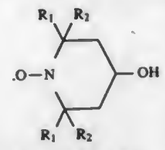
when n is 1, E is alkyl of 1 to 19 carbon atoms, alkenyl of 2 to 17 carbon atoms, phenyl or said phenyl substituted by 1 to 3 alkyl of 1 to 4 carbon atoms,

when n is 2, E is a direct bond, alkylene of 2 to 12 carbon atoms, o-phenylene, m-phenylene or p-phenylene,

when n is 3, E is alkanetriyl of 3 to 7 carbon atoms, 1,2,4-benzenetriyl or 1,3,5-benzenetriyl, and

when n is 4, E is alkanetetrayl of 4 to 8 carbon atoms or 1,2,4-benzenetriyl or 1,3,5-benzenetriyl,

by the reaction of essentially n equivalents of



(II)

with one equivalent of

E-[COOT]$_n$

where T is alkyl of 1 to 4 carbon atoms, and R_1, R_2 n and E are as described above, in the presence of a tetraalkyl orthotitanate or a trialkoxy titanium chloride transesterification catalyst, wherein the improvement comprises

carrying out the reaction at a temperature of 90°–130° C. in the presence of an aliphatic hydrocarbon solvent or mixture of such solvents, said solvent boiling in the range of 90°–130° C.

5,574,164

1-ALKYL-,1-ALKENYL-, AND 1-ALKYNYLARYL-2-AMINO-1,3-PROPANEDIOLS AND RELATED COMPOUNDS

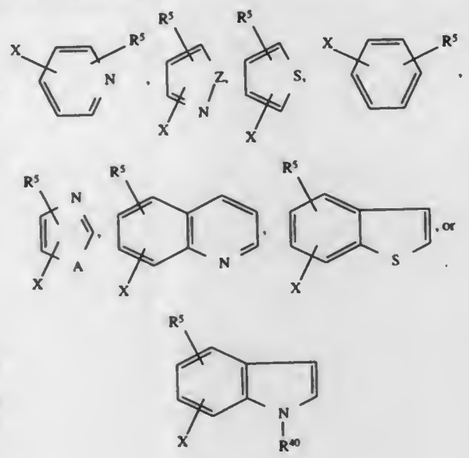
John J. Tegeler, Bridgewater; Barbara S. Rauckman, Flemington; Russell R. L. Hamer, Lebanon; Brian S. Freed, Phillipsburg, all of N.J., and Gregory H. Merriman, Fairfield, Ohio, assignors to Hoescht Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 942,908, Sep. 10, 1992, Pat. No. 5,360,811, which is a continuation-in-part of Ser. No. 840,236, Feb. 24, 1992, abandoned, which is a continuation of Ser. No. 632,910, Dec. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 596,448, Oct. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 492,200, Mar. 13, 1990, abandoned. This application Apr. 21, 1995, Ser. No. 426,317

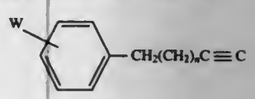
Int. Cl.[6] C07C *47/11;47/115*

U.S. Cl. 546—298 **5 Claims**

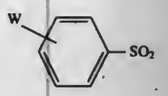
1. A process for the preparation of a compound of the formula RCHO wherein R is



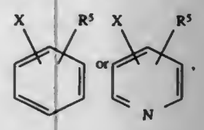
wherein R^5 is $CH_3(CH_2)_mC{\equiv}C$ or



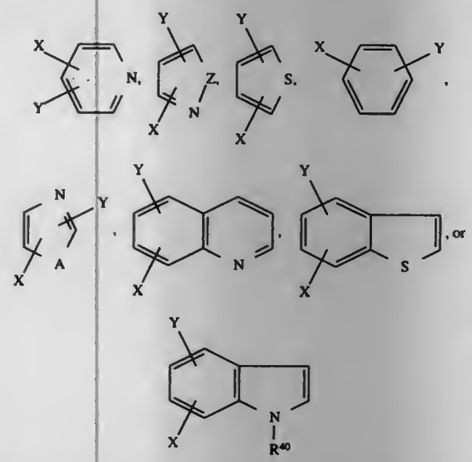
wherein m is 9 to 15 and n is 0 to 12; R^{40} is alkyl or a group of the formula



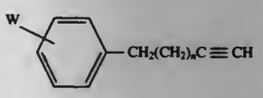
wherein W is as below; W and X are independently hydrogen, loweralkyl, loweralkoxy, halogen, or trifluoromethyl; with the proviso that when R is



X is not hydrogen or loweralkyl Z is O; and A is O or S; which comprises contacting a compound of the formula RCHO wherein R is



wherein R^{40}, X, A and Z are as above and Y is halogen; with the compound of the formula $CH_3(CH_2)_mC{\equiv}CH$ or



wherein W, m and n are as above in the presence of bis(triphenylphosphine)palladiumdichloride and cuprous iodide and an acid acceptor.

5,574,165

PROCESS FOR THE PREPARATION OF CYANOIMINO-1,3-THIAZOLIDINES

Reinhard Lantzsch, Wuppertal, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 26, 1995, Ser. No. 506,937

Claims priority, application Germany, Aug. 4, 1994, 44 27 569.2

Int. Cl.[6] C07D *277/04*

U.S. Cl. 548—198 **3 Claims**

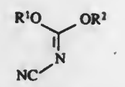
1. Process for the preparation of cyanoimino-1,3-thiazolidine, characterized in that cysteamine salts of the formula (I)



in which

X represents an acid radical

are reacted in the presence of a diluent, in the presence of at least 2 equivalents of base and, if desired, in the presence of a protective-gas atmosphere with dialkyl N-cyanoimidocarbonates of the formula (II)

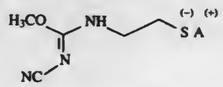


(II)

in which

R^1 and R^2 represent methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, sec-butyl or tert-butyl

to give the intermediate product of the formula (III)

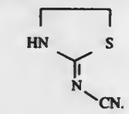


(III)

in which

$A^{(+)}$ represents a metal ion equivalent or an ammonium ion

which is subsequently cyclized at a pH of from 8 to 9.5 to give cyanoimino-1,3-thiazolidine of the formula (IV)



(IV)

5,574,166

CRYSTALLINE FORM OF 2-(2-HYDROXY-3-α-CUMYL-5-TERT-OCTYLPHENYL)-2H-BENZOTRIAZOLE

Roland A. E. Winter, Armonk; Ramanathan Ravichandran, Nanuet; Mark S. Holt, West Nyack; Volker H. von Ahn, Mahopac; Joseph E. Babiarz, Amawalk, all of N.Y., and David G. Leppard, Marly, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Apr. 19, 1995, Ser. No. 424,843

Int. Cl.[6] C07D *249/20*

U.S. Cl. 548—260 **5 Claims**

1. A process for the preparation of the soluble crystalline form of the compound 2-(2-hydroxy-3-α-cumyl-5-tert-octylphenyl)-2H-benzotriazole, characterized by melting in the range of 109°–111° C. and by an X-ray diffraction pattern obtained using Cu—Kα which exhibits diffraction angles (2Θ) as seen below:

Peak No.	Diffraction Angle
1	9.6
2	10.2
3	10.4

VOL 1192 ISS 2 NO 12 1996 UMI

-continued

Peak No.	Diffraction Angle
4	10.8
5	12.8
6	13.8
7	14.2
8	14.8
9	15.0
10	16.4
11	16.8
12	17.8
13	18.0
14	18.6
15	19.0
16	19.4
17	19.8
18	20.2
19	20.6
20	21.2
21	21.4
22	23.0
23	23.4
24	24.6
25	26.0
26	28.0
27	29.0
28	30.4
29	31.0

which comprises

crystallizing or recrystallizing said compound from an alkanol of 1 to 4 carbon atoms either alone or in conjunction with a minor amount (up to 10% by volume) of toluene.

5,574,167

ALKANOIC AND BENZOIC ESTERS OF 1-(2-HYDROXYPROPYL)-2-METHYL-5-NITROMOIMIDAZOLE

Santiago A. B. Jaber, Cerro Del Vigilanto No. 165, Col., Romero De Terreros, Mexico

Filed Jan. 10, 1995, Ser. No. 370,672

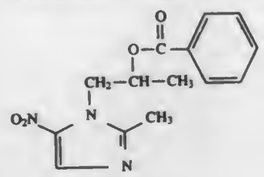
Claims priority, application Mexico, Jan. 10, 1994, 940354

Int. Cl.[6] C07D *233/84;233/94;* **A61K** *31/415*

U.S. Cl. 548—327.1 **4 Claims**

1. A savorless, antiamoebic and anti-protozoan compound which has the formula:

1-(2-hydroxypropyl)-2-methyl-5-nitromidazole benzoate



SECNIDAZOLE BENZOYL.

3. A procedure to obtain a savorless, antiamoebic and antiprotozoan chemical product, that comprises the steps of:

mixing in a flask 1-(2-hydroxypropyl)-2-methyl-5-nitromidazole benzoate, toluene, and pyridine;

heating the mixture to between 70°–80° C. while adding benzoyl chloride and heating again to reflux for 2 hours;

washing the heated mixture 3 times with of water;

cooling an organic layer of the washed heated mixture to 0° C. for 15 min.;

filtering the cooled organic layer so as to obtain a filtrate;

washing the filtrate with cold toluene; and

drying the washed filtrate so as to obtain raw and dry 1-(2-hydroxypropyl)-2-methyl-5-nitromidazole benzoate.

5,574,168

1-(SUBSTITUTED BENZYL)-3-(SUBSTITUTED ARYL)-CONDENSED PYRAZOLE DERIVATIVES AND PROCESSES OF MAKING THE SAME

Sheng-Chu Kuo; Fang Yu Lee, both of Taichung, and Che-Ming Teng, Taipei, all of Taiwan, assignors to Yung Shin Pharm. Ind. Co., Ltd., Tachia Taichung, Taiwan

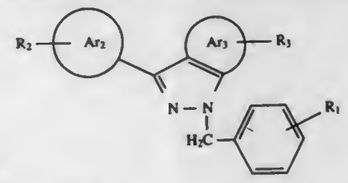
Filed May 3, 1994, Ser. No. 237,087

Int. Cl.[6] C07D *231/56;487/04*

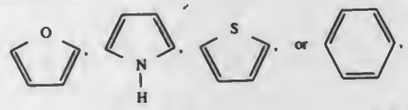
U.S. Cl. 548—360.5 **5 Claims**

1. A process for preparing 1-substituted benzyl-3-substitute-aryl condensed pyrazoles, which are represented as compound X below,

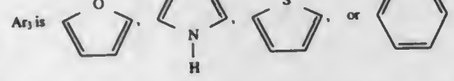
Compound X



wherein Ar_2 is

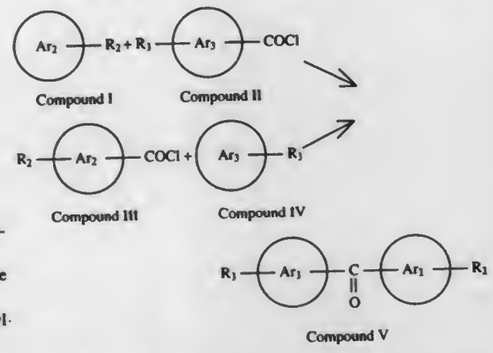


Ar_3 is



R_1 is H, C_{1-3} alkyl, or X where X is a halogen; R_2 is CH_2OR, H, COOR, C_{1-3} alkyl, or X; R_3 is H, C_{1-3} alkyl, X, or —OR radical, and R is H or C_{1-3} alkyl; said process comprising the following steps

(a) reacting compound I and compound II, or compound III and compound IV, to produce compound V, which is a substituted aryl ketone, as follows:

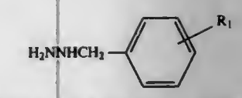


Compound I Compound II

Compound III Compound IV

Compound V

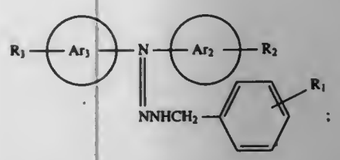
(b) reacting said compound V with a hydrazine compound VI, which is represented by the following formula:



Compound VI

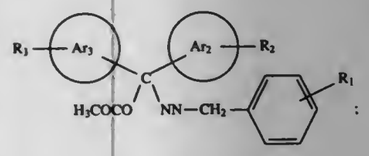
TO form a hydrazone compound VII, which is represented by the following formula:

Compound VII



(c) reacting said hydrazone compound VII with lead tertraacetate (LTA) to form an intermediate compound VIII, which is represented by the following formula:

Compound VIII



and

(d) reacting said intermediate compound VIII with trifluoride etherate ($BF_3.Et_2O$) to form said 1-substituted benzyl-3-substituted-aryl condensed pyrazole.

5,574,169

SUBSTITUTED PYRAZOLIDIN-3-ONE DERIVATIVES

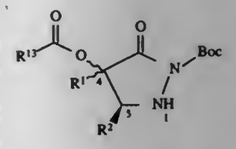
William B. Blanchard, Indianapolis; Thomas C. Britton, Carmel, and David L. Varie, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 153,843, Nov. 12, 1993, Pat. No. 5,399,708. This application Feb. 16, 1995, Ser. No. 389,457

Int. Cl.[6] C07D *231/08;401/06*

U.S. Cl. 548—366.1 **4 Claims**

1. A compound of Formula 6



6

wherein R^1 and R^2 are independently hydrogen, C_1–C_6 alkyl, phenyl, benzyl, naphthyl, pyridyl or substituted phenyl having 1, 2, or 3 substituents selected from the group consisting of C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkylthio, chloro, fluoro, trifluoromethyl, phenyl, phenoxy, phenyl(C_1–C_4 alkyl), phenyl(C_1–C_4 alkoxy), cyano, carbamyl, methylenedioxy, C_3–C_6 alkene, amino, —NH(C_1–C_4 alkyl or benzyl) , and $N(C_1$–C_4 alkyl$)_2$;

R^{13} is C_1–C_6 alkyl, aryl, CF_3 , or OR^{14};

R^{14} is C_1–C_6 alkyl or aryl; and

Boc is t-butoxycarbonyl.

5,574,170

KETOROLAC DERIVATIVES WITH CONSIDERABLY REDUCED GASTRO-INTESTINAL IRRITATION AND ULCERATION

Carlos E. A. Monti, and Gustavo E. Aldoma, both of Buenos Aires, Argentina, assignors to Roemmers S.A.I.C.F., Argentina

Division of Ser. No. 178,541, Jan. 7, 1994, Pat. No. 5,508,301. This application Jun. 6, 1995, Ser. No. 468,648

Claims priority, application Germany, Jan. 13, 1993, 43 00 697.3

Int. Cl.[6] C07D *209/02*

U.S. Cl. 548—467 **1 Claim**

1. A process for the preparation of a compound according to formula



(I)

or pharmaceutically acceptable addition salts thereof characterized in that (+)-5-benzoyl-2,3 -dihydro-1H-pyrrolizine-1-carboxylic acid is alkylated with 2-(1-pyrrolidinyl)-ethylchlorid or a salt thereof.

5,574,171

ENANTIOSELECTIVE HYDROFORMYLATION

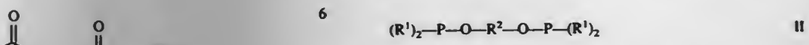
Timothy A. Ayers, and Thaliyil V. Rajanbabu, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 116,235, Sep. 2, 1993, Pat. No. 5,475,146. This application Apr. 24, 1995, Ser. No. 427,328

Int. Cl.[6] C07F *15/00;* **B01J** *31/00*

U.S. Cl. 549—206 **6 Claims**

1. A catalyst composition comprising one or more metals selected from the group consisting of Co, Rh, Ir and Pt, and a chiral nonracemic ligand of formula II



II

wherein

each R^1 is an electron-withdrawing group selected from the group consisting of an aromatic hydrocarbyl substituted with one or more halo, halogen-substituted alkyl groups, cyano, alkylsulfonyl, carboalkoxy, quaternary ammonium, nitro, amido or keto groups and a heteroaromatic optionally substituted with one or more halo, halogen-substituted alkyl groups, cyano, alkylsulfonyl, carboalkoxy, quaternary ammonium, nitro, amido or keto groups; and

R^2 is a C_4 to C_{40} dideoxy carbohydrate; optionally substituted with one or more hydrocarbyl, halo, alkoxy, carboalkoxy, hydroxy, amido or keto groups.

5,574,172

PROCESS FOR PRODUCING HALOGENATED PHTHALIC ANHYDRIDE

Yoshio Katsuro, and Hitoshi Matsuda, both of Kitakyushu, Japan, assignors to Mitsubishi Chemical Corporation, Japan

Filed May 26, 1994, Ser. No. 250,787
Claims priority, application Japan, May 27, 1993, 5-126263
Int. Cl.[6] C07D *307/89;* C07B *39/00*
U.S. Cl. 549—246 24 Claims

1. A process for producing halogenated phthalic anhydride, which comprises reacting phthalic anhydride with a molecular halogen in vapor phase at a temperature in the range of 150° C. to about 280° C. and in the presence of a catalyst containing zeolite as active component, and the zeolite is cation exchanged with zinc ion.

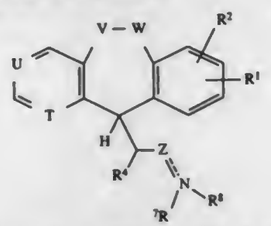
5,574,173

TRICYCLIC DERIVATIVES, COMPOSITIONS AND METHODS OF USE

Pauline C. Ting, New Providence; Richard J. Friary, Bridgewater; Wing C. Tom, Cedar Grove, all of N.J.; Joe F. Lee, Brooklyn, N.Y., and Vera A. Seidl, Wayne, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Dec. 6, 1993, Ser. No. 162,686
Int. Cl.[6] C07D *313/10;* C07C *211/31;* A61K *31/335;31/135*
U.S. Cl. 549—354 21 Claims

1. A compound of the Formula I:



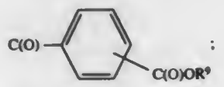
(I)

or a pharmaceutically acceptable salt or solvate thereof, wherein:
each of T and U represents CH;
one of V and W represents oxygen and the other represents $—CH_2—$; or each of V and W represent $—CH_2—$;
R^1 and R^2 are each independently selected from the group consisting of H and halogen;
R^4 is alkenyl or alkoxy;

---- represents an optional double bond;

---- when is a double bond, Z represents —CH═, or $—CH_2C(R^5)═$, wherein R^5 is H or lower alkyl; and R^7 and R^8 together represent OR^9;

---- when represents a single bond, Z represents $—CH_2—$, —CH═CH—, or $—CH_2C(R^5)(R^6)—$, wherein R^5 and R^6 are independently H or lower alkyl; and R^7 and R^8 are independently H, alkyl, alkenyl, alkynyl, aryl, alkaryl, aralkyl, cycloalkyl, $—OR^9$; $—C(O)OR^{10}$; $—CH_2C(O)OR^9$; $—C(O)R^{10}$; $—SO_2R^{10}$; $—(CH_2)_n—N(CH_3)_2$, where n is 2 to 4; $—(CH_2)_m—O(CH_2)_jOH$, where m and j are independently 2 or 3;



R^9 is H or lower alkyl; and
R^{10} is alkyl or aryl.

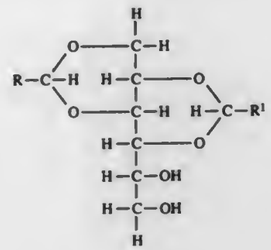
5,574,174

SORBITOL DERIVATIVES AS NUCLEATORS AND CLARIFIERS FOR POLYOLEFINS, AND POLYOLEFIN COMPOSITIONS OBTAINED THEREWITH

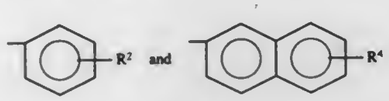
Abuzar Syed, New Castle County, Del., assignor to Montell North America Inc., Wilmington, Del.

Division of Ser. No. 239,230, May 14, 1994, Pat. No. 5,470,898, which is a continuation-in-part of Ser. No. 85,717, Jun. 30, 1993, abandoned. This application Mar. 20, 1995, Ser. No. 407,347
Int. Cl.[6] C07D *403/00;323/04;409/00*
U.S. Cl. 549—364 4 Claims

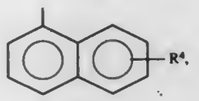
1. A D-sorbitol derivative of the following formula:



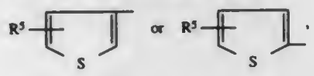
wherein:
(a) R and R^1 are the same and represent a member selected from the group consisting of



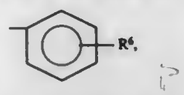
and



wherein R^2 is mono-, di- or tri-substituted on the ring and represents a member selected from the class consisting of NO_2 and CN; and wherein R^4 is mono-, di-, or tri-substituted on the ring and represents a member selected from the class consisting of C_1–C_6 alkyl or O-alkyl, and NO_2; or
(b) R and R^1 are different and one of R and R^1 is

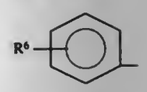


wherein R^5 represents a member selected from the class consisting of H, C_1–C_6 alkyl, NO_2, Cl, Br and F, and the other of R and R^1 is

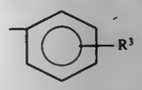


wherein R^6 is mono-, di-, or tri-substituted on the ring and represents a member selected from the class consisting of alkyl or O-alkyl groups having 1 to 8 carbon atoms, NO_2, CN and COOY, wherein Y is an alkyl having 1 to 8 carbon atoms; or

(c) R and R^1 are different and R is



wherein R^6 is as defined above, and R^1 is



wherein R^3 is mono-, di-, or tri-substituted on the ring and represents an alkyl group having 4 to 6 carbon atoms.

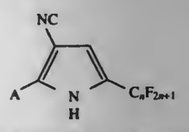
5,574,175

PROCESS FOR THE MANUFACTURE OF INSECTICIDAL ARYLPYRROLES VIA OXAZOLE AMINE INTERMEDIATES

Venkataraman Kameswaran, Princeton Junction, N.J., assignor to American Cyanamid Co., Madison, N.J.

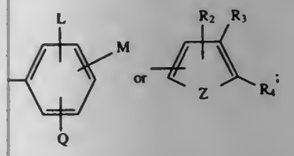
Division of Ser. No. 343,147, Nov. 22, 1994, Pat. No. 5,446,170. This application May 16, 1995, Ser. No. 442,045
Int. Cl.[6] C07D *207/327*
U.S. Cl. 548—517 11 Claims

1. A process for the manufacture of an arylpyrrole compound of formula IV



(IV)

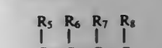
wherein n is an integer of 1, 2, 3, 4, 5, 6, 7 or 8 and
A is



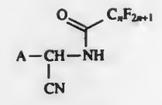
L is hydrogen or halogen;
M and Q are each independently hydrogen, halogen CN, NO_2, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, C_1-C_4haloalkoxy, C_1-C_4alkylthio, C_1-C_4alkylsulfinyl or when M and Q are on adjacent positions they may be taken together with the carbon atoms to which they are attached to form a ring in which MQ represents the structure

$—OCH_2O—$, $—OCF_2O—$ or —CH═CH—CH═CH—;

R_2, R_3 and R_4 are each independently hydrogen, halogen, NO_2, CHO or R_3 and R_4 may be taken together with the atoms to which they are attached to form a ring in which R_3R_4 is represented by the structure



R_5, R_6, R_7 and R_8 are each independently hydrogen, halogen, CN or NO_2; and
Z is O or S
which comprises reacting a perfluoroalkanoyl aminonitrile of formula II



(II)

wherein A and n are described above with at least one molar equivalent of an acyl halide of formula III



(III)

wherein R is C_1-C_6alkyl, C_1-C_6haloalkyl, $COOR_1$, or phenyl optionally substituted with one or more halogen, NO_2, CN, C_1-C_4alkoxy, C_1-C_4alkylthio, C_1-C_4alkyl or C_1-C_4haloalkyl groups; R_1 is C_1-C_4alkyl or C_1-C_4haloalkyl; and
X is Cl or Br in the presence of an acid optionally in the presence of a solvent to form an oxazole amine intermediate, reacting the intermediate with at least one molar equivalent of 2-haloacrylonitrile or 2,3-dihalopropionitrile in the presence of at least one molar equivalent of a base to give the desired formula IV arylpyrrole.

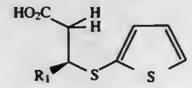
5,574,176

SYNTHESIS OF AN INTERMEDIATE FOR THE PREPARATION OF 5,6-DIHYDRO-(S)-4-(ETHYLAMINO)-(S)-6-METHYL-4H-THIENO [2,3-B]THIOPYRAN-2-SULFONAMIDE 7,7-DIOXIDE INTERMEDIATES AND RELATED COMPOUNDS

David J. Mathre, Skillman; Paul Sohar, Warren, and Lynn M. Brown, Clark, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

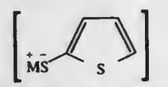
Filed Apr. 26, 1995, Ser. No. 430,214
Int. Cl.[6] C07D *333/18;495/04*
U.S. Cl. 549—66 5 Claims

1. Preparation of a Compound I of structural formula:



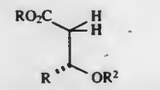
I

wherein R_1 is hydrogen, C_{1-4} alkyl, or C_{1-4} alkoxy-C_{1-4}alkyl, comprising treating a compound III of structural formula:



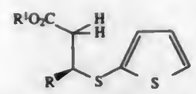
III

wherein M^+ is $(C_2H_5)_3$ NH^+, Na^+, K^+, or Li^+ with a compound IV of structural formula:



IV

wherein R and R_1 independently are hydrogen, or C_{1-4} alkyl, and R_2 is tosyl, mesyl, p-methoxy benzenesulfonyl, p- or m-chloro-, or bromo-, benzenesulfonyl or p-nitrobenzenesulfonyl in formamide or a mixture of an ethereal solvent and formamide at a temperature of about 41° C. to 60° C. for about 2 to about 4 hours to produce Compound II, treating Compound II



with about 8:1 acetic acid/strong mineral acid solution at a temperature of about 50° to 118° C. for about 5 to about 10 hours to produce Compound I and isolating Compound I.

5,574,177

ARYLAMIDE ANALOGUES OF N-(4-HYDROXYPHENYL) RETINAMIDE-O-GLUCURONIDE

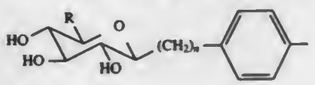
Robert W. Curley, Jr., and Michael J. Panigot, both of Columbus, Ohio, assignors to The Ohio State Research Foundation, Columbus, Ohio

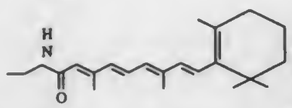
Continuation of Ser. No. 974,730, Nov. 13, 1992, abandoned. This application Oct. 7, 1994, Ser. No. 321,207

Int. Cl.[6] C07D *309/10*

U.S. Cl. 549—417 **7 Claims**

1. A compound having the following structure:





wherein R is a H, COOH or CH_2OH group, and n equals 0 or 1.

5,574,178

4,6-DI-T-BUTYL-DIHYDROBENZOFURAN-5-OL AND ITS DERIVATIVES

Kunio Tamura; Yoshiaki Kato; Mitsutaka Yoshida; Osamu Cynshi, and Yasuhiro Ohba, all of Shizuoka, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP93/01489, § 371 Date Apr. 17, 1995, § 102(e) Date Apr. 17, 1995, PCT Pub. No. WO94/08930, PCT Pub. Date Apr. 28, 1994

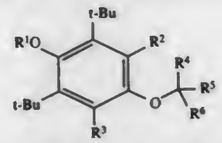
PCT Filed Oct. 18, 1993, Ser. No. 416,862

Claims priority, application Japan, Oct. 16, 1992, 4-321101

Int. Cl.[6] C07D *307/79*

U.S. Cl. 549—462 **9 Claims**

1. A compound represented by the formula (I):



(I)

where R^1 is a hydrogen atom or an acyl group; R^3 is a hydrogen atom or a lower alkyl group; R^5 and R^6 which may be the same or different are a hydrogen atom or an optionally substituted alkyl, alkenyl, alkynyl or aryl group; and R^2 and R^4 taken together form a dihyrobenzofuran ring.

5,574,179

CONCENTRATED BIODEGRADABLE QUATERNARY AMMONIUM FABRIC SOFTENER COMPOSITIONS AND COMPOUDS CONTAINING INTERMEDIATE IODINE VALUE UNSATURATED FATTY ACID CHAINS

Errol H. Wahl, Cincinnati; Dennis R. Bacon, Milford; Ellen S. Baker, Cincinnati, all of Ohio; Jean-Francois Bodet, Newcastle Upon Tyne, Great Britain; Michael E. Burns, West Chester, Ohio; Hugo J. M. Demeyere, Merchtem, Belgium; Charles A. Hensley; Robert Mermelstein, both of Cincinnati, Ohio; John C. Severns, West Chester, Ohio; John H. Shaw, Jr.; Michael P. Siklosi, both of Cincinnati, Ohio; Alice M. Vogel, West Chester, Ohio, and Jeffrey W. Watson, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 142,739, Oct. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 24,541, Mar. 1, 1993, abandoned. This application Feb. 28, 1995, Ser. No. 395,263

Int. Cl.[6] C07C *101/00*

U.S. Cl. 554—110 **24 Claims**

1. A quaternary ammonium compound having the structure:

$$(R)_{4-m}—N^+—[(CH_2)_n—Y—R^2]_m\ X^-$$

wherein

each Y is —O—(O)C—;

m is 2 or 3;

n is 1 to 4;

each R is a C_1–C_6 alkyl group, benzyl group, or mixtures thereof;

each R^2 is a C_{11}–C_{21} hydrocarbyl or substituted hydrocarbyl substituent; and

X^- is any textile softener-compatible anion;

wherein the compound is derived from C_{12}–C_{22} fatty acyl groups having an Iodine Value of from greater than about 5 to less than about 100, a cis/trans isomer weight ratio of greater than about 30/70 when the Iodine Value is less than about 25, the level of unsaturation of the fatty acyl groups being less than about 65% by weight, wherein said compounds are capable of forming concentrated aqueous compositions with concentrations greater than about 13% by weight at an Iodine Value of greater than about 10 without viscosity modifiers other than normal polar organic solvents present in the raw material of the compound or added electrolyte, and wherein any fatty acyl groups from tallow must be hydrogenated and/or deodorized.

5,574,180

PROCESS FOR RECOVERING PHYTIC ACID, LACTIC ACID OR INOSITOL

Donald McQuigg, Mooresville, Ind.; Charles Marston, Midland, Mich.; Gina Fitzpatrick, Indianapolis; Ernest Crowe, Beech Grove, both of Ind.; Susan Vorhies; Ramiah Murugan, both of Indianapolis, Ind., and Thomas D. Bailey, Greenwood, Ind., assignors to Reilly Industries, Inc., Indianapolis, Ind.

Continuation of Ser. No. 964,118, Oct. 21, 1992, abandoned, which is a continuation of Ser. No. 669,045, Mar. 14, 1991, abandoned. This application Aug. 1, 1994, Ser. No. 284,826

Int. Cl.[6] C07C *51/42;59/48;35/16;65/10*

U.S. Cl. 558—147 **31 Claims**

1. A process for recovering phytic acid from a plant extract liquid medium containing phytin, comprising:

adding an acid to said plant extract liquid medium to convert the phytin to phytic acid;

after said adding, contacting the medium with a solid-phase free base polymer having tertiary amine functions to adsorb the phytic acid;

after said contacting, rinsing said polymer with an aqueous rinse medium; and

after said rinsing desorbing the phytic acid from said polymer by passing an aqueous acid or an aqueous base over said polymer.

30. A process for recovering lactic acid from a liquid medium containing lactic acid, comprising:

contacting the medium with an amount of solid-phase, divinylbenzene-crosslinked free base form polymer having tertiary amine groups to adsorb the lactic acid, said contacting being at a first temperature and being continued until said amount of solid-phase, divinylbenzene-crosslinked free base form polymer is substantially saturated with lactic acid;

after said contacting, rinsing said polymer with an aqueous rinse medium;

after said rinsing, desorbing the lactic acid from said polymer by passing hot water at a second temperature of at least about 75° C. over the polymer, said second temperature being higher than said first temperature; and

recovering from said desorbing step a desorbed fraction consisting essentially of an aqueous solution of lactic acid.

5,574,181

PROCESS FOR THE PREPARATION OF AN AMINOITRILE BY PARTIAL HYDROGENATION OF A NITRILE COMPOUND WITH TWO OR MORE NITRILE GROUPS

Hubertus J. M. Bosman, Sittard, and Franciscus H. A. M. J. Vandenbooren, Maastricht, both of Netherlands, assignors to DSM N.V., Heerlen, Netherlands

PCT No. PCT/NL92/00230, § 371 Date Aug. 17, 1994, § 102(e) Date Aug. 17, 1994, PCT Pub. No. WO93/12073, PCT Pub. Date Jun. 24, 1993

PCT Filed Dec. 17, 1992, Ser. No. 256,061

Claims priority, application Netherlands, Dec. 18, 1991, 9102112

Int. Cl.[6] C07C *253/30*

U.S. Cl. 558—459 **34 Claims**

1. A process for preparing an aminonitrile comprising:

partially hydrogenating a nitrile compound having at least two nitrile groups with hydrogen under a partial hydrogen pressure of at least 0.1 MPa to 50 MPa at a temperature of 0° to 200° C. in a reaction medium having less than 5 wt. % water using a catalyst containing a metal from group 8 of the periodic table of elements which is selected from the group consisting of nickel, cobalt, platinum, palladium, and rhodium, wherein the catalyst has been contacted with 0.01 to 0.5 gram of an alkanolate per gram of catalyst and said nitrile compound is an α,ω-alkane dinitrile or a dendrific macromolecule containing at least two nitrile groups.

5,574,182

OPTICALLY ACTIVE COMPOUNDS HAVING PLURAL CHIRAL CENTERS AND PRODUCTION THEREOF

Kazutoshi Miyazawa, and Naoyuki Yoshida, both of Ichihara, Japan, assignors to Chisso Corporation, Osaka-fu, Japan

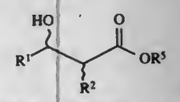
Division of Ser. No. 257,666, Jun. 8, 1994, Pat. No. 5,411,877, which is a division of Ser. No. 35,889, Mar. 23, 1993, Pat. No. 5,348,870, which is a division of Ser. No. 612,146, Nov. 13, 1990, abandoned. This application Jan. 30, 1995, Ser. No. 380,519

Claims priority, application Japan, Nov. 14, 1989, 1-295816

Int. Cl.[6] C07C *69/66*

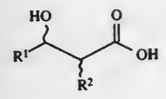
U.S. Cl. 560—179 **2 Claims**

1. A process for resolution which comprises hydrolyzing a 2-substituted-3-hydroxycarboxylic acid ester as a racemate of the general formula,



(8)

to form a 2-substituted-3-hydroxycarboxylic acid of the general formula,

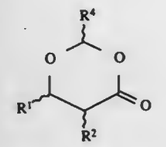


(19)

reacting the carboxylic acid with an aldehyde of the general formula,

$$R^4CHO \quad (22)$$

to form a 2,5,6-substituted-1,3-dioxan-4-one of the general formula,

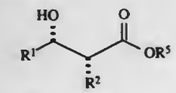


(10)

separating the resulting product into crystal and a mother liquor for recrystallization by recrystallization, effecting a ring-opening reaction of the crystal and the mother liquor residue by using an alcohol of the general formula,

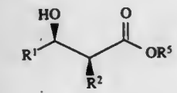
$$R^5OH \quad (23)$$

to resolve the racemate of formula (8) into 2,3-syn- 2-substituted-3-hydroxycarboxylic acid esters of the general formulas,



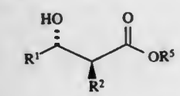
(5')

and



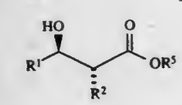
(4')

and 2,3-anti-2-substituted-3-hydroxycarboxylic acid esters of the general formulas,



(3')

and



(2')

where R^1, R^2 and R^4 are independently selected from the group consisting of alkyl, alkenyl, and alkynyl, having 1–40 carbon atoms, the carbon chain may contain at least one member selected from the group consisting of halogen, cyano, oxygen, nitrogen, silicon, sulfur, benzene ring, cyclohexane ring, pyridine ring, pyrimidine ring, pyridazine ring, pyrazine ring, dioxane ring, bicyclooctane ring, and the rings with at least one substituent; R^5 is selected from the group consisting of alkyl, alkenyl and alkynyl, having 1–40 carbon atoms.

5,574,183

PREPARATION OF OPTICALLY ACTIVE ALIPHATIC CARBOXYLIC ACIDS

Deepak R. Patil, Orangeburg, S.C., and Venkataraman Ramachandran, Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Filed Jan. 24, 1995, Ser. No. 378,049
Int. Cl.[6] C07B 55/00
U.S. Cl. 562—401 **6 Claims**

1. A process for separating the enantiomers of a racemic mixture of an aryl-substituted C_1–C_6 aliphatic carboxylic acid or ester thereof which comprises (A) reacting about 0.1–0.25 molar proportion of an N-alkyl-D-glucamine with a solution of one molar proportion of the racemic mixture in an inert organic solvent so that the N-alkyl-D-glucamine combines preferentially with the enantiomer that forms the more insoluble diastereomeric salt, (B) precipitating and separating the resultant diastereomeric salt from the remainder of the reaction mixture, (C) decomposing the diastereomeric salt into its N-alkyl-D-glucamine and enantiomer components, and (D) isolating a substantially pure enantiomer from the resultant mixture of decomposition products.

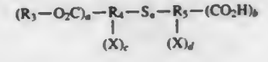
5,574,184

ANTIWEAR AND ANTIOXIDANT ADDITIVES

Shi-Ming Wu, Newtown, Pa., and Andrew G. Horodysky, Cherry Hill, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 313,508, Sep. 26, 1994, Pat. No. 5,503,758, which is a continuation-in-part of Ser. No. 236,867, May 2, 1994, Pat. No. 5,405,545, which is a continuation of Ser. No. 24,015, Mar. 2, 1993, abandoned. This application Mar. 10, 1995, Ser. No. 402,233
Int. Cl.[6] C07C 315/00
U.S. Cl. 562—556 **3 Claims**

1. A reaction product made by reacting (1) a sulfur-containing carboxylic acid having the following structural formula:

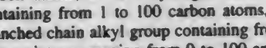


where n=0 to 2,
a=0 to 1,
b=0 to 1,
c=0 to 1,
d=0 to 1, and
X is H, SH or CH_2CO_2H;
provided that: if n=0, then c+d=1 and X is SH and if n is not 0, then X is not SH, and if a+b=0, then c+d≧1 and X is CH_2CO_2H,

R_3 is a hydrogen atom or a hydrocarbyl radical which contains from 1 to 60 carbon atoms, R_4 and R_5 are the same or different hydrocarbyl radicals containing 1 to 30 carbon atoms and (2) an etheramine of structural formula:



or an etherdiamine of structural formula:



where R' is a hydrocarbon group which contains from 1 to 100 carbon atoms, R" is a hydrogen atom or a hydrocarbon group containing from 1 to 100 carbon atoms, A is a straight chain or branched chain alkyl group containing from 2 to 10 carbon atoms, y is an integer ranging from 0 to 100 and x is an integer ranging from 1 to 100; the sulfur-containing carboxylic acid and the (i) etheramine or the (ii) etherdiamine is reacted in a mole ratio of acid to amine or diamine of 10 to 1 at a temperature ranging from about 0° to 250° C. at about one atmosphere pressure.

5,574,185

PRODUCTION OF N-(α-ALKOXYETHYL) FORMAMIDE

Shin-ichi Sato, and Kiyoji Kuma, both of Kitakyusyu, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Nov. 16, 1994, Ser. No. 346,605
Int. Cl.[6] C07C 233/05
U.S. Cl. 564—224 **11 Claims**

1. A process for producing N-(α -alkoxyethyl)formamide comprising reacting formamide with acetaldehyde in the presence of a basic catalyst selected from the group consisting of potassium bicarbonate and potassium hydrogenphosphate, thereby giving N-(α-hydroxyethyl)formamide, and reacting the N-(α-hydroxyethyl)formamide with a primary or secondary alcohol in the presence of an acid catalyst, thereby giving N-(α-alkoxyethyl)formamide.

5,574,186

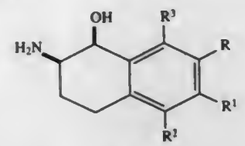
ENANTIOSELECTIVE SYNTHESIS OF CYCLIC AMINO ALCOHOLS

Charles Boudreau, Salem, N.H.; Richard D. Tillyer, Scotch Plains, and David M. Tschaen, Holmdel, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

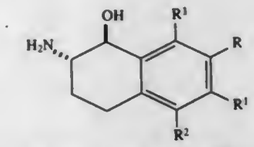
Filed Mar. 8, 1995, Ser. No. 401,050
Int. Cl.[6] C07C 209/40
U.S. Cl. 564—393 **7 Claims**

1. A process for the preparation of a compound represented by formula Ia or Ib:

Ia



Ib

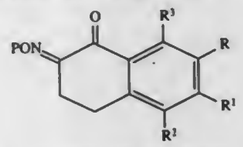


the individual diastereomers, the individual enantiomers or mixtures thereof, or acceptable salt thereof, wherein:

R, R [1], R^2 and R^3 are independently H, C1 to C10 alkyl, O-alkyl, alkylamino, thioalkyl, alkene, cycloalkyl or halogen;

comprising the steps of adding, over a course of about 3 to about 6 hours, a solution, containing a solvent and from about 0.05M to about 5.0M of a keto-oxime ether of the formula II:

II



wherein P is H, TBS, TBDPS, acetate, benzoate, benzyl, paramethoxybenzyl (PMB), or alkyl; and

R, R^1, R^2 and R^3 are independently H, C1 to C10 alkyl, O-alkyl, alkylamino, thioalkyl, alkene, cycloalkyl or halogen;

to a stirred and chilled solution of about 2 to about 30 mol % of an OAB-BH_3 complex and excess $BH_3.SMe_2$ in a solvent, stirring the mixture, heating the mixture until a substantial amount of Ia or Ib is produced and isolating the compound so produced.

5,574,187

PROCESS OF PREPARING PARA SUBSTITUTED PHENYLAMINES

Russell E. Malz, Naugatuck, Conn.; Gerard V. Smith, Carbondale, Ill.; Mark P. Ferrandino, Danbury, Conn.; Ruozhi Song, Carbondale, Ill.; Chung-Yuan Lin, Orange, and Franklin H. Barrows, Waterbury, both of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Filed Oct. 6, 1994, Ser. No. 318,927
Int. Cl.[6] C07C 209/02
U.S. Cl. 564—402 **17 Claims**

1. A process of preparing para substituted phenylamines comprising:

contacting phenylhydroxylamine, optionally substituted with at least one inert substituent, with a nucleophilic reagent in the presence of a solid acid catalyst at a temperature between about 10° C. and about 170° C. and a pressure from subatmospheric to superatmospheric such that a para substituted phenylamine, optionally correspondingly substituted with at least one inert substituent, is formed.

5,574,188

PROCESS FOR THE PREPARATION OF 4,6-DIAMINORESORCINOL

Horst Behre, Odenthal; Helmut Fiege, Leverkusen; Heinz-Ulrich Blank, Odenthal; Uwe Heinz, and Wolfgang Eymann, both of Köln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 27, 1995, Ser. No. 549,241
Claims priority, application Germany, Nov. 3, 1994, 44 39 191.9; Nov. 3, 1994, 44 39 185.4; Nov. 3, 1994, 44 39 194.3
Int. Cl.[6] C07C 213/00
U.S. Cl. 564—418 **17 Claims**

1. A process for the preparation of 4,6-diaminoresorcinol from 1,3-dichloro-benzene by dinitration to give 1,3-dichloro-4,6-dinitrobenzene, by subsequent reaction with sodium benzylate in benzyl alcohol to give 1,3-dibenzyloxy- 4,6-dinitrobenzene and by subsequent catalytic hydrogenation of 1,3-dibenzyloxy-4,6-dinitrobenzene on a noble metal catalyst, wherein

a) in a first step, 1,3-dichlorobenzene is reacted with a mixed acid containing nitric acid, sulphuric acid and 0.7 to 1.5 mol of SO_3 per mol of nitric acid in a temperature range from 0° to 40° C. in anhydrous sulphuric acid which contains 0 to 10% by weight of free SO_3, the molar ratio of HNO_3 to 1,3-dichlorobenzene being 2 to 3,

b) in a second step, the 1,3-dichloro-4,6/2,4-dinitrobenzene isomeric mixtures obtained in a) which contains 0.1 to 50% of 1,3-dichloro-2,4-dinitrobenzene, based on the total weight of the isomeric mixture, are reacted with 2 to 5 mol of benzyl alcohol and 2 to 5 equivalents of a strong base in the presence of an inert solvent, the process being carried out stepwise initially in the temperature range from −15° to +15° C. and then in the temperature range 20°–40° C. and

c) in a third step the 1,3-dibenzyloxy-4,6-dinitrobenzene obtained in b) is converted to 4,6-diaminoresorcinol by catalytic pumped hydrogenation on a noble metal catalyst in an inert organic solvent at an H_2 pressure of 1 to 100 bar and a temperature of 20° to 100° C.

5,574,189

HYDROGENATION OF NITRILES TO PRODUCE AMINES

Gamini A. Vedage, Bethlehem, and John N. Armor, Orefield, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 2, 1995, Ser. No. 382,739
Int. Cl.[6] C07C 209/48
U.S. Cl. 564—493 **14 Claims**

1. In a process for the catalytic hydrogenation of an aliphatic or an aromatic nitrile wherein a feedstock containing said nitrile is contacted with hydrogen in the presence of a hydrogenation catalyst, the improvement which comprises:

utilizing a bimetallic hydrogenation catalyst comprising nickel in combination with rhodium or ruthenium or cobalt in combination with palladium, rhodium, or-ruthenium wherein said bimetallic hydrogenation catalyst is carried on a single support.

5,574,190

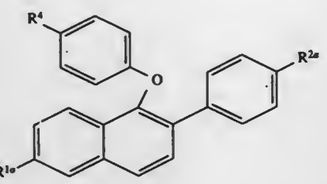
NAPHTHYL COMPOUNDS, INTERMEDIATES, COMPOSITIONS, AND METHODS

Alan D. Palkowitz, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 395,950, Feb. 28, 1995. This application Jun. 6, 1995, Ser. No. 465,844
Int. Cl.[6] C07C 47/546; 43/20
U.S. Cl. 568—440 **7 Claims**

1. A compound of formula II

II



wherein

R^{1a} is —H or —OR^5 in which R^5 is a hydromy protecting group;

R^{2a} is —H, halo, or —OR^6 in which R^6 is a hydroxy protecting group; and

R^4 is —OH or —CHO; or a pharmaceutically acceptable salt thereof.

5,574,191

PROCESS FOR THE MANUFACTURE OF 1,1,1-TRIHALOETHANES

Dominique Balthasart, Brussels, and Pascal Pennetreau, Rixensart, both of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

Filed Sep. 25, 1995, Ser. No. 533,453
Claims priority, application France, Sep. 26, 1994, 94 11564
Int. Cl.[6] C07C 17/08
U.S. Cl. 570—166 **11 Claims**

1. A process for the manufacture of 1,1,1-trifluoroethane and, in addition, 1,1-dichloro-1-fluoroethane and/or 1-chloro-1,1-difluoroethane, by reaction in the liquid phase of hydrogen fluoride, vinylidene fluoride and at least one chloro compound chosen from vinylidene chloride and 1,1,1-trichloroethane,

wherein said hydrogen fluoride, vinylidene fluoride and at least one chloro compound are introduced into a reaction zone in which the hydrogen fluoride reacts simultaneously with the vinylidene fluoride and the chloro compound at a temperature of at least 20 C. and which does not exceed 150 C.

5,574,192

PROCESS FOR THE MANUFACTURE OF 1,1,1,3,3-PENTAFLUOROPROPANE

Michael VanDerPuy, and Alagappan Thenappan, both of Cheektowaga, N.Y., assignors to AlliedSignal Inc., Morris County, N.J.

Continuation of Ser. No. 273,553, Jul. 11, 1994, abandoned. This application Aug. 25, 1995, Ser. No. 519,857

Int. Cl.[6] C07C *17/08*

U.S. Cl. 570—167 **31 Claims**

1. A process for the manufacture of 1,1,1,3,3-pentafluoropropane which comprises:

a) reacting a compound of the formula:

$$CF_yCl_{3-y}CH_2CHF_wCl_{2-w}$$

wherein w=0 or 1, and y=0–3, with hydrogen fluoride in the presence of a fluorination catalyst under conditions sufficient to produce a compound of the formula $CF_3CH_2CF_2H$.

5,574,193

INITIATORS FOR TELOMERIZATION OF POLYFLUOROALKYL IODIDES WITH FLUOROOLEFINS

Carl G. Krespan; Vlacheslav A. Petrov, and Bruce E. Smart, all of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 249,311, May 26, 1994, abandoned. This application Apr. 4, 1995, Ser. No. 416,942

Int. Cl.[6] C07C *21/18*

U.S. Cl. 570—172 **22 Claims**

1. A process for preparing fluorinated alkyl iodide telomers, which may also contain chlorine, consisting of telomerizing a starting perfluoroalkyl iodide with a terminally unsaturated perfluoro olefin or monochlorofluoro olefin, at a temperature of about 20° C. to 180° C. and at autogenous pressure, in the presence of a metal fluoride initiator, wherein the metal fluoride is a more powerful oxidizer than mercuric fluoride, wherein the initiator is selected from the group consisting of CrF_3, CrF_4, CrF_5, MnF_3–MnF_4, CeF_4, PbF_4, BiF_5, CoF_3, $KCoF_4$, $NaCoF_4$, AgF_2, and VF_5 and stable fluorides of noble gases and in the presence of a solvent selected from the group consisting of $CFCl_2CF_2Cl$, perfluorobutyltetrahydrofuran and HFP cyclodimer or in the absence of added solvent.

5,574,194

2,6-BIS-(TRIFLUOROMETHYL)BENZYL ALCOHOL

Didier Babin, Montigny; Marc Benoit, Roquevaire, and Jean-Pierre Demoute, Neuilly Plaisance, all of France, assignors to Roussel Uclaf, France

Division of Ser. No. 395,626, Jan. 28, 1995, abandoned, which is a division of Ser. No. 312,116, Sep. 26, 1994, Pat. No. 5,420,159, which is a continuation of Ser. No. 17,630, Feb. 12, 1993, abandoned. This application Oct. 6, 1995, Ser. No. 540,083

Claims priority, application France, Feb. 21, 1992, 92 02010

Int. Cl.[6] C07C *33/46*

U.S. Cl. 568—812 **1 Claim**

1. 2,6-bis-(trifluoromethyl)-benzyl alcohol.

5,574,195

METHOD OF PREPARING SELECTED MONOCYCLIC MONOTERPENES

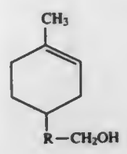
Doyle E. Chastain, 137 Birch St., Titusville, Fla. 32780; Naresh Mody, Merritt Island, Fla., and George Majetich, Athens, Ga., assignors to Doyle E. Chastain, Titusville, Fla.

Filed Jun. 19, 1995, Ser. No. 492,372

Int. Cl.[6] C07C *35/18*

U.S. Cl. 568—826 **14 Claims**

1. Process for the preparation of a monocyclic monoterpene having the formula:



wherein R=—C=CH_2

which comprises treating limonene in a liquid reaction medium with a strong base followed by addition to the medium of a boron-containing reagent to produce a limonenyl adduct; treating the adduct with an oxidizing agent to cause cleavage of said adduct and the introduction of an hydroxyl group at the 10-position of said limonenyl structure; diluting said medium with water and an organic solvent to produce two liquid phases, and recovering from the organic phase limonen-10-ol having the above formula when R=—C=CH_2.

5,574,196

PROCESS FOR PREPARING ALKANOLS

Charles E. Tucker; Diane E. Allen, and Charles C. Hobbs, all of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Feb. 28, 1995, Ser. No. 395,267

Int. Cl.[6] C07C *29/48;31/125;35/06;35/21*

U.S. Cl. 568—838 **17 Claims**

1. A process for preparing substantially only Tertiary alkanols or cycloalkanols which comprises the step of oxidizing with ozone a saturated hydrocarbon having a tertiary carbon center in the presence of a carboxylic acid and for a sufficient period of time and at suitable temperature and pressure to form substantially only said alkanols, with the proviso that said carboxylic acid is initially present in an amount which provides a homogeneous solution with said hydrocarbon and functions both as a catalyst and as a solvent.

10. A process for preparing substantially only 1-methylcyclopentanol which comprises the step of oxidizing methylcyclopentane with ozone in the presence of a carboxylic acid and for a sufficient period of time and at a suitable temperature to form substantially only 1-methylcyclopentanol, with the proviso that said carboxylic acid is initially present in an mount which provides a homogeneous solution with said methylcyclopentane and functions both as a catalyst and as a solvent.

5,574,197

METHOD OF MAKING A STABLE NON-PYROPHORIC LITHIUM DIORGANOAMIDE SOLUTION

Wilfried Weiss, Oberursel; Ulrich Wietelmann, Friedrichsdorf; Uwe Lischka, and Ute Emmel, both of Frankfurt am Main, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sep. 23, 1994, Ser. No. 311,525

Claims priority, application Germany, Sep. 27, 1993, 43 32 652.8

Int. Cl.[6] C07C *7/20;* C01D *15/00*

U.S. Cl. 585—4 **7 Claims**

1. A method of preparing a stable non-pyrophoric solution of a lithium diorganoamide of the formula, LiNR'R" wherein R' and R" are each independently selected from the group consisting of alkyl groups having 2 to 6 carbon atoms, and a lithium alkoxide having from 3 to 6 carbon atoms in an inert liquid hydrocarbon, said method comprising mixing a secondary amine having said R' and R" and an alcohol having 3 to 6 carbon atoms with a lithium metal member selected from the group consisting of lithium granulate and lithium powder in an inert liquid hydrocarbon and reacting said secondary amine said alcohol and said lithium metal member with addition of an electron acceptor compound to form the stable non-pyrophoric solution containing said lithium diorganoamide and said lithium alkoxide.

5,574,198

PROCESS FOR PRODUCING LINEAR ALKYLBENZENES

Pierino Radici, Turate; Pierluigi Cozzi, Nerviano; Giuseppe Giuffrida, Caronno Pertusella, and Agostino Zatta, San Donato Milanese, all of Italy, assignors to Enichem Augusta S.p.A., Palermo, Italy

Continuation of Ser. No. 124,060, Sep. 21, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 419,959

Claims priority, application Italy, Sep. 24, 1992, MI92A2177

Int. Cl.[6] C07C *2/68*

U.S. Cl. 585—323 **10 Claims**

1. Integrated process for preparing linear alkylbenzenes having 10–14 carbon atoms in the alkyl chain from a feed including aromatic hydrocarbons with n-paraffins, said process comprising the steps of:

(a) dehydrogenating n-paraffins to corresponding n-olefins;

(b) selectively hydrogenating diolefins formed during the preceding step to convert them into mono-olefins, thus forming a reaction mixture including olefins and paraffins;

(c) alkylating benzene in said reaction mixture of olefins and paraffins in the presence of an active catalytic species based on $AlCl_3$ so as to form an alkylated benzene mixture;

(d) forming a hydrocarbonaceous catalytic complex between said $AlCl_3$ catalytic species and the alkylated benzene mixture;

(e) separating said hydrocarbonaceous catalytic complex from said alkylated benzene;

(f) adding an additional quantity of $AlCl_3$ to said hydrocarbonaceous catalytic complex;

(g) recycling said $AlCl_3$ hydrocarbonaceous catalytic complex to step (c).

5,574,199

PARA-SELECTIVE AROMATIZATION PROCESS WITH EX SITU SELECTIVATED ZEOLITE CATALYST

Jeffrey S. Beck, Princeton, and Ralph M. Dessau, Edison, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 69,251, May 28, 1993, Pat. No. 5,476,823. This application Jan. 13, 1995, Ser. No. 372,467

Int. Cl.[6] C07C *15/00*

U.S. Cl. 585—407 **21 Claims**

1. A process for enhanced shape selective hydrocarbon conversion to aromatics, comprising:

contacting a reaction stream comprising hydrocarbon to be converted, under aromatization conditions, with a catalytic molecular sieve which has been modified by being exposed to a series of at least two ex situ selectivation sequences,

wherein each of the ex silu selectivation sequences includes the steps of :

a) contacting the catalytic molecular sieve with a selectivating agent in an organic carrier; and

b) subsequently calcining the contacted catalytic molecular sieve.

5,574,200

INITIATOR SUSPENSIONS, THEIR PREPARATION AND USE

Claes Lundin, Saltsjö-Boo, and Berit Simonsson, Vällingby, both of Sweden, assignors to Akzo Nobel N.V., Arnhem, Netherlands

Continuation of Ser. No. 111,054, Aug. 24, 1993, Pat. No. 5,403,804, which is a division of Ser. No. 885,976, May 20, 1992, Pat. No. 5,270,271. This application Jan. 23, 1995, Ser. No. 376,698

Claims priority, application Sweden, May 31, 1991, 9101674

Int. Cl.[6] C08F *4/34*

U.S. Cl. 585—520 **8 Claims**

1. A process for polymerization of ethylenically unsaturated monomers, wherein a solid free-radical forming initiator is charged to a polymerization system comprising ethylenically unsaturated monomers, said initiator being in the form of a suspension, characterized in that at least 50% by weight of initiator particles in the suspension are smaller than 5 μm and at least 90% by weight of the initiator particles are smaller than 10 μm.

5,574,201

ALKYLATION PROCESS

Lyle R. Kallenbach, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 12, 1995, Ser. No. 440,262

Int. Cl.[6] C07C *2/62*

U.S. Cl. 585—730 **19 Claims**

1. In a process for alkylating at least one alkane containing 2–12 carbon atoms per molecule with at least one alkene containing 2–12 carbon atoms per molecule in the presence of a catalyst comprising trifluoromethanesulfonic acid and at least one solid inorganic material so as to produce at least one product alkane containing more carbon atoms than said at least one feed alkane, the improvement which comprises the presence of at least one tricyclic hydrocarbon selected from the group consisting of dicyclopentadiene, tetrahydrodicyclopentadiene and mixtures thereof in the feed comprising said at least one feed alkane and said at least one feed alkene.

5,574,202

TECHNIQUE FOR PROCESSING POISON GASES

Mark Pilipski, P.O. Box 561, Clifton, N.J. 07012, assignor to Mark Pilipski; Martin F. Sturman, and Michael Ebert, all of Melrose Park, Pa.

Filed Jun. 12, 1995, Ser. No. 489,694

Int. Cl.[6] A62D *3/00*

U.S. Cl. 588—200 **7 Claims**

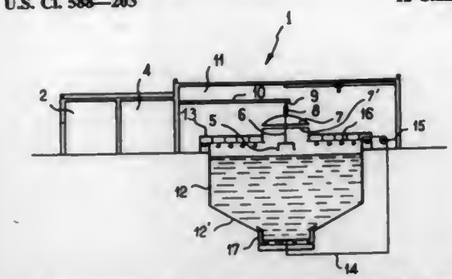
1. A technique for degrading a chemical warfare poison compound to render it innocuous, said technique comprising the steps of conducting the compound through a reactor containing an anhydrous liquid halide which acts as a catalyst to degrade the toxic compound, and withdrawing from the reactor the innocuous degraded compound.

5,574,203

PROCESS AND INSTALLATION FOR DESTROYING MUNITIONS CONTAINING TOXIC AGENTS

Nicolas Noel, Paris, and Yves Santo, Le Plessis Trevise, both of France, assignors to Sope Ingenierie S.A., Saint Quentin En Yvelines, France

Filed Oct. 27, 1994, Ser. No. 329,854
Int. Cl.[6] A62D 3/00
U.S. Cl. 588—203 12 Claims



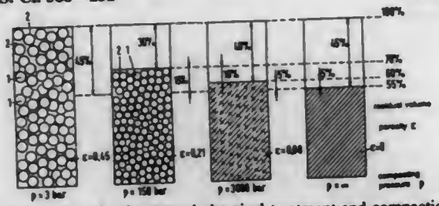
1. In a process for destroying a munition containing a toxic agent in a pool which is filled with a neutralizing liquid for the toxic agent, the pool also being resistant to explosions and including lid means for closing the pool to seal against toxic emanations, the process comprising the following cycle of operations:
(1) equipping the munition with a pyrotechnic fragmentation device;
(2) introducing the munition into the pool;
(3) closing said pool so that the pool is sealed with respect to toxic emanation;
(4) igniting the pyrotechnic device so that the munition is fragmented and releases the toxic agent into the neutralizing liquid;
(5) permitting the neutralizing liquid to neutralize the toxic agent; and
(6) reopening the pool after neutralization of the toxic agent for another cycle.

5,574,204

METHOD FOR THE MUTUAL CHEMICAL AND COMPACTION TREATMENT OF INORGANIC WASTES

Thomas Menzel, Hilden; Joachim Beyer, Kürten; Gerd Bauer, Leverkusen; Bernd Koglin, Bergisch Gladbach, and Rolf Rink, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

PCT No. PCT/EP93/03240, § 371 Date Jul. 24, 1995, § 102(e) Date Jul. 24, 1995, PCT Pub. No. WO94/12292, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 19, 1993, Ser. No. 446,793
Claims priority, application Germany, Dec. 3, 1992, 42 40 589.0
Int. Cl.[6] B09B 3/00
U.S. Cl. 588—252 7 Claims



1. A method for the mutual chemical treatment and compaction of inorganic waste materials, which are in loose particulate form and contain water and also contain water-soluble components capable of reacting with one another, which comprises mixing said waste materials together, then compacting them under a pressure sufficient to reduce the pore volume between the individual particles to the liquid volume resulting from the water in the waste materials, so that the pores between the particles of loose material are partially or completely filled with a water solution of reactive components and chemical reactions take place between the reactive components.

5,574,205

HOMOLOGOUS RECOMBINATION FOR UNIVERSAL DONOR CELLS AND CHIMERIC MAMMALIAN HOSTS

Raju Kucherlapati, Darien, Conn.; Beverly H. Koller, Carrboro; Oliver Smithies, Chapel Hill, both of N.C.; Robert B. Dubridge, Belmont, Calif.; Gary Greenburg, San Carlos, Calif.; Daniel J. Capon, Hillsborough, Calif.; Steven R. Williams, San Francisco, Calif., and Mariona L. A. De Rafael, Barcelona, Spain, assignors to Cell Genesys, Foster City, Calif.

Continuation-in-part of Ser. No. 990,879, Dec. 19, 1992, Pat. No. 5,413,923, which is a continuation-in-part of Ser. No. 611,020, Nov. 19, 1990, Pat. No. 5,416,260, which is a continuation-in-part of Ser. No. 431,872, Nov. 19, 1989, abandoned, and Ser. No. 385,651, Jul. 19, 1989, abandoned. This application Dec. 30, 1993, Ser. No. 175,469
Int. Cl.[6] C12N 15/00;5/00; A61K 48/00;49/00
U.S. Cl. 800—2 8 Claims

5. A genetically engineered mouse characterized by lacking functional class I and II major histocompatibility complex antigens as a result of introduction of a DNA construct into embryonic stem cell producing a lesion that results in inactivation of the IFNγR gene.

5,574,206

TRANSGENIC MOUSE CARRYING A NON-INFECTIOUS HIV GENOME

Paul Jolicoeur, Outremont, Canada, assignor to L'Institut De Recherches Cliniques De Montreal, Montreal, Canada

Continuation-in-part of Ser. No. 747,670, Aug. 20, 1991. This application Aug. 24, 1994, Ser. No. 294,908
Claims priority, application Canada, May 15, 1991, 2042625
Int. Cl.[6] C12N 15/00
U.S. Cl. 800—2 3 Claims

1. A transgenic mouse in which the germ cells and somatic cells carry at least one copy of a single transgene that comprises:
(i) a HIV DNA genome from which is deleted the 5'-LTR, a portion of the 5' leader sequence, and a portion of the 3'-LTR, whereby said HIV DNA and its RNA transcript are rendered non-infectious,
(ii) the MMTV LTR promoter operatively linked to the 1' end of said DNA, and
(iii) the SV40 poly(A) addition signal operatively linked to the 3' end of said DNA, wherein said transgene is introduced into said mouse or an ancestor thereof as a single transgene, such that said mouse has the entire coding sequence of said HIV DNA genome, but produces non-infectious HIV RNA, said transgenic mouse further expressing (a) detectable levels of RNA transcripts encoding HIV proteins env, gag and pol in a promoter-specific manner, and (b) detecting levels of HIV structural proteins env and gag.

5,574,207

RYE GRASS HYBRID 1917 AND PARENTAL LINES 71548 AND 71550

Ross H. Rasmussen, Hooper, Nebr., assignor to Nu-Dwarf Farms Inc., Hooper, Nebr.

Filed Apr. 4, 1994, Ser. No. 222,068
Int. Cl.[6] A01H 1/02;5/00;5/10
U.S. Cl. 800—200 26 Claims

1. Inbred rye grass seed designated 71548 having ATCC accession No. 75707.

2. A rye grass plant produced by growing the seed of claim 1.

6. Inbred rye grass seed designated 71550 having ATCC Accession No. 75706.

7. A rye grass plant produced by growing the seed of claim 6.

5,574,208

HYBRID CORN PLANT (3893)

Roy Luedtke, Jr., Grand Forks County, N. Dak., assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Continuation of Ser. No. 187,966, Jan. 28, 1994, abandoned. This application Dec. 22, 1994, Ser. No. 361,895
The portion of the term of this patent subsequent to Jan. 24, 2014, has been disclaimed.
Int. Cl.[6] A01H 1/02;4/00;5/00;5/04
U.S. Cl. 800—200 5 Claims

1. A hybrid corn plant designated 3893, seed of said hybrid having ATCC accession number 97588.

5,574,209

HYBRID MAIZE PLANT & SEED (3951)

Vladimir Puskaric, Oxford County, Canada, and Roy Luedtke, Jr., Grand Forks County, N. Dak., assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Mar. 8, 1995, Ser. No. 401,062
Int. Cl.[6] A01H 5/00;4/00; C12N 5/04
U.S. Cl. 800—200 7 Claims

1. Hybrid maize seed designated 3951, representative seed having ATCC Accession Number 97500.

5,574,210

GRAY LEAF SPOT RESISTANT CORN AND THE PRODUCTION THEREOF

Mohammad Saghai-Maroof, Blacksburg, Va.; George K. Rufener, II, Johnston, Iowa; Erik Stromberg, Blackburg, Va.; Ronald P. Mowers, and Albert J. Balducchi, both of Ames, Iowa, assignors to Zeneca Limited, London, England

Filed Jun. 6, 1995, Ser. No. 466,098
Int. Cl.[6] A01H 5/00;1/100; C12N 5/04;15/00
U.S. Cl. 800—200 12 Claims



1. An improved maize plant, and parts thereof, which evidences a resistance response to Gray Leaf Spot (GLS) comprising a genome, homozygous with respect to genetic alleles which are native to a first parent and nonnative to a second parent of the improved maize plant, wherein said second parent evidences significantly less resistant response to GLS than said first parent and said improved plant comprises alleles from said first parent that evidences resistance to GLS in hybrid combination in at least two loci selected from: (locus 1) chromosome 1, proximate map unit 124 through 135, (locus 2) chromosome 2, proximate map unit 64 through 91, (locus 3) chromosome 5, proximate map unit 103 through 146 and (locus 4) chromosome 8, proximate map unit 129 through 136; whereto said map units correspond to the maize chromosome map of FIG. 3, said resistance not significantly less than that of the first parent in the same hybrid combination, and yield and moisture characteristics which are not significantly different than those of the second parent in the same hybrid combination.

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DETECTOR HAVING SELF-CALIBRATION FUNCTION

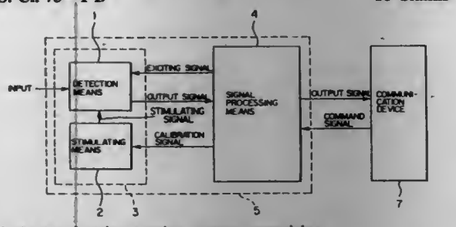
Satoshi Shimada, Hitachi; Seiko Suzuki, Hitachiota; Shigeki Tsuchitani, Mito; Seiichi Ugai, Hitachi; Masayoshi Kaneyasu, Hitachi; Hiroshi Kuroiwa, Hitachi, and Yoshihiro Yokota, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 339,709, Nov. 14, 1994, Pat. No. 5,429,736, which is a continuation of Ser. No. 985,654, Dec. 7, 1992, Pat. No. 5,391,283, which is a continuation of Ser. No. 595,824, Oct. 10, 1990, Pat. No. 5,174,884. This application May 30, 1995, Ser. No. 452,698

Claims priority, application Japan, Oct. 20, 1989, 1-271666

Int. Cl.[6] G01P *15/00*

U.S. Cl. 73—1 D **16 Claims**



1. An acceleration sensing system comprising:

a detection section for detecting a displacement of a movable portion displaceable according to an acceleration;

exciting means for applying an exciting signal to the movable portion;

signal processing means for giving the exciting means a command signal for the exciting signal in response to a command signal received from outside the signal processing means, and receiving a response signal in accordance with the displacement of the movable portion caused by the exciting signal;

memory means storing data concerning an initial characteristic for the exciting signal; and

a communication device disposed outside the signal processing means for transmitting to the signal processing means a command signal for causing the signal processing means to give the exciting means the command signal for the exciting signal;

wherein the signal processing means is operative to compare the initial characteristic data with the response signal.

5,574,212

AUTOMATED SYSTEM AND METHOD FOR TESTING RESOLUTION OF ULTRASOUND SCANNERS

Ernest L. Madsen; James A. Zagzebski; Gary R. Frank, and Jason J. Rownd, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jun. 14, 1995, Ser. No. 490,319

Int. Cl.[6] G01N *29/00*

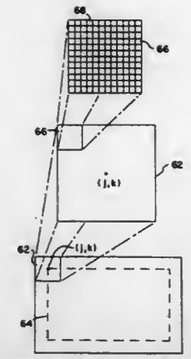
U.S. Cl. 73—1 DV **29 Claims**

1. An automated system for testing the resolution capabilities of ultrasound scanners, comprising:

(a) means for storing digitized target slice image data of an ultrasound image corresponding to a slice whose midplane is superimposed on a plane of an ultrasound phantom which contains the centers of an array of target spheres and for storing digitized background slice image data of an ultrasound image corresponding to a slice of the ultrasound phantom which contains only background material;

(b) means for retrieving the stored target slice and background slice image data for analysis;

(c) means for calculating a lesion signal to noise ratio $(SNR)_L$ at each defined pixel location (j,k) in the target slice image using an average target slice pixel value S_L calculated from image data over a sample area centered at the pixel location (j,k) in the target slice image, an average background pixel value S_{MB} calculated from image data over a first averaging area centered at the pixel location (j,k) and including mostly background image data, and an average background plane pixel value standard deviation σ_B calculated from image data over a second averaging area including the pixel location (j,k) in the background slice image;



(d) means for determining the number of pixel locations in a sample depth range for which the absolute value of the lesion signal to noise ratio exceeds a first threshold value;

(e) means for automatically determining a depth range limit of detectability by determining the sample depth range at which the number of pixel locations in the sample depth range where the absolute value of the lesion signal to noise ratio exceeds the first threshold value exceeds a second threshold value; and

(f) means for displaying the depth range limit of detectability.

5,574,213

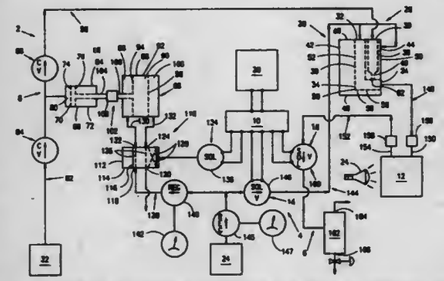
APPARATUS AND METHOD FOR DETECTING LEAKS

Alfred W. Shanley, P.O. Box 692349, Houston, Tex. 77269

Filed Mar. 13, 1995, Ser. No. 402,614

Int. Cl.[6] G01M *3/08*

U.S. Cl. 73—40.7 **14 Claims**



1. Apparatus for testing a refrigerant coil prior to assembly into a refrigerant system, said apparatus comprising:

first conduit means for supplying a flow of a mixture of a carrier gas and an atomized UV fluorescent liquid dye to a refrigerant coil to be pressure tested, said refrigerant coil having an inlet and an outlet, said first conduit means having a first valve means operably associated therewith and having a first coupling for coupling directly to the inlet of said refrigerant coil, said first valve means being positionable in an open position or a closed position;

second conduit means for exhausting a flow of a mixture of carrier gas and an atomized UV fluorescent liquid dye from the outlet of said refrigerant coil which has been pressure tested, said second conduit means having a second valve means operably associated therewith and having a second coupling for coupling directly to the outlet of said refrigerant coil, said second valve means being positionable in an open position or a closed position;

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third conduit means for introducing a predetermined amount of a UV fluorescent liquid dye into the first conduit means, said third conduit means having an atomization and injection means associated therewith for causing the introduction of the predetermined amount of UV fluorescent liquid dye into the first conduit means in atomized form; and

automatic control means having

(i) a means for actuating the atomization and injection means to introduce the predetermined amount of UV fluorescent liquid dye in atomized form into the first conduit means;

(ii) a means for positioning the second valve means in the open position, to permit a pressure drop from the inlet to the outlet of said refrigerant coil to be pressure tested;

(iii) a means for positioning a first valve means in the open position, to permit flow of the atomized mixture throughout said refrigerant coil to be pressure tested;

(iv) a means for positioning the second valve means in the closed position, to permit pressurization and testing of sad refrigerant coil to be pressure tested;

(v) a means for positioning the second valve means in the open position, to permit exhaust of the atomized mixture from said refrigerant coil upon completion of pressure testing and to depressurize said refrigerant coil;

(vi) a means for positioning the first valve means in the closed position, to isolate said refrigerant coil from the carrier gas and permit safe disconnection of said refrigerant coil from the first conduit means; and

(vii) a means for positioning the second valve means in the closed position, to permit isolation of the second conduit means from the environment when said refrigerant coil is disconnected from the second conduit means;

wherein the automatic control means further includes means for actuating means (i) through (vii) in order.

5,574,214

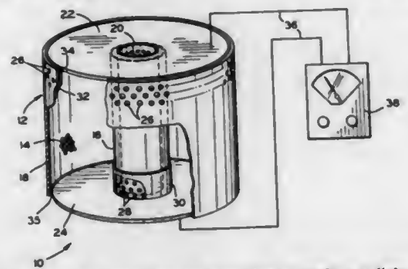
APPARATUS FOR DRYING DIELECTRIC OIL

Christopher S. Balton, Manitou Springs; James D. Pierce, Colorado Springs; Gregory S. Sprenger, Colorado Springs, and Benjamin G. Taylor, Colorado Springs, all of Colo., assignors to Velcon Filters, Inc., Colorado Springs, Colo.

Filed May 17, 1995, Ser. No. 443,108

Int. Cl.[6] G01N *37/00;33/26*

U.S. Cl. 73—61.43 **6 Claims**



1. Apparatus for measuring and removing water from a dielectric oil, comprising:

a first cylindrical wall, including a plurality of apertures located around the periphery of said first cylindrical wall;

a second cylindrical wall, coaxial with said first cylindrical wall said second cylindrical wall including a plurality of apertures located around the peripbery of said second cylindrical wall, the apertures in said first and second cylindrical walls forming spaced-apart parallel planes perpendicular to the axis of said first and second cylindrical walls;

a first annular electrically conductive wall, perpendicular to the axis of and affixed to said first and second cylindrical walls;

a second annular electrically conductive wall, said second annular wall being affixed to the first and second cylindrical walls and parallel and spaced-apart relative to said first annular wall;

a bed of molecular sieves between said first and second annular walls; and

means electronically connected to said first and second annular walls for measuring the capacitance across the bed between Said first and second annular walls to determine the water content of a dielectric oil between said first and second annular walls.

5,574,215

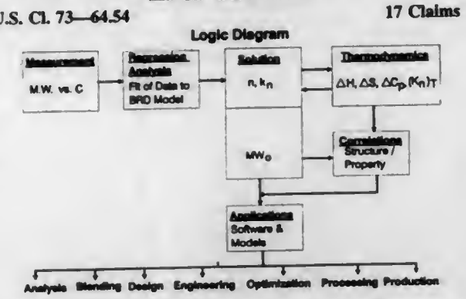
METHOD FOR DETERMINING THERMODYNAMIC AND MOLECULAR PROPERTIES IN THE LIQUID PHASE

James W. Bunger; Christopher P. Russell, and Prasad A. V. Devineni, all of Salt Lake City, Utah, assignors to James W. Bunger & Associates, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 204,553, Mar. 1, 1994, abandoned. This application Feb. 28, 1995, Ser. No. 396,378

Int. Cl.[6] G01N *33/00*

U.S. Cl. 73—64.54 **17 Claims**



1. A method for calculating the average molecular weight of individual molecules (MW_0) in a sample, where the molecules in solution associate to form clusters, which method comprises,

(a) heating a reference portion of a solvent at a reference temperature (T_R) to form a saturated solvent vapor at vapor pressure (P_R) above the reference portion,

(b) dissolving a measured mass of the sample in a measured second portion of the solvent to provide a solution with a known concentration (C) of the sample in terms of mass per unit volume, and heating a sample portion of the solution to a sample temperature (T_S) to form a saturated solvent vapor above the sample portion at vapor pressure (P_S),

(c) measuring the deviation of the sample temperature and vapor pressure (T_S, P_S) from the reference temperature and vapor pressure (T_R, P_R), and computing an apparent molar concentration (C_M) in moles per unit volume by reference to the deviation, the apparent concentration being the molar concentration of the clusters of associated molecules and any unassociated molecules,

(d) computing an apparent molecular weight (MW) from the equation;

$$MW = \frac{C}{C_M}$$

the apparent molecular weight being the average molecular weight of clusters of associated molecules and any unassociated molecules,

(e) repeating steps (a) through (d) for m repetitions with a different value of concentration (C) for each repetition,

(f) solving for $a_1, a_2, \ldots a_j$, and MW_0 from the MW and C data points from the following set of equations:

a subset of equations for n=2 to m defined by

$$R_n = \frac{nk_n}{(MW_0)^{n-1}} Y^n C^{n-1}$$

an equation defined by

$$1 - Y = \sum_{i=2}^{m} \frac{ik_i}{(MW_0)^{i-1}} Y^i C^{i-1}$$

an equation defined by

$$MW = \frac{MW_0}{Y + \sum_{i=2}^{m} \frac{R_i}{i}}$$

and a subset of equations that are relations between k_n and n, for n=2 to m

$$k_n = f(n, a_1, a_2, \ldots, a_j)$$

where m is an integer greater than 2, k_n are equilibrium constants of association between the monomers and the clusters, $a_1, a_2, \ldots a_j$ are constants, and j is an integer greater than 0, the number of the apparent molecular weight (MW) versus concentration (C) data points produced by the repetitions in step (e) being an integer greater than j.

5,574,216

ROTARY DRUM CENTERING METHOD AND APPARATUS

Koji Hiyama, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed Jan. 20, 1995, Ser. No. 375,996

Claims priority, application Japan, Jan. 24, 1994, 6-023228

Int. Cl.[6] G01M *1/00*

U.S. Cl. 73—65.01 **19 Claims**

15. An apparatus for centering a rotary drum so that a magnetic head is positioned thereon, comprising:

holding means for holding the rotary drum;

means for rotating the rotary drum about a predetermined reference axis;

means for sensing the position of a peripheral surface of the rotary drum; and

tapping means for tapping a target portion of the holding means which is concentric with an outer circumferential portion of the rotary drum and for inducing the rotary drum to move radially with respect to the predetermined axis of rotation until an axis of rotation of the rotary drum becomes coincident with the predetermined reference axis and assumes a position wherein a magnetic head can be accurately positioned on the rotary drum.

5,574,217

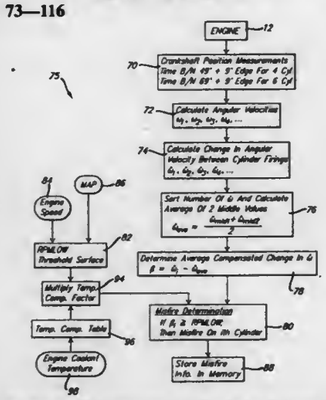
ENGINE MISFIRE DETECTION WITH COMPENSATION FOR NORMAL ACCELERATION OF CRANKSHAFT

Jay C. McComble, Rochester Hills, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Jun. 6, 1995, Ser. No. 468,117

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—116 **8 Claims**



1. An apparatus for detecting misfire in individual cylinders of an internal combustion engine in a motor vehicle, comprising:

means for sensing rotation of a crankshaft;

measuring means connected to the sensing means for measuring changes in angular velocity corresponding to each of a plurality of expected cylinder firings;

means for sorting an even number of angular velocity changes by amplitude for a predetermined series of expected cylinder firings;

averaging means for averaging two middle most of the angular velocity changes from said sorted plurality of angular velocity changes so as to provide an average change in velocity value;

deviation means coupled to said averaging means and measuring means for determining a deviation between a change in angular velocity for a selected cylinder firing and the average change in velocity value; and

means for comparing the deviation with a thresbold value to detect the occurrence of a misfire for the selected cylinder as a result of said comparison.

5,574,218

DETERMINING THE LENGTH AND AZIMUTH OF FRACTURES IN EARTH FORMATIONS

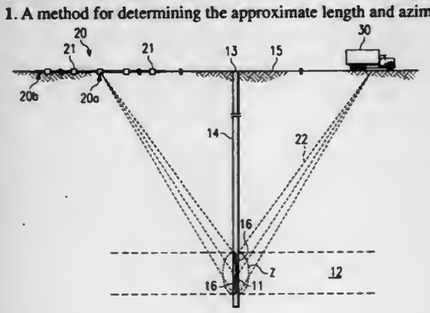
Robert J. Withers, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 11, 1995, Ser. No. 570,147

Int. Cl.[6] E21B *47/00*

U.S. Cl. 73—152.02 **8 Claims**

1. A method for determining the approximate length and azimuth



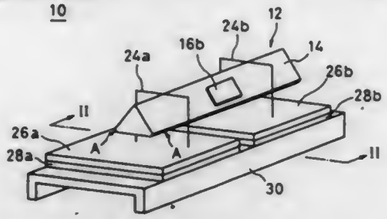
of a hydraulic fracture within a subterranean formation, said method comprising:
- carrying out a seismic survey of the formation from a first position on the surface before forming said hydraulic fracture in said formation;
- pumping a fracturing fluid through the wellbore of an injection well into said formation to initiate and propagate said hydraulic fracture therein;
- carrying out another seismic survey of the formation from the surface after said hydraulic fracture has been formed in said formation; and
- comparing said seismic surveys to determine the approximate length and azimuth of said hydraulic fracture;
- wherein the steps of carrying out said seismic surveys before and after the forming of said hydraulic fracture comprise:
  - positioning a seismic source at said first position on one side of said injection well;
  - positioning an array of acoustical-energy sensors on the the opposite side of said injection;
  - activating said seismic source to generate and impart acoustical energy signals into the earth; and
  - receiving said acoustical energy signals at said array after said signals have passed through the earth.

5,574,219

PIEZOELECTRIC VIBRATOR

Yoshiaki Heinouchi, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan

Filed Apr. 21, 1995, Ser. No. 426,605
Claims priority, application Japan, Apr. 26, 1994, 6-112310
Int. Cl.[6] H01L *41/08*
U.S. Cl. 73—504.12 **7 Claims**



1. A piezoelectric vibrator comprising:
- a prism-shaped vibrating body for making a bending vibration, said prism-shaped vibrating body having an exterior surface having exterior portions,
- wherein a hardness of one exterior portion of said vibrating body in a direction of a basic bending vibration is lower than a hardness of other exterior portions of the vibrating body.

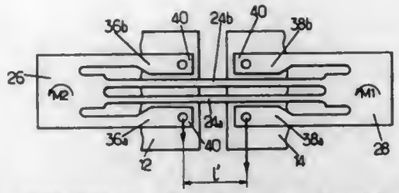
5,574,220

VIBRATING BEAM FORCE-FREQUENCY TRANSDUCER

Yvon Amand, L'Isle Adam, and Jean-Pierre Peghaire, Argenteuil, both of France, assignors to Sagem SA, Paris, France

Filed Aug. 9, 1995, Ser. No. 512,906
Claims priority, application France, Aug. 10, 1994, 94 09908
Int. Cl.[6] G01L *1/10;1/26*
U.S. Cl. 73—514.29 **6 Claims**

1. A vibrating beam force-frequency transducer comprising:
- a flat elongate blade having two mutually parallel major faces, comprising a middle portion constituting two mutually parallel lateral beams separated by a gap and terminal portions interconnecting said lateral beams and extensions of said terminal portions parallel to the beams and directed toward a middle portion of the blade in a longitudinal direction thereof;
- connecting means for connecting each one of said extensions to a respective one of a pair of force applying elements for applying a longitudinal force to said blade, said connecting means being so located that said force applying elements apply said longitudinal force to said blade in zones of said blade that are at a distance from each other smaller than a distance between said terminal portions;
- means for setting said beams into vibration in a plane parallel to said major faces of said blade; and
- means for measuring a frequency of vibration of said beams.

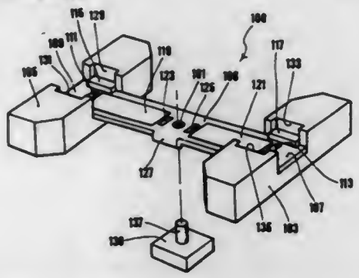


5,574,221

ANGULAR ACCELERATION SENSOR

Kyoo Y. Park, and Suk M. Choi, both of Seoul, Rep. of Korea, assignors to Samsung Electro-Mechanics Co., Ltd., Kyongki-do, Rep. of Korea

Filed Oct. 28, 1994, Ser. No. 330,462
Claims priority, application Rep. of Korea, Oct. 29, 1993, 22432; Oct. 29, 1993, 22433; Oct. 29, 1993, 22763; Oct. 29, 1993, 22764
Int. Cl.[6] G01P *15/08*
U.S. Cl. 73—514.02 **4 Claims**



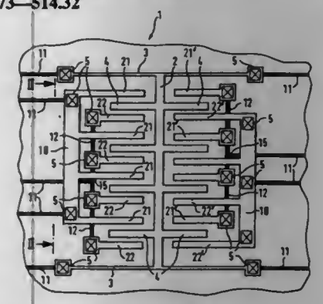
1. A sensor for sensing an angular acceleration, comprising:
- an elastic plate having a pair of symmetrical and opposite arms arranged outward from a center of the plate, said arms bending in opposite directions in response to a rotation force acting about an axis lying within a plane formed by the arms;
- a pair of piezoelectric elements adhered onto the elastic plate, each element being symmetrically positioned at the same distance from the center of the plate,
- the piezoelectric elements generating an electrical signal in response to tensile or compressing forces formed by the bending of the elastic plate;
- a pair of inertia bodies, each body being symmetrically positioned at an end of each arm; and
- a member for supporting the center of the elastic plate, wherein said elastic plate has position-indicating grooves to which the piezoelectric elements are attached.

5,574,222

ACCELERATION SENSOR

Michael Offenberg, Tuebingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 4, 1995, Ser. No. 511,184
Claims priority, application Germany, Sep. 2, 1994, 44 31 338.1
Int. Cl.[6] G01P *15/125*
U.S. Cl. 73—514.32 **6 Claims**



1. An acceleration sensor comprising:
- a substrate;
- a bending element mounted to the substrate;
- a seismic mass suspended from the bending element;
- a plurality of movable electrodes suspended from the seismic mass and adapted to move with respect to the substrate in response to an acceleration;
- a connecting beam mounted on the substrate;
- a first group of fixed electrodes suspended from the connecting beam, the first group including a plurality of fixed electrodes, each of the fixed electrodes of the first group arranged on one side of a respective one of the movable electrodes; and
- a second group of fixed electrodes, each of the fixed electrodes of the second group individually mounted on the substrate and arranged on another side of the respective movable electrode opposite the side of the respective movable electrode on which a respective fixed electrode of the first group is arranged;
- wherein the first and second groups of fixed electrodes and the movable electrodes form at least one plate capacitor.

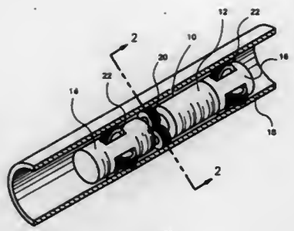
5,574,223

SCAN ASSEMBLY AND METHOD USING SCAN RATE MODULATION

Karl F. Kiefer, Woodlands, Tex., assignor to Gas Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 222,621, Apr. 5, 1994. This application Jun. 30, 1995, Ser. No. 497,032
Int. Cl.[6] G01N *29/10;29/26*
U.S. Cl. 73—623 **9 Claims**

1. A method for scanning a surface and cross-section of a wall of an elongated cylindrical object with an ultrasonic scan assembly having a rotatable sensor section capable of rotating as said scan assembly is advanced axially in said cylindrical object, said sensor section including scan means for transmitting and receiving ultrasonic energy, said method comprising the steps of:
- advancing said scan assembly in an axial direction along said elongated cylindrical object;
- rotating said sensor section of said scan assembly at a first scan rate as said scan assembly advances in said axial direction so as to create a helical scan pattern; and
- modulating the scan rate of said sensor section as said scan assembly advances in said object whereby a portion of said object scanned at said first scan rate is scanned at a second scan rate.

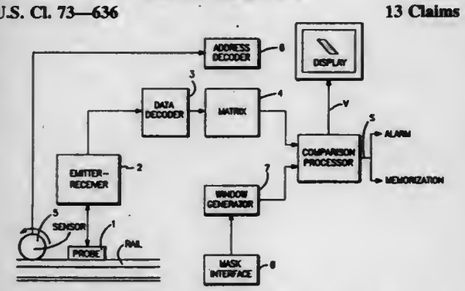


5,574,224

PROCESS AND DEVICE FOR THE CONTINUOUS NONDESTRUCTIVE CONTROL OF RAILS ON A RAILWAY LINE BY ULTRASONICS

Jean-Pierre Jaeggi, Geneva, Switzerland, assignor to Speno International S.A., Geneva, Switzerland

Continuation of Ser. No. 162,705, Dec. 7, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 459,627
Claims priority, application Switzerland, Dec. 23, 1992, 3928/92
Int. Cl.[6] G01N *29/04*
U.S. Cl. 73—636 **13 Claims**



1. A continuous nondestructive control process for rails on a railway line comprising the steps of:
- moving a probe along and in acoustic contact with a rail of said railway line;
- successively emitting beams of ultrasounds into a rail head at different points along the rail spaced by a measured distance;
- receiving ultrasound echoes of said successive beams of ultrasounds reflected from obstacles situated inside said rail;
- measuring, for each of said ultrasound beams emitted into said rail head, and acoustic distance between each of said different points along the rail and points at which said obstacles inside said rail generate a reflection of said emitted ultrasound beams;
- establishing a bidirectional map of said received ultrasound echoes by correlating a distance between each of said different points with said acoustic distance for each of said received ultrasound echoes;
- performing a comparison and a superposition of said bidirectional map with at least one selected mask having a window, of which a shape, orientation, and dimensions are determined by characteristic features of said rail and by a type of obstacle to be located, thereby allowing an identification of the type and shape of obstacles situated inside said rail.

5,574,225

APPARATUS AND A METHOD FOR DETECTING THE POSITION OF A LASER BEAM

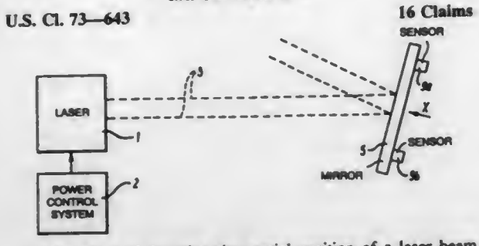
Peter J. Modern, Preston; William O'Neill, Liverpool; Martin R. Sparkes, Macclesfield, and William M. Steen, Cadley, all of United Kingdom, assignors to British Nuclear Fuels plc, Warrington, United Kingdom

Filed Jun. 20, 1994, Ser. No. 262,217

Claims priority, application United Kingdom, Jun. 18, 1993, 9312584

Int. Cl.[6] G01J 1/56

U.S. Cl. 73—643 16 Claims



1. A method of detecting the spatial position of a laser beam relative to a body locatable in a path of the laser beam by detecting an acoustic signal produced by the laser beam in the body, wherein the laser beam includes a power modulation signal and the body has a plurality of acoustic sensors for detecting and producing an output indicative of the acoustic signal produced in the body by the laser beam, the method including the steps of:

detecting, in the outputs of the acoustic sensors, signals corresponding to the power modulation signal of the laser beam; and

detecting any difference in phase between the detected signals, said detected phase difference indicative of the spatial position of the laser beam relative to said body.

5,574,226

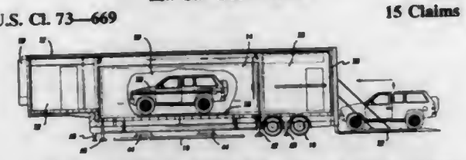
TRANSPORTABLE ENVIRONMENTAL TEST FACILITY

Kenneth R. Reuther, Plymouth; Stephen A. Nolan, Ferndale; Richard W. Squires, Commerce Township; Mark N. Maskill, Birmingham, and Mark W. Talley, Farmington, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 6, 1995, Ser. No. 417,522

Int. Cl.[6] G01N 29/00

U.S. Cl. 73—669 15 Claims



1. A transportable environmental test facility for testing a vehicle having a plurality of wheels comprising:

a trailer having an enclosure, a trailer bed and trailer wheels, said vehicle being entirely enclosed in the enclosure of the trailer to provide a controlled environment for testing;

a plurality of hydraulic actuators being secured to the trailer bed and a seismic mass, each hydraulic actuator being adapted to support one of the wheels of the vehicle to be tested;

a hydraulic fluid circuit including the hydraulic actuators; and

a controller operatively associated with the hydraulic fluid circuit and hydraulic actuators causing the wheels of the vehicle to be tested to move vertically in a controlled manner relative to the seismic mass to simulate vehicle operating conditions.

5,574,227

PAPER BOARD CREASE FORCE MEASURING DEVICE

Russell J. Allan, Alphington, Australia, assignor to Amcor Limited, South Melbourne, Australia

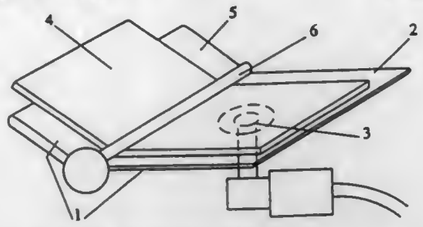
PCT No. PCT/AU94/00142, § 371 Date Aug. 22, 1995, § 102(e) Date Aug. 22, 1995, PCT Pub. No. WO94/22010, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 23, 1994, Ser. No. 507,321

Claims priority, application Australia, Mar. 23, 1993, PL7950

Int. Cl.[6] G01N 3/20

U.S. Cl. 73—849 6 Claims



1. An apparatus for determining the crease characteristics of a corrugated paper board sample, said apparatus comprising:

a sample location area;

a load cell for measuring an applied force, said load cell being located within said sample location area such that one surface of a sample positioned on the sample location area overlies the load cell; and

a creasing edge positioned to transversely overlie the sample location area at a location laterally spaced from the load cell, wherein the creasing edge is adapted to transversely overlie the opposite surface of a sample positioned on the sample location area, and wherein a portion of the sample on the side of the creasing edge remote from the load cell can be rotated about the creasing edge towards the load cell, such that the force exerted on the load cell is in the same rotational direction as the force exerted on the sample.

5,574,228

SYSTEM FOR MEASURING FLUID OSCILLATOR SIGNALS

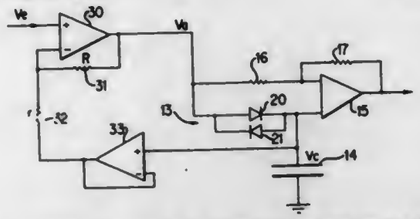
Alain G. Bazin, Villejuif, France, assignor to Schlumberger Industries, S.A., Montrouge, France

Filed Jun. 10, 1994, Ser. No. 259,749

Claims priority, application France, Jun. 11, 1993, 93 07042

Int. Cl.[6] G01F 1/32

U.S. Cl. 73—861.19 9 Claims



1. A system for measuring the frequency of oscillation of a fluid within a fluid oscillator comprising detector means for detecting fluid oscillations and providing a signal representing the oscillations, a peak detector comprising a threshold device receiving a first signal corresponding to the signal representing the oscillations, the threshold device being in a conductive state when a voltage applied thereto exceeds a threshold value, the device then providing a second signal with a drop in potential relative to the first signal, means for receiving and storing the second signal, and comparison means comparing the value of the second, stored signal with the value of the first signal and providing an output signal characteristic of the relative values of the first and second signals, wherein the peak detector further comprises an amplifier which receives and amplifies the signal provided by the detector means and which provides the first signal to the threshold device, the amplifier having a gain which is controlled by the second signal received from the threshold device.

5,574,229

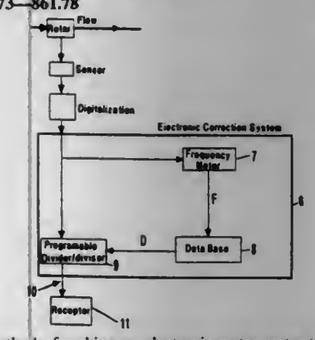
ELECTRONIC WATER METER WITH CORRECTIONS FOR FLOW RATE

Juan B. Castillo, Zaragoza, Spain, assignor to Contadores de Aqua de Zaragoza, La Cartuja Baja, Spain

Filed Mar. 21, 1994, Ser. No. 210,927

Int. Cl.[6] G01F 1/12

U.S. Cl. 73—861.78 8 Claims



1. A method of making an electronic water meter to accurately measure the volume of water flowing through the meter especially at low flow rates to detect leakage, the meter comprising a body member through which the water flows, a magnetic rotor means mounted on the body and movable by the flow of water to produce magnetic signals corresponding to the frequency of rotor means movement, electronic circuit means mounted on the body member to detect the magnetic signals and convert the magnetic signals into digital signals which are frequency pulse signals, and an electronic correction circuit means mounted on the meter body member to correct for non-proportionality between water flow and rotor means movement frequency, the method including the steps of

(a) dividing the digital signals by the number of digital signals produced by each complete movement of the rotor means;

(b) entering a set of corrections into a non-volatile integrated circuitry memory, the set of corrections being for each flow of water over a flow range of the meter;

(c) displaying on display means the volume of water as corrected by the electronic correction circuit;

(d) testing each individual water meter on a test bench with at least three water flow rates;

(e) comparing the rotor means of each individual water meter to a prototype rotor means at said three water flow rates;

(f) using the digital signals generated during said test to calculate the set of corrections for the individual meter to correct for differences between the rotor means and the prototype rotor means;

(g) entering the set of corrections into the no-volatile integrated circuit memory as the set of corrections for individual differences of each rotor means from the prototype; and

(h) displaying on the display means a leakage indication for flows of water over a selected time below a selected amount.

5,574,230

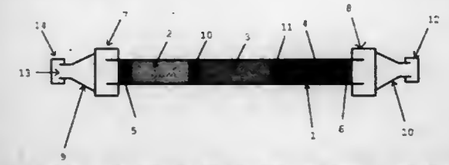
SILICA GEL, TENAX, AND CARBON MEDIA ADSORPTION TUBE FOR THE SAMPLING OF A WIDE VARIETY OF ORGANIC COMPOUNDS IN AIR AND GAS STREAMS

Steven F. Baugh, Broomfield, Colo., assignor to Havelick & Associates, Ltd., Broomfield, Colo.

Filed Oct. 20, 1994, Ser. No. 326,594

Int. Cl.[6] G01N 1/22

U.S. Cl. 73—863.23 1 Claim



1. A method for sampling gas wherein said method comprises providing a sample tube comprising silica gel, an adsorbent polymer of, or derivative of, 2,6-diphenyly-p-phenylene oxide, and carbon, said sample tube comprising a stainless steel tube having a glass wool plug at opposite ends thereof, each end connected to a fitting connected to a reducer connected to an end cap, one said end cap being an inlet end, the method further comprises removing the cap at the inlet end such that gas being sampled can pass into the stainless steel tube by passing in order through a passage in the reducer at the inlet end, a passage in the fitting at the inlet end, and the glass wool plug at the inlet end, and wherein the silica gel, adsorbent polymer of, or derivative of, 2,6-diphenyl-p-phenylene oxide, and carbon are located within the stainless steel tube and arranged therewithin such that after passing through the glass wool plug at the inlet end the gas being sampled can pass in order through the silica gel, a glass wool plug, the adsorbent polymer of, or derivative of, 2,6-diphenyl-p-phenylene oxide, a glass wool plug, the carbon, and the glass wool plug at the end of the stainless steel tube opposite the inlet end.

5,574,231

MAGNETOELASTIC CONTACTLESS TORQUE TRANSDUCER WITH A SHAFT WITH A DUPLEX ANISOTROPIC MICROSTRUCTURE

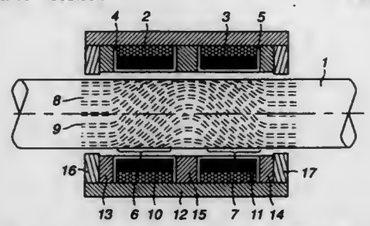
Kent Blomkvist, Hallstahammar, and Eva Wadman, Västerås, both of Sweden, assignors to Asea Brown Boveri AB, Vasteras, Sweden

Filed Sep. 12, 1995, Ser. No. 522,327

Claims priority, application Sweden, May 27, 1993, 9301800

Int. Cl.[6] G01L 1/00

U.S. Cl. 73—862.336 4 Claims



1. A magnetoelastic torque transducer for electrically measuring torsional stresses in a shaft, wherein the transducer comprises a first device for creating an axially directed magnetizing field in the shaft, cyclically varying in time, the shaft being provided with at least one zone provided with an anisotropy, the effect of which is to deflect the magnetic flux density in a direction away from the natural direction along the shaft, and a second device for measuring the reluctance differences, induced by the torsional stresses, between a zone where the magnetic field has been deflected and a region where the magnetic field has not been deflected, and between zones where the magnetic field has been deflected in

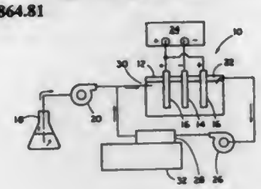
different directions, respectively, wherein the shaft is formed of a material which has a geometrically anisotropic microstructure with at least two phases, of which one phase comprises relatively soft-magnetic continuous streaks with magnetoelastic properties and at least one phase which has a considerably lower permeability, and the deflection of the magnetic flux density in the zone/zones takes place by mechanically distorting the shaft within the zone/zones.

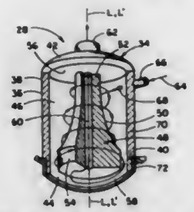
5,574,232

LIQUID SAMPLE FLOW-THROUGH ANALYSIS CELL

Robert A. Davidson, Heber, and Edward B. Walker, Ogden, both of Utah, assignors to Robert Davidson, Herber City, and Edward Walker, Ogden, both of Utah

Filed Jun. 1, 1995, Ser. No. 457,719
Int. Cl.[6] G01N *1/00*
U.S. Cl. 73—864.81 **5 Claims**





1. A flow-through cell which operates in conjunction with a reflectance or fluorescence spectroscopy apparatus for analysis on a real-time basis of a sample from a low-volume, low-flow rate liquid stream, comprising:

(a) a cylindrical housing including an upper end wall having an outlet opening, a lower end wall made of a clear transparent material suitable for viewing a sample of a liquid stream passing over said lower end wall by a spectroscopy apparatus, and a curved sidewall defining a bollow interior and having an inlet opening displaced above said lower end wall; and

(b) a cylindrical flow control body including an upper end, a lower end, and a conical shaped outer surface continuously increasing in diameter from said upper end to said lower end and having a longitudinally extending flow channel defined therethrough from said lower end to said upper end;

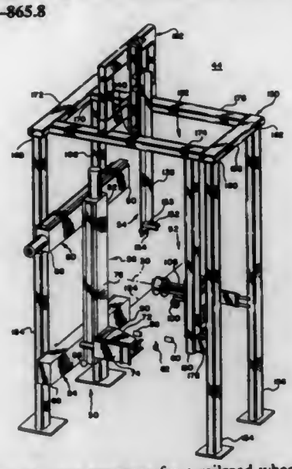
(c) said control body being positioned within said housing such that said upper end of said control body abuts said upper end wall of said housing to align said flow channel in communication with said outlet opening and such that said lower end of said control body is spaced a short axial distance above said lower transparent end wall of said housing to define a sample stream viewing area between said lower end of said control body and said lower end wall of said housing, said outer surface of said control body being displaced from an interior surface of said sidewall of said housing by a lateral distance continuously decreasing from said upper end to said lower end of said control body so as to continuously decrease available flow volume between said control body and said housing sidewall and thereby increase the flow velocity of a liquid stream that enters said inlet opening and flows radially about and centrifugally downwardly over said outer surface of said control body to said lower end thereof and then radially inwardly across said sample stream viewing area where real time analysis of a sample of said stream is taken by the spectroscopy apparatus before said stream exits up through said flow channel in said control body and out through said outlet opening of said upper end wall of said housing.

5,574,233

NON-CONTACT RAILWAY WHEEL TEST APPARATUS AND METHOD

John D. Oliver, Flossmoor, Ill., and Roger M. Whitson, Wilsonville, Ala., assignors to Amsted Industries Incorporated

Filed Oct. 17, 1994, Ser. No. 324,237
Int. Cl.[6] G01B *121/14;21/00;21/12*; G01M *17/10*
U.S. Cl. 73—865.8 **3 Claims**



1. A non-contact test apparatus for a railroad wheel, said wheel having a front face, a rear face, a tread with a tread face and an outer diameter, an inner bore with an inner bore diameter, a perimeter with a flange at said perimeter, a rear flange face, a front flange face in proximity to said tread face, a generally centrally located hub, a rear hub face, a front hub face, said inner bore being generally centrally located and extending through said hub and having a wheel axis, said tread having a tread front face at the perimeter of said wheel front face and a circumference with a tape line thereon, said test apparatus comprising:

a holding fixture for said wheel, which fixture is operable to retain said wheel in a test orientation and to rotate said wheel for analysis of test parameters;

a plurality of non-contact laser sensors and magnetic induction sensors, each of said sensors operable to sense at least one of a point and a real location on a wheel surface and provide an output signal of said at least one point and a real location as a sensed parameter;

a first and three-axis sampling assembly for mapping a reference plane and fixing a coordinate relationship for said railroad wheel, said first assembly having a first induction sensor positionable in proximity to said tread front face, a second induction sensor in proximity to said flange rear face and a first laser sensor in proximity to said tread for sensing a plurality of data points about the perimeter of the wheel, across the front and rear faces of said wheel and between the front face and rear face of said wheel;

a second and two-axis sampling assembly having a third induction sensor, a cluster of laser sensors with a second laser sensor, a third laser sensor, a fourth laser sensor and a fifth laser sensor, said laser sensors positionable in said wheel bore, said cluster of laser sensors having at least one sensor for noting the inner bore diameter, and said third induction sensor sensing dimensional parameters of said wheel at a plurality of points in proximity to an outer surface of said wheel at said bore as said wheel is rotated in said fixture;

a third and fixed point sampling assembly having a fourth induction sensor in proximity to said tread and a fifth induction sensor in proximity to said tread front face;

means for connecting;

means for receiving said output signals, which receiving means has a plurality of reference parameters for comparison to said output signals, the connecting means coupling said sensors and said receiving means for communication of said output signals to said receiving means for comparison to said reference parameters to provide an analytical output of said output signals and to describe dimensional characteristics of said wheel;

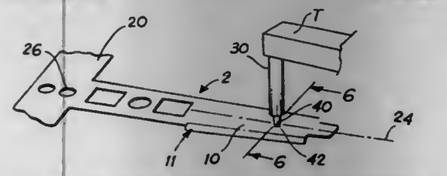
a three-axis positioning apparatus, said first sampling assembly mounted and movable on said positioning apparatus for locating said first induction sensor in proximity to said wheel and tread front faces, said positioning apparatus operable to trace said tread front face and said hub front face and communicate said sensed output signals to said receiving means to define a virtual reference plane of said wheel front face.

5,574,234

FLOATING-BALL DEVICE FOR PRECISE AXIAL ALIGNMENT BETWEEN OPPOSING STRUCTURES

Dale F. Schudel, Ayutthaya THX, assignor to K. R. Precision Co., Ltd., Ayutthaya THX

Filed May 1, 1995, Ser. No. 431,971
Int. Cl.[6] G01N *19/00*
U.S. Cl. 73—865.9 **20 Claims**



1. A coupling device for ensuring a precise alignment between a first structure and a second structure along a predetermined alignment axis, wherein the first structure is adapted to exert a force against the second structure, said coupling device comprising:

(a) a housing attached to said first structure and having an interior surface defined by a flat top plate and a tapered wall with an upside-down truncated-cone shape converging to a bottom circular rim of a predetermined diameter, said housing having a main axis parallel to said predetermined alignment axis, and said top plate and bottom circular rim being disposed in parallel to one another at a predetermined distance and perpendicularly to the main axis of the housing;

(b) a spherical ball enclosed in said housing between said top plate and bottom circular rim, said spherical ball having a diameter larger than said predetermined diameter of the bottom circular rim and larger than said predetermined distance; and

(c) a circular opening formed in said second structure, said circular opening being perpendicular to said predetermined alignment axis, having a diameter smaller than said predetermined diameter of the bottom circular rim, and having a center disposed on said predetermined alignment axis;

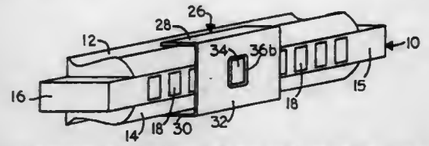
wherein said predetermined distance between the top plate and the bottom circular rim is sufficiently large to allow a vertical movement of the spherical ball, whereby the spherical ball is also free to move laterally within a predetermined radius.

5,574,235

HARMONICA HOLE SHIELD

Joseph A. Scotese, Lincoln Court Apts., 21 New St. Apt. 2F, Binghamton, N.Y. 13903

Continuation-in-part of Ser. No. 231,746, Apr. 25, 1994, abandoned. This application Jun. 19, 1995, Ser. No. 491,811
Int. Cl.[6] G10D *7/12*
U.S. Cl. 84—377 **8 Claims**



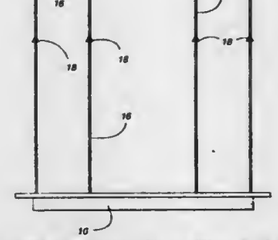
1. A template for shielding a harmonica during the playing thereof, said harmonica having a front surface with a plurality of holes therein, said template comprising a U-shaped frame, said frame having a face of a predetermined length and two sides attached to opposite edges of said face, said sides being substantially perpendicular to said face, said face having a planar front surface and a planar rear surface, said face having an aperture disposed therein, said aperture having front edges on said front surface of said face, said front edges being beveled, so that when said template is placed in operational relationship with said harmonica, said rear surface of said face is proximate said front surface of said harmonica, whereby, said aperture can be aligned with any desired one of said harmonica holes for facilitating the sounding of any one desired harmonica note.

5,574,236

DRUM MUFFLING AND MICROPHONE SUSPENSION ASSEMBLY

Steven R. Webber, 9708 Overbrook Rd., Leawood, Kans. 66206

Filed May 9, 1994, Ser. No. 240,172
Int. Cl.[6] G10D *13/02*
U.S. Cl. 84—411 M **4 Claims**



1. A drum muffling assembly for muffling the harmonics and overtones in a drum having a shell, a first skin on one end of the drum and a second skin on the opposite end of the drum, said assembly comprising:

a first muffler for muffling the drum when pressed against the first skin of the drum;

a second muffler for muffling the drum when pressed against the second skin of the drum;

a first tray for supporting the first muffler;

a second tray for supporting the second muffler;

spokes connected between the first tray and the second tray for moving the trays with respect to one another;

said spokes being oppositely screw threaded into each tray and rotatable in a first direction to push the first and second mufflers further apart, moving the first muffler against the first

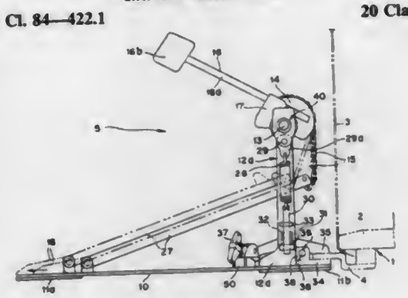
skin and the second muffler against the second skin to increase tension in the skins of the drum, and rotatable in a second direction to move the first and second mufflers closer together to decrease tension in the skins of the drum.

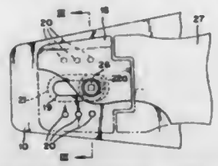
5,574,237

BASS DRUM PEDAL ASSEMBLY WITH MOVEABLE HEEL PLATE

Mitsuo Yanagisawa, Chiba, Japan, assignor to Pearl Musical Instrument Co., Chiba, Japan

Filed Sep. 27, 1995, Ser. No. 534,579
Int. Cl.[6] G10D *13/02*
U.S. Cl. 84—422.1 **20 Claims**





1. A foot operated bass drum assembly, comprising:
a means for striking a membrane of a drum to produce sound;
a base plate connected to said striking means and for supporting said assembly on an underlying surface, said base plate having a front and rear end;
a heel plate supported by said rear end of said base plate,
wherein;
said heel plate is horizontally adjustable in relation to said rear end of said base plate.

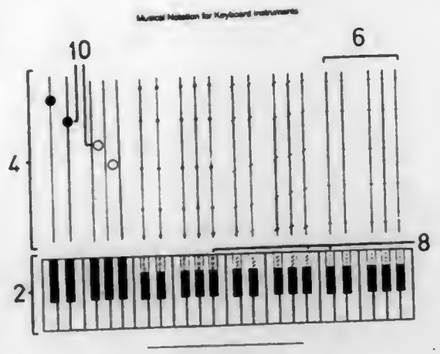
5,574,238

MUSICAL NOTATION FOR KEYBOARD INSTRUMENTS

Paul Mencher, P.O. Box 8727, La Jolla, Calif. 92038

Filed Mar. 24, 1995, Ser. No. 409,971
Int. Cl.[6] G09B *15/02*
U.S. Cl. 84—483.2 **1 Claim**

1. A color sticker or marking device for each black half tone key of a conventional keyboard instrument, said color sticker being of a different color for each octave, said black half tone keys corresponding to a notation system consisting of a plurality of parallel lines spaced essentially in proportion to, and representing, said black half tone keys, said parallel lines being colored to match the color of said colored stickers of the corresponding black half tone keys, the spaces between said parallel lines representing the white full tone keys.

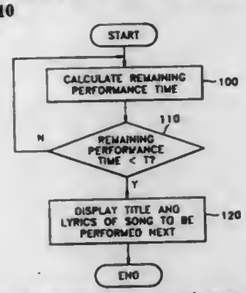


5,574,239

VIDEO-SONG ACCOMPANIMENT APPARATUS AND METHOD FOR DISPLAYING RESERVED SONG

Jae-yong Kang, and Hong-soon Park, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Jun. 1, 1995, Ser. No. 456,721
Claims priority, application Rep. of Korea, Jun. 22, 1994, 94-14324
Int. Cl.[6] G09B *5/00;* **G10H** *1/36;* **H04N** *5/76*
U.S. Cl. 84—610 **5 Claims**



1. A method of displaying a reserved song in a video-song accompaniment apparatus having a reservation function, said method comprising the steps of:
calculating remaining time by comparing total performance time with an elapsed time of a currently performed song;
obtaining a title and lyrics information for a first measure of the reserved song responsive to a reserved song number, when said remaining time is less than a predetermined value; and
displaying the title and the lyrics information for the first measure of the reserved song superimposed on a background image of a respective currently performed song.

5,574,240

PROPELLANTS USEFUL IN ELECTROTHERMAL-CHEMICAL GUNS

Richard V. Cartwright, Wantage, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 986,228, Dec. 7, 1992, abandoned.
This application Jan. 29, 1996, Ser. No. 593,537
Int. Cl.[6] F41F *1/00;* **C06B** *31/28*
U.S. Cl. 89—8 **35 Claims**

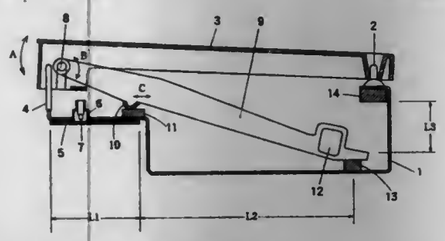
1. An electrothermal-chemical gun chemical propellant comprising a self-contained stable dispersion of at least one energetic solid in at least one energetic liquid phase, said stable dispersion being established prior to deployment of said propellant.

5,574,241

KEYBOARD APPARATUS WITH COMMON STOPPER FOR KEY AND HAMMER

Shinji Kumano, and Takamichi Masubuchi, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Dec. 19, 1994, Ser. No. 359,031
Claims priority, application Japan, Dec. 24, 1993, 5-325679
Int. Cl.[6] G10C *3/12*
U.S. Cl. 84—439 **18 Claims**



12. A keyboard apparatus comprising:
a plurality of support members;
a plurality of keys movably supported by the corresponding support members such that each key can be operated by a finger action to undergo a primary stroke movement;
a plurality of mass members arranged such that each mass member is linked to a corresponding key for undergoing a secondary stroke movement in response to the primary stroke movement of the corresponding key so as to impart a dynamic reaction to the finger action;
stopper means for directly fixing a limit of the secondary stroke movement of each mass member by abutment with the mass member, and for indirectly fixing a limit of the primary stroke movement of the corresponding key through a mechanical link between the key and the mass member; and
guide means comprised of a plurality of guiding members disposed a predetermined distance from the support members and corresponding to respective keys, each guiding member being substantially in point contact with the corresponding key so as to guide the primary stroke movement thereof.

5,574,242

SONG CODING FOR OPTIMAL PERFORMANCE

Phiet T. Bui, 16 Cordoba, Irvine, Calif. 92614

Filed Sep. 19, 1994, Ser. No. 308,589
Int. Cl.[6] G09B *15/00*
U.S. Cl. 84—483.1 **1 Claim**

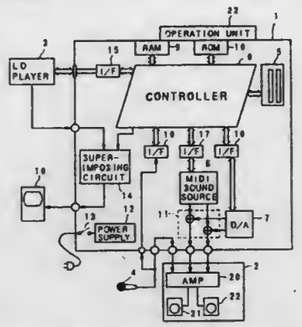
1. A method for coding or indexing a song, or other recorded musical material, according to its highest and/or lowest sung note, to facilitate the selection by individual performer of the tonality, or key, best suited for his or her vocal attributes, said method of coding comprising:
identifying for each key among twelve major, or minor, keys possible, the highest note to be sung for any song or one of its parts, using the numbers 1 through 12 instead of C, C#or Db, D, D#or Eb, E, F, F#or Gb, G, G#or Ab, A, A#or Bb, and B, respectively, to minimize confusion,
listing each of the twelve keys and the associated highest note together on said song or one of its parts.

5,574,243

MELODY CONTROLLING APPARATUS FOR MUSIC ACCOMPANIMENT PLAYING SYSTEM THE MUSIC ACCOMPANIMENT PLAYING SYSTEM AND MELODY CONTROLLING METHOD FOR CONTROLLING AND CHANGING THE TONALITY OF THE MELODY USING THE MIDI STANDARD

Toshiki Nakai; Mitsuyoshi Amano; Kazuhiro Miyamoto; Yoshiyuki Akiba, and Masuhiro Sato, all of Tokyo-to, Japan, assignors to Pioneer Electronic Corporation, Tokyo-to, Japan

Filed Sep. 19, 1994, Ser. No. 305,931
Claims priority, application Japan, Sep. 21, 1993, 5-234643
Int. Cl.[6] G09B *5/00;* **G10H** *3/03;3/06;* **H04N** *5/76*
U.S. Cl. 84—609 **14 Claims**



12. A music accompaniment playing method comprising the steps of:
reproducing, by a first reproducing means, first digital sound source controlling information, melody controlling information related to the first digital sound source controlling information, and lyrics information corresponding to the first digital sound source controlling information, which are based on the MIDI (Musical Instrument Digital Interface) standard;
storing melody changing information in a memory, said melody changing information comprising a tonality changing map;
reading the tonality changing map from said memory according to the melody controlling information reproduced by said first reproducing means;
changing a tonality expressed by the first digital sound source controlling information on the basis of the tonality changing map to generate second digital sound source controlling information;
generating music information signal from the second digital sound source controlling information by a digital sound source comprising a MIDI sound source module;
reproducing video information by a second reproducing means; and
superimposing the lyrics information reproduced by said first reproducing means on the video information reproduced by said second reproducing means in synchronization with the music information signal generated by the digital sound source.

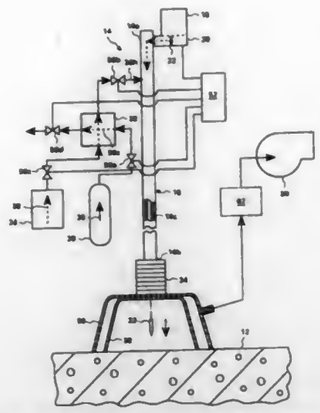
5,574,244

HYPERVELOCITY CUTTING MACHINE AND METHOD

James R. Powell, Shoreham, and Morris Reich, Queens, both of N.Y., assignors to Associated Universities, Inc., Washington, D.C.

Filed Nov. 16, 1994, Ser. No. 340,537
Int. Cl.[6] F41A *1/04*
U.S. Cl. 89—7 **31 Claims**

1. A machine **14** for cutting a workpiece **12** comprising:
an elongate gun barrel **16** having a loading end **16***a* and an opposite firing end **16***b*;



means **18**, **20** for repetitively and sequentially supplying projectiles **22** into said barrel loading end **16***a*;

a tank **28** for storing a pressurized propellant **30**;

a thermal storage tank **32**,**32A** joined in flow communication with said propellant tank **28** for repetitively receiving therefrom a propellant charge **30***c* and heating said propellant charge **30***c*, said thermal tank **32** also being joined in flow communication with said barrel loading end **16***a* for delivering said heated propellant charge **30***h* thereto; and

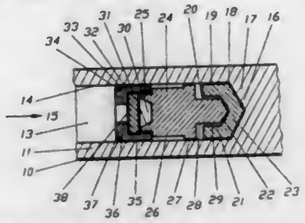
means **50**, **52** for controlling repetitive delivery of said projectiles **22** to and loading into said barrel **16**, said propellant charge **30***c* from said propellant tank **28** to said thermal tank **32**, and said heated propellant charge **30***h* from said thermal tank **32** to said barrel **16** for repetitively firing said projectiles **22** from said barrel firing end **16***b* toward said workpiece **12** for cutting thereof.

5,574,245

FRAGMENT-SEALING BULLET TRAP

Steven M. Buc, 53 Lake Park Ct., Germantown, Md. 20874, and Stephen Adelman, 10011 Maxwell Ct., Manassas, Va. 22110

Filed Feb. 13, 1996, Ser. No. 600,520
Int. Cl.[6] F42B *30/06*
U.S. Cl. 102—485 **20 Claims**



1. A fragment-sealing bullet trap for use in rifle muzzle launched projectiles, comprising:

a launch tube, a metallic cap, a gasket made of an elastomeric material, and a metallic plug;

said launch tube has an interior cavity opening rearward having a cylindrical longitudinal cross section having an internal diameter sized to fit over the muzzle end of a rifle;

said cap is affixed to an aft cylindrical exterior surface of said plug defining a bullet trap assembly; said bullet trap assembly is inserted into the rearward opening interior cavity of the launch tube;

said cap has an interior cavity opening forward having a substantially cylindrical longitudinal cross section having an internal diameter;

said gasket has a substantially cylindrical longitudinal cross section having an external diameter which is greater than said internal diameter of said cap;

said gasket is disposed within the interior cavity of the cap with a press fit, providing fragment-sealing means against the escape of bullet and plug fragments after perforation; and

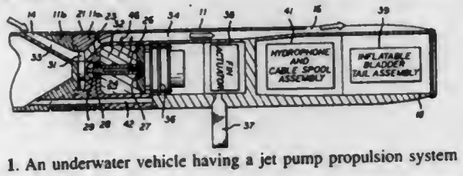
said plug has at its base an interior cavity opening rearward having a substantially frusto-conically tapered longitudinal cross section over substantially its entire length providing expansion volume for the gasket during bullet perforation said gasket is in contact with a base of said interior cavity of said cap and said base of said plug.

5,574,246

UNDERWATER VEHICLE WITH IMPROVED JET PUMP PROPULSION CONFIGURATION

Scott C. Meyers, Fountain Hills; David M. Mathis, Phoenix, and Eugene A. Zanelli, Scottsdale, all of Ariz., assignors to AlliedSignal Inc., Morris Township, N.J.

Filed Apr. 21, 1995, Ser. No. 426,331
Int. Cl.[6] F42B *19/12*; **B63G** *8/08*; **B63H** *11/00*
U.S. Cl. 114—20.2 **5 Claims**



1. An underwater vehicle having a jet pump propulsion system comprising:

an elongated rigid cylindrical housing having a forward end and an aft end referring to direction of vehicle travel through surrounding waters;

a pump located inside said housing near said aft end and having a rotatable rotor and fixed stator;

at least one water inlet passage formed in said rigid housing forward of said pump for communicating surrounding water to said pump rotor;

a generally cylindrical inner housing containing an electric motor located immediately adjacent and apt of said pump, said motor having a shaft of which said pump rotor is fixed; and

at least one water exit passage communicating with said pump stator and running longitudinally along said inner housing past the electric motor and exiting through said rigid cylindrical housing adjacent the aft end thereof for propelling the vehicle.

5,574,247

CVD REACTOR APPARATUS

Eisuke Nishitani, Yokohama; Susmu Tsuzuku; Natsuyo Chiba, both of Tokyo; Shigeru Kobayashi, Hiratsuki; Naoyuki Tamura, Kudamatsu, and Norihiro Uchida, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 21, 1994, Ser. No. 263,323
Claims priority, application Japan, Jun. 21, 1993, 5-149388; May 20, 1994, 6-106460
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—708 **21 Claims**

1. A CVD reactor apparatus for forming a CVD reaction film on the surface of a substrate in a CVD reactor by using a reactive gas, comprising:

a ring-shaped or frame-shaped substrate clamp for clamping a peripheral edge of a front of said substrate disposed in said reactor and dividing a space inside said reactor into a first space adjacent the front of said substrate and a second space adjacent the backside of said substrate, said substrate clamp having projections for setting up, between said substrate clamp and the peripheral edge of the front of said clamped substrate, a gap through which the first space communicates with the second space;

substrate clamp moving means for moving said substrate clamp vertically;

a plurality of lift pins fixed to said substrate clamp and operative to engage the backside of said substrate for suspending and lifting said substrate;

a ring-shaped or frame-shaped stopper disposed beneath said substrate clamp and being in contact with said substrate to surround said substrate;

a seal which seals, in an airtight manner, a contact portion between said substrate clamp and said stopper;

a plurality of spring-shaped substrate susceptor pins fixed to the inner side of said stopper and operative to push up said substrate at its backside by a force which does not damage said substrate and flex downwards by themselves when said substrate is pushed down by said substrate clamp;

a first gas supply which supplies the reactive gas to the substrate front through the first space; and

an inert gas supply which supplies inert gas to a space adjacent the substrate backside which is surrounded by an inner wall of said stopper, a lower surface of said substrate clamp and the bottom of said reactor.

5,574,248

ENERGETIC COMPOSITIONS CONTAINING NO VOLATILE SOLVENTS

Jerry S. Brown, Woodford, Va., and John A. Conkling, Chestertown, Md., assignors to The United States of America as represented by the Secrerary of the Navy, Washington, D.C.

Division of Ser. No. 195,249, Feb. 14, 1994, Pat. No. 5,531,844. This application Mar. 28, 1996, Ser. No. 626,615
Int. Cl.[6] C06B *45/10*
U.S. Cl. 149—19.3 **3 Claims**

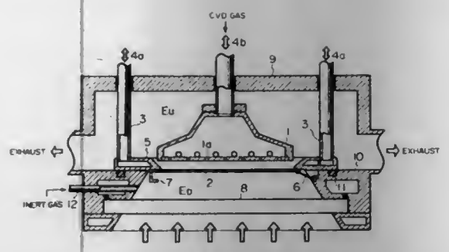
1. A method of making an organic solvent free energetic composition comprising the steps of:

(a) providing an emulsion of fluorinated terpolymer fluoroelastomer in water;

(b) providing a quantity of a metal fuel in the form of a powder consisting of 3 to 10 micron size particles;

(c) adding and blending one pair by weight of the metal fuel powder to four parts by weight of the emulsion;

(d) allowing the water to evaporate overnight at room temperature to yield a rubbery, pliable, organic solvent free energetic composition that ignites readily and with intensity.

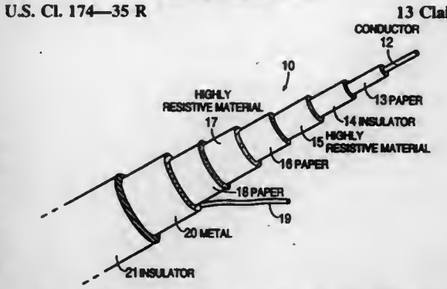


5,574,249

HIGH RESISTIVITY INNER SHIELDS FOR CABINETS HOUSING ELECTRONIC CIRCUITRY

David S. Lindsay, Sunnyvale, Calif., assignor to Lindsay Audiophile Inc., Sunnyvale, Calif.

Filed Jul. 18, 1994, Ser. No. 276,741
Int. Cl.[6] E04F *15/00*
U.S. Cl. 174—35 R **13 Claims**



1. An enclosure for an electrical circuit, said enclosure comprising:

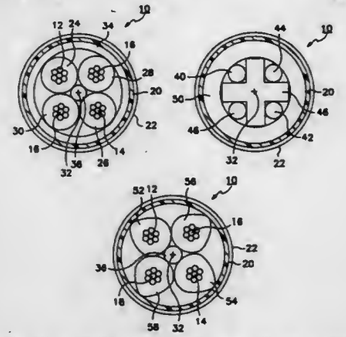
a plurality of high resistivity shields arranged in a plurality of respective layers, each of said layers substantially surrounding an electrical circuit, wherein the inner-most layer of said plurality of high resistivity shields has a resistivity exceeding approximately 100 ohms and each of the other layers of said plurality of high resistivity shields has a resistivity less than that of its respective adjacent inner layer.

5,574,250

MULTIPLE DIFFERENTIAL PAIR CABLE

William G. Hardie; Craig R. Theorin, both of Landenberg, Pa.; Edward L. Kozlowski, Jr., Elkton, Md., and Herbert G. Van Deusen, Bear, Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Feb. 3, 1995, Ser. No. 383,167
Int. Cl.[6] H01B *7/34*
U.S. Cl. 174—36 **20 Claims**



1. A high speed data transmission cable having a plurality of differential conductor pairs, a length and a central axis comprising:

each differential pair comprising two conductors generally 180° apart from each other;

a first insulation electrically insulating the conductors from each other;

an electrically conductive shield surrounding the conductors and the insulation; and

a second insulation surrounding all the differential pairs and distancing the differential pairs from the shield;

wherein the second insulation layer serves to separate the distance between any one of the conductors and the shield to be

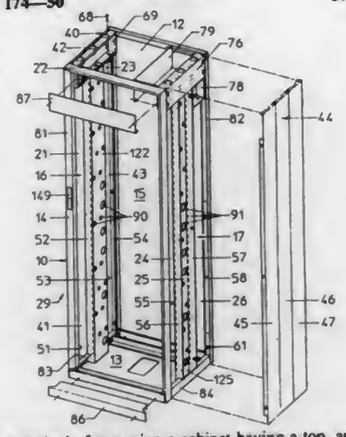
greater than the distance between that conductor and the central axis of the cable so as to lower attenuation of the cable.

5,574,251

ELECTRICAL AND ELECTRONIC CABINET SYSTEMS

Richard W. Sevier, Goleta, Calif., assignor to Hendry Mechanical Works, Goleta, Calif.

Filed Feb. 15, 1995, Ser. No. 388,974
Int. Cl.[6] H05K *5/02*
U.S. Cl. 174—50 **39 Claims**



1. In a method of preparing a cabinet having a top, an opposite bottom, a front, an opposite rear, a left-hand side and a right-hand side opposite said left-hand side, each of said sides extending between said front and said rear for containment of electrical equipment requiring different groups of electric conductors, the improvement comprising in combination:

segmenting one of said left-hand and right-hand sides between said front and said opposite rear into separate conductor channels for different groups of electric conductors;

providing said one side with a removable cover structure for said conductor channels permitting access to said conductor channels from space adjacent said one side between said front and said opposite rear; and

structuring said removable cover structure as an outside wall of said cabinet on said one side.

5,574,252

METHOD AND APPARATUS FOR ELECTRICALLY AND MECHANICALLY INTERCONNECTING ELECTRICAL COMPONENTS

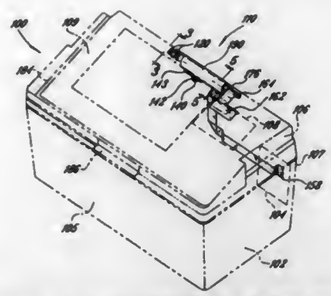
Douglas J. Hill, Renton, Wash., assignor to Physio-Control Corporation, Redmond, Wash.

Filed Mar. 8, 1994, Ser. No. 207,854
Int. Cl.[6] H05K *5/02*
U.S. Cl. 174—51 **20 Claims**

6. A mechanical and electrical assembly for interconnecting first and second housings enclosing respective first and second electrical components, the first and second housings respectively formed with first and second apertures extending from the exterior to the interior of the housings, said assembly comprising:

a pivot assembly pivotally coupling the first and second housings together for pivoting movement of the first and second housings relative to each other about an axis of rotation;

an electrical conductor of a flexible web type coupled through the first aperture to the first electrical component at a first end and coupled through the second aperture to the second electrical component at a second end, a first portion of the



electrical conductor being wrapped in at least one complete loop having an axis that is substantially coincident with the axis of rotation of the pivot assembly so that the electrical conductor winds and unwinds as the first and second housings pivot with respect to each other, the first end being axially offset from the second end; and

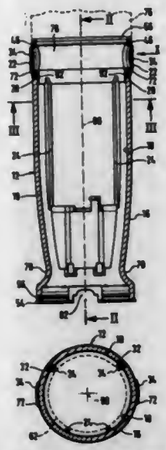
first and second environmental seal members positioned about the first and second ends of the electrical conductor, respectively, and positioned in the respective first and second apertures in the first and second housing, the environmental seal members providing a barrier between the interior and the exterior of the housings.

5,574,253

HOUSING FOR AN ELECTRICALLY POWERED APPLIANCE FOR PERSONAL USE

Jürgen Golob, Friedrichsdorf, and Antonio Rebordosa, Manresa, both of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Germany

Filed Feb. 17, 1995, Ser. No. 390,036
Claims priority, application Germany, Feb. 23, 1994, 44 05 765.2
Int. Cl.[6] H05K *5/00*; A45C *11/26*
U.S. Cl. 174—52.1 **14 Claims**



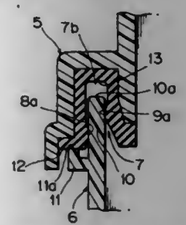
1. A housing for an electrically powered appliance for personal use for accommodating drive and switching means, said housing comprising a wall fabricated from a first plastic material having at least one outer surface and one inner surface, and also comprising at least one second plastic material of a hardness lower than the hardness of the first plastic material provided on at least one area of the wall, wherein the second plastic material is molded onto the inner surface of the wall, such that a first area of said at least one area projects from the inner surface of the wall at least in individual sections forming bearing areas structured to serve as supports for components mountable in the interior of the housing, wherein at least one connecting area formed by the second plastic material extends from at least one of the bearing areas, said connecting area terminating in at least one aperture in the wall, and wherein the aperture in the wall is closed tight by the second plastic material in the form of a diaphragm providing a second area of said at least one area.

5,574,254

WATER-PROOF SEALING STRUCTURE FOR AN ELECTRIC JUNCTION BOX

Fumimasa Mori; Masato Odake, both of Tokyo; Kazuhiro Shimizu, and Fumio Kumagai, both of Kosai, all of Japan, assignors to Yazaki Corporation, and Arai Seisakusho Co., Ltd., both of Tokyo, Japan

Filed May 17, 1995, Ser. No. 443,192
Claims priority, application Japan, May 25, 1994, 6-110795
Int. Cl.[6] H02G *3/14*
U.S. Cl. 174—52.3 **4 Claims**



1. A water-proof sealing structure for an electric junction box comprising a main box having a first fitting portion and a water-proof covering having a second fitting portion to be mated with said first fitting portion; wherein

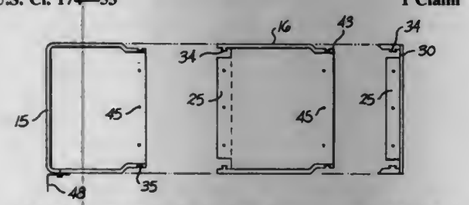
one of said first fitting portion and said second fitting portion is integrally formed with an elastomer-made fitting groove having a narrowed portion therein, while another of said first fitting portion and said second fitting portion is formed with a locking projection wall provided with a stopper; said locking projection wall being suppressed by said narrowed portion when inserted into said fitting groove, forming simultaneously an air-keeping section between a top end of said locking projection wall and an innermost portion of said fitting groove.

5,574,255

LATERALLY EXPANDABLE MODULAR ELECTRICAL BOX

Micheal L. Simmons, 8561 Blackfoot Ct., Lorton, Va. 22079

Filed Jun. 14, 1993, Ser. No. 75,724
Int. Cl.[6] H02G *3/08*
U.S. Cl. 174—53 **1 Claim**



1. A wall mountable electrical wiring system with closed back-open front modular electrical boxes enclosed by sidewalls and adapted for receiving receptacles, switches and accessories, said boxes being modularly extendable laterally for added service, comprising in combination:

an anchor box module provided with anchoring means for affixing the anchor box module to a stud adjacent one sidewall of the box module,

a removable sidewall on the anchor box module remote from the sidewall adjacent the stud,

interconnection means for inserting a modular box extension between the anchor box module and the removable sidewall including support means for affixing the modular box extension firmly to the anchor box module for support, and

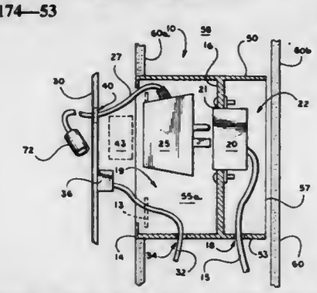
attachment means accessible from the open front of the box module for securing the removable sidewall, removing the removable sidewall, and for replacing the removable sidewall with a modular extension box having a closed back and upper and lower sidewalls while the anchor box module is affixed to said stud wherein the support means further comprises interlocking framework between the anchor box module and the removable sidewall comprising channels extending from the front towards the back of the box module to permit removal and replacement of modules and sidewalls by movement perpendicular to the closed back.

5,574,256

RECESSED TRANSFORMER ELECTRICAL OUTLET BOX WITH INTEGRAL TELEPHONE LINE CONNECTION

Thomas E. Cottone, P.O. Box 6010, Marietta, Ga. 30065

Filed Dec. 8, 1994, Ser. No. 351,670
Int. Cl.[6] H02G *3/10*
U.S. Cl. 174—53 **16 Claims**



14. A recessed electrical outlet box mountable essentially flush with a surface of a building wall, comprising:

a housing;

means for securing said housing to said building wall;

outer wall means on said housing defining an exterior surface of said housing;

said outer wall means defining a recessed first well with an opening that opens on said surface of said building wall for receiving and enclosing a modular AC power transformer having electrical prongs for plugging into an electrical outlet socket, and a second well;

a vertically extending interior dividing wall dividing said housing into said first well and said second well;

an opening for mounting said electrical outlet socket on said interior dividing wall;

a first aperture in said outer wall means opening into said first well for receiving telephone wiring from behind said surface of said building wall to within said first well; and

a second aperture in said outer wall means opening into said second well, for receiving an electrical AC wiring from behind said surface of said building wall to within said second well, said electrical AC wiring being connected to said electrical outlet socket within said second well.

5,574,257

TELECOMMUNICATIONS ARTICLES CONTAINING GELLED OIL COMPOSITIONS

Melvin Brauer, East Brunswick, and Thomas W. Sheedy, Chatham, both of N.J., assignors to CasChem, Inc., Bayonne, N.J.

Continuation-in-part of Ser. No. 961,233, Oct. 15, 1992, Pat. No. 5,358,664. This application Oct. 24, 1994, Ser. No. 327,726

Int. Cl.[6] B01J *13/00*; H01B *17/34*; H02G *15/22*

U.S. Cl. 174—76 21 Claims

1. An article for transmitting telecommunications signals comprising at least one conductive metal wire for carrying an electrical signal; a conductive metal element in electrical communication with the wire to receive the electrical signal; an external sheath and a gelled oil composition for protecting the metal wire and element from moisture, the gelled oil composition comprising about 40 to 90% of an oil component, about 5 to 50% of a bleed inhibitor comprising a rubber block copolymer or a synthetic oil which is different from the oil component, and about 4 to 15% of an aluminum soap complex and placed between the external sheath and the wire and element.

2. An article of manufacture comprising a telecommunication cable having an external sheath surrounding a core, with a plurality of information carrying elements comprising conductive metal wire located in the core, and a gelled oil composition which is disposed in said core between the elements and the sheath; said gelled oil composition comprising about 40 to 90% of an oil component, about 5 to 50% of a bleed inhibitor comprising a rubber block copolymer or a synthetic oil which is different from the oil component, and about 4 to 15% of an aluminum soap complex and placed between the sheath and the elements.

5,574,258

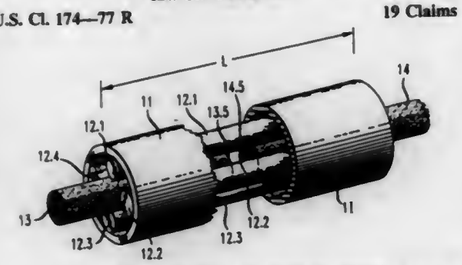
HEAT-SHRINK CRIMPING DEVICE AND METHOD

Greg E. Blonder, Summit, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 23, 1994, Ser. No. 363,152

Int. Cl.[6] H01R *4/02*

U.S. Cl. 174—77 R 19 Claims



12. A device for establishing a low electrical resistance between at least two wires comprising a heat-shrinkable hollow tube having at least one open end, an axis and a length L on whose inner surface is attached at least one conductor running substantially parallel to the axis along substantially the entire length L of the tube, the device being capable of making a low resistance connection with said two wires contained therein through reduction in the diameter of the heat-shrinkable hollow tube and forcing of the at least one conductor into electrical contact with the two wires.

5,574,259

CABLE SLEEVE COMPOSED OF A LONGITUDINALLY DIVIDED HOUSING

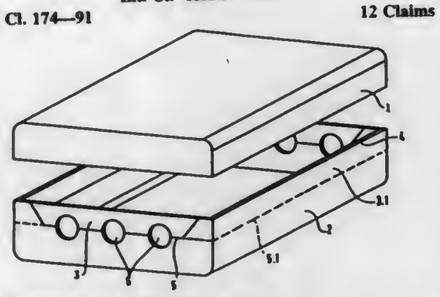
Hans-Juergen Meltsch, Schwerte; Franz Froelich, Hagen, and Rainer Zimmer, Schalksmuehle, all of Germany, assignors to RXS Schrumpftechnik-Garnituren GmbH, Hagen, Germany

Filed Dec. 21, 1994, Ser. No. 360,627

Claims priority, application Germany, Dec. 22, 1993, 43 43 941.1

Int. Cl.[6] H02G *15/113*

U.S. Cl. 174—91 12 Claims



1. A cable sleeve comprising:

a longitudinally divided housing having opposite end faces and formed by a lower part and an upper part separably mating at a separating plane of the housing, a middle part disposed at least at said end faces separably mating with said lower part at a cable introduction plane independent of said separating plane only at some locations, said middle part and said lower part each having openings therein forming, in combination, introduction openings for cables when said middle part and said lower part are mated at said cable introduction plane;

an introduction muff arranged in a region where the separating plane of the housing and the cable introduction plane coincide;

a sealing channel having a circumference in the separating plane;

a mounting plate affixed inside the housing;

centerable cable interceptors respectively mounted on the floor of said housing at each introduction opening;

receptacles for a seal respectively mounted to said housing at each introduction opening;

each of said upper and lower parts having a bead laterally attached at an exterior thereof adjacent said separating plane, said beads forming, in combination, a closure bead when said lower and upper parts are mated at said separating plane, said closure bead having an exterior tapering shape;

centering elements arranged at each introduction opening;

two U-shaped closure rails respectively slidable over said closure bead from each end face, said rails each having legs with an interior channel matched to said exterior shape of said closure bead for holding said lower and upper parts together with said middle part therebetween.

5,574,260

COMPOSITE CONDUCTOR HAVING IMPROVED HIGH FREQUENCY SIGNAL TRANSMISSION CHARACTERISTICS

James R. Broomall; Christine M. Foster, both of Newark, Del.; Craig R. Theorin, and Peter A. Widdoes, both of Landenberg, Pa., assignors to W. L. Gore & Associates, Inc., Newark, Del.

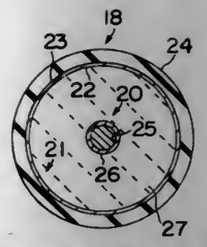
Filed Mar. 6, 1995, Ser. No. 400,054

Int. Cl.[6] H01B *9/04*

U.S. Cl. 174—102 R 15 Claims

5. A composite conductor having improved high frequency signal transmission characteristics comprising:

a material having a predetermined high thermal conductivity;



a conductive base layer disposed upon said highly thermally conductive material, the conductive base layer having a permeability μ_2 and a conductivity σ_2; and

a conductive coating layer disposed upon the conductive base layer, the conductive coating layer having a permeability μ_1 and a conductivity σ_1, such that

$$\frac{\mu_2}{\sigma_2} >> \frac{\mu_1}{\sigma_1}$$

wherein the conductive coating has a thickness ranging from about one-half to about five times a skin depth of said coating; and

wherein a current distribution of the composite conductor is redistributed from the conductive base layer to the conductive coating layer by employing a conductive base layer having a higher surface resistance than the conductive coating layer.

5,574,261

CIRCUIT FOR PRECISELY MEASURING THE LOAD OF COOKING FOOD IN MICROWAVE OVEN

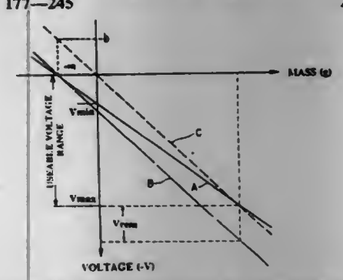
Jong T. Kim, Suwon, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 7, 1993, Ser. No. 164,253

Claims priority, application Rep. of Korea, Dec. 9, 1992, 92-23696

Int. Cl.[6] G01G *19/00*; H05B *6/50*

U.S. Cl. 177—245 2 Claims



1. A circuit for precisely measuring the weight of the cooking food in a microwave oven, said circuit comprising:

a piezo-electric sensor for generating a sinusoidal wave each time each of a plurality of rollers in said microwave oven passes a pressing plate of said sensor;

a filtering section for shaping the weight-voltage converted sinusoidal wave of said piezo-electric sensor;

an amplifying section for amplifying the weight-voltage converted sinusoidal wave output of said filtering section to a level above a maximum recognizable voltage Vmax of a microprocessor;

a rectifying section for charging or discharging the weight-voltage converted sinusoidal wave output of said amplifying section; and

a buffer section having a voltage adding and subtracting operational amplifier for supplying to said microprocessor the weight-voltage converted output having a corrected gradient as a result of adding to or subtracting from the weight-voltage converted gradient of said rectifying section, and by means of said operational amplifier, an adder voltage (−V1) having a value as much as a minimum recognizable voltage Vmin of said microprocessor.

5,574,262

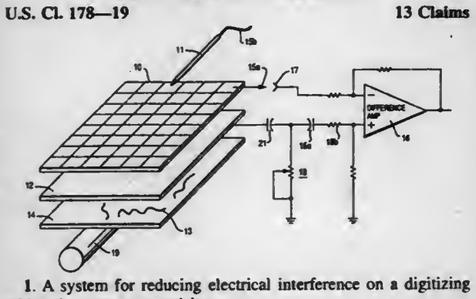
NOISE CANCELLATION FOR NON-IDEAL ELECTROSTATIC SHIELDING

William K. Petty, Colorado Springs, Colo., assignor to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios Logic, Inc., Fort Collins, Colo.

Filed Oct. 4, 1994, Ser. No. 317,952

Int. Cl.[6] G08C *21/00*; G09G *3/02*

U.S. Cl. 178—19 13 Claims



1. A system for reducing electrical interference on a digitizing tablet, the system comprising:

stylus means for producing a position signal representative of a position of the stylus means on the digitizing tablet;

image source means for producing an image to be digitized;

difference amplifier means having a first input means and a second input means for supplying an output signal proportional to a difference between signal values coupled to the first input means and the second input means;

grid means in said digitizing tablet for detecting the position signal from the stylus means and for supplying an input signal coupled to the first input means of said difference amplifier means;

conductive transparent shield means positioned between the image source means and the grid means and being transparent to the image produced by the image source means, said conductive transparent shield means for intercepting electrical interference impressed on the grid means from the image source means and for supplying a noise reference signal proportional to electrical interference intercepted; and

coupling means for coupling the noise reference signal supplied by the conductive transparent shield means to the second input means of the difference amplifier means so that the difference amplifier means subtracts the noise reference signal from the input signal.

5,574,263

PRODUCTION LOGGING MECHANISM FOR ACROSS-THE-BOREHOLE MEASUREMENT

Raymond E. Roesner, deceased, late of The Woodlands, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Continuation of Ser. No. 323,357, Oct. 14, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 583,760

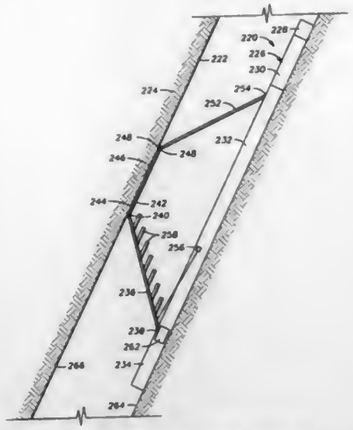
Int. Cl.[6] G01V *1/40*

U.S. Cl. 181—102 19 Claims

11. A production logging tool for use in deviated and horizontal wellbores defining a top and a bottom wall, comprising:

(a) an elongate tool body adapted for transition through a wellbore and having a designated weight;

(b) an elongate sensor probe being supported by said tool body;



(c) at least one well fluid sensor being supported by said elongate sensor probe, said sensor probe having a weight less than the designated weight;

(d) means for orienting the fluid sensor probe across sad well fluid passage for detection of all phases of production fluid present therein;

(e) wherein the influence of gravity acting on said production logging tool causes orientation of said production logging tool such that said elongate tool body is in contact with the bottom wall of said wellbore and said sensor probe is in contact with the top wall of said wellbore;

wherein said elongated sensor probe comprises

(f) a sensor pad being disposed for engagement with said top wall of said wellbore;

(g) means connecting said sensor pad in movable relation with said elongate tool body;

(h) sensor means being interconnected with said elongate tool body and with said sensor pad upon movement of said sensor pad into engagement with said top wall of said well bore, being oriented across said wellbore for sensing all phases of production fluids therein; and

(i) means selectively urging said sensor pad into engagement with said top wall of said well bore.

5,574,264

ACTIVE EXHAUST-NOISE ATTENUATION MUFFLER

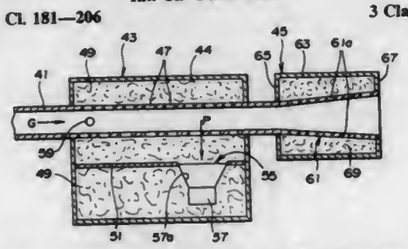
Yoshihisa Takemori, and Hiroshi Soma, both of Tokyo, Japan, assignors to Calsonic Corporation, Tokyo, Japan

Filed Aug. 9, 1994, Ser. No. 288,184

Claims priority, application Japan, Aug. 12, 1993, 5-044258 U

Int. Cl.[6] F01N *1/06*

U.S. Cl. 181—206 **3 Claims**



1. An active exhaust-noise attenuation muffler, comprising:

a tailpipe included in an exhaust system;

an exhaust pipe included in the exhaust system;

a microphone arranged in said exhaust pipe for monitoring an exhaust noise being propagated with a moving stream of an exhaust gas flowing through the exhaust pipe;

a secondary sound source including a loudspeaker arranged upstream of said tailpipe and communicating with an interior of the exhaust pipe for attenuating low- and mid-ranges of frequencies below 500 Hz in the exhaust noise by emitting a secondary sound, which is in opposite phase to the monitored exhaust noise, into the exhaust pipe;

said tailpipe being formed in a flared-out manner so that a cross-sectional area of said tailpipe gradually increases towards a downstream end of said tailpipe, for maintaining a noise-attenuation effect provided by said loudspeaker at a high level by holding a static pressure acting on a vibrating surface of said loudspeaker at a pressure level equal to an atmospheric pressure by radiation of the exhaust gas through said tailpipe; and

a high-frequency exhaust noise attenuation means arranged at said tailpipe for attenuating a high-frequency noise component above 500 Hz in the exhaust gas;

wherein said high-frequency exhaust noise attenuation means includes perforations formed in said tailpipe, an outer shell surrounding said tailpipe, a pair of end plates respectively hermetically covering both opening ends of said outer shell in an air-tight manner, and a sound absorption material filling an internal space defined between said outer shell and said tailpipe.

5,574,265

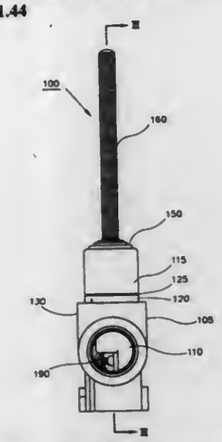
SWITCH HOUSING INCLUDING EXTENSIBLE EXTERNAL ACTUATOR AND IMPROVED TERMINAL STRUCTURE

David E. Falcon, Oak Creek, Wis., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 28, 1995, Ser. No. 395,255

Int. Cl.[6] H01H *9/02*

U.S. Cl. 200—61.44 **6 Claims**



1. A switch enclosure comprising:

an electrically insulative housing, having an interior cavity, a switch pocket formed within the interior cavity of said electrically insulative housing, said switch pocket being shaped to receive an electrical switch which has a plurality of conductive blades extending therefrom and a switch actuator, an operator opening permitting an external operator to mechanically contact said switch actuator of said electrical switch, and a conduit opening through said electrically insulative housing for allowing a plurality of external wires to be electrically connected to the switch, a plurality of terminal pockets formed within said interior cavity of said electrically insulative housing;

a plurality of terminals, each of said plurality of terminals being disposed in a preselected corresponding one of said plurality of terminal pockets of said electrically insulative housing and retained in place by a frictional fit between each of said plurality of terminals and said corresponding one of said plurality of terminal pockets formed in said electrically insulative housing, each of said plurality of terminals being shaped to receive a preselected one of said conductive blades by a frictional fit therebetween, whereby each of said plurality of terminals retains a corresponding conductive blade of said electrical switch therein by a frictional fit to retain said electrical switch in place within said switch pocket, each of said plurality of conductive blades being held in electrical communication with said corresponding one of said plurality of terminals by said frictional fit therebetween; and

a cover plate joined to said electrically insulative housing to enclose said interior cavity.

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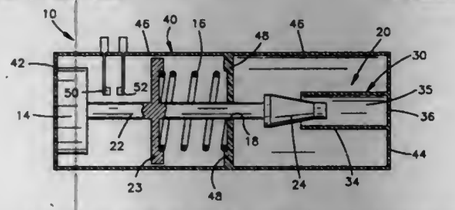
DEVICE FOR ENCHANCING CONTACT CLOSURE TIME OF A DECELERATION SENSOR SWITCH FOR USE IN A VEHICLE OCCUPANT RESTRAINT SYSTEM

Roger F. Wells, Yorba Linda, Calif., assignor to TRW Technar Inc., Irwindale, Calif.

Filed Sep. 22, 1994, Ser. No. 310,582

Int. Cl.[6] H01H *35/14*

U.S. Cl. 200—61.53 **19 Claims**



1. A device for enhancing contact closure time of a deceleration sensor switch having electrical contacts and a mass movable between an unactuated position in which the contacts are open and an actuated position in which the contacts are closed, said device comprising:

means for biasing the mass to the unactuated position in which the contacts are open;

first means connected with the mass for moving with the mass between the unactuated position and the actuated portion; and

second means cooperating with said first means to create at least a partial vacuum which resists movement of the mass from the actuated position to the unactuated position, thereby enhancing contact closure time of the contacts.

5,574,267

SWITCH WITH ENHANCED HEAT ELIMINATION

Nicholas R. Palumbo, 176 Prospect St., Providence, R.I. 02906

Filed Nov. 13, 1995, Ser. No. 559,761

Int. Cl.[6] H01H *1/06*

U.S. Cl. 200—275 **6 Claims**

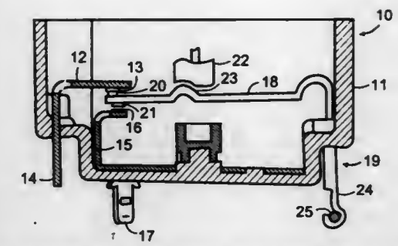
1. An electrical switch including

a housing of non-conducting material,

an electrode with a contacting region, said electrode being supported within said housing and connected to electrical circuitry,

a conductive element supported by and passing through said housing, said conductive element having a contacting region within said housing and a terminal end outside said housing,

mechanism for bringing together and separating the contacting region of said electrode and the contacting region of said conductive element to effect switching,



said terminal end being inserted in a female spade receptacle having a bridge connected on each side to a rail, each of said rails having a spacer portion extending upwards from said bridge and a clamping edge extending from said spacer portion and bending over to provide gripping surface opposed to said bridge, with a space between the gripping surface and the bridge,

said terminal end having a width greater than a space between said clamping edges and less than a space between said spacer portions,

said terminal end having two edge portions and a central portion lying between said edge portions, said edge portions and said central portion extending lengthwise along said terminal, said central portion having a width less than said space between said clamping edges and a thickness greater than the space between the gripping surface and the bridge,

said two edge portions being thinner than said central portion, said edge portions fitting under and engaging said gripping surface while said central portion presses against said bridge, said conductive element enhancing conduction of heat from said contacting regions to structures exterior to said switch housing.

5,574,268

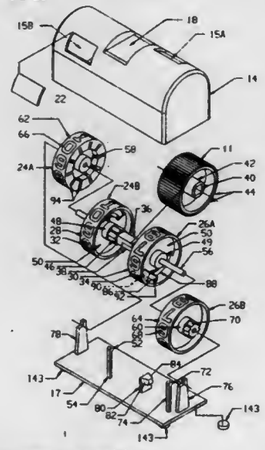
GAME DISPLAY COUNTER

Trent S. Herman, 4440 Meigs, Waterford, Mich. 48329; Randolph C. King, 220 Pine St., Imlay City, Mich. 48444, and Jon D. Stroven, 2238 Hempstead, Auburn Hills, Mich. 48326

Filed Nov. 30, 1994, Ser. No. 346,874

Int. Cl.[6] G06M *1/00*

U.S. Cl. 235—91 R **18 Claims**



1. A display counter comprising:

a housing having a flat base for supporting said housing on a table top;

a pair of display windows formed into said housing, said display windows on opposite sides of said housing;

VOL 1192 ISS 2 NO 12 1996 UMI

a first ones counter wheel rotatably mounted in said housing for rotation in a forward or reverse direction and having an axis aligned with one of said display windows so that each portion of the perimeter of said first ones counter wheel can rotate past said one of said display windows to be viewable therethrough, the perimeter of said first ones counter wheel bearing numeric indicia in a sequence from zero to nine;

a second ones counter wheel rotatably mounted in said housing for rotation in a forward or reverse direction and connected with said first ones counter wheel to rotate together therewith, said second ones counter wheel having an axis aligned with the other of said display windows so that each portion of the perimeter of said second ones counter wheel can rotate past said other window and is viewable therethrough, said perimeter of said second counter ones wheel bearing numeric indicia in a sequence from from zero to nine, but inverted from said indicia on said first ones counter wheel;

said numeric indicia on said first and second counter wheels are located so that the same indicia on said zero to nine sequence are successively displayed in both of said display windows as said first and second ones counter wheels rotate together in either said forward or reverse direction to successive rotated positions; and

means for manually advancing said ones counter wheels in either said forward or reverse direction of rotation for increasing or decreasing the count to display a selected count in both of said display windows.

5,574,269

PROCESSING SYSTEM FOR PROCESSING INFORMATION IN CARD HAVING PLURALITY OF FUNCTIONS

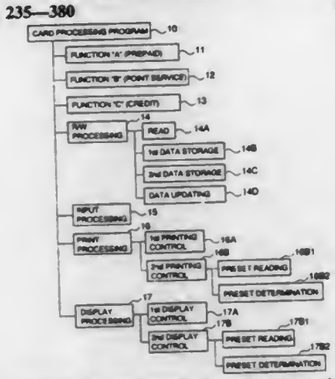
Seiji Mori, and Kyoko Terada, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 17, 1994, Ser. No. 197,819

Claims priority, application Japan, Feb. 26, 1993, 5-038585

Int. Cl.[6] G06K *5/00*

U.S. Cl. 235—380 **13 Claims**



12. A method for processing information stored in a card, comprising the steps of:

receiving a card having a plurality of functions wherein said plurality of functions comprises at least first and second functions;

reading stored information from the received card corresponding to the first and second functions;

determining, based on the information read from the received and read card, whether the received and read card has a plurality of functions, including the first and second functions, which can be successively executed; and

performing, in succession:

a first process corresponding to the first function in accordance with the stored information read from the received and read card, and

a second process corresponding to the second function of the received and read card if it is determined in the determining step that the received and read card has a plurality of functions comprising the first and second functions which can be successively executed.

5,574,270

CHIP CARD SYSTEM PROVIDED WITH AN OFFSET ELECTRONIC CIRCUIT

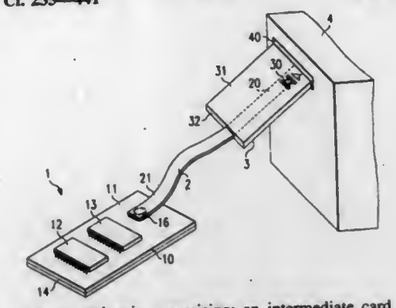
Francis Steffen, St. Maximin, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly, France

Continuation of Ser. No. 856,836, Mar. 23, 1992, which is a continuation of Ser. No. 598,062, Oct. 16, 1990. This application Jun. 10, 1993, Ser. No. 74,989

Claims priority, application France, Oct. 20, 1989, 89 13756

Int. Cl.[6] H05K *7/02*

U.S. Cl. 235—441 **29 Claims**



1. A smart card unit, comprising: an intermediate card which physically corresponds to a standard smart

card physical format, and which includes thereon connectors in a standard smart card connector format and in a standard smart card connector location, but which does not include any active circuitry whatsoever; and

a portable pocket-size electronic module comprising one or more integrated circuits which implement normal smart card operation, and permanently connected to said intermediate card by a flexible connector;

whereby said portable pocket-size module can interface to a standard card reader through said flexible connector and said intermediate card.

5,574,271

ELECTRONIC TERMINAL WITH MEMORY-CARD READER

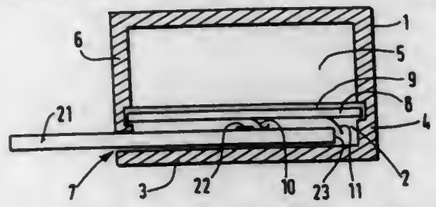
Jean-Louis Sarradin, Fontenay en Parisis, France, assignor to Societe D'Applications D'Electricite et de Mecanique SAGEM, France

Filed Sep. 13, 1994, Ser. No. 305,090

Claims priority, application France, Sep. 14, 1993, 93 10911

Int. Cl.[6] G06K *7/06*

U.S. Cl. 235—441 **3 Claims**



1. An electronic terminal comprising a housing (1) containing a separate enclosed receptacle chamber (2) therein, said receptacle chamber being adapted to receive a memory card (21) having a connecting region (22) and to permit cooperation of connecting means (10) of the terminal with the connection region of the card (21), wherein the receptacle chamber (2) is defined by at least one wall (3–5) in common with at least part of one wall of the housing (1) but less than all walls of the housing, wherein the receptacle chamber (2) is defined by a wall, within said housing, comprised of an electronic card (8), with said card having the connecting means (10) directly mounted thereon, and wherein the electronic card (8), with the connecting means (10) directly mounted thereon, is positioned to directly face the memory card received within the receptacle chamber.

5,574,272

DATA SYMBOL READER

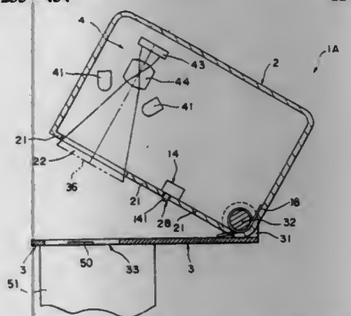
Shuzo Seo, and Makoto Mogamiya, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 12, 1995, Ser. No. 439,648

Claims priority, application Japan, May 13, 1994, 6-124657

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—454 **11 Claims**



1. A data symbol reader for reading a two-dimensional data symbol, comprising:

a reading device, said reading device receiving light reflected from said data symbol;

a casing in which the reading device is positioned;and

a guide member, said guide member defining a symbol reading area in which said data symbol can be positioned;

said guide member being attached to said casing and moveable between a first position in which a position of said data symbol relative to said symbol reading area can be viewed from an exterior of said data symbol reader, and a second position in which said data symbol can be read by said reading device in said casing.

5,574,273

NON-CONTACT SYSTEM PARALLEL DATA TRANSFER SYSTEM

Kazunari Nakagawa, Toride; Takeshi Tottori, Ibaraki-ken; Wasao Takasugi, Higashiyamato; Yoshiharu Hino, Toride, and Takeshi Uchida, Saitama-ken, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Jun. 13, 1994, Ser. No. 257,906

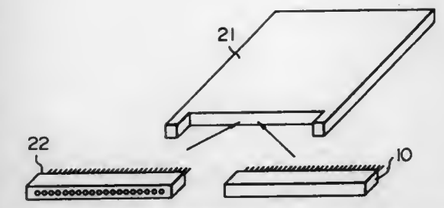
Claims priority, application Japan, Jun. 14, 1993, 5-142210; Sep. 21, 1993, 5-257690; Oct. 1, 1993, 5-247020

Int. Cl.[6] G06K *19/06;07/06*

U.S. Cl. 235—492 **31 Claims**

2. An electromagnetic coupling connector for transferring data by an electromagnetic coupling system, comprising:

a plurality of data transfer coils, disposed at a side surface of an end portion of the connector, for transferring data via an electromagnetic coupling;



the side surface being substantially parallel to a thickness of the connector;

magnetic flux from the coils passing through, and substantially orthogonal to, the side surface; and

transfer means for transferring a signal obtained from said plurality of data transfer coils to equipment to which said electromagnetic coupling connector is fitted.

5,574,274

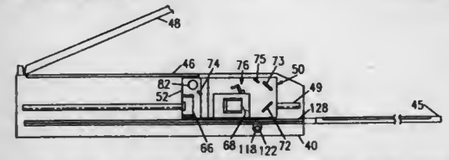
TRANSMISSIVE/REFLECTIVE OPTICAL SCANNING APPARATUS

John S. Rubley, Redondo Beach, and Loi N. Han, Alhambra, both of Calif., assignors to Microtek International, Inc., Taiwan

Filed Feb. 21, 1995, Ser. No. 393,112

Int. Cl.[6] H04N *1/04*

U.S. Cl. 250—208.1 **15 Claims**



1. An optical scanning apparatus for retrieving digital images representative of opaque and transmissive objects comprising:

a scanner housing;

a reflective scanning platform formed in the upper surface of said scanner housing and including a glass platen upon which said opaque object is positioned;

a removable transmissive scanning platform;

a docking port formed in the side of said scanner and including docking tracks, said docking port receiving said removable transmissive scanning platform; and

a scanning camera movably positioned proximate to said reflective scanning platform and including a digital camera, a lens, an optical pathway which are oriented to selectively view said platforms and generate electrical signals representative of the images viewed;

a motor means for moving said scanning camera along a lengthwise path within said housing;

a controller circuit which is connected to said scanning camera to activate said scanning camera such that upon activating said scanning camera receive said scanning camera electrical signals and which is connected to said motor means to control the movement of said scanning camera; and

said digital camera being aligned with the lens to view images from the optical pathway and the optical pathway being selectively aligned with said reflective scanning platform in a reflective scanning mode such that said control. circuit receives images representative of said opaque object and aligned with said transmissive scanning platform in a transmissive scanning mode such that said control circuit receives images representative of said transmissive object.

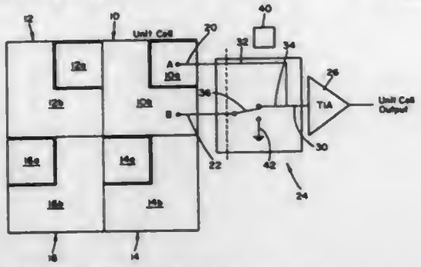
VOL 1192 ISS 2 NO 12 1996 UMI

5,574,275

ADJUSTABLE RESOLUTION OPTICAL SENSOR

David I. Durst, Syosset, N.Y.; Patrick L. Hayman, Mission Viega, Calif., and Martin Klop, Great River, N.Y., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Mar. 23, 1995, Ser. No. 409,361
Int. Cl.[6] G01C 21/02; G01J 1/42
U.S. Cl. 250—208.2 12 Claims



1. An optical sensor comprising:
a plurality of unit cells, each of the unit cells including at least first and second pixels;
a plurality of groups of optical detectors, each group of optical detectors being associated with a respective one of the unit cells and including
(i) a first detector for generating a first electric signal representing the intensity of light incident on the first pixel of the associated unit cell, and
(ii) a second detector for generating a second electric signal representing the intensity of light incident on the second pixel of the associated unit cell;
an amplifier; and
a plurality of selection circuits, each of the selection circuits being associated with a respective one of the groups of optical detectors for transmitting to the amplifier the electric signals from the associated group of optical detectors, and each selection circuit having first and second modes,
in the first mode, each selection circuit conducts to the amplifier the electric signal from only the first optical detector of the associated group of optical detectors, and
in the second mode, each selection circuit sums the electric signals from the first and second optical detectors of the associate group of optical detectors and conducts the summed electric signal to the amplifier; and
wherein the amplifier amplifies the electric signals conducted thereto.

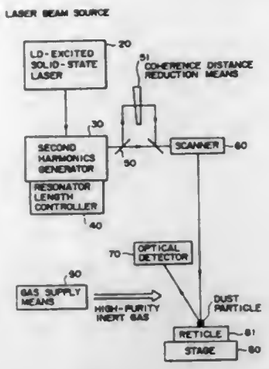
5,574,276

APPARATUS AND METHOD FOR DETECTING A DUST PARTICLE

Toshiyuki Ishimaru, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 29, 1995, Ser. No. 412,927
Claims priority, application Japan, Mar. 30, 1994, 6-083883
Int. Cl.[6] G01V 9/04
U.S. Cl. 250—222.2 9 Claims

1. A dust particle inspection apparatus for detecting any dust particle or the like existent on the surface of an article to be inspected, comprising:
a laser beam source for emitting a laser beam therefrom;
a scanner for scanning the surface of the article, which is to be inspected, with the laser beam emitted from said laser beam source;
an optical detector for detecting the laser beam reflected and diffracted on the surface of said article being inspected;
a stage for setting said article thereon and displacing the same in a predetermined direction; and
gas supply means for surrounding said article with a high-purity inert gas atmosphere.

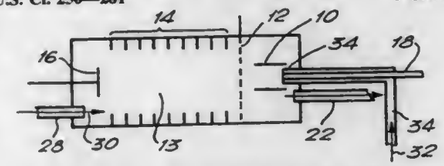


5,574,277

INTRODUCTION OF SAMPLES INTO AN ION MOBILITY SPECTROMETER

Stephen J. Taylor, Buckinghamshire, Great Britain, assignor to Graseby Dynamics Limited, Bushney, Great Britain

PCT No. PCT/GB92/01388, § 371 Date Jan. 24, 1994, § 102(e) Date Jan. 24, 1994, PCT Pub. No. WO93/03360, PCT Pub. Date Feb. 18, 1993
PCT Filed Jul. 27, 1992, Ser. No. 182,010
Claims priority, application United Kingdom, Jul. 26, 1991, 9116222.2
Int. Cl.[6] H01J 49/40
U.S. Cl. 250—281 5 Claims



1. An ion mobility spectrometer having a drift area and a source area, a first unidirectional gas flow common to the said areas and exciting the spectrometer from the source area downstream of an ionization source, characterized by means for introducing into the source area in the region of the ionization source the effluent from the gas chromatograph together with a further gas flow, the further gas flow being introduced in a direction counter to that of the first gas flow, and the further gas flow wholly or partly surrounding the effluent, substantially without mixing, to sheathe the effluent.

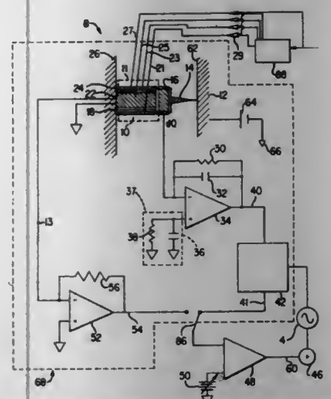
5,574,278

ATOMIC FORCE MICROSCOPE USING PIEZOELECTRIC DETECTION

Gregory E. Poirier, North Potomac, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed May 23, 1995, Ser. No. 448,316
Int. Cl.[6] H01J 37/26
U.S. Cl. 250—306 26 Claims

1. An atomic force microscope for determining properties of a sample surface, comprising:
a piezoelectric element mounted on a rigid surface, the piezoelectric element comprising at least one actuator portion and at least one piezoelectric detector portion;
a probe having a tip, the probe mounted on the piezoelectric element, the probe generating a charge signal resulting from interaction of the tip with the sample surface;



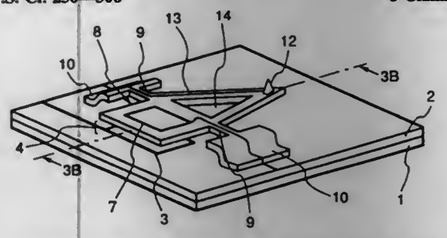
circuitry connected to the piezoelectric element, the circuitry amplifying the charge signal to create a feedback signal and directing the feedback signal to the at least one actuator portion; and
analyzing means connected to the circuitry, the analyzing means for determining sample surface properties from the feedback signal.

5,574,279

PROBE WITH TORSION LEVER STRUCTURE, AND SCANNING PROBE MICROSCOPE AND RECORD/REPRODUCING APPARATUS UTILIZING THE SAME

Tsutomu Ikeda, Hachioji; Takehiko Kawasaki, Atsugi, and Yasuhiro Shimada, Hadano, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1995, Ser. No. 530,965
Claims priority, application Japan, Sep. 21, 1994, 6-226189
Int. Cl.[6] H01J 37/26
U.S. Cl. 250—306 8 Claims



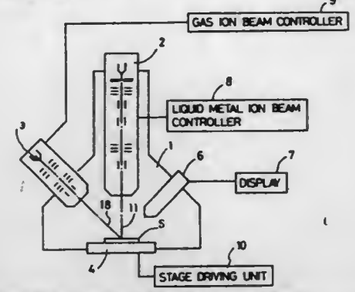
1. A probe of torsion lever structure provided with a flat plate-shaped driving unit formed on a substrate with a gap therebetween, two beams positioned along a straight line parallel to said substrate and rotatably supporting said flat plate-shaped driving unit relative to said substrate, drive means for driving said flat plate-shaped driving unit, and a tip for information input/output provided at an end of said flat plate-shaped driving unit, wherein:
said two beams are provided at a position, between said end of said flat plate-shaped driving unit and the other end thereof, closer to said the other end than the center between said end and said the other end.

5,574,280

FOCUSED ION BEAM APPARATUS AND METHOD

Toshiaki Fujii, and Tatsuya Adachi, both of Tokyo, Japan, assignors to Seiko Instruments Inc., Tokyo, Japan

Filed Mar. 1, 1994, Ser. No. 204,468
Claims priority, application Japan, Mar. 2, 1993, 5-041560
Int. Cl.[6] H01J 37/30
U.S. Cl. 250—309 5 Claims



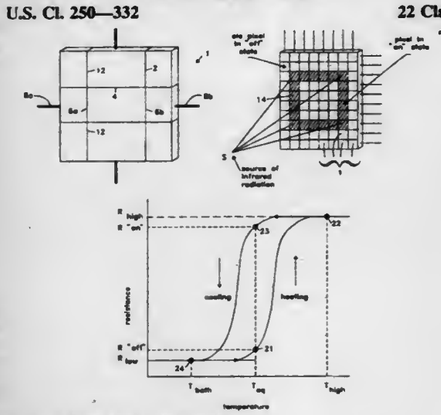
1. An ion beam processing method comprising:
removing a predetermined area of a sample by irradiation with a repeatedly scanning and finely focused liquid metal ion beam by sputtering;
irradiating a area which includes at least the predetermined area with a ion beam of gas element, a diameter of said gas element ion beam being larger than that of the focused liquid metal ion beam.

5,574,281

SENSING DEVICE FOR INCORPORATING THERMALLY BISTABLE MATERIAL

Lee S. Martinson, Coralville; John W. Schweitzer, Iowa City, and Norman C. Baenziger, North Liberty, all of Iowa, assignors to University of Iowa Research Foundation, Iowa City, Iowa

Division of Ser. No. 188,809, Jan. 31, 1994, Pat. No. 5,380,377, which is a division of Ser. No. 51,947, Apr. 26, 1993, Pat. No. 5,330,708. This application Nov. 14, 1994, Ser. No. 339,691
Int. Cl.[6] G01J 5/02;5/20
U.S. Cl. 250—332 22 Claims

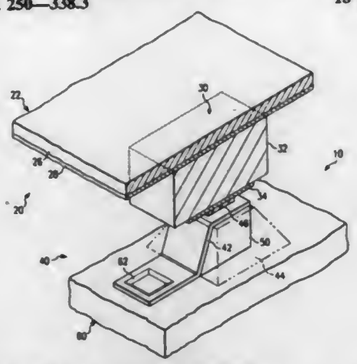


1. An apparatus, comprising:
a substrate;
a bistable material embedded in said substrate;
heating means for heating said bistable material; and
coupling means for enabling the resistance of said bistable material to be measured.

5,574,282
THERMAL ISOLATION FOR HYBRID THERMAL DETECTORS

William K. Walker, Plano; John P. Long, Garland; Robert A. Owen, Rowlett; Bert T. Runnels, Garland, and Gail D. Shelton, Mesquite, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 30, 1994, Ser. No. 268,365
Int. Cl.[6] G01J 5/06
U.S. Cl. 250—338.3 18 Claims



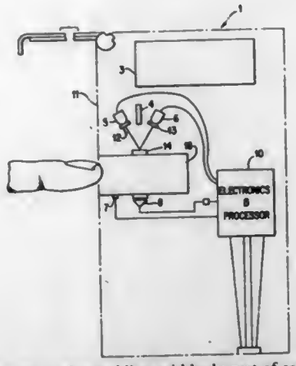
1. A hybrid thermal detector comprising:
at least three thermal sensors for generating a sensor signal output representative of the thermal radiation incident to the respective thermal sensor, each thermal sensor having an associated pyroelectric element;
a substrate having at least three signal contact pads for receiving the sensor signal outputs from the respective thermal sensors;
at least three mesa-type formations projecting adjacent to the signal contact pads of the substrate;
at least three mesa strip conductors disposed between the thermal sensors and the substrate, each mesa strip conductor extending from the top of an associated mesa-type formation to a corresponding signal contact pad of the substrate, the mesa strip conductors formed from a single film of thermally insulating material; and
the thermal sensors being disposed over the substrate such that the sensor signal output for each thermal sensor is coupled with the corresponding signal contact pad by the respective mesa strip conductor.

5,574,283
NON-INVASIVE NEAR-INFRARED QUANTITATIVE MEASUREMENT INSTRUMENT

Reynaldo Quintana, Washington, D.C., assignor to Futrex, Inc., Gaithersburg, Md.

Continuation-in-part of Ser. No. 106,758, Aug. 16, 1993, which is a continuation-in-part of Ser. No. 813,739, Dec. 30, 1991, Pat. No. 5,237,178, which is a continuation-in-part of Ser. No. 565,302, Aug. 10, 1990, Pat. No. 5,077,476, which is a continuation-in-part of Ser. No. 544,580, Jun. 27, 1990, Pat. No. 5,086,229. This application May 17, 1994, Ser. No. 243,756
Int. Cl.[6] G01N 33/50
U.S. Cl. 250—341.1 7 Claims

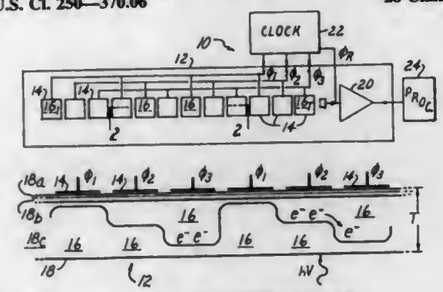
1. A near-infrared quantitative analysis instrument for non-invasive measurement of a blood analyte present in a body part of a subject, said analysis instrument comprising:
(a) introducing means including a near-infrared energy source for introducing near-infrared energy into blood present in a body part of a subject;
(b) detecting means for detecting near-infrared energy emerging from the body part;
(c) a housing means for housing at least said introducing means and said detecting means, said housing means comprising a chamber means for enabling said body part of said subject to be exposed to said near-infrared energy, said introducing means and said detecting means being positioned about said chamber means such that near-infrared energy emitted by said introducing means is receivable by said detecting means;
(d) a plurality of removable insert means each adapted to engage said chamber means, each of said plurality of removable insert means being dimensioned to securely and properly position within said chamber means a body part of a size different than the others of said plurality of removable insert means, wherein a specific one of said plurality of removable insert means is engaged with said chamber means according to the size of the body part of the subject under analysis; and
(e) processing means for calculating from an electrical signal from said detection means a signal indicative of the quantity of said blood analyte present in the blood of the subject.



5,574,284
ENERGY RESOLVING X-RAY DETECTOR

William H. Farr, 817 Wildrose, Monrovia, Calif. 91016

Continuation-in-part of Ser. No. 192,001, Feb. 4, 1994, Pat. No. 5,493,122. This application Jun. 7, 1995, Ser. No. 478,241
Int. Cl.[6] G01T 1/36
U.S. Cl. 250—370.06 28 Claims

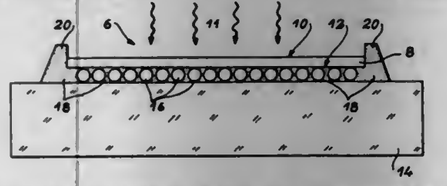


1. An energy-resolving x-ray detector comprising:
(a) a charge-coupled integrated circuit radiation detector device having:
(i) an array of collection regions, each of the collection regions being located for receiving soft x-rays from a source external of the detector device and having an associated transport electrode, the collection regions forming at least one collection shift register;
(ii) an output amplifier for sequentially amplifying and signalling charges received by the collection shift register; and
(iii) means external of the array and the transport electrodes for repelling the charges toward the electrodes; and
(b) a clock circuit connected to the transport electrodes for sequentially shifting the charges between collection regions of the collection shift register and into the output amplifier during continuous exposure of the array to incoming radiation, each of the charges received by the output amplifier being sequentially accumulated in each of the collection regions of the collection shift register in response to the radiation, the clock circuit being operative for maintaining the electrodes continuously positively charged to at least a first predetermined level relative to the collection regions, and a shifting subset of the electrodes being positively charged to a second level, the second level being higher than the first level.

5,574,285
ELECTROMAGNETIC RADIATION DETECTOR AND ITS PRODUCTION PROCESS

Francois Marion, Saint Egreve; Angelo Guiga, Tullins; Michelle Boitel, Fontaine, and Gilbert Gaude, Noyarey, all of France, assignors to Commissariat a L'Energie Atomique, France

Filed Jan. 4, 1995, Ser. No. 368,624
Claims priority, application France, Jan. 7, 1994, 94 00115
Int. Cl.[6] G01J 5/20
U.S. Cl. 250—370.13 14 Claims

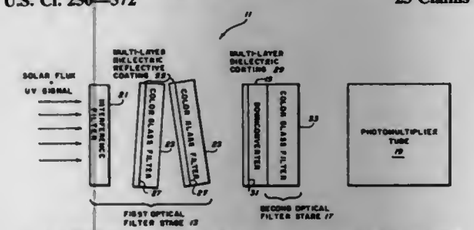


1. Hybrid electromagnetic radiation detector comprising a thin detection material film sensitive to the radiation to be detected and having a first and a second faces, the first face being directly exposed to the radiation to be detected, a reading circuit bonded to said second face, and a resin coating surrounding the thin detection material film and having a lip projecting beyond the first face of the thin film.

5,574,286
SOLAR-BLIND RADIATION DETECTOR

Alan L. Huston, 8501 Fairburn Dr., and Brian L. Justus, 6609 Holford La., both of Springfield, Va. 22152

Filed Jun. 30, 1995, Ser. No. 497,660
Int. Cl.[6] G01J 3/51
U.S. Cl. 250—372 23 Claims

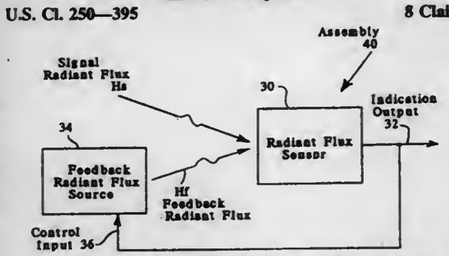


1. An apparatus for detecting an ultraviolet signal in the presence of background solar radiation, said apparatus comprising:
first filter means disposed along an optical axis being responsive to a light flux consisting of background solar radiation and an ultraviolet signal for passing therethrough ultraviolet light wavelengths below a selected ultraviolet wavelength and having a very sharp wavelength cutoff to substantially block wavelengths within a first selected wavelength band above the first selected ultraviolet wavelength;
second and third filter means serially disposed along the optical axis and tilted off the optical axis with respect to each other, said second and third filter means being responsive to light from said first filter means for sequentially passing therethrough ultraviolet light wavelengths below the selected ultraviolet wavelength and substantially blocking visible light within the first selected wavelength band;
means responsive to ultraviolet signal light at wavelengths below the selected ultraviolet wavelength for transforming that light to visible light in a second selected wavelength band;
first dielectric coating means disposed adjacent to said transforming means and between said third filter means and said transforming means for passing the ultraviolet signal light into said transforming means and for reflecting the visible light produced by said transforming means;
fourth filter means responsive to light from said transforming means for blocking all wavelengths greater than about 700 nm that may have passed through said first filter means, and said second and third filter means, and for passing therethrough the visible light in the second selected wavelength band; and
means for detecting the visible light in the second selected wavelength band.

5,574,287
RESPONSE EXCURSION REDUCTION METHOD FOR RADIANT FLUX SENSORS

James A. Kuzdrall, P.O. Box 1247, Nashua, N.H. 03061

Filed Dec. 20, 1994, Ser. No. 359,511
Int. Cl.[6] G01J 1/02
U.S. Cl. 250—395 8 Claims



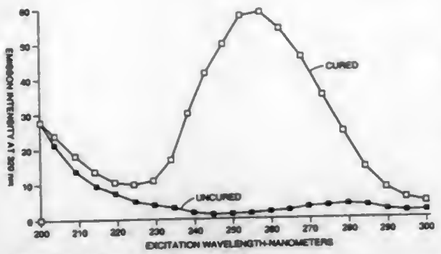
1. A method for reducing a primary response excursion in a radiant flux sensor, said sensor having an indication output responsive to said primary response excursion, and said primary response excursion being caused by excursion in an external signal radiant flux, said method comprising the following steps:
a. applying a feedback radiant flux to said sensor that causes a response at said indication output; and
b. setting said feedback radiant flux such that said feedback radiant flux is non-zero when said external signal radiant flux is zero; and
c. adjusting said feedback radiant flux, said adjustment being responsive to a substantially exact replica of said indication output, said adjustment reducing said feedback radiant flux in response to increases in said external signal radiant flux, to reduce excursions of said indication output resulting from excursions of said signal radiant flux, whereby reducing said primary response excursion.

5,574,288
METHOD FOR MEASURING RESIDUAL RADIATION-CURABLE MONOMERS OR OLIGOMERS

Lanny L. Harklau, Stillwater, and J. Thomas Simpson, Lake Elmo, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 17, 1995, Ser. No. 423,204
Int. Cl.[6] G01N 21/64
U.S. Cl. 250—459.1 27 Claims

1. A method of measuring intensity of radiant energy fluoresced by a fluorescer in a radiation-cured coating, the method comprising the steps of:



a) providing a coating comprising:
  i) a radiation-curable monomer or oligomer; and
  ii) a fluorescer having an excitation energy at a wavelength λ_2, the fluorescer fluorescing radiant energy of a wavelength λ_3;
b) curing the coating by exposure to radiant energy, thereby changing the intensity of radiant energy that would be fluoresced by the fluorescer if exposed to wavelength λ_2;
c) illuminating the radiation-cured coating with excitation energy of a wavelength λ_2, wherein at least 50% of the excitation energy is absorbed by the upper 75 μm of the radiation-cured coating; and
d) measuring the intensity of the radiant energy fluoresced by the fluorescer at wavelength λ_3.

5,574,289

SEMICONDUCTOR OPTICAL INTEGRATED DEVICE AND LIGHT RECEIVER USING SAID DEVICE

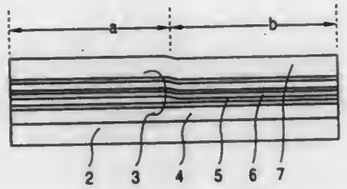
Masahiro Aoki, Kunitachi; Hirohisa Sano, Kokubunji; Shinji Sakano, Yokohama; Makoto Suzuki; Makoto Takahashi, both of Kokubunji; Kazuhisa Uomi, Hachiohji; Tatemi Ido, and Atsushi Takai, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 1, 1993, Ser. No. 24,084

Claims priority, application Japan, Feb. 28, 1992, 4-042831; Mar. 18, 1992, 4-061774

Int. Cl.[6] H01L *29/06;31/0328;31/0336*

U.S. Cl. 257—17 **23 Claims**



1. A semiconductor optical integrated device comprising at least a first optical functional section having a first optical waveguide structure comprising a first compound semiconductor material and a second optical functional section having a second optical waveguide structure comprising a second compound semiconductor material, the first and second optical waveguide structures being provided laterally on a same substrate, wherein the first optical waveguide structure is continuous with the second optical waveguide structure on the substrate, and wherein a lattice mismatch of crystal growth films of the first optical waveguide structure, on the substrate, differs from a lattice mismatch of crystal growth films of the second optical waveguide structure, on the substrate.

5,574,290

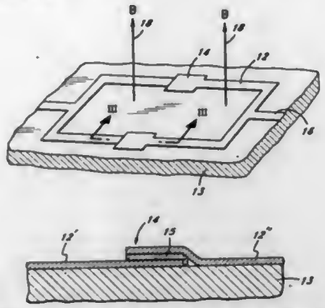
SUPERCONDUCTING QUANTUM INTERFERENCE DEVICE

Hong K. You, San Gabriel, Calif., assignor to Micontech, Inc., San Gabriel, Calif.

Filed Feb. 23, 1994, Ser. No. 200,641

Int. Cl.[6] H01L *39/22*

U.S. Cl. 257—31 **9 Claims**



1. A SQUID device on a face of a substrate, the SQUID including
  a first loop of superconducting film material, the material having a first width;
  at least a Josephson Junction in the first loop of superconducting film material, the Josephson Junction having pads of superconducting film material overlying one another and separated by a layer of insulating material having a second width, the pads having a third width larger than the first width and equal to or less than the second width, the width of pads being substantially the same.

5,574,291

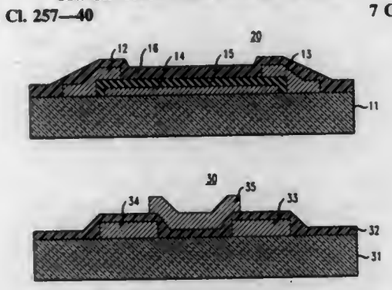
ARTICLE COMPRISING A THIN FILM TRANSISTOR WITH LOW CONDUCTIVITY ORGANIC LAYER

Ananth Dodabalapur, Millington; Howard E. Katz, Summit, and Luisa Torsi, Murray Hill, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 9, 1994, Ser. No. 353,032

Int. Cl.[6] H01L *35/24;51/00;29/76;27/01*

U.S. Cl. 257—40 **7 Claims**



1. An article comprising a thin film transistor comprising
a) a layer of organic semiconductor material;
b) spaced apart first and second contact means in contact with said layer; and
c) third contact means that are spaced from said first and second contact means and that are adapted for controlling, by means of a voltage applied to the third contact means, a current between the first and second contact means through said layer; CHARACTERIZED IN THAT
d) the organic semiconductor material is selected from the group consisting of α-nT without substituent on the 4- or 5-carbon on the terminal ring, and α-nT with substituent on the 4- or 5-carbon on the terminal ring, with n being an integer from 4 to 9; and
e) the organic semiconductor material has an electrical conductivity of at most 5×10^{-8} S/cm at 20° C., and furthermore has a charge carrier mobility of at least 10^{-3} $cm^2/V\cdot s$ at 20° C.

5,574,292

SEMICONDUCTOR DEVICE WITH MONOSILICON LAYER

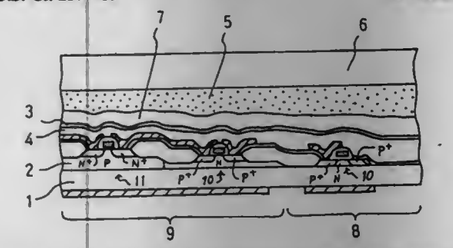
Kunihiro Takahashi; Yoshikazu Kojima; Hiroaki Takasu; Tsuneo Yamazaki, and Tadao Iwaki, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed May 5, 1993, Ser. No. 57,986

Claims priority, application Japan, May 13, 1992, 4-120699; Aug. 19, 1992, 4-220503

Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—59 **26 Claims**



1. A semiconductor device, comprising: an electrically insulative material, a monosilicon layer disposed on the insulative material and having at least an integrated circuit formed thereon, a passivation film covering at least the integrated circuit, an adhesive layer disposed on the passivation film, and a support member fixed to the electrically insulative material through the adhesive layer to support the monosilicon layer, the integrated circuit comprising an MIS transistor having a source region, a drain region and a channel region each being formed in the monosilicon layer.

5,574,293

SOLID STATE IMAGING DEVICE USING DISILANE

Michio Arai, Tokyo; Takashi Inushima, Kanagawa; Mitsufumi Codama, Kanagawa; Kazushi Sugiura, Kanagawa; Ichiro Takayama, Kanagawa; Isamu Kobori, Kanagawa; Yukio Yamauchi, Kanagawa, and Naoya Sakamoto, Kanagawa, all of Japan, assignors to TDK Corp., Tokyo, and Semiconductor Energy Laboratory Co. Ltd., Kanagawa, both of Japan

PCT No. PCT/JP94/00452, § 371 Date Nov. 22, 1994, § 102(e) Date Nov. 22, 1994, PCT Pub. No. WO94/22173, PCT Pub. Date Sep. 29, 1994

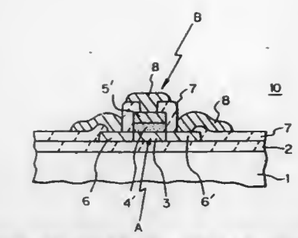
PCT Filed Mar. 22, 1994, Ser. No. 343,492

Claims priority, application Japan, Mar. 23, 1993, 5-063789; Nov. 19, 1993, 5-314135

Int. Cl.[6] H01L *31/062;31/113*

U.S. Cl. 257—59 **4 Claims**

1. A method for producing a solid state image sensor having a thin film transistor comprising the steps of;
  providing a silicon oxide layer on a substrate,
  providing an amorphous silicon layer on said silicon oxide layer by using disilane gas,
  providing a crystallized non-single crystal silicon layer by annealing said amorphous silicon layer by illuminating said amorphous silicon layer with a laser beam of short pulse width so that the trap density of said silicon layer is less than $5\times10^{11}/cm^2$,
  providing an island of said crystallized non-single crystal silicon layer, said island being an active layer,



providing a gate insulation layer and a gate electrode layer on said active layer, and
doping impurities in said active layer to provide a source region and a drain region.

5,574,294

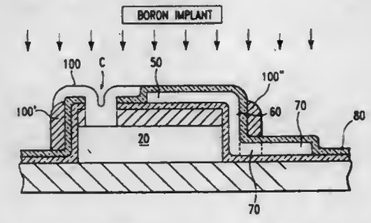
VERTICAL DUAL GATE THIN FILM TRANSISTOR WITH SELF-ALIGNED GATES / OFFSET DRAIN

Joseph F. Shepard, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1995, Ser. No. 576,103 .

Int. Cl.[6] H01L *29/76;21/265*

U.S. Cl. 257—66 **19 Claims**



12. A vertical dual gated TFT device having a bottom and a top electrode, a sidewall channel and a drain off-set comprising:
  a substrate;
  a bilayer with a polysilicon bottom electrode overlying said substrate, and a co-extensive insulator on top of and in contact with the bottom electrode;
  a first insulating gate layer overlying and in contact with side of the bottom electrode;
  a polysilicon device layer, having a source and drain regions at the ends and a channel region therebetween, said channel region located vertically along the side of the bottom electrode and overlying insulator, and in contact with said first gate insulator, and one of said end regions located on top of the insulator overlying the bottom electrode;
  a second insulating gate layer overlying said polysilicon device layer and in contact with the channel region;
  a sidewall spacer polysilicon top electrode located in contact with the second gate insulator, adjacent to said channel region, said top electrode physically connected to a horizontal polysilicon part, which in turn connected to the bottom electrode through an opening in the insulator overlying the bottom electrode; and,
  an off-set region of the device layer underneath the top electrode located between the channel and drain regions of said device layer.

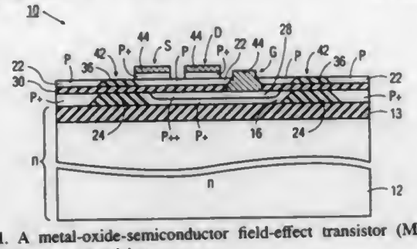
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5,574,295

DIELECTRICALLY ISOLATED SIC MOSFET

Anthony D. Kurtz, Teaneck, N.J., and Andrew V. Bemis, Chestnut Ridge, N.Y., assignors to Kulite Semiconductor Products, Leonia, N.J.

Filed Aug. 9, 1995, Ser. No. 512,892
Int. Cl.[6] H01L *31/0312;29/80;29/00*
U.S. Cl. 257—77 10 Claims



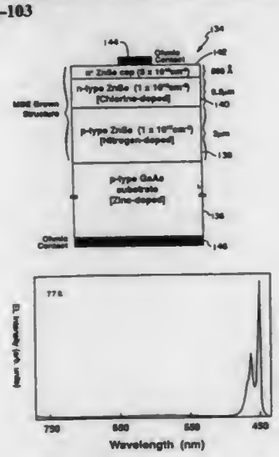
1. A metal-oxide-semiconductor field-effect transistor (MOSFET) device comprising:
a carrier wafer;
a gate region disposed on said carrier wafer, said gate region being fabricated from a silicon semiconductive material;
a source region disposed on said carrier wafer above said gate region, said source region being fabricated from a silicon carbide semiconductive material;
a drain region disposed on said carrier wafer above said gate region and spaced laterally from said source region, said drain region being fabricated from said silicon carbide semiconductive material; and
a plurality of trenches in said carrier wafer, each of said trenches being oriented laterally between said MOSFET device and other semiconductor devices disposed on said carrier wafer.

5,574,296

DOPING OF IIB-VIA SEMICONDUCTORS DURING MOLECULAR BEAM EPITAXY ELECTROMAGNETIC RADIATION TRANSDUCER HAVING P-TYPE ZNSE LAYER

Robert M. Park, Gainesville, Fla.; James M. DePuydt, St. Paul, Minn.; Hwa Cheng, and Michael A. Haase, both of Woodbury, Minn., assignors to Minnesota Mining And Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 573,428, Aug. 24, 1990, Pat. No. 5,248,631. This application Jul. 21, 1993, Ser. No. 95,872
Int. Cl.[6] H01L *33/00;29/22;31/0328;31/00*
U.S. Cl. 257—103 21 Claims



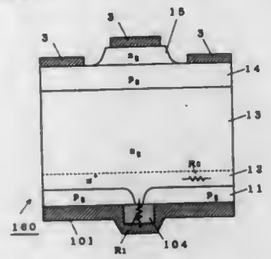
1. An electromagnetic radiation transducer comprising:
a first contact;
a p-type IIB-VIA semiconductor layer formed by doping IIB-VIA semiconductor with group VA neutral free-radicals selected from the group consisting of N, P, As, Sb and Bi generated by a free-radical source during fabrication by molecular beam epitaxy, the p-type IIB-VIA semiconductor layer electrically connected to the first contact;
an n-type layer operably coupled to the p-type IIB-VIA semiconductor layer, wherein the n-type layer interacts with the p-type IIB-VIA semiconductor layer and forms a pn junction;
a second contact electrically connected to the n-type layer; and
wherein the neutral free-radicals which dope the p-type IIB-VIA semiconductor layer enable the electromagnetic radiation transducer to have a room temperature (300° K.) electroluminescent (EL) spectrum having a maximum intensity at wave lengths of less than 550 nanometers and provide a net acceptor concentration which is greater than about 5×10^{15} cm^{-3}.

5,574,297

GATE TURNOFF THYRISTOR WITH REDUCED GATE TRIGGER CURRENT

Nozomu Sennenbara; Kouji Niinobu; Kazuhiko Niwayama, and Futoshi Tokunoh, all of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1995, Ser. No. 407,650
Claims priority, application Japan, Apr. 4, 1994, 6-065949
Int. Cl.[6] H01L *29/74;31/111*
U.S. Cl. 257—135 17 Claims



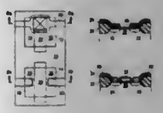
1. A gate turnoff thyristor, comprising:
a semiconductor substrate having upper and lower surfaces, including a first emitter layer, a first base layer, a second base layer and a second emitter layer being successively stacked from said lower surface side with conductivity types being different from each other, and further including a buffer layer, being located between said first emitter layer and said first base layer, containing an impurity of the same conductivity type as said first base layer in higher concentration than said first base layer;
a first main electrode being connected to said lower surface of said semiconductor substrate, a second main electrode being connected to said upper surface of said semiconductor substrate, and a gate electrode being connected to said second base layer; and
a resistive layer interposed between said semiconductor substrate and said first main electrode,
said buffer layer being locally connected with said first main electrode through said resistive layer.

5,574,298

SUBSTRATE CONTACT FOR GATE ARRAY BASE CELL AND METHOD OF FORMING SAME

Masashi Hashimoto, Tsukaba, Japan; Louis N. Hutter, and S. Shivaling Mahant-Shetti, both of Richarson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 268,392, Jun. 30, 1994, abandoned. This application Aug. 29, 1995, Ser. No. 521,080
Int. Cl.[6] H01L *27/10*
U.S. Cl. 257—206 5 Claims



1. A substrate contact, comprising:
a substrate of a first conductivity type;
a base cell including two heavily doped source/drain regions of a second conductivity type formed in said substrate and a lightly doped region in said substrate of said first conductivity type disposed therebetween and in contact with said two source/drain regions of said second conductivity type;
a first insulating layer extending over said two source/drain regions and said region therebetween of said first conductivity type;
a second insulating layer covering at least a portion of said first insulating layer; and
an electrically conductive material extending through said first and second insulating layers and forming electrical contact with said lightly doped region of said first conductivity type and both said source/drain regions of said second conductivity type.

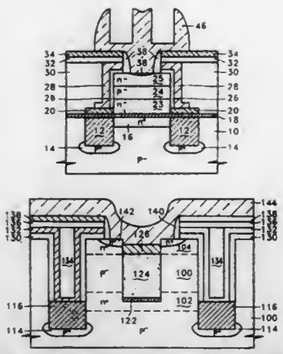
5,574,299

SEMICONDUCTOR DEVICE HAVING VERTICAL CONDUCTION TRANSISTORS AND CYLINDRICAL CELL GATES

Hyoung-sub Kim, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Division of Ser. No. 246,227, May 18, 1994, Pat. No. 5,460,994. This application Jun. 29, 1995, Ser. No. 442,712.
Claims priority, application Rep. of Korea, Mar. 28, 1994, 94-6232
Int. Cl.[6] H01L *27/108*
U.S. Cl. 257—296 11 Claims

1. A semiconductor device, comprising:
a semiconductor substrate;
a plurality of spaced-apart trench isolation regions formed in said semiconductor substrate, said trench isolation regions defining active regions therebetween;
a plurality of bit lines formed on said semiconductor substrate;
a silicon pillar formed on each said bit line, each said silicon pillar having vertically stacked layers which serve as drain, channel, and source regions of a transistor;
a gate insulating layer formed on each said silicon pillar, in surrounding relationship thereto;



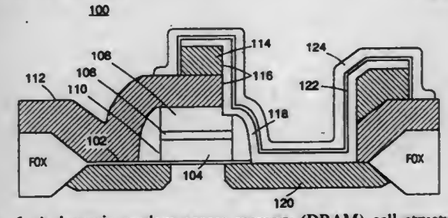
a gate line formed on said gate insulating layers, in surrounding relationship to respective ones of said silicon pillars, said gate line having recesses formed therein between adjacent ones of said silicon pillars;
a planarizing layer formed in said recesses in said gate line, said planarizing layer having an upper surface co-planar with an upper surface of said gate line;
an insulating layer formed on said upper surface of said gate line and said upper surface of said planarizing layer; and,
a plurality of contact holes provided in vertically aligned portions of said insulating layer, said gate line, and said gate insulating layer located above respective ones of said silicon pillars to thereby expose said source region of respective ones of said transistors.

5,574,300

DRAM CELL WITH SELF-ALIGNED CONTACT

Ritu Shrivastava, Fremont, and C. N. Reddy, Los Altos, both of Calif., assignors to Alliance Semiconductor Corporation, San Jose, Calif.

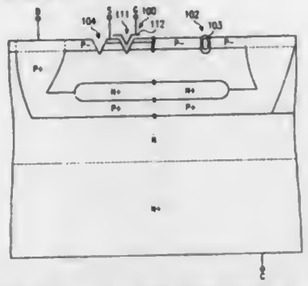
Filed May 31, 1995, Ser. No. 456,080
Int. Cl.[6] H01L *27/108*
U.S. Cl. 257—306 5 Claims



1. A dynamic random access memory (DRAM) cell structure (**100**) formed in a semiconductor substrate having a first conductivity type and having a self-aligned contact, the DRAM cell structure comprising:
source (**120**) and drain regions of a second conductivity type that is opposite to the first conductivity type formed in the semiconductor substrate in spaced-apart relationship to define a channel region therebetween;
a layer of gate dielectric material formed on a surface of the semiconductor substrate above the channel region and extending to partially overlap the source region (**120**) and the drain region;
a conductive gate (**104/106**) formed on the layer of gate dielectric material over the channel region;
a layer of first dielectric material (**108**) formed on the conductive gate (**104/106**) to define, in combination with the conductive gate, a stacked gate structure;
a dielectric sidewall spacer structure (**110**) formed on sidewalls of the stacked gate structure and such that at least a first

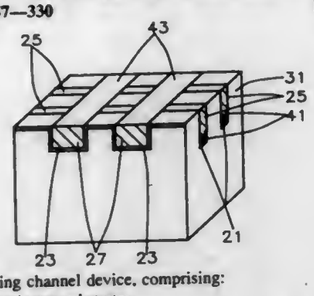
portion of the sidewall spacer structure is formed on gate dielectric material that overlaps the drain region and at least a second portion of the sidewall spacer structure is formed on gate dielectric material that overlaps the source region (120);
a layer of second dielectric material (112) formed over the first dielectric material (108) and extending over the first portion of the sidewall spacer structure (110) and the drain region and the source region (120), the second dielectric material (112) having a contact trench (116) formed therein, the contact trench (116) having a first edge that is at least partially aligned over the conductive gate (104/106) and is at least partially defined by the second portion of the sidewall spacer structure, and a second edge that is aligned over the source region (120), the contact trench (116) defining an exposed surface of the source region (120);
a conductive lower capacitor plate (114/118) formed at least partially over the second dielectric material (112) and to cover the first and second edges of the contact trench (116) and the exposed surface of the source region (120);
a layer of capacitor dielectric material (122) formed over the lower capacitor plate (114/118); and
a conductive upper capacitor plate (124) formed over the capacitor dielectric material (122).

5,574,301
VERTICAL SWITCHED-EMITTER STRUCTURE WITH IMPROVED LATERAL ISOLATION
Richard A. Blanchard, Los Altos, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Division of Ser. No. 397,710, Feb. 28, 1995. This application Sep. 15, 1995, Ser. No. 528,687
Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*
U.S. Cl. 257—329 **12 Claims**



1. A solid-state device structure, comprising, in a substantially monocrystalline body of semiconductor between first and second surfaces thereof:
a collector, extending to said first surface, which is heavily doped with a first conductivity type;
a drift region, overlying said collector, which has said first conductivity type and is more lightly doped than said collector;
a base region, overlying said drift region, which has a second conductivity type;
a drain/emitter region, overlying said base region, which is heavily doped with said first conductivity type;
a body region, overlying said drain/emitter region, which has said second conductivity type;
a source region, overlying said body region, which is heavily doped with said first conductivity type;
a gate electrode which is in proximity to said second surface of said monocrystalline body, and which extends into a recess therein, and which is capacitively coupled to said body region to controllably induce therein a channel which provides a current path between said source region and said drain/emitter region;
sinker diffusions of said second conductivity type which extend from said second surface to said base region; and
dielectric isolation which is interposed to laterally separate said body region from surface portions of said sinker diffusions.

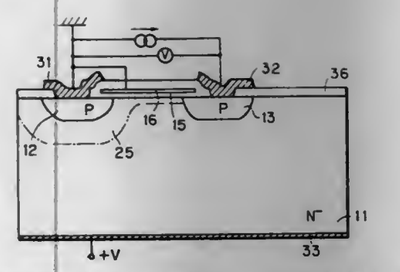
5,574,302
FIELD EFFECT TRANSISTOR STRUCTURE OF A DIVING CHANNEL DEVICE
Jemmy Wen, Hsin-Chu; Water Lur, Taipei, and Joe Ko, Hsin-Chu, all of Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan
Division of Ser. No. 365,044, Dec. 27, 1994, Pat. No. 5,460,987. This application Aug. 24, 1995, Ser. No. 518,708
Int. Cl.[6] H01L *29/76;29/94;31/062*
U.S. Cl. 257—330 **13 Claims**



1. A diving channel device, comprising:
a semiconductor substrate;
deep vertical trenches having deep walls and deep bottoms formed in said semiconductor substrate;
a first dielectric layer formed on said deep bottoms and the lower part of said deep walls of said deep vertical trenches;
a first heavily doped polysilicon material filling said deep vertical trenches;
shallow vertical trenches having shallow walls and shallow bottoms formed in said semiconductor substrate crossing said deep vertical trenches such that said shallow bottoms of said shallow vertical trenches are above the top of said first dielectric layer on said deep walls of said deep vertical trenches;
a second dielectric layer covering said shallow walls and said shallow bottoms of said shallow vertical trenches;
a second heavily doped polysilicon material filling said shallow vertical trenches; and
electrical contacts formed to said first heavily doped polysilicon material and to said second heavily doped polysilicon material.

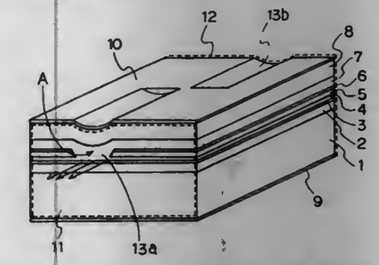
5,574,303
SEMICONDUCTOR VOLTAGE SENSING DEVICE
Tomohide Terasima; Mituharu Tabata, both of Fukuoka; Masao Yoshizawa, and Kazumasa Satsuma, both of Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 991,367, Dec. 15, 1992, abandoned. This application Oct. 19, 1994, Ser. No. 325,633
Claims priority, application Japan, Jan. 6, 1992, 4-000217
Int. Cl.[6] H01L *29/76;29/94*
U.S. Cl. 257—401 **16 Claims**

1. A semiconductor voltage sensing device comprising:
a semiconductor substrate of a first conductivity type having first and second major surfaces;
a first semiconductor region of a second conductivity type selectively formed in said first major surface of said semiconductor substrate;
a second semiconductor region of said second conductivity type selectively formed in said first major surface of said semiconductor substrate independent of said first semiconductor region;
a first main electrode formed on said first semiconductor region;



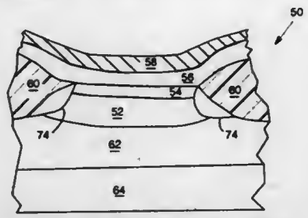
a sense electrode formed on said second semiconductor region; and
a constant current source which is connected across the first main electrode and the sense electrode to supply a constant current to said sense electrode;
a second main electrode formed on said second major surface of said semiconductor substrate, said first and second main electrodes respectively being supplied with voltage to reverse bias a region between said first and second main electrodes, and
wherein a potential difference between said first and second main electrodes is sensed as a function of a sense voltage provided by said sense electrode.

5,574,304
SUPERLUMINESCENT DIODE WITH OFFSET CURRENT INJECTION REGIONS
Masato Mushiage; Tatsuo Yamauchi, and Yukio Shakuda, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan
Continuation-in-part of Ser. No. 119,381, Sep. 13, 1993, abandoned. This application Feb. 24, 1995, Ser. No. 394,034
Claims priority, application Japan, Sep. 14, 1992, 3-244660; Sep. 14, 1992, 3-244661; Sep. 14, 1992, 3-244662; Sep. 14, 1992, 3-244663
Int. Cl.[6] H01L *27/15;29/06;31/00;33/00*
U.S. Cl. 257—466 **2 Claims**



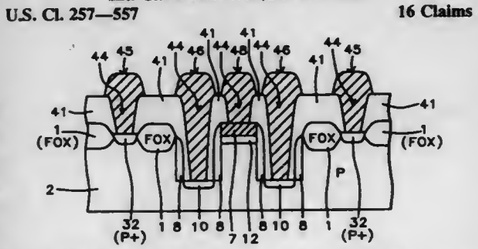
1. A current-blocking type superluminescent diode of a compound semiconductor wherein an active layer is sandwiched by an Upper cladding layer of a first conductivity type and a lower cladding layer of a second conductivity type, each having a band gap energy larger than that of the active layer and a refractive index smaller than that of the active layer, the super luminescent diode comprising:
two current-injection regions each of a stripe groove shape which are provided on opposite end faces, respectively, of a chip,wherein said two current-injection regions provided respectively on opposite end face sides are positioned offset to each other such that respective stripe-shaped groove axes thereof are not aligned with each other;
two current-noninjection regions extended from a terminal end of each of said current-injection regions; and
a current blocking layer formed of a material having a band gap energy not greater than that of the active layer and a refractive index not smaller than that of the active layer wherein light advancing in said active layer is absorbed in said current-noninjection region, said current blocking layer being provided within said upper cladding layer.

5,574,305
WALLED-EMITTER TRANSISTOR
Chuen-Der Lien, Mountain View, and Kyle W. Terrill, Sunnyvale, both of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.
Continuation of Ser. No. 100,620, Jul. 29, 1993, abandoned, which is a division of Ser. No. 835,200, Feb. 13, 1992, Pat. No. 5,258,317. This application Jul. 8, 1994, Ser. No. 272,277
Int. Cl.[6] H01L *21/331;29/70*
U.S. Cl. 257—515 **1 Claim**



1. A walled-emitter bipolar transistor, comprising:
a pair of wells of a first conductivity type and adjacent to opposite edges of an active area on a semiconductor substrate and extending into a layer over a collector of a second-conductivity type;.
a field oxide having a bird's beak profile, said field oxide being in contact with a polysilicon layer and said active area at a single point, wherein an edge of one well avoids contact with a substantially horizontal position of said field oxide;
an emitter of a second conductivity type having at each terminal end one of said wells; and
an intrinsic base coincident with said active area and having at each terminal end one of said wells.

5,574,306
LATERAL BIPOLAR TRANSISTOR AND FET
Ying-Tzung Wang, and Sheng-Hsing Yang, both of Hsinchu, Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan
Division of Ser. No. 355,478, Dec. 14, 1994, Pat. No. 5,449,627. This application Jul. 10, 1995, Ser. No. 500,470
Int. Cl.[6] H01L *29/00;27/082;27/102*
U.S. Cl. 257—557 **16 Claims**



1. A lateral bipolar NPN transistor structure comprising:
a body of P type semiconductor material, said body having an upper surface;
a trench downwardly extending from said upper surface of said body, said trench having a floor displaced away from said upper surface of said body;
a pedestal of P type semiconductor material integral with said P type body, surrounded by said trench and extending upwardly above said floor of said trench so that an upper surface of said pedestal is coplanar with said upper surface of said body;

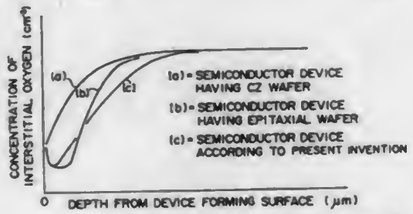
a layer of heavily doped N type semiconductor material in intimate contact with said upper surface of said pedestal;
a first region of heavily doped N type semiconductor material located immediately below said upper surface of said pedestal;
a second region of heavily doped N type semiconductor material located immediately below said floor of said trench; and
a region of heavily doped P type semiconductor material located immediately below said upper surface of said body and positioned so as to surround said trench.

5,574,307

SEMICONDUCTOR DEVICE AND METHOD OF PRODUCING THE SAME

Mokuji Kageyama, and Yoshiaki Matsushita, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 35,808, Mar. 23, 1993, abandoned. This application Dec. 16, 1994, Ser. No. 357,351
Claims priority, application Japan, Mar. 27, 1992, 4-071686
Int. Cl.[6] H01L *29/167;29/207;29/227;31/0288*
U.S. Cl. 257—607 **16 Claims**



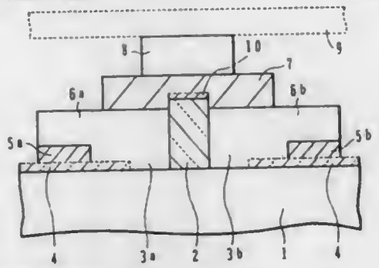
1. A semiconductor device having a silicon substrate sliced off from a silicon ingot produced by a pulling method or a floating zone method, the silicon substrate having a device forming surface wherein the minimum concentration of interstitial oxygen is in a region from the device forming surface to a depth of approximately 10 μm or less but not on the device-forming surface.

5,574,308

SEMICONDUCTOR DEVICE AND ITS MANUFACTURING METHOD

Toshihiko Mori, and Yoshiki Sakuma, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 162,703, Dec. 7, 1993, Pat. No. 5,438,018. This application Jun. 7, 1995, Ser. No. 488,057
Claims priority, application Japan, Dec. 7, 1992, 4-326944
Int. Cl.[6] H01L *29/06*
U.S. Cl. 257—618 **15 Claims**



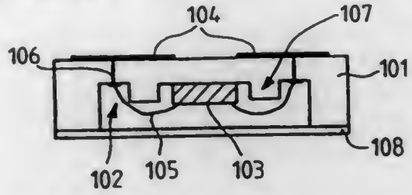
1. A semiconductor device comprising:
a single crystal semiconductor substrate;
a first insulating region formed on said single crystal semiconductor substrate;
an opening defining member for defining a pair of openings, said pair of openings exposing the surface of said single crystal semiconductor substrate on both the sides of said first insulating region, said opening defining member having a function of regulating the growth of semiconductor crystal and having a pair of conductive regions at least near said pair of openings;
a pair of first semiconductor single crystal structures separated from each other, said pair of first semiconductor single crystal structures contacting the surface of said single crystal semiconductor substrate in said pair of openings, extending on the surface of said opening defining member, and being electrically connected to said pair of first conductive regions;
a second conductive region of single crystal material continuously formed on said pair of first semiconductor single crystal structures; and
a second semiconductor single crystal structure formed on said second conductive region.

5,574,309

INTEGRATED CIRCUIT CARD COMPRISING MEANS FOR THE PROTECTION OF THE INTEGRATED CIRCUIT

Michel Papapietro, Lyons; Jean-Christophe Fidalgo, Aubagne, and Jël Turin, Marseille, all of France, assignors to Gemplus Card International, Gemenos Cedex, France

PCT No. PCT/FR92/01091, § 371 Date Aug. 15, 1994, § 102(e) Date Aug. 15, 1994, PCT Pub. No. WO93/11564, PCT Pub. Date Jun. 19, 1993
PCT Filed Nov. 25, 1992, Ser. No. 244,364
Claims priority, application France, Nov. 25, 1991, 91 14505
Int. Cl.[6] H01L *23/02*
U.S. Cl. 257—679 **15 Claims**



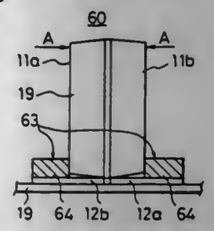
1. An integrated circuit card comprising:
an integrated circuit;
a card body; and
a package, the package being housed in the card body, the package housing the integrated circuit, the package being formed of a ceramic material, the package having a cavity formed therein to hold the integrated circuit, the cavity opening out on a first face of the package to receive the integrated circuit, and the package further comprising means for connecting the integrated circuit with the exterior, the connection means further comprising
metallizations positioned on a second face of the package, the second face being opposed to the first face,
feed-through conductors connected to the metallizations and connecting the metallizations electrically to the interior of the cavity, and
connection wires connected to the integrated circuit and to the feed-through conductors;
wherein the package has a lid fixed to the package to close the cavity and the lid is formed out of a metallic material.

5,574,310

SEMICONDUCTOR PACKAGE FOR SURFACE MOUNTING WITH REINFORCING MEMBERS ON SUPPORT LEGS

Michio Sono; Junichi Kasai; Masanori Yoshimoto; Kazuto Tsuji, and Kouji Saito, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 330,737, Oct. 28, 1994, abandoned, which is a continuation of Ser. No. 881,899, May 12, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 485,117
Claims priority, application Japan, May 17, 1991, 3-113483; Jul. 3, 1991, 3-162976; Oct. 2, 1991, 3-255415; Mar. 11, 1992, 4-52434
Int. Cl.[6] H01L *23/58;29/41*
U.S. Cl. 257—696 **14 Claims**



1. A semiconductor device having a package of a single in-line type, comprising:
a semiconductor chip;
a package body that accommodates said semiconductor chip therewithin, said package body being defined by a pair of opposing major surfaces connected by a bottom wall, said bottom wall including a substantially planar edge part that extends substantially perpendicular to said major surfaces;
a plurality of interconnection leads held by said package body so as to extend substantially perpendicularly to said edge surface, each of said interconnection leads being connected to said semiconductor chip electrically, each of said interconnection leads consisting of an inner lead part located inside said package body and an integral, outer lead part located outside said package body and having a distal end, said outer lead part being bent laterally, relatively to said inner lead part, in one of first and second directions that are opposite to each other and substantially perpendicular to said opposing major surfaces;
a plurality of support legs, each of said support legs comprising an inner part located inside said package body and an outer part located outside said package body, said outer part of each said support leg being bent laterally in one of said first and second directions, relatively to said inner part thereof, and extending beyond the distal ends of said outer leads and supporting said package body, when placed on a substrate, in an upright position relatively to the substrate; and
a reinforcement member provided in correspondence to each of said support legs, each said reinforcement member supporting said package body against tilting by contacting said package body.

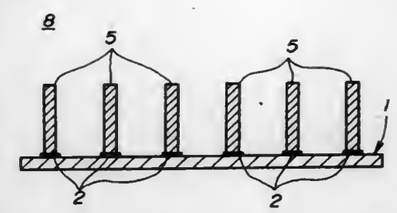
5,574,311

DEVICE HAVING PINS FORMED OF HARDENED MIXTURE OF CONDUCTIVE METAL PARTICLE AND RESIN

Tatsuharu Matsuda, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 29, 1994, Ser. No. 350,986
Claims priority, application Japan, Jan. 28, 1994, 6-008848
Int. Cl.[6] H01L *23/498*
U.S. Cl. 257—697 **7 Claims**

1. A semiconductor device comprising:
a semiconductor chip having electrode pads thereon; and



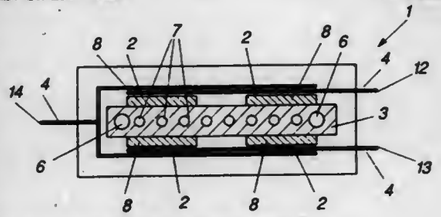
electrode pins formed of a hardened mixture of minute particles of highly conductive metals and epoxy resin projecting from a respective one of said electrode pads of said semiconductor chip.

5,574,312

LOW-INDUCTANCE POWER SEMICONDUCTOR MODULE

Reinhold Bayerer, Reichelsheim, Germany, and Thomas Stockmeier, Rancho Palos Verdes, Calif., assignors to ABB Management AG, Baden, Switzerland

Filed May 5, 1995, Ser. No. 435,617
Claims priority, application Germany, Jun. 17, 1994, 44 21 319.0
Int. Cl.[6] H01L *23/10;23/34*
U.S. Cl. 257—706 **19 Claims**



1. A power semiconductor module comprising:
a heat sink having opposed first and second sides;
at least one power semiconductor assembly mounted on each of said first and second sides of said heat sink; and
a plurality of electrically conductive contact laminates extending parallel to the heat sink stacked on top of the power semiconductor assemblies; and
wherein each of the power semiconductor assemblies comprises at least one power semiconductor switch, in particular an IGBT, having a reverse-connected parallel diode connected across said switch, which are fitted to a substrate made of an electrically insulating and thermally conductive material selected from the group consisting of aluminum oxide, aluminum nitride and beryllium oxide.

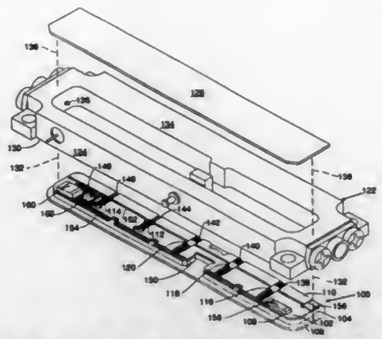
5,574,313

HERMETICALLY SEALED MICROWAVE INTEGRATED CIRCUIT PACKAGE WITH GROUND PLANE FUSED TO PACKAGE FRAME

Christopher C. McKleroy, Los Altos, Calif., assignor to Litten Systems, Inc., San Jose, Calif.

Filed Oct. 17, 1994, Ser. No. 324,473
Int. Cl.[6] H01L *29/40;23/06;* **H01P** *3/08*
U.S. Cl. 257—728 **6 Claims**

1. A microwave integrated circuit package comprising:
a microwave-integrated circuit motherboard including a dielectric layer suitable for microwave transmission, an upper layer including a microstrip conductor pattern disposed on one surface of said motherboard, and a ground plane that consists of relatively soft aluminum alloy of at least 80% aluminum



and at least 6% silicon and defines a flange that extends radially beyond and circumscribes said dielectric layer disposed on the other surface of said motherboard;

at least one active device disposed on said motherboard;

a frame of relatively hard aluminum alloy consisting of at least 90% aluminum and no more than 1% silicon, said frame having an upper surface and a lower surface, said lower surface being fused to said flange so that said microstrip conductor pattern and said active devices of said motherboard fit within said frame; and

a cover fused to said upper surface of said frame so that said ground plane, frame, and cover hermetically enclose said active devices.

5,574,314

PACKAGED SEMICONDUCTOR DEVICE INCLUDING SHIELDED INNER WALLS

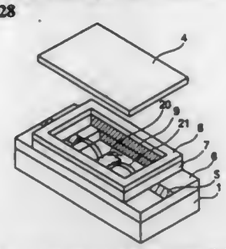
Masaaki Okada, and Tosio Usuki, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1995, Ser. No. 503,342

Claims priority, application Japan, Jul. 28, 1994, 6-176701

Int. Cl.[6] H01L *23/60;23/12*

U.S. Cl. 257—728 **10 Claims**



1. A packaged semiconductor device comprising:

a metal base;

a first ceramic frame having a first opening and bonded to said metal base;

a metallization layer providing input and output terminals and disposed on and extending along a longitudinal direction of said first ceramic frame;

a second ceramic frame having a second opening larger than the first opening and bonded to said first ceramic frame and to said metallization layer, the first and second openings being aligned to form a cavity defined by a first pair of inner side walls generally parallel to said metallization layer and a second pair of inner side walls generally transverse to said metallization layer;

metal disposed on and covering each of the first pair of inner side walls of said first and second ceramic frames, not electrically contacting said metallization layer but electrically contacting said base member;

a semiconductor element disposed on said base member within the first opening, said semiconductor element having terminals electrically connected to said metallization layer and a grounding terminal electrically connected to said base member; and

a cover hermetically sealing said semiconductor element, bonded to said second ceramic frame, and electrically connected to the metal disposed on said first pair of inner side walls.

5,574,315

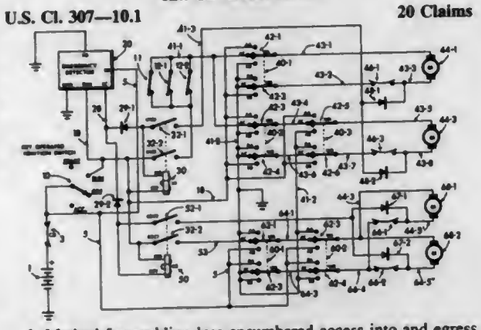
METHOD AND APPARATUS ENABLING EMERGENCY ACTIVATED CONTROL OF ELECTRICALLY OPERATED DOOR LOCK AND WINDOW REGULATOR SYSTEMS IN A MOTOR VEHICLE

Harold J. Weber, 560 Washington St., P.O. Box 6161, Holliston, Mass. 01746-6161

Filed Jan. 17, 1995, Ser. No. 373,060

Int. Cl.[6] B60R *21/09*

U.S. Cl. 307—10.1 **20 Claims**



1. Method for enabling less encumbered access into and egress from a motor vehicle having electric window regulators subsequent to sensing an emergency condition usually resulting from collision between the motor vehicle and another object; establishing an emergency condition response to include immediate enablement of the electric window regulators for window opening; and, inhibiting the emergency condition response while the motor vehicle is parked or functionally inoperative.

5,574,316

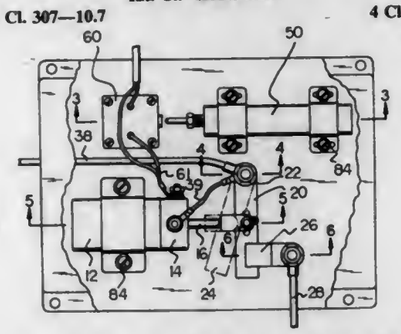
VEHICLE BATTERY DISABLING APPARATUS

Emil Nieschulz, 7132 Scheurer St., Pigeon, Mich. 48755

Filed Aug. 31, 1995, Ser. No. 521,875

Int. Cl.[6] H01H *9/20*

U.S. Cl. 307—10.7 **4 Claims**



1. A vehicle battery disabling apparatus for disconnecting a battery of a vehicle upon the discretion of a user or in the event of a collision comprising, in combination:

a solenoid coupleable to a battery of the vehicle and having a retracted orientation when electrically energized and an extended orientation when de-energized;

pivotable first switch means coupleable between an electrical system of the vehicle and its battery and further engaged with the solenoid, the first switch means having a first orientation when the solenoid is de-energized for allowing electrical energy to be delivered from the battery to the electrical system and a second orientation when the solenoid is energized for preventing such delivery;

an elongated and spring-loaded plunger having a biased and extended orientation when impact pressure is applied thereto and an unbiased and retracted orientation when no impact pressure is applied;

electronic and depressible second switch means coupled to the solenoid and coupleable to the battery of the vehicle and further positioned in juxtaposed relation to the plunger, the second switch means having an activated orientation when the plunger is momentarily abutted thereagainst in its biased and extended orientation for energizing the solenoid; and

manually activated electronic third switch means coupled to the second switch means and coupleable to the battery of the vehicle, the third switch means having an engaged orientation for placing the second switch means in its activated orientation to thereby allow the battery to be disconnected from the vehicle electrical system.

5,574,317

DEVICE FOR COMPENSATION OF AN ALTERNATING VOLTAGE WHICH OCCURS BETWEEN A MEDIUM AND A METALLIC PIPELINE DISPOSED IN THE MEDIUM

Uno Jonsson, Vällingby, and Dan Karlsson, Ludvika, both of Sweden, assignors to STRI AB, Sweden

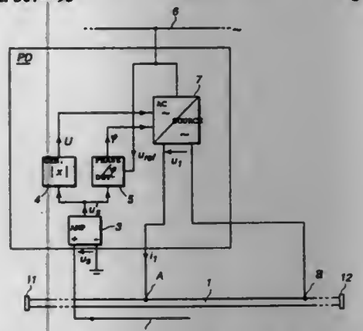
PCT No. PCT/SE94/00793, § 371 Date Mar. 1, 1995, § 102(e) Date Mar. 1, 1995, PCT Pub. No. WO95/06761, PCT Pub. Date Mar. 9, 1995

PCT Filed Aug. 29, 1994, Ser. No. 392,887

Claims priority, application Sweden, Sep. 2, 1993, 9302831

Int. Cl.[6] H01B *7/28*

U.S. Cl. 307—95 **8 Claims**



1. A device for compensation of an alternating voltage induced in a metallic, electrically insulated pipeline and directed in the longitudinal direction of the pipeline, said pipeline is disposed in a medium, wherein the device comprises:

(a) first members forming a first quantity which corresponds to an alternating voltage induced in the longitudinal direction of the pipeline, and

(b) a controllable a.c. source connected to connection points on the pipeline, said connection points spaced from each other in the longitudinal direction of the pipeline, said a.c. source supplying said first quantity and, in dependence thereon, to cause an alternating current to flow in the longitudinal direction of the pipeline with such an amplitude and such a phase position that the voltage drop in the longitudinal direction of the pipeline tends to reduce the voltage difference between the pipeline and the medium.

5,574,318

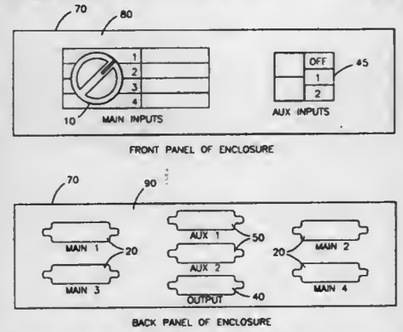
MULTI-PORT JOYSTICK SWITCHBOX

Patrick E. Gost, 25421 Gallup Cir., Laguna Hills, Calif. 92653

Filed Feb. 14, 1994, Ser. No. 195,536

Int. Cl.[6] A63B *71/00*

U.S. Cl. 307—112 **4 Claims**



1. A switching device for connecting M input devices and at least one auxiliary device to a common output device, the switching device comprising:

a first switch means having M-positions and N-poles switchably adapted for connecting one of a plurality of M input connectors, each having N-pins, wherein said first switch means further connected to N first switch means output lines, the N output lines interconnected with N−2 pins of an output connector;

a second switch means having three positions and 2-poles switchably adapted for connecting either one of two auxiliary input connectors or two of the N output lines to two second switch means output lines, the two second switch means output lines connecting to two further pins of the output connector;

whereby any of the M input connectors and either or neither of the auxiliary input connectors may be interconnected with the output connector.

5,574,319

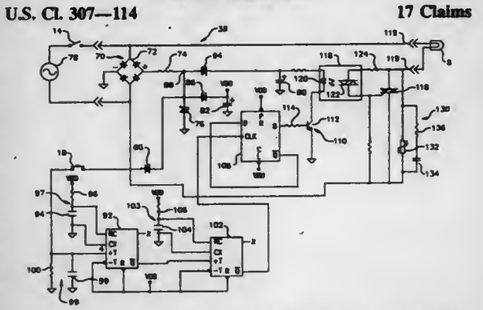
SWITCHING DEVICES

Neil W. Bennett, 19916 - 190th Ave. NE., Woodinville, Wash. 98072

Filed Feb. 15, 1995, Ser. No. 388,710

Int. Cl.[6] H02B *1/24*

U.S. Cl. 307—114 **17 Claims**



1. The combination of: an electrical load device, an electrical outlet, a first operator-actuatable switch means for completing and

interrupting a connection between said outlet and an electrical power source, and a control device with an input which can be electrically connected to said electrical outlet and an outlet to which said load device can be electrically connected, said control device also including a load circuit switch for completing a load circuit between said outlet and said load device; a second, operator actuatable switch means; and circuit means so incorporating said load circuit switch that a change in the state of either of said first and second operator actuatable switch means will effect a change in the state of the load circuit switch resulting in a completion or interruption of said load circuit,

said first and second operator actuatable switch means each having an ON state and an OFF state, said load circuit switch having active and inactive states, and the circuit means of the control device being so constructed that the manipulation of said first and second operator-actuatable switch means affects the load circuit switch as follows:

State of First Switch	State of Second Switch	State of Load	Manipulation	Effect on Load Circuit Control Switch	Resulting State of Load
ON	ON	Not Powered	First Switch OFF then ON	Reverses State	Powered
ON	ON	Powered	First Switch OFF then ON	Reverses State	Not Powered
ON	ON	Not Powered	Second Switch OFF then ON	Reverses State	Powered
ON	ON	Powered	Second Switch OFF then ON	Reverses State	Not Powered.

5,574,320

LOAD DRIVE CIRCUIT

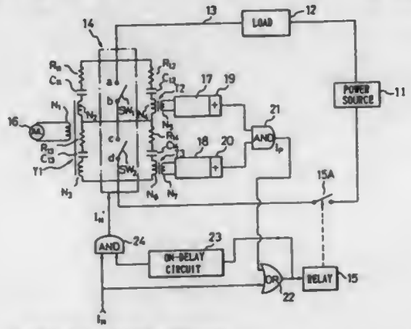
Toshihito Shirai; Masayoshi Sakai, and Koichi Futsuhara, all of Saitama-ken, Japan, assignors to The Nippon Signal Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/01703, § 371 Date Jul. 19, 1995, § 102(e) Date Jul. 19, 1995, PCT Pub. No. WO95/14304, PCT Pub. Date May 26, 1995

PCT Filed Nov. 19, 1993, Ser. No. 491,984

Int. Cl.[6] H02H *3/00*

U.S. Cl. 307—131 **10 Claims**



1. A load drive circuit comprising:

a switch circuit having a switch element which is switched on and off in accordance with the presence or absence of an input signal for controlling a supply of power to a load, and relay contacts connected in series with said switch circuit for forcibly interrupting the supply of power to the load;

a monitoring sensor coupled to said switch circuit for monitoring the switch circuit condition such that when energy is supplied across contacts of said switch element when the switch element is in an "off" condition, the received signal level based on said supply energy becomes a high level and an output is generated, while when the switch element is in an "on" condition, the received signal level based on said supply energy becomes a low level and an output is not generated;

a first logical sum operating circuit for computing a logical sum from an output of said monitoring sensor and a load drive signal; and

a first logical product operating circuit for computing a logical product from a logical sum output of said first logical sum operating circuit and said load drive signal;

wherein the logical product output of said first logical product operating circuit is provided as said input signal for "on" and "off" switching of the switch element of said switch circuit, and an electromagnetic relay for driving said relay contacts is drive controlled by the logical sum output of said first logical sum circuit.

5,574,321

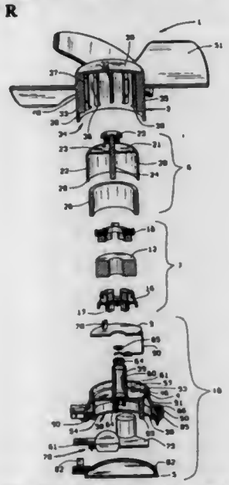
INTEGRAL REFRIGERATOR MOTOR FAN BLADES

Gerald N. Baker, Florissant, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed May 4, 1994, Ser. No. 237,780

Int. Cl.[6] H02K *7/14;11/00*

U.S. Cl. 310—67 R **21 Claims**



1. A dynamoelectric machine having a stator assembly and a rotor assembly comprising:

a base having a side wall;

a fan assembly including a hub having a sidewall and a top wall, said side wall defining a chamber sized to receive a cup, and a plurality of spacers extending inwardly of said chamber; and radially inward projections on an end of said spacers adapted to engage an end of said cup in the mounted position of said cup; and

a rotor assembly, said rotor assembly including a cup intermounted to said fan assembly, and at least one permanent magnet carried by said cup, said base and said fan assembly defining a labyrinth seal with respect to one another.

5,574,322

MOTOR, A PRINTER HAVING SUCH A MOTOR AND A DISK DRIVE SYSTEM HAVING SUCH A MOTOR

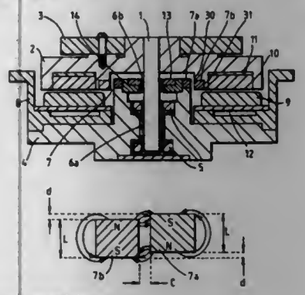
Katsutoshi Nii; Takeshi Nakajima; Ichiro Hashimoto; Satosi Uno, and Sueo Akashi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 1, 1993, Ser. No. 114,176

Claims priority, application Japan, Sep. 3, 1992, 4-235608

Int. Cl.[6] H02K *7/09*

U.S. Cl. 310—90.5 **20 Claims**



1. A motor comprising:

a stator;

a rotor mounted on said stator so as to be rotatable about a rotation axis;

a radial bearing arranged on said stator for supporting said rotor, said radial bearing enabling vibration attenuation in a radial direction;

a magnetic fluid member for lubrication provided in said radial bearing, said magnetic fluid member enabling vibration attenuation in an axial dissection;

drive means for applying a rotative force to said rotor about said rotation axis from said stator; and

a magnetic thrust bearing for applying thrust force in a direction radially of said rotation axis between said rotor and said stator, said magnetic thrust bearing comprising a first permanent magnet on said rotor and a second permanent magnet on said stator, said first permanent magnet and said second permanent magnet being concentrically arranged around said rotation axis, having a radial gap therebetween, and being arranged to generate said thrust force therebetween, said first permanent magnet being disposed one of radially outwardly and radially inwardly of said second permanent magnet, said first permanent magnet being solely magnetized in said axial direction, and said second permanent magnet being magnetized in said axial direction, said first permanent magnet having a radially outer surface abutting a part of said rotor;

wherein both said first permanent magnet and said second permanent magnet are arranged so as to be maintained at a fixed and predetermined relation to each other in said axial direction without any axial direction movement so that said rotor is held without any axial direction movement.

5,574,323

ELECTRONICALLY COMMUTATED ELECTRIC MOTOR FOR DRIVING A FEED PUMP

Hermann Nusser, Markgroeningen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

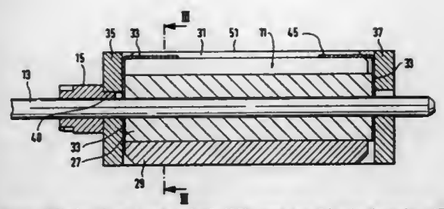
Filed Aug. 19, 1994, Ser. No. 293,273

Claims priority, application Germany, Sep. 18, 1993, 43 31 803.7

Int. Cl.[6] H02K *21/12;15/00*

U.S. Cl. 310—156 **16 Claims**

1. An electronically commutated electric motor for driving a feed pump (3) in a housing (5) of a fuel feed assembly for internal combustion engines having a stator (7) disposed in the housing (5), said stator is provided with windings (9), which include connections (25) that are connected to an electronic commutation device,



a rotor (11) fixed on a rotor shaft (13) supported in the housing (5), said rotor shaft rotates coaxially to the stator (7) and said stator (7) is disposed in a manner fixed against relative rotation, the rotor (11) is embodied as a carrier (27) mounted on and axially secured to the rotor shaft (13), several permanent magnets are disposed on a circumferential face of said carrier, a coupling part (15) is rotatably connected to the rotor (11), which connects the rotor (11) to a rotating part (17) of the feed pump (3), the permanent magnets form a circular ring that encompasses the carrier (27) of the rotor (11), said circular ring has four magnet segments (29) which are held in contact with a radial circumferential face of the carrier (27) by means of two retaining elements, which are guided on the rotor shaft (13) and which axially define the rotor (11), the retaining elements each have several prongs (45), which correspond to the number of magnet segments (29) and which encompass the magnet segments (29) essentially parallel to their circumferential face; the prongs (45) protrude into and engage recesses of the magnet segments (29), each of the retaining elements are embodied as a one-piece retaining clamp (33) having a disk-shaped base body (41) in which a bore (43) is disposed, said bore corresponds to the diameter of the rotor shaft (13), and from which the prongs (45) radiate, said prongs are embodied as angled sheet metal strips, which are bent toward the rotor axis, wherein the prongs (45) are spaced equidistant from one another.

5,574,324

ROTOR STRUCTURE OF ALTERNATING CURRENT GENERATOR FOR USE IN VEHICLE

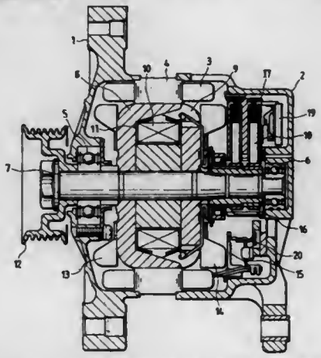
Makoto Hirama; Kenji Ishihara, both of Hitachinaka; Susumu Sasaki, Naka-machi, and Yoshiaki Honda, Hitachinaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Automotive Engineering Co., Ltd., Ibaraki, both of Japan

Filed Mar. 1, 1995, Ser. No. 396,787

Claims priority, application Japan, Mar. 1, 1994, 6-031098

Int. Cl.[6] H02K *1/04;15/00;1/22;21/00*

U.S. Cl. 310—194 **12 Claims**



1. A rotor structure of an alternating current generator for use in a vehicle comprises:

a rotative support shaft;

a pair of rotor cores fixed to and oppositely arranged on said shaft, and each of said pair of rotor cores respectively having plural claw-shaped magnetic poles;

a field magnetic coil sandwiched by said pair of rotor cores; and

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a bobbin made of a synthetic resin material for insulating said pair of rotor cores from said field magnetic coil, said bobbin comprising:

(i) a cylindrical portion and two side plate members integrally formed with said cylindrical portion;

(ii) plural thin plate projecting portions provided integrally on an outer peripheral portion of each of said two side plate members, said plural thin plate projecting portions of said bobbin being arranged oppositely to said plural claw-shaped magnetic poles, and each of said plural thin plate projecting portions extending from a root portion of said plural claw-shaped magnetic poles of said pair of rotor cores toward a direction of a tip portion of said plural claw-shaped magnetic poles of said pair of rotor cores; and

(iii) an adhesive material disposed on said bobbin on one side of said thin plate projecting portions so as to cause said field magnetic coil and said bobbin to adhere to each other and also on the other side of said thin plate projecting portions so as to cause said bobbin and said pair of rotor cores to adhere to each other;

wherein each of said plural thin plate projecting portions of said bobbin is disposed at an intermediate position in the space formed between said inner face of each of said plural claw-shaped magnetic poles of said pair of rotor cores and an outer peripheral face of said field magnetic coil, so that adhesive material retaining spaces are provided on both sides of said thin plate projecting portions.

5,574,325

IMPREGNATABLE CONFIGURATION OF A CARRIER BODY AND WINDING ELEMENTS

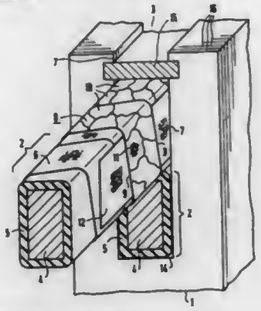
Rudolf von Musil, Oberhausen; Wolfgang Schier, Mülheim; Günter Kremser, Mülheim; Norbert Didzun, Mülheim; Rainer Müller, Ratingen, and Ferdinand Stobbe, Mülheim, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 14, 1994, Ser. No. 213,228

Claims priority, application European Pat. Off., Sep. 13, 1991, 9111568

Int. Cl.[6] H02K *3/34*

U.S. Cl. 310—215 **19 Claims**



1. A configuration, comprising:

a) a ferromagnetic and electrically conductive carrier body having grooves formed therein defining groove walls;

b) winding elements disposed in said grooves, each of said winding elements having an electrically highly conductive basic unit, an impregnatable insulating sleeve surrounding said basic unit, and an electrically weakly conductive, impregnatable protective layer enveloping said insulating sleeve;

c) impregnatable separating layers each being disposed between a respective one of said winding elements and at least one of said groove walls of a respective one of said grooves, said separating layers being substantially formed of laminated mica sheets resting flat between said winding elements and said groove wall; and

d) a multiplicity of electrically weakly conductive bridges electrically connecting said protective layer through said separating layer to said groove wall.

5,574,326

VIBRATION ACTUATOR

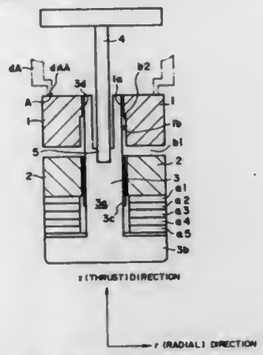
Ichiro Chiba, and Jun Tamai, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 236,034, May 2, 1994, abandoned. This application Dec. 19, 1995, Ser. No. 575,176

Claims priority, application Japan, May 7, 1993, 5-106376

Int. Cl.[6] H02N *2/00*

U.S. Cl. 310—323 **25 Claims**



1. A vibration actuator comprising:

a substantially rod-shape vibration member, said vibration member including a recess formed therein, the recess including a first recess portion formed about the entire circumference of the vibration member and extending radially inward from the outer circumference of the vibration member, and a second recess portion extending in an axial direction of the vibration member, the second recess portion being located at a radially interior portion of the first recess portion;

an electro-mechanical energy conversion element portion for generating a vibration in said vibration member; and

a contact member contactable to said vibration member and arranged for receiving the vibration therefrom to cause relative movement between said vibration member and said contact member.

5,574,327

MICROLAMP INCORPORATING LIGHT COLLECTION AND DISPLAY FUNCTIONS

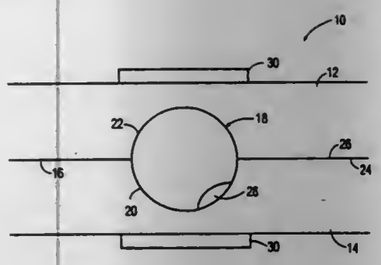
David A. Cammack, Scarborough; Ronald D. Pinker, Peekskill, and Babar A. Khan, Ossining, all of N.Y., assignors to Philips Electronics North America, New York, N.Y.

Continuation-in-part of Ser. No. 177,089, Dec. 30, 1993, Pat. No. 5,438,343, which is a continuation-in-part of Ser. No. 922,707, Jul. 28, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 487,613

Int. Cl.[6] H01J *17/16*

U.S. Cl. 313—110 **13 Claims**

1. A microlamp structure comprising a structure having a first surface and a second surface, at least one light forming cavity within said structure between said first and second surfaces, and at least one of a reflecting surface and a lens structure disposed relative to said light forming cavity.



5,574,328

LIGHT SOURCE APPARATUS

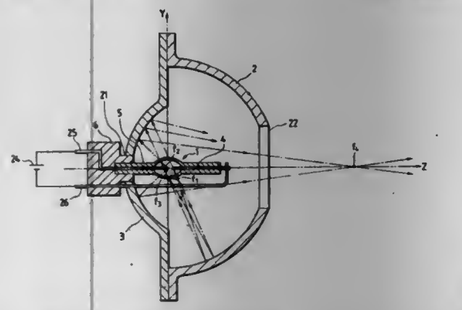
Hiroaki Okuchi, Anjo, Japan, assignor to Nippondenso Co., Ltd, Kariya, Japan

Filed Dec. 6, 1994, Ser. No. 354,722

Claims priority, application Japan, Dec. 7, 1993, 5-306830

Int. Cl.[6] F21V *7/00;7/12*

U.S. Cl. 313—114 **14 Claims**



1. A light source apparatus comprising:

a concave main mirror having a first main mirror focus point on an optical axis of said concave main mirror;

a discharge lamp including:

a cathode electrode,

an anode electrode, and

a discharge gap between said cathode electrode and said anode electrode,

a center of said discharge lamp being located substantially at said first main mirror focus point; and

a concave sub mirror having a first sub mirror focus point and a second sub mirror focus point on an optical axis of said concave sub mirror, said concave sub mirror having an opening therein around said optical axis of said Concave sub mirror;

said concave main mirror and said concave sub mirror confronting each other such that said optical axis of said concave main mirror is arranged on said optical axis of said concave sub mirror; and

said first focus point of said concave sub mirror and said second focus point of said concave sub mirror are arranged to be substantially on tips of Said cathode electrode and said anode electrode, respectively.

5,574,329

SPARK PLUG AND A METHOD OF MAKING THE SAME FOR AN INTERNAL COMBUSTION ENGINE

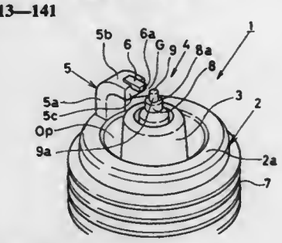
Junichi Kagawa, Nagoya, Japan, assignor to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Jul. 6, 1994, Ser. No. 268,546

Claims priority, application Japan, Jul. 6, 1993, 5-167073; Jul. 6, 1993, 5-167074

Int. Cl.[6] H01T *13/32*

U.S. Cl. 313—141 **7 Claims**



1. A spark plug comprising:

(a) a cylindrical metallic shell;

(b) a tubular insulator supported within the metallic shell;

(c) a center electrode provided to axially extend within the insulator;

(d) an outer electrode secured to a front end of the metallic shell so as to extend toward an elevational side of the center electrode, said outer electrode having an inner surface, an outer surface and an end surface; and

(e) a first spark-erosion resistant noble metal tip secured to the outer surface of the outer electrode, said outer electrode extending across a front open end of the metallic shell so as to form a spark gap between an extended end of the tip and the elevational side of the center electrode.

5,574,330

ELECTRON GUN AND METHOD OF ASSEMBLING IT

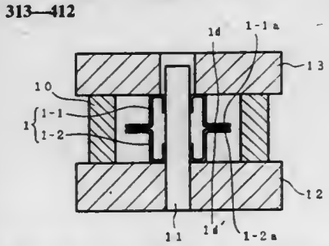
Kenichi Matsuda; Takeshi Mera, and Satoru Endo, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 6, 1995, Ser. No. 398,807

Claims priority, application Japan, Mar. 8, 1994, 6-037237

Int. Cl.[6] H01J *29/70;29/46*

U.S. Cl. 313—412 **5 Claims**



1. An electron gun comprising: a composite electrode including at least two electrode elements united together; and a plurality of electrodes sequentially arrayed along a single axis at predetermined intervals, wherein opposed faces of said electrode elements which constitute said composite electrode are perpendicular to said axis and said opposed faces are provided with projections which constitute said composite electrode when said projections are united together in opposed relationship to each other.

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5,574,331

IN-LINE ELECTRON GUN FOR A COLOR PICTURE TUBE

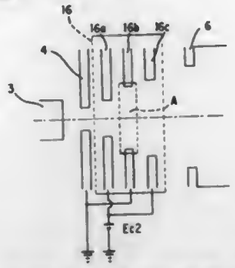
Sung-Gi An; Hyun C. Kim; Sung-Ho Cho; Hee S. Lee; Won-Hyun Kim, and Hee-Won Yun, all of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jan. 20, 1995, Ser. No. 375,872

Claims priority, application Rep. of Korea, Jan. 22, 1994, 1994-1175

Int. Cl.[6] H01J 29/50

U.S. Cl. 313—414 8 Claims



1. An in-line electron gun for a color picture tube comprising:
a cathode;
a control electrode;
an accelerating electrode portion having three separately-formed plate electrodes spaced apart from one another by a predetermined distance; and
a first accelerating/focusing electrode,
wherein the first and third electrodes of said separated accelerating electrode portion are supplied with a first potential, and the second electrode thereof is supplied with a potential lower than said first potential.

5,574,332

LUMINESCENT SCREEN

Ulrich H. Kynast, Roetgen, and Volker U. Weiler, Aachen, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 16, 1994, Ser. No. 359,243

Claims priority, application European Pat. Off., Dec. 17, 1993, 93203574

Int. Cl.[6] C09K 11/06

U.S. Cl. 313—483 8 Claims

1. Luminescent screen comprising a substrate provided with a luminescent material, characterized in that the luminescent material comprises a zeolite containing trivalent Ce.

5,574,333

METHOD FOR MANUFACTURING A CATHODE FOR FLUORESCENT DISPLAY SCREENS OF THE MICROTIP-TYPE

Jean-Freédéric Clerc, Saint Egreve, France, assignor to Pixel International, Rousset, France

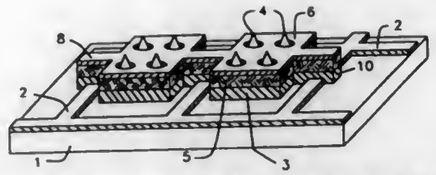
Filed Feb. 17, 1995, Ser. No. 390,087

Claims priority, application France, Feb. 22, 1991, 94 02291

Int. Cl.[6] H01J 9/02

U.S. Cl. 313—497 9 Claims

1. A microtip fluorescent display screen having a cathode plate (1) including a supporting plate (1) bearing cathode conductors in meshed columns (2), a resistive layer (3) bearing microtips (4), an insulating layer (5) and a grid conductive layer (6) disposed in rows, wherein the grid layer (6), insulating layer (5) and resistive layer (3) are etched according to a single pattern forming predetermined elements so that empty areas (9) remain between said



elements and the column meshes, thus allowing the observation of the phosphor elements of an anode plate through the cathode structure.

5,574,334

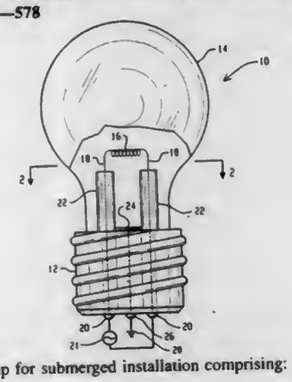
SUBMERGED LAMP WITH SELF GROUNDING SLEEVE

Ronald B. Robol, Sanford, N.C., assignor to Essef Corporation, Chardon, Ohio

Filed Mar. 13, 1995, Ser. No. 402,911

Int. Cl.[6] H01J 17/00;61/00; F21V 33/00;29/00

U.S. Cl. 313—578 18 Claims



16. A lamp for submerged installation comprising:
a base;
a filament;
a pair of electrically conductive filament supports mounted on the base and connected to and supporting respective ends of the filament;
a pair of power contacts mounted on the base and connected to respective filament supports and adapted to be connected to an electrical power source;
a pair of electrically conductive sleeves mounted on the base and around respective filament supports and spaced therefrom;
a grounding contact mounted on the base and connected to the sleeves and adapted to be connected to a ground;
insulating spacers disposed between the sleeves and the filament supports;
a breakable glass bulb mounted on the base and forming therewith a sealed enclosure enclosing the filament, supports, and sleeve.

5,574,335

BALLAST CONTAINING PROTECTION CIRCUIT FOR DETECTING RECTIFICATION OF ARC DISCHARGE LAMP

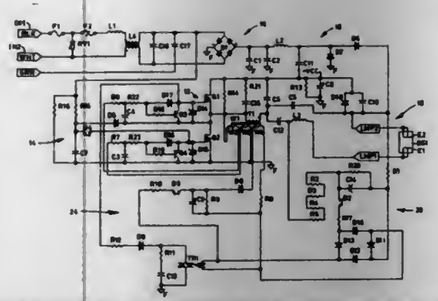
Yiyoung Sun, Danvers, Mass., assignor to Osram Sylvania Inc., Danvers, Mass.

Filed Aug. 2, 1994, Ser. No. 284,779

Int. Cl.[6] H05B 37/00

U.S. Cl. 315—119 10 Claims

1. A ballast for a discharge lamp having a pair of cathodes wherein said discharge lamp is characterized by a lamp voltage waveform having a DC voltage component when said lamp



approaches end-of-line upon depletion of emissive material on one of said cathodes, said ballast comprising:
a pair of AC input terminals for receiving an AC signal from an AC power supply;
DC power supply means coupled to said AC input terminals;
inverter means coupled to said DC power supply means and having an output;
load means coupled to said output of said inverter means comprising a tank circuit having a near-resonant mode condition and a resonant mode condition;
first detecting means for detecting an increase in said DC voltage component having an input for coupling to said discharge lamp, said first detecting means comprising an integration network; and
disabling means coupled to the output of said first detecting means for disabling said inverter in response to at least said increase in said DC component.

5,574,336

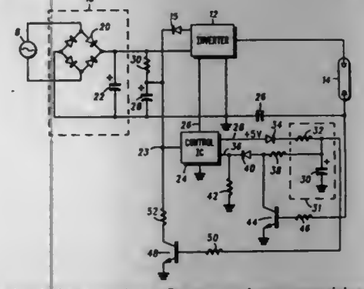
FLOURESCENT LAMP CIRCUIT EMPLOYING A RESET TRANSISTOR COUPLED TO A START-UP CIRCUIT THAT IN TURN CONTROLS A CONTROL CIRCUIT

John G. Konopka, Barrington, and Robert A. Priegnitz, Algonquin, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 28, 1995, Ser. No. 413,133

Int. Cl.[6] H05B 37/02

U.S. Cl. 315—225 9 Claims



1. A circuit for powering a fluorescent lamp comprising:
a direct current source;
an inverter coupled to the direct current source and providing a lamp current to the lamp;
an inverter control circuit;
a sensor for detecting lamp current, coupled to the inverter control circuit such that the inverter control circuit turns off the inverter whenever the sensor detects the absence of lamp current;
a DC voltage source which is present only when the inverter control circuit is operating;
a timing circuit coupled to the inverter control circuit and the DC voltage source; and
a restart control transistor coupled to the timing circuit, the restart control transistor coupled to a startup circuit, the startup circuit starting the inverter control circuit such that the startup circuit is reactivated after a predetermined interval.

5,574,337

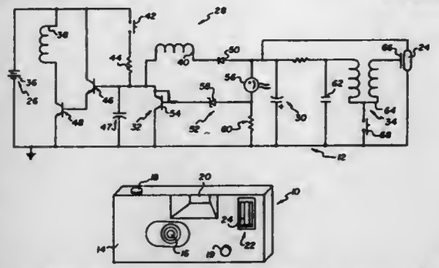
SINGLE TOUCH FLASH CHARGER CONTROL

Clay A. Dunsmore, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 327,244, Oct. 21, 1994, which is a continuation-in-part of Ser. No. 269,415, Jun. 30, 1994. This application Oct. 28, 1994, Ser. No. 330,658

Int. Cl.[6] H05B 37/00

U.S. Cl. 315—241 P 28 Claims



1. A flash device including an illumination element, a flash capacitor providing energy to illuminate said element, a self-oscillating circuit for charging said capacitor, and an electrically actuated gate separate from the self-oscillating circuit for arresting oscillations in said circuit; characterized in that:
a conductive path provided between said flash capacitor and said gate separate from said self-oscillating circuit includes a trigger responsive to a charge level on said capacitor for enabling at least momentary conduction in said path to actuate said gate and arrest said oscillations; and
including an oscillation trigger responsive to a momentary actuation for initiating oscillations in said self-oscillating circuit.

5,574,338

CONTROL CIRCUIT FOR GAS DISCHARGE LAMPS, WHICH HAS A TRANSFORMER WITH START AND RUN WINDINGS

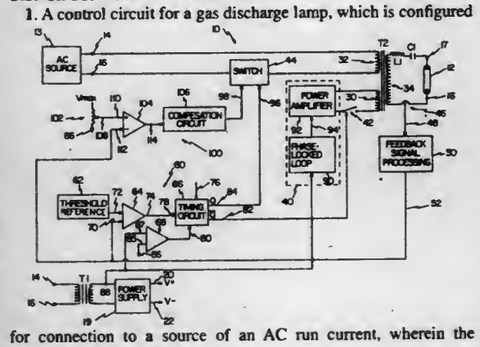
Douglas R. Kuusisto, Burnsville, and Eric G. Persson, Minnetonka, both of Minn., assignors to Nicollet Technologies Corporation, Minneapolis, Minn.

Filed Jun. 7, 1995, Ser. No. 487,503

Int. Cl.[6] H05B 41/36

U.S. Cl. 315—307 28 Claims

1. A control circuit for a gas discharge lamp, which is configured



for connection to a source of an AC run current, wherein the control circuit comprises:
input terminals which are adapted to be coupled to the source of the AC run current;

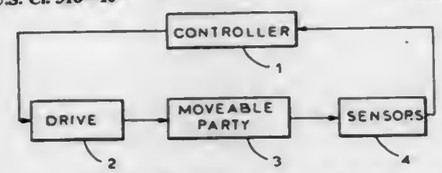
output terminals which are adapted to be coupled to the gas discharge lamp;
a transformer having a primary run winding, a primary start winding and a secondary winding, wherein the primary run winding is coupled to the input terminals and the secondary winding is coupled in parallel with the output terminals;
a run current control switch coupled in series with the primary run winding;
an oscillator coupled to the primary start winding of the transformer;
a start current control switch coupled to the oscillator;
a current sensor coupled in series with the output terminals; and
a feedback loop coupled between the current sensor and the run current control switch and between the current sensor and the start current control switch such that the run current control switch and the start current control switch are responsive to the current sensor.

5,574,339

DRIVE FOR ROCKING FURNITURE

Marcus Kattwinkel, Halver, and Martin Zagromski, Dortmund, both of Germany, assignors to Matt Kattwinkel, Halver, Germany

Filed Jun. 6, 1995, Ser. No. 471,280
Claims priority, application Germany, Jun. 6, 1994, 44 19 781.0
Int. Cl.[6] A47C *3/02*
U.S. Cl. 318—10 **13 Claims**



1. In combination with a piece of furniture having a frame and a part capable of rocking on the frame about an axis and having a natural rocking frequency, a drive comprising:
sensor means for detecting movement of the part on the frame;
drive means for rocking the part on the frame including
a drive rail carried on the part and having an arcuate surface generally centered on the axis,
an electric motor having a rotary output,
a wheel carried on the output, and
spring means urging the wheel radially against the drive-rail surface; and
control means connected between the drive and sensor means for rocking the part on the frame at the natural rocking frequency up to a predetermined maximum angular displacement of the part on the frame.

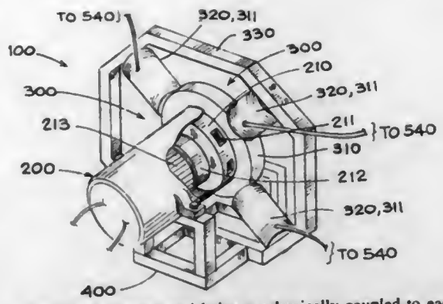
5,574,340

ELECTRICAL AND ELECTRMAGNETIC ROTARY MOTOR APPARATUS AND METHOD UTILIZING SELF-GENERATED SECONDARY ELECTRICAL ENERGY

Charley W. Bisel, 286 E. 12th Ave., Broomfield, Colo. 80501, and Alvin Simpson, 437 W. Scott, Clovis, Calif. 93612

Filed May 11, 1994, Ser. No. 241,420
Int. Cl.[6] H02P *7/00*
U.S. Cl. 318—34 **11 Claims**

1. A rotary motor apparatus, said apparatus comprising:
at least one electromagnetically powered first motor member; and
at least one electrically powered second member,
each of said at least one first motor member and each of said at least one second motor member being powered from a primary power source and being mechanically coupled to each other via a common drive shaft for delivery of produced rotary power,



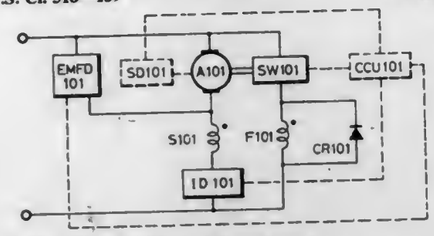
each of said at least one first motor member comprising at least one stationary electromagnet member coupled to said primary power source and being in a magnetically coupled, rotational movement producing relationship with at least one permanent magnet member embedded in a first flywheel member for driving said common drive shaft, each said electromagnet member producing a magnetic field during energization from said primary power source,
each of said at least one second motor member being electrically coupled to said at least one first motor member via said at least one electromagnet member for receiving secondary electrical energy from said at least one electromagnet member to enhance rotational speed and torque output power of said apparatus,
said secondary electrical energy comprising back-emf energy produced from collapse of said magnetic field during a de-energization period of said at least one electromagnetic member; and
a controller means for controlling power distribution from said primary power source and said secondary electrical energy from said at least one electromagnet member.

5,574,341

COMPOUND MOTOR LIMITING CONTROL CIRCUIT FOR CONTROLLABLE SHUNT FIELD WINDING BY MEANS

Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan

Continuation of Ser. No. 87,414, Jul. 8, 1993, abandoned. This application May 1, 1995, Ser. No. 431,979
Int. Cl.[6] H02P *5/04*
U.S. Cl. 318—139 **4 Claims**



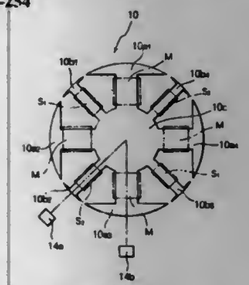
1. In a compound DC motor, comprising:
an armature, a series field winding connected in series between the armature and a terminal of a power supply, a shunt field winding connected in parallel with the series-connected series winding and armature, and
a switch connected in series between the shunt field winding and a terminal of the power supply and in parallel with the armature and series field winding; the improvement wherein:
said switch is a limit switch connected to means for measuring a speed of the motor and for controlling the limit switch be continuously open when the motor speed is below a minimum speed and to be continuously closed when the motor speed exceeds the predetermined speed.

5,574,342

BRUSHLESS MOTOR

Kenjiro Okamoto, Kyoto, Japan, assignor to Nidec Corporation, Kyoto, Japan

Filed Apr. 12, 1995, Ser. No. 420,867
Claims priority, application Japan, Apr. 14, 1994, 6-076030; May 19, 1994, 6-105291
Int. Cl.[6] H02K *29/03*
U.S. Cl. 318—254 **13 Claims**



1 A brushless motor comprising:
a stator having drive coil means and a stator core on which said drive coil means is wound;
a rotor rotatable in relative to said stator;
a magnet attached to said rotor in such a way as to face said stator; and
position detecting means for detecting a rotational angular position of said rotor and control means for controlling a current to be supplied to said drive coil means based on an output signal of said position detecting means,
said stator having a plurality of main teeth and a plurality of auxiliary teeth arranged between said plurality of main teeth,
said drive coil means comprising a main coil and first and second sub coils,
said main coil being wound around said plurality of main teeth in such a way that winding directions on adjacent main teeth become opposite to each other,
said first sub coil being wound on every other one of said plurality of auxiliary teeth in such a way as to have a same winding direction,
said second sub coil being wound on remaining auxiliary teeth in such a way as to have a same winding direction,
winding directions of said first and second sub coils being the same.

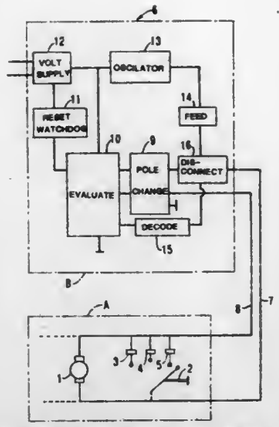
5,574,343

CONTROL OF ACTIVATORS IN MOTOR VEHICLE DOORS

Heinz Leiber, Oberriexingen; Thomas Hennig, Frankfurt-Sossenheim, and Dieter Busch, Rosbach, all of Germany, assignors to VDO Adolf Schinding AG, Frankfurt, and Mercedes-Benz AG, Stuttgart, both of Germany

Continuation-in-part of Ser. No. 161,284, Dec. 2, 1993. This application Jul. 29, 1994, Ser. No. 283,400
Claims priority, application Germany, Dec. 2, 1992, 42 40 403.7
Int. Cl.[6] H02P *1/58*
U.S. Cl. 318—291 **8 Claims**

1. A system for controlling actuating members in a door of a motor vehicle with the use of passive components to produce control commands, the system comprising:
a two-pole line, at least one electromotive actuating drive and at least one actuating element which are located in the door of the vehicle, and a control unit located in the vehicle distant from the door, the actuating element serving to direct a D.C voltage to the actuating drive;



wherein the actuating drive and the actuating element constitute a functional unit, and only the two-pole line is present to provide electrical connection between the control unit and the functional unit;
the control unit includes a source of alternating voltage and a source of direct voltage for supplying voltages to the two-pole line, a pole-reversing circuit connected with the two-pole line for reversing polarity of the D.C. voltage, an evaluation circuit, means for connecting the alternating voltage to the two-pole line, and a decoder for decoding signals appearing on the two-pole line, the decoder interconnecting the two-pole line with the evaluation circuit and being operative with the evaluation circuit for evaluating electrical signals appearing on the two-pole line;
the evaluation circuit connects with the pole-reversing circuit for selecting a polarity of the D.C. voltage; and
the system includes at least two passive components of different impedances which are located in the vehicle door and are connectable into the two-pole line by the at least one actuating element in parallel to the actuating drive, a connection of an individual one of said passive components into the two pole line serving to provide a coded signal to the decoder upon excitation of the two pole line with the alternating voltage.

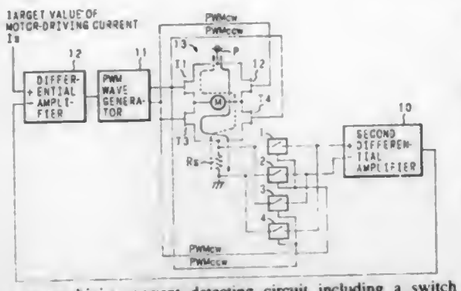
5,574,344

POWER STEERING APPARATUS FOR PERFORMING FEEDBACK CONTROL OF MOTOR-DRIVING CURRENT

Hirofumi Matsuoka, Kyoto, and Ken Fukuda, Kashiwara, both of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Jul. 14, 1995, Ser. No. 502,759
Claims priority, application Japan, Aug. 2, 1994, 6-181392; May 25, 1995, 7-126769
Int. Cl.[6] B62D *5/04*; H02P *1/22*
U.S. Cl. 318—293 **6 Claims**

1. A power steering apparatus for producing a steering assisting power through the control of the duty cycle of a PWM wave signal delivered to control the motor driving in accordance with a detected motor-driving current, the power steering apparatus comprising:
a motor driving circuit including a motor connected to bridge-connected switching elements in such a manner as to bridge two opposite pairs of the switching elements;
a PWM wave generating circuit for driving a selected pair of switching elements connected in series through the motor;
a motor-driving current detecting resistance connected between the motor driving circuit and a power source for the motor; and



a motor-driving current detecting circuit including a switch circuit for switching from one polarity to the other of the voltage developed across the motor-driving current detecting resistance in synchronism with the PWM wave signal and detecting a motor-driving current on the basis of an output from the switch circuit.

5,574,345

POWER SUPPLY CIRCUIT FOR MAGNETIC BEARING SYSTEM

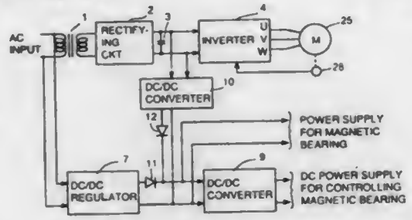
Tadao Yoneta; Takashi Unno; Yukihiro Kurita, and Chikaya Shinba, all of Shizuoka, Japan, assignors to NTN Corporation, Osaka, Japan

Filed Feb. 27, 1995, Ser. No. 395,007

Claims priority, application Japan, Feb. 28, 1994, 6-029694

Int. Cl.[6] H02P *3/12*

U.S. Cl. 318—376 **4 Claims**



1. A power supply circuit for supplying electric power to a magnetic bearing system which supports a spindle by magnetic bearings and rotates said spindle by the driving force of a motor, comprising:

a transformer for transforming a commercially available AC voltage;

a rectifying and filtering circuit connected to said transformer for rectifying and filtering said AC voltage into a smoothed DC voltage;

an inverter connected between said rectifying and filtering circuit and said motor, for converting said smoothed DC voltage into an AC voltage for the motor during normal operation, and for rectifying regenerative electric power generated by said motor when said commercially available AC voltage fails,

a first DC/DC voltage converter having an input connected to said rectifying and filtering circuit and to said inverter and an output connected to said magnetic bearing, for converting the DC voltage output from said rectifying and filtering circuit during normal operation, and for converting the regenerated DC voltage output from said inverter when said AC voltage fails.

5,574,346

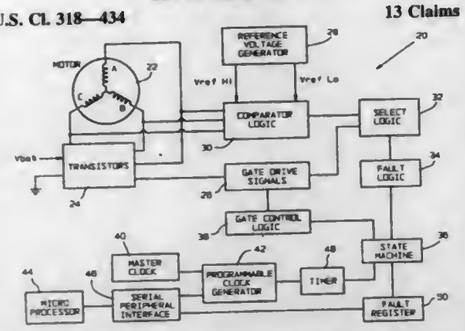
ON AND OFF STATE FAULT DETECTION CIRCUIT FOR A MULTI-PHASE BRUSHED OR BRUSHLESS DC MOTOR

Abhijeet V. Chavan, Ann Arbor, Mich.; David W. Stringfellow, Kokomo, and Sanmukh M. Patel, Indianapolis, both of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed May 15, 1995, Ser. No. 441,108

Int. Cl.[6] H02H *7/26*

U.S. Cl. 318—434 **13 Claims**



1. In an electronic motor control circuit for driving a brushed or brushless multi-phase electric motor having a plurality of phase windings, the motor control circuit comprising an electric power supply having supply and ground voltage terminals, a master clock signal, a serial peripheral interface for interfacing the motor driver circuit with a host microprocessor, a fault register, and a driver sequencing means for generating phase drive signals to sequentially drive the motor phase windings so as to cause the motor to move in a desired manner, a fault detection circuit comprising:

a programmable clock generator which receives the master clock signal and a set of digital program commands from the host microprocessor, said clock generator manipulating the master clock signal and producing a fault detection clock signal;

means for comparing the voltage drop across the motor phase windings with at least one reference voltage, whereby said comparing means produces at least one output indicating if the voltage drop across any of the motor phase windings falls outside of a predetermined normal operating range;

fault detecting means for receiving said comparing means output and the phase drive signals, said fault detecting means generating a fault indication signal upon the occurrence of a fault condition;

gate control means for receiving the phase drive signals and providing a fault detection initiating signal;

counting means for receiving said fault detection clock signal, said counting means counting the pulses of said fault detection clock signal and generating an output representing the number of clock pulses counted; and

a logic state machine means for receiving said fault detection initiating signal, said counting means output, and said fault indication signal, said state machine means providing multi-state fault detection operation, whereby upon the occurrence of a fault condition said state machine means transitions from a first state to a subsequent state after at least one predetermined number of clock pulses have been counted, should the fault condition continue to exist with the state machine means in said subsequent state, said state machine means providing a valid fault signal to the fault register.

5,574,347

APPARATUS FOR LOCOMOTION IN ENCLOSED SPACES

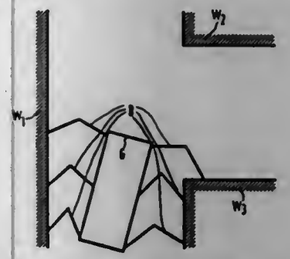
Werner Neubauer, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 156,713, Nov. 24, 1993, abandoned. This application Jun. 8, 1995, Ser. No. 489,005

Claims priority, application Germany, Nov. 27, 1992, 42 39 987.4

Int. Cl.[6] H02J *17/00;* **B62D** *57/02*

U.S. Cl. 318—568.12 **14 Claims**



1. Apparatus for locomotion in an enclosed space defined by at least a first surface and a second surface wherein the first surface is substantially parallel to the second surface defining an interior of the enclosed space, said apparatus comprising:

a base member having at least three legs, each with at least two degrees of articulation, distributively attached over the circumference of said base member;

at least one leg control means controlling leg motion sequence of each leg, said each leg being movable relative to said surfaces of said enclosed space and capable of contacting said first surface and said second surface simultaneously; and

crawler control means for controlling the locomotion and coordination of said leg control means in alternation by repeatedly initiating at least two of said legs to brace themselves against at least one said surface of said enclosed space to support said base member and by placing at least one other leg in motion to respectively drive different leg controls for bracing and moving the other leg to provide said locomotion of said base member.

5,574,348

TOOL SUPPORT

Andreas Ehlerding, Sachsenhäger Str. 3, D-31718 Pollhagen, Germany

PCT No. PCT/EP92/01567, § 371 Date Nov. 17, 1994, § 102(e) Date Nov. 17, 1994, PCT Pub. No. WO93/01021, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 10, 1992, Ser. No. 182,022

Claims priority, application Germany, Jul. 13, 1991, 41 23 323.9

Int. Cl.[6] G05B *19/18;19/407*

U.S. Cl. 318—575 **19 Claims**

1. An apparatus for controlled movement and maximum acceleration of machine tools, comprising:

a) a tool support movably supported adjacent to a work surface for movement in at least two dimensions relative to a work surface;

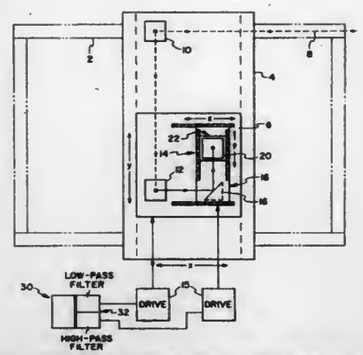
b) a tool-receiving system configured for receiving a tool;

c) said tool-receiving system being movably supported on said tool support for movement in at least one dimension relative to said tool support;

d) a tool support drive provided for accelerating and driving said tool support;

e) a tool-receiving system drive for accelerating and driving said tool-receiving system;

f) a control device operatively connected to said tool support drive and said tool-receiving system drive; and



g) said control device coordinating relative movement of said tool support and said tool-receiving system for accelerating said tool-receiving system at an effective overall rate of acceleration that corresponds to at least the rate of acceleration provided by said tool-receiving system.

5,574,349

SERVO MOTOR CONTROL CIRCUIT

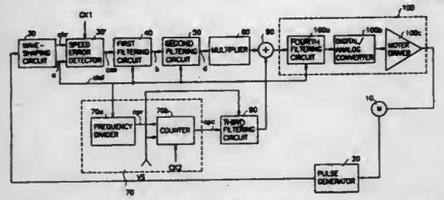
Yong G. Oh, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 30, 1994, Ser. No. 367,805

Claims priority, application Rep. of Korea, Dec. 31, 1993, 1993-32127

Int. Cl.[6] G05B *1/02*

U.S. Cl. 318—606 **2 Claims**



1. A servo motor control circuit for a video signal playback apparatus, comprising:

wave-shaping means for wave-shaping a pulse signal generated according to rotation of a servo motor and providing resultant first and second output signals, said first and second output signals having a desired phase difference therebetween;

speed error detection means for inputting the first and second output signals from said wave-shaping means as reset and enable signals, respectively, and counting an external clock signal in response to the inputted signals to output a speed error signal;

first filtering means for filtering a torque ripple component of the speed error signal from said speed error detection means in response to the second output signal from said wave-shaping means wherein a gain of said first filtering means is much higher in a low frequency band than in any other frequency band;

second filtering means for attenuating a low-frequency gain of an output signal from said first filtering means in response to the second output signal from said wave-shaping means;

phase error detection means for outputting a phase error signal in response to the second output signal from said wave shaping means and an external comparison signal;

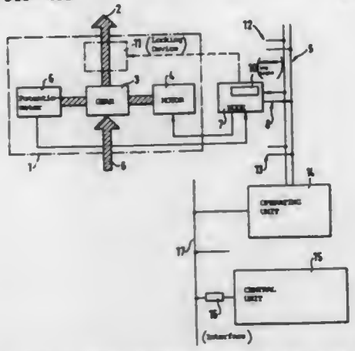
speed/phase adding means for adding an output signal from said second filtering means and the phase error signal from said phase error detection means; and

motor control means for controlling said servo motor in response to an output signal from said speed/phase adding means and the second output signal from said wave-shaping means.

5,574,350
MOTOR-OPERATED ADJUSTING DEVICE FOR MACHINES

Hanspeter Duss, Gretzenbach, and Thomas Schweizer, Wikon, both of Switzerland, assignors to Grapha-Holging AG, Herqiswil, Switzerland

Filed Oct. 25, 1994, Ser. No. 328,818
Claims priority, application Switzerland, Nov. 8, 1993, 03345/93
Int. Cl.[6] G05B *19/35;* **H02P** *5/00*
U.S. Cl. 318—632 **18 Claims**



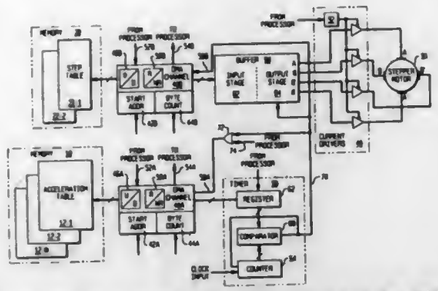
1. A motor-operated adjusting device for adjusting machine axles, comprising:
an addressable unit;
an operating unit for executing control functions for adjusting a position of an axle to be adjusted;
a bus coupling the operating unit to said addressable unit; and
an adjusting unit including:
a path indicator for indicating the position of the axle to be adjusted,
a gear connected to the axle and to the path indicator, and
a motor having an output directly connected via the gear to both the axle and the path indicator for adjusting the position of the axle, an output of the motor and an output of the path indicator being directly connected, via the addressable unit and the bus, to the operating unit so that the operating unit can instruct the motor via the addressable unit to adjust the position of the axle in dependence of the position of the axle as indicated by the path indicator.

5,574,351
METHOD AND APPARATUS FOR CONTROL OF STEPPER MOTORS

Gary S. Jacobson, East Norwalk; Wesley A. Kirschner, and Micheal J. Ramadei, both of Trumbull, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 21, 1994, Ser. No. 327,249
Int. Cl.[6] H02P *8/00*
U.S. Cl. 318—696 **15 Claims**

1. An apparatus for control of a stepper motor by a data processor, said apparatus comprising:
a. a first memory for storing a step time table comprising a sequence of step times defining a velocity profile for said stepper motor;
b. a first DMA channel for sequentially accessing said first memory to output said sequence of step times;

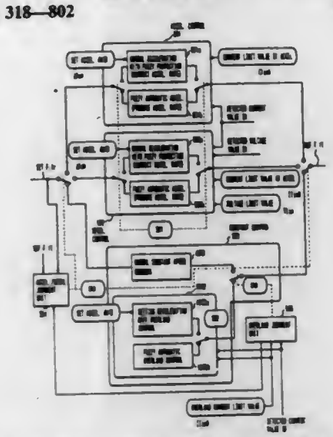


c. a timer for receiving said step times from said first DMA channel and for generating a sequence of trigger signals, corresponding to expiration of intervals defined by each of said step times;
d. a second memory for storing a step table defining a sequence of exitation patterns for driving said stepper motor;
e. a second DMA channel for repetitively accessing said step table to output a cyclic sequence of said exitation patterns to drive said stepper motor; wherein
f. said first DMA channel is responsive to said trigger signals to output said sequence of step times;
g. said second DMA channel is responsive to said trigger signals to output said cyclic sequence of said exitation patterns;
h. said timer is responsive to input of said step times to begin timing the duration of said intervals; and,
I. said apparatus is responsive to said data processor to initiate exitation of said acceleration profile.

5,574,352
FREQUENCY CONTROL METHOD FOR INVERTER AND APPARATUS THEREFOR

Tsunehiro Endo; Tsuyoshi Sasaki, both of Narashino; Hiroshi Fujii, Chiba, and Seiji Ishida, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 20, 1994, Ser. No. 277,977
Claims priority, application Japan, Jul. 20, 1993, 5-178832
Int. Cl.[6] H02P *5/34*
U.S. Cl. 318—802 **14 Claims**

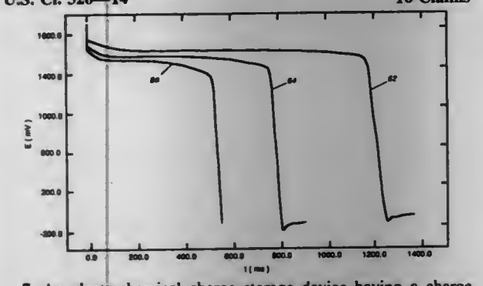


1. In a frequency control method of controlling an inverter which outputs a dc voltage as a variable voltage, variable frequency ac voltage to controllably drive a motor in an accelerating and decelerating mode, the frequency control method comprises the steps of:
conducting a fuzzy inference using at least two physical quantities selected from a group consisting of (1) a difference between a motor current and a current limit value, (2) a quantity of change of the difference between the motor current and the current limit value, and (3) a quantity of change of the motor current;
obtaining an accelerating/decelerating rate of a frequency to be output from said inverter on a basis of the fuzzy inference, such that a motor current flowing through said motor at the time of acceleration and deceleration is maintained within a preset range which includes the current limit value; and
controlling an output frequency from the inverter in dependence on said accelerating/decelerating rate.

5,574,353
ELECTROCHEMICAL CHARGE STORAGE DEVICE HAVING CONSTANT VOLTAGE DISCHARGE

Lijun Bai, Vernon Hills, Canada; Ke K. Lian, Northbrook, Ill., and Robert E. Stengel, Pompano Beach, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 31, 1995, Ser. No. 414,816
Int. Cl.[6] H01M *10/46*
U.S. Cl. 320—14 **16 Claims**



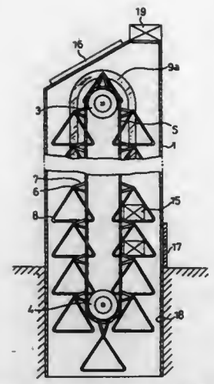
7. An electrochemical charge storage device having a charge cycle and a discharge cycle, and comprising an antimony:bismuth alloy anode, a nickel-molybdenum-chromium alloy cathode, and an electrolyte, said charge storage device characterized by a voltage discharge profile which is substantially constant during at least a substantial portion of the discharge cycle under constant current discharge, and a discharge rate in excess of 100 C.

5,574,354
STORAGE BATTERY CHARGING STATION FOR ELECTRIC VEHICLES

Akira Kohchi, Ashiya, Japan, assignor to Institute for Home Economics of Japan, Inc., Hyogo, Japan

Division of Ser. No. 222,906, Apr. 5, 1994, Pat. No. 5,449,995.
This application Mar. 17, 1995, Ser. No. 406,160
Claims priority, application Japan, Apr. 6, 1993, 5-79722
Int. Cl.[6] H01M *10/46*
U.S. Cl. 320—15 **11 Claims**

6. A vehicular battery charging station comprising:
an enclosed tower structure having doors at ground level for receiving or delivering batteries therethrough;
two pairs of rotors located inside said structure, one at a top end and the other at a bottom end of said structure, said rotors having horizontal shafts thereof journaled to said structure;
driving means for rotating at least one of said shafts;
a pair of conveyor means installed over said top and bottom rotors and circling around said rotors;
a plurality of rods disposed transversely over said pair of conveyor means and attached to said conveyor means;
a carriage suspended from each of said rods and free to swing around associated rod, each of said carriages having the capacity of receiving batteries thereon;
a power source of electricity for charging said batteries;

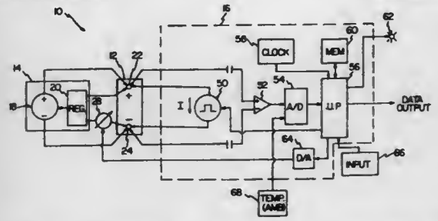


distributing means of electricity from said power source to said carriages, said distributing means disposed alongside the path of said carriage rods and supplying electricity either continuously or intermittently during rotation of said conveyor means; and
means provided on each of said carriages for electrically connecting said electricity distributing means with terminal posts on said batteries.

5,574,355
METHOD AND APPARATUS FOR DETECTION AND CONTROL OF THERMAL RUNAWAY IN A BATTERY UNDER CHARGE

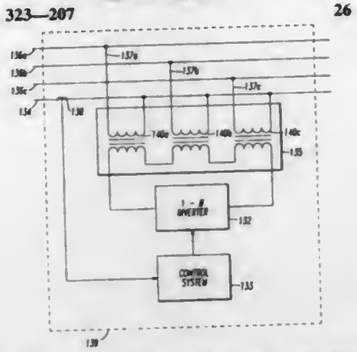
Stephen J. McShane, Oak Brook; Mark Hlavac, New Lenox, and Kevin Bertness, Batavia, all of Ill., assignors to Midtronics, Inc., Burr Ridge, Ill.

Filed Mar. 17, 1995, Ser. No. 406,210
Int. Cl.[6] H01M *10/44;10/48;* **H02J** *7/04;* **G01N** *27/416*
U.S. Cl. 320—39 **20 Claims**



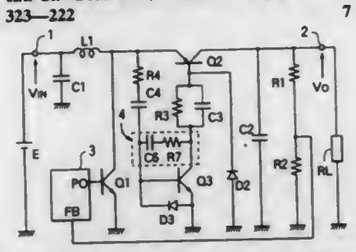
1. A method controlling charging of a battery, comprising the steps of:
charging the battery through a first battery terminal and a second battery terminal;
injecting a time varying current through the first and second battery terminals;
monitoring a voltage between the first and second battery terminals generated in response to the known current;
detecting a decrease in the monitored voltage indicative of a thermal runaway condition; and
reducing the charging of the battery in response to a detected decrease in the monitored voltage.

5,574,356
ACTIVE NEUTRAL CURRENT COMPENSATOR
Kevin L. Parker, Monroeville, Pa., assignor to Northrop Grumman Corporation, Los Angeles, Calif.
Filed Jul. 8, 1994, Ser. No. 272,346
Int. Cl.[6] G05F *1/70*
U.S. Cl. 323—207 **26 Claims**



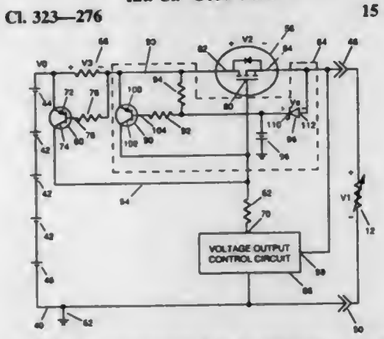
1. An active neutral current compensator for controlling a zero-sequence current in at least one conductor of a multi-phase power distribution system comprising:
a. a multi-phase neutral-forming magnetic structure connected to said multi-phase distribution system for supplying electric power to said active neutral current compensator;
b. said multi-phase neutral-forming magnetic structure having at least one zero-sequence current path;
c. said multi-phase neutral-forming magnetic structure providing low impedance to said zero-sequence current and high impedance to a positive-sequence current and high impedance to a negative-sequence current in at least one conductor of said multi-phase power distribution system:
d. current sensing means, operably connected with said at least one conductor, for sensing a zero-sequence current in said at least one conductor; and
e. control means, connected to said current sensing means and said at least one conductor, for controlling a zero-sequence equivalent impedance in said multi-phase neutral-forming magnetic structure in response to said zero-sequence current in said at least one conductor.

5,574,357
SWITCHING POWER SUPPLY
Tetsushi Otake, Tokyo, and Noriyuki Yoshizawa, Kawagoe, both of Japan, assignors to Toko, Inc., Tokyo, Japan
Filed Nov. 14, 1994, Ser. No. 337,882
Claims priority, application Japan, Nov. 12, 1993, 5-307520; Jan. 14, 1994, 6-015843; Sep. 16, 1994, 6-248632
Int. Cl.[6] G05F *1/10;1/652;1/613;* **H02M** *7/217*
U.S. Cl. 323—222 **7 Claims**



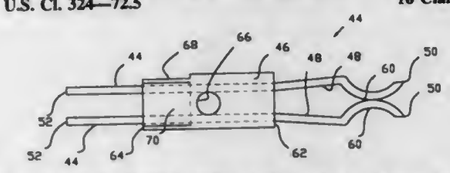
1. In a switching power supply for obtaining a desired D.C. power by storing an energy in an inductor element when a switching element is in a turn-off state, transferring an input energy from the outside and a discharging energy of said inductor element to an output through a rectifying element, and causing an on-duty of said switching element to change, the switching power supply comprising:
a transistor rectifying element consisting of a PNP type bipolar transistor, connected between said inductor element and an output terminal;
a driving transistor consisting of an NPN type bipolar transistor, connected between a base of said transistor rectifying element and a low potential point such as the ground, for driving said transistor rectifying element according to a control signal supplied from a connection point of said transistor rectifying element and said inductor element; and
a capacitor element, connected between a base of said driving transistor and said connection point of said transistor rectifying elements and said inductor element, for leading said control signal to a base of said driving transistor.

5,574,358
SHUTDOWN CIRCUIT AND BATTERY PACK USING SAME
Scott M. Garrett, Lawrenceville, Ga., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 12, 1994, Ser. No. 354,340
Int. Cl.[6] G05F *1/569*
U.S. Cl. 323—276 **15 Claims**



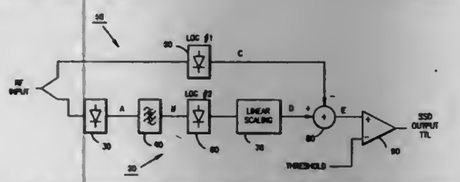
1. A shutdown circuit for use with a power source, a load, and a pass device having an input terminal, an output terminal, and a bias terminal, said shutdown circuit being disposed electrically in parallel with said pass device, said circuit comprising:
a three terminal switch having a first terminal connected to said input terminal of said pass device, a second terminal electrically coupled to said bias terminal of said pass device, and a third terminal connected to said output terminal of said pass device through a first resistance and a voltage controlled current blocking element.

5,574,359
REMOVABLE TESTER CONTACT
Jim L. Arthur, Hamilton, Ill., assignor to Methode Electronics, Inc., Chicago, Ill.
Filed Dec. 16, 1994, Ser. No. 357,407
Int. Cl.[6] G01R *31/02;* **H01R** *13/00*
U.S. Cl. 324—72.5 **16 Claims**



1. A removable tester contact for providing a reliable test interface between an electrical test equipment connector, having a tester contact receiving socket, and a test item having an electrical test point, said tester contact comprising:
a) a rigid contact holder formed of an insulating material for inserting into said tester contact receiving socket; and
b) two contact beams mounted within said contact holder wherein each portion of the contact beams mounted within the contact holder is surrounded by the insulating material of the contact holder.

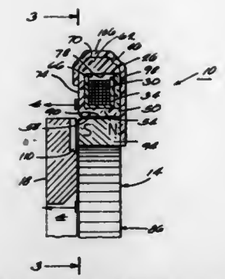
5,574,360
SIMULTANEOUS SIGNAL DETECTOR
David L. Richardson, Arlington Heights, Ill., assignor to Northrop Grumman Corporation, Los Angeles, Calif.
Filed May 12, 1995, Ser. No. 439,677
Int. Cl.[6] G01R *23/16*
U.S. Cl. 324—76.39 **17 Claims**



1. In a simultaneous signal detector for indicating the simultaneous presence of an RF input signal made up of signals having frequencies f1 and f2 separated by a predetermined minimum, including:
a difference signal generating component which includes means for generating and outputting a difference signal proportional to the difference P between frequencies f1 and f2; and
a simultaneous signal (SS) active signal generating component which includes means for evaluating an output of the first component to determine whether the input signal is made up of separate signals, and generating an SS active signal in response to detection of the separate signals;
the improvement comprising:
a splitter having an input connected to the RF input of the detector and two outputs, one of which is connected to an input of the first component, the two outputs forming two parallel processing paths;
a first detector including means for detecting a parameter of the input signal which is independent of the difference in frequencies and which is to be used as a scaling factor for the difference signal, said first detector having as an input a second output of the splitter;
a difference signal scaling component having as inputs respective outputs of the first detector and the difference signal generating component, and including means for scaling the respective outputs of the first detector and the difference signal generating component and outputting a result of the scaling to the input of the evaluating component.

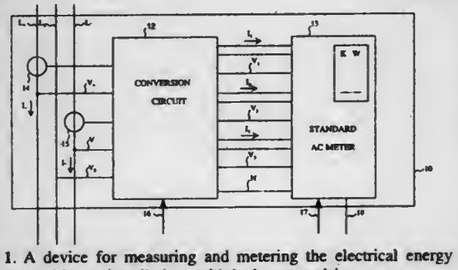
5,574,361
IMPROVED SWITCHED RELUCTANCE ANGULAR VELOCITY SENSOR
James D. Seefeldt, DeForest; Timothy C. Ausavich, and Jeffrey J. Bloom, both of Janesville, all of Wis., assignors to SSI Technologies, Inc., Janesville, Wis.
Filed Dec. 27, 1994, Ser. No. 364,598
Int. Cl.[6] G01P *3/488*
U.S. Cl. 324—174 **19 Claims**

1. A sensor for detecting the angular speed of a rotating element relative to a fixed element, the rotating element having a plurality of teeth and an axis of rotation, the sensor comprising:
an annular ferromagnetic ring having an annular recess, said ring being mounted on the fixed element;



a pick-up coil mounted in said annular recess; and
an annular magnet mounted in said ferromagnetic ring so as to be concentric and with radially inward relative to said pick-up coil, said magnet including a plurality of magnetic regions alternating in polarity around said magnet and said magnet being oriented relative to the plurality of teeth such that at least one of said magnetic regions is adapted to face a respective one of the teeth on the rotating element.

5,574,362
ELECTRICAL ENERGY MEASURING AND METERING DEVICE
Jean-Noël Florina, Seyssinet-Pariset, and Jean-Jacques Pillet, St. Egreve, both of France, assignors to Schneider Electric SA, France
Filed Jun. 1, 1994, Ser. No. 252,359
Claims priority, application France, Jun. 11, 1993, 93 07161
Int. Cl.[6] G01R *11/00*
U.S. Cl. 324—142 **10 Claims**



1. A device for measuring and metering the electrical energy consumed by an installation, said device comprising:
current measurement means for measuring currents consumed by the installation through a power distribution system,
voltage measurement means for measuring voltages applied to the installation through the power distribution system,
a standard electrical energy meter operating in a predetermined AC current and voltage operating range and comprising current and voltage inputs,
conversion means including a first input connected to an output of the current measurement means, a second input connected to an output of the voltage measurement means, current outputs connected to the current inputs of the standard meter, and voltage outputs connected to the voltage inputs of the standard meter,
wherein the conversion means includes circuit means for producing output AC current and voltage signals suitable for the standard meter in response to current and voltage signals supplied from the current measurement means and the voltage measurement means, wherein an electrical power corresponding to the AC current and voltage signals supplied by the conversion means is proportional to an electrical power of the current and voltage signals respectively supplied by the cur-

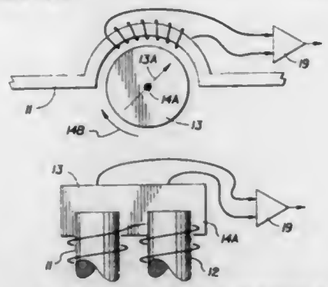
rent measurement means and the voltage measurement means, and wherein at least one of the current and voltage signals supplied by the current measurement means and the voltage measurement means is incompatible with the current and voltage operating range of the standard meter.

5,574,363

IMPROVED STABILITY METHOD AND APPARATUS FOR NON DESTRUCTIVE MEASURE OF MAGNETIC SATURATION FLUX DENSITY IN MAGNETIC MATERIALS

Tomasz M. Jagielinski, Carlsbad, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 14, 1994, Ser. No. 196,052
Int. Cl.[6] G01N *27/74*; G01R *33/12*
U.S. Cl. 324—204 **17 Claims**



1. A device for measuring the magnetic properties of a material, said device comprising:

a radially magnetized, cylindrical dipole permanent magnet having a rotational axis and having an axis of magnetization perpendicular to and passing through said cylindrical axis;

rotational apparatus for rotating said magnet about a rotational axis;

a first sample holder having a first inductive pick-up coil, said first sample holder positioned on a first side of said magnet, said first sample holder having an axis in a plane perpendicular to said rotational axis; and

a second sample holder with a second inductive pickup coil, said second sample holder having a generally symmetric position relative to said first sample holder and said first coil to said first sample holder on said first side of said rotational axis, said coils being electrically coupled to provide a cancellation of signals induced in said pick-up coils as a result of said rotating magnet when no material to be tested is present, wherein said material to be tested being inserted in said first sample holder resulting in an output signal.

5,574,364

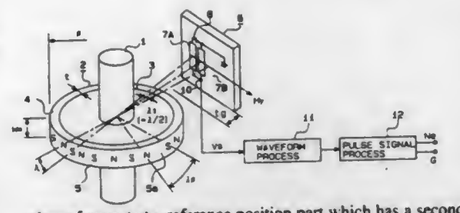
POSITION DETECTOR INCLUDING A REFERENCE POSITION WHEREIN THE SENSOR IS SATURATING THE MR SENSOR FOR PREVENTING HYSTERESIS AND IN A BRIDGE CIRCUIT

Kazuo Kajimoto; Tomoatsu Makino; Yasuaki Makino, all of Okazaki, and Seiki Aoyama, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 18, 1994, Ser. No. 199,337
Claims priority, application Japan, Feb. 19, 1993, 5-030669
Int. Cl.[6] G01R *33/025*; G01B *7/14;7/30*
U.S. Cl. 324—207.12 **25 Claims**

2. A position detector comprising:

a movable body having poles with alternating opposite magnetization polarities at a first magnetization pitch on a surface



thereof except at a reference position part which has a second magnetization reference position pitch larger than said first magnetization pitch; and

a magnetoresistive transducer facing said movable body for generating a voltage signal corresponding to an intensity of a magnetic field from said magnetized surface, said transducer being saturated when said magnetic field intensity is above a predetermined level;

wherein an intensity of said magnetic field at said reference position part is above said predetermined level, and

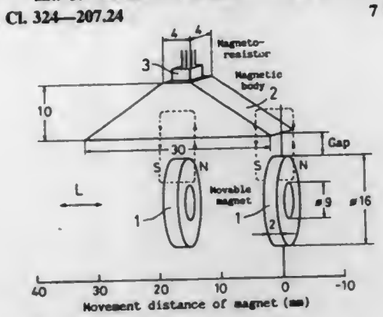
said movable body comprises a rotor having a magnetized circumferential rim as said surface and wherein a magnetic field intensity of a portion of said circumferential surface immediately adjacent to said reference position part is higher than that of other ones of said magnetic poles.

5,574,365

TRAVEL SENSOR HAVING A MAGNETIC SENSOR ATTACHED TO A TRUNCATED PYRAMID AND A MOVABLE MAGNET

Hitoshi Oyama, and Masahiro Kume, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 21, 1994, Ser. No. 361,223
Claims priority, application Japan, Oct. 14, 1994, 6-248988
Int. Cl.[6] G01B *7/14*; G01D *5/18*; G01R *33/02*
U.S. Cl. 324—207.24 **7 Claims**



1. A movement distance detector comprising:

a magnet movable along a path and having poles arranged parallel to the path;

a magnetic body having the shape of a truncated pyramid having a top portion and a bottom portion, wherein said bottom portion of said truncated pyramid extends parallel to the path; and

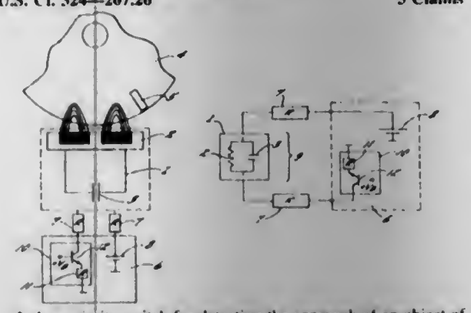
a magnetically sensitive element mounted on said top portion of said truncated pyramid.

5,574,366

PROXIMITY SWITCH HAVING A VARIABLE SENSING RESISTOR FOR MAINTAINING A CONSTANT TOTAL RESISTANCE

Friedhelm Joost, Essen, Germany, assignor to Tiefenbach GmbH, Essen, Germany

Filed Sep. 2, 1993, Ser. No. 116,244
Claims priority, application Germany, Sep. 2, 1992, 42 29 225.5; Sep. 10, 1992, 42 30 270.6
Int. Cl.[6] G01B *7/14*
U.S. Cl. 324—207.26 **5 Claims**



1. A proximity switch for detecting the approach of an object of metallic material and comprising

an oscillating circuit which includes a first coil for producing a magnetic field, the oscillating circuit including an internal resistance which varies inversely to a distance between the oscillating circuit and an approaching metal object,

sensing resistor means having a resistance and connected in series with said oscillating circuit, said sensing resistor means including means for adjusting the resistance of the sensing resistor means in relation to variations in the internal resistance of the oscillating circuit so that a total resistance of said oscillating circuit and said sensing resistor means remains constant as the metal object approaches, and

means for monitoring a voltage drop across said sensing resistor means as a measure of an amount of damping of the oscillation circuit caused by the approach of the metal object into the magnetic field of said first coil.

5,574,367

POLAR COORDINATES SENSOR ARRAY WITH ROTATING MAGNETIC FIELD DRIVEN PICKUP ELEMENTS

Delmar L. Logue, R.R. #1, Box 60, Herrick, Ill. 62431

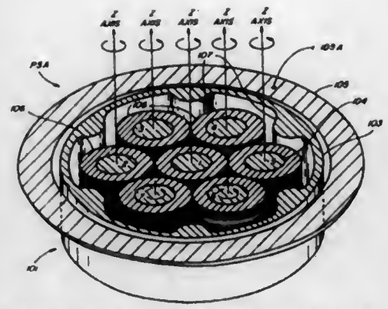
Continuation-in-part of Ser. No. 842,244, Feb. 27, 1992, Pat. No. 5,404,101, and a continuation-in-part of Ser. No. 108,880, Aug. 13, 1993, abandoned, and a continuation-in-part of Ser. No. 142,933, Oct. 29, 1993, Pat. No. 5,532,591, and a continuation-in-part of Ser. No. 170,058, Dec. 20, 1993. This application Jan. 27, 1994, Ser. No. 187,072
Int. Cl.[6] G01B *7/14;7/30*
U.S. Cl. 324—207.26 **4 Claims**

1. A polar coordinates sensing array having a plurality of pick-up elements driven by a rotating magnetic field generating means, for generating a plurality of polar coordinate signals representing the geometric shape of a metal target, said polar sensing array comprising:

a) a pick-up core formed of ferromagnetic material, further comprising:

i) an outer cylindrical pole closed at one end with a base portion forming a cup-like structure; and,

ii) a plurality of cylindrical pick-up poles mounted inside the said cup-like structure with with the longitudinal axis of each cylindrical pick-up pole being arranged parallel to the longitudinal axis of the outer cylindrical pole in a hexagonal arrangement with the longitudinal axis of one cylindrical pick-up pole coaxial to the longitudinal axis of the outer cylindrical pole; and,



one end of each cylindrical pick-up pole attached to the base portion inside the said cup-like structure; and, there being a predetermined spacing distance between adjacent cylindrical pick-up poles and the outer cylindrical pole so that each cylindrical pick-up pole has a 360 degree azimuth flux balance; and,

the open end of the outer cylindrical pole and the cylindrical pick-up poles forming a sensing face; and,

iii) a plurality of half cylinder protrusions attached to the inside circumference of the outer cylindrical pole, each protrusion symmetrically disposed between an adjacent pair of pick-up poles for improving flux distribution between the cylindrical pick-up poles and the outer cylindrical pole; and,

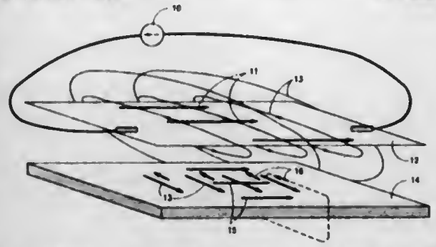
iv) a pick-up coil wound around each of the said plurality of cylindrical pick-up poles for generating a plurality of polar coordinate signals simultaneously when the said 360 azimuth flux balance is upset.

5,574,368

APPARATUS AND METHOD FOR INDUCING EDDY CURRENTS IN A STRUCTURE FOR MAGNETO-OPTIC TESTING

Michel Horn, South Setauket, and Stanley M. Reich, Jericho, both of N.Y., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Sep. 7, 1995, Ser. No. 524,845
Int. Cl.[6] G01N *27/82*; G01R *33/12*
U.S. Cl. 324—228 **19 Claims**



1. Apparatus for inducing eddy currents in a structure for magneto-optic testing, comprising:

a conductor sheet:

means for causing a sheet current to flow through the conductor sheet and thereby generate an alternating primary magnetic field surrounding said sheet, the primary magnetic field in turn inducing eddy currents in the structure, the eddy currents in turn generating an opposing magnetic field;

means for sensing the opposing magnetic field: and

means for rotating the primary magnetic field by varying the sheet current in the conductor sheet.

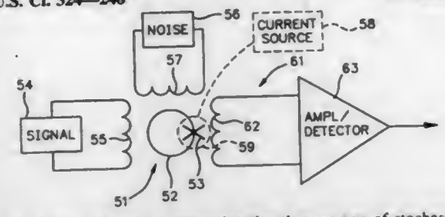
VOL 1192 ISS 2 NO 12 1996 UMI

5,574,369

DETECTION AND COMMUNICATIONS DEVICE EMPLOYING STOCHASTIC RESONANCE

Andrew D. Hibbs, 945 Van Nuys St., San Diego, Calif. 92109

Filed Aug. 19, 1994, Ser. No. 293,094
Int. Cl.[6] G01R *33/035*; H03K *17/92*
U.S. Cl. 324—248 23 Claims



1. A detecting device employing the phenomenon of stochastic resonance to improve signal-to-noise ratio (SNR) and detector sensitivity, said device comprising:

a stochastic resonance element comprising a superconducting loop having at least one Josephson junction, said loop having at least two stable states of internal magnetic flux and being transitionable from one state to another;

means for applying noise to said loop;

means for coupling a magnetic flux input to said loop of unknown and insufficient amplitude to cause said loop to change state, the noise and flux input together in said loop inducing said loop to transition stochastically from one state to another to produce an output signal; and

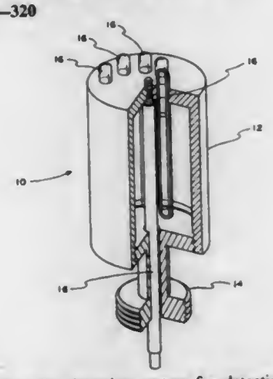
means for detecting the output signal of said loop indicative of the internal magnetic flux state transitions of said loop, thereby determining the existence of and information about the input magnetic flux.

5,574,370

NUCLEAR RESONANCE TOMOGRAPHY WITH A TOROID CAVITY DETECTOR

Klaus Woelk, Hinsdale; Jerome W. Rathke, Lockport, and Robert J. Klingler, Westmont, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 2, 1994, Ser. No. 307,981
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—320 9 Claims



1. A toroid cavity detection system for detecting the spectral properties of a sample and for determining the distance from a fixed position for the sample using Nuclear Magnetic Resonance comprising:

a hollow conducting cylinder having a long axis and an inner and outer surface and a closed end opposing an open end where said inner surfaces of said hollowed cylinder are approximately parallel to said outer surfaces of said cylinder;

a conducting base where a first end of said base is joined to said cylinder at said cylinder's open end, where said second end of said base is configured to attach to a probe, and where the combination of said conducting base with said cylinder enclose the sample;

a central insulated conductor which passes through an opening in said conducting base and is attached to said closed end;

an external magnetic means for producing a uniform external magnetic field which is oriented parallel to said long axis of said cylinder;

a pulse generating transmitter means coupled to said conductor for developing a time variable magnetic field internal to said cylinder; and

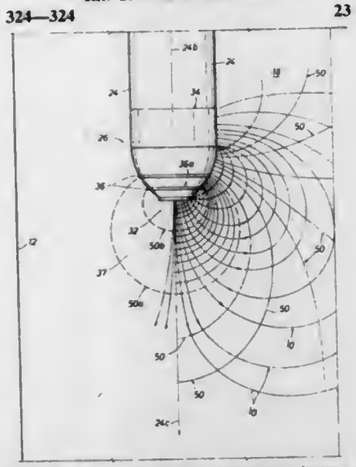
a receiving means coupled to said conductor for processing a sample response to said external magnetic and said time variable magnetic field.

5,574,371

METHOD AND APPARATUS FOR MEASURING MUD RESISTIVITY IN A WELLBORE INCLUDING A PROBE HAVING A BOTTOM ELECTRODE FOR PROPAGATING A CURRENT FROM AND TO THE BOTTOM ELECTRODE IN A DIRECTION APPROXIMATELY PARALLEL TO A LONGITUDINAL AXIS OF THE PROBE

Jacques R. Tabanou, Houston, and Andre E. Orban, Sugarland, both of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Continuation of Ser. No. 330,397, Oct. 27, 1994. This application Jan. 31, 1996, Ser. No. 594,419
Int. Cl.[6] G01V *3/18*;*3/02*
U.S. Cl. 324—324 23 Claims



1. An apparatus adapted to be connected to a bottom of a tool string in a wellbore for measuring a resistivity of a mud in said wellbore, said apparatus having a bottom surface which includes a first plurality of surfaces occupied by electrodes and a second plurality of surfaces not occupied by electrodes, comprising:

a bottom electrode occupying one of said first plurality of surfaces having a bottom electrode surface and connected to a bottom of said apparatus when said apparatus is disposed in said wellbore, a region of said mud being disposed directly below said bottom electrode when said apparatus is disposed in said wellbore;

a second electrode occupying another of said first plurality of surfaces having a second electrode surface,

said bottom electrode being adapted for emitting a first current into said region of said mud, said second electrode adapted for receiving said first current from said region of said mud, substantially all of said first current propagating in a direction which is approximately parallel to a longitudinal axis of said apparatus when said first current is initially emitted from said bottom electrode,

said second electrode being adapted for emitting a second current into said region of said mud, said bottom electrode being adapted for receiving said second current from said region of said mud, substantially all of said second current propagating in a direction which is approximately parallel to the longitudinal axis of said apparatus when said second current is received in said bottom electrode; and

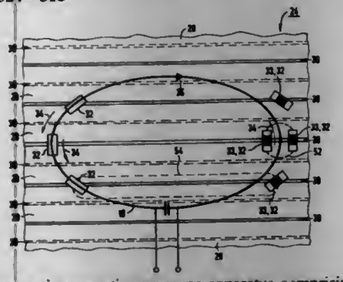
at least one measurement electrode occupying still another of said first plurality of surfaces and having a measurement electrode surface and disposed adjacent said bottom electrode and said region of said mud adapted for measuring a voltage potential in said region, said voltage potential in said region being controlled by said current flowing in said region, said first plurality of surfaces including said bottom electrode surface and said second electrode surface and said measurement electrode surface, said first plurality of surfaces joining together with said second plurality of surfaces to form one substantially continuous bottom surface.

5,574,372

DIAGNOSTIC MAGNETIC RESONANCE APPARATUS HAVING A RADIO FREQUENCY SHIELD BETWEEN THE RADIO FREQUENCY ANTENNA AND THE GRADIENT COIL SYSTEM

Michael Moritz, Mistelgau; Ralph Oppelt, Uttenreuth, and Wilhelm Duerr, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 18, 1995, Ser. No. 374,028
Claims priority, application Germany, Jan. 19, 1994, 44 01 464.3; Apr. 25, 1994, 44 14 371.0
Int. Cl.[6] G01R *33/28*
U.S. Cl. 324—318 7 Claims



1. A diagnostic magnetic resonance apparatus comprising:

means for defining an examination space for accepting at least part of an examination subject;

means for generating a basic magnetic field in said examination space;

gradient coil means for generating a plurality of gradient magnetic fields in said examination space superimposed on said basic magnetic field;

radio frequency antenna means for transmitting excitation pulses into said examination subject in said examination space in the presence of said basic magnetic field and said gradient fields, and thereby causing said examination subject to produce magnetic resonance signals, and for receiving said magnetic resonance signals, said radio-frequency antenna means being disposed closer to said examination space than is said gradient coil means; and

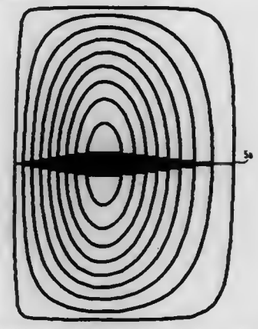
a radio-frequency shield disposed between said radio-frequency antenna means and said gradient coils means, said radio-frequency shield comprising a first electrically conductive layer and a second electrical conducive layer disposed opposite said first electrical conductive layer, a dielectric disposed between said first and second electrically conductive layers, each of said first and second electrically conductive layers having a plurality of interconnects disposed side-by-side and separated from each other by electrically insulating slots, said slots in the respective first and second electrically conductive layers being disposed offset relative to each other, and adjacent interconnects in at least one of said first and second electrically conductive layers being connected to each other by respective bridges which conduct high-frequency currents, said bridges being disposed in an arrangement preventing inducement of ring currents, having a resonant frequency approximating an operating frequency of the magnetic resonance apparatus, over a plurality of said interconnects, said bridges being disposed on the as least one electrically conductive layer causing currents induced in said at least one electrically conductive layer by said radio-frequency means to flow between said adjacent interconnects substantially only via said bridges.

5,574,373

LOCAL GRADIENT COIL ARRANGEMENT FOR NUCLEAR MAGNETIC RESONANCE TOMOGRAPHY APPARATUS

Guenther Pausch, Effeltrich, and Eva Eberlein, Baiersdorf, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 24, 1996, Ser. No. 590,818
Claims priority, application Germany, Feb. 7, 1995, 195 04 171.2
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—318 10 Claims



1. A local gradient coil arrangement for use in a nuclear magnetic resonance tomography apparatus, comprising:

a plurality of gradient coils, each having a conductor, disposed to form a hollow-cylindrical geometrical combination;

said geometrical combination having at least one separating line permitting said geometrical combination to be separated at at least one side thereof along an axial direction;

each gradient coil conductor crossing said separating line being interrupted at said separating line; and

each gradient coil having current-carrying connecting lines proceeding parallel to and on opposite sides of said separating line.

5,574,374

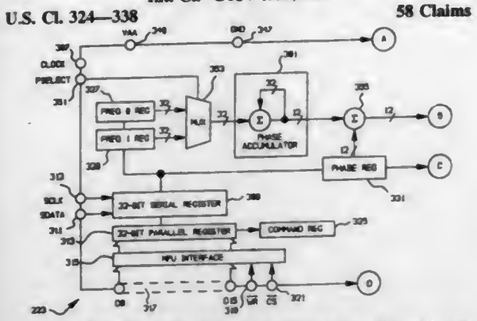
METHOD AND APPARATUS FOR INTERROGATING A BOREHOLE AND SURROUNDING FORMATION UTILIZING DIGITALLY CONTROLLED OSCILLATORS

Larry W. Thompson, Willis, and Macmillan M. Wisler, Kingwood, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 820,091, Jan. 13, 1992, Pat. No. 5,402,068, which is a continuation of Ser. No. 697,524, Apr. 29, 1991, Pat. No. 5,081,419. This application Mar. 14, 1994, Ser. No. 214,343

Int. Cl.[6] G01V *3/08; 1/02*

U.S. Cl. 324—338 **58 Claims**



1. A logging apparatus for use in interrogating a borehole and surrounding formation, comprising:

a housing;

at least one transmitter antenna carried by said housing;

at least one receiver antenna carried by said housing;

at least one oscillator, which is electrically coupled to said at least one transmitter antenna for selectively energizing said at least one transmitter antenna, which has at least one digital input and an analog output, and which provides a particular analog output from a plurality of available analog outputs at least in part in response to receipt of a particular digital command signal;

a controller means for (1) supplying a particular digital command signal from a plurality of available digital command signals in response to program instructions, (2) causing said analog output of said at least one oscillator to be applied to a particular ones of said at least one transmitter antenna to produce an interrogating electromagnetic field, (3) utilizing said at least one receiver antenna to measure at least one attribute of said interrogating electromagnetic field, and (4) calculating a value for at least one attribute of at least one of said borehole and surrounding formation.

5,574,375

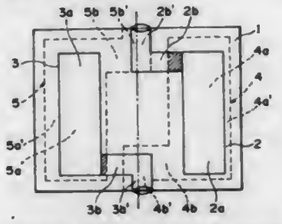
DUAL PYROELECTRIC SENSOR

Aisaku Nagai, Iwaki, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,899

Int. Cl.[6] G01J *5/34*

U.S. Cl. 324—502 **12 Claims**



1. A dual pyroelectric sensor, comprising: a pyroelectric sheet, a pair of first and second electrodes formed on a first major surface of the pyroelectric sheet, and a pair of third and fourth electrodes disposed on a second major surface of the pyroelectric sheet opposite to the first and second electrodes, respectively; each of said first to fourth electrodes comprising a principal electrode region for providing an effective light-receiving area and a takeout electrode region integrally extended out of the principal electrode region so as to allow a connection with another electrical member, said first and third electrodes and a part of the pyroelectric sheet disposed between these electrodes constituting a first pyroelectric element, said second and fourth electrodes and a part of the pyroelectric sheet disposed between these electrodes constituting a second pyroelectric element; wherein

the principal electrode region of said first electrode includes an enlarged region surrounding a region thereof overlying the principal electrode region of the third electrode opposite thereto; the principal electrode region of said fourth electrodes includes an enlarged region surrounding a region thereof overlying with the principal electrode region of the second electrode opposite thereto; and the takeout electrode regions of the second and third electrodes are initially taken out of the respective principal electrode regions thereof in mutually opposite directions, whereby the first and second pyroelectric elements are ensured to have substantially identical effective light-receiving areas even in case of a positional deviation between the first and second electrodes formed on the first major surface and the third and fourth electrodes formed on the second major surface.

5,574,376

A.C. FIELD MEASUREMENT SYSTEM FOR DETECTING AND SIZING DEFECTS IN A CONDUCTOR VIA FIXED ORTHOGONAL COILS

David A. Topp, and Martin C. Lugg, both of Milton Keynes, England, assignors to Technical Software Consultants Limited, Milton Keynes, England

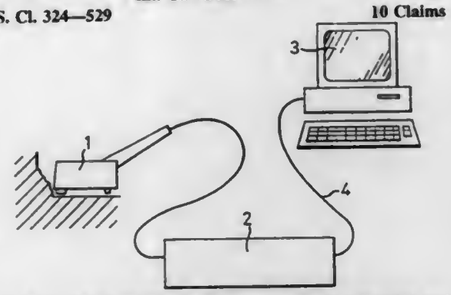
PCT No. PCT/GB92/00053, § 371 Date Jul. 6, 1993, § 102(e) Date Jul. 6, 1993, PCT Pub. No. WO92/12422, PCT Pub. Date Jul. 23, 1992

PCT Filed Oct. 1, 1992, Ser. No. 84,228

Claims priority, application United Kingdom, Jan. 11, 1991, 9100589

Int. Cl.[6] G01N *27/90*

U.S. Cl. 324—529 **10 Claims**



1. An a.c. field measurement testing system for detecting and sizing defects in a conductor comprising a probe and a processor including at least one display wherein the probe includes a yoke for inducing a uniform a.c. field in a first direction, sensor means comprising at least two coils wound on a former at the same location on the former, said former being fixed in said probe with respect to said yoke and said first direction, a first coil of which baving a longitudinal axis extending in said first direction and a second coil of which having a longitudinal axis extending in a second direction orthogonal to said first direction and means for effecting energisation of the a.c. field, the arrangement being such that signals produced by the coils indicative of defects in a test piece, when the probe is located adjacent to the test piece, are processed by the processor and plots of signal magnitude derived from at least two of the coils are recorded on the display.

5,574,377

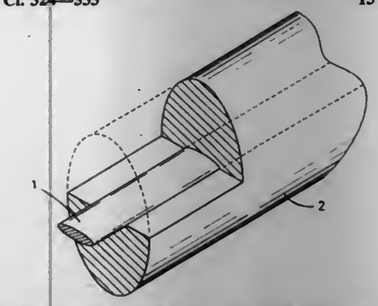
DEVICE FOR THE DETECTION AND LOCALIZATION OF ORGANIC SOLVENT LEAKAGES AND FABRICATION PROCESS

Alfredo Marquez-Lucero, Daniel Delgadillo #99, 54050 Vista Bella, Tlalnepantla, Edo. de Mex. C.P., and Pedro Fuentes-Riquelme, Calle 57 # 324, Villas de la Hacienda, Mérida, both of Mexico

Filed Aug. 10, 1994, Ser. No. 288,458

Int. Cl.[6] G01R *31/11;* **G01M** *3/04*

U.S. Cl. 324—533 **15 Claims**



12. An electrically conductive cable sensitive to an organic solvent, said cable comprising an electrically conductive composite comprised of electrically conducting particles in a matrix of a polymer soluble in or swellable by said organic solvent, said electrically conducting particles being present in at least an amount corresponding to the electrical percolation concentration, said cable losing part or all of its ability to transmit an electrical signal when in contact with an organic solvent,

wherein said conducting particles are of a first size and a second size, said first size conducting particles being at least 80 times larger than said second size conducting particles, the first size conducting particles constituting 60–70% by volume of said composite, the second size conductive particles constituting 20–30% of said composite by volume.

5,574,378

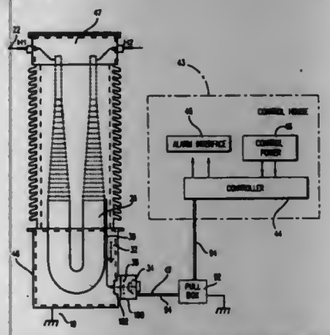
INSULATION MONITORING SYSTEM FOR INSULATED HIGH VOLTAGE APPARATUS

Thomas J. Meyer, Pinellas Park, and Nicholas S. Powers, Safety Harbor, both of Fla., assignors to Square D Company, Palatine, Ill.

Filed Dec. 15, 1994, Ser. No. 356,821

Int. Cl.[6] G01R *31/12*

U.S. Cl. 324—541 **14 Claims**



1. An insulation monitoring system for a high voltage apparatus having a capacitance tap coupled to an insulation system between a high voltage conductor and earth ground of said high voltage apparatus, said insulation monitoring system comprising:

a. a transmitter module including an AC current sensor for measuring and converting a charging current flowing in said insulation system between said high voltage conductor and earth ground to a first voltage signal proportional to said charging current and an electronic circuit means for converting said first voltage signal to a DC current and modulating a first current signal by said DC current;

b. an adapter for coupling said transmitter module to said capacitance tap;

c. a transmission network coupled to said transmitter module, said transmission network for sending said modulated first current signal;

d. a controller coupled to said transmitter by said transmission network to receive said modulated first current signal, said controller for demodulating said modulated first current signal to extract said DC current, converting said DC current to a voltage proportionally to said charging current, comparing said proportional voltage with a preset voltage level, and generating an alarm signal when said proportional voltage exceeds said preset voltage level; and

e. wherein said insulation monitoring system continuously monitors said insulation system.

5,574,379

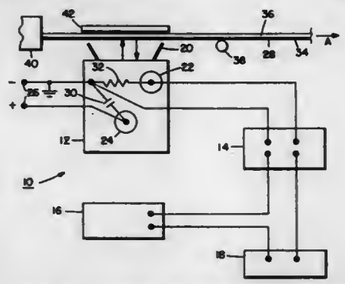
SYSTEM FOR MEASURING ELECTROMAGNETIC PROPERTIES

Phillip H. Darling, Jr., Buena Park, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Continuation of Ser. No. 992,238, Dec. 17, 1992, Pat. No. 5,393,557. This application Feb. 15, 1995, Ser. No. 388,761

Int. Cl.[6] G01R *27/32*

U.S. Cl. 324—642 **11 Claims**



1. A system for measuring an electromagnetic property of a member, comprising:

transceiver means spaced from the member for directing electromagnetic energy at a region of the member and for receiving reflected electromagnetic from the region, the reflected electromagnetic energy being representative of the electromagnetic property, the transceiver means outputting a transceiver output signal which is representative of the reflected electromagnetic energy;

amplifier means, connected to the transceiver means and receiving the transceiver output signal, for outputting an output current signal which is representative of the transceiver output signal;

display means, connected to the amplifier means and receiving the output current signal, for presenting a display signal which is representative of the output current signal, whereby the electromagnetic property is measured; and

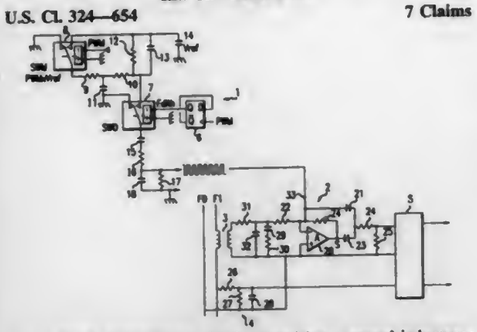
a controller connected to the amplifier means and to the display means, the controller being adapted to control an apparatus for coating the member based, at least partially, upon the reflected electromagnetic energy received by the transceiver means.

5,574,380

CURRENT MEASUREMENT CIRCUIT COMPRISING A MUTUALLY COUPLED TRANSFORMER AND AN INTEGRATION CIRCUIT

Michel Dubin, Poitiers, France, assignor to Schlumberger Industries, S.A., Montrouge, France

Filed May 19, 1995, Ser. No. 444,499
Claims priority, application France, Jun. 1, 1994, 94 06675
Int. Cl.[6] G01R 27/26
U.S. Cl. 324—654 7 Claims



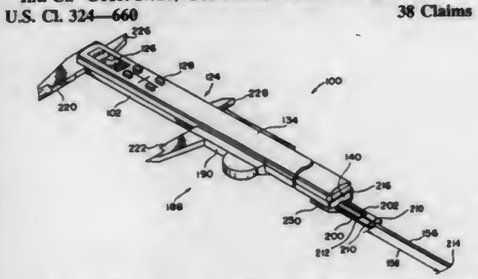
1. Current measurement circuit comprising a mutual inductance transformer and an integration circuit which integrates the signal from the transformer characterised in that the measurement circuit further comprises a dither circuit which adds a substantially rectangular signal to the signal from the transformer before the input of the integration circuit in order that the integration circuit provides a signal representing the measured current perturbed by a substantially triangular dither signal.

5,574,381

SEALED MECHANICAL CONFIGURATION FOR ELECTRONIC CALIPERS FOR RELIABLE OPERATION IN CONTAMINATED ENVIRONMENTS

Nils I. Andermo, and Kim W. Atherton, both of Kirkland, Wash., assignors to Mitutoyo Corporation, Tokyo, Japan

Filed Jan. 6, 1995, Ser. No. 369,657
Int. Cl.[6] G01R 27/26; G01B 7/02; G01D 5/24; G08C 19/10
U.S. Cl. 324—660 38 Claims



1. A capacitive electronic caliper having reduced sensitivity to environmental contaminants, comprising:

an elongated main beam mechanically coupled to a first position determining member, said main beam having a hollow interior thereby forming an elongated cavity;

a first set of electrodes fixed within said elongated cavity in said main beam, said first set of electrodes forming a pattern extending over a measuring range along the length of said main beam;

a slider mechanically coupled to a second position determining member, said slider being slidably mounted on said main beam so that the position of said slider on said main beam is indicative of the relative distance between said first and second position determining members;

a second set of electrodes fabricated on a substrate operably positioned in the cavity of said main beam so that said second set of electrodes can move along the length of said first set of electrodes to form an operable set of capacitive encoder electrodes;

a coupling mechanism mechanically coupling said slider to said substrate so that the relative movement between said first and second position determining members corresponds to the relative movement between said first and second set of electrodes;

a sealing mechanism to isolate said cavity from the external environment while allowing said coupling mechanism to mechanically couple said slider to said second set of electrodes; and

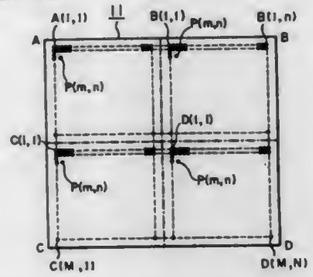
electronic circuitry connected to one of said sets of electrodes, said electronic circuitry applying signals to and receiving signals from said set of electrodes in order to provide an indication of the relative position between said first and second position determining members as a function of the capacitive coupling between said first and second sets of electrodes.

5,574,382

INSPECTION ELECTRODE UNIT FOR PRINTED WIRING BOARD

Kiyoshi Kimura, Chiba, Japan, assignor to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 942,448
Claims priority, application Japan, Sep. 17, 1991, 3-262631; Jun. 8, 1992, 4-171484
Int. Cl.[6] G01R 1/04
U.S. Cl. 324—754 4 Claims



1. An inspection electrode unit for printed wiring board, comprising:

an insulating substrate;

an inspection electrode element set up on one side of the substrate in which inspection electrodes are formed at standard grids crosswise arranged and which element has a plurality of functional regions each having a plurality of inspection electrodes identically positioned in each of said plurality of functional regions; and

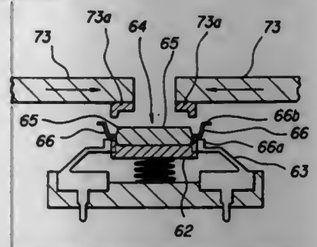
a connecting material through which correspondingly positioned ones of said inspection electrodes of said plural functional regions are connected together, to form commonized electrodes, wherein the identical positioning of said plurality of inspection electrodes in said plurality of functional regions allows for inspection of said printed wiring board so that individual printed wiring board electrodes to be inspected are individually connected to said commonized electrodes.

5,574,383

IC TESTER AND MEASURING METHOD

Takashi Saito; Shigeo Ikeda, and Masumi Okutsu, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 2, 1995, Ser. No. 382,808
Claims priority, application Japan, Feb. 8, 1994, 6-036485
Int. Cl.[6] G01R 1/04;31/26
U.S. Cl. 324—755 5 Claims



1. An IC measuring and testing device comprising:

a measurement handler socket;

a mold-receiving base biasingly supported on the measurement handler socket and having around its periphery guide members corresponding to a shape of an IC mold body to be measured and probes for contacting outer leads of an IC the mold receiving base having an IC mold body receiving surface within said periphery; and

a handling means for suction-supporting the IC and mounting it in the mold-receiving base, the IC measuring and testing device performing measuring and testing of the IC mounted on the mold-receiving base by means of the handling means, wherein:

the guide members are provided on each side of the mold receiving base;

the mold receiving base includes slots between the guide members, which slots extend partially into the IC mold body receiving surface;

the guide members separate corresponding outer leads of the IC, and end portions of the probes are arranged so as to be inserted into the slots; and

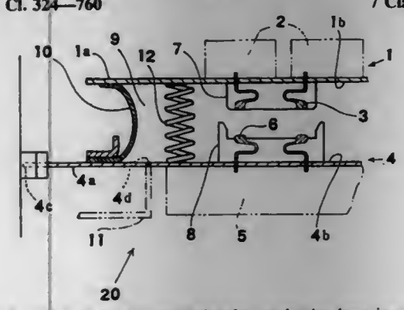
the guide members extend above the IC mold body receiving surface of the mold body receiving base.

5,574,384

COMBINED BOARD CONSTRUCTION FOR BURN-IN AND BURN-IN EQUIPMENT FOR USE WITH COMBINED BOARD

Kenichi Oi, Osaka, Japan, assignor to Tabai Espec Corp., Osaka, Japan

Filed May 15, 1995, Ser. No. 440,589
Claims priority, application Japan, Jan. 31, 1995, 7-037546
Int. Cl.[6] G01R 31/02
U.S. Cl. 324—760 7 Claims



1. A combined board construction for conducting burn-in operations on devices under test, comprising:

a first board having a first surface with electrical connecting members for accepting the devices, and a first back side with first terminals electrically connected to respective electrical contacts of said electrical connecting members;

a second board having a second surface with an electronic circuit for generating signals to operate the devices, a second back side with second terminals electrically connected to said electronic circuit, and a side with side terminals electrically connected to said electronic circuit for powering said electronic circuit;

a sealing member for sealing a perimeter of a space defined between said first back side and said second back side of said first and second boards, respectively when said first and second boards are adjacent one another at a first position with said first and second electrical terminals apart from each other, said sealing member having sufficient flexibility to allow said first and second boards to converge to a second position whereat said first an ond terminals contact each other in response to a pressure differential between said space and an area outside said space; and

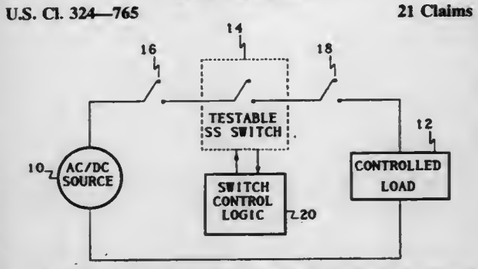
said first terminals and said second terminals being disposed in correspondence with each other to effect electrical contact between corresponding ones of said first and second terminals when said first back side and said second back side are disposed proximate each other.

5,574,385

TESTABLE SOLID STATE SWITCH AND RELATED METHOD

Kenneth J. Murphy, West Hills, and Walter J. Grams, Costa Mesa, both of Calif., assignors to ICS Triplex, Inc., Houston, Tex.

Filed Apr. 28, 1994, Ser. No. 234,255
Int. Cl.[6] G01R 1/04
U.S. Cl. 324—765 21 Claims



1. A solid state testable switch module for connection between a power source and a controlled load, the switch module comprising:

a pair of unidirectional solid state switches connected back-to-back to permit switching of current flowing in either direction;

an independent power source connected to the solid state switches to supply a control signal to operate the switches;

means for generating a switch test pulse by momentarily inverting the sense of the control signal operating the switches; and

a pair of current sensing circuits connected between the independent power supply and the respective solid state switches, for sensing a current pulse corresponding to the test pulse;

whereby the switch module is testable regardless of whether or not it is connected to a power source or a load, and regardless of whether the power source supplies alternating current or direct current.

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5,574,386

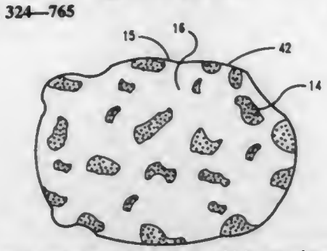
APPARATUS AND METHOD FOR CREATING DETACHABLE SOLDER CONNECTIONS

Guy D. Beaumont; Denis Labbe, and Alain Warren, all of Granby, Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 324,938, Oct. 18, 1994, Pat. No. 5,494,856. This application Jun. 5, 1995, Ser. No. 462,345

Int. Cl.[6] G01R *1/04*

U.S. Cl. 324—765 **12 Claims**



1. A semiconductor chip carrier to which a semiconductor chip is attached in order to carry out burn-in tests on said chip, said carrier including a plurality of connecting pads to which a corresponding plurality of solder balls on said chip are connected, the improvement comprising the surface of each of said connecting pads on said carrier consists of randomly amalgamated plural areas of solder wettable and solder non-wettable materials.

5,574,387

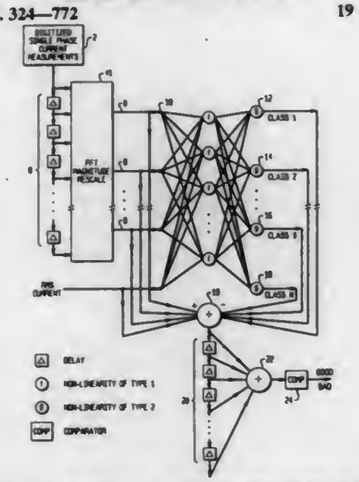
RADIAL BASIS FUNCTION NEURAL NETWORK AUTOASSOCIATOR AND METHOD FOR INDUCTION MOTOR MONITORING

Thomas Petsche, Neshanic Station, and Charles Garrett, Plainsboro, both of N.J., assignors to Siemens Corporate Research, Inc., Princeton, N.J.

Filed Jun. 30, 1994, Ser. No. 269,465

Int. Cl.[6] G06G *7/60;* **H02P** *7/36*

U.S. Cl. 324—772 **19 Claims**



1. Apparatus for detecting a departure from normal operation of an electric motor, comprising:

sensing means for measuring a set of current values for a motor being monitored;

first processing means coupled to said sensing means for deriving frequency spectral components associated with said set of current values;

a neural network auto-associator coupled to said signal processing means and further coupled to said sensing means for receiving at least one of at least a portion of said spectral components and at least a portion of said current values as an input vector and having output terminals for providing an output vector, said neural network having undergone a training phase; and

second processing means coupled to said output terminals for comparing said input and output vectors for providing an error metric, wherein said first processing means clusters said frequency spectral components into a smaller number of clusters during said training phase.

5,574,388

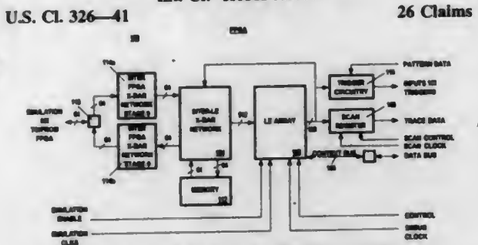
EMULATION SYSTEM HAVING A SCALABLE MULTI-LEVEL MULTI-STAGE PROGRAMMABLE INTERCONNECT NETWORK

Jean Barbier, Chatillon; Olivier LePape, Paris, and Frederic Reblewski, Les Molieres, all of France, assignors to Mentor Graphics Corporation, Wilsonville, Oreg.

Filed Oct. 13, 1995, Ser. No. 542,519

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—41 **26 Claims**



1. A field programmable gate array (FPGA) comprising

a plurality of reconfigurable logic elements (LEs) for emulating circuit elements of a circuit design;

a plurality of input/output (I/O) pins;

an on-chip multi-stage inter-LE network of programmable interconnect devices coupled to the I/O pins and the reconfigurable LEs for selectively interconnecting the reconfigurable LEs to each other and to the I/O pins, and

an on-chip subset of a first stage of an inter-FPGA network of programmable interconnect devices disposed in between the I/O pins and the inter-LE network of programmable interconnect devices for interconnecting the FPGA to other FPGAs and to I/O pins of a logic board wherein the FPGAs are disposed.

5,574,389

CMOS 3.3 VOLT OUTPUT BUFFER WITH 5 VOLT PROTECTION

Ke-Cheng Chu, Ping-Tung Hsien, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed Aug. 9, 1995, Ser. No. 513,053

Int. Cl.[6] H03K *19/0948*

U.S. Cl. 326—81 **13 Claims**

1. A high voltage tolerant output buffer circuit, comprising:

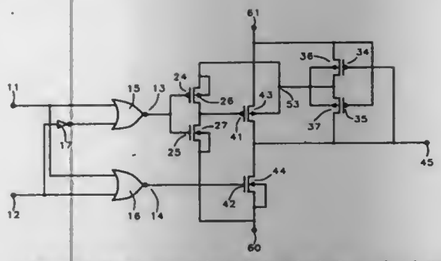
a buffer voltage supply node having a first voltage level;

a reference voltage supply node having a reference voltage level;

an output node;

an intermediate node;

a control logic circuit having a data control input, a tristate control input, a first output, and a second output wherein said first output and said second output are at a logical zero level when said tristate control input is at a logical one level, said first output is at the same logic level as said data control input



when said tristate control input is at a logical zero level, and said second output is at the inverse of the logic level at said data control input when said tristate control input is at a logical zero level;

an output buffer circuit having a first P channel field effect transistor and a first N channel field effect transistor each said field effect transistor having a gate, a source, a drain, and an isolation well wherein said gate of said first N channel field effect transistor is connected to said second output of said control logic circuit, said source of said first P channel field effect transistor is connected to said buffer voltage supply node, said source and said isolation well of said first N channel field effect transistor are connected to said reference voltage supply node, and said drain of said first N channel field effect transistor and said drain electrode of said first P channel field effect transistor are connected to said output node;

means for feedback whereby said gate of said first P channel field effect transistor is connected to said intermediate node when said tristate control input of said control logic circuit is at a logical one level or said data control input of said control logic circuit is at a logical zero level and to said reference voltage level when said tristate control input of said control logic circuit is at a logical zero level and said data control input of said control logic circuit is at a logical one level; and

means for isolation whereby said isolation well of said first P channel field effect transistor and said intermediate node are connected to said buffer voltage supply node when the voltage at said output node is less than or equal to said first voltage level and to said output node when the voltage at said output node is greater than said first voltage level, wherein said means for isolation comprises no more than two field effect transistors.

5,574,390

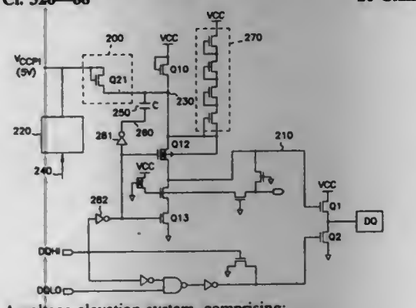
METHOD AND APPARATUS FOR ENHANCED BOOTING AND DC CONDITIONS

Mark R. Thomann, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jun. 23, 1995, Ser. No. 493,912

Int. Cl.[6] H03K *19/0175;19/082*

U.S. Cl. 326—88 **20 Claims**



1. A voltage elevation system, comprising:

a first power supply having a first output voltage;

a second power supply having a second output voltage which exceeds the first output voltage;

a capacitor having a first node and a second node, the first node connected to the first power supply;

a boot circuit connected between a common ground and the second node for supplying about zero voltage in a first state and an elevated voltage for the second node of the capacitor when in a second state;

a switching circuit, connected to the boot circuit, for switching the boot circuit between the first state and the second state; and

a secondary current path connecting the second power supply to the first node the of the capacitor;

wherein the boot circuit is switched by the switching circuit to provide an elevated voltage on the first node of the capacitor for driving an output node.

5,574,391

ECL INTEGRATED CIRCUIT ALLOWING FAST OPERATION

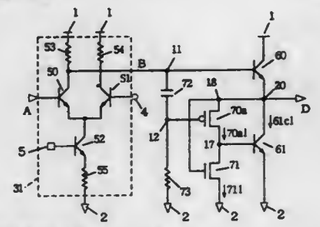
Toshiaki Hanibuchi; Yasushi Hayakawa, and Masahiro Ueda, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 30, 1995, Ser. No. 453,120

Claims priority, application Japan, Jun. 2, 1994, 6-121096

Int. Cl.[6] H03K *19/086*

U.S. Cl. 326—126 **15 Claims**



1. A semiconductor device comprising:

a first bipolar transistor having first and second electrodes connected to first and second potentials, respectively, and a control electrode receiving an input signal;

a second bipolar transistor having first and second electrodes connected to said first and second potentials, respectively, and a control electrode receiving a reference signal;

a third bipolar transistor having a control electrode connected to said first electrode of said first bipolar transistor, a first electrode connected to said first potential and a second electrode connected to an output terminal node;

a fourth bipolar transistor connected between said output terminal node and said second potential for accelerating change of the potential of said output terminal node; and

adjusting means connected between a control electrode of said fourth bipolar transistor and said second potential for adjusting a current flowing into the control electrode of said fourth bipolar transistor in response to potential change of said output terminal node.

5,574,392

ASYMMETRICAL RAMP GENERATOR SYSTEM

Edward P. Jordan, Greensboro, N.C., assignor to Analog Devices, Inc., Norwood, Mass.

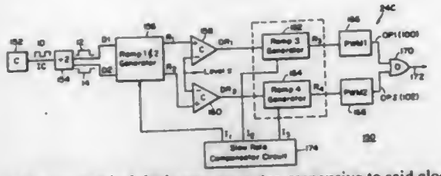
Filed Apr. 25, 1995, Ser. No. 428,374

Int. Cl.[6] H03K *3/01;4/06*

U.S. Cl. 327—131 **12 Claims**

1. An asymmetrical ramp generator system for a pulse width modulator, comprising:

a complementary clock circuit;



a first symmetrical dual ramp generator, responsive to said clock circuit, for generating first and second ramps having a predetermined voltage range and extending for a period equal to or greater than one half the clock cycle;

a comparator device, responsive to each of said first and second symmetrical ramps and to a reference level within said predetermined voltage range of said first and second ramps, for generating corresponding dual first and second asymmetrical drive signals; and

a second asymmetrical dual ramp generator, responsive to said first and second asymmetrical drive signals, for generating third and fourth asymmetrical overlapping ramps which extend beyond said predetermined voltage range.

5,574,393

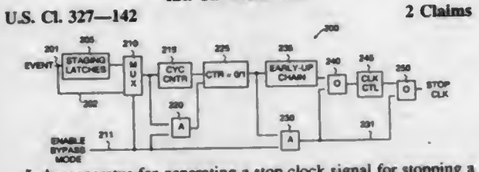
APPARATUS AND METHOD FOR IMMEDIATELY STOPPING CLOCKS

Quang H. Nguyen, San Jose, and Eugene T. Wang, Fremont, both of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Dec. 22, 1992, Ser. No. 994,772

Int. Cl.[6] H03L *7/00*

U.S. Cl. 327—142 **2 Claims**



1. An apparatus for generating a stop clock signal for stopping a system clock in a data processing system, said apparatus comprising:

first means including:

delay means receiving a first signal and for delaying the first signal to provide a delayed first signal;

evaluation means for receiving the delayed first signal, for evaluating the occurrence of the delayed first signal and for generating an evaluation output signal indicative of the results of evaluating the occurrence of the delayed first signal;

control means for generating a disable clock signal in response to receiving the evaluation output signal;

timing means for adjusting the timing of the received disable clock signal and for providing a time adjusted disable clock signal; and

clock control means for generating a stop clock signal in response to receiving the time adjusted disable clock signal; and

a bypass means receiving a mode selection signal and when the mode selection signal indicates a bypass mode for bypassing the delay means and the evaluation means so as to provide the first signal to the control means and for bypassing the timing means and the clock control means so as to generate a stop clock signal directly from a received disable clock signal from said control means of said first means.

5,574,394

Patent Not Issued For This Number

5,574,395

SEMICONDUCTOR CIRCUIT

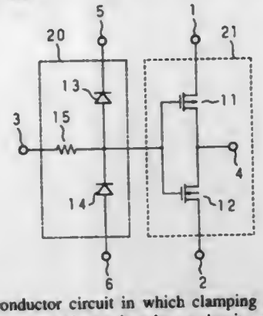
Mitsuo Kusakabe, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1995, Ser. No. 449,150

Claims priority, application Japan, Jun. 17, 1994, 6-135700

Int. Cl.[6] H03K *5/08;* **H01L** *25/00;* **H02H** *3/20*

U.S. Cl. 327—309 **5 Claims**



1. A semiconductor circuit in which clamping diodes are disposed at an input part of a semiconductor circuit unit to protect the semiconductor circuit unit connected to a signal input terminal from a high voltage that can be generated at the signal input terminal, comprising:

a signal input terminal;

a first power supply terminal connected to a first power supply potential;

a second power supply terminal connected to a second power supply potential;

a semiconductor circuit unit formed on a substrate connected between said first power supply terminal and said second power supply terminal, said semiconductor circuit unit receiving, at the input part thereof, a signal inputted from said signal input terminal;

a third power supply terminal formed independently from said first power supply terminal and connected to said first power supply potential;

a fourth power supply terminal formed independently from said second power supply terminal and connected to said first power supply potential; and

an overvoltage protection circuit formed on a different semiconductor substrate from that bearing said semiconductor circuit unit, said substrates being electrically separated from each other, said protection circuit being connected between said third power supply terminal and said fourth power supply terminal and including clamping diodes connected in series with each other, a series node between said clamping diodes being connected to the input part of said semiconductor unit, whereby an overcurrent is prevented from flowing into the semiconductor circuit unit, thereby preventing latch up in the semiconductor circuit unit by the overcurrent, and

wherein said signal input terminal is formed in a first wiring layer of said different semiconductor substrate, and

at least one of said third power supply terminal and said fourth power supply terminal is formed in a second wiring layer other than said first wiring layer of said different semiconductor substrate.

5,574,396

MICRO-POWER VORTEX ISOLATOR CIRCUIT

Michael G. Drainville, Manville, R.I., assignor to The Foxboro Company, Foxboro, Mass.

Filed Oct. 13, 1994, Ser. No. 322,641

Int. Cl.[6] G06G *7/64*

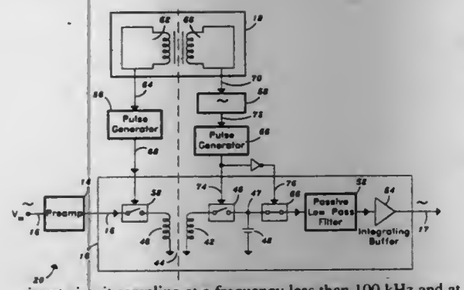
U.S. Cl. 327—337 **5 Claims**

1. A micro-power isolation circuit comprising:

(a) an input circuit having an electrical output, for sampling an input analog signal to produce a first sampled signal, said input circuit sampling at a frequency less than 100 kHz and at a sampling interval of less than 10% of the sampling frequency;

(b) an output circuit having an electrical input and electrically isolated from said input circuit, said output circuit generating a second sampled signal derived from the voltage difference between two successive samples of said input signal; and

(c) means for coupling said first sampled signal to said input of said output circuit, said coupling means maintaining electrical isolation between said input circuit and said output circuit.



5,574,397

SIGNAL OUTPUT CIRCUIT OPERATING STABLY AND ARRANGEMENT OF POWER SUPPLY INTERCONNECTION LINE THEREFOR IN SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

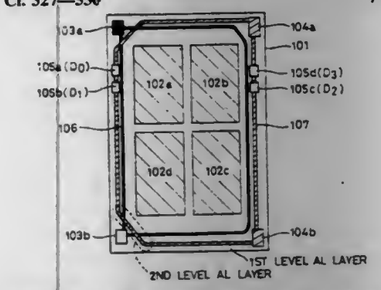
Shigeki Tomishima; Hideto Hidaka; Masakazu Hirose, and Takahiro Tsuruda, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 121,853, Sep. 17, 1993, Pat. No. 5,390,140. This application Nov. 30, 1994, Ser. No. 352,021

Claims priority, application Japan, Oct. 29, 1992, 4-291136

Int. Cl.[6] H01J *19/82*

U.S. Cl. 327—530 **7 Claims**



1. A semiconductor integrated circuit device, comprising:

a pad provided on a semiconductor chip for receiving an externally applied predetermined potential; and

a plurality of power supply interconnection lines connected to the pad, each of said power supply interconnection lines being exclusively used for a different internal functional circuit, said plurality of power supply lines arranged separately from each other along an entire length of each respective power supply interconnection line.

5,574,398

ACTIVE BANDPASS FILTER

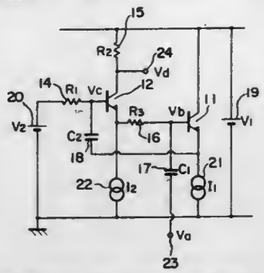
Hideyuki Hagino, Kumagaya, and Michiro Yokote, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 7, 1995, Ser. No. 488,052

Claims priority, application Japan, Aug. 1, 1994, 6-180310

Int. Cl.[6] H03K *5/00;* **H03H** *11/08*

U.S. Cl. 327—557 **5 Claims**



1. An active bandpass filter having an input terminal and an output terminal, comprising:

a first transistor having an emitter, a base connected to the input terminal via a first capacitance element and a collector connected to a first constant voltage source;

first means for supplying a first constant current to the emitter of the first transistor;

a second transistor having a base connected both to a second constant voltage source via a first resistance element and to the emitter of the first transistor via a second capacitance element, a collector connected both to the output terminal and, via a second resistance element, to the first constant voltage source, and an emitter connected to the base of the first transistor via a third resistance element; and

second means for supplying a second constant current to the emitter of the second transistor.

5,574,399

COHERENT PSK DETECTOR NOT REQUIRING CARRIER RECOVERY

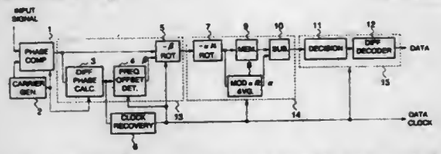
Hideto Oura, and Yuji Iguchi, both c/o Oki Electric Industry Co., Ltd. 7-12, Toranomon 1-chome, Minato-ku, Tokyo, Japan, assignors to Hideto Oura, and Yuji Iguchi, both of Tokyo, Japan

Filed Oct. 30, 1995, Ser. No. 544,977

Claims priority, application Japan, Nov. 10, 1994, 6-276524

Int. Cl.[6] H03D *3/00;* **H04L** *27/233*

U.S. Cl. 329—306 **16 Claims**



1. A coherent PSK detector for demodulating an input signal that was produced by modulating a transmit carrier signal by phase-shift keying according to symbols derived from data, comprising:

a carrier generator for generating an unmodulated carrier signal, without synchronizing said unmodulated carrier signal to said transmit carrier signal;

a phase comparator coupled to said carrier generator, or comparing said input signal with said unmodulated carrier signal, thereby obtaining a first instantaneous phase signal referenced to said unmodulated carrier signal;

a frequency offset compensation section coupled to said phase comparator, for detecting a phase rotation in said first instantaneous phase signal due to a frequency offset between said

transmit carrier signal and said unmodulated carrier signal, and removing said phase rotation from said first instantaneous phase signal, thereby obtaining a second instantaneous phase signal;

a phase offset compensation section for detecting a phase offset between said second instantaneous phase signal and certain correct phase values, and removing said phase offset from said second instantaneous phase signal, thereby obtaining a third instantaneous phase signal; and

a data recovery section, for recovering said data from said third instantaneous phase signal.

5,574,400

FEEDFORWARD AMPLIFIER WITH REDUCED DISTORTION IN WIDE BAND

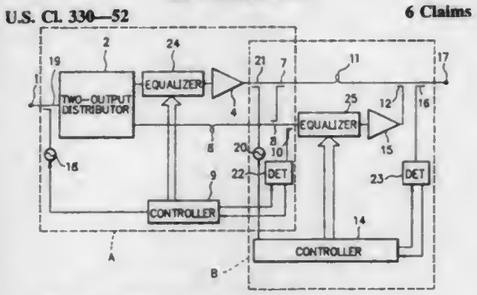
Akio Fukuchi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 29, 1995, Ser. No. 413,085

Claims priority, application Japan, Mar. 31, 1994, 6-062573

Int. Cl.[6] H03F *1/32*

U.S. Cl. 330—52 **6 Claims**



1. A feedforward amplifier, comprising:

a main amplifier circuit including:

a first equalizing means for adjusting frequency characteristics of both amplitude and phase of an input signal to provide a first adjusted signal; and

a first amplifying means for amplifying the first adjusted signal to provide a first amplified signal;

the first equalizing means and the first amplifying means being arranged in a cascade connection so that the output of the main amplifier circuit is the first amplified signal;

a first delay line for delaying the input signal to provide a first delayed signal;

a second delay line for delaying the first amplified signal to provide a second delayed signal;

an auxiliary amplifier circuit including:

a distortion sensing means for synthesizing a branched signal of the first amplified signal with the first delayed signal to provide a distortion signal representative of a distortion of the first amplified signal;

a second equalizing means for adjusting frequency characteristics of both amplitude and phase of the distortion signal to provide a second adjusted signal; and

a second amplifying means for amplifying the second adjusted signal to provide a second amplified signal;

the distortion sensing means, the second equalizing means and the second amplifying means being arranged in a cascade connection so that the output of the auxiliary amplifier circuit is the second amplified signal; and

a distortion removing means for synthesizing the second amplified signal with the second delayed signal to remove said distortion from the second delayed signal.

5,574,401

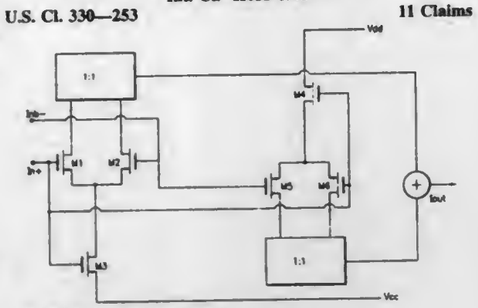
LARGE COMMON MODE INPUT RANGE CMOS AMPLIFIER

Paul A. Spitalny, Everett, Wash., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Jun. 2, 1995, Ser. No. 460,084

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—253 **11 Claims**



1. An amplifier comprising:

a differential pair of NMOS transistors;

an NMOS transistor connected to said NMOS differential pair to conduct the tail current thereof;

a differential pair of PMOS transistors;

a PMOS transistor connected to said PMOS differential pair to conduct the tail current thereof;

means connecting said NMOS differential pair together with said tail current NMOS transistor between two supply rails;

means connecting said PMOS differential pair together with said tail current PMOS transistor between said supply rails;

first and second input terminals to provide an input signal to said NMOS and PMOS differential pairs;

means responsive to the input signal for controlling said tail-current NMOS and PMOS transistors to effect adaptive biasing of said transistors; and

means to combine the outputs of said differential pairs to produce a composite output signal.

5,574,402

MONOLITHIC INTEGRATED CIRCUIT DEVICE HAVING MICROWAVE POWER AMPLIFIER INCLUDING A MATCHING CIRCUIT USING DISTRIBUTED LINES

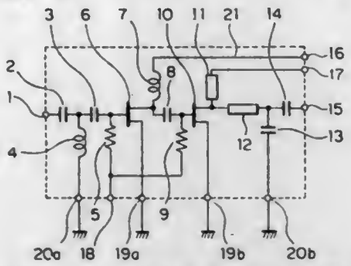
Akishige Nakajima; Tooru Fujioka, both of Kokubunji, and Eiichi Hase, Iruma, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 6, 1995, Ser. No. 524,188

Claims priority, application Japan, Sep. 16, 1994, 6-221369

Int. Cl.[6] H03F *3/193;3/195*

U.S. Cl. 330—277 **5 Claims**



1. A monolithic integrated circuit device having a semi-insulating substrate, a microwave multi-stage power amplifier formed at said substrate and a signal output pad and first and second voltage supply pads formed on said substrate, said multi-stage amplifier including a first stage having a first field-effect transistor, FET, and serving to deliver an output of said amplifier, a second stage having a second field-effect transistor, FET, and preceding to said first stage, a first matching circuit connected to said first FET and a second matching circuit interconnected between said first and second stages, wherein:

said first FET in said first stage has its drain connected to said first voltage supply pad through a first distributed line and further connected to said signal output pad through a second distributed line, said first and second distributed lines contributing to formation of said first matching circuit;

said second FET in said second stage has its drain connected to said second voltage supply pad through a spiral inductor and a third distributed line connected in series to said spiral inductor, said spiral inductor contributing to formation of said second matching circuit while said third distributed line serves as a connection conductor without contributing to formation of said second matching circuit; and

said first distributed line has a width larger than that of said third distributed line and has a length which limits an impedance seen at said drain of said first FET towards said first voltage supply pad at an operation frequency of said amplifier to a value other than infinity.

5,574,403

SIMPLE HIGH SPEED PRECISION TRANSCONDUCTANCE AMPLIFIER CIRCUITS

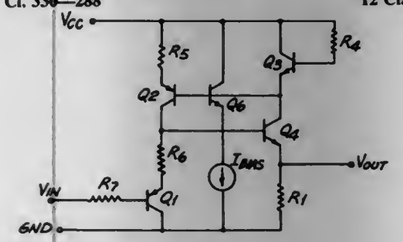
Madhav V. Kolluri, Sunnyvale, Calif., assignor to Maxim Integrated Products, Sunnyvale, Calif.

Division of Ser. No. 313,546, Sep. 27, 1994, Pat. No. 5,446,414.

This application May 23, 1995, Ser. No. 447,708

Int. Cl.[6] H03F *3/343*

U.S. Cl. 330—288 **12 Claims**



6. An amplifier comprising:

first and second power supply connections, an input connection and an output connection;

first and second transistors of a first conductivity type, third and fourth transistors of a second conductivity type, each having an emitter, a base and a collector, and a resistor;

said first transistor having its collector coupled to said second power supply connection, its base coupled to said input connection and its emitter coupled to the collector of said second transistor and the base of said fourth transistor;

said second transistor having its emitter coupled to said first power supply connection;

said third transistor having its collector and base coupled to said first power supply connection and its emitter coupled to the base of said second transistor and to the collector of said fourth transistor;

said fourth transistor having its emitter coupled to said output connection and through said resistor to said second power supply connection

a means for conducting current between the base of said second transistor and said second power supply connection.

5,574,404

OPTICAL COUPLER GALVANIC ISOLATION DEVICE, AND MODEM INCORPORATING IT

Philippe A. Le Bars, Elancourt, France, assignor to Apple Computer, Inc., Cupertino, Calif.

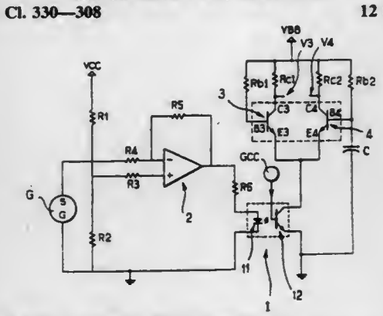
PCT No. PCT/IB94/00152, § 371 Date Apr. 28, 1995, § 102(e) Date Apr. 28, 1995, PCT Pub. No. WO94/29950, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 10, 1994, Ser. No. 381,957

Claims priority, application France, Jun. 14, 1993, 93 07129

Int. Cl.[6] H03F *17/00;* **H04M** *11/00*

U.S. Cl. 330—308 **12 Claims**



1. A galvanic isolation device comprising:

a) an optical coupler having a light-emitting diode and a photo-transistor, said photo-transistor having a base electrode, collector electrode, and emitter electrode, said collector electrode and emitter electrode forming a current path, said light-emitting diode for creating a current of photonic origin in the base electrode of said photo-transistor;

b) a control circuit, coupled to the light-emitting diode, said control circuit controlling the light-emitting diode;

c) a signal generator circuit, coupled to the photo-transistor, said signal generator circuit having a fixed-gain amplifier circuit, said fixed-gain amplifier circuit coupled to the current path of said photo-transistor; and

d) a biasing circuit, coupled to the base electrode of said photo-transistor, said biasing circuit biasing said photo-transistor into a saturated state.

5,574,405

LOW NOISE AMPLIFIER/MIXER/FREQUENCY SYNTHESIZER CIRCUIT FOR AN RF SYSTEM

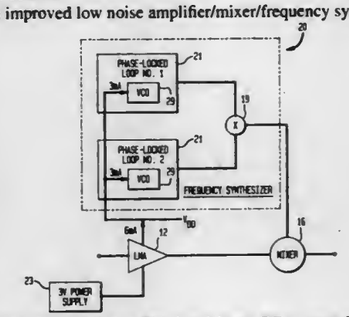
Behzad Razavi, Aberdeen, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 22, 1995, Ser. No. 517,935

Int. Cl.[6] H03B *5/24;* **H03L** *7/07;* **H04B** *1/26*

U.S. Cl. 331—2 **20 Claims**

1. An improved low noise amplifier/mixer/frequency synthesizer



circuit for demodulating a RF signal in an RF system front end, comprising:

a frequency synthesizer for producing a demodulation signal, said frequency synthesizer containing at least one oscillator, wherein said oscillator requires a predetermined bias current;

a low noise amplifier for amplifying said RF signal, said low noise amplifier containing a bias current at least as large as said predetermined bias current, wherein said low noise amplifier is directly coupled to said frequency synthesizer and provides said predetermined bias current thereto;

a mixer coupled to said frequency synthesizer and said low noise amplifier, wherein said mixer mixes said RF signal as amplified by said low noise amplifier to said demodulation signal, thereby demodulating said RF signal.

5,574,406

PHASE LOCK LOOP WITH ERROR MEASUREMENT AND CORRECTION IN ALTERNATE PERIODS

Donald J. Sauer, Allentown; William E. Rodda, Trenton, and Edward R. Campbell, III, Tabernacle, all of N.J., assignors to RCA Thomson Licensing Corporation, Princeton, N.J.

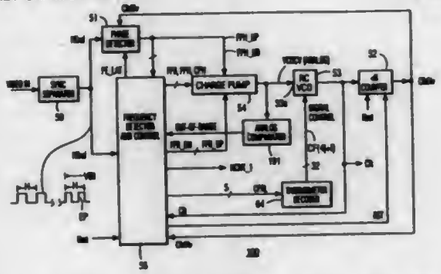
PCT No. PCT/US94/04307, § 371 Date Sep. 28, 1995, § 102(e) Date Sep. 28, 1995, PCT Pub. No. WO94/24769, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 19, 1994, Ser. No. 525,689

Claims priority, application United Kingdom, Apr. 20, 1993, 9308141; Jun. 4, 1993, 9311560

Int. Cl.[6] H03L *7/113*

U.S. Cl. 331—11 **7 Claims**



1. An apparatus for generating an oscillatory signal that is locked to a synchronizing signal, comprising:

a source of said synchronizing signal at a frequency that is related to a horizontal scanning frequency;

a controllable oscillator for generating said oscillatory signal; and

a detector responsive to said oscillatory and synchronizing signals for measuring a cycle related error therebetween and for generating a signal that is indicative of said error, said error indicative signal being coupled to said oscillator for varying a cycle of said oscillatory signal when said error exceeds a first value, the variation of said cycle of said oscillatory signal and the measurement of said error occurring, alternately, in non-overlapping periods.

5,574,407

PHASE LOCK LOOP WITH ERROR CONSISTENCY DETECTOR

Donald J. Sauer, Allentown; William E. Rodda, Trenton; Edward R. Campbell, III, Tabernacle, all of N.J., and Francis Dell'Ova, St. Hilaire Du Touvet, France, assignors to RCA Thomson Licensing Corporation, Princeton, N.J.

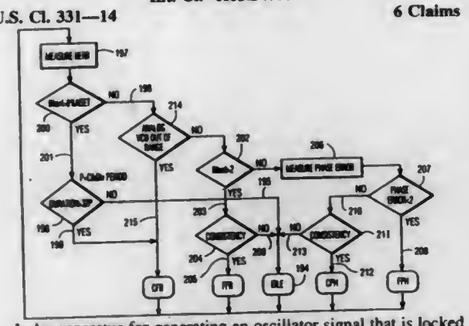
PCT No. PCT/US94/04291, § 371 Date Sep. 28, 1995, § 102(e) Date Sep. 28, 1995, PCT Pub. No. WO94/24768, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 19, 1994, Ser. No. 532,647

Claims priority, application United Kingdom, Apr. 20, 1993, 9308141; Jun. 4, 1993, 9311560

Int. Cl.[6] H03L *7/087*

U.S. Cl. 331—14 **6 Claims**



1. An apparatus for generating an oscillator signal that is locked to a synchronizing signal, comprising:

a controllable oscillator for generating said oscillatory signal;

a source of said synchronizing signal at a frequency that is related to a scanning frequency;

means responsive to said oscillatory and synchronizing signals for generating a first signal that is indicative of a cycle related error therebetween, said first signal being coupled to a control input of said oscillator for correcting said cycles of said oscillatory signal to correct for said error in a negative feedback loop manner; and

means coupled to said first signal generating means for comparing said error that is measured in a given pair of periods of said synchronizing signal and for disabling the correction of said oscillatory signal when a difference between said error that is measured in one of said pair of periods and said error that is measured in the other one of said pair of periods is greater than a first value.

5,574,408

OSCILLATOR CIRCUIT HAVING A MEMORY THAT STORES THE CHARACTERISTIC INFORMATION OF THE INDIVIDUAL OSCILLATOR CRYSTAL

Eduard Zwack, Puchheim, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 178,840, Jan. 7, 1994, abandoned. This application May 5, 1995, Ser. No. 435,268

Claims priority, application Germany, Jan. 29, 1993, 43 02 542.0

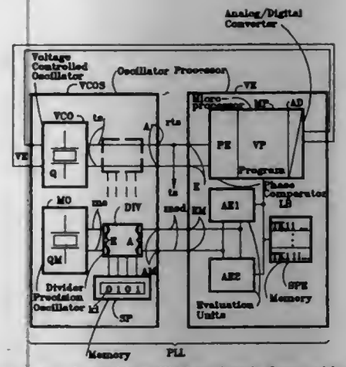
Int. Cl.[6] H03B *5/32*

U.S. Cl. 331—176 **27 Claims**

1. An oscillator circuit having an oscillator crystal, the oscillator crystal, the oscillator crystal having at least one characteristic information uniquely associated therewith, comprising:

oscillator means for forming oscillation signals from the oscillator crystal, said oscillation signals being digital clock signals and an oscillator means having an output that is a clock signal output, and a means for outputting is for modifying said digital clock signals as a function of said at least one characteristic information;

oscillator output circuit connecting said oscillator means to an oscillator output of the oscillator circuit, said oscillator output



circuit conveying said oscillation signals from said oscillator means to said oscillator output;

dedicated means for storing at least one characteristic information of the oscillator crystal;

means for outputting the at least information from the oscillator circuit in the form of one of analog signals, digital signals, coded digital signals and modulated signals, said at least one characteristic information being transferred to an external memory for an external processor to which said means for outputting is coupled;

said oscillator means, said oscillator output circuit, said means for storing and said means for outputinq forming a replaceable electronic circuit element, wherein the external processor uses the at least one characteristic information stored in the external memory for controlling the oscillator circuit;

a clock means for furtherprocessing said digital clock signals, said clock means connected to said clock signal output and having means for recognizing and evaluating the modified digital clock signals such that the at least one characteristic information contained in the modified digital clock signals is derived therefrom.

5,574,409

APPARATUS AND METHOD FOR ADJUSTING MICROWAVE BPSK MODULATOR AND MIXER

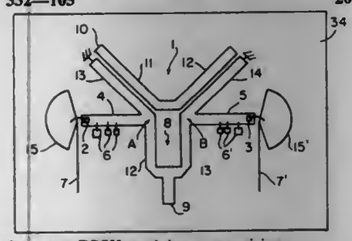
Masakazu Nishida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 25, 1995, Ser. No. 547,874

Claims priority, application Japan, Oct. 25, 1994, 6-260476

Int. Cl.[6] H04L *27/20;* **H04B** *1/26*

U.S. Cl. 332—105 **20 Claims**



1. A microwave BPSK modulator comprising:

a balance/unbalance transformer section which comprises unbalancing lines for inputting or outputting a microwave signal and balancing lines for transforming said signal from said unbalancing lines to a balanced signal;

a synthetic/branching line section which is provided at the ends of the balancing lines of said balancing/unbalancing transformer section and outputs said balanced signal as a synthetic signal or the input microwave signal as branched signals;

a pair of diode-mounting lines which are provided at the ends of the balancing lines;

one or more modulating characteristic-adjusting, capacitive stubs which are provided near the ends of said pair of diode-mounting lines;

a pair of diodes which are mounted at the ends of said pair of diode-mounting lines; and

a pair of lines which are connected to said pair of diodes and input modulating signals which subject said balancing signal to two-phase modulation.

5,574,410

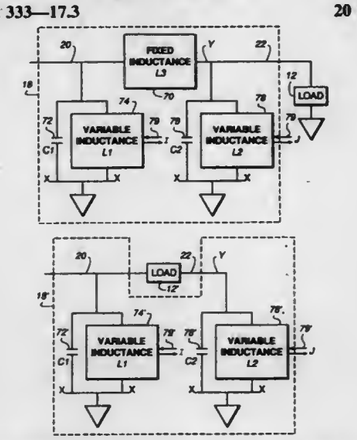
ELECTRONICALLY TUNED MATCHING NETWORKS USING ADJUSTABLE INDUCTANCE ELEMENTS AND RESONANT TANK CIRCUITS

Kenneth S. Collins; John Trow; Craig A. Roderick; Jay D. Pinson, II, all of San Jose; Douglas A. Buchberger, II, Tracy; Robert P. Hartlage, Sunnyvale, and Viktor Shel, Milpitas, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Division of Ser. No. 975,355, Nov. 12, 1992, Pat. No. 5,392,018, which is a continuation-in-part of Ser. No. 825,658, Jan. 23, 1992, Pat. No. 5,187,454, and a continuation-in-part of Ser. No. 722,340, Jun. 27, 1991, abandoned. This application Nov. 9, 1994, Ser. No. 336,873

Int. Cl.[6] H03H *7/40*

U.S. Cl. 333—17.3 **20 Claims**



1. An impedance matching network having a first and a second terminal for connecting a variable load therebetween and an electrical signal generator which produces a driving signal on said first terminal, wherein during operation said impedance matching network is connected to a control circuit that generates first and second control signals that are responsive to changes in said variable electrical load, said impedance matching network comprising

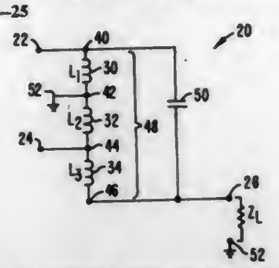
a first tank circuit comprising a variable inductance element responsive to said first control signal and a fixed capacitance element, said first tank circuit connected between said first terminal and a grounded node,

a second tank circuit comprising a variable inductance element responsive to said second control signal and a fixed capacitance element, said second tank circuit connected between said second terminal and said grounded node.

5,574,411
LUMPED PARAMETER BALUN

Thomas R. Apel, and Charles E. Page, both of Sunnyvale, Calif., assignors to Samsung Semiconductor, Inc., San Jose, Calif.

Filed Sep. 25, 1995, Ser. No. 533,294
Int. Cl.[6] H03H 7/42
U.S. Cl. 333—25 5 Claims



1. A method for forming a balun interface between a balanced input stage, having first and second output terminals, and an unbalanced output stage having a single ended input terminal for receiving a single ended input signal having a voltage level referenced to a ground voltage level, said method comprising the steps of:

providing a lumped parameter, parallel LC resonant circuit including an inductive element, having inductance L, comprising at least first, second, and third discrete, series connected inductors, each having first and second terminals and inductances of L1, L2, and L3, respectively, and a capacitance element, having first and second terminals and a capacitance of C, shunting the inductive element, with the first inductor having its first terminal coupled to the first terminal of the capacitance element at a first node and its second terminal coupled to the first terminal of the second inductor at a second node, and with the third inductor having its first terminal coupled to the second terminal of the second inductor at a third node and having its second terminal coupled to the second terminal of the capacitance element at a fourth node, and with the parallel LC circuit characterized by a resonant frequency equal to the inverse of 2pi multiplied by the square root of the product of L and C;

coupling the second node of said parallel LC circuit to the ground voltage level;

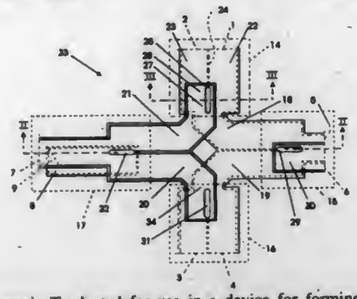
coupling the first and third-nodes to the output terminals of said balanced input stage to receive a balun input signal, provided by the balanced input stage, having an input signal bandwidth centered near the resonant frequency, with the balun input signal characterized by an odd mode excitation where input signal voltage levels at said first and third nodes have the same magnitude and opposite polarities with reference to the ground voltage level and an even mode excitation where the input signal voltage levels at the first and third nodes have the same polarity with reference to the ground voltage level;

coupling the fourth node to the single-ended input terminal of the unbalanced output stage to provide a single ended balun output signal with resonance of the LC parallel resonant circuit forcing substantially equal balanced and unbalanced port currents magnitudes and voltage magnitudes when an odd mode excitation balun input signal is received and to attenuate the voltage and current provided to the single-ended input when an even mode excitation balun input signal is received.

5,574,412
MAGIC T AND A COMPARATOR COMPRISING A PLURALITY OF MAGIC TS

Gunnar L. Nilsson, Kungsbacka, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Feb. 1, 1995, Ser. No. 384,332
Claims priority, application Sweden, Feb. 2, 1994, 9400318
Int. Cl.[6] H01P 5/20
U.S. Cl. 333—122 11 Claims



7. A magic T adapted for use in a device for forming a first output signal as well as at least a second and a third output signal by means of bringing four input signals in the microwave range together, said first output signal being a sum of said input signals and said second and third output signals being differences between different combinations of the input signals, the magic T comprising two inputs, comprising two parallel wave-guide means having an impedance and being of a predetermined length, a partition wall being of a predetermined length extending from said inputs, a first output means and a second output means, wherein:

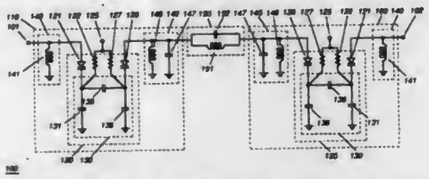
said two parallel wave-guide means and said first output means are arranged in a first plane, separated from a second plane, parallel with said first plane, by a dividing wall;

said second output means is a third wave-guide means having a longitudinal direction, arranged in said second plane, whereby said third wave-guide means is electrically connected to said two parallel wave-guide means by, in said dividing wall, a slot having a longitudinal direction.

5,574,413
TUNABLE FILTER HAVING A CAPACITIVE CIRCUIT CONNECTED TO GROUND

Charles R. Ruelke, Davie, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 2, 1995, Ser. No. 397,458
Int. Cl.[6] H03H 7/12
U.S. Cl. 333—174 14 Claims



1. A tunable filter, comprising:

first and second resonant structures coupled by a capacitive coupler, the capacitive coupler comprising:

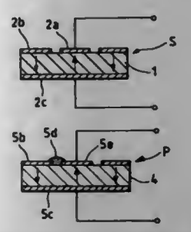
first and second variable capacitive tuning elements, each having a positive terminal; and

a capacitive circuit coupling the variable capacitive tuning elements, the capacitive circuit comprising a capacitive pi-network coupled at the positive terminals of the variable capacitive tuning elements, the capacitive pi-network having at least one element directly electrically connected to ground.

5,574,414
HIGH-FREQUENCY LADDER TYPE PIEZOELECTRIC FILTER AND PIEZOELECTRIC RESONATOR THEREFOR

Tatsuo Ogawa, and Yasuhiko Nakagawa, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Feb. 17, 1995, Ser. No. 390,795
Claims priority, application Japan, Feb. 25, 1994, 6-052951
Int. Cl.[6] H03H 9/00/9/205
U.S. Cl. 333—189 7 Claims



1. A high-frequency ladder type piezoelectric filter comprising:

a series line between an input terminal and an output terminal;

a ground line;

a parallel branch connected between said series line and said earth line;

at least two adjacent series resonators, each having a resonant frequency higher than 1 MHz by utilizing a secondary double harmonic wave, each of said series resonators comprising a piezoelectric ceramic plate having a predetermined thickness, a center electrode, an outer electrode, and a common electrode, said center electrode and said outer electrode of said series resonator being provided on one surface of said piezoelectric ceramic plate in concentric relation and being electrically insulated from each other, said common electrode being provided on the other surface of said piezoelectric ceramic plate, each of said series resonators being arranged in said series line so that said center electrode of each said series resonator is connected to one of said input and output terminals, said common electrode of each said series resonator is connected to the other of said input and output terminals, and said outer electrode of said each said series resonator is electrically isolated from both said input and output terminals, said at least two adjacent resonators being interconnected so that the common electrode of one series resonator is connected to the center electrode of the adjacent series resonator; and

a parallel resonator having a antiresonant frequency higher than 1 MHz by utilizing a secondary double harmonic wave, said parallel resonator comprising a piezoelectric ceramic plate having a predetermined thickness, a center electrode, an outer electrode, and a common electrode, said center electrode and said outer electrode of said parallel resonator being provided on one surface of said piezoelectric ceramic plate in a concentric relation and being electrically connected each other, said common electrode of said parallel resonator being provided on the other surface of said piezoelectric ceramic plate, said parallel resonator being arranged in said parallel branch so that said center electrode of said parallel resonator is connected to the common electrode of one of said series resonators and to the center electrode of the adjacent series resonator, and said common electrode of said parallel resonator is connected to said ground line;

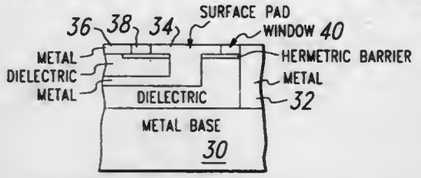
a center electrode region and an outer electrode region of both said series resonators and said parallel resonator being mutually polarized along opposite directions;

the series resonators and the parallel resonator being stacked together in a case with at least an input terminal plate, an output terminal plate, a ground terminal plate, and a relay terminal plate.

5,574,415
METHOD OF FABRICATING MICROWAVE INTERCONNECTS AND PACKAGING AND THE INTERCONNECTS AND PACKAGING

Robert K. Peterson, 3802 Keystone, Garland, Tex.

Filed Jun. 11, 1992, Ser. No. 897,174
Int. Cl.[6] H01P 3/08
U.S. Cl. 333—238 28 Claims



1. A microwave circuit which comprises:

(a) a base having an electrically conductive metallic surface;

(b) a metal region having plural distinct layers disposed over said base;

(c) a dielectric region having plural layers disposed over said base and contiguous on sides thereof with said metal region;

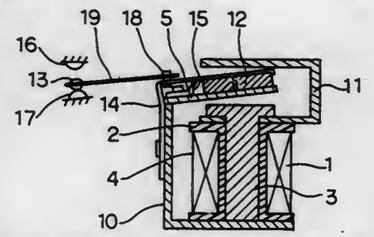
(d) a metal via extending from a surface of said dielectric region remote from said base into said dielectric region; and

(e) an hermetic barrier buried in said dielectric region and contacting said metal region to hermetically isolate the portions of said dielectric region on opposing sides thereof.

5,574,416
ELECTROMAGNETIC RELAY

Terutaka Maruyama, Toyota; Seiji Kawai, Seto, and Hiroyuki Hirata, Nukata-gun, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 13, 1995, Ser. No. 571,639
Claims priority, application Japan, Dec. 26, 1994, 6-322102
Int. Cl.[6] H01M 51/22
U.S. Cl. 335—78 14 Claims



1. An electromagnetic relay for use with an electric source comprising;

a magnetic core having a top surface and a bottom surface;

a coil bobbin disposed around said magnetic core;

a coil disposed in said coil bobbin and connected to said electric source for generating magnetomotive force when energized;

a magnetic pole member, magnetically connected said top surface of said magnetic core and having a portion facing said top surface, for providing a space between said potion and said top surface;

a yoke member magnetically connected to said bottom surface of said magnetic core;

an armature member magnetically connected to said yoke member and disposed in said space;

a permanent magnet disposed near said armature member in said space for attracting said armature member to said portion when said coil is not energized; and

means for movably supporting said armature member at a portion middle in said space.

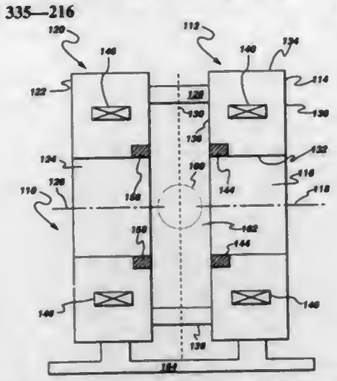
VOL 1192 ISS 2 NO 12 1996 UMI

5,574,417

OPEN MRI MAGNET WITH HOMOGENEOUS IMAGING VOLUME

Bizhan Dorri, Clifton Park, and Evangelos T. Laskaris, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 23, 1995, Ser. No. 547,002
Int. Cl.[6] H01F 7/22; G01V 3/00
U.S. Cl. 335—216 8 Claims



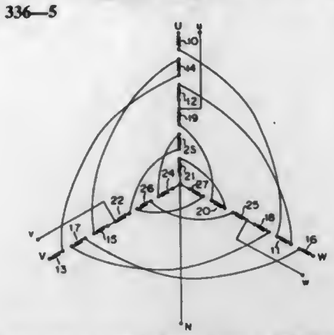
1. An open magnetic resonance imaging magnet comprising:
a) a first superconductive coil assembly including:
(1) a generally toroidal-shaped first coil housing surrounding a first bore and having a generally longitudinal first axis; and
(2) a generally annular-shaped first superconductive main coil generally coaxially aligned with said first axis, disposed within said first coil housing, and having a first magnetic field direction within said first bore generally parallel to said first axis;
b) a generally annular-shaped first permanent magnet array generally coaxially aligned with said first axis and spaced radially inward and radially apart from said first superconductive main coil;
c) a second superconductive coil assembly including:
(1) a generally toroidal-shaped second coil housing longitudinally spaced apart from said first coil housing, surrounding a second bore, and having a generally longitudinal second axis generally coaxially aligned with said first axis; and
(2) a generally annular-shaped second superconductive main coil generally coaxially aligned with said second axis, disposed within said second coil housing, and having a second magnetic field direction within said second bore generally identical to said first magnetic field direction; and
d) a generally annular-shaped second permanent magnet array generally coaxially aligned with said second axis and spaced radially inward and radially apart from said second superconductive main coil,
wherein said second superconductive coil assembly is a generally mirror image of said first superconductive coil assembly about a plane oriented perpendicular to said first axis and disposed longitudinally midway between said first and second coil housings, and wherein said second permanent magnet array is a generally mirror image of said first permanent magnet array about said plane, and
wherein said first permanent magnet array has a magnetic field direction within said first bore generally opposite to said first magnetic field direction and wherein said second permanent magnet array has a magnetic field direction within said second bore generally opposite to said second magnetic field direction.

5,574,418

THREE-PHASE AUTOTRANSFORMER WITH A BALANCING FUNCTION

Mitsuya Matsumura, 68-2, Oaza, Angyo, Kichizou, Kawaguchi-shi, Saitama, Japan

Filed Oct. 19, 1994, Ser. No. 325,940
Claims priority, application Japan, Oct. 22, 1993, 5-286145
Int. Cl.[6] H01F 17/02
U.S. Cl. 336—5 9 Claims



1. A three-phase autotransformer with a balancing function, comprising:
an iron core which includes a first leg, a second leg, and a third leg, which are interlinked;
a first common winding which includes a first winding wound on said first leg, and a second winding wound on said third leg;
a second common winding which includes a third winding wound on said second leg, and a fourth winding wound on said first leg;
a third common winding which includes a fifth winding wound on said third leg, and a sixth winding wound on said second leg;
a first series winding connected in series with said first common winding;
a second series winding connected in series with said second common winding; and
a third series winding connected in series with said third common winding,
wherein one ends of said first, second and third common windings are connected in common, one ends of said first, second and third series windings are input terminals of a first phase, a second phase, and a third phase, respectively, a connecting point of said first common winding and said first series winding is an output terminal of the first phase, a connecting point of said second common winding and said second series winding is an output terminal of the second phase, and a connecting point of said third common winding and said third series winding is an output terminal of the third phase.

5,574,419

UNIQUE ELECTRICAL COIL WITH TAP

Joseph S. Drobo, Chicago, Ill., assignor to Philips Electronics North America Corporation

Continuation-in-part of Ser. No. 806,022, Dec. 12, 1991, abandoned. This application Apr. 11, 1994, Ser. No. 226,183
Int. Cl.[6] H01F 15/10
U.S. Cl. 336—192 5 Claims

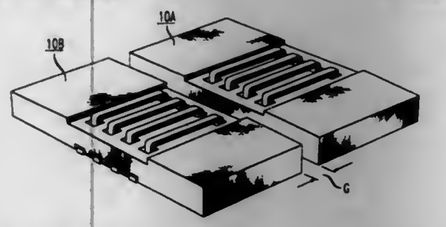
1. A precision-wound coil comprising:
a. a multiplicity of turns of wire wound in a plurality of adjacent layers including an inner layer disposed between first and second layers, said second layer including a predetermined one of said turns which is disposed intermediate other turns of said second layer and including an outer circumferential surface that is remote from said inner layer;
b. anchor means comprising at least one strip of material extending transversely of said turns and including first and second portions connected by an intermediate portion disposed between the first and second portions, the first portion being disposed between the first layer and the inner layer, the second portion being disposed between the second layer and the inner layer, and the intermediate portion extending partially around the circumference of the predetermined one of the turns in the second layer and along said outer circumferential surface; and
c. tapping means comprising a continuation of the wire forming said predetermined one of the turns, said continuation extending from said anchor means, between adjacent ones of the layers, and transversely across the turns of said adjacent layers to a location external of the coil turns.

5,574,420

LOW PROFILE SURFACE MOUNTED MAGNETIC DEVICES AND COMPONENTS THEREFOR

Apurba Roy, Rockwall; Steven A. Shewmake, Mesquite, and James C. Wadlington, Dallas, all of Tex., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 27, 1994, Ser. No. 250,075
Int. Cl.[6] H01F 27/24;27/30
U.S. Cl. 336—200 21 Claims



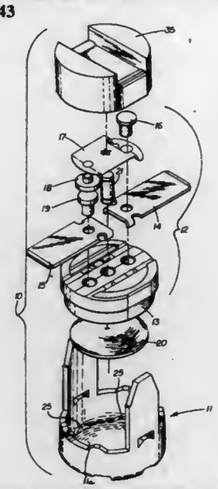
1. A magnetic device comprising:
a plurality of components, each component comprising a separate magnetic ferrite body and a plurality of conductive elements, each conductive element partially surrounding a portion of said body and having a pair of contact surfaces aligned along a common plane, wherein at least a portion of each conductive element extends through a respective aperture in said body to maintain a position of said conductive element relative to said body;
an insulating substrate including a second plurality of conductive elements adhered to a surface of said substrate for interconnecting said contact surfaces of the conductive elements of respective components to form conductive windings around portions of said body of said respective components; and
said conductive elements on said insulating substrate arranged for magnetically coupling said plurality of said components in a magnetic circuit.

5,574,421

SNAP DISC THERMOSTAT AND SELF CALIBRATING ASSEMBLY METHOD

Colin D. Hickling, Frankfort, Ky., assignor to Trig, Inc., Frankfort, Ky.

Filed Sep. 14, 1994, Ser. No. 307,984
Int. Cl.[6] H01H 37/74;37/12;37/54;11/00
U.S. Cl. 337—343 10 Claims



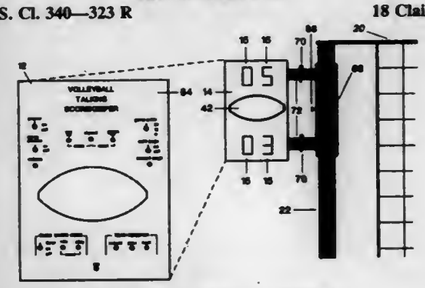
1. A thermostat for energizing an electrical circuit comprising:
a case assembly having first and second terminals;
a resilient blade having a first contact and connected to said first terminal;
a second contact on said second terminal opposed to said first contact to open and close said circuit in response to relative movement;
a bimetal member to actuate said blade by heating to cause said relative movement of the contacts and to define a predetermined threshold temperature; and
a base engaging said case assembly defining an interface and for supporting said member, said interface being deformed sufficiently to couple said base and said case assembly together and to position said bimetal member relative to said blade;
whereby the calibration of said thermostat may be provided by adjusting the deformation of said interface.

5,574,422

MULTI-FUNCTIONAL VOLLEYBALL TALKING SCOREKEEPER

Steven D. Martin, 628 Enos Ct., Santa Clara, Calif. 95051

Filed Aug. 11, 1995, Ser. No. 513,707
Int. Cl.[6] G08B 23/00
U.S. Cl. 340—323 R 18 Claims



1. A volleyball scorekeeping device comprising:
a microcontroller,

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an addressable voice chip that an assembler pre-records with audible signals to track and score a volleyball game,

a user interface including controls that a user operates to input information to said device, and

a speaker means to provide audible output; wherein

upon activation of a first team score button on said user interface, said microcontroller causes an audible serve warning tone to be sounded before a service, the microcontroller thereafter causing a game status to be announced if so required, and the microcontroller then causing the current score to be announced, and

the microcontroller automatically increments the score if a serving team wins a point and thus again activates the first team score button, and the microcontroller announces side out as the game situation if a second team button on said user interface is activated, and

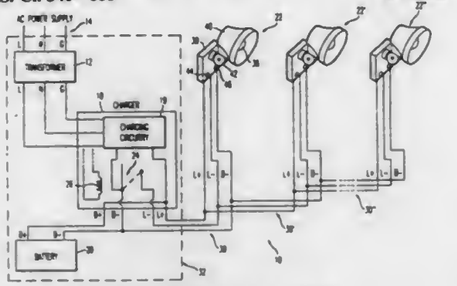
said device includes means to manually override said microcontroller to correct a scoring error.

5,574,423

SELF-DIAGNOSTIC CIRCUIT FOR EMERGENCY LAMPHEAD

David A. Vosika, Salem, Va., and Robert S. Feldstein, Dobbs Ferry, N.Y., assignors to Hubbell Incorporated, Orange, Conn.

Filed Mar. 10, 1995, Ser. No. 402,056
Int. Cl.[6] G08B *1/00*
U.S. Cl. 340—333 **20 Claims**



1. An emergency lamphead system comprising:

at least one emergency lamphead;

a battery for supplying power to said emergency lamphead during operation in an emergency mode;

a charger for charging said battery during operation in a standby mode;

a transfer switch for switching the output of said battery to said lamphead for operation in said emergency mode; and

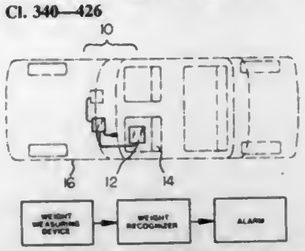
a self-diagnostic circuit connected to said battery and said lamphead for indicating during standby mode operation whether said lamphead is capable of operating in said emergency mode, said self-diagnostic circuit including a first high-impedance circuit path connected in series with said lamphead, said first high-impedance circuit path having a first indicator which is energized by a first battery current passing through said circuit path and said lamphead during operation in said standby mode, said first battery current being insufficient to illuminate said lamphead.

5,574,424

ANTI-CAR JACKING/THEFT DEVICE

Duc M. Nguyen, 8530 Bauer Dr., Springfield, Va. 22152

Filed May 9, 1994, Ser. No. 239,573
Int. Cl.[6] B60R *25/10*
U.S. Cl. 340—426 **2 Claims**



1. An anti-car jacking/theft device for detecting an unauthorized person who is attempting to operate a vehicle and activating an alarm comprising, in combination:

measurement circuitry adapted to be coupled to a driver's seat of the vehicle for transmitting an input weight signal indicating a person's weight when a person sits on the driver's seat;

key receiving circuitry adapted for receiving a user-supplied key and transmitting a reset signal when the key is coupled therewith, a set signal when the key is de-coupled therefrom, and a key status ready signal having one mode indicating that the key receiving circuitry is active and another mode indicating that the key receiving circuitry is inactive;

control circuitry for receiving the input weight signal from the measurement circuitry and the reset signal, set signal, and key status ready signal from the key receiving circuitry, comparing the input weight signal with a resident reference weight signal and a resident input threshold signal with the control circuitry having one mode for transmitting an alarm command signal indicating that an unauthorized weight is detected at the measurement circuitry and another mode for transmitting the alarm command signal indicating that the key receiving circuitry is inactive, the control circuitry further comprising:

read-only-memory circuitry for receiving and storing the input threshold signal and the input weight signal as the reference weight signal with the read-only-memory circuitry having one mode for transmitting the reference weight signal based on the receipt of the set signal and another mode for transmitting the reference weight signal based on the receipt of the reset signal;

arithmetic circuitry for receiving the input weight signal and reference weight signal and transmitting a weight difference signal based on the absolute difference between the input weight signal and reference weight signal;

inverter circuitry for receiving the reset signal, the set signal, and the key status ready signal and transmitting an inverted reset signal, an inverted set signal, and an inverted key status signal;

comparator circuitry for receiving the input threshold signal, comparing the level of the input threshold signal to the levels of the input weight signal and the weight difference signal, and transmitting a first indication signal and a second indication signal based on the comparisons;

first conjunctive circuitry for receiving the first indication signal and the second indication signal and transmitting a first conjunctive indication signal based on the levels of the first indication signal and the second indication signal;

second conjunctive circuitry having one mode for receiving the first conjunctive indication signal and the inverted reset signal and transmitting a second conjunctive indication signal based on the levels of the first conjunctive indication signal and the inverted reset signal and another mode for receiving the first conjunctive indication signal and the inverted set signal and transmitting a second conjunctive indication signal based on the levels of the first conjunctive indication signal and the inverted set signal;

counter circuitry for receiving the second conjunctive indication signal and transmitting a detection signal provided the second conjunctive indication signal is received for a given period of time; and

selection circuitry for receiving the detection signal and inverted key status ready signal and having one mode for transmitting the alarm command signal when the detection signal is received, whereby indicating that the unauthorized weight is detected at the measurement circuitry, and another mode for transmitting the alarm command signal when the inverted key status ready signal is received, whereby indicating that the key receiving circuitry is inactive;

alarm means for receiving the alarm command signal and activating the alarm;

power transmission means for energizing the measurement circuitry, key receiving circuitry, and control circuitry; and

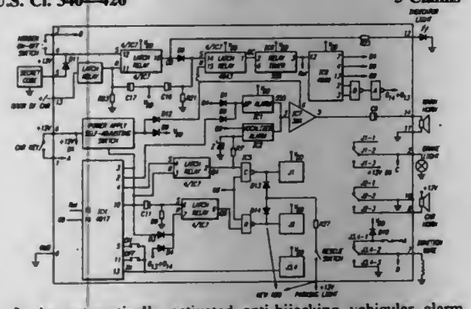
switch means coupled between the power transmission means and the measurement circuitry, key receiving circuitry, and control circuitry, the switch means having one orientation for activating the measurement circuitry, key receiving circuitry, and control circuitry and another orientation for deactivating the measurement circuitry, key receiving circuitry, and control circuitry.

5,574,425

ANTI-HIJACKING SAFETY SYSTEM FOR A VEHICLE AND ITS DRIVER

Ji W. Shu, Monterey Park, Calif., assignor to AAA Plus International, Inc., Monterey Park, Calif.

Filed Feb. 3, 1995, Ser. No. 382,981
Int. Cl.[6] B60R *25/10*
U.S. Cl. 340—426 **5 Claims**



1. An automatically activated anti-hijacking vehicular alarm system comprising:

sensor latch means for providing an output signal in response to detection of either an attempt to start the vehicle engine or the opening of a vehicle door;

brake activation detection means for providing an output signal in response to detection of the activation of the brake system of the vehicle;

first manually actuated switch means and a key for selectively operating said switch for generating a first reset signal to reset said sensor latch means and a timer means;

timer means having a sequential series of at least a first, second, third and fourth timer cycles, said timer means being responsive to said sensor latch means output signal and to said brake activation detection means output signal, for starting said sequential series of timer cycles whenever both output signals are received by said timer means, wherein when each of said timer cycles begins, said timer means outputs a first, second, third and fourth trigger signal respectively,

said timer means further responsive to said first reset signal to reset said timer means if said first reset signal is detected during said first timer cycle;

audible oscillator circuit means responsive to said first timing cycle trigger signal from said timer means for providing a driver of the vehicle with first audible warning of the activation of the timer means;

speech generation circuit means responsive to said second timing cycle trigger signal from said timer means for providing a driver of the vehicle with second audible warning vocalized in a known language of the activation of said timer means;

visual warning means responsive to said second timing cycle trigger signal from said timer means including a circuit adapted for flashing a brake light of the vehicle for providing a driver of the vehicle with a first visual warning of the activation of the timer means;

vehicle engine disabling means responsive to said third timing cycle trigger signal from said timer means for disabling the engine of the vehicle;

audible warning means responsive to said third timing cycle trigger signal from said timer means including a circuit adapted to sound a horn of the vehicle for providing a driver of the vehicle with third audible warning of the activation of the timer means, said horn sounding circuit further having means for intermittently sounding said horn for only a preset period of time; and,

second manually actuated reset signal generating means for generating a second reset signal to reset said sensor latch means and a timer means during said second, third and fourth timer cycles of said timer means,

said second manually actuated reset signal generating means comprising:

memory means for storing an authorized reset code signal;

code entry means for generating a user selected code signal; and,

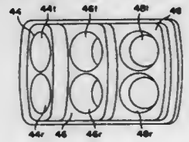
comparison means operatively connected to said memory means and to said code entry means for comparing said user selected code signal with said authorized reset code signal stored in said memory means and for generating said second reset signal to reset said sensor latch means and a timer means during said second, third and fourth timer cycles of said timer means whenever a match is found.

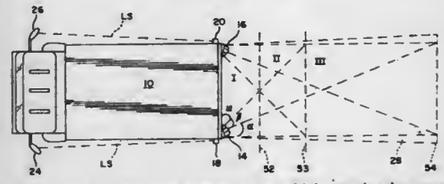
5,574,426

OBSTACLE DETECTION SYSTEM FOR VEHICLES MOVING IN REVERSE

Ben Z. Shisgal, Karmiel; Hanan Anderman, Haifa; Yosef Faschchik, Karmiel, and Yariv Porat, Haifa, all of Israel, assignors to Insys, Ltd., Karmiel, Israel

Filed Jun. 30, 1995, Ser. No. 497,429
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 340—435 **21 Claims**





1. An obstacle detection system for a vehicle moving in reverse for warning a driver of obstacles in a detection area to the rear of the vehicle, said detection system comprising:

an angled, stepped sensor cluster adapted to be attached to the rear of the vehicle, said sensor cluster comprising an array of signal transmitting means for transmitting signals from the

rear of the vehicle and an array of signal receiving means for receiving return signals deflected from a target object located in the detection area;

detection means coupled to said transmitting means and said receiving means for detecting the presence of a target object in the detection area iteratively, said detection means comprising

multi-target screening means for screening return signals and determining one which corresponds to a closest target object,

calculating means for calculating the distance from the rear of the vehicle to the closest target object,

memory means for storing a first threshold value corresponding to a minimum distance allowed between an obstacle in the detection area and the rear of the vehicle,

first comparator means for comparing the calculated distance to the first threshold distance and generating a first output signal if the calculated distance is less than the first threshold distance; and

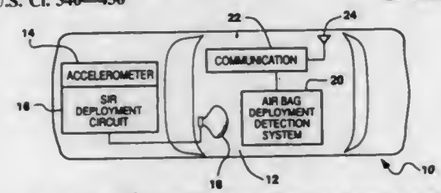
indication means coupled to said detection means and responsive to the first output signal for indicating to the driver to activate the brakes and stop the vehicle or signaling directly to the brake system to activate the brakes.

5,574,427

METHOD AND APPARATUS FOR DETECTING AIR BAG DEPLOYMENT

Eric S. Cavallaro, Indianapolis, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Mar. 15, 1996, Ser. No. 617,988
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 340—436 **11 Claims**



1. In a motor vehicle equipped with an air bag system, a method of detecting air bag deployment independently of the air bag system comprising the steps of:

sensing noise in the vehicle;

evaluating the noise to detect impulse noise associated with air bag deployment; and

activating a communication system to transmit a signal in response to detection of the impulse noise.

5,574,428

MESSAGE DISPLAY UNIT FOR MOTOR VEHICLES

John C. Groover, 3306 Miser Station Rd., Louisville, Tenn. 37777

Filed Sep. 19, 1995, Ser. No. 533,815
Int. Cl.[6] B60Q *1/26*
U.S. Cl. 340—468 **21 Claims**

1. A message display unit for presenting messages from a motor vehicle comprising:

a power supply for providing power,

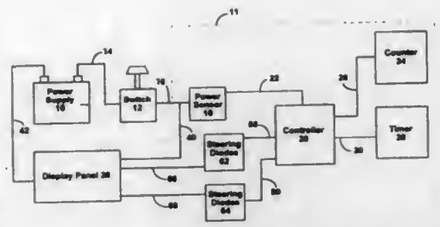
an interrupter for producing, within a first predetermined time frame, interruptions in the power provided by the power supply,

a power sensor for sensing the interruptions in the power,

a counter for counting the interruptions sensed in the power,

a timer for measuring the first predetermined time frame during which the interruptions in the power occur,

a message storage means for storing at least one message,



a controller for selecting one of the stored messages based on the number of interruptions sensed in the power and the first predetermined time frame during which the interruptions in the power occurred, and

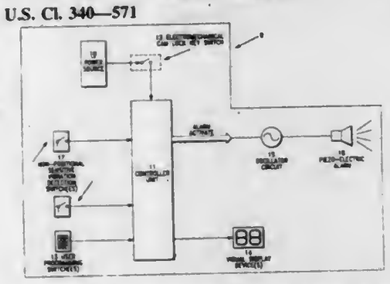
a display panel for presenting the selected one of the messages.

5,574,429

SELF-CONTAINED, PROGRAMMABLE NON-POSITION-SENSITIVE VIBRATION DETECTING ALARM SYSTEM

Robert W. Streeter, 2621 Palisade Ave. No. 11K, Riverdale, N.Y. 10463

Filed Jan. 15, 1993, Ser. No. 4,855
Int. Cl.[6] G08B *13/14*
U.S. Cl. 340—571 **22 Claims**



1. A vibration detecting alarm system adapted to be attached to an article for sounding an alarm signal, said alarm system comprising:

a tamper proof housing;

a tamper proof attaching member mounted on said housing and adapted to attach said housing to said article;

an alarm signaling device;

a power source;

a tamper-proof storage compartment for storing said power source;

one or more non-position-sensitive vibration detecting device(s) mounted in one or more preselected positions within said housing and being electrically connected to a programmable alarm system controller, each of said vibration detecting device(s) being operable, in response to movement of said article, between a first condition and a second condition whereby said alarm signaling device is activated;

a tamper-proof on/off switch means;

wherein said programmable alarm system controller is mounted within said housing and is electrically connected to said power source by said on/off switch means;

wherein said programmable controller detects movement of said article by sensing transitions between said first and second conditions of said vibration detecting devices(s);

wherein said controller contains an operating program which determines an operation of said alarm system;

wherein said operation of said alarm system begins when said on/off switch means electrically connects said power source to said controller and said controller initializes and performs instruction routines of said operating program;

wherein said operating program includes a plurality of said instruction routines, each of which can be executed and varied, executed and not varied or not executed, and the group of which can be selected to be specifically sequenced by preprogramming, user programming or a combination of preprogramming and user programming;

wherein said operating program contains variable parameters within some or all of said plurality of routines, said variable parameters being preprogrammed, user programmed or a combination of preprogrammed and user programmed;

wherein said execution of said routines and said sequencing determine a selected method of operation of said alarm system; and

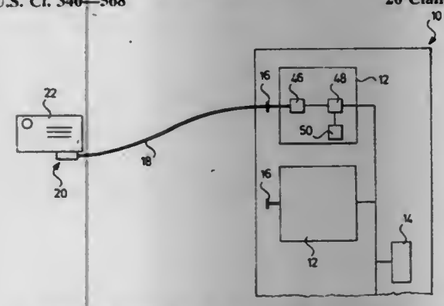
wherein said variable parameters within said routines determine selected characteristics of operation of said alarm system.

5,574,430

MONITORING SENSOR

Reinhold Ott, Europaplatz 20, D-70565 Stuttgart, and Christoph Rossmann, Gaultsch, both of Germany, assignors to Reinhold Ott, Stuttgart, Germany

Filed Jan. 17, 1995, Ser. No. 374,143
Claims priority, application Germany, Jan. 18, 1994, 44 01 325.6
Int. Cl.[6] G08B *13/14*
U.S. Cl. 340—568 **20 Claims**



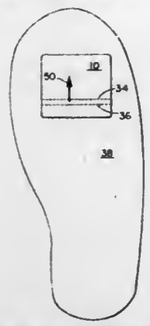
1. Monitoring sensor for an article (**22**) susceptible to theft, comprising a sensor element (**36**) for monitoring a proper secure attachment of the monitoring sensor (**20**) to the article (**22**) and a connecting cable (**18**) for connection of the sensor (**20**) to a monitoring circuit (**12**) of a theft protection system (**10**), wherein the sensor (**20**) makes a measured variable available during disconnecting of said attachment to the article (**22**), alteration in said variable being evaluated by the monitoring circuit (**12**) as a theft alarm situation, wherein the sensor (**20**) comprises a flexible contact surface element (**26**) abutting areally on the article (**22**) in the case of said attachment of the sensor (**20**) to the article (**22**), wherein the sensor element (**36**) is designed and arranged such that an alteration in the shape of the contact surface element (**26**) during disconnecting of said attachment of the sensor (**20**) to the article (**22**) results in an alteration in the measured variable, and wherein the sensor element (**36**) is deformable with the contact surface element (**26**) for adaptation to the shape of the article (**22**) and is arranged to extend essentially parallel to a contact surface (**28**) of the contact surface element (**26**).

5,574,431

DEACTIVATEABLE SECURITY TAG

Thomas J. McKeown, Pensauken, and Gary T. Mazoki, Sewell, both of N.J., assignors to Checkpoint Systems, Inc., Thorofare, N.J.

Filed Aug. 29, 1995, Ser. No. 521,084
Int. Cl.[6] G08B *13/14*
U.S. Cl. 340—572 **17 Claims**



1. A security tag for use with an electronic security system, the security system having means for detecting the presence of a security tag within a surveilled area utilizing electromagnetic energy at a frequency within a predetermined detection frequency range, the security tag comprising:

a dielectric substrate having first and second opposite principal surfaces;

a resonant circuit capable of resonating at a frequency within the predetermined detection frequency range, the resonant circuit including an inductor formed at least in part on one of the principal surfaces of the substrate; and

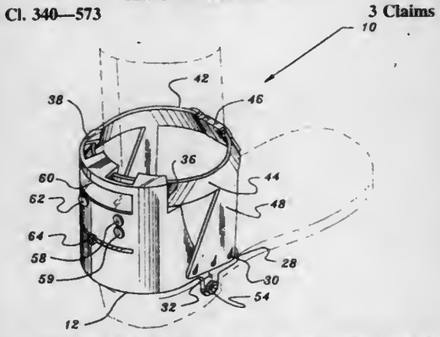
a first perforation path comprising a series of spaced apart perforations extending along a line across the substrate, the line extending through at least a portion of the resonant circuit, wherein a stress exerted on the tag breaks the resonant circuit along the first perforation path thereby causing an electrical open circuit condition which prevents the resonant circuit from resonating.

5,574,432

APPARATUS ATTACHABLE TO A SHOE FOR DEPLOYING A RESCUE SIGNAL

Steven R. McCarthy, 7 Warren St., Maynard, Mass. 01754

Filed Jan. 4, 1996, Ser. No. 582,955
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—573 **3 Claims**



1. An apparatus attachable to a shoe for deploying a rescue signal comprising, in combination:

a base with a generally rectangular configuration having an arcuate outboard surface, an arcuate inboard surface, a top surface, a bottom surface, and a pair of side edges defining an interior space, the inboard surface having an opening formed

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therein with a removable arcuate cover for allowing selective access to the interior space, the base further comprising a pair of generally rectangular strips coupled to a lower extent of the side edges and extended horizontally therefrom, the strips each having a plurality of linearly aligned buttons coupled thereto and a tab formed at a central extent thereof and extended downward therefrom with each tab having an axially aligned aperture formed therein, the base also comprising a lip extending upwardly from the top surface and coinciding with the outboard surface thereof, the lip having a plurality of horizontal members coupled thereto and extending in an inboard radial direction and a plurality of flanges coupled to an inboard end of each horizontal member and extending downwardly in a skewed outboard direction thereby defining a slot, whereby the inboard surface of the base is adapted to abut a rear extent of a shoe with the strips extending along each side extent thereof;

a restraining unit comprising an annular band having a top periphery and a bottom periphery with the top periphery having a smaller circumference than the bottom periphery whereby the annular band is adapted to be slidably inserted within the slot of the base, the annular band having a pair of clips attached to a front extent thereof for allowing the coupling and decoupling thereof, the annular band further comprising a pair of generally triangular members attached at a tip end thereof to the front extent of the band and extended downwardly therefrom with a plurality of linearly aligned buttonholes releasably coupleable to the buttons disposed on the strips of the base, whereby the restraining unit is adapted to secure about a portion of the shoe corresponding to an ankle of a user and further bind the base to the shoe;

a metal rod with a threaded end and a bolt end adapted to insert within a lateral bore formed in a heel of the shoe and further within the apertures of the tabs located on the strips, the rod further comprising a nut for coupling with the threaded end of the rod and firmly fastening the base to the shoe; and

signalling means disposed within the interior space for providing a signal upon the manual activation thereof and further for providing a signal upon the failure to respond to an alarm adapted to indicate an end of a predetermined amount of time, the signalling means further comprising display means for depicting a time remaining in the predetermine amount of time.

5,574,433

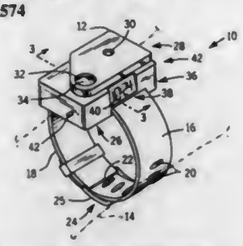
WATCH ALARM

James Bahcall, Mequon, Wis., assignor to ArmAlarm Incorporated, Mequon, Wis.

Filed Apr. 3, 1996, Ser. No. 627,261

Int. Cl.[6] G08B *15/00*

U.S. Cl. 340—574 **12 Claims**



1. A personal security device comprising:

a wrist strap;

a fastener holding a first and second end of the wrist strap together about a person's wrist in a fastened state and allowing the first and second end of the wrist strap to be separated for removal of the wrist strap from the person's wrist in a loosened state;

a housing attached to the wrist strap to have an exposed side exposed to access by the user and a covered side covered by the persons' wrist when the wrist strap is in the fastened state around a person's wrist; and

an electronic alarm circuit having a first and second electrical switch, the first electrical switch activating the alarm circuit and the second switch deactivating the alarm circuit;

wherein the first electrical switch has an switch operator extending from the exposed side and the second electrical switch has an switch operator extending from the covered side.

5,574,434

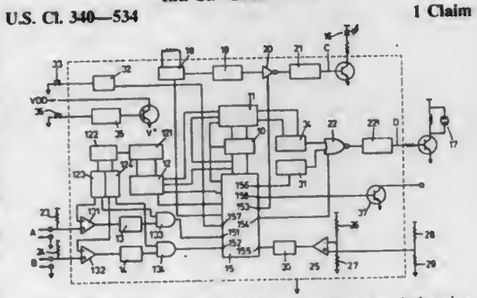
ALARM FOR HEAT MULTISTAGED DETECTING

Hung-Chang Liu, Tainan, Taiwan

Filed Aug. 11, 1995, Ser. No. 514,004

Int. Cl.[6] G08B *17/00*

U.S. Cl. 340—534 **1 Claim**



1. An alarm device for multistage heat detecting and alarming, comprises:

a ROM, in which high and low parameter limits are prestored; wherein every time the device starts-up, the high and low parameter limits are sent into a RAM for storage;

a high coefficient heat sensor and an inferior high coefficient heat sensor, each detecting external heat coefficient to generate sensor output signals to be compared by a respective comparator means with said parameter limits prestored in the RAM, and the respective comparator means output signal is changed to a digital signal by an A/D converter, the digital signal is sent into a digital operation unit to perform a digital program operation;

wherein operation unit output signals are sent out to drive a luminous diode and a buzzer or additionally a connecting external system by driving circuits, wherein the driving circuit of the buzzer comprises a NOR gate connected to a buzzer buffer; wherein the driving circuit of the luminous diode comprises an extremely high frequency oscillator connected to a detector which drives the input of a triggerable inverter whose output is connected to a diode buffer, said oscillator provides a time clock signal for sequence operation of the digital operation unit, and for providing an oscillator signal for conversion to a digital signal by said detector for input to the inverter to drive said diode through said diode buffer, such that when an output signal of the digital operation unit triggers the inverter, a triggered signal is sent out to the diode buffer for controlling the luminous diode for a lighting-extinguishing flashing operation; wherein, when the inferior high coefficient heat sensor senses a heat coefficient, its output signal is transferred through the digital operation unit to trigger the inverter and the NOR gate separately, through the diode buffer to drive the luminous diode and through the buzzer buffer to drive the buzzer, respectively, into intermittent alarming; and when the high coefficient heat sensor senses a heat coefficient, its output signal is transferred through the digital operation unit to cause the inverter and the NOR gate to conduct non-intermittently to create an uninterrupted alarm signal output;

a power capacity checking circuit, which comprises an operational amplifier comparator, series resistance elements and an A/D converter, in which the series resistance provides an internal setting coefficient for comparing with the device's power capacity coefficient by the comparator, wherein if the device's power capacity coefficient is lower than the internal setting coefficient, the comparator output signal is converted into a digital signal by the checking circuit A/D converter, and sent out through the digital operation unit to cause the oscillating signal of the oscillator drive the luminous diode flashing;

a coercing alarm circuit, which includes a manual switch and a flip-flop, such that when opening the switch, an input signal is sent to the digital operation unit to stop all detecting operation and to send out a coercing alarm signal, the coercing alarm signal is deciphered by a decoder connected to said NOR gate and drive the buzzer into an alarm state.

5,574,435

PHOTOELECTRIC TYPE FIRE DETECTOR

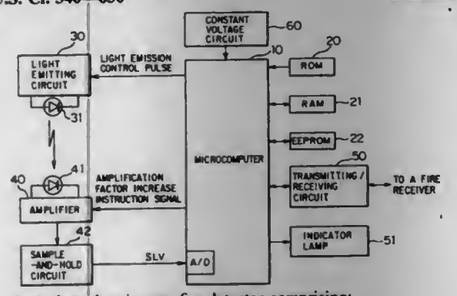
Mikio Mochizuki, Tokyo, Japan, assignor to Nohmi Bosai, Ltd., Tokyo, Japan

Continuation of Ser. No. 219,374, Mar. 29, 1994, abandoned. This application Dec. 13, 1995, Ser. No. 571,699

Claims priority, application Japan, Mar. 31, 1993, 5-096712

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—630 **5 Claims**



1. A photoelectric type fire detector comprising:

a light emitting element;

a light receiving element which receives scattered light emitted from said light emitting element and scattered by smoke particles;

an amplifier which amplifies an output signal of said light receiving element; and

a control circuit, coupled to said light emitting and light receiving elements and to said amplifier, for alternately and repeatedly operating in fire monitoring mode and self-testing mode time intervals, said control circuit comprising:

(a) means for detecting a smoke density according to an output signal of said amplifier during each fire monitoring mode time interval and for generating an alarm signal when the smoke density exceeds a predetermined level;

(b) means for setting an output range defined by an upper threshold and a lower threshold;

(c) means for increasing an amplification factor set in said amplifier during each self-testing mode time interval relative to an amplification factor set in said amplifier during each fire monitoring mode time interval;

(d) means for comparing a level of said output signal of said amplifier with said output range during each self-testing mode time interval;

(e) means for counting a number of times in which the level of said output signal of said amplifier deviates from said output range;

(f) means for setting a threshold value for said number of times; and

(g) means for detecting an abnormality in said photoelectric-type fire detector when said number of times exceeds said threshold value and for generating an error signal when detecting said abnormality.

5,574,436

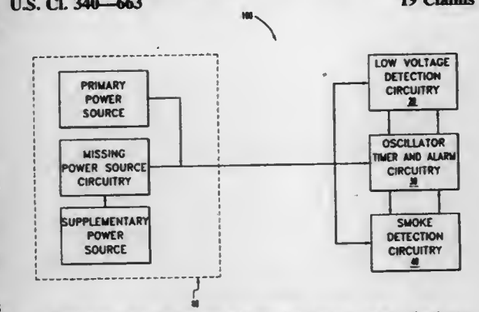
SMOKE DETECTOR INCLUDING AN INDICATOR FOR INDICATING A MISSING PRIMARY POWER SOURCE WHICH IS POWERED BY A SUBSTANTIALLY NONREMOVABLE SECONDARY POWER SOURCE

Ronald Sisselman, 4626 Hazleton La., Lake Worth, Fla. 33467-8634, and Gerald D. Rork, 924 Willow La., Sleepy Hollow, Ill. 60118

Filed Jul. 21, 1993, Ser. No. 95,289

Int. Cl.[6] G08B *21/00;17/10;23/00*

U.S. Cl. 340—663 **19 Claims**



1. A smoke detector having a missing power source indicator, comprising:

primary power source means for providing power to the smoke detector;

smoke detection and indication means, connected to said primary power source means, for detecting and indicating the presence of smoke;

missing power source indicator means for indicating the absence of said primary power source means; and

supplementary power source means, connected to said missing power source indicator means, for providing power to said missing power source indicator means in the absence of power from said primary power source means, wherein said supplementary power source means is substantially nonremovable from said smoke detector by a consumer.

5,574,437

SAFETY DEVICE FOR A PRINTING MACHINE

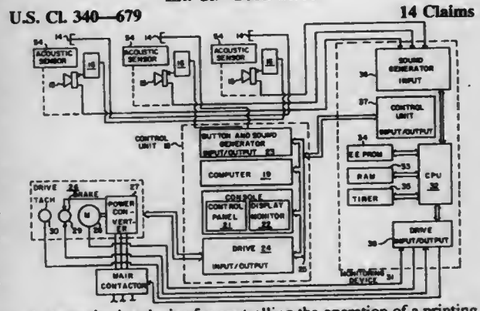
Klaus Schwinn; Bernd Lindner, both of Heusenstamm; Reinbold Bischof, Dietzenbach; Heinz Gotz, Alzenau, and Joachim Deschamps, Neuberg, all of Germany, assignors to MAN Roland Druckmaschinen AG, Germany

Filed May 31, 1995, Ser. No. 456,082

Claims priority, application Germany, May 31, 1994, 44 18 998

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—679 **14 Claims**



1. A monitoring device for controlling the operation of a printing machine, the printing machine having a drive, the printing machine also having a control unit connected to buttons via which the start-up of the printing machine through the drive can be initiated,

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the control unit also connected to at least one sound generator for emission of an acoustic alarm after actuation of one of the buttons, the monitoring device comprising: a sound generator input for receiving a signal from the at least one sound generator; a means for receiving input for the operating state of the printing machine; a processor having a comparator, the processor connected to the sound generator input and connected to the means for receiving input for the operating state, the processor determining the operation of the printing machine based on the means for receiving input for the operating state and the comparator determining whether an acoustic alarm was generated from the at least one sound generator; a means for activating the stopping of the drive connected to the processor when the comparator determines that no acoustic alarm was generated by the at least one sound generator upon start-up of the printing machine.

5,574,438

METHOD FOR TRANSFERRING INFORMATION, AND IN PARTICULAR FOR PERFORMING A LOGIC OPERATION, USING ELECTRON BEAMS

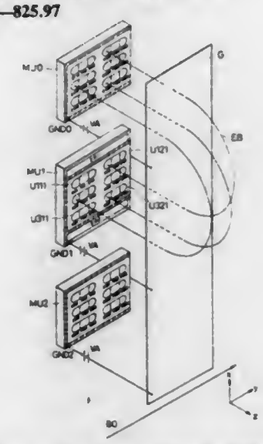
Fumitaka Kan, Tokyo; Kenji Nakamura, Hadano; Masanori Takenouchi, Atsugi; Naoji Hayakawa, Yokohama; Isamu Shimoda, Zama, and Masahiko Okunuki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 902,783, Jun. 24, 1992, Pat. No. 5,355,127, which is a continuation of Ser. No. 64,299, Jun. 19, 1987, abandoned. This application May 13, 1994, Ser. No. 242,236

Claims priority, application Japan, Jun. 23, 1986, 61-144735; Aug. 15, 1986, 61-191851; Aug. 15, 1986, 61-191852; Aug. 15, 1986, 61-191853; Aug. 15, 1986, 61-191855; Aug. 15, 1986, 61-191856; Aug. 15, 1986, 61-191862; Aug. 15, 1986, 61-191863; Aug. 15, 1986, 61-191864

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.97 **2 Claims**



1. A method of performing a logical operation with an electron beam, said method including the steps of:

directing at least one of a first electron beam and a second electron beam to an electron beam detector; and

performing a logical operation on the basis of an amount of charge accumulated in the electron beam detector.

5,574,439

PAGING RECEIVER WHICH DISPLAYS CANNED AND GENERAL MESSAGES

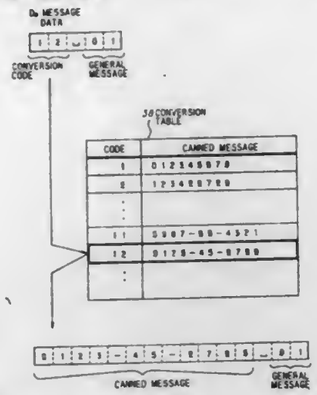
Mafumi Miyashita, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jan. 21, 1993, Ser. No. 7,142

Claims priority, application Japan, Jan. 20, 1992, 4-007855

Int. Cl.[6] G08B *5/22*

U.S. Cl. 340—825.440 **14 Claims**



1. A paging receiver, comprising:

(a) means for receiving a transmitted signal to provide a received signal, said received signal including a call signal and a message signal, said message signal having a plurality of characters selectively defining a conversion code and/or a space code and/or a general message;

(b) means for comparing said call signal to an identification number of said paging receiver and for providing a coincidence signal when said call signal corresponds to said identification number;

(c) means for storing a plurality of predetermined messages, each associated with a respective conversion code; and

(d) means responsive to the generation of said coincidence signal for:

(1) determining whether any one of a predetermined subset of said plurality of characters is said space code; and, if so,

(2) displaying that one of said predetermined messages identified by said conversion code in said received signal and said general message.

5,574,440

RF SWITCHING WITH REMOTE CONTROLLERS DEDICATED TO OTHER DEVICES

Fred R. Kurtz, 9901 W. Sahara Ave., Apt. 1115, Las Vegas, Nev. 89117

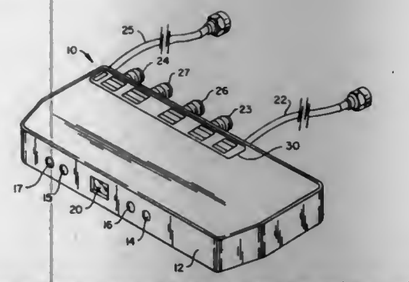
Division of Ser. No. 174,224, Dec. 28, 1993, Pat. No. 5,491,472. This application Jun. 8, 1995, Ser. No. 488,999

Int. Cl.[6] G08C *19/00;* **H04N** *5/268*

U.S. Cl. 340—825.57 **12 Claims**

1. Apparatus for switching a first or a second signal source into the signal input of a receiving device in response to a code defining sequence of radiated pulse signals transmitted from a remote control device, comprising:

a switching circuit having a switch output connectable with said receiving device signal input, having a first switch path connectable with said first signal source, extending to said switch output and including a first switch responsive to a first control condition to effect the passage of signals from said first signal source to said switch output, having a second switch path connectable with said second signal source, extending to said switch output and including a second switch responsive to a second control condition to effect the passage of signals from said second signal source to said switch output;



a switch actuator having a detector stage responsive to said, sequence of radiated pulse signals to derive a corresponding sequence of detected signals and having a delay stage responsive to the sustained occurrence of said sequence of detected signals for at least a predetermined interval of time to effect derivation of actuating inputs; and

a switch control responsive to said actuating inputs to derive said first and second control conditions.

5,574,441

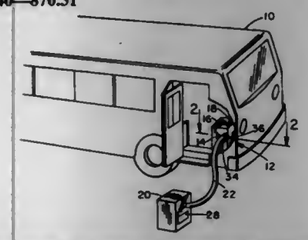
MASS TRANSIT INDUCTIVE DATA COMMUNICATION SYSTEM

John B. Roes, Kings Beach; Guy M. Kelly, La Jolla, and Charles J. Ingram, La Mesa, all of Calif., assignors to Cubic Automatic Revenue Collection Group, San Diego, Calif.

Continuation-in-part of Ser. No. 633,063, Dec. 19, 1990, abandoned. This application Jul. 2, 1993, Ser. No. 87,994

Int. Cl.[6] G08C *19/06*

U.S. Cl. 340—870.31 **5 Claims**



1. A mass transit information communication system, comprising:

a first mechanical connector;

a second mechanical connector for mating with said first mechanical connector to form a mechanical connection, said mechanical connection for removing coins stored in a farebox through said first and second mechanical connectors;

first data transmitter means for providing sequences of first current changes in response to first transmitter input data;

a first inductive transformer half mounted on said first mechanical connector and connected to said first data transmitter means for providing sequences of first flux changes in response to said sequences of first current changes;

a second inductive transformer half mounted on said second mechanical connector for providing sequences of second current changes in response to said sequences of first flux changes, said first inductive transformer half and said second inductive transformer half being disposed such that they may be placed into sufficient proximity that each said first flux change may induce a corresponding second current change in said second inductive transformer half;

first data receiver means for providing first receiver output data corresponding to said first transmitter input data in response to sequences of said second current changes;

second data transmitter means for providing sequences of third current changes in response to second transmitter input data;

a third inductive transformer half mounted on said second mechanical connector and connected to said second data transmitter means for providing sequences of second flux changes in response to said sequences of third current changes;

a fourth inductive transformer half mounted on said first mechanical connector for providing sequences of fourth current changes in response to said sequences of second flux changes, said third inductive transformer half and said fourth inductive transformer half being disposed such that they may be placed into sufficient proximity that each said second flux change may induce a corresponding fourth current change in said second inductive transformer half; and

first data receiver means for providing receiver output data in response to sequences of said fourth current changes.

5,574,442

INCLINATION ANGLE SENSOR

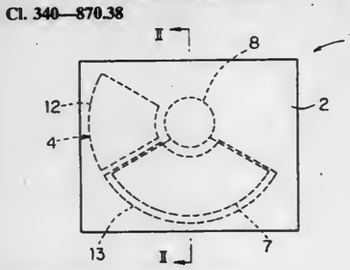
Motohiro Kinoshita; Fumitoshi Masuda; Masanori Oshima; Hiromu Okunishi, and Kiminori Yamauchi, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jul. 11, 1994, Ser. No. 273,395

Claims priority, application Japan, Jul. 12, 1993, 5-195518

Int. Cl.[6] G08C *15/00*

U.S. Cl. 340—870.38 **23 Claims**



1. An inclination angle sensor comprising:

a housing;

a fixed electrode fixed on said housing; and

a rotatable electrode rotatably supported in said housing, at a prescribed spacing with respect to said fixed electrode, so as to be rotatable about a prescribed rotation axis and to face a constant direction with respect to the direction of gravity,

said fixed electrode comprising first and second fixed split electrode members being defined by a split through said fixed electrode along a parting line radially extending from said rotation axis of said rotatable electrode and formed so that said first and second fixed split electrode members do not conduct electrically with each other,

said first and second central angles of respective first and second fixed split electrode members are different from each other,

said first and second fixed split electrode members respectively defining first and second central angles and together defining a total central angle of not more than 180°,

said rotatable electrode defining a third central angle being not more than the total central angle of said first and second fixed split electrode members, and

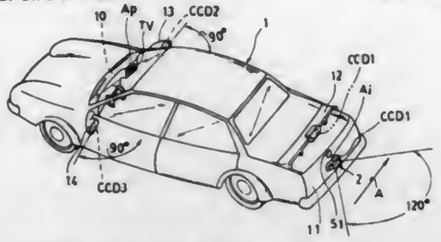
conductors being electrically connected with respective ones of said first and second fixed split electrode members for carrying a capacitance formed between said fixed electrode means and said rotatable electrode means.

5,574,443

VEHICLE MONITORING APPARATUS WITH BROADLY AND RELIABLY REARWARD VIEWING

Chi-Sheng Hsieh, c/o Hung Hsing Patent Service Center P.O. Box 55-1670, Taipei, Taiwan

Filed Jun. 22, 1994, Ser. No. 263,715
Int. Cl.[6] H04N 7/18
U.S. Cl. 340—901 8 Claims



I. A vehicle monitoring apparatus comprising:

a car (1) having a rear video camera (CCD1) mounted on a rear portion (11) of the car (1), a right video camera (CCD2) mounted in a right-sideview mirror (13) of the car (1), and a left video camera (CCD3) mounted in a left-sideview mirror (14) of the car (1);

a television receiver (3) including an audio and video receiving circuit (30), a deflection circuit (31) and a sounding circuit (32) for receiving video signals from said video cameras (CCD1, CCD2, CCD3) and for receiving audio signals from a sound-signal sensor (5) mounted on the car (1);

a display means (7) having a cathode ray tube (CRT) therein and mounted in the car (1);

a mirror-effect circuit (4) connected to the deflection circuit (31) of the television receiver (3) for inverting two poles (H1, H2) of a pair of horizontal deflection coils (Hc) of the deflection circuit (31) for changing a left to right scanning direction to a right to left scanning direction for reproducing a picture on the cathode ray tube (CRT) of the display means (7) in response to a true subject positioned at a rear side of the car (1), thereby reversing a right-and-left picture orientation from the left-to-right scanning direction to have right-and-left orientation of the picture shown on the display means (7) to be same as that of the true subject at the rear side of the car (1) for safely driving the car (1) when backing or turning the car (1); and

a system control circuit (6) for controlling the actuation of the cameras (CCD1, CCD2, CCD3), the mirror-effect circuit (4) and the sound-signal sensor (5).

5,574,444

METHOD AND APPARATUS FOR DECODING SIGNALS CONTAINING ENCODED INFORMATION

Paul Seifcak, Houston, Tex., assignor to Mitsubishi Caterpillar Forklift America Inc., Houston, Tex.

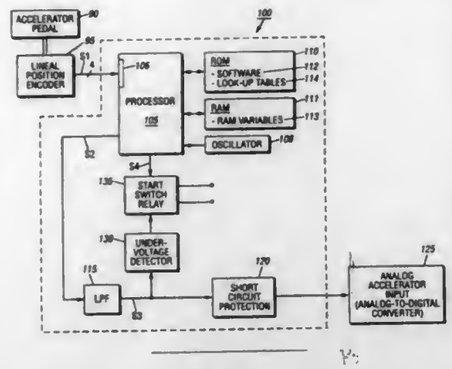
Filed Feb. 14, 1995, Ser. No. 388,391
Int. Cl.[6] H03M 1/12
U.S. Cl. 341—1 19 Claims

1. A signal converter for use with a moveable mechanical device, comprising:

input means for receiving a multi-bit digital signal indicative of a position of the moveable mechanical device;

a processor comprising means for converting said multi-bit digital signal into a pulse-width modulated signal; and

a low-pass filter operable to create an analog voltage from said pulse-width modulated signal, said analog voltage corresponding to the position of the moveable mechanical device.

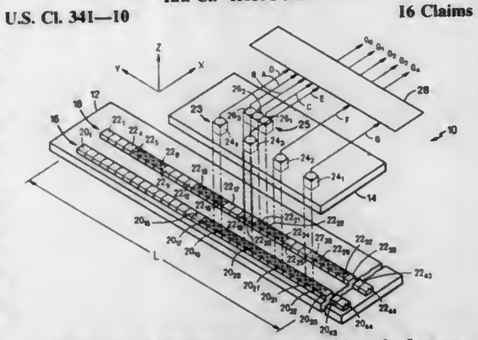


5,574,445

DIGITAL ABSOLUTE POSITION ENCODERS

Robert L. Maresca, Milford, Mass.; James A. Parison, Jr., Fitzwilliam, N.H.; Thomas A. Froeschle, Southboro, Mass.; John J. Breen, Southboro, Mass., and Christopher H. Perry, Southboro, Mass., assignors to Bose Corporation, Framingham, Mass.

Filed Dec. 8, 1994, Ser. No. 351,838
Int. Cl.[6] H03M 1/22
U.S. Cl. 341—10 16 Claims



1. An encoder for determining absolute position of a first member with respect to a second member, such absolute position being determined within a resolution cell of L/2^n, where n is an integer and L is a predetermined span, such encoder, comprising:

(a) a plurality of, m, absolute ecoding tracks of binary indicia disposed on the first member and distributed over the predetermined length, L, where m is an integer less than n;

(b) a plurality of indicia detectors for each track disposed on the second member for detecting the binary indicia on each track.

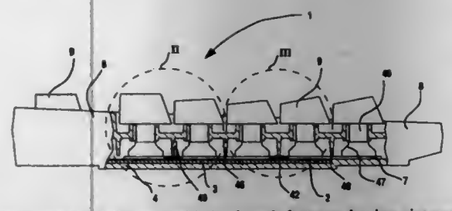
5,574,446

KEYBOARD

Jörg Dittrich, Ammertal; Günter Greiner, Bayreuth; Karl-Heinz Müller, Auerbach; Klaus Schuster, Bayreuth; Günter Murmann, Pegnitz, and Kurt Michel, Roth, all of Germany, assignors to Cherry Mikroschalter GmbH, Auerbach, Germany

Filed Mar. 2, 1995, Ser. No. 397,477
Claims priority, application Germany, Mar. 11, 1994, 44 08 331.9; Nov. 25, 1994, 44 42 073.0
Int. Cl.[6] H03K 17/94; H03M 11/100
U.S. Cl. 341—22 9 Claims

1. A keyboard having a housing top with a key pad and a housing bottom, a key support mat and a multi-layer contact foil set disposed within said housing underneath said key pad, a metal plate embedded in a recess formed in said housing bottom below



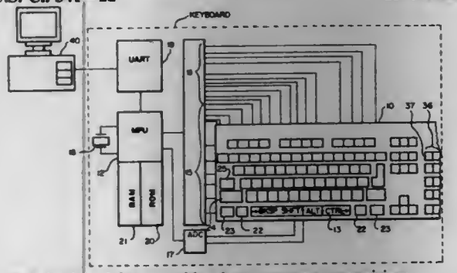
said contact foil set, said keyboard bottom having integral U-shaped reinforcement webs provided, at their lower ends remote from the housing bottom, with a support surface and having side walls with bearing studs projecting from said side walls toward one another adjacent the housing bottom, and housing legs having at one of their ends bearing cavities receiving said bearing studs so as to be pivotally supported thereby, said housing legs having, at their one ends, outer circular wall portion extending in a partial circle around said bearing cavities and, at their outer circumference adjacent the housing bottom circumferentially spaced locking grooves and said housing bottom having, integrally formed with said housing bottom, resilient locking tabs with locking ribs which are disposed within said U-shaped webs and adapted to engage said locking grooves in said support legs for locking said support legs in their end positions.

5,574,447

METHOD AND APPARATUS FOR MODIFYING CHARACTERS ENTERED ON A COMPUTER KEYBOARD

William H. Roylance, Salt Lake City, Utah, assignor to Mallinckrodt & Mallinckrodt, Salt Lake City, Utah

Filed Jul. 24, 1995, Ser. No. 506,241
Int. Cl.[6] B41J 5/00
U.S. Cl. 341—22 23 Claims



1. A keyboard for use with a host computer comprising:

an array of keys including a space key and a plurality of modifiable keys;

apparatus for detecting when keys of the key array are pressed and for generating a key code corresponding to keys that are pressed;

a buffer capable of holding the key code of a key;

a state register having a first state indicating when the first key code of a word is in the buffer;

means for comparing a key code in the buffer to a second key code;

means for generating a modified key code;

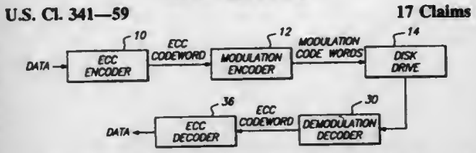
means for sending key codes to the host computer, the means for sending transmitting the modified key code when the state register is in the first state and the key code in the buffer matches the second key code of the word, and when the state register is in the first state and the key code in the buffer does not match the second key code of the word the means for sending transmitting key codes sent comprise a sequence comprising the key code in the buffer and the second key code.

5,574,448

METHOD AND APPARATUS FOR ENCODING DATA WITH VARIABLE BLOCK LENGTHS

Lih-Jyh Weng, Shrewsbury; John DeRoo, Marlborough, and Michael Leis, Framingham, all of Mass., assignors to Quantum Corporation, Milpitas, Calif.

Filed May 8, 1995, Ser. No. 436,980
Int. Cl.[6] H03M 7/46
U.S. Cl. 341—59 17 Claims



1. An encoding system for encoding b-bit symbols and e-bit symbols using a modified n/m rate run length limited modulation code that limits the run length of consecutive zero's to z and consecutive one's to r, the system including:

A. a modulation code encoder for encoding a b-bit symbol or b bits of an e-bit symbol to form an n-bit cell;

B. a cell manipulator for producing, from an n-bit cell associated with an e-bit symbol, an (m+i)-bit cell that satisfies the run length limitations of the modulation code, the manipulator inserting into the n-bit cell the i=e-b bits of the associated e-bit symbol that the encoder refrained from encoding; and

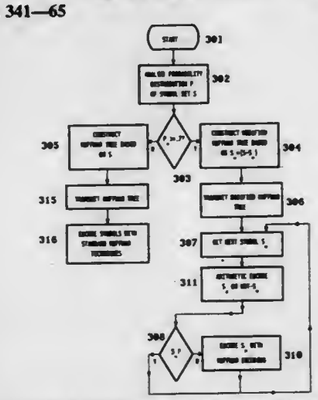
C. means for producing a modulation code word by concatenating the n-bit cells associated with the b-bit symbols, and the (m+i)-bit cells associated with the e-bit symbols.

5,574,449

SIGNAL PROCESSING WITH HYBRID VARIABLE-LENGTH AND ENTROPY ENCODIDNG

Stuart J. Golin, East Windsor, N.J., assignor to Intel Corporation, Santa Clara, Calif.

Filed Feb. 24, 1995, Ser. No. 393,718
Int. Cl.[6] H03K 13/24
U.S. Cl. 341—65 20 Claims



1. A computer-implemented method for processing signals, the method comprising the steps of:

(a) determining at least one dominant symbol of a set S comprising a plurality of symbols and forming a dominant set comprising the at least one dominant symbol;

(b) receiving a next symbol for encoding;

(c) determining whether the next symbol is in the dominant set; and

(d) encoding the next symbol in accordance with either entropy encoding or variable-length encoding in accordance with the determination of step (c).

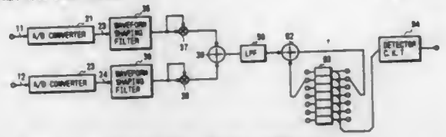
VOL 1192 ISS 2 NO 12 1996 UMI

5,574,450

SYNCHRONIZATION ADDER CIRCUIT

Katsuhiko Hiramatsu; Kazunori Inogal, both of Yokohama, and Kimihiko Ishikawa, Funabashi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 9, 1994, Ser. No. 302,029
Claims priority, application Japan, Sep. 10, 1993, 5-248600
Int. Cl.[6] H03M *1/48*
U.S. Cl. 341—112 **6 Claims**



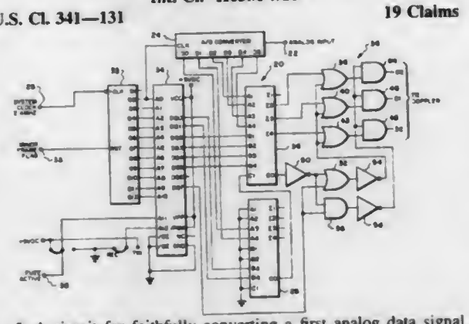
1. A synchronization adder circuit comprising:
A/D converter means for sampling at given sampling points in time per sampling cycle a received signal transmitted through a plurality of subcarriers to digitize sampled values to provide digital signals;
waveform-shaping circuit means for waveform-shaping the digital signals from said A/D converter means without decomposing them for every subcarrier;
square means for squaring output signals from said waveform-shaping circuit means;
a low-pass filter removing a given high-frequency component from output signals from said square means; and
adder means for adding values of output signals from said low-pass filter at each sampling point for preselected sampling cycles.

5,574,451

DIGITAL CIRCUIT FOR THE INTRODUCTION OF DITHER INTO AN ANALOG SIGNAL

Gary S. Borgen, Camarillo, and James L. Sullivan, Ventura, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 8, 1995, Ser. No. 385,526
Int. Cl.[6] H03M *1/20*
U.S. Cl. 341—131 **19 Claims**



1. A circuit for faithfully converting a first analog data signal into an equivalent digital signal, said circuit having a first clock signal of a first predetermined frequency provided thereto, said circuit comprising:
first converting means for receiving said first analog data signal and then converting said first analog data signal into said equivalent digital signal;
said equivalent digital signal having a plurality of digital data samples, each of said digital data samples having a plurality of data bits;
counting means responsive to said first clock signal providing a second clock signal having a second predetermined frequency, and a plurality of digital addresses;
said second clock signal being supplied to said converting means so as to effect the frequency at which said converting means samples said first analog data signal;
random number generating means responsive to said digital addresses provided by said first counting means generating a periodic sequence of random binary numbers, each of said random binary numbers generated by said first random number generating means being a nyquist dither component to be added to one digital data sample of said equivalent digital signal, said first random number generating means providing for each random binary number generated thereby a sign bit indicative of whether said random binary number is positive or negative;
high pass filtering means having an input for receiving an externally generated sequence of positive integers, said high pass filtering means processing said externally generated sequence of positive integers to provide said periodic sequence of said random binary numbers, said periodic sequence of said random binary numbers being loaded into said random number generating means;
adding means for adding said nyquist dither components to said digital data samples of said equivalent digital signal and for eliminating at least one bit from each of said digital data samples after said nyquist dither components are added thereto, said adding means providing a carry bit indicative of when the magnitude of any of said digital data samples exceeds the maximum value of the binary number which may be provided by said adding means after said adding means adds said nyquist dither component to said digital data sample;
clipping circuit means for receiving each digital data sample of said equivalent digital signal from said adding means, said clipping circuit means responsive to said carry bit provided by said adding means and said sign bit provided by said first random number generating means allowing said digital data sample to pass therethrough or setting each data bit of said digital data sample to a predetermined logic state; and
second converting means for receiving each digital data sample of said equivalent digital signal from said clipping circuit means and converting each digital data sample of said equivalent digital signal into a second analog data signal, said second analog data signal including said nyquist dither components;
said high pass filtering means including:
a first time delay (**110**) having an input for receiving said externally generated sequence of positive integers and an output;
a second time delay (**112**) having an input connected to the output of said first time delay (**110**) and an output;
a first constant multiplier (**114**) having an input connected to the output of said first time delay (**112**) and an output;
a second constant multiplier (**116**) having an input connected to the output of said second time delay (**112**) and an output;
a first summer (**118**) having a first input for receiving said externally generated sequence of positive integers, a second input connected to the output of said first constant multiplier (**114**), a third input connected to the output of said second constant multiplier (**116**) and an output;
a second summer (**120**) having a positive input connected to the output of said first summer (**118**), a negative input and an output;
a third time delay (**122**) having an input connected to the output of said second summer (**120**) and an output;
a fourth time delay (**126**) having an input connected to the output of said third time delay (**122**) and an output;
a third constant multiplier (**124**) having an input connected to the output of said third time delay (**122**) and an output;
a fourth constant multiplier (**128**) having an input connected to the output of said fourth time delay (**126**) and an output;
a third summer (**130**) having a first positive input connected to the output of said third constant multiplier (**124**), a second positive input connected to the output of said fourth constant multiplier (**128**) and an output connected to the negative input of said second summer (**120**);
a fourth summer (**132**) having a positive input connected to the output of said second summer (**120**), a negative input and an output;

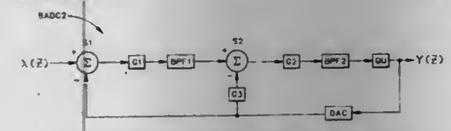
a fifth time delay (**134**) having an input connected to the output of said fourth summer (**132**) and an output;
a sixth time delay (**138**) having an input connected to the output of said fifth time delay (**138**) and an output;
a fifth constant multiplier (**136**) having an input connected to the output of said fifth time delay (**134**) and an output;
a sixth constant multiplier (**140**) having an input connected to the output of said sixth time delay (**138**) and an output;
a fifth summer (**142**) having a first positive input connected to the output of said fifth constant multiplier (**136**), a second positive input connected to the output of said sixth constant multiplier (**140**) and an output connected to the negative input of said fourth summer (**132**).

5,574,452

SINGLE BIT BANDPASS ANALOG-TO-DIGITAL CONVERTER

Lorenzo L. Longo, Dove Canyon; Raouf Halim, Laguna Niguel, and Bor-Rong Horng, Mission Viejo, all of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Feb. 15, 1994, Ser. No. 196,354
Int. Cl.[6] H03M *3/02*
U.S. Cl. 341—143 **14 Claims**



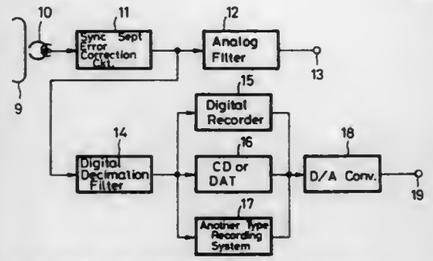
1. A single bit bandpass analog-to-digital converter comprising:
(a) an analog summer connected for receiving, at a plus input terminal, analog input signals;
(b) an analog gain stage connected for receiving analog signals from the summer;
(c) an analog bandpass filter connected for receiving analog signals from the gain stage, the analog bandpass filter comprising:
(1) an analog summer connected for receiving, at a plus input terminal, analog input signals;
(2) a first delay element, connected for receiving an analog signal from the summer, and constructed for delaying the signal for one delay interval determined, by a digital clock; and
(3) a second delay element, connected for receiving an analog signal from the first delay element, and connected for delivering analog signals to a minus input terminal of the summer, and constructed for delaying the signal for one delay interval determined by the clock;
(d) an output terminal connected for producing analog output signals is located at an output terminal of one of a group consisting of the summer, the first delay element, and the second delay element;
(e) a single bit analog-to-digital converter connected for receiving analog signals from the bandpass filter, and connected for producing digital output signals; and
(f) a digital-to-analog converter connected for receiving digital signals from the analog-to-digital converter, and connected for driving a minus input terminal of the summer, thereby forming a loop, the delay around the loop totaling two clock cycles.

5,574,453

DIGITAL AUDIO RECORDING APPARATUS

Ayataka Nishio, Kanagawa, and Yasuhiro Ogura, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 24, 1995, Ser. No. 395,242
Claims priority, application Japan, Mar. 3, 1994, 6-033822
Int. Cl.[6] H04N *1/38;* **H03M** *7/00*
U.S. Cl. 341—143 **3 Claims**



1. An audio signal processing apparatus comprising:
sigma-delta modulating means for outputting a sigma-delta modulated audio signal performing sigma-delta modulation on an input audio signal;
a detecting circuit for detecting that said sigma-delta modulated audio signal maintains a fixed value for a time period longer than a predetermined time present in the sigma-delta modulation;
idling signal generating means for generating an idling signal corresponding to a mid-point potential of said input audio signal;
a delay circuit for delaying said sigma-delta modulated audio signal output from said sigma-delta modulating means by a predetermined time period; and
switching means receiving a delayed output signal of said delay circuit and said idling signal and being controlled by said detecting circuit for switching and outputting the delayed signal from said delay circuit or said idling signal based on a detected result of said detecting circuit, wherein said switching means outputs said idling signal when said detecting circuit detects that said sigma-delta modulated audio signal has a fixed value for a time period longer than a predetermined time found in said sigma-delta modulation.

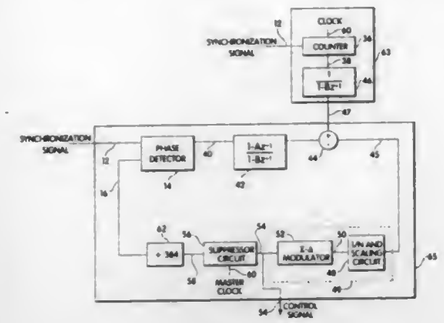
5,574,454

DIGITAL PHASE-LOCKED LOOP UTILIZING A HIGH ORDER SIGMA-DELTA MODULATOR

James Wilson, Foxboro, and Ronald A. Cellini, Newton, both of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Division of Ser. No. 403,291, Mar. 14, 1995, which is a continuation-in-part of Ser. No. 121,104, Sep. 13, 1993, Ser. No. 120,957, Sep. 13, 1993, Ser. No. 241,059, May 11, 1994, Ser. No. 343,713, Nov. 22, 1994, Ser. No. 373,864, Jan. 17, 1995, and Ser. No. 328,560, Oct. 25, 1994. This application Jun. 7, 1995, Ser. No. 479,943
Int. Cl.[6] H03M *3/00*
U.S. Cl. 341—143 **19 Claims**

1. A phase-adjustable sigma-delta modulator, comprising:
a sigma-delta modulator, responsive to a frequency select signal, for providing a sigma-delta modulated control signal representative of a data rate of the frequency select signal; and
means for adding an impulse to the frequency select signal to vary a value of the sigma-delta modulated control signal to either advance or retard a phase of a signal under control of the sigma-delta modulated control signal.

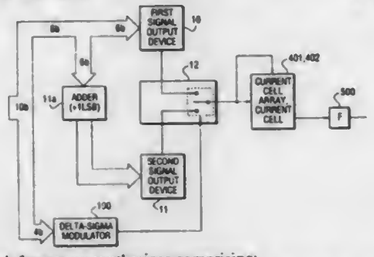


5,574,455

DIGITAL TO ANALOG CONVERTER AND FREQUENCY SYNTHESIZER USING THE CONVERTER

Kazuyuki Hori, Tokyo, and Masaru Kokubo, Hannou, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 25, 1995, Ser. No. 377,648
Claims priority, application Japan, Jan. 25, 1994, 6-006130
Int. Cl.[6] H03M 1/68; H03K 13/00
U.S. Cl. 341—144 78 Claims



17. A frequency synthesizer comprising:

a voltage controlled oscillator which provides an oscillating output at a frequency corresponding to a value of an input analog voltage;

a divider which divides the frequency of the oscillating output of said voltage controlled oscillator;

a phase comparator which outputs a digital signal corresponding to the phase difference between the output of said divider and a reference signal;

a digital filter which removes unwanted high frequency components included in the output of said phase comparator; and

a digital to analog converter which drives said voltage controlled oscillator by converting the output of said digital filter to an analog voltage,

wherein said digital to analog converter is a current cell matrix type having a current cell array which includes a plurality of current cells including current sources arranged in a matrix and switches for outputting currents from said current sources in response to an input digital signal when said current cells are in an output state, and wherein a sum of output currents from said current cells is output as an analog signal, and

wherein said digital to analog converter comprises:

a delta sigma modulator which transforms lower n bits of the input digital signal of N bits to a one bit signal sequence by delta sigma modulation and outputs the one bit signal sequence,

a first row decoder which decodes higher m bits of said higher (N-n) bits of the input digital signal and outputs a row selection signal for selecting one row in said current cell array corresponding to a number represented by said higher m-bits,

a second row decoder which decodes said higher m bits and outputs a row output state setting signal for causing current cells in all rows of said current cell array corresponding to a number less than the number represented by said higher m bits to be in the output state,

a first column decoder which decodes lower (N-n-m) bits of the higher (N-n) bits of the input digital signal, and outputs a column selecting signal for selecting one column of said current cell array corresponding to a number represented by said lower (N-n-m) bits, thereby causing current cells of said current cell array on the column selected by said column selection signal and on the row selected by the row selection signal to be in the output state.

a second column decoder which decodes the lower (N-n-m) bits, and outputs an all column selection signal for selecting current cells of all the columns of said current cell array corresponding to a number less than the number represented by said lower (N-n-m) bits, thereby causing current cells of said current cell array on the columns selected by said all column selection signal and on the row selected by the row selection signal to be in the output state,

a selector which outputs the column selection signal output from said first column decoder to said current cell array or outputs the sum of the column selection signals output from the first and second column decoders to said current cell array based on the output from said delta sigma modulator, and

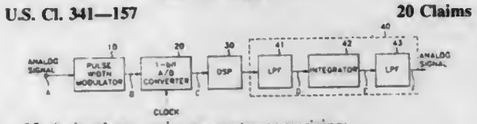
a filter which smooths the sum of the output currents of the current cells of said current cell array in the output state.

5,574,456

SIGNAL PROCESSING METHOD AND APPARATUS THEREFOR

Gea-ok Cho, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jul. 26, 1994, Ser. No. 280,826
Claims priority, application Rep. of Korea, Jul. 26, 1993, 93-14196
Int. Cl.[6] H03M 1/60
U.S. Cl. 341—157 20 Claims



13. A signal processing apparatus comprising:

modulating means receiving an input analog signal for generating a frequency modulation signal;

limiting means receiving said frequency modulation signal for generating a limited frequency modulation signal;

1-bit analog-to-digital converting means receiving said limited frequency modulation signal for wave-shaping said limited frequency modulation signal to produce a waved-shaped signal, for sampling the wave-shaped signal responsive to a clock signal having a predetermined frequency, and for generating a serially grouped single-bit digital signal;

digital-signal processing means receiving said serially grouped single-bit digital signal for processing said serially grouped single-bit digital signal to thereby provide a processed serially grouped single-bit digital signal; and

output means receiving said processed serially grouped single-bit digital signal for low-pass-filtering said processed serially grouped single-bit digital signal to provide a filtered signal and for frequency-demodulating the filtered signal so as to output an output analog signal.

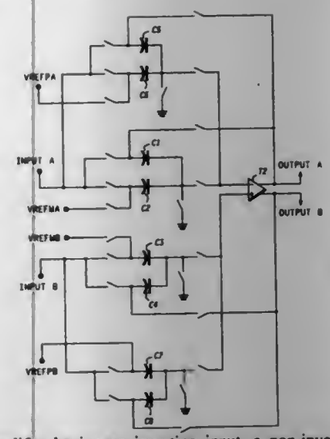
5,574,457

SWITCHED CAPACITOR GAIN STAGE

Douglas A. Garrity, Gilbert, Ariz., and Patrick L. Rakers, Schaumburg, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 12, 1995, Ser. No. 489,349
Int. Cl.[6] H03M 1/12
U.S. Cl. 341—172 22 Claims

1. A switched capacitor gain stage having an input and an output, the switched capacitor gain stage comprising:



an amplifier having an inverting input, a non-inverting input coupled to a power supply terminal, and an output coupled to the output of the switched capacitor gain stage;

a first capacitor having a first terminal and a second terminal;

a first switch having a first terminal coupled to said first terminal of said first capacitor and a second terminal coupled to said output of said amplifier;

a second switch having a first terminal coupled to the input of the switched capacitor gain stage and a second terminal coupled said first terminal of said first capacitor;

a third switch having a first terminal coupled to said second terminal of said first capacitor and a second terminal coupled to said inverting input of said amplifier;

a fourth switch having a first terminal coupled to said second terminal of said first capacitor and a second terminal coupled to said power supply terminal;

a fifth switch having a first terminal coupled to the input of the switched capacitor gain stage and a second terminal;

a second capacitor having a first terminal coupled to said second terminal of said fifth switch and a second terminal coupled to said second terminal of said first capacitor;

a third capacitor having a first terminal and a second terminal;

a sixth switch having a first terminal coupled to said first terminal of said third capacitor and a second terminal coupled to said output of said amplifier;

a seventh switch having a first terminal coupled to the input of the switched capacitor gain stage and a second terminal coupled said first terminal of said third capacitor;

an eighth switch having a first terminal coupled to said second terminal of said third capacitor and a second terminal coupled to said inverting input of said amplifier;

a ninth switch having a first terminal coupled to said second terminal of said third capacitor and a second terminal coupled to said power supply terminal;

a tenth switch having a first terminal coupled to the input of the switched capacitor gain stage and a second terminal; and

a fourth capacitor having a first terminal coupled to said second terminal of said tenth switch and a second terminal coupled to said second terminal of said third capacitor.

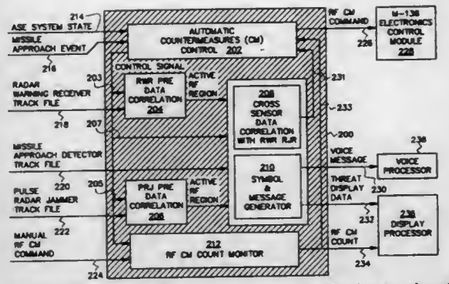
5,574,458

AUTOMATIC RF COUNTERMEASURES DISPENSING MODULE CONTROLLER

My Tran, Albuquerque, N.M., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 977,327, Nov. 17, 1992, abandoned.
This application Jun. 30, 1994, Ser. No. 308,161
Int. Cl.[6] G01S 7/38
U.S. Cl. 342—13 20 Claims

1. An automatic RF countermeasures dispensing module comprising:



(a) automatic countermeasures control means having an aircraft survivability system state input, a missile approach event input, an RF countermeasures command output, a control signal output, a cross-sensor data correlation input and a countermeasures count monitor input;

(b) radar warning receiver pre-data correlation means having a control signal input operatively connected to the control signal output of said automatic countermeasures control means and a radar warning receiver track file input, said radar warning receiver pre-data correlation means providing an active RF region output;

(c) pulsed radar jammer pre-data correlation means having a pulsed radar jammer control input operatively connected to the control signal output of said automatic countermeasures control means and a pulsed radar jammer track file input, said pulsed radar jammer pre-data correlation means having active RF region output;

(d) RF countermeasures count monitor means having an RF count monitor control signal input operatively connected to the control signal output of said automatic countermeasures control means and a manual RF countermeasures command count input, said RF countermeasures count monitor means providing an RF countermeasures count output;

(e) cross sensor data correlation means having an active RF region input operatively connected to the active RF region output of said radar warning receiver pre-data correlation means, an active RF region input connected to said output of said pulsed radar jammer pre-data correlation means, a missile approach detector track file input, and a cross sensor data correlation control input operatively connected to the control signal output of said automatic countermeasures control means, said cross sensor data correlation means providing cross sensor data correlation with said RF active region output of said radar warning receiver pre-data correlation means and said active RF region output of said pulsed radar jammer pre-data correlation means and with said missile approach detector track file input means, said cross sensor data correlation means outputting to said correlated data input of said automatic countermeasures control means;

(f) symbol and message generator means having a control signal input operatively connected to the control signal output of said automatic countermeasures control means and operatively connected to said cross sensor data correlation means, said symbol and message generator means providing a threat display data output and a voice message output; and

(g) voice processor means operatively connected to said voice message output and display processor means for displaying threat data operatively connected to said threat display data output and said RF countermeasures count output.

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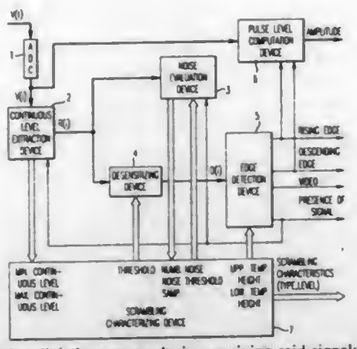
DEVICE FOR THE DETECTION AND CHARACTERIZING OF RADAR PULSES

Olivier Burgay, Meudon, and Philippe Leconte, Cesson, both of France, assignors to Thomson-CSF, Paris, France

Filed Dec. 28, 1994, Ser. No. 364,995
Claims priority, application France, Dec. 28, 1993, 93 15745
Int. Cl.[6] G01S 13/87;13/76;7/292
U.S. Cl. 342—40 12 Claims

1. A device for the detection and characterization of radar pulses in a received signal, said device comprising:

VOL 1192 ISS 2 NO 12 1996 UMI



an analog-digital converter device receiving said signal;

an extraction device for extracting the continuous level of the signal;

an edge detection device coupled to said extraction device;

a scrambling characterizing device coupled to said extraction device for detecting the presence of rising and descending edges and of scramblers in said signal.

5,574,460

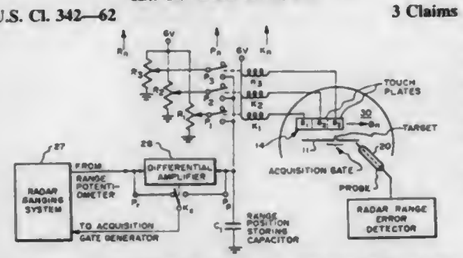
MANUAL PROBE ACQUISITION SYSTEM

John Di Perry, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 3, 1965, Ser. No. 431,490

Int. Cl.[6] G01S *13/72;7/10*

U.S. Cl. 342—62 **3 Claims**



1. In a range tracking radar system a manual-aid for the instantaneous and accurate positioning of tracking radar acquisition gate signals at any position within the full operating range of the radar ranging system upon operator command, comprising in combination:

(a) a dual trace radar oscilloscope display, one trace representing the full operating range of the radar system a select relatively small segment of which represents the acquisition gate, and the other trace representing the acquisition gate in expanded form,

(b) first and second control means mounted on the outer face of said oscilloscope,

(c) said first control means being adjacent to and corresponding to the length of said full operating range trace,

(d) said second control means being adjacent to and corresponding to the trace of said acquisition gate in expanded form,

(e) means to effect connection of said first and second control means to the radar ranging system,

(f) said first control means being operable upon connection to the radar ranging system to instantaneously position the acquisition gate at any range in said full operating range trace where a target echo pulse appears upon operator command whereupon the target pulse will automatically be acquired by the radar system range gate and will also appear on the expanded acquisition gate trace,

(g) said second control means being operable upon connection to the radar ranging system to position and maintain the range gate pulse on the desired target echo pulse upon operator command in the presence of other pulses due to interference and other targets appearing on said expanded acquisition gate trace,

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5,574,461

RADAR APPARATUS FOR CONNECTING TO A GUN

Antonius J. M. Withag, Hengelo; Peter J. Cool, Almelo, and Henk Fischer, Hengelo, all of Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

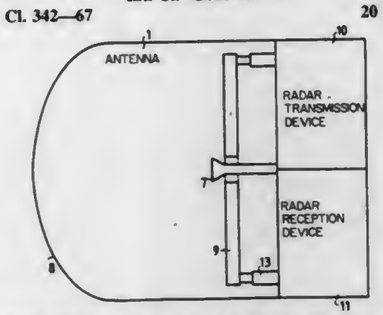
PCT No. PCT/EP94/00093, § 371 Date Jul. 17, 1995, § 102(e) Date Jul. 17, 1995, PCT Pub. No. WO94/17566, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 12, 1994, Ser. No. 481,387

Claims priority, application Netherlands, Jan. 21, 1993, 9300113

Int. Cl.[6] G01S *13/72*

U.S. Cl. 342—67 **20 Claims**



1. Radar apparatus provided with an antenna for connecting to a substantially non-recoiling part of a gun barrel, of a gun equipped with servo motors, with a radar transmission device coupled to the antenna, a radar reception device coupled to the antenna, a radar data processor and servo control means, for controlling the servo motors such that in a first operational mode the gun with the antenna mounted on it is fit for automatically tracking a target, characterized in that the antenna is a Cassegrain antenna provided with a flat mirror controlled with actuators, for generating in a second operational mode an angular offset between a gun center line and a line of sight of the antenna.

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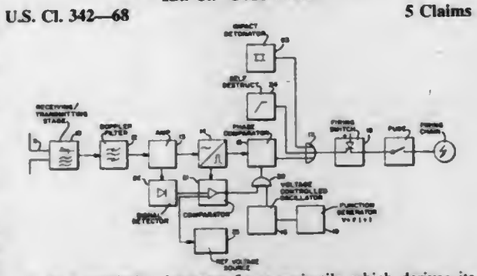
PROXIMITY DETONATOR

Georg Schmucker, Ulm/Donau, and Leo Fischer, Pfuhl, both of Germany, assignors to Licentia-Patent Verwaltungs GmbH, Frankfurt, Germany

Filed Dec. 4, 1975, Ser. No. 638,428

Int. Cl.[6] G01S *13/08*

U.S. Cl. 342—68 **5 Claims**



1. In a proximity detonator for a projectile which derives its firing criterion from reflected beam measurements and thus obtains information about the radial relative velocity of the detonator with respect to its target object by evaluating the Doppler effect, said proximity detonator including: transmitter-receiver means for transmitting a signal of a given frequency, for receiving the signal reflected by the target and for producing a Doppler signal corresponding to said radial relative velocity from said transmitted and received signals at its output; circuit means responsive to said Doppler signal for producing a firing signal; and means responsive to the firing signal for detonating an explosive; the improvement wherein said circuit means comprises: a function generator for producing an output voltage having a time sequence which corresponds to the decrease in said radial relative velocity as the projectile, and hence the detonator, approaches the target; a voltage controlled oscillator means, having its control input connected to the output of said function generator, for producing a comparison frequency output signal which corresponds to desired firing moments; and a phase comparator means, having first and second signal inputs connected to the output of said transmitter-receiver means and said oscillator means respectively, for comparing the frequency of said Doppler signal with said comparison frequency signal and for producing said firing signal whenever the frequency of said Doppler signal is equal to the frequency of said comparison frequency signal.

5,574,463

OBSTACLE RECOGNITION SYSTEM FOR A VEHICLE

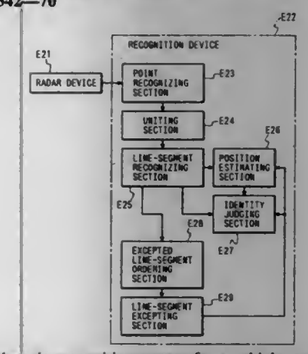
Noriaki Shirai, Oobu; Katsuhiko Hibino, Toyoake, and Takao Nishimura, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 24, 1995, Ser. No. 449,116

Claims priority, application Japan, May 26, 1994, 6-112779

Int. Cl.[6] G01S *13/93;13/60*

U.S. Cl. 342—70 **3 Claims**



1. An obstacle recognition system for a vehicle, comprising:

a) radar means for emitting a wave beam into a given angular range outside the vehicle and scanning the given angular range by the wave beam, and for detecting a reflected wave beam; and

b) recognizing means for recognizing an obstacle with respect to the vehicle on the basis of the result of detection of the reflected wave beam by the radar means;

wherein the recognizing means comprises:

b1) point recognizing means for recognizes obstacles as points on the basis of the result of detection of the reflected wave beam by the radar means;

b2) uniting means for uniting adjacent points among the points provided by the point recognizing means, and for providing sets each having adjacent points;

b3) line-segment recognizing means for detecting a specific set or specific sets of adjacent points among the adjacent-point sets provided by the uniting means, and for recognizing every detected specific set as a line segment having a length only along a width direction of the vehicle, wherein every specific set has a length smaller than a given length along a longitudinal direction of the vehicle;

b4) position estimating means for estimating the position of a line segment, which will be provided by the line-segment recognizing means, in response to the position of a previously-provided line segment; and

b5) identity judging means for comparing the line-segment position estimated by the position estimating means and the position of a line segment currently provided by the line-segment recognizing means to judge whether or not the line segment currently provided by the line-segment recognizing means and the previously-provided line segment are the same.

5,574,464

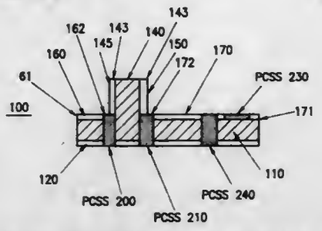
HIGH-SPEED SWITCHING DEVICE FOR MONOSTATIC IMPULSE RADAR

Richard G. Madonna, East Meadow, and Gregory H. Vilardi, Huntington Station, both of N.Y., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Oct. 17, 1995, Ser. No. 544,369

Int. Cl.[6] G01S *7/28*

U.S. Cl. 342—198 **42 Claims**



1. A switching device for switching an antenna between a transmitter and a receiver in an impulse radar system, comprising:

a first switching circuit means formed along a stripline situated between the antenna and the transmitter;

a second switching circuit means formed along a stripline situated between the antenna and the receiver;

wherein during a radar transmit mode the first switching circuit means provides an electrical path for allowing radar pulses to pass from the transmitter to the antenna and the second switching circuit means simultaneously isolates the antenna from the receiver; and

wherein during a radar receive mode the second switching circuit means provides an electrical path for allowing reflected radar pulses to pass from the antenna to the receiver and the first switching circuit means simultaneously isolates the antenna from the transmitter.

5,574,465

PORTABLE ASTRONOMIC/METEORIC OBSERVATION SYSTEM

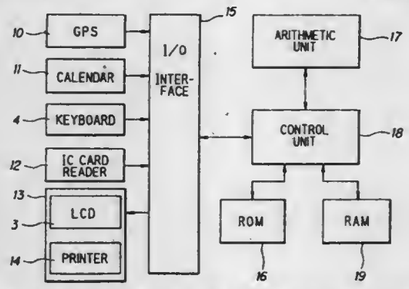
Setsuo Okada, Hokkaido, Japan, assignor to Hudson Soft Co., Ltd., Hokkaido, Japan

Continuation of Ser. No. 160,754, Dec. 3, 1993, abandoned. This application Feb. 15, 1995, Ser. No. 390,262

Claims priority, application Japan, Oct. 21, 1993, 5-285722

Int. Cl.[6] H04B *7/185*

U.S. Cl. 342—352 **16 Claims**



1. A portable system for observing astronomical and tide-related phenomena in accordance with a present location of a user and a present date and time, comprising:

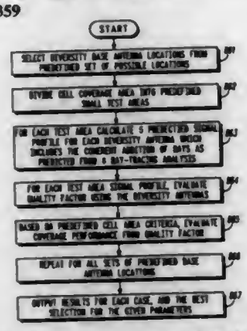
detection means for detecting the current location of a user;
calendar means for providing the present date and time;
a memory for storing tide-related and astronomical data, including data for a celestial chart showing the arrangement of the constellations;
input means responsive to an operation by the user for supplying an input signal specifying an astronomical or tide-related item to be observed;
data selection means responsive to the input signal for selecting and loading the corresponding data from the memory;
processor means, connected to the detection means, calendar means and data selection means, for modifying the data supplied from the memory through the data selection means in accordance with the current location of the user and the present date and time; and
output means responsive to the processor means for showing the modified data.

5,574,466

METHOD FOR WIRELESS COMMUNICATION SYSTEM PLANNING

John D. Reed, Arlington, and Yuqiang Tang, Plano, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 415,051, Mar. 31, 1995. This application May 30, 1995, Ser. No. 452,799
Int. Cl.[6] G01S *1/00*
U.S. Cl. 342—359 **14 Claims**



10. A method of determining a quality of candidate locations for diversity antennas of a communication unit, comprising:
(a) providing a known environment and selecting plural combinations of candidate antenna locations and a set of transmit locations;
(b) measuring, for each candidate of the candidate antenna locations, a respective set of receive signal quality measures for rays between said each candidate and the set of transmit locations; and
(c) determining, for each combination of the plural combinations of candidate antenna locations, a set of diversity signal quality measures by diversity processing the respective set for each candidate of the candidate antenna locations forming part of said each combination.

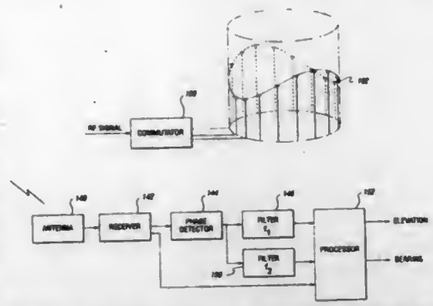
5,574,467

DOPPLER POSITIONING USING NON-PLANAR MOVEMENT OF TRANSMITTING SOURCE AND RECEIVING SOURCE

Steven E. Saunders, Cupertino, Calif., assignor to Interval Research Corporation, Palo Alto, Calif.

Filed Mar. 9, 1995, Ser. No. 401,171
Int. Cl.[6] G01S *1/44*
U.S. Cl. 342—398 **54 Claims**

1. A method of determining the position of a first location relative to a reference location using a radio frequency signal transmitted from an effective source location which moves along a closed, non-planar path having a plurality of local extreme points



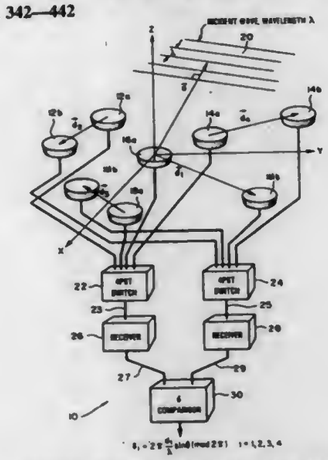
with respect to a predetermined axis, wherein the effective source location passes through successive ones of the extreme points at a first predetermined frequency, the method comprising the steps of:
receiving the radio frequency signal at a location proximate to the first location, the radio frequency signal having a received phase;
detecting a phase signal representative of the received phase of the radio frequency signal;
filtering the phase signal to extract a first signal component at the first predetermined frequency; and
processing the first signal component to form a first signal representative of the elevation of the first location relative to the reference location.

5,574,468

PHASE-EQUIVALENT INTERFEROMETER ARRAYS

Conrad M. Rose, Dahlgren, Va., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Filed Apr. 20, 1995, Ser. No. 426,000
Int. Cl.[6] G01S *5/04*
U.S. Cl. 342—442 **6 Claims**



1. A method for modifying conventional linear and planar interferometer arrays for installation on a conformal surface, comprising the steps of:
designing a conventional linear or planar interferometer array,
choosing a dispersed set of baselines on the basis of said conventional linear or planar array design and in accordance with the particular conformal surface installation,
changing the value of phase measurement noise for the conventional linear or planar array design so that it is consistent with a value for said dispersed set of baselines, and
generating a multiplicity of phase equivalent antenna locations from the specific antenna positions of the conventional design which consists, for a particular baseline a_1 and arbitrary origin

change a_0, of the set of all antenna positions a_0 and a_1 on a line with Pluecker coordinates $(\vec{d}_p, \vec{d}_0 \times \vec{d}_1)$ such that

$$|\vec{a}_1 - \vec{a}_0| = |\vec{d}_1|$$

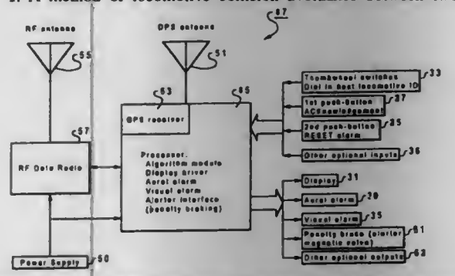
5,574,469

LOCOMOTIVE COLLISION AVOIDANCE METHOD AND SYSTEM

George C. C. Hsu, Fort Worth, Tex., assignor to Burlington Northern Railroad Company, Fort Worth, Tex.

Filed Dec. 21, 1994, Ser. No. 360,401
Int. Cl.[6] G01S *3/02*
U.S. Cl. 342—455 **8 Claims**

1. A method of locomotive collision avoidance between two



locomotives and associated trains operating in railway system, comprising:
periodically receiving on each locomotive digitally encoded data from a global positioning satellite system;
creating a first data frame in each locomotive containing its identity, geographical location, speed and direction of travel;
broadcasting from each locomotive digitally encoded signals containing its respective first data frame;
receiving in each locomotive the first data frame from the other locomotive as a second data frame;
processing said first and second data frames in a first locomotive to determine if a second locomotive is a collision candidate;
initiating collision avoidance measure if the second locomotive is determining to be a collision candidate by:
initiating both an audio and visual warning within the first locomotive when said locomotives are separated by less than a selected distance;
permitting the audio alarm to be reset only after intiation of voice communication with the second locomotive; and
braking the first locomotive when said locomotives are separated by a second, closer distance in response to a failure to initiate voice communication with said second locomotive.

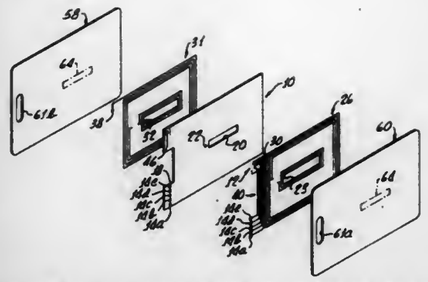
5,574,470

RADIO FREQUENCY IDENTIFICATION TRANSPONDER APPARATUS AND METHOD

Franklin B. de Vall, Boulder, Colo., assignor to Palomar Technologies Corporation, Carlsbad, Calif.

Continuation-in-part of Ser. No. 316,694, Sep. 30, 1994. This application Oct. 11, 1995, Ser. No. 540,785
Int. Cl.[6] H01Q *1/36*
U.S. Cl. 343—895 **27 Claims**

1. A method for making a radio frequency identification transponder comprising the steps of:
forming a thin dielectric substrate having first and second sides;
forming a die bond site on said first side;
forming a plurality of bond pads on said first side adjacent said die bond site;
forming a first multi-turn flat antenna coil on said first side having a first end at an interior portion of said substrate, and having a second end at one of said bond pads;
forming a first via extending through said substrate and connected to said first end on said first side of said substrate;



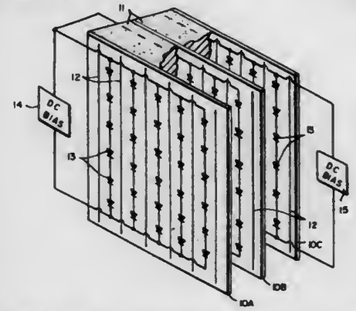
forming a second via through said substrate adjacent one of said bond pads;
forming a second multi-turn antenna coil on said second side of said substrate having a first end at an interior portion of said substrate connected to said first via and having a second end connected to said second via on said second side of said substrate; connecting said second via on said first side of the substrate to one of said bond pads;
mounting a die to said substrate at said die bond site;
electrically connecting said die to said bond pads;
forming a dielectric protective coating over both said first and second sides of said substrate and over said antenna coils;
securing a first protective cover to said second side of said substrate over said second antenna coil;
applying a nonconductive encapsulation over said die and said bond pads; and
applying a second protective dielectric cover to said first side of said substrate covering and protecting said first antenna coil, said die, and said bond pads.

5,574,471

ELECTROMAGNETIC ENERGY SHIELD

Jean-Claude Sureau, Boston, Mass., assignor to Radant Systems, Inc., Stow, Mass.

Continuation of Ser. No. 415,260, Sep. 7, 1982, abandoned. This application Jan. 11, 1985, Ser. No. 690,816
Int. Cl.[6] H01Q *15/02;15/24*
U.S. Cl. 343—909 **21 Claims**



1. A structure for selectively transmitting electromagnetic energy, said structure comprising
at least one shutter means being mounted in said structure and including
a substrate, at least one surface of which includes
at least one continuous conductive element extending in a selected direction along substantially the entire length of said surface; and
at least one discontinuous element having separated conductive portions and extending in said selected direction along substantially the entire length of said surface; and
at least one diode means interconnecting the separated portions of said at least one discontinuous element;

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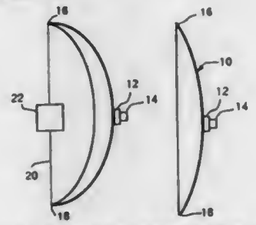
means for biasing said at least one diode means in a non-conductive direction during a first operating mode so that said shutter means is substantially resonant to electromagnetic energy incident thereon within a selected frequency range so as to permit the substantial transmission of said incident energy within said selected frequency range through said structure and for biasing said at least one diode means in a conductive direction during a second operating mode so that said shutter means substantially prevents the transmission of electromagnetic energy through said structure within and outside of said selected frequency range.

5,574,472

SIMPLIFIED SPACECRAFT ANTENNA REFLECTOR FOR STOWAGE IN CONFINED ENVELOPES

Stephen A. Robinson, Sepulveda, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Continuation of Ser. No. 766,369, Sep. 27, 1991, abandoned.
This application Jun. 30, 1995, Ser. No. 491,331
Int. Cl.[6] H01Q *15/20*
U.S. Cl. 343—915 **4 Claims**



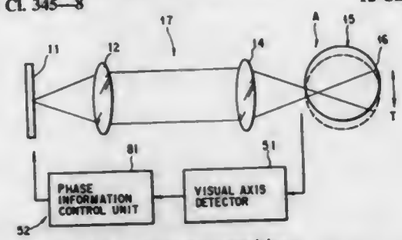
1. A method for stowing an antenna reflector, comprising the steps of:
providing a flexible antenna having a periphery;
deforming said flexible antenna reflector into a U-shaped configuration;
maintaining said flexible antenna reflector in the U-shaped configuration by attaching a string between diametrically opposed points at the periphery of the reflector; and
releasing said flexible antenna reflector from the maintained deformed state.

5,574,473

IMAGE DISPLAY APPARATUS

Nobutoshi Sekiguchi, Hidaka, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1994, Ser. No. 285,200
Claims priority, application Japan, Aug. 26, 1993, 5-211557
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—8 **12 Claims**



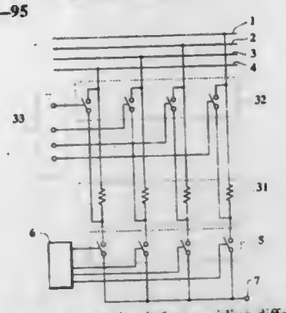
1. An image display apparatus comprising:
display means for generating and displaying a plurality of coherent point light source pairs;
optical means for focusing images of the point light source pairs, generated and displayed by the display means, on the pupil plane of an eye of an observer so that an image is formed on the retina by the effect of optical interference;
visual axis detecting means for detecting a visual axis direction of the observer's eye; and
an optical correcting unit for reducing a distortion of the retinal image, caused by eye movement, in accordance with the visual axis direction detected by the visual axis detecting means.

5,574,474

LIQUID CRYSTAL DRIVING CIRCUIT

Yutaka Tamanoi, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Continuation of Ser. No. 798,010, Nov. 26, 1991, abandoned.
This application May 31, 1994, Ser. No. 251,664
Claims priority, application Japan, Nov. 27, 1990, 2-320946
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—95 **2 Claims**



1. A liquid crystal driving circuit for providing different voltages comprising:
a plurality of power lines for supplying different voltages;
means connected With said power lines for selectively outputting the voltage of one of said power lines through an output terminal; and
a plurality of pairs of resistors and switches, a respective pair of a resistor and a switch of said plurality of pairs connected in parallel between said means for selectively outputting and a respective one of said power lines, the resistor of said pair being selectively shorted by the switch of said pair in order to adjust a current passing from said power line through said output terminal, wherein the switches of the plurality of pairs of resistors and switches are independently driven by separate respective signals.

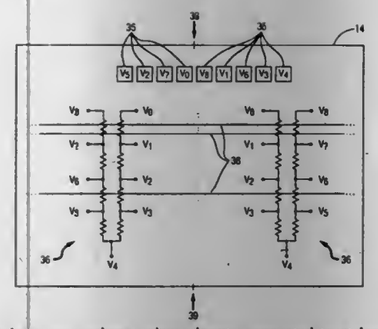
5,574,475

SIGNAL DRIVER CIRCUIT FOR LIQUID CRYSTAL DISPLAYS

Michael J. Callahan, Jr., and Christopher A. Ludden, both of Austin, Tex., assignors to Crystal Semiconductor Corporation, Austin, Tex.

Filed Oct. 18, 1993, Ser. No. 138,366
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—100 **25 Claims**

1. A signal driving integrated circuit chip for driving an LCD panel, comprising:
a plurality of decoding cells for selecting voltages for outputs of said signal driving circuit;
a resistor voltage divider comprising,
a first resistor series comprising a first plurality of resistors connected in series,
a second resistor series comprising a second plurality of resistors connected in series, at least one of said first plurality of resistors being operatively connected in parallel with at least one of said second plurality of resistors to form a parallel connected resistor, at least a portion of said plurality of decoding cells being physically located between said first resistor series and said second resistor series,



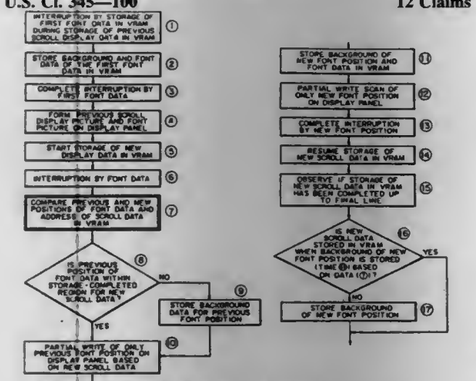
at least two resistor voltage inputs connected to at least two reference voltages, and
at least two of said resistor voltage inputs shared by each of said first and second resistor series; and
at least one conductor connected to an output of one of said parallel connected resistors and connected to at least one of said plurality of decoding cells.

5,574,476

DATA PROCESSING SYSTEM AND APPARATUS WITH GRAPHIC EVENT PRIORITY LEVELS FOR STORAGE AND RETRIEVAL OF DIFFERENT GRAPHIC EVENT DATA

Hiroshi Inoue, Yokohama; Atsushi Mizutome, Fujisawa, and Aiko Enomoto, Zama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 267,366, Jun. 29, 1994, which is a division of Ser. No. 11,241, Jan. 29, 1993, Pat. No. 5,359,344, which is a division of Ser. No. 410,731, Sep. 21, 1989, abandoned. This application Mar. 9, 1995, Ser. No. 401,453
Claims priority, application Japan, Sep. 29, 1988, 63-246089; Sep. 30, 1988, 63-246307; Sep. 30, 1988, 63-246308; Oct. 6, 1988, 63-252992; Oct. 11, 1988, 63-256324; Oct. 12, 1988, 63-258185
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—100 **12 Claims**



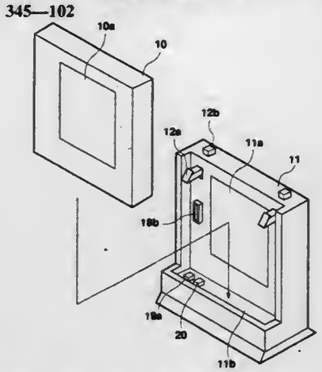
1. A data processing apparatus, comprising:
(a) means for receiving image data having a plurality of graphic events including a first and a second graphic event;
(b) means for controlling an image data storage memory so that the received image data is stored in the memory in the order of from a higher display priority level of the graphic events based on prescribed display priority levels of the graphic events allocating a higher display priority level to the first graphic event than to the second graphic event; and
(c) means for controlling the image data storage memory so that image data having the second graphic event stored in the memory is outputted from the memory in a period until image data having the first graphic event is started to be stored in the memory.

5,574,477

DIRECT-VISION/PROJECTION TYPE LIQUID-CRYSTAL DISPLAY

Makoto Shimizu, Ohgaki; Masahiro Okuyama, Inazawa; Kazuhiko Moriwaki; Atsuyoshi Tanioka, both of Gifu; Hisao Uehara, Ohgaki, and Norio Miura, Ohta, all of Japan, assignors to Sanyo Electric Co., Inc., Osaka, Japan

Continuation of Ser. No. 313,340, Sep. 27, 1994, abandoned.
This application Nov. 6, 1995, Ser. No. 553,828
Claims priority, application Japan, Sep. 30, 1993, 5-245575
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—102 **6 Claims**



1. A liquid crystal display apparatus comprising:
a liquid-crystal panel;
a driver circuit unit for supplying necessary signals to conductors of said liquid-crystal panel;
a cooling device for cooling said liquid-crystal panel;
a display housing receiving said liquid-crystal panel, driver circuit unit and cooling device; and
a housing support for detachably supporting said display housing, said housing support including an illumination unit for irradiating light to said liquid-crystal panel;
said display housing including a first switch for de-energizing said cooling device when said display housing is mounted in said housing support and for energizing said cooling device when said display housing is removed from said housing support, and
said housing support including a second switch for energizing said illumination unit when said display housing is mounted in said housing support and for de-energizing said illuminating unit when said display housing is removed from said housing support.

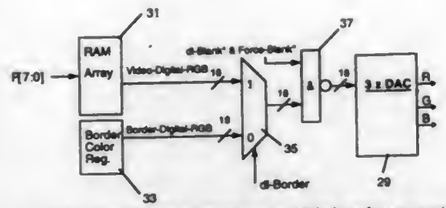
5,574,478

VGA COLOR SYSTEM FOR PERSONAL COMPUTERS

Vlad Bril, Campbell, and Boyd G. Pett, San Jose, both of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Apr. 27, 1992, Ser. No. 874,038
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—132 **3 Claims**

1. In a personal computer having a color monitor and using a video graphics adapter to place color images from a video RAM on the monitor, said video graphics adapter having a RAMDAC including a RAM array and a digital to analog converter coupled between said RAM array and said monitor, said digital-analog converter adapted to convert a digital signal representing red, blue and green from said RAM array to an analog RGB signal used by the monitor to create a color display, the improvement comprising:



a) a border color register coupled to the digital-analog converter of the video graphics adapter, said border color register for storing user selected red, blue and green colors;

b) means for selecting one of said video RAM and said border color register as a source of color data for each pixel to be displayed on the monitor by the video graphics adapter.

5,574,479

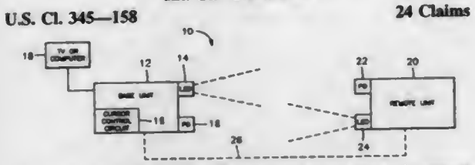
OPTICAL SYSTEM FOR DETERMINING THE ROLL ORIENTATION OF A REMOTE UNIT RELATIVE TO A BASE UNIT

Donald S. Odell, Burlington, Vt., assignor to Selectech, Ltd., Williston, Vt.

Filed Jan. 7, 1994, Ser. No. 178,557

Int. Cl.[6] G09G *5/08*

U.S. Cl. 345—158 **24 Claims**



1. A system for determining the pointing orientation of a remote unit relative to a base unit, the system comprising:

a fixed base unit comprising at least one light source for emitting at least one light beam which light beam is polarized in at least one particular orientation;

a movable remote unit comprising photodetector means for detecting light emitted by said light source means of the fixed base unit, said photodetector means comprising means responsive to receipt of said polarized light beam for determining pitch, yaw and roll of the remote unit relative to the base unit; and

means for transmitting signals related to the pitch, yaw and roll of the remote unit relative to the base unit to the base unit.

5,574,480

COMPUTER POINTING DEVICE

Maarten R. Pranger, Morgan Hill; Cristian A. Fraenkel, San Mateo; Richard Pekelney, San Francisco, and David C. Shafer, Menlo Park, all of Calif., assignors to Kensington Microware Limited, San Mateo, Calif.

Continuation of Ser. No. 255,320, Jun. 7, 1994, Pat. No. 5,428,369. This application May 8, 1995, Ser. No. 435,075

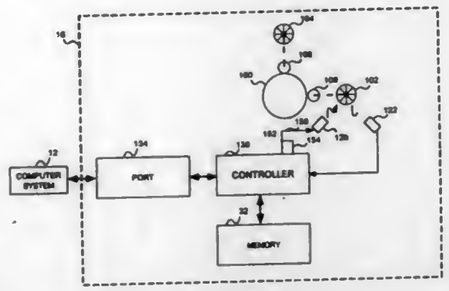
Int. Cl.[6] G09G *5/08*

U.S. Cl. 345—166 **15 Claims**

1. A computer pointing device, comprising:

a position translating unit, alternately operable in a first operating mode and a second operating mode responsive to a configuration datum; and

a memory for storing said configuration datum, wherein said memory is responsive to a configuration signal received from an associated computer, said configuration signal comprising said configuration datum.



5,574,481

DETACHABLE FOLDING KEYBOARD DEVICE

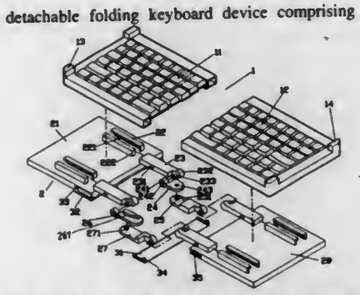
Michael Lee, Taipei, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan

Filed Jan. 31, 1994, Ser. No. 188,845

Int. Cl.[6] G09G *3/02*

U.S. Cl. 345—168 **3 Claims**

1. A detachable folding keyboard device comprising a base



frame unit having a left base frame and a right base frame, a keyboard unit having a left keyboard and a right keyboard respectively supported on said left and right base frames, a first connecting device and a second connecting device respectively connected between said left base frame and said right base frame for permitting said left base frame and said right base frame to be moved toward or apart from each other and swung on the same plane relative to each other to change the positions of said left keyboard and said right keyboard relative to each other, or folded up to collapse the keyboard device, wherein said first connecting device comprises a first slide bar made to slide in a first sliding groove on said left base frame at one side, a second slide bar made to slide in a second sliding groove on said right base frame at one side, a first connecting plate having one end hinged to said first slide bar and an opposite end made with a pivot hole, and a second connecting plate having one end made with a pivot pin inserted into the pivot hole on said first connecting plate and an opposite end hinged to said second slide bar; said second connecting device comprises a third slide bar made to slide in a third sliding groove being disposed on said left base frame at a second side in parallel with said first sliding groove, a fourth slide bar made to slide in a fourth sliding groove being disposed on said right base frame at a second side in parallel with said second sliding groove, a third connecting plate having one end hinged to said third slide bar and an opposite end made with an elongated, curved slot, and a fourth connecting plate having one end made with a pivot pin inserted into the curved slot on said third connecting plate and an opposite end hinged to said fourth slide bar.

5,574,482

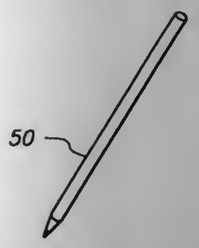
METHOD FOR DATA INPUT ON A TOUCH-SENSITIVE SCREEN

Charles J. Niemeier, 1239 Mandarin Dr., Sunnyvale, Calif. 94087

Continuation of Ser. No. 245,229, May 17, 1994, abandoned. This application Oct. 31, 1995, Ser. No. 550,569

Int. Cl.[6] G09G *3/02*

U.S. Cl. 345—173 **11 Claims**



1. A method for data input on a touch-sensitive display, comprising the steps of:

a. displaying a keyboard arrangement on said display including at least one key individual to each of the letters comprising the standard letters of the alphabet,

b. presenting on said keyboard arrangement, upon the touch of any key area corresponding to said standard letters of the alphabet, a plurality of additional temporary keys including at least one key individual to each of selected ones of letters of the same alphabet in close proximity to said key area so as to allow sliding from the touched key area into any of said temporary keys, and

c. responding to the touching of any of the key areas of the keyboard arrangement and any of the said additional temporary key areas by inputting the character assigned to the touched key.

5,574,483

DISPLAY CONTROL UNIT AND DISPLAY CONTROL METHOD THEREOF

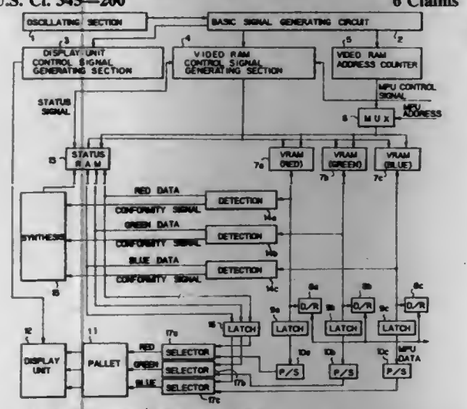
Yoshiyuki Nishizawa, Hadano, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 1, 1993, Ser. No. 115,038

Claims priority, application Japan, Sep. 3, 1992, 4-235691

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—200 **6 Claims**



1. A display control unit comprising:

a display data memory for storing display data displayed in pixels of a display unit; and

control means for repeatedly reading the display data stored to the display data memory when the display data are outputted to said display unit;

said control means including:

bit judging means for judging whether all bits of the display data read at one time from said display data memory are the same or not; and

a status memory for storing judging results of the bit judging means and a bit kind of the display data judged as the same bits;

said control means confirming registered contents of said status memory and reading the bit kind registered to said status memory instead of the display data stored to said display data memory when all the bits of said display data are the same.

5,574,484

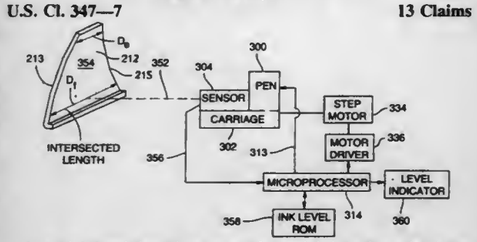
LEVEL DETECTION FOR INK CARTRIDGES OF INK-JET PRINTERS

Bruce Cowger, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 20, 1994, Ser. No. 360,911

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—7 **13 Claims**



1. An ink level detection system for an ink-jet printer that has a reciprocating carriage that moves in a path, comprising:

a cartridge that contains ink and that collapses as ink is depleted from the cartridge;

a flag member connected to the cartridge to move relative to the carriage path as the cartridge collapses; and

a sensor mounted to the carriage for detecting the movement of the flag member, the carriage and sensor moving together relative to the cartridge.

5,574,485

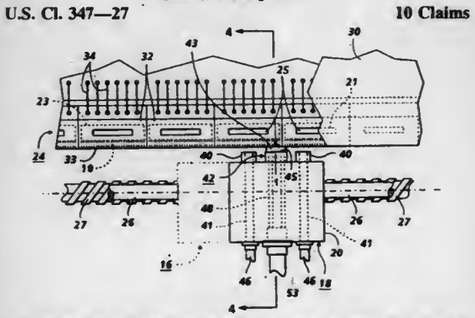
ULTRASONIC LIQUID WIPER FOR INK JET PRINTHEAD MAINTENANCE

David G. Anderson; Alfred J. Claflin, both of Ontario, and John Chinnici, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 13, 1994, Ser. No. 322,128

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—27 **10 Claims**



1. In a maintenance station for an ink jet printer having a repositionable printhead with a linear array of nozzles in a nozzle

VOL 1192 ISS 2 NO 12 1996 UMI

face, the printhead being positionable between a printing location for printing and the maintenance station for servicing and capping, the maintenance station including:

an ultrasonic liquid wiper apparatus comprising a tubular-shaped transducer defining an interior space therein, said space containing a liquid cleaning solution, one end of the transducer having a cleaning nozzle confrontingly spaced from the printhead nozzle face, the cleaning solution being held in the cleaning nozzle by surface tension to form a meniscus;

means for selectively increasing the pressure of the cleaning solution in the cleaning nozzle to cause the meniscus to bulge toward and contact the nozzle face; and

means for energizing said transducer so as to ultrasonically excite the cleaning solution and hence the meniscus whereby the portion of the nozzle face contacted by said ultrasonically excited meniscus is cleaned of ink and other contaminants.

5,574,486

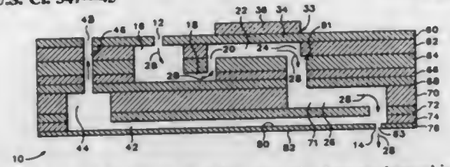
INK JET PRINT HEADS AND METHOS FOR PREPARING THEM

Maridana L. Whitlow; J. Kirk McGlothlan, both of Beaverton, Oreg.; Jeffrey J. Anderson, Camas, Wash.; Randy C. Karambelas, Beaverton, and Richard Schmachtenberg, III, Aloha, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Jan. 13, 1993, Ser. No. 3,917

Int. Cl.[6] B41J *2/16*

U.S. Cl. 347—45 **11 Claims**



1. A method of treating an orifice plate of a drop-on-demand ink jet print head, the orifice plate having an ink-contacting surface, an opposed surface, and an orifice extending between them, comprising the step of:

electropolishing the ink-contacting surface of the orifice plate where the orifice extends into the orifice plate.

5,574,487

SUBSTRATE WITH AN ETCHED SILICON COMPOUND FILM AND AN INK JET HEAD UTILIZING THE SUBSTRATE

Shuji Koyama, Kawasaki; Masami Kasamoto, Ayase, and Makoto Shibata, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

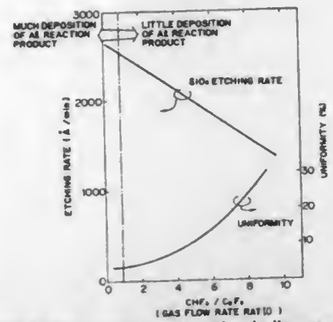
Division of Ser. No. 836,710, Feb. 19, 1992, Pat. No. 5,374,332. This application Nov. 30, 1994, Ser. No. 352,033

Claims priority, application Japan, Feb. 20, 1991, 3-45578; Feb. 14, 1992, 4-59117

Int. Cl.[6] B41J *2/05;* **H01L** *29/12*

U.S. Cl. 347—62 **15 Claims**

1. A substrate comprising a supporting member and a treated article provided on the supporting member comprising: 1) a patterned resistor layer; 2) a patterned material provided on the patterned resistor layer comprising at least aluminum; 3) a silicon compound film provided on both the patterned resistor layer and the patterned material comprising at least aluminum, wherein at least the silicon compound film is patterned in a desired shape by placing the article between electrodes positioned at an interelectrode distance of 4.0–7.0 mm in a treating space with a resist patterned in the desired shape provided on the silicon compound film, introducing into the treating space CHF_3 gas and C_2F_6 gas in a gas flow rate ratio of the CHF_3 gas to the C_2F_6 gas ranging from 1:1 to 6:1 and etching the silicon compound film under an inner pressure of the treating space of 40 to 120 Pa during the etching; and 4) a multi-layered wiring provided on the article comprising as



constituents at least a conductive layer electrically connected to the patterned material comprising at least aluminum.

5,574,488

LIQUID JET HEAD, LIQUID JET HEAD CARTRIDGE, AND LIQUID JET APPARATUS

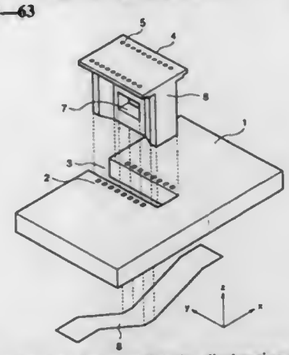
Yasuyuki Tamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1994, Ser. No. 361,181

Claims priority, application Japan, Dec. 22, 1993, 5-324963

Int. Cl.[6] B41J *2/05;2/135*

U.S. Cl. 347—63 **19 Claims**



1. A liquid jet head for recording by discharging a liquid from discharge ports including the following:

an elemental base board having on it elements for generating discharge energy to discharge a liquid;

a head having a discharge port member with a plurality of said discharge ports arranged therefor, constituting a plurality of liquid passages by being pressed to be in close contact with the surface of said elemental base board on the side where said elements for generating discharge energy are arranged, and

said discharge port member having an extension extendedly present to the reverse side of said surface, and being provided with biasing means for pressing said discharge port member to be in close contact with said surface by exerting a biasing force on said extension.

5,574,489

INK CARTRIDGE SYSTEM FOR INK-JET PRINTER

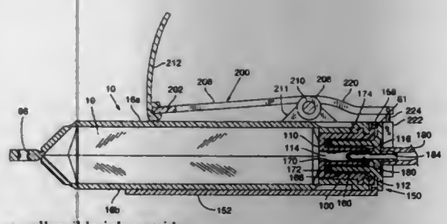
Bruce Cowger, and Ron Prevost, both of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 30, 1994, Ser. No. 221,318

Int. Cl.[6] B41J *2/175;* **B65B** *1/04;* **B65D** *25/08*

U.S. Cl. 347—86 **20 Claims**

17. A system for securing to a printer a collapsible ink cartridge that has a cavity therein for storing ink, the system comprising:



a collapsible ink cartridge;

a station configured to support the cartridge in a connected position;

a coupler connectable with the cartridge in the connected position to form an ink flow passage for ink stored within the cavity to flow from the cartridge; and

a pressure member engageable with the cartridge in the connected position, and an actuator coupled to the pressure member, the actuator operable by a control signal to automatically actuate the pressure member to apply a force to the cartridge to provide ink flow from the cavity through the passage, and the actuator operable to automatically actuate the pressure member to remove the force from the cartridge to retain ink in the cavity without leakage from the cavity.

5,574,490

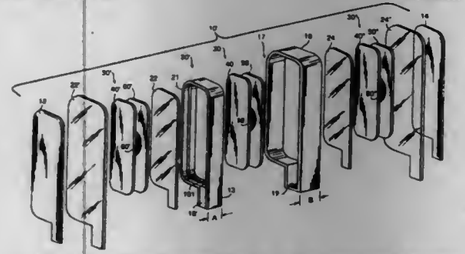
INK JET HARD COPY APPARATUS INK CARTRIDGE

Brian D. Gragg, San Diego, Calif.; James E. Clark, Albany, Oreg.; David W. Swanson, Escondido, Calif.; George T. Kaplinsky, and Tofigh Khodapanah, both of San Diego, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 929,615, Aug. 12, 1992, abandoned, which is a continuation of Ser. No. 240,297, May 9, 1994. This application Dec. 21, 1993, Ser. No. 170,951

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—87 **19 Claims**



1. An ink reservoir structure for an ink-jet printing cartridge, having an ink discharge aperture device coupled thereto, said structure comprising:

a substantially rigid frame having a pair of peripherally extending edges on opposite sides thereof and at least a first ink discharge port and a second ink discharge port therethrough;

at least three flexible, ink-impervious membranes, each of said membranes having a periphery, said membranes being sealingly joined only about each respective periphery, thereby forming at least a first ink reservoir and a second ink reservoir by sharing a central one of said membranes, wherein said first ink reservoir and said second ink reservoir are in fluid communication with said first ink discharge port and said second ink discharge port, respectively; and

a first ink pressure regulator means within said first ink reservoir coupled to a first one of said membranes and said central one of said membranes, and a second ink pressure regulator means within said second ink reservoir coupled to said central one of said membranes and a third one of said membranes, each of said first pressure regulator means and second ink pressure regulator means for urging adjacent membranes apart from each other such that a negative pressure is maintained at said ink discharge aperture device.

5,574,491

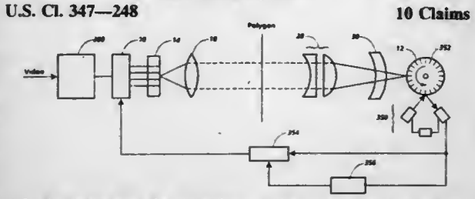
APPARATUS SPOT POSITION CONTROL IN AN OUTPUT DEVICE EMPLOYING A LINEAR ARRAY OF LIGHT SOURCES

Thomas L. Paoli, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 812,248, Dec. 20, 1991. This application Feb. 14, 1994, Ser. No. 195,600

Int. Cl.[6] B41J *2/435*

U.S. Cl. 347—248 **10 Claims**



1. An apparatus for scanning a light beam, in a scan line direction, across an imaging medium movable in a slow scan direction orthogonal to said scan line direction, and for providing image spot position control within the inter-scan line distance between successive scan lines, comprising:

a linear array of independently addressable, single light emitting elements including first and last light emitting elements, wherein each of said of light emitting elements may form an image spot, having a continuous illumination profile, on said imaging medium, said first and last light emitting elements being spaced from one another by a distance which will cause centers of the image spots formed by the first and last light emitting elements to be separated by said inter-scan line distance;

a controller in communication with said plurality of light emitting elements for selecting a single light emitting element of said linear array;

scanner means for moving an image spot, emanating from said selected single light emitting element, across said imaging medium to form a scan line; and

a position detector, in communication with said controller, for detecting the position of said imaging medium in said slow scan direction, and generating a control signal as a function thereof, whereby said controller selects one of said light emitting elements in response to said control signal.

5,574,492

IMAGING METHOD AND SEMICONDUCTOR DEVICE MANUFACTURING METHOD USING THE SAME

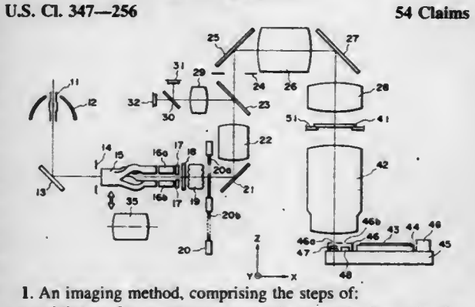
Akiyoshi Suzuki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 38,900, Mar. 29, 1993, abandoned. This application Dec. 5, 1995, Ser. No. 567,719

Claims priority, application Japan, Mar. 27, 1992, 4-071270; Mar. 1, 1993, 5-039826

Int. Cl.[6] R41J *15/16*

U.S. Cl. 347—256 **54 Claims**



1. An imaging method, comprising the steps of:

providing a fine pattern on a predetermined plane, the fine pattern having a group of lines extending along orthogonal

first and second directions and a group of lines extending along a third direction different from the first and second directions; and

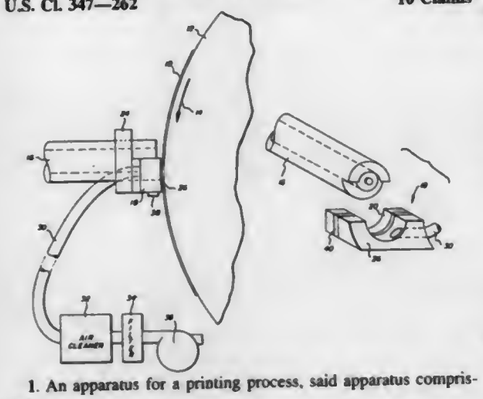
obliquely illuminating the fine pattern to form an image of the fine pattern, wherein illumination beams along the first, second and third directions, respectively, each has an intensity sufficiently lowered as compared with that of a particular illumination beam along a particular direction different from the first, second and third directions.

5,574,493

VACUUM COLLECTION SYSTEM FOR DYE-ABLATION PRINTING PROCESS

Kurt M. Sanger, Rochester; Lee W. Tutt, Webster; James B. Geist, Holley, and Seung H. Baek, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 11, 1994, Ser. No. 212,098
Int. Cl.[6] B41J *2/435*
U.S. Cl. 347—262 **10 Claims**



1. An apparatus for a printing process, said apparatus comprising:

a platen having a surface for receiving an ablation materials recording element;

a source of high energy radiation adapted to selectively irradiate portions of the received recording element to drive off the ablated materials from the recording elemeot;

means for raster scanning in a crosstrack direction and an intrack direction the recording element with radiation from the source; and

an ablated materials collection apparatus comprising:

wall means for defining a vacuum chamber open towards the platen surface, and

a vacuum source which communicates with the vacuum chamber through an opening in the wall means, said opening being on the crosstrack side of the vacuum chamber away from areas of the recording element already written, whereby the ablated material is drawn over unwritten portions of the recording element and blow back of ablated materials onto previously written areas is inhibited.

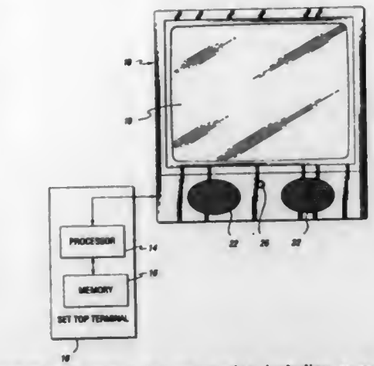
5,574,494

METHOD FOR AUTOMATICALLY NAVIGATING A COMPLEX STRUTURE AT AN INTERACTIVE USER STATION

Monica A. Marics, Boulder, Colo., assignor to U.S. West Technologies, Inc., Boulder, Colo.

Filed May 31, 1994, Ser. No. 252,495
Int. Cl.[6] H04N *5/44;5/445*
U.S. Cl. 348—13 **12 Claims**

1. A method for automatically navigating a hierarchical complex structure at an interactive user station, the complex structure comprising a plurality of nodes, each node including at least one



presentation element, the user station including a processor in electrical communication with a memory and a presentation device, the method comprising:

receiving at said processor a first electrical signal generated by a user selection device, said signal corresponding to a predetermined location of a selected node and a corresponding presentation element desired for future viewing, said location to be stored in said memory;

receiving at said processor a second electrical signal generated by said user selection device corresponding to said stored location of said selected presentation element; and

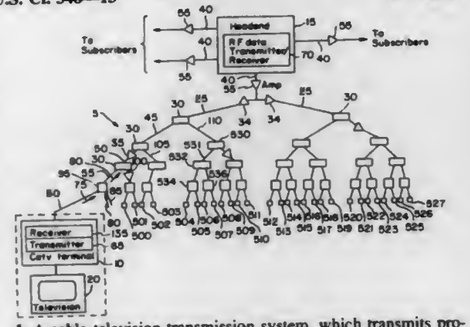
automatically navigating to and presenting at said presentation device said selected presentation element.

5,574,495

CABLE TELEVISION DATA PATH ERROR ANALYZER LOCATED AT THE SET-TOP TERMINAL

Louis Caporizzo, North Wales, Pa., assignor to General Instrument Corporation, Hatboro, Pa.

Filed Oct. 18, 1995, Ser. No. 544,469
Int. Cl.[6] H04H *1/02*
U.S. Cl. 348—13 **23 Claims**



1. A cable television transmission system, which transmits programming over a plurality of channels, including a data path analyzer comprising:

a headend comprising:

means for transmitting analysis data over at least one selected CATV channel to a plurality of settop terminals,

means for receiving a return signal from each of said plurality of settop terminals; and

means for analyzing said return signals; and a plurality of settop terminals each comprising:

means for receiving said analysis data over said selected channel;

means for determining whether said received data includes errors;

means for calculating the error rate of the received data; and

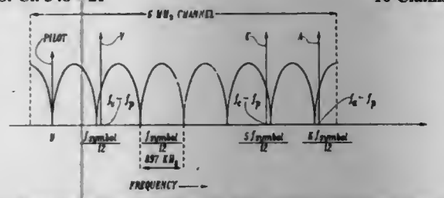
means for generating a return signal to said headend which includes the error rate of said received data.

5,574,496

TECHNIQUES FOR MINIMIZING CO-CHANNEL INTERFERENCE IN A RECEIVED ATV SIGNAL

Larry E. Nielsen, Chicago, and David A. Willming, Palatine, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Jun. 7, 1995, Ser. No. 474,049
Int. Cl.[6] H04N *5/38*
U.S. Cl. 348—21 **10 Claims**



1. A method of transmitting an ATV signal, comprising multilevel symbols formatted in repetitive segments and having a pilot, in the service area of a co-channel NTSC signal where an ATV receiver includes an NTSC rejection filter having a feed forward delay comprising:

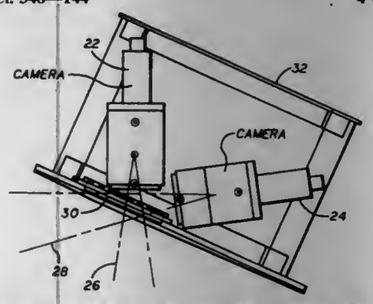
selecting the positional relationship between the NTSC and ATV signals such that the demodulated difference $f_v - f_p$, where f_v is the frequency of the NTSC visual carrier and f_p is the frequency of the ATV pilot, is located close to a first notch of the NTSC rejection filter.

5,574,497

MULTI-CAMERA CLOSED CIRCUIT TELEVISION SYSTEM FOR AIRCRAFT

Thomas D. Henderson, and James M. McCann, both of San Marcos, Calif., assignors to Puritan Bennett Corporation, Carlsbad, Calif.

Continuation of Ser. No. 152,350, Nov. 12, 1993, Pat. No. 5,440,337. This application Jul. 13, 1995, Ser. No. 502,092
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—144 **4 Claims**



1. A closed circuit television system for an aircraft, said system comprising:

a first camera arranged to have a field of view essentially perpendicular downward from the aircraft's centerline, said first camera including a focal plane sensor and an interface electronics unit to condition the output of the focal plane electronics for transmission to an external camera control unit;

a second camera arranged essentially parallel to the aircraft's center line and forward facing, said second camera also incorporating camera lens optics, a focal plane sensor and interface electronics;

a camera module unit structure which houses the two cameras in relation to one another, the system arranged to provide fields of view which narrowly avoid imaging the adjacent camera, said camera module unit structure providing a hermetically sealed, controlled temperature and humidity environment for said first and second cameras;

a window mounted within said camera module unit providing a field of view of the cameras;

a remote camera control unit containing electronics to drive and process information from the camera; and

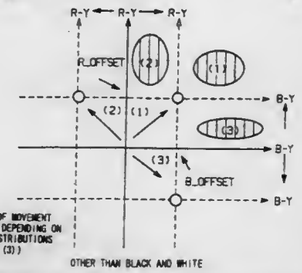
a remote control unit in the flight deck of the aircraft which allows control of the functional aspects of the system by a member of the flight crew.

5,574,498

TARGET TRACKING SYSTEM

Takayuki Sakamoto, and Koji Kageyama, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 20, 1994, Ser. No. 309,983
Claims priority, application Japan, Sep. 25, 1993, 5-261678
Int. Cl.[6] H04N *5/225*
U.S. Cl. 348—169 **6 Claims**



1. A target tracking system comprising:

memory means for storing R-Y signals, B-Y signals and luminance signals of an input color image in a first region of interest, wherein said image is subdivided into a plurality of pixels and an individual set of R-Y signal, B-Y signal, and luminance signal is associated with a pixel of said image;

a processor programmed to extract predetermined characteristic quantities of said image from said first region of interest, said programmed processor being operable to: (a) calculate a forecasted luminance signal as a function of luminance forecast coefficients which are determined as a function of (i) said R-Y signals and (ii) said B-Y signals of said image in said region of interest, (b) calculate a forecasted B-Y signal as a function of B-Y forecast coefficients which are determined as a function of said B-Y signal of said image in said region of interest, (c) calculate a one-dimensional evaluation function from an absolute sum of (i) luminance signal differences which are determined as a function of luminance signals associated with respective pixels in said image, (ii) set color differences which are determined as a function of sets of R-Y and B-Y signals associated with respective pixels in said image, (iii) luminance forecast errors which are determined as a function of the luminance signal associated with a pixel of said image and said forecasted luminance signal, and (iv) B-Y forecast errors which are determined as a function of said B-Y signal associated with the pixel of said image and said forecasted B-Y signal, (d) change an origin of said R-Y signals and said B-Y signals in response to a user input, (e) convert the image to a binary image by adaptively changing a threshold value of said one-dimensional evaluation function, and (f) determine a location of a target object from said binary image;

camera control means for controlling panning and tilt of a television camera based on said location of said target object to provide a second region of interest;

said processor being further programmed to continuously track said target object in said second region of interest until a switch is operated by an operator to disable the camera control means, whereby said processor is operable to extract said predetermined characteristic quantities of said image from said second region of interest and to control the camera

VOL 1192 ISS 2 NO 12 1996 UMI

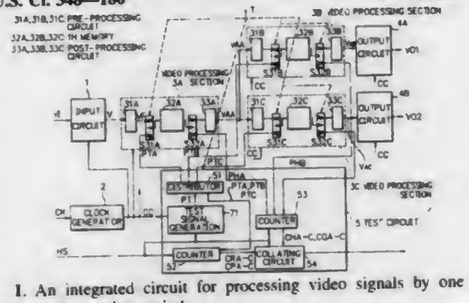
control means to effect the panning and tilt of the television camera based on said location of said target object.

5,574,499

INTEGRATED CIRCUIT FOR TESTING A PLURALITY OF 1H MEMORIES

Miyuki Nasu, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 6, 1994, Ser. No. 239,023
Claims priority, application Japan, May 10, 1993, 5-107804
Int. Cl.[6] H04N *17/00*
U.S. Cl. 348—180 **8 Claims**



1. An integrated circuit for processing video signals by one horizontal scanning period:

a test means for achieving a test of each of a plurality of memory means; and

a plurality of input switching means wherein each input switching means is connected to an input of said memory means and a plurality of output switching means wherein each output switching means is connected to an output of said memory means;

wherein the test means includes:

test signal generating means operative at a timing synchronized with a horizontal synchronizing signal of a digital video signal for producing an original test signal in a predetermined format represented by a series of a preset number of pulses in a predetermined duration period of time;

test signal distributor means operative in response to the original test signal supplied from the test signal generator means for generating a plurality of test signals in a format substantially identical to that of the original test signal, the plurality of the test signals being respectively associated with the plurality of the memory means and being produced respectively at a predetermined first point of time and at a predetermined second point of time in the one horizontal scanning period; and

collating means for collating the plurality of the test signals respectively with delayed test signals respectively created from the plurality of the memory means in response to the test signals respectively supplied thereto, thereby deciding matching states between the test signals and the delayed test signals.

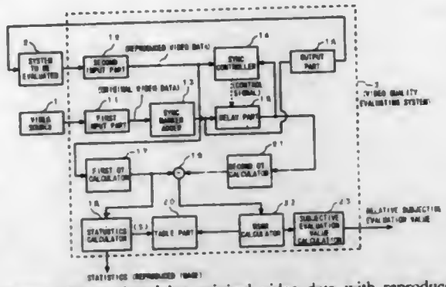
5,574,500

VIDEO QUALITY EVALUATING EQUIPMENT FOR REPRODUCED IMAGE OF VIDEO SIGNAL SUBJECT TO DIGITAL COMPRESSION

Takahiro Hamada, Saitama, and Shuichi Matsumoto, Tokyo, both of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Oct. 12, 1995, Ser. No. 542,356
Claims priority, application Japan, Jan. 20, 1995, 7-024486
Int. Cl.[6] H04N *17/00*
U.S. Cl. 348—180 **6 Claims**

1. A video quality evaluating equipment for a reproduced image of a video signal subject to digital compression comprising:



means for synchronizing original video data with reproduced video data obtained by reproducing said original video data after compressing the original video data;

means for orthogonally transforming a block of the original video data and the reproduced video data which are synchronized respectively;

means for calculating a difference of the same order coefficients of the orthogonally transformed video data;

means for weighting the difference with a weighting function, which varies with a position of the coefficient of the above orthogonally transformed data and a magnitude of an AC power in the block after orthogonal transform in the original image and subsequently obtaining an average weighted S/N ratio for each video frame or a plurality of video frames; and

means for obtaining a value of subjective evaluation by using said weighted S/N ratio.

5,574,501

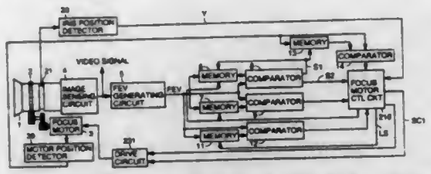
Patent Not Issued For This Number

5,574,502

AUTOMATIC FOCUSING APPARATUS WHICH ADJUSTS THE SPEED OF FOCUSING BASED ON A CHANGE IN THE RATE OF THE FOCUS EVALUATING VALUE

Toshinobu Haruki, Shijonawate, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Division of Ser. No. 260,768, Jun. 16, 1994. This application Jun. 2, 1995, Ser. No. 459,478
Claims priority, application Japan, Jun. 17, 1993, 5-146286; Jun. 24, 1993, 5-153663
Int. Cl.[6] H04N *5/232*
U.S. Cl. 348—347 **2 Claims**



1. An automatic focusing apparatus for automatically matching focus with respect to an object in response to a video signal obtained from image sensing means having an adjustable aperture, a lens, and an image sensor receiving incident light through said aperture and said lens, comprising:

focus evaluating value supplying means for supplying a high frequency component level of the video signal obtained from said image sensing means as a focus evaluating value at every first prescribed period;

lens relative position changing means for changing a relative position of said lens along an axial direction with respect to said image sensor so that the focus evaluating value from said focus evaluating value supplying means attains the maximum:

aperture adjusting means for adjusting a size of the aperture to control an amount of incident light received by said image sensor; and

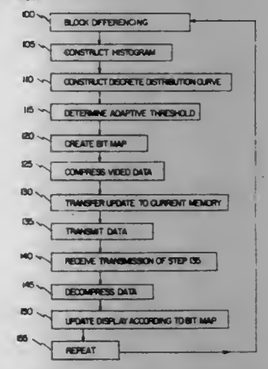
control means responsive to a size of the aperture for controlling a speed at which said relative position of said lens is changed by said lens relative position changing means, wherein the control means increases the speed as the aperture is reduced in size.

5,574,503

ADAPTIVE INTERFRAME VIDEO DATA COMPRESSION AND START-UP TECHNIQUES

Anthony F. May, Cedar Rapids, Iowa, assignor to Rockwell International, Seal Beach, Calif.

Filed Mar. 31, 1992, Ser. No. 860,944
Int. Cl.[6] H04N *7/24*
U.S. Cl. 348—409 **16 Claims**



1. A method of performing data compression comprising the following steps:

calculating a measured difference between all positionally corresponding data blocks in a first data frame with those data blocks in a second data frame;

determining a discrete distribution function of the calculated data block differences;

determining an Adaptive Threshold for transmitting updated information based upon the calculated data block difference and data transmission rate;

compressing data blocks of a first and second data frame above the Adaptive Threshold;

creating a bit map for identifying updated and compressed data;

transmitting the updated data and the bit map; and

receiving and decoding transmitted compressed data.

5,574,504

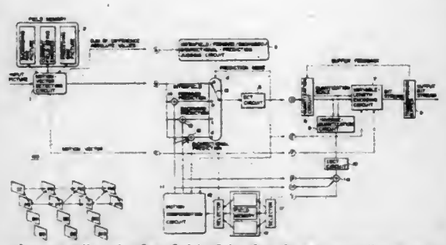
METHODS AND SYSTEMS FOR ENCODING AND DECODING PICTURE SIGNALS AND RELATED PICTURE-SIGNAL RECORDING MEDIA

Yoichi Yagasaki, and Jun Yonemitsu, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 79,592, Jun. 22, 1993, abandoned. This application Aug. 22, 1995, Ser. No. 517,992
Claims priority, application Japan, Jun. 26, 1992, 4-169430; Apr. 13, 1993, 5-085038
Int. Cl.[6] H04N *7/32;7/30*
U.S. Cl. 348—415 **34 Claims**

1. A picture signal encoding method for encoding interlaced scan picture signals including a plurality of frames, each frame including first and second fields, comprising the steps of:

encoding a first field of a first frame of the interlaced scan picture signals;



after encoding the first field of the first frame, encoding a second field of the first frame;

after encoding the second field of the first frame, encoding a first field of a second frame of the interlaced scan picture signals utilizing predictions from decoded versions of the encoded first and second fields of the first frame;

after encoding the first field of the second frame, encoding a second field of the second frame utilizing predictions from only decoded versions of the encoded second field of the first frame and the encoded first field of the second frame;

encoding a first field of a third frame of the interlaced scan picture signals timewise between the first and second frames utilizing predictions from decoded versions of the encoded first and second fields of the first frame and the encoded first and second fields of the second frame; and

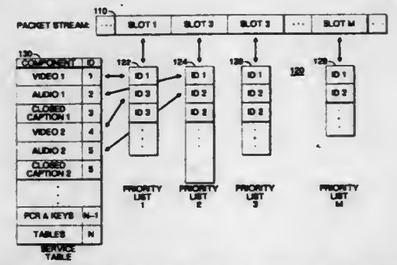
encoding a second field of the third frame utilizing predictions from decoded versions of the encoded first and second fields of the first frame and the encoded first and second fields of the second frame.

5,574,505

METHOD AND APPARATUS FOR OPERATING A TRANSPORT STREAM ENCODER TO PRODUCE A STREAM OF PACKETS CARRYING DATA REPRESENTING A PLURALITY OF COMPONENT SIGNALS

Paul W. Lyons, New Egypt, N.J.; Alfonse A. Acampora, New York; Nicola J. Fedele, Kingston, both of N.Y., and Victor V. D'Alessandro, Berkleley Heights, N.J., assignors to Thomson multimedia S.A., LaDefense 5 - Courbevoie, France

Filed May 16, 1995, Ser. No. 442,429
Int. Cl.[6] H04N *7/24*
U.S. Cl. 348—426 **17 Claims**



1. A method for operating a transport stream encoder to produce a stream of packets carrying data representing a plurality of component signals, comprising the steps of:

partitioning the packet stream into successive groups containing a predetermined number of packet slots; maintaining a plurality of priority lists, corresponding to respective packet slots within the groups of packet slots, each priority list containing a plurality of entries each entry identifying a respective one of the plurality of component signals;

for each one of the plurality of packet slots, traversing the plurality of entries in the priority list corresponding to the one of the plurality of packet slots;

for each one of the plurality of entries in the priority list corresponding to the one of the plurality of packet slots:

determining if the component signal identified by the one of the plurality of entries can produce a packet; and

if the component signal identified by the one of the plurality of entries can produce a packet, producing a packet containing data representing the identified component signal.

5,574,506

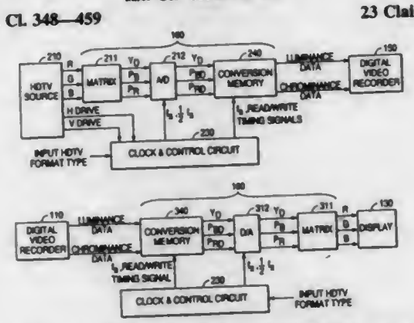
BI-DIRECTIONAL TELEVISION FORMAT DIGITAL SIGNAL CONVERTER WITH IMPROVED LUMINANCE SIGNAL-TO-NOISE RATIO

Charles W. Rhodes, Alexandria, Va., assignor to Advanced Television Test Center, Inc., Alexandria, Va.

Division of Ser. No. 53,230, Apr. 28, 1993, Pat. No. 5,488,424, which is a continuation-in-part of Ser. No. 404,190, Sep. 7, 1989, Pat. No. 5,280,397. This application Jun. 7, 1995, Ser. No. 478,052

Int. Cl.[6] H04N *5/782*

U.S. Cl. 348—459 **23 Claims**



1. An apparatus for bi-directionally converting a television signal between a first television signal format and a second television signal format, the first television signal format having a first field rate and the second television signal format having a second field rate, the apparatus comprising:

a memory for storing data, the data stored in an arrangement representing both the first television signal format and the second television signal format;

first means, responsive to the first field rate, for generating a first synchronizing signal;

second means, responsive to the second field rate, for generating a second synchronizing signal;

dummy data generating means, responsive to the first field rate and the second field rate, for generating dummy data samples for storage with the data stored in memory; and

control means, coupled to the memory and responsive to the first synchronizing signal and the second synchronizing signal, for storing data in the memory in synchronism with the first synchronizing signal and for reading data from the memory in synchronism with the second synchronizing signal when the first television signal format is being converted to the second television signal format, and for storing data in the memory in synchronism with the second synchronizing signal and for reading data from the memory in synchronism with the first synchronizing signal when the second television signal format is being converted to the first television signal format.

5,574,507

CIRCUIT AND METHOD FOR COMPENSATING FOR POSITION OF MAIN PICTURE

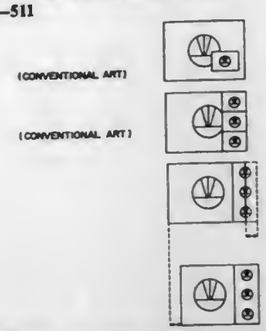
Woon G. Baek, Kyungsangbook-Do, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed May 6, 1994, Ser. No. 238,882

Claims priority, application Rep. of Korea, May 8, 1993, 7927/1993

Int. Cl.[6] H04N *5/45;3/227*

U.S. Cl. 348—511 **39 Claims**



14. An apparatus for compensating for a position of a main picture displayed on a display screen of a display, comprising:

sub-picture producing means for receiving an intermediate frequency signal of a sub-picture, and for producing a sub-picture video signal of a predetermined aspect ratio from said intermediate frequency signal;

chroma means for receiving a main picture video signal representing said main picture, and said sub-picture video signal, for generating a composite video signal from said main picture video signal and said sub-picture video signal, and for outputting said composite video signal to said display;

display control means for controlling said display such that said main picture and said sub-picture are displayed on said display screen with a position of said main picture shifted on said display screen in a first mode of operation.

27. A method for compensating for a position of a main picture displayed on a display screen of a display, comprising:

(a) receiving a main picture signal representing said main picture and an intermediate frequency signal representing a sub-picture;

(b) producing a sub-picture video signal of a predetermined aspect ratio from said intermediate frequency signal;

(c) generating a composite video signal from said main picture video signal and said sub-picture video signal;

(d) outputting said composite video signal to said display; and

(e) controlling said display such that said main picture and said sub-picture are displayed on said display screen with a position of said main picture shifted on said display screen in a first mode of operation.

5,574,508

VERTICAL PANNING FOR INTERLACED VIDEO

Robert K. Diamant, Zurich, Switzerland, assignor to RCA Thomson Licensing Corporation, Princeton, N.J.

Filed Nov. 2, 1994, Ser. No. 333,181

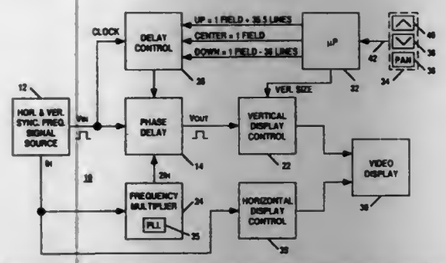
Int. Cl.[6] H04N *5/04*

U.S. Cl. 348—511 **11 Claims**

1. A vertical panning system, comprising:

means for supplying respective signals having a vertical synchronizing frequency, a horizontal synchronizing frequency and a multiple of said horizontal synchronizing frequency;

a horizontal display control circuit for a video display, responsive to said supplied horizontal synchronizing frequency signal for displaying a video signal by interlacing fields;



a plurality of digital counting means responsive to said supplied multiple horizontal synchronizing frequency signal, said supplied vertical synchronizing frequency signal and to a panning control signal;

means for decoding an output of one of said counting means and generating a second vertical synchronizing frequency signal delayed in phase relative to said supplied vertical synchronizing frequency signal by any one of a plurality of delays differing in increments corresponding in duration to horizontal half line intervals; and,

a vertical display control circuit for said video display, responsive to said second vertical synchronizing frequency signal.

5,574,509

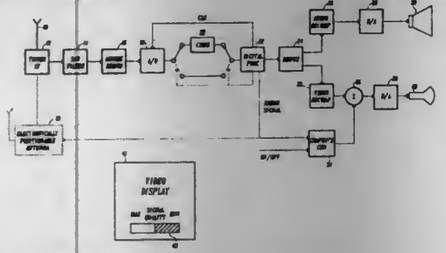
ANTENNA ORIENTATION SYSTEM FOR DIGITAL TV RECEIVER

Richard W. Citta, Oak Park, and Gary J. Sgrignoli, Mount Prospect, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Sep. 8, 1994, Ser. No. 303,989

Int. Cl.[6] H04N *5/50*

U.S. Cl. 348—569 **9 Claims**



1. In combination:

a television receiver for processing digital signals;

a positionable antenna coupled to said television receiver for receiving a digital television signal including a robust frame sync symbol code, said television receiver including a reference frame sync symbol code;

means for comparing the frame sync symbol code in said digital signal with said reference frame sync symbol code for developing an error signal; and

means including a graphics generator for producing a visual indication on a display screen of said television receiver based on said error signal for enabling optimal orientation of said positionable antenna.

5,574,510

MULTI-COMPONENT VIDEO SIGNAL MIXER

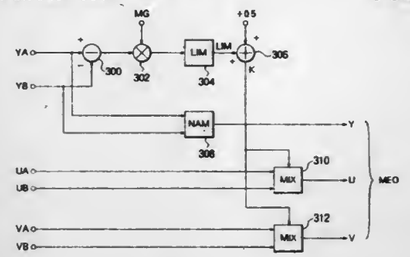
Masanori Abe, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 14, 1995, Ser. No. 403,324

Claims priority, application Japan, Mar. 18, 1994, 6-049576

Int. Cl.[6] H04N *5/265;5/275*

U.S. Cl. 348—584 **8 Claims**



30

1. A video signal mixing device for mixing a first video signal comprised of at least a mutually related first signal component and second signal component and a second video signal comprised of at least a mutually related first signal component and second signal component to produce a mixed video signal in which the second signal components are mixed independently of the mixing of the first signal components, said video signal mixing device comprising:

first mixing means for selecting the larger first signal component value from said first and said second video signals as the first component of said mixed video signal;

differential signal producing means for generating a differential signal representing a difference between values of said first signal component of said first video signal and said first signal component of said second video signal; and

second mixing means for mixing said second signal component of said first video signal and said second signal component of said second video signal by a mixing ratio determined as a function of said differential signal to provide the second signal component of said mixed video signal.

5,574,511

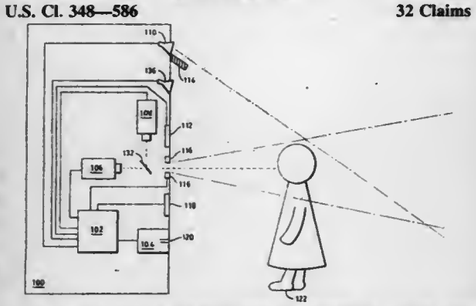
BACKGROUND REPLACEMENT FOR AN IMAGE

Yibing Yang, Arlington, and F. Richard Soini, Sudbury, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 18, 1995, Ser. No. 544,615

Int. Cl.[6] H04N *9/74*

U.S. Cl. 348—586 **32 Claims**



1. A method of replacing an original background of a scene with a predetermined replacement background, said method comprising the steps of:

making a first infrared (IR) image of the scene at a first time with first IR radiation having a first intensity illuminating said original background;

measuring an intensity of IR radiation at each pixel of said first IR image;

making a second IR image of the scene at a second time after deactivating said first IR radiation, by illuminating a foreground of the scene with a second IR radiation having a second intensity less than said first intensity;

measuring an intensity of IR radiation at each pixel of said second IR image;

generating a mask distinguishing said foreground from said original background by comparing the intensities of IR radiation at each corresponding pixel between said first and second IR images;

making a digital visible light image of the scene at said second time by illuminating the scene with visible lighting; and

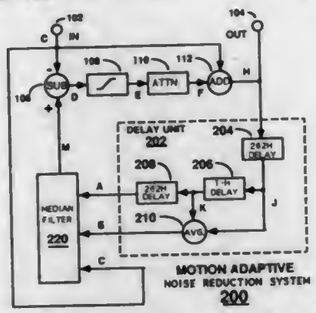
replacing, in said digital visible light image, said original background with said predetermined replacement background to produce a modified version of the digital visible light image by applying said mask to the digital visible light image.

5,574,512

MOTION ADAPTIVE VIDEO NOISE REDUCTION SYSTEM

Timothy W. Saeger, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Aug. 15, 1994, Ser. No. 290,419
Int. Cl.[6] H04N *5/21*
U.S. Cl. 348—620 **14 Claims**



1. Apparatus, for providing video noise reduction, comprising:

a subtractor for forming a difference signal from a video input signal and a further signal supplied thereto

a circuit for limiting and attenuating said difference signal to form a resultant signal;

a combiner for combining the input and resultant signals to form a noise reduced video output signal;

a delay circuit, responsive to the video output signal, for providing a field delayed video signal and a frame delayed video signal; and

a selection circuit for selecting one of the field delayed video signal, the frame delayed video signal and the video input signal as the further signal for application to the subtractor.

5,574,513

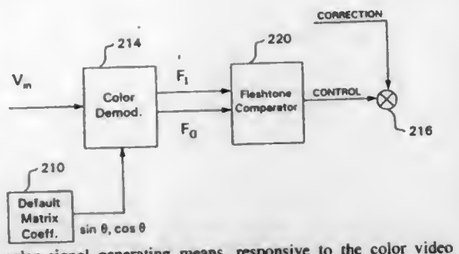
COLOR SELECTION APERTURE CORRECTION CIRCUIT

Robert Topper, Hatboro, Pa., assignor to Panasonic Technologies, Inc., Princeton, N.J.

Filed Mar. 31, 1995, Ser. No. 414,439
Int. Cl.[6] H04N *9/64*
U.S. Cl. 348—652 **12 Claims**

1. Apparatus for processing a color video signal to control aperture correction of the color video signal, said apparatus comprising:

a source of an aperture correction signal;



color signal generating means, responsive to the color video signal, for generating an in-phase signal, having an amplitude, and a quadrature signal, having a magnitude, to represent respective color components of the color video signal;

control signal generating means, responsive to a ratio of the amplitude of the in-phase signal and the magnitude of the quadrature signal, for generating an aperture control signal having a first value when the ratio is greater than a first predetermined value and a second value when the ratio is less than a second predetermined value; and

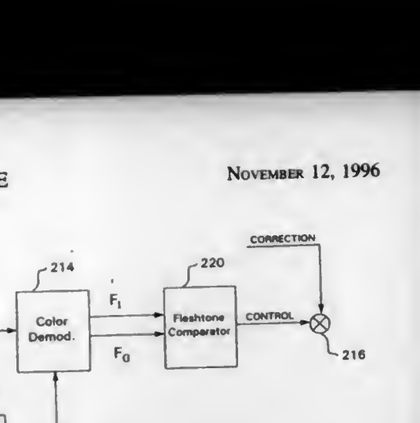
control means, coupled to the source of the aperture correction signal and responsive to the aperture control signal having said first value, for reducing the aperture correction signal in amplitude.

5,574,514

AUDIO/VIDEO DEVICE FOR A COMMUNICATION SYSTEM

Tadahi Tanihira; Takashi Miyake; Hitoshi Fukatsu; Kouichi Sato, and Tadashi Sano, all of Iwaki, Japan, assignors to Alpine Electronics, Inc., Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,161
Claims priority, application Japan, Dec. 27, 1993, 5-330320
Int. Cl.[6] H04N *5/268*
U.S. Cl. 348—706 **18 Claims**



1. An audio/video device connectable to a communication bus, the bus including a communication line and an audio signal line, a plurality of such audio/video devices; being serially interconnected through the bus, the audio/video device comprising:

first and second connectors adapted for coupling to first and second ends of the bus;

a communication line segment extending between the first and second connectors;

an audio line segment extending between the first and second connectors;

a memory unit storing priority value and address data; and

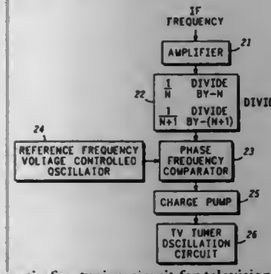
a controller connected to the communication line segment and to the memory unit, the controller including means for generating a communication frame on the communication line segment such that the communication frame is transmitted on the communication line of the bus, the frame including transmission and destination addresses which coincide with the stored address data, and transmission information which coincides with the stored priority value.

5,574,515

VOLTAGE CONTROLLED OSCILLATOR CIRCUIT AND AUTOMATIC FINE TUNING CIRCUIT FOR TV

Hiroshi Ogasawara, Sendai, Japan, assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 492,559, Jun. 20, 1995. This application Dec. 15, 1995, Ser. No. 573,095
Claims priority, application Japan, Jun. 23, 1994, 6-166083
Int. Cl.[6] H04N *5/44*
U.S. Cl. 348—731 **5 Claims**



1. An automatic fine tuning circuit for television (TV), comprising:

a TV intermediate frequency divider producing a divided frequency;

a phase frequency comparator for outputting an error signal corresponding to a phase frequency difference between the divided frequency from the TV intermediate frequency divider and a reference frequency; and

a voltage controlled oscillator circuit for generating the reference frequency, wherein the TV intermediate frequency divider performs divide-by-N and divide-by-(N+1) operations selected according to a ratio of a TV intermediate frequency and the reference frequency, multiple times, respectively, and outputs an average frequency of both as the divided frequency such that the average frequency is close to the reference frequency, and wherein a TV tuner oscillation circuit is automatically controlled by the error signal from said phase frequency comparator so that an oscillation frequency is maintained constant.

5,574,516

COLOR IMAGE DISPLAY DEVICE

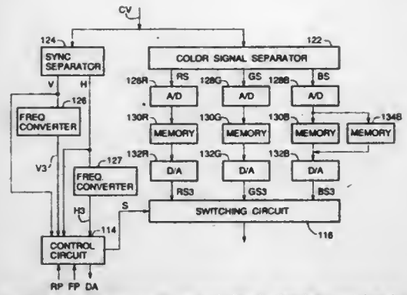
Akira Kanai, Amagasaki; Masaki Yamakawa, Nagaokakyo; Shoichi Sugihara, Nagaokakyo; Masaharu Hayakawa, Nagaokakyo; Kiyotaka Yamamoto; Masafumi Kodama, both of Amagasaki, and Akiko Maeno, Nagaokakyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1993, Ser. No. 87,384
Claims priority, application Japan, Jul. 8, 1992, 4-180993; Jul. 17, 1992, 4-190955; Aug. 27, 1992, 4-228428; Nov. 25, 1992, 4-314691; Dec. 4, 1992, 4-325318; Mar. 22, 1993, 5-061834
Int. Cl.[6] H04N *9/31;9/12*
U.S. Cl. 348—742 **48 Claims**

1. A color image display system comprising:

a monochromatic image display means having a screen for display of images;

a rotary filter having color filter sections of a plurality of colors, the filter sections being provided to be interposed in an optical path from the screen to a predefined viewing position in turn as the rotary filter rotates;



a plurality of memories, each of the memories corresponding to one of the plurality of colors and storing a color image signal, each color image signal corresponding to one of the plurality of colors; and

a control circuit for writing the color image signals of the respective colors into the memories at a first rate, for reading the color image signals of the respective colors from the memories at a second rate higher than the first rate, for controlling supply of the color image signals of the respective colors, in sequence, to the display means, and for controlling rotation of the rotary filter such that the filter section of a color corresponding to the color image signal which is being supplied to the display means is interposed in the optical path;

wherein the color image signal of each color is a sequence of samples, the control circuit writes the color image signal of one field in each of the memories by designating writing addresses in succession and supplying the samples of the color image signal to one of the memories to thereby write the samples of the color image signal at the designated writing addresses, the control circuit reads the color image signal from each of the memories by designating reading addresses in succession and reading the samples of the color image signal from the designated reading addresses to thereby obtain a sequence of the samples of the color image signal, and the control circuit controls supply of the color image signals from the memories to the display means in a sequence in which the color image signals of a color or colors which are less prominent than others are supplied to the display means during a period in which passing of the reading address over the writing address occurs, the passing of the reading address over the writing address occurring due to the second rate being higher than the first rate.

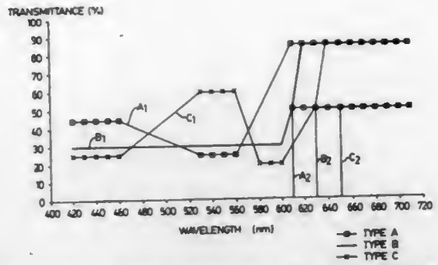
5,574,517

AID FOR COLOR VISION DEFICIENCIES

Francis K. W. Pang, Toronto; Andrew K. T. Pang, Mississauga, both of Canada; Jia Z. Wang, and Shu Y. Zheng, both of Haidian, China, assignors to Top One Optic Technology Inc., Toronto, Canada

Filed Dec. 21, 1994, Ser. No. 360,560
Int. Cl.[6] G02C *7/10;* G02B *1/10*
U.S. Cl. 351—44 **23 Claims**

1. A visual aid for individuals with red-green colour vision deficiencies, comprising a pair of optical elements shaped to be placed in front of an individual's eyes, the elements having an interference coating applied to one surface thereof, wherein the interference coating comprises a stack of thin dielectric films of alternating low and high refractive index, the stack being structured to give the optical elements a pre-selected spectral transmission curve for addressing a known form of colour-vision deficiency, wherein the maximum transmission rate for wavelengths from about 420 nm–460 nm falls within the range of about 45% to about 25%, the maximum transmission rate for wavelengths from about 530 nm–560 nm falls within the range of about 60% to about



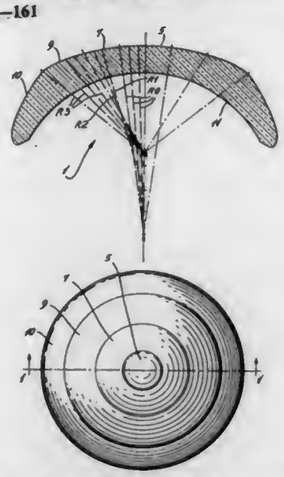
25%, and the maximum transmission rate for wavelengths from about 640 nm–710 nm is about 85%.

5,574,518

SYSTEM INCORPORATION TWO DIFFERENT SPHERO-NON-SPHERICAL CONTACT LENSES FOR CORRECTING PRESBYTIA

Robert Mercure, St. Denis-de-Brampton, Canada, assignor to Les Laboratoires Opti-Centre Inc., Quebec, Canada

Filed Jan. 10, 1995, Ser. No. 370,666
Int. Cl.[6] G02C *7/04*
U.S. Cl. 351—161 **8 Claims**



1. A binocular vision system for correcting presbyopia by means of sphero-non-spherical contact lenses, said system comprising the combination of the following contact lenses:

a first multifocal contact lens comprising on a front face thereof, a first central area having a spherical surface, said front central area being dimensioned to cover about 65% to about 85% of a pupil of an eye of a person, and having a diameter which varies between about 1.8 to 3.7 mm, and a first annular shaped area surrounding the first central area, having a non-spherical surface which has a diopter power in the form of a progressive addition which varies from a zero addition at inner periphery of said first annular shaped area to a maximum addition at outer periphery thereof, said non-spherical area enabling vision at all distances including reading,

said first central area incorporating a correction for distance vision, said first annular shaped non-spherical area incorporating gradual correction from distance correction to intermediate and reading corrections,

said first multifocal contact lens being adjusted to adapt to the vision of a dominant eye of said person,

a second multifocal lens comprising on a front face thereof a second central area having a spherical surface being dimensioned to cover about 45% to 70% of a pupil of another eye of said person and having a diameter which varies between about 1.4 and 2.9 mm, and a second annular shaped area surrounding said second central area, having a non-spherical surface which has a diopter power in the form of a progressive reduction which varies from a maximum addition at inner periphery thereof to a zero addition at outer periphery thereof, said non-spherical area enabling vision at all distances including reading,

said second central area incorporating a correction for reading, said second annular shaped area incorporating gradual correction from reading to intermediate and distance correction,

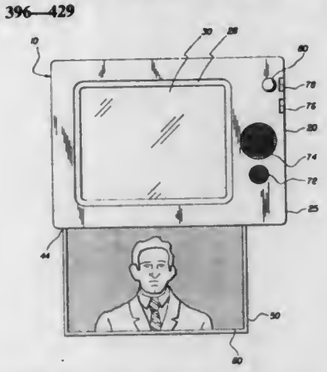
said second multifocal contact lens being adjusted to adapt to the vision of a dominated eye of said person.

5,574,519

TALKING PHOTOALBUM

Joseph A. Manico, Rochester, and Cynthia S. Bell, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1994, Ser. No. 237,077
Int. Cl.[6] G03B *29/00;* **G09F** *11/30*
U.S. Cl. 396—429 **22 Claims**



1. A display apparatus comprising display means for holding a plurality of still images and for displaying the images successively in a viewing aperture, and advance means for sequentially advancing the images one at a time to said viewing aperture, is characterized by:

storage means for storing audio information corresponding to at least one of a plurality of still images to be displayed in said viewing aperture;

playback means for playing back audio information stored by said storage means when at least one still image is advanced to said viewing aperture for display, wherein said display means includes a housing and a releasably attachable cartridge engageable with said housing in which said cartridge includes supporting means for retaining a plurality of still images; and

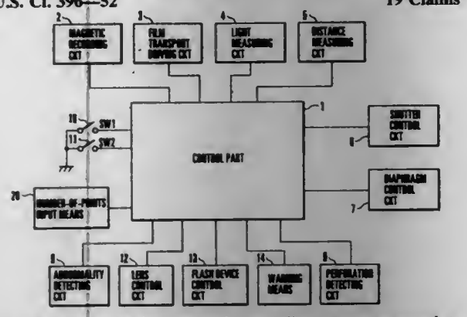
attachment means for attaching said audio storage device to said cartridge for retaining audio messages corresponding to a plurality of retained still images.

5,574,520

CAMERA CHANGING MAGNETIC RECORDING UPON DETECTION OF ABNORMAL CAMERA STATE

Masaaki Ishihara, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1995, Ser. No. 446,236
Claims priority, application Japan, May 25, 1994, 6-133888
Int. Cl.[6] G03B *17/24*
U.S. Cl. 396—52 **19 Claims**



1. A camera having magnetic recording means arranged to magnetically record information through a magnetic head in a magnetic recording part of a film, comprising:

a) state detecting means for generating an output when a state of shooting become a predetermined state; and

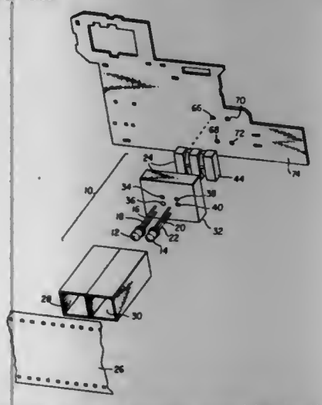
b) recording control means for causing said magnetic recording means to record, in the magnetic recording part, information designating the number of prints as "0" or "1", in response to the output of said state detecting means.

5,574,521

OPTICAL FILM ENCODING APPARATUS

Douglas W. Constable, and Randy E. Horning, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 11, 1996, Ser. No. 585,004
Int. Cl.[6] G03B *17/24*
U.S. Cl. 396—315 **5 Claims**



1. Optical film encoding apparatus comprising an LED with a pair of wire leads, and means for supporting said LED including its wire leads to precisely position the LED opposite a filmstrip to be optically encoded, is characterized in that:

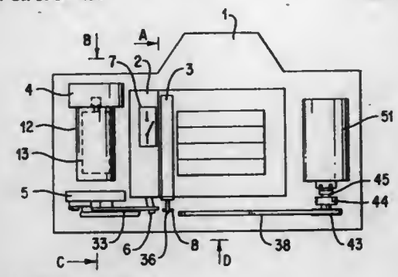
said supporting means supports each one of said wire leads suitably bent at multiple angles to prevent stray ambient light from following the wire leads towards the filmstrip.

5,574,522

CAMERA

Nobuo Matsukawa, Tokyo, Japan, assignor to Nikon Coporation, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,383
Claims priority, application Japan, Dec. 30, 1993, 5-354440; May 13, 1994, 6-099932
Int. Cl.[6] G03B *19/12;1/18;9/08*
U.S. Cl. 396—411 **28 Claims**



1. A camera comprising:

a cartridge chamber;

a spool chamber; and

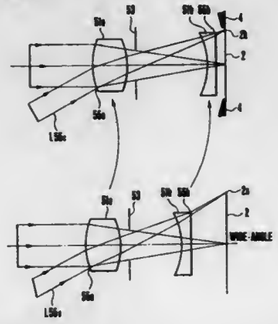
a driving motor coupled to a shutter activating mechanism, said driving motor including a rotor that rotates about a central axis of said driving motor, said central axis being parallel to longitudinal axes of said cartridge chamber and said spool chamber, said driving motor being a flat motor located adjacent to one end of one of said spool chamber and said cartridge chamber.

5,574,523

CAMERA CAPABLE OF VARYING SIZE OF IMAGE PLANE

Hiroki Nakayama, and Hideo Taka, both of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 300,852, Sep. 6, 1994, abandoned, which is a continuation of Ser. No. 963,730, Oct. 20, 1992, abandoned. This application May 18, 1995, Ser. No. 443,686
Claims priority, application Japan, Oct. 23, 1991, 3-305284; Apr. 14, 1992, 4-094172
Int. Cl.[6] G03B *17/02*
U.S. Cl. 396—435 **8 Claims**



7. A camera comprising:

a) varying means for varying an image pickup area from a first size to a second size, the second size having a shorter diagonal length than a diagonal length of the first size; and

b) objective lens means for varying zooming range when the image pickup area changes from the first size to the second size, said objective lens means having a broader zooming range at the second size than at the first size.

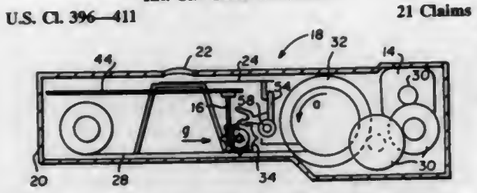
VOL 1192 ISS 2 NO 12 1996 UMI

5,574,524

SINGLE USE CAMERA AUTO WIND MOTOR CONTROL MECHANISM

Dwight J. Petruchik, Honeoye Falls, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 5, 1995, Ser. No. 465,038
Int. Cl.[6] G03B 1/12;17/38
U.S. Cl. 396—411 21 Claims



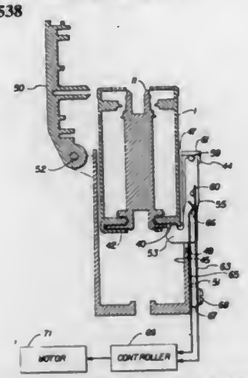
1. An auto wind motor control mechanism for a camera comprising:
a user actuatable shutter release button;
a lever for actuating a shutter in response to actuation of said shutter release button;
a control switch which upon closure thereof, activates a film advance motor for advancing film disposed within the camera;
a cam for opening said switch after the film has advanced a predetermined distance; and
said switch being actuatable by said lever.

5,574,525

DOUBLE EXPOSURE PREVENTION APPARATUS

Robert L. Kuhn, Jr., Rush, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 10, 1995, Ser. No. 385,291
Int. Cl.[6] G03B 19/10
U.S. Cl. 396—538 10 Claims



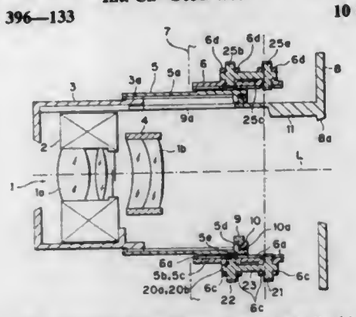
1. In a camera, apparatus to be used with a film cassette having a film-exposure status indicator which is movable from an unexposed position, to indicate that a filmstrip within the cassette is unexposed, to a partly exposed position to indicate that the filmstrip is only partly exposed, and to a fully exposed position to indicate that exposure of the filmstrip is completed, said camera having a loading chamber sized for receiving said cassette, and blocking means cooperating with said status indicator by engagement therewith for preventing said cassette from entering said loading chamber when said status indicator indicates that film contained within the cassette has been at least partly exposed, is characterized by:
sensing means cooperating with said blocking means to sense the presence of a film cassette in said loading chamber, including biasing means for biasing said blocking means in said loading chamber for engagement with the status indicator of a loaded cassette wherein said sensing means includes a resettable switch element which is movable from a first position when no cassette is present in said chamber to a second position when an unblocked cassette is present in said chamber.

5,574,526

LENS BARREL

Minoru Kato, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 309,472, Sep. 22, 1994, abandoned, which is a continuation of Ser. No. 72,994, Jun. 7, 1993, abandoned. This application Jan. 24, 1996, Ser. No. 590,871
Claims priority, application Japan, Jun. 12, 1992, 4-177675
Int. Cl.[6] G03B 1/13
U.S. Cl. 396—133 10 Claims



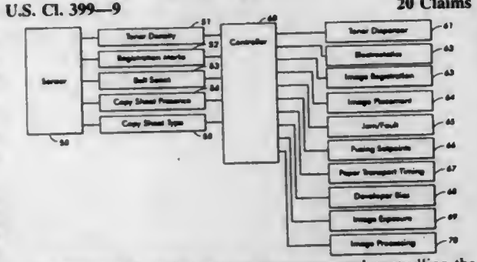
1. A lens barrel device having a rotary cylinder helicoid-coupled to a stationary cylinder and movable along an optical axis while rotated, comprising:
a helical gear formed on an outer periphery of said rotary cylinder;
a plurality of drive gears and a plurality of driven gears arranged to be gear-coupled to said helical gear and arranged on said stationary cylinder;
at least one of said plurality of drive gears being gear-coupled to said helical gear in a rotation range of said rotary cylinder, and at least one of said driven gears being gear-coupled to said helical gear in a predetermined rotation range of said rotary cylinder, only one of said plurality of drive gears being gear-coupled to said helical gear in at least one range in said rotation range, and only one of said driven gears being gear-coupled to said helical gear in at least one range in said predetermined rotation range.

5,574,527

MULTIPLE USE OF A SENSOR IN A PRINTING MACHINE

Jeffrey J. Folkins, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 25, 1995, Ser. No. 533,036
Int. Cl.[6] G03G 21/00
U.S. Cl. 399—9 20 Claims



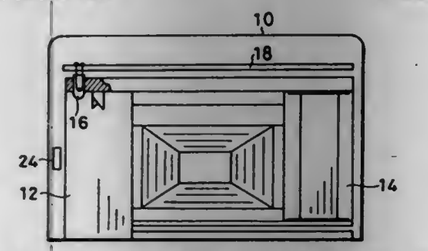
1. A method of sensing process parameters and controlling the printing process in a printing machine comprising:
passing a charge retentive surface through at least one revolution about the printing machine;
forming a latent image on the charge retentive surface during the revolution;
developing the latent image with toner;
transporting a transfer sheet along an operative paper path;
transferring the developed image to the transfer sheet;
fusing the transferred image to the transfer sheet;
locating an optoelectronic sensor in sensing relationship with the charge retentive surface and the operative paper path;
sensing a printing parameter with the optoelectronic sensor; and
controlling the printing process based on the sensed printing parameter.

5,574,528

CAMERA HAVING INSIDE-ILLUMINATING LIGHT SOURCE

Kazuaki Nagata, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Mar. 23, 1995, Ser. No. 409,008
Claims priority, application Japan, Apr. 9, 1994, 6-095574
Int. Cl.[6] G03B 17/02
U.S. Cl. 396—536 4 Claims



1. A camera having an inside-illuminating light source, said camera comprising:
an illuminating light source provided within said camera for lighting at least a patrone compartment within said camera; and
a control circuit for controlling lighting of said illuminating light source in accordance with opening and closing of a rear cover.

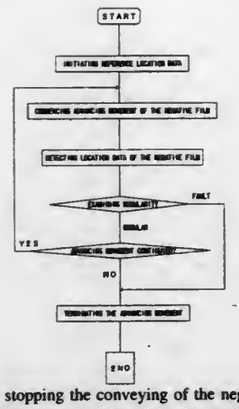
5,574,529

METHOD OF INSPECTING A NEGATIVE FILM IN A PHOTOGRAPHIC PROCESSING APPARATUS

Toshiro Akira, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Mar. 28, 1995, Ser. No. 412,153
Claims priority, application Japan, Mar. 28, 1994, 6-057705
Int. Cl.[6] G03D 3/08;13/00
U.S. Cl. 396—568 1 Claim

1. A method of inspecting a negative film in a photographic processing apparatus, the negative film having regularly spaced perforations along a length thereof, said method comprising the steps of:
conveying the photographic film lengthwise between first and second parts of a perforation detector, the first and second parts being located on opposite sites of the negative film as the negative film is conveyed lengthwise therebetween;
using the perforation detector to obtain location data indicative of a detected distance between successive perforations of the negative film as detected by the perforation detector;
electrically comparing the location data with reference location data indicative of a distance between regularly spaced perforations of a standard negative film; and



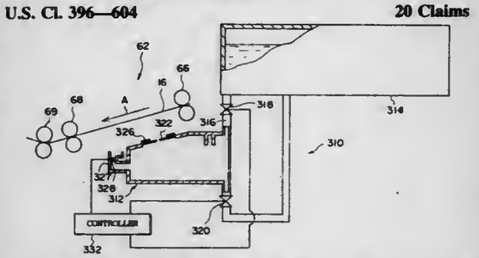
automatically stopping the conveying of the negative film upon finding a fault in a regularity of the detected location data as compared to the reference location data.

5,574,530

DEVICE FOR APPLYING SOLVENT FOR FORMING AN IMAGE

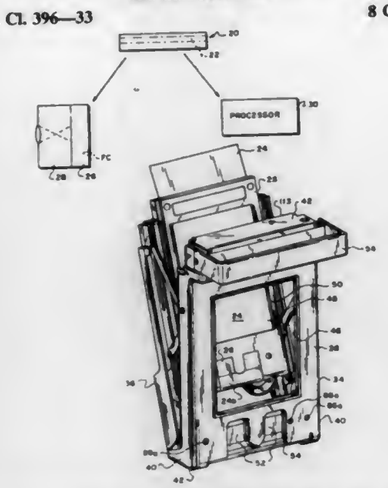
Kazuo Sanada, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 7, 1995, Ser. No. 483,275
Claims priority, application Japan, Oct. 19, 1994, 6-253987; Oct. 19, 1994, 6-254001; Oct. 19, 1994, 6-254002
Int. Cl.[6] G03D 17/00;3/02
U.S. Cl. 396—604 20 Claims



1. A device for applying a solvent for forming an image, comprising:
a spray tank which is disposed to oppose a conveying path of an image recording material which has been image-exposed, said spray tank containing a solvent for forming an image;
a nozzle formed on said spray tank as a portion of a wall surface of said spray tank which wall surface opposes the conveying path of the image recording material, a plurality of nozzle holes which spray the solvent for forming an image being arranged in said nozzle to be aligned linearly at fixed intervals along a direction intersecting a conveying direction of the image recording material; and
an actuator which displaces said nozzle, one time, toward the image recording material on the conveying path, so a to emit droplets of the solvent from the respective nozzle holes so that the solvent adheres to said image recording material which is being conveyed and thereby is applied to a wide range of the image recording material.

5,574,531
METHOD OF AND APPARATUS FOR LIGHTTIGHT TRANSFERRING OF FILM
Lawrence J. Salvo, Stow, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Mar. 24, 1995, Ser. No. 410,147
Int. Cl.[6] G03D *3/08*
U.S. Cl. 396—33 8 Claims

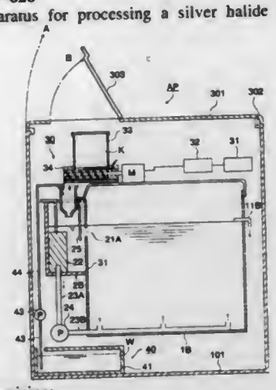


1. In an apparatus for use in shuttling at least a film container having an exposing opening and carrying at least a photosensitive film unit, wherein the film shuttling apparatus comprises a portable lighttight shuttle housing assembly for removably receiving the film container; the housing assembly including an exposure aperture registerable with the film container exposing opening; a light blocking means coupled to said housing assembly and operable by a control means for automatically changing between light blocking and unblocking conditions relative to the exposing opening and said exposure aperture; and control means operably coupled to said light blocking means and being selectively operable in response to an image recording apparatus and a film processing apparatus for controlling said light blocking means between said light blocking and unblocking conditions; the improvement comprising:

said light blocking means comprising a shutter assembly including at least a pair of superimposed, flexible and opaque shutters, each of said shutters is provided with at least one shutter aperture aligned with said other shutter aperture, said shutters being connected at their respective opposite ends to a supply roller assembly and a takeup roller assembly mounted in said housing assembly, said shutters being wrappable on said supply roller assembly and said takeup roller assembly so as to move conjointly between said takeup and supply assemblies whereby said shutter apertures can move into and out of registry with the exposing opening and said exposure aperture; and,

a pair of light baffles, each one being interposed between a respective longitudinal edge of said pair of shutters, each of said baffles extends along one of the longitudinal edge portions of said curtain for a distance which exceeds the length of said housing exposing aperture and thereby form labyrinth passages with and between said shutter assemblies which enhance lighttightness of said shuttle apparatus.

5,574,532
AUTOMATIC DEVELOPING APPARATUS FOR SILVER HALIDE PHOTOGRAPHIC PHOTOSENSITIVE MATERIAL
Moeko Hagiwara, and Tsuyoshi Haraguchi, both of Hino, Japan, assignors to Konica Corporation, Japan
Filed Mar. 13, 1995, Ser. No. 403,275
Claims priority, application Japan, Mar. 17, 1994, 6-047242
Int. Cl.[6] G03D *3/02*
U.S. Cl. 396—626 10 Claims



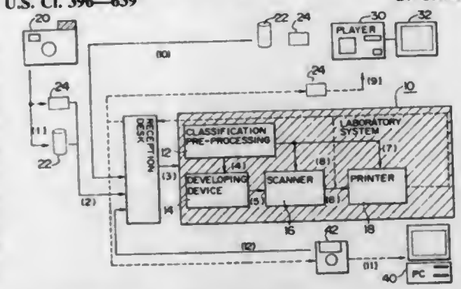
1. An apparatus for processing a silver halide photographic material comprising:

a processing tank in which a processing solution is stored; and

an agent supplier for measuring a predetermined volume of a solid processing agent and for supplying said predetermined volume to the processing solution,

wherein the solid processing agent comprises a mixture of a plurality of processing agent components, more than 50% of the components h: ing average particle sizes of 150 μm to 3000 μm and said components having a specific volume of 0.6 cm^3/g to 2.0 cm^3/g.

5,574,533
LABORATORY SYSTEM
Takeyoshi Itoh, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed May 25, 1995, Ser. No. 450,008
Claims priority, application Japan, Jun. 30, 1994, 6-149477
Int. Cl.[6] G03D *13/02*
U.S. Cl. 396—639 20 Claims



1. A laboratory system comprising:

development means for developing a still photographic film;

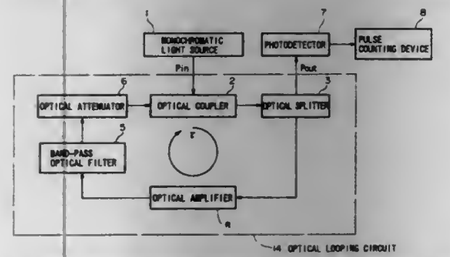
image reading means for picking up an image from the still photographic film developed by said development means and converting said image into digital image data;

a digital printer for printing a film image from the digital image data provided by said image reading means;

writing means for writing data in a portable storage medium; and

pre-processing means for directing said writing means to write the digital image data provided by said image reading means in said portable storage medium when there is a requirement for the digital image data.

5,574,534
APPARATUS FOR DETERMINING NOISE FACTOR OF OPTICAL AMPLIFIER
Seiji Nogiwa, Tokyo, and Kazuo Aida, Yokohama, both of Japan, assignors to Ando Electric Co., Ltd., and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan
Filed Oct. 24, 1995, Ser. No. 547,664
Claims priority, application Japan, Oct. 24, 1994, 6-258401
Int. Cl.[6] H01S *3/00*; H04B *10/08*; *10/02*
U.S. Cl. 359—337 8 Claims



1. A noise determination apparatus for determining a noise factor of an optical fiber amplifier comprising:

an optical looping circuit comprising an optical coupler, an optical bandpass filter; an optical attenuator; an optical splitter; and a subject amplifier, whose noise factor is to be determined, disposed in said optical looping circuit, wherein said optical attenuator attenuates an optical pulse so as to maintain a constant pulse intensity for each looping cycle in said optical looping circuit;

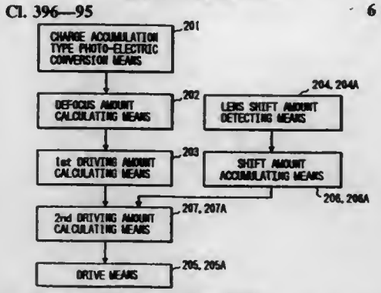
an optical pulse generation means for generating one optical pulse having a pulse width shorter than a pulsing time and injecting said one optical pulse into said optical looping circuit through said optical coupler to loop around said optical looping circuit;

a photodetector for converting an optical output pulse outputted from said optical looping circuit into an electrical pulse signal so as to generate a plurality of said electrical pulse signals for a respective number of looping cycles;

a measuring means for measuring a result of looping cycles selected from a group consisting of a number of said plurality of electrical pulse signals, a duration time for a pulse train and a change in amplitude of said plurality of electrical pulse signals;

wherein said noise factor is determined in relation to one of either said number of said plurality of electrical pulse signals, or said duration time for a pulse train and said pulsing time, or said change in amplitude of said plurality of electrical pulse signals, and is calculated using the values of a gain of said subject amplifier, a bandwidth of said optical bandpass filter, a oscillation frequency of light, and a light intensity of said one optical pulse.

5,574,535
AUTO-FOCUSING DEVICE
Akira Ogasawara, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 220,396, Mar. 30, 1994, abandoned, which is a continuation of Ser. No. 101,038, Aug. 3, 1993, abandoned, which is a division of Ser. No. 894,437, Jun. 5, 1992, Pat. No. 5,270,763. This application Oct. 23, 1995, Ser. No. 546,731
Claims priority, application Japan, Jun. 24, 1991, 3-178780
Int. Cl.[6] G03B *13/36*
U.S. Cl. 396—95 6 Claims



1. An auto-focusing device comprising:

a light receiving device which receives a flux of object light through a photographing lens, accumulates charges during a time interval according to the object light flux, and outputs an electric signal;

defocus amount calculating circuitry which, based on charges accumulated during said time interval, calculates a defocus amount indicative of an amount of defocus of said photographing lens;

a movement amount detecting portion which outputs a lens movement amount indicative of actual movement of said photographing lens;

accumulation circuitry which accumulates the lens movement amount output from the movement amount detecting portion, with no refreshing;

detection circuitry that detects changes in accumulated lens movement amount over successive predetermined time periods;

first movement amount calculation circuitry which, based on the calculated defocus amount and a change in the accumulated lens movement amount during a corresponding one of said tame periods, detects movement of the object and calculates an anticipated amount of movement of the object;

second movement amount calculation circuitry which, based on the anticipated amount of movement of the object and a lens movement amount subsequent to said time interval, calculates a lens drive amount corresponding to a target position for said photographing lens; and

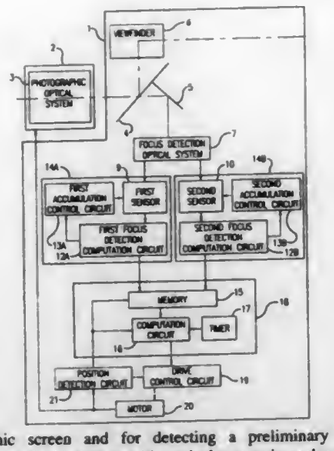
a lens drive that drives said photographing lens based on an output from said second movement amount calculation circuitry.

5,574,536
AUTOMATIC FOCUS ADJUSTMENT CAMERA
Yosuke Kusaka, and Ken Utagawa, both of Kanagawa-ken, Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Jun. 2, 1994, Ser. No. 252,779
Claims priority, application Japan, Jun. 11, 1993, 5-140975
Int. Cl.[6] G03B *13/36*
U.S. Cl. 396—96 46 Claims

1. An automatic focus adjustment camera having a photographic optical system including a photographic screen and movable along an optical axis to form an image of a subject on an intended focus surface, the automatic focus adjustment camera comprising:

a plurality of focus detection means each for responding to a plurality of focus detection regions established on said photo-

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graphic screen and for detecting a preliminary defocus amount of said photographic optical system in each said focus detection region, each of said plurality of focus detection means operating asynchronously and independently of one another;

setting means for setting a final defocus amount from the preliminary defocus amounts detected by said plurality of focus detection means; and

drive means for driving said photographic optical system in accordance with the final defocus amount set by said setting means.

5,574,537

APPARATUS FOR CONTROLLING LIGHT QUANTITY USING ACOUSTO-OPTIC MODULATOR FOR SELECTING 0TH-ORDER DIFFRACTED BEAM

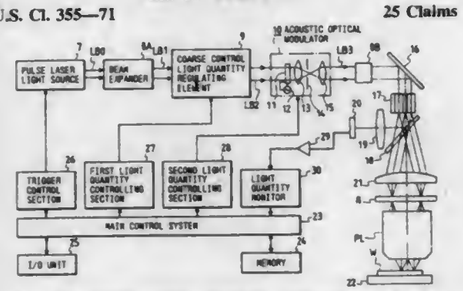
Ken Ozawa, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Apr. 13, 1994, Ser. No. 227,237

Claims priority, application Japan, Apr. 15, 1993, 5-088330

Int. Cl.[6] G03B *27/72*

U.S. Cl. 355—71 **25 Claims**



8. A light quantity control apparatus comprising, in the following sequence along an optical path:

a light source that emits light; and

a medium on which light from said light source is incident; and further comprising:

a driving unit that is coupled to said medium and that generates a periodic change of a refractive index in said medium to diffract said incident light and emit a 0th-order diffracted light beam; and

a drive controlling section that is connected to said driving unit and that adjusts a light quantity of said 0th-order diffracted light beam by changing the value of the refractive index by said driving unit.

5,574,538

METHOD AND APPARATUS FOR REMOVING IMAGE FORMING SUBSTANCE FROM IMAGE HOLDING MEMBER FORMING PROCESSING SITUATION MARK

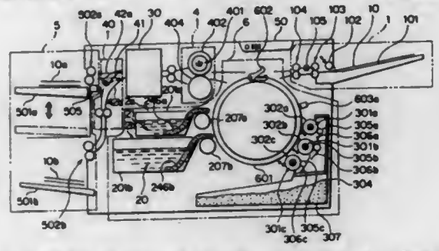
Yasuhiro Takahashi, Tokyo; Yoshiaki Miyashita; Satoshi Shinguryou, both of Kawasaki; Shinichi Kuramoto, Numazu; Youichi Asaba; Kiyoshi Tanikawa, both of Yokohama; Sadao Takahashi; Yoshiyuki Kimura, both of Tokyo; Kazuhiro Ando, Satte, and Tadashi Saitoh, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 27, 1995, Ser. No. 495,166

Claims priority, application Japan, Sep. 26, 1994, 6-257584

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—71 **20 Claims**



1. A method for removing an image forming substance from an image holding member, comprising the steps of:

a process for providing an unstabilizing agent to the image holding member;

the unstabilizing agent being constructed such that an attaching state between the image forming substance and the image holding member stably attaching the image forming substance on a surface thereof is changed to an unstable state by the unstabilizing agent;

a process for separating and removing the image forming substance from the image holding member by making a separating member come in close contact with the image forming substance on the image holding member having the provided unstabilizing agent; and

a process for forming on the image holding member at least a processing situation mark based on a result of an executed removal of the image forming substance by said unstabilizing agent providing process and said image forming substance separating and removing process, said processing situation mark showing a processing situation of the executed removal of the image forming substance.

5,574,539

TONER MAINTENANCE SUBSYSTEM FOR A PRINTING MACHINE

Lam F. Wong, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 18, 1995, Ser. No. 529,796

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—62 **12 Claims**

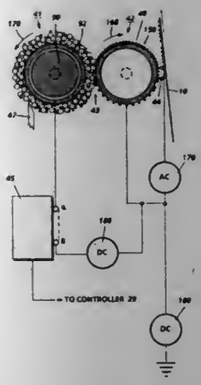
1. A toner maintenance system for an electrophotographic developer unit, comprising:

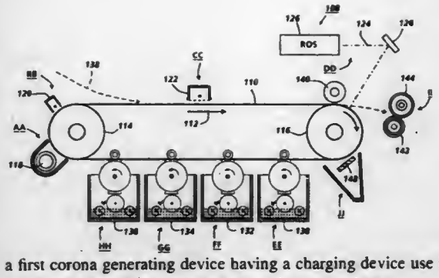
a sump for storing a quantity of developer material comprised of carrier and toner material;

a first member for transporting a mixture of developer material and toner particles from said sump, said first member having a voltage applied thereto;

a second member, adjacent said first member, for transporting only toner particles from said first member, said second member having a voltage applied thereto; and

a sensor device for measuring the current between said first member and said second member, and generating a signal indicative thereof.





a first corona generating device having a charging device use in a first pass and a detack device use in a second pass.

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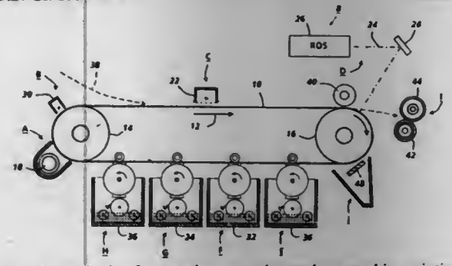
DUAL USE CHARGING DEVICES

Jeffrey J. Folkins, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1995, Ser. No. 477,013

Int. Cl.[6] G03G *15/01;15/02*

U.S. Cl. 399—171 **3 Claims**



1. A method of operating an electrophotographic printing machine comprising the steps of:

(a) forming a toner layer on a photoreceptor;

(b) overcharging the photoreceptor and the toner layer with corona from a charging device to potentials higher than that which the photoreceptor and the toner layer are to have before they are exposed;

(c) reducing the potentials of the photoreceptor and the toner layer with corona from a subsequent charging station to the potential the photoreceptor and the toner layer are to have before they are exposed;

(d) forming a subsequent toner layer on the photoreceptor;

(e) charging the toner layer and the subsequent toner layer using corona from the charging device; and

(f) transferring the toner layer and the subsequent toner layer onto a substrate using corona from the subsequent charging device.

5,574,541

CORONA DUAL-USE FOR COLOR IMAGE FORMATION

Jeffrey J. Folkins, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1995, Ser. No. 477,956

Int. Cl.[6] G03G *15/02;15/14*

U.S. Cl. 399—171 **20 Claims**

10. A printing machine comprising:

a charge retentive surface which makes at least two passes through the printing machine to form an image, a pass being one revolution of the charge retentive surface; and

5,574,542

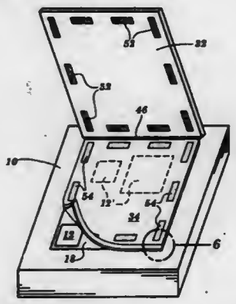
SCANNER COVER

Mark G. Brook, III, Londonberry, N.H., assignor to AGFA Division, Bayer Corporation, Wilmington, Mass.

Filed Feb. 14, 1996, Ser. No. 601,205

Int. Cl.[6] G03B *27/62;* **G03G** *15/00*

U.S. Cl. 399—380 **2 Claims**



1. A cover assembly for a scanning system comprising:

a first, substantially rigid cover component;

means for pivotally mounting said first, substantially rigid cover component to said scanning system, wherein said first substantially rigid cover component can be raised and lowered relative to a surface of said scanning system;

a second, substantially flexible cover component;

means for pivotally mounting said second, substantially flexible cover component to said scanning system, wherein said second, substantially flexible cover component can be raised and lowered relative to the surface of said scanning system independently of said first, substantially rigid cover component; and

means for releasably coupling said second, substantially flexible cover component to an underside of said first, substantially rigid cover component, wherein said first and second cover components can be selectively raised and lowered as a unit or independently of one another;

said second, substantially flexible cover component including an upper layer formed of a foam-type material and a lower layer formed of a rubber-type material, wherein a downwardly facing surface of said lower layer is coated with an optically reflective material.

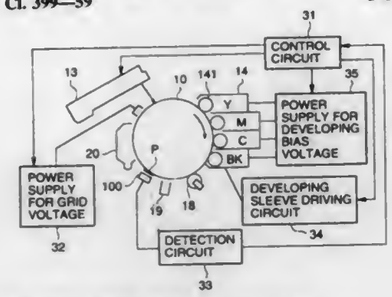
VOL 1192 ISS 2 NO 12 1996 UMI

5,574,543

IMAGE FORMING APPARATUS

Eiichi Sakai, and Okushi Okuyama, both of Hachioji , Japan, assignors to Konica Corporation, Japan

Filed Sep. 6, 1994, Ser. No. 301,331
Claims priority, application Japan, Sep. 16, 1993, 5-230480; Sep. 17, 1993, 5-231816; Sep. 17, 1993, 5-231817; Jan. 11, 1994, 6-001327
Int. Cl.[6] G03G 21/00
U.S. Cl. 399—59 8 Claims



1. An image forming apparatus, comprising:
an image retainer;
a charger for electrically charging the image retainer;
a latent image former for forming a latent image of a recording image corresponding to image information on the charged image retainer;
a developer for developing the latent image of the recording image so as to form a toner image of the recording image, the developer including a developing sleeve by which developer is conveyed onto the image retainer;
an electric bias for applying a developing bias voltage to the developer;
a control for controlling the charger, the latent image former, the developer and the electric bias so as to form a patch image used as a test image on the image retainer under a patch image forming condition which is different from a recording image forming condition under which the toner image of the recording image is formed;
an optical detector for detecting a density of the patch image and generating a detection output; and
the control controlling at least one of the charger; the developer and the electric bias in accordance with the detection output of the optical detector so that a density of the toner image of the recording image formed on the image retainer satisfies a predetermined condition,
the control adjusting a peripheral speed of the developing sleeve of the developer during formation of the patch image to be different from that during formation of the recording image.

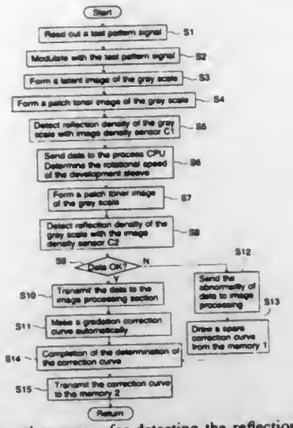
5,574,544

IMAGE FORMING APPARATUS HAVING IMAGE DENSITY GRADATION CORRECTION MEANS

Kunihisa Yoshino; Mitsuo Motohashi; Satoshi Nishida, and Akira Takahashi, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Aug. 21, 1995, Ser. No. 517,535
Claims priority, application Japan, Aug. 29, 1994, 6-203798
Int. Cl.[6] G03G 15/00
U.S. Cl. 399—60 2 Claims

1. An image forming apparatus, comprising:
(a) an image carrier;
(b) exposure means for exposing a first plurality of latent patch images formed by plural exposures of a maximum luminance onto said image carrier;
(c) developing means for developing said first plurality of latent patch images to form a first plurality of toner images by changing a rotational speed of a developing sleeve of said developing means;



(d) first detecting means for detecting the reflection density of each of said first plurality of toner images;
(e) determining means for determining a rotational speed at which the reflection density detected by said first detecting means coincides with or becomes lower than a predetermined value;
(f) said exposure means exposing a second plurality of latent patch images formed by exposures of different luminance onto said image carrier;
(g) said developing means developing said second plurality of latent patch images to form a second plurality of toner images while rotating said developing sleeve at said rotational speed determined by said determining means;
(h) second detecting means for detecting the reflection density of each of said second plurality of toner images; and
(i) correction curve forming means for forming a correction curve of gradation on the basis of the reflection densities detected by said second detecting means,
wherein said exposure means exposes said image carrier in accordance with said correction curve of gradation formed by said correction curve forming means.

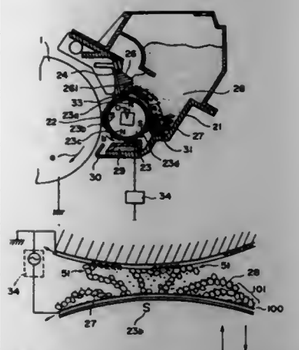
5,574,545

METHOD FOR TRANSFERRING TONER FROM DEVELOPER CARRYING MEMBER TO IMAGE BEARING MEMBER USING CHAINS OF MAGNETIC PARTICLES FORMED ON DEVELOPER CARRYING MEMBER AND CONTACTING IMAGE BEARING MEMBER, AND ALTERNATING ELECTRIC FIELD

Atsushi Hosoi, Tokyo; Hatsuo Tajima, Matsudo; Takashi Saito, Ichikawa; Norihisa Hoshika, Kawasaki; Hiroshi Tajika, Yokohama, and Masaaki Yamaji, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 41,360, Apr. 1, 1993, abandoned, which is a continuation of Ser. No. 490,712, Mar. 8, 1990, abandoned, which is a division of Ser. No. 257,164, Oct. 13, 1988, Pat. No. 4,933,254, which is a continuation of Ser. No. 163,149, Feb. 25, 1988, abandoned, which is a continuation of Ser. No. 906,080, Sep. 10, 1986, abandoned. This application May 22, 1995, Ser. No. 455,716
Claims priority, application Japan, Sep. 2, 1985, 60-207013; Sep. 17, 1985, 60-204605; Sep. 30, 1985, 60-217556; Sep. 30, 1985, 60-217559; Nov. 11, 1985, 60-252316; Nov. 11, 1985, 60-252317; Nov. 11, 1985, 60-252319; Nov. 11, 1985, 60-252320
Int. Cl.[6] G03G 15/09/14
U.S. Cl. 399—270 8 Claims

1. A developing method comprising the steps of:
disposing a developer carrying member having a surface carrying a developer containing toner particles and magnetic particles opposite an image bearing member bearing an electrostatic image, whereby the magnetic particles are formed into



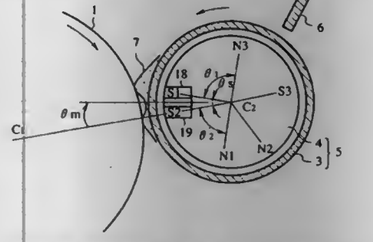
chains, and toner particles are carried on both the chains and the surface of the developer carrying member;
contacting the chains to the image bearing member; and
generating an alternating electric field between the image bearing member and the developer carrying member, for moving toner particles from the surface of the developer carrying member to the image bearing member.

5,574,546

DEVELOPING APPARATUS FOR AN ELECTROPHOTOGRAPHIC MACHINE

Takao Kumasaka, Takahagi; Yasuo Takuma, Hitachi; Tatsuo Igawa, Kitaibaraki; Tomio Sugaya, and Yasuo Kikuchi, both of Hitachinaka, all of Japan, assignors to Hitachi, Ltd., and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed Jul. 20, 1995, Ser. No. 504,314
Claims priority, application Japan, Jul. 22, 1994, 6-170555
Int. Cl.[6] G03G 15/00
U.S. Cl. 399—276 22 Claims



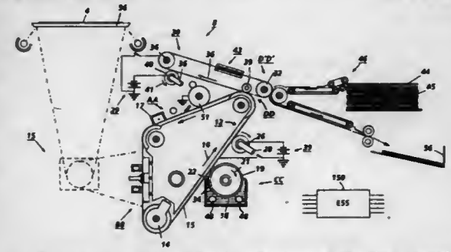
1. A developing apparatus for an electrophotographic system, said developing apparatus comprising:
a rotatable sleeve;
a stationary multipole permanent magnet positioned within said rotatable sleeve;
a photo-conductive body having an axis of rotation parallel with the axis of rotation of said rotatable sleeve;
means for forming an electrostatic latent image on a surface of said photo-conductive body;
means for supplying to the peripheral surface of said rotatable sleeve a developer containing at least carrier and toner and adapted to be attracted onto and held on said peripheral surface of said rotatable sleeve by magnetic force of said multipole permanent magnet; and
first and second magnetic pieces positioned in said multipole permanent magnet in a region facing said photo-conductive body and adjoining said peripheral surface of said rotatable sleeve, each of said first and second magnetic pieces being elongated in a direction parallel to the axis of rotation of said rotatable sleeve, said first and second magnetic pieces having the same magnetic polarity, so that said first and second magnetic pieces cause respective first and second peaks of magnetic field strength in a section perpendicular to the axis of rotation of said rotatable sleeve,
wherein an angle θm formed by a first line extending radially from the axis of rotation of said rotatable sleeve and midway between said first and second magnetic pieces and a second line extending between the axis of rotation of said rotatable sleeve and the axis of rotation of said photo-conductive body is between ⅜ and ⅛ of an angle θs formed by a third line extending between the vertex of the first peak and the axis of rotation of said rotatable sleeve and a fourth line extending between the vertex of the second peak and the axis of rotation of said rotatable sleeve, so that the developer held on said peripheral surface of said rotatable sleeve is brought by rotation of said rotatable sleeve into contact with the peripheral surface of said photo-conductive body, thereby developing an electrostatic latent image on said peripheral surface of said photo-conductive body.

5,574,547

LIQUID ELECTROPHOTOGRAPHIC REPRODUCTION MACHINE EMPLOYING HEATED CARRIER LIQUID

Gary A. Denton, Webster; John F. Knapp, Fairport; James R. Larson, Fairport, and Damodar M. Pai, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1995, Ser. No. 473,808
Int. Cl.[6] G03G 15/10
U.S. Cl. 399—251 10 Claims



1. A liquid electrophotographic reproduction machine comprising:
(a) an image bearing member movable along a process path;
(b) latent image forming means mounted along the process path for forming a latent image electrostatically on said image bearing member; and
(c) a development unit mounted along the process path for developing the latent image using liquid developer material, said development unit having a housing defining a developer material holding chamber, and said chamber including a heating element for heating liquid developer material within said chamber to a desired elevated temperature so as to reduce viscosity of the liquid developer material and improve developability, said heating element comprising a heat conductive conduit and a quantity of a heatable fluid contained in said conduit.

5,574,548

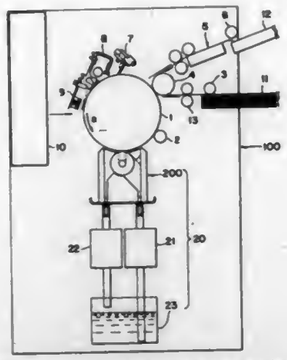
METHOD AND DEVICE FOR DEVELOPING WITH A LIQUID

Shuji Iino, Muko; Toshimitsu Fujiwara, Kobe, and Hidetoshi Miyamoto, Takatsuki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 10, 1995, Ser. No. 419,616
Claims priority, application Japan, Apr. 18, 1994, 6-078817
Int. Cl.[6] G03G 15/10
U.S. Cl. 399—240 24 Claims

1. A method for developing with a liquid comprising:

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forming an electrostatic latent image on an image carrying surface;

forming a liquid developer layer on a developer holding surface, said layer comprising a bottom layer having as a main constituent charged toner particles and a top layer having as a main constituent a liquid carrier; and

contacting the electrostatic latent image with the top layer without substantially contacting the bottom layer with the image carrying surface.

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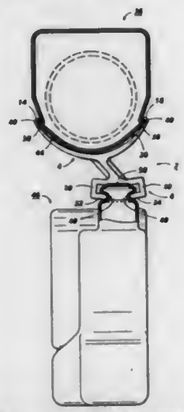
CONTAINER COUPLING MEMBER

John D. Sundquist, Clarksville, Va., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 6, 1994, Ser. No. 254,204

Int. Cl.[6] G03G *15/06*

U.S. Cl. 399—262 **18 Claims**



16. An electrostatographic printing apparatus comprising:

(a) a coupling member comprising:

(i) a cradle portion defining a container receiving space, and including a first side end having a first flange which extends into the receiving space and a second side end having a second flange which extends into the receiving space; and

(ii) means for coupling the coupling member to an indented surface, wherein the second portion is associated with the cradle portion;

(b) a first container defining a chamber containing developer particles, wherein the first container includes one or more outer surface protuberances, wherein the first container is partially disposed in the container receiving space and at least a portion of the first flange and at least a portion of the second flange contact the outer surface of the first container to define a first region of the outer surface of the first container below the first flange and the second flange, wherein the one or more protuberances, disposed in the first region, minimize movement of the first region above the first flange and the second flange by engaging the first flange or the second flange when the first container is subjected to movement out of the receiving space, thereby coupling the first container to the coupling member;

(c) a second container defining a chamber for storing waste marking particles, wherein the second container includes an indented surface, and wherein the indented surface is coupled with the coupling means; and

(d) a charge-retentive surface.

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TRANSFER DEVICE FOR IMAGE FORMING MACHINE

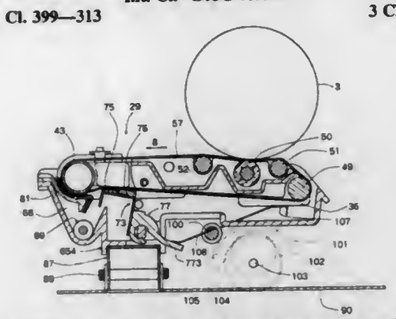
Noritaka Okazaki; Ryuji Wataki; Michio Uchida; Shigeo Fujita, and Yuzuru Nanjo, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Oct. 13, 1995, Ser. No. 542,961

Claims priority, application Japan, Nov. 10, 1994, 6-300129; Nov. 10, 1994, 6-300130

Int. Cl.[6] G03G *15/14*

U.S. Cl. 399—313 **3 Claims**



1. A transfer device for an image forming machine, comprising a driving roller, a driven roller disposed at a distance from said driving roller, a transfer belt looped about said driving roller and said driven roller, a transfer roller adapted to be disposed opposite an image bearing member of the image forming machine with said transfer belt interposed therebetween and with said transfer roller pressing said transfer belt against the image bearing member, and a voltage source for applying a predetermined voltage onto said transfer roller to transfer a toner image, formed on the surface of the image bearing member, to a transfer paper fed between said transfer belt and the image bearing member, and to convey the transfer paper with the toner image transferred thereon, wherein

said transfer roller consists of a rotating shaft and a roller portion mounted on said rotating shaft, and the hardness of said roller portion results in a compression of said roller portion of 0.45 to 2.00 mm at a linear pressure of 3 g/cm.

5,574,551

PRINT MEDIA SUPPLY APPARATUS WITH MEDIA PARAMETER DETECTION CAPABILITY

James A. Kazakoff, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 24, 1994, Ser. No. 247,942

Int. Cl.[6] G03G *21/00*

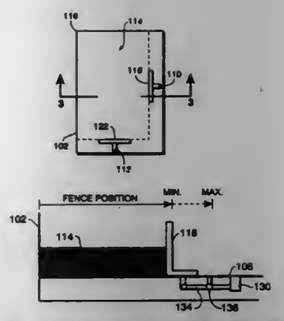
U.S. Cl. 399—45 **17 Claims**

1. A print media detection apparatus for a hard copy machine, having a print engine, including an electrical power supply means and electronic controller means, for printing on print media of various length and width dimensions, said apparatus comprising:

holding means for holding at least one sheet of print media, including at least one registration means for fixing said sheet of print media to a predetermined orientation, and aligning means, adjustable to conform to length and width dimensions of said sheet of print media, for aligning said sheet of print media to said registration means such that said aligning means is correspondingly at a one of a plurality of predetermined configurations;

signal generating means, operable in cooperation with said holding means, for generating output signals indicative of the length and width dimensions of said sheet of print media; and

means, connected to said signal generating means and said print engine, for transmitting signals to said electronic controller means such that said print engine is adjusted to produce a hard copy in accordance with length and width dimensions of said sheet of print media.



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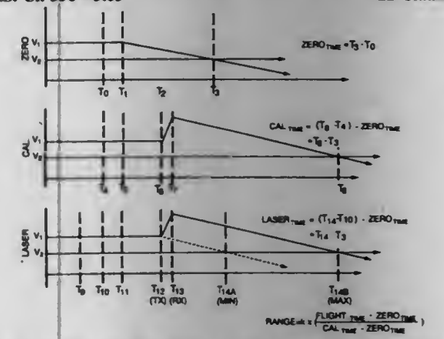
SELF-CALIBRATING PRECISION TIMING CIRCUIT AND METHOD FOR A LASER RANGE FINDER

Jeremy G. Dunne, Littleton, Colo., assignor to Laser Technology, Inc., Englewood, Colo.

Filed Jan. 19, 1995, Ser. No. 375,941

Int. Cl.[6] G01C *3/08;* **G01S** *13/08;* **G01P** *3/36*

U.S. Cl. 356—5.05 **22 Claims**



1. A method for determining a range to a target based upon a flight time of a pulse toward said target, said method comprising the steps of:

initially establishing first and second reference voltage levels;

firstly unclamping said second reference voltage level;

firstly allowing said second reference voltage level to diminish at a first rate to said first reference voltage level;

firstly storing a first reference time $T1_{ref}$ from said step of unclamping until said first and second reference voltage levels are equal;

re-establishing said first and second reference voltage levels;

secondly unclamping said second reference voltage level;

increasing said second reference voltage level at a second higher rate than said first rate for a predetermined period of time to establish a third reference voltage level;

secondly allowing said third reference voltage level to diminish at said first rate to said first reference voltage level;

secondly storing a second reference time $T2_{ref}$ from said step of secondly unclamping until said first and third reference voltage levels are equal;

again re-establishing said first and second reference voltage levels;

thirdly unclamping said second reference voltage level;

again increasing said second reference voltage level at said second higher rate for a period of time related to said flight time of said pulse to said target to establish a fourth reference voltage level;

thirdly allowing said fourth reference voltage level to diminish at said first rate to said first reference voltage level;

thirdly storing a third reference time $T3_{ref}$ from said step of thirdly unclamping until said first and fourth reference voltage levels are equal; and

computing said range to said target as proportional to $(T3_{ref}-T1_{ref})/(T2_{ref}-T1_{ref})$.

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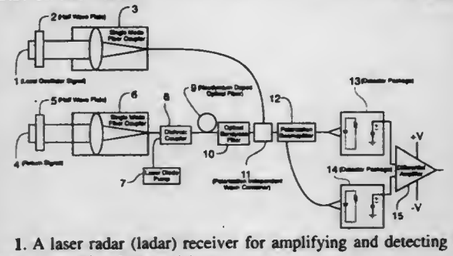
LADAR RECEIVER INCORPORATING AN OPTICAL AMPLIFIER AND POLARIZATION OPTICAL MIXER

Paul F. McManamon, Dayton, Ohio; Gary D. Sharp, Boulder, Colo.; Michael S. Salisbury, Dayton, Ohio, and Steven A. Serati, Golden, Colo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 27, 1994, Ser. No. 363,793

Int. Cl.[6] G01C *3/08;* **G01P** *3/36;* **H04B** *10/00*

U.S. Cl. 356—5.15 **5 Claims**



1. A laser radar (ladar) receiver for amplifying and detecting a laser return signal, comprising:

a source of a local oscillator signal which is linearly polarized and frequency shifted from a laser transmitter center frequency;

said source being coupled to a first half wave plate in a first rotatable mount which is set so that the linear polarization is rotated to be at $3\pi/4$ radians;

the local oscillator signal from the first half wave plate being focused into a first single mode fiber leading to a first leg of a polarization independent beam combiner, which couples 10 percent of the incoming local oscillator power into an output fiber;

wherein said laser return signal is coupled to pass through a second rotatable half wave plate, giving a polarization of $\pi/4$ radians;

the laser return signal from the second half wave plate being focused into a second single mode fiber to a dichroic coupler, where the laser return signal and pump light from a laser diode are combined into a third single fiber;

wherein the combined powers from the third single fiber are coupled into a doped optical fiber, where laser amplification of the laser return signal occurs and spontaneous emission photons are added;

output from said doped optical fiber being coupled to pass through an in-line 4 nanometer optical bandpass filter block unabsorbed pump and excess spontaneous emission power;

output from the doped optical fiber via the optical bandpass filter being coupled into a second leg of the beam combiner, with

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ninety percent of the amplified return signal power being combined with the local oscillator signal power in the output fiber;

wherein light in the output fiber from the beam combiner comprises local oscillator power, amplified return signal power and randomly polarized spontaneous emission components;

the output fiber being coupled to a polarization beamsplitter which is used to split x polarization and y polarization components into two separate fibers, which are coupled respectively to first and second detector packages, the x components of the local oscillator signal and return signal to the first detector package being polarized in opposite directions, while the y components to the second detector package are polarized the same direction, so that when these powers are incident on the detectors, the resulting intermediate frequency currents are 180 degrees out of phase from each other;

output signals from the first and second detector packages being coupled into a differential amplifier, which effectively adds the two signals because of the 180 degree phase difference between them, wherein random noise signals from each detector, primarily due to local oscillator shot noise and spontaneous emission beat noise, do not have a constant phase relationship between them, so that the differential amplifier subtracts the noise currents, effectively rejecting some of the noises and decreasing the noise level.

5,574,554

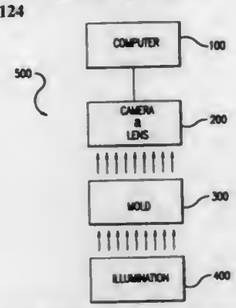
CONTACT LENS INSPECTION APPARATUS AND LENS MOLD FOR USE IN SUCH APPARATUS

Kai C. Su; Jack C. White, both of Alpharetta, and Mushir Siddiqui, Lawrenceville, all of Ga., assignors to Ciba-Geigy AG, Basle, Switzerland

Continuation-in-part of Ser. No. 89,523, Jul. 21, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 459,772

Int. Cl.[6] G01N *21/88*

U.S. Cl. 356—124 **6 Claims**



1. An automated contact lens inspection system comprising:

a contact lens support;

a light source for illuminating a contact lens located on said contact lens support;

a photographic lens having a field of view positioned over said contact lens support so as to view the contact lens illuminated by said light source;

a camera coupled to said photographic lens for obtaining an image of the contact lens viewed by said photographic lens and for generating image data denoting pixel image densities of the image of the contact lens; and,

a computer programmed to detect abnormalities of the contact lens located on said contact lens support based on the image data generated by said camera;

wherein said contact lens support is a mold member used to mold the contact lens located thereon; and

wherein said mold member is transparent and includes a convex surface having an optical finish and an opposite concave surface having an optical finish, and wherein said light source directs light through said mold member from one of said concave surface and said convex surface to the other of said concave surface and said convex surface and then through the contact lens resting on said other of said concave surface and said convex surface.

5,574,555

LENS INSPECTION METHOD AND APPARATUS

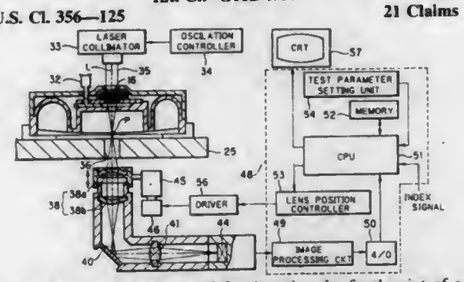
Yukihiko Yamaguchi, and Masahiro Tagi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 16, 1994, Ser. No. 243,136

Claims priority, application Japan, May 14, 1993, 5-113456

Int. Cl.[6] G01B *9/00*

U.S. Cl. 356—125 **21 Claims**



1. A lens inspection method for detecting the focal point of a lens, comprising the steps of:

positioning said lens in a predetermined inspecting position between a light source and an object focal point of an objective lens;

projecting a bundle of parallel light rays onto said lens parallel to an optical axis of said objective lens;

moving said objective lens stepwise along said optical axis so as to shift said object focal point into a plurality of measurement positions within a predetermined range along said axis including a predetermined normal focal point of said lens;

forming a point image of light from said objective lens on a two-dimensional image sensor;

picking up an image signal of said point image for each of said measurement positions; and

determining an actual focal point of said lens as a position on the optical axis at which said image signal indicates said point image is brightest.

5,574,556

STAGE MECHANISM IN EXPOSURE APPARATUS

Tetsuzo Mori, Atsugi, and Hidehiko Fujioka, Yamato, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 267,367, Jun. 29, 1994, abandoned. This application Mar. 25, 1996, Ser. No. 621,512

Claims priority, application Japan, Jun. 30, 1993, 5-161023

Int. Cl.[6] G01N *21/01*; **G01B** *11/27*; **G05B** *1/06*

U.S. Cl. 356—244 **8 Claims**

1. A stage mechanism, comprising:

a base having first and second faces and having a bore extending from the first face to the second face;

a substrate holder disposed at the first face side of said base and being movable in a direction along the first face of said base;

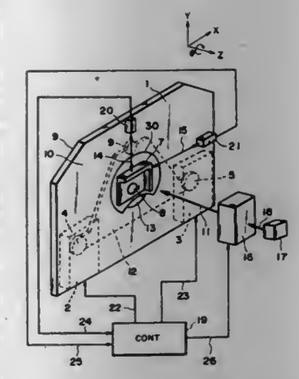
a movable member disposed at the second face side of said base;

a connecting member for connecting said substrate holder and said movable member through the bore of said base;

a blocking member, being movable with said movable member, for substantially covering the bore of said base;

electromagnetic coil means, disposed at the second face side of said base, for supplying kinetic energy to said movable member; and

measuring means, disposed at the first face side of said base, for detecting positional information of said substrate holder with respect to the direction along the first face of said base.



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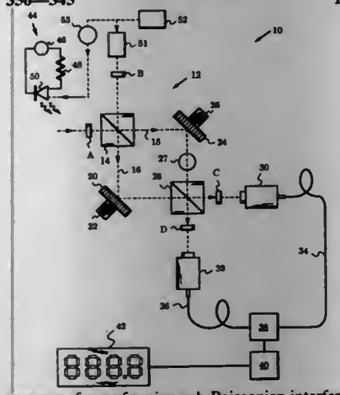
APPARATUS AND METHOD FOR PERFORMING SUB-POISSONIAN INTERFERENCE MEASUREMENTS USING AN INTENSITY-SQUEEZED STATE

Gunnar Bjork, Mountain View, and Shuichiro Inoue, Palo Alto, both of Calif., assignors to The Board of Trustees of The Leland Stanford Junior University, Palo Alto, Calif., and Research Development Corporation of Japan, Japan

Filed May 8, 1995, Ser. No. 436,579

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—345 **12 Claims**



1. An apparatus for performing sub-Poissonian interference measurements, said apparatus comprising:

a) an interferometer comprising:

1) a beam splitting means,

2) a first photon input A,

3) a second photon input B,

4) a first photon output C, and

5) a second photon output D, said interferometer having a first path and a second path both having predetermined optical lengths and connecting said photon inputs A, B and said photon outputs C, D such that photons entering said interferometer through said first photon input A and through said second photon input B are split by said at least one beam splitting means, travel along said first path and said second path, are recombined by said at least one beam splitting means, and exit through said first photon output C and said second photon output D;

b) a radiation generating means for producing photons in an intensity-squeezed state in which the amplitude a_ϕ^2 of the photons is certain and the phase ϕ of the photons is uncertain, and for delivering the photons in said intensity-squeezed state to one of said first and second photon inputs A, B; and

c) an optical path length adjustment means for introducing an optical path length difference $\Delta\theta$ between said predetermined optical path lengths such that said interferometer acts as a phase-dependent beam splitter and photons delivered to said first photon input A exit through said first photon output C and photons delivered to said second photon input B exit through said second photon output D.

5,574,558

OPTICAL ENCODING APPARATUS FOR MEASURING DISPLACEMENT OF AN OBJECT USING DIFFRACTION GRATINGS AND TWICE-DIFFRACTED AND TWICE-TRANSMITTED LIGHT

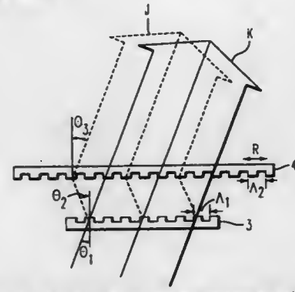
Kouichi Kudo; Nobuyuki Baba, and Hideo Maeda, all of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 19, 1995, Ser. No. 444,873

Claims priority, application Japan, May 19, 1994, 6-131411; Mar. 3, 1995, 7-070951

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—356 **7 Claims**



1. An optical encoding apparatus for measuring a displacement of an object, said apparatus comprising:

a light source for emitting a light beam;

a light beam condensing means for condensing said light beam emitted by said light source;

a first diffraction grating to which light beams condensed by said light beam condensing means are directed;

a second diffraction grating to which light beams exiting from said first diffraction grating are directed; and

displacement information obtaining means for obtaining information regarding a displacement of one of said first and second diffraction gratings, said information being obtained in accordance with a twice-diffracted beam diffracted by both said first and second diffraction gratings and a twice-transmitted beam transmitted through both of said first and second diffraction gratings without diffraction.

5,574,559

DISPLACEMENT DETECTION APPARATUS USING MULTIPLE DISPLACEMENT DETECTION SIGNALS FORMED BY A MULTIPLE PHASE COMBINATION GRATING

Yasushi Kaneda, Tokyo; Koh Ishizuka, Ohmiya; Hiroshi Kondo, Yokohama, and Satoshi Ishii, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

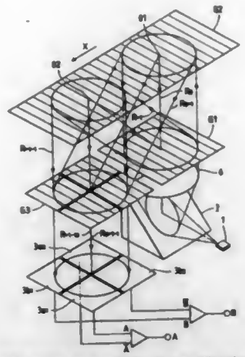
Continuation of Ser. No. 172,052, Dec. 23, 1993, abandoned. This application Feb. 28, 1996, Ser. No. 608,029

Claims priority, application Japan, Dec. 28, 1992, 4-347414

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—356 **22 Claims**

1. A displacement detection apparatus comprising means for applying to a diffraction grating two beams obtained by dividing a radiation beam, means for combining a first diffracted beam cre-



ated from the diffraction grating by the application of one of said two beams and a second diffracted beam created from the diffraction grating by the application of the other beam, and light receiving means for receiving an interference beam formed by the combination of said first and second diffracted beams and converting it into a signal indicative of the displacement of said diffraction grating, said combining means being provided with first to fourth diffraction gratings differing in phase by 90° each, said light receiving means being provided with first to fourth light receiving portions for individually receiving portions of said interference beam obtained through said first to fourth diffraction gratings.

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DUAL-BEAM INTERFEROMETER WITH A PHASE GRATING

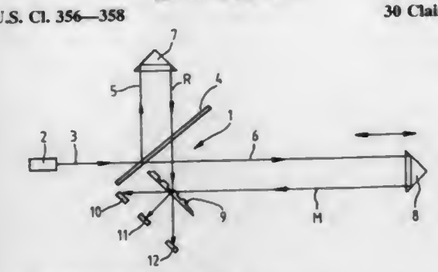
Andreas Franz, Trostberg, and Erwin Spanner, Traunstein, both of Germany, assignors to Dr. Johannes Heidenhain GmbH, Traunreut, Germany

Filed Feb. 24, 1995, Ser. No. 393,700

Claims priority, application European Pat. Off., Feb. 26, 1994, 94102938

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—358 **30 Claims**



1. An interferometer comprising:

a light source generating a beam of light;

a stationary beam splitter splitting said beam of light into a reference beam and a measuring beam;

a first reflector reflecting said reference beam towards an interference point;

a second movable reflector reflecting said measuring beam towards said interference point;

a beam merging element positioned at said interference point so that said reference beam and said measuring beam interfere with each other at said interference point so that at least two pairs of partial beams which are phase-shifted in relation to each other and interfere with one another are generated wherein said beam merging element comprises a phase grating having a plurality of ridges, each ridge defining a ridge height and a ridge width; and

a plurality of detectors to receive said at least two pairs of partial beams and form directionally dependent measured values.

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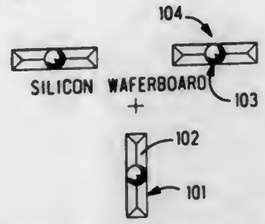
KINEMATIC MOUNTING OF OPTICAL AND OPTOELECTRONIC ELEMENTS ON SILICON WAFERBOARD

Robert A. Boudreau, Hummelstown; Hongtao Han, Mechanicsburg; Michael Kadar-Kallen, Harrisburg, and John R. Rowlette, Sr., Hummelstown, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Dec. 22, 1994, Ser. No. 362,625

Int. Cl.[6] G01B *11/00*

U.S. Cl. 356—399 **9 Claims**



1. An alignment apparatus for aligning optical elements with great precision, comprising:

a first substrate having a top surface, a bottom surface and a selected thickness therebetween;

grooves formed on said top surface of said first substrate, said grooves forming a tripod arrangement having tolerance in two degrees of freedom;

a second substrate having a top surface, a bottom surface and a selected thickness therebetween;

grooves formed on said bottom surface of said second substrate, said grooves formed to substantially match the location of the grooves on the first substrate to enable accurate alignment; and

ball elements mounted in said grooves of said substrates thereby enabling alignment between said grooves and thereby said substrates and the optical elements thereon.

5,574,562

METHOD AND APPARATUS FOR EVALUATION OF HIGH TEMPERATURE SUPERCONDUCTORS

Ilya M. Fishman, Palo Alto, and Gordon S. Kino, Stanford, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Dec. 19, 1994, Ser. No. 359,283

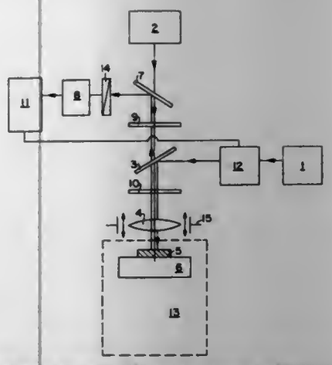
Int. Cl.[6] C01N *21/55*

U.S. Cl. 356—432 **27 Claims**

1. A method for evaluation of high-T_c superconducting material, comprising the steps of:

providing a periodic thermal excitation of said material and probing said material with a first polarized optical beam;

changing temperature of said material within a range including a critical temperature for said material; and



measuring anisotropic differential optical reflectivity of said material as a function of said temperature and polarization of said first optical beam.

5,574,563

METHOD AND APPARATUS FOR FORMING IMAGES AT DIFFERENT DEGREES OF RESOLUTION

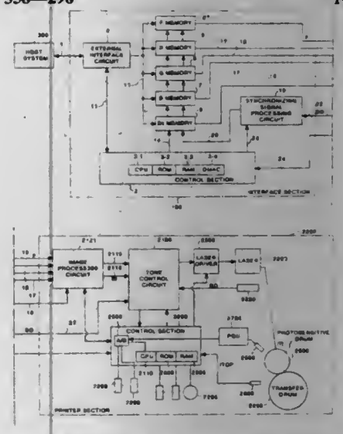
Kimiyoshi Hayashi, Souka, and Kazuhiko Hirooka, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 165,550, Dec. 13, 1993, which is a continuation of Ser. No. 519,441, May 4, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 471,159

Claims priority, application Japan, May 10, 1989, 1-115140; May 10, 1989, 1-115141; May 10, 1989, 1-115142; May 10, 1989, 1-115143; May 10, 1989, 1-115144

Int. Cl.[6] H04N *1/23;1/29;1/40;* **G01D** *15/14*

U.S. Cl. 358—296 **14 Claims**



1. A method for forming an image at different degrees of resolution, comprising the steps of:

converting image data into a two-level signal according to a density which corresponds to the image data;

forming the image in accordance with the two-level signal; and

varying driving power for driving an image forming means in accordance with the different degrees of resolution.

5,574,564

READING APPARATUS FOR READING A RECORD CARRIER ON WHICH CODED PICTURES HAVE BEEN RECORDED

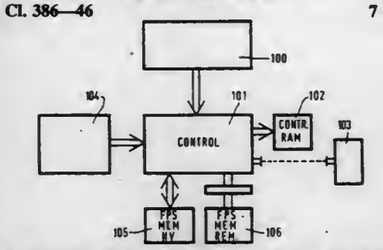
Jozef M. K. Timmermans, Hasselt, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 856,215, Jun. 30, 1992, abandoned. This application Dec. 7, 1993, Ser. No. 231,447

Claims priority, application European Pat. Off., Sep. 19, 1990, 90202487; Netherlands, Sep. 27, 1990, 9002114

Int. Cl.[6] H04N *5/76*

U.S. Cl. 386—46 **7 Claims**



1. A read device for reading a record carrier on which a coded picture representing a first picture is stored, said first picture being composed of first pixels arranged in a matrix of P rows of Q pixels, where P and Q are not equal in value and are integers, said read device comprising:

a) a read unit for reading said coded picture and for supplying therefrom a sequence of coded pixels representing said matrix of first pixels;

b) a picture memory unit coupled to said read unit, which comprises a picture memory having memory locations;

c) storage means coupled to said picture memory unit, for storing said coded pixels in said memory locations;

d) fetching means coupled to said storage means, for reading said coded pixels stored in said memory locations in a second sequence of coded pixels; and

e) picture conversion means coupled to said fetching means, for converting said second sequence of coded pixels into an adapted coded picture representing said first picture and comprising second pixels arranged in a matrix of P' rows of Q' pixels, P' and Q' being integers, wherein each of said second pixels has a first dimension in the horizontal direction and a second dimension in the vertical direction and wherein the ratio of said first dimension to said second dimension is substantially equal to Q divided by P.

5,574,565

DATA PLACEMENT ON TAPE FOR A DIGITAL VIDEO TAPE RECORDER SUITABLE FOR HIGH SPEED PICTURE PLAYBACK

Christopher H. Strolle, Glenside, Pa.; Steven T. Jaffe, Freehold, and Tianmin Liu, Lawrenceville, both of N.J., assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

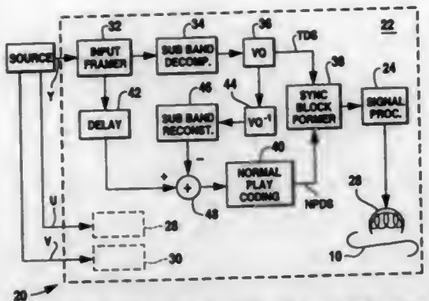
Division of Ser. No. 983,741, Dec. 1, 1992, Pat. No. 5,398,143. This application Oct. 28, 1994, Ser. No. 335,211

Int. Cl.[6] H04N *5/76;5/78;* **G11B** *5/00;5/09*

U.S. Cl. 386—81 **20 Claims**

1. An image carrier including a plurality of equal-length parallel slant tracks recorded therein, each track comprising a plurality of successively recorded sync blocks disposed in respective ones of each of a plurality of sub-intervals along the length of said track, wherein:

each said sync block is divided into at least first and second parts having first and second digital signals respectively coded therein, the first digital signal being used for reconstructing input images with relatively low resolution during a trickplay mode and the second digital signal being used for reconstructing input images with relatively high resolution during a normal play mode;



the first digital signal of each sync block is essentially representative of a prescribed fraction of a line by line scanning response to one of said input images, but the second digital signal of each sync block is not so constrained; and

the second digital signal codes information concerning said input images with variable-bit-length coding and at times codes different fractions of said input images in different ones of said sync blocks.

5,574,566

APPARATUS OF DIGITALLY RECORDING AND REPRODUCING VIDEO SIGNALS

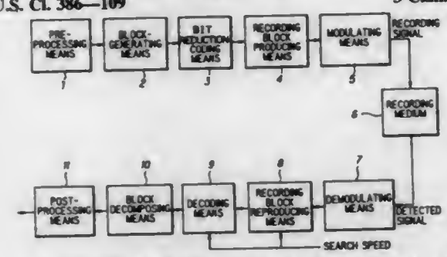
Eiichi Takakura, Nagareyama; Michiyuki Sugino, Chiba; Takayoshi Yamaguchi, Nagareyama, and Akiyoshi Nagawo, Chiba, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 24, 1995, Ser. No. 377,238

Claims priority, application Japan, Jan. 24, 1994, 6-005738

Int. Cl.[6] H04N *5/76;5/78*

U.S. Cl. 386—109 **3 Claims**



1. An apparatus of digitally recording and reproducing video signals comprising:

a recording system including:

block-generating means for forming blocks by collecting a plurality of sampling values;

bit reduction coding means for forming recording blocks from said blocks by subjecting each block to an orthogonal transformation and controlling code lengths of data to be equalized in each block or each group of blocks;

rearranging means for rearranging said recording blocks for recording; and

recording means for recording the rearranged recording blocks into a recording medium; wherein, when video signal data in one image frame is divided into plural parts (N parts) by dividing the image frame horizontally and/or vertically into N-divided rectangular regions and the thus formed N parts of the divided data are recorded on respective plural tracks (N tracks), said rearranging means rearranges video signal data in each divided region in such a manner that significant components of a block and a proximal block thereto in the divided region on the image frame are allotted to proximal recording blocks which are to be recorded onto proximal positions on a corresponding track on the recording medium, and

a reproducing system including:

inverse-rearranging means for inversely rearranging detected signal digitally recorded on a recording medium by means of said recording system in a reverse order to that executed when the data is recorded to thereby produce recording blocks;

decoding means for decoding original blocks of video data from said recording blocks; and

modifying means for reducing adverse effects on image quality when any of said recording blocks is reproduced erroneously, wherein judgment of whether or not data is to be modified is effected on each short-side row of blocks in the rectangular region as a unit so as to modify the data based on the judgment.

5,574,567

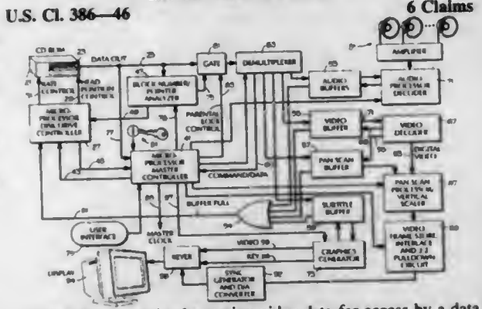
SYSTEM AND METHOD FOR CONTROLLING PLAY OF MULTIPLE VERSIONS OF THE SAME MOTION PICTURE STORED ON AN OPTICAL DISK

Christopher J. Cookson; Lewis S. Ostroyer, and Warren N. Lieberfarb, all of Los Angeles, Calif., assignors to Time Warner Entertainment Co., L.P., Burbank, Calif.

Division of Ser. No. 573,719, Dec. 18, 1995, which is a continuation of Ser. No. 144,785, Oct. 29, 1993, abandoned. This application Feb. 7, 1996, Ser. No. 598,197

Int. Cl.[6] H04N *5/85;5/76*

U.S. Cl. 386—46 **6 Claims**



1. A software carrier for storing video data for access by a data processor comprising a single track with a data structure having three different types of interleaved video data blocks, each of said video data blocks including (1) video data unique to one of at least two versions of the same program material, (2) video data unique to the other of said at least two versions of the same program material, and (3) video data common to said at least two versions of the same program material, with said track containing at least one data block of each of said three types and said video data blocks further containing addresses and pointer data identifying the sequential addresses of the video data blocks to be selected for a particular version of the same program material.

5,574,568

VIDEO RECORDING AND REPRODUCING APPARATUS

Tatsuro Juri, Osaka, and Eiji Yamauchi, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

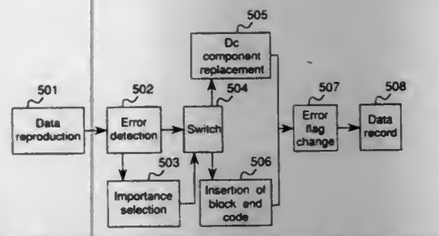
Filed May 11, 1994, Ser. No. 241,002

Claims priority, application Japan, May 12, 1993, 5-110354; May 14, 1993, 5-112865

Int. Cl.[6] H04N *5/945*

U.S. Cl. 386—112 **25 Claims**

1. A video recorder for reproducing and recording data, which data have been recorded by constructing blocks made from adjacent pixels of input video signals, by obtaining orthogonal components by orthogonal transformation of the data for each block, by coding the orthogonal components for each block and control data



needed for reproduction of the block including an end-of-block codeword for representing that ac components after the codeword are all zero, by arranging coded data for each block in prescribed record areas and by constructing an error correction area made of one or more record areas and coding the data in the error correction area as error correction codes, which video recorder comprising:

a data reproduction means for reproducing the data from an error correction area;

an error detection means for detecting an error which cannot be corrected exists in data in an error correction area and for detecting a position of the error;

a replacement means for replacing either a dc component in the recording area or a codeword for a control data needed for decoding the data in a block with a prescribed codeword and for replacing a codeword for a first ac component with an end-of-block code if said error detection means detects in the block an error which cannot be corrected; and

a recording means for recording data processed by said replacement means.

5,574,569

IMAGE SIGNAL TRANSMISSION APPARATUS FOR REPEATEDLY REPRODUCING AND TRANSMITTING A MAIN IMAGE AND A SUB-IMAGE USING AN OPTICAL DISC

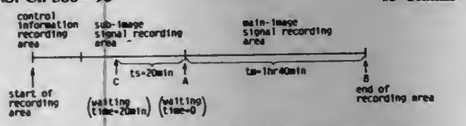
Kuniaki Utsumi, and Kazuki Maeda, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 987,660, Dec. 9, 1992, Pat. No. 5,432,767. This application Nov. 28, 1994, Ser. No. 345,933

Claims priority, application Japan, Dec. 12, 1991, 3-328721

Int. Cl.[6] H04N *5/76*

U.S. Cl. 386—95 **13 Claims**



1. An image signal transmission apparatus for repeatedly reproducing and transmitting a main image and a sub-image, using an optical disc which has a main image storage area which stores the main image, a sub-image storage area which stores a time display which shows a time progressively counting down until a remaining time is zero, and a control information storage area which stores control information including an end address in the sub-image storage area, a main image reproduction time, and an end address in the main image storage area, comprising:

control information acquisition means for acquiring the end address of the sub-image storage area and the reproduction time, the start address and the end address of the main image from the control information storage area of the optical disc when the optical disc is set;

a timer which is set an expected necessary time for moving a reproduction head;

cycle memory means for storing a cycle which transmits a main image signal;

calculation means for calculating a sub-image reproduction required time from the cycle, the main image reproduction time and the set time in the timer, and at the same time finding a sub-image reproduction start address from the sub-image reproduction required time and the end address in the sub-image storage area;

timer activation means for turning on the timer when data in the end address of the main image has been reproduced by the reproduction head; and

control means for moving the reproduction head to the sub-image reproduction start address found by the calculation means when the reproduction head has finished reproducing the end address in the main image, and for starting reproduction again from the sub-image reproduction start address having waited for the set time in the timer to expire.

5,574,570

VIDEO SIGNAL RECORDING/REPRODUCTION APPARATUS AND METHOD FOR RECORDING/REPRODUCING TWO KINDS OF VIDEO SIGNALS CARRYING DIFFERENT AMOUNTS OF INFORMATION

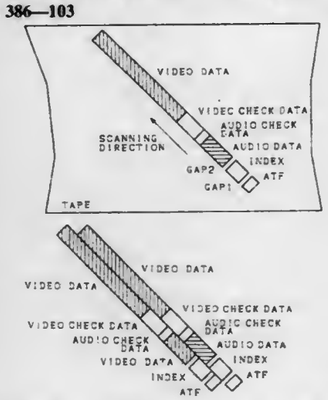
Ikuo Ohkuma; Makoto Kumano; Kihei Ido, and Ken Onishi, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1993, Ser. No. 57,774

Claims priority, application Japan, May 12, 1992, 4-118740; May 22, 1992, 4-130583; May 28, 1992, 4-136853

Int. Cl.[6] H04N *5/76;5/91;* **G11B** *5/02*

U.S. Cl. 386—103 **27 Claims**



1. A video signal recording/and reproduction apparatus for recording first video signals of a first amount of information and second video signals of a second amount of information different from the first amount of information, in oblique tracks, comprising:

first recording processor for controlling the recording of the first video signals in first type recording tracks including at least an audio sector and a video sector; and

second recording processor for controlling the recording of the second video signals in N recording tracks including the first type recording tracks and second type recording tracks, N being a real number multiple of the number of tracks recording the first video signals greater than one, at least a portion of the second video signals being recorded in areas of the second type recording tracks positionally corresponding to the audio sector of the first type recording tracks, the second type recording tracks not including audio sectors.

VOL 1192 ISS 2 NO 12 1996 UMI

5,574,571

FACSIMILE MACHINE WITH DIVERSE COMMUNICATION FACILITIES

Philippe Charbonnier, Maisons Laffitte, France, assignor to Societe d'Applications Generales d'Electricite et de Mecaniqne Sagem, France

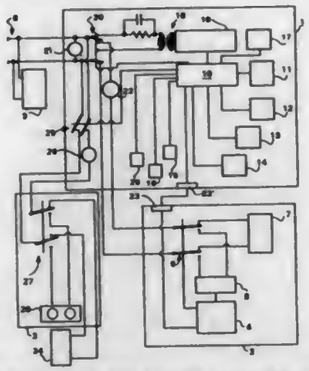
PCT No. PCT/FR92/00132, § 371 Date Aug. 5, 1993, § 102(e) Date Aug. 5, 1993, PCT Pub. No. WO92/14335, PCT Pub. Date Aug. 20, 1992

PCT Filed Feb. 12, 1992, Ser. No. 98,405

Claims priority, application France, Feb. 12, 1991, 91.01586

Int. Cl.[6] H04N *1/00;1/40*

U.S. Cl. 358—400 **15 Claims**



1. A call director apparatus including a facsimile machine, said apparatus having a processor having means for connecting a telephone line, means for connecting at least one main telephone, a call detector, and a module for detecting events indicating the nature of incoming calls, said apparatus comprising:

means for directly connecting the processor to at least one terminal; and

means for connecting said terminal to the telephone line, so that, only in the event of a connection between the terminal and the telephone line, is the processor connected to the terminal to monitor events on the telephone line, so as to determine their nature, and to switch the telephone line to the facsimile machine or to the terminal as a function of the events occurring during said connection.

5,574,572

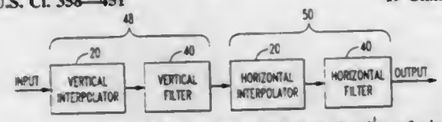
VIDEO SCALING METHOD AND DEVICE

Christopher W. Malinowski, and Stanley R. Zepp, Melbourne, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Sep. 7, 1994, Ser. No. 301,622

Int. Cl.[6] H04N *1/393;1/40*

U.S. Cl. 358—451 **19 Claims**



1. A device for scaling an input of a first plurality of pixels arrayed in horizontal rows and vertical columns that form an image in order to provide an output of a second plurality of pixels that forms the image, each of the pixels having N components, the device comprising as a set:

an upscaling interpolator comprising (a) a buffer for storing the input pixels, and (b) a linear interpolator that sequentially receives each of the stored input pixels from said buffer and the pixel subsequent thereto for providing interpolated output pixels therefrom responsive to a predetermined upscaling factor; and

a decimating finite impulse response (FIR) filter for reducing the number of output pixels from said upscaling interpolator responsive to a predetermined downscaling factor, said decimating FIR filter comprising no more than two row buffers for each of the pixel components, said second plurality being equal to said first plurality times said upscaling and downscaling factors,

wherein repetitive operation of said set of said upscaling interpolator and said decimating FIR filter will provide an output of the second plurality of pixels that forms the image.

5,574,573

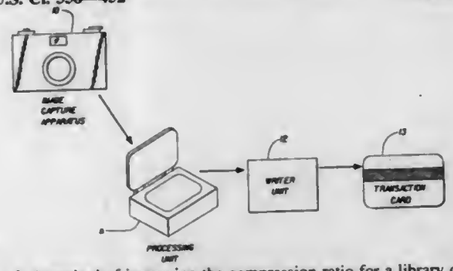
COMPRESSION METHOD FOR A STANDARDIZED IMAGE LIBRARY

Lawrence A. Ray, and Richard N. Ellson, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 29, 1993, Ser. No. 145,284

Int. Cl.[6] H04N *1/387;1/00;7/18;* **G06K** *9/00*

U.S. Cl. 358—452 **7 Claims**



2. A method of increasing the compression ratio for a library of facial images, the method comprising the steps of:

automatically standardizing spatial features and characteristics and identifying regions of increased informational significance of the images; and

automatically compressing each image and providing an increased data density in each compressed image responsive to the standardizing and identifying;

wherein said standardizing step includes the steps of:

selecting image features in an order of importance;

providing set of images from said library which enhances the selected features;

determining image feature constraints for said selected features;

automatically processing said image to meet said image feature constraints, wherein said image feature constraints comprising compression and image quality requirements; and

positioning eyes and facial orientation in each image in a standard locational configuration; and

wherein said providing step includes the step of:

providing compressed data in a region of a face having a higher compression ratio than non-facial regions.

5,574,574

METHOD OF DISPLAYING THE SAME INFORMATION ON A PLURALITY OF IMAGE DISPLAY APPARATUSES

Koichi Kawamura, Kunitachi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 894,583, Jun. 5, 1992, abandoned. This application May 9, 1995, Ser. No. 437,633

Claims priority, application Japan, Jul. 11, 1991, 3-171288

Int. Cl.[6] H04Q *11/04;* **H04N** *1/00;* **G09G** *3/00*

U.S. Cl. 358—468 **8 Claims**

1. A method of displaying the same information on a plurality of display apparatuses, said method comprising the steps of:

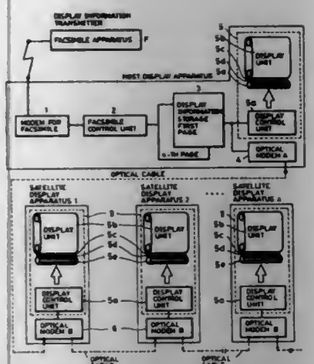
connecting a first display apparatus, which is provided with a facsimile communication function, to a second display apparatus not provided with a facsimile communication function and using a line of a type different from a communication line for facsimile reception;

receiving, by said first display apparatus, information via a communication line for facsimile reception;

displaying on said first display apparatus the information received in said receiving step;

automatically transmitting said received information to said second display apparatus from said first display apparatus via said different-type line; and

displaying the same information as the information displayed in the displaying step on said second display apparatus substantially simultaneously with the display on said first display apparatus.



5,574,575

FACSIMILE MACHINE

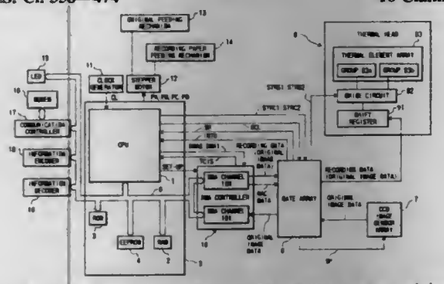
Tokunori Kato, Ichinomiya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 17, 1993, Ser. No. 77,395

Claims priority, application Japan, Jun. 18, 1992, 4-186256

Int. Cl.[6] H04N *1/04*

U.S. Cl. 358—474 **16 Claims**



1. An image recording apparatus for reading out an original image on an original and reproducing the original image on image receiving medium, said image recording apparatus comprising:

means for synchronously feeding an original bearing an original image and image receiving medium for receiving an image, the original image having successive original image sections;

means for reading out each of the successive original image sections and for producing a set of original image data representative of the each original image section, said reading means cooperating with said feeding means so as to read out the successive original image sections one by one, to thereby produce successive sets of original image data representative of the successive original image sections one by one;

means for transferring one by one the successive sets of original image data from said reading means;

a shift register for receiving one by one the successive sets of original image data transferred by said transferring means;

means for recording an image section on the image receiving medium in accordance with each of the successive sets of original image data received by said shift register, said recording means cooperating with said feeding means so as to record successive image sections on the image receiving medium in accordance with the successive sets of original image data successively received by said shift register;

means for controlling said transferring means so that said recording means may complete recording an image section in accordance with a set of original image data which is received by said shift register and which represents each of the successive original image sections before said transferring means transfers to said shift register a next set of original image data representative of a next original image section which is positioned next to the each original image section and which is read out by said reading means subsequent to the each original image section; and

means for temporarily storing each of the successive sets of original image data produced for each of the successive original image sections, wherein said transfer controlling means includes:

means for judging whether said recording means completes recording the image section in accordance with the set of original image data representative of the each original image section;

means for controlling said transferring means to start transferring the next set of original image data representative of the next original image section after when said judging means determines that said recording means completes recording the image section in accordance with the set of original image data representative of the each original image section, said reading means outputs each of the successive sets of original image data to said image data storing means and said transferring means transfers each of the successive sets of original image data from said temporary image data storing means to said shift register, and said transferring means includes first means for transferring each of the successive sets of original image data from said image data storing means to said shift register with a direct memory access transfer manner.

5,574,576

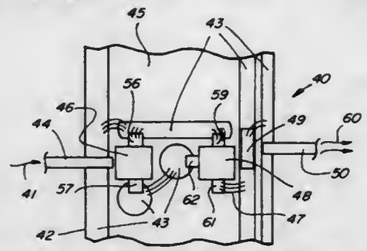
COHERENT LIGHT DRIVEN DISPLAY DEVICE

Danny W. Martin, 3704 Calle Castano N.E., Albuquerque, N.M.

Filed May 21, 1993, Ser. No. 65,855

Int. Cl.[6] H04N *1/195;* **G09B** *21/00;* **H04B** *3/36;10/12;10/16*

U.S. Cl. 358—484 **13 Claims**



6. A display device having a plurality of distinct display areas in optical communication with respective ones of a plurality of coherent laser light generating means so that coherent laser light signals output from the generating means produce recognizable movement of the corresponding respective distinct display areas, each coherent laser light generating means associated with a respective light controlled circuit such that each coherent laser light generating means is energized in response to non-coherent light impinging on at least a portion of the corresponding circuit.

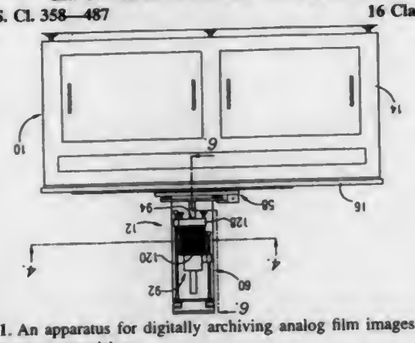
12. A device for producing highly amplified coherent laser light signals corresponding to portions of a visual image including an image sensor having a plurality of optical fibers, one end of each fiber being positioned to view a portion of a scene to be viewed such that each fiber end receives non-coherent light from a distinct portion of the scene, a plurality of optical amplifying means, each optical amplifying means in communication with the opposite end of one respective optical fiber and including a photosensitive receptor having an input portion in optical communication with the respective optical fiber and producing an electrical output, and a plurality of coherent laser light generating means, each coherent laser light generating means having an input io communication with the electrical output of one respective amplifying means.

5,574,577

METHOD AND APPARATUS FOR DIGITALLY ARCHIVING ANALOG IMAGES

Joseph H. Wally, Jr., Overland Park, and John G. Voeller, Lenexa, both of Kans., assignors to Black & Veatch Architects, Inc., Kansas City, Mo.

Filed Apr. 11, 1994, Ser. No. 225,656
Int. Cl.[6] H04N *1/00;1/04;9/47;* **G03B** *27/00*
U.S. Cl. 358—487 **16 Claims**



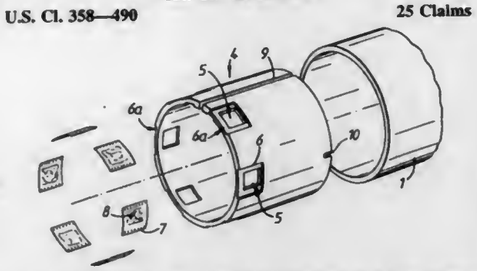
1. An apparatus for digitally archiving analog film images, the apparatus comprising:
a support means for supporting an analog film image within a plane defined by perpendicular X and Y axes;
a carriage supported for movement along the X axis relative to the support means;
an X-axis drive means for moving the carriage in either direction along the X axis;
a digitizing means spaced from the image in a direction defining a Z axis perpendicular to the X and Y axes for sensing a linear analog image and for converting the linear image into digital data representing an area format, the digitizing means being supported on the carriage above the film image with the length of the linear analog image sensed by the digitizing means extending in a direction parallel to the Y axis;
a lighting means mounted on the carriage beneath the support means for transilluminating the film image and projecting the image upward toward the digitizing means;
an objective lens means mounted on the carriage above the support means between the film image and the digitizing means for focusing the projected analog image at the digitizing means; and
first and second Z-axis drive means mounted on the carriage for moving the digitizing means and objective lens means relative to one another and to the film image between a range of enlarging positions in which the objective lens means is closer to the film image than to the digitizing means, and a range of reducing positions in which the objective lens means is further from the film image than from the digitizing means so that the film image may be enlarged, reduced or projected at original size before being sensed and converted into digital data.

5,574,578

METHOD AND APPARATUS FOR HOLDING A FILM TRANSPARENCY IN A ROTARY DRUM SCANNER

Alan R. Dresch, Worcestershire; Stephen C. Smith, and Andrew G. Sokoloff, both of Gloucestershire, all of United Kingdom, assignors to I.C.G. Ltd., Cheltenham, United Kingdom

Filed Mar. 7, 1994, Ser. No. 206,819
Claims priority, application United Kingdom, Mar. 10, 1993, 9304851; Aug. 11, 1993, 9316683; Aug. 20, 1993, 9317358
Int. Cl.[6] H04N *1/08*
U.S. Cl. 358—490 **25 Claims**



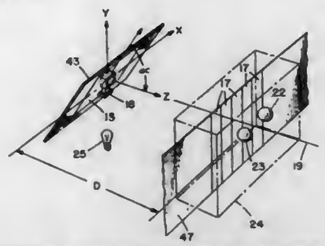
1. A method of holding a film transparency in a rotary drum scanner comprising:
providing a rotary drum scanner having a transparent cylindrical drum and means for rotating said drum about its longitudinal axis, said drum having an inside and an outside surface;
providing a film transparency having an image portion and an emulsion-containing side thereon;
rotating said drum about its axis while holding the film transparency including the image portion thereof with its emulsion side in contact with the inside surface of said drum solely by the centrifugal force exerted thereon, as said drum is rotated.

5,574,579

HEADS-UP AND HEADS-DOWN DISPLAYS EMPLOYING HOLOGRAPHIC STEREOGRAMS

William J. Molteni, Waltham, Mass., and William J. Volchok, Barcelona, Spain, assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 195,322, Feb. 14, 1994, Pat. No. 5,473,477. This application Jun. 7, 1995, Ser. No. 478,513
Int. Cl.[6] G03H *1/26*
U.S. Cl. 359—23 **10 Claims**



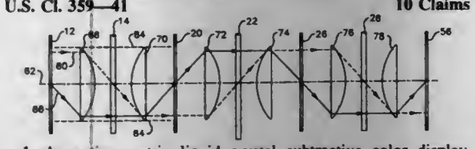
1. A holographic stereogram which produces an image which is perceived by a user along a line of sight, said holographic stereogram comprising a recording medium which defines a plane disposed non-orthogonally to the line of sight and which contains a diffraction pattern which upon illumination produces a set of two-dimensional perspective views and a set of viewing slits, one viewing slit for each of the two-dimensional perspective views, said viewing slits being located in the vicinity of the user's eyes such that an image formed by the viewing slits is substantially orthogonal to the line of sight.

5,574,580

LCD WITH INTEGRAL LIGHT CONFINEMENT HAVING A PAIR OF AFOCAL LENSLETS POSITIONED BETWEEN LIQUID CRYSTAL CELLS AND COLOR POLARIZERS

David A. Ansley, Sterling, Va., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 130,608, Oct. 1, 1993, abandoned. This application Dec. 12, 1995, Ser. No. 570,807
Int. Cl.[6] G02F *1/1335;1/1347*
U.S. Cl. 359—41 **10 Claims**



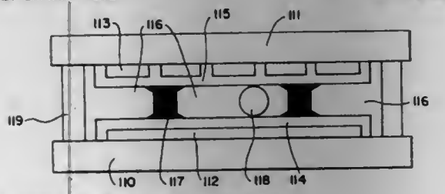
1. An active matrix liquid crystal subtractive color display, comprising:
a light source,
a linear polarizer positioned to linearly polarize light from said light source,
at least three color polarizers positioned successively in a path of polarized light from said linear polarizer,
at least three active matrix liquid crystal cells positioned respectively between said linear polarizer and the first of said color polarizers in said light path, and between each pair of successive color polarizers, said liquid crystal cells being organized into aligned arrays of independently programmable pixels for rotating the polarization of incident light by programmed amounts, said pixels occupying predetermined areas, and
respective optical confiners positioned between each pair of successive liquid crystal cells, said linear and color polarizers and said liquid crystal cells being aligned along an optical axis, each of said optical confiners comprising a respective pair of afocal lenslets, the lenslets of each pair having substantially equal focal lengths and being positioned substantially one focal length from the nearest color polarizer and the nearest liquid crystal cell, said lenslets collectively substantially confining the transmission of light between said cells to pixel projections which do not exceed the areas of said cell pixels so that a collimated beam incident on said linear polarizer along said optical axis emerges as a telecentric collimated beam from the last of said liquid crystal cells in said light patch.

5,574,581

LCD HAVING HYDROPHOBIC RESIN OR URETHANE OLIGOMER COLUMNAR SPACERS OR HAVING ORIENTATION FILM SURFACE TENSION > COLUMNAR SPACER SURFACE TENSION

Michio Shimizu, Chiba; Takeshi Nishi, and Toshimitsu Konuma, both of Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Division of Ser. No. 245,045, May 17, 1994. This application Jun. 7, 1995, Ser. No. 473,952
Claims priority, application Japan, May 27, 1993, 5-148543; May 18, 1993, 5-139395; May 18, 1993, 5-139397
Int. Cl.[6] G02F *1/1333;1/1337;1/339*
U.S. Cl. 359—052 **41 Claims**



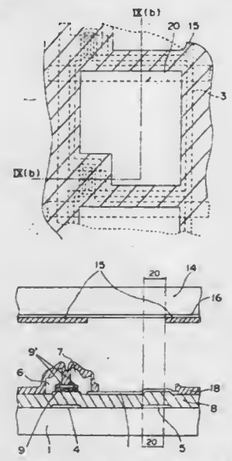
1. An electro-optical device comprising:
a pair of substrates;
an electro-optical modulating layer provided between the substrates and comprising a liquid crystal material, said liquid crystal material comprising a molecule oriented substantially parallel to the substrates; and
a plurality of columnar spacers extending between the substrates and comprising a resin containing a hydrophobic material,
wherein said substrates comprise a different material from said columnar spacers.

5,574,582

ACTIVE MATRIX LIQUID CRYSTAL DISPLAY PANEL WITH SCANNING ELECTRODES ACTING AS CAPACITOR ELECTRODE AND BLACK MATRIX

Mamoru Takeda, Hirakata, and Kobayashi Ikunori, Sakai, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd, Osaka, Japan

Division of Ser. No. 44,001, Apr. 8, 1993. This application May 18, 1995, Ser. No. 443,663
Claims priority, application Japan, Apr. 10, 1992, 4-90506
Int. Cl.[6] G02F *1/136;1/1343*
U.S. Cl. 359—59 **1 Claim**



1. A liquid crystal display panel comprising a base substrate, a confronting substrate and liquid crystal filled between the base substrate and the confronting substrate;
said base substrate comprising (a) a plurality of elongate signal electrodes extending parallel to each other, (b) a plurality of non-transparent and elongate scanning electrodes extending parallel to each other and orthogonal to said signal electrodes to define a plurality of rectangular pixel areas, each pixel area enclosed by neighboring first and second signal electrodes and neighboring first and second scanning electrodes, said elongate first scanning electrode having a first side edge facing said elongate second scanning electrode and a second side edge opposite said first side edge, (c) a transparent pixel electrode provided in each pixel area and extending beyond said first and second side edges of said first scanning electrode so as to completely overlap said first scanning electrode and so as to form an auxiliary capacitance between said pixel electrode and said first scanning electrode, and (d) a switching transistor provided between said first signal electrode and said pixel electrode;
said confronting substrate comprising a black matrix formed of a non-transparent layer having a matrix pattern of transparent window openings therein, each of said transparent window openings being positioned over a respective one of said pixel electrodes and having a first side edge positioned between said first and second side edges of said first scanning electrode so as to partially overlap said first scanning electrode;

wherein a light transmittance region through each pixel area is defined between said first side edge of said first scanning electrode and a second side edge of each transparent window opening which is opposite said first side edge of each transparent window opening.

5,574,583

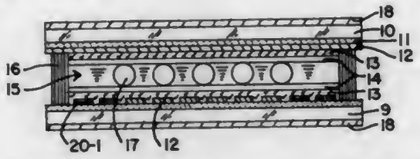
LIQUID CRYSTAL DISPLAY DEVICE HAVING A COMPENSATION LAYER AND METHOD FOR FABRICATING THE SAME

Jae B. Kim, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics, Kyoungki-do, Rep. of Korea

Continuation of Ser. No. 284,137, Aug. 2, 1994, abandoned. This application Feb. 29, 1996, Ser. No. 608,955

Int. Cl.[6] G02F *1/1333*

U.S. Cl. 359—74 **1 Claim**



1. A method for fabricating a liquid crystal display device, comprising the steps of:

preparing a pair of spaced glass plates , forming an oxide film, a transparent electrode film, a top coating film and an orientation film, in this order, over each of the glass plates,

sealing the resulting structure, and

filling a liquid crystal in a space defined between the glass plates,

forming at least one compensation layer at a region other than a display region where the transparent electrode films are overlapped with each other ,

said compensation layer formed by the steps of:

transferring an SiO_2 based material on the region by use of an offset roll coating process,

drying the transferred layer at a temperature of 80° to 120° C. for several minutes,

exposing the died layer to an infrared ray zone maintained at a temperature of 140°±20°and then to an ultraviolet ray zone maintained with an ultraviolet energy of at least 500 mJ/cm^2 by an ultraviolet lamp,

then heat treating the resulting layer in a baking furnace maintained at a temperature of 200°to 400° C.

5,574,584

WAVELENGTH DIVISION MULTIPLEXING PASSIVE OPTICAL NETWORK WITH BI-DIRECTIONAL OPTICAL SPECTRAL SLICING

Thomas E. Darcie; Nicholas J. Frigo, both of Monmouth, and Patrick P. Iannone, Middlesex, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 326,576, Oct. 20, 1994, abandoned. This application Mar. 22, 1996, Ser. No. 595,816

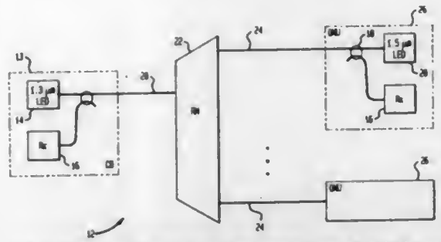
Int. Cl.[6] H04J *14/02*

U.S. Cl. 359—125 **19 Claims**

1. A passive optical network utilizing bi-directional optical spectral slicing, comprising:

a) a central office for transmitting/receiving optical information;

b) a remote node including a plurality of input/output ports, said remote node being optically linked to said central office for routing said optical information by wavelength band to and from each of said input/output ports utilizing bi-directional optical spectral slicing, the bi-directional optical spectral slicing providing each of said input/output ports with multiple optical wavelength bands, the remote node having a periodicity property for transmitting substantially equal optical power to each of the input/output ports; and



c) at least one optical network unit optically linked to a corresponding input/output port of said remote node, said optical network unit transmitting/receiving said optical information, wherein said central office transmits optical information as downstream data signals to said remote node, and said remote node optically routes said downstream data signals through the input/output ports and to the corresponding optical network units, each optical network unit receiving multiple wavelength bands, and wherein each said optical network unit transmits optical information as upstream data signals to said remote node, the optical information from each optical network unit being optically routed through the corresponding input/output port according to wavelength bands and combined to prevent spectral overlap of said upstream data signals, the combined upstream data signals being routed to said central office.

5,574,585

TRANSMISSION METHOD AND APPARATUS FOR AN INFRARED REMOTE CONTROL SYSTEM

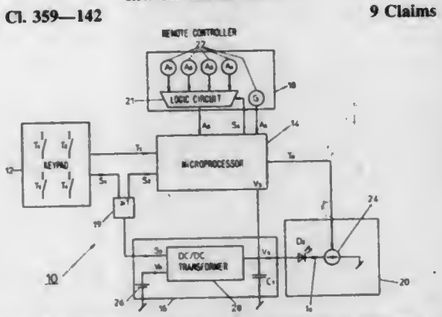
Markus Thaler, Hirzel; Urs Jost, Altendorf; Stefan Sigrist, and Peter Schmid, both of Horgen, all of Switzerland, assignors to Feller AG, Horgen, Switzerland

Continuation of Ser. No. 961,681, Jan. 19, 1993, abandoned. This application Jun. 28, 1995, Ser. No. 588,583

Claims priority, application Switzerland, May 30, 1991, 1597/91; May 30, 1991, 1599/91; May 30, 1991, 1600/91

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—142 **9 Claims**



4. A data transmission system for transmission between an infrared transmitter and an infrared receiver, said transmission comprising:

a keypad for generating, by long and short key depressions, respective repeat and release signals;

means for transmitting said repeat and release signals and including means for modulating said repeat and release signals by a burst-pause modulating technique;

means for generating a separate shift signal and terminating the transmission of said repeat signals upon the release of said key;

power storage means for providing the power and required voltage revel for said means for transmitting;

means for charging said power storage means during pauses in the transmission of said repeat and release signals; and

means for selecting the number of burst periods per burst packet having the duration TB and the burst intervals TAO, TA1 to TAN for charging said power storage means during said duration TB.

5,574,586

SIMULTANEOUS OPTICAL COMPRESSION AND DECOMPRESSION APPARATUS

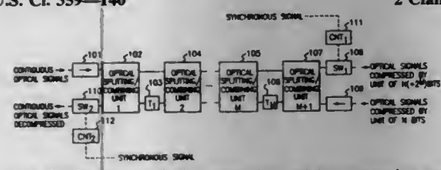
Kwang Uk Chu; Byeong H. Kim; Seo Y. Shiu; Ki H. Kim, and Yong h. Won, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, DPR of Korea, and Korea Telecommunication Authority, Seoul, DPR of Korea

Filed Nov. 23, 1994, Ser. No. 346,919

Claims priority, application Rep. of Korea, Dec. 3, 1993, 1993-26431

Int. Cl.[6] H04J *14/08;* **H04B** *10/00*

U.S. Cl. 359—140 **2 Claims**



1. A simultaneous optical compression and decompression apparatus comprising:

M+1 2×2 optical splitting/combining means enabling simultaneous splitting and combining of optical signals in opposite directions, the M+1 2×2 optical splitting/combining means having input and output terminals and being multi-stage connected to each other at the input and output terminals thereof in a cascade manner;

lines respectively connecting inputs and outputs of adjacent ones of the M+1 2×2 optical splitting/combining means;

M delay means each disposed on one of the lines respectively connecting the input and output terminals of adjacent ones of the M+1 2×2 optical splitting/combining means and adapted to delay a signal on said one of the lines;

first optical isolation means adapted to input contiguous optical signals of N ($N= 2^M$) bits at one of the terminals of a first one of the M+ 1 2×2 optical splitting/combining means in one direction;

first optical switching means adapted to switch contiguous optical signals reversely compressed and output from the first 2×2 optical splitting/combining means in response to a first control signal applied thereto;

first control means adapted to receive a synchronous signal from an external source and apply the first control signal to the first optical switching means in response to the synchronous signal;

second optical isolation means adapted to input compressed contiguous optical signals of N bits at one of the terminals of an M+1-th one of the M+1 2×2 optical splitting/combining means in one direction;

second optical switching means adapted to switch compressed contiguous optical signals of N bits output from the M+1-th 2×2 optical splitting/combining means in response to a second control signal applied thereto; and

second control means adapted to receive a synchronous signal from an external source and apply the second control signal to the second optical switching means in response to the synchronous signal.

5,574,587

PROCESS FOR INCREASING THE INTERFERENCE SUPPRESSION

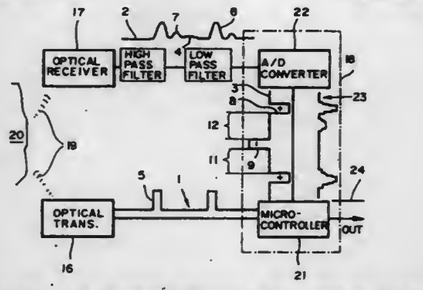
Dieter Krökel, Lindau, and Andreas Schiff, Eriskirch, both of Germany, assignors to i f m electronic GmbH, Germany

Filed Aug. 1, 1994, Ser. No. 283,854

Claims priority, application Germany, Aug. 2, 1993, 43 25 861.1; Sep. 7, 1993, 43 30 223.8

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—153 **20 Claims**



19. A device for increasing interference suppression in optical proximity switches comprising an optical transmitter for emitting an optical pulse train, an optical receiver for emitting a measuring signal comprised of a superposition of a constantly emitted interference background and a measuring pulse emitted when receiving an optical pulse, and a control and evaluation unit for controlling said optical transmitter and for evaluating the measuring signal in a signal interval during a measuring pulse and in at least one background interval outside of the measuring pulse with an interruption of the evaluation with gaps between the signal intervals and the background intervals; wherein the control and evaluation unit comprises a microcontroller connected with the optical receiver via an analog/digital converter.

5,574,588

PHASE LOCK LOOP CIRCUIT USING OPTICAL CORRELATION DETECTION

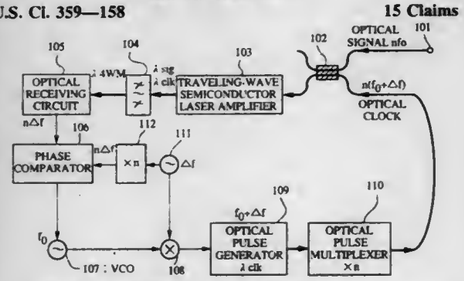
Satoki Kawanishi, Zushi; Osamu Kamatani, Sagamihara, and Masatoshi Saruwatari, Yokosuka, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Feb. 16, 1995, Ser. No. 389,486

Claims priority, application Japan, Feb. 23, 1994, 6-025750; Feb. 23, 1994, 6-025751

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—158 **15 Claims**



1. Optical clock phase lock loop comprising:

first oscillating means in which an oscillation frequency and phase vary according to exterior control;

second oscillating means for outputting an a.c. signal;

frequency mixing means for generating, by means of mixing an output signal of said first oscillating means and an output signal of said second oscillating means, a signal of a frequency corresponding to a sum, difference, or sum and difference of frequencies of said output signals;

optical pulse generating means for generating an optical pulse of a repetition frequency equal to the frequency of an output signal of said frequency mixing means;

optical multiplexing means for conducting optical time-division-multiplexing of said optical pulse, and for multiplying said repetition frequency by n, n being a natural number;

optical correlation detecting means for outputting the product of light intensities of an optical signal pulse and an optical clock pulse outputted from said optical multiplexing means;

optical receiving means for converting an optical output of said optical correlation detecting means into an electrical signal; and

means for controlling the phase of said first oscillating means by comparing the phase of said electrical signal outputted from said optical receiving means and the phase of said signal produced by multiplying the repetition frequency by n, such that said phase difference of said signals results in a predetermined value;

wherein, said optical correlation detecting means is formed from a optical combining means for combining said optical signal pulse and said optical clock pulse; traveling-wave semiconductor laser amplifying means for amplifying a signal produced by said combination; and optical splitting means for extracting from an optical output signal of said traveling-wave semiconductor laser amplifying means only the wavelength of said optical output signal which is a correlation component of said optical signal pulse and said optical clock pulse;

said oscillation frequency of said first oscillating means is set to 1/n of the bit rate of said optical signal pulse, and said wavelengths of said optical signal and optical output of said optical pulse generating means are set to values such that said signals coherently interfere with each other.

5,574,589

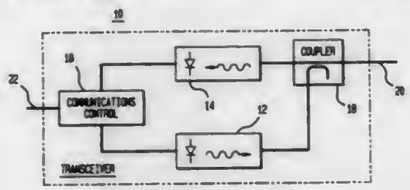
SELF-AMPLIFIED NETWORKS

Mark D. Feuer, Colts Neck, and Thomas H. Wood, Holmdel, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 9, 1995, Ser. No. 370,141

Int. Cl.[6] H04B *10/00;* **H01S** *03/00*

U.S. Cl. 359—160 **35 Claims**



1. An optical communication network comprising:

at least three transceivers connected in a star configuration;

a gain region for operatively coupling at least two of said at least three transceivers, at least one of said at least three transceivers having:

a light source for generating a light beam which serves as a signal light and a pump light;

a communications control module for controlling the generation of the signal light and the pump light; and

a detector for detecting an incoming light; and

said gain region being responsive to said pump light for optically amplifying the signal light.

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OPTICAL AMPLIFYING TRANSMITTING SYSTEM

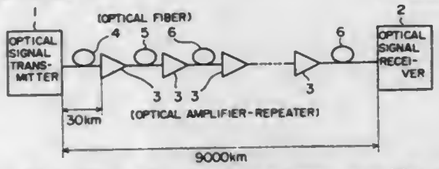
Noboru Edagawa, Tokyo-to; Masatoshi Suzuki, Kawajima-machi; Hidenori Taga, Sakado; Itsuro Morita, Ichigayata-machi; Shu Yamamoto, Shiki, and Shigeyuki Akiba, Tokyo-to, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1995, Ser. No. 521,838

Claims priority, application Japan, Sep. 12, 1994, 6-242406

Int. Cl.[6] H04B *10/16;10/12*

U.S. Cl. 359—179 **10 Claims**



1. An optical amplifying transmission system, comprising: an optical fiber for transmitting a lightwave signal with digital information located on return to-zero lightwave pulses and a plurality of optical amplifying repeaters disposed on said optical fiber,

said optical fiber having an average zero dispersion wavelength shorter than the wavelength of said light signal over the entire length thereof;

sections of said optical fiber divided by said optical amplifier repeaters being composed of first sections of said optical fiber, wherein an average zero dispersion wavelength in each of said first sections of said optical fiber is shorter than the wavelength of said lightwave signal, and second sections of said optical fiber, wherein an average zero dispersion wavelength on each of said second sections of said optical fiber is longer than the wavelength of said lightwave signal and the absolute value of an average wavelength dispersion value of said optical fiber is larger than one-half the absolute value of an average wavelength dispersion value over the entire length of said optical fiber; and

the entire length of said second sections of said optical fiber is in the range of one-third to two-thirds of the entire length of said optical fiber.

5,574,591

POLYGON SCANNER AND PRODUCTION PROCESS THEREOF

Mitsuo Suzuki, Tokyo; Yukio Itami, Yokohama; Yoshio Hashimoto, Tokyo; Koji Tsukahara, Sagamihara; Yoshihiro Takahashi, Natori, and Takao Abe, Shibata-machi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, and Tohoku Ricoh Co., Ltd., Miyagi-ken, both of Japan

Division of Ser. No. 35,791, Mar. 23, 1993. This application Feb. 6, 1995, Ser. No. 383,929

Claims priority, application Japan, Mar. 26, 1992, 4-067695

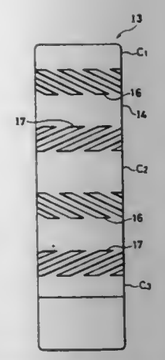
Int. Cl.[6] G02B *26/08*

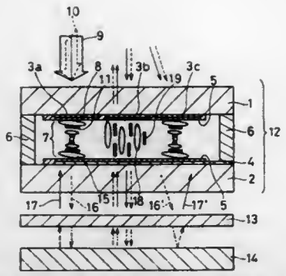
U.S. Cl. 359—200 **1 Claim**

1. A process for producing a polygon scanner in which a rotating shaft is supported through a dynamic pressure air bearing on a fixed shaft and in which a polygon mirror and a rotor magnet assembly are mounted on said rotating shaft, wherein each of said fixed shaft, said rotating shaft and said polygon mirror is made of an aluminum alloy to match in coefficient of thermal expansion, and wherein an anodic oxide film is formed on each of surfaces of said fixed shaft and said rotating shaft opposite to each other, the process comprising the steps of:

making a masking on a predetermined portion of a fixed shaft contacting with a rotating shaft, prior to an anodic oxidation treatment to form an anodic oxide film; and

performing said anodic oxidation treatment, whereby, during said treatment, forming an anodic oxide film and a pattern of recesses and protrusions for dynamic pressure generation corresponding to a pattern of said masking, which are constituent elements of a dynamic pressure air bearing.





radiated back to said retardation film, retardation of said retardation film is determined such that relative retardation of said polarized light shifts at 180°, and a principal refraction index n_z in the thickness direction z of said retardation film is determined to be a value obtained in the middle of two principal refraction indexes x and y inside the plane.

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ROTATABLE POLYGON MIRROR

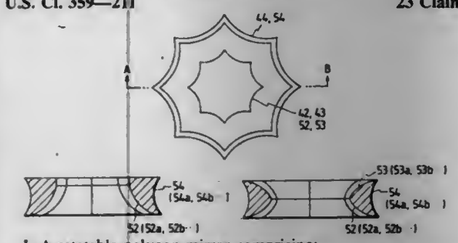
Yasukazu Sano; Nobuhiko Tsuji; Tetsuya Saito; Tomio Shimizu, and Naoki Kaiho, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 125,850, Sep. 24, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 464,462

Claims priority, application Japan, Dec. 24, 1992, 4-342956

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—211 **23 Claims**



1. A rotatable polygon mirror comprising:

a regular polygonal cylinder of transparent material having a plurality of outer side surfaces and corresponding inner side surfaces, said outer side surfaces being curved and symmetrical to one another relative to a rotational axis,

said inner side surfaces being shaped to form total internal reflective surfaces, said inner side surfaces being curved in an axial direction.

5,574,593

LIQUID CRYSTAL DISPLAY ELEMENT AND LAMINATED RETARDATION FILM APPLIED THERETO

Naohide Wakita, Osaka, and Hisanori Yamaguchi, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 12, 1995, Ser. No. 440,129

Claims priority, application Japan, May 18, 1994, 6-103837

Int. Cl.[6] G02F *1/03;1/137*

U.S. Cl. 359—259 **11 Claims**

1. A liquid crystal display element comprising at least one liquid crystal layer comprised of guest host liquid crystals sandwiched between electrodes facing each other via an alignment film, a retardation film disposed under said liquid crystal layer, and a reflection plate disposed under said retardation film, wherein at the time polarized light passing through said liquid crystal layer enters said retardation film and is reflected by said reflection plate and is

5,574,594

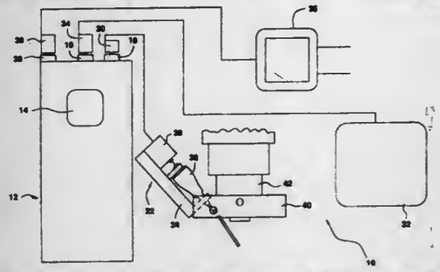
AUTOMATED MICROSCOPE SLIDE MARKING DEVICE

Whitson Fowler, Halesite; Merrill Brenner, Baldwin, and Melina Vratny, Lake Ronkonkoma, all of N.Y., assignors to Nikon Inc., Melville, N.Y.

Filed Nov. 5, 1993, Ser. No. 147,990

Int. Cl.[6] G02B *21/26;21/00;* **G01D** *15/16*

U.S. Cl. 359—391 **22 Claims**



1. An automated microscope slide marking device for making reference marks on a surface of a microscope slide, said device comprising:

an electronic marker assembly having a support upon which an electrical actuator and a needle marker cartridge are secured, said needle marker cartridge being comprised of an ink well with a needle-like tube extending from one end and a coupling member on the other end, said coupling member being connected to a fiber that passes through said ink well and along said needle-like tube, said coupling member and said fiber being movable along a longitudinal axis of said needle marker cartridge, said electrical actuator having a solenoid coil formed around an operative pin member which is connected to said coupling member, such that said pin member forces said fiber to protrude from said needle-like tube with ink from said ink well adhering thereto when said solenoid coil is energized;

means for mounting said electronic marker assembly onto a microscope objective, said microscope objective including a barrel as part thereof, said mounting means comprising an adapter, said adapter comprising

a sleeve member adapted to releasably engage the microscope objective barrel, and

a marker assembly support means associated with said sleeve member, said marker assembly support means comprising

paired receiving arms extending substantially radially outward from said sleeve member to receive at least a portion of said electronic marker assembly therebetween, each of said arms defining juxtaposed receiving surfaces, each of said juxta-

VOL 1192 ISS 2 NO 12 1996 UMI

posed receiving surfaces defining along at least a portion thereof a carved out region for fitting said ink well snugly within said adapter, and

an angled surface extending substantially radially outward from said sleeve member and disposed between said arms adapted to engage said portion of said electronic marker assembly,

wherein an angled hole is defined through said angled surface to allow a portion of said electronic marker assembly to extend therethrough, and wherein said receiving surfaces and said angled surface cooperate to define a cradle-like platform for said electronic marker assembly; and

electronic control means for energizing said solenoid coil when the surface of said microscope slide is desired to be marked.

5,574,595

OPTICAL ISOLATOR

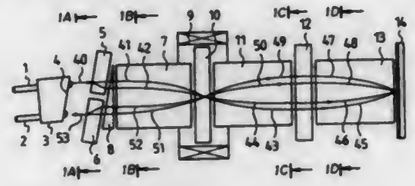
Noboru Kurata, Ikoma; Masaaki Tojo, Nara-ken, and Hironori Souda, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 4, 1994, Ser. No. 205,431

Claims priority, application Japan, Mar. 10, 1993, 5-048837

Int. Cl.[6] G02B *27/28*

U.S. Cl. 359—484 **32 Claims**



1. An optical isolator comprising:

first polarizing means for splitting a first input optical signal entering in a transmitting direction into first and second polarized optical signals having first and second planes of polarization, respectively, the first plane of polarization being oriented in a first polarization direction, the second plane of polarization being oriented in a second polarization direction perpendicular to the first polarization direction, the second polarized optical signal having the second plane of polarization being shifted from the first polarized optical signal by a first spatial distance in a first angular direction, sad first polarization means further splitting a second input optical signal entering in an isolation direction into third and fourth polarized optical signals having the first and second planes of polarization, respectively, the third polarized optical signal having the first plane of polarization being shifted from the fourth polarized optical signal having the second plane of polarization by the first spatial distance in a second angular direction;

a first lens designed to converge the first, second, third, and fourth polarized optical signals projected from said first polarizing means;

a magnetooptic member functioning to rotate the first and second planes of polarization of the first, second, third, and fourth polarized optical signals projected from said first lens through a predetermined angle to orient the first and second planes of polarization in third and fourth polarization directions to provide third and fourth planes of polarization, respectively;

a second lens designed to orient the first, second, third, and fourth polarized optical signals from said magnetooptic member so as to separate the second and third polarized optical signals from the first and fourth polarized optical signals by the first spatial distance;

a second polarizing means for shifting the second polarized optical signal having the fourth plane of polarizaion by a second spatial distance in a third angular direction to align the first and second optical signals on a preselected optical path with a third spatial distance, said second polarizing means also shifting the fourth polarized optical signal having the fourth plane of polarization by the second spatial distance in the third angular direction to shift the third and fourth optical signals out of the preselected optical path; and

reflecting means for reflecting the first, second, third, and fourth polarized optical signals projecting from said second polarizing means back thereinto.

5,574,596

OPTICAL CIRCULATOR

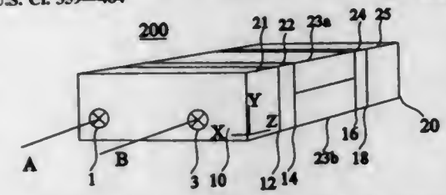
Yihao Cheng, Kanata, Canada, assignor to JDS Fitel Inc., Nepean, Canada

Filed May 16, 1995, Ser. No. 442,368

Claims priority, application Canada, May 1, 1995, 2148317

Int. Cl.[6] G02B *5/30*

U.S. Cl. 359—484 **12 Claims**



1. An optical circulator for transmitting lights from incoming and outgoing ports circularly, comprising:

a first dividing and combining means for dividing a beam into two beams of orthogonal electric field vectors and for combining two beams from different paths into one on the same path;

a pair of beam path determining means adjacently coupled for introducing a beam to a different direction depending on the direction of the electric field vector and the propagation, each means in said pair being substantially identical but oppositely oriented, such that the pair of means have opposite beam shifting directions;

a second dividing and combining means for dividing a beam into two beams of orthogonal electric field vectors and for combining two beams of orthogonal electric field vectors from different paths into one on the same path, said first dividing and combining means, said beam path determining means and said second dividing and combining means being optically coupled to allow light to propagate from the first dividing and combining means to the beam path determining means and to the second dividing and combining means;

a first polarization rotation means between said first dividing and combining means and said beam path determining means for rotating two orthogonal polarization vectors in a same direction and maintaining an orthogonal relationship; and,

a second polarization rotating means between said beam path determining means and said second dividing and combining means for rotating two orthogonal polarization vectors in a same direction to maintain thereby maintaining an orthogonal relationship.

5,574,597

LIGHT SCANNER AND MULTI-BEAM GENERATOR USING THE SAME

Keiji Kataoka, Ibaraki, Japan, assignor to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed May 18, 1993, Ser. No. 62,550

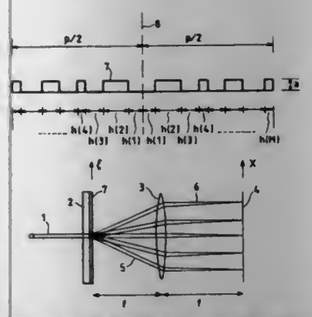
Claims priority, application Japan, May 22, 1992, 4-130313

Int. Cl.[6] G02B *5/18*

U.S. Cl. 359—569 **5 Claims**

1. A multi-beam generator comprising:

a light source; and



a grating device which generates at least three beams of light when a beam of light from said light source is irradiated onto said grating device, said grating device comprising:

a substrate; and

a grating formed on said substrate, said grating comprising a cyclically repeated reference phase pattern comprising a plurality of rectangular regions arranged in a direction along a surface of said substrate, said grating having only two phase levels having optimized phase difference to generate said at least three beams of light;

wherein said cyclically repeated reference phase pattern comprises four rectangular regions with two of said rectangular regions, having unequal widths, symmetrically arranged on each side of a center line, each of said four rectangular regions has a width corresponding to one of two parameters h(1) and h(2), h(1) satisfying the following relationship:

$$0.126<h(1)/p<0.374,$$

wherein p=a pitch of said reference phase pattern, and wherein an absolute value of a total phase difference, represented as a, introduced by a difference between said two phase levels, satisfies the following relationship:

$$1.5 \text{ radians}<|a|<2.5 \text{ radians},$$

provided that said difference satisfies the relationship when a value of a is changed by performing one of an addition of multiples of 2π to a, and a subtraction of multiples of 2π from a.

5,574,598

VARIFOCAL LENS

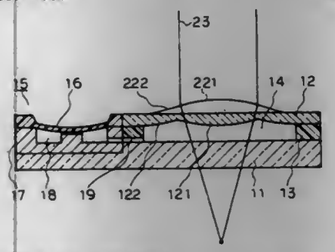
Tukasa Koumura, Toyota; Michio Hisanaga, Nagoya, and Tadashi Hattori, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 5, 1994, Ser. No. 286,560

Claims priority, application Japan, Aug. 5, 1993, 5-194721

Int. Cl.[6] G02B *1/06;3/12;15/14*

U.S. Cl. 359—666 **14 Claims**



1. A varifocal lens comprising:

a first transparent film and a second transparent film, at least one of which is made of an elastic material, said films being constructed and arranged so as to have peripheral portions thereof sealed to one another and central portions thereof spaced from one another so as to define an inner space therebetween;

an operating liquid disposed Within said inner space and having a refractive index equivalent to a common refractive index of said first and said second transparent films; and

a deformation controlling structure constructed and arranged to control the pressure applied to said operating liquid so as to provide an image-forming optical system by deforming said at least one of said transparent films, and

wherein said at least one of said transparent films has a thickness distribution such that the central portion thereof is circular and has a surface defining a spherical plane, such that said peripheral portion thereof has a surface defining a third order curved plane with a radius of curvature differing from that of the central portion, and such that said circular central portion thereof has its thickness increasing as it extends radially inwardly.

5,574,599

ZOOM LENS AND ZOOMING METHOD

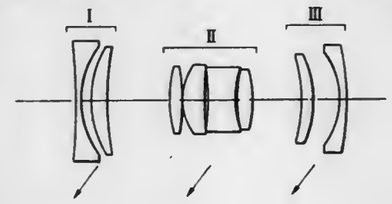
Kouji Hoshi; Yoshinori Itoh, and Akihiro Nishio, all of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1993, Ser. No. 153,024

Claims priority, application Japan, Nov. 18, 1992, 4-333593; Nov. 19, 1992, 4-310281; Apr. 14, 1993, 5-111058

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—689 **35 Claims**



1. A zoom lens comprising:

a front lens unit of negative refractive power;

an intermediate lens unit of positive refractive power; and

a rear lens unit of negative refractive power,

zooming being performed by varying a separation between said front lens unit and said intermediate lens unit and a separation between said intermediate lens unit and said rear lens unit, and said zoom lens satisfying the following conditions:

$$0.5 < |f_1| \sqrt{f_W \cdot f_T} < 0.9$$

$$0.40 < f_2 \sqrt{f_W \cdot f_T} < 0.51$$

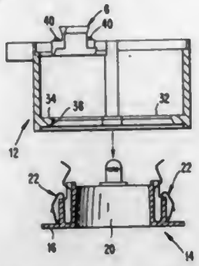
$$0.7 < |f_3| \sqrt{f_W \cdot f_T} < 1.1$$

where f_W is the overall focal length of the entire lens system in a wide-angle end, f_T is the overall focal length of the entire lens system in a telephoto end, f_1 is the focal length of said front lens unit, f_2 is the focal length of said intermediate lens unit, and f_3 is the focal length of said rear lens unit.

5,574,600
LIGHT ASSEMBLY HAVING INTERCONNECTED HOUSING PARTS AND A LENS

James V. Agro, Geneva, Ill., assignor to Cooper Industries, Inc., Houston, Tex.

Filed May 17, 1995, Ser. No. 442,965
Int. Cl.[6] G02B 7/02
U.S. Cl. 359—818 22 Claims



1. A housing for a light assembly, comprising first and second housing parts releasably connected to one another,

said first housing part forming an internal chamber, and including a lamp-mounting device disposed in said chamber; said second housing part including:

a shell removably mounted to said first housing part,

a lens disposed in said shell in alignment with said lamp-mounting device,

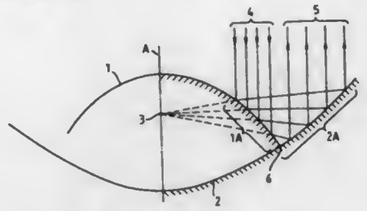
a baffle mounted to said shell and including a wall situated inside said shell to form a light-emitting passage, said wall forming a rim situated within said shell and defining a lens seat on which said lens is seated, and

a plurality of spring clips, each spring clip engaging both said shell and said baffle and applying forces to both said shell and said baffle for securing said baffle to said shell, and each spring clip including a lens-retaining portion for retaining said lens on said lens seat.

5,574,601
OPTICAL BEAM EXPANDER

Peter R. Hall, Hitchin, Great Britain, assignor to British Aerospace Public Limited Company, Farnborough, England

Filed Oct. 14, 1994, Ser. No. 323,258
Claims priority, application United Kingdom, Oct. 16, 1993, 9321408
Int. Cl.[6] G02B 26/08;17/00;5/08;5/10
U.S. Cl. 359—859 15 Claims



2. An optical beam expander comprising:

a first reflective surface of conic profile;

a second reflective surface of conic profile and arranged to be confocal with said first reflective surface; and

a third reflecting surface for adjusting a position of an optical beam of radiation on said first reflective surface, said adjustment thereby varying a magnification of said optical beam expander;

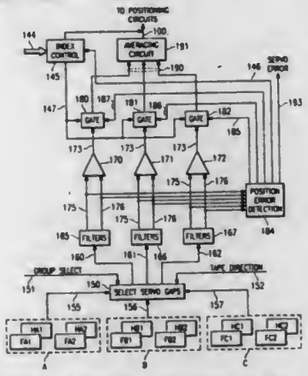
one of said first reflective surface and said second reflective surface being convex and the other of said first reflective surface and said second reflective surface being concave;

at least one of said reflective surface and said second reflective surface being paraboloidal; and said first reflective surface and said second reflective surface being included on a single element.

5,574,602
PROCESSING SERVO SIGNALS CONCURRENTLY READ FROM PLURAL SPACED-APART SERVO AREAS FOR A MAGNETIC TAPE HAVING SERPENTINE DATA TRACK SCANNING

Robert C. Baca; Man F. Cheung; Alex Chliwnyj; Wayne T. Comeaux, and James F. Crossland, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1993, Ser. No. 75,624
Int. Cl.[6] G11B 5/584
U.S. Cl. 360—77.12 13 Claims



1. In a method of relatively positioning first and second relatively movable members including separately processing position error signals from a first predetermined number of spaced apart servo areas, said servo areas being disposed on a first one of a pair of first and second relatively movable members, each of said servo areas having machine-sensible indicia indicating a second predetermined number of reference positions, said first and second predetermined numbers each being greater than unity, each of said reference positions extending in a predetermined spaced-apart relation along a first direction to which said relatively movable members are to be moved, a first predetermined number of sensing means on said second member for respectively sensing said machine-sensible indicia in respective ones of said servo areas on said first member, machine motive means connected to said members for relatively moving said members, including the steps:

selecting a given one of said second predetermined number of said reference positions as a target reference position;

initially relatively moving said members transversely to said first direction for relatively moving said members to said target reference position for disposing a first predetermined number of said sensing means at said target reference position in said servo areas, respectively;

relatively moving said members in said first direction;

while relatively moving said members in said first direction, in said first predetermined number of said sensing means simultaneously separately sensing said indicia in each of said first predetermined number of said servo areas to produce said first predetermined number of sensed position error signals respectively from said second predetermined number of said servo areas for respectively indicating in each of said sensed position error signals a position error of a relative position of said members with respect to said target reference position;

combining all of said first predetermined number of said sensed position error signals to produce an output position error signal that indicates an average position error of all of said first predetermined number of said position errors indicated

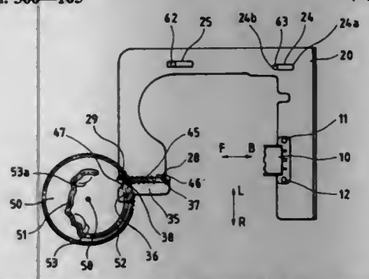
respectively by said first predetermined number of said sensed position error signals; and

applying said output position error signal to said motive means to reposition said members toward said target reference position.

5,574,603
MAGNETIC TAPE RECORDING AND PLAYBACK DEVICE WITH SPRING ACTUATED HEAD PLACEMENT

Takao Morimoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 229,771, Apr. 19, 1994. This application Mar. 23, 1995, Ser. No. 408,844
Claims priority, application Japan, Apr. 20, 1993, 5-093134
Int. Cl.[6] G11B 5/008;5/54
U.S. Cl. 360—105 7 Claims



1. A magnetic tape recording and playback device into which a magnetic tape cassette may be inserted comprising:

a main base;

a head base to which a magnetic recording/playback head is attached, said head base being movable on said main base;

an actuating cam provided on said main base, for effecting movement of said head base, between an engaged position and a disengaged position, relative to said magnetic tape cassette;

a drive plate disposed laterally adjacent to said head base and engaged with said cam, said drive plate being movable in accordance with the rotation of said cam; and

a resilient member engaged with both said drive plate and head base at two points located on the adjacent portions of said drive plate and said head base,

such that when said cam is rotated said drive plate drives said head base in a first direction parallel to the movement direction of said drive plate through said resilient member.

5,574,604
INNER DIAMETER DISK DRIVE HEAD/SLIDER LOAD/UNLOAD DEVICE

Lowell J. Berg; Zine-Eddine Boutaghou, both of Rochester; Thomas S. Larson, Altura; Dallas W. Meyer, Burnsville; Jay M. Mosbrucker, Rochester; Jerry L. Neubauer, Stewartville, and Hal H. Ottesen, Rochester, all of Minn., assignors to International Business Machines Coporation, Armonk, N.Y.

Continuation of Ser. No. 172,366, Dec. 21, 1993, abandoned.
This application Apr. 4, 1995, Ser. No. 416,938
Int. Cl.[6] G11B 5/54;21/22
U.S. Cl. 360—105 3 Claims

1. A disk drive for the storage and retrieval of data comprising:

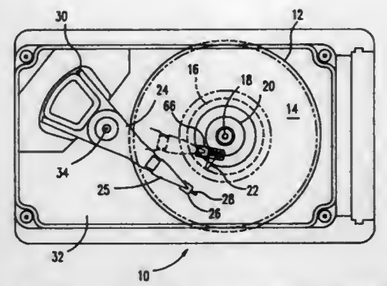
a base plate;

a disk with two sides having a magnetic coating on at least one of said two sides, said disk having an inside edge;

a hub fixedly attached to said disk for supporting said disk;

an electric motor having at least a rotor for rotating said disk and said hub;

said hub, having an axis of rotation, and drivingly engaged with said rotor;



a shaft fixedly supported by said base plate and coaxial with said hub and said disk, said shaft rotatably supporting and extending through said hub;

a magnetic read/write head;

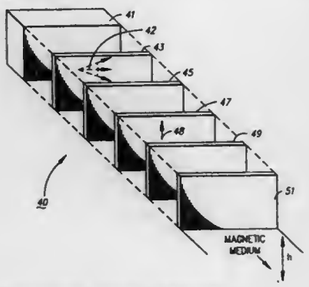
an actuator arm for positioning said magnetic head relative to said disk and moveable to pass said head over said magnetic coating of said disk in a generally radial path relative to said hub;

a load/unload ramp for displacing said head from said magnetic coating of said disk in response to said actuator arm movement of said head toward said axis of rotation of said hub, said load/unload ramp comprising an inclined surface with an included angle between said disk and said inclined surface of less than 20 degrees, said load/unload ramp further including a retaining formation displaced from said disk and engageable with said actuator arm for holding said magnetic head in a position displaced from said disk, said load/unload ramp disposed proximate said axis of rotation, fixedly supported by said shaft, and extending generally radially from said axis of rotation and over said inside edge.

5,574,605
ANTIFERROMAGNETIC EXCHANGE COUPLING IN MAGNETORESISTIVE SPIN VALVE SENSORS

Peter M. Baumgart, San Jose, Calif.; Bernard Dieny, Grenoble Credex, France; Bruce A. Gurney, Santa Clara, Calif.; Virgil S. Speriosu, San Jose, Calif., and Dennis R. Wilhoit, Morgan Hill, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 470,651, Jun. 6, 1995, abandoned, which is a continuation of Ser. No. 263,158, Jun. 20, 1994, abandoned, which is a continuation of Ser. No. 937,620, Aug. 28, 1992, abandoned. This application Nov. 17, 1995, Ser. No. 560,175
Int. Cl.[6] G11B 5/39
U.S. Cl. 360—113 19 Claims



1. A magnetoresistive sensor comprising:

a first and a second layer of ferromagnetic material separated by a spacer layer of nonmagnetic metallic material, said second ferromagnetic layer being of iron, the magnetization direction of said first layer of ferromagnetic material being substantially

perpendicular to the magnetization direction of said second layer of ferromagnetic material at zero applied magnetic field;
a layer of magnetically soft material adjacent to and in contact with said second ferromagnetic layer; and
a layer of antiferromagnetic material adjacent to and in contact with said layer of magnetically soft material, said antiferromagnetic layer separated from said second ferromagnetic layer by said magnetically soft layer, said magnetically soft layer and said second ferromagnetic layer forming a bilayer in direct contact with said antiferromagnetic layer, said antiferromagnetic layer for providing a bias field in said bilayer thereby fixing the direction of the magnetization in said bilayer.

5,574,606

MAGNETIC HEAD HAVING DUST HANDLING TAPE SLIDE SURFACE

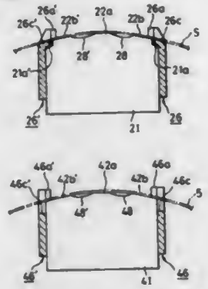
Takeshi Kimura, Chichibu, Japan, assignor to Canon Denshi Kabushiki Kaisha, Chichibu, Japan

Continuation of Ser. No. 111,394, Aug. 25, 1993, abandoned, which is a continuation of Ser. No. 832,618, Feb. 11, 1992, abandoned, which is a continuation of Ser. No. 488,725, Feb. 27, 1990, abandoned. This application Apr. 14, 1995, Ser. No. 422,651

Claims priority, application Japan, Feb. 28, 1989, 1-048916; Feb. 28, 1989, 1-048917; May 19, 1989, 1-126384; May 19, 1989, 1-126385; May 19, 1989, 1-126386

Int. Cl.[6] G11B *15/60;5/187;5/105*

U.S. Cl. 360—130.21 **4 Claims**



1. A magnetic head for writing and/or reading data into and/or from a magnetic tape comprising:
a magnetic core;
a case member for holding said magnetic core;
at least one tape guide being attached to said case member at an end thereof in a sliding direction of said magnetic tape and having projecting portions which are spaced apart from and disposed above said case member, one of said projecting portions having a surface defining a reference plane in contact with and determining a position of an edge of said magnetic tape, another of said projecting portions having a surface defining an inclined plane, disposed opposite said surface defining the reference plane, in contact with an opposite edge of said magnetic tape, for urging said magnetic tape to said surface defining the reference plane; and
a tape slide surface on which said magnetic tape slides in contact therewith, said tape slide surface being defined by respective partial surfaces of said magnetic core and said case member, a section of the tape slide surface arranged between said surface defining the reference plane and said surface defining the inclined plane being defined by an upper surface of said case member, said section of the tape slide surface guiding said magnetic tape, and having at least one recess disposed in a part of said section of the slide surface and extending directly under said projecting portions.

4. A magnetic head for writing and/or reading data into and/or from a magnetic tape comprising:
a magnetic core;
a case member for holding said magnetic core;
tape guides provided at opposite ends of said case member in a sliding direction of said magnetic tape, each of said tape guides having a surface defining a reference plane in contact with and determining a position of an edge of said magnetic tape, a surface defining an inclined plane, disposed opposite said surface defining the reference plane, in contact with an opposite edge of said magnetic tape, for urging said magnetic tape to said surface defining the reference plane, and a connecting portion which connects said reference plane to said inclined plane, said connecting portion having an upward facing connecting surface that faces upward toward the magnetic tape, said upward facing connecting surface being disposed below a tape slide surface on which said magnetic tape slides in contact therewith, said connecting portion spaced from said magnetic tape; and
wherein said tape slide surface on which said magnetic tape slides in contact therewith is defined by respective partial surfaces of said magnetic core and said case member, sections of the tape slide surface arranged directly between said surface defining the reference plane of each of said tape guides and said surface defining the inclined plane of each of said tape guides, being defined by the partial surfaces of said case member.

5,574,607

MAGNETIC DISK CARTRIDGE

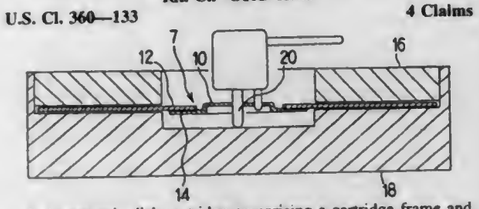
Keizo Takahashi; Kunihiro Hyakutake, and Hisayoshi Oshima, all of Tochigi-ken, Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 92,069, Jul. 16, 1993, abandoned. This application Nov. 15, 1994, Ser. No. 340,489

Claims priority, application Japan, Aug. 28, 1992, 4-230418

Int. Cl.[6] G11B *23/03*

U.S. Cl. 360—133 **4 Claims**



1. A magnetic disk cartridge comprising a cartridge frame and, freely rotatably disposed therein, a magnetic disk comprising a magnetic recording medium and a hub provided at the center of said medium, wherein said hub is bonded to said medium with a moisture-curable urethane hot-melt adhesive, and an adhesive strength between the hub and the medium is 14 kgfcm or more at 23° C. and 50% RH just after assembly thereof, and after curing of the adhesive, the adhesive strength is 28 kgfcm or more at a temperature from 23°–60° C.

5,574,608

BRUSHLESS MOTOR LOCK DETECTION APPARATUS

Toshiaki Fukuoka, Yonago, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

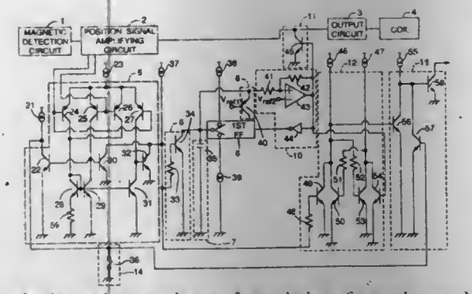
Filed Sep. 30, 1994, Ser. No. 316,549

Claims priority, application Japan, Oct. 1, 1993, 5-246611

Int. Cl.[6] H02H *5/04*

U.S. Cl. 361—23 **11 Claims**

1. A brushless motor lock detection apparatus for detecting a locked condition of a rotor of a brushless motor, said apparatus comprising:
pulse generating means for generating pulses synchronized to the rotation of said rotor;
integration means for charging a current and discharging said current in response to said pulses, said integration means being continuously charged in the absence of said pulses;



first integration control means for producing a first mode control signal when said integration means is charged to a first predetermined level during the absence of said pulses; second integration control means having a hysteresis characteristics for producing a current interruption signal when said integration means is charged to a second predetermined level which is less than said first predetermined level, and also for producing a second mode control signal when said integration means is discharged to a third predetermined level which is less than said second predetermined level;
mode selection means for selectively setting either one of a charge mode during the presence of said pulses for charging said integration means, and a discharge mode during the absence of said pulses for discharging said integration means, said discharge mode being established in response to said first mode control signal, and said charge mode being established in response to said second mode control signal; and
lock detection means for producing a high level signal indicative of a motor locked state starting in response to a current interruption signal and ending in response to a pulse from said pulse generating means, and for producing a pulsating signal indicative of a motor rotating state commensurate with said pulses.

5,574,609

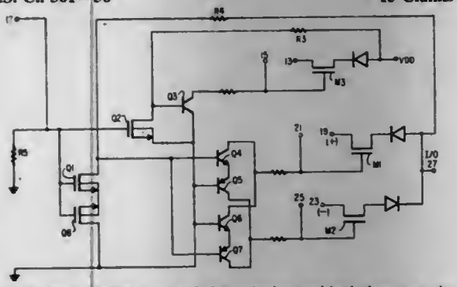
FAIL-SAFE MOS SHUTDOWN CIRCUITRY

Arthur J. Leidich, Flemington, N.J., assignor to Harris Corporation, Melbourne, Fla.

Filed Jan. 12, 1994, Ser. No. 180,267

Int. Cl.[6] H02H *9/00*

U.S. Cl. 361—56 **15 Claims**



1. A dual discharge network for reducing residual charge on the gates of MOSFET over-voltage protection devices, comprising:
a first MOSFET over-voltage protection device having a first gate terminal and a first input terminal;
a second MOSFET over-voltage protection device having a second gate terminal and a second input terminal;
said first and second input terminals connected to common terminal;
a first discharge network including a first transistor pair of opposite polarity and a first input terminal for said first discharge network;
a second discharge network including a second transistor pair of opposite polarity and a second input terminal for said second discharge network;
said first input terminal of said first discharge terminal, and said second input terminal of said second discharge terminal connected to said common terminal, to discharge said first and second gate terminals of said first and second MOSFET's;
said first transistor pair arranged to be biased into conduction by a positive signal at said common terminal;
said second transistor pair arranged to be biased into conduction by a negative signal at said common terminal to discharge the said first and second gates of said first and second MOSFET's; and
said first transistor pair and said second transistor pair are arranged to receive base emitter bias from said common terminal and collector voltage from said first and second gates, respectively.

5,574,610

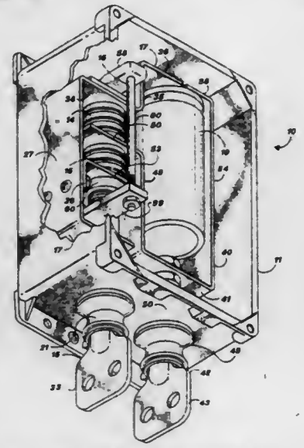
ELECTRICAL ISOLATION DEVICE

Henry N. Tachick, W10848 W. 4th Rd., Pound, Wis. 54161, and Brian R. Pelly, 1253 Via Landetta, Palos Verdes Estate, Calif. 90274

Filed Oct. 14, 1994, Ser. No. 323,271

Int. Cl.[6] H02H *9/00*

U.S. Cl. 361—56 **35 Claims**



22. An electrical isolation device comprising:
(a) two diode stacks each comprising at least ooe diode layer and at least one of the stacks having a plurality of layers in stacked relation, the number of diode layers in each stack being unequal, each diode layer including a diode junction wafer with an anode side and a cathode side and which is capable of conducting electricity predominantly only in one direction from one side to the other, the diode layers stacked such that each diode stack predominantly conducts electricity in only one direction;
(b) input terminals connectable to electrical lines; and
(c) electrical conductors which connect the diode stacks in parallel with each other across the input terminals such that when large fault currents are conducted through the device electricity is predominantly conducted in one direction through one diode stack and in an opposite direction through the other diode stack, and wherein the number of diode layers in each diode stack is chosen such that when an AC current sufficient to cause both diode stacks to conduct is applied to the input terminals there is a net DC voltage across the input terminals of between about −0.70 and −2.50 volts.

VOL 1192 ISS 2 NO 12 1996 UMI

5,574,611

SERVICE INTERRUPTION MINIMIZING SYSTEM FOR POWER DISTRIBUTION LINE

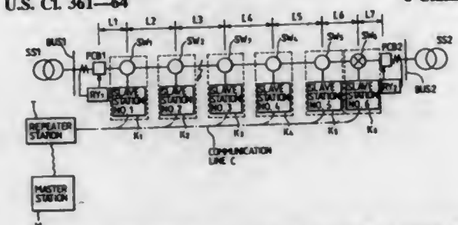
Kazuo Nishijima, Katsuta; Hiroshi Inoue, Hitachi; Minoru Kanoi; Terunobu Miyazaki, both of Naka-gun, and Mitsuru Nakamura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 28, 1994, Ser. No. 202,804

Claims priority, application Japan, Mar. 1, 1993, 5-039645

Int. Cl.[6] H02H *7/26*

U.S. Cl. 361—64 **6 Claims**



1. A service interruption minimization system for a power distribution line, comprising:

first and second distribution lines each respectively connected to first and second bus bars via first and second circuit breakers, respectively, and having switchgears disposed at appropriate sites thereof, one of said switchgears serving as a tie point switchgear disposed between end portions of said first and said second distribution lines, the tie point switchgear being in an open state normally;

a protective relay for opening said first circuit breaker upon elapse of a preset time after occurrence of a fault on the first distribution line;

closing means for closing said tie point switchgear upon occurrence of a fault defining a load side of the fault and a bus bar side of the fault on said first distribution line;

first opening means for opening a first switchgear which is adjacent to said fault point and located on the bus bar side of said fault point after closing of said tie point switchgear by said closing means; and

second opening means for opening a second switchgear which is adjacent to said fault point and located on the load side of said fault point, the opening of said second switchgear being executed on the condition that the fault still remains after the opening of said first switchgear;

wherein said second switchgear is effected to open within a preset period of time preset for said protective relay to start its operation.

5,574,612

POWER CONNECTION SYSTEM FOR SERVICE PANEL UTILIZING A QUICK PLUG-IN ELECTRICAL RECEPTACLE

Won S. Pak, 31615-C 3rd Pl., SW., Federal Way, Wash. 98023

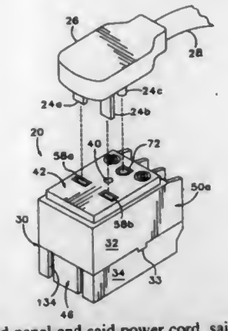
Filed Nov. 15, 1994, Ser. No. 340,071

Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—93 **22 Claims**

1. A system for adapting a power distribution panel for electrical connection with a power cord, said power cord including at least first and second prongs, said power distribution panel having at least one power terminal through which said panel supplies electrical power and a mounting support on which at least one circuit breaker module of standard length can be selectively mounted by pivoting movement of a rearward end of said module about a hook-like retaining tab included on said support so as to rotate a conductive element included adjacent a forward end of said module into plug-in engagement with said power terminal, said system comprising:

(a) an electrical receptacle including an outer housing and a plurality of conductive elements included within said housing for enabling said receptacle to establish electrical connection between said panel and said power cord, said housing having an upper face, a lower face, a front end, a rear end and a pair of sides, said elements including at least first and second upper contacts disposed in alignment with at least first and second openings formed in said upper face such that said first and second prongs are insertable into said first and second openings for engagement with said first and second upper contacts, respectively;



(b) a mounting mechanism on said receptacle, said mounting mechanism including a lower contact disposed along said lower face of said receptacle adjacent said front end in suitable orientation for plug-in engagement with said power terminal; and

(c) said mounting mechanism being configured so that said receptacle is mountable on said panel in substitution for said circuit breaker module of standard length and including attachment means adjacent said rear end for engaging said hook-like retaining tab and for keeping said rear end and said hook-like retaining tab inseparably attached to each other in direct response to plug-in engagement between said lower contact and said power terminal.

5,574,613

LIGHTNING ARRESTER HAVING MACHINERY BUILT-IN

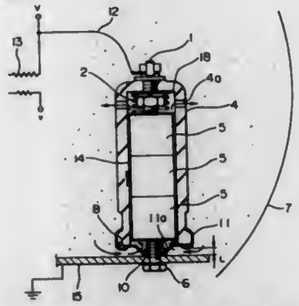
Shingo Shirakawa; Morio Ito, both of Hitachi; Shingo Uchida, Noda, and Kazutoshi Mochizuki, Utsunomiya, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 10, 1995, Ser. No. 500,207

Claims priority, application Japan, Jul. 11, 1994, 6-158781

Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—117 **6 Claims**



1. A lightning arrester having machinery built-in in which a line-side terminal is provided on an axial one end of an insulating tube which stores therein zinc oxide elements, a ground mounting bracket is fixed to the axial other end of said insulating tube, openings which communicate with each other through a gap between outer peripheries of said zinc oxide elements and an inner wall surface of said insulating tube are formed respectively on the side of said line-side terminal and on the side of said ground mounting bracket, and said ground mounting bracket is fixed to a ground bracket within a power distribution equipment which is filled with an insulating medium, characterized in that a metal cap with an inclination portion which projects toward the anti-side of the zinc oxide elements and in which said ground mounting bracket is fixed substantially at a center thereof is provided at said axial other end of said insulating tube, and said openings on the side of said ground mounting bracket are formed in said metal cap.

5,574,614

PROTECTION PLUG

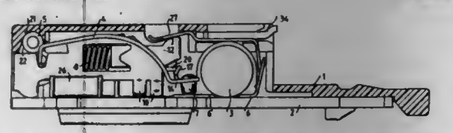
Ralf-Dieter Busse; Harlad Klein; Johann Oltmanns, and Gerd Richter, all of Berlin, Germany, assignors to Krone Aktiengesellschaft, Berlin-Zehlendorf, Germany

Filed Aug. 17, 1995, Ser. No. 516,309

Claims priority, application Germany, Oct. 1, 1994, 44 37 122.5

Int. Cl.[6] H02H *9/06*

U.S. Cl. 361—119 **5 Claims**



1. A protection plug for over-voltage protection for telecommunication installations, comprising:

a housing with a printed circuit board, said housing including an inner housing wall with a support edge;

a voltage-surge suppressor;

a spring;

a ground plate;

a signalling element;

a slider, said slider being formed as one piece and including a support face, a support portion having opposedly bent-off contact rings, a receiving portion for receiving said spring, a contact face for the connection of said voltage-surge suppressor to ground over said ground plate, a groove for holding said signalling element, a blade-spring portion, having a long spring arm, said blade spring portion being bent off at a resilient end to form a web whereon a shaped part of solder material is disposed and wherefrom a support face is bent off, said spring being disposed in said housing to preload said support face of said slider in said housing against said support edge of said inner housing wall, said shaped part of solder material being loaded to a minimum extent by a spring force of said slider.

5,574,615

AIR SPARK GAP FOR DETERMINING THE MAXIMUM VOLTAGE AT A VOLTAGE SURGE SUPPRESSOR

Ralf-Dieter Busse, and Carsten Storbeck, both of Berlin, Germany, assignors to Krone Aktiengesellschaft, Berlin-Zehlendorf, Germany

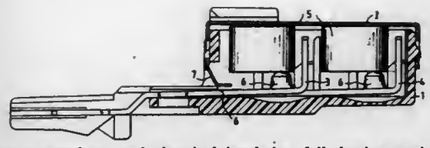
Filed Jan. 25, 1995, Ser. No. 378,191

Claims priority, application Germany, Jan. 28, 1994, 44 03 053.3

Int. Cl.[6] H02H *1/04*

U.S. Cl. 361—120 **16 Claims**

1. A voltage surge protection assembly, comprising: a capsule filled with an inert gas forming a voltage surge suppressor; an electrode arrangement including two contact members electrically parallel with the voltage surge suppressor and forming an air spark gap therebetween, one of said contact members being a housing and said other of said contact members being a contact tongue; a contact element, said one of said contact members being electrically connected with said contact element, said contact element being biased toward a surface portion of said other one of said contact members; and electrical insulation foil, having a given thickness, arranged between said contact element and said other one of said contact members for an electrical disconnection, said electrical insulation foil being provided with an opening for forming the air gap between said contact element and said other one of said contact members.



5,574,616

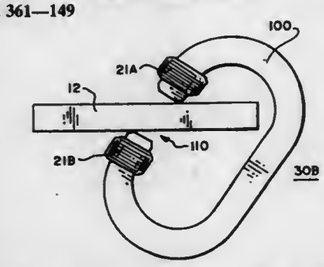
DEGAUSSING TECHNIQUE

Donald G. Becker, and David J. Etherton, both of Lincoln, Nebr., assignors to Garner Industries, Inc., Lincoln, Nebr.

Continuation-in-part of Ser. No. 996,674, Dec. 24, 1992, Pat. No. 5,416,664, which is a continuation-in-part of Ser. No. 870,476, Apr. 17, 1992, Pat. No. 5,204,801. This application May 8, 1995, Ser. No. 437,168

Int. Cl.[6] H01F *13/00*

U.S. Cl. 361—149 **12 Claims**



1. A method of degaussing magnetic material comprising the steps of:

applying a magnetic field to the magnetic material while the magnetic material moves with respect to the field in a single air gap of a magnetic path with a flux density of at least 1,000 gauss and at an angle between 20 degrees and 70 degrees; and

alternating the field at a frequency of at least ten hertz for a sufficient time so that the flux density of at least 1,000 gauss passes through each portion of the magnetic material having a signal recorded on it at the angle of between 20 degrees and 70 degrees for at least one and one-half cycles of the alternating field.

5,574,617

FUEL INJECTION VALVE DRIVE CONTROL APPARATUS

Hiroshi Shimanuki, and Toshiaki Ariyoshi, both of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1994, Ser. No. 352,560

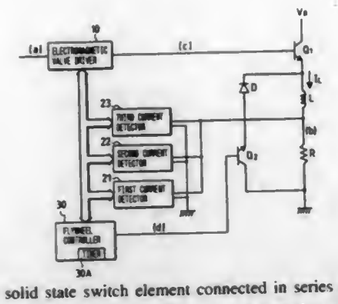
Claims priority, application Japan, Dec. 28, 1993, 5-350739

Int. Cl.[6] H01H *47/04*

U.S. Cl. 361—154 **5 Claims**

1. A fuel injection valve drive control apparatus in which a valve opening current that is large enough to open an electromagnetic fuel injection valve, consisting of a plunger movable relative to a fuel injection port and an excitation coil surrounding the plunger, is supplied to said coil to open the valve, and thereafter, instead of continuing to supply said valve opening current, a lesser holding current required to keep said valve open is supplied to said coil,

the fuel injection valve drive control apparatus comprising:



a first solid state switch element connected in series with said excitation coil for controlling the current supply to said coil,

a valve driver for performing on-off control of said first solid state switch element to supply the valve opening current or the holding current to said coil,

means, connected in parallel with said coil through a second solid state switch element, operative when said first solid state switch element is turned off after it was turned on, for feeding back to said coil, through said second solid state switch element, electromagnetic energy stored in said coil and

means for turning on said second solid state switch element after the elapse of a predetermined time following the start of supplying the holding current.

5,574,619

APPARATUS FOR GENERATING ANIONS IN VIDEO APPLIANCES

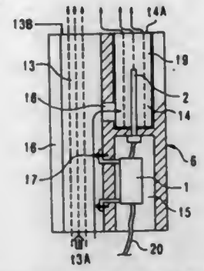
Seok H. Jeong, Kyungsanbuk-Do, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Mar. 24, 1995, Ser. No. 410,276

Claims priority, application Rep. of Korea, Mar. 24, 1994, 94-5933

Int. Cl.[6] H01T *23/00*

U.S. Cl. 361—230 **10 Claims**



1. A single unit apparatus for generating anions, comprising:

an air chamber in which an ascending air stream caused by heat from heating elements inside a video appliance penetrates from a lower part to an upper part;

an anion chamber contiguous to and sharing a common wall with said air chamber;

a ventilation hole between the air and anion chambers for permitting a portion of said ascending air stream to travel from said air chamber to said anion chamber; and

a high-voltage generator for providing a high voltage necessary for creation of anions.

5,574,618

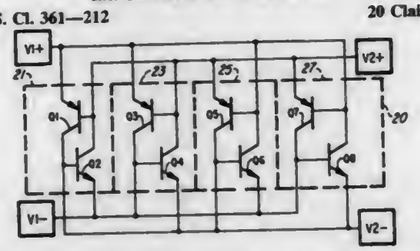
ESD PROTECTION USING SCR CLAMPING

Gregg D. Croft, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Feb. 17, 1994, Ser. No. 198,002

Int. Cl.[6] H05F *3/00;* **H02H** *3/20*

U.S. Cl. 361—212 **20 Claims**



1. An ESD device for providing a discharge path for a static charge comprising:

a set of floating pins;

an SCR clamp having a plurality of SCR's;

each of said plurality of SCR's having SCR terminals

each of said plurality of SCR's having separate anode, anode gate, cathode and cathode gate SCR terminals;

said SCR terminals of each of said plurality of SCR's being connected to a separate combination of said floating pins; and at least a first of said SCR's of said plurality of SCR's, is arranged to conduct in response to a potential between a pair of floating pins of said set of floating pins.

5,574,620

ELECTRICAL COMPONENT RESISTANT TO DAMAGE BY INFRARED RADIATION

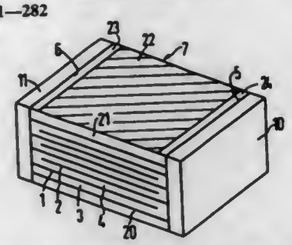
Wilhelm Grimm, Roth, and Reinhard Sperlich, Kolbermoor, both of Germany, assignors to Siemens Matsushita Comp. GmbH & Co. KG, Munich, Germany

Filed Apr. 3, 1995, Ser. No. 415,936

Claims priority, application Germany, May 5, 1994, 44 15 950.1

Int. Cl.[6] H01G *4/30*

U.S. Cl. 361—282 **12 Claims**



1. An electrical component employable in an environment wherein said component is exposed to infrared radiation comprising:

a plurality of internal components susceptible to damage by infrared radiation; and

a surface layer disposed at an exterior of said internal components which reflects infrared radiation.

5,574,621

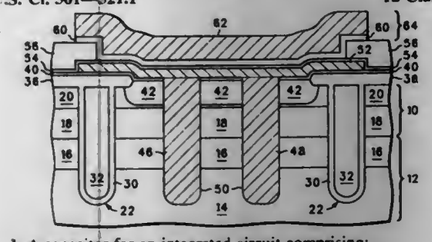
INTEGRATED CIRCUIT CAPACITOR HAVING A CONDUCTIVE TRENCH

Kurt K. Sakamoto, Chandler; Neil T. Tracht, and Robert A. Pryor, both of Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 27, 1995, Ser. No. 411,194

Int. Cl.[6] H01G *4/06;* **H01L** *27/108*

U.S. Cl. 361—321.1 **12 Claims**



1. A capacitor for an integrated circuit comprising:

a semiconductor substrate of a first conductivity type;

a semiconductor layer of a second conductivity type having a first opening and overlying said semiconductor substrate;

an insulating layer having a second opening and overlying said semiconductor layer;

a bottom electrode layer overlying said insulating layer;

a dielectric layer disposed on said bottom electrode layer;

a top electrode layer disposed on said dielectric layer; and

a conductive trench disposed below said bottom electrode layer and extending through said second opening of said insulating layer and through said first opening of said semiconductor layer to said semiconductor substrate, wherein said conductive trench electrically connects said bottom electrode layer and said semiconductor substrate.

5,574,622

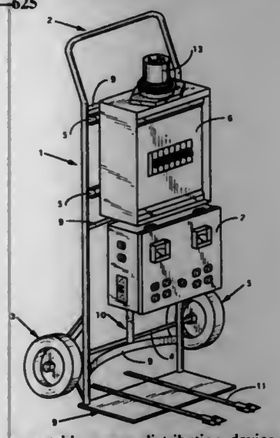
POWER TRUCK

Julius Brown, 11405 Azalea Dr., Pittsburgh, Pa. 15235

Filed May 22, 1995, Ser. No. 447,086

Int. Cl.[6] H02B *1/26*

U.S. Cl. 361—625 **4 Claims**



1. I claim, a portable power distribution device, which comprises:

a support stand (1) having an inverted U-shaped frame (2) defining an interior space with a flat base (8) defining a final side of said interior space, said interior space bisected by cross-bars (5) to connect each side of said frame (2), and a wheel (3) attached to each side of said frame (2), said wheels (3) connected via a rod (4),

an external support frame;

a distribution panel (6) attached to said cross bars (5) containing a male turnlok connector socket (13) mounted centrally atop said distribution panel (6);

and an outlet box (7) containing three prong grounded duplex outlets.

5,574,623

DEVICE PANEL WITH IN-MOLDED APPLIQUE

Leland K. Girard, Geneva, Ill., assignor to Master Molded Products Corporation, Elgin, Ill.

Filed Feb. 28, 1995, Ser. No. 395,966

Int. Cl.[6] H02B *1/04*

U.S. Cl. 361—627 **14 Claims**



1. A molded electrical circuit assembly comprising:

a generally continuous panel structure having a front side, a reverse side and an edge extending therebetween;

at least one electrical component having a portion thereof positioned against said reverse side of said panel structure;

an integral, single piece molded portion molded generally over and abutting said

reverse side of said panel structure and abutting at least a portion of said edge of said panel structure;

said molded portion defining at least one window through said molded portion exposing an area of said reverse side of said panel structure, said window being positioned in said molded portion aligned with said at least one electrical component and having a perimeter spaced away from an outer edge of said at least one electrical component.

5,574,624

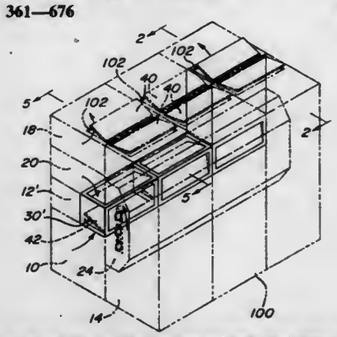
VENTILATION SYSTEM FOR ARC-RESISTANT SWITCHGEAR ENCLOSURE

Jon S. Rennie, Lake Mary, and David S. Komives, Apopka, both of Fla., assignors to ABB Power T&D Company Inc., Raleigh, N.C.

Filed Oct. 3, 1995, Ser. No. 538,746

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—676 **6 Claims**



6. A ventilation system for an arc-resistant enclosure for electrical components, said arc-resistant enclosure comprising:

a plurality of compartments for housing said electrical components, each of said compartments housing one or more of said electrical components, said plurality of compartments being arranged to form an internal arc chamber for providing a path for releasing from said enclosure pressure and hot gases produced by an electrical arc fault associated with an electrical component in a least one of said compartments;

each of said compartments having an aperture for permitting pressure and gases to flow therefrom into said arc chamber and having hinged covering means for each of said apertures;

said hinged covering means covering the aperture with which it is associated during both normal operation and when an arc fault occurs in a compartment with which it is not associated and, upon the occurrence of an arc fault within one or more of said compartments, uncovering the aperture of a compartment in which an arc fault occurs to permit pressure and gases to flow from a compartment in which an arc fault occurs into said arc chamber;

said arc chamber comprising a first vertical section providing an exit path to the top of said enclosure; and, a second horizontal section for permitting a portion of said arc chamber to be disposed beneath at least one of said compartments, said second horizontal section adjoining and communicating with said first vertical section,

the arrangement being such that pressure and hot gases produced within a compartment within which an electrical arc fault occurs are controllably released from the top of said enclosure and prevented from entering into a compartment in which an arc fault has not occurred,

said ventilation system comprising:

vent means comprising a plurality of ventilation slots disposed in at least one of said covering means and a plurality of pivotable vent flaps mounted on said at least one covering means for covering and uncovering said slots, said slots permitting convection cooling within at least one of said compartments whereby heated air can flow between said at least one compartment and said arc chamber when said vent flaps uncover said slots, said flaps, when covering said slots, preventing pressure and hot gases to flow from said arc chamber into said at least one compartment.

5,574,625

PORTABLE INFORMATION PROCESSING APPARATUS HAVING MULTIPLE ROTATABLE PORT COVERS

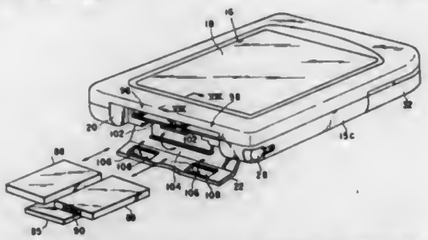
Keizo Ohgami, and Ryo Hosoya, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 80,917, Jun. 22, 1993, abandoned. This application Jul. 25, 1995, Ser. No. 506,170

Claims priority, application Japan, Jun. 22, 1992, 4-163029; Sep. 25, 1992, 4-066973

Int. Cl.[6] G06F *1/16*; **H05K** *7/16*

U.S. Cl. 361—684 **10 Claims**



1. A portable information processing apparatus comprising:

a housing storing electronic components, the housing including an upper surface, a bottom surface, side surfaces continuous with the upper and bottom surfaces, and a plurality of storage portions having insertion ports open to one side surface of said housing, respectively, for storing optional components;

input/display means arranged in the housing and constituting at least a part of the upper surface of the housing, for displaying information and inputting data;

a first cover provided on the housing to be rotatable between a closed position, wherein the insertion port of one of said plurality of storage portions is closed by the first cover, and an opened position wherein the insertion port of said one storage portion is open; and

a second cover provided on the housing to be rotatable between a closed position, wherein the first cover located in the closed position and the insertion port of another storage portion are covered with the second cover, and an opened position wherein the first cover and the insertion port of said another storage portion are exposed.

5,574,626

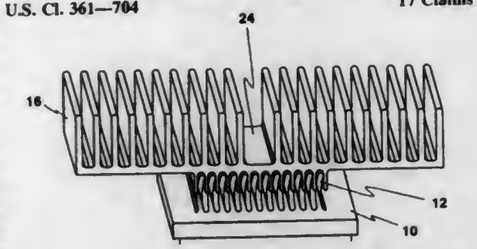
ADD-ON HEAT SINK

Grant M. Smith, Bryn Athyn, Pa., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Jul. 12, 1995, Ser. No. 501,479

Int. Cl.[6] H05K *7/20*; **H01L** *23/40*

U.S. Cl. 361—704 **17 Claims**



1. A combination heat sink for increasing the heat dissipation capabilities of an existing heat sink affixed to an integrated circuit including an existing heat sink which comprises a plurality of spaced fins for dissipating heat and an add-on heat sink comprising:

a support base;

a first plurality of spaced fins placed in a lateral direction along the base extending upwardly from the upper surface of the support base for dissipating heat;

a second plurality of spaced fins extending downwardly from the lower surface of the support base in same said lateral direction, the second plurality of spaced fins being arranged to intermesh with the fins of the existing heat sink and to form an interference fit therewith, whereby the add-on heat sink can be removably attached to the existing heat sink; and

said first plurality of spaced fins extends in said lateral direction to a greater extent than that of the said second plurality of spaced fins.

10. A combination comprising:

a first heat sink affixed to an integrated circuit and having a plurality of spaced fins for dissipating heat; and

an add-on heat sink comprising:

a support base;

a first plurality of spaced fins extending from the support base for dissipating heat; and

a second plurality of spaced fins extending from the support base, the second plurality of fins being arranged to intermesh with the fins of the existing heat sink and to form an interference fit therewith, whereby the add-on heat sink can be removably attached to the first heat sink.

5,574,627

APPARATUS FOR PREVENTING THE FORMATION OF CONDENSATION ON SUB-COOLED INTEGRATED CIRCUIT DEVICES

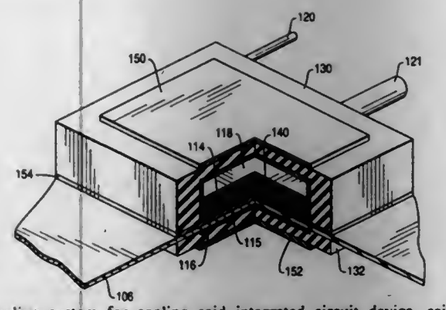
Warren W. Porter, Escondido, Calif., assignor to AT&T Global Information Solutions Company, Dayton, Ohio

Filed Jul. 24, 1995, Ser. No. 506,155

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—719 **6 Claims**

2. In a computer system including an integrated circuit device mounted to a printed circuit board, said integrated circuit device being mounted to a first surface of said printed circuit board, and a



cooling system for cooling said integrated circuit device, said cooling system including cooling system elements in thermal contact with said integrated circuit, said integrated circuit device being chilled to a temperature below the dew point of an ambient environment, the improvement comprising:

a first thermal insulator secured to said first surface of said printed circuit board and covering said integrated circuit device, said first thermal insulator having an inner surface in contact with said integrated circuit device and said cooling system elements in thermal contact with said integrated circuit device, and an outer surface exposed to the ambient environment;

a first heating element disposed on the outer surface of said first thermal insulator, said heating element generating heat upon the application of an electrical current thereto to prevent the formation of condensation on said first thermal insulator.

5,574,628

RIGID PCMCIA FRAME KIT

Henry J. Persia, Greensboro, and Randy G. Simmons, Lewisville, both of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed May 17, 1995, Ser. No. 443,144

Int. Cl.[6] H05K *1/14*

U.S. Cl. 361—737 **20 Claims**



1. In a PCMCIA frame kit for receiving a planar electronic device for electrical engagement with a complementary device in electronic equipment, said kit comprising a pair of matable, metal cover members, where each said cover member is integrally molded to a dielectric frame upon which said planar electronic device is seated, the improvement comprising in combination therewith the provision of each said frame including at least a pair of side rails, where said pair of side rails on one cover member includes plural, circular, upstanding pins having a predetermined diameter, and said pair of side rails on the other cover member including a like plurality of holes, where the cross section of said holes exhibits a multi-sided configuration with the diametrical distance between opposing corners being slightly greater than said predetermined diameter, and the diametrical distance between opposing said sides is slightly less than said predetermined diameter, whereby a normal force applied between said covers effects a force fit between each respective pin and its multi-sided hole.

5,574,629

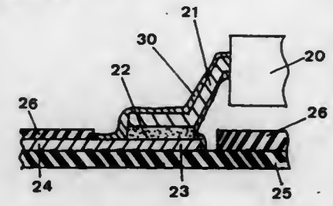
SOLDERLESS PRINTED WIRING DEVICES

Kenneth W. Sullivan, 5407 Strasburg Rd., Gap, Pa. 17527

Continuation-in-part of Ser. No. 704,465, May 23, 1991, abandoned, which is a continuation of Ser. No. 363,868, Jun. 9, 1989, abandoned. This application Sep. 29, 1993, Ser. No. 128,115

Int. Cl.[6] H05K *7/10*

U.S. Cl. 361—767 **5 Claims**



1. In a combination of a substrate having a metal-plateable member, and an electrical component having a metal plateable lead connected with the metal-plateable member, improved means for electrically connecting the lead and the member comprising;

a metal layer plated on said lead and on said member and forming an electrically conductive path between the lead and the member, and

said lead being connected to said metal-plateable member by an adhesive.

5,574,630

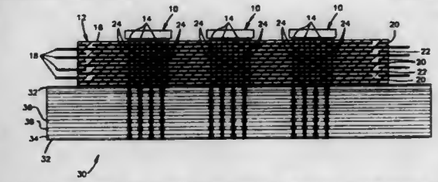
LAMINATED ELECTRONIC PACKAGE INCLUDING A POWER/GROUND ASSEMBLY

John S. Kresge, Binghamton, N.Y.; David N. Light, Friendsville, Pa., and Tien Y. Wu, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 11, 1995, Ser. No. 438,952

Int. Cl.[6] H05K *7/14*

U.S. Cl. 361—792 **12 Claims**



1. A laminated electronic packaging structure comprising a circuit board and a power/ground assembly:

(A) said circuit board being formed of alternating layers of electrical insulating material and conducting material forming voltage planes and signal planes, and having a component mounting face defined by the surface of one of the layers of insulating material and having voltage pads and ground pads formed thereon and connecting with said voltage planes and said ground planes respectively;

(B) said power/ground assembly being formed of alternating layers of:

(i) an organic electrically-insulating material,

(ii) at least a first layer of electrically-conducting material forming a first voltage plane,

(iii) at least a second layer of electrically-conducting material forming a second voltage plane, and

(iv) at least one layer of a structural material being free of electrical connections and including a component having a coefficient of thermal expansion (CTE) of less than about 17 ppm/C°.

(C) said power/ground assembly having;

(i) a power input face defined by the surface of one of the layers of organic insulating material and having formed

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thereon power connection sites connected to said power pads on said circuit board and ground connection sites connected to said ground pads on said circuit board;

(ii) a first plurality of electrical conductors extending from at least one of the layers of conducting material of said power/ground assembly to said ground connection sites of said power input face of said power/ground assembly;

(iii) a second plurality of electrical conductors extending from at least a second layer of said conducting material of said power/ground assembly to said power connection sites of said power input face of said power/ground assembly;

(iv) at least one of said layers of electrically-conducting material and at least one of said layers of said structural material having openings therethrough through which at least some of said electrical conductors extend free of contact therewith;

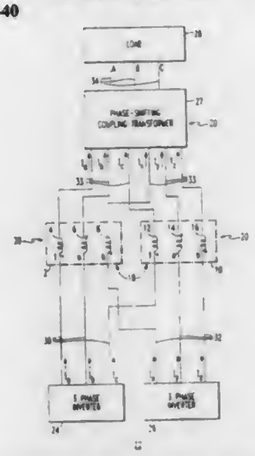
(D) the layers defining said power/supply assembly being selected in size and material such that the overall coefficient of thermal expansion of said power/supply assembly is substantially the same as the value of the coefficient of thermal expansion of said circuit board.

5,574,631

MAGNETIC FILTER

Robert J. Nelson, Orlando, and Jianhua Bian, Winter Park, both of Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 26, 1995, Ser. No. 429,379
Int. Cl.[6] H02M *1/12*
U.S. Cl. 363—40 **18 Claims**



1. A magnetic filter apparatus for a power circuit including a first plurality of current sets having a fundamental frequency and a second plurality of harmonic frequencies of said fundamental frequency, each of said first plurality of current sets being conducted by a third plurality of phases and being displaced from a corresponding one of said first plurality of current sets by a predetermined phase shift, said magnetic filter apparatus comprising:

a plurality of transformer means of the first plurality, each of said plurality of transformer means having windings of the third plurality for receiving at least one current from each of said first plurality of current sets; and

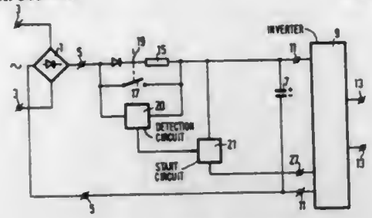
phase shift elimination means having a plurality of input phases of the first plurality times the third plurality for receiving each of the currents of said first plurality of current sets, said phase shift elimination means also having output phases of the third plurality which conduct an output current set, said plurality of transformer means filtering substantially all of said second plurality of harmonic frequencies from the output current set.

5,574,632

POWER SUPPLY COMPRISING A CIRCUIT FOR LIMITING INRUSH CURRENTS

Frans Pansier, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 7, 1995, Ser. No. 387,059
Claims priority, application Belgium, Feb. 11, 1994, 09400161
Int. Cl.[6] H02J *11/00;* **H02P** *13/00*
U.S. Cl. 363—49 **10 Claims**



1. A power supply for converting an alternating voltage supplied by an electric mains into a desired voltage, comprising: rectifier means which include input terminals operative to receive the alternating voltage and output terminals which supply a pulsating direct voltage, a first capacitor connected parallel to the output terminals, an inverter which includes input terminals connected to the first capacitor, and a current limiting circuit connected between one of the output terminals of the rectifier means and an electrode of the first capacitor in order limit an inrush current occurring when the power supply is switched on, wherein said current limiting circuit comprises a parallel connection of a first resistor and a first switching element with the first switching element in an electrically non-conductive state when the power supply is switched on and arranged to change over to an electrically conductive state some time after switching on, and detection means for detecting the state of the first switching element and which cooperate with a start circuit operative to generate a start signal for the inverter such that the start circuit can generate the start signal only if the detection means establish that the first switching element is in the non-conductive state.

5,574,633

MULTI-PHASE CHARGE SHARING METHOD AND APPARATUS

James S. Prater, Fort Collins, Colo., assignor to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios Logic Inc., Fort Collins, Colo.

Filed Feb. 23, 1994, Ser. No. 200,612
Int. Cl.[6] H02M *3/18;7/25;3/06;* **H01M** *10/44*
U.S. Cl. 363—59 **20 Claims**

1. A system for minimizing power dissipation, comprising:

a plurality of circuits having outputs which from time to time transition between different voltage levels;

means for coupling together at least a portion of the outputs which are about to transition, while maintaining discontinuity between at least a portion of the outputs which are not about to transition.

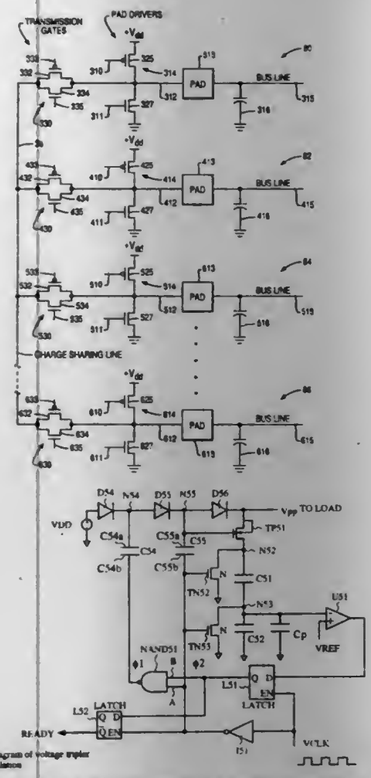
5,574,634

REGULATOR FOR PUMPED VOLTAGE GENERATOR

David B. Parlour, Pittsburgh, Pa., and Roger D. Carpenter, Cupertino, Calif., assignors to Xilinx, Inc., San Jose, Calif.

Continuation of Ser. No. 784,843, Oct. 30, 1991, abandoned. This application Jan. 3, 1994, Ser. No. 176,304
Int. Cl.[6] H02M *3/18*
U.S. Cl. 363—59 **9 Claims**

1. A voltage regulator comprising:



Block Diagram of voltage tripler with regulation

a plurality of capacitors for pumping a supply voltage through a plurality of stages, each capacitor pumping one of said stages, said plurality of capacitors thereby generating an output voltage;

a plurality of diodes connected in series, a first diode of said plurality receiving said supply voltage and a last diode of said plurality providing said output voltage; and

a comparator for receiving said output voltage, wherein said comparator controls the pumping of at least one of said plurality of capacitors and at least one of said plurality of capacitors is pumped independently from said comparator.

5,574,635

AC-DC CONVERTER COMPRISING A FILTERING DEVICE

Daniel Phillippe, St. Martin le Vinoux, France, assignor to Schneider Electric SA, France

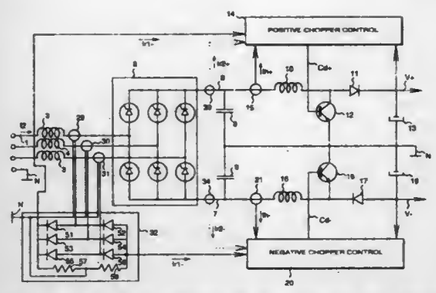
Filed Nov. 17, 1994, Ser. No. 341,096
Claims priority, application France, Nov. 24, 1993, 93 14144
Int. Cl.[6] H02M *1/12*
U.S. Cl. 363—124 **7 Claims**

1. An AC-DC converter, comprising:

an input line comprising at least two conductors;

rectifying and filtering means connected to the input line;

first and second means for monitoring and regulating, respectively, positive and negative components of a DC output voltage, connected to the output of the rectifying and filtering means;



means for measuring currents in the rectifying and filtering means, the currents being measured prior to the output of said rectifying and filtering means; and

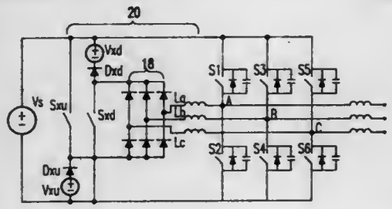
means for regulating the positive and negative components of the output voltage in terms of the currents measured by said measuring means, said measuring means comprising detection means to supply to said regulating means signals representative of the positive and negative components of the measured currents.

5,574,636

ZERO-VOLTAGE-TRANSITION (ZVT) 3-PHASE PWM VOLTAGE LINK CONVERTERS

Fred C. Lee, and Hengchun Mao, both of Blacksburg, Va., assignors to Center for Innovative Technology, Herndon; Virginia Tech Intellectual Properties, Inc., and Virginia Polytechnic Institute and State University, both of Blacksburg, all of Va.

Filed Sep. 9, 1994, Ser. No. 304,661
Int. Cl.[6] H02M *7/5387*
U.S. Cl. 363—132 **7 Claims**



1. A zero-voltage-transition three-phase voltage link converter, comprising:

a direct current power source;

a main switching circuit connected between said direct current power source and a three-phase alternating current output; and

an auxiliary circuit connected between said direct current power source and said main switching circuit, said auxiliary circuit comprising:

at least one resonant inductor connected to at least one phase of said three-phase output;

auxiliary power supply means for discharging said resonant inductor; and

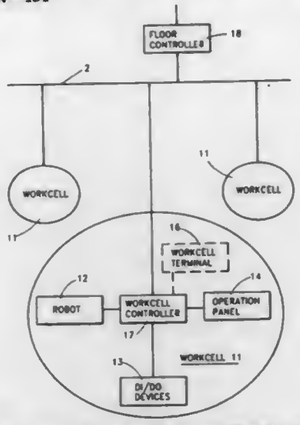
switch means for switchably connecting said auxiliary circuit to said direct current power source.

5,574,637

CONTROL APPARATUS FOR AN AUTOMATED PRODUCTION SYSTEM WORKCELL

Masatoshi Obata, 4-11-4, Minamirinkan; Chihiro Sawada, 2-18-4-104, Eda-minami; Masayuki Takata, 450-61, Ohzenji, and Nobuyoshi Terawaki, 1-14-4, Ryohsei, all of Kanagawa-ken, Japan

Filed Mar. 31, 1994, Ser. No. 220,710
Claims priority, application Japan, Apr. 8, 1993, 5-081793
Int. Cl.[6] G06F *19/00*; G05B *19/414*
U.S. Cl. 364—131 13 Claims



1. Integrated control apparatus for controlling the operation of a robot and a digital input/output (DI/DO) device in a workcell of an automated production system, the control apparatus comprising:

a workcell processor;

workcell operation software specific to said workcell and running on said workcell processor for generating control commands;

workcell operation language processor software running on said workcell processor for interpreting said control commands and generating device specific robot commands and device specific DI/DO commands:

a robot control driver responsive to said robot commands for realtime control of said robot: and

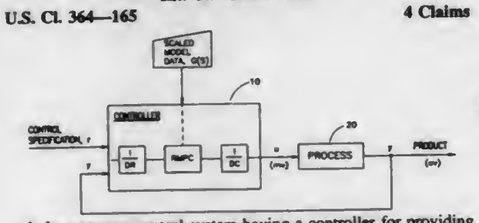
a DI/DO device control driver responsive said DI/DO commands for realtime control of said DI/DO device.

5,574,638

METHOD OF OPTIMAL SCALING OF VARIABLES IN A MULTIVARIABLE PREDICTIVE CONTROLLER UTILIZING RANGE CONTROL

Zhuxin J. Lu, 19513 N. 73rd La., Glendale, Ariz. 85308

Filed Apr. 3, 1995, Ser. No. 415,882
Int. Cl.[6] G05B *13/02*
U.S. Cl. 364—165 4 Claims



1. In a process control system having a controller for providing robust control to a process, the process further having at least one manipulated variable and at least one process variable, a method for providing the robust control of a process, comprising the steps of:

a) calculating a set of scale factors for the manipulated variables and the process variables;

b) initializing the controller with the set of scale factors, the set of scale factors determining a relative importance to the process of the manipulated variables and the process variables;

c) initializing the robust control to have predetermined constraints of the manipulated variables and the controlled variables;

d) obtaining present values of the manipulated variables and the process variables said process variables corresponding to measurement parameters of the process;

e) calculating new values of the process variables for a predetermined number of points in the future in order to have the values of the process variables within the predetermined range to obtain an optimal robustness of the resultant controller, the manipulated variables being within predetermined constraints, and the process variables falling within a predetermined range when controllable; otherwise, keeping process variable constraint violations to a minimum;

f) from a plurality of solutions, selecting a most robust solution; and

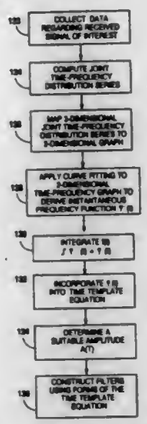
g) controlling the process in accordance with the most robust solution.

5,574,639

SYSTEM AND METHOD FOR CONSTRUCTING FILTERS FOR DETECTING SIGNALS WHOSE FREQUENCY CONTENT VARIES WITH TIME

Shie Qian, Austin, Tex., and Mark E. Dunham, Los Alamos, N.M., assignors to National Instruments Corporation, Austin, Tex.

Filed Oct. 12, 1994, Ser. No. 322,053
Int. Cl.[6] G06F *17/10*
U.S. Cl. 364—724.01 35 Claims



1. A method for constructing one or more filters to detect signals having a frequency content which varies with time, comprising the steps of:

collecting data regarding the signals:

computing a joint time-frequency representation of the signals;

mapping the joint time-frequency representation to a multi-valued function;

curve-fitting the multi-valued function to derive an instantaneous frequency function $\phi'(t)$;

integrating the instantaneous frequency function $\phi'(t)$ to obtain $\phi(t)$;

determining a time template equation using said function $\phi(t)$;

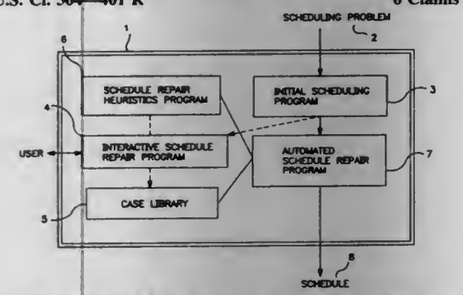
constructing one or more filters which receive the signals and compare the signals with one or more terms of said time template equation, wherein said one or more filters detect the signals.

5,574,640

A CASE-BASED SCHEDULING METHOD FOR CREATING A SCHEDULE

Katia P. Sycara, Pittsburgh, Pa., and Kazuo Miyashita, Osaka, Japan, assignors to Carnegie Mellon University, Pittsburgh, Pa., and Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Continuation of Ser. No. 37,080, Mar. 25, 1993, abandoned.
This application Dec. 7, 1994, Ser. No. 351,547
Int. Cl.[6] G06F *15/22*
U.S. Cl. 364—401 R 6 Claims



1. In a machine-effected method of creating a schedule to a given schedule problem, which has to satisfy the constraints and maximize a user's objectives in the schedule that are or are not described explicitly in the schedule problem;

the machine-executed steps of:

first, acquiring and recording the user's context dependent preferential knowledge for scheduling, in a case library, by solving trial schedule problems with extensive assistance of a user, said case library including schedule evaluation information, repairability information, and repair history information;

second, solving new schedule problems by reusing the recorded user's context dependent preferential knowledge stored in said case library in the decision points of the new schedule problems.

5,574,641

APPARATUS AND METHOD FOR IMPROVING THE AWARENESS OF VEHICLE DRIVERS

Yoshinaka Kawakami, Kariya; Yoshiharu Takigawa, Okazaki; Arihiro Isomura, Kariya; Kouichi Kamiya, Anjo, and Katsunori Hamatani, Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 178,135, Jan. 6, 1994, abandoned.
This application Jun. 23, 1995, Ser. No. 494,306
Claims priority, application Japan, Jan. 6, 1993, 5-000783
Int. Cl.[6] G06F *7/70*; G08B *23/00*
U.S. Cl. 364—424.05 18 Claims

1. An apparatus comprising:

heartbeat sensor means for detecting heartbeat pulse information of a driver;

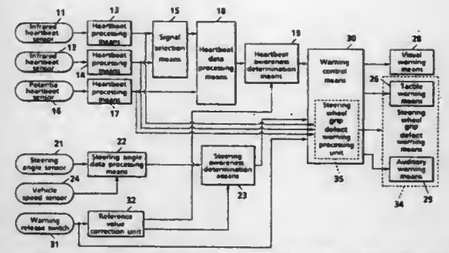
heartbeat awareness determination means for determining a first decrease in awareness of said driver from said heartbeat pulse information detected by said heartbeat sensor;

steering angle sensor means for detecting a steering angle of a vehicle and producing a detection signal;

steering awareness determination means for determining a second decrease in awareness of said driver according to a high-frequency component of said detection signal from said steering angle sensor means;

a plurality of warning means, each for stimulating different senses of said driver for improving a level of awareness of said driver; and

warning control means for activating said plurality of warning means in stages according to said first and said second decreases in awareness of said driver determined by said heartbeat awareness determination means and said steering awareness determination means.

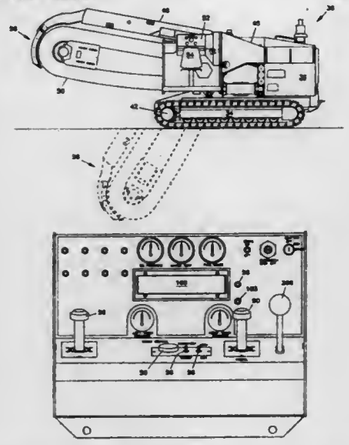


5,574,642

TRACK TRENCHER INFORMATION SYSTEM AND PROCESS

Mark R. Cooper, Pella, Iowa, assignor to Vermeer Manufacturing Company, Pella, Iowa

Filed Jul. 29, 1994, Ser. No. 282,923
Int. Cl.[6] E02F *3/32*
U.S. Cl. 364—424.07 31 Claims



1. An information system for a track trencher, comprising:

a track trencher including a left track drive, a right track drive, and an engine coupled to the left and right track drives;

data acquisition means for acquiring data indicative of an operating condition of one of the left and right track drives and the engine, and for producing a signal corresponding to a message indicative of the operating condition; and

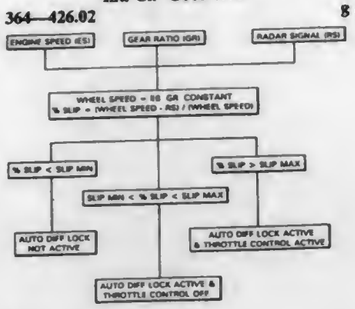
display means, coupled to the data acquisition means, for receiving the signal and communicating the message to an operator.

5,574,643

TRACTION CONTROL FOR A MACHINE WITH ELECTRONIC ENGINE AND TRANSMISSION CONTROLS

Leon P. Yesel, East Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Jul. 15, 1994, Ser. No. 275,862
Int. Cl.[6] G06F 7/70
U.S. Cl. 364—426.02 8 Claims



1. A machine, comprising:
a frame;
wheels mounted on said frame, said wheels experiencing wheel slip under certain conditions;
an engine mounted on said frame and operable at an engine speed;
an engine throttle control operable between an off condition at which engine speed is unaffected and an on condition at which engine speed is controlled;
a transmission mounted on said frame and coupled to said engine and operable at a gear ratio;
a transmission control for controlling operation of said transmission and effecting said gear ratio;
a differential gear assembly coupled to said transmission for turning said wheels and propelling said machine at a ground speed, said differential gear assembly having a lock operable between an off condition at which wheel turning is unaffected so that wheels turn differentially and an on condition at which wheel turning is affected so that all drive wheels turn at same speed;
means for determining said ground speed of said machine;
means for calculating percent slip for said wheels; and
means for controlling operation said differential lock and said throttle control and turning said differential lock off when percent slip is less than a slip minimum value, turning said differential lock on and said throttle control off when percent slip is equal to or greater than said slip minimum value and equal to or less than a slip maximum value, and turning said differential lock on and said throttle control on when percent slip is greater than said slip maximum value.

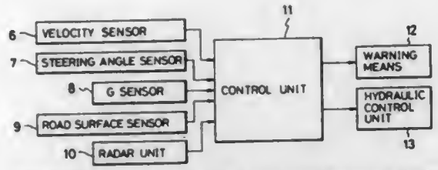
5,574,644

AUTOMATIC BRAKE CONTROL SYSTEM

Tetsuro Butsuen, Hiroshima-ken, and Tohru Yoshioka, Hatsukaichi, both of Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan

Continuation of Ser. No. 37,634, Mar. 26, 1993, Pat. No. 5,420,792. This application Mar. 1, 1995, Ser. No. 396,943
Claims priority, application Japan, Mar. 30, 1992, 4-106200
Int. Cl.[6] B60T 8/58
U.S. Cl. 364—426.04 4 Claims

1. An automatic brake control system for automatically braking a driving vehicle according to velocities of a driving vehicle and a vehicle ahead of said driving vehicle and a vehicle distance therebetween comprising:
first detecting means for detecting respective velocities of the vehicles and the vehicle distance therebetween;



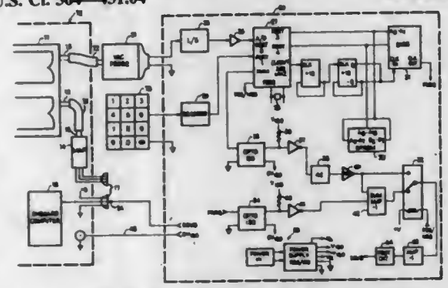
calculating means for calculating a desirable distance to be kept between the vehicles based on the respective velocities of the vehicles detected by the first detecting means;
warning means for producing a warning when an actual distance is smaller than a warning distance which, in turn, is larger than the desirable distance by a predetermined value; and
setting means for automatically controlling the warning distance so that it increases as a velocity difference between the respective velocities of the vehicles is increased.

5,574,645

MANIFOLD ABSOLUTE PRESSURE SENSOR EMULATOR

Michael B. Meeker, Kenosha, and Ross A. Nieml, Burlington, both of Wis., assignors to Snap-on Technologies, Inc., Crystal Lake, Ill.

Filed Feb. 28, 1995, Ser. No. 395,906
Int. Cl.[6] G06F 19/00
U.S. Cl. 364—431.04 18 Claims



1. A manifold absolute pressure (MAP) sensor emulator for diagnosing the condition of a MAP sensor by emulating the operation of the MAP sensor when normally functioning, for use with a vacuum probe coupled to an intake manifold of an internal combustion engine and generating electrical signals in response to vacuum pressure at the intake manifold, said emulator comprising:
a user interface for inputting data representative of the MAP sensor to be emulated; and
an emulation circuit, responsive to the electrical signals and to the data for automatically generating a sensor substitution signal representative of the normal operating output of the emulated MAP sensor, wherein said emulation circuit includes means for varying a voltage level of the sensor substitution signal proportional to a change in the vacuum pressure sensed by the vacuum probe.

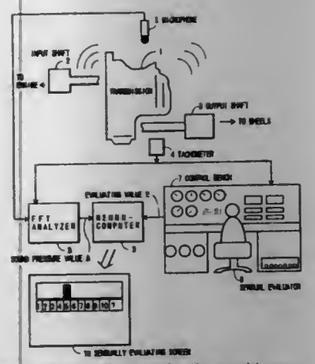
5,574,646

GEAR NOISE EVALUTATION SYSTEM

Yoshiki Kawasaki; Masahiko Karube, and Tatsuhiko Nishioka, all of Fujisawa, Japan, assignors to Isuzu Motors Limited, Tokyo, Japan

Filed Feb. 29, 1996, Ser. No. 609,944
Int. Cl.[6] G06F 15/18
U.S. Cl. 364—431.08 5 Claims

1. A gear noise evaluation system comprising;
a tachometer for detecting a rotative speed of a shaft on which a gear is mounted;



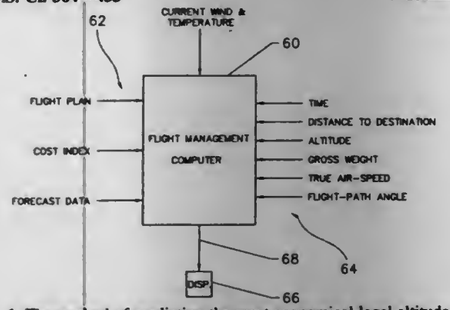
a microphone for detecting a noise from said gear;
an FFT analyzer which repeatedly receives as an input the rotative speed from said tachometer and the noise from said microphone and provides as an output a sound pressure value with respect to the rotative speed for a predetermined gear position;
a control bench where the rotative speed of the shaft is indicated and changed by an evaluator presetting an absolutely sensual evaluating value as a teacher signal with respect to the rotative speed of the shaft; and,
a neuro-computer which receives as an input the sound pressure value from said FFT analyzer, learns to attain the absolutely sensual evaluating value, stops learning when the difference between the sound pressure value and the absolutely sensual evaluating value from said control bench lies in a permissive error range thereby determining a function value.

5,574,647

APPARATUS AND METHOD FOR COMPUTING WIND-SENSITIVE OPTIMUM ALTITUDE STEPS IN A FLIGHT MANAGEMENT SYSTEM

Sam P. Liden, Phoenix, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 4, 1993, Ser. No. 131,069
Int. Cl.[6] G06F 165/00;15/00;17/00
U.S. Cl. 364—433 7 Claims



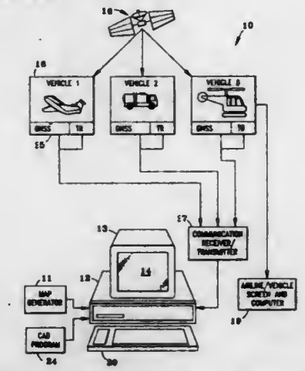
1. The method of predicting the most economical legal altitudes to fly an aircraft over a flight plan, the method consisting of a sequence of prediction intervals the end of the last one of which defines the current state of that prediction interval and for which maximum and minimum permitted altitudes exist, comprising the steps of:
A. Determining the maximum and minimum permitted altitudes at the end of the interval;
B. Determining the legal altitudes from the minimum to the maximum altitudes at the end of the interval;
C. Calculating the Specific Cost for each such determined legal altitude utilizing the equation: SpCost=(if+k)/vg where SpCost is cost/unit distance, ff is fuel flow as determined from a function of air speed, altitude, temperature and gross weight, k is the non-fuel cost per unit time divided by the fuel cost/unit weight and vg is ground speed as determined from a function of true air speed and wind direction and velocity;
D. Selecting a candidate legal altitude at which SpCost, calculated in step C is the lowest;
E. Comparing the candidate legal altitude from step D with the altitude of the current state; and
E1. If they are the same, continuing normal prediction without changing altitudes; or
E2. If the candidate legal altitude is different than the altitude of the current prediction state, determining determine and saving a point in the prediction interval as the candidate step climb point the point being where specific costs at the prediction state altitude and the SpCost at the candidate legal altitude are equal;
F. Predicting the direct operating cost of the flight for each of the legal altitudes of step B by performing a trial prediction over a pre-determined distance interval for each such legal altitude: and
G. Comparing the direct operating cost for each such legal altitude from step F and identifying that one which gives the lowest direct operating cost.

5,574,648

AIRPORT CONTROL/MANAGEMENT SYSTEM USING GNSS-BASED METHODS AND EQUIPMENT FOR THE CONTROL OF SURFACE AND AIRBORNE TRAFFIC

Harold R. Pilley, R.F.D. #1, Box 204, Deering, N.H. 03244

Continuation of Ser. No. 859,681, Jun. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 758,852, Sep. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 593,214, Oct. 9, 1990, Pat. No. 5,200,902. This application Jan. 5, 1995, Ser. No. 369,273
The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.
Int. Cl.[6] G06F 163/00
U.S. Cl. 364—439 45 Claims



1. An improved airport control/management system for controlling and managing surface and airborne movements of vehicles and aircraft operating within a selected airport space envelope, the airport control/management system comprising:
(a) means for establishing a precise 3-dimensional digital map of the selected airport space envelope, the map containing GNSS reference points,
(b) a computer with a monitor screen for receiving and displaying the 3-dimensional map,
(c) means located on at least one of said vehicles and aircrafts in the airport space envelope to generate and transmit continuous GNSS-based location reports,

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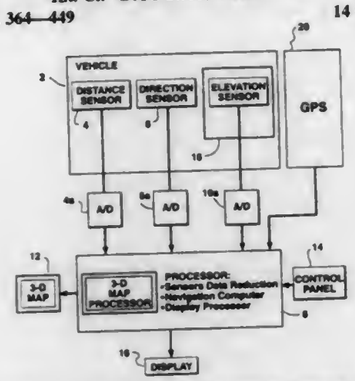
(d) a radio receiver interfaced to the computer to receive said reports from said at least one of said vehicles and aircrafts,
(e) means for processing within the computer to use said reports to superimpose a 3-dimensional image corresponding to a path of said at least one of said vehicles and aircrafts on the 3-dimensional map,
(f) means for using the 3-dimensional map display for generating airport control and management signals as a function of said path to control the traffic in an airport, and
(g) means for manipulation of the 3-dimensional map and the 3-dimensional image of said at least one of said vehicles and aircrafts and said path to a desired apparent line of observation, to control the traffic in the airport,
(h) means for layering the 3-dimensional map in at least one digital map graphical layer,
(i) means for selecting for display on the monitor screen, at least one of the digital map graphical layers,
(j) means for controlling the display of the 3-dimensional map and the image of said at least one of the vehicles and aircrafts based upon the digital map graphical layers, and
(k) means for utilizing the graphical layers to sort and track at least one of the vehicles and aircrafts, each of the layers determined by function selected from a group of layers consisting of air traffic control responsibility, phase of flight, GNSS position, NOTAMS, zone identification, airline and airport operations.

5,574,649

POSITION-LOCATING METHOD AND APPARATUS INCLUDING CORRECTIONS FOR ELEVATIONAL CHANGES

Nessim I. Levy, 13 Habrosh St., 56 516 Savyon, Israel

Continuation of Ser. No. 893,149, Jun. 3, 1992, abandoned.
This application Jun. 5, 1995, Ser. No. 461,467
Claims priority, application Israel, Sep. 27, 1991, 99596
Int. Cl.° G01C *21/00;* **G06G** *7/78*
U.S. Cl. 364—449 **14 Claims**



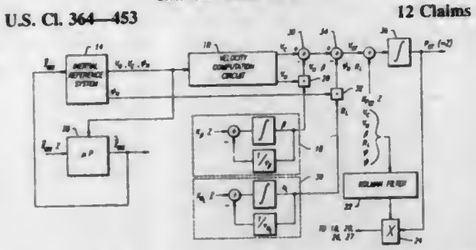
1. A method of determining the instantaneous location of a land vehicle travelling on a terrain, comprising the following operations:
measuring an approximate location of the land vehicle as said vehicle travels on the terrain by continuously measuring distances and headings of the land vehicle as said vehicle travels on the terrain from a known location, and determining the approximate location of said land vehicle by dead reckoning;
measuring changes in elevatioo of the land vehicle as said vehicle travels on the terrain;
continuously utilizing said measured changes in elevation for computing the horizontal component of said measured distances in order to determine the instantaneous location of the land vehicle on the terrain;
storing reference data which includes changes in sign in the elevation slope of known locations on said terrain; and
utilizing the changes in sign in the elevation slope of the reference data having known locations, and the changes in sign in the elevation slope of the measured data whose location was determined by dead reckoning, for periodically correcting the instantaneous location of the land vehicle on said terrain.

5,574,650

METHOD AND APPARATUS FOR CALIBRATING THE GYROS OF A STRAPDOWN INERTIAL NAVIGATION SYSTEM

John W. Diesel, Woodland Hills, Calif., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Filed Mar. 23, 1993, Ser. No. 39,725
Int. Cl.° G06F *165/00*
U.S. Cl. 364—453 **12 Claims**



1. In a method for adjusting the rate outputs of the gyros of an aircraft's strapdown inertial navigation system for east gyro bias error wherein the cross-track velocity (V_{CT}) of said aircraft is utilized to determine said east gyro bias error, the improvement comprising the steps of:
a) taxiing said aircraft substantially along a heading; and
b) measuring north velocity (V_N), east velocity (V_E), heading (ψ_H) and time derivative of said heading (ψ_H) of said aircraft while taxiing said aircraft; and
c) determining a crab angle (β) of said taxiing aircraft; and
d) determining a lever arm (R_L) of said taxiing aircraft; and
e) determining cross heading velocity (V_c) and heading velocity (V_H) of said taxiing aircraft according to the relationships:

$$V_c = V_E \cos \psi_H - V_N \sin \psi_H$$

$$V_H = V_E \sin \psi_H + V_N \cos \psi_H;$$

then
f) determining V_{CT} according to the relationship

$$V_{CT} = V_C - V_H \sin \beta - \dot{R}_L \psi_H;$$

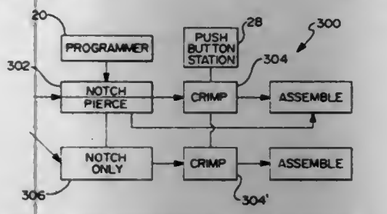
then
g) integrating V_{CT} to generate a cross-track position P_{CT}; and
h) determining Kalman gain values for V_N, V_E, ψ_H, ψ_H, R_L and β; then
i) multiplying said Kalman gain values by said cross-track position P_{CT} to determine V_N, V_E, ψ_H, ψ_H, R_L and β errors; then
j) correcting V_{CT} for said V_N, V_E, ψ_H, ψ_H, R_L and β errors; and then
k) adjusting gyro output values in accordance with said corrected value of V_{CT}.

5,574,651

METHOD AND SYSTEM FOR MACHINING MUNTIN SECTIONS AND SEATING BARS

John McKeegan, 45866 Denise Dr., Plymouth, Mich. 48170, and Rodney E. Bracy, 11805 Davis Rd., Middleville, Mich. 49330

Filed Nov. 21, 1994, Ser. No. 342,583
Int. Cl.° G06F *17/00;19/00*
U.S. Cl. 364—474.02 **11 Claims**



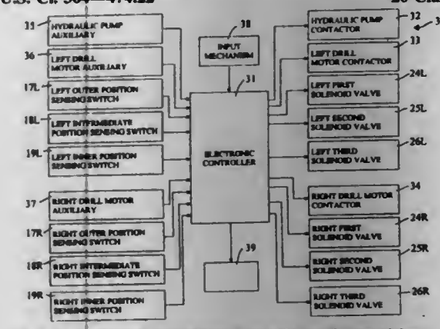
1. A system for machining muntin sections comprising:
(a) at least one muntin section notching unit, the unit comprising means for forming at least one notch in a muntin section;
(b) means for controlling the muntin section notching unit;
(c) at least one muntin section crimping unit adjacent the notching unit, the crimping unit including means for forming at least one retaining dimple in the at least one muntin section proximate the notch; and
(d) means for controlling the muntin section crimping unit.

5,574,652

AUTOMATED CONTROL SYSTEM FOR MACHINE TOOL

Michael A. Murphy, Barrie, Canada, assignor to Dana Corporation, Toledo, Ohio

Filed Feb. 17, 1993, Ser. No. 18,767
Int. Cl.° G06F *19/00*
U.S. Cl. 364—474.22 **20 Claims**



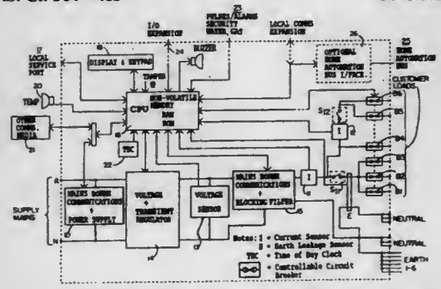
1. A controller for controlling a machine tool comprising:
means for executing a programmed machine cycle for generating output signals to control the machine tool to perform a plurality of operations, said programmed machine cycle comprising a plurality of sequences wherein each of said sequences defines an individual operation to be performed by the machine tool each of said sequences also being associated with a legend which describes said individual operation of said machine tool defined thereby;
an input mechanism for selectively controlling the operation of said executing means between a run mode and a command mode, said run mode for automatically operating the machine tool through a complete programmed machine cycle and said command mode for manually stepping one sequence at a time through each of said sequences comprising a programmed machine cycle;
a visual display operatively connected to said executing means for displaying a plurality of said legends; and
means for highlighting at least one particular one of said plurality of legends displayed on said visual display wherein, when said run mode is selected, said particular highlighted legend is said legend associated with said sequence currently being performed and, when said command mode is selected, said particular highlighted legend is said legend associated with said next sequence to be performed.

5,574,653

SWITCHBOARD

Ronald J. Coomer, Brackenridge, and Graeme J. Wightman, The Gap, both of Australia, assignors to The South East Queensland Electricity Board, Brisbane, Australia

Continuation of Ser. No. 965,386, Dec. 14, 1992, abandoned.
This application Jan. 13, 1995, Ser. No. 372,843
Claims priority, application Australia, Jun. 25, 1990, PK0777
Int. Cl.° G06F *15/56;* **G01R** *22/00;* **H02J** *3/00;* **H02H** *7/26*
U.S. Cl. 364—483 **30 Claims**



1. A switchboard containing one single phase or multi-phase power input circuit and a plurality of associated single or multi-phase power output circuits and including:
a central processing unit (CPU) having an input for receiving control information from a source external to said switchboard,
a plurality of controllable circuit breakers capable of tripping and closing independently of each other, each for controlling the flow of power to an associated one of the power output circuits, each said circuit breaker being closable and trippable manually or under the control of the CPU and with independent tripping means for automatically tripping the circuit breaker when a magnitude of the current flowing through it exceeds a preset value and each said circuit breaker including interlocking means to prevent closing of the circuit breaker by the CPU when the circuit breaker has tripped independently of the CPU and to prevent manual closing of the circuit breaker when the circuit breaker has been tripped by the CPU as a function of said control information,
sensing means for providing said CPU with an instantaneous value of the voltage of the one or more of the said power circuits, and
sensing means for providing said CPU with an instantaneous value of the current flowing in one or more of the said power circuits.

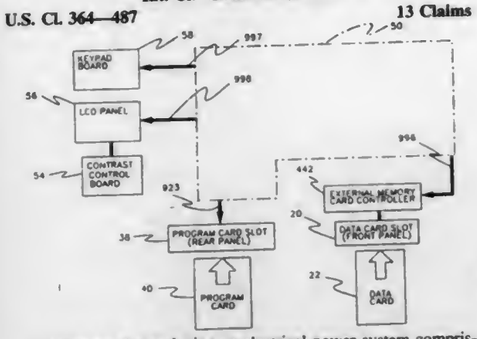
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5,574,654

ELECTRICAL PARAMETER ANALYZER

Richard P. Bingham, Cranford; Ross M. Ignall, North Brunswick, and Paul J. Bernard, Neshanic Station, all of N.J., assignors to Dranetz Technologies, Inc., Edison, N.J.

Filed Feb. 24, 1994, Ser. No. 201,348
Int. Cl.[6] G01R *1/20;19/00*
U.S. Cl. 364—487 13 Claims



1. Apparatus for analyzing an electrical power system comprising:

(a) Data acquisition means for sampling electrical power being supplied by said electrical power system and generating a sample stream corresponding thereto,

(b) an acquisition control processor including a random access memory for storing a program containing instructions for processing said sample stream, and a first microprocessor connected to said random access memory and to said data acquisition means for processing said sample stream in accordance with said instructions;

(c) a second microprocessor connected for providing said instructions to said random access memory;

(d) a removable program card provided with a solid state memory logically organized into a common memory and an attribute memory, said instructions being stored in said common memory, and identifying information being stored in said attribute memory,

(e) a program card interface configured for receiving said program card and operative under control of said second microprocessor to provide a copy of said instructions for use as aforesaid, and

(f) a startup ROM containing a boot code for booting said second microprocessor, logic instructions sufficient for enabling said second microprocessor to cause operation of said apparatus as a three-phase wattmeter and other instructions enabling said second microprocessor to control the operation of said program card interface.

5,574,655

METHOD OF ALLOCATING LOGIC USING GENERAL FUNCTION COMPONENTS

Steven K. Knapp, Santa Clara, and Jorge P. Seidel, San Jose, both of Calif., assignors to Xilinx, Inc., San Jose, Calif.

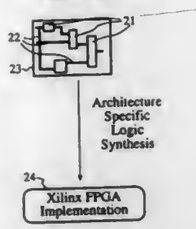
Continuation of Ser. No. 223,374, Apr. 5, 1994, which is a continuation of Ser. No. 785,121, Oct. 30, 1991, abandoned.
This application May 15, 1995, Ser. No. 441,237
Int. Cl.[6] G06F *15/60*
U.S. Cl. 364—489 38 Claims

1. A computer-aided method for implementing functions of a logic design comprising the steps of:

storing a general function component which includes a general arithmetic component and a general register component; and

configuring said general function component to implement a specific function component selected by a user, wherein said specific function component provides either an arithmetic function or a register function.

FPGA Block Diagram
(entered into system)

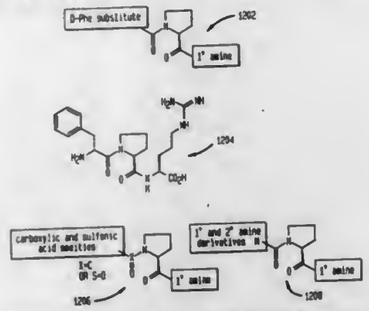


5,574,656

SYSTEM AND METHOD OF AUTOMATICALLY GENERATING CHEMICAL COMPOUNDS WITH DESIRED PROPERTIES

Dimitris K. Agrafiotis, Exton, Pa.; Roger F. Bone, Bridgewater, N.J.; Francis R. Salemme, Kennett Square, Pa., and Richard M. Soll, Lawrenceville, N.J., assignors to 3-Dimensional Pharmaceuticals, Inc., Philadelphia, Pa.

Continuation of Ser. No. 306,915, Sep. 16, 1994, Pat. No. 5,463,564. This application Sep. 28, 1995, Ser. No. 535,822
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—500 2 Claims



1. A system for generating compounds having a prescribed set of activity/properties, comprising:

one or more chemical synthesis robots to robotically synthesize, in accordance with robotic synthesis instructions, a directed diversity chemical library comprising a plurality of chemical compounds;

one or more analysis robots to robotically analyze said chemical compounds to obtain structure-activity data pertaining thereto, said analysis robots including at least one of an assay module, a chemical synthesis indicia generator, a structure and composition analysis module, a physical and electronic property analysis module, and a three dimensional receptor mapping module;

a synthesis protocol generator, comprising:

comparing means for comparing said structure-activity data of said chemical compounds against said prescribed set of activity/properties to identify any of said chemical compounds substantially conforming to said prescribed set of activity/properties;

classifying means for classifying said identified chemical compounds as lead compounds;

structure-activity model derivation means for analyzing said structure-activity data of said compounds and historical structure-activity data pertaining to compounds synthesized and analyzed in the past to derive structure-activity models having enhanced predictive and discriminating capabilities;

reagent identifying means for identifying, in accordance with said structure-activity models, reagents from a reagent database that, when combined, will produce a set of compounds predicted to exhibit activity/properties more closely matching said prescribed set of activity/properties; and

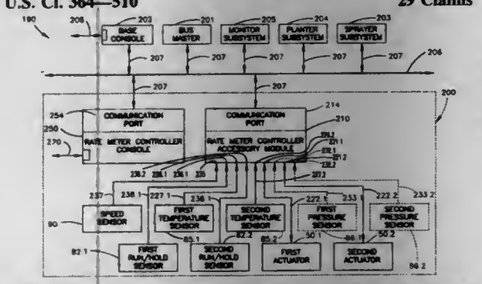
robotic synthesis instruction generating means for generating robotic synthesis instructions that, when executed, enable said chemical synthesis robots to robotically synthesize said set of compounds.

5,574,657

ELECTRONIC RATE METER CONTROLLER AND METHOD

S. D. Tofte, Mankato, and Steven W. Vogel, North Mankato, both of Minn., assignors to Micro-Trak Systems, Inc., Eagle Lake, Minn.

Filed Feb. 8, 1994, Ser. No. 193,387
Int. Cl.[6] G01F *1/684*
U.S. Cl. 364—510 29 Claims



23. A system for managing a plurality of agricultural devices, one of said plurality of agricultural devices having an applicator for dispensing a meterable material by means of a rate meter that controls the rate of material flow through the applicator in response to movement of a manually adjustable primary control member, the system comprising:

(a) user interface means for selectively displaying status and control information associated with the plurality of agricultural devices and for receiving user input information for selectively controlling operation of the plurality of agricultural devices; and

(b) electronic integrated system control means, operatively connected between said user interface means and the plurality of agricultural devices, for identifying each agricultural device to be managed, for storing program code and data, for accessing stored program code and data associated with each identified agricultural device, for receiving user input information from said user interface means, for generating electrical control signals controlling the plurality of agricultural devices and for providing said status and control information to said user interface means;

(c) wherein said electronic integrated system control means comprises an electronic rate meter controller for controlling said one of said plurality of agricultural devices, comprising:

(i) actuator means configured for operative mechanical connection to the manually adjustable primary control member of the rate meter and to receive an electrical control signal, for mechanically moving the manually adjustable primary control member in controlled real time response to said electrical control signal; and

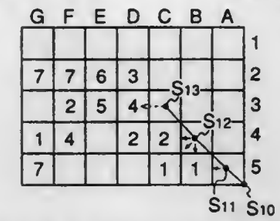
(ii) electronic control means operatively connected to said actuator means for providing said electrical control signal to mechanically move the manually adjustable primary control member to desired control positions; wherein the rate of material flow through the applicator is adjustably controlled in real time in response to said electrical control signal.

5,574,658

METHOD OF DESIGNING OPTIMUM SKELETON AND PLATE STRUCTURES

Nobutaka Ito, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 2, 1994, Ser. No. 236,127
Claims priority, application Japan, Jun. 25, 1993, 5-154007
Int. Cl.[6] G06T *17/20*
U.S. Cl. 364—512 9 Claims



1. A method of designing an optimum skeleton structure by using a computer to obtain a skeleton structure from a density distribution within a 2 or 3 dimensional design region which is obtained as an optimum shape of a mechanical structure, said design region being divided into finite elements each having a density D assigned thereto, said method comprising the steps of:

(a) inputting a first reference value D_S of the density D;

(b) regarding points within the design region where an external force is applied as starting point candidates;

(c) selecting a starting point from the starting point candidates;

(d) extending a line from the starting point and successively passing through finite elements which are adjacent to each other and satisfying $D \geq D_S$ so that the line is as straight as possible; and

(e) stopping the extension of the line and regarding the line as a skeleton member of the skeleton structure derived from the density distribution of the optimum shape of the mechanical structure, when no further adjacent finite elements satisfying $D \geq D_S$ exist or when one of the starting point candidates not previously selected is reached,

said steps d through (e) being repeated with a starting point selected from one of the starting point candidates not previously selected until no more starting point candidates exist.

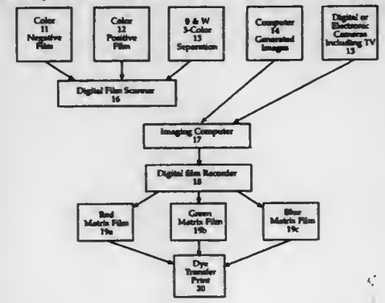
5,574,659

DYE TRANSFER PRINTS UTILIZING DIGITAL TECHNOLOGY

Edward Delvers; Bruce Richardson, and Sharon Brazil, all of Santa Barbara, Calif., assignors to Chromax, Inc., Santa Barbara, Calif.

Filed Oct. 12, 1994, Ser. No. 322,942
Int. Cl.[6] G03C *7/18*
U.S. Cl. 364—514 A 12 Claims

1. In a prior art dye transfer printing process for generating



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motion picture film print wherein said prior art dye transfer printing process comprises the steps of;

(a) presenting a film bearing a color image;

(b) generating at least one color-separated matrix film from said film bearing a color image;

(c) applying a dye to said at least one color-separated matrix film wherein said dye has color crossover characteristics particular to said dye; and

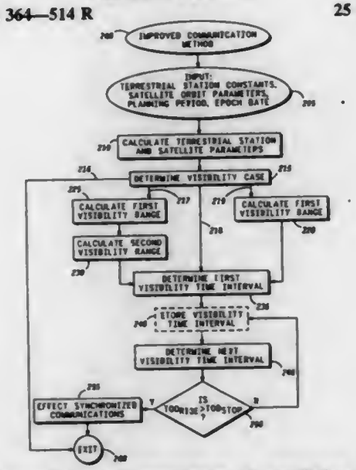
(d) bringing said matrix film into registrable contact with a blank film until a portion of said dye in said matrix film is imbibed by said blank film to form a color prim of said color image, the improvement comprising the additional step of generating a digital representation of said color image and inputting said digital representation of said color image into a computer means operable for manipulating said digital representation of said color image and manipulating said digital representation of said color image by said computer means to generate a color corrected edited digital image, then using said color corrected edited digital image to generate at least one color-separated matrix film as in step (b) above.

5,574,660

COMMUNICATION METHOD AND APPARATUS

Dennis P. Diekelman, Tempe, Ariz., assignor to Motorola, Inc., Schaumborg, Ill.

Filed Jul. 12, 1993, Ser. No. 89,464
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—514 R **25 Claims**



2. A method for rapid determination of constellation visibility for radio communication between a terrestrial station and a satellite, said method comprising steps of:

calculating satellite observation parameters relevant to a particular coverage area by a first computer;

selecting a method for computing orbital parameters from a plurality of methods for computing orbital parameters based on the satellite observation parameters calculated in said calculating step;

calculating visibility time intervals using the method selected in said selecting step;

storing the visibility time intervals in a first storage medium; and

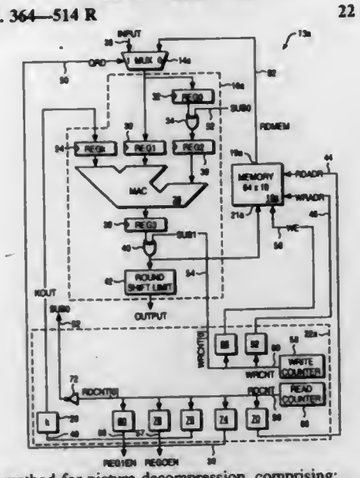
activating the radio during a time determined from the visibility time intervals to synchronize communications between the terrestrial station and the satellite.

5,574,661

SYSTEM AND METHOD FOR INVERSE DISCRETE COSINE TRANSFORM IMPLEMENTATION

Sorin C. Cismas, Sunnyvale, Calif., assignor to CompCore Multimedia, Inc., Sunnyvale, Calif.

Filed Jul. 29, 1994, Ser. No. 282,947
Int. Cl.[6] H04L *12/00*
U.S. Cl. 364—514 R **22 Claims**



1. A method for picture decompression, comprising:

(a) inputting a compressed picture definition digital signal;

(b) digitally processing said compressed picture definition digital signal using a signal processor to generate a spatially redundant picture definition digital signal, the processing steps including performing an evaluation of a plurality of 2-dimensional, 8-point-by-8-point inverse discrete cosine transforms, each said evaluation including sixteen evaluations of a scaled eight-point, one-dimensional inverse discrete cosine transform, scaled by a factor equal to the square root of a power of two, followed by a shift of said two-dimensional inverse discrete cosine transform by a number of bits equal to said power of two, said scaled eight-point one-dimensional inverse discrete cosine transform having values f'(0)–f'(7), from discrete cosine transform values F(0)–F(7), said evaluations of a scaled, eight-point, one-dimensional inverse discrete cosine transform including:

(i) calculating an intermediate value P_0 equal to about $F(0)+F(4)$;

(ii) calculating an intermediate value P_1 equal to about $F(0)-F(4)$;

(iii) calculating an intermediate value P_2 equal to about $F(2)+k_1F(6)$ wherein k_1 is about $2^{1/2}-1$;

(iv) calculating an intermediate value P_3 equal to about $F(2)-k_2F(6)$ wherein k_2 is about $2^{1/2}+1$;

(v) calculating an intermediate value P_4 equal to about $F(1)+k_3F(7)$ wherein k_3 is about $2^{1/2}(2+2^{1/2})^{1/2}-2^{1/2}-1$;

(vi) calculating an intermediate value P_5 equal to about $F(1)-k_4F(7)$ wherein k_4 is about $2^{1/2}(2+2^{1/2})^{1/2}+2^{1/2}+1$;

(vii) calculating an intermediate value P_6 equal to about $F(5)+k_5F(3)$ wherein k_5 is about $2^{1/2}(2-2^{1/2})^{1/2}+2^{1/2}-1$;

(viii) calculating an intermediate value P_7 equal to about $F(5)-k_6F(3)$ wherein k_6 is about $2^{1/2}(2-2^{1/2})^{1/2}-2^{1/2}+1$;

(ix) after said intermediate values P_0 and P_2 become available, calculating an intermediate value Q_0 equal to about $P_0+k_7P_2$ wherein k_7 is about $2^{-1/2}(2+2^{1/2})^{1/2}$;

(x) after said intermediate values P_0 and P_2 become available, calculating an intermediate value Q_2 equal to about $P_0-k_7P_2$;

(xi) after said intermediate values P_1 and P_3 become available, calculating an intermediate value Q_1 equal to about $P_1+k_8P_3$ wherein k_8 is about $2^{-1/2}(2-2^{1/2})^{1/2}$;

(xii) after said intermediate values P_1 and P_3 become available, calculating an intermediate value Q_3 equal to about $P_1-k_8P_3$;

(xiii) after said intermediate values P_4 and P_6 become available, calculating an intermediate value Q_4 equal to about $P_4+k_9P_6$ wherein k_9 is about $-(2+2^{1/2})^{1/2}+2^{1/2}+1$;

(xiv) after said intermediate values P_4 and P_6 become available, calculating an intermediate value Q_6 equal to about $P_4-k_9P_6$;

(xv) after said intermediate values P_5 and P_7 become available, calculating an intermediate value Q_5 equal to about $P_5+k_{10}P_7$ wherein k_{10} is about $(2+2^{1/2})^{1/2}+2^{1/2}+1$;

(xvi) after said intermediate values P_5 and P_7 become available, calculating an intermediate value Q_7 equal to about $P_5-k_{10}P_7$;

(xvii) after said intermediate values Q_6 and Q_7 become available, calculating an intermediate value R_6 equal to about $Q_6+k_3Q_7$;

(xviii) after said intermediate values Q_6 and Q_7 become available, calculating an intermediate value R_7 equal to about $Q_6-k_3Q_7$;

(xix) after said intermediate values Q_0 and Q_4 become available, calculating said value f'(0) equal to about $Q_0+k_{11}Q_4$ wherein k_{11} is about $2^{-1/2}(2+(2+2^{1/2})^{1/2})^{1/2}$;

(xx) after said intermediate values Q_0 and Q_4 become available, calculating said value f'(7) equal to about $Q_0-k_{11}Q_4$;

(xxi) after said intermediate values Q_1 and R_6 become available, calculating said value f'(1) equal to about $Q_1+k_{12}R_6$ wherein k_{12} is about $(1/2)(2+(2+2^{1/2})^{1/2})^{1/2}$;

(xxii) after said intermediate values Q_1 and R_6 become available, calculating said value f'(6) equal to about $Q_1-k_{12}R_6$;

(xxiii) after said intermediate values Q_2 and Q_5 become available, calculating said value f'(3) equal to about $Q_2+k_{13}Q_5$ wherein k_{13} is about $2^{-1/2}(2-(2+2^{1/2})^{1/2})^{1/2}$;

(xxiv) after said intermediate values Q_2 and Q_5 become available, calculating said value f'(4) equal to about $Q_2-k_{13}Q_5$;

(xxv) after said intermediate values Q_3 and R_7 become available, calculating said value f'(2) equal to about $Q_3+k_{12}R_7$; and

(xxvi) after said intermediate values Q_3 and R_7 become available, calculating said value f'(5) equal to about $Q_3-k_{12}R_7$; and

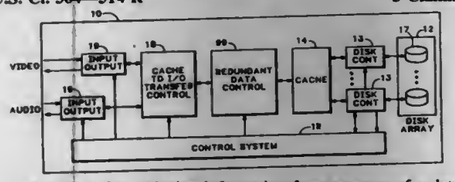
(c) outputting said spatially redundant picture definition digital signal for use in rendering a display.

5,574,662

DISK-BASED DIGITAL VIDEO RECORDER

Kevin D. Windrem, Grass Valley; David Casper, Oregon House; Anna Greco, Grass Valley; Scott Murray, Nevada City; Paul O'Connor, Grass Valley, and Elaine B. Zamani, Nevada City, all of Calif., assignors to Tektronix, Inc., Wilsonville, Oreg.

Division of Ser. No. 949,174, Sep. 21, 1992. This application Jun. 1, 1995, Ser. No. 457,895
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—514 R **3 Claims**



1. A method for retrieving information from an array of n data storage devices, said array including one redundant storage device, comprising the steps of:

requesting information from the array of data storage devices;

retrieving data from the first n-1 data storage devices to respond to the request for information; and

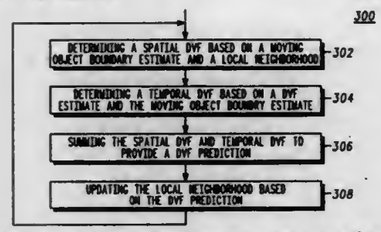
deriving the information based on the retrieved data, thereby enabling information retrieval without waiting for the response of the last data storage device.

5,574,663

METHOD AND APPARATUS FOR REGENERATING A DENSE MOTION VECTOR FIELD

Taner Ozcelik, San Jose, Calif.; James C. Brailean, Park Ridge, and Aggelos K. Katsaggelos, Chicago, both of Ill., assignors to Motorola, Inc.

Filed Jul. 24, 1995, Ser. No. 505,981
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—514 R **26 Claims**



1. A method for regenerating a dense motion vector field, comprising:

determining, using a spatial DVF determiner, a spatial DVF based on a moving object boundary estimate and a local neighborhood of previous DVF predictions;

determining, using a temporal DVF determiner, a temporal DVF based on a DVF estimate and the moving object boundary estimate;

summing, using a summer, the spatial DVF and temporal DVF to provide a DVF prediction; and

updating the local neighborhood of previous DVF predictions based on the DVF prediction.

5,574,664

METHOD FOR CALIBRATING COMPUTER MONITORS USED IN THE PRINTING AND TEXTILE INDUSTRIES

Michael F. Feasey, 701 Calle Cumbre, San Clemente, Calif. 92673

Division of Ser. No. 169,516, Dec. 17, 1993, Pat. No. 5,459,678, which is a continuation-in-part of Ser. No. 909,109, Jul. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 14,364, Feb. 5, 1993, abandoned. This application Jul. 14, 1995, Ser. No. 502,568
Int. Cl.[6] G01K *19/00*
U.S. Cl. 364—571.07 **8 Claims**

1. A method for calibrating color settings of a computer monitor to cause a displayed image to essentially match a printed image on standard media, comprising the steps of:

1) orienting a monitor sensor to sense red, green and blue monitor illumination components from the face of the computer monitor;

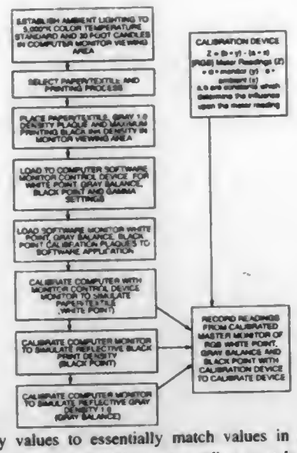
2) orienting an ambient sensor to sense red, green and blue ambient illumination components at the face of the computer monitor;

3) displaying calibration plaques on the face of the computer monitor;

4) sensing said monitor illumination components with said monitor sensor and said ambient illumination components with said ambient sensor;

5) generating a set of red, green and blue display values as a function of illumination components sensed by said monitor sensor and said ambient sensor;

6) adjusting gamma values for red, green and blue color guns of the computer monitor to cause said red, green and blue



display values to essentially match values in a predefined monitor calibration table corresponding to at least one standard medium.

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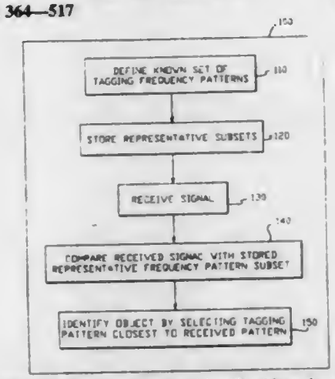
RECEIVER APPARATUS AND METHOD FOR FREQUENCY TAGGING

Anand Narasimhan, New York, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1994, Ser. No. 235,447

Int. Cl.[6] G01S *15/00*

U.S. Cl. 364—517 **5 Claims**



1. A method for a transceiver to identify objects by recognizing one or more frequency pattern tags, the method comprising the steps of:

defining a set of unique frequency patterns, each said unique frequency pattern comprising a set of at least two different frequencies, each frequency pattern in the set uniquely tagging an object that transmits its respective frequency pattern tag, the object being in a set of one or more objects;

storing the set of unique frequency patterns in a memory of the transceiver;

transmitting a frequency pattern tag to the transceiver by one or more of the objects;

estimating the frequency pattern of the received signal;

comparing the estimated frequency pattern to a selected test frequency pattern to determine a distance between the estimated frequency pattern and the test frequency pattern;

modifying the test frequency pattern to minimize the distance to a final test frequency pattern that is developed by the modifications;

selecting one stored pattern from the stored set that has the shortest distance to the final test frequency pattern, the selected stored pattern being that tag of an object that is selected as the object transmitting the tag.

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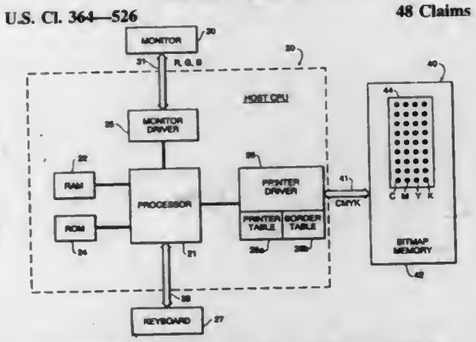
COLOR PRINTING METHOD AND APPARATUS USING GAMUT MAPPING IN MUNSELL SPACE

Brigitte Ruetz, San Bruno; Gesualdo Alesii, San Jose, and Timothy I. Kohler, Mountain View, all of Calif., assignors to Canon Information Systems, Inc., Costa Mesa, Calif.

Filed May 13, 1994, Ser. No. 242,234

Int. Cl.[6] G03F *3/08*

U.S. Cl. 364—526 **48 Claims**



22. Apparatus for constructing a printer table, comprising:

means for transforming relative spectral reflectance measurements of printable colors into Munsell space;

means for deriving color mapping functions which map Munsell space coordinates into primary color coordinates;

means for determining a Munsell printer gamut by selecting points in Munsell space where the color mapping functions result within the printable primary color range;

determining a CIELAB space extended gamut which includes the printer gamut and a typical color monitor gamut;

means for mapping all discrete points of the extended gamut in CIELAB space into the Munsell space; and

means for inserting primary color values into said printer table by taking the mapped CIELAB points and applying the color mapping functions to the mapped CIELAB points that lie inside the Munsell printer gamut, and applying gamut mapping to the mapped CIELAB points in Munsell space that lie outside the Munsell printer gamut;

means for transforming the points in CIELAB space into points in Munsell space for each printable color; and

means for transforming the points in Munsell space in cylindrical coordinates H, V, C into Cartesian coordinates U, V, W for each printable color,

wherein the gamut mapping maps a color point, in the Munsell space which lies outside the Munsell printer gamut, at a constant angle to a color of the same hue at the border of the Munsell printer gamut.

5,574,667

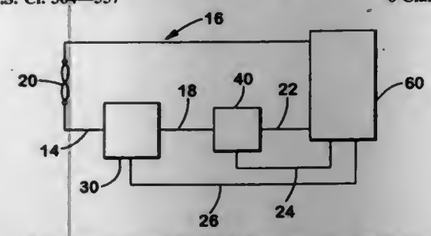
TEMPERATURE INDEPENDENT FAN-ERROR CORRECTION CIRCUIT

James S. Dinh, Spring, and George K. Korinsky, The Woodlands, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 76,466, Jun. 14, 1993, Pat. No. 5,526,289. This application Jun. 1, 1995, Ser. No. 457,039

Int. Cl.[6] H02H *7/08*; H05K *7/20*

U.S. Cl. 364—557 **6 Claims**



1. A computer system having a housing, a fan and a power supply for applying a voltage to the fan and electrical power to the computer system comprising:

a fan control circuit electrically coupled to the fan for adjusting the voltage applied to the fan, the fan control circuit producing at least one fan-error signal when the fan control circuit detects one or more fan operational errors, wherein each fan operational error is detected independently of temperature within the housing; and

protection circuitry electrically coupled to the power supply and the fan control circuit for receiving each fan-error signal and for sending a power-off signal to the power supply thereby commanding the power supply to turn off the electrical power to the electrical equipment upon receipt of at least one fan-error signal.

5,574,668

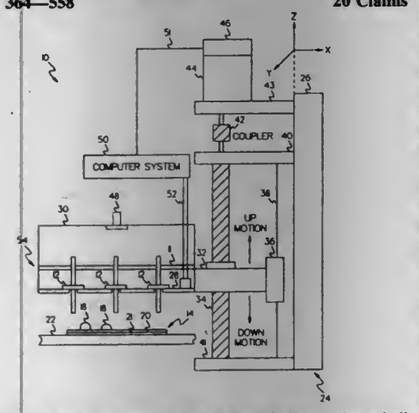
APPARATUS AND METHOD FOR MEASURING BALL GRID ARRAYS

Elwin M. Beaty, 13529 Arthur St., Minnetonka, Minn. 55305

Filed Feb. 22, 1995, Ser. No. 394,642

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—558 **20 Claims**



1. A ball grid array measurement apparatus for inspecting a ball grid array comprising:

(a) a base;

(b) fixture means, connected to the base, for holding the ball grid array;

(c) actuating means, connected to the base, for moving a stage in at least one axis in response to a motion control signal;

(d) position sensing means, connected to the stage, for sensing a position of the stage, wherein the position sensing means has a position output;

(e) touch sensor means, connected to the stage, for sensing contact with the ball grid array when the actuating means moves the stage toward the ball grid array, wherein the touch sensor means further comprises a plurality of gas pressure backed contact switches, each in a predetermined position, and each having a contact signal; and

(f) computer processor means, connected to receive the contact signal and position signal, for storing the position of the stage at a time of contact to measure the ball grid array at the predetermined position.

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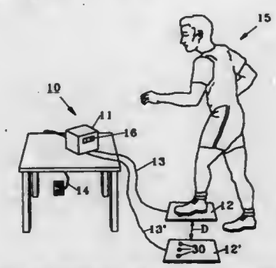
DEVICE FOR MEASURING FOOT MOTION AND METHOD

William R. Marshall, 2021 Downing St., Greensboro, N.C. 27410

Continuation of Ser. No. 68,857, May 28, 1993, abandoned. This application Jan. 25, 1995, Ser. No. 377,692

Int. Cl.[6] A63B *71/02*;*67/00*

U.S. Cl. 364—569 **8 Claims**



1. A device for timing a moving subject comprising: a first separately movable pad, said first pad comprising means for sensing the presence of the subject contiguous thereto, a second separately movable pad, said second pad comprising means for sensing the presence of the subject contiguous thereto, said first pad sensing means and said second pad sensing means for sensing the presence of the subject contiguous thereto, each of said pad sensing means comprising a separate optical sensor circuit, each of said optical sensor circuits comprising a light source and a light sensor, said light source comprising a light-emitting diode, said light sensor comprising a photo transistor, said light-emitting diode and said photo transistor positioned so that light emitted from said diode and reflected by said subject controls the output current of said photo transistor, electrical circuitry, said electrical circuitry comprising a means for measuring a time interval, means for displaying said time interval, said means for displaying said time interval comprising means for generating a sound, said sound generation means for audibly indicating said time interval, said sound generation means comprising means for generating a sound of variable pitch, said variable pitch sound generation means comprising a flip,flop, said flip-flop for storing the pitch of the sound to be generated, a multi-vibrator, said multi-vibrator connected to said flip-flop, said multi-vibrator for controlling the duration of the sound to be generated, said variable pitch sound generation means for generating a high-pitched sound when said time interval decreases, said variable pitch sound generation means for generating a low-pitched sound when said time interval increases, said time interval displaying means connected to said electrical circuitry, a first flexible cable, said first flexible cable joined to said sensing means of said first pad, a second flexible cable, said second flexible cable joined to said sensing means of said second pad, said first and second flexible cables independently connected to said electrical circuitry and allowing separate movement of said pads to vary the distance therebetween, wherein the

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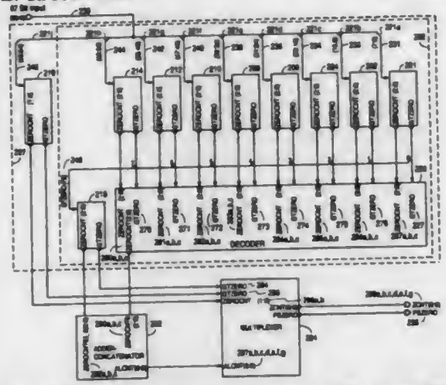
time interval between the sensing of the subject contiguous said first pad and the sensing of the subject contiguous said second pad can be displayed.

5,574,670

APPARATUS AND METHOD FOR DETERMINING A NUMBER OF DIGITS LEADING A PARTICULAR DIGIT

Leonel Lozano, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 24, 1994, Ser. No. 295,347
Int. Cl.[6] G06F 7/00;15/00
U.S. Cl. 364—715.1 35 Claims



12. An apparatus to determine a number of leading count digits in a data input signal, the data input signal having X groups of M digits, each digit having one of N possible values comprised of count values and non-count values, wherein a count digit is a digit having a count value, the apparatus comprising:

a first counter having an input to receive a most significant group of the X groups of M digits having a non-count digit, having counter circuitry to determine a first count number, the first count number representing a location of the most significant non-count digit in the X groups of M digits, and having an output to communicate the first count number;

a plurality of detectors, each having an input to receive a group of the M digits, each having detector circuitry to detect the presence and absence of a non-count digit in the respective group of M digits, and each having an output to communicate a first state when a non-count digit is present and to communicate a second state when a non-count digit is absent in the M digits;

a second counter having an input coupled to the outputs of the detectors, having counter circuitry responsive to the first states and second states communicated from the detectors to determine a second count number, the second count number representing the number of leading groups of the X groups of M digits having an absence of a non-count digit, and having an output to communicate the second count number; and

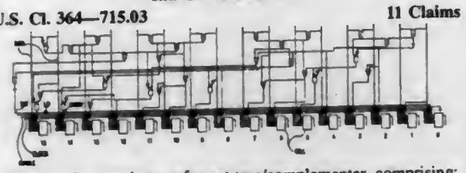
a concatenator having an input coupled to the outputs of the first counter and the second counter to receive the first count number and the second count number, respectively, and having concatenator circuitry to concatenate the second count number to the first count number to form a concatenation signal representing the number of leading count digits in the X groups of M digits in the data input signal; wherein the first count number is represented by Z digits where $M=N^Z$ and X, M, N, and Z are non-negative integers.

5,574,671

TRUE/COMPLEMENTER FOR A HALF-BAND FILTER

William R. Young; Cindy C. Manion; Perry W. Frogge, and David H. Damarow, all of Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 304,433, Sep. 12, 1994, which is a continuation of Ser. No. 930,167, Aug. 14, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 462,684
Int. Cl.[6] H03M 7/00
U.S. Cl. 364—715.03 11 Claims



7. A two's complement format true/complementer, comprising:

plural cells Cj, j=0, 1, . . . , N, with each of said cells Cj having a data bit input, a saturation bit input, a carry bit input, a true/complement bit input, and a bit memory coupled to said inputs;

saturation circuitry with inputs coupled to said data bit inputs of said cells Cj and an output coupled to said saturation bit inputs of cells Cj, said saturation circuitry detecting the condition of a bit at the data bit input of CN being a 1 and the bit at the data bit input of Cj being 0 for all j not equal to N, said saturation circuitry outputting a bit indicative of said condition; and

logic circuitry coupled to said inputs of said cells and to said saturation circuitry for (i) when a bit at said true/complement bit input indicates true, said bit memory of cell Cj stores a bit equal to the bit at said data bit input, and (ii) when a bit at said true/complement bit input indicates complement, said bit memory of cell Cj stores a bit equal to the complement of the bit at said data bit input plus the bit at said carry bit input, and (iii) when the bit output by said saturation circuitry indicates said condition and when the bit at said true/complement bit input indicates complement said memory of cell CN stores 0 and said memory of cells Cj store 1 for j not equal to N.

5,574,672

COMBINATION MULTIPLIER/SHIFTER

Willard B. Briggs, Dallas, Tex., assignor to Cyrix Corporation, Richardson, Tex.

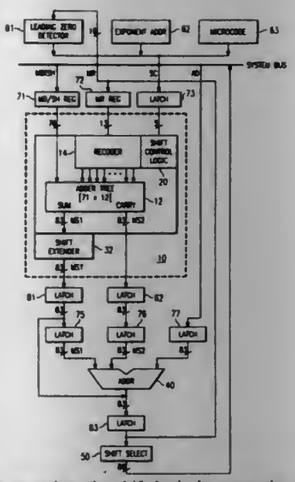
Continuation of Ser. No. 951,217, Sep. 25, 1992, abandoned. This application Oct. 21, 1994, Ser. No. 331,232
Int. Cl.[6] G06F 5/01;7/52
U.S. Cl. 364—715.08 15 Claims

1. A combination multiplier/shifter circuit for selectably performing multiplication and shift operations, the multiplier/shifter circuit including an adder array in which multiplication operations are performed by inputting to the adder array appropriately shifted values of a multiplicand, each equal to plus or minus a successive power of two times the multiplicand, the multiplier/shifter circuit comprising:

multiplication logic, including selection logic and the adder array, coupled to receive, (i) for multiplication operations, a multiplier and the multiplicand, and (ii) for shift operations, a shift operand in place of the multiplicand; and

shift logic, coupled to the selection logic and including shift count circuitry that provides a shift count representative of a shift in the shift operand, the shift logic being coupled to receive the shift count for each shift operation, wherein,

for a multiplication operation, the selection logic is responsive to the multiplier to generate appropriately shifted values of the multiplicand for input to the adder array, which then provides a corresponding multiplication output; and



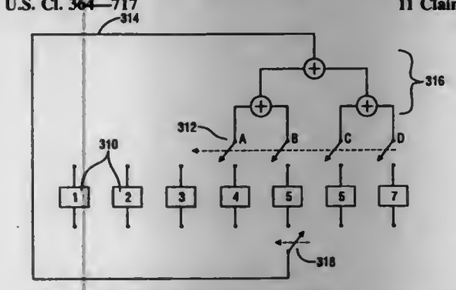
for a shift operation, the shift logic is responsive to the shift count for causing the selection logic to generate a correspondingly shifted value of the shift operand for input to the adder array, such that the adder array provides a shift output corresponding to the shift operand shifted in accordance with the shift count.

5,574,673

PARALLEL ARCHITECTURE FOR GENERATING PSEUDO-RANDOM SEQUENCES

Menahem Lowy, Arlington, Tex., assignor to Board Of Regents, The University Of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 158,969, Nov. 29, 1993, abandoned. This application Nov. 29, 1994, Ser. No. 346,159
Int. Cl.[6] G06F 1/02
U.S. Cl. 364—717 11 Claims



1. A digital sequence generator, comprising:

a plurality of memory cells, each memory cell storing a bit of information in a digital format;

logic circuitry having a plurality of inputs connectable to selected memory cells, for generating an output based upon the contents of said memory cells;

tap switches, each of said tap switches for selectively connecting one of said memory cells to an input of said logic circuitry;

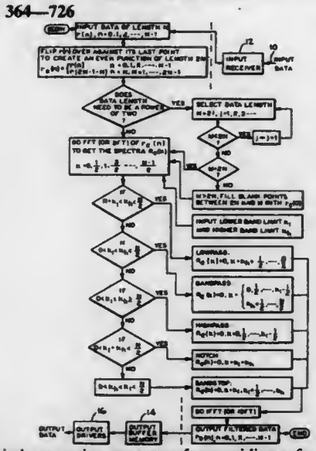
feedback circuitry for coupling the output of the logic circuitry to an input of a selected memory cell.

5,574,674

FOURIER TRANSFORM PROCESSING FOR DIGITAL FILTERS OR OTHER SPECTRAL RESOLUTION DEVICES

Cheh Pan, 13263 Paramount Dr., Saratoga, Calif. 95070

Filed Mar. 14, 1994, Ser. No. 209,251
Int. Cl.[6] G06F 15/00
U.S. Cl. 364—726 10 Claims



1. Digital processing apparatus for providing a frequency spectrum of a digital waveform by computing the Fourier transform of a train of sampled digital signals at uniform time intervals which are initiated at some arbitrary time and which therefore exhibit the Gibbs phenomenon due to discontinuities of the signal waveform at the start and end of the signal train, said apparatus comprising means for receiving a train of such signals over a period of time with said train of signals being represented by a first sequence of discrete numerical values beginning with a first value at the start of the time period and ending with an end value at the end of the time period means for creating a second sequence of discrete numerical values from the first sequence which second sequence begins with said first value and ends with a value numerically equal to said first value and which includes remaining values at said time intervals arranged so that the frequency components of said first sequence remain unchanged except those introduced by the discontinuities in the signal waveform at the start and end of the time period, and means for transforming the second sequence into a plurality of frequency domain component digital signals by using a digital Fourier transform method whereby an accurate frequency domain transformation of the first sequence is accomplished without introducing errors due to the discontinuities at the first and end values of the first sequence to thereby eliminate the Gibbs phenomenon.

5,574,675

STATE-CONTROLLED HALF-PARALLEL ARRAY WALSH TRANSFORM

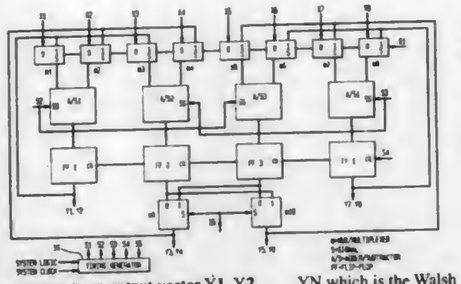
Wen-Chang Lin, Hsinchu, Taiwan, assignor to Industrial Technology Research Laboratories, Hsinchu, Taiwan

Filed Mar. 22, 1994, Ser. No. 215,857
Int. Cl.[6] G06F 7/36
U.S. Cl. 364—727 7 Claims

1. A fast Walsh transform processor circuit for performing a Walsh transform on an input vector X1, X2, . . . XN where $N=2^p$ and p is a positive integer, comprising:

(a) N/2 adder/substractor units; and

(b) means configured to receive elements X1, X2, . . . XN and configured to supply input signals to said adder/subtractor units formed from said elements X1, X2, . . . XN in preselected cycles and configured to supply a control signal to each adder/subtractor unit in each of 2p successive cycles to determine whether each unit adds or subtracts in the cycle to



generate an output vector Y1, Y2. . . . , YN which is the Walsh transform of X1, X2, ... XN.

5,574,676

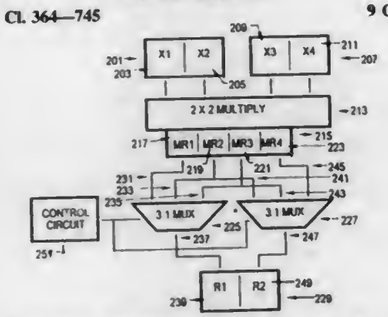
INTEGER MULTIPLY INSTRUCTIONS INCORPORATING A SUBRESULT SELECTION OPTION

Ruby B. Lee, Los Altos, Calif.; Charles R. Dowdell, and Joel D. Lamb, both of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 2, 1994, Ser. No. 300,278

Int. Cl.[6] G06F *7/52*

U.S. Cl. 364—745 **9 Claims**



1. A computer apparatus for selection of multiplication subresults for storage in a target register, comprising:

a plurality of operand register fields having values stored therein, said operand register fields having N-bits each;

means for multiplying said values stored in said operand register fields to generate a result comprising 2N-bits;

means for storing said 2N-bit result;

multiplexor means for selecting any of said 2N-bits;

at least a first operations code (OP-Code) field containing at least a first OP-Code value for directing said computer to perform a multiply with select operation;

at least a first select field containing at least a first select field value indicating which of said 2N-bits is to be selected;

control circuit means responsive to said first OP-Code value and to said select field value for directing said multiplying means to multiply said values stored in said operand register fields and said multiplexor means to select any of said 2N-bits; and

means for storing said selected bits;

wherein said stored selected bits comprise a subresult of said 2N-bit result.

5,574,677

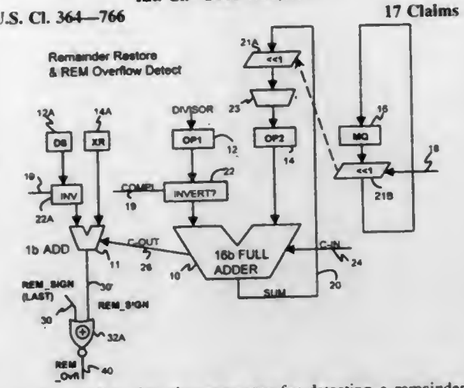
ADAPTIVE NON-RESTORING INTEGER DIVIDE APPARATUS WITH INTEGRATED OVERFLOW DETECT

Earl T. Cohen, Fremont, Calif., assignor to Exponential Technology, Inc., San Jose, Calif.

Filed Nov. 23, 1994, Ser. No. 344,179

Int. Cl.[6] G06F *7/38;7/52*

U.S. Cl. 364—766 **17 Claims**



1. An overflow detection apparatus for detecting a remainder overflow in an integer division sequence of a dividend divided by a divisor, the integer division sequence having a plurality of iterations including a last iteration, the last iteration producing a last partial remainder having a last remainder sign, the last remainder sign being positive or negative, the overflow detection apparatus comprising:

final restore means, receiving the last partial remainder and the last remainder sign, for restoring the last partial remainder, the final restore means subtracting an absolute value of the divisor from the last partial remainder and outputting a difference as a result if the last remainder sign is positive, the final restore means adding the absolute value of the divisor to the last partial remainder and outputting a sum as the result if the last remainder sign is negative, the result having a result sign indicating if the result is positive or negative;

select means, receiving the result from the final restore means and the last remainder sign, for selecting as a final remainder the result from the final restore means if the last remainder sign is negative, and for selecting as the final remainder the last partial remainder if the last remainder sign is positive; and

overflow detect means, receiving the last remainder sign and the result sign, for signaling the remainder overflow when the last remainder sign and the result sign are both positive or both negative;

whereby the remainder overflow is detected from the result sign from the final restore means and the last remainder sign.

5,574,678

CONTINUOUS TIME PROGRAMMABLE ANALOG BLOCK ARCHITECTURE

James L. Goreckl, Hillsboro, Oreg., assignor to Lattice Semiconductor Corp., Hillsboro, Oreg.

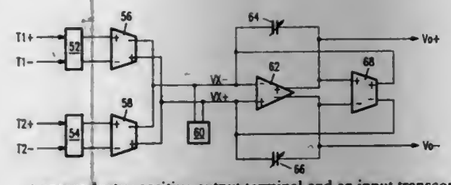
Filed Mar. 1, 1995, Ser. No. 396,994

Int. Cl.[6] G06G *7/00*

U.S. Cl. 364—807 **23 Claims**

1. A programmable analog circuit apparatus, the programmable analog circuit apparatus receiving a differential analog input signal and providing a processed differential analog output signal comprising

a first input transconductor, the input transconductor having a programmable transconductance, the input transconductor having an input transconductor positive input terminal and an input transconductor negative input terminal coupled to receive the differential analog input signal and an input



transconductor positive output terminal and an input transconductor negative output terminal;

an amplifier, the amplifier including first and second amplifier input terminals and first and second amplifier output terminals, the positive and negative input transconductor output terminals being coupled to the first and second amplifier input terminals, the amplifier output terminals being coupled to the first and second amplifier input terminals, the amplifier output terminals providing the processed differential analog output signal;

a feedback transconductor, the feedback transconductor including a feedback transconductor positive input terminal and a feedback transconductor negative input terminal and a feedback transconductor positive output terminal and a feedback transconductor negative output terminal, the feedback transconductor positive and negative input terminals being coupled to the first and second amplifier output terminals and the feedback transconductor positive and negative output terminals being coupled to the first and second amplifier input terminals, the feedback transconductor output terminals having a high output impedance.

5,574,679

MEMORY DATA PROTECTION FOR A FERROELECTRIC MEMORY

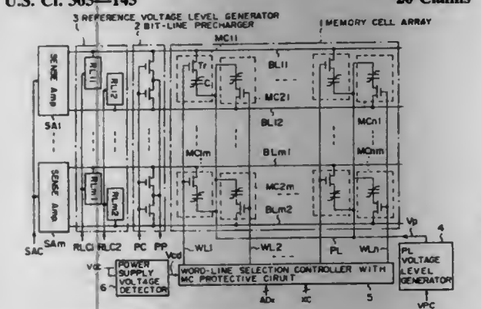
Tetsuya Ohtsuki, and Hiroki Koike, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 27, 1995, Ser. No. 549,417

Claims priority, application Japan, Oct. 27, 1994, 6-263751

Int. Cl.[6] G11C *11/22*

U.S. Cl. 365—145 **20 Claims**



1. A memory device comprising:

a power supply for supplying power to said ferroelectric memory device;

a memory cell array comprising a plurality of memory cells, each said memory cell comprising a switching transistor and a ferroelectric capacitor, said ferroelectric capacitor being connected to a data line at an electrode thereof through said switching transistor and being connected to a cell electrode line at another electrode thereof, said switching transistor being further connected to a selection line at a control electrode thereof, said switching transistor being forced into conduction when a selection signal appears on said selection line and being forced out of conduction when a non-selection signal appears on said selection line;

voltage generating means for generating a first predetermined voltage on said cell electrode line;

detecting means for detecting an voltage of said power supply to generate a low-voltage detection signal when said voltage of said power supply is lower than a predetermined threshold voltage; and

protective control means responsive to said low-voltage detection signal for fixing said selection line at a second predetermined voltage so as to protect said ferroelectric capacitor from a voltage change of said selection line.

5,574,680

SEMICONDUCTOR MEMORY DEVICE

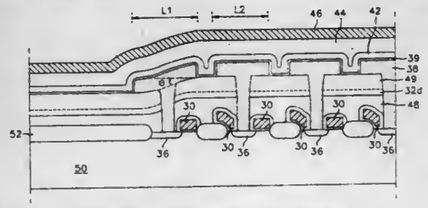
Kyeong T. Kim, and Ji H. Ahn, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 103,267, Aug. 9, 1993, Pat. No. 5,392,232. This application Oct. 4, 1994, Ser. No. 317,905

Claims priority, application Rep. of Korea, Aug. 8, 1992, 14243/1992

Int. Cl.[6] G11C *11/24*

U.S. Cl. 365—149 **11 Claims**



5. A semiconductor memory device, comprising:

a plurality of spaced-apart bit lines;

a plurality of spaced-apart word lines, each of said word lines intersecting each of said bit lines;

a memory cell array comprised of a plurality of rows and columns of memory cells, each of said memory cells including a capacitor and a switching transistor electrically coupled between intersecting ones of said bit lines and word lines;

wherein said capacitor of each of said memory cells includes a storage electrode; and,

wherein said storage electrode of said capacitor of an outermost one of said memory cells has a height which is lower than that of said storage electrode of said capacitor of an innermost one of said memory cells.

5,574,681

METHOD FOR DRAM SENSING CURRENT CONTROL

Richard C. Foss, Kirkcaldy Fife, Scotland; Peter B. Gillingham, Kanata; Robert Harland, Carp, both of Canada; Masami Mitsuhashi, Gunma, and Atsushi Wada, Okazaki, both of Japan, assignors to Mosaid Technologies Incorporated, Kanata, Canada

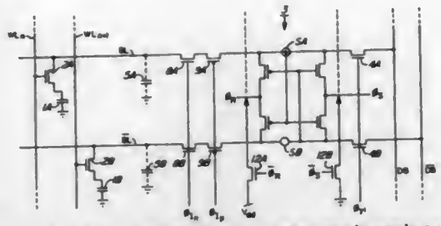
Continuation of Ser. No. 147,038, Nov. 4, 1993, Pat. No. 5,414,662, which is a continuation of Ser. No. 680,747, Apr. 5, 1991, abandoned. This application Jan. 25, 1995, Ser. No. 377,622

Claims priority, application United Kingdom, Apr. 6, 1990, 9007789

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—149 **2 Claims**

1. A dynamic random access memory (DRAM) comprising a plurality of bit lines and associated sense amplifiers, the bit lines being arrayed across an integrated circuit chip and the sense amplifiers being disposed in a row, a pair of low-resistance power supply conductors extending in parallel with said row across said chip for carrying logic high level and logic low level voltages, sense amplifier enabling signal conductors extending across said chip accessible to said sense amplifiers, means for coupling sense



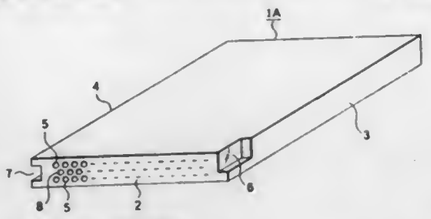
inputs of said sense amplifiers to said power supply conductors, and means coupling said sense amplifier enabling signal conductors to enabling inputs of said means for coupling sense inputs, for enabling passage of current resulting from said logic high level and low level voltages to said sense amplifiers, said means for coupling sense inputs of said sense amplifiers being comprised of local field effect transistors having their gates connected to said sense amplifier enabling signal conductors, said gates forming said enabling inputs.

5,574,682

PC CARD

Takayuki Shinohara, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1995, Ser. No. 537,005
Claims priority, application Japan, Apr. 27, 1995, 7-104259
Int. Cl.[6] G11C *11/50;8/00;* G06F *3/00*
U.S. Cl. 365—164 **16 Claims**



1. A PC card, comprising:
a housing having side surfaces and a connector surface communicating with said side surfaces;
first contact holes formed on said connector surface and mated with contact pins of a multipin connector and contact pins of a standard pin connector; and
second contact holes formed on said connector surface and mated with said contact pins of said multipin connector.

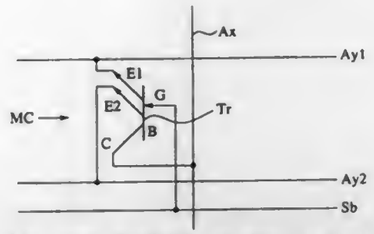
5,574,683

MEMORY DEVICE AND A METHOD FOR WRITING INFORMATION IN THE MEMORY DEVICE

Toshihiko Mori, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 27, 1995, Ser. No. 411,302
Claims priority, application Japan, May 16, 1994, 6-100504
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—179 **34 Claims**

2. A memory device comprising row address signal line; pairs of column address signal lines; a memory cell provided at an area where the row address signal line intersects with the column address signal lines; and a first row address signal line driver and a second row address signal line driver provided at one end of the row address signal line,
the memory cell comprising a memory transistor of double-emitter structure each including one collector electrode and emitter electrodes, and exhibiting negative differential characteristic;



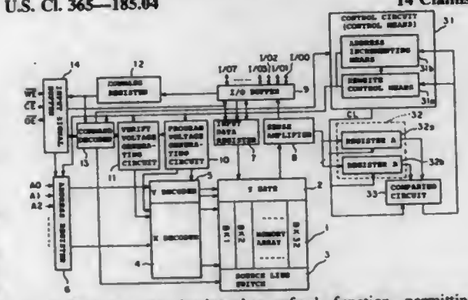
one of the emitter electrodes of the memory transistor being connected to one of the column address signal lines which is on a lower-voltage side, the other of the emitter electrodes being connected to the other of the column address signal lines which is on a higher-voltage side, the collector electrode of the memory transistor being connected to the address signal line;
the first row address signal line driver comprising a first driver transistor of a double-emitter structure which includes one collector electrode, and a smaller-area emitter electrode and a larger-area emitter electrode, and exhibits a negative differential characteristic;
the smaller-area emitter electrode of the first driver transistor being grounded, and the collector electrode of the driver transistor being connected to the row address signal line;
the second row address signal line driver being the same as the first row address signal line driver, and comprising a second driver transistor of a double-emitter structure which includes one collector electrode, and a smaller-area emitter electrode and a larger-area emitter electrode, and exhibits a negative differential characteristic; and
the smaller-area emitter electrode of the second driver transistor being grounded, and the collector electrode of the second driver transistor being connected to the row address signal line.

5,574,684

FLASH MEMORY HAVING DATA REFRESH FUNCTION AND DATA REFRESH METHOD OF FLASH MEMORY

Mitsuhiro Tomoeda, Hyogo, Japan, assignor to Mitsubishi Electric Semiconductor Software Co., Ltd., Hyogo, and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of Japan

Filed Jun. 5, 1995, Ser. No. 463,802
Claims priority, application Japan, Jan. 9, 1995, 7-001303
Int. Cl.[6] G11C *7/00;29/00*
U.S. Cl. 365—185.04 **14 Claims**



1. A flash memory having data refresh function, permitting verify operation of writing and erasing data to and from a memory cell utilizing program verify mode and erase verify mode, said flash memory comprising:
comparing means for comparing data read out in the program verify mode in response to assignment of a read-out address and data read out in the erase verify mode in response to assignment of the same address as the read-out address; and

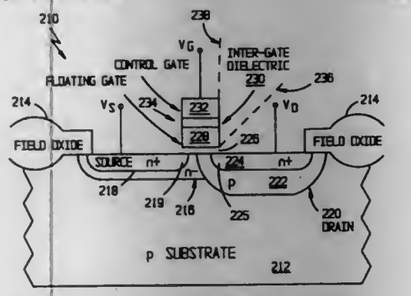
rewrite control means for controlling rewrite of data of a memory cell corresponding to inconsistent data, when the inconsistent data are detected by said comparing means.

5,574,685

SELF-ALIGNED BURIED CHANNEL/JUNCTION STACKED GATE FLASH MEMORY CELL

James Hsu, Saratoga, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 1, 1994, Ser. No. 299,876
Int. Cl.[6] G11C *16/04*
U.S. Cl. 365—185.18 **5 Claims**



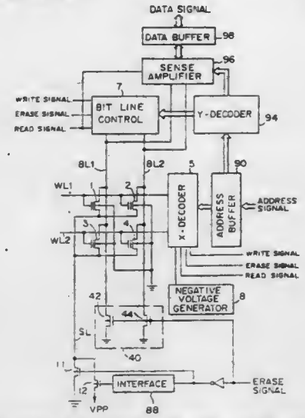
1. A one-transistor memory cell structure comprising:
a substrate (**212**);
an n⁻ buried channel/junction region (**216**) disposed in said substrate;
an n⁺-type source region (**218**) disposed in said substrate and on a first side of said buried channel/junction region defining a source side;
a drain structure (**220**) disposed in said substrate and on a second side of said n⁻ buried channel/junction region defining a drain side;
said drain structure including a first p-type drain region (**222**) and a second n⁺-type drain region (**224**) disposed in said first p-type drain region;
said p-type drain region (**222**) being formed by implanting on the drain side with a large tilt angle with respect to a line disposed perpendicularly to said stacked gate structure so as to cause the channel length of the memory cell to be set on the drain side and to be made independent of critical dimensions of said stacked gate structure;
a tunnel oxide (**226**) disposed on said substrate;
a stacked gate structure (**234**) disposed on said tunnel oxide and being formed over said n-channel/junction region (**216**);
said stacked gate structure (**234**) including a floating gate (**228**), an inter-gate dielectric (**230**) disposed on said floating gate, and a control gate (**232**) disposed on said inter-gate dielectric;
said tunnel oxide (**226**) overlying a portion (**219**) of said n⁺-type source region (**218**), said first p-type drain region (**222**), and a portion (**225**) of said second n⁺ drain region (**224**);
means for applying a moderately high voltage (V_D) to said second n⁺-type drain region (**224**) and a relatively high voltage (V_G) to said control gate (**232**) so as to cause hot electron injection into said floating gate (**228**) through said tunnel oxide (**226**) from said drain structure during programming; and
means for applying a relatively high voltage (V_S) to said source region (**218**) and a ground potential to said control gate (**232**) so as to cause Fowler-Nordheim electron tunneling from said floating gate (**228**) through said tunnel oxide (**226**) to said source region (**218**) during an erase operation.

5,574,686

NONVOLATILE SEMICONDUCTOR STORAGE SYSTEM

Yukihiro Watsuji, and Akira Maruyama, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 187,311, Jan. 27, 1994, Pat. No. 5,432,738.
This application May 31, 1995, Ser. No. 454,710
Claims priority, application Japan, Jan. 27, 1993, 5-11969
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—185.23 **10 Claims**



1. A nonvolatile semiconductor storage system comprising:
a plurality of memory transistors arranged in a matrix, each of said memory transistors comprising a floating gate electrode, a control gate electrode, a source region and a drain region, the data writing and erasing operations of memory transistors being carried out by injection and release of electrons relative to said floating gate electrode;
a plurality of bit lines, the drain region of each memory transistor being connected to one of said bit lines;
a source line, the source region of each memory transistor being connected to said source line;
a plurality of word lines, the control gate electrode of each memory transistor being connected to one of said word lines;
a source line control circuit for applying a first positive voltage to said source line during a reading operation;
a bit line control circuit for applying a second positive voltage which is higher than said first positive voltage to at least one bit line of said plurality of bit lines during the reading operation; and
means for reducing the threshold voltage difference, during the erasing operation, between the threshold voltage of a memory transistor in which the threshold voltage is most slowly reduced and the threshold voltage of another memory transistor in which the threshold voltage is most rapidly reduced.

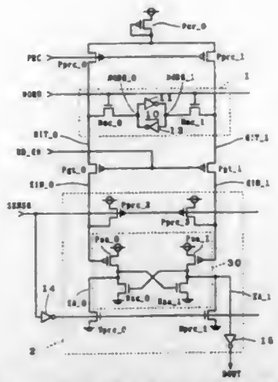
5,574,687

SEMICONDUCTOR MEMORY

Yasunobu Nakase, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1995, Ser. No. 533,550
Claims priority, application Japan, Jun. 26, 1995, 7-159442
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—189.06 **13 Claims**

1. A semiconductor memory comprising:
first and second power supplies for supplying first and second power supply voltages, respectively;
a pair of first and second bit lines;
a memory cell portion having first and second storage nodes for causing potentials at said first and second storage nodes to feed said first and second power supply voltages, respectively, on the basis of contents of storage;



precharge means for setting the potentials of said first and second bit lines to a precharge potential during a precharge time period;

memory cell portion connecting means for electrically connecting said first and second storage nodes of said memory cell portion and said pair of first and second bit lines, respectively, during a write time period or during a read time period which follows said precharge time period;

read means for providing output data to the exterior during the read time period in response to a potential difference between first and second bit line potentials respectively appearing on said first and second bit lines; and

write means for developing a potential difference between said first and second bit lines during the write time period in response to external input data, said potential difference permitting the contents of storage in said memory cell portion to be rewritten,

said precharge means including a clamping transistor of a first conductivity type having a first electrode connected to said first power supply and control and second electrodes connected commonly, said clamping transistor having a first threshold voltage for shifting said first power supply voltage at its first electrode toward said second power supply voltage by the amount of said first threshold voltage to provide said precharge potential,

said read means including first and second read transistors of the first conductivity type having said first threshold voltage and receiving said first and second bit line potentials at their control electrodes during said read time period, respectively, each of said first and second read transistors having a first electrode, connected to said first power supply, each of said first and second read transistors being conducting when a potential difference between the control electrode and first electrode thereof is greater than said first threshold voltage and being non-conducting when the potential difference is less than said first threshold voltage, thereby determining said output data depending on the conduction/non-conduction thereof,

said write means setting one of said pair of first and second bit lines to said precharge potential and the other bit line to said second power supply voltage in response to said input data.

5,574,688

APPARATUS AND METHOD FOR MAPPING A REDUNDANT MEMORY COLUMN TO A DEFECTIVE MEMORY COLUMN

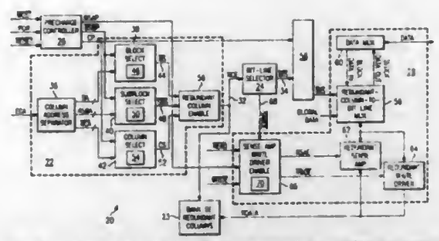
David C. McClure, Carrollton, and Thomas Teel, Austin, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed May 10, 1995, Ser. No. 438,903

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—200 **31 Claims**

1. Apparatus for mapping a redundant memory column having a redundant memory cell to an address of a defective memory



column in a memory device that communicates with an external address bus and an external data bus having one or more data-bit lines, comprising:

an enable line in communication with said redundant memory column and operable to carry first active and inactive signal levels for respectively enabling and disabling communication between said data bus and said redundant memory cell;

an address decoder operable to receive an address signal on said address bus and to generate said active level on said enable line when the value of said address signal equals said address; and

a first driver operable to precharge said enable line to said inactive level while said address signal is invalid.

5,574,689

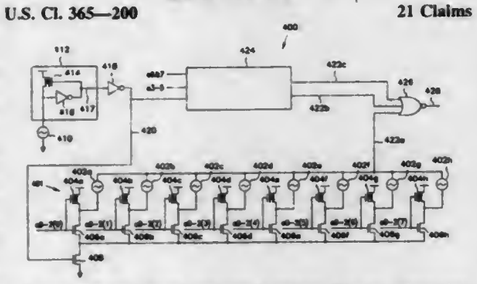
ADDRESS COMPARING FOR NON-PRECHARGED REDUNDANCY ADDRESS MATCHING

Donald M. Morgan, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jul. 11, 1995, Ser. No. 501,212

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—200 **21 Claims**



1. An integrated circuit receiving n address bits and comprising:

primary circuit elements being selectable by binary values of the n address bits;

a programmable master storage device storing and providing a programmable master condition which when active indicates that at least one primary circuit element is being replaced; and

redundant circuit elements, each having a corresponding matching circuit comprising:

a plurality of sub-match circuits, each including programmable two state storage devices being programmable to a programmed state wherein one of the two state storage devices is in a first of the two states and the rest of the two state storage devices are in a second of the two states, wherein each two state storage device corresponds to one of the possible binary values of at least one of the n address bits, and wherein each sub-match circuit is responsive to the master condition and a binary value of the at least one of the n address bits to activate a sub-match signal when the binary value of the at least one of the n address bits corresponds to the one of the two state storage devices in the first state and the master condition is active, and

a match circuit coupled to the plurality of sub-match circuits for activating a match signal in response to all of the sub-match signals being active, wherein the activated match signal is used to disable a primary circuit element from being selected by a corresponding binary value of the n address bits and to enable the redundant circuit element to be selected by the corresponding binary value of the n address bits.

5,574,690

SELF-TEST DEVICE FOR MEMORIES, DECODERS, ETC.

Frank Kesel, Pfullingen, and Eberhard Boehl, Reutlingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

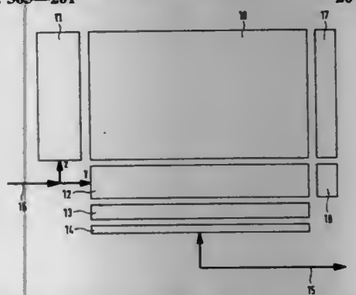
PCT No. PCT/DE94/00521, § 371 Date Jan. 20, 1995, § 102(e) Date Jan. 20, 1995, PCT Pub. No. WO94/28555, PCT Pub. Date Dec. 8, 1994

PCT Filed May 6, 1994, Ser. No. 374,672

Claims priority, application Germany, May 22, 1993, 43 17 175.3

Int. Cl.[6] G11C *29/00*

U.S. Cl. 365—201 **20 Claims**



1. A self-test device for checking a plurality of lines, comprising:

at least one check matrix coupled to the plurality of lines and including at least one 1-out-of-n checker, the 1-out-of-n checker including at least one sensor line; and

at least one error detector coupled to the check matrix, the error detector generating an error signal when at least two of the plurality of lines are activated simultaneously.

5,574,691

SEMICONDUCTOR MEMORY DEVICE HAVING CIRCUIT FOR ACTIVATING PREDETERMINED ROWS OF MEMORY CELLS UPON DETECTION OF DISTURB REFRESH TEST

Susumu Tanida; Kazutoshi Hirayama; Tomio Suzuki, and Masanori Hayashikoshi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 304,028, Sep. 9, 1994. This application Mar. 22, 1995, Ser. No. 408,255

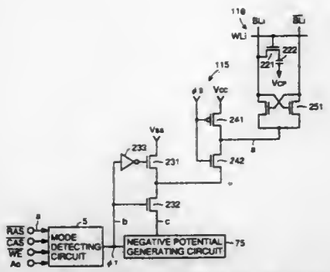
Claims priority, application Japan, Oct. 1, 1993, 5-246942; Apr. 22, 1994, 6-084622

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—201 **11 Claims**

1. A semiconductor memory device including a plurality of word lines, a plurality of bit lines crossing respective word lines, a plurality of memory cell transistors each connected to one of said plurality of word lines and one of said plurality of bit lines, and a plurality of sense amplifiers connected to said plurality of bit lines, and incorporating a test circuit for determining in a test mode a memory cell transistor having an absolute value of a threshold voltage lower than a predetermined threshold voltage among said plurality of memory cell transistors, comprising:

test mode detecting means for detecting said test mode, and



negative potential signal generating means responsive to detection of test mode by said test mode detecting means for applying a drive signal of a negative potential to said plurality of sense amplifiers in order that said memory cell transistor having a low threshold voltage is likely to be rendered conductive.

5,574,692

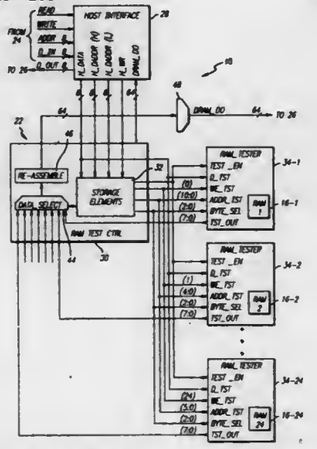
MEMORY TESTING APPARATUS FOR MICROELECTRONIC INTEGRATED CIRCUIT

Gregg Dierke, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Jun. 7, 1995, Ser. No. 472,857

Int. Cl.[6] G11C *29/00*

U.S. Cl. 365—201 **18 Claims**



1. A testing apparatus for testing a plurality of memories including parallel outputs having a total of a first number of bits, comprising:

a parallel output bus having a second number of bits which is smaller than said first number of bits;

output means for selectively connecting outputs of the memories to the parallel output bus such that a total number of bits of said selected outputs is not greater than said second number of bits; and

control means for writing test data into the memories; and for controlling the output means to read the test data out of the memories and apply the test data to the parallel output bus.

5,574,693

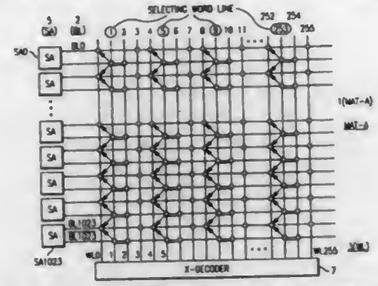
SEMICONDUCTOR MEMORY DEVICE

Takashi Inui, Tsuchiura; Kiyotaka Okuzawa, Tsukuba, and Yoshihiro Ogata, Tsuchiura, all of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 105,203, Aug. 10, 1993, Pat. No. 5,544,796. This application Jun. 7, 1995, Ser. No. 473,405

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—201 5 Claims



1. A method of operating a semiconductor memory device comprising:

inputting a multiword control signal to a decoder circuit of said device;

inputting first predecode signals to said decoder circuit;

inputting second predecode signals to said decoder circuit;

selectively driving word lines of said device based on the states of said multiword control signals, said first predecode signals and said second predecode signals.

5,574,694

INTEGRATED SEMICONDUCTOR MEMORY CIRCUIT AND METHOD FOR ITS OPERATION

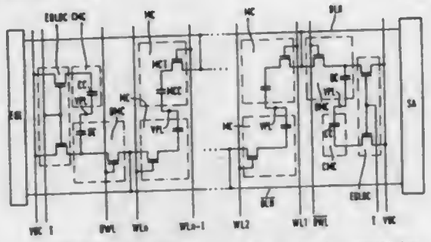
Thomas V. D. Ropp, Germering, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 12, 1995, Ser. No. 371,827

Claims priority, application Germany, Jan. 12, 1994, 44 00 699.3

Int. Cl.[6] G11C *11/40*

U.S. Cl. 365—203 2 Claims



1. An integrated semiconductor memory circuit, comprising:

a supply voltage potential and a reference potential;

bit lines each being formed of two bit line halves;

word lines defining intersection points with said bit lines;

one-transistor memory cells being disposed in matrix-like fashion at said intersection points, each of said memory cells having one selection transistor and one memory capacitor having an electrode;

said selection transistor of each of said memory cells being connected to a respective one of said bit line halves;

the electrode of said memory capacitor of each of said memory cells being connected during operation to a plate potential of a predetermined value;

at least one dummy memory cell having at least one dummy memory capacitor for each respective bit line half with first and second electrodes;

the first electrode of said at least one dummy memory capacitor being connected during operation to the plate potential; and

devices for causing the second electrode of said at least one dummy memory capacitor of said at least one dummy memory cell to be acted upon during operation with a precharging potential having a value being 5 to 35% greater than a value of half a difference between the supply voltage potential and the reference potential.

5,574,695

SEMICONDUCTOR MEMORY DEVICE WITH BIT LINE LOAD CIRCUIT FOR HIGH SPEED OPERATION

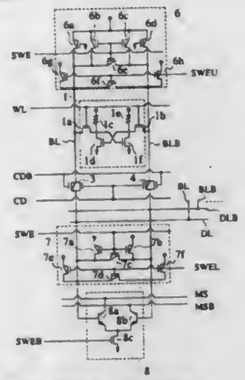
Azuma Suzuki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 2, 1995, Ser. No. 397,678

Claims priority, application Japan, Mar. 4, 1994, 6-034852

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—203 17 Claims



1. A semiconductor memory comprising:

a plurality of memory cells for data storage, connected to bit line pair;

a memory cell selection decoder for selecting the memory cell in the plurality of memory cells corresponding to a bit line direction address;

bit line load means for supplying a voltage potential to the bit line pair; and

impedance control means for receiving the bit line direction address and changing an impedance of the bit line load means according to the bit line direction address,

wherein,

the semiconductor memory performs data write-in and data readout operations from/to the memory cell in the plurality of memory cells selected by the memory cell selection decoder through the bit line pair;

the bit line load means comprising a plurality of bit line load circuits whose impedance being changed by the impedance control means by using the bit line direction address, and the plurality of bit line load circuits are provided at one point or at a plurality of points in each of the plurality of bit line pairs; and

the plurality of bit line load circuits are provided at an uppermost section over the uppermost memory cell along to the bit line direction and a lowermost section under the lowermost memory cell along to the bit line direction,

the impedance control means changes the impedance of the bit line load circuit located in the uppermost section which being greater than the impedance of the bit line load circuit located in the lowermost section during an access operation to the memory cell located in the uppermost section, and changes the impedance of the bit line load circuit located in the uppermost section which being smaller than the impedance of the bit line load circuit located in the lowermost section during an access operation to the memory cell located in the lowermost section.

5,574,696

DYNAMIC RAM DEVICE HAVING HIGH READ OPERATION SPEED

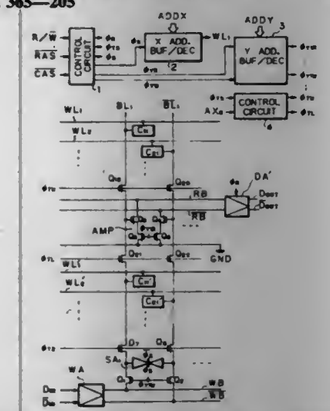
Tatsunori Murotani, c/o NEC Corporation, 7-1, Shiba 5-chome, Minato-ku, Tokyo, Japan

Filed Nov. 2, 1994, Ser. No. 333,984

Claims priority, application Japan, Nov. 2, 1993, 6-297227

Int. Cl.[6] G11C *7/06*

U.S. Cl. 365—205 18 Claims



1. A dynamic semiconductor memory device comprising:

a plurality of word lines;

a plurality of bit lines;

a plurality of dynamic memory cells, each connected between one of said word lines and one of said bit lines;

a plurality of sense amplifiers, each connected to one pair of said bit lines;

a plurality of switching circuits, each connected between one pair of said bit lines and one of said sense amplifier;

two read bus lines;

a plurality of switching amplifiers, each connected between one pair of said bit lines and said read bus lines; and

a control means, connected to said sense amplifiers, said switching circuits and said switching amplifiers, for turning ON one of said switching amplifiers to carry out a read operation, and thereafter, turning ON said switching circuits to carry out a refresh operation.

5,574,697

MEMORY DEVICE WITH DISTRIBUTED VOLTAGE REGULATION SYSTEM

Troy A. Manning, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Aug. 15, 1995, Ser. No. 515,485

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—226 17 Claims

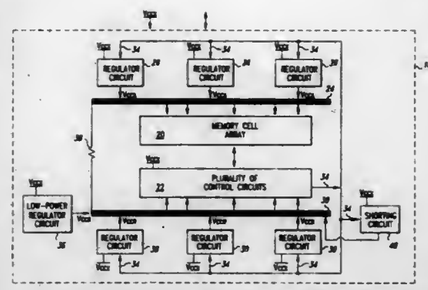
1. A memory device comprising:

a memory cell array;

a plurality of control circuits operatively coupled to the array; and

a voltage regulation system including:

an array power bus operatively coupled to the array for distributing an array supply voltage to the array;



a control circuit power bus operatively coupled to the plurality of control circuits for distributing a control circuit supply voltage to the plurality of control circuits;

a first regulator circuit operatively coupled to the array power bus at a first location along the array power bus for providing and regulating the array supply voltage;

a second regulator circuit operatively coupled to the control circuit power bus at a first location along the control circuit power bus for providing and regulating the control circuit supply voltage; and

a third regulator circuit operatively coupled to either the array power bus or the control circuit power bus at a second location spaced apart from the first location for providing and regulating the array or control circuit supply voltage, respectively, thereby allowing the third regulator circuit to respond to a localized variation in the array or control circuit supply voltage, respectively, at the second location.

5,574,698

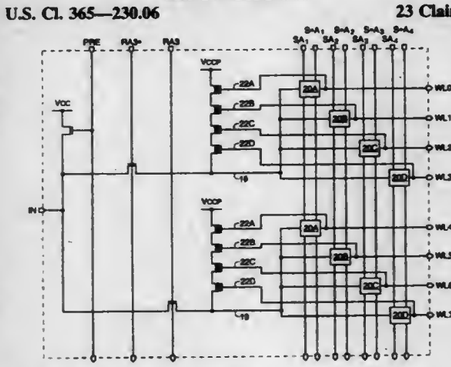
RAM ROW DECODE CIRCUITRY THAT UTILIZES A PRECHARGE CIRCUIT THAT IS DEACTIVATED BY A FEEDBACK FROM AN ACTIVATED WORD LINE DRIVER

George B. Raad, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 406,235, Mar. 17, 1995, abandoned, which is a continuation of Ser. No. 166,585, Dec. 13, 1993, Pat. No. 5,400,283. This application Jun. 18, 1996, Ser. No. 665,621

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.06 23 Claims



1. A memory system, comprising:

a) memory device for storing data in an array of memory cells;

b) a plurality of wordlines in electrical communication with the array;

c) a plurality of driver circuits, each of said driver circuits having an input node and an output node, each of said driver circuits in electrical communication, at its output node, with one of said wordlines, the input nodes of said driver circuits

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connected at a common node, a potential on said common node enabling said plurality of driver circuits to drive a select potential to a selected wordline and enabling said plurality of driver circuits to drive a non-select potential to non-selected wordlines when said wordlines of said plurality of wordlines are non-selected;

d) a plurality of serially connected transistors, each one of said serially connected transistors connected, at a control input, to the output node of a corresponding one of said driver circuits, said plurality of said serially connected transistors interposed between a supply node, connectable to a supply potential, and the common node;

e) a decode circuit electrically interposed between a second supply node, connectable to a second supply potential, and said common node, said decode circuit allowing said potential of said common node to be pulled toward said first supply potential when all of said wordlines of said plurality of wordlines are non-selected, said decode circuit allowing said potential of said common node to attain a potential different than said first supply potential when at least one of said plurality of said wordlines is selected; and

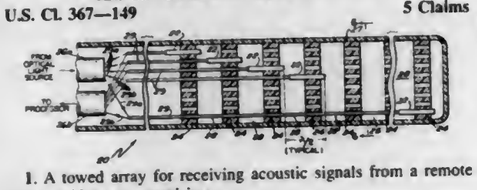
f) a means for sending decode signals to said driver circuits, said decode signals determining selected and non-selected said wordlines of said plurality.

5,574,699

FIBER OPTIC LEVER TOWED ARRAY

Frank W. Cuomo, 108 Wannamoisett Rd., East Providence, R.I. 02914

Filed Oct. 31, 1983, Ser. No. 547,273
Int. Cl.[6] G02B *6/02;* **H04R** *1/02;15/00*
U.S. Cl. 367—149 **5 Claims**



1. A towed array for receiving acoustic signals from a remote target, said array comprising:

a light source for providing light signals;

a plurality of miniature, fiber optic lever hydrophone means, each having a diameter of not more than 1300 microns and being spaced at preselected locations along said array, for receiving said acoustic signals and intensity modulating said light signals in proportion thereto, each of said plurality of miniature fiber optic lever hydrophone means further comprising, at least one receive fiber from said receiving fiber bundle, at least one transmit fiber from said transmit fiber bundle, said transmit fibers being positioned adjacent to said at least one receive fiber, all fiber distal ends being aligned so as to form a sub-bundle, a first tubular sheath having an outside diameter of not more than 1300 microns and an inside diameter which slides freely over said sub-bundle, one end of which is aligned with said aligned fiber ends, a cement, filling the space inside said first sheath and around said fibers, for bonding said aligned fibers and said first sheath together, miniature reflector means, positioned a preselected distance "d" from and parallel to the plane formed by said aligned fiber and said first sheath ends, and a bead of optically clear elastomer having a compressibility substantially the same as water, said elastomer filling the gap between said reflector means and said fiber end plane, for moveably bonding said reflector means to said fibers whereby the light exiting from said receive fiber passes through said bead while propagating to said reflector, reflects back from said reflector, and propagates back through said bead and into said transmit fibers;

a plurality of hydrophone holder means, one each attached to one of said plurality of miniature hydrophone means, for fixedly holding each said hydrophone means at its preselected array location;

a bundle of receiving optical fibers, at least one fiber of which is connected to each of said plurality of hydrophones, for receiving said light signals from said light source and providing said light to each said miniature hydrophone, each said at least one receiving fiber having a length corresponding to the spacing along the array of the corresponding miniature hydrophone;

a bundle of transmit optical fibers, at least one fiber of which is connected to each of said plurality of hydrophones, for receiving said modulating light signals from each said hydrophone and transmitting said modulated light signals to a remote signal processor, each said at least one transmit fiber having a length corresponding to the spacing along the array of the corresponding miniature hydrophone;

a second tubular sheath of outside diameter not greater than three eights of an inch, said second sheath enclosing said miniature hydrophone means, said hydrophone holder means, said receiving fibers and said transmit fibers, said second sheath fixedly attaching to each of said plurality of holder means thereby forming internal voids where not so in contact, for providing strength and protection to the array; and

an acoustically transparent fluid, filling said internal voids within said second sheath, for transmitting said acoustic pressure from said remote target, through said second sheath to said plurality of miniature hydrophones while making said array neutrally buoyant;

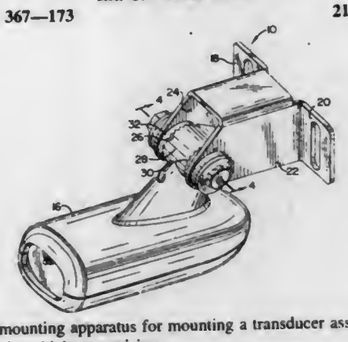
whereby an acoustic line array is formed having a diameter of not more than said three eights of an inch second sheath outside diameter and therefore a corresponding, substantially reduced turbulent flow-noise profile.

5,574,700

RATCHET OPERATED KICK-UP BRACKET

Brian R. Chapman, Broken Arrow, Okla., assignor to Lowrance Electronics, Inc., Tulsa, Okla.

Filed Dec. 18, 1995, Ser. No. 573,665
Int. Cl.[6] H04R *17/00*
U.S. Cl. 367—173 **21 Claims**



1. A mounting apparatus for mounting a transducer assembly to an aquatic vehicle comprising:

a mounting member for mounting the transducer assembly to the aquatic vehicle, said mounting member comprising at least one mounting arm wherein at least a portion of said at least one mounting arm comprises an irregular engagement surface having a first predetermined shape; and

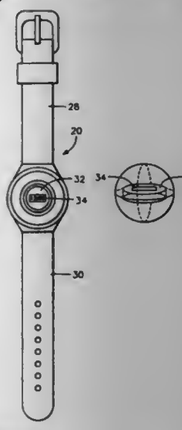
a spacer connected to the transducer assembly for connecting the transducer assembly to said mounting member, said spacer comprising a complimentary engagement surface having a second predetermined shape which corresponds to the first predetermined shape of said mounting arm, wherein said spacer is adapted to mate in a facing relationship with said engagement surface of said mounting arm such that said spacer and said mounting arm of said mounting member interlock to fixedly mount the transducer assembly to the aquatic vehicle in a first operative position, and wherein the mounting apparatus is adapted to permit relative movement between said engagement surfaces of each of said spacer and mounting arm upon contact of the transducer assembly with at least a predetermined force such that the transducer assembly pivots to a second position to thereby at least partially protect the transducer assembly.

5,574,701

MARBLE WATCH

Mangharam Harilela, Kowloon Tong, Hong Kong, assignor to HBL Limited, Kowloon, Hong Kong

Filed Oct. 25, 1995, Ser. No. 547,790
Int. Cl.[6] G04B *19/00;37/00*
U.S. Cl. 368—223 **18 Claims**



1. A watch comprising:

a watchcase,

a lens secured to said watchcase, and

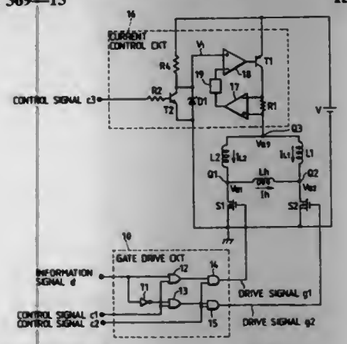
a marble rotatably mounted between said lens and said watchcase, said marble including a watch movement.

5,574,702

MAGNETIC HEAD CURRENT CONTROL CIRCUIT FOR USE IN A MAGNETIC HEAD DRIVE DEVICE, AND MAGNETIC/MAGNETOOPTICAL RECORDING APPARATUS USING THE SAME

Kazuyoshi Ishii, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1994, Ser. No. 286,331
Claims priority, application Japan, Aug. 6, 1993, 5-213550
Int. Cl.[6] G11B *11/00*
U.S. Cl. 369—13 **15 Claims**



1. A magnetic head drive device comprising:

a pair of auxiliary coils;

a pair of switch elements respectively connected in series with said pair of auxiliary coils;

a magnetic head arranged between nodes of said pair of auxiliary coils and said pair of switch elements;

switch element drive means for driving said pair of switch elements, said switch element drive means controlling operation to maintain at least one of said pair of switch elements in an ON state for a predetermined period of time upon completion or interruption of information recording by said magnetic head; and

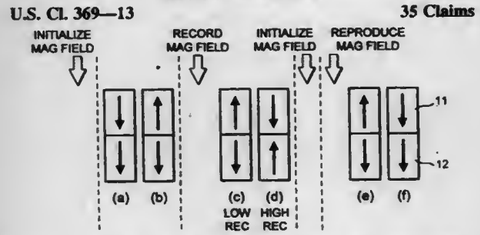
current control means for gradually decreasing a current to be supplied to said pair of auxiliary coils during the ON state.

5,574,703

MAGNITO-OPTICAL METHOD AND APPARATUS FOR RECORDING/REPRODUCING DATA

Satoshi Shimokawato; Hiromu Miyazawa, and Toshiaki Mikoshiba, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo-to, Japan

Continuation-in-part of Ser. No. 717,672, Jun. 19, 1991, abandoned. This application Nov. 14, 1994, Ser. No. 339,510
Claims priority, application Japan, Jun. 21, 1990, 2-163510; May 20, 1991, 3-114919
Int. Cl.[6] G11B *13/04*
U.S. Cl. 369—13 **35 Claims**



1. In a magneto-optical method of recording and reproducing a binary datum in the form of a signal having one of first and second signal levels with a magneto-optical recording medium of a first magnetic layer having a relatively high coercive force at room temperature and a relatively low Curie point exchange coupled to a second magnetic layer having a relatively low coercive force at room temperature and a relatively high Curie point, the improvements comprising the steps of:

providing the first magnetic layer dominant in one of (1) rare-earth element magnetic moment having a compensation point and (2), at room temperature, transition element magnetic moment and providing the second magnetic layer dominant in rare-earth element magnetic moment having a compensation point;

providing a first magnetization direction of only the second magnetic layer by applying an initializing magnetic field of a direction to the recording medium;

performing at a selected area of the recording medium either a first recording step or a second recording step according to the one signal level of the datum to be recorded, the first recording step being to magnetize the first magnetic layer at the selected area in a direction determined by the first magnetization direction of the second magnetic layer by applying a recording magnetic field in the direction of the initializing magnetic field and simultaneously irradiating the selected area of the recording medium with a laser beam for heating the selected area to a first temperature, and the second recording step being to first reverse the first magnetization direction of the second magnetic layer and then to magnetize the first magnetic layer in a direction determined by the reversed magnetization direction of the second magnetic layer by applying a recording magnetic field in the direction of the initializing magnetic field and simultaneously irradiating the selected area of the recording medium with a laser beam for heating the selected area to a second temperature;

applying the initializing magnetic field to the selected area at which the first or second recording steps have been performed to re-provide said first magnetization in said second magnetic layer; and

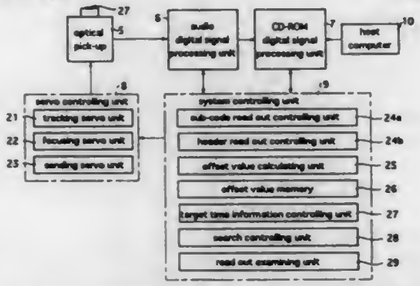
reproducing the datum recorded in accordance with the direction of magnetization of the first magnetic layer by applying a reproducing magnetic field in the direction of the initializing magnetic field and simultaneously irradiating the selected area of the recording medium with a laser beam, the reproducing magnetic field having a magnetic strength greater than a magnetic strength of the recording magnetic field.

5,574,704

HEADER SEARCHING METHOD AND APPARATUS IN A DATA RECORDING MEDIUM

Wataru Shimosaka, Sakai, Japan, assignor to Funai Techno-Systems Co., Ltd., Osaka, Japan

Filed Aug. 8, 1995, Ser. No. 512,495
Claims priority, application Japan, Aug. 11, 1994, 6-212152
Int. Cl.[6] G11B *17/22*
U.S. Cl. 369—32 **3 Claims**



1. A header searching method in a data recording medium in which tracks are formed spirally and records a plurality of data blocks, and the data blocks comprises a header including a time information to distinguish each data block and records a sub-code including a time information showing a track position corresponding to each data block, comprising:

first reading out step in which a time information of an optional sub-code is read out, when the data recording medium is loaded in a reproducing device;

second reading out step in which a time information of the header obtained successively to reading out the sub-code is read out;

calculating and memorizing step in which an offset value is calculated in accordance with a difference between read out time information of the sub-code and the time information of the header, and calculated offset value is memorized;

calculating step in which, when a time information of a target header is given, a target time information is calculated by adding the offset value, which is memorized at the calculating and memorizing step, to given time information of the header;

searching step in which a sub-code, which indicates a time information equal to the target time information, as a target sub-code is searched; and,

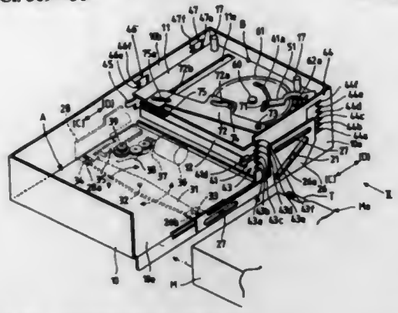
reading and examining step in which a time information of the header obtained successively to searching the target sub-code obtained at the searching step is read out, and it is examined whether or not the time information of the header is coincident with the time information of the target header.

5,574,705

VIBRATION RESISTANT DISC SELECTABLE PLAYER

Shoji Suzuki, Iwaki, Japan, assignor to Alpine Electronics, Inc., Tokyo, Japan

Continuation of Ser. No. 111,382, Aug. 24, 1993, abandoned.
This application Mar. 16, 1995, Ser. No. 406,757
Claims priority, application Japan, Aug. 28, 1992, 4-253689; Sep. 4, 1992, 4-262845
Int. Cl.[6] G11B *17/22*
U.S. Cl. 369—36 **33 Claims**



1. A disc selectable player comprising:

a case including a disc installation portion for receiving a plurality of discs arranged in a vertical stack;

a moveable portion housed in the case, the moveable portion having a disc removal mechanism for removing a selected disc from the disc installation portion, said moveable portion also having a disc drive portion for rotating the selected disc removed by said disc removal mechanism;

a drive mechanism for moving said moveable portion in a vertical direction to position the moveable portion next to a selected one of the discs;

a plurality of vertically-arranged locating portions provided on said case, each of said locating portions being associated with one of the discs; and

a locating member movably provided on said moveable portion;

wherein the locating member is horizontally moved to engage with one of said plurality of locating portions to accurately position the moveable portion when the selected disc is removed from said disc installation portion; and

wherein the locating member is moved horizontally to disengage from all of said plurality of vertically-arranged locating portions before said moveable portion is vertically moved by said drive mechanism.

5,574,706

FOCUS OFFSET OPTIMIZATION FOR READING OPTICALLY RECORDED DATA

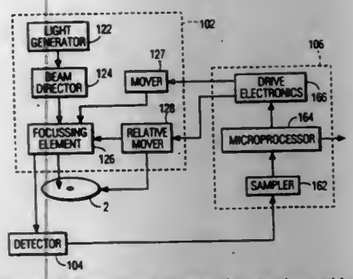
Johannes J. Verboom, Black Forest, and Keith W. Malang, Niwot, both of Colo., assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 994,573, Dec. 22, 1992, abandoned.
This application Jun. 28, 1994, Ser. No. 270,511
Int. Cl.[6] G11B *7/095*
U.S. Cl. 369—44.26 **14 Claims**

10. A combination of a record carrier and an apparatus, wherein said record carrier includes a substantially planar recording layer comprising a plurality of recorded regions which respectively contain marks which affect a parameter of light impinging thereon, said marks including respective data marks optically recorded on the record carrier; said apparatus is arranged for reading said respective data marks; and said combination comprises:

means for generating a beam of light and directing said beam toward said recording layer,

a focusing element for converging said beam to a spot in a reading plane, and a focus servo, including a focus detector



providing a servo error signal, for moving said focusing element to position said reading plane with respect to said recording layer,

means for providing relative movement between said spot and said layer in a direction parallel to said layer,

means for intercepting light from said spot, and producing an electrical waveform representative of values of said parameter, and

means for controlling a condition of said focusing element to optimize said waveform, by adding a focus offset signal to said servo error signal,

characterized in that each said recorded region includes two respective recorded reference data marks which have a mutual spacing equal to the minimum spacing between any other data marks in said region, the electrical waveform obtained by reading said two respective recorded reference data marks thereby being a waveform having a "worst-case" signal to noise ratio, and

said means for controlling comprises:

means for sampling portions of the electrical waveform corresponding to said two recorded reference data marks in one of said recorded regions, to produce a plurality of samples,

means for computing a signal strength value based on said plurality of samples, and

means, responsive to the computed signal strength value, for selecting an optimum value of said offset signal, and maintaining said optimum value during reading of data marks in said one of said recorded regions.

5,574,707

PULSE WIDTH CONTROL APPARATUS FOR OPTICAL DISK

Shigetoshi Hirai, Hiratsuka, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 13, 1995, Ser. No. 527,425
Claims priority, application Japan, Sep. 14, 1994, 6-220644
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—48 **10 Claims**

7. A data processing apparatus for recording data on a data recording medium having a data recording section and a header section, said header section containing recording address of said data recording section, said apparatus comprising:

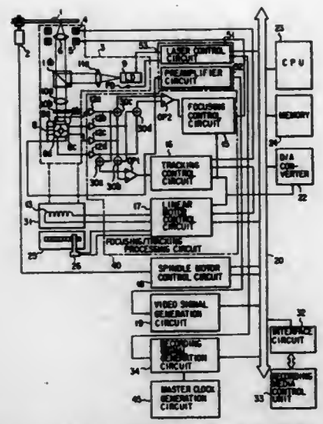
pulse generating means for generating a timing pulse corresponding to data which is to be recorded on said recording medium;

generating means for generating a reference pulse train having a period;

recording pulse generating means, receiving said timing pulse, for generating a recording pulse having a width from a start time defined by said timing pulse during a data recording mode;

optical pulse applying means for applying optical pulses to said data recording section of said recording medium in accordance with said recording pulse generated by said record pulse generating means; and

pulse width correcting means for correcting said width of said recording pulse generated by said recording pulse generating



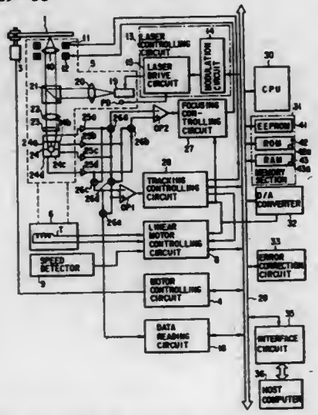
means based on said reference pulse train while said header portion representing said address of said data portion to which said optical pulses is to be applied is reproduced.

5,574,708

OPTICAL DISK APPARATUS PERFORMING DATA WRITING TEST

Izumi Kawakami, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 1, 1995, Ser. No. 522,704
Claims priority, application Japan, Sep. 1, 1994, 6-208723
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—58 **6 Claims**



1. A data processing apparatus for writing data from an outer unit to an optical disk, the apparatus comprising:

means for receiving a data writing command from the outer unit or a data reading command and data to be processed;

means for writing the data to the optical disc in response to the receipt of the data writing command;

first writing means for writing testing data to a predetermined area of the optical disk during a time when the receiving means is not receiving the data;

first reading means for reading the testing data from the first storing means;

means for checking whether a writing operation of the first writing means is functioning normally based on the testing data read by the first reading means;

second writing means for writing the data received by the receiving means to a first address area of the storing means if the checking means determines that the writing operation of the first writing means is functioning normally; and

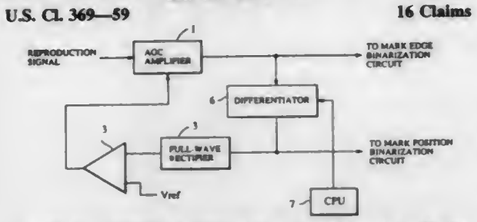
second reading means for reading the data from the storing means if the receiving means receives the data reading command, wherein the second writing means has means for reading data of the first address area where the data is to be written to check the number of the area using times so as to write the data to a second address area different from the first address area if the number of times of using the first address area is more than a predetermined number.

5,574,709

AUTOMATIC GAIN CONTROL SYSTEM AND INFORMATION REPRODUCTION APPARATUS USING IT

Junichi Takeda, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 20, 1994, Ser. No. 277,105
Claims priority, application Japan, Jul. 22, 1993, 5-201247
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—59 **16 Claims**



1. An AGC system for controlling the amplitude of a reproduction signal read out from a recording medium at a predetermined level by adjusting the gain of an AGC amplifier, said AGC system comprising:

differentiating means for differentiating an output signal of said AGC amplifier, and for outputting a resultant differential signal;

rectifying means for rectifying said output differential signal; and

operation means which compares the rectified output differential signal of said rectifying means with a predetermined reference value, and outputs an error signal corresponding to the difference between the rectified output differential signal of the rectifying means and the predetermined reference value;

wherein the gain of said AGC amplifier is adjusted according to said error signal so that the output signal of said AGC amplifier and the resultant differential signal of said differentiating means are controlled at respective predetermined levels, and

wherein the output signal of said AGC amplifier is output as a reproduction signal for mark edge recording, and the resultant differential signal of said differentiating means is output as a reproduction signal for mark position recording.

5,574,710

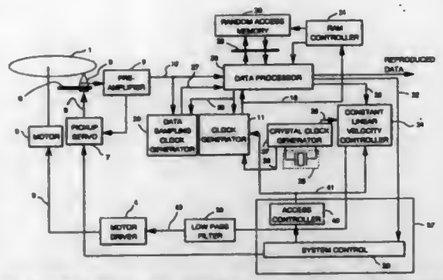
DISC REPRODUCING APPARATUS

Izumi Kimura, and Toshifumi Takeuchi, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 7, 1995, Ser. No. 511,806
Claims priority, application Japan, Aug. 8, 1994, 6-186021
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—60 **6 Claims**

1. A disc reproducing apparatus for reproducing a disc on which a digital information signal including an error correction code and a subcode having a time code therein is recorded in a predetermined recording format at a CLV, comprising:

means for rotating said disc;



first control means for controlling said rotating means to cause said rotating means to rotate said disc at the CLV during a continuous recording operation;

reading means for reading said digital information signal from said disc;

digital signal processing means for executing a predetermined reproducing digital signal processing such as demodulation and error correction for the digital information signal which is outputted from said reading means in correspondence with said recording format;

storage means for rearranging and memorizing data temporarily so as to perform an error correction corresponding to said recording format;

second control means for controlling said storage means;

first clock generating means for generating a reproducing clock corresponding to a transmission rate of said digital information signal;

oscillating means for generating a clock having a fixed frequency;

second clock generating means for generating a first master clock based on the clock generated by said oscillating means, the first master clock being for use as a reference clock for operations performed by said digital signal processing means, said first control means, and said second control means;

third clock generating means for generating a second master clock not based on the clock generated by said oscillating means, the second master clock being for use as a reference clock for operations performed by said digital signal processing means and said second control means;

switching means for selecting one of the first master clock and the second master clock and supplying the selected one of the first master clock and the second master clock to said digital signal processing means and said second control means;

third control means for controlling said first control means and said switching means; and

fourth control means for controlling said disc reproducing apparatus;

wherein said third control means controls said switching means such that when the continuous reproducing operation is performed, said switching means selects the first master clock and supplies the first master clock to said digital signal processing means and said second control means such that said digital signal processing means and said second control means operate based on the first master clock, and when an access operation is performed, said switching means selects the second master clock and supplies the second master clock to said digital signal processing means and said second control means such that said digital signal processing means and said second control means operate based on the second master clock; and

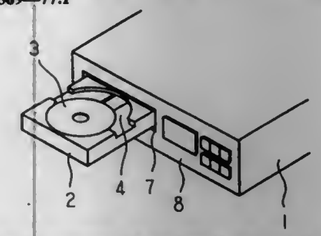
wherein the first master clock is always supplied to said first control means such that said first control means always operates based on the first master clock.

5,574,711

DEVICE FOR DRIVING TRAYS IN DISK PLAYERS

Niro Nakamichi, Rancho Palos Verdes, Calif., assignor to Nakamichi Corporation, Tokyo, Japan

Filed Nov. 10, 1994, Ser. No. 338,010
Claims priority, application Japan, Nov. 12, 1993, 5-307336
Int. Cl.[6] G11B 17/04
U.S. Cl. 369—77.1 **17 Claims**



1. A drive mechanism for moving a disk into a disk-player, comprising:

a holder for holding said disk;

said holder having a recess with a bottom;

said recess being defined by a portion of said holder above said bottom;

a first position at said bottom of said recess for receiving said disk when said disk is placed correctly in said holder and a second position on said portion above said bottom of said holder on which an edge of said disk may rest when said disk is placed incorrectly in said holder;

said disk remaining in said second position by a force of friction;

means for moving said holder into said disk-player;

said means for moving including means for imparting at least one acceleration to said holder in addition to an initial acceleration and a final deceleration imparted by said means for moving;

said means for imparting being responsive to one of a distance of displacement of said holder and a timing of displacement of said holder;

said at least one acceleration being sufficiently abrupt to overcome said force of friction to dislodge said disk, whereby said disk in said second position is suddenly moved from said second position;

said recess being shaped such that said disk tends to fall toward said bottom when said disk is suddenly moved from said second position, whereby said at least one acceleration is effective to shift said disk from said second position to said first position when said disk is in said second position prior to said at least one acceleration.

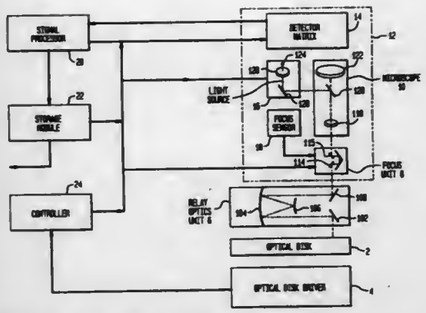
5,574,712

DETECTOR MATRIX FOR ACQUIRING TRACK DATA FROM MULTIPLE TRACKS

Amir Alon, Yahud; Shlomo Shapira, and Itzhak Katz, both of Petach Tikva, all of Israel, assignors to Zen Research N.V., Netherlands Antilles, Netherlands Antilles

Division of Ser. No. 43,254, Apr. 6, 1993, Pat. No. 5,426,623.
This application Feb. 24, 1995, Ser. No. 394,175
Claims priority, application Israel, Apr. 10, 1992, 101570
Int. Cl.[6] G11B 11/18
U.S. Cl. 389—102 **4 Claims**

1. A reading device for an optical data disk rotating at a disk rotating speed, comprising a detector matrix having a TDI structure provided with a plurality of detectors arranged to form parallel columns of detectors, whereby electric charge generated by light falling on each subsequent said detectors of a column of said detectors is summed with a charge generated by light falling on previous said detectors of the column of said detectors and transferred at the disk rotating speed to a following one of said detectors of the column of said detectors to produce an output signal representing the optical data resulting from the integration of each of said columns of detectors.

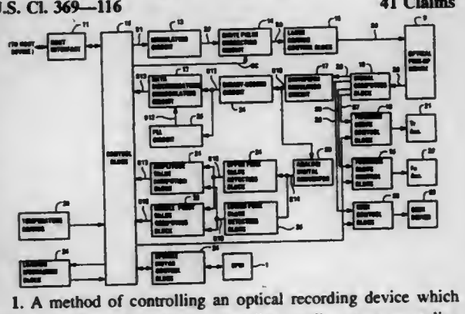


5,574,713

METHOD FOR CONTROLLING AN OPTICAL RECORDING DEVICE FOR IMPROVED RECORDING MARK DETECTION

Ikuo Aoki, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 25, 1994, Ser. No. 232,678
Claims priority, application Japan, Apr. 26, 1993, 5-120405
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—116 **41 Claims**



1. A method of controlling an optical recording device which uses an exchangeable optical recording medium as a recording medium, and which executes an operation to record data in a state where a pulse width of a record pulse has been corrected from a pulse width in record modulation, and which includes an initial set-up method comprising the steps of:

recording a first recording pattern having a short record mark length and a second recording pattern having a long record mark respectively in a specified area of an optical recording medium;

regenerating the first recording pattern and the second recording pattern respectively;

detecting a first amplitude value corresponding to an amplitude of a regenerative signal for the first recording pattern, and a second amplitude value corresponding to an amplitude of a regenerative signal for the second recording pattern; and

setting a corrected value of a pulse width of a record pulse so that a quotient obtained by dividing the first amplitude value by the second amplitude value is equal to or larger than a specified value;

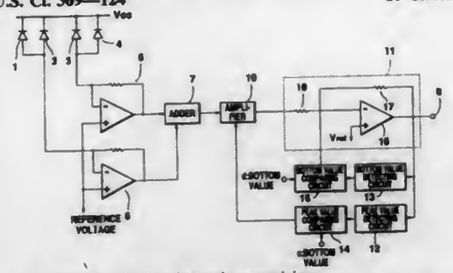
wherein said initial set-up method is executed just after power for the device is turned ON.

5,574,714

AMPLIFIER WITH PEAK AND BOTTOM SIGNAL LEVEL SHIFTING CONTROL

Arai Masashi, and Tsukihashi Akira, both of Oizumi, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Nov. 21, 1994, Ser. No. 342,488
Claims priority, application Japan, Nov. 22, 1993, 5-291999
Int. Cl.[6] H03G *3/20;* G11B *7/00*
U.S. Cl. 369—124 10 Claims



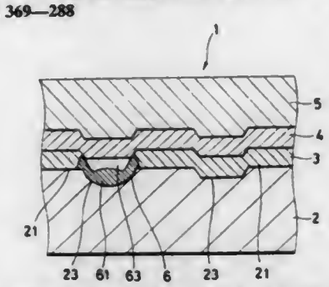
1. A signal level adjusting unit comprising:
an amplifier that amplifies an input signal, and varying an amplification factor thereof in response to a first control signal;
a level shift circuit that DC level shifts an output signal of the amplifier in response to a second control signal;
a peak value control circuit that detects a peak value of the output signal from the level shift circuit, and issuing the first control signal for varying the amplification factor of the amplifier so that the peak value becomes equal to a first given value; and
a bottom value control circuit that detects a bottom value of the output signal from the level shift circuit, and issuing the second control signal to vary a shift amount of the level shift circuit so that the bottom value becomes equal to a second given value.

5,574,715

OPTICAL RECORDING MEDIUM

Kenryo Namba, Tokyo; Masahiro Shinkai; Tetsushi Inoue, both of Chiba, and Sumiko Kitagawa, Saitama, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation of Ser. No. 164,827, Dec. 9, 1993, abandoned, which is a continuation of Ser. No. 53,555, Apr. 20, 1993, abandoned, which is a continuation of Ser. No. 703,668, May 21, 1991, abandoned. This application Dec. 19, 1994, Ser. No. 358,681
Claims priority, application Japan, May 21, 1990, 2-131009; May 21, 1990, 2-131010; May 24, 1990, 2-134386
Int. Cl.[6] G11B *7/24;* G03C *1/72*
U.S. Cl. 369—288 14 Claims



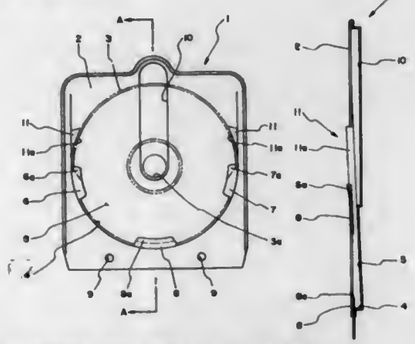
1. An optical recording medium of the type wherein recording is carried out by directing recording light to a recording layer to form pits and reproduction is carried out by directing reproducing light to the recording layer, and comprising a substrate, a recording layer on the substrate and a reflective layer stacked close to the recording layer, said recording layer contains a light absorbing dye and a bisphenylenedithiol copper complex, said recording layer has an extinction coefficient k of 0.01 to 0.10 as measured at the wavelength of the recording and reproducing light, and said dye is a cyanine dye having a first indolenine ring in condensed or uncondensed form and a second indolenine ring in condensed or uncondensed form and different from said first indolenine ring.

5,574,716

OPTICAL DISC PROTECTIVE STORAGE DEVICE

Hiromichi Uchida, Tokyo, Japan, assignor to Toyo Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1995, Ser. No. 389,231
Int. Cl.[6] G11B *3/70;5/86;7/26;25/30;* B65D *25/39*
U.S. Cl. 369—291 7 Claims



1. An optical disc storage device comprising:
a substantially planar member having an upper insertion portion and a lower portion;
a disc storage recess formed in an upper surface of said substantially planar member, said recess being defined by an upstanding wall configured to contact over half of a peripheral edge of a stored optical disc and a bottom wall which is inclined so that the depth of said recess is reduced in a direction from said lower portion to said upper insertion portion of said substantially planar member;
at least one stopper positioned adjacent said upstanding wall and having a disc abutment surface; and
a rigid support structure for preventing inadvertent movement of a stored disc away from said inclined surface of said recess, said support structure being attached to a peripheral edge of said upstanding wall and extending inwardly therefrom toward a central portion of said recess so as to overlay a portion of said recess and define a space for receiving an edge of a stored optical disc, said support structure and said at least one stopper being configured to facilitate insertion and removal of an optical disc from said device.

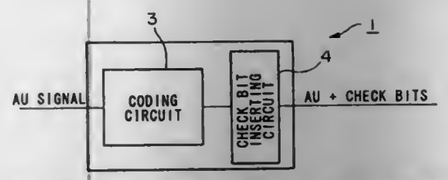
5,574,717

LINE TERMINATING EQUIPMENT IN SDH NETWORKS, USING FORWARD ERROR CORRECTING CODES

Masahito Tomizawa, Yokosuka; Yoshiaki Yamabayashi, Yokohama; Yukio Kobayashi; Kiyoshi Nakagawa, both of Miura-gun, and Ken-ichi Yagisawa, Yokosuka, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed May 16, 1995, Ser. No. 442,145
Claims priority, application Japan, May 17, 1994, 6-103110; Mar. 20, 1995, 7-061380; Apr. 4, 1995, 7-079034
Int. Cl.[6] H04L *1/00*
U.S. Cl. 370—13 13 Claims

1. A line terminating equipment, applicable to a SDH network, providing a FEC circuit comprising:



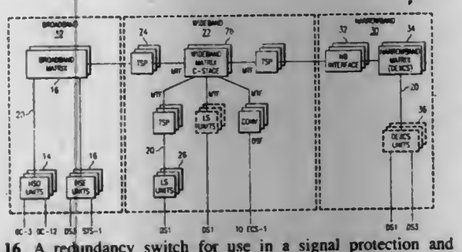
first circuit means for processing FEC coding/decoding operations on each of AU-4 signals which are constituted by VC paths or derived from a STM frame corresponding to an input data string; and
second circuit means for writing check bits into undefined byte areas of a MSOH field within a SOH field of the STM frame, whereby forward error correcting is performed based on the check bits.

5,574,718

SIGNAL PROTECTION AND MONITORING SYSTEM

Charles C. Eckhoff, and Oscar A. Tovar, both of Plano, Tex., assignors to DSC Communications Corporation, Plano, Tex.

Filed Jul. 1, 1994, Ser. No. 270,019
Int. Cl.[6] H04J *1/16*
U.S. Cl. 370—16 18 Claims



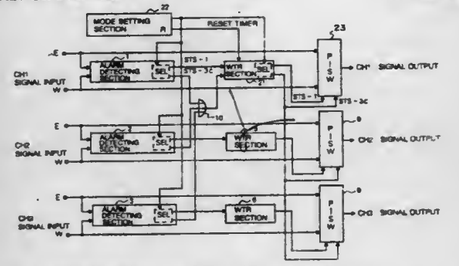
16. A redundancy switch for use in a signal protection and monitoring system, comprising:
a receiver interface unit operable to receive an inbound customer signal on an inbound transmission path of a main processor, said receiver interface unit including a first selection circuit operable to route said inbound customer signal to one of a first spare processor and a second spare processor, said first selection circuit operable to route said inbound customer signal to a monitoring port
a transmitter interface unit operable to place an outbound customer signal onto an outbound transmission path of said main processor, said transmitter interface unit including a second selection circuit operable to route said outbound customer signal from one of said first and second spare processors to said outbound transmission path, said transmitter interface unit operable to receive a transmitter signal from one of said first and second spare processors through said second selection circuit, said receiver interface unit operable to receive said transmitter signal from one of said first and second spare processors through said second selection circuit, said first selection circuit operable to route said transmitter signal to said monitoring port and back to one of said first and second spare processors for diagnostic testing, said transmitter interface unit including a relay operable to selectively place said outbound customer signal onto said outbound transmission path, said transmitter signal being routed through said relay in order to determine a status of said relay, said transmitter interface unit operable to receive said outbound customer signal from said outbound transmission path, said first selection circuit operable to route said outbound customer signal to said monitoring port; and
a microcontroller unit operable to control said first and second selection circuits in routing said inbound and outbound customer signals, said microcontroller unit operable to provide routing signals to said receiver and transmitter interface units in response to a failure of said main processor.

5,574,719

TRANSMISSION SYSTEM

Junichi Ishiwatari, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Oct. 24, 1994, Ser. No. 328,065
Claims priority, application Japan, Mar. 18, 1994, 6-049609
Int. Cl.[6] H04L *1/22*
U.S. Cl. 370—16 9 Claims



1. An optical transmission system comprising:
a mode setting section for selectively setting an STS-1 mode for a pass process of STS-1 units for a basic frame format in a SONET system and an STS-3c mode for a pass process of STS-3C units for a frame format requiring a large transfer capacity, each STS-3c unit being obtained by coupling first to third channels of STS-1;
first to third alarm detecting sections for respectively detecting alarms in signals of individual channels in two directions and outputting alarm detecting signals;
first to third wait-to-restore sections for outputting a switching signal when no alarm detecting signal is received from said first to third alarm detecting sections for a predetermined interval;
first to third path switches for switching paths of corresponding channels in two directions when receiving said switching signal to output said signal received from a switched path; and
means for supplying said alarm detecting signals outputted from said first to third alarm detecting sections to said first to third wait-to-restore sections, respectively, in said STS-1 mode and supplying all the alarm detecting signals outputted from said first to third alarm detecting section only to a first wait-to-restore section in said STS-3c mode.

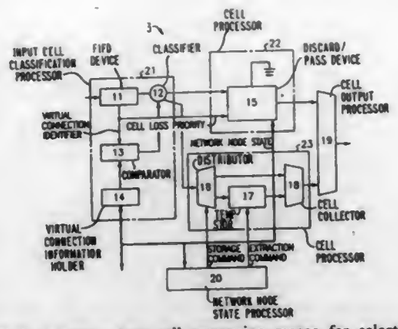
5,574,720

TRAFFIC OUTPUT SUPPRESSION APPARATUS AND METHOD FOR PREVENTING CONGESTION IN ASYNCHRONOUS TRANSFER MODE NETWORK

Soong H. Lee, Yuseong-Ku, Rep. of Korea, assignor to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Feb. 17, 1995, Ser. No. 389,877
Claims priority, application Rep. of Korea, Feb. 21, 1994, 1994-3064
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—17 6 Claims

1. A traffic output suppression apparatus for preventing congestion in an asynchronous transfer mode network having a network node, comprising:
input cell classification processing means for detecting virtual connection identifiers and cell loss priority information from an input cell stream and classifying the input cell stream into real-time process type cells and process-after-standby type cells according to service characteristics required by virtual connections corresponding to the input cell stream;



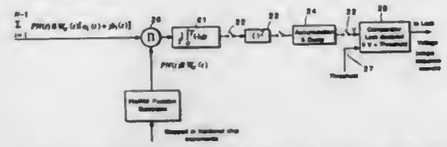
real-time process type cell processing means for selectively discarding or passing the real-time process type cells from said input cell classification processing means in response to the cell loss priority information from said input cell classification processing means and network node state information received from the network node;

network node state processing means for generating a storage command and an extraction command as control signals for the processing of the process-after-standby type cells from said input cell classification processing means in response to the network node state information;

process-after-standby type cell processing means for processing the process-after-standby type cells from said input cell classification processing means in response to the storage command the extraction command from said network node state processing means, said process-after-standby type cell processing means outputting directly or storing the process-after-standby type cells from said input cell classification processing means if the network node state is a normal state, and storing the process-after-standby type cells from said input cell classification processing means without outputting them if the network node state is a quasi-congestion state or a congestion state; and

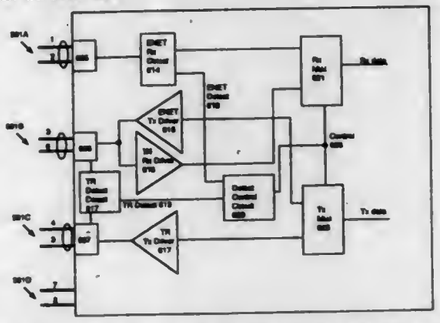
cell output processing means for transferring the output cells from said real-time process type cell processing means or the output cells from said process-after-standby type cell processing means in a first-in-first-out manner.

5,574,721
ORTHOGONAL CODE TRACKING SYSTEM HAVING PHANTOM CARRIER SIGNAL
David T. Magill, Palo Alto, Calif., assignor to Stanford Telecommunications, Inc., Sunnyvale, Calif.
Filed Dec. 9, 1994, Ser. No. 353,538
Int. Cl.[6] H04J *13/00*
U.S. Cl. 370—18 **2 Claims**



1. In an orthogonal code division multiple access spread spectrum communication system having at least one central transceiver station and a plurality of subscriber transceiver stations in which a plurality of channel signals are bandwidth spread according to a pseudorandom noise (PN) spreading code and each channel signal is identified by a selected one of a set of Rad emacher Walsh (RW) code accesses and a PN/RW chip is either a one or a zero that arises from the mod-2 addition of a PN chip with a RW chip , the improvement comprising, said set of RW codes being reduced by a predetermined one of said set of RW codes, each said transceiver station including acquisition circuitry including means to search for a null falling lower than a predetermined threshold value, and means synchronizing tracking of received signals on detection of said null.

5,574,722
PROTOCOL INDEPENDENT SWITCH
Tom Slykhouse, San Jose; Robert Smith, Los Altos, and Dan Simone, San Jose, all of Calif., assignors to Bay Networks, Inc., Santa Clara, Calif.
Filed Mar. 21, 1995, Ser. No. 407,680
Int. Cl.[6] H04L *12/413;12/417*
U.S. Cl. 370—56 **13 Claims**



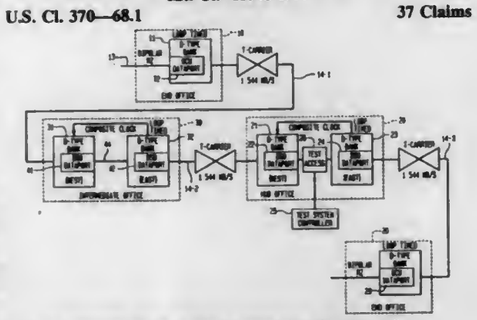
6. A central device allowing for attachment of at least a first DTE and a second DTE, said central device comprising:

(1) a first port for accepting and transmitting data to said first DTE, said first DTE communicating information on said data network in one of a plurality of protocols;

(2) a second port for accepting and transmitting data to said second DTE, said second DTE communicating information on said data network in one of said plurality of protocols; and

(3) a first circuit for receiving a message packet from said first DTE and for determining the protocol type of said message packet.

5,574,723
REMOTE PROVISIONING OF TELEPHONE CHANNEL UNIT USING INBAND DIGITAL CODE SEQUENCES TRANSMITTED OVER TANDEM LINK
Stephen T. Killian, Huntsville, and Jeffrey B. Wells, Madison, both of Ala., assignors to Adtran, Huntsville, Ala.
Continuation of Ser. No. 813,346, Dec. 24, 1991, Pat. No. 5,390,179. This application Sep. 8, 1994, Ser. No. 302,590
Int. Cl.[6] H04S *3/00*
U.S. Cl. 370—68.1 **37 Claims**



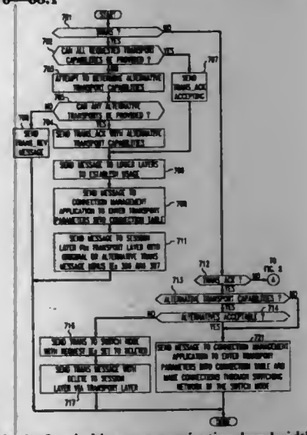
1. A communication method comprising the steps of:

(a) transmitting a communication link establishment sequence of respectively different in-band digital code bytes, from a first device at a first site, over a digital communications link, along which a plurality of second devices are sequentially distributed in tandem at a plurality of second sites served by said digital communications link, said sequence being defined so as to identify a selected one of said plurality of second devices;

(b) in response to said sequence of respectively different in-band digital code bytes, transmitted in step (a) from said first device having identified said selected one of said plurality of second devices, causing said selected one of said plurality of second devices to establish a communication link with said first device at said first site; and

(c) having established said communication link between said selected one of said plurality of second devices and said first device in step (b), transmitting a digital message from said first device at said first site over said established communication link to said selected second device, the contents of said digital message being exclusive of any of said in-band digital code bytes and being effective to cause said selected second device to perform a prescribed task which, upon being completed, will cause said first device to have knowledge of the operational configuration of said selected second device.

5,574,724
ADJUSTMENT OF CALL BANDWIDTH DURING A COMMUNICATION CALL
Bruce M. Bales, Louisville, and Stephen M. Thieler, Boulder, both of Colo., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed May 26, 1995, Ser. No. 451,282
Int. Cl.[6] H04L *12/54*
U.S. Cl. 370—68.1 **56 Claims**



1. A method of switching communication bandwidth on a communication path through a switching system, and the switching system having a plurality of switch nodes, the method comprising the steps of:

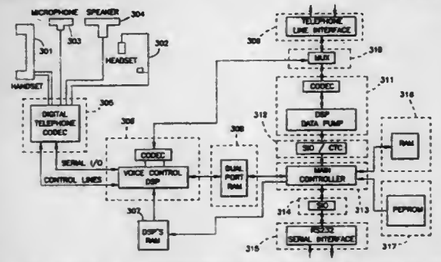
transmitting by a terminating one of the plurality of switch nodes a first message for switching the communication bandwidth on the communication path through the switching system;

receiving the first message via a signaling channel that is part of the communication path .by a first one of the plurality of switch nodes;

determining a requested change in telecommunication bandwidth by tile first one of the plurality of switch nodes from the first message;

modifying the communication bandwidth through the switch node to provide the requested communication bandwidth; and transmitting by a first one of the plurality of switch nodes the first message via the signaling channel to a next sequential one of tile plurality of switch nodes in the communication path.

5,574,725
COMMUNICATION METHOD BETWEEN A PERSONAL COMPUTER AND COMMUNICATION MODULE
Raghu Sharma, North Oaks; Jeffrey P. Davis, Ham Lake; Timothy D. Gunn, Mounds View, and Ping Li, New Brighton, all of Minn., assignors to Multi-Tech Systems, Inc., Mounds View, Minn.
Division of Ser. No. 2,467, Jan. 8, 1993, Pat. No. 5,452,289. This application Aug. 11, 1994, Ser. No. 289,295
Int. Cl.[6] H04J *3/12*
U.S. Cl. 370—79 **5 Claims**



1. A method of communicating both control information and data on a dedicated, point-to-point connection between a communications module and a personal computer, comprising the steps of:

creating a data packet having a data packet identifier, a length indicator and a variable amount of data;

creating a compressed voice packet having a voice packet identifier and a fixed mount of compressed voice data, the compressed voice data having been compressed using a voice compression algorithm;

creating a qualified packet having a qualified packet identifier and a plurality of command identifiers for communicating control information;

asynchronously transmitting the data packet, the voice packet and the qualified packet in any order from the personal computer to the communications module one packet at a time through the dedicated connection;

receiving the data packet, the voice packet and the qualified packet at the communications module; and

switching the communications module between data or control state in response to the receipt of the qualified packet.

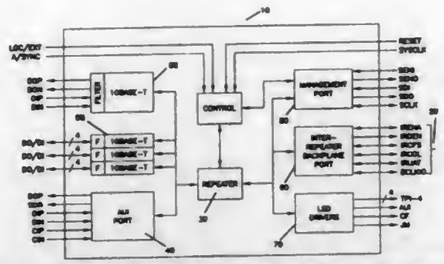
5,574,726
INTER-REPEATER BACKPLANE
David T. Chan, Fair Oaks; Haim Shafir, Sacramento, and Stefan M. Wurster, Livermore, all of Calif., assignors to Level One Communications, Inc., Sacramento, Calif.
Filed Jan. 30, 1995, Ser. No. 380,651
Int. Cl.[6] H04L *12/46;12/66*
U.S. Cl. 370—85.3 **25 Claims**

1. An inter-repeater backplane connecting multiple repeaters together to form a hub system, comprising:

a bus comprising a plurality of electrically conductive signal lines coupled between repeaters for communicating electrical signals therebetween, wherein at least one of the lines has an analog voltage level for signaling repeater state information;

a receiver, coupled to the bus at an input port of a first repeater, for receiving a first data signal;

means, coupled to the receiver, for recovering data from the first data signal, for generating a preamble and for generating a start of frame signal for the recovered data;



timing means, coupled to the recovering and generating means, for retiming the recovered data to a clock;

means, coupled to the timing means, for transmitting a second data signal comprising the start of frame signal, the preamble and the recovered data, the second data signal being routed on to the bus; and

repeating means, coupled to the input port of the remaining repeaters on the bus, for receiving and repeating the second data signal.

5,574,727

CORDLESS TELEPHONE SYSTEM AND COMMUNICATION METHOD THEREOF

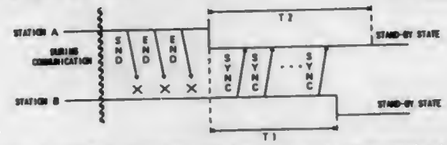
Masayasu Fujino, Funabashi, Japan, assignor to Uniden Corporation, Chiba, Japan

Filed Dec. 13, 1994, Ser. No. 357,278

Claims priority, application Japan, Dec. 14, 1993, 5-342608

Int. Cl.[6] H04L *3/06*

U.S. Cl. 370—95.1 **22 Claims**



1. A cordless telephone system executing communication between a first master phone and a first slave phone in a communication period of time according to a time division multiplexing operation, said cordless telephone system comprising:

circuitry in said first master phone for sending a first synchronization request code and a first communication end request code;

a synchronization inhibiting means for inhibiting said first master phone from establishing synchronization with said first slave phone, regardless of the presence of a second synchronization request code from said first slave phone, for a prespecified inhibit period of time after said circuitry in said first master phone sends the communication end request code, within the communication period; and

a communication terminating means for terminating communication with said first slave phone in case that a synchronous state in the communication with said first slave phone has been lost for a prespecified period of time.

5,574,728

METHODS OF TERMINAL REGISTRATION

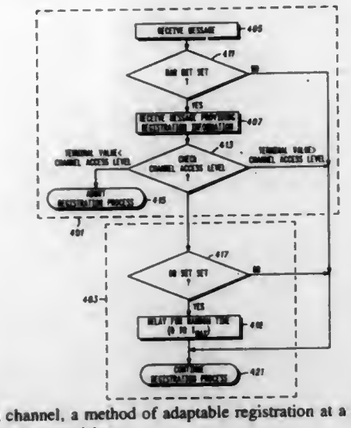
Farzan Mamaghani, Bothell, Wash.; Thomas W. Lockhart, Richmond, Canada, and William H. Kilner, Monroe, Wash., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 27, 1995, Ser. No. 495,275

Int. Cl.[6] H04J *3/16*

U.S. Cl. 370—95.1 **13 Claims**

1. In a data communication system including infrastructure arranged to communicate with a plurality of communication units



over a channel, a method of adaptable registration at a communication unit comprising :

receiving at least one message indicative of a change in access level and including registration information:

determining whether to register based on a current access level and when to register based on the registration information: and

sending a registration message after a delay based on the registration information.

5,574,729

REDUNDANCY CIRCUIT FOR REPAIRING DEFECTIVE BITS IN SEMICONDUCTOR MEMORY DEVICE

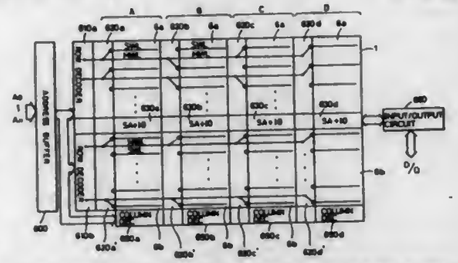
Mitsuya Kinoshita; Shigeru Mori; Yoshikazu Morooka; Hiroshi Miyamoto; Shigeru Kikuda, and Makoto Suwa, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 766,177, Sep. 27, 1991, abandoned. This application Nov. 10, 1994, Ser. No. 338,817

Claims priority, application Japan, Sep. 29, 1990, 2-261213

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—10.3 **29 Claims**



1. A defective bit repairing circuit in a semiconductor memory device including a plurality of memory blocks, each memory block including a plurality of memory cells arranged in a matrix of rows and columns, comprising:

i main row or column lines each commonly extending over said plurality of memory blocks to be shared therewith, where i is an integer;

decoder means having i outputs and responsive to a received address signal for selecting a main row or column line out of said i main row or column lines through an output thereof;

at least (i+1) sub row or column lines in each of said plurality of memory blocks, each sub row or column line for selecting a row or column of memory cells in an associated memory block;

a plurality of connecting means coupled, respectively, to said plurality of memory blocks, each connecting means coupled between said i main row or column lines and said at least (i+1) sub row or column lines in an associated memory block for selectively connecting one main row or column line to one of a predetermined set of lines of said at least (i+1) sub row or column lines; and

a plurality of defining means coupled, respectively, to said plurality of memory blocks, each defining means coupled to each connecting means of each memory block for defining a manner of an associated connecting means such that said i main row or column lines are connected to successively adjacent sub row or column lines in one to one correspondence except a sub row or column line including a defective bit.

5,574,730

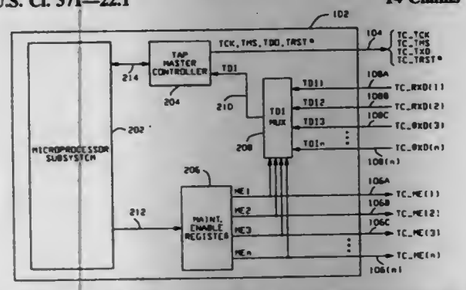
BUSSED TEST ACCESS PORT INTERFACE AND METHOD FOR TESTING AND CONTROLLING SYSTEM LOGIC BOARDS

Joseph H. End, III, Malvern; Todd M. Rimmer, Exton, and Andrew F. Sanderson, Havertown, all of Pa., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jan. 31, 1995, Ser. No. 381,046

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—22.1 **14 Claims**



1. A system for testing and controlling a plurality of system logic boards, each system logic board having at least one integrated circuit which is designed in accordance with conventional test access port and boundary-scan architecture standards, the system, comprising:

a controller for producing test access port signals and enable signals;

a bus coupled between said controller and the plurality of system logic boards for transferring contemporaneously said test access port signals from said controller to each of the plurality of system logic boards, wherein said test access port signals include a test data input signal (TC_TXD);

first signal lines coupled between said controller and the plurality of system logic boards, for transferring at least one active or non-active enable signal from said controller to at least one of the plurality of system logic boards, wherein said system logic boards are responsive to said test access port signals when said system logic boards receive active enable signals and cause said system logic boards to produce test results signals; and

second signal lines coupled between said controller and the plurality of system logic boards, for transferring said test result signals to said controller.

5,574,731

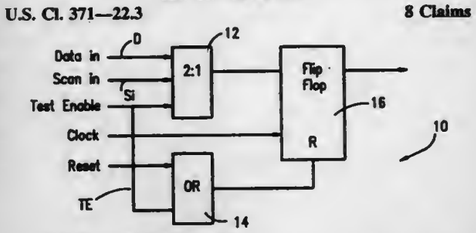
SET/RESET SCAN FLIP-FLOPS

Fazal U. R. Qureshi, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 392,086, Feb. 22, 1995. This application Apr. 27, 1995, Ser. No. 429,944

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—22.3 **8 Claims**



1. A scan circuit comprising:

a multiplexer that receives a data input signal and a scan input signal, the multiplexer being responsive to first and second logic states of a Test Enable select signal such that the multiplexer provides the data input signal as a multiplexer output signal when the Test Enable select signal is in the first logic state and provides the scan input signal as the multiplexer output signal when the Test Enable select signal is in the second logic state;

a logic gate that receives the Test Enable select signal and a set/reset signal as input signals and that provides a logic gate output signal having either the first logic state or the second logic state, the logic gate output signal having the second logic state when the Test Enable select signal is in the second logic state; and

a storage element that receives the multiplexer output signal at its storage element data input and that responds to the first and second logic states of the logic gate output signal by providing a multiplexer output signal as a storage element output signal when the logic gate output signal is in the second logic state and by providing a storage element output signal having the first logic state when the logic gate output signal is in the first logic state.

5,574,732

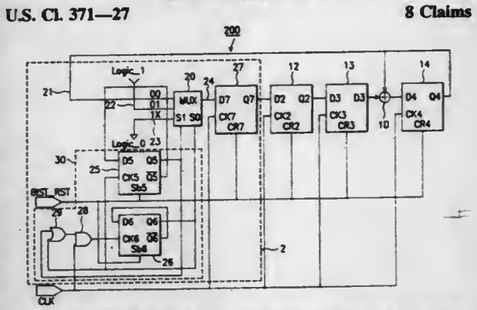
TEST PATTERN GENERATOR

Cheng-Ju Hsieh, Hsinchu Hsien, and Chien-Chung Pan, Taichung, both of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed May 12, 1995, Ser. No. 439,968

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—27 **8 Claims**



1. A test pattern generator for successively outputting a plurality of test patterns in response to a clock signal, comprising:

a plurality of shift registers serially connected in a loop for successively outputting said test patterns in response to said clock signal;

at least one logic gate connected among said shift registers; and

at least one control means, connected within said loop and responsive to a control signal, for setting said shift registers to an initial pattern in response to the control signal, for setting said shift registers to one of said test patterns in response to the control signal, and for successively outputting said test patterns through said shift registers in response to said clock signal, wherein said control means includes:

a multiplexer connected within said loop, said multiplexer having two input terminals and two control terminals, wherein said input terminals are connected to a first electric potential and a second electric potential, respectively; and

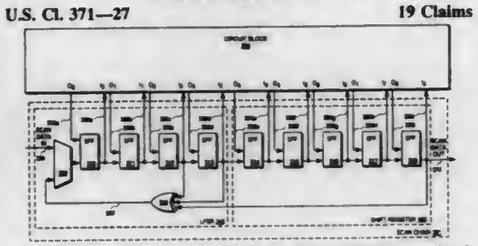
a counter connected to said control terminals of said multiplexer for receiving said control signal and controlling said multiplexer, wherein said first electric potential is sent to said loop when said control signal is enabled, said second electric potential is sent to said loop thereafter in response to said clock signal, and said loop forms a closed loop through said multiplexer when said first electrical potential is sent to both of said two control terminals.

5,574,733

SCAN-BASED BUILT-IN SELF TEST (BIST) WITH AUTOMATIC RESEEDING OF PATTERN GENERATOR

Kee S. Kim, Folsom, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jul. 25, 1995, Ser. No. 506,661
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—27 **19 Claims**



2. A method of performing a built-in self test (BIST) on a circuit block of an integrated circuit, the method comprising the steps of:

a) setting contents of a scan chain to an initial value, wherein the scan chain includes a linear feedback shift register (LFSR) cascaded with a shift register, and wherein an output of a last storage element in the scan chain is fed back to an input of a first storage element of the LFSR such that contents of the shift register are shifted through the LFSR upon application of a test clock;

b) generating a test pattern in the scan chain by applying the test clock N times, such that a data string of length N stored in the shift register is shifted through the LFSR, wherein the LFSR generates the test pattern according to a characteristic polynomial; and

c) applying the test pattern of the scan chain to inputs of the circuit block.

11. A scan chain for use in a built-in self test (BIST) sequence performed on a circuit block in an integrated circuit, the scan chain comprising:

a) a linear feedback shift register (LFSR); and

b) a shift register cascaded with the LFSR and coupled in a circular path wherein an output of a 1st storage element of the shift register is fed back to an input of a first storage element of the LFSR such that when a test clock is asserted, contents of the shift register are shifted through the LFSR such that a pseudo-random test pattern is generated in the scan chain.

19. A scan chain for generating non-successive pseudo-random test patterns for testing a circuit block in an integrated circuit, the scan chain comprising:

a) pattern generation means for generating a plurality of pseudo-random test patterns, each test pattern being successively ordered, wherein each test pattern is generated from a test seed in accordance with a characteristic polynomial;

b) coupling means for applying the generated plurality of pseudo-random test patterns to inputs of the circuit block in the integrated circuit and receiving corresponding outputs from the circuit block; and

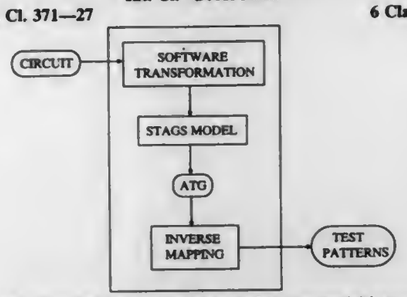
c) reseeding means for automatically providing the pattern generation means with the outputs from the circuit block, wherein the outputs from the circuit block are used as a test seed for a subsequent pseudo-random test pattern generated by the pattern generation means such that the subsequent pseudo-random test pattern is non-successive.

5,574,734

TEST GENERATION OF SEQUENTIAL CIRCUITS USING SOFTWARE TRANSFORMATIONS

Arun Balakrishnan, Piscataway, and Srimat T. Chakradhar, North Brunswick, both of N.J., assignors to NEC USA, Inc., Princeton, N.J.

Filed Oct. 5, 1995, Ser. No. 539,392
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—27 **6 Claims**



1. A process for generating a test set for a sequential integrated circuit comprising the steps of:

performing a STAGS transformation on a software model of the sequential integrated circuit for providing a modified software model that should be more easily tested, but that need not be functionally equivalent;

deriving test sequences for the modified software model; and

inverse mapping the derived test sequences to the original software model for deriving a test set for the original sequential circuit.

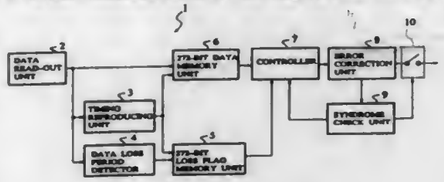
5,574,735

ERROR CORRECTION CIRCUIT WHICH SUBSTITUTES BITS INTO DATA STREAM DURING PERIODS OF DATA LOSS

Masayuki Takada; Osamu Yamada; Toru Kuroda, all of Tokyo, and Koichi Yamazaki, Saitama-ken, all of Japan, assignors to Nippon Hoso Kyokai, and Nippon Conlux Co., Ltd., both of Tokyo, Japan

Filed Nov. 28, 1994, Ser. No. 345,112
Claims priority, application Japan, Nov. 29, 1993, 5-298345
Int. Cl.[6] H03M *13/00*
U.S. Cl. 371—37.1 **7 Claims**

1. An error correction circuit for decoding data read out from an



information recording medium in a predetermined error correction system, comprising:

a data loss period detector for detecting data loss when at least one part of data read out from the information recording medium is lost;

a substitute data generator for generating substitute data comprising all bits of "1" or "0" during a data loss period when the data loss is detected by said data loss period detector; and

an error corrector for decoding the data read out from the information recording medium in the predetermined error correction system to generate corrected data, or when the error correction fails, substituting the substitute data obtained in said substitute data generator for the lost data for the data loss period in the data read out from the information recording medium and then decoding the data in the predetermined error correction system to generate corrected data;

wherein the data read out from the information recording medium are encoded with an MFM-RZ system and has a (272, 190) compacted difference-set cycle code as an error correction code, and said error correction unit corrects the data with the MFM-RZ system and a (272, 190) compacted difference-set cycle code system.

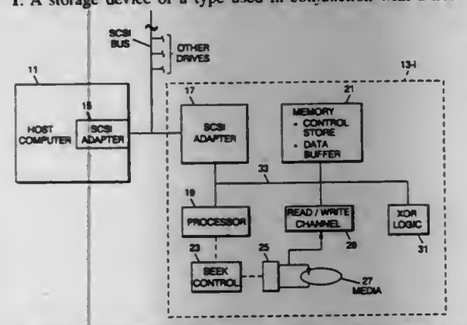
5,574,736

DATA STORAGE DEVICE AND METHOD OF OPERATION

Peter B. Bandy, Pine Island, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 178,955, Jan. 7, 1994. This application Nov. 21, 1995, Ser. No. 561,225
Int. Cl.[6] G11C *29/00;* **G06F** *11/00*
U.S. Cl. 371—40.4 **14 Claims**

1. A storage device of a type used in conjunction with a host



computer and at least one other storage device that is of a generally similar type, said storage device comprising:

an interface for connecting said storage device to said host computer and to said at least one other storage device;

control means connected to said interface for receiving a first command and new data from said host computer;

storage media for storing old data;

memory means controlled by said control means in response to said first command for storing said new data;

calculation means connected to said memory means and said storage media for calculating a result from said new data and said old data, said result being useful as error correction information; and

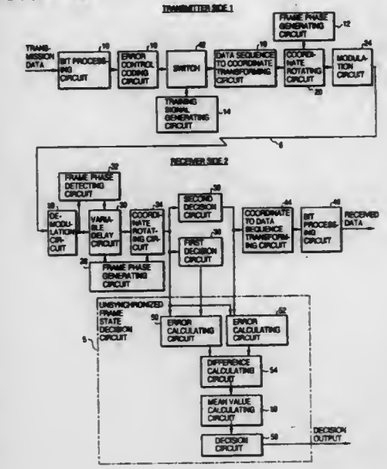
means including said interface for issuing a second command and said calculation result to said at least one other storage device.

5,574,737

MODULATOR-DEMODULATOR DEVICE CAPABLE OF DETECTING AN UNSYNCHRONIZED FRAME STATE BASED ON HARD AND SOFT ERROR VALUES

Yasunao Mizutani, Fuchu, and Takashi Kaku, Tama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 635,520, Feb. 13, 1991, Pat. No. 5,319,650. This application Apr. 29, 1993, Ser. No. 53,803
Claims priority, application Japan, Jun. 13, 1989, 1-151272; Jun. 27, 1989, 1-164624
Int. Cl.[6] H04L *1/00;7/10*
U.S. Cl. 371—46 **5 Claims**



5. In a communication network, a modulation/demodulation method for detecting an unsynchronized frame state comprising:

providing a non-coded signal during a first predetermined time period;

providing a predetermined coded signal during a second predetermined time period which is after the first predetermined time period;

coding a signal to be transmitted in accordance with a predetermined transition rule governing a transition between signal points on the complex plane after the first predetermined time period and transmitting coded transmission data after the second predetermined time period;

modulating the non-coded signal, the predetermined coded signal and the coded transmission data to provide coordinate data of a modulated signal to the communication network;

receiving and demodulating the modulated signal from the communication network to provide coordinate data of a demodulated signal point on the complex plane;

setting an evaluation value for each of the transition sequences of the received signals based on the predetermined transition rule, updating the evaluation value for each of the received signals to provide an updated evaluation numeral, and selecting the maximum likelihood transition sequence based on the updated evaluation numeral to correct an error in the coordinate data of the demodulated signal point when an unsynchronized frame state is determined based on rotation of the coordinate data; and

designating an initial value for the updated evaluation numeral first received when switching from the transmission of the non-coded signal to the transmission of the predetermined coded signal.

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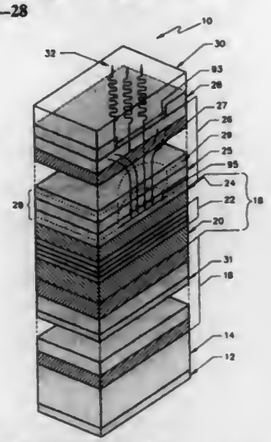
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5,574,738

MULTI-GIGAHERTZ FREQUENCY-MODULATED VERTICAL-CAVITY SURFACE EMITTING LASER

Robert A. Morgan, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 7, 1995, Ser. No. 476,965
Int. Cl.[6] H01S 3/10;3/19
U.S. Cl. 372—28 12 Claims



1. A VCSEL system comprising:
a plurality of VCSELs wherein-each VCSEL of said plurality, comprises:
a first mirror region having a first terminal;
a second mirror region having a second terminal;
an active region situated between the first and second mirror regions; and
a saturable absorber situated between the first and second terminals; and
wherein for certain magnitudes of power applied to the first and second terminals, the VCSEL outputs self-pulsing light having certain frequencies corresponding to the certain magnitudes of power applied, respectively;
a signal source for providing a signal having an amplitude; and
a modulation driver, connected to the first and second terminals of each VCSEL and to said signal source, for providing the power applied having a magnitude varied in accordance with the amplitude of the signal from said signal source, to each VCSEL to affect the frequency of self-pulsing light of each VCSEL, the frequency of the self-pulsing light modulated in accordance with the signal from said signal source.

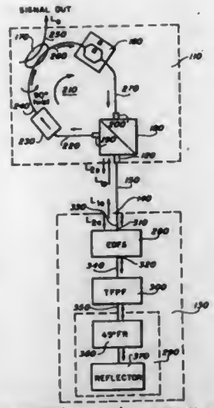
5,574,739

POLARIZATION-STABLE PULSED LASER

Thomas F. Carruthers, Laurel, Md.; Irl N. Duling, III, Round Hill, and Michael L. Dennis, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 12, 1995, Ser. No. 440,020
Int. Cl.[6] H01S 3/13
U.S. Cl. 372—29 3 Claims

1. A pulsed laser comprising:
(a) a polarization section having a port, said polarization section being for receiving light at said port in a selected state of polarization and for outputting light at said port having a state of polarization orthogonal to the selected state of polarization;
(b) an amplifying section having a port, a bidirectional amplifier, and a rotator-reflector, said amplifying section being for receiving light at said amplifying section port and for outputting light at said amplifying section port amplified with respect thereto, said bidirectional amplifier being operatively



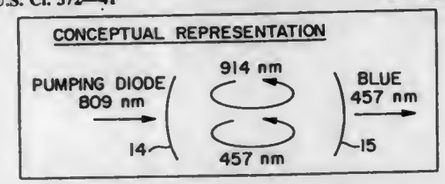
coupled to said amplifying section port at a first end and operatively coupled to said rotator-reflector at a second end;
(c) means for transmitting light in both directions between said polarization section port and said amplifying section port;
(d) an amplitude modulator responsive to a modulation signal for actively mode-locking light internal to said pulsed laser; and
(e) means responsive to light internal to said polarization section (a) for outputting coherent light.

5,574,740

DEEP BLUE MICROLASER

David E. Hargis, La Jolla, and Sven E. Nelte, Carlsbad, both of Calif., assignors to Laser Power Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 112,558, Aug. 26, 1993, abandoned. This application Aug. 23, 1994, Ser. No. 295,006
Int. Cl.[6] H01S 3/16
U.S. Cl. 372—41 68 Claims



1. A laser comprising:
an active gain medium comprising a rare earth doped microlaser crystal selected from the group consisting of neodymium-doped yttrium orthovanadate ($Nd:YVO_4$) and neodymium-doped gadolinium orthovanadate ($Nd:GdVO_4$), said gain medium having two opposite faces, one said face being an input face, said gain medium having a polarized emission at the fundamental wavelength of about 912–914 nm when optically pumped;
a nonlinear frequency doubling crystal oriented to phase match at about 912–914 nm, thereby defining the polarization orientation and the propagation axis relative to said nonlinear crystal, said nonlinear crystal having two opposite faces, said gain medium and nonlinear crystal being bonded together to form a composite resonant cavity having a propagation axis, said non linear crystal face located opposite to its said face adjacent said gain medium being the output face of said laser;
the distance between said input and output faces ranging between about 0.2 mm and 12 mm, the doping concentration of said gain medium ranging between 0.3 and 2.0%; and
optical pumping means in effective operative relationship with said gain medium, for pumping said gain medium, frequency-doubling occurring in said composite cavity to generate blue

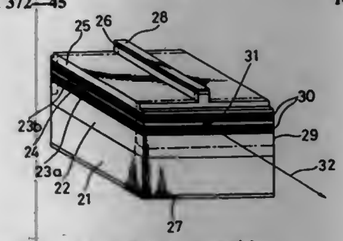
light from the fundamental frequency of said gain medium at about 456–457 nm, said gain medium exhibiting laser action at the $^4F_{3/2} \rightarrow {}^4I_{9/2}$ 914-nm transition when said gain medium is pumped by said optical pumping means.

5,574,741

SEMICONDUCTOR LASER WITH SUPERLATTICE CLADDING LAYER

Satoshi Arimoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 8, 1993, Ser. No. 2,012
Claims priority, application Japan, Jul. 9, 1992, 4-207343
Int. Cl.[6] H01S 3/19
U.S. Cl. 372—45 14 Claims



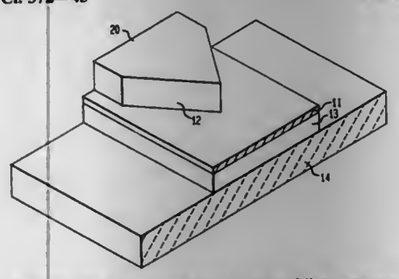
1. A semiconductor laser device comprising:
a first conductivity type substrate;
a first conductivity type cladding layer disposed on said first conductivity type substrate;
an active layer consisting of a single layer disposed on said first conductivity type cladding layer;
a second conductivity type cladding layer disposed on said active layer, the semiconductor laser having opposed facets transverse to said active layer for reflecting and transmitting light; and
a semiconductor superlattice structure disposed between and contacting said active layer and said second conductivity type cladding layer, said superlattice structure being disordered at at least one of the facets.

5,574,742

TAPERED BEAM EXPANDER WAVEGUIDE INTEGRATED WITH A DIODE LASER

Rafael Ben-Michael, Eatontown, and Uziel Koren, Fair Haven, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 31, 1994, Ser. No. 250,876
Int. Cl.[6] G02B 6/12
U.S. Cl. 372—45 10 Claims



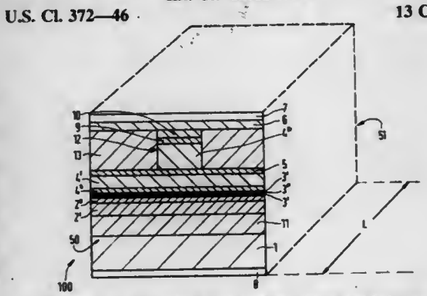
1. A single-mode semiconductor waveguiding structure for propagating electromagnetic energy comprising:
a substrate;
a first semiconductor waveguiding layer that is of substantially constant height and that is formed on the substrate;
a barrier layer formed on the first semiconductor waveguiding layer and which is etch-proof to a selected etchant; and
a second semiconductor waveguiding layer which is formed on the barrier layer and which is etched using the selected etchant to have i) a thickness that is substantially uniform along said second semiconductor waveguiding layer's length for the purpose of expanding said electromagnetic energy in order to substantially reduce loss of said electromagnetic energy when said waveguiding structure is integrated with a laser, and ii) a width which tapers to a pointed edge having a radius of curvature of greater than zero and less than 500 Angstroms.

5,574,743

SEMICONDUCTOR DIODE LASER HAVING IMPROVED PERFORMANCE AND METHOD OF MANUFACTURING SAME

Carolus J. van der Poel; Gerard A. Acket, and Marcel F. C. Schemmann, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 21, 1995, Ser. No. 407,931
Claims priority, application European Pat. Off., Mar. 22, 1994, 94200730
Int. Cl.[6] H01S 3/19
U.S. Cl. 372—46 13 Claims



1. A semiconductor diode laser of the index-guided type, comprising a semiconductor body with a semiconductor substrate of a first conductivity type on which a semiconductor layer structure is disposed which comprises at least, in that order, a first cladding layer of the first conductivity type, an active layer, and a second cladding layer of a second conductivity type opposed to the first, and comprising a pn junction which can generate coherent electromagnetic radiation, given a sufficient current strength in the forward direction, in a strip-shaped active region situated within a resonance cavity which is limited by surfaces extending substantially perpendicular to the active region, the semiconductor layer structure being provided with means for forming a step in the effective refractive index on either side of the active region, and the first and the second cladding layer being provided with further means for forming an electrical connection, characterized in that the resonance cavity has at least a length for which the optical power at which the derivative of the optical power as a function of the current through the pn junction changes is a maximum.

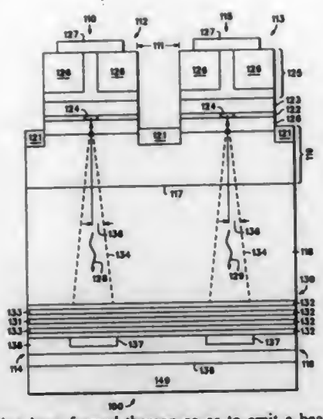
5,574,744

OPTICAL COUPLER

Craig A. Gaw, Scottsdale; Chan-Long Shieh, Paradise Valley, and Michael S. Lebby, Apache Junction, all of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Feb. 3, 1995, Ser. No. 383,151
Int. Cl.[6] H01S 3/18
U.S. Cl. 372—50 14 Claims

1. An optocoupler comprising:
a first substrate having a first surface and a second surface, the first substrate having a ridge waveguide vertical cavity surface



emitting laser formed thereon so as to emit a beam of light through the second surface of the first substrate; and

a second substrate having a first surface and a second surface, the second substrate having a photodetector formed thereon so as to receive light directed toward the first surface of the second substrate, the first surface of the second substrate being optically and physically coupled to the second surface of the first substrate to operably couple the vertical cavity surface emitting laser with the photodetector.

5,574,745

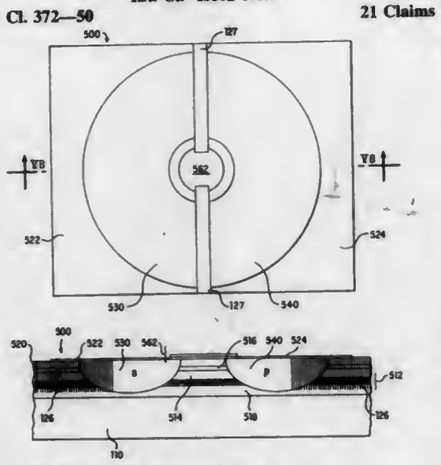
SEMICONDUCTOR DEVICES INCORPORATING P-TYPE AND N-TYPE IMPURITY INDUCED LAYER DISORDERED MATERIAL

Thomas L. Paoli, Los Altos, and John E. Northrup, Palo Alto, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 29, 1995, Ser. No. 496,753

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—50 **21 Claims**



1. A surface emitting laser, comprising:

a substrate;

a multilayer optical reflecting stratum formed over the substrate;

a first wide bandgap spacer layer formed over the multilayer reflecting stratum;

an light emitting multilayer stratum formed over the first spacer layer;

a second wide bandgap spacer layer formed over the light emitting stratum;

an annular contact region formed over the second spacer layer;

a set of multiple layers, the multiple layers formed from one of dielectric materials and semiconductor materials, the set of multiple layers formed over the second spacer layer in a center portion of the annular contact region;

a first semi-annular laser region formed in the second spacer layer under a first semi-annular portion of the annular contact region and extending through the active light emitting stratum, the first spacer layer, and into the multilayer reflecting stratum; and

a second semi-annular laser region formed in the second spacer layer under a second semi-annular portion of the annular contact region and extending through the active light emitting stratum, the first spacer layer, and into the multilayer reflecting stratum;

wherein the first and second laser regions are formed of oppositely doped materials to function as the laser cathode and laser anode.

5,574,746

MELTING FURNACE FOR THERMAL TREATMENT OF SPECIAL WASTES CONTAINING HEAVY METALS AND/OR DIOXIN

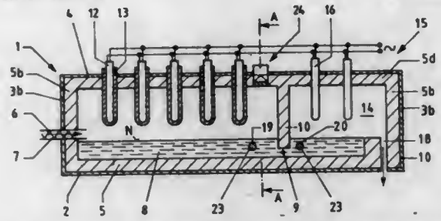
Hans Ammon, Wettingen; Markus Pfister, Fislisbach, and Christian Wieckert, Seon, all of Switzerland, assignors to ABB K.K., Tokyo, Japan

Filed Jul. 6, 1994, Ser. No. 268,563

Claims priority, application Germany, Jul. 6, 1993, 43 22 448.2

Int. Cl.[6] F27D *17/00*

U.S. Cl. 373—9 **6 Claims**



1. Melting furnace for thermal treatment of at least one of heavy metal-containing and dioxin-containing special wastes, comprising a principal furnace vessel, which exhibits a melting tank for holding a melt; at least one feeder for feeding the material to be treated; at least one discharge chamber, which is at a spatial distance from the feeder and which is connected via a siphon to the melting tank; at least one first heater, projecting into the interior of the furnace vessel, and at least one second heater projecting into the discharge chamber, wherein

the principal furnace vessel and the discharge chamber have third heating elements in the form of bath electrodes, by means of which an electric current is run through the melt and the siphon for additional heating of the melt.

5,574,747

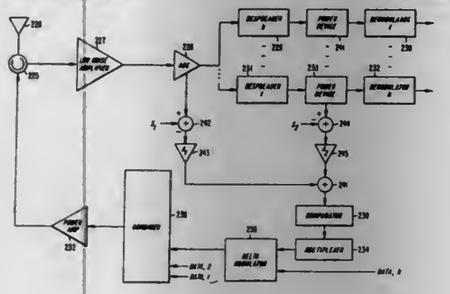
SPREAD SPECTRUM ADAPTIVE POWER CONTROL SYSTEM AND METHOD

Gary R. Lomp, Centerport, N.Y., assignor to InterDigital Technology Corporation, Wilmington, Del.

Filed Jan. 4, 1995, Ser. No. 368,710

Int. Cl.[6] H04K *1/00*

U.S. Cl. 375—200 **24 Claims**



1. A system for adaptive-power control of a spread-spectrum transmitter of a mobile station operating in a cellular-communications network using spread-spectrum modulation, comprising:

a mobile station having a mobile transmitter coupled to a mobile antenna for transmitting a first spread-spectrum signal using radio waves;

a base station having

an automatic-gain-control (AGC) circuit, responsive to a received signal, for generating an AGC-output signal, with the received signal including the first spread-spectrum signal and an interfering signal;

a base correlator coupled to said AGC circuit for despreading the AGC-output signal;

a power-measurement circuit coupled to said base-correlator, for processing the despread AGC-output signal as a received-power level;

a comparator coupled to said power-measurement circuit for generating a comparison signal by comparing the received-power level to a threshold level;

a power-command circuit coupled to said comparator and responsive to the comparison signal for generating a power-command signal;

an antenna;

a transmitter coupled to said antenna and to said power-command circuit for transmitting the power-command signal as a second spread-spectrum signal; and

said mobile station further including

a mobile correlator coupled to said mobile antenna for despreading the power-command signal from the second spread-spectrum signal as a power-adjust signal;

a decision device coupled to said mobile correlator for responding to the power-adjust signal;

an accumulator coupled to said decision device;

a step-size algorithm device coupled to said decision device and to said accumulator for storing an algorithm for adjusting a power level; and

a first variable-gain device coupled to said accumulator, responsive to the power-adjust signal, for adjusting a transmitter-power level of the first spread-spectrum signal transmitted from said mobile-transmitter.

5,574,748

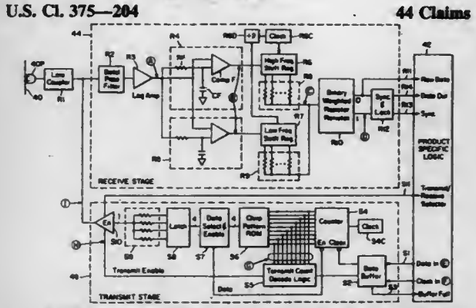
SPREAD SPECTRUM COMMUNICATIONS SYSTEM FOR NETWORK

James E. Vander Mey, and Timothy J. Vander Mey, both of Ocala, Fla., assignors to Intellon Corporation, Ocala, Fla.

Continuation of Ser. No. 72,705, Jun. 7, 1993, abandoned, which is a continuation of Ser. No. 775,279, Oct. 11, 1991, abandoned, which is a continuation of Ser. No. 397,803, Aug. 23, 1989, Pat. No. 5,090,024. This application May 22, 1995, Ser. No. 445,931

Int. Cl.[6] H04L *27/30*

U.S. Cl. 375—204 **44 Claims**



1. A method of transmitting sequences of information symbols on a communications channel between any of a plurality of transmitters and at least one receiver connected to the communications channel, comprising the steps of

each transmitter transmitting a sequence of predetermined wide band signals,

each transmitter resolving contention for use of the communications channel by sensing, prior to or during transmission of the sequence, for the presence on the communications channel of a said predetermined wide band signal transmitted by another transmitter,

wherein the step of sensing for the presence of a predetermined wide band signal transmitted by another transmitter comprises using a filter that, without prior synchronization, produces an output indicative of receipt of a wide band signal.

5,574,749

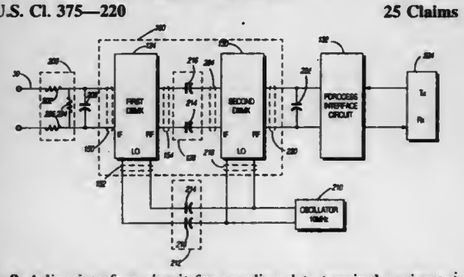
LINE INTERFACE APPARATUS AND METHOD FOR ISOLATING DATA TERMINAL EQUIPMENT FROM THE LINE

David P. Nelson, and David H. Nabors, both of Huntsville, Ala., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 1, 1994, Ser. No. 284,023

Int. Cl.[6] H04B *1/38*

U.S. Cl. 375—220 **25 Claims**



8. A line interface circuit for coupling data terminal equipment to a line, the data terminal equipment receiving a data signal over the line, comprising:

(a) a first mixer coupled to the line for receiving the data signal and transforming the data signal to a high frequency data signal (**110**);

(b) a voltage isolation circuit coupled to the first mixer for isolating the high frequency data signal, thereby generating an isolated high frequency data signal; and,

(c) a second mixer coupled to the voltage isolation circuit and the data terminal equipment for transforming the isolated high frequency data signal to a low frequency isolated data signal, the low frequency isolated data signal having a frequency spectrum that is almost identical to the frequency spectrum of the data signal.

5,574,750

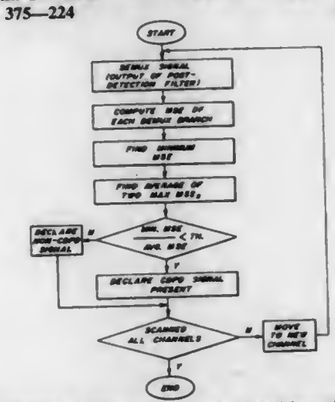
METHODS AND APPARATUS FOR DETECTING A CELLULAR DIGITAL PACKET DATA (CDPD) CARRIER

George Peponides, Encinitas, and Kumar Balachandran, San Diego, both of Calif., assignors to Pacific Communication Sciences, Inc., San Diego, Calif.

Filed Sep. 14, 1993, Ser. No. 121,339

Int. Cl.[6] H04B *3/46; 1/04;* **H03D** *1/00;* **H04L** *7/00*

U.S. Cl. 375—224 **11 Claims**



1. A method for detecting an overlay signal in a channel of a primary system, wherein said overlay signal is associated with an overlay system that shares a frequency allocation with the primary system, wherein the primary system has a plurality of channels in which the overlay signal might be present at any given time, and wherein the overlay signal is characterized by a predetermined expected value, the method comprising the steps of:

(a) sampling a received signal in at least one channel to obtain a predetermined number of samples for said at least one channel;

(b) computing an error value for each sample, said error value based on a difference, if any, between a sample value and said predetermined expected value;

(c) determining a minimum error value;

(d) determining a reference value;

(e) determining a ratio of said minimum error value to said reference value; and

(f) making a decision as to whether the received signal is an overlay signal on the basis of at least said ratio, wherein said decision is made by comparing said ratio to a threshold value.

5,574,751

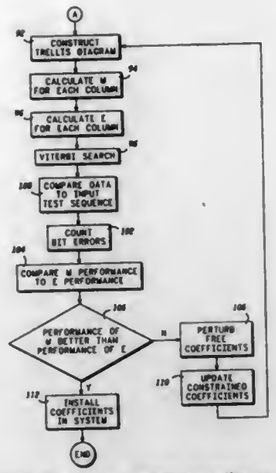
METHOD FOR A SOFT-DECISION MODULATION SYSTEM

Jennifer Trelewicz, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 24, 1995, Ser. No. 427,335

Int. Cl.[6] H03M *13/12;* **H04L** *1/00*

U.S. Cl. 375—265 **19 Claims**



1. A method for a soft-decision modulation system, said soft-decision modulation system including a transmitter and a receiver, said soft-decision modulation system including a processor for performing said method, said method comprising the steps of:

said transmitter performing the steps of:

encoding original data by a trellis encoder to produce encoded data;

modulating by a modulator said encoded data to produce modulated data; and

transmitting said modulated data;

said receiver performing the steps of:

recovering symbols representing said original data from said modulated data;

selecting values for a set of coefficients;

decoding via a trellis decoder said symbols with said set of coefficients to produce new data approximating said original data;

evaluating a bit error rate of said new data for determining acceptable performance of said decoding step; and

adjusting said values of said set of coefficients, if said performance is unacceptable.

5,574,752

MOVING IMAGE DATA TRANSMITTER AND RECEIVER FRAME SYNCHRONIZATION

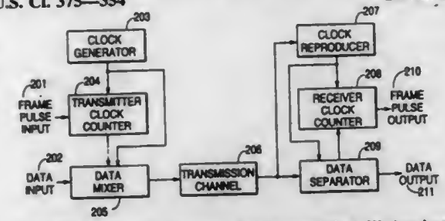
Tatsuro Juri, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 234,377, Apr. 28, 1994, abandoned. This application Aug. 4, 1995, Ser. No. 511,320

Claims priority, application Japan, Apr. 28, 1993, 5-102363

Int. Cl.[6] H04N *5/067;* **H04L** *7/00*

U.S. Cl. 375—354 **21 Claims**



1. A data transmitter apparatus for transmitting moving image data through a digital transmission channel, comprising:

a clock generator for generating a transmission clock signal used for transmission through the digital transmission channel;

a counter responsive to a frame pulse which is inputted together with the moving image data at intervals of a frame of a moving image for counting clock pulses of the transmission clock signal during each of said intervals to produce a frame count which indicates a start time of the frame of the moving image counted by the clock pulses of the transmission clock signal;

a data mixer for merging the frame count with the moving image data to produce a composite data; and

a transmitter for transmitting the composite data produced by the data mixer.

5,574,753

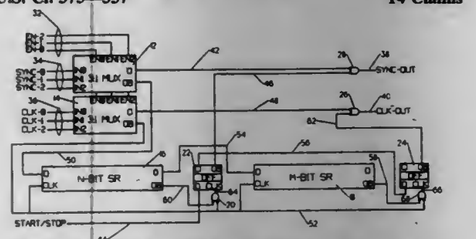
GLITCH FREE CLOCK START/STOP CONTROL CIRCUIT FOR OUTPUTTING A SINGLE CLOCK SIGNAL AND A SINGLE SYNC SIGNAL FROM A PLURALITY OF SYNC SIGNAL INPUTS AND A PLURALITY OF CLOCK SIGNAL INPUTS

Kelvin S. Vartti, Vadnais Heights; Thomas T. Kubista, Eagan, both of Minn., and Ferris T. Price, deceased, late of Mayer, Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Continuation-in-part of Ser. No. 172,661, Dec. 23, 1993, Pat. No. 5,422,915. This application Jan. 12, 1994, Ser. No. 180,896

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—357 **14 Claims**



14. An apparatus for switching between a plurality of clock input signals wherein each of the plurality of clock input signals is imposed on a corresponding one of a plurality of clock input ports, comprising:

a. a plurality of sync input ports wherein predetermined ones of the plurality of sync input ports have a corresponding one of a plurality of sync input signals imposed thereon;

b. a clock output port;

c. initiation means for initiating the selection of one of the plurality of clock input signals:

d. selecting means coupled to the plurality of clock input ports, said plurality of sync input ports, and said initiation means, for selecting one of the plurality of clock input signals thereby resulting in a selected clock input signal, and for selecting one of the plurality of sync input signals thereby resulting in a selected sync input signal;

e. sensing means coupled to said selecting means for sensing when a sync pulse occurs on the selected sync input signal;

f. delaying means coupled to said sensing means for providing a delay of N clock cycles from the time the sync pulse is sensed by said sensing means, where N is an integer greater than or equal to one; and

g. controlling means coupled to said delaying means for controlling the clock output port.

5,574,754

SLIDING CORRELATOR

Takao Kurihara; Yoshitaka Uchida, and Masahiro Hamatsu, all of Kohriyama, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

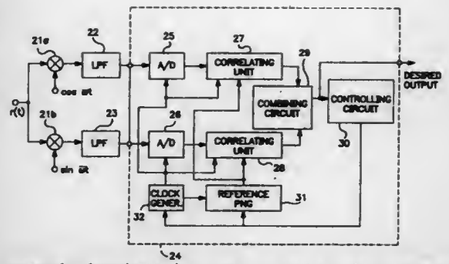
Continuation of Ser. No. 154,174, Nov. 17, 1993, abandoned. This application Nov. 9, 1995, Ser. No. 556,439

Claims priority, application Japan, Nov. 17, 1992, 4-331059

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—367 **24 Claims**

1. A sliding correlator comprising:



means for detecting a sine component and a cosine component of an input signal;

means for digitizing the sine and cosine component to produce sine and cosine digitized components;

means for generating a reference PN code, frequency of the PN code being similar tot hat of the input signal;

means for determining a correlation between the digitized sine and cosine components output from the digitizing means and sine and cosine components of the reference PN code generated by the reference PN code generating means, the determining means comprising both a first correlating unit for determining a correlation between the digitized sine component and the sien component of the generated reference PN code and a second correlating unit for determining a correlation between the digitized cosine component and the cosine component of the generated reference PN code;

means for generating at least three clock signals and outputting a desired one for use in the means for digitizing and means for generating a reference PN code, each of the at least three clock signals having a predetermined frequency, and phases of the clock signals being deviated a predetermined amount from each other, whereby the reference PN code generating menas being capable of generating at least three PN codes; and

means for controlling an output signal to be output from the sliding correlator by selecting one of the clock signals in accordance with an output of the means for determining a correlation, the controlling means being designed to output a control signal.

5. Apparatus adapted to be positioned in a sliding correlator for synchronizing a transmitted PN code with a reference PN code to be generated therein, frequency values of the transmitted PN code and the generated reference PN code being substantially the same with each other, comprising:

means for generating first, second and third reference PN codes;

the first, second and third reference PN codes including transmitted PN code;

the first, second and third reference PN codes being displaced in phase from each other;

means for checking whether one of correlated values of the reference PN codes exceeds a predetermined threshold value; and

means for shifting in phase each of the reference PN codes a predetermined value to the correlated one.

5,574,755

I/Q QUADRAPHASE MODULATOR CIRCUIT

Charles J. Persico, Sunnyvale, Calif., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Jan. 25, 1994, Ser. No. 186,398

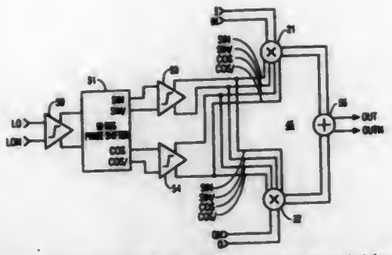
Int. Cl.[6] H04L *27/04;* **H03C** *3/00*

U.S. Cl. 375—295 **8 Claims**

4. An I/Q quadraphase modulator comprising:

(a) first and second multiplier means each having first, second, and third inputs and an output,

(b) summation means having inputs connected to the outputs of the first multiplier means and second multiplier means and having an output,



(c) means for connecting an I input signal to the third input of the first multiplier means,
(d) means for connecting a Q input signal to the third input of the second multiplier means,
(e) means for receiving and processing a local oscillator signal having a frequency equal to ω_1, to produce four quadraphase signals, V1, V2, V3, V4, where:

$V1=\sin\omega_1 t+\cos\omega_1 t$,

$V2=\cos\omega_1 t+\sin\omega_1 t$,

$V3=\sin\omega_1 t-\cos\omega_1 t$,

$V4=\sin\omega_1 t-\cos\omega_1 t$,

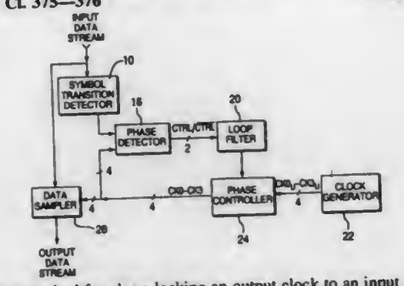
(f) means for supplying the signal V1 to the first input of the first multiplier means,
(g) means for supplying the signal V2 to the second input of the first multiplier means,
(h) means for supplying the signal V3 to the first input of the second multiplier means,
(i) means for supplying the signal V4 to the second input of the second multiplier means.

5,574,756

METHOD FOR GENERATING DIGITAL COMMUNICATION SYSTEM CLOCK SIGNALS & CIRCUITRY FOR PERFORMING THAT METHOD

Deog-Kyoon Jeong, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 31, 1994, Ser. No. 332,561
Claims priority, application Rep. of Korea, May 25, 1994, 1994-11407
Int. Cl.[6] H03D *3/24*
U.S. Cl. 375—376 **31 Claims**



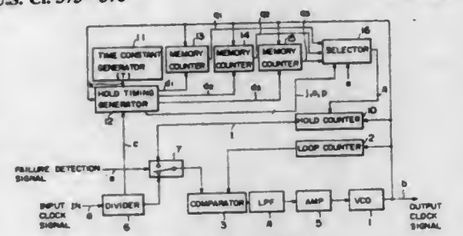
3. A method for phase-locking an output clock to an input clock with transitions between "0" and "1" logic levels at ones of intervals occurring at an input frequency, said method comprising the steps of:
generating an output clock exhibiting transitions between "0" and "1" conditions at an output frequency that is substantially the same as said input frequency;
assigning consecutive transitions of said output clock cyclically to first through m^{th} sets of transitions of said output clock, m being an integer more than one;
controlling the delay of each of said first through m^{th} sets of transitions of said output clock in response to a control signal, for generating first through m^{th} sets of delayed transitions of said output clock;
performing a phase comparison of said delayed transitions of said output clock in each of said first through m^{th} sets thereof with corresponding transitions in said input clock, thus to generate a respective one of m error signal components;
combining all m of said error signal components to generate an error signal; and
lowpass filtering said error signal for generating said control signal.

5,574,757

PHASE-LOCKED LOOP CIRCUIT HAVING A TIMING HOLDOVER FUNCTION

Yoshito Ogawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 22, 1995, Ser. No. 494,564
Claims priority, application Japan, Jun. 22, 1994, 6-139942
Int. Cl.[6] H03D *3/24*
U.S. Cl. 375—376 **17 Claims**



1. A phase-locked loop circuit comprising:
an oscillator for generating an oscillation signal of a frequency varying based on a control signal;
time interval setting means for generating a periodic signal having a period equal to a time interval T;
detecting means for detecting a predetermined number of phase components from an input signal at consecutive time instants having the time interval T, respectively;
first selecting means for selecting a signal phase component from the phase components excluding a phase component detected at a latest time instant;
generating means for generating a first signal in accordance with the single phase component;
second selecting means for selecting a reference signal from the first signal and the input signal in accordance with a second signal received from outside the phase-locked loop circuit; and
means for detecting a phase difference between the oscillation signal and the reference signal to generate the control signal corresponding to the phase difference.

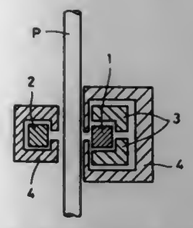
5,574,758

METHOD FOR MEASURING GAMMA-RAYS OF RADIONUCLIDES, PARTICULARLY IN PRIMARY WATER OF NUCLEAR REACTOR

Ryuji Murakami, Nara; Masataka Yamada; Hirofumi Shintani, both of Osaka, and Shingo Ando, Kanagawa, all of Japan, assignors to Nuclear Engineering, Ltd., Osaka, Japan

Filed Jan. 11, 1995, Ser. No. 371,291
Claims priority, application Japan, Feb. 3, 1994, 6-033188
Int. Cl.[6] G21C *17/02*
U.S. Cl. 376—245 **6 Claims**

1. A method for measuring selectively gamma-rays of radionuclides, in primary water of a nuclear reactor, which further contains radionuclides each emitting a pair of annihilation gamma-rays in



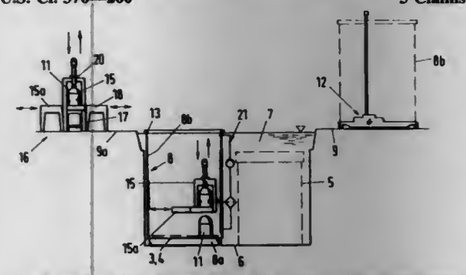
diametrically opposite directions, by the use of a gamma-ray spectrometric system which includes a primary detector for detecting photons of the gamma-rays and photons of the one annihilation gamma-rays in the one direction, a secondary detector for detecting at least photons of the other annihilation gamma-rays in the opposite direction, a shield detector for detecting Compton-scattered photons of the gamma-rays escaped from the primary detector to the shield detector, and an anticoincidence circuit connecting with the primary, secondary, and shield detectors, the primary detector and the secondary detector being located in opposed manner relative to the axis of a coolant pipe through which the primary water flows, the shield detector surrounding the primary detector except for its portion facing the pipe on which the gamma-rays and the annihilation gamma-rays are incident, which method comprises:
detecting the photons of the gamma-rays and the photons of the one annihilation gamma-rays on the primary detector as pulses while detecting the photons of the other annihilation gamma-rays on the secondary detector as pulses;
counting the pulses of the secondary detector in anticoincidence with the pulses of the primary detector thereby to reject the recording of the pulses of the annihilation gamma-rays from the primary detector, thus minimizing the annihilation gamma-rays on the primary detector; and subsequently determining count numbers of the gamma-rays.

5,574,759

METHOD FOR DISMANTLING BULKY PARTS OF PRESSURE-VESSEL FITTINGS OF A NUCLEAR PLANT AND FOR RECEIVING THE DISMANTLED PARTS

Alban Dietrich, Hassloch, and Michael Spicka, Hemsbach, both of Germany, assignors to ABB Reaktor GmbH, Mannheim, Germany

Filed Dec. 18, 1995, Ser. No. 573,726
Claims priority, application Germany, Dec. 16, 1994, 44 45 171.7
Int. Cl.[6] G21C *19/00;* **G21F** *9/28*
U.S. Cl. 376—260 **5 Claims**



1. A method for dismantling bulky parts of pressure-vessel fittings of a nuclear plant and for storing the dismantled parts, which comprises:
setting down a dismantling container for pressure-vessel fittings in a water tank;
inserting the pressure-vessel fittings into the dismantling container;
introducing a receiving container for the dismantled parts into the dismantling container;
fixing a dismantling manipulator relative to the dismantling container;
separating the pressure-vessel fittings into predeterminable smaller-size parts;
introducing the smaller-size parts into the receiving container;
removing the receiving container from the dismantling container; and
transferring the parts disposed within the receiving container, within the nuclear plant, into a transport container.

5,574,760

METHOD AND APPARATUS FOR SUPPORTING A SHROUD IN A NUCLEAR REACTOR

Bengt I. Baversten, Weatogue, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Division of Ser. No. 241,441, May 11, 1994, Pat. No. 5,488,643. This application Nov. 8, 1995, Ser. No. 555,043
Int. Cl.[6] G21C *13/00*
U.S. Cl. 376—461 **7 Claims**



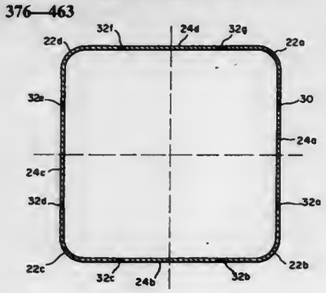
1. A nuclear reactor comprising;
a shroud disposed within a reactor vessel so as to surround at least one fuel assembly; and
a shroud support arrangement for supporting said shroud in the reactor vessel, comprising:
an upper support ring clamped about the upper periphery of said shroud; and
an upper hanger rod which has a lower end engaged with said upper support ring and an upper end adapted for connection to a predetermined structure located within the reactor vessel above said shroud.

5,574,761

FUEL CHANNELS WITH OFF-CENTERLINE WELDS

Neal C. Nordstrom, Poway; Joseph E. Conway, El Cajon, and Donald R. Wozniak, San Diego, all of Calif., assignors to CRS Holdings, Inc., Wilmington, Del.

Filed Sep. 29, 1995, Ser. No. 536,513
Int. Cl.[6] G21C *3/324*
U.S. Cl. 376—463 **4 Claims**



VOL 1192 ISS 2 NO 12 1996 UMI

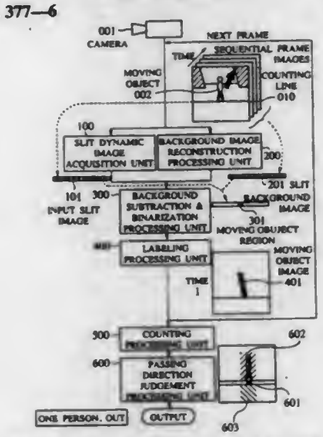
1. A nuclear fuel channel comprising:
four corners and four elongated sidewalls each disposed between two of said corners to provide a polygonal transverse cross-section, said sidewalls and said corners being formed of a sheet alloy;
two of said sidewalls each having:
a longitudinal centerline that coincides with a line of maximum stress on said sidewall;
a first longitudinal off-center line, that is located between the longitudinal centerline and one of the corners abutting the elongated sidewall and is coincident with a line of minimum stress on said elongated sidewall; and
a weld formed along the length of said first longitudinal off-center line.

5,574,762

METHOD AND APPARATUS FOR DIRECTIONAL COUNTING OF MOVING OBJECTS

Atsushi Sato; Megumu Tsuchikawa; Akira Tomono, and Kenichiro Ishii, all of Kanagawaken, Japan, assignors to Nippon Telegraph And Telephone Corp., Tokyo, Japan

Filed Aug. 31, 1995, Ser. No. 522,196
Claims priority, application Japan, Aug. 31, 1994, 6-206320
Int. Cl.[6] G06M *11/02*
U.S. Cl. 377—6 **20 Claims**



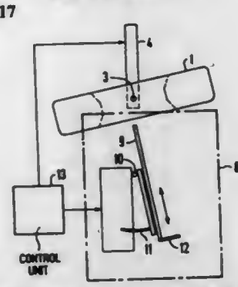
1. A method for directional counting of moving objects at a prescribed monitoring target location, comprising the steps of:
(a) taking sequential images of the prescribed monitoring target location;
(b) setting a counting line in an image field of the sequential images, and acquiring a dynamic image formed by time changing pixel values of a series of pixels forming the counting line from each sequential image;
(c) obtaining a background image by successively updating the pixel values of the series of pixels forming the counting line in states in which a moving object is not passing over the counting line;
(d) applying a subtraction processing on the dynamic image and the background image, and then applying a binarization processing to extract a moving object region;
(e) forming a moving object image by sequentially labeling moving object region in time order;
(f) counting a number of moving objects passing through the prescribed monitoring target location according to the moving object image; and
(g) setting upper and lower direction judgement regions above and below the counting line in the image field of the sequential images, and judging a passing direction of each moving object by judging one of the upper and lower direction judgement regions in which the moving object is present at a time of a formation start/end time of the moving object image.

5,574,763

COMPUTED TOMOGRAPHY APPARATUS

Guenter Dehner, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 31, 1995, Ser. No. 381,711
Claims priority, application Germany, Feb. 21, 1994, 44 05 505.6
Int. Cl.[6] H05G *1/06*
U.S. Cl. 378—17 **10 Claims**



1. A computed tomography apparatus for examining hollow organs in an examination subject, comprising:
patient support means for supporting an examination subject having a torso and a mid-section in a standing upright position relative to a vertical axis;
a gantry containing an x-ray source and an x-ray detector and having an opening therein between said x-ray source and said x-ray detector for surrounding an entirety of said examination subject, said gantry being oriented at an angle relative to a horizontal axis and said patient support means and said gantry being relatively oriented for permitting movement of said gantry along the torso and the mid-section while the patient is in said standing upright position on said patient support means;
means for producing relative movement between said examination subject and said gantry to conduct a scan of a region of said examination subject contained within the torso and mid-section while rotating said x-ray source and said x-ray detector around said subject to obtain a plurality of sets of attenuation data;
computer means for processing said attenuation data to generate and display a plurality of tomograms of said examination subject; and
control means for tilting said patient support means relative to said vertical axis and for displacing said gantry relative to said vertical axis for maintaining a constant angle between said gantry and said patient support means for every position of said patient support means.

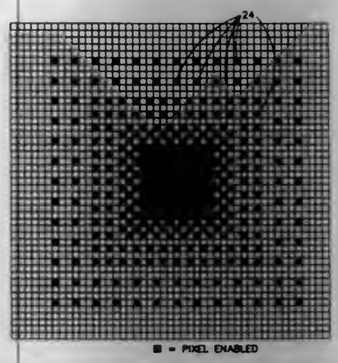
5,574,764

DIGITAL BRIGHTNESS DETECTOR

Paul R. Granfors; Jean C. Morvan, both of Milwaukee, and Michael A. Juhl, Pewaukee, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Jun. 6, 1995, Ser. No. 466,646
Int. Cl.[6] H05G *1/64*
U.S. Cl. 378—98.7 **10 Claims**

1. A method of performing brightness detection for a digital x-ray detector comprising the steps of:
specifying a region of interest of an image;
finding the average pixel value within the specified region of interest of the image;
providing the result of the average pixel value finding to the x-ray generator for control of the x-ray exposure; and



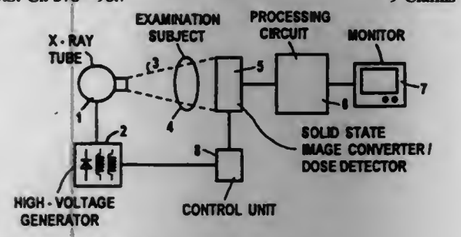
using the average pixel value to update a digital scaling factor.

5,574,765

X-RAY DIAGNOSTICS INSTALLATION HAVING A SOLID-STATE CONVERTER

Dietrich Hassler, Uttenreuth, and Martin Hoheisel, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 25, 1995, Ser. No. 506,870
Claims priority, application Germany, Jul. 26, 1994, 44 26 451.8
Int. Cl.[6] H05G *1/64*
U.S. Cl. 378—98.7 **9 Claims**



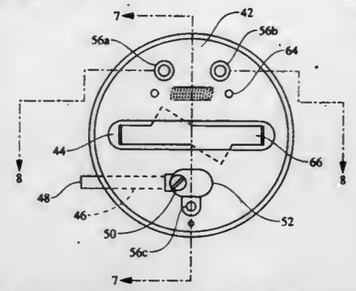
1. An x-ray diagnostics installation comprising:
a high-voltage generator;
an x-ray tube, supplied by said high-voltage generator, which emits an x-ray beam;
a solid-state image converter on which said x-ray beam is incident for converting an x-ray image of an examination subject disposed in said x-ray beam into electrical video signals and for separately generating a dose rate signal corresponding to an x-ray dose of said x-ray tube, said solid-state image converter including a semiconductor layer with a plurality of light-sensitive pixel elements arranged in a matrix for generating said video signals, an electrically non-conductive layer disposed on said semiconductor layer, and an electrode layer disposed on said non-conducting layer forming a capacitor with said pixel elements to which charge is supplied due to x-rays incident on said solid-state image converter for generating said dose rate signal corresponding to the x-ray dose rate exclusively of said video signals;
means supplied with said video signals from said solid-state image converter for generating a video image corresponding to said x-ray image; and
control means, supplied with said dose signal corresponding to said x-ray dose rate, for controlling said high-voltage generator dependent on an x-ray dose derived from said dose rate.

5,574,766

X-RAY BEAM LIMITER

Cheryl L. Panasik, Bartlett, Ill., assignor to Picker International, Inc., Cleveland, Ohio

Filed Oct. 24, 1995, Ser. No. 547,301
Int. Cl.[6] G21K *1/02*
U.S. Cl. 378—147 **20 Claims**



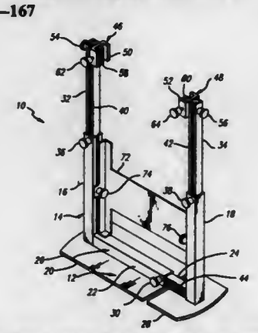
1. An x-ray beam limiter assembly, comprising:
a bearing retaining race having an inner surface characterized by an inner diameter, the inner surface having a groove with a diameter and radius disposed therein; and
a rotating assembly rotatably mounted with respect to the bearing retaining race, the rotating assembly comprising
a disc having a diameter and a radiused outer edge;
a bearing surface on the outer edge;
means for permitting the diameter of the disc to be reduced to a compressed diameter when a compressive force is applied to the disc and for urging the disc to return to substantially its original diameter when the compressive force is removed, whereby the disc can be inserted within the groove when a compressive force is applied to the disc and the disc is rotatably retained within the groove when the compressive force is removed; and
a radiation attenuating member fastened to the disc and having at least first and second differently dimensioned radiation passing positions which cross at the axis of rotation of the rotating assembly; and means for rotating the rotating assembly between first and second positions, whereby the rotation attenuating member is rotatable between a first and a second position.

5,574,767

ADJUSTABLE X-RAY CASSETTE HOLDER

Kenneth J. Hayes, Northridge, Calif., assignor to Hayes Technology, Inc., Canoga Park, Calif.

Filed Feb. 27, 1995, Ser. No. 397,662
Int. Cl.[6] G03B *42/02;42/04*
U.S. Cl. 378—167 **20 Claims**



1. An X-ray film cassette holder adapted for use with medical imaging equipment, comprising: a base, an expandable frame carried by said base, said frame incorporating two upwardly

expandable risers releasably lockable in a plurality of expanded positions, said risers separated by a releasably lockable variable distance; and two film cassette clamps, each of which is pivotably carried by one of said upwardly expandable risers, and releasably lockable in fixed angular relation to said one of said upwardly expandable risers.

5,574,768

SCREEN FILM CASSETTE

Donald McLean, Springwood, Australia, assignor to The University of Sydney, Sydney, Australia

Continuation-in-part of Ser. No. 347,561, Nov. 30, 1994, abandoned. This application Sep. 8, 1995, Ser. No. 525,415

Claims priority, application Australia, May 26, 1994, PM5890

Int. Cl.[6] G03B 42/02

U.S. Cl. 378—185 7 Claims



1. A radiographic screen-film cassette comprising a container, front and rear screen-film combinations housed within the container, each of the screen-film combinations including a pair of intensifying screens and a film sandwiched by the screens, and a dividing filter located between the two screen-film combinations.

5,574,769

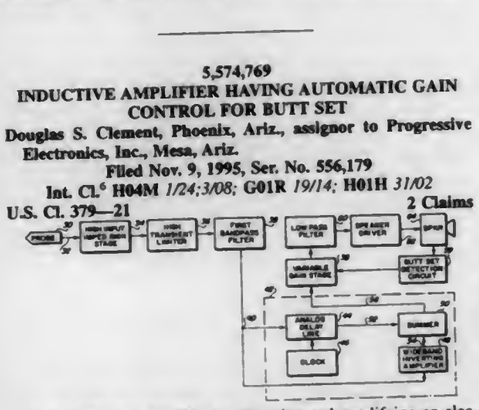
INDUCTIVE AMPLIFIER HAVING AUTOMATIC GAIN CONTROL FOR BUTT SET

Douglas S. Clement, Phoenix, Ariz., assignor to Progressive Electronics, Inc., Mesa, Ariz.

Filed Nov. 9, 1995, Ser. No. 556,179

Int. Cl.[6] H04M 1/24;3/08; G01R 19/14; H01H 31/02

U.S. Cl. 379—21 2 Claims



1. An inductive amplifier for detecting and amplifying an electrical tone conducted by one of a group of wires in order to identify and trace a particular wire, said inductive amplifier comprising in combination:

a. a housing;

b. an electrically conductive probe extending from the housing for being placed adjacent a wire under test to detect an electrical tone signal therein;

c. a variable gain amplifier contained within the housing to amplify the detected electrical tone signal, the variable gain amplifier selectively providing a first level of gain or a second level of gain;

d. a speaker disposed in the housing for reproducing the amplified electrical tone as an audible signal;

e. butt set terminals extending from the housing and adapted to be coupled with leads of a telecommunications butt set for allowing a speaker within an earpiece of the telecommunications butt set to reproduce the amplified electrical tone as an audible signal; and

f. a butt set lead detection circuit for detecting that the leads of the butt set are connected to the butt set terminals, and for causing the gain of the variable gain amplifier to decrease from the first level of gain to the second level of gain when the leads of the butt set are connected to the butt set terminals.

5,574,770

METHOD FOR CONTROLLING OVERLOAD OF MAIN PROCESSOR OF DISTRIBUTED SWITCHING SYSTEM WITH HIERARCHY STRUCTURE

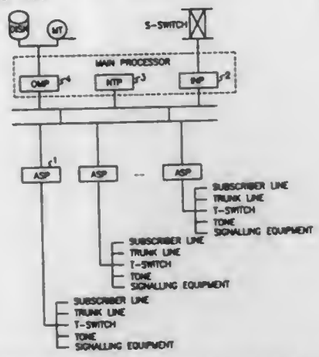
Chan H. Yoo; Byung S. Lee, and Young S. Kim, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, and Korea Telecommunication Authority, both of Rep. of Korea

Filed Nov. 23, 1994, Ser. No. 344,175

Claims priority, application Rep. of Korea, Dec. 21, 1993, 1993-28938

Int. Cl.[6] H04M 3/22;15/00

U.S. Cl. 379—34 6 Claims



1. A method for controlling an overload of main processors in an electronic switching system in which part of the functions of the electronic switching system is performed in a centralized manner by main processors while functions associated with a generation of calls and a setting of calls are performed in a distributed manner by a plurality of lower-level processors, the method comprising the steps of:

(A) executing a call processing delay monitoring process at intervals of a first predetermined time in accordance with a priority not higher than a call processing process, but higher than an operation and maintenance process, thereby detecting a delay condition of the call processing process;

(B) executing an overload control process in accordance with a priority higher than the call processing process, thereby detecting a delay condition of the call processing process impossible to be detected by the call processing delay monitoring process so that information from the call processing delay monitoring process that the call processing process has delayed predetermined times continuously or for a second predetermined time is used for a determination about the overload, thereby preventing an abrupt increase and decrease in load or a load caused by a software not associated with a call processing from being determined as an overload; and

(C) determining an occurrence of the overload when a CPU occupancy rate for the second predetermined time is not less than a CPU reference value while the condition of the step (A) is satisfied, and then informing all the lower-level processors of the occurrence of the overload.

5,574,771

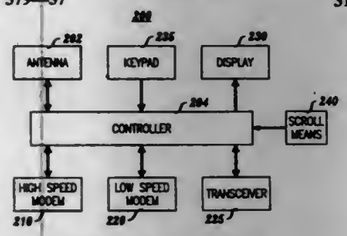
INTEGRATED COMMUNICATION SYSTEM

Peter F. Driessen, Aberdeen; Lawrence J. Greenstein, Edison, and Krishan K. Sabnani, Westfield, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 15, 1994, Ser. No. 290,168

Int. Cl.[6] H04Q 7/12

U.S. Cl. 379—57 31 Claims



15. A cellular telephone device comprising:

a) an antenna for receiving and transmitting communication signals;

b) control means connected with said antenna for processing signals related to said communication signals and for selecting between first and second transmission rates for transmitting signals from said antenna;

c) transceiver means connected to said antenna and said control means for receiving and transmitting voice and data signals from and to said antenna, and transporting said voice and data communication signals between said antenna and said control means;

d) a high speed modem connected to said antenna and said control means for transmitting voice and data signals at a first predetermined transmission rate from said antenna; and

e) a low speed modem connected to said antenna and said control means for transmitting data signals at a second predetermined transmission rate less than said first predetermined transmission rate from said antenna.

5,574,772

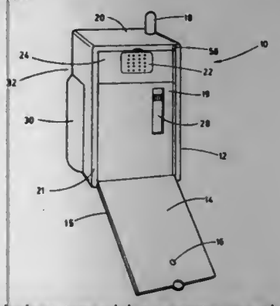
PERSONAL APPARATUS FOR RECEIVING RADIOTELEPHONE COMMUNICATIONS

Joseph F. Scalisi, 711 Arabian La., Walnut, Calif. 91789, and Julio C. Smiriglio, 2435 Paso Real St., Rowland Heights, Calif. 91748

Continuation-in-part of Ser. No. 146,910, Nov. 1, 1993, abandoned. This application Oct. 27, 1994, Ser. No. 330,358

Int. Cl.[6] H04Q 7/32

U.S. Cl. 379—58 12 Claims



1. A radiotelephone transceiving apparatus operative in a radiotelephone communications system comprising:

a housing with no keypad thereon, and no keypad circuitry therein, so that said transceiving apparatus is a one-way, incoming call only receiving apparatus and no outgoing signals may be initiated by a user on said transceiving apparatus;

said housing also includes receiving means for receiving radiotelephone signals;

transmission means for transmitting radiotelephone signals, only upon receipt of radiotelephone signals by said receiving means, whereby said transceiving apparatus may only be used to supervise a two-way voice communication initiated from another telephone apparatus;

processing means coupled to the transmission means and to the receiving means, said processing means processing received signals and only transmitting radiotelephone signals in response to receipt of a signal having the correct mobile identification number of said transceiving apparatus, said processing means having no means for creating an outgoing addressing signal, so that no radiotelephone signals may be initiated from said transceiving apparatus by the user, and said processing means only producing an alert signal in response to receipt of said signal having the correct mobile identification number of said transceiving apparatus; and

means for indicating reception of radiotelephone signals coupled to said processing means.

5,574,773

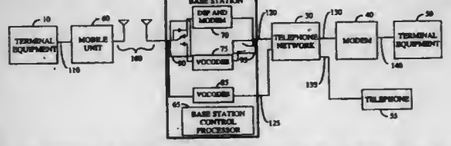
METHOD AND APPARATUS OF PROVIDING AUDIO FEEDBACK OVER A DIGITAL CHANNEL

Matthew S. Grob, San Diego; Gadi Karmi, Del Mar, and Robert H. Kimball, San Diego, all of Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Filed Feb. 22, 1994, Ser. No. 200,028

Int. Cl.[6] H04B 7/00

U.S. Cl. 379—59 34 Claims



1. A method of providing an audible feedback feature to a first terminal equipment user during communication or attempted communication between said first terminal equipment and a second terminal equipment using a mobile unit and a base station each capable of digital wireless communications, and a telephone network capable of passing audible tones, and a modem capable of communications with audible tones, said method comprising the steps of:

initiating a connection from said first terminal equipment to said second terminal equipment by passing a connection initiation message from said first terminal equipment to said mobile unit;

passing to said base station by said mobile unit a first digitally encoded message containing a telephone number associated with said second terminal equipment;

decoding said digitally encoded message by said base station and providing a first audible tone message to said telephone network;

vocoding by said base station said first audible tone message to produce a digital feedback message and providing said digital feedback message to said mobile unit; and

decoding said digital feedback message at said mobile unit and providing said first audible tone message to said first terminal equipment user.

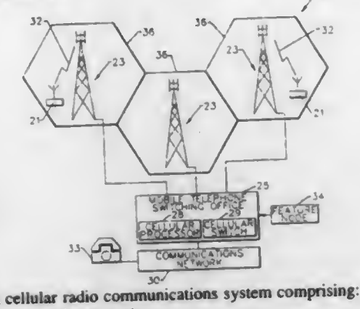
VOL 1192 ISS 2 NO 12 1996 UMI

5,574,774

METHOD AND APPARATUS OF MAINTAINING AN OPEN COMMUNICATIONS CHANNEL BETWEEN A CELLULAR TERMINAL AND AN ASSOCIATED CELLULAR RADIO NETWORK

Björn G. D. Ahlberg, Falsterbo, Sweden; Johan Falk, and Anders Mölne, both of Cary, N.C., assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed May 4, 1994, Ser. No. 237,678
Int. Cl.[6] H04Q *7/22*
U.S. Cl. 379—59 **47 Claims**



1. A cellular radio communications system comprising:
a cellular radio network;
a first cellular terminal which communicates with said cellular radio network via a first voice channel;
a second cellular terminal which communicates with said cellular radio network via a second voice channel;
termination means, responsive to receipt of an end communications signal for said first cellular terminal which indicates that communications between the first cellular terminal and the cellular network have been terminated, for disconnecting the first voice channel from said first cellular terminal such that the first voice channel can be reused; and
open voice channel maintaining means, responsive to receipt of an end communications signal for said second cellular terminal which indicates that the communications between the second cellular terminal and the cellular network have been terminated, for maintaining the second voice channel open for a predetermined time period after receipt of the end communications signal for said second cellular terminal, such that the second cellular terminal continues to access said cellular radio network during the predetermined time period thereafter, via the second voice channel, thereby allowing the second cellular terminal to initiate and receive new communications to and from said cellular telephone network without requiring a new access to the cellular network.

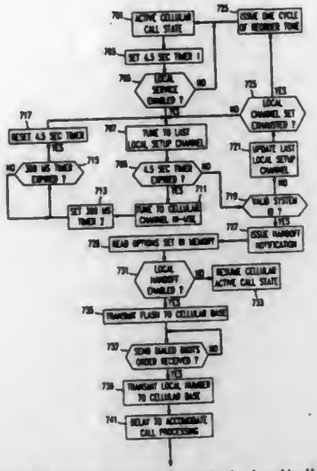
5,574,775

UNIVERSAL WIRELESS RADIOTELEPHONE SYSTEM

Robert R. Miller, II, Morris Township, Morris County; B. Waring Partridge, III, Mendham; Jesse E. Russell, Piscataway, and Robert E. Schroeder, Morris Township, Morris County, all of N.J., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Continuation of Ser. No. 102,037, Aug. 4, 1993, Pat. No. 5,406,615. This application Oct. 25, 1994, Ser. No. 329,038
Int. Cl.[6] H04Q *7/22*
U.S. Cl. 379—60 **6 Claims**

1. A method of selectively operating a mobile subscriber handset in a wide service area and in a local service area system:
comprising the steps of:
initializing a mobile radiotelephone upon power turn on by:
investigating if local service is enabled;
investigating if cellular service is enabled if local service has not been enabled;
determining which service is enabled and acquiring a valid channel for radiotelephone communications;



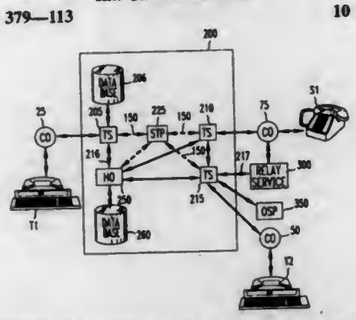
checking for a valid system ID with the local/cellular service that is enabled;
establish an active call state with the local/cellular service that is enabled; and
when transiting from a local area to a wide area service area; transferring service from a local service area to a wide area service area by a handoff operation which includes the steps of;
detecting an impairment in signal strength of a call in progress;
providing notification to a handset user of a desirability of a hand-off;
enabling the handset user to initiate and control an occurrence of the desired hand-off;
retuning the handset in response to user enabling to acquire a cellular set up channel while continuing to communicate with the local service area station;
detecting a page from a wide service area station and issuing a page response from the handset;
assigning a voice channel in the wide area system and tuning the handset to that channel.

5,574,776

CALL REDIRECTION FEATURE FOR RELAY SERVICES

Ileana A. Leuca, Highland Park, and Alfred E. Vitalo, Red Bank, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 13, 1993, Ser. No. 166,130
Int. Cl.[6] H04M *15/00*
U.S. Cl. 379—113 **10 Claims**



1. A method of processing a call in a telephone network comprising the steps of

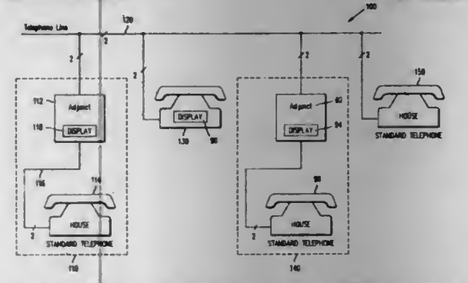
associating different types of telephone devices capable of placing and receiving telephone calls via said telephone network with respective codes, and
responsive to receipt of a telephone call from a calling device to a called device, comparing the codes associated with said calling and called devices and establishing either a direct telephone connection between the calling and called devices if the codes match or an indirect telephone connection via service platform if the codes do not match.

5,574,777

CALLER ID AND CALL WAITING FOR MULTIPLE CPES ON A SINGLE TELEPHONE LINE

Harry W. Lewis, Morgan Hill, Calif., assignor to CIDCO Incorporated, Morgan Hill, Calif.

Division of Ser. No. 388,108, Feb. 13, 1995. This application Jun. 7, 1995, Ser. No. 486,461
Int. Cl.[6] H03M *15/00;15/06;11/00;3/00*
U.S. Cl. 379—142 **6 Claims**



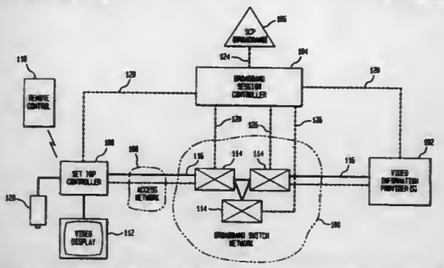
1. A method of receiving caller identification (CID) information in a telephone system having a plurality of customer premises equipments (CPEs) coupled to a single telephone line, each of the CPEs including a corresponding telephone, the method comprising the steps of:
selecting one of the plurality of CPEs as a primary customer premises equipment (CPE);
monitoring the single telephone line with each CPE to determine if the single telephone line is in an off-hook condition, and when the single telephone line is determined to be in an off-hook condition, then performing the following steps:
monitoring the single telephone line with each CPE to detect when a CPE alerting signal (CAS) tone is received;
using each CPE to disconnect the telephone corresponding to the CPE when a CAS tone is detected;
monitoring the single telephone line with each CPE to determine whether the single telephone line is in an on-hook condition;
if the single telephone line is determined to be in an on-hook condition, establishing an off-hook condition with the primary CPE;
generating an acknowledge signal with the primary CPE and transmitting the acknowledge signal to the single telephone line; and
receiving the CID information transmitted on the single telephone line with each CPE.

5,574,778

METHOD AND APPARATUS FOR PROVIDING VIDEO SERVICES

Thomas C. Ely, Bridgewater, and Darek A. Smyk, Piscataway, both of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

Filed May 1, 1995, Ser. No. 432,581
Int. Cl.[6] H04M *3/42;7/00;* **H04N** *7/14;* **H04Q** *11/04*
U.S. Cl. 379—207 **16 Claims**



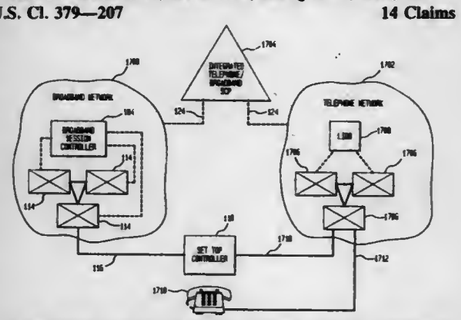
1. A system for providing broadband information to a remote terminal, comprising:
a broadband switch network;
a remote terminal controller associated with said remote terminal;
a video information provider connected to said broadband switch network;
a broadband session controller for communicating with said remote terminal controller and said video information provider; and
a broadband service control point connected to said broadband session controller.

5,574,779

METHOD AND APPARATUS FOR PROVISIONING NETWORK SERVICES

Thomas C. Ely, Bridgewater, and Darek A. Smyk, Piscataway, both of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

Filed May 1, 1995, Ser. No. 432,582
Int. Cl.[6] H04M *3/42;* **H04N** *7/14;* **H04Q** *11/04;* **H04J** *3/24*
U.S. Cl. 379—207 **14 Claims**



1. An integrated network for provisioning services, comprising:
a broadband network;
a telephone network;
an integrated service control point connected to both said broadband network and said telephone network;
a display at a user's remote location;
means for interfacing with a user on said display to collect from said user information concerning a broadband service or a telephone service;
means for updating said user's broadband processing record to initiate a selected broadband service if said user inputs information about a broadband service; and

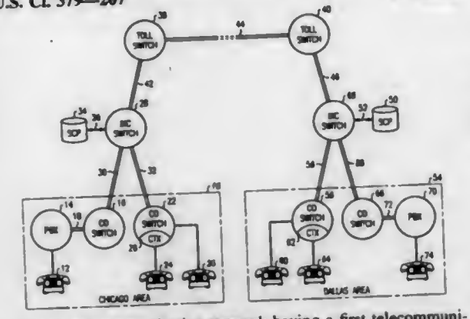
means for updating said user's telephone call processing record to initiate a selected telephone service if said user inputs information about a telephone service.

5,574,780

CONTROLL OF CALL FEATURES PROVIDED TO A SUBSCRIBER BY A HIERARCHICAL TELECOMMUNICATION SWITCH

Donald L. Andruska, Glen Ellyn, and Liane T. Tsai, Wheaton, both of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 16, 1995, Ser. No. 556,323
Int. Cl.[6] H04M *3/42;7/00;* **H04Q** *11/04*
U.S. Cl. 379—207 **8 Claims**



1. In a telecommunication network having a first telecommunication switch that supports subscribers coupled to the first switch, a method for controlling features made available to a subscriber comprising the steps of:

recognizing, at the first switch, a request for call origination by a calling party on an associated communication line, the request being for call origination services to be provided by a second switch;

conveying the call origination request from the first switch to the second switch disposed at a hierarchical level above the first switch;

locating a first record in a database coupled to the second switch based on the identification of the calling party's line;

determining a first set of predetermined call features based on information contained in the first record;

receiving at the second switch a personal identification number (PIN) entered by the calling party via said associated communication line;

locating a second record based on the PIN in the database coupled to the second switch, said second record independent of said first record;

determining a second set of predetermined call features based on information contained in the second record;

determining a third set of call features that is made available to the calling party based on call features contained in said first and second sets of features, whereby call features associated with a particular line can be supplemented by other call features associated with the PIN of a particular subscriber.

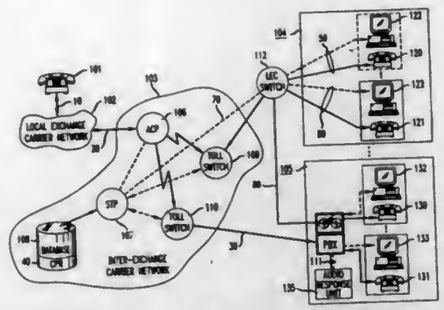
5,574,781

TRANSLATION INDICATOR FOR DATABASE-QUERIED COMMUNICATIONS SERVICES

Matthew A. Blaze, Jersey City, N.J., assignor to AT&T, Holmdel, N.J.

Filed Dec. 8, 1994, Ser. No. 351,918
Int. Cl.[6] H04M *3/00;7/00*
U.S. Cl. 379—220 **16 Claims**

1. A method of completing a telephone call, the method comprising the steps of:



receiving in a communications network a telephone number dialed by a caller to request a database-queried communications service, said telephone number being the only telephone number translatable to at least one POTS number;

translating the received telephone number to said at least one POTS number;

completing the call to a subscriber's telephone set associated with the said at least one POTS number; and

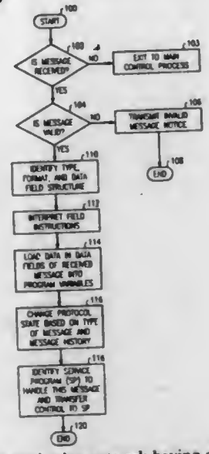
delivering to a monitor associated with said telephone set information indicative of said translation.

5,574,782

MINIMIZING SERVICE DISRUPTIONS IN HANDLING CALL REQUEST MESSAGES WHERE NEW MESSAGE FORMATS ARE NEEDED IN A TELECOMMUNICATION NETWORK

Michael H. Baird, Pickerington; Dennis W. Jackson, Reynoldsburg, and Ren-Wei Liou, Gahanna, all of Ohio, assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 14, 1995, Ser. No. 422,281
Int. Cl.[6] H04M *3/42*
U.S. Cl. 379—220 **18 Claims**



1. In a telecommunication network having a plurality of central office switches that directly serve subscribers, interoffice switches that provide communication channels on demand among the central office switches, a signaling network that controls handling requests for service via the interoffice switches, and a network service control point (SCP) node coupled to the signaling network, the SCP node storing call handling information and transmitting a first network message having predetermined stored set of formats defining the handling of said requests for service, a method for

generating a second network message having a format not included in said predetermined set of formats, the method of comprising the steps of:

(a) storing in the SCP node a computer implemented program that interprets instructions received from a service management system coupled to the SCP node;

(b) receiving at the SCP node a first instruction identifying a format and data field structure of the second network message;

(c) determining at the SCP node if the first instruction is a valid instruction;

(d) if the first instruction is determined to be valid, copying at the SCP node data associated with data instructions contained in the data field structure to corresponding variables of the computer implemented program;

(e) generating the second network message at the SCP node based on the format defined by the first instruction and data contained in the variables of the computer implemented program; and

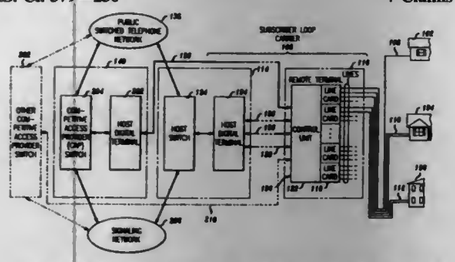
(f) transmitting the second network message from the SCP node via the signaling network to one of the central office switches and interoffice switches.

5,574,783

SYSTEM AND METHOD FOR PROVIDING COMPETITIVE ACCESS TELEPHONE SERVICE FOR TELEPHONES CONNECTED TO A REMOTE TERMINAL OF THE MONOPOLY SERVICE PROVIDER

James P. Dunn, Sandwich, Ill., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 22, 1995, Ser. No. 561,996
Int. Cl.[6] H04M *7/00;3/22;3/42*
U.S. Cl. 379—230 **7 Claims**



1. In a local telephone network, a system for providing competitive access to a remote terminal connected to a plurality of lines, said remote terminal being controlled by a monopoly provider switch for controlling said plurality of lines at said remote terminal, said local network including a signaling network, said system comprising:

a competitive access provider (CAP) switch, said CAP switch having facilities for remote terminals, said CAP switch being connected to said signaling network;

said remote terminal being connected to said CAP switch by one or more trunks;

said CAP switch having means for sending messages to said monopoly provider switch via said signaling network in order to control said lines served by said CAP switch; and

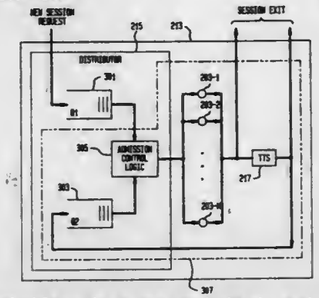
said monopoly provider switch including means for determining which switch serves a particular line, and means responsive to said messages from said CAP switch to control said remote terminal according to said messages.

5,574,784

DYNAMIC ADMISSION CONTROL FOR TELECOMMUNICATIONS RELAY SERVICE WITH TEXT-TO-SPEECH SYNTHESIS

Charles A. LaPadula, Tinton Falls, and Daniel J. Yaniro, Jr., Middletown, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 20, 1992, Ser. No. 979,134
Int. Cl.[6] H04M *11/00;3/42*
U.S. Cl. 379—309 **27 Claims**



1. A method for use in a system employing the services of, when operational, a variable number of live attendants ranging from a minimum of one to predetermined maximum, said system being for processing communication sessions which each have at least first and second ordered phases which recur in order, said first phase requiring one of said live attendants to assist on said communication session and said second phase proceeds without assistance of any of said live attendants, said method being characterized by the step of:

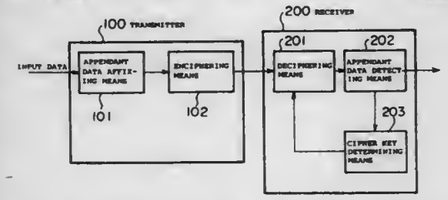
establishing in said system a new communication session in response to a request therefor only when (a) less than a predetermined number of communication sessions are currently being processed in said system, said predetermined number being more than the current value of the number of live attendants and less than the number of communication sessions that can be established in said system based on the physical capacity of said system, (b) no communication session is waiting for one of said live attendants and (c) one of said live attendants is available.

5,574,785

ENCIPHERED COMMUNICATIONS SYSTEM

Tomoyuki Ueno, and Mitsuru Seta, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Dec. 29, 1994, Ser. No. 365,915
Claims priority, application Japan, May 31, 1994, 6-117828
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—2 **13 Claims**



1. An enciphered communication system having a plurality of cipher keys to be switched as required, comprising:

a transmitter receiving input data and including appendant data affixing means for affixing to input data appendant data which allows an error on a transmission line to be detected and which is used for changing a cipher key, and enciphering means coupled to said affixing means and having a plurality of cipher keys selectively used for enciphering the input data

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with the appendant data affixed thereto, output from the appendant data affixing means; and

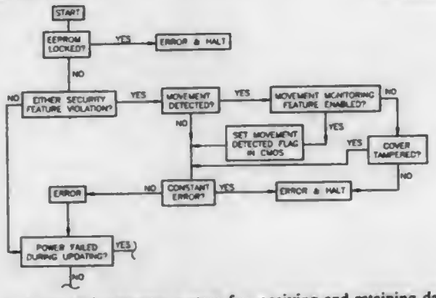
a receiver including deciphering means for receiving and deciphering the enciphered data received via the transmission line, appendant data detecting means for detecting the appendant data affixed to the input data, and cipher key determining means, coupled to said detecting means for measuring an error rate in the detected appendant data and for determining whether a cipher key used for the deciphering is correct, based on the measured error rate of the detected appendant data, and coupled to said deciphering means, for instructing the deciphering means to change the cipher key used for the deciphering when the measured error rate exceeds a predetermined value.

5,574,786

SECURING TRUSTED PERSONAL COMPUTER SYSTEM AGAINST UNAUTHORIZED MOVEMENT

Richard A. Dayan, and Palmer E. Newman, both of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 6, 1995, Ser. No. 383,828
Int. Cl.[6] H04L 9/00
U.S. Cl. 380—4 **22 Claims**



1. A personal computer system for receiving and retaining data and capable of securing data retained within the system against unauthorized access, the system comprising:

a normally closed enclosure;

an erasable memory element mounted within said enclosure for selective activation to active and inactive states and for receiving and storing a privileged access password when in the active state;

a manually operable option switch mounted within said enclosure, said option switch being operatively connected with said erasable memory element and manually settable by a user of the personal computer system for setting said erasable memory element to the active and inactive states;

a movement detection switch;

means for selectively enabling and disabling the movement detection switch;

said movement detection switch mounted within said enclosure and operatively connected with said erasable memory element for detecting unauthorized movement of the computer system;

means including the movement detection switch for preventing a successful power-up of the computer system in response to any switching of said movement detection switch while it is enabled; and

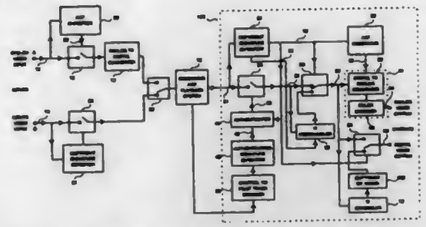
a system processor mounted within said enclosure and operatively connected with said erasable memory element for controlling access to at least certain levels of data stored within the system by distinguishing between entry and non-entry of the password, and between enabled and disabled state of the movement detection switch.

5,574,787

APPARATUS AND METHOD FOR COMPREHENSIVE COPY PROTECTION FOR VIDEO PLATFORMS AND UNPROTECTED SOURCE MATERIAL

John O. Ryan, 22015 Creekside Ct., Cupertino, Calif. 95014

Filed Jul. 25, 1994, Ser. No. 279,542
Int. Cl.[6] H04N 7/167
U.S. Cl. 380—5 **43 Claims**



1. An apparatus for playing back material digitally recorded on a recording medium, comprising:

a mechanism for playing said recording medium;

a digital output terminal operatively connected to said mechanism for providing a digital data signal from said mechanism;

a first detector for detecting an authenticating signal within said digital data signal;

a second detector for detecting a copyright signature signal within said digital data signal;

wherein said copyright signature signal, when present, and said authenticating signal, when present are coupled to an authenticator;

when both said authenticating signal and said copyright signature signal are coupled to said authenticator, said authenticator couples a command to activate a first switch;

said activation of said first switch couples said digital data signal to a first input of a second switch and a descrambler;

a descrambled output of said descrambler is coupled to a second input of said second switch;

said copyright signature signal is also coupled to a control element of said second switch so as to couple said output of said descrambler to a digital to analog converter, a first input of a third switch and a scrambler;

an output of said scrambler is coupled to a second input of said third switch;

an output of said third switch couples a scrambled output when said copyright signature signal is present and couples a clear digital data signal when said copyright signature signal is present;

said copyright signature signal activates an analog anticopy generator;

a digital to analog converter is operatively connected to an output of said second switch containing clear digital data when said copyright signature signal is present on said control element of said second switch and descrambled digital data when said copyright signature signal is present on said control element of said second switch;

said digital to analog converter converts said digital signal to an analog signal;

said analog output is encoded into a composite video signal;

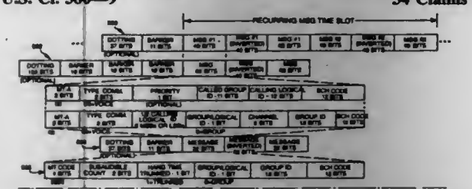
said anticopy generator couples an analog anticopy signal and modifies said analog signal outputted by said digital to analog converter and said encoder.

5,574,788

TRUNKED RADIO REPEATER SYSTEM

Jeffrey S. Childress, Lynchburg; Marc A. Dissosway, Forest; Gerald M. Cooper, Gretna, and Houston H. Hughes, III, Lynchburg, all of Va., assignors to Ericsson Inc., Research Triangle Park, N.C.

Division of Ser. No. 105,153, Aug. 12, 1993, Pat. No. 5,483,670, which is a division of Ser. No. 860,159, Mar. 30, 1992, Pat. No. 5,274,837, which is a division of Ser. No. 464,053, Jan. 3, 1990, Pat. No. 5,125,102, which is a division of Ser. No. 56,922, Jun. 3, 1987, Pat. No. 4,905,302. This application Apr. 19, 1995, Ser. No. 425,152
Int. Cl.[6] H04L 9/00
U.S. Cl. 380—9 **34 Claims**



1. A method of communication within a trunked radio repeater system having a full duplex digital control channel and plural working channels, which working channels are assigned for temporary use of individual radio units specified by digital control signals on the control channel comprising,

requesting and receiving assignment of a specific working channel over said control channel with 9600 bits per second digital signals,

automatically switching to an assigned working channel,

engaging in a digital communication session over said working channel, and

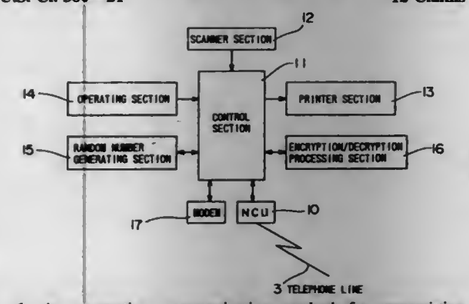
releasing said working channel at the end of a communication session for reassignment by said control channel.

5,574,789

ENCRYPTION COMMUNICATION METHOD AND TERMINAL DEVICE FOR ENCRYPTION COMMUNICATION

Mitsuhiro Nakamura; Koichi Shibata; Masakazu Oyama, and Toshihiro Mori, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Dec. 5, 1994, Ser. No. 341,205
Claims priority, application Japan, Dec. 7, 1993, 5-306764
Int. Cl.[6] H04L 9/16; H04N 1/44
U.S. Cl. 380—21 **12 Claims**



1. An encryption communication method for transmitting encrypted information from a calling terminal device to a called terminal device through a communication line, said method comprising the steps of:

(a) generating at the calling terminal device a random number sequence;

(b) producing at the calling terminal device an encryption key on the basis of the generated random number sequence;

(c) subjecting information to be transmitted by the calling terminal device to encryption processing on the basis of the produced encryption key;

(d) transmitting the encrypted information and control information from the calling terminal device, via the communication line, to the called terminal device, the control information including the random number sequence used in producing the encryption key;

(e) receiving the encrypted information and the control information at the called terminal device;

(f) reproducing at the called terminal device the encryption key on the basis of the random number sequence included in the received control information; and

(g) decrypting the received encrypted information on the basis of the reproduced encryption key;

wherein step (b) comprises:

defining as a position key a binary data sequence corresponding to n bits of the generated random number sequence, commencing with the m-th bit counted from the first bit in the generated random number sequence; and

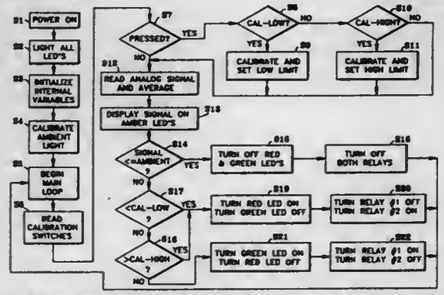
defining as the encryption key a binary data sequence having a length of K bits and commencing with a bit at a bit position corresponding to an ordinal number representation of the position key, counted from the first bit in the generated random number sequence, where m, n, and K are integers.

5,574,790

FLUORESCENCE AUTHENTICATION READER WITH COAXIAL OPTICS

Louis H. Liang, Los Altos, Calif.; Daniel A. Marinello, Burlington, Ky.; William J. Ryan, Underhill, Vt.; David Silverglate, Santa Cruz, Calif., and Donald L. Wray, Ocala, Fla., assignors to Angstrom Technologies, Inc., Florence, Ky.

Continuation-in-part of Ser. No. 383,785, Feb. 6, 1995, abandoned, which is a division of Ser. No. 127,250, Sep. 27, 1993, Pat. No. 5,418,855. This application Dec. 18, 1995, Ser. No. 575,729
Int. Cl.[6] H04L 9/00
U.S. Cl. 380—23 **34 Claims**



1. An authentication system for discriminating among articles marked with one or more fluorescent substances which emit fluorescent light in response to electromagnetic radiation, comprising:

a) a source of electromagnetic radiation in at least one of the ultraviolet, visible, and infrared spectral ranges;

b) means for modulating said electromagnetic radiation at a frequency of more than about 25 kHz;

c) means for synchronously detecting said fluorescent light at said modulation frequency to produce an analog signal;

d) first optical means for transmitting said electromagnetic radiation from said source toward said articles;

e) second optical means for transmitting said fluorescent light toward said means for synchronously detecting said fluorescent light, wherein said first and second optical means are adapted to be substantially coaxial;

f) conversion means to convert said analog signal to a first digital signal;

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g) comparison means comparing said first digital signal with a predetermined second digital signal to within a predetermined tolerance; and

h) output means indicating a positive authentication result if said first and second digital signals agree to within said tolerance, and otherwise indicating a negative authentication result.

5,574,791

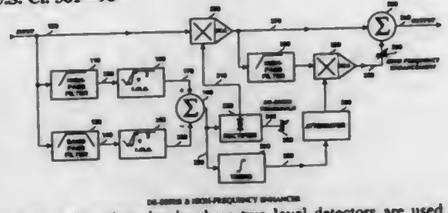
COMBINED DE-ESSER AND HIGH-FREQUENCY ENHANCER USING SINGLE PAIR OF LEVEL DETECTORS

Robert A. Orban, Belmont, Calif., assignor to AKG Acoustics, Incorporated, San Leandro, Calif.

Filed Jun. 15, 1994, Ser. No. 260,106

Int. Cl.[6] H03G *5/00*

U.S. Cl. 381—98 **5 Claims**



1. In a de-essing circuit where two level detectors are used to provide a first signal representative of the logarithmic ratio between high frequency power in an input signal and the loudness-contoured power and where the signal is used with a DC level to control a first voltage controlled amplifier (VCA) to reduce sibilant sounds, an improvement to provide high frequency enhancement comprising:

a non-linear low-pass filter coupled to receive the first signal;

a second VCA controlled by an output signal from the non-linear low-pass filter;

a high pass filter coupled to receive the input signal, an output of the high pass filter being coupled to an input of the second VCA;

a combiner, coupled to receive the input signal and an output signal from the second VCA;

a control to control the amount of the input from the second VCA that is fed to the combiner; and,

wherein the first and the second VCAs have the same gain characteristics and wherein an attenuator attenuates the output signal from the non-linear low pass filter before it controls the second VCA.

5,574,792

VOLUME AND TONE CONTROL CIRCUIT FOR ACOUSTIC REPRODUCTION SETS

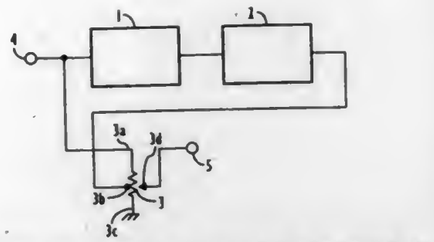
Fumiyasu Konno, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 17, 1994, Ser. No. 291,847

Claims priority, application Japan, Aug. 18, 1993, 5-203953

Int. Cl.[6] H03G *5/00*

U.S. Cl. 381—103 **9 Claims**



1. A volume and tone control circuit for an audio device comprising:

an input terminal and an output terminal;

a variable resistor having an intermediate fixed terminal, one end connected to said input terminal, the other end connectable to ground, and a movable contact connected to said output terminal;

an attenuation circuit connected to said input terminal; and

a tone control circuit connected between the output of said attenuation circuit and said intermediate fixed terminal,

wherein the position of said intermediate fixed terminal of said variable resistor is determined so that amplitude-versus-frequency characteristics of an output signal provided become flat over the entire audio frequency band at the maximum volume settings of the movable contact, regardless of the setting of said tone control circuit.

5,574,793

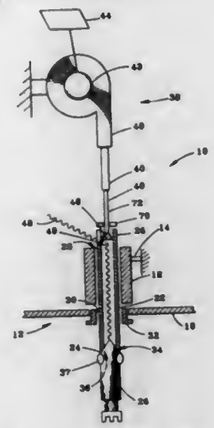
AUTOMATED CONFERENCE SYSTEM

Bruce D. Hirschhorn, 156 Farber Hill Rd., Boonton, N.J. 07005

Continuation of Ser. No. 981,593, Nov. 25, 1992, Pat. No. 5,406,638. This application Mar. 27, 1995, Ser. No. 410,832

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—169 **3 Claims**



1. A positionable microphone unit for ceiling mounting comprising:

guide mounted at or above the ceiling having a central passage;

means for securing said guide with respect to the ceiling;

a wand having a first end and a second end, said wand slidably engaging said central passage;

a microphone attached to said first end of said wand;

a microphone cord attached to said microphone passing through said wand exiting in the vicinity of said second end;

a power antenna or raising and lowering said wand, said power antenna having a telescoping antenna with a free end, said free end being attached to said second end of said wand; and

a power antenna mount for attaching said power antenna above the ceiling.

5,574,794

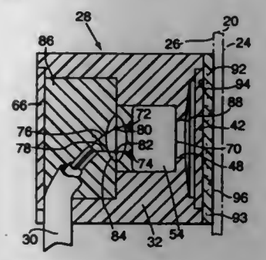
MICROPHONE ASSEMBLY FOR ADHESIVE ATTACHMENT TO A VIBRATORY SURFACE

Robert A. Valley, Branford, Conn., assignor to Earmark, Inc., Hamden, Conn.

Filed Jan. 19, 1995, Ser. No. 375,341

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—169 **16 Claims**



1. A microphone assembly for adhesive attachment to a vibratory surface, said assembly comprising:

a housing of rigid material having a front end and a recess extending inwardly from said front end,

a first diaphragm attached to said front end of said housing so as to hermetically seal said recess at said front end of said housing, said first diaphragm having a front face located in a given plane and said housing not extending forwardly beyond said plane, and

a microphone unit carried by said housing, said microphone unit including a case having an open end and a microphone diaphragm carried by said case said microphone diaphragm is positioned near said open end of said case and extends across and hermetically seals said open end of said case,

said open end of said case communicating with said housing recess and said case being hermetically sealed to said housing so that said housing recess, said first diaphragm and said microphone diaphragm define together an airtight chamber containing a fixed quantity of air, said chamber being of such volume that the air contained therein efficiently transfers vibrations of said first diaphragm to said microphone diaphragm at frequencies within the frequency range of the human voice.

5,574,795

HEADPHONE APPARATUS

Hideki Seki, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed Jul. 27, 1994, Ser. No. 281,113

Claims priority, application Japan, Jul. 31, 1993, 5-208470

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—183 **14 Claims**

1. A headphone apparatus comprising:

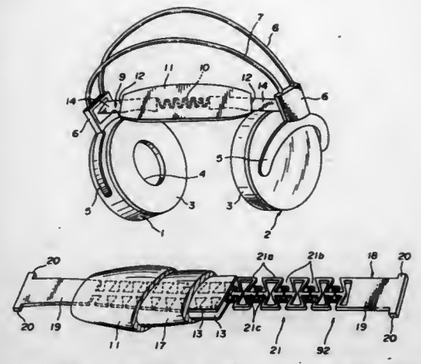
a head band formed in a bent shape;

a headphone unit provided on each side of said head band;

a suspender member mounted between the two sides of the head band to respective positions above a location of attachment of the head band to said headphone unit on each side, said suspender member being entirely between said head band and said headphone unit deformed along the contour of the head when the headphone apparatus is mounted on the head, said suspender member having non-extendable sections and an extendable section unified to said non-extendable sections and extended and contracted along the length of said suspender member;

a pad member mounted on said suspender member for sheathing said extendable section; and

a pair of lubricous sheets arranged between the suspender member and said pad member for clamping said suspender member in-between and with a buffer member arranged between each of said lubricous sheets and said pad member.



5,574,796

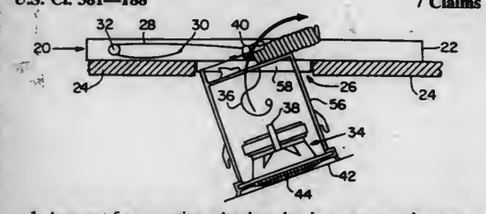
LOUDSPEAKER INSTALLING

William J. Keezer, Sherborn, Mass., assignor to Bose Corporation, Farmingham, Mass.

Filed Aug. 18, 1994, Ser. No. 292,722

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—188 **7 Claims**



1. A mount for mounting a loudspeaker in an aperture in a room boundary structure having an outside surface away from the inside of the room, said mount comprising,

a frame constructed and arranged to rest on said outside surface,

and a spring having a first end attached to said frame and having a free second end movable from a retracted position toward the inside of said room when said frame is resting on said outside surface to an extended position,

said spring constructed and arranged to exert a unidirectional force away from the inside of said room whenever said second end of said spring is displaced from said retracted position toward the inside of said room and said extended position,

said free second end of said spring is formed with free second end engaging structure for supporting loudspeaker structure that including a loudspeaker.

5,574,797

SUSPENSION MOUNT FOR LOUDSPEAKERS

Stefan Geisenberger, Straubing, Germany, assignor to Nokia Technology GmbH, Pforzheim, Germany

Filed Dec. 19, 1994, Ser. No. 358,742

Claims priority, application Germany, Dec. 18, 1993, 43 43 324.3

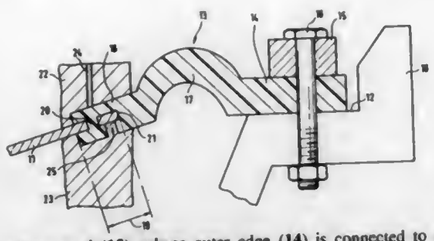
Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—193 **8 Claims**

1. Suspension mount for cone loudspeakers

with a diaphragm (**11**),

with a loudspeaker frame (**10**), and



with a bead (**13**), whose outer edge (**14**) is connected to the loudspeaker frame (**10**) and the inner edge (**18**) is connected to the upper edge (**19**) of the diaphragm (**11**), wherein

the bead (**13**) is made of an injection-mouldable and high-temperature resistant elastomer material, and

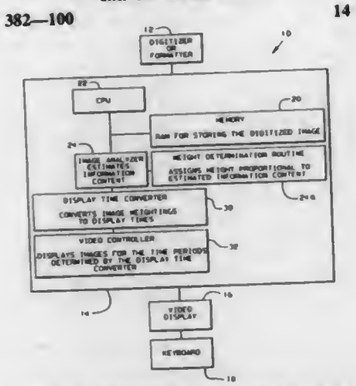
the inner edge (**18**) of the bead (**13**) is connected to the upper edge (**19**) of the diaphragm (**11**) by spraying the upper edge (**19**) of the diaphragm (**11**) with beading material, wherein the upper edge (**19**) of the diaphragm (**11**) has a circumferential perforation having a plurality of openings (**20**) which are filled after being sprayed with the beading material, so that the areas of beading material on both sides of the upper edge (**19**) of diaphragm (**11**) are connected with each other through the openings (**20**) of the diaphragm (**11**).

5,574,798

VISUAL PRESENTATION SYSTEM WHICH DETERMINES LENGTH OF TIME TO PRESENT EACH SLIDE OR TRANSPARENCY

Timothy D. Greer, Endicott, and William F. Phillips, Owego, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 3, 1994, Ser. No. 285,390
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—100 **14 Claims**



1. A system for determining display durations of each of a plurality of images in a presentation, said system comprising:

means for determining an information content of each of said images; and

means for determining for each of said images a display duration based on a respective amount of the information content in the image; and

wherein the display duration determining means enforces a minimum and maximum limit for the display duration of each of said images.

5,574,799

METHOD AND SYSTEM FOR AUTOMATED DETECTION OF MICROCALCIFICATION CLUSTERS IN MAMMOGRAMS

Isaac N. Bankman, Columbia, and William A. Christens-Barry, Ellicott City, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Jun. 12, 1992, Ser. No. 897,650
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—132 **35 Claims**



1. A method of operating an image interpretation system wherein an object in the image is automatically detected, the method comprising the steps of:

digitizing the image;

inputting the digitized image into a data processing means;

detecting automatically the object using the data processing means and the digitized image comprising the steps of:

forming a contour plot of the image, the object in the contour plot comprised of a set of nested contour lines wherein the contour lines correspond to intensity levels thereby causing the object to appear as a peak in relation to the surrounding background in the image;

obtaining a sequence of contour areas from the set of nested contour lines progressing from the contour line having the highest intensity level to the contour line having the lowest intensity level;

computing a feature of the set of nested contour lines using the sequence of contour areas; and

detecting the object using the computed feature; and

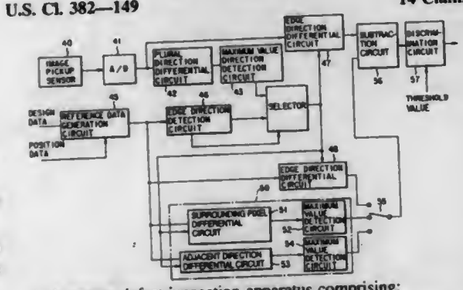
indicating the location of the object in the image.

5,574,800

PATTERN DEFECT INSPECTION METHOD AND APPARATUS

Hiromu Inoue, and Kentaro Okuda, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 23, 1994, Ser. No. 294,510
Claims priority, application Japan, Aug. 24, 1993, 5-209453
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—149 **14 Claims**



1. A pattern defect inspection apparatus comprising:

image pickup means for picking up image data of an object to be inspected to generate inspection image data, the object having at least one edge;

reference image generation means for generating reference image data representing a reference image for comparing with the inspection image data of the object;

edge direction detection means for detecting an edge direction at an image point in the reference image data, the image point being arranged on any point of the reference image;

first edge direction differential means for executing differential processing at an image point in the inspection image data comparable to the image point in the reference image data using a differential operator for the edge direction detected by the edge direction detection means and outputting an absolute value of each differential datum obtained by the differential processing;

second edge direction differential means for executing differential processing at the image point in the reference image data using the differential operator for the edge direction and outputting an absolute value of each differential datum obtained by the differential processing;

differential processing means for executing differential processing at the image point and in pixels surrounding the image point in the reference image data using the differential operator for the edge direction and outputting differential data, and for executing differential processing at the image point in the reference image data using multiple differential operators whose differential directions are the edge direction, the clockwise adjacent direction of the edge direction, and the counterclockwise adjacent direction of the edge direction to provide differential data;

means for calculating the maximum absolute value from the differential data of the image point and of pixels surrounding the image point, and calculating a maximum absolute value from the differential data of the image point; and

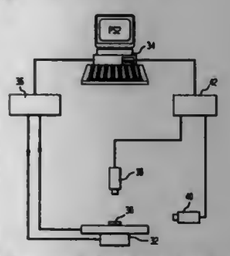
discrimination means for detecting a pattern defect of the object to be inspected on the basis of a difference between differential data obtained by said first edge direction differential means, and differential data obtained by said second edge direction differential means or one of the differential data obtained by said differential processing means.

5,574,801

METHOD OF INSPECTING AN ARRAY OF SOLDER BALL CONNECTIONS OF AN INTEGRATED CIRCUIT MODULE

Olivier Collet-Beillon, 27 Avenue de Brimont, 78400-Chatou, France

Filed Aug. 12, 1994, Ser. No. 289,972
Claims priority, application European Pat. Off., Sep. 17, 1993, 93480113.5
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—150 **17 Claims**



1. A method of inspecting balls within a ball grid array, the balls used as connections of integrated circuit modules, using an inspection apparatus having a microprocessor, a support for holding in place the modules to be inspected, wherein positioning of the support is controlled by the microprocessor, at least one camera connected to the microprocessor, the camera providing images of the balls, the balls being illuminated by a light source, said method comprising the steps of:

measuring a centrality of the grid array by taking views of successive adjoining sub-arrays of said grid array and combining said views to form a composite image of the module;

from said composite image, measuring the X and Y coordinates of each of the balls forming said grid array to determine a best fitting grid of said balls;

determining the Z coordinate measured from the top of each of said balls to define a best fitting plane applicable to said array, based on said best fitting grid;

offsetting said best fitting plane so that the plane includes the lowest ball of said array of balls;

computing a deviation in the Z direction between each of said balls of said array and said offset plane; and

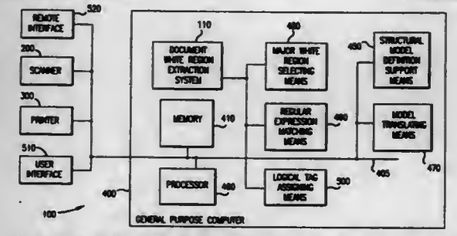
comparing the computed deviation against a predetermined specification and discarding as defective any said modules exceeding said first deviation and said deviation in the Z direction.

5,574,802

METHOD AND APPARATUS FOR DOCUMENT ELEMENT CLASSIFICATION BY ANALYSIS OF MAJOR WHITE REGION GEOMETRY

Masaharu Ozaki, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn., and Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1994, Ser. No. 315,857
Int. Cl.[6] G06K *9/34*
U.S. Cl. 382—176 **19 Claims**



1. A method for logically identifying document elements in a document image, comprising the steps of:

storing a set of at least one predetermined structural model, each structural model in the set defining relationships between document elements of a corresponding model document;

identifying major background regions in the document image:

defining relationships between the major background regions in the document image;

converting the defined relationships of the major background regions in the document image into nested one-dimensional relationships by selecting coextensive major background regions extending perpendicular to a direction of each level of the nested one-dimensional relationships;

hierarchically comparing the nested one-dimensional relationships of the document image with the relationships of each structural model in the set;

determining if the nested one-dimensional relationships of the document image match the relationships of at least one structural model in the set;

selecting at least one matching structural model if the nested one-dimensional relationships of the document image match the relationship of the at least one structural model in the set to form a matching set of at least one structural model;

identifying a most similar matching structural model from the matching set most similar to the relationships in the document image; and

assigning appropriate logical tags to identify at least one of the document elements between the major background regions of the document image based on predetermined logical tags assigned to the document elements of the most similar matching structural model.

VOL 1192 ISS 2 NO 12 1996 UMI

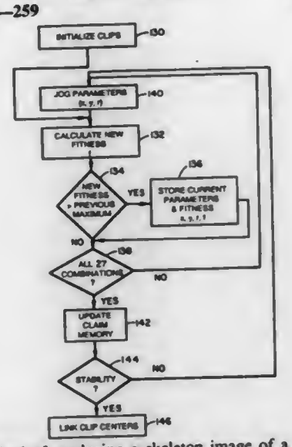
VOL 1192 ISS 2 NO 12 1996 UMI

5,574,803

CHARACTER THINNING USING EMERGENT BEHAVIOR OF POPULATIONS OF COMPETITIVE LOCALLY INDEPENDENT PROCESSES

Roger Gaborski, Pittsford, N.Y.; Andrew Assad, Champagne, Ill., and Thaddeus Pawlicki, Akron, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 2, 1991, Ser. No. 739,649
Int. Cl.[6] G06K 9/44
U.S. Cl. 382—259 20 Claims



1. A method of producing a skeleton image of a character bit map comprising pixels of different pixel values using competitive locally independent processes (CLIPs), comprising the steps of:

defining an individual CLIP for each group of a predetermined number of pixels having a predetermined range of pixel values in said character bit map, each individual CLIP characterized by a center location and radius defining the pixels included in said CLIP;

for each individual CLIP varying said center location and said radius over predetermined ranges to produce a predetermined number of permutations of said center location and said radius;

computing a trial fitness value for each of said permutations, said trial fitness value being a function of the values of the pixels included in said CLIP;

storing the maximum trial fitness value of each individual CLIP as the next fitness value of said CLIP and storing the corresponding center location and radius;

eliminating any CLIP having a next fitness value which falls below a predetermined minimum value;

using said next fitness value, repeating said varying step, said computing step, said storing step and said eliminating step for all of the surviving CLIPs; and

whenever said repeating step fails to produce change in the next fitness value greater than a predetermined threshold, outputting the center locations of all surviving CLIPs.

5,574,804

HAND-HELD SCANNER

Francis Olschafskie, 46 Atherton St., Boston, Mass. 02119, and Allan Chasanoff, 117 E. 36th St., New York, N.Y. 10016

Continuation-in-part of Ser. No. 901,004, Jun. 19, 1992, Pat. No. 5,301,243, which is a continuation-in-part of Ser. No. 632,144, Dec. 21, 1990, abandoned. This application Dec. 2, 1993, Ser. No. 161,762
Int. Cl.[6] G06K 9/22;7/10
U.S. Cl. 382—313 37 Claims

1. A hand-held scanner for reading characters arranged in a plurality of lines recorded on a substrate, the scanner comprising:



a housing having an elongate shape with a scanning end and a rear end;

first optical means for viewing a first area of view on the substrate adjacent the scanning end of said housing when said housing is oriented with respect to the substrate such that the scanning end of said housing is adjacent the substrate and the rear end of said housing is lifted off away from the substrate;

second optical means for viewing a second area of view on the substrate adjacent a side of said housing when said housing is oriented with respect to the substrate such that the side of said housing is adjacent the substrate, wherein a longest dimension of the second area of view is at least several times longer than a longest dimension of the first area of view; and

optical detector means, located within said housing, for detecting relative intensity of light reflected from each of a plurality of points in one of the first and second areas of view;

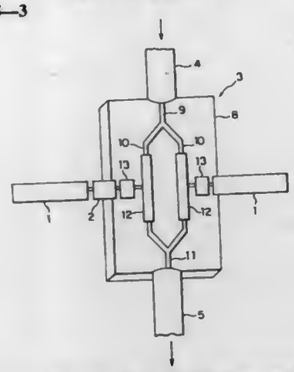
wherein the scanning end of said housing is moved along a line of characters to read the characters through the first area of view and wherein the side of said housing is moved over the substrate line by line to read the characters through the second area of view.

5,574,805

ELECTRIC FIELD SENSOR

Yoshikazu Toba; Michikazu Kondo; Yoshiro Sato, all of Sendai; Kazubisa Hayeiwa, Tokyo; Hisashi Naka, Tokyo, and Tadasu Ishikawa, Tokyo, all of Japan, assignors to Tokin Corporation, Miyagi, and Nippon Hoso Kyokai, Tokyo, both of Japan

Filed May 11, 1995, Ser. No. 439,468
Claims priority, application Japan, May 12, 1994, 6-098331
Int. Cl.[6] G02B 6/10
U.S. Cl. 385—3 7 Claims



1. An electric field sensor comprising: a reception antenna for receiving an input signal;

an electric field sensor head for varying an intensity of a propagating light beam propagating therethrough in response to an electric field intensity of said input signal;

an incident optical fiber and an outgoing optical fiber, both of said incident and outgoing optical fibers being connected to said electric field sensor head;

a light source connected to one end of said incident optical fiber for emitting a light beam to said incident optical fiber as said propagating light beam;

an optical detector supplied with said propagating light beam delivered from said electric field sensor head through said outgoing optical fiber for detecting said propagating light beam;

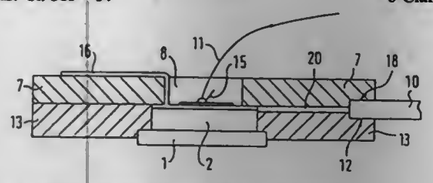
said electric field sensor head comprising a substrate, an incident optical waveguide formed on said substrate to be connected to said incident optical fiber, two phase-shift optical waveguides formed on said substrate and branched from said incident optical waveguide and having a variable refractive index which varies in response to said electric field intensity, an outgoing optical waveguide formed on said substrate to be connected at one end thereof to said outgoing optical fiber and connected at the other end thereof to the junction of said two phase-shift optical waveguides, and at least one modulation electrode formed in the vicinity of at least one of said two phase-shift optical waveguides, said at least one modulation electrode having a thickness not smaller than 1 μm; and a circuit element connected between said at least one modulation electrode and said reception antenna, and wherein said circuit element, said electric field sensor head and said reception antenna together form a resonance circuit.

5,574,806

HYBRID INTEGRATED OPTICAL CIRCUIT AND DEVICE FOR EMITTING LIGHT WAVES

Hans Kragl, Ober-Ramstadt, and Wolf-Henning Rech, Griesheim, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Division of Ser. No. 295,915, Sep. 13, 1994, Pat. No. 5,475,775. This application Aug. 25, 1995, Ser. No. 519,223
Claims priority, application Germany, Jan. 13, 1993, 43 00 652.3
Int. Cl.[6] G02B 6/12
U.S. Cl. 385—14 6 Claims



1. A device for emitting light waves, comprising:

at least one electrooptic semiconductor component having a plurality of sides; and

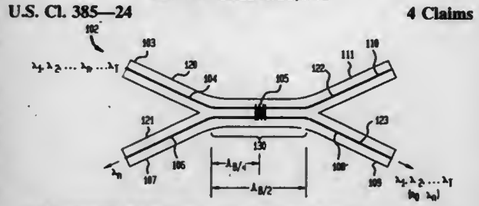
a molded material molded to the at least one electrooptic semiconductor component, the molded material including at least one recess disposed alongside at least one of the plurality of sides of the at least one electrooptic semiconductor component to align the at least one electrooptic semiconductor component with a waveguide trench.

5,574,807

COUPLER USED TO FABRICATE ADD-DROP DEVICES, DISPERSION COMPENSATORS, AMPLIFIERS, OSCILLATORS, SUPERLUMINESCENT DEVICES, AND COMMUNICATIONS SYSTEMS

Elias Snitzer, Piscataway, N.J., assignor to Rutgers University, Piscataway, N.J.

Division of Ser. No. 185,071, Jan. 19, 1994, Pat. No. 5,459,801, which is a continuation-in-part of Ser. No. 145,390, Oct. 29, 1993, Pat. No. 5,457,758. This application Jun. 6, 1995, Ser. No. 469,196
Int. Cl.[6] G02B 6/26;6/42
U.S. Cl. 385—24 4 Claims



1. A communications system which comprises:

an optical fiber transmission ring, the ring being comprised of a substantially single mode waveguide;

one or more stations coupled to the optical fiber transmission ring, a station comprising:

an evanescent wave coupler having a coupling region formed from two substantially single mode waveguides, wherein size and spacing of the waveguides in the coupling region are fabricated having dimensions determined by a condition that if the coupling region were sufficiently long, substantially complete evanescent field coupling of light from one waveguide to the other in a predetermined wavelength band would occur, the coupler having a length substantially equal to twice a length for complete evanescent field coupling of light from one waveguide to the other in a predetermined wavelength band to occur (which length is referred to as a half-beat-length) plus an amount which is substantially equal to N multiplied by the half-beat-length, where N is an even positive integer or zero;

a first tunable Bragg grating disposed in the coupling region in each of the waveguides, wherein the Bragg gratings are positioned at a distance from an entrance end of the coupler region which is substantially equal to one-half of the half-beat-length plus an amount which is substantially equal to N1 multiplied by the half-beat-length, where N1 is a positive integer or zero; and

a second tunable Bragg grating disposed in the coupling region in each of the waveguides, wherein the Bragg gratings are positioned at a distance from an end opposite the entrance end of the coupler region which is substantially equal to one-half of the half-beat-length plus an amount which is substantially equal to N2 multiplied by the half-beat-length, where N2 is a positive integer or zero.

5,574,808

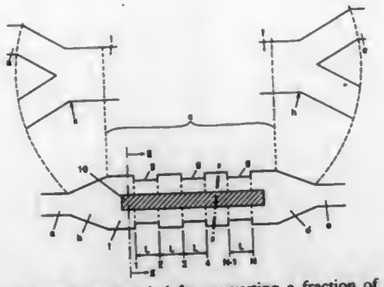
OPTICAL SWITCHING DEVICE

Johannes J. G. M. van der Tol, Zoetermeer, Netherlands, assignor to Koninklijke PTT Nederland N.V., The Hague, Netherlands

PCT No. PCT/EP93/00370, § 371 Date Sep. 12, 1994, § 102(e) Date Sep. 12, 1994, PCT Pub. No. WO93/17363, PCT Pub. Date Sep. 2, 1993
PCT Filed Feb. 17, 1993, Ser. No. 284,605
Claims priority, application Netherlands, Feb. 21, 1992, 9200328
Int. Cl.[6] G02B 6/35
U.S. Cl. 385—28 19 Claims

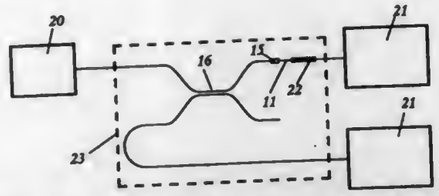
1. Optical switching device, comprising:

a passive mode converter, provided with a bimodal channel type optical waveguide having a periodic mode field profile struc-



ture with a fixed period for converting a fraction of a first guided mode signal into a second guided mode signal, one guided mode of the first and second guided mode signals being a guided mode of a zeroth-order and another guided mode of the first and second guided mode signals being of a first-order, and

switching means for switchably modifying mainly a propagation constant of only one of said first and second guided mode signals in the channel type optical waveguide.



tion of sufficient fluence to induce 'damage', sufficient fluence to induce 'damage' being defined to mean fluence that is sufficient, when applied to an optical fibre preform having the same optical core composition as that of the waveguide, to produce ablation effects, which step is succeeded by the step of enhancing said modulation depth to a relatively higher refractive index difference modulation depth value by exposure of said seed Bragg grating to one or more further pulses of electromagnetic radiation of sufficient fluence to induce further 'damage' in the previously 'damaged' regions of the seed grating, wherein said exposure to said one or more further pulses is an exposure substantially devoid of any fringe pattern.

5,574,809

OPTICAL FIBER TYPE PART FOR OPTICAL SYSTEMS

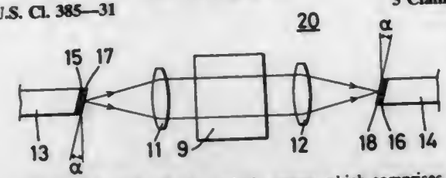
Toshiaki Watanabe, and Toshihiko Ryuo, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 14, 1995, Ser. No. 502,627

Claims priority, application Japan, Aug. 1, 1994, 6-179356

Int. Cl.[6] G02B *6/32*

U.S. Cl. 385—31 **5 Claims**



1. An optical fiber part for optical systems which comprises an optical element, first and second lenses each arranged on the light-incident or light-outgoing side of the optical element and first and second optical fibers each arranged on the light-incident side of the first lens and the light-outgoing side of the second lens respectively, wherein the end faces of the first and second optical fibers which are opposed to one another are inclined at an angle and have abrasive finish and anti-reflection film on each end face, wherein the anti-reflection film comprising an inner layer and a surfaced layer, and wherein the inner layer is formed from TiO_2 and the surface layer is formed from SiO_2.

5,574,810

INCUBATED BRAGG GRATING IN WAVEGUIDES

Kevin C. Byron, Bishop's Stortford; Peter Dyer, N. Humbs.; Robert Farley, N. Humbs., and Roswitha Giedl, N. Humbs., all of United Kingdom, assignors to Northern Telecom Limited, Moutreal, Canada

Filed Jun. 1, 1995, Ser. No. 456,959

Claims priority, application United Kingdom, Jun. 1, 1994, 9410996

Int. Cl.[6] G02B *6/34*

U.S. Cl. 385—37 **7 Claims**

1. A method of creating a Bragg grating in a photosensitive optical waveguide which method includes the step of creating a seed Bragg grating of relatively lower refractive index difference modulation depth by exposure of the waveguide to a fringe pattern of illumination using one or more pulses of electromagnetic radia-

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5,574,811

METHOD AND APPARATUS FOR PROVIDING OPTICAL COUPLING BETWEEN OPTICAL COMPONENTS

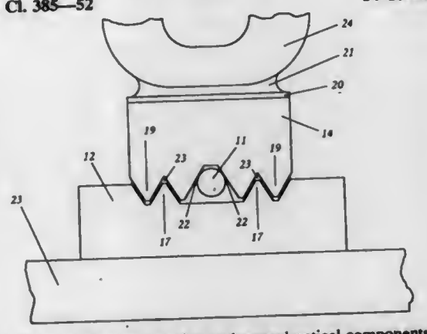
Terry Bricheno, Essex, and James W. Parker, Herts, both of United Kingdom, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jul. 26, 1995, Ser. No. 507,613

Claims priority, application United Kingdom, Sep. 7, 1994, 9417975

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—52 **14 Claims**



1. A method of mounting first and second optical components in optically coupled relationship, wherein the first optical component comprises an optical waveguide formed in or mounted on a first substrate and the second optical component is formed in or mounted on a second substrate, wherein the first and second substrates are provided with at least one pair of substantially complementary profile mating surfaces, and wherein the first and second optical components are positioned with respect to their respective substrates with a precision that ensures that a maximum value of optical coupling between said components occurs with a relative positioning of each of said mating surfaces with respect to its pair providing a non-zero spacing therebetween of not substantially more than 101μm, in which method said relative positioning is substantially established and is held while a bonding medium between each of said mating surfaces and its pair is solidified.

9. A device having a first optical component comprising a first optical waveguide formed in or mounted on a first substrate and a second optical component comprising a second optical waveguide formed in or mounted on a second substrate, wherein the first and second substrates are provided with at least one pair of substantially complementary profile mating surfaces, wherein the first and second components are held positioned relative to each other so as to provide a substantially maximised value of optical coupling therebetween by a bonding medium that provides a bond between said at least one pair of substantially complementary profile mating surfaces, the bonding medium of said bond having a non-zero thickness of not substantially more than 10μm.

5,574,812

HOLDER ARRANGEMENT FOR OPTICAL CONNECTORS OR THE LIKE

Axel Beier, and Hans-Dieter Weigel, both of Berlin, Germany, assignors to Siemens Aktiengesellscnaft, München, Germany

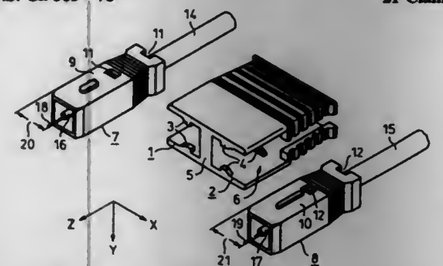
PCT No. PCT/DE94/00013, § 371 Date Jul. 26, 1995, § 102(e) Date Jul. 26, 1995, PCT Pub. No. WO94/17433, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 4, 1994, Ser. No. 495,669

Claims priority, application Germany, Jan. 26, 1993, 43 02 826.8

Int. Cl.[6] G02B *6/00;6/36*

U.S. Cl. 385—78 **21 Claims**



1. A connector arrangement comprising:

at least two individual optical connector housings; and

a holder having at least two receptacles, said receptacles being substantially rigidly interconnected, each of said receptacles has a substantially C-shaped cross section with two arms, each of said receptacles being capable of receiving one of said connector housings, each of said receptacles includes a holding device on an inside surface of each of said receptacles, each holding device interacts with a complementary holding device of said connector housings;

wherein the inside surface of at least one of said receptacles and the holding device of said at least one receptacle is dimensioned with respect to an outside dimension of at least one of said connector housings and the complementary holding device of said at least one connector housing such that said at least one connector housing is capable of movement in at least one direction that is radial to a longitudinal axis of said at least one connector housing; and

wherein the arms of the C-shaped cross section of each of said receptacles is elastically deformable such that upon introduction of the connector housings into said receptacles, said arms expand flexibly, and when the connector housing is fully introduced into said receptacles, the arms contract flexibly, so that the holding devices of said receptacles mutually interact with the complementary holding devices of the connector housings.

5,574,813

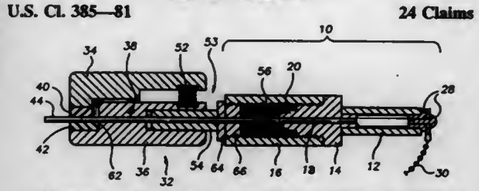
OPTICAL FIBER CONNECTOR, ABUTMENT FIXTURE AND METHOD OF COMPATIBLE USE THEREOF

Paul Chudoba, Shohola, Pa., and Michael Coppola, Binghamton, N.Y., assignors to NuVisions International, Inc., Shohola, Pa.

Filed May 26, 1995, Ser. No. 451,484

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—81 **24 Claims**



7. A fixture for releasable attachment to a bare fiber adapter to define stop means for positioning the cleaved, terminal end of an optical fiber in predetermined plane relative to said adapter, said fixture comprising:

a) a body portion extending along a longitudinal axis between opposite ends;

b) an open-ended passageway extending axially of said body portion;

c) an optically polished abutment surface positioned within said passageway perpendicular to the axis thereof, said polished surface comprising a terminal end surface of an element simulating an optical element of apparatus with which said cleaved end is to be interfaced; and

d) connector means for cooperative engagement with said bare fiber adapter with said polished surface substantially at said predetermined plane, whereby positioning said cleaved end in abutting relation to said polished surface places said cleaved end in said predetermined plane.

5,574,814

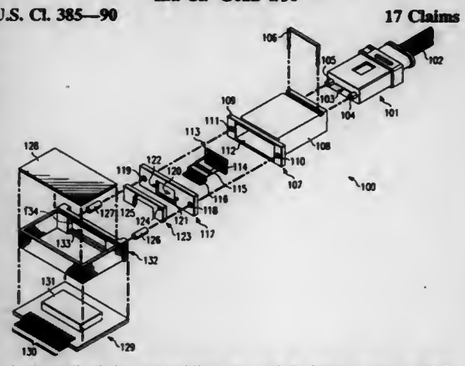
PARALLEL OPTICAL TRANSCEIVER LINK

Kenneth C. Noddings, Austin, Tex.; Robert C. Gardner, Boston, Mass.; Thomas J. Hirsch, Austin, Tex.; Charles L. Spooner, Austin, Tex.; Michael A. Olla, Austin, Tex., and Jason J. Yu, Austin, Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Filed Jan. 31, 1995, Ser. No. 381,168

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—90 **17 Claims**



1. A method for assembling an optical interconnect module adaptable for mating with an optical connector having at least one optical fiber and an alignment pin, said method comprising the steps of:

mounting an optical device onto a connector body, said connector body being a portion of said optical interconnect module, said optical device operable for transmitting or receiving optical signals to/from said at least one optical fiber;

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inputting a relative position between said alignment pin and an end of said at least one optical fiber; and

forming a slot in said connector body by using said inputted relative position between said alignment pin and said end of said at least one optical fiber, wherein a relative position between said slot and said optical device mirrors said inputted relative position between said alignment pin and said end of said at least one optical fiber so that said optical device and said end of said at least one optical fiber are substantially aligned to permit transmission of said optical signals between said optical device and said end of said at least one optical fiber when said optical connector and said optical interconnect module are mated, wherein said slot is adaptable for receiving said alignment pin when said optical connector and said optical interconnect module are mated.

5,574,815

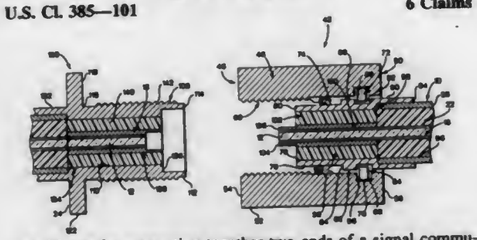
COMBINATION CABLE CAPABLE OF SIMULTANEOUS TRANSMISSION OF ELECTRICAL SIGNALS IN THE RADIO AND MICROWAVE FREQUENCY RANGE AND OPTICAL COMMUNICATION SIGNALS

Foster C. Kneeland, 86 Lawrence St., Haverhill, Mass. 01830

Filed Jan. 28, 1991, Ser. No. 646,229

Int. Cl.[6] G02B 6/44

U.S. Cl. 385—101 6 Claims



6. Means for connecting together two ends of a signal communications cable comprising the combination of a coaxial cable for transmission and reception of electrical signals and an optical fiber for transmission and reception of optical signals, said optical fiber having a predetermined diameter and being centrally disposed so as to form a core for the signal communications cable and comprising a solid, circular-shaped, elongated fiber, an inner, annular-shaped, electrical conductor coaxially surrounding said optical fiber core, and having predetermined inner and outer diameters, an outer, annular-shaped, solid electrical conductor coaxially surrounding said inner conductor and having predetermined inner and outer diameters, said outer conductor being radially, uniformly spaced from the outer diameter of the said inner conductor, and an annular-shaped dielectric material having predetermined outer and inner diameters and of a predetermined dielectric constant being located between the said inner and outer electrical conductors and coaxially surrounding the said inner conductor, said dielectric material maintaining the outer and inner electrical conductors in a desired uniform spatial relationship relative to one another and providing a desired uniform electrical impedance therebetween, the means for connecting comprising:

(a) a male plug housing comprising an annular-shaped coupling nut having a front end and a back end and being of predetermined inner and outer diameters defining inner and outer circumferential surfaces, a thread pattern being provided in the inner circumferential surface of the coupling nut from the front end of the coupling nut along at least a part of the length thereof, an elongated annular-shaped male plug member being located in the elongated opening provided by the inner circumferential surface of the coupling nut, said plug member being of predetermined inner and outer diameters less than the inner and outer diameters of the coupling nut and defining inner and outer circumferential surfaces, and means provided in operative association between the inner circumferential surface of the coupling nut and outer circumferential surface of the male plug member for retaining the two components in assembly together;

(b) an elongated tubular-shaped first electrical contact member open at both ends thereof and of predetermined length for location on an end of the communications cable and in surrounding, coaxial contact with the inner conductor, a length of outer conductor and dielectric material having been stripped from the cable of the same length as the predetermined length of the electrical contact member, said contact member having a lesser diameter at its front end for a predetermined length from the front end than the remainder of the contact member, said contact member being operatively associated with the male plug member;

(c) a second elongated tubular-shaped electrical contact member of predetermined length open at both ends thereof for location on another end of a communications cable in contact with the inner conductor, a length of outer conductor and dielectric material having been stripped from the cable of a somewhat lesser predetermined length than that of the second contact member, the inner diameter of the second contact member being somewhat greater at the front end of the contact member and for a predetermined length inwardly thereof equal to that of the lesser outer diameter of the first contact member;

(d) a jack member being operatively associated with the second electrical contact member comprising an elongated annular-shaped front member defined by front and back ends and inner and outer diameters defining inner and outer circumferential surfaces, a thread pattern being provided in the said outer surface of the front member complementary to that provided on the inner surface of the coupling nut, the outer diameter of the elongated front member of the jack member being such relative to the inner diameter of the coupling nut that these two members can be threadedly connected together and disconnected as desired, a circular-shaped receptacle being provided in the jack member and extending inwardly from the front end a predetermined distance and terminating in a radially disposed edge perpendicular to the length of the elongated member, said receptacle having a diameter and a predetermined length such that a predetermined length of the end of the male plug member can be located therein, the front edge of the male plug member being in contact with the said radially disposed edge and providing a block against further movement of the male plug member into the jack member when the jack member and male plug member are in operative assembly and the coupling nut is turned to bring those members in tight interface with one another, the front lesser diameter end of the first contact member being located in the front greater diameter end of the second contact member in male and female fashion, so that the ends of the optical fibers interface with one another and are in essentially the same plane.

5,574,816

POLYPROPYLENE-POLYETHYLENE COPOLYMER BUFFER TUBES FOR OPTICAL FIBER CABLES AND METHOD FOR MAKING THE SAME

Hon-ching M. Yang, Conover; James D. Holder, Hickory, both of N.C., and Christopher W. McNutt, Saint Germain en Laye, France, assignors to Alcatel NA Cable Sytems, Inc., Claremont, N.C.

Filed Jan. 24, 1995, Ser. No. 377,366

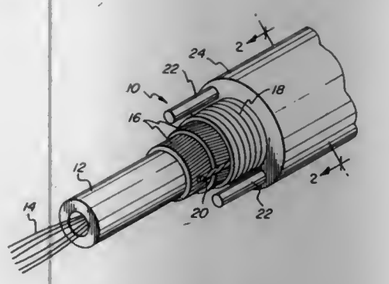
Int. Cl.[6] G02B 6/44

U.S. Cl. 385—109 14 Claims

9. An optical fiber cable comprising:

a buffer tube made from a polypropylene-polyethylene copolymer resin having a nucleating agent disbursed therein; and

at least one optical fiber transmission medium positioned in the buffer tube.



5,574,817

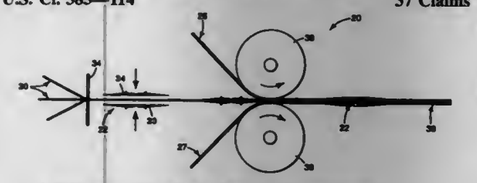
FIBER OPTIC RIBBON CABLE ASSEMBLY AND METHOD OF MANUFACTURING SAME

Gordon D. Henson, Lake Elmo; Barbara A. DeBaun, Woodbury; Scott A. Igl, St. Paul; Nicholas A. Lee, Woodbury, and Terry L. Smith, Roseville, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 1, 1995, Ser. No. 456,571

Int. Cl.[6] G02B 6/44

U.S. Cl. 385—114 37 Claims



1. A fiber optic ribbon cable assembly comprising:

a pair of adhesive tape layers;

a plurality of optical fibers arranged in a generally longitudinal orientation between the pair of adhesive tape layers with adjacent optical fibers positioned with an arbitrary lateral spacing relative to each other; and

at least one connector assembly having at least a portion thereof disposed between the pair of adhesive tape layers and having the plurality of optical fibers disposed therein with adjacent optical fibers positioned with a fixed lateral spacing relative to each other.

5,574,818

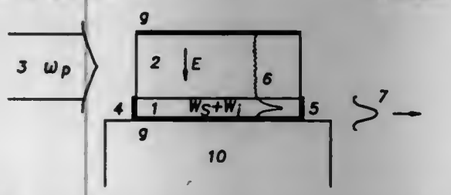
COMPOUND WAVEGUIDE LASERS AND OPTICAL PARAMETRIC OSCILLATORS

Sergej G. Krivoshlykov, Moscow, Russian Federation, assignor to CeramOptec Industries, Inc., East Longmeadow, Mass.

Filed Aug. 1, 1995, Ser. No. 509,875

Int. Cl.[6] G02F 1/39

U.S. Cl. 385—122 20 Claims



9. An optical parametric oscillator for parametric amplification and frequency conversion in a compound multimode nonlinear waveguide comprising:

a compound multimode nonlinear waveguide, said waveguide having a cladding and a compound core comprising two regions in its cross section, namely a multimode region and a single-mode region; at least said single mode region exhibits a second order nonlinearity, said multimode region can also exhibit electro-optical properties, refractive index profile in said compound waveguide is chosen to support propagation of similar field configurations having tails in said multimode region and sharp peaks of their fields in said single-mode nonlinear region for higher order waveguide modes at three frequencies ω_p, ω_s and ω_i, such that $\omega_p=\omega_s+\omega_i$, wherein ω_p is a pump frequency, ω_s is a signal frequency and ω_i is an idler frequency, said peaks of said mode fields providing an efficient frequency conversion in said nonlinear single-mode region when said refractive index profile of said multimode pan is also chosen to provide required phase matching between said modes at said three frequencies.

a means of pumping said nonlinear single-mode region with a beam of frequency ω_p;

a means of optical feedback for said signal frequency mode or for said idler frequency mode or for both the signal and idler frequencies modes.

5,574,819

RECEPTACLE FOR A CABLE END PIECE

Uwe Günther, and Hans-Dieter Weigel, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, München, Germany

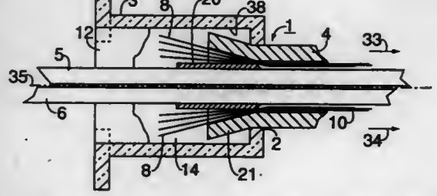
PCT No. PCT/DE94/00118, § 371 Date Sep. 25, 1995, § 102(e) Date Sep. 25, 1995, PCT Pub. No. WO94/18585, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 1, 1994, Ser. No. 495,555

Claims priority, application Germany, Feb. 3, 1993, 43 03 737.2

Int. Cl.[6] G02B 6/02

U.S. Cl. 385—139 20 Claims



1. A receptacle arrangement for an end piece of a cable, said arrangement comprising:

a cable including a cable sheath enclosing at least one signal conductor and an elongated stress-relief device, said cable having an end piece such that an end of the cable sheath at the end piece of said cable is sufficiently removed to expose at least one of said signal conductors and an end of said stress-relief device;

a container having an inlet orifice, such that the end piece of said cable is inserted into said inlet orifice, and an outlet orifice, such that at least one of said signal conductors exits through said outlet orifice;

a casting compound inside said container such that said casting compound surrounds at least one of said signal conductors, the end of said stress-relief device and at least a portion of said cable sheath in said container;

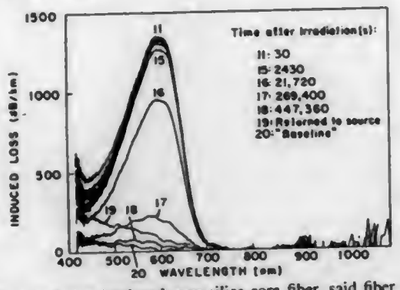
a spreading body that is at least partially inserted into the portion of said cable sheath in said container, said spreading body spreading out the end of said stress-relief device, said spreading body is dimensioned so that a diameter of the end of said cable sheath in said container is widened beyond the diameter of the inlet orifice of said container.

5,574,820

RADIATION HARDENING OF PURE SILICA CORE OPTICAL FIBERS AND THEIR METHOD OF MAKING BY ULTRA-HIGH-DOSE GAMMA RAY PRE-IRRADIATION

David L. Griscom, 7304 Rebecca Dr., Alexandria, Va. 22307

Filed Jun. 30, 1995, Ser. No. 497,661
Int. Cl.[6] G02B 6/16
U.S. Cl. 385—142 45 Claims



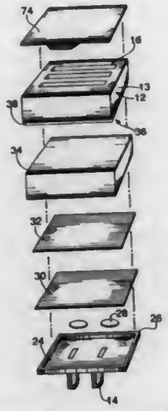
17. A radiation hardened pure-silica-core fiber, said fiber comprising pure-silica exhibiting radiation induced losses of no more than 30 dB/km within a wavelength range of about 400 nm to about 700 nm at a radiation dose of at least about 100,000 Gray.

5,574,821

PLUG IN VOLATILE SUBSTANCE DISPENSER AND METHOD FOR DISPENSING VOLATILES

Wolfgang Babasade, 405 Knierim Pl., New Milford, N.J. 07646

Filed Nov. 24, 1993, Ser. No. 157,882
Int. Cl.[6] A61L 9/03
U.S. Cl. 392—392 24 Claims



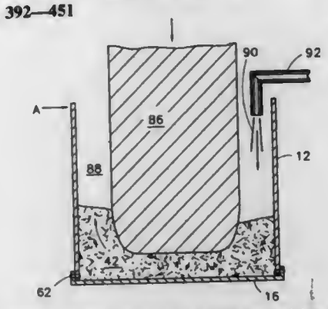
14. A volatile substance dispenser for direct connection to an electrical outlet, said fragrance dispenser being disposable after a fragrance material has diffused out of said fragrance dispenser after a period of normal use, said fragrance dispenser comprising:
(a) a base portion and a top portion;
(b) said base portion having at least two prongs connected to said base portion for electrically connecting said base portion to said electrical outlet;
(c) said top portion having openings therein to permit vapors to pass through said openings;
(d) a cavity area between said base portion and said top portion when said base portion and said top portion are joined together;
(e) a pre-selected quantity of said volatile substance;
(f) retaining means for retaining said volatile substance, said retaining means having a base and a top;
(g) securing means for Securing said retaining means within said cavity area between said top portion and said base portion of said dispenser;
(h) means for carrying electric current from said prongs into said cavity area when said prongs are connected to said electrical outlet; and
(i) electrical conversion means for converting said electric current supplied by said prongs into heat, said electrical conversion means comprising a thick film, fixed resistor heat pad and a thermal conductor, said fixed resistor heat pad being affixed to an interior surface of said base portion which is immediately adjacent said cavity area within said volatile substance dispenser, said fixed resistor heat pad being screen printed on said interior surface of said base portion, said fixed resistor heat pad being in electrical contact with said prongs connected to said base portion, said thermal conductor being within said cavity area positioned between said fixed resistor heat pad and said means for retaining said volatile substance, said thermal conductor having substantially the same surface area as said base of said volatile substance retaining means, so that when said current is converted to said heat, said heat is focused upon and uniformly distributed across the surface of said base of said volatile substance retaining means, whereby said volatile substance is caused to be diffused away from said means for retaining said volatile substance in the form of vapors, which vapors now pass through said openings in said top portion of said dispenser, thereby disseminating said vapors in a place wherein said volatile substance dispenser is located.

5,574,822

COMPACT ELECTRIC WATER HEATER

Eugene L. West, Grand Rapids, Mich., assignor to Bradford White Corporation, Ambler, Pa.

Filed Mar. 19, 1993, Ser. No. 34,548
Int. Cl.[6] F24H 1/20
U.S. Cl. 392—451 11 Claims



1. A method of making a water heater comprising:
forming a steel water tank by welding together a bottom plate and a substantially tubular deep drawn body portion having an open end and a rounded integral closed end;
lining the formed steel water tank on its interior surface with a glass coating;
placing foam insulation forming liquids into a substantially rigid outer covering and separably about a die to form foam insulation having an interior portion with an open end and sized and shaped to substantially match the shape of said body portion of said water tank;
separating said die and said foam insulation;
positioning said water tank into the interior portion of said foam insulation; and
covering said bottom plate of said water tank with a bottom pan and connecting said bottom pan to said outer covering.

5,574,823

FREQUENCY SELECTIVE HARMONIC CODING

Hisham Hassanein, Kanata; André Brind'Amour, Gloucester, and Karen Bryden, Ottawa, all of Canada, assignors to Her Majesty in Right of Canada as Represented by the Minister of Communications, Ottawa, Canada

Filed Jun. 23, 1993, Ser. No. 79,912
Int. Cl.[6] G10L 3/02;9/00
U.S. Cl. 395—2.17 10 Claims



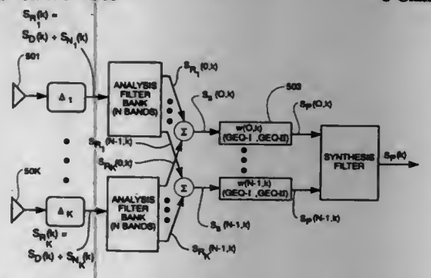
1. A method of encoding a speech signal comprising:
(a) processing said speech signal by harmonic coding to generate a fundamental frequency signal, and a set of optimal harmonics,
(b) processing said fundamental frequency signal, and harmonics to select a number of bands encompassing a reduced number of harmonics, and to generate for each of the selected bands a voiced or unvoiced decision signal, an optimal subset of magnitudes and a signal indicating the positions of the selected bands, and transmitting a pitch signal and signals indicating the position of the selected bands with a bandwidth that contains reduced harmonics and thus is a fraction of the bandwidth of said speech signal.

5,574,824

ANALYSIS/SYNTHESIS-BASED MICROPHONE ARRAY SPEECH ENHANCER WITH VARIABLE SIGNAL DISTORTION

Raymond E. Slyh, Dayton; Randolph L. Moses, Worthington, and Timothy R. Anderson, Dayton, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 225,878, Apr. 11, 1994, abandoned.
This application Apr. 14, 1995, Ser. No. 422,729
Int. Cl.[6] G10L 5/06;3/02
U.S. Cl. 395—2.35 8 Claims



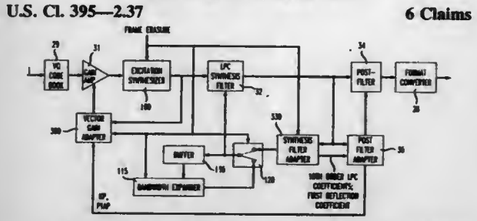
5. The microphone-array apparatus of claim 4 wherein said synthesis filtering means output signal comprises a non filtered summation of said weigbted like-channel sum signals.

5,574,825

LINEAR PREDICTION COEFFICIENT GENERATION DURING FRAME ERASURE OR PACKET LOSS

Juin-Hwey Chen, Neshanic Station, N.J., and Craig R. Watkins, Latham, Australia, assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 14, 1994, Ser. No. 212,475
Int. Cl.[6] C10L 3/02; H04B 14/06
U.S. Cl. 395—2.37 6 Claims



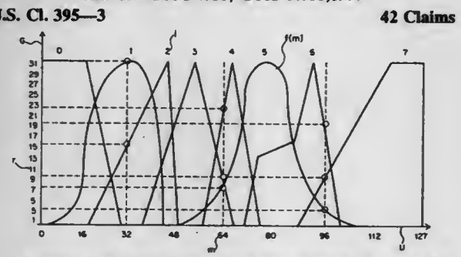
1. A method of generating linear prediction filter coefficient signals during frame erasure, the generated linear prediction coefficient signals for use by a linear prediction filter in synthesizing a speech signal, the method comprising the steps of:
storing linear prediction coefficient signals in a memory, said linear prediction coefficient signals generated responsive to a speech signal corresponding to a non-erased frame; and
responsive to a frame erasure, scaling one or more of said stored linear prediction coefficient signals by a scale factor, BEF raised to an exponent i, where $0.95 \leqq BEF \leqq 0.99$ and where i indexes the stored linear prediction coefficient signals, the scaled linear prediction coefficient signals applied to the linear prediction filter for use in synthesizing the speech signal.

5,574,826

MEMORY ORGANIZATION METHOD FOR A FUZZY LOGIC CONTROLLER AND CORRESPONDING DEVICE

Biagio Russo, Mascalucia; Claudio Luzzi, Aeri, and Rinaldo Poluzzi, Milan, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed Jun. 9, 1994, Ser. No. 257,340
Claims priority, application European Pat. Off., Jun. 9, 1993, 93830251
Int. Cl.[6] G06G 7/00; G06F 17/00;9/44
U.S. Cl. 395—3 42 Claims



1. A method for loading information into a memory section of an electronic controller which performs inference operations according to rules, each rule comprising at least one preposition and at least one implication, wherein a number of membership functions are defined for a finite number of points within a universe of discourse, the method comprising the steps of:
providing values of the membership functions appearing in the preposition of at least one of the rules, each value being indicative of a degree of membership; and
storing in the memory section, for each of the finite number of points, the values of only those membership functions for the point which are not zero.

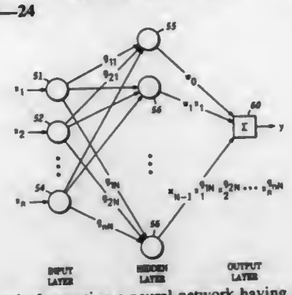
VOL 1192 ISS 2 NO 12 1996 UMI

5,574,827

METHOD OF OPERATING A NEURAL NETWORK

Shay-Ping T. Wang, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 76,601, Jun. 14, 1993, Pat. No. 5,517,667.
This application Apr. 17, 1995, Ser. No. 422,474
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—24 12 Claims



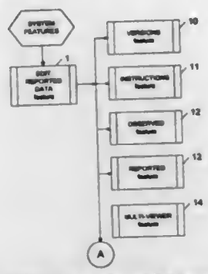
1. A method of operating a neural network having a plurality of neural network inputs, a plurality of neurons for inputting a plurality of inputs and generating at least one output, said method comprising the steps of:
(a) distributing each of said neural network inputs to each of said neuron inputs;
(b) each neuron applying a gating function to each of said neural network inputs to produce corresponding gated inputs;
(c) each neuron multiplying each of said gated inputs together to generate a product;
(d) each neuron multiplying said product by a weight value to generate a neuron output for each neuron; and
(e) summing the outputs of said neurons to generate said at least one network output.

5,574,828

EXPERT SYSTEM FOR GENERATING GUIDELINE-BASED INFORMATION TOOLS

Robert S. A. Hayward, Hamilton, Canada; Michael F. Roizen; David Summerell, both of Chicago, Ill., and Martin Rom, Bloomfield Hills, Mich., assignors to TMRC, Bloomfield Hills, Mich.

Filed Apr. 28, 1994, Ser. No. 234,982
Int. Cl.[6] G06F *17/00;15/00*
U.S. Cl. 395—50 9 Claims



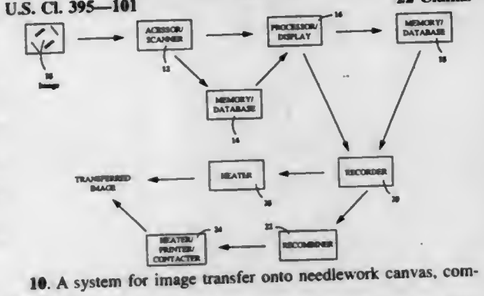
1. An expert system data processing means for generating guideline-based information tools, comprising:
A) input means for accepting input data, the input data including reported data, guidelines, and algorithms;
B) memory means, connected to the input means, for storing the input data and for storing a first application program and a second application program;
C) logic means, connected to the memory means, for manipulating the input data and for running the first application program and the second application program, the first application program adapted to accept the reported data and to manipulate the reported data according to the guidelines and the algorithms in order to produce output data; and
D) presentation means, connected to the logic means, for presenting output data, the output data including means for eliciting additional reported data;
E) the logic means being adapted to generate the second application program as a result of manipulating the input data through the first application program;
F) the second application program adapted to accept the additional reported data and to manipulate the additional reported data according to the guidelines and the algorithms in order to produce an output report.

5,574,829

METHOD AND APPARATUS FOR PRODUCING NEEDLEWORK CANVAS

Elizabeth Wallace, and John B. Spelz, Sr., both of 134 Mountain King, Boulder, Colo. 80302

Filed Jan. 7, 1994, Ser. No. 178,981
Int. Cl.[6] C06F *15/00*
U.S. Cl. 395—101 22 Claims



10. A system for image transfer onto needlework canvas, comprising:
means for accessing raw image data, said accessing means including image scanning means and a first memory for storing image data;
image processing means coupled to said accessing means for performing predetermined processing operations on the raw image data, said processing means including display means coupled to said first memory means and user input means for manipulating the raw image data;
means for recording said manipulated image data onto a substantially non-absorptive receiving surface, said recording means including a printer utilizing a thermo-operative dye; and
means for printing said recorded image onto an absorptive fabric medium, said printing means operative through application of heat and pressure to said receiving surface to affix said dye to said fabric, said fabric consisting essentially of needlework canvas, such that a high resolution color image is permanently imprinted.

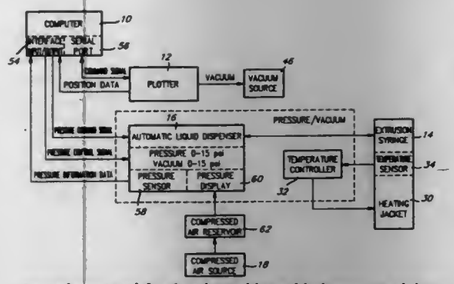
5,574,830

COMPUTER AIDED TACTILE DESIGN

Gaston Quzilleau, Quebec, Canada, assignor to Foundation Centre Louis-Hebert, Canada

Filed Apr. 26, 1994, Ser. No. 234,085
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—103 10 Claims

1. A tactile image drawing system for the visually impaired comprising:
a) a computer for storing and processing graphic images or alphanumeric text;
b) a reference surface on which said graphic images or alphanumeric text will be drawn;
c) a plotter connected to and cooperative with said computer for receiving data representative of said graphic images or alphanumeric text and for drawing said graphic images or alphanumeric text and, said plotter having an extrusion syringe for dispensing a bead of extruded material for drawing said graphic images or alphanumeric text on said reference surface;
d) means connected to and cooperative with said computer and said plotter for governing the flow volume of said extruded material;
wherein said extruded material is a viscous and fast-drying liquid, and is adapted to dry as a raised shape when deposited on said reference surface, said raised shape creating a tactile representation recognizable by tactile perception performed by a visually impaired person.

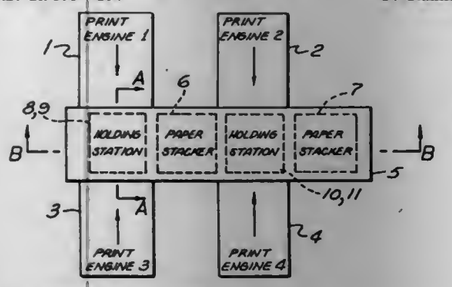


5,574,831

HIGH SPEED PRINTING USING AN ARRAY OF LOW SPEED PRINTERS

Robert Grenda, 7018 E. Roundup Way, Orange, Calif. 92669

Filed May 25, 1994, Ser. No. 249,173
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—104 14 Claims



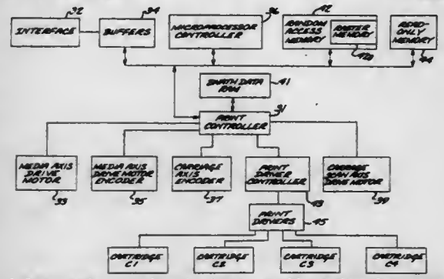
1. A printing system, comprising:
a first printer engine that can produce printed pages from electronic image data;
a second printer engine that can produce printed pages from electronic image data; and,
an electronic image control device which can receive electronic image data that corresponds to a first printed page and a second printed page, and provide said electronic image data to said first and second printer engines such that said first printer engine produces the first printed page and said second printer engine produces the second printed page.

5,574,832

DOUBLE AXIS DOT DEPLETION FOR 600 DPI EDGE ACUITY WITH 300 DPI PRINT CARTRIDGE

David C. Towery; Alan E. Cariffe; Janet E. Mebane, all of San Diego; Anne P. Kadonaga, Del Mar, all of Calif.; Iue-Shuenn Chen, Singapore, Singapore, and Mark Overton, Escondido, Calif., assignors to Hewlett-Packard Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 925,723, Aug. 3, 1992, abandoned. This application Apr. 30, 1993, Ser. No. 56,244
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—109 11 Claims



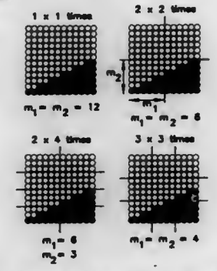
1. In a swath type printer having a movable carriage for supporting a plurality of print elements which are controlled to print dots on a rectilinear array of pixels each having an associated pixel data bit in a bit-mapped pixel data array which is logically organized in rows and columns to correspond to the printed pixel array, each row of the pixel data array being organized into a sequence of bits that starts at a start bit and ends with a last bit,a method for depleting a row of the pixel data array, comprising the steps of:
(A) sequentially selecting the second through next to last in sequence bit of the row of raster data; and
(B) setting the selected bit to 0 if (a) the adjacent prior in sequence bit of the row is a 1 and (b) the adjacent next in sequence bit of the row is at 1.

5,574,833

IMAGE PROCESSING APPARATUS FOR THE SMOOTH ENLARGEMENT AND MULTILEVELING OUTPUT OF AN IMAGE

Hanyuh Yoshiaki, Soka, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 2, 1993, Ser. No. 115,148
Claims priority, application Japan, Sep. 2, 1992, 4-234593
Int. Cl.[6] H04N *1/40*
U.S. Cl. 395—109 12 Claims



1. An image processing apparatus comprising:
smoothing enlargement means for enlarging a q1×q2 dot array of binary image data into an n1×n2 dot array of binary image data having a black and white pattern and for smoothing a jagged image;
dividing means for dividing the n1×n2 dot array into k1×k2 blocks of binary image data with each block being an m1×m2 array of dots; and

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multileveling means for multileveling each block of the divided binary data and making k1×k2 items of multilevel image data; wherein:

$(q1 \times q2) > 1$,

$(n1 \times n2) > (q1 \times q2)$,

$(m1 \times m2) > (q1 \times q2)$,

$(n1 \times n2) = (k1 \times k2)\ (m1 \times m2)$,

$(k1 \times k2) > (q1 \times q2)$,

and

q1, q2, n1, n2, m1, m2, k1, and k2 are integers greater than or equal to 1.

5,574,834

IMAGE COMMUNICATION SYSTEM FOR FOLLOWING A COMMUNICATION PROCEDURE TO SIMULTANEOUSLY TRANSMIT IMAGE CODE DATA

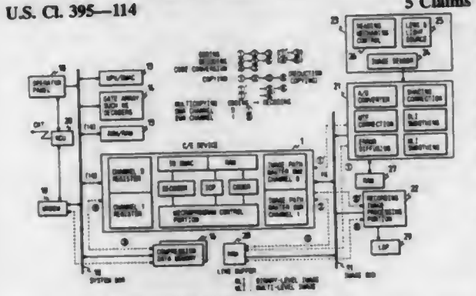
Hitoshi Horie, Ageo; Toru Ozaki, Tokyo, and Hideyuki Shirai, Ichikawa, all of Japan, assignors to Matsushita Graphic Communications Systems, Inc., Japan

Filed Jan. 8, 1993, Ser. No. 2,471

Claims priority, application Japan, Jan. 9, 1992, 4-001879; Feb. 13, 1992, 4-026457; Apr. 22, 1992, 4-102622

Int. Cl.[6] G06F *15/20*

U.S. Cl. 395—114 **5 Claims**



3. An image processing system comprising:

processing means for performing a coding processing to change a piece of image data to a piece of coding data;

a plurality of line memories for respectively storing the image data processed by the processing means or the coding data obtained by the processing means;

external-bus connection control means for controlling a connection between an external bus and the system;

an internal bus for transferring pieces of image data and pieces of coding data among the processing means, the external-bus connection control means and the plurality of line memories; and

operation control means for causing the processing means, the plurality of line memories and the external-bus connection control means to perform an input operation of inputting the pieces of image data from the external bus to the line memories and an output operation of outputting the pieces of coding data to the external bus from the processing means or the line memories in parallel with each other,

wherein the operation control means includes conversion means for performing an image conversion in secondary scanning direction by preferentially thinning or interpolating a line in which the number of black pixels indicated by pieces of coding data obtained by the processing means is less

than a predetermined number.

5,574,835

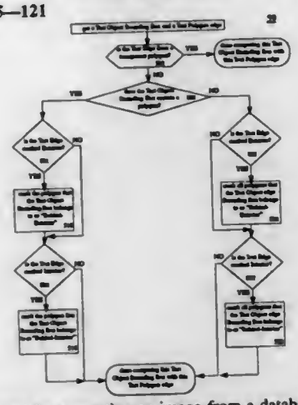
BOUNDING BOX AND PROJECTIONS DETECTION OF HIDDEN POLYGONS IN THREE-DIMENSIONAL SPATIAL DATABASES

Jerome F. Duluk, Jr., and David B. Kasle, both of Mountain View, Calif., assignors to Silicon Engines, Inc., Palo Alto, Calif.

Continuation of Ser. No. 58,919, May 6, 1993, abandoned, which is a continuation-in-part of Ser. No. 43,365, Apr. 6, 1993, abandoned. This application Nov. 2, 1995, Ser. No. 552,212

Int. Cl.[6] G06T *15/40*

U.S. Cl. 395—121 **9 Claims**



1. A method for generating an image from a database including a plurality of three-dimensional objects, each said three-dimensional object comprising at least one polygon having at least one edge and allowing for each said object to have an unlimited number of said polygons and edges, and for successively determining whether a particular selected one of said at least one polygon designated a current test polygon is not visible to an observer located at a predetermined eyepoint coordinate location by virtue of being hidden by previously selected ones of said three-dimensional objects in said database designated as test objects and therefore said test polygon does not need to be rendered by a renderer; said method comprising the steps of:

(A) selecting a particular one of said plurality of three-dimensional object as a current test object from among said plurality of three-dimensional objects in said database, said selecting being performed on said plurality of three-dimensional objects in arbitrary order without pre-sorting said three-dimensional geometry of objects according to a z coordinate distance from said predetermined eyepoint coordinate location prior to said selection;

(B) selecting, for each said selected particular three-dimensional current test object, each one of said polygons within said selected three-dimensional test object as said current test polygon;

(C) for each said selected current test polygon, determining whether said current test polygon is not visible to an observer located at a predetermined eyepoint coordinate location by virtue of being hidden by ones of said test objects that have been previously selected; said step of determining whether said current test polygon is not visible to an observer including the steps of;

(1) determining the exterior region of said current test object as the union of bounding boxes of exterior polygons, where said exterior polygons are identified by successively comparing each edge in each polygon of said current test object with the edges in all other polygons of said same current test object and said comparisons identify either an edge shared with a back facing polygon or an edge that is not shared by any another polygon, wherein a polygon is a back facing polygon of said test object when said test object is topologically closed and when said polygon is

located on a far side of said test object relative to said predetermined observer eyepoint coordinate location;

(2) determining the interior region of said test object as the union of bounding boxes of interior polygons, where a said interior polygon is identified by

being neither a said exterior polygon nor as a polygon having its projected bounding box overlap with a projected bounding box of a said exterior polygon, said overlap being the sharing of a common region between each of two projected bounding boxes, said common region including a one-dimensional edge and a two-dimensional area;

(3) testing for said overlap between the projected bounding box of said test polygon and the projected bounding boxes of said exterior polygons and the projected bounding boxes of said interior polygons;

(4) determining that said test polygon is not visible if;

(a) any of said overlaps occur between said projected bounding box of said test polygon and said bounding boxes of said interior polygons, and

(b) said overlaps do not occur between said projected bounding box of said test polygon and said bounding boxes of said exterior polygons, and

(c) for all said occurring overlaps between said projected bounding box of said test polygon and a said bounding box of a said interior polygon, the Z coordinate values of said bounding box of said test polygon are all farther from said predetermined eyepoint coordinate location of said observer than the Z coordinate values of the said bounding box of said interior polygon;

(5) discarding any of said test polygons that are determined to be not visible from said predetermined eyepoint location and rendering any of said test polygons that are not determined to be hidden by said test objects and may be visible and not hidden by said test objects; and

(6) retaining each said test polygon that may be visible and has not been discarded, and using each said retained polygon as a polygon of its corresponding three-dimensional object when said object is processed as a previously selected test object; and

(D) repeating steps (A) through (C) with each said three-dimensional object in said database as said current test object; and

(E) directing a display process to perform or omit displaying each said test polygon on a display device depending on whether each said test polygon is determined to be visible or hidden.

5,574,836

INTERACTIVE DISPLAY APPARATUS AND METHOD WITH VIEWER POSITION COMPENSATION

Raymond M. Broemmelsiek, 9465 Maler Rd., San Diego, Calif. 92129

Filed Jan. 22, 1996, Ser. No. 589,189

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—127 **18 Claims**

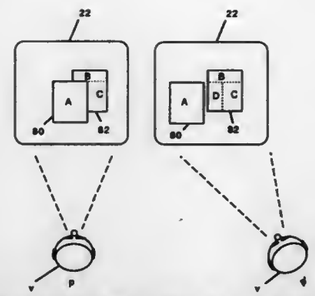
1. A system for displaying an image of a graphical object on a display device, the position at which the object is displayed being a function of the position from which a viewer views the display device so as to simulate an interactive, three-dimensional viewing environment, comprising:

an autoscopic display device;

a microprocessor for producing graphics instructions representing a current view of an object based on viewer position;

a graphics engine, connected to the microprocessor, for converting the graphics instructions into data capable of driving the display device;

a buffer, connected to the graphics engine and the display device, for storing the data;



means for determining the position of a viewer relative to the display device of a type wherein the viewer carries no required apparatus to enable the determining of viewer position;

means, connected to the means for determining viewer position, for determining the display position of the object based on the determined position of a viewer;

means, connected to the means for determining display position and to the buffer, for determining read-out order of the data such that the data may be used to generate a display of that part of the object, in the proper position, viewable from the viewer's position; and

means, connected to the buffer, for controlling reading out of the data from the buffer in the order determined by the means for determining read-out order, so as to drive the display device to display only that part of the object, in the proper position, viewable from the viewer's position.

5,574,837

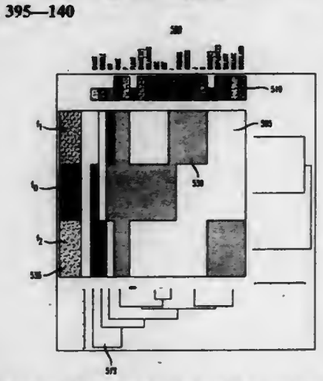
METHOD OF GENERATING A BROWSER INTERFACE FOR REPRESENTING SIMILARITIES BETWEEN SEGMENTS OF CODE

Linda A. Clark, Mountainside; Thaddeus J. Kowalski, and Daryl Pregibon, both of Summit, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 17, 1995, Ser. No. 373,340

Int. Cl.[6] G06T *9/00*

U.S. Cl. 395—140 **18 Claims**



1. An apparatus for generating an interface corresponding to at least one segment of code comprising:

means for extracting statistical information attributes from the at least one segment of code and using said statistical information attributes to generate an external metric;

means for creating an interface display from the external metric, said interface display including a first cluster interface which illustrates the affects of applying a weighing scheme to one or more of said statistical information attributes, said weighing scheme being applied add emphasis to a particular statistical

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information attribute, and a second cluster interface which illustrates the similarity of the code segments being compared based on the applied weighing scheme; and

means for generating said interface display.

5,574,838

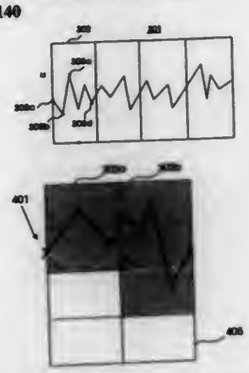
METHOD OF IMPROVING THE EFFICIENCY OF DATA DELIVERY TO AN OUTPUT DEVICE

Elias Politis, Nepean, and Jean-Sébastien Thériault, Hull, both of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Apr. 24, 1995, Ser. No. 426,977

Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—140 **12 Claims**



1. A method for improving data delivery of an image to a device comprising the steps of:

a) obtaining a first plurality of data points corresponding to the image, each data point having an address (t, u) on a two dimensional coordinate system;

b) grouping the first plurality of data points into an integral number of linear divisions, wherein more than two data points from the first plurality of data points are grouped into at least one linear division;

c) selecting, from each of a plurality of linear divisions two data points representing minimum and maximum values of one of t and u to form a second plurality of data points; and

d) temporarily storing said second plurality of data points in a memory means until it is requested.

5,574,839

METHOD AND APPARATUS FOR AUTOMATIC GAP CLOSING IN COMPUTER AIDED DRAWING

Michel Gangnet, Saint-Germain en Laye, and Jean-Manuel Van Thong, Courbevoie, both of France, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Feb. 14, 1994, Ser. No. 195,724

Int. Cl.[6] G06F *15/62*

U.S. Cl. 395—142 **20 Claims**

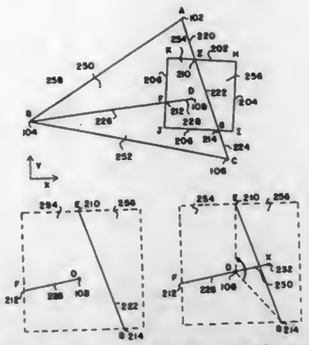
1. A computer executed method of editing a computer generated drawing to close unintended gaps, said drawing being stored in a storage device as a plurality of digital data elements, each digital data element expressing a vector corresponding to user-provided drawing strokes, said method comprising the steps of:

iteratively storing input drawing strokes as a series of vector elements in said storage device;

selecting from said storage device a stored vector element whose characteristics indicate a gap between said stored vector element and other stored vector elements, if any;

if a gap is so found, processing only those stored vector elements corresponding to input strokes within a selectable region of said gap in order to synthesize at least one connecting vector element for closing said gap; and

updating said storage device by inserting said at least one connecting vector element in said storage device.



5,574,840

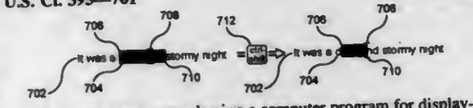
METHOD AND SYSTEM FOR SELECTING TEXT UTILIZING A PLURALITY OF TEXT USING SWITCHABLE MINIMUM GRANULARITY OF SELECTION

Andrew Kwatinetz; Antoine Leblond, both of Seattle; G. Christopher Peters, Bellevue, and Stephen M. Hirsch, Seattle, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Aug. 29, 1994, Ser. No. 298,219

Int. Cl.[6] G06T *11/60*

U.S. Cl. 395—761 **10 Claims**



1. In a computer system having a computer program for displaying text on a video display and for selecting the displayed text according to a minimum granularity such that the selection of the displayed text occurs in units of the minimum granularity and a mouse input device having a mouse button for requesting selection of the displayed text, the text comprising a plurality of words, each word having at least one letter, the computer program having a plurality of modes for selecting the text, a first of the modes being letter mode wherein the text selection has a minimum granularity of a letter, a second of the modes being word mode wherein the text selection has a minimum granularity of a word, a method for selecting text comprising the steps of:

receiving a request to select text in response to a user depressing the mouse button without releasing the mouse button;

while the mouse button remains depressed,

determining a mode for selecting the text by the computer program by determining whether the mouse input device has been stationary for more than a predetermined amount of time;

when the mouse input device has been stationary for more than the predetermined amount of time,

determining to utilize letter mode;

when the mouse input device has not been stationary for more than a predetermined amount of time,

determining to utilize word mode;

when the computer program determines to utilize letter mode, selecting the text utilizing letter mode; and

when the computer program determines to utilize word mode, selecting the text utilizing word mode.

5,574,841

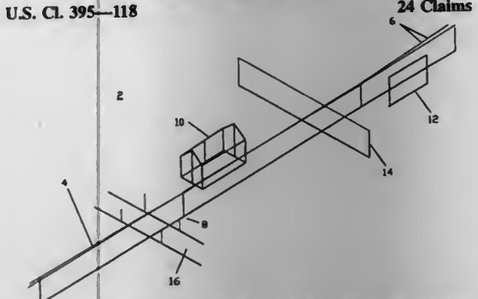
APPARATUS FOR AND METHOD OF POWERLINE SURVEYING, DESIGNING AND MAINTENANCE

Philip G. Thompson, and Timothy Pilgrim, both of Dublin, Ireland, assignors to Calligraphic Systems Limited, Dublin, Ireland

Continuation of Ser. No. 741,114, Aug. 5, 1991, abandoned. This application Jun. 24, 1994, Ser. No. 265,633

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—118 **24 Claims**



1. A computerized apparatus for powerline designing, comprising:

a device for generating and editing in three dimensions a powerline and powerline support structures design in relation to a surrounding environment and displaying the design and the surrounding environment simultaneously in a single three-dimensional representation, parameters of the three-dimensional representation being contained in one of a ground profile and a terrain model stored in a CAD design file; and

means for defining in three dimensions a conductor design, and displaying the conductor design in three dimensions in the single three-dimensional representation of the powerline, powerline support structures and environment at any selectable swing angle, for each of a plurality of conductors of the powerline.

5,574,842

DOCUMENT PROCESSING APPARATUS AND METHOD FOR GENERATING A CHARACTER OR SYMBOL PATTERN ACROSS A PLURALITY OF LINES

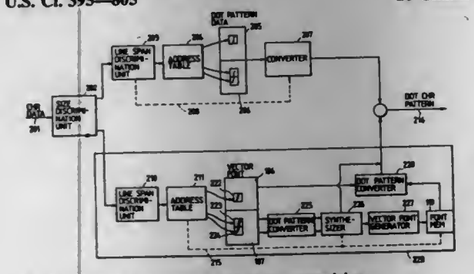
Hiroshi Takakura, Yokohama; Takahiro Kato; Kunio Seto, both of Tokyo; Akifumi Shirasaka, and Masaki Hamada, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 84,328, Jun. 30, 1993, abandoned, which is a continuation of Ser. No. 385,399, Jul. 26, 1989, abandoned. This application Mar. 2, 1995, Ser. No. 397,711

Claims priority, application Japan, Jul. 29, 1988, 63-188353; Jul. 29, 1988, 63-188354; Jul. 29, 1988, 63-188355; Jul. 29, 1988, 63-188356; Jul. 29, 1988, 63-188357

Int. Cl.[6] G06F *17/21*

U.S. Cl. 395—805 **28 Claims**



1. A document processing apparatus comprising:

size discriminating means for discriminating whether a character or symbol pattern to be output has a predetermined size;

means for inputting character code information corresponding to a character to be output;

memory means for storing character or symbol pattern data in the form of a plurality of fonts;

discriminating means for discriminating whether a character or symbol pattern to be output exists across a plurality of lines;

first generating means for generating one character or symbol pattern from one dot font data based on one character code in the event said discriminating means discriminates that the character or symbol pattern to be output exists on a single line and that said size discriminating means discriminates that the character or symbol pattern has the predetermined size;

second generating means for generating one character or symbol pattern from a plurality of dot font data based on one character code in the event that said discriminating means discriminates that the character or symbol pattern to be output exists across a plurality of lines and that said size discriminating means discriminates that the character or symbol pattern has the predetermined size;

third generating means for generating one character or symbol pattern from one vector font data based on one character code in the event that said discriminating means discriminates that the character or symbol pattern to be output exists on a single line and that said size discriminating means discriminates that the character or symbol pattern does not have the predetermined size; and

fourth generating means for generating one character or symbol pattern from a plurality of vector font data based on one character code in the event that said discriminating means discriminates that the character or symbol pattern to be output exists across a plurality of lines that said size discriminating means discriminates that the character or symbol pattern does not have the predetermined size.

5,574,843

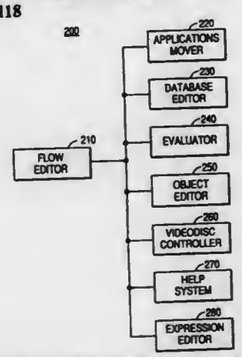
METHODS AND APPARATUS PROVIDING FOR A PRESENTATION SYSTEM FOR MULTIMEDIA APPLICATIONS

John D. Gerlach, Jr., Falls Church, Va., assignor to Escom AG, Heppenheim, Germany

Continuation of Ser. No. 691,984, Apr. 26, 1991, abandoned. This application Jan. 17, 1995, Ser. No. 384,735

Int. Cl.[6] G06F *17/00*

U.S. Cl. 395—118 **8 Claims**



5. A presentation system in a data processing system including a central processing unit, a memory for storing a plurality of presentations which includes operations which are represented by parent icons and child icons, each of said child icons associated with a respective one of said parent icons, and a display device having a display screen including a presentation area for displaying said parent icons and child icons representing said operations performed in each of said plurality of presentations, the presentation system comprising:

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a plurality of data structures corresponding to each of said plurality of presentations including a plurality of event structures and a plurality of command structures, each of said plurality of event structures and each of said plurality of command structures including a) a respective parent list, and b) a respective specific data member which designates respective data for a respective one of said operations, each of said plurality of event structures further including c) a respective child list;

a plurality of link structures each associated with respective ones of said plurality of data structures, each of said plurality of link structures including respective link nodes each a) to couple a respective one of said plurality of event structures with a respective one of said plurality of command structures and b) associates with at least a respective one of said plurality of data structures based on contents of said respective parent list and child list for coupling to at least one of said parent icons and child icons, respectively;

means for receiving one the plurality of event structures of one of said plurality of presentations;

means for locating, using one of the plurality of link structures associated with the received one of the plurality of event structures based on one of said respective parent list and said respective child list for said received one of said plurality of event structures, one of the plurality of command structures of the one of said plurality presentations:

means for determining an action to be performed which corresponds to an action identifier which has been stored in said located one of said plurality of command structures; and

means for performing the action corresponding to the action identifier in accordance with a plurality of attributes which have been stored in said located one of said plurality command structures.

5,574,844

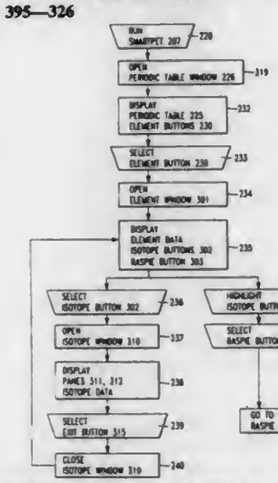
COMPUTER SYSTEM AND METHOD FOR PROCESSING ATOMIC DATA TO CALCULATE AND EXHIBIT THE PROPERTIES AND STRUCTURE OF MATTER

Ajaya K. Mohanty, Red Hook, and Farid A. Parpia, Lake Katrine, both of N.Y., assignors to International Busines Machiness Corporation, Armonk, N.Y.

Filed Sep. 22, 1994, Ser. No. 310,459

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—326 **11 Claims**



1. A computer apparatus for exhibiting the properties and structure of matter comprising:

a visual display unit;

a data entry device; and

a data processing system connected to said visual display unit and said data entry device, said data processing system having atomic structure program means for constructing mathematical atomic models, and a text/graphic interactive user interface having program selection means for permitting a user to interact with and perform operations on said atomic structure program means via said data entry device and said visual display unit, an atomic data base containing atomic information for use by said atomic structure program means for constructing said mathematical atomic models, an atomic data display means for displaying on said visual display unit atomic select buttons and said atomic information in response to selections made by said user via said atomic select buttons and said data entry device, and a graphic display means for displaying graphical representations of said mathematical atomic models on said visual display unit, and wherein said atomic data display means includes a periodic table means for displaying a plurality of said atomic select buttons to form element buttons labeled with said atomic information to form a periodic table of chemical elements on said visual display unit, and an element means for displaying on said visual display unit, in response to selection of one of said element buttons, a plurality of said atomic select buttons to form isotope buttons labeled with isotope information from said atomic information, said isotope information corresponding to the isotopes of said one of said chemical elements.

5,574,845

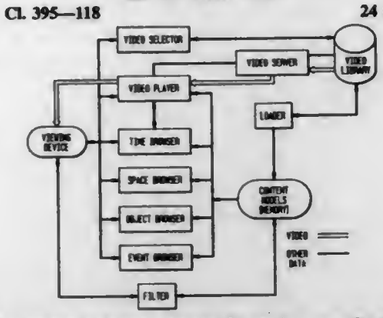
METHOD AND APPARATUS VIDEO DATA MANAGEMENT

Daniel C. Benson, Lawrenceville; Arturo A. Pizano, Belle Mead; Farshid Arman, Hamilton, and Remi DePommier, Plainsboro, all of N.J., assignors to Siemens Corporate Research, Inc., Princeton, N.J.

Filed Nov. 29, 1994, Ser. No. 346,453

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—118 **24 Claims**



8. Apparatus including computer for use by a user for management of video data in a video stream stored in a video library, said video stream including a plurality of video shots wherein each shot comprises a sequence of frames, said apparatus comprising:

video selector means for selecting a video by said user from a video library;

video server means for accessing said video library;

video player means coupled to said video server means and to said video selector means for defining and storing in said video library on a frame-sequence axis at least one of

(1) a time-based model of said video stream,

(2) a space-based model of said video stream,

(3) an object-based model of said video stream, and

(4) an event-based model of said video stream;

browser means for enabling said user to selectively scan through such of said models as have been defined and select events of interest therefrom; and

filter means for selecting for viewing portions of said video stream associated with segments of interest.

5,574,846

CARD WINDOWING METAPHOR FOR APPLICATION COMMAND AND PRESENTATION HISTORY

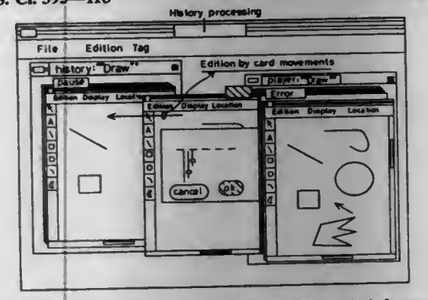
Tetsuya Yoshimura; Hirotada Ueda; Yutaka Hidai, and Masashi Uyama, all of Tokyo, Japan, assignors to New Media Development Association, Tokyo, Japan

Continuation of Ser. No. 911,732, Jul. 10, 1992, abandoned. This application May 30, 1995, Ser. No. 452,962

Claims priority, application Japan, Jul. 15, 1991, 3-174023

Int. Cl.[6] G06F *11/32*

U.S. Cl. 395—118 **9 Claims**



1. A history content representation system for use in information processors, comprising:

means for managing at least one of an operational history data and a status data to revert an application back to any desired point in the past or to make use of past operations;

an interface screen having cards as objects for manipulation by a user to use the past operations, wherein contents of said cards represent the past operations, and wherein an order of said cards corresponds to time series of the past operation, and wherein the screen, which displays a card representation, displays images which alternatively display simultaneous screen representations before and after a change in an application of the screen, the change in the application of the screen being performed by the user at any point in the past operations; and

a stack of cards which cooperates with an application by the user, wherein an application executes past operations corresponding to a card sequence on said stack of cards, wherein results of the application which has been executed are represented on said cards.

5,574,847

COMPUTER GRAPHICS PARALLEL SYSTEM WITH TEMPORAL PRIORITY

Glen A. Eckart, and William Armstrong, both of Salt Lake City, Utah, assignors to Evans & Sutherland Computer Corporation, Salt Lake City, Utah

Filed Sep. 29, 1993, Ser. No. 128,893

The portion of the term of this patent subsequent to Apr. 18, 2012, has been disclaimed.

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—505 **26 Claims**

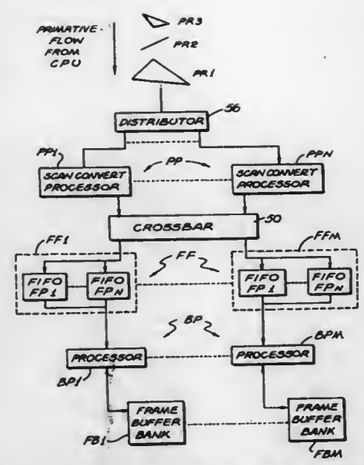
8. A graphics system for processing primitive data, as provided in a temporal sequence from a host computer, to provide display data in the form of display pixels related to locations in a display, said graphics system comprising:

a primitive structure for processing said primitive data to provide representative update pixels and comprising a plurality of primitive processors for iteratively receiving and processing primitive data in parallel for individual primitives, whereby said temporal sequence is altered;

a plurality of visibility-and-blend pixel processors, said visibility-and-blend processors each comprising an associated frame buffer bank for storing predetermined pixels related to locations in a display, said visibility-and-blend processors each for iteratively processing said update pixels into said associated frame buffer bank;

a switch structure for supplying said update pixels from said primitive structure to said visibility-and-blend pixel processors in accordance with locations in a display; and

a distribution structure for supplying said update pixels to said visibility-and-blend pixel processors in said temporal sequence.



5,574,848

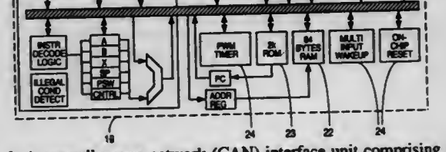
CAN INTERFACE SELECTING ONE OF TWO DISTINCT FAULT RECOVERY METHOD AFTER COUNTING A PREDETERMINED NUMBER OF RECESSIVE BITS OR GOOD CAN FRAMES

Thomas W. Thompson, Santa Cruz, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Aug. 24, 1993, Ser. No. 111,383

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—181 **5 Claims**



1. A controller area network (CAN) interface unit comprising a bit stream processor, the bit stream processor announcing when errors are received from a CAN bus;

error management logic coupled to the bit stream processor, the error management logic receiving errors announced by the bit stream processor, determining in which of a plurality of error states the CAN interface is operating and informing the bit stream processor of which of a plurality of states the CAN interface is operating, the states including

an error active state in which the CAN interface participates in bus communication and transmits a dominant error flag,

an error passive state in which the CAN interface participates in bus communication and transmits a recessive error flag, the error active state transitioning to the error passive state when an error count is greater than or equal to a first predetermined number, and

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a busoff state in which the CAN interface does not participate in CAN bus activity, the error active state transferring control to the busoff state when a count is greater than or equal to a second predetermined number, the second predetermined number being greater than or equal to the first predetermined number,

the busoff state transitioning to the error active state using a fault recovery method selected from between a first fault recovery method and a second fault recovery method, the first fault recovery method transitioning to the error active state after receiving a predetermined number of recessive bits by the CAN interface and the second fault recovery method transitioning to the error active state after receiving a predetermined number of good CAN frames.

5,574,849

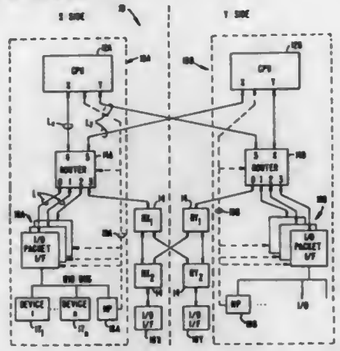
SYNCHRONIZED DATA TRANSMISSION BETWEEN ELEMENTS OF A PROCESSING SYSTEM

David P. Sonnier; William P. Bunton, both of Austin; Richard W. Cutts, Jr., Georgetown; James S. Klecka, Lexington; John C. Krause, Georgetown; William J. Watson, and Linda E. Zalzala, both of Austin, all of Tex., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Jun. 7, 1995, Ser. No. 482,628

Int. Cl.[6] G01R *31/28;* **G06F** *11/00*

U.S. Cl. 395—182.1 **1 Claim**



1. A method of synchronizing data sent by a pair of data transmitting sources and to receive from each identical data in the form of pairs of multi-bit symbols, the multi-bit symbols including a SYNC symbol, and each one of the pair of multi-bit symbols being identical to the other of the pair of multi-bit symbols, and each one of the pair of multi-bit symbols being transmitted by a one of the pair of data transmitting sources at substantially the same moment in time as an identical one of the pair of multi-bit symbols, the method, comprising the steps of:

providing a periodic SYNC clock signal, a transmit clock signal, and a local clock signal;

receiving the data from the pair of data transmitting sources with corresponding ones of a pair of storage elements, each of the storage elements including,

multiple storage locations,

a first pointer counter identifying a one of the multiple storage locations at which received ones of the multi-bit symbols are stored in synchronism with the transmit clock signal,

a second pointer counter identifying another of the multiple storage locations from which stored ones of the symbols are retrieved in synchronism with the local clock signal;

sequentially retrieving the multi-bit symbols from the another of the multiple storage locations;

detecting the SYNC symbol;

setting the first and second pointers corresponding to the one of the pair storage elements from which the SYNC symbol was retrieved to a reset state on a predetermined first transition of the SYNC clock signal subsequent to retrieval of the SYNC symbol; and

releasing the first and second pointers corresponding to the one of the pair storage elements from which the SYNC symbol was retrieved from the reset state on a predetermined second transition of the SYNC clock signal subsequent in time to the first transition in a manner that leaves such first and second pointers respectively identifying ones of a pair of the multiple storage locations a predetermined amount of the multiple storage locations apart.

5,574,850

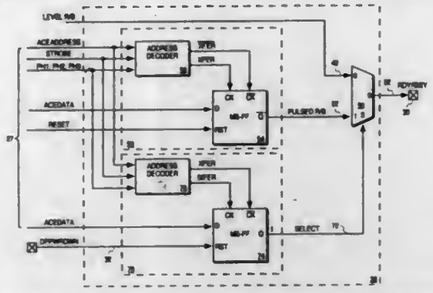
CIRCUITRY AND METHOD FOR RECONFIGURING A FLASH MEMORY

Mickey L. Fandrich, Placerville, Calif., assignor to INTEL Corporation, Santa Clara, Calif.

Continuation of Ser. No. 512,858, Aug. 8, 1995, abandoned, which is a continuation of Ser. No. 141,126, Oct. 20, 1993, abandoned. This application Apr. 9, 1996, Ser. No. 629,785

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—182.03 **23 Claims**



1. A reconfiguration circuit in an integrated circuit for redefining a first signal, the reconfiguration circuit reconfiguring the integrated circuit after manufacture of the integrated circuit in response to a command, the reconfiguration circuit comprising:

a) a multiplexer coupled to a first input signal, a second input signal, and a select signal, the multiplexer outputting the first signal, the first signal following the first input signal when the select signal is in a first state and following the second input signal when the select signal is in a second state; and

b) a first register outputting the select signal, the first register bringing the select signal to the first state in response to a reset signal and bringing the select signal to the second state in response to the command.

5,574,851

METHOD FOR PERFORMING ON-LINE RECONFIGURATION OF A DISK ARRAY CONCURRENT WITH EXECUTION OF DISK I/O OPERATIONS

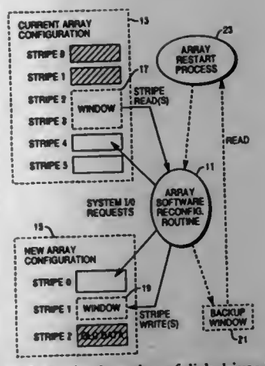
Dale F. Rathunde, Wheaton, Ill., assignor to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, Milpitas, Calif., and Symbios Logic Inc., Fort Collins, Colo.

Continuation of Ser. No. 48,248, Apr. 19, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 482,425

Int. Cl.[6] G06F *11/00;12/00*

U.S. Cl. 395—182.05 **11 Claims**

1. In a computer system including an array of disk drives for use in storing information comprising one of data and parity, a method for reconfiguring stored information between a first disk array configuration and a second disk array configuration, comprising the steps of:



providing a predetermined number of disk drives in said array of disk drives, with said predetermined number of disk drives being all of said disk drives in said array of disk drives;

transferring information to all of said predetermined number of disk drives for storage therein in accordance with said first disk array configuration, wherein said information includes data that is stored in a plurality of said predetermined number of disk drives;

deciding to reconfigure said information from said first disk array configuration to said second disk array configuration;

wherein said first disk array configuration includes at least one of: (a) a RAID level selected from a group that includes one or more of the following: RAID levels **0**, **1**, **2**, **3**, **4**, and **5**; and (b) a first plurality of stripes for storing the information and having a first size;

wherein said second disk array configuration includes at least one of: (i) a RAID level selected from a group that includes one or more of the following: RAID levels **0**, **1**, **2**, **3**, **4**, and **5**, and being different from said RAID level selected for said first disk array configuration and (ii) a second plurality of stripes for storing information and having a second size that is different from said first size of said first disk array configuration;

reconfiguring said information from said first disk array configuration to said second disk array configuration during a single reconfiguration using said same predetermined number of disk drives that are used in said transferring information step, wherein said reconfiguring step includes:

reading said information from said same predetermined number of disk drives according to said first disk array configuration; and

writing said information from said reading information step to said same predetermined number of disk drives according to said second disk array configuration.

5,574,852

INTEGRATED MICROCONTROLLER HAVING A CUP-ONLY MODE OF OPERATION WHICH DIRECTLY OUTPUTS INTERNAL TIMING INFORMATION FOR AN EMULATOR

Jacobus M. Bakker, Eindhoven, Netherlands, and Dieter Hagedorn, Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 817,020, Jan. 3, 1992, abandoned. This application Oct. 26, 1994, Ser. No. 329,791

Claims priority, application European Pat. Off., Jan. 17, 1991, 91200079

Int. Cl.[6] G06F *9/455*

U.S. Cl. 395—183.04 **13 Claims**

13. An improved microcontroller for use in an emulation circuit that externally controls execution of instructions by said microcontroller, said microcontroller having a CPU and internal memory and providing no direct external access to internal buses connecting said CPU and internal memory and wherein said microcontroller has at least two externally controlled alternative circuit configurations, one of said alternative circuit configurations including said internal memory and another one of said alternative circuit configurations not including said internal memory, said microcontroller also having an active mode of operation, a reset mode of operation and an idle mode of operation, said improved microcontroller comprising:

means for outputting a static binary signal on a pin of said microcontroller to said emulation circuit indicating whether the microcontroller is in said active mode; and

means for outputting a static first signal level on another pin to said emulation circuit whenever said microcontroller is in said reset mode and for outputting a static second signal level different from said static first signal level on said another pin to said emulation circuit whenever said microcontroller is in said idle mode,

whereby said emulation circuit can discriminate among the active mode, the reset mode and the idle mode of said microcontroller.

5,574,853

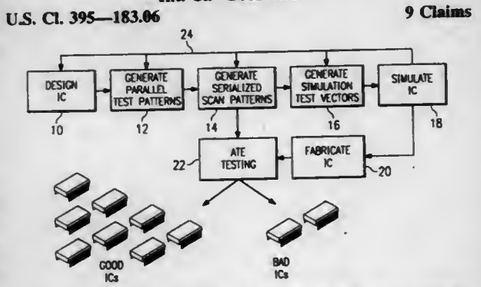
TESTING INTEGRATED CIRCUIT DESIGNS ON A COMPUTER SIMULATION USING MODIFIED SERIALIZED SCAN PATTERNS

Phillip T. Barch, McKinney, Tex.; Christopher J. Ellingham, Bedford, United Kingdom; Frederick L. Wagner, Garland, and John R. Larkin, Spring, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 3, 1994, Ser. No. 176,382

Int. Cl.[6] G06F *11/263*

U.S. Cl. 395—183.06 **9 Claims**



1. A method to test an integrated circuit design on a computer simulation, comprising the steps of;

generating a desired vector comprising state data to be loaded into a serial scan chain of the integrated circuit design;

loading the scan chain with the state data of the desired vector in parallel and offset by a predetermined number of shifts;

shifting the state data by the predetermined number of shifts along the scan chain to position the state data in the scan chain, to set a desired state of the integrated circuit design; and

executing a function of the integrated circuit design with the desired state

wherein the step of generating a desired vector further comprises the steps of:

generating a parallel data vector that represents the desired state of the integrated circuit design; and

adjusting the parallel data vector to account for logical manipulations to the state data in the scan chain caused by the step of shifting.

5,574,854

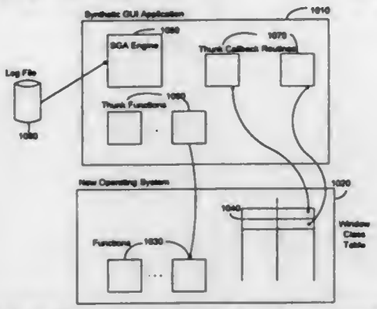
METHOD AND SYSTEM FOR SIMULATING THE EXECUTION OF A COMPUTER PROGRAM

Russell P. Blake, Carnation, and Robert F. Day, Bothell, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 85,621, Jun. 30, 1993, abandoned. This application Mar. 16, 1995, Ser. No. 406,641

Int. Cl.[6] G06F *11/34;9/455*

U.S. Cl. 395—183.04 **39 Claims**



1. A method in a computer system of simulating an execution of a computer program, the computer program developed for invoking operating system functions of a first operating system, each operating system function for performing a behavior in accordance with passed parameters, the method comprising the steps of:

under the control of the first operating system, generating a log during the execution of the computer program, the log including an indication of each invocation of an operating system function by the computer program and an indication of each parameter passed to the operating system function by the computer program; and

under the control of a second operating system, for each indication of an invocation of an operating system function in the log, invoking an operating system function of the second operating system to perform a behavior similar to the behavior performed by the invocation of the operating system function of the first operating system in accordance with the passed parameters.

5,574,855

METHOD AND APPARATUS FOR TESTING RAID SYSTEMS

Mitchell N. Rosich, Groton; William F. Beckett, Framingham; John W. Bradley, Peabody, and Robert DeCrescenzo, North Attleboro, all of Mass., assignors to EMC Corporation, Hopkinton, Mass.

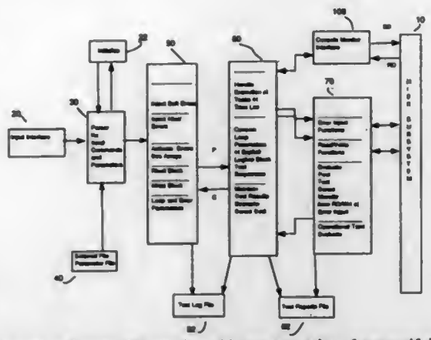
Filed May 15, 1995, Ser. No. 440,952

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.17 **16 Claims**

1. An apparatus for injecting errors into a RAID disk subsystem for test purposes, comprising:

a host connected to said RAID disk subsystem, said host having a device for communicating test scenarios that inject errors into said RAID disk subsystem;



logical referents for use in said test scenarios, for specifying placement of errors and types of errors to be caused in said RAID disk subsystem;

a test script system coupled with said host for parsing said logical referents into physical addresses and commands in tasks and then scheduling said tasks and conveying them to a tester for execution with said RAID disk subsystem,

so that errors may be injected into said RAID disk subsystem without first being corrected by said RAID disk subsystem's normal processes.

5,574,856

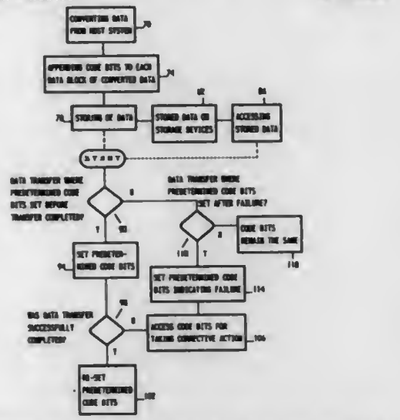
FAULT INDICATION IN A STORAGE DEVICE ARRAY

Lisa A. Morgan, Longmont, and Marty Parrish, Lafayette, both of Colo., assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 792,702, Nov. 15, 1991, Pat. No. 5,379,411. This application Dec. 29, 1994, Ser. No. 366,032

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—185.05 **10 Claims**



1. A method for indicating whether a fault occurs associated with at least first and second data transfer related operations in an array storage system, comprising:

providing code means including a plurality of code bits, with said code bits being in a first state;

altering at least a first predetermined code bit of said code bits to a second state, different from said first state, before said first data transfer related operation and before a fault related to said first data transfer related operation;

conducting said first data transfer related operation and, when no fault occurs during said step of conducting said first data transfer related operation, modifying said code bits differently from said second state;

performing said second data transfer related operation, which is different in type from said first data transfer related operation;

changing at least a second predetermined code bit of said code bits when a fault occurs after said step of performing has begun but not changing said second predetermined code bit when the fault does not occur; and

accessing said code bits for use in taking corrective action using information in said code bits.

5,574,857

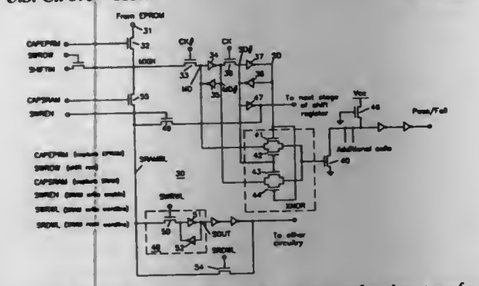
ERROR DETECTION CIRCUIT FOR POWER UP INITIALIZATION OF A MEMORY ARRAY

K. K. Ramakrishnan, Rancho Cordova; Randy Steele, Folsom, and Joseph H. Salmon, Placerville, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jan. 31, 1994, Ser. No. 189,188

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—185.07 **18 Claims**



7. An apparatus for verifying the accuracy of a data transfer operation from a source memory to a destination memory, said apparatus comprising:

a shift register coupled to said source memory and said destination memory, said shift register having a master portion and a slave portion;

a first circuit coupled to transfer source data from said source memory to said master portion of said shift register;

a second circuit coupled to shift said source data from said master portion of said shift register to said slave portion of said shift register;

a third circuit coupled to transfer said source data from said slave portion of said shift register to said destination memory;

a fourth circuit coupled to transfer destination data from said destination memory to said master portion of said shift register; and

a fifth circuit coupled to compare said destination data in said master portion of said shift register and said source data in said slave portion of said shift register to verify the accuracy of the data transfer operation from said source memory to said destination memory.

5,574,858

METHOD AND APPARATUS FOR, UPON RECEIPT OF DATA FROM A MOUSE, REQUIRING THE REMAINDER OF DATA NEEDED TO CONSTITUTE A PACKET TO BE RECEIVED WITHIN ONE SECOND

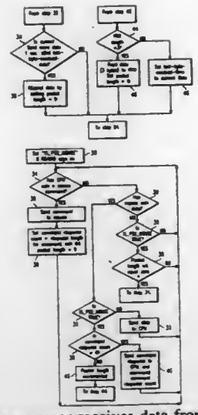
Kendall C. Witte, Austin, Tex., assignor to Dell U.S.A., L.P., Austin, Tex.

Filed Aug. 11, 1995, Ser. No. 514,508

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—185.09 **11 Claims**

1. A method of operating a computer which has a CPU, an input/output coprocessor, and an attached pointing device, the input/output coprocessor receiving data in packets from the attached pointing device, the method comprising the steps of:



when the coprocessor receives data from the pointing device, if the pointing device produced the data in response to a command from the CPU, passing the data unmodified to the CPU; and

when the coprocessor receives data from the pointing device, if the pointing device did not produce the data in response to a command from the CPU, requiring the remainder of the data packet to appear within one second before passing the packet of data to the CPU.

5,574,859

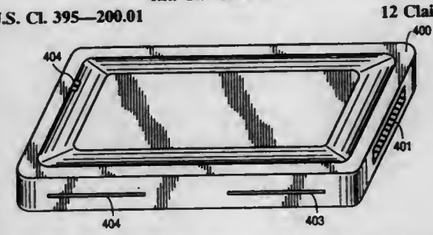
METHOD AND APPARATUS FOR USING A SOFTWARE CONFIGURABLE CONNECTOR TO CONNECT A PALMTOP COMPUTER HAVING A CUSTOM PORT TO A HOST HAVING A STANDARD PORT

Keming W. Yeh, 43765 Abeloe Ter., Fremont, Calif. 94539

Continuation of Ser. No. 786,483, Nov. 1, 1991, abandoned. This application Jan. 26, 1993, Ser. No. 9,364

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—200.01 **12 Claims**



1. An integrated peripheral device for a palmtop computer, said palmtop computer having a customized port for communicating with a host computer, said host computer having a standardized port and running a standardized operating system, said customized port using signal levels different from signal levels in said standardized port, said integrated peripheral device comprising:

a connector for connecting to said customized port of said palmtop computer, said connector, using signal levels compatible with said signal levels of said customized port, being configured by software of said integrated peripheral device;

a programmable device for storing said software in a non-volatile manner;

means for providing storage for said integrated peripheral device, said means for providing storage using a data format compatible with said standardized operating system of said host computer; and

means, coupled to said connector, said programmable device and said means for providing storage, for controlling data transfer between said means for providing storage and said

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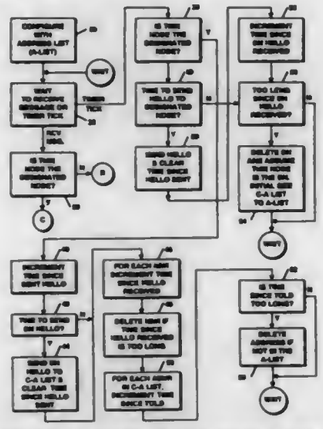
palmtop computer via a connection at said connector, in accordance with said software stored in said programmable device.

5,574,860

METHOD OF NEIGHBOR DISCOVERY OVER A MULTIACCESS NONBROADCAST MEDIUM

Radia J. Perlman, Acton; Charles W. Kaufman, Northborough, and Christopher W. Gunner, Harvard, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 11, 1993, Ser. No. 29,815
Int. Cl.[6] H04B *3/00;* **H04J** *13/00;3/00*
U.S. Cl. 395—200.06 **14 Claims**



1. A neighbor node discovery method having a plurality of nodes connected to a communications network, each of said nodes having an address, said method comprising the steps of:

configuring each of said plurality of nodes connected to said communication network, such that each node of said plurality of nodes is aware of a subset of said addresses for reaching selected nodes identified by said subset of said addresses;

collectively, among said plurality of nodes connected to said network, agreeing upon a designated node;

periodically sending a hello message of a first type to said designated node from each other node of said plurality of nodes (herein the term "other node" refers to all of said plurality of nodes except said designated node), wherein each hello message of said first type identifies a sending node and said subset of said addresses that said sending node has been configured with for reaching said selected nodes; and,

periodically sending a hello message of a second type from said designated node to each of said other nodes, wherein each hello message of said second type contains a list of addresses derived in part from received hello messages of said first type.

5,574,861

DYNAMIC ALLOCATION OF B-CHANNELS IN ISDN

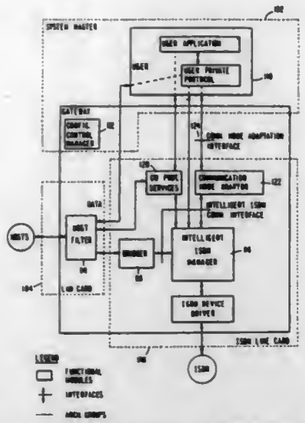
Don Lorvig; Paul Lew, both of 5 Manor Pkwy., Salem, N.H. 03079, and Paul Cummings, 53 Lawndale St., Belmont, Mass. 02178

Continuation of Ser. No. 94,114, Dec. 21, 1993, abandoned. This application Oct. 5, 1995, Ser. No. 539,251
Int. Cl.[6] H01J *13/00;* **H04J** *3/12;3/24*
U.S. Cl. 395—200.06 **30 Claims**

1. A network, comprising:

a plurality of computers having a common operating system;

means for interfacing said computers to a common ISDN line;



means for transmitting on said common ISDN line an operating system command globally to all of said computers;

means for detecting on said ISDN line a queue of messages destined for a predetermined terminal; and

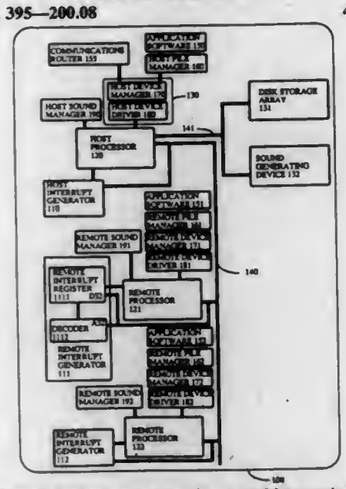
means responsive to said queue for dynamically allocating B-channels interactively with the network to the predetermined terminal, extra B-channels being added to allocated B-channels when the queue increases, and some of the allocated B-channels being released when the queue decreases, wherein said channel allocating means deallocates the extra B-channels from a first destination to allocate them to a second destination, when the queue to the first destination decreases and the queue to the second destination increases.

5,574,862

MULTIPROCESSING SYSTEM WITH DISTRIBUTED INPUT/OUTPUT MANAGEMENT

Ronald Marianetti, II, Mountain View, Calif., assignor to Radius Inc., San Jose, Calif.

Filed Apr. 14, 1993, Ser. No. 23,820
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.08 **4 Claims**



1. Memory-sharing apparatus in a multiprocessing system including a first processor, a second processor, and a bus coupling said first processor and said second processor, the memory-sharing apparatus comprising:

a first memory coupled to said first processor and communicating with said bus, said first memory being configured to include a first memory status portion, and a first memory command queue;

a data heap memory coupled to said first processor and communicating with said bus, said data heap memory being configured to include a data heap status portion and a plurality of variably-sized data blocks;

second status means in said second processor, communicating with said first memory status portion over said bus, configured to assert an active data state in said first memory status portion in response to reading from said first memory status portion a non-active data state and in response to a state of said second processor calling for transfer of commands to be processed to said first memory; said second status means also being configured to assert an active data state in said data heap status portion in response to reading from said data heap status portion a non-active data state and in response to a state of said second processor calling for transfer of data to be processed to said data heap memory;

command assertion means in said second processor, communicating with said first memory over said bus, configured to store commands to be processed in said first command queue portion responsive to assertion of said active data state in said first memory status portion by said status means;

data assertion means in said second processor, communicating with said data heap memory over said bus, configured to store data to be processed in a subset of said plurality of variably-sized data blocks responsive to assertion of said active data state in said data heap status portion by said status means;

first interrupt means communicating with said first processor, configured to send first processor a first interrupt signal indicative of storage of data to be processed in said first command queue;

a second memory coupled to said second processor and communicating with said bus, said second memory being configured to include a second memory status portion, and a second memory command complete queue;

first status means in said first processor, communicating with said second memory status portion over said bus, configured to assert an active data state in said second memory status portion in response to reading from said second memory status portion a non-active data state and in response to a state of said first processor calling for transfer of processed data to said second memory;

command complete assertion means in said first processor, communicating with said first command complete queue portion over said bus, configured to store processed data in said second command complete queue portion responsive to assertion of said active data state by said first status means; and

second interrupt means, communicating with said second processor, configured to send said second processor a second interrupt signal indicative of storage of processed data in said first command complete queue.

5,574,863

SYSTEM FOR USING MIRRORED MEMORY AS A ROBUST COMMUNICATION PATH BETWEEN DUAL DISK STORAGE CONTROLLERS

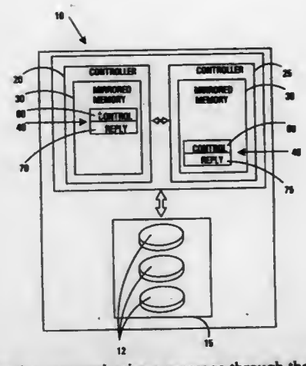
Marvin D. Nelson; Douglas L. Voigt, and Randy J. Matthews, all of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 25, 1994, Ser. No. 329,004
Int. Cl.[6] G06F *15/167*
U.S. Cl. 395—200.08 **17 Claims**

1. A communication and control system for a computer disk storage system, comprising:

(a) a plurality of disk storage controllers, each controller having substantially mirrored memory with respect to each other;

(b) a messaging mailbox in the mirrored memory of each controller, wherein the messaging mailbox is a reserved portion of the memory;



(c) means for communicating a message through the mailbox by selectively controlling mirroring of the mailbox, including means for selectively enabling and disabling mirroring (i) upon an event of one of the controllers writing to its own mailbox to reduce collateral error to each of the of the other controllers' memory, and (ii) upon an event of reading one of the other controllers' mailbox; and,

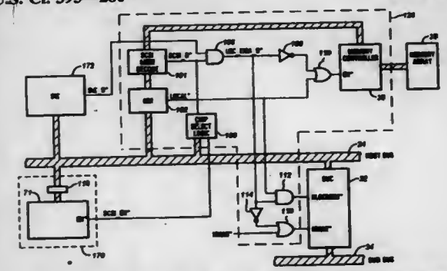
(d) means for detecting and reading the message in the mailbox.

5,574,864

METHOD OF IMPLEMENTING EISA BUS DEVICES ON A HOST BUS BY DISABLING BRIDGE CIRCUITRY BETWEEN HOST AND EISA BUSES

Theodore F. Emerson, and Timothy S. Wettach, both of Houston, Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Sep. 9, 1994, Ser. No. 303,405
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—280 **6 Claims**



1. A computer system in which non-host bus devices are implemented on a host bus, comprising:

a host bus;

a microprocessor coupled to said host bus that executes memory operations and input/output operations on said host bus;

a standard peripheral bus that includes an address space;

bridge circuitry for communicating between said host bus and said standard peripheral bus, said bridge circuitry receiving a host bus memory access signal and a memory-input/output operation signal, wherein said bridge circuitry responds to an operation on said host bus by passing the operation to said standard peripheral bus when the operation is accompanied by the received memory-input/output operation signal indicating an input/output operation, but wherein said bridge circuitry is non-responsive to an operation on said host bus when the operation is accompanied by the received host bus memory access signal indicating a host bus memory access and the received memory-input/output operation signal indicating a memory operation;

a device connected to said host bus, said device responsive to memory or input/output operations executed by said microprocessor directed to a predetermined portion of the address space of said standard peripheral bus; and

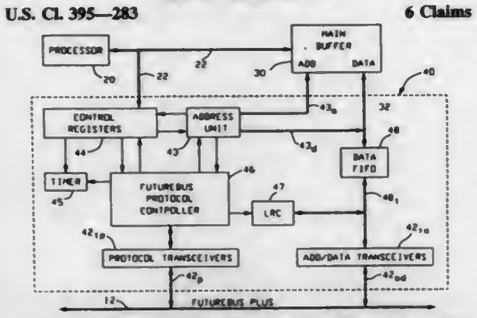
means for disabling said bridge circuitry and enabling said device in response to memory or input/output operations directed to said predetermined portion of the address space, said means for disabling providing the memory-input/output operation signal and the host bus memory access signal to said bridge circuitry indicative of a memory operation and indicative of a host bus memory access, whereby said bridge circuitry is non-responsive on said host bus to memory or input/output operations on said host bus directed to said predetermined portion of the address space.

5,574,865

SYSTEM FOR DATA TRANSFER PROTECTION DURING MODULE CONNECTION/DISCONNECTION ONTO LIVE BUS

Seyed H. Hashemi, Mission Viejo, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 1, 1994, Ser. No. 348,653
Int. Cl.[6] G06F *11/08*
U.S. Cl. 395—283 **6 Claims**



1. A system for insuring integrity of data transmission between sending and receiving digital modules in a network connecting said digital modules by a Futurebus Plus common system bus means comprising:

(a) a plurality of digital modules, connected via said Futurebus Plus common system bus means, each said digital module including:

(a1) processor means for commanding Write operations for sending data;

(a2) buffer memory storage means for holding data to be sent on Write operations or data received on Read operations;

(a3) Futurebus interface means;

(b) and wherein said Futurebus interface means includes:

(b1) means to generate a data transfer Write operation command to send data to another digital module;

(b2) means to receive and accept data for storage in said buffer memory storage means;

(b3) means to generate an identification address for a receiving module;

(b4) means to send data from said buffer memory storage means for transfer to said addressed receiving module;

(b5) means to generate in said sending module, when sending data, a first longitudinal redundancy check (LRC) value derived from said identification address and said sending data;

(b6) means to generate in said receiving module, when receiving data, a second LRC value, derived from said identification address and data received;

(b7) means to compare said first and second LRC values for a match to establish validity of the received data;

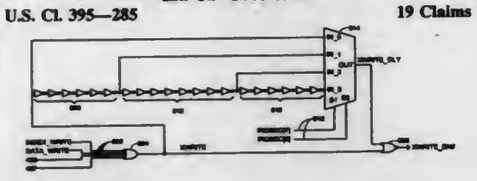
(c) said Futurebus common system bus means functioning for continuous data transfer operations while additional digital modules are being connected to or disconnected from said network.

5,574,866

METHOD AND APPARATUS FOR PROVIDING A DATA WRITE SIGNAL WITH A PROGRAMMABLE DURATION

Jimmy D. Smith; Mark D. Nicol, both of Stevensville, and Terence P. O'Brien, Saint Joseph, all of Mich., assignors to Zenith Data Systems Corporation, Buffalo Grove, Ill.

Continuation of Ser. No. 43,126, Apr. 5, 1993, abandoned.
This application Feb. 15, 1995, Ser. No. 389,559
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—285 **19 Claims**



1. A control system for transferring data between a first bus and a second bus in response to an external first control signal, said first control signal having both an active state of a first duration and an inactive state, said control system comprising:

means for receiving said first control signal;

means, responsive to said first control signal, for generating a second control signal having an active state of a second duration and an inactive state;

one or more delay devices responsive to said first control signal to provide one or more variable durations of said active state of said second control signal;

means for selectively varying said second duration of said second control signal by selectively activating said one or more delay devices to provide one or more durations of said active state of said second control signal relatively longer than said first duration of said active state of said first control signal; and

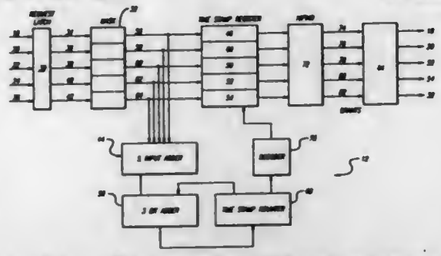
means coupled to said first bus and said second bus for enabling data transfer during an active state of said second control signal between said first bus and said second bus.

5,574,867

FAST FIRST-COME FIRST SERVED ARBITRATION METHOD

Manpreet S. Khaira, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jul. 8, 1994, Ser. No. 273,027
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—293 **24 Claims**



1. A first come first serve scheduler mechanism for a plurality of clients that generate access request for a resource, comprising:

a signal conversion circuit which converts a plurality of requests into a plurality of associated time stamp input signals;

a time stamp generation circuit which receives said time stamp input signals and generates coded time stamp output values that correspond to an order of receipt of said time stamp input signals, said time stamp generation circuit includes a time stamp counter which counts each time stamp input signal when said time stamp input signal is generated by said signal conversion Circuit and decrements one unit after a client has released the resource;

a plurality of time stamp registers that receive and store said coded time stamp output values; and,

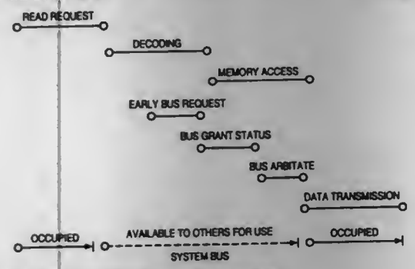
a hifind circuit that reads said plurality of time stamp registers and generates an output signal in accordance with a predetermined hierarchy and which allows a client access to the resource.

5,574,868

BUS GRANT PREDICTION TECHNIQUE FOR A SPLIT TRANSACTION BUS IN A MULTIPROCESSOR COMPUTER SYSTEM

Suresh Marisetty, San Jose, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed May 14, 1993, Ser. No. 62,065
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—298 **11 Claims**



1. A data processing system comprising:

(a) a data communication bus;

(b) a data memory;

(c) a data requester, coupled to the data communication bus, operable to issue a memory read request over the data communication bus for requested data stored in the data memory;

(d) a memory controller, coupled to the data communication bus and the data memory, operable to receive the memory read request and to issue read control signals to the data memory to retrieve the requested data, and to generate an early bus request signal as a function of the memory read request while access to the data memory is occurring to obtain the requested data;

(e) bus grant prediction logic, coupled to the data communication bus and the memory controller, operable to receive the early bus request signal and to generate a bus grant status signal in response thereto while access to the data memory is occurring to obtain the requested data, the bus grant status signal indicating a predicted future clock for availability of the data communication bus;

(f) data routing circuitry, coupled to the data memory, the memory controller and the data communication bus, operable to transfer the requested data retrieved from the data memory onto the data communication bus at the predicted future clock for availability indicated by the bus grant status signal.

5,574,869

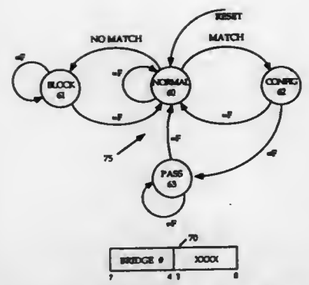
BUS BRIDGE CIRCUIT HAVING CONFIGURATION SPACE ENABLE REGISTER FOR CONTROLLING TRANSITION BETWEEN VARIOUS MODES BY WRITING THE BRIDGE IDENTIFIER INTO CSE REGISTER

Bruce Young, Tigard, and Gary Solomon, Hillsboro, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 299,146, Aug. 31, 1994, abandoned, which is a continuation of Ser. No. 859,816, Mar. 30, 1992, abandoned. This application Feb. 28, 1996, Ser. No. 603,687
Int. Cl.[6] G06F *13/36*
U.S. Cl. 395—306 **14 Claims**

1. A computer system, comprising:

a central processing unit coupled to a system bus and configured to transfer a write transaction to a configuration space enable



address over the system bus, the write transaction to the configuration space enable address containing a bridge identifier; and

a bridge circuit coupled to the system bus and a peripheral component bus; said bridge circuit is configured to communicate with the system bus and said peripheral component bus; the bridge circuit having a set of operating modes including: a normal mode and a config mode; said normal mode for propagating read and write transactions between the system bus and the peripheral component bus, and said config mode for converting a read or write transaction of a predetermined configuration address space over the system bus into a read or write transaction of the predetermined configuration address space over the peripheral component bus; the bridge circuit includes a configuration space enable register having an assigned bridge number; the configuration space enable register is mapped to the configuration space enable address, such that when data is written to the configuration space enable address, the bridge identifier is written to the configuration space enable register, and the bridge circuit transitions from the normal mode to the config mode if the bridge identifier written to the configuration space enable register corresponds to the assigned bridge number for the bridge circuit.

5,574,870

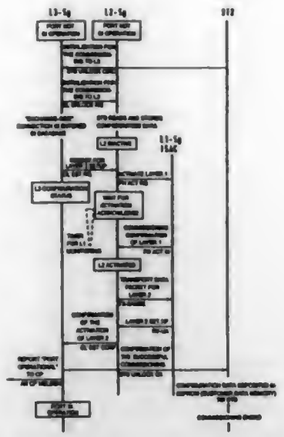
METHOD FOR THE COMMISSIONING OF AN INTERFACE TO BE ALLOCATED TO DIFFERENT TRANSMISSION PATHS IN A PROGRAM-CONTROLLED COMMUNICATION SYSTEM

Norbert Dziennus, Dortmund; Detley Boettger, Schwerte; Ulrich Abel, Essen; Martin Hoppe, Hamm, and Matthias Spiel, Holzwickede, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 16, 1995, Ser. No. 405,138
Claims priority, application Germany, Mar. 16, 1994, 44 09 023.4
Int. Cl.[6] G06F *13/00;15/177;* H04L *12/00*
U.S. Cl. 395—309 **6 Claims**

1. Method for commissioning interfaces to be allocated to different transmission paths in a program-controlled communication system having a microprocessor system that controls or, respectively, coordinates switching, signalling and performance features of the communication system, said microprocessor system including a microprocessor and memory units that store connection-associated and device-associated information and wherein function components or, respectively, interfaces of the communication system are connected to a local bus system formed by address, data and control lines, said method for commissioning interfaces comprising the steps of:

initializing an interface to be placed in operation dependent on the transmission path connected thereto, said interface being capable of being used in at least two different operating modes, said initializing of the interface step is undertaken in a first operating mode having an allocated communication protocol by the microprocessor system after the initial activation of the communication system and said initializing step further



includes performing a check to see whether the communication processes deriving therefrom correspond in nature to communication protocol allocated to said first operating mode;

automatically, ultimately configuring the interface to provide an interface configuration corresponding to said first operating mode automatically recognized as applicable and storing the interface configuration in the memory unit when the interface corresponds to said first operating mode;

automatically performing the initializing of the interface step in another operating mode in the same way as for said first operating mode when the interface does not correspond to said first operating mode;

repeating the prior operational steps with reference to further operating modes at least until all operating modes have been taken into consideration; and

cyclically restarting said operations for the automatic recognition and commissioning of the interface by the microprocessor system when none of the possible operating modes is recognized as being actually applicable.

5,574,871

METHOD AND APPARATUS FOR IMPLEMENTING A SET-ASSOCIATIVE BRANCH TARGET BUFFER

Bradley D. Hoyt; Glenn J. Hinton, both of Portland; David B. Papworth; Ashwani K. Gupta, both of Beaverton; Michael A. Fetterman, Hillsboro; Subramanian Natarajan; Sunil Shenoy, both of Portland, and Reynold V. D'Sa, Aloha, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jan. 4, 1994, Ser. No. 177,155

Int. Cl.[6] G06F *9/38*

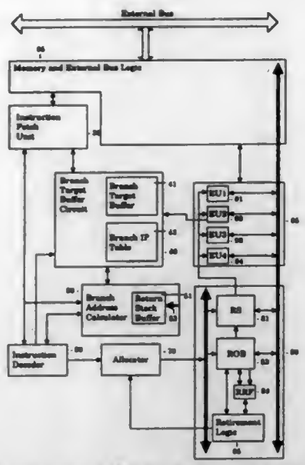
U.S. Cl. 395—376 **17 Claims**

1. A branch instruction prediction mechanism, said branch instruction prediction mechanism predicting a plurality of branch instructions within a stream of computer instructions, said branch instruction prediction mechanism comprising:

an instruction pointer for identifying an instruction address in a memory, said instruction pointer having a set of branch target buffer set address bits and a set of branch target buffer tag address bits;

a branch target buffer cache, said branch target buffer cache comprising a plurality of branch set entries, each of said branch set entries comprising a set of branch instruction entries, each branch instruction entry storing information about an associated branch instruction including a position with a memory block, all branch instruction entries within a particular branch set entry storing branch instructions having identical branch target buffer set address bits; and

a branch target buffer circuit, said branch target buffer circuit receiving said instruction pointer, said branch target buffer circuit indexing into said branch target buffer cache with said set of branch target buffer set address bits of said instruction pointer to select a branch set entry, said branch target buffer circuit selecting at least one branch instruction entry in said branch set entry using said branch target buffer tag address bits of said instruction pointer.



5,574,872

METHOD AND APPARATUS FOR CONTROLLING THE SAVING OF PIPELINES IN PIPELINED PROCESSORS DURING TRAP HANDLING

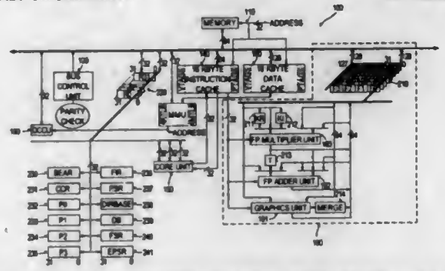
Shai Rotem, Hofit; Benny Lavi, Haifa, and Michael Kagan, Maale Hagalil, all of Israel, assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 805,472, Dec. 10, 1991, abandoned.

This application Jun. 23, 1994, Ser. No. 265,495

Int. Cl.[6] G06F *9/46*

U.S. Cl. 395—376 **12 Claims**



1. A method in a processor performed during handling of a first trap which occurs while executing a first instruction, the processor having a pipeline with a plurality of stages, a first indicator denoting an instruction which uses said pipeline, and a second indicator denoting whether to generate a trap on use of said pipeline, said method comprising the steps of:

(a) saving said first indicator and said second indicator;

(b) activating said second indicator and clearing said first indicator and continuing said handling of said first trap;

(c) clearing said first indicator and said second indicator and saving said pipeline responsive to a second trap being generated during said handling of said first trap;

(d) continuing said handling of said first trap;

(e) restoring said first indicator and said second indicator;

(f) restoring said pipeline; and

(g) resuming execution at said first instruction.

5,574,873

DECODING GUEST INSTRUCTION TO DIRECTLY ACCESS EMULATION ROUTINES THAT EMULATE THE GUEST INSTRUCTIONS

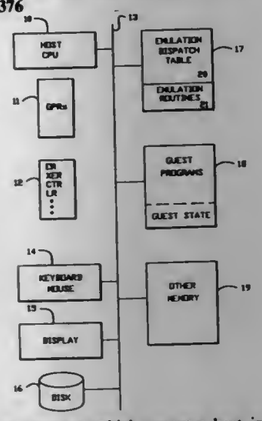
Gary G. Davidian, Mountain View, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 59,472, May 7, 1993, abandoned.

This application Jan. 25, 1995, Ser. No. 378,071

Int. Cl.[6] G06F *9/42;9/455*

U.S. Cl. 395—376 **39 Claims**



1. For a host processor which executes host instructions and includes a host processor addressable memory, a system for decoding guest instructions, comprising:

a sequence of guest instructions in said host processor addressable memory;

an emulation program store, in said host processor addressable memory, said emulation program store containing emulation programs, each of said emulation programs having a starting address within said emulation program store, each of said emulation programs including a host instruction routine for emulation of a particular guest instruction; and

logic, within said emulation programs, which is implemented by decoding instructions that are executable by said host processor including an instruction to retrieve a next guest instruction in said sequence, and an instruction to determine one of said starting addresses in response to said next guest instruction by multiplying said next guest instruction by a constant value and by adding a base address of said emulation program store, and an instruction to jump directly to said emulation program store in response to said one of said starting addresses.

5,574,874

METHOD FOR IMPLEMENTING A CHECKPOINT BETWEEN PAIRS OF MEMORY LOCATIONS USING TWO INDICATORS TO INDICATE THE STATUS OF EACH ASSOCIATED PAIR OF MEMORY LOCATIONS

Jeremy O. Jones; Brian A. Coghlan, and Philip O'Carroll, all of Dublin, Ireland, assignors to Tolsys Limited, Dublin, Ireland

Continuation of Ser. No. 147,870, Nov. 3, 1993, abandoned.

This application Jun. 16, 1995, Ser. No. 491,278

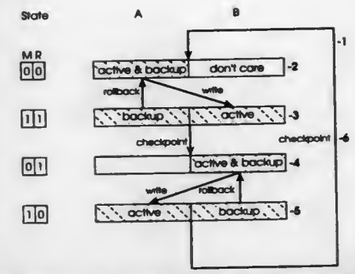
Claims priority, application Ireland, Nov. 3, 1992, 922784

Int. Cl.[6] G06F *12/00;11/00*

U.S. Cl. 395—376 **12 Claims**

1. A method carried out by a processor for implementing a checkpoint between pairs of memory locations, the method comprising the steps of:

(a) storing in a memory circuit a modification indicator associated with each pair of memory locations, each modification indicator indicating if a write operation has taken place to one of the pairs of memory locations since a previous checkpoint and wherein said memory circuit is resettable such that all modification indicators are simultaneously changed to a default value;



(b) storing a role indicator associated with each said pair of memory locations, each role indicator indicating status of the associated pair of memory locations when read in combination with the associated modification indicator, each said role indicator being stored in a second memory circuit separate from the resettable memory circuit storing the modification indicators;

(c) implementing a current checkpoint for all memory locations by resetting the resettable memory circuit so that all modification indicators have said default value, the role indicators being unchanged at a checkpoint, the combination of role and modification indicators for each pair of locations thereby indicating:

if a location has been modified since the previous checkpoint, that said location now has active and backup status and that the other location of its pair of memory locations is now non-designated, and

if neither location has been modified since the previous checkpoint, that the status of both locations is unchanged, and

(d) for each memory location pair, at a first write operation to a location of said pair after the current checkpoint:

updating the associated modification indicator to indicate that a write operation has occurred to one of the memory locations;

updating the associated role indicator so that in combination with the modification indicator said role indicator indicates that said non-designated location is changed to active status and that the other location is changed to backup status; and

writing data to the active location and subsequently writing data to said active location until the next checkpoint.

5,574,875

CACHE MEMORY SYSTEM INCLUDING A RAM FOR STORING DATA AND CAM CELL ARRAYS FOR STORING VIRTUAL AND PHYSICAL ADDRESSES

Anthony I. Stansfield; Catherine L. Barnaby; Richard J. Gammack, and Roger M. Shepherd, all of Bristol, United Kingdom, assignors to Inmos Limited, Bristol, United Kingdom

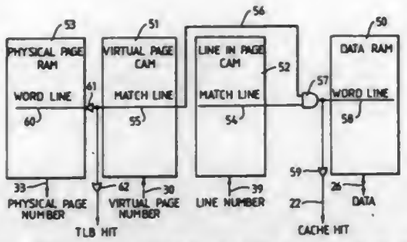
Filed Mar. 12, 1993, Ser. No. 31,241

Claims priority, application United Kingdom, Mar. 13, 1992, 9205551

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—403 **16 Claims**

1. A fully associative cache memory for virtual addressing comprising a data RAM, a first CAM cell array for holding virtual page addresses wherein each of said virtual page addresses requires address translation to identify a physical page in a main memory, a second CAM cell array holding line or word in page addresses, address input circuitry connected to both said first and second CAM cell arrays, a physical address memory for holding physical page addresses for the main memory corresponding to virtual page addresses in said first CAM cell array, and data RAM



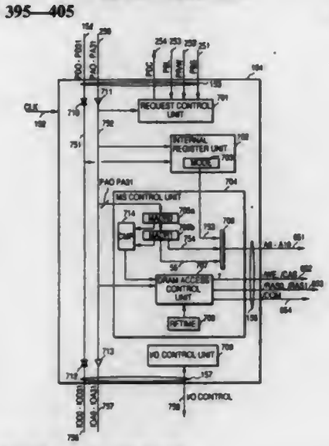
access control circuitry, said first CAM cell array having hit output circuitry connected to said physical address memory to access said physical address memory and effect address translation only in response to a combination of a hit output from said first CAM cell array and a miss output from said second CAM cell array, and said data RAM access control circuitry being coupled to hit output circuitry of both said first and second CAM cell arrays and to the data RAM to access the data RAM only in response to hit outputs from both said first and second CAM cell arrays.

5,574,876

PROCESSOR SYSTEM USING SYNCHRONOUS DYNAMIC MEMORY

Kunio Uchiyama, Kodaira, and Osamu Nishii, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 9, 1993, Ser. No. 118,191
Claims priority, application Japan, Sep. 18, 1992, 4-249190
Int. Cl.[6] G06F *12/06*
U.S. Cl. 395—405 **10 Claims**



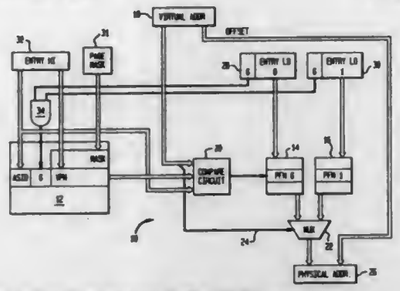
1. A process system comprising:
a processor;
a main storage apparatus accessible by an access address issued from said processor; and
a main storage controller coupled to said processor and said main storage apparatus;
wherein said main storage apparatus includes a memory having a plurality of memory banks; and
wherein said main storage controller includes:
a) two address registers for respectively storing two consecutive access addresses received from said processor;
(b) a bank field comparator for comparing bank field information parts of access addresses respectively stored in said two address registers; and
(c) a memory access control unit for delivering bank operation start signals to said memory for requesting parallel operations of two accesses in respective memory banks corresponding to two access addresses stored in said registers, in response to an output of said bank field comparator, when said bank field information parts are different from each other.

5,574,877

TLB WITH TWO PHYSICAL PAGES PER VIRTUAL TAG

Ashish B. Dixit, Union City, and Earl A. Killian, Los Altos, both of Calif., assignors to Silicon Graphics, Inc., Mountain View, Calif.

Filed Sep. 25, 1992, Ser. No. 951,471
Int. Cl.[6] G06F *12/10*
U.S. Cl. 395—417 **8 Claims**



1. A translation lookaside buffer (TLB) comprising:
a tag memory having a plurality of virtual address tag entries;
a cache memory having at least a pair of physical addresses corresponding to each of said virtual address tag entries;
a virtual address bus;
a comparison circuit having inputs coupled to said virtual address bus and outputs of said tag memory and having match outputs for selecting one of said pair of said physical addresses upon a match, expanding the virtual space covered by each of said virtual address tag entries to two spaces containing said ohe of said pair of said physical addresses, and allowing said two spaces to map to two discontiguous blocks of physical space; and
selection means, coupled to said cache memory, for selecting a single address from said one of said pair of physical addresses in response to at least one bit from said virtual address bus.

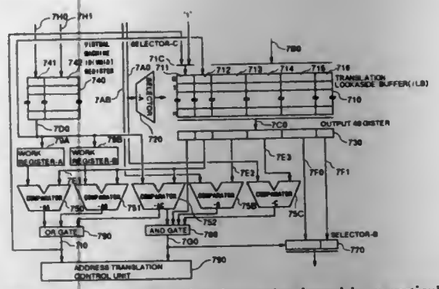
5,574,878

METHOD OF PARALLEL PURGING OF TRANSLATION LOOKASIDE BUFFER IN A MULTILEVEL VIRTUAL MACHINE SYSTEM

Osamu Onodera, Hadano; Ken Uehara, Isehara; Yuji Kobayashi, and Hideaki Amano, both of Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 16, 1994, Ser. No. 306,983
Claims priority, application Japan, Sep. 17, 1993, 5-231946
Int. Cl.[6] G06F *12/10*
U.S. Cl. 395—417 **3 Claims**

1. In a virtual machine system, comprising a first central processing unit provided with a plurality of levels of virtual machines, a main storage shared by said virtual machines, and a translation lookaside buffer having a plurality of entries for storing a plurality of sets, each set including a logical address used by each of said virtual machines in accessing said main storage in the past, an absolute address corresponding to said logical address, and a virtual machine identification code, allocated to an access source virtual machine, for translating the logical address to the absolute address by referencing said entries when each of said virtual machines makes access to said main storage, wherein at least one register, provided in association with said virtual machine system, stores virtual machine identification codess, each identifying one of said virtual machines, a method of purging said translation lookaside buffer comprising the steps of:



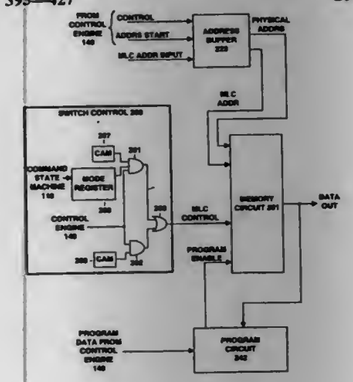
storing, upon execution of an instruction issued by a particular one of said virtual machines and which is accompanied by a purge of said translation lookaside buffer, a virtual machine identification code of said particular virtual machine and a virtual machine identification code of another level of said virtual machines having a translation lookaside buffer entry to be purged; and
when said instruction is executed, purging in parallel the entry storing the virtual machine identification code which coincides with that of said particular virtual machine and the entry storing the virtual machine identification code which coincides with that of said another level of virtual machines.

5,574,879

ADDRESSING MODES FOR A DYNAMIC SINGLE BIT PER CELL TO MULTIPLE BIT PER CELL MEMORY

Steven E. Wells, Citrus Heights, and Kurt B. Robinson, Newcastle, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 252,920, Jun. 2, 1994, Pat. No. 5,515,317. This application Oct. 10, 1995, Ser. No. 541,522
Int. Cl.[6] G11C *11/56;11/34*
U.S. Cl. 395—427 **20 Claims**



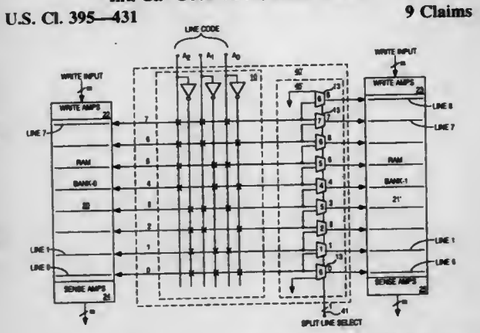
1. A memory system comprising:
a plurality of memory cells, each memory cell capable of storing any one of at least 2" threshold levels, wherein the threshold levels designate states corresponding to storage of "n" bits of data;
an address buffer coupled to the memory cells for generating a plurality of physical addresses such that each physical address uniquely identifies "j" of the memory cells, wherein the "j" memory cells are associated with at least one memory location for storing data;
a switch control for selecting one of a standard cell mode and a multi-level cell (MLC) mode of operation;
a select circuit coupled to the switch control and the plurality of memory cells for accessing one bit per memory cell when operating in a standard cell mode, and for accessing more than one bit per memory cell when operating in a multi-level cell (MLC) mode, wherein the memory system exhibits an n:1 correspondence between memory locations and the physical addresses when operating in the MLC mode, wherein the memory system exhibits a 1:1 correspondence between memory locations and the physical addresses when operating in the standard cell mode;
an MLC address register for storing an MLC address, wherein the MLC address identifies a portion of data associated with a given physical address when operating in the MLC mode;
a program controller coupled to said switch control for programming control structure data in said standard cell mode, and for programming data structures in said MLC mode.

5,574,880

MECHANISM FOR PERFORMING WRAP-AROUND READS DURING SPLIT-WORDLINE READS

Jeng-Jye Shaw, Palo Alto, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 11, 1994, Ser. No. 212,136
Int. Cl.[6] G06F *12/06;* **G11C** *11/407*
U.S. Cl. 395—431 **9 Claims**



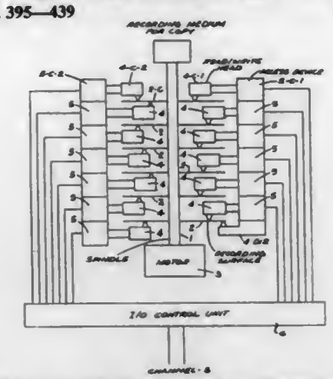
3. An N-line memory system for selectively operating in either an OR-line mode or in a split-line mode, each line of the memory system being accessible by applying an n-bit binary coded address index i, $0 \leq i \leq N-1$ where $N=2^n$, the N-line memory system comprising:
(a) a multi-bank random access memory (RAM) including,
(i) a first RAM having N lines of memory accessible by activating one-out-of-N address lines, and
(ii) a second RAM having (N+1) lines of memory, accessible by activating one-out-of-(N+1) address lines; and
(b) a line decoder for selectively accessing lines from said first RAM and said second RAM corresponding to the n-bit binary coded address index i in response to an externally provided mode control signal applied to a first mode control line such that when the first mode control line is in a first state the line decoder selects the line corresponding to the n-bit binary coded address index i from the first RAM and the second RAM, and when the first mode control line is in a second state the line decoder selects the line corresponding to the n-bit binary coded address index i of the first RAM and the line corresponding to the n-bit binary coded address index i+1 of the second RAM,
when the first mode control line is in the second state and the n-bit binary coded address index i has a value of N−1, the one-out-of-(N+1) address lines of the second RAM located at a position corresponding to the index i+1 is accessed, where the index i+1 has a value of N for a wrap-around read.

5,574,881

HIGH CAPACITY DATA STORAGE METHOD AND SYSTEM USING INDEPENDTLY CONTROLLED HEADS AND CIRCUITRY FOR MONITORING ACCESS FREQUENCY OF DATA RECORDS

Hiroshi Yasuoka, Fujisawa; Yoshito Tsunoda, Suginami-ku; Takeshi Maeda, Kokubunji; Yoshihisa Kamo, Musashimurayama; Hiromichi Fujisawa, Tokorozawa; Zenji Tsutsumi, Kokubunji, and Shunichi Torii, Musashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 406,798, Sep. 13, 1989, abandoned.
This application Aug. 10, 1995, Ser. No. 511,779
Claims priority, application Japan, Sep. 19, 1988, 63-232365
Int. Cl.[6] G06F *13/00;12/12;* G11B *17/22*
U.S. Cl. 395—439 6 Claims



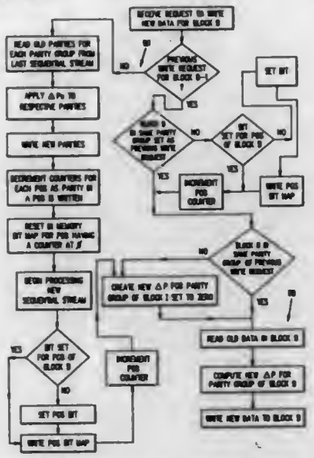
1. A fast access high capacity data storage system comprising:
a plurality of generally disk-shaped recording surfaces secured to a common spindle;
a first plurality of data access heads in generally close proximity relative to a first disk-shaped recording surface of the plurality of recording surfaces, whereby each data access head of the first plurality of data access heads is adapted for data communication with the first disk-shaped recording surface;
means for rotating the common spindle in relation to each of the first plurality of data access heads;
means for independently positioning each data access head of the first plurality of data access heads in relation to the first disk-shaped recording surface of the plurality of recording surfaces;
a second plurality of data access heads, distinct from the first plurality of data access heads, in generally close proximity to a copy recording surface of the plurality of generally disk-shaped recording surfaces;
a control system for selectively communicating data with each data access head, the control system including,
monitoring means for supervising a storage of an address of the data,
means for storing data representative of an access frequency of at least one of a write, readout and rewrite of the data,
means for controlling the transfer of most frequently accessed data, as determined by the data representative of access frequency, to the copy recording surface, and
a data supervision system including,
means for recording at least one of (a) address data representative of an address to which a data record is written, (b) record length data representative of a length of a data record, (c) transfer timing data representative of a duration necessary for transferring location of a data record, and (d) access timing data representative of a number of accesses to a data record;
average computing means for computing an average of at least one of said address data, record length data, transfer timing data, and access timing data, and
means for storing data representative of an average computed by the average computing means; and
means for independently positioning each of the second plurality of data access heads relative to the copy recording surface under the control of the control system.

5,574,882

SYSTEM AND METHOD FOR IDENTIFYING INCONSISTENT PARITY IN AN ARRAY OF STORAGE

Jaishankar M. Menon, San Jose; James C. Wyllie, Monte Sereno, and Geoffrey A. Riegel, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 3, 1995, Ser. No. 397,817
Int. Cl.[6] G06F *11/10;12/00;13/00*
U.S. Cl. 395—441 19 Claims



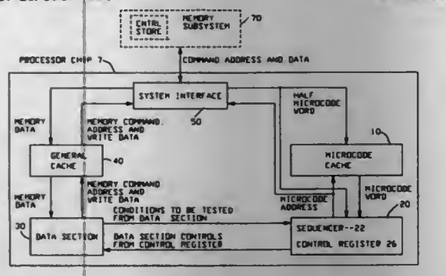
18. An article of manufacture for use in a computer system for storing data in a computer system having an array of storage devices, the computer system having means to write data blocks to the storage devices, said article of manufacture comprising a computer-readable storage medium having a computer program code embodied in said medium which may cause the computer to:
(A) logically arrange a plurality of block locations on the storage devices as a plurality of parity groups wherein a parity block stored in a block location as part of a parity group is logically derived from the combination of data blocks stored in the block locations of the parity group, and each parity and data block in a parity group is stored on a different storage device;
(B) group a set of the plurality of parity groups into a parity group set; and
(C) when writing a new data block to a data block location on a storage device:
(i) read an old data block stored at the data block location;
(ii) write the new data block to the data block location;
(iii) identify a parity group and a parity group set to which the block location belongs;
(iv) only when the identified parity group set is in an unmodified state prior to writing the new data block, write to the storage device an indicator that the identified parity group set is in a modified state so that during a recovery process, all parity groups in the identified parity group set will be checked for inconsistent parity;
(v) incrementing a parity group set counter for the identified parity group set when the identified parity group becomes modified;
(vi) decrementing the parity group set counter for the identified parity group when the identified parity group becomes unmodified; and
(vii) when the parity group set counter for the parity group set becomes zero, setting an indicator that the parity group set is in an unmodified state.

5,574,883

SINGLE CHIP PROCESSING UNIT PROVIDING IMMEDIATE AVAILABILITY OF FREQUENTLY USED MICROCODE INSTRUCTION WORDS

Richard D. Freeman, Mission Viejo, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Nov. 30, 1993, Ser. No. 159,883
Int. Cl.[6] G06F *12/00;13/00*
U.S. Cl. 395—446 8 Claims



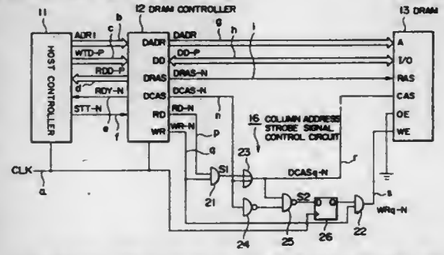
1. A single chip multi-cache processing system comprising:
(a) system interface means for enabling communication between an external main memory sub-system holding a main microcode word control store and general cache means and microcode cache means, said interface means including:
(a1) a Read data register for data and instructions read out from said main memory sub-system;
(a2) a Write data register for data and instructions to be written into said main memory sub-system;
(a3) a microcode base address register for holding the base address of microcode words in said main control store;
(a4) connection means to said general cache means to said microcode cache means;
(b) said general cache means for holding frequently used OPCODES and data words for rapid delivery to a processor means;
(c) said microcode cache means for holding frequently used microcode words for providing routines for the execution of selected OPCODES by said processor means; and includes:
(c1) a plurality of microcode-address storage means holding addresses of microcode instruction words being held in a plurality of microcode-data word means;
(c2) a plurality of comparator means for comparing an incoming requested address, from said processor means, with addresses in said plurality of microcode-address storage means and including;
(c2a) means to generate a hit signal to a specific location in one of said plurality of microcode-data word means, said location holding a requested microcode instruction word;
(c3) said plurality of microcode data word means holding said microcode instruction words and transmitting the requested microcode instruction word to a control register means in one clock cycle after the occurrence of said hit signal;
(c4) a use-sensing means to register microcode address locations of less recently used microcode instruction words and including:
(c4a) means to replace less recently used microcode addresses and the corresponding microcode instruction words with more recently used microcode addresses and microcode instruction words;
(c4b) a least recently used logic unit for sensing least recently used microcode-addresses in said plurality of microcode-address storage means including:
(c4b1) means to convey said least recently used addresses to a microcode cache state machine;
(c4c) a least recently used microcode-address storage means having means for tagging each associated microcode instruction word as valid or invalid, said least recently used microcode-address storage means for holding the least recently used microcode-addresses including:
(c4c1) means to convey said at least recently used addresses to said least recently used logic unit;
(c4d) said microcode cache state machine for controlling the loading of said microcode-address storage means, and the loading of said microcode-data word means at those locations sensed by said least recently used logic unit, and including:
(c4d1) means for executing a microcode word fetch from said main memory sub-system, if a miss occurs during a microcode instruction word request from said processor means to said microcode cache means,
(c4d2) means to place said fetched microcode word address and said microcode word in said locations sensed as least recently used;
(c5) a control register means for holding the requested microcode information word for access by said processor means;
(d) said processor means for executing selected OPCODES by accessing in one clock cycle, addressed microcode instruction words available in said microcode cache means;
(e) wherein each said system interface means, said general cache means, said microcode cache means and said processor means are implemented on a single chip.

5,574,884

DRAM CONTROL CIRCUIT

Osamu Ishikawa, and Toshikazu Ito, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1994, Ser. No. 302,035
Claims priority, application Japan, Sep. 17, 1993, 5-231641
Int. Cl.[6] G11C *7/00*
U.S. Cl. 395—482 4 Claims



1. A DRAM control circuit having a DRAM controller and a DRAM, the DRAM controller adapted for receiving an address, write data, and a data rewrite command from a host controller and designating a row address and a column address to the DRAM and causing the signal levels of a row address strobe signal, a column address strobe signal, and a read signal to become "L", reading the contents of the addresses through a data bus connected to an input/output terminal of the DRAM, causing the signal level of the read signal to become "H", causing the signal level of the write signal that is output to a read/write terminal of the DRAM to become "L", and rewriting the contents of the addresses with the write data, comprising:
a column address strobe signal control circuit for generating a pseudo column address strobe signal and a pseudo write signal corresponding to the column address strobe signal, the read signal, and the write signal and for inputting the pseudo column address strobe signal and the pseudo write signal to a column address strobe terminal of the DRAM and the read/write terminal of the DRAM, respectively; and

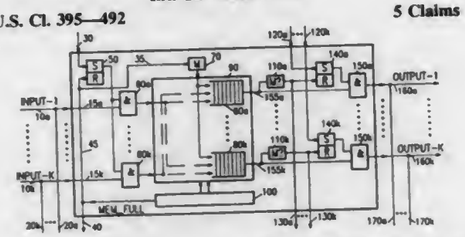
means for causing the signal level of the pseudo column address strobe signal to become "L" so as to read the contents of the addresses when the signal levels of the column address strobe signal and the read signal become "L", for causing the signal level of the pseudo column address strobe signal to become "H" level so as to cause the input/output terminal become high impedance state when the signal level of the read signal becomes "H", for causing the signal level of the pseudo write signal to become "L" so as to output the write data to the data bus when the input/output terminal is high impedance state, and for rewriting the contents of the addresses with the write data when the signal level of the pseudo column address strobe signal is "L".

5,574,885

MODULAR BUFFER MEMORY WITH SEPARATELY CONTROLLABLE LOGICAL OUTPUT QUEUES FOR USE IN PACKET SWITCHED NETWORKS

Wolfgang E. Denzel, Au-Waedenswil; Antonius J. Engbersen, Richterswil, and Gunnar Karlsson, Rueschlikon, all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 779,745, Oct. 21, 1991, abandoned.
This application Nov. 17, 1994, Ser. No. 341,467
Claims priority, application European Pat. Off., Dec. 20, 1990, 90811014
Int. Cl.[6] G06F *13/18*
U.S. Cl. 395—492 **5 Claims**



1. A buffer memory for use in a data packet switch in a packet switched network having a plurality of input lines for inputting data into said buffer memory and a plurality of switch output lines for outputting data from said buffer memory, comprising:

a plurality of memory modules, each one of said memory modules containing a memory component and a corresponding memory control, said plurality of memory modules being connected in a sequential structure such that for each memory module there is a previous memory module and a next memory module;

wherein each of said memory components is connected separately to each of said plurality of input lines and separately to each of said plurality of switch output lines; and

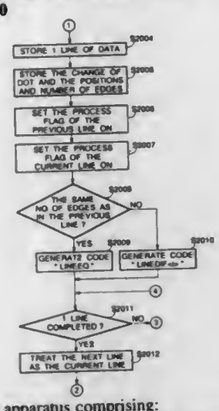
wherein said each memory control provides a plurality of logical FIFO output queues of variable size in its corresponding memory component, each of said plurality of switch output lines having an associated logical FIFO output queue in each of said memory components, with separate readout control and gating means being provided between each of said switch output lines and each of its associated logical FIFO output queues.

5,574,886

DATA PROCESSING SYSTEM FOR ENCODING AND COMPRESSING A PATTERN DATA AND FOR DECODING THE ENCODED AND COMPRESSED DATA TO AN OUTPUT SYSTEM

Hisashi Koike, Sakura; Satoshi Nagata, Tama, and Tetsuo Kurita, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1993, Ser. No. 63,076
Claims priority, application Japan, May 18, 1992, 4-125132; May 10, 1993, 5-108232
Int. Cl.[6] G06F *3/00;5/00*
U.S. Cl. 395—500 **202 Claims**



21. An output apparatus comprising:

storage means for obtaining dot change point positions and the number of change points in units of scanning lines by scanning a dot pattern in a predetermined direction, for discriminating start and end positions of a dot set by scanning the dot pattern in the predetermined direction so as to detect appearance of noncontinuous dot pattern in a direction substantially perpendicular to a direction of the scanning line, and for storing information representing, as relative values with respect to an immediately preceding scanning line, the obtained change point positions and the obtained number of change points and the discriminated start and end positions of the dot set, in advance in correspondence with identification information for identifying the dot pattern, said information being generated for each scanning line based on the number of change points and based on the positions of the dot change point in each said scanning line; and

output means for outputting the number of dot change points and dot change point positions of each line in a dot pattern corresponding to code information on the basis of the information read out from said storage means.

5,574,887

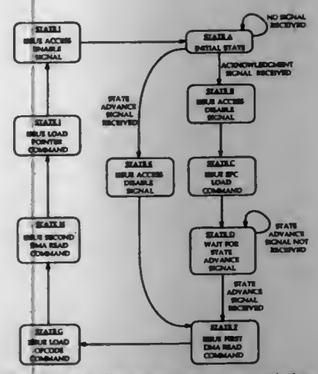
APPARATUS AND METHOD FOR EMULATION ROUTINE POINTER PREFETCH

Jonathan Fitch, Cupertino, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Sep. 20, 1993, Ser. No. 124,315
Int. Cl.[6] G06F *3/00;* **H01J** *9/00*
U.S. Cl. 395—500 **20 Claims**

1. An apparatus for retrieving and storing a pointer to a next emulation routine during execution of a current emulation routine in a computer system having a central processing unit and a memory coupled by a control bus, a data bus, and an address, said apparatus comprising:

an emulated program counter having a control input, a load input, and an output, for storing an address of a next source instruction to be emulated, the emulated program counter storing data on the data bus in response to a first signal on the control input of the emulated program counter, the control



input of the emulated program counter coupled to the control bus, the load input of the emulated program counter coupled to the data bus, and the output of the emulated program counter coupled to the address bus;

a pointer storage means having a control input, a data input, and a data output, for storing a pointer to the next emulation routine in response to a second signal on the control input of the pointer storage means, the control input of the pointer storage means coupled to the control bus, the data input of the pointer storage means coupled to the data bus, and the data output of the pointer storage means coupled to the data bus; and

a prefetch state machine having a control input, an increment input, an increment output, and a control output, for detecting when the emulated program counter has been updated, retrieving a pointer to the next emulation routine to be executed from the memory and storing the pointer in the pointer storage means, the control input of the prefetch state machine coupled to the control bus, the increment input of the prefetch state machine coupled to the address bus, and the control output of the prefetch state machine coupled to the control bus.

5,574,888

A METHOD AND APPARATUS FOR ESTABLISHING COMPATIBILITY BETWEEN COMMUNICATION APPLICATIONS PRODUCING AT COMMANDS AND A TELEPHONY APPLICATION PROGRAMMING INTERFACE

Marjorie J. M. Panditji, Beaverton, and Jeremy Gaylord, Portland, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

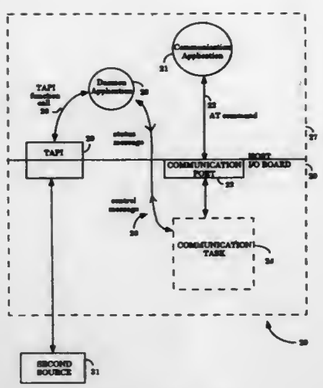
Filed Dec. 28, 1993, Ser. No. 175,321
Int. Cl.[6] G06F *5/00*
U.S. Cl. 395—500 **20 Claims**

1. A method for establishing compatibility between a communication application transmitting an AT command to perform a specific telephony operation and a Telephony Application Programming Interface, the method comprising the steps of:

intercepting information transmitted from the communication application to a communication hardware device; and

processing the intercepted information within the communication hardware device in order to ascertain whether the information includes the AT command, wherein if the intercepted information includes the AT command,

translating the AT command into a Telephony Application Programming Interface function call corresponding to the AT command.

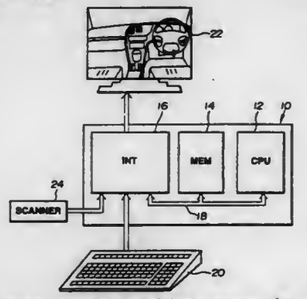


5,574,889

APPARATUS FOR SELECTING AND EVALUATING DESIGN BASED ON STORED INFORMATION

Tomio Jindo, Yokohama, and Yoji Shimizu, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 627,283, Dec. 13, 1990, abandoned.
This application Jan. 27, 1994, Ser. No. 186,894
Claims priority, application Japan, Dec. 28, 1989, 1-338673
Int. Cl.[6] G06F *17/50*
U.S. Cl. 395—500 **19 Claims**



1. An apparatus including a digital computer for evaluating a design including a plurality of items, the apparatus comprising:

a data bus;

a processing unit connected to said data bus;

a computer memory connected to said data bus;

a display unit.;

an interface control unit connected to said display unit and connected to said data bus;

input means connected to said interface control unit for inputting information derived from said design;

a database stored in said computer memory unit, wherein said database contains, for each of said plurality of items, a plurality of design elements, each design element having a plurality of variables correlating to a plurality of evaluation terms, respectively, wherein

said processing unit identifies from said inputted information a design element for each of said plurality of items,

said processing unit selects, for each of the plurality of said items, one of said plurality of design elements contained in said database which is substantially the same as said identified design element, to determine one variable out of said plurality of variables allocated to said selected design element,

said processing unit calculates, for each of said plurality of evaluation terms, a sum of all of said determined variables correlating to each evaluation term,

VOL 1192 ISS 2 NO 12 1996 UMI

said processing unit selects at least one evaluation term out of said plurality of evaluation terms in response to an order of said calculated sums for said plurality of evaluation terms, and

said display unit controlled by said interface control unit displays said selected evaluation term.

5,574,890

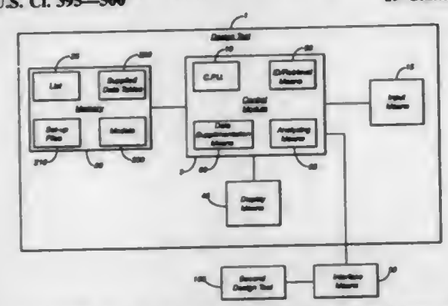
COMPUTER DESIGN TOOL FOR ROTARY SLITTING OF METAL AND A METHOD OF USE THEREOF

William H. Rackoff, Pittsburgh, and Albert R. Zelt, Bethel Park, both of Pa., assignors to Asko, Inc., Homestead, Pa.

Filed Aug. 31, 1994, Ser. No. 298,571

Int. Cl.[6] G06F *17/50;* **G01B** *21/02*

U.S. Cl. 395—500 **19 Claims**



1. A design tool for adjusting an arbor setup in rotary slitting of metal to account for slit width variation, comprising:

a) a control module, the control module comprising a central processing unit,

b) an input means in communicative connection with the control module at least for entering of data comprising data sets, each data set comprising a set of values of system variable affecting slit width variation, each set of values of system variables corresponding to an actual slitting run performed upon a slitter machine, each data set also comprising a slit width variation experienced in conjunction with the slitting run corresponding to the set of values of system variables of the data set,

c) a memory in communicative connection with the control module for storing the data sets, the data sets stored in the list so that the set of values of the system variables of each data set is linked to and identifiable with the corresponding slit width experienced,

wherein the control module further includes a means for identifying data sets from the list, the identified values of the system variables of the identified data sets falling within defined ranges of values of the system variables, the control module further including a means for performing a statistical analysis upon the identified data sets to provide a predictive indication of slit width variation to be experienced in a future slitting run in which the values of the system variable are within the defined ranges.

5,574,891

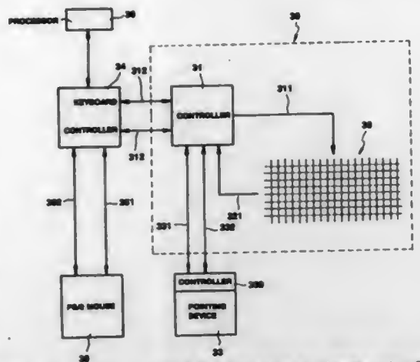
METHOD FOR MANAGING THE INPUT CODES FROM KEYBOARD AND POINTING DEVICE

Hung-Chang Hsu, and Jui-Ho Chen, both of Taoyuan, Taiwan, assignors to Acer Peripherals, Inc., Taoyuan, Taiwan

Filed Sep. 27, 1994, Ser. No. 312,995

Int. Cl.[6] G09G *3/02*

U.S. Cl. 395—500 **4 Claims**



1. In a computer system having a keyboard controller, the keyboard controller having a first input/output port and a second input/output port adapted to couple to a keyboard and a PS/2 mouse respectively, a method for managing the input codes from the keyboard, comprising the steps of:

(1) detecting if the keyboard controller is connected to a PS/2 mouse;

(2) if the result in step (1) is NO, detecting a Basic Assurance Test (BAT) code from the keyboard to determine whether the keyboard coupled is a hybrid keyboard, the hybrid keyboard including a keyboard device and a pointing device;

(3) if a hybrid keyboard is detected in step (2), requesting the hybrid keyboard to send a leading code designated to the pointing device;

(4) detecting whether a signal received by the keyboard controller is a command sent from the computer system or an input code from the hybrid keyboard;

(5) if, in step (4) , the signal received by the keyboard controller is the input code from the hybrid keyboard, detecting whether an input code from the hybrid keyboard has the designated leading code;

(6) if the result of the step (5) is YES, emulating the input code as a PS/2 mouse code and sending the emulated PS/2 mouse code to the computer system.

5,574,892

USE OF BETWEEN-INSTRUCTIN BREAKS TO IMPLEMENT COMPLEX IN-CIRCUIT EMULATION FEATURES

Reed K. Christensen, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 85,404, Jun. 30, 1993, abandoned. This application Feb. 28, 1995, Ser. No. 396,278

Int. Cl.[6] G06F *11/30;* **G01R** *31/28*

U.S. Cl. 395—500 **30 Claims**

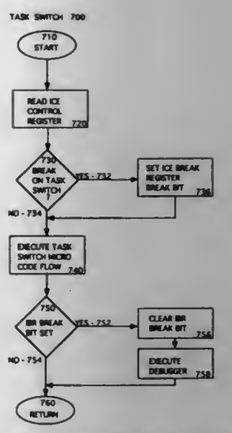
1. In a computer system comprising a host system, a target system and an in-circuit emulation bus, said in-circuit emulation bus for communication of in-circuit emulation commands and data between said host and said target, a method for said host to invoke a complex in-circuit emulation teat of said target, said method comprising the steps of:

said host accessing said target across said in-circuit emulation bus and setting a test desired indicator to indicate to said target that said complex in-circuit emulation test is to be performed, said complex in-circuit emulation test having an impending test point wherein an impending test criterion can be determined to be met and a begin test point wherein a begin test criterion can be determined to be met;

after setting said test desired indicator, said host notifying said target to resume execution;

said target then resuming execution;

if said test desired indicator has been set and said target reaches said impending test point, said target setting a test break indicator and resuming execution without intervention from said host; and



if said test break indicator has been set and said target reaches said begin test point, said target halting said execution and permitting said host to perform said complex in-circuit emulation test.

5,574,893

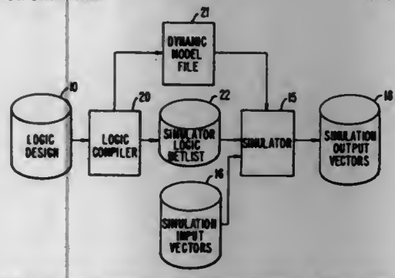
COMPUTER LOGIC SIMULATION WITH DYNAMIC MODELING

Timothy J. Southgate, San Carlos, and James G. Schleicher, II, Sunnyvale, both of Calif., assignors to Altera Corporation, San Jose, Calif.

Continuation of Ser. No. 969,943, Oct. 29, 1992, Pat. No. 5,477,474. This application Aug. 8, 1995, Ser. No. 512,600

Int. Cl.[6] G06F *9/455*

U.S. Cl. 395—500 **8 Claims**



1. A method for improving the performance of computer logic simulation in a computer system in which the operation of a logic design is simulated by compiling a network list representative of the logic design to obtain a simulator network list and applying predetermined input vectors to the simulator network list representative of the logic design in order to generate output vectors representative of the response of the simulator network list, said method comprising the steps of:

(A) identifying one or more portions of the network list;

(B) preventing the identified portions from the network list from being compiled to produce a modified network list;

(C) creating one or more dynamic device models in the form of executable code to perform the simulation of one or more of the identified portions, wherein one or more of the dynamic device models can be used to more quickly simulate the compiled portion of the network it replaces;

(D) compiling the compilable portions of the modified network list to produce a simulator network list; and

(E) using both the dynamic device models and the simulator network list to perform the simulation process, thereby speeding up the simulation.

5,574,894

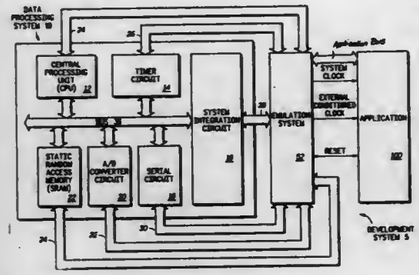
INTEGRATED CIRCUIT DATA PROCESSOR WHICH PROVIDES EXTERNAL SENSIBILITY OF INTERNAL SIGNALS DURING RESET

Alexander L. Iles; Joseph Jelemensky, and Oded Yishay, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 3, 1994, Ser. No. 333,658

Int. Cl.[6] G06F *1/04*

U.S. Cl. 395—555 **22 Claims**



1. A data processing system, comprising:

bus interface means for communicating an address value, a data value, a control value and a reset signal;

a system clock circuit for communicating a system clock signal;

a simulation clock generator coupled to the system clock circuit for receiving the system clock signal, the simulation clock generator providing an internal conditioned clock signal in response to the system clock signal;

mode control means for determining a mode of operation of the data processing system in response to the reset signal, the mode control means being coupled to the bus interface means for receiving reset signal, the mode control means providing a mode signal in a first logic state when the data processing system is operating in a first mode of operation and providing the mode signal in a second logic state when the data processing system is operating in a second mode of operation; and

bus control means for providing a first information value when the data processing system is in the first mode of operation and for providing the internal conditioned clock signal when the data processing system is in the second mode of operation, the bus control means being coupled to the bus interface means for receiving the reset signal, being coupled to the mode control means for receiving the mode signal, and being coupled to the simulation clock generator for receiving the internal conditioned clock signal.

5,574,895

MULTI-MEMORY FUNCTION PROGRAMMABLE COUNTER AND TIMER

Chang S. Lee, and Ching T. Lee, both of 3321 Fay Ave., Culver City, Calif. 90232

Filed Apr. 18, 1995, Ser. No. 423,993

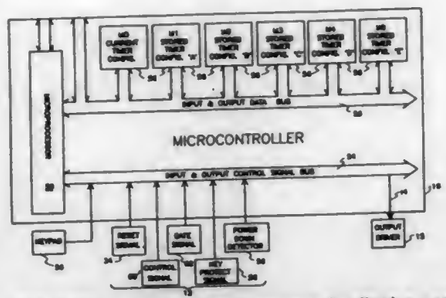
Int. Cl.[6] G06F *1/14*

U.S. Cl. 395—555 **19 Claims**

1. A timer for selectively assuming a plurality of timer configurations, said timer comprising:

a plurality of memory storage means corresponding in number to said plurality of timer configurations, each of said plurality of memory storage means having stored therein one of a plurality of sets of timer function parameters and a preset time value, each set of said plurality of sets of timer function parameters and said preset time value defining a respective one of said plurality of timer configurations;

a microprocessor including primary memory storage means for storing a plurality of sets of permissible values, each set of said plurality of sets of permissible values containing permissible values for a respective member of each set of said plurality of sets of timer function parameters, said microprocessor communicating with said plurality of memory storage means;



input means coupled to said microprocessor for allowing a user to select a value for each member of each set of said plurality of sets of timer function parameters and for said preset time value, said value for each member of each set of said plurality of sets of timer function parameters being selected from a respective one of said plurality of sets of permissible values; and

selection means communicating with said microprocessor for allowing a user to select one of said plurality of timer configurations defined by a corresponding set of said plurality of sets of timer function parameters and said preset time value stored in a respective one of said plurality of memory storage means, said microprocessor controlling operation of said timer in accordance with said one of said plurality of timer configurations selected by the user, whereby said timer readily assumes any one of said plurality of timer configurations without the user having to reprogram said timer.

5,574,896

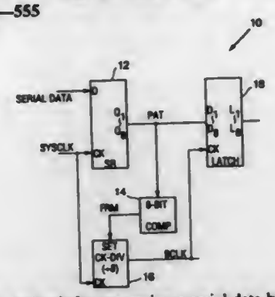
FRAMING CIRCUIT THAT INCREASES THE PULSE WIDTH OF THE BYTE CLOCK SIGNAL AFTER THE BYTE CLOCK SIGNAL IS RESET

Gabriel M. Li, San Francisco, and Hee Wong, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 334,682, Nov. 4, 1994, abandoned. This application Feb. 28, 1996, Ser. No. 608,101

Int. Cl.[6] H04L *7/00*

U.S. Cl. 395—555 **7 Claims**



1. A framing circuit for converting a serial data bit stream into a series of parallel data words, the framing circuit comprising:

a comparison stage that identifies a predefined sequence of bits in the serial data bit stream, outputs a match signal when the predefined sequence of bits is identified, and outputs the predefined sequence of bits as a parallel data word a first delay time after the match signal is output; and

a counter stage having a count that counts a plurality of system clock periods, outputs a framing clock signal having a period equal to the period of the predefined sequence of bits in response to the count, freezes the framing clock signal in response to a freeze signal, resets the count in response to a reset signal, and restarts the count so that the leading edge of the framing clock signal occurs when the parallel data word output from the comparison stage is valid; and

a delay stage that outputs the freeze signal in response to the match signal, and outputs the reset signal a second delay time after the match signal is output.

5,574,897

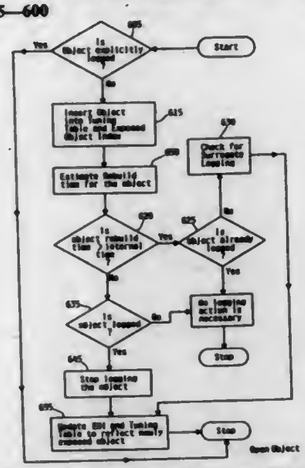
SYSTEM MANAGED LOGGING OF OBJECTS TO SPEED RECOVERY PROCESSING

David L. Hermsmeier, Oronoco; Gary R. Ricard, Rochester; John J. Vriezen, Rochester, and Larry W. Youngren, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1992, Ser. No. 954,641

Int. Cl.[6] G06F *7/00*

U.S. Cl. 395—600 **24 Claims**



1. An object recovery mechanism in a computer system, comprising:

means for determining and maintaining rebuild information representative of an amount of time associated with each respective object which would be required to rebuild said respective object in the event data contained in said object becomes lost, wherein said rebuild information further comprises an estimated time;

means for selectively logging changes to objects in a non-volatile log, wherein objects are selected for logging based on said rebuild information, wherein said means for logging further comprises means for determining and maintaining a threshold time and means for selecting objects that have a rebuild time greater than said threshold time such that changes to such selected objects are logged; and

means for recovering objects from said logged changes recorded in said non-volatile log in the event data contained in said objects becomes lost.

5,574,898

DYNAMIC SOFTWARE VERSION AUDITOR WHICH MONITORS A PROCESS TO PROVIDE A LIST OF OBJECTS THAT ARE ACCESSED

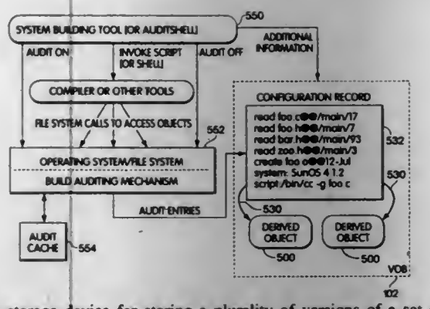
David B. Leblang, Wayland; Larry W. Allen, Cambridge; Robert P. Chase, Jr., Newton; Bryan P. Douros, Framingham; David E. Jabs, Sudbury; Gordon D. McLean, Jr., Brookline, and Debra A. Minard, Newton Upper Falls, all of Mass., assignors to Atria Software, Inc., Lexington, Mass.

Filed Jan. 8, 1993, Ser. No. 1,822

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—601 **20 Claims**

1. A data processing system for controlling versions of objects, comprising,



a storage device for storing a plurality of versions of a set of objects,

a processor for executing instructions and for accessing a subset of the set of objects, which includes retrieving objects from and storing objects to the storage device, during a process, and

an auditor for determining the subset of objects accessed by the processor during a process, the auditor auditing the instructions being executed by the processor during the process and recording, as an entry in an audit record, each version of each object within said subset of objects accessed during the process, as said version of said object is being accessed by the processor during the process.

5,574,899

GENERATION NUMBER MANAGING APPARATUS FOR ADJUSTING GENERATION NUMBERS AMONG PROCESSORS OR PROGRAM FILES

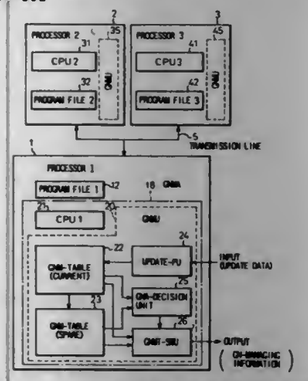
Hideo Kinoshita, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Jan. 31, 1994, Ser. No. 190,326

Claims priority, application Japan, Sep. 16, 1993, 5-229991

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—601 **7 Claims**



1. A generation number managing apparatus for adjusting generation numbers among processors or program files in a multiprocessor system, said apparatus comprising:

generation number controlling means (19, 21), for receiving update data regarding the generation numbers of the processors or program files; and

generation number managing means (20, 20', 20") operatively connected to the generation number controlling means for holding the generation numbers of the processors or program files, determining compatibility of the generation numbers by comparing them among processors or program files, and updating the generation numbers when they are compatible thereamong,

wherein said generation number managing means include: a first table (22) for holding present generation numbers (below, current table); a second table (23) for holding generation numbers from one generation earlier (below, spare table); an update processing unit (24) for updating the generation numbers which are held in the current table based on the update data; a generation number compatibility decision unit (25) for determining compatibility of the generation numbers which are held in the current and spare tables; and a switch unit (26) for changing over the current table to the spare table when the generation numbers are not compatible.

5,574,900

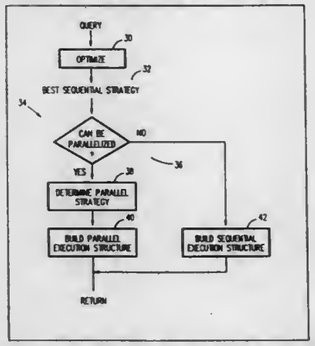
SYSTEM AND METHOD FOR OPTIMIZING PARALLEL PROCESSING OF DATABASE QUERIES

Daniel T. Huang; Eileen T. Lin, both of San Jose, and Yun Wang, Saratoga, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 25, 1994, Ser. No. 201,822

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—601 **8 Claims**



1. A method for retrieving data from a computerized database system having at least one processor, a memory, and at least one non-volatile storage system, using a query statement to identify data to be retrieved, comprising the steps performed by the database of:

(a) during compile time:

(i) determining an optimal sequential execution plan for the query statement, and

(ii) determining an optimal parallel execution plan based on said optimal sequential execution plan, and based on available resource information; and

(b) during run time:

(i) determining, based on a value of at least one run time variable, whether to use said sequential execution plan without modification or a modification of said parallel execution plan as an optimal run time execution plan, and

(ii) executing said query statement using said optimal run time execution plan.

5,574,901

METHOD AND APPARATUS FOR OBJECT TRAVERSING SUITABLE FOR STRUCTURED MEMORY FORMED BY LINKED OBJECTS

Toshinari Takahashi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

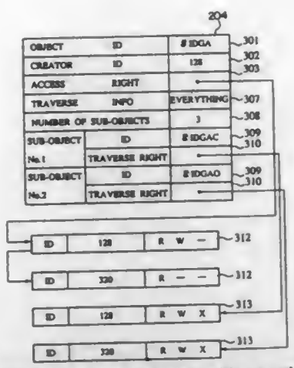
Filed Mar. 9, 1994, Ser. No. 207,745

Claims priority, application Japan, Mar. 9, 1993, 5-048159

Int. Cl.[6] G06F *17/30;12/14*

U.S. Cl. 395—601 **24 Claims**

1. An object traversing apparatus for traversing an object formed by a plurality of sub-objects, comprising:



memory means for storing the object with an assignment of a traverse right for each sub-object indicating who is allowed to traverse each sub-object;

traverse ID list means for specifying one or more traverse IDs for identifying a user making an access request to the object;

traverse object selection means for selecting the sub-objects to be traversed at a time of traversing the object in response to the request from the user according to the traverse right assigned to the user identified by the traverse IDs; and

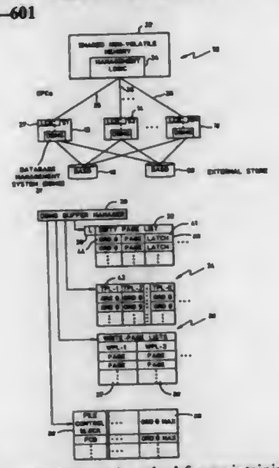
output means for outputting the sub-objects selected by the traverse object selection means as a result of the access to the object.

5,574,902

EFFICIENT DESTAGING OF UPDATED LOCAL CACHE PAGES FOR A TRANSACTION IN A MULTISYSTEM AND MULTIPROCESS DATABASE MANAGEMENT SYSTEM WITH A HIGH-SPEED SHARED ELECTRONIC STORE

Jeffrey W. Josten, Morgan Hill; Tina Mukai, San Jose; Inderpal S. Narang, Saratoga, and James Z. Teng, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 2, 1994, Ser. No. 236,284
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—601 **12 Claims**



1. A machine-implemented method for maintaining recoverable database coherency in a data processing system, comprising the steps of:

(a) structuring said data processing system to include one or more Central Processing Complexes (CPCs), in which each said CPC has one or more processes, a plurality of direct access storage devices (DASDs) coupled to said CPCs for permanent stable storage of one or more databases, each database having a recovery log, and a shared electronic store (SES) for temporary nonvolatile data storage;

(b) coupling said SES to one or more local caches (LCs) provided in the main data stores of said CPCs, each said LC containing one or more LC buffers (LCBs), each LCB for storing data pages for processing by transactions;

(c) maintaining for each said LCB a dirty page list (DPL) of data pages stored in said each LCB that have been modified by a transaction of said transactions but not written to SES or to said DASDs, said DPL including a unique ordinal number (ORD#) for each said data page listed in said DPL; and

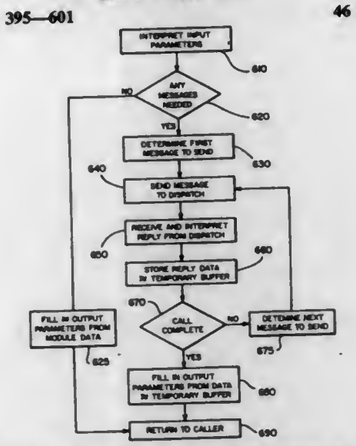
(d) maintaining for each transaction of said transactions a Transaction Page List (TPL), said TPL including ORD#s for data pages modified by said each transaction.

5,574,903

METHOD AND APPARATUS FOR HANDLING REQUEST REGARDING INFORMATION STORED IN A FILE SYSTEM

Steven J. Szymanski, and Bill M. Bruffey, both of Cupertino, Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed May 13, 1994, Ser. No. 245,141
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—601 **46 Claims**



1. In a computer including an operating system, at least one storage media, interface means for interfacing between callers sending requests for access to said at least one storage media and the operating system, and a plurality of agent modules for interfacing between the operating system and the storage media, each agent module corresponding to one of at least one file system formats, a method for handling and processing said requests for access to said at least one storage media comprising the steps of:

storing, in a store, at least one first identifier for identifying said plurality of agent modules, second identifiers for identifying a plurality of objects to which requests can be sent, and mapping information for mapping between said second and first identifiers;

receiving a request from said interface means at a request processing module; and

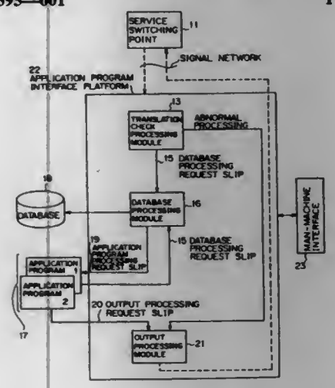
forwarding the request to said at least one agent module responsive to said mapping information in said store.

5,574,904

DATABASE MANAGEMENT SYSTEM IN AN INTELLIGENT NETWORK USING A COMMON REQUEST DATA FORMAT

Hideo Yunoki, and Yoshihiro Kubota, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 642,894, Jan. 18, 1991, abandoned. This application May 19, 1994, Ser. No. 246,479
Claims priority, application Japan, Jan. 19, 1990, 2-8415
Int. Cl.[6] G06F *12/00;15/167*
U.S. Cl. 395—601 **17 Claims**



1. A system, comprising:

an intelligent telephone network performing centralized control for services provided to telephone subscribers; and

a database management system, comprising:

a database storing indications of telephone services provided to subscribers;

a plurality of subscriber service application programs providing subscriber services; and

a subscriber application interface platform operatively connected to provide an application interface between the database and the plurality of service application programs, said application interface platform comprising:

a translation module for requesting database processing by generating a database processing request in a common data format in response to a service request message from an originating subscriber of the intelligent telephone network;

a database module for accessing the database based on the database processing request in the common data format from said translation module, for producing an application processing request in the common data format for application processing by one of the plurality of service application programs in response to the database processing request from said translation module and for accessing the database based on a database processing request in the common data format from one of the plurality of service application programs; and

an output module for sending a message to the intelligent telephone network based on an output processing request in the common data format from one of the plurality of service application programs; and

wherein said application interface platform transfers the database processing, the application processing and the output processing requests between said translation, database and output modules or between one of said translation, database and output modules and the plurality of subscriber service application programs in the common data format.

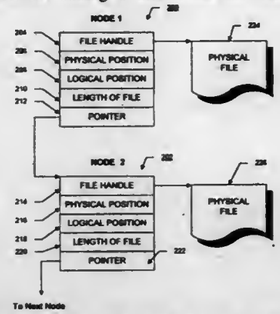
5,574,905

METHOD AND APPARATUS FOR MULTIMEDIA EDITING AND DATA RECOVERY

Linden A. deCarmo, Plantation, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 26, 1994, Ser. No. 249,318
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—601 **22 Claims**

1. Apparatus for editing a multimedia file comprised of a



sequential plurality of data units generated by sampling an analog signal and encoding each sample as a data unit, and each of the plurality of data units being located in a physical file having an address indicating the start of the physical file and a physical file length, the apparatus operating under control of an editing application and comprising:

apparatus responsive to the physical file address and length for constructing a node representing a sequential plurality of data units comprising a segment of the multimedia file, the node comprising the physical file address, and a physical position of the represented file segment in the physical file;

apparatus responsive to editing commands generated by the editing application for changing information contained in the node in order to edit the represented file segment; and

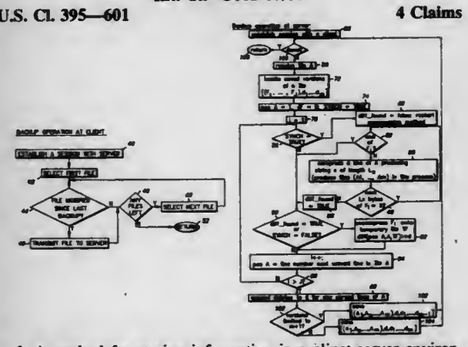
apparatus responsive to the physical file address and length of each of the plurality of file segments for constructing a linked list comprising a plurality of said nodes.

5,574,906

SYSTEM AND METHOD FOR REDUCING STORAGE REQUIREMENT IN BACKUP SUBSYSTEMS UTILIZING SEGMENTED COMPRESSION AND DIFFERENCING

Robert J. T. Morris, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 24, 1994, Ser. No. 328,204
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—601 **4 Claims**



1. A method for storing information in a clinet-server environment having a client and a backup subsystem, the backup subsystem comprising a backup server, a server backup program, a storage medium, and a copy of a versioned sequence of a file stored in the storage medium, said versioned sequence comprising

a base version of a file in multiple compressed segments and a predetermined number of delta files, the client having a client backup program and a storage medium, the client and the backup server are connected to each other by a communication link, comprising the steps of:

establishing a backup session between the client and the backup server;

detecting, using the client backup program, a changed version of said file at the client;

transmitting a changed version of said file in an uncompressed format, using the communication link, from the client to the backup subsystem; and

differencing using the backup subsystem, the changed version of said file and the multiple compressed segments of the base version of said file, said differencing further including the steps of:

compressing the changed version of said file at the backup server one line at a time;

comparing each compressed line of the changed version of said file with the corresponding line of the base version of said file one line at a time;

determining whether a difference between the compressed line of the changed version of said file and the compressed line of the base version of said file has been detected;

decompressing the segment of the base version of said file, known as the current segment, if a difference has been detected;

comparing the uncompressed current segment of the base version of said file and the corresponding segment of the changed version of said file where the difference has been detected;

creating a delta file which includes the differences detected;

determining whether the differencing procedure is back in synch at the end of the current segment of the base version of said file; and

storing the changed version of said file in the compressed segmented format.

5,574,907

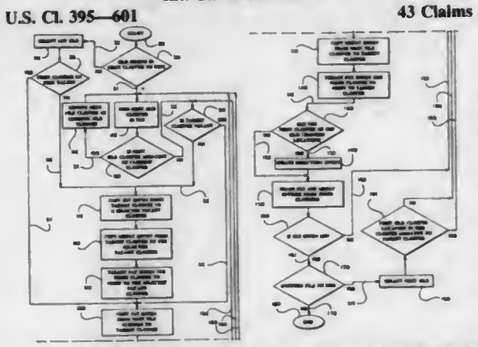
TWO-PASS DEFRAGMENTATION OF COMPRESSED HARD DISK DATA WITH A SINGLE DATA REWRITE

Richard P. Jernigan, IV, Kirkland, and Scott D. Quinn, Issaquah, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Nov. 30, 1994, Ser. No. 346,853

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—601 **43 Claims**



1. A method for defragmenting compressed data stored in files in non-adjacent variable-length clusters on a disk having a beginning and an end, each cluster comprising at least one sector, said method comprising the steps of:

maintaining a first data structure having an entry for each file stored on the disk, each entry identifying the cluster in which the first portion of the file data is contained;

maintaining a second data structure having an entry for each cluster on the disk, each entry identifying another cluster in which the next portion of the file data is contained;

maintaining a third data structure having an entry for each cluster on the disk, each entry identifying the sectors in which the file data of each respective cluster is contained;

rearranging the second and third data structures such that the respective entries for each file are located in adjacent clusters starting from the beginning of the disk;

updating the first data structure entries as necessary responsive to said step of rearranging the second and third data structures; and

rearranging the file data on the disk such that the file data is located in adjacent clusters as determined by the rearranged second and third data structures;

wherein file data is not moved during said step of rearranging the second and third data structures.

5,574,908

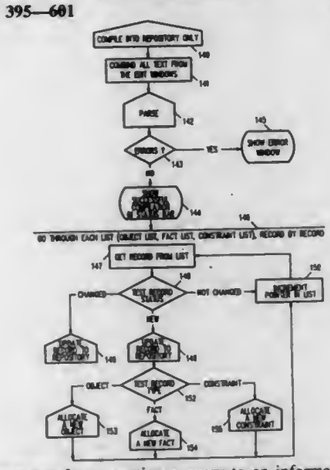
METHOD AND APPARATUS FOR GENERATING A QUERY TO AN INFORMATION SYSTEM SPECIFIED USING NATURAL LANGUAGE-LIKE CONSTRUCTS

James A. Harding, Issaquah, and Jonathan I. McCormack, Renton, both of Wash., assignors to Asymetrix Corporation, Bellevue, Wash.

Division of Ser. No. 112,852, Aug. 25, 1993, Pat. No. 5,495,604. This application Jun. 6, 1995, Ser. No. 485,210

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—601 **18 Claims**



1. Apparatus for generating a query to an information system, said information system having been created using a drag-and-drop information system specification means utilizing a computer language having both textual and graphical forms for translating natural language-like constructs into object-role modeling symbology, said information system specification means further for entering text, utilizing the textual form of said computer language, onto a display device, for parsing said text into at least one of object, fact and constraint into a repository, for forming a conceptual schema representing said information system, and for mapping said conceptual schema to a database, said apparatus implemented on a programmable computer including memory, data entry means, said display means, a graphical user interface, and having said repository implemented thereon, said apparatus using said natural language-like constructs for specifying said query to said information system by providing means for displaying said conceptual schema utilizing said graphical form of said computer language, drag and drop cursor control means for moving a cursor over said conceptual schema diagram and for selecting a first object, and fact tree formation means for forming a fact tree from a first object stored in said repository and displayed on said conceptual schema diagram, said first object forming the root node of a fact tree, said apparatus further comprising:

relational query mapping means for mapping said query to said database and for returning said query in a language appropriate to said database, said query mapping means utilizing said root node defined by said first object, which first object is displayed using utilizing said graphical form of said computer language, and selected by said drag and drop cursor control means.

5,574,909

APPARATUS AND METHOD FOR DATA SEARCH USING SELECTED OR REPRESENTATIVE DATA SAMPLE

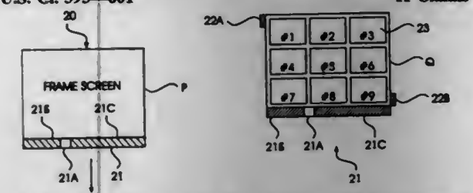
Shinji Misono, Tokyo; Kazuo Iwano, Yokohama, and Jung-Kook Hong, Tokyo, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 221,917, Apr. 1, 1994, abandoned. This application Aug. 28, 1995, Ser. No. 531,570

Claims priority, application Japan, Apr. 5, 1993, 5-078052

Int. Cl.[6] G06F *17/30;3/14*

U.S. Cl. 395—601 **11 Claims**



1. A data search apparatus for locating a data item within a sequence of data the apparatus comprising:

dividing means for dividing the sequence of data at a plurality of dividing positions within the sequence of data;

extracting means for extracting a plurality of representative samples of data from said sequence of data, each one of the representative samples being located at a respective one of the plurality of dividing positions;

display means for displaying said plurality of representative samples of data extracted by the means for extracting;

selecting means for selecting two of the representative samples displayed by the display means, the two selected samples surrounding the data item to be located; and

determining means for determining a new subsequence of data to be searched, the new subsequence of data having start and end positions which are specified by said two selected representative samples;

whereby finding the data item is facilitated because the new subsequence of data is smaller than the sequence of data.

5,574,910

METHOD FOR SEGMENTING DATA PACKETS TO FORM BINARY DECISION TREES WHICH DETERMINE FILTER MASK COMBINED TO FILTER THE PACKETS FOR FORWARDING

Jan Bialkowski, Nashua, N.H., and John Krawczyk, Watertown, Mass., assignors to Bay Networks, Inc., Santa Clara, Calif.

Continuation of Ser. No. 396,374, Feb. 28, 1995, Pat. No. 5,463,777, which is a continuation of Ser. No. 908,248, Jul. 2, 1992, abandoned. This application Oct. 30, 1995, Ser. No. 550,525

Int. Cl.[6] G06F *17/30*

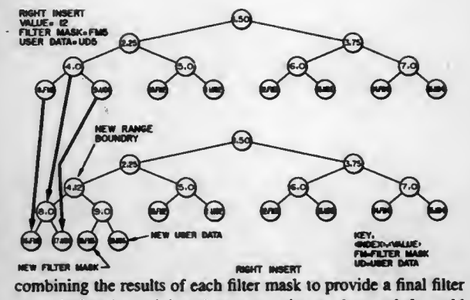
U.S. Cl. 395—601 **2 Claims**

1. A method for processing a data communications binary data packet including a data portion and an information containing portion having keys, each key having at least one data value, the method comprising the steps of:

segmenting said information containing portion into a plurality of information subset segments, each segment associated with at least one of said keys,

creating and storing at least one look-up table associated with said keys, said at least one table having a plurality of non-final nodes, and a plurality of final nodes,

processing each said information subset segments using the tables to determine a filter mask for each key,



combining the results of each filter mask to provide a final filter mask for determining data processing to be used for said packet on the basis of data values of the keys being within preselected ranges of data values, and

processing said packet in accordance with the processing results using said final filter mask.

5,574,911

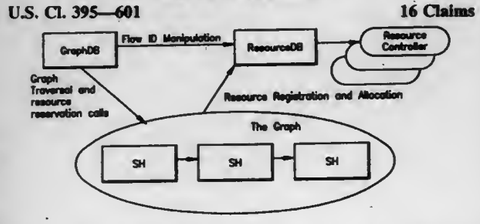
MULTIMEDIA GROUP RESOURCE ALLOCATION USING AN INTERNAL GRAPH

Stephen D'Angelo, Sunnyvale; Steven H. Goldberg, Burlingame; Robert J. Relyea, Mountain View, all of Calif., and Lars C. Wolf, Heidelberg, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 101,314, Aug. 3, 1993, abandoned. This application Dec. 4, 1995, Ser. No. 566,596

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—601 **16 Claims**



1. In a computer-based multimedia system, a computing resource allocation system having dynamic allocation of requests by a plurality of objects comprising:

means for creating said plurality of objects and connection thereof;.

means for grouping said requests;

means for collecting hardware, software or flow limitations and constraints associated with each of said plurality of objects and associated connections;

means for determining the allocation of said computing resources based on said grouping and said collected limitations and constraints:

internal graph means to coordinate said allocation of said requests for said computing resources with each of said computing resources responding to said internal graph means, and

means responsive to said internal graph means to allocate said computing resources to said requesting objects.

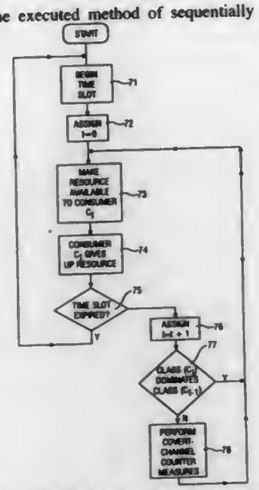
5,574,912

LATTICE SCHEDULER METHOD FOR REDUCING THE IMPACT OF COVERT-CHANNEL COUNTERMEASURES

Wei-Ming Hu, Arlington, Mass., and Andrew H. Mason, Hollis, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed May 4, 1990, Ser. No. 519,238
Int. Cl.[6] G06F *12/14;17/30*
U.S. Cl. 395—650 **20 Claims**

1. A machine executed method of sequentially allocating the



availability of a computer system resource among a plurality of consumers to inhibit use of the resource as a covert communications channel,

each said consumer having a respective class that is a member of plurality of classes organized according to a partial ordering scheme wherein a first class A is in a dominance relationship with a second class B,

said method comprising the steps of:

(a) defining a scheduling cycle comprising a plurality of sequentially ordered time slots, each said time slot having a respective beginning time and ending time;

(b) assigning at least one said class (designated as class X) to a said time slot (designated as time slot X);

(c) at the beginning of said time slot X, making said resource available for use by a class-X consumer in said class X (subject to termination of said availability at the ending time of said time slot X); and

(d) if said class-X consumer, referred to as consumer C_0, gives up the resource prior to the ending time of said time slot X, then making said resource available for use by a plurality of consumers, referred to as consumers C_1 through C_N, where N may be any integer greater than 1, in one or more classes that dominate said class X (subject to termination of said availability at the ending time of said time slot X) in a sequence wherein the class of any consumer C_i, i being any integer from 1 to N, dominates the class of the immediately preceding consumer C_{i-1} in said sequence such that consumers in classes not dominating class X are prevented from using said resource during the period after the consumer C_0 gives up the resource and before the end of time slot X unless a covert-channel counter-measure is performed, thereby inhibiting the use of the resource as a covert communications channel.

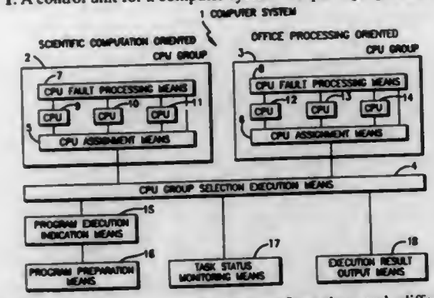
5,574,913

CONTROL UNIT FOR A COMPUTER SYSTEM COMPRISING A PLURALITY OF CPU'S HAVING DIFFERENT INSTRUCTION PROPERTIES

Toshiyuki Ohtsu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 2, 1994, Ser. No. 253,068
Claims priority, application Japan, Jun. 4, 1993, 5-160121
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—561 **28 Claims**

1. A control unit for a computer system comprising a plurality of



CPUs having a same instruction configuration and different instruction properties, said control unit comprising:

a plurality of CPU assignment means for classifying said plurality of CPUs into a plurality of CPU groups, each CPU group of said plurality of CPU groups comprising CPUs having a same instruction property, said CPU assignment means also causing a plurality of program run units requested to be executed in a designated CPU group to be executed in CPUs within said designated CPU group;

CPU group selection execution means for requesting, at a time of program execution, said CPU assignment means to carry out execution of said program run units requested to be executed by said designated CPU group, and for assigning said plurality of program run units which have not been designated to any CPU group to one of said plurality of CPU assignment means of an arbitrary CPU group for execution;

program execution indication means for additionally designating selected CPU groups to execute said plurality of program run units, upon indicating program execution to said CPU group selection execution means;

wherein said program execution indication means designates one of said plurality of CPU groups to said CPU group selection execution means based on a CPU group designation input separately from a program to be executed;

CPU fault processing means incorporated in each of said plurality of CPU groups for isolating faulty CPUs by detecting faults of individual CPUs included in its own CPU group, and for informing said CPU assignment means of its own CPU group of fault information including information concerning program run units under execution in the faulty CPUs, wherein

said CPU assignment means, by receiving said fault information from said CPU fault processing means of its own CPU group, assigns to non-faulty CPUs of its own CPU group the continued execution of program run units if the program run units under execution in said faulty CPUs are those designated execution in its own CPU group, and informs said CPU group selection execution means of said fault information if the program run units did not designate its own CPU group, and

said CPU group selection execution means, by receiving said fault information from said CPU assignment means, selects said CPU assignment means of an arbitrary one of said plurality of CPU groups, and instructs the selected CPU assignment means to continue execution of the program run units which had been under execution in said faulty CPUs; and

execution result output means for receiving from said CPU group selection execution means, at a completion of execution of said program run units constituting the program, execution information including at least a CPU group utilized, and a utilization time for each completed program run unit, for

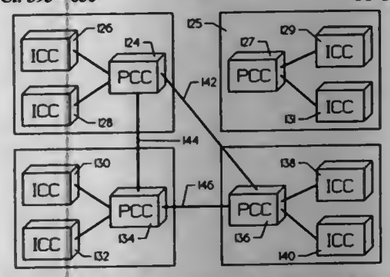
editing the execution information and outputting said edited execution information as a part of an execution report for the program.

5,574,914

METHOD AND APPARATUS FOR PERFORMING SYSTEM RESOURCE PARTITIONING

Peter J. Hancock, White Bear Lake; Ian R. Hepburn, Minnetonka; Lonny R. Lebahn, Saint Paul; Hans C. Mikkelsen, Afton; John A. Miller, Shoreview; Robert T. Sandelands, Stillwater, and James F. Torgerson, Andover, all of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 290, Jan. 4, 1993, abandoned. This application Sep. 8, 1994, Ser. No. 302,381
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—650 **31 Claims**



1. A method of having a computer device dynamically partition a plurality of data processing resources among a number of separate and autonomous data processing systems, each of the number of separate and autonomous data processing systems having a corresponding system control facility for controlling the plurality of data processing resources dynamically partitioned thereto, comprising:

a. making an inventory of the plurality of data processing resources; and

b. dynamically partitioning selected ones of the plurality of data processing resources among the number of separate and autonomous data processing systems, said dynamic partitioning step being performed by the computer device wherein the computer device uses said inventory to select the selected ones of the plurality of data processing resources.

5,574,915

OBJECT-ORIENTED BOOTING FRAMEWORK

Steven P. Lemon, Los Gatos, and Patrick D. Ross, Sunnyvale, both of Calif., assignors to Taligent, Cupertino, Calif.

Filed Dec. 21, 1993, Ser. No. 171,595
Int. Cl.[6] G06F *9/445*
U.S. Cl. 395—700 **15 Claims**

1. An apparatus for booting an object-oriented operating system comprising a kernel program and a plurality of shared libraries containing hardware-independent, object-oriented programs onto a computer system comprising a plurality of hardware devices connected in a configuration, the apparatus comprising:

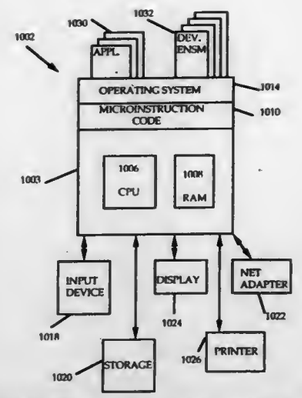
(a) a processor;

(b) a volatile storage attached to and under the control of the processor;

(c) a non-volatile storage attached to and under the control of the processor, the non-volatile storage having the kernel program, the plurality of shared libraries and a hardware-specific boot image program stored therein;

(d) boot image delivery means for loading the boot image program from the non-volatile storage into the volatile storage;

(e) framework setup means for causing the processor to execute the boot image program to load the kernel program from the



non-volatile storage into the volatile storage, to determine the configuration of the plurality of hardware devices and to generate configuration data in a universal format; and

(f) framework execution means for causing the processor to initialize the kernel with the configuration data, to start a program which provides paging between the volatile storage and the non-volatile storage and to instantiate an object oriented file system from the shared libraries.

5,574,916

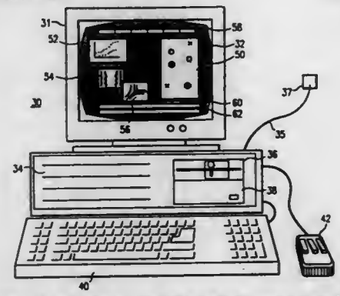
Patent Not Issued For This Number

5,574,917

METHOD FOR INFORMATION COMMUNICATION BETWEEN CONCURRENTLY OPERATING COMPUTER PROGRAMS

William E. Good; Harold A. Hildebrand; Cedric V. Snyder, Jr., all of Houston; Joseph L. Stiles, Bellaire; Kathleen M. Whitfield, Katy, and Marie S. Jansen, Spring, all of Tex., assignors to Landmark Graphics Corporation, Houston, Tex.

Continuation of Ser. No. 790, Jan. 4, 1993, Pat. No. 5,448,738, which is a continuation of Ser. No. 852,737, Mar. 16, 1992, abandoned, which is a continuation of Ser. No. 735,156, Jul. 23, 1991, abandoned, which is a continuation of Ser. No. 297,659, Jan. 17, 1989, abandoned. This application May 25, 1995, Ser. No. 452,563
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—561 **11 Claims**



1. A method for transferring information between multiple programs operating concurrently in a computer system, said multiple programs including at least one information-using application program and at least one information-generating application program, the method comprising the computer-executed steps of:

registering at least one information code and an application program identification for said at least one information code by at least one information-using application program during execution on the computer system with a dispatcher program, said at least one information code representing a specific type or collection of said information, said registering by said at least one information-using application program being for the purpose of receiving information represented by said at least one information code without further requests on the part of said at least one information-using application program,

producing a record in said dispatcher program including said at least one information code and said application program identification,

producing selected information and a corresponding information code by an information-generating application program executing on said computer system,

transmitting said selected information and corresponding information code by said information-generating application program to said dispatcher program,

comparing said information code which corresponds to said selected information with the information code in said record to find a match which identifies through said application program identification of said record said at least one application program which is registered in said dispatcher program to receive the type or collection of information indicated by said information code which corresponds to said selected information, and

transmitting at least said selected information to said at least one identified information-using application program.

5,574,918

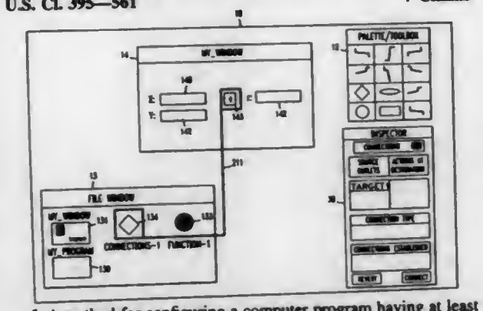
METHOD AND APPARATUS FOR CONFIGURING COMPUTER PROGRAM FROM AVAILABLE SUBPROGRAMS

Daniel F. Hurley, Marlboro, and Earle H. West, Morganville, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 110,235, Aug. 23, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 469,115

Int. Cl.[6] G06F *9/445;7/00*

U.S. Cl. 395—561 **7 Claims**



1. A method for configuring a computer program having at least first and second previously compiled and executing objects, at least some of said objects having outlets, said outlets having names, the method comprising the steps of:

sending a first message from said first object to said second object requesting said second object transmit its outlet names to said first object;

receiving at said first object said outlet names from said second object; and

creating in said first object an additional outlet for each name received from said second object, said created outlets for connecting said first object to other objects.

5,574,919

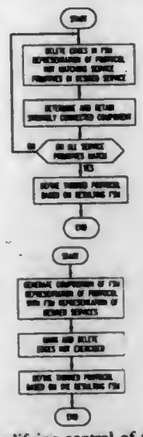
METHOD FOR THINNING A PROTOCOL

Arun N. Netravali, Westfield, and Krishan K. Sabnani, Berkeley Heights, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 752,127, Aug. 29, 1991, Pat. No. 5,327,544. This application Feb. 23, 1996, Ser. No. 606,231

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—561 **6 Claims**



1. A method of simplifying control of a subset of services in a communications process in accordance with a specific set of rules, said specific set of rules comprising a subset of a complex set of rules, said specific set of rules being generated by the steps of:

(a) storing first signals representative of said complex set of rules, wherein said first signals characterize a finite state machine representation of said complex set of rules and wherein said first signals comprise signals characterizing states and signals characterizing edges representing input/output operations and internal and external transitions between said states in said finite said machine representation;

(b) storing second signals representative of a set of rules for a subset of services, wherein said second signals comprise signals characterizing edges representing service primitives of a finite state machine representation of said set of rules for said subset of services;

(c) comparing said first signals to said second signals and deleting from said first signals a first set of signals characterizing edges with no match in said second signals;

(d) selecting from said first signals a second set of signals representative of said specific set of rules, wherein said second set of signals characterize a strongly connected graph; and

(e) repeating steps (c) and (d) until said second set of signals characterize only a strongly connected graph with no unmatched edges.

5,574,920

METHOD FOR CONTROLLING POWER DOWN OF A HARD DISK DRIVE IN A COMPUTER

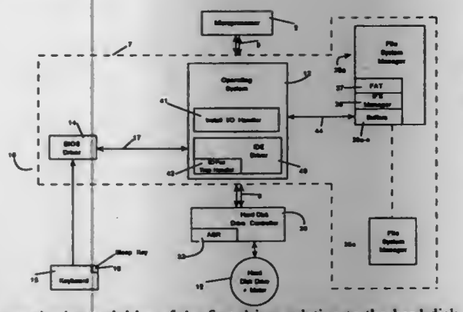
William G. Parry, Bellevue, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Oct. 25, 1994, Ser. No. 328,366

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—750 **25 Claims**

1. In a computer having a hard disk drive and first and second drivers separately capable of powering down the hard disk drive, an improved method for controlling the hard disk drive comprising the steps of:



monitoring activities of the first driver relating to the hard disk drive to detect a pattern that indicates that the first driver is going to power down the hard disk drive;

inhibiting the first driver from powering down the hard disk drive in response to detection of the pattern;

completing activities of the second driver relating to said hard disk drive;

inhibiting the second driver from utilizing the hard disk drive;

allowing the first driver to power down the hard disk drive; and

reactivating the hard disk drive after the first driver powers down the hard disk drive, the hard disk drive being reactivated under control of the second driver.

5,574,921

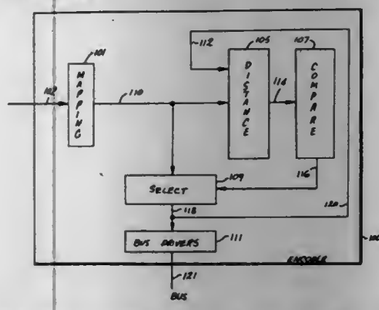
METHOD AND APPARATUS FOR REDUCING BUS NOISE AND POWER CONSUMPTION

Brian W. Curran, Saugerties, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 414,554, Mar. 31, 1995. This application Jun. 6, 1995, Ser. No. 468,484

Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—750 **13 Claims**



1. In a data processing system comprising a plurality of subsystems interconnected by a bus comprising a plurality of bit drivers and bit receivers, a method of transmitting data from a sending subsystem to a receiving subsystem comprising the steps of:

transmitting a first n-bit code word on the bus from the sending subsystem;

mapping a predefined data word comprising a predetermined number of data bits into a plurality of second n-bit code words by use of a plurality of predefined mapping codes, each of the second n-bit code words being generated from the predetermined number of data bits of the data word;

selecting one of the plurality of second n-bit code words; and

transmitting the selected n-bit code word on the bus from the sending subsystem.

5,574,922

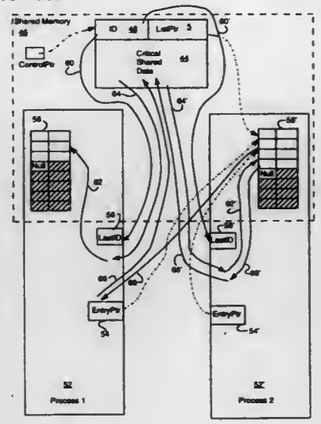
PROCESSOR WITH SEQUENCES OF PROCESSOR INSTRUCTIONS FOR LOCKED MEMORY UPDATES

David V. James, Palo Alto, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Jun. 17, 1994, Ser. No. 261,168

Int. Cl.[6] G06F *9/46;15/00*

U.S. Cl. 395—561 **14 Claims**



4. A method for updating a memory address in a locked fashion, comprising:

(a) as part of a first machine language instruction, determining whether a first address may be fetched into a cache and generating a trap if the first address may not be fetched into said cache;

(b) as part of the first machine language instruction, setting a lock register to disable interrupts, reading the first address, comparing its content with that of a first register, and setting a fail register to a predetermined first value if they are not equal and setting up the fail register to be set to said predetermined first value if the cache line of the first address becomes invalid before the lock register is set to a value allowing interrupts;

(c) as part of a second machine language instruction, generating a trap if the lock register is already set to a value allowing interrupts;

(d) as part of the second machine language instruction, if a second address may not be fetched into the cache, offloading predetermined parameters to a bus interface for an uncached memory access;

(e) as part of the second machine language instruction, if the second address may be fetched into the cache, reading the second address into a second register;

(f) as part of the second machine language instruction, if the second address may be fetched into the cache, determining whether the second address should be updated if the fail register is not set to said predetermined first value;

(g) as part of the second machine language instruction, if the second address should be updated and the fail register is not set to said predetermined first value, generating an update value and updating the second address; and

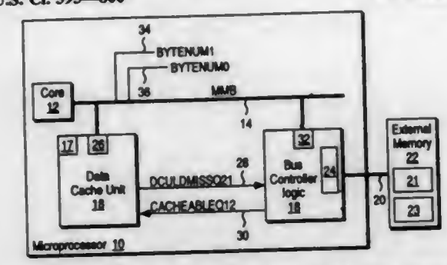
(h) as part of the second machine language instruction, setting the lock register to a value allowing interrupts.

5,574,923

METHOD AND APPARATUS FOR PERFORMING BI-ENDIAN BYTE AND SHORT ACCESSES IN A SINGLE-ENDIAN MICROPROCESSOR

Jay Heeb, Gilbert, Ariz.; Sunil Shenoy, Portland, and Scott Huck, Beaverton, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed May 10, 1993, Ser. No. 59,543
Int. Cl.[6] G06F 13/38;12/04;7/00
U.S. Cl. 395—800 24 Claims



1. A microprocessor for accessing an external memory containing first endian ordered data and second endian ordered data, said microprocessor comprising:

a local bus;

a bus controller coupled to said local bus and having an interface for coupling to said external memory, said bus controller comprising:

loading means for loading sub-word data and word data from said external memory onto said local bus, said loading means promoting loads of sub-word data to loads of word data, the word data including the sub-word data;

converting means coupled to said loading means, said converting means for converting first endian ordered data loaded from said external memory to second endian ordered data; and

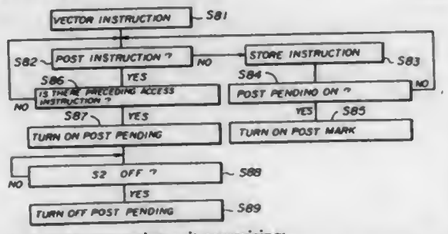
pointer means coupled to said local bus, said pointer means for pointing to the sub-word data within the word data placed on said local bus.

5,574,924

VECTOR PROCESSING DEVICE THAT UTILIZES POST MARKS TO ENSURE SERIALIZATION OF ACCESS REQUESTS OF VECTOR STORE INSTRUCTIONS

Toru Yoshinaga, and Takashi Mochiyama, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 16, 1993, Ser. No. 121,552
Claims priority, application Japan, Nov. 30, 1992, 4-320592
Int. Cl.[6] G06F 15/347
U.S. Cl. 395—800 3 Claims



1. A vector processing unit comprising:

a vector unit having a plurality of operation pipelines and a vector register connected to the plurality of operation pipelines;

a scalar unit having a buffer;

a memory unit;

a memory unit controller connected between the memory unit and the vector unit and between the memory unit and the scalar unit, said memory unit controller performing an information transfer in accordance with a serializing process among access requests by using a post instruction and a wait instruction, access requests sandwiched between the post instruction and the wait instruction being serially carried out;

first means for assigning a post mark to each access request of a vector store instruction issued during a time when the post instruction is being executed and for stopping instruction execution of the scalar unit when there is an unexecuted vector store instruction issued prior to the post instruction; and

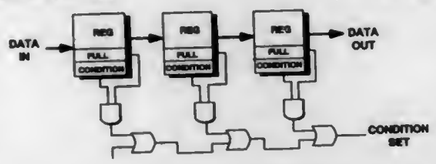
second means for detecting completion of execution of an access request which is issued prior to the post instruction and which does not have a post mark and for causing the scalar unit to start to operate when said completion is detected.

5,574,925

ASYNCHRONOUS PIPELINE HAVING CONDITION DETECTION AMONG STAGES IN THE PIPELINE

Nigel C. Paver, Manchester, United Kingdom, assignor to The Victoria University of Manchester, Manchester, United Kingdom

PCT No. PCT/GB92/00959, § 371 Date Jan. 19, 1994, § 102(e) Date Jan. 19, 1994, PCT Pub. No. WO93/01544, PCT Pub. Date Jan. 21, 1993
PCT Filed May 27, 1992, Ser. No. 182,191
Claims priority, application United Kingdom, Jul. 4, 1991, 9114513
Int. Cl.[6] G06F 9/38
U.S. Cl. 395—800 10 Claims



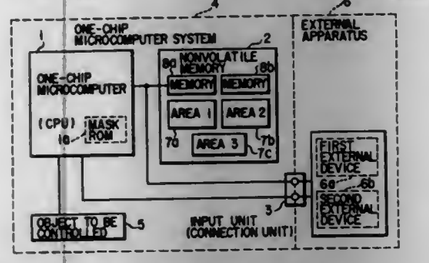
1. A condition detector for an asynchronous pipeline, wherein each stage in the pipeline comprises condition storing means for storing a single bit of data indicating whether or not the condition to be detected is set in that stage, said single bit in the condition storing means of one stage being transferred to the condition storing means of a succeeding stage in the pipeline when data stored in said one stage is transferred to said succeeding stage during operation of the pipeline, means are provided for detecting whether or not any one of the condition storing means of the pipeline stages indicates that the condition is set, and means are provided for generating a condition set output if any one of the condition storing means of the pipeline stages indicates that the condition is set.

5,574,926

ONE-CHIP MICROCOMPUTER SYSTEM HAVING FUNCTION FOR SUBSTANTIALLY CORRECTING CONTENTS OF PROGRAM

Azuma Miyazawa; Junichi Itoh; Yuji Imai; Minoru Hara; Kazutada Kobayashi; Shoji Kawamura; Kenji Fujibayashi, all of Tokyo; Yuichi Saito, Sagamihara, and Yoichiro Okumura, Tokyo, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1994, Ser. No. 209,834
Claims priority, application Japan, Mar. 11, 1993, 5-051112; Mar. 12, 1993, 5-051752; Mar. 12, 1993, 5-051753
Int. Cl.[6] G06F 15/78;19/00;9/06
U.S. Cl. 395—800 8 Claims



1. A one-chip microcomputer system comprising:

a one-chip microcomputer including:

a one-chip microcomputer main body,

data input means for receiving correction data,

a mask ROM for storing ROM version data indicating a type of said mask ROM and program contents for control by said one-chip microcomputer main body, and

substantial changing means for substantially changing the program contents stored in said mask ROM on the basis of the correction data received via said data input means, said correction data corresponding to said ROM version data;

an object to be controlled by said one-chip microcomputer; and

a nonvolatile memory arranged outside said one-chip microcomputer, said nonvolatile memory having a first correction data storage area for storing the correction data for correcting a bug in the program stored in said mask ROM, and a second correction data storage area for storing correction data for adding or changing a function to said one-chip microcomputer system in accordance with a user's request;

wherein said one-chip microcomputer reads out the ROM version data stored in said mask ROM and writes correction data matching with the readout ROM version data in said nonvolatile memory, while said one-chip microcomputer reads out the correction data written in said nonvolatile memory via said data input means and substantially changes the program contents.

5,574,927

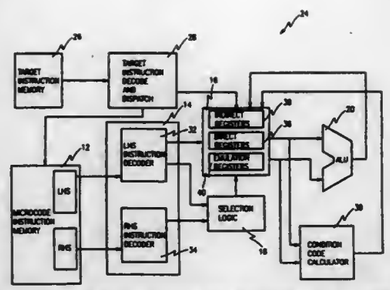
RISC ARCHITECTURE COMPUTER CONFIGURED FOR EMULATION OF THE INSTRUCTION SET OF A TARGET COMPUTER

Henry L. Scantlin, Hermosa Beach, Calif., assignor to International Meta Systems, Inc., El Segundo, Calif.

Filed Mar. 25, 1994, Ser. No. 218,225
Int. Cl.[6] G06F 9/30;9/312;9/315;9/318
U.S. Cl. 395—800 25 Claims

4. A RISC architecture computer having a native instruction width of N bits configured for emulating target instructions from the instruction set of a target computer, comprising:

a plurality of emulation registers capable of corresponding to registers in the target computer and having data widths greater than or equal to the data widths of the registers in the target computer;



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a plurality of n_1-bit operand busses and an n_1-bit result bus, n_1 being a positive integer number;

an integer functional unit coupled to the operand busses through a plurality of n_2-bit inputs and coupled to the result bus through an n_2-bit output, n_2 being a positive integer number less than or equal to n_1; and

a floating point functional unit coupled to the n_1-bit operand busses through a plurality of n_1-bit inputs, and coupled to the result bus through an n_1-bit output, the floating point functional unit comprising:

means for combining a plurality of n_1-bit operands from the floating point functional unit inputs into n_3-bit operand data;

means for executing a floating point operation utilizing the n_3-bit operand data;

means for generating an n_3-bit result;

means for segmenting the n_3-bit result into a plurality of n_1-bit partial results; and

means for sending the partial results to the floating point functional unit outputs, the number of bits n_3 being greater than the number of bits n_1;

an n_1-bit writeback bus;

a reorder buffer for storing results of speculatively executed operations having outputs coupled to the n_1-bit operand busses and to the n_1-bit writeback bus and an input coupled to the result bus; and

a register file for storing results of speculatively executed operations when the results are no longer speculative having outputs coupled to the n_1-bit operand busses and input coupled to the n_1-bit writeback bus.

5,574,929

PROCESSOR CIRCUIT COMPRISING A FIRST PROCESSOR, A MEMORY AND A PERIPHERAL CIRCUIT, AND SYSTEM COMPRISING THE PROCESSOR CIRCUIT AND A SECOND PROCESSOR

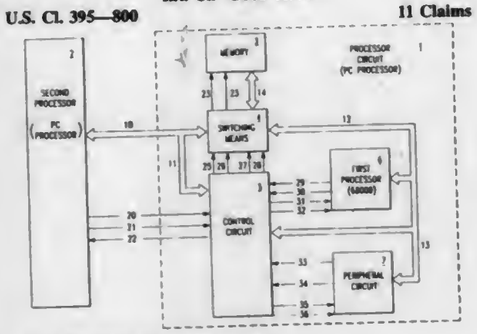
Rob Pieterse, Zandvoort; Wing K. Cheung, Voorburg, and Dirk J. J. Van Bruchem, Wateringen, all of Netherlands, assignors to Koninklijke PTT Nederland N.V., Netherlands

Filed Jan. 3, 1994, Ser. No. 253,406

Claims priority, application Netherlands, Jun. 23, 1993, 9301093

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800 **11 Claims**



1. A processor circuit comprising:

a first processor;

a memory circuit including a memory, a first input/output for coupling the first processor with the memory circuit, and a second, input/output for coupling a second processor with the memory circuit; and

a peripheral circuit for coupling to the first processor,

wherein the processor circuit has a first operational mode, for communication between the second processor and the memory of the memory circuit and communication among the first processor and the peripheral circuit and the memory of the memory circuit, and has a second operational mode, for communication between the second processor and the peripheral circuit without using the memory of the memory circuit, and

wherein the memory circuit is provided with switching means for coupling, in the first operational mode, the second input/output to the memory and coupling the first input/output to the memory and, in the second operational mode, coupling the second input/output to the first input/output.

5,574,930

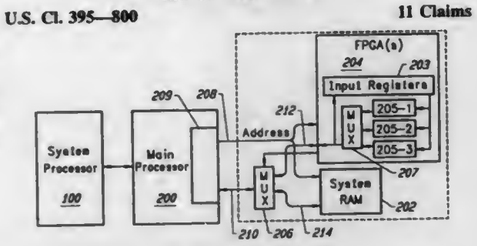
COMPUTER SYSTEM AND METHOD USING FUNCTIONAL MEMORY

Richard P. Halverson, Jr., and Art Y. Lew, both of Honolulu, Hi., assignors to University of Hawaii, Honolulu, Hi.

Filed Aug. 12, 1994, Ser. No. 290,027

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800 **11 Claims**



1. A computer system comprising:

a central processing unit, including memory access circuitry for asserting memory addresses and for writing and reading data to and from memory devices at asserted memory addresses;

a functional memory coupled to the central processing unit's memory access circuitry, said functional memory including random access memory circuitry connected in parallel with field programmable gate array circuitry;

said field programmable gate array circuitry coupled to said central processing unit so as to receive configuration data for configuring said field programmable gate array circuitry from said central processing unit, said configuration data defining what memory addresses said field programmable gate array circuitry will be responsive to and what computation functions said field programmable gate array circuitry will perform;

said field programmable gate array circuitry including input registers for storing data received from said central processing unit when said central processing unit's memory access circuitry asserts a first set of memory addresses defined by said configuration data and result output circuitry for communicating the results computed by said field programmable gate array circuitry, said result output circuitry outputting result data to said central processing unit when said central processing unit's memory access circuitry asserts a second set of memory addresses defined by said configuration data; and

said functional memory including access circuitry for routing data signals from said central processing unit to both said random access memory circuitry and said field programmable gate array circuitry in parallel, and for routing data signals from both said random access memory circuitry and said field programmable gate array circuitry to said central processing unit.

5,574,931

INTERCONNECTION PROCESS AND SYSTEM FOR THE CONTROL OF MESSAGES IN AN ARRAY OF PROCESSORS HAVING A PARALLEL STRUCTURE

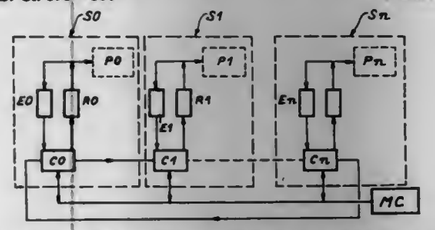
Laurent Letellier, Boulogne-Billancourt; Hassane Essafi, Orsay; Thierry Collette, les Ulis; Jean-Francis Larue, Viroflay; Jean-Pierre Guerin, Orsay, and Jean Rebillat, Aubergenville, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Sep. 26, 1994, Ser. No. 311,960

Claims priority, application France, Oct. 4, 1993, 93 11787

Int. Cl.[6] G06F *15/00;15/16*

U.S. Cl. 395—800 **6 Claims**



1. Process for the control of messages circulating in a ring network of elementary processors (Po, . . . , Pn) organized in accordance with a parallel structure and able to process, per cycle, messages of the same size, each of these processors being associated with a respective interconnection module and connected to the network by the interconnection module, wherein a question of priorities of interconnection modules for transmission and for reception of messages is established by circulation of tokens in the network and one size of messages (TMESS) to be transmitted on the network is specified prior to a first transmission, the process comprising the steps of:

each elementary processor transmits a token if it verifies the equations:

(NPE modulo TMESS)=0

and (N+NPE)>TMESS,

with NPE between 0 and N−1 and in which TMESS is the size of the messages to be transmitted, NPE is an elementary processor number in the network and N is the total number of elementary processors connected to the network;

when one of the interconnection modules receives a token, the interconnection module receives and acknowledges a first data item of a message to be received circulating in the network if the message is intended for the elementary processor associated with one of the interconnection modules;

determining whether the interconnection module has sufficient memory space for storing the message:

using the interconnection module to return the message to the network if the memory space is inadequate for storing the message,

using the interconnection module to store the first data item of the message and then all successive data items of the message until the interconnection module detects an end of the message if the memory space is adequate for storing the message; and

using the elementary processor to check that the interconnection module has an adequate memory space for completely storing a message to be sent:

storing the message to be sent in the interconnection module if there is memory space for the message;

using the interconnection module to supply a first data item of the stored message to the network when the token is received and then all successive data items of the stored message if at least one message has been stored;

waiting until the interconnection module receives a following token if no message has been stored.

5,574,932

ONE-CHIP MICROCOMPUTER AND PROGRAM DEVELOPMENT/EVALUATION SYSTEM THEREFOR

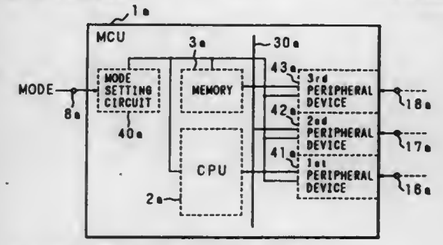
Fumiki Sato, and Kouichi Fujita, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1994, Ser. No. 318,455

Claims priority, application Japan, Oct. 12, 1993, 5-254270

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—800 **6 Claims**



6. A one-chip microcomputer, comprising:

first one-chip microcomputer, having:

storing means for storing programs and data,

a CPU for executing the programs stored in said storing means,

first, second and third peripheral devices having terminals connected to the outside, and

operation mode setting means for setting a first evaluation operation mode under which an operation of said storing means and two of the peripheral devices are inhibited, and programs and data are read from the outside via the two inhibited peripheral devices in order to operate said CPU;

second one-chip microcomputer, having:

storing means for storing programs and data,

a CPU for executing the programs stored in said storing means,

first, second and third peripheral devices having terminals connected to the outside, and

operation mode setting means for setting a first evaluation operating mode of a second evaluation operation mode under which an operation of said storing means, said CPU, and two of the peripheral devices are inhibited and signals are inputted/outputted from/to the outside via the terminals of the two inhibited the peripheral device in order to control said at least first, second and third peripheral devices which is not inhibited;

third one-chip microcomputer, having:

storing means for storing programs and data,

a CPU for executing the programs stored in said storing means,

first, second and third peripheral devices having terminals connected to the outside, and

operation mode setting means for setting a second evaluation operating mode of a second evaluation operation mode under which an operation of said storing means, said CPU, and two of the peripheral devices are inhibited and signals are inputted/outputted from/to the outside via the terminals of the two inhibited peripheral devices in order to control the peripheral device which is not inhibited; and

program supplying means connected to the two inhibited two peripheral devices of each of said first, second and third one-chip microcomputers, wherein

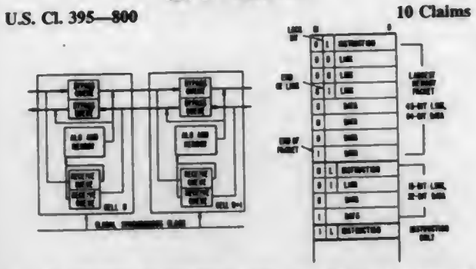
a different peripheral devices is not inhibited in each of the first, second and third one-chip microcomputers, and

each inhibited peripheral device in any one one-chip microcomputer is connected to one inhibited peripheral device in each other one-chip microcomputer.

5,574,933
TASK FLOW COMPUTER ARCHITECTURE

Robert W. Horst, Champaign, Ill., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Continuation of Ser. No. 735,594, Jul. 25, 1991, Pat. No. 5,404,550. This application Oct. 26, 1994, Ser. No. 329,719
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—800 10 Claims



1. A computer for executing a task, the task being segmented into a plurality of instructions to be executed sequentially, said computer comprising:

(a) an interconnection network;

(b) a first cell coupled to said interconnection network, said first cell including:

a first receive queue coupled to said interconnection network for receiving a first incoming transmission packet containing a first instruction and a first link address, said first link address identifying a first memory packet and forming a portion of a linked list of memory packets specifying an order of execution;

a first memory coupled to said first receive queue for storing said first memory packet, said first memory packet being selectively disposed in said first cell and including a second instruction, a first data element and a second link address, said second link address identifying a second memory packet and forming a portion of said linked list of memory packets specifying an order of execution;

a bypass queue coupled to said first memory for outputting a second incoming transmission packet that addresses no memory packet residing in said first memory;

a first arithmetic and logic unit (ALU) coupled to said first memory for executing said first instruction;

means coupled to said first ALU for generating a first outgoing transmission packet containing said second instruction and a link field for storing said second link address; and

(c) a second cell coupled to said first cell through said interconnection network, said second cell comprising:

a second receive queue coupled to said interconnection network for receiving said first outgoing transmission packet;

a second memory coupled to said second receive queue for storing said second memory packet, said second memory packet being selectively disposed in said second cell and including a third instruction, a second data element and a third link address, said third link address identifying a third memory packet and forming a portion of said linked list of memory packets specifying an order of execution;

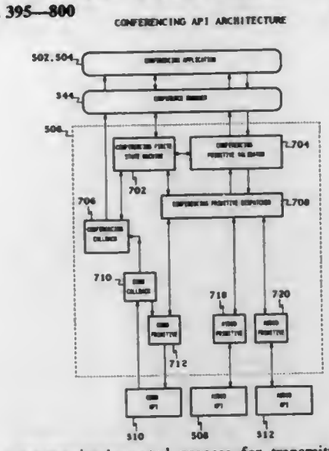
a second ALU coupled to said second memory for executing said second instruction stored in said first outgoing transmission packet; and

means coupled to said second ALU for generating a second outgoing transmission packet containing said third instruction and said third link address.

5,574,934
PREEMPTIVE PRIORITY-BASED TRANSMISSION OF SIGNALS USING VIRTUAL CHANNELS

Mojtaba Mirashrafi; Benjamin Vrvilo, both of Portland; Peter Tung, Beaverton, and Krishnan Rajamani, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 157,694, Nov. 24, 1993. This application Nov. 15, 1994, Ser. No. 340,173
Int. Cl.[6] G06F *9/46;13/36*
U.S. Cl. 395—800 33 Claims



1. A computer-implemented process for transmitting two or more types of signals from a local computer system, comprising the steps of:

(a) providing signals of a first type having a first priority;

(b) beginning to transmit the signals of the first type on a first virtual channel of a physical communications link to a remote computer system;

(c) providing signals of a second type having a second priority before the transmission of the signals of the first type is complete, wherein the second priority of the second type of signals is greater than the first priority of the first type of signals;

(d) interrupting the transmission of the signals of the first type;

(e) transmitting the signals of the second type on a second virtual channel of the communications link to the remote computer system, wherein the second virtual channel has a priority different from the first virtual channel; and

(f) resuming the transmission of the signals of the first type on the first virtual channel of the communications link to the remote computer system after the transmission of the signals of the second type is complete.

5,574,935
SUPERSCALAR PROCESSOR WITH A MULTI-PORT REORDER BUFFER

Rohit A. Vidwans, Beaverton; Wesley D. McCullough, Aloha; Joel Huang, and Joseph F. Rohlman, both of Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

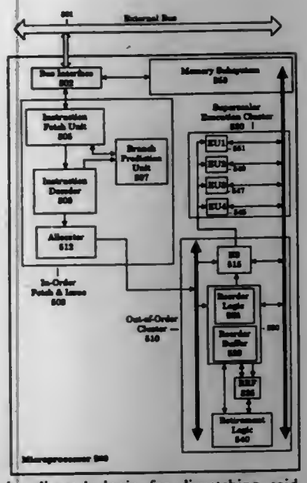
Division of Ser. No. 174,715, Dec. 29, 1993. This application Nov. 29, 1994, Ser. No. 346,078
Int. Cl.[6] G06F *9/30;12/00*
U.S. Cl. 395—800 4 Claims

1. A microprocessor comprising:

an instruction fetch circuit for fetching instructions;

an instruction decoder for decoding and issuing said instructions fetched;

a superscalar execution cluster comprising a plurality of execution units for executing said instructions;



out-of-order dispatch logic for dispatching said instructions issued to said plurality of execution units in said superscaler execution cluster;

a reorder buffer coupled to said out-of-order dispatch logic for storing entries, including source data, corresponding to said instructions issued, said reorder buffer comprising:

a plurality of write ports wherein each write port is coupled to an execution unit in said superscalar execution cluster, said plurality of write ports receiving data generated by said superscalar execution unit corresponding to said instructions executed in said superscalar execution unit, said plurality of write ports comprising:

a write enable line;

a write data line:

a write transistor stack including:

a first write transistor being controlled by said write data line and being coupled to ground such that a first state applied to said write data line results in conduction of current in said first write transistor to ground;

a second write transistor coupling said first write transistor to said cell and being controlled by said write enable line such that when said second write transistor is enabled a conductive path is formed from said cell to ground:

a third write transistor coupling said cell to said write data line and being controlled by said write enable line such that when said third write transistor is enabled a second state applied to said write data line drives said cell to said second state; and

a plurality of read ports coupled to said superscalar execution unit and to said out-of order dispatch logic, said out-of-order dispatch logic utilizing two read ports to transfer said source data to one of said execution units in said superscalar execution cluster, said plurality of read ports comprising:

a read enable line;

a read data line;

a precharge circuit for charging said read data line to a predetermined voltage level:

a read transistor stack including:

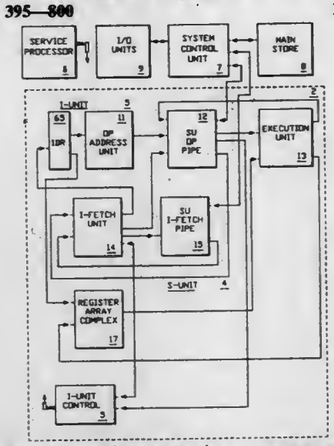
a first read transistor being controlled by said cell and being coupled to ground such that a second logic state stored in said cell results in conduction of current in said first read transistor;

a second read transistor coupling said first read transistor to said read data line and being controlled by said read enable line such that when said second read transistor is enabled said second read transistor provides a conductive path from said read data line to said first read transistor, said first read transistor pulling said read data line to ground when said second state is stored in said cell, said read data line retaining said state when said first state is stored in said cell.

5,574,936
ACCESS CONTROL MECHANISM CONTROLLING ACCESS TO AND LOGICAL PURGING OF ACCESS REGISTER TRANSLATION LOOKASIDE BUFFER (ALB) IN A COMPUTER SYSTEM

Edward G. Ryba, Milpitas; Peter H. Lipman; Jefferson J. Connell, both of Cupertino, and David Weiss, Palo Alto, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 257,457, Jun. 9, 1994, abandoned, which is a continuation of Ser. No. 816,864, Jan. 2, 1992, abandoned. This application Jan. 25, 1995, Ser. No. 378,082
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—800 13 Claims



1. An access control apparatus in a computer system, said computer system including storage, physical processors, logical processors (LP's) which can operate in either a host or guest mode, access registers, an access-register translator (ART), an ART-lookaside buffer (ALB) for storing entries created by said logical processors, said access control apparatus comprising:

a host ALBID register for storing an ALB identifier (ALBID) and an ALBID validity indicator for the host mode of the logical processor;

a guest ALBID register for storing an ALB identifier (ALBID) and an ALBID validity indicator for the most recent guest mode on the logical processor;

first means for generating and storing in said host ALBID register an ALB identifier (ALBID) and for marking valid said ALBID validity indicator in said host ALBID register when a host mode is initiated on said logical processor and when a logical purge is requested during the host mode by said logical processor;

second means for generating and storing in said guest ALBID register an ALB identifier (ALBID) and for marking valid said ALBID validity indicator in said guest ALBID register when a guest mode is first initiated on said logical processor and when a logical purge is requested during a guest mode by said logical processor;

third means for storing in each ALB entry the host ALBID in said host ALBID register when an ALB entry is made in said ALB by said logical processor when said logical processor is in said host mode;

fourth means for storing in each ALB entry the guest ALBID in said guest ALBID register when an ALB entry is made in said ALB by said logical processor when said logical processor is in said guest mode;

fifth means for permitting access by the logical processor while in the host mode to an ALB entry in said ALB when said ALBID in said ALB entry matches the ALBID stored in said host ALBID register and the valid indicator in said ALBID host register is marked valid; and

sixth means for permitting access by the logical processor while in the guest mode to an ALB entry in said ALB when said ALBID in said ALB entry matches the ALBID stored in said guest ALBID register and the valid indicator in said ALBID guest register is mark valid.

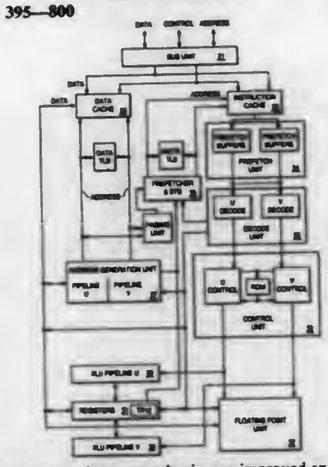
VOL 1192 ISS 2 NO 12 1996 UMI

5,574,937

METHOD AND APPARATUS FOR IMPROVING INSTRUCTION TRACING OPERATIONS IN A COMPUTER SYSTEM

Bikas Narain, Gilbert, Ariz., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jan. 30, 1995, Ser. No. 380,026
Int. Cl.[6] G06F *9/26*
U.S. Cl. 395—800 **6 Claims**



1. A data processing system having an improved execution trace function, the data processing system comprising a bus coupled to a processor, the processor including an instruction cache; at least one instruction pipeline that provides a path for instructions to be fetched from the instruction cache, decoded, and executed; and a control unit that includes circuitry which interprets the decoded instructions and controls the pipeline, wherein the improvement comprises:

a register that stores data indicating a special bus cycle to be run on the bus, the special bus cycle including a first message which provides a target linear address of a branch, and optionally, a second message which provides a linear address of an instruction that caused the branch;

the register having a first bit that enables/disables the special bus cycle, and a second bit that controls whether the special bus cycle includes only the first message, or both the first and second messages.

5,574,938

ALLOWED OPERATIONAL-LINK TRANSCEIVER TABLE VERIFIES THE OPERATIONAL STATUS OF TRANSCEIVERS IN A MULTIPLE CONDUCTOR DATA TRANSMISSION LINK

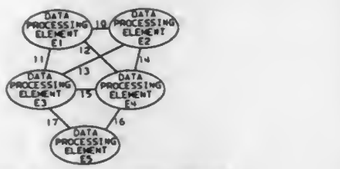
Neil G. Bartow, Saugerties; Steven N. Goss, Lake Katrine, and Douglas W. Westcott, Rhinebeck, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

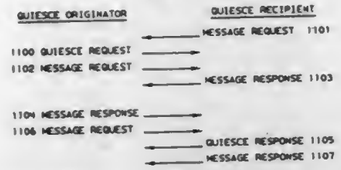
Division of Ser. No. 71,154, Jun. 1, 1993, which is a continuation-in-part of Ser. No. 839,657, Feb. 20, 1992, Pat. No. 5,357,608, and a continuation-in-part of Ser. No. 839,986, Feb. 20, 1992, Pat. No. 5,267,240, and a continuation-in-part of Ser. No. 839,652, Feb. 20, 1992, Pat. No. 5,412,803. This application Jun. 1, 1995, Ser. No. 457,217
Int. Cl.[6] G06F *13/00;* **H04J** *3/02*
U.S. Cl. 395—800 **4 Claims**

1. An apparatus for interconnecting first and second elements of a data processing complex comprising:

a plurality of conductors connecting said first element to said second element;

a configured-conductor table in each of said elements, said table indicating whether each of said conductors operationally connects said elements;





a means for generating an allowed-operational-link, said allowed-operational-link containing a set of conductors which are allowed to form an operational link between said first element and said second element; and

a means for comparing said allowed-operational-link to said configured-conductor table, said comparing means determining if each conductor in said allowed-operational-link is marked as configured in said configured-conductor table; and

a means for establishing an operational link from said allowed-operational-link if each conductor in said allowed-operational-link is marked as configured in said configured-conductor table, and means for establishing elements which can be quiesce originators and quiesce recipients, both of which request a quiesce at the same time, including a node descriptor for each end of an operational link, and means for assigning quiesce ownership to an end of the operational link having a higher node descriptor; and means for

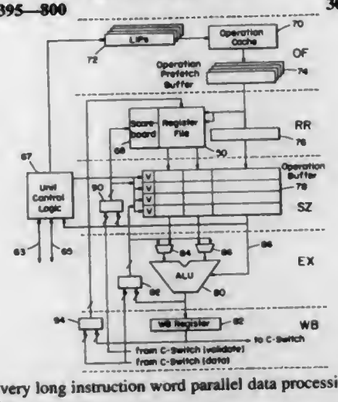
canceling quiesce ownership of an end of the link having a lower node descriptor.

5,574,939

MULTIPROCESSOR COUPLING SYSTEM WITH INTEGRATED COMPILE AND RUN TIME SCHEDULING FOR PARALLELISM

Stephen W. Keckler, Cambridge, and William J. Dally, Framingham, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 62,388, May 14, 1993, abandoned. This application Jun. 29, 1995, Ser. No. 496,462
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—800 **30 Claims**



20. A very long instruction word parallel data processing system comprising:

a plurality of processing units grouped in clusters with instruction words spanning the clusters, each cluster of at least one processing unit sharing a register file for plural threads of computation which is separate from register files of other clusters for the same threads of computation such that the processing units of each cluster read from the register file of only that cluster, the system further comprising means for writing from a processing unit of one cluster to the register file of another cluster; and

memory having stored therein sequential multiple-operation instruction words for each of plural threads of computation, each instruction word comprising plural fields spanning the clusters, each field identifying an operation for a respective one of the plurality of processing units such that all operations identified by a multiple operation instruction word may be executed simultaneously on respective processing units with processing of a single thread;

each processing unit comprising a processing pipeline including:

a read register stage for reading operands from a register file and supplying those operands to an operation buffer for each of plural threads of computation prior to execution;

a synchronization stage following the read register stage for selecting one of plural threads of computation for that processing unit and issuing the operation identified in the respective field of a next instruction word for the selected thread of computation, the synchronizer stage allowing parallel units to simultaneously issue operations from different thread instruction words such that issuance of multiple-operation instruction words for plural threads are interleaved across the plural units; and

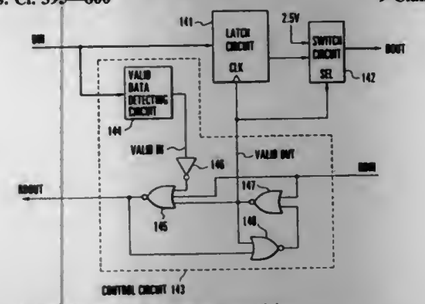
an execution stage for executing operations issued by the synchronizer stage.

5,574,940

DATA PROCESSOR WITH QUICKER LATCH INPUT TIMING OF VALID DATA

Toshinori Otsuka, Ibaragi, Japan, assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 143,914, Oct. 27, 1993, Pat. No. 5,471,630. This application Aug. 17, 1995, Ser. No. 516,317
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—800 **9 Claims**



1. A data processing apparatus comprising:

first data holding means for outputting a signal as three values data representing a first valid value having a first logic value, a second valid value having a second logic value, and an invalid value;

second data holding means for holding the three values data from said first data holding means;

signal processing means for receiving the three values data from said second data holding means and outputting a first ready signal indicating completion of data processing; and

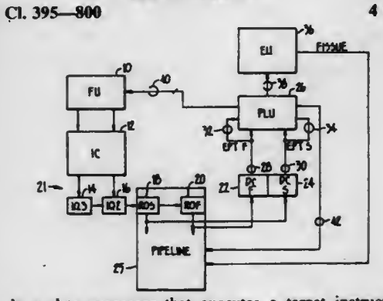
control means for controlling independent of an external clock signal said second data holding means and for outputting to said first data holding means, independent of an external clock signal, a second signal indicating completion of data processing in said second data holding means when the three values data from said first data holding means exhibits one of the first and second valid values and the first ready signal is input from said signal processing means.

5,574,941

COMPUTER ARCHITECTURE CAPABLE OF CONCURRENT ISSUANCE AND EXECUTION OF GENERAL PURPOSE MULTIPLE INSTRUCTION

Robert W. Horst, Champaign, Ill., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Continuation of Ser. No. 300,815, Sep. 2, 1994, abandoned, which is a continuation of Ser. No. 890,299, May 27, 1992, Pat. No. 5,390,355, which is a continuation of Ser. No. 356,170, May 24, 1989, abandoned. This application Nov. 3, 1995, Ser. No. 552,433
Int. Cl.[6] G06F *9/30*
U.S. Cl. 395—800 **4 Claims**



1. In a data processor that executes a target instruction set including a predetermined number of instructions, an improved instruction processing system that facilitates processing instructions at a rate of more than one instruction per clock, said system comprising:

means for fetching a plurality of instructions including a group of n, n being a predetermined integer, sequential instructions in a program where the number of possible groups that may be included in said plurality is the predetermined number raised to the nth power;

a memory for storing operand data;

a pipeline, having a series of pipeline stages and coupled to said means for fetching and said memory, said pipeline having resources, including a register file, an arithmetic logic unit, and means for directly providing a result operand, resulting from execution of a particular instruction in said group of instructions, as operand data required to execute a different instruction in said group of instructions, prior to storing said result operand in said register file, with said pipeline capable of singly executing each instruction in said target instruction set and capable of executing in parallel only a limited subset of all the possible groups of instructions so that the n instructions included in one of the groups in said limited subset can be issued from said means for fetching to said pipeline during a single clock and can be retired by said pipeline during a single clock, and with at least one of said groups in said limited subset including multiple non-branching instructions with one of said non-branching instructions being a memory reference type of instruction which process memory operands fetched from memory;

a decoder, coupled to said means for fetching and responsive to said fetched group of n instructions, for generating a plurality of decode result fields, each decode result field decoded from one of said instructions in said fetched n instructions;

means, coupled to said decoder and to said pipeline and responsive to said decode result fields, for issuing said fetched group of n instructions to said pipeline during said single clock only if said fetched group of instructions is one of said groups of instructions included in the limited subset of groups that can be executed in parallel; and

means, coupled to said decoder and said pipeline and responsive to said decode result fields, for controlling said pipeline to

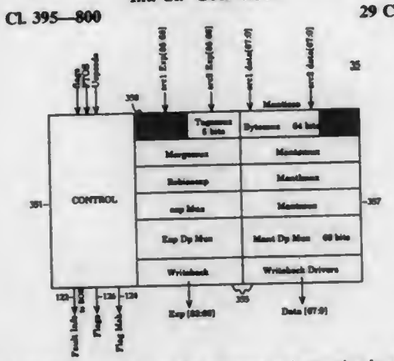
process an issued group of instructions and to advance said issued group through said pipeline stages.

5,574,942

HYBRID EXECUTION UNIT FOR COMPLEX MICROPROCESSOR

Robert P. Colwell, Portland; David B. Papworth, Beaverton; Michael A. Fetterman; Andrew F. Glew, both of Hillsboro; Glenn J. Hinton, Portland; Stephen M. Coward, Aloha, and Grace C. Chen, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 202,797, Feb. 28, 1994, abandoned.
This application Feb. 15, 1996, Ser. No. 602,254
Int. Cl.[6] G06F *9/30*
U.S. Cl. 395—800 **29 Claims**



1. A hybrid execution unit that executes an instruction in a single clock cycle comprising:

a data path that receives during said single clock cycle first and second source operands associated with a single cycle instruction wherein both said source operands may be of first or second data types having differing data lengths, said data path operating on said source operands in response to control signals to produce result data;

a control block that receives and decodes said single cycle instruction, said control block generating said control signals responsive to said decoded single cycle instruction that control said data path in manipulating said first and second source operands to generate said result data, said control block also receiving flag data associated with at least one of said first and second source operands, said control block selectively generating control signals in response to said flag data; and

write back driver circuitry that transmits said result data during said single clock cycle from said hybrid execution unit.

5,574,943

GATE-A20 AND CPU RESET CIRCUIT FOR MIRCROPROCESSOR-BASED COMPUTER SYSTEM

Reza E. Daftari, Irvine, Calif., assignor to AST Research, Inc., Irvine, Calif.

Filed Dec. 9, 1994, Ser. No. 353,513
Int. Cl.[6] G06F *1/24*
U.S. Cl. 395—821 **3 Claims**

1. A signal generation system which controls the generation of a gate-A20 signal and a CPU RESET signal in a computer system having a system microprocessor, said signal generation system comprising:

a first circuit which generates a conventional gate-A20 signal and a conventional CPU RESET signal in response to conventional commands from the system microprocessor;

a peripheral controller which monitors commands from the system microprocessor and which responds to predetermined commands to generate an alternative gate-A20 signal and an alternative CPU RESET signal in response to said predetermined commands, said peripheral controller further responsive to commands to generate a select signal having first and second states; and

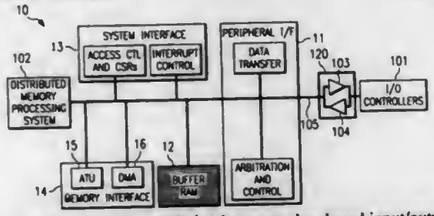
a select circuit having a first set of inputs which receive said conventional gate-A20 signal and said conventional CPU RESET signal from said first circuit and having a second set of inputs which receive said alternative gate-A20 signal and said alternative CPU RESET signal from said peripheral controller, said select circuit receiving said select signal from said peripheral controller and responsive to said select signal to provide said conventional gate-A20 signal and said conventional CPU RESET signal as outputs to the computer system when said select signal has said first state and to provide said alternative gate-A20 signal and said alternative CPU RESET signal as outputs to the computer system when said select signal has said second state.

5,574,944

SYSTEM FOR ACCESSING DISTRIBUTED MEMORY BY BREAKING EACH ACCEPTED ACCESS REQUEST INTO SERIES OF INSTRUCTIONS BY USING SETS OF PARAMETERS DEFINED AS LOGICAL CHANNEL CONTEXT

Gary B. Stager, Plano, Tex., assignor to Convex Computer Corporation, Richardson, Tex.

Filed Dec. 15, 1993, Ser. No. 168,067
Int. Cl.[6] G06F *15/40*
U.S. Cl. 395—825 **9 Claims**



1. An apparatus for interfacing between a bus-based input/output device and a distributed memory processing system, wherein said system contains memory distributed over a plurality of nodes, wherein said bus-based I/O device issues access requests for data directed to a single memory location within a logical address space, and wherein said location may be spread over a plurality of said nodes, said apparatus comprising:

means for accepting said access requests from said I/O device to produce accepted access requests;

means for accessing said distributed memory in response to said accepted access requests;

a read/write buffer memory for storing said data and for storing one or more sets of parameters used to access said logical address space, wherein each said set of parameters is defined as a logical channel context, each set comprises a channel configuration parameter for enabling and activating a particular logical channel context and a buffer configuration parameter for specifying a segment of said read/write buffer assigned for use by said particular logical channel context; and

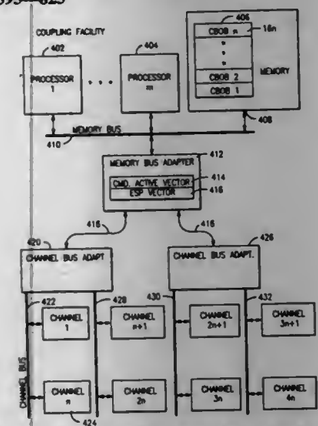
circuitry controlled by said logical channel context for breaking each accepted access request into a series of instructions for accessing said memory spread over a plurality of said nodes.

5,574,945

MULTI CHANNEL INTER-PROCESSOR COUPLING FACILITY PROCESSING RECEIVED COMMANDS STORED IN MEMORY ABSENT STATUS ERROR OF CHANNELS

David A. Elko, Poughkeepsie, N.Y.; Gottfried A. Goldrian, Boeblingen, Germany; Steven N. Goss, Lake Katrine, N.Y.; Thomas A. Gregg, Highland, N.Y.; Audrey A. Helffrich, Poughkeepsie, N.Y., and Ambrose A. Verdibello, Jr., Millbrook, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 147,703, Nov. 4, 1993, abandoned.
This application Jun. 7, 1995, Ser. No. 477,926
Int. Cl.[6] G06F *15/163*
U.S. Cl. 395—825 **19 Claims**



1. A computer system interface apparatus, comprising:

a coupling facility comprising:

a plurality of intersystem channels programmable to receive one or more commands from one or more central processing complexes coupled to said coupling facility;

a memory for storing said one or more commands received by said plurality of intersystem channels;

a memory bus adapter providing an interface between said plurality of intersystem channels and said memory, said memory bus adapter providing a central location for storing state information, said state information indicating whether any of said plurality of intersystem channels has an error and whether any of said one or more commands is stored in said memory; and

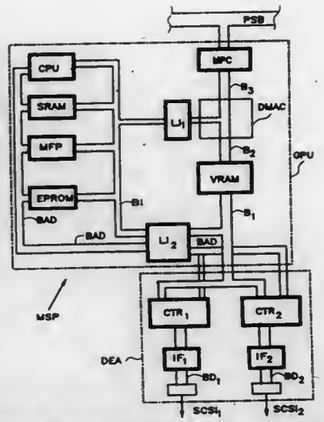
at least one processor coupled to said memory bus adapter and said memory, said at least one processor programmable to poll said state information to determine when said one or more commands is stored in said memory and whether any errors exist, said at least one processor programmable to process said one or more commands when said one or more commands is stored in said memory and no errors exist on said plurality of intersystem channels.

5,574,946

DATA TRANSMISSION SYSTEM USING INDEPENDENT ADAPTATION PROCESSES ASSOCIATED WITH STORAGE UNIT TYPES FOR DIRECTLY CONVERTING OPERATING SYSTEM REQUESTS TO SCSI COMMANDS

Patrick Sala, Porcheville, France, assignor to Bull S.A., Paris La Defense, France

Continuation of Ser. No. 76,588, Jun. 14, 1993, abandoned.
This application Feb. 20, 1996, Ser. No. 607,271
Claims priority, application France, Jun. 15, 1992, 92 07208
Int. Cl.[6] G06F *5/00*
U.S. Cl. 395—825 **21 Claims**



1. A data transmission system (MSP_1, MSP_2) between a computer parallel bus (PSB) and a mass memory ($SCSI_1$, $SCSI_2$) on a SCSI bus having a large number of data storage units (D_1 to D_5, T_6, D_7 to D_{11}, T_{12}) connected to one another by a specific connection (BD_1, BD_2) to which the system is physically connected, that includes a central microprocessor (CPU) connected to at least one memory (SRAM) containing an operating system (GPOS) designed to be executed by it comprising:

means of transferring frames (MPC, B_2, B_3, VRAM, B_1, DMAC, CTR_1, CTR_2) between the computer bus and the connection, whose work is organized and managed by the microprocessor, including a data storage memory (VRAM) located between the computer bus and the connection; the operating system (GPOS) being associated with at least one specific application (A_1, A_2) to transmit data between the computer bus (PSB) and said connection (BD_1, BD_2); said data transmission system including at least one input/output microprocessor (CTR_1, CTR_2) responsive to the central micro processor (CPU), connected to said data storage memory (VRAM) and to said connection; said at least one application including:

a process for initialization (P_0) of an entire application,

a plurality of separate adaptation processes independent from one another (P_1 to P_6, P_7 to P_{12}), each of said adaptation processes associated with a certain type of storage unit, said processes directly converting commands sent via message semaphore from said GPOS into commands that comply with SCSI protocol, each said adaptation process communicating with one another by message semaphore to assist conversion, the conversion being carried out in the VRAM through correspondence tables located therein; and

at least one management process authorizing the input/output microprocessor to transfer physically the commands and data in frames corresponding to them between the memory and the connection as soon as the corresponding adaptation process has finished said adaptation wherein the storage memory (VRAM) has second memory zones (BP_1 to BP_{12}), each assigned to storage of data intended for each of the different storage units, and tables (TP_1 to T_{12}) each associated with a certain one of them, including the address of the second memory zone associated with the same unit and the length of the necessary data stored there.

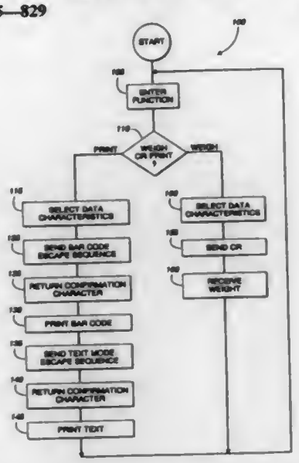
VOL 1192 ISS 2 NO 12 1996 UMI

5,574,947

DATA COMMUNICATION CABLE FOR A DATA TERMINAL FOR SIMULTANEOUSLY CONNECTING MULTIPLE PERIPHERAL DEVICES AND SELECTING THE PERIPHERAL DEVICES BASED ON DATA RATE

Blaise A. Massa, Clifton, N.J., assignor to United Parcel Service of America, Inc., Atlanta, Ga.

Filed May 17, 1994, Ser. No. 246,055
Int. Cl.[6] H04L 23/00
U.S. Cl. 395—829 16 Claims



1. A method for simultaneously connecting a data terminal to first and second peripheral devices, and for communicating with one of said first and second peripheral devices while the other of said first and second peripheral devices remains connected, comprising the steps of:

providing a transmit data line between a first transmit data conductor on said first peripheral device, a second transmit data conductor on said second peripheral device, and a third transmit data conductor on said data terminal;

providing a receive data line between a first receive data conductor on said first peripheral device, a second receive data conductor on said second peripheral device, and a third receive data conductor on said data terminal;

transmitting on said transmit data line transmit data signals from said data terminal to said first and second peripheral devices, said transmit data signals comprising a first characteristic or a second characteristic, said first characteristic comprising a first data rate and said second characteristic comprising a second data rate, said first data rate being different than said second data rate;

in response to said transmit data signals comprising said first characteristic, transmitting on said receive data line first receive data signals from said first peripheral device to said data terminal, and blocking said first receive data signals from said second receive data conductor on said second peripheral device; and

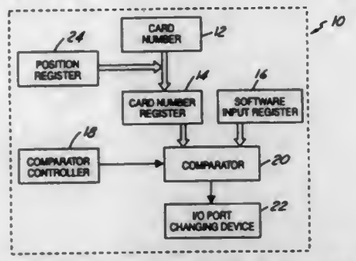
in response to said transmit data signals comprising said second characteristic, transmitting on said receive data line second receive data signals from said second peripheral device to said data terminal, and blocking said second receive data signals from said first receive data conductor on said first peripheral device.

5,574,948

METHOD FOR SEPARATING JUMPLESS ADD-ON CARDS HAVING IDENTICAL I/O PORT ONTO DIFFERENT I/O PORTS BY USING COMPARISON TECHNIQUE BASED ON THE CARD NUMBERS

Su-Chu Lin, Hsin-Chu, and Jeng-Fang Chiou, Pin-Chan, both of Taiwan, assignors to United Microelectronics Corp., Hsin-Chu, Taiwan

Filed Aug. 25, 1994, Ser. No. 295,969
Int. Cl.[6] G06F 15/02
U.S. Cl. 395—830 8 Claims



1. A method to separate a plurality of jumpless add-on cards having identical sets of I/O ports onto different I/O ports wherein each of said add-on cards being equipped with a card number, a card number register, a software input register, a comparator controller, a comparator, and an I/O port changing device, said method comprising the steps of:

(a) distinguishing among a set of I/O ports used by a first one of said add-on cards the set of I/O ports that are used by a second one of said add-on cards and the ports that are not used by any other of said jumpless add-on cards,

(b) activating said I/O port changing device to switch the position of an I/O port of said first one of said jumpless add-on cards to an unused I/O port when said comparator is disabled by said comparator controller,

(c) separating said first one of said jumpless add-on cards from one or more other add-on cards different from said jumpless add-on cards not equipped with said card number register, said comparator and said I/O port changing device, and locating the I/O port that contain said add-on card,

(d) comparing the content of said card number register and said software input register by said comparator to produce a comparison result, and

(e) outputting the comparison result from step (d) to said I/O port changing device and determining the changing or not changing of said I/O port based on said comparison result such that two add-on cards utilizing the same I/O port can be distinguished.

5,574,949

MULTI-ACCESS LOCAL AREA NETWORK USING A STANDARD PROTOCOL FOR TRANSMITTING MIDI DATA USING A SPECIFIC DATA FRAME PROTOCOL

Kanehisa Tsurumi, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Dec. 6, 1993, Ser. No. 163,065
Claims priority, application Japan, Dec. 7, 1992, 4-351276
Int. Cl.[6] G06F 7/24
U.S. Cl. 395—850 6 Claims

1. A multi-access local area network that uses a standard protocol and is for transmitting MIDI data between at least two MIDI devices, the network comprising:

at least one transmit-side adapter that accepts data from a first of the at least two MIDI devices and converts MIDI data to be transmitted on the multi-access local area network, the transmit-side adapter comprising:

a serial-to-parallel converter circuit for receiving and converting the MIDI data to produce parallel data that only forms data frames that represent an MIDI local area network transmission protocol which is different from and does not interfere with the standard protocol currently being used on the multi-access local area network,

a storage buffer for storing the parallel data from the serial-to-parallel converter in a predetermined order of frames,

a parallel-to-serial convertor circuit for receiving and converting data from the storage buffer in the predetermined order of frames to produce serial data frames,

a modulating circuit to modulate and code the serial data frames for transmission on the multi-access local area network, and

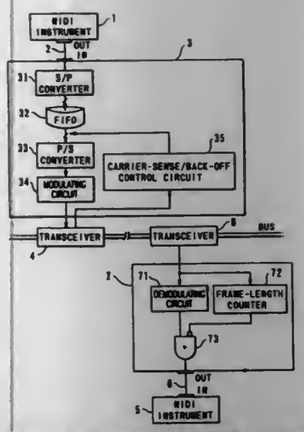
a carrier-sense/back-off control circuit that controls when the modulating circuit transmits the modulated data frames on the multi-access local area network; and

at least one receive-side adapter that receives modulated data frames from the multi-access local area network that use the MIDI local area network protocol and converts the modulated data frames into MIDI data for a second of the at least two MIDI devices, the receive-side adapter comprising:

a decoding circuit to demodulate and decode each of the modulated data frames into MIDI data,

a frame-length counter circuit to determine the length of each of the received modulated data frames to detect complete transmission of each of the modulated data frames, and

a gate controlled by the frame-length counter circuit, wherein the gate passes the demodulated and decoded MIDI data for each modulated data frame to the second of the at least two MIDI devices when the framelength counter circuit detects a complete transmission of each of the modulated data frames.



5,574,950

REMOTE DATA SHADOWING USING A MULTIMODE INTERFACE TO DYNAMICALLY RECONFIGURE CONTROL LINK-LEVEL AND COMMUNICATION LINK-LEVEL

Roger G. Hathorn; Bret W. Holley; James L. Iskiyan; William F. Micka, and Asim R. Qureshi, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

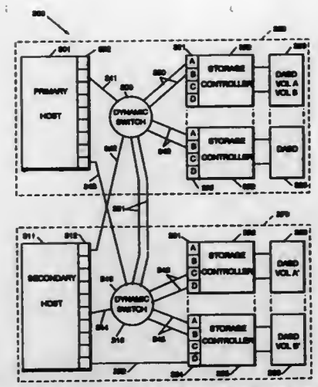
Filed Mar. 1, 1994, Ser. No. 203,248
Int. Cl.[6] G06F 15/02
U.S. Cl. 395—861 17 Claims

17. A remote dual copy system, comprising:

a primary host having at least one channel;

a primary storage subsystem having at least one link-level facility;

a secondary host having at least one channel;



a secondary storage subsystem having at least one link-level facility;

at least one communication link; and

a dynamic switch coupling the primary and secondary hosts and the primary and secondary storage subsystems via the at least one communication link and corresponding channels and link-level facilities, wherein the primary host initiates a remote copy session communicating with the primary and secondary storage subsystems and initializes paths thereto, the at least one link-level facility of the primary and secondary storage subsystems operating in a control unit link-level facility mode, and further wherein the at least one primary storage subsystem link-level facility is dynamically re-configured for operating in a channel link-level facility mode, the primary storage subsystem acting as a host to the secondary storage subsystem and establishing logical paths and pathing control therebetween, the primary storage controller intercepting primary host write commands for sending modified data to the secondary storage subsystem.

5,574,951

SYSTEM FOR PROVIDING A TIME DIVISION RANDOM ACCESS INCLUDING A HIGH SPEED UNIDIRECTIONAL BUS AND A PLURALITY OF FUNCTION CARDS CONNECTED IN A DAISY CHAIN

Laurence D. Sawyer, Park City; Robert A. Lindsay, Bountiful; Steven C. Tate, Manti, and Daniel M. Griffin, Bontiful, all of Utah, assignors to Unisys Corporation, Blue Bell, Pa.

Filed Mar. 17, 1993, Ser. No. 32,576
Int. Cl.[6] G06F 13/00;13/20
U.S. Cl. 395—865 13 Claims

1. An improved time division random access bus system for processing large amounts of data at high speeds, comprising:

a high speed unidirectional bus structure,

a plurality of receptacles on said bus structure,

a plurality of parallel lines on said bus structure interconnecting the output pins on one receptacle with the input pins on an adjacent receptacle,

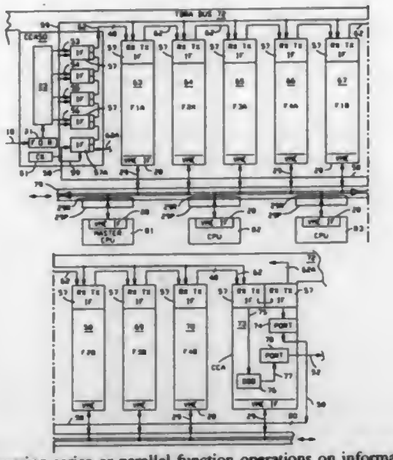
a plurality of function circuit card assemblies connected to said receptacles of said bus structure in said bus system to form a daisy chain for performing logic functions on said data,

each said circuit card assembly having a plug connection for connecting its input and output pins to said receptacles to form said daisy chain,

a source circuit card assembly coupled to a source of high speed data for supplying said high speed data information having destination addresses onto said bus structure,

a destination circuit card assembly for removing said information from said bus structure, and

said plurality of function circuit card assemblies being connected in said daisy chain between said source circuit card assembly and said destination circuit card assembly for per-



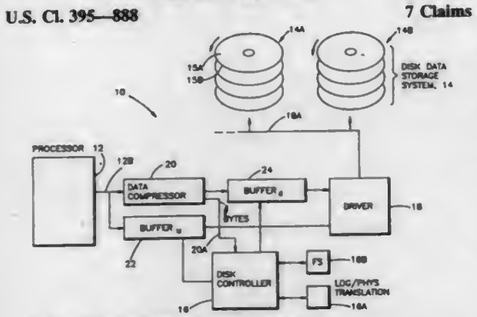
forming series or parallel function operations on information passed from one function circuit card assembly unidirectionally to a downstream function circuit card assembly to provide a time division random access data processing system having a data rate higher than individual function circuit card assemblies.

5,574,952

DATA STORAGE SYSTEM AND METHOD FOR OPERATING A DISK CONTROLLER INCLUDING ALLOCATING DISK SPACE FOR COMPRESSED DATA

James T. Brady, and Jaishankar Menon, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 11, 1994, Ser. No. 241,987
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—888 **7 Claims**



1. A data storage system, comprising:

a data compression unit for compressing a data unit prior to the data unit being written to a disk in said data storage unit; and

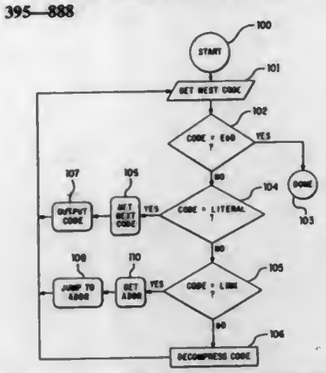
a disk controller coupled to said disk for allocating contiguous space in said disk for writing a compressed data unit therein, said disk controller including means for comparing a size of a compressed data unit to an amount of said contiguous space previously allocated for the data unit, and for managing said disk in a log-structured manner wherein modifications, instead of being written in place in a data unit being modified, are written to said disk in a sequential log-like file structure and only when said compressed data unit is larger than the contiguous space previously allocated for the data unit.

5,574,953

STORING COMPRESSED DATA IN NON-CONTIGUOUS MEMORY

Robert Rust, and Roger L. Pennington, both of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 19, 1994, Ser. No. 293,229
Int. Cl.[6] G06F *12/02*; H03M *7/30*
U.S. Cl. 395—888 **3 Claims**



1. A data decompression method for decompressing a compressed data into an original data where said compressed data is stored in a non-contiguous memory, said method comprising the steps of:

retrieving a code of said compressed data from said non-contiguous memory;

determining if said code is a link code; and

if said code is said link code, then

reading a pointer where said pointer points to a next area of said non-contiguous, said pointer being stored in memory after said link code.

5,574,954

EROSION-RESISTANT TITANIUM CARBIDE COMPOSITES AND PROCESSES FOR MAKING THEM

Jayanti M. Panchal, Spring Valley, N.Y., assignor to Alloy Technology International, Inc., West Nyack, N.Y.

Filed Jun. 4, 1992, Ser. No. 893,425
The portion of the term of this patent subsequent to May 18, 2014, has been disclaimed.
Int. Cl.[6] B22F *3/00*
U.S. Cl. 419—14 **8 Claims**

1. The process of preparing a sintered body of defined dimensions from a composite of matrix powder and TiC powder, said composite comprising at least about 70% of TiC powder by volume, comprising the following steps in the order recited:

a. milling said matrix powder and TiC powder together to form said composite to be sintered;

b. pressing said composite to a pre-form with a shape oversized with respect to said defined dimensions, and to a green state sufficiently integral to be handled;

c. applying heat to said pre-form for a period of time and at a sufficient temperature to pre-sinter the pre-form, and cooling the pre-form;

d. machining the pre-form to a shape oversized with respect to said defined dimensions by amounts to provide for shrinkage of the machined pre-form in subsequent processing;

e. applying heat to said machined pre-form to sinter the same;

f. hot isostatically pressing the product from step e to reduce its shape approximately to said defined dimensions;

g. isostatically annealing the product from step f; and

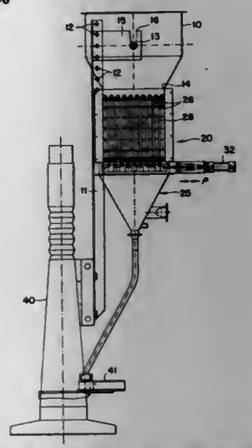
h. cooling the product from step g.

5,574,955

METHOD AND DEVICE FOR HEATING POWDER, AND THE USE OF SUCH A DEVICE

Mats Strömgren, Mölle, and Michael Johansson, Höganäs, both of Sweden, assignors to Hoganas AB, Hoganas, Sweden

Filed Apr. 11, 1995, Ser. No. 419,987
Claims priority, application Sweden, Apr. 13, 1994, 9401239
Int. Cl.[6] B22F *1/00*
U.S. Cl. 419—30 **21 Claims**



1. A method for heating powder, especially for preheating metal powder in view of subsequent compacting thereof, characterised in that the powder is temporarily divided into a number of essentially separate partial flows which are urged on by gravity and each have an inlet and an outlet and which are heated separately to one and the same predetermined outlet temperature (T_{out}) and then are brought together to form a common outflow (33) of heated powder, the partial flows being so heated that the predetermined outlet temperature (T_{out}) is attained over essentially the entire cross-section of each of the partial flows before these are brought together.

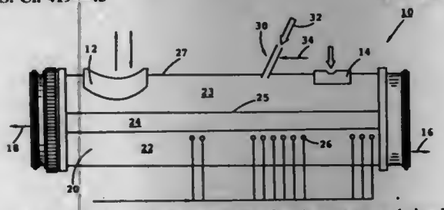
10. A method as set forth in claim 1, characterised in in that the heated powder in the outflow (33) is passed to a mould where it is compacted.

5,574,956

METHOD AND APPARATUS FOR TREATMENT SULPHIDIC CONCENTRATES

Rolf Malmström, Helsinki, Finland, assignor to Outokumpu Engineering Contractors Oy, Espoo, Finland

PCT No. PCT/FI93/00428, § 371 Date Apr. 13, 1995, § 102(e) Date Apr. 13, 1995, PCT Pub. No. WO94/09166, PCT Pub. Date Apr. 28, 1994
PCT Filed Oct. 19, 1993, Ser. No. 424,319
Claims priority, application Finland, Oct. 21, 1992, 924761
Int. Cl.[6] C21B *11/02*
U.S. Cl. 419—45 **10 Claims**



1. A method for oxidizing treatment of molten matte and simultaneous direct smelting of sulphidic concentrate in a refractory-lined liquid bath reactor converter, into which oxidizing air is introduced below the surface of the liquid bath, wherein, for additional supply of energy in order to achieve thermal balance or increase of capacity in the liquid bath reactor, at least a portion of the sulphidic concentrate is introduced into a gas phase of the liquid bath reactor together with oxygen gas or oxygen-enriched air through a concentrate burner, for combusting and smelting concentrate in a gas space before it reaches the liquid bath.

5,574,957

METHOD OF ENCASING A STRUCTURE IN METAL

John M. Barnard, Wilmington, N.C.; Ronald E. Johnson, Tioga, Pa., and Kathleen A. Wexell, Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Feb. 2, 1994, Ser. No. 190,528
Int. Cl.[6] B22F *7/02*
U.S. Cl. 419—67 **35 Claims**

1. A method of forming an integrally encased cellular structure by

a) providing an apparatus comprising a die body and a shell or encasement forming means;

b) extruding a first batch material longitudinally through the die body to form a cellular structure

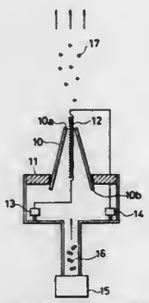
c) passing a second batch material longitudinally through the shell forming means concurrently with the first batch material and controlling the flow of the second batch material whereby the second batch material is engaged to and is knitted with the first batch material to form a shell or encasement of the second batch material around the cellular structure, wherein the second batch material is compositionally different from the first batch material and is comprised of sinterable particulates or powders comprised of metal.

5,574,958

HYDROGEN RADCIAL PRODUCING APPARATUS

Masaya Kawano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 428,350
Claims priority, application Japan, Apr. 26, 1994, 6-88581
Int. Cl.[6] B01J *19/08*
U.S. Cl. 422—186 **16 Claims**



1. An apparatus for producing hydrogen radical, comprising:

a pipe for concentrating hydrogen gas to the surface of a filament;

said filament generating heat by running an electrical current therethrough, said filament being longitudinally aligned with and at least partially disposed in said pipe;

walls of said pipe sloping inwardly, in a direction of hydrogen gas flow, over a substantial portion of an overall length of said filament;

a hydrogen gas source for supplying said hydrogen gas to said pipe;

said pipe being electrically isolated from other parts of said apparatus, including said filament.

5,574,959

METAL CASING FOR SEMICONDUCTOR DEVICE HAVING HIGH THERMAL CONDUCTIVITY AND THERMAL EXPANSION COEFFICIENT

Masanori Tsujioka, and Junzoh Matsumura, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 16, 1994, Ser. No. 306,955

Claims priority, application Japan, Sep. 16, 1993, 5-253818

Int. Cl.[6] B22F 3/16

U.S. Cl. 419—2 10 Claims

1. A powder metallurgy injection molding process using infiltration to manufacture net-shape products comprising the steps of mixing tungsten powder and nickel powder having average particle sizes equal to or less than 40 μm so as to form mixed metal powder, kneading the mixed metal powder with an organic binder so as to form an admixture, injection molding said admixture so as to form a predetermined green shape, debinderizing said green shape, applying surface powder to at least one surface of the green shape so as to prevent effusion of copper during infiltration, and infiltrating copper into the green shape so as to produce a net-shape product.

5,574,960

METHOD OF SEPARATING EXOTHERMIC ELEMENTS FROM HIGH-LEVEL RADIOACTIVE LIQUID WASTE

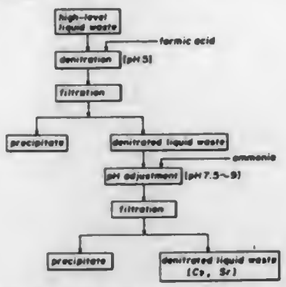
Shigeaki Yonezawa, Naka-gun, Japan, assignor to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo-to, Japan

Filed Aug. 30, 1995, Ser. No. 520,784

Claims priority, application Japan, Jan. 19, 1995, 7-006216

Int. Cl.[6] C22B 26/00

U.S. Cl. 423—11 3 Claims



1. A method of separating exothermic elements from a high-level radioactive liquid waste which comprises a denitration step wherein formic acid is added to a high-level radioactive liquid waste of an aqueous nitrate solution so as to adjust its pH to approximately 5, thereby causing most of the elements other than exothermic elements consisting essentially of Cs and Sr to precipitate in the high-level radioactive liquid waste with the result that a denitrated liquid waste containing the exothermic elements in high concentrations is obtained; and a pH adjustment step wherein ammonia is added to the denitrated liquid waste obtained in the above denitration step so as to adjust its pH to approximately 7.5 to 9, thereby removing by precipitation the elements other than the exothermic elements remaining in the denitrated liquid waste.

5,574,961

PHASE-SEPARATED MATERIAL (U)

Alan S. Edelstein, Alexandria, Va.; Stuart A. Wolf, Greenbelt, Md., and Kenneth E. Kihlstrom, Santa Barbara, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 16, 1985, Ser. No. 711,019

Int. Cl.[6] B22F 7/04

U.S. Cl. 428—548 11 Claims



1. A phase-separated material for deposition on a surface comprising: from about 10 to 60 percent of total material volume of single-magnetic-domain clusters or particles of a magnetic metal selected from the group consisting of α—Fe, Co, and α—FeCo alloys dispersed in an insulating matrix of BN.

5,574,962

METHOD AND APPARATUS FOR AUTOMATICALLY IDENTIFYING A PROGRAM INCLUDING A SOUND SIGNAL

Michel Fardeau, Les Milles; Michel Briend, Roquevaire; Marc Tommasi, Ventabren, and Serge Galant, Aix-en-Provence, all of France, assignors to The Arbitron Company, Columbia, Md.

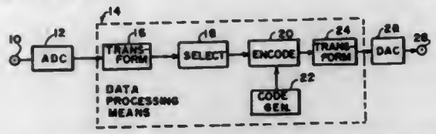
Continuation of Ser. No. 936,111, Aug. 27, 1992, abandoned.

This application Dec. 20, 1994, Ser. No. 360,990

Claims priority, application France, Sep. 30, 1991, 91 11989

Int. Cl.[6] H04H 7/04

U.S. Cl. 455—2 3 Claims



1. A method for including an encoded message into a digital sound signal forming at least a part of a program such that the message is inaudible, the message containing data indicating at least one of a broadcasting channel or station providing said program, an identity of said program and a broadcasting date of said program, comprising the steps of separating said digital sound signal into frequency components by digital transform processing, adding the encoded message by modulating the energy of at least one of the frequency components of said digital sound signal in a characteristic manner that is predetermined, composing an output sound signal from the separated frequency components including the frequency component whose energy has been modulated to form an encoded sound signal and at least one of either broadcasting the program including the encoded sound signal or recording the encoded sound signal on a recording medium.

5,574,963

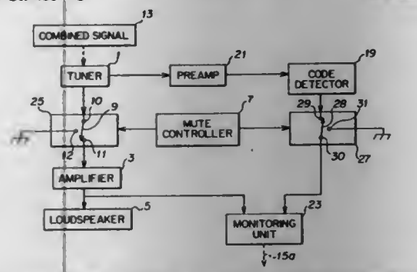
AUDIENCE MEASUREMENT DURING A MUTE MODE

Lee S. Weinblatt, 797 Winthrop Rd., Teaneck, N.J. 07666, and Thomas Langer, Teaneck, N.J., assignors to Lee S. Weinblatt, Teaneck, N.J.

Filed Jul. 31, 1995, Ser. No. 509,322

Int. Cl.[6] H04B 17/00

U.S. Cl. 455—2 4 Claims



1. Apparatus for monitoring a program signal transmitted by a broadcast source, wherein an audio portion of the program signal is combined with a coded signal for transmission as a combined signal, said apparatus including a receiver and a monitoring unit,

wherein at least a portion of said monitoring unit is portable and responds to the coded signal for collecting information about at least one of the program signal and broadcast source, and

wherein the receiver comprises:

a tuner for detecting the combination signal transmitted by the broadcasting source,

a loudspeaker,

a switch between said tuner and said loudspeaker having a first condition for passing signals from said tuner to said loudspeaker and a second condition for blocking signals from said tuner to said loudspeaker,

an actuator responsive to a mute mode command and coupled to the switch for controlling the condition thereof such that the switch is in the first condition during a normal operating mode and in the second condition during a mute mode,

a code detector for detecting the coded signal and coupled to said tuner, and

bypass means controlled by said actuator and coupled to said code detector for passing the coded signal to the monitoring unit during the mute mode.

5,574,964

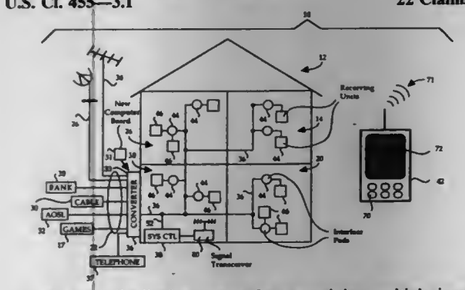
SIGNAL DISTRIBUTION SYSTEM

Christopher L. Hamlin, Cupertino, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed May 30, 1995, Ser. No. 453,871

Int. Cl.[6] H04N 7/10

U.S. Cl. 455—3.1 22 Claims



1. A signal distribution system for transmitting multiple input signals on a common signal transfer medium to various receiving units, the system comprising:

a converter including

a first receiving channel having

first input terminals for receiving, from a first signal transfer medium, first input signals having a first format which is dedicated to a first type of receiving unit; and

a first translator for converting the first input signals to first converted signals in a common format;

a second receiving channel having

second input terminals for receiving, from a second signal transfer medium, second input signals having a second format which is different than the first format and is dedicated to a second type of receiving unit; and

a second translator for converting the second input signals to second converted signals in the common format;

a device coupled to the common signal transfer medium, for transmitting the first and second converted signals on a common signal transfer medium to the receiving units;

a common signal transfer medium, connected to the device, for carrying the common format converted signals; and

a system controller coupled to the common signal transfer medium and enabling a user to select one of the converted signals for delivery to one of the receiving units.

5,574,965

LOCAL COMMUNICATION BUS SYSTEM AND APPARATUSES FOR USE IN SUCH A SYSTEM

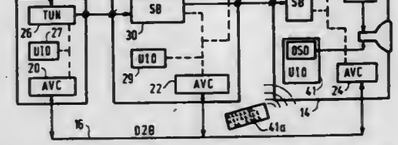
Harm J. Welmer, Sutton, United Kingdom, assignor to D2B Systems Company Limited, Redhill, England

Filed Oct. 5, 1992, Ser. No. 958,039

Claims priority, application United Kingdom, Oct. 4, 1991, 9121203

Int. Cl.[6] H04H 1/00

U.S. Cl. 455—3.2 7 Claims



6. A first apparatus comprising a control means and an interface to a serial data channel for exchanging messages to second and third apparatuses over said serial data channel, said first apparatus comprising:

means for initiating a user dialogue session with said second apparatus;

means for sending to said second apparatus at least one user information item during said user dialogue session;

means for receiving from the second apparatus information during said user dialogue session which conveys user control signals by reference to said at least one said user information item; and

means for controlling said first apparatus in accordance with said information;

wherein said control means comprises:

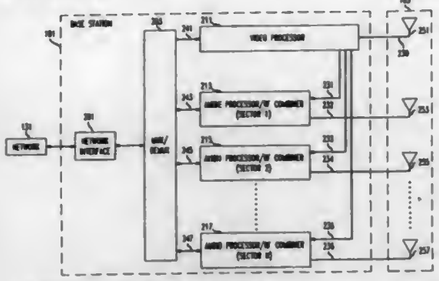
means for initiating during said user dialogue session, a transfer of control of said session from said first apparatus to said third apparatus when said information conveys a predetermined one of said user control signals.

5,574,966

WIRELESS BASE STATION ARCHITECTURE

Farhad Barzegar, Hillsborough Township, Somerset County, and Robert E. Schroeder, Morris Township, Morris County, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 30, 1994, Ser. No. 367,402
Int. Cl.[6] H04H *1/02*
U.S. Cl. 455—6.1 **6 Claims**



1. A wireless base station comprising:

a demultiplexor for receiving at least one common service video signal, which is intended to be broadcast to an area, at least one sectorized service video signal, which is intended to be broadcast to a sector, and at least one sectorized service audio signal, which is intended to be broadcast to said sector, and for directing said common service video signal and said sectorized service video signal to a video processor, and for directing said sectorized service audio signal to an audio processor/RF combiner;

said video processor for preparing said common service video signal and said sectorized service video signal for broadcast, for directing said common service video signal to a first antenna, which radiates said common service video signal to said area, and for directing said sectorized service video signal to said audio processor/RF combiner; and

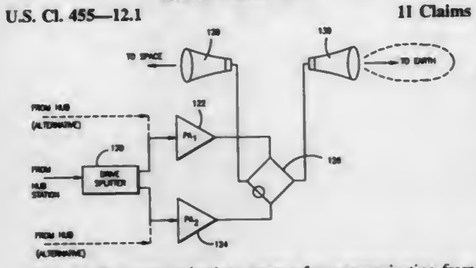
said audio processor/RF combiner for preparing said sectorized service audio signal for broadcast, for combining said sectorized service audio signal and said sectorized service video signal to form a combined signal, and for directing said combined signal to a second antenna, which radiates said combined signal to said sector.

5,574,967

WASTE ENERGY CONTROL AND MANAGEMENT IN POWER AMPLIFIERS

Paul W. Dent, Stehag, Sweden, and Ross W. Lampe, Raleigh, N.C., assignors to Ericsson GE Mobile Communications, Inc., Research Triangle Park, N.C.

Filed Jan. 11, 1994, Ser. No. 179,947
Int. Cl.[6] H04B *7/185*
U.S. Cl. 455—12.1 **11 Claims**



11. A satellite communications system for communicating from at least one ground station via at least one orbiting satellite to a plurality of mobile stations, comprising:

signal generation means in said orbiting satellite for producing a plurality of constant amplitude signals in dependence on signals desired to be communicated to said mobile stations;

power amplifier means connected to said signal generation means for amplifying said constant amplitude signals to produce desired and undesired signals; and

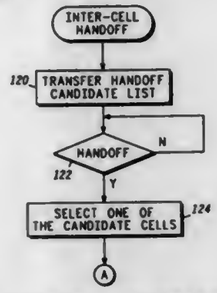
antenna means coupled to said power amplifier means such that said desired signals are radiated in the direction of said mobile stations and the undesired signals produced by said signal generation means and power amplifier means are radiated out of said orbiting satellite in other directions.

5,574,968

SATELLITE CELLULAR COMMUNICATION METHODS FOR PERFORMING CELL-TO-CELL HANDOFF

Keith A. Olds; James P. Redden, both of Mesa, Ariz., and Christopher Kurby, Elmhurst, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 1, 1994, Ser. No. 252,472
Int. Cl.[6] H04B *7/19*
U.S. Cl. 455—12.1 **27 Claims**



23. A method executed by an individual subscriber unit (ISU) for handing-off a call of the ISU from a current cell to one of a plurality of candidate cells in a satellite cellular communication system, a satellite projecting the current cell and the candidate cells onto Earth, the method comprising the steps of:

(a) receiving a handoff candidate list comprising a list of candidate cells from the satellite;

(b) determining whether the handoff is to occur;

(c) selecting one of the candidate cells to receive the handoff based on the handoff candidate list;

(d) requesting the handoff from the current cell to the candidate cell; and

(e) waiting for the satellite to perform the handoff from the current cell to the candidate cell.

5,574,969

METHOD AND APPARATUS FOR REGIONAL CELL MANAGEMENT IN A SATELLITE COMMUNICATION SYSTEM

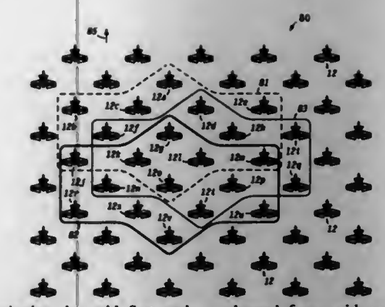
Keith A. Olds; Tadd E. Spicer, both of Mesa, and David Terris, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 8, 1994, Ser. No. 336,140
Int. Cl.[6] H04B *7/185*
U.S. Cl. 455—12.1 **19 Claims**

14. A method of operating a communication system comprised of a plurality of communication nodes, said method comprising the steps of:

receiving, at a first node, notice of channel assignments from nodes within a radio line-of-sight of each other;

determining, at said first node, a pool of available channels based on said notice of channel assignments; and



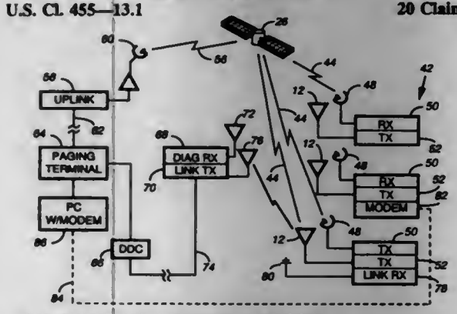
assigning, by said first node, a channel from said pool to a subscriber unit located within a service area of said first node wherein said plurality of nodes are satellite communication stations.

5,574,970

PAGING SYSTEM PROVIDING CONTINVOUS SYNCHRONIZATION OF SIMULCAST DELAY

Roger D. Linquist, and Malcolm M. Lorang, both of Dallas, Dallas County, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 252,455, Jun. 1, 1994, which is a continuation of Ser. No. 111,723, Aug. 24, 1993, Pat. No. 5,355,529, which is a continuation of Ser. No. 612,064, Nov. 13, 1990, Pat. No. 5,239,671. This application Jun. 7, 1995, Ser. No. 488,101
Int. Cl.[6] H04B *7/19;7/24*
U.S. Cl. 455—13.1 **20 Claims**



1. A data transmission system, comprising:

a plurality of transmission sites disposed in the footprint of a satellite that transmits timing information;

a satellite receiver disposed at the transmission sites for receiving the timing information from the satellite, the timing information received at the satellite receivers associated with the transmission sites at substantially the same time;

a data communication channel connected from a data source to the transmission sites;

a data receiver disposed at the transmission sites for receiving data from the data communication channel that is transmitted from the data source;

a data transmitter disposed at the transmission sites and coupled to the data receiver to receive the data and to transmit the data within a predetermined transmission locale proximate to the transmission sites for reception by a mobile data receiver;

a synchronization system disposed at each of the transmission sites for receiving the timing information from the satellite and for continuously synchronizing delay at the transmitter with the timing information; and

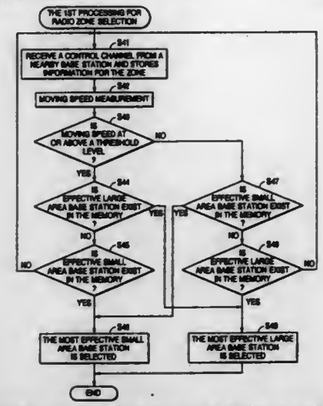
wherein the synchronization system continuously synchronizes the delay with the timing information so that data received by the data receiver is transmitted at substantially the same time from each of the transmitters.

5,574,971

MOBILE COMMUNICATION METHOD AND SYSTEM FOR OPTIMAL SELECTION OF RADIO ZONE

Makoto Aihara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 28, 1995, Ser. No. 411,312
Claims priority, application Japan, Mar. 28, 1994, 6-56934
Int. Cl.[6] H04B *7/26*
U.S. Cl. 455—33.1 **6 Claims**



1. A mobile communication system including a mobile terminal operating within a large zone being served by a large service area base station, said large zone being divided into a plurality of small zones each being respectively served by a small service area base station, said system comprising:

identification signal output means, provided in said large service area base station and each of said small service area base stations, for outputting an identification signal identifying a transmitting base station as one of said large service area base station and said small service area base station;

receiving means, provided in said mobile terminal, for receiving, as received identification signals, said identification signals which exceed a predetermined threshold signal strength and for determining a received signal strength for each of said received identification signals;

storing means, provided in said mobile terminal, for storing said received signal strengths for each of said received identification signals and a type of base station that transmitted each of said identification signals, said type being one of said large service area base station and said small service area base station;

speed determination means, provided in said mobile terminal, for determining whether a moving speed of said mobile terminal exceeds a predetermined speed; and

selecting means, provided in said mobile terminal, for selecting a most effective base station for providing a communication link therewith based on said received identification signals,

wherein said most effective base station corresponds to said large service area base station when said moving speed of said mobile terminal exceeds said predetermined speed and one of said received identification signals corresponds to said large service area base station,

wherein said most effective base station corresponds to one of said small service area base stations when said moving speed of said mobile terminal does not exceed said predetermined speed and one of said received identification signals corresponds to one of said small service area base stations, and

wherein if none of said received identification signals correspond to said large service area base station and said moving speed of said mobile terminal exceeds said predetermined speed, one of said small service area base stations corresponding to one of said received identification signals is selected as said most effective base station.

5,574,972

MOBILE RADIO SYSTEM HAVING POWER LEVEL CONTROL SIGNALLING

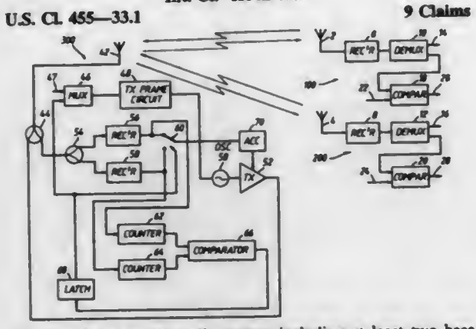
Anthony P. Hulbert, Shirley, England, assignor to Roke Manor Research Limited, Hampshire, England

Filed Feb. 24, 1995, Ser. No. 393,823

Claims priority, application United Kingdom, Mar. 10, 1994, 9404612

Int. Cl.[6] H04B 7/26

U.S. Cl. 455—33.1 9 Claims



1. A cellular mobile radio system including at least two base stations and at least one mobile unit arranged to communicate with the base stations via a radio medium, said system comprising:

each of said at least two base stations further including:

means for detecting a power level signal of received signals from said at least one mobile unit;

means for generating a power control signalling bit for controlling the amplitude of a signal transmitted by said at least one mobile unit; and

means for transmitting the power signal to said at least one mobile unit;

said at least one mobile unit further including:

means for receiving said power control signalling bits; and

means for monitoring said power control signalling bits to identify one of said at least two base stations sending a greater number of said control signalling bits over a transmit frame, thereby indicating that said one of said at least two base stations has received a higher average power signal over said transmit frame.

5,574,973

METHOD OF REGISTERING/-REASSIGNING A CALL IN A DUAL MODE COMMUNICATION NETWORK

David E. Borth, Palatine; John R. Haug, Arlington Heights, and Phillip D. Rasky, Buffalo Grove, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 957,122, Oct. 7, 1992, abandoned.

This application Mar. 16, 1995, Ser. No. 405,572

Int. Cl.[6] H04Q 7/22

U.S. Cl. 455—33.1 17 Claims

8. A method of registering a call in a dual mode communication network comprising the steps of:

receiving a first signal transmitted over a first channel of a first communication system via a first air interface protocol;

measuring a first quality factor of the first signal;

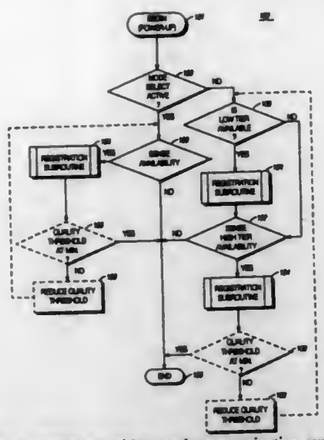
selecting a channel of said first communication system if said first quality factor exceeds a first quality threshold having a first threshold level;

attempting to register said call with said first communication system on said first channel;

determining whether said call is registered with said first communication system;

receiving a second signal transmitted via a second air interface protocol over a second channel of said second communication system;

measuring a second quality factor of said second signal;



selecting a channel of said second communication system if said second quality factor of said channel exceeds a second quality threshold having a second threshold level;

attempting to register said call with said second communication system on said second channel;

setting one of said first and second quality thresholds to a third threshold level; and

re-attempting to register said call with one of said first and second communication system if one of said first and second quality factors exceeds said third threshold level.

5,574,974

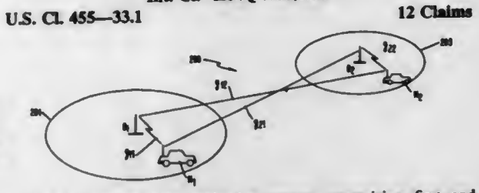
ADAPTIVE CHANNEL ALLOCATION IN A MOBILE COMMUNICATIONS SYSTEM

Knut M. Almgren, Sollentuna; Claes H. Andersson, Ekerö; Carl M. Frodigh, Kista, and Yngve K. Wallstedt, Solna, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Mar. 20, 1995, Ser. No. 406,591

Int. Cl.[6] H04Q 7/00;9/00

U.S. Cl. 455—33.1 12 Claims



1. In a cellular communication system comprising first and second cells, wherein the first cell comprises a first base station and a first mobile station, and the second cell comprises a second base station and a second mobile station, and wherein further the second cell uses any one of a plurality of channels on a second connection between the second base station and a second mobile station, a method for allocating one of the plurality of channels for use on a first connection between the first base station and the first mobile station, the method comprising the steps of:

in the second cell, adjusting total power of the used one of the channels by an amount ΔP_2, wherein:

ΔP_2 is equal to a sum of a change in transmission power of the second mobile station plus a change in transmission power of the second base station on the used one of the channels;

ΔP_2 has a magnitude that is substantially equal to a magnitude of a change in path gain between the second mobile station and the second base station; and

ΔP_2 has a sign that is opposite a sign of the change in path gain between the second mobile station and the second base station;

in the first cell, using determinations of uplink interference values to select an acceptable free channel from those ones of the plurality of channels that are unused in the first cell; and

in the first cell, allocating the acceptable free channel to the first connection.

5,574,975

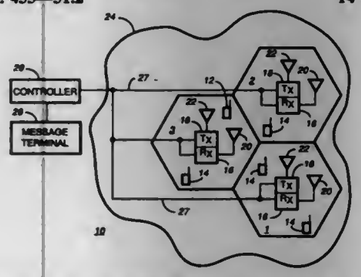
PAGING METHOD USING POWER SHIFTED TRANSMITTERS

Thomas C. Hill, Wellington, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 5, 1995, Ser. No. 523,164

Int. Cl.[6] H04B 7/26

U.S. Cl. 455—51.2 14 Claims



1. A method of transmitting information from a group of radio transmitters to portable pagers, comprising:

(a) causing each transmitter in the group of transmitters to transmit, at given power output levels, the information to the pagers; and thereafter

(b) temporarily changing the power output levels of at least one transmitter within the group of transmitters and causing each transmitter in the group of transmitters to re-transmit at least part of the information to at least some of the portable pagers.

5,574,976

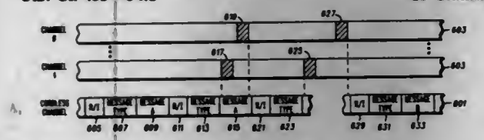
SYSTEM FOR SCANNING CHANNELS

Michael J. Schellinger, Vernon Hills, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 6, 1994, Ser. No. 239,019

Int. Cl.[6] H04B 1/00

U.S. Cl. 455—54.1 18 Claims



9. A communication system comprising:

a base station including a processor, a transmitter and a receiver, said base station transmitting a data stream on a channel;

said processor directing the base station to;

(i) transmit a scan indicator;

(ii) terminate said data stream after transmitting the scan indicator;

(iii) examine a channel other than the data stream channel after terminating said data stream; and

(iv) resume said data stream on said data stream channel after a predetermined period of time.

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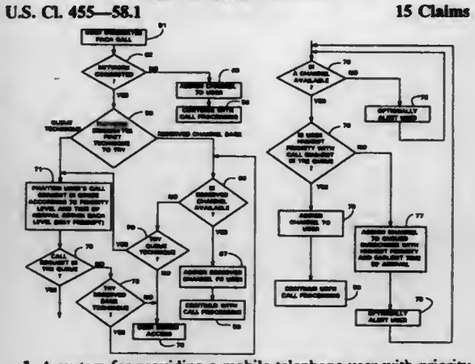
SYSTEM AND METHOD FOR PROVIDING PRIORITY ACCESS AND CHANNEL ASSIGNMENT IN A CELLULAR TELECOMMUNICATION SYSTEM

Robin S. Joseph, Ste. Anne de Bellevue, and Michael Houde, St. Laurent, both of Canada, assignors to Telefonaktiebolaget LM Ericsson, Stolkholm, Sweden

Filed Apr. 17, 1995, Ser. No. 423,798

Int. Cl.[6] H04B 1/00;7/00

U.S. Cl. 455—58.1 15 Claims



1. A system for providing a mobile telephone user with priority access to a cellular telecommunications network having a plurality of subscribers, and assigning a channel to said user on a priority basis when there is channel congestion in said network, said system comprising:

means for determining a priority level for said user and each of said plurality of subscribers, said means for determining a priority level including:

means for determining whether said user and each of said plurality of subscribers is designated as a priority access and channel assignment (PACA) user;

a first prioritization parameter associated with said user and each of said plurality of subscribers, said first prioritization parameter indicating whether said user and each of said plurality of subscribers has activated a priority access and channel assignment feature; and

a second prioritization parameter associated with said user and each of said plurality of subscribers, said second prioritization parameter indicating a relative priority level for said user and each of said subscribers who has activated said priority access and channel assignment feature;

means for determining a level of channel congestion;

means for reserving a bank of channels;

means for queuing call requests from said user and said plurality of subscribers; and

means for selectively assigning a reserved channel to said user, or queuing a call request from the user with call requests from said plurality of subscribers, while awaiting an available channel.

5,574,978

INTERFERENCE CANCELLATION SYSTEM AND RADIO SYSTEM FOR MULTIPLE RADIOS ON A SMALL PLATFORM

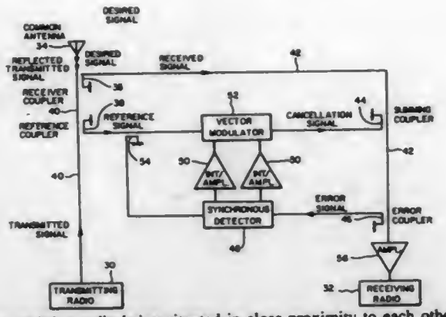
Ashok K. Talwar, Westlake Village; Barry F. Fitzgerald, Agoura Hills, and Mark B. Bahu, Ventura, all of Calif., assignors to American Nucleonics Corporation, Westlake Village, Calif.

Filed May 12, 1994, Ser. No. 242,160

Int. Cl.[6] H04B 1/10;15/00

U.S. Cl. 455—63 11 Claims

1. An interference cancellation system for use with at least one receiving radio receiving a desired signal and at least one transmitting radio generating a transmitted signal which interferes with the desired signal, the at least one receiving radio and the at least one



transmitting radio being situated in close proximity to each other and having a common antenna for receiving and transmitting signals, the common antenna reflecting a portion of the transmitted signal to generate a reflected transmitted signal, the interference cancellation system comprising:

a reference coupler, the reference coupler being responsive to the transmitted signal and providing a reference signal in response thereto;

a receiver coupler, the receiver coupler being responsive to the reflected transmitted signal and to the desired signal and providing a received signal in response thereto, the received signal including an interfering signal component corresponding to the reflected transmitted signal and a desired signal component corresponding to the desired signal;

an error coupler, the error coupler being responsive to the received signal and providing an error signal in response thereto;

a synchronous detector, the synchronous detector being responsive to the error signal and to a first portion of the reference signal and generating at least one detector output signal in response thereto;

a vector modulator, the vector modulator being responsive to the at least one detector output signal and to a second portion of the reference signal and generating a cancellation signal in response thereto, the cancellation signal being adjusted by the vector modulator to be substantially equal in amplitude and opposite in phase to the interfering signal component of the received signal; and

a summing coupler, the summing coupler being responsive to the received signal and to the cancellation signal and being provided for summing the cancellation signal and the received signal to thereby cancel the interfering signal component from the received signal.

5,574,979

PERIODIC INTERFERENCE AVOIDANCE IN A WIRELESS RADIO FREQUENCY COMMUNICATION SYSTEM

Guy J. West, Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa

Filed Jun. 3, 1994, Ser. No. 253,791
Int. Cl.[6] H04B *1/00*
U.S. Cl. 455—63 **19 Claims**

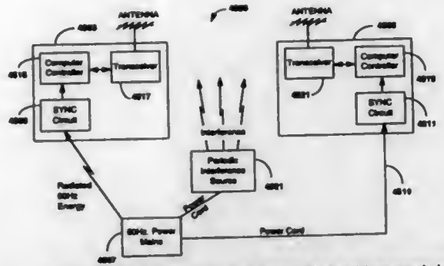
1. A system for transmitting and receiving radio frequency communication in an environment where there is periodic interference, comprising:

(a) means for transmitting a communications message via wireless radio frequency communication;

(b) sync means comprising:

(b1) sensing means for sensing periodic interference; and

(b2) means, coupled with said sensing means, for generating a sync signal that tracks an alternating current associated with a power main which is representative of the timing of



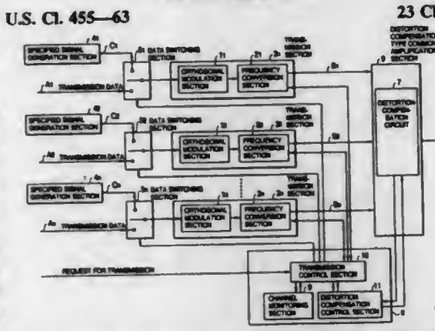
said periodic interference and controlling said transmitting means to effect radio frequency transmission of a communication message according to the sync signal, so as to tend to avoid errors in radio frequency communication due to said periodic interference.

5,574,980

COMMUNICATION BASE STATION SYSTEM FOR TRANSMITTING DATA TO A MOVABLE BODY

Tominari Nomura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 24, 1994, Ser. No. 265,722
Claims priority, application Japan, Jun. 24, 1993, 5-153756
Int. Cl.[6] H04B *1/04*
U.S. Cl. 455—63 **23 Claims**



1. A communication base station system for transmitting data to a movable body comprising:

a plurality of transmission means, each of said plurality of transmission means for receiving a transmission data, modulating the received transmission data, and generating an output signal by converting a frequency of the modulated transmission data to a preset transmission frequency;

a control means for controlling said plurality of transmission means, wherein if at least two of said plurality of transmission means are not in use, said control means outputs a respective specified signal instead of said transmission data to each of two of said plurality of transmission means among said at least two of said plurality transmission means;

an amplification means for collectively amplifying the output signal from each of said plurality of transmission means; and

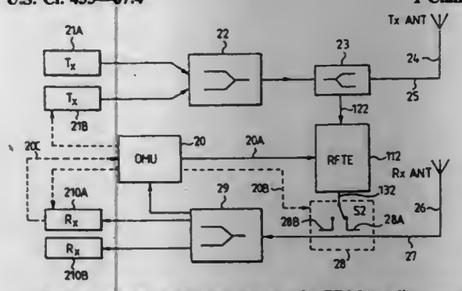
a compensation means for compensating for intermodulation distortion components generated in said amplification means based on respective preset transmission frequencies of said two of said plurality of transmission means and on respective output signals of said two transmission means.

5,574,981

METHOD AND ARRANGEMENT FOR MEASURING THE CONDITION OF A RECEIVER ANTENNA

Jalo Ahonen, Oulu, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

PCT No. PCT/FI93/00565, § 371 Date Aug. 30, 1994, § 102(e) Date Aug. 30, 1994, PCT Pub. No. W094/16336, PCT Pub. Date Jul. 21, 1994
PCT Filed Dec. 29, 1993, Ser. No. 284,578
Claims priority, application Finland, Dec. 30, 1992, 925954
The portion of the term of this patent subsequent to Aug. 30, 2014, has been disclaimed.
Int. Cl.[6] H04B *17/00*
U.S. Cl. 455—67.4 **1 Claim**



1. A test apparatus for a base station of a TDMA radio system, comprising:

a radio test loop having a control input, an output, and an input connected to a transmitting antenna line of a base station to receive a transmitting frequency test signal from a transmitter of said base station, said radio test loop converting said transmitting frequency test signal to a receiving frequency and outputting said receiver frequency test signal at said output,

a switch unit having an input connected to said output of said radio test loop, a first output, a second output, and a control input, said switch unit being responsive to a control signal at said control input for switching said receiving frequency test signal between said first and second outputs,

a first directional coupler having an input connected to said first output of said switch unit, said first directional coupler coupling said receiving frequency test signal to a receiving antenna line towards a receiving antenna of said base station,

a second directional coupler having an input connected to said second output of said switch unit, said first directional coupler coupling said receiving frequency test signal to a receiving antenna line towards a receiver of said base station,

a measuring unit,

a controller connected to said control inputs of said radio test loop and said switch unit,

a radio test loop made in which said switch means is controlled to switch said receiving frequency test signal to said second directional coupler in a TDMA time slot allocated for establishing said radio test loop, and

a receiving antenna test mode having A) a first test configuration in which said switch means is controlled to switch said receiving frequency signal to said first directional coupler in a TDMA time slot allocated for said radio test loop, and said measuring unit is controlled by said controller to measure the level of said receiving frequency signal reflected from said receiving antenna, and B) a second test configuration in which said switch means is controlled to switch said receiving frequency signal to said second directional coupler in a TDMA time slot allocated for said radio test loop, and said measuring unit is controlled by said controller to measure the level of said receiving frequency signal transmitted towards said receiver,

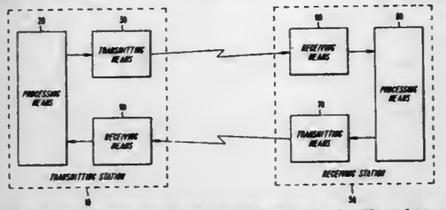
said controller being arranged to determine the standing wave ratio of said receiving antenna on basis of measurements carried out in said first and second configuration.

5,574,982

METHOD AND APPARATUS FOR REGULATING A POWER LEVEL OF A TRANSMITTED RADIO SIGNAL

Magnus K. Almgren, Sollentuna; Claes H. Andersson, Stockholm, and Erik O. Grimlund, Hässelby, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed May 14, 1993, Ser. No. 61,000
Int. Cl.[6] H04B *17/00*
U.S. Cl. 455—69 **10 Claims**



1. In a radio communication system having a plurality of transmitting stations, a method of regulating a power level of a radio signal transmitted through a channel from a transmitting station to a receiving station comprising the steps of:

receiving the radio signal, the radio signal being transmitted at a known transmission power level by the transmitting station;

measuring a quality criterion associated with the received signal that was transmitted at the known transmission power level;

determining a new transmission power level for the transmitting station based on the quality criterion and the known transmission power level, the new transmission power level being otherwise independent of transmission power levels of other transmitting stations; and

ordering the transmitting station to transmit the radio signal at the new transmission power level;

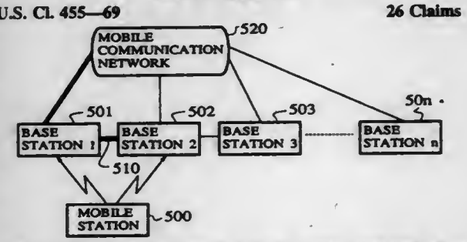
wherein the new transmission power level is determined so that, when the new transmission power level is greater than the known transmission power level, the quality criterion associated with a received signal that was transmitted at the new transmission power level is worse than the quality criterion associated with the received signal that was transmitted at the known transmission power level.

5,574,983

BASE STATION DEVICE AND MOBILE STATION DEVICE IN MOBILE COMMUNICATION SYSTEM UTILIZING THE SITE DIVERSITY EFFECT IN SOFT HANDOVER STATE

Youichi Douzono, Dazaihu, and Narumi Umeda, Yokohama, both of Japan, assignors to NTT Mobile Communications Network Inc., Tokyo, Japan

Filed Sep. 29, 1994, Ser. No. 314,719
Claims priority, application Japan, Sep. 29, 1993, 5-242735
Int. Cl.[6] H04B *1/00*
U.S. Cl. 455—69 **26 Claims**



25. A method for controlling a radio channel switching of a mobile station in a mobile communication system, comprising the steps of:

measuring a communication quality of the base station transmission signals from one base station received at said mobile station;

carrying out a radio channel switching from said one base station to another base station in the mobile communication system whenever the communication quality measured at the measuring step becomes lower than a threshold communication quality; and

adjusting the threshold communication quality according to a number of base stations simultaneously in communication with said mobile station.

5,574,984

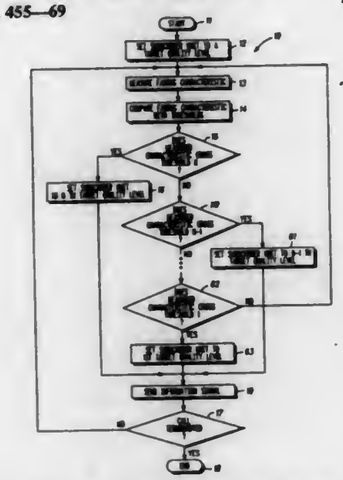
METHOD AND APPARATUS FOR CONTROLLING A POWER LEVEL OF A BASE STATION OF A WIRELESS COMMUNICATION SYSTEM

John D. Reed, Arlington, and Walter J. Rozanski, Jr., Hurst, both of Tex., assignors to Motorola, Inc., Shaumburg, Ill.

Continuation-in-part of Ser. No. 16,446, Feb. 11, 1993, abandoned. This application Dec. 13, 1994, Ser. No. 354,297

Int. Cl.[6] H04B *7/00*

U.S. Cl. 455—69 **7 Claims**



1. An apparatus for controlling a base station of a wireless communication system, the apparatus comprising:

receiving means for receiving a first radio frequency (RF) signal from the base station and determining a received signal strength of the first RF signal;

comparing means for comparing the averaged received signal strength with the received signal strength to determine a fading characteristic, and for further comparing the fading characteristic with a threshold value to determine when the fading characteristic crosses the threshold value; and

control means for sending a power level adjustment signal to the base station when the fading characteristic crosses the threshold value.

5,574,985

RADIO TRANSMITTER RECEIVER FOR OPERATION IN PLURAL RADIO SYSTEMS HAVING UNEQUAL BANDS OF OPERATING FREQUENCIES REPRESENTED BY CHANNEL NUMBERS

Taavi Ylikotila, Äänekoski, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

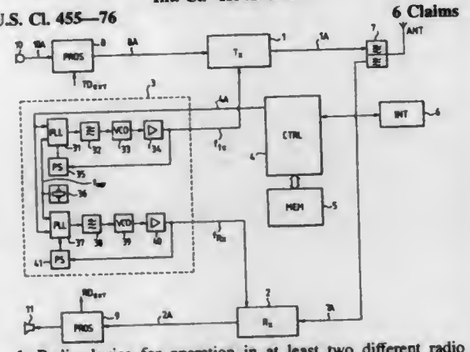
PCT No. PCT/FI93/00047, § 371 Date Nov. 7, 1994, § 102(e) Date Nov. 7, 1994, PCT Pub. No. WO93/16530, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 12, 1993, Ser. No. 290,823

Claims priority, application Finland, Feb. 14, 1992, 920645

Int. Cl.[6] H104B *1/40*

U.S. Cl. 455—76 **6 Claims**



1. Radio device for operation in at least two different radio systems having unequal bands of operating frequencies represented by channel numbers, the radio device comprising

a radio transmitter;

a radio receiver;

a frequency synthesizer means for generating local oscillator frequencies for the radio transmitter and the radio receiver, respectively; and

a control means for controlling the frequency synthesizer means so as to lock the synthesizer means to transmitting and receiving frequencies corresponding to a selected channel number,

the control means comprising a memory means for storing frequency synthesizer control data of a single channel number for each of the at least two different radio system, the control means being arranged to derive control data of any other channel number for the radio system in which the radio device is currently operating, from said frequency synthesizer control data.

5,574,986

TELECOMMUNICATION SYSTEM, AND A FIRST STATION, A SECOND STATION, AND A TRANSCEIVER FOR USE IN SUCH A SYSTEM

Carel H. D. Mobach, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 16, 1994, Ser. No. 340,569

Claims priority, application European Pat. Off., Nov. 22, 1993, 93203262

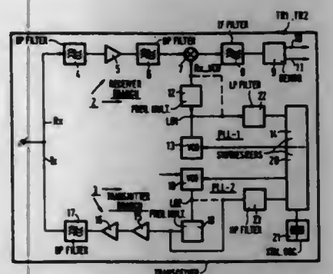
Int. Cl.[6] H04B *1/40*

U.S. Cl. 455—76 **7 Claims**

1. A telecommunication system which includes a first station having a first transceiver and a second station having a second transceiver, the first and second stations being arranged for radio communication with each other; at least the first transceiver comprising:

a receiver branch with a first phase-lock-loop for providing a first local oscillator signal (LO1), and a transmitter branch with a second phase-lock-loop for providing a second local oscillator signal (LO2);

the first and second phase-lock-loops respectively comprising first and second synthesizers which are coupled to each other;



the receiver branch comprising a first frequency multiplier for multiplying the first local oscillator signal (LO1) by a first integer greater than one, the multiplied signal being produced at an output of the first multiplier which is coupled to an rf-path in the receiver branch; and

a first filter in the phase-lock-loop of one of said branches for suppressing signals which reach said one branch from the other branch via said first and second synthesizers.

5,574,987

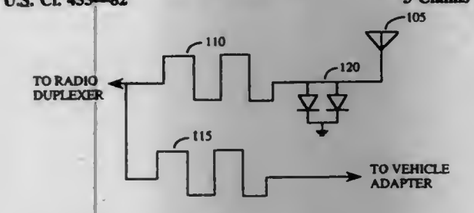
ANTENNA SWITCHING APPARATUS

Raymond C. Wallace, San Diego, Calif., assignor to QUALCOMM Incorporated, San Diego, Calif.

Filed Dec. 20, 1994, Ser. No. 363,422

Int. Cl.[6] H04B *1/18*

U.S. Cl. 455—82 **5 Claims**



1. An apparatus for switching between a first antenna and a second antenna of a radio communications system, the system having a transceiver that communicates radio signals having a predetermined signal wavelength, the apparatus comprising:

a first transformer having a first predetermined wavelength, the first transformer coupling the first antenna to the transceiver;

a second transformer having a second predetermined wavelength, the second transformer coupling the second antenna to the transceiver, and being directly connected to said transceiver; and

at least one diode coupling the first transformer and the first antenna to a ground potential.

5,574,988

Patent Not Issued For This Number

5,574,989

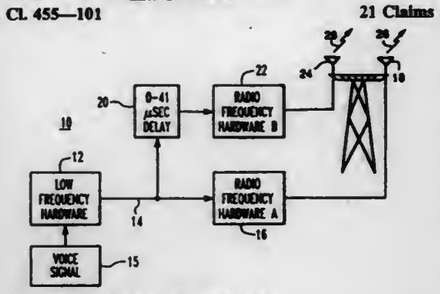
TIME DIVISION MULTIPLE ACCESS CELLULAR COMMUNICATION SYSTEM AND METHOD EMPLOYING BASE STATION DIVERSITY TRANSMISSION

John Watson, Carlsbad, Calif.; Youngky Kim, Potomac, Md.; Long Huynh, and Michael Parr, both of San Diego, Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Continuation of Ser. No. 53,173, Apr. 26, 1993, abandoned. This application Oct. 13, 1994, Ser. No. 322,963

Int. Cl.[6] H04B *7/06*

U.S. Cl. 455—101 **21 Claims**



1. A communication system comprising:

a base station having:

means for generating a first low frequency signal corresponding to an information signal;

means for processing the first low frequency signal to form a first radio frequency signal corresponding thereto and a second radio frequency signal corresponding thereto;

means for time delaying the second radio frequency signal relative to the first radio frequency signal;

means for transmitting the first and second radio frequency signals over independent transmission paths; and

at least one receiver having:

means for receiving and summing the transmitted first and second radio frequency signals;

means for separating and downconverting the summed first and second radio frequency signals to generate downconverted time diversity signals;

means for demodulating the separated downconverted diversity signals to generate separate demodulated time diversity signals; and

equalizing means for combining the separate demodulated time diversity signals to generate an equalized combination signal for receiver output processing.

5,574,990

PREDISTORTION TECHNIQUE FOR COMMUNICATIONS SYSTEMS

Richard T. Flanagan, Freehold, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 67,902, May 27, 1993, abandoned. This application Nov. 20, 1995, Ser. No. 559,888

Int. Cl.[6] H04B *17/00*

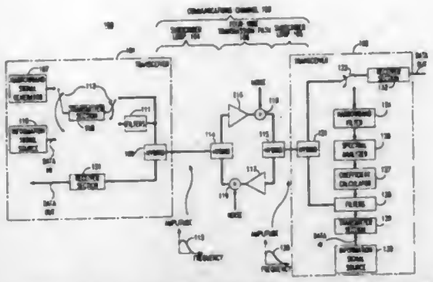
U.S. Cl. 455—115 **18 Claims**

1. Transceiver apparatus having a receiver and a transmitter for use in a communications system wherein a communications channel through which an information signal is transmitted introduces amplitude distortion, said apparatus comprising:

a source of a narrow-band signal having a frequency spectrum substantially narrower than that of said information signal;

means for coding said narrow-band signal and introducing said narrow-band signal into the communications channel to induce quantization noise in a transmission path therein;

means, responsive to said quantization noise appearing at said receiver of said transceiver from said communications channel, for determining the amplitude distortion introduced within a near-end subscriber loop of said communications



channel which supplies said quantization noise to said receiver of said transceiver, the quantization noise appearing at said receiver of said transceiver being caused by the propagation of said coded narrow-band signal through said transmission path and said near-end subscriber loop; and

means responsive to said determined amplitude distortion for predistorting a transmitted signal from said transmitter of said transceiver.

5,574,991

TRANSMISSION POWER CONTROL CIRCUIT

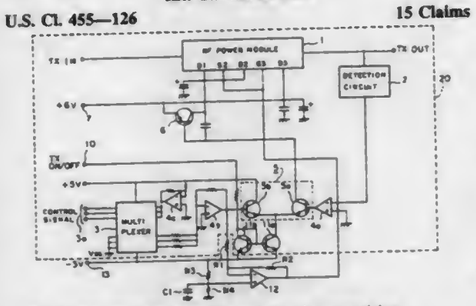
Keisei Miyama, and Hideyo Ono, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 328,245, Mar. 24, 1989, abandoned. This application Jun. 19, 1992, Ser. No. 900,759

Claims priority, application Japan, Jun. 15, 1988, 63-145652

Int. Cl.[6] H04B *1/04*

U.S. Cl. 455—126 **15 Claims**



15. A transmission power control circuit, comprising:

a RF power module including means for amplifying a communication transmission signal;

RF power module control means, connected to said RF power module, for controlling said RF module in response to a control signal to cause said transmission signal to be amplified to one of a plurality of predetermined levels; and

bias voltage control means which outputs a bias voltage to perform level setting of stepwise control, connected to said RF power module and said RF power module control means, responsive to a signal from the RF module control means for controlling the bias voltage supplied to said RF power module in accordance with said predetermined level selected by said control signal, so as to achieve optimum power consumption efficiency for the plurality of predetermined levels, wherein said bias voltage control means is directly connected to a gate of said RF power module.

5,574,992

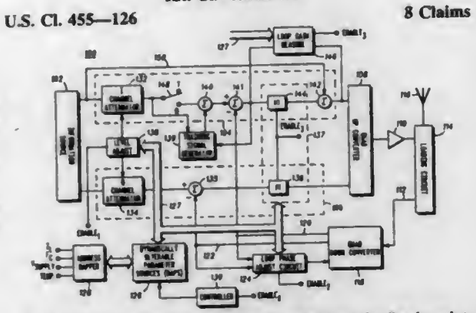
METHOD AND APPARATUS FOR REDUCING OFF-CHANNEL INTERFERENCE PRODUCED BY A LINEAR TRANSMITTER

Lawrence F. Cygan, Schaumburg; Paul H. Gailus, Prospect Heights; William J. Turney, Schaumburg, and Michael H. Baker, Elmhurst, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 29, 1994, Ser. No. 235,415

Int. Cl.[6] H04B *1/04*

U.S. Cl. 455—126 **8 Claims**



5. A linear transmitter that utilizes a closed loop feedback path to maintain linearity, the closed loop feedback path including an amplifier that is terminated with a radiating load element during normal operation, the linear transmitter comprising:

a switch for terminating an output of the amplifier with a non-radiating loading circuit, wherein the non-radiating loading circuit comprises a load impedance synthesizer and a load measuring device; and

means, operably coupled to the non-radiating loading circuit, for adjusting at least one loop parameter of the closed loop feedback path when the output of the amplifier is terminated with the non-radiating loading circuit.

5,574,993

MOBILE COMMUNICATION APPARATUS AND METHOD

Kunio Kobayashi, Takasaki; Tetsuaki Adachi, Nagano-ken, and Tsuyoshi Shibuya, Komoro, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Tohbu Semiconductor, Ltd., Saitama-ken, both of Japan

Filed Sep. 19, 1994, Ser. No. 308,669

Claims priority, application Japan, Sep. 24, 1993, 5-261646; Jun. 23, 1994, 6-164506

Int. Cl.[6] H09B *1/04*

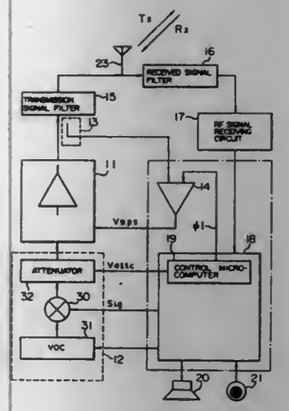
U.S. Cl. 455—126 **14 Claims**

1. A mobile communication apparatus comprising a radio-frequency power amplifier for amplifying a modulation signal of a signal to be transmitted to control a transmission power, said apparatus comprising:

means for decreasing an input signal power applied to the radio-frequency power amplifier on a basis of instructional information contained in a signal received from an external source, said instructional information instructing an output power of the radio-frequency power amplifier to be relatively decreased below a predetermined value; and

means for increasing a gain of the radio-frequency power amplifier in response to said instructional information,

wherein said gain of the radio-frequency power amplifier is increased when said input signal power applied to the radio-frequency power amplifier is decreased in response to said instructional information.



5,574,994

METHOD OF CORRECTING CARRIER LEAK IN A TRANSMITTER

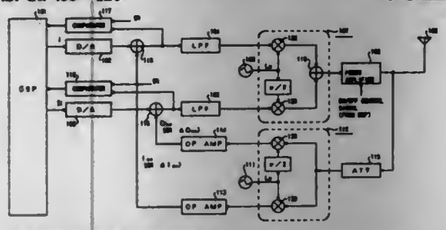
Ping Huang, Chiba; Yumi Hachisuka, Matsudo, and Kiyoshi Tanaka, Chiba, all of Japan, assignors to Uniden Corporation, Chiba, Japan

Filed Jan. 27, 1995, Ser. No. 379,810

Claims priority, application Japan, Jul. 15, 1994, 6-164285

Int. Cl.[6] H01Q *11/12*

U.S. Cl. 455—126 **9 Claims**



7. A transmitter comprising:

a digital signal processor for generating first and second input signals separated in phase by 90°,

a first local oscillator for generating a first carrier wave signal,

a second local oscillator for generating a second carrier wave signal,

a quadrature modulator responsive to said first and second input signals and said first carrier wave signal for generating a modulated signal,

an antenna responsive to said modulated signal for radiating a transmitted signal,

a quadrature demodulator responsive to said modulated signal and said second carrier wave signal for generating first and second demodulated signals,

a first adding circuit responsive to said first input signal and said first demodulated signal for generating a first resultant signal,

a second adding circuit responsive to said second input signal and said second demodulated signal for generating a second resultant signal,

a first comparator responsive to said first resultant signal and a first reference signal for supplying said digital signal processor with a first feedback signal to adjust said first input signal, and

a second comparator responsive to said second resultant signal and a second reference signal for supplying said digital signal processor with a second feedback signal to adjust said second input signal.

5,574,995

RADIO RECEIVER WITH A HIGH SPEED AND ACCURATE SEARCH OPERATION AND METHOD THEREOF

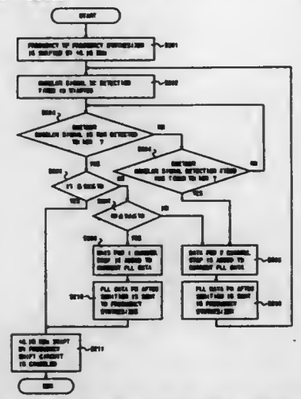
Tateo Masaki, Sakura, Japan, assignor to Uniden Corporation, Chiba, Japan

Filed Dec. 14, 1994, Ser. No. 356,022

Claims priority, application Japan, Sep. 28, 1994, 6-233847

Int. Cl.[6] H04B *1/16*

U.S. Cl. 455—161.2 **14 Claims**



1. A method of selecting a station for a radio receiver for selecting a channel from those each having a prespecified frequency allocated thereto respectively, comprising:

a first frequency shift step for shifting a frequency of a local oscillator so that as many channels to be scanned as possible will be included within specified bandwidths,

a first scanning step for scanning each of the specified bandwidths with the shifted frequency,

a second scanning step for scanning each channel within a respective bandwidth after a signal is detected in the first scanning step, and

a second frequency shift step for shifting a frequency of said local oscillator so that a desired channel frequency identified in the second scanning step will be at the center of said respective bandwidth.

5,574,996

ENHANCED SLEEP MODE IN RADIOCOMMUNICATION SYSTEMS

Alex K. Raith, Durham, N.C., assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Division of Ser. No. 331,951, Oct. 31, 1994, which is a continuation-in-part of Ser. No. 147,254, Nov. 1, 1993. This application Jun. 6, 1995, Ser. No. 467,877

Int. Cl.[6] H04B *1/16*

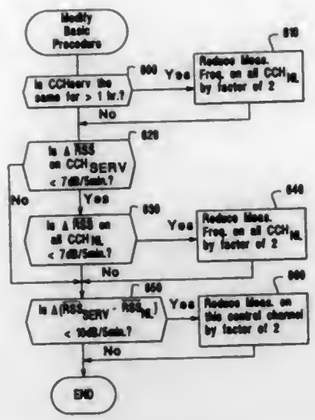
U.S. Cl. 455—161.3 **15 Claims**

1. A method for scanning a plurality of neighboring control channels in a radiocommunication system comprising the steps of:

transmitting, on a control channel which is currently serving a remote station, a default scanning periodicity at which said remote station is to scan at least one of said neighboring control channels;

modifying said default scanning periodicity based on some predetermined criteria; and

scanning, at said remote station, at least one of said plurality of neighboring control channels at said modified default scanning periodicity.



5,574,997

AUTO-SELECTING CIRCUIT OF AN INTERMEDIATE FREQUENCY

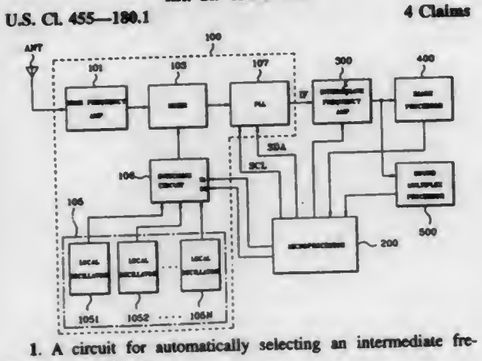
Young Pyo Hong, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 9, 1994, Ser. No. 352,625

Claims priority, application Rep. of Korea, Jun. 9, 1994, 94-12944

Int. Cl.[6] H04B *1/16*

U.S. Cl. 455—180.1 **4 Claims**



1. A circuit for automatically selecting an intermediate frequency comprising:

a single tuner, including a plurality of local oscillators and a mixer, said tuner amplifying a channel frequency received by an antenna and mixing the channel frequency with a local oscillating frequency output from one of said plurality of local oscillators to produce an intermediate frequency signal;

a microprocessor which outputs a control signal to designate said one of said plurality of local oscillators from among said plurality of local oscillators;

a switching circuit which selects an oscillating frequency output by the designated local oscillator according to the control signal output from said microprocessor, and outputs the selected oscillating frequency to said mixer of said tuner; and

a detector of an intermediate frequency, said detector including:

an image signal detector for detecting image signals from said intermediate frequency signal and outputting an image signal detecting signal; and

a sound signal detector for detecting sound signals from said intermediate frequency signal and outputting a sound signal detection signal;

wherein said microprocessor receives the image signal detecting signal and the sound signal detecting signal and outputs the control signal to designate said one of said plurality of local oscillators according to the image signal detecting signal and the sound signal detecting signal.

5,574,998

AUTOMATIC FREQUENCY CONTROL CIRCUIT FOR CONTROL OF REFERENCE OSCILLATOR IN COMMUNICATION APPARATUS

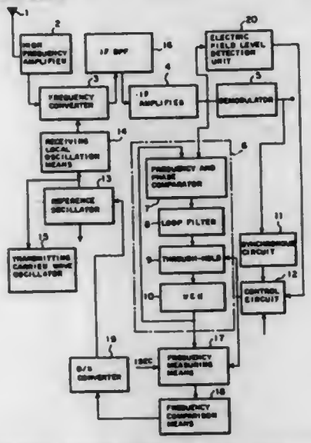
Akira Andoh, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1989, Ser. No. 446,805

Claims priority, application Japan, Aug. 10, 1989, 1-207348

Int. Cl.[6] H04B *1/16*

U.S. Cl. 455—182.2 **8 Claims**



1. An automatic frequency control device, comprising:

a reference oscillator which supplies a reference frequency to a receiving local oscillator and a transmitting carrier wave oscillator;

a frequency converter which converts which converts an output signal of a high frequency amplifier for amplifying a received signal, into a predetermined IF frequency according to an output of said receiving local oscillator;

an IF amplifier for amplifying said IF signal;

a demodulator which obtains a demodulated data signal from said amplified IF signal;

frequency sample and holding means which samples and holds a burst frequency contained in said IF signal outputted by said IF amplifier;

measuring means for measuring the frequency held by said frequency sample and holding means; and

frequency comparison means for comparing measured frequency data from said frequency measuring means with a preset reference frequency data and outputting a correction signal equal to the difference between said measured and reference frequency data, and for controlling a reference oscillation frequency of said reference oscillator with said correction signal so as to maintain said difference below a predetermined value.

5,574,999

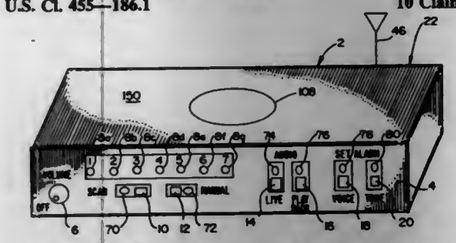
ALERT RECEIVER

Daniel R. Gropper, 9908 Dale Ridge Ct., Vienna, Va. 22181

Continuation-in-part of Ser. No. 207,537, Mar. 7, 1994, Pat. No. 5,444,433. This application Nov. 7, 1994, Ser. No. 337,198

Int. Cl.[6] H04B *17/02*

U.S. Cl. 455—186.1 **10 Claims**



1. A method of automatically selecting a particular channel from a preselected set of channels comprising the steps of:

a. preselecting a set of channels as received by means for receiving broadcast radio signals;

b. scanning each channel in said preselected set of channels;

c. automatically determining each channel's relative received signal strength;

d. storing each channel's relative received signal strength in a memory bank;

e. automatically selecting said channel with the highest relative received signal strength;

f. monitoring said channel with said highest relative received signal strength until the next scanning cycle during which said channel with said highest relative received signal strength will again be determined, selected and monitored; and,

g. automatically activating said scanning cycle after a preset period of time after prior said scanning cycle.

5,575,000

AUTOMATIC BROADCASTING CHANNEL SETTING SYSTEM AND THE METHOD THEREOF

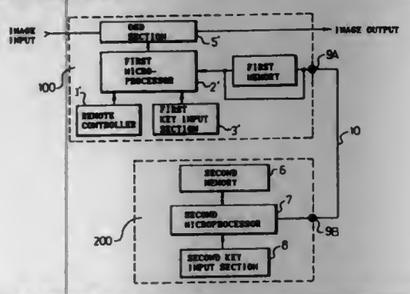
Ki B. Park, and Young C. Kim, both of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 2, 1993, Ser. No. 160,671

Claims priority, application Rep. of Korea, Dec. 2, 1992, 92-23129; Dec. 8, 1992, 92-23602

Int. Cl.[6] H04B *1/18*

U.S. Cl. 455—186.2 **7 Claims**



1. An automatic broadcasting channel setting system comprising:

a tuner for selecting a channel of a received broadcasting signal;

a first key input means for inputting a key signal for automatic channel setting;

a first memory means for storing plus channel mapping data provided from an external memory; and

a first microprocessor for setting a plus code channel in a concerned district among the received broadcast channels, storing said plus channel mapping data provided from said external memory in said first memory means and transmitting said plus channel mapping data stored in said memory means to said external memory according to said key signal from said key input means.

5,575,001

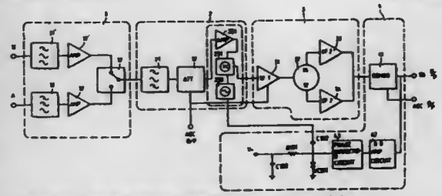
DIRECT BROADCASTING SATELLITE TUNER WITH A NEGATIVE FEEDBACK AND IMAGE COMPRESSION CIRCUIT

Hsi-Yung Ku, Taipei, Taiwan, assignor to Hwa Lin Electronic Co., Ltd., Taipei, Taiwan

Filed Jun. 7, 1995, Ser. No. 483,161

Int. Cl.[6] H04B *1/18*

U.S. Cl. 455—192.1 **6 Claims**



1. A direct broadcasting satellite tuner comprising:

radio frequency input means for receiving and amplifying the radio frequency signal transmitted from a satellite antenna;

frequency converting means for converting the signal outputted from said radio frequency input means into an intermediate frequency signal by means of the operation of a microwave monolithic integrated circuit thereof, said microwave monolithic integrated circuit comprised of a radio frequency amplifier, a frequency mixer, and a voltage control oscillator;

intermediate frequency amplification means for amplifying the output intermediate frequency signal from said frequency converting means, then filtrating the amplified intermediate frequency signal by bandwidth of 16 MHz or 12 MHz, and then amplifying the filtrated signal; and

negative feedback & image compression circuit means comprising of a demodulator circuit, a baseband amplifier circuit, a phase correction circuit, a variable capacitance diode, and a power supply; wherein:

said demodulator circuit receives and demodulates the output signal from said intermediate frequency amplification means so as to obtain a satisfactory baseband frequency signal by means of the control of an automatic gain control circuit;

said baseband amplifier circuit is connected to the output terminal of said demodulator circuit to receive and amplify the baseband frequency signal from said demodulator circuit;

said phase correction circuit is connected to the output terminal of said baseband amplifier circuit to receive the output signal from said demodulator circuit and then to correct the phase of the deviation of the signal;

said variable capacitance diode is connected to the output terminal of said phase correction circuit and connected respectively to the voltage control oscillator of said microwave monolithic integrated circuit and said power supply, to receive the phase corrected signal from said phase correction circuit and to regulate the DC level of the phase corrected signal by means of the control of said power supply and then to feed back the regulated signal to said voltage control oscillator for regulating the oscillating frequency, for permitting the oscillating frequency from said voltage control oscillator to be mixed with the frequency of said radio frequency signal so that the modulated intermediate frequency signal can be compressed and the compressed image intermediate frequency signal can effectively eliminate noises, increase sound/noise ratio and improve the threshold when entering said demodulator circuit.

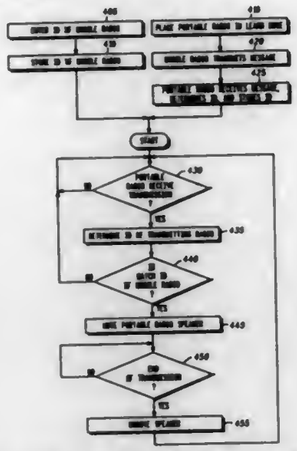
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5,575,002

METHOD FOR MUTING A RADIO

Keith I. Mulford, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 31, 1994, Ser. No. 332,213
Int. Cl.[6] H04B 1/16
U.S. Cl. 455—194.1 34 Claims



1. In an arrangement of a mobile radio and a portable radio, wherein both radios transmit and receive digitally on a communication resource, and wherein the mobile radio has a first ID, a method for muting the portable radio, comprising the steps of:

at the portable radio, wherein the first ID is stored within the portable radio:

(a) receiving a transmission that was transmitted by transmitting radio having a second ID, wherein the transmission includes at least the second ID;

(b) determining the second ID of the transmitting radio based on the transmission; and

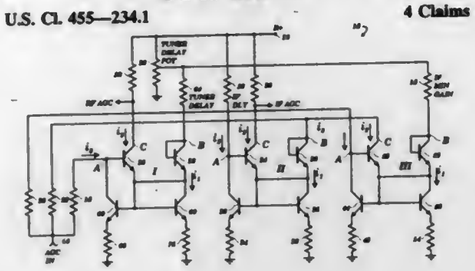
(c) when the second ID of the transmitting radio matches the first ID of the mobile radio, muting a speaker volume of the portable radio, thereby avoiding acoustic feedback between the portable radio and the mobile radio.

5,575,003

CURRENT MODE AGC SYSTEM FOR TELEVISION TUNER

Victor G. Mycynek, Des Plaines, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 12, 1994, Ser. No. 354,406
Int. Cl.[6] H04B 1/06
U.S. Cl. 455—234.1 4 Claims



1. For use with a television tuner having an RF amplifier and an IF amplifier and an AGC signal;

a first current mirror supplied with said AGC signal for developing an RF AGC potential for said RF amplifier;

a second current mirror supplied with said AGC signal for developing an IF AGC potential for said IF amplifier;

means for controlling the respective gain reduction of said RF AGC potential and said IF AGC potential with signal level changes;

each of said first and said second current mirrors each having first, second and third nodes;

said AGC signal being supplied to said first node of said first current mirror, said RF AGC potential being taken from said second node of said first current mirror; and

a tuner delay means established by coupling a current to said third node of said first current mirror.

DESIGN PATENTS

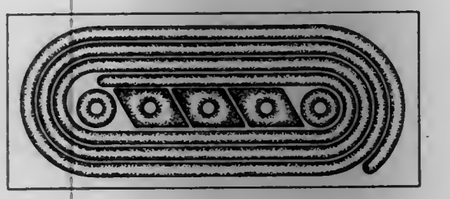
GRANTED November 12, 1996

ERRATA

For CLASS	See PATENT NO.
D16–132	D375,507
D06–445	D375,514
D23–393	D375,558
D24–224	D375,565
D25–164	D375,573
D25–199	D375,574
D26–087	D375,605

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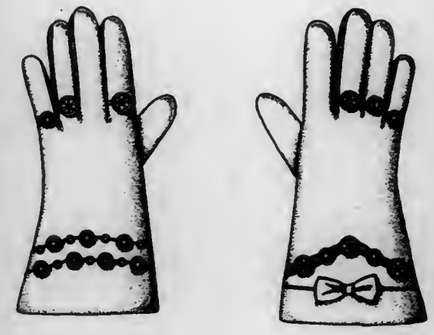
375,395
COMBINED FOOD PRODUCT AND SUPPORT BOARD THEREFOR
Timothy J. Gluszak, Eden Prairie, and Craig E. Zimmermann, Waconia, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.
Filed Dec. 4, 1995, Ser. No. 47,440
Term of patent 14 years
U.S. Cl. D1—102



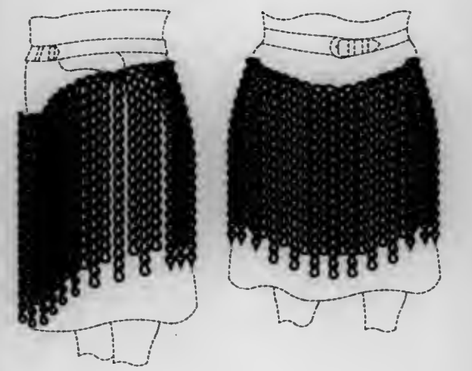
375,396
PRETZEL CRACKER
Warren J. Wilson, and Sara H. Wilson, both of 7 West Shore Dr., Pennington, N.J. 08534
Filed Dec. 20, 1995, Ser. No. 48,111
Term of patent 14 years
U.S. Cl. D1—120



375,397
PAIR OF GLOVES
Marilu Morency, 1552 Palisades Dr., Pacific Palisades, Calif. 90272-2122
Filed Feb. 6, 1995, Ser. No. 34,457
Term of patent 14 years
U.S. Cl. D2—614



375,398
CHAIN SKIRT
Regina A. Cetrangelo, 101 Locust Ave., Oakdale, N.Y. 11769
Filed Dec. 16, 1993, Ser. No. 16,481
Term of patent 14 years
U.S. Cl. D2—851



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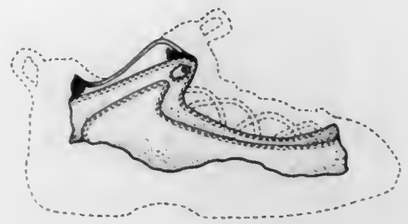
375,399
FOOTWEAR SOLE
Gordon Cook, 780 Laird Blvd., Montreal, Quebec, Canada
Continuation-in-part of Ser. No. 19,097, Feb. 23, 1994. This application Jan. 19, 1995, Ser. No. 33,731
Claims priority, application Canada, Nov. 30, 1993, 30-11-93-4
Term of patent 14 years
U.S. Cl. D2—957



375,400
SANDAL UPPER
Lee N. Bishop, Ste. 416, 1809 Princeton Lakes Dr., Brandon, Fla. 33511
Filed Jun. 10, 1994, Ser. No. 24,252
Term of patent 14 years
U.S. Cl. D2—969



375,401
SIDE ELEMENT OF A SHOE UPPER
Aaron Cooper, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Nov. 13, 1995, Ser. No. 46,323
Term of patent 14 years
U.S. Cl. D2—972



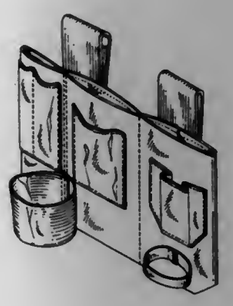
375,402
KNAPSACK
Kuei-ching K. Yeh, No. 3, Yowshih Rd., Yowshih Industrial Dist., Tachi Chen, Taichung Hsien, Taiwan
Filed Mar. 12, 1996, Ser. No. 51,508
Term of patent 14 years
U.S. Cl. D3—217



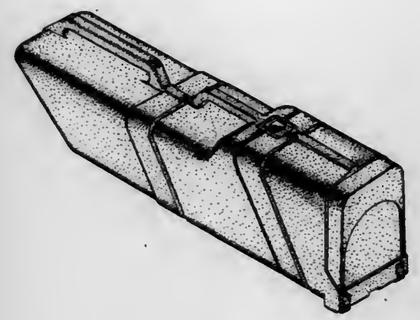
375,403
BACKPACK COOLER
Thomas J. Melk, Chicago, Ill., assignor to Outer Circle Products, Ltd., Chicago, Ill.
Filed Dec. 13, 1995, Ser. No. 47,823
Term of patent 14 years
U.S. Cl. D3—217



375,404
POUCH FOR A PAINTER'S BELT
Steven P. Moffitt, 71 Horseshoe Rd., Guilford, Conn. 06437, assignor to Steven P. Moffitt, and John David Moffit, both of Guilford, Conn.
Filed Oct. 16, 1995, Ser. No. 45,288
Term of patent 14 years
U.S. Cl. D3—228



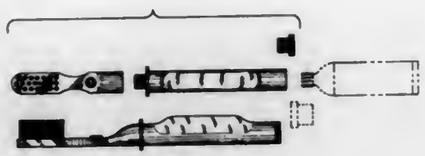
375,405
GOLF CLUB CONTAINER
Gary B. Hunsaker, 4475 Dupont Ct., #10, Ventura, Calif. 93003
Continuation-in-part of Ser. No. 20,861, Apr. 4, 1994, Pat. No. Des. 360,296. This application May 11, 1995, Ser. No. 38,745
The portion of the term of this patent subsequent to Jul. 18, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—255



375,406
BALL HOLDER
David J. Smith, Fairlawn, Ohio, assignor to Steere Enterprises, Tallmadge, Ohio
Filed Apr. 13, 1995, Ser. No. 37,484
Term of patent 14 years
U.S. Cl. D3—257



375,407
TOOTHPASTE DISPENSING TOOTHBRUSH
Harold J. Smith, 3828 Bobstone Dr., Sherman Oaks, Calif. 91423
Filed Mar. 20, 1995, Ser. No. 36,397
Term of patent 14 years
U.S. Cl. D4—108



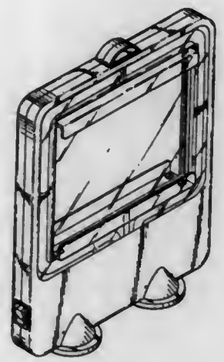
375,408
COMBINATION RAZOR EXTENSION AND APPLICATOR
Alicia Muller, 252 Maple St., Secaucus, N.J. 07094
Filed Jun. 8, 1995, Ser. No. 40,017
Term of patent 14 years
U.S. Cl. D4—116



375,409
BROOM
Edward Uranga, and Ruben Uranga, Jr., both of 4342 Glenmuir Ave., Los Angeles, Calif. 90065
Continuation-in-part of Ser. No. 26,916, Aug. 9, 1994. This application Apr. 12, 1995, Ser. No. 38,153
Term of patent 14 years
U.S. Cl. D4—132



375,410
DISPLAY FRAME
Johnny Wang, P.O. Box 82-144, Taipei, Taiwan
Filed Mar. 4, 1996, Ser. No. 51,088
Term of patent 14 years
U.S. Cl. D6—300



375,411
LIQUID FILLED PHOTOGLOBE
Victor Hawkins, 1082 Civic Center Dr., Rohnert Park, Calif. 94928
Filed Mar. 23, 1995, Ser. No. 36,580
Term of patent 14 years
U.S. Cl. D6—314



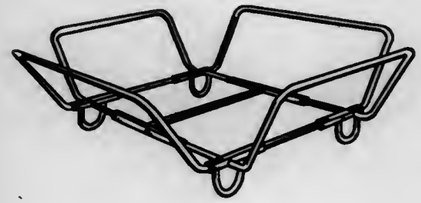
375,412
CLOTHES HANGER
Borje Thorstensson, Vinninga, Sweden, assignor to S. Berendsen AB, Malmo, Sweden
Filed Dec. 27, 1994, Ser. No. 32,715
Claims priority, application Sweden, Apr. 25, 1994, 94 0944
Term of patent 14 years
U.S. Cl. D6—319



375,413
SUIT HANGER
Chen Y. Lin, P.O. Box 82-144, Taipei, Taiwan
Filed Jul. 3, 1995, Ser. No. 41,040
Term of patent 14 years
U.S. Cl. D6—319



375,414
COUCH FRAME
Korin J. Hull, 11159 Santa Monica Blvd. #201, Los Angeles, Calif. 90025, and James R. Hull, 23715 Malibu Rd. #292, Malibu, Calif. 90265
Filed Dec. 30, 1994, Ser. No. 32,872
Term of patent 14 years
U.S. Cl. D6—334



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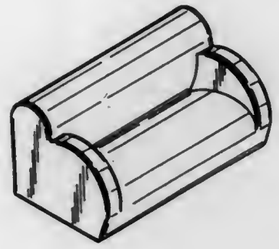
375,415
ROCKING CHAISE LONGUE
Robert J. Cutten, 474 Cambridge St., San Francisco, Calif. 94134, assignor to Robert J. Cutten, San Franciso, Calif.
Filed Jul. 10, 1995, Ser. No. 41,208
Term of patent 14 years
U.S. Cl. D6—361



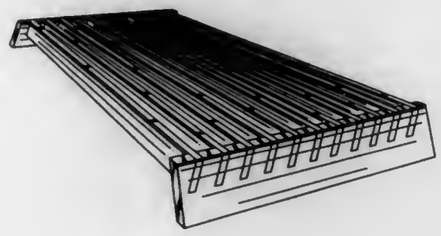
375,416
CHAIR
Elinor S. McGuire, San Francisco, Calif., assignor to The McQuire Furniture Company, San Francisco, Calif.
Filed Jul. 16, 1992, Ser. No. 915,475
The portion of the term of this patent subsequent to May 23, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—369



375,417
SEAT
Vincenzo A. Bonaddio, Rancho Santa Margarita, and Jose De Jesus Munoz Contreras, Apple Valley, both of Calif., assignors to Foamex L.P., Linwood, Pa.
Filed Feb. 8, 1995, Ser. No. 34,590
The portion of the term of this patent subsequent to Feb. 20, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—381



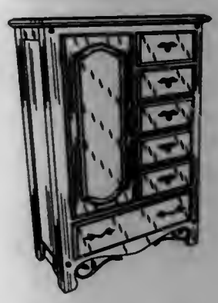
375,418
BEDSTEAD
Florin Baeriswyl, Lettenstrasse 89, CH-8134 Adiswil, Switzerland, and Christof Wuthrich, Kraftstrasse 37, CH-8044 Zurich, both of Switzerland
Filed May 18, 1994, Ser. No. 24,121
Term of patent 14 years
U.S. Cl. D6—382



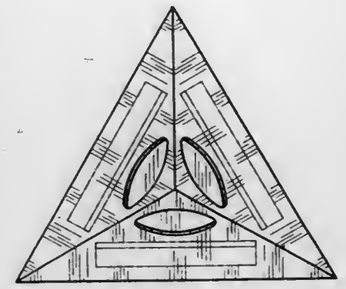
375,419
BABY CHANGING TABLE WITH UNIVERSAL DRAWER
Richard Levine, Wheaton, Ill., assignor to Pali USA Ltd., Wheaton, Ill.
Filed Nov. 14, 1994, Ser. No. 30,918
Term of patent 14 years
U.S. Cl. D6—384



375,420
DOOR CHEST
H. Thomas Keller, and Scott Risdon, both of High Point, N.C., assignors to Vaughan Furniture Company, Inc., Galax, Va.
Division of Ser. No. 30,024, Oct. 20, 1994. This application Sep. 27, 1995, Ser. No. 44,619
Term of patent 14 years
U.S. Cl. D6—445



375,421
PYRAMIDAL RECEPTACLE AND DISPLAY DEVICE
Douglas S. Weiner, Twinsburg, Ohio, assignor to Pyram-Ad Corporation, Twinsburg, Ohio
Filed Mar. 9, 1995, Ser. No. 35,897
Term of patent 14 years
U.S. Cl. D6—449

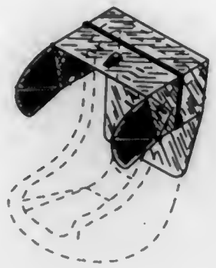


375,422
TABLE
Jeff Jurasinski, 8617 Boysenberry St., Tampa, Fla. 33615
Division of Ser. No. 18,485, Feb. 8, 1994, Pat. No. Des. 364,287. This application Nov. 21, 1995, Ser. No. 47,083
Term of patent 14 years
U.S. Cl. D6—451

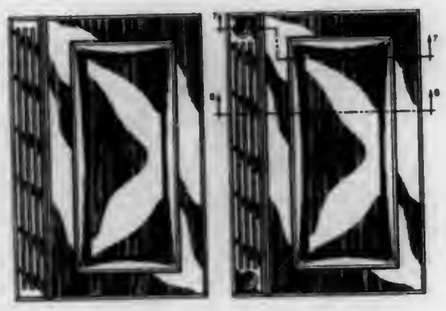


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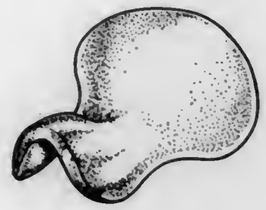
375,423
CAR SEAT VISOR
Robin Lapointe, 223 Springdale, Pointe Claire, Quebec, Canada
Filed Apr. 13, 1995, Ser. No. 35,473
Term of patent 14 years
U.S. Cl. D6—491



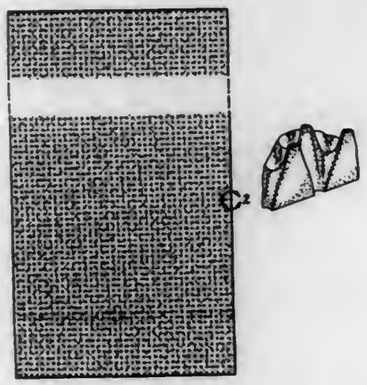
375,424
CABINET DOOR
Michael H. Burwick, 180 Brentwood Dr., Cheshire, Conn. 06410
Filed Mar. 23, 1995, Ser. No. 36,600
Term of patent 14 years
U.S. Cl. D6—492



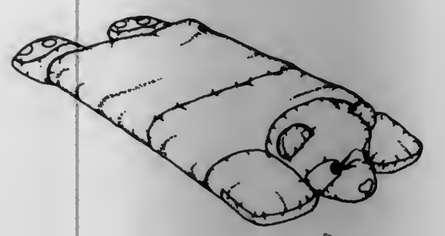
375,425
SEAT
Mary F. Gale, Collaroy Beach, Australia, assignor to The Bambach Saddle Seat PTY. Limited, Brookvale New South Wales, Australia
Filed Mar. 31, 1995, Ser. No. 36,960
Claims priority, application United Kingdom, Dec. 23, 1994, 2044071
Term of patent 14 years
U.S. Cl. D6—502



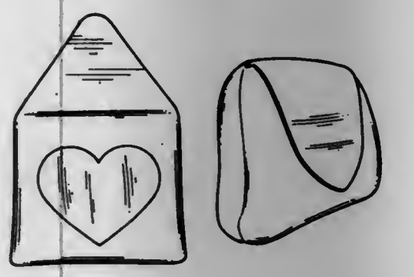
375,426
THREE DIMENSIONALLY SHAPED SYNTHETIC FOAM SHEETING FOR USE IN MATRESS CUSHIONS AND SEAT CUSHIONS
Vincenzo A. Bonaddio, and Feyyaz O. Baskent, Newport Beach, both of Calif., assignors to Foamex L.P., Linwood, Pa.
Filed Nov. 30, 1994, Ser. No. 31,516
Term of patent 14 years
U.S. Cl. D6—596



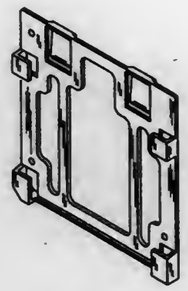
375,427
INFLATABLE MATTRESS
Thomas Yeh, 10F, No. 97, Sec. 2, Nan-Gun Rd., Taipei, Taiwan
Filed Dec. 15, 1995, Ser. No. 47,943
Term of patent 14 years
U.S. Cl. D6—598



375,428
COMBINED PILLOW FABRIC PICTURE FRAME AND FABRIC HEART SHAPED POUCH
Robert A. Gall, and Kathleen O. Gall, both of 4005 Massachusetts Ave., La Mesa, Calif. 91941
Filed Sep. 9, 1994, Ser. No. 28,216
Term of patent 14 years
U.S. Cl. D6—601



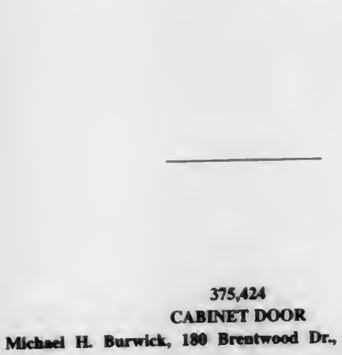
375,429
FLOPPY DISC HOLDER
James A. Staack, Seminole, and David R. Marvel, Indian Rocks Beach, both of Fla., assignors to New Plastics, Inc., Clearwater, Fla.
Filed Apr. 28, 1995, Ser. No. 38,091
Term of patent 14 years
U.S. Cl. D6—627



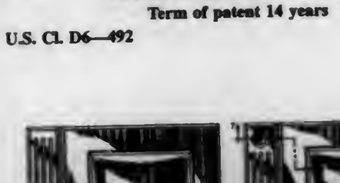
375,430
CD CASSETTE STAND
Sabine Asch, Bietigheim; Norbert Gubo, Reichertshausen, and Gerald Sebert, Bietigheim, all of Germany, assignors to Asch & Sebert (GbR), Bietigheim-Bissingen, and Koch International GmbH, Munich, both of Germany
Filed May 19, 1995, Ser. No. 39,050
Claims priority, application Germany, Nov. 22, 1994, M 94 09 088.2
Term of patent 14 years
U.S. Cl. D6—630



375,431
CAR SEAT
Jeffrey Kassai, Los Angeles, Calif., assignor to Kolcraft Enterprises, Inc., Chicago, Ill.
Filed Jan. 3, 1995, Ser. No. 30,000
Term of patent 14 years
U.S. Cl. D6—491



375,432
CAR SEAT
Jeffrey Kassai, Los Angeles, Calif., assignor to Kolcraft Enterprises, Inc., Chicago, Ill.
Filed Jan. 3, 1995, Ser. No. 30,001
Term of patent 14 years
U.S. Cl. D6—491



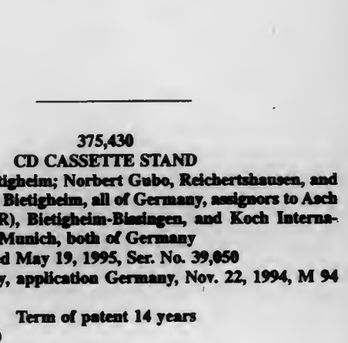
375,433
CAR SEAT
Jeffrey Kassai, Los Angeles, Calif., assignor to Kolcraft Enterprises, Inc., Chicago, Ill.
Filed Jan. 3, 1995, Ser. No. 30,002
Term of patent 14 years
U.S. Cl. D6—491

375,434
CAR SEAT
Jeffrey Kassai, Los Angeles, Calif., assignor to Kolcraft Enterprises, Inc., Chicago, Ill.
Filed Jan. 3, 1995, Ser. No. 30,003
Term of patent 14 years
U.S. Cl. D6—491

375,435
CAR SEAT
Jeffrey Kassai, Los Angeles, Calif., assignor to Kolcraft Enterprises, Inc., Chicago, Ill.
Filed Jan. 3, 1995, Ser. No. 30,004
Term of patent 14 years
U.S. Cl. D6—491



375,436
CAR SEAT
Jeffrey Kassai, Los Angeles, Calif., assignor to Kolcraft Enterprises, Inc., Chicago, Ill.
Filed Jan. 3, 1995, Ser. No. 30,005
Term of patent 14 years
U.S. Cl. D6—491



375,437
CAR SEAT
Jeffrey Kassai, Los Angeles, Calif., assignor to Kolcraft Enterprises, Inc., Chicago, Ill.
Filed Jan. 3, 1995, Ser. No. 30,006
Term of patent 14 years
U.S. Cl. D6—491



375,438
CAR SEAT
Jeffrey Kassai, Los Angeles, Calif., assignor to Kolcraft Enterprises, Inc., Chicago, Ill.
Filed Jan. 3, 1995, Ser. No. 30,007
Term of patent 14 years
U.S. Cl. D6—491



375,439
CAR SEAT
Jeffrey Kassai, Los Angeles, Calif., assignor to Kolcraft Enterprises, Inc., Chicago, Ill.
Filed Jan. 3, 1995, Ser. No. 30,008
Term of patent 14 years
U.S. Cl. D6—491



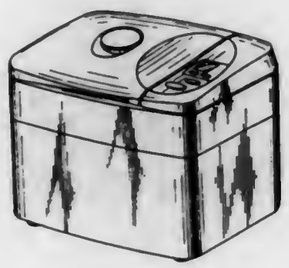
375,440
CAR SEAT
Jeffrey Kassai, Los Angeles, Calif., assignor to Kolcraft Enterprises, Inc., Chicago, Ill.
Filed Jan. 3, 1995, Ser. No. 30,009
Term of patent 14 years
U.S. Cl. D6—491



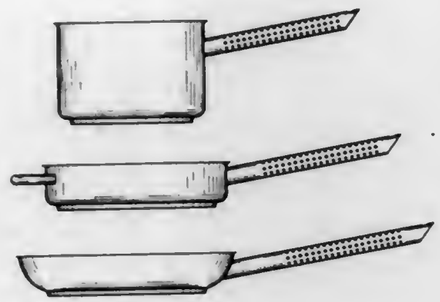
375,431
LOW COST BEVERAGE DISPENSER
William S. Credle, Jr., Stone Mountain; Steven C. Gamper, Atlanta; David S. Rowley, Smyrna, all of Ga., and John D. Santy, Jr., San Antonio, Tex., assignors to The Coca-Cola Company, Atlanta, Ga.
Continuation-in-part of Ser. No. 24,119, Jun. 8, 1994, abandoned. This application Aug. 23, 1995, Ser. No. 43,012
Term of patent 14 years
U.S. Cl. D7—311



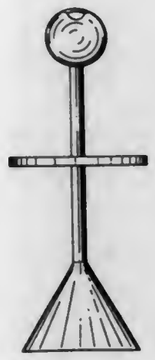
375,432
AUTOMATIC BREAD MAKER
Masanori Hamada; Ikuko Wakita, both of Osaka, and Masao Kasai, Hyogo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 25, 1995, Ser. No. 37,947
Claims priority, application Japan, Oct. 25, 1994, 6-32601
Term of patent 14 years
U.S. Cl. D7—350



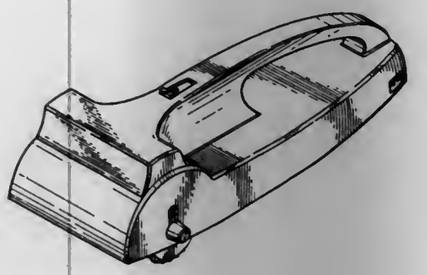
375,433
COOKING PAN
Carsten Jorgensen, Dattenbergrain, Switzerland, assignor to PI-Design AG, Triengen, Switzerland
Filed Dec. 8, 1994, Ser. No. 31,898
Claims priority, application Denmark, Jun. 13, 1994, 523/94
Term of patent 14 years
U.S. Cl. D7—354



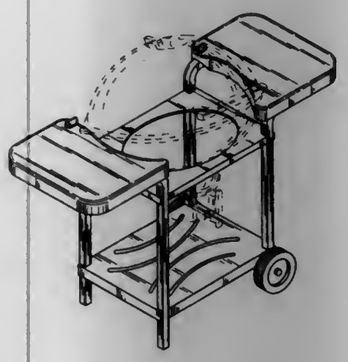
375,434
GARBAGE DISPOSAL PLUNGER
Kevin Roussel, 8551 Floralwood Dr., Boca Raton, Fla. 33433
Filed Jul. 12, 1995, Ser. No. 41,345
Term of patent 14 years
U.S. Cl. D7—375



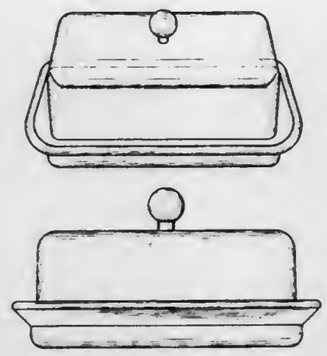
375,435
FOOD SLICER
Gregory L. Knapp, P.O. Box 1224, Craig, Ak. 99921
Filed Jul. 12, 1995, Ser. No. 41,356
Term of patent 14 years
U.S. Cl. D7—383



375,436
COMBINED SIDE TABLES AND STAND FOR A BARBEQUE GRILL
Richard Bird; Edward Golladay, Jr.; Donald Payne, all of Louisville, Ky.; Randy Smitley, Corydon, Ind.; Calvin Sprinkle, Borden, Ind., and Marine Walls, Jeffersonville, Ind., assignors to Porcelain Metals Corporaton, Louisville, Ky.
Filed Aug. 12, 1994, Ser. No. 27,088
Term of patent 14 years
U.S. Cl. D7—403



375,437
BUTTER DISH
Carsten Joergensen, Kriens, Switzerland, assignor to PI-Design AG, Triengen, Switzerland
Filed Feb. 24, 1995, Ser. No. 35,354
Claims priority, application Hague Agreement, Aug. 26, 1994, 747/94
Term of patent 14 years
U.S. Cl. D7—502

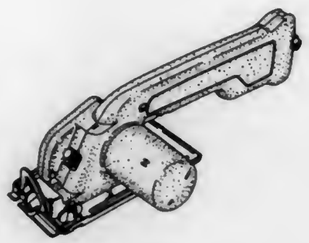


375,438
STACKABLE HOT DOG PLATE WITH COMPARTMENTS
Bette E. Smith, 23681 Posey La., West Hills, Calif. 91304
Filed May 8, 1995, Ser. No. 38,567
Term of patent 14 years
U.S. Cl. D7—555

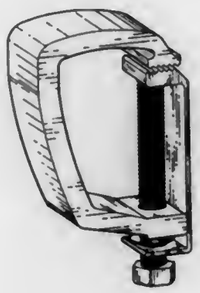


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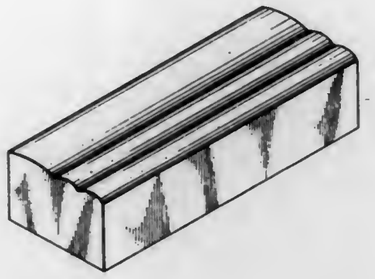
375,439
CORDLESS CIRCULAR SAW
Norifumi Niwa, Chiryu, and Takefumi Furuta, Toyoake, both of Japan, assignors to Makita Corporation, Anjo, Japan
Filed Jun. 23, 1995, Ser. No. 40,654
Claims priority, application Japan, Dec. 27, 1994, 6-40479
Term of patent 14 years
U.S. Cl. D8—66



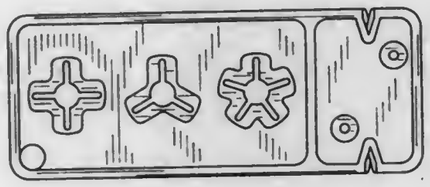
375,440
DUAL ARC CLAMP
Ronald L. Yoder, Topeka, and John L. Mault, Wolcottville, both of Ind., assignors to Indiana Custom Trucks, Inc., Wawaka, Ind.
Filed Feb. 7, 1995, Ser. No. 34,527
Term of patent 14 years
U.S. Cl. D8—73



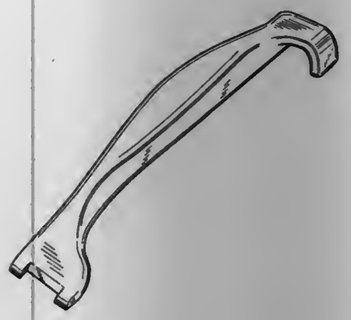
375,441
SHARENING STONE
Duane K. McCoy, Rte. 1 - Box 147, Alma, Kans. 66001, and Howard R. Vermillion, 505 S. Victory Blvd., Burbank, Calif. 91502
Filed Nov. 3, 1994, Ser. No. 30,608
Term of patent 14 years
U.S. Cl. D8—91



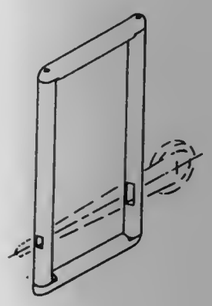
375,442
ARROWHEAD SHARPENER AND WRENCH COMBINATION
Jeffrey T. Hughes, Winston-Salem, N.C., assignor to Hughes Products Co., Inc., Thomasville, N.C.
Filed Feb. 21, 1995, Ser. No. 35,108
Term of patent 14 years
U.S. Cl. D8—91



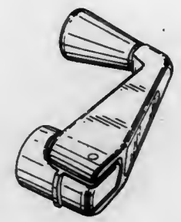
375,443
AUTOMOBILE BODY TOOL HANDLE
Ray D. Luong, 1335 Pacific Ave., #208, San Francisco, Calif. 94109
Filed Apr. 18, 1995, Ser. No. 37,670
Term of patent 14 years
U.S. Cl. D8—107



375,444
EXTENSION HANDLE FOR A RECLINER
John F. McElwee, 108-12TH Ave., Glendora, N.J. 08029
Filed Sep. 21, 1993, Ser. No. 8,288
Term of patent 14 years
U.S. Cl. D8—300



375,445
FOLDABLE HANDLE FOR A WINDOW OPERATOR
Peter J. Harrison, Darlaston, and Arthur D. Tippin, Edgbaston, both of England, assignors to Hardware & Systems Patents Limited, England
Filed Jan. 31, 1995, Ser. No. 34,232
Claims priority, application United Kingdom, Aug. 19, 1994, 2041157
Term of patent 14 years
U.S. Cl. D8—309

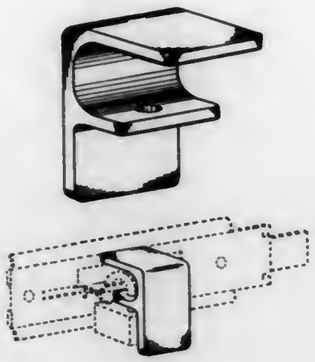


375,446
DOOR LATCH REENFORCEMENT MEMBER
Rodney E. Nelson, Rte. 3, Box 83, Cameron, N.C. 28326
Filed Mar. 27, 1995, Ser. No. 36,736
Term of patent 14 years
U.S. Cl. D8—343

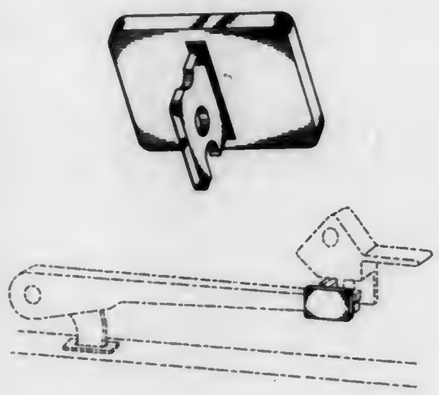


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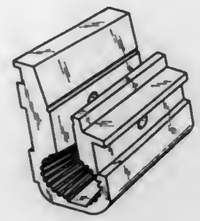
375,447
PADLOCK SHACKLE PROTECTIVE SHIELD
Michael H. Small, 4966 Red Bluff Rd., Riverside, Calif. 92503, and Kevin E. Small, 270 Main St., Cedarville, Calif. 96104
Filed Jun. 29, 1995, Ser. No. 40,862
Term of patent 14 years
U.S. Cl. D8—346



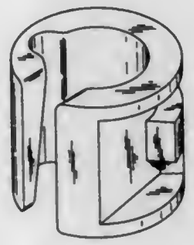
375,448
PADLOCK PROTECTOR SHIELD
Michael H. Small, 4966 Red Bluff Rd., Riverside, Calif. 92503, and Kevin E. Small, 270 Main St., Cedarville, Calif. 96104
Filed Jun. 29, 1995, Ser. No. 40,865
Term of patent 14 years
U.S. Cl. D8—346



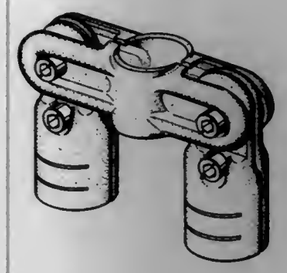
375,449
BRACKET FOR A HANDLE-BAR OF A CLEARING SAW
Göran Dahlberg, Gränna, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Aug. 24, 1994, Ser. No. 27,570
Claims priority, application Sweden, Feb. 25, 1994, 940445
Term of patent 14 years
U.S. Cl. D8—349



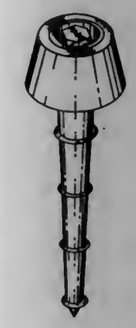
375,450
ULTRASOUND TRANSDUCER PROBE HOLDER WITH GROOVE
Dean J. Bidwell, and Stephen B. Hooper, both of Redmond, Wash., assignors to Siemens Medical Systems Inc., Iselin, N.J.
Filed Sep. 29, 1995, Ser. No. 44,687
Term of patent 14 years
U.S. Cl. D8—356



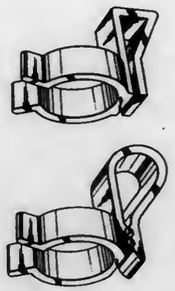
375,451
STRUCTURAL JOINT
Masayuki Ohkubo, Shizuoka, Japan, assignor to Yazaki Industrial Chemical Co., Ltd., Shizuoka, Japan
Filed Jul. 13, 1994, Ser. No. 25,843
Term of patent 14 years
U.S. Cl. D8—382



375,452
LICENSE PLATE LOCK
Peter A. Housser, 6304 Collins Dr., Niagara Falls, Ontario, Canada
Filed Jun. 22, 1995, Ser. No. 40,597
Term of patent 14 years
U.S. Cl. D8—382



375,453
CHRISTMAS LIGHT HOLDER
Jacob Fleck, 168 Mount Pleasant Drive, Camrose, Alberta, Canada
Continuation-in-part of Ser. No. 9,670, Jun. 21, 1993, abandoned. This application Apr. 5, 1995, Ser. No. 37,156
Term of patent 14 years
U.S. Cl. D8—395

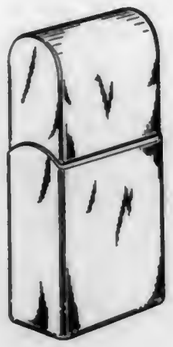


375,454
BOTTLE
Gregory A. Lathrop, Manchester; Mark D. Gerhart, Westminster; David F. Gnadt, Owings Mills; Kevin J. Markey, Westminster, all of Md.; Frank E. Gonda, Fairfield, Conn., and David S. Laubach, New York, N.Y., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Filed May 19, 1995, Ser. No. 39,044
The portion of the term of this patent subsequent to Aug. 20, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—300

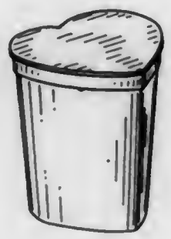


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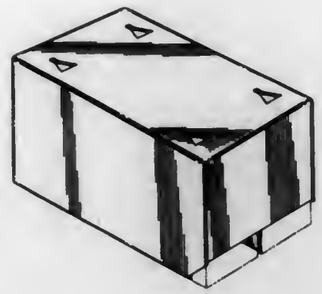
375,455
COMBINED SPRAY BOTTLE AND CAP
Thomas Uhl, New Hope, Pa.; Robert C. Maxwell, Princeton, and Ronald S. Elowitz, Watchung, both of N.J., assignors to Schering-Plough Healthcare Products, Inc., Memphis, Tenn.
Filed May 31, 1995, Ser. No. 39,598
Term of patent 14 years
U.S. Cl. D9—300



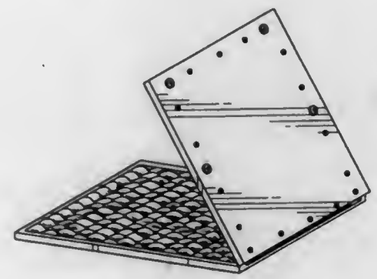
375,456
HEART-SHAPED COMESTIBLE PACKAGE
Heinrich Borgmann, Dorsten, Germany, assignor to Privat-Molkerei Borgmann GmbH & Co. KG, Dorsten, Germany
Filed Feb. 3, 1995, Ser. No. 34,501
Claims priority, application WIPO, Aug. 15, 1994, DM/030 420
Term of patent 14 years
U.S. Cl. D9—315



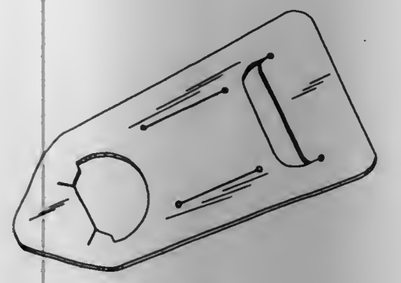
375,457
DISPENSING CARTON
Timothy J. King, Moss Nr Wrexham, Wales, and James J. Beech, Upton, England, assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Apr. 28, 1995, Ser. No. 38,189
Term of patent 14 years
U.S. Cl. D9—417



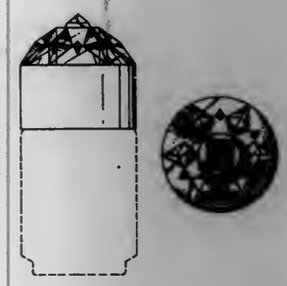
375,458
FRAMED ARTWORK PROTECTIVE SHIPPING CONTAINER
Powell G. Drinnen, 7705 Gld Sherrod Rd., Strawberry Plains, Tenn. 37871
Filed Jan. 16, 1996, Ser. No. 49,088
Term of patent 14 years
U.S. Cl. D9—423



375,459
BOTTLE CARRIER DEVICE
Raymond P. Tipp, P.O. Box 3778, Missoula, Mont. 59806
Filed Jul. 13, 1995, Ser. No. 41,427
Term of patent 14 years
U.S. Cl. D9—434



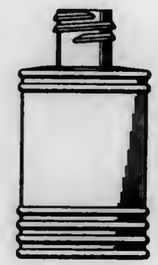
375,460
BOTTLE TOP
Noby Tanaka, 15155 Gale Ave., Suite C., Hacienda Heights, Calif. 91745
Filed Mar. 24, 1995, Ser. No. 36,688
Term of patent 14 years
U.S. Cl. D9—451



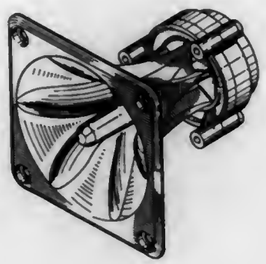
375,461
COMBINED JAR AND CLOSURE
Jung-Hwan Kang, No. 122-2, Euijungbu 1-Dong, Euijungbu-Si, Kyungki-Do, and So-Ja Kim, No. 213-12, Jamsil, Bon-Dong, Songpa-Gu, Seoul, both of Rep. of Korea
Filed Oct. 24, 1994, Ser. No. 30,198
Claims priority, application Japan, May 2, 1994, 6-12347
Term of patent 14 years
U.S. Cl. D9—520



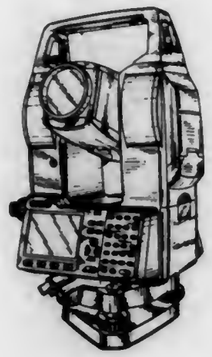
375,462
RIBBED RECTANGULAR BOTTLE
Thomas W. David, 9 Willow Dr., Chester, N.J. 07930
Filed Aug. 3, 1995, Ser. No. 42,198
Term of patent 14 years
U.S. Cl. D9—570



375,463
SUPERHORN
Jerry L. Bohannan, Albuquerque, N.M., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 2, 1996, Ser. No. 48,521
Term of patent 14 years
U.S. Cl. D10—120



375,464
ELECTRONIC THEODOLITE FOR DISTANCE MEASURING
Yukitaka Hoshino, Tokyo, Japan, assignor to Sokkia Co., Ltd., Tokyo, Japan
Filed Apr. 19, 1995, Ser. No. 37,728
Claims priority, application Japan, Oct. 21, 1994, 6-31739
The portion of the term of this patent subsequent to Feb. 20, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—66



375,465
JEWELRY CHAIN
David Rozenwasser, 26 Har Dafna Street, Savion, Israel
Filed Sep. 27, 1994, Ser. No. 28,961
Claims priority, application Israel, Mar. 29, 1994, 22461
Term of patent 14 years
U.S. Cl. D11—17



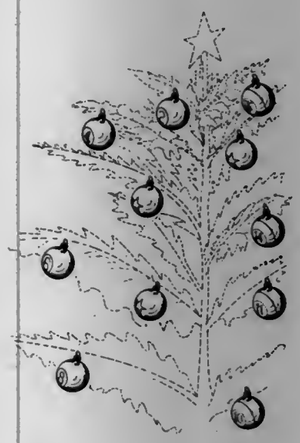
375,466
RING
Henri Samuel, Paris, France, assignor to Fred S.A., Paris, France
Filed Apr. 25, 1995, Ser. No. 37,953
Claims priority, application WIPO, Nov. 7, 1994, DM/031236
Term of patent 14 years
U.S. Cl. D11—26



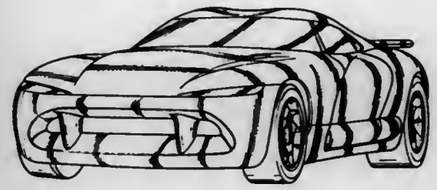
375,467
ARTICLE OF JEWELRY
Goan Thylmann, and Oliver Michl, both of Im Alten Bahnhof, D-88682 Salem, Germany
Filed Apr. 3, 1995, Ser. No. 37,098
Term of patent 14 years
U.S. Cl. D11—93



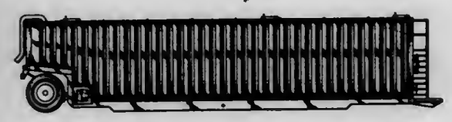
375,468
SET OF BILLIARD CHRISTMAS TREE ORNAMENTS
Robert J. Connolly, Lutherwood, Apt. 417, Lake Scranton Rd., Scranton, Pa. 18505-2263, and Michael J. Phillips, 1140 S. Lackawanna Trail, Clarks Summit, Pa. 18411-9259
Filed Mar. 28, 1995, Ser. No. 36,814
Term of patent 14 years
U.S. Cl. D11—125



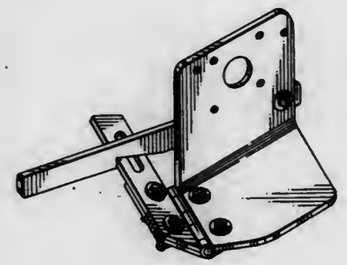
375,469
AUTOMOBILE
Steven W. Ferrerio, Troy; Ernest J. Barry, Clarkston, and K. Neil Walling, Leonard, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.
Filed Oct. 22, 1993, Ser. No. 14,557
Term of patent 14 years
U.S. Cl. D12—91



375,470
TRACTOR-TRAILER TANK
Louis E. Adams, 8321 Seymour Hwy., Wichita Falls, Tex. 76308
Filed Jun. 13, 1995, Ser. No. 40,283
Term of patent 14 years
U.S. Cl. D12—95

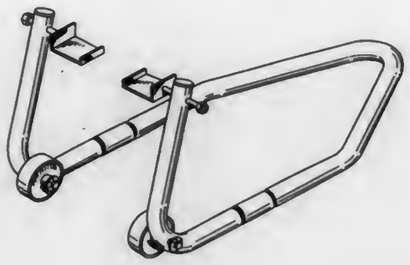


375,471
SUPPORT BRACKET FOR BICYCLE ENGINE
Garold Page, Jr., 362 Shady La., Orange City, Fla. 32763, and Herbert L. Harker, Jr., P.O. Box 195401, Winter Springs, Fla. 32719-5401
Filed Aug. 30, 1995, Ser. No. 43,256
Term of patent 14 years
U.S. Cl. D12—114

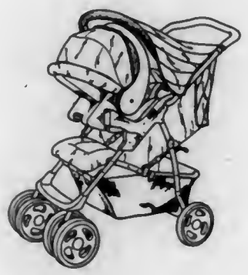


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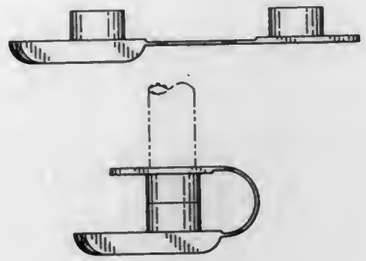
375,472
MOTORCYCLE STAND
Paul S. Slater, Derbeyshire, England, assignor to CLF International Limited, England
Filed Aug. 24, 1995, Ser. No. 43,075
Term of patent 14 years
U.S. Cl. D12—120



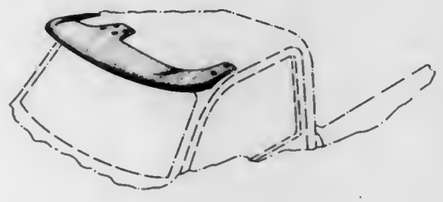
375,473
STROLLER IN COMBINATION WITH A SAFETY SEAT
Li-chu C. Huang, No. 9, Alley 2, Lane 606, Sec. 2, Po Ai Rd., Chia Yi City, Taiwan
Filed Dec. 1, 1995, Ser. No. 47,348
Term of patent 14 years
U.S. Cl. D12—129



375,474
WALKER GLIDE
Richard E. Henderson, and Katthleen A. O'Brien, both of 107 Whispering Sands Cir., Sarasota, Fla. 34242
Filed May 5, 1994, Ser. No. 22,447
Term of patent 14 years
U.S. Cl. D12—133



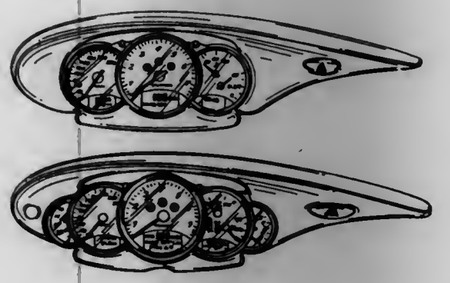
375,475
TRUCK SUN VISOR
Pat Smiarowski, 3590 Simpson's Trace, Maineville, Ohio 45039
Filed Aug. 21, 1995, Ser. No. 42,891
Term of patent 14 years
U.S. Cl. D12—191



375,476
AUTOMOBILE VISOR
Lance J. Gibson, 5025 44 St., Drayton Valley, Canada
Filed Oct. 30, 1995, Ser. No. 45,791
Term of patent 14 years
U.S. Cl. D12—191



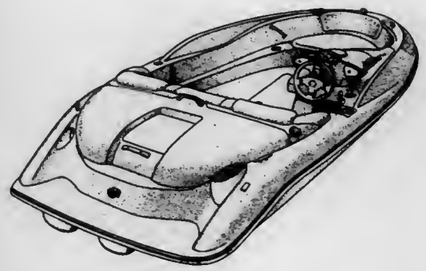
375,477
PASSENGER SIDE SURFACE CONFIGURATION OF AN INSTRUMENT PANEL FOR A MOTOR VEHICLE
Matthias Kulla, Stuttgart, and Wolfgang Moebius, Schwieberdingen, both of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany
Filed Jan. 17, 1995, Ser. No. 34,595
Claims priority, application Germany, Jul. 16, 1994, M94 05 672.2
Term of patent 14 years
U.S. Cl. D12—192



375,478
FRONT FACE OF A VEHICLE WHEEL
Peter Pfeiffer, Boeblingen, Germany, assignor to Mercedes-Benz AG, Stuttgart, Germany
Filed Jul. 21, 1994, Ser. No. 26,160
Claims priority, application Germany, Jan. 21, 1994, M94 00 462.5
Term of patent 14 years
U.S. Cl. D12—209

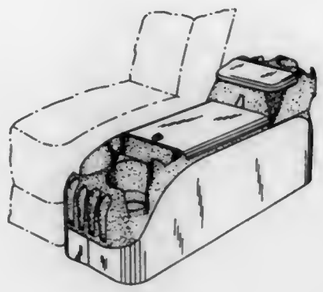


375,479
JET BOAT
Denys Lapointe, Mont Shefford; Pierre Rondeau, Bromond, both of Canada, and Shannon Cassell, Palm Bay, Fla., assignors to Bombardier Inc., Montreal, Canada
Filed Dec. 8, 1994, Ser. No. 32,127
Term of patent 14 years
U.S. Cl. D12—307

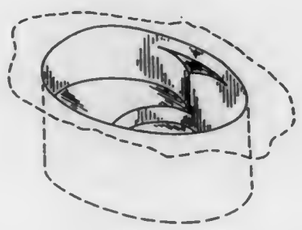


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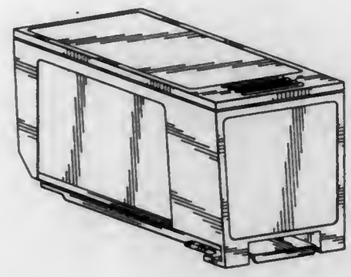
375,480
FLOOR TO SEAT CONSOLE
Daniel G. Smith, Grand Prairie, Tex., assignor to Texas Saddlebags, Inc., Arlington, Tex.
Filed Dec. 28, 1994, Ser. No. 32,775
Term of patent 14 years
U.S. Cl. D12—419



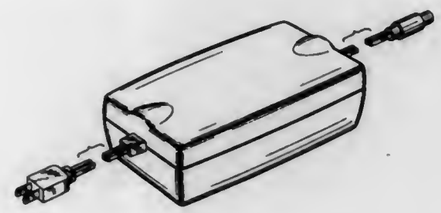
375,481
INNER SURFACE OF CONTAINER HOLDER
Ronald A. Dykstra, Grandville, Mich., assignor to Prince Corporation, Holland, Mich.
Filed Jan. 26, 1995, Ser. No. 34,042
Term of patent 14 years
U.S. Cl. D12—419



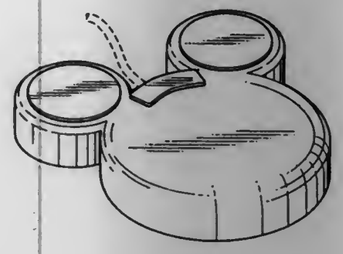
375,482
BATTERY
Jonathan N. Andrews, Monmouth, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed May 16, 1995, Ser. No. 38,918
Term of patent 14 years
U.S. Cl. D13—103



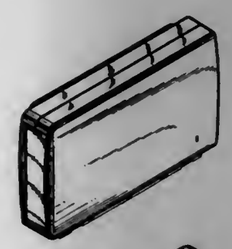
375,483
AC/DC CONVERTER
Naoki Tashiro, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 5, 1995, Ser. No. 37,154
Claims priority, application Japan, Oct. 6, 1994, 6-30445
Term of patent 14 years
U.S. Cl. D13—110

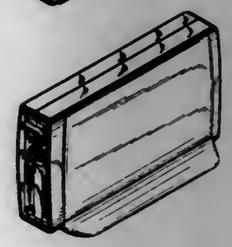


375,484
COMPUTER MOUSE
Richard Leifer, 11 Beaumont Dr., Melville, N.Y. 11747
Filed Dec. 28, 1994, Ser. No. 32,784
Term of patent 14 years
U.S. Cl. D14—114

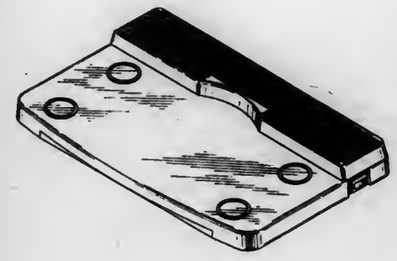


375,485
DATA STORAGE HOUSING
David Gray, Stubbington Fareham, England, assignor to Havant International Limited, Hampshire, United Kingdom
Filed Jan. 12, 1995, Ser. No. 33,465
Claims priority, application United Kingdom, Jul. 14, 1994, 2,040,320
Term of patent 14 years
U.S. Cl. D14—102

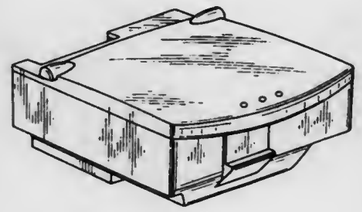




375,486
IMAGE SIGNAL CONVERTER
Toru Shinano, Yokohama, Japan, assignor to Canon Kabushiki Kaisha
Filed May 12, 1995, Ser. No. 38,728
Claims priority, application Japan, Nov. 14, 1994, 6-34668
Term of patent 14 years
U.S. Cl. D14—107

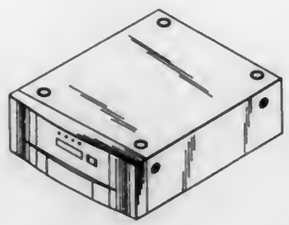


375,487
IMAGE READING DEVICE
Naoki Tashiro, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 21, 1995, Ser. No. 44,400
Claims priority, application Japan, Mar. 23, 1995, 7-7778
Term of patent 14 years
U.S. Cl. D14—107

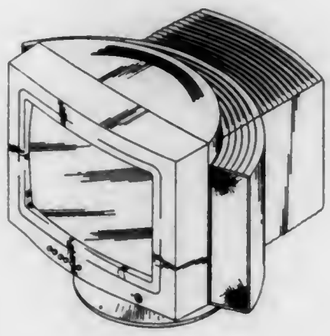


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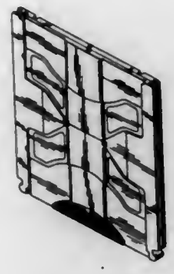
375,488
SIGNAL PROCESSOR
Takashi Ikenaga, Tokyo, Japan, assignor to Sony Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 15, 1995, Ser. No. 44,064
Term of patent 14 years
U.S. Cl. D14—107



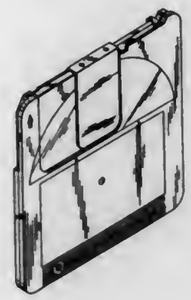
375,489
COMPUTER DISPLAY
Hartmut H. Esslinger, Los Gatos, Calif. 95030, assignor to Packard Bell Electronics, Inc., Westlake Vaillage, Calif.
Continuation-in-part of Ser. No. 23,805, Jun. 1, 1994, abandoned. This application Jun. 13, 1994, Ser. No. 24,335
Term of patent 14 years
U.S. Cl. D14—113



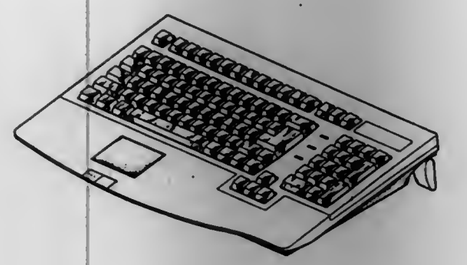
375,490
DISK CARTRIDGE
Toshiyuki Hisatsune, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jan. 12, 1995, Ser. No. 33,408
Term of patent 14 years
U.S. Cl. D14—114



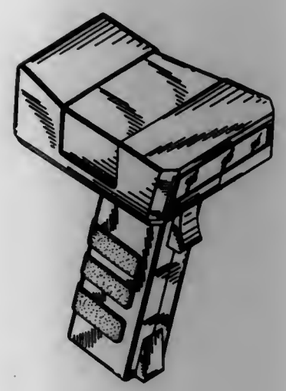
375,491
MAGNETIC OPTICAL DISC CARTRIDGE
Masayuki Hata, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 24, 1995, Ser. No. 36,698
Term of patent 14 years
U.S. Cl. D14—114



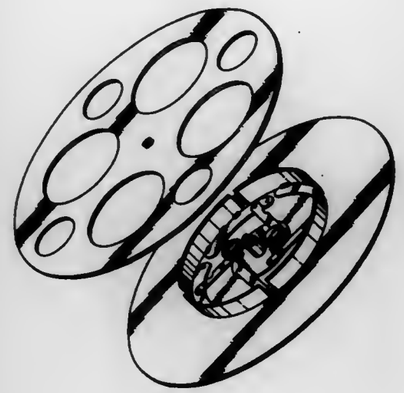
375,492
KEYBOARD
Stephen Chung, Taipei, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan
Filed Nov. 28, 1995, Ser. No. 47,178
Term of patent 14 years
U.S. Cl. D14—115



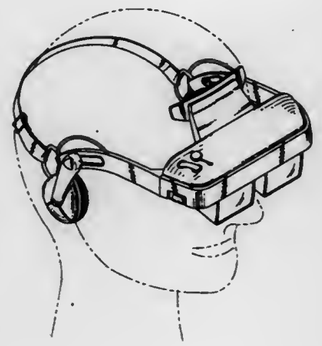
375,493
OPTICAL SCANNER
James H. Karlin, Fairport, N.Y., assignor to PSC Inc., Webster, N.Y.
Filed Sep. 18, 1995, Ser. No. 44,081
Term of patent 14 years
U.S. Cl. D14—116



375,494
FILM REEL
Randy Urlik, 8093 S. Jackson St., Littleton, Colo. 80122
Filed Mar. 6, 1996, Ser. No. 51,232
Term of patent 14 years
U.S. Cl. D14—122

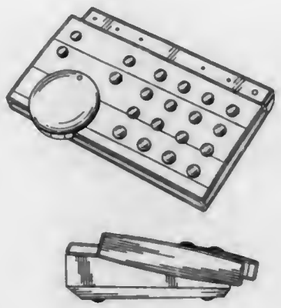


375,495
HEAD MOUNTED DISPLAY
Scott Macness, Issaquah; Christopher D. Wiegel, and Jae P. Park, both of Seattle, all of Wash., assignors to Virtual I/O, Inc., Seattle, Wash.
Continuation of Ser. No. 27,898, Aug. 31, 1994, abandoned. This application Jul. 20, 1995, Ser. No. 41,651
Term of patent 14 years
U.S. Cl. D14—124



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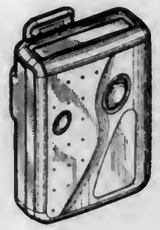
375,496
TELEPHONE APPARATUS
Finn Jensen, Struer, and Steve McGugan, Copenhagen, both of Denmark, assignors to GN Netcom, Denmark
Filed Sep. 6, 1995, Ser. No. 43,531
Term of patent 14 years
U.S. Cl. D14—150



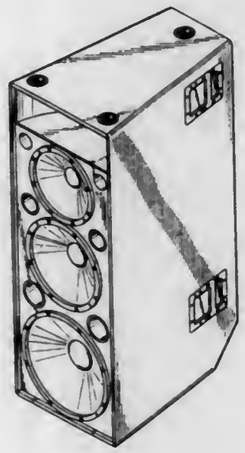
375,497
TELEPHONE SET
Wataru Kuwajima, Kawasaki, Japan, assignor to Nitsuko Corporation, Kanagawa, Japan
Filed Jun. 1, 1995, Ser. No. 37,843
Term of patent 14 years
U.S. Cl. D14—151



375,498
PAGER
William J. Scheid, Coral Springs, and Charles E. Staron, Jupiter, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 16, 1995, Ser. No. 46,314
Term of patent 14 years
U.S. Cl. D14—191



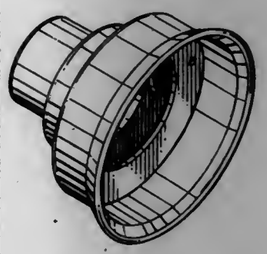
375,499
LOUDSPEAKER
John D. Meyer, Berkeley; Jeffrey A. Weiner, Oakland, and Frank Kavka, Walnut Creek, all of Calif., assignors to Meyer Sound Laboratories Incorporated, Berkeley, Calif.
Continuation-in-part of Ser. No. 35,928, Mar. 9, 1995. This application Aug. 9, 1995, Ser. No. 42,391
Term of patent 14 years
U.S. Cl. D14—214



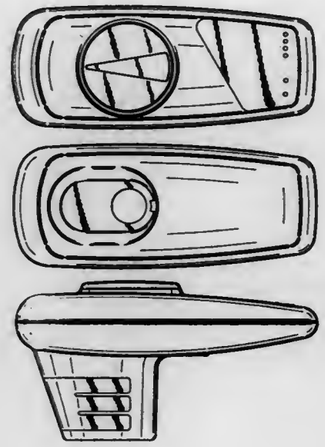
375,500
COMMUNICATIONS HEADSET
Gabriele Bungardt, Aptos, Calif.; Luis Pedraza, West Roxbury, Mass., and Tim Dearborn, Rochester Hills, Mich., assignors to Plantronics, Inc., Santa Cruz, Calif.
Filed Apr. 19, 1995, Ser. No. 37,702
Term of patent 14 years
U.S. Cl. D14—223



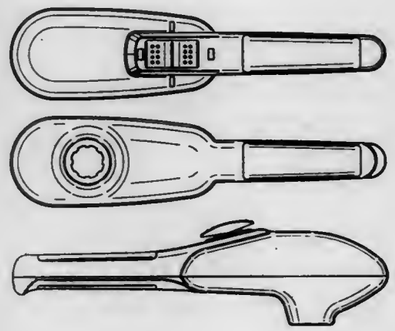
375,501
CUP RECEPTACLE FOR TELEPHONE HAND SET
Peter Lee, Huntington Beach, and George F. Cheung, La Mirada, both of Calif., assignors to American Phone Products, Inc., Garden Grove, Calif.
Filed Jan. 28, 1994, Ser. No. 18,067
Term of patent 14 years
U.S. Cl. D14—242



375,502
MOTOR HEAD
Jack Robbins, Derby, Kans., assignor to Brunswick Corporation, Lake Forest, Ill.
Filed Apr. 20, 1995, Ser. No. 37,781
Term of patent 14 years
U.S. Cl. D15—5

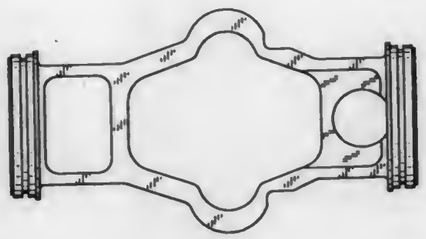


375,503
MOTOR HEAD
Jack Robbins, Derby, Kans., assignor to Brunswick Corporation, Lake Forest, Ill.
Filed Apr. 20, 1995, Ser. No. 37,791
Term of patent 14 years
U.S. Cl. D15—5

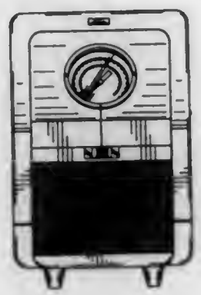


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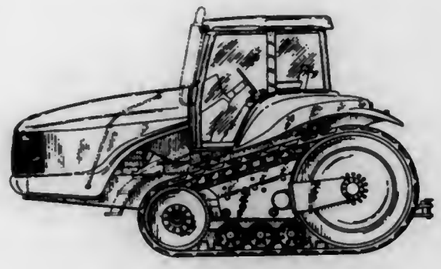
375,504
AIR MOTOR DUAL PISTON DESIGN
Leslie J. Sell, Bothell, Wash., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Jan. 16, 1996, Ser. No. 48,955
Term of patent 14 years
U.S. Cl. D15—5



375,505
AIR COMPRESSOR
Paul W. K. Wong, New Territories, Hong Kong, assignor to Good Hope Industries Ltd., Hong Kong, Hong Kong
Filed May 5, 1995, Ser. No. 38,625
Claims priority, application United Kingdom, Dec. 13, 1994, 2043883
Term of patent 14 years
U.S. Cl. D15—9



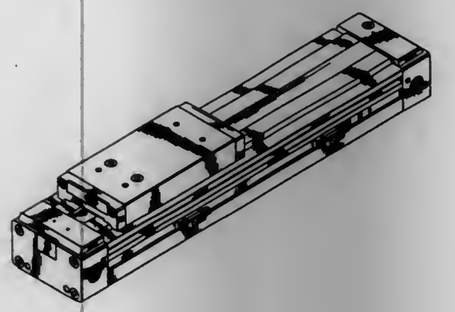
375,506
WORK MACHINE HAVING ENDLESS GROUND ENGAGING DRIVE BELTS
Robert C. Bastian, Hinckley; William C. Boroski, Aurora; Melvin P. Busch, Jr., Peoria; Elmer R. Crabb, Aurora; Patrick W. Friede, Brimfield; Alan D. Gustafson, Leland; David C. Koch, Lisle; Mark D. Miller, Montgomery; Jeffrey A. Moore, Waterman; James R. Oldham, St. Charles; Robert L. Stamate, Chillicothe; Samuel B. Stevens, Pekin, all of Ill.; Russell W. Strong, Craftsbury Common, Vt.; Lynn A. Sutton, Kewanee, and Joseph M. Tucker, III, Oswego, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Division of Ser. No. 12,145, Aug. 24, 1993, Pat. No. Des. 364,879. This application May 26, 1995, Ser. No. 40,251
Term of patent 14 years
U.S. Cl. D15—24



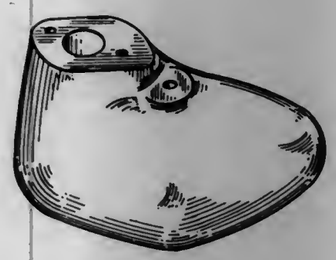
375,507
TELESCOPE SUPPORTING STAND
Ching-Chun Hsu, No. 24, She-Tzu, Hsin-Wu Hsiang, Taoyuan Hsien, Taiwan
Continuation of Ser. No. 297,898, Aug. 30, 1994. This application Jun. 21, 1995, Ser. No. 40,537
Term of patent 14 years
U.S. Cl. D16—132



375,508
RODLESS CYLINDER WITH A MOVABLE TABLE
Masatoshi Shino, Kakamihara; Terumasa Takeuchi, Aichi-ken, and Osamu Fushihara, Nagoya, all of Japan, assignors to CKD Corporation, Aichi, Japan
Division of Ser. No. 34,164, Jan. 27, 1995, Pat. No. Des. 367,863. This application Nov. 14, 1995, Ser. No. 46,417
Claims priority, application Japan, Jul. 29, 1994, 6-23011; Jul. 29, 1994, 6-23012
Term of patent 14 years
U.S. Cl. D15—143



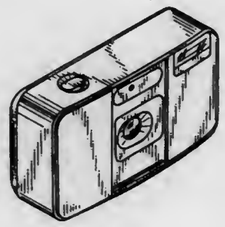
375,509
GEAR CASING
David Shaw, 103 Washington St., Morristown, N.J. 07960
Filed Dec. 11, 1995, Ser. No. 47,695
Term of patent 14 years
U.S. Cl. D15—148



375,510
MULTIFUNCTION BINOCULARS
Su-Min Kung, 8 Fl., No. 276-2, Sec. 1, Ta-Tung Road, Hsi Chih Town, Taipei Hsien, Taiwan
Filed Oct. 10, 1995, Ser. No. 45,090
Term of patent 14 years
U.S. Cl. D16—133



375,511
CAMERA
Kazuhisa Horikiri, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 10, 1995, Ser. No. 34,741
Claims priority, application Japan, Aug. 10, 1994, 6-24133
Term of patent 14 years
U.S. Cl. D16—209



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375,512

COVER LABEL FOR DAYLIGHT CAMERA

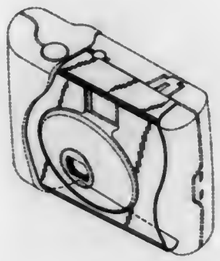
Steven S. Chapman, Corfu; Daniel C. Jackson; John K. McBride, both of Rochester; James G. Rydelek, Henrietta, and Joseph E. Yokaity, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 28, 1994, Ser. No. 30,435

The portion of the term of this patent subsequent to Oct. 15, 2010, has been disclaimed.

Term of patent 14 years

U.S. Cl. D16—219



375,513

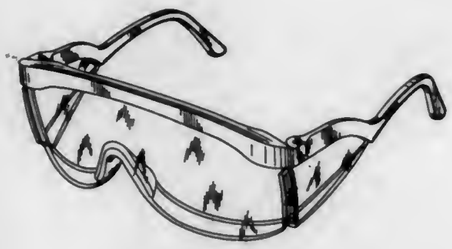
PROTECTIVE EYEGLASSES

Eugene Propp, 312 Keeney, Evanston, Ill. 60601

Filed Jul. 14, 1995, Ser. No. 41,452

Term of patent 14 years

U.S. Cl. D16—314



375,514

CHEST

H. Thomas Keller, and Scott Risdon, both of High Point, N.C., assignors to Vaughan Furniture Company, Inc., Galax, Va.

Filed Oct. 20, 1994, Ser. No. 30,024

Term of patent 14 years

U.S. Cl. D6—445



375,515

MUSIC SELECTION DEVICE

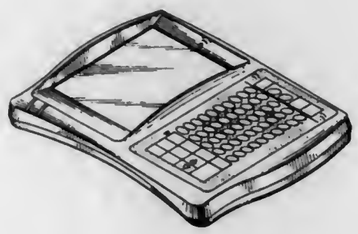
Masaru Takeda; Kazuo Miyashita; Yaichi Moriya, and Kenichi Yamauchi, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 26, 1995, Ser. No. 38,008

Claims priority, application Japan, Oct. 26, 1994, 6-32587

Term of patent 14 years

U.S. Cl. D17—99



375,516

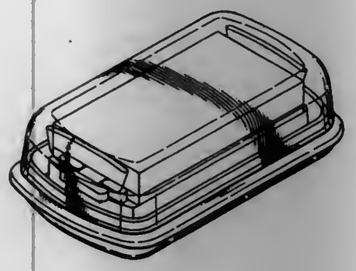
COMBINED STAMP PAD AND CONTAINER

Jeffrey M. Winston, 658 W. Shore Dr., Anacortes, Wash. 98221

Filed Aug. 22, 1995, Ser. No. 43,000

Term of patent 14 years

U.S. Cl. D18—17



375,517

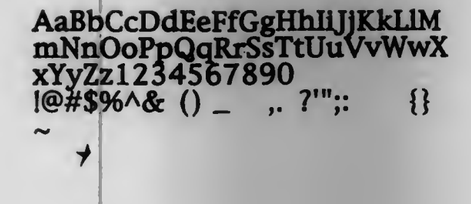
FONT OF TYPE

Denis B. Darby, Golden, Colo., assignor to U S West, Inc., Englewood, Colo.

Filed Dec. 22, 1995, Ser. No. 48,260

Term of patent 14 years

U.S. Cl. D18—24



375,518

COPYING MACHINE

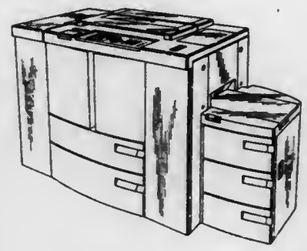
Nobuyuki Agata, Soka, and Takeshi Komada, Yokosuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 12, 1995, Ser. No. 38,724

Claims priority, application Japan, Nov. 14, 1994, 6-34666

Term of patent 14 years

U.S. Cl. D18—39



375,519

TONER CARTRIDGE FOR COMPUTER PRINTER

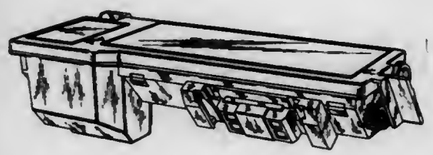
Mitsuhiro Tsumuki, Mie, Japan, assignor to Kyocera Corporation, Kyoto, Japan

Filed May 15, 1995, Ser. No. 38,842

Claims priority, application Japan, Nov. 15, 1994, 6-34955

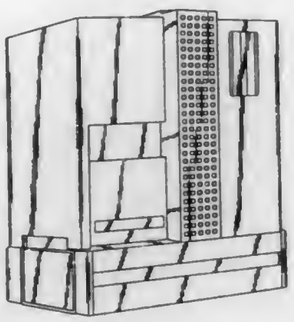
Term of patent 14 years

U.S. Cl. D18—43

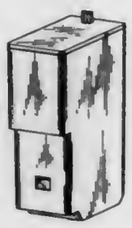


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375,520
LABEL PRINTER SUCH AS FOR PRINTING STICK-ON LABELS, BARCODE LABELS, AND GUMMED LABELS, SUCH AS FOR APPLICATION TO RETAIL GOODS
Ulf Koch; Dirk Umbach, both of Eberbach, and Arno Körner, Utting, all of Germany, assignors to Esselte Meto International GmbH, Heppenheim, Germany
Filed Apr. 15, 1994, Ser. No. 22,172
Claims priority, application Germany, Oct. 15, 1993, M 93 07 967.2
Term of patent 14 years
U.S. Cl. D18—53



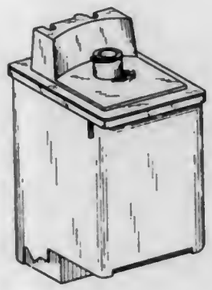
375,521
INK TANK FOR PRINTER
Hiroyuki Tokuda; Masanori Takenouchi, both of Yokohama; Yasuo Kotaki, Machida, and Yuji Hamasaki, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 22, 1995, Ser. No. 35,186
Claims priority, application Japan, Aug. 23, 1994, 6-25174
The portion of the term of this patent subsequent to Jul. 30, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



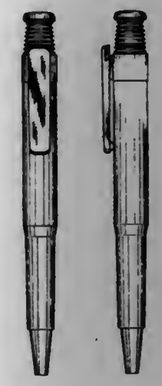
375,522
INK TANK FOR PRINTER
Hiroyuki Tokuda; Masanori Takenouchi, both of Yokohama; Yasuo Kotaki, Machida, and Yuji Hamasaki, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 22, 1995, Ser. No. 35,187
Claims priority, application Japan, Aug. 23, 1994, 6-25173
The portion of the term of this patent subsequent to Jun. 25, 2014, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



375,523
REPLACEABLE INK JET CARTRIDGE FOR INK JET PRINTERS
Richard A. Murray, San Diego, Calif., assignor to Encad, Inc., San Diego, Calif.
Filed May 4, 1995, Ser. No. 38,471
Term of patent 14 years
U.S. Cl. D18—56



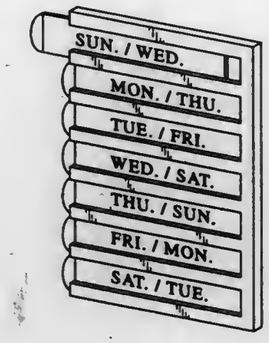
375,524
WRITING INSTRUMENT
Osamu Takahashi, Kawagoe, Japan, assignor to Kotobuki & Co., Ltd., Kyoto, Japan
Filed Aug. 2, 1995, Ser. No. 42,138
Claims priority, application Japan, May 23, 1995, 7-14221
Term of patent 14 years
U.S. Cl. D19—48



375,525
BALLPOINT PEN
Maria Boix Gacia, Barcelona, Spain, assignor to Inoxcrom, S.A., Barcelona, Spain
Filed Jul. 25, 1994, Ser. No. 26,308
Claims priority, application Spain, Jan. 24, 1994, 131777
Term of patent 14 years
U.S. Cl. D19—51



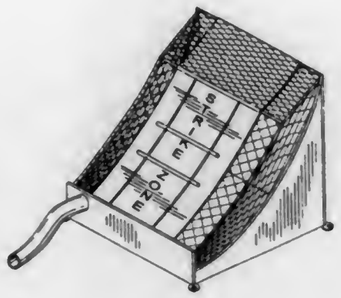
375,526
CALENDAR FOR A MEDICINE REMINDER
Patricia R. Londino, 123 Colorado Ave., Watertown, N.Y. 13601
Filed Mar. 24, 1995, Ser. No. 36,668
Term of patent 14 years
U.S. Cl. D20—18



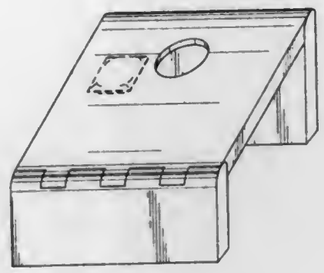
375,527
DISPLAY DEVICE
Christina B. Keogh, 983 Juliet La., Arnold, Md. 21012
Filed May 30, 1995, Ser. No. 39,517
Term of patent 14 years
U.S. Cl. D20—31



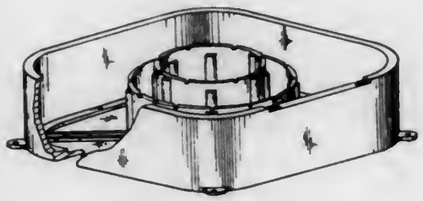
375,528
PITCHING TARGET AND RETURN APPARATUS
Lynn F. Raines, and Linda Raines, both of 11060 Country Rd., #246, Helena, Mo. 64459
Filed Oct. 6, 1995, Ser. No. 45,028
Term of patent 14 years
U.S. Cl. D21—5



375,530
BEAN BAG GAME
Bob Rudd, 5343 W. Warren Ave., Silver Lake, Ind. 46982
Filed Nov. 27, 1995, Ser. No. 47,028
Term of patent 14 years
U.S. Cl. D21—5



375,529
GAME BOARD
Arthur Kohler, Mentor, Ohio, assignor to Chagrin Plastic Methods, Mentor, Ohio
Filed Nov. 15, 1995, Ser. No. 46,458
Term of patent 14 years
U.S. Cl. D21—5



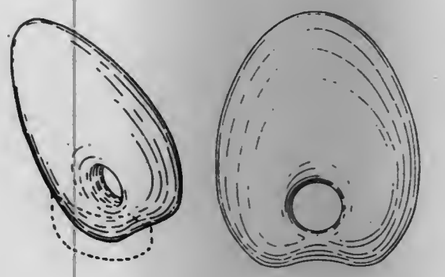
375,531
VIDEO GAME CONTROLLER FOR USE WITH AN EXERCISE APPARATUS
Steven C. Visser, West Lafayette, Ind., assignor to ExerTron, Inc., Muncie, Ind.
Filed Feb. 1, 1995, Ser. No. 34,333
Term of patent 14 years
U.S. Cl. D21—48



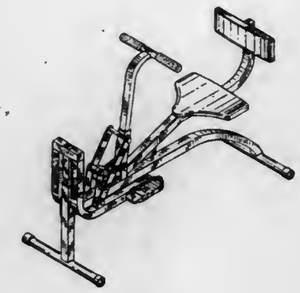
375,532
FRONT FACE OF A BLACK HISTORICAL FIGURES CHESS SET
Kevin B. Branham, 3501 N. MacGregor #81, Houston, Tex. 77004
Filed May 2, 1995, Ser. No. 38,261
Term of patent 14 years
U.S. Cl. D21—52



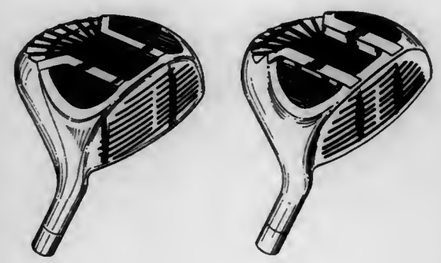
375,533
RATTLE
Joseph Selame, Chestnut Hill, Mass., assignor to Kalypso Corp., Saddle Brook, N.J.
Filed Dec. 15, 1995, Ser. No. 47,928
Term of patent 14 years
U.S. Cl. D21—65



375,534
EXERCISER
Paul Lin, No. 26, Lane 234, Yang Hu Road, Sec. 1, Yangmei Chen, Taoyuan, Taiwan
Filed Jul. 12, 1995, Ser. No. 41,374
Term of patent 14 years
U.S. Cl. D21—195



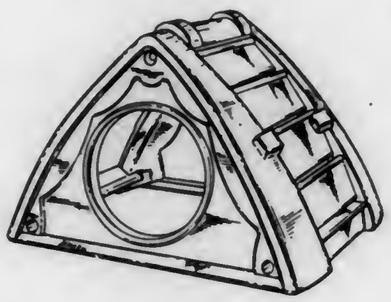
375,535
WOOD-TYPE GOLF CLUB HEAD
Geoffrey W. Gorman, Greer, S.C., assignor to Dunlop Slazenger Corporation, Greenville, S.C.
Continuation-in-part of Ser. No. 349,670, Dec. 5, 1994, Pat. No. 5,441,263. This application Apr. 7, 1995, Ser. No. 37,242
Term of patent 14 years
U.S. Cl. D21—214



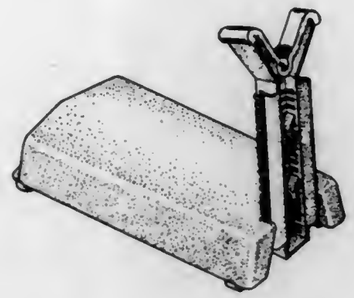
375,536
GRIP COVER FOR SKI STICK
Koji Kato, Tokyo, Japan, assignor to K&K Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 14, 1995, Ser. No. 44,005
Term of patent 14 years
U.S. Cl. D21—230



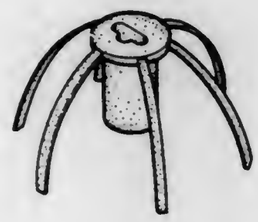
375,537
CLIMBING PLAY STRUCTURE
Gary G. Lenihan, East Aurora, N.Y., assignor to Fisher-Price, Inc., East Aurora, N.Y.
Filed Aug. 18, 1995, Ser. No. 42,831
Term of patent 14 years
U.S. Cl. D21—245



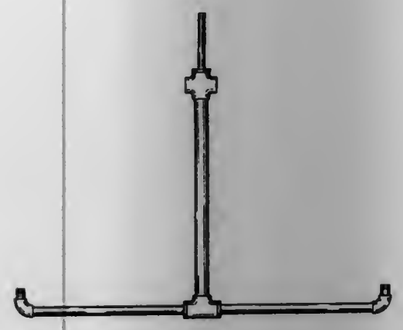
375,538
PISTOL REST
Steven W. Minneman, c/o MTM Molded Products Company, 3370 Obco Ct., Dayton, Ohio 45414, assignor to Steven W. Minneman, Clayton, Ohio
Filed Jan. 24, 1995, Ser. No. 33,962
Term of patent 14 years
U.S. Cl. D22—108



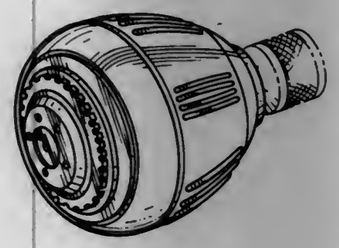
375,539
PROTECTIVE SHIELD FOR FISH HOOK
Hsiu-fen Chu, No. 2, Lane 246, Lin Shen Road, Chang Hua, Taiwan
Filed Mar. 27, 1995, Ser. No. 36,710
Term of patent 14 years
U.S. Cl. D22—144



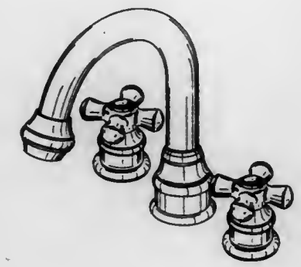
375,540
AERATION UNIT
Stephen J. McDonald, 7001 Creek Stone Rd., Milton, Fla. 32570
Filed Jun. 26, 1995, Ser. No. 40,722
Term of patent 14 years
U.S. Cl. D23—207



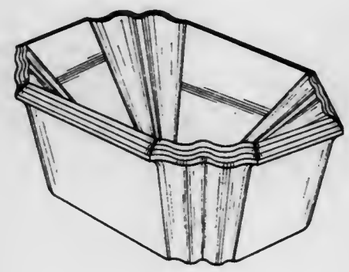
375,541
SHOWERHEAD
Bob Michaluk, Farmington, Mich., assignor to Alsons Corporation, Hillsdale, Mich.
Filed Sep. 18, 1995, Ser. No. 44,082
Term of patent 14 years
U.S. Cl. D23—213



375,542
FAUCET
Frederic C. Doughty, 842 Oneota Dr., S. Pasadena, Calif. 91030, and Darren M. Mark, 29109 Eveningside Dr., Castaic, Calif. 91384
Filed Jan. 25, 1995, Ser. No. 33,987
The portion of the term of this patent subsequent to Nov. 7, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—242

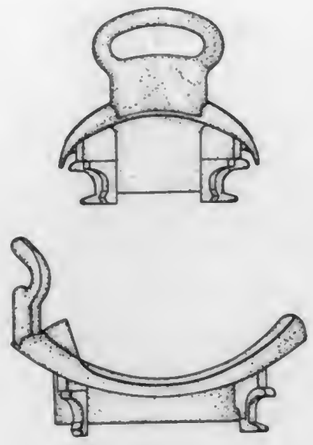


375,543
LAVATORY BOWL
Sherle Wagner, New York, N.Y., assignor to Sherle Wagner International, Inc., New York, N.Y.
Filed Jul. 17, 1995, Ser. No. 41,495
Term of patent 14 years
U.S. Cl. D23—285

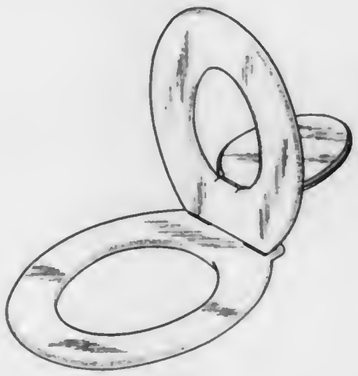


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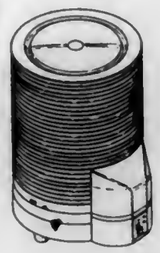
375,544
PORTABLE CHILD TOILET SEAT
Yoichi Nakata; Shinichi Katsuoka, and Shuko Yumino, all of Tokyo, Japan, assignors to Pigeon Corporation, Tokyo, Japan
Filed Dec. 9, 1994, Ser. No. 31,956
Claims priority, application Japan, Jun. 14, 1994, 6-17444
Term of patent 14 years
U.S. Cl. D23—296



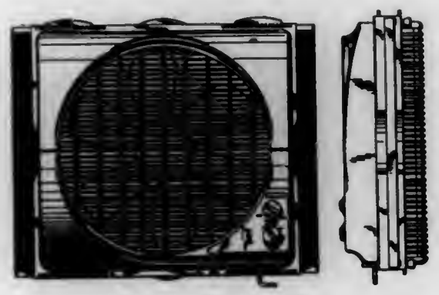
375,545
COMMODE REPLACEMENT LID WITH SUPPLEMENTAL SEAT CONFIGURATION FOR TODDLERS
Dennis E. Brown, 511 Ave. F, Box 104, Riverside, Pa. 17868
Filed Oct. 16, 1995, Ser. No. 45,276
Term of patent 14 years
U.S. Cl. D23—311



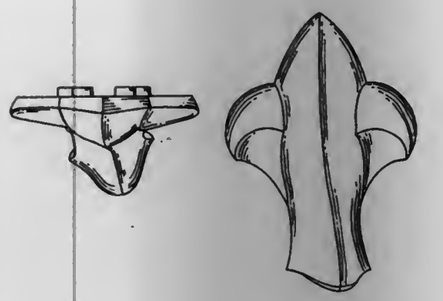
375,546
AIR PURIFIER
Keun M. Lee, Seoul, Rep. of Korea, assignor to Myoung Woull Electronics Co., Ltd., Rep. of Korea
Filed Dec. 27, 1995, Ser. No. 48,367
Claims priority, application Rep. of Korea, Jun. 29, 1995, 95-12361
Term of patent 14 years
U.S. Cl. D23—364



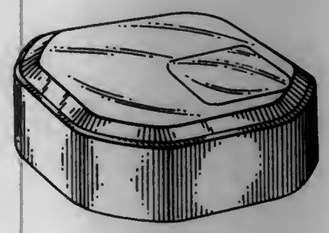
375,547
WINDOW FAN
Jui-Shang Wang, 5F, No. 184-2, Sec. 1, Ho Peiping E. Rd., Taipei, Taiwan, assignor to Duracraft Corp., Southborough, Mass.
Filed Jun. 20, 1994, Ser. No. 24,732
Term of patent 14 years
U.S. Cl. D23—382



375,548
BLADE HOLDER FOR A CEILING FAN
Richard M. Holbrook, Pasadena, Calif., assignor to Hunter Fan Company, Memphis, Tenn.
Filed Jun. 15, 1995, Ser. No. 40,343
Term of patent 14 years
U.S. Cl. D23—411



375,549
PHARMACEUTICAL TABLET
Joseph P. Sauer, Clementin, N.J., assignor to SmithKline Beecham Corporation, Philadelphia, Pa.
Filed Nov. 30, 1994, Ser. No. 31,602
The portion of the term of this patent subsequent to Jul. 23, 2014, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—101



375,550
HEARING PROTECTIVE EARPLUG
J. Scott Esler, Sturbridge, Mass.; Joseph A. Marino, Cumberland, R.I., and R. William Vernazza, Charlton, Mass., assignors to Cabot Safety Intermediate Corporation, Boston, Mass.
Filed Apr. 15, 1994, Ser. No. 21,406
The portion of the term of this patent subsequent to May 7, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—106



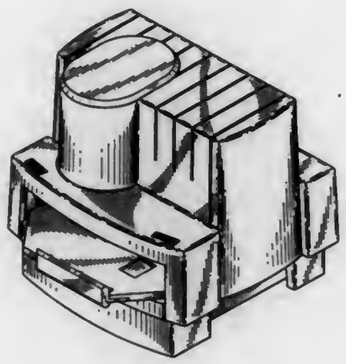
375,551
HEARING PROTECTIVE EARPLUG
J. Scott Esler, Sturbridge, Mass.; Joseph A. Marino, Cumberland, R.I., and R. William Vernazza, Charlton, Mass., assignors to Cabot Safety Intermediate Corporation, Boston, Mass.
Filed Apr. 15, 1994, Ser. No. 21,414
The portion of the term of this patent subsequent to May 7, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—106



375,552
NASAL CLIP
Richard A. Davi, 15 Pochuck Ct., Glenwood, N.J. 07418
Filed May 4, 1995, Ser. No. 38,363
Term of patent 14 years
U.S. Cl. D24—106



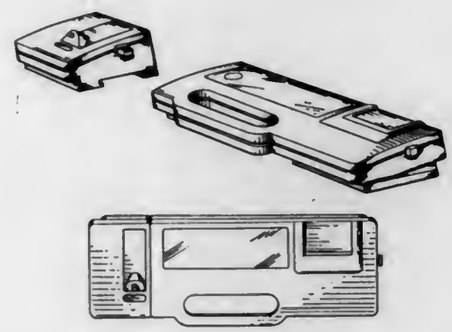
375,553
SURGICAL CASSETTE ADAPTER
Kevin M. Creed, Colleyville, Tex.; James R. Dennewill, San Juan Capistrano, Calif.; Valentine P. Injev, Irvine, Calif.; Diana J. Perrotta, Anaheim Hills, Calif., and Richard A. Rossback, Irvine, Calif., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.
Filed Nov. 15, 1995, Ser. No. 46,467
Term of patent 14 years
U.S. Cl. D24—111



375,554
FEMALE HYGIENE APPARATUS
Robbie S. Lee, 17,900 Bull Canyon Rd., Granada Hills, Calif. 91344
Filed Sep. 6, 1994, Ser. No. 28,067
Term of patent 14 years
U.S. Cl. D24—115



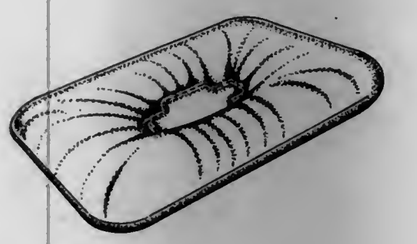
375,555
COMBINED SENSOR CARTRIDGE FOR A FLUID ANALYTE ANALYZER AND MONITORING MODULE
Douglas R. Savage, Del Mar; Richard J. Koerner, San Diego; Allan L. Cameron, Santa Monica; Ronald L. Lawrence, San Diego, all of Calif., and David R. Rich, So. Glastonbury, Conn., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 885,203, May 18, 1992, which is a continuation-in-part of Ser. No. 494,087, Mar. 7, 1990, Pat. No. Des. 331,286. This application May 18, 1993, Ser. No. 8,497
Term of patent 14 years
U.S. Cl. D24—169



375,556
HEARING AID
Yoshiyuki Narisawa, Kokubunji, and Noboru Inoue, Tokyo, both of Japan, assignors to Rion Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 27, 1994, Ser. No. 25,083
Term of patent 14 years
U.S. Cl. D24—174



375,557
THERAPEUTIC PILLOW
Linda H. Dixon, 1569 Aalapapa Dr., Kailua, Hi. 96734
Filed Mar. 21, 1995, Ser. No. 36,463
Term of patent 14 years
U.S. Cl. D24—183



375,558
END COUPLER FOR FUME EXHAUST DUCTS
Douglas Williams, 28 Waterside Cir., San Rafael, Calif. 94903
Filed Jun. 7, 1995, Ser. No. 39,898
Term of patent 14 years
U.S. Cl. D23—393

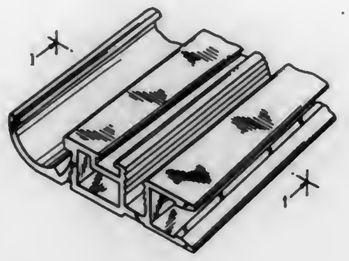


375,559
CONTAINER
James A. Baxter, London, United Kingdom, assignor to Chromacol Limited, Hertfordshire, United Kingdom
Filed Apr. 10, 1995, Ser. No. 37,315
Claims priority, application United Kingdom, Nov. 11, 1994, 2043202
Term of patent 14 years
U.S. Cl. D24—224

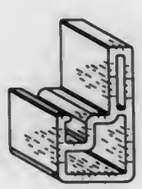


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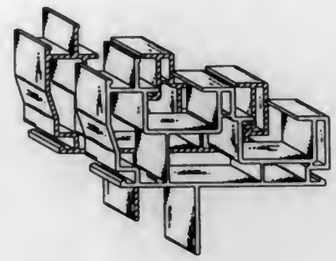
375,560
FRAME MEMBER EXTRUSION
Patrick W. Harris, and Maureen A. Harris, both of c/o Gentech Services, 7 Killick Street, Kunda Park, Queensland, 4556, Australia
Filed Feb. 7, 1995, Ser. No. 34,564
Term of patent 14 years
U.S. Cl. D25—113



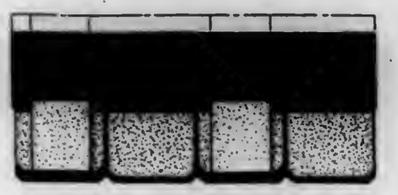
375,561
WINDOW COMPONENT EXTRUSION
Teresa A. Oliver, Kent, Wash., assignor to Mikron Industries, Kent, Wash.
Filed May 31, 1995, Ser. No. 39,443
Term of patent 14 years
U.S. Cl. D25—124



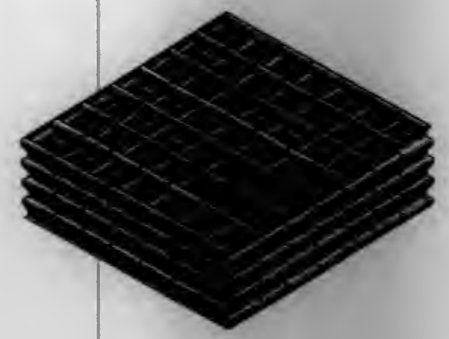
375,562
WINDOW COMPONENT EXTRUSION
Teresa A. Oliver, Kent, Wash., assignor to Mikron Industries, Inc., Kent, Wash.
Filed Dec. 1, 1995, Ser. No. 47,375
Term of patent 14 years
U.S. Cl. D25—124



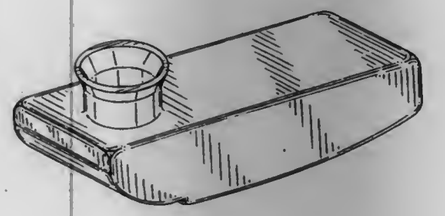
375,563
SHINGLE
Marcia G. Hannah; Michael J. Noone, both of Wayne; Kermit E. Stahl, North Wales; George W. Mehrer, Oreland, and Joseph Quaranta, Yardley, all of Pa., assignors to CertainTeed Corporation, Valley Forge, Pa.
Filed Mar. 17, 1995, Ser. No. 36,294
Term of patent 14 years
U.S. Cl. D25—139



375,564
GRID STRUCTURE
John M. Perez, Sunnyvale, Calif., assignor to Lockheed Corporation, Calabasas, Calif.
Filed Sep. 13, 1991, Ser. No. 758,948
Term of patent 14 years
U.S. Cl. D25—152



375,565
FLUID RESERVOIR
Robert C. Autrey, N. Ridgeville; Scott C. Lewis, Amherst, and Scott E. Mathis, Bay Village, all of Ohio, assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.
Filed Jul. 12, 1995, Ser. No. 41,848
Term of patent 14 years
U.S. Cl. D24—224



375,566
CANDLE
Eric W. Harter, 251 Highbury Crescent, Columbus, Ohio 43230
Filed Dec. 1, 1995, Ser. No. 47,332
Term of patent 14 years
U.S. Cl. D26—6



375,567
CANDLE HOLDER
Christopher Hardy, Springfield, Ill., assignor to Design Ideas, Ltd., Springfield, Ill.
Filed Apr. 26, 1995, Ser. No. 38,121
Term of patent 14 years
U.S. Cl. D26—9



UMI

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375,568
COMBINED HEADLIGHT RING AND VISOR FOR MOTORCYCLE
Lawayne L. Matthies, 809 Manor St., Grand Prarie, Tex. 75050
Filed Jul. 27, 1995, Ser. No. 41,948
Term of patent 14 years
U.S. Cl. D26—28



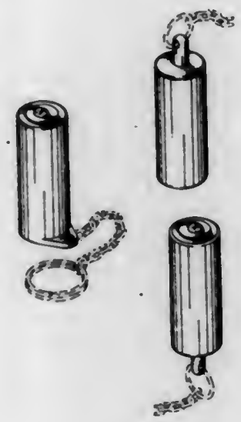
375,569
FLASHLIGHT
Philip Hwang, Kaohsiung Hsien, Taiwan, assignor to Freezin-hot Enterprise Co., Ltd., Feng-Shan, Taiwan
Filed Dec. 20, 1995, Ser. No. 48,178
Term of patent 14 years
U.S. Cl. D26—37



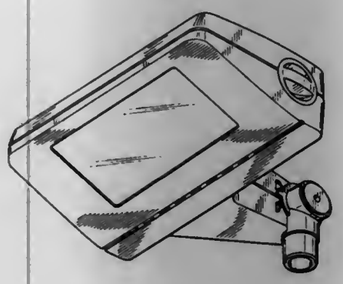
375,570
FLASHLIGHT
Naohiro Hayakawa, and Akinori Kimata, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Mar. 20, 1995, Ser. No. 36,392
Claims priority, application Japan, Sep. 22, 1994, 6-28914
Term of patent 14 years
U.S. Cl. D26—44



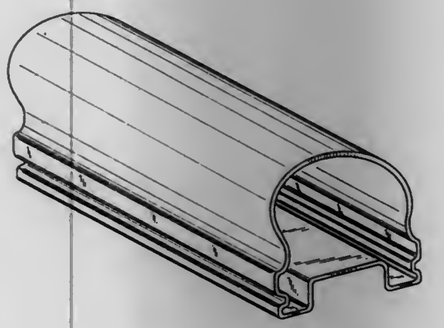
375,571
FLASHLIGHT
Thomas G. Petruzzi, 5118 Beleville Ave., Orlando, Fla. 32812
Filed Nov. 18, 1994, Ser. No. 31,117
Term of patent 14 years
U.S. Cl. D26—46



375,572
ADJUSTABLE QUARTZ FLOODLIGHT
Donald R. Sandell, San Jose, Calif., assignor to Larry C. Y. Lee, Hayward, Calif.
Filed Mar. 28, 1995, Ser. No. 36,808
The portion of the term of this patent subsequent to Jul. 25, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—63



375,573
EXTRUDED RAIL MEMBER FOR CONSTRUCTING A DECK AND THE LIKE
Thomas J. Andres, North Versailles, Pa., assignor to Thermal Industries, Inc., Pittsburgh, Pa.
Filed Aug. 17, 1995, Ser. No. 42,766
Term of patent 14 years
U.S. Cl. D25—164



375,574
CONCRETE BLOCK INSPECTION SCREEN
Lawrence M. Pickett, 10402 Cypress Rd., Leesburg, Fla. 34788
Filed Apr. 13, 1995, Ser. No. 37,458
Term of patent 14 years
U.S. Cl. D25—199



375,575
BATHROOM LIGHTING FIXTURE
Melissa S. Kay, South Euclid, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio
Filed Nov. 28, 1994, Ser. No. 31,448
Term of patent 14 years
U.S. Cl. D26—80



375,576
FLASHLIGHT
Naohiro Hayakawa, and Akinori Kimata, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Mar. 20, 1995, Ser. No. 36,393
Claims priority, application Japan, Sep. 22, 1994, 6-28915
Term of patent 14 years
U.S. Cl. D26—44

375,577
FLASHLIGHT
Naohiro Hayakawa, and Akinori Kimata, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Mar. 20, 1995, Ser. No. 36,394
Claims priority, application Japan, Sep. 22, 1994, 6-28916
Term of patent 14 years
U.S. Cl. D26—44

375,578
FLASHLIGHT
Naohiro Hayakawa, and Akinori Kimata, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Mar. 20, 1995, Ser. No. 36,395
Claims priority, application Japan, Sep. 22, 1994, 6-28917
Term of patent 14 years
U.S. Cl. D26—44

375,579
FLASHLIGHT
Naohiro Hayakawa, and Akinori Kimata, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Mar. 20, 1995, Ser. No. 36,396
Claims priority, application Japan, Sep. 22, 1994, 6-28918
Term of patent 14 years
U.S. Cl. D26—44

375,580
FLASHLIGHT
Naohiro Hayakawa, and Akinori Kimata, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Mar. 20, 1995, Ser. No. 36,397
Claims priority, application Japan, Sep. 22, 1994, 6-28919
Term of patent 14 years
U.S. Cl. D26—44

375,581
FLASHLIGHT
Naohiro Hayakawa, and Akinori Kimata, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Mar. 20, 1995, Ser. No. 36,398
Claims priority, application Japan, Sep. 22, 1994, 6-28920
Term of patent 14 years
U.S. Cl. D26—44

375,582
FLASHLIGHT
Naohiro Hayakawa, and Akinori Kimata, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Mar. 20, 1995, Ser. No. 36,399
Claims priority, application Japan, Sep. 22, 1994, 6-28921
Term of patent 14 years
U.S. Cl. D26—44

375,583
FLASHLIGHT
Naohiro Hayakawa, and Akinori Kimata, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Mar. 20, 1995, Ser. No. 36,400
Claims priority, application Japan, Sep. 22, 1994, 6-28922
Term of patent 14 years
U.S. Cl. D26—44

375,584
FLASHLIGHT
Naohiro Hayakawa, and Akinori Kimata, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Mar. 20, 1995, Ser. No. 36,401
Claims priority, application Japan, Sep. 22, 1994, 6-28923
Term of patent 14 years
U.S. Cl. D26—44

375,585
FLASHLIGHT
Naohiro Hayakawa, and Akinori Kimata, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Mar. 20, 1995, Ser. No. 36,402
Claims priority, application Japan, Sep. 22, 1994, 6-28924
Term of patent 14 years
U.S. Cl. D26—44

375,586
FLASHLIGHT
Naohiro Hayakawa, and Akinori Kimata, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Mar. 20, 1995, Ser. No. 36,403
Claims priority, application Japan, Sep. 22, 1994, 6-28925
Term of patent 14 years
U.S. Cl. D26—44

375,587
FLASHLIGHT
Naohiro Hayakawa, and Akinori Kimata, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Mar. 20, 1995, Ser. No. 36,404
Claims priority, application Japan, Sep. 22, 1994, 6-28926
Term of patent 14 years
U.S. Cl. D26—44

375,588
FLASHLIGHT
Naohiro Hayakawa, and Akinori Kimata, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Mar. 20, 1995, Ser. No. 36,405
Claims priority, application Japan, Sep. 22, 1994, 6-28927
Term of patent 14 years
U.S. Cl. D26—44

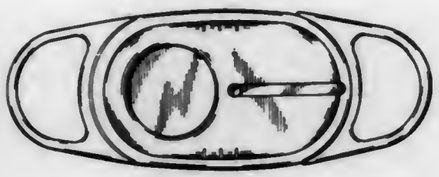
375,589
FLASHLIGHT
Naohiro Hayakawa, and Akinori Kimata, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Mar. 20, 1995, Ser. No. 36,406
Claims priority, application Japan, Sep. 22, 1994, 6-28928
Term of patent 14 years
U.S. Cl. D26—44

375,590
FLASHLIGHT
Naohiro Hayakawa, and Akinori Kimata, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Mar. 20, 1995, Ser. No. 36,407
Claims priority, application Japan, Sep. 22, 1994, 6-28929
Term of patent 14 years
U.S. Cl. D26—44

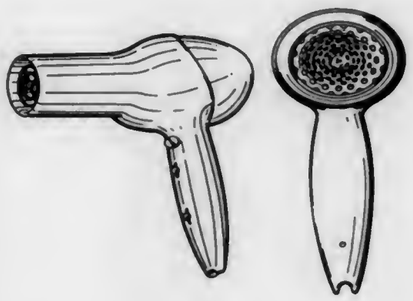
375,591
FLASHLIGHT
Naohiro Hayakawa, and Akinori Kimata, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Mar. 20, 1995, Ser. No. 36,408
Claims priority, application Japan, Sep. 22, 1994, 6-28930
Term of patent 14 years
U.S. Cl. D26—44

375,592
FLASHLIGHT
Naohiro Hayakawa, and Akinori Kimata, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Mar. 20, 1995, Ser. No. 36,409
Claims priority, application Japan, Sep. 22, 1994, 6-28931
Term of patent 14 years
U.S. Cl. D26—44

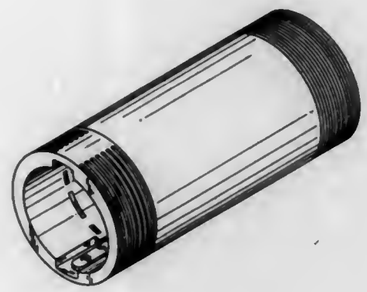
375,576
CIGAR END CUTTER
Craig B. Mesco, 116 Lithia Way #4, Ashland, Oreg. 97520
Filed Dec. 11, 1995, Ser. No. 47,717
Term of patent 14 years
U.S. Cl. D27—195



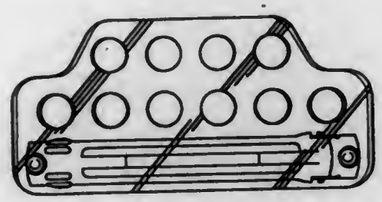
375,577
HAIR DRYER
Tucker Viemeister, and David K. Peschel, both of New York, N.Y., assignors to Remington Products Company, Bridgeport, Conn.
Filed Oct. 26, 1993, Ser. No. 14,588
Term of patent 14 years
U.S. Cl. D28—13



375,578
HAIR ROLLER
Dalal K. Hibri; David A. Monroe, both of San Antonio, Tex.; Chris N. Lenart, San Francisco; Beth K. Mosher, San Francisco, both of Calif.; Bryan F. Howell, Austin, and David R. Davis, San Antonio, both of Tex., assignors to Dalal Kanafani Hibri, San Antonio, Tex.
Filed Feb. 1, 1995, Ser. No. 34,314
Term of patent 14 years
U.S. Cl. D28—37



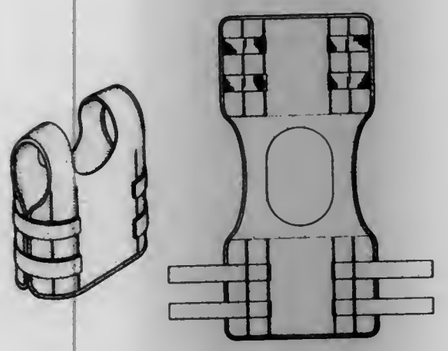
375,579
COMBINATION HAIR CLIP AND SCARF HOLDER
Jacqueline S. Nicholson, 1491 Wood Thrust Way, Marietta, Ga. 30062
Filed Nov. 3, 1994, Ser. No. 30,600
Term of patent 14 years
U.S. Cl. D28—42



375,580
HAIR COLORING EASEL
Dennis Giedd, 395 S. Topanga Canyon Blvd., Topanga, Calif. 90290
Filed Dec. 21, 1994, Ser. No. 32,596
Term of patent 14 years
U.S. Cl. D28—73



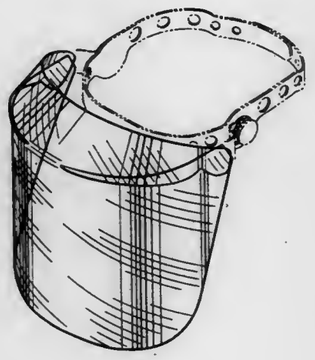
375,581
PROTECTIVE ATHLETIC VEST
Robert B. Dyer, 109 Edgemont Dr., Birmingham, Ala. 35209
Filed Sep. 29, 1994, Ser. No. 29,096
Term of patent 14 years
U.S. Cl. D29—101



375,582
CYCLIST'S HELMET
Louis Garneau, St-Augustin-de-Desmaures, Canada, assignor to Vetements Louis Garneau Inc., Canada
Filed Jan. 21, 1994, Ser. No. 17,753
Term of patent 14 years
U.S. Cl. D29—102



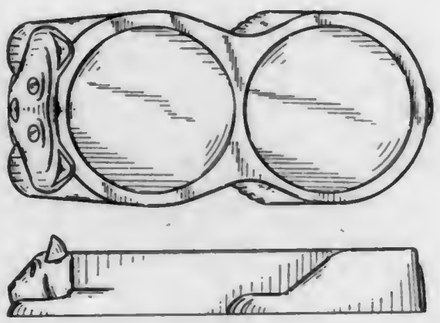
375,583
DISPOSABLE FACE SHIELD
Timothy J. Landis, Loomis; Kyle D. Fields, El Dorado Hills; James P. Dudley, Sacramento, and Scott M. Perry, Auburn, all of Calif., assignors to OP-D-OP, Inc., Roseville, Calif.
Continuation-in-part of Ser. No. 388,671, Feb. 13, 1995. This application Apr. 18, 1995, Ser. No. 37,758
Term of patent 14 years
U.S. Cl. D29—108



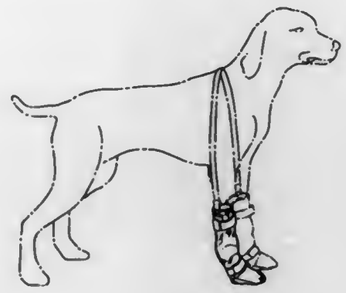
375,584
EAR CUP
Roland Westerdal, 7 Trowbridge Dr., Bethel, Conn. 06801-0540
Filed Apr. 24, 1995, Ser. No. 37,935
Term of patent 14 years
U.S. Cl. D29—112



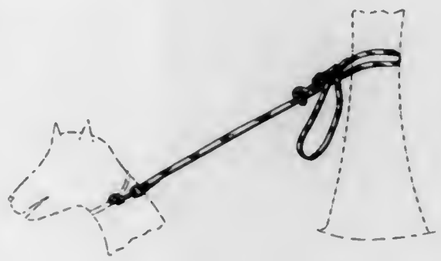
375,585
CAT-SHAPED PET FEEDING DISH
Charles R. Goetz, Carnegie, Pa., assignor to Alco Industries, Inc., Valley Forge, Pa.
Filed Jun. 16, 1995, Ser. No. 40,412
Term of patent 14 years
U.S. Cl. D30—130



375,586
BOOT FOR A CANINE
Sylvan B. Caditz, Issaquah, Wash., assignor to S. Caditz and Associates, Inc., Issaquah, Wash.
Filed Apr. 26, 1995, Ser. No. 38,030
Term of patent 14 years
U.S. Cl. D30—146



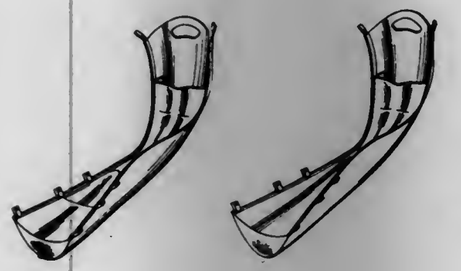
375,587
DOG LEASH
Robert L. Maglich, 1134 Huron La., Henderson, N.Y. 89015
Filed Jul. 6, 1992, Ser. No. 907,460
Term of patent 14 years
U.S. Cl. D30—153



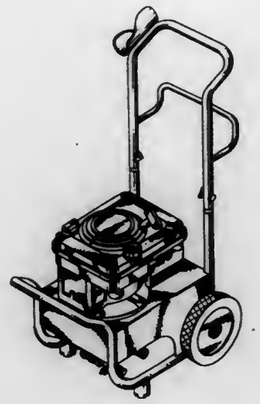
375,588
LIQUID SOLUTION DISPENSER FOR ANIMALS
Jan J. Bzoch, South Pasadena, Fla., assignor to A.O. Medical Corp., Largo, Fla.
Filed Mar. 6, 1995, Ser. No. 35,943
Term of patent 14 years
U.S. Cl. D30—158



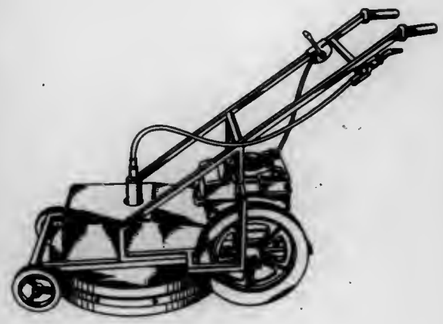
375,589
EQUIDAE MANURE/URINE CATCHER
William J. McNamara, Mt. Eliza Road, Kerrie, Victoria, Australia
Filed Mar. 28, 1995, Ser. No. 36,903
Claims priority, application Australia, Sep. 29, 1994, 3275/94
Term of patent 14 years
U.S. Cl. D30—161



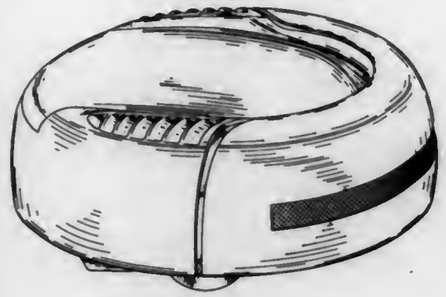
375,590
PORTABLE COLD WATER PRESSURE WASHER
Eric E. Steinhart, Bellevue, and Daniel C. Ertl, Dyersville, both of Iowa, assignors to Mi-T-M Corporation, Peosta, Iowa
Filed Aug. 12, 1994, Ser. No. 27,094
Term of patent 14 years
U.S. Cl. D32—15



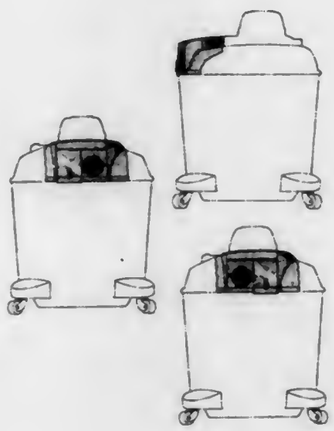
375,591
SURFACE CLEANER
Jules J. Fryoux, 5236 Floynell, Baton Rouge, La. 70809
Filed Dec. 8, 1994, Ser. No. 31,881
Term of patent 14 years
U.S. Cl. D32—15



375,592
VACUUM CLEANER
Inese Ljunggren, Ekerö, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Aug. 29, 1995, Ser. No. 43,225
Term of patent 14 years
U.S. Cl. D32—21



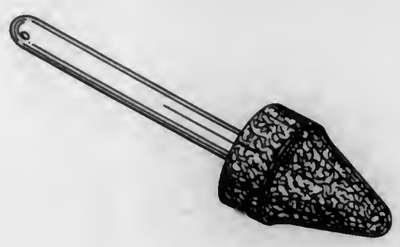
375,593
PORTION OF A VACUUM CLEANER
Richard A. Wareham, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Division of Ser. No. 8,532, May 19, 1993. This application Nov. 25, 1994, Ser. No. 31,411
Term of patent 14 years
U.S. Cl. D32—31



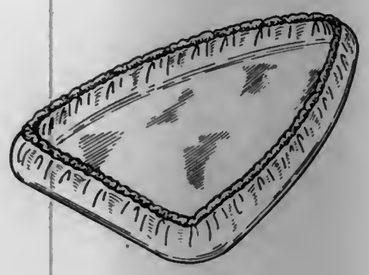
375,594
UPPER PORTION OF AN UPRIGHT VACUUM CLEANER
Gregory W. Luebbering, Bloomington, Ill., assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Jan. 13, 1995, Ser. No. 33,484
Term of patent 14 years
U.S. Cl. D32—31



375,595
NIPPLE SCRUBBER
Craig S. Shumway, and Amy Shumway, both of 4506 Dartford Ct., Orlando, Fla. 32826
Continuation of Ser. No. 182,287, Jan. 14, 1994. This application Feb. 7, 1996, Ser. No. 50,043
Term of patent 14 years
U.S. Cl. D32—35



375,596
IRON SOLE PLATE COVER
Virginia D. Laughlin, 227 Probasco Rd., East Windsor, N.J. 08520
Filed Jul. 12, 1995, Ser. No. 41,367
Term of patent 14 years
U.S. Cl. D32—71



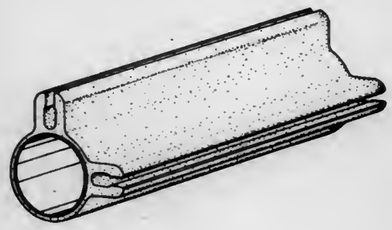
375,597
FOUR WHEELED CONTAINER WITH VERTICALLY AFFIXED LIFTING BRACKET
Norman C. Lee, Greensboro, N.C., assignor to Compagnie Plastic Omnium, Lyons, France
Filed Jan. 5, 1995, Ser. No. 33,082
Term of patent 14 years
U.S. Cl. D34—5



375,598
CONTAINER BASE
Vincent L. Haley, Orrville, Ohio, and David W. Kaiser, North Haven, Conn., assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jun. 23, 1995, Ser. No. 40,688
Term of patent 14 years
U.S. Cl. D34—10

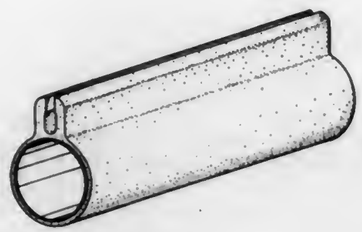


375,599
STRUCTURAL PIPE
Seiji Hirano, and Shuji Yoshino, both of Shizuoka, Japan, assignors to Yazaki Industrial Chemical Co., Ltd., Shizuoka, Japan
Filed Jul. 18, 1995, Ser. No. 41,566
Term of patent 14 years
U.S. Cl. D34—27

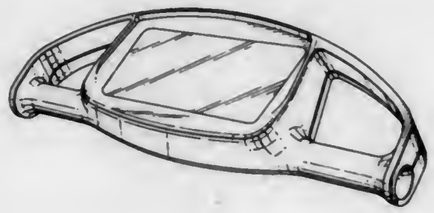


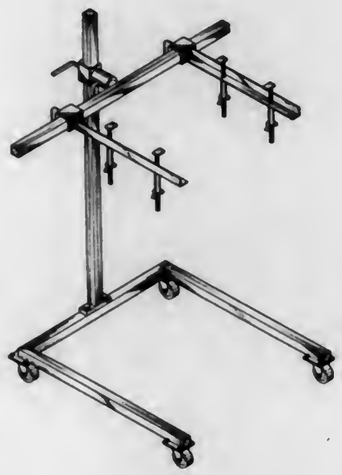
VOL 1192 ISS 2 NOV 12 1996 UMI

375,600
STRUCTURAL PIPE
Seiji Hirano, and Shuji Yoshino, both of Shizuoka, Japan, assignors to Yazaki Industrial Chemical Co., Ltd., Shizuoka, Japan
Filed Jul. 18, 1995, Ser. No. 41,567
Term of patent 14 years
U.S. Cl. D34—27

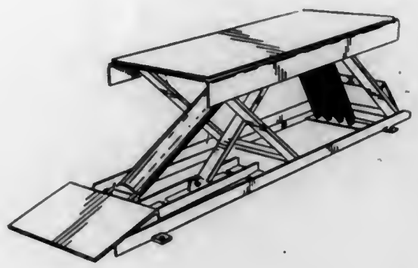


375,601
HANDLE FOR SHOPPING CART
Robert Myers, Chislehurst, United Kingdom, assignor to Lorraine Patricia Myers, United Kingdom
Filed Oct. 6, 1995, Ser. No. 45,046
Claims priority, application United Kingdom, Apr. 10, 1995, 2046622
Term of patent 14 years
U.S. Cl. D34—27



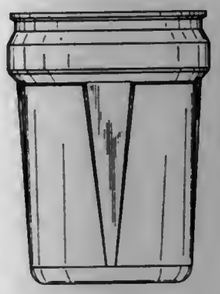


375,602
ABOVE GROUND LIFT
Donald R. Henthorn, Simi Valley, and Jeffrey S. Kritzer, Moorpark, both of Calif., assignors to Bend-Pak, Inc., Santa Paula, Calif.
Filed Jun. 21, 1995, Ser. No. 40,547
Term of patent 14 years
U.S. Cl. D34—28

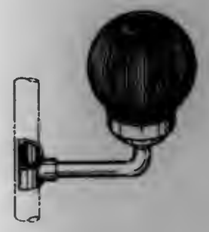


375,603
POSITIONER FOR ELECTRONIC EQUIPMENT
Carlton S. Carver, 303 Magnolia Dr., Washington, N.C. 27889
Filed Jul. 11, 1995, Ser. No. 41,320
Term of patent 14 years
U.S. Cl. D34—28

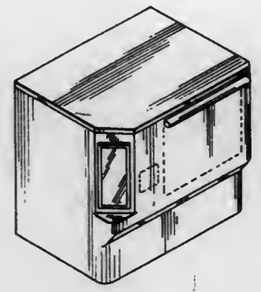
375,604
DRUM
Donald J. Mitchell, Wellsburg, W. Va., assignor to Eagle Manufacturing Company, Wellsburg, W. Va.
Filed Nov. 28, 1994, Ser. No. 31,436
Term of patent 14 years
U.S. Cl. D34—39



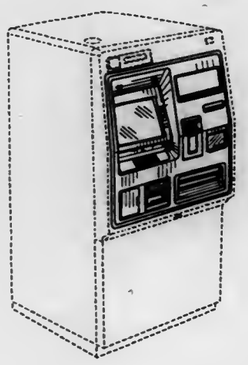
375,605
OUTDOOR LIGHT FIXTURE
Frank R. Balish, Jr., 12429 Denton Ave., Hudson, Fla. 34667
Filed Sep. 18, 1995, Ser. No. 44,114
Term of patent 14 years
U.S. Cl. D26—87



375,606
AUTOMATIC TELLER MACHINE CABINET
Ernest R. Dallman, 9200 Fanchon Dr., Zionsville, Ind. 46077, and Frnaklin W. Wehr, Indianapolis, Ind., assignors to Ernest R. Dallman, Zionsville, Ind.
Continuation-in-part of Ser. No. 22,639, May 10, 1994, Pat. No. Des. 361,192. This application Nov. 14, 1994, Ser. No. 30,926
Term of patent 14 years
U.S. Cl. D99—28



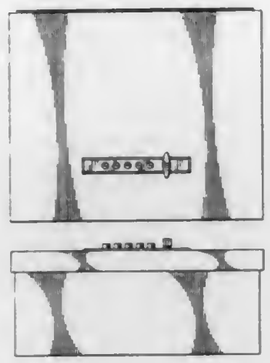
375,607
AUTOMATED TELLER MACHINE
Richard B. Hall, North Canton, Ohio, assignor to InterBoid, North Canton, Ohio
Filed Mar. 14, 1995, Ser. No. 36,420
The portion of the term of this patent subsequent to Jul. 25, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D99—28



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NO
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375,608
DESIGN FOR SECURITY BOX
Gale L. Berry, 20514 Ambrosia La., P.O. Box 8367, Bend, Oreg. 97708
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Kone Oy: *See—*
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Kong, Alvin M. W.; and Tu, Chan A., to TRW Inc. Method of thin film patterning by reflow. 5,573,171, Cl. 228-123.100.

Konica Corporation: *See—*
Hagiwara, Moeko; and Haraguchi, Tsuyoshi, 5,574,532, Cl. 396-626.000.
Komatsu, Yoshimasa; Ishikawa, Masao; Hagiwara, Moeko; Ishida, Kenji; Yoshimoto, Hiroshi; and Nagaoka, Shinsaku, 5,573,895, Cl. 430-398.000.
Sakai, Eiichi; and Okuyama, Okushi, 5,574,543, Cl. 399-59.000.
Yoshino, Kunihisa; Motohashi, Mitsuo; Nishida, Satoshi; and Takahashi, Akira, 5,574,544, Cl. 399-60.000.

Koninklijke PTT Nederland N.V.: *See—*
Pieterse, Rob; Cheung, Wing K.; and Van Bruchem, Dirk J. J., 5,574,929, Cl. 395-800.000.
van der Tol, Johannes J. G. M., 5,574,808, Cl. 385-28.000.

Konno, Fumiyasu, to Matsushita Electric Industrial Co., Ltd. Volume and tone control circuit for acoustic reproduction sets. 5,574,792, Cl. 381-103.000.

Konopka, John G.; and Priegnitz, Robert A., to Motorola, Inc. Flourescent lamp circuit employing a reset transistor coupled to a start-up circuit that in turn controls a control circuit. 5,574,336, Cl. 315-225.000.

Konuma, Toshimitsu: *See—*
Shimizu, Michio; Nishi, Takeshi; and Konuma, Toshimitsu, 5,574,581, Cl. 359-052.000.

Konya, Shohgo: *See—*
Yoshizaki, Kouji; Ogai, Masahiko; Kako, Takuzou; Nakajima, Yuuji; Fujino, Kenji; Itoh, Kazunori; Konya, Shohgo; and Sato, Keiji, 5,573,731, Cl. 422-174.000.

Konya, Yoshiharu: *See—*
Fukuoka, Hirofumi; Konya, Yoshiharu; Fukuhira, Masanori; and Ishizaka, Ichiro, 5,573,689, Cl. 219-390.000.

Kook, Taeho: *See—*
Chen, Min-Liang; Chittipeddi, Sailesh; Kook, Taeho; Powell, Richard A.; and Roy, Pradip K., 5,573,965, Cl. 437-41.000.

Kopp, Richard: *See—*
Bock, Manfred; Casselmann, Holger; Drouvé, Werner; Grögler, Gerhard; Kopp, Richard; and Hess, Heinrich, 5,574,123, Cl. 528-45.000.

Kopylov, Nonna; and Kortan, Ahmet R., to Lucent Technologies Inc. Method for making optical fiber preforms and optical fibers fabricated therefrom. 5,573,571, Cl. 65-388.000.

Korea Telecommunication Authority: *See—*
Chu, Kwang Uk; Kim, Byeong H.; Shin, Seo Y.; Kim, Ki H.; and Won, Yong h., 5,574,586, Cl. 359-140.000.
Yoo, Chan H.; Lee, Byung S.; and Kim, Young S., 5,574,770, Cl. 379-34.000.

Koren, Uziel: *See—*
Ben-Michael, Rafael; and Koren, Uziel, 5,574,742, Cl. 372-45.000.

Korin, Amon. Replaceable integrated water filtration and sterilization cartridge and assembly therefor. 5,573,666, Cl. 210-232.000.

Korinsky, George K.: *See—*
Dinh, James S.; and Korinsky, George K., 5,574,667, Cl. 364-557.000.

Kornelow: *See—*
Jordan, Franklin F., 5,572,843, Cl. 52-410.000.

Kornfeld, Joachim: *See—*
Schmode, Hartmut; Wiebe, Ulrich; Herzog, Armin; Kornfeld, Joachim; David, Bernd; Hetland, Detlev; Hanning, Günther; Gernot, Siegmund; and Bornefeld, Thorsten, 5,572,911, Cl. 81-9.430.

Korsunsky, Iosif: *See—*
Grabbe, Dimitry G.; and Korsunsky, Iosif, 5,573,435, Cl. 439-862.000.

Kortan, Ahmet R.: *See—*
Kopylov, Nonna; and Kortan, Ahmet R., 5,573,571, Cl. 65-388.000.

Koseki, Satoshi: *See—*
Muraki, Mineo; Takamiya, Toshito; and Koseki, Satoshi, 5,572,892, Cl. 72-39.000.

Kosmider, Ronald T.: *See—*
Rasmussen, Yonn K.; Sciarratta, Larry; and Kosmider, Ronald T., 5,573,445, Cl. 451-39.000.

Koster, Marinus P.: *See—*
Hoving, Willem; Van Hout, Johannes A. M.; Grooten, Marcellinus A. M.; Van Rens, Piet C. J.; Koster, Marinus P.; and Westerhof, Marten, 5,572,895, Cl. 72-342.940.

Koszalka, George W.: *See—*
Van Tuttle, Joel; Daluge, Susan M.; Burns, Charlene L.; Koszalka, George W.; and Krenitsky, Thomas A., 5,574,149, Cl. 536-50.000.

Koths, Kirston E.: *See—*
Ladner, Martha B.; Noble, Janelle A.; Martin, George A.; Kawasaki, Ernest S.; Coyne, Mazie Y.; Halenbeck, Robert F.; and Koths, Kirston E., 5,573,930, Cl. 435-69.500.

Kotzer, Moshe, to Pipex Ltd. Extrusion of thermally cross-linkable materials. 5,573,720, Cl. 264-171.150.

Koumura, Tukasa; Hisanaga, Michio; and Hattori, Tadashi, to Nippondenso Co., Ltd. Varifocal lens. 5,574,598, Cl. 359-666.000.

Kovacs, Paul: *See—*
Davidson, James A.; Mishra, Ajit K.; Daigle, Kenneth P.; and Kovacs, Paul, 5,573,401, Cl. 433-201.100.

Kovner, Spencer. Business card holder. 5,572,815, Cl. 40-404.000.

Kowall, David J.: *See—*
DeRees, Delbert D.; and Kowall, David J., 5,573,297, Cl. 296-146.600.

Kowalski, Thaddeus J.: *See—*
Clark, Linda A.; Kowalski, Thaddeus J.; and Pregibon, Daryl, 5,574,837, Cl. 395-140.000.

Koyama, Shuji; Kasamoto, Masami; and Shibata, Makoto, to Canon Kabushiki Kaisha. Substrate with an etched silicon compound film and an ink jet head utilizing the substrate. 5,574,487, Cl. 347-62.000.

Koyanagi, Kunihiko: *See—*
Miyoshi, Rika; Sakai, Tadamoto; Hashimoto, Noriaki; Sumihiro, Yukihiro; Yokota, Kayoko; and Koyanagi, Kunihiko, 5,574,129, Cl. 528-354.000.

Koyo Seiko Co., Ltd.: *See—*
Matsuoka, Hirofumi; and Fukuda, Ken, 5,574,344, Cl. 318-293.000.

Kozakai, Takashi; Yamamoto, Hironori; Nakamura, Nobuo; Takashita, Junji; and Imanari, Toru, to Canon Kabushiki Kaisha. Method and apparatus for grinding brittle materials. 5,573,447, Cl. 451-41.000.

Kozlowski, Edward L., Jr.: *See—*
Hardie, William G.; Theorin, Craig R.; Kozlowski, Edward L., Jr.; and Van Deusen, Herbert G., 5,574,250, Cl. 174-36.000.

Krafft, Marie-Pierre: *See—*
Riess, Jean G.; and Krafft, Marie-Pierre, 5,573,757, Cl. 424-78.020.

Krafft, Werner: *See—*
Andries, Hartwig; Krafft, Werner; Muës, Willem; and Gilleir, Jan, 5,573,897, Cl. 430-501.000.

Kragl, Hans; and Rech, Wolf-Henning, to Robert Bosch GmbH. Hybrid integrated optical circuit and device for emitting light waves. 5,574,806, Cl. 385-14.000.

Kramer, Daniel P.: *See—*
Dalton, Rick D.; Kramer, Daniel P.; Massey, Richard T.; and Waker, Damon A., 5,573,565, Cl. 65-59.100.

Kranig, Wolfgang; Cibura, Klaus; Woltering, Joachim; and Hilger, Christopher. Process for the preparation of powder coatings of epoxide resin, polymeric polycarboxylic acid and polyol. 5,574,112, Cl. 525-327.300.

Krause, Frank: *See—*
Heidel, Klaus; Ruback, Wulf; and Krause, Frank, 5,574,120, Cl. 526-318.200.

Krause, John C.: *See—*
Sonnier, David P.; Bunton, Wiliam P.; Cutts, Richard W., Jr.; Klecka, James S.; Krause, John C.; Watson, William J.; and Zalzala, Linda E., 5,574,849, Cl. 395-182.100.

Krauss, Karl-Hermann: *See—*
Sack, Wieland; Krauss, Karl-Hermann; Mehnert, Reiner; and Klenert, Peter, 5,573,636, Cl. 162-5.000.

Krawczyk, John: *See—*
Bialkowski, Jan; and Krawczyk, John, 5,574,910, Cl. 395-601.000.

Krebs, Steven L.: *See—*
Nazre, Aniruddha A.; Krebs, Steven L.; and Hayes, S. Kyle, 5,573,548, Cl. 606-232.000.

Kregloh, Daniel J. Magnification device lens assembly. 5,572,795, Cl. 33-244.000.

Kreider, Kenneth G., to United States of America, Commerce. Transparent carbon nitride films and compositions of matter comprising transparent carbon nitride films. 5,573,864, Cl. 428-698.000.

Kremser, Günter: *See—*
von Musil, Rudolf; Schier, Wolfgang; Kremser, Günter; Didzun, Norbert; Müller, Rainer; and Stobbe, Ferdinand, 5,574,325, Cl. 310-215.000.

Krenitsky, Thomas A.: *See—*
Van Tuttle, Joel; Daluge, Susan M.; Burns, Charlene L.; Koszalka, George W.; and Krenitsky, Thomas A., 5,574,149, Cl. 536-50.000.

Kresge, John S.; Light, David N.; and Wu, Tien Y., to International Business Machines Corporation. Laminated electronic package including a power/ground assembly. 5,574,630, Cl. 361-792.000.

Krespan, Carl G.; Petrov, Viacheslav A.; and Smart, Bruce E., to Du Pont de Nemours, E. I., and Company. Initiators for telomerization of polyfluoroalkyl iodides with fluoroolefins. 5,574,193, Cl. 570-172.000.

Kretschmer, Stephen L.: *See—*
Ruehl, Phillip C.; Kretschmer, Stephen L.; and Behrmann, Richard J., 5,573,222, Cl. 248-647.000.

Kreuzman, Adam J.; and Yeh, Wu-Kuang, to Eli Lilly and Company. Process for purifying echinocandin B deacylase. 5,573,936, Cl. 435-196.000.

Krivoshlykov, Sergej G., to CeramOptec Industries, Inc. Compound waveguide lasers and optical parametric oscillators. 5,574,818, Cl. 385-122.000.

Krofchak, David, to International Solidification, Inc. Method of treating steel mill waste. 5,573,576, Cl. 75-773.000.

Kroin, Julian S.: *See—*
Hertel, Larry W.; and Kroin, Julian S., 5,574,021, Cl. 514-45.000.

Krökel, Dieter; and Schiff, Andreas, to i f m electronic GmbH. Process for increasing the interference suppression. 5,574,587, Cl. 359-153.000.

Krone Aktiengesellschaft: *See—*
Busse, Ralf-Dieter; Klein, Harlad; Ottmanns, Johann; and Richter, Gerd, 5,574,614, Cl. 361-119.000.
Busse, Ralf-Dieter; and Storbeck, Carsten, 5,574,615, Cl. 361-120.000.

Kroner, Matthias; Schornick, Gunnar; Denzinger, Walter; Baur, Richard; Kud, Alexander; Potthoff-Karl, Birgit; and Schwendemann, Volker, to BASF Aktiengesellschaft. Polycocondensates based on aspartic acid, their preparation and their use. 5,574,113, Cl. 525-327.600.

Kroon, Gijsbert, to Aqualon Company. Waterborne clay-containing emulsion paints with improved application performance. 5,574,081, Cl. 524-56.000.

Kropp, Karl M.: *See—*
Rossini, Steven J.; Pinckney, Keith T.; Kropp, Karl M.; and Luhman, Robert A., 5,573,626, Cl. 156-361.000.

Krstenansky, John L.; and Broersma, Robert J., Jr., to Merrell Pharmaceuticals Inc. Analogs of hirudin having anti-platelet activity. 5,574,012, Cl. 514-14.000.

Krumbeck, Cindy: *See—*
Krumbeck, Keith, 5,572,921, Cl. 92-165.00R.

Krumbeck, Keith, to Krumbeck, Keith; and Krumbeck, Cindy. Lift for the handicapped. 5,572,921, Cl. 92-165.00R.

Krupp Polysius AG: *See—*
Tegtmeier, Gert; Strohbusch, Manfred; Henrich, Bernd; Palma, Pedro G.; and Halbleib, Andreas, 5,572,937, Cl. 110-300.000.

Ku, Chingyu J. Remotely controlled lawn mower. 5,572,856, Cl. 56-10.20A.

Ku, Hsi-Yung, to Hwa Lin Electronic Co., Ltd. Direct broadcasting satellite tuner with a negative feedback and image compression circuit. 5,575,001, Cl. 455-192.100.

Kubista, Thomas T.: *See—*
Vartti, Kelvin S.; Kubista, Thomas T.; Price, Ferris T., deceased, 5,574,753, Cl. 375-357.000.

Kubo, Akira: *See—*
Suzuki, Tameyuki; and Kubo, Akira, 5,573,876, Cl. 430-7.000.

Kubo, Hideyuki: *See—*
Irie, Yoshio; Harada, Nobuyuki; Nagasuna, Kinya; Hirota, Kohichi; Masuda, Yoshihiko; Nagano, Hideaki; and Kubo, Hideyuki, 5,574,121, Cl. 526-318.440.

Kubota, Yoshihiro: *See—*
Yunoki, Hideo; and Kubota, Yoshihiro, 5,574,904, Cl. 395-601.000.

Kubota, Yoshikazu; Matsushima, Sunao; Takashima, Shigeo; Mitsuhasi, Tsuneo; and Kamiya, Takashi, to Kohjin Co., Ltd.; and Aica Kogyo Co., Ltd. Fine dot-like tone decorative laminates containing pigmented fibers. 5,573,827, Cl. 428-143.000.

Kuboyama, Nobuyoshi. Health beverage that an extracted ingredient from plant, animal or mineral is major ingredient, and manufacturing method and apparatus therefor. 5,572,923, Cl. 99-287.000.

Kuchcik, Joel G.: *See—*
Baumann, James A.; Kuchcik, Joel G.; and Lanigan, John J., Sr., 5,573,293, Cl. 294-68.100.

Kucherlapati, Raju; Koller, Beverly H.; Smithies, Oliver; Dubridge, Robert B.; Greenburg, Gary; Capon, Daniel J.; Williams, Steven R.; and De Rafael, Mariona L. A., to Cell Genesys. Homologous recombination for universal donor cells and chimeric mammalian hosts. 5,574,205, Cl. 800-2.000.

Kud, Alexander: *See—*
Kroner, Matthias; Schornick, Gunnar; Denzinger, Walter; Baur, Richard; Kud, Alexander; Potthoff-Karl, Birgit; and Schwendemann, Volker, 5,574,113, Cl. 525-327.600.

Kudo, Kouichi; Baba, Nobuyuki; and Maeda, Hideo, to Ricoh Company, Ltd. Optical encoding apparatus for measuring displacement of an object using diffraction gratings and twice-diffracted and twice-transmitted light. 5,574,558, Cl. 356-356.000.

Kuhl, Donald K.: *See—*
Henry, Edgar G.; Schossler, Frank W.; and Kuhl, Donald K., 5,573,075, Cl. 173-211.000.

Kuhn, Robert L., Jr., to Eastman Kodak Company. Double exposure prevention apparatus. 5,574,525, Cl. 396-538.000.

Kulite Semiconductor Products: *See—*
Kurtz, Anthony D.; and Bemis, Andrew V., 5,574,295, Cl. 257-77.000.

Kulkarni, Rupali A.; and Deckner, George E., to Richardson-Vicks Inc. Photoprotective compositions. 5,573,754, Cl. 424-59.000.

Kuma, Kiyoji: *See—*
Sato, Shin-ichi; and Kuma, Kiyoji, 5,574,185, Cl. 564-224.000.

Kumagai, Chiaki: *See—*
Suzuki, Osamu; Tanaka, Keishin; Hayashi, Tatsuo; Matsuto, Takushi; Kumagai, Chiaki; Sakurai, Takeshi; and Ota, Atsuo, 5,573,313, Cl. 303-115.200.

Kumagai, Fumio: *See—*
Mori, Fumimasa; Odake, Masato; Shimizu, Kazuhiro; and Kumagai, Fumio, 5,574,254, Cl. 174-52.300.

Kumano, Makoto: *See—*
Ohkuma, Ikuo; Kumano, Makoto; Ido, Kihei; and Onishi, Ken, 5,574,570, Cl. 386-103.000.

Kumano, Shinji; and Masubuchi, Takamichi, to Yamaha Corporation. Keyboard apparatus with common stopper for key and hammer. 5,574,241, Cl. 84-439.000.

Kumar, Anil; Gemert, Barry V.; and Knowles, David B., to Transitions Optical, Inc. Substituted naphthopyrans. 5,573,712, Cl. 252-586.000.

Kumasaka, Takao; Takuma, Yasuo; Igawa, Tatsuo; Sugaya, Tomio; and Kikuchi, Yasuo, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Developing apparatus for an electrophotographic machine. 5,574,546, Cl. 399-276.000.

Kume, Masahiro: *See—*
Oyama, Hitoshi; and Kume, Masahiro, 5,574,365, Cl. 324-207.240.

Kumiai Chemical Industry Co., Ltd.: *See—*
Shibata, Masaru; Sugiyama, Kazuhiko; Yonekura, Norihisa; Sakai, Junetsu; Kojima, Yoshiyuki; and Hayashi, Shigeru, 5,574,064, Cl. 514-542.000.

Kumota, Hidetaka: *See—*
Shimizu, Masakazu; Shimamura, Hiroshi; and Kumota, Hidetaka, 5,573,632, Cl. 156-629.100.

Kunkle, Albert C.; Hardy, Robert E.; and Skipper, Bobby R., to J. M. Huber Corporation. Low brightness functional pigment from process by-product. 5,573,658, Cl. 209-164.000.

Kunkle, Herman M., Jr.: *See—*
Robertson, Stella M.; and Kunkle, Herman M., Jr., 5,573,775, Cl. 424-427.000.

Kunta, Norbert J. Guided vanes hydraulic power system. 5,573,035, Cl. 137-625.430.

Kuo, Dai-Ming. Water magnetization apparatus having insertable magnetizing unit. 5,573,664, Cl. 210-222.000.

Kuo, Kevin. Dartboard clock. 5,573,250, Cl. 273-408.000.

Kuo, Sheng-Chu; Lee, Fang Yu; and Teng, Che-Ming, to Yung Shin Pharm. Ind. Co., Ltd. 1-(substituted benzyl)-3-(substituted aryl)-condensed pyrazole derivatives and processes of making the same. 5,574,168, Cl. 548-360.500.

Kurahashi, Osamu: *See—*
Ono, Eiji; Tsujimoto, Nobuharu; Matsui, Kazuhiko; and Kurahashi, Osamu, 5,573,945, Cl. 435-252.330.

Kuramoto, Shinichi: *See—*
Takahashi, Yasuhiro; Miyashita, Yoshiaki; Shinguryou, Satoshi; Kuramoto, Shinichi; Asaba, Youichi; Tanikawa, Kiyoshi; Takahashi, Sadao; Kimura, Yoshiyuki; Ando, Kazuhiro; and Saitoh, Tadashi, 5,574,538, Cl. 399-71.000.

Kurata, Noboru; Tojo, Masaaki; and Souda, Hironori, to Matsushita Electric Industrial Co., Ltd. Optical isolator. 5,574,595, Cl. 359-484.000.

Kurby, Christopher: *See—*
Olds, Keith A.; Redden, James P.; and Kurby, Christopher, 5,574,968, Cl. 455-12.100.

Kureha Chemical Industry Co., Ltd.: *See—*
Ise, Michihito; and Hayashi, Hideo, 5,573,761, Cl. 424-125.000.

Kureha Kagaku Kogyo K.K.: *See—*
Tanaka, Hideaki; Oba, Hiroyuki; and Hirose, Kazuhiko, 5,574,096, Cl. 525-57.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Nagai, Aisaku, 5,574,375, Cl. 324-502.000.

Kurihara, Hideshi: *See—*
Kaneko, Tatsushi; Kinsho, Takeshi; Shimizu, Takaaki; Ogihara, Tsutomu; Saito, Ryuichi; and Kurihara, Hideshi, 5,573,705, Cl. 252-299.610.

Kurihara, Takao; Uchida, Yoshitaka; and Hamatsu, Masahiro, to Clarion Co., Ltd. Sliding correlator. 5,574,754, Cl. 375-367.000.

Kurita, Tetsuo: *See—*
Koike, Hisashi; Nagata, Satoshi; and Kurita, Tetsuo, 5,574,886, Cl. 395-500.000.

Kurita, Yukihiro: *See—*
Yoneta, Tadao; Unno, Takashi; Kurita, Yukihiro; and Shinba, Chikaya, 5,574,345, Cl. 318-376.000.

Kuroda, Akitada. Box holder. 5,573,216, Cl. 248-316.700.

Kuroda, Toru: *See—*
Takada, Masayuki; Yamada, Osamu; Kuroda, Toru; and Yamazaki, Koichi, 5,574,735, Cl. 371-37.100.

Kuroiwa, Hiroshi: *See—*
Shimada, Satoshi; Suzuki, Seiko; Tsuchitani, Shigeki; Ugai, Seiichi; Kaneyasu, Masayoshi; Kuroiwa, Hiroshi; and Yokota, Yoshihiro, 5,574,211, Cl. 73-1.00D.

Kurome, Kanji; Asahina, Atsushi; Hashimoto, Yoshihito; Nakagawa, Yoshiki; Wakou, Harutomo; and Oku, Yoshitaka, to Teijin Limited. Apparatus for assisting in ventilating the lungs of a patient. 5,572,993, Cl. 128-204.230.

Kurosaki, Takaharu: *See—*
Tsushima, Yuji; Kurosaki, Takaharu; Saito, Kenjiro; and Ishibasi, Yoichi, 5,572,960, Cl. 123-65.0PE.

Kuroyanagi, Itsuo: *See—*
Nakazima, Yukio; and Kuroyanagi, Itsuo, 5,573,448, Cl. 451-41.000.

Kurtz, Anthony D.; and Bemis, Andrew V., to Kulite Semiconductor Products. Dielectrically isolated SiC mosfet. 5,574,295, Cl. 257-77.000.

Kurtz, Fred R. RF switching with remote controllers dedicated to other devices. 5,574,440, Cl. 340-825.570.

Kusaka, Yosuke; and Utagawa, Ken, to Nikon Corporation. Automatic focus adjustment camera. 5,574,536, Cl. 396-96.000.

Kusakabe, Mitsuo, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor circuit. 5,574,395, Cl. 327-309.000.

Kuusisto, Douglas R.; and Persson, Eric G., to Nicollet Technologies Corporation. Control circuit for gas discharge lamps, which has a transformer with start and run windings. 5,574,338, Cl. 315-307.000.

Kuzdrall, James A. Response excursion reduction method for radiant flux sensors. 5,574,287, Cl. 250-395.000.

Kwatinetz, Andrew; Leblond, Antoine; Peters, G. Christopher; and Hirsch, Stephen M., to Microsoft Corporation. Method and system for selecting text utilizing a plurality of text using switchable minimum granularity of selection. 5,574,840, Cl. 395-761.000.

Kynast, Ulrich H.; and Weiler, Volker U., to U.S. Philips Corporation. Luminescent screen. 5,574,332, Cl. 313-483.000.

Kyosan Denki Co., Ltd.: *See—*
Ohsaki, Hitoshi; and Hojo, Shinji, 5,573,030, Cl. 137-43.000.

Kyoto Dai-ichi Kagaku Co. Ltd.: *See—*
Ueda, Hideo; Hiromoto, Mitsuo; Gang, Meng; and Yamasaki, Yutaka, 5,573,005, Cl. 128-730.000.

Labbe, Denis: *See—*
Beaumont, Guy D.; Labbe, Denis; and Warren, Alain, 5,574,386, Cl. 324-765.000.

Laboureau, Jacques P., to Societe Lars S.A. Ancillary instrument set for the reconstruction of the posterior cruciate knee ligament. 5,573,538, Cl. 606-96.000.

Lacroix, Martial, to BioChem Immunosystems Inc. Peptides and mixtures thereof for detecting antibodies to hepatitis C virus (HCV). 5,574,132, Cl. 530-323.000.

Lacy, Jeffrey L. Method for preparing a physiological isotonic pet radiopharmaceutical of ^{62}Cu. 5,573,747, Cl. 424-1.650.

Lacy, Rodney G., to Lacy, Rodney G. Room jacket for patient identification card. 5,572,929, Cl. 101-368.000.

Ladner, Martha B.; Noble, Janelle A.; Martin, George A.; Kawasaki, Ernest S.; Coyne, Mazie Y.; Halenbeck, Robert F.; and Koths, Kirston E., to Cetus Oncology Corporation. DNA encoding various forms of colony stimulating factor-1. 5,573,930, Cl. 435-69.500.

Lage, Axel. Foresail. 5,572,942, Cl. 114-106.000.

Lagrange, Gilles: *See—*
Mairesse, Gaetan; Boivin, Jean-Claude; Lagrange, Gilles; and Cocolios, Panayotis, 5,573,655, Cl. 205-634.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Mairesse, Gaetan; Boivin, Jean-Claude; Lagrange, Gilles; and Cocolios, Panayotis, 5,573,655, Cl. 205-634.000.

Lakes, Judith A.: *See—*
Riddick, Eric F.; and Lakes, Judith A., 5,573,697, Cl. 510-359.000.

Lal, B. B.: *See—*
Sharma, Tribhuvan P.; Lal, B. B.; Singh, Jagbir; and Chimote, R. S., 5,573,068, Cl. 169-68.000.

LaLonde, Aaron D. Cantilevered bottle support capable of incorporating any desired shape or graphic design. 5,573,123, Cl. 211-74.000.

Lam Research Corporation: *See—*
Dible, Robert D., 5,573,595, Cl. 118-723.0MP.

Lamb, Joel D.: *See—*
Lee, Ruby B.; Dowdell, Charles R ; and Lamb, Joel D., 5,574,676, Cl. 364-745.000.

Lambertini, Giuseppe, to Officina Meccanica Lombarda S.R.L. Device for blocking a piece on a support plane like a table for operating machines. 5,573,230, Cl. 269-235.000.

Lambrechts, John, to Banner Pharmacaps Inc. Shampoo conditioner and softgel filled therewith. 5,573,756, Cl. 424-70.240.

Lamm, Gunther: *See—*
Lauth, Guenter; Hoelderich, Wolfgang; Wagenblast, Gerhard; Albert, Bernhard; Lamm, Gunther; Reichelt, Helmut; Grund, Clemens; and Gruettner-Merten, Sabine, 5,573,585, Cl. 106-496.000.

Lammimäki, Kari: *See—*
Poikolainen, Antti; and Lamminmäki, Kari, 5,573,644, Cl. 162-278.000.

Lampe, Ross W.: *See—*
Dent, Paul W.; and Lampe, Ross W., 5,574,967, Cl. 455-12.100.

Lancaster, Patrick R., III; Gordon, Yoram; and Harrison, Jeff, to Lantech, Inc. Stretch wrapping with film severing. 5,572,850, Cl. 53-399.000.

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McKleroy, Christopher C., to Litten Systems, Inc. Hermetically sealed microwave integrated circuit package with ground plane fused to package frame. 5,574,313, Cl. 257-728.000.

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Merchel, Horst, to Vendoret Holding S.A. Shopping or luggage cart with lock. 5,573,097, Cl. 194-212.000.

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Methode Electronics, Inc.: *See—*
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Meyer, Dallas W.: *See—*
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Jacobson, Gary S.; Kirschner, Wesley A.; and Ramadei, Micheal J., 5,574,351, Cl. 318-696.000.

Pitt, Colin G.: *See—*
Habberfield, Alan D.; Kinstler, Olaf B.; and Pitt, Colin G., 5,574,018, Cl. 514-21.000.

Pittcon Industries, a division of American Metal Forming Corporation: *See—*
Decker, Dennis E., 5,573,829, Cl. 428-156.000.

Pixel International: *See—*
Clerc, Jean-Frédéric, 5,574,333, Cl. 313-497.000.

Pizano, Arturo A.: *See—*
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Place, Virgil A.: *See—*
Harrison, Juan M. E.; Barclay, Brian L.; Childers, Jerry D.; Wright, Jeri D.; Place, Virgil A.; and Wong, Patrick S., 5,573,776, Cl. 424-435.000.

Plante, Raymond: *See—*
Beaulieu, Pierre L.; Déziel, Robert; Moss, Neil; and Plante, Raymond, 5,574,015, Cl. 514-18.000.

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Beason, George P., Jr.; McKechnie, Timothy N.; and Power, Christopher A., 5,573,682, Cl. 219-121.500.

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Chanal, Cyrille; and Playe, Jacques, 5,573,130, Cl. 220-319.000.

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Donovan, Mary B.; and Pleggenkuhle, Timothy J., 5,573,844, Cl. 428-240.000.

Plessis, Olivier: *See—*
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Plestan, Alain: *See—*
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Poikolainen, Antti; and Lamminmäki, Kari, to Valmet Corporation. Apparatus for guiding a wire. 5,573,644, Cl. 162-278.000.

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Polaroid Corporation: *See—*
Molteni, William J.; and Volchok, William J., 5,574,579, Cl. 359-23.000.
Salvo, Lawrence J., 5,574,531, Cl. 396-33.000.
Yang, Yibing; and Soini, F. Richard, 5,574,511, Cl. 348-586.000.

Politis, Elias; and Thériault, Jean-Sébastien, to National Research Council of Canada. Method of improving the efficiency of data delivery to an output device. 5,574,838, Cl. 395-140.000.

Pollack, Alfred; Kirby, Robert A.; and Dufault, Robert, to Resolution Pharmaceutical Inc. Hydrazino-type N_2S_2 chelators. 5,574,140, Cl. 534-10.000.

Poluzzi, Rinaldo: *See—*
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Polysource Inc.: *See—*
Wehtje, Erik W.; and Anderlind, Erik T., 5,573,790, Cl. 425-404.000.

Poole, C. Allen; and York, Bonner N. Air powered caulking apparatus. 5,573,148, Cl. 222-611.100.

Pop-Pak, Limited: *See—*
Kaufman, Harrison; and Palmer, Michael B., 5,573,120, Cl. 206-755.000.

Poppe, R. Keith, to Everest Medical Corporation. Apparatus for interfacing a bipolar electrosurgical instrument to a monopolar generator. 5,573,424, Cl. 439-502.000.

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Salama, Amir, 5,573,733, Cl. 422-186.180.

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Shisgal, Ben Z.; Anderman, Hanan; Fashchik, Yosef; and Porat, Yariv, 5,574,426, Cl. 340-435.000.

Porter, Don B.; and Currey, Stephen B., to Sargent Controls & Aerospace/Dover Diversified Inc. Electro-hydraulic servovalve having mechanical feedback. 5,573,036, Cl. 137-625.630.

Porter, Warren W., to AT&T Global Information Solutions Company. Apparatus for preventing the formation of condensation on sub-cooled integrated circuit devices. 5,574,627, Cl. 361-719.000.

Porto, Brian, to Hugo Gepo Co., Inc., The. Coffee roaster oven chamber. 5,573,802, Cl. 426-466.000.

Portola Packaging, Inc.: *See—*
Chenault, Rawson L.; and Luch, Daniel, 5,573,134, Cl. 220-276.000.

Post, James M. Optical ornament. 5,573,017, Cl. 132-275.000.

Potthoff-Karl, Birgit: *See—*
Kroner, Matthias; Schornick, Gunnar; Denzinger, Walter; Baur, Richard; Kud, Alexander; Potthoff-Karl, Birgit; and Schwendemann, Volker, 5,574,113, Cl. 525-327.600.

Pouget, Francoise: *See—*
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Powell, Earle R.: *See—*
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Powell, James R.; and Reich, Morris, to Associated Universities, Inc. Hypervelocity cutting machine and method. 5,574,244, Cl. 89-7.000.

Powell, Richard: *See—*
Barry, Thomas G.; Gannon, Bernard F. X.; and Powell, Richard, 5,574,145, Cl. 536-24.320.

Powell, Richard A.: *See—*
Chen, Min-Liang; Chittipeddi, Sailesh; Kook, Taeho; Powell, Richard A.; and Roy, Pradip K., 5,573,965, Cl. 437-41.000.

Power, Christopher A.: *See—*
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Power Lone Star, Inc.: *See—*
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Power Tool Holders Incorporated: *See—*
Huff, Robert O.; Jordan, Paul T.; and Forquer, William F., 5,573,254, Cl. 279-62.000.
Salpaka, Glenn L., 5,573,255, Cl. 279-75.000.

Powers, Nicholas S.: *See—*
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PPG Industries, Inc.: *See—*
Nugent, Richard M., Jr.; Niederst, Ken W.; and Seiner, Jerome A., 5,573,819, Cl. 428-34.800.

Pradel, Robert; and Schiffler, Stefan, to Fichtel & Sachs AG. Stabilizer system for a motor vehicle suspension system with a rotary actuator. 5,573,265, Cl. 280-689.000.

Prager, Bernhard: *See—*
Danklmaier, Johann; Macher, Ingolf; and Prager, Bernhard, 5,574,155, Cl. 540-227.000.

Pramanik, Dipankar; and Nariani, Subhash R., to VLSI Technology, Inc. Method for reducing contamination of anti-fuse material in an anti-fuse structure. 5,573,970, Cl. 437-60.000.

Pranger, Maarten R.; Fraenkel, Cristian A.; Pekelney, Richard; and Shafer, David C., to Kensington Microware Limited. Computer pointing device. 5,574,480, Cl. 345-166.000.

Prasad, B. Bhanu: *See—*
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Prater, James S., to AT&T Global Information Solubions Company; Hyundai Electronics America; and Symbios Logic Inc. Multi-phase charge sharing method and apparatus. 5,574,633, Cl. 363-59.000.

Pratt, William C., to Micro Chemical, Inc. Method and apparatus for measuring internal tissue characteristics in feed animals. 5,573,002, Cl. 128-660.070.

Praxair Technology, Inc.: *See—*
Leger, Christopher B., 5,572,938, Cl. 110-346.000.

Precision Control Design, Inc.: *See—*
Conlan, Robert W., 5,573,013, Cl. 128-782.000.

Pregibon, Daryl: *See—*
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President and Fellows of Harvard College: *See—*
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President U Fellows of Harvard College: *See—*
Kassis, Amin I.; Foulon, Catherine F.; and Adelstein, S. James, 5,574,148, Cl. 536-28.520.

Prevost, Ron: *See—*
Cowger, Bruce; and Prevost, Ron, 5,574,489, Cl. 347-86.000.

Price, Ferris T., deceased (by Robert Howe Price, Personal Representative): *See—*
Vartti, Kelvin S.; Kubista, Thomas T.; Price, Ferris T., deceased, 5,574,753, Cl. 375-357.000.

Priegnitz, Robert A.: *See—*
Konopka, John G.; and Priegnitz, Robert A., 5,574,336, Cl. 315-225.000.

Priority Designs, Inc.: *See—*
Kolada, Paul P.; and Birchler, Terry M., 5,572,739, Cl. 2-19.000.

Pritchard, David: *See—*
Wrightham, David W.; and Pritchard, David, 5,572,863, Cl. 60-39.370.

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Ampulski, Robert S.; Monteith, Joel K.; Ostendorf, Ward W.; Van Phan, Dean; and Trokhan, Paul D., 5,573,637, Cl. 162-112.000.
Applegate, Stephen S., 5,573,176, Cl. 229-162.000.
Johnston, James P., 5,574,003, Cl. 510-301.000.
Wahl, Errol H.; Bacon, Dennis R.; Baker, Ellen S.; Bodet, Jean-Francois; Burns, Michael E.; Demeyere, Hugo J. M.; Hensley, Charles A.; Mermelstein, Robert; Severns, John C.; Shaw, John H., Jr.; Siklosi, Michael P.; Vogel, Alice M.; and Watson, Jeffrey W., 5,574,179, Cl. 554-110.000.
Welch, Robert G.; Githuku, David N.; Hollihan, Lester J.; and Jackson, Charles A., 5,574,005, Cl. 510-444.000.

Proctor, Ronnie E. Spraying apparatus and method for cleaning holding tanks of recreational vehicles and other vehicles with a commode. 5,573,187, Cl. 239-532.000.

Product Engineered Systems, Inc.: *See—*
Odom, Horace L.; and Odom, Kenneth A., 5,573,563, Cl. 55-301.000.

Progressive Electronics, Inc.: *See—*
Clement, Douglas S., 5,574,769, Cl. 379-21.000.

Projectron Ltd.: *See—*
Boram, Frank; and Boram, John M., 5,572,814, Cl. 40-362.000.

Pronko, Steven G. E.: *See—*
Wilkinson, G. Mark; and Pronko, Steven G. E., 5,573,307, Cl. 299-14.000.

Pryor, Robert A.: *See—*
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Waggener, Herbert A.; and Przydzial, Kazimierz, 5,573,732, Cl. 422-186.060.

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Puckhaber, John H., Jr.: *See—*
Steltenkamp, Robert J.; Puckhaber, John H., Jr.; Colodney, Daniel; and Hendrickson, Thomas C., 5,573,700, Cl. 510-383.000.

Pulaski, Doris P.: *See—*
Kaplan, Leon H.; and Pulaski, Doris P., 5,573,875, Cl. 430-5.000.

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Puritan Bennett Corporation: *See—*
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Purotech Ltd.: *See—*
Frommer, Moshe A.; and Dalven, Israel, 5,573,665, Cl. 210-232.000.

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Puukangas, Pertti: *See—*
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Pyrocap International Corporation: *See—*
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Qian, Shie; and Dunham, Mark E., to National Instruments Corporation. System and method for constructing filters for detecting signals whose frequency content varies with time. 5,574,639, Cl. 364-724.010.

Qualcomm Incorporated: *See—*
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Wallace, Raymond C., 5,574,987, Cl. 455-82.000.

Quantum Chemical Company: *See—*
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Quantum Corporation: *See—*
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Quantum Group, Inc.: *See—*
Marnie, Glenn; Dolnick, Earl M.; and Nelson, Ivan J., 5,573,953, Cl. 436-164.000.

Quantum Peripherals Colorado, Inc.: *See—*
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Quay, Steven C., to Sonus Pharmaceuticals, Inc. Persistent gaseous bubbles as ultrasound contrast media. 5,573,751, Cl. 424-9.520.

Quest Medical, Inc.: *See—*
LeCocq, Andrew D.; Thompson, Thomas C.; Jones, Kenneth A.; Abbott, Martyn; Davis, Albert M.; and Mattson, Andrew P., 5,573,502, Cl. 604-4.000.

Quinn, Scott D.: *See—*
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Quintana, Reynaldo, to Futrex, Inc. Non-invasive near-infrared quantitative measurement instrument. 5,574,283, Cl. 250-341.100.

Quirk, Richard; Bird, David A.; Sbulver, Ian N. W.; and McIntosh, Robin M., to Pilkington Glass Limited. Method for reducing NOx emissions from a regenerative glass furnace. 5,573,568, Cl. 65-134.600.

Qureshi, Asim R.: *See—*
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Qureshi, Fazal U. R., to National Semiconductor Corporation. Set/reset scan flip-flops. 5,574,731, Cl. 371-22.300.

Quzilleau, Gaston, to Foundation Centre Louis-Hebert. Computer aided tactile design. 5,574,830, Cl. 395-103.000.

R.I.T.A. Corporation: *See—*
Murphy, Lawrence J., 5,573,785, Cl. 424-70.100.

R J Fullwood and Bland Limited: *See—*
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Raad, George B., to Micron Technology, Inc. Ram row decode circuitry that utilizes a precharge circuit that is deactivated by a feedback from an activated word line driver. 5,574,698, Cl. 365-230.060.

Raba Magyar Vagon-es Gepgyar Rt.: *See—*
Tar, Lóránt; Légmán, László; and Végh, Iibor, 5,573,388, Cl. 418-15.000.

Rachak, Alexander L., to Shane Group, Inc., The. Retrofit waste vault system. 5,573,661, Cl. 210-170.000.

Rackoff, William H.; and Zelt, Albert R., to Asko, Inc. Computer design tool for rotary slitting of metal and a method of use thereof. 5,574,890, Cl. 395-500.000.

Radant Systems, Inc.: *See—*
Sureau, Jean-Claude, 5,574,471, Cl. 343-909.000.

Radici, Pierino; Cozzi, Pierluigi; Giuffrida, Giuseppe; and Zatta, Agostino, to Enichem Augusta S.p.A. Process for producing linear alkylbenzenes. 5,574,198, Cl. 585-323.000.

Radius Inc.: *See—*
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Raffensperger, George T., to SIF Products Group Inc. Portable seat cushion and storage device. 5,573,288, Cl. 297-188.120.

Rafiqui, Lisa A., to Let's Rollit LLC. Louver assembly with cover and cap. 5,572,831, Cl. 49-403.000.

Ragan, Lawrence H.: *See—*
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Raith, Alex K., to Telefonaktiebolaget LM Ericsson. Enhanced sleep mode in radiocommunication systems. 5,574,996, Cl. 455-161.300.

Rajamani, Krishnan: *See—*
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Rajanbabu, Thaliyil V.: *See—*
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Rakers, Patrick L.: *See—*
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Ramachandran, Venkataraman: *See—*
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Ramadei, Micheal J.: *See—*
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Randle, Beverley J., to Surface Active Limited. Antibodies, and methods for their use. 5,573,920, Cl. 435-7.900.

Rang, Harald: *See—*
Sauter, Hubert; Bayer, Herbert; Oberdorf, Klaus; Wingert, Horst; von Deyn, Wolfgang; Grammenos, Wassilios; Kóenig, Hartmann; Rang, Harald; Roehl, Franz; Lorenz, Gisela; and Ammermann, Eberhard, 5,573,999, Cl. 504-266.000.

Ranganathan, Ramachandran S.; Marinelli, Edmund R.; Pillai, Radhakrishna; and Tweedle, Michael F., to Bracco International B.V. Armoatic amide compounds and metal chelates thereof. 5,573,752, Cl. 424-9.363.
Ranger, Scott A.: *See*—
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Rank Taylor Hobson Limited: *See*—
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Ranpak Corp.: *See*—
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Ransburg Industrial Finishing K.K.: *See*—
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Ransom, Richard W.: *See*—
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Rappas, Alkis S.; Paspek, Stephen C.; and Davies, David S. Water managed solvent extraction process for the organic wastes. 5,573,672, Cl. 210-638.000.
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Rasky, Phillip D.: *See*—
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Rasmussen, Ross H., to Nu-Dwarf Farms Inc. Rye grass hybrid 1917 and parental lines 71548 and 71550. 5,574,207, Cl. 800-200.000.
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Rastrelli, Edmund C.: *See*—
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Rathbone, Thomas, to BOC Group, plc, The. Air separation. 5,572,874, Cl. 62-645.000.
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Raupp, Thomas L.; Spall, J. Michael; and Gearns, Kimberly A., to Unisys Corporation. Probe for unjamming high-speed document processing systems. 5,573,291, Cl. 294-1.100.
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Ravichandran, Ramanathan: *See*—
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Winter, Roland A. E.; Ravichandran, Ramanathan; Holt, Mark S.; von Ahn, Volker H.; Babiarz, Joseph E.; and Leppard, David G., 5,574,166, Cl. 548-260.000.
Ray, Lawrence A.; and Ellson, Richard N., to Eastman Kodak Company. Compression method for a standardized image library. 5,574,573, Cl. 358-452.000.
Razavi, Behzad, to Lucent Technologies Inc. Low noise amplifier/mixer/frequency synthesizer circuit for an RF system. 5,574,405, Cl. 331-2.000.
Razdan, Raj K.: *See*—
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RCA Thomson Licensing Corporation: *See*—
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Satomi, Yasuhiko; Itoh, Seiichi; Otsuka, Eiji; Yamaki, Jun; and Kato, Takashi, to Nippon Sanso Corporation. Metallic vacuum double-walled container. 5,573,140, Cl. 220-420.000.

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Sau, Arjun C., to Aqualon. Hydrophobically modified poly(acetal-polyethers). 5,574,127, Cl. 528-125.000.

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Saul, Allan J.; Cooper, Juän A.; and Irving, David O., to Saramane Pty. Ltd. Cloning and expression of a rhoptry associated protein of P. falciparum. 5,573,943, Cl. 435-252.300.

Saunders, Steven E., to Interval Research Corporation. Doppler positioning using non-planar movement of transmitting source and receiving source. 5,574,467, Cl. 342-398.000.

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Savaria, James R. Hand held decoy and hunter shield. 5,572,823, Cl. 43-2.000.

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Oku, Teruo; Kayakiri, Hiroshi; Satoh, Shigeki; Abe, Yoshito; Sawada, Yuki; and Tanaka, Hirokazu, 5,574,042, Cl. 514-300.000.

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Hubbell, Jeffrey A.; Pathak, Chandrashekhar P.; Sawhney, Amarpreet S.; Desai, Neil P.; Hill-West, Jennifer L.; and Hossainy, Syed F. A., 5,573,934, Cl. 435-177.000.

Sawtek, Inc.: *See*—
Gore, John G., 5,573,172, Cl. 228-180.220.

Sawyer, Laurence D.; Lindsay, Robert A.; Tate, Steven C.; and Griffin, Daniel M., to Uoisys Corporation. System for providing a time division random access including a high speed unidirectional bus and a plurality of function cards connected in a daisy chain. 5,574,951, Cl. 395-865.000.

Saye, William B.: *See*—
McPherson, William E.; Saye, William B.; and Reddick, Eddie J., 5,573,496, Cl. 600-217.000.

Scalisi, Joseph F.; and Smiriglio, Julio C. Personal apparatus for receiving radiotelephone communications. 5,574,772, Cl. 379-58.000.

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Ruscito, Joseph L.; and Scarnati, Frank P., 5,573,501, Cl. 602-7.000.

Scavitto, John A.: *See*—
Venooker, Ronald J.; Scavitto, John A.; Karkantis, Peter N.; Healey, David T.; and Travers, Richard L., 5,573,046, Cl. 141-285.000.

Schaap, Robert J.: *See*—
Rose, Jed E.; and Levin, Edward D., 5,574,052, Cl. 514-343.000.

Schäfer, J. A.: *See*—
Hübner, Andreas; Lucas, Scott R.; Partlow, William D.; Choyke, W. J.; Schäfer, J. A.; and Yates, John T., Jr., 5,573,592, Cl. 117-89.000.

Schafer, James P., to Johnson Servioe Company. Low pressure air cycle cooling device. 5,572,882, Cl. 62-402.000.

Schairbaum, Edward C., to Nova Solutions, Inc. Adjustable monitor suspending assembly. 5,572,935, Cl. 108-50.000.

Schantz, Spencer C.; Sagar, Steve L.; Hapke, Kenyon A.; and Bargholtz, William E., to U. S. Controls Corporation. Actuator assembly for use in appliances. 5,572,869, Cl. 60-528.000.

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Schechter, Michael M.; and Levin, Michael B., to Ford Motor Company. Balancing valve motion in an electrohydraulic camless valvetrain. 5,572,961, Cl. 123-90.120.

Scheiner, Jonathan. Toothbrush with sound generator. 5,572,762, Cl. 15-105.000.

Schellinger, Michael J., to Motorola, Inc. System for scanning channels. 5,574,976, Cl. 455-54.100.

Schemmann, Marcel F. C.: *See*—
van der Poel, Carolus J.; Acket, Gerard A.; and Schemmann, Marcel F. C., 5,574,743, Cl. 372-46.000.

Schenk, Günther, to AGFA-Gevaert AG. Use of Yellow couplers of the indolo [3,2-B] guinoline type in a colotir photographic development process. 5,573,892, Cl. 430-388.000.

Schenk, Klaus, to Robert Bosch GmbH. Method for cylinder identification in an internal combustion engine when idling. 5,572,973, Cl. 123-414.000.

Schenke, Thomas: *See*—
Petersen, Uwe; Schenke, Thomas; Grobe, Klaus; Bremm, Klaus-Dieter; Endermann, Rainer; and Metzger, Karl G., 5,574,161, Cl. 546-167.000.

Schepp, Karl: *See*—
Schneider, Volker R.; Schepp, Karl; and Kobelitz, Hans-Peter, 5,573,364, Cl. 414-234.000.

Scherer, Craig: *See*—
Lutz, James R.; Alaberg, Keith D.; Caruso, James F.; Doczy, Paul J.; Gelick, Robert S.; and Scherer, Craig, 5,572,989, Cl. 128-201.180.

Schering Corporation: *See*—
Ting, Pauline C.; Friary, Richard J.; Tom, Wing C.; Lee, Joe F.; and Seidl, Vera A., 5,574,173, Cl. 549-354.000.

Scherpf, David H.: *See*—
Lorence, Matthew W.; Scherpf, David H.; Hopkins, Brian D.; and Archibald, William E., 5,573,693, Cl. 219-730.000.

Schier, Wolfgang: *See*—
von Musil, Rudolf; Schier, Wolfgang; Kremser, Günter; Didzum, Norbert; Müller, Rainer; and Stobbe, Ferdinand, 5,574,325, Cl. 310-215.000.

Schiff, Andreas: *See*—
Krökel, Dieter; and Schiff, Andreas, 5,574,587, Cl. 359-153.000.

Schiffler, Stefan: *See*—
Pradel, Robert; and Schiffler, Stefan, 5,573,265, Cl. 280-689.000.

Schinazi, Robert. Thin film temperature sensing device for measuring the operating temperature of a cutting tool. 5,573,335, Cl. 374-141.000.

Schirmann, Peter J.: *See*—
Galbo, James P.; Ravichandran, Ramanathan; Schirmann, Peter J.; and Mar, Andrew, 5,574,162, Cl. 546-188.000.

Schirmer, Ulrich: *See*—
Kast, Juergeo; Kolassa, Dieter; Meyer, Norbert; Schirmer, Ulrich; Harreus, Albrecht; Wild, Jochen; Westphalen, Karl-Otto; and Wuerzer, Bruno, 5,574,000, Cl. 504-292.000.

Schleicher, James G., II: *See—*
Southgate, Timothy J.; and Schleicher, James G., II, 5,574,893, Cl. 395-500.000.

Schlitzer, Ronald L.: *See—*
Dassanayake, Nissanke L.; Schlitzer, Ronald L.; and Park, Joonsup, 5,573,726, Cl. 422-28.000.

Schloegl, Gunter: *See—*
Peiffer, Herbert; Murschall, Ursula; Schloegl, Gunter; Osan, Frank; and Dries, Thomas, 5,573,717, Cl. 264-45.100.
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Schlosser, Erich J.; and Sieg, Ewald, to Weber-Stephen Products Co. Leg enhancements for barbecue grill. 5,572,983, Cl. 126-25.00R.

Schlumberger Industries, S.A.: *See—*
Bazin, Alain G., 5,574,228, Cl. 73-861.190.
Dubin, Michel, 5,574,380, Cl. 324-654.000.

Schlumberger Technology Corporation: *See—*
Tabanou, Jacques R.; and Orban, Andre E., 5,574,371, Cl. 324-324.000.

Schmachtenberg, Richard, III: *See—*
Whitlow, Maridana L.; McGlothlan, J. Kirk; Anderson, Jeffrey J.; Karambelas, Randy C.; and Schmachtenberg, Richard, III, 5,574,486, Cl. 347-45.000.

Schmalstieg, Lutz; Rettig, Rainer; Walter, Ulrich; and Hortelano, Edwin R., to Bayer Aktiengesellschaft; and Bayer Corporation. Isocyanate prepolymers, a process for their preparation and their use. 5,574,124, Cl. 528-59.000.

Schmid, Peter: *See—*
Thaler, Markus; Jost, Urs; Sigrist, Stefan; and Schmid, Peter, 5,574,585, Cl. 359-142.000.

Schmidt, Helmut: *See—*
Ostertag, Werner; and Schmidt, Helmut, 5,573,584, Cl. 106-417.000.

Schmitt, Edgar; Schwind-Grellmann, Barbara; and Ott, Harald, to Robert Bosch GmbH. Reciprocating piston pump. 5,573,386, Cl. 417-521.000.

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Schmitz, Christian; and Weingartner, Armin, to Giesecke & Devrient GmbH. Antifalsification paper having a thread- or band-shaped security element. 5,573,639, Cl. 162-140.000.

Schmode, Hartmut; Wiebe, Ulrich; Herzog, Armin; Kornfeld, Joachim; David, Bernd; Hetland, Detlev; Hanning, Günther; Gernot, Siegmund; and Bornefeld, Thorsten, to Weidmuller Interface GmbH & Co. Stripping device. 5,572,911, Cl. 81-9.430.

Schmucker, Georg; and Fischer, Leo, to Licentia-Patent Verwaltungs GmbH. Proximity detonator. 5,574,462, Cl. 342-68.000.

Schneberger, Ron W.: *See—*
Nomura, Lisa M.; and Schneberger, Ron W., 5,573,276, Cl. 281-48.000.

Schneider Electric SA: *See—*
Fiorina, Jean-Noël; and Pillet, Jean-Jacques, 5,574,362, Cl. 324-142.000.
Philippe, Daniel, 5,574,635, Cl. 363-124.000.

Schneider, Frank; and Ewringmann, Ulrich, to Franz Schneider GmbH & Co. KG. Audio playback system for steering wheel of child's vehicle. 5,573,440, Cl. 446-404.000.

Schneider, Jeffrey D.: *See—*
Straub, Gustave O.; and Schneider, Jeffrey D., 5,573,175, Cl. 229-109.000.

Schneider, Volkc: R.; Schepp, Karl; and Kobelitz, Hans-Peter, to Siemag Transplan GmbH. Automated parking system for motor vehicles. 5,573,364, Cl. 414-234.000.

Schnoor, William J.: *See—*
Laub, Michael F.; and Schnoor, William J., 5,573,408, Cl. 439-62.000.

Schofield, John H. L.; Hill, David A.; Dewhurst, Graham; and Fairhurst, Paul J., to Ingersoll-Rand Company. Compressed fluid operated tool with fluid metering device. 5,573,073, Cl. 173-17.000.

Schonbek Worldwide Lighting Inc.: *See—*
Lucas, John M., 5,573,330, Cl. 362-405.000.

Schornick, Gunnar: *See—*
Kroner, Matthias; Schornick, Gunnar; Denzinger, Walter; Baur, Richard; Kud, Alexander; Potthoff-Karl, Birgit; and Schwendemann, Volker, 5,574,113, Cl. 525-327.600.

Schossler, Frank W.: *See—*
Henry, Edgar G.; Schossler, Frank W.; and Kuhl, Donald K., 5,573,075, Cl. 173-211.000.

Schreader, Loren R.: *See—*
Steelman, Ronald S.; and Schreader, Loren R., 5,573,865, Cl. 428-40.900.

Schreffler, John R.: *See—*
Lawson, David F.; Antkowiak, Thomas A.; Hall, James E.; Stayer, Mark L., Jr.; and Schreffler, John R., 5,574,109, Cl. 525-280.000.

Schreiber Foods, Inc.: *See—*
Fager, Orville C.; Andrews, Scott G.; Ferdon, Dennis R.; Garnett, David J.; and Stenzel, Matthew T., 5,573,805, Cl. 426-515.000.

Schroeder, Robert E.: *See—*
Barzegar, Farhad; and Schroeder, Robert E., 5,574,966, Cl. 455-6.100.
Miller, Robert R., II; Partridge, B. Waring, III; Russell, Jesse E.; and Schroeder, Robert E., 5,574,775, Cl. 379-60.000.

Schubert, Frederic E.: *See—*
Hou, Wei-Hsin; Schubert, Frederic E.; and Semertzidis, George, 5,573,711, Cl. 252-572.000.

Schudel, Dale F., to K. R. Precision Co., Ltd. Floating-ball device for precise axial alignment between opposing structures. 5,574,234, Cl. 73-865.900.

Schueler, Peter H.: *See—*
Hallstrom, Joseph E.; and Schueler, Peter H., 5,572,956, Cl. 122-247.000.

Schuessler, Josef: *See—*
Rock, Reinhold; and Schuessler, Josef, 5,573,629, Cl. 156-522.000.

Schultheiss, Adrian: *See—*
Hofmann, Manfred; Klingert, Bernd; Hunziker, Max; Wiesendanger, Rolf; Schultheiss, Adrian; and Bernhard, Paul, 5,573,889, Cl. 430-285.100.

Schulz, Galyn A., to James River Corporation, The. High bulk embossed tissue with nesting prevention. 5,573,830, Cl. 428-156.000.

Schumacher, Mark W.; and Sterling, Raymond L., to Pipeform LLC. Interlocked plastic-encased concrete pipe. 5,573,040, Cl. 138-147.000.

Schürbrock, Klaus: *See—*
Belgardt, Herbert; Schürbrock, Klaus; and Meyer, Rolf-Günter, 5,573,729, Cl. 422-100.000.

Schuster, Hermann: *See—*
Breitenbücher, Klaus; and Schuster, Hermann, 5,573,984, Cl. 501-39.000.

Schuster, Klaus: *See—*
Dittrich, Jörg; Greiner, Günter; Müller, Karl-Heinz; Schuster, Klaus; Murmann, Günter; and Michel, Kurt, 5,574,446, Cl. 341-22.000.

Schwartz, Robert S.; Holmes, David R.; Halverson, Frederick S.; Donadio, James V., III; and Berry, David, to Mayo Foundation for Medical Education and Research. Flexible tubular device for use in medical applications. 5,573,520, Cl. 604-282.000.

Schwarz, Werner R.: *See—*
Graessle, Josef A.; Schwarz, Werner R.; and Wildt, Theo N., 5,573,950, Cl. 435-287.300.

Schwarzkopf, Eugen, to Hotset Heizpatronen u. Zubehohr GmbH. Electrically heated nozzle for injection-molding machine. 5,573,185, Cl. 239-135.000.

Schweitzer, John W.: *See—*
Martinson, Lee S.; Schweitzer, John W.; and Baenziger, Norman C., 5,574,281, Cl. 250-332.000.

Schweizer, Thomas: *See—*
Duss, Hanspeter; and Schweizer, Thomas, 5,574,350, Cl. 318-632.000.

Schwendemann, Volker: *See—*
Kroner, Matthias; Schornick, Gunnar; Denzinger, Walter; Baur, Richard; Kud, Alexander; Potthoff-Karl, Birgit; and Schwendemann, Volker, 5,574,113, Cl. 525-327.600.

Schwind-Grellmann, Barbara: *See—*
Schmitt, Edgar; Schwind-Grellmann, Barbara; and Ott, Harald, 5,573,386, Cl. 417-521.000.

Schwinn, Klaus; Lindner, Bernd; Bischof, Reinhold; Gotz, Heinz; and Deschamps, Joachim, to MAN Roland Druckmaschinen AG. Safety device for a printing machine. 5,574,437, Cl. 340-679.000.

Sciarratta, Larry: *See—*
Rasmussen, Yonn K.; Sciarratta, Larry; and Kosmider, Ronald T., 5,573,445, Cl. 451-39.000.

Scire, Frank J.: *See—*
Gannaway, Edwin L.; and Scire, Frank J., 5,573,182, Cl. 237-2.00B.

Scotese, Joseph A. Harmonica hole shield. 5,574,235, Cl. 84-377.000.

Scott, Donald G., to Fox, Charles S. Table for chair. 5,573,301, Cl. 297-173.000.

Scott Fetzer Company, The: *See—*
Du, Wei, 5,573,369, Cl. 415-119.000.

Scott, Richmond M.: *See—*
Tilman, Paul A.; Scott, Richmond M.; and Machacek, Zdenek, 5,573,614, Cl. 156-66.000.

Scripps Research Institute, The: *See—*
Lerner, Richard; Janda, Kim; and Brenner, Sydney, 5,573,905, Cl. 435-6.000.

Sealed Air Corporation: *See—*
Kannankeril, Charles P.; and Cruikshank, Bruce A., 5,573,168, Cl. 225-106.000.

Seamark, Robert F.; and Wells, Julian R. E., to Luminis Pty. Ltd. Transgenic pigs. 5,573,933, Cl. 435-172.300.

Secrest, William M.: *See—*
Lengers, Hans L.; Storandt, Gerhard; McCormick, James; Secrest, William M.; and Horney, Michael D., 5,573,851, Cl. 428-378.000.

Seden, William E.: *See—*
Hamilton, Ronald S.; and Seden, William E., 5,573,108, Cl. 206-5.100.

SEEC, Inc.: *See—*
Erickson, Stewart E.; and Halvorson, Daniel J., 5,573,367, Cl. 414-786.000.

Seefeldt, James D.; Ausavich, Timothy C.; and Bloom, Jeffrey J., to SSI Technologies, Inc. Switched reluctance angular velocity sensor. 5,574,361, Cl. 324-174.000.

Seeger, Klaus: *See—*
Bartsch, Dietmar; Seeger, Klaus; and Kaiser, Hans-Dieter, 5,573,580, Cl. 106-38.270.

Segall, Paul E.; Sternberg, Hal; and Waitz, Harold D., to Biotime, Inc. Method of perfusing a primate. 5,574,019, Cl. 514-23.000.

Seibl, Rudolf: *See—*
Rosemeyer, Viola; Seibl, Rudolf; and Laubrock, Andreas, 5,573,913, Cl. 435-6.000.

Seibold, Annette: *See—*
Gruenwald, Werner; Roethlingshoefer, Walter; Goebel, Ulrich; Haug, Ralf; Moser, Manfred; and Seibold, Annette, 5,573,808, Cl. 427-79.000.

Seidel, Jorge P.: *See—*
Knapp, Steven K.; and Seidel, Jorge P., 5,574,655, Cl. 364-489.000.

Seidl, Vera A.: *See—*
Ting, Pauline C.; Friary, Richard J.; Tom, Wing C.; Lee, Joe F.; and Seidl, Vera A., 5,574,173, Cl. 549-354.000.

Seifcak, Paul, to Mitsubishi Caterpillar Forklift America Inc. Method and apparatus for decoding signals containing encoded information. 5,574,444, Cl. 341-1.000.

Seikagaku Kogyo Kabushiki Kaisha (Seikagaku Corporation): *See—*
Shibata, Yuko; Aketagawa, Jun; and Tanaka, Shigenori, 5,574,023, Cl. 514-54.000.

Seiki, Masao: *See—*
Kitagawa, Osamu; Ishii, Katsuyuki; Niwa, Seiichi; Ueki, Sigeru; and Seiki, Masao, 5,574,054, Cl. 514-365.000.

Seiko Epson Corporation: *See—*
Kodaira, Toshimoto; Oshima, Hiroyuki; and Mano, Toshihiko, 5,573,959, Cl. 437-21.000.
Shimokawato, Satoshi; Miyazawa, Hiromu; and Mikoshiba, Toshiaki, 5,574,703, Cl. 369-13.000.
Watsuji, Yukihiro; and Maruyama, Akira, 5,574,686, Cl. 365-185.230.

Seiko Instruments Inc.: *See—*
Fujii, Toshiaki; and Adachi, Tatsuya, 5,574,280, Cl. 250-309.000.
Takahashi, Kunihiro; Kojima, Yoshikazu; Takasu, Hiroaki; Yamazaki, Tsuneo; and Iwaki, Tadao, 5,574,292, Cl. 257-59.000.

Seiko Precision Inc.: *See—*
Yasuoka, Tadashi, 5,573,337, Cl. 400-605.000.

Seiner, Jerome A.: *See—*
Nugent, Richard M., Jr.; Niederst, Ken W.; and Seiner, Jerome A., 5,573,819, Cl. 428-34.800.

Sekar, Chandra. Method of making a paint roller. 5,572,790, Cl. 29-895.211.

Seki, Hideki, to Sony Corporation. Headphone apparatus. 5,574,795, Cl. 381-183.000.

Seki, Hitoshi: *See—*
Fukui, Hirofumi; Miyazaki, Masanori; Seki, Hitoshi; Sasaki, Makoto; and Kasama, Yasuhiko, 5,573,958, Cl. 437-21.000.

Sekiguchi, Nobutoshi, to Olympus Optical Co., Ltd. Image display apparatus. 5,574,473, Cl. 345-8.000.

Sekita, Takashi: *See—*
Kiyama, Syuji; Shin, Osamu; Mizumoto, Kaoru; Sekita, Takashi; Ogaki, Hiroshi; Sakurai, Akio; Ikenaga, Takao; Tanokuchi, Ichiro; and Sakai, Naoki, 5,573,652, Cl. 205-98.000.

Selectech, Ltd.: *See—*
Odell, Donald S., 5,574,479, Cl. 345-158.000.

Seliger, Hartmut; Markiewicz, Wojciech; Gröger, Gabriele; Rösch, Rudi; and Klotz, Margit, to Boehringer Mannheim GmbH. Functionalized carrier materials for the simultaneous synthesis and direct labeling of oligonucleotides as primers for template-dependent enzymatic nucleic acid syntheses. 5,574,141, Cl. 536-22.100.

Sellers, Randall E.; and Loyer, Philip K., to Dayco Products, Inc. Branched hose construction, part therefor and methods of making the same. 5,573,283, Cl. 285-93.000.

Semertzidis, George: *See—*
Hou, Wei-Hsin; Schubert, Frederic E.; and Semertzidis, George, 5,573,711, Cl. 252-572.000.

Semiconductor Energy Laboratory Co. Ltd.: *See—*
Arai, Michio; Inushima, Takashi; Codama, Mitsufumi; Sugiura, Kazushi; Takayama, Ichiro; Kobori, Isamu; Yamauchi, Yukio; and Sakamoto, Naoya, 5,574,293, Cl. 257-59.000.
Shimizu, Michio; Nishi, Takeshi; and Konuma, Toshimitsu, 5,574,581, Cl. 359-052.000.

Semitool, Inc.: *See—*
Thompson, Raymon F.; and Owczarz, Aleksander, 5,573,023, Cl. 134-66.000.

Senior, Peter: *See—*
Paikert, Bettina; and Senior, Peter, 5,573,392, Cl. 431-9.000.

Sennenbara, Nozomu; Niinobu, Kouji; Niwayama, Kazuhiko; and Tokunoh, Futoshi, to Mitsubishi Denki Kabushiki Kaisha. Gate turnoff thyristor with reduced gate trigger current. 5,574,297, Cl. 257-135.000.

Seo, Shuzo; and Mogamiya, Makoto, to Asahi Kogaku Kogyo Kabushiki Kaisha. Data symbol reader. 5,574,272, Cl. 235-454.000.

Sequa Corporation: *See—*
Sirvet, Enn, 5,572,927, Cl. 101-40.000.

Serati, Steven A.: *See—*
McMahamon, Paul F.; Sharp, Gary D.; Salisbury, Michael S.; and Serati, Steven A., 5,574,553, Cl. 356-5.150.

Serpelloni, Michel; and Boonaert, Jean-Philippe, to Roquette Freres. Pulverulent mannitol of moderate friability and process for its preparation. 5,573,777, Cl. 424-440.000.

Seta, Mitsuru: *See—*
Ueno, Tomoyuki; and Seta, Mitsuru, 5,574,785, Cl. 380-2.000.

Sethi, Rakesh B.; and Hsueh, Cheng-Chen, to National Semiconductor Corporation. Integrated circuit having a diamond thin film trench arrangement as a component thereof and method. 5,573,973, Cl. 437-67.000.

Seto, Kunio: *See—*
Takakura, Hiroshi; Kato, Takahiro; Seto, Kunio; Shirasaka, Akifumi; and Hamada, Masaki, 5,574,842, Cl. 395-805.000.

Severns, John C.: *See—*
Wahl, Errol H.; Bacon, Dennis R.; Baker, Ellen S.; Bodet, Jean-Francois; Burns, Michael E.; Demeyere, Hugo J. M.; Hensley, Charles A.; Mermelstein, Robert; Severns, John C.; Shaw, John H., Jr.; Siklosi, Michael P.; Vogel, Alice M.; and Watson, Jeffrey W., 5,574,179, Cl. 554-110.000.

Sevier, Richard W., to Hendry Mechanical Works. Electrical and electronic cabinet systems. 5,574,251, Cl. 174-50.000.

Sgrignoli, Gary J.: *See—*
Citta, Richard W.; and Sgrignoli, Gary J., 5,574,509, Cl. 348-569.000.

SGS-Thomson Microelectronics, Inc.: *See—*
Blanchard, Richard A., 5,574,301, Cl. 257-329.000.
McClure, David C.; and Teel, Thomas, 5,574,688, Cl. 365-200.000.

SGS-Thomson Microelectronics, S.A.: *See—*
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SGS-Thomson Microelectronics, S.r.l.: *See—*
Russo, Biagio; Luzzi, Claudio; and Poluzzi, Rinaldo, 5,574,826, Cl. 395-3.000.

Shaban-Watson, Jaleh: *See—*
Watson, Thomas L.; and Shaban-Watson, Jaleh, 5,573,525, Cl. 604-403.000.

Shackle, Dale R. Solid electrolytes with novel electrolyte salts and electrolytic cells produced therefrom. 5,573,872, Cl. 429-192.000.

Shadley, Miles A.: *See—*
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Takada, Masayuki; Yamada, Osamu; Kuroda, Toru; and Yamazaki, Koichi, to Nippon Hoso Kyokai; and Nippon Conlux Co., Ltd. Error correction circuit which substitutes bits into data stream during periods of data loss. 5,574,735, Cl. 371-37.100.

Takahashi, Akihiko; Yasuda, Hitoshi; Hartwig, Karl T.; McDonald, Lacy C.; and Zou, Hong, to Sumitomo Chemical Co., Ltd.; and Texas A & M University Systems, The. High purity aluminum conductor used at ultra low temperature. 5,573,861, Cl. 428-621.000.

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Takahashi, Keizo; Hyakutake, Kunihiro; and Oshima, Hisayoshi, to Kao Corporation. Magnetic disk cartridge. 5,574,607, Cl. 360-133.000.

Takahashi, Koichi; Takatori, Tetsuya; Ichikawa, Haruo; Kaya, Akimasa; and Takahashi, Tomoyuki, to Fuji Photo Film Co., Ltd. Photographic film cassette and apparatus and method of loading and removing photographic film in association with the cassette. 5,573,201, Cl. 242-532.400.

Takahashi, Kunihiro; Kojima, Yoshikazu; Takasu, Hiroaki; Yamazaki, Tsuneo; and Iwaki, Tadao, to Seiko Instruments Inc. Semiconductor device with monosilicon layer. 5,574,292, Cl. 257-59.000.

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Takahashi, Yoshihiro: *See—*
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Takeuchi, Yoshiaki: *See—*
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Talmy, Inna G.; Martin, Curtis A.; Haught, Deborah A.; and Le, Anh H., to United States of America, Navy. Electromagnetic window. 5,573,986, Cl. 501-97.000.

Talwar, Ashok K.; Fitzgerald, Barry F.; and Bahu, Mark B., to American Nucleonics Corporation. Interference cancellation system and radio system for multiple radios on a small platform. 5,574,978, Cl. 455-63.000.

Tamada, Osamu: *See—*
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Tamura, Kunio; Kato, Yoshiaki; Yoshida, Mitsutaka; Cynshi, Osamu; and Ohba, Yasuhiro, to Chugai Seiyaku Kabushiki Kaisha. 4,6-Di-t-butyldihydrobenzofuran-5-ol and its derivatives. 5,574,178, Cl. 549-462.000.

Tamura, Naoyuki: *See—*
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Tanaka, Yoshio; Uryu, Toshiyuki; and Yaguchi, Minoru, to Sandoz Ltd. Cement compositions containing a sulfated polysaccharide and method. 5,573,589, Cl. 106-804.000.

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Thünker, Walter; Lohmann, Gabriele; and Marschewski, Arnim, to Chemische Betriebe Pluto GmbH. Device for adding additives to liquid fuels in the fuel stream. 5,573,557, Cl. 44-639.000.

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Tiefenbach GmbH: *See*—
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Tiefenbach, Lawrence W., Jr., to B.O.T.S.G., Inc. Fiber reinforced abrasive mold and die finishing tools. 5,573,453, Cl. 451-533.000.

Tien, Henry C. Compositions and methods for the treatment of male-pattern baldness. 5,574,011, Cl. 514-14.000.

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Tomishima, Shigeki; Hidaka, Hideto; Hirose, Masakazu; and Tsuruda, Takahiro, to Mitsubishi Denki Kabushiki Kaisha. Signal output circuit operating stably and arrangement of power supply interconnection line therefor in semiconductor integrated circuit device. 5,574,397, Cl. 327-530.000.

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Shimada, Satoshi; Suzuki, Seiko; Tsuchitani, Shigeki; Ugai, Seiichi; Kaneyasu, Masayoshi; Kuroiwa, Hiroshi; and Yokota, Yoshihiro, 5,574,211, Cl. 73-1.00D.

Tsuji, Kazuto: *See—*
Sono, Michio; Kasai, Junichi; Yoshimoto, Masanori; Tsuji, Kazuto; and Saito, Kouji, 5,574,310, Cl. 257-696.000.

Tsuji, Nobuhiko: *See—*
Sano, Yasukazu; Tsuji, Nobuhiko; Saito, Tetsuya; Shimizu, Tomio; and Kaiho, Naoki, 5,574,592, Cl. 359-211.000.

Tsujiguchi, Yoichi; and Ishii, Osamu, to Japan Crown Cork Co., Ltd. Tamper-evident plastic cap with engaging stopper pieces. 5,573,128, Cl. 215-252.000.

Tsujimoto, Nobuharu: *See—*
Ono, Eiji; Tsujimoto, Nobuharu; Matsui, Kazuhiko; and Kurahashi, Osamu, 5,573,945, Cl. 435-252.330.

Tsujioka, Masanori; and Matsumura, Junzoh, to Sumitomo Electric Industries, Ltd. Metal casing for semiconductor device having high thermal conductivity and thermal expansion coefficient. 5,574,959, Cl. 419-2.000.

Tsukahara, Koji: *See—*
Suzuki, Mitsuo; Itami, Yukio; Hashimoto, Yoshio; Tsukahara, Koji; Takahashi, Yoshihiro; and Abe, Takao, 5,574,591, Cl. 359-200.000.

Tsukamoto, Kazumasa; Ando, Masahiko; Hayabuchi, Masahiro; Yamamoto, Yoshihisa; and Kano, Toshihiro, to Aisin Aw Co., Ltd. Quick shift hydraulic control for a two stage jump shift. 5,573,478, Cl. 477-130.000.

Tsunoda, Yoshito: *See—*
Yasuoka, Hiroshi; Tsunoda, Yoshito; Maeda, Takeshi; Kamo, Yoshihisa; Fujisawa, Hiromichi; Tsutsumi, Zenji; and Torii, Shunichi, 5,574,881, Cl. 395-439.000.

Tsuruda, Takahiro: *See—*
Tomishima, Shigeki; Hidaka, Hideto; Hirose, Masakazu; and Tsuruda, Takahiro, 5,574,397, Cl. 327-530.000.

Tsurumi, Kanehisa, to Yamaha Corporation. Multi-access local area network using a standard protocol for transmitting MIDI data using a specific data frame protocol. 5,574,949, Cl. 395-850.000.

Tsushima, Yuji; Kurosaki, Takaharu; Saito, Kenjiro; and Ishibasi, Yoichi, to Honda Giken Kogyo Kabushiki Kaisha. Two-cycle engine of the spark ignition type. 5,572,960, Cl. 123-65.0PE.

Tsutsumi, Zenji: *See—*
Yasuoka, Hiroshi; Tsunoda, Yoshito; Maeda, Takeshi; Kamo, Yoshihisa; Fujisawa, Hiromichi; Tsutsumi, Zenji; and Torii, Shunichi, 5,574,881, Cl. 395-439.000.

Tsuzuku, Susmu: *See—*
Nishitani, Eisuke; Tsuzuku, Susmu; Chiba, Natsuyo; Kobayashi, Shigeru; Tamura, Naoyuki; and Uchida, Norihiro, 5,574,247, Cl. 118-708.000.

Tu, Chan A.: *See—*
Kong, Alvin M. W.; and Tu, Chan A., 5,573,171, Cl. 228-123.100.

Tubergen, Karen R.: *See—*
Sommese, Anthony G.; Tubergen, Karen R.; and Chung, Daniel K., 5,573,675, Cl. 210-705.000.

Tucker, Charles E.; Allen, Diane E.; and Hobbs, Charles C., to Hoechst Celanese Corporation. Process for preparing alkanols. 5,574,196, Cl. 568-838.000.

Tung, Peter: *See—*
Mirashrafi, Mojtaba; Vrvilo, Benjamin; Tung, Peter; and Rajamani, Krishnan, 5,574,934, Cl. 395-800.000.

Turin, Jël: *See—*
Papapietro, Michel; Fidalgo, Jean-Christophe; and Turin, Jël, 5,574,309, Cl. 257-679.000.

Turner, Cheryl S.; Turner, Eli J.; and Van Dusen, Lisa M., to Continental American Corporation. Inflatable balloon with at least one flap member for concealing or exposing a graphic design. 5,573,439, Cl. 446-226.000.

Turner, Eli J.: *See—*
Turner, Cheryl S.; Turner, Eli J.; and Van Dusen, Lisa M., 5,573,439, Cl. 446-226.000.

Turner, John L.: *See—*
Koch, Russell W.; Turner, John L.; Walenga, Guy J.; Takigawa, Hiroyoshi; and Okamoto, Keizo, 5,573,610, Cl. 152-152.100.
Koch, Russell W.; Turner, John L.; Walenga, Guy J.; Takigawa, Hiroyoshi; and Okamoto, Keizo, 5,573,611, Cl. 152-152.100.

Turney, William J.: *See—*
Cygan, Lawrence F.; Gailus, Paul H.; Turney, William J.; and Baker, Michael H., 5,574,992, Cl. 455-126.000.

Turpin, Robert A., Jr.: *See—*
States, John B., Sr.; and Turpin, Robert A., Jr., 5,574,093, Cl. 514-772.100.

Tutt, Lee W.: *See—*
Sanger, Kurt M.; Tutt, Lee W.; Geist, James B.; and Baek, Seung H., 5,574,493, Cl. 347-262.000.

Tuttle, James D.: *See—*
Evans, James R.; and Tuttle, James D., 5,573,072, Cl. 172-744.000.

Tveit, Gary L., to Eastman Kodak Company. Apparatus and method for automated assembly of precision components. 5,572,785, Cl. 29-468.000.

Tvorogov, Nikolai: *See—*
Akopov, Ernest; Astashov, Vytchesalv F.; Tvorogov, Nikolai; and Udalov, Sergei, 5,573,543, Cl. 606-144.000.

Tweedle, Michael F.: *See—*
Ranganathan, Ramachandran S.; Marinelli, Edmund R.; Pillai, Radhakrishna; and Tweedle, Michael F., 5,573,752, Cl. 424-9.363.

Tyner, Clifford A., to Medical Connexions, Inc. Needleless connector. 5,573,516, Cl. 604-249.000.

Tzuk, Yuval: *See—*
Goffer, Amit; and Tzuk, Yuval, 5,573,000, Cl. 128-653.200.

U. S. Controls Corporation: *See—*
Schantz, Spencer C.; Sagar, Steve L.; Hapke, Kenyon A.; and Bargholtz, William E., 5,572,869, Cl. 60-528.000.

Uchida, Hiromichi, to Toyo Chemical Co., Ltd. Optical disc protective storage device. 5,574,716, Cl. 369-291.000.

Uchida, Masaya: *See—*
Yoshida, Masatoshi; Uchida, Masaya; Ishida, Hiroyuki; Minami, Kenji; Izubayashi, Masuji; and Tanaka, Yasumasa, 5,574,117, Cl. 526-224.000.

Uchida, Michio: *See—*
Okazaki, Noritaka; Wataki, Ryuji; Uchida, Michio; Fujita, Shigeo; and Nanjo, Yuzuru, 5,574,550, Cl. 399-313.000.

Uchida, Norihiro: *See—*
Nishitani, Eisuke; Tsuzuku, Susmu; Chiba, Natsuyo; Kobayashi, Shigeru; Tamura, Naoyuki; and Uchida, Norihiro, 5,574,247, Cl. 118-708.000.

Uchida, Shingo: *See—*
Shirakawa, Shingo; Ito, Morio; Uchida, Shingo; and Mochizuki, Kazutoshi, 5,574,613, Cl. 361-117.000.

Uchida, Takeshi: *See—*
Nakagawa, Kazunari; Tottori, Takeshi; Takasugi, Wasao; Hino, Yoshiharu; and Uchida, Takeshi, 5,574,273, Cl. 235-492.000.

Uchida, Yoshitaka: *See—*
Kurihara, Takao; Uchida, Yoshitaka; and Hamatsu, Masahiro, 5,574,754, Cl. 375-367.000.

Uchiyama, Kenji: *See—*
Kawasaki, Shoji; Hirayama, Nobuhiro; Uchiyama, Kenji; Sato, Hisatomo; Akiyama, Hiromi; and Uramoto, Katuo, 5,573,881, Cl. 430-110.000.

Uchiyama, Kunio; and Nishii, Osamu, to Hitachi, Ltd. Processor system using synchronous dynamic memory. 5,574,876, Cl. 395-405.000.

Udalov, Sergei: *See—*
Akopov, Ernest; Astashov, Vytchesalv F.; Tvorogov, Nikolai; and Udalov, Sergei, 5,573,543, Cl. 606-144.000.

Ueda, Hideo; Hiromoto, Mitsuo; Gang, Meng; and Yamasaki, Yutaka, to Kyoto Dai-ichi Kagaku Co. Ltd. Expiration collecting method and automatic expiration collector. 5,573,005, Cl. 128-730.000.

Ueda, Hirotada: *See—*
Yoshimura, Tetsuya; Ueda, Hirotada; Hidai, Yutaka; and Uyama, Masashi, 5,574,846, Cl. 395-118.000.

Ueda, Masahiro: *See—*
Hanibuchi, Toshiaki; Hayakawa, Yasushi; and Ueda, Masahiro, 5,574,391, Cl. 326-126.000.

Ueda, Takahisa: *See—*
Naitou, Kazumasa; Naito, Shosuke; Ueda, Takahisa; and Fujiwara, Masaru, 5,573,253, Cl. 277-1.000.

Uehara, Hisao: *See—*
Shimizu, Makoto; Okuyama, Masahiro; Moriwaki, Kazuhiko; Tanioka, Atsuyoshi; Uehara, Hisao; and Miura, Norio, 5,574,477, Cl. 345-102.000.

Uehara, Ken: *See—*
Onodera, Osamu; Uehara, Ken; Kobayashi, Yuji; and Amano, Hideaki, 5,574,878, Cl. 395-417.000.

Ueki, Sigeru: *See—*
Kitagawa, Osamu; Ishii, Katsuyuki; Niwa, Seiichi; Ueki, Sigeru; and Seiki, Masao, 5,574,054, Cl. 514-365.000.

Uemura, Yoshiaki: *See—*

Tagashira, Kenji; Uemura, Yoshiaki; and Yoshida, Masanao, 5,573,612, Cl. 152-544.000.
Uemura, Yukio; Shikata, Kazushi; and Nonoyama, Hiroshi, to Nippondenso Co., Ltd. Blower assembly including casing housing a fan and a motor. 5,573,383, Cl. 417-360.000.
Ueno, Eiji: *See*—
Asami, Goro; and Ueno, Eiji, 5,573,362, Cl. 411-509.000.
Ueno, Tomoyuki; and Seta, Mitsuru, to Fujitsu Limited. Enciphered communication system. 5,574,785, Cl. 380-2.000.
Ugai, Seiichi: *See*—
Shimada, Satoshi; Suzuki, Seiko; Tsuchitani, Shigeki; Ugai, Seiichi; Kaneyasu, Masayoshi; Kuroiwa, Hiroshi; and Yokota, Yoshihiro, 5,574,211, Cl. 73-1.00D.
Uitz, Mark O. Method of cleaning a reusable collapsible container. 5,573,599, Cl. 134-16.000.
Ulrich, Peter: *See*—
Bukrinsky, Michael I.; Cerami, Anthony; and Ulrich, Peter, 5,574,040, Cl. 514-275.000.
Ultimate Trading Corporation: *See*—
Geswelli, James, 5,572,887, Cl. 63-3.000.
Ultra Systems GmbH UV-Oxidation: *See*—
Massholder, Karl F.; Werz, Wilfried; and Ecker, Erwin, 5,573,676, Cl. 210-759.000.
Um, Kyung-Yong, to Samsung Electronics Co., Ltd. Operational control method and apparatus for an air conditioner. 5,572,876, Cl. 62-89.000.
Umeda, Narumi: *See*—
Douzono, Youichi; and Umeda, Narumi, 5,574,983, Cl. 455-69.000.
Umemoto, Koichi: *See*—
Nobori, Kazuhiro; Umemoto, Koichi; Ushikoshi, Ryusuke; and Yamaguchi, Shinji, 5,573,690, Cl. 219-457.000.
Umemoto, Teruo; Izutani, Naoaki; and Takahasi, Ikuko, to Daikin Industries, Ltd. Material for generating electric energy. 5,573,868, Cl. 429-50.000.
Umise, Shigeki: *See*—
Imamura, Hirokatsu; Hayashi, Masafumi; Nakamura, Kouichi; Kaneko, Hirokazu; Umise, Shigeki; Suto, Kenichiro; and Watanabe, Hiromi, 5,573,833, Cl. 428-195.000.
Uniden Corporation: *See*—
Fujino, Masayasu, 5,574,727, Cl. 370-95.100.
Huang, Ping; Hachisuka, Yumi; and Tanaka, Kiyoshi, 5,574,994, Cl. 455-126.000.
Masaki, Tateo, 5,574,995, Cl. 455-161.200.
Union Carbide Chemicals & Plastics Technology Corporation: *See*—
Eaton, Robert F.; and Johnson, Robert N., 5,574,079, Cl. 523-423.000.
Union Chemical Co., Ltd.: *See*—
Otomo, Shigeru, 5,573,708, Cl. 252-389.610.
Uniroyal Chemical Company, Inc.: *See*—
Ma, Shih-Yu; and Davis, Robert A., 5,574,056, Cl. 514-383.000.
Malz, Russell E.; Smith, Gerard V.; Ferrandino, Mark P.; Song, Ruozhi; Lin, Chung-Yuan; and Barrows, Franklin H., 5,574,187, Cl. 564-402.000.
Unisorb Inc.: *See*—
Whittaker, Wayne H.; Shadley, Miles A.; Haase, Richard A.; and Curtis, David L., 5,573,220, Cl. 248-638.000.
Unisys Corporation: *See*—
End, Joseph H., III; Rimmer, Todd M.; and Sanderson, Andrew F., 5,574,730, Cl. 371-22.100.
Freeman, Richard D., 5,574,883, Cl. 395-446.000.
Hancock, Peter J.; Hepburn, Ian R.; Lebahn, Lonny R.; Mikkelsen, Hans C.; Miller, John A.; Sandelands, Robert T.; and Torgerson, James F., 5,574,914, Cl. 395-650.000.
Hashemi, Seyed H., 5,574,865, Cl. 395-283.000.
Raupp, Thomas L.; Spall, J. Michael; and Gearns, Kimberly A., 5,573,291, Cl. 294-1.100.
Sawyer, Laurence D.; Lindsay, Robert A.; Tate, Steven C.; and Griffin, Daniel M., 5,574,951, Cl. 395-865.000.
Smith, Grant M., 5,574,626, Cl. 361-704.000.
Vartti, Kelvin S.; Kubista, Thomas T.; Price, Ferris T., deceased, 5,574,753, Cl. 375-357.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Verrall, Mark A.; Greenfield, Simon; and Coates, David, 5,573,704, Cl. 252-299.010.
United Microelectronics Corporation: *See*—
Hsieh, Cheng-Ju; and Pan, Chien-Chung, 5,574,732, Cl. 371-27.000.
Hsu, Chen-Chung, 5,573,966, Cl. 437-48.000.
Lin, Su-Chu; and Chiou, Jeng-Fang, 5,574,948, Cl. 395-830.000.
Wang, Ying-Tzung; and Yang, Sheng-Hsing, 5,574,306, Cl. 257-557.000.
Wen, Jemmy; Lur, Water; and Ko, Joe, 5,574,302, Cl. 257-330.000.
United Parcel Service of America, Inc.: *See*—
Massa, Blaise A., 5,574,947, Cl. 395-829.000.
United Pipeline System, USA, Inc.: *See*—
Egner, Randall H.; and Kneller, Dale A., 5,573,282, Cl. 285-55.000.
United States of America
Air Force: *See*—
McManamon, Paul F.; Sharp, Gary D.; Salisbury, Michael S.; and Serati, Steven A., 5,574,553, Cl. 356-5.150.
Slyh, Raymond E.; Moses, Randolph L.; and Anderson, Timothy R., 5,574,824, Cl. 395-2.350.
America: *See*—
Barry, Clifton, III; and Yuan, Ying, 5,573,915, Cl. 435-6.000.
Commerce: *See*—
Kreider, Kenneth G., 5,573,864, Cl. 428-698.000.
Poirier, Gregory E., 5,574,278, Cl. 250-306.000.
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Balachandran, Uthamalingam; Dusek, Joseph T.; Kleefisch, Mark S.; and Kobylinski, Thadeus P., 5,573,737, Cl. 422-211.000.
Dalton, Rick D.; Kramer, Daniel P.; Massey, Richard T.; and Waker, Damon A., 5,573,565, Cl. 65-59.100.
Woelk, Klaus; Rathke, Jerome W.; and Klingler, Robert J., 5,574,370, Cl. 324-320.000.
Health and Human Services: *See*—
Beeler, John F.; Larochelle, William; and Aaronson, Stuart A., 5,573,935, Cl. 435-194.000.
Rothman, Richard; Carroll, Frank J.; Blough, Bruce; and Mascarella, Samuel W., 5,574,060, Cl. 514-411.000.
National Aeronautics and Space Administration: *See*—
Bugga, Ratnakumar V.; Surampudi, Subbarao; and Halpert, Gerald, 5,573,873, Cl. 429-223.000.
Cook, Joseph S., Jr., 5,572,905, Cl. 74-411.000.
Navy: *See*—
Borgen, Gary S.; and Sullivan, James L., 5,574,451, Cl. 341-131.000.
Brown, Jerry S.; and Conkling, John A., 5,574,248, Cl. 149-19.300.
Carruthers, Thomas P.; Duling, Irl N., III; and Dennis, Michael L., 5,574,739, Cl. 372-29.000.
Crane, Roger M.; Loup, Douglas C.; Gillespie, John W., Jr.; Andersen, Stephen M.; and Coppens, Daniel D., 5,573,344, Cl. 403-179.000.
Di Perry, John, 5,574,460, Cl. 342-62.000.
Edelstein, Alan S.; Wolf, Stuart A.; and Kihlstrom, Kenneth E., 5,574,961, Cl. 428-548.000.
Lawrence, G. William; and Gilligan, William H., 5,574,125, Cl. 528-66.000.
Lawrence, G. William; and Gilligan, William H., 5,574,126, Cl. 528-66.000.
Talmy, Inna G.; Martin, Curtis A.; Haught, Deborah A.; and Le, Anh H., 5,573,986, Cl. 501-97.000.
U.S. Philips Corporation: *See*—
Bakker, Jacobus M.; and Hagedorn, Dieter, 5,574,852, Cl. 395-183.040.
De Vaan, Adrianus J. S. M., 5,573,324, Cl. 353-77.000.
Hoving, Willem; Van Hout, Johannes A. M.; Grooten, Marcellinus A. M.; Van Rens, Piet C. J.; Koster, Marinus P.; and Westerhof, Marten, 5,572,895, Cl. 72-342.940.
Kynast, Ulrich H.; and Weiler, Volker U., 5,574,332, Cl. 313-483.000.
Mobach, Carel H. D., 5,574,986, Cl. 455-76.000.
Pansier, Fraas, 5,574,632, Cl. 363-49.000.
Timmermans, Jozef M. K., 5,574,564, Cl. 386-46.000.
van der Poel, Carolus J.; Acket, Gerard A.; and Schemmann, Marcel F. C., 5,574,743, Cl. 372-46.000.
van der Wilk, Ronald; Stevens, Theodorus H. M.; and van Moorsel, Josephus J., 5,573,173, Cl. 228-194.000.
United States Surgical Corporation: *See*—
Green, David T.; Bolanos, Henry; Kolesa, Michael S.; and Toso, Kenneth, 5,573,169, Cl. 227-177.100.
Green, David T.; and Bolanos, Henry, 5,573,541, Cl. 606-143.000.
Sauer, Jude S.; Greenwald, Roger J.; Oravecz, Michael G.; and Kobilansky, Alex, 5,573,493, Cl. 600-121.000.
Stone, Corbett, 5,573,534, Cl. 606-48.000.
Viklund, Mark C., 5,573,535, Cl. 606-51.000.
U.S. Textile Corporation: *See*—
Lengers, Hans L.; Storandt, Gerhard; McCormick, James; Secrest, William M.; and Horney, Michael D., 5,573,851, Cl. 428-378.000.
U.S. West Technologies, Inc.: *See*—
Marics, Monica A., 5,574,494, Cl. 348-13.000.
United Technologies Corporation: *See*—
Barcza, William K., 5,573,375, Cl. 416-193.000.
Barcza, William K., 5,573,378, Cl. 416-245.00R.
Universal Enterprises, Inc.: *See*—
Ridenour, Ralph G., 5,573,285, Cl. 285-353.000.
Universite des Sciences et Technologies de Lille: *See*—
Mairesse, Gaetan; Boivin, Jean-Claude; Lagrange, Gilles; and Cocolios, Panayotis, 5,573,655, Cl. 205-634.000.
University College Galway: *See*—
Barry, Thomas G.; Gannon, Bernard F. X.; and Powell, Richard, 5,574,145, Cl. 536-24.320.
University of California, The Regents of the: *See*—
McEwan, Thomas E., 5,573,012, Cl. 128-782.000.
McFadden, David W., 5,574,010, Cl. 514-12.000.
University of Cincinnati: *See*—
Kabra, Bhagwati G.; and Gehrke, Stevin H., 5,573,994, Cl. 502-402.000.
University of Delaware: *See*—
Davidonis, Gayle; Knorr, Dietrich W.; and Romagnoli, Lynn G., 5,573,941, Cl. 435-240.400.
Waite, J. Herbert, 5,574,134, Cl. 530-328.000.
University of Hawaii: *See*—
Halverson, Richard P., Jr.; and Lew, Art Y., 5,574,930, Cl. 395-800.000.
University of Iowa Research Foundation: *See*—
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University of Massachusetts: *See*—
Klocek, Paul; MacKnight, William J.; Farris, Richard J.; and Lietzau, Christian, 5,573,824, Cl. 428-38.000.
University Of Miami: *See*—

Simon, Gabriel; Legeais, Jean-Marc; Lee, William; and Parel, Jean-Marie, 5,573,544, Cl. 606-151.000.
University of Michigan, The Regents of the: *See*—
Townsend, Leroy B.; and Drach, John C., 5,574,058, Cl. 514-394.000.
University of Oregon, The: *See*—
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University Of Pennsylvania, Trustees of the: *See*—
Cohen, Jeffrey A.; Greene, Mark I.; and Williams, William V., 5,574,009, Cl. 514-12.000.
University of Sydney, The: *See*—
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University of Utah Research Foundation: *See*—
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Unno, Takashi: *See*—
Yoneta, Tadao; Unno, Takashi; Kurita, Yukihiro; and Shinba, Chikaya, 5,574,345, Cl. 318-376.000.
Uno, Satosi: *See*—
Nii, Katsutoshi; Nakajima, Takeshi; Hashimoto, Ichiro; Uno, Satosi; and Akashi, Sueo, 5,574,322, Cl. 310-90.500.
Untereker, Dartel F.; Phipps, Joseph B.; and Lattin, Gary A., to ALZA Corporation. Iontophoretic drug delivery. 5,573,503, Cl. 604-20.000.
Uomi, Kazuhisa: *See*—
Aoki, Masahiro; Sano, Hirohisa; Sakano, Shinji; Suzuki, Makoto; Takahashi, Makoto; Uomi, Kazuhisa; Ido, Tatemi; and Takai, Atsushi, 5,574,289, Cl. 257-17.000.
UOP: *See*—
Monkelbaan, Daniel R.; Resetarits, Michael R.; and Graczyk, Lawrence S., 5,573,714, Cl. 261-114.500.
Upjohn Company, The: *See*—
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Uramoto, Katuo: *See*—
Kawasaki, Shoji; Hirayama, Nobuhiro; Uchiyama, Kenji; Sato, Hisatomo; Akiyama, Hiromi; and Uramoto, Katuo, 5,573,881, Cl. 430-110.000.
Urea Casale S.A.: *See*—
Pagani, Giorgio, 5,573,734, Cl. 422-189.000.
Pagani, Giorgio, 5,573,735, Cl. 422-189.000.
Uryu, Toshiyuki: *See*—
Tanaka, Yoshio; Uryu, Toshiyuki; and Yaguchi, Minoru, 5,573,589, Cl. 106-804.000.
Ushikoshi, Ryusuke: *See*—
Nobori, Kazuhiro; Umemoto, Koichi; Ushikoshi, Ryusuke; and Yamaguchi, Shinji, 5,573,690, Cl. 219-457.000.
Usui, Hideaki: *See*—
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Usuki, Tosio: *See*—
Okada, Masaaki; and Usuki, Tosio, 5,574,314, Cl. 257-728.000.
Utagawa, Ken: *See*—
Kusaka, Yosuke; and Utagawa, Ken, 5,574,536, Cl. 396-96.000.
Utsumi, Kuniaki; and Maeda, Kazuki, to Matsushita Electric Industrial Co., Ltd. Image signal transmission apparatus for repeatedly reproducing and transmitting a main image and a sub-image using an optical disc. 5,574,569, Cl. 386-95.000.
Uyama, Masashi: *See*—
Yoshimura, Tetsuya; Ueda, Hirotada; Hidai, Yutaka; and Uyama, Masashi, 5,574,846, Cl. 395-118.000.
Vaassen, Wilhelmus M. H.; and Groenenboom, Albert, to Hollandse Signaalapparaten B.V. Apparatus for the three-dimensional orientation of an object. 5,573,218, Cl. 248-371.000.
Vaillancourt, Greg; and Sissons, Donald, to Valcom Mechanical Limited. Remote fuel station. 5,573,066, Cl. 169-49.000.
Vaillard, Pierre: *See*—
Cogneville, Francis; Saint-Leger, Gerard; and Vaillard, Pierre, 5,572,964, Cl. 123-179.170.
Valcom Mechanical Limited: *See*—
Vaillancourt, Greg; and Sissons, Donald, 5,573,066, Cl. 169-49.000.
Valice, Steven F. Padded skating shorts. 5,572,737, Cl. 2-465.000.
Valley, Robert A., to Earmark, Inc. Microphone assembly for adhesive attachment to a vibratory surface. 5,574,794, Cl. 381-169.000.
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Yoon, InBae. Safety penetrating instrument with safety member and cannula moving during penetration and triggered cannula and/or safety member protrusion. 5,573,545, Cl. 606-185.000.

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Dong, Yuanji: *See*—
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Steinberg, Meyer; and Dong, Yuanji. Process and apparatus for the production of methanol from condensed carbonaceous material. Re. 35,377, Cl. 518-704.000.

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Brown, Raymond H.: *See*—
Rucker, Jon A.; Ancheta, Bart D.; and Brown, Raymond H., B1 5,092,523, Cl. 239-240.000.

Collins, Ellsworth H.; Fultz, William A.; and Mattingly, James F., to Interlake Companies. High-speed lineshaft-driven accumulating conveyor. B1 5,375,696, Cl. 198-781.040.

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Collins, Ellsworth H.; Fultz, William A.; and Mattingly, James F., B1 5,375,696, Cl. 198-781.040.

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Ozkahyaoglu, Aysegul; and Zoerner, Marty M., to Nartron Corporation. Filter condition indicator having moveable sensor and aggregate flow counter. B1 5,089,144, Cl. 210-767.000.

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Florida Foundation Seed Producers, Inc.: *See*—
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Geo. J. Ball, Inc.: *See*—
Leue, Ellen F., 9,691, Cl. Plt.-87.600.
Henny, Richard J., to Florida Foundation Seed Producers, Inc. Dieffenbachia named '61101'. 9,694, Cl. Plt.-88.200.
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CLASSIFICATION OF PATENTS

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NOTE—First number, class; second number, subclass; third number, patent number

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445 5,573,186
532 5,573,187

CLASS 241

16 5,573,188
21 5,573,189
27 5,573,190

CLASS 242

41 5,573,191
150 R 5,573,192
319 5,573,193
334.6 5,573,194
340 5,573,195
348.1 5,573,196
356.6 5,573,197
375 5,573,198
434.8 5,573,200
532.4 5,573,201
534.2 5,573,202
584.1 5,573,203

CLASS 244

100 R 5,573,204
122 A 5,573,205
135 A 5,573,206
145 5,573,207
153 R 5,573,208

CLASS 248

48.2 5,573,209
59 5,573,210
96 5,573,211
188.9 5,573,212
5,573,213
311.2 5,573,214
316.2 5,573,215
316.7 5,573,216
5,573,217
371 5,573,218
421 5,573,219
638 5,573,220
640 5,573,221
647 5,573,222

CLASS 250

208.1 5,574,274
208.2 5,574,275
222.2 5,574,276
281 5,574,277
306 5,574,278
5,574,279
309 5,574,280
332 5,574,281
338.3 5,574,282
341.1 5,574,283
370.06 5,574,284
370.13 5,574,285
372 5,574,286
395 5,574,287
459.1 5,574,288

CLASS 251

4 5,573,223
30.04 5,573,224

CLASS 252

8.63 5,573,694
8.91 5,573,695
299.01 5,573,703
5,573,704
299.61 5,573,705
315.01 5,573,706
321 5,573,707
389.61 5,573,708
572 5,573,711
586 5,573,712

CLASS 254

134.4 5,573,225
395 5,573,226

CLASS 256

65 5,573,227

CLASS 257

17 5,574,289
31 5,574,290
40 5,574,291
59 5,574,292
5,574,293
66 5,574,294
77 5,574,295
103 5,574,296
135 5,574,297
206 5,574,298
296 5,574,299
306 5,574,300
329 5,574,301
330 5,574,302
401 5,574,303
466 5,574,304
515 5,574,305
557 5,574,306
607 5,574,307
618 5,574,308
679 5,574,309
696 5,574,310
697 5,574,311
706 5,574,312
728 5,574,313
5,574,314

CLASS 261

23.1 5,573,713
114.5 5,573,714

CLASS 264

1.36 5,573,715
40.7 5,573,716
45.1 5,573,717
56 5,573,718
129 5,573,719
171.150 5,573,720
401 5,573,721
5,573,722
448 5,573,723

CLASS 266

265 5,573,724

CLASS 269

41 5,573,228
49 5,573,229
235 5,573,230

CLASS 270

43 5,573,231
51 5,573,232
58.08 5,573,233

CLASS 271

9.01 5,573,234
121 5,573,235
265.02 5,573,236

CLASS 273

1.5 R 5,573,237
5,573,238
26 A 5,573,239
5,573,240
73 C 5,573,242
153 R 5,573,245
157 R 5,573,246
274 5,573,248
292 5,573,249
408 5,573,250
416 5,573,251
454 5,573,252

CLASS 277

1 5,573,253

CLASS 279

62 5,573,254
75 5,573,255

CLASS 280

18 5,573,256
22 5,573,257
33.993 5,573,258
204 5,573,259
250.1 5,573,260
5,573,261
279 5,573,262
509 5,573,263
602 5,573,264
689 5,573,265
704 5,573,266
728.3 5,573,267
731 5,573,268
735 5,573,269
740 5,573,270
741 5,573,271
751 5,573,272
775 5,573,273
781 5,573,274
825 5,573,275

CLASS 281

48 5,573,276

CLASS 283

79 5,573,277
109 5,573,278

CLASS 285

21.1 5,573,279
38 5,573,280
40 5,573,281
55 5,573,282
93 5,573,283
298 5,573,284
353 5,573,285

CLASS 289

12 5,573,286

CLASS 292

29 5,573,287
264 5,573,289
338 5,573,290

CLASS 294

1.1 5,573,291
7 5,573,292
68.1 5,573,293

CLASS 296

97.23 5,573,294
100 5,573,295
136 5,573,296
146.6 5,573,297
188 5,573,298
194 5,573,299
197 5,573,300

CLASS 297

173 5,573,301
188.12 5,573,288
230.14 5,573,302
300.5 5,573,303
314 5,573,304
452.41 5,573,305
482 5,573,306

CLASS 299

14 5,573,307
102 5,573,308

CLASS 301

5.3 5,573,309
43 5,573,310
105.1 5,573,311

CLASS 303

3 5,573,312
10 5,573,314
115.2 5,573,313
141 5,573,315

CLASS 305

180 5,573,316

CLASS 307

10.1 5,574,315
10.7 5,574,316
95 5,574,317
112 5,574,318
114 5,574,319
131 5,574,320

CLASS 310

67 R 5,574,321
90.5 5,574,322
156 5,574,323
194 5,574,324
215 5,574,325

323 5,574,326

CLASS 312

7.2 5,573,317
34.11 5,573,318
100 5,573,319
223.3 5,573,320
242 5,573,321
400 5,573,322
405 5,573,323

CLASS 313

110 5,574,327
114 5,574,328
141 5,574,329
412 5,574,330
414 5,574,331
483 5,574,332
497 5,574,333
578 5,574,334

CLASS 315

119 5,574,335
225 5,574,336
241 P 5,574,337
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CLASS 318

10 5,574,339
34 5,574,340
139 5,574,341
254 5,574,342
291 5,574,343
293 5,574,344
376 5,574,345
434 5,574,346
568.12 5,574,347
575 5,574,348
606 5,574,349
632 5,574,350
696 5,574,351
802 5,574,352

CLASS 320

14 5,574,353
15 5,574,354
39 5,574,355

CLASS 323

207 5,574,356
222 5,574,357
276 5,574,358

CLASS 324

72.5 5,574,359
76.39 5,574,360
142 5,574,362
174 5,574,361
204 5,574,363
207.12 5,574,364
207.24 5,574,365
207.26 5,574,366
5,574,367
228 5,574,368
248 5,574,369
318 5,574,372
5,574,373
320 5,574,370
324 5,574,371
338 5,574,374
502 5,574,375
529 5,574,376
533 5,574,377
541 5,574,378
642 5,574,379
654 5,574,380
660 5,574,381
754 5,574,382
755 5,574,383
760 5,574,384
765 5,574,385
5,574,386
772 5,574,387

CLASS 326

41 5,574,388
81 5,574,389
88 5,574,390
126 5,574,391

CLASS 327

131 5,574,392
142 5,574,393
309 5,574,395
337 5,574,396
530 5,574,397
557 5,574,398

CLASS 329

306 5,574,399

CLASS 330

52 5,574,400
253 5,574,401
277 5,574,402
288 5,574,403
308 5,574,404

CLASS 331

2 5,574,405
11 5,574,406
14 5,574,407
176 5,574,408

CLASS 332

105 5,574,409

CLASS 333

17.3 5,574,410
25 5,574,411
122 5,574,412
174 5,574,413
189 5,574,414
238 5,574,415

CLASS 335

78 5,574,416
216 5,574,417

CLASS 336

5 5,574,418
192 5,574,419
200 5,574,420

CLASS 337

343 5,574,421

CLASS 340

323 R 5,574,422
333 5,574,423
425 5,574,424
5,574,425
435 5,574,426
436 5,574,427
468 5,574,428
534 5,574,434
568 5,574,430
571 5,574,429
572 5,574,431
573 5,574,432
574 5,574,433
630 5,574,435
663 5,574,436
670 5,574,437
825.440 5,574,439
825.57 5,574,440
825.97 5,574,438
870.31 5,574,441
870.38 5,574,442
901 5,574,443

CLASS 341

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10 5,574,445
22 5,574,446
5,574,447
59 5,574,448
65 5,574,449
112 5,574,450
131 5,574,451
143 5,574,452
5,574,453
5,574,454
144 5,574,455
157 5,574,456
172 5,574,457

CLASS 342

13 5,574,458
40 5,574,459
62 5,574,460
67 5,574,461
68 5,574,462
70 5,574,463
198 5,574,464
352 5,574,465
359 5,574,466
398 5,574,467
442 5,574,468
455 5,574,469

CLASS 343

895 5,574,470
909 5,574,471
915 5,574,472

CLASS 345

8 5,574,473
95 5,574,474
100 5,574,475
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102 5,574,477
132 5,574,478
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166 5,574,480
168 5,574,481
173 5,574,482
200 5,574,483

CLASS 347

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27 5,574,485
45 5,574,486
62 5,574,487
63 5,574,488
86 5,574,489
87 5,574,490
248 5,574,491
256 5,574,492
262 5,574,493

CLASS 348

13 5,574,494
5,574,495
21 5,574,496
144 5,574,497
169 5,574,498
180 5,574,499
5,574,500
347 5,574,502
409 5,574,503
415 5,574,504
426 5,574,505
459 5,574,506
511 5,574,507
5,574,508
569 5,574,509
584 5,574,510
586 5,574,511
620 5,574,512
652 5,574,513
706 5,574,514
731 5,574,515
742 5,574,516

CLASS 351

44 5,574,517
161 5,574,518

CLASS 353

77 5,573,324
79 5,573,325

CLASS 355

71 5,574,537

CLASS 356

5.05 5,574,552
5.15 5,574,553
124 5,574,554
125 5,574,555
244 5,574,556
345 5,574,557
356 5,574,558
5,574,559
358 5,574,560
399 5,574,561
432 5,574,562

CLASS 358

296 5,574,563
400 5,574,571
451 5,574,572
452 5,574,573
468 5,574,574
474 5,574,575
484 5,574,576
487 5,574,577
490 5,574,578

CLASS 359

23 5,574,579
41 5,574,580
052 5,574,581
59 5,574,582
74 5,574,583
125 5,574,584
140 5,574,586
142 5,574,585
153 5,574,587
158 5,574,588
160 5,574,589
179 5,574,590
200 5,574,591
211 5,574,592
259 5,574,593
337 5,574,534
391 5,574,594
484 5,574,595
5,574,596
569 5,574,597
666 5,574,598
689 5,574,599
818 5,574,600
859 5,574,601

CLASS 360

77.12 5,574,602
105 5,574,603
5,574,604
113 5,574,605
130.21 5,574,606
133 5,574,607

CLASS 361

23 5,574,608
56 5,574,609
5,574,610
64 5,574,611
93 5,574,612
117 5,574,613
119 5,574,614
120 5,574,615
149 5,574,616
154 5,574,617
212 5,574,618
230 5,574,619
282 5,574,620
321.1 5,574,621
625 5,574,622
627 5,574,623
676 5,574,624
684 5,574,625
704 5,574,626
719 5,574,627
737 5,574,628
767 5,574,629
792 5,574,630

CLASS 362

66 5,573,326
80 5,573,327
183 5,573,328
191 5,573,329
405 5,573,330

CLASS 363

40 5,574,631
49 5,574,632
59 5,574,633
5,574,634
124 5,574,635
132 5,574,636

CLASS 364

131 5,574,637
165 5,574,638
401 R 5,574,640
424.05 5,574,641
424.07 5,574,642
426.02 5,574,643
426.04 5,574,644
431.04 5,574,645
431.08 5,574,646
433 5,574,647
439 5,574,648
449 5,574,649
453 5,574,650
474.02 5,574,651
474.22 5,574,652
483 5,574,653
487 5,574,654
489 5,574,655
500 5,574,656
510 5,574,657
512 5,574,658
514 A 5,574,659
514 R 5,574,660
5,574,661
5,574,662
5,574,663
517 5,574,665
526 5,574,666
557 5,574,667
558 5,574,668
569 5,574,669
571.07 5,574,664
715.03 5,574,671
715.08 5,574,672
715.1 5,574,670
717 5,574,673
724.01 5,574,639
726 5,574,674
727 5,574,675
745 5,574,676
766 5,574,677
807 5,574,678

CLASS 365

145 5,574,679
149 5,574,680
5,574,681
164 5,574,682
179 5,574,683
185.04 5,574,684
185.18 5,574,685
185.23 5,574,686
189.06 5,574,687
200 5,574,688
5,574,689
201 5,574,690
5,574,691
5,574,692
5,574,693
203 5,574,694
5,574,695
205 5,574,696
226 5,574,697
230.06 5,574,698

CLASS 366

81 5,573,331
85 5,573,332
132 5,573,333
162.4 5,573,334

CLASS 367

149 5,574,699
173 5,574,700

CLASS 368

223 5,574,701

CLASS 369

13 5,574,702
5,574,703
32 5,574,704
36 5,574,705
44.26 5,574,706
48 5,574,707
58 5,574,708
59 5,574,709
60 5,574,710
77.1 5,574,711
102 5,574,712
116 5,574,713
124 5,574,714
288 5,574,715
291 5,574,716

CLASS 370

13 5,574,717
16 5,574,718
5,574,719
17 5,574,720
18 5,574,721
56 5,574,722
68.1 5,574,723
5,574,724
79 5,574,725
85.3 5,574,726
95.1 5,574,727
5,574,728

CLASS 371

10.3 5,574,729
22.1 5,574,730
22.3 5,574,731
27 5,574,732
5,574,733
5,574,734
37.1 5,574,735
40.4 5,574,736
46 5,574,737

CLASS 372

28 5,574,738
29 5,574,739
41 5,574,740
45 5,574,741
5,574,742
46 5,574,743
50 5,574,744
5,574,745

CLASS 373

9 5,574,746

CLASS 374

126 5,573,339
141 5,573,335

CLASS 375

200 5,574,747
204 5,574,748
220 5,574,749
224 5,574,750
265 5,574,751
295 5,574,755
354 5,574,752
357 5,574,753
367 5,574,754
376 5,574,756
5,574,757

CLASS 376

245 5,574,758
260 5,574,759
461 5,574,760
463 5,574,761

CLASS 377

6 5,574,762

CLASS 378

17 5,574,763
98.7 5,574,764
5,574,765
147 5,574,766
167 5,574,767
185 5,574,768

CLASS 379

21 5,574,769
34 5,574,770
57 5,574,771
58 5,574,772
59 5,574,773
5,574,774
60 5,574,775
113 5,574,776
142 5,574,777
207 5,574,778
5,574,779
5,574,780
220 5,574,781
5,574,782
230 5,574,783
309 5,574,784

CLASS 380

2 5,574,785
4 5,574,786
5 5,574,787
9 5,574,788
21 5,574,789
23 5,574,790

CLASS 381

98 5,574,791
103 5,574,792
169 5,574,793
5,574,794
183 5,574,795
188 5,574,796
193 5,574,797

CLASS 382

100 5,574,798
132 5,574,799
149 5,574,800
150 5,574,801
176 5,574,802
259 5,574,803
313 5,574,804

CLASS 384

146 5,573,336

CLASS 385

3 5,574,805
14 5,574,806
24 5,574,807
28 5,574,808
31 5,574,809
37 5,574,810
52 5,574,811
78 5,574,812
81 5,574,813
90 5,574,814
101 5,574,815
109 5,574,816
114 5,574,817
122 5,574,818
139 5,574,819
142 5,574,820

CLASS 386

46 5,574,564
5,574,567
81 5,574,565
95 5,574,569
103 5,574,570
109 5,574,566
112 5,574,568

CLASS 392

392 5,574,821
451 5,574,822

CLASS 395

2.17 5,574,823
2.35 5,574,824
2.37 5,574,825
3 5,574,826
24 5,574,827
50 5,574,828
101 5,574,829
103 5,574,830
104 5,574,831
109 5,574,832
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114 5,574,834
118 5,574,841
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5,574,911
650 5,574,912
5,574,914
700 5,574,915
750 5,574,920
5,574,921
761 5,574,840
800 5,574,923
5,574,924
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805 5,574,842

821 5,574,943
825 5,574,944
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829 5,574,947
830 5,574,948
850 5,574,949
861 5,574,950
865 5,574,951
888 5,574,952
5,574,953

CLASS 396

33 5,574,531
52 5,574,520
95 5,574,535
96 5,574,536
133 5,574,526
315 5,574,521
411 5,574,522
5,574,524
429 5,574,519
435 5,574,523
536 5,574,528
538 5,574,525
568 5,574,529
604 5,574,530
626 5,574,532
639 5,574,533

CLASS 399

9 5,574,527
45 5,574,551
59 5,574,543
60 5,574,544
62 5,574,539
71 5,574,538
171 5,574,540
5,574,541
240 5,574,548
251 5,574,547
262 5,574,549
270 5,574,545
276 5,574,546
313 5,574,550
380 5,574,542

CLASS 400

605 5,573,337
611 5,573,338

CLASS 401

126 5,573,340
172 5,573,341
175 5,573,342

CLASS 403

31 5,573,343
179 5,573,344
271 5,573,345
282 5,573,346

CLASS 405

43 5,573,347
52 5,573,348
5,573,349
119 5,573,350
5,573,351
168.3 5,573,353
216 5,573,354
227 5,573,355

CLASS 406

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CLASS 408

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35 5,573,358

CLASS 409

132 5,573,352

CLASS 410

69 5,573,359
84 5,573,360

CLASS 411

373 5,573,361
509 5,573,362

CLASS 414

138.9 5,573,363
234 5,573,364
417 5,573,365
664 5,573,366
786 5,573,367
795.8 5,573,368

CLASS 415

119 5,573,369
169.4 5,573,370
182.1 5,573,371

CLASS 416

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131 5,573,373
186 R 5,573,374
193 5,573,375
193 A 5,573,376
229 A 5,573,377
245 R 5,573,378

CLASS 417

222.2 5,573,379
269 5,573,380
284 5,573,381
326 5,573,382
360 5,573,383
392 5,573,384
393 5,573,385
521 5,573,386

CLASS 418

13 5,573,387
15 5,573,388
55.5 5,573,389
178 5,573,390

CLASS 419

2 5,574,959
14 5,574,954
30 5,574,955
45 5,574,956
67 5,574,957

CLASS 422

7 5,573,725
28 5,573,726
63 5,573,727
90 5,573,728
100 5,573,729
123 5,573,730
174 5,573,731
186 5,574,958
186.06 5,573,732
186.18 5,573,733
189 5,573,734
5,573,735
191 5,573,736
211 5,573,737
300 5,573,741

CLASS 423

11 5,574,960
20 5,573,738
87 5,573,739
299 5,573,740
412 5,573,742
477 5,573,743
613 5,573,744
700 5,573,745
705 5,573,746

CLASS 424

1.65 5,573,747
1.69 5,573,748
9.363 5,573,752
9.45 5,573,749
5,573,750
9.52 5,573,751
59 5,573,753
5,573,754
5,573,755
60 5,573,759
65 B1 5,407,668
70.1 5,573,785
70.24 5,573,756
78.02 5,573,757
78.04 5,573,758
84 5,573,760
85.1 5,573,763
85.2 5,573,764
93.45 5,573,765
93.461 5,573,766
125 5,573,761
145.1 5,573,762
195.11 5,573,767
401 5,573,768
403 5,573,769
405 5,573,770
422 5,573,771
423 5,573,772
5,573,773
5,573,774
427 5,573,775
435 5,573,776
440 5,573,777
448 5,573,778
450 5,573,779
464 5,573,780
484 5,573,781
490 5,573,783
551 5,573,784
718 5,573,786

CLASS 425

233 5,573,787
238 5,573,788
394 5,573,789
404 5,573,790
523 5,573,791

CLASS 426

2 5,573,792
34 5,573,793
48 5,573,794
53 5,573,795
94 5,573,796
106 5,573,797
262 5,573,799
326 5,573,800
5,573,801
466 5,573,802
483 5,573,803
496 5,573,804
515 5,573,805
582 5,573,806

CLASS 427

66 5,573,807
79 5,573,808
123 5,573,809
126.5 5,573,798
186 5,573,810
244 5,573,811
333 5,573,812
346 5,573,813
448 5,573,814
504 5,573,815
510 5,573,816
561 5,573,817

CLASS 428

12 5,573,818
34.8 5,573,819
35.7 5,573,820
36.9 5,573,822
36.92 5,573,823
38 5,573,824
40.9 5,573,865
43 5,573,825
64.1 5,573,831
143 5,573,827
152 5,573,828
156 5,573,829
5,573,830
192 5,573,832
195 5,573,833
210 5,573,834
216 5,573,837
5,573,839
219 5,573,840
220 5,573,841
240 5,573,842
5,573,843
5,573,844
306.6 5,573,845
323 5,573,846
332 5,573,847
354 5,573,848
373 5,573,850
378 5,573,851
5,573,852
411.1 5,573,854
418 5,573,855
424.8 5,573,856
480 5,573,857
489 5,573,782
548 5,574,961
553 5,573,859
617 5,573,860
621 5,573,861
684 T 5,573,863
688 5,573,862
698 5,573,864

CLASS 429

13 5,573,866
17 5,573,867
50 5,573,868
91 5,573,869
96 5,573,870
103 5,573,871
192 5,573,872
223 5,573,873

CLASS 430

5 5,573,874
5,573,875
7 5,573,876
30 5,573,877
59 5,573,878
95 5,573,879
106.6 5,573,880
110 5,573,881
115 5,573,882
116 5,573,883
126 5,573,884
138 5,573,885
192 5,573,886
199 5,573,887
256 5,573,888
285.1 5,573,889
311 5,573,890
323 5,573,891
388 5,573,892
393 5,573,893
394 5,573,894
398 5,573,895
399 5,573,896
501 5,573,897
503 5,573,898
517 5,573,899
546 5,573,900
567 5,573,901
5,573,902
600 5,573,903

CLASS 431

8 5,573,391
9 5,573,392
255 5,573,393
258 5,573,394
278 5,573,395

CLASS 432

106 5,573,396

CLASS 433

56 5,573,397
80 5,573,398
5,573,399
136 5,573,400
201.1 5,573,401

CLASS 434

69 5,573,402
185 5,573,403
207 5,573,406
238 5,573,404
5,573,405
262 5,573,407

CLASS 435

4 5,573,904
6 5,573,905
5,573,906
5,573,907
5,573,908
5,573,909
5,573,910
5,573,911
5,573,912
5,573,913
5,573,914
5,573,915
7.1 5,573,916
7.4 5,573,918
7.9 5,573,919
5,573,920
7.92 5,573,921
7.93 5,573,922
32 5,573,927
68.1 5,573,923
69.1 5,573,928
5,573,929
69.5 5,573,924
5,573,930
69.7 5,573,925
74 5,573,926
145 5,573,931
172.3 5,573,932
5,573,933
177 5,573,934
194 5,573,935
196 5,573,936
240.1 5,573,937
240.2 5,573,938
5,573,939
240.243 5,573,942
240.4 5,573,941
252.3 5,573,943
5,573,944
252.33 5,573,945
253.5 5,573,946
253.6 5,573,947
271 5,573,948
280 5,573,949
287.5 5,573,950
289.1 5,573,951

CLASS 436

8 5,573,952
164 5,573,953
174 5,573,954
501 5,573,955
518 5,573,956
5,573,957

CLASS 437

21 5,573,958
5,573,959
5,573,960
5,573,961
34 5,573,962
5,573,963
40 5,573,964
41 5,573,965
48 5,573,966
52 5,573,967
5,573,968
57 5,573,969
60 5,573,970
5,573,971
63 5,573,972
67 5,573,973
69 5,573,974
129 5,573,975
5,573,976
192 5,573,978
195 5,573,979
200 5,573,980
225 5,573,981
331 5,573,418

CLASS 439

62 5,573,408
76.1 5,573,409
88 5,573,410
95 5,573,411
133 5,573,412
159 5,573,413
191 5,573,414
260 5,573,415
291 5,573,416
310 5,573,417
340 5,573,419
371 5,573,420
409 5,573,421
448 5,573,422
462 5,573,423
502 5,573,424
5,573,425
504 5,573,426
526 5,573,427
566 5,573,428
587 5,573,429
701 5,573,430
751 5,573,431
752 5,573,432
805 5,573,433
839 5,573,434
862 5,573,435

CLASS 440

77 5,573,436

CLASS 446

75 5,573,437
149 5,573,438
226 5,573,439
404 5,573,440

CLASS 450

89 5,573,441

CLASS 451

8 5,573,442
11 5,573,443
28 5,573,444
39 5,573,445
5,573,446
41 5,573,447
5,573,448
47 5,573,449
76 5,573,450
243 5,573,451
246 5,573,452
533 5,573,453

CLASS 452

29 5,573,454
35 5,573,455
198 5,573,456

CLASS 453

31 5,573,457

CLASS 454

315 5,573,458

CLASS 455

2 5,574,962
5,574,963
3.1 5,574,964
3.2 5,574,965
6.1 5,574,966
12.1 5,574,967
5,574,968
5,574,969
13.1 5,574,970
33.1 5,574,971

5,574,972
5,574,973
5,574,974
51.2 5,574,975
54.1 5,574,976
38.1 5,574,977
63 5,574,978
5,574,979
5,574,980
67.4 5,574,981
69 5,574,982
5,574,983
5,574,984
76 5,574,985
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82 5,574,987
101 5,574,989
115 5,574,990
126 5,574,991
5,574,992
5,574,993
5,574,994
161.2 5,574,995
161.3 5,574,996
180.1 5,574,997
182.2 5,574,998
186.1 5,574,999
186.2 5,575,000
192.1 5,575,001
194.1 5,575,002
234.1 5,575,003

CLASS 460

145 5,573,459

CLASS 463

26 5,573,244
60 5,573,243

CLASS 464

24 5,573,460
83 5,573,461
90 5,573,462
111 5,573,464

CLASS 472

118 5,573,465

CLASS 473

184 5,573,247
282 5,573,241
289 5,573,467
312 5,573,468
314 5,573,469

CLASS 474

255 5,573,470

CLASS 475

207 5,573,471
301 5,573,472

CLASS 477

9.1 5,573,474
63 5,573,473
94 5,573,475
109 5,573,476
5,573,477
130 5,573,478

CLASS 482

44 5,573,479
57 5,573,480
5,573,481
96 5,573,482
105 5,573,483
108 5,573,484
112 5,573,485

5,573,486
124 5,573,487

CLASS 483

1 5,573,488

CLASS 493

194 5,573,489
315 5,573,490
352 5,573,491

CLASS 501

1 5,573,982
12 5,573,983
39 5,573,984
96 5,573,985
97 5,573,986
108 5,573,987

CLASS 502

37 5,573,988
64 5,573,989
77 5,573,990
177 5,573,991
209 5,573,992
319 5,573,993
402 5,573,994

CLASS 503

201 5,573,995
208 5,573,996

CLASS 504

142 5,573,997
211 5,573,998
266 5,573,999
292 5,574,000

CLASS 505

231 5,574,001

CLASS 508

224 5,573,696

CLASS 510

122 5,573,709
131 5,573,699
202 5,574,002
277 5,573,698
301 5,574,003
359 5,573,697
361 5,574,004
383 5,573,700
397 5,573,701
405 5,573,710
417 5,573,702
444 5,574,005

CLASS 514

3 5,574,006
12 5,574,007
5,574,008
5,574,009
5,574,010
14 5,574,011
5,574,012
18 5,574,013
5,574,014
5,574,015
5,574,016
19 5,574,017
21 5,574,018
23 5,574,019
30 5,574,020
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54 5,574,022
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89 5,574,024
129 5,574,025
152 5,574,026
184 5,574,027
210 5,574,028
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212 5,574,030
5,574,031
217 5,574,032
222.5 5,574,033
232.8 5,574,034
236.2 5,574,035
239.2 5,574,036
245 5,574,037
249 5,574,038
257 5,574,039
275 5,574,040
278 5,574,041
300 5,574,042
304 5,574,043
316 5,574,044
317 5,574,045
321 5,574,046
324 5,574,047
5,574,048
340 5,574,051
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357 5,574,050
364 5,574,053
365 5,574,054
376 5,574,055
383 5,574,049
5,574,056
390 5,574,057
394 5,574,058
397 5,574,059
411 5,574,060
456 5,574,061
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474 5,574,063
542 5,574,064
546 5,574,065
548 5,574,066
557 5,574,067
562 5,574,068
586 5,574,069
634 5,574,070
648 5,574,071
772.1 5,574,093

CLASS 518

704 Re.35,377

CLASS 521

131 5,574,072
134 5,574,073
143 5,574,074

CLASS 523

116 5,574,075
128 5,574,076
137 5,574,077
161 5,574,078
423 5,574,079

CLASS 524

11 5,574,080
56 5,574,081
110 5,574,082
186 5,574,083
270 5,574,084
289 5,574,085
296 5,574,086
451 5,574,087
542 5,574,088
556 5,574,089
560 5,574,090
570 5,574,091
590 5,574,092

CLASS 525

54.3 5,574,094
54.5 5,574,095
57 5,574,096
61 5,574,097
5,574,098
71 5,574,099
75 5,574,100
92 A 5,574,101
124 5,574,102
127 5,574,103
130 5,574,104
179 5,574,105
183 5,574,106
193 5,574,107
221 5,574,108
280 5,574,109
296 5,574,110
313 5,574,111
327.3 5,574,112
327.6 5,574,113
440 5,574,114

CLASS 526

62 5,574,115
116 5,574,116
224 5,574,117
281 5,574,118
318.2 5,574,120
318.44 5,574,121

CLASS 528

28 5,574,122
45 5,574,123
59 5,574,124
66 5,574,125
5,574,126
125 5,574,127
288 5,574,128
310 5,574,129
354 5,574,130
422 5,574,131

CLASS 530

323 5,574,132
324 5,574,133
328 5,574,134
344 5,574,135
350 5,574,136
351 5,574,137
5,574,138
380 5,574,139

CLASS 534

10 5,574,140

CLASS 536

22.1 5,574,141
23.1 5,574,142
23.2 5,574,143
23.5 5,574,144
24.32 5,574,145
25.34 5,574,146
28.52 5,574,148
50 5,574,149
56 5,574,150
124 5,574,151

CLASS 540

200 5,574,152
222 5,574,153
5,574,154
227 5,574,155
357 5,574,156
469 5,574,158

CLASS 544

396 5,574,159

CLASS 546

110 5,574,160
167 5,574,161
188 5,574,162
242 5,574,163
298 5,574,164

CLASS 548

198 5,574,165
260 5,574,166
327.1 5,574,167
360.5 5,574,168
366.1 5,574,169
467 5,574,170
517 5,574,175

CLASS 549

66 5,574,176
206 5,574,171
246 5,574,172
354 5,574,173
364 5,574,174
417 5,574,177
462 5,574,178

CLASS 554

110 5,574,179

CLASS 558

147 5,574,180
459 5,574,181

CLASS 560

179 5,574,182

CLASS 562

401 5,574,183
556 5,574,184

CLASS 564

224 5,574,185
393 5,574,186
402 5,574,187
418 5,574,188
493 5,574,189

CLASS 568

440 5,574,190
812 5,574,194
826 5,574,195
838 5,574,196

CLASS 570

166 5,574,191
167 5,574,192
172 5,574,193

CLASS 585

4 5,574,197
323 5,574,198
407 5,574,199
520 5,574,200
730 5,574,201

CLASS 588

200 5,574,202
203 5,574,203
252 5,574,204

CLASS 600

117 5,573,492
121 5,573,493
5,573,494
204 5,573,495
217 5,573,496

CLASS 601

2 5,573,497
41 5,573,498
70 5,573,499
111 5,573,500

CLASS 602

7 5,573,501

CLASS 604

4 5,573,502
20 5,573,503
35 5,573,504
56 5,573,505
65 5,573,506
77 5,573,507
90 5,573,463
96 5,573,508
102 5,573,509
158 5,573,510
164 5,573,511
171 5,573,512
198 5,573,513
5,573,514
236 5,573,515
249 5,573,516
264 5,573,517
265 5,573,518
272 5,573,519
282 5,573,520
5,573,521
374 5,573,523
385.1 5,573,524
403 5,573,525
408 5,573,526
410 5,573,527
891.1 5,573,528

CLASS 606

1 5,573,529
5,573,530
14 5,573,531
26 5,573,532
34 5,573,533
48 5,573,534
51 5,573,535
60 5,573,536
80 5,573,537
96 5,573,538
122 5,573,539
139 5,573,540
143 5,573,541
144 5,573,542
5,573,543
151 5,573,544
185 5,573,545
205 5,573,546
232 5,573,547
5,573,548

CLASS 607

28 5,573,550
33 5,573,551
68 5,573,552

CLASS 800

2 5,574,205
5,574,206
200 5,574,207
5,574,208
5,574,209
5,574,210

CLASSIFICATION OF DESIGNS

D1— 102 375,395
120 375,396
D2— 614 375,397
851 375,398
957 375,399
969 375,400
972 375,401
D3— 217 375,402
375,403
228 375,404
255 375,405
257 375,406
D4— 108 375,407
116 375,408
132 375,409
D6— 300 375,410
314 375,411
319 375,412
375,413
334 375,414
361 375,415
369 375,416
381 375,417
382 375,418
384 375,419
445 375,420
375,514
449 375,421
451 375,422
491 375,423
492 375,424
502 375,425
596 375,426
598 375,427
601 375,428
627 375,429
630 375,430
D7— 311 375,431
350 375,432
354 375,433
375 375,434
383 375,435
403 375,436
502 375,437
555 375,438
D8— 66 375,439
73 375,440
91 375,441
375,442
107 375,443
300 375,444
309 375,445
343 375,446
346 375,447
375,448
D10— 66 375,464
120 375,463
D11— 17 375,465
26 375,466
93 375,467
125 375,468
D9— 300 375,454
375,455
315 375,456
417 375,457
423 375,458
434 375,459
451 375,460
520 375,461
570 375,462
D12— 91 375,469
95 375,470
114 375,471
120 375,472
129 375,473
133 375,474
191 375,475
375,476
192 375,477
209 375,478
307 375,479
419 375,480
375,481
D13— 103 375,482
110 375,483

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	107	375,486		143	375,508			375,530			375,551		63	375,572		35	375,595
		375,487		148	375,509		48	375,531			375,552		80	375,575		71	375,596
		375,488	D16—	132	375,507		52	375,532		111	375,553		87	375,605	D34—	5	375,597
	113	375,489		133	375,510		65	375,533		115	375,554	D27—	195	375,576		10	375,598
	114	375,484		209	375,511		195	375,534		169	375,555	D28—	13	375,577		27	375,599
		375,490		219	375,512		214	375,535		174	375,556		37	375,578			375,600
		375,491		314	375,513		230	375,536		183	375,557		42	375,579			375,601
	115	375,492	D17—	99	375,515		245	375,537		224	375,559		73	375,580		28	375,602
	116	375,493	D18—	17	375,516	D22—	108	375,538			375,565	D29—	101	375,581			375,603
	122	375,494		24	375,517		144	375,539	D25—	113	375,560		102	375,582		39	375,604
	124	375,495		39	375,518	D23—	207	375,540		124	375,561		108	375,583			
	150	375,496		43	375,519		213	375,541			375,562		112	375,584	D99—	28	375,606
	151	375,497		53	375,520		242	375,542		139	375,563	D30—	130	375,585			375,607
	191	375,498		56	375,521		285	375,543		152	375,564		146	375,586			375,608
	214	375,499			375,522		296	375,544		164	375,573		153	375,587			
	223	375,500			375,523		311	375,545		199	375,574		158	375,588			
	242	375,501	D19—	48	375,524		364	375,546	D26—	6	375,566		161	375,589			
D15—	5	375,502		51	375,525		382	375,547		9	375,567	D32—	15	375,590			
		375,503	D20—	18	375,526		393	375,558		28	375,568			375,591			
		375,504		31	375,527		411	375,548		37	375,569		21	375,592			
	9	375,505	D21—	5	375,528	D24—	101	375,549		44	375,570		31	375,593			

CLASSIFICATION OF PLANTS

P.—	10	9,687	27	9,689	87.6	9,691		9,693			
	26	9,688	79	9,690	88.1	9,692	88.2	9,694			

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	5,572,949	5,572,924	5,573,359	5,573,954	5,574,490	5,574,868
	5,572,997	5,572,945	5,573,376	5,573,955	5,574,491	5,574,873
	5,573,682	5,572,950	5,573,398	5,573,970	5,574,497	5,574,877
	5,573,772	5,572,985	5,573,399	5,573,971	5,574,557	5,574,879
	5,574,723	5,572,995	5,573,402	5,573,973	5,574,562	5,574,880
	5,574,749	5,572,996	5,573,409	5,574,010	5,574,567	5,574,882
04 :	5,572,800	5,573,001	5,573,420	5,574,012	5,574,605	5,574,883
	5,572,834	5,573,003	5,573,422	5,574,018	5,574,627	5,574,887
	5,572,873	5,573,007	5,573,459	5,574,019	5,574,650	5,574,893
	5,573,020	5,573,011	5,573,467	5,574,022	5,574,655	5,574,895
	5,573,036	5,573,012	5,573,468	5,574,027	5,574,659	5,574,896
	5,573,249	5,573,019	5,573,499	5,574,039	5,574,661	5,574,900
	5,573,271	5,573,037	5,573,506	5,574,052	5,574,662	5,574,902
	5,573,428	5,573,063	5,573,508	5,574,066	5,574,663	5,574,903
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	5,573,695	5,573,083	5,573,516	5,574,137	5,574,666	5,574,911
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	5,574,744	5,573,123	5,573,599	5,574,290	5,574,726	5,574,987
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	5,574,950	5,573,160	5,573,722	5,574,318	5,574,755	5,572,962
	5,574,968	5,573,162	5,573,743	5,574,363	5,574,761	5,573,282
	5,574,969	5,573,163	5,573,751	5,574,369	5,574,767	5,573,288
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	5,572,762	5,573,259	5,573,776	5,574,410	5,574,790	5,573,809
	5,572,770	5,573,276	5,573,781	5,574,411	5,574,791	5,573,916
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	5,572,777	5,573,307	5,573,806	5,574,425	5,574,831	5,574,230
	5,572,794	5,573,314	5,573,813	5,574,441	5,574,832	5,574,262
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Michael Kantor, *Secretary*
PATENT AND TRADEMARK OFFICE
Bruce Lehman, *Commissioner*

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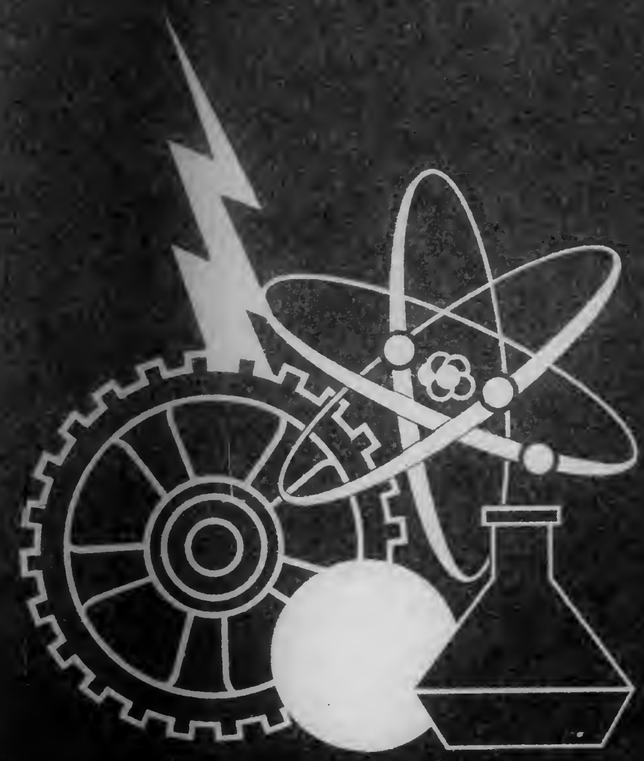
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OFFICIAL GAZETTE

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PATENTS
November 19, 1996



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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1190 O.G. 3, on September 3, 1996.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on January 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1181 O.G. 49, on December 19, 1995.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective October 1, 1996, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	677.00
Basic supplemental fee (for each page over 30)	13.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	164.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	164.00
— Confirmation fee	82.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	207.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

Sept. 10, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

---

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on November 16, 1993 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,261,124 through 5,263,199
Reissue Patents based on the above identified patents.

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Attention is drawn to the patents which were issued on November 14, 1989 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,879,765 through 4,881,274
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on November 12, 1985 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,551,857 through 4,553,268
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED September 11, 1996 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,596	06/861,965	02/09/88
(4,470,447)	(06/374,545)	(09/11/84)
Re. 33,105	07/051,271	10/31/89
(4,471,114)	(06/454,646)	(09/11/84)
Re. 33,522	07/264,164	01/22/91
(4,768,436)	(06/873,121)	(09/06/88)
Re. 33,540	07/489,344	02/19/91
(4,470,614)	(06/368,276)	(09/11/84)
Re. 33,972	07/606,809	06/23/92
(4,769,786)	(06/885,618)	(09/06/88)
4,470,161	06/572,749	09/11/84
4,470,163	06/508,885	09/11/84
4,470,165	06/403,184	09/11/84
4,470,167	06/435,587	09/11/84
4,470,169	06/367,778	09/11/84
4,470,179	06/487,031	09/11/84
4,470,185	06/374,367	09/11/84
4,470,188	06/413,284	09/11/84
4,470,204	06/399,930	09/11/84
4,470,205	06/469,836	09/11/84
4,470,206	06/449,683	09/11/84
4,470,211	06/449,182	09/11/84
4,470,213	06/457,939	09/11/84
4,470,228	06/344,391	09/11/84
4,470,233	06/313,997	09/11/84
4,470,236	06/376,528	09/11/84
4,470,241	06/380,515	09/11/84
4,470,248	06/448,985	09/11/84
4,470,250	06/394,567	09/11/84
4,470,256	06/333,500	09/11/84
4,470,258	06/399,469	09/11/84
4,470,266	06/362,780	09/11/84
4,470,272	06/411,810	09/11/84
4,470,284	06/378,415	09/11/84
4,470,285	06/466,024	09/11/84
4,470,290	06/299,444	09/11/84
4,470,293	06/460,509	09/11/84
4,470,306	06/479,443	09/11/84
4,470,315	06/386,006	09/11/84
4,470,318	06/389,364	09/11/84
4,470,320	06/522,630	09/11/84
4,470,323	06/366,015	09/11/84
4,470,345	06/488,801	09/11/84
4,470,358	06/456,280	09/11/84
4,470,361	06/353,892	09/11/84
4,470,365	06/359,084	09/11/84
4,470,377	06/272,179	09/11/84
4,470,379	06/345,902	09/11/84
4,470,386	06/398,565	09/11/84
4,470,394	06/456,501	09/11/84
4,470,407	06/357,150	09/11/84
4,470,410	06/460,135	09/11/84
4,470,415	06/409,367	09/11/84
4,470,421	06/373,901	09/11/84
4,470,426	06/298,506	09/11/84
4,470,427	06/388,728	09/11/84
4,470,430	06/266,706	09/11/84
4,470,434	06/441,621	09/11/84
4,470,458	06/390,688	09/11/84

Patent Number	Serial Number	Issue Date
4,470,462	06/545,015	09/11/84
4,470,464	06/348,060	09/11/84
4,470,466	06/471,261	09/11/84
4,470,470	06/419,192	09/11/84
4,470,482	06/446,149	09/11/84
4,470,488	06/482,560	09/11/84
4,470,495	06/374,096	09/11/84
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4,470,546	06/415,822	09/11/84
4,470,551	06/346,244	09/11/84
4,470,557	06/463,887	09/11/84
4,470,559	06/481,777	09/11/84
4,470,560	06/413,523	09/11/84
4,470,561	06/465,737	09/11/84
4,470,563	06/356,483	09/11/84
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4,470,575	06/296,726	09/11/84
4,470,580	06/498,706	09/11/84
4,470,586	06/396,830	09/11/84
4,470,591	06/407,399	09/11/84
4,470,596	06/454,496	09/11/84
4,470,597	06/370,078	09/11/84
4,470,599	06/368,973	09/11/84
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4,470,623	06/404,340	09/11/84
4,470,632	06/324,399	09/11/84
4,470,638	06/431,845	09/11/84
4,470,654	06/370,003	09/11/84
4,470,657	06/366,547	09/11/84
4,470,665	06/385,544	09/11/84
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4,769,139	07/052,782	09/06/88
4,769,141	06/829,567	09/06/88
4,769,143	07/120,135	09/06/88
4,769,145	07/015,176	09/06/88
4,769,146	06/713,657	09/06/88
4,769,161	07/112,667	09/06/88
4,769,163	06/830,607	09/06/88
4,769,167	07/043,574	09/06/88
4,769,168	06/938,579	09/06/88
4,769,175	06/830,820	09/06/88
4,769,182	06/878,706	09/06/88
4,769,186	06/741,060	09/06/88
4,769,187	07/027,015	09/06/88
	07/095,465	09/06/88

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4,769,189	06/940,795	09/06/88
4,769,190	07/041,424	09/06/88
4,769,192	07/031,278	09/06/88
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4,769,214	06/777,520	09/06/88
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5,146,213	07/569,528	09/08/92
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5,146,246	07/643,443	09/08/92
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5,146,262	07/392,204	09/08/92
5,146,275	07/625,850	09/08/92
5,146,283	07/675,151	09/08/92
5,146,288	07/717,663	09/08/92
5,146,303	07/504,751	09/08/92
5,146,322	07/592,458	09/08/92
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5,146,342	07/625,197	09/08/92
5,146,368	07/696,379	09/08/92
5,146,381	07/676,071	09/08/92
5,146,382	07/637,264	09/08/92
5,146,390	07/666,226	09/08/92
5,146,392	07/615,446	09/08/92
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5,146,399	07/665,950	09/08/92
5,146,413	07/042,864	09/08/92
5,146,417	07/489,708	09/08/92
5,146,423	07/613,889	09/08/92
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5,146,446	07/865,668	09/08/92
5,146,461	07/455,640	09/08/92
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5,146,492	07/732,160	09/08/92
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Patents Reinstated Due To The Acceptance of a Late Maintenance Fee From 9/13/96

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,598,810	06/601,277	04/17/84	07/08/86	09/17/96
4,646,339	06/743,386	06/11/85	02/24/87	09/17/96
4,677,674	06/719,580	04/03/85	06/30/87	09/17/96
4,720,541	06/627,497	07/06/84	01/19/88	09/17/96
4,732,464	06/945,172	12/18/86	03/22/88	09/17/96
4,772,522	07/006,432	01/23/87	09/20/88	09/19/96
4,891,954	07/300,444	01/19/89	01/09/90	09/17/96
4,917,235	07/241,890	09/08/88	04/17/90	09/17/96
4,929,028	07/193,774	05/13/88	05/29/90	09/19/96
4,945,580	07/349,054	05/09/89	08/07/90	09/17/96
4,976,356	07/316,791	02/28/89	12/11/90	09/19/96
4,980,572	07/124,172	01/25/88	12/25/90	09/16/96
4,991,302	07/375,863	07/05/89	02/12/91	09/16/96
5,010,164	07/519,751	05/07/90	04/23/91	09/16/96
5,071,293	07/429,964	10/30/89	12/10/91	09/17/96
5,077,980	07/534,515	06/06/90	01/07/92	09/19/96
5,099,559	07/411,366	09/25/89	03/31/92	09/19/96

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Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,429,950	06/380,417	05/20/82	02/07/84	09/27/96
4,492,549	06/480,311	03/30/83	01/08/85	09/27/96
4,559,588	06/567,902	01/03/84	12/17/85	09/27/96
4,625,344	06/756,287	07/18/85	12/02/86	09/20/96
4,644,571	06/770,091	08/28/85	02/17/87	09/24/96
4,695,896	06/726,468	04/24/85	09/22/87	09/25/96
4,716,324	06/932,079	11/05/86	12/29/87	09/24/96
4,720,577	06/783,212	10/02/85	01/19/88	09/25/96
4,727,041	06/852,645	04/16/86	02/23/88	09/27/96
4,731,887	07/064,138	06/19/87	03/22/88	09/25/96
4,772,262	07/045,708	04/27/87	09/20/88	09/27/96
4,802,526	06/516,347	07/22/83	02/07/89	09/27/96
4,836,287	07/109,356	10/15/87	06/06/89	09/27/96
4,938,436	07/238,598	08/31/88	07/03/90	09/23/96
4,943,063	07/330,055	03/29/89	07/24/90	09/26/96
4,947,039	07/258,649	10/17/88	08/07/90	09/25/96
4,955,876	07/138,879	02/29/88	09/11/90	09/26/96
5,024,517	07/447,201	12/07/89	06/18/91	09/27/96
5,039,667	07/228,745	08/05/88	08/13/91	09/25/96
5,051,967	07/626,978	12/13/90	09/24/91	09/27/96
5,069,384	07/431,309	11/03/89	12/03/91	09/24/96
5,078,508	07/684,997	04/15/91	01/07/92	09/25/96

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5,081,078	07/443,881	11/30/89	01/14/92	09/26/96
5,081,263	07/450,402	12/14/89	01/14/92	09/25/96
5,097,640	07/597,113	10/12/90	03/24/92	09/25/96
5,098,450	07/693,683	04/30/91	03/24/92	09/26/96
5,103,946	07/609626	11/06/90	04/14/92	09/27/96
5,108,514	07/652,565	02/08/91	04/28/92	09/20/96
5,113,073	07/460,935	03/20/90	05/12/92	09/24/96
5,118,114	07/745,387	08/15/91	06/02/92	09/27/96
5,129,182	07/405,410	09/11/89	07/14/92	09/26/96

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,291,443, Re. S.N. 08/613,455, March 1, 1996, Cl. 365/189, SIMULTANEOUS READ AND REFRESH OF DIFFERENT ROWS IN A DRAM, Hank H. Lim, Owner of Record: *Micron Technology, Inc., Boise, Id.*, Attorney or Agent: Joseph A. Walkowski, Ex. Gp.: 2512

5,296,906, Re. S.N. 08/619,423, March 21, 1996, Cl. 355/311, ELECTROPHOTOGRAPHIC APPARATUS CAPABLE OF SELECTIVELY USING CUT SHEET AND CONTINUOUS PAPER AND METHOD PROCESS THEREFOR, Shigehiro Hano, et. al., Owner of Record: *Toray Industries, Inc., Tokyo, Japan*, Attorney or Agent: Andrew F. Reish, Ex. Gp.: 2105

5,327,847, Re. S.N. 08/680,530, July 9, 1996, Cl. 114/218, APPARATUS FOR FASTENING AND ADJUSTING A LINE, Peter Cook, Owner of Record: *Inventor*, Attorney or Agent: Mark D. Giarratana, Ex. Gp.: 3102

5,330,652, Re. S.N. 08/690,217, July 12, 1996, Cl. 210/618, FLUIDIZED BED REACTOR AND DISTRIBUTOR SYSTEM, Joshua N. Goldman, et. al., Owner of Record: *Aquafuture Inc., Turner Falls, Mass.*, Attorney or Agent: Ronald J. Kransdorf, Ex. Gp.: 1308

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

D. 367,846, Reexam. No. 90/004,411, Oct. 15, 1996, Cl. D13/144, VEHICLE STARTER CABLE, Eitan B. Moshe, Owner of Record: *Sun-Mate Corp., Canoga Park, Calif.*, Attorney or Agent: Michael A. Painter, Isaacman, Kaufman & Painter, Beverly Hills, Calif., Ex. Gp.: 2901, Requester: Anex Electrical Co., Ltd., c/o John T. Raffle, Townsend and Townsend and Crew, San Francisco, Calif.

4,521,275, Reexam. No. 90/004,413, Oct. 7, 1996, Cl. 156/643.1, PLASMA ETCH CHEMISTRY FOR ANISOTROPIC ETCHING OF SILICON, Andrew J. Purdes, Owner of Record: *Texas Instruments Inc., Dallas, Tex.*, Attorney or Agent: Carlton H. Hoel, Texas Instruments, Inc., Dallas, Tex., Ex. Gp.: 1109, Requester: Owner

4,586,606, Reexam. No. 90/004,378, Oct. 11, 1996, Cl. 206/313, NONWOVEN FABRIC, Jon A. Howey, Owner of Record: *International Paper Co., Purchase, N.Y.*, Attorney or Agent: Ostrager Chong & Flaherty, New York, N.Y., Ex. Gp.: 3208, Requester: Owner

4,806,123, Reexam. No. 90/004,379, Oct. 11, 1996, Cl. 439/595, ELECTRICAL CONNECTOR DEVICE WITH A NUMBER OF TERMINALS, Kenjiro Konishi, et. al., Owner of Record: *Furukawa Electric Co., Ltd., Tokyo, Japan*, Attorney or Agent: William F. Westerman, Armstrong Westerman Hattori McLeland & Naughton, Washington, D.C., Ex. Gp.: 3202, Requester: Owner

4,867,921, Reexam. No. 90/004,414, Oct. 18, 1996, Cl. 264/36, PROCESS FOR INSTALLING A NEW PIPE INSIDE AN EXISTING PIPELINE, Campbell H. Steketee, Jr., Owner of Record: *Nu-Pipe Inc., Salem, Oreg.*, Attorney or Agent: Michael Wolfson, Cowan Liebowitz & Latman, New York, N.Y., Ex. Gp.: 1307, Requester: Charles J. Brown, Brown Kelleher & Zwickel, Windham, N.Y., James Muldoon, Bond, Schoeneck & King, Syracuse, N.Y.

5,244,624, Reexam. No. 90/004,415, Oct. 18, 1996, Cl. 264/516, METHOD OF INSTALLING A NEW PIPE INSIDE AN EXISTING CONDUIT BY PROGRESSIVE ROUNDING, Campbell H. Steketee, Jr., Owner of Record: *Nu-Pipe Inc., Salem, Oreg.*, Attorney or Agent: Michael Wolfson, Cowan Liebowitz & Latman, New York, N.Y., Ex. Gp.: 1307, Requester: Charles J. Brown, Brown Kelleher & Zwickel, Windham, N.Y., James Muldoon, Bond, Schoeneck & King, Syracuse, N.Y.

5,368,107, Reexam. No. 90/004,420, Oct. 22, 1996, Cl. 173/162.2, VIBRATION PREVENTIVE COIL SPRING MOUNTING STRUCTURE, Toshio Taomo, Owner of Record: *Kioritz Corp., Tokyo, Japan*, Attorney or Agent: Cushman Darby & Cushman, Washington, D.C., Ex. Gp.: 3205, Requester: Owner

5,368,809, Reexam. No. 90/004,416, Oct. 18, 1996, Cl. 264/516, METHOD OF INSTALLING A NEW PIPE INSIDE AN EXISTING CONDUIT BY PROGRESSIVE ROUNDING, Campbell H. Steketee, Jr., Owner of Record: *Nu-Pipe Inc., Salem, Oreg.*, Attorney or Agent: Michael Wolfson, Cowan Liebowitz & Latman, New York, N.Y., Ex. Gp.: 1307, Requester: Charles J. Brown, Brown Kelleher Zwickel & Wilhelm, Windham, N.Y., James Muldoon, Bond, Schoeneck & King, Syracuse, N.Y.

5,396,737, Reexam. No. 90/004,376, Oct. 4, 1996, Cl. 451/028, COMPOUND, GLAZING OR POLISHING PAD, Robert L. Englund, et. al., Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.*, Attorney or Agent: William L. Huebsch, 3M Office of Intellectual Property Law, St. Paul, Minn., Ex. Gp.: 3203, Requester: Lake County Manufacturing Inc., c/o Andrus Sceales Starke & Sawall, Milwaukee, Wisc.

5,423,369, Reexam. No. 90/004,417, Oct. 18, 1996, Cl. 164/63, APPARATUS FOR AND METHOD OF VACUUM CASTING, Atsushi Ota, et. al., Owner of Record: *Toyota Jidosha, Kabushiki Kaisha, Toyota-Shi, Japan*, Attorney or Agent: James W. Edmondson, Finnegan, Henderson, Farabow, Garrett & Dunner, Washington, D.C., Ex. Gp.: 3205, Requester: Owner

5,437,466, Reexam. No. 90/004,404, Oct. 16, 1996, Cl. 280/11.22, IN-LINE ROLLER SKATE, Antonin A. Meibock, et. al., Owner of Record: *K-2 Corp., Vasbon, Wash.*, Attorney or Agent: Christensen O'Conner Johnson & Kindness, Seattle, Wash., Ex. Gp.: 3106, Requester: Olson & Olson, Portland, Oreg.

5,446,137, Reexam. No. 90/004,375, Sept. 30, 1996, Cl. 536/023.1, OLIGONUCLEOTIDES CONTAINING 4'SUBSTITUTED NUCLEOTIDES, Haas Maag, et. al., Owner of Record: *Behringwerke AG, Marburg, Germany*, Attorney or Agent: Theodore J. Leiteneg, San Jose, Calif., Ex. Gp.: 1211, Requester: Robert D. Fish, Crockett & Fish, La Habra, Calif.

5,459,382, Reexam. No. 90/004,418, Oct. 21, 1996, Cl. 318/568.11, MEHTOD AND SYSTEM FOR PROVIDING A TACTILE VIRTUAL REALITY AND MANIPULATOR DEFINING AN INTERFACE DEVICE THEREFOR, Charles J. Jacobus, et. al., Owner of Record: *Cybernet System Corp., Ann Arbor, Mich.*, Attorney or Agent: Gifford, Krass, Grob, Sprinkle, Patmore, Anderson & Citkowski, Birmingham, Mich., Ex. Gp.: 2107, Requester: Owner

5,460,967, Reexam. No. 90/004,377, Oct. 8, 1996, Cl. 435/273, RECYCLE PROCESS FOR THE PRODUCTION OF LOW-COST SOLUBLE COLLAGEN, David J. Fink, et. al., Owner of Record: *Ranpak Corp., Concord Township, Ohio*, Attorney or Agent: Renner Otto Boisselle & Sklar, Cleveland, Ohio, Ex. Gp.: 1302, Requester: Owner

5,466,786, Reexam. No. 90/004,412, Oct. 16, 1996, Cl. 536/26.26, 2'MODIFIED NUCLEOSIDE AND NUCLEOTIDE COMPOUNDS, Chris A. Buhr, et. al., Owner of Record: *Gilead Sciences, Foster City, Calif.*, Attorney or Agent: Morrison & Foerster, Washington, D.C., Ex. Gp.: 1211, Requester: Anthony J. DeLaurentis, Arlington, Va.

5,505,163, Reexam. No. 90/004,419, Oct. 21, 1996, Cl. 122/379, SOOT BLOWER NOZZLE, Mohomed I. Jameel, Owner of Record: *Bergemann USA, Inc., Atlanta, Ga.*, Attorney or Agent: Hopkins & Thomas, Atlanta, Ga., Ex. Gp.: 3404, Requester: Douglas R. Hanscom, Jones, Tullar & Cooper, Arlington, Va.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JULY 23, 1996 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
106,215	71/087,128	10/19/1915
106,307	71/086,107	10/19/1915
106,366	71/086,153	10/19/1915
106,385	71/084,939	10/19/1915
106,424	71/084,365	10/19/1915
106,479	71/081,074	10/19/1915
106,486	71/086,710	10/19/1915
329,014	71/365,968	10/15/1935
329,022	71/364,249	10/15/1935
329,045	71/366,917	10/15/1935
329,051	71/360,948	10/15/1935
329,061	71/364,981	10/15/1935
329,067	71/365,421	10/15/1935
329,088	71/366,749	10/15/1935
329,095	71/366,573	10/15/1935
329,102	71/364,758	10/15/1935
329,118	71/365,513	10/15/1935
329,120	71/365,593	10/15/1935
329,148	71/366,128	10/15/1935
329,149	71/366,126	10/15/1935
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614,164	71/679,517	10/18/1955
614,167	71/651,720	10/18/1955
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614,183	71/680,172	10/18/1955
614,199	71/676,533	10/18/1955
614,207	71/679,604	10/18/1955
614,208	71/679,844	10/18/1955
614,209	71/680,045	10/18/1955
614,225	71/675,647	10/18/1955
614,234	71/675,499	10/18/1955
614,240	71/676,021	10/18/1955
614,241	71/676,052	10/18/1955
614,243	71/676,112	10/18/1955
614,244	71/676,113	10/18/1955
614,261	71/684,143	10/18/1955
614,265	71/684,744	10/18/1955
614,267	71/684,858	10/18/1955
614,269	71/685,345	10/18/1955
614,281	71/668,484	10/18/1955
614,300	71/680,919	10/18/1955
614,310	71/681,457	10/18/1955
614,321	71/649,368	10/18/1955
614,344	71/678,726	10/18/1955
614,350	71/679,726	10/18/1955
614,364	71/639,536	10/18/1955
614,365	71/640,689	10/18/1955
614,367	71/648,158	10/18/1955
614,368	71/650,023	10/18/1955
614,386	71/677,393	10/18/1955
614,409	71/677,997	10/18/1955
614,410	71/678,008	10/18/1955
614,411	71/674,817	10/18/1955
614,427	71/676,792	10/18/1955
614,429	71/677,223	10/18/1955
614,430	71/651,864	10/18/1955
614,431	71/660,101	10/18/1955
614,435	71/674,250	10/18/1955
614,440	71/679,311	10/18/1955
614,443	71/679,817	10/18/1955
614,454	71/636,743	10/18/1955
614,455	71/645,161	10/18/1955
614,462	71/662,232	10/18/1955
614,465	71/665,040	10/18/1955
614,473	71/672,957	10/18/1955
614,479	71/675,906	10/18/1955
614,480	71/676,384	10/18/1955
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Department of Commerce
Patent and Trademark Office

Announcement of Membership of the Patent and Trademark Office Performance Review Board

Agency: Patent and Trademark Office, Commerce.
Action: Notice.
Summary: In conformance with the Civil Service Reform Act of 1978, 5 U.S.C. 4314(c)(4), the Patent and Trademark Office announces the appointment of persons to serve as members of its Performance Review Board.
For Further Information Contact: Alerhea Long-Green, Director, Office of Human Resources, Patent and Trademark Office, One Crystal Park, Suite 700, Washington, DC 20231 or telephone (703) 305-8062.
Supplementary Information: The new membership of the Patent and Trademark Ofice Performance Review Board is as follows:

Bradford R. Huther, Chairman
Associate Commissioner and
Chief Financial Officer
Patent and Trademark Office
Washington, DC 20231
Term — expires September 30, 1998

Richard V. Fisher
Director, Patent Examining Group
Patent and Trademark Office
Washington, DC 20231
Term — expires September 30, 1998

Jin F. Ng
Deputy Director, Patent Examining Group
Patent and Trademark Office
Washington, DC 20231
Term — expires September 30, 1998

Frederick T. Alt
Principal Associate Director and
Chief Financial Officer
Bureau of the Census
Washington, DC 20233
Term — expires September 30, 1998

Robert M. Anderson
Deputy Assistant Commissioner
for Trademarks
Patent and Trademark Office
Washington, DC 20231
Term — expires September 30, 1997

Karl E. Bell
Deputy Director of Administration
National Institute of Standards and Technology
Gaithersburg, MD 20899
Term — expires September 30, 1997

Virginia B. Robinson
Executive Director
Joint Financial Management Improvement Program
Washington, DC 20548
Term — expires September 30, 1998

Tina Sung
Director, Federal Quality Institute Consulting Group
National Performance Review
Washington, DC 20006
Term — expires September 30, 1998

October 10, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

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Examination of Patent Applications Containing Nucleotide Sequences

I. Introduction

Biotechnology is expected to be an important growth industry from now until well into the twenty-first century, particularly in the United States, one which will produce new therapeutics for the benefit of mankind. The Patent and Trademark Office (PTO) has taken a very active role in working together with its customers to simplify and standardize PTO policies and procedures and to encourage and promote the growth of this industry for the benefit of humanity.

For at least a decade, researchers in the biotechnology industry have been filing patent applications claiming isolated DNA or RNA sequences of nuclcotides, referred to as nucleotide or nucleic acid sequences. Scientific and technological advances now permit researchers to identify large numbers of gene sequences rapidly. The ease of using automated techniques for sequencing large numbers of nucleotides in a nucleic acid has resulted in the filing of a growing number of patent applications, many of which recite thousands of individual nucleotide sequences with each sequence reciting at least several hundred nucleotides. The examination of these applications presents unprecedented search and examination challenges, even with the most modern, up-to-date equipment.

Faced with these challenges, the PTO held public hearings on issues relating to patent protection of nucleotide sequences on April 16, 1996, in San Diego, California and on April 23, 1996, in Arlington, Virginia. At those hearings, the PTO received several recommendations that restriction practice pursuant to 35 U.S.C. § 121 should be applied to patent applications claiming nucleotide sequences.

This Notice responds to comments received during the hearings. This Notice clarifies PTO's policy for examination of patent applications that claim large numbers of nucleotide sequences.

II. The PTO Will Permit Applicants to Claim Up to Ten Independent and Distinct Nucleotide Sequences In One National Application

By statute, "[i]f two or more independent and distinct inventions are claimed in one application, the Commissioner may require the application to be restricted to one of the inventions." 35 U.S.C. § 121. Pursuant to this statute, the Rules of Practice in Patent Cases provide that "[i]f two or more independent and distinct inventions are claimed in a single application, the examiner in his action shall require the applicant . . . to elect that invention to which his claim shall be restricted." 37 CFR 1.142(a). See also 37 CFR 1.141(a).

Nucleotide sequences encoding different proteins are structurally distinct chemical compounds and are unrelated to one another. These sequences are thus deemed to normally constitute independent and distinct inventions within the meaning of 35 U.S.C. § 121. Absent evidence to the contrary, each such nucleotide sequence is presumed to represent an independent and distinct invention, subject to a restriction requirement pursuant to 35 U.S.C. § 121 and 37 CFR 1.141 *et seq.* Nevertheless, to further aid the biotechnology industry in protecting its intellectual property without creating an undue burden on the Office, the Commissioner has decided *sua sponte* to partially waive the requirements of 37 CFR 1.141 *et seq.* and permit a reasonable number of such nucleotide sequences to be claimed in a single application.

Accordingly, in most cases, up to ten (10) independent and distinct nucleotide sequences will be examined in a single application without restriction. It has been determined that normally ten sequences constitute a reasonable number for examination purposes. The PTO believes that allowing applicants to claim up to ten (10) independent and distinct nucleotide sequences in a single application will promote efficient, cost-effective examination of these types of applications. In addition to the specifically selected sequences, those sequences which are patentably indistinct from the selected sequences will also be examined. Furthermore, nucleotide sequences encoding the same protein are not considered to be independent and distinct inventions and will continue to be examined together.

In some exceptional cases, the complex nature of the claimed material, for example a protein amino acid sequence reciting three dimensional folds, may necessitate that the reasonable number of sequences to be selected be less than ten (10). In other cases, applicants may petition pursuant to 37 CFR 1.181 for examination of additional nucleotide sequences by providing evidence that the different nucleotide sequences do not cover independent and distinct inventions.

III. Under the Unity of Invention Standard in an International Application or National Stage Application Filed Under 35 U.S.C. § 371, Up to Ten Nucleotide Sequences Will Be Searched and/or Examined Without Payment of An Additional Fee

International applications filed under the Patent Cooperation Treaty (PCT) and national stage applications filed under 35 U.S.C. § 371 will be treated in a similar manner. Under 37 CFR 1.475 and 1.499 *et seq.*, when claims do not comply with the requirement of unity of invention, i.e., when the claimed subject matter does not involve "one or more of the same or corresponding special technical features," 37 CFR 1.475(a), an additional fee is required to maintain the claims in the same application. 37 CFR 1.476(b).

The Commissioner has decided *sua sponte* to partially waive 37 CFR 1.475 and 1.499 *et seq.* to permit applicants to claim up to ten (10) nucleotide sequences which do not have the same or corresponding special technical feature, without the payment of an additional fee. The PCT permits inventions which lack unity of invention to be maintained in the same international application for the payment of additional fees. Thus, in international applications, for each group for which applicant has paid additional international search and/or preliminary examination fees, the PTO has determined that up to four (4) such additional sequences per group is a reasonable number for examination. Further, claims directed to the selected sequences will be examined with claims drawn to any sequence combinations which have a common technical feature with the selected sequences. Nucleotide sequences encoding the same protein are considered to satisfy the unity of invention standard and will continue to be examined together.

IV. Examples of Nucleotide Sequence Claims That Are the Subject of this Notice

Examples of typical nucleotide sequence claims impacted by this Notice include:

(1) an isolated and purified DNA fragment comprising DNA having at least 95% identity to a DNA sequence selected from SEQ ID Nos. 1-1,000;

(2) a combination of DNA fragments comprising SEQ ID Nos. 1-1,000; and

(3) a combination of DNA fragments, said combination containing at least thirty different DNA fragments selected from SEQ ID Nos. 1-1,000.

Applications claiming more than ten (10) individual independent and distinct nucleotide sequences in alternative form, such as set forth in example 1, will be subject to a restriction requirement. Only the ten (10) nucleotide sequences selected in response to the restriction requirement and any other claimed sequences which are patentably indistinct therefrom will be examined.

Applications claiming only a combination of nucleotide sequences, such as set forth in example 2, will generally not be subject to a restriction requirement. The presence of one novel and nonobvious sequence within the combination will render the entire combination allowable. The combination will be searched until one nucleotide sequence is found to be allowable. The order of searching will be chosen by the examiner to maximize the identification of an allowable sequence. If no individual nucleotide sequence is found to be allowable, the examiner will consider whether the combination of sequences taken as a whole renders the claim allowable.

Applications containing only composition claims reciting different combinations of individual nucleotide sequences, such as set forth in example 3, will be subject to a restriction requirement. Applicants will be required to select one combination for examination. If the selected combination contains ten or fewer sequences, all of the sequences of the combination will be searched. If the selected combination contains more than ten sequences, the combination will be examined following the procedures set forth above for example 2. More specifically, the combination will be searched until one nucleotide sequence is found to be allowable with the examiner choosing the order of search to maximize the identification of an allowable sequence. The identification of any allowable sequence(s) will cause all combinations containing the allowed sequence(s) to be allowed.

In applications containing all three claims set forth in examples 1-3, the PTO will require restriction of the application to ten sequences for initial examination purposes. Based upon the finding of allowable sequences, claims limited to the allowable sequences as in example 1, all combinations, such as in examples 2 and 3, containing the allowable sequences and any patentably indistinct sequences will be rejoined and allowed.

Rejoinder will be permitted for claims requiring any allowable sequence(s). Any claims which have been restricted and non-selected and which are limited to the allowable sequence(s) will be rejoined and examined.

V. Other Possible Solutions

The PTO is pursuing other possible ways to efficiently examine applications that claim large numbers of nucleotide sequences, including the following:

A. *Software Development* - Using private contractors, the PTO will attempt to identify, modify or develop software tools to aid in searching and the analysis of search results.

B. *Feedback* - The PTO will pursue and evaluate suggestions from applicants, members of the bar, industry, scientists, government, and inventors.

C. *International Cooperation* - The PTO will encourage greater cooperation between the other patent offices of the world in the area of biotechnology. The PTO will work with these offices to share resources thereby minimizing duplication of search and examination.

D. *PTO Outside Search Center* - The PTO will explore the possibility of establishing an outside search center which would perform standard searches for all patent applicants submitting applications containing nucleotide sequences.

E. *Search Standards* - The PTO will explore the possibility of establishing quality and proficiency standards for prior art searches so that applicants can perform their own pre-examination searches. Applicants could then submit their searches with their applications, and the PTO could examine applications based on applicants' searches.

F. *Communication* - The PTO will communicate its procedures for searching the prior art and how the current hardware and software have been optimized for examination needs.

Any questions, comments or suggestions regarding this Notice should be directed to Esther M. Kepplinger, Supervisory Primary Examiner, Group Art Unit 1302: by mail to Box Comments-Patents, Assistant Commissioner for Patents, Washington, DC 20231; by FAX to (703) 305-3601; or by electronic mail addressed to ekepplin@uspto.gov.

October 17, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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37 CFR 1.47 Notice by Publication

Notice is hereby given of the filing of an application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (Valery Alexandrovich Dyatlov and Georgy Arkadievich Katz) may join in the application by promptly filing an appropriate oath or Declaration complying with 37 CFR 1.63. The international application number is PCT/IE94/00002 and was filed on 10 January 1994 in the names of Valery Alexandrovich Dyatlov and Georgy Arkadievich Katz for the invention entitled PROCESS FOR THE PREPARATION OF ESTERS OF 2-CYANOACRYLIC ACID AND USE OF THE ESTERS SO PREPARED AS ADHESIVES. The national stage application number is 08/481,487 and has a 35 U.S.C. 371 date of 06 August 1996.

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37 CFR 1.47 Notice by Publication

Notice is hereby given of the filing of a national stage application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (Ian McMillan) may join in the application by promptly filing an appropriate oath or Declaration complying with 37 CFR 1.63. The international application number is PCT/NO91/00071 and was filed on 16 May 1991 in the names of Richard Bale and Ian McMillan for the invention entitled METHOD FOR ACQUISITION OF SEISMIC DATA AT SEA. The national stage application number is 07/952,827 and has a 35 U.S.C. 371 date of 30 June 1993.

Registration To Practice

The following person successfully passed the registration examination that was held November 2, 1994, and has been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until applicant's registration certificate is mailed to applicant. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before January 3, 1997.

Yip, Gwendolyn H., 129 Truman Rd., Newton, Mass. 02159

October 23, 1996

KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following person successfully passed the registration examination that was held April 13, 1994, and has been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until applicant's registration certificate is mailed to applicant. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before January 3, 1997.

Horie, Tadashi, 441 E. Erie, #5803, Chicago, Ill. 60611

October 23, 1996

Karen L. Bovard, *Director*
Office of Enrollment and Discipline

Omission

The following Utility patent was inadvertently omitted from the October 22, 1996 *Official Gazette*.

5,567,115

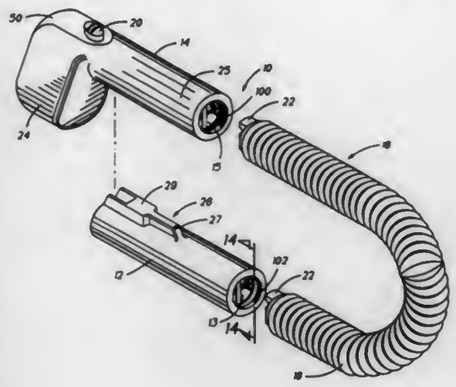
FLASHLIGHT WITH FLEXIBLE CORE

Richard J. Carbone, Southbury, Conn., assignor to Black & Decker Inc., Newark, Del.

Continuation of Ser. No. 286,313, Aug. 5, 1994, Pat. No. 5,521,803. This application Feb. 21, 1996, Ser. No. 604,639

Int. Cl.[6] F21L *15/20*

U.S. Cl. 362/198 **10 Claims**



1. A flashlight comprising:
a first housing forming a power end for said flashlight;
at least one battery housed in said first housing;
a second housing spaced from said first housing and supporting a reflector, a lens and a light bulb;
a flexible mounting assembly connecting said first housing to said second housing and comprising a pair of electrically conductive wires electrically connecting said battery to said light bulb, a flexible spine including a plurality of interconnecting and universally rotatable members, and a resilient sleeve member surrounding an outer surface of each of the rotatable members forming said spine; and
one of said first and second housings including a longitudinally extending convex surface and the other of said housings including a longitudinally extending concave surface, said convex surface being positioned substantially opposite said concave surface for insertion thereinto when said flexible mounting assembly is folded to provide a compact configuration.

Certificate of Correction
For Week of November 19, 1996

D. 371,701	5,088,016	5,305,726	5,354,524
D. 372,774	5,104,867	5,310,781	5,359,723
D. 372,959	5,170,214	5,312,546	5,375,222
D. 373,012	5,178,726	5,314,761	5,377,145
D. 373,644	5,215,955	5,315,806	5,389,032
4,107,543	5,233,381	5,316,458	5,394,739
4,696,357	5,233,472	5,316,956	5,395,486
5,019,908	5,267,260	5,323,281	5,399,694
5,041,433	5,291,242	5,332,136	5,405,702
5,043,168	5,291,354	5,336,601	5,408,542
5,072,248	5,299,161	5,347,411	5,410,010
5,084,997	5,305,104	5,347,640	5,411,991
5,421,557	5,488,018	5,520,705	5,540,564
5,422,821	5,490,697	5,520,787	5,540,749
5,423,829	5,491,332	5,520,882	5,540,764
5,425,916	5,491,709	5,520,923	5,541,170
5,426,125	5,492,011	5,521,708	5,541,207
5,428,847	5,492,312	5,522,683	5,541,238
5,433,343	5,492,315	5,523,204	5,541,253
5,433,950	5,492,409	5,523,669	5,541,451
5,435,421	5,493,399	5,524,023	5,541,501
5,435,816	5,493,632	5,524,077	5,541,602
5,436,389	5,493,953	5,524,103	5,541,710
5,436,593	5,494,358	5,524,873	5,541,880
5,437,875	5,495,122	5,525,207	5,541,913
5,437,943	5,495,185	5,525,775	5,542,117
5,440,913	5,495,205	5,525,784	5,542,395
5,441,132	5,495,338	5,525,785	5,542,412
5,441,691	5,496,158	5,526,021	5,542,490
5,442,008	5,496,318	5,526,137	5,542,627
5,442,826	5,496,428	5,526,141	5,542,640
5,443,180	5,497,101	5,526,611	5,542,809
5,443,275	5,498,241	5,526,780	5,543,049
5,446,854	5,498,719	5,528,260	5,543,707
5,447,127	5,498,886	5,528,383	5,544,496
5,448,414	5,499,808	5,528,547	5,544,734
5,450,415	5,499,841	5,528,576	5,545,262
5,450,920	5,500,276	5,528,650	5,545,294
5,451,573	5,500,718	5,528,751	5,545,664
5,452,072	5,500,733	5,529,134	5,545,828
5,452,697	5,501,266	5,529,914	5,546,017
5,453,879	5,501,780	5,530,047	5,546,054
5,455,378	5,502,427	5,530,354	5,546,347
5,455,718	5,502,804	5,530,497	5,546,583
5,456,256	5,504,675	5,530,522	5,546,850
5,458,804	5,504,936	5,530,600	5,547,254
5,460,199	5,506,496	5,530,609	5,547,372
5,460,896	5,506,552	5,530,646	5,548,834
5,460,953	5,506,779	5,530,862	5,549,079
5,461,239	5,507,273	5,531,069	5,549,191
5,461,295	5,507,693	5,531,698	5,549,553
5,463,452	5,508,392	5,532,793	5,549,982
5,464,392	5,508,991	5,532,848	5,550,182
5,465,808	5,509,097	5,532,988	5,550,688
5,467,809	5,509,411	5,533,821	5,550,793
5,468,166	5,509,573	5,534,141	5,550,890
5,468,778	5,510,887	5,534,549	5,551,467
5,469,891	5,511,514	5,534,693	5,551,718
5,470,752	5,511,784	5,534,919	5,551,745
5,470,999	5,511,803	5,535,154	5,551,749
5,471,526	5,511,893	5,536,063	5,551,924
5,471,604	5,511,982	5,536,109	5,551,947
5,472,459	5,512,333	5,536,216	5,552,004
5,473,497	5,512,544	5,536,618	5,552,154
5,473,964	5,512,917	5,536,835	5,552,179
5,474,783	5,515,179	5,537,385	5,552,208
5,474,993	5,515,742	5,537,430	5,552,226
5,478,754	5,515,868	5,537,481	5,552,299
5,479,304	5,515,906	5,537,606	5,552,377
5,479,576	5,516,469	5,537,788	5,552,498
5,480,074	5,516,598	5,537,951	5,552,519
5,481,675	5,516,644	5,537,972	5,552,544
5,483,489	5,518,037	5,538,104	5,553,098
5,483,607	5,518,814	5,538,168	5,554,520
5,484,481	5,518,872	5,538,516	5,555,883
5,484,673	5,519,113	5,538,770	5,555,994
5,484,710	5,519,123	5,538,988	5,556,064
5,484,945	5,519,361	5,539,507	5,556,668
5,485,023	5,519,393	5,539,972	5,557,487
5,485,822	5,520,290	5,540,036	5,557,501
5,486,848	5,520,320	5,540,074	5,557,951

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
September 16-20, 1996

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication	TTAB Decision
9-20	EX	74/252,762	Vicorp Restaurants, Inc.	whether the matter asserted for registration functions as a service mark for the goods recited in applicant's application		"SCRAMBLED SENSATIONS" [restaurant services]		No	Refusal Reversed

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

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Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

September 23-27, 1996

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
9-24	EX (R)	74/385,588	Societe Breck's Internationale Inc.	2(e)(4); whether the mark shown in drawing is WILLIAMS & DESIGN or WILLIAMS (with a design); if former, whether proposed amendment of applicant's mark is a material alteration	Request for Reconsideration Denied [Refusal Reversed as to 2(e)(4); Affirmed as to other issues]		"WILLIAMS & DESIGN" [rings, bracelets, earrings, brooches, watches, clocks, pens, pencils, etc.]		No
9-25	EX	74/317,077	Professional Security Alliance, Inc.	2(d)	Refusal Affirmed		"PROFESSIONAL SECURITY ALLIANCE" [professionally installed industrial and commercial on-site monitoring systems]	"SECURITY ALLIANCE" [installation and maintenance of burglar and fire alarm systems: burgular and fire alarm system retail sales outlet services]	No
9-26	EX	74/252,520	ACPI Delaware, Inc.	2(e)(1)	Refusal Affirmed		"REFLECTIVES" [metal house and general purpose numbers and letters]		No
9-27	CANC	19,874	Linville v. Rivard	abandonment	Petition to Cancel Granted		"ULTRACUTS" [hair dressing and beauty salon services]		No
9-27	EX	74/445,159	American Blimp Corp.	2(e)(1)	Refusal Reversed		"LIGHTSHIP" [internally illuminated airships, namely, vehicular dirigibles used as advertising media]		No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SJ) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION

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Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
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Box 14	Mail directed to the APS Contracts Office.
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PATENT EXAMINING CORPS

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LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
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GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	11/17/94
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	08/01/94
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—BARRY S. RICHMAN, Director	308-0651	09/23/94
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SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	03/14/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	11/18/93
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	09/06/94
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	03/17/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	02/03/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	03/13/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	06/08/94
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	12/01/94
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	07/17/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	06/16/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	11/14/94

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failore to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

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TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of October 1, 1996

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/27/96	08/05/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/27/96	05/07/96
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/04/96	07/15/96
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/10/96	07/17/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/06/96	06/04/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/10/96	07/23/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/04/96	07/22/96
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions— Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/15/96	04/19/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/10/96	08/06/96
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100		
Trademark Assistance Center—(703) 308-9000		
Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188		
Intent-To-Use—(ITU)—(703) 308-9500		
Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	07/01/96	—0—
Renewals (All Classes)	07/10/96	—0—
Section 12(c) Publications (All Classes)	04/20/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

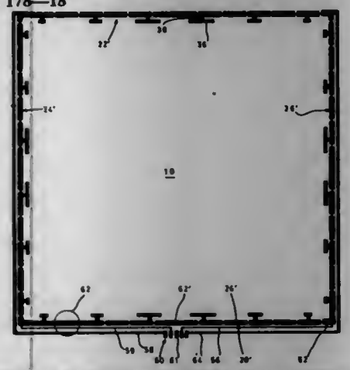
3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

NOVEMBER 19, 1996

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,822,957 (3057th)
ELECTROGRAPHIC TOUCH SENSOR HAVING REDUCED BOW OF EQUIPOTENTIAL FIELD LINES THEREIN
John E. Talmage, Jr., Anderson County, and John T. Quirk, Jr., Campbell County, both of Tenn., assignors to Elographics, Inc., Oak Ridge, Tenn.
Reexamination Request No. 90/004,024, Oct. 31, 1995.
Reexamination Certificate for Patent 4,822,957, issued Apr. 18, 1989, Ser. No. 87,596, Aug. 19, 1987.
Continuation-in-part of Ser. No. 870,848, Jun. 5, 1986, Pat. No. 4,731,508, which is a continuation-in-part of Ser. No. 685,348, Dec. 24, 1984, Pat. No. 4,661,655.
Int. Cl.[6] G08C *21/00*
U.S. Cl. 178—18



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** is confirmed.

7. A position touch sensor having resistive electrodes which provides a linear output response over an enhanced proportion of the surface area of said sensor by reducing the bow of equipotential lines along edges of said sensor, which comprises:

a resistive layer having a selected substantially uniform resistivity of about 200 ohms per square throughout said surface, said resistive surface defining perimeter edges;

a resistance element having a non-uniform resistance value per unit length positioned proximate each of said perimeter edges of said resistive surface for providing orthogonal electrical fields on said resistive surface, each of said resistance elements formed from a plurality of serially-connected resistance units with a connection point between each unit, each resistance unit formed by a pair of conductive lines substantially parallel to said perimeter edges of said resistive surface and being in electrical contact with said resistive surface, said lines spaced apart a selected distance of about 0.020 inch and overlapping a selected length of about 0.4 inch whereby said resistance unit has a resistance value of about 10 ohms established by said resistivity of said resistive surface and by said selected separation distance and said overlap length, each said resistance element having opposite ends joined to proximate ends of adjoining resistance elements;

a plurality of electrodes positioned on, and electrically connected to, said resistive surface along a preselected symmetrical path proximate each perimeter edge of said surface, said electrodes having a selected spacing and an effective length along said paths, said length and spacing of said electrodes selected to produce a selected voltage gradient at each of said electrodes to compensate for any cumulative voltage drop along said resistance element perpendicular to current flow in said resistive surface during operation of said sensor when said orthogonal fields are introduced into said resistive surface whereby said bow is reduced;

circuit means connected to said ends of said resistance elements to introduce orthogonal electrical fields on said resistive surface; and

conductive means for contacting said resistive surface at a selected point to obtain output voltage signals from said resistive surface at that point.

B1 4,894,975 (3058th)
METHOD AND APPARATUS FOR MAKING RECLOSABLE BAGS WITH FASTENER STRIPS IN A FORM FILL AND SEAL MACHINE
Steven Ausnit, New York, N.Y., assignor to Minigrip, Inc., Orangeburg, N.Y.
Reexamination Request Nos. 90/003,882, Jun. 29, 1995 and 90/004,071, Nov. 27, 1995.
Reexamination Certificate for Patent 4,894,975, issued Jan. 23, 1990, Ser. No. 166,024, Mar. 9, 1988.
The portion of the term of this patent subsequent to Dec. 1, 2004, has been disclaimed.
Int. Cl.[6] B65B *61/18;9/08*
U.S. Cl. 53—412

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–19** is confirmed.

1. The method of forming a vertical tubular form fill reclosable bag from a sheet of plastic film comprising the steps:

continuously feeding a supply of thin thermoplastic film from a supply means;

wrapping the film into tubular shape over a filling spout bringing the lateral edges of the film together in adjacent relationship to form a tube;

feeding a continuous supply of plastic zipper strip having webs with first and second reclosable pressure interlocking members thereon into a space between said film edges;

attaching the webs of said members to the film between said film edges so that said strip provides the sole means joining said edges and said strip provides a reopenable closure for a bag formed of said film; and

wherein said interlocking members are joined by one of said webs and said one web must be separated for access to the interior of a bag formed by said film.

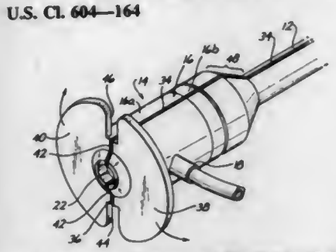
VOL 1192 ISS 3 NO 19 1996 UMI

B1 5,125,904 (3059th)

SPLITTABLE HEMOSTATIC VALVE SHEATH AND THE METHOD FOR USING THE SAME

Hongpyo H. Lee, Rancho Palos Verdes, Calif., assignor to HL Medical Inventions, Inc., Rancho Palo Verdes, Calif.

Reexamination Request No. 90/003,862, Jun. 19, 1995.
Reexamination Certificate for Patent 5,125,904, issued Jun. 30, 1992, Ser. No. 727,191, Jul. 9, 1991.
Int. Cl.[6] A61H *5/178*
U.S. Cl. 604—164



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–8**, **10–19** is confirmed.

Claim **9** is determined to be patentable as amended.

New claims **20–34** are added and determined to be patentable.

1. An sheath assembly for use with a lead or catheter comprising:

an introducer sheath;

a hemostatic valve coupled to said introducer sheath, said hemostatic valve and introducer sheath being arranged and configured to permit introduction of at least one lead or catheter therethrough;

means for permitting removal of said hemostatic valve and introducer sheath from said lead or catheter disposed therethrough without requiring said introducer sheath and hemostatic valve to be removed from an end of said lead or catheter,

whereby said assembly may remain in a vein throughout an operation with the advantage of free lead exchange and easier lead manipulation without substantial bleeding, risk of air embolism, clotting or repeated sheath insertion related trauma from lead exchange.

REISSUES

NOVEMBER 19, 1996

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,378

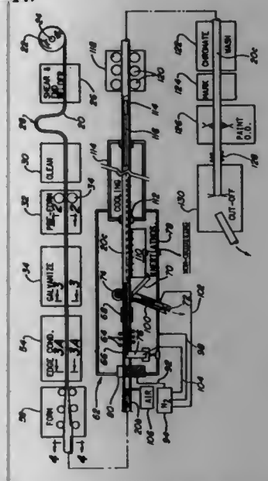
METHOD OF FORMING SEAMED METAL TUBE

Theodore H. Krengel, Flossmoor, Ill.; John J. Borzym, Birmingham, Mich., and Charles A. Willetts, West Midland, England, assignors to The IDOD Trust, Novi, Mich.

Original No. 5,344,062, dated Sep. 6, 1994, Ser. No. 83,078, Jun. 24, 1993. Application for reissue Oct. 14, 1994, Ser. No. 323,043

Int. Cl.[6] B23K *101/06;31/02*

U.S. Cl. 228—147 **32 Claims**



10. A method of forming a seamed metal tube having an internal and external metal coating from a continuously moving relatively flat metal strip, comprising the following steps performed in sequence:

a) applying a coating to at least one side surface of said strip with a metal coating;

b) continuously rolling and forming said strip into a tube-shaped strip having opposed adjacent spaced lateral edges in a lower portion of said tube-shaped strip;

c) heating and continuously forging said opposed adjacent spaced lateral edges of said tube-shaped strip in a sealed enclosure to form a tube having a welded seam in said lower portion of said tube; and

d) introducing an [inert] *non-oxidizing* gas under pressure into said enclosure forming a non-oxidizing atmosphere in said enclosure with the temperature of said tube adjacent to and including said seam above the melting temperature of said metal coating and said metal coating flowing downwardly and coating said seam following forging.

Re. 35,379

COMPLETELY DIFFERENTIAL FILTER WITH SWITCHED CONDENSERS USING CMOS OPERATIONAL AMPLIFIERS WITH NO COMMON-MODE FEEDBACK

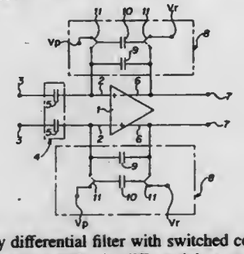
Germano Nicollini, Piacenza, Italy, assignor to SGS Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Original No. 5,084,683, dated Jan. 28, 1992, Ser. No. 453,921, Dec. 19, 1989. Application for reissue Jan. 28, 1994, Ser. No. 189,576

Claims priority, application Italy, Dec. 22, 1988, 23059/88

Int. Cl.[6] H03F *1/34*

U.S. Cl. 330—107 **20 Claims**



1. Completely differential filter with switched condensers, comprising at least one completely differential operational amplifier having two inputs and two outputs and at least one pair of feedback circuits arranged to connect said outputs with respective inputs of said amplifier outside of same, characterized in that said operational amplifier has no common-mode circuit and in that the latter's function is performed by said pair of feedback circuits external to said amplifier and further characterized in that said operational amplifier is formed by two series of CMOS transistors connected between a voltage supply and ground and having an intermediate branch point connected to respective outputs of said amplifier, one of the transistors of each series having its gate connected to a respective input of said amplifier.

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PLANT PATENTS

GRANTED NOVEMBER 19, 1996

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,695
PEACH TREE "SWEET SCARLET"
Chris F. Zaiger, 929 Grimes Ave.; Gary N. Zaiger, 1907 Elm Ave.; Leith M. Gardner, 1207 Grimes Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesto, Calif. 95358
Filed Oct. 10, 1995, Ser. No. 541,292
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—43.1 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described, characterized by its large size, vigorous upright growth, is a regular and productive bearer of large, yellow flesh, clingstone fruit with an attractive red skin color; the fruit is further characterized by having firm flesh with a sweet sub-acid flavor, having the ability to ship to long distance markets and in comparison to Sweet Gem Peach (U.S. Plant Pat. No. 7,952) the fruit is approximately 1 week early in maturity.

9,696
RASPBERRY PLANT CV. 'GODIVA'
Carlos D. Fear, Aptos, Calif., assignor to Sweetbriar Development, Inc., Watsonville, Calif.
Filed Apr. 25, 1995, Ser. No. 430,538
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—46.2 **1 Claim**

1. A new and distinct cultivar of raspberry plant named 'Godiva' as herein illustrated and described.

9,697
***ACER PALMATUM* NAMED 'BENI SHI EN'**
Harold Johnston, 31 Ware Rd., Tallassee, Ala. 36078
Filed Jan. 16, 1996, Ser. No. 599,420
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—53.6 **1 Claim**

1. The new and distinct cultivar of *Acer palmatum*, 'Beni Shi En' substantially as herein shown and described, characterized by a unique marbled foliage with a fine textured appearance and a rounded to vase shaped and slightly pendulous growth habit and its dense foliage of fine textured variegated leaves.

9,698
***ABELIA×GRANDIFLORA* 'SUNRISE'**
Jo A. Morales-Martinez, Raleigh, and Thomas P. McCracken, Zebulon, both of N.C., assignors to Taylor's Nursery, Inc., Raleigh, N.C.
Filed Aug. 8, 1995, Ser. No. 512,737
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—54.1 **1 Claim**

1. We claim the new and distinct variety of *Abelia×grandiflora* herein described and illustrated and identified by the characteristics enumerated above.

9,699
CHRYSANTHEMUM PLANT NAMED 'SARASOTA'
Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed Oct. 17, 1995, Ser. No. 544,099
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—74.1 **1 Claim**

1. A new and distinct Chrysanthemum plant named Sarasota, as described and illustrated.

9,700
CHRYSANTHEMUM PLANT NAMED 'GOLDEN CINDERELLA'
Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed Sep. 7, 1995, Ser. No. 525,313
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct Chrysanthemum plant named Golden Cinderella, as described and illustrated.

9,701
CHRYSANTHEMUM PLANT NAMED 'PINK CINDERELLA'
Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed Sep. 7, 1995, Ser. No. 525,315
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—80 **1 Claim**

1. A new and distinct Chrysanthemum plant named Pink Cinderella, as described and illustrated.

9,702
CHRYSANTHEMUM PLANT NAMED 'BRONZE CHERIE'
Susan M. Polys, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed Sep. 5, 1995, Ser. No. 523,288
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—82.3 **1 Claim**

1. A new and distinct Chrysanthemum plant named Bronze Cherie, as described and illustrated.

9,703
ANTHURIUM 'ROTOLANTE NUMBER 3'
Denis W. Rotolante, Homestead, Fla., assignor to Agri-Starts Inc., Apopka, Fla.
Filed Mar. 13, 1995, Ser. No. 402,853
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct Anthurium plant substantially as herein shown and described, characterized particularly as to novelty by its vigorous growth, continuously and profusely producing blooms from white buds and with spathes having a front of white with pink blush centers and a back of white said petals being very long lasting and retaining their color as the plant matures.

9,704
ANTHURIUM PLANT NAMED 'ELISABETH'
Magdalena J. M. Van Rijn, Schipluiden, Netherlands, assignor to Van Rijn Plants, Schipluiden, Netherlands
Filed Aug. 2, 1995, Ser. No. 510,566
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of *Anthurium* plant named 'Elisabth,' as illustrated and described.

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PATENTS

GRANTED November 19, 1996

ERRATA

For CLASS	See PATENT NO.
082–148	5,575,041
297–300	5,575,095
074–606	5,575,190
091–375	5,575,193
131–345	5,575,302
164–158	5,575,327
362–240	5,575,459
029–530	5,575,472
473–298	5,575,473
463–026	5,575,474
473–379	5,575,477
312–223	5,575,529
475–072	5,575,735
134–002	5,575,863
205–426	5,575,864
205–460	5,575,905
205–580	5,575,906
219–544	5,575,907
219–469	5,575,941
219–710	5,575,942
204–232	5,575,943
424–401	5,576,064
526–088	5,576,386
558–319	5,576,469
252–182	5,576,558
340–825	5,576,739
396–079	5,576,779
396–418	5,576,784
396–397	5,576,785
396–133	5,576,786
396–055	5,576,787
396–052	5,576,788
396–418	5,576,789
396–396	5,576,790
396–379	5,576,791
396–510	5,576,792
396–006	5,576,793
396–564	5,576,794
396–626	5,576,795

171–488 O.G.–96–2: QL3

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ERRATA–CONTINUED

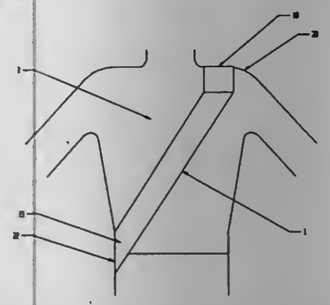
For CLASS	See PATENT NO.
396–051	5,576,796
396–121	5,576,797
396–159	5,576,798
396–233	5,576,799
396–238	5,576,800
386–033	5,576,837
386–117	5,576,838
386–113	5,576,839
386–046	5,576,840
386–C46	5,576,841
386–046	5,576,842
386–097	5,576,843
386–052	5,576,844
386–068	5,576,902
395–227	5,576,951
395–752	5,576,953
395–603	5,576,954
395–795	5,576,955
375–376	5,577,086
375–377	5,577,087
455–033	5,577,168
345–200	5,577,203

PATENTS

GRANTED NOVEMBER 19, 1996

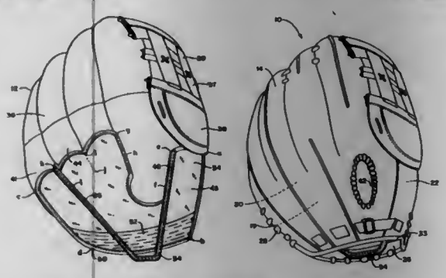
GENERAL AND MECHANICAL

5,575,004
REFLECTIVE SAFETY SASH
Jean M. Eisele, and John F. Eisele, both of 1363 Old Toll Bridge Rd., Lakeland, Minn. 55043
Filed Sep. 18, 1995, Ser. No. 529,426
Int. Cl.[6] A41D *23/00*
U.S. Cl. 2—1 **7 Claims**



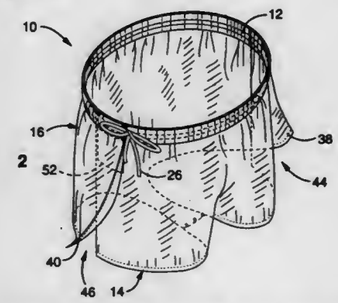
1. A sash to be worn on the human body, said sash comprising two fabric sections: a first and longer fabric section having a reflective surface on at least one surface of said first fabric and which is mitered at midpoint to form an angle of 75 to 105 degrees, and a second and shorter fabric section being attached to two ends of said first fabric section to form an angle of between 110 and 165 degrees between the first and second fabric sections.

5,575,005
BASEBALL OR SOFTBALL GLOVE HAVING ELASTIC LINER
Alan D. Walker, Somers, Conn., and Andrew Jones, Roslindale, Mass., assignors to Lisco, Inc., Tampa, Fla.
Filed Feb. 3, 1995, Ser. No. 383,461
Int. Cl.[6] A41D *13/08*
U.S. Cl. 2—19 **19 Claims**



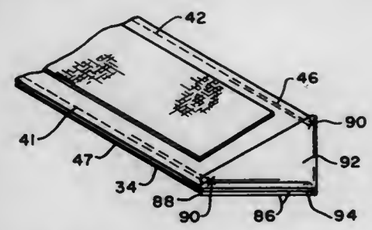
1. A ball-catching glove, comprising:
a front portion and a back portion defining a hand space therebetween which includes a major region for receiving fingers of a wearer and a minor region for receiving a thumb of the wearer,
an opening at an edge of the glove which is configured for receiving a hand of the wearer in the hand space,
an elastic liner formed in the hand space and connected to the front portion, the liner being configured to draw the wearer's hand toward the front portion, and
an elastic strap connected to a portion of the elastic liner for reinforcing said portion, the elastic strap being configured to extend transversely across the back of the wearer's hand proximate the wearer's wrist.

5,575,006
HOSPITAL PRIVACY GARMENT
Dorothy T. Wolfe, 3056 White Oak Dr., Cottonwood, Calif. 96022
Filed Dec. 5, 1994, Ser. No. 349,748
Int. Cl.[6] A41B *9/00*
U.S. Cl. 2—114 **12 Claims**



1. A hospital garment for covering the lower portion of a patient's body, comprising:
(a) a drapeable panel member having top and bottom ends, said panel having a flat structure and configuration;
(b) waist encircling support means for supporting said panel member around a wearer's waist;
(c) a plurality of vertically oriented slit means for providing medical access to a wearer, said slit means extending from said waist encircling support means to said bottom end of said panel member;
(d) a plurality of overlapping flaps, one said flap covering each said slit means; and
(e) fastening means adjacent said bottom end of said panel member for providing medical access to said patient adjacent the crotch of said patient.

5,575,007
REVERSIBLE NECKTIE AND METHOD FOR MAKING SAME
James Gaffney, Dorchester, Mass., assignor to Esquire Neckwear, Inc., Quincy, Mass.
Filed Apr. 25, 1994, Ser. No. 232,485
Int. Cl.[6] A41D *25/00;25/16;27/00*
U.S. Cl. 2—144 **12 Claims**



1. A reversible necktie comprising:
(a) first and second fabric pieces, said fabric pieces cut into matching necktie shapes, each said fabric piece having a finished face side, a wide end, longitudinal edges, and a narrow end, said fabric pieces superimposed in mating relationship with said finished sides facing outward; and
(b) attaching means for securing said longitudinal edges of said first and second fabric pieces to one another, said attaching

means being a continuous internal seam that is spaced adjacent to and running substantially parallel to said superimposed longitudinal edges on each side of said fabric pieces, said continuous seam running from an innermost point of said wide end to an innermost point of said narrow end, said wide end being closed and said narrow end being open, said wide end closed by said continuous seam, said narrow end having a hem, said hem being defined by at least a first diagonal fold and a second diagonal fold in said first and second fabric pieces, said first and second diagonal folds overlying each other, said first and second diagonal folds in said fabric pieces being secured in position with a pair of internal stitch lines disposed outside of said attaching means securing said longitudinal edges of said fabric pieces to one another, said open narrow end being positioned between said longitudinal edges.

5,575,008

MARTIAL ARTS TRAINING GLOVE

Robert L. McBride, 550 Dumfries, Detroit, Mich. 48217, and Bascom E. Copley, 13987 Glenwood Dr., Shelby Township, Mich. 48315

Filed Nov. 16, 1995, Ser. No. 558,788
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—161.1 **19 Claims**



1. A martial arts training glove for protecting a hand of a user during martial arts hand strikes wherein the hand impacts with an object, said martial arts training glove comprising:

a glove body, said glove body having a neck, an opening at said neck, an index finger receptacle, a near index finger receptacle, a third finger receptacle, a fourth finger receptacle, a thumb receptacle, a palm side, a heel at said palm side, a back side opposite said palm side, a thumb side, a bottom side opposite said thumb side, and an interior side;

at least one compartment connected with said glove body, said at least one compartment being sealed closed wherein said at least one compartment is located at least at said heel, said bottom side and said back side of said glove body; and

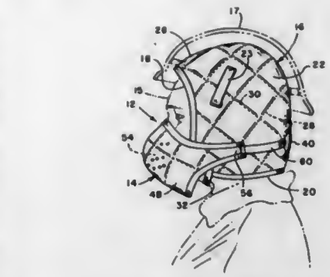
loose granular material located within said at least one compartment.

5,575,009

COLD WEATHER FACE MASK AND HOOD

David Ryvin, Williamsville, N.Y., assignor to American Allsafe Company, Tonawanda, N.Y.

Filed Mar. 13, 1995, Ser. No. 402,885
Int. Cl.[6] A42B *1/04*
U.S. Cl. 2—173 **13 Claims**



1. In combination, a cold weather hood and face mask for protection of the head and at least a portion of the face of a wearer of the hood and face mask, the hood being formed of a flexible insulative fabric and being shaped to at least partially enclose the head of a wearer and being delimited by a front peripheral edge to expose the face of a wearer, and the face mask being formed of a flexible insulative fabric and being shaped to closely conform to at least a portion of the face of a wearer, characterized in that:

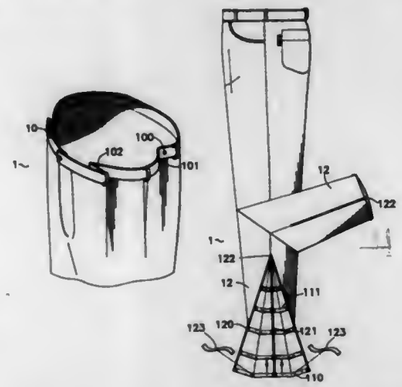
the face mask includes means forming a pocket portion and two opposed side tab portions projecting from said face mask, a support strap secured at one end to one of the tab portions, the support strap having fastening means on a distal end thereof for attachment to fastening means on the other of the tab portions of said face mask for releaseably securing said face mask around the neck of a wearer, and the support strap including a resilient member which is stretchable to permit the face mask to be moved from a protective covering position over at least a portion of a wearer's face to a position either below the chin or over the forehead without moving said hood from a position protecting the head of a wearer.

5,575,010

PANTS WITH ADJUSTABLE WAIST AND LENGTH

Chin-Fu Chung, No. 898, Min-Sheng St., Kuei-Jen Hsiang, Tainan Hsien, Taiwan

Filed Sep. 22, 1995, Ser. No. 532,148
Int. Cl.[6] A41D *27/10;1/06*
U.S. Cl. 2—227 **2 Claims**



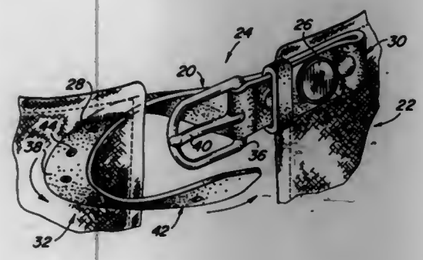
1. A pair of pants comprising a waistband and two pant legs, wherein said waistband is a continuous piece of material including male fastening elements and female fastening elements mounted around said waistband in an alternating order of a male fastening element and a female fastening element for fastening with one another and changing a size of said waistband; said pant legs are symmetrical and respectively have a bottom and an inside, a zipper arranged at said bottom, a hook tape fixedly secured to said inside near said bottom end, and a plurality of vertically spaced loop tapes fixedly secured to said inside for fastening said hook tape when said pant leg is inwardly folded up, said zipper opens downward and extends upward only along a portion of said pant leg.

5,575,011

DETACHABLE WAIST BAND EXTENDER AND GARMENT INCLUDING THE SAME

Todd M. Allen, 1362 S. Vineyard Apt. #2011, Mesa, Ariz. 85210

Filed Nov. 1, 1995, Ser. No. 551,739
Int. Cl.[6] A41D *1/06*
U.S. Cl. 2—236 **9 Claims**



1. A detachable waist band extender for temporarily extending the waist band of a lower body garment, having a certain waist dimension, to enable an individual to wear the garment when the waist measurement of the individual exceeds the waist dimension of the garment wherein the garment has a fly opening extending downward from an upper edge of a waist band of the garment with a button on a first side of the fly opening and a button hole on a second side of the fly opening for receiving the button to close the fly opening, said detachable waist band extender comprising:

a tab portion having a button hole therein for receiving the garment button to secure said detachable waist band extender to the first side of the fly opening;

a belt loop portion for securing said detachable waist band extender to the second side of the fly opening; said belt loop portion being integral with said tab portion and comprising a strap having a first free end with a buckle means and a second free end with a tongue means for adjustably securing said second free end to said buckle means to vary an effective length of said belt loop portion whereby said detachable waist band extender can be adjusted to an appropriate length required to secure the first and second sides of the garment fly together; said tongue means having a width no greater than a largest dimension of said garment button hole whereby said tongue means can be passed through the garment button hole and adjustably secured to said buckle means of said first free end to join said first and second free ends of said belt loop portion together and the first and second sides of the garment fly opening together; and

said tab portion extending outward from said belt loop portion of said detachable waist band extender intermediate said buckle means of said first free end and said tongue means of said second free end of said belt loop portion.

5,575,012

METHOD FOR TREATING LEGWEAR AND PRODUCT

Maurice Fox, 1 Windgate Dr., New City, N.Y. 10956; Selwyn P. Schenkman, 2 Elath Rd., New City, N.Y. 10956, and Stanley Selman, 1902 Fain Cemetery Rd., Dandridge, Tenn. 37725

Continuation-in-part of Ser. No. 61,455, May 17, 1993, abandoned. This application Aug. 2, 1994, Ser. No. 285,128
Int. Cl.[6] A41B *11/00*
U.S. Cl. 2—239 **23 Claims**

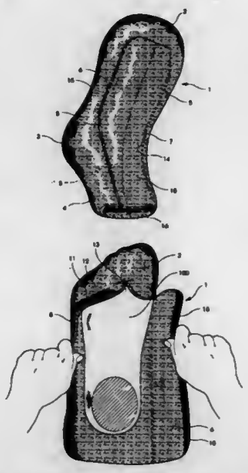
1. A sock for wearing upon a foot, wherein the surface of the sock which contacts the skin of the foot comprises discrete, individual particles of a fluoropolymer, and wherein the amount of fluoropolymer contained on the sock surface and in the fabric of the sock is sufficient to reduce friction between the foot and the sock.

5,575,013

EASY ON SOCK

Frank G. Kräck, 8035 Woodgate Ct., Indianapolis, Ind. 46168

Continuation-in-part of Ser. No. 66,511, May 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 897,914, Jun. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 760,523, Sep. 16, 1991, abandoned. This application Oct. 13, 1994, Ser. No. 322,317
Int. Cl.[6] A41B *11/00*
U.S. Cl. 2—239 **22 Claims**



6. A sock for atraumatically covering a tender foot subject to pain when squeezed or rubbed, comprising a toe pocket, a sole portion, a heel portion, a lower leg portion and an upper portion extending between said toe portion and said lower leg portion;

said toe pocket being sized to receive a person's toes without contacting the remaining portion of the person's foot;

said sock having a split extending from said toe pocket through said lower leg portion, said split defining first and second opposing edges that terminate at said toe pocket;

an extension flap having a first side edge and a second side edge, said first side edge being connected to said sock along said first opposing edge of said split; and

adjustable closure means, attached to said extension flap along said second side edge and attached to said sock along said second opposing edge, for releasably securing said second side edge of said extension flap to said second opposing edge of said sock to cover and close said split, and being adjustable to permit a wearer of said sock to limit the amount of pressure exerted by said sock on the foot of the wearer, said closure means including at least one mating portion of hook and one loop closure material; and

wherein said sock and said extension flap are made entirely from a soft and flexible fabric, such that said lower leg portion lays substantially within said plane as at least a portion of said sole portion when said sock is laid open.

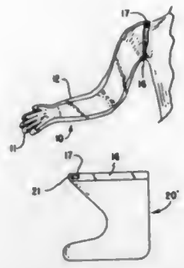
5,575,014

FASTENING DEVICE FOR PROTECTIVE VETERINARY GARMENTS

George K. Kane, 4900 Pennbrook Ave., Sioux Falls, S. Dak. 57106, and Gerald C. Hodapp, RR 4, Box 190, Mankato, Minn. 56001

Continuation-in-part of Ser. No. 252,161, May 17, 1994, abandoned. This application Apr. 10, 1995, Ser. No. 419,425
Int. Cl.[6] A41D *13/08;* A43B *3/16*
U.S. Cl. 2—239 **8 Claims**

1. For use on an outer member comprising an arm or leg of a wearer, a shield device comprising a pair of walls cut to approxi-



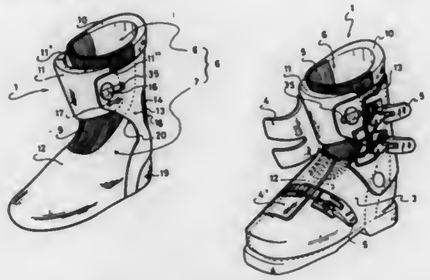
mately conform to the shape of said member, said walls being sealed together along said cut walls to form closed side walls and one closed end but having a single open end at one end of said shield for entry of said member, a first wall of said pair of walls extending integrally beyond the second wall of said pair of walls for the entire width of said pair of walls to form a band extending beyond said open end over the width of said pair of walls, fastening means applied to said band whereby said band lies against adjustment material and is fastened upon said adjacent material to close said open end.

5,575,015

INNER SOCK FOR SPORTS BOOT

Jean Paris, Sevrier, and Laurent Bonaventure, Cran-Gevrier, both of France, assignors to Salomon S.A., Annecy, France

Filed Dec. 1, 1994, Ser. No. 352,134
Claims priority, application France, Dec. 3, 1993, 93 14672
Int. Cl.[6] A41B *11/02*; A43B *17/18*; *19/00*; *5/04*
U.S. Cl. 2—240 **10 Claims**



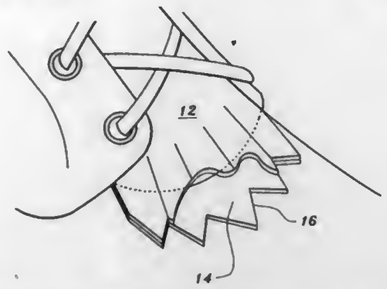
1. Comfort sock to be arranged inside the shell of a sports boot having at least one tightening element which can travel toward said sock when said boot is closed, said comfort sock having a one-piece structure comprising a foot covering incorporating at least one elastic zone designed to facilitate passage of a foot when putting on or taking off said sports boot, and at least one comfort support liner cooperating with a lower leg of a wearer, and a reinforcement incorporated on an outer wall of said foot covering, said at least one comfort support liner having a substantially groove-shaped section, said support liner being independent of said foot covering and having at least one wing connecting said support liner to said reinforcement using a pivoting-sliding connection and placed opposite said at least one elastic zone of said foot covering so as to come into close contact with said foot covering when said sports boot is closed by motion of said at least one tightening element used to tighten said shell of said sports boot.

5,575,016

KILTIE WEIGHT

James J. Bailey, 100 Watkins Rd., Sherman, Tex. 75090

Filed Dec. 22, 1995, Ser. No. 577,902
Int. Cl.[6] A43B *5/00*
U.S. Cl. 2—245 **14 Claims**



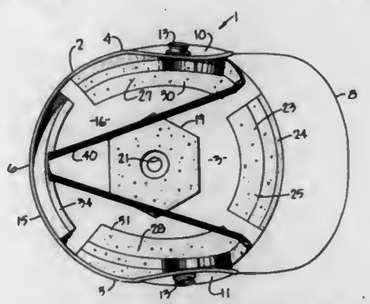
1. A device to prevent curling of kilties on boots and shoes, comprising:
a) a weighted strip of material for attaching to an underside of a kiltie, said strip having two ends, an upper surface, a lower surface, a front edge and a rear edge,
b) said front edge of said strip being serrated to conform to a serrated shape of a front edge of a kiltie, and
c) a lining on said lower surface of said strip of material.

5,575,017

ADJUSTABLE BASEBALL BATTER'S HELMET

Dennis V. Hefling, Ballwin; Matthew Winningham, Maryland Heights; Randy D. Black, Webster Groves, all of Mo., and Sally Yeast, Plano, Tex., assignors to Rawlings Sporting Goods Company, Inc., St. Louis, Mo.

Filed Jan. 2, 1996, Ser. No. 587,602
Int. Cl.[6] A42B *3/00*
U.S. Cl. 2—418 **5 Claims**



1. A protective, sports helmet for automatically adjusting and gripping wearers' heads of different sizes, said helmet comprising:
a) a rigid shell defining cavity and having top, front, rear and side portions shaped to protect the top, front, rear and side areas of a wearer's head;
b) shock absorbing material secured to an interior of said shell;
c) a substantially one-piece elastic strap having a mid-portion secured substantially directly to the interior of said shell at said rear portion and having opposite arms diverging forwardly to form a substantially V-shaped harness extending substantially into said shell cavity and with ends secured substantially directly to the interior of said shell at front side portions; and
d) said elastic strap snugly cradling and forwardly biasing the helmet on the wearer's head, and tending to space the helmet

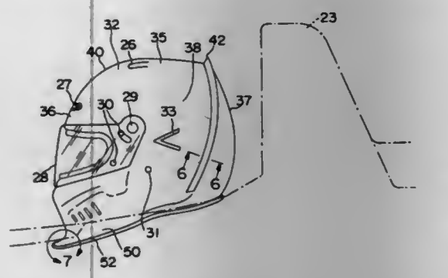
from the wearer's head at said sides and rear areas, said opposite arms being stretched and pulled outwardly from one another to accommodate the wearer's head.

5,575,018

OPEN COCKPIT RACING HELMET

Ed Rothrock, Whittier, Calif., assignor to Bell Sports, Inc., Cerritos, Calif.

Filed Apr. 26, 1994, Ser. No. 233,074
Int. Cl.[6] A42B *3/00*
U.S. Cl. 2—424 **9 Claims**



1. A helmet for the protection of a wearer's head, said helmet comprising an outer shell, said outer shell having a top, a front, a rear, and left and right sides corresponding to the head's crown, face, rear and left and right sides, respectively, said helmet further comprising a first air deflector formed of a strip of flexible material having a substantially triangular cross-section with a base which is disposed on said outer shell, and an upstanding edge which extends up from and substantially perendicularly away from said base, said first air deflector being disposed on the top and left and right sides of the outer shell, wherein the upstanding edge of said strip is disposed toward the rear of said outer shell, and wherein the front of said outer shell comprises a lower portion corresponding to the chin and lower jaw of the wearer's head, said helmet further having a said front extending outward from said lower portion of said front of said outer shell, wherein the length of the spoiler from its outer rim to its juncture with said outer shell is greatest at the most forward part of the lower portion of said front of said outer shell, and a second air deflector disposed on said spoiler.

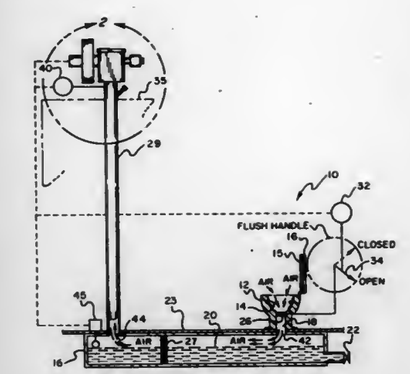
5,575,019

TOILET VENTILATION SYSTEM

Robert J. Kijewski, 329 Queen St., Woodbury, N.J. 08096

Continuation-in-part of Ser. No. 658,955, Feb. 22, 1991, abandoned. This application May 11, 1992, Ser. No. 881,725
Int. Cl.[6] E03D *9/04*
U.S. Cl. 4—209 R **13 Claims**

1. In a conventional sanitary system in a recreational vehicle including a conventional mechanical seal toilet located within an enclosure and a holding tank located below the floor of the enclosure and having the toilet, vent piping and a tank drain connected to the holding tank, with the vent piping extending upwardly to the exterior of the enclosure, the improvement being the addition of a venting means installed in the vent piping adjacent the top thereof and energized to reduce pressure in the system when the toilet seal is open to thereby prevent gases in the holding tank from communicating with the facility enclosure via the toilet, said toilet and vent piping being connected to said holding tank through a toilet opening and vent opening, respectively, and further including a strainer means between said toilet opening and said vent opening to prevent solids from getting near to said vent opening.

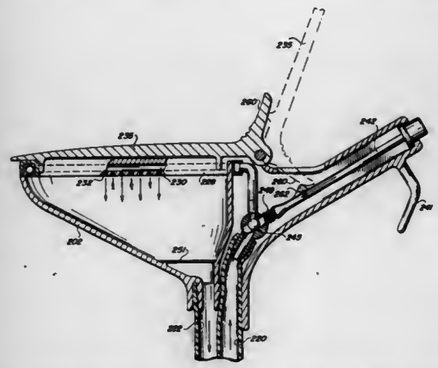


5,575,020

WATER-CONSERVING URINAL

Sylvan E. Hubrig, Sun City, and Roy K. Fischer, Scottsdale, both of Ariz., assignors to Sybrig, Inc., Scottsdale, Ariz.

Filed Feb. 17, 1995, Ser. No. 390,103
Int. Cl.[6] E03D *1/22*
U.S. Cl. 4—342 **4 Claims**



1. A urinal for use in connection with a waste line and a water supply, said urinal comprising:
(a) a urinal bowl having a narrow front and diverging rearwardly from said front in a general triangular shape, said bowl having an open top with a peripheral edge and a discharge at a lower end;
(b) a flexible waste line extending from the discharge of the urinal bowl and communicating with the waste line;
(c) a hanger mountable on a fixture, said hanger having means for engaging the said urinal bowl whereby the urinal bowl may be maintained in a stored position with said bowl in a generally horizontal position and may be manually moved from the hanger to a position of use;
(d) means for flushing said bowl including an orifice disposed to direct flush water to the interior of said bowl and connected to a flexible water supply line across a valve;
(e) a cover pivotally mounted above said bowl for movement from a position covering said bowl to an open position, said cover including a lever arm located on a rear portion thereof; and
(f) said valve having actuation means located rearwardly of said cover to direct flushing water to said orifice, said actuation means being manually operable by the user or operable by contact with said lever when said cover is moved to said open position.

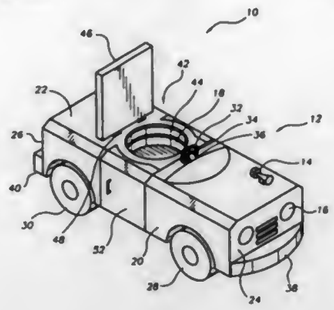
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5,575,021

COMBINED TOILET TRAINER AND TOY CAR

Rosalind M. Harris, 24442 Kinsel, Southfield, Mich. 48034

Filed Nov. 30, 1995, Ser. No. 564,865
Int. Cl.[6] A47K *11/00*
U.S. Cl. 4—449 19 Claims



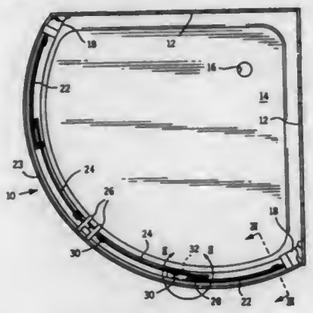
1. A combined toilet trainer and toy car comprising:
a body having a pair of side walls, a top wall, a front wall and a rear wall formed in the shape of an automobile, said top wall forming a hole therethrough approximate a midpoint of said top wall;
a cover hingedly connected to said top wall, said cover being movable from a raised position to a closed position covering said hole;
a light mounted on said front wall;
a horn connected to said body;
a pan removably disposed below said hole formed through said top wall; and
sensing means, operationally connectable between said pan and said light and said horn for activating said light and said horn when a waste product is deposited within said pan; and,
a bracket assembly having a floor member for removably holding said pan, said bracket assembly being connected to an interior surface of said top wall.

5,575,022

SHOWER CUBICLE ENCLOSURE

Philip Duffy, and Uwe Harms, both of Cape Town, South Africa, assignors to Sterling Plumbing Group, Inc., Rolling Meadows, Ill.

Filed Dec. 30, 1994, Ser. No. 367,021
Int. Cl.[6] A47K *3/22*
U.S. Cl. 4—607 4 Claims



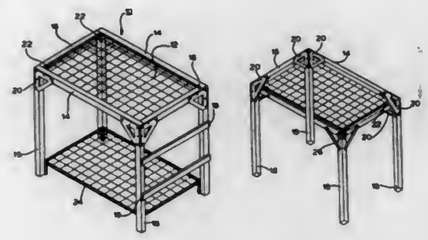
1. A shower enclosure which comprises:
a fixed panel;
a slidable panel having a leading end and a trailing end, for opening or closing an access opening in the enclosure; and
a rail which defines a curved track;
wherein the slidable panel has runner elements which cooperate with the track so as to guide the slidable panel for movement between an open position in which the slidable panel is retracted behind and spaced transversely from the fixed panel, and a closed position in which the leading end of the slidable panel extends from the fixed panel to close the access opening;
wherein the fixed panel and the slidable panel each are of cylindrically curved configuration;
wherein means are provided for drawing the trailing end of the slidable panel transversely towards the fixed panel as the slidable panel approaches the closed position said means comprises a parking formation in the track, the slidable panel has a leading runner element and a trailing runner element, and the trailing runner element cooperates with the parking formation as the slidable panel approaches the closed position; and
wherein the parking formation includes two converging track portions which move the trailing end of the slidable panel transversely towards the fixed panel as the slidable panel approaches the closed position, and displace the trailing end of the slidable panel transversely away from the fixed panel as the slidable panel is displaced further, beyond the closed position.

5,575,023

LOFT-STYLE BED ASSEMBLY KIT AND A METHOD FOR ASSEMBLING A LOFT-STYLE BED USING THE KIT

Tom L. McCumber, 47 South Blvd., #2N, Oak Park, Ill. 60302, assignor to Tom L. McCumber, Peoria, Ill.

Filed Jan. 23, 1995, Ser. No. 377,035
Int. Cl.[6] A47C *19/20*
U.S. Cl. 5—9.1 16 Claims



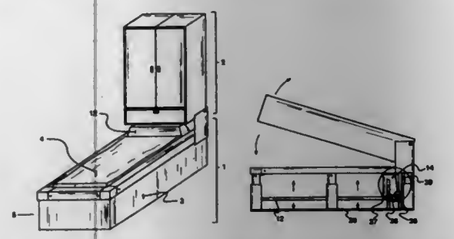
1. A loft-style bed assembly kit for use with beams and standard bed frames to form a loft-style bed, the kit comprising:
a plurality of corner brackets;
a plurality of angle braces;
a plurality of bed frame clips;
connecting hardware whereby assembling the kit provides the loft-style bed;
wherein each of the corner brackets further comprises:
a first plate including a first portion having an end and a side and a flange portion integrally formed with the first portion at the end thereof and arranged at a 90° angle therewith, the first portion and the flange portion each having a mounting hole therein; and
a second plate substantially identical to the first plate and integrally formed with the first plate conjoining the sides thereof, the first and second plates having a 90° angle therebetween such that the flange portions of first and second plate are directed away from each other so as not to contact one another.

5,575,024

EARTHQUAKE PROTECTIVE BED

Do Nam You, 3270 W. 8th St., Los Angeles, Calif. 90005

Filed May 15, 1995, Ser. No. 441,556
Int. Cl.[6] A47C *19/22*
U.S. Cl. 5—424 9 Claims



1. An earthquake protective bed of approximately the same size as a conventional bed, generally comprising a head-end and a foot-end, more particularly comprising:
a. a lower rectangular frame comprising two long sides, a head-end short side, and a foot-end short side;
b. six legs extending upward from said rectangular frame, four of said legs extending upward from each corner of said lower rectangular frame, two of said legs extending upward from the middle of said long sides of said lower rectangular frame;
c. an upper rectangular frame of the same dimensions as said lower rectangular frame, comprising two long sides, a head-end short side, a foot-end short side having a top and bottom side, and being supported by said six legs;
d. two mattress support ledges extending inwardly from said foot-end short side of said upper rectangular frame;
e. a corner piece at each corner of said upper rectangular frame connecting said long sides to said short sides;
f. a mattress support having a head-end and a foot-end and resting on the top of said upper rectangular frame;
g. a triggering system installed within said head-end of said earthquake protective bed;
h. a mechanical mattress support lowering system installed below said head-end of said mattress support;
i. a leg-release system installed below said foot-end of said mattress support;
j. an outer support attached to either side of said head-end of said upper rectangular frame;
k. an alarm box;
l. an upper cover portion.

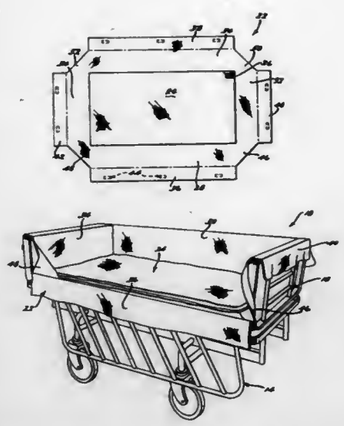
5,575,025

GURNEY WITH PROTECTIVE COVER

Michael J. Peters, 5040 Sebring Ct., Bloomfield Hills, Mich. 48302

Filed Nov. 14, 1994, Ser. No. 337,778
Int. Cl.[6] A47C *31/00;* A47G *9/00*
U.S. Cl. 5—600 1 Claim

1. A gurney comprising:
a planar, horizontally disposed generally rectangular patient supportive surface;
a plurality of vertically extending side and end rails at the sides and ends of the supportive surface respectively and capable of movement from a position below the plane of said supportive surface to a position above the plane of the supportive surface, respectively, and
a one-piece fluid impervious membrane comprising:
a generally rectangular base portion complementary to and overlying said patient supportive surface;
a plurality of side and end portions at the sides and ends of the base portion, respectively, covering the inner surfaces of said side and end rails, respectively;
a plurality of attachment portions on the side and end portions of said membrane, respectively, adapted to be folded about an upper edge of said side and end rails, respectively; and
a plurality of generally triangular flaps extending between and joining adjacent side and end portions, respectively, of said membrane, each of the flaps extending from the base portion of said membrane the full extent of the side and end portions thereof so as to contain fluids internally of said membrane when said side and end walls are elevated and eliminate tensile stress on the membrane in the event of elevation or lowering of a side or end rail relative to an adjacent side or end rail.



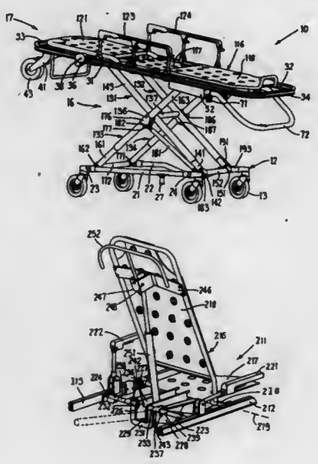
5,575,026

EMERGENCY STRETCHER WITH X-FRAME SUPPORT

Christopher B. Way; John M. Arend, both of Kalamazoo Township, Kalamazoo County, and Christopher Gentile, Sherman Township, St. Joseph County, all of Mich., assignors to Stryker Corporation, Kalamazoo, Mich.

Division of Ser. No. 229,723, Apr. 19, 1994, Pat. No. 5,537,700.
This application Nov. 1, 1995, Ser. No. 551,518
Int. Cl.[6] A61G *1/00;1/04;1/013*
U.S. Cl. 5—617 5 Claims

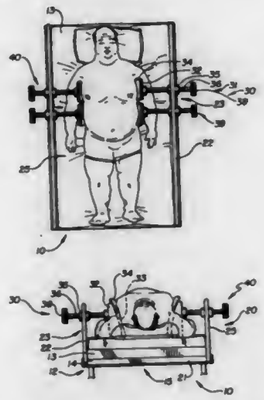
1. A stretcher, comprising: a wheeled base; a support mechanism



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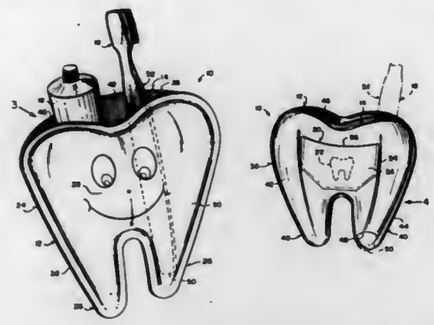
disposed on said base; a patient litter which is supported on said support mechanism at a location above said base, said patient litter including a frame supported on said support mechanism and including a patient support provided on said frame, said patient support including an articulatable member movable relative to said frame between an inclined position and an approximately horizontal position; and an elongate position control device which has selectively actuatable means for respectively permitting and preventing a change in the length thereof when respectively actuated and deactuated, and which has two ends respectively pivotally coupled to said frame and said articulatable member; wherein said frame has spaced parallel side members extending lengthwise of said stretcher and has a cross member extending transversely between said side members, said cross member having means defining an upwardly open recess in a central portion thereof, a portion of said position control device moving into said recess as said articulatable member moves to said approximately horizontal position.

5,575,027
METHOD OF SUPPORTING A CHEST AND ABDOMEN AND APPARATUS THEREFOR
George B. Mueller, 3540 Chalet La., Crete, Ill. 60417
Filed Apr. 18, 1995, Ser. No. 423,877
Int. Cl.[6] A61G *7/06*
U.S. Cl. 5—621 **15 Claims**



1. A method for supporting a chest or an abdomen of a person laying in a supine position on a stationary horizontal surface between a pair of spaced-apart oppositely disposed cushioned body engageable means, comprising:
positioning the person between the pair of cushioned body engaging means;
progressively applying pressure to one side of the abdomen or chest with a cushioned body engaging means relative to the other cushioned body engageable means to help facilitate the lateral support of the abdomen or chest;
extending a mechanical drive means on said one side above an arm of the user to help apply pressure progressively to said one side with said cushioned body engaging means;
engaging the other side of the abdomen or chest with the other cushioned body engaging means to progressively apply pressure to the other side in opposition to and concurrently with the pressure applied by said cushioned body engaging means to secure the person forcibly between the pair of cushioned body engageable means for causing pressure to be applied to both sides of the abdomen or chest;
extending another mechanical drive means on said other side above another arm of the user to help apply pressure progressively to said other side with said other cushioned body engaging means; and
maintaining the application of the pressure on both of said sides of the abdomen or chest with pressure maintaining means coupled to said pair of cushioned body engaging means to restrain laterally releasably the abdomen or chest between said pair of cushioned body engaging means.

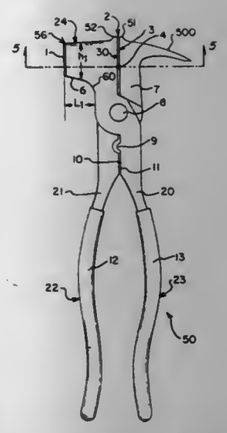
5,575,028
TOOTH FAIRY PILLOW
Nancy Brau, and Robert Brau, both of 10 Chauser Dr., Greenlawn, N.Y. 11740
Filed Jan. 20, 1995, Ser. No. 375,999
Int. Cl.[6] A47C *20/00;* **A63H** *3/02*
U.S. Cl. 5—639 **5 Claims**



1. A tooth fairy pillow comprising:
a) a molar shaped cushion having a broad crown portion and a pair of tooth root portions integral with and extending downwardly from said broad crown portion and further includes a front flexible sheet on which a happy face is imprinted thereon, a rear flexible sheet, a soft filling between said front flexible sheet and said rear flexible sheet, and a sealed edge about the periphery of said front flexible sheet and said near flexible sheet, to maintain said soft filling therebetween;
b) a large rear pocket on said molar shaped cushion for holding a toothbrush and a tube of toothpaste which can be used by a child, said large rear pocket being molar shaped and includes a broad crown segment and a pair of tooth root segments integral with and extending downwardly from said broad crown segment, said large rear pocket being formed by a flexible sheet being of the same size and shape as said rear flexible sheet of said molar shaped cushion and having a sealed edge to said rear flexible sheet except along a top edge forming a top opening, so that said large rear pocket can be accessed through said top opening, one of said tooth root segments having a bottom opening aligned with said top opening to permit a tooth brush within said large rear pocket to extend out both of the top and bottom openings; and
c) a small rear pocket mounted on said large rear pocket for retaining a tooth lost by the child, said small rear pocket being a flexible sheet of a smaller size and different shape than said flexible sheet of said large rear pocket and includes sealed side edges and a sealed bottom edge to said large rear pocket, so that said small rear pocket can be accessed through the top edge.

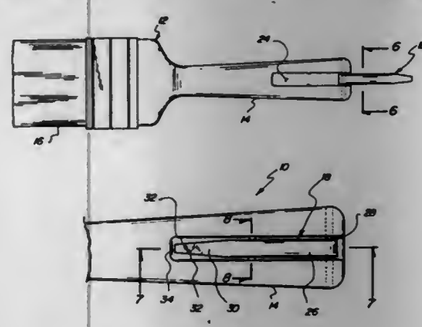
5,575,029
COMBINATION TOOL
Dave Simpson, 3381 "E" Rd., Loxahatchee, Fla. 33470
Filed May 17, 1995, Ser. No. 443,069
Int. Cl.[6] B25B *7/22*
U.S. Cl. 7—137 **18 Claims**

1. A combination hand tool, comprising:



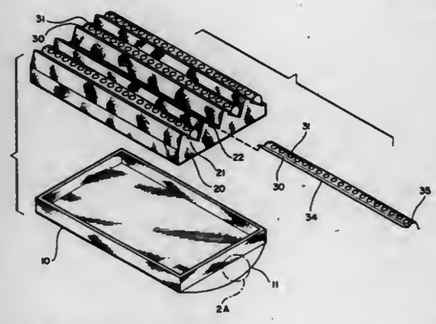
a first and a second pivoting member, said first pivoting member having a handle, an external and an internal edge and an external and internal surface and said second pivoting member having a handle, an external and an internal edge and an external and internal surface;
a pivot pin for rotatably joining said first and second pivoting members together, whereby said internal edges of said first and second pivoting members may be displaced towards or away from each other;
hammer means, disposed on said external surface of said first pivoting member, for driving an object into a material, said hammer means having a lower edge;
claw means, disposed on said external surface of said second pivoting member, for removing said object from said material;
a first pliers means, disposed on said internal surfaces of said first and second pivoting members, for gripping an object;
stripper means, disposed on said internal surfaces of said first and second pivoting members below said first pliers means, for stripping a wire; and
reamer means, disposed on said lower edge of said hammer means, for reaming a pipe.

5,575,030
CONTAINER OPENING PAINT BRUSH
Darcy T. Girard, 49 Deerfield Ave., East Hartford, Conn. 06108
Filed Jul. 14, 1995, Ser. No. 502,815
Int. Cl.[6] A46B *15/00*
U.S. Cl. 15—105 **6 Claims**



1. A container opening paint brush comprising:
a brush member including an elongated handle, the handle having a narrow first end, spaced from and flaring towards a second end thereof such that the second end is substantially wider than the first end, and wherein the handle is shaped so as to define a channel extending into a top surface thereof and oriented longitudinally along a portion of a longitudinal length of the handle, the channel extending into contiguous communication with the first end of the handle;
a plurality of brush fibers extending from the second end of the handle; and
a prying means comprising a substantially elongated member which is substantially cylindrical over a major portion of its length, said elongated member pivotally mounted within the channel of the handle proximal to a first end of the elongated member, said elongated member having an opposed second end distal from the pivotal mounting which is shaped so as to define a pair of opposed planar engaging faces which extend at an oblique angle relative to the longitudinal axis of the elongated member, said elongated member being pivoted into the channel of the handle for storage, and extendable from the first end of the handle for effecting prying open of a lid of a paint can.

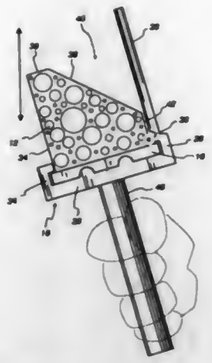
5,575,031
PILLY REMOVER
David C. H. Chai, No.15, Shan Hsi 4th Street, North District, Taichung, Taiwan
Filed Aug. 11, 1995, Ser. No. 518,595
Int. Cl.[6] A47L *25/08*
U.S. Cl. 15—111 **5 Claims**



1. A pilly remover comprising:
a) a main body including a fixing seat thereon, the fixing seat having at least one projection seat defining a setting slot;
b) an arcuate blade including a pair of opposed setting edges, the blade being detachably secured to the projection seat through engagement of the setting edges with the setting slot;
c) a plurality of spaced holes formed in the blade, each hole including a top edge and a notch defining a double blade provided at the top edge; and
d) wherein when the blade is rubbed across the surface of a fabric containing pillies supported on fiber roots, the pillies are disposed within the holes of the blade and directed to the notches wherein the double blades cut the roots of the pillies to remove the pillies from the fibers.

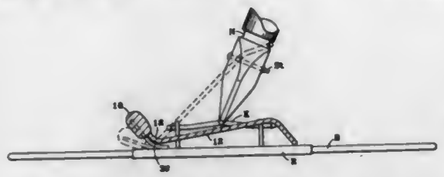
5,575,032
SPONGE SHOWER CLEANER
John Cernuska, 6031 W. Berenice, Chicago, Ill. 60634
Filed Apr. 5, 1995, Ser. No. 417,654
Int. Cl.[6] A47L *13/14*
U.S. Cl. 15—119.2 **7 Claims**

1. A sponge shower cleaner for wiping a surface exposed to moisture such as a vertical shower wall, the sponge shower cleaner comprising:



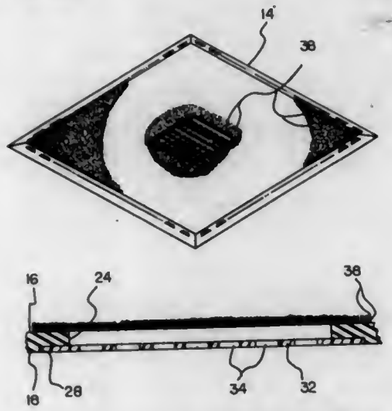
an elongate cleaning head formed from an absorbent sponge material having a leading cleaning surface and an inclined surface extending away from the leading cleaning surface at an angle thereto;
a cleaning head mounting plate for supporting the elongate cleaning head thereon;
a cleaning head holder having a guideway track slidably receiving the cleaning head mounting plate;
a wringing member connected to the holder defining a space between the cleaning head inclined surface and the wringing member; and
an elongate handle less than two feet in length connected to the holder to allow a user to orient the leading cleaning surface against and along the surface to be cleaned to pick up moisture and particulate matter therefrom, the handle being useable with one hand to press the wringing member and the inclined surface against a surface to compress the absorbent sponge material of the cleaning head to extract the moisture and particulate matter picked up by the cleaning head therefrom with the other free hand capable of being used for support while the sponge material is compressed, wherein the wringing member extends parallel to the leading cleaning surface and the space defined by the wringing member and inclined surface has an elongate wedge shape.

5,575,033
FLOOR-CLEANING APPLIANCE
Werner Nolte, Noben, Germany, assignor to Metaform Metallverarbeitungs-Gesellschaft mbH, Hoppstädten-Weiersbach, Germany
PCT No. PCT/EP93/01039, § 371 Date Dec. 27, 1994, § 102(e) Date Dec. 27, 1994, PCT Pub. No. WO94/24923, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 29, 1993, Ser. No. 356,371
Int. Cl.[6] A47L *13/24*; B25G *1/06*
U.S. Cl. 15—147.2 **11 Claims**



1. In an improved cleaning appliance having a handle, means to attach said handle to a basic body portion, said basic body portion accommodates attaching thereto of materials used for cleaning, scrubbing and wiping, the improvement comprising:
said means to attach said handle to said basic body portion being a cardanic connection;
means for articulatably mounting and appropriately positioning a setting-up stirrup, said setting-up stirrup mounted on said basic body portion; and
means for releasably engaging said mounted setting-up stirrup to said handle when said handle is substantially vertically directed relative to said basic body portion.

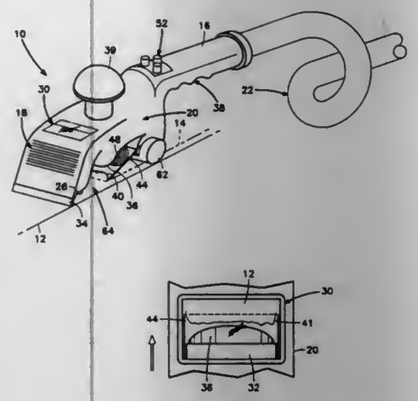
5,575,034
FOOT CLEANING AND MASSAGING MAT SYSTEM
Robert D. Biernacinski, 4403-C Valley Ave., Pleasanton, Calif. 94566, and Mirella M. Tomasik, 555 E. Washington Ave. #609, Sunnyvale, Calif. 94086
Filed Jun. 19, 1995, Ser. No. 492,185
Int. Cl.[6] A47K *7/02*; A61H *7/00*
U.S. Cl. 15—217 **3 Claims**



1. A new and improved foot cleaning and massaging mat system for use in a shower comprising, in combination:
a mat in a generally rectangular configuration having an upper planar surface and a lower planar surface parallel with each other, the upper and lower surfaces being both in a rectangular configuration and coupled around their periphery with a triangular-shaped outwardly directed projection;
an aperture in a square configuration formed in the center of the mat and extending completely therethrough;
an upwardly extending recess formed from the lower surface of the mat peripherally around the aperture;
an insert positionable within the recess, the insert having a plurality of square apertures in a symmetric configuration;
a plurality of upstanding bristle-like members extending upwardly from the upper surface of the mat between the aperture and the periphery; and
a plurality of indents formed in the lower surface of the mat within the projection.

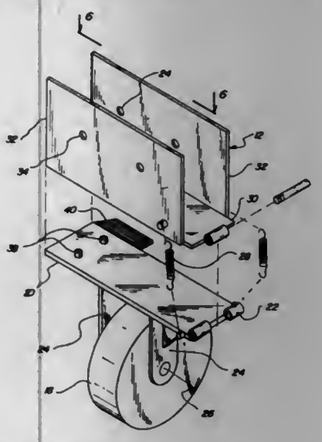
5,575,035
ENVIRONMENTALLY SOUND AND SAFE APPARATUS FOR REMOVING COATINGS
Carl A. Reis, Torrance; Nicholas T. Castellucci, San Pedro, and Richard A. Osterman, Lomita, all of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.
Filed Jan. 24, 1996, Ser. No. 590,798
Int. Cl.[6] A47L *9/06*
U.S. Cl. 15—324 **14 Claims**

1. An apparatus for removing coatings from a substrate, comprising:
a housing having a front section with an outlet, a mid section with an inlet, and a rear section;



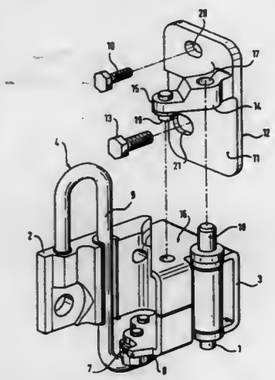
a heat source disposed within said front section of said housing for emitting heat through said outlet;
a vacuum source disposed within said mid section of said housing for providing suction through said inlet;
a power source disposed within said rear section for supplying power to said heat source and said vacuum source;
a control panel having heat controller means for adjusting and controlling said heat emitted from said heat source through said outlet and a vacuum controller means for adjusting and controlling said suction provided by said vacuum through said inlet; and
a blade located adjacent to said inlet and resiliently coupled to said housing for resiliently urging said blade against said substrate, wherein said blade is moved across said substrate for scraping and removing said coating from said substrate, and wherein said blade is under compression while in contact with said coating of said substrate.

5,575,036
TABLE WHEEL
Gregory D. May, 1020 Ross Street S.E., Medicine Hat, Alberta, Canada
Filed Jul. 26, 1995, Ser. No. 507,085
Int. Cl.[6] B60B *33/06*
U.S. Cl. 16—34 **4 Claims**



1. A table wheel comprising:
a wheel;
a mounting means for securing to a leg of a table, said mounting means comprising a substantially rectangular end plate having spaced and parallel longitudinal edges and spaced and parallel transverse edges extending substantially orthogonally between the longitudinal edges so as to define a substantially rectangular shape of the end plate, a pivot plate being pivotally mounted to one of the transverse edges of the end plate; and a pair of mounting plates extending in a substantially spaced and parallel orientation from the respectively opposed longitudinal edges of the end plate, the mounting plates each shaped so as to define at least one mounting aperture directed therethrough; and,
a wheel support means mounted to the mounting means for rotatably supporting the wheel in either a first position beneath the mounting means and a second position lateral of the mounting means, wherein the wheel support means comprises a pair of wheel support stanchions protecting substantially orthogonally from the pivot plate in a spaced and parallel orientation, the wheel being rotatably mounted between the wheel support stanchions; and a spring extending between the pivot plate and a portion of the mounting plates.

5,575,037
DOOR HINGE ASSEMBLY, STRUCTURALLY UNITED WITH A DOOR LATCH, FOR CAR DOORS
Karl-Heinz Tölle, Wuppertal, and Norbert Lotz, Leichlingen, both of Germany, assignors to Ed Scharwachter GmbH & Co., KG, Remsaheld, Germany
Filed Sep. 7, 1995, Ser. No. 524,687
Claims priority, application Germany, Sep. 8, 1994, 44 32 022.1
Int. Cl.[6] E05D *11/10*
U.S. Cl. 16—334 **14 Claims**



1. A door hinge assembly for car doors, comprising:
first and second hinge wings and a hinge pin for pivotably connecting said wings to each other, said hinge pin defining a hinge axis, said first hinge wing being constructed and arranged to be durably fastened to a door body and said second hinge wing being constructed and arranged to be detachably fastened to a door column,
a rotating bar door latch including a retarding and securing member fixed on said first hinge wing,
said second hinge wing having a lateral wall projecting perpendicular to the hinge axis,
a catch device disposed on said lateral wall of said second hinge wing,
an intermediate part cooperable with said second hinge wing for mounting said second hinge wing to the door column,
said second hinge wing being formed entirely by a folded pressed sheet metal part and being constructed and arranged to be fastened on the door column via said intermediate part,

first fastening means for durably fixing said intermediate part at the door column in a position aligned with said door body said intermediate part including a contact face for engaging the second hinge wing, said contact face being aligned parallel to said hinge axis,

said intermediate part including a projection extending perpendicularly to the hinge axis and which receives a portion of said hinge pin, said projection having an extension which engages the lateral wall of the second hinge wing, said extension providing additional support to counteract forces which result from the operation of the door latch,

second fastening means for detachably fixing said second hinge wing to the door column said second fastening means effecting connection of the second hinge wing to the intermediate part, and being constructed and arranged to provide common fastening of said intermediate part and said second hinge wing to the door column.

5,575,038

METHOD OF CARDING

Andre Varga, Halifax, and Harry Cripps, Stockport, both of Great Britain, assignors to Carding Specialists (Canada) Limited, Toronto, Canada

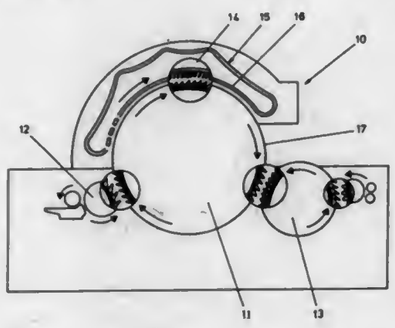
PCT No. PCT/GB92/01659, § 371 Date Jul. 22, 1994, § 102(e) Date Jul. 22, 1994, PCT Pub. No. WO93/06274, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 10, 1992, Ser. No. 244,159

Claims priority, application United Kingdom, Sep. 20, 1991, 9120128

Int. Cl.[6] D01G *15/24;15/36*

U.S. Cl. 19—98 **16 Claims**



1. A method of carding a fibrous feedstock to form a carded sliver, comprising the steps of:

providing a carding engine having a main toothed wire rotating cylinder, a taker-in, a doffer, and a series of flats movable along a closed loop having a working path arranged alongside an outer periphery of the cylinder between the taker-in and the doffer;

carrying out a carding operation on the feedstock in cooperation with teeth of the rotating cylinder;

removing trash particles, nep, dust and short fibers from the feedstock, the flats having a linear speed along the working path of X inches per minute and the outer periphery of the rotating cylinder having a cylinder peripheral speed of Y inches per minute; and

providing a ratio of X:Y greater than 1.24:10,000 so that a resulting sliver may approach the quality of a carded, and subsequently semi-combed (scratch-combed) or combed sliver.

5,575,039

METHOD AND APPARATUS FOR FEEDING A FIBER PROCESSING TEXTILE MACHINE WITH FIBER TUFTS

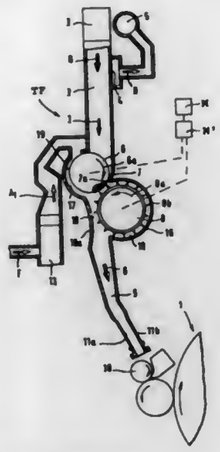
Ferdinand Leifeld, Kempen, and Armin Leder, Mönchengladbach, both of Germany, assignors to Trützschler GmbH & Co. KG, Mönchengladbach, Germany

Filed Sep. 22, 1995, Ser. No. 532,250

Claims priority, application Germany, Sep. 24, 1994, 44 34 250.0

Int. Cl.[6] D01G *15/40;23/02;15/74*

U.S. Cl. 19—105 **21 Claims**



1. A fiber tuft feeder comprising

(a) a first chute having an upper, inlet end and a lower, outlet end;

(b) charging means for introducing fiber tufts into said first chute through said inlet end;

(c) an opening roller supported in a zone of said outlet end; said opening roller having a rotary axis; said opening roller receiving fiber tufts from said first chute;

(d) a second chute extending downwardly from said opening roller and having an outlet;

(e) densifying air stream generating means for introducing a densifying air stream into said second chute to densify the fiber tufts therein;

(f) guide means for orienting said densifying air stream toward said opening roller in a direction other than tangentially thereto to combine said densifying air stream with an additional air stream generated by said opening roller by rotation thereof, for aligning the combined air stream in a direction of said second chute and for directing the combined air stream away from said opening roller into said second chute; and

(g) means for discharging fiber material from said second chute through said outlet thereof.

5,575,040

APPARATUS FOR CONTROLLING SLIVER DEPOSITION IN A COILER CAN

Ferdinand Leifeld, Kempen; Alexander Loos, and Reinhard Hartung, both of Mönchengladbach, all of Germany, assignors to Trützschler GmbH & Co. KG, Mönchengladbach, Germany

Continuation-in-part of Ser. No. 242,094, May 13, 1994, Pat. No. 5,446,946. This application Jul. 18, 1995, Ser. No. 503,899

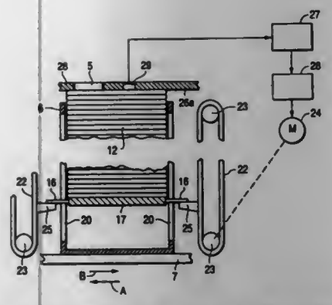
Claims priority, application Germany, May 14, 1993, 43 16 156.1; Mar. 9, 1994, 44 07 849.8

Int. Cl.[6] D04H *11/00;* **B65H** *54/76;54/84*

U.S. Cl. 19—159 A **11 Claims**

1. A sliver coiler apparatus for depositing sliver, comprising

(a) a machine frame;



(b) a stationary coiler plate supported in said machine frame; said coiler plate having a peripheral outline and an underface;

(c) a coiler head rotatably supported in said coiler plate;

(d) a platform situated underneath said coiler plate;

(e) an upwardly open coiler can supported in an upright position on said platform for receiving sliver from said coiler head in an annular pattern such that a momentarily uppermost sliver layer is in contact with said underface of said coiler plate; said coiler can having a vertically-displaceable can bottom for supporting sliver deposited by said coiler head into said coiler can; and

(f) control means for controlling a rate of downward movement of said can bottom during deposition of sliver into said coiler can by said coiler head; said control means including

(1) an electronic control device;

(2) means for lowering said can bottom, including

(i) a vertically-movable support member engaging said can bottom for movement with said can bottom;

(ii) a drive connected to said support member for lowering said support member; said drive being connected to said electronic control device; and

(3) a pressure sensor responsive to forces exerted by the sliver; said pressure sensor being connected to said electronic control device for controlling the rate of downward movement of said can bottom as a function of said signals; and

(4) support means for positioning said pressure sensor for exposure to the forces exerted by the sliver.

5,575,041

RESILIENTLY YIELDABLE TAIL STOCK DEVICE FOR USE IN A NUMERICALLY CONTROLLED LATHE

Juong W. Lee, Masan, Rep. of Korea, assignor to Daewoo Heavy Industries, Ltd., Incheon, Rep. of Korea

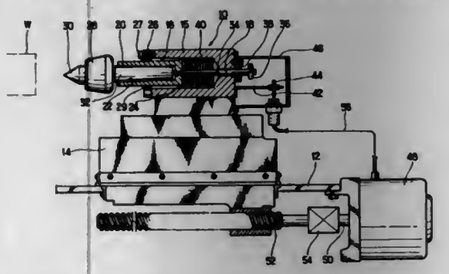
Filed Oct. 13, 1994, Ser. No. 322,127

Claims priority, application Rep. of Korea, Oct. 13, 1993, 93-20959

Int. Cl.[6] B23B *23/00*

U.S. Cl. 82—148 **10 Claims**

1. A resiliently yieldable tail stock device for use in a numerically controlled lathe having a bed and a spindle rotatable together with a workpiece, comprising:



a body slidable along the bed toward and away from the spindle, said slidable body having a bore and a passage hole each formed in axial alignment with the spindle;

a center socket removably received within the bore of the slidable body for movement between an extended position and an operative retracted position, said center socket having a tapering blind bore open at a front end of the center socket;

a live center having a pointed front end engageable with the workpiece and a tapering rear shank removably fitted in said tapering blind bore;

biasing means for yieldably biasing said center socket toward the extended position;

an elongate rod having a proximal end fixedly secured to said center socket and carrying a dog at a distal end thereof, said elongate rod extending through said passage hole of the slidable body;

means, actuated by the dog, for generating a stop signal as the center socket travels into the retracted position; and

drive means for causing the slidable body to move back and forth and for inhibiting forward movement of the slidable body in response to the stop signal to restrict the biasing force applied to the workpiece by the biasing means.

5,575,042

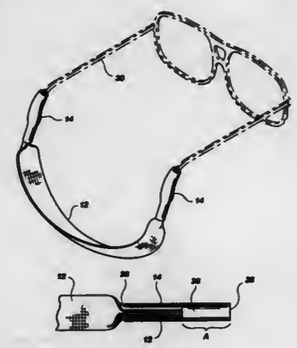
EYEGLASS RETAINER

Edward V. L. Kalbach, 575 West 3200 South, Nibley, Utah 84321-6337

Filed Jan. 10, 1995, Ser. No. 371,067

Int. Cl.[6] A44B *21/00;* **G02C** *3/00*

U.S. Cl. 24—3.3 **8 Claims**



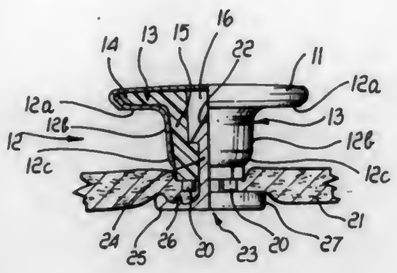
1. An eyeglass retainer comprising:

an elongate panel fabricated from a first elastic material having opposing ends, said panel being folded over on itself proximate each of said ends thereby bringing the opposing sides of said panel into abutment one against the other; and

two elongate tubular members, each said elongate tubular member being fabricated of a second elastic material, each said elongate tubular member defining a channel therein dimensioned to receive a portion of an eyeglass frame upon an elastic expansion of said elongate tubular member;

wherein each said folded over opposing end of said elongate panel is positioned within a said channel of a respective elongate member to fall a portion of the length of said channel, each said opposing end being fixedly secured to said respective elongate tubular member.

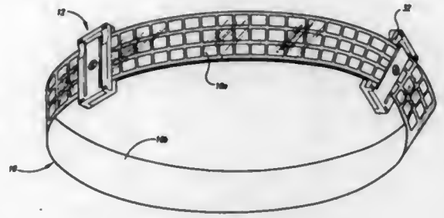
5,575,043
BUTTON FOR CLOTHING
Riccardo Candotti, Via Rome, 83, 35100 Padova, Italy
Filed Jul. 25, 1995, Ser. No. 507,688
Claims priority, application Italy, Aug. 5, 1994, PD94A0146
Int. Cl.[6] A44B *1/18*
U.S. Cl. 24—114.4 18 Claims



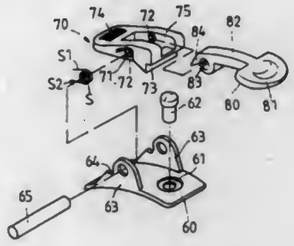
1. A button for clothing fabric comprising:
a metallic dome;
a metallic bell-shaped part having a hollow tubular portion and a flanged portion depending from an end of said tubular portion, said flanged portion of said bell-shaped part being coupled with said dome;
a core contained in said hollow tubular portion of said bell-shaped part, said core having a disk-shaped portion and an axial stem connected to said disk-shaped portion at a first end of the stem, said stem having a square cross-section defining respective corners at least at a second free end thereof, the stem being further force-fitted inside said hollow tubular portion of said bell-shaped part which is complementarily shaped by plastic deformation at least at said corners of said stem for providing a coupling in which mutual rotation of said dome and said bell-shaped part is prevented and such that at least a portion of said second free end protrudes out of said hollow tubular portion, and said stem having a blind axial channel;
a nail being engageable in said axial channel;
first raised portions for engaging the fabric being provided on a front surface of said second end of said stem such that said first raised portions are positioned outside of said hollow tubular portion for engaging the fabric; and
second raised portions protruding from a facing surface of a head of said nail, said first and second raised portions being mutually positioned for engaging said fabric such that in an engaged fixed configuration of the button said first and second raised portions are mutually axially offset and do not mutually engage.

5,575,044
HIGH VISIBILTY BELT ASSEMBLY
David A. Zornes, 4348 - 202nd Ave. N.E., Redmond, Wash. 98053
Filed Apr. 28, 1995, Ser. No. 430,342
Int. Cl.[6] A44B *11/25*
U.S. Cl. 24—168 19 Claims

1. A clip comprising:
two interfitting clip components jointly presenting a belt passage therebetween;
said clip components each having a spring leaf, said spring leafs being spaced apart along a central portion of said belt passage, and each leaf being adapted to be sprung away from the other spring leaf into gripping position over material inserted between the spring leaf and the remainder of the respective clip component.

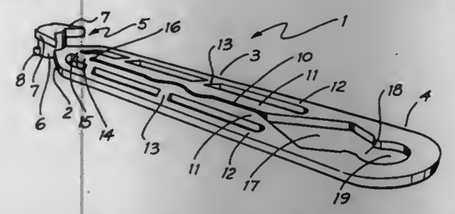


5,575,045
ROLLER SKATE FASTENING DEVICE
Hsien-Kuang Chu, 58, Ma Yuan West St., Taichung, Taiwan
Filed Jan. 2, 1996, Ser. No. 581,983
Int. Cl.[6] A43C *11/00*
U.S. Cl. 24—68 SK 1 Claim



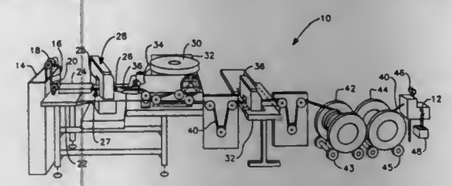
1. A roller skate fastening device comprising:
a positioning seat to receive a pressing fastener thereon;
said positioning seat having a positioning hole thereon and two lugs with corresponding holes to receive corresponding pins;
said lugs extending upward from two sides of said positioning seat;
each of said lug having a hook recess disposed on a periphery of said lug;
a rivet passing through said positioning hole to fasten said positioning seat on a roller skate;
said pressing fastener having a pressed portion at a first end of said pressing fastener, a groove and a protruded jag extending downward from a second end of said pressing fastener;
two through holes formed on walls abutting said groove;
a spring recess formed on said pressing fastener adjacent to one of said through hole;
a torsion spring having a first leg and a second leg;
said spring embedded in said spring recess, said first leg embedded in said spring recess also, and said second leg hooking said hook recess;
said groove receiving a movable fastener;
said movable fastener having a protruded fang disposed at a first end of said movable fastener, a round recess formed adjacent to said protruded fang, and a trip bar disposed at a second end of said movable fastener; and
a pin passing through said holes of said lugs, said through holes of said pressing fastener, and said round recess of said movable fastener.

5,575,046
HOLDER FOR SUSPENDING ARTICLES
Christopher R. G. Rourke, Gordon, Australia, assignor to Klingers Peg-Free Clothes Lines Pty. Limited, Asquith, Australia
PCT No. PCT/AU93/00432, § 371 Date Mar. 30, 1995, § 102(e) Date Mar. 30, 1995, PCT Pub. No. W094/04742, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 24, 1993, Ser. No. 392,752
Claims priority, application Australia, Aug. 25, 1992, 21302/92
Int. Cl.[6] D06F *53/02*
U.S. Cl. 24—563 3 Claims



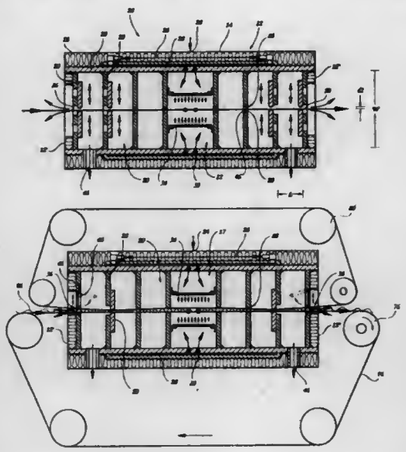
1. A holder for suspending a cloth or other flexible article from an upper end, comprising an elongated plastics moulding having two opposite end portions and an intermediate portion providing an elongated and non-linear pinch slot formed between two resilient side portions of the moulding which, at one end portion of the moulding, diverge away from one another to define part of an opening through which the upper end of the article can be guided into the pinch slot for subsequent retention therein, and in which each side portion of the moulding comprises an inner rib and an outer rib in parallel spaced relationship and between which extend diagonal bars to permit individual sections of the inner ribs to flex outwardly to different extents to accommodate variations in the thickness of the article trapped in the pinch slot formed between the two inner ribs.

5,575,047
METHOD FOR MAKING BIODEGRADABLE ABSORBENT PADS
Roland W. Gerstenberger, Arden, N.C., and Robert L. Buck, Lake Oswego, Oreg., assignors to Athena Medical Corporation, Portland, Oreg.
Division of Ser. No. 380,830, Jan. 30, 1995, which is a continuation-in-part of Ser. No. 344,991, Nov. 25, 1994, abandoned. This application Sep. 18, 1995, Ser. No. 529,420
Int. Cl.[6] D04H *1/22;* A61F *13/20*
U.S. Cl. 28—119 4 Claims



1. A method for producing biodegradable absorbent pads comprising the steps of:
moving a rope of biodegradable absorbent material in one direction through the inside of a hollow tube;
providing a web of non-woven rayon fibers as a biodegradable material;
moving the web of biodegradable material, having elongated edges, along the outside of said hollow tube in a direction which is opposite to the direction of movement of said rope;
forming said web into a hollow cylinder; non-heat sealing said edges of said web together; reversing the direction of said web approximately 180° ; moving said web in said reversed direction through the inside of said hollow cylinder between said rope of absorbent material and the inside walls of said hollow cylinder; covering said rope of absorbent material with said web.

5,575,048
APPARATUS FOR TREATING TRAVELING TEXTILE MATERIAL HAVING EXPANSION CHAMBERS
Helmut Ruef, 10173 Foxhall Dr., Charlotte, N.C. 28210
Filed Dec. 19, 1994, Ser. No. 358,519
Int. Cl.[6] D02G *1/00;* F26B *3/00*
U.S. Cl. 28—219 15 Claims



1. An apparatus for treating traveling textile material in a pressurized fluid comprising:
housing means including means for forming a textile material inlet and a textile material outlet, said inlet forming means including an opening formed in one end of said housing means for passage therethrough of said traveling textile material, and door means for at least partially covering said inlet opening, said door means being movable between an opened position for feeding textile material through said housing means and a closed position wherein said door means at least partially covers said inlet opening and forms a passageway for free movement of textile material therethrough, a treatment chamber for the application of pressurized treatment fluid to the textile material passing therethrough, a plurality of expansion chambers each having a textile material passageway formed therein, said expansion chambers being disposed upstream and downstream of said treatment chamber in fluid communication therewith for the successive expansion of said treatment fluid between said treatment chamber and the atmosphere, each textile material passageway having an opening formed with a predetermined cross sectional dimension and each said expansion chamber being formed with predetermined dimensions according to a predetermined ratio of passageway size relevant to expansion chamber size for maintaining a pressure drop across each said chamber; and
means for delivering pressurized treatment fluid to said treatment chamber including a treatment fluid holding chamber disposed in said housing means in fluid communication with said treatment chamber.

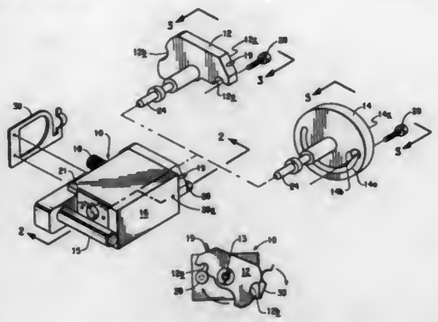
VOL 1192 ISS 3 NO 19 1996 UMI

5,575,049

YARN TEXTURING JET WITH IMPROVED ASSEMBLY AND DISASSEMBLY FEATURES

Adly A. Gorrafa, and Jagdish N. Shah, both of Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 29, 1995, Ser. No. 520,421
Int. Cl.[6] D02G 1/16
U.S. Cl. 28—272 4 Claims



1. In a yarn texturing jet that includes a hollow body member forming a chamber, means for introducing fluid under pressure into said chamber, an exit nozzle from the chamber for fluid and yarn, and a yarn guiding member axially slidable in the body member extending through the chamber for supplying yarn to the nozzle for texturing, said yarn guiding member being mounted on said body member for movement from an operating position to a string-up position closer to the exit nozzle and for movement back to an operating position and means for stopping movement of the yarn guiding member at an appropriate operating position, the improvement comprising: a spring attached to the body member; a flange located outside said body member, said flange being attached to said yarn guiding member, said flange engaging said means for stopping slidable movement of the yarn guiding member in the operating position, and being rotatable free from engagement with said means for stopping slidable movement of the yarn guiding member to permit said yarn guiding member to be removed from said body member for examination without disturbing said means for stopping said yarn guiding member, said flange having a notch engaging said spring to provide rotational positioning of said yarn guiding member.

5,575,050

METHOD OF ASSEMBLING ELECTRONIC COMPONENT

Daisaku Kugo, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Feb. 24, 1994, Ser. No. 202,149
Claims priority, application Japan, Feb. 26, 1993, 5-062872
Int. Cl.[6] H01L 41/22
U.S. Cl. 29—25.35 2 Claims

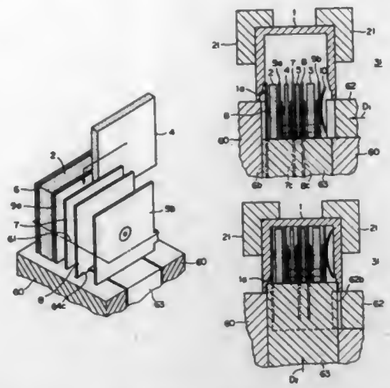
1. A method of assembling an electronic component having at least one element being held between terminal plates under pressure and stored in a case, said method comprising the steps of:

inserting said terminal plates into a receiving portion of a base means so as to align said terminal plates along a direction of thickness thereof;

inserting said element between said terminal plates in said receiving portion;

compressing said terminal plates and said element along the direction of thickness so that an overall thickness of said terminal plates and said element is smaller than an inner size of said case; and

setting said case on said base means so that an opening of said case corresponds to said receiving portion; and



inserting said terminal plates and said element from said base means into said case simultaneously;

wherein said terminal plates have lead portions outwardly protruding from said case, and wherein

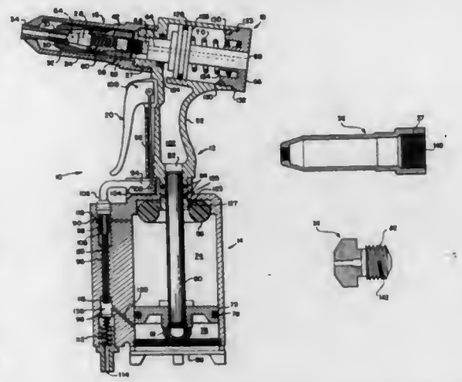
said base has lead portion receiving holes at a bottom of said receiving portion for receiving said lead portions of said terminal plates so as to hold said terminal plates.

5,575,051

HIGH IMPACT POWER TOOL HAVING SHOCK ABSORBING MEANS

Steven C. Moore, East Bridgewater, Mass., assignor to Marson/Creative Fastener Group, Taunton, Mass.

Continuation of Ser. No. 75,037, Jun. 10, 1993, abandoned.
This application Sep. 7, 1994, Ser. No. 301,479
Int. Cl.[6] B23P 11/02; B21J 15/10
U.S. Cl. 29—243.523 2 Claims



1. A method for assembling a riveter having a means to prevent damage to the riveter, comprising the steps of:

locating a series of paired engagements on the riveter which are subject to substantial shock and vibration, said series of engagements each comprising mateable first and second components each having a threaded portion wherein said first and second components of said series of paired engagements include a frame cap and an upper cylinder, a nosepiece and a frame head, an extension and a jaw case, a piston locknut and a piston rod, said frame head and said upper cylinder, a frame locknut and a housing, and said frame locknut and a pneumatic cylinder;

applying a nylon shock absorber on the threaded portion of either said first or second component of each of said paired engagements; and

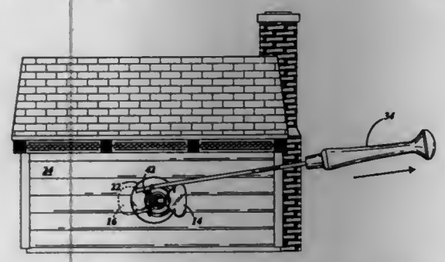
mating said first component and said second component along said threaded portions of each of said components to distribute shock and vibration generated by the riveter throughout the riveter.

5,575,052

LIGHT RETRIEVING TOOL FOR USE WITH MINIATURE VILLAGE BUILDINGS

John S. Thoresen, 8307 Oxborough Ave. South, Bloomington, Minn. 55437

Filed Jul. 14, 1995, Ser. No. 502,631
Int. Cl.[6] B23P 19/00
U.S. Cl. 29—426.6 5 Claims



5. A method for retrieving a light holder from the interior of a miniature building structure of the type having a circular opening in one wall thereof for receiving the light holder therein, the light holder comprising a light socket having a pair of outwardly flaring spring clips affixed thereto which, when unconstrained, have a maximum dimension greater than a diameter of the circular opening, the spring clips each including notches extending inwardly from opposed side edges of the spring clips for normally engaging a portion of the wall surrounding the circular opening comprising the steps of:

(a) withdrawing the light holder until one of the spring clips extends partially out through the circular opening far enough to be grasped with the user's fingers;

(b) inserting a tool through said circular opening, the tool comprising an elongated rigid wire having a straight shank portion, a proximal end and a distal end, where the distal end has an integrally formed, U-shaped hook disposed at a predetermined angle to the straight shank portion, the proximal end having a handle affixed thereto;

(c) engaging the U-shaped hook with the notches on the other of the spring clips;

(d) pulling on the tool to compress the other spring clip sufficiently to permit it to clear the wall surrounding the circular opening; and

(e) removing the light holder from the building through the circular opening.

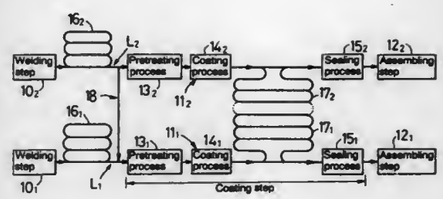
5,575,053

METHOD FOR PRODUCING VEHICLES IN A PLURALITY OF PRODUCTION LINES

Yoshiki Ishida; Keiichi Samekawa; Kenichi Katayama; Yoshifumi Matsumoto; Hideo Ishida, and Koichi Kimura, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1995, Ser. No. 393,373
Claims priority, application Japan, Feb. 25, 1994, 6-027783
Int. Cl.[6] B21D 39/03
U.S. Cl. 29—430 4 Claims

1. A method for producing vehicles comprising:



providing a plurality of production lines capable of successively passing vehicles through a welding step, a coating step and an assembly step in each of said production lines;

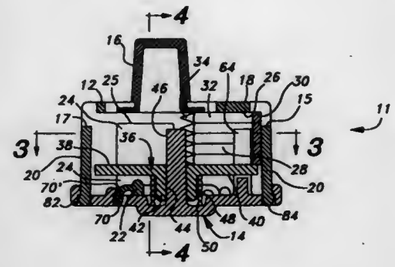
transferring a number of said vehicles in one production line having less of a margin for production, after said number of vehicles have passed through the welding step in said one production line, to another production line having more of a margin for production, at a portion of said another production line between the welding step and the coating step thereof, in accordance with an increase in the number of vehicles produced in said one production line and/or a decrease in the number of vehicles produced in said another production line.

5,575,054

BONE STAPLER CARTRIDGE

William P. Klinzing, St. Paul, Minn., and Barry W. Robole, Woodville, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 319,293, Oct. 6, 1994. This application Jan. 29, 1996, Ser. No. 593,659
Int. Cl.[6] A61B 17/068
U.S. Cl. 29—453 2 Claims



1. A method of making a cartridge adapted for use in a stapler for driving staples, the method comprising the steps of:

(1) providing a case comprising a first wall and side walls projecting from said first wall, inner guide surfaces, and structure forming opposed openings;

(2) providing a stack of staples;

(3) providing a follower on a side of said stack of staples opposite said first wall,

(4) mounting the follower so that it is movable within said case with said stack of staples,

(5) biasing said follower and said stack of staples toward said first wall;

(6) providing a spacer having guide surfaces for guiding a staple through one of said opposed openings, and

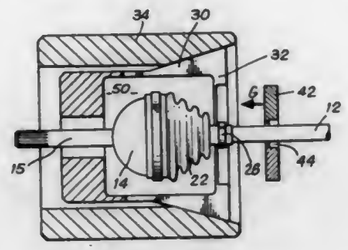
(7) attaching the spacer to the case without the use of an adhesive.

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5,575,055
PROCESS FOR SHRINKING A RING ON A CYLINDRICAL SUPPORT BEHIND AN AXIAL OBSTACLE

Pascal Detable, Gievres, and Michel Andre, Romorantin Lanthenay, both of France, assignors to Etablissements Caillau, Issy Les Moulineaux, France

Filed Nov. 29, 1994, Ser. No. 346,014
Claims priority, application France, Dec. 3, 1993, 93 14514
Int. Cl.[6] B21D *39/00*
U.S. Cl. 29—508 **2 Claims**



1. A process for shrinking a ring to be shrunk, said ring having, before shrinking, a first diameter and being placed around an object to be clamped on a cylindrical support having an axis, an axial obstacle being connected to said support and having a second diameter greater than said first diameter and having an axial length terminating at first and second ends the ring being disposed behind said obstacle in a first axial direction, the process comprising the steps of:

a) providing a shrinking tool which includes jaws having an inner periphery and being capable of adopting an expanded position and a retracted position, and which further includes a cavity, disposed axially adjacent said jaws and having diametral dimensions which, in the expanded position as well as in the retracted position of the jaws, are greater than said second diameter of the obstacle;

b) fitting the shrinking tool, with the jaws thereof in expanded position, by moving the jaws of the shrinking tool in the first axial direction from the first end to the second end of the obstacle so that the shrinking tool is over the axial obstacle with said cavity placed around said axial obstacle;

c) positioning the shrinking tool until the jaws are disposed, in said first axial direction, behind said obstacle, in a radial plane of the ring to be shrunk, with said cavity placed around said obstacle

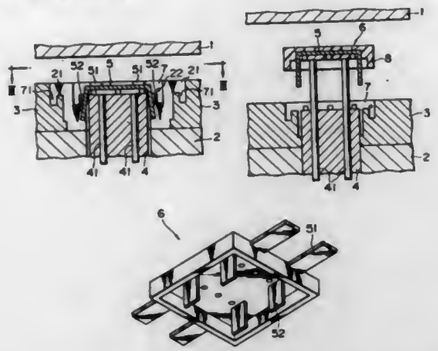
d) positioning a spacer in the jaws in expanded position, by the rear of the axial obstacle, said spacer presenting a substantially circular central opening and an outer periphery, and being capable of adopting a retracted position and an expanded position in which said outer periphery of said spacer is adapted to the inner periphery of the jaws in expanded position thereof, while a diameter of the central opening is substantially equal to the diameter of the ring to be shrunk, and

e) tightening the shrinking tool in order to bring the jaws and the spacer disposed therein into their respective retracted positions, so as to bring the ring to a third diameter smaller than said first diameter while the cavity of the shrinking tool is placed around the obstacle.

5,575,056
METHOD OF AND MOLD FOR MOLDING PRODUCT HAVING INSERT

Yuji Nakagawa, Tsu, Japan, assignor to Sumitomo Bakelite Company Limited, Tokyo, Japan

Filed Feb. 15, 1995, Ser. No. 389,230
Claims priority, application Japan, Feb. 25, 1994, 6-027788
Int. Cl.[6] B23P *19/04;* **B29C** *39/36*
U.S. Cl. 29—527.4 **2 Claims**



1. A method of molding a product having an integral portion formed of a resin and having a flat plate portion and a peripheral wall portion extending perpendicularly from a peripheral edge of said flat plate portion, said product further having at least one insert of metal having a body extending generally parallel to said flat plate portion, and a leg portion projecting from said flat plate portion and substantially parallel to said peripheral wall portion, said method comprising the steps of:

setting said insert on one of a pair of mold halves, which has a partial cavity in a surface thereof such that said body of said insert is generally flush with or adjacent said surface of said one mold half, with said body of said insert adjacent a core;

slidingly moving a slide core in a groove formed in a portion of said one mold half, which corresponds to said leg portion of said insert, said slide core having a cavity portion corresponding to said partial cavity in said one mold half, and pressing said leg portion towards said core;

clamping another of said pair of mold halves to said one mold half and said slide core to define a whole cavity therebetween;

introducing a resin into said whole cavity;

curing or setting said resin; and

opening a mold constituted by said pair of mold halves and said slide core, and removing the molded product therefrom.

5,575,057
METHOD OF MANUFACTURING A COIN DETECTOR

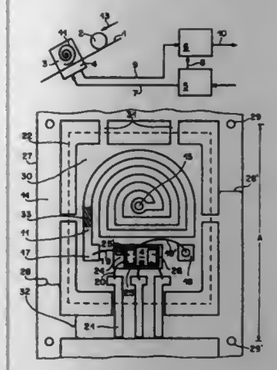
Thomas Seitz, Zug, Switzerland, assignor to Landis & Gyr Technology Innovation AG, Zug, Switzerland

Continuation of Ser. No. 72,913, May 17, 1993, Pat. No. 5,411,126. This application Mar. 24, 1995, Ser. No. 410,066
Claims priority, application Switzerland, Jun. 3, 1992, 1782/92
Int. Cl.[6] H01F *41/02*
U.S. Cl. 29—602.1 **4 Claims**

1. A process for producing an inductive coin detector having a single coil, an oscillator, and a detector circuit on a single housing to be affixed to one side of a coin chute, the process comprising the steps of:

(a) punching positioning holes at predetermined intervals of border zones of a band made from a flexible insulator film laminated on one side with conductive material

(b) punching a support sheet partially free from the band, leaving narrow ridges as connections to the border zone and transversal ridges connecting the border zones to each other;



(c) covering with etching masks conductive material surfaces provided for conductive elements, which elements are on a substrate in alignment with the positioning holes;

(d) etching exposed, superfluous conductive material;

(e) removing the etching masks;

(f) attaching a detector circuit to a substrate and aligned with the positioning holes on a surface of the support sheet exposed by removing the etching masks;

(g) producing connecting bridges from terminal lugs to the detector circuit and from both ends of the coil to the detector circuit forming an oscillator circuit;

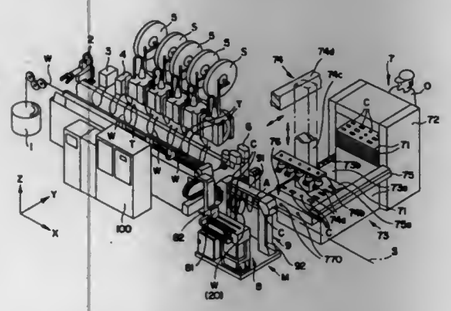
(h) surrounding the detector-circuit bearing support sheet with a synthetic material so that the synthetic material constitutes a flat housing having sides aligned to be parallel with a plane of the conductor elements; and

(i) cutting the narrow and traversal ridges and the terminal lugs free.

5,575,058
CONNECTOR HOUSING SUPPLYING DEVICE

Tokuji Nakamura; Kenichi Taniguchi; Hiroki Shuto, and Yoshinobu Ohta, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Feb. 23, 1995, Ser. No. 393,069
Claims priority, application Japan, Feb. 23, 1994, 6-025199
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—748 **11 Claims**



1. A connector housing supplying device, comprising:

at least one pallet for arraying a plurality of connector housings in a plurality of rows and a plurality of columns;

at least one holding plate having a plurality of fixtures disposed for alignment with the respective columns of the pallet,

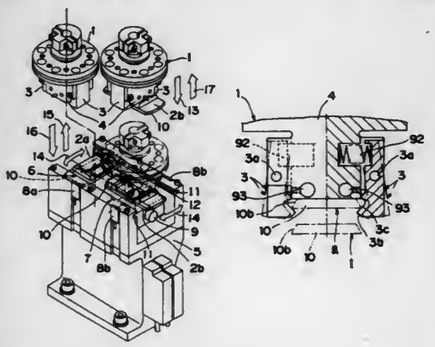
a plurality of actuators disposed for alignment with the respective columns, said actuators being simultaneously operable for engaging the connector housings in one said row and for subsequently releasing the engaged connector housings; and

a conveying apparatus for moving said actuators between a position in proximity to at least one said row on said pallet and a position in proximity to the holding plate, whereby the conveying apparatus enables the actuators to simultaneously remove one said row of the connector housings from the pallet and subsequently enables the actuators to simultaneously deposit the engaged connector housings onto the fixtures of the holding plate.

5,575,059
TAPE CARRIER PACKAGE MOUNTING APPARATUS WITH HEATERS FOR BONDING TOOLS

Nobuhiko Muraoka, Toyonaka; Nobuhisa Watanabe, Kobe; Shinjiro Tsuji, Hirakata, and Ikuko Obata, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed May 22, 1995, Ser. No. 447,048
Claims priority, application Japan, May 24, 1994, 6-109280
Int. Cl.[6] H05K *3/34;* **B23P** *19/04*
U.S. Cl. 29—740 **2 Claims**



1. A TCP mounting apparatus comprising:

a tool storing and holding section having arranged therein a plurality of different kinds of bonding tools for detachably engaging respective tape carrier packages of different shapes and then heat and pressure bonding the tape carrier packages to a liquid crystal panel, said bonding tools being stored at respective predetermined positions within the tool storing and holding section, said tool storing and holding section including a first heater which heats said bonding tools stored at the respective predetermined positions, and a detection device which detects a presence and absence of each of said bonding tools stored at the respective predetermined positions;

a head part which detachably engages any selected one of said bonding tools to extract and then return said any selected one of said bonding tools from and to the respective predetermined positions within said tool storing and holding section, said head part including a second heater which heats a bonding tool engaged by said head part; and

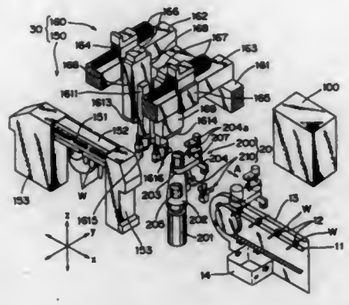
a conveyor mechanism which moves and positions the head part relative to the respective predetermined positions within said tool storing and holding section.

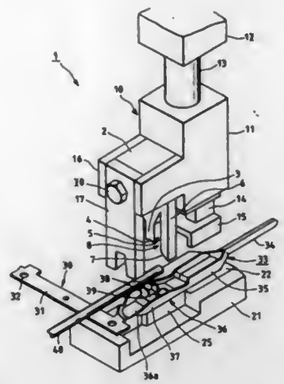
5,575,060

TERMINAL INSERTING DRIVE APPARATUS FOR INSERTING TERMINALS ON WIRE

Yoshinobu Ohta; Kenichi Taniguchi, and Hideo Ohnishi, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Dec. 14, 1994, Ser. No. 358,560
Claims priority, application Japan, Dec. 21, 1993, 5-321734
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—749 **3 Claims**





1. A terminal inserting drive apparatus for inserting terminals crimped to both ends of a wire into corresponding terminal cavities of a connector housing, on a housing carrying means which carries the connector housing, upon arranging the cavities of the connector housing along an axis so as to cooperate with the terminal inserting drive apparatus, said drive apparatus comprising:

a pair of hand means for, respectively, gripping portions adjacent to both ends of the wire with terminals;

a conveying means for, individually, conveying said hand means between a wire receiving position and different terminal inserting positions located along said axis; and

a conveying control means for operating said conveying means so as to convey both said hand means along said axis to a first set of two different terminal inserting positions simultaneously when said first two different positions are located such that both said hand means would not interfere with each other as said conveying means conveys said hands to said two positions, and sequentially conveying both said hand means along said axis to a second set of two different terminal inserting positions when said second set of two different terminal inserting positions are located such that both said hand means would interfere with each other if said hand means were conveyed simultaneously.

5,575,061

WIRE PRESSING METHOD AND APPARATUS FOR PRESSING A WIRE INTO A TERMINAL

Masanori Tsuji; Hiroshi Yamamoto, and Sakai Yagi, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Feb. 14, 1995, Ser. No. 388,439
Claims priority, application Japan, Feb. 14, 1994, 6-017553; May 25, 1994, 6-111440
Int. Cl.[6] H01R *43/04*
U.S. Cl. 29—863 **16 Claims**

1. A method of electrically connecting a wire to a terminal, the wire including a conductor surrounded by an insulator and the terminal including a wire connecting portion having a pair of blades defining a wire receiving groove therebetween, the method comprising the following steps:

placing said terminal on a pedestal;

positioning a movable applicator above the terminal, the applicator including a wire pressing portion and a pair of retaining arms;

placing the wire on the wire connecting portion of the terminal; and

moving said applicator downwardly such that said pair of retaining arms sandwich said blades therebetween, and said wire pressing portion Forces said wire into said groove of said terminal, said retaining arms preventing outward movement of said blades in a radial direction of said wire.

6. A wire pressing apparatus for elastically connecting a terminal to a wire, the wire including a conductor surrounded by an insulator and the terminal including a wire connecting portion having a pair of blades defining a wire receiving groove therebetween, the apparatus comprising:

a vertically movable applicator confronting said terminal and movable with respect to said terminal, said vertically movable applicator including a wire pressing portion disposed on a bottom end thereof for pressing the wire into said groove such that said blades cut the insulator and electrically contact the conductor, and retaining means attached to a lower end of said applicator for preventing outward movement of said blades in a radial direction of said wire when the wire is pressed in said groove.

5,575,062

METHOD FOR FORMING A CONNECTOR

Yasushi Nakajima, and Ryo Kameoka, both of Kanagawa-ken, Japan, assignors to Kyocera Elco Corporation, Kanagawa-ken, Japan

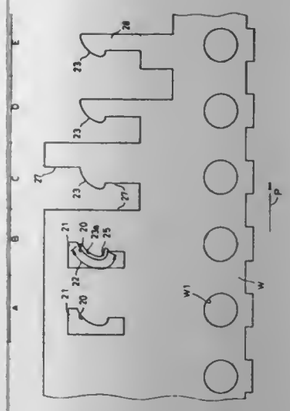
Filed Dec. 7, 1994, Ser. No. 350,655
Claims priority, application Japan, Dec. 21, 1993, 5-322544
Int. Cl.[6] H01R *43/16*
U.S. Cl. 29—874 **4 Claims**

1. A method for forming a contact for a connector in which a workpiece, in the form of a piece of material having upper and lower sides and a thickness dimension extending generally perpendicularly to said upper and lower sides, is punched by a press to form a contact surface extending in said thickness dimension which contact surface can be brought into contact with a mating member to be associated therewith, comprising;

forming a provisional contact surface extending in said thickness dimension by a first punching operation of the workpiece; and,

forming a final contact surface by shaving said provisional contact surface;

in which shaving said provisional contact surface is subjected to a split-shaving operation from both of said upper and lower sides of the workpiece to separately shave upper and lower halves of the provisional contact surface in the direction of the thickness of the workpiece to form a final contact surface.

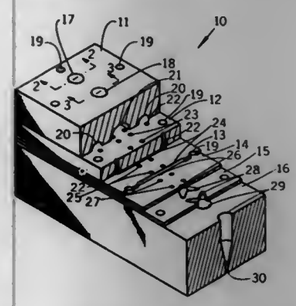


5,575,063

MELT-SPINNING SYNTHETIC POLYMERIC FIBERS

John A. Hodan, Arden, and Otto M. Ilg, Asheville, both of N.C., assignors to BASF Corporation, Parsippany, N.J.

Division of Ser. No. 138,907, Oct. 18, 1993, Pat. No. 5,533,833, which is a continuation of Ser. No. 968,557, Oct. 29, 1992, abandoned. This application May 23, 1995, Ser. No. 447,516
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—890.09 **4 Claims**



1. A method of assembling a flow distribution plate set for distributing at least two discreet molten polymer streams to a spinneret comprising:

(a) stenciling a pattern in at least one first plate such that the first plate has edges which define a substantially regular two-dimensional geometric shape, a substantially planar upstream surface, a substantially planar downstream surface and at least one flow distribution pattern stenciled therein by cutting through said first plate, said flow distribution pattern connecting said upstream surface with said downstream surface; and

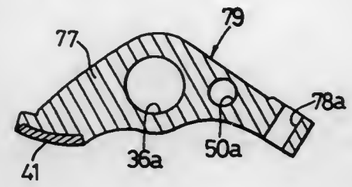
(b) then stacking the first plate sealingly adjacent to a second plate which has edges which define a substantially regular two-dimensional geometric shape, a substantially planar upstream surface and a substantially planar downstream surface, said second plate having cut-through holes connecting said upstream surface with said downstream surface to form at least one flow-through channel to allow fluid flow through said first plate and otherwise being substantially solid with solid portions where said first plate is cut through to accomplish fluid flow in a direction transverse to the flow in said flow-through channel, said liquid polymer streams flowing as discrete streams through said flow distribution plate sets to said spinneret.

5,575,064

PROCESS FOR PRODUCING ROCKER ARM FOR INTERNAL COMBUSTION ENGINE

Akira Fujiwara; Noriyuki Yamada, and Kazushige Yakubo, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1994, Ser. No. 354,024
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—888.2 **2 Claims**



1. A process for producing a rocker arm for an internal combustion engine comprising the steps of:

fabricating a rocker arm blank which has an aperture adapted to be converted into a shaft insertion hole which is made of steel comprising:

0.3% (inclusive) to 0.5% (inclusive) by weight of carbon (C),

0.3% (inclusive) to 1.5% (inclusive) by weight of manganese (Mn),

0.9% (inclusive) to 1.5% (inclusive) by weight of chromium (Cr),

0.7% (inclusive) to 1.5% (inclusive) by weight of aluminum (Al),

0.35% by weight or less of silicon (Si),

0.03% by weight or less of phosphorus (P),

0.03% by weight or less of sulfur (S),

0.3% by weight or less of copper (Cu),

0.25% by weight or less of nickel (Ni),

at least one member of the group consisting of 0.04% (inclusive) to 0.15% (inclusive) by weight of lead (Pb), and 0.03% (inclusive) to 0.1% (inclusive) by weight of bismuth (Bi), and

the balance substantially of iron, with the normal impurities;

refining said rocker arm blank by:

hardening at a treating temperature (T_1) of 850° (inclusive) to 950° C. (inclusive) for a treating time (t_1) of 0.5 (inclusive) to 2 (inclusive) bours;

reaming said aperture an amount sufficient to form said shaft insertion hole; and

nitriding said reamed rocker arm blank at a treating temperature (T_3) of 550°(inclusive) to 610° C.(inclusive) for a treating time (t_3) of 5 (inclusive) to 8 (inclusive) hours.

5,575,065

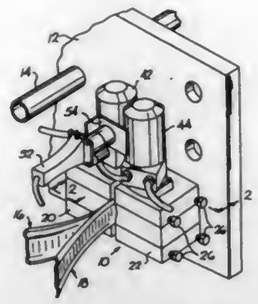
TUBE SLITTING TRAVELER

Richard T. Harris, Chattanooga, Tenn., assignor to Retubeco, Inc., Ooltewah, Tenn.

Continuation of Ser. No. 325,794, Oct. 19, 1994, abandoned. This application Nov. 27, 1995, Ser. No. 563,224
Int. Cl.[6] B23P *15/26*
U.S. Cl. 29—890.03 **3 Claims**

1. A method of removing a tube axially from a heat exchanger tubesheet and slitting the tube into two portions, comprising:

disposing a pair of driving and deforming rollers in spaced apart relationship, said rollers each having an axis of elongation, the space between said rollers defining a nip, each of said rollers having a configuration including a central section of a cylindrical configuration having a diameter larger than the cross sectional dimension of the remainder of the roller such that said nip has a configuration which is smallest in the central portion between said rollers and is enlarged remote from said central portion,



positioning said tube in said nip and in contact with said rollers, rotatably driving said rollers in opposite directions about the respective axis of elongation to grasp and travel said tube axially out of said tubesheet while simultaneously deforming said tube by said rollers into a configuration having a longitudinally extending flattened central portion intermediate a pair of remote longitudinally extending bulbous edges, said bulbous edges being enlarged relative to said flattened portion in a direction extending between said rollers, and

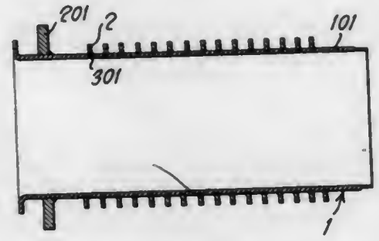
longitudinally slitting each of said bulbous edges with a respective cutting blade to slit the deformed tube into two portions.

5,575,066

METHOD OF MANUFACTURING FREEZING CYLINDERS FOR ICE CREAM MAKING MACHINES

Gino Cocchi, Bologna, Italy, assignor to Carpigiani S.R.L., Italy

Filed May 27, 1992, Ser. No. 888,843
Claims priority, application Italy, Jun. 21, 1991, GE91A0088
Int. Cl.[6] B23P *15/26*
U.S. Cl. 29—890.035 **2 Claims**



1. A method of manufacturing a tubular heat exchanger for use in a refrigerating unit, comprising the steps of:

forming a helical groove having a desired shade extending from an outer wall surface and into a portion of an inner cylindrical steel sleeve to a depth less than a thickness of said inner cylindrical steel sleeve;

winding a flat strip of annealed mild steel having a shape conforming to the shape of the helical groove in screw-thread fashion in said groove to form a screw-thread shaped member, while preserving the shape of said groove;

heating an outer cylindrical steel sleeve to allow insertion of the inner cylindrical steel sleeve with the screw-thread member therein;

shrink-fitting the previously heated outer cylindrical steel sleeve onto the crests of said member to anchor said member in said groove and to form an interference fit and a fluid-tight annular space between said inner and outer cylindrical steel sleeves; and

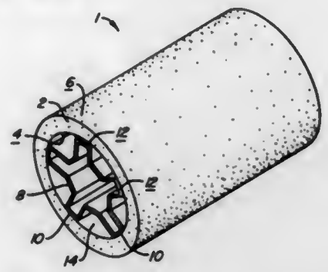
forming, at opposed ends of said outer cylindrical steel sleeve, tubular unions for connection to a refrigerating unit.

5,575,067

METHOD OF MAKING A CONTINUOUS CERAMIC FIBER REINFORCED HEAT EXCHANGER TUBE

Milton F. Custer, Discovery Bay, and Becky A. Simpson, Livermore, both of Calif., assignors to Hexcel Corporation, Pleasanton, Calif.

Filed Feb. 2, 1995, Ser. No. 382,769
Int. Cl.[6] B23P *15/26*
U.S. Cl. 29—890.036 **18 Claims**



1. A method for making a hollow, ceramic heat exchanger tube comprising the following steps:

selecting a hollow ceramic outer tube having inner and outer surfaces;

constructing a corrugated ceramic fiber inner member having a plurality of hinge joints and a plurality of outer contact surfaces;

positioning said outer contact surfaces against said inner surface of said outer tube through the flexion of said hinge joints; and

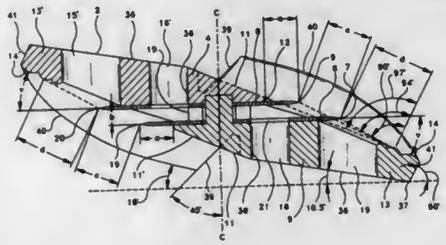
affixing said outer contact surfaces to said inner surface of said outer tube to form a heat exchanger tube having at least one fluid flow passageway between said outer tube and said inner member.

5,575,068

SAFETY RAZOR

Jette B. Pedersen, Vejen, Denmark, assignor to Warner-Lambert Company, Morris Plains, N.J.

PCT No. PCT/DK93/00137, § 371 Date Jan. 3, 1995, § 102(e) Date Jan. 3, 1995, PCT Pub. No. WO93/22112, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 23, 1993, Ser. No. 313,140
Claims priority, application Denmark, Apr. 27, 1992, 0538/92
Int. Cl.[6] B26B *21/54*
U.S. Cl. 30—47 **4 Claims**



1. A safety razor comprising:

a handle (1);

a cassette holder (2) having a bottom piece (46) and a top piece (47), said cassette holder (2) attached to said handle (1);

a blade cassette (3) removably mounted in said cassette holder (2);

said blade cassette (3) comprising a cap section (4), a base section (5), a front blade (6) having a front cutting edge (7), a rear blade (8) having a rear cutting edge (9), and said front and rear cutting edges (7, 9) providing a cassette geometry;

said cap section (4) having a contact face (11) positioned in a level lower than the plane passing through the cutting edges (7, 9), and a front edge (12) positioned rearward of said rear cutting edge (9);

said base section (5) protruding forwardly of said front cutting edge (7), and having a longitudinal bearer (13) on the front side thereof;

said bearer (13) having a wavy contact face (14) provided thereon in a level lower than said plane;

said base section (5) having a first row of cut-outs (15) provided rearward of said bearer (13), and a second row of cut-outs (16) provided below said front blade (6);

said blades (6, 8) being mounted at a mutual blade distance (b) by a distance piece (10), said two cutting edges (7, 9) spaced apart at a cutting edge distance (c), a contact-face/cutting-edge distance (d) between said wavy contact face (14) and said front cutting edge (7), and a cutting edge/contact-face angle (v) formed between said front cutting edge (7) and a first wave of said wavy contact face (14);

said front blade (6) having an additional cutting edge (19) on the side opposite to said front cutting edge (7), and said rear blade (8) having an additional cutting edge (20) on the side opposite to said rear cutting edge (9);

said additional cutting edges (19, 20) having an additional cassette geometry defined by a contact face, a wavy contact face, blade/cutting-edge distances and a cutting edge/contact-face angle, and said additional cassette geometry being identical to the cassette geometry of said front and rear cutting edges (7, 9);

said front and rear blades (6, 8) having the same construction and each having two holes (26, 27), said rear blade (8) being mounted in a turned position of 180 with respect to said front blade (6);

said base section (5) having, on the end opposite to said bearer (13), two dowels (24) fitting into each hole (25) in said cap section (4), said dowels (24) passing through said two holes (26, 27) of said front and rear blades (6, 8) and through said distance piece (10);

said cap section (4) and said base section (5) having the same construction, and said cap section (4) being mounted in a turned position of 180 with respect to said base section (5); and

said blade cassette (3) being provided with exterior mating surfaces and said cassette holder (2) being provided with interior control surfaces for allowing said blade cassette (3) to be held in a first locked position in said cassette holder (2), and in a second turned position of 180 around a center axis (0) with respect to said first position.

5,575,069

PIVOTABLE HAIR CUTTING DEVICE FOR CUTTING OVER NON-LINEAR SURFACES

Katherine R. Roberto Kneeland, 113 Fairmount Ave., Saugus, Mass. 01906

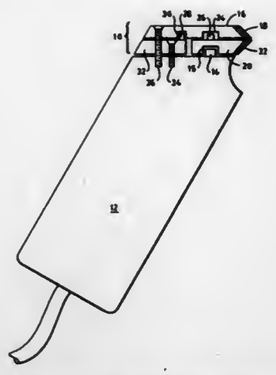
Filed Jun. 28, 1994, Ser. No. 276,160
Int. Cl.[6] B26B *19/02*
U.S. Cl. 30—199 **12 Claims**

7. A power-driven hair cutter comprising

an elongate housing having a longitudinal axis and containing motor means for generating a drive force communicated through a drive peg;

a cutting head removably and replacably attachable to a front end of said elongate housing such that the cutting head is free to pivot relative to the elongate housing while cutting, said cutting head comprising

a stationary blade having a concave array of teeth;



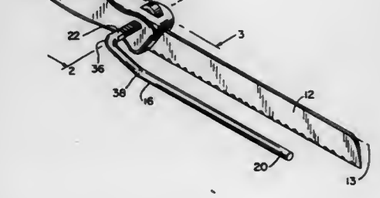
a reciprocating blade having a concave array of teeth and in mechanical communication with said drive peg to reciprocate in shearing engagement with said stationary blade, said blades being cooperative with one another to define a main cutting edge arranged along the front end of the housing.

5,575,070

KNIFE WITH ADJUSTABLE GUIDE

Jerald L. Anderson, Wausau, Wis., assignor to Fiskars Inc., Madison, Wis.

Filed Nov. 9, 1995, Ser. No. 556,443
Int. Cl.[6] B26B *3/03*
U.S. Cl. 30—283 **20 Claims**



1. A knife with adjustable blade guide comprising:

a handle;

an elongated blade extending from one end of the handle;

a guide adjustable with respect to the blade, the adjustable guide having a portion spaced apart from the blade; and

a knob substantially received in, but protruding from, a cavity formed in an upper region of the handle, the knob cooperating with the guide for adjustment of the space between the guide and the blade, the knob being configured as a wheel having a pair of oppositely facing and spaced apart shoulders, and the cavity comprising a pair of spaced apart recessed surfaces formed substantially parallel to the blade, each of the surfaces guiding a respective one of the shoulders when the knob is received in the cavity.

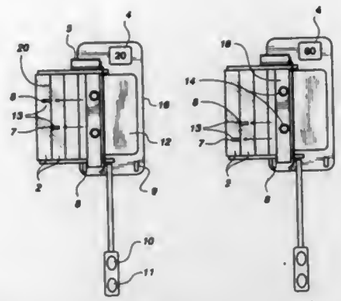
5,575,071
TOOLESS QUICKCHANGE BLADE CLAMP FOR RECIPROCATING SAWS
Alan Phillips, and Matthew G. Popik, both of Jackson, Tenn., assignors to Porter-Cable Corporation, Jackson, Tenn.
Continuation-in-part of Ser. No. 183,717, Jan. 19, 1994, abandoned. This application May 31, 1995, Ser. No. 456,022
Int. Cl.[6] B27B *19/09*
U.S. Cl. 30—392 **9 Claims**



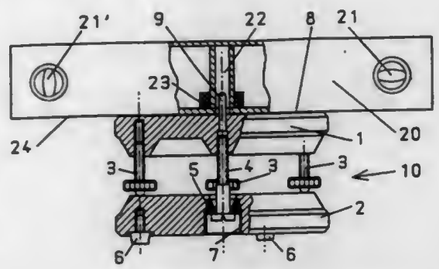
1. In a reciprocating power saw having a motor for driving a saw blade having a shank portion with an aperture formed therein, the improvement comprising:
a blade carrier driven by said motor and having a free end, said free end having a slot formed therein along a central longitudinal axis thereof in which said shank portion of said saw blade is received, said free end further having an aperture in its sidewall providing communication between an outer surface of said free end and said slot;
a clamp member having tubular body and a hollow interior in which said free end of said blade carrier is received, said clamp member having a first and a second eccentric grooves formed in its inner surface, said clamp member further having an inside diameter corresponding generally to the width of said shank portion of said saw blade;
means for attaching said clamp member to said free end of said blade carrier for rotation about said free end between at least first and second positions;
means captured in said aperture in said free end of said blade carrier and in engagement with said first eccentric groove for cooperating with said aperture in said shank portion to secure said blade to said blade carrier when said clamp member is in said first position and release said blade when said clamp member is in said second position; and
means attached to said free end of said blade carrier and received within said second eccentric groove to retain said clamp member on said free end and limit rotation of said clamp member between said first and second positions.

5,575,072
ELECTRIC ARCHERY BOW SIGHT/RANGE FINDER
Gary Eldridge, 1617 Sierraville Ave., San Jose, Calif. 95132
Filed Nov. 8, 1994, Ser. No. 335,989
Int. Cl.[6] F41G *1/467*
U.S. Cl. 33—265 **14 Claims**

1. Apparatus for a bow which comprises:
a user input device; a display; and a controller, which controller comprises a programmer and a runner; wherein:
the programmer comprises a program means, responsive to user input program commands received from the user input device, for: (a) selecting a distance and a display position for one of one or more markers and (b) storing information from which a representation of the distance and the display position can be retrieved; and
the runner comprises a run means, responsive to user input run commands received from the user input device, for: (a) selectably retrieving a representation of the distance and the display position for one of the one or more markers and (b) transmitting the representation of the distance and the display position to the display for display of the distance and the marker at the display position.

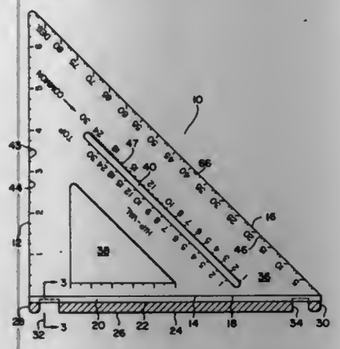


5,575,073
APPARATUS FOR SETTING A HORIZONTAL PLANE BY MEANS OF A LEVEL
Peter von Wedemayer, Annweiler am Trifels, Germany, assignor to Stabila Messgerate Gustav Ullrich GmbH & Co. KG, Germany
Filed Feb. 1, 1995, Ser. No. 382,137
Claims priority, application Germany, Feb. 3, 1994, 9401752 U
Int. Cl.[6] G01C *5/00;9/10;15/10*
U.S. Cl. 33—365 **19 Claims**



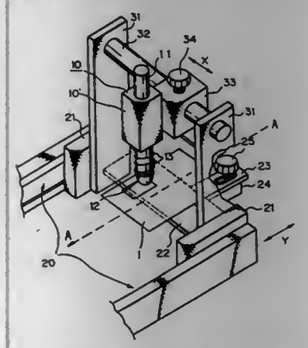
1. An apparatus for setting a horizontal plane, comprising
a leveling apparatus which indicates when it is level, the leveling apparatus having a housing and the housing having a measuring base;
a leveling plate for receiving the measuring base of the housing of the leveling apparatus; the leveling plate including an upper plate having a planar surface on which the measuring base of the housing is movably disposed, the planar surface being substantially precisely planar so that the measuring base of the leveling apparatus being in direct contact therewith, thereby to provide exacting measurements;
tilt adjustment means for adjusting the tilt orientation of the upper plate of the leveling plate and for thereby adjusting the tilt orientation of the measuring base of the housing on the upper plate to a selected level setting;
cooperating pivot means at the upper plate and at the housing for enabling the housing to be pivoted to various orientations around the upper plate by pivoting around the pivot means;
respective magnet means at the upper plate and in the housing generally at the measuring base for attracting the housing and its measuring base to rest on the planar surface of the upper plate in any selected pivot orientation of the housing around the planar surface of the upper plate.

5,575,074
SPEED SQUARE
Craig Cottongim, 1058A Heritage Hill Dr., Naperville, Ill. 60563; Ronald J. Scheidelman, 4914 Columbia Ave., Lisle, Ill. 60532-2202, and Darrell A. Martin, P.O. Box 1118, Wheaton, Ill. 60189-1118
Filed Feb. 28, 1995, Ser. No. 395,757
Int. Cl.[6] B25F *1/00;* **B25B** *13/48;* **B43L** *13/00*
U.S. Cl. 33—474 **5 Claims**



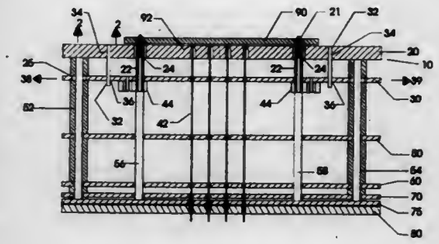
1. An aluminum speed square comprising a triangular flat plate having inscribed along at least one of its sides units of measure; a rectangular T-bar of greater thickness than the triangular flat plate and having top and bottom faces and ends, with the top face being fitted to and extending substantially along the length of an outer edge of the triangular flat plate and with the bottom face containing a toughened aluminum alloy or steel reinforcing plate having a dimension corresponding approximately to the dimension of the bottom of the T-bar; and at least one nut engaging shaped opening extending part way into the bottom of the reinforcing plate and the T-bar near an end which nut engaging shaped opening is sized to receive nuts most commonly used to secure portable circular saw blades.

5,575,075
THICKNESS DETECTING DEVICE
Yoshiyuki Sasaki, Tokyo, Japan, assignor to Juki Corporation, Tokyo, Japan
Filed Nov. 28, 1994, Ser. No. 345,990
Claims priority, application Japan, Nov. 30, 1993, 5-299928
Int. Cl.[6] G01B *7/06;5/06*
U.S. Cl. 33—501.02 **7 Claims**



1. A thickness detecting device for an envelope sealed by a mail inserting and sealing machine and transported along a predetermined path form the inserting and sealing machine, comprising:
a thickness detecting rod (11) supported slideably in vertical directions on a guide portion (10') for detecting the thickness of the envelope transported along the predetermined path from the mail inserting and sealing machine;
means for adjusting the position of said thickness detecting rod (11) relative to a plane defining a portion of the predetermined path along which the envelope is transported to detect the thickness of the envelope at a desired location on the envelope,
said means for adjusting the position including a main body (33) supported slideably in X directions perpendicular to the path on a slide rod (32) having opposite ends and supporting said guide portion (10'), and a structure (31, 31, 22, 21, 21) supporting said slide rod (32) slideably in Y directions perpendicular to the X directions and relative to the path,
said structure (31, 31, 22, 21, 21) supporting said slide rod (32) including a pair of supporting plates (31, 31) supporting said opposite ends of said slide rod (32), a bottom plate (22) secured to and extending between said supporting plates (31, 31) and defining said plane, and supporting blocks (21, 21) supporting said supporting plates (31, 31) respectively,
said supporting blocks (21, 21) being integrally connected to each other and sliceable in said Y-directions which are perpendicular to said X directions; and
an electric motor (18) for vertically driving said detecting rod (11).

5,575,076
CIRCUIT BOARD TESTING FIXTURE WITH REGISTRATION PLATE
Joseph M. Creeden, Alto Loma, Calif., assignor to Methode Electronics, Inc., Chicago, Ill.
Continuation of Ser. No. 274,216, Jul. 13, 1994, abandoned. This application Nov. 16, 1995, Ser. No. 558,348
Int. Cl.[6] G01D *21/00*
U.S. Cl. 33—620 **5 Claims**



1. A test fixture having multiple plates having test pin apertures for holding an array of test pins therein and separate from said test pin apertures are registration holes providing for realignment of an intermediate plate according to a misregistration measurement designated by a registration pattern, the test fixture comprising:
a board plate having a first pattern of registration holes therein;
an intermediate plate having a second pattern of registration holes therein corresponding to said registration holes of said first pattern;
a registration pin received by said first and second pattern of registration holes; and
each individual second pattern registration hole is offset by a predetermined distance and angle from each corresponding individual first pattern registration bole according to said misregistration measurement, wherein insertion of said registration pin through said first pattern registration hole and said corresponding second pattern registration hole causes said intermediate plate to be realigned according to said misregistration measurement.

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5,575,077

EXTENDABLE TAPE MEASURE

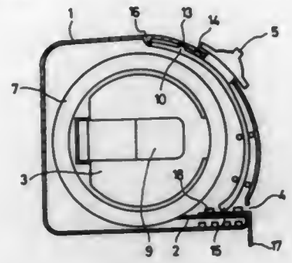
Jung Tae Oum, 505-1201 Hyundai Apt. #554 Kwangzang-Dong Sungdong-ku, Seoul, Rep. of Korea

Filed Aug. 8, 1994, Ser. No. 287,080

Claims priority, application Rep. of Korea, Aug. 9, 1993, 93-15220 U

Int. Cl.[6] G01B 3/10

U.S. Cl. 33—767 2 Claims



1. A tape measure comprising:
(a) a case having a slit;
(b) a rotatable spool mounted in the case, the spool having two flanges, each flange having an inner rim;
(c) a handle attached to the spool for rotating the spool;
(d) a scale tape wound on the spool, the tape having an elasticity for extending the tape through the slit of the case, the tape being retractable through the slit of the case by turning the handle, the tape being positioned on the spool by the inner rim of each flange; and
(e) a stopper mounted on the case, the stopper being moveable to a forward position for locking the scale tape, the stopper being moveable to a backward position for releasing the scale tape,
wherein the case has an inner surface with a protrusion for blocking backward movement of the stopper when the stopper is being moved to the backward position for releasing the scale tape, the stopper having a rear end with an elastic hoop and an inner protrusion in the hoop.

5,575,078

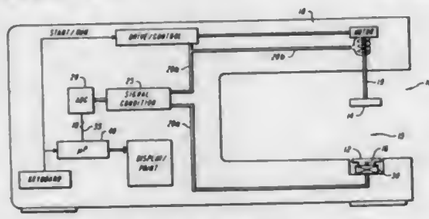
ZERO LOAD THICKNESS CALIPER

James E. Moulton, III, Porter Corners, N.Y., assignor to Hollingsworth & Vose Company, East Walpole, Mass.

Filed Mar. 1, 1995, Ser. No. 396,972

Int. Cl.[6] G01B 7/06;5/06

U.S. Cl. 33—815 19 Claims



1. A measurement apparatus comprising
a caliper having a first contact face for supporting an article to be measured, and a movable contact face for moving into contact with the article supported on said first face
position means for developing a sequence of position signals indicative of position of said movable contact face as said movable contact face moves opposed to said first contact face, so that when it contacts the article, the position means indicates thickness of the article
load means for developing a sequence of load signals indicative of load exerted on one of said contact faces, and
processing means operative on said sequences of load signals and position signals for determining zero load thickness of the article wherein said processing means detects an initial load signal level and determines when the load signal differs from said initial load by an amount greater than a noise band.

5,575,079

SUBSTRATE DRYING APPARATUS AND SUBSTRATE DRYING METHOD

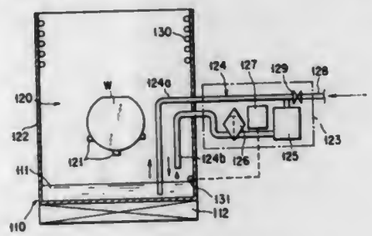
Kenji Yokomizo, Onojo; Hiroshi Tanaka, Kurume; Shori Mokuo, Saga, and Teruomi Minami, Kurume, all of Japan, assignors to Tokyo Electron Limited, Tokyo, and Tokyo Electron Kyushu Limited, Tosu, both of Japan

Filed Oct. 28, 1994, Ser. No. 330,793

Claims priority, application Japan, Oct. 29, 1993, 5-294333; Jan. 17, 1994, 6-016979; Feb. 15, 1994, 6-040396; Aug. 23, 1994, 6-221161

Int. Cl.[6] F26B 21/06

U.S. Cl. 34—78 11 Claims



1. A substrate drying apparatus comprising:
a process bath having an object containing region for containing an object to be treated, a treatment liquid containing region for containing a volatile treatment liquid, and heating means for evaporating the treatment liquid;
a receiving container, provided below said object containing region, for receiving water removed from the object with use of said evaporated treatment liquid;
an exhaust pipe, attached to said container, for exhausting the water from said container to the outside of said process bath;
cooling means, provided above said object containing region of said process bath, for condensing said evaporated treatment liquid; and
treatment liquid circulating means, provided in said process bath, for circulating said treatment liquid,
wherein said treatment liquid circulating means includes treatment liquid purifying means.

5,575,080

DEVICE FOR THE CONTINUOUS-FLOW TREATMENT OF TEXTILE MATERIAL OR LIKE FIBER CONTAING MATERIAL

Gerold Fleissner, Zug, Switzerland, assignor to Fleissner GmbH & Co., KG, Egelsbach, Germany

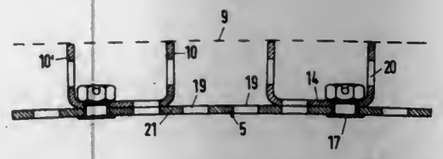
Continuation-in-part of Ser. No. 493,321, Jun. 21, 1995. This application Nov. 2, 1995, Ser. No. 552,124

Claims priority, application Germany, Jun. 28, 1994, 44 22 508.3

Int. Cl.[6] D06B 5/08

U.S. Cl. 34—122 16 Claims

1. A device for the continuous-flow treatment of textile material, fleece or paper with a gaseous or liquid treatment medium that is circulated in the device having a permeable sheet-metal drum as transport member, said drum being under suction and having bases on its ends, and an outer peripheral surface of the drum being



surrounded with a screen mesh covering and between the screen mesh covering and the drum, as a support means to increase the distance between the drum and the screen mesh covering, there are disposed parallel over the whole length of the drum from base to base straight sheet-metal strips, the outer peripheral surface of the sheet-metal drum contacting directly against radially inwardly-situated edges of the metal strips, and the metal strips being closely connected to the outer peripheral surface of the sheet-metal drum; the radially inwardly-situated edges of the sheet-metal strips being provided with a flange that is tightly connected to the outer peripheral surface of the drum and said drum having a plurality of perforations arranged between adjacent strips.

5,575,081

DEVICE FOR TRANSPORTING MAGAZINES FOR MOLDING WAFER-SHAPED OBJECTS

Joachim Ludwig, Jena, Germany, assignor to Jenoptik GmbH, Jena, Germany

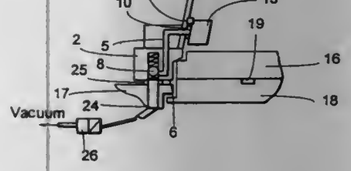
PCT No. PCT/EP94/02446, § 371 Date Apr. 3, 1995, § 102(e) Date Apr. 3, 1995, PCT Pub. No. WO95/05002, PCT Pub. Date Feb. 16, 1995

PCT Filed Jul. 25, 1994, Ser. No. 411,721

Claims priority, application Germany, Aug. 5, 1993, 43 26 308.9

Int. Cl.[6] F26B 19/00

U.S. Cl. 34—218 13 Claims



1. A device for transporting magazines for holding wafer-shaped objects, comprising:
a magazine container having a releasable bottom wall and a side wall contiguous with said bottom wall, said side wall having a depositing surface engageable with a holding plate of an enclosure for a clean room, where the holding plate has a lowerable plate part, for supporting said bottom wall and a magazine in said container;
a gas feed duct disposed in said side wall and proceeding from closable ducts in said side wall;
means for distributing gas, said gas feed duct opening into said means for distributing; and
a gas discharge duct communicating with a gas outlet adjacent to said means for distributing opposite the magazine.

5,575,082

RAW SEWAGE DISPOSAL APPARATUS

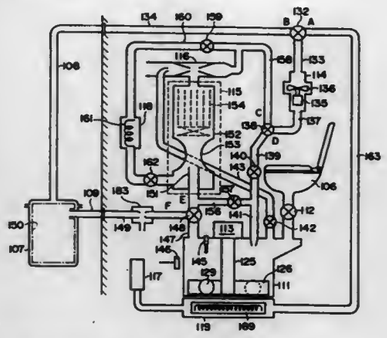
Mitsuhiro Kishi, Ashikaga, Japan, assignor to Nikken Corporation, Tokyo, Japan

Filed Apr. 20, 1994, Ser. No. 230,537

Claims priority, application Japan, Apr. 26, 1993, 5-121968; Apr. 28, 1993, 5-125360

Int. Cl.[6] F26B 3/34

U.S. Cl. 34—247 7 Claims



1. A raw sewage disposal apparatus comprising:
a heat-resistant airtight container for containing raw sewage therein;
induction heating means disposed under and close to said container, said heating means having therein a high-frequency coil for generating a high-frequency electromagnetic wave so that said container is heated by induction heating from the electromagnetic wave generated by said induction heating means, said induction heating means comprising a box which is hollow at the inside thereof and said high-frequency coil is housed in and fixed to said box, said box having a space through which air flows;
a high-frequency generating circuit for supplying high-frequency power to said induction heating means;
stirring means disposed in said container, said stirring means having a plurality of stirring blades for stirring the raw sewage; and
a multitude of heat-holding balls contained in said container.

5,575,083

VACUUM DRYER

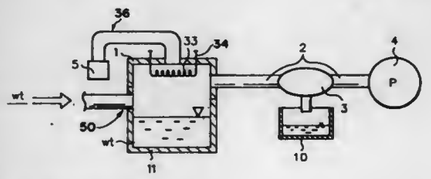
In S. Lee, and Hyeong K. Lee, both of Kyungki, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 5, 1994, Ser. No. 266,887

Claims priority, application Rep. of Korea, Jul. 5, 1993, 12535/1993; Jul. 13, 1993, 12843/1993; Jul. 23, 1993, 14040/1993

Int. Cl.[6] F26B 3/34

U.S. Cl. 34—255 9 Claims



1. A vacuum dryer comprising:
an upper chamber;
a lower chamber, detachably mounted in communication with the upper chamber for accommodating objects to be dried;

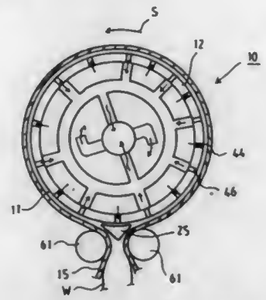
a vacuum pump, connected to the upper chamber by a conduit, for drawing in air to create a vacuum within the combination of said upper and lower chambers;
a direct heating means positioned on the upper chamber for directly heating objects to be dried within the combination of the upper and lower chambers;
a dielectric heating means for heating the objects to be dried in areas of the combination of the upper and lower chambers remotely located from the direct heating means; and,
a moisture removing means, provided along the conduit between the upper chamber and the vacuum pump, for removing moisture from the air drawn by the vacuum pump originating from the combination of the upper and lower chambers.

5,575,084

METHOD AND DEVICE FOR DRYING OR COOLING A PAPER WEB

Vesa Vuorinen, Turku, Finland, assignor to Valmet Corporation, Helsinki, Finland

Filed Jun. 7, 1995, Ser. No. 476,644
Claims priority, application Finland, Jun. 23, 1994, 943040
Int. Cl.[6] F26B *13/18;13/20*
U.S. Cl. 34—460 **9 Claims**



1. A method for drying and/or cooling a paper web by means of a gas, comprising the steps of:
carrying the web on support of a wire over a circumference of a revolving roll on a face of the wire facing the roll,
blowing a gas through a first set of openings in a mantle of the roll into a space between an outer face of the roll and the web to form a support zone between the outer face of the roll and the web whereupon the gas becomes humidified as the web is dried,
directing the humidified gas from the support zone into an interior of the roll through a second set of openings in the roll mantle of the roll, and
exhausting the humidified gas from the interior of the roll.

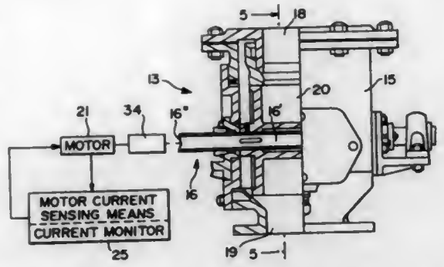
5,575,085

APPARATUS AND METHOD FOR CONTROLLING THE ROTARY AIRLOCKS IN A COOL PROCESSING SYSTEM BY REVERSING THE MOTOR CURRENT ROTATING THE AIR LOCK

Clifton E. Groombridge, Hardin, Mont., assignor to Western Syncoal Company, Billings, Mont.

Filed Jul. 17, 1995, Ser. No. 504,055
Int. Cl.[6] F26B *3/08*
U.S. Cl. 34—368 **31 Claims**

22. In a coal processing system, wherein coal particles are passed into and out of a processing vessel through a rotary airlock, the rotary airlock including a plurality of circumferentially-spaced vanes rotating within a chamber and mounted on a shaft driven by reversible electric motor externally of the chamber, the motor having a rated operating current, and wherein the rotary airlock is



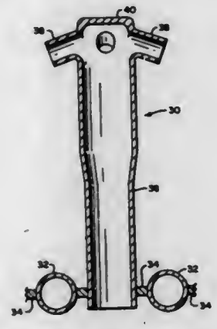
subject to jamming by lumps of solid rock or other hard materials found in the coal, thereby requiring a complete shut-down of the system to manually unclog the rotary airlock, a method for unjamming the rotary airlock, comprising the steps of:
continuous monitoring of an instantaneous motor current, comparing the instantaneous motor current with the rated operating current of the motor to obtain a differential signal, and
reversing the motor when the differential signal has exceeded a predetermined threshold value, thereby quickly sensing when jamming may occur in the rotary airlock and clearing the rotary airlock.

5,575,086

FLUIDIZED BED WITH IMPROVED NOZZLE CONSTRUCTION

Ernest L. Hartman, Bloomfield, and Michael C. Tanca, Tariffville, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 16, 1994, Ser. No. 307,139
Int. Cl.[6] F26B *17/00*
U.S. Cl. 34—585 **7 Claims**



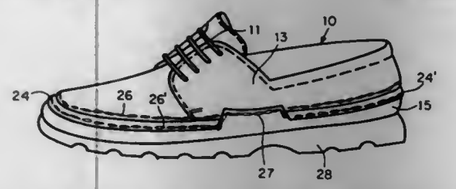
1. A fluidized-bed system which comprises:
a housing;
a floor comprising a plurality of generally parallel tubes joined by fins intermediate adjacent tubes; and
a plurality of nozzle assemblies extending generally vertically in mutually parallel relationship, each of said nozzle assemblies including a generally cylindrical body having a centerline disposed in generally perpendicular relationship to said floor, each of said bodies including a plurality of heads extending generally radially therefrom at an axial extremity thereof remote from said floor, each of said nozzle assemblies being mounted in a manner that prevents rotation thereof about a geometric axis extending the length of said body, each of said heads being uniformly spaced around the circumferential extent of each of said bodies, each of said heads being generally cylindrical and has a centerline, each of said centerlines of said heads being disposed at an oblique angle with respect to a horizontal plane.

5,575,087

SHOE, ESPECIALLY A MOCCASIN

Hans Ehrhart, Wasgaustrasse 29, D-76848, Germany, and Peter Ehrhart, both of Schwanheim, Germany, assignors to Hans Ehrhart, Schwanheim, Germany

PCT No. PCT/DE93/00482, § 371 Date Mar. 24, 1994, § 102(e) Date Mar. 24, 1994
PCT Filed Jun. 4, 1993, Ser. No. 190,147
Claims priority, application Germany, Jun. 6, 1992, 42 18 805.9; Dec. 24, 1992, 42 44 147.1
Int. Cl.[6] A43B *3/14*
U.S. Cl. 36—11 **21 Claims**



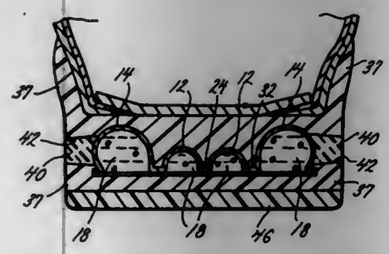
1. A moccasin shoe comprising: a shaft enclosing a front portion of a wearer's foot; a sole attached to said shaft; said shaft comprising an upper part, a lower part, and at least one insert in form of a strip; said strip having at least sections located between said upper part and said lower part and sewn to said upper part and said lower part; said insert having a plurality of perforations along at least one longitudinal edge and comprising a strip-shaped blank having at least some straight sections, said strip having a length and a width so that the length exceeds the width; said insert and said upper part and said lower part of said shaft being tightly fastened together by at least one manually-laced seam; a lace attaching said strip to said upper part and said lower part of said shaft and extends in order through holes in a row along one edge of said strip and along an overlapping edge of one said part of said shaft and then alternating around another edge of said strip and through holes in a row extending along an adjacent edge of the other part of the shaft and intermediately through holes in a row extending along said another edge of the strip towards said adjacent edge of the strip.

5,575,088

SHOE SOLE WITH REACTIVE ENERGY FLUID FILLED TOROID APPARATUS

Bernie Allen, Wayland, Mass.; Christopher J. Edington, Derry, N.H.; Rui Parracho, Peabody, Mass.; Douglas E. Clark, Amesbury, Mass., and Eric S. Swartz, Malden, Mass., assignors to Converse Inc., North Reading, Mass.

Continuation of Ser. No. 767,132, Sep. 27, 1991, abandoned.
This application May 1, 1995, Ser. No. 431,627
Int. Cl.[6] A43B *13/18;19/00;7/14*
U.S. Cl. 36—28 **15 Claims**



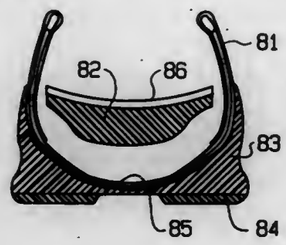
1. A cushioning, stabilizing and supporting apparatus for a foot, the apparatus comprising:
a shoe sole;
a fluid bladder positioned on a surface of the shoe sole, the bladder having a hollow inner chamber containing a fluid, the inner chamber having a flexible top surface that extends to a first vertical height above the surface of the shoe sole, the bladder having a hollow outer chamber containing a fluid, the outer chamber extends around the inner chamber on the surface of the shoe sole, the outer chamber having a flexible top surface that extends to a second vertical height above the surface of the shoe sole and above the first vertical height of the inner chamber top surface, the top surfaces of the outer chamber and the inner chamber together forming a concave recessed area above the center of the bladder that provides stability and support to the foot by cradling the foot in the recessed area;
a plurality of conduits containing fluid extending between the inner chamber and the outer chamber and connecting the inner and outer chambers in fluid communication;
the top surface of the inner chamber and the top surface of the outer chamber being separated by a plurality of arcuate webs that do not contain fluid and are recessed below and positioned between the inner and outer chambers and between the plurality of conduits.

5,575,089

COMPOSITE SHOE CONSTRUCTION

Erik O. Giese, and Roger J. Brown, both of Aspen, Colo., assignors to Comfort Products, Inc., Aspen, Colo.

Continuation-in-part of Ser. No. 55,935, Apr. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 649,525, Feb. 1, 1991, abandoned, which is a continuation of Ser. No. 871,017, Jun. 4, 1986, Pat. No. 5,025,573. This application Oct. 31, 1994, Ser. No. 335,562
The portion of the term of this patent subsequent to Jun. 25, 2008, has been disclaimed.
Int. Cl.[6] A43B *13/14;13/12*
U.S. Cl. 36—30 R **29 Claims**



1. A composite shoe having a toe area, arch area, and a heel area comprising:
a lower shaped support layer having an upper surface, a lower surface, a greater relative thickness around the periphery of the heel area and in the arch area, and the upper surface having an irregular contoured upper stabilizing surface for the wearer's foot;
a shoe upper attached to the upper surface of the lower layer;
an upper cushioning layer of a material which is softer than that of said lower layer and which is positioned above and in face-to-face relation with the lower layer, said upper cushioning layer having a varying thickness, a pre-shaped three-dimensional contour which is complementary to the bottom surface of the wearer's foot, and said upper cushioning layer having an increased height around the periphery of the heel area and in the arch area, thus forming a cupped heel and a raised arch support with the three dimensional contour in the arch area having a side-to-side height profile that varies along an arcuate path from a relatively lower point on the lateral portion of the layer to a relatively higher point on the medial portion of the layer to form a raised arch support, wherein the upper cushioning layer has a smaller thickness around the periphery of its heel and arch area, thereby providing an

irregular contoured upper stabilizing surface for cushioning the wearer's foot; and

an outsole secured to at least a portion of the lower surface of the lower support layer and comprising at least one strip of wear-resistant material.

5,575,090

INNER BOOT TONGUE OF A SKI BOOT

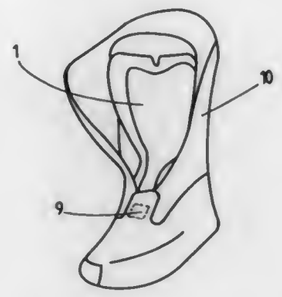
Alessandro Condini, Villazzano-Trento, Italy, assignor to Lange International S.A., Fribourg, Switzerland

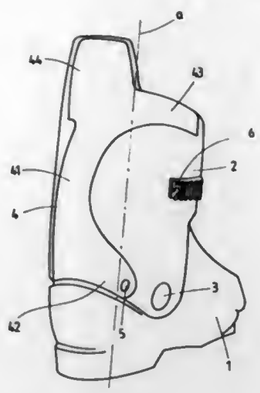
Continuation of Ser. No. 280,788, Jul. 26, 1994, abandoned. This application Feb. 15, 1996, Ser. No. 601,818

Claims priority, application Switzerland, Sep. 7, 1993, 2 657/93

Int. Cl.[6] A43B *23/26*

U.S. Cl. 36—54 **7 Claims**





1. A ski boot containing an inner boot, said inner boot having a sole and an upper part and wherein said upper part has a padded part comprising;

an outer part which is made of impermeable semi-rigid plastic;

an alveolate structure on the inside of the outer part having alveoles hermetically closed on the outside by said outer part;

a foam-padding lying directly on the open side of the alveoles, so that the alveoles are taken in sandwich between said outer part and the foam-padding;

and an inner liner lying on the foam-padding, in such a manner that during dynamic compression of the padded part the foam penetrates further into the alveoles, compressing thereby the air trapped in said alveoles, so that instantaneous overpressures are damped.

5,575,091

SKI BOOT MADE OF PLASTIC MATERIAL

Mario Mattiuzzo, Treviso, Italy, assignor to Lange International S.A., Fribourg, Switzerland

Filed Apr. 6, 1995, Ser. No. 417,927

Claims priority, application Switzerland, Apr. 14, 1994, 1124/94; France, Jun. 14, 1994, 94 07500

Int. Cl.[6] A43B *5/04*

U.S. Cl. 36—118.2 **13 Claims**

1. Ski boot having a front end, an inner side and outer side made of plastic material comprising a shell (1) surrounding a foot and a heel of a skier, a shaft (2) in the form of a collar articulated relative to the shell at articulation points (3), said collar having a front and back, means for tightening (6) the collar around the leg and a rigid reinforcement (4; 4') intended to ensure a good transfer of the movement of the leg to the ski, characterized in that the reinforcement (4; 4'; 70; 70') is fixed to the collar (2) and is asymmetrical relative to the at least approximately vertical plane containing an axis (a) of the collar which extends from the heel to the front end of the boot, the reinforcement extends along the back of the collar and, in its upper part (43; 73) the reinforcement extends on the inner side of the boot.

5,575,092

DRAGLINE BUCKET

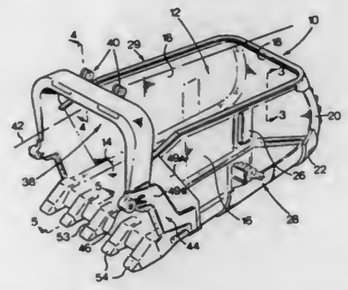
Andries J. Smit, Hendrina, South Africa, assignor to Van Reenen Steel (Proprietary) Limited, Gauteng, South Africa

Filed Jun. 20, 1995, Ser. No. 492,569

Claims priority, application South Africa, Jun. 21, 1994, 94/4425

Int. Cl.[6] E02F *3/46*

U.S. Cl. 37—398 **12 Claims**



1. A dragline bucket comprising:

a basket having an open front end and an open top defined by bottom, side and rear walls;

cheek plate structures carried by the side walls at a front end of the basket, the cheek plate structures being fabricated from steel plates in a laminated construction and carrying drag attachment points;

a lip plate assembly carried by the bottom wall at the front end of the basket, the lip plate assembly being fabricated from steel plates connected to each other and carrying attachment points for excavating teeth;

an arch spanning over the front end of the basket and carrying dump rope attachment means, the arch being fabricated from steel plates connected to each other to form a hollow rectangular cross-section; and

the cheek plate structures, the lip plate assembly and the arch being connected to each other to form a ring of continuous, fabricated steel plate construction at the front end of the basket.

5,575,093

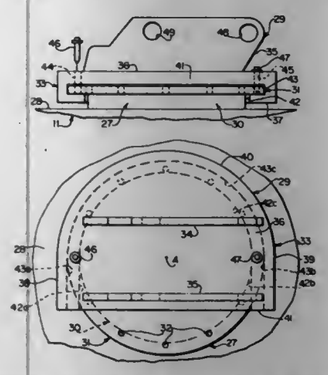
COUPLER ASSEMBLY

Samuel S. Pratt, Bedford; Dan Shaffer, Duncansville; Tim A. Davis, Berlin; Ashley Heiple, Alum Bank, all of Pa., and Peter N. Lalos, Gaithersburg, Md., assignors to Rockland, Inc., Bedford, Pa.

Filed Apr. 20, 1995, Ser. No. 425,628

Int. Cl.[6] E02F *3/96*

U.S. Cl. 37—468 **18 Claims**



1. An assembly for coupling an implement to an operating arm of a machine comprising:

a first component fixedly mountable on said implement;

a second component connectable to said operating arm;

one of said components having a slot in a side and bottom thereof, disposed substantially radially relative to a given axis, said slot including diametrically opposed fixed sides, and the other of said components having a section receivable within said slot to position said components in coupling relation, said components having engageable surfaces permitting angular displacement and precluding axial displacement relative to said given axis when said other component is disposed in said slot of said one component; and

retaining means disposable in abutting relation relative to said components when disposed in said coupled relation for precluding angular displacement between said components relative to said axis.

5,575,094

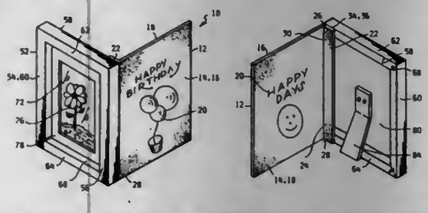
GREETING CARD AND PICTURE FRAME COMBINATION

Michael J. Leake, 6740 Rodeo Rd., Palos Verdes, Calif. 90274, and Albert O. Cota, 17475 Flanders St., Granda Hills, Calif. 91344

Filed Oct. 19, 1993, Ser. No. 139,508

Int. Cl.[6] G09F *1/00*

U.S. Cl. 40—124.1 **1 Claim**



1. A greeting card and picture frame combination comprising:

A. a greeting card having:

(1) a front cover having a front surface and a back surface,

(2) a foldable back section having a front surface and a back surface,

(3) a living hinge that foldably retains the front cover to the back section,

B. a picture frame assembly comprising:

a) a picture frame further comprising:

(1) a front side,

(2) an inner longitudinal member having a back surface,

(3) an outer longitudinal member,

(4) an upper member and

(5) a lower member, where the upper and lower members are attached by an attachment means to the inner and outer longitudinal members respectively and where the inner, outer, upper and lower members define said picture frame having a central opening with an inner perimeter,

(6) a perimeter lip cut into the inner perimeter of said picture frame,

b) a transparent member inserted into said picture frame and held within said frame by means of the perimeter lip,

c) a picture facing toward the front side of said picture frame and inserted into said frame over the transparent member where the picture is viewed from the front side of said frame,

d) a frame backing inserted into said frame over the picture,

e) means for securing the frame backing to said picture frame, and

C. means for attaching the back surface of the foldable back section of said greeting card to the back surface of the inner longitudinal member of said frame, where when so attached, said front cover can be moved outward away from the back surface of said frame assembly to allow said greeting card and picture frame combination to be placed on a horizontal surface to allow the front surface of the front cover and the front side of the picture frame to be viewed wherein the back section of said greeting card further consists of a longitudinal tab having a width substantially equal to the width of the inner longitudinal member of said frame, where the longitudinal tab has a back surface that is attached by an attachment means to the back surface of the inner longitudinal member of said picture frame.

5,575,095

CHAIR

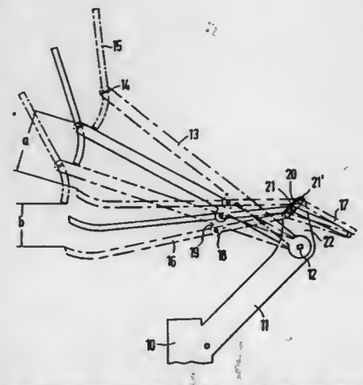
Heinrich Korn, Maintal, Germany, assignor to Roeder GmbH, and Hartmut S. Engel, both of Germany

Continuation-in-part of Ser. No. 437,058, Nov. 14, 1989, abandoned. This application Dec. 27, 1993, Ser. No. 173,612

Claims priority, application Germany, Nov. 18, 1988, 38 38 999.1

Int. Cl.[6] A47C *1/032;3/00*

U.S. Cl. 297—300.4 **4 Claims**



1. A chair comprising: a seat (16) with a variable inclination; a backrest (15) having an automatically variable overproportionally

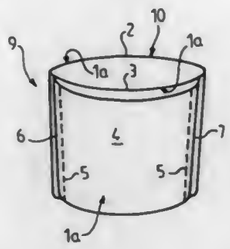
inclination dependent upon an alteration in said variable inclination of said seat (16), whereby as said variable inclination of said seat (16) increases, said backrest (15) executes an additional relative movement with respect to a back edge of said seat (16); on each of both sides of said seat (16), a pivot lever (13) disposed on a support arm (11) of a chair frame, said support arm (11) oriented towards a front of said chair; an upper end of said pivot lever (13) non-rotatably connected to said backrest (15) and supporting said backrest (15); a seat pivot shaft (21, 21') of said seat (16) mounted in a displaceable and rotatable manner in a region of a front edge of said seat (16) within an oblong slot (20) formed at an end of said support arm (11) distal from said chair frame, said pivot lever (13) pivotably connected to said seat (16); a lower end of said pivot lever (13) comprising an arm pivot shaft (12) rotatably connected to said end of said support arm (11) distal from said chair frame, said arm pivot shaft (12) connected to said support arm (11) of said chair frame and disposed lower than said seat pivot shaft (21, 21') of said seat (16); said pivot lever (13) comprising an armrest; said arm pivot shaft (12) of said lower end of said pivot lever (13) disposed substantially beneath said seat pivot shaft (21, 21') of said seat (16); and said oblong slot (20) inclined upwards toward said front edge of said seat (16).

5,575,096

INFORMATION SUPPORT SLEEVE, ITS METHOD OF MANUFACTURE, AND CONTAINERS EQUIPPED WITH SUCH A SLEEVE

André Allegre, Dardilly, France, assignor to Decomatic S.A., societe anonyme, France

Filed Feb. 18, 1994, Ser. No. 198,299
Claims priority, application France, Feb. 19, 1993, 93 01906
Int. Cl.[6] G09F *3/08*
U.S. Cl. 40—306 **6 Claims**



1. A sleeve including a sleeve body comprising a single continuous sheet of plastic forming an enclosed shape having a front side, a back side and an overlapping section extending over said front side, said enclosed shape including parallel welds extending through adjacent edges of said front and back sides and said overlapping section, said sleeve body being capable of receiving printing thereon, said overlapping section including at least one precut extending parallel to said welds for detaching a portion of said overlapping section whereby said front side is visible.

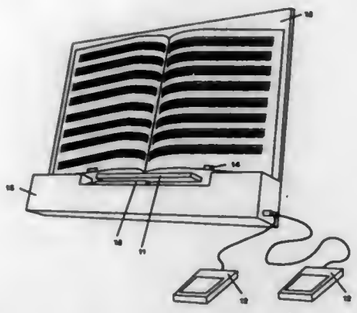
5,575,097

PAGE TURNING DEVICE

Jeffrey P. Chou, 735 Menlo Ave. #4, Menlo Park, Calif. 94025, and Ronald Ih, San Francisco, Calif., assignors to Jeffrey P. Chou, and Ronald H. Ih, both of Menlo Park, Calif.

Filed Mar. 16, 1995, Ser. No. 405,533
Int. Cl.[6] B42D *9/04*
U.S. Cl. 40—531 **20 Claims**

1. A device for turning pages comprising:
in combination, a first assembly having a first electro-motive device and first means for conveying rotational energy from



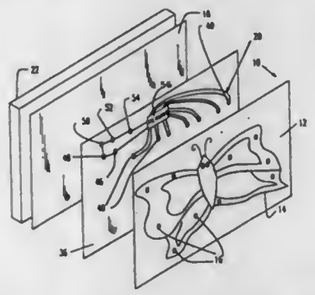
said first electro-motive device to a final drive shaft, said assembly being mounted on a frame;
an arm member mounted on one end to said final drive shaft, said arm member being rotationally moveable in a horizontal plane;
a magnetic tab mounted pivotally on opposite end of said arm member, said tab being rotationally moveable in a vertical plane;
in combination, a second assembly having a second electro-motive device and second means of converting rotational energy to linear energy from said second electro-motive device to said magnetic tab causing said magnetic tab to pivot;
an electronic circuit that controls the operation of said electro-motive devices; and
an electro-mechanical transducer connected to said electronic circuit adapted to communicate an user inputs to said electronic circuit.

5,575,098

ILLUMINATED DISPLAY APPARATUS

Jeanette C. Goettel-Schwartz, Monmouth Junction, N.J., assignor to Sunbeam Oster, Chicago, Ill.

Continuation of Ser. No. 47,461, Apr. 19, 1993, abandoned.
This application Dec. 19, 1994, Ser. No. 358,403
Int. Cl.[6] G09F *13/28*; **F21S** *1/02*
U.S. Cl. 40—550 **20 Claims**



1. An illuminated display apparatus, comprising in combination:
a) indicia being artistic and pleasing to small children applied to a generally flat flexible surface, said flat surface being provided with a plurality of apertures disposed at particular locations related to said indicia;
b) a plurality of illumination means having a front portion and a rear portion, each of said illumination means having said front portion thereof disposed in each of said apertures;
c) switching means for applying electrical power to said rear portions of said illumination means to energize them;

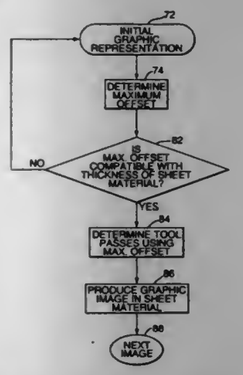
d) electrical conducting means interconnecting the rear portion of said illumination means and said switching means adapted to be connected to a source of electrical energy;
e) soft sponge-like material, said sponge-like material being adapted to receive said switching means and said electrical conducting means therein; and
f) backing means cooperating with said generally flat surface for sandwiching said rear portions of said illumination means, said switching means, said conducting means, and said sponge-like material therebetween.

5,575,099

METHOD AND APPARATUS FOR PRODUCING SIGNS WITH PRISMATIC LETTERS AND GRAPHIC IMAGES

Wolfgang M. Strobel; Barrett C. Gray, both of Tolland, Conn., and Sanjay V. Sohoni, Longmeadow, Mass., assignors to Gerber Scientific Products, Inc., Manchester, Conn.

Filed May 3, 1995, Ser. No. 434,388
Int. Cl.[6] B27B *1/00*; **G09F** *7/00*; **B23C** *1/16*
U.S. Cl. 40—584 **20 Claims**



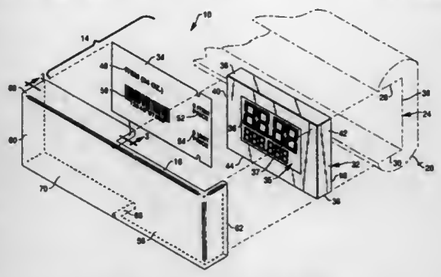
13. An apparatus for controlling an automated cutting machine for producing prismatic graphic images in sheet material having a predetermined thickness, the automated cutting machine being responsive to tool path signals and having a rotary cutting tool for removing material from the sheet material, the cutting tool having an axis of rotation, a radius extending from the axis to an outer edge of the tool, a cutting surface and a cutting angle defined by the cutting surface and a plane normal to the axis, the graphic images having a preselected, two-dimensional initial graphic representation, the apparatus comprising:
means for generating signals indicative of an initial graphic representation of the graphic images to be produced in the sheet material in accordance with a graphic images generating program, the initial graphic representation being defined by a predetermined data set;
means for determining a maximum stroke width of the graphic images in accordance with the initial graphic representation and for generating signals indicative of the maximum stroke width;
means for determining tool paths in accordance with the signals indicative of the initial graphic representation, the signal indicative of the maximum stroke width, and the signals indicative of the tool radius and cutting angle, the tool paths being oriented substantially normal to the axis of rotation, and for generating signals indicative of the tool paths; and
means for presenting the signals indicative of the tool paths to the automated cutting machine.

5,575,100

ELECTRONIC SHELF LABEL PROTECTIVE COVER

Russel H. Marvin, Riverton, Wyo., and Donald W. Carr, Birmingham, Mich., assignors to AT&T Global Information Solutions Company, Dayton, Ohio

Filed Jun. 23, 1994, Ser. No. 264,398
Int. Cl.[6] G09F *3/18*
U.S. Cl. 40—642 **8 Claims**



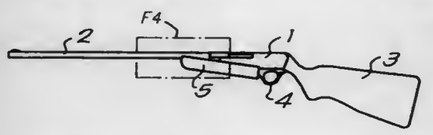
2. An electronic shelf label system comprising:
an electronic display module for displaying price information having first and second sides and a front side;
a protective cover having a size independent of the size of the front side of the electronic display module including a primary cover member having first and second ends, a resilient first side member coupled to the first end of the primary cover member for grasping the first side of the electronic display module, a second side member coupled to the second end of the primary cover member, a top side member extending from the second side member and coupled to the primary cover member, a bottom side member extending from the second side member and coupled to the primary cover member, a resilient top holder extending downwardly from the top side member and coupled to the primary cover member for grasping the second side of the electronic display module, and a resilient bottom holder extending upwardly from the bottom side member and coupled to the primary cover member for grasping the second side of the electronic display module; and
a display tag between the electronic display module and the protective cover, having a size independent of the size of the front side of the electronic display module, for displaying information other than price without obscuring the price information.

5,575,101

GUN EQUIPPED WITH A MOVEABLE HANDSHIELD FOR CONTROLLING GUN LOADING

Carlo Piccini, Forescia, Italy, assignor to Browning, societe anonyme, Belgium

Filed Jun. 6, 1995, Ser. No. 467,285
Claims priority, application Belgium, Jul. 13, 1994, 09400657
Int. Cl.[6] F41A *3/00*
U.S. Cl. 42—16 **6 Claims**

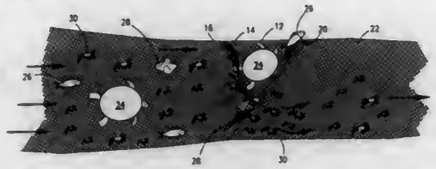


1. A gun comprising a casing including a forward end area; a barrel extending axially from the forward end area of the casing and supported by the casing; a handshield for controlling gun loading movably mounted for rearward and forward movement generally axially along the gun barrel; and relative to said casing, said handshield including forward and rearward end portions, with

VOL 1192 ISS 3 NO 19 1996 UMI

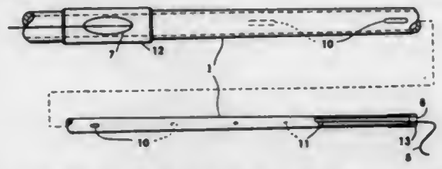
the rearward end portion terminating adjacent the casing when the handshield is in its forward normal rest position; a mobile part for controlling a gun loading device connected to the handshield for actuation thereby; guiding means for supporting and guiding the handshield such that upon rearward movement of the handshield from its forward rest position, said rearward end portion of said handshield tilts downwardly below the forward end area of the casing, whereby, upon such rearward movement, said rearward end portion of the handshield moves over a distance under the forward end area of said casing.

5,575,102
APPARATUS FOR EXCLUSION OF DEBRIS AND BY-CATCH FROM BOTTOM TRAWLS
Dennis J. Coulon, Barataria, La., assignor to Vincent Wiseman, and Charles Tranchant, Both of Lafitte, La.
Filed Mar. 16, 1995, Ser. No. 405,088
Int. Cl.[6] A01K *73/02*
U.S. Cl. 43—9.2 **7 Claims**



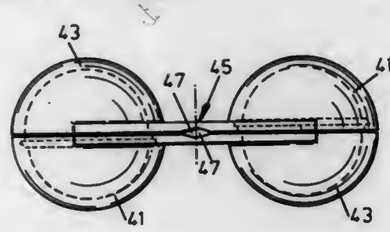
1. A turtle excluder device for inclusion in a trawl net comprising:
a) a hard frame having upstream and down stream ends, side bars and a contiguous array of spaced bar members, said hard frame for attachment within said trawl net transverse to the direction of flow through said net;
b) a hoop attached to said down stream end of the hard frame and extending upstream, generally parallel to direction of flow;
c) a first brace member attached to said hoop at an end opposite said hard frame and to a side bar of said hard frame;
d) a second brace member attached to said hoop opposite said first brace member and opposite said hard frame, and to an opposing side bar of said hard frame; and
e) a spoiler transverse to said direction of flow, attached to said hoop, upstream of said hard frame, extending diagonally, and generally perpendicular to said array of spaced bar members.

5,575,103
PERFORATED FISHING ROD
Gerard M. Hare, Route 425, Northwest Miramichi, Red Bank, R.R. # 1, New Brunswick, Canada
Filed Jul. 25, 1994, Ser. No. 280,155
Claims priority, application Canada, Sep. 17, 1993, 2106455
Int. Cl.[6] A01K *87/00*
U.S. Cl. 43—18.1 **16 Claims**



1. A fishing rod having a butt end and tip end, the rod comprising a fiber-reinforced hollow shaft defining an inner passageway for a line extending from a point near the butt end to the tip end, said inner passageway for the line extending substantially parallel to a longitudinal axis of the shaft;
the shaft having a line entrance opening near the butt end, and a tip end opening for egress of the line at the tip end; and
the shaft having a plurality of perforations disposed between the line entrance opening and the tip end.

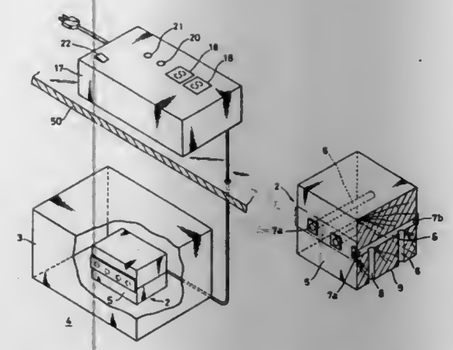
5,575,104
FISHING LINE ACCESSORY
John Wilding, The Boat House, Halton-on-Lune, United Kingdom
Filed May 4, 1994, Ser. No. 237,824
Claims priority, application United Kingdom, Dec. 4, 1993, 9324924
Int. Cl.[6] A01K *87/00*
U.S. Cl. 43—25.2 **31 Claims**



1. A submarine fishing line accessory to be mounted movably on a fishing line to be submersed, in use, to attract fish comprising a member having two partial housings interconnected by a connecting web, means by which the two partial housings are connectable one with the other to form a single hollow housing, the hollow housing having a completely enclosed interior volume being adapted to receive a rattle member with freedom to move within the hollow housing, and wherein at least one recess is provided in the connecting web to receive the fishing line and by which the accessory is received slidably and rotatably movably on the fishing line, the connecting web between the two partial housings permitting hinging to bring the two partial housings into mutual engagement to form the single hollow housing such that the at least one recess forms an open-ended bore within the connecting web to receive the fishing line when the two partial housings are in mutual engagement, the bore being disposed to one side of the single hollow housing.

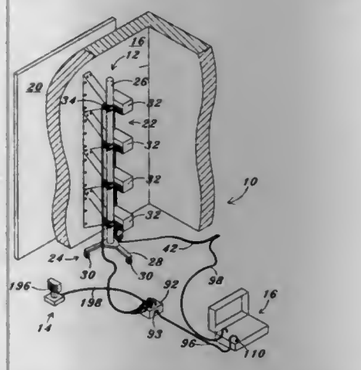
5,575,105
TERMITE ALARM UNIT
Hirotaka Otomo, Tokyo, Japan, assignor to Cats, Inc., Tokyo, Japan
Filed Nov. 3, 1994, Ser. No. 335,404
Claims priority, application Japan, Jun. 29, 1994, 6-170134
Int. Cl.[6] A01M *1/20*
U.S. Cl. 43—132.1 **15 Claims**

1. A termite alarm unit comprising:
a sensor section including (a) a cellulose-containing member having a bottom surface and opposite side surfaces, said cellulose-containing member further having a plurality of vertical holes, each of said vertical holes extending vertically within said cellulose-containing member and having an opening at the bottom surface of said cellulose-containing member, and said cellulose-containing member further having a plurality of through holes, each of said through holes extending between the opposite side surfaces of said cellulose-containing member so as to cross and communicate with at least one of said vertical holes, (b) emitting elements, each of said emitting elements being inserted into one side of a



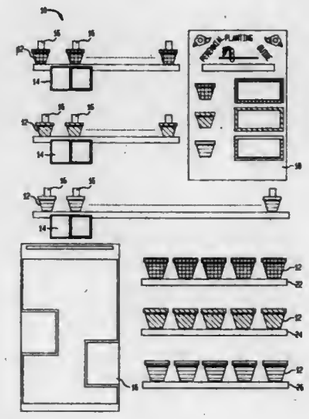
respective one of said through holes and emitting an output wave, and (c) receiving elements, each of said receiving elements being inserted into another side of a respective one of said through holes and receiving the output wave emitted by a respective one of said emitting elements;
a judgement section generating an output signal upon detecting the invasion of termites in response to the obstruction of at least one output wave from said emitting elements to said receiving elements within said through holes; and
an alarm display section for issuing an alarm in response to the output signal from said judgement section.

5,575,106
IN SITU MICROWAVE INSECT ERADICATION DEVICE WITH SAFETY SYSTEM
Randy S. Martin; Paul R. Biederman, and Michael R. Meek, all of Santa Clara, Calif., assignors to Micro Term, Inc., San Jose, Calif.
Filed Dec. 2, 1994, Ser. No. 349,090
Int. Cl.[6] A01M *1/20*
U.S. Cl. 43—132.1 **17 Claims**



1. A pest eradication system utilizing microwave energy, comprising:
a plurality of remote magnetron units, each magnetron unit having a magnetron for emitting microwave energy and a horn for directing emitted microwave energy;
power source means for providing power to each said magnetron unit;
a single local control unit for controlling power to all of said magnetron units such that said magnetron units may be activated by an operator at a safe distance;
a contact delay switch for providing that the power to each said magnetron unit is not instantaneously supplied but rather is delayed for at least several seconds upon attempted activation of said magnetron units from said local control unit;
at least one proximity sensor for detecting bodies near said magnetron units, said proximity sensor emitting an off sisal upon detecting a body; and
a power control circuit for disengaging power to said magnetron units upon receiving an off signal from said proximity sensor.

5,575,107
PERFECT PLANTING COLOR CODE, AND METHODS OF CONSTRUCTING AND UTILIZING SAME
Gary R. Doerr, 2087 Forest Dr., Lapeer, Mich. 48446
Filed Dec. 14, 1990, Ser. No. 627,343
Int. Cl.[6] A01B *79/00*
U.S. Cl. 47—1.01 **17 Claims**



1. A kit of components for a display for potted plants, comprising:
indicating means for the containers the potted plants are held in, the indicating means comprising color coded, solid-colored sleeves adapted to be bonded to said containers corresponding to the amount of light needed by the plant held in one of said containers, said sleeves being provided in at least three different colors;
a first color sleeve indicates a plant which requires at least six hours of direct sunlight, a second color sleeve indicates a plant which requires at least two hours of direct sunlight, and a third color sleeve indicates a plant which prefers total shade;
tags for said containers, said tags being color-coded in said at least three different colors;
planting label guides adapted to be secured adjacent a plurality of said containers holding a same variety of plant, said planting label guides being color-coded in said at least three different colors; and
poster charts adapted to be secured prominently in said display and including an explanation of said color-coding.

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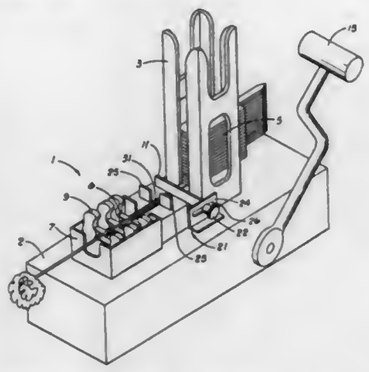
5,575,108
APPARATUS FOR STEMMING FLOWERS

Donald E. Weder, Highland; William F. Straeter, Breese; Joseph G. Straeter, Highland, all of Ill.; Paul Fantz, Imperial, Mo.; Gary E. Wilson, Troy, Ill., and Charles E. Schlueter, St. Louis, Mo., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Division of Ser. No. 144,917, Oct. 28, 1993, which is a continuation-in-part of Ser. No. 949,411, Sep. 22, 1992, Pat. No. 5,391,208. This application May 18, 1995, Ser. No. 443,498

Int. Cl.[6] A01C *1/00*

U.S. Cl. 47—1.01 **7 Claims**



1. An apparatus for cutting the stem of a flower and applying a stem pick to the cut flower stem, said apparatus comprising:
means for attaching a stem pick to the stem of a flower in a first mode of operation;
pick positioning means for moving another stem pick, in a second mode of operation, into a position ready for attachment to another flower stem; and
electromechanical means for automatically operating said means for attaching a stem pick and said pick positioning means, said electromechanical means comprising a transmission for mutually exclusively operating said means for attaching a stem pick and said pick positioning means and wherein said transmission further comprises:
a first actuator coupled to, and thereby operating, said means for attaching a stem pick;
a second actuator coupled to, and thereby operating, said pick positioning means; and
a clutch means for energizing one or the other of said actuators, and for deenergizing said first actuator after a stem pick has been attached to the flower stem by said means for attaching a stem pick, and deenergizing said second actuator after a stem pick has been moved into position for attachment by said pick positioning means.

5,575,109
PLANT PROTECTION DEVICE

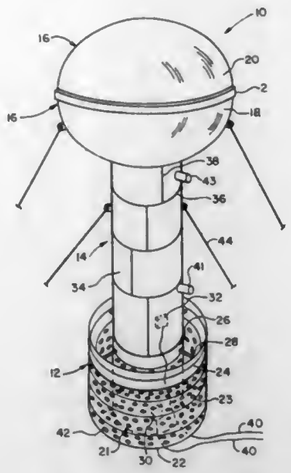
Mark E. Kuotz, 1409 W. Boulevard St., Kokomo, Ind. 46902

Filed May 8, 1995, Ser. No. 439,469

Int. Cl.[6] A01G *9/24*

U.S. Cl. 47—22 **20 Claims**

1. A plant protection device comprising:
a) a root protection barrier capable of surrounding tbe roots of a plant, wherein said root protection barrier extends from a determined depth below the surface of the ground to the surface of the ground;
b) a cylindrical chamber capable of securely attaching to said root protection barrier, wherein said cylindrical chamber extends substantially vertically;



c) a top dome which is capable of securely attaching to said cylindrical chamber to substantially envelope a plant;
d) a temperature control means for controlling the temperature of air contained within said cylindrical chamber and contained within said top dome; and
e) a temperature control means for controlling the soil temperature within said root protection barrier.

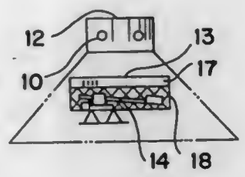
5,575,110
SELF WATERING CHRISTMAS TREE STAND

Luc M. Couture, R.R. 1, Box 16C, Jefferson, N.H. 03583

Filed Jun. 22, 1995, Ser. No. 493,592

Int. Cl.[6] A47G *7/02*

U.S. Cl. 47—40.5 **10 Claims**



1. A self-watering tree stand comprising:
means for holding a tree in an upright position,
compartment means connected to said means for holding a tree in an upright position,
means for allowing water to flow from said compartment means to said means for holding a tree in an upright position,
filter means positioned between said compartment means and said means for holding a tree in an upright position,
said filter means having openings sized and shaped to pass water but not debris,
valve means positioned in said compartment means for controlling the amount of water which flows into said compartment means, and
means for supplying water to said compartment means.

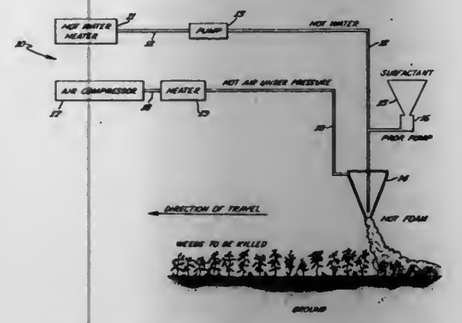
5,575,111
METHOD OF USING HOT AIR FOAM TO KILL VEGETATION AND PESTS

A. H. J. Rajamannan, 2120 Argonne Dr., NE., Minneapolis, Minn. 55402

Filed Sep. 28, 1995, Ser. No. 535,545

Int. Cl.[6] A01M *21/00*

U.S. Cl. 47—58 **4 Claims**



1. A method of forming and applying heated air foam to vegetation and the soil surface from a mobile medium for killing and defoliating vegetation, and for killing or inhibiting the establishment of fungus, bacteria, virus, and insects, comprising,
mixing a stream of hot water under pressure with a surfactant,
heating a stream of compressed air to a temperature sufficient to melt the waxy cuticular coating of plants for killing such plants,
mixing the heated stream of hot air with the mixed stream of hot water and surfactant to thereby form a hot air foam having a temperature within the range of 130° to 212° F. and consisting volumetrically of 80% to 95% hot air and 5% to 20% hot water and surfactant,
and applying the hot air foam to vegetation and the surface of ground to kill and defoliate vegetation and to kill or inhibit the establishment of fungus, bacteria, virus and insects.

5,575,112
METHOD FOR CONTROLLING THE GROWTH OF PLANT ROOTS

Gerard Scheubel, Ste-Foy, Canada, assignor to Texel Inc., Quebec, Canada

Continuation-in-part of Ser. No. 727,442, Jul. 9, 1991, abandoned. This application Dec. 14, 1993, Ser. No. 166,104

Int. Cl.[6] A01G *9/02*

U.S. Cl. 47—78 **16 Claims**

1. A method for controlling weed growth in a soil covered with a sheet of a landscape fabric, said method comprising the steps of:
a) providing a weed growth barrier comprising a sheet of non-woven fabric made of synthetic fibers coated with a polymeric binder in which is dispersed an effective amount of a water-insoluble inorganic copper compound to stop root growth wherein, in step (a):
the synthetic fibers are made of a non-rotting polymer selected from the group consisting of polypropylene, polyester, polyethylene and polyamide, and have a size of 1 to 17 dtex;
the non-woven fabric has an average weight of 10 to 800 g/m^2 and is manufactured by entangling the synthetic fibers by needle punching, thermal bonding, calendaring or chemical bonding;
said non-woven fabric is water-permeable and has pores of 30 to 180 microns;
the water-insoluble copper compound is selected from the group consisting of copper oxychloride, copper oxide, copper carbonate and copper hydroxide and is in the form of a powder having a particle size ranging from 0.5 to 2 microns;
said water-insoluble copper compound is used in an amount ranging from 5 to 80 g/m^2 of said fabric; and
from 5 to 400 g/m^2 of said polymeric binder is applied onto the fibers by knife coating, printing, soaking or spraying, so as to produce a uniform coating, and is subjected to drying, curing and cross-linking at a temperature of 140° C. to 170° C. for 1 to 5 minutes so as to entrap the water-insoluble copper compound powder and give the binder a good water-swelling resistance; and
b) using the barrier of step (a) as said sheet of a landscape fabric; whereby weed seeds carried onto said sheet of a landscape fabric by the wind or by irrigation water are prevented from growing, thereby avoiding hand-weeding or herbicide application and perforation of the landscape fabric.

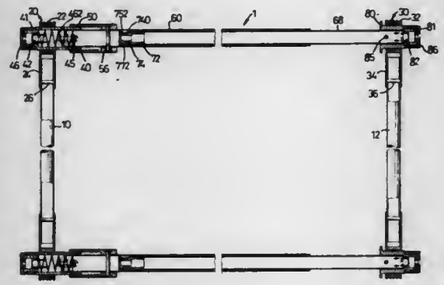
5,575,113
DOOR GUARD RAIL STRUCTURE

Li-chu C. Huang, No. 9, Alley 2, Lane 606, Sec. 2, Po-ai Rd., Chiayi City, Taiwan

Filed Dec. 19, 1995, Ser. No. 574,762

Int. Cl.[6] E06B *3/68*

U.S. Cl. 49—55 **3 Claims**



1. A guard rail structure comprising:
a first vertical tube (**10**) and a second vertical tube (**12**) arranged in parallel with each other and each having two distal ends;
two first support members (**20**) each fixedly mounted on one of the two distal ends of said first vertical tube (**10**);
two second support members (**30**) each fixedly mounted on one of the two distal ends of said second vertical tube (**12**);
two first fastener members (**40**) each horizontally mounted on a corresponding one of said two first support members (**20**);
two second fastener members (**80**) each horizontally and rotatably mounted on a corresponding one of said two second support members (**30**);
two first horizontal tubes (**60**) each having a first distal end mounted in a corresponding one of said two first fastener members (**40**), a second distal end and an inner wall (**601**);
two second horizontal tubes (**68**) each having a first distal end fixedly mounted in a corresponding one of said two second fastener members (**80**) to rotate therewith, and a second distal end slidably received in a corresponding one of said two first horizontal tubes (**60**);
two eccentric members (**70**) each including a plug (**72**) securely mounted in the second distal end of a corresponding one of said two second horizontal tubes (**68**) to move therewith and each including an eccentric shaft (**74**) extending from said plug (**72**) thereof; and
two annular eccentric clamps (**75**) each including an inner wall (**750**) rotatably mounted on said eccentric shaft (**74**) of a corresponding one of said two eccentric members (**70**) and each including an outer wall (**752**) detachably rested against the inner wall (**601**) of an associated first horizontal tube (**60**).

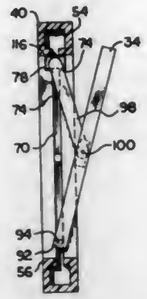
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5,575,114

HOPPER WINDOW

Harry M. Riegelman, 2417 Wimbledon, Arlington, Tex. 76017

Filed Aug. 7, 1995, Ser. No. 512,004
Int. Cl.[6] E05D *15/28*
U.S. Cl. 49—246 12 Claims



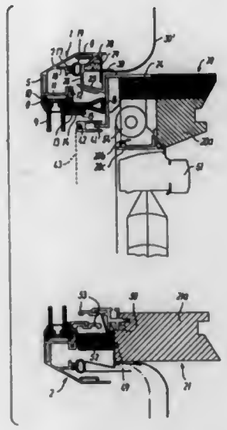
1. A hopper window comprising in combination:
a frame,
a sash,
said frame comprising;
a first jamb,
a second jamb generally parallel to said first jamb,
said first jamb comprising a longitudinal track having a first end and a second end,
said sash being in said frame between said jambs,
stop means mounted on said track between said first end and said second end of said track,
said sash comprising a first end and a second end, and;
pivot means extending from said second end of said sash into said track,
an arm pivotally attached at one end of said arm to said sash between said first end of said sash and said second end of said sash,
shoe means on the other end of said arm,
said shoe means being slidably mounted on said track for travel along said track between said first end of said track and said stop means,
said shoe means engaging said track in generally constant resistance to said travel along said track such that said sash can be drawn by hand against said generally constant resistance to any angle from the track set by the location of said shoe means in said track between said first end of said track and
said stop means, and said sash is held at said any angle by said generally constant resistance to travel of said engaging,
said shoe means comprising a first wall and a second wall opposite said first wall,
spring means, biasing said first wall away from said second wall,
a first cam on said first wall,
said first cam engaging said track for biasing said first wall toward said second wall when said shoe is mounted on said track for said sliding on said track,
a second cam on said first wall,
said second cam engaging said track for biasing said first wall toward said second wall when said shoe is mounted on said track for said sliding on said track. resistance to said travel along said track such that said sash.

5,575,115

WINDOW WITH A FRAME OF EXTRUDED PROFILE MEMBERS

Claes Lindgren, Farum; Flemming O. Petersen, Bloustrod/Allerod, and Stig F. Vigenberg, Gilleleje, all of Denmark, assignors to V. Kann Rasmussen Industri A/S, Søborg, Denmark

Continuation-in-part of Ser. No. 802,640, Dec. 9, 1991, Pat. No. 5,394,649. This application Feb. 25, 1994, Ser. No. 202,251
Claims priority, application Denmark, Dec. 6, 1991, 1972/71
Int. Cl.[6] E06B *11/00*
U.S. Cl. 49—381 13 Claims



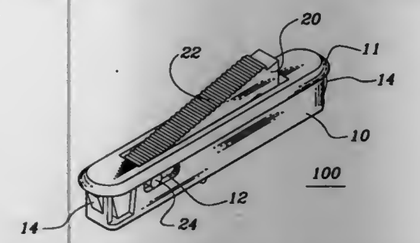
1. A window having a top side and other sides comprising a first frame of first extruded profile members each having an exterior side surface parallel to a plane defined by a thermo pane of glass and having at the exterior side surface a first flange portion acting as a supporting member for an edge portion of the thermo pane on an external side of the thermo pane, whereas an opposite edge portion of the thermo pane at an internal side of the thermo pane is supported by a glazing bead connected with the extruded profile members, and a main frame comprising wood profiles having exterior surfaces covered by weather-resisting coverings, a hinge member at the top side of the window comprising a hinge pivot formed by an edge portion of a second extruded profile member connected to a portion of said main frame and a hinge blade defined by a hook-shaped wall portion of an opposed one of said first extruded profile members of said first frame, and ensuring means for maintaining continued engagement of said hinge pivot and said hinge blade, characterized in that the hook-shaped wall portion defining the hinge blade comprises a flange on an upper exterior side wall of one of said first extruded profile members, said flange projecting downwardly substantially parallel to the glass plane, whereas the hinge pivot forming edge portion is formed by an upwardly projecting flange of said second extruded profile member, said upwardly projecting flange being adapted to be engaged by said hinge blade by hooking said hinge blade around said hinge pivot forming edge portion with said downwardly projecting flange positioned behind said upwardly projecting flange, said engagement ensuring means being provided at at least one of the other sides of the window.

5,575,116

WINDOW VENT STOP

Dennis Carlson, McPherson, Kans.; Jeffrey B. Hersh, Wayne, Pa., and Dennis Westphal, Parma, Mich., assignors to CertainTeed Corporation, Valley Forge, Pa.

Filed Jun. 6, 1995, Ser. No. 470,957
Int. Cl.[6] E05B *55/00*
U.S. Cl. 49—449 19 Claims



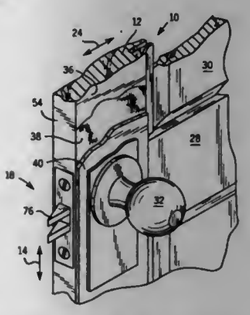
1. In a window having a support structure including a sill and a pair of vertical jambs, said window including a pair of sashes, including at least one movable sash which is disposed in tracks located on said jambs for permitting a sliding of said sash, the improvement comprising:
a vent stop device mounted to a first of said sashes, said device comprising a housing and a stop block disposed within said housing, said stop block comprising an integral spring arm for permitting said stop block to selectively extend out from said first sash to contact a surface of a second of said sashes to limit the degree to which said movable sash can be opened to form a vent opening through said window.

5,575,117

BREAK-IN RESISTANT WOOD PANEL DOOR

Lawrence A. Soltis, Mt. Horeb; Robert J. Ross, Madison, both of Wis., and William W. von Segen, Portland, Oreg., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 204,114, Mar. 1, 1994, Pat. No. 5,501,054. This application Dec. 26, 1995, Ser. No. 576,998
Int. Cl.[6] E06B *1/04*
U.S. Cl. 49—460 11 Claims



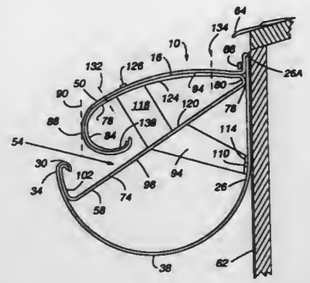
1. A wooden panel door for use with a lock set, the door comprising spaced apart longitudinally extending butt and lock stiles joined at their ends by transversely extending top and bottom rails to contain at least one panel between the stiles and rails, wherein the lock stile is composed of wood having longitudinally extending grain and wherein the lock stile has bonded to at least one face proximate to a location of the lock set, a fiber mat oriented to provide transverse tensile restraint on the grain of the lock stile, including additionally a wooden stile facing strip and wherein the fiber mat is sandwiched between the lock stile and the wooden stile facing strip.

5,575,118

EAVES TROUGH ASSEMBLY

Wayne Vahldieck, 88-A Grand Blvd., Massapequa Park, N.Y. 11762

Filed Apr. 24, 1995, Ser. No. 426,871
Int. Cl.[6] E04D *13/00*
U.S. Cl. 52—11 19 Claims



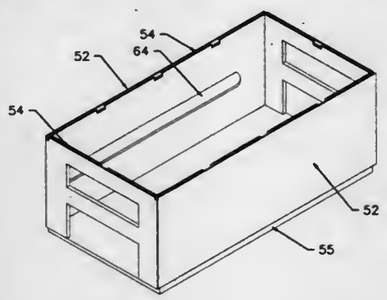
19. In a shielded trough having a front and a back and comprising a shield having a front and a back and a trough having a front and a back, said shield being superimposed over and spaced from said trough so that said shield deflects leaves and debris on the outer side of said shield from entering the trough by way of a longitudinal space between the front of said shield and the front of said trough and water running over the outer side of said shield is directed by said shield into said trough by way of said longitudinal space, said shielded trough being for use in cooperation with a bracket within said shielded trough, said bracket comprising a first wall adapted for being juxtaposed to the inner side of said shield for supporting said shield and a second wall for supporting said trough, said fronts of said shield and trough ending respectively in a backward facing upturned bend and a backward facing downward bend, said first and second walls of said bracket having bent ends conforming to the bent ends of said fronts of said shield and trough for engaging said front ends of the shield and trough.

5,575,119

BUILDING ELEMENT

Steven A. Wolfowitz, 106 Terrace Road, Sebenza, Edenvale, Johannesburg, South Africa

Filed May 31, 1994, Ser. No. 251,423
Claims priority, application South Africa, May 29, 1993, 93/3746; Aug. 25, 1993, 93/6213
Int. Cl.[6] E04H *1/02*
U.S. Cl. 52—79.1 9 Claims



VOL 1192 ISS 3 NO 19 1996 UMI

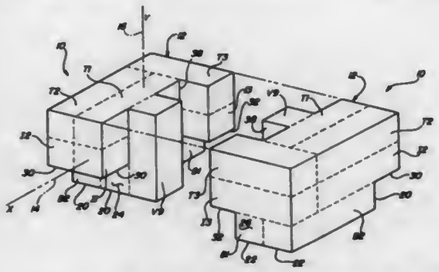
1. A building element comprising a pair of right-angled elements interengaged to form a topless and bottomless box, upper or lower edges of the box including a channel formation adapted to receive the periphery of an adjacent element in stacking relationship, an outer wall of the channel being continuous and uninterrupted and an inner wall of the channel including a series of castellations opposite said continuous outer wall and adapted to receive the peripheries of building elements.

5,575,120

DESIGN AND CONSTRUCTION MODULE

Frederick G. Handley, 1181 Pelissier Street, Windsor, Ontario, Canada

Filed Jun. 6, 1995, Ser. No. 466,106
Int. Cl.[6] E04B 1/348; E04H 1/00
U.S. Cl. 52—79.1 20 Claims



1. An interlockable design and construction module comprising:

nine members of substantially equal length, width and height, said members having longitudinally opposed first and second ends;

two of said members forming base members located in side-by-side relation to one another such that said first ends of said base members terminate adjacent to one another and flush with one another to define a first common plane, said second ends of said base members terminating adjacent to one another and flush with one another to define a second common plane;

three of said members forming intermediate members and located above said base members, two of said intermediate members corresponding with said base members and being located immediately thereabove and longitudinally offset from said base members such that said two of said intermediate members extend a predetermined distance beyond said first ends of said base members forming a longitudinal overhang, said third one of said intermediate members extending transversely with respect to said two other intermediate members and said base members, a portion of said third one of said intermediate members extending beyond a lateral side of one of said base members and forming a lateral overhang with respect thereto and having a side, said third one of said intermediate member having a side surface formed flush with said second common plane defined by said base members;

three of said members forming top members which cooperate to define a common top surface of said model, one each of said top members being positioned substantially directly above one of said intermediate members so as to directly correspond therewith; and

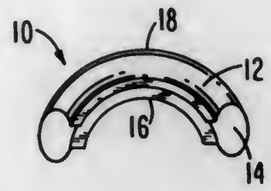
a final member extending along an axis perpendicular to planes defined by said base, intermediate and top members, said final member being located with a portion of a side surface coincidental and flush with said common plane defined by said first ends of said base members, said final member being spaced apart from said lateral overhang defined by said third ones of said intermediate and top members a distance corresponding to the width of said final member and generally defining a channel therebetween, said final member also having a pair of ends, one of said ends of said final member being coincidental and flush with said top surface defined by said top members, the other of said ends being coincidental and flush with said bottom surface defined by said base members, whereby said module is adapted for interlocking engagement with one or more additional modules to enable the designing and construction of various structures including terrestrial, marine and aeronautical structures.

5,575,121

SOUND BARRIER WALL CONSTRUCTION USING TIRE SECTIONS

Philippe Lajaunie, 135 Wooster St., New York, N.Y. 10012

Filed Mar. 7, 1995, Ser. No. 399,430
Int. Cl.[6] E04B 1/84
U.S. Cl. 52—144 13 Claims



1. A wall-like sound barrier for absorbing and reflecting sound emanating from a source of sound so as to minimize passage of sound from the source beyond the barrier, said barrier comprising:

a plurality of tire sections arranged to form a plurality of substantially vertically stacked rows of said tire sections so as to define a substantially vertically extending wall, each said tire section comprising an arcuate segment of a vehicle tire and including an arcuate tire wall defining a substantially concave and partly open interior extending between opposed ends of said segment and a substantially convex exterior extending between said opposed segment ends, and each said row comprising a plurality of said tire sections arranged so that the substantially concave interior of each said tire section faces outwardly from the wall so that when the wall is disposed proximate a source of sound so that sound from the source enters the partly open interior of the tire section, the sound is damped by absorbed by and reflected from the tire section to thereby minimize passage of sound from the source beyond said barrier:

wherein each said tire section is oriented at a predetermined angular inclination relative to an underlying ground surface upon which said wall is constructed to encourage runoff, through at least one of the ends of each tire section, of liquids entering said partly open interior and thereby prevent accumulation of liquids in said tire section interior.

5,575,122

EARTH SCREW ANCHOR ASSEMBLY HAVING ENHANCED PENETRATING CAPABILITY

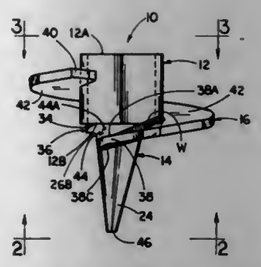
Daniel V. Hamilton; Robert M. Hoyt, both of Centralia; Patricia J. Halferty, Columbia, and William L. Hoffman, Centralia, all of Mo., assignors to Hubbell Incorporated, Orange, Conn.

Filed Nov. 22, 1995, Ser. No. 561,908
Int. Cl.[6] E02D 5/74
U.S. Cl. 52—157 24 Claims

13. An earth screw anchor assembly, comprising:

(a) an elongated hollow tubular hub member having a central axis and a pair of upper and lower opposite open ends axially spaced apart along said central axis;

(b) a spade member having a longitudinal axis and including



(i) an upper portion inserted into said hub member from said lower open end thereof,

(ii) a lower portion connected to said upper portion and extending downwardly therefrom and from said hub member and adapted to cut and penetrate into the earth upon rotation of said assembly about said longitudinal axis,

(iii) an intermediate flange portion attached about said upper and lower portions at a location of connection therebetween, said intermediate flange portion extending radially outwardly from said longitudinal axis and beyond said upper and lower portions such that respective peripheral edges on said lower end of said hub member and said intermediate flange portion of said spade member provide adjacent surfaces to which welds are applied for attaching said lower end of said hub member to said intermediate flange portion of said spade member, and

(iv) an attachment land formed on one side of said intermediate flange portion and protruding downwardly therefrom and being attached along and extending partially about an upper end of said lower portion of said spade member; and

(c) a blade member helical in shape and extending about and radially outwardly from said hub member, said blade member including

(i) a pair of leading and trailing opposite end portions being axially offset from one another along said central axis of said hub member, and

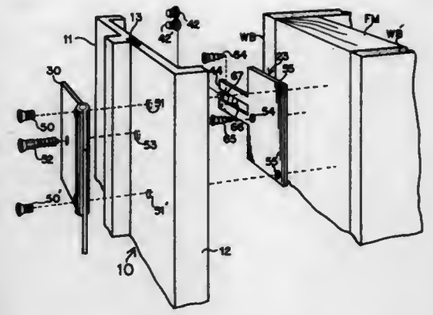
(ii) a middle portion extending between said leading and trailing opposite end portions, said blade member at said trailing end portion and said middle portion thereof being attached to said hub member, said blade member at said leading end portion thereof extending below said intermediate flange portion and along and attached to said attachment land of said spade member so as to dispose said leading end portion of said blade member substantially below said intermediate flange portion and thereby below said lower end of said hub member such that said leading end portion of said blade member will engage and dig into the earth as said assembly is rotated about said longitudinal axis of said spade member before contact is made with the earth by said intermediate flange portion of said spade member and thereafter by said hub member.

5,575,123

EXTRUDED VINYL DOOR JAMB ASSEMBLY

Carl W. Adams, 5450 N. Eugene, Boise, Id. 83703

Filed Nov. 1, 1995, Ser. No. 551,718
Int. Cl.[6] E06B 1/60
U.S. Cl. 52—212 3 Claims



1. A vinyl door frame assembly, for a framed door opening having a hinge side frame, striker side frame and a beader frame, which comprises:

a plurality of jamb backing members for attachment to the frame members of the framed door opening, said jamb backing members having a hinge backing segment and a leg segment having a generally horizontally oriented axis, said jamb backing members having a plurality of threaded holes and at least one additional hole formed therethrough within the hinge backing segment, the leg segment of each said jamb backing member being further configured to provide a slot along its generally horizontally oriented axis, said slot, in its cross section having a T-shaped configuration;

a vinyl jamb member first section, having a generally L-shaped configuration, said vinyl jamb member first section having a leg segment and a body segment, the body segment having a front side and a back side, the body segment further having a plurality of holes formed therethrough along the length of the body segment for corresponding alignment with the holes in the hinge backing sections of the jamb backing members;

a vinyl jamb member third section having a generally L-shaped configuration, said vinyl jamb member third section having a leg segment, and a body segment, the body segment having a front side and a back side, the body segment further having a plurality of threaded holes formed therein along the length of the body segment for corresponding alignment with the holes in the hinge backing sections of the corresponding jam backing members, said holes being formed from the back side without penetrating through the front side;

a vinyl jamb member second section, having a generally L-shaped configuration, said vinyl jamb member second section having a leg segment, and a body segment, the body segment having a front side and a back side, the body segment further having a plurality of threaded holes formed therein along the length of the body segment for corresponding alignment, said holes being formed from the back side without penetrating through the front side;

a vinyl jamb header first section having a generally L-shaped configuration, said vinyl jamb header first section having a leg segment and a body segment, the body segment having a front side and a back side, the body side further having a plurality of holes formed therein along the length of the body segment for corresponding alignment with the holes in the hinge backing sections of the jamb backing members, said holes being formed from the back side without penetrating through the front side;

a vinyl jamb header second section having a generally L-shaped configuration, said vinyl jamb header second section having a leg segment, and a body segment, the body segment having a front side and a back side, the body segment further having a plurality of threaded holes formed therein along the length of the body segment for corresponding alignment and interfitting engagement within the generally horizontally aligned slot in the leg segment of the corresponding jam backing members, said holes being formed from the back side without penetrating through the front side;

a plurality of hinge means for supporting a door, said hinge means having a plurality of holes therethrough for corresponding alignment with the holes in the jamb backing member hinge backing segments and the holes in the vinyl jam member first sections;

attachment means for engagement in at least one of the plurality of threaded holes formed in the hinge backing sections of the jamb backing members for attaching a hinge means and the vinyl jamb member first section to the hinge backing section of the jamb backing members;

attachment means for engagement in at least one of the plurality of threaded holes in the back side of the vinyl jamb member third section body segment for attaching the hinge backing section of the jamb backing members to the vinyl jamb member third section;

means for attaching the plurality of jam backing members to the hinge side frame door opening with the axis of the leg segments generally horizontally oriented;

attachment means for threaded engagement in at least one of the plurality of threaded holes in the back side of the vinyl jamb member second section body segments, said attachment means configured to slidingly engage within the T-shaped slot of the jamb backing member; and

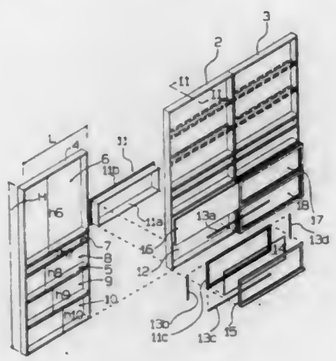
attachment means for threaded engagement in at least one of the plurality of threaded holes in the back side of the vinyl jamb header second section body segment, said attachment means configured to slidably engage within the T-shaped slot of the jamb backing members when attached to the header frame of the framed door opening.

5,575,124

CONSTRUCTION WITH MODULAR WALLS

Eligio Novello, Jr., 53, chemin des Planches, CH - 1066 Epalinges, Switzerland

Filed Mar. 29, 1995, Ser. No. 412,953
Int. Cl.[6] E04B *2/14*
U.S. Cl. 52—270 **24 Claims**



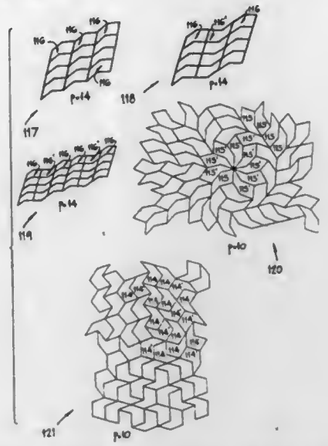
1. A construction for outer walls, roofs, floors, and inner supporting walls comprising an assembly of independent modular units, each modular unit comprising a peripherally closed rectangular supporting frame forming one or, by means of intermediate frame elements fixed to said supporting frame, several open compartments having all the inner breadth of the supporting frame and having respective heights equal to an integer submultiple of the height of said frame or to an integer multiple of said submultiple, and comprising at least one construction element including a central embrasure part arranged in said compartment of said supporting frame, and at least two facing parts placed, respectively, on opposite sides of said supporting frame and assembled with said central embrasure part, said facing parts having an outer breadth and an outer height which are substantially equal to the outer breadth and height of said compartment.

5,575,125

PERIODIC AND NON-PERIODIC TILINGS AND BUILDING BLOCKS FROM PRISMATIC NODES

Haresh Lalvani, 164 Bank St., Apt. 2B, New York, N.Y. 10014

Continuation-in-part of Ser. No. 282,991, Dec. 2, 1988, Pat. No. 5,007,220, which is a continuation of Ser. No. 36,395, Apr. 9, 1987. This application Apr. 15, 1991, Ser. No. 684,978
Int. Cl.[6] E04F *13/00*
U.S. Cl. 52—311.2 **22 Claims**



1. A family of periodic space structure configurations for design applications, the combination comprising:

a plurality of substantially planar, even-sided singly-concave polygonal tiles having a thickness and arranged in layers, each said tile having m edges which meet at m vertices at interior angles defined by the angle between adjacent said edges on the interior of said tile where said edges are composed of m/2 pairs of parallel edges and wherein

said plurality comprises at least one said tile with m greater than 6, and at least one tile without mirror-symmetry,

said tiles are engaged together to fill space,

said edges comprise two sets of contiguous edges, first said set having convex interior angles and second set having concave interior angles

said edges are substantially equal in length and said interior angles are whole number multiples of 360°/p, and

where p is any number greater than 4.

5,575,126

FLAT EXPANSION JOINT GASKET

Julian J. Attaway, Marietta; Richard J. Gladue, Conyers; Larry M. Petree, Lawrenceville, and Claude M. Schuerman, Norcross, all of Ga., assignors to MM Systems Corp., Tucker, Ga.

Filed Dec. 28, 1993, Ser. No. 174,207
Int. Cl.[6] E04B *1/682*
U.S. Cl. 52—396.02 **18 Claims**

1. A gasket for a longitudinally elongate expansion joint cover,



comprising:

a longitudinally elongate central body portion having a top, a bottom, and two opposed, transverse sides;

two side portions, one at either transverse edge of the central body portion;

the central body portion and said side portions being composed of an elastomeric substance and comprising an upper wall having a thickness and an essentially flat surface, a lower wall having a thickness and a surface which is opposed to the surface of the upper wall, a pair of side walls having a thickness and opposed surfaces and each adjacent a respective side portion, and a plurality of inner walls connecting the upper wall to the lower wall;

the upper wall including a first series of alternating longitudinal regions of greater and lesser compressive resistance, the first series of alternating regions disposed in essentially regular spacing along the upper wall;

the lower wall including a second series of alternating longitudinal regions of greater and lesser compressive resistance, the second series of alternating regions disposed in essentially regular spacing along the upper wall;

the regions of greater compressive resistance in the upper wall being generally vertically disposed above the regions of lesser compressive resistance in the lower wall;

the regions of lesser compressive resistance in the upper wall being generally vertically disposed above the regions of greater compressive resistance in the lower wall; and

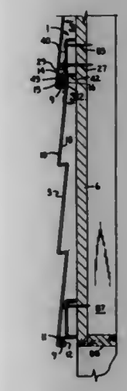
wherein the regions of lesser compressive resistance in the upper wall are regions of reduced upper wall thickness.

5,575,127

SIDING ATTACHMENT SYSTEM

Jerry D. O'Neal, 701 SW. Gulfport, Lee's Summit, Mo. 64081

Filed Jan. 24, 1995, Ser. No. 377,210
Int. Cl.[6] E04D *1/34*
U.S. Cl. 52—520 **23 Claims**



17. A siding attachment system including a siding panel in combination with a siding attachment bracket for attaching said siding panel to a wall which includes a plurality of studs generally spaced apart a uniform distance between centers of said studs and wherein;

a. said siding panel includes;

i. an upper and a lower edge and a front and a rear surface;

ii. said lower edge of said panel extending rearwardly and then upwardly to form an upwardly opening longitudinal channel;

iii. a forwardly and downwardly projecting longitudinal lip projecting forwardly away from the front surface of said panel and downwardly therefrom to form a downwardly opening channel;

iv. an upwardly and rearwardly opening L-shaped longitudinal channel formed in said lip and opening to said rear surface of said panel; and

v. a flange extending above said lip and forming said upper edge of said panel; and

b. said bracket is adapted to be at least as long as said uniform distance between centers of said studs and comprises:

i. a generally vertically extending web;

ii. a first support leg extending rearwardly from said web;

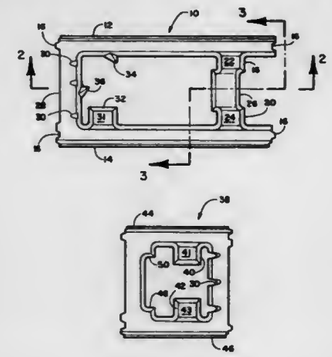
iii. a siding support shoulder including a horizontal leg and a vertical leg; said horizontal leg connected at a first end to said web and extending forwardly from said web and ending at a distal end thereof; said vertical leg extending downwardly from said distal end of said horizontal leg; said shoulder is sized for insertion into said upwardly and rearwardly opening L-shaped longitudinal channel of one of said siding panels such that said shoulder supports said panel but permits longitudinal slidable movement of said panel on said bracket.

5,575,128

INTERLOCKING MORTARLESS BUILDING BLOCK SYSTEM

Juan Haener, 8215 Harton Pl., San Diego, Calif. 92123

Filed Jun. 27, 1994, Ser. No. 265,804
Int. Cl.[6] E04C *1/00*
U.S. Cl. 52—572 **14 Claims**



1. An interlocking block system for mortarless wall assembly in which a plurality of blocks are laid up in courses in a staggered relationship wherein two different block configurations are provided, the first blocks having lengths at least twice the width and the second blocks having the same width and a length up to half the length of said first blocks, which comprises:

a plurality of said first blocks, each of which comprises:

a pair of spaced, upright sidewalls having substantially flat top and bottom surfaces and generally parallel outermost side surfaces;

said sidewalls having lengths at least twice their height;

block end interlock means at the opposite ends of said sidewalls;

one first transverse end wall extending between said sidewalls at a first end of said first block;

at least one second transverse wall extending between said sidewalls spaced from a second end of said first block;

two opposed first and second protrusions on interior surfaces of said block adjacent to said first end of said first block said first and second protrusions each having an approximately right triangular cross section and a base substantially coplanar with said substantially flat sidewall bottom surfaces, one said protrusion extending upwardly along each of a sidewall and said first transverse end wall and tapering to a smaller cross section and ending short of the top surfaces of said sidewalls and first transverse end wall;

one third protrusion on an interior surface of one of said sidewalls adjacent to said first end of said block, said third protrusion extending along a sidewall from a base to a tip extending above said top surface to interlock with a block in the next succeeding course;

between-course interlock means within said second transverse wall for interlocking with a second block in the next course laid parallel to one said first block;

a plurality of said second blocks, each of which comprises:

a pair of spaced, upright sidewalls having substantially flat top and bottom surfaces and generally parallel outermost side surfaces;

said sidewalls having lengths up to about half the lengths of said first block sidewalls;

block end interlock means at the opposite ends of said sidewalls;

transverse end walls extending between said sidewalls of said second block; and

fourth and fifth protrusions along the interior of said sidewalls each extending from a base generally coplanar with the bottom surface to a tip extending above said sidewalls for interlocking with said between-course interlock means in a next course of blocks laid either parallel or perpendicular to one said second block;

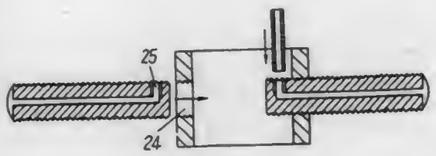
whereby block walls, enclosures and columns may be built using only said first and second blocks.

5,575,129

CONNECTOR FOR TRUSS STRUCTURE

Yasuo Goto, Oita, Japan, assignor to Home Co., Ltd., Oita-ken, Japan

Filed Oct. 28, 1994, Ser. No. 330,673
Claims priority, application Japan, Oct. 30, 1993, 5-294289
Int. Cl.[6] E04C *5/03*
U.S. Cl. 52—655.1 **9 Claims**



1. A truss connector comprising

a core fitting,

a hollow tubular member having a base part fixed to a predetermined part of said core fitting and having a distal end opened,

a branch pipe communicating with said tubular member and further comprising engaging means formed where said branch pipe communicates with said tubular member wherein said branch pipe is removably engageable with said tubular member.

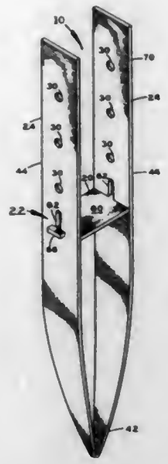
5,575,130

ANCHOR DEVICE

Daniel J. Chiodo, 12399 SW. 53rd St., Suite 104, Cooper City, Fla. 33330

Continuation-in-part of Ser. No. 269,747, Jul. 1, 1994, Pat. No. 5,467,569. This application Nov. 2, 1995, Ser. No. 552,105
Int. Cl.[6] E04B *1/38*
U.S. Cl. 52—713 **2 Claims**

1. An anchoring apparatus for securing a truss member to a concrete structural member, comprising:



a substantially U-shaped member including an elongate plate bent end to end in the form of a curved portion and two leg portions, each said leg portion including an abutment plate engaging slot,

an abutment plate sized to fit between said leg portions and including two abutment plate ends, each said abutment plate end including leg portion engaging means for anchoring said abutment plate to said U-shaped member, said leg portion engaging means comprise said abutment plate engaging slot in each leg portion and a substantially T-shaped protrusion at each said abutment plate end for insertion into said engaging slots,

such that rotating said abutment plate relative to said leg portions interlocks said U-shaped member and said abutment plate.

5,575,131

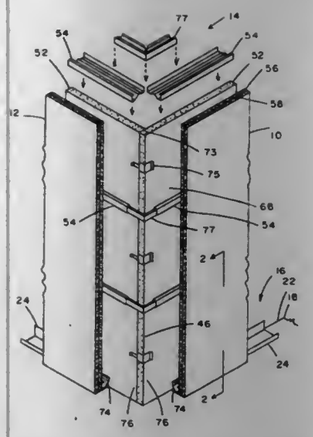
MULTIPLE USE CORNER CLIP

Robert J. Menchetti, Buffalo, N.Y., assignor to National Gypsum Company, Charlotte, N.C.

Division of Ser. No. 92,968, Jul. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 22,590, Feb. 25, 1993. This application Jun. 6, 1995, Ser. No. 468,370
Int. Cl.[6] E04B *1/00*
U.S. Cl. 52—745.09 **6 Claims**

1. The method of erecting a horizontal stud wall corner comprising the steps of mounting horizontal studs and horizontally extending core boards alternately one upon another to form one vertical wall, mounting horizontal studs and horizontally extending core boards alternately one upon another to form a second vertical wall, each of said stud including a web extending between flanges and said core boards engaging said web, with the ends of said walls adjacent one another at a corner and with said walls extending horizontally at an angle to one another forming said corner, the improvement comprising:

adjoining the two walls by connecting the ends of respective abutting horizontal studs with individual small stud corner clips, said stud corner clips engaging said webs, affixing said small stud corner clips to the said stud ends, and engaging said core boards with said small stud corner clips and partially supporting said core boards with a board-supporting portion of said stud corner clips.



5,575,132

SHINGLE INSTALLATION TOOL

Richard H. Garsjo, HC 67 Box 209, Nashua, Mont. 59248

Filed Sep. 15, 1995, Ser. No. 529,203
Int. Cl.[6] E04D *15/00*
U.S. Cl. 52—749.12 **8 Claims**

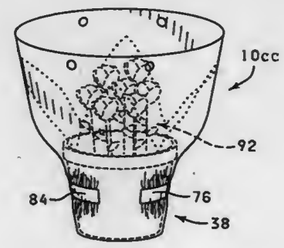
1. A tool for use in installing interlocking roofing shingles which comprises a plate having hand grip means, and insertion means providing a pair of tapered leading insertion edges at a forward end of said plate that are separated by a recessed portion, said edges being spaced far enough apart that the intervening recessed portion can be placed over a locking leg of a first interlocking shingle with said edges straddling the locking leg and with said edges each overlaying one of two locking leg feet of the first interlocking shingle; said insertion means being configured and arranged so that the plate can be placed over the first interlocking shingle with the first interlocking shingle locking leg projecting forwardly of said plate and with said edges overlaying the first interlocking shingle locking leg feet, and said edges can then be inserted underneath adjacent locking side tabs of adjacent second and third interlocking shingles to place the locking leg feet underneath the adjacent locking side tabs and to place the locking leg over the second and third interlocking shingles so as to interlock the first, second and third interlocking shingles.

5,575,133

METHOD OF PACKAGING A POTTED PLANT

Donald E. Weder; Joseph G. Straeter, both of Highland, and William F. Straeter, Breese, all of Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 386,859, Feb. 10, 1995, Pat. No. 5,493,809, which is a continuation-in-part of Ser. No. 237,078, May 3, 1994, which is a continuation-in-part of Ser. No. 220,852, Mar. 31, 1994, said Ser. No. 237,078is a continuation-in-part of Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482, said Ser. No. 386,859is a continuation-in-part of Ser. No. 313,675, Sep. 27, 1994, abandoned, which is a continuation of Ser. No. 188,183, Jan. 28, 1994, Pat. No. 5,388,386, which is a continuation of Ser. No. 968,798, Oct. 30, 1992, Pat. No. 5,369,934, which is a continuation of Ser. No. 865,563, Apr. 9, 1992, Pat. No. 5,245,814, which is a continuation of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned, said Ser. No. 386,859is a continuation-in-part of Ser. No. 218,952, Mar. 25, 1994, which is a continuation-in-part of Ser. No. 95,331, Jul. 21, 1993, Pat. No. 5,428,939. This application Jun. 2, 1995, Ser. No. 458,327
Int. Cl.[6] B65B *11/02;25/02;51/00*
U.S. Cl. 53—397 **23 Claims**



1. A method of packaging a potted plant, comprising:

providing a flexible sleeve, the flexible sleeve having a lower end, an upper end, an outer peripheral surface, and an inner peripheral surface surrounding an inner retaining space, the sleeve further comprising:

a lower portion having a space for enclosing a pot,

an upper portion connected to the lower portion and sized to substantially surround and encompass a floral grouping, the upper portion detachable from the lower portion via perforations positioned in a predetermined pattern, and

holding means comprising a tab having a connected end and a free end connectable to a portion of the outer peripheral surface of the sleeve via an adhesive bonding material for tightening the base portion about the pot and wherein the connected end is connected to the outer peripheral surface of the lower portion of the sleeve;

opening the flexible sleeve rendering accessible the inner retaining space of the sleeve;

providing a pot containing a floral grouping, the pot having an outer peripheral surface;

disposing the pot within the inner retaining space of the flexible sleeve wherein a base portion of the lower portion of the flexible sleeve is positioned adjacent the pot and the upper portion of the sleeve extends upwardly from the pot, said upper portion substantially surrounding and encompassing the floral grouping; and

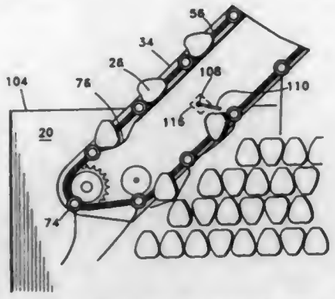
tightening the base portion of the sleeve about the pot by connecting the free end of the tab to a portion of the outer peripheral surface of the lower portion of the sleeve via the adhesive bonding material whereby the sleeve is held in a position about the pot.

5,575,134

APPARATUS AND METHOD FOR FILLING A BIN

Scott C. Main, 1030 Gibson, Selah, Wash. 98942

Filed Apr. 18, 1995, Ser. No. 424,705
Int. Cl.[6] B65B 35/30
U.S. Cl. 53—443 13 Claims



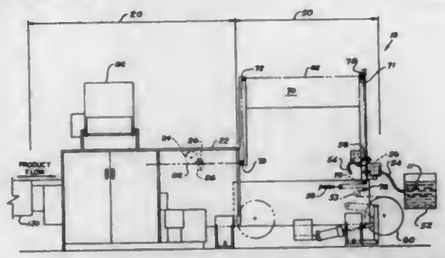
1. A method of loading a plurality of articles into a bin which comprises the steps of:
driving a continuous member having a plurality of resilient flaps pivotally mounted thereto along an upper run, about a first axis, along a lower run and about a second axis, the second axis substantially parallel to and spaced from the first axis;
supporting the flaps in a position substantially parallel the upper run during the flaps movement along the upper run between a pickup location proximate the second axis and a drop location proximate the first axis;
feeding a plurality of articles onto each of the flaps as each of the flaps passes the pickup location;
permitting the flaps to pivot under the influence of gravity into an article dropping position as each of the flaps passes the drop location;
permitting the flaps to pivot under the influence of gravity and the movement thereof along the lower run into an article catching position;
catching the plurality of articles on each of the flaps as each of the flaps passes a catch location;
depositing the plurality of articles into the bin between the catch location and an end of the lower run; and
sweeping the plurality of articles away from the catch location with the flaps.

5,575,135

PAPER WRAPPING PROCESS AND A MACHINE FOR PERFORMING THE PAPER WRAPPING PROCESS

John E. Nordstrom, Manitowoc, Wis., assignor to Barbara A. Nordstrom, Manitowoc, Wis.

Continuation-in-part of Ser. No. 862,857, Apr. 3, 1992, abandoned. This application May 24, 1993, Ser. No. 66,407
Int. Cl.[6] B65B 11/00;51/10
U.S. Cl. 53—463 7 Claims



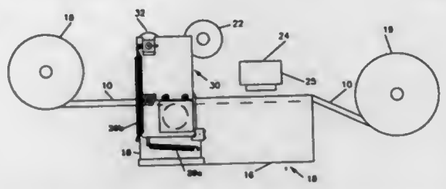
1. A process for using wrapping paper, having a glue applied to it, to completely wrap paper goods using the combination of a glue application station having a drying section, including a roller means for supporting the wrapping paper as it passes through the drying section, for allowing the glue applied to the wrapping paper to dry and a paper product wrapping machine having an advancement means for advancing the wrapping paper through the paper product wrapping machine, the process comprising:
a first step in which a web of wrapping paper is fed from a means for supplying wrapping paper into the glue application station;
a second step in which the glue is applied, in the glue application station by spraying the glue from a spray means for spraying the glue, to a first predetermined portion of the web;
a third step in which the glue applied to the first predetermined portion of the web is allowed to dry in the drying section and the web continues through the drying section over the rolling means without substantial transference of the glue from the web to the rolling means;
a fourth step in which the wrapping paper, having the dried glue on the predetermined portion of the web, is fed into the paper product wrapping machine, cut to a predetermined length, and there is substantial contact between the web and the advancement means without transference of the glue to the advancement means;
a fifth step in which the wrapping paper is completely folded around the paper goods and the first predetermined portion of the wrapping paper to which the glue has been applied is pressed against a second predetermined portion of the web;
a sixth step in which the pressed together first and second predetermined portions of the wrapping paper are heated to a temperature sufficient to activate the glue and insufficient to damage the wrapping paper; the paper goods being completely wrapped in the wrapping paper;
a seventh step in which the glue is resolidified while the first and second predetermined portions of the web are held together; whereby the first and second predetermined portions of the web adhere to each other and the paper goods are completely wrapped.

5,575,136

DE-REELER FOR TAPE AND REEL MACHINE

Shirley Y. Caldwell, Sherman, and Jerry M. Varley, Whitesboro, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 5, 1995, Ser. No. 369,020
Int. Cl.[6] B65B 43/40;7/28
U.S. Cl. 53—492 7 Claims



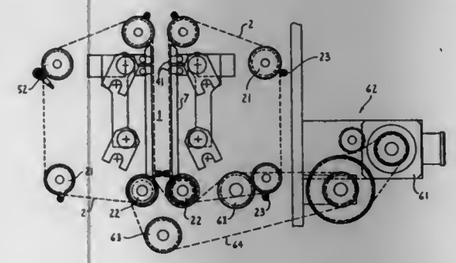
1. Method for re-working defective carrier tapes in which semiconductor devices are sealed in a carrier tape by a cover tape, comprising the steps of:
advancing a defective carrier tape through a track with a drive mechanism;
removing a defective cover tape from the carrier tape with a de-reeler tape reel rotated by said drive mechanism in synchronism with the advancing of the defective carrier tape through said track;
supplying a new cover tape to the carrier tape with a cover tape reel; and
sealing said new cover tape to said carrier tape in said track.

5,575,137

CROSS-SEALING DEVICE FOR A TUBULAR BAG PACKAGING MACHINE

Hartmut Metz, Nieder-Ohmen; Dieter Korzer, Wetzlar, and Walter Baur, Gruendau, all of Germany, assignors to Rovema Verpackungsmaschinen GmbH, Fernwald, Germany

Filed Apr. 12, 1995, Ser. No. 420,870
Claims priority, application Germany, Apr. 13, 1994, 44 12 577.1
Int. Cl.[6] B65B 9/12;9/20;51/26;61/00
U.S. Cl. 53—552 16 Claims



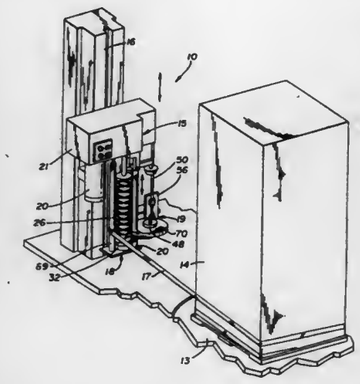
1. In a cross-sealing device for a tubular foil bag packaging machine including at least one pair of cross-sealing jaws, a first support means for movably mounting said cross sealing jaws on said tubular foil bag packaging machine whereby said cross sealing jaws move into and out of engagement with a plastic foil tube, at least one pair of stripping rods, and a second support means for symmetrically moving said at least one pair of stripping rods and mounting said at least one pair of stripping rods on said tubular foil bag packaging machine, said at least one pair of cross-sealing jaws being movable into and out of engagement with the plastic foil tube in a direction perpendicular to a longitudinal axis of the plastic foil tube to thereby divide transversely with respect to its longitudinal axis through a cross-sealing seam the plastic foil tube into individual tubular bag packages, said at least one pair of stripping rods being arranged on said second support means symmetrically to one another and parallel with respect to the cross-sealing seam and being symmetrically movable toward one another along an area to be sealed causing said at least one pair of stripping rods to wipe within and along at least one portion of the plastic foil tube in said area to be sealed clamping the plastic foil tube therebetween at least over an area of the plastic foil tube whereat the cross-sealing seam is to be formed so that the packaging material is wiped away from said area to be sealed into the tubular bag package to be closed prior to operation of said at least one pair of cross sealing jaws, the improvement wherein an endless and elastically yieldable and flexible driving belt is provided on opposite sides of and symmetrically with respect to said area to be sealed; wherein said second support means further includes a fastening means for attaching said at least one pair of stripping rods on said driving belts; wherein said driving belts are each synchronously driven by a common drive over a respective driving roller, and wherein a control device is provided for said common drive for controlling movement of said at least one pair of stripping rods independently of the plastic foil tube and of said at least one pair of cross-sealing jaws.

5,575,138

STRETCH WRAPPING TAPE DISPENSING APPARATUS

Lawrence P. Reigrut, Youngstown, and Robert Simons, Newton Falls, both of Ohio, assignors to Liberty Industries, Girard, Ohio

Continuation-in-part of Ser. No. 370,421, Jan. 9, 1995. This application Jun. 29, 1995, Ser. No. 496,335
Int. Cl.[6] B65B 53/00;11/04
U.S. Cl. 53—556 4 Claims



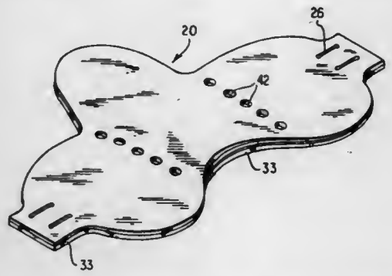
1. A pre-stretch wrapping machine for dispensing a tape band of wrapping material to a load supported on a turntable comprises, a carriage assembly having a pair of drive rollers, a first drive roller engaging the tape band of wrapping material from a feed stock roll, a second drive roller engaging the tape band of wrapping material from the first drive roller and pre-stretching said tape band between said first and second rollers, said drive rollers having a rubberized outer surface and intersecting deep spiral grooves within, one of said rollers having an area of smooth non-resistant material inwardly from one end thereof.

5,575,139

NON-SLIP SADDLE PAD

Chris L. Green, Clovis, Calif., assignor to Form To Fit, Pinedale, Calif.

Continuation of Ser. No. 233,385, Apr. 26, 1994, abandoned. This application Dec. 21, 1995, Ser. No. 576,391
Int. Cl.[6] B68C 1/12
U.S. Cl. 54—66 17 Claims



16. A saddle pad comprising a flexible foam layer having a nonsmooth exposed surface formed by removal of at least a portion of at least one surface skin, said exposed surface is able to create a plurality of tiny suctions when placed in contact with an animal thereby preventing the pad from slipping while in use.

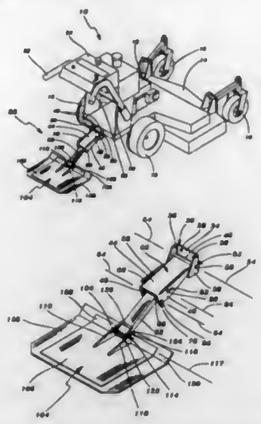
VOL 1192 ISS 3 NO 19 1996 UMI

5,575,140

APPARATUS FOR TRANSPORTING OPERATOR BEHIND SELF-PROPELLED VEHICLE

Steven P. Bermes, and Gregory J. Bermes, both of Fort Wayne, Ind., assignors to Novae Corp., Fort Wayne, Ind.

Filed May 30, 1995, Ser. No. 453,216
Int. Cl.[6] A01D *34/67;67/04*
U.S. Cl. 56—14.7 31 Claims



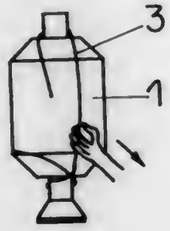
1. An apparatus attachable to a self-propelled vehicle for transporting an operator therebehind, said apparatus comprising:
an attachment member selectively attachable to a self-propelled vehicle;
a first arm pivotally connected to said attachment member;
a second arm pivotally connected to said first arm at a distance from said first arm pivotal connection to said attachment member; and,
an operator support platform pivotally connected to said second arm at a distance from said second arm pivotal connection to said first arm, whereby said first and second arms and said support platform are selectively pivotable for placing said platform in a retracted storage position and in an extended in use position for carrying and transporting an operator behind the self-propelled vehicle.

5,575,141

PROCESS FOR BREAKING YARN FOR THE AUTOMATIC REMOVAL OF BOBBINS FROM BANKS OF SPINDLES AND PRESSER FINGER FOR PRACTICING THIS PROCESS

Henri Genevray, Guebwiller, France, assignor to N. Schlumberger et Cie (SA), Guebwiller, France

Filed Jul. 13, 1995, Ser. No. 501,816
Claims priority, application France, Jul. 13, 1994, 94 08883
Int. Cl.[6] D01H *9/14;* B65H *54/00*
U.S. Cl. 57—278 3 Claims



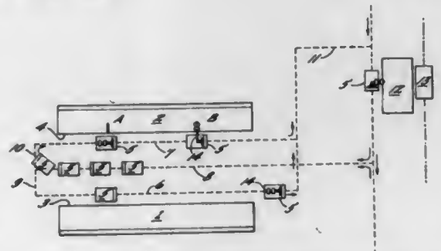
1. Process for breaking yarn for the automatic removal of bobbins (1) from banks of spindles, permitting the operator to grasp the end of the yarn at the base of the bobbin (1) and guaranteeing a good retention of the yarn during handling of the bobbin (1), thereby avoiding its untimely unwinding, comprising winding yarn on a substantially vertical bobbin, and at the end of winding, stopping the winding in the lower portion of the bobbin (1), then effecting a lower winding of several turns at the base of the bobbin (1), then effecting an upper limited winding at least partially about the upper portion of the bobbin followed by breaking of the yarn below the upper portion of the bobbin (1).

5,575,142

METHOD OF AUTOMATICALLY SERVICING WINDING APPARATUS IN MULTI-STATION TEXTILE MACHINES

Gerd Munoekehoff, Remscheid, Germany, assignor to Barmag AG, Remscheid, Germany

Continuation of Ser. No. 763,174, Sep. 20, 1991, abandoned.
This application Mar. 18, 1994, Ser. No. 210,350
Claims priority, application Germany, Sep. 21, 1990, 40 29 924.4
Int. Cl.[6] D01H *9/10;9/14*
U.S. Cl. 57—281 12 Claims



1. A method of automatically servicing a textile machine comprising a plurality of winding stations in a predetermined spatial relationship, the method comprising the steps of:
parking not less than two identically equipped service carts in a state of service preparedness in a first position;
issuing a call signal to one of the service carts at said first position from one of said winding stations upon a serviceable condition existing at the one signal issuing station;
moving said one service cart in response to the call signal to the one winding station which issued the call signal;
servicing the one winding station which issued the call signal by said one service cart;
moving said one service cart from said one winding station to a second position;
refurbishing said state of service preparedness of said one service cart at said second position; and
moving said one service cart from said second position back to said first position.

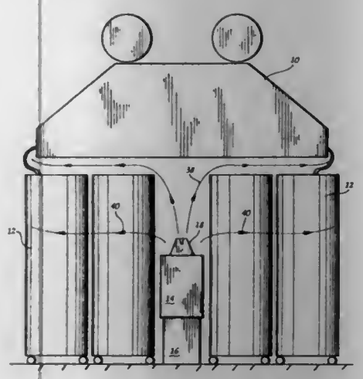
5,575,143

AIR DIRECTING APPARATUS FOR USE WITH TEXTILE MACHINES AND THE LIKE

Mark S. Gengler, Shelby, N.C., assignor to Pneumafil Corporation, Charlotte, N.C.

Filed Apr. 19, 1995, Ser. No. 425,183
Int. Cl.[6] D01H *5/28;13/26*
U.S. Cl. 57—308 6 Claims

1. An apparatus for supplying conditioned air to a spinning machine, comprising:
(a) a duct for transporting conditioned air to the spinning machine, said duct including an opening through which conditioned air exits said duct; and



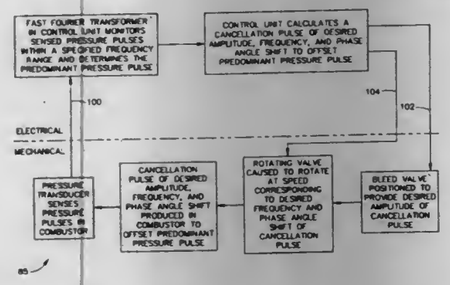
(b) an air diffuser mounted on said duct in the path of conditioned air exiting from said duct, said air diffuser including an air directing wall shaped to direct a major portion of conditioned air exiting from said duct toward and between sliver cans in an area located beneath the spinning machine, and including a plurality of openings of a predetermined area formed in said wall so that a minor portion of conditioned air flows through said openings and is directed toward the spinning machine itself.

5,575,144

SYSTEM AND METHOD FOR ACTIVELY CONTROLLING PRESSURE PULSES IN A GAS TURBINE ENGINE COMBUSTOR

Anthony D. Brough, Hamilton, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Nov. 28, 1994, Ser. No. 345,081
Int. Cl.[6] F02C *7/00*
U.S. Cl. 60—39.02 16 Claims



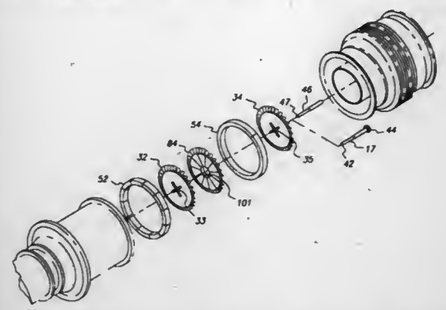
12. A method of actively controlling pressure pulses in a combustor of a gas turbine engine, comprising the following steps:
(a) sensing pressure pulses in said combustor;
(b) determining an amplitude and a frequency for a predominant pressure pulse of said sensed pressure pulses;
(c) calculating an amplitude, a frequency, and a phase angle shift for a cancellation pulse to offset said predominant pressure pulse; and
(d) periodically extracting metered volumes of air from said combustor to produce said cancellation pulse.

5,575,145

GAS TURBINE REPAIR

Brian P. O'Neill, Bakersfield, and Tommy A. Eveland, Fellows, both of Calif., assignors to Chevron U.S.A. Inc., Richmond, Calif.

Filed Nov. 1, 1994, Ser. No. 332,835
Int. Cl.[6] F02C *7/00*
U.S. Cl. 60—39.02 4 Claims



3. In the operation of a gas turbine engine wherein a common drive shaft assembly includes a hot gas section comprising a plurality of hot gas stages, each of which includes a turbine disc axially spaced apart from the other turbine discs along said drive shaft and an air compressor section axially spaced apart from said hot gas section having a multiplicity of axially adjacent air compressor discs, and a combustion chamber surrounding said drive shaft intermediate said hot gas and said air compressor sections, said common drive shaft extending beyond either one or both of said air compressor and hot gas sections of said engine for connection to rotary drive power means, or auxiliary means, or both,
and wherein said turbine engine includes a removable exhaust gas diffuser housing extending beyond the last turbine discs of said hot gas section to expose a sufficiency of each turbine disc supported on a portion of said common drive shaft being independently removable from said hot gas section,
a method for in-field restoring or improving the efficiency of the hot gas stage of said gas turbine without displacement or removal of said turbine engine from its normal operating position and without need to re-balance said common drive shaft assembly to avoid destructive vibration of said gas turbine engine operating at normal or ideal temperatures and rotary speeds, which comprises the steps of
(a) index marking each of said hot gas turbine discs relative to its axial and circumferential position on said removable drive shaft portion;
(b) withdrawing said removable drive shaft portion from said common drive shaft through said plurality of turbine discs by unthreading the connection between said portion and said common drive shaft,
(c) replacing said drive shaft section with a dummy drive shaft section, said dummy drive shaft being substantially identical to said drive shaft portion, including a threaded end for connection to said common drive shaft except that the rearward end of said dummy drive shaft having a diameter to permit the hubs of each said turbine disc to pass axially over said dummy drive shaft end,
(d) index marking the circumferential and axial positions of each turbine disc on said dummy shaft, and measuring the space or gap between the tips of the turbine blades and the opposed tip shoe surfaces at a multiplicity of locations around the full circumference of said turbine blade tips,
(e) then, successively removing each of said hot stage assemblies from said turbine engine by independently sliding the turbine disc over the rearward end of said dummy shaft, removing the associated tip shoe means as a unit, and followed by removal of the corresponding nozzle ring supplying hot gas to the related turbine disc,
(f) re-assembling said multiplicity of hot stages in the reverse order of step (e) wherein each turbine disc is oriented

around and along said dummy shaft by said index markings previously recorded on said dummy shaft and said turbine discs, and

(g) after each turbine disk is replaced, substituting a modified tip shoe means for each of the plurality of original tip shoes around at least said first and second stage turbine discs, each of said modified tip shoe means including an abradable surface coating forming a plurality of labyrinth edges having a Mohr scale hardness not less than about 40 and not greater than about 80, and said labyrinth edges having a radial width toward the opposed turbine blade tips to substantially full the space therebetween, and the hardness of said labyrinth edges of said substituted tip shoes having maximum abradability at the outer end thereof and each shoe means having a maximum hardness at the support ends of said tip shoe to permit self adjustment of said space between the turbine disc tips and said labyrintive edges to minimize abrasion of said labyrinth edges to the maximum radial expansion of said turbine blade tips under operating conditions and without damage to said blade tips, and

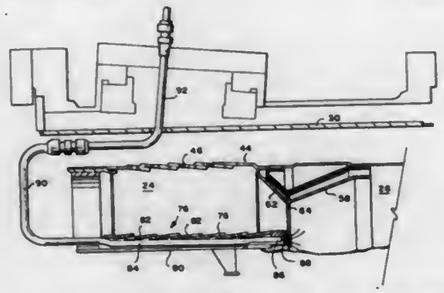
(h) unthreading the end of said dummy drive shaft from said common drive shaft, and threadably reconnecting said drive shaft portion to said common drive shaft so that each of said index markings on said discs and their index markings on said drive shaft portion may be torqued to said common drive shaft, whereby said drive shaft and the reassembled discs thereon do not require dynamic rebalancing of said common drive shaft prior to operation of the re-assembled gas turbine.

5,575,146

TERTIARY FUEL, INJECTION SYSTEM FOR USE IN A DRY LOW NOX COMBUSTION SYSTEM

Richard J. Borkowicz, Westminster, Md.; L. Berkley Davis, Jr., Schenectady, and Masayoshi Kuwata, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 987,957, Dec. 11, 1992, Pat. No. 5,487,275. This application May 5, 1995, Ser. No. 435,293
Int. Cl.[6] F02C *7/228*
U.S. Cl. 60—39.06 **9 Claims**



1. A method of suppressing combustion dynamics during transfer from a primary mode to a premixed mode of operation in a dual stage gas turbine combustor which includes primary and secondary combustion chambers separated by a venturi and supplied with fuel from primary and secondary fuel nozzles respectively and wherein, in a primary mode fuel is fed to the primary combustion chamber by said primary fuel nozzles for burning in the primary combustion chamber only, and in a premixed mode fuel is fed to the primary combustion chamber by said primary fuel nozzles for premixing with air and for burning in the secondary combustion chamber, comprising the steps of:

a) during transfer from the primary to the premixed mode of operation, diverting 100% of the fuel to a plurality of tertiary fuel nozzles arranged in circular array about a longitudinal axis of the combustor, proximate but not upstream of a throat portion of the venturi, for injection into the secondary combustion chamber, thereby causing flame out on the primary combustion chamber and providing a stable diffusion flame on the secondary combustion chamber; and

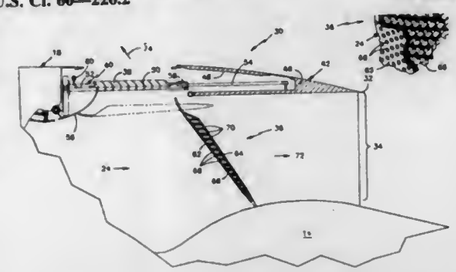
(b) upon flame out in the primary combustion chamber, diverting a portion of the fuel back to the primary fuel nozzles for injection of fuel into the primary combustion chamber for premixing with air, and diverting the remaining portion of the fuel to the secondary fuel nozzle for injection into the secondary combustion chamber.

5,575,147

COMPACT THRUST REVERSER

John P. Nikkanen, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 22, 1994, Ser. No. 361,628
Int. Cl.[6] F02K *1/72*
U.S. Cl. 60—226.2 **3 Claims**



1. A thrust reverser for a gas turbine engine, said thrust reverser having a blocker door, said blocker door having a stowed position and a deployed position, said blocker door in said deployed position obstructing a path of a fan flow, said thrust reverser characterized by:

a plurality of passageways formed within said blocker door for allowing said fan flow to leak therethrough when said blocker door is disposed in said deployed position, said blocker door having a first face sheet and a second face sheet with a honeycomb structure sandwiched therebetween, said first face sheet having a first plurality of openings, said second face sheet having a second plurality of openings, said first plurality of openings, said honeycomb structure and said second plurality of openings forming said plurality of passageways within said blocker door for allowing said fan flow to leak therethrough.

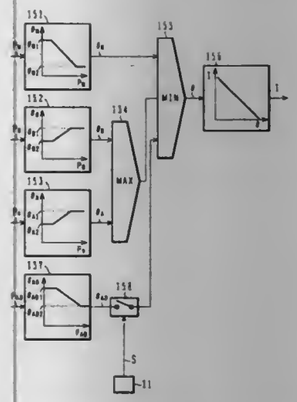
5,575,148

HYDRAULIC PUMP CONTROL SYSTEM

Toichi Hirata, Ushiku; Genroku Sugiyama, Ibaraki-ken; Hiroshi Watanabe, Ushiku, and Shigehiro Yoshinaga, Ibaraki-ken, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/02008, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO95/15441, PCT Pub. Date Jun. 8, 1995
PCT Filed Nov. 30, 1994, Ser. No. 454,270
Claims priority, application Japan, Nov. 30, 1993, 5-300052
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—445 **9 Claims**

1. A hydraulic pump control system for use with a hydraulic drive system comprising a variable displacement hydraulic pump (1), a plurality of hydraulic actuators (6–9) driven by said hydraulic pump, a plurality of flow control valves (10–13) of a center bypass type for controlling the driving of said hydraulic actuators, and a center bypass line (5) connecting the center bypasses of said flow control valves in series, said hydraulic pump control system



controlling a displacement volume of said hydraulic pump by using a negative control pressure generated by flow resisting means (20) which is disposed downstream of said center bypass line, said hydraulic pump control system comprising:

pressure detecting means (21) for detecting the negative control pressure generated in said center bypass line (5),

first target displacement volume calculating means (151) for calculating, based on a detected value of said pressure detecting means, a first target displacement volume of said hydraulic pump (1) in accordance with a preset first characteristic,

first control input detecting means (22 or 23) for detecting a control input for operating at least one (6 or 7) of said plurality of hydraulic actuators,

maximum target displacement volume limiting means (152–155) for limiting, depending on the detected value of said first control input detecting means, a maximum value of the first target displacement volume calculated by said first target displacement volume calculating means based on the detected value of said pressure detecting means, and providing a target displacement volume to be output, and

a regulator (26) for controlling the displacement volume of said hydraulic pump in accordance with said target displacement volume to be output.

5,575,149

HYDRAULIC SWING CIRCUIT

Terry A. Stoychoff, Garner, Iowa, assignor to Iowa Mold Tooling Company, Inc., Garner, Iowa

Continuation-in-part of Ser. No. 310,568, Sep. 22, 1994, Pat. No. 5,499,503. This application Sep. 11, 1995, Ser. No. 526,493
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—469 **4 Claims**

1. In a hydraulic system for an implement having a plurality of control circuits each having a work performing device and including a swing circuit having a hydraulic motor which, when under an aiding load, may function as a pump; a source of hydraulic fluid under pressure; a plurality of control valves, at least one for each circuit and interconnected between said source and the associated work performing device; the combination of:

a pair of hydraulic conduits extending from the control valve for said swing circuit to said hydraulic motor;

a pair of pilot operated dual level pressure relief valves connected oppositely across said conduits at a location between said control valve for said swing circuit and said hydraulic motor; and

a pair of counter-balance valves, one in each of said conduits at a location between said control valve for said swing circuit and said pressure relief valves, said counter-balance valves each having a pilot and being oriented in the associated conduit to allow flow from said control valve for said swing circuit toward said hydraulic motor, but not the reverse, except when receiving a pilot signal;

the pilots of said pressure relief valves being connected to the conduit whose pressure is relieved by the associated pressure relief valve at a location between said pressure relief valves and said control valve for said swing circuit; and

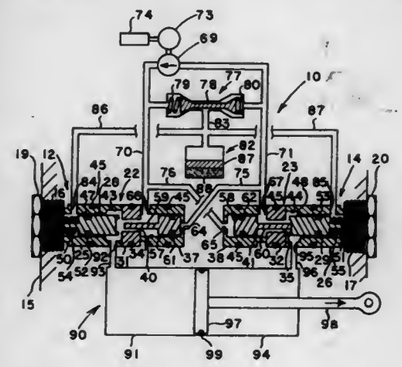
the pilot of each said counter-balance valve being connected to the conduit in which the other counter-balance valve is located at a location between said counter-balance valves and said control valve for said swing circuit.

5,575,150

STIFFNESS ENHANCED ELECTROHYDROSTATIC ACTUATOR

Kurt W. Vieten, Binghamton, N.Y.; Marvin V. Nordby, Newport Beach, and Sandor Dobos-Bubno, Torrance, both of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Apr. 12, 1995, Ser. No. 420,937
Int. Cl.[6] F16D *31/02*; F15B *11/08*
U.S. Cl. 60—476 **11 Claims**



1. An enhanced stiffness electrohydrostatic actuator, comprising:

an actuator including an extend chamber and a retract chamber which are separated by a piston having an actuator ram extending therefrom; and

a hydraulic system fluidly coupled to said actuator and comprising:

an extend valve fluidly coupled to said extend chamber;

a retract valve fluidly coupled to said retract chamber; and

a hydraulic pump fluidly coupled to said extend and retract valves for alternatively supplying high pressure hydraulic fluid to said extend chamber via said extend valve and said retract chamber via said retract valve;

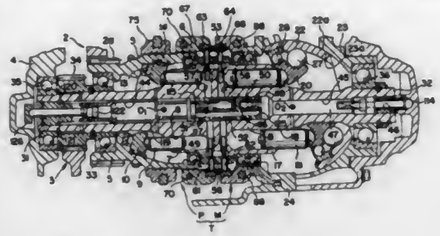
said extend and retract valves being in fluid communication with said actuator, said pump, and each other, and operable to isolate said extend and retract chambers from said pump when static loads and high frequency oscillating loads are applied to said actuator ram.

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5,575,151
SWASH PLATE TYPE HYDRAULIC ACTUATOR WITH VARIABLE ECCENTRICITIES

Tsutomu Hayashi, and Yoshihiro Nakajima, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1994, Ser. No. 366,039
Claims priority, application Japan, Dec. 29, 1993, 5-353965
Int. Cl.[6] F16H *39/14;61/40*
U.S. Cl. 60—489 **23 Claims**



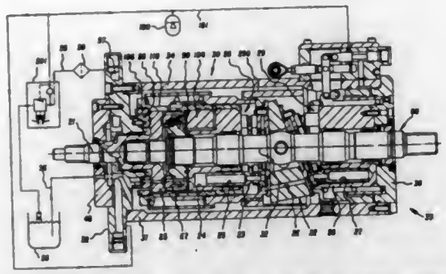
1. A swash plate hydraulic actuator comprising:
a casing;
a cylinder block including first and second cylinders supported on the casing for rotation about an axis of rotation, said cylinders being provided with a plurality of cylinder bores arranged on a circle;
an annular inner oil passage formed in an inner circumference of the cylinder block;
an annular outer oil passage formed in an outer circumference of the cylinder block;
a plurality of radial valve holes extending between the annular inner oil passage and the annular outer oil passage and respectively having ports opening into the cylinder bores;
plungers slidably fitted respectively in the cylinder bores;
first and second swash plates;
first and second swash plate holders for holding the first and second swash plates, respectively, for contacting the first and second swash plates with one end of each of the plungers projecting from the cylinders;
distributing valves slidably fitted in the valve holes for connecting the ports alternately to the inner oil passage and the outer oil passage;
first and second eccentric rings held on the first and second swash plate holders, respectively, for being in contact with the outer ends of the distributing valves;
said eccentric rings being selectively shifted radially of the cylinders by eccentric radius changing means for changing the eccentric radii of the eccentric rings relative to the cylinders for changing the effective stroke of the plungers;
wherein a discharge range of said first cylinder varies as the eccentric radius of the first eccentric ring changes, with a phase angle of the discharge range remaining constant, and
wherein an amount of eccentricity of each of said eccentric rings varies, with a phase angle remaining constant.

5,575,152
HYDRAULIC MACHINE WITH WEDGE-SHAPED SWASHPLATE

Lawrence R. Folsom, Pittsfield, Mass., assignor to Martin Marietta Corporation, Bethesda, Md.

Continuation of Ser. No. 93,192, Jul. 13, 1993, Pat. No. 5,423,183, which is a continuation-in-part of Ser. No. 640,645, Jan. 14, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 465,631
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—492 **8 Claims**

3. A hydraulic machine comprising, in combination:
an output shaft having an axis of rotation;



a member connected to the output shaft in torque coupled relation for rotation with the output shaft about the axis, the member including:
a first slot located in a first side of the member and having circumferentially opposed end faces of differential surface areas, and
a second slot located in a second side of the member diametrically opposed to the first side and having circumferentially opposed end faces of differential surface areas; and
means for delivering high pressure fluid to the first slot and low pressure fluid to the second slot, the high and low pressure fluids acting against the differential end face surfaces areas of the first and second slots, respectively, to develop a resultant torque on the member that is coupled to the output shaft as output torque.

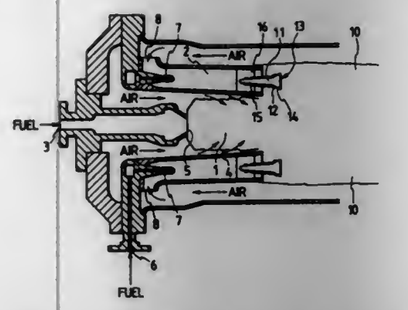
5. A method of producing an infinitely variable transmission ratio input speed to output speed in a hydrostatic transmission including a hydraulic pump unit, a grounded hydraulic motor unit, and a swashplate operatively positioned between the hydraulic pump and motor units, the method comprising the steps of:
introducing hydraulic fluid to a pair of angularly spaced slots in hydraulic fluid flow communication with the hydraulic pump and motor units, the slots respectively located at diametrically opposed pumping and suction sides of the swashplate, the slots having circumferentially opposed end faces of differential surface areas;
jointly setting relative angular orientations of the swashplate to the hydraulic pump and motor units to a desired transmission ratio;
applying input torque to an input shaft coupled to rotate the hydraulic pump unit at input speed;
pressurizing the hydraulic fluid in the slot at the pumping side of the swashplate to a high fluid pressure and the hydraulic fluid in the slot at the suction side of the swashplate to a low fluid pressure;
generating a first torque component on the swashplate proportional to the differentials in the surface areas of the slot faces;
coupling the first torque component to an output shaft at output speed; and
jointly adjusting the swashplate angular orientations to the hydraulic pump and motor units to a new transmission ratio.

5,575,153
STABILIZER FOR GAS TURBINE COMBUSTORS AND GAS TURBINE COMBUSTOR EQUIPPED WITH THE STABILIZER

Kazuyuki Ito, Katsuta; Tadayoshi Murakami, Hitachi; Kazuhiko Kawaike, Katsuta; Shigeru Azuhata, and Michio Kuroda, both Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 30, 1994, Ser. No. 220,251
Claims priority, application Japan, Apr. 7, 1993, 5-080613; Sep. 20, 1993, 5-233393
Int. Cl.[6] F02C *1/02*
U.S. Cl. 60—737 **27 Claims**

1. A gas turbine combustor stabilizer, comprising:
a support portion extending in a direction of a main fluid flow in a gas turbine combustor;

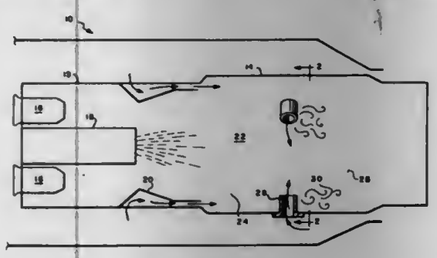


a stabilizer portion connected to and extending downstream of said support portion with respect to the main fluid flow, said stabilizer portion having a stabilizer surface inclined against and extending along the direction of the main fluid flow and a heat receiving surface arranged at a downstream side end of said stabilizer surface so as to traverse the direction of the main fluid flow; and
at least one turbulence promotor arranged on said stabilizer surface so as to project from said stabilizer surface and extend in a transverse direction of the main fluid flow.

5,575,154
DILUTION FLOW SLEEVE FOR REDUCING EMISSIONS IN A GAS TURBINE COMBUSTOR

Anthony J. Loprinzo, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 212,407, Mar. 14, 1994, Pat. No. 5,454,221. This application Feb. 3, 1995, Ser. No. 383,274
Int. Cl.[6] F02C *7/228*
U.S. Cl. 60—746 **5 Claims**

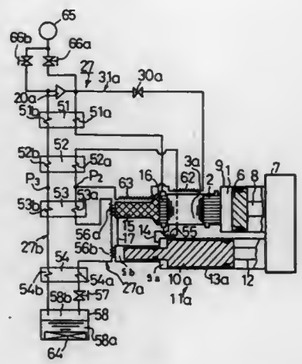


1. A combustor for a turbine comprising:
a combustor body;
a nozzle for supplying fuel into said combustor body, said combustor body including a combustion liner downstream of said fuel nozzle defining a reaction volume for containing a generally axially extending core flow of hot gases of combustion, said reaction volume including first and second reaction zones and a dilution zone therebetween, said first reaction zone being disposed upstream of said dilution zone for containing an annular flow of relatively unmixed cooling air and the core flow of hot gases of combustion; and
a plurality of flow sleeves disposed at circumferentially spaced positions about said liner and extending inwardly of said liner into the reaction volume, said sleeves being located axially along said liner to supply dilution air into said dilution zone and the core flow to facilitate CO to CO_2 reactions and thereby reduce CO emissions, said second reaction zone being disposed downstream of said dilution zone for mixing the cooling air and the dilution air with the core flow sufficiently to substantially preclude quenching CO to CO_2 reactions.

5,575,155
COOLING SYSTEM

Hideo Mita, Okazaki; Katsunobu Kanda, Toyohashi; Hideo Misawa, Anjo; Toshiki Herai, Kokubunji, and Ken Nagashima, Hachioji, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, and Railway Technical Research Institute, Tokyo, both of Japan

Filed Aug. 17, 1995, Ser. No. 516,364
Claims priority, application Japan, Aug. 24, 1994, 6-199403
Int. Cl.[6] F25B *9/00*
U.S. Cl. 62—6 **13 Claims**



1. A cooling system, comprising:
a cold-accumulating refrigerator including:
a compression chamber in which a first refrigerant is compressed;
a chiller for dissipating heat resulting from the compression of the first refrigerant;
a regenerator communicating with the chiller; and
an expansion chamber in which the first refrigerant, transferred via the regenerator, is expanded; and
a cooling circuit in which a second refrigerant flows, the cooling circuit including a main circuit and a branched circuit:
the main circuit including:
pressure delivering means having an inlet port and an outlet port;
a heat exchanger for cooling a substance to be cooled;
a high-pressure-side circuit connecting the outlet port of the pressure delivering means and the cooling heat exchanger;
a low-pressure-side circuit connecting the cooling heat exchanger and the inlet port of the pressure delivering means; and
a counterflow heat exchanger for thermally bringing the second refrigerant, flowing in the high-pressure-side circuit, into contact with the second refrigerant, flowing in the low-pressure-side circuit; and
the branched circuit for branching part of the second refrigerant from an upstream portion, which is placed between the pressure delivering means and the counterflow heat exchanger in the high-pressure-side circuit of the main circuit, and introducing the part of the second refrigerant into a downstream portion, which is placed between the counterflow heat exchanger and the heat exchanger in at least one of the high-pressure-side circuit and the low-pressure-side circuit of the main circuit, the branched circuit including:
a heat exchanger for conducting cold, the cold-conducting heat exchanger being thermally brought into contact with a portion of the regenerator of said cold-accumulating refrigerator whose temperature is varied from a high temperature to a low temperature by the first refrigerant flowing therein.

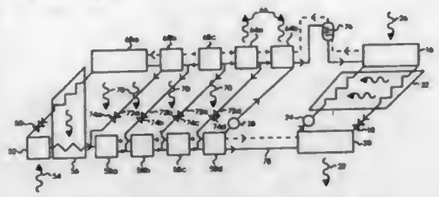
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5,575,156

HIGH-LIFT LOW-DROP ABSORPTION HEAT PUMP

Lawrence A. Howe, 8101 Chestnut Ave., Bowie, Md. 20715

Filed Feb. 21, 1995, Ser. No. 391,190
Int. Cl.[6] F25B *15/00;15/06*
U.S. Cl. 62—101 13 Claims



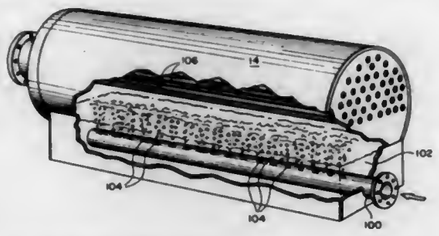
1. A process for absorption heat pumping comprising:
supplying heat to a first generator, thereby desorbing vapor from a solution of absorbent and refrigerant in the first generator,
supplying the vapor desorbed in the first generator to a first absorber in which the vapor is partially absorbed into an absorbent solution, thereby producing a mixture of vapor and liquid,
supplying the mixture from the first absorber to a second absorber in which vapor is further absorbed into the absorbent solution, thereby producing a strong solution and evolving a heat of absorption,
reducing the ambient pressure of the strong solution in a partial evaporator, thereby vaporizing some of the strong solution, and extracting heat from a load,
supplying absorbent vapor and liquid from the partial evaporator to an additional generator, thereby producing more vapor and leaving a remaining liquid, the additional generator receiving the heat of absorption evolved by the second absorber,
pumping the remaining liquid from the additional generator to the first absorber,
supplying vapor from the additional generator to a third absorber in which the vapor is absorbed into an absorbent solution,
pumping absorbent solution from the third absorber to the first generator, and
supplying absorbent liquid solution from the first generator to the third absorber.

5,575,157

NOISE CONTROL IN A CENTRIFUGAL CHILLER

Robert G. Harold, West Salem, Wis., assignor to American Standard Inc., Piscataway, N.J.

Division of Ser. No. 291,264, Aug. 16, 1994, Pat. No. 5,499,509. This application Aug. 24, 1995, Ser. No. 518,907
Int. Cl.[6] F25B *1/00*; F28F *13/00*
U.S. Cl. 62—115 5 Claims



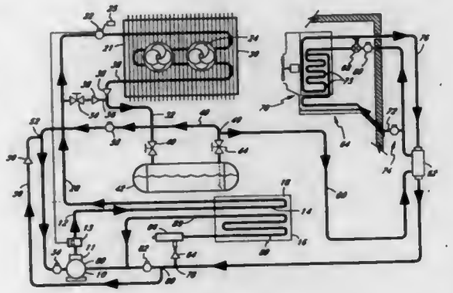
1. A centrifugal chiller comprising:
a centrifugal refrigerant gas compressor;
a condenser in flow communication with said compressor, said condenser having an upper portion and a lower portion, said upper portion of said condenser being traversed by a plurality of tubes through which a cooling medium flows, said lower portion of said condenser defining a sump in which liquid refrigerant pools after having been condensed in said condenser in a heat exchange relationship with the cooling medium flowing through the tubes in the upper portion of said condenser;
an evaporator in flow communication with said condenser and said compressor;
a device for metering refrigerant from said condenser to said evaporator; and
a manifold, immersed in said liquid refrigerant pool in said sump in said lower portion of said condenser, for bringing liquid refrigerant in said condenser sump into contact with refrigerant gas discharged from said compressor by distributing said refrigerant gas directly into liquid refrigerant pooled in said condenser sump.

5,575,158

REFRIGERATION DEFROST CYCLES

Kenneth E. Vogel, Yuma, Ariz., assignor to Russell A Division of Ardco, Inc., Brea, Calif.

Filed Oct. 5, 1994, Ser. No. 318,214
Int. Cl.[6] F25B *47/02*
U.S. Cl. 62—196.4 9 Claims



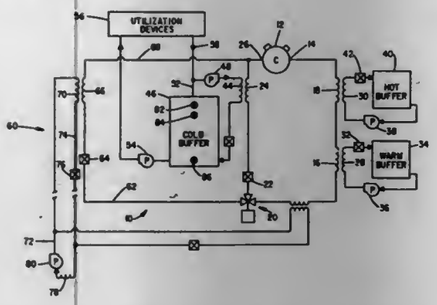
1. In a refrigeration system, including a compressor, a condenser, a first conduit connecting the compressor and the condenser, a receiver, an evaporator, and defrost cycle valving for directing hot gasses from the compressor to the receiver while bypassing the condenser and directing liquid and hot gasses from the receiver to a coil in the evaporator to defrost the evaporator coil, apparatus for improving the defrost cycle, comprising:
a valve controlling flow from the compressor to the condenser through said first conduit;
a temperature sensor for sensing the temperature adjacent the condenser, said temperature sensor being coupled to said valve, said valve being responsive to a temperature above a selected temperature to allow the hot gasses from the compressor to flow into the condenser where it is cooled somewhat before traveling to the receiver and the evaporator coil, said valve being responsive to a temperature below said temperature to direct the hot gasses from the compressor to flow to said receiver and the evaporator coil;
a pressure sensor coupled to said valve for permitting output from said compressor to flow into said condenser when the pressure of the refrigerant leaving the compressor reaches a predetermined maximum;
one or more bypass lines for distributing the heated refrigerant to the evaporator coil at two or more points in the evaporator coil to defrost all areas of the evaporator coil; and
a second conduit for conducting liquid refrigerant from the evaporator to the compressor to cool the compressor during the defrost cycle.

5,575,159

HEAT ENERGY TRANSFER SYSTEM

Edward W. Dittell, 300 Greenhill La., Long Lake, Minn. 55356

Filed Jun. 2, 1995, Ser. No. 459,812
Int. Cl.[6] F25B *5/00;27/00*
U.S. Cl. 62—199 12 Claims



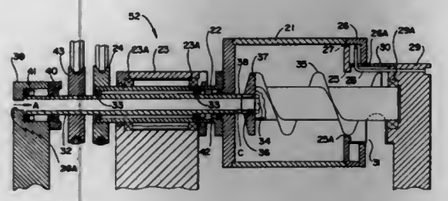
1. In an energy transfer system of the type including a refrigerant carrying loop having, in series, a heat transfer engine, a condenser, a first thermal expansion means and a main evaporator, the improvement comprising:
(a) first heat exchanger means having an inlet and an outlet operatively disposed in heat exchange relationship with the main evaporator for providing heat energy to the main evaporator;
(b) cold buffer means coupled in fluid communication with said first heat exchanger means for storing a heat transfer fluid, said buffer comprising a container having an upper and a lower end, with an inlet and an outlet at both the upper and lower end, the outlet at the upper end Coupled to an inlet of the first heat exchanger means and the inlet at the lower end coupled to an outlet of the first heat exchanger means; and
(c) means connected to the outlet at the lower end and the inlet at the upper end for supplying the heat transfer fluid from the cold buffer means to a utilization device.

5,575,160

FREEZE CRYSTALLIZATION FOR THE REMOVAL OF WATER FROM A SOLUTION OF DISSOLVED SOLIDS

Arie Keus, Lynn, Mass., assignor to Waterworks International, Inc., Bedford, Mass.

Division of Ser. No. 397,638, Mar. 2, 1995, Pat. No. 5,465,592, which is a division of Ser. No. 63,735, May 20, 1993, Pat. No. 5,394,706. This application Sep. 6, 1995, Ser. No. 523,824
Int. Cl.[6] B01D *9/04*
U.S. Cl. 62—544 21 Claims



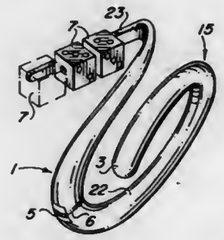
1. An apparatus for separating a slurry of ice crystals and liquid concentrate without filtration comprising:
a rotatable drum having a longitudinal axis, an inlet for receiving a slurry of ice crystals and liquid concentrate, a first outlet for conducting liquid concentrate away from the drum, and a second outlet for conducting ice crystals and any residual liquid concentrate away from the drum;
a scraper disposed inside and separate from the drum for conducting the ice crystals and any residual liquid concentrate to the second outlet; and
a drive mechanism for rotating the drum about its longitudinal axis wherein the centrifugal action produced upon rotation of the drum forces the liquid concentrate through the first outlet.

5,575,161

DICE AND CRAPS STICK JEWELRY

Janet L. Hinchey, Rt. 3, Box 530, Colfax, La. 71417

Filed Dec. 7, 1994, Ser. No. 352,522
Int. Cl.[6] A44C *5/00;25/00*
U.S. Cl. 63—2 7 Claims



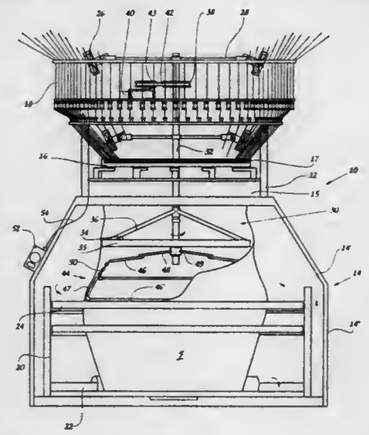
1. Dice and craps stick jewelry for wearing on display, comprising at least one miniature, decorative simulated craps stick having a dice contact leg and a stick handle extending from said dice contact leg, at least one miniature die attached to said dice contact leg of said craps stick; and attachment means provided on said miniature craps stick for maintaining said craps stick and said die on display.

5,575,162

APPARATUS FOR CONTROLLING TWIST IN A KNITTED FABRIC

Ed Gray, and Clark Gurganus, both of Greensboro, N.C., assignors to Guilford Mills, Inc., Greensboro, N.C.

Filed Oct. 3, 1995, Ser. No. 538,718
Int. Cl.[6] D04B *15/88;35/00*
U.S. Cl. 66—151 21 Claims



1. An apparatus for controlling twist in a knitted fabric being withdrawn from a circular knitting machine, the circular knitting

machine having a motor for driving a knitting cylinder and a fabric take-up assembly, the fabric being generally tubular to define a cavity within the fabric, the fabric having an inner surface and an outer surface, said apparatus comprising:

a twist control member rotatably mounted to the circular knitting machine for rotatable disposition within the fabric cavity, said twist control member having a fabric contact surface;

means for rotatably driving said twist control member; operable independently from the knitting cylinder and take-up assembly drive motor; and

means for controlling the driven rotation of said twist control member.

5,575,163
DEVICE FOR THE DETACHABLE FASTENING OF AN ELECTRICAL SERVICE APPLIANCE

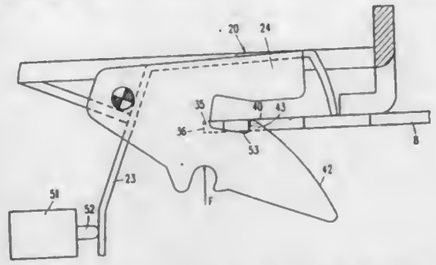
Peter Köhl, Herborn; Heinz Laxnter, Heuchelheim; Klaus Rinneburger, Wilnsdorf, and Manfred Rückert, Hagenbüchach, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 6, 1994, Ser. No. 178,150

Claims priority, application Germany, Jan. 14, 1993, 43 00 734.1

Int. Cl.[6] E05B *73/00*; H04B *1/00*

U.S. Cl. 70—58 **11 Claims**



1. An apparatus comprising an electrical service appliance including fastening means for detachably fastening the appliance in an opening defined by a mounting means, said fastening means comprising:

a. latching means insertable in the opening and pivotable to a locked position, for preventing removal of the appliance, or to a release position, for permitting removal of the appliance, said latching means including an inclined surface;

b. spring means for forcing the latching means into the locked position;

said apparatus including means defining a slotted passage for receiving a key and for guiding said key to the inclined surface of the latching means, said passage being oriented relative to said inclined surface to guide the key into sliding contact with said surface to effect pivoting of the latching means to the release position;

said latching means including a projection which is positioned and shaped for entry into a predetermined portion of the key which defines a cooperating security opening that is positioned and shaped to receive said projection, thereby permitting pivoting of the latching means to the release position.

5,575,164
COMBINATION LOCK

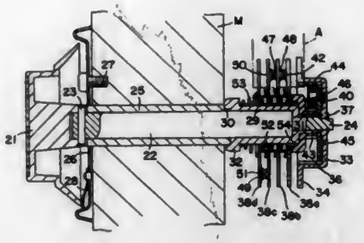
Tsuguyoshi Ohsawa, Sagamihara, Japan, assignor to K I International Co., Ltd., Tokyo, Japan

Filed Aug. 4, 1995, Ser. No. 511,225

Int. Cl.[6] E05B *37/08*

U.S. Cl. 70—303 A **3 Claims**

1. A combination lock characterized in that said combination lock includes a dial shaft adapted to be rotated with a user's hand, a fore lock plate, at least one intermediate lock plate and a rear lock plate arranged in parallel with each other so as to allow them to be followably rotated via a plurality of engagement projections projected from the opposite side surfaces of said lock plates, and a driving plate integrally fitted to the rear end of said dial shaft, that a plurality of unlocking cutouts are formed on the outer peripheries of said driving plate and said lock plates so as to allow a lock pawl to be received in said unlocking cutouts when the latter are located in alignment with each other, and that a driving gear having a large diameter is formed in said driving plate, and a follower gear having a small diameter is formed on said fore lock plate located adjacent to said driving plate, said driving gear and said follower gear meshing with each other at a gear ratio via an idle gear so as to allow both the gears to be rotated in the opposite direction, said gear ratio being determined such that all the lock plates are followably rotated as said dial shaft is rotated with a user's hand.



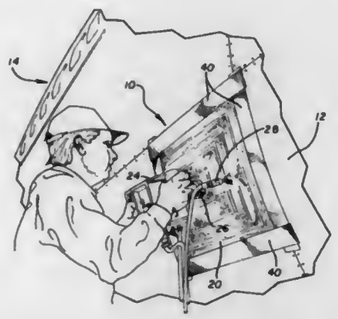
5,575,165
METHOD OF DENT REMOVAL USING A RESONANCE DAMPING VACUUM BLANKET

Thomas J. Roseberry, La Palma, Calif., assignor to McDonnell Douglas Corporation, Huntington Beach, Calif.

Filed Jan. 25, 1995, Ser. No. 377,958

Int. Cl.[6] B21D *1/06*

U.S. Cl. 72—56 **9 Claims**



1. A method for removing a dent from a sheet of metal, comprising the steps of:

a) mounting a sheet of damping material to the sheet metal;

b) coupling an electromagnetic device to the sheet metal; and,

c) energizing said electromagnetic device to pull the dent out of the sheet metal; wherein said damping material dampens any vibrational energy and eliminates "spring back" generated by the pull of said electromagnetic device.

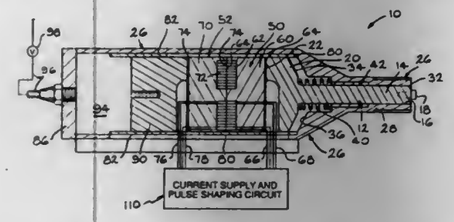
5,575,166
HIGH ENERGY IMPACT RIVETING APPARATUS AND METHOD

David Michalewski, Cheektowaga; Joseph A. Dionne, West Seneca, and Mark A. Sluta, Lockport, all of N.Y., assignors to Gemcor Engineering Corp., Buffalo, N.Y.

Division of Ser. No. 118,511, Sep. 9, 1993, Pat. No. 5,471,865. This application Jun. 7, 1995, Ser. No. 480,811

Int. Cl.[6] B21J *7/30*; H02K *33/00*

U.S. Cl. 72—56 **10 Claims**



1. A method for forming a metal object such as upsetting a fastener comprising the steps of:

a) providing a forming tool adapted for forming said metal object;

b) providing first and second coil means in close proximity to and in electromagnetic association with each other, said first coil means being in driving association with said forming tool;

c) supporting said first and second coil means in a manner allowing movement of said first coil means relative to said second coil means; and

d) supplying electric current pulses simultaneously to said first and second coil means to produce a repulsive electromagnetic force sufficient to accelerate said first coil means and drive said forming tool to perform a forming operation on said metal object;

e) said step of supplying electric current pulses including shaping said pulses in accordance with a characteristic of the object being formed.

5,575,167
DEEP ROLLING SPLIT-PIN FILLETS OF CRANKSHAFTS

William P. Gottschalk, Davisburg, and Hans T. Lauten, Commerce Township, both of Mich., assignors to Hegenscheidt Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 242,262, May 13, 1994, Pat. No. 5,495,738, and a continuation-in-part of Ser. No. 176,792, Jan. 3, 1994, Pat. No. 5,445,003. This application Jan. 18, 1995, Ser. No. 374,029

Int. Cl.[6] B21K *1/08*

U.S. Cl. 72—110 **6 Claims**

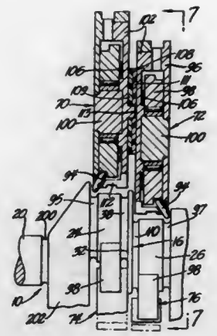
1. Method of deep rolling adjacent fillets of physically connected and adjacent and arcuately offset cylindrical bearing parts of crankshafts for internal combustion engines, each bearing part having an axis of revolution offset from the axis of revolution of the other part comprising the steps of:

(1) mounting said crankshaft in a fillet rolling machine;

(2) employing fillet rolling tools to engage the adjacent fillets of said bearing parts;

(3) relatively rotating said crankshaft and the fillet rolling tools;

(4) deep rolling said adjacent fillets of said adjacent and arcuately offset bearing parts so that the arcuate segment of said fillet of a first bearing part and the arcuate segment of a second bearing part which overlap one another are deep rolled at loads sufficiently higher than the arcuate segments of said fillets which are free from overlapping so said the overlapping arcuate segments of said fillets have high residual stresses imparted thereto to thereby strengthen the physical connection between the bearing parts.



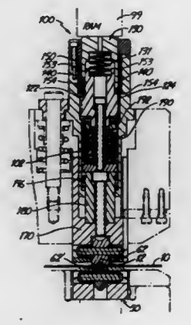
5,575,168
WORKPIECE-DEFORMING TOOL AND DIE FOR USE IN A PUNCH PRESS

Ronald G. Rosene, Coon Rapids, and Richard L. Timp, Vadnais Heights, both of Minn., assignors to Wilson Tool International, Inc., White Bear Lake, Minn.

Continuation-in-part of Ser. No. 177,691, Jan. 12, 1994. This application Jan. 9, 1995, Ser. No. 370,144

Int. Cl.[6] B21D *5/14*

U.S. Cl. 72—179 **7 Claims**



1. A self-locking workpiece-deforming tool for use in a punch press with a ram, comprising:

an elongated punch guide having an interior surface defining a chamber extending therethrough;

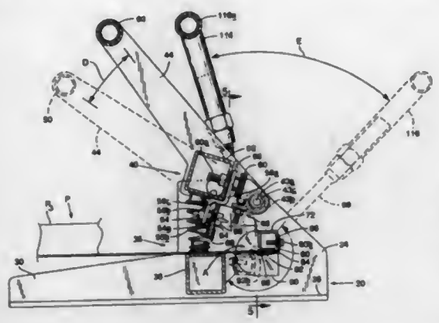
a punch body having an upper end and a lower end, the body being at least partially received within the chamber for reciprocal axial movement with respect to the guide between a raised position and a workpiece-deforming depressed position, the body being lockable in the depressed position and releasable to the raised position;

a rotatable workpiece-deforming roller carried by the lower end of the body for movement between the raised position and the depressed position as the body is reciprocated;

positioning means for sustaining the body and rotatable workpiece-deforming roller in the depressed position without continuous pressure being exerted against the body by the ram, the positioning means locking the body and the rotatable workpiece-deforming roller in the depressed position upon a momentary strike by the ram and releasing the body in the rotatable workpiece-deforming roller to the raised position upon a subsequent momentary strike by the ram; and

biasing means for transmitting force from the guide to the body and for urging the body and the rotatable workpiece-deforming roller into the raised position after the positioning means is released.

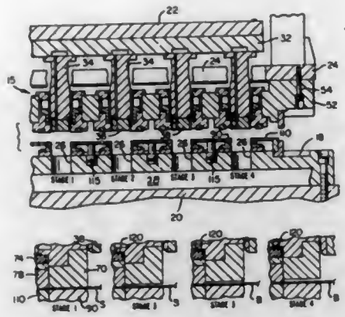
5,575,169
SHEET METAL BENDING TOOL AND METHOD FOR ACCOMPLISHING THE SAME
William J. Banse, 11332 Rolling Hills Dr., Dublin, Calif. 94568
Filed Nov. 22, 1994, Ser. No. 344,338
Int. Cl.[6] B21D 5/04
U.S. Cl. 72—319 23 Claims



1. A light-weight sheet metal bending tool for accommodating roof-top use in bending an end portion of a sheet metal work piece, the tool being capable of bending the end portion at least 180-degrees relative to the work piece, the tool comprising:
- a base defining a sheet metal work area for receiving a generally planar sheet metal work piece;
- a confronting member mounted on the base adjacent the work area and reciprocally movable relative thereto, for biasing a portion of the sheet metal work piece against the base, thereby fixing the position of the work piece relative to the base;
- a bending member rotatably mounted to the base and spaced from the confronting member, wherein the bending member is rotatable about a rotation axis for bending the end portion of the sheet metal work piece; and
- a handle operatively connected to the bending member for articulation through a defined range for enabling a user to rotate the bending member about its rotation axis and impart a 180-degree bend in the end portion, wherein the defined range through which the handle may be moved lies above the work piece plane.

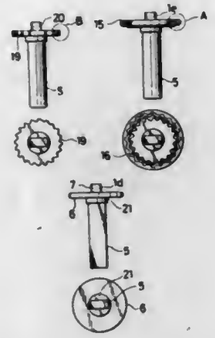
5,575,170
TOOLING APPARATUS AND METHOD FOR HIGH SPEED PRODUCTION OF DRAWN METAL CUP-LIKE ARTICLES
Ralph P. Stodd, 6450 Poe Ave., Suite 213, Dayton, Ohio 45414
Continuation of Ser. No. 184,969, Jan. 21, 1994, Pat. No. 5,442,947, which is a continuation-in-part of Ser. No. 30,777, Mar. 12, 1993, abandoned. This application Aug. 18, 1995, Ser. No. 516,555
Int. Cl.[6] B21D 28/02
U.S. Cl. 72—336 10 Claims

1. A method of forming a batch of cup-like articles from a strip of sheet metal with each stroke of a high speed mechanical press and for significantly reducing the dynamic loading on the press during each stroke of the press, the tooling comprising a series of cup-forming stages each including at least one annular draw pad opposing a corresponding annular blank and draw die, an annular cut edge die surrounding each of the draw pads and a die center punch within each of the draw pads, the method comprising the steps of engaging the strip with the annular cut edge dies and the corresponding blank and draw dies of the stages for forming a series of generally circular disk-like blanks, inserting a series of shims of different thicknesses for positioning the draw pads of the stages to provide for sequentially engaging the metal on the blank



and draw dies with the draw pads of the stages for sequentially holding the metal with each stroke of the press, and engaging the center portions of the blanks being held by the draw pads with the corresponding series of die center punches of the stages for drawing the blanks into the articles with each stroke of the press.

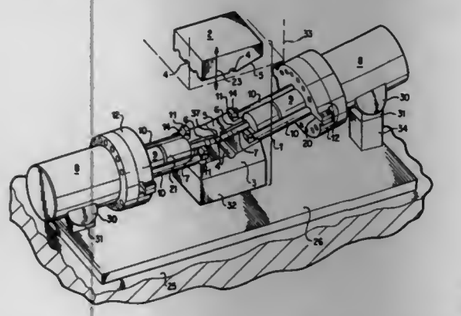
5,575,171
PROCESS AND APPARATUS FOR THE PRODUCTION OF WEBBING TAKE-UP SPINDLE
Hiroyuki Sawai; Yasuhisa Fujiwara, both of Kanagawa, and Shoji Tabei, Gunma, all of Japan, assignors to NSK Ltd., Tokyo, Japan
Filed Oct. 18, 1994, Ser. No. 325,653
Claims priority, application Japan, Oct. 22, 1993, 5-286153
Int. Cl.[6] B21D 22/00; 28/00
U.S. Cl. 72—352 8 Claims



1. A process for producing a webbing take-up spindle by cold-forming a cylindrical blank, comprising:
- cold-forming said cylindrical blank into a preform having a flange-shaped disc portion and a spindle portion extending from and in continuation with said disc portion;
- pressing wedge action dies, whose pressing portions are in the form of ratchet teeth, against upper and lower sides of an outer peripheral portion of said disc portion, respectively, so that ratchet teeth are partially formed and a thin-walled portion is also formed circumferentially along said partially-formed ratchet teeth at a position deviated toward said upper side of the flange-shaped disc portion; and

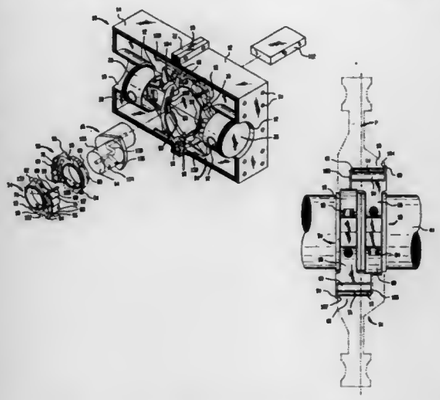
punching said thin-walled portion from said lower side to fully form ratchet teeth.

5,575,172
DEVICE FOR PRODUCING HOLLOW BODIES ACCORDING TO AN INTERNAL HIGH PRESSURE METAL FORMING PROCESS
Pierre Bonny, and Thoralf Nehls, both of Hamburg, Germany, assignors to Mercedes-Benz, Stuttgart, Germany
Filed Sep. 27, 1995, Ser. No. 534,463
Claims priority, application Germany, Sep. 27, 1994, 44 34 441.4
Int. Cl.[6] B21D 22/00; 39/08
U.S. Cl. 72—357 34 Claims



1. A device for producing a hollow body according to an internal high pressure metal forming process comprising:
- a tool which is divided along a mold joint into a stationary tool part and a liftable tool part, said tool having an impression for receiving a tube-shaped blank, an end-side impression being assigned to an end of the blank, respectively, and being arranged approximately parallel to and centrally with respect to an end-side portion of the mold joint;
- a press which is movable in a direction transverse to the mold joint to open and close the tool;
- an axially movable slide which is arranged concentrically with respect to the end-side impression, respectively, and which is sealingly attached to an open end of the blank, a pressure medium being introduced into the blank via at least one slide;
- a hydraulic working cylinder which is arranged with a common axis as the end-side impression, respectively, and having a piston rod which holds the slide and which displaces the slide axially, the working cylinder being angularly and vertically adjustable on a support member; and
- a pair of pull rods which is assigned to the working cylinder, connecting the tool and the working cylinder with tensile strength in parallel to the common axis in order to receive a reaction force between the tool and the working cylinder, the pull rods of the pair being arranged on opposite sides of the piston rod at the same level as the piston rod, each pull rod extending into the end-side portion of the mold joint and being releasably anchored to each of the stationary tool part and the liftable tool part in a form-locking manner in corresponding recesses along the mold joint, said recesses configured such that after a working cycle the liftable tool part can be lifted away from the pull rod in a vertical direction without resistance.

5,575,173
CONJUGATE DRIVE MECHANISM
Douglas C. Brackett, 2535 Mason Oaks Dr., Valricho, Fla. 33594
Continuation of Ser. No. 316,855, Oct. 3, 1994, Pat. No. 5,513,541, which is a continuation-in-part of Ser. No. 210,875, Mar. 18, 1994, Pat. No. 5,445,039. This application Sep. 29, 1995, Ser. No. 536,164
Int. Cl.[6] F16H 21/18
U.S. Cl. 74—49 49 Claims



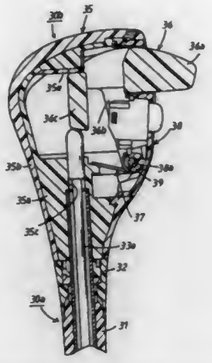
1. A motion converter apparatus, comprising a shuttle movable in a reciprocating fashion along a rectilinear path, said shuttle having an aperture therein, one side of said aperture being defined by a first trackable profile, which has a first circumferential length, and an opposite side of said aperture being defined by a second trackable profile, which has a second circumferential length; a rotatable crankshaft having a crankpin positioned within said aperture of said shuttle and rotatable in a circular path; a pair of conjugate drivers rotatably mounted on said crankpin by a corresponding pair of mounting means positioned on opposite sides of an imaginary plane which passes through said crankpin and which is oriented normal to a longitudinal axis of said crankpin, one of said conjugate drivers including a first tracking profile having a third circumferential length, which is equal to said first circumferential length, a first profiled portion positioned on one side of said imaginary plane and a second profiled portion positioned on an opposite side of said imaginary plane, whereby said second profiled portion of said first tracking profile overhangs the other of said conjugate drivers, said other conjugate driver including a second tracking profile having a fourth circumferential length, which is equal to said second circumferential length, a first profiled portion positioned on said opposite side of said imaginary plane and a second profiled portion positioned on said one side of said imaginary plane, whereby said second profiled portion of said second tracking profile overhangs said one conjugate driver, said first trackable profile extending on both sides of said imaginary plane and said second trackable profile extending on both sides of said imaginary plane, and said first and second tracking profiles engaging said first and second trackable profiles, respectively, in a continuous conjugating manner as said crankpin rotates in said circular path, whereby the reciprocating rectilinear motion of said shuttle is continuously converted into the rotary motion of said crankpin or vice versa.

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5,575,174
SHIFT LEVER ASSEMBLY FOR POWER TRANSMISSION OF AUTOMOTIVE VEHICLE

Hideki Kanematsu, and Masaichi Suzuki, both of Kariya, Japan, assignors to Tsuda Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Division of Ser. No. 166,029, Dec. 14, 1993, Pat. No. 5,458,017. This application Jul. 14, 1995, Ser. No. 502,457
Claims priority, application Japan, Dec. 14, 1992, 4-332927
Int. Cl.[6] B60K 20/04
U.S. Cl. 74—475 2 Claims



1. A shift lever assembly adapted for use in a power transmission of an automotive vehicle, comprising:

a tubular lever member having an axial bore formed therein with a proximal end of said tubular lever member mounted on a stationary support block secured to a vehicle body structure to be shifted in fore and aft directions;

an operation rod slidably disposed within said axial bore of said tubular lever member, said operation rod having a detent mechanism provided at a proximal end thereof for retaining said lever member in a shifted position; and

an operation knob having a grip portion connected to a distal end of said tubular lever member and an operation button assembled with said grip portion, said operation button being operatively engaged with a distal end of said operation rod so as to release said detent mechanism when operated by an operator, wherein

said grip portion of said operation knob is formed with a cavity which opens in one direction, said cavity of said grip portion being opened in a lateral direction and covered by a cover member coupled therewith,

said operation button has an operation body engaged with said distal end of said operation rod and movably mounted within said cavity of said grip portion, said operation body projecting through a portion of said cover member and having means for inwardly moving along a semi-circular path with respect to said cavity by operation of said operator, and

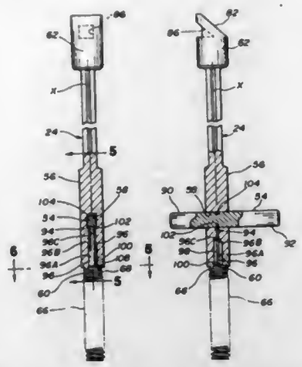
said grip portion further has resilient means assembled within said cavity for biasing said operation button in a substantially horizontal direction into engagement with a surface of said cavity.

5,575,175
SHIFT LEVER ASSEMBLY

Yoshimasa Katauml, and Yasuyuki Ikegami, both of Kosai, Japan, assignors to Fuji Kiko Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1995, Ser. No. 512,760
Claims priority, application Japan, Sep. 30, 1994, 6-236118
Int. Cl.[6] F16H 63/38; F16B 21/00
U.S. Cl. 74—475 9 Claims

1. A shift lever assembly, comprising:



a detent rod with a lateral detent pin, said detent rod having one end and a lateral through bore receiving said lateral detent pin;

a pivotable shift lever which is hollowed to receive said detent rod for movement in a longitudinal direction of the shift lever; and

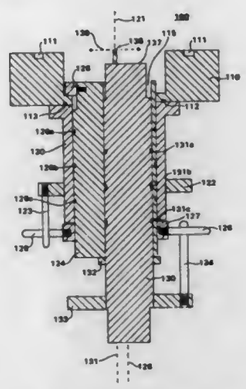
a compression spring having one end bearing against said one end of said detent rod and operative to apply force to said detent rod;

wherein said detent pin is formed with a groove positioned in said lateral through bore, said detent rod being formed with a passage having one end opening at said one end of said detent rod and the opposite end opening to said lateral through bore, and a lock bolt is slidably received in said passage, said lock bolt having one end connected to said compression spring at said one end thereof and an opposite end engaged in said groove of said lateral detent pin.

5,575,176
THREE-DIMENSIONAL POSITIONING DEVICE

Henry W. Rohrs, 1106 Anthrop Dr., West Lafayette, Ind. 47906, and David Berry, 8906 Marathon Rd., Longmont, Colo. 80503

Filed Dec. 30, 1994, Ser. No. 367,845
Int. Cl.[6] B25J 1/08; F16J 15/50
U.S. Cl. 74—479.01 17 Claims



1. An apparatus for positioning an object within a sealed chamber which comprises:

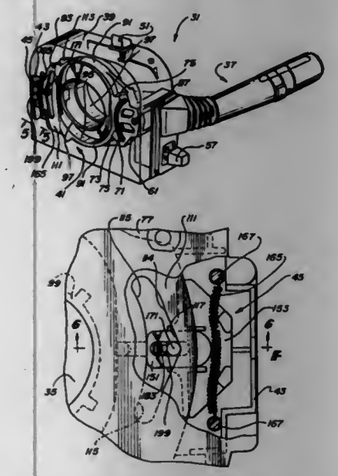
an inner rotatable element having an internal end face;

an outer substantially cylindrical rotatable element also having an internal end face and having an eccentrically bored longitudinal passage sized and shaped for receiving said inner element; said inner and outer rotatable elements being independently rotatable with respect to each other; and a stator sized and shaped for receiving said outer rotatable element wherein said apparatus is adapted for mounting on said chamber such that the end faces of said inner and outer elements communicate with the inside of said chamber and wherein said apparatus is adapted for forming a seal with said chamber to isolate said chamber from the external atmosphere.

5,575,177
TURN SIGNAL CANCELLATION MECHANISM

LeRoy A. Poleschuk, White Lake; James B. Wright, Warren, and Dale R. Jesselson, Livonia, all of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Continuation-in-part of Ser. No. 120,676, Sep. 13, 1993, Pat. No. 5,385,067. This application Jan. 30, 1995, Ser. No. 380,090
Int. Cl.[6] H01H 3/16; 19/04
U.S. Cl. 74—484 R 50 Claims



1. A turn signal cancellation mechanism comprising:

an actuator having a handle interfacing segment, said actuator selectively movable between a left turn position, a neutral position and a right turn position; and

a pawl having a single cancel cam engaging arm extending toward said handle interfacing segment of said actuator, said pawl movable in response to said actuator.

5,575,178
BRAKE HANDLE

Chin-chang Wu, No. 19, Lane 108, Yungfeng Rd., Taiping Hsiang, Taichung Hsien, Taiwan

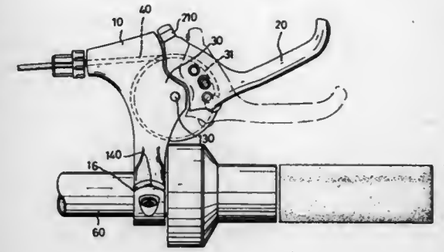
Filed Aug. 22, 1995, Ser. No. 517,916
Int. Cl.[6] F16C 1/10; G05G 1/10
U.S. Cl. 74—489 6 Claims

1. A brake handle for attachment to a bicycle, the brake handle comprising:

a brake body defining a semi-circular slot therein;

a brake lever defining a semi-circular slot therein; and

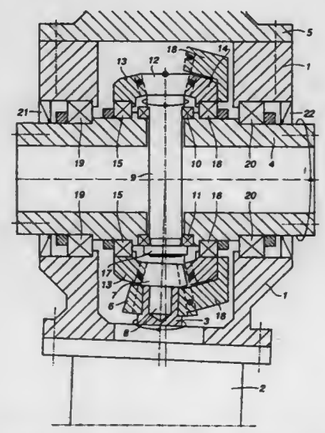
a rotatable disk partly and rotatably received in the semi-circular slot of the brake body and partly and fixedly received in the semi-circular slot of the brake lever, the rotatable disk including securing means for receiving a brake cable, and an engaging means for the brake lever to be releasably engaged to the disk.



5,575,179
COMPACT GEAR

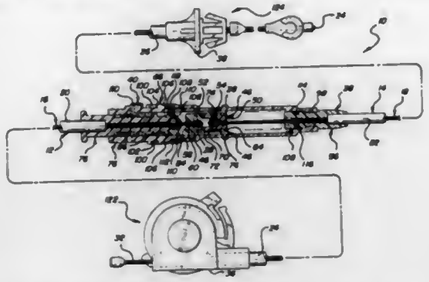
Richard Arbrink, Västerås, Sweden, assignor to Asea Brown Boveri AB, Västerås, Sweden

PCT No. PCT/SE93/01068, § 371 Date Jul. 10, 1995, § 102(e) Date Jul. 10, 1995, PCT Pub. No. WO94/15114, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 15, 1993, Ser. No. 464,740
Claims priority, application Sweden, Dec. 23, 1992, 9203888
Int. Cl.[6] B25J 17/00; F16H 1/28
U.S. Cl. 74—490.03 4 Claims



1. A compact gear comprising a gear housing (1), an outgoing main shaft (4) which is rotatable in relation to the gear housing (1), a motor (2) supported by the gear housing (1) with a drive shaft (3) projecting into the gear housing 1, on which drive shaft a first larger (6) and a second smaller conical gear toothed wheel (7) are arranged, a cross shaft (9) directed transversely to the main shaft (4) and fixed to the main shaft, two equally large first (13) and second crown wheels (14) mounted on opposite sides of said cross shaft (9), said crown wheels (13, 14) being rotatably arranged on the main shaft (4) and adapted, on opposite sides, to engage with a third conical toothed wheel (12), arranged on the cross shaft (9), a third crown wheel (18) with a larger diameter than said second crown wheel (14) being rotatably arranged around the main shaft (4) and fixed to the second crown wheel (14), the first larger conical toothed wheel (6) being in engagement with the third crown wheel (18), characterized in that the drive shaft (3) is arranged so as to form an angle with a normal plane of the main shaft, that said second smaller conical toothed wheel (7) is in engagement with said first crown wheel (13), and that the gear ratio between the second conical toothed wheel (7) and the first crown wheel (13) is different from the gear ratio between the first conical toothed wheel (6) and the third crown wheel (18).

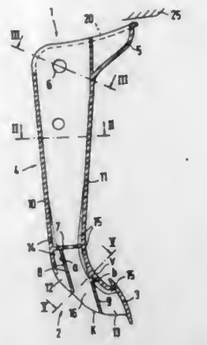
5,575,180
CORE AND CONDUIT SPLICER
Edward C. Simon, Garden City, Mich., assignor to Teleflex Incorporated, Plymouth Meeting, Pa.
Filed May 11, 1995, Ser. No. 439,486
Int. Cl.[6] F16C 1/26
U.S. Cl. 74—502.4 34 Claims



1. A two-piece motion-transmitting remote-control assembly (10) where each assembly piece (130, 132) has an outer end (122, 124) and an inner end (126, 128) and where the outer ends (122, 124) are attached to different vehicle components prior to vehicle component assembly and the inner ends (126, 128) are manually spliced together once the vehicle components are assembled, the assembly comprising:
first (12) and second (14) conduit segments for attachment to respective vehicle components and each having a conduit inner end (20, 22);
first (16) and second (18) core element segments movably supported within respective said first (12) and second (14) conduit segments and each having a respective core inner end (28, 30);
core splicing means (46) carried on each of said core inner ends (20, 22) for splicing said core inner ends (20, 22) to one another in end-to-end fashion while extending unsheathed from their respective said conduit inner ends (20, 22); and
characterized by intermediate conduit locking means (88) moveable relative to each of said conduit inner ends (20, 22) from an initial assembly position exposing and allowing access to said core splicing means (46) to a final operative position for locking said conduit inner ends (20, 22) end-to-end and spaced-apart to slidably support said core splicing means (46) between said conduit inner ends (20, 22) while transferring axial loads between said first (12) and second (14) conduit segments thereby connecting said first (12) and second (14) conduit segments into an integral member.

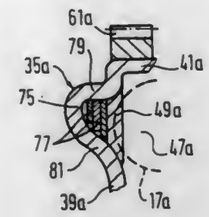
5,575,181
ONE-PIECE PEDAL
Hans-Uwe Baumann, Stuttgart, Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany
Filed Jun. 1, 1995, Ser. No. 456,461
Claims priority, application Germany, Nov. 26, 1994, 44 42 122.2
Int. Cl.[6] G05G 1/14
U.S. Cl. 74—512 18 Claims

1. A one-piece molded pedal for a motor vehicle comprising:
a first hollow closed profile section, and
a second U-shaped profile section molded onto an end of said first hollow closed profile section, said U-shaped profile section having a stepping plate molded thereon, side walls of the U-shaped profile sectioo extending as respective continuations of side walls of said first section,
wherein first and second reinforcing ribs join the side walls of the U-shaped profile section with one another and extend toward the open side of said U-shaped profile section such that they form wedge shaped hollow spaces together with said



side walls, said wedge shaped hollow spaces expanding toward said open side, whereby said reinforcing ribs reinforce said second section adjacent the stepping plate while accommodating molding of said second section,
and wherein further reinforcing ribs are provided which join a bridge part of said U-shaped profile section at a position intermediate the side walls of the U-shaped profile section, said further reinforcing ribs protruding only partially into at least one of the wedge shaped hollow spaces.

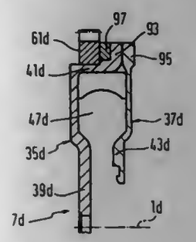
5,575,182
DUAL-MASS FLYWHEEL
Bernhard Schierling; Hilmar Göbel; Georg Kraus, and Bernd Stockmann, all of Bundesrepublik, German Dem. Rep., assignors to Fichtel & Sachs AG, Schweinfurt, Germany
Division of Ser. No. 163,134, Dec. 7, 1993. This application May 24, 1995, Ser. No. 449,415
Claims priority, application Germany, Dec. 10, 1992, 42 41 520.9; Nov. 18, 1993, 43 39 421.3
Int. Cl.[6] F16D 3/14
U.S. Cl. 74—574 11 Claims



1. A dual-mass flywheel comprising a primary mass which is adapted to be attached in a position which is centered on an axis of rotation to a crankshaft of an internal combustion engine, the primary mass including two formed sheet-metal parts which are positioned concentric to the axis of rotation, of which formed sheet-metal parts a first formed sheet-metal part has the shape of a pan and includes a base wall portion which extends in an essentially radial direction and is adapted to be attached to the crankshaft, and a peripheral flange portion which is connected to a radially outward edge of the base wall portion and extends in an essentially axial direction away from the crankshaft; and of which a second formed sheet-metal part is attached to the peripheral flange portion of the first formed sheet-metal part and, together with the first formed sheet-metal part, defines a cavity which extends concentrically to the axis of rotation in the radially outer region of the primary mass; a secondary mass which is supported for rotation around the axis of rotation relative to the primary mass

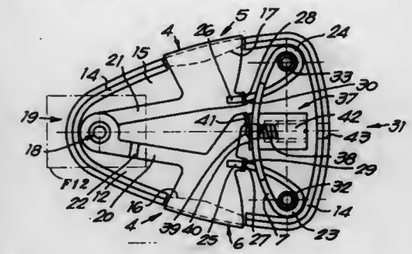
and is adapted for the attachment of a friction clutch; and a torsion-damping arrangement which couples the secondary mass in a rotationally elastic manner with the primary mass and has springs which are arranged in the cavity; wherein within the cavity defined by the two formed sheet-metal parts there is provided at least one supplementary mass-ring arrangement, which arrangement is fixed, axially, circumferentially and radially, to at least one of the formed sheet-metal parts.

5,575,183
DUAL-MASS FLYWHEEL
Bernhard Schierling, Kürnach; Hilmar Göbel, Grafenrheinfeld; Georg Kraus, Bergrheinfeld, and Bernd Stockmann, Röthlein, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany
Division of Ser. No. 163,134, Dec. 7, 1993. This application May 24, 1995, Ser. No. 449,529
Claims priority, application Germany, Dec. 10, 1992, 42 41 520.9; Nov. 18, 1993, 43 39 421.3
Int. Cl.[6] F16D 3/14
U.S. Cl. 74—574 10 Claims



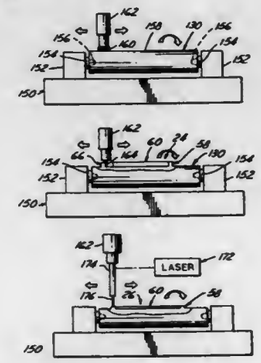
1. A dual-mass flywheel comprising a primary mass which is adapted to be fastened concentrically with an axis of rotation to a crankshaft of an internal-combustion engine, the primary mass having two formed sheet-metal parts of which formed sheet-metal parts a first formed sheet-metal part has the shape of a pan and has a base wall portion which extends in an essentially radial direction and is adapted to be attached to the crankshaft, and a peripheral flange portion which is joined to a radially outward end of the base wall portion and extends in an essentially axial direction away from the crankshaft and of which a second formed sheet-metal part is attached to the peripheral flange portion of the first formed sheet-metal part and has a base portion which extends in an essentially radial direction; which base portion, together with the first formed sheet-metal part, defines a cavity disposed concentrically with the axis of rotation in a radially outer region of the primary mass; a secondary mass which is mounted for rotation relative to the primary mass around the axis of rotation and is adapted to be attached to a friction clutch; and a torsion-damping arrangement which couples the secondary mass in a rotationally elastic manner with the primary mass and includes springs arranged in the cavity; and wherein the peripheral flange portion of the first formed sheet-metal part has at an end remote from the crankshaft a peripheral collar bent substantially radially outwardly and forming a one-piece supplementary mass; wherein said collar engages a wall portion of the second formed sheet-metal part and is rigidly connected at a juncture formed between the collar and said wall portion, a starter ring gear is affixed on the peripheral flange portion of the first formed sheet-metal part, and a circumferentially continuous supplementary mass-ring is axially affixed between the collar of the first formed sheet-metal part and the starter ring gear.

5,575,184
BICYCLE PEDAL WITH STRUCTURE FOR HOLDING A SHOE ON A FOOTREST PORTION THEREOF
Hubert De Schrijver, Waasmunster, Belgium, assignor to Eddy Merckx Equipments, naamloze vennootschap, Hamme, Belgium
Filed Jan. 25, 1995, Ser. No. 378,555
Claims priority, application Belgium, Jan. 25, 1994, 09400082
Int. Cl.[6] G05G 1/14
U.S. Cl. 74—594.6 17 Claims



1. A bicycle pedal comprising:
a pedal axle;
a foot rest connected to and supported upon said pedal axle; and
means for holding a shoe on said bicycle pedal, said holding means including at least two clamps which are pivotally attached to said foot rest, each of said at least two clamps including a first portion located below and arranged substantially parallel to said foot rest and a hooking element that extends about a respective lateral side of said foot rest for directly engaging the shoe, said holding means being movable, from a closed position, laterally outwardly relative to said foot rest upon the exertion of a predetermined level of force thereon created by lateral movement of the shoe retained on said bicycle pedal by said holding means.

5,575,185
METHOD OF MAKING ROTARY CUTTING DIES
William A. Cox, West Bloomfield, and Alan R. Pfaff, Orchard Lake, both of Mich., assignors to Atlantic Eagle, Inc., Farmington Hills, Mich.
Division of Ser. No. 78,679, Jun. 16, 1993, Pat. No. 5,417,132, which is a continuation-in-part of Ser. No. 2,660, Jan. 11, 1993, abandoned. This application May 9, 1995, Ser. No. 437,658
Int. Cl.[6] B21K 5/20
U.S. Cl. 76—107.1 13 Claims



1. A process of making a rotary die cylinder having a body and an integral elongate severing blade thereon comprising: machining

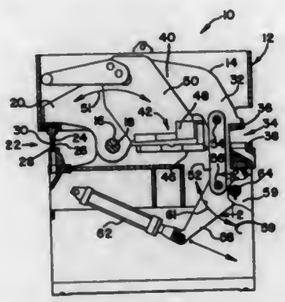
in a workpiece of steel in opposed ends of the workpiece a pair of recesses with tapered surfaces on essentially the same axis and each surface tapering inwardly of its associated end of the workpiece, utilizing said recesses and tapered surfaces to locate the workpiece while machining thereon a generally cylindrical peripheral outer surface essentially coincident with said axis of said tapered surfaces, utilizing said recesses and the said tapered surfaces to locate and turn said workpiece relative to a rotating metal cutting tool to machine away metal from the periphery of said generally cylindrical outer surface to form at least one cutting blade thereon having an elongate land which has an outer face and a pair of spaced apart side faces, at least one of said side faces being essentially perpendicular to said outer face if said outer face is linear or a chord of said outer face if said outer face is arcuate, and said one side face intersecting said outer face to define a cutting edge of said land, a portion of said peripheral outer surface being the outer face of said land, and thereafter hardening at least the periphery of said land by heating said land to an elevated temperature and cooling said land without substantially hardening the body of the die cylinder.

5,575,186

MACHINE TOOL STROKE CONTROL SYSTEM

Kirk A. Kempen, Kankakee, Ill., assignor to Peddinghaus Corporation, Bradley, Ill.

Filed Oct. 6, 1993, Ser. No. 132,716
Int. Cl.[6] B26D *5/02*
U.S. Cl. 83—13 **2 Claims**



1. A process for controlling the stroke positions of tools on a multi-station metal working machine wherein the tools are carried on an arm which is operatively connected to an actuator for moving said arm with said tools carried thereon relative to a workpiece, each of said tools having a station associated therewith, the steps comprising:

providing a control circuit including a tool selector mode switch for selecting control of said actuator relative to a selected one of said tools, said control circuit further including at least one jog switch for operating said actuator to move said arm in a selected one of two opposite stroke directions, said control circuit further including initial and final programmable registers associated with said selected one of said tools, said initial registers each being settable at a selected value corresponding to a value of a position signal being representative of an initial stroke position of said arm, said final registers each being preset at a selected value corresponding to a value of said position signal being representative of a predetermined final position of said arm;

operating said tool selector mode switch to select control of said actuator relative to said selected one of said tools;

positioning said workpiece in said station of said selected one of said tools;

operating said jog switch in a selected stroke direction to position said selected one of said tools at a selected elevation above said workpiece corresponding to said initial stroke position and then terminating the operation of said jog switch;

continuously sensing the position of said arm; generating said position signal corresponding to the sensed position of said arm, said position signal having a value that varies with and is representative of the position of said arm;

in response to the termination of said jog switch, setting said initial register by storing in said initial register the value of said position signal corresponding to said initial stroke position;

said final register having been preset by storing in said final register the value of said position signal corresponding to a predetermined final stroke position;

operating said actuator in response to a start signal for moving said arm from said initial stroke position to said final stroke position;

generating a first control signal for reversing the direction of operation of said actuator in response to the value of said position signal being equal to said value stored in said final register;

operating said actuator in the reverse direction in response to said first control signal for moving said arm from said final stroke position to said initial stroke position; and

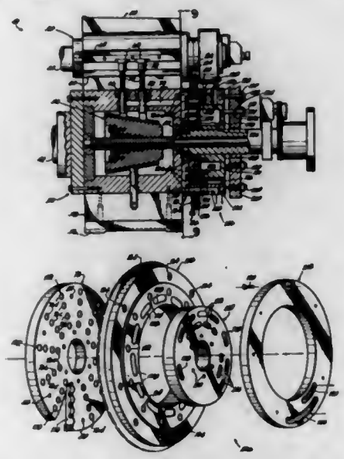
generating a second control signal for terminating the operation of said actuator in response to the value of said position signal being equal to said value stored in said initial register.

5,575,187

VARIABLE COUNT DIRECT DEPOSIT KNIFE

Paul E. Dieterien, Covington, Ky., assignor to R.A. Jones & Co. Inc., Cresent Springs, Ky.

Filed Nov. 14, 1994, Ser. No. 338,840
Int. Cl.[6] B26D *1/67*; B65H *29/32*
U.S. Cl. 83—98 **15 Claims**



1. A rotary knife apparatus for directly depositing filled pouches in preselected count stacks along a travelling product conveyor, comprising:

a rotating knife hub operably driven at a first rotational speed by a first driving element;

a product conveyor disposed beneath said knife hub;

a series of suction cups circumferentially spaced and extending radially from said knife hub, said suction cups being carried in a circular path by said knife hub;

at least one negative pressure source communicating with each of said suction cups along at least one segment of said circular path whereby said suction cups grasp a pouch in register with said suction cups during said at least one segment;

a positive pressure source communicating with each of said suction cups to propel said pouches off of said suction cups and onto said product conveyor at a predetermined number of different angular drop-off points along a segment of said circular path, said product conveyor being operable to receive said pouches in stacks of a preselected count corresponding to said number of angular drop-off points; and

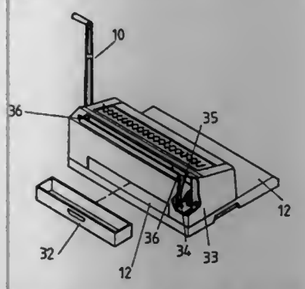
a rotating disc valve operably driven at a second rotational speed by a second driving element, said rotating disc valve being mounted intermediate said negative and positive pressure sources and said rotating knife hub to communicate said negative and positive pressure sources to said suction cups, said predetermined number of different angular drop-off points and said corresponding number of pouches being deposited onto said product conveyor in said preselected count stacks being operatively determined by one of said first and second rotational speeds relative to the other.

5,575,188

STRUCTURE OF CARD PUNCH

Chiang-Ho Hu, Taichung, Taiwan, assignor to Tah Hsin Industry Co., Ltd., Taichung, Taiwan

Filed Jan. 9, 1995, Ser. No. 369,890
Int. Cl.[6] B26F *1/14*
U.S. Cl. 83—167 **6 Claims**



1. A card punch comprising a base, an operating handle, a rectangular hole punching unit mounted on said base and driven by said operating handle to punch paper, said rectangular hole punching unit comprising a transmission shaft coupled to said operating handle, a series of rectangular punching elements, and a plurality of links connected between said rectangular punching elements and said transmission shaft, and a circular hole punching mechanism, and a cover shell covered over said circular hole punching mechanism and said rectangular hole punching unit, wherein said circular hole punching mechanism comprises:

two drive gears fixedly mounted around two opposite ends of said transmission shaft;

two upright end plates securely fixed to said base, each upright end plate having a respective elongated guide slot and an elongated locating slot;

two square shafts revolvably mounted on said upright end plates;

two driven gears securely mounted around said square shafts and meshed with said drive gears;

a guide plate securely connected between said end plates, having a plurality of circular through holes spaced from one another at a predetermined pitch;

a plurality of locating frames respectively fixed to said guide plate, each frame having a circular guide hole aligned with one of the circular through holes in said guide plate;

a hollow sliding bar having two opposite ends inserted into the elongated guide slots on said end plates, said sliding bar being moved up and down along the elongated guide slots on said end plates by said driven gears when said transmission shaft is driven by said operating handle to turn said drive gears; and

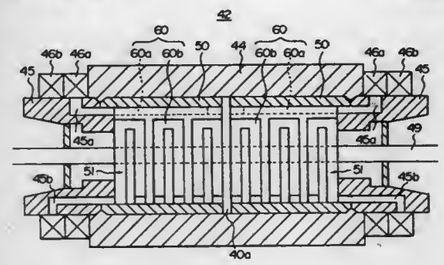
a plurality of circular punching elements respectively perpendicularly fastened to said sliding bar and respectively inserted into the circular guide holes on said locating frames and driven by said sliding bar to punch paper being inserted into said locating frames.

5,575,189

ROLLER HAVING GROOVES FOR WIRE SAW

Etsuo Kiuchi, Gunma-gun; Kazuo Hayakawa, Takasaki, and Kouhei Toyama, Nishi-shirakawa-gun, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed May 30, 1995, Ser. No. 452,835
Claims priority, application Japan, Jun. 28, 1994, 6-168794
Int. Cl.[6] B26D *1/547*; B28D *1/08*
U.S. Cl. 83—651.1 **19 Claims**



1. A roller having grooves on the peripheral surface thereof for a wire saw machine, comprising;

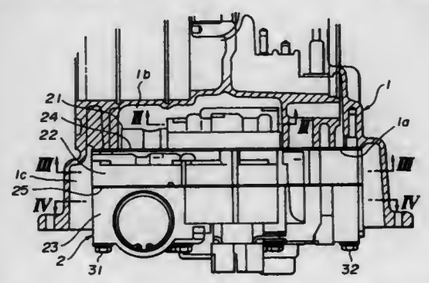
a core member which is partitioned into a pair of inside areas wherein, one of said inside areas is generally positioned at a first end of said core member, and the other of said inside areas is generally positioned at a second end of said core member opposed to said first end, wherein each of the inside areas has a passage for circulation of a coolant, and an inlet and an outlet of each passage are provided in the vicinity of an outer end of each inside area in which the passage belongs.

5,575,190

CONTROL VALVE ARRANGEMENT OF AUTOMATIC TRANSMISSION

Ikuo Hirose, Fuji, Japan, assignor to Jatco Corporation, Fuji, Japan

Filed Oct. 4, 1994, Ser. No. 317,535
Claims priority, application Japan, Oct. 4, 1993, 5-247263
Int. Cl.[6] F16H *57/02*
U.S. Cl. 74—606 R **6 Claims**



1. A control valve arragment for use with an automatic transmission having a transmission case, comprising: means defining a recess in said transmission case, said recess including a smaller deeper part and a larger shallower part bounded by a mounting surface, said smaller deeper and larger shallower parts being located at opposite positions with respect to said mounting surface, said mounting surface being formed with outlet and inlet openings communicating with fluid passages formed in said transmission case;

a valve unit substantially fully accommodated in said recess of said transmission case and including:

a first valve body having an upper surface put on said mounting surface and having therein a first hydraulic circuit, said

first valve body having a first given portion formed with inlet an outlet openings mating with said outlet and inlet openings of said transmission case when said first valve body is put on said mounting surface;

a second valve body having an upper surface put on a lower surface of said first valve body and having therein a second hydraulic circuit, said second valve body having the same width as said first valve body so that said second valve body has a second given portion located just below said first given portion of said first valve body;

a third valve body received in said smaller deeper part of the recess and tightly mounted on the upper surface of said first valve body and having therein a third hydraulic circuit;

a first separate plate interposed between said first and second valve bodies; and

a second separate plate interposed between said first and third valve bodies, said second separate plate having an extension interposed between said mounting surface of said transmission case and the upper surface of said first valve body to achieve sealing therebetween; and

bolt members each passing through said second given portion, said first separate plate, said first given portion, and said second separate plate, and are detachably connected to said mounting surface to tightly mount said valve unit to said mounting surface,

wherein said first, second, and third hydraulic circuits each comprise a number of fluid passages, bores with free sliding spool valves, springs, and check valves.

5,575,191

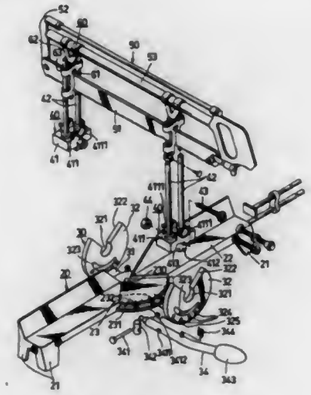
SAW EQUIPMENT

Mary Wang, No.20, Alley 22, Lane 294, Sec.3, Chang-Shui Rd., Hsi-Hu Chen, Chang-Hua Hsien, Taiwan

Filed Jun. 6, 1994, Ser. No. 254,245

Int. Cl.[6] B27B *21/02*

U.S. Cl. 83—766 **7 Claims**



1. A saw equipment comprising:

a working table having a segmental plate and a vertical rotary axis at a center of said segmental plate;

a rotary arm having an intermediate portion that is mounted rotatably on said vertical rotary axis, and two positioning plates which extend upward respectively from two end portions of said rotary arm, each of said positioning plates having a V-shaped notch at an upper side thereof, said V-shaped notch having a round tip portion, each of said positioning plates further having a plurality of engaging holes aligned at intervals, below said round tip portion, in the form of an arc substantially concentric with said round tip portion, and an arcuate locking slot concentric with said round tip portion and radially spaced from said arc of said engaging holes;

a hacksaw including a saw blade and a frame holding said saw blade;

two guide units for holding movably said frame above said working table, each of said guide units defining a slot for passage of said saw blade;

two adjusting members, each of which adjustably mounting each of said guide units to a respective one of said positioning plates, each of said adjusting members respectively having a lock block which is side-by-side adjacent to and turnably connected to a respective one of said positioning plates so as to adjust an inclining angle of the respective one of said guide units relative to said working table, each of said lock blocks having a protrusion to extend into said round tip portion for rotation therein, each of said lock blocks further having an integral engaging nose projecting therefrom to engage selectively one of said engaging boles, said integral engaging nose being movable between an engaging position and a disengaging position by moving said each of said lock blocks towards or away from an adjacent one of said positioning plates, and a locking hole to be constantly aligned with said arcuate locking slot; and

a plurality of locking bolts, each of said locking bolts passing through one of said arcuate locking slots and a respective one of said aligned locking boles.

5,575,192

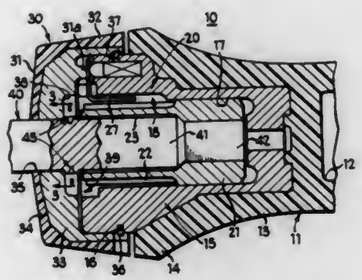
RETENTION OF SHANK IN HANDLE OF RATCHETING DRIVER

Daniel M. Eggert, Kenosha, Wis., assignor to Snap-on Technologies, Inc., Crystal Lake, Ill.

Filed Sep. 1, 1995, Ser. No. 522,514

Int. Cl.[6] B25B *13/46*

U.S. Cl. 81—63.1 **15 Claims**



1. A ratcheting driver comprising: an elongated handle having a main body portion and a cap portion rotatable relative to each other about a common longitudinal axis, a cavity formed in said handle, a ratchet mechanism disposed in said cavity, said cap having a cylindrical axial bore therethrough communicating with said cavity, and an elongated shank having a mounting end receivable through said bore for engagement with said ratchet mechanism in a mounted condition, said mounting end of said shank having a small projection formed thereon and projecting radially outwardly therefrom to prevent free passage of said mounting end of said shank through said bore, said cap being softer than said projection so as to be deformable thereby to permit passage of said projection and said mounting end of said shank through said bore to said mounted condition, said projection in said mounted condition being freely accommodated in said cavity to permit rotation of said shank relative to said cap and cooperating with said cap to retain said shank in its mounted condition.

5,575,193

ROTARY SLIDE VALVE FOR ASSITED STEERING SYSTEMS

Helmut Bareis, Eschach, and Gerhard Ruf, Hüttlingen, both of Germany, assignors to ZF Friedrichshafen AG., Friedrichshafen, Germany

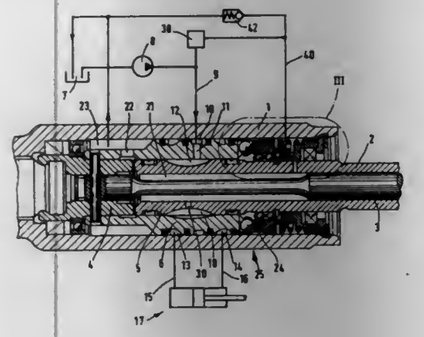
PCT No. PCT/EP93/01570, § 371 Date Mar. 2, 1995, § 102(e) Date Mar. 2, 1995, PCT Pub. No. WO94/00329, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 21, 1993, Ser. No. 356,352

Claims priority, application Germany, Jun. 24, 1992, 42 20 624.3

Int. Cl.[6] F15B *9/10*

U.S. Cl. 91—375 A **5 Claims**



1. Rotary slide valve for use with hydraulic power steering units, comprising:

a housing,

a valve bushing located in the housing,

a rotatable slide located within the valve bushing to form a rotary slide valve,

a drive shaft connected with the valve bushing of the rotary slide valve,

a steering shaft connected with the rotary slide of the rotary slide valve and to a manual steering wheel,

a rotating rod positioned between the valve bushing and the rotary slide of the rotary slide valve,

a reaction chamber defined by a reaction piston and a lid, said reaction chamber including feed grooves for feeding a pressurized fluid to the reaction chamber and return grooves for removing fluid from the reaction chamber,

a centering device positioned between the valve bushing and the rotary slide of the rotary slide valve, said centering device including a plurality of inclined surfaces at least two of which are associated with the reaction piston, a plurality of roller bodies located between said inclined surfaces, and a spring located in the reaction chamber and supported against the reaction piston by a needle bearing, said spring being used for the precise positioning of the rotary slide valve in a central position by exertion of a pressure force on the roller bodies via the reaction piston, and

means for applying a speed-dependent variable pressure in the reaction chamber to the same side of the reaction piston as is acted upon by the spring whereby a speed-dependent steering resistance is generated in the manual steering wheel.

5,575,194

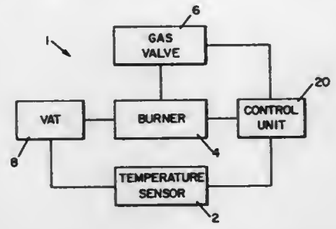
ELECTRONIC CONTROL SYSTEM FOR A HEATING APPARATUS

Charles A. Maher, Jr., Stratford, Conn., and Raymond Larrick, Kent, Ohio, assignors to Tridelta Industries, Inc., Mentor, Ohio

Continuation of Ser. No. 210,127, Mar. 17, 1994, abandoned. This application Aug. 23, 1995, Ser. No. 538,187

Int. Cl.[6] A47J *27/62*

U.S. Cl. 99—330 **16 Claims**



1. A temperature control system for a heating apparatus comprising:

input means for inputting a setpoint temperature;

means for heating a medium;

means for sensing the temperature of the medium;

control means for controlling the amount of heat provided to the medium by the means for heating, wherein during an idle mode of operation the control means causes said means for heating to generate a single continuous pulse of heat each time the temperature of the medium changes from a temperature above an idle-ON temperature to a temperature below the idle-ON temperature, the duration of each said single continuous pulse of heat being determined by the temperature change of the medium resulting from a previous pulse of heat.

5,575,195

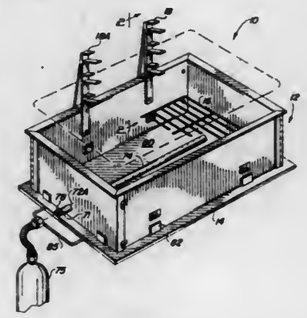
COLLAPSIBLE PORTABLE COOKING UNIT

Kenneth E. Foxford, 13344 - 36th Pl., Yuma, Ariz. 85367

Filed Jan. 16, 1996, Ser. No. 585,714

Int. Cl.[6] A47J *37/00;37/07*

U.S. Cl. 99—340 **10 Claims**



1. A flexible cooking unit comprising:

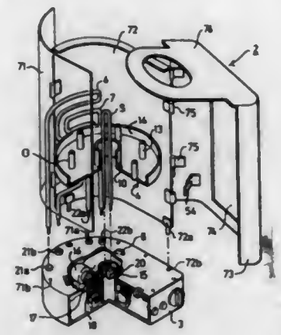
(a) a first wall assembly having first and second panels hingedly connected to one another whereby said first wall assembly may be pivoted from a generally flat stored position to an erected position with said panels disposed at right angles with respect to one another;

(b) a second wall assembly having first and second panels hingedly connected to one another whereby said second wall assembly may be pivoted from a generally flat stored position

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to an erected position with said first and second panels being generally at right angles with respect to one another;
(c) means for detachably securing said first and second wall assemblies in an erected position to form an enclosure;
(d) grate supporting means disposed on at least two of said panels of said wall assemblies at opposite locations;
(e) a grate positionable on said grate supporting means in a generally horizontal position;
(f) hanger means detachably secured to one of said panels in a generally vertical position, said hanger means having an elongate upright or vertical support with at least first and second arms projecting therefrom defining a slot therebetween for removably receiving said grill therein in a generally horizontal position disposed above said enclosure; and
(g) a cooking grill.

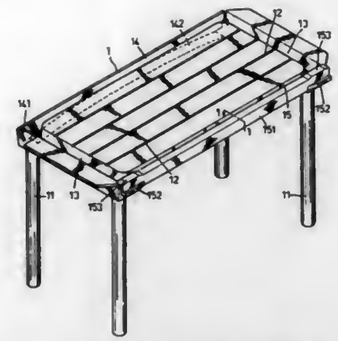
5,575,196
GRILLING APPLIANCE
Reuben Masel, Ramat Hasharon, and George Valdshtein, Ganey Tiqua, both of Israel, assignors to Applicon Ltd., Hod Hasharon, Israel
Filed Jul. 17, 1995, Ser. No. 503,009
Int. Cl.[6] A47J *37/00;37/04*
U.S. Cl. 99—421 V **24 Claims**



1. A grilling appliance, comprising:
a housing defining a grilling compartment for receiving food articles to be grilled;
a vertical impaling member of thermally-conductive material mounted vertically within said grilling compartment for impaling a food article to be grilled;
a rotary drive for rotating said vertical impaling member about a vertical axis;
a first heater located within said vertical impaling member for heating the interior of the food article to be grilled;
and a second heater located laterally of said vertical impaling member for heating the exterior of the food article to be grilled.

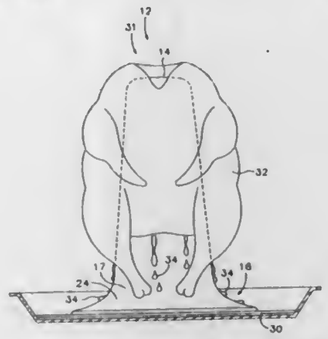
5,575,197
MODULAR ROASTING PAN HAVING A JOINTER
Ching-Hsiung Cheng, No. 45, Alley 21, Lane 373, Sec. 3, Chang Shi Rd., Tainan City, Taiwan
Filed Oct. 10, 1995, Ser. No. 540,481
Int. Cl.[6] A47J *37/00;37/06;37/07*
U.S. Cl. 99—425 **3 Claims**

1. A modular roasting pan comprising:
(a) a bottom portion;
(b) a plurality of support leg members coupled to said bottom portion;
(c) a roasting block portion formed on said bottom portion, said roasting block portion having a substantially planar upper



surface raised relative to said bottom portion in an upward direction; said upper surface having formed therein a plurality of grooves;
(d) a sidewall portion extending in said upward direction from said bottom portion, said sidewall portion being formed substantially about said roasting block portion to define a liquid collecting basin portion peripherally bounding said roasting block portion, said sidewall portion having first and second segments extending in a longitudinal direction and front and back segments coupled to said second segment to extend in a transverse direction therefrom, said front and back segments each having formed therein adjacent said second segment a slot having a predetermined contour; and,
(e) an outer tongue portion formed on said first segment of said sidewall portion, said outer tongue portion being adapted to form a releasable tongue and groove coupling with said second segment of said sidewall portion of a second said modular roasting pan, said outer tongue portion having formed thereon at least a pair of stopper sections adapted to be respectively received within said slots of said front and back segments of said sidewall portion of said second modular roasting pan to releasably secure said tongue and groove coupling.

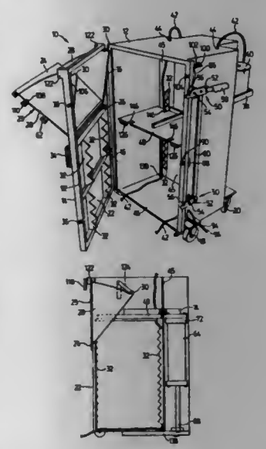
5,575,198
CERAMIC MEAT COOKER
Gerald G. Lowery, P.O. Box 25, Rickreall, Oreg. 97371-0025
Filed Apr. 27, 1995, Ser. No. 429,912
Int. Cl.[6] A47J *43/18*
U.S. Cl. 99—426 **8 Claims**



1. A ceramic meat roaster for roasting a piece of meat, the meat having an internal cavity with inside walls that extend through the meat from a bottom end to a top end, the roaster comprising:
a vertically elongated ceramic body having a top and bottom end, the ceramic body including a circular cross-sectional

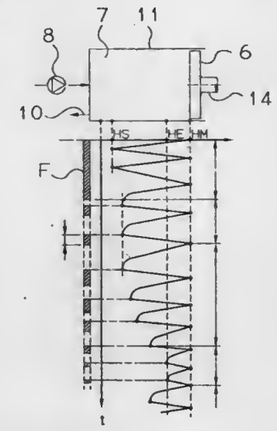
shape that uniformly tapers from the bottom end to the top end forming a continuous enclosed conical surface for inserting and substantially filling the internal cavity thereby pressing against the inside walls of substantially the entire cavity; and
a ceramic base joined to the bottom end of the ceramic body for supporting both the ceramic body and the piece of meat in a vertically aligned upright position, the ceramic base and ceramic body conducting heat radiated from a cooking system to the internal walls of the internal cavity of the piece of meat thereby searing the internal walls while the meat is roasted externally by the cooking system.

5,575,199
COMPACTOR
Soichiro Yamamoto, 2 Allen Manner, Unionville, Ontario, Canada
Filed Mar. 22, 1995, Ser. No. 409,126
Int. Cl.[6] B65B *13/18;* **B30B** *15/16;1/32*
U.S. Cl. 100—34 **22 Claims**



1. A compactor comprising:
an elongate housing including an access door;
a transverse platen located in the housing;
guide means coupled to the platen for guiding the movement of the platen along a longitudinal path in the housing from a retracted position, past said access door to an extended position, whereby material inserted into the housing through the access door is compacted by the platen; and
an actuator located in the housing beside and parallel to said path of movement of the platen, the actuator including a piston and a cylinder, the piston having a first end attached to the housing and the cylinder including a second opposed end attached to the platen, said cylinder being slidably disposed on the piston whereby the platen is reciprocated by the movement of the cylinder between an upper position where said piston is substantially withdrawn from the cylinder and a lower position where said piston is retracted into said cylinder and supported by said cylinder.

5,575,200
METHOD FOR DETERMINING AND USING THE FILL AMOUNTS OF MATERIAL FOR PRESSING IN SOLID/LIQUID SEPARATION WITH A FILTER PRESS
Eduard Hartmann, Schneisingen, Switzerland, assignor to Bucher-Guyer AG, Niederweningen, Switzerland
PCT No. PCT/CH95/00062, § 371 Date Nov. 27, 1995, § 102(e) Date Nov. 27, 1995, PCT Pub. No. WO95/26874, PCT Pub. Date Oct. 12, 1995
PCT Filed Mar. 21, 1995, Ser. No. 553,337
Claims priority, application Switzerland, Mar. 30, 1994, 946/94
Int. Cl.[6] B30B *9/02*
U.S. Cl. 100—37 **14 Claims**



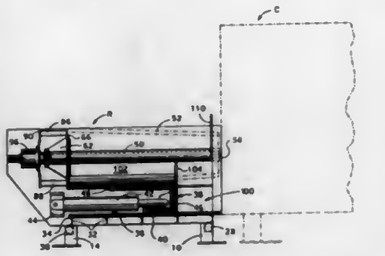
1. A method for the determination and use of the amounts of fill with material (7) to be pressed in connection with the solid/liquid separation by means of a filter press, comprising a pressing chamber (11) in which liquid is pressed out of the material (7) to be filtered by the action of a pressure element (6) charged with a pressure force during several successive stroke operations, wherein a fill amount is placed into the pressing chamber (11) during each stroke operation in the course of one filling phase of the separating process, characterized by the following steps: 1) a fill and pressing operation is performed while measuring the output (L) and yield (A), which leads to a first operating point (1) with known output (L1) and yield (A1) in the yield/output diagram; 2) in at least one subsequent second fill and pressing operation, which leads to a second operating point (4, 4') in the yield/output diagram, at least one process value is determined for the second operating point (4, 4'), and subsequently, by means of employing relationships regarding the changes in output (L) and yield (A) of the solid/liquid separation in the course of the fill and pressing operations by the interposition of an imaginary operating point (3, 3'), a fill amount (G4) is determined and used which is required so that a maximum product from yield (A4) and output (L4) results during the separating process, wherein the transition from the first operating point (1) to the imaginary operating point (3, 3') takes place by means of a purely fill operation and the transition from the imaginary operating point (3, 3') to the second operating point (4, 4') takes place by means of a purely pressing operation and wherein it is presupposed that the straight-line connections of those operating points (1', 1; 3' 4') which differ by means of a purely pressing operation intersect in the yield/output diagram at a common operating point (A0, A01, A04) with maximum yield (A) and vanishing output (L), or are parallel with each other.

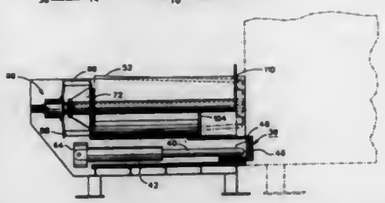
5,575,201

COMPACTOR HAVING AN AUGER AND METHOD OF ITS OPERATION

Grant H. Fenner, Memphis, Tenn.; Kent Spiers, Caledonia, Miss., and Peter C. Nelson, Reform, Ala., assignors to Marathon Equipment Company, Vernon, Ala.

Filed Apr. 25, 1995, Ser. No. 428,758
Int. Cl.[6] B30B *13/00;9/30;7/00*
U.S. Cl. 100—39 39 Claims





38. The method of breaking and compacting bulky materials, comprising the steps of:

a) providing a compactor assembly comprising a rotary auger for breaking and transporting material contacted therewith, a drop area for receiving the broken material, a reciprocating ram operably associated with the drop area for discharging the broken material, and a container in which the broken material is thereafter received for compaction by reciprocation of the ram;

b) contacting the rotating auger with material and thereby causing the material to be broken;

c) transporting the broken material to the drop area by continued rotation of the auger; and

d) continuously reciprocating the ram as the auger is rotated and thereby discharging the broken material to the container.

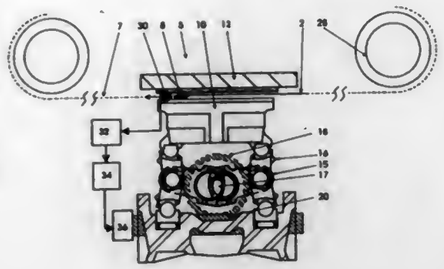
5,575,202

SAFETY DEVICE IN A PLATEN PRESS FOR PROCESSING PLATE-LIKE WORKPIECES

Hakan Pfeiffer, Mont-Sur-Rolle, Switzerland, assignor to Bobst SA, Lausanne, Switzerland

Filed May 24, 1995, Ser. No. 449,792
Claims priority, application Switzerland, May 24, 1994, 01592/94
Int. Cl.[6] B30B *15/14;15/28*
U.S. Cl. 100—45 4 Claims

1. In a safety device which prevents a gripper bar from being squeezed in a platen press that processes plate-like workpieces, said press comprising a fixed upper beam and a movable lower beam raised recurrently by a driving means, said safety device comprising a pick-up for emergency situations which activates a switch of an emergency braking device arranged in the driving means of the lower beam, the improvements comprising the pick-up for emergency situations being a cell for direct scanning of the passage of a gripper bar which is arranged at a point of the outlet of the gripper bar from the press.

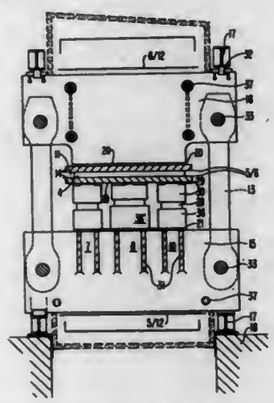


5,575,203

CONTINUOUSLY OPERATING PRESS FOR THE PRODUCTION OF PARTICLE BOARDS, FIBER BOARDS OR SIMILAR WOOD BOARDS AND PLASTIC BOARDS

Friedrich B. Bielfeldt, Paehl, Germany, assignor to Maschinenfabrik J. Dieffenbacher GmbH & Co., Germany

Filed Dec. 1, 1994, Ser. No. 352,076
Claims priority, application Germany, Dec. 1, 1993, 43 40 983.0
Int. Cl.[6] B30B *5/06*
U.S. Cl. 100—93 RP 15 Claims



1. A continuously operating press for the production of particle boards, fiber boards and similar wood boards and plastic boards, comprising:

flexible endless steel belts;

driving drums and reversing drums;

an upper press beam and a lower press beam;

press/heating platens; and

rolling supporting elements each having a longitudinal axis;

wherein the flexible endless steel belts transmit pressing pressure, pull material to be pressed through the press, are guided over the driving drums and reversing drums around the upper and lower press beams, and are supported with an adjustable press nip against the press/heating platens on the press beams via the rolling supporting elements which accompany their revolution and are guided with their longitudinal axes transverse to a running direction of the belts,

at least one of the lower and the upper press/heating platens being vertically adjustable to set the press nip by a plurality of cylinder-piston arrangements arranged in rows transversely to a longitudinal axis of the press;

a) wherein the press beams include individual beams of different lengths which can be connected to one another and are made up of web plates and ribs connecting the latter, upper individual modules being suspended on two I-section girders which represent the length of the press and which take the pretensioning forces of the steel belts, while the lower press beam rests on two I-section girders anchored in a foundation,

b) wherein two press beams are connected positively by tiebars that can be pivoted out and that can be replaced quickly and

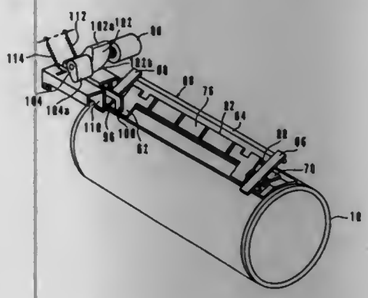
c) wherein the cylinder-piston arrangements of one row are arranged between the tiebars and, together with supporting crossmembers and supporting surfaces, can be introduced into and removed from a pressing zone after a release of some of the tiebars.

5,575,204

DEVICE FOR MOUNTING LEADING END OF STENCIL IN ROTARY STENCIL PRINTER

Muneaki Kawai, and Hiroshi Watanabe, both of Tokyo, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Nov. 17, 1995, Ser. No. 559,528
Claims priority, application Japan, Nov. 25, 1994, 6-315653
Int. Cl.[6] B41L *13/10*
U.S. Cl. 101—116 4 Claims



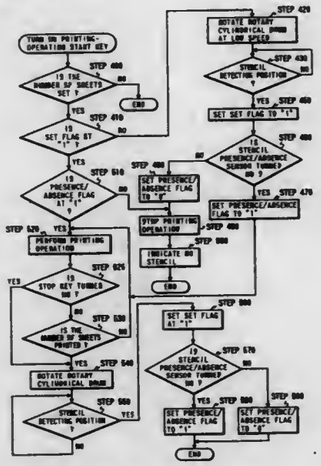
1. A device for mounting a leading end of a stencil in a rotary stencil printer, said printer having a printing drum equipped with a base member having a band surface extending along a portion of a cylindrical outer surface of said printing drum in parallel with a central axis thereof for supporting said leading end of the stencil thereon, and a clamp member having a clamping surface and movable between a closed position where said clamping surface is laid over said stencil leading end supporting surface and an open position where said clamping surface is removed from said stencil leading end supporting surface, so that the leading end of the stencil is inserted into a space left between said stencil leading end supporting surface of said base member and said clamping surface of said clamp member across a inlet edge of each of said surfaces when said clamp member is in said open position and is then clamped between said stencil leading end supporting surface of said base member and said clamping surface of said clamp member when said clamp member is moved to said closed position, said device comprising a snap-up member movable between a first position located close to the inlet edge of said stencil leading end supporting surface and a second position close to the inlet edge of said clamping surface of said clamp member positioned at said open position in relation to the movement of said clamp member between said closed and open positions and supply/discharge of the stencil, so that, when the leading end of the stencil is inserted into the space left between said stencil leading end supporting surface and said clamping surface to be mounted to said base member, said snap-up member is positioned at said first position to be on a same side of the leading end of the stencil as said stencil leading end supporting surface, and when clamp member moves to remove said clamping surface away from said stencil leading end supporting surface for releasing the leading end of the stencil clamped between said stencil leading end supporting surface and said clamping surface to exhaust the stencil, said snap-up member moves to said second position so as, at least temporarily, to face a first side of said clamp member opposite to a second side thereof where said clamping surface is provided, thereby moving the leading end of the stencil to said first side of said clamp.

5,575,205

STENCIL PRINTING MACHINE FOR REDUCING THE TIME REQUIRED FOR STENCIL MAKING AND STENCIL PRINTING

Kouichiro Iida, Tokyo, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Filed Mar. 21, 1995, Ser. No. 408,159
Claims priority, application Japan, Mar. 22, 1994, 6-050417
Int. Cl.[6] B41L *13/06*
U.S. Cl. 101—116 8 Claims



1. A stencil printing machine comprising:

stencil presence/absence detecting means for determining whether or not a stencil sheet is wound on a rotary cylindrical drum when said rotary cylindrical drum is located at a predetermined position of rotation;

memory means for storing latest data indicating the presence or absence of said stencil sheet which is detected by said stencil presence/absence detecting means; and

control means for reading said latest data from said memory means and performing a printing process or a stencil making process according to whether said latest data indicates the presence of a stencil sheet.

5,575,206

SCREEN PRINTING APPARATUS WITH PALLET REGISTRATION

Alexander Szyszko, Bloomingdale, Ill., assignor to Elexon Ltd., Elk Grove Village, Ill.

Filed Oct. 25, 1995, Ser. No. 547,895
Int. Cl.[6] B41F *15/10;15/26*
U.S. Cl. 101—126 8 Claims

1. A screen printer having a plurality of printing stations for making successive screen prints on a substrate, the combination comprising:

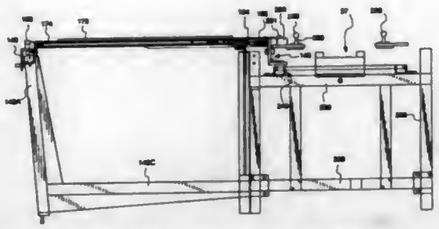
a screen printing frame;

a pallet for carrying the substrate between the printing stations;

an endless drive on the screen printing frame for carrying the pallet through the print stations;

a pallet support connected to the endless drive and carrying the pallet through the printing stations, the pallet support being stationary during a registration operation;

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a screen printing head mounted on the screen printing frame at each of said plurality of printing stations for printing on the substrate on the pallet;

at least one movable locator on the screen frame at the printing stations for shifting the pallet on and relative to the pallet support to register the pallet with respect to the printing head.

5,575,207

SUCTION APPARATUS FOR PRINTING PRESS

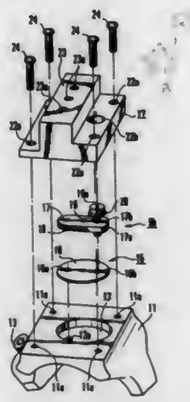
You Shimizu, Ibaragi, Japan, assignor to Komori Corporation, Japan

Filed Oct. 27, 1995, Ser. No. 549,536

Claims priority, application Japan, Nov. 2, 1994, 6-269601

Int. Cl.[6] B41F *13/24*

U.S. Cl. 101—232 **10 Claims**



9. A paper suction apparatus for a printing press, comprising a plurality of suction ports, arranged in an axial direction and provided to a paper convey cylinder, for temporality sucking and bolding a paper sheet transferred from an upstream cylinder, and air shutter devices provided to said suction ports on two end sides not used for a suction operation of a small-size paper sheet,

wherein each of said air shutter devices is constituted by

a passage block having an air passage through which air for sucking a paper sheet passes,

a magnetic member arranged around an opening of said air passage, and

a shutter member consisting of a magnetic material and movable between a closed position where said opening of said air passage is closed and an open position where said opening of said air passage is open, one of said magnetic member and said shutter member being magnetized, and

said shutter member moves to the closed position to close said opening of said air passage of said passage block by an air suction force and a magnetic attraction force between said shutter member and said magnetic member when the suction operation of said small-size object is performed, thereby preventing air leakage from said suction ports on the two end portion sides which are not used.

5,575,208

INK PUMP CONTROL SYSTEM

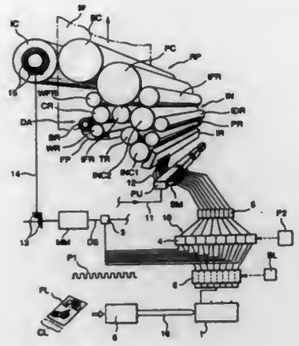
Tetsuya Kirihara, Tokyo, Japan, assignor to Tokyo Kikai Seisakusho Ltd., Tokyo, Japan

Filed Feb. 14, 1995, Ser. No. 388,393

Claims priority, application Japan, Mar. 4, 1994, 6-034386

Int. Cl.[6] B41F *31/08*; B41L *27/10*

U.S. Cl. 101—366 **12 Claims**



1. An ink pump control system comprising:

a rotary press;

an ink pump mounted on said rotary. press;

a stepping motor driving said ink pump;

a first pulse output means for outputting a pulse signal in proportion to an operating speed of said rotary press;

printing element ratio measuring means for measuring a printing element ratio of an area of a plate surface to which ink is to be fed;

a memory means for obtaining in advance said printing element ratio from said printing element ratio measuring means, and storing an ON/OFF bit string corresponding to said printing element ratio, ON bits in said ON/OFF bit signal being distributed substantially evenly;

a second pulse output means for sequentially reading each bit in said ON/OFF bit string stored in said memory means every time a pulse signal outputted by said first pulse output means is inputted, and outputting a pulse signal corresponding to read bits in said ON/OFF bit string; and

a motor driver connected to said second pulse output means and said stepping motor for operating said stepping motor in accordance with said pulse signal outputted by said second pulse output means.

5,575,209

PREGRIPPER FOR A PRINTING MACHINE

Harald Bayer, Rodgau, and Klemens Kemmerer, Sellgenstadt, both of Germany, assignors to MAN Roland Druckmaschinen AG, Germany

Filed Oct. 25, 1995, Ser. No. 548,102

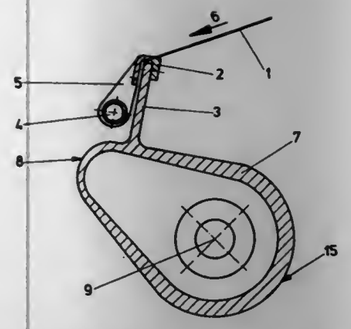
Claims priority, application Germany, Oct. 29, 1994, 44 38 757.1

Int. Cl.[6] B41F *1/30*

U.S. Cl. 101—408 **11 Claims**

1. A pregripper for transferring sheets between a sheet feeder and a feed drum or an impression cylinder of a rotary printing machine having opposing side frames, said pregripper comprising, in combination:

a hollow tube having two ends and a substantially pear-shaped cross section characterized by a first apex with a greater curvature and a second apex having a curvature which is less than said greater curvature;



a journal releasably attached to each of said ends of said tube and rotatably mounted on said opposing side frames such that the axis of rotation of said hollow tube is adjacent said second apex; and

a gripper bridge arranged adjacent said first apex and including a gripper shaft, a gripper impact strip, and a plurality of grippers.

5,575,210

DEVICE FOR CLEANING AND INKING UNIT OF AN OFFSET PRINTING MACHINE

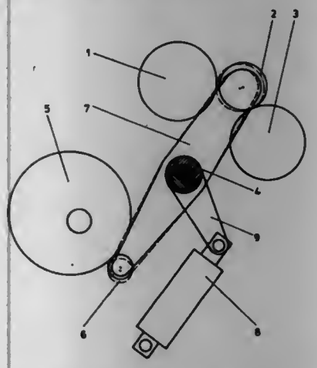
Roland Holl, Weiterstadt, and Peter Hummel, Offenbach, both of Germany, assignors to MAN Roland Druckmaschinen AG, Germany

Filed Jul. 13, 1995, Ser. No. 502,279

Claims priority, application Germany, Jul. 13, 1994, 44 24 590.4

Int. Cl.[6] B41F *35/04*

U.S. Cl. 101—423 **5 Claims**



1. A cleaning apparatus for the inking mechanism of an offset printing machine, the offset printing machine including an independently-driven ink fountain roller, an ink lifter roller and ink take-off roller associated with an ink roller train, the cleaning apparatus comprising:

at least one lever arm having a first end journalling the ink lifter roller for rotation;

an eccentric coupling pivotally supporting the lever arm intermediate the ends thereof;

a working cylinder and an articulated link connecting the working cylinder to the eccentric coupling, the working cylinder being actuable to rotate the eccentric coupling and move the lever arm and ink lifter roller between a cleaning position, wherein the ink lifter roller simultaneously contacts the ink fountain roller and the ink take-off roller, and a printing position, wherein the lever arm pivots about the eccentric coupling to oscillate the lifter roller between contact with the ink fountain roller and the ink take-off roller;

a cam follower disposed at a second end of the lever arm; and

control means including a rotatable control device selectively engaged by the cam follower, with the lever arm in the printing position, for pivoting the lever arm about the eccentric coupling to oscillate the ink lifter roller between contact with the ink fountain roller and the ink take-off roller; the cam follower being disengaged from contact when the control means with the lever arm is moved to the cleaning position.

5,575,211

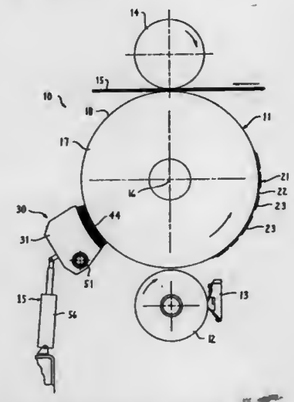
WASHING ARRANGEMENT FOR ROTARY PRINTER

Frederick W. Harrison, Kalamazoo, Mich., assignor to Hycorr Machine Corporation, Kalamazoo, Mich.

Continuation of Ser. No. 331,009, Oct. 28, 1994, abandoned. This application Jun. 30, 1995, Ser. No. 496,927

Int. Cl.[6] B41F *35/00*

U.S. Cl. 101—425 **26 Claims**



1. A washing arrangement for removing ink and debris from a printing plate mounted on a rotatable printing roll, said cleaning arrangement comprising:

an elongate channellike housing having an open mouth along one side thereof adapted to be positioned in close proximity to a peripheral surface of the printing roll, said housing defining therein an interior chamber including a lower reservoir for collecting liquid and debris;

edge sealing strips mounted on said housing in surrounding relationship to the mouth, said edge sealing strips being disposed for contact with the peripheral surface of the printing roll;

a first spray bar mounted adjacent the housing and including a plurality of longitudinally spaced first nozzles for discharging cleaning liquid through the mouth of the housing onto the surface of the printing roll, and said first spray bar being connected to a first source which supplies the cleaning liquid to the respective first nozzles;

a second spray bar mounted adjacent the housing and including a plurality of longitudinally spaced second nozzles for discharging rinse liquid through the mouth of the housing onto the surface of the printing roll, said second spray bar being connected to a second source for supplying rinse liquid to the respective second nozzles, and said second nozzles being mounted on said housing relative to said first nozzles such that the rinse liquid discharged from said second nozzles contacts a region of said printing roll which is positioned downstream of the region of the printing roll contacted by the cleaning liquid discharged by said first nozzles; and

a drain member communicating with the reservoir of said housing for discharging the liquids and debris from the housing.

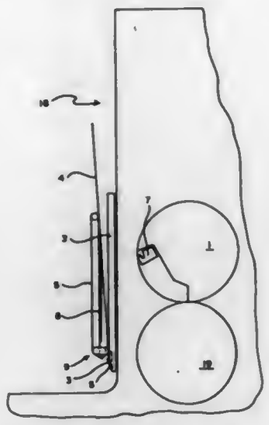
VOL 1192 ISS 3 NO 19 1996 UMI

5,575,212

APPARATUS FOR FEEDING A PRINTING PLATE TO A PRINTING MACHINE

Gernot Moser, Rüdesheim; Uwe Pfischel, Heidesheim, and Hans Stutzer, Geisenheim, all of Germany, assignors to MAN Roland Druckmaschinen AG

Filed Sep. 29, 1995, Ser. No. 536,828
Claims priority, application Germany, Sep. 29, 1994, 9415751 U
Int. Cl.[6] B41F *21/00*
U.S. Cl. 101—477 10 Claims



1. An apparatus for feeding a printing plate to a printing machine, said printing machine including a frame defining an interior and supporting a plate cylinder therein for receiving said printing plate, the apparatus comprising:

a guard plate connected to said frame and moveable between a first position which impedes access to said interior of said printing machine and said plate cylinder and a second position which allows access to said interior of said printing machine and said plate cylinder, said guard plate including at least one stop for holding said printing plate in a ready position;

a support bracket pivotally connected to said guard plate for supporting said printing plate in said ready position when said guard plate is in said second position; and

articulating means for pivotally connecting said support bracket to said guard plate, said articulating means permitting movement of said support bracket with respect to said guard plate between a first, essentially vertical position supporting said printing plate in said ready position and a second, inclined position for feeding said printing plate to said plate cylinder.

5,575,213

FEEDING UNIT

Muneaki Kawai, and Terutoshi Nakao, both of Tokyo, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Oct. 31, 1995, Ser. No. 550,864
Claims priority, application Japan, Nov. 18, 1994, 6-285157
Int. Cl.[6] B41F *27/06*
U.S. Cl. 101—477 10 Claims

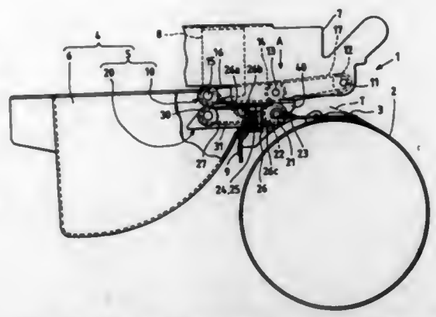
1. A feeding unit comprising:

first feeding means including,

a plurality of pulleys arranged to confront one another, each having an axis and being rotatable around said axis, and

a belt installed around said pulleys, wherein a set is defined by said pulleys and said belt therearound, and a plurality of sets are provided and juxtaposed along pulley's axial directions;

second feeding means including,



a plurality of pulleys arranged to confront one another, each having an axis and being rotatable around said axis, and

a belt installed around said pulleys, wherein a set is defined by said pulleys and said belt therearound, a plurality of sets are provided and juxtaposed along pulley's axial directions, said pulleys of said second feeding means are located at the corresponding position to said respective pulleys of said first feeding means; and

support means for urging the respective pulleys belonging to at least a single pulley group, the single pulley group being defined by said pulleys arranged along a common axis in either one of said first feeding means and said second feeding means, toward confronting the other one of said first feeding means and said second feeding means with a predetermined force independently from the other pulleys belonging to the same single pulley group.

5,575,214

APPARATUS FOR PRINTING ANY DOCUMENTS AND MAKING THEM UNFALSIFIABLE

Jean-Pierre Braunstein, 5, Rue des Grés, Boissise Le Roy; Christian Bonnard, 66, Chemin du Milieu des Hauts Picards, Marly Le Roi; Didier Ache, 1, Avenue d'Aligre, Le Pecq, and Florence Duval, Yerres, all of France, assignors to Jean-Pierre Braunstein, Boissise Le Roy; Christian Bonnard, Marly Le Roi; Didier Ache, Le Pecq, and Sesame, Paris, all of France

Filed Mar. 13, 1995, Ser. No. 403,162
Claims priority, application France, Mar. 15, 1994, 94 03001
Int. Cl.[6] B41F *31/00*
U.S. Cl. 101—494 16 Claims



1. An apparatus for printing on a document having first and second faces and for making said document less subject to falsification, said apparatus comprising:

a body which includes:

a printing system using ink for printing on said first face of said document to form a printed document;

means for passing said document past said printing system for printing on said first face by said printing system;

a receptacle in said body for receiving said printed document;

said receptacle having an open cavity, a casing mountable onto said body over said open cavity, said casing comprising means for heating said printed document sufficient to impregnate and to transfer said ink between said first and second faces of said printed document to make appear on said second face a substantially exact but inverted replica of the printing on said first face of said printed document, thus forming a printed document less subject to falsification; and

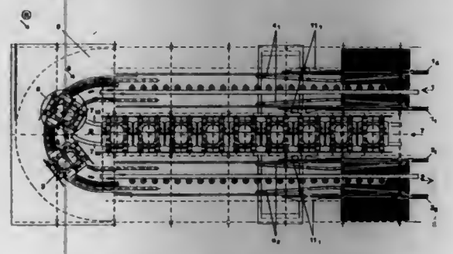
a slot between said body and said casing for discharging said printed document.

5,575,215

BYPASS FOR THE CARS OF A CIRCUIT CABLE RAILWAY SYSTEM

Ernst Egli, Hittnau, and Felix Inauen, Bazenheid, both of Switzerland, assignors to Garaventa Holding AG, Goldau, Switzerland

Filed Mar. 8, 1995, Ser. No. 400,823
Claims priority, application Switzerland, Mar. 11, 1994, 726/94; Sep. 6, 1994, 2725/94
Int. Cl.[6] F01B *25/15;* B61B *9/00*
U.S. Cl. 104—99 23 Claims



1. A bypass for a car of a circuit cable railway system, positioned at a turn-about station of the system between incoming and outgoing lines of at least one revolving conveying cable, comprising:

coupling points, disposed on incoming and outgoing portions of a station track in the station, at which the car is decoupled from the at least one conveying cable when entering the station and coupled to the at least one conveying cable when exiting the station;

a conveying apparatus which moves the car, which has been decoupled from the at least one conveying cable, at a feeding velocity around the station on the station track, and which accelerates movement of the car on the station track to enable the car to recouple with the at least one conveying cable at the coupling point when exiting the station;

at least one turn-about wheel that turns the at least one conveying cable around to allow the at least one conveying cable to enter and exit the station;

a side track disposed between the incoming and outgoing portions of the station track;

a rotary switch, disposed on the station track, which is swivelable to optionally direct the car to continue on the station track or to enter the side track; and

a control device which controls the conveying apparatus and the rotary switch;

the conveying apparatus, rotary switch and side track each including individual drives, symmetrically disposed thereabout, to facilitate movement of the car as controlled by the control device; and

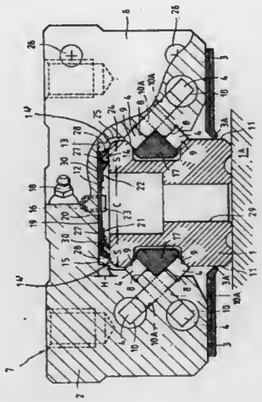
the station track comprising a plurality of zones, each of said zones comprising at least one initiator which senses movement of the car and provides signals to said control device, said control device controlling said individual drives on the basis of said signals.

5,575,216

LINEAR MOTION ROLLING GUIDE UNIT

Kouhei Yuasa, Gifu, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1995, Ser. No. 510,336
Claims priority, application Japan, Aug. 9, 1994, 6-209213
Int. Cl.[6] F16C *29/06*
U.S. Cl. 104—119 6 Claims



1. A linear motion rolling guide unit comprising:

a track rail extending in a longitudinal direction including first raceway grooves formed on longitudinally extending side wall surfaces of the track rail;

a casing slidable relative to the track rail and including second raceway grooves formed at positions on two sides of the casing, the second raceway grooves facing the first raceway grooves;

end caps mounted to longitudinal ends of the casing;

rolling elements circulating between the opposing first raceway grooves and second raceway grooves;

end seals attached to outer end surfaces of the end caps;

under seals provided on an underside of the casing on both of the sides; and

a top seal mounted to the underside of the casing, the underside facing an upper surface of the track rail, the top seal comprising

a plate longitudinally extending along edges of the underside of the casing and

longitudinally extending lip seals each being secured to one longitudinal side of the plate;

the lip seals each including at least one pair of lip portions spaced a predetermined distance from each other, the lip portions generally parallel to one another and extending with an inclination toward respective ones of the second raceway grooves of the casing, the front ends of the lip portions being in bermetic sliding contact with side areas of the upper surface of the track rail; and

lip means for keeping the seals in hermetic contact with the track rail to prevent grease which has been placed between the casing and the track rail from leaking therebetween and to prevent foreign matter from entering into the second raceway grooves from the upper surface of the track rail.

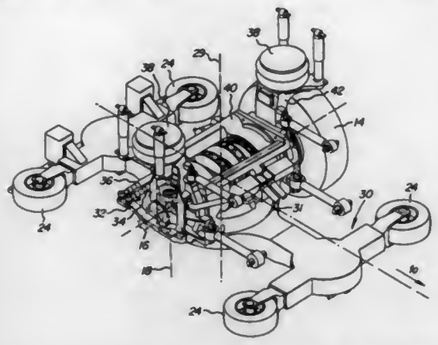
VOL 1192 ISS 3 NO 19 1996 UMI

5,575,217

WHEEL SET FOR A VEHICLE TRAVELLING ON A GUIDE PATH

Bruno Vincent-genod, Neuilly sur Seine, France, assignor to Matra Transport, Montrouge Cedex, France, and Vevey Technologies, Villeneuve, Switzerland

Continuation of Ser. No. 262,529, Jun. 20, 1994, abandoned.
This application Feb. 14, 1996, Ser. No. 601,535
Claims priority, application France, Jun. 21, 1993, 93 07474
Int. Cl.[6] B61F 13/00; B61D 15/00
U.S. Cl. 104—247 9 Claims



1. A wheel set for a vehicle designed to travel on a guide track, the wheel set having a pair of load-carrying wheels, steerable about parallel axes relative to a fixed portion, and two pairs of guide wheels for bearing laterally against the track, the pairs of guide wheels being situated on either side of the load-carrying wheels, and being carried by a common guide frame that is displaceable relative to the fixed portion, each guide wheel having a respective pivot axis which is fixed relative to the guide frame, the fixed portion being constituted by a transverse box girder placed above the guide frame and provided with steering pivots for the load-carrying wheels, which pivots are placed beneath cushions providing suspension for the vehicle on the wheel set, wherein the guide frame is displaceable relative to the fixed portion only in rotation about a vertical axis, and is connected to the load-carrying wheels by a linkage for forced steering of the load carrying wheels.

5,575,218

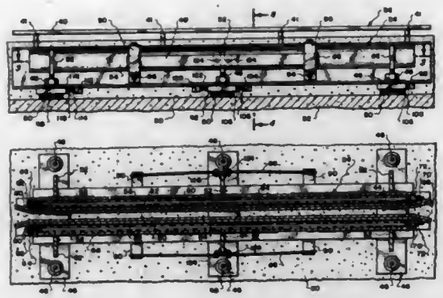
TRACK BRAKE APPARATUS WITH SLIDING SHOES AND WEAR PLATES FOR PREVENTING EXCESSIVE MOVEMENT OF THE SHOES IN THE DIRECTION OF VEHICLE MOVEMENT

Leroy H. Gutknecht, Las Vegas, Nev., assignor to Newera Capital Corp., Burnaby, Canada

Filed Apr. 10, 1996, Ser. No. 631,163
Int. Cl.[6] B61K 7/00
U.S. Cl. 104—249 6 Claims

1. A brake apparatus mounted in conjunction with a track, a structure movable on said track, said brake apparatus comprising:

a pair of braking units, a first portion of said braking units being fixed to said track, a second portion of said braking units being movable from a non-braking position to a braking position, said braking position locating said second portion of said braking unit to contact said structure to result in slowing of said structure to achieve eventual stopping of said structure, said non-braking position locating said second portion of said braking units spaced from said structure, said braking units being movable toward each other during movement from said non-braking position to said braking position, a plurality of metallic cross beams fixedly mounted to said track, said second portion of said braking units being slidably mounted on said metallic cross beams, each said metallic cross beam including a removable wear plate, said second



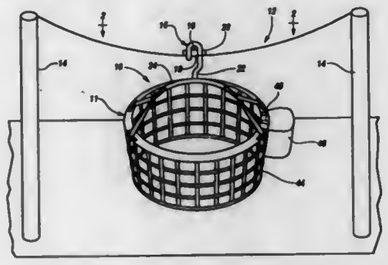
portion including contact means to push against said wear plates when said brake apparatus is in said braking position and said second portion is in contact with said structure.

5,575,219

CLOTHES BASKET COMBINATION

David M. Herring, Rte. 2, Box 1780, Cushing, Okla. 74023

Filed Mar. 6, 1995, Ser. No. 398,876
Int. Cl.[6] B61B 3/00
U.S. Cl. 105—151 11 Claims



1. A clothes basket combination adapted for movement along a clothes line, comprising:

a pulley device adapted for movement along the clothes line, said pulley device including a hanger for the pulley device supporting the pulley device rotatably and including a downwardly depending arm substantially centered below the pulley device,

a clothes basket having means for adjustably attaching the clothes basket to the aforesaid arm,

said means for adjustably attaching the clothes basket to the aforesaid arm includes a cross member secured to the arm,

said cross member is secured substantially transversely of the aforesaid pulley, and

said cross member includes means at each end for attaching a basket support line thereto.

5,575,220

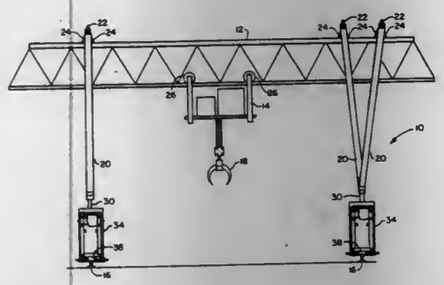
SIDE ROLLER ASSEMBLY FOR GANTRY CRANE BRIDGE WHEELS

Cornelis J. M. van Soest, Coquitlam, Canada, and Robert R. Gingrasso, Renton, Wash., assignors to Kone Wood Inc., Atlanta, Ga.

Filed Jun. 20, 1995, Ser. No. 492,871
Int. Cl.[6] B61H 5/50
U.S. Cl. 105—163.1 27 Claims

1. A gantry truck assembly for rolling on a rail having a top rail surface and a side rail surface, said gantry truck comprising:

a bogie frame;



a flanged wheel rotatably mounted to said frame, said flanged wheel defining a wheel face for rolling contact on said top rail surface and a flanged face generally perpendicular to said wheel face, said flange face adapted for intermittent contact with said side rail surface;

a side roller means for contact with said side rail surface, said side roller means comprising a roller;

a side roller support means for rotatably supporting said side roller means in a first position whereby said side roller means is closer to said side rail surface than is said flange face, and is movable from the first position to a second position to allow said flange face to contact said side rail surface; and

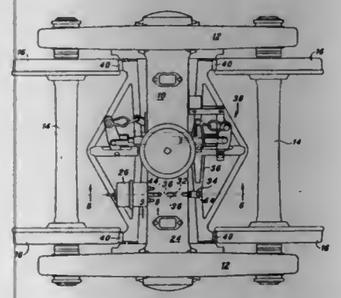
sensor means for indicating contact between said flange face and said side rail surface.

5,575,221

TRUCK MOUNTED BRAKE SYSTEM

Robert A. Biegel, South Holland, Ill., and Peter R. Manyek, Highland, Ind., assignors to Thrall Car Manufacturing Company, Chicago Heights, Ill.

Filed Jan. 23, 1995, Ser. No. 377,123
Int. Cl.[6] B61F 5/00
U.S. Cl. 105—226 11 Claims



1. In a railroad truck comprising a pair of side frames and a bolster extending between said side frames, said bolster having a first sidewall with a pair of horizontally spaced holes therein, a second sidewall, and two intermediate webs, and a braking system comprising a brake cylinder mounted on said first sidewall, a cylinder rod extending through said sidewalls and said webs, and at least two fasteners extending through said holes in said first sidewall, the improvement comprising:

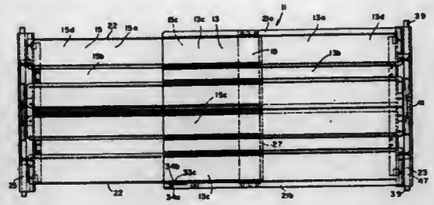
a series of aligned, horizontally elongated slots formed in the second sidewall and said intermediate webs, each of said elongated slots being centered on the cylinder rod and being dimensioned to permit direct linear viewing of, and access to, both of said holes, each said slot providing clearance for insertion of a wrench on either side of said cylinder rod.

5,575,222

TELESCOPING BRIDGE PLATE FOR AUTORACK RAILROAD CARS

Robert J. Sauer, Blackwood, N.J.; Charles L. Van Auken, Dillsburg, and John W. Rudibaugh, West Chester, both of Pa., assignors to Pennsy Corporation, West Chester, Pa.

Filed Aug. 9, 1995, Ser. No. 513,133
Int. Cl.[6] B61D 49/00; 3/00
U.S. Cl. 105—458 8 Claims



1. A telescoping bridge plate for auto rack railroad cars employed as a ramp for supporting motor vehicles passing from one railroad car to another railroad car in a train to bridge the space between the cars, to load or unload the railroad cars, comprising

a top plate with corrugations providing top bearing surfaces separated by grooves,

said top plate having an overlapping end portion and a locking end portion,

a bottom plate with corrugations providing top bearing surfaces which seat beneath the top surfaces of the top plate, and grooves which seat beneath the grooves of the top plate,

said bottom plate having an overlapping end portion and locking end portion,

said top plate overlapping end portion and said bottom plate overlapping end portion being in sliding overlapping engagement,

means for holding top and bottom plates together and preventing them from separating vertically,

and bridge plate connecting means mounted on the locking ends of the top and bottom plates for connecting the bridge plates to adjacent auto rack railroad cars so that the bridge plate extends between the adjacent auto rack railroad cars and motor vehicles may be driven from one railroad car to another over the bridge plate,

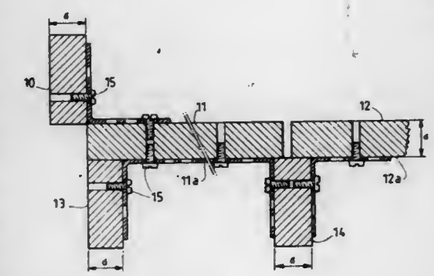
and stop means mounted on at least one of the plates for preventing the plates from sliding apart.

5,575,223

FURNITURE KIT

Siegfried Hendel, Mannheim, Germany, assignor to Inntegra AG, Basel, Switzerland

Filed Sep. 22, 1994, Ser. No. 310,453
Claims priority, application Switzerland, Sep. 22, 1993, 2862/1993
Int. Cl.[6] A47B 3/00
U.S. Cl. 108—193 2 Claims



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1. A furniture kit, comprising:

a plurality of panel elements including first panel elements having a thickness of d and second panel elements having a thickness equal one of 3d/4, d/2 and ¾, the panel elements of the plurality of panel elements having a width of (n3d–d/2), where n is an integer, and all of the panel elements of the plurality of panel elements being provided, along longitudinal edges thereof, with at least one row of holes for receiving fixing screws, with a distance between centers of adjacent holes corresponding to the thickness d and with a first hole of the row of holes being spaced from an adjacent end side a distance equal d/2; and

a plurality of connecting brackets having each first and second limbs extending at a right angle to each other and having, respectively, ten and eight fixing screw receiving openings arranged symmetrically relative to a line of symmetry extending at a right angle to a bracket edge;

wherein four of the openings of the first limb and four of the openings of the second limb have centers thereof lying on the symmetry line and spaced from the bracket edge a distance equal, respectively, d/2, d, 3d/2, and 2d, and

wherein remaining six openings of the first limb and four openings of the second limb are formed as recesses evenly distributed along opposite edges of the first and second limbs, respectively, which extend parallel to the symmetry line, with centers of recesses of the first limb being spaced from the bracket edge a distance 3d/4, 5 d/4 and 7d/4, and centers of recesses of the second limb being spaced from the bracket edge a distance equal 3d/4 and 3d/2.

5,575,224

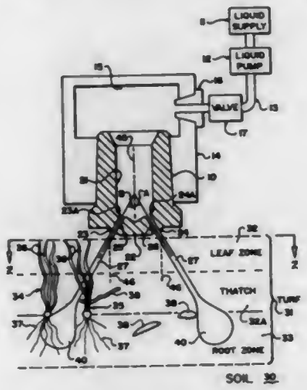
INJECTION TIP FOR LIQUID DISTRIBUTION IN A TURF ROOTZONE

Ramon B. Rogers, 626 - 47th Street E., Saskatoon, Saskatchewan, Canada

Filed Jan. 17, 1995, Ser. No. 372,922

Int. Cl.[6] A01C *23/04*

U.S. Cl. 111—118 **26 Claims**



1. A method of applying liquid below an upper surface of turf, the turf comprising a first layer of grass including leaves, a second layer of thatch having a layer of dead leaves and stems and a third layer comprising a root zone in which the roots engage into the soil, the method comprising providing a liquid injection nozzle having at least one nozzle opening, generating a liquid under pressure for injection through the nozzle opening, shaping the nozzle opening to generate a penetrating stream of the liquid, releasing the liquid under pressure through the nozzle opening in a series of sequential pulses, moving the nozzle across the turf in a direction of movement such that the series of sequential pulses inject liquid into the soil at a series of locations spaced along the direction of movement, locating the nozzle at a position above the soil surface and closely adjacent to the soil surface at a height to pass over the leaves and thatch, and directing the stream of liquid of each pulse at an angle to a vertical line through the soil surface at the respective one of the locations, the angle being arranged and the pressure of the liquid relative to a transverse dimension of the stream being set so as to cause the liquid stream to penetrate through the first and second layers at least into the third layer of the root zone.

5,575,225

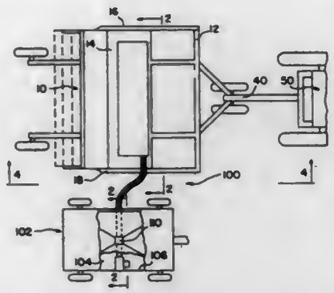
AIR-POWERED APPARATUS FOR FILLING GRAIN DRILLS AND METHOD OF USING SAME

David R. Smith, Ft. Jennings, Ohio; Robert Kepple, Green, and Dennis McWilliams, Bristow, both of Iowa, assignors to Unverferth Manufacturing Company, Inc., Kalida, Ohio

Filed Feb. 27, 1995, Ser. No. 394,352

Int. Cl.[6] A01C *7/00*

U.S. Cl. 111—174 **24 Claims**



1. An apparatus for supplying grain to a grain drill which dispenses grain in a desired location in the ground, the apparatus comprising:

a grain hopper for receiving a supply of grain, the grain hopper having an upper portion and a lower portion, the upper portion being open to fill the grain hopper with a desired amount of grain, and the lower portion having an outlet which opens into a grain conveying conduit and feeds grain into the conduit;

an air blower device for generating pressurized air, the blower device communicating with the grain conveying conduit to force pressurized air therethrough which entrains grain exiting from the outlet of the lower portion of the grain hopper, the conveying conduit having a section extending away from the blower device and grain hopper; and

a manifold assembly connected to the grain conveying conduit to receive grain carried through the conduit by the air, the manifold assembly having means for securing the assembly to an inlet of a grain drill to fill the drill with grain;

wherein the manifold assembly includes an elongated manifold tube with an elongated opening for dispensing grain into the inlet of the grain drill.

5,575,226

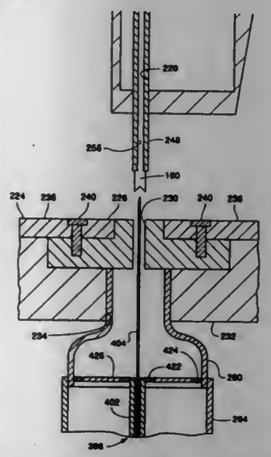
SEWING AND MATERIAL REMOVAL ASSEMBLY

Ralph Badillo, and Paul Badillo, both of Littleton, Colo., assignors to Ralph's Industrial Sewing Machine Company, Denver, Colo.

Continuation-in-part of Ser. No. 24,687, Mar. 1, 1993, Pat. No. 5,339,756, which is a continuation of Ser. No. 764,332, Sep. 23, 1991, Pat. No. 5,193,471, which is a continuation-in-part of Ser. No. 633,497, Dec. 26, 1990, Pat. No. 5,158,026. This application Aug. 5, 1994, Ser. No. 286,640

Int. Cl.[6] D05B *3/06*

U.S. Cl. 112—68 **35 Claims**



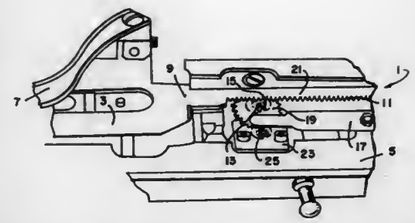
1. A sewing and material removal assembly for use with a plurality of plies of a stitchable material, comprising:

a sewing unit comprising a sewing needle;

a material removal unit laterally displaced from said sewing needle and comprising a material removal device and a receiving table with an aperture aligned with said material removal device;

means for transferring the stitchable material between said sewing unit and said material removal unit; and

means for aligning the plurality of plies of a stitchable material in a predetermined position relative to said material removal device, said means for aligning comprising means for restricting movement in at least one dimension of each ply comprising the plurality of plies, said means for aligning being disposed within said aperture and extending above said receiving table.



driving gear, a left bevel gear and a right bevel gear, the left and right bevel gears keyed to the feed shaft and positioned on the feed shaft such that the lower driving gear is located between the left bevel gear and the right bevel gear, and a ratchet mechanism drivingly connected to the feed shaft for driving the feed shaft and for moving the plate in steps.

5,575,227

FEED MECHANISM FOR A BUTTONHOLE SEWING MACHINE

Rudy Papajewski, and Gerd Papajewski, both of Stutensee, Germany, assignors to AMF Reece, Inc., Mechanicsville, Va.

Filed Aug. 29, 1995, Ser. No. 520,645

Int. Cl.[6] D05B *3/06*

U.S. Cl. 112—76 **20 Claims**

1. A work feed apparatus for a buttonhole sewing machine comprising a movable plate, a pinion that engages an edge of the plate, a large gear onto which is fixed the pinion, the large gear being connected to a support, an upper driving gear mounted on an upper end of a stub shaft, the upper driving gear lying in a same parallel plane as the large gear and positioned near the large gear so that an edge of the upper driving gear engages an edge of the large gear, and the stub shaft extending vertically downward, a lower driving gear mounted on a lower end of the stub shaft, a longitudinally shiftable feed shaft having a right end and a left end and extending perpendicular to the stub shaft beneath the lower

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5,575,228

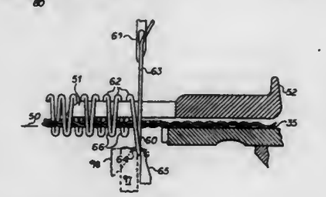
VARIABLE GAUGE TUFTING APPARATUS

W. Paul Padgett, III, Rome, Ga., and Brian K. Lovelady, Soddy-Daisy, Tenn., assignors to Tuftco, Inc., Chattanooga, Tenn.

Filed Aug. 25, 1993, Ser. No. 112,662

Int. Cl.[6] D05C *15/12;15/30*

U.S. Cl. 112—80.41 **17 Claims**



1. A tufting machine comprising:

(a) means for supporting a substrate for longitudinal movement in a feeding direction from front-to-rear through the tufting machine;

(b) a front needle bar having a plurality of front needles spaced transversely of said feeding direction;

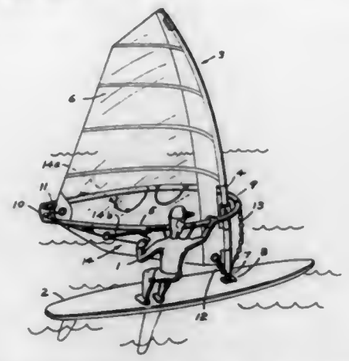
(c) a rear needle bar behind said front needle bar in said feeding direction and having a plurality of rear needles spaced transversely of said feeding direction;

(d) a needle drive means for reciprocally moving said needle bars toward and away from the substrate and thereby causing said front needles and said rear needles to move in substantially vertical needle paths and to stitch yarns through the substrate; and

(e) a pattern control actuator means operatively connected to said front and rear needle bars to shift said needle bars independently of each other in predetermined increments transversely of said feeding direction; and

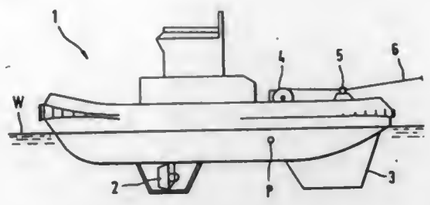
(f) a loop forming plate fixably supported above the substrate having a plurality of transversely spaced loop forming fingers projecting rearwardly between the vertical needle paths of the front and rear needles.

5,575,229
CONTROL TACKLE APPARATUS FOR A SAILBOARD RIG OUTHAUL
Richard Blackmer, 109 Oakwood Dr., Scotia, N.Y. 12302
Filed Nov. 21, 1994, Ser. No. 342,599
Int. Cl.[6] B63B *35/00*
U.S. Cl. 114—39.2 7 Claims



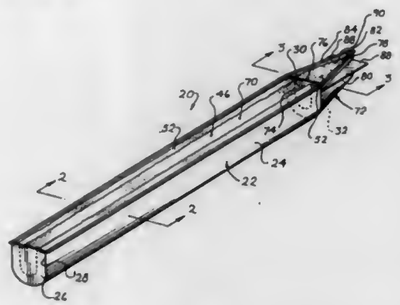
1. An improved control tackle apparatus for a sailboard rig having a boom, a mast and a sail with a clew line under tension, said control tackle apparatus comprising:
at least one ring cinch assembly having an anchor ring and top and bottom cinch rings,
means for anchoring said anchor ring to said boom,
means for attaching said top and bottom cinch rings together and to said clew line,
said ring cinch assembly further comprising a cinch line attached to said anchor ring, said cinch line having a pull-part portion extending from said anchor ring and passing between said top and bottom cinch rings, a release-part portion passing around said top cinch ring and extending back to said anchor ring, and a cinch-part portion passing around said anchor ring and extending back to said cinch rings, said cinch-part portion being secured to said top and bottom cinch rings by a loop passing around both said top and bottom cinch rings, whereby tension on said clew line may be increased by pulling on said pull-part portion and cinched between said top and bottom cinch rings when the pull-part portion is released, and whereby the tension on said clew line may be reduced by pulling on said release-part portion.

5,575,230
TUG BOAT FOR ESCORT TOWING AND/OR HARBOR USE
Harri K. Eronen, Raisio, Finland, assignor to Aquamaster-Rauma Ltd., Rauma, Finland
Filed Mar. 14, 1995, Ser. No. 403,679
Claims priority, application Finland, Mar. 14, 1994, 941196
Int. Cl.[6] B63B *1/00*
U.S. Cl. 114—56 16 Claims



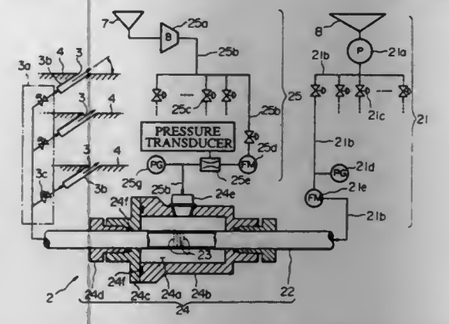
1. A tug boat for escort towing and/or harbor use including an elongate hull, a towing winch installed on a deck thereof and a tow rope connected to the towing winch and connectable to a vessel being assisted, comprising
a towing eyelet through which the tow rope is passed between the towing winch and connectable to the vessel such that traction force of the tow rope is transmitted to the tug boat through said towing eyelet, said towing eyelet being arranged such that the force transmitted to the tug boat through the tow rope lies in a plane in proximity to or on the deck of the tug boat, and
a substantially arcuate tow arc mounted on the deck and arranged in a plane substantially parallel to a plane of the deck,
said towing eyelet being movable along said tow arc to change its position relative to a change in a towing angle defined between a longitudinal center line of the boat and a direction of the tow rope extending from the boat to the vessel,
the hull having a construction such that a hydrodynamic point of application of the hull is situated in a longitudinal position proximate to said towing eyelet such that torque heeling the tug boat is reduced and the force of the tow rope and the hydrodynamic force are longitudinally close to one another.

5,575,231
FLOTATION FOAM LINED PONTOON LOG
John P. Metcalf, Lebanon, Mo., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Sep. 29, 1995, Ser. No. 536,888
Int. Cl.[6] B63B *1/00*
U.S. Cl. 114—61 7 Claims



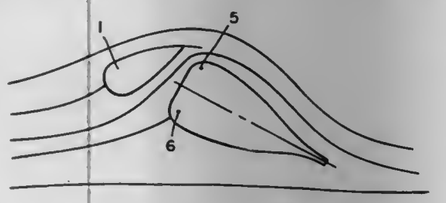
1. A pontoon log, comprising:
a shell having a bow end and a stern end, and having an outer surface and an inner surface defining an interior shell volume;
a lining of flotation foam adhered to, and extending over at least a substantial portion of, the inner surface of the shell between said bow end and said stern end of the shell; and
the foam lining being sufficiently thin to leave an inner free surface of said foam lining which inner free surface is not bound or constrained by any other surface, with the portion of the interior shell volume which is disposed interiorly of the inner free surface of the foam being hollow.

5,575,232
METHOD AND DEVICE FOR REDUCING FRICTION ON A NAVIGATING VEHICLE
Hiroharu Kato, 5-31-9, Koganehara, Matsudo-shi, Chiba-ken, and Yoshiaki Takahashi, Tokyo, both of Japan, assignors to Hiroharu Kato, Chiba-ken, and Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, both of Japan
Filed Dec. 21, 1994, Ser. No. 360,731
Claims priority, application Japan, May 11, 1993, 5-109547; Oct. 13, 1993, 5-256162
Int. Cl.[6] B63B *1/38*
U.S. Cl. 114—67 A 13 Claims



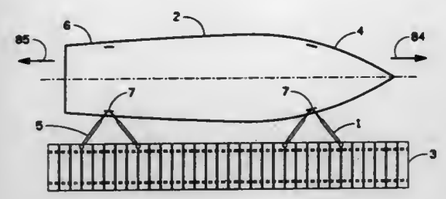
1. A low friction navigation vehicle comprising a gas mixture generation and supply apparatus (2) for generating and supplying a gas bubble/water mixture, said gas mixture generation and supply apparatus being carried on a navigating ship (1), and fluid ejection openings (3) communicating with the gas mixture generation and supply apparatus (2) in a submerged surface (4) for ejecting the gas bubble/water mixture towards the stern of the low friction navigation vehicle, wherein said ship (1) comprises a double hull structure, and a plurality of said gas bubble/water mixture generation and supply apparatuses (2) are disposed in space sections formed between an outer hull (11) and an inner hull (12).

5,575,233
MONOPLANE AND LOW THRUST WINGSAIL ARRANGEMENTS
John G. Walker, Tipwell House, St Mellion, Cornwall PL12 6RS, Great Britain
Filed Jan. 31, 1995, Ser. No. 381,192
Claims priority, application United Kingdom, Jan. 31, 1994, 9401744
Int. Cl.[6] B63H *9/06*
U.S. Cl. 114—102 5 Claims



1. A wingsail assembly comprising a thrust wing having a leading aerofoil (1) and a trailing aerofoil (2), the leading and trailing aerofoils being deflectable with respect to one another to adopt a cambered configuration, characterised in that the trailing aerofoil has a cross-sectional shape with a relatively flat leading edge interconnecting relatively strongly curved corners (5,6) on opposite sides of the aerofoil, such that for each direction of relative deflection between the leading and trailing aerofoils the corner more remote from the trailing edge of the leading aerofoil provides an aerodynamic leading edge for the trailing aerofoil and the corner more proximate the trailing edge of the leading aerofoil provides an inner wall for a convergent slot.

5,575,234
BOAT AND DOCK STANDOFF
Edward D. Dysarz, 11423 Triola Ln., Houston, Tex. 77072
Filed Nov. 13, 1995, Ser. No. 556,506
Int. Cl.[6] B63B *21/00*
U.S. Cl. 114—230 16 Claims



1. A boat and dock standoff wherein at least one said boat and dock standoff is fixed to a cleat mounted on a boat and further fixed to a wooden dock with boards for preventing said boat from contacting said dock or drifting away from said dock due to waves, tides or winds comprising:
at least one cleat hook wherein said cleat hook is fixed to said cleat;
at least one pivot plate wherein said pivot plate has a first end and a second end and said pivot plate is fixed to said cleat hook;
at least one first arm wherein said first arm has a first end and a second end and wherein said first end of said first arm is flexibly attached to said second end of said pivot plate;
at least one second arm wherein said second arm has a first end and a second end and wherein said first end of said second arm is flexibly attached to said second end of said pivot plate;
at least one first dock attachment device comprised of a vertical pivot plate with a first end and a second end wherein said first end of said vertical pivot plate is flexibly attached to said second end of said first arm and wherein said first dock attachment device is further comprised of a T-bar, an inner rod with a first and a second end wherein said inner rod has threads formed on said inner rod and said second end of said inner rod is fixed to said T-bar, an inner tube around said T-bar, a rotation ring around said inner tube, a lower washer fixed to said inner tube, an upper washer on said inner tube and a wing nut with threads that suitably mesh with said threads on said inner rod and said vertical pivot plate that is fixed to said rotation ring;
at least one second dock device comprised of a vertical pivot plate wherein said vertical pivot plate is fixed to a rotation ring and wherein said rotation ring is held in place around an inner tube, an upper washer and a lower washer and said inner tube is held in place by a wing nut on an inner rod and said inner rod is held to said dock by a T-bar rotated below said boards wherein said second end of said second arm is flexibly fixed to said second vertical pivot plate and said first arm is flexibly fixed to said first dock attachment device and wherein said first arm fixed to said first dock attachment device is fixed to said dock and said second arm is fixed to said second dock attachment device is further fixed to said dock thereby forming a rigid or semi-rigid triangle between said dock and said boat cleat, the first arm and the second arm thereby preventing the boat from moving forward or aftward or from moving directly toward said dock or directly away from said dock thereby allowing said boat to move in a rotational direction up or down without striking said dock.

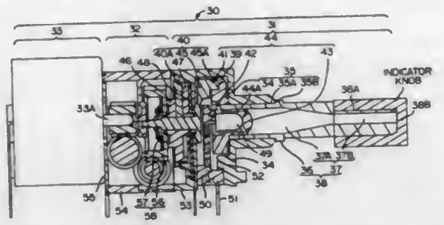
VOL 1192 ISS 3 NO 19 1996 UMI

5,575,235

ELECTRONIC ILLUMINATION APPARATUS

Yoshinobu Nakagawa; Tomitaro Murakami, and Hiroshi Matsui, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 23, 1993, Ser. No. 125,657
Claims priority, application Japan, Sep. 30, 1992, 4-261186
Int. Cl.[6] G01O 11/28; H01C 1/02
U.S. Cl. 116—286 14 Claims



1. In an electronic illumination apparatus comprising:
at least a driver, a resistor substrate,
a bushing with a concaved housing,
a rotational operation shaft, and
an illumination source, an improvement comprising: a rotor inside said concaved housing of said bushing, said rotor comprising a recess in its center and a front end and a rear end, said bushing comprising a front portion and an end portion, said illumination source being in the back of said recess of said rotor,
said rotational operation shaft including a front end and a rear end, said rotational operation shaft rotatably connected to said bushing so as to freely rotate, and said rear end of said rotational operation shaft connected to said front end of said rotor by a releasable connection means, so as to rotate with said rotor, said rotational operation shaft connected to said rotor by inserting said rotational operation shaft through said front portion and then through said end portion of said bushing;
said rotational operation shaft including an elevated step portion contacting said front portion of said bushing, wherein in assembly said rotational operation shaft is inserted into said front portion of said bushing and is connected by said releasable connection means to said rotor, thereby putting the elevated step portion into contact with said front portion of said bushing.

5,575,236

METHOD OF USING AN ANT HABITAT CONSTRUCTION

Lonnie C. Pogue, 1736 W. Montecito Way, San Diego, Calif. 92103, and Brian Macowski, 2088 Montgomery, Apt. #N, Cardiff by the Sea, Calif. 92007

Filed Feb. 14, 1995, Ser. No. 388,383
Int. Cl.[6] A01K 67/033
U.S. Cl. 119—6.5 3 Claims

1. A method for using an ant habitat having a base means, a housing mounted in an upright manner on said base means and having a generally thin rectangular shape and being bowed in shape in a convex manner between its side edges to provide an aesthetically pleasing convex curved configuration, said housing having at least one internal compartment for receiving and confining particulate materials, said housing having at least one transparent window for viewing the contents of the compartment, said housing having an access opening therein for receiving the particulate materials, an access door means removably connected to the housing for sealing over the access opening, and said base means including large foot pad means, having a front portion and a rear portion, connected to the bottom of the housing for helping provide mechanical stability for the housing to help prevent inadvertent tipping over of the housing, said foot pad means having a dimension extending between the front and rear portions thereof being substantially equal to about one-third of the height of the housing, the method comprising the steps of:
inverting the ant habitat and having it rest on a supporting surface standing upside down;
removing a lower access cover to expose a lower access opening;
filling a lower interior compartment with particulate material by pouring the particulate material through said exposed lower access opening;
replacing said lower access cover to retain the particulate material within said lower interior compartment;
inverting the ant habitat to position it in an upright manner;
opening a hingedly connected upper access door to expose an upper access opening;
starting a tunnel;
adding burrowing insects to an upper interior compartment through said upper access opening;
closing said upper access door to confine the burrowing insects within the interior compartment; and
wherein said step of inverting the ant habitat and having it rest on a supporting surface standing upside down includes attaching removable foot pads to that portion of the ant habitat contacting the supporting surface to enhance stability of the ant habitat during the filling operation.

5,575,237

METHOD OF HATCHING AVIAN EGGS

Mark W. J. Ferguson, Stockport, England, assignor to The Victoria University of Manchester, England

PCT No. PCT/GB93/02565, § 371 Date Aug. 23, 1995, § 102(e) Date Aug. 23, 1995, PCT Pub. No. WO94/13132, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 16, 1993, Ser. No. 481,428
Claims priority, application United Kingdom, Dec. 16, 1992, 9226179
Int. Cl.[6] A01K 41/00
U.S. Cl. 119—68 13 Claims

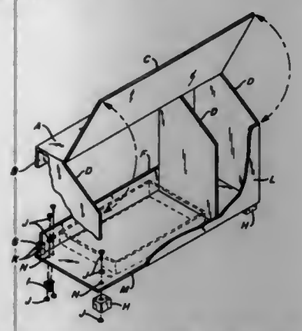
1. A method of hatching eggs of avian species which comprises carrying out at least one cycle of steps (a) to (c) as follows:
(a) incubating the eggs in a first, baseline ambient environment which is normal for hatchery incubation of the eggs of the avian species In the prevailing climatic conditions and then during a sex-sensitive time window of embryonic development, (b) altering the ambient environment to shifted conditions for a period of time effective to bias the normal phenotypic sex ratio of the embryos, without significant adverse effect on the average mortality rate, and (c) thereafter restoring the incubation conditions to or towards normal, and allowing the eggs to hatch.

5,575,238

FURNITURE-LIKE LITTER BOX HOUSING

Remington S. Redman, 12160 Colorado Blvd. #B203, Thornton, Colo. 80241, assignor to Remington S. Redman, Thornton, Colo.

Filed May 16, 1995, Ser. No. 442,466
Int. Cl.[6] A01K 29/00
U.S. Cl. 119—165 8 Claims



1. An enclosure for retaining pet related articles, said enclosure including:
a top piece;
a lid including a top portion rotatably connected to said top piece for covering said enclosure and providing access to an interior of said enclosure;
a front panel;
a pair of opposing sidewalls each including a clip holder, said pair of opposing sidewalls connected by said front panel and said top piece;
a bottom spaced below said top piece and attached to said sidewalls to support the pet related articles;
a backboard guard slidably engageable with said clip holders and positionable between said opposing sidewalls; and
a backboard support positioned between said opposing sidewalls and spaced from said backboard guide wherein an opening is formed between said backboard support and said backboard guide for access by the pet to at least some of the pet related articles within said enclosure.

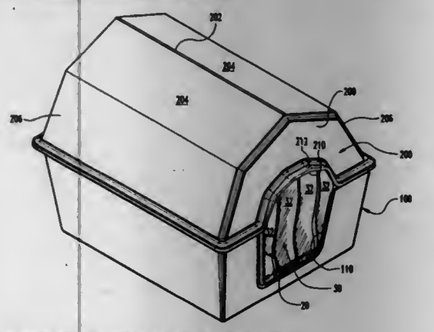
5,575,239

INDOOR/OUTDOOR ANIMAL HOUSING

Richard K. Garton, and Richard N. Sauerwein, both of Fort Wayne, Ind., assignors to Fort Wayne Plastics, Inc., Fort Wayne, Ind.

Filed Apr. 28, 1995, Ser. No. 430,332
Int. Cl.[6] A01K 1/02; 1/035
U.S. Cl. 119—500 39 Claims

1. An animal housing comprising:



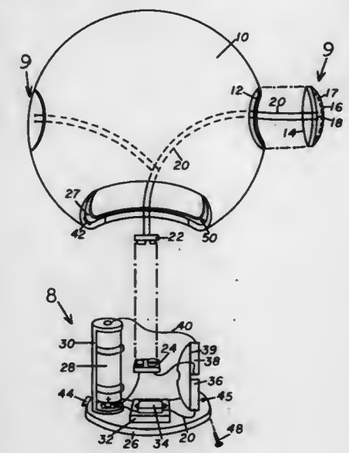
a hollow base portion having a lower rim;
a hollow top portion having an upper rim configured to align with said lower rim, said hollow top portion further configured for attachment to said base portion to define an enclosed interior;
a connected pair of press-fit attachment members, a first member of said pair being integral with said base portion and a corresponding second member of said pair being integral with said top portion; and,
wherein said first member is a tab inwardly extending from said lower rim and said corresponding second member is a finger extending downward, said finger having an outward surface defining a groove configured to receive said tab for interlocking engagement.

5,575,240

ANIMAL ATTRACTING SOUND PRODUCING BALL

Steven D. Udelle, and Laura L. Udelle, both of 26414 Barranquilla Ave., Punta Gorda, Fla. 33983

Filed Jul. 18, 1995, Ser. No. 503,841
Int. Cl.[6] A01K 29/00
U.S. Cl. 119—707 7 Claims



1. An animal attractant device comprising:
a spherical ball-shaped enclosure forming a housing;
an electronic sound synthesizer assembly affixed within said housing, said sound synthesizer assembly comprising a first sound synthesizer and a second sound synthesizer, said first synthesizer producing a first sound and second synthesizer producing a second sound distinctly different from said first sound;
a power source disposed within said housing;
a manual on/off switch electrically connecting said first sound synthesizer to said power source for activating said first sound synthesizer; and
at least one pressure sensitive switch connecting said second sound synthesizer to said power source for activating said second sound synthesizer independently of said first sound synthesizer; said at least one pressure sensitive switch being disposed on the outside of said housing.

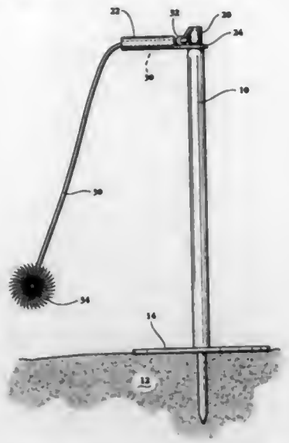
VOL 1192 ISS 3 NO 19 1996 UMI

5,575,241

ANIMAL EXERCISE AND AMUSEMENT DEVICE

Ronnie G. Line, 7747 E. 24th, Tulsa, Okla. 74129

Filed Aug. 30, 1995, Ser. No. 520,778
Int. Cl.[6] A01K *15/02;29/00*
U.S. Cl. 119—708 3 Claims



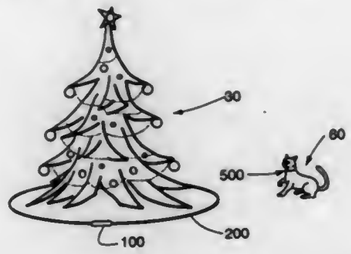
1. An animal exercise and amusement device comprising:
a vertical post;
a shank having an eye rotatably retained to a top of said post, said shank being hollow and extending horizontally outward from said post; and
an elastic cord, one end of which is retained in said hollow shank and extending a given length from said shank and terminating at the other end in a play toy.

5,575,242

ANIMAL CONTROL SYSTEM

James E. Davis, 26 Austin Rd., Wilmington, Del. 19810, and Byron H. Rubin, Honeoye Falls, Monroe, N.Y. 14472

Filed Mar. 21, 1994, Ser. No. 201,215
Int. Cl.[6] A01K *15/02;* G08B *21/00*
U.S. Cl. 119—721 12 Claims



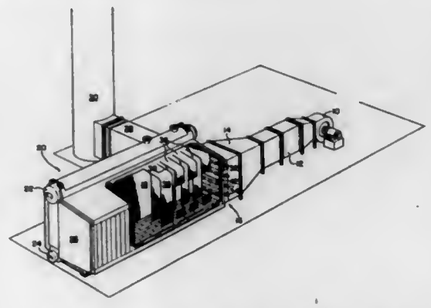
1. A system for controlling the movement of a first object relative to a controlled area comprising:
a first radio frequency transmitter generating a radio frequency signal, said transmitter including means for frequency modulating the radio frequency signal with an audio frequency signal fa to provide a frequency modulated signal having a frequency deviation fd and a carrier frequency fc,
a transmitting antenna coupled to the first transmitter radiating the frequency modulated signal and defining the controlled area, and
a first receiver associated with the first object, the receiver having a receiving antenna receiving the radiated signal and a demodulator means for demodulating said received radiated signal to recover the signal fa, and a response selector means for providing an alarm signal in response to the recovered signal fa,
the demodulator means comprising a phase locked loop having means for activating the phase locked loop to recover the signal fa and provide the alarm signal only when the amplitude of the received radiated signal exceeds a predetermined amplitude, thereby reducing power required by the receiver.

5,575,243

LOW NO_x INTEGRATED BOILER-BURNER APPARATUS

Richard C. Vetterick, Akron, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Nov. 30, 1994, Ser. No. 347,613
Int. Cl.[6] F22B *15/00*
U.S. Cl. 122—235.11 31 Claims



1. A low NO_x, integrated boiler-burner apparatus, comprising:
a horizontally fired, factory assembled package boiler having an inlet plenum and a furnace space;
a multi-nozzle burner (MNB) array including a plurality of vertically and horizontally spaced burner nozzles located at an entrance to the furnace space for supplying fuel for combustion into the furnace space;
one or more vertically extending, horizontally spaced chill tube assemblies located within the furnace space downstream of the MNB array so as to quickly absorb heat from combustion exhaust gases within the furnace space to lower a temperature of the combustion exhaust gases to minimize NO_x formation; and
means for supplying fuel to the MNB array.

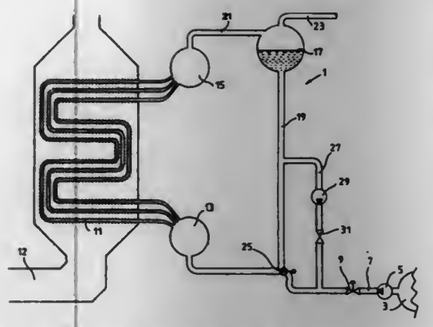
5,575,244

HEAT RECOVERY BOILER WITH INDUCED CIRCULATION

Alfred Dethier, Lince-Sprimont, Belgium, assignor to Cockerill Mechanical Industries S.A., Seraing, Belgium

Filed Dec. 28, 1994, Ser. No. 325,442
Claims priority, application Belgium, May 8, 1992, 9200428
Int. Cl.[6] F22D *7/00*
U.S. Cl. 122—406.1 34 Claims

1. Heat recovery boiler comprising one or more steam generating circuits, optionally at different pressures, each comprising
a water/steam separating flask,
an evaporator device with finned pipes, arranged horizontally in a stream of hot gases,
downcomer and riser pipes ensuring the communication between the flask and the evaporator device via an entry manifold and an exit manifold,



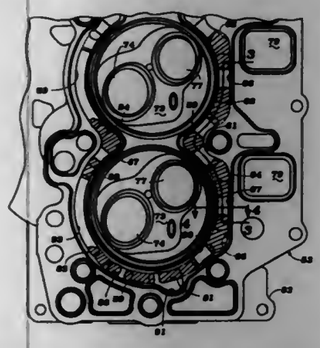
at least one steam generating circuit comprises an ejector capable of ensuring an induced water circulation in the boiler in normal operation, and in that the corresponding water/steam separating flask is arranged at any height in relation to the exit manifold of the evaporator device of this circuit, and
each steam generating circuit comprising an ejector additionally comprises a means for ensuring a minimum flow rate permitting the operation of this ejector during the stage of starting up the boiler.

5,575,245

LIQUID COOLING ARRANGEMENT FOR ENGINE

Takahide Watanabe, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Sep. 6, 1994, Ser. No. 301,322
Claims priority, application Japan, Sep. 6, 1993, 5-221277
Int. Cl.[6] F02B *75/18*
U.S. Cl. 123—41.74 16 Claims



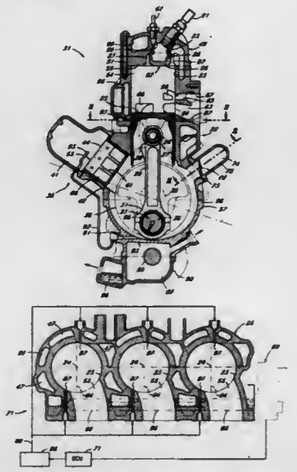
1. A gasket and sealing arrangement for a water-cooled engine having a pair of members having facing surfaces to be sealed, a first water jacket formed in one of said members and having a first opening in the facing surface of said one member, a second water jacket formed in the other of said members and having a second opening in the facing surface of the other of said members, said openings being sized and configured so that when said facing surfaces are in their facing relationship flow between said openings is permitted and at least a portion of one of said openings is in confronting relationship with a portion of the facing surface of the other of said members, a sealing gasket received and compressed between said facing surfaces, said sealing gasket having a portion extending across and at least partially positioned to be directly engaged only on one side by said portion of the facing surface of the other of said members with the other side of said portion of said gasket being in facing relation to said portion of said one opening so that said one side of said gasket portion and said portion of said facing of said other member are in facing relation without compression of said portion of said gasket, and means comprising a pocket formed in the portion of said facing surface of said other member forming a substantially unrestricted flow path for permitting water to drain from the area between said uncompressed portion of said sealing gasket and said other member portion to said one opening when said members and sealing gasket are assembled.

5,575,246

OPERATIONAL CONTROL DEVICE FOR TWO-CYCLE ENGINES

Hideaki Ito, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 22, 1994, Ser. No. 310,663
Claims priority, application Japan, Sep. 22, 1993, 5-236499; Sep. 22, 1993, 5-236500
Int. Cl.[6] F02B *75/02*
U.S. Cl. 123—65 PE 106 Claims



1. A two-cycle, crankcase compression internal combustion engine having a scavenging system for transferring a charge from a crankcase of said engine to a combustion chamber thereof, an exhaust system for discharge of exhaust products from said combustion chamber to the atmosphere, control means for controlling the flow through at least one of said systems, sensors for sensing at least two running parameters of said engine, and operating means for operating said control means in accordance with a first map in a normal steady state condition within at least a certain speed range and in accordance with another routine in response to another engine condition.

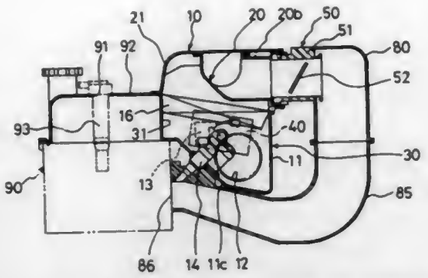
5,575,247

AIR INTAKE DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Toshiaki Nakayama, Nishikamo-gun; Shuya Mikami, Kariya; Yoshitaka Nishio, Nagoya; Akihide Yamaguchi, Kariya, and Masao Ino, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 26, 1995, Ser. No. 579,606
Claims priority, application Japan, Feb. 1, 1995, 7-015242; Jun. 7, 1995, 7-140644
Int. Cl.[6] F02M *31/00*
U.S. Cl. 123—184.21 24 Claims

1. An air intake device for an internal combustion engine having a shaft, a plurality of cylinders, a throttle and air-intake pipes, said air intake device comprising:



a case having an inlet, an outlet, a space connected between said inlet and said outlet, and a mount member disposed below said outlet and adjacent to said air-intake pipes and connected to each of said air-intake pipes;

a filter element disposed detachably in said case to partition said space into a dusty-side space which includes said mount member and is connected to said inlet and a clean-side space which is connected to said outlet; and

means, fixed to said mount member, for supplying fuel to said intake pipes.

5,575,248

INDUCTION SYSTEM AND METHOD OF OPERATING AN ENGINE

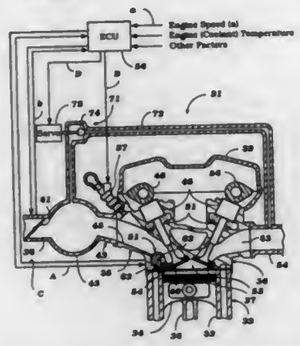
Atsushi Tada, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Feb. 7, 1994, Ser. No. 192,735

Claims priority, application Japan, Feb. 5, 1993, 5-018994; Feb. 5, 1993, 5-018995; Feb. 5, 1993, 5-018996

Int. Cl.[6] F01L *3/20;* **F02M** *35/10*

U.S. Cl. 123—184.56 **264 Claims**



1. An induction system for an internal combustion engine having a pair of relatively movable components defining a combustion chamber which varies cyclicly in volume upon the relative movement between said components, an induction system for delivering an intake charge to said combustion chamber, control valve means in said induction system and movable between a first opened position wherein the flow of charge from said induction system to said combustion chamber enters said combustion chamber without generating significant turbulence and at a relatively low velocity and a second position wherein the charge entering the combustion chamber is turbulent and at a high velocity, engine sensing means for sensing at least one running condition of said engine, transient condition sensing means for sensing a transient condition, and control means for setting the position of said control valve in response to the output signals of said sensing means of the sensed engine condition and the sensed transient condition for providing the desired degree of turbulence for both types of conditions.

5,575,249

PLASTIC INTAKE MANIFOLD ASSEMBLY WITH HOLLOW RESONANCE CHAMBER STRUCTURE FOR INTERNAL COMBUSTION ENGINES

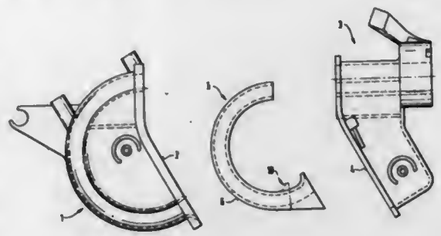
Josef Mielke, Schwieberdingen, and Herbert Pietrowski, Steinheim, both of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Germany

Filed Oct. 20, 1995, Ser. No. 546,034

Claims priority, application Germany, Oct. 21, 1994, 44 37 677.4

Int. Cl.[6] B29C *65/06;* **B29D** *23/24;* **F02M** *35/10*

U.S. Cl. 123—184.57 **14 Claims**



1. A method for producing an plastic intake manifold assembly with a hollow resonance chamber structure, said method comprising the steps of:

providing a first plastic housing piece having a first sealing surface;

providing a second plastic housing piece having a second sealing surface;

providing at least one plastic insert piece having a sealing surface mating with at least one of said first and second housing pieces;

mounting the first housing piece in a first tool which supports the first housing piece in the vicinity of the first sealing surface;

mounting the second housing piece in a second tool which support the second housing piece in the vicinity of the second sealing surface;

inserting the at least one insert piece into one of the first and second housing pieces so as to form a resonance chamber cross section;

aligning said first and second tools with the first and second housing pieces such that the first and second sealing surfaces matingly engage each other, and

bonding the mating sealing surfaces to each other.

5,575,250

QUICK DISCONNECT COUPLING FOR FLUID FLOW CONNECTIONS

G. L. Van Dyne, II, Aurora, Colo., assignor to PROK Performance Enterprises, Inc., Denver, Colo.

Filed Apr. 21, 1995, Ser. No. 427,290

Int. Cl.[6] F02M *35/10*

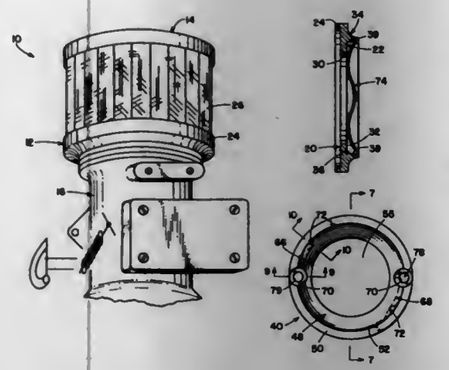
U.S. Cl. 123—184.46 **24 Claims**

1. A quick disconnect coupling for releasably interconnecting first and second fluid flow members each having a fluid opening, said coupling comprising:

a base member having a bottom surface, an annular attachment collar defining an inner fluid port axially through said base member and including an outer cylindrical side wall, and an annular shoulder surrounding said attachment collar;

means for mounting said base member bottom surface to said first fluid flow member to align said fluid port with the fluid opening of said first fluid flow member;

a connecting plate having a top and bottom surface and a central aperture defining an inner cylindrical sleeve sized for journaling about said collar side wall for limited rotation thereabout, and an annular shoulder disposed along said bottom surface



radially outwardly of said sleeve, said connecting plate upper surface being adapted for connection to said second fluid flow member;

spring means positioned on said base member annular shoulder and adapted for resilient compression between said annular shoulders when said connecting plate is journaled about said attachment collar; and

means for releasably locking said connecting plate to said base member including interacting tongue and groove means adapted for interengagement upon rotation of said plate about said collar, said spring means biasing said plate axially away from said base member to exert an axial force against said tongue and groove means.

5,575,251

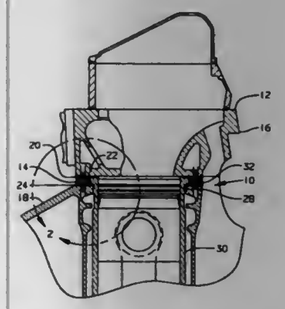
DECK PLATE FOR AN INTERNAL COMBUSTION ENGINE

Allyn P. Bock, West Lafayette, Ind., assignor to Caterpillar Inc., Peoria, Ill.

Filed Jan. 4, 1994, Ser. No. 177,045

Int. Cl.[6] F02B *75/08*

U.S. Cl. 123—193.3 **17 Claims**



1. In an internal combustion engine having a cylinder liner mounted in a cylinder bore of a cylinder block, said cylinder liner including a flanged mounting surface clamped on a corresponding mounting surface of said cylinder block, the improvement comprising said mounting surface of said cylinder block having a hardness in the range of 25 to 60 on a Rockwell "C" scale.

5,575,252

RECIPROCATING INTERANL COMBUSTION ENGINE

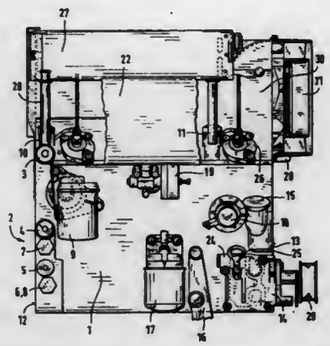
Lothar Bauer, Köln; Herbert Schleiermacher, Brühl; Werner Lemme, Rösrath, and Heinz W. Fuchs, Remscheid, all of Germany, assignors to Klöckner-Humboldt-Deutz AG, Cologne, Germany

Filed Dec. 15, 1994, Ser. No. 358,081

Claims priority, application Germany, Dec. 15, 1993, 43 42 802.9

Int. Cl.[6] F01M *11/02*

U.S. Cl. 123—196 R **4 Claims**



1. A multiple cylinder reciprocating internal combustion engine comprising:

a cylinder crankcase having at least two in-line cylinders, said crankcase having a flywheel end and a second end opposite said flywheel end;

a crankshaft supported in said crankcase;

piston guided in each of said cylinders;

a connecting rod connecting each of said pistons to said crankshaft;

fittings of an oil circulation system and other attached parts formed on one lateral side of said crankcase adjacent said cylinder nearest said second end opposite said flywheel end of said crankcase 1), each fitting and each attached part having a predetermined spacing to said second end opposite to said flywheel end of said crankcase (1) that remains constant regardless of the number of cylinders in said crankcase and

said fittings of said oil circulation system and attached parts formed on said crankcase (1) including an oil cooler return hole (11), an oil pump (14) having a pressure relief valve (24), an oil dipstick (25), and oil filler neck (15), a fuel filter (17), a fuel supply pump (18), a full load stop dependent on a charge pressure (19) and oil pressure and oil temperature sensors, said attached parts having the same positions relative to said second end in all versions of said engine.

5,575,253

FUEL PUMPING APPARATUS

Malcolm D. D. Lambert; Adam M. Cox, both of London, England, and Colin T. Timms, Harrow Weald, England, assignors to Lucas Industries Public Limited Company, Solihull, England

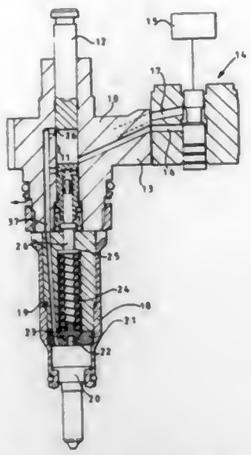
Filed Mar. 28, 1996, Ser. No. 623,296

Claims priority, application United Kingdom, Apr. 6, 1995, 9507115

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—300 **8 Claims**

1. A fuel pumping apparatus comprising a high pressure pump including an engine cam actuated pumping plunger slidable within a first bore formed in a body, a spill valve which when open allows fuel to spill from the first bore during inward movement of the plunger and a fuel injection nozzle mounted on the body and which receives fuel from the first bore when during the inward movement



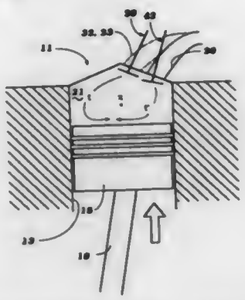
of the plunger the spill valve is closed, a pilot piston movable in a pilot bore, first resilient means acting on the pilot piston to bias the pilot piston into engagement with a first stop, said pilot piston being movable away from said first stop into engagement with a second stop by fuel under pressure applied to the pilot piston from said first bore, a piston member slidable within a blind drilling formed in the pilot piston, a second resilient means acting between the piston and piston member, said piston member engaging said second stop whereby during movement of the pilot piston by the fuel under pressure in the first bore, fuel in the drilling is pressurised to a higher value than the pressure in the bore, and passage means connecting the drilling with said fuel injection nozzle.

5,575,254

INDUCTION SYSTEM FOR ENGINE

Naoki Tsuchida, and Hiroyuki Tsuzuku, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Aug. 5, 1994, Ser. No. 286,670
Claims priority, application Japan, Aug. 9, 1993, 5-197479
Int. Cl.[6] F02B *31/00*
U.S. Cl. 123—308 **15 Claims**



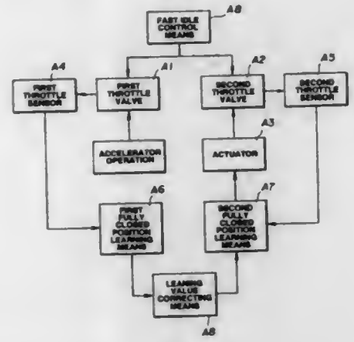
1. An induction system for an internal combustion engine having a cylinder defining a cylinder bore having an axis, a piston reciprocating in said cylinder bore, a cylinder head affixed to said cylinder and having a surface defining with said cylinder bore and said piston a combustion chamber, the volume of which varies cyclically upon reciprocation of said piston within said cylinder bore, intake port means cooperating with said combustion chamber for delivering a charge to said combustion chamber, and means cooperating with said intake port means for causing the intake charge delivered to said combustion chamber to assume a tumble motion rotating about a tumble axis that extends transversely to said cylinder bore axis which tumble axis is disposed substantially at the center of said combustion chamber volume when said piston is traveling from its bottom dead center position toward its top dead center position during the compression stroke and at its maximum speed.

5,575,255

THROTTLE CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Kazuhiko Abe, Sagamihara, and Masahiro Iriyama, Atsugi, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 9, 1994, Ser. No. 354,862
Claims priority, application Japan, Dec. 28, 1993, 5-333905
Int. Cl.[6] F02D *9/02;11/00;* **B60K** *28/16*
U.S. Cl. 123—336 **15 Claims**



1. A throttle control system for an internal combustion engine on a vehicle, comprising:

throttle means opened and closed in response to operation of an accelerator and, under a predetermined vehicle operating condition requiring traction control, compulsorily closed to a target opening degree in accordance with an actuator, said throttle means providing an opening degree of said throttle means as an operating amount thereof;

control means for:

learning a first operating amount as a first fully closed position corresponding value of said throttle means for acceleration control means when said throttle means is at a first, fully closed, position, and

learning a second operating amount as a second fully closed position corresponding value of said throttle means for traction control under control of said actuator to compulsorily close said throttle means to a second position immediately after turning ON of a switch for allowing electric current to flow to the engine; and

fast idle control means for changing the fully closed position of said throttle means in an increasing direction to open said throttle means as an engine temperature lowers to provide a change amount representative of a charge in said first fully closed position corresponding value, under action of a thermally responsive member which is deformable in response to the engine temperature;

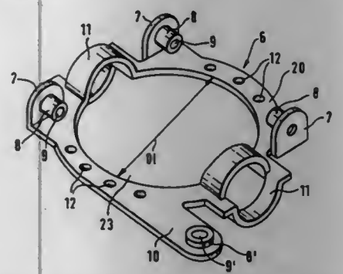
wherein said control means further operates for correcting said second fully closed position corresponding value of said throttle means in accordance with said change amount in said first fully closed position corresponding value provided by said fast idle control means.

5,575,256

THROTTLE VALVE HOUSING FORMED OF MOLDED PLASTIC

Klaus-Jürgen Peters, Affalterbach; Karl Gmelin, Flein; Matthias Entenmann, Bietigheim-Bissingen; Peter Ropertz, Markgroeningen, all of Germany; Herbert Pollmann, and Wolfgang Hodulik, both of Karlstein, Austria, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE93/00948, § 371 Date Apr. 7, 1995, § 102(e) Date Apr. 7, 1995, PCT Pub. No. WO95/02493, PCT Pub. Date Jan. 26, 1995
PCT Filed Oct. 7, 1993, Ser. No. 403,815
Claims priority, application Austria, Jul. 14, 1993, 1391/93
Int. Cl.[6] F02D *9/08*
U.S. Cl. 123—337 **12 Claims**



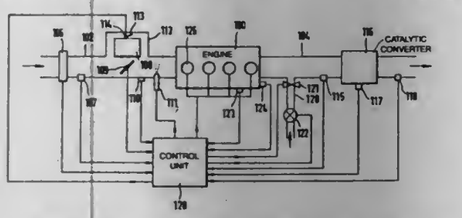
1. A throttle valve housing formed of molded plastic, said throttle-valve housing (1) having a wall (15) with an inner wall surface (3) which bounds a cavity (2), a metal insert (6) shaped from a metal sheet and molded within the wall (15) and covered by plastic material at least on the inner wall surface (3) facing the cavity (2) and said metal insert surrounds an area in which a throttle valve is supported.

5,575,257

METHOD AND DEVICE FOR THE OPEN-LOOP CONTROL OF AN INTERNAL-COMBUSTION ENGINE

Joerg Lange, Eberdingen; Heinz Stutzenberger, Vaihingen; Thomas Lehmann, Oberriexingen, and Christian Koehler, Ludwigsburg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 19, 1994, Ser. No. 358,435
Claims priority, application Germany, Dec. 18, 1993, 43 43 353.7
Int. Cl.[6] F02M *3/00*
U.S. Cl. 123—337.11 **15 Claims**



1. A method for open-loop control of an internal-combustion engine in which an ignition angle and air inducted by the internal-combustion engine are influenced in at least one operating state of the engine, the method comprising the steps of:

calculating first and second correction values as a function of at least one operating parameter of the internal-combustion engine selected from a group of parameters including load, intake air flow, engine temperature, catalytic converter temperature, throttle valve opening, pressure, exhaust oxygen content and engine speed, such that an effect of the first correction value on a torque of the internal-combustion engine is compensated by the second correction value;

generating a first control signal as a function of a first value for the ignition angle and the first correction value;

generating a second control signal as a function of a second value for the air inducted by the internal-combustion engine and the second correction value;

applying the first control signal to an ignition controller to control the ignition angle; and

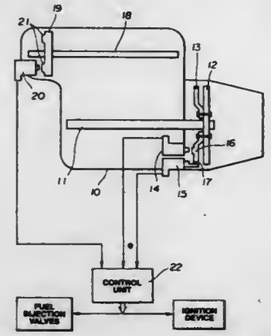
applying the second control signal to an intake air controller to control the air inducted by the internal-combustion engine.

5,575,258

APPARATUS AND METHOD FOR DETERMINING ENGINE REVOLUTION DISPLACEMENT FOR MULTI-CYLINDER FOUR-STROKE INTERNAL COMBUSTION ENGINE

Atsushi Iochi, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed May 8, 1995, Ser. No. 438,128
Claims priority, application Japan, May 9, 1994, 6-094714
Int. Cl.[6] F02D *45/00;* **F02P** *7/06*
U.S. Cl. 123—414 **18 Claims**



1. An apparatus for determining an engine revolution displacement of a multi-cylinder, four-stroke internal combustion engine, an engine operation being controlled on the basis of the determined engine revolution displacement, said apparatus comprising:

a) first detecting means for detecting a reference angular displacement of an engine revolution, the reference angular displacement corresponding to a predetermined crankshaft angular displacement with respect to a top dead center at which a piston of each cylinder has arrived, and for outputting a reference signal indicating the piston of each cylinder has arrived at the reference angular displacement whenever the engine crankshaft has rotated through the predetermined crankshaft angular displacement, the predetermined crankshaft angular displacement being set according to a number of the cylinders;

b) second detecting means for detecting a unit angular displacement of the engine crankshaft and for outputting a unit angular signal whenever the engine crankshaft has rotated through the unit angular displacement;

c) pseudo signal generating means, having a first counter which is so constructed and arranged as to receive said reference signal and unit angular signal and as to count the unit angular signal upon receipt of said reference signal, said first counter being reset to zero and starting the counting of the unit angular signal whenever a count value of the first counter has reached a first predetermined value, said first predetermined value corresponding to the predetermined crankshaft angular displacement set between the outputs of the two consecutive reference signals and whenever the subsequent reference signal is received, said pseudo signal generating means generat-

ing a pseudo signal serving as a back-up signal for the reference signal whenever the count value of said first counter has reached the first predetermined value; and

d) engine controlling displacement signal generating means for generating an engine controlling displacement signal on the basis of either of said reference signal or the pseudo signal.

5,575,259

CONTROLLER FOR FOUR-STROKE CYCLE INTERNAL-COMBUSTION ENGINE

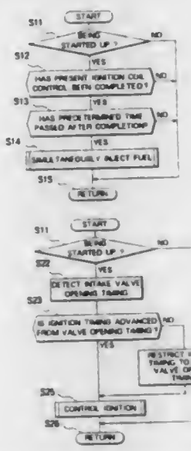
Wataru Fukui, and Yutaka Ohashi, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 26, 1995, Ser. No. 578,025

Claims priority, application Japan, Aug. 10, 1995, 7-204818

Int. Cl.[6] F02P *5/00*

U.S. Cl. 123—417 **3 Claims**



1. A controller for a four-stroke cycle internal-combustion engine, comprising:

an angle detector for detecting the angle of rotation of a four-stroke cycle internal-combustion engine in synchronization with the rotation of said four-stroke cycle internal-combustion engine;

an injector for injecting fuel which is provided for each cylinder of said four-stroke cycle internal-combustion engine;

a plurality of ignition coils for generating high voltage for ignition for said respective cylinders;

a fuel injection control unit for making said injectors inject fuel to the respective cylinders at the same time; and

an ignition control unit for performing control by applying high voltage from said ignition coils so that the spark plugs may discharge at the same time to a cylinder group to be ignited; wherein

said fuel injection control unit performs said fuel injection after a predetermined time has elapsed since the control of said ignition coils was performed.

5,575,260

METHOD AND DEVICE FOR CONTROLLING IGNITION OF AN INTERNAL COMBUSTION ENGINE AS A FUNCTION OF ENGINE RPM

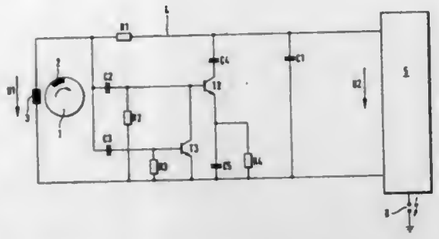
Jürgen Trost, Grafenberg, and Eberhard Scheiber, Backnang, both of Germany, assignors to Andreas Stihl, Waiblingen, Germany

Filed Dec. 16, 1994, Ser. No. 357,410

Claims priority, application Germany, Dec. 16, 1993, 43 42 932.7

Int. Cl.[6] F02P *5/145*

U.S. Cl. 123—418 **8 Claims**



1. A method of controlling ignition of an internal combustion engine as a function of engine rpm, said method comprising the steps of:

revolving a magnet wheel;

inducing with the revolving magnet wheel in an induction coil an initial voltage;

providing a primary delay element, comprising a capacitor, in closed electrical circuit with the induction coil;

connecting in parallel at least one additional delay element to the capacitor of the primary delay element;

connecting differentiating members in a closed electrical circuit to the induction coil;

connecting the differentiating members to the at least one additional delay element;

automatically switching on and off the at least one additional delay element depending on engine rpm with said differentiating members;

deducing a transformed voltage from the initial voltage via the primary delay element and the at least one additional delay element when switched on; and

tripping the ignition when the transformed voltage reaches a preset threshold.

5,575,261

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Dieter Junger, Stuttgart, and Peter Zweigle, Ditzingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

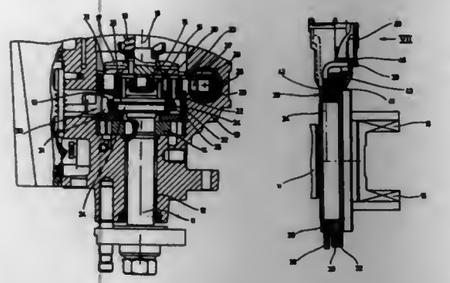
Filed Aug. 18, 1995, Ser. No. 507,262

Claims priority, application Germany, Dec. 29, 1993, 43 44 865.8

Int. Cl.[6] F02M *41/12*

U.S. Cl. 123—449 **28 Claims**

1. A fuel injection pump for internal combustion engines, comprising a pump casing (**10**), with a pump plunger (**18**) which is accommodated in the pump casing (**10**) and serves to produce an injection pressure, a drive shaft (**11**) which is rotatably mounted in the pump casing (**10**) and serves for the actuation of the pump plunger (**18**), a rotational-angle sensor (**30**) which is integrated into the pump casing (**10**), said rotational-angle sensor (**30**) comprises a rotating pulse generator and a pulse pick-up (**31**) fixed relative to the pulse generator and serves for detection of an angular position of the drive shaft (**11**), the pulse generator is designed as a pulse generator wheel (**32**) with external toothing (**33**) seated in a manner fixed in terms of rotation on the drive shaft (**11**) and the pulse pick-up (**31**) of which is held in radial association with the external toothing (**33**) of the pulse generator wheel (**32**) on a carrier ring (**35**; **35'**) seated rotatably on the drive shaft (**11**) and situated directly adjacent to the pulse generator wheel (**32**), and sliding surfaces (**41**, **41**) resting on both sides of the pulse generator wheel (**32**) and serving the purpose of axial narrowly toleranced association of the pulse generator wheel (**32**) and the carrier ring (**35**; **35'**) wherein the pulse pick-up (**31**) is accommodated, with positive engagement, in a sensor housing (**40**; **40'**; **40"**) on the carrier ring (**35**; **35'**), wherein the sliding surfaces (**41**, **42**) are formed on the sensor housing (**40**; **40'**; **40"**) and wherein one of two stop surfaces corresponding to one another in the radial direction is in each case provided on the sensor housing (**40**; **40'**; **40"**) and on the carrier ring (**35**; **35'**) for the radial association of the pulse pick-up (**31**) and the pulse generator wheel (**32**).



5,575,262

DAMPER ELEMENT FOR DAMPING COMPRESSIVE OSCILLATIONS AND METHOD FOR PRODUCING THE SAME

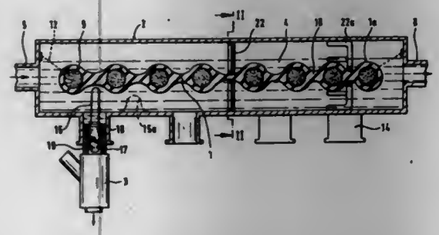
Siegfried Rohde, Kohoku, Japan, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 16, 1994, Ser. No. 340,689

Claims priority, application Germany, Dec. 4, 1993, 43 41 368.4

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—467 **21 Claims**



1. A method for damping compressive oscillations in a fuel circulation system of an internal combustion engine having a fuel distributor for supplying fuel to at least one fuel injection valve via at least one mount, comprising the step

disposing at least one enclosed gas-filled chamber within the fuel distributor adjacent to the at least one fuel injection valve, the at least one chamber being surrounded by fuel contained in the fuel distributor.

5,575,263

FUEL-DISPERSING SKIRT FOR AN INJECTOR OF A FUEL-INJECTED ENGINE

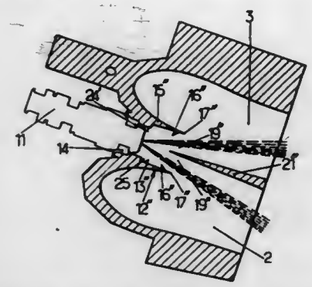
Michaël Pontoppidan, Rueil-Malmaison; Bruno Covin, Boulogne-Billancourt; Jean C. Lucas, Cergy, and Christophe Preterre, Paris, all of France, assignors to Magneti Marelli France, Nanterre Cedex, France

Filed Nov. 27, 1995, Ser. No. 563,052

Claims priority, application France, Dec. 1, 1994, 94 14456

Int. Cl.[6] F02M *55/02;* **F02B** *15/00*

U.S. Cl. 123—470 **14 Claims**



1. A skirt for dispersing fuel received from a multi-hole injector and transferred into at least two air intake ports separated by a partition for supplying a combustion chamber of a fuel-injected internal combustion engine, the injector being arranged substantially between at least two air ports and the skirt, said skirt comprising a tubular overall shape having an upstream part exhibiting an axisymmetric shape, and a downstream part forming at least two fuel passages communicating with one another toward an inside of the skirt, said at least two fuel passages emerging respectively in said at least two air ports through an outlet orifice and being defined by two opposed lateral walls of the skirt wherein each of said opposed lateral walls progressively thins to a bevel of at least one of thickness and width decreasing from upstream to a downstream end comprising a downstream free edge, in a form of a thin blade, wherein said downstream free edge comprises a concave notch with concavity turned toward the downstream end.

5,575,264

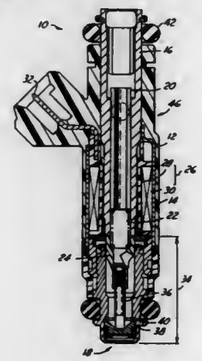
USING EEPROM TECHNOLOGY IN CARRYING PERFORMANCE DATA WITH A FUEL INJECTOR

Richard Barron, Williamsburg, Va., assignor to Siemens Automotive Corporation, Auburn Hills, Mich.

Filed Dec. 22, 1995, Ser. No. 579,081

Int. Cl.[6] F02M *51/00*

U.S. Cl. 123—486 **6 Claims**



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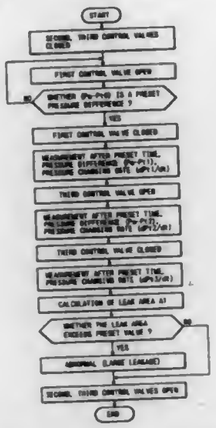
1. A method for retaining and recalling technical data associated with a solenoid-operated fuel injector comprises the steps of:
testing the fuel injector to generate technical data specifications relating to the fuel injector;
attaching a memory means to the fuel injector;
transferring the technical data specifications to the memory means attached to the fuel injector;
transferring the technical data specifications from the memory means to a vehicle computer;
using the vehicle computer to adjust for variations between fuel injectors to collapse variability of injectors to a single, centered injector flow.

5,575,265

DIAGNOSTIC METHOD FOR EVAPORATED FUEL GAS PURGING SYSTEM

Nobuo Kurihara, Hitachioota; Hiroshi Kimura; Yutaka Takaku, both of Hitachinaka, and Toshio Ishii, Mito, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 26, 1995, Ser. No. 507,562
Claims priority, application Japan, Jul. 26, 1994, 6-173837
Int. Cl.[6] F02M *33/02*; **F02D** *41/22*
U.S. Cl. 123—520 **12 Claims**



1. A method for diagnosing leakage in a system for recovering fuel vapor evaporated from a fuel tank for an internal combustion engine and having venting means for venting fuel vapor to atmosphere comprising the steps of
detecting the leakage using means for closing the system, one of depressurizing and pressurizing inside the closed system, detecting one of pressure and pressure change inside the closed system and
comparing an operational state with a non-operational state of the venting means.

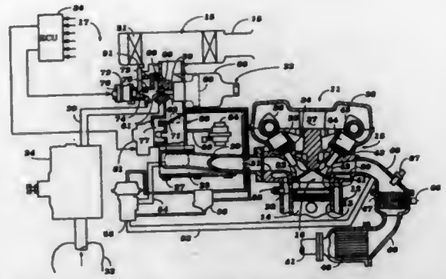
5,575,266

METHOD OF OPERATING GASEOUS FUELED ENGINE

Yoshikatsu Iida, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Aug. 29, 1994, Ser. No. 297,376
Claims priority, application Japan, Aug. 31, 1993, 5-216381; Aug. 31, 1993, 5-216382
Int. Cl.[6] F02D *41/14*; **F01N** *3/00*
U.S. Cl. 123—680 **64 Claims**

1. A gaseous fueled engine having an induction system including a charge former for supplying a fuel-air mixture to said engine and comprising an induction passage for receiving atmospheric air and



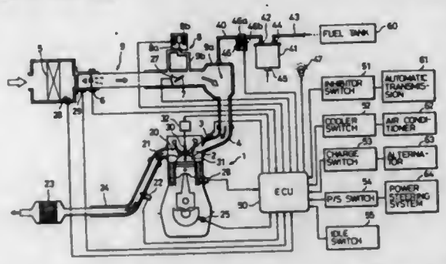
a fuel supply circuit for receiving gaseous fuel from a source of gaseous fuel stored under pressure and mixing said fuel with the air in said induction passage for forming a fuel-air mixture for said engine, an air bleed passage communicating an atmospheric air inlet with said fuel supply circuit, an automatic air bleed control valve in said air bleed passage for controlling the amount of air bled into said fuel supply circuit to control the mixture strength, an engine combustion sensor for detecting the air-fuel ratio, feedback control means for receiving a signal from said engine combustion sensor and controlling said automatic air bleed valve to maintain the desired air-fuel ratio, means for sensing a condition different from a normal steady-state running condition of said engine, and means for discontinuing feedback control of said automatic air bleed valve under the sensing of said condition and regardless of whether the feedback control system and engine are in such a state that feedback control could be operative and operating said automatic air bleed valve with a different control strategy and without utilizing the output of said engine combustion condition sensor.

5,575,267

FAULT DIAGNOSIS APPARATUS FOR A FUEL EVAPORATIVE EMISSION SUPPRESSING SYSTEM

Takuya Matsumoto; Toru Hashimoto; Mitsuhiro Miyake; Hitoshi Kamura, all of Kyoto, Japan; Yasuhisa Yoshida, Corella Newport Beach, Calif.; Hidetsugu Kanao, and Toshiro Nomura, both of Okazaki, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1995, Ser. No. 537,293
Claims priority, application Japan, Sep. 30, 1994, 6-237427; Sep. 30, 1994, 6-237429; Sep. 30, 1994, 6-237430; Jan. 20, 1995, 7-007764
Int. Cl.[6] F02D *41/00*; **F02M** *33/02*
U.S. Cl. 123—698 **25 Claims**



1. A fault diagnosis apparatus for detecting a fault in a fuel evaporative emission suppressing system which includes a purge passage, through which a fuel evaporative gas in a fuel supply system of an engine mounted in a vehicle, along with outside air, is introduced as purge air into an intake passage of the engine, and purge regulating means for changing a quantity of purge air introduction, comprising:
operating state change detecting means for detecting a change of an operating state of at least one of the vehicle, the engine,

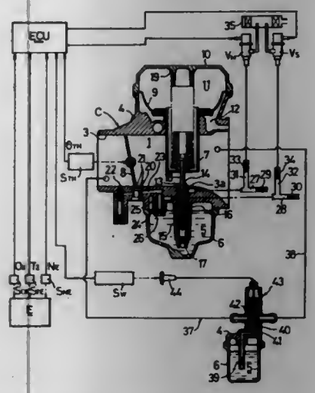
and means associated with engine operation when the purge regulating means is driven; and
fault diagnosis means for making a fault diagnosis on the fuel evaporative emission suppressing system in accordance with the change of the operating state detected by said operating state change detecting means.

5,575,268

AIR-FUEL RATIO CONTROLLING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Kenichi Hirano, Iwanuma; Takashi Namari, Shibata-gun, and Shinichi Nemoto, Kakuda, all of Japan, assignors to Kabushiki Kaisha Keihinseiki Seisakusho, Tokyo, Japan, and Harley-Davidson, Inc., Milwaukee, Wis.

Filed Nov. 22, 1995, Ser. No. 562,193
Claims priority, application Japan, Nov. 24, 1994, 6-290163
Int. Cl.[6] F02D *41/00*; **F02M** *23/00;25/00*
U.S. Cl. 123—701 **17 Claims**



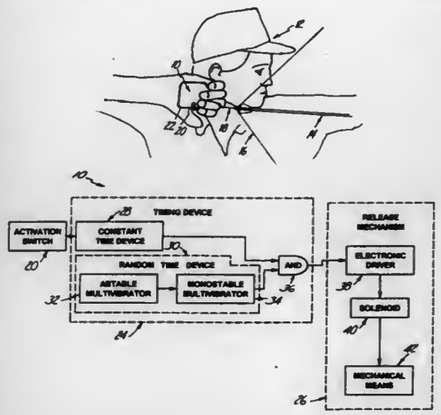
1. An air-fuel ratio control system for an internal combustion engine, comprising:
a carburetor including a main fuel system which opens into a venturi portion of an air intake path; a slow fuel system which opens into the intake path at a location downstream from the venturi portion, a main bleed air passage permitting communication between a portion of the intake passage upstream of the venturi portion and the main fuel system; a main bleed air control passage connected at its downstream end to the main fuel system; a slow bleed air passage permitting communication between a portion of the intake passage upstream of the venturi portion and the slow fuel system, and a slow bleed air control passage connected at its downstream end to the slow fuel system;
a valve for controlling the amount of bleed air supplied through the main bleed air control passage and the slow bleed air control passage;
an oxygen sensor for detecting an oxygen component in an exhaust gas flowing through an exhaust passage; and
an electronic control unit capable of carrying out a feed-back control for controlling the operation of the valve on the basis of a signal from the oxygen sensor to bring the air-fuel ratio to a theoretical air-fuel ratio, the electronic control unit determining a control value in such a manner that a feed-back control value is learned and stored to provide a learned value which is substantially constant with respect to fuel of a constant calorific value, wherein the stored learned value is reflected to a next control value.

5,575,269

BOWSTRING RELEASE MECHANISM

Lanny L. Harklau, 2860 Ice Rose La., Stillwater, Minn. 55082

Filed Sep. 6, 1995, Ser. No. 524,269
Int. Cl.[6] F41B *5/18*
U.S. Cl. 124—35.2 **14 Claims**



1. A release apparatus for use with a projectile firing device, the release apparatus comprising:
an activation switch for initiating a time period;
an electrical timing device connected to the activation switch for establishing a length of the time period; and
a release mechanism connected to the timing device for propelling the projectile upon expiration of the time period.

10. A method for improving shooting accuracy of an archer using a bow, a bowstring affixed to the bow, an arrow and a bowstring release apparatus, the method including:
drawing a bowstring;
activating an activation switch; and
releasing the bowstring after completion of a time period, wherein duration of the time period is determined by an electrical timing device which is responsive to the activating of the activation switch.

5,575,270

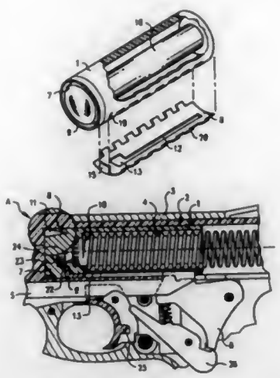
AIR GUNS

Francisco Casas-Salva, Sant Boi de Llobregat, Spain, assignor to Industrias el Gamo, S.A., Barcelona, Spain

Filed Nov. 23, 1994, Ser. No. 344,140
Claims priority, application Spain, Sep. 21, 1993, 9402407 U; France, Nov. 24, 1993, 93 14267
Int. Cl.[6] F41B *11/14;11/18;11/22*
U.S. Cl. 124—67 **24 Claims**

1. In an air gun of the type having a hinged barrel with the barrel acting as a hinged lever arm to compress a spring attached to an axially movable piston that is tightly inserted in a compression chamber mounted on the buttstock body of the gun, and further including a hinged push-rod thrusting means associated with the piston for compressing the spring, as well as a safety catch which locks the piston in a spring compressed position for shooting, an improvement comprising;
a tubular piston comprised of a synthetic polymer and having a wall adjacent an end of the compression chamber that is contoured to tightly fit the compression chamber;
a wear resistant element between said piston, the thrusting means and the safety catch;
inertial means inside said tubular piston to provide said piston with sufficient weight for functional working inertia.

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5,575,271

APPARATUS FOR CUTTING WET CONCRETE

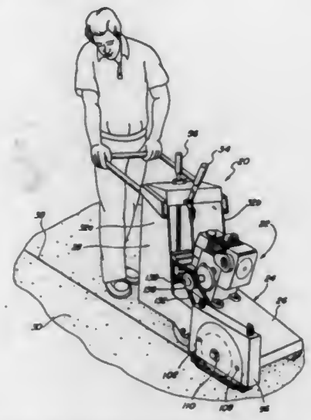
Edward R. Chiuminatta, 16405 Everett, and Alan R. Chiuminatta, 16862 Mariposa Ave., both of Riverside, Calif. 92504

Continuation of Ser. No. 17,140, Feb. 12, 1993, Pat. No. 5,429,109, which is a continuation-in-part of Ser. No. 837,248, Feb. 14, 1992, Pat. No. 5,305,729. This application May 5, 1995, Ser. No. 435,724

The portion of the term of this patent subsequent to Mar. 16, 2015, has been disclaimed.

Int. Cl.[6] B28D *1/04*

U.S. Cl. 125—13.01 26 Claims



1. A concrete saw having a rotating cutting blade with a leading cutting edge to cut grooves in a concrete surface as the saw is moved over the surface, comprising:

wheels connected to the saw to movably support the saw on the surface of the concrete during cutting;

a skid plate having a slot through which the cutting blade extends during cutting, the skid plate being mounted to the saw and having a support portion configured to contact the surface being cut adjacent at least the leading cutting edge of the blade during cutting; and

at least one resilient member having a first end connected to the concrete saw, and having a second end connected to the skid plate, the resilient member orientated to allow movement of the skid plate relative to the saw during cutting while also resiliently urging the skid plate against the concrete surface with a predetermined force.

5,575,272

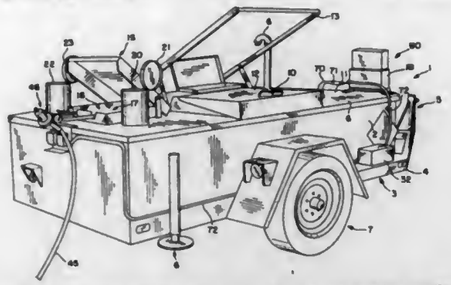
ROOFING KETTLE WITH AUTOMATIC FUEL IGNITION AND CONTROL SYSTEM

Brian T. Byrne, Chanhassen, Minn., assignor to Garlock Equipment Company, Minneapolis, Minn.

Filed Feb. 24, 1995, Ser. No. 393,720

Int. Cl.[6] F24H *1/00*

U.S. Cl. 126—343.5 A 10 Claims



1. An improved roofing kettle having a vat for heating roofing asphalt, a fuel source, and a combustion chamber operably connected to the fuel source to provide heat to the vat, the improvements comprising, in combination:

a) an electrical power source;

b) temperature selection means to electronically select a vat operating temperature, said temperature selection means including a plurality of temperature indicia; said temperature selection means being selectively positionable at a preselected vat operating temperature;

c) a first thermocouple positioned within the kettle vat;

d) spark ignition means to generate a fuel igniting spark when electrical current is supplied thereto, said spark ignition means being operably connected to said electrical power source; said spark ignition means further including a spark igniter positioned adjacent the kettle combustion chamber;

e) a third thermocouple, said third thermocouple being positioned in the kettle vat, said third thermocouple including signal generating means to generate an output signal which is correlated to the vat temperature;

f) a fuel control valve functionally positioned between the fuel source and the combustion chamber, said fuel control valve having an open position wherein fuel passes from the fuel supply to the combustion chamber and a closed position wherein fuel is prevented from passing from the fuel supply to the combustion chamber; and

g) electrical control means to operably interconnect said first thermocouple, said third thermocouple, said fuel control valve, said electrical power source, said temperature selection means and said spark ignition means; said electrical control means further comprising:

i) igniter switching means to provide a closed electrical circuit between said electrical power source and said spark igniter when the temperature sensed by said first thermocouple is less than said preselected vat operating temperature, and to provide an open electrical circuit between said electrical power source and said spark igniter when the temperature sensed by said first thermocouple is greater than said preselected vat operating temperature;

ii) maximum temperature selection means to electronically establish an output signal corresponding to a selected maximum operating temperature for the vat;

iii) overheating control means to move said fuel control valve from said open position to said closed position when said third thermocouple output signal corresponds to a temperature exceeding said maximum temperature selection means output signal,thereby shutting off the flow of fuel from the fuel source to the kettle combustion chamber preceding overheating of the kettle; and

iv) fuel valve switching means to electronically switch said fuel control valve between said fuel control valve open position and said fuel control valve closed position.

5,575,273

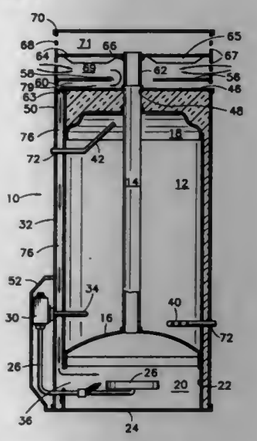
BALANCED FLUE OUTDOOR WATER HEATER

H. Jack Moore, Jr., Johnson City, Tenn., assignor to Southcorp Water Heaters USA, Inc., Johnson City, Tenn.

Continuation-in-part of Ser. No. 395,759, Feb. 28, 1995, Pat. No. 5,533,495. This application Jun. 30, 1995, Ser. No. 491,356

Int. Cl.[6] F24H *1/00*

U.S. Cl. 126—350 R 18 Claims



1. An outside balanced flue water heater comprising:

a water tank;

a jacket surrounding the water tank and forming a space therebetween;

a combustion chamber containing a burner positioned adjacent said water tank;

a flue extending from said combustion chamber through an upper portion of said water tank;

a water inlet and a water outlet connected to said water tank;

insulation substantially filling said space;

means between said jacket and said tank forming an elongated narrow combustion air passageway bounded by said insulation, said passageway being positioned to lead to said combustion chamber;

means forming a combustion air inlet chamber located above said water tank and adapted to directly receive outside air, said combustion air inlet chamber communicating with said combustion air passageway; and

means forming a flue gas exhaust chamber above said combustion air inlet chamber and adapted to receive flue gases from said flue and to directly exhaust flue gases, said flue gas exhaust chamber communicating with said flue.

5,575,274

GAS LOG FIREPLACE SYSTEM

Thomas M. DePalma, HCR Box 54A, Central Bridge, N.Y. 12035

Continuation-in-part of Ser. No. 100,487, Jul. 30, 1993, Pat. No. 5,503,550. This application Mar. 6, 1995, Ser. No. 399,179

Int. Cl.[6] F24C *3/12*

U.S. Cl. 126—512 9 Claims

1. A gas burning fireplace system for a wood burning fireplace having a central firebox area partially surrounded by walls, said walls extending upwardly to form a flue and a chimney, said central firebox area further including an inner hearth and an opening extending into the interior of a building, said system comprising:

an automatic damper, disposed within said flue and having means for automatically opening said flue when said central firebox area is ignited and means for automatically closing said flue when said central firebox area is not ignited, said automatic damper thereby enhancing the flow of exhaust from said fireplace and up said flue;

a gas burning system retrofitted into said central firebox area, and including:

a gas inlet conduit;

a gas manifold having at least one outlet hole, connected to said gas inlet conduit;

a pilot light operatively connected to said gas manifold;

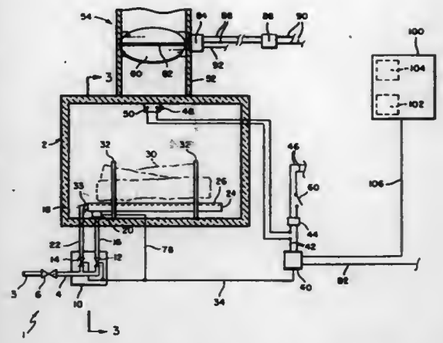
a first electrically actuated gas flow valve operatively connected to said gas inlet conduit, to control the flow of gas to said gas manifold;

a second electrically actuated gas flow valve operatively connected to said gas inlet conduit and to said pilot light, to control the flow of gas to said pilot light;

an electronic ignitor operatively connected to said pilot light and said first and second electrically actuated valves; and

switch means, operatively connected to said electronic ignitor, whereby said first and second electrically actuated valves are opened, causing gas to flow through said gas inlet conduit, into said gas manifold to be ignited and released out said at least one outlet hole; and

means for detecting the carbon monoxide level within said interior of a building, disposed outside said fireplace, operatively connected to said electronic ignitor and having means to automatically terminate gas flow and ignition within said gas burning system in response to a predetermined carbon monoxide level within said interior of a building.



5,575,275

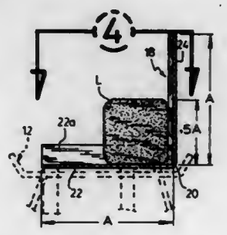
FIRELOG BURNER TRAY WITH HEAT REFLECTOR

Guy Gazaille, 1276, Chantovent, Sante-Adéle, Canada

Filed Dec. 15, 1994, Ser. No. 356,136

Int. Cl.[6] F23H *13/00*

U.S. Cl. 126—540 4 Claims



1. A firelog burner tray for supporting a straight, elongated wood-wax firelog of rectangular cross-section, said tray including: (a) an apertureless, elongated flat base plate defining a substantially smooth upper surface and an aft longitudinal portion;

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(b) an elongated heat-reflecting plate, upwardly extending from said aft longitudinal portion and making a right angle with said base plate; and

(c) at least two elongated ribs, extending forwardly over said base plate member and longitudinally along said heat-reflecting member and laterally spacedly from one another;

wherein first air channel means of restricted cross-sectional area are formed between each pair of laterally successive said elongated ribs, said heat-reflecting plate and said firelog when it rests on said base plate and abuts against said ribs, for promoting vertical circulation of combustion air between said heat-reflecting member and said firelog;

said elongated ribs extending short of said base plate and thus defining lower ends spacedly located above said base plate, said heat-reflecting plate being apertureless, second air channel means of restricted cross-sectional area being formed between said ribs lower ends, said base plate, said heat-reflecting plate and said firelog when said firelog rests on said base plate and abuts against said ribs, said second air channel means promoting horizontal circulation of combustion air between said heat reflecting plate and said firelog;

said base plate defining laterally opposite side edges, said tray further including a pair of flanges; each flange of said pair of flanges edgewisely depending from a corresponding one of said side edges, said flanges being outwardly upwardly inclined; the degree of inclination of said flanges controling at least partially the combustion air supply through said second air channel means.

5,575,276

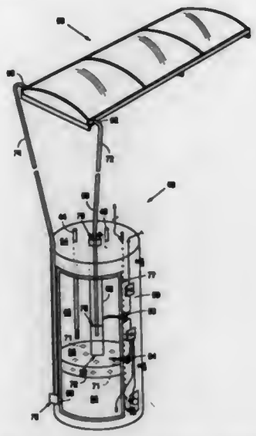
SOLAR THERMAL WATER HEATING SYSTEM

Richard L. Fossum, and Michaele J. Fossum, both of 3819 Hunter Trail, San Antonio, Tex. 78230

Continuation-in-part of Ser. No. 121,442, Sep. 14, 1993, Pat. No. 5,431,149, which is a continuation of Ser. No. 922,858, Jul. 31, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 480,688

Int. Cl.[6] F24J *2/40*

U.S. Cl. 126—588 **14 Claims**



1. A solar thermal water heating system comprising:

(a) a water storage tank,

(b) a first heat exchanger disposed vertically within said water storage tank and having an upper feed end and a lower discharge end,

(c) a solar energy collector unit located above said water storage tank and having an inlet and an outlet, said solar energy collector unit comprising:

(1) a plurality of identical rectangular heat absorbing panels which, when assembled in side by side and end to end relationship will form a total heat absorbing surface area of the desired dimensions;

(2) each said panel comprising;

(a) a rectangular heat absorbing plate having a top surface to receive incident solar radiation;

(b) a black body radiation coating on said top surface; and

(c) one or more pipes secured in heat transferring relation to the bottom surface of said heat absorbing plate;

(3) a rectangular frame dimensioned to mount a selected plurality of said panels in side by side and end to end relation to provide the desired width and length of heat absorbing surface;

(4) a transparent cover of glazing material overlying said plurality of panels and having the property of reflecting infrared radiation emitted by said black body coating;

(5) means for securing said transparent cover to said rectangular frame;

(6) means connecting the adjacent ends of said pipes to provide heat transfer fluid flow paths extending the length of said end to end panels;

(7) header means connected to the non-adjacent ends of said pipes for directing fluid flow through all of said heat transfer flow paths;

(8) pump means for producing turbulent flow of heat transfer fluid through all of said pipes;

(9) an inlet header connected to one end of a first set of pipes providing a fluid flow path to said first set of pipes;

(10) an outlet header connected to one end of a second set of pipes providing a fluid flow path from said second set of pipes;

(11) said inlet header and outlet header being on the same ends of said panels;

(12) said connecting means providing horizontally parallel fluid flow paths; and

(13) said header means directing fluid flow from said first set of pipes to said second sets of pipes, said second set of pipes having a fluid flow path in a direction opposite the fluid flow path of said first set of pipes;

(d) a drain back solar water heating tank located below said water storage tank,

(e) a second heat exchanger comprising a concave wall positioned between said water storage tank and said drain back solar water heating tank,

(f) a drain in said drain back tank,

(g) a first conduit connecting said outlet of said solar energy collector and the inlet of said first heat exchanger,

(h) a second conduit connecting said drain and said inlet of said solar energy collector, and

(i) a pump in said second conduit for pumping said fluid from said drain through said solar collection unit and from said solar collection unit through said first conduit and said first heat exchanger and past said second heat exchanger to said drain back tank.

5,575,277

EQUALIZTION SYSTEM FOR A DIVING MASK

James R. Lutz, Round Lake Beach; Keith D. Alsberg, Chicago; James F. Caruso, Evanston; Paul J. Doczy, Chicago; Robert S. Gelick, Evanston, and Craig S. Scherer, Wilmette, all of Ill., assignors to Johnson Worldwide Associates, Sturtevant, Wis.

Filed Jan. 17, 1996, Ser. No. 587,401

Int. Cl.[6] A62B *18/02;18/08;* **B63C** *11/16*

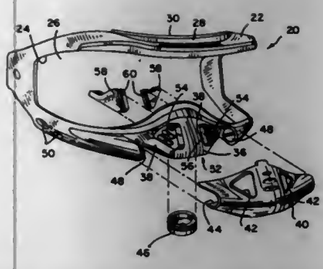
U.S. Cl. 128—201.18 **19 Claims**

1. A dive mask designed to cover the eyes and nose of a diver, comprising:

a frame;

a window mounted in the frame;

a flexible skirt mounted to the frame, the flexible skirt including a nosepiece having a pair of sidewalls having interior and exterior sides, the interior sides of said nosepiece sidewalls configured to fit along the nose of a diver; and



an equalizer system having a pair of buttons disposed to cooperate with the pair of sidewalls on the exterior sides of the sidewalls, said pair of buttons being manually movable between a depressed position where said pair of buttons move said nosepiece sidewalls towards a diver's nose to pinch the nose closed, and a non-depressed position.

5,575,278

INDIVIDUAL EQUIPMENT FOR PROTECTION AGAINST NBC ATTACKS

Jean-Phillipe Bonhomme, Viroflay; Eric Farin, Paris; Jean-Claude Urgel, Le Chesnay, and Claude Fevrier, Magnanville, all of France, assignors to Intertechnique, Plaisir, France

Filed Nov. 6, 1995, Ser. No. 554,567

Claims priority, application France, Nov. 7, 1994, 94 13315

Int. Cl.[6] A62B *17/00*

U.S. Cl. 128—201.29 **11 Claims**



1. Individual protection equipment for use by a person exposed to NBC threats, comprising:

a helmet;

a face-cover provided with fastenings for connection with the helmet and provided with a coupling for a breathing gas feed;

a flexible envelope extending from the helmet and the face-cover downwards; and

means for providing a sealed connection between the helmet, the face-cover and the envelope;

wherein said means for providing the sealed connection comprises a hoop sealingly securely secured to the helmet and projecting forwardly from a base of said helmet, said hoop having an upper edge and a lower edge and wherein said upper edge is constructed to have a gas tight connection with said face-cover while said lower edge is constructed to have a gas-tight connection with said envelope, whereby said helmet, face-cover and flexible envelope define a gas-tight volume in front of and around the head of the person wearing the individual protection equipment.

5,575,279

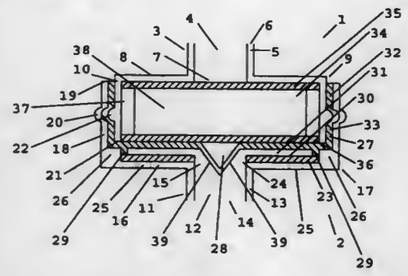
DUAL-FILTERED ROTARY ISOLATION VALVE FOR RESUSCIATION

Douglas K. Beplate, Washington, Utah, assignor to Emergency Filtration Products, Inc., St. George, Utah

Filed Jan. 2, 1996, Ser. No. 587,805

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—203.11 **12 Claims**



1. A dual-filtered rotary isolation valve for resuscitation of patients, which comprises:

an upper housing having an upper tube containing a bore formed by a surrounding upper tube wall, the first end of which upper tube may either be placed directly into a care provider's mouth or be connected to a mouthpiece to be placed into the mouth of the care provider, the second end of which upper tube expands outward to create a top of an upper chamber segment and then returns to its original direction to from a wall of an upper chamber segment having a circular cross section concentrically located with respect to the cross section of the upper tube, the cross section of said upper tube also being circular, and the wall of the upper chamber segment protruding outward at a location between the top of the upper chamber segment and the bottom of the wall of the upper chamber to create annular ridge;

a lower housing having a lower tube with a containing a bore formed by a surrounding lower tube wall, the first end of which lower tube may either be placed directly into the patient's mouth or be connected to a mask to be placed around the nose and mouth of the patient or be attached to a mouthpiece to be inserted into the mouth of the patient, the second end of which lower tube expands outward to create a bottom of a lower chamber segment and then returns to its original direction to form a wall of a lower chamber segment having a circular cross section concentrically located with respect to the cross section of the lower tube, the cross section of said lower tube also being circular, the wall of the lower chamber segment bulging outward to create an annular channel at a location between the bottom of the lower chamber segment and the top of the wall of the lower chamber segment so aligned with the annular ridge in the wall of the upper chamber segment that the lower chamber segment can be snap-fit onto the upper chamber segment, the inner diameter of the wall of the lower chamber segment being slightly greater than the outer diameter of the wall of the upper chamber segment to permit the lower chamber argment to rotate with respect to the upper chamber segment, the inner diameter of the annular channel being slightly greater than the outer diameter of the annular ridge but not so much greater that the lower chamber segment could slip from the upper chamber segment once the lower chamber segment and the upper chamber segment have been snap-fit together, one or more apertures existing in the bottom of the lower chamber segment, and an annular step formed at the junction of the bottom of the lower chamber segment and the wall of the lower chamber segment;

an exhalation filter placed on the bottom of the lower chamber segment, which exhalation filter contains an aperture that is approximately aligned with the bore of the lower tube;

a flexible diaphragm having a check valve near the center of said flexible diaphragm, having a support which rests on the exhalation filter adjacent to the support but covering only the outer edge of the exhalation filter so that the majority of the surface

of the exhalation filter that is opposite to the bottom of the lower chamber segment is adjacent a passage which communicates with the bore of the lower tube, and having an outer edge that extends into the space between the wall of the lower chamber segment and the wall of the upper chamber segment with the bottom of the wall of the upper chamber segment resting on the diaphragm to create an air-tight seal between the upper chamber segment and the lower chamber segment; and

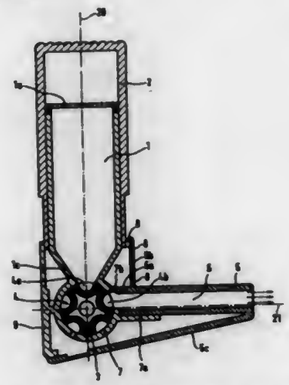
a transmission filter fills the upper chamber segment and is adjacent to the diaphragm.

5,575,280

POWDER INHALATION DEVICE HAVING NOZZLE TO EMPTY DOSING CHAMBER

Arun R. Gupte; Heinrich Kladders, both of Ingelheim; Hans D. Ruthemann, Gau-Algesheim; Bernd Zierenberg, Bingen, all of Germany; Raimo K. A. Auvinen, Kuopio, Finland; Pekka J. Karttunen, Varkaus, Finland, and Mika T. Vidgren, Kuopio, Finland, assignors to Boehringer Ingelheim KG, Germany, and Orion Corporation, Finland

Continuation of Ser. No. 66,148, Jul. 26, 1993, abandoned.
This application Oct. 25, 1994, Ser. No. 328,546
Claims priority, application United Kingdom, Nov. 29, 1990, 9026025
Int. Cl.[6] A61M *15/08;16/00;* **B05D** *7/14;* **B65D** *83/06*
U.S. Cl. 128—203.15 **18 Claims**



1. A propellant-free inhalation device for use with a supply of pulverized medical substance, comprising:

a housing defining a supply chamber adapted to receive a supply of medical substance, said supply chamber having a longitudinal axis and an outlet;

manually actuatable dosing means for metering a dose of medical substance, said dosing means including a metering drum rotatable about an axis of rotation and having at least one peripheral recess which forms a dosing chamber for receiving a dose of medical substance from said supply chamber in a first position and for discharging a dose of medical substance in a second position;

a mouthpiece having a longitudinal axis connected to said housing for inhalation of a dose of medical substance, said mouthpiece including an air channel for distributing a dose of medical substance metered by said dosing means into an air flow drawn through said mouthpiece, said air channel positioned at the level of said dosing means and offset from said outlet of said supply chamber, wherein said longitudinal axis of said mouthpiece and said axis of rotation of said dosing means form a first angle in the range of 70° to 110°; and

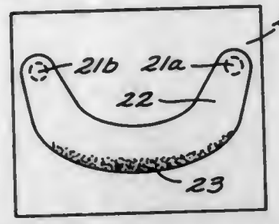
intaking making and channeling means for intaking and channeling air, said intaking and channeling means comprising at least one air intake and an opening positioned adjacent said dosing chamber in said second position, said opening forming a nozzle means for creating a strongly aligned stream of air and for emptying said dosing chamber, said nozzle means positioned at a periphery of said dosing means and in front of said dosing chamber, so that air that enters said air intake is channeled through said nozzle means to directly impinge on said dosing chamber in said second position to discharge a dose of medical substance from said dosing chamber directly into an air flow drawn into said air channel upon inhalation.

5,575,281

MEDICATED PACKAGE

Mark B. Mecikalski, 7580 N. Calle Sin Desengano, Tucson, Ariz. 85718

Continuation of Ser. No. 258,743, Jun. 10, 1994, Pat. No. 5,483,954. This application Jul. 13, 1995, Ser. No. 502,331
Int. Cl.[6] A61M *15/00*
U.S. Cl. 128—203.21 **16 Claims**



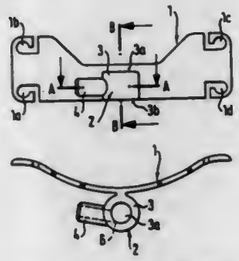
1. A medication dispensing package comprising an envelope containing a single dosage of medication therein and a first hole and a second hole in a planar portion of said envelope wherein the holes are in the same plane, said planar portion extending substantially the entire length and width of one side of said envelope, said second hole adapted for acceptance of an airflow into said envelope and said first hole adapted for exhaustion of said airflow with said medication from said envelope, said package adapted to be insertable into an inhaler such that said first hole is contained within said inhaler and said second hole is external to said inhaler such that communication of said dosage of medication is accomplished via a patient's inhalation.

5,575,282

OXYGEN DISTRIBUTOR WITH BOTH MOUTH AND NOSE DELIVERY PORTS

Martin Knoch, Berg; Dieter Kohler, Winkhausen, and Matthias Remke, Starnberg, all of Germany, assignors to Paul Ritzau Pari-Werk GmbH, Starnberg, Germany

Continuation of Ser. No. 148,410, Nov. 8, 1993, abandoned, which is a continuation of Ser. No. 837,403, Feb. 18, 1992, abandoned. This application Nov. 1, 1994, Ser. No. 333,613
Int. Cl.[6] A61M *16/00;15/08;* **A62B** *9/06;7/00*
U.S. Cl. 128—204.18 **16 Claims**



1. An oxygen distributor for use in oxygen therapy, said distributor comprising:

a basic body which positions the oxygen distributor in the area between the patient's mouth and nose;

a connecting element for connecting an oxygen feed; and

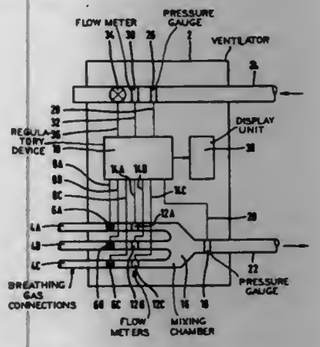
a whirler encompassing a whirling space that has end openings oriented toward the patient's mouth and nose and into which the connecting element leads, the orientation of the end openings of the whirler, its interior size relative to that of the connecting element, and the configuration of the intersection of the connecting element to the whirler spirally whirling oxygen flow fed through the connecting element and forming an unstable spiral oxygen flow, wherein oxygen exits essentially equally from both openings of the whirler at standstill and mixes with ambient air.

5,575,283

DEVICE FOR DETERMINING AN OPENING PRESSURE IN THE LUNGS

Ulf Sjoestrand, Uppsala, Sweden, assignor to Siemens-Elema AB, Solna, Sweden

Filed Feb. 13, 1995, Ser. No. 387,186
Claims priority, application Sweden, Feb. 14, 1994, 9400487
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—204.23 **22 Claims**



1. A ventilator comprising:

respiratory-assist means, connectable to a patient, for assisting respiration of said patient by supplying a regulated flow of air to the lungs of said patient, said regulated flow of air having a volume and producing air pressure in the lungs;

pressure gauge means for measuring said air pressure in the lungs;

volume-determining means for measuring the volume of air supplied to the lungs in said regulated flow of air;

registration means, connected to said pressure gauge means and to said volume-determining means, for registering said air pressure and said volume over a time period, said air pressure and said volume having a relationship in said time period;

calculator means, supplied from said registration means with said air pressure and said volume registered over said time period, for calculating from said relationship an opening pressure which will inflate at least some alveoli in the lungs; and

means for controlling said respiration-assist means to regulate said flow of air dependent on said opening pressure.

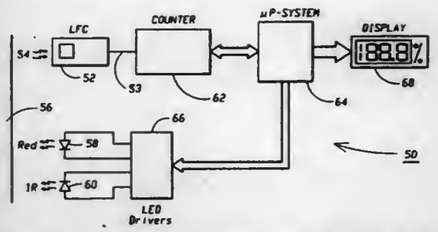
5,575,284

PORTABLE PULSE OXIMETER

Stephan P. Athan, Tampa, and John E. Scharf, Oldsmar, both of Fla., assignors to University of South Florida, Tampa, Fla.

Filed Apr. 1, 1994, Ser. No. 221,958
Int. Cl.[6] A61B *5/02*
U.S. Cl. 128—633 **22 Claims**

1. A diagnostic instrument for determining a parameter of a cardiovascular system comprising:



a. an electromagnetic radiation source for illumination of a volume of intravascular blood with electromagnetic radiation, the electromagnetic radiation having at least one frequency component having an intensity, the intensity of the at least one frequency component of the electromagnetic radiation being altered by interaction with the volume of intravascular blood thereby generating an optical signal from the interaction of the at least one frequency component of the electromagnetic radiation with the volume of intravascular blood, the optical signal having an intensity;

b. a light-to-frequency converter having an electromagnetic radiation sensor electrically connected to an electronic signal generator, said electromagnetic radiation sensor being optically coupled to said electromagnetic radiation source for reception of the optical signal and said electronic signal generator generating a periodic electrical signal responsive to said electromagnetic radiation sensor, the periodic electrical signal comprising a digital pulse train having pulses, the timing of the pulses of the electrical signal corresponding to the intensity of the optical signal; and

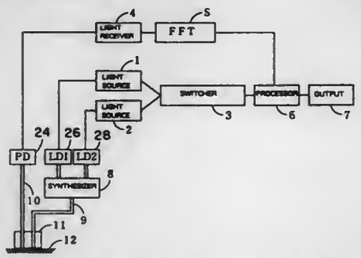
c. a signal analyzer electrically connected to said light-to-frequency converter for determining from the pulses of the periodic electrical signal the cardiovascular system parameter.

5,575,285

APPARATUS FOR MEASURING OXYGEN SATURATION

Satohiko Takanashi, Tokyo; Tetsuya Yamamoto, Ibaraki-ken; Tsuyoshi Watanabe, and Muneharu Ishikawa, both of Tokyo, all of Japan, assignors to Kowa Company Limited, Japan

Filed Dec. 14, 1994, Ser. No. 355,516
Claims priority, application Japan, Dec. 21, 1993, 5-320721
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—633 **16 Claims**



1. An apparatus for non-invasive measurement of oxygen saturation in a sample of blood in tissue of a subject, the apparatus comprising:

light means for irradiating a sample of blood in tissue of a subject with at least a first laser beam and a second laser beam;

switching means for driving the light means and sequentially switching the irradiation of the sample of blood between the first and second laser beams;

photoelectric detecting means for detecting light transmitted through or reflected from the sample of blood and providing an electrical output signal indicative of an intensity of the detected light; and

measuring means for measuring the oxygen saturation of the sample of blood from the electrical output signal of the

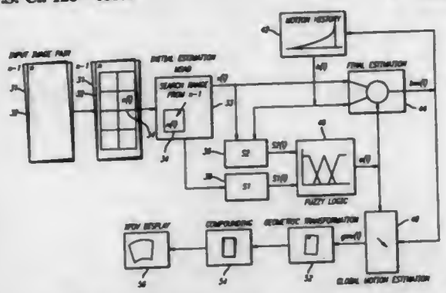
detecting means, the measuring means comprising converter means for converting the electrical output signal of the detecting means to a power spectrum, and processing means for processing the power spectrum and calculating the oxygen saturation of the sample of blood.

5,575,286

METHOD AND APPARATUS FOR GENERATING LARGE COMPOUND ULTRASOUND IMAGE

Lee Weng, and Arun P. Tirumalai, both of Issaquah, Wash., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Mar. 31, 1995, Ser. No. 414,978
Int. Cl.[6] A61B 8/00
U.S. Cl. 128—653.1 **24 Claims**



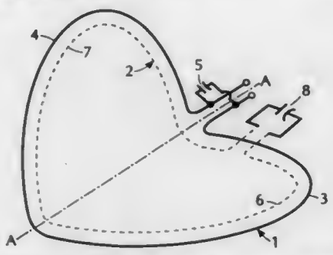
1. A method for providing a compound image, comprising the steps of:
generating a plurality of substantially adjacent image frames of an interrogation region of a patient's body;
dividing individual ones of the image frames into a plurality of sub-image regions;
estimating local motion vectors of the respective sub-image regions between consecutive ones of the image frames;
estimating global image motion based on the estimated local motion vectors; and
displaying a compound image based on the estimated global image motion.

5,575,287

INDUCTIVELY COUPLED RF COILS FOR MAGNETIC RESONANCE STUDIES

Gregory I. Eydelman, West Hempstead, N.Y., assignor to Fonar Corporation, Melville, N.Y.

Filed Jan. 25, 1993, Ser. No. 8,667
The portion of the term of this patent subsequent to Feb. 16, 2013, has been disclaimed.
Int. Cl.[6] A61B 5/055
U.S. Cl. 128—653.5 **10 Claims**



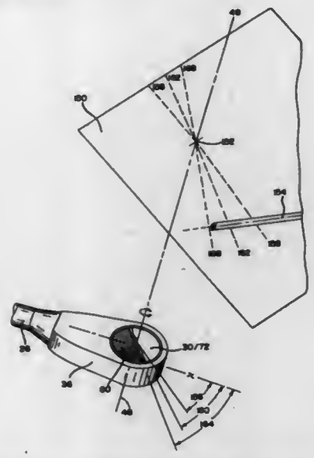
1. An inductively coupled RF coil for magnetic resonance studies, comprising:
a tuned primary circuit comprising a primary inductor and a primary capacitor connected in series, the primary inductor having a first portion substantially disposed in a first plane and a second portion substantially disposed in a second plane wherein the second plane is different than the first plane;
a tuned secondary circuit comprising a secondary inductor and a secondary capacitor connected in series, the secondary inductor being proximate to and inductively coupled to the primary inductor, the secondary inductor having a first portion substantially disposed in the first plane and a second portion substantially disposed in the second plane.

5,575,288

COMPACT ROTATIONALLY STEERABLE ULTRASOUND TRANSDUCER

John W. Sliwa, Jr., Palo Alto; Thomas G. Cooper, Menlo Park, and Sevig Ayter, Cupertino, all of Calif., assignors to Acuson Corporation, Mountain View, Calif.

Continuation of Ser. No. 69,092, May 28, 1993, Pat. No. 5,465,724. This application Jun. 7, 1995, Ser. No. 479,617
Int. Cl.[6] A61B 8/00
U.S. Cl. 128—660.09 **34 Claims**



1. An ultrasonic imaging system having a remote ultrasound console and a probe connected thereto for inspecting an interior region of a body, comprising:
a scanhead housing disposed at a distal end of the probe;
a transducer mounted upon a rotatable support structure within the scanhead housing;
means for electrically connecting the transducer to the remote ultrasound console; and
a magnetic sensor connected to the rotatable support structure and electrically coupled to the remote ultrasound console.

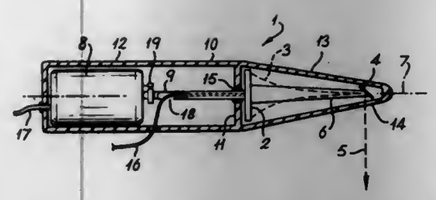
5,575,289

FLOWMETERS

Robert Skidmore, Bitton, England, assignor to British Technology Group Limited, London, England

PCT No. PCT/GB93/01498, § 371 Date Jan. 11, 1995, § 102(e) Date Jan. 11, 1995, PCT Pub. No. WO94/02069, PCT Pub. Date Feb. 3, 1994
PCT Filed Jul. 16, 1993, Ser. No. 362,601
Claims priority, application United Kingdom, Jul. 17, 1992, 9215231
Int. Cl.[6] A61B 8/00
U.S. Cl. 128—661.08 **12 Claims**

1. A medical probe (1) suitable for use in measuring parameters of fluid flow in a conduit within a human or animal body, the probe comprising:



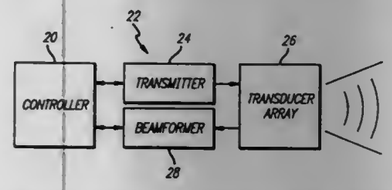
a hollow housing (**10**) having an ultrasound transparent wall part (**14**);
transducer means (**2**) mounted within the housing and operable to emit and detect ultrasound beam signals along a path (**3**); and
reflecting means (**4**) within the housing and disposed in said path to divert the beam through an angle so as to emerge from the housing through an exit portion of the ultrasound transparent wall part, wherein the external dimension of the housing transverse to said path reduces substantially from the region of the transducer means to the region of the exit portion, characterised in that the reflecting means are mounted for rotation in the narrowed exit portion region.

5,575,290

COARSE-FINE ULTRASOUND TRANSDUCER ARRAY FOR MEDICAL IMAGING

Tat-Jin Teo, Redmond, and John R. Klepper, Seattle, both of Wash., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Jun. 30, 1995, Ser. No. 497,627
Int. Cl.[6] A61B 8/00
U.S. Cl. 128—661.10 **22 Claims**



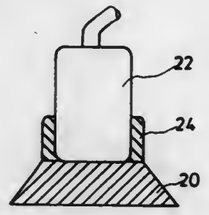
1. A method of performing an ultrasound scan of a patient with an array of transducer elements, the array comprising a plurality of rows spaced apart along an elevational direction, each one of the rows comprising a plurality of the transducer elements spaced apart along an azimuthal direction, the number of rows being less than the number of transducer elements in a given row, the method comprising the steps of:
defining a first elevation aperture for transmitting ultrasound signals from a first plurality of rows of the transducer elements;
defining a first azimuthal aperture for transmitting ultrasound signals from a plurality of the transducer elements within each one of the first plurality of rows;
transmitting ultrasound signals into the patient from the plurality of transducer elements defined by the elevation aperture and azimuthal aperture;
defining a second elevation aperture for receiving ultrasound signals at a second plurality of rows of the transducer elements;
defining a second azimuthal aperture for receiving ultrasound signals at a plurality of the transducer elements within each one of the second plurality of rows;
receiving reflected signals of the transmitted ultrasound signals from the patient at the plurality of transducer elements defined by the second elevation aperture and second azimuthal aperture; and
wherein average row spacing of the first plurality of rows along the elevational direction defines a first spacing, average row spacing of the second plurality of rows along the elevational direction defines a second spacing, and the first spacing is different than the second spacing.

5,575,291

ULTRASONIC COUPLER

Kenichi Hayakawa, and Kiyoto Matsui, both of Kawasaki, Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

Filed Sep. 15, 1994, Ser. No. 306,320
Claims priority, application Japan, Nov. 17, 1993, 5-288116
Int. Cl.[6] A61B 8/00
U.S. Cl. 128—662.03 **6 Claims**



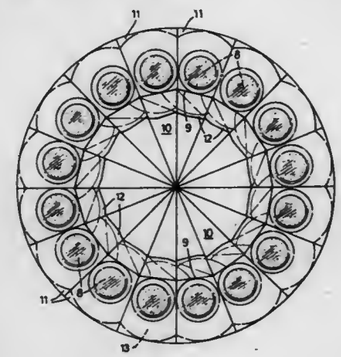
1. An ultrasonic device comprising a gel material containing polyvinyl alcobol PVA in the range of 3 weight % <PVA<6 weight %, the polyvinyl alcohol having a degree of saponification of at least 98 mole % and the gel material having a hardness in the range of 0.5×10^4 dyne/cm^2 to 2×10^4 dyne/cm^2.

5,575,292

APPLIED POTENTIAL TOMOGRAPHY

Brian H. Brown; David C. Barber, and Francis J. McArdle, all of Sheffield, England, assignors to British Technology Group Limited, London, England

PCT No. PCT/GB92/01156, § 371 Date Dec. 23, 1993, § 102(e) Date Dec. 23, 1993, PCT Pub. No. WO93/00038, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 26, 1992, Ser. No. 170,325
Claims priority, application United Kingdom, Jun. 27, 1991, 9113830
Int. Cl.[6] A61B 5/05
U.S. Cl. 128—733 **11 Claims**



1. A method for investigating a region within a body by applied potential tomography, comprising:
locating a plurality of surface-contact electrodes in a closed loop array on one substantially planar skin surface of the body distant from the region under investigation,
applying electrical signals to said electrodes, and

measuring electrical signals responsive to said applied signals at said electrodes,

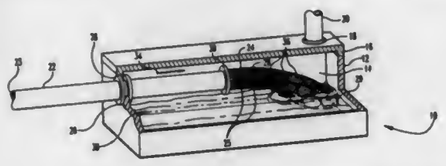
the electrodes being electrically connected to data acquisition and processing equipment.

5,575,293

APPARATUS FOR COLLECTING AND STAGING TISSUE

Michael E. Miller; Joseph L. Mark, both of Indianapolis, Ind., and Alan M. Schechter, Long Beach, Calif., assignors to Promex, Inc., Indianapolis, Ind.

Filed Feb. 6, 1995, Ser. No. 383,777
Int. Cl.[6] A61B *10/00*
U.S. Cl. 128—752 24 Claims



1. An apparatus for collecting and staging tissue bits excised from a patient comprising:

an elongated tube defining a channel therethrough for receiving the excised tissue bits; and

a collection container slidably disposed over a portion of said tube for collecting the excised tissue bits;

wherein said collection container is drawn away from said tube as it receives the excised tissue bits therein,

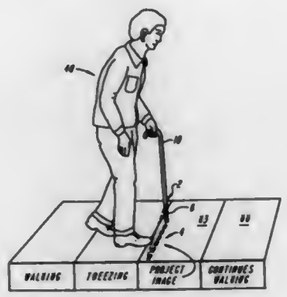
whereby the tissue bits are staged within said collection container in substantially the order in which they entered said channel.

5,575,294

METHOD AND DEVICE FOR MANAGING FREEZING GAIT DISORDERS

Robert E. Perry, 32 Abbott St., South Weymouth, Mass. 02190, and Linda Perry, 38 Hemlock Rd., West Roxbury, Mass. 02132

Filed Mar. 21, 1994, Ser. No. 215,942
Int. Cl.[6] A45B *3/00*
U.S. Cl. 128—774 20 Claims



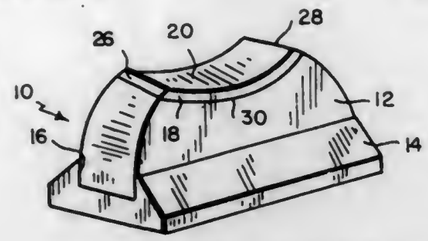
1. A method of managing a freezing gait disorder, comprising the step of providing a device actuable for projecting a luminous mark, and instructing a user to respond to an instance of freezing by projecting a luminous mark in a path of travel to create an apparent obstacle and enable movement.

5,575,295

METHOD AND APPARATUS FOR RESTORING SPINAL CERVICAL CURVATURE

Guruchander S. Khalsa, Espanola, and Muktiar S. Khalsa, Santa Cruz, both of N.M., assignors to Chiro-Yog, Inc., Santa Fe, N.M.

Filed Mar. 2, 1992, Ser. No. 844,711
Int. Cl.[6] A61G *15/00*
U.S. Cl. 128—845 13 Claims



1. Apparatus for use in restoring spinal cervical curvature in a patient's neck comprising;

a block formed of a material which is substantially non-deformable when pressure is applied thereto, said block having a top surface, a curved groove formed in said top surface, the width of said groove being greater than the width of the patient's neck, a bottom section, and a thickness at least at said top surface which is generally in the range of ½" to 3", said groove having a lowest point at approximately the center of the groove, the distance from said lowest point to the surface being approximately 3½ to 4½ inches,

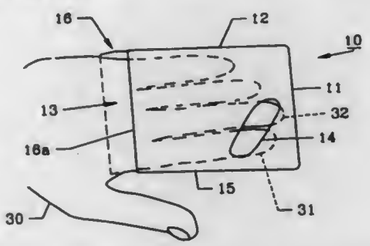
means for supporting the block in an upright position on a generally horizontal surface; the dimensions of the apparatus being such that, when the patient is laying on his back with the area of the patient's neck of the C3/C6 vertebra positioned in the groove, the patient's head is supported above the surface.

5,575,296

FINGER PUNCTURE PROTECTOR

Edward F. Peck, 4908 Edinborough Rd., Greensboro, N.C. 27401

Continuation of Ser. No. 149,055, Nov. 8, 1993, Pat. No. 5,415,184, which is a continuation of Ser. No. 914,803, Jul. 16, 1992, abandoned. This application Apr. 6, 1995, Ser. No. 417,814
Int. Cl.[6] A61D *19/00*
U.S. Cl. 128—880 13 Claims



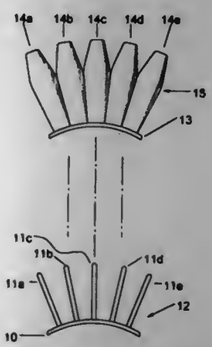
1. A finger protector for protecting a human hand having fingers with tips, tip pads, and knuckles from needle punctures, said protector comprising: a rigid needle puncture resistant rectangular box-like housing, said housing having a planar bottom, a top, a first continuous side wall, a second continuous side wall, and a distal closed end, said top spaced from and secured to said planar bottom by continuous and closed attachment of said distal closed end and said first and second continuous side walls, said distal closed end, said first and second continuous side walls, said top, and said bottom defining a closed container having a proximal opening for reception of at least one of the fingers, so the finger tip pad of the contained finger within said housing container is adjacent said distal closed end, said bottom having a length from said distal closed end to said proximal opening less than the length of the finger, said bottom having a lower surface, and said bottom defining an aperture contiguous said distal closed end within said closed container, said aperture sized to only expose the finger tip pad, said aperture contiguous said distal closed end to allow the finger tip pad to extend below said bottom surface to allow tactile feeling outside the container housing when the finger is completely inserted into said closed container.

5,575,297

HAIR BRAIDING DEVICE

Jerry Hatchett, 19 Reynard Dr., Tupelo, Miss. 38801, and Debra L. Meredith, Madison, Miss., assignors to Jerry Hatchett, Tupelo, Miss.

Filed Jan. 30, 1995, Ser. No. 380,032
Int. Cl.[6] A45D *7/02*
U.S. Cl. 132—212 12 Claims



1. A hair styling device providing means for independently retaining a plurality of separate sections of hair, comprising a rigid frame assembly comprising a rigid base with a plurality of elongated rigid members adjacently joined to and arising from said rigid base in such a manner that slots are formed between the adjacent elongated members, each of said slots being of sufficient height and width to accommodate and retain a section of hair containing multiple strands of hair, said section consisting of a sufficient number of strands of hair as to be suitable for braiding, wherein said slots contain adjacent resilient surfaces in close proximity to each other, thereby enhancing the ability of said device to retain said sections of hair.

5,575,298

APPARATUS AND METHOD FOR CONCEALING ATTACHMENTS OF HAIR SUPPLEMENTS

Cassandra Hinton, 16770 Starboard View Dr., Friendswood, Tex. 77546

Filed Jan. 17, 1995, Ser. No. 372,932
Int. Cl.[6] A45D *24/00*
U.S. Cl. 132—200 8 Claims

1. A method of adding a hair supplement to a human scalp comprising the steps of:

forming a hair supplement of human hair, said hair supplement having an end in which the human hair is grouped together;

forming a braid in hair of the scalp, said braid having a desired length;

affixing said end of said hair supplement to said braid; and



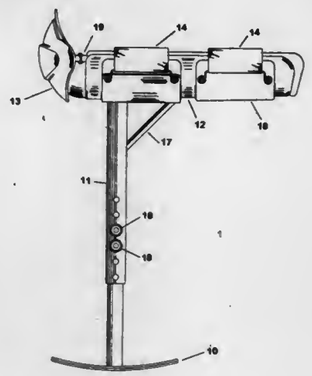
attaching an adhesive layer over said braid and said end of said hair supplement, said adhesive layer having an outer surface generally covered with human hair particles.

5,575,299

WALKING DEVICE

H. Carlton Bieri, 901 Cannan Dr., Angleton, Tex. 77515

Filed Aug. 1, 1995, Ser. No. 510,002
Int. Cl.[6] A45B *3/00*
U.S. Cl. 135—66 6 Claims



1. A walking device comprising:

a) a foot member having an upper and lower surface;

b) a support member having a first and second end, the first end of the support member attached to the upper surface of said foot member;

c) a body member having an upper and lower surface and a front and back end, the lower surface of the body member attached to the second end of said support member;

d) a front member, said front member attached to the front end of the body member; and

e) an attaching means on the body member for securing the device to the human leg, said attaching means attached to the upper surface of said body member.

5,575,300

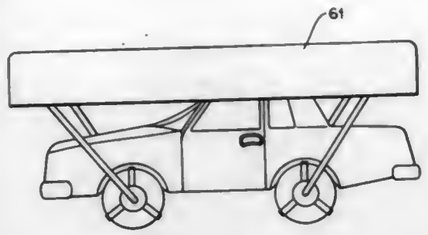
PORTABLE CARPORT

Michael L. James, 12197 Sanibel Ct., Reston, Va. 22091

Filed Mar. 17, 1995, Ser. No. 404,491
Int. Cl.[6] E04H *15/06*
U.S. Cl. 135—88.06 19 Claims

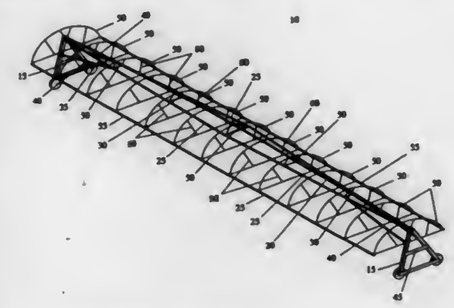
1. A portable vehicle cover for shielding a vehicle, comprising:

a) a plurality of wheel attachment mechanisms connected to an outside part of wheels on the vehicle;



b) an upper frame for attaching a flexible fabric cover; and
c) a plurality of masts connecting the plurality of wheel attachment mechanisms to the upper frame;
d) the portable vehicle cover being supported by the connection of the wheel attachment mechanisms to the outside part of the wheels, with no support and no contact being provided to the ground.

5,575,301
MOBILE SHELTER
Mark A. Bolton, 312 Cypress Creek Rd., Brandon, Miss. 39042
Filed Jul. 31, 1995, Ser. No. 509,229
Int. Cl.[6] E04H *15/34*
U.S. Cl. 135—122 **1 Claim**

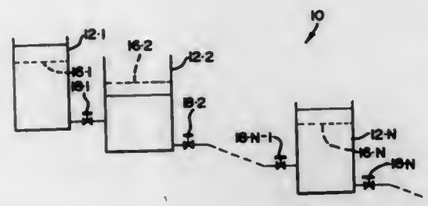


1. A mobile shelter comprising;
two end support structures;
a plurality of wheels connected to said two end support structures;
a primary connecting member connecting said two end support structures to each other;
two auxiliary support members connecting said two end support structures to each other whereby said two auxiliary support members and said primary connecting member form a generally isosceles triangular cross section with said primary connecting member being the upper most point of the triangle;
a plurality of bracing structures connecting said primary connecting member and said two auxiliary support members at intervals along the length of said primary connecting member;
stabilizer bar systems connecting each of said two auxiliary support members to each of said two end support structures;
a plurality of rib units connected to said primary connecting member at intervals along the length of said primary connecting member, whereby said plurality of rib units lie in planes parallel to the plane of said two end support structures, and further wherein said plurality of rib units provide a curved support surface;
two canopy cross bar members which are connected to the ends of each of said plurality of rib units; and
a canopy which is supported by said plurality of rib units.

5,575,302
FILTER FOR REMOVING NITROGEN OXIDES FROM TOBACCO SMOKE
Erich Blöcker, Hofheim, and Andreas Schleicher, Einhausen, both of Germany, assignors to Hoechst Aktiengesellschaft
Filed Dec. 20, 1994, Ser. No. 359,556
Claims priority, application Germany, Dec. 22, 1993, 43 43 920.9
Int. Cl.[6] A24D *3/06;3/10*
U.S. Cl. 131—345 **10 Claims**

1. A combination comprising tobacco smoking means and a filter associated with the tobacco smoking means for filtering tobacco smoke generated by the tobacco smoking means, and wherein the filter includes a poly(arylene thioether).

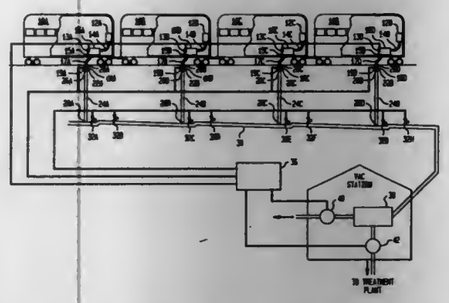
5,575,303
PROCESS FOR CONTROLLING A SERIES OF FLOTATION CELLS
David G. Hulbert, Johannesburg, South Africa, assignor to Mintek, South Africa
Filed Nov. 14, 1994, Ser. No. 337,760
Claims priority, application South Africa, Nov. 19, 1993, 93/7610
Int. Cl.[6] E03B *11/00*
U.S. Cl. 137—1 **9 Claims**



1. A process for controlling distribution of a material in a series of interconnected vessels of a plant, the process including
monitoring a variable representative of a quantity of material in each vessel and comparing a monitored value of the variable with a set point value of the variable;
summing differences between said monitored values and set point values of the variable resulting from at least one disturbance; and
when such a disturbance in any one vessel results in a signal representative of said summed value being generated, manipulating each of a plurality of actuators of the plant in a predetermined direction from said one vessel to cause rapid reduction of the disturbance.

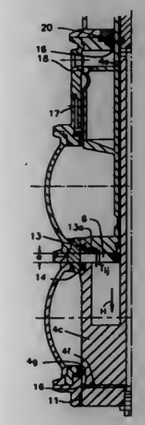
5,575,304
VACUUM SEWER SYSTEM
Alan F. Hassett, Berwyn, Pa., assignor to Environmental Resources Management, Exton, Pa.
Filed Apr. 13, 1995, Ser. No. 421,392
Int. Cl.[6] E03B *5/00*
U.S. Cl. 137—1 **33 Claims**

1. A method of operating a vacuum sewer system for withdrawing wastewater from a sewage holding tank through a lateral flow line into a main pipeline, said method comprising the steps of:
creating a vacuum environment in said main pipeline and said lateral flow line; selectively subjecting wastewater retained within said sewage holding tank to said vacuum environment for a period of time sufficient to force substantially only wastewater to flow out of said sewage holding tank and into said lateral flow line but insufficient to permit an appreciable amount of air to flow from said sewage holding tank; and



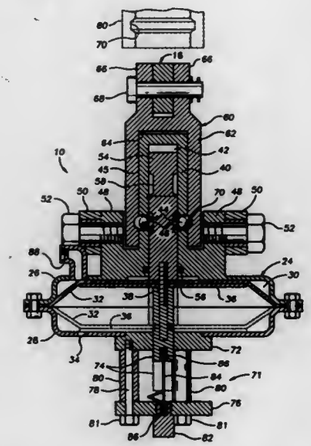
selectively admitting air directly into said main pipeline thereby enhancing the flow of the wastewater flowing within said lateral flow line.

5,575,305
PROCEDURE FOR CLEANING A DOUBLE SEAT VALVE AND VALVE ARRANGEMENT FOR IMPLEMENTING THE PROCESS
Hans O. Mieth, Büchen, Germany, assignor to Otto Tuchenhagen GmbH & Co. KG, Buchen, Germany
PCT No. PCT/EP92/01275, § 371 Date Dec. 6, 1993, § 102(e) Date Dec. 6, 1993, PCT Pub. No. WO92/21900, PCT Pub. Date Dec. 10, 1992
PCT Filed Jun. 5, 1992, Ser. No. 150,206
Claims priority, application Germany, Jun. 7, 1991, 41 18 874.8
Int. Cl.[6] B08B *3/04;9/02;* **F16K** *11/20*
U.S. Cl. 137—15 **23 Claims**



1. Procedure for cleaning a double seat valve, in particular a substantially leakage free operating double seat valve, provided with two closing members(3, 4) acting in series and controllable using first and second operating rods (3*a*, 4*b*), containing a leakage hollow space (6) between them, whereby at least one closing member implements a partial stroke, which makes accessible a major part of a seat surface (2*a*) associated with a closing member to a cleanser stream, whereby the rod (3*a*) of the first closing member (3) is guided over a guide passage (A) between a first seal (5) and a pressure compensating piston (3*b*) out of an associated valve the second closing member (4) opening the guide passage (C) when the piston (4*a*) moves away from the second seal (7), so that the cleanser stream (R) is branched off in the first case from valve housing part (1*a*) to clean the guide passage (A) and in the second case from valve housing part (1*b*) to clean the guide passage (C);
in the closed position and in the partial open position given by respective partial stroke of the closing members (3, 4), a sealing of the first closing member (3) with its first seat seal (13) and of the second closing member (4) with its second seat seal (14) upon the seat surface (2*a*) is achieved; and
the leakage hollow space (6) together with the seat surface (2*a*) made accessible by respective partial stroke of the closing members (3, 4) form the seat area (B).

5,575,306
RELIEF VALVE TRIGGER FOR RELATIVELY LARGE DIAMETER FLUID PRESSURE CONTAINERS
Julian S. Taylor, 8300 SW. 8th, Oklahoma City, Okla. 73128
Filed Apr. 10, 1995, Ser. No. 419,656
Int. Cl.[6] F16K *17/14;31/365*
U.S. Cl. 137—70 **6 Claims**



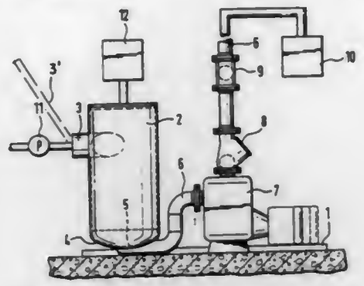
5. A flapper valve for opening and closing an opening of a container containing fluid under greater than atmospheric pressure, comprising:
a sleeve body axially secured to a container around an opening in the container;
flapper valve means including a plate having an annular lip for sealing with the peripheral end portion of said sleeve body;
a flapper valve latch arm radially secured to and projecting beyond the perimeter of said plate;
fluid pressure trigger relief valve means including a collapsible pin having a predetermined buckting point supported adjacent said flapper valve;
latch means on said trigger relief valve means for releasably connecting said flapper valve latch arm with said relief valve means; and,
tube means for providing fluid communication between the container and the trigger relief valve means for releasing said latch means and the flapper valve latch arm in response to a predetermined fluid pressure generating an axial force collapsing the collapsible pin.

5,575,307

DEVICE FOR THE DISPOSAL OF LIQUID MEDIA

Hans-Peter Martinitz, Kuchen, Germany, assignor to F&F Filter- Und Fordertechnik GmbH, Ostfildern, Germany

Filed Aug. 4, 1995, Ser. No. 511,234
Claims priority, application Germany, Oct. 8, 1994, 44 36 003.7
Int. Cl.[6] F17D *1/14;3/16*
U.S. Cl. 137—205 19 Claims



1. A device for the disposal of liquid media in the form of cooling-lubricating liquids containing production residue from industrial processes, wherein these media can be returned after being separated or filtered via at least one pipe line to a return reservoir and from there through pipe lines connected near the bottom of the reservoir to at least one collecting tank by means of at least one return pump,

wherein the return reservoir has an approximate shape of a standing circular cylinder, in which at least one inlet pipe line supplying liquid media terminates approximately tangentially, and

wherein the return reservoir has a connector at its bottom for an outlet pipe line leading to a collecting tank,

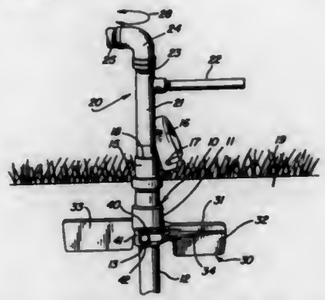
said return reservoir shape and said inlet and outlet pipe lines serving to assure circulating flow of the liquid media in the return reservoir which cleans interior walls of the return reservoir and prevents deposit of production residue in the return reservoir.

5,575,308

TORQUE-RESISTING ANCHOR FOR IRRIGATION VALVE

Ali Marandi, 4482 Elm Tree La., Irvine, Calif. 92715

Filed Aug. 21, 1995, Ser. No. 517,135
Int. Cl.[6] F16L *5/00*
U.S. Cl. 137—356 11 Claims



1. For use in combination with a valve having a valve body to which a valve key is applied and pivotally moved to open and close the valve, a valve anchor for resisting torsional and vertical forces upon the valve body, said valve anchor comprising:

an anchor body defining an open-end receptacle for receiving a portion of said valve body;

a first vertical vane integral with said anchor body and extending in a first generally horizontal direction from said open-end receptacle;

a second vertical vane integral with said anchor body and extending in a second generally horizontal direction, substantially opposite to said first direction, from said open-end receptacle; and

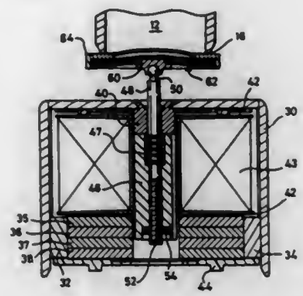
attachment means supported by said anchor body for securing said valve body within said open-end receptacle.

5,575,309

SOLENOID ACTUATOR

Richard A. Connell, Cambridge, United Kingdom, assignor to BLP Components Limited, Newmarket, United Kingdom

PCT No. PCT/GB94/00691, § 371 Date Nov. 21, 1994, § 102(e) Date Nov. 21, 1994, PCT Pub. No. WO94/23230, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 31, 1994, Ser. No. 338,560
Claims priority, application United Kingdom, Apr. 3, 1993, 9306980
Int. Cl.[6] F16K *31/08*
U.S. Cl. 137—556 9 Claims



1. Solenoid actuator for a fluid flow valve, the solenoid actuator comprising:

a closure member adapted to engage a fluid flow aperture external to the solenoid actuator;

solenoid means having a movable plunger adapted to move the closure member into engagement with the fluid flow aperture;

the closure member comprising a sealing surface to contact the fluid flow aperture and a diaphragm spring, within the closure member, to which the plunger is attached;

the diaphragm spring being adapted to deform in the direction of travel of the solenoid plunger when the sealing surface has contacted the fluid flow aperture, to convey to the sealing surface, and to limit, the force exerted upon the sealing surface by the solenoid means, and to provide a force acting to displace the closure member from the fluid flow aperture when the force due to the solenoid means is removed.

3. A solenoid actuator in accordance with claim 1 including a switch, the operative state of which indicates the position of the closure member relative to the fluid flow aperture.

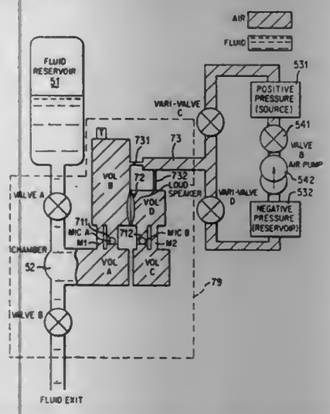
4. A solenoid actuator in accordance with claim 3 in which the switch is a membrane switch incorporated within the closure member.

5,575,310

FLOW CONTROL SYSTEM WITH VOLUME-MEASURING SYSTEM USING A RESONATABLE MASS

Dean L. Kamen, Bedford, N.H.; Joseph B. Seale, Gorham, Me.; Joseph Briggs, Manchester, N.H., and Finn Arnold, Sutton, Mass., assignors to DEKA Products Limited Partnership, Manchester, N.H.

Continuation of Ser. No. 443,428, May 15, 1995, abandoned, which is a division of Ser. No. 306,459, Sep. 15, 1994, which is a division of Ser. No. 792,877, Nov. 15, 1991, Pat. No. 5,349,852, which is a continuation-in-part of Ser. No. 615,612, Nov. 19, 1990, abandoned, Ser. No. 674,813, Mar. 22, 1991, abandoned, Ser. No. 673,834, Mar. 22, 1991, abandoned, and Ser. No. 614,806, Nov. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 523,801, May 15, 1990, Pat. No. 5,088,515, and Ser. No. 345,387, May 1, 1989, Pat. No. 4,976,162, which is a continuation-in-part of Ser. No. 92,481, Sep. 3, 1987, Pat. No. 4,826,482, which is a continuation-in-part of Ser. No. 22,167, Mar. 5, 1987, Pat. No. 4,808,161, and Ser. No. 836,023, Mar. 4, 1986, Pat. No. 4,778,451, said Ser. No. 673,834is a continuation-in-part of Ser. No. 523,801, said Ser. No. 615,612is a continuation-in-part of Ser. No. 523,801, and Ser. No. 345,387, said Ser. No. 674,813is a continuation-in-part of Ser. No. 523,801. This application Jan. 24, 1996, Ser. No. 590,623
Int. Cl.[6] F16K *31/02*
U.S. Cl. 137—614.11 9 Claims



1. A system for controlling the flow of liquid through a line, the system comprising:

a front chamber disposed in the line, wherein the front chamber has an inlet from the line and an outlet to the line, wherein the front chamber houses a volume of gas in communication with liquid in the chamber, the front chamber having a constant volume so that a change in the volume of liquid in the front chamber results in a corresponding opposite change in the volume of gas in the front chamber;

isolation means for isolating in the front chamber a volume of liquid from pressure effects of liquid in the rest of the line and for dispensing liquid from the front chamber, wherein the isolation means includes a first valve means, located at the inlet, for selectively permitting and preventing flow into the front chamber, and a second valve means, located at the outlet, for selectively permitting and preventing flow out of the front chamber;

a back chamber housing a constant volume of gas;

an orifice containing a resonatable mass of gas and providing fluid communication between the front and back chambers;

signal means for generating an electrical signal;

speaker means for converting the electrical signal into an acoustic response in the front and back chambers;

microphone means for determining the acoustic response; and

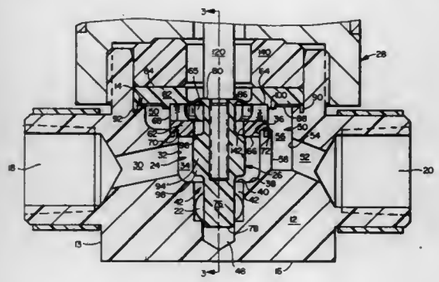
control means, in communication with the first and second valve means and the microphone means, for determining the volume of gas in the front chamber and directing the operation of the first and second valve means in order to measure and control flow of liquid through the line.

5,575,311

THREE-WAY POPPET VALVE APPARATUS

Kenji Kingsford, Devore, Calif., assignor to Furon Company, Laguna Niguel, Calif.

Filed Jan. 13, 1995, Ser. No. 372,457
Int. Cl.[6] F16K *11/044*
U.S. Cl. 137—625.5 27 Claims



1. A three-way valve consisting essentially of four components including:

a one-piece valve body having a top end and a bottom end, the valve body comprising:

an inlet port and first and second outlet ports disposed between the top and bottom ends;

a valve chamber centrally located in an axial position within the valve body;

a first valve seat formed integrally with the valve chamber facing toward the top end of the valve body and located between the inlet port and the second outlet port;

a second valve seat formed separately from the valve body and mounted in the valve chamber at a position above the first valve seat, the second valve seat facing the bottom end and located between the inlet port and the first outlet port;

a poppet assembly formed separately from the valve body and mounted for axial movement within the valve chamber, the poppet assembly comprising:

a valve stem having an enlarged diameter section between its top and bottom end portions; and

a diaphragm formed integrally with its top end and extending radially therefrom, the diaphragm having a peripheral edge that forms an air and liquid-tight seal against a side wall of said valve chamber, the enlarged diameter section of the valve stem located between the first and second valve seats and comprising a lower shoulder for engaging the first valve seat when in a first axial position within the valve chamber, and an upper shoulder for engaging the second valve seat when in a second axial position within the valve chamber; and

means for moving the poppet assembly between the first and second positions.

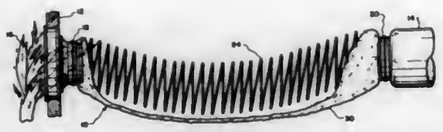
5,575,312

FIRE RETARDING HEATING AND COOLING DUCT

Clifford A. Schroeder, Westlake Village, Calif., assignor to CASCO Manufacturing, San Fernando, Calif.

Continuation of Ser. No. 268,327, Jun. 30, 1994, abandoned. This application Dec. 7, 1995, Ser. No. 568,529
Int. Cl.[6] F16L *9/14*
U.S. Cl. 138—149 9 Claims

7. A fire retarding heating and cooling duct comprising;



a flexible duct core comprised of a heat meltable flexible plastic reinforced with a helical wire;

a heat meltable insulation wrapped around said duct core, said heat meltable insulation comprising a heat meltable plastic having air filled bubbles;

a heat meltable jacket enclosing said duct core and said heat meltable insulation;

said fire retarding heating and cooling duct being constructed in short sections for mounting between a plenum and an end of a building heating and cooling duct;

said heat meltable duct core, insulation and jacket being meltable at a temperature substantially below the combustion or melting temperature of the building heating and cooling duct it is connected to;

mounting means for joining the ends of said section of fire retarding heating and cooling duct to said plenum at one end and to said building and cooling duct at the other end, said mounting means comprising duct collars at each end of said section of fire retarding heating and cooling duct;

whereby said section of heating and cooling duct will collapse when excessive heat from a building fire enters said plenum, thereby preventing the fire from spreading through the building heating and cooling duct.

5,575,313

APPARATUS FOR MONITORING A WARP YARN MOVEMENT IN A MULTI-PHASE WEAVING MACHINE

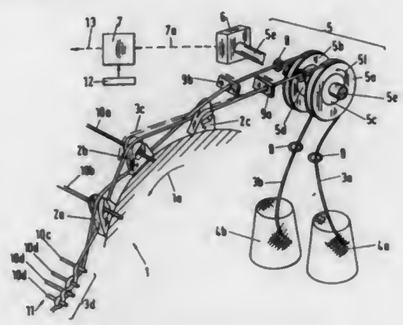
Thomas Weber, Feldmeilen; Dietmar Markward, and Jaques Peulen, both of Rüti, all of Switzerland, assignors to Sulzer Rueti AG, Rueti, Switzerland

Filed Apr. 11, 1995, Ser. No. 419,889

Claims priority, application European Pat. Off., Apr. 22, 1994, 94810223

Int. Cl.[6] D03D *51/28;* **B65H** *63/032*

U.S. Cl. 139—28 **6 Claims**



1. A multi-phase weaving machine comprising:

a weaving rotor for driving a plurality of leno warp yarns in a drawing-off direction; and

a detection arrangement for detecting movement of at least one of the leno warp yarns in the drawing-off direction, the arrangement comprising an electronic scanner.

5,575,314

WEFT CUTTER FOR AIR LOOM WHICH IS CONTROLLABLE AS A FUNCTION OF WEAVING CONDITIONS

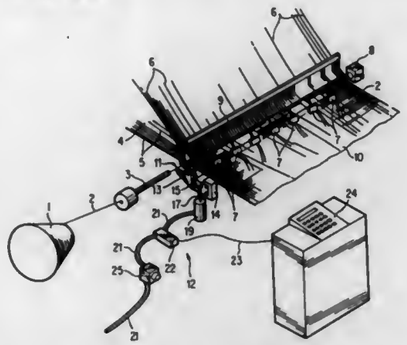
Roberto Capitanio, Castegnero; Gianluigi Sora, Vicenza, and Zanrosso Mauro, Schio, all of Italy, assignors to Nuovo Pignone S.p.A., Florence, Italy

Filed May 18, 1995, Ser. No. 443,455

Claims priority, application Italy, May 20, 1994, MI94A1020

Int. Cl.[6] D03D *47/36;49/70*

U.S. Cl. 139—429 **1 Claim**



1. Weft cutter for an air loom, comprising:

a stationary blade cooperating with a movable blade adapted to be positioned in proximity with a reed of the loom;

a drive system oscillating said movable blade from a resting position to an active position, and vice-versa, wherein said drive system includes a pneumatic cylinder having a ram, a stem hinged to said movable blade and interconnecting the ram to the movable blade, and a return spring positioned in the pneumatic cylinder which biases said movable blade to return to a rest position, and a solenoid valve which pneumatically feeds said cylinder and which is adapted to be controlled from a loom console and includes a pressure regulator located at an inlet side of said solenoid valve, whereby cutting by the cutter is controlled from the loom console as a function of weaving conditions of the loom such that a cutting force of the movable blade is controllable as a function of the type of weft to be cut.

5,575,315

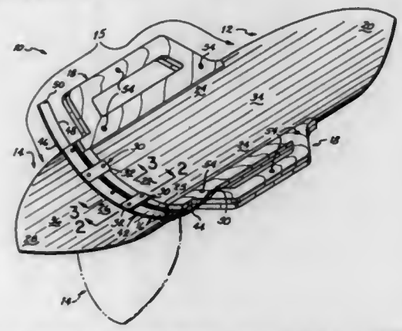
DEVICE AND METHOD FOR FILLING A SANDBAG

James A. Wengert, 4590 Muir Ridge Ct., Batavia, Ohio 45103

Filed Sep. 28, 1994, Ser. No. 314,061

Int. Cl.[6] B65B *67/00*

U.S. Cl. 141—109 **17 Claims**



1. A shovel for moving material into a container, comprising:

a continuously curved scoop having a head region, a base region and two side edge regions located between said head and base regions;

a non-tubular chute to direct material from said scoop into a container, said chute having a material entry end adjacent to said base region of said scoop and a material exit end, said scoop and chute forming a shovel body;

a connector interconnecting said scoop and said chute to locate said base region of said scoop adjacent said material entry end of said chute throughout a range of relative angular movement therebetween; and

a container gripper mounted to said shovel body and releasably connectable to the mouth of a container to maintain the container mouth in material-receiving relationship to said exit end of said chute when releasably connected thereto.

5,575,316

DEVICE FOR AUTOMATIC FILLING OF CONTAINERS

Manfred Pollklas, Rheda-Wiedenbrück, Germany, assignor to Claas oHG beschraenkt haftende offene Handelgesellschaft, Harsewinkel, Germany

Filed Feb. 7, 1995, Ser. No. 386,058

Claims priority, application Germany, Feb. 8, 1994, 44 03 893.3

Int. Cl.[6] B65G *65/32*

U.S. Cl. 141—198 **24 Claims**

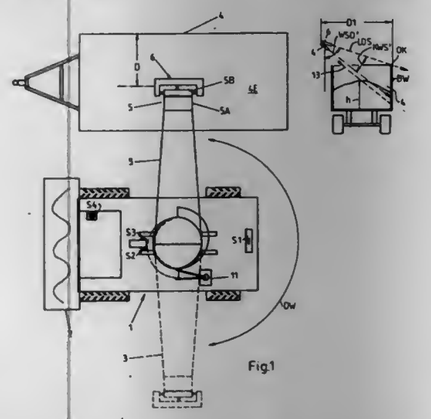


Fig.1

1. A device for automatic filling of a mobile container (4) with a material stream (13) from a harvester (1) moving alongside the container, the device comprising:

means for transporting the material stream from the harvester (1) to the container (4), the means for transporting being controllably pivotable around a vertical and a horizontal axis;

a pivotable discharge flap at an end of the means for transporting;

a range finder (6), consisting of one of an optical or an acoustic range detector, for measurement of the container (4) and for measuring fill levels (h) of the loaded material (14), the range finder being disposed on the discharge knee pipe (3), such that the range finder (6) can be pivoted horizontally and vertically selectively together with the means for transporting and independently thereof;

means for generating distance signals (ES) generated by the range finder (6) and supplying the distance signals to an electronic evaluation and control installation (10), which continuously regulates a horizontal pivot position, a vertical pivot position of the means for transporting, and a flap pivot position of the discharge flap (5); whereby

loading of the container (4) is achieved with as few losses as possible by means of the fed-back distance signals (ES).

5,575,317

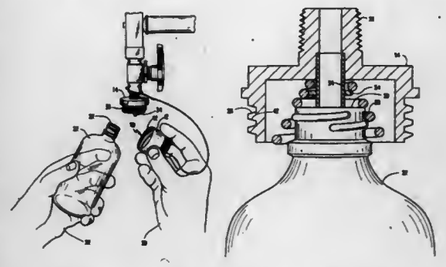
SAMPLE TAP APPARATUS WITH PRESSURE SENSITUVE CAP

Henry J. Behnke, III, 4 West Kincaid, Cransbury, N.J. 08512; A. Eric Jansen, Terbreqseweg 124, 3056 JX, Rotterdam, Netherlands, and Martin Bal, 3023 Kenross, Houston, Tex. 77043

Filed Jan. 27, 1995, Ser. No. 379,187

Int. Cl.[6] G01N *1/100*

U.S. Cl. 141—372 **6 Claims**



1. A pressure sensitive tap apparatus for filling a sample bottle wherein said apparatus is connectable to a valve attached to a fluid line, said apparatus comprising:

a base connectable to said valve, said base having a first set of threads thereon;

a fill tube having a first and a second end and a channel therethrough, wherein said first end is attached to said base and communicates with said valve attached to said fluid line;

a cap having an outside surface and an interior cavity, said interior cavity including a second set of threads thereon adapted to mate with said first set of threads on said base;

a recessed cavity inside of said interior cavity of said cap;

an elastomeric plug located inside of said recessed cavity; and,

knurling on said outside surface of said cap,

wherein the resistance provided by said first set of threads acting against said second set of threads as said cap is screwed onto and off of said base is substantially linear at all times so that the force necessary to unscrew said cap is substantially proportional to the pressure buildup inside of said interior cavity of said cap and wherein said knurling improves the ability of an operator to screw said cap on and off of said base and, further, wherein said second end of said fill tube comes into contact with said elastomeric plug when said cap is screwed onto said base.

5,575,318

SLIDE ASSEMBLY FOR MACHINE TOOLS AND METHOD OF MAKING SAME

Kenneth J. Susnjara, Santa Claus, Ind., assignor to Thermwood Corporation, Dale, Ind.

Filed Feb. 17, 1995, Ser. No. 390,754

Int. Cl.[6] B27C *9/00*

U.S. Cl. 144—2.1 **21 Claims**

1. A slide assembly for a machine tool, comprising:

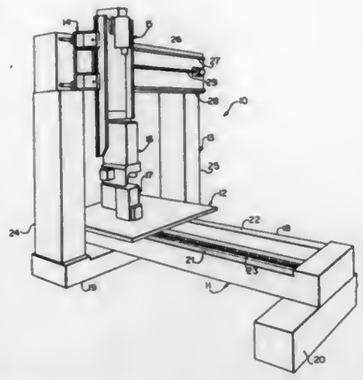
a first member having at least one guide slot disposed parallel to a given line of travel, provided with at least one wall portion;

a second member disposed in a predetermined spatial relation relative to said first member, having a portion thereof extending into said guide slot, spaced from said slot wall portion, and displaceable along said guide slot when said members are disposed in said predetermined spatial relation;

detachable means for fastening said members together in said predetermined spatial relation relative to each other; and

a structural polymer disposed in said guide slot adhesively secured to one of said extending portion of said second member and said slot wall portion of said first member, and slideably engagable with the other of said extending portion

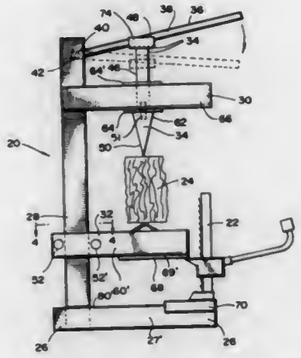
VOL 1192 ISS 3 NO 19 1996 UMI



of said second member and said slot wall portion of said first member, providing a guideway for a moveable one of said members,

whereby upon applying said detachable fastening means and thereby positioning said second member in said predetermined spatial relation relative to said first member, when forming said guideway, said structural polymer in an unhardened fluid state may be injected into the space between said extending portion of said second member and said slot wall portion of said first member to form said guideway.

5,575,319
LOG SPLITTING APPARATUS FOR USE WITH CONVENTIONAL VEHICLE JACKS
Charles T. Chick, 741 SW. Lemans, Lee's Summit, Mo. 64082
Filed Apr. 1, 1996, Ser. No. 625,307
Int. Cl.[6] B27L *7/00*
U.S. Cl. 144—195.4 **12 Claims**



1. Apparatus for use in combination with a conventional vehicle jack for splitting logs, said apparatus comprising:

base means for removably receiving and supporting said jack thereon and for supporting said apparatus on the ground or other substantially horizontal surface;

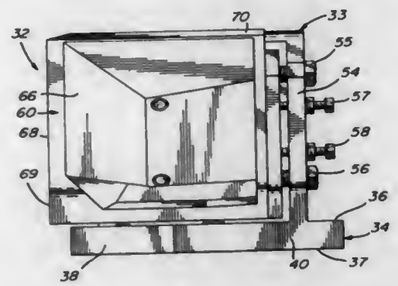
a first support connected to and extending upwardly from said base means;

a second support connected to and extending outwardly from said first support and located above said base means;

a log support movably connected to and extending outwardly from said first support and located between said base means and said second support, said log support movably positionable along said first support to rest on said jack when said jack is positioned on said base means and beneath said log support; and

wedge means in operative relationship with said second support for engaging and splitting a log positioned on said log support and beneath said wedge means as said log support and said log are moved upwardly toward said second support by conventional activation of said jack positioned between said base means and said log support.

5,575,320
CUTTING TOOL ASSEMBLY FOR A ROTATABLE CHIP FORMING HEAD
Maurice Brisson, Laval, Canada, assignor to Les Ateliers Benoit Allard, Inc., Quebec, Canada
Filed Jan. 11, 1995, Ser. No. 371,164
Int. Cl.[6] B27G *13/04*
U.S. Cl. 144—220 **7 Claims**



1. A cutting tool assembly for mounting to a rotatable chip forming head comprising:

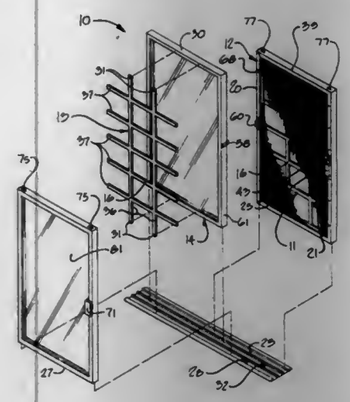
a knife holder including a base portion having opposite sides and being adapted to be secured peripherally to said head and a cantilevered plate portion having a lower section joined to one of said opposite sides of said base portion and an upper section extending obliquely above said base portion; said upper section defining an inner face and a front working side, said front working side extending above the other of said of opposite sides of said base portion to define therebetween an open side for chip ejection;

a knife mounted to bear against said inner face of said holder; said knife having a cutting edge extending frontwardly beyond said working side of said upper section; and

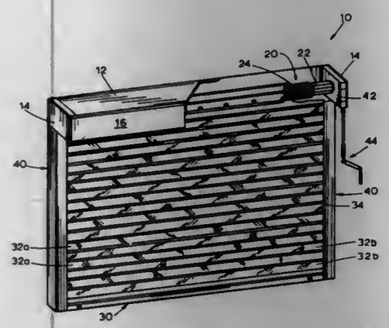
means securing said knife to said cantilevered portion.

5,575,321
SECURITY DOOR SYSTEM FOR SLIDING SCREEN DOORS
Ken E. Currier, 10 English Run Turn, Sparks, Md. 21152
Filed Feb. 7, 1995, Ser. No. 384,842
Int. Cl.[6] E06B *3/32*
U.S. Cl. 160—90 **18 Claims**

1. A sliding screen door security kit comprising a sliding screen door, a security grille for mounting on a sliding screen door, a key-operated locking unit for attachment to said sliding screen door capable of preventing the sliding screen door from sliding and from being lifted off of its track, a sliding flat bolt locking unit comprising a fixed flat bolt and a keeper which slidably engages said bolt, which when engaged is capable of preventing the sliding door from being lifted off of its track, and mounting hardware therefor.



5,575,322
ROLLING PROTECTIVE SHUTTERS
James V. Miller, 893 N. Maryknoll Cir., Glen Ellyn, Ill. 60137
Filed Sep. 15, 1995, Ser. No. 529,219
Int. Cl.[6] E06B *9/08*
U.S. Cl. 160—133 **28 Claims**



1. A rolling shutter assembly, comprising:

a shutter support member;

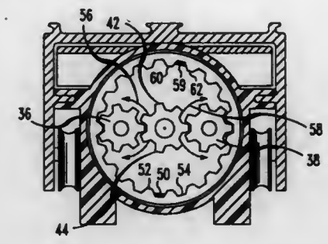
a shutter coupled to said shutter support member, said shutter comprising a plurality of individual slats and a plurality of hinges interconnecting said slats, each of said slats having a pair of slat portions, said slats comprising a first set of slats and a second set of slats, each of said slats in said first and second sets being alternated so that each of said hinges is connected to one of said slats in said first set and one of said slats in said second set;

a pair of shutter tracks;

means for rolling said shutter from an extended position in which said slat portions are disposed in said shutter tracks to a retracted position in which said shutter is rolled up on said shutter support member,

said hinges and said shutter tracks being adapted to facilitate, when said shutter is in said extended position, said slats in said first set of slats to occupy a first relative orientation in which said slats are aligned with a first angled direction between about 10° and about 80° with respect to a horizontal axis and said slats in said second set of slats to occupy a second relative orientation in which said slats are aligned with a second angled direction between about 100° and about 170° with respect to said horizontal axis.

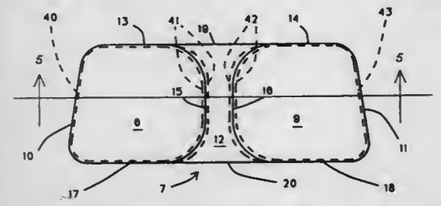
5,575,323
POSITIVE CLOSURE APPARATUS FOR VERTICAL BLIND TRACK BY INTERNAL DRIVE GEAR CONTROL
Lawrence Smuckler, P.O. Box 616, Capon Bridge, W. Va. 26711-0616
Filed Feb. 1, 1995, Ser. No. 382,176
Int. Cl.[6] E06B *9/38*
U.S. Cl. 160—177 **10 Claims**



1. In a vertical blind track of the type incorporating a sprocket gear within an end control housing to rotate a fluted pinion gear and vanes carried thereby under action of a pull-chain entrained around the sprocket gear, and with the end control housing including a first gear and a pair of second gears, one of which is driven by the sprocket gear when rotated, positive closure apparatus comprising:

a filled recess between a pair of adjacent teeth on said first gear to prevent meshing with at least one of said pair of second gears, said recess being filled at least 5–10% of the cavity space between said pair of adjacent teeth, and said recess being located on said first gear one position ahead of that recess location which defines the closed position of said vanes.

5,575,324
SUNSHIELD AND METHOD OF MANUFACTURE OF SUNSHIELD
Charles Hwang, 1714 Stoner Ave. Unit #9, Los Angeles, Calif. 90025
Continuation-in-part of Ser. No. 418,956, Apr. 7, 1995. This application Apr. 19, 1995, Ser. No. 423,818
Int. Cl.[6] B60J *3/00*
U.S. Cl. 160—370.21 **8 Claims**



1. A method of manufacture of a folding sunshield comprised of a sunshield material and two spring loops for attaching to said material a spaced distance apart to respective approximate halves of said material, said spaced distance apart providing an intermediate portion of said material acting as a hinge between said two loops, for folding one of said spring loops upon the other and further folding, or twisting said two spring loops into a compact configuration, said method comprising the steps of;

creating two ridges from said sunshield material, said ridges directed across said intermediate portion of said sunshield, said ridges each having a top edge along such ridges,

attaching tape around a first one of said approximate halves by attaching tape over the edge of one of said ridges, along said ridge, and around the remainder of said one approximate half,

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attaching tape around a second one of said approximate halves by attaching tape over the edge of the other of said ridges, along said other ridge, and around the remainder of the other of said approximate halves, and

including a spring loop within each of said tapes whereby each said spring loop is attached to said material and wherein said tapes are attached to said ridges by sewing from one side of each ridge to the other side and through said tapes.

5,575,325

SEMI-MOLTEN METAL MOLDING METHOD AND APPARATUS

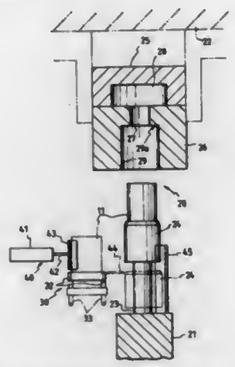
Yasuo Sugiura; Hiroshi Seo, and Seiji Saikawa, all of Shizuoka, Japan, assignors to Asahi Tec Corporation, Shizuoka, Japan

Filed Feb. 3, 1994, Ser. No. 194,305

Claims priority, application Japan, Feb. 3, 1993, 5-039541; Mar. 10, 1993, 5-076177; Oct. 22, 1993, 5-287399

Int. Cl.[6] B22D *27/09;17/04;* **B22C** *9/00*

U.S. Cl. 164—120 **11 Claims**



2. A method of molding a semi-molten metal material, comprising the steps of:

(a) inserting upwardly said semi-molten metal material to a cavity of a mold from below said mold;

(b) causing an oxide film which forms on said semi-molten metal material to drop towards a bottom of said semi-molten material; and

(c) filling said cavity with said semi-molten metal material by pressing.

5,575,326

INDOOR UNIT OF AIR CONDITIONER

Yasutoshi Asami, Tokyo, and Isao Kawasaki, Yokohama, both of Japan, assignors to Fujitsu General Limited, Japan

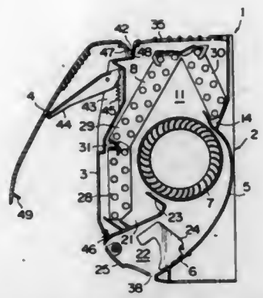
Filed Jun. 21, 1994, Ser. No. 262,943

Claims priority, application Japan, Aug. 6, 1993, 5-196151

Int. Cl.[6] F28F *13/12*

U.S. Cl. 165—124 **2 Claims**

1. An air conditioner comprising: a casing having at least one air inlet in an upper surface thereof and at least one air outlet in a front lower part; a heat exchanger disposed in an air passage connecting the at least one air inlet of the casing to an air outlet and being bent about two cut-out portions therein so as to have an upright section and a rearward inclined section located forward and a forward inclined section located rearward, the rearward inclined section and the forward inclined section forming the upper part of the heat exchanger into the shape of an inverted V; and a fan disposed rearward of the upright section and the rearward inclined section in an installation space of the heat exchanger; wherein the casing comprises a frame body, a front cover attached to the frame body and having the at least one air inlet in an upper surface and in a front upper part thereof and the at least one air outlet in a lower part, a suction grille attached detachably to the front cover and which can be opened or closed; bearings formed at opposite sides of an upper surface of the front cover, catchers disposed at opposite sides of a lower part of said front cover, shafts supported rotatably by said bearings formed at opposite sides of an upper end of said suction grille, protections detachably supported by said catchers formed at opposite sides of a lower part of said suction grille, such that when said shafts of said suction grille are supported by said bearings of said front cover and said projections of said suction grille are held by said catchers of said front cover, said suction grille is mounted to the front of said front cover, and when the projections of said suction grille are released from said catchers of said front cover, said suction grille is lifted up, and the shafts are released from the bearings of said front cover, said suction grille can be removed from said front cover, the casing further comprising recesses formed in opposite sides of a front upper part of the front cover, arms movably supported in said recesses and which are normally biased by springs in an opening direction, such that when the projections of said suction grille are released from said catchers of said front cover, said suction grille is opened by said arms and said suction grille is held in a prescribed open position, and when said suction grille is held in a prescribed open position and is lifted up to release said shafts from said bearings of said front cover, said suction grille is removed from said front cover.



5,575,327

STRIP CASTING APPARATUS

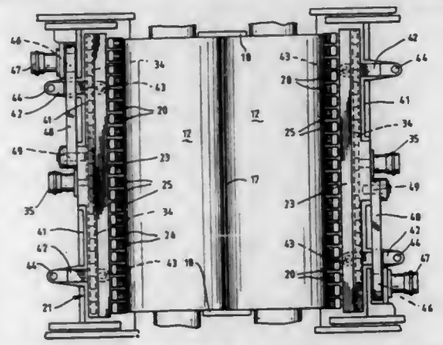
Heiji Kato, Yokosuka, Japan, assignor to Ishikawajima-Harima Heavy Industries Co., Ltd., and BHP Steel (JLA) Pty Ltd., both of Japan

Filed Jul. 17, 1995, Ser. No. 503,341

Claims priority, application Australia, Aug. 18, 1994, PM7508

Int. Cl.[6] B08B *1/04;* **B22D** *11/06;43/00*

U.S. Cl. 164—158 **18 Claims**



1. Apparatus for casting metal strip, comprising a casting roll, metal delivery means to deliver molten metal onto the surface of the casting roll, and a roll cleaning brush device to clean the roll surface, the cleaning brush device comprising a brush mounting structure, a series of rotary brush heads mounted on said structure in a linear array extending across the width of the casting roll and for rotation about respective individual brush head rotational axes which are transverse to a casting surface of the roll and are spaced across said width, and brush drive means to rotate the brush heads of the array.

5,575,328

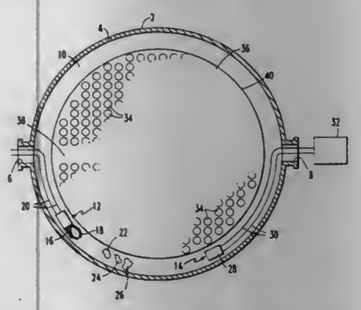
DEBRIS BOX

Edward J. Hyp, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 8, 1994, Ser. No. 287,382

Int. Cl.[6] F28F *27/00*

U.S. Cl. 165—11.2 **15 Claims**



1. An apparatus for use with a search and retrieval device for searching and retrieving a plurality of foreign objects within a heat exchanger, said apparatus comprising:

container means for containing said plurality of foreign objects which are retrieved by said search and retrieval device within said heat exchanger; and

insertion means for inserting said container means into said heat exchanger.

5,575,329

PASSIVE BY-PASS FOR HEAT EXCHANGERS

Allan K. So, Mississauga, and Thomas F. Lemczyk, Hamilton, both of Canada, assignors to Long Manufacturing Ltd., Ontario, Canada

Filed May 25, 1994, Ser. No. 249,016

Claims priority, application Canada, Jan. 14, 1994, 2113519

Int. Cl.[6] F28F *3/08*

U.S. Cl. 165—167 **23 Claims**

1. A heat exchanger comprising: a housing defining a fluid inlet chamber and a fluid outlet chamber; means defining a plurality of heat exchange passages located between and communicating with the inlet and outlet chambers, the heat exchange passages having inlet passages defining an inlet flow manifold communicating with the inlet chamber; a separator located adjacent to the inlet flow manifold; and said separator defining a calibrated bypass orifice therethrough located remote from the inlet passages and communicating with the inlet flow manifold for the continuous flow out of the inlet flow manifold of a portion only of the fluid entering the inlet flow manifold.

5,575,330

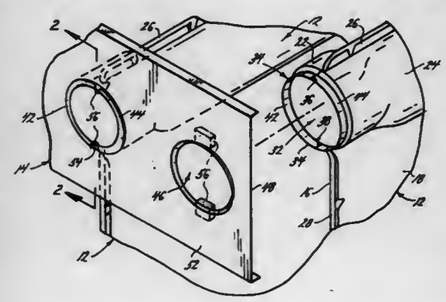
FURNACE HEAT EXCHANGER SEAL AND METHOD OF MAKING SAME

Russell W. Hoeffken, Belleville, Ill., assignor to Alco Industries, Inc., Valley Forge, Pa.

Continuation of Ser. No. 303,132, Sep. 8, 1994, abandoned, which is a continuation of Ser. No. 7,507, Jan. 22, 1993, abandoned. This application Jun. 19, 1995, Ser. No. 491,685

Int. Cl.[6] F28F *9/04*

U.S. Cl. 165—170 **19 Claims**



1. A heat exchanger assembly for a furnace, the heat exchanger assembly comprising:

a heat exchanger cell formed from at least one wall surrounding a hollow interior volume of the cell, the cell having an opening therein providing access to the interior volume of the cell, and the cell wall having a pair of adjacent edges joined together by a seam, the seam extending over the cell wall and terminating at an end of the seam at the opening in the cell;

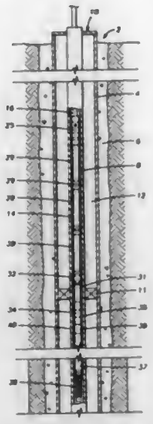
a mounting plate having at least one aperture therethrough;

a heat resistant, deformable sponge pad secured to one side of the mounting plate adjacent the aperture, said sponge pad having a width greater than the width of the seam end but only a small fraction of the total circumference of said mounting plate aperture; and

the heat exchanger cell being secured to the mounting plate with the cell opening adjoining the mounting plate aperture and with the seam end pressed against the sponge pad whereby the sponge pad is partially forced into the seam end to provide a seal between the seam end and the mounting plate but does not otherwise extend to the opposite side of said mounting plate.

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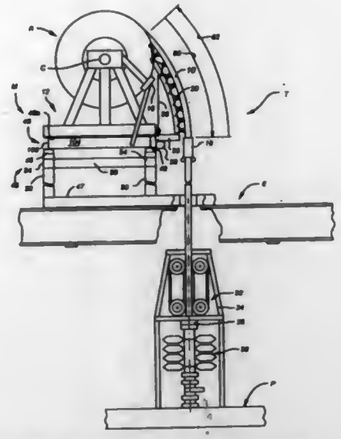
5,575,331
CHEMICAL CUTTER
Jamie B. Terrell, Ft. Worth, Tex., assignor to Halliburton Company, Houston, Tex.
Filed Jun. 7, 1995, Ser. No. 479,949
Int. Cl.[6] E21B *29/02*
U.S. Cl. 166—55 28 Claims



1. In a downhole chemical cutting tool having an elongated tool body adapted to be inserted into a conduit and positioned at a downhole location thereof for effecting a cutting action in said conduit, the combination comprising:
a) a head section in said tool body adapted to be connected to a running string;
b) a propellant section in said tool body adapted to contain a pressure generating propellant.
c) a chemical section in said elongated tool body interposed between said propellant section and the hereinafter recited cutting section and having at least one chamber adapted to contain a chemical cutting agent;
d) a cutting section in said tool body adapted to receive a chemical cutting agent from said chemical section and having an outer wall section containing a plurality of transverse cutting ports arranged circumferentially of said cutting section therein for the discharge of a chemical cutting agent from said cutting section;
e) an anchoring section disposed in the lower portion of elongated tool body below said cutting section;
f) a load bearing hub section in said tool body extending longitudinally through said cutting section to said anchoring section and connecting said anchoring section to the upper portion of said tool body including said head section in a load bearing relationship;
g) means providing a plurality of longitudinally extended flow passages spaced circumferentially about and extending longitudinally along said hub section of said elongated tool body and in fluid communication with said chemical section to provide for the flow of chemical cutting agent from said chemical section to said cutting ports.

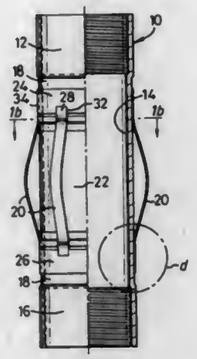
5,575,332
REELED WELL TUBING SYSTEMS
Philip W. Wasterval, Jr., Houston, Tex., assignor to Sundowner Offshore Services, Inc., Houston, Tex.
Filed Aug. 5, 1995, Ser. No. 511,611
Int. Cl.[6] E21B *19/22*
U.S. Cl. 166—77.1 16 Claims

1. A manipulator for guiding reeled well tubing as it moves between a storage reel and a tubing injector at a well site, comprising:



a sled having the storage reel mounted therewith;
a frame receiving said sled thereon;
roller means permitting movement between said sled and said frame;
a guide mechanism mounted with said frame for receiving the tubing from the storage reel and guiding it towards the tubing injector; and
means for moving the storage reel with respect to said guide mechanism as the tubing enters and leaves the storage reel.

5,575,333
CENTRALIZER
Brent J. Lirette; Robert P. Vilyus; James G. Martens, and Brad W. Herbert, all of Houma, La., assignors to Weatherford U.S., Inc., Houston, Tex.
Filed Jun. 7, 1995, Ser. No. 484,171
Int. Cl.[6] E21B *17/10*
U.S. Cl. 166—241.1 16 Claims



1. A centralizer apparatus comprising
a tubular body with an exterior surface,
a first collar movably emplaced around the tubular body and movable longitudinally thereon,
a first groove in the exterior surface of the tubular body, the groove defined by a top side wall, a bottom side wall, and a middle wall therebetween,
the first collar movably disposed in the groove, and
the first groove top side wall and bottom side wall limiting first collar movement,
a plurality of spring bows, each spring bow having a first end spaced apart from a second end, each spring bow biased outwardly from the tubular body, the first ends connected to the first collar, so that upon movement of the first collar in a direction away from the second ends of the spring bows the first ends move with the first collar and the spring bows move inwardly toward the tubular body.

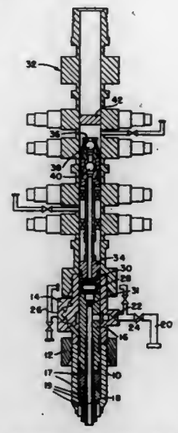
5,575,334
COPPER AND ZINC RECOVERY PROCESS FROM SULFIDE ORES
Thomas J. Clough, Grover Beach, Calif., assignor to Ensci Inc., Pismo Beach, Calif.
Continuation-in-part of Ser. No. 242,187, May 16, 1994, Pat. No. 5,482,118, which is a continuation-in-part of Ser. No. 981,185, Nov. 24, 1992, Pat. No. 5,339,900. This application Jun. 6, 1995, Ser. No. 466,608
Int. Cl.[6] E21B *43/22*
U.S. Cl. 166—274 24 Claims

1. A process for recovering at least one first metal selected from the grouping consisting of copper, zinc and mixtures thereof from an ore containing at least one copper or zinc sulfide material comprising contacting said ore with at least one added plant derived aromatic component having (1) ortho-quinone functionality and mixture thereof or (2) catechol functionality complexed with iron (+3) and mixtures thereof and mixtures of (1) and (2), wherein the ortho-quinone functionality and the catechol functionality are present in the component in the range of from about 1 to about 40 wt % of the total weight of the plant derived aromatic component at conditions effective to oxidize at least a portion of said copper and zinc sulfide material and at least partially liberate the metal to be recovered from said ore and recovering said first metal from said ore.

5,575,335
METHOD FOR STIMULATION OF SUBTERRANEAN FORMATIONS
Dwain G. King, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed Jun. 23, 1995, Ser. No. 493,874
Int. Cl.[6] E21B *43/267*
U.S. Cl. 166—280 20 Claims

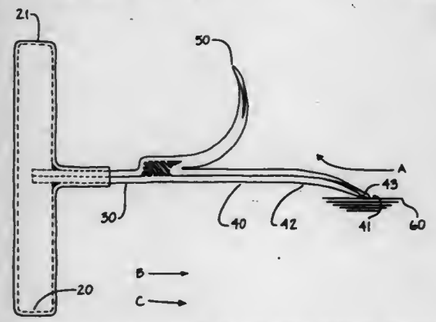
1. A method of treating a subterranean formation penetrated by a wellbore comprising:
preparing an aqueous treatment fluid having an initial predetermined density containing an aqueous gelling agent;
introducing the treatment fluid into the subterranean formation through the wellbore at a rate and pressure sufficient to create at least one fracture in said formation,
admixing proppant with at least a portion of said treatment fluid and adjusting the density of the resultant fluid by addition of a gas or gasifiable liquid or adjustment of the quantity of a water soluble salt added to said treatment fluid to maintain a substantially constant density in the fluid in relation to the initial predetermined density, introducing the proppant-containing treatment fluid into the created fracture and depositing said proppant in said fracture to create a flow path from said formation to said wellbore.

5,575,336
SAFETY VALVE FOR HORIZONTAL TREE
Michael G. Morgan, Limeklins, United Kingdom, assignor to FMC Corporation, Chicago, Ill.
Filed Feb. 10, 1995, Ser. No. 386,387
Claims priority, application United Kingdom, Feb. 10, 1994, 9402583
Int. Cl.[6] E21B *34/12*
U.S. Cl. 166—330 14 Claims



1. A safety valve assembly for use in a well christmas tree having a bore extending therethrough and a tree cap mounted adjacent the bore near the top of the christmas tree, the safety valve assembly comprising:
a valve body mounted in the tree cap, the valve body having a flow path therethrough in communication with the bore;
a cylindrical valve element having a longitudinal rotation axis and being rotatably mounted in said valve body;
a main bore extending through said valve element in a direction generally transverse to said longitudinal axis;
means for rotating said valve element into and out of a position in which said main bore aligns with said flowpath;
sealing means for forming a pressure seal between said valve body and said valve element.

5,575,337
HOOF PICK
Rachel T. Sapyta, 15415 Triple Creek, San Antonio, Tex. 78247
Filed Aug. 11, 1994, Ser. No. 288,948
Int. Cl.[6] A01L *15/00*
U.S. Cl. 168—48.1 5 Claims



1. An implement for cleaning foreign debris from the hooves of a horse, the implement comprising:

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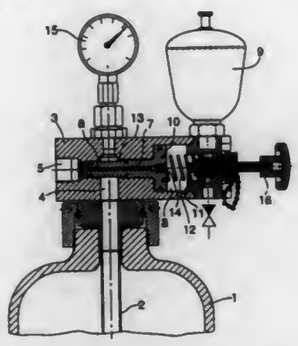
a handle having a longitudinal axis;
a shank having a longitudinal axis perpendicular to the longitudinal axis of said handle having a first end, an elongated body and a second end, the first end engaging said handle and the second end forming a tip, the tip being generally wedge-shaped and forming an angle between the longitudinal axis of the body of said shank and the angle of the tip of greater than 0 degrees and less than 90 degrees; and
a hook portion, said hook portion fixedly attached at a first end thereof to the body of said shank between the first end and the second end of the shank, said hook portion having a second end, the second end of said hook portion defining a wedge-shaped member forming a pointed tip; wherein said hook portion may be used to scrape foreign debris, loosened by forcing the tip of said shank into the foreign debris, away from the hoof;
wherein the tip of said shank can be inserted into the debris on the hoof with the concave section of the second end facing the hoof and urged axially along the longitudinal axis of the body of said shank to force the debris off the hoof.

5,575,338

VALVE FOR FIRE FIGHTING INSTALLATION

Göran Sundholm, Ilmari Kiannon kuja 3, FIN-04310 Tuusula, Finland

PCT No. PCT/FI94/00045, § 371 Date Dec. 30, 1994, § 102(e) Date Dec. 30, 1994, PCT Pub. No. WO94/16772, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 31, 1994, Ser. No. 307,828
Claims priority, application Finland, Jan. 29, 1993, 930416
Int. Cl.[6] A62C *35/66;35/68*
U.S. Cl. 169—5 **21 Claims**



1. A valve for fire fighting installation, the installation comprising a high pressure source of extinguishing liquid and a number of automatically releasable spray heads, whereby the high pressure source is adapted to deliver to the spray heads the extinguishing liquid of the high pressure source,
the valve comprising an inlet (4) connectable to the high pressure source (1), an outlet (5) connectable to an out-going line, and a valve spindle (6) which is movable between a stand-by position in which the spindle closes a connection from the inlet to the outlet and an activated position in which the spindle opens the connection from the inlet to the outlet;
wherein the valve spindle (6) comprises an axial through channel (7) which connects the outlet to a liquid space (8) which is under influence of a secondary liquid source (9) with a lower pressure than a pressure of the high pressure source (1),
the valve spindle (6) has a shoulder face (13) under the influence of the pressure of the high pressure source (1) in an opposite direction in relation to action of the lower pressure of the secondary liquid source in the liquid space (8) on the spindle (6), and
the action of the lower pressure of the secondary liquid source (9) in the liquid space (8) on the spindle holds the spindle (6) in the stand-by position and the influence of the pressure of the high pressure source (1) on the shoulder face (13) drives the spindle (6) to the activated position when the lower pressure of the secondary liquid source (9) decreases to a predetermined value due to liquid delivery to at least one released one of the automatically releasable spray heads.

19. A valve and spray heads for a fire fighting installation, the valve comprising:
an inlet into a valve body for connection to a primary source of a first Liquid under a first pressure;
a liquid space in the valve body for connection to a secondary source of a second liquid under a second pressure;
an outlet from the valve body for connection to an out-going line for the first and second liquids;
a connection from the inlet to the outlet and a movable spindle in the valve body for closing the connection with one end of the spindle when the spindle is in a stand-by position and opening the connection when the spindle is in an activated position, an opposite end of the spindle being in the liquid space for the second pressure of the second liquid to urge the spindle toward the stand-by position, the spindle having a shoulder for pressing by the first pressure of the first liquid to urge the spindle toward the activated position, relative areas of the shoulder and the opposite end of the spindle being such that the first pressure can be higher than the second pressure for the second pressure still to urge the spindle sufficiently to hold the spindle in the stand-by position against the urging of the first pressure; and
a channel through the spindle from the one end to the opposite end of the spindle for supplying the second liquid to the outlet even when the connection is closed,
whereby, when fire-caused release of one of the spray heads on the out-going line drains sufficient of the second for the second pressure to fall, the first pressure urges the spindle sufficiently to move the spindle to the activated position for opening the connection and supplying the first liquid through the connection and the outlet to the out-going line; and
the spray heads being on the out-going line, each of the spray heads comprising a housing, an inlet opening into the housing connected to the out-going line for receiving the first and second liquids therefrom, at least one nozzle connected to the inlet opening for spraying the liquids from the housing when the inlet opening is open, one spindle element in the housing having one end in the inlet opening for being acted on by the first and second pressures of the first and second liquids and being movable in the housing from a first position in which one end of the one spindle element closes the inlet opening to a second position in which the one end of the one spindle element opens the inlet opening, the pressures acting on the one end of the one spindle element to urge the spindle element toward the second position, and a spring in the housing and having one end acting on the one spindle element for urging the spindle element into the first position, whereby the urging of the spring can keep the inlet opening closed under the second pressure but open under the first pressure.

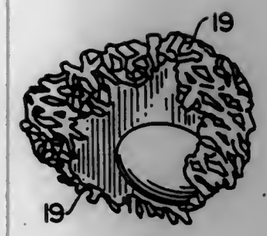
5,575,339

COMPOSITIONS OF MATTER FOR STOPPING FIRES, EXPLOSIONS AND OXIDATIONS OF MATERIALS AND BUILD UP OF ELECTROSTATIC CHARGES AND METHOD AND APPARATUS FOR MAKING SAME

Shaikh G. M. Y. Alhamad, P.O. Box 31590, Riyadh, Saudi Arabia

Continuation-in-part of Ser. No. 806,901, Dec. 12, 1991, Pat. No. 5,402,852, which is a division of Ser. No. 674,277, Mar. 19, 1991, Pat. No. 5,097,907, which is a division of Ser. No. 417,696, Oct. 5, 1989, Pat. No. 5,001,017, which is a division of Ser. No. 280,317, Dec. 6, 1988, abandoned. This application Mar. 31, 1995, Ser. No. 414,727
Int. Cl.[6] B65D *90/28;* **A62C** *2/00;3/07*
U.S. Cl. 169—45 **16 Claims**

1. A method of preventing explosion in a tank containing flammable material comprising filling said tank with multiple pieces of expanded metal net formed in the shape of ellipsoids having unequal major and minor axes.

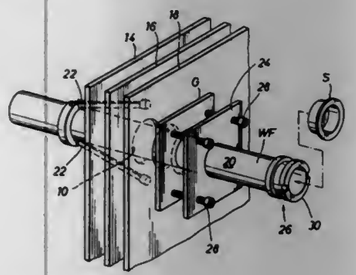


5,575,340

METHOD FOR EXTINGUISHING SHIP CONTAINER FIRES

Dwight Williams, P.O. Box 1359, Mauriceville, Tex. 77626

Filed Jul. 27, 1994, Ser. No. 281,475
Int. Cl.[6] A62C *3/00*
U.S. Cl. 169—46 **17 Claims**



1. A method for extinguishing ship container fires in a ship container having a top and at least one side wall to define an inside of the container, the inside of the container further defining a container customary air space within the container adjacent the top, the method comprising:
drilling a first hole in the wall of the ship container;
sealingly attaching a wall fitting around the hole including attaching means for resisting retraction of the fitting through the hole, and pressuring sealing means between the fitting and the hole;
attaching tubing to the wall fitting to establish fluid communication through the tubing and the fitting with the inside of the container;
coupling a portion of the tubing to a source of inert gas; and
controlling the fluid communication of the inert gas through the tubing and the fitting to the inside of the container.

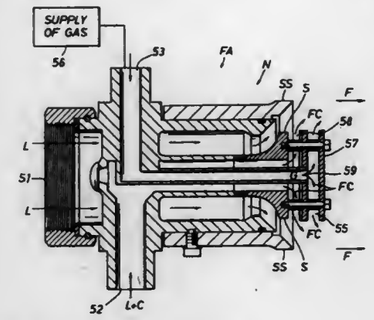
17. A method for extinguishing ship container fires, the method comprising:
drilling a first hole in a wall of a ship container;
sealingly attaching a wall fitting around the hole;
attaching tubing to the wall fitting to establish fluid communication through the tubing and the fitting with an inside of the container;
coupling a portion of the tubing to a source of inert gas;
controlling the fluid communication of the inert gas through the tubing and the fitting to the inside of the container;
drilling a second hole in the ship container wall;
sealingly attaching a second wall fitting around the second hole;
attaching second tubing to the second fitting to establish a second means of fluid communication with the inside of the container;
sampling exhaust vapors through the second tubing; and
testing the sampled exhaust vapors.

5,575,341

MECHANICAL FOAM FIRE FIGHTING EQUIPMENT AND METHOD

Kenneth C. Baker, Mauriceville; Dwight Williams, and Leslie P. Williams, both of Vidor, all of Tex., assignors to CCA, Inc., Vidor, Tex.

Continuation of Ser. No. 7,591, Jan. 22, 1993, abandoned. This application Jul. 11, 1994, Ser. No. 274,651
Int. Cl.[6] A62C *31/12*
U.S. Cl. 169—70 **8 Claims**



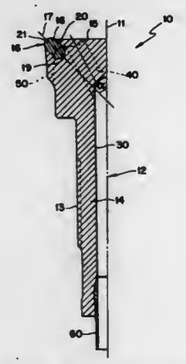
1. A fire fighting system comprising:
a nozzle having a discharge orifice;
means for discharging liquid from said orifice;
a source of inert gas;
means for communicating said inert gas from said source of inert gas to a foaming area at said discharge orifice;
a source of foam concentrate;
means for communicating said foam concentrate from said source of foam concentrate to said foaming area; and
means for mixing said inert gas and said foam concentrate with said liquid in said foaming area at said discharge orifice to thereby form mechanical foam.

5,575,342

PERCUSSION DRILL BIT, AN INSERT FOR USE THEREIN AND A METHOD OF DRILLING A BORE

Jan-Gunnar Hedlund, and Bengt Åsberg, both of Houston, Tex., assignors to Sandvik AB, Sandviken, Sweden

Filed May 26, 1995, Ser. No. 452,136
Int. Cl.[6] E21B *10/46*
U.S. Cl. 175—57 **10 Claims**



1. A percussion drill bit for drilling a bore, comprising a drill body having a connecting section at a rear end thereof for connection to a percussive unit and defining a rotational axis of the drill bit, and a plurality of gauge row inserts embedded in a front end of

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the drill body, the front end being rigid with respect to the connecting section, each gauge row insert comprising a cemented carbide body having a rear mounting portion embedded in the drill body, and a front end protruding from the drill body, there being a diamond layer disposed on the front end of the carbide body, the layer having a rear edge disposed adjacent a maximum cross section of the insert, the gauge row inserts oriented at an acute angle relative to the rotational axis of the drill bit, the angle being from about 41° to about 51° for spacing the rear edge of the diamond layer from a wall of the bore during drilling.

5,575,343

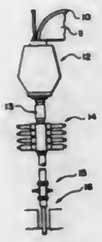
DRILLING A BORE HOLE HAVING A SHORT RADIUS CURVED SECTION FOLLOWED BY A STRAIGHT SECTION

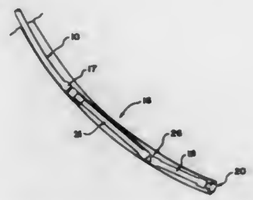
Benjamin Gray, Silver Valley, Canada, assignor to Sidekick Tools Inc., Alberta, Canada

Continuation of Ser. No. 352,039, Nov. 30, 1994, abandoned, which is a continuation-in-part of Ser. No. 179,560, Jan. 20, 1994, abandoned. This application Jul. 26, 1995, Ser. No. 507,187

Int. Cl.[6] E21B *7/04;7/08*

U.S. Cl. 175—61 **26 Claims**





1. A method of drilling a bore hole in the earth including a short radius curved section and a substantially straight section at an end of the curved section comprising:

providing a drill string and connecting a supply of drilling fluid to a trailing end of the drill string for pumping the drilling fluid therethrough;

providing a drilling tool having an elongate tool body with a first tool portion and a second tool portion, providing in the drilling tool a motor mounted on one of the tool portions of the tool body to generate drive power, providing on the drilling tool a drill bit mounted on the first tool portion at a leading end thereof for rotation relative to the tool body in response to the drive power from the motor;

providing in the drilling tool knuckle means defining a bend section in the tool body between the first and second tool portions defining a bend axis transverse to the longitudinal axis of the tool body about which the first tool portion carrying the drill bit will bend relative to the second tool portion to vary an orientation of a longitudinal axis of the first portion from a first orientation coaxial with a longitudinal axis of the second portion to a second orientation in which the longitudinal axis of the first portion lies at an angle relative thereto with the knuckle means bent to one side of the axis;

providing an eccentric collar for closely surrounding the tool body at a position thereon adjacent the knuckle means at the bend section;

shaping the eccentric collar to provide an inner surface of the eccentric collar contacting the tool body and an outer surface of the eccentric collar which is eccentric relative to the longitudinal axis of the tool body so as to have a thicker portion of the eccentric collar on one side of the tool body and a thinner portion on an opposite side of the tool body such that the thicker portion has an outer surface with a greater radial distance from the longitudinal axis than that of the thinner portion;

with the eccentric collar removed, drilling the curved section by causing the portions to move to the second orientation and rotating the drill bit while the drill string is maintained halted against rotation about the longitudinal axis;

at the end of the curved section, attaching onto the tool body the eccentric collar at the position thereon adjacent the knuckle means and fixing the eccentric collar relative to the tool body for co-rotation therewith in the bore hole, the bend axis being arranged substantially at right angles to a line joining the thicker portion to the opposed thinner portion, the thicker portion being located on a side of the axis opposite to said one side; and

engaging the eccentric collar and the drill bit with the bore hole, rotating the drill bit on the drilling tool and rotating the tool body and the eccentric collar about the longitudinal axis within the drill bore at a rate of rotation less than that of the drill bit so as to guide substantially straight forward movement of the tool body along the straight section of the bore hole.

5,575,344

ROD CHANGING SYSTEM

Alonzo Wireman, Sherman, Tex., assignor to Reedrill Corp., Sherman, Tex.

Filed May 12, 1995, Ser. No. 439,858

Int. Cl.[6] E21B *19/15*

U.S. Cl. 175—85 **19 Claims**



1. A drill rod changer for use with a drilling rig, the drilling rig having a drill string including a plurality of threadedly connected drill rods, comprising:

a support assembly mounted to the drilling rig for supporting a drill rod;

a lifting assembly mounted to the support assembly for raising and lowering the drill rod along a longitudinal axis of the drill string;

a gripping assembly integrated with the lifting assembly for engaging the drill rod to enable loosening of threaded connections with the drill rod and to assist in movement of the drill rod along the longitudinal axis of the drill string; and

means for rotating the grip assembly from a first position coaxial with the drill string to a second storage position.

5,575,345

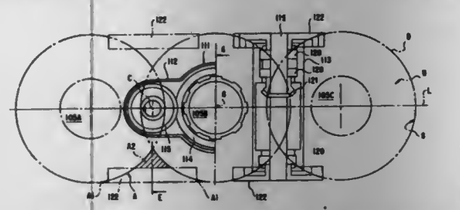
MULTI SHAFT DRILLING UNIT

Mitsuhiro Shibasaki, Tokyo, and Hiroshi Kotacki, Sagamihara, both of Japan, assignors to Chemical Grouting Company. Ltd., Tokyo, Japan

Filed Nov. 15, 1994, Ser. No. 335,694

Int. Cl.[6] E21B *3/02;* **E02D** *17/13*

U.S. Cl. 175—108 **1 Claim**



1. A multi-shaft drilling unit equipped with three auger shafts for developing a continuous wall under ground comprised of: a housing for retaining pitch between said auger shafts; said housing comprising;

a primary transfer means rotating around a central auger shaft;

a pair of secondary transfer means engaging with said primary transfer means;

a tertiary transfer means integral to said primary transfer means;

a quaternary transfer means engaging with said primary transfer means and fixed to a rotary shaft orthogonally crossing a straight line connecting said auger shaft centers; and

cone-shaped cutters expanding the diameter outward fixed on opposite ends of said rotary shaft.

5,575,346

TRANSPORT DEVICE

Hans Yberle, Am Weinberg 27, D-92318 Neumarkt, Germany

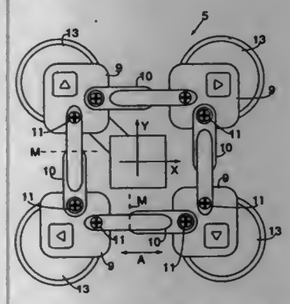
PCT No. PCT/DE94/00456, § 371 Date Dec. 23, 1994, § 102(e) Date Dec. 23, 1994, PCT Pub. No. WO94/25329, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 26, 1994, Ser. No. 356,367

Claims priority, application Germany, Apr. 27, 1993, 43 13 719.9

Int. Cl.[6] B62D *57/02*

U.S. Cl. 180—8.6 **22 Claims**



1. Transport means for a controlled striding motion along a substrate (**14**), comprising:

(a) at least three striding elements (**9**) each comprising a foot element having a lift element (**12**) and being lowerable and raisable, respectively, in a first axial direction for placement upon and removal from the substrate (**14**) by means of said lift element (**12**),

(b) servo elements (**10**) acting in between each of said striding elements (**9**), said striding elements (**9**) and servo elements (**10**) being connected to each other to form a polygon structure having corner regions in which the striding elements (**9**) form the corner regions of the polygon structure and in which two striding elements (**9**) are connected to each other by at least one servo element (**10**) in each instance to generate a linear motion between said two striding elements towards and away from each other within a preselected travel in an axis of motion,

(c) with the striding elements (**9**) connected by way of at least one servo element (**10**) being arranged on either side of an imaginary median plane (M) intersecting said axis of motion at a right angle, and

(d) with each servo element (**10**) being articulated by way of an articulating arrangement to the striding element (**9**) pivotably about at least two axes in space.

5,575,347

SUSPENSION DEVICE FOR CRAWLER VEHICLE

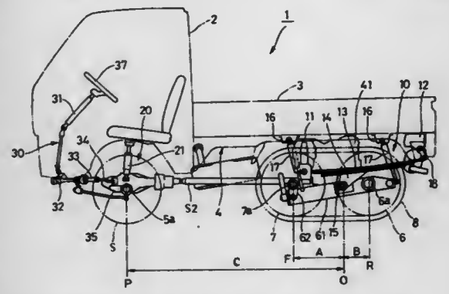
Kouichi Uchibaba; Naoki Matsumoto, and Hajime Yoshimura, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1995, Ser. No. 400,021

Claims priority, application Japan, Feb. 28, 1994, 6-030244

Int. Cl.[6] B62D *55/00*

U.S. Cl. 180—9.1 **7 Claims**



1. A suspension device in a crawler vehicle, comprising:

a vehicle body having a front portion and a rear portion;

a pair of parallel spaced swing beams, each having a length, a front end and a rear end mounted on the rear portion of said vehicle body for angular movement about a first axis located substantially centrally of the length of said swing beams each of the swing beams having a front portion and a rear portion;

a hydraulic damper disposed and connected between the rear end of each swing beam and the vehicle body;

a rear idle wheel rotatably supported on the front portion of each of said swing beam for rotation about a second axis positioned between the first axis and the front end of each swing beam;

a rear drive wheel rotatably supported on the rear portion of each of said swing beam for rotation about a third axis positioned between the first axis and the rear end of each swing beam;

a crawler belt trained around said rear idle wheel and said rear drive wheel; and

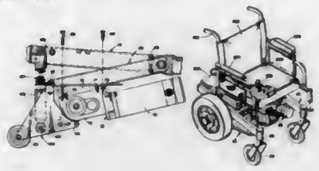
a front wheel rotatably mounted on the front portion of said vehicle body;

said second axis being spaced from said first axis by a first distance greater than a second distance by which said third axis is spaced from said first axis.

5,575,348
POWERED WHEELCHAIR WITH ADJUSTABLE CENTER OF GRAVITY AND INDEPENDENT SUSPENSION

Gerold G. Goertzen, Brunswick; Neal J. Curran, Lakewood, and James H. Molnar, Bedford, all of Ohio, assignors to Invacare Corporation, Elyria, Ohio

Filed Apr. 15, 1994, Ser. No. 228,584
Int. Cl.[6] B60K *1/02*
U.S. Cl. 180—656 22 Claims



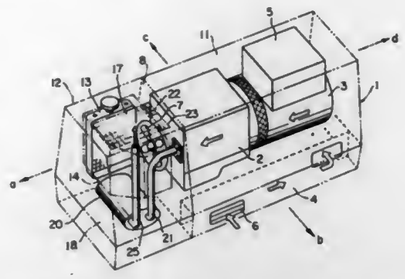
1. A powered wheelchair comprising:
a frame having first and second longitudinal sides connected by a bridge;
a seat module carried by said frame;
a first power drive assembly disposed on said frame first longitudinal side, said first power drive assembly comprising:
a first swing arm pivotally secured to said frame,
a first motor mounted to said first swing arm, and
a first wheel operably connected to said first motor,
a second power drive assembly disposed on said frame second longitudinal side, said second power drive assembly comprising:
a second swing arm pivotally secured to said frame,
a second motor mounted to said second swing arm, and
a second wheel operably connected to said second motor;
a first anti tip assembly comprising a first section pivotally secured to said first swing arm and a second section secured, via one of at least two spaced apertures, to said first power drive assembly;
a second anti tip assembly comprising a first section pivotally secured to said second swing arm and a second section secured, via one of at least two spaced apertures, to said second power drive assembly; and,
a power supply mounted on said frame for powering said first and second motors.

5,575,349
SOUNDPROOF TYPE WATER-COOLED ENGINE GENERATOR

Takatoshi Ikeda; Toshiaki Tanaka, and Sanpei Sato, all of Kosei-Cho, Japan, assignors to Denyo Kabushiki Kaisha, Tokyo-To, Japan

Filed Oct. 17, 1994, Ser. No. 323,879
Claims priority, application Japan, Oct. 19, 1993, 5-056350 U
Int. Cl.[6] B60K *11/00*
U.S. Cl. 180—68.1 3 Claims

1. A soundproof water-cooled engine generator comprising:
a water-cooled engine;



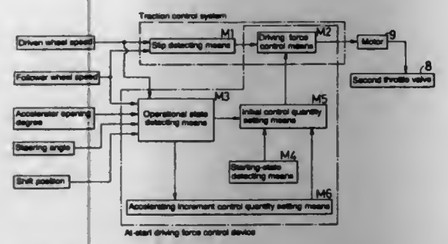
a generator to be driven by said water-cooled engine;
a cooling fan connected to said engine for flowing a cooling current of air around said water-cooled engine and said generator;
a radiator arranged perpendicular to said cooling fan and fluidly connected to said water-cooled engine so as to receive cooling water therefrom, for cooling said cooling water using the cooling current of air from said cooling fan;
a shroud chamber having a shroud wall which shifts the cooling current from said cooling fan toward said radiator, provided between said cooling fan and said radiator for guiding the cooling current to said radiator and arranged so as to evenly distribute said cooling current across a front surface of said radiator;
a muffler connected to said water-cooled engine for receiving exhaust from said water-cooled engine, deadening exhaust sound, and discharging the exhaust;
an engine and generator chamber for accommodating said engine and generator;
an exhaust processing chamber for accommodating said radiator and muffler;
a panel wall having an air vent through which the cooling current of air passes to said shroud chamber, wherein the cooling current of air passed through said air vent is guided by said shroud chamber to meet said radiator, said radiator being perpendicular to said panel wall, said panel wall serving to partition said engine and generator chamber from said exhaust processing chamber;
said exhaust processing chamber being provided for forming such a ventilation path as guiding the cooling current of air from said air vent to said radiator in said exhaust processing chamber;
said muffler being provided in said exhaust processing chamber, and
said cooling fan moving the flow of air from said radiator to around said muffler.

5,575,350
DRIVING FORCE CONTROL SYSTEM IN VEHICLE

Hironobu Kiryu; Ryoji Mori; Takashi Nishihara, and Shuji Shiraishi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1995, Ser. No. 405,241
Claims priority, application Japan, Mar. 18, 1994, 6-049192
Int. Cl.[6] B60K *28/16*
U.S. Cl. 180—197 13 Claims

1. A driving force control system in a vehicle, comprising:
(a) a slip detecting means for detecting the slip of a driven wheel of said vehicle;
(b) a driving force control means connected to said slip detecting means for limiting the driving force on the driven wheel when said slip detecting means detects an excessive slip of the driven wheel;
(c) an operational state detecting means for detecting an operational state of the vehicle;
(d) a starting-state detecting means for detecting a starting-state of the vehicle;

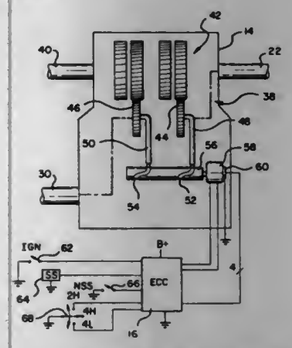


(e) an initial control quantity setting means connected to said operational state detecting means and said starting-state detecting means, for setting an initial control quantity for the driving force at the start of the vehicle in accordance with an output from said operational state detecting means, when it is determined, based on an output from said starting-state detecting means, that the vehicle is in a starting state, and wherein the initial control quantity set by said initial control quantity setting means at the start of the vehicle is applied to said driving force control means to limit the driving force on the driven wheel;
limiting means for limiting of the driving force for the driven wheel based on said initial control quantity until a predetermined time has elapsed after the start of the vehicle; and
an accelerating increment control quantity setting means for setting an accelerating increment control quantity which is added to the initial control quantity when the vehicle is accelerating after a predetermined time has elapsed after the start of the vehicle.

5,575,351
ELECTRIC SHIFT TRANSFER CASE SYSTEM FOR AN AUTOMOBILE

James D. Warren, Clayton, N.C., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed May 1, 1995, Ser. No. 432,961
Int. Cl.[6] B60K *17/354*
U.S. Cl. 180—247 7 Claims

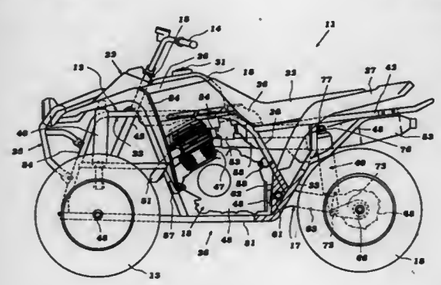


7. In an electronic control circuit (16) for a direct current electric shift motor (58) of a vehicle transfer case system (10), said electronic control circuit having a microprocessor (73) and a motor drive circuit (70);
said motor drive circuit (70) having first and second output terminals for connection to the electric shift motor (58) and including first, second, third, and fourth switching elements (74–77), with said first switching element (74) coupled between said first output terminal and a supply voltage node, said second switching element (75) coupled between said first output terminal and a ground node, said third switching element (76) coupled between said second output terminal and said supply voltage node, and said fourth switching element (77) coupled between said second output terminal and said ground node, said first, second, third, and fourth switching elements each having conductive and non-conductive states selectable by respective first, second, third, and fourth command inputs;
whereby certain combinations of voltage levels on said command inputs result in desirable combinations of conductive and non-conductive states of said switching elements (74–77) and certain other combinations of voltage levels on said command inputs result in undesirable combinations of conductive and non-conductive states of said switching elements; and
said microprocessor (73) having a plurality of data outputs coupled to said command inputs;
wherein said electronic control circuit (16) is characterized by:
said electronic control circuit (16) having an interface circuit (72) connected between said microprocessor (73) and said motor drive circuit (70), said interface circuit being responsive to any combination of voltage levels on said data outputs to provide a combination of voltage levels on said command inputs that results in one of said desirable combinations of conductive and non-conductive states of said switching elements (74–77), whereby said undesirable combinations of conductive and non-conductive states of said switching elements are prevented.

5,575,352
FOUR-WHEELED VEHICLE

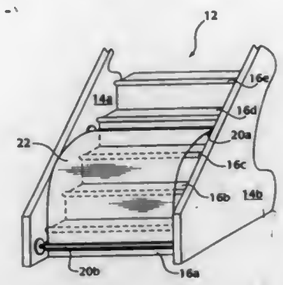
Takashi Suzuki, and Eiji Kato, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Apr. 25, 1995, Ser. No. 428,017
Claims priority, application Japan, Apr. 26, 1994, 6-88216
Int. Cl.[6] B60K *13/04*
U.S. Cl. 180—311 30 Claims



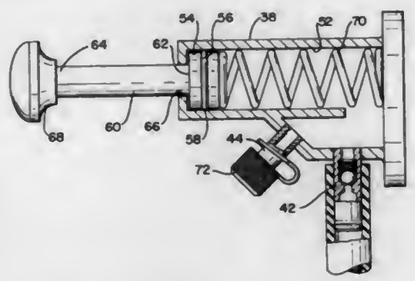
1. A four-wheel vehicle comprised of a generally open tubular frame having a longitudinally extending center plane, a pair of dirigible front wheels supported by said frame at the forward end thereof, a pair of rear wheels, a rear wheel suspension suspending said pair of rear wheels said frame at a rear end thereof, said center plane being positioned equidistantly from and between the wheels of the pairs, said rear wheel suspension comprising a single suspension element having a center line of action offset to one side of said longitudinally extending center plane, an engine mounted in said frame and driving a drive shaft disposed on the other side of said longitudinally extending center plane, and a final drive for transferring drive from said drive shaft to said rear wheels.

5,575,353
DEVICE FOR BLOCKING STAIRS
Fred Cafaro, 124 Pamlico Ave., Ronkonkoma, N.Y. 11779
Filed Jun. 28, 1995, Ser. No. 495,827
Int. Cl.[6] E06C 7/18
U.S. Cl. 182—106 9 Claims



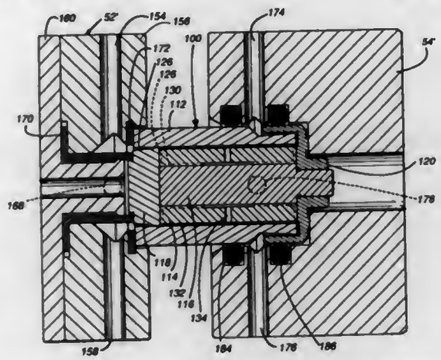
1. A device attached to the vertically-extending side panels of a stairway for blocking access to the steps comprising:
a pair of axially-extending support rods, each rod being adapted to expand horizontally across the stairway and be frictionally retained between the side panels with said rods being spaced-apart from each other by a few steps; and
a material sheet attached to, and extending between, said pair of support rods, wherein said material sheet is adapted to cover the few steps so that access to the steps and the stairway is blocked.

5,575,354
CALIBRATED ENGINE LUBRICANT DISPENSER
Donald S. Taylor, Jupiter, Fla., assignor to Taylor Mechanicals, Incorporated, Jupiter, Fla.
Filed Jun. 15, 1995, Ser. No. 490,295
Int. Cl.[6] F16N 27/00
U.S. Cl. 184—7.4 17 Claims



1. An engine lubricant dispensing device, comprising:
a reservoir for storing engine lubricant;
means for dispensing the engine lubricant from the reservoir into a separate portable engine fuel container that is independent from and not attached to an engine or an engine powered device, the means for dispensing being calibrated so that a predetermined amount of engine lubricant is dispensed into the engine fuel container, the means for dispensing the engine lubricant, having a biasing means so that the means for dispensing is in a ready-to-pump position that remains primed with the predetermined amount of engine lubricant.

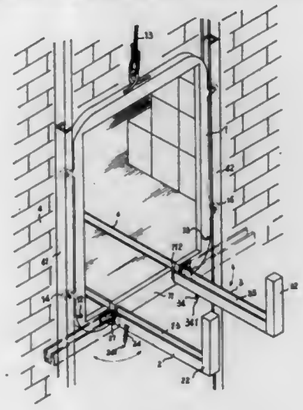
5,575,355
METHOD AND APPARATUS FOR APPLYING LUBRICANT TO A HYDRODYNAMIC BEARING
Carl D. Williams; Jackie Cordova, and Richard E. Mills, all of Colorado Springs, Colo., assignors to Quantum Corporation, Milpitas, Calif.
Division of Ser. No. 495,822, Jun. 28, 1995, Pat. No. 5,524,728. This application Apr. 3, 1996, Ser. No. 626,880
Int. Cl.[6] F16N 7/30
U.S. Cl. 184—55.1 16 Claims



1. An apparatus for applying a fluid lubricant to a hydrodynamic bearing having clearance spaces separating bearing parts of the bearing and having at least one pathway extending between an external surface of the bearing and the clearance spaces, said apparatus comprising:
a vacuum tank, said vacuum tank having a pressure level adjustable between an ambient pressure level and an evacuated pressure level;
a pool of the fluid lubricant supported in the tank; and
a conveyer for conveying the bearing into said vacuum tank, through said pool of the fluid lubricant, beyond said pool, and out of said vacuum tank.

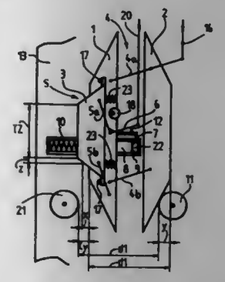
5,575,356
LIFT
Meu S. Chen, and George Chen, both of P.O. Box 82-144, Taipei, Taiwan
Filed Jul. 7, 1995, Ser. No. 499,774
Int. Cl.[6] B66B 9/00
U.S. Cl. 187—239 6 Claims

1. A lift comprising a rectangular base frame moved between



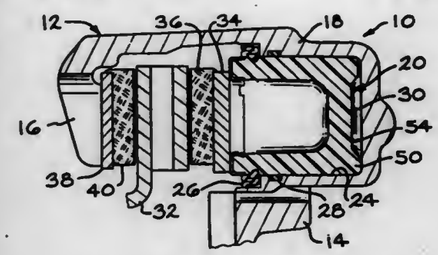
two parallel rails on the outside wall of a building, two supporting bars fastened to said base frame for carrying things, a lifting cable fastened to said base frame and driven by a motor drive to lift said base frame along said parallel rails, wherein said supporting bars are hinged to a cross bottom bar on said base frame and turned between the collapsed position in which said supporting bars are longitudinally aligned and closely attached to said cross bottom bar, and the operative position in which said supporting bars are disposed in parallel with each other and perpendicular to said cross bottom rail for supporting the wheels of a cargo carriage, said supporting bars each having an upright guard rod at the end for supporting the cargo carriage in place.

5,575,357
ENTRAINING APPARATUS FOR ELEVATOR DOORS
Peter A. Spiess, Meggen, Switzerland, assignor to Inventio AG, Hergiswil NW, Switzerland
Filed Apr. 13, 1995, Ser. No. 421,398
Claims priority, application European Pat. Off., Apr. 25, 1994, 94106380
Int. Cl.[6] B66B 13/12
U.S. Cl. 187—319 20 Claims



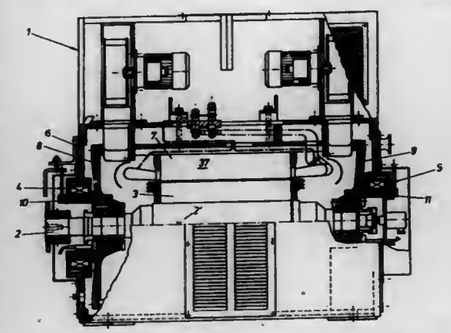
1. An apparatus for mounting on an elevator car door and for coupling, unlatching and entraining elevator shaft doors comprising:
a generally vertically extending fixed entraining member and a generally vertically extending movable entraining member;
a pair of links having opposite ends pivotally connected to said entraining members, said links and said entraining members forming an entraining parallelogram linkage permitting movement of said movable entraining member relative to said fixed entraining member; and
an arresting means having a first portion connected to said fixed entraining member and a cooperating second portion whereby when said entraining parallelogram linkage and said second portion of said arresting means are mounted on a door of an elevator car and said first portion of said arresting means is connected to a car door unlatching mechanism, upon arrival of the elevator car at a floor having a shaft door with rollers, one of the rollers being connected to a shaft door unlatching mechanism, said entraining members move between and engage the rollers and said entraining parallelogram linkage is moved into a centered position, the one roller moves said first portion of said arresting means into engagement with said second portion of said arresting means to arrest further movement of said entraining parallelogram linkage relative to the car door, and said first portion of said arresting means operates the car door unlatching mechanism and moves the one roller to operate the shaft door unlatching mechanism.

5,575,358
MOLDED PISTON HAVING METALLIC COVER FOR DISC BRAKE ASSEMBLY
Christopher O. McCormick, Plymouth, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Aug. 17, 1994, Ser. No. 292,151
Int. Cl.[6] F16J 1/01; F16D 65/24
U.S. Cl. 188—71.6 20 Claims



1. A piston adapted for use in a brake assembly comprising:
a cover formed from a first material, said cover including an end wall having an inner edge and an outer edge, an inner side wall extending from said inner edge, and an outer side wall extending from said outer edge; and
a hollow piston body formed from a second material, said piston body including an open end, a closed end, an inner surface extending between said open end and said closed end, and an outer surface extending between said open end and said closed end, said open end, said inner surface, and said outer surface of said piston body being integrally molded to said cover such that said end wall of said cover is covered by said open end of said piston body, said inner side wall of said cover is covered by a portion of said inner surface of said piston body, and said outer side wall of said cover is covered by a portion of said outer surface of said piston body.

5,575,359
BRAKING DEVICE FOR MEASURING THE TORQUE OF AN ENGINE
Melde-Tuczai Helmut, Graz, Austria, assignor to AVL Gesellschaft für Verbrennungskraftmaschinen und Messtechnik mbH. Prof. Dr. Dr. h.c. Hans List, Graz, Austria
Filed Aug. 10, 1995, Ser. No. 513,515
Claims priority, application Austria, Aug. 18, 1994, 250/94
Int. Cl.[6] B60L 7/00
U.S. Cl. 188—158 5 Claims



1. An electric braking device for measuring torque of an engine comprising: a housing, a rotor rotating with a shaft which extends through said housing, and a stator tiltably supported in said housing by a bearing at either of front ends thereof, each of said front

ends being provided with a disk-shaped bearing shield with a pivot journal, wherein said bearings comprise hydrostatic swivel bearings, a first of said hydrostatic swivel bearings being an axially movable bearing and a second of said hydrostatic swivel bearings being an axially immovable bearing, each of said bearings comprising a ring slipped over a pivot journal of a respective said bearing shield, said ring being supported by two bearing bodies secured against rotating, said bearing bodies being located one on either side of a longitudinal center plane containing the shaft axis and below a transverse plane containing the shaft axis and which is normal to said longitudinal center plane, each bearing body comprising a bearing pad and a supporting body permanently attached to the housing, each bearing pad being tiltably supported by a supporting body, and the ring of the axially immovable bearing being supported by the bearing pad so as to be secured against axial shifting.

5,575,360

SHOCK ABSORBER ASSEMBLY FOR A MOTOR VEHICLE, THE SHOCK ABSORBER ASSEMBLY HAVING A PNEUMATIC SPRING

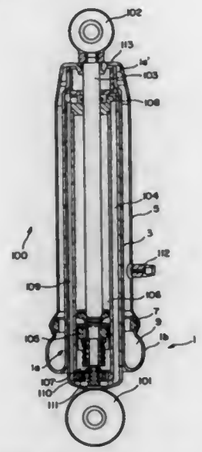
Holger Gubitz, Schweinfurt, and Heinz-Joachim Gilsdorf, Donnersdorf, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Jan. 30, 1995, Ser. No. 380,029

Claims priority, application Germany, Jan. 31, 1994, 44 02 750.8; Mar. 4, 1994, 44 07 263.5

Int. Cl.[6] F16F *9/04*

U.S. Cl. 188—298 **14 Claims**



1. A shock absorber assembly for a motor vehicle, said shock absorber assembly having a pneumatic spring, said shock absorber assembly comprising:

a sealed cylinder defining a chamber therein, said cylinder containing a damping medium;

said cylinder having a first end portion and a second end portion disposed a substantial distance away from said first end portion;

a piston rod sealingly projecting into said first end portion of said cylinder and being axially displaceable with respect to said cylinder;

said piston rod having a longitudinal axis defining an axial direction parallel to said longitudinal axis;

a piston attached to said piston rod, said piston being slidably disposed within said cylinder to sealingly divide said chamber into a first and second chamber;

means for permitting flow of damping medium between said first chamber and said second chamber;

an outer tube disposed about at least a portion of said cylinder;

pneumatic spring means for applying a substantially axially directed force to said outer tube;

means for fastening said pneumatic spring means to said outer tube; said pneumatic spring means comprising:

a tubular bellows portion comprising a first portion immediately surrounding and making contact with said cylinder, and a second portion for being fastened to said outer tube;

said first portion and said outer tube defining at least a portion of a spring chamber therebetween, said spring chamber for applying said substantially axially directed force to said outer tube;

means for maintaining a substantial radial distance between said outer tube and said first portion, to minimize contact between said outer tube and said first portion;

said means for maintaining comprising a retaining ring for fastening said second portion of said tubular bellows portion to said outer tube, said retaining ring being disposed about said cylinder;

said retaining ring comprising:

an inner guiding surface disposed adjacent said first portion of said tubular bellows portion;

an outer circumference disposed substantially concentrically about said longitudinal axis;

an inner circumference disposed within said outer circumference, said inner circumference comprising said inner guiding surface;

an outer portion extending substantially from said inner guiding surface to said outer circumference;

said outer portion comprising:

at least one raised portion, said at least one raised portion having a first radial dimension;

said at least one raised portion being disposed circumferentially about said outer portion;

two additional portions, said two additional portions being a first additional portion and a second additional portion;

each of said first additional portion and said second additional portion being disposed circumferentially about said outer portion, and each of said first additional portion and said second additional portion having a second radial dimension, said first radial dimension being substantially greater than said second radial dimensions of each of said first additional portion and said second additional portion;

said at least one raised portion being disposed between said first additional portion and said second additional portion; and

said first additional portion and said second additional portion both comprising substantially concave portions disposed circumferentially around said outer portion.

5,575,361

WHEELED SUITCASE

Ming-Shi Chou, No. 59, Hsi-Chou Rd., 439 Ta-An Hsiang, Taichung Hsien, Taiwan

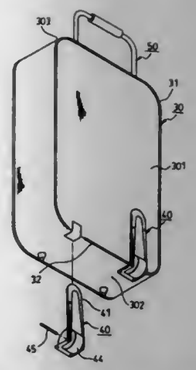
Filed Feb. 6, 1995, Ser. No. 383,945

Int. Cl.[6] A45C *5/14;13/26*

U.S. Cl. 190—18 A **3 Claims**

1. A suitcase including a generally rectangular suitcase body with a vertical side wall and a horizontal bottom wall, two lower openings formed on the suitcase body and located at a corner between the side wall and the bottom wall of the suitcase body, two roller assemblies disposed on the suitcase body and inserted in the lower openings respectively, and a handle assembly disposed on the suitcase body, wherein the improvement comprises:

each of the roller assemblies including a roller seat mechanism which has an outer seat and an inner seat coupling with said outer seat fixed on the suitcase body and having a shaft hole unit formed through said roller seat mechanism, a rotating shaft extending through said shaft hole unit of said roller seat mechanism, a roller sleeved rotatably on said rotating shaft, said inner seat receiving said roller, said suitcase body further including a flexible long wire positioned on a peripheral portion of said vertical side wall of said suitcase body and



having two end portions located between said bottom wall and said side wall of said suitcase body, and a horizontal short wire positioned between said bottom wall and said side wall of said suitcase body and between said two end portions of said long wire in alignment with said rotating shafts, each of said rotating shafts having two ends which respectively abut against an end of said short wire and an end of said long wire so as to prevent said rotating shafts from movement on said suitcase body.

5,575,362

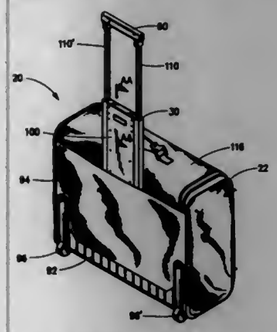
COLLAPSIBLE PULL HANDLE FOR WHEELED GARMENT BAG

Dana Franklin, and Bonnie M. Earl, both of Denver, Colo., assignors to Samsonite Corporation, Denver, Colo.

Filed Jan. 5, 1995, Ser. No. 369,038

Int. Cl.[6] A45C *5/14;13/28*

U.S. Cl. 190—115 **15 Claims**



1. In an article of luggage having a main body defining an interior space in which clothing and like personal items can be contained, the main body including wheel means upon which the main body can be rolled along a supporting surface, and a wheel handle for gripping the luggage and moving it along the supporting surface, an improvement in the wheel handle comprising:

an intermediate handle member movable from a position substantially retracted relative to said main body to a position at least partially extended from said main body;

means upon said main body for guiding the movement of said intermediate handle member, said intermediate handle member in slidable contact with said guiding means;

proximate handle means reversibly retractable into and extendable from said intermediate handle member;

retainer means connected to said intermediate handle member, whereby said retainer means is movable in conjunction with said intermediate handle member, and wherein said retainer means is retracted into said main body when said intermediate handle member is in a position substantially retracted relative to said main body;

means, movable from a stored position at least partially on said retainer means, for releasably securing auxiliary luggage to the first mentioned article of luggage; and

an extendable grip disposed upon said proximate handle means, said extendable grip comprising:

an outer grip, comprising a wall and an interior space at least partially defined by said wall;

an inner grip slidably disposed within said outer grip and extendable from and retractable into said interior space; and

means for temporarily locking said inner grip in a position extended from said interior space.

5,575,363

HYDROKINETIC TORQUE CONVERTER WITH LOCKUP CLUTCH

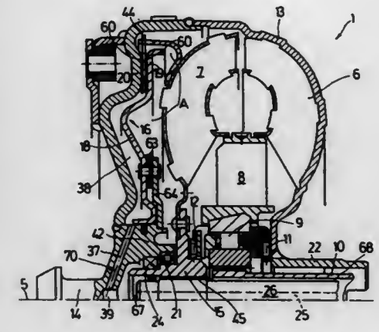
Uwe Dehrmann, Würzburg; Peter Volland, Rannungen; Wolfgang Kundermann, Schweinfurt; Hans W. Wienholt, Dortmund; Ruthard Knoblach, Bergrheinfeld, and Herbert Schmid, Münnerstadt, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Dec. 19, 1994, Ser. No. 358,852

Claims priority, application Germany, Dec. 22, 1993, 43 43 804.0; Jul. 6, 1994, 43 23 640.9

Int. Cl.[6] F16H *45/02;41/30*

U.S. Cl. 192—3.3 **20 Claims**



1. A hydrokinetic lockup torque converter, such as for a motor vehicle, said torque converter comprising:

a power input shaft defining an axis of rotation and an axial direction parallel to said axis of rotation;

a power output shaft;

a converter housing, said converter housing having means for being driven by said power input shaft;

a turbine wheel being disposed within said converter housing;

said turbine wheel having means for being disposed on and for driving said power output shaft;

a pump wheel being disposed adjacent said turbine wheel, said pump wheel having means for being fastened to said converter housing;

lockup clutch means for coupling said turbine wheel to said converter housing;

said lockup clutch means having an engaged position wherein said turbine wheel is coupled to said converter housing;

said lockup clutch means having a disengaged position wherein said turbine wheel and said converter housing are uncoupled from one another;

said lockup clutch means comprising:

a piston being disposed between said converter housing and said turbine wheel, said piston and said converter housing defining a first chamber therebetween;

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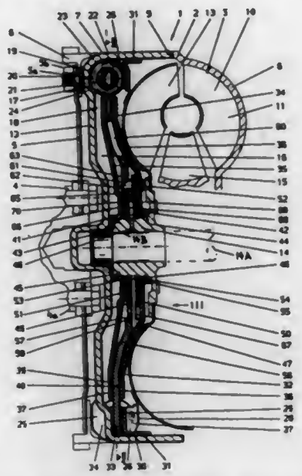
a second chamber having said pump wheel and said turbine wheel disposed therein;
at least one friction lining being disposed between a portion of said converter housing and a portion of said piston;
said at least one friction lining having means for contacting said converter housing and said piston in said engaged position of said lockup clutch means;
passage means for supplying and discharging converter fluid from said torque converter, said passage means being disposed adjacent said power output shaft;
flow guide means for connecting said first chamber to said passage means;
said flow guide means comprising means for substantially restricting, tangential movement of the converter fluid during its passage from said first chamber to said passage means and for reducing tangential movement of the converter fluid in said passage means;
said tangential movement being movement that is substantially tangent to a circle concentric with respect to the axis of rotation;
means for permitting flow of converter fluid from said second chamber into said first chamber in said engaged position of said lockup clutch means;
said means for permitting flow being disposed substantially adjacent said at least one friction lining; and
said first chamber extending substantially between said means for permitting flow and said flow guide means.

5,575,364

APPARATUS FOR TRANSMITTING FORCE BETWEEN ROTARY DRIVING AND DRIVEN UNITS

Oswald Friedmann, Lichtenau, and Johann Jäckel, Baden-Baden, both of Germany, assignors to Luk Lamellen Und Kupplungsbau GmbH, Bühl, Germany

Division of Ser. No. 881,994, May 1, 1992. This application Aug. 8, 1994, Ser. No. 287,233
Claims priority, application Germany, May 2, 1991, 41 14 321
Int. Cl.[6] F16D *3/14*
U.S. Cl. 192—3.29 **60 Claims**



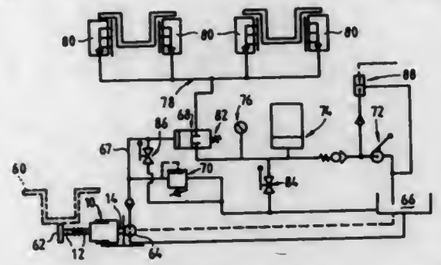
1. Hydraulic clutch for transmitting force from a driving unit to a driven unit comprising:
a pump and a turbine being disposed in a clutch casing having a substantially radial wall;
at least one elastic damper having input means driven by said casing and output means; and
a lock-up clutch receiving torque from said elastic damper output means, said lock-up clutch and said elastic damper being disposed axially between said wall and said turbine, said lock-up clutch receiving torque from said elastic damper output means as it is driven by said casing.

5,575,365

OVERSPEED PROTECTION SYSTEM FOR A VEHICLE

Nico du Plessis, 3 Alexander Street Extension 1; Glen R. Steel, and Gary G. J. Port, both of P.O. Box 4329, all of Vereeniging, South Africa

Filed Dec. 22, 1994, Ser. No. 361,949
Int. Cl.[6] B60K *41/24*
U.S. Cl. 192—12 R **4 Claims**



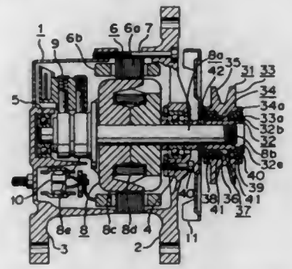
1. An overspeed protection systems for use in conjunction with a vehicle, comprising:
a. a rotatable shaft which is mountable on the vehicle, the shaft being rotatable at speeds proportional to the speed of travel of the vehicle;
b. a rotatable hydraulic pump for hydraulically opening a valve for releasing pressurized fluid to activate a braking system to reduce the traveling speed of the vehicle; and
c. a releasable clutch interposed between the rotatable shaft and the bydraulic pump, the clutch being operable to transmit torque from the rotatable shaft to the hydraulic pump whenever the speed of rotation of the shaft exceeds a predetermined limit.

5,575,366

VEHICULAR CHARGING GENERATOR

Keisaku Zenmei; Keiichi Konishi; Shuzo Isozumi, and Akira Morishita, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 13, 1995, Ser. No. 421,914
Claims priority, application Japan, Nov. 10, 1994, 6-276543
Int. Cl.[6] H02K *7/10*; **F16D** *41/066*
U.S. Cl. 192—45 **10 Claims**



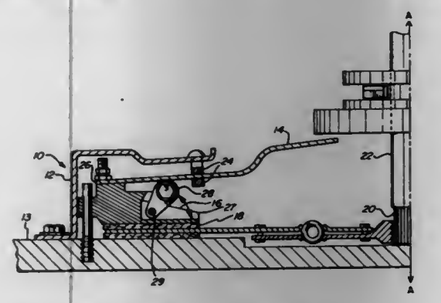
3. A charging generator provided with a one-way clutch, said one-way clutch comprising:
a clutch inner installed on a shaft of a rotor of said generator; and
a clutch outer interposed between the clutch inner and a pulley driven by a power unit and transmitting power only in one rotational direction from the pulley to the shaft;
wherein the clutch outer is integrally formed with the pulley.

5,575,367

UNIFORM HIGH FORCE CLUTCH

Pat Romanelli, Harrington Park, N.J., assignor to Mr. Gasket, Inc., Cleveland, Ohio

Filed Jul. 31, 1995, Ser. No. 509,335
Int. Cl.[6] F16D *13/46;43/12*
U.S. Cl. 192—52.4 **14 Claims**



1. A centrifugally-assisted clutch comprising:
a cover;
a diaphragm spring; said diaphragm spring being connected to said cover;
a pressure plate affixed to said diaphragm spring whereby said spring provides a clamping force to said pressure plate; and
a centrifugal weight having first and second end portions; said first end portion being pivotally mounted to said pressure plate; said second end portion being movable between a first position and a second position, wherein, in said second position, said second end of said centrifugal weight is in contact with said diaphragm spring.

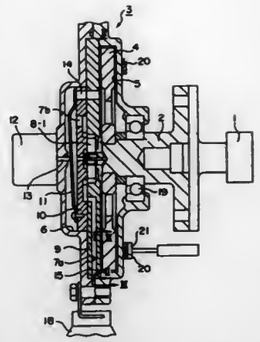
5,575,368

FLUID CLUTCH

Yasuhei Kikuchi; Mitsuaki Hatori, and Satoshi Tsuyuki, all of Tagata-gun, Japan, assignors to USUI Kokusai Sangyo Kaisha Ltd., Japan

Filed Mar. 15, 1995, Ser. No. 404,428
Claims priority, application Japan, Mar. 19, 1994, 6-074113
Int. Cl.[6] F16D *31/00*
U.S. Cl. 192—58.3 **5 Claims**

1. A fluid clutch comprising a driving section, a rotational shaft rotated by the driving section, a casing rotatably mounted concentrically around the rotational shaft, a partitioning member disposed in the casing for dividing the inside of the casing into a torque transmission chamber and an oil reservoir in which an oil is supplied, said partition member having a supply aperture formed therethrough for causing oil flow from the oil reservoir to the torque transmission chamber, a valve member for selectively opening and closing the supply aperture in the partitioning member, a solenoid-type actuator for operating the valve member, a driving disk securely mounted to the rotational shaft and disposed in the torque transmission chamber such that oil in the torque transmission chamber transmits torque from the driving disk to said casing, wherein the fluid clutch comprises a pump mechanism securely mounted to the rotational shaft for rotation therewith such that the pump mechanism rotates relative to the partitioning member of the casing due to a difference between the number of rotation of the rotational shaft and the number of rotation of the casing, a first flow channel extending through said partitioning member from the torque transmission chamber to the pump mechanism for sucking the oil in the torque transmission chamber toward the pump mechanism and a second flow channel formed in the partitioning member and extending from the pump mechanism to a location in the oil reservoir spaced from the valve member for sending the oil sucked by the pump mechanism into the oil reservoir.

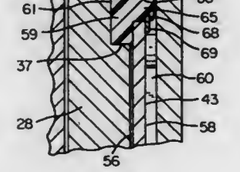


5,575,369

FAN CLUTCH CONSTRUCTION AND METHOD OF MAKING THE SAME

Neil T. Hunters, Arlington, and James A. Jennings, Azle, both of Tex., assignors to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 233,910, Apr. 28, 1994, abandoned. This application Dec. 8, 1995, Ser. No. 569,642
Int. Cl.[6] F16D *35/00*
U.S. Cl. 192—58.7 **4 Claims**

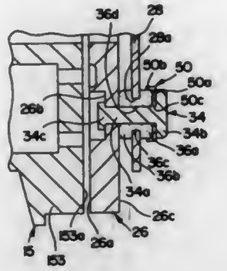


1. In a fan clutch construction comprising a housing means having a chamber therein, a drive plate rotatably mounted in said chamber, and a scoop plate disposed in said chamber and being operatively interconnected to said housing means to cause rotation of said housing means when said scoop plate is rotated by the rotation of said drive plate, said scoop plate having a dam thereon that cooperates with said drive plate to cause rotation of said scoop plate through a fluid coupling drive arrangement with said drive plate, the improvement wherein said dam has a surface that provides a substantially zero clearance with said drive plate when relative movement is provided between said drive plate and said scoop plate, said dam comprising a part that is initially separate from said scoop plate and then is fixedly secured thereto as an integral part thereof.

5,575,370
ELECTROMAGNETIC CLUTCH

Hideyuki Gonda; Masakatsu Sakaki, both of Isesaki, and Yukimasa Nagai, Gunma-gun, all of Japan, assignors to Sanden Corporation, Japan

Continuation of Ser. No. 358,813, Dec. 19, 1994. This application Jun. 6, 1995, Ser. No. 469,048
Claims priority, application Japan, Dec. 21, 1993, 5-321909
Int. Cl.[6] F16D *27/112;27/14*
U.S. Cl. 192—84.96 **3 Claims**



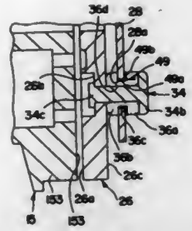
1. An electromagnetic clutch comprising:
a first rotatable member for connection to an external driving source, said first rotatable member rotatably supported on a first bearing and having an axial magnetic end plate;
a second rotatable member coupled to a driven member;
an annular magnetic member connected to said second rotatable member through a plurality of leaf springs so as to be capable of limited axial movement and facing said axial end plate of said first rotatable member with an axial gap therebetween;
a third rotatable member connected to said second rotatable member to limit axial movement of said annular magnetic member;
electromagnetic means coupled to said first rotatable member with said annular magnetic member and transmitting a rotational force from an external driving source to said second rotatable member;
a plurality of connecting and absorbing means fixedly disposed between said annular magnetic member and said third rotatable member for connecting said annular magnetic member to said third rotatable member and for absorbing vibration and impact force when said annular magnetic member is attracted to said magnetic end plate of said first rotatable member, said connecting and absorbing means comprising a pin member having a first end including a flange portion overlying an outer end surface of said third rotatable member, said connecting and absorbing means passing through an opening in said third rotatable member and fixedly secured to said annular magnetic member;
an elastic member sandwiched between said flange portion of said pin member and an outer end surface of said third rotatable member; and
means for protecting said elastic member from deterioration by the impact force and vibration sustained when said annular magnetic member is attracted to said magnetic end plate;
wherein said protecting means is placed on said elastic member so as to contact said pin member.

5,575,371
ELECTROMAGNETIC CLUTCH

Hideyuki Gonda; Masakatsu Sakaki, and Yukimasa Nagai, all of Gunma, Japan, assignors to Sanden Corporation, Gunma, Japan

Continuation of Ser. No. 358,313, Dec. 19, 1994. This application Jun. 6, 1995, Ser. No. 469,599
Claims priority, application Japan, Dec. 21, 1993, 5-321909
Int. Cl.[6] F16D *27/112;27/14*
U.S. Cl. 192—84.96 **3 Claims**

1. An electromagnetic clutch comprising:



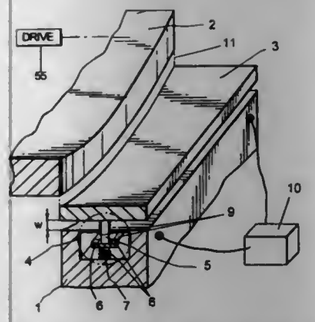
a first rotatable member for connection to an external driving source, said first rotatable member rotatably supported on a first bearing and having an axial magnetic end plate;
a second rotatable member coupled to a driven member;
an annular magnetic member connected to said second rotatable member through a plurality of leaf springs so as to be capable of limited axial movement and facing said axial end plate of said first rotatable member with an axial gap therebetween;
a third rotatable member connected to said second rotatable member to limit axial movement of said annular magnetic member;
electromagnetic means coupled to said first rotatable member with said annular magnetic member and transmitting a rotational force from an external driving source to said second rotatable member;
a plurality of connecting and absorbing means fixedly disposed between said annular magnetic member and said third rotatable member for connecting said annular magnetic member to said third rotatable member and for absorbing vibration and impact force when said annular magnetic member is attracted to said magnetic end plate of said first rotatable member, said connecting and absorbing means comprising a pin member having a first end including a flange portion overlying an outer end surface of said third rotatable member, said connecting and absorbing means passing through an opening in said third rotatable member and fixedly secured to said annular magnetic member;
an elastic member sandwiched between said flange portion of said pin member and an outer end surface of said third rotatable member; and
means for protecting said elastic member from deterioration by the impact force and vibration sustained when said annular magnetic member is attracted to said magnetic end plate;
wherein said protecting means is placed in said elastic member so as to contact said third rotatable member.

5,575,372
DEVICE FOR PREVENTING SHEARING OR PINCHING OF A FOREIGN OBJECT

Gerd Huebner, and Michael Heitmann, both of Jena, Germany, assignors to Jenoptik Technologie GmbH, Jena, Germany

Filed Dec. 15, 1994, Ser. No. 356,457
Claims priority, application Germany, Jun. 22, 1994, 44 21 828.1
Int. Cl.[6] F16P *3/00*
U.S. Cl. 192—116.5 **28 Claims**

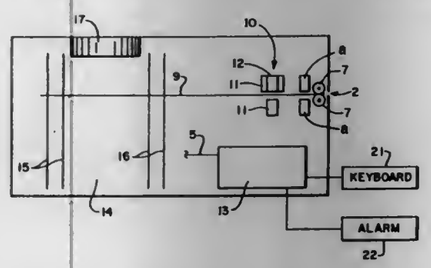
1. A device at a loading or unloading station, comprising:
a first part;
a second part movable past said first part;
automatic safety means for preventing shearing or pinching of a foreign object caught between said first part and said second part during movement of said second part towards said first part, said safety means including a solid barrier member displaceably fastened to one of said first part and said second part, said safety means further including detector means in operative engagement with said barrier member for detecting a displacement of said barrier member owing to an interposition of said foreign object between said barrier member and the other of said first part and said second part, said detector means including three electrical contacts in non-colinear, three-point formation in a single electrical circuit, said contacts and said circuit being closed in a reference position of said barrier member.



5,575,373
DEVICE FOR STORING MONEY IN A CAB

Hans-Jakob Peters, Dibberser Muhlenweg 71, 2110 Buchholz, Germany

Filed Sep. 4, 1992, Ser. No. 939,529
Claims priority, application Germany, Mar. 5, 1990, 40 06 881.1
Int. Cl.[6] G07B *13/02*
U.S. Cl. 194—202 **20 Claims**

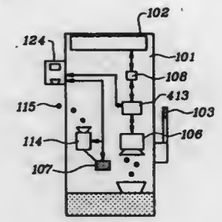


1. A device for storing money in a cab comprising:
a lockable housing for holding notes, the housing having at least one note opening for receiving at least one note,
note identifying means for determining the value of the at least one note which is received through the note opening in the housing,
means for dispensing change in an amount having a value which is no more than the value of the at least one note which is received in the housing,
means for invalidating the notes held in the housing in the event of forcible tampering, and
means for connecting the device to a cab meter.

5,575,374
GAMES MACHINE WITH ELECTRONIC PAYMENT MECHANISM

HervéOrus, Marseille; Jean-Jacques Foglino, Peynier; Firmin Lopez, Luynes; AndréRichard, Trets, and Alain Nicolai, Allauch, all of France, assignors to Gemplus Card International, Gemenos, France

Filed Oct. 18, 1994, Ser. No. 324,657
Claims priority, application European Pat. Off., Oct. 18, 1993, 93402560
Int. Cl.[6] G07F *7/08*
U.S. Cl. 194—213 **6 Claims**

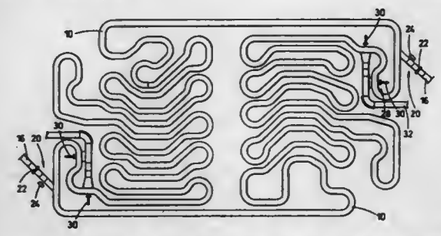


1. An electronic payment mechanism for a games machine comprising
a first token payment mechanism operated by tokens secured by contact-free detection,
a second chip-card payment mechanism,
switching means for switching, by choice, between the first and second payment mechanisms, and
a sorting channel including
a set of rollers provided with an external half-crown and driven in continuous rotation by toothed wheels in such a way that secured tokens introduced into the sorting channel can pass from one roller to the next one, and
a set of hatches placed before the rollers to enable the ejection of the secured token when it goes into a roller corresponding to its face value.

5,575,375
MULTIPLE TRAY CARRIERS FOR EARLY BAG STORAGE SYSTEM

Donald Sandusky, Farmington Hills, Mich.; Ronald K. Taylor, Milton Keynes, England, and Donald L. Anderson, Farmington Hills, Mich., assignors to Jervis B. Webb Company, Farmington Hills, Mich.

Continuation-in-part of Ser. No. 135,464, Oct. 13, 1993, Pat. No. 5,413,205. This application May 9, 1995, Ser. No. 437,879
Int. Cl.[6] B65G *43/08*
U.S. Cl. 198—358 **21 Claims**



1. An apparatus for storing early bags arriving at an airport and for discharging such stored early bags to a make-up operation for a desired departure flight, comprising:
an endless storage conveyor having a plurality of baggage carriers, each of said baggage carriers being equipped with a plurality of trays, each said tray being adapted to receive one of said early bags, said trays being arranged in end-to-end

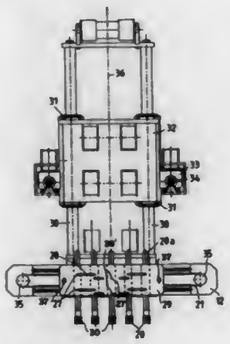
endless fashion and supported for continuous recirculating movement on a path of travel defined by a conveyor track;
induction conveyor means for loading each of said early bags onto a separate one of said baggage carriers;
identification means for identifying each of said early bags and the said baggage carrier onto which it is loaded; and
discharge means adjacent to a portion of said conveyor track for selectively removing early bags from baggage carriers passing said discharge means.

5,575,376

PRODUCT-HANDLING DEVICE ARRANGEMENT FOR PICK AND PLACE MACHINE

Arturo Colamussi, Fossalta, Italy, assignor to Vortex Systems S.r.L., Fossalta, Italy

Filed Oct. 11, 1994, Ser. No. 322,019
Claims priority, application Italy, Oct. 11, 1993, MI93A2149
Int. Cl.[6] B65G *25/00*
U.S. Cl. 198—468.3 **6 Claims**



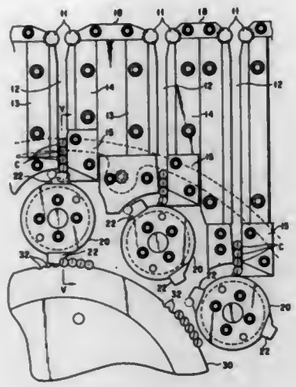
1. A product-handling device arrangement for a pick and place machine, comprising:
a base plate having at least one horizontally oriented rail;
an endless belt drive mounted on said base plate and operable for providing motive power in two opposite directions parallel to said rail;
at least one product handling device including:
a carriage supported on said base plate for movement along said rail;
an engagement element mounted on the carriage and resiliently loaded into driven engagement with said endless belt drive, for being slippably driven in both said directions;
a guide pin fixed to the carriage; and
a vertically oriented product pick-up element for releasably gripping a prospective product;
a slotted guide plate mounted to the base plate and having for each said carriage, a horizontally elongated slot receiving a prospective said pin and having two opposite ends disposed for defining limits to horizontal travel of the respective carriage;
the endless belt drive being operable for causing each engagement element to move the respective carriage in one direction until the respective pin engages the respective end of the respective slot, and being operable to drive each engagement element to move the respective carriage in an opposite direction until the respective pin engages the respective opposite end of the respective slot, further operation of the endless drive belt in a same mode after the respective engagement element has engaged a slot end, being accommodated by slippage between the respective engagement element and the endless belt drive.

5,575,377

CIGARETTE SUPPLYING APPARATUS

Tadao Etani, Tokyo, Japan, assignor to Japan Tobacco Inc., Tokyo, Japan

Filed Feb. 14, 1995, Ser. No. 388,458
Claims priority, application Japan, Feb. 15, 1994, 6-018067
Int. Cl.[6] B65G *47/56*
U.S. Cl. 198—481.1 **13 Claims**



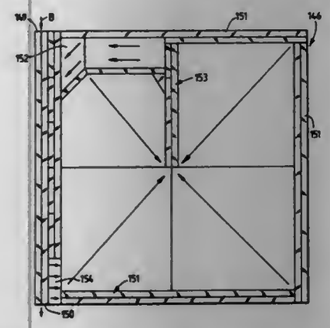
1. An apparatus having supplying passages for transporting cigarettes downwardly in a row under a weight of the cigarettes and designed to supply the cigarettes forwardly one by one, said apparatus comprising:
holding members provided at lower portions of said supplying passages, each for holding the lowest one of the cigarettes being transported downwardly, each of said holding members having a jaw directed upwardly from a horizontal plane; and
rotatable receiving drums provided under the lower portions of said supply passages, each drum having a peripheral surface and receiving members projecting from the peripheral surface, each receiving member having a depression for holding one cigarette;
wherein the cigarettes are released from the jaws of said holding members, transported hence to said receiving means and held in said depressions, as said receiving drums are rotated;
each of the jaws of the holding members located at a lower end portion of part of said supplying passages extends along a tangent line to the peripheral surface of the corresponding one of said receiving drums, each of the receiving members of the receiving drums includes a front end and an inclined portion extending from the front end to the peripheral surface of the corresponding one of said receiving drums;
said inclined portion abuts on the cigarette held in the corresponding one of said holding members when the corresponding one of said receiving drums is rotated, and pushes the cigarette upwardly from said holding member and into the depression of said receiving member; and
a space provided between the jaw of said holding member and a lower portion of a side wall of the corresponding one of said supplying passages, said space being large enough to allow passage of only the lowest cigarette pushed upwardly by the inclined portion of the corresponding one of said receiving members;
the depression of each receiving member abuts a cigarette held by the corresponding one of said holding members when the corresponding one of said receiving drum is rotated, thereby to move the cigarette along the peripheral surface of said receiving drum, to release the cigarette from the corresponding one of said holding members and to hold the cigarette in the depression.

5,575,378

TRANSFER METHOD AND APPARATUS THEREFOR

Alan J. Billington, Cottam; Stephen C. N. Brown, Goosnargh; Barry Snelson, Garstang; Joseph H. Drayton, Freckleton; Stephen A. Wood, Blackpool; Paul H. Desborough, Inskip, and Stuart Slater, Blackburn, all of United Kingdom, assignors to British Nuclear Fuels plc, Warrington, United Kingdom

Continuation of Ser. No. 137,889, Sep. 24, 1993, abandoned, which is a continuation of Ser. No. 758,451, Sep. 6, 1991, abandoned, which is a continuation of Ser. No. 406,102, Sep. 12, 1989, abandoned. This application Dec. 6, 1994, Ser. No. 354,725
Claims priority, application United Kingdom, Sep. 12, 1988, 8821368; Dec. 7, 1988, 8828597; Aug. 16, 1989, 8918651
Int. Cl.[6] B65G *27/00*
U.S. Cl. 198—771 **35 Claims**



1. A method of smoothly transferring relatively light frangible objects susceptible to weight loss during conveying, said method comprising the steps of:
providing at least one cushion element comprised of a multiplicity of flexible synthetic polymer fibers located in a backing comprising a plastic material, said fibers located at an inclined orientation in the direction of transfer, said fibers having a thickness not greater than about 45 microns, said fibers having similar lengths not greater than about 2.5 mm above said backing and said fibers buttressed against collapse under said object by adjacent fibers, said fibers being packed as an ultra high density pile of at least about 68×10^6 fibers per square meter; and
vibrating said cushion element and thereby said fibers, said vibration causing said light frangible objects to move along said soft cushion element without damage.

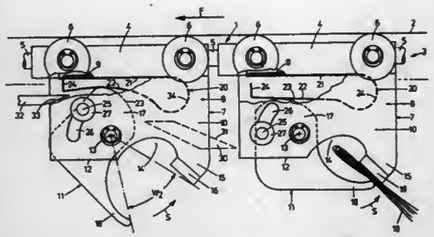
5,575,379

NEWSPAPER CONVEYOR

Helmut Schmetzer, Bayreuth, Germany, assignor to Gammerler Maschinenbau Und Anlagentechnik Gmbh, Geretsried-Gelting, Germany

PCT No. PCT/EP94/01983, § 371 Date Mar. 15, 1995, § 102(e) Date Mar. 15, 1995, PCT Pub. No. WO95/00429, PCT Pub. Date Jan. 5, 1995
PCT Filed Jun. 17, 1994, Ser. No. 403,848
Claims priority, application Germany, Jun. 17, 1993, 43 20 085.0
Int. Cl.[6] B65G *47/86*
U.S. Cl. 198—803.9 **17 Claims**

1. A newspaper conveyor having an endless conveyor chain (1) running along a conveyor (3) and a plurality of newspaper grips (7, 7') arranged in sequence thereon, each of which has a supporting part (8, 8') for securing said grip (7, 7') to said endless conveyor chain (1), a fixed clamp (16, 16') and a movable clamp (11, 11') coacting therewith by the action of a spring (leaf spring 20, 20'), between said clamps (11, 11', 16, 16') when said movable clamps



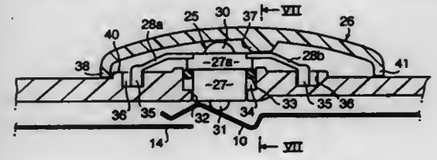
(11, 11') are closed a newspaper is clampable, the closing and opening movement of said movable clamp (11, 11') being controllable via cam control curves (28, 30, 32) on said conveyor (3) characterized in that said movable clamp (11) is adjustable in two opening positions, namely a first opening position in which said movable clamp (11, 11') is maintained open by a cam control curve (28) against the closing force of said spring in the form of a leaf spring (20, 20') and a second opening position in which said movable clamp (11, 11') is maintained open self-lockingly by friction contact with said leaf spring (20, 20').

5,575,380

ELECTRIC SWITCH HAVING A SEAL DEVICE

Kiyoshi Imai, Toyama, Japan, assignor to Kitano Co., Ltd., Toyama, Japan

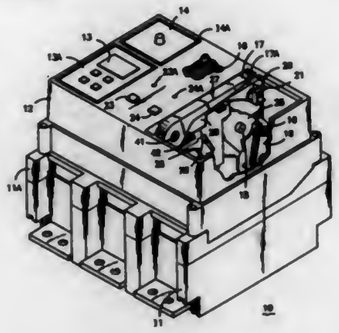
Filed Jul. 24, 1995, Ser. No. 506,122
Claims priority, application Japan, Jul. 25, 1994, 6-010628 U
Int. Cl.[6] H01H *13/06*
U.S. Cl. 200—302.2 **3 Claims**



1. An electric switch mounted on a support comprising:
a slide button having a pushing projection formed on an underside thereof, and slidably mounted on top of the support,
a push button made of plastic, and having a cylindrical shaft portion, a flange formed on a top of the cylindrical shaft portion, a pair of elastic stays formed integral with the flange, a first projection formed on an upper surface of the flange, and a second projection formed on an underside of the shaft portion, the cylindrical shaft portion and the flange being inserted in a hole formed in the support so as to be movable in a pushing direction perpendicular to a sliding direction of the slide button;
an O-ring disposed in an annular space formed between the cylindrical shaft portion of the push button, an inside wall of the hole in the support, and an underside of the flange so as to seal the hole;
a movable contact engaged with the second projection, and having an elasticity to return itself to an original position;
a fixed contact to be contacted with the movable contact so as to close a circuit;
each of the elastic stays having a downward inclined portion and a leg formed on an end of each elastic stay;
each leg being slidably engaged in an opening formed in the support; and
the elastic stays having an elasticity sufficient to move the push button in a direction opposite to the pushing direction of the push button wherein upon sliding of said slide button, said pushing projection contacts said first projection and thereby depresses said push button in said pushing direction to

thereby depresses said push button contact into electrical contact with said fixed contact.

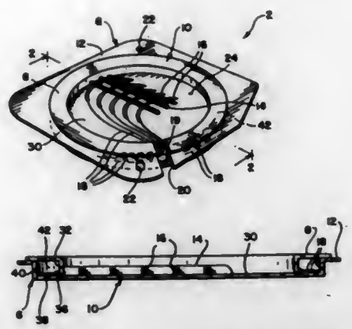
5,575,381
INTERLOCK FOR HIGH AMPERE-RATED CIRCUIT BREAKER CONTACT CLOSING SPRINGS
Roger N. Castonguay, Terryville; Mark A. Zaffetti, Windsor Locks, and James L. Rosen, West Hartford, all of Conn., assignors to General Electric Company, New York, N.Y.
Filed Sep. 30, 1994, Ser. No. 315,385
Int. Cl.[6] H01H *23/00*
U.S. Cl. 200—401 **17 Claims**



1. An interlock arrangement for circuit breaker contact closing springs comprising:
- a sideframe assembly within a circuit breaker to support circuit breaker operating components;
- a logic plate arranged on a handle drive gear, said logic plate and said drive gear being concentrically mounted on a circuit breaker operating mechanism closing shaft;
- a logic lever pivotally-attached to said sideframe and interacting with said logic plate and with a locking pawl to control rotation of said logic lever relative to rotation of said drive gear; and
- an interlock link pivotally-attached to said sideframe and interacting with a circuit breaker closing link to prevent operation of a circuit breaker closing button until circuit breaker contact closing springs have become fully charged.

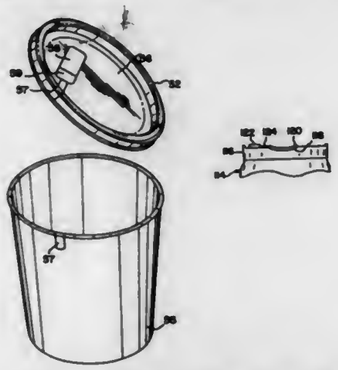
5,575,382
ROTARY SELF-WINDING TWO-PIECE LIGATURE PACKAGE
Martin Sobel, Flemington, N.J., and Robert J. Cerwin, Tipersville, Pa., assignors to Ethicon, Inc., Somerville, N.J.
Filed Dec. 22, 1994, Ser. No. 362,681
Int. Cl.[6] A61B *17/06*
U.S. Cl. 206—63.3 **13 Claims**

1. A package for retaining at least one ligature comprising a circular plate having a circular recessed base in a central portion thereof and a raised outer perimeter forming an inner wall that extends from and is substantially perpendicular to the base and an upper ring that extends from the inner wall and is substantially perpendicular to the inner wall and extends away from the base; and a flange member having a lower ring with an outer edge and an inner edge, extending from the outer edge is an outer wall which is substantially perpendicular to the lower ring, the outer wall having a top, extending from the top is an outer member that is substantially perpendicularly to the outer wall and extends from away from the lower ring; wherein the inner wall of the circular plate fits inside the inner edge of the lower ring and is adjacent thereto and the combination of the inner wall, lower ring, the outer wall and



the upper ring defines a channel suitable for retaining a ligature said channel having an aperture for receiving said ligature.

5,575,383
CONTAINER HAVING AN AUDIBLE SIGNALING DEVICE
Dennis H. Seeley, 7 N. Delaware Avenue, Pier 5, Unit 105, Philadelphia, Pa. 19106
Continuation of Ser. No. 254,614, Jun. 6, 1994, Pat. No. 5,464,092. This application May 9, 1995, Ser. No. 437,789
Int. Cl.[6] B65D *85/72;* **G09F** *25/00*
U.S. Cl. 206—217 **9 Claims**

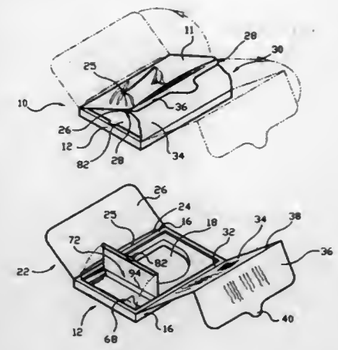


1. An audible tone generator externally mounted on a product container, the container comprising a compartment having an opening and a sealing member for sealing the compartment opening; said tone generator actuated by displacement of said sealing member relative to said compartment; the tone generator comprising:
- a power source;
- memory means for storing data corresponding to audible tones;
- an electronic sound generator for accessing the memory means and generating audible tones; and
- switch means having a first portion located on said compartment and a second portion located on said sealing member; said switch means being responsive to the separation of said first portion from said second portion upon the displacement of said sealing member relative to said compartment; whereby said switch means connects said electronic sound generator to said power source to produce the audible tones.

6. A signal generator externally mounted on a pressurized beverage container, the container having a lid which includes a tab assembly and a pre-cut tab which is substantially detached from the lid to open the container, the signal generator comprising:
- a power source comprising a battery;
- an electronic storage means comprising a read-only memory (ROM) for storing data corresponding to audible tones;
- an electronic sound generator connected to said electronic storage means for accessing said storage means and generating audible tones; and
- a switch means for connecting said electronic sound generator to said power source; said switch means comprising an electronic circuit which monitors the electrical continuity of a circuit having a first portion located on said pre-cut tab and a second portion located on said lid; wherein said switch means changes state in response to an electrical discontinuity caused by the separation of said first and second portions upon the substantial detachment of said pre-cut tab.

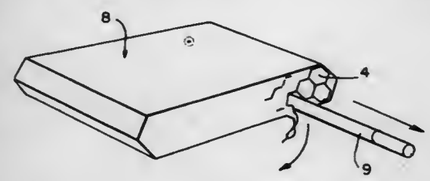
8. A method for providing a container having a compartment for receiving a product and an operative portal for accessing the product, comprising:
- providing a signal generator which includes:
  - a power source;
  - memory means for storing data corresponding to audible tones;
  - an electronic sound generator for accessing the memory means and generating audible tones; and
  - switch means responsive to the opening of said portal for connecting said electronic sound generator to said power source, whereupon the audible tones are produced, said switch means including a circuit having a first portion located on said compartment and a second portion located on said portal; and
- mounting said signal generator on said container external to said compartment; whereby opening the portal to access the product detaches said first circuit portion from said second circuit portion to activate the signal generator.

9. An audible tone generator externally mounted on a pressurized product container, the container comprising a compartment having an opening and a sealing member for sealing the compartment opening; the sealing member having two configurations, a first configuration being substantially curved when the container is pressurized, and a second configuration being substantially flat when the container is depressurized; the tone generator comprising:
- a power source;
- memory means for storing data corresponding to audible tones;
- an electronic sound generator for accessing the memory means and generating audible tones; and
- switch means being responsive to the change in the configuration of said sealing member to connect said electronic sound generator to said power source to produce the audible tones when said container is depressurized.



wherein said male greeting panel is folded and alternately inserted into and removed from said sleeve so that said combined greeting card and commemorative carrier can be closed and opened, respectively.

5,575,385
PACKAGE FOR CIGARETTES AND THE LIKE, METHOD FOR THE PRODUCTION OF THIS PACKAGE AND APPARATUS FOR CARRYING OUT THIS METHOD
Mauro Zona, Turin, Italy, assignor to G.D. Societa' per Azioni, Bologna, Italy
Filed Mar. 1, 1995, Ser. No. 396,731
Claims priority, application Italy, Mar. 3, 1994, TO94A0145
Int. Cl.[6] B65B *19/02;* **B65D** *85/10*
U.S. Cl. 206—256 **3 Claims**



1. Package for cigarettes comprising a honey-comb structure which defines a plurality of elongated parallel cells, each for receiving a respective cigarette, said structure further including two opposite walls which close said cells at their ends, at least one of said end walls being adapted to be opened to allow access to said cells,
- wherein the honey-comb structure is comprised of a plurality of sheets superimposed to each other, which are mutually bonded along strip portions thereof which are spaced apart from each other, and said sheets being spaced apart from each other between two adjacent strip portions, so as to define said cells, according to a honey-comb general arrangement,
- wherein the material forming said sheets and said end walls is light cardboard or paper, and
- wherein said end wall which can be opened has pre-cut lines arranged so as to define a plurality of removable strips arranged side by side according to parallel directions which are slanted with respect to the sides of the package.

5,575,384
COMBINED GREETING CARD AND ITEM CARRIER
Louis A. Saye, Rte. 3, Box 184A, Chippewa Falls, Wis. 54729
Filed Oct. 12, 1994, Ser. No. 321,799
Int. Cl.[6] B65D *69/00*
U.S. Cl. 206—232 **26 Claims**

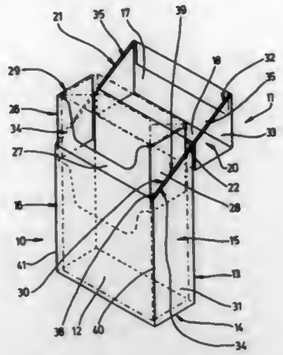
1. A combined greeting card and commemorative carrier comprising:
- a commemorative carrier having a selected depth and bounding a commemorative storage area;
- a female greeting panel pivotally attached to said commemorative carrier, said female greeting panel having an insert sleeve for receiving a male greeting panel, said insert sleeve defined by said female greeting panel and a chord extending substantially across a length and width of said female greeting panel; and
- a male greeting panel pivotally attached to said commemorative carrier at a position opposite said female greeting panel, said male greeting panel having a fold for insertion into said sleeve;

5,575,386

HINGE-LID BOX, IN PARTICULAR FOR CIGARETTES

Heinze Focke, Verden, and Hans-Jürgen Bretthauer, Bremen, both of Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Germany

Filed Feb. 6, 1995, Ser. No. 384,575
Claims priority, application Germany, Feb. 9, 1994, 44 04 146.2
Int. Cl.[6] B65D 85/10
U.S. Cl. 206—264 5 Claims



1. Hinge-lid box for cigarettes, comprising a box part (10) and a lid (11) which is connected pivotably to said box part (10), characterized by the following features:

a) the box part (10) comprises a front wall (12), a rear wall (13), a base wall (14) and two side walls (15, 16),

b) the side walls (15, 16) each comprise two mutually overlapping side tabs (30, 31), said side tabs (30, 31) comprising inner Side tabs (30) and outer side tabs (31), each one of said outer side tabs (31) covering one of said inner side tabs (30), each one of said inner side tabs (30) being connected to one of said outer side tabs (31),

c) the lid (11) comprises a lid front wall (17), a lid rear wall (19), a lid upper wall (18) and two lid side walls (20, 21), oblique joints (24) being formed between the side walls (15, 16) and the lid side walls (20, 21),

d) the lid side walls (20, 21) each comprise two mutually overlapping lid side tabs (32, 33), said lid side tabs (32, 33) comprising inner lid side tabs (32) and outer lid side tabs (33), each one of said outer lid side tabs (33) covering one of said inner lid side tabs (32), each one of said inner lid side tabs (32) being connected to one of said outer lid side tabs (33),

e) free edges of the box part (10), on the one hand, and of the lid (11), on the other hand, butt against one another, at the top of the front wall (12) of the box part (10) and at the top of the side walls (15, 16) of the box part (10), in the closed position of said lid (11),

f) the side walls (15, 16) of the box part (10), on the one hand, and the lid side walls (20, 21), on the other hand, are connected directly to one another by connecting webs (38, 39) which can be severed when the lid (11) is opened for the first time, and

g) the connecting webs (38, 39) exclusively connect said inner side tabs (30) to said inner lid side tabs (32) across the oblique joints (24), whereby the connecting webs (38, 39) are barely visible from the outside of the hinge-lid box when the lid (11) is in the closed position.

5. Hinge-lid box for cigarettes, comprising a box part (10) and a lid (11) which is connected pivotably to said box part (10), characterized by the following features:

a) the box part (10) comprises a front wall (12), a rear wall (13), a base wall (14) and two side walls (15, 16),

b) the side walls (15, 16) each comprise two mutually overlapping side tabs (30, 31), said side tabs (30, 31) comprising inner side tabs (30) and outer side tabs (31), each one of said outer side tabs (31) covering one of said inner side tabs (30), each one of said inner side tabs (30) being connected to one of said outer side tabs (31),

c) the lid (11) comprises a lid front wall (17), a lid rear wall (19), a lid upper wall (18) and two lid side walls (20, 21), oblique joints (24) being formed between the side walls (15, 16) and the lid side walls (20, 21),

d) the lid side walls (20, 21) each comprise two mutually overlapping lid side tabs (32, 33), said lid side tabs (32, 33) comprising inner lid side tabs (32) and outer lid side tabs (33), each one of said outer lid side tabs (33) covering one of said inner lid side tabs (32), each one of said inner lid side tabs (32) being connected to one of said outer lid side tabs (33),

e) free edges of the box part (10), on the one hand, and of the lid (11), on the other hand, butt against one another, at the top of the front wall (12) of the box part (10) and at the top of the side walls (15, 16) of the box part (10), in the closed position of said lid (11),

f) the side walls (15, 16) of the box part (10), on the one hand, and the lid side walls (20, 21), on the other hand, are connected directly to one another by connecting webs (38, 39) which can be severed when the lid (11) is opened for the first time,

g) the connecting webs (38, 39) exclusively connect said inner side tabs (30) to said inner lid side tabs (32) across the oblique joints (24), whereby the connecting webs (38, 39) are barely visible from the outside of the hinge-lid box when the lid (11) is in the closed position, and

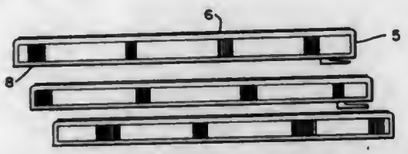
h) each of a pair (38) of the connecting webs (38, 39) is located approximately at the top of one of the upright front edges (40, 41) formed by the junction of the front wall (12) and the side walls (15, 16).

5,575,387

HINGED COMPACT DISC CONTAINER

John A. Gelardi, P.O. Box 714, Kennebunkport, Me. 04046

Filed Oct. 25, 1994, Ser. No. 328,707
Int. Cl.[6] B65D 85/57; 21/02
U.S. Cl. 206—308.1 18 Claims



1. A storage apparatus comprising multiple identical trays, each tray having a top, a base, a first end, a second end, lateral sidewalls, and an end cap having a movable end wall, a hinge hinging the end wall and the end cap to the first end of the tray and having a lid extending perpendicularly from the end wall for partially overlying the top, and a hinged connection for combining the multiple trays, the hinged connection further comprising a connector bar having an upper segment, a lower segment, an open outer end and an inner end, the upper segment of the connector bar being attached to the base of the tray near the first end and extending along the first end, the connector bar thus forming an outward opening receiver for receiving a lid of an end cap of an underlying tray and for using the hinge of the end cap as the hinged connection between the trays.

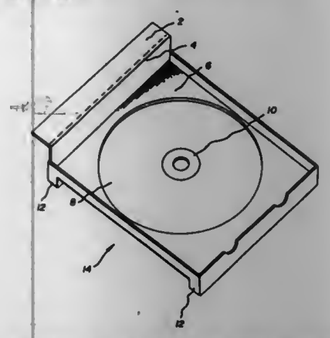
13. A compact disc container apparatus comprising a tray, having a top, a base having receivers, a first end, a second end and opposed lateral sidewalls, an end cap having an end wall and a hinge connecting the end wall and the first end for hinging the end cap to the first end of the tray and a lid that extends perpendicularly from the end wall for overlying a portion of the top, and a connector bar having an upper segment, a lower segment, an open outer end and an inner end, the upper segment of the connector bar being attached to the base of the tray near the first end in the receivers and extending along the first end for receiving the lid of a lower tray.

5,575,388

INSERTABLE TRAY FOR PROVIDING A MULTIPLE COMPACT DISC CONTAINER

David L. Bolognia, Lanesboro, and George F. Rufo, Jr., Dalton, both of Mass., assignors to Lakewood Industries, Inc., Pittsfield, Mass.

Filed Jan. 18, 1996, Ser. No. 588,271
Int. Cl.[6] B65D 85/57
U.S. Cl. 206—308.1 7 Claims



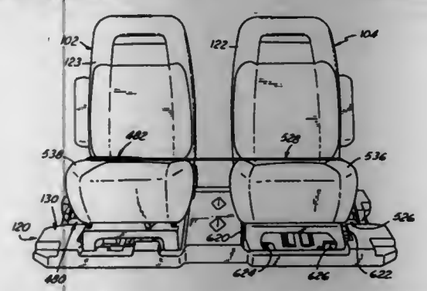
1. An insertable tray for holding at least two compact discs within a compact disc storage container having a cover and a base, which insertable tray comprises a first and second opposite sides with each side having compact disc engagement means for engaging and holding a compact disc, a connected shelf wherein the shelf has attachment means for attaching to a storage container, a longitudinal living hinge provided between the shelf and the part of the tray holding the compact discs for providing rotational movement therebetween, wherein the shelf can be removably affixed in a snap fit relationship with the base of a storage container and wherein the insertable tray has on the bottom side thereof a longitudinal protrusion on at least the front of the bottom side of the insertable tray opposite from the end of the tray containing the shelf and living hinge.

5,575,389

TWIN SHEET PLASTIC PALLET WITH LATCH MEANS

James C. Alspach, Farmington Hills; Steven R. Spooner, Ann Arbor, and Kurtis A. Nofz, Belleville, all of Mich., assignors to Johnstown Industries, Inc., Plymouth, Mich.

Continuation-in-part of Ser. No. 319,996, Oct. 7, 1994, Pat. No. 5,529,185. This application Jan. 31, 1995, Ser. No. 381,217
Int. Cl.[6] B65D 19/44
U.S. Cl. 206—386 21 Claims



1. A plastic pallet for supporting thereon in a free-standing manner a cargo load having a high aspect ratio and support feet constructed to support the cargo load in use in a free-standing end-use orientation, said pallet comprising:

a planar load bearing twin sheet hollow pallet member normally oriented with its major plane generally horizontal in use and being formed from upper and lower sheets of thermoplastic so as to have a low aspect ratio;

said pallet member comprising a top deck formed from said upper sheet of thermoplastic and having a generally upwardly facing cargo load supporting exterior surface;

said pallet member further comprising a bottom deck formed from said lower sheet of thermoplastic and having a generally downwardly facing pallet supporting surface;

a plurality of top deck and bottom deck bosses extending between said top and bottom deck surfaces respectively formed from said upper and lower sheets of thermoplastic and being fused together, said top deck bosses being distributed in a predetermined pattern to define at least one cargo load receiving and nesting compartment means recessed into said top deck, adapted for drop-on placement into said at least one compartment means of the cargo load from above said top deck,

said top deck bosses being constructed and arranged to provide an array of cargo load bearing cargo foot seating surfaces and associated cooperative nesting surfaces in said at least one compartment means for restraining cargo load foot movement horizontally relative to said pallet member,

and retractable seat belt latch means permanently attached to said pallet member and having cargo load hold down belt means operably movable relative to said at least one compartment means to an extended position spaced above said seating surfaces adapted for releasably engaging the cargo load as foot-supported on said seating surfaces with the cargo load pallet-positioned in its free-standing end-use orientation and with said hold down belt means disposed above the elevation of said seating surfaces and operable in said extended position for preventing vertical movement of the cargo load relative to said at least one compartment means with the cargo load so oriented, and being operably movable to a retracted cargo-load-disengaged position relative to and at least one compartment means clearing said seating surfaces and adapted to enable lift-off cargo load removal upwardly out of said at least one compartment means and drop-on loading of the cargo load on said seating surfaces with the cargo load pallet-positioned in its free-standing end-use orientation.

17. A shipment package comprising in combination:

a free-standing cargo load comprising a manufactured product having a high aspect ratio and support feet constructed to support the product upright in end-use orientation;

and a planar load bearing twin sheet plastic hollow pallet member normally oriented with its major plane generally horizontal in use and being formed from upper and lower sheets of thermoplastic so as to have a low aspect ratio;

said pallet member comprising a top deck formed from said upper sheet of thermoplastic and having a generally upwardly facing product supporting exterior surface;

said pallet member further comprising a bottom deck formed from said lower sheet of thermoplastic and having a generally downwardly facing pallet supporting exterior surface;

a plurality of top deck bosses and bottom deck bosses extending between said top and bottom exterior deck surfaces respectively formed from said upper and lower sheets of thermoplastic and being fused together, said top deck bosses being distributed in a predetermined pattern to define at least one nesting compartment means recessed into said top deck adapted for drop-on placement into said at least one compartment means of the product from above said top deck,

said top deck bosses being constructed and arranged to provide an array of load bearing product foot compartment seating surfaces and associated cooperative nesting surfaces in said at least one compartment means for restraining product foot movement horizontally relative to said pallet member,

said product being partially received and nested in said at least one compartment means with the product support feet individually resting on said compartment seating surfaces with said product oriented upright on said pallet top deck and projecting upwardly therefrom in end-use orientation with said pallet oriented horizontally,

and retractable seat belt latch means permanently attached to said pallet member and having product hold down belt means

operably movable relative to said at least one compartment means to an extended position spaced above said compartment seating surfaces for releasably engaging said product as supported on its feet on said compartment seating surfaces with the product positioned in its free-standing end-use orientation and with said hold down belt means disposed above the elevation of said compartment seating surfaces and operable in said extended position for preventing vertical removal of said product relative to said at least one compartment means, said hold down belt means being operably movable to a retracted product disengaged position clearing said compartment seating surfaces and enabling lift-off product removal and drop-on loading of the product on said compartment seating surfaces with said product positioned in its free-standing end-use orientation.

5,575,390

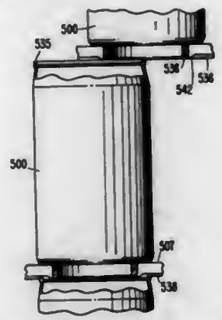
NESTABLE AND STACKABLE TRAY FOR CANS OR THE LIKE

William P. Apps, Anaheim, and Arne Lang-Ree, Manhattan Beach, both of Calif., assignors to Rehrig Pacific Company, Los Angeles, Calif.

Continuation of Ser. No. 528,215, May 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 272,039, Nov. 15, 1988, Pat. No. 4,932,532, and Ser. No. 369,598, Jun. 21, 1989, abandoned, and Ser. No. 357,068, May 23, 1989, Pat. No. Des. 317,670. This application Oct. 21, 1992, Ser. No. 944,742

Int. Cl.[6] B65D *1/24*

U.S. Cl. 206—503 **8 Claims**



1. A low depth tray for cylindrical containers adapted to be nested with other trays when empty of the containers and stacked with other trays when loaded with the containers, said tray comprising:

a low depth side wall structure comprising a band extending around the periphery of said tray for preventing the cylindrical containers from tipping during transport;

a floor structure connected to said wall structure, said floor structure comprising

a substantially flat, open floor top surface having a plurality of support areas for supporting the containers thereon, and

a floor bottom surface having a plurality of spaced downward projections adapted to prevent free sliding of said tray when loaded with the containers and stacked with other trays, the containers each having a top surface defining top rims of the containers, wherein said projections are positioned to be within the top rims of containers in an adjacent tray beneath said tray when loaded with containers and stacked, and also positioned to surround the top rims of containers in an adjacent tray beneath said tray when loaded with containers and stacked, thereby providing rotatably releasable engagement of the bottom of an adjacent tray with the top rims of containers loaded in said tray therebeneath; and

a plurality of columns interconnecting said band and said floor structure, said columns configured to nest deeply with columns of another empty tray.

5,575,391

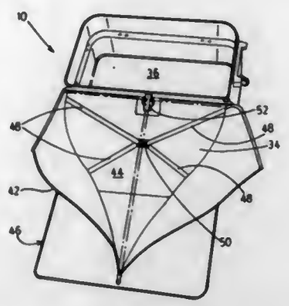
GARMENT CARRIER WITHIN SUITCASE AND METHOD FOR PACKING

Edward L. Gerch, Chicago, Ill., assignor to Kingport International Corporation, Evanston, Ill.

Continuation of Ser. No. 137,610, Oct. 14, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 490,094

Int. Cl.[6] A45C *5/14;5/12;13/26;13/30*

U.S. Cl. 206—527 **19 Claims**



15. A method for packing and carrying a first plurality of articles and a second plurality of articles wherein the second plurality of articles are individually placed on hanging members, the method comprising the steps of:

providing a first compartment having an interior capable of receiving the first plurality of articles wherein the first compartment has a sidewall selectively accessible by a fastener to access the interior of the first compartment;

providing a second compartment having a hanging device and further having walls on the sidewall in the interior of the first compartment, the walls defining an interior of the second compartment wherein the interior of the second compartment is selectively accessible by a fastener, and further wherein the interior of the second compartment is capable of receiving the second plurality of articles only when the interior of the first compartment is accessible and further wherein at least a portion of the interior of the second compartment is defined by the sidewall of the first compartment and a remainder of the second compartment is defined by the walls of the second compartment wherein the walls extend beyond a periphery of the sidewall of the first compartment;

suspending the hanging members from the hanging device in the interior of the second compartment;

folding, at least once, the walls of the second compartment forming the sidewall of the first compartment; and

inverting the second compartment into the interior of the first compartment.

5,575,392

PILL DISPENSER

Paul A. Cutler, 14 Kirkham Dr., Ajax, Ontario, Canada

Continuation of Ser. No. 856,784, Mar. 24, 1992, abandoned, which is a division of Ser. No. 644,406, Jan. 22, 1991, Pat. No. 5,154,296, which is a continuation of Ser. No. 357,579, May 26, 1989, abandoned. This application Sep. 19, 1994, Ser. No. 308,478

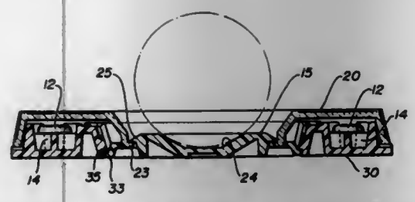
The portion of the term of this patent subsequent to Jan. 22, 2011, has been disclaimed.

Int. Cl.[6] B65D *83/04*

U.S. Cl. 206—534 **16 Claims**

1. Apparatus for dispensing a series of pills during the intervals of a prescribed period, comprising:

(a) A substantially cylindrical cover means having a top surface, an inner rim and an outer rim, said outer rim having an external surface and a lower edge;



(b) calendar means for indicating a time period, comprising a substantially disc shaped portion having a diametrically disposed groove on a surface thereof, said surface having a plurality of means for indicating a time period inscribed thereon, said calendar means having means for positively registering said calendar means in incremental positions; and

(c) base means comprising a plurality of radially disposed and substantially circularly arranged, compartments for holding a plurality of pills in a separated and orderly fashion;

(d) said cover means, calendar means, and base means being substantially concentric and mutually rotatable, said calendar means being rotatable relative to said base means through application of rotational force to such grove,

whereby said cover coacts with said base to enclose and separate each of said pills, and said calendar means is adjustable relative said base by insertion of separate hand held means into the groove to correlate the beginning of the prescribed period to that pill corresponding to the initial dosage and positively hold the calendar means registered in that position, thereby minimizing any possibility that the calendar means will be altered or otherwise mis-set during normal use, while thereafter each prescribed pill is dispensed during the correct interval by manually rotating said cover relative to said base.

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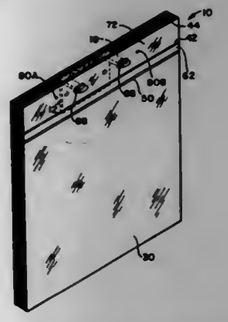
STACK OF COLD WELDED HEADERLESS BAGS

Terry D. Gebhardt, Longview, Tex., assignor to TC Manufacturing Co., Inc., Evanston, Ill.

Filed Jul. 28, 1995, Ser. No. 508,720

Int. Cl.[6] B65D *85/62*

U.S. Cl. 206—554 **11 Claims**



1. A stack of bags adapted to be mounted on a dispenser comprising:

a plurality of bags assembled together for individual dispensing from the dispenser, each said bag including a front wall having a first body portion and a first terminal edge, and a rear wall attached to said front wall, said rear wall having a second body portion and a rear lip having a second terminal edge, said first body portion of said front wall overlying said second body portion of said second wall and defining a chamber therebetween adapted to receive one or more products, said rear lip of said rear wall extending from said second body portion beyond said first terminal edge of said front wall; and

a cold weld removably attaching said rear lip of each said bag to an adjacent bag in the stack, said cold weld located in said rear lip of each said bag and being formed by pressing the rear lips of adjacent bags together, said cold weld between adjacent bags maintaining said bags in said stack in the proper orientation relative to one another to facilitate the mounting of said stack of bags onto the dispenser, said cold weld being selectively severable such that each bag may be selectively separated in its entirety from the stack for individual dispensing.

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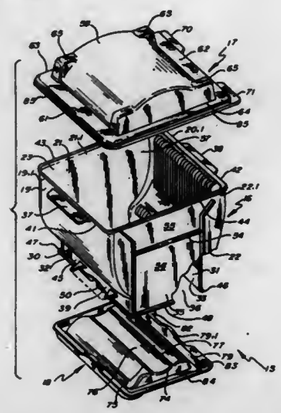
WAFER SHIPPER AND PACKAGE

David L. Nyseth, Plymouth, Minn., assignor to Fluoroware, Inc., Chaska, Minn.

Filed Jul. 15, 1994, Ser. No. 276,096

Int. Cl.[6] B65D *73/02*

U.S. Cl. 206—710 **6 Claims**



1. A plastic container for storing and shipping semiconductor wafers and interfacing with processing machines in indexing relation comprising a wafer carrier comprising sidewalls with wafer supporting offset portions and wafer separating ribs, the carrier also comprising first and second end walls interconnecting the sidewalls, the sidewalls and end walls comprising upper edge portions defining a top opening of the carrier facilitating loading and unloading of wafers, the sidewalls and end walls also defining lower edge portions defining a bottom opening of the carrier providing access to the wafers in the carrier, said upper edge portions comprising enlarged upper rim portions, said lower edge portions of the carrier comprise enlarged lower rim portions, the wafer carrier comprises a periphery adjacent the lower edge portions thereof, the lower edge portions and the lower rim portions of the carrier extend entirely around the periphery of the wafer carrier,

a bottom cover removably traversing the bottom opening of the wafer carrier and lying against said lower edge portions to close the bottom opening, and the bottom cover comprises a periphery and also comprises enlarged bottom cover rim portions extending around the entire periphery of the bottom cover and engaging and embracing the lower rim portions of the wafer carrier in a snap fit and removably retaining the bottom cover on the carrier, said lower edge portions of the sidewalls comprising indexing notches opening through said lower edge portions, the lower rim portions of the carrier and the bottom cover rim portions continuing along and bypassing said indexing notches,

a bottom cover removably traversing the bottom opening of the wafer carrier and lying against said lower edge portions to close the bottom opening, and the bottom cover comprises a periphery and also comprises enlarged bottom cover rim por-

tions extending around the entire periphery of the bottom cover and engaging and embracing the lower rim portions of the wafer carrier in a snap fit and removably retaining the bottom cover on the wafer carrier,

and a top cover removably traversing the top opening of the wafer carrier and lying against said upper edge portion of the carrier to close the top opening and retain the wafers, the top cover comprising enlarged top cover rim portions engaging and embracing upper rim portions of the wafer carrier in a snap fit and removably retaining the top cover on the wafer carrier.

5,575,395

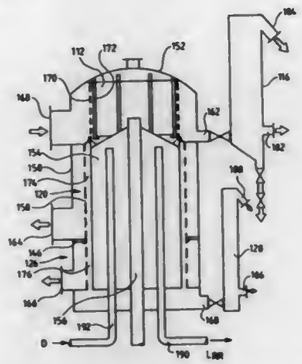
METHOD AND APPARATUS FOR SCREENING FIBROUS SUSPENSIONS

Timo Alajääski, Kotka; Kaj Henricson, Helsinki; Kalevi Laakso, Karhula; Antero Laine, Kotka; Risto Ljokkoi, Karbula; Olavi Pikka, Karhula; Markku Simola, Helsinki, all of Finland, and Pertti Wathén, Queensbury, N.Y., assignors to A. Ahlstrom Corporation, Noormarkku, Finland

Filed Jul. 15, 1994, Ser. No. 275,343

Int. Cl.[6] B03B *7/00*

U.S. Cl. 209—17 **36 Claims**



1. A fiber suspension treatment apparatus comprising:

a pump having an inlet and an outlet and for pumping fiber suspension out of said outlet;

a knotter having a rotatable knotter cylinder with a first diameter;

at least one screening stage comprising a stationary screen cylinder having a second diameter, and a rotor having a third maximum diameter portion, and disposed on the opposite side of said knotter from said pump;

said knotter cylinder connected to said rotor to rotate with said rotor;

a common housing containing said knotter and said at least one screening stage;

said pump outlet connected to said knotter and said at least one screening stage to provide substantially the sole motive force to a fiber suspension to move the fiber suspension through said knotter and said at least one screening stage; and

said third diameter being smaller than said second diameter and said first diameter being smaller than said third diameter so that upon rotation of said rotor the circumferential speed of said knotter cylinder differs from the circumferential speed of said rotor maximum diameter portion.

5,575,396

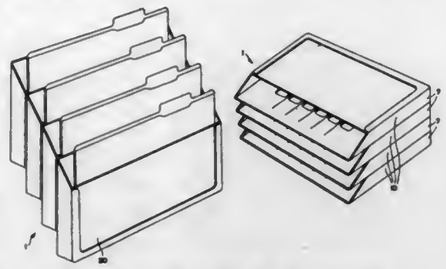
MODULAR STORAGE UNIT

Ole F. Smed, Calbary, Canada, assignor to R & D Group, Calgary, Canada

Filed Dec. 16, 1994, Ser. No. 359,274

Int. Cl.[6] A47F *5/00*

U.S. Cl. 211—11 **19 Claims**



1. A storage unit having at least one tray comprising:

a back wall having front and back surfaces;

bottom and side walls extending outwardly from said front surface of said back wall;

a bottom lip extending upwardly from said bottom wall;

side lips extending inwardly from said side walls;

wherein said walls and said lips define a storage area;

a first connector on each of said side lips; and

two second connectors on said back surface of said back wall each of said two second connectors having multiple tab receiving portions such that a first tray can be connected to another tray to form a multi-tray unit having one of multiple configurations.

5,575,397

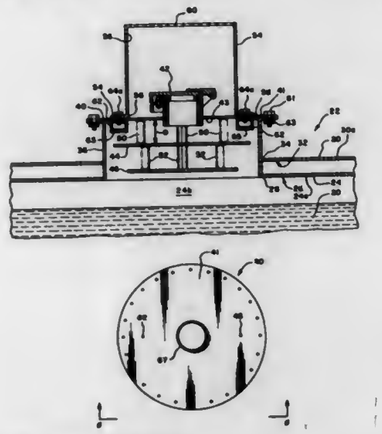
APPARATUS FOR PROTECTING THE RELIEF VENT ON A DOUBLE-WALLED TANK FOR SURGING LIQUID

Donald A. Wood, 2651 S. Cherokee St., Denver, Colo. 80223

Filed Aug. 1, 1995, Ser. No. 509,879

Int. Cl.[6] B65D *51/16;90/34*

U.S. Cl. 220—203.01 **12 Claims**



1. A tank assembly comprising:

an inner tank for storing a liquid, said inner tank having a top portion with an opening;

an outer tank surrounding said inner tank, said outer tank having a top portion with an opening;

a passageway extending upward from said opening in said top portion of said inner tank to at least said opening in said top portion of said outer tank, said passageway having an outer opening;

a cover mounted over said outer opening of said passageway;

a pressure relief vent mounted to said cover, said pressure relief vent opening when pressure within said inner tank exceeds a predetermined limit;

a plate suspended from said cover within said passageway at a predetermined distance below said pressure relief vent and above said top portion of said inner tank, said plate having dimensions sufficiently large to prevent the liquid surging within said inner tank from directly impinging upon said pressure relief vent; and

at least a second plate suspended from said plate above said top portion of said inner tank.

5,575,398

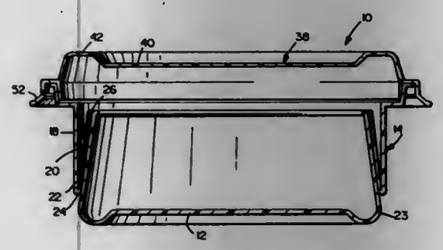
REUSABLE AND RE-COLLAPSIBLE CONTAINER AND ASSOCIATED CAP

Edward S. Robbins, III, 2802 E. Avalon Ave., Muscle Shoals, Ala. 35661

Continuation of Ser. No. 47,185, Apr. 16, 1993, Pat. No. 5,417,447, which is a continuation-in-part of Ser. No. 12,122, Feb. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 789,838, Nov. 12, 1991, Pat. No. 5,226,551. This application Dec. 28, 1994, Ser. No. 365,404

Int. Cl.[6] B65D *6/12*

U.S. Cl. 220—8 **9 Claims**



1. A reusable collapsible container comprising:

a bottom wall and a relatively flexible, peripheral side wall extending upwardly from said bottom wall, said side wall movable between axially extended and collapsed positions and, in the extended position, having lower and upper relatively thicker side wall portions and an intermediate relatively thinner side wall portion located axially between said lower and upper side wall portions, said upper side wall portion formed with an annular rim defining an upper open end of the container, said rim formed with means for receiving a removable cap; and wherein said lower portion is tapered downwardly and radially outwardly along substantially its entire length from said intermediate side wall portion and wherein said upper side wall and intermediate side wall portions are shaped and arranged such that in said collapse position, said lower side wall portion is partially telescoped within said upper side wall portion with said intermediate side wall portion forming a completely reverse folded portion therebetween, and with an uppermost edge of said lower side wall portion radially spaced away from said upper side wall portion.

5,575,399

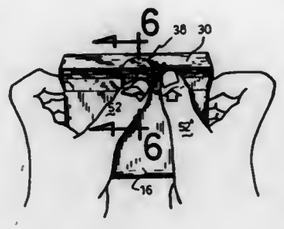
CONTAINER

Thomas D. Intini, 9270 Recollet Street, Ville Brossard, Quebec, Canada

Division of Ser. No. 31,724, Mar. 15, 1993, Pat. No. 5,346,069, which is a continuation-in-part of Ser. No. 949,984, Sep. 24, 1992, abandoned. This application Aug. 24, 1994, Ser. No. 294,912

Int. Cl.[6] B65D *43/22*

U.S. Cl. 220—326 **8 Claims**



1. A child resistant package comprising a bottom member adapted to receive and contain at least one item to be packaged, said bottom member having a base and at least one wall extending upwardly therefrom, a cover member, first and second cooperative locking means on both said cover member and said bottom member, both of said first and second locking means being operative such that when said cover member is in a closed position with respect to the bottom member said locking means function to maintain the cover member and bottom member in a locked relationship, said second locking means permitting limited movement between the cover member and bottom member while maintaining a locking relationship such that said first locking means may be moved from a locked to an unlocked position while said second locking means are locked.

5,575,460

CONTAINERS

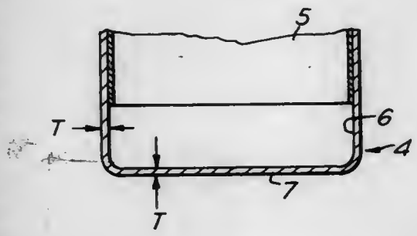
Terence A. Turner, Frilford Heath; Stuart A. Monro, Witney; Simon P. Rose, Swindon; Mary A. Parker, Wotton-under-Edge, and Gordon Rothwell, Wantage, all of United Kingdom, assignors to CarnaudMetalbox plc, United Kingdom

Filed Dec. 13, 1991, Ser. No. 806,741

Claims priority, application United Kingdom, Dec. 22, 1990, 9027954

Int. Cl.[6] B65D *7/42*

U.S. Cl. 220—458 **15 Claims**



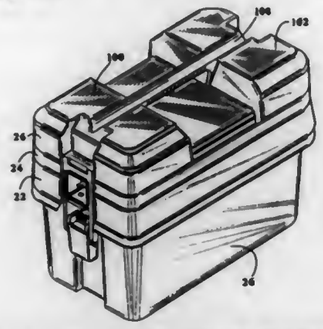
1. A can body drawn from a tinplate to comprise an end wall and an integral side wall which extends from the periphery of the end wall to a terminal portion defining a mouth of the body, characterized in that, a margin of organic coating material extends from the terminal portion along the interior surface of the side wall for an axial distance less than the length of the side wall, and the rest of the side wall has an exposed tin surface.

5,575,401

PORTABLE STORAGE ASSEMBLY

David A. Trower; Fred P. Ritchie, both of Waterloo, and Bryan J. Stow, Cedar Falls, all of Iowa, assignors to Waterloo Industries, Inc., Waterloo, Iowa

Continuation of Ser. No. 157,910, Nov. 24, 1993, Pat. No. 5,518,139. This application Feb. 8, 1996, Ser. No. 599,598
Int. Cl.[6] B65D 21/00
U.S. Cl. 220—522 8 Claims



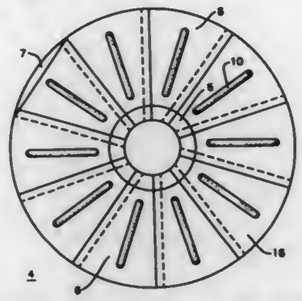
1. A portable storage assembly comprising, in combination:
a bottom tub container having a top opening; a cover for the tub container top opening, said cover including a spaced planar top surface, and a generally horizontal top handle for the cover connecting generally planar top surfaces, said handle being generally coplanar with the top surfaces,
said top surfaces including a longitudinal groove, said groove extending along the handle, said groove defining means for retaining a workpiece; and
a means for removably latching the cover to the bottom tub container.

5,575,402

TANK HEAD INSULATION COVERS

Christos J. Botsolas, Clearwater, Fla., assignor to Carol M. Botsolas, Clearwater, Fla.

Continuation of Ser. No. 243,732, May 17, 1994, abandoned, which is a continuation of Ser. No. 921,859, Jul. 29, 1992, abandoned. This application Mar. 20, 1995, Ser. No. 406,631
Int. Cl.[6] B65D 90/02
U.S. Cl. 220—565 13 Claims



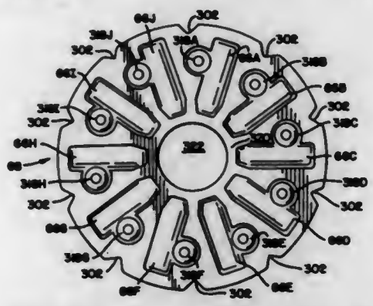
1. An apparatus for covering tank heads of varying sizes comprising:
(a) a plurality of substantially rigid wedge-shaped panels comprised of a thermoformable plastic that is fabricated to conform intimately to the shape of the tank head, a pair of sides joined at one end by a convex base and converging towards an adjoining inner base, the convex base conforming substantially to an arc along the circumference of the tank head and a flange extending obliquely from said convex base and conforming snugly to the perimeter of the tank, the panels arranged adjacently in overlapping fashion so as to substantially cover the tank head, wherein the panels are solid and the edges are flat so that a particular set of panels can be used to cover various sized tank heads by varying the degree to which each panel overlaps the next; and
(b) a cap for covering the center of the tank head left uncovered by the plurality of panels.

5,575,403

DISPENSING INSTRUMENT FOR FLUID MONITORING SENSORS

Steven C. Charlton, Osceola, Ind.; Anne T. Miller, Cambridge, United Kingdom; Joseph L. Moulton, Mishawaka, Ind.; Matthew A. Schumann, Cambridge, United Kingdom; Dennis Slomski, South Bend, and Frank W. Wogoman, Granger, both of Ind., assignors to Bayer Corporation, Elkhart, Ind.

Filed Jan. 13, 1995, Ser. No. 372,304
Int. Cl.[6] G07F 11/72
U.S. Cl. 221—31 8 Claims



1. A sensor pack for use in a sensor instrument for handling of a plurality of fluid sensors, said sensor pack comprising:
a base portion having a plurality of sensor cavities, each of which sensor cavities extending toward a peripheral edge of said base portion and accommodating one of said plurality of fluid sensors;
an enclosure means sealed to said base portion to seal said sensor cavities with said sensors disposed therein; and
a support wall in each of said sensor cavities for supporting said sensor thereon, each of said support walls extending in a radial direction from adjacent said peripheral edge of said base portion toward a central portion of said base portion and being sloped toward said enclosure means in a direction toward said peripheral edge of said base portion.

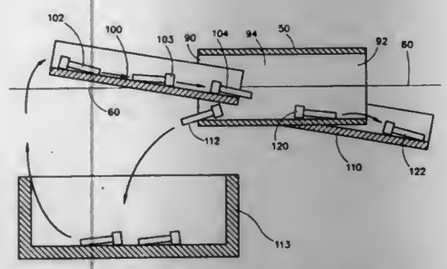
5,575,404

APPARATUS FOR HANDLING COMPONENTS

Larry J. Bohnert, Monroe, Wis., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 31, 1995, Ser. No. 522,206
Int. Cl.[6] B23Q 7/12
U.S. Cl. 221—167 9 Claims

1. A component handling apparatus, comprising:
a rotatable tube having a first end, a second end and a central portion between said first and second ends;
means for serially feeding a plurality of components into said central portion of said rotatable tube;
first means, disposed proximate said first end of said rotatable tube, for receiving selected ones of said components which are deposited into said central portion of said rotatable tube with a first orientation and which move out of said first end of said rotatable tube;



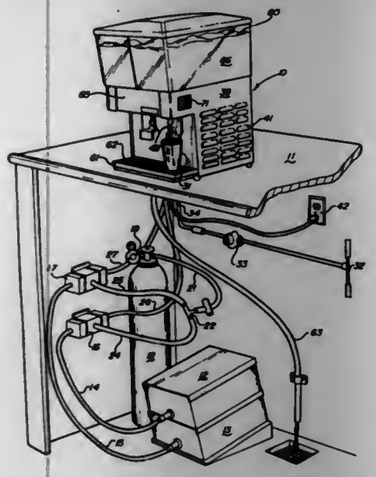
means, attached to said first receiving means, for returning said selected ones of said components to said serially feeding means;
second means, disposed proximate said second end of said rotatable tube, for receiving selected others of said components which are deposited into said central portion of said rotatable tube with a second orientation and which move out of said rotatable tube at said second end; and
means for rotating said rotatable tube about a central axis.

5,575,405

POST-MIX BEVERAGE DISPENSER WITH AN ASSOCIATED SIMULATED VISUAL DISPLAY OF BEVERAGE

Peter K. Stratton, Dearborn, Mich., and Gus J. Stratton, San Dimas, Calif., assignors to Juicy Whip, Inc., Irwindale, Calif.

Continuation of Ser. No. 406,819, Mar. 20, 1995, abandoned, which is a continuation of Ser. No. 178,473, Jan. 5, 1994, abandoned, which is a continuation of Ser. No. 707,987, May 22, 1991, abandoned, which is a continuation of Ser. No. 402,198, Sep. 1, 1989, abandoned. This application Apr. 18, 1996, Ser. No. 634,684
Int. Cl.[6] B67B 7/00
U.S. Cl. 222—1 12 Claims



1. In a post-mix beverage dispenser of the type having an outlet for discharging beverage components in predetermined proportions to provide a serving of dispensed beverage, the improvement which comprises:
a transparent bowl having no fluid connection with the outlet and visibly containing a quantity of fluid;
said fluid being resistant to organic growth and simulating the appearance of the dispensed beverage;
said bowl being positioned relative to the outlet to create the visual impression that said bowl is the reservoir and principal source of the dispensed beverage issuing from the outlet; and
said bowl and said quantity of fluid visible within said bowl cooperating to create the visual impression that multiple servings of the dispensed beverage are stored within said bowl.

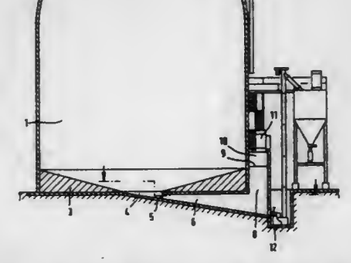
6. A method for inducing sales of a beverage to be dispensed from the outlet of a post-mix beverage dispenser, said method comprising the steps of:
positioning a transparent display bowl relative to the dispenser outlet to create the visual impression that said bowl is the reservoir and principal source from which a serving of the beverage is dispensed;
selecting a display fluid for said bowl which resists formation of organic growth and simulates the appearance of the dispensed beverage; and
visibly storing, without dispensing, a quantity of said fluid in said bowl to create the visual impression that multiple servings of the dispensed beverage are stored in said bowl for issuance from the outlet.

5,575,406

BULK-MATERIAL SILO WITH EXPANSION CHAMBER

Adolf Buchfink, Rosengarten, Germany, assignor to Claudius Peters Aktiengesellschaft, Buxtehude, Germany

PCT No. PCT/EP94/01535, § 371 Date Jan. 9, 1995, § 102(e) Date Jan. 9, 1995, PCT Pub. No. WO94/26629, PCT Pub. Date Nov. 24, 1994
PCT Filed May 11, 1994, Ser. No. 367,159
Claims priority, application Germany, May 14, 1993, 93 07 386.6 U
Int. Cl.[6] B65G 69/06
U.S. Cl. 222—195 3 Claims



1. A silo for storing, fluidizing and discharging bulk material comprising a storage chamber having a ventilated base contoured to slope toward its center, a dual stage expansion chamber having primary and secondary expansion portions and an inlet for connecting the primary portion to the storage chamber at the center of the base, the secondary portion of the expansion chamber being positioned outside the storage chamber and the primary portion of the expansion chamber extending from the inlet of the expansion chamber toward and merging with the secondary portion, said expansion chamber having means for fluidizing the bulk material therein and said secondary portion having a volume in excess of that occupied by the fluidized bulk material to provide a free space above the fluidized material, dust extraction means operatively communicating with said free space for drawing off excess air from said space and extracting dust therefrom and a storage chamber air extraction line extending from the top of the storage chamber and operatively communicating with the dust extraction means for conveying air therealong from the top of the storage chamber toward the dust extraction means.

VOL 1192 ISS 3 NO 19 1996 UMI

5,575,407

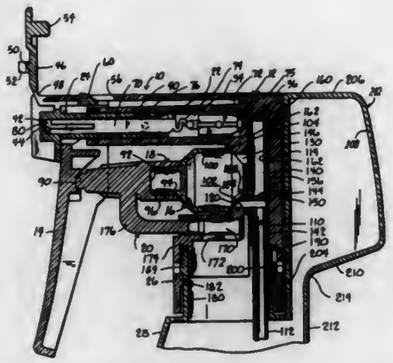
LOW COST TRIGGER SPRAYER HAVING CONTAINER WITH INTEGRAL SADDLE

Donald D. Foster, St. Charles, and Philip L. Nelson, Ellisville, both of Mo., assignors to Contico International, Inc., St. Louis, Mo.

Continuation of Ser. No. 371,961, Jan. 12, 1995, abandoned, which is a division of Ser. No. 964,158, Oct. 21, 1992, Pat. No. 5,385,302, which is a continuation-in-part of Ser. No. 603,281, Oct. 25, 1990, Pat. No. 5,234,166. This application Mar. 13, 1996, Ser. No. 614,901

Int. Cl.[6] B67D *5/40*

U.S. Cl. 222—324 14 Claims



1. A trigger sprayer assembly comprising:

a trigger sprayer having a housing containing a discharge orifice and a manually operated pump communicating with the orifice for pumping liquid through the orifice on operation of the pump; and,

a bottle container having an interior volume enclosed by a container wall, the container wall having a bottom and a neck formed on the container wall opposite the bottom, and the container wall having a portion that extends beside the neck and encloses a portion of the interior volume adjacent the neck;

the trigger sprayer housing has a top surface opposite its connection to the neck and the portion of the container wall has a top surface extending over the portion of the container interior volume enclosed by the portion of the container wall, and the trigger sprayer housing top surface and the portion of the container wall top surface run abreast to each other.

5,575,408

IMAGE DEVELOPER MATERIAL AGITATION SYSTEM WITH NON-BINDING MIXING COIL AGITATOR

Virginia A. Marqueling, Webster; A. Lance Marchese, Honeoye Falls; Bruce J. Parks, Bloomfield; Darryl L. Pozzanghera, and David B. Playfair, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

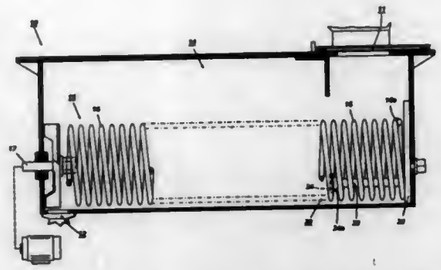
Filed Apr. 27, 1995, Ser. No. 430,025

Int. Cl.[6] G03G *15/06*

U.S. Cl. 222—412 5 Claims

1. In a particulate image developer material mixing system for a reproduction apparatus, with a rotatably driven helical mixing coil in a developer material sump for mixing said developer material in said sump, and with a system for holding said rotatably driven helical mixing coil in said sump, and a system for anti-bridging of said developer material by agitating said developer material in said sump by agitating said mixing coil; the improvement comprising:

a smoothly rounded rod extending inside of said helical mixing coil through a substantial portion thereof, said smoothly rounded rod having a smoothly enlarged diameter end portion operatively intermediately engaging said mixing coil so that



as said helical mixing coil is rotatably driven at least one coil thereof is periodically partially detained and deformed on said smoothly enlarged diameter end portion and then periodically released automatically after a predetermined rotation of said helical mixing coil, so as to provide a periodic anti-bridging agitation of said developer material with said at least one released coil at a desired frequency as said helical mixing coil is rotated.

5,575,409

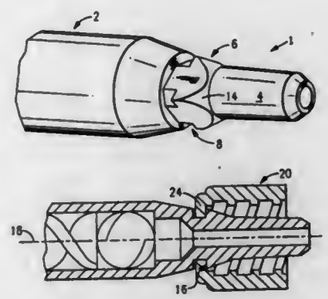
STATIC MIXER NOZZLE CONFIGURATION THAT REMOVABLY RECEIVES A LOCKING HUB THEREON

Peter E. Gruendeman, Allentown, N.J., assignor to Terry A. Horner, Allentown, N.J.

Filed Feb. 23, 1995, Ser. No. 393,230

Int. Cl.[6] B65D *83/00*; F16L *25/00*

U.S. Cl. 222—459 15 Claims



1. A static mixer nozzle configuration for releasably receiving a locking hub thereon, said nozzle comprising:

an enlarged retaining shoulder having a symmetrical cross section for receiving a said locking hub having a corresponding symmetrical mounting opening thereover; and

an undercut having a symmetrical cross section located immediately adjacent said shoulder remote from a tip of said nozzle;

wherein faces of said undercut alternately define access surfaces corresponding to said retaining shoulder's symmetrical cross-section for receiving a said locking hub in an access position, and locking surfaces, corresponding to said mounting opening, that undercut the corners of said shoulder for positively retaining said locking hub on said nozzle upon rotation of said hub in a locking direction to a locking position in which the corners of said shoulders overlie a base of said locking hub.

5,575,410

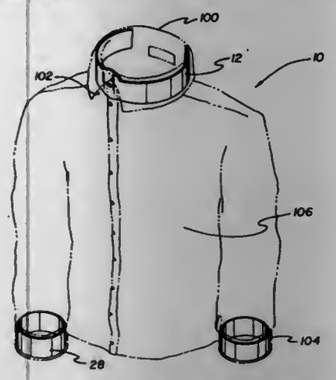
COLLAR AND CUFF PROTECTING DEVICE

Rose A. Compton, 878 Dennison Ave., Columbus, Ohio 43215

Filed Sep. 26, 1995, Ser. No. 533,695

Int. Cl.[6] A47G *25/00*; B65D *85/18*

U.S. Cl. 223—84 1 Claim



1. A collar and cuff protecting device for protecting collars and cuffs from becoming wrinkled and smashed comprising, in combination:

a protective collar portion fabricated of a pliable material, the protective collar having a central circular portion and a pair of end portions extending from opposing edges of the central circular portion whereby the pair of end portions being diametrically opposed from one another, each of the end portions having a first end, a second end, and an intermediate extent therebetween, each first end being integral with the central circular portion, each second end having a width about twice the width of each first end with the width of the intermediate extent gradually decreasing from the second end to the first end, the second end having a width equal to the width of the central circular portion, the protective collar portion adapted for securement underneath a shirt collar with the end portions extending around the shirt collar;

a protective cuff portion comprised of a continuous rigid open circular member without seams, the open circular member having a width equal to the width of the central circular portion of the protective collar portion, the protective cuff portion adapted for securement within a cuff of a shirt.

5,575,411

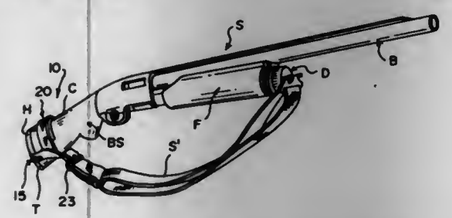
BUTT STOCK SLING ATTACHING DEVICE FOR A SHOTGUN

Floyd L. Hightower, 5617 Lake Highlands Dr., Waco, Tex. 76710

Filed Mar. 6, 1995, Ser. No. 387,401

Int. Cl.[6] F41C *33/00*

U.S. Cl. 224—149 11 Claims



1. A butt stock sling attaching device comprising a primary loop and a secondary loop; said primary loop being defined by a single one-piece web of material folded upon itself and at least half-twisted upon itself to form at least a half-twist therein to define opposite side portions integrally joined to each other at one end by an integral folded stock toe engaging portion and a second opposite end defined by terminal ends of said primary loop, means for attachment to a sling carried by said primary loop terminal ends; means for fastening said primary loop terminal ends to each other to maintain said at least half-twist, said secondary loop being defined by first and second secondary loop portions, a first end of said first secondary loop portion being connected to one of said primary loop side portions and a first end of said second secondary loop portion being connected to another of said primary loop side portions, and means for removably securing together second ends of said first and second secondary loop portions.

5,575,412

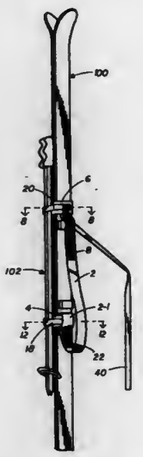
SKI CARRIER

Fred Arias, 302 Third St., Huntington Beach, Calif. 92648

Filed Jun. 12, 1992, Ser. No. 897,907

Int. Cl.[6] A45F *3/14*

U.S. Cl. 224—257 14 Claims



1. A carrier by which to enable a user to transport a pair of skis and a pair of poles, each of said pairs having first and second ends, said carrier comprising;

a first end strap adapted to be attached to the first end of the pair of skis to be transported;

a second end strap adapted to be attached to the second end of the pair of skis to be transported;

a shoulder strap connected between said first and second end straps and adapted to be worn over a shoulder of the user after said first and second end straps have been attached to the skis;

a first auxiliary strap having one end thereof fixedly attached to said first end strap and an opposite free end surrounding the first end of the pair of poles to be transported and attached to said first end strap so as to couple the first ends of said pairs of skis and poles together;

a second auxiliary strap having one end thereof fixedly attached to said second end strap and an opposite free end surrounding the second end of the pair of poles and attached to said second end strap so as to couple the second ends of said pairs of skis and poles together;

a cross strap attached to said carrier for exerting a pulling force on said shoulder strap to prevent said shoulder strap from sliding off the shoulder of the user, said cross strap having a first end connected to said first end strap and an opposite free end;

first attachment means located on the free end of said cross strap; and

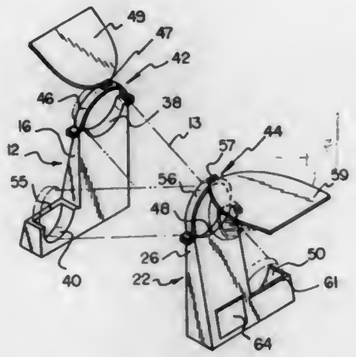
second attachment means located on said shoulder strap, said first and second attachment means being mated together to detachably connect the free end of said cross strap to said shoulder strap.

5,575,413

GOLF BAG HOLDER APPARATUS

William L. Starry, Rte. 3 Box 137A, Sauk Centre, Minn. 56378

Filed Mar. 16, 1995, Ser. No. 405,362
Int. Cl.[6] B60R 9/08
U.S. Cl. 224—274 9 Claims



1. A golf bag holder apparatus, comprising:

a first support assembly which includes a first base, a first high-form bag support assembly supported by said first base, and a first low-form bag support assembly supported by said first base adjacent to said first high-form bag support assembly, wherein said first low-form bag support assembly includes a first bag retention portion projecting upward from said first base, and

a second support assembly which includes a second base, a second high-form bag support assembly supported by said second base, and a second low-form bag support assembly supported by said second base adjacent to said second high-form bag support assembly, wherein said second low-form bag support assembly includes a second bag retention portion projecting upward from said second base,

longitudinal spacer means connected between said first support assembly and said second support assembly such that said first high-form bag support assembly is spaced opposite said second low-form bag support assembly and such that said second high-form bag support assembly is spaced opposite said first low-form bag support assembly.

5,575,414

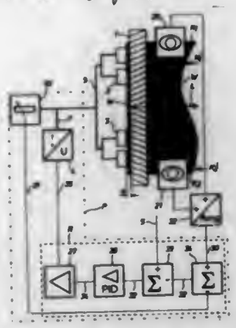
PROCESS AND DEVICE FOR GUIDING AND KEEPING A MATERIAL WEB SPREAD

Alois Gröninger, Augsburg; Werner Geyer, Konigsbrunn, and Hans Seibold, Anhausen, all of Germany, assignors to Erhardt & Leimer GmbH, Augsburg, Germany

Filed Jan. 3, 1995, Ser. No. 367,691
Claims priority, application Germany, Jan. 8, 1994, 44 00 389.7
Int. Cl.[6] B65H 23/032
U.S. Cl. 226—18 20 Claims

1. Process for guiding and keeping a material web spread out, with a spreading roll covered by oppositely orientated thread turns, said thread turns starting from the center and with spaced contact pressure elements acting on the material web, comprising





pressing the material web against the spreading roll using the contact pressure elements and, at the same time, producing forces directed to edges of the material web;

detecting the position of the contact pressure elements and generating a signal indicative of said position;

detecting the edge position of the material web and generating a signal indicative of said edge position; and

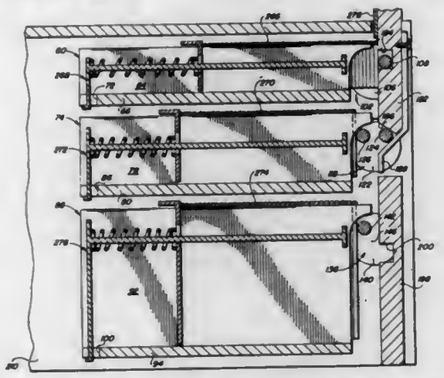
changing the spacing of the contact pressure elements from the spreading roll in such a way that the edge position of the material web is controlled and maintained as closely as possible to a preset desired value, and said controlling of the material web being based upon the signals indicative of said edge position of the material web and said detected position of the contact pressure elements.

5,575,415

STAPLER APPARATUS AND METHOD FOR SELECTIVELY DISPENSING A PLURALITY OF DIFFERENT SIZE STAPLES

Richard Sucher, 23611 Elkwood, West Hills, Calif. 91304

Filed Feb. 2, 1994, Ser. No. 190,761
Int. Cl.[6] B27F 7/00; B25C 5/16
U.S. Cl. 227—109 19 Claims



1. A stapler for use in binding a plurality of sheets of paper together, said stapler comprising:

a housing member having a first end and a second end and a top and a bottom, said second end of said housing member defining a pathway extending between said top of said housing member and said bottom of said housing member through which pathway staples may be dispensed;

cassette means, disposed within said housing member, for storing a plurality of different size staples within said housing member, each of said plurality of sizes of staples being stored in one of a plurality of rows, said plurality of rows being arranged in a stacked array intermediate said top of said housing member and said bottom of said housing member;

means for biasing staples disposed in each of said plurality of rows in a direction from said first end of said housing member toward said second end of said housing member;

selector means for alternately, selectively displacing staples disposed in all but one of said plurality of rows back away from said second end of said housing member toward said first end of said housing member; and

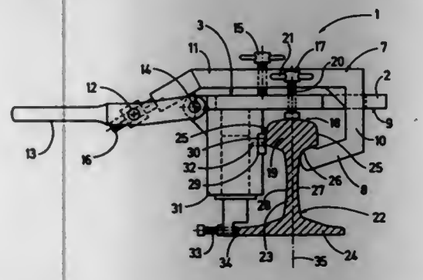
means for dispensing a staple disposed in said one of said plurality of rows which is not displaced back away from said second end of said housing member by urging the staple from said one of said plurality of rows through said pathway toward said first end of said housing member to bind a plurality of sheets of paper together.

5,575,416

DEVICE FOR ALIGNING AND RETAINING TWO RAILS WHOSE ENDS ARE TO BE WELDED TOGETHER

Friedrich Oellerer, Linz, and Heinz Mühlleitner, St. Pölten-Flinsbach, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft M.B.H., Vienna, Austria

Filed Aug. 25, 1995, Ser. No. 519,820
Claims priority, application Austria, Sep. 1, 1994, 1678/94
Int. Cl.[6] B23K 37/04
U.S. Cl. 228—49.1 12 Claims



1. A device for aligning and retaining two rails having abutting ends to be welded together, the rails comprising a rail head having a tread, an underside and sides connecting the tread and underside, a rail foot and a web connecting the rail head and foot, which comprises

(a) a rigid frame,

(b) abutments on the frame for the rail head tread and one of the rail head sides spaced from each in a longitudinal direction along the rails,

(1) the abutments for the rail head tread being adjustable relative to the frame for engaging the rail head tread, and

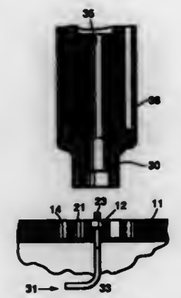
(c) retaining yokes for frictionally engaging the rails and clamping the device to the rails, the retaining yokes being associated with the frame and extending in a direction extending perpendicular to the longitudinal direction.

5,575,417

SOLID STATE MICROWAVE INTEGRATED CIRCUIT RF INSULATOR-ENCAPSULATED CONTACT INSTALLATION AND REMOVAL PROCESSES

Robert C. Allison, Rancho Palos Verdes; Jonathan W. Chan, La Puente; Garrett I. Kurogi, Lakewood; Brian C. Semmelroth, Huntington Beach; James C. Tonder, Manhattan Beach, and Kenneth S. Varon, Palos Verdes Estates, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 31, 1995, Ser. No. 381,043
Int. Cl.[6] B23K 1/00
U.S. Cl. 228—119 8 Claims



1. A process for desoldering an insulator-encapsulated contact secured in a housing 11, said process comprising the steps of:

securing the housing to minimize movement of the housing;

heating a soldering iron to approximately 825° C.;

tinning the tip of the soldering iron with solder and flux;

engaging the contact from the rear using an extraction tool;

disposing flux on a solder joint between the housing and the contact;

disposing the soldering iron in contact with the contact;

disposing the soldering iron in moat while outward pressure is exerted with an extraction tool;

after a predetermined delay, vacuuming out the contact using the extraction tool, while simultaneously removing the soldering iron and pushing out the contact, whereafter the contact is desoldered and seated in the extraction tool; and

removing the contact from the extraction tool and removing the tool from the housing.

5,575,418

CORRUGATED PAPERBOARD PACKAGE SYSTEMS WITH GAS-PERMEABLE PLASTIC MEMBRANES FOR MODIFIED ATMOSPHERE PACKAGING OF FRESH FRUITS AND VEGETABLES AND CUT FLOWERS

Chiu H. Wu, Vancouver, Canada; Juhani I. Oikarinen, Lahti, Finland; Bo Matstoms, Örebro, Sweden, and William D. Powrie, North Vancouver, Canada, assignors to The University of British Columbia, Vancouver, Canada

Filed May 27, 1994, Ser. No. 250,460
Claims priority, application Canada, Sep. 30, 1993, 2107456
Int. Cl.[6] B65D 85/50
U.S. Cl. 229—3.5 R 46 Claims

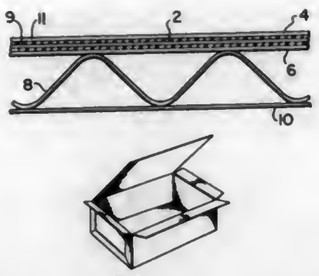
1. A corrugated gas-permeable paperboard combination comprising:

(a) a first layer of kraft paper;

(b) a layer of polymer with no natural pinholes therein;

(c) a second layer of kraft paper, said first and second layers of kraft paper sandwiching the first layer of polymer between them;

(d) a corrugated fluting affixed to a side of the second kraft paper layer, on a side of the second kraft paper layer opposite the polymer layer; and



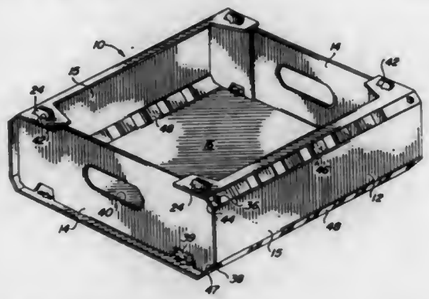
(e) a third layer of kraft paper affixed to the corrugated fluting, on a side of the corrugated fluting opposite the second layer of kraft paper, wherein at least one of the layers of the paperboard combination is punctured with at least one pinhole to permit gas to be transmitted through the paperboard combination at prescribed levels.

5,575,419

OPEN-TOP CONTAINER WITH LAMINATED END PANELS

John A. Ross, and James C. Fogle, both of Marietta, Ga., assignors to Riverwood International Corporation, Atlanta, Ga.

Filed Aug. 24, 1995, Ser. No. 518,694
Int. Cl.[6] B65D *5/32;21/032*
U.S. Cl. 229—23 R **11 Claims**



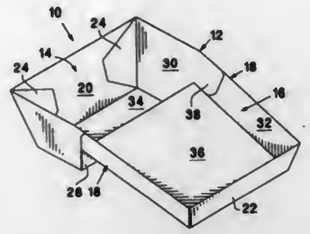
1. In a container comprised of:
two spaced, substantially parallel, relatively rigid end panels;
each end panel having two spaced upper corner areas and two upwardly extending projections, each projection being inwardly spaced from one of the upper corner areas;
a flexible sheet forming bottom and side panels extending between the end panels;
each side panel including an upper inwardly sloped portion;
the upper corner areas of the end panels extending through slots in the upper sloped portions; and
means for securing end portions of the flexible sheet to associated of said end panel projections;
the improvement comprising:
each end panel having a main body portion and foldably connected end flaps adhered to end sections of the main body portion, the end sections and the adhered end flaps forming a two-ply structure;
the projections of each end panel being of two-ply construction, one of the plies of the projections of each end panel being comprised of projections extending upwardly from the end sections of the main body portion and the other ply of the projections of each end panel being comprised of projections extending upwardly from the end flaps.

5,575,420

COMPARTMENT CARTON

Simon Whitnell, Exton, Pa., assignor to Dopaco, Inc., Downingtown, Pa.

Filed Dec. 7, 1995, Ser. No. 568,467
Int. Cl.[6] B65D *5/4805*
U.S. Cl. 229—104 **20 Claims**



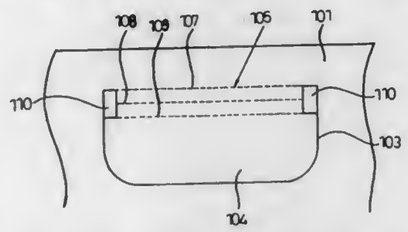
1. A food carton comprising a tray with adjacent first and second food retaining compartments, said first compartment including a first bottom panel defining a support plane for said carton, said second compartment communicating with said first compartment in spaced relation above said first bottom panel, said second compartment including a second bottom panel inclined outward and downward from said first compartment to an outer end in said support plane.

5,575,421

KNOB OF A CORRUGATED CARDBOARD PACKING BOX

Se-Hwan Heo, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 366,653, Dec. 30, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 585,755
Claims priority, application Rep. of Korea, Dec. 30, 1993, 1993-31043
Int. Cl.[6] B65D *5/468*
U.S. Cl. 229—117.16 **1 Claim**



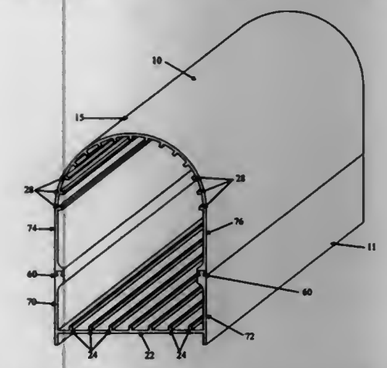
1. A knob of corrugated cardboard packing box comprising:
a cutting part being cut and having two edges;
a bending part connecting both edges of said cutting part;
means for dispersing a stress applied in both edges of said cutting part, said means being openings formed between both an edge of the cutting part and the bending part, said bending part comprising:
a first bending part, being bent as a knob part, when said bending part is positioned at a low position in comparison with the position of a packing segment inside the packing box;
a second bending part being bent as the knob part when said bending part is positioned at a substantially parallel position with the position of the packing segment; and
a third bending part being bent as the knob part when said bending part is positioned at a high position in comparison with the position of the packing segment, wherein the packing segment is styrofoam for protecting goods put in the packing box.

5,575,422

EXTRUDED REINFORCED MAILBOX

Glenn Peterman, 118 Douglas Dr., Sandusky, Ohio 44870

Filed Jul. 12, 1994, Ser. No. 273,985
Int. Cl.[6] B65D *91/00*
U.S. Cl. 232—38 **14 Claims**



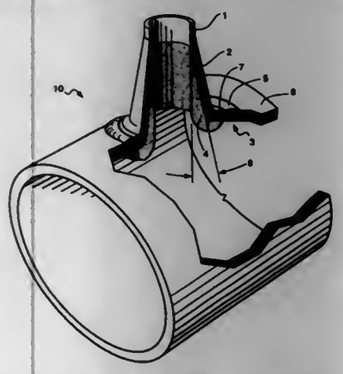
1. A reinforced mailbox produced by the method comprising of the steps of:
a. extruding a body of the mailbox and said body has a flat bottom and a top and said body has a means for reinforcing the mailbox, said reinforcing means including ribbons on an inside surface of the top of the mailbox such that there will be no damages caused by an individual striking said mailbox with a baseball bat; and,
b. attaching a back wall to the extruded body; and,
c. attaching a front door to the extruded body.

5,575,423

TUBE NOZZLE HAVING THERMAL TRANSIENT REDUCTION

Jim L. Yuen, Thousand Oaks, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 30, 1994, Ser. No. 316,617
Int. Cl.[6] B05B *15/00*
U.S. Cl. 239—397.5 **10 Claims**



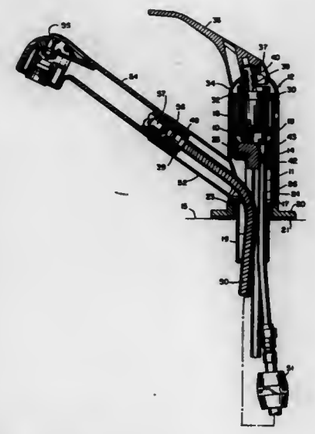
6. A tube nozzle with a thermal barrier comprising,
a tube section having a uniform inner diameter for connecting to a tube,
a conical section having an increasing inner diameter, extending from the tube section and
a base radius region extending from the conical section for connecting to a pipe,
the conical section having an insulative material applied to the inner diameter, such that the thickness of the insulative material is greater adjacent the base region than adjacent the tube section, to form a thermal barrier and protect the tube nozzle from thermal strains.

5,575,424

VACUUM BREAKER FOR FAUCETS

Gary A. Fleischmann, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Oct. 20, 1994, Ser. No. 326,624
Int. Cl.[6] A62C *31/00*
U.S. Cl. 239—436 **13 Claims**



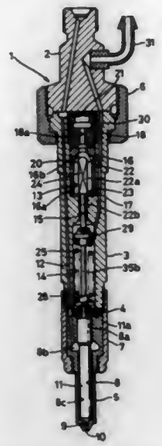
1. A faucet, comprising:
a faucet housing having a first bore in communication with a fluid inlet and fluid outlet, and a second bore;
a valve unit positioned in the first bore for regulating fluid flow from the fluid inlet to the fluid outlet;
a pull-out spray unit removably mountable adjacent to a terminus of the second bore and connected to a tube, the tube extending into the second bore and being axially movable therein;
a conduit between the first bore and the tube;
a vacuum breaker positioned in the first bore between the fluid inlet and valve unit, the vacuum breaker having a base section with a fluid entry passage, a fluid exit passage and at least one air passage, the three passages all passing therethrough, the fluid entry passage being in communication with the fluid inlet and with a fluid passageway of the valve unit, the fluid exit passage being in communication with the fluid outlet and with a fluid vent of the valve unit, and the air passage communicating at one end with atmosphere and at another end with the conduit when the other end is not closed; and
a flapper valve mountable to removably cover the other end of the air passageway so as to permit air entry into the conduit during reduced pressure conditions, the flapper valve having a gasket with a central hole and also a peripheral portion that surrounds the base section.

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5,575,425
FUEL INJECTION NOZZLE

Fumitsugu Yoshizu, Saitama-ken, Japan, assignor to Zexel Corporation, Tokyo, Japan

Filed Jul. 11, 1995, Ser. No. 500,786
Claims priority, application Japan, Jul. 21, 1994, 6-190888
Int. Cl.[6] F02M 47/00
U.S. Cl. 239—533.8 2 Claims

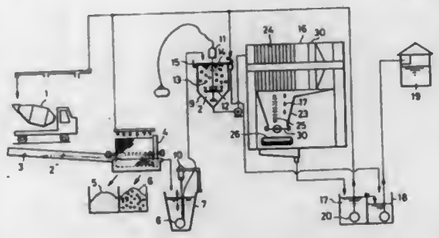


1. A two-stage injection type fuel injection nozzle comprising:
(a) an elongated hollow main body, said main body having a first, a second and a third receiving hole connected to one another in this order from a distal end thereof to a basal end, said main body including an injection port and a main valve seat formed at the distal end thereof, said injection port being communicated with said first receiving hole through said main valve seat, said main body further including a supply passage formed in a wall thereof and extending in a longitudinal direction thereof, said supply passage being adapted to supply a high pressure fuel, one end of said supply passage being connected to said first receiving hole and the other end being opened at a basal end portion of said main body, the basal end portion of said main body being provided with a secondary valve seat adapted to intercommunicate said supply passage and said third receiving hole;
(b) a needle valve received in said first receiving hole of said main body, said needle valve being capable of sliding axially of said main body, said needle valve being sat on said main valve seat and lifted from said main valve seat;
(c) a dodge plunger received in said third receiving hole of said main body, said dodge plunger being capable of sliding axially of said main body, said dodge plunger being sat on said secondary valve seat and lifted from said secondary valve seat, a full lift position of said dodge plunger being determined by being contacted with a stopper formed on said main body;
(d) a nozzle spring received in a second receiving hole of said main body, said nozzle spring being disposed between said needle valve and said dodge plunger and adapted to bias said needle valve and dodge plunger in opposite directions, i.e., toward said main valve seat and secondary valve seat, respectively;
(e) a fuel-pressure bearing area of said needle valve in the sitting state being larger than a fuel-pressure bearing area of said dodge plunger in the sitting state, a fuel-pressure bearing area of said needle valve in the lifted state being smaller than a fuel-pressure bearing area of said dodge plunger in the lifted state, owing to the foregoing arrangement, lifting of said needle valve, lifting of said dodge plunger, sitting of said needle valve, re-lifting of said needle valve, re-sitting of said needle valve and sitting of said dodge plunger being made in a sequence every time the high pressure fuel is supplied via said supply passage, a pilot injection of the fuel being performed through said injection port during the time period from the time of first lifting of said needle valve to the time of sitting thereof, a main injection of the fuel being performed through said injection port during the time period from the time of re-lifting of said needle valve to the time of re-sitting thereof;
(f) said dodge plunger being of a hollow construction, said dodge plunger including a pressure intake chamber and a guide hole arranged in this order toward said needle valve, said guide hole being allowed to extend in an axial direction of said dodge plunger; and
(g) a central plunger axially slidably received in said guide hole of said dodge plunger, one end of said central plunger being faced with said pressure intake chamber, said central plunger being allowed to project from said dodge plunger toward said needle valve and being inserted in said nozzle spring, the fuel pressure being introduced into said pressure intake chamber via said secondary valve seat by lifting said dodge plunger when the pilot injection is made, said central plunger being biased by the received fuel pressure to urge said needle valve toward said main valve seat.

5,575,426
PROCESS FOR DISPOSING RAW CONCRETE SLUDGE, APPARATUS FOR DISPOSING THE SAME, AND AGGREGATE FORMING APPARATUS USING THE SAME SLUDGE

Kiyoshi Tanii, Kumamoto-ken, Japan, assignor to Tanii Industries Co., Ltd., Japan

Division of Ser. No. 361,771, Dec. 22, 1994. This application Oct. 4, 1995, Ser. No. 538,923
Claims priority, application Japan, Dec. 29, 1993, 5-355200; Dec. 29, 1993, 5-355228; Apr. 5, 1994, 6-101671; Jun. 17, 1994, 6-169920
Int. Cl.[6] B02C 19/12
U.S. Cl. 241—3 4 Claims

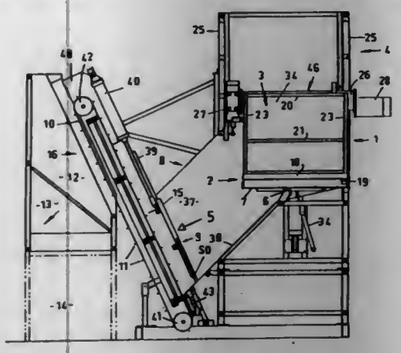


1. A dehydrated cake disposing process comprising the steps of:
dehydrating uncured concrete sludge by dehydrator means, said uncured concrete sludge having an admixture removed therefrom;
slicing a dehydrated cake dropped from said dehydrator means;
coating the sliced dehydrated cake with cake powder;
allowing the powder-coated cake to be cured; and
crushing the cured cake into granulation.

5,575,427
BULK PRODUCT HANDLING METHOD AND APPARATUS

Ladislav S. Karpisek, 86 Woodfield Boulevarde, Caringbah, New South Wales, Australia

PCT No. PCT/AU94/00079, § 371 Date Oct. 21, 1994, § 102(e) Date Oct. 21, 1994, PCT Pub. No. WO94/19115, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 23, 1994, Ser. No. 325,230
Claims priority, application Australia, Feb. 26, 1993, PL7530
Int. Cl.[6] B02C 18/06;19/12
U.S. Cl. 241—30 8 Claims



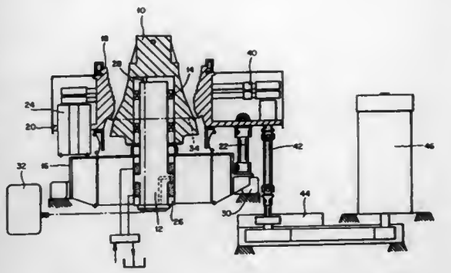
1. A method of converting a primary product mass comprised of normally discrete elements which superficially surface adhere to each other when bulk stored to individual elements, said method including the steps of gravitationally delivering the primary product mass to a stationary breaking means in the form of an apertured area to randomly disassociate the adhered elements comprising said primary mass and thereby produce individual elements and secondary masses of the elements of a size able to pass through said apertures, discharging the individual elements and the secondary masses from said stationary breaking means onto an adjacent moving breaking means which includes a conveying belt fitted with transverse slats, collecting discharged individual elements on said slats and conveying them to a conveyor discharge location, supporting the discharged secondary masses on the moving breaking means and repeatedly impacting the second masses with said conveyor slats to reduce said secondary masses to individual elements to be conveyed by the conveyor slats to the conveyor discharge location.

5,575,428
CONE VIBRATING MILL AND PROCESS FOR ADJUSTING THE OPERATION OF SUCH A MILL

Alain Cordonnier, Lille, and Renaud Evrard, Lecelles, both of France, assignors to FCB, Montreuil, France

PCT No. PCT/FR94/00309, § 371 Date Jan. 26, 1995, § 102(e) Date Jan. 26, 1995, PCT Pub. No. WO94/21380, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 22, 1994, Ser. No. 343,568
Claims priority, application France, Mar. 24, 1993, 93 03375
Int. Cl.[6] B02C 2/00;25/00
U.S. Cl. 241—30 6 Claims

1. A grinding mill comprising
(a) a support structure,
(b) a frame movable with respect to the support structure,
(c) a bottomless bowl supported on the frame,
(d) means for imparting circular and approximately horizontal vibrations to the bowl,
(e) a cone fitted inside the bowl and mounted on the support structure for free rotation around an axis of the cone,
(f) means for measuring the speed of rotation of the cone around the axis,

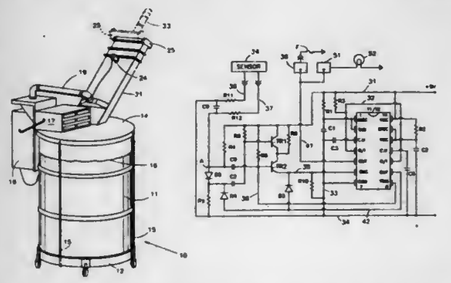


(l) the bowl and the cone defining a gap therebetween for receiving a layer of a material to be ground upon rotation of the cone, and for the ground material to be discharged in a discharge plane,
(g) means for determining a minimum thickness of the layer of ground material in the discharge plane on the basis of a measured value of the speed of rotation of the cone, and
(h) means for adjusting the frequency and/or amplitude of the bowl vibrations so as to maintain the minimum thickness of the layer at a set value.

5,575,429
CONTROL APPARATUS FOR FLUORESCENT LAMP CRUSHER

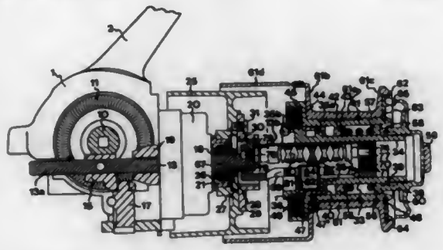
Otto Muller-Girard, Rochester, N.Y., assignor to Dextrite, Inc., Rochester, N.Y.

Filed Feb. 27, 1995, Ser. No. 395,130
Int. Cl.[6] B02C 19/12;23/04
U.S. Cl. 241—36 14 Claims



8. In a fluorescent lamp crusher having a chute for use in feeding fluorescent lamp tubes of different sizes one-by-one to a crusher mechanism, and a counter for interrupting the operation of the crusher mechanism after a predetermined quantity of count signals have been applied to an input of the counter, improved control apparatus for operating said counter, comprising
switch means operative to produce a first signal upon each insertion into said chute of a tube of a first predetermined size, and operative to produce a second signal of longer duration than said first signal, upon each insertion into said chute of a tube of a second size larger than said first size, and
control means interposed between said switch means and said counter and responsive to the initial production of each of said first and second signals to apply one count signal to an input of said counter,
said control means including inhibit means operative after application of said one count signal to said counter input to inhibit the application of a second count signal to said counter input for a predetermined interval of time greater than the duration of said first signal and less than the duration of said second signal.

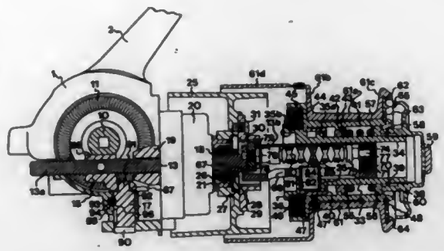
5,575,430
OPEN-FACE FISHING REEL OF THE FIXED-SPOOL TYPE
Bengt-Ake Henriksson, Svängsta, Sweden, assignor to Abu AB, Svängsta, Sweden
Filed Sep. 25, 1995, Ser. No. 533,268
Int. Cl.[6] A01K *89/01*
U.S. Cl. 242—241 **5 Claims**



1. An open-face fishing reel of the fixed-spool type, comprising
a housing;
a spindle element having a rear spindle member which is non-rotatably mounted in the housing, and a sleeve-shaped front spindle member connected to the rear spindle member and positioned in front of the housing, said front spindle member having a longitudinal slit and a rear recess;
a hollow rotor shaft which is rotatably mounted on the rear spindle member and supports a first gear wheel nonrotatably connected to the rotor shaft;
a drive shaft mounted in the housing;
a handle for rotating the drive shaft;
a gear drive which is non-rotatably arranged on the drive shaft and meshes with the first gear wheel for rotating the rotor shaft on rotation of the drive shaft;
a rotor non-rotatably mounted on the rotor shaft and supporting a toothed element which is rotatable with the rotor shaft and the rotor;
an endless screw which is rotatably arranged in the sleeve-shaped front spindle member and supports a second gear wheel which is non-rotatably connected to the endless screw and which, via the rear recess in the front spindle member, meshes with the toothed element supported by the rotor, thereby rotating the endless screw as the rotor rotates;
a hollow line spool shaft non-rotatably arranged on the front spindle member;
a line spool rotatably mounted on the line spool shaft; and
a groove-follower pin connected to the line spool shaft and, via the slit in the front spindle member, engaging with the endless screw to move, on rotation thereof, the line spool shaft and the line spool back and forth along the front spindle member.

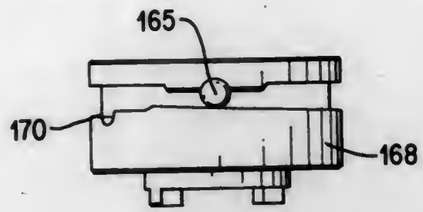
5,575,431
OPEN-FACE FISHING REEL OF THE FIXED-SPOOL TYPE
Bengt-Åke Henriksson, Svängsta, Sweden, assignor to ABU AB, Svängsta, Sweden
Filed Sep. 25, 1995, Ser. No. 533,643
Int. Cl.[6] A01K *89/01*
U.S. Cl. 242—241 **2 Claims**

1. An open-face fishing reel of the fixed-spool type, comprising
a housing;
a spindle element having a rear spindle member which is non-rotatably mounted in the housing, and a sleeve-shaped front spindle member connected to the rear spindle member and positioned in front of the housing;
a hollow rotor shaft which is rotatably mounted on the rear spindle member and supports a gear wheel non-rotatably connected to the rotor shaft;
a drive shaft mounted in the housing;



a handle for rotating the drive shaft;
a gear drive which is non-rotatably arranged on the drive shaft and meshes with the gear wheel of the rotor shaft, for rotating the rotor shaft on rotation of the drive shaft;
a rotor non-rotatably mounted on the rotor shaft;
a hollow line spool shaft which is non-rotatably arranged on the front spindle member;
a line spool rotatably mounted on the line spool shaft;
an oscillating member which is arranged in the sleeve-shaped front spindle member and connected to the rotor on one side and to the line spool shaft on the other side for moving the line spool shaft back and forth on the front spindle member and, thus, oscillating the line spool about a center of oscillation as the rotor rotates; and
a mechanism for setting the center of oscillation in a desired position along the front spindle member, said mechanism having a slide arranged in the housing and connected to the rear spindle member and being displaceable in the longitudinal direction of the spindle element, and an adjusting means which is operable from the outside of the housing and engages the slide for displacing the slide the spindle element, and the oscillating member in the longitudinal direction of the spindle element, whereby the center of oscillation of the line spool is moved to the desired position.

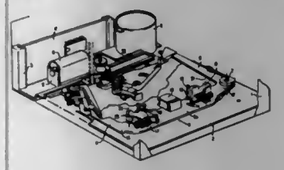
5,575,432
INCREASED DRAG MECHANISM
Eric K. Baisch, Philadelphia, Pa., assignor to Penn Fishing Tackle Manufacturing Company, Philadelphia, Pa.
Filed Dec. 5, 1994, Ser. No. 349,425
Int. Cl.[6] A01K *89/02*
U.S. Cl. 242—302 **1 Claim**



1. An improved cam means for use in a fishing reel of the type having a friction drag means, to increase the range of the drag imparted by the operation of said drag means; which drag means includes a substantially cylindrical cam rotatable about its cylindrical axis, said cam having a cam follower surface thereon which rises axially, said drag means further having a follower means comprising a pin retained by and protruding from a radially extending surface of a follower, said pin engaging said follower surface on said cam and positioned to move axially in response to rotation of the cam about its axis, following the axial position of the cam surface, whereby the drag imparted by said drag means is adjusted; the improvement comprising:

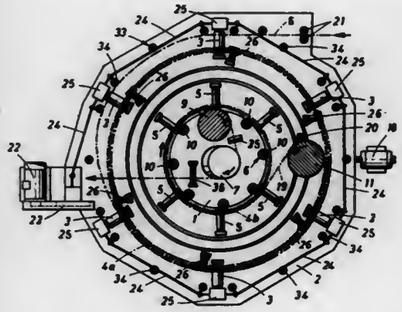
said follower having a shouldered portion extending axially from said radially extending surface toward said cam surface, said shouldered portion retaining said pin; and
said cam surface having a portion thereof configured to retain a portion of said pin and, thereafter, rising axially to a portion of said cam surface which is relieved axially to accommodate said shouldered portion of said follower, so that a substantial portion of said shouldered portion fits substantially within said relieved portion of said cam surface.

5,575,433
TECHNICAL DEVICE, PARTICULARLY ELECTROMECHANICAL DECK FOR MOVING INFORMATION CARRIERS AND METHOD OF PRODUCING A MOVABLE FUNCTIONAL PART ON A METAL PLATE (FLEXURE FILM)
Georg Kämmler, Berlin, and Stefan Müller, Wetzlar, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 26, 1994, Ser. No. 329,572
Claims priority, application Germany, Nov. 19, 1993, 43 39 450.7
Int. Cl.[6] B29C *53/02*
U.S. Cl. 242—358 **10 Claims**



1. A technical device comprising at least one plastics function part formed on a metal plate, which part has been moulded onto the metal plate by outsert-moulding and comprises at least one bridge element, which traverses a hole in the metal plate, and retaining elements, which are situated on surfaces of said metal plate and are interconnected by the bridge element, characterized in that the movability of the function part as a slidable or rotatable part is obtained automatically through shrinkage of the plastic by means of the following construction:
a) the bridge element and the retaining elements are formed as tubular elements,
b) the tubular retaining elements surround the edges of the hole with a clearance (a) over the entire circumference,
c) the bridge element and the retaining elements are connected at the peripheral location of the hole by means of a plastic film which film is oriented along its
d) plane at least at one of the metal-plate surfaces,
e) the cross-section of the tubular retaining elements and the cross-section of the tubular bridge element are dimensioned in such a manner that the tubular retaining elements and the tubular bridge element are subject to a shrinkage such that it compensates for the tendency of the tubular elements to be shrunk onto the metal plate by warping of the plastic film caused by said shrinkage.

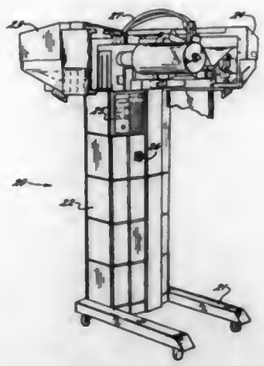
5,575,434
STRIP ACCUMULATOR
Karl Steinmair, Schiedlberg, Austria, assignor to Voest-Alpine Industrieanlagenbau GmbH, Linz, Austria
PCT No. PCT/AT94/00113, § 371 Date Jun. 1, 1995, § 102(e) Date Jun. 1, 1995, PCT Pub. No. WO95/06528, PCT Pub. Date Mar. 9, 1995
PCT Filed Aug. 12, 1994, Ser. No. 433,419
Claims priority, application Austria, Sep. 1, 1993, A 1752/93
Int. Cl.[6] B65H *20/26*
U.S. Cl. 242—364.1 **4 Claims**



1. A strip accumulator comprising an outer circular set of carrying rollers, which extend radially with respect to a vertical axis of the set and serve to carry an upright outer strip coil receiving a strip from a strip feeder positioned outside the outer circular set, a concentric inner circular set of freely rotatably mounted, radially extending inner carrying rollers for carrying an inner strip coil connected to the outer strip coil by a reversing loop, a roller cage, which constitutes a core for the inner strip coil and comprises rollers having parallel axes, one of the rollers serving as a payout roller for guiding the strip to an inclined delivery roller disposed within the roller cage, a looping roller for forming the reversing loop arranged between the outer and inner circular sets of carrying rollers drivable to revolve about the vertical axis at a velocity that is equal to one-half of the difference between the velocities of the incoming and outgoing strips, and a circular set of radially inwardly extending inclined rollers inside of the outer circular set of carrying rollers, the inclined rollers being upwardly inclined towards the vertical axis and/or being inclined relative to a radial orientation with respect to the vertical axis in a sense which is opposite to the sense of rotation of the outer strip coil.

5,575,435
HIGH SPEED APPARATUS FOR FORMING FOAM CUSHIONS FOR PACKAGING PURPOSES
Charles R. Sperry, Springfield, Vt., and Laurence B. Sperry, Brookline, Mass., assignors to Sealed Air Corporation, Saddle Brook, N.J.
Continuation of Ser. No. 766,810, Sep. 26, 1991, Pat. No. 5,376,219. This application Dec. 22, 1994, Ser. No. 362,122
Int. Cl.[6] B65H *16/04*
U.S. Cl. 242—421.4 **12 Claims**

1. A feeding system for feeding a web of plastic film material from a supply roll at a desired tension regardless of the supply of film material on the supply roll, said feeding system comprising:
a rotatable shaft for carrying the supply roll of plastic film material;
a breaking motor attached to rotate with said shaft for retarding the supply rotation of said shaft;
means, independent of said braking motor, for advancing the plastic film material from the supply roll;
means for measuring the EMF generated in said braking motor by the rotation of said shaft as the film is supplied; and



means for driving said motor opposite said supply rotation in response to the measured EMF to thereby apply a desired amount of tension to the web of film material being supplied.

5,575,436

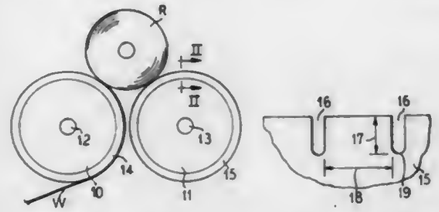
COMPLIANT COVERED ROLL OR DRUM

Michael F. McDermott, Lee, Mass., assignor to Beloit Technologies, Inc., Wilmington, Del.

Filed May 19, 1994, Ser. No. 247,212

Int. Cl.[6] B65H *18/26*

U.S. Cl. 242—542.4 **3 Claims**



1. In a winder for winding a continuous traveling web onto a roll, the improvement comprising:

a cylindrical winder drum for supportingly driving a roll wound from the continuous web;

a covering layer on the drum, the covering layer having a compliant surface with a surface pattern of land areas and recesses for supporting the web roll on said land areas, the width of the recesses being in the range of between about 0.050 inch to about 0.250 inch, the depth of the recesses being in the range of between about 0.050 inch to about 0.250 inch, the aspect ratio of the recesses and land areas being the range of about 1.00 to about 10.00;

said layer and surface pattern arranged to provide a pattern of individually defined land areas in the outer surface thereof, the land areas being non-uniform in either size, or spacing one from the other, or both, with said recesses being distributed over the entire outer surface of the covering layer on the drum.

5,575,437

KNOCKDOWN REEL

Kenneth E. Campbell, 4063 Old Orchard Rd., York, Pa. 17402

Filed Jan. 12, 1995, Ser. No. 372,027

Int. Cl.[6] B65H *75/22*

U.S. Cl. 242—608.6 **2 Claims**

1. A knockdown reel comprising:

a tubular hub member formed from two parts releasably interlocked together and including aligning ribs on both ends thereof;

a pair of end flange members each having an inner side wall with a circular recessed socket therein which cooperates with the ends of the tubular hub in order to telescopically receive the ends of the tubular hub, said socket including aligning slots in the side walls thereof which cooperate with the aligning ribs on the tubular hub;

releasable locking means on said socket side walls and said telescopically received portions of said tubular hub member including yieldable latch elements having radially extending locking abutments thereon arranged at circumferentially spaced locations on the telescopically engaging portions of one of said members and radially extending openings in the telescopically engaging portion of the other of said members arranged complementarily to receive said locking abutments of said one of said members and latch the end flange members releasably to the opposite ends of said tubular hub member, said locking abutments being accessible through said radial openings adjacent the outer surfaces of said end flange members for engagement to move said abutments radially in disengaging direction to permit separation of said end flange members from said tubular hub; and

wherein the socket includes a bottom wall with radially spaced curved projections thereon extending inwardly toward said inner side wall of said end flange, each said projection spaced from the side walls of the socket a sufficient distance to guide the ends of the tubular member into proper circumferential alignment.

5,575,438

UNMANNED VTOL GROUND SURVEILLANCE VEHICLE

Kevin P. McGonigle, Milford; John Ferraro, Clinton, and James P. Cycon, Orange, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 9, 1994, Ser. No. 239,645

Int. Cl.[6] B64D *47/00*

U.S. Cl. 244—13 **18 Claims**

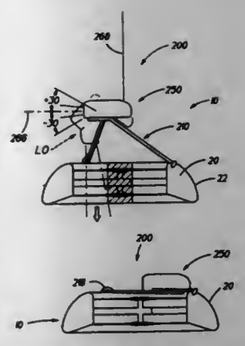
1. An unmanned aerial vehicle for a ground surveillance mission, comprising:

a toroidal fuselage;

a rotor assembly including a pair of counter-rotating rotors, said rotor assembly being secured in fixed coaxial combination with said toroidal fuselage and operative to provide lift, pitch, yaw, and roll control to provide vertical takeoff and landing and translational flight capabilities for said unmanned aerial vehicle

a landing gear subsystem secured in combination with said toroidal fuselage to facilitate landing of said unmanned aerial vehicle at unprepared ground surveillance sites; and

a sensor subsystem that provides an azimuthal scanning capability and a predetermined elevation/depression scanning capa-



bility to accomplish the ground surveillance mission, said sensor subsystem including

a sensor pod having at least one sensor mounted therein which is operable to provide sensor data in accomplishment of the ground surveillance mission, and

a mounting assembly for mounting said sensor pod in external combination with said toroidal fuselage, said mounting assembly being operative to reconfigure said sensor subsystem to a deployed configuration for accomplishment of the ground surveillance mission and to reconfigure said sensor subsystem to a stowed configuration for transportability of said unmanned aerial vehicle.

5,575,439

FASTENING OF A THERMAL INSULATION STRUCTURE

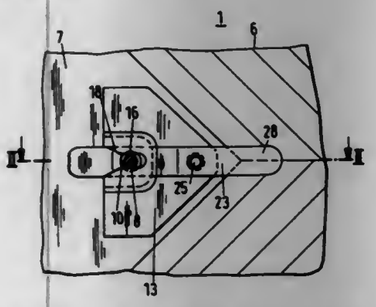
Horst Heinze, Feldkirchen-Westerham, and Axel Runge, Ottobrunn, both of Germany, assignors to Daimler-Benz Aerospace AG, Munich, Germany

Filed Nov. 23, 1994, Ser. No. 344,112

Claims priority, application Germany, Nov. 24, 1993, 43 40 002.7

Int. Cl.[6] B64C *1/06*

U.S. Cl. 244—131 **14 Claims**



1. A fastening system of a thermal insulation structure on the airframe of craft for protection during reentry into the atmosphere, comprising an airframe having an air frame surface, an insulation structure including a plurality of highly heat-resistant, mechanically stable panels, each of said panels having a bot gas-exposed panel surface and an airframe connection panel surface, a plurality of fastening points being provided on each of said panels, said fastening points being arranged at spaced locations from one another and including fastening means at each of said fastening points for establishing a positive-locking connection between the insulation structure and the airframe, said fastening means including:

first fastening point means for either preventing movement of the panel, permitting limited rotary movement of said panel around an axis that is substantially at right angles to said airframe surface, or permitting limited movement of the panel in a local tangential plane of the airframe surface at the first fastening point, said first fastening point means being formed as a self-locking plug-type or snap connection which is releasable from said bot gas-exposed panel surface, with an assembling bolt, a connection element accommodating said assembling bolt and a spring element interlocking said assembling bolt and said connection element rigidly or in a limitedly rotatable manner;

second fastening point means for permitting a limited linear displacement of said panel in parallel or approximately in parallel to the airframe surface; and

another fastening point means for permitting a limited displacement of said panel in all directions in parallel or approximately in parallel to the airframe surface, said second fastening point means and said another fastening point means each being plug-type connections, wherein the direction of plugging in is the same for all fastening points.

5,575,440

PROCEDURE AND DEVICES TO DETERMINE THE SEVERITY OF ICING CONDITIONS FOR AN AIRCRAFT

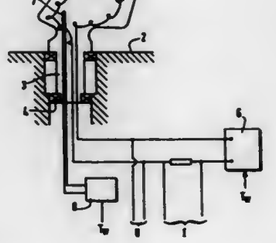
Henri LeBlond, Versailles; Joel Choisnet, La Frette S/Seine, and Gregoire Dodel, Neuilly Sur Seine, all of France, assignors to Sextant Avionique, Meudon la Foret, France

Filed Nov. 25, 1994, Ser. No. 348,086

Claims priority, application France, Nov. 25, 1993, 93 14092

Int. Cl.[6] B64D *15/00*

U.S. Cl. 244—134 F **11 Claims**



1. A method for determining the severity of icing conditions for an aircraft flying in air containing drops of water, comprising the steps of:

heating a part projecting from a surface of said aircraft;

measuring the total power required for said heating;

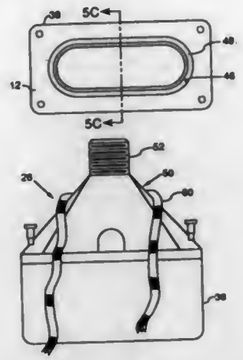
measuring flow parameters in a proximity of said part;

computing the heating power that would be required in dry air having said flow parameters;

deducting said heating power from said total power to obtain the complementary power required for evaporating said drops of water; and

computing from said complementary power a parameter representative of a speed at which the thickness of ice increases at the surface of the aircraft.

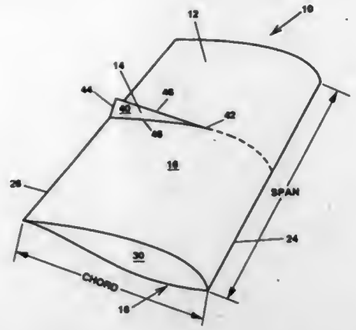
5,575,441
FUEL LIQUID/VAPOR VENT CONTAINMENT/ RECOVERY SYSTEM
James R. Gervais, Swansea, and Walter S. Lambert, St. Lakeville, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Nov. 28, 1994, Ser. No. 345,182
Int. Cl.[6] B64D *15/00*
U.S. Cl. 244—135 R **5 Claims**



1. An adaptor assembly for connecting a hose to a wing vent/dump outlet, said adaptor being a part of a fuel liquid/vent containment/recovery system of an aircraft having said vent/dump outlet, said vent/dump outlet being positioned on a wing and having an aerodynamic shape thereto, said vent/dump outlet having an opening enclosed by a wall having its top cut at a slant to a base with said wall mounted thereon said adaptor assembly comprising:
a connector, said connector having an interior channel therethrough for the flow of vent and/or dumped fuel and/or vapor of said fuel, said connector having a groove in a front thereof, said groove being about said interior channel, said groove having a shape to receive said wall of said outlet, said groove having a bottom shaped in a slanting manner to complement the slant of said wall, said front further having a shape to conform to a base of said outlet, said groove having a single O-ring at the bottom thereof for sealing engagement with the top of said wall having a slant thereto;
a reducer, said reducer being connected to a back of said connector, said reducer having an interior channel therethrough, a first opening of said reducer being congruent with an opening of said interior channel of said connector, said reducer having a means for connecting a hose to said reducer; and
a means for holding said connector and said reducer to said outlet for a sealed engagement with said outlet upon refueling of said aircraft.

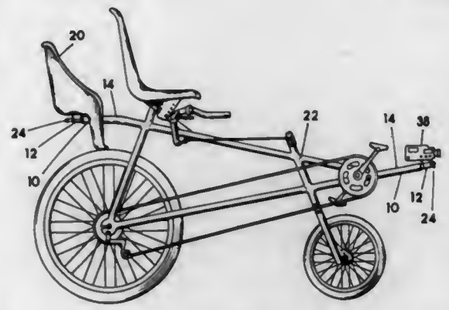
5,575,442
GUIDED WING FOR AIRCRAFT FLYING AT HIGH ANGLES OF ATTACK
Tsze C. Tai, Potomac, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jan. 19, 1995, Ser. No. 375,031
Int. Cl.[6] B64C *3/58*
U.S. Cl. 244—198 **19 Claims**

1. An apparatus for attaching to a wing operating in a fluid medium for increasing the angle of attack at which the wing experiences aerodynamic/hydrodynamic stall, the wing including upper and lower surfaces extending between a leading edge and a trailing edge and having a maximum thickness therebetween, and



between a root and a tip, wherein the leading and trailing edges define a chord and the root and tip define a span, said apparatus comprising:
at least one plate member projecting normal to the upper surface of the wing, said at least one plate member having a straight top surface and a curvilinear bottom surface, said bottom surface adjoining the upper surface of the wing and having a shape corresponding thereto, said top and bottom surfaces defining a height of said at least one plate member, said top and bottom surfaces extending in a substantially chordwise direction between an anterior end and a posterior end of said at least one plate member, said at least one plate member having a minimum height at said anterior end and a maximum height at said posterior end wherein said maximum height is equal to between about 100% and 110% of a fully attached boundary layer thickness of a fluid flowing over the upper surface of the wing, said boundary layer thickness being determined at said trailing edge at a predetermined operating condition.

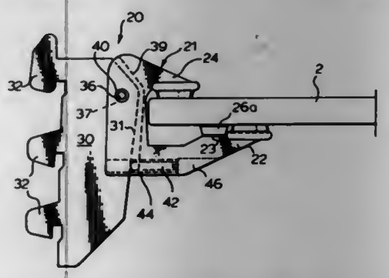
5,575,443
QUICK RELEASE ACCESSORY MOUNT ON A BICYCLE
Jay W. Honeycutt, 244 Madison Ave., #182, New York, N.Y. 10016
Filed Oct. 4, 1994, Ser. No. 322,412
Int. Cl.[6] A47F *5/08*
U.S. Cl. 248—231.9 **5 Claims**



1. In combination, a multiple member mount assembly and a bicycle, the assembly comprising:
a first mount member attached to said bicycle and a second mount member disengageably attachable to said first mount member, said second mount member having an attached bicycle accessory, wherein the first and second mount members provide structuring allowing for the ready attachment and detachment of said accessory relative to said bicycle absent the use of wrenching tools;

said first mount member having a first end attached to said bicycle and a second end oppositely disposed from said first end, said second end structured for telescopic engagement;
said second mount member including a portion sized and shaped for a snug-fit, telescopic engagement with said second end of said first mount member;
bore means associated with at least one of said first or second mount members;
a lock pin insertable into said bore means when the first and second mount members are telescopically engaged with one another, said lock pin engages both said first mount member and said second mount member when inserted and including a lock means for preventing unwanted separation of the first and second mount members, said lock pin allows separation of said second mount member from said first mount member when removed from said bore means;
security lock means engagable with said lock pin for preventing unauthorized withdrawal of said lock pin from said bore means and unauthorized separation of said second mount member and said accessory from said first mount member.

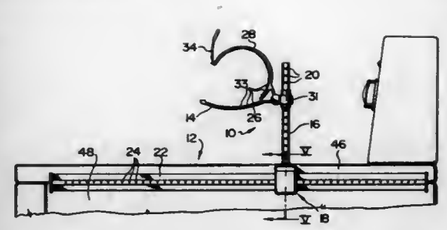
5,575,444
ADJUSTABLE SHELF BRACKET
Martin Otema, 15 Pine Ridge Dr., Scarborough, Ontario, Canada
Filed Mar. 16, 1995, Ser. No. 405,160
Int. Cl.[6] A47G *29/02*
U.S. Cl. 248—242 **20 Claims**



1. A bracket for supporting a shelf comprising
mounting means comprising a vertical mounting gusset for mounting the bracket on a supporting surface,
means for supporting a shelf provided with a vertical slot into which the mounting gusset is pivotally received, pivotally suspended from the mounting means such that the means for supporting a shelf can pivot toward and away from the supporting surface,
a gap provided between a front edge of the mounting gusset and a floor of the slot, and
adjusting means for maintaining the means for supporting a shelf at a desired attitude relative to the supporting surface.

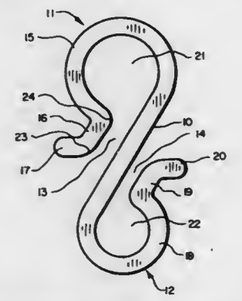
5,575,445
STOVE-TOP AID
Anthony B. Kozdas, R.R. #2, Stirling, Ontario, Canada
Filed Feb. 14, 1994, Ser. No. 196,696
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—287.1 **1 Claim**

1. An apparatus adapted to securing pots or pans on a stove top, said apparatus comprising:
a. a clamping means movable between an opened and a closed position, mounted on a vertical support member and adapted to hold the handle of a cooking pot or pan wherein the clamping means comprises an upper claw and a lower claw attached by biasing means and together attached to said



vertical support member wherein the upper claw is adapted to provide a downward force against the handle of a cooking pot or pan when in the closed position to bias a cooking pot or pan against the stove;
b. an attachment means connected to the vertical support member and adapted to provide attachment to the stove;
c. a rail adapted to provide a means for moving the attachment means horizontally on the rail;
d. a locking means comprising a ratchet and pawl mechanism, wherein the ratchet of said mechanism is a bar pivotally attached at one end thereof to the upper claw at an end remote from its pivot connection to the opposed claw and the pawl of said mechanism is carried on the lower claw at an end remote from the pivot and wherein said ratchet bar comprises ratchet teeth, said ratchet teeth cooperate with the pawl to lockably engage the claws and wherein said ratchet teeth are released from the pawl by a hand manipulable release.

5,575,446
CLAMPING DEVICE FOR SECURING CHRISTMAS TREE LIGHT WIRES AND/OR DECORATIONS TO CHRISTMAS TREES
Barbara Swenson, P.O. Box 680096, Park City, Utah 84068, and D. Scott Beckham, Summit County, Utah, assignors to Barbara Swenson, Sandy, Utah
Filed Dec. 23, 1994, Ser. No. 371,266
Int. Cl.[6] F16B *45/00*
U.S. Cl. 248—304 **15 Claims**



1. A device for clamping the wires of a string of Christmas tree lights to Christmas tree branches and at the same time providing for attachment of a tree decoration, comprising a wholly integral length of flexible but normally shape-retaining material that is doubled back on itself from opposite ends thereof at opposite sides of a diagonally oriented, substantially central part of said length to provide oppositely directed, open loop clamping portions whose openings are at respective opposite sides of but at said central part of said length, said openings formed by relatively short straight portions substantially parallel to the central part of said length, whereby either of said clamping loops may be selected for clamping of a wire of a string of Christmas tree lights to a branch of the Christmas tree, leaving the other free for receiving a Christmas tree decoration.

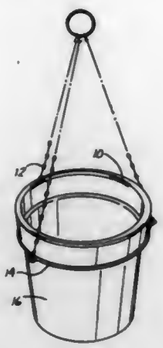
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5,575,447

POT HANGER AND HOLDER

Frederick M. Griffin, 4131 Paseo de la Tortugas, Torrance, Calif. 90505

Filed Oct. 31, 1994, Ser. No. 331,993
Int. Cl.[6] A47F *5/00*
U.S. Cl. 248—318 6 Claims



1. A pot hanger for suspending a pot for display comprising:
a multiple strand hanger having a common connection at one end and having its strands splayed at an opposing end; and
a resilient and flexible ring having a diameter for providing an interference fit with said pot;
a plurality of ears defined in the periphery of said ring, said splayed ends of said multiple strand hanger being coupled to said ears; and
a hook and hole fastener integrally formed only from said ring to adjustably and temporarily vary said diameter of said ring but to simultaneously provide nonexpansible restraint to prevent increase of diameter of said ring once adjusted so that said interference fit with said pot is rigid,
whereby said pot hanger suspends said pot without the necessity of drilling or connecting in any manner with said pot other than by means of said interference fit with said ring.

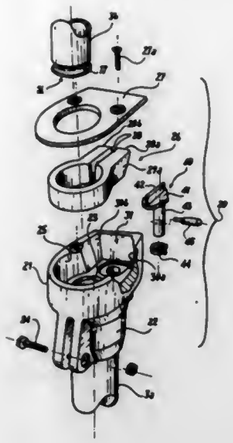
5,575,448

ADJUSTABLE STAND, PARTICULARY FOR PHOTOGRAPHIC AND CINEMATOGRAPHIC USE

Gilberto Battocchio, Bassano Del Grappa, Italy, assignor to Lino Manfrotto & Co. S.p.A., Bassano Del Grappa, Italy

Filed Mar. 30, 1995, Ser. No. 413,400
Claims priority, application Italy, Apr. 7, 1994, PD9400065
Int. Cl.[6] F16M *11/00*
U.S. Cl. 248—410 8 Claims

1. An adjustable stand, particularly for photographic and cinematographic use, comprising a telescopic stem with first and second stem elements which are slidable relative to one another, and with a locking device for firmly fixing the stem elements to one another, the locking device including a collar which is connected to the first element of the stem and surrounds the second element at least partially, as well as clamping means for the collar for tightening it from an inoperative position in which the second stem element is slidable relative to the first to an operative position in which the second stem element is fixed firmly to the first element by means of the collar, characterized in that the locking device comprises a seat in which the collar is restrained for limited movement between the inoperative position and the operative position, and in that the clamping means for the collar comprise respective surfaces of the collar and of the seat, the surfaces being coupled with one another and shaped so as to receive a component of a load bearing on the second stem element and to clamp the collar onto the second stem dement in dependence on the said component.

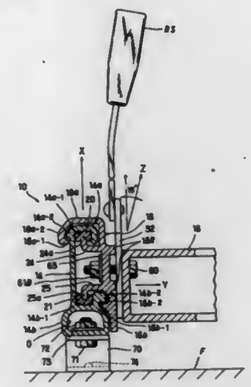


5,575,449

SLIDE RAIL DEVICE FOR SEAT

Hideo Shinbori; Takuro Takayama, and Masami Akiyama, all of Akishima, Japan, assignors to Tachi-S Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1994, Ser. No. 318,294
Claims priority, application Japan, Oct. 13, 1993, 5-60003
Int. Cl.[6] B60N *1/00*
U.S. Cl. 248—429 10 Claims



1. A slide rail device for a seat, of such a type mounted laterally of a seat cushion frame which forms a part of said seat, comprising:
a lower rail means to be fixed to a floor, said lower rail means including an upper guide groove and a lower guide groove;
an upper rail means to be fixed to a lateral side of said seat cushion frame, said upper rail means being slidably assembled with said lower rail means such as to be slidable along said lower rail means;
said upper rail means including an upper guide means and a lower guide means which are respectively slidably fitted in said upper and lower guide grooves of said lower rail means via slider means;
a seat belt anchor means disposed between said upper rail means and said seat cushion frame; and
at least two engagement means which are so arranged between said upper and lower rail means that each of said at least two engagement means to effect an engagement action responsive to an inwardly slant upward force being applied through said seat belt anchor means to said upper rail means in a slant direction inwardly of the seat, whereby said engagement action disperses a stress produced by said inward slant upward force in said upper and lower guide means of said upper rail means, said at least two engagement means including:
(a) a first engagement means disposed at a point laterally away from said seat frame, said first engagement means being to effect an engagement action in response to at least one of an upward component force and an inward component force composed by said inwardly slant upward force; and
(b) a second engagement means disposed at a point laterally toward said seat frame and away from said first engagement means said second engagement means being to effect an engagement action only in response to said upward component force.

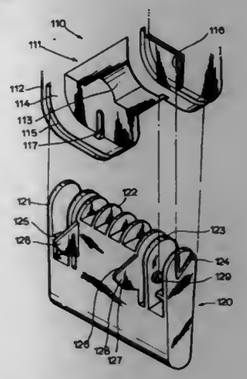
a pair of rounded second protrusions, each of the second protrusions being formed inside a corresponding first protrusion with a space therebetween for receiving a corresponding second fixture of the bracket and having an outer projection extending outwards from a middle section of its outer surface, said projection being engaged with the guide part of a corresponding second fixture of said bracket; and
a center block provided between said second protrusions, said center block being rounded at its upper top in order to correspond to said center recess of the bracket and including an opposed pair of support legs extending forwards from its front surface, each of said support legs having a linear surface part and an inclined surface part.

5,575,450

MONITOR TILTING DEVICE

Nam-soo Lee, Iujungbu, Rep. of Korea, assignor to Inkel Corporation, Seoul, Rep. of Korea

Division of Ser. No. 186,692, Jan. 24, 1994, Pat. No. 5,520,361.
This application May 25, 1995, Ser. No. 450,414
Claims priority, application Rep. of Korea, Apr. 20, 1993, 93-6642; Oct. 26, 1993, 93-22077; Oct. 26, 1993, 93-22078
Int. Cl.[6] H05K *5/00*
U.S. Cl. 248—688 2 Claims



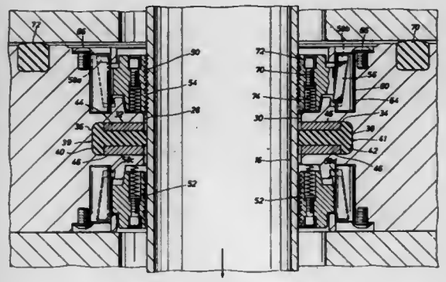
1. A monitor tilting device comprising:
a monitor having a bracket provided on a lower surface thereof, said bracket including:
a base formed on the lower surface of said monitor;
an opposed pair of rounded first fixtures protruding from opposed sides of said base, each of said first fixtures being provided with a semicircular stepped part on its inner surface;
a pair of rounded second fixtures, each of said second fixtures being formed inside a corresponding first fixture with a mounting slit defined therebetween, and having a guide part on a top section of its inner surface; and
a center recess defined between said second fixtures; and
monitor tilting means rotatably engaged with said bracket, said means including:
an opposed pair of rounded first protrusions received into said mounting slits of the bracket, each of said first protrusion having a V-shaped groove on an upper section of its outer surface and a sliding part on a middle section of its inner surface, said V-shaped groove being engaged with the semicircular stepped part of a corresponding first fixture of said bracket, said sliding part having first and second seats and cooperating with a corresponding second fixture of the bracket;

5,575,451

BLOWOUT PREVENTER RAM FOR COIL TUBING

Kenneth W. Colvin, and William L. Carbaugh, both of Humble, Tex., assignors to Hydril Company, Houston, Tex.

Filed May 2, 1995, Ser. No. 434,042
Int. Cl.[6] E21B *33/06*
U.S. Cl. 251—1.3 3 Claims



1. A blowout preventer ram for combining with another ram to engage a coil tubing string extending through the blowout preventer to prevent fluid from flowing upwardly between the tubing and the rams and to hold the tubing from upward and downward movement, said ram comprising a ram body having a semi-circular cavity for mating with a semi-circular cavity in another ram and encircle the tubing, seals carried by the rams to engage the tubing string and prevent fluid from flowing upwardly past the rams, and slips carried by the ram and positioned in the semi-circular cavity on opposite sides of the seal to hold the tubing from upward and downward movement relative to the ram.

5,575,452

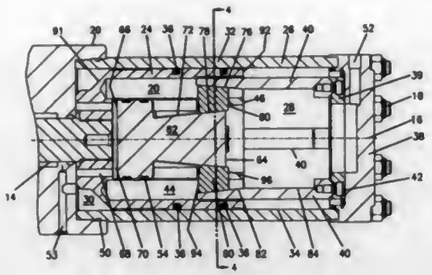
BLOWOUT PREVENTER WITH RAM WEDGE LOCKS

Melvyn F. Whitby, Houston; Frank L. Sklenka, Kingwood, and David L. O'Donnell, Houston, all of Tex., assignors to Varco Shaffer, Inc., Houston, Tex.

Filed Sep. 1, 1995, Ser. No. 522,998
Int. Cl.[6] E21B *33/06*
U.S. Cl. 251—1.3 20 Claims

1. A blowout preventer ram actuating mechanism for controlling the opening and closing of a ram block interconnected with a ram movable within a ram housing and along a ram axis between opened and closed positions, the ram actuating mechanism comprising:
a ram piston secured to the ram and axially movable within the ram housing, the ram piston having a ram closing end face and an axially opposing ram opening end face;
a ram closing flow line for applying fluid pressure to the ram closing end face of the ram piston to move the ram block to the closed position;

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a ram opening flow line for applying fluid pressure to the ram opening end face of the ram piston to move the ram block to the opened position;

a locking piston sealing engaging the ram piston and movable along the ram axis in response to fluid pressure, the locking piston having a locking end face, an axially opposing unlocking end face, and a plurality of substantially planar tapered locking piston surfaces circumferentially spaced about an exterior of the locking piston and each inclined at an acute positive locking piston cam angle;

an unlocking piston flow line for applying fluid pressure to the unlocking face of the locking piston to move the locking piston to an unlocked position;

a plurality of locking rods each secured to the ram housing and circumferentially spaced about the locking piston, each locking rod including a substantially planar tapered locking rod surface thereon inclined at an acute negative locking rod cam angle; and

a plurality of locking segments each spaced radially between a respective locking rod and the locking piston, each locking segment being sandwiched between a respective planar locking rod surface and a planar locking piston surface for preventing opening of the ram until the locking piston is moved in response to fluid pressure in the unlocking piston flow line.

5,575,453

VEHICLE SIDEWALL AIR DISTRIBUTION DUCT WITH INFLATABLE GASKET

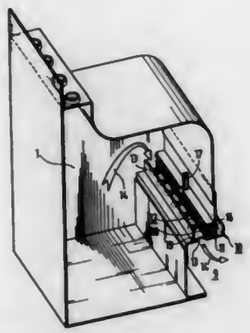
Jean-Pierre Dion, Fouras, France, assignor to GEC Alsthom Transport SA, Paris, France

Filed May 15, 1995, Ser. No. 441,437

Claims priority, application France, May 26, 1994, 94 06383

Int. Cl.[6] F16K *7/10*

U.S. Cl. 251—61.1 **6 Claims**



1. For a vehicle having laterally opposed, generally vertical sidewalls and an underlying integral floor, an air distribution duct being of modified rectangular cross-section and extending longitudinally along the floor of the vehicle and along one sidewall thereof, said air distribution duct having vertically opposed top and bottom walls and horizontally opposed sidewalls including a laterally outer sidewall proximate to said vehicle sidewall and a spaced, laterally opposed sidewall facing interiorly of the vehicle, said duct including a narrow top extending vertically upward along said exteriorly facing sidewall, said interiorly facing sidewall of said duct being laterally offset adjacent said floor including a short height vertical portion and a right angle horizontal portion defining a recess within the interiorly facing sidewall, a longitudinally extending series of floorward-facing blow perforations within said horizontal portion for permitting air distributed through said duct to enter the interior of the vehicle adjacent to said floor, at least one longitudinally extending inflatable gasket within the interior of the duct adjacent the interiorly facing sidewall and parallel to said series of perforations and including a normally retractable portion in the non-inflated state retracted to one side of the perforations, but projectable across the perforations to seal off the flow of air through said floorward-facing blow perforations to limit distribution of air within said duct to said narrow top portion along the vehicle sidewall.

5,575,454

VACUUM VALVE

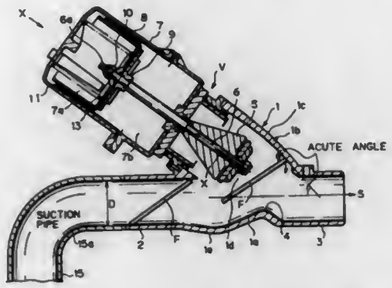
Akihiro Ushitora, and Osamu Shimizu, both of Kanagawa-ken, Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Sep. 21, 1994, Ser. No. 309,679

Claims priority, application Japan, Sep. 22, 1993, 5-259050

Int. Cl.[6] F16K *31/126*

U.S. Cl. 251—61.5 **4 Claims**



1. A vacuum valve including a casing having an inlet opening, an outlet opening, and a valve seat, a valve body accommodated in said casing and adapted to move rectilinearly between a position where it rests on said valve seat and a position which is away from said valve seat, means for pressing said valve body to the resting position, and a piston chamber in which an air differential pressure acts so as to separate said valve body from said valve seat against said pressing means, wherein said casing has a front wall portion which is set at an acute angle to a direction of a streamline connecting said inlet and outlet openings and extends from a front portion of said valve seat which is disposed at less than 90 degrees to the direction of said streamline so that elongate foreign matter flowing in from said inlet opening can readily flow out, and side and rear wall portions expanding outwardly in a direction approximately perpendicular to an axis of said valve from a position near said valve seat so that bulk foreign matter flowing in from said inlet opening will not get caught between said valve body and the casing inner wall of said casing.

5,575,455

FIBRE COILING

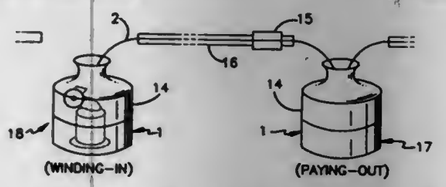
Peter D. Jenkins, Woodbridge, and Paul F. Wettengel, Ipswich, both of England, assignors to British telecommunications, plc, London, England

Division of Ser. No. 111,734, Aug. 25, 1993, Pat. No. 5,374,005, which is a continuation of Ser. No. 534,300, Jun. 7, 1990, abandoned, which is a continuation of Ser. No. 319,083, Feb. 17, 1989, abandoned. This application Sep. 29, 1994, Ser. No. 313,601

Claims priority, application United Kingdom, Jun. 22, 1987, 8714578

Int. Cl.[6] H02G *1/08;* **B65H** *18/28;* **E21C** *47/10*

U.S. Cl. 254—134.4 **7 Claims**



1. A method for installation of optical fibre transmission lines comprising providing at least one container of coiled optical fibre package, the container having a substantially annular configuration with an outer side wall and a substantially concentric inner wall and having the fibre package coiled around the inner wall in a sequence of turns each turn having 360 degrees of torsion and being offset from adjacent turns, feeding an end of the fibre package from the container into an installation duct and advancing it through the duct by fluid drag while maintaining the container of fibre package rotationally stationary.

5,575,456

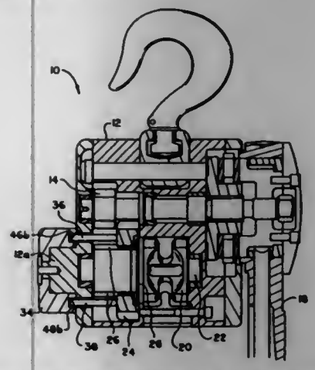
LEVER OPERATED HOIST

Julian J. Raphael, III, Abingdon, Va., assignor to Columbus McKinnon Corporation, Amherst, N.Y.

Filed Jun. 12, 1995, Ser. No. 489,532

Int. Cl.[6] B66D *3/14*

U.S. Cl. 254—345 **9 Claims**



1. In a lever operated tool including a drive gear mounted upon a rotatable drive shaft, a driven gear mounted together with a lift wheel on a rotatable driven shaft, a casing supporting said shafts, and a lever for imparting driving rotation to said drive gear thereby to impart driven rotation to said lift wheel via said driven wheel, the improvement for permitting free wheeling of said lift wheel comprising in combination:

means for supporting said driven gear for movement in a direction aligned with an axis of rotation of said driven shaft from a first position in which said driven gear is disposed in driven engagement with said drive gear and a second position in which said driven gear is removed from driven engagement with said drive gear;

resilient means providing a bias tending to maintain said driven gear in said first position;

a manually operated knob rotatably supported exteriorly of said casing for movement between normal and operable rotatable positions and having a cam track means displaceable incident to rotation of said knob between said rotatable positions thereof;

compression pin means slidably supported by said casing and having an inner end arranged for sliding engagement with said driven wheel and an outer end arranged for sliding engagement With said cam track means, said track means moving said pin means to effect movement of said driven gear from said first position into said second position against said bias incident to rotation of said knob from said normal position into said operable position, and said track means allowing movement of said driven gear from said second position into said first position under said bias incident to rotation of said knob from said operable position into said normal position; and

locking means for releasably retaining said driven gear in said second position.

5,575,457

STRUCTURE FOR CONTROLLING BRAKING ACTION OF A MECHANICAL BRAKE OF A LEVER TYPE HOIST AND TRACTION MACHINE

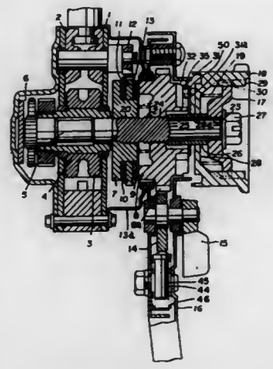
Yoshitaka Inoue; Yoshiaki Okamoto; Yasuo Wada, and Eikichi Kobayashi, all of Osaka Sayama, Japan, assignors to Elephant Chain Block Company, Limited, Osaka, Japan

Filed Sep. 20, 1994, Ser. No. 309,444

Claims priority, application Japan, Nov. 11, 1993, 5-282492; Dec. 14, 1993, 5-313856

Int. Cl.[6] B66D *1/14*

U.S. Cl. 254—368 **3 Claims**



1. A structure for controlling braking actions of a mechanical brake of a lever type hoist and traction machine comprising:

a load sheave;

a driving shaft, having a driven member, for driving said load sheave;

a driving member threadedly mounted on said driving shaft and having teeth on its outer periphery and;

a mechanical brake provided between said driven member and said driving member;

an operation lever, having a feed click switchably engageable with said teeth, for driving said driving member in regular and reverse directions by a reciprocal operation of said operation lever;

a stopper provided at an axial end portion of said driving shaft;

an operation handle interposed between said stopper and said driving member to be axially movable but non-rotatable relative to said driving shaft; and

a spring for biasing said operation handle toward said driving member,

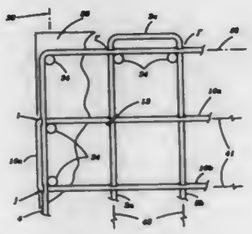
said driving member being provided, at a portion thereof facing said operation handle, with an engaging stepped portion, and said operation handle being provided, on a surface thereof facing said driving member, with an engaging projection projecting toward said driving member, wherein there is provided an inclined surface having a slope successively extending from and integral with said engaging projection, said surface being inclined forwardly with respect to a regular rotation direction of said driving member from a top end portion of said projection on a fore side with respect to a regular rotation direction of said driving member toward a base end of said projection, and said inclined surface is resiliently contacted with the engaging stepped portion via a biasing force of said spring in an operative mode of said mechanical brake, so as to apply to said driving member a component force acting in a brake tightening direction, and wherein an idle-controlling spring for rotatably biasing said driving member in a brake loosening direction of said mechanical brake is interposed between said driving member and said operation handle.

5,575,458

MESH STRUCTURE

Merle Kingham, 8966 E. Voltaire Dr., Scottsdale, Ariz. 85260

Filed May 6, 1994, Ser. No. 238,915
Int. Cl.[6] E04H *17/04*
U.S. Cl. 256—45 **9 Claims**



1. A mesh structure comprising:

a border member having a first given dimension taken in one direction and a second given dimension taken in a second direction wherein said first and second dimensions define the general shape of the mesh structure;

a plurality of longitudinal and transverse strands, each of said longitudinal strands being disposed generally parallel to one another and to said first given dimension of said border member and each of said transverse strands being disposed parallel to one another and to said second dimension of said border member such that the longitudinal strands and the transverse strands together intersect one another at given intervals;

consecutively ordered pairs of said transverse strands and consecutively ordered pairs of said longitudinal strands each being comprised of a single strand length doubled back on itself so as to form an intermediate strand length disposed generally orthogonally to the doubled back strand lengths of the involved single strand length, said doubled back strand lengths of each of said transverse strands extending with said first given dimension and said doubled back strand lengths of each of said longitudinal strands extending with said second given dimension,

each consecutively ordered pair of said transverse strands and each consecutively ordered pair of said longitudinal strands being connected to said border member such that the doubled back strand lengths of each of said consecutively ordered pair of said transverse strands and each consecutively ordered pair of said longitudinal strands connect with the border member at two spaced points corresponding to the length of the intermediate strand length associated with each consecutively ordered pair of said transverse strands and each consecutively ordered pair of said longitudinal strands;

fastening means for interconnecting said transverse and said longitudinal strands to one another at the intersections thereof; and

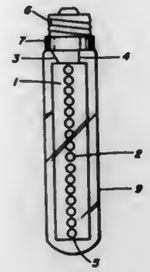
means for securing the free ends of said consecutively ordered pair of said transverse strands and free ends of said consecutively ordered pair of said longitudinal strands to said border member or to a juxtaposed transverse strand or longitudinal strand.

5,575,459

LIGHT EMITTING DIODE LAMP

Robert A. Anderson, Burlington, Canada, assignor to Uniglo Canada Inc., Stoney Creek, Canada

Filed Apr. 27, 1995, Ser. No. 429,552
Int. Cl.[6] F21V *3/00*
U.S. Cl. 362—240 **4 Claims**



1. A light emitting diode lamp assembly comprising: a first plurality of light emitting diodes connected in series with each other and in parallel with a second plurality of light emitting diodes with opposite polarity connected in series so that each of said light emitting diodes generate light when properly forwardly biased and including capacitive means to reduce voltage drop across said light emitting diodes; a rigid base means having said light emitting diodes mounted thereon; metal base means to connect said light emitting diodes to an AC power source; a light transmissive cover means adapted to receive and contain said rigid base means and said light emitting diodes mounted thereon; and insulating means intermediate said cover means and said metal base means, adapted to be received in said metal base means and to receive said cover means, so that said cover means and said rigid base means may be rotated relative to said metal base means when in operative connection with said AC power source, and wherein said insulating means comprises a first cap portion adapted to receive said cover means and including a central bore, a second cap portion including a hollow boss adapted to be slidingly inserted through said central bore and an axially aligned flange portion for rotatable planar engagement with said first cap portion, and means to secure said boss to said metal base means.

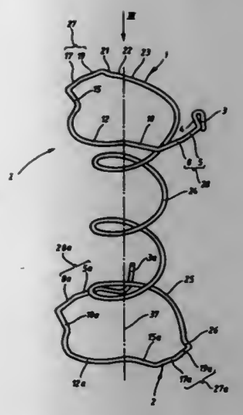
5,575,460

SPRING CORE FOR A MATTRESS

Hans Knöpfel, Roggwil, Switzerland, assignor to Spuehl AG, Switzerland

Filed Jan. 9, 1995, Ser. No. 370,430
Int. Cl.[6] F16F *3/04*
U.S. Cl. 267—91 **9 Claims**

1. A spring core for a mattress, comprising:



a plurality of identically shaped spiral springs, each spring comprising a central spring coil part having opposite first and second ends, a first end ring secured to the first end of the spring coil part and a second end ring secured to the second end of the spring coil part and diametrically opposite the first end ring;

each end ring being of approximately circular shape and being open on one side, and comprising first and second assembly legs adjacent the open side of the end ring, a transition leg extending between the first assembly leg and spring coil part, and an additional leg extending between said assembly legs and positioned diametrically opposite said open side of the end ring; and

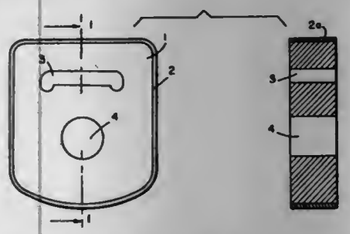
each of said additional legs being bent radially outwardly with respect to said spring coil part and being positioned outside the radius of said spring coil part, whereby said additional legs cannot contact said spring coil part when the core is compressed.

5,575,461

ELASTIC SUSPENSION FOR ATTACHING DYNAMICALLY STRESSED PERFORMANCE PARTS

Erich Ihle, Wadern, Germany, assignor to Saar-Gummiwerk GmbH, Wadern-Büschfeld, Germany

Filed Sep. 28, 1994, Ser. No. 313,888
Claims priority, application Germany, Oct. 2, 1993, 43 33 643.4
Int. Cl.[6] B60K *13/04;* **F16L** *3/16*
U.S. Cl. 267—153 **2 Claims**



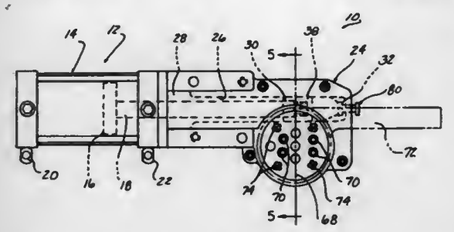
1. An elastic suspension apparatus for suspending dynamically stressed parts comprising a support and a flexible unitary spring element for attaching to the support, the spring element being an elastic non-porous structure made of a closed-cell foamed material, the foamed material being made of rubber material having a volume between 0.3 and 1 g/cm^3, a retainer for at least partially enclosing edges of said spring element, the retainer being a flexible elastic strap enveloping a circumference of the spring element.

5,575,462

ROTARY CLAMP FOR A LINEAR ACTUATOR

John A. Blatt, 22 Stratton Pl., Grosse Pointe Shores, Mich. 48236

Filed Aug. 17, 1994, Ser. No. 291,687
Int. Cl.[6] B23Q *3/08*
U.S. Cl. 269—32 **16 Claims**



1. A rotary clamp for a linear actuator comprising:

means for converting linear actuator motion between a first position and a second position into rotary clamp motion between an unclamped position and a clamped position, respectively; and

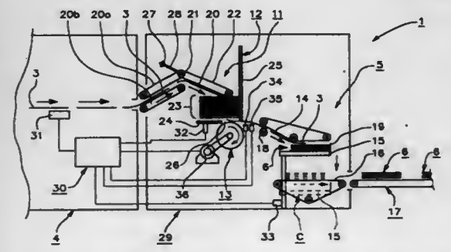
means, separate from said linear actuator and cooperatively engageable with said converting means for movement between a recessed position and an extended position, for resetting said converting means toward said first position when said resetting means is in said extended position.

5,575,463

METHOD AND DEVICE FOR HANDLING SHEETS WHICH ARE PROVIDED WITH INFORMATION IN A LASER PRINTER

Göthe A. K. Parkander, Ljungby, Sweden, assignor to Stralfors AB, Ljungby, Sweden

Filed Mar. 14, 1995, Ser. No. 403,479
Claims priority, application Sweden, Mar. 15, 1994, 9400862
Int. Cl.[6] B65H *39/10;85/00*
U.S. Cl. 270—52.02 **13 Claims**



1. Method for handling sheets (3) which are provided with information in a laser printer (4) and fed to a sorting device (5) for being sorted into one or more separate sheet groups (6) containing a predetermined number of sheets (3), the sheets (3) being fed through the laser printer (4) as a sheet travel, said method comprising the steps of:

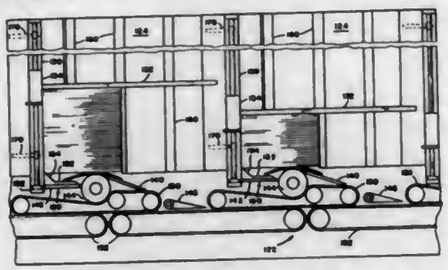
providing the sheets (3) with information;

continuously feeding the sheets (3) into a magazine (12) at the top thereof while at the same time continuously removing the sheets (3) from said magazine (12) at the bottom thereof for transport to the sorting device (5);

piling the sheets (3) on top of each other in the magazine (12) to form a sheet buffer supply (11) when the rate of the laser printer (4) providing sheets (3) with information is higher than the rate of the sorting device (5) sorting sheets (3) which are received from the magazine (12);

permitting the piling of about 2,000 sheets (3) in the magazine (12);
controlling the laser printer (4) to provide sheets (3) with information as long as the magazine (12) contains fewer sheets (3) than the maximum number of sheets (3) which can be piled in said magazine (12);
removing the sheets (3) from the magazine (12) at the bottom thereof with a removal means (13);
bringing the sheets (3) into cooperation with a transport means (14) located next to said removal means (13);
transporting the sheets (3) by the transport means (14) to a sorting table (15) which forms part of the sorting device (5) and which is located under said transport means (14); and
lowering the sorting table (15) to a delivery position (C) wherein the sheets (3) located thereon are moved out of the sorting device (5) to a transport table (17) for removal.

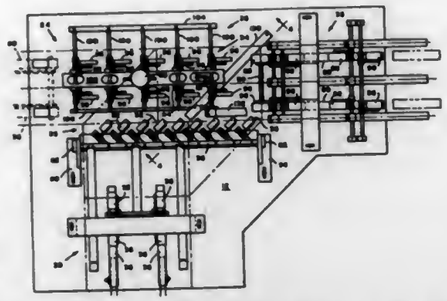
5,575,464
URGE ROLLER FOR REGISTERING BOTTOM EDGES OF FLAT ARTICLES IN A STACKER
Miguel O. Martinez, Danbury, Conn., and James W. Murphy, Midlothian, Va., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Dec. 14, 1995, Ser. No. 572,428
Int. Cl.[6] B65H *29/22*
U.S. Cl. 271—2 **5 Claims**



1. In an apparatus for stacking flat articles having a lead edge and a bottom edge, the apparatus including a deck surface, a vertical registration wall mounted on the deck surface, the vertical registration wall and the deck surface defining a stacking bin in which the articles are stacked, an urge roller for feeding the articles towards the registration wall, and a paddle slidably positioned in the stacking bin orthogonal to the registration wall and above the deck surface, the paddle biased toward the urge roller, and wherein the paddle moves away from the urge roller as the articles are stacked against the registration wall, an improvement to the urge roller comprising:
a rib extending outward from the urge roller so that as the urge roller rotates the rib contacts the article and feeds the article toward the deck surface.

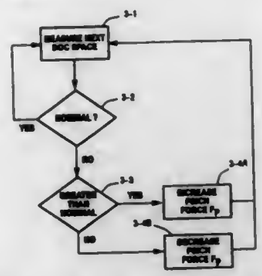
5,575,465
APPARATUS FOR TRANSPORTING DOCUMENTS CONVEYED FROM TWO DIRECTIONS
David R. Auerbach, West Redding, and Kenneth W. Lowell, Bristol, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Dec. 20, 1994, Ser. No. 359,687
Int. Cl.[6] B65H *5/26*
U.S. Cl. 271—9.13 **16 Claims**

1. Apparatus for transporting documents from two directions, comprising:
a deck;
first direction transporting means for transporting first documents seriatim over said deck in a first direction;



second direction transporting means adjacent a downstream end of said first direction transporting means for seizing control of said first documents and transporting the first documents over said deck in a second direction, said second direction being approximately at a 45° angle to said first direction;
third direction transporting means downstream from said second direction transporting means for transporting the first documents in a third direction as the first documents are released from the control of said second direction transporting means, said third direction being orthogonal to said first direction;
an in-line transport located upstream from said third direction transporting means and adjacent a downstream end of said second direction transporting means, said in-line transport including means for receiving second documents being conveyed from upstream in said third direction and for transporting the second documents to said third direction transporting means; and
guide means located between said second direction transporting means, said in-line transport and said third direction transporting means, for preventing the first and second documents from lifting away from said deck and from skewing as the first and second documents are transported in said second and third directions respectively.

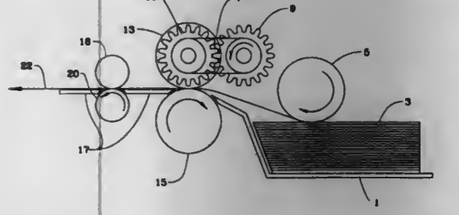
5,575,466
DOCUMENT TRANSPORT WITH VARIABLE PINCH-ROLL FORCE FOR GAP ADJUST
Michael N. Tranquilla, Livonia, Mich., assignor to Unisys Corporation, Blue Bell, Pa.
Filed Nov. 21, 1994, Ser. No. 343,695
Int. Cl.[6] B65H *5/00*
U.S. Cl. 271—10.03 **7 Claims**



1. In a method of processing documents by moving the documents from an input hopper along a given path to a destination at a controlled rate, the steps comprising:
picking successive documents from said input hopper and advancing them via advance means along a given feed path at an adjustable time period after a previous document had been so picked, to thus establish a "nominal" inter-document gap-distance value g_n;

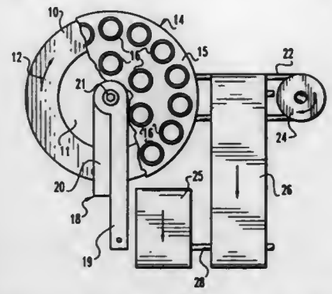
sensing the distance d between each so-picked document and the following document; comparing said distance d with said nominal gap g_n and establishing the variance-distance Δd from said nominal gap; and then accelerating or decelerating the succeeding document to thereby decrease the sensed variation Δd from said nominal gap; and
wherein the next pick time is automatically set by deriving and storing a value g representing the instantaneous associated gap-distance; and also
comparing the stored gap value with stored values representing the desired nominal gap value; and
adjusting the acceleration or deceleration to drive said instantaneous gap value g toward said nominal gap value, whereby the number of documents passing through the system per unit time may be controlled and maximized; and
also prescribing a minimum inter-document gap g_m, and, when an "under-gap" g_u that is less than gap g_m, is detected, decelerating the document following to reduce gap variance; and also:
providing means to detect and register a repeated occurrence of said undergap condition for N successive documents, and when such is detected, to responsively stop the feed means for a suitable delay time.

5,575,467
DYNAMIC FORCE PAPER SEPARATOR
Scott S. Williams, Lexington, Ky., assignor to Lexmark International, Inc., Lexington, Ky.
Filed Sep. 25, 1995, Ser. No. 533,198
Int. Cl.[6] B65H *3/52*
U.S. Cl. 271—122 **2 Claims**



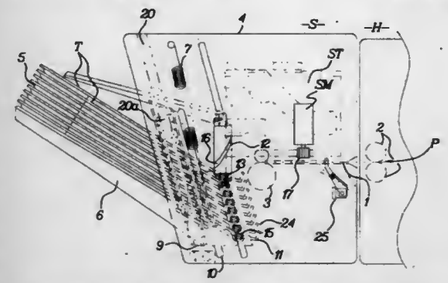
1. Sheet separating and feeding apparatus comprising a driven roller and a restraint roller mounted to be in nip contact, a gear train which comprises a driven gear which drives said driven roller and a driving gear, a bracket mounting said driven roller and said gear train, said bracket being mounted to pivot around said driving gear, a bin positioned to hold sheets for feeding said sheets to said nip, drive means to move sheets from said bin to said nip, sheet feed means located past said nip to begin feeding a sheet which is in said nip, the rotation of said driving gear being in a direction to rotate said bracket toward said nip and said gear train translating said rotation of said driving gear to rotation of said driven roller so that said driven roller moves paper from said nip to said paper feed means located past said nip, the coefficient of friction of said driven roller and said restraint roller each being greater than the coefficient of friction of paper to paper in a stack and said sheet feed means past said nip moving said sheets faster than said driven roller is moving said sheets.

5,575,468
POWER TURNING AND ORIENTING METHOD AND APPARATUS
David L. Bell, P.O. Box 307, Oquawka, Ill. 61469-0307
Filed Oct. 25, 1994, Ser. No. 328,459
Int. Cl.[6] B65H *5/00*
U.S. Cl. 271—225 **8 Claims**



1. Apparatus, for turning and orienting an incoming article moving along a linear path, said apparatus comprising annular driving means, means for rotating said annular driving means, holding means centrally of said annular driving means, a first plurality of holding points disposed above said driving means, and a second plurality of holding points disposed above said bolding means, means for selectively rotating said first and second plurality of holding points with respect to said holding means, and stop means extending at least partially across said holding means and said driving means for receiving an article thereagainst for stopping said linear motion of said incoming article.

5,575,469
SHEET RECEIVER WITH INFEED SPEED VARIED BY MEASURED LENGTH OF SHEET
Peter M. Coombs, Tustin; Edward Seibel, Fountain Valley, and Bryson Bennet, Westminster, all of Calif., assignors to Gradco (Japan) Ltd, Tokyo, Japan
Filed Jan. 25, 1995, Ser. No. 378,218
Int. Cl.[6] B65H *5/34*
U.S. Cl. 271—270 **4 Claims**



1. A sheet output device operatively connectable to a host copier or printer machine, the host copier or printer machine providing successive sheets to the output device for deposit in a plurality of horizontally extended trays disposed one above the other, said output device having feed roller means for feeding the sheets received from the host machine to the horizontally extended trays, said trays extending upwardly at an incline from a sheet infeed end thereof to which sheets are supplied from said feed roller means and having a backstop at said sheet infeed end, a drive motor for rotationally driving the feed roller means at a rotational speed depending upon the rotational speed of said drive motor, and a control means for controlling the rotational speed of said drive

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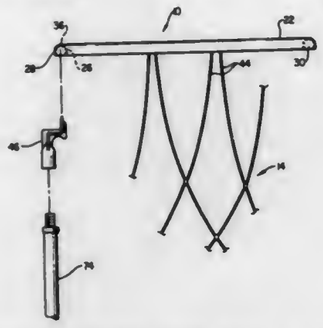
motor, the improvement wherein said output device includes sheet length detector means for detecting the leading edge and the trailing edge of a sheet received by said feed roller means, and means responsive to said sheet length detector means and acting on said control means to vary the speed of said drive motor depending upon the detected length of successive sheets to vary the speed of travel of a sheet over said backstop.

5,575,470

REMOVABLE BASKETBALL NETTING ASSEMBLY

David C. Sherman, 806 Greenway Dr., Coppell, Tex. 75019

Filed Jun. 7, 1995, Ser. No. 476,338
Int. Cl.[6] A63B 63/08
U.S. Cl. 273—1.5 R 10 Claims



1. A removable basketball netting assembly for use with a basketball goal including a backboard, a rim, and a support ledge to secure said rim to said backboard, comprising:

a ring having an inverted U-shaped cross-section and including a first portion and a second portion, said first portion having two opposing sides, a top, an interior surface extending only from a first of said two opposing sides through said top and to a second of said two opposing sides, and at least one generally rectangular opening through said top of said first portion of said ring, said second portion having one side, a top, and an interior surface, wherein said first and said second portion are removably engaged with said rim and wherein said second portion accommodates said support ledge, further wherein said two opposing sides extend only slightly below said rim when said ring is engaged with said rim;

a plurality of protrusions, each of said plurality of protrusions spaced apart from all others of said plurality of protrusions and formed alternatively on said interior surface on said first of said two opposing sides and said interior surface on said second of said two opposing sides, said plurality of protrusions being staggered around said ring, so that none of said plurality of protrusions are located directly across from any of said plurality of protrusions for temporarily securing said ring to said rim; and

a placement device having a main body for receiving a handle and including a top of said main body, a hook having a horizontal section and a vertical section, said horizontal section having a top, a bottom, a first end, and a second end, wherein said bottom of said first end of said horizontal section is formed on said top of said main body, said vertical section having a top and a bottom, said bottom of said vertical section formed on said top of said second end of said horizontal section said vertical section including a front on which a vertical protrusion is formed, said vertical protrusion extending only along a portion of said front of said vertical section, wherein said portion, does not extend from said top to said bottom of said vertical section, said top of said vertical section being received within said opening of said ring.

9. A method for temporarily securing a basketball netting assembly to a basketball goal and for removing said basketball netting assembly from said basketball goal, said basketball goal including a backboard, a rim, and a support ledge, comprising the steps of:

inserting a top of a vertical section of a placement device into one of a plurality of openings through a top of said ring, wherein said placement device includes a main body including a top of said main body, a hook having a horizontal section and a vertical section, said horizontal section having a first end and a second end, wherein said first end of said horizontal section is formed on said top of said main body, said vertical section having a top and a bottom, said bottom of said vertical section formed on said second end of said horizontal section, said vertical section including a front on which a vertical protrusion is formed, said vertical protrusion extending only along a portion of said front of said vertical section, wherein said portion does not extend from said top to said bottom of said vertical section;

lifting said ring over said rim, wherein said ring includes an inverted U-shaped cross-section and including a first portion and a second portion, said first portion having two opposing sides, said top, an interior surface extending only from a first of said two opposing sides through said top and to a second of said two opposing sides, and at least one generally rectangular opening through said top of said first portion of said ring, said second portion having one side, a top, and an interior surface, wherein said first and said second portion are removably engaged with said rim and wherein said second portion accommodates said support ledge;

lowering said ring onto said rim;

removing said placement device from said ring;

placing a bottom of said horizontal section of said placement device on said top of said ring; and

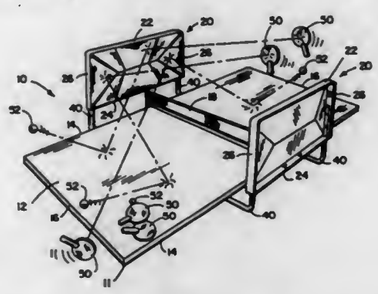
temporarily securing said ring onto said rim, by pulling said placement device down, wherein a plurality of protrusions are temporarily deformed while said ring is being secured onto said rim, each of said plurality of protrusions formed alternatively on said interior surface on said first of said two opposing sides and said interior surface on said second of said two opposing sides, each of said plurality of protrusions being staggered around said ring, so that none of said plurality of protrusions are located directly across from any of said plurality of protrusions, said plurality of protrusions regaining an original shape of said plurality of protrusions when said ring is temporarily secured to said rim, wherein said first and said second sides of said ring are secured around said rim.

5,575,471

TABLE TENNIS APPARATUS

Stephen W. Robinson, 327 Capital Ave., NE., Battle Creek, Mich. 49017, and Michael W. Robinson, 3836 Mt. Olivet, Kalamazoo, Mich. 49004

Filed Apr. 25, 1995, Ser. No. 428,557
Int. Cl.[6] A63B 67/04
U.S. Cl. 273—30 21 Claims



1. A table tennis game apparatus, comprising:

a horizontal playing surface having opposite edges extending longitudinally along opposite sides thereof, and being supported at a preselected height to facilitate bouncing an associated ball between opposite fields of play on said playing surface; and

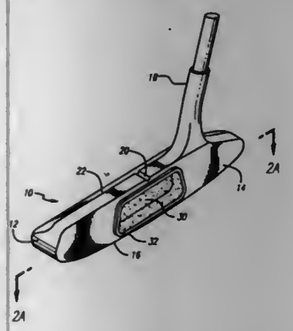
at least one rebounding panel positioned alongside of an associated one of the edges of said playing surface to permit the ball to be bounced between said rebounding panel and said playing surface; said rebounding panel having first and second distinct rebounding surfaces oriented toward said playing surface; said first rebounding surface being disposed along a central portion of said rebounding panel, and having an inwardly facing, generally V-shape with a first surface hardness which causes the ball to ricochet at a first speed and/or spin, and said second rebounding surface being disposed along one side of said central portion, and having a second surface hardness, which is different than the first surface hardness of said first rebounding surface, and causes the ball to ricochet at a second speed and/or spin, which is different than said first speed and/or spin for enhanced game enjoyment and competition.

5,575,472

GOLF PUTTER HEAD HAVING FACE INSERT AND METHOD OF FORMING THE SAME

Michael L. Magerman; Bradley V. Adams, both of Carlsbad, and Brian R. Pond, San Marcos, all of Calif., assignors to Odyssey Sports, Inc., Carlsbad, Calif.

Filed Jul. 27, 1994, Ser. No. 282,202
Int. Cl.[6] A63B 53/04
U.S. Cl. 29—530 5 Claims



1. A method of forming a golf putter head comprising the steps of:

forming a golf putter head from a metal material having an elongate configuration defining a generally planar front face;

forming a recess within said front face to extend rearwardly within said golf putter head, said recess defining a continuous sidewall;

forming the golf putter head to further include a continuous perimeter bead about said recess which extends outwardly beyond said front face and is substantially flush with said sidewall;

casting a curable non-metal insert within said recess; and

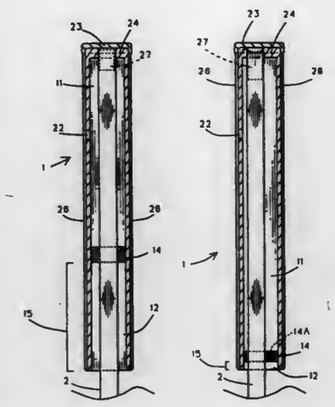
finishing said golf putter head to remove the perimeter bead, a portion of said front face, and that portion of the insert extending beyond said front face such that the insert and the front face extend in generally co-planar relation to each other.

5,575,473

GOLF CLUB

Terry S. Turner, c/o Electra, 550A Vista Blvd., Sparks, Nev. 89434

Continuation-in-part of Ser. No. 184,385, Jan. 19, 1994, and a continuation-in-part of Ser. No. 980,458, Nov. 23, 1992, Pat. No. 5,322,285. This application Aug. 25, 1994, Ser. No. 296,344
Int. Cl.[6] A63B 53/14
U.S. Cl. 473—298 18 Claims



5. A playing golf club comprising a grip, a shaft and a head, said head having a face for striking a golf ball, said shaft having opposite ends, said grip connected to one of said ends and said head connected to the other of said ends, and wherein said shaft extends a substantial distance within said grip and wherein is included one or more cavities between the inside of said grip and said shaft and wherein said grip is connected to said shaft by first and second connection means between said shaft and the inside of said grip, said first and second connection means being disposed apart thereby creating said one or more cavities inside said grip and wherein said grip and one or more of said first and second connection means are substantially comprised of one or more materials having a modulus of elasticity substantially greater than 2,000,000 psi.

5,575,474

COMMUNICATIONS SYSTEM USING BETS

Michael Rossides, 3666 Upton St. NW., Washington, D.C. 20008

Filed Sep. 21, 1994, Ser. No. 309,677
Int. Cl.[6] A63F 9/24
U.S. Cl. 463—26 2 Claims

1. A communications apparatus for the transaction of bets over a network, said apparatus comprising in combination,

a computer including input/output means, memory means, processing means, and program means,

said apparatus holding a central data base and being connected to a network of input/output terminals,

said program means directing the operation of said apparatus,

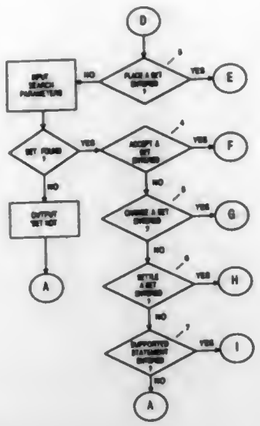
said program means directing said apparatus to enable users to choose from among several modes for entering information into said central data base, including:

a user account mode for enabling a user to establish a user account in said data base,

a search mode for enabling a user to search said data base,

a placing a bet mode for enabling a first user to enter a bet into said data base,

an accepting a bet mode for enabling a second user to accept said bet,



a changing a bet mode for enabling either of said users to change said bet and,

a settling a bet mode for enabling said users to settle said bet;

when a user chooses said user account mode, said program means directing said apparatus to execute the steps of:

creating a user record for identification data, contact data, billing data, credit/debit data, bet data, and bet result data,

creating a user identification number (PIN) and storing it in said user record,

outputting said PIN to said user,

inputting and storing said user's name, contact, billing, and credit/debit data in said user record;

when a user chooses said search mode, said program means directing said apparatus to execute the steps of:

inputting search parameters for a bet,

checking to see if a bet matching said parameters is in said data base,

if said bet is not found, outputting a message saying that no such bet is found,

if said bet is found, outputting the bet;

when a user chooses said place a bet mode, said program means directing said apparatus to execute the steps of:

creating a record for storing data for a bet,

storing said user's PIN in said bet record and identifying said user by the name of Placer,

inputting and storing in said record a bet statement,

inputting and storing in said record the type of commodity being bet,

inputting and storing in said record the amount at stake, and identifying said amount as said user's stake,

inputting and storing in said record the payoff odds,

if the odds are in X–Y form,

converting them to percentage form,

storing them, in said record, in percentage form as well,

if the payoff odds are in percentage form,

converting them to X–Y form,

storing them, in said record, in X–Y form as well,

inputting and storing in said record the side of the bet ("True" or "False") that said user is taking,

assigning the opposite side of the bet to a not yet identified, dummy user called by the name of Acceptor,

calculating and storing in said record an amount needed to cover said Placer's stake, and identifying said amount as the Acceptor's stake,

outputting the information stored in said bet record;

when a second user chooses said accept a bet mode, said program means directing said apparatus to execute the steps of:

inputting search parameters for a bet,

finding said bet,

checking to see if said bet has already been accepted,

if yes, outputting a message, "bet has already been accepted,"

if no, storing said second user's PIN in said bet record and identifying said second user by the name of Acceptor, and identifying said Acceptor's stake as said second user's stake, and further, storing an acceptance in said bet record, and alerting said Placer of the acceptance,

immediately after storing said acceptance, starting a clock with a pre-set time limit,

when the time on the clock expires, checking to see if either Placer or Acceptor has canceled the acceptance,

if yes, doing nothing to said bet record,

if no, storing a confirmation of said acceptance in said bet record;

when a user chooses said change a bet mode, said program means directing said apparatus to execute the steps of:

inputting search parameters for a bet,

finding said bet,

verifying that said user is the Placer or Acceptor of said bet,

checking if said bet has been accepted,

if the bet has not been accepted, receiving an input from the Placer,

checking if said input is to cancel or change the bet,

if said input is to cancel the bet, canceling the bet,

storing said cancellation in said user's record,

if input is to change the bet, inputting and storing changes in said bet record,

if said bet has been accepted,

checking whether said acceptance is confirmed,

if yes, outputting a message, "No changes allowed now,"

if no, checking whether said user is the Placer or Acceptor,

if said user is the Placer, canceling the bet,

storing the cancellation in said user's record,

alerting the Acceptor of said cancellation,

if said user is the Acceptor, canceling the acceptance,

storing the cancellation in said user's record,

alerting the Placer of said cancellation;

when a user chooses said settle a bet mode, said program means directing said apparatus to execute the steps of:

inputting search parameters for a bet,

finding said bet,

checking said user's PIN to see if said user is either the Placer or Acceptor,

if no, outputting a message, "You are not authorized to report a result,"

if yes, receiving an input for a judge or a bet result,

if said input is a call for a judge, sending a message to a system judge,

if said input is a bet result,

storing the result in said bet record as the result of said user,

checking to see if results have been entered by both Placer and Acceptor,

if no, alerting the other user identified in said bet record of said result,

if yes, checking to see if results match,

if the results do not match,

alerting Placer and Acceptor of the clashing results,

if the results match,

storing the matching result in the bet and users' records,

alerting the Placer and Acceptor that bet is settled,

if the matching result is "Undecided," declaring neither Placer nor Acceptor the winner,

if the matching result is "True," identifying the user assigned the side of "True" as the winner and the user assigned "False" as the loser,

if the matching result is "False," identifying the user assigned the side of "False" as the winner and user assigned "True" as the loser,

crediting the winner's account by the loser's stake and debiting the loser's account by the loser's stake.

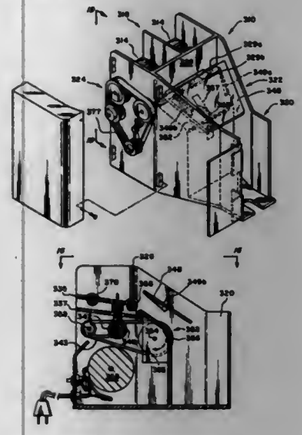
5,575,475
CARD SHUFFLER APPARATUS

James R. Steinbach, 9776 Orangewood Dr., Denver, Colo. 80221

Continuation-in-part of Ser. No. 215,933, Mar. 22, 1994, Pat. No. 5,445,377. This application Mar. 17, 1995, Ser. No. 405,952

Int. Cl.[6] A63F 1/12

U.S. Cl. 273—149 R 7 Claims



1. A card shuffler apparatus, comprising:

a card feeder compartment for receiving a plurality of stacks of unshuffled cards;

a card receiver compartment sized to accommodate a single stack of shuffled cards;

a deflector structure between and in communication with the card feeder compartment and the card receiver compartment, the deflector structure including an upper deflector panel;

a first deflector extending from an inner surface of the deflector panel and positioned to deflect cards moving from the card feeder compartment as they pass through the deflector structure;

a second deflector extending from the inner surface of the deflector panel and positioned to deflect cards moving from the card feeder compartment as they pass through the deflector structure; and

a card ejector mechanism associated with the card feeder compartment and operative to eject at least a single card in each stack of unshuffled cards disposed in the card feeder compartment into the deflector structure so that ejected ones of the cards strike the first deflector and deflect into and descend in the card receiver compartment to accumulate therein, thereby forming the single stack of shuffled cards.

5,575,476
GAME APPARATUS

Ju-Hsun Yang, 58, Ma Yaun West St., Taichung, Taiwan

Filed Jun. 5, 1995, Ser. No. 458,117

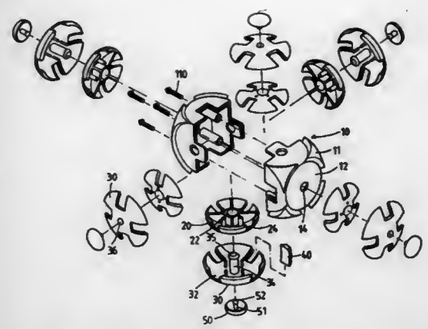
Int. Cl.[6] A63F 9/08

U.S. Cl. 273—153 S 1 Claim

1. A game apparatus comprising:

a parallelepiped body including six surfaces each having a recess formed therein and each having an aperture formed therein,

six pairs of inner shells and outer shells engaged on said six surfaces respectively and each including a substantially semi-spherical shape, said inner shells each including a center portion having a hole formed therein and aligned with said apertures of said body, said inner shells each including a peripheral portion having four spaced slots formed therein,



said outer shells each including a tube extended through said holes of said inner shells and said apertures of said body, said tubes each including a free end portion having an annular flange radially extended outward therefrom for engaging with said body so as to rotatably secure said inner shells and said outer shells to said body, said outer shells each including a peripheral portion having four notches formed therein for aligning with said slots of said inner shells, said outer shells each including an outer surface having an orifice formed therein,

six caps each including an extension engaged in said orifices of said outer shells such that said caps move in concert with said outer shells, and

a plurality of slides slidably engaged in said notches of said outer shells and movable between said notches, said slides each including an outer surface, and six groups of patterns being provided on said outer surfaces of said slides.

5,575,477
GOLF BALL

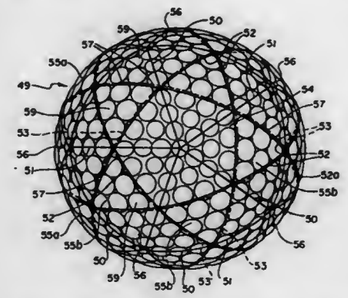
In H. Hwang, Seoul, Rep. of Korea, assignor to Ilya Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 20, 1994, Ser. No. 359,446

Claims priority, application Rep. of Korea, Jan. 25, 1994, 1994-1284

Int. Cl.[6] A63B 37/14

U.S. Cl. 473—379 11 Claims



1. A golf ball having an outer spherical surface, which includes two associated poles and an equator, the outer spherical surface being figuratively divided into a spherical icosidodecahedron having 2 regular pole pentagons, 10 regular equator pentagons, 10 regular pole triangles and 10 regular equator triangles that are each defined by imaginary sides constituting six great circles, one of the great circles being the equator, the golf ball comprising:

a plurality of imaginary covalent boundary zones, each zone being the area between a side of a pole pentagon, equator pentagon, pole triangle or equator triangle and the side's one

associated covalent boundary segment, which is parallel to and spaced apart from the given side; and

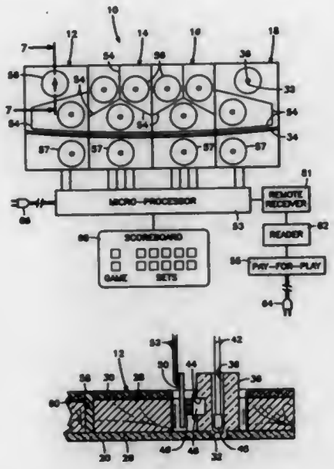
a plurality of dimples including a set of most exterior dimples for each of the pole pentagons, equator pentagons, pole triangles, and equator triangle, a major portion of each one of the plurality of dimples being positioned within an associated one of the pole pentagons, equator pentagons, pole triangles, or equator triangles, wherein at least a portion of each set of most exterior dimples partially exists within but not beyond the covalent boundary zones of their associated pole pentagon, equator pentagon, pole triangle, or equator triangle, whereby some of the at least a portion of each set of most exterior dimples are intersected by a great circle.

5,575,478

GAMING APPARATUS

Catherine B. Lamberti, Santa Barbara; Michael O. Cronkite, Thousand Oaks, and Roger C. Young, Yorba Linda, all of Calif., assignors to Catherine Lamberti, Santa Barbara, Calif.

Filed Oct. 27, 1995, Ser. No. 549,626
Int. Cl.[6] A63B *63/00*; F41J *5/04*
U.S. Cl. 273—372 **1 Claim**



1. A gaming device to be located on a supporting surface to which a ball is to be propelled by a user and then rebounded proximate to the user, said gaming device comprising;

a ball return wall having a contact surface, said contact surface adapted to be located transverse to the supporting surface;

said wall including a plurality of sensors located in a spaced-apart manner, each said sensor located in a specific area, each said sensor adapted to be sensitive to the force of the impact of said ball when said specific area for said sensor is struck by said ball;

microprocessor means connected to said sensors, a said sensor to transmit a signal to said microprocessor means upon said specific area of said wall proximate said sensor being struck by the ball, said microprocessor means to utilize said signals from said sensors within a preprogrammed game and then display the results of said game on a scoreboard to be observed by the user; and

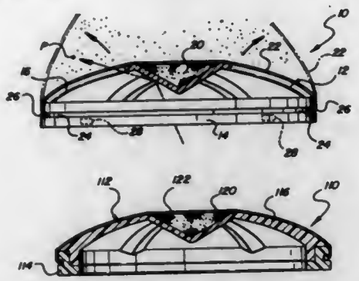
each said sensor comprising an accelerometer, said accelerometer being mounted within a lens, a light being mounted in conjunction with said lens, said lens being fixedly mounted within said wall.

5,575,479

PROJECTILE IMPACT INDICATING TARGET

John A. Ayres, Lapeer, Mich., assignor to Nu-Tech & Engineering, Inc., Lapeer, Mich.

Filed Sep. 22, 1995, Ser. No. 532,058
Int. Cl.[6] F41J *9/16*
U.S. Cl. 273—378 **15 Claims**



1. A projectile impact indicating target characterized by:

a frame;

a projectile impact sensor mounted on said frame for sensing projectile impact; said projectile impact sensor being of an elastomeric material stretched about said frame near its elastic limit; said sensor being rupturable upon projectile impact; and

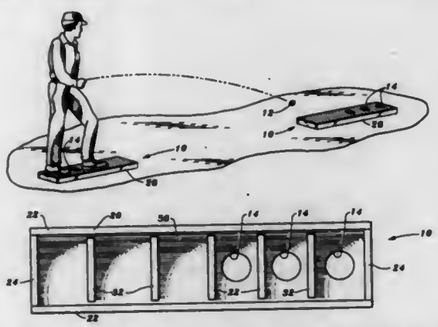
an impact indicator releasably restrained by said projectile impact sensor for indicating projectile impact with said target.

5,575,480

TOSS GAME APPARATUS

Craig M. Wehr, 5601 Calvine Rd., Sacramento, Calif. 95823

Filed Mar. 13, 1996, Ser. No. 615,711
Int. Cl.[6] A63B *67/06*
U.S. Cl. 273—402 **8 Claims**



1. Toss game apparatus for alternate use as a target for thrown projectiles or as a support for supporting an individual playing the toss game, said apparatus comprising, in combination:

a frame positionable on a surface, said frame being of substantially rectangular configuration, including a pair of spaced, elongated frame side walls and a pair of spaced frame end walls affixed to said frame Side walls, and defining a frame interior of substantially rectangular configuration;

a top panel connected to said frame and covering said frame interior, said top panel defining at least one opening communicating with said frame interior; and

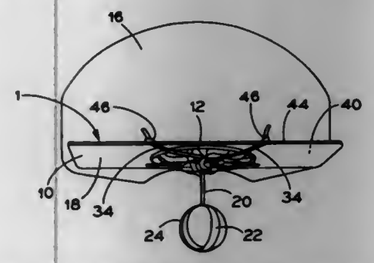
at least one interior support member connected to said top panel, extending downwardly from said top panel into said frame interior between said frame Side walls and between said frame end walls and terminating adjacent to said surface, said support member having opposed sides adjacent to said frame side walls and movable relative to said frame side walls upon deflection of said top panel relative to said frame.

5,575,481

VOLLEYBALL TRAINING AID

John F. Lovetere, and Lyne A. Lovetere, both of Plano, Ill., assignors to Rip Tide Volleyball, Plano, Ill.

Filed Aug. 23, 1994, Ser. No. 294,305
Int. Cl.[6] A63B *69/00*
U.S. Cl. 273—411 **23 Claims**



1. A volleyball training device adapted to securely rest on top of a basketball hoop, said training device comprising:

a backboard being shaped to cooperatively engage with said basketball hoop to prevent said backboard from horizontally sliding relative to said basketball hoop;

a tether secured to said backboard; and

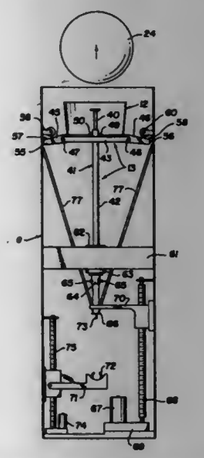
a pair of elastic bands for securing a volleyball to said tether.

5,575,482

SPORTS BALL LAUNCHER

Bill Butler, Jr., P.O. Box 3669, Amarillo, Tex. 79106

Filed Dec. 2, 1994, Ser. No. 349,058
Int. Cl.[6] A63B *67/18*
U.S. Cl. 273—411 **21 Claims**



1. A volleyball launched for training players comprising:

a support housing (**11**) having an upper end; and

an launch mechanism (**13**) in said housing, said launch mechanism comprising: upwardly extending lift bar assembly (**41**), mechanical stored energy propelling means (**77**) and a pair of stop means; (**59,60**);

said lift bar assembly having an upper end and comprising a tubular member (**42**) having an upper end, a ball cradle (**12**), a lift rod (**40**), a cross bar (**43**), and a pair of propelling arms (**45, 46**);

said lift bar assembly being mounted in said housing and adapted for limited longitudinal travel therein; said tubular member extending downwardly for a substantial distance from said upper end of said lift bar assembly, and having a pair of longitudinal slots in opposite sides thereof extending along said tubular member from near said upper end of said tubular member;

said ball cradle being mounted on the upper end of said tubular member and adapted to receive a ball to be launched;

said lift rod having a lower end and being adapted for travel along and within said tubular member between an upward limit and a downward limit, said lift rod extending substantially into said ball cradle at the upward limit of travel;

said cross bar being mounted at its midsection to said tubular member near the upper end thereof and extending laterally in opposite directions and terminating within said housing;

said propelling arms each having an inner and an outer end and said outer end being pivotally mounted proximate a respective end of said cross bar,

said inner end of said propelling arm extending inwardly through said slots under the lower end of said lift rod;

said stored energy propelling means being connected between said support housing and said lift bar assembly and adapted to impel said lift bar assembly through said limited travel toward said upper end of said support housing;

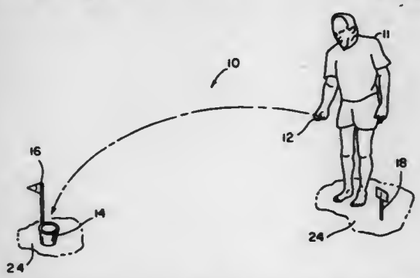
said stop means being affixed to said support housing near said upper end thereof and being adapted and positioned to contact said outer ends of said propelling arms when said lift bar assembly approaches the limit of its travel toward said upper end whereby during the upward travel of lift bar assembly said ball receives a launch impulse from said ball cradle and an added launch impulse from said lift rod.

5,575,483

GOLF TOSS GAME

Robert T. Dineen, and Susan M. Michels, both of 770 Meadowbrook Ln., Fond du Lac, Wis. 54935

Filed Sep. 26, 1995, Ser. No. 533,687
Int. Cl.[6] A63B *67/00*
U.S. Cl. 273—411 **24 Claims**



1. A transportable golf toss game having a playing course set up in an outdoor area to resemble a golf course, said golf toss game comprising:

a. at least one tossing bag;

b. a plurality of receptacles for receiving the bag, said receptacles arranged on the playing course to simulate golf holes, each said receptacle attached to the ground for securing said receptacle to the playing course, each an receptacle having an open top a hollow interior, interior side walls and exterior side walls and further comprising a bolder adapted to receive an identifier wherein the identifier is inserted through the holder and into the ground for securing the receptacle to the playing course;

c. a plurality of identifiers positioned with said receptacles for visually identifying the location of each receptacle on the playing course, said identifiers are connected to said receptacles for providing support and anchoring each said receptacle to the ground;

d. a plurality of markers for defining a starting point for each hole: and

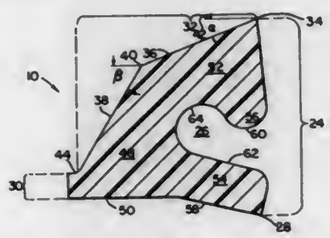
e. a score sheet for registering the players and recording the score of each player.

5,575,484

FLUID PRESSURE ACTIVATED PISTON RETURN SPRING SEAL

John A. Burke, Rocky River, Ohio, assignor to Greene, Tweed of Delaware, Inc., Wilmington, Del.

Filed Jun. 30, 1995, Ser. No. 497,097
Int. Cl.[6] F16J 15/32
U.S. Cl. 277—27 9 Claims



1. An improved fluid pressure activated piston return spring seal element for installation in a piston housing comprising an annular groove having in toroidal cross-section first and second generally parallel radial side walls, an axial base wall extending between the first and second side walls, and a mouth, the spring seal element being formed of an elastomeric material and having a generally annular shape, an axis, a radial face defining a pressure side of the seal element and for facing toward the first side wall of the groove, and an axial face for facing toward and partially protruding through the mouth of the groove, the seal element further having in toroidal cross-section:

a body portion;

a first branch extending generally axially from the body portion and having a distal end portion defining at least a portion of the radial face and the axial face, the first branch having a piston pressure sealing lip for extending outside the mouth of the groove and sealingly engaging a piston when the piston is positioned in the housing and across the mouth of the groove;

a second branch extending generally axially from the body portion and having a distal end portion defining at least a portion of the radial face, the second branch having a base wall pressure sealing lip for sealingly engaging the base wall; and

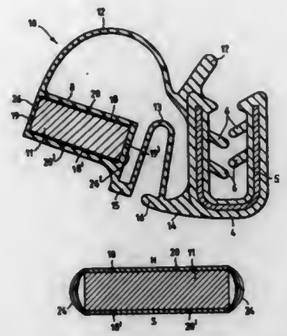
a third branch extending generally radially from the distal end portion of the first branch toward the distal end portion of the second branch, and defining at least a portion of the radial face, the body portion and the first, second, and third branches defining a crotch region extending inwardly with respect to the seal element from the radial face.

5,575,485

MAGNETIC GASKET SUITABLE FOR FORMING A SEAL BETWEEN A FIXED PART AND AN OPENABLE PART

Adriano Merla, Angera, and Paolo Cittadini, Luvinate, both of Italy, assignors to Industrie Ilpea S.p.A., Italy

PCT No. PCT/EP92/02651, § 371 Date May 17, 1994, § 102(e) Date May 17, 1994, PCT Pub. No. WO93/10990, PCT Pub. Date Jun. 10, 1993
PCT Filed Nov. 24, 1992, Ser. No. 240,660
Claims priority, application Italy, Nov. 25, 1991, MI91A3137
Int. Cl.[6] F16J 15/53
U.S. Cl. 277—80 14 Claims



1. A magnetic gasket suitable for forming a seal between a fixed part and a moveable part in regions of curvilinear extension of said parts, comprising:

an element for fixing to one of said parts; and

a seat housing a magnetized bar of substantially rectangular cross-section, said fixing element and said seat being connected together by an extendable deformable tubular chamber, wherein said bar is magnetized along at least one of two shorter opposing sides of its substantially rectangular cross-section, said magnetized side facing, when in its operating position, the other of said parts with which contact is made for sealing purposes, and wherein said extendable deformable tubular chamber has opposing free walls which are substantially curvilinear and curved in the same direction, thus achieving a substantially C-shaped cross-section.

5,575,486

GROOVED RUN-IN FACE SEAL

Jan K. J. Edling, Älvsjö , and Rolf A. Jacobsson, Saltsjö-Boo, both of Sweden, assignors to Atlas Copco Tools AB, Nacka, Sweden

Continuation of Ser. No. 128,467, Sep. 28, 1993, abandoned.
This application Feb. 14, 1996, Ser. No. 601,416
Claims priority, application Sweden, Oct. 1, 1992, 9202849
Int. Cl.[6] F16J 15/34
U.S. Cl. 277—96 8 Claims

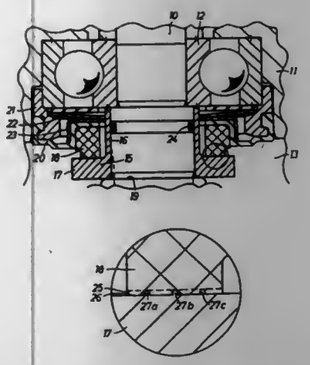
1. An oil seal for sealing off a fast rotating shaft (**10**) relative to a housing (**11**), comprising:

a first seal element (**15**) associated with and co-rotating with said shaft (**10**);

a second seal element (**18**) associated with said housing (**11**);

said first and second seal elements (**15**, **18**) each having an annular axially facing flat contact surface (**25**, **26**) for sealing cooperation with the contact surface of the other of said first and second seal elements (**15**, **118**), one of said first and second seal elements (**15**, **18**) being axially movable; and

a spring means (**22**) arranged for exerting a continuous axial bias force on said movable one of said seal elements toward the other of said seal elements, thereby providing a contact pressure between said contact surfaces (**25**, **26**); and wherein:



one of said seal elements is formed of a harder material, and the other one of said seal elements is formed of a softer material which is softer than said harder material, and

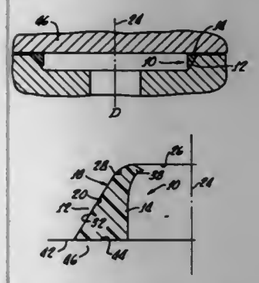
said harder material seal element comprises at least one narrow circular guide rib (**27***a–c*) disposed concentrically with the rotating shaft (**10**) and arranged to form, during an initial running-in mode and under a relatively high contact pressure accomplished by said bias force, at least one mating circular groove in said softer material seal element, wherein a total active contact area of said at least one rib (**27***a–c*) in contact with said softer material seal element which is established during a running-in period is several times smaller than a total active contact area of said contact surfaces (**25**, **26**), and wherein in a continuous service mode succeeding said initial running-in mode, said at least one circular groove has reached a depth equal to the axial extent of said at least one guide rib (**27***a–c*), and a sealing contact between said contact surfaces (**25**, **26**) is established and maintained under a relatively low contact pressure.

5,575,487

CIRCULAR TAPERED RING FOR STATIC SEALING UNDER CONDITIONS OF HIGH PRESSURE

Peter J. Balsells, Santa Ana, Calif., assignor to Bal Seal Engineering Company, Inc., Santa Ana, Calif.

Filed Jan. 17, 1995, Ser. No. 372,967
Int. Cl.[6] F16J 15/10
U.S. Cl. 277—169 6 Claims



1. Circular ring apparatus for static sealing comprising:

a circular ring seat having a shoulder with a flat surface of revolution disposed at an acute angle to a center line of the seat and subtending, through an arcuate surface, a seat bottom disposed at a right angle to the ring seat center line; and

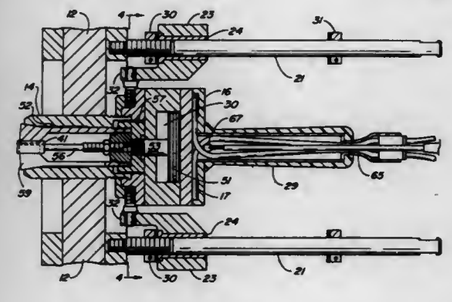
a sealing ring having an exterior surface of revolution disposed at an acute angle to a center line of the sealing ring and an interior surface of resolution disposed parallel to the sealing ring center line, the sealing ring exterior surface acute angle being different from the ring seat flat surface acute angle, said sealing ring having a height, measured along the sealing ring center line, greater than a height of the ring seat, measured along the ring seat center line, and a ring seat assembled position with the ring seat in which the sealing ring center line and the ring seat center line are coaxial, the sealing ring exterior surface abuts the ring seat shoulder and a portion of the sealing ring exterior surface abuts the ring seat arcuate surface and ring seat bottom and the sealing ring interior surface is unsupported.

5,575,488

HAND-HELD PART HOLDER AND FIXTURE

William C. Sholly, Jr., Souderton, Pa., assignor to SRW Associates, Inc., Wilmington, Del.

Filed Mar. 10, 1995, Ser. No. 401,799
Int. Cl.[6] B23B 31/20;31/34
U.S. Cl. 279—4.08 13 Claims



1. A workpiece holder, comprising:

a main body of the holder supporting nosepiece at one end and a handle at the other end;

a clamp having resilient jaws with outer surfaces located within said nosepiece. said nosepiece including a tapered, inner surface bearing against said outer surface of said clamp jaws, said clamp being linearly movable relative to said nosepiece between at least two positions;

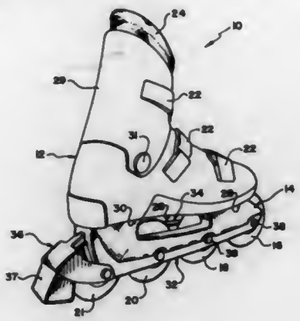
a retracted position of said clamp where said inner surface of said nosepiece bears against said jaws moving them to a gripping position;

an advanced position of said clamp where said jaws, being resiliently biased in the open. position, move to a release position;

powered means for moving said clamp between said retracted and said advanced positions, wherein said powered means for moving said clamp comprises an air cylinder located within said holder main body, said cylinder including a piston connected to said clamp; and

a power distribution block which regulates air flow from a main supply to and from said air cylinder, wherein the regulation of said air flow is provided by an electrically activated valve, said valve being controlled by changing its electrical supply between "on"and "off" states, the electrical supply to said valve being actuated by an operator-controlled switch, wherein said switch is a tilt switch on said holder responsive to the angular position of the holder in the vertical plane such that the electrical supply to said valve is changed when said holder is tilted between horizontal and vertical positions.

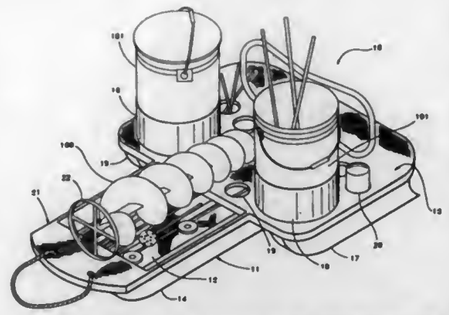
5,575,489
SHOCK ABSORBENT IN-LINE ROLLER SKATE
Gerald O. S. Oyen, #480 - 601 W. Cordova Street, Vancouver, British Columbia, Canada, and Francois E. Charron, P.O. Box 169 Suite 101 - 1184 Denman St., Vancouver, British Columbia, Canada
Continuation-in-part of Ser. No. 50,819, Mar. 22, 1993, Pat. No. 5,330,208. This application Jun. 14, 1994, Ser. No. 261,037
Int. Cl.[6] A63C *17/04*
U.S. Cl. 280—11.22 14 Claims



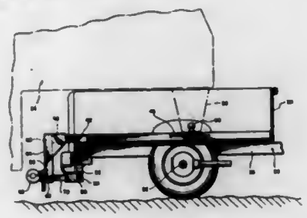
1. An in-line roller skate comprising:
(a) a boot with a heel and toe adapted to receive a foot of a skater;
(b) a first wheel supporting rail means secured to an underside of the boot and extending from the heel to the toe;
(c) a second wheel supporting rail means secured to an underside of the boot and extending from the heel to the toe adjacent and generally parallel to the first rail means;
(d) a plurality of wheel means mounted in tandem in a line between the first and second rail means, the wheel means being respectively connected to the first and second rail means by respective axle means and bearing means; and
(e) a plurality of resilient shock absorbing means located between the respective axle means and bearing means and the rail means to enable the respective wheel means to move under force individually upwardly or downwardly relative to the first and second rail means, said resilient shock absorbing means being arranged in pairs for each wheel, axle and bearing means, and the resilient shock absorbing means being mounted in respective vertical elongated cavities in the first and second rail means, each resilient means having a crescent shape, the axle means fitting in the concave curves of the crescents whereby the axles are positioned at a first elevation when the concave sides of the crescents face upwardly and are positioned at a second lower elevation when the concave sides of the crescents face downwardly.

5,575,490
ICE FISHING SLED AND CADDY
Donald V. Simpson, Jr., 27 Mountain View Rd. P.O. Box 1053, Gray, Me. 04039-1053
Filed Oct. 24, 1994, Ser. No. 328,036
Int. Cl.[6] B62B *13/02*
U.S. Cl. 280—28.12 2 Claims

1. A sled apparatus for transportation and storage of equipment, the sled apparatus comprising:
an elongated lower housing having an equipment carrying chamber formed by longitudinally extending sidewalls and a bottom wall, the bottom wall having a pair of longitudinally extending runners formed along a lower surface, a first outrigger runner extending longitudinally along a rearward portion of one sidewall of the lower housing and integrally connected thereto, a second outrigger runner extending longitudinally along a rearward portion of an opposite sidewall of the lower housing and integrally connected thereto, each of the first and second outrigger runners having a storage area contained therein and a bottom surface lying substantially in a common plane with the runners of the lower housing, a substantially planar platform having a forward portion and a rearward portion, the rearward portion being wider than the forward portion, the platform having a lower surface connected to upper edge portions of the lower housing and the first and second outrigger runners, an enlarged opening formed in the forward portion of the platform for permitting access to the lower housing, and a plurality of hollow cylindrical shaped members extending upwardly from an upper surface of the rearward portion of the platform for supporting containers received therein.

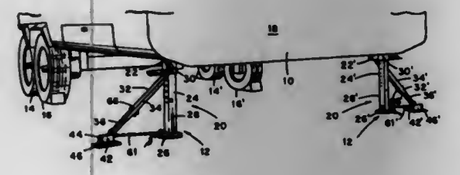


5,575,491
CARRIER HITCH
E. Dale Fenton, Columbia, Mo., assignor to ASI Industries, Fulton, Mo.
Filed May 2, 1995, Ser. No. 431,643
Int. Cl.[6] B60D *1/52*
U.S. Cl. 280—417.1 12 Claims



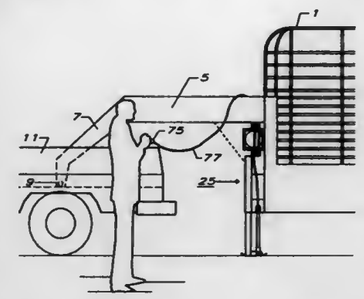
1. A vehicle having a frame, a bed and a rear axle beneath said frame and further having an intermediate structure and a hitch attached thereto, wherein the improvement comprises: said hitch including a frame structure for laying within said vehicle bed, said frame structure including a first main beam, a second main beam and a cross member, each said main beam having a first end and a second end, said first ends which are connected together to form an apex and said cross member extending between and being directly connected to said first and second main beams to generally form an A-shape, a first attaching structure proximate to each of said second ends of said main beams for removably attaching said main beams to the bed, a second attaching structure proximate to said first ends of said main beams for removably attaching said main beams to said intermediate structure, and said hitch including connecting means mounted on said cross member for removably connecting a trailer to said frame structure so that the vehicle and the trailer are interconnected by said hitch, said cross member being generally positioned over or slightly forward of the rear axle of said vehicle when said hitch lays within said vehicle bed and is attached to said vehicle bed and said intermediate structure so that the load of the trailer is distributed over the vehicle.

5,575,492
STABILIZER APPARATUS FOR FIFTH WHEEL TRAILERS
Jerry E. Stone, 23695 St. John Rd., Athens, Ala. 35611
Filed Oct. 24, 1994, Ser. No. 327,964
Int. Cl.[6] B60S *9/04*
U.S. Cl. 280—475 5 Claims



1. Apparatus for stabilizing a trailer against undergoing movement when parked and leveled by a pair of jacks placed in operating position under the trailer comprising:
a pair of stabilizer assemblies each comprising a said jack, a strut-forming leg disposable diagonally in proximity to a said jack in the assembly, said strut-forming leg having a top portion engageable with said trailer and a foot engageable with the ground, and a variable link connector comprising a chain attachable to said foot and to a lower portion of said jack;
a pair of studs comprising fixed pins secured to said trailer by inverted U-shaped brackets attached to the trailer and positioned for receiving top portions of said strut-forming legs;
a pair of braces having L-shaped cross sections with first sides connected to said bracket and second sides connected to a frame member of said trailer;
said trailer having a longitudinal axis, and said pins being disposed parallel to said axis;
said legs comprise metal tubing having a rectangular cross section, and opposite top sides of the legs have V-shaped notches defined therein and adapted to engage said pins; and
said jacks, strut-forming legs, and connector chains having a relative length such that upon placement of the assemblies underneath the trailer with tops of the strut-forming legs engaging said contact members and attaching the connectors to said lower portions of said jacks and strut-forming legs, slightly lifting the trailer, removing slack from the connector, and lowering the trailer, the weight of the trailer will be distributed between the jacks and legs, and movement of the trailer in the directions of said legs will be restrained.

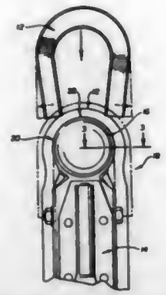
5,575,493
LIFTING MECHANISM FOR WHEELED APPARATUS
Charlie E. Schwartz, 1802 N. Llano, Junction, Tex. 76849, and John R. Kyburz, 10412 Pleasant Mound, Fort Worth, Tex. 76108
Continuation of Ser. No. 190,907, Feb. 1, 1994, Pat. No. 5,401,046. This application Mar. 27, 1995, Ser. No. 411,434
Int. Cl.[6] B60S *9/10*
U.S. Cl. 280—475 12 Claims



1. A lifting mechanism for use with a wheeled apparatus adapted to be towed by a vehicle, the lifting mechanism comprising:
a shroud connected to a portion of the wheeled apparatus;
a powered hydraulic cylinder carried inside the shroud, with a rod extending reciprocatingly downwardly to raise and lower the wheeled apparatus;
a stabilizer arm terminating at its lower end in a foot portion, the stabilizer arm carried by the shroud to extend downwardly and coextensively with the rod to protect the hydraulic cylinder from loading other than by the weight of the wheeled apparatus and its load;
an hydraulic pump carried by the shroud;
a solenoid-activated bi-directional valve coupled to a pressure supply conduit in fluid communication with the pump;
a rod extension conduit in fluid communication between the bi-directional valve and the cylinder;
a rod retraction conduit in fluid communication between the bi-directional valve and the cylinder;
a check valve in the pressure supply conduit to prevent fluid return to the pump through the pressure supply conduit; and
a pressure relief valve in the pressure supply conduit to prevent overpressurization of the lifting mechanism wherein the bi-directional valve selectively couples the pressure supply conduit with one of the extension and retraction conduits to provide fluid pressure from the pump to the cylinder to selectively downwardly extend and upwardly retract the rod and stabilizer arm.

5,575,494
TRAILER COUPLER GUARD
Dale D. DeVries, 215 E. 7th, Red Wing, Minn. 55066
Filed Jan. 18, 1995, Ser. No. 374,326
Int. Cl.[6] B60D *1/60*
U.S. Cl. 280—507 16 Claims

1. A guard for a trailer coupler having a lateral marginal flange defining a portion of the perimeter thereof, said guard comprising:
(a) a generally U-shaped member including a first and a second leg extending laterally from a closed end of said U-shaped member having a generally U-shaped upper lateral surface and a generally U-shaped lower lateral surface with a first longitudinal surface defining a contiguous inside perimeter of said U-shaped member therebetween, said first longitudinal surface having a channel formed therein extending the length of the inside perimeter of said U-shaped member and said first and said second leg angled toward each other as they extend away from said closed end, wherein in use said guard is



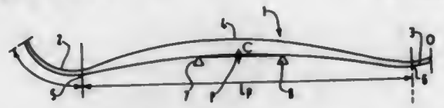
placed in contact with said coupler with at least a portion of said lateral marginal flange received within said channel and said legs releasably secure said U-shaped member.

5,575,495

CROSS-COUNTRY SKI

Bruno Dusser, Seyssins, and Dominique Locatelli, Antrans, both of France, assignors to Skis Rossignol SA, France

PCT No. PCT/FR93/01240, § 371 Date Oct. 18, 1994, § 102(e) Date Oct. 18, 1994, PCT Pub. No. WO94/16783, PCT Pub. Date Apr. 8, 1994
PCT Filed Dec. 14, 1993, Ser. No. 290,734
Claims priority, application France, Jan. 19, 1993, 93 00679
Int. Cl.[6] A63C 5/00
U.S. Cl. 280—602 6 Claims



1. A cross-country ski, comprising:
a sole having a bearing length L_p extending between a front and a rear contact line of said ski; and
a support face extending away from said sole and having a deflexion of not more than 2 millimeters under a load of 40 kilograms, exerted at a mid-point of said bearing length L_p compared with a deflexion in absence of said load, the deflexion being measured when said ski is placed on two supports separated by a length L, equal to a ratio $L_p/2.78$, said supports being centered with respect to the mid-point of said bearing length L_p and the deflexion being defined with respect to a plane P passing through respective contact points between said supports and said sole.

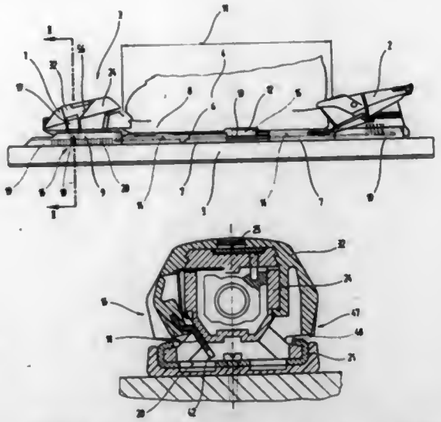
5,575,496

COUPLING DEVICE BETWEEN A BOOT AND A PIECE OF SPORTS APPARATUS SUCH AS A SKI BINDING

Max Lultz, Blaichach-Bihlerdorf, and Hans Frick, Wiggensbach, both of Germany, assignors to Atomic Austria GmbH, Altenmarkt im Pongau, Austria

Filed Jan. 27, 1995, Ser. No. 380,349
Claims priority, application Austria, Jan. 28, 1994, 165/94
Int. Cl.[6] A63C 9/00
U.S. Cl. 280—618 20 Claims

1. A coupling device for coupling a boot to a sports apparatus, which comprises
(a) a toe clamp,
(b) a heel clamp,
(1) a selected one of the clamps comprising a housing part,
(c) a guiding arrangement connected to a surface of the sports apparatus and defining a guideway for the toe and heel clamps for common displacement of the clamps in a longitudinal direction, said housing part guided in the guiding arrangement to allow an adjusted position in the longitudinal direction
(d) a device for retaining the selected clamp in an adjusted position in the longitudinal direction, the retaining device comprising an adjusting device including
(1) an actuating element,
(2) a catching element connected with the actuating element, the actuating element with the catching element being pivotal in a plane extending perpendicularly to the longitudinal direction about a swivel axis extending substantially parallel to the longitudinal direction and to the surface of the sports apparatus, and
(3) a locking plate in the guiding arrangement extending in the longitudinal direction and defining a series of latching slots spaced from each other in said direction, the catching element engaging a respective one of the latching slots when the actuating element is pivoted into a retaining position, and
(e) an attachment part superimposed on the housing part,
(1) the actuating element with the catching element being pivotally connected to the attachment part by the swivel axis and the attachment part with the actuating element being approximately U-shaped and encompassing the housing part in the direction of the surface.

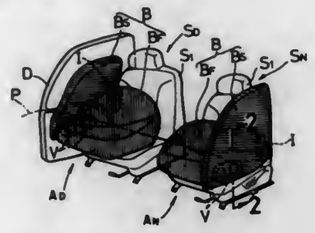


5,575,497

METHOD FOR DEVELOPING AIR BAG FOR VEHICLE

Kouichi Suyama, and Kiyoshi Honda, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1995, Ser. No. 490,038
Claims priority, application Japan, Jun. 14, 1994, 6-131825
Int. Cl.[6] B60R 21/16
U.S. Cl. 280—730.1 4 Claims



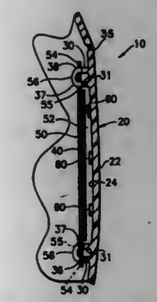
1. A method for developing an air bag for a vehicle into a vehicle compartment to hold an occupant of the vehicle, by a high pressure gas generated by an inflator, when an acceleration greater than a predetermined value is detected, said air bag comprising a first portion to be developed between said occupant and a side door, and a second portion to be developed between said occupant and an instrument panel, wherein the method comprises the steps of first developing said first portion of the air bag and then developing said second portion of the air bag.

5,575,498

AIRBAG MODULE COVER WITH FLOATING HORN SWITCH

Wael S. Elqadah, and Mark L. Enders, both of North Ogden, Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Jul. 26, 1995, Ser. No. 507,585
Int. Cl.[6] B60R 21/16
U.S. Cl. 280—731 20 Claims



1. An airbag module cover with a membrane horn switch for operation by a vehicle driver, comprising:
a switch cover panel having a front outer face and a rear inner face, the outer face forming a portion of the airbag module cover presented to the driver, the switch cover panel deformably depressible from the front outer surface;
the membrane horn switch for closing a horn switch circuit upon being compressed, the membrane horn switch positioned adjacent the rear inner face of the switch cover panel;
spacing means extending rearwardly from the rear inner face of the switch cover panel and extending beyond the position of the membrane horn switch, the spacing means located peripherally around the membrane horn switch; and
a secured switch backing place supported by the spacing means and retaining the horn switch between the rear inner face and the backing plate;
the spacing means creating a positive gap between the backing plate and the rear inner face greater than a thickness of the membrane horn switch so that the membrane horn switch is not simultaneously in contact with and compressed between the backing plate and the rear inner face absent compressive force applied to the cover by a vehicle driver.

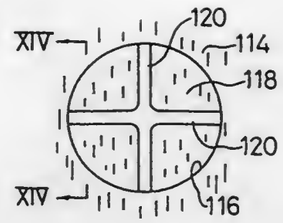
5,575,499

INFLATOR FOR AIR BAG DEVICE

Kaname Kohno, Tokyo, Japan, assignor to Takata Corporation, Tokyo, Japan

Filed Nov. 29, 1994, Ser. No. 350,032
Claims priority, application Japan, Mar. 23, 1994, 6-51684
Int. Cl.[6] B60R 21/26
U.S. Cl. 280—741 10 Claims

1. An inflator of an air bag device adapted to inflate an air bag, comprising:
a metallic casing with a wall portion,
a propellant filled in said casing for generating gas,
an igniter situated inside the casing adjacent to the propellant, said igniter starting a gas generating reaction of the propellant when the igniter is actuated, and gas discharge means provided in the wall portion of the casing and integrally formed with the wall portion of the casing as one unit to completely seal the casing, said gas discharge means including first recessed portions with first metallic films to be able to communicate with the air bag, and second recessed portions with second metallic films situated at a side opposite to the first recessed portions, each of said first metallic films having a thickness less than a thickness of each of the second metallic films so that when the igniter is actuated upon collision of a vehicle, the first metallic films break to inflate the air bag, and when the propellant is ignited by heat due to a fire, the first and second metallic films break to prevent thrust from being formed by gases ejected from the first and second recessed portions.

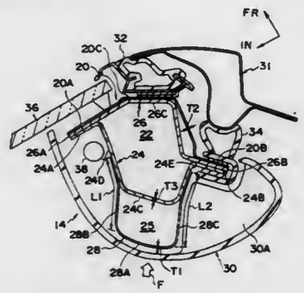


5,575,500

OCCUPANT PROTECTING STRUCTURES OF VEHICLE BODY UPPER PORTIONS

Etsuhisa Mimura, Shizuoka-ken; Takashi Nakamura, Aichi-ken, and Syuiti Tsimoto, Shizuoka-ken, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 22, 1995, Ser. No. 532,069
Claims priority, application Japan, Oct. 7, 1994, 6-244104; Oct. 14, 1994, 6-249642
Int. Cl.[6] B60R 21/04;21/055
U.S. Cl. 280—751 20 Claims



1. An occupant protecting structure of a vehicle body upper portion, which is applied to at least one of a pillar and a roof rail, at least one of the pillar and the roof rail comprising:
an outer panel having a predetermined thickness;
an inner panel having a predetermined thickness and disposed further toward an interior of a vehicle than said outer panel with a space therebetween; and
an energy absorbing panel having a thickness smaller than those of said outer panel and said inner panel and disposed further toward the interior of the vehicle than said inner panel with a space therebetween,
wherein said inner panel has a pair of opposing side surface portions at both ends of an intermediate portion of said inner panel, said energy absorbing panel has a pair of opposing side surface portions which are formed at both ends of a pressure-

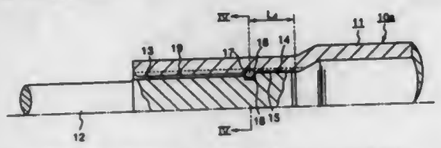
applied portion to which load is applied from a head portion of an occupant and which are respectively fixed to the pair of side surface portions of said inner panel, and said outer panel and said inner panel form a closed cross-sectional configuration when cut along a virtual line perpendicular to a longitudinal direction of said outer and inner panels in a state in which one flange portions and another flange portions of said outer panel and said inner panel are respectively joined in layers.

5,575,501

SHAFT FOR COLLAPSIBLE STEERING APPARATUS

Seiichi Moriyama, Takasaki; Yasuo Matsui, Maebashi, and Kiyoshi Sadakata, Gunma-ken, all of Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Feb. 16, 1995, Ser. No. 389,807
Claims priority, application Japan, Sep. 9, 1994, 6-215495
Int. Cl.[6] B62D 1/19
U.S. Cl. 280—777 **2 Claims**



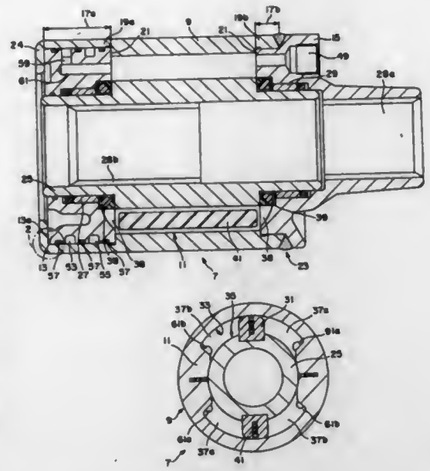
1. A shaft for collapsible steering apparatus, comprising:
an outer shaft having female serration grooves on an inner surface thereof;
an inner shaft having male serration grooves on an outer surface thereof that engage said female serration grooves, said inner shaft having a recess on said outer surface at a portion corresponding to a root in the male serration grooves; and
a hard member disposed in said recess and having a part that intrudes into part of a serration among said female serration grooves,
wherein a relief, for avoiding friction between said part of said serration into which the hard member intrudes and said outer surface of the inner shaft, is provided on said outer surface at a portion among said male serration grooves and closer than said recess to a center of said inner shaft in an axial direction of said inner shaft.

5,575,502

ROTARY ACTUATOR SUCH AS A HYDRAULIC ROTARY ACTUATOR FOR A MOTOR VEHICLE AND A METHOD OF MAKING A ROTARY ACTUATOR

Horst Oppitz, Dittelbrunn; Stefan Schiffler, Schonungen, and Bernhard Schmitt, Wasserlosen, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Oct. 28, 1994, Ser. No. 331,042
Claims priority, application Germany, Nov. 5, 1993, 43 37 773.4; Oct. 6, 1994, 44 35 692.7
Int. Cl.[6] B60G 21/00
U.S. Cl. 280—689 **7 Claims**



1. A rotary actuator comprising:
housing means;
means for connecting said housing means to a first portion of a motor vehicle suspension;
shaft means, said shaft means defining a longitudinal axis;
at least a portion of said shaft means being rotatably disposed within said housing means;
means for connecting said shaft means to a second portion of a motor vehicle suspension;
means for rotatably mounting said at least a portion of said shaft means within said housing means for rotation of at least one of said shaft means and said housing means about said longitudinal axis with respect to the other of said shaft means and said housinq means;
said shaft means comprising an outer surface disposed towards said housing means;
said housing means comprising an inner surface disposed towards said outer surface of said shaft means, said inner surface of said housing means being spaced apart from said outer surface of said shaft means to define a chamber between said shaft means and said housing means, said chamber having a first axial end and a second axial end;
cap means for closing at least one of said first and second axial ends of said chamber;
means for connecting said cap means to said housing means;
said means for connecting comprising at least one radial deformation of said housing means;
said at least one radial deformation of said housing means being configured for engaging at least a portion of said cap means;
said housing means having a first axial end and a second axial end;
said cap means fitting within said inner surface of said housing means adjacent at least one of said first and second axial ends of said housing means;
said radial deformation comprising a radially inward deformation of said housing means for engaging at least a portion of said cap means;
said cap means comprising:
a first axial end surface being disposed within said housing;
a second axial end surface being opposite said first axial end surface; and
a cylindrical outer surface extending axially between said first and second axial end surfaces;
said radially inward deformation of said housing means engaging at least one of:
at least a portion of said second axial end surface of said cap means; and
at least a portion of said cylindrical outer surface of said cap means;
said housing means comprising a cylindrical flange forming said first end of said housing means;
said radially inward deformation comprising a radially inward deformation of at least a portion of said flange to axially engage said at least a portion of said flange with said at least a portion of said second axial end surface of said cap means;
said cap means comprising first and second cap means for closing both of said first and second axial ends of said chamber;
said means for connecting said first cap means to said housing means comprising said radially inward deformation;
said means for connecting said second cap means to said housing comprising a weld;

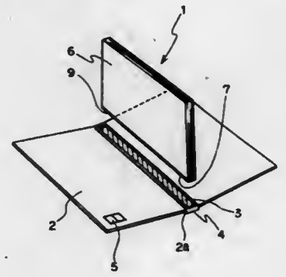
said second cap means comprising said means for connecting said housing means to said first portion of a motor vehicle suspension;
each of said outer surface of said shaft means, and said inner surface of said housing means, comprising at least two protections extending towards the other of:
said outer surface of said shaft means, and
said inner surface of said housing means;
said projections of said shaft means being disposed between said projections of said housing means;
each of said projections extending from said first axial end of said chamber to said second axial end of said chamber to axially divide said chamber into at least four chamber portions;
means for fluidly connecting together at least a first two of said chamber portions;
means for fluidly connecting together at least a second two of said chamber portions;
each of said at least a first two chamber portions being disposed between ones of said at least a second two chamber portions;
each of said at least a second two chamber portions being disposed between ones of said at least a first two chamber portions;
means for independently introducing fluid into each of:
said at least a first two chamber portions, and
said at least a second two chamber portions,
to relatively rotate said housing means and said shaft means with respect to one another;
said means for fluidly connecting together said at least a first two of said chamber portions comprising at least a first channel disposed circumferentially about said outer cylindrical surface of said first cap means between said first cap means and said inner surface of said housing means;
said means for fluidly connecting together said at least a second two of said chamber portions comprising at least a second channel disposed circumferentially about said outer cylindrical surface of said first cap means between said first cap means and said inner surface of said housing means;
said means for fluidly connecting together said at least a first two of said chamber portions additionally comprising:
first axial passages in said first cap means in fluid communication with each of said at least a first two of said chamber portions;
first radial passages in said first cap means extending radially between said first channel and said first axial passages;
said means for fluidly connecting together said at least a second two of said chamber portions additionally comprising:
second axial passages in said first cap means in fluid communication with each of said at least a second two of said chamber portions; and
second radial passages in said first cap means extending radially between said second channel and said second axial passages;
said means for introducing fluid comprising hydraulic connections for fluidly connecting said chamber portions to a fluid supply source;
said second cap means comprising said hydraulic connections;
said radially inward deformation comprising a radial inward deformation of all of said flange completely about the circumference of said housing;
said first and second channels being separated from one another axially on said outer cylindrical surface of said first cap means;
said cap means further comprising:
a third channel being disposed between said first channel and said first end surface of said cap means, said third channel being disposed circumferentially about said outer cylindrical, surface of said first cap means, and said third channel comprising a ring-shaped seal disposed therein to seal said outer cylindrical surface of said first cap means to said inner surface of said housing means;
a fourth channel being disposed between said first channel and said second channel, said fourth channel being disposed circumferentially about said outer cylindrical surface of said first cap means, and said fourth channel comprising a ring-shaped seal disposed therein to seal said outer cylindrical surface of said first cap means to said inner surface of said housing means; and
a fifth channel being disposed between said second channel and said second end surface of said first cap means, said fifth channel being disposed circumferentially about said outer cylindrical surface of said first cap means, and said fifth channel comprising a ring-shaped seal disposed therein to seal said outer cylindrical surface of said first cap means to said inner surface of said housing means;
each of said projections comprising:
a first side being disposed towards one of said first two chamber portions;
a second side being disposed opposite to said first side and adjacent one of said second two chamber portions;
a surface being disposed between said first side and said second side, said surface being disposed towards the other of:
said outer surface of said shaft means, and
said inner surface of said housing means; and
at least one seal means for sealing said surface of said at least one projection to the other of:
said outer surface of said shaft means, and
said inner surface of said housing means,
to minimize fluid flow from said first two chamber portions to said second two chamber portions;
said first and second cap means comprising gasket means for sealing said cap means about said shaft means;
said cap means further comprising bearing means for rotatably mounting said shaft means within said cap means;
said shaft means comprising a longitudinal hole therein disposed along said longitudinal axis of said shaft means;
at least a portion of said longitudinal hole having a non-round cross section;
said means for connecting said shaft means to a second portion of a motor vehicle suspension comprising said non-round cross-section of said longitudinal hole;
said housing comprising a cylinder, said cylinder having an outer surface; and
said weld of said second cap means being disposed circumferentially about said outer surface of said cylinder at said second axial end of said cylinder.

5,575,503

FILING TOOL

Masakatsu Takahashi, 4-6, Narihira-cho, Ashiya-shi, Hyogo 659, Japan, assignor to Masakatsu Takahashi; Toki Takahashi, both of Hyogo; Ryutaro Takahashi; Megumi Hashimoto, both of Tokyo; Chizuko Yamada, Niigata, and Kentaro Takahashi, Shiga, all of Japan

PCT No. PCT/JP92/01010, § 371 Date Nov. 17, 1993, § 102(e) Date Nov. 17, 1993, PCT Pub. No. WO93/18926, PCT Pub. Date Sep. 30, 1993
PCT Filed Aug. 5, 1992, Ser. No. 150,042
Claims priority, application Japan, Mar. 17, 1992, 4-092285
Int. Cl.[6] B42D 1/00
U.S. Cl. 281—21.1 **2 Claims**



1. A filing tool comprising a magnet and a cover provided with said magnet, wherein said magnet is an electromagnet having a switching means for switching said electromagnet between an excited state and a non-excited states, wherein said cover is made of a two-folded sheet with magnetic shield property capable of shielding against lines of magnetic force around said electromagnet.

5,575,504

FILE FOLDER

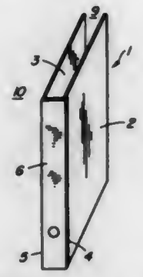
Konrad Wagner, Ulrichstrasse 44, D-86316 Friedberg-Derching, Germany

Filed Oct. 20, 1994, Ser. No. 326,237

Claims priority, application Germany, Oct. 20, 1993, 9315962 U

Int. Cl.[6] B42F *7/00*

U.S. Cl. 281—29 **6 Claims**



1. A file folder comprising a front, a back cover and a spine formed of one piece of cardboard material and connected along two folds, the folds having been produced by rolling, two grooves milled along the two folds on the inside of the file having been produced by a milling head operating in a direction of feed of the cardboard material and parallel to the fibers of the cardboard material, the grooves being coated with a permanent elastic adhesive.

5,575,505

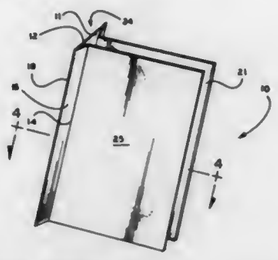
PAMPHLET WITH ENHANCED SPINE

Donald Y. Bridges, 3014 Creek Ct., Roswell, Ga. 30075

Filed Aug. 9, 1995, Ser. No. 513,079

Int. Cl.[6] B42D *3/00*

U.S. Cl. 281—36 **12 Claims**



1. A pamphlet, comprising:
a T-shaped spine comprising an elongate central panel foldably connected along opposite edges to a pair of connecting panels, said connecting panels having a width less than or equal to half the width of the central panel and being folded inwardly to a position approximately parallel to the central panel; and
a pair of main panels each foldably connected to one of the connecting panels.

5,575,506

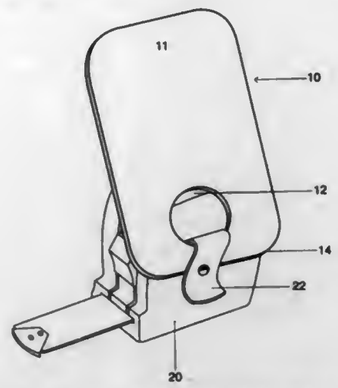
ERASABLE WRITING PAD

Charles E. Gardenhour, Jr., 3126 Belle View Ave., Cheverly, Md. 20785, and Christopher E. Gardenhour, 6125 43rd St., Riverdale, Md. 20737

Filed Apr. 21, 1995, Ser. No. 426,616

Int. Cl.[6] G01B *3/02*

U.S. Cl. 281—39 **13 Claims**



1. A writing pad surface for attachment to the clip of a standard tape measure, comprising:
a writing pad made from a substantially rigid material having at least one writing surface, the writing surface being sufficiently hard and abrasive to permit the writing surface to be marked by a standard writing instrument; and,
the writing pad including a means for releasably securing the writing pad to the clip of a standard tape measure such that the writing pad can rotate about the clip from a first use position to a second storage position, wherein the means includes an opening in the form of a hole adjacent an edge of the writing pad, the diameter of which is only slightly larger than the width of the clip.

5,575,507

HEAT TRANSFER RECORDING MEDIA

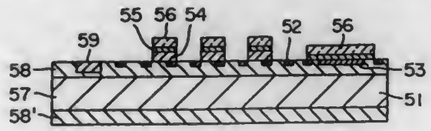
Mineo Yamauchi; Katsuyuki Oshima; Jitsuhiko Ando; Masanori Torii; Hideo Fujimura, and Tamami Iwata, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 340,354, Nov. 14, 1994, Pat. No. 5,496,072, which is a continuation of Ser. No. 118,210, Sep. 9, 1993, Pat. No. 5,387,013, which is a continuation of Ser. No. 582,216, Oct. 1, 1990, Pat. No. 5,267,755. This application Dec. 5, 1995, Ser. No. 567,424

Claims priority, application Japan, Jan. 31, 1989, 1-22346; Feb. 13, 1989, 1-33455; Feb. 13, 1989, 1-33456; Nov. 20, 1989, 1-299774; Nov. 20, 1989, 1-299775; Nov. 20, 1989, 1-299776; Nov. 27, 1989, 1-304844; Nov. 27, 1989, 1-304845

Int. Cl.[6] B92D *15/00*

U.S. Cl. 283—86 **8 Claims**



1. A heat transfer recording medium comprising:
a substrate;
a sublimable dye layer formed on the substrate;
a meltable ink layer formed on the substrate; and
a protective layer formed on the substrate.

5,575,508

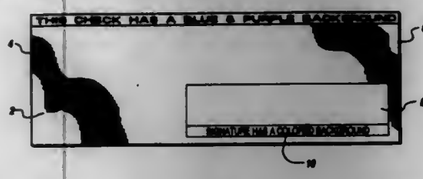
METHOD AND APPARATUS FOR INHIBITING THE COPYING OF CHECKS AND NEGOTIABLE DOCUMENTS

Robert I. Diamond, Bothell, Wash., assignor to Formtronics, Inc., Alpine, Utah

Continuation-in-part of Ser. No. 241,798, May 12, 1994, Pat. No. 5,538,290, which is a continuation-in-part of Ser. No. 57,614, May 5, 1993, abandoned. This application Nov. 2, 1994, Ser. No. 333,542

Int. Cl.[6] B42D *15/00*

U.S. Cl. 283—93 **13 Claims**



1. A negotiable document having enhanced security for deterring generation of copies of the negotiable document, comprising:
a backing;
a first warning mark printed on the backing and comprised of a first dot size pattern;
a second warning mark printed on the backing and comprised of a second dot size pattern; and
a background pattern printed on the backing and surrounding the first and second warning marks, said background pattern comprising a third dot size pattern.

5,575,509

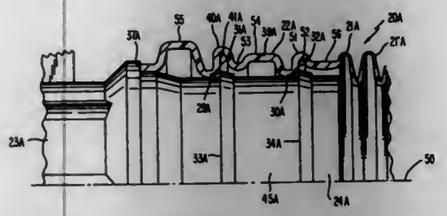
VACUUM CLEANER HOSE ASSEMBLY, A FLEXIBLE HOSE THEREFOR AND METHODS OF MAKING THE SAME

Keith E. Wood, Asheville; R. Dale Medford, and Larry D. Rathbone, both of Waynesville, all of N.C., assignors to Dayco Products, Inc., Dayton, Ohio

Filed Mar. 22, 1995, Ser. No. 408,464

Int. Cl.[6] F16L *21/00*

U.S. Cl. 285—7 **12 Claims**



1. In a vacuum cleaner hose assembly comprising a flexible hose with annular corrugations having a cuff end, and a tubular tool part having an end telescoped in said cuff end and being locked therein while being rotatable relative thereto, said cuff end having a first outwardly directed annular convolution adjacent said end of said tool part and a first inwardly directed annular convolution joining said annular corrugations, said cuff end also having a pair of axially spaced apart and inwardly directed annular convolutions provided with like facing sides, said end of said tool part having a pair of axially spaced apart and outwardly directed annular shoulder means respectively engaging said sides of said pair of annular convolutions to tend to lock said end of said tool part in said cuff end of said hose, said cuff end of said hose having an annular structure interconnecting said pair of convolutions together, the improvement wherein said pair of convolutions are transversely intermediate said first outwardly directed convolution and said first inwardly directed convolution, said pair of convolutions providing the only contact between said annular structure and said tool part, and wherein said annular structure of said cuff end of said hose is annularly spaced outwardly form said tool part so as to be out of engagement therewith from one said pair of convolutions to the other of said pair of convolutions to minimize drag during rotation of said tool part relative to said cuff end.

5,575,510

QUICK-CONNECT FITTING FOR GAS CYLINDERS

Wolfgang Weh, and Erwin Weh, both of Illertissen, Germany, assignors to Weh FmbH, Verbindungstechnik, Illertissen, Germany

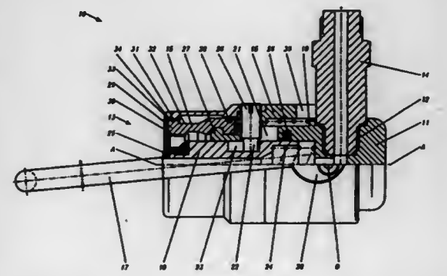
PCT No. PCT/EP93/00703, § 371 Date Sep. 30, 1994, § 102(e) Date Sep. 30, 1994, PCT Pub. No. WO93/20378, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 31, 1993, Ser. No. 313,143

Claims priority, application Germany, Mar. 31, 1992, 9204384 U

Int. Cl.[6] F16L *35/00*

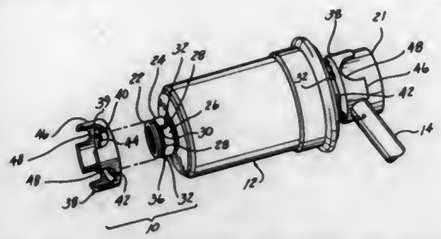
U.S. Cl. 285—35 **11 Claims**



1. Quick-connect fitting for transferring gaseous and/or liquid media, in particular for filling gas bottles, comprising:
a housing having an inlet and an outlet for the medium to be transferred,
a quick-connect device arranged in the area of the outlet comprising clamping tongs, which are adapted to be interlockable with an external complementary profile said profile including an internal surface, the outlet of the housing being generally cylindrical and the tongs being distributed circumferentially about the outlet with gaps in between, the tongs including external ends which, in combination, define a connection for the complementary profile, each tong being pivotable and biased so that its external end is urged radially outward.
a hollow sealing piston having a seal thereon and housed in said housing, and a device for axially glidably moving said piston with respect to said cylindrical outlet and said tongs to a position sealingly engaging said internal surface,
a sleeve displaceable about said housing and having an inner control surface for engaging external control surfaces of said tongs,
an eccentric-shaped disk cam rotatable about said housing and positioned to engage a portion of said sleeve so as to displace said sleeve toward and away from said outlet, and
an actuating device for applying the clamping tongs so as to displace the external ends of said clamping tongs radially inward about said profile, said actuating device including an elongated member fixedly mounted with respect to said rotatable disk cam.

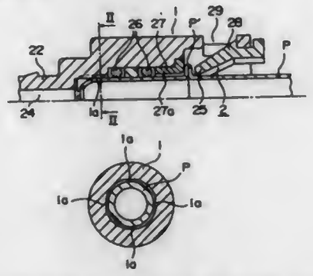
VOL 1192 ISS 3 NO 19 1996 UMI

5,575,511
FUEL FILTER COUPLING BRACKET
John L. Kroha, Grosse Pointe, and Daryl S. Beesley, South Lyon, both of Mich., assignors to Flexon, Inc., Ferndale, Mich.
Filed Apr. 7, 1995, Ser. No. 418,759
Int. Cl.[6] F16L *3/00;35/00*
U.S. Cl. 285—61 6 Claims



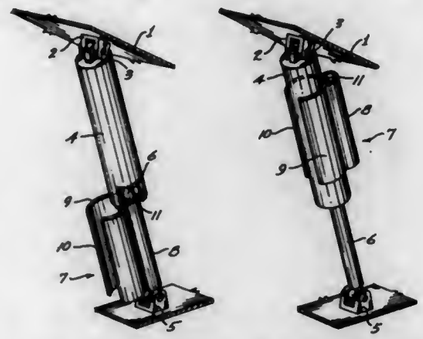
1. A fluid coupling device useful for coupling a fluid line to a fluid filter, said coupling comprising:
a tubular coupling base member, having a first end for engagement with a fluid filter, a second end for engagement with the fluid line, and an annular groove proximate to the second end; and
a coupling bracket having a crown-shaped configuration having an inner and outer periphery, wherein said inner periphery defines a circular aperture therethrough, and comprising a plurality of tabs extending inwardly from the inner periphery for releasable engagement within the annular groove of the base member and a circular vertical flange extending axially around the outer peripbery, said vertical flange having a U-shaped recess for engaging a fluid line.

5,575,512
PIPE JOINT
Katsushi Umezawa, Numazu, Japan, assignor to Usui Kokusai Sangyo Kaisha Ltd., Japan
Filed Mar. 24, 1995, Ser. No. 410,240
Claims priority, application Japan, Mar. 29, 1994, 6-082412
Int. Cl.[6] F16L *39/00*
U.S. Cl. 285—319 10 Claims



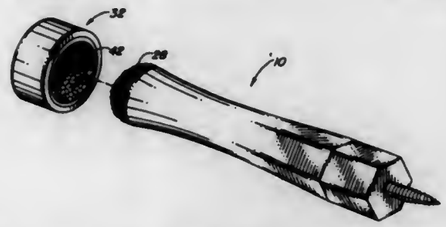
1. In a pipe joint comprising a pipe having a first radially outwardly projecting annular wall protrusion near one end thereof, a connector in which said pipe is fitted at and near said one end thereof, a socket attached to said connector and having a plurality of radially outwardly projecting engaging portions by which said socket is held to said connector, and a plurality of radially inwardly projecting engaging lugs, a plurality of seal rings surrounded by said connector and surrounding said pipe, and a first annular bush fitted in said connector between said wall protrusion and said seal rings, said wall protrusion being held between said lugs and said bush to hold said pipe in position, the improvement which comprises means provided between said pipe and said connector for producing friction to hold them against any axial and radial displacement from each other.

5,575,513
AUTOMOBILE HOOD STRUT LOCK
Willis A. Tuttle, 422 W. Galer, Seattle, Wash. 98119
Filed Apr. 3, 1995, Ser. No. 385,138
Int. Cl.[6] E05C *17/54*
U.S. Cl. 292—339 5 Claims



1. A lock device for maintaining a jack cylinder and plunger in extended condition, comprising a receptacle having side-by-side chambers, one of said chambers being a plunger chamber for embracing the jack plunger for propping the cylinder and plunger in extended condition and the other of said chambers being a cylinder chamber for embracing the jack cylinder when the cylinder and plunger are contracted from their extended condition for maintaining said receptacle in captive condition relative to the jack, said receptacle having an internal slot communicating between said plunger chamber and said cylinder chamber for passage of the jack plunger transversely therethrough between said cylinder chamber and said plunger chamber.

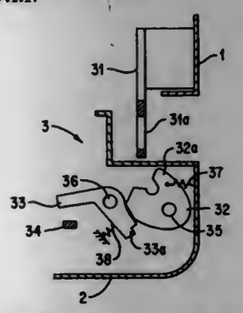
5,575,514
DOOR-HOLDING DOOR STOP
Robert F. Troy, P.O. Box 4145, Scottsdale, Ariz. 85261-4145
Filed Jan. 5, 1995, Ser. No. 368,858
Int. Cl.[6] E05B *15/02*
U.S. Cl. 292—340 5 Claims



1. A door stop comprising, in combination:
an elongated member having a substantially convex first end;
a covering for said first end of said elongated member wherein said covering comprises an exterior portion and an interior portion, said exterior portion comprises at least one of a hook-type and a loop-type fastening material;
means for attaching said first end of said elongated member to said interior portion of said covering;
means for attaching a second end of said elongated member to at least one of a wall and molding strip;

receiving means that is shorter than said elongated member for releasable coupling with said exterior portion of said covering, said receiving means comprises a substantially flat first side and a substantially concave second side;
a covering for said second side of said receiving means wherein said covering comprises an exterior portion and an interior portion, said exterior portion comprises at least one of a hook-type and a loop-type fastening material;
means for attaching said second side of said receiving means to said interior portion of said covering; and
means for attaching said substantially flat first side of said receiving means to a face of a door.

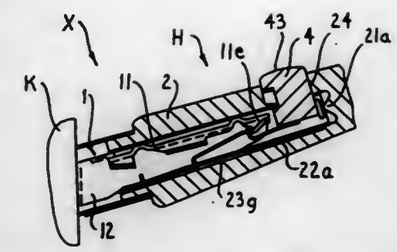
5,575,515
DOOR LOCKING APPARATUS FOR DISPENSER
Shozo Iwamoto; Tetsuya Miyao, and Kosaku Ito, all of Mie, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan
Filed Feb. 3, 1995, Ser. No. 383,487
Claims priority, application Japan, Feb. 10, 1994, 6-015621
Int. Cl.[6] E05B *15/02*
U.S. Cl. 292—341.17 6 Claims



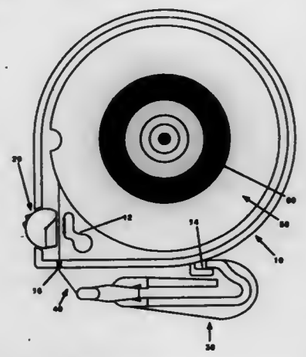
1. A door locking apparatus for locking and unlocking a door of a dispenser and a case thereof comprising:
a door lock mechanism situated between the door and the case for latching the door at a locked position and including a lock plate fixed to one of the door and the case, and engaging means fixed to the other of the door and the case, said engaging means including a cam plate engagable with the lock plate when the door is closed, a latch situated adjacent to the cam plate for locking the cam plate in a locking condition, and a release lever situated adjacent to the latch;
a solenoid mounted inside the door for releasing the door lock mechanism, said solenoid being attached to the release lever so that when the release lever is rotated by actuation of the solenoid, the latch is rotated to move the cam plate to release engagement between the cam plate and the lock plate;
a receiver mounted inside the door and connected to the solenoid;
and
a transmitter for sending an ID signal from an outside of the door to the receiver so that when the receiver receives the ID signal from the transmitter, the solenoid actuates the engaging means to release the lock plate of the door lock mechanism.

5,575,516
FASTENING MECHANISM FOR A HANDLE
Gerd-Diethard Baumgarten, Wilnsdorf-Wilden, Germany, assignor to Heinrich Baumgarten KG Spezialfabrik fuer Beschlagteile, Neunkirchen, Germany
Filed May 1, 1995, Ser. No. 432,095
Int. Cl.[6] E05B *3/00*
U.S. Cl. 292—353 23 Claims

1. In a fastening mechanism for a handle for locking a handle piece in a position of use on a cooking utensil, said fastening mechanism having a metallic holding piece nonreleasably provided on the cooking utensil and projecting outwardly therefrom, said handle including a handle piece which has a recess for receiving said holding piece, and a spring piece which is fastened in said recess, extends along said recess, and is able to be coupled with said holding piece, said spring piece being automatically and positively lockable on said holding piece when said handle piece is moved over said holding piece and locks said handle piece to said holding piece in said position of use, comprising the improvement wherein an opening is provided in said handle piece and extending transversely with respect to a longitudinal extent of said handle piece and ending in said recess, wherein, in said opening, there is provided an operating piece secured to said handle piece and is supported for movement in said transversely extending opening in response to a gripping of said handle piece by a digit of a user's hand, with which operating piece said spring piece is biased and thereby unlocked from said holding piece to cancel the positive locking of said spring piece on said holding piece, and wherein a metallic tubular sleeve is stationarily fixed in said recess to thereby protectively line said recess, said sleeve including means for locking said spring piece in said recess.



5,575,517
PORTABLE, HAND-OPERATED HOIST
Bruce A. Thomas, 2029 S. Elms Rd., Swartz Creek, Mich. 48473
Filed Oct. 21, 1994, Ser. No. 327,098
Int. Cl.[6] B65H *75/40;* B66C *1/10*
U.S. Cl. 294—1.1 1 Claim



1. A hoist comprising:
a length of ribbon with a first end and a second end;
a hook attached to said second end;
a housing large enough to hold said ribbon and having an orifice large enough for through communication of said ribbon but too small for through communication of said hook, wherein said ribbon has its said first end retained within said housing, communicates through said orifice, and has said second end outside of said housing;

a holding means attached to said housing for detachably retaining said hook, said holding means comprising a recess on the outside of said housing placed just far enough from said orifice that a retained hook will be snuggled next to said housing; and

a locking means cooperating with said ribbon and said housing for selectively preventing movement of said ribbon.

5,575,518

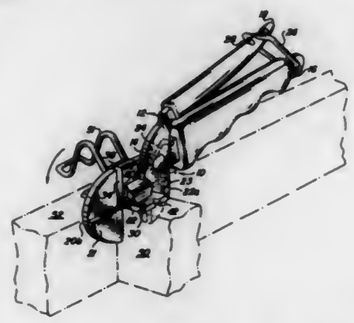
GRIPPER TOOL FOR HANDLING LUMBER

Douglas F. Payne, P.O. Box 582, Wellsriver, Vt. 05081

Filed Dec. 19, 1994, Ser. No. 358,377

Int. Cl.[6] B25B *5/14*

U.S. Cl. 294—16 **20 Claims**



1. A gripper tool for facilitating the handling of a 2-by-lumber member of rectangular cross-section having a nominal thickness of 1½ inches, comprising:

a pair of levers pivotally joined by a pivot pin having arms at one side of the pivot pin constituting handles which are disposed generally parallel to each other and in a substantially common plane, and shorter arms at the other side of the pivot pin which are disposed in closely adjacent planes, a first of said shorter arms including a portion which extends forwardly from said pivot pin and at a forward end has a generally right angularly extending first jaw, and the second of said shorter arms extending forwardly from said pivot pin and having a second jaw thereon which opposes and is spaced from said first jaw by a throat region of a length substantially equal to said nominal thickness, said jaws being adapted to grip opposite side surfaces of a portion of a lumber member having a rectangular cross-section and said nominal thickness placed therebetween when said handles are squeezed toward one another, and

means defining a flat plate affixed to said extending portion of said first of said shorter arms at said throat region, said plate having a width dimension generally corresponding to said nominal thickness and a length dimension approximately twice said width dimension and extending substantially equidistantly to either side of and right angularly to the plane of said first of said shorter arms for providing ears adapted for temporarily supporting an end of a lumber member gripped by said jaws on an abutting lumber member.

5,575,519

BALL RETRIEVAL DEVICE

Ernest J. Mansbridge, 58 Laburnham Road, Maidenhead, Berkshire SL6 4DB, Great Britain

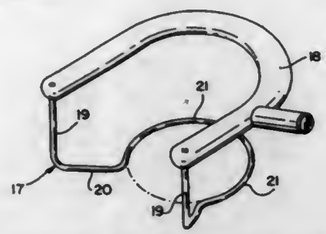
PCT No. PCT/GB94/00617, § 371 Date Sep. 15, 1995, § 102(e) Date Sep. 15, 1995, PCT Pub. No. WO94/21331, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 24, 1994, Ser. No. 522,407

Claims priority, application United Kingdom, Mar. 24, 1993, 9306068

Int. Cl.[6] A63B *47/02*

U.S. Cl. 294—19.2 **13 Claims**



3. A device for retrieving a ball from a hazard comprising:

a substantially-flat ball-receiving frame positioned in a first plane, said ball-receiving frame defining a mouth of a dimension for receiving a ball to be retrieved from a direction parallel to said first plane;

an elongated wire having an intermediate portion formed in a loop lying in a second plane, substantially parallel to said first plane, said wire being bent at opposite end limbs thereof for extending between said first and second planes on opposite sides of said mouth of said ball-receiving frame and for attaching said wire to said frame;

wherein, said loop defines an opening having dimensions for allowing the ball to pass only partially therethrough so as to capture said ball in said opening;

wherein said end limbs are spaced from one another a distance greater than a diameter of the ball so that the ball can pass between said end limbs in said direction parallel to said first plane through said mouth of said ball-receiving frame to be captured in said loop;

wherein said first and second planes are spaced from one another a distance less than a diameter of the ball so that said frame prevents said ball from leaving said loop in directions parallel to said planes, other than at said mouth; and

a handle attached to said device for manipulating said device to retrieve the ball.

5,575,520

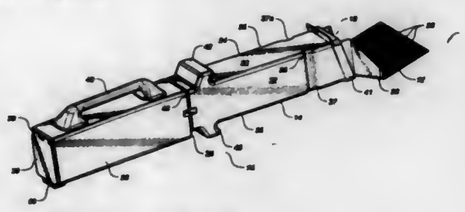
CLEANING DEVICE FOR STABLES

Wayne E. Northcutt, P.O. Box 1002, Crockett, Tex. 75835

Continuation-in-part of Ser. No. 390,130, Feb. 17, 1995, abandoned. This application Apr. 24, 1995, Ser. No. 427,069

Int. Cl.[6] E01H *1/12*

U.S. Cl. 294—55 **16 Claims**



1. A cleaning device comprising:

a rake member;

a body connected to said rake member, said body having an opening adjacent said rake member, said body having an interior volume, said body comprising:

a throat section; and

a storage section connected to said throat section, said throat section and said storage section sharing said interior volume, said body having a shoulder formed at a juncture between said throat section and said storage section, said shoulder extending outwardly from said throat section; and

gate means affixed within said body, said gate means for allowing material to pass from said rake member into said interior volume while preventing movement of material from said interior volume toward said rake member.

5,575,521

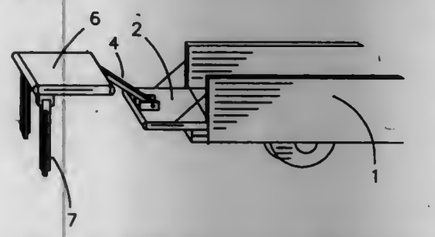
TAIL GATE BOX, TABLE, AND SINK

Gregory D. Speis, 1516 Tijeras NE. #34, Albuquerque, N.M. 87106

Filed Sep. 25, 1995, Ser. No. 533,066

Int. Cl.[6] B62D *25/00*

U.S. Cl. 296—57.1 **15 Claims**



1. A pickup truck tailgate utility device comprising, in combination:

a generally flat table surface;

a tailgate attach removably mounted to a pickup truck tailgate;

an elongated arm member pivotally coupled to said flat table surface and pivotally coupled to said tailgate attach; extendable legs fastened to said flat surface, whereby said legs fold parallel to said flat table surface for storage, said legs supporting said flat surface when extended.

5,575,522

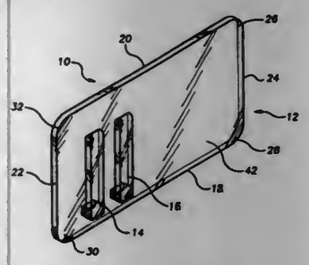
AUTOMOBILE SUN SHIELD

Emmett W. Robinson, 105 Veterans Blvd., Lot 14, Kenner, La. 70062

Filed Jun. 28, 1995, Ser. No. 495,824

Int. Cl.[6] B60J *3/02*

U.S. Cl. 296—97.6 **5 Claims**



1. An automobile sun shield comprising:

a substantially rectangularly shaped, one piece shield member having a fist and second substantially planar side surface, a length along first and second substantially parallel longer side edges of between eight and fourteen inches, a width along third and fourth substantially parallel shorter side edges of between three and one-half and six inches, and a thickness of between one-sixteenth and one-fourth of an inch, said shield member having four arcuately curved corners formed at convergences of said first and second longer side edges and said third and fourth shorter side edges;

a first clip member, secured to said first planar side surface, including a first planar clip surface having an area of at least two square inches, said first planar clip surface being positioned parallel to said first planar side surface and spaced a distance of between one-eighth and three-eighths inches from said first side surface, said first clip member being positioned within a distance of said third shorter side edge of at least twenty percent of said length of one of said longer side edges; and

a second clip member, secured to said first planar side surface, including a second planar clip surface having an area of at least two square inches, said second planar clip surface being positioned parallel to said first planar side surface and a spaced a distance of between one-eighth and three-eighths inches from said first side surface, said second clip member being positioned within a distance of said third shorter side edge of between twenty-two and thirty-seven percent of said length of one of said longer side edges.

5,575,523

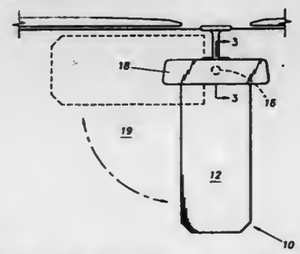
MOTOR VEHICLE AUXILIARY VISOR FOR BLOCKING OUT LOW INCIDENT SUN RAYS

Theodore F. Keller, 2416 Yorktown #379, Houston, Tex. 77056

Filed Nov. 1, 1995, Ser. No. 551,616

Int. Cl.[6] B60J *3/00*

U.S. Cl. 296—97.7 **13 Claims**



6. An auxiliary visor for a moving vehicle having a rear view mirror coupled to a shaft or arm extending rearwardly of said mirror, said auxiliary visor comprising:

a shade having a body exposing an elongated surface area; and

distinct coupler means having a body for pivotably and detachably coupling said shade to said shaft for discrete clockwise and counter-clockwise angular rotations of said shade about the longitudinal axis of said rear view mirror shaft, toward and away from the vehicle's driver, whereby, in use, said driver can pivot said shade discretely from a rest position to an optimum position, whereat said shade's surface area is just sufficient to effectively block out low-incident sun rays and prevent them from reaching and adversely affecting said driver's eyes.

5,575,524

DISCREET MOTOR VEHICLE WINDOW SHADE

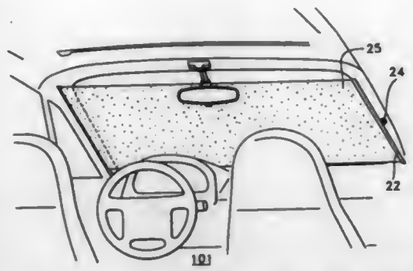
Peter J. Cronk, 919 McElwee Rd., Moorestown, N.J. 08057

Filed Sep. 29, 1994, Ser. No. 314,973

Int. Cl.[6] B60J *1/20*

U.S. Cl. 296—142 **18 Claims**

1. A combination of a window shading device and a rigid window frame of a motor vehicle windshield, said windshield



being supported in said rigid window frame, said combination further including a cover disposed over a portion of said rigid window frame to provide a pleasing aesthetic appearance to an interior of a motor vehicle, said combination further comprising:

a shade wound onto a winding core, said shade having one free end and one fixed end adhered to said winding core, said winding core being swivelly mounted between said rigid window frame and said cover, said cover providing a slotted opening for receiving said free end of said shade, said shade having a surface area which can substantially cover a selected surface area of said windshield.

5,575,525

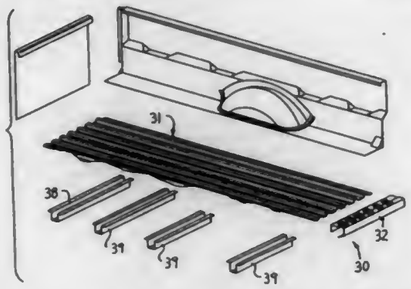
TRUCK BED AND METHOD OF MANUFACTURE WITH IMPROVED REAR SILL MEMBER

Tom M. Walworth, Jr., Grosse Pointe Farms; Joseph J. Jurica, Mt. Clemens; Donald E. Weilemann, Romeo, and Joseph Turner, Bloomingdale, all of Mich., assignors to Pullman Industries, Inc., Pullman, Mich.

Continuation of Ser. No. 318,646, Dec. 13, 1994, which is a continuation-in-part of Ser. No. 864,741, Apr. 7, 1992, Pat. No. 5,188,418. This application Feb. 14, 1996, Ser. No. 599,942

Int. Cl.[6] B62D *25/20*

U.S. Cl. 296—183 **8 Claims**



1. In a vehicle bed assembly having a horizontally-enlarged one-piece monolithic floor pan member constructed from a thin metal sheet and having a plurality of generally parallel and sidewardly-spaced stiffening ribs extending longitudinally thereof, said stiffening ribs being of generally downwardly-opening channel-like cross sections which are deformed so as to project upwardly from the sheet, and a horizontally elongated rear sill member positioned at least partially under a transversely extending rear portion of said pan member, said rear sill member being elongated in a direction generally perpendicularly with respect to the longitudinal direction of said pan member and fixedly secured thereto, comprising the improvement wherein said stiffening ribs project longitudinally throughout the entire length of said pan member so as to terminate at front and rear free edges of said pan member, said front and rear free edges of said pan member each having a corrugated configuration, said rear sill member having a wall with a plurality of upwardly projecting rib-end projections, said rib-end projections being disposed in a row extending in the elongated direction of the rear sill member and spaced apart at intervals corresponding to the spacing between adjacent ribs on said floor pan member, the transversely extending rear portion of said floor pan member being positioned on said wall of said rear sill member so that the rib-end projections close off the ribs directly adjacent the rear free edges thereof.

5,575,526

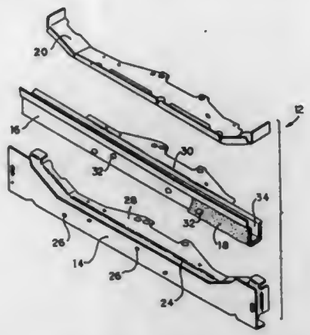
COMPOSITE LAMINATE BEAM FOR RADIATOR SUPPORT

Joseph S. Wycech, Grosse Pointe Woods, Mich., assignor to Novamax Technologies, Inc., Warren, Mich.

Filed May 19, 1994, Ser. No. 245,798

Int. Cl.[6] B60K *11/04*

U.S. Cl. 296—205 **10 Claims**



1. A laminate radiator support beam, comprising:

a longitudinal outer structural metal portion defining a channel and having an outer wall surface and an inner wall surface;

a longitudinal metal inner tube portion disposed in said channel having an outer wall surface and an inner wall surface, said inner wall surface of said inner tube portion defining a longitudinal hollow cavity, wherein said outer wall surface of said longitudinal inner tube portion defines at least three walls;

a layer of structural foam disposed between and bonded to said inner wall surface of said outer structural portion and said outer wall surface of said inner tube portion along substantially the entire length of said inner tube portion, said structural foam layer being bonded to three of said at least three walls of said inner tube portion outer wall surface;

a cap attached to said outer structural metal portion closing said channel; and

attachment sites on said laminate radiator support beam for connecting a radiator to said support beam.

5,575,527

FASTENING DEVICE FOR A DECORATIVE OR COVER STRIP

Klaus Pfister, Maulbronn, Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany

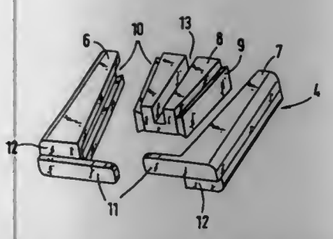
Filed Oct. 23, 1995, Ser. No. 553,758

Claims priority, application Germany, Oct. 21, 1994, 44 37 687.1; Jun. 16, 1995, 195 21 862.0

Int. Cl.[6] B60R *13/02*

U.S. Cl. 296—213 **21 Claims**

1. A fastening device for a cover strip for a gap having a longitudinally extending gap length in a motor vehicle, comprising:



a holding body inserted and wedged into the gap for holding the cover strip, the holding body comprising several parts including first and second lateral bracing elements, each of which brace against a lateral wall of the gap, and a spreading element arranged between the first and second lateral bracing elements and being displaceable in a direction of the gap length for bracing said first and second lateral bracing elements against the lateral walls, and further wherein said spreading element includes a fastener for the cover strip.

5,575,528

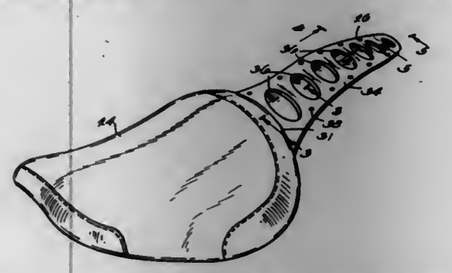
MOTORCYCLE REAR FENDER COVER

Louis Netz, Grafton, Wis., assignor to Harley-Davidson Motor Company, Milwaukee, Wis.

Filed Dec. 22, 1994, Ser. No. 361,987

Int. Cl.[6] A47C *31/00*

U.S. Cl. 297—219.11 **4 Claims**



1. A motorcycle seat for use with a motorcycle having a frame and a rear fender attached to the frame, means for supporting the seat on the frame, said seat having a rear portion, a fender cover fixed to the rear portion of the seat and extending rearwardly therefrom, said fender cover comprising a thin section constructed and arranged to extend over the motorcycle fender and preformed to define a shape complementary to at least a portion of the rear fender and composed of a material which generally retains said configuration, and attachment means for attaching said fender cover to the rear fender of a motorcycle at a point spaced from the rear portion of the seat.

5,575,529

MODULE ENCLOSURE AND MODULE LATCH MECHANISM

James L. Dowdy, Eagle, and Darrel W. Poulter, Middleton, both of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 14, 1995, Ser. No. 388,731

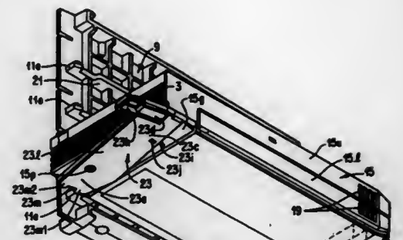
Int. Cl.[6] A47B *81/06*

U.S. Cl. 312—223.2 **7 Claims**

1. An enclosure assembly, comprising:

a. an enclosure having opposite side walls and an open end;

b. a module insertable through said open end of said enclosure said module having a front end and opposing sides wherein,



when said module is fully inserted into said enclosure, said front end is positioned substantially at said open end of said enclosure and said sides are positioned within and extend along said walls of said enclosure, said module having a recess of predetermined depth in one surface thereof, the recess having a recess surface extending to said sides of said module at said front end of said module;

c. a latch lever operatively connected to the module, said latch lever being disposed between said walls of said enclosure at said front end of said module, said latch Lever having a latch end and a handle end, said latch lever having a predetermined thickness less than the depth of said recess and having an outer surface which is substantially flush with said one surface of said module;

d. pivot means mounted to said recess surface, pivotally engaging said latch lever between said latch end and said handle end, said latch lever being angularly movable in said recess about said pivot means between a latched position and an unlatched position;

e. said recess surface having an arcuate slot therethrough at a radius from said pivot means to a position near said handle end of said latch lever;

f. a slot follower mounted to said latch lever and projecting through said arcuate slot for preventing bending of said latch lever away from said recess surface;

g. a catch member on said enclosure;

h. a latch member on said latch end of said latch lever for engaging said catch member; and

i. said latch member, when said latch lever is in said latched position, passing by said catch member as said module is moved toward said fully inserted position in said enclosure, movement of said latch lever toward and into latched position is by the application of manual force to said latch lever at said handle end to engage said latch member with said catch member and move said module, by force application thereto at said pivot means, to said fully inserted position in said enclosure.

5,575,530

INFANT BOUNCER

Marjorie G. Harper, Littleton, and Patrick M. Bertsch, Thornton, both of Colo., assignors to Gerry Baby Products Company, Thornton, Colo.

Filed Sep. 9, 1992, Ser. No. 942,423

Int. Cl.[6] A47C *3/02*

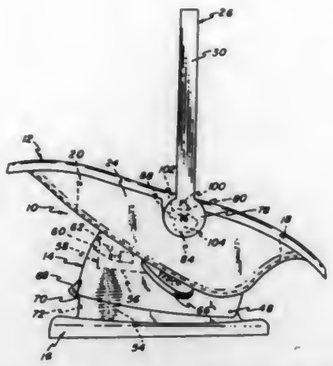
U.S. Cl. 297—260.2 **18 Claims**

1. An infant carrier comprising:

a shell portion for receiving an infant;

a base portion for supporting said shell portion on a support surface;

spring means connecting a first end of said shell portion to said base portion, said spring means comprising a compression spring having a spring rate which increases with increasing compression;



a pivot connection connecting a second end of said shell portion to said base portion for pivotal movement about a pivot axis; and

wherein said spring means resiliently supports said shell portion in longitudinally spaced relation to said pivot axis for a bouncing motion with respect to said base portion.

5,575,531

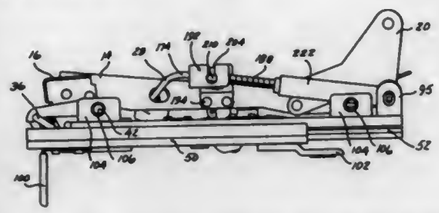
VEHICLE POWER SEAT ADJUSTER WITH END DRIVEN LEAD SCREW ACTUATION

Derek K. Gauger, Ann Arbor; Max O. Heesch, Brooklyn, and Richard W. A. Rees, Auburn Hills, all of Mich., assignors to ITT Corporation, New York, N.Y.

Filed Dec. 15, 1993, Ser. No. 167,732

Int. Cl.[6] B60N 2/02

U.S. Cl. 297—362.11 **30 Claims**



30. A seat back recliner for a vehicle having a seat back movable relative to a seat bottom, the seat bottom mounted on first and second track assemblies, each formed of a lower track adapted to be fixed to the vehicle and an upper track movably mounted on the lower track, the seat back recliner comprising:

a drive motor means;

a first drive shaft coupled to the drive motor means and rotated by the drive motor means, the first drive shaft having first and second axial end portions and an intermediate portion connecting the first and second axial ends;

a first driven shaft;

means for co-axially connecting the second axial end of the first drive shaft to one end of the first driven shaft in a fixed connection to transmit rotation of the first drive shaft to the driven shaft, the means for co-axially connecting including:

bracket means adapted to be fixedly mounted to one of the first and second track assemblies; and

a housing receiving a fixed connection between the second axial end of the first drive shaft and one end of the first driven shaft, the housing mounted in the bracket means; and

means, adapted to be connected between the driven shaft and the seat back, for translating rotation of the driven shaft to pivotal movement of the seat back relative to the seat bottom.

5,575,532

VEHICLE SEAT, IN PARTICULAR AN AIRPLANE PASSENGER SEAT

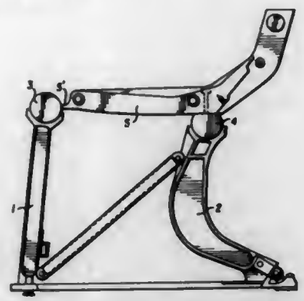
Wolfgang von Rolbicki, Bremen, and Albert Strobel, Bermatingen, both of Germany, assignors to Keiper Recaro GmbH & Co., Remscheid, Germany

Filed Nov. 4, 1994, Ser. No. 336,098

Claims priority, application Germany, Nov. 6, 1993, 43 37 939.7

Int. Cl.[6] A47C 7/02

U.S. Cl. 297—452.2 **15 Claims**



7. A vehicle seat, in particular an airplane passenger seat, comprising: a front crosspiece, a rear crosspiece arranged parallel to the front crosspiece, and at least two feet each having a lower end and an upper end, first and second seat dividers, both crosspieces being solidly connected with the upper end of said feet, said first seat dividers supported by the crosspieces, said crosspieces being profiled tubes with longitudinal slots for connecting said first seat dividers and said feet, said from crosspiece being provided with a longitudinal slot which is open toward the rear crosspiece and includes parallel flanks for slidingly receiving therein a front end-section of said second seat dividers, wherein both crosspieces have a double-wall and one of the longitudinal slots of the rear crosspiece is open toward the top of said rear crosspiece, and wherein said one of said longitudinal slots is delimited by inside wall of said rear crosspiece, which wall extends more than 180 degrees concentrically to the longitudinal axis of said rear crosspiece.

5,575,533

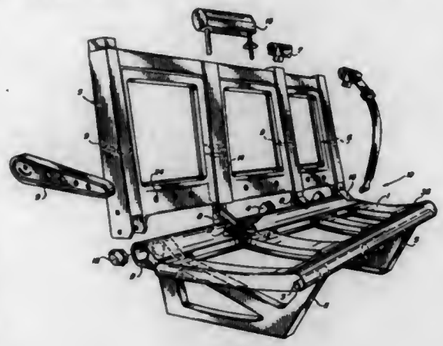
BLOW MOLDED SEAT FRAME WITH INTEGRAL REINFORCEMENT

Patrick M. Glance, Plymouth, Mich., assignor to Concept Analysis Corp., Plymouth, Mich.

Filed Feb. 25, 1994, Ser. No. 202,953

Int. Cl.[6] B60N 2/42

U.S. Cl. 297—452.2 **27 Claims**



1. A seat with a front and an opposing back, the seat also having opposing first and second sides that extend between the front and the back, said seat comprising:

a pedestal;

a structural cross member connected with said pedestal and generally extending at least partially between the first and the second sides;

a seat cushion member formed of a moldable material with an upper surface contoured to receive and support the buttocks of a user in a seated position, said seat cushion member having an elongated seat cavity extending at least partially between the first and the second sides, said structural cross member being positioned in said seat cavity, said seat cushion member being supported above a floor by said pedestal and said structural cross member;

a seat back member formed of a moldable material with a forward surface adapted to receive and support at least a portion of the back of a user in a seated position, said seat back member having a base located near said seat cushion member and an opposing top, said seat back member having an elongated back cavity extending at least partially from said base to said top, said seat back member being connected with said structural cross member; and

a reinforcement beam positioned in said back cavity and connected with said structural cross member, whereby said pedestal, said structural cross member, and said reinforcement beam comprise a structural frame of said seat.

5,575,534

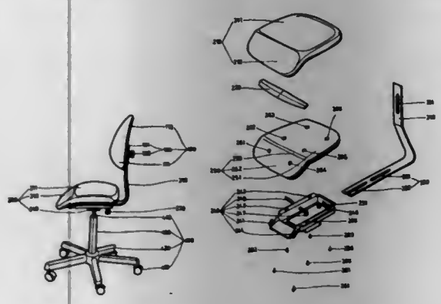
WORK CHAIR

Chi-Yuang Yu, Hsinchu, Taiwan, assignor to Institute of Occupational Safety and Health, Council of Labor Affairs, Taipei, Taiwan

Filed Jun. 19, 1995, Ser. No. 491,629

Int. Cl.[6] A47C 7/02

U.S. Cl. 297—452.21 **5 Claims**



1. A work chair comprising:

a backrest provided on a back thereof with a first fastening means;

a seat-pan comprising a pelvic support portion having a support surface and a thigh support portion said pelvic support portion provided on a underside thereof with a first rotary fastening means and further provided with a second fastening means located axially thereof;

a fastening mechanism comprising a vertical fastening means engageable with said first fastening means of said backrest, said fastening mechanism further comprising a horizontal fastening means engageable with said second fastening means of said seat-pan, said vertical fastening means and said horizontal fastening means forming an angle of between 85 and 95 degrees;

a chair support leg provided on a top thereof with a second rotary fastening means engageable with said first rotary fastening means of said seat-pan; and,

an anti-skid baffle extending above the support surface and located on the seat pan adjacent to the juncture of the pelvic support portion and the thigh support portion, whereby

said first fastening means of said backrest and said vertical fastening means of said fastening mechanism form an adjustment means for adjusting said backrest upwards and downwards, relative to said vertical fastening means; said second fastening means of said seat-pan and said horizontal fastening means of said fastening mechanism form a longitudinal adjusting means for adjusting a longitudinal position of said seat-pan relative to said horizontal fastening means, said backrest having and arcuate front side, said thigh support portion of said seat-pan forms an angle between 15 and 35 degrees with said pelvic support portion.

5,575,535

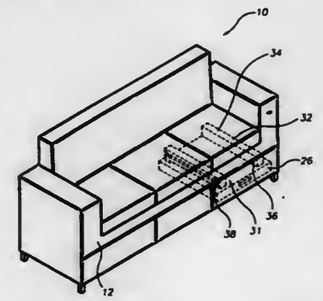
COUCH WITH RETRACTABLE GUARD MEMBER

Mark R. Burchett, 1521 Lariat, and Samuel W. Bibles, 712 S.E. Sooner Park Dr., both of Bartlesville, Okla. 74006

Filed Aug. 22, 1995, Ser. No. 517,920

Int. Cl.[6] A47C 31/00

U.S. Cl. 297—464 **5 Claims**



1. In a couch having a base, a first and second opposing arm rest, a back portion, a seating surface, and a front couch surface, the improvement comprising;

a front guard detachably connectable to said front couch surface for enclosing a portion of said seating surface on three sides; and

a storage and retraction mechanism in connection between an underside of said base and said front guard for slidably retracting and storing said front guard beneath said base; said storage and retraction mechanism including first and second rail members rigidly connected to said underside of said base and spaced in parallel relationship, said first and second rail members each having a side forming a channel along the longitudinal axis thereof.

5,575,536

CHAIN RELEASE FOR TRUCK TAILGATE

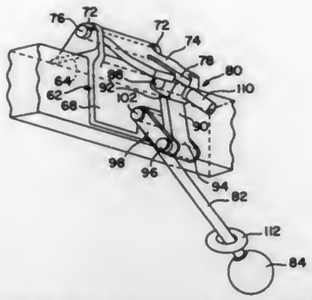
Kenneth R. Wallan, P.O. Box 245, Miranda, Calif. 95553

Filed Jun. 7, 1995, Ser. No. 479,713

Int. Cl.[6] B60P 1/28

U.S. Cl. 298—23 R **6 Claims**

1. In a dump truck having a dump bed pivoted on a truck frame, the dump bed having a dump body for carrying a load, the dump bed being pivotal on the truck frame, wherein the dump body has a rear opening with a bottom and a top, the rear opening being closed by a tailgate pivoted at the top and selectively openable at the bottom to release the load through an opening between the tailgate and the dump body; at least one chain extending between the bottom of the bed and an anchoring location on the tailgate, the improvement comprising:



at least one chain release mounted to the tailgate at the anchoring location; the chain release including a chain retainer for receiving the chain of the tailgate; a pivot for mounting the chain retainer on the tailgate for allowing the chain retainer to pivot with respect to the tailgate from a chain retaining positioo to a chain release position, a toggle device for locking the chain retainer in the chain retaining position when locked and for allowing the chain retainer to pivot to the chain releasing position when unlocked, whereby when the dump body is raised to release the load and the tailgate is partially open, the tailgate can be released to swing free about the tailgate pivot in order to clear jams in the opening between the tailgate and dump body.

5,575,537

TUNNEL DRILLING MACHINE OR TUBE-DRIVING MACHINE

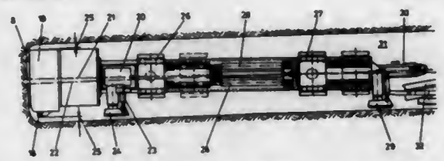
Peter Kogler, Knittelfeld, Austria, and Günther Koslowski, Bottrop, Germany, assignors to Alpine Westfalia Berg- und Tunneltechnik GmbH & Co., Lünen, Germany

Filed Apr. 5, 1995, Ser. No. 417,053

Claims priority, application Germany, Apr. 15, 1994, 44 13 235.2

Int. Cl.[6] E21D *9/10*; E21B *10/12*

U.S. Cl. 299—31 **28 Claims**



1. A tunnel drilling machine for drilling a bore in hard rock by means of a rotatably seated drill bead which supports drilling tools, wherein the drill head has a diameter less than the diameter of the bore and wherein said machine includes means for selectively displacing an axis of rotation of said drill head angularly of a longitudinal axis of the bore to facilitate removal of the drill head from said bore.

5,575,538

ROCK SAW WITH CENTERLINE CONVEYOR ASSEMBLY AND METHOD OF DIGGING A NARROW TRENCH

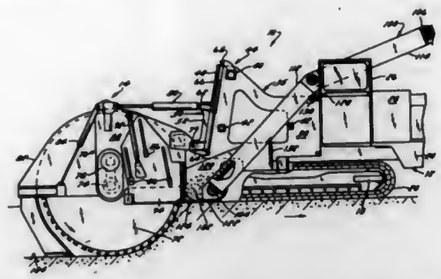
Jerry F. Gilbert, Southlake, and Jack D. Smith, The Colony, both of Tex., assignors to Astec Industries, Inc., Chattanooga, Tenn.

Filed Jun. 1, 1995, Ser. No. 457,991

Int. Cl.[6] E01C *23/09*; E02F *5/08*

U.S. Cl. 299—39.2 **17 Claims**

15. A method of digging a narrow trench in a hard surface, comprising:



(A) lowering an inlet end of a loading conveyor from a raised transport position to a lowered operative position in which said inlet end rides on the ground at a location closely adjacent and longitudinally in front of a rotary cutting wheel of a rock saw assembly, said loading conveyor and said rock saw assembly being mounted on a frame assembly;

(B) rotating said cutting wheel to dig said trench; then

(C) discharging excavated materials directly from said cutting wheel onto said inlet end of said loading conveyor; then

(D) conveying said excavated materials away from said rock saw assembly using said loading conveyor; and

(E) when said inlet end of said loading conveyor is in said operative position, applying a downward biasing force to said inlet end of said loading conveyor which is sufficiently high to prevent said inlet end from bouncing up and down during normal operation but which is sufficiently low to permit said inlet end to follow the contour of the ground and to pass over obstructions without damaging said loading conveyor.

5,575,539

WHEEL RIM FOR A MOTOR VEHICLE AND PROCESS FOR MAKING SAME

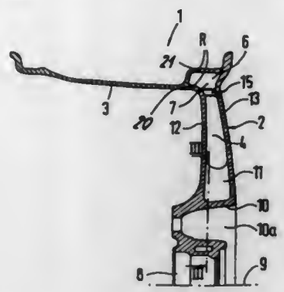
Jens Stach, Weil der Stadt, Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany

Continuation-in-part of Ser. No. 262,100, Jun. 16, 1994, Pat. No. 5,538,329, which is a continuation of Ser. No. 8,582, Jan. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 979,274, Nov. 20, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 463,008

Claims priority, application Germany, Nov. 23, 1991, 41 38 558.6; Jan. 24, 1992, 42 01 838.2; Aug. 27, 1994, 44 30 489.7

Int. Cl.[6] B60B *5/00*

U.S. Cl. 301—65 **20 Claims**



1. Wheel having a cast wheel spider comprising several hollow spokes connected with a rim ring by a weld, the hollow spokes having core openings for a sand core in the area of the outer circumference which are directed toward the rim ring, each said hollow spoke being defined by opposing walls,

wherein the wheel spider has wheel bolt accommodating bores which are arranged concentrically to a centric wheel opening

and which are defined by bolt hole sleeves which extend through respective hollow spokes,

wherein at least one reinforcing rib and at least one reinforcing element are arranged within said hollow spokes,

wherein said at least one reinforcing rib extends from a respective said bolt hole sleeve, and

wherein said at least one reinforcing element extends between the opposing walls of a respective hollow spoke in the area of the core openings.

5,575,540

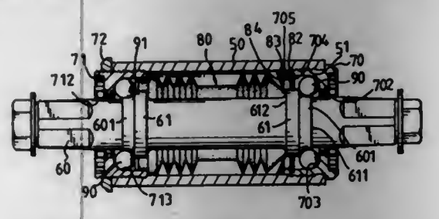
HUB OF A BICYCLE

Yi C. Chi, No. 139-5, An Mei Rd., Mei Shan Tsun Hou Li Hsiang, Taichung Hsien, Taiwan

Filed Sep. 11, 1995, Ser. No. 526,383

Int. Cl.[6] B60B *27/00*

U.S. Cl. 301—110.5 **3 Claims**



1. A hub of a bicycle and comprising:

a hub shell having a first end and a second end, each of said first, end and said second end having a threaded portion defined in an inner periphery thereof;

an axle having a first end and a second end, each of said first end and said second end thereof having a first, flange extending radially therefrom, each of said first flanges having a first side and a second side and having a first groove defined in an outer periphery thereof near said first side;

a first dust cap and a second dust cap, each having a tubular portion extending therefrom and each of said tubular portions having an outer threaded portion defined in an outer periphery thereof for being threadedly engaged with said corresponding threaded portion of said hub shell, each of said first dust cap and said second dust cap having a hole defined centrally therein for said axle extending therethrough, each of said first dust cap and said second dust cap having a second groove defined in an inner periphery of said tubular portion thereof for a plurality of balls rotatably received between said first grooves of said axle and said second grooves, said first dust cap having a third groove defined in said inner periphery of said tubular portion and located near a distal end of said tubular portion, and

a tubular element having a first end and a second end, said first end thereof having a fourth groove defined in an outer periphery thereof so as to form a first shoulder and a second shoulder to define said fourth groove wherein said first shoulder being located near said first end of said tubular element and being received in said third groove of said first dust cap, said second shoulder having a second flange extending inwardly and radially therefrom for contacting against said second side of said first flange near said first end of said axle.

5,575,541

AIR SUPPLY SYSTEM AND METHOD WITH ENHANCED PURGE CAPACITY

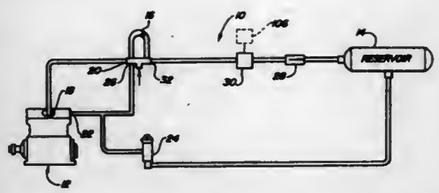
Naman A. Elamin, Lorain, Ohio, assignor to AlliedSignal Truck Brake Systems Co., Elyria, Ohio

Filed Jun. 26, 1995, Ser. No. 494,450

Int. Cl.[6] B60T *17/00*

U.S. Cl. 303—1 **10 Claims**

1. An air supply system for a motor vehicle comprising:



an air compressor cyclically actuatable from a loaded mode producing compressed air and an unloaded mode not producing said compressed air,

a reservoir for storing said compressed air produced by said air compressor,

an air dryer for absorbing water in said compressed air produced by said air compressor, said air dryer having a desiccant material for absorbing said water and a purge volume for storing purge air for purging said desiccant material when said compressor is in said unloaded mode,

pressure reducing means for reducing the pressure of said compressed air delivered by said air compressor before said air is delivered to said reservoir whereby said purge volume is charged with air at a higher pressure than air delivered to said reservoir,

connection means for transmitting said air from said air compressor to said air dryer and said reservoir, and

control means for controlling said system to cyclically actuate said air compressor between said loaded mode for charging said reservoir and said purge volume, and said unloaded mode during which air charged in said purge volume purges said desiccant material.

5,575,542

VEHICLE BRAKING FORCE CONTROLLER

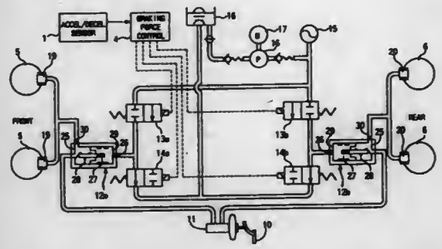
Hirohisa Tanaka; Kazuhiro Kato, and Youichi Miyawaki, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 8, 1995, Ser. No. 524,641

Claims priority, application Japan, Sep. 20, 1994, 6-224668

Int. Cl.[6] B60T *8/32*

U.S. Cl. 303—125 **5 Claims**



1. A vehicle braking force controller for controlling braking force of a vehicle by changing brake fluid pressure effected by a fluid pressure controller, comprising:

deceleration detection means for detecting and outputting a vehicle deceleration;

target deceleration calculation means for calculating a target deceleration of the vehicle;

pressure adjustment speed calculation means for calculating a pressure adjustment speed at which the brake fluid pressure changes using the calculated target deceleration and the detected vehicle deceleration; and

fluid pressure controller drive means for controlling the operation of the fluid pressure controller according to the calculated pressure adjustment speed;

said pressure adjustment speed calculation means calculating the brake fluid pressure adjustment speed using a brake fluid pressure adjustment volume which is commensurate with a difference between the detected vehicle deceleration and the calculated target deceleration, and a target tracking time representing a time required to adjust the brake fluid pressure with said pressure adjustment volume.

5,575,543

ELECTRONIC BRAKING CONTROL SYSTEM

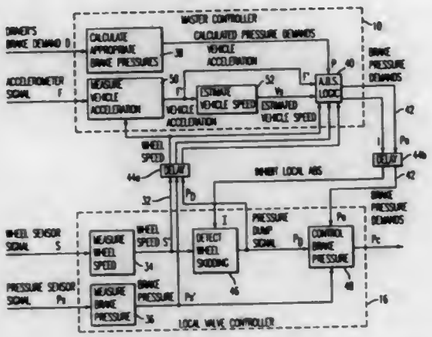
John B. Pheonix, Birmingham, United Kingdom, assignor to Lucas Industries PLC., Solihull, England

Filed Nov. 8, 1994, Ser. No. 337,407

Claims priority, application United Kingdom, Nov. 8, 1993, 9322956

Int. Cl.[6] B60T *8/58*

U.S. Cl. 303—155 **18 Claims**



1. An electronically controlled braking system for a wheeled vehicle, incorporating anti-lock brake control and comprising:

a plurality of brake pressure control valves;

a plurality of local electronic control units associated with said brake pressure control valves;

at least one master electronic control unit which communicates electronically with said plurality of valve-associated local electronic control units;

two-way coupling means connecting said master electronic control unit with said plurality of local electronic control units for enabling the passage of electronic signals therebetween;

means within said master electronic control unit for receiving driver generated demands to establish a desired braking pressure demand signal which is passed via said coupling means to said local control units;

respective means within each of said plurality of local electronic control units for receiving wheel speed sensor signals and generating wheel speed signals representative of the speed of the individual wheels with which those local control units are respectively associated;

skid control means located in said master control unit which is responsive to wheel speed signals provided by said local control units to modify said desired braking pressure demand signal, passed to said local control units via said coupling means, in accordance with an anti-skid algorithm for preventing wheel locking; and

a respective skid detection means in each said local control unit which receives said wheel speed signals respectively generated within said local control unit and, upon detection of a wheel skid condition, causes said pressure demand signal received via said coupling means unit to be overridden for a predetermined time and temporarily reduce brake pressure at said pressure control valve associated therewith, until at least such time as said desired pressure demand signal received via said coupling means from said master controller has been modified by said skid control mens in the master controller in response to said wheel skid condition.

5,575,544

VEHICLE-MOUNTED EQUIPMENT ANTI-THEFT MECHANISM

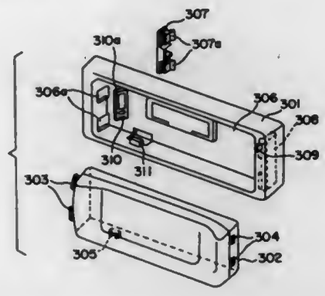
Masakazu Hasegawa; Tomoji Yoshida, and Takeshi Baba, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1993, Ser. No. 112,119

Claims priority, application Japan, Aug. 26, 1992, 4-060122 U; Sep. 4, 1992, 4-062414 U; Dec. 8, 1992, 4-328215; Feb. 26, 1993, 5-038931 U

Int. Cl.[6] A47B *81/06*

U.S. Cl. 312—7.1 **4 Claims**



1. An anti-theft mechanism in a vehicle-mounted electronic apparatus comprising:

an equipment body;

a control panel;

said control panel including means for operating said electronic apparatus;

said equipment body including a first engaging portion;

said control panel including a second engaging portion;

said first engaging portion has one of a convex shape and a concave shape;

said second engaging portion has another one of a convex shape and a concave shape;

said first engaging portion engaging said second engaging portion;

said equipment body including a first locking portion;

said control panel including a second locking portion;

said first locking portion having one of a convex shape and a concave shape;

said second locking portion having another one of a convex shape and a concave shape;

said first locking portion interlocking with said second locking portion;

a release means for disengaging said first locking portion from said second locking portion;

biasing means for biasing said control panel away from said equipment body;

retaining means for retaining said control panel at an ejected position after operation of said release means;

said retaining means including a first stopper and a second stopper;

said equipment body including said first stopper;

said control panel including said second stopper; and

said first stopper and said second stopper being capable of contacting each other.

5,575,545

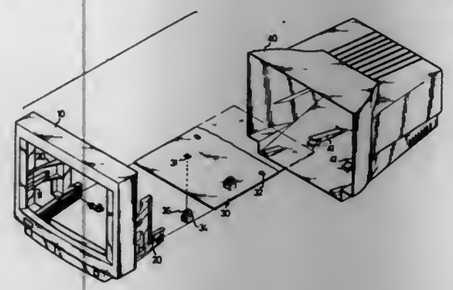
MONITOR SHELL

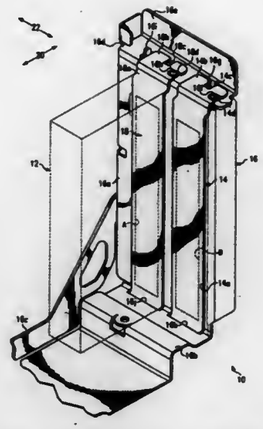
Tsong L. Wang, Taoyuan Hsien, Taiwan, assignor to Shamrock Technology Company Limited, Taoyuan Hsien, Taiwan

Filed Feb. 1, 1995, Ser. No. 381,725

Int. Cl.[6] A47B *81/06*

U.S. Cl. 312—7.2 **8 Claims**





1. A monitor shell comprising:

a first frame including a hollow rectangular panel, two vertical walls, a lower wall and an upper wall;

a second frame engageable with the first frame;

two receiving devices each formed on a corresponding one of the vertical walls, each of the receiving devices including two fins and two blades projecting perpendicularly from a corresponding one of the fins;

two first barbs each projecting from a corresponding one of the vertical walls;

two second barbs formed on the lower wall;

two cylinders projecting horizontally from the rectangular panel of the first frame;

two brackets each including;

a first branch including a first end portion, a second end portion, a groove defined therein for receiving a board and a hole defined longitudinally in the first end portion thereof;

a second branch projecting perpendicularly from the first branch;

a third branch projecting perpendicularly from the second branch and including a free end portion, a U-shaped slot defined therein thus forming an elastic handle and a third barb projecting from the elastic handle;

a fourth branch extending from the first branch and including a fourth barb projecting therefrom;

wherein each of the cylinders is inserted into the hole defined in the first branch of each of the brackets while the third branch of each of the brackets is guided by means of the fins and blades of each of the receiving devices;

wherein the third barb formed on the third branch of each of the brackets is engageable with the second barb formed on each of the vertical walls while the fourth barb formed on the fourth branch of each of the brackets is engageable with each of the second barbs formed on the lower walls.

5,575,546

APPARATUS FOR RETENTION OF COMPUTER EXPANSION CARDS AND FILLER PANELS

Timothy Radloff, Austin, Tex., assignor to Dell U.S.A., L.P., Austin, Tex.

Filed Jul. 21, 1995, Ser. No. 505,501

Int. Cl.[6] B42F *17/16*

U.S. Cl. 312—183 **16 Claims**

1. Apparatus for retaining a card or filler panel mount in position relative to a chassis, said mount including a first edge and a second edge opposite said first edge, the apparatus comprising:

a slot defined in said first edge of said mount;

a post extending from said chassis so that said slot engages said post to retain said mount from moving in a first direction; and

a tab extending from said chassis so that said second edge engages said tab to retain said mount from moving in a second direction opposite said first direction and in a third direction perpendicular to said first direction.

5,575,547

VIEWING AND STORAGE SYSTEM FOR A TELEVISON SET OR THE LIKE

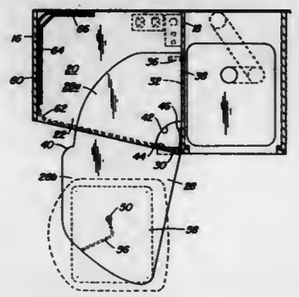
Jacobus N. Hanemaayer, 100 Shirley Avenue, Kitchener, Ontario, Canada

Filed Jun. 26, 1995, Ser. No. 494,963

Claims priority, application Canada, Jun. 29, 1994, 2127058

Int. Cl.[6] A47B *49/00*

U.S. Cl. 312—326 **12 Claims**



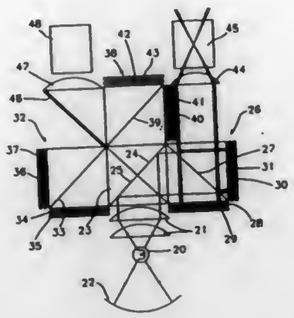
1. A viewing and storage system for a television set including a cabinet having a pair of adjacent compartments; one said compartment being sized to receive the television set and having a frontal door opening therein, said one compartment also having a fixed horizontal lower shelf therein and a rotating horizontal support shelf rotatable about a vertical axis, said rotatable shelf being located at a level above said lower shelf and in close juxtaposition thereto; said rotatable shelf being shaped such that when rotated to a first extended position, a substantial portion of said shelf extends outwardly of said one compartment via said door opening for support of the television set thereon with a remaining portion of the rotatable shelf overlying said lower shelf, means for counteracting vertical loadings applied to the outwardly extending portion of said rotatable shelf, and said rotatable shelf also being shaped such that when rotated to a second retracted position said rotatable shelf is disposed substantially entirely within said cabinet and extends from said one compartment into the other compartment.

5,575,548

FULL COLOR THREE DIMENSIONAL PROJECTOR

Dong-Hee Lee, Kyeongsangnam-Do, Rep. of Korea, assignor to Daewoo Electronics Industrial Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 28, 1995, Ser. No. 508,447
Claims priority, application Rep. of Korea, Jul. 30, 1994, 94-18853
Int. Cl.[6] G03B 35/22;21/28
U.S. Cl. 353—31 9 Claims



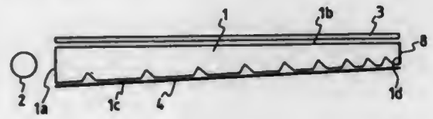
9. A full color three dimensional projector comprising:
a light source for emitting light including a red color component, a blue color component and a green color component;
a condensing means for condensing an emitted light and converting into a parallel light;
a dichroic prism for separating said parallel light into a red color component, a blue color component and a green color component;
a first polarization coating layer for reflecting a red color component having S orientation and for transmitting a red color component having P orientation;
a first quarter wave plate for converting said red color component having S orientation reflected by said first polarization coating layer into a red color component having P orientation;
a first light valve modulator for providing a first optical image for said red color component having S orientation;
a second quarter wave plate for converting said red color component having P orientation transmitted through said first polarization coating layer into a red color component having S orientation;
a second light valve modulator for providing a second optical image for said red color component having P orientation;
a second polarization coating layer for reflecting a blue color component having S orientation and for transmitting a blue color component having P orientation;
a third quarter wave plate for converting said blue color component having S orientation reflected by said second polarization coating layer into a blue color component having P orientation;
a third light valve modulator for providing a third optical image for said blue color component having S orientation;
a fourth quarter wave plate for converting said blue color component having P orientation transmitted through said second polarization coating layer into a blue color component having S orientation;
a fourth light valve modulator for providing a fourth optical image for said blue color component having P orientation;
a third polarization coating layer for reflecting a green color component having S orientation and for transmitting a green color component having P orientation;
a fifth quarter wave plate for converting said green color component having S orientation reflected by said third polarization coating layer into a green color component having P orientation;
a fifth light valve modulator for providing a fifth optical image for said green color component having S orientation;
a sixth quarter wave plate for converting said green color component having P orientation transmitted through said third polarization coating layer into a green color component having S orientation;
a sixth light valve modulator for providing a sixth optical image for said green color component having P orientation;
a first collecting lens for collecting said red color components from said first light valve modulator and said second light valve modulator;
a first projecting lens for projecting said collected red color components onto a screen;
a dichroic mirror for combining said blue color component from said third light valve modulator and said fourth light valve modulator and said green color component from the fifth light valve modulator and said sixth light valve modulator;
a second collecting lens for collecting components combined by said dichroic mirror; and
a second projecting lens for projecting components collected by said second collecting lens onto said screen.

5,575,549

SURFACE LIGHT SOURCE DEVICE

Tsuyoshi Ishikawa, Tokyo; Kayoko Watai, Hasuda, and Kazuaki Yokoyama, Ageo, all of Japan, assignors to Enplas Corporation, Saitama-ken, Japan

Filed Aug. 12, 1994, Ser. No. 290,087
Int. Cl.[6] F21V 7/04
U.S. Cl. 362—31 3 Claims



1. A surface light source device comprising a light conducting member made of transparent material, a linear light source disposed in the vicinity of one of edge surfaces of said light conducting member, a diffusion plate disposed on a light emitting surface side of said light conducting member, and a reflective member disposed on an opposite side surface of said light emitting surface of said light conducting member, said light conducting member comprising a multiplicity of conical or polygonal pyramid-shaped concave portions formed on said opposite side surface of the light conducting member and said concave portions satisfy the following conditions:

$$80° \leq \alpha \leq 100°$$

$$90° > \beta > 90° - \theta$$

wherein the reference symbol α represents a top angle of the concave portion, β represents an inclined angle of an inclined surface of the concave portion on a linear light source side, and θ is a value given by the following formula 1a when a refractive index of said light conducting member is represented by n:

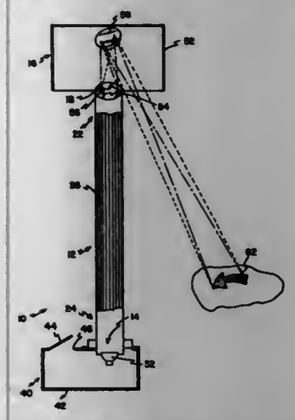
$$\theta = \sin^{-1}(1/n). \quad (1a)$$

5,575,550

POLE LIGHT HAVING A PROGRAMMABLE FOOTPRINT

Roger H. Appeldorn, Grant Township, Washington County; Sanford Cobb, Jr., Saint Mary's Point, and John F. Dreyer, Jr., North Oaks, all of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Division of Ser. No. 268,672, Jun. 30, 1994, abandoned, which is a continuation of Ser. No. 999,082, Dec. 31, 1992, abandoned. This application Feb. 6, 1995, Ser. No. 384,679
Int. Cl.[6] F21V 8/00
U.S. Cl. 362—32 6 Claims



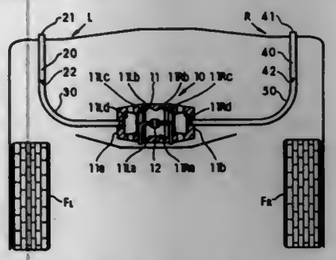
1. A pole light for delivering light in a desired pattern to a surface proximate to the pole light, said pole light comprising:
(a) a light conduit having a proximate end and a distal end;
(b) the distal end of said light conduit serving as an area source of quasi-collimated light;
(c) a light distributing member further distal from said area source of light, said light distributing member comprising a plurality of prismatic elements positioned relative to one another so as to direct portions of said area source of light to illuminate a surface proximate to said pole light in a precise and predetermined pattern, said prismatic elements selected from the group consisting of reflective prismatic elements and refractive prismatic elements.

5,575,551

ILLUMINATING DEVICE FOR VEHICLES

Yasutoshi Horii, Toyoake, Japan, assignor to Nippondens Co., Ltd, Kariya, Japan

Filed May 31, 1995, Ser. No. 455,894
Claims priority, application Japan, May 31, 1994, 6-118491
Int. Cl.[6] F21V 7/04
U.S. Cl. 362—32 9 Claims



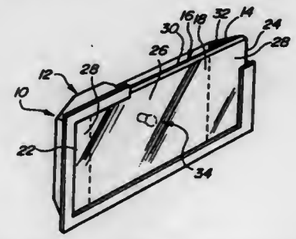
1. An illuminating device for vehicles having a lamp device which emits light from a light source, comprising:
an optical fibre for emitting the light incident from the light source; and
a light conducting path lens connected to the optical fibre so that the light from the optical fibre is incident thereto,
wherein a shape of the incident light on an incident light plane of the light conducting path lens is made to have two opposing sides parallel to each other,
the light conducting path lens is formed to have two opposing planar sides extending in an outgoing light plane of the light conducting path lens from the two opposing parallel sides,
the light conducting path lens is formed in an approximately a fan shape both in a longitudinal cross section and a lateral cross section, and
the outgoing light plane of the light conducting path lens is shaped to form a lens plane having a predetermined radiuses of curvature both in the longitudinal cross section and the lateral cross section.

5,575,552

LIGHTED MIRROR APPARATUS

Michael D. Faloon, Northville; Arthur W. Hess, Troy, and Carmen P. Jackson, Huntington Woods, all of Mich., assignors to United Technologies Automotive Systems, Inc., Dearborn, Mich.

Filed Dec. 9, 1994, Ser. No. 352,495
Int. Cl.[6] B60Q 3/00
U.S. Cl. 362—83.1 20 Claims



3. A mirror apparatus for reflecting and selectively projecting light comprising:
at least one light source selectively generating light of substantially all visible wavelengths;
a mirror glass disposed in front of said at least one light source, substantially all visible light wavelengths being transmittable outwardly through said mirror glass, said mirror glass being reflective of visible ambient light when said at least one light source is not generating said light, said light selectively generated from said at least one light source passing through said mirror glass, said mirror glass including at least one lighting section, said light selectively generated from said at least one light source passing through said at least one lighting section, said light from said at least one light source not passing through said mirror glass at a section other than said one lighting section.

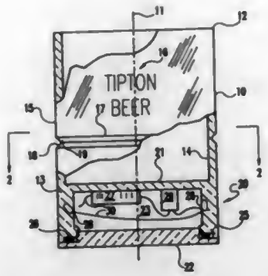
5,575,553

CONTAINER USING FIBER OPTIC IMAGING

Tommy B. Tipton, 3433 Darilek Rd., Flatonia, Tex. 78941

Filed Jun. 23, 1995, Ser. No. 494,002
Int. Cl.[6] F21V 33/00
U.S. Cl. 362—101 15 Claims

4. A container, comprising:
a base;
a sidewall extending from said base and having indicia formed as recesses, said recesses being emergent upon a surface of said container, said base comprising a sealed compartment;



a lighting mechanism housed within said compartment and including a battery and at least one light-emitting diode disposed beneath an extremity of said sidewall, said at least one diode being activated by said battery; and

a switch mechanism positioned within said compartment and comprising means for energizing said at least one light-emitting diode for a predetermined time period when the container is actuated,

wherein said at least one light-emitting diode is formed in an orientation which is other than parallel to a bottom surface of the container,

wherein said switch mechanism comprises a touch-sensitive switch for energizing said at least one diode for a predetermined time period when the container is touched.

5,575,554

MULTIPURPOSE OPTICAL DISPLAY FOR ARTICULATING SURFACES

Steven P. W. Guritz, P.O. Box 10022, Portland, Oreg. 97120

Division of Ser. No. 890,706, May 29, 1992, Pat. No. 5,375,044, which is a continuation-in-part of Ser. No. 698,824, May 13, 1991, Pat. No. 5,128,843. This application Dec. 13, 1994, Ser. No. 354,558

Int. Cl.[6] F21L *15/08*

U.S. Cl. 362—103 **9 Claims**



1. A method of manufacturing wearing apparel with optical display capability comprising the steps of:

(a) printing an electrically conductive pathway having a predetermined pattern directly onto said apparel;

(b) electrically coupling a means for illumination onto said conductive pathway;

(c) connecting a control circuitry for the energizing of said illumination means, said control circuitry comprising a semi-flexible circuit board having an IC chip based timing circuit, and having a power source for illuminating said illumination means;

said control circuit being coupled to said illumination means by means of said electrically conductive pathway.

5,575,555

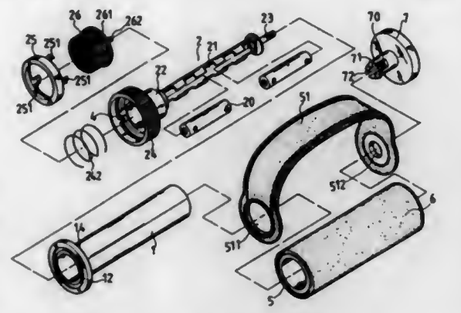
WARNING AND DEFENDING ASSEMBLY

Sreter Chang, No. 451, Ta Tien Road, Homei Chen Chang Hua Hsien, Taiwan

Filed Jan. 31, 1995, Ser. No. 381,322

Int. Cl.[6] F21V *33/00*

U.S. Cl. 362—109 **6 Claims**



1. An illuminating exercise assembly, comprising:

a cylindrical body including a hollow interior, a first end and a second end;

a lid engaged on said first end of said cylindrical body having a screw hole formed therein;

a housing engaged in said cylindrical body having a first end and a second end, said first end having a bolt extended therefrom for engaging with said screw hole of said lid; and

a light-generating means engaged in said second end of said housing for generating light so as to provide a warning signal, wherein

said light-generating means includes a circuit board and a light bulb received in said second end of said housing, a switch secured to said circuit board, a cap secured to said second end of said housing, a cover slidably engaged in said cap, means for biasing said cover outward of said cap, means for retaining said cover in said cap and for limiting outward movement of said cover, and an extension extending from said cover for engaging said switch so as to actuate said switch when said cover is depressed inward of said cap.

5,575,556

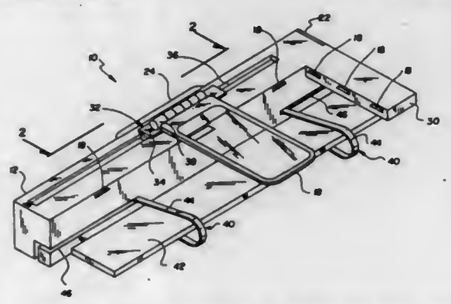
REMOTE CONTROL ILLUMINATING AND MAGNIFYING DEVICE

Wesley H. Kennedy, 40 - 11th Street, Weyburn, Saskatchewan, Canada

Filed Mar. 19, 1996, Ser. No. 617,642

Int. Cl.[6] F21V *33/00*

U.S. Cl. 362—109 **20 Claims**



1. A remote control illuminating and magnifying device comprising:

a main body positionable in adjacency relative to a remote control device;

an illumination means mounted relative to the main body for dispensing illumination upon an upper surface of the remote control device when the remote control device is positioned relative to the main body;

a magnifying lens mounted relative to the main body for positioning over buttons of the remote control device when the remote control device is positioned relative to the main body.

5,575,557

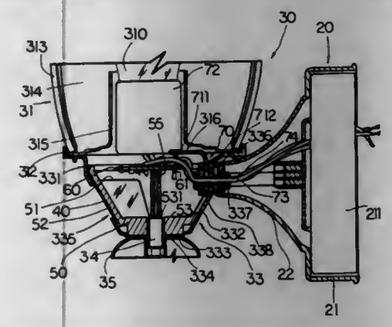
MOTION SENSOR LIGHT APPARATUS

Zhao Y. Huang, Guangzhou, China, and E. Robert Kunzler, San Diego, Calif., assignors to Merritway Electrical Industries Co. Ltd., Canton, Switzerland

Filed Aug. 14, 1995, Ser. No. 514,538

Int. Cl.[6] F21V *25/00*

U.S. Cl. 362—276 **6 Claims**



1. A motion sensor light apparatus, comprising

a wall mounted mounting base having an electrical controlling circuitry box disposed therein;

a lighting body comprising a decorative house which has a lamp socket holder disposing therein and coupling with a lamp bulb socket a house bottom platform having a central circular opening, and a light base;

said light base extended concentrically and downwardly from said house bottom platform comprising a top rim, a conical base body and a bottom portion; in which said top rim is formed by extending continuously and downwardly from a circumference of said opening of said house bottom platform, said base body is extended coaxially and downwardly from a bottom of said top rim defining a vertical connecting surface and gradually reduces its diameter to define a conical shape with a predetermined acute angle, and said bottom portion is a circular rim with a flat bottom side extended from the bottom portion of said base body;

said base body having a front lens aperture provided on its front surface, and said vertical connecting surface formed on its opposite back surface firmly securing to said mounting base; said lens aperture is in azimuthal shape and has a top and a bottom horizontal side adjacent to said top rim and said bottom portion respectively, and the width between a right and a left side of said lens aperture having an angle extent of 160 degrees;

a seat, winch is a flat bottom conical hollow cup, having an external shape and size substantially equal to the internal shape and size of said base body, and having a front azimuthal seat aperture provided thereon; said seat aperture has a shape and size substantially equal to the shape and size of said lens aperture of said base body and a middle rib vertically positioned between the middle portions of a top side and a bottom side of said seat aperture; said seat further having at least two supporting shoulders protruded on two opposing inner sides adjacent to a right side and a left side of said seat aperture respectively;

a lens, which can direct infra-red radiation from at least a human and a vehicle object, having a size slightly larger than said lens aperture of said base body and being positioned in said base body to cover said lens aperture; said lens being adhered to said seat to cover said seat aperture and being supported by said middle rib maintaining its curvature;

said seat being disposed in said base body with said seat aperture superimposing with said lens aperture of said base body to hold and support said lens firmly in a position covering said lens aperture;

an infra-red motion sensor circuit board, which is horizontally mounted on said two supporting shoulders of said seat, having an infra-red sensor located in an upper position with respect to said flat bottom portion that the infra-red radiation from at least the human and the vehicle object can be directed by said lens to said infra-red sensor;

a stand which is mounted to an inner side of said vertical connecting surface of said light base mounting said lamp bulb socket in said decorative house; and

electric wires connecting said motion sensor circuit board and said lamp bulb socket with said electrical controlling circuitry box respectively.

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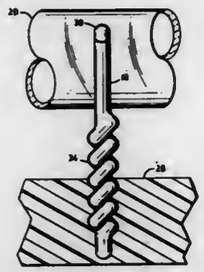
MINIATURE DISCHARGE LAMP TUBE HOLDER

Charles M. Coushaine, Rindge; Robert J. Schmitt, Jr., Raymond, and Frank P. Kace, Jr., Antrim, all of N.H., assignors to Osram Sylvania Inc., Danvers, Mass.

Filed Nov. 10, 1994, Ser. No. 338,052

Int. Cl.[6] F21V *21/00*

U.S. Cl. 362—396 **2 Claims**



1. A miniature, holder for coupling a discharge lamp tube to a wall of a plastic housing comprising:

a single piece having a resilient clamp portion formed from a wire, having at least three contact points arrayed to contact the surface of a gas discharge tube, and thereby hold the tube in position, and a stake portion formed as spiraled wire, having an extended length insertably connectable by fusion to the wall of the plastic lamp housing to provide fixed support of the clamp.

5,575,559

MIXER FOR MIXING MULTI-PHASE FLUIDS

Daniel R. Roll, Seneca Falls, N.Y., assignor to Goulds Pumps, Inc., Seneca Falls, N.Y.

Continuation of Ser. No. 308,701, Sep. 19, 1994, abandoned. This application Nov. 1, 1995, Ser. No. 551,572

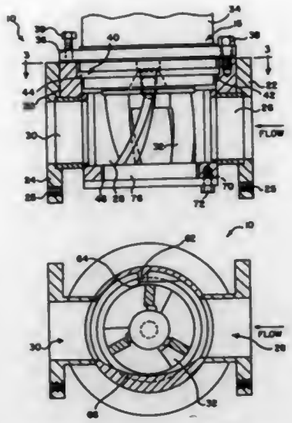
Int. Cl.[6] B01F *5/04;7/32*

U.S. Cl. 366—171.1 **28 Claims**

1. A mixer for mixing at least two substances, said mixer comprising:

a mixer casing having an inlet and an outlet, each having an opening and a center axis which extends axially through the

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center of the opening, said inlet for receiving a stream of unmixed substances under pressure;

a motor, including a rotatable shaft, adapted to be mountable on said mixer casing;

a rotor mounted on said rotatable shaft for rotation about an axis of rotation and including a plurality of elongated blades which extend at least partially in a direction perpendicular to the center axis of said inlet or said outlet; and,

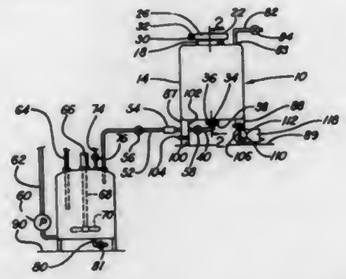
a mixing chamber housing said rotor and defined in part by an inner surface of said mixer casing, said inner surface having a contour which is in closer proximity to said blades on one side of said rotor than on a generally opposite side of the rotor, said inner surface and said blades of said rotor thereby defining respective regions of lesser and greater clearance between each other, said mixing chamber further including an elongated rib protruding from the inner surface of said mixer casing in said region of greater clearance and extending at least partially in a direction perpendicular to the center axis of said inlet or said outlet.

5,575,560

PAINT TOTE WITH COLAPSIBLE LINER AND TOTE AGITATOR

Donald E. Kaneski, High Ridge, Mo., and Ross G. Good, South Lyon, Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Aug. 9, 1995, Ser. No. 512,984
Int. Cl.[6] B01F *11/00*
U.S. Cl. 366—219 **7 Claims**



1. A paint tote comprising a rigid, hollow tank having walls defining an inner chamber,

a flexible, collapsible liner in the chamber of said tank,

said liner being in the form of a substantially closed vessel for water-based paint sealed against the entry of air or contaminants thereinto,

said liner when full of paint substantially filling said chamber and lining the walls thereof,

a paint outlet extending from said liner through one of the walls of said tank for dispensing paint from said liner,

an air inlet opening into said chamber to allow the collapse of said liner as paint is dispensed therefrom and to fill with air that portion of the chamber not occupied by the liner as the liner collapses, and

means for agitating said tank.

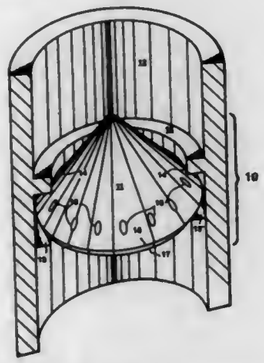


5,575,561

IN-LINE MIXER FOR DISPERSIONS

Gary L. Rohwer, 29575 Bar Diamond La., Parma, Id. 83660

Continuation-in-part of Ser. No. 189,154, Jan. 27, 1994, Pat. No. 5,460,449. This application Aug. 31, 1995, Ser. No. 521,791
Int. Cl.[6] B01F *5/06*
U.S. Cl. 366—336 **10 Claims**



1. Apparatus for mixing comprising;

a) a tubular housing of known inside diameter having an inside surface, an upstream end for receiving unmixed material, and a downstream end for disgorging mixed material, said ends defining a longitudinal axis;

b) a first annular obstruction fixedly attached to the inside surface of said tubular housing for reducing the cross-sectional area inside of said tubular housing and accelerating material flow;

c) a second annular obstruction removeably attached immediately downstream of the first annular obstruction;

d) a third annular obstruction downstream of the second annular obstruction for creating a bypass channel;

e) a plurality of thin flat spacers positioned directly downstream of the second annular obstruction for holding the third annular obstruction in fixed spatial relationship with an inner shear an mixing head; and

f) a cone shaped inner shear head comprising;

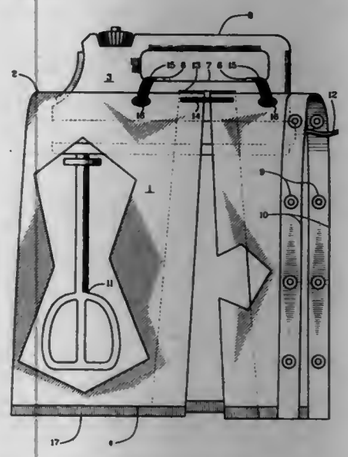
an upstream pointed end, an upstream conical face, a downstream conical base, a downstream pointed end and a cylindrical midsection, wherein the inner shear head is symmetric about a central axis defined by the upstream pointed end and the downstream conical base end; said inner shear bead rigidly positioned within said tubular housing, wherein the central axis of the inner shear head is coincident with the centerline of the longitudinal axis of the housing, oriented with the upstream conical face directed upstream, with the cylindrical midsection concentric to the third annular obstruction, said inner shear head positioned downstream of the first annular obstruction, said first annular obstruction partially enveloping said inner shear head to define a first mixing zone within the first and second annular obstructions which communicate with the upstream end and a second mixing zone, said second mixing zone being within the confines of the tubular housing and inner shear head downstream of said annular obstruction and communicating with said first mixing zone and downstream housing end.

5,575,562

SPLATTER PROOF BLENDER SKIRT

Dawn Borgia, 4611 Dominion Dr., Naples, Fla. 33962

Filed Dec. 4, 1995, Ser. No. 567,032
Int. Cl.[6] B01F *15/00*
U.S. Cl. 366—347 **18 Claims**



1. A splatter-proof blender skirt comprising:

a splatter-protective skirt having a top portion of the splatter-protective skirt that is sized and shaped to fit designedly around a body of a hand-held electric blender and a bottom portion of the splatter-protective skirt that is expansive to cover desired portions of a design range of sizes and shapes of food-preparation containers;

at least one attachment line that is attachable to designedly opposite sides of the top portion of the splatter-protective skirt; and

the at-least-one attachment line is positioned proximate a hand-holding position on a top of the hand-held electric blender to hold the splatter-protective skirt in a splatter-protective position intermediate the body of the hand-held electric blender and the desired portions of the design range of sizes and shapes of food-preparation containers.

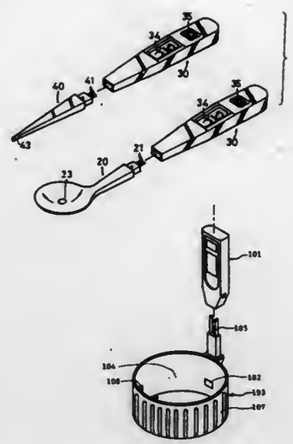
5,575,563

MULTIUSAGE THERMOMETER

Job Chiu, No. 19, Kun-Ming St., and Kai-Tang Chung, 3F., No. 104, Kuang-Hui St., both of Chungli, Taiwan

Continuation-in-part of Ser. No. 92,132, Jul. 15, 1993, abandoned. This application May 24, 1994, Ser. No. 248,436
Int. Cl.[6] G01K *1/14;7/01;13/00*
U.S. Cl. 374—141 **8 Claims**

1. A multiusage thermometer comprising a body portion capable of selectively detachably engaging thereto at least a first sensing portion, a second sensing portion, a third sensing portion and a fourth sensing portion, each of said sensing portions having a first engaging member at a first end thereof, said body portion integrally forming a second engaging member at one end thereof for electrically and complementarily connecting thereto said first engaging member of each of said sensing portions, said fourth sensing portion having a generally bottomed tube structure having an interior therein for accommodating a container filled with contents, and having a sensing cap mounted on one side of said bottomed tube structure for contacting said container to obtain a temperature of said contents.

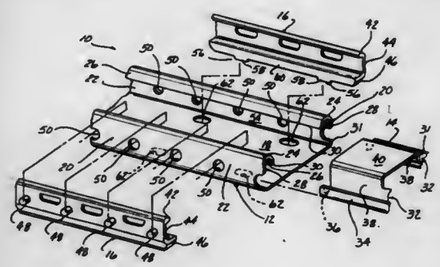


5,575,564

SEAT TRACK APPARATUS

Thomas G. Harmon, Rochester Hills; Joseph C. Montano, Troy, and Brian D. Pawlowicz, Imlay City, all of Mich., assignors to ITT Automotive, Inc., Auburn Hills, Mich.

Filed May 26, 1995, Ser. No. 452,155
Int. Cl.[6] F16C *17/00*
U.S. Cl. 384—34 **19 Claims**



1. A seat track apparatus for a vehicle comprising:

means for defining a channel having a bottom wall and at least one longitudinally extending contact surface;

a slide member disposed within said channel defining means and having at least one contact surface in contact with said contact surface of said channel defining means; and

self-locking means, located along a mid-portion of said bottom wall, for maintaining contact between said contact surface of said slide member and said contact surface of said channel defining means.

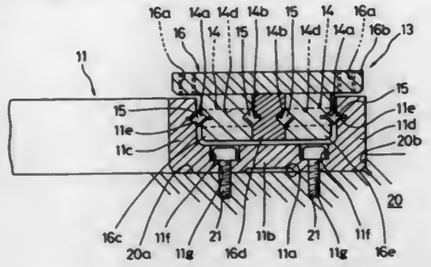
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5,575,565

ROLLING GUIDE UNIT

Seiji Takei, and Takehiko Hara, both of Kanagawa, Japan, assignors to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1994, Ser. No. 334,354
Claims priority, application Japan, Nov. 8, 1993, 5-064850 U
Int. Cl.[6] F16C *29/06*
U.S. Cl. 384—45 12 Claims



1. A rolling guide unit comprising: a track rail having side walls in which is formed track grooves having a roughly V-shaped cross-section along a lengthwise direction thereof; a slider, in which is formed a rolling element circulating path containing load bearing track grooves having a roughly V-shaped cross-section and corresponding to said track grooves, said slider being able to freely perform relative motion with respect to said track rail; a rail insert arranged along the inside surface of one of said side walls, a track groove having a roughly V-shaped cross-section being formed along a lengthwise direction in an inside surface of Said rail insert; and, a plurality of rollers arranged and contained within said rolling element circulating path such that axes of rotation of adjacent rollers lie in planes that cross, said rollers circulating while rolling along said track grooves;

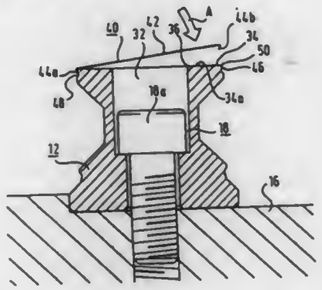
said rolling guide unit having a prescribed curvature in the direction of said relative motion.

5,575,566

LINEAR MOTION GUIDE COVER BAND

Thomas Faulhaber, Bergrheinfold, Germany, assignor to Deutsche Star GmbH, Schweinfurt, Germany

PCT No. PCT/EP94/01080, § 371 Date Sep. 25, 1995, § 102(e) Date Sep. 25, 1995, PCT Pub. No. WO94/24445, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 7, 1994, Ser. No. 530,366
Claims priority, application Germany, Apr. 8, 1993, 43 11 641.8
Int. Cl.[6] F16C *29/06*
U.S. Cl. 384—45 11 Claims



1. A guide rail cover, comprising:

a center section for covering a top side of a guide rail; and

two edge sections extending parallel to a longitudinal direction of the guide rail and bent inward at a sharp angle from the center section for engagement with side faces of the guide rail;

the guide rail cover being composed of a hardened spring material.

4. A linear motion guide, comprising:

a guide rail having a longitudinal direction, a top side and two side faces, each side face having an undercut in the transverse direction;

a slide substantially U-shaped in cross section;

a plurality of rolling elements provided on the slide for supporting the slide on the guide rail for movement longitudinally therealong;

at least one opening through the top side of the guide rail within the range of longitudinal movement of the slide for receipt of a fastening member to secure the guide rail to a support;

a cover band of springy band material, the cover band having a center section for covering the top side of the guide rail within the range of longitudinal movement of the slide and two edge sections parallel to the longitudinal direction of the guide rail and bent inward in the transverse direction for engagement with the side face undercuts of the guide rail; and

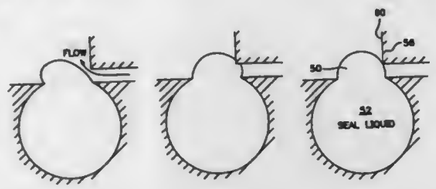
a contact surface of each guide rail undercut forms an undercut angle (β) with the guide rail top side which is greater than a sharp angle (α) formed between the center section and the respective edge section of the cover band.

5,575,567

SURFACE TENSION BEARINGS AND SEALS

Forbes T. Brown, Bethlehem, Pa., assignor to Competitive Technologies, Inc., Bethlehem, Pa.

Filed Nov. 25, 1994, Ser. No. 344,986
Int. Cl.[6] F16C *33/82;32/06*
U.S. Cl. 384—132 4 Claims



1. A seal for use in a gap between at least two non-contacting solid members, comprising; a pool of fluid, said pool being anchored in a first of said members and contacting a second of said members, said pool being detachable from said second members in response to a pressure differential within the gap.

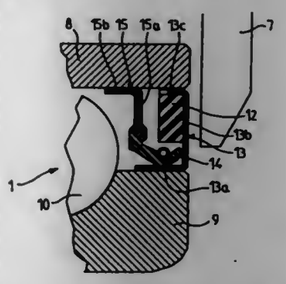
2. A bearing in a gap between two non-contacting solid members for use in a micromechanical pump, comprising; a disk member suspended between said non-contacting solid members, a pool of a first liquid between a first of said solid members and a first surface of said disk member, a second fluid in contact with a second surface of said disk member, said second fluid being dielectric, and means for applying an electrical potential across said disk member and said second fluid, said disk member being moveable in response to said electrical potential.

5,575,568

ENCODER DEVICE FOR A ROTATIONAL SPEED SENSOR AND ROLLING-CONTACT BEARING EQUIPPED WITH SUCH A DEVICE

Christian Rigaux, Artannes-sur-Indre, and Jean-François Maestrati, Joue-les-Tours, both of France, assignors to S.K.F. France, Clamart Cedex, France

Filed Jan. 31, 1996, Ser. No. 594,151
Claims priority, application France, Feb. 9, 1995, 95 01515
Int. Cl.[6] F16C *19/08*
U.S. Cl. 384—448 21 Claims



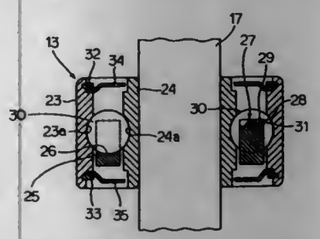
1. Encoder device for a rotational speed sensor of a rotating member of a bearing mounted on a non-rotating member of the said bearing, of the type comprising a sensor which is secured to an element that is fixed relative to the non-rotating member and in front of which an element forming a rotor moves in rotation with a small air gap, which element is equipped with an encoder capable of producing in the sensor a periodic signal of frequency proportional to the speed of rotation of the rotor element, wherein the encoder, in the form of a multipole magnetized ring, is fixed on an internal face of a rigid protection and support element made of nonmagnetic metallic material, a corresponding external face of the said protection element moving in rotation in front of the said sensor.

5,575,569

BEARING ARRANGEMENT FOR ELECTRIC MOTOR

Tsuyoshi Shinohara, Nagoya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 23, 1995, Ser. No. 408,972
Claims priority, application Japan, Mar. 24, 1994, 6-053476
Int. Cl.[6] F16C *33/38*
U.S. Cl. 384—470 12 Claims



1. A bearing arrangement for an electric motor, comprising:

an inner ring;

an outer ring disposed substantially coaxially and coextensive with the inner ring defining a space therebetween;

an annular retainer disposed in the space between the inner ring and the outer ring, the annular retainer being configured so as to define a plurality of receiving portions disposed circumferentially about the retainer, the retainer also being configured so as to define a plurality of grease reserve portions disposed circumferentially about the retainer, a grease reserve portion being provided between each pair of adjacent receiving portions, the retainer having an outer peripheral wall and a plurality of walls disposed radially from the outer peripheral wall, each of the grease reserve portions being defined by an adjacent pair of the radially disposed walls and a portion of the peripheral wall from which the pair of radial walls extend such that each of the grease reserve portions has a substantially U-shaped configuration;

a plurality of rolling members, each being received in a respective one of said receiving portions of said retainer such that each rolling member is in rolling engagement with the inner and outer rings; and

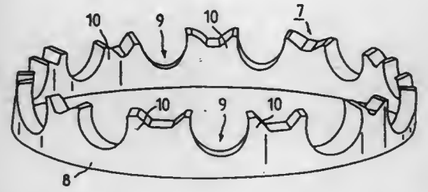
grease held within the grease reserve portions of said annular retainer, wherein an amount of the grease is 10% or less of an inner volume, said inner volume being a volume of the space less a volume of the retainer and the rolling members.

5,575,570

CAGE FOR ROLLING BEARING

Takahiko Uchiyama; Youichiro Sugimori; Toshimi Takajo; Michiharu Naka; Masao Yamamoto; Emiko Shiraishi, and Atushi Yokouchi, all of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Jul. 7, 1995, Ser. No. 499,375
Claims priority, application Japan, Jul. 8, 1994, 6-179705; Jan. 20, 1995, 7-024567
Int. Cl.[6] F16C *33/66*
U.S. Cl. 384—470 5 Claims



1. A cage for a rolling bearing obtained by molding a resin composition comprising 100 parts by weight of a heat-resistant and oil-resistant resin and from 5 to 100 parts by weight of a polyolefin into the shape of a cage and then immersing the molded article in a lubricating oil.

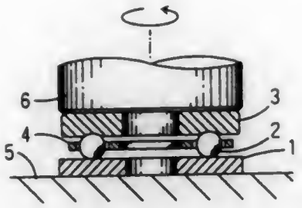
5,575,571

ROLLING BEARING

Hiroaki Takebayashi, Yao; Kazunori Hayashida, Sayama; Hisao Yabe, Hiratsuka, and Isao Ikeda, Yokohama, all of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

PCT No. PCT/JP94/01834, § 371 Date Aug. 25, 1995, § 102(e) Date Aug. 25, 1995, PCT Pub. No. WO95/12764, PCT Pub. Date May 11, 1995
PCT Filed Oct. 31, 1994, Ser. No. 464,816
Claims priority, application Japan, Nov. 2, 1993, 5-274029; Apr. 11, 1994, 6-072164
Int. Cl.[6] F16C *33/56*
U.S. Cl. 384—492 12 Claims

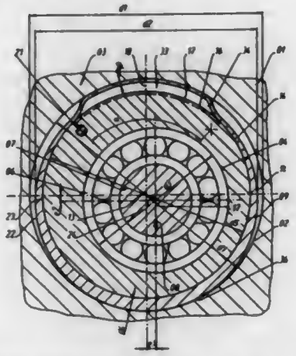
1. A rolling bearing comprising a pair of races and a plurality of rolling elements provided between both races, wherein at least the rolling elements ar made of a ceramic material prepared by sintering a sintering material of silicon nitride containing an $MgAl_2O_4$ of spinel structure and silicon dioxide as sintering assistants.



5,575,572
BEARING BUSHING

Johannes G. Schaede, Würzburg, Germany, assignor to Koenig & Bauer-Albert Aktiengesellschaft, Germany

Filed Oct. 13, 1995, Ser. No. 542,738
Claims priority, application Germany, Oct. 13, 1994, 44 36 629.9
Int. Cl.[6] F16C *43/04*
U.S. Cl. 384—585 **7 Claims**



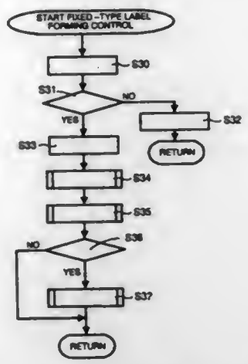
1. A bearing bushing usable to support a cylinder journal bearing in a bore in the frame of a rotary printing press, said bearing bushing comprising:
an inner ring having a bearing receiving central bore and an inner ring outer surface;
an outer ring having an outer ring inner surface and an outer, frame bore engaging surface; and
a pressure chamber formed between said inner ring and said outer ring, said pressure chamber having a circumferential segment angle of between 60° and 120° and being disposed generally opposite from a resultant of effective forces acting on said bearing bushing, said pressure chamber being chargeable with a pressure medium.

5,575,573
DOCUMENT PROCESSING DEVICE HAVING FORMAT INFORMATION STORING FUNCTION

Chitoshi Ito, Kasugai; Yasushi Kawakami, Nagoya; Akihiro Sawada, Nagoya, and Sachiyo Nakahigashi, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 11, 1995, Ser. No. 500,838
Claims priority, application Japan, Jul. 20, 1994, 6-191129
Int. Cl.[6] B41J *5/30*
U.S. Cl. 400—76 **16 Claims**

1. A document processing device, comprising:
input means for inputting data comprising at least characters and various instructions as input data;

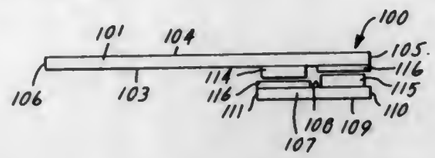


display means for displaying the input characters;
a text memory for storing the input data;
control means for controlling the input means, the text memory, the display means and the print means;
fixed format mode setting means for setting a fixed format mode to print the input data in a fixed format, wherein each fixed format defined elements of a label for a specific use in which input data fills in the elements;
a non-volatile fixed format information memory in which fixed format information for printing the input data in a prescribed preset fixed format is stored;
a format information memory provided in said text memory stores fixed format information to print the input data when the fixed format mode is set;
format information transmission means for reading the fixed format information defining the elements of the label from said fixed format information memory and transmitting the fixed format information to said format information memory; and
format information altering control means for displaying on a display the fixed format information which is transmitted by said format information transmission means to said format information memory and allowing the fixed format information of the elements to be altered through said input means.

5,575,574
SHEET COMPOSITE ADAPTED TO BE PRINTED

Timothy A. Mertens, Cottage Grove, Wash., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 6, 1994, Ser. No. 223,778
Int. Cl.[6] B41J *2/00*
U.S. Cl. 400—118.2 **7 Claims**



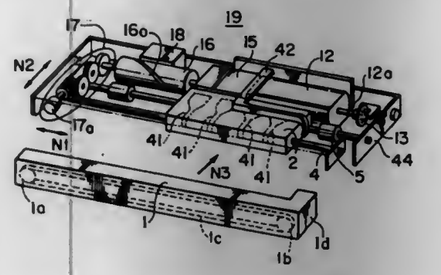
1. A method for printing a custom printed sheet comprising the steps of:
providing a printer of the type commonly used with personal or other types of computers such as a laser printers, an ink jet printer, or an impact printer,
providing a manually operable means for forming indicia in digital form capable of operating the printer in a manner such that the printer will print the message when the printer is actuated and the electronic form of the message is sent to the printer;

providing a sheet composite comprising a primary sheet portion having opposite first and second major surfaces of a size adapted to be received by the printers and having first and second opposite edges, a secondary sheet portion having first and second opposite major surfaces and having first and second opposite edges, said secondary sheet portion having a width between said first and second edges that is no more than half the width of the primary sheet portion between the first and second opposite edges of the primary sheet portion, the first surface of said secondary sheet being positioned adjacent the first surface of the primary sheet with the first edges of said primary and secondary sheets generally aligned; and a layer of pressure sensitive adhesive extending between the adjacent first surfaces of said sheet portions, said adhesive being firmly adhered on the first surface of one of said sheet portions and being releasably adhered on the first surface of the other of said sheet portions, the force required to peel apart the sheet portions prior to printing the sheet composite in a printer being greater than about 5 grams per 25 millimeter of adhesive width along the peel line when the sheet portions are peeled apart at a 90 degree angle at 300 millimeters per minute;
forming a desired message using the manually operable means;
actuating the printer;
sending the message in its electronic form to the printer;
feeding the sheet composite through the printer so that the message is printed on the sheet composite;
separating the secondary sheet portion from the primary sheet portion so that the printed sheet composite can be adhered to a substrate using the layer of pressure sensitive adhesive.

5,575,575
SMALL-SIZED PRINTER HAVING MULTIPLE FUNCTION MOTOR

Takehiko Ide, Tosu; Hiroki Kokubu, Kurume; Takahisa Shiramizu, Saga-ken; Yuji Tanaka, Chikushino; Tetsuo Hayama, Ogoori; Takashi Takeda, Tosu; Hiroyuki Fukusako, Tosu; Keisuke Shiba, Tosu; Akihiro Nishiyama, Kurume; Norio Amamoto, Tosu; Hidehito Nakamura, Kurume; Tsutomu Egashira, Saga-ken, and Kouji Okada, Kurume, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 159,204, Nov. 30, 1993, abandoned. This application Mar. 15, 1995, Ser. No. 405,393
Claims priority, application Japan, Dec. 25, 1992, 4-346152; Dec. 25, 1992, 4-346153; Feb. 9, 1993, 5-021002; Feb. 12, 1993, 5-023914
Int. Cl.[6] B41J *23/02*
U.S. Cl. 400—185 **26 Claims**

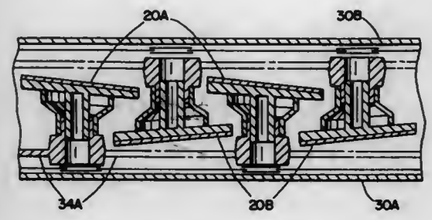


1. A printer which is adapted to perform printing on a printing medium having first and second side directions, said printer comprising:
medium feeding means for feeding the printing medium in a main scanning direction which is adapted to be parallel to the first side direction of the printing medium;
printing means comprising a plurality of printing units disposed in parallel in a sub-scanning direction which is adapted to be parallel to the second side direction of the printing medium;
printing drive means for reciprocally moving the printing means in the sub-scanning direction;
a counterweight; and
counterweight moving means for reciprocally moving the counterweight with a phase opposite to a phase of reciprocal movement of the printing means, said counterweight moving means being disposed between said printing means and said counterweight and comprising a cylindrical cam for engaging with both said printing means and said counterweight and for rotating about an axis parallel to the sub-scanning direction.

5,575,576
KEYBOARD

Brunn W. Roysden, Jr., 4102 E. Palo Verde, Phoenix, Ariz. 85018

Continuation-in-part of Ser. No. 939,066, Sep. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 785,799, Oct. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 528,814, May 25, 1990, abandoned. This application Dec. 13, 1993, Ser. No. 166,572
Int. Cl.[6] B41J *5/10*
U.S. Cl. 400—472 **22 Claims**



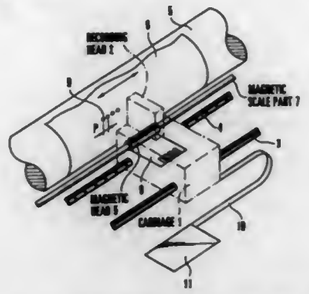
1. A keyboard, for inputting data, including at least two keyboard sections, a first section and a second section, each such section including
a. a keyboard section structure, and
b. a plurality of keys, including at least one BOUNDING KEY SET, each such BOUNDING KEY SET consisting of two rows of two keys each, each key within said plurality of keys including
i. a key cap which is used to activate said key, and
ii. switch means associated with said key,
c. a SECTION KEY SPACE, consisting of the space contained between two bound planes, the upper key cap plane of said section and the lower key plane of said section, with a lateral side consisting of the pseudocylindrical surface defined by the boundaries of said two planes, and
d. a SECTION CAPLESS KEY SPACE, consisting of the space contained between two bound planes, the lower key cap plane of said section and the lower key plane of said section, with a lateral side consisting of the pseudocylindrical surface defined by the boundaries of said two planes, and
in which said keyboard sections can be arranged in at least two positions,
one a keyboard-operative position in which said sections can be arranged such that the keys of said sections can be used to input data, and
the other a keyboard-storage position,
in which the claimed improvement includes means, for each key within said BOUNDING KEY SET of said first section, for placing the key cap of said key within said SECTION KEY SPACE of said second section.

5,575,577

RECORDING APPARATUS HAVING POSITION DETECTING DEVICE

Yoshio Kawakami; Kohzo Ohkubo, and Syuzo Abiko, all of Saitama-ken, Japan, assignors to Canoon Denshi Kabushiki Kaisha, Saitama-ken, Japan

Filed Apr. 28, 1994, Ser. No. 234,249
Claims priority, application Japan, Apr. 30, 1993, 5-104249; Jun. 30, 1993, 5-161737; Jul. 2, 1993, 5-164665
Int. Cl.[6] B41J 29/24
U.S. Cl. 400—705.1 47 Claims



1. A recording apparatus for performing a recording operation by moving a carriage on which recording means is mounted, comprising:

a) a first member arranged in parallel to a moving locus of a carriage to have position information recorded in a longitudinal direction thereof;

b) detecting means for detecting the position information and including a substrate and detecting element disposed on said substrate and a protection film formed over said detecting element; and

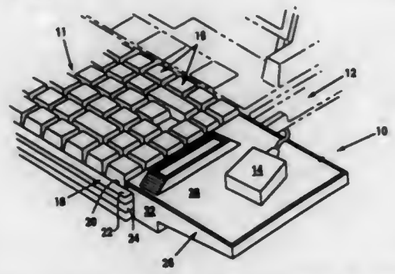
c) a second member arranged to have said first member slidably fitted therein and to hold said detecting means in such a way as to enable said detecting means to read the position information recorded on said first member, said second member being formed with a polypbenylene sulfide material containing 10 to 50% of a filler.

5,575,578

REMOVABLE PAD FOR PORTABLE COMPUTER

Robert P. Lakoski, 5417 Shoalwood Ave., Austin, Tex. 78756; Roy V. Cleve, Jr., 3935 Lago Vista, Austin, Tex. 78734; John P. Fetzko, 15818 Booth Circle, Volente, Tex. 78641, and Jody L. Numbers, 2120 East 6th St. #6, Tempe, Ariz. 85281

Continuation of Ser. No. 903,482, Jun. 24, 1992, abandoned.
This application Apr. 11, 1994, Ser. No. 225,512
Int. Cl.[6] B41J 29/00
U.S. Cl. 400—717 2 Claims



1. A pad platform for attachment to a computer, the computer having a keyboard, the keyboard having a plurality of keys, an inside surface adjacent the keys and an outside surface parallel the inside surface, comprising:

a base having a lip engaging the inside surface of the keyboard, said base forming a platform to support pad for the use of a computer mouse;

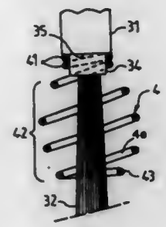
means mounted to the base for engaging the outside surface of the keyboard to clamp the pad to the keyboard between the surfaces, wherein the means for engaging the outside surface of the keyboard include a ramp surface on the base at an angle relative to the other surface, a clamp having a ramp surface to engage the ramp surface on the base and an engagement surface for contacting the outer surface of the keyboard, and a spring acting between the base and the clamp to urge the clamp outward along the ramp surfaces and into engagement with the outer surface.

5,575,579

APPLICATOR EQUIPPED WITH A FLEXIBLE APPLICATION MEMBER AND ASSEMBLY COMPRISING SUCH AN APPLICATOR

Gérard Joulia, Paris, France, assignor to L'Oreal, Paris, France

Filed Dec. 9, 1994, Ser. No. 352,881
Claims priority, application France, Dec. 9, 1993, 93/14778
Int. Cl.[6] A46B 11/00
U.S. Cl. 401—119 23 Claims



1. Product applicator movable between a rest position and a use position, comprising:

a holder;

a flexible application member connected to the holder; and

a retainer located facing the member close to an end via which the member connects to the holder;

wherein the retainer is flexible, retains fluid by capillary effect, has a flexibility that is similar to a flexibility of the member, and is separated from the application member in the rest position, and

wherein, when the application member is bent in the use position, the retainer is bent, the application member and the retainer contact each other, so that the application member, in the use position, is supplied with fluid from the flexible retainer.

5,575,580

CONNECTOR FOR STRUCTURAL APPARATUS

Terry V. Parrish, and Duane R. Lundberg, both of Monett, Mo., assignors to Miracle Recreation Equipment Company, Monett, Mo.

Filed May 3, 1995, Ser. No. 433,158
Int. Cl.[6] E04G 7/00; E04H 17/14; F16B 9/00; B25G 3/00
U.S. Cl. 403—49 12 Claims

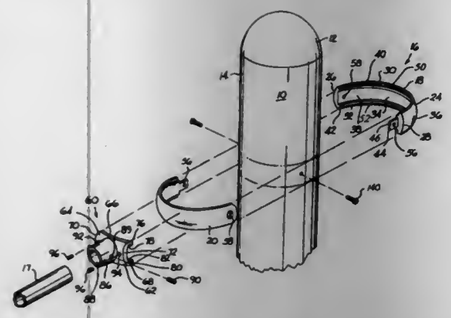
10. An assembly of structural members comprising:

a vertical post having a distal end,

a pair of oppositely disposed C-shaped connectors, said C-shaped connectors being detachably connected in a selected one of two conditions, when in the first condition the C-shaped connectors are movable relative to the surface of the post and when in the second condition the C-shaped connectors are secured to the post at a preselected position on the surface thereof, and

each C-shaped connector including a generally C-shaped body with interior and exterior surfaces and opposite ends, the pair of C-shaped connectors also having complementary interfitting connections for assembling the pair of C-shaped connectors together to define a generally circular shape;

a component receiver which receives the other member, the component receiver being slidably mounted along a C-shaped path corresponding to a selected one of the C-shaped connectors, and the component receiver being in one of two conditions, when in the first condition the component receiver is slidable on the C-shaped connectors and when in the second condition the component receiver is secured to the adjacent C-shaped connector.

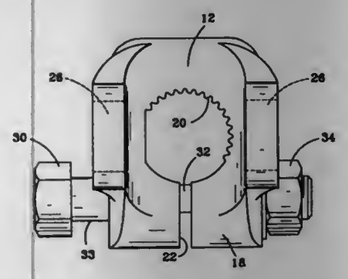


5,575,581

CLAMP YOKE AND BOLT ASSEMBLY

James G. DeBisschop, Morris, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed May 4, 1995, Ser. No. 434,891
Int. Cl.[6] F16D 3/16; F16C 11/06; B21D 21/00
U.S. Cl. 403—157 12 Claims



1. A monolithic clamp yoke comprising:

two ear portions, each ear portion having a bore therethrough;

a shaft receiving body connecting the ear portions, the shaft receiving body having a shaft receiving bore therethrough and a bolt receiving bore therethrough, the shaft receiving body having a slot extending from an outer surface of the shaft receiving body to the shaft receiving bore; and

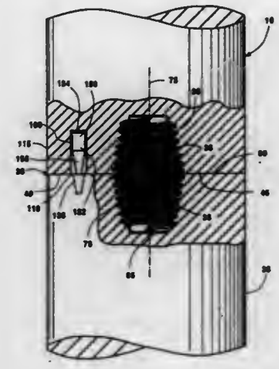
a bolt and nut positioned within the bolt receiving bore and extending beyond the shaft receiving body, the bolt having a major diameter portion and a relieved area portion.

5,575,582

FASTENING DEVICE FOR SECURING ELECTRODE JOINTS

Michael Frastaci, Parma; Richard T. Lewis, Parma Heights; David G. Proctor, Berea, and David M. Riffle, Medina, all of Ohio, assignors to UCAR Carbon Technology Corporation, Danbury, Conn.

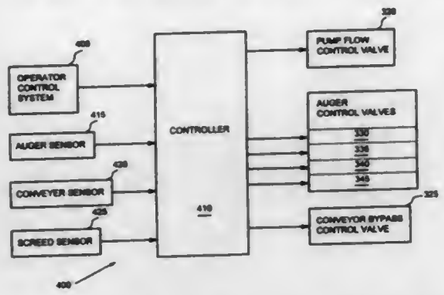
Filed Jan. 18, 1995, Ser. No. 374,937
Int. Cl.[6] F16B 13/00
U.S. Cl. 403—320 4 Claims



1. In a carbon electrode joint comprising two vertically positioned longitudinally coaxially aligned abutting upper and lower electrode sections, each said electrode section having an annular butt face transverse to its central longitudinal axis and a threaded socket in its annular butt face, and a correspondingly threaded nipple longitudinally coaxially aligned with and joining said electrode sections in an abutting relationship by threading rotation of the respective electrode sections to define an annular contact interface, the improvement which comprises a passage in the upper electrode section extending from an opening in its annular butt face substantially parallel to and spaced from the central longitudinal axis of the upper electrode section; a tapered carbon, including graphite, locking pin positioned in said passage in said upper electrode section having an upper straight-sided portion which has a width such that the locking pin is slidably engaged with said passage and having a lower downwardly tapered portion, means for releasably holding said locking pin in said passage in said upper electrode section; a slot shaped passage in the lower electrode section extending from an opening in its annular butt face wherein said slot shaped passage has a width which is less than the width of the straight-sided portion of said locking pin, at least a portion of said opening of the lower electrode section being directly below the opening of said passage in the annular butt face of the upper electrode section, said slot shaped passage extending radially equidistantly from the central longitudinal axis of the lower electrode section, said opening of said slot shaped passage in the annular butt face of the lower electrode section having the width which decreases in the direction opposite to the threading rotation direction of the lower electrode section and a depth which is downwardly tapered to correspond to the downwardly tapered portion of said locking pin whereby upon release of the locking pin, the lower downwardly tapered portion thereof will enter said slot shaped passage and engage with the downwardly tapered portion of said slot shaped passage.

5,575,583
APPARATUS AND METHOD FOR CONTROLLING THE MATERIAL FEED SYSTEM OF A PAVER
Conrad G. Grembowicz, Peoria; Keith R. Schmidt, Sycamore, and Alan L. Ferguson, Peoria, all of Ill., assignors to Caterpillar Paving Products Inc., Minneapolis, Minn.
Filed Apr. 13, 1995, Ser. No. 421,821
Int. Cl.[6] E01L 19/00
U.S. Cl. 404—72 18 Claims

1. An apparatus for controlling a material feed system of a paver



having a screed, the material feed system including a feeder conveyor and a spreader auger, the apparatus comprising:

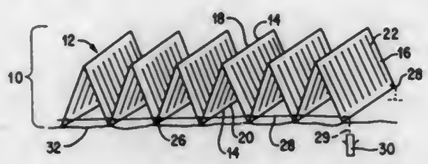
means for monitoring the amount of material adjacent the screed and responsively producing an actual material height signal;

means for producing a desired material height signal indicative of a desired amount of material adjacent the screed;

means for receiving the actual and desired material height signals, determining a desired rotational speed of the auger in response to the difference between the signal magnitudes, and producing a command signal to rotate the auger at the desired speed; and

means for receiving the command signal and rotating the auger at the desired rotational speed.

5,575,584
UNDERWATER SOIL EROSION PREVENTION SYSTEM
Peter Alsop, Kent, England, assignor to Marine Environmental Solutions, L.L.C., Calverton, Md.
Filed Aug. 1, 1994, Ser. No. 284,015
Int. Cl.[6] E02B 3/04
U.S. Cl. 405—24 12 Claims



1. An underwater soil erosion prevention system comprising:

a generally rectangular length of material having at least two folds, each fold being generally perpendicular to the longitudinal axis of the rectangular length of material;

wherein said folds form a plurality of successive sheets in the rectangular length of material;

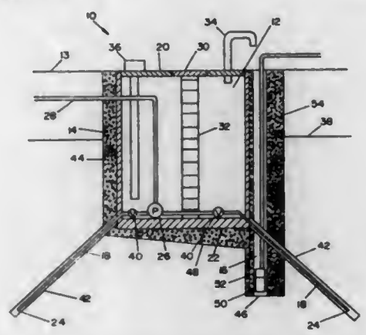
wherein one of the folds defines a top edge of two successive sheets and a successive fold defines a bottom edge of two successive sheets such that the portion of the rectangular length of material between two successive folds comprises a single sheet;

wherein the top edge of each sheet is substantially parallel to the bottom edge of the same sheet;

wherein each sheet contains at least one slit, said slit beginning above the bottom edge of the sheet and terminating below the top edge of the sheet; and

wherein said slit is generally perpendicular to the fold.

5,575,585
MULTIPLE WELL CONTAMINANT RECOVERY APPARATUS
Jaromir Kovarik, Annville, Pa., assignor to R. E. Wright Environmental, Inc., Middletown, Pa.
Filed Feb. 16, 1995, Ser. No. 389,329
Int. Cl.[6] B09C 1/00
U.S. Cl. 405—52 13 Claims



1. An apparatus for removing contaminants from ground water located below a ground surface comprising:

a chamber with walls, a top, and a bottom enclosing a volume, with at least part of the chamber located below the ground surface;

at least two well pipes extending downward and outward from the chamber so that the bottom ends of the well pipes are remote from the chamber and are located farther below the ground surface than the chamber bottom and are horizontally displaced from the chamber walls;

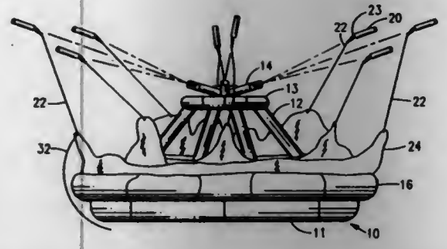
water pumping means connected to the well pipes and capable of moving water from the bottom ends of the well pipes to the ground surface;

a sump comprising a porous volume with side walls and a bottom boundary, the sump being located within the ground and in proximity to the chamber, and the bottom boundary of the sump being located more remote from the ground surface than the bottom of the chamber and so that the bottom boundary is located within the ground water at the location of the sump; and

contaminant pumping means with an intake located within the sump and capable of pumping ground water contaminating fluids from the sump to the ground surface.

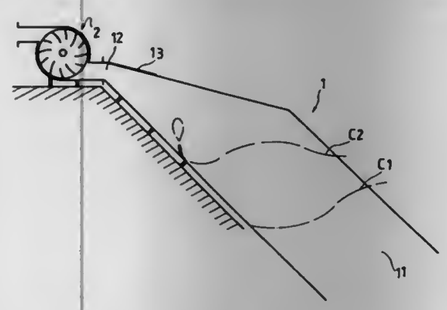
5,575,586
OIL SPILL RECOVERY SYSTEM
Alan K. Lydiard, Exeter, N.H., and Dwight W. Reynolds, Portland, Me., assignors to Petroleum Recovery Technologies, Inc., Hampton, N.H.
Continuation of Ser. No. 991,313, Dec. 16, 1992, Pat. No. 5,407,301. This application Mar. 15, 1995, Ser. No. 404,528
Int. Cl.[6] E02B 15/04
U.S. Cl. 405—66 16 Claims

1. A system comprising a cover for being deployed over an oil spill for recovering oil entrapped by the cover, the improvement wherein the cover is deployed by rockets secured around the periphery of the cover, each said rocket being propelled by a supply of high pressure gas, said cover being deployed from a



floating support, and said system also comprises x and y sensors for detecting the attitude of said support and means for controlling deployment of said cover as a function of detected attitude, said x and y sensors and said controlling means being located on said floating support.

5,575,587
TIDE-OPERATED DRIVING SYSTEM
Leang S. Chen, 5F, No. 5-4, Alley 7, Lane 377, Chung Cheng Rd., Shin Chuang City, Taipei Hsien, Taiwan
Filed Jan. 13, 1995, Ser. No. 372,079
Int. Cl.[6] E02B 9/05
U.S. Cl. 405—76 2 Claims

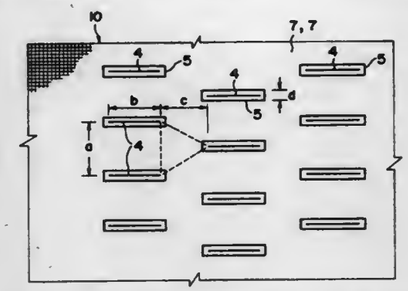


1. A tide-operated driving system comprising:

a variable air chamber having a broad bottom opening disposed under the water of the sea below the elevation of the ebb tide and a small top opening communicated with said broad bottom opening and disposed above the elevation of the flow tide, the inner diameter of said variable air chamber reducing gradually from said broad bottom opening toward said small top opening; and

a motor having a center shaft, a plurality of centrifugal type vanes spaced around said center shaft, a first air port and second said center shaft disposed tangent to the periphery of said vanes in reversed directions, said first air port communicating with said small top opening for allowing reciprocating currents of air, which are induced by the movement of the tide, to pass through said vanes in a fixed direction, causing said vanes to rotate said center shaft said vanes being of two different lengths alternatively arranged around said center shaft for guiding the reciprocating flow of air from one air port to the other through the center of said rotor.

5,575,588
METHOD OF CONSTRUCTING A SLOPE PROTECTON
Yukichi Nakamura, Tokyo, Japan, assignor to Okanishi Trading Co., Ltd., Tokyo, Japan
Filed Mar. 31, 1995, Ser. No. 414,107
Claims priority, application Japan, Aug. 5, 1994, 6-183302
Int. Cl.[6] E02B 3/12
U.S. Cl. 405—18 7 Claims



1. A method of constructing a slope protection, comprising the steps of:

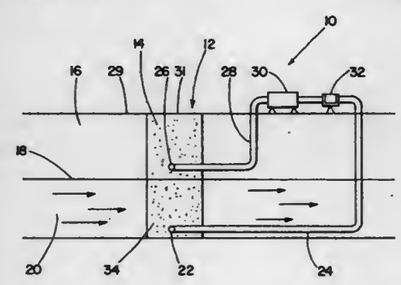
(a) providing a bag-like mat composed of front and back fabric layers joined together to define therebetween an internal space in which a filling material including a concrete, a soil or the like can be placed, said mat having a plurality of discrete slits extending across the thickness of said front and back fabric layers, said mat being closed along a portion extending around each of said slits to form a closed peripheral edge of each said slit, said closed peripheral edge being formed along a shape of said slit and in close proximity to said slit;

(b) placing a said bag-like mat flatly over a slope to be protected such that an original plane size of said bag-like mat is substantially maintained;

(c) subsequently placing said filling material in said internal space of said bag-like mat to expand said bag-like mat, thereby causing said slits to spread out to form openings through said front and back fabric layers; and

(d) finally vegetating the slope through said openings.

5,575,589
APPARATUS AND METHOD FOR REMOVING VOLATILE CONTAMINANTS FROM PHREATIC WATER
Suthan S. Suthersan, Yardley, Pa., assignor to Geraghty & Miller, Inc., Denver, Colo.
Filed Apr. 11, 1995, Ser. No. 420,224
Int. Cl.[6] B09B 3/00
U.S. Cl. 405—128 12 Claims



1. A dosed-loop process for removing volatile contaminants from a contaminated area of the earth, wherein the contaminated area of the earth has a phreatic zone, the contaminant being present in the phreatic zone, which comprises the steps of:

establishing a trench extending downwardly from the surface of the ground within the contaminated area, said trench having a lower portion substantially within the phreatic zone and an upper portion substantially within the vadose zone;

placing an injection pipe having a perforated surface in the bottom of said lower portion of said trench;

filling fluid-permeable fill material into said lower portion of said trench above the water table so that said fill material will permit fluid to flow readily through said lower portion;

placing an extraction pipe having a perforated surface into said trench upper portion;

filling fluid-permeable fill material into said upper portion of said trench up to the ground surface so that said fill material will permit fluid to flow readily through said upper portion;

sealing said trench at said ground surface to prevent gas passage between said trench and the atmosphere;

applying air under pressure to said injection pipe effective to induce a flow of air from said injection pipe into said trench lower portion; and

applying a vacuum to said extraction pipe effective to induce a flow of air and a gas containing vapor of said contaminant present in said trench upper portion into said extraction pipe so that said contaminant is removed from said ground.

5,575,590

INSTALLATION FOR LAYING A PIPELINE ON A FLOOR LOCATED UNDER WATER, BEARING MEANS AND TERMINAL

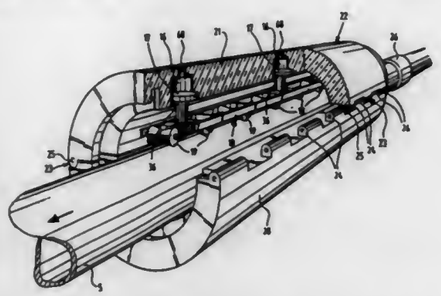
Johannes J. C. I. Drost, Vlaardingen; Erik J. Rooduijn, Bergschenhoek, and Albert Ploeg, Benthuizen, all of Netherlands, assignors to Allseas Group S.A., Switzerland

Filed Feb. 10, 1995, Ser. No. 387,404

Claims priority, application Netherlands, Mar. 31, 1994, 9400517

Int. Cl.[6] F16L *1/235*

U.S. Cl. 405—166 **9 Claims**



1. Apparatus for laying a pipeline on a floor located under water comprising a pipe bedding installation with securing means for supporting a pipe string extending between the pipe bedding installation and the floor while said pipe string is lowered into the water, characterized by bearing means which at least partially supports the part of said pipe string situated between the water surface and the floor, said bearing means having at least one trunk tube, said trunk tube provided with a plurality of energizing cylinders which engage said trunk tube on said pipe string by means of a train of rollers when said energizing cylinders are energized, and disengage said trunk tube and said pipe string when not energized thereby allowing relative movement between said pipe string and said trunk tube.

5,575,591

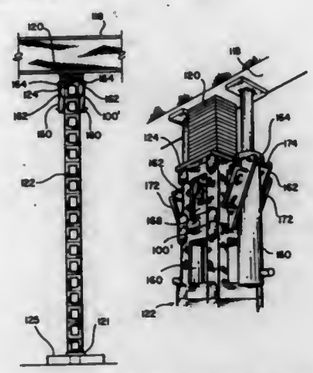
APPARATUS AND METHOD FOR A MODULAR SUPPORT AND LIFTING SYSTEM

Peter M. Vanderklaauw, 8360 SW 186th St., Miami, Fla. 33157

Filed Apr. 24, 1995, Ser. No. 427,276

Int. Cl.[6] E02D *5/00*

U.S. Cl. 405—230 **27 Claims**



1. An apparatus for a modular structural support system for constructing temporary support structures, said apparatus comprising:

a plurality of generally identical cribs, said cribs having a first mating end, a second mating end, and four non-mating sides, whereby a first crib may be mated to a second crib for forming an elongate structure, said cribs also having openings on at least some of said non-matings sides able to receive various additional mounting components, said cribs further including connecting means for releasably mating said cribs to one another.

5,575,592

TLP TENSION ADJUST SYSTEM

Jack Pollack, Camarillo, Calif., assignor to Imodco, Inc., Calabasas Hills, Calif.

Filed Dec. 14, 1994, Ser. No. 355,552

Int. Cl.[6] B63B *35/44*

U.S. Cl. 405—223.1 **3 Claims**



1. A hydrocarbon production complex comprising:

a platform that floats at the sea surface;

a plurality of risers and tendons each extending down from said platform to the seafloor;

a vessel having a working displacement which is a plurality of times greater than the working displacement of said platform, said vessel lying at least about 500 meters away from said platform, and anchored so it can drift and weathervane;

said platform includes at least one tree connected to upper ends of said risers;

a fluid conduit extending primarily downwardly from said tree on said platform to the seafloor, along said seafloor, and generally upwardly from the seafloor to said vessel;

said platform is substantially devoid of well effluent processing equipment, but said vessel has well effluent processing equipment of a mass more than five times any processing equipment on said platform.

2. A tension leg platform system which includes a platform that floats at the sea surface and a plurality of tendons extending down from said platform to the seafloor and anchored thereto, said platform having means for attaching up to a predetermined maximum number of risers, and including a plurality of risers each extending down from said platform to the seafloor and anchored thereto, with said tendons and risers each being held under tension which produces downward forces on said platform that are countered by displacement of said platform, wherein:

said platform has a small enough buoyancy and said tendons have a small enough tension, that the combined downward force that would be applied by said predetermined number of risers to said platform is at least 20% of the total working displacement of said platform;

said platform has means for varying the buoyancy of said platform in water to compensate for the tension of risers that are attached to said platform after said tendons are attached, so as to maintain approximately constant tendon tension, whereby to avoid the need for repeated tendon adjustment.

5,575,593

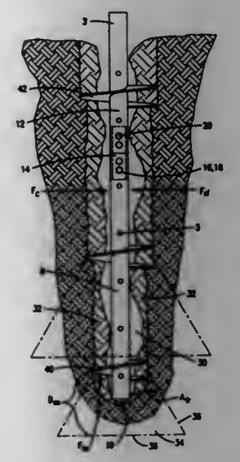
METHOD AND APPARATUS FOR INSTALLING A HELICAL PIER WITH PRESSURIZED GROUTING

David B. Raaf, Independence, Mo., assignor to Atlas Systems, Inc., Independence, Mo.

Filed Jul. 11, 1994, Ser. No. 273,210

Int. Cl.[6] F02D *5/44*

U.S. Cl. 405—237 **29 Claims**



1. A method for installing a pier column, having a hollow body with perforations along a length thereof, which is affixed to a structure to support said structure, said pier column interacting with a surrounding effective soil region to resist lateral and longitudinal movement by said structure, said method comprising the steps of:

rotating said pier column into the soil to a predetermined depth and halting rotation of said pier column thereafter,

after halting rotation of said pier column, pumping pressurized grout through an upper end of the pier column, along said hollow body, and out through said perforated holes to fill any voids in soil surrounding said pier column,

forming grout nodules securely fixed to and arranged about an exterior surface of said pier column, and

securing said pier column to said structure.

5,575,594

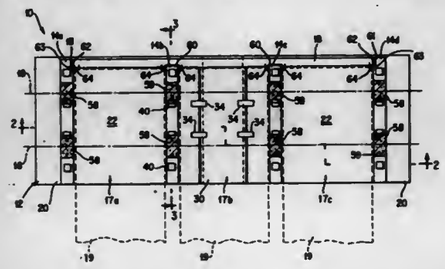
MODULAR RAIL CAR UNLOADING PIT AND METHOD OF USING THE SAME

Steven C. Kurtz, Hummelstown, Pa., and Michael S. Tuculescu, Ridgewood, N.J., assignors to Tarmac Minerals, Inc., Annville, Pa.

Filed Jun. 7, 1995, Ser. No. 483,706

Int. Cl.[6] E02D *29/00*; B61B *1/00*; B65F *9/00*; B65G *67/00*

U.S. Cl. 405—303 **24 Claims**



1. A modular unloading pit for containing a conveyer system to transport material unloaded from a rail car, said modular unloading pit being located beneath, and supporting, at least one rail for guiding the rail car, said modular unloading pit comprising:

a precast concrete floor; and

a plurality of precast concrete lateral vertical walls;

said floor having wall interfacing means for interfacing with, and supporting, said lateral vertical walls;

said lateral vertical walls oriented perpendicular to the rail, each said lateral vertical wall having floor interfacing means for interfacing with said wall interfacing means of said floor, each said lateral vertical wall further having rail supporting means for contacting and supporting the rail.

5,575,595

LOW PROFILE PARALLEL RAILCAR DISCHARGE ADAPTOR

David K. Smoot, Overland Park, Kans., assignor to Smoot Co., Kansas City, Kans.

Continuation-in-part of Ser. No. 40,890, Mar. 31, 1993, Pat. No. 5,387,058. This application Aug. 25, 1994, Ser. No. 296,223

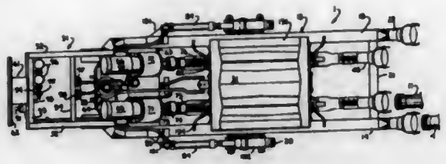
Int. Cl.[6] B65G *53/08*

U.S. Cl. 406—39 **17 Claims**

1. A discharge adaptor for connection between a discharge gate of a railcar and a pressure pneumatic conveyor for unloading material from said railcar, comprising:

a. a frame with a low profile airlock housing attached thereto, said airlock housing including a top surface which is sealingly engagable with said discharge gate;

b. a pair of juxtaposed parallel cylindrical airlock chambers within said airlock housing;



c. a pair of airlock vanes, one positioned within each said chamber, said chambers and vanes forming a pair of side by side parallel rotary airlocks, each of which has an top opening with both top openings positioned side by side beneath said discharge gate when said airlock housing is sealingly engaged therewith; and

d. elevation means for selectively raising and lowering said frame and said airlock housing.

5,575,596

CLOSURE DEVICE FOR A CONVEYING UNIT OPERATING IN A VACUUM

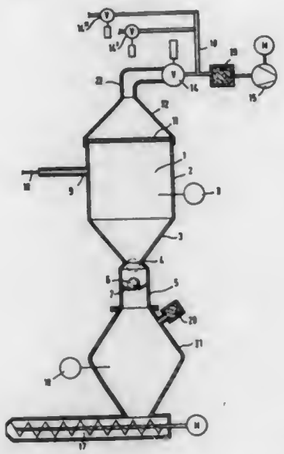
Michael Bauer, Waiblingen; Otto Brandauer, Muehlacker, and Dieter Kemmler, Ludwigsberg, all of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Germany

Filed Mar. 24, 1995, Ser. No. 408,890

Claims priority, application Germany, Mar. 24, 1994, 44 10 087.6

Int. Cl.[6] B65G 53/46

U.S. Cl. 406—168 10 Claims



1. A closure device for a discharge outlet of a vacuum conveyor for bulk material, wherein said outlet has a circular cross-section, said closure device comprising a freely movable ball provided under said circular outlet, and a support provided under said freely movable ball, said freely movable ball resting on said support in a first position spaced away from said outlet so that said outlet is open when the vacuum conveyor is deactivated, said freely movable ball being drawn by vacuum into a second position against said outlet to close said outlet when the vacuum conveyor is activated to convey said bulk material, and said freely movable ball being formed of material having a composition identical to said bulk material conveyed by the vacuum conveyor.

5,575,597

MECHANICAL MANIPULATOR

Ralph P. S. Bailey, Chanctonbury, and Jerome J. Leary, Brighton, both of England, assignors to Geodetic Technology International Holdings N.V., England

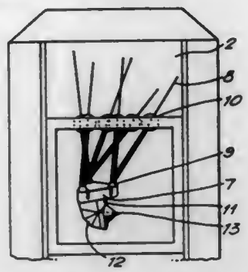
PCT No. PCT/GB92/00613, § 371 Date Oct. 5, 1993, § 102(e) Date Oct. 5, 1993, PCT Pub. No. WO92/17313, PCT Pub. Date Oct. 15, 1992

PCT Filed Apr. 6, 1992, Ser. No. 119,189

Claims priority, application United Kingdom, Apr. 5, 1991, 9107207

Int. Cl.[6] B23C 1/12; B25J 9/10

U.S. Cl. 409—201 44 Claims



1. A mechanical movement system for locating an effector relative to an object, said system comprising:

a mounting;

a base for further movement, said base being mounted for movement in translation and rotation relative to said mounting by means of a plurality of legs extending between the mounting and the base, means to adjustably control the length of the legs wherein the effective length of said legs is controllably adjustable for determining the orientation of the base relative to the mounting and the connection of the legs to the mounting and to the base being such as to accommodate changes in the angular orientation of the legs consequential to adjustment of their effective length; and

means coupled to said base and providing for movement of an object mounted on said base additional to the base movement arising out of movements of the legs;

said additional movement providing means comprises first controllably adjustable means providing for a first degree of movement relative to the base, and second controllably adjustable means mounted on said first controllably adjustable means and providing for a different degree of movement relative to said base to that provided by the first controllably adjustable means.

5,575,598

V-SHAPED GROOVE FORMING MACHINE AND ITS CONTROL METHOD

Nobuo Abe, Yokosuka; Nobuyuki Kinnou, Isehara; Toshihide Ohara, Isehara; Kazunori Kuga, Isehara; Yoshiharu Komizo, Machida; Takara Kibe, Isehara, and Hideyuki Fujikawa, Atsugi, all of Japan, assignors to Amada Company, Limited, Kanagawa, Japan

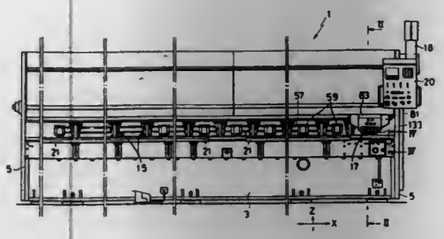
Continuation of Ser. No. 1,556, Jan. 6, 1993, Pat. No. 5,397,049, which is a continuation of Ser. No. 706,326, May 28, 1991, abandoned, which is a continuation of Ser. No. 447,549, Dec. 7, 1989, abandoned, which is a division of Ser. No. 216,534, Jul. 8, 1988, Pat. No. 5,080,540. This application Mar. 2, 1995, Ser. No. 397,487

Claims priority, application Japan, Aug. 7, 1987, 62-168561; Dec. 22, 1987, 62-193401; Jan. 27, 1988, 63-14615; Jun. 14, 1988, 63-144774

Int. Cl.[6] B23D 7/00

U.S. Cl. 409—304 12 Claims

1. A groove forming machine for forming a V-shaped groove in a plate material, comprising:



a frame;

a guide rail mounted on the frame and extending along a first horizontal axis;

a slider mounted on the guide rail so as to be movable along the first horizontal axis;

a tool holder supported on the slider so as to be pivotal about a second horizontal axis which is perpendicular to the first horizontal axis, said tool holder being formed with a plurality of through holes, said tool holder being secured to the slider by a plurality of bolts, each bolt loosely passing through one of the through holes;

a plurality of cutting tools mounted on the tool holder so as to be arranged along the first horizontal axis;

at least one adjustment bolt having a free end, the adjustment bolt being mounted on the slider so that the free end thereof is vertically movable relative to the slider and is in contact with the tool holder; and

means for detecting the presence or absence of the tool holder, said detecting means comprising a holder sensor mounted on the slider.

5,575,599

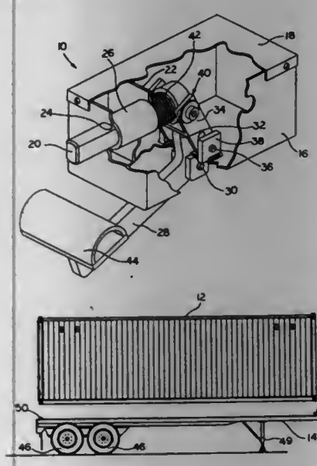
CONTAINER LOCK PIN SYSTEM

Joseph A. Conlee; Bruce A. Harder, both of Mishawaka, and David A. Penzenik, South Bend, all of Ind., assignors to Penz Products, Inc., Mishawaka, Ind.

Filed Apr. 15, 1994, Ser. No. 227,972

Int. Cl.[6] B60P 7/13

U.S. Cl. 410—69 8 Claims



1. A container locking system for locking a container to a vehicle, said system comprising;

a lock pin means connected to said vehicle for horizontal movement, said lock pin means slidable toward the container;

a lever means connected to said vehicle and said lock pin means for sliding said lock means toward the container when the container is placed on said lever means whereby said lock pin means automatically engages the container thereby locking the container to the vehicle;

said lock pin means being pivotally connected to said lever means.

5,575,600

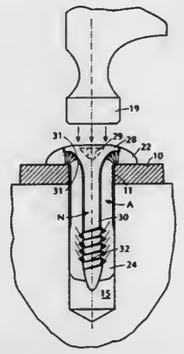
ALL-METAL EXPANSIBLE ANCHOR AND NAIL ASSEMBLY

Louis N. Giannuzzi, Greenwich, Conn., and Anthony C. Giannuzzi, 59 Dingletown Rd., Greenwich, Conn. 06830, assignors to Anthony C. Giannuzzi, Greenwich, Conn.

Filed Jul. 10, 1995, Ser. No. 499,928

Int. Cl.[6] F16B 13/06

U.S. Cl. 411—48 12 Claims

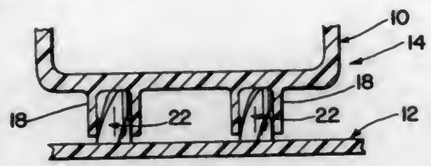


1. A hammer-drivable expansible anchor and nail assembly adapted to fasten an object having a mounting hole to masonry having a hole drilled therein to receive the assembly; said assembly comprising:

A. a hollow metal anchor provided with a head and an expansible body extending from the head having a bore therein insertable through said mounting hole into the drilled hole to cause said anchor head to engage the object and the body to project into the drilled hole, said head having a well countersunk therein; and

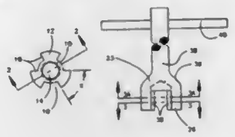
B. a metal expander nail insertable in the bore of said hollow anchor, said nail being provided with a head adapted to receive blows from the hammer and a shank having a diameter greater than that of the bore joined to the nail head by a junction section of generally progressively greater diameter whereby the shank merges with the nail head, said anchor head well having a shape substantially conforming to that of the nail head and the junction section to nest said nail head and junction section when the nail is driven by hammer blows into the hollow anchor to expand said body against the wall of the drilled hole, whereby hammer blows thereafter applied to the nail head give rise to compressive stresses in a region of the metal anchor surrounding the well therein that retard further advance of the nail and resists the production of shear stresses that may cause the anchor head to separate from the body of the anchor.

5,575,601
HELIX FASTENER ASSEMBLY
James Skufca, Lakewood, and Matthew R. Skufca, Jr., Cleveland, both of Ohio, assignors to Heelix Fasteners, Inc., Cleveland, Ohio
Filed Feb. 23, 1995, Ser. No. 393,328
Int. Cl.[6] F16B *21/00;15/08*
U.S. Cl. 411—339 **10 Claims**



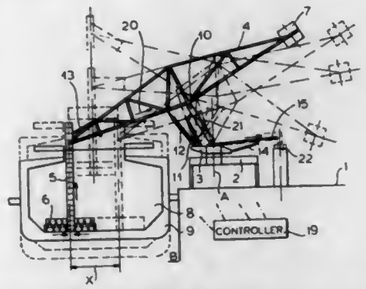
1. A fastener assembly particularly suited for joining first and second molded plastic components comprising:
a plurality of cylindrical bores formed to extend inwardly from an outer surface of the first component; and,
a plurality of stud members molded integral with and extending outwardly from an outer surface of the second component and each said stud engaged in a separate one of the said cylindrical bores in the first component, at least one of the stud members having at least one rib extending outwardly of the stud member and interference fitted in the respective bore by being axially and non-rotatively driven thereinto, the said at least one rib extending helically about the stud at a helix angle in the range above 45° said at least one rib having a crest formed by a curved surface and a planar surface that intersect at substantially 90°.

5,575,602
MULTIPLE-ARMED NUT
Kevin J. Savage, and Janet M. Savage, both of 1087 Green Glen Dr., Boothwyn, Pa. 19061
Filed Aug. 17, 1995, Ser. No. 516,339
Int. Cl.[6] F16B *39/282;* **B25B** *23/08*
U.S. Cl. 411—405 **4 Claims**



1. A nut and mating tool head for mechanical fastening to a threaded stud, said nut being operable by said mating tool head, the nut comprising of:
a) a rigid circular main body with a threaded hollow center
b) said main body built with a plurality of rigid radial arms extending therefrom each with rounded outer surfaces
c) said radial arms each having unparallel rigid interior flat surfaces between the main body and said arm's rounded outer surface
d) said unparallel rigid interior flat surfaces of each radial arm oriented at an angle that when projected, intersect at the center of the circular main body
the mating tool head comprising of:
a) a plurality of teeth or projections matching in plurality the nut's radial projections
b) a hollow center to allow a snug fit over the nut's main body
c) said plurality of teeth each having circularly rounded interior and exterior surfaces
d) the plurality of teeth each having unparallel rigid flat surfaces between said rounded interior and exterior surfaces
e) said unparallel rigid flat surfaces of each tooth oriented at an angle that when projected, intersect at the center of said hollow center
f) the plurality of teeth built integrally with a rigid body.

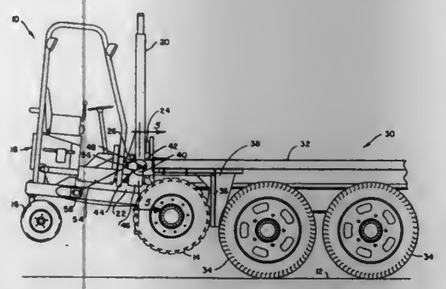
5,575,603
BULK-SHIP UNLOADING SYSTEM
Hans J. Becker, Quierschied, and Horst Steckel, St. Ingbert, both of Germany, assignors to PWH Anlagen + Systeme GmbH, St. Ingbert, Germany
Filed Nov. 17, 1995, Ser. No. 560,317
Claims priority, application Germany, Dec. 1, 1994, 44 42 717.4
Int. Cl.[6] B65G *67/60*
U.S. Cl. 414—137.9 **6 Claims**



1. An apparatus for unloading bulk material from a ship floating in a body of water, the apparatus comprising:
a carriage displaceable horizontally adjacent the ship;
a turntable on the carriage;
a generally upright column having a lower end pivoted on the turntable and an upper end;
a column-moving hydraulic cylinder having one end pivoted on the column and another end pivoted on the turntable;
an arm pivoted on the upper end of the column and having an outer end above the ship and provided with a conveyor;
an arm-moving hydraulic cylinder having one end pivoted on the arm and another end pivoted on the turntable;
means including an outer vertical conveyor pivoted on the outer arm end and having a lower end engaged in the material in the ship for extracting the material from the ship and delivering it to the arm conveyor;
a conveyor-moving hydraulic cylinder having one end pivoted on the vertical conveyor and an opposite end pivoted on the arm; and
control means connected to all of the cylinders for actuating same to sweep the lower end of the vertical conveyor along the ship.

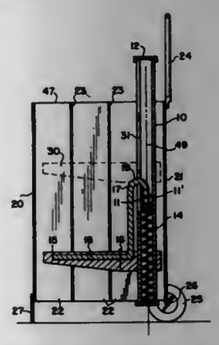
5,575,604
APPARATUS AND METHOD FOR MOUNTING A FORKLIFT ON A CARRIER
William R. Dubosh, Pickerington; John R. Mauck, Galloway; Paul W. Neagle, Westerville, and Lonnie A. Wilson, Rockbridge, all of Ohio, assignors to Teledyne Princeton, Inc., Ontario, Canada
Filed Apr. 26, 1995, Ser. No. 429,357
Int. Cl.[6] B66F *9/06*
U.S. Cl. 414—462 **13 Claims**

1. In combination, a forklift and a carrier secured together to allow said forklift to be transported from one site to another by said carrier,



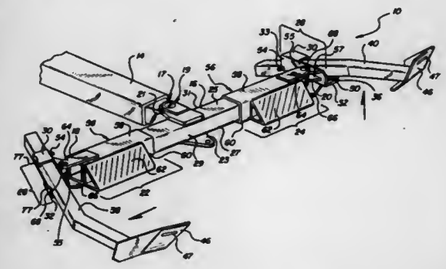
said forklift including a forklift frame having front and rear wheels,
a pair of forks mounted on a carriage, said carriage being mounted to reciprocate vertically on a vertically extending mast by a pressurized hydraulic system, said mast being supported by said frame,
said carrier including a carrier frame supported by wheels, at least one fork-receiving pocket mounted on said carrier frame, and a pair of front wheel abutments mounted below said carrier frame to engage and limit forward movement by said front forklift wheels,
said forks being disposed in said pocket, a lock securing said forklift to said carrier,
said forks exerting no vertical force on said pocket upon depressurization of said hydraulic system, said lock being the sole upward force applied to said forklift,
said lock being one of:
(a) a pair of straps, each strap having one end connected to said carrier, each strap extending beneath one front wheel and its other end being secured to said carrier frame and
(b) a pair of hooks encompassing a pair of horizontal bars, said bars being mounted on one of said carrier frame and said forklift frame, said hooks being mounted on the other of said carrier frame and said forklift frame.

5,575,605
ELEVATABLE SHOPPING CART
Herbert H. Fisher, 1910 N.E. 207th St., North Miami Beach, Fla. 33179
Continuation of Ser. No. 206,326, Mar. 7, 1994, abandoned. This application Oct. 20, 1995, Ser. No. 546,013
Int. Cl.[6] B62B *1/12*
U.S. Cl. 414—490 **16 Claims**



8. A wheeled shopping cart comprising an elongated vertical tubular support housing having a length, an elongated vertical rod having an upper and lower extremity and being movable concentrically within said housing with respect to a common vertical axis of said housing and said rod, an elongated narrow support member having opposite end portions, one said end portion being connected to said vertical rod, said housing having an elongated narrow vertical slot extending substantially parallel with said common vertical axis and generally along said length of said housing, said support member extending through said slot adjacent said one end portion of said support member with another of said end portion being connected to said shelf and generally parallel to said axis and affixed to said vertical rod adjacent said upper extremity of said vertical rod, a horizontal solid bottom shelf being supported by said rod and which selectively moves vertically with movement of said rod, said support member being affixed to said shelf adjacent said lower extremity, an elongated solid vertical skirt encircling and spaced outwardly from said shelf, said skirt having an open top and a bottom, said shelf being movable from a position adjacent said bottom of said skirt to a position spaced below said top, at least two freely rotatable wheels supporting said cart, and a handle for guiding said cart.

5,575,606
WHEEL LIFT TOWING ATTACHMENT ASSEMBLY
John H. Kiefer, Fayetteville, and Jeffrey S. Barbour, State Line, both of Pa., assignors to Jerr-Dan Corporation, Greencastle, Pa.
Filed Sep. 13, 1994, Ser. No. 305,098
Int. Cl.[6] B60P *3/12*
U.S. Cl. 414—563 **28 Claims**



1. A wheel lift attachment of the type coupled to a towing vehicle for supporting the wheels of a vehicle to be lifted and towed by the towing vehicle, said assembly comprising:
a cross beam adapted to be coupled to the towing vehicle, said cross beam having a first end and a second end;
first and second receivers coupled to said respective first and second ends of said cross beam,
said first and second receivers comprising an upper plate and a lower plate that are parallel, said lower plate being spaced vertically below and horizontally offset from said upper plate,
first and second wheel support arms slidably received between said upper and lower plates of said respective first and second receivers, and
a first pin extending outwardly from each of said receivers and positioned vertically below said respective upper plate such that at least a majority of the first pin is below a plane formed by an upper surface of said respective lower plate for preventing said respective wheel support arm from vertically tilting away from said respective upper and lower plates.

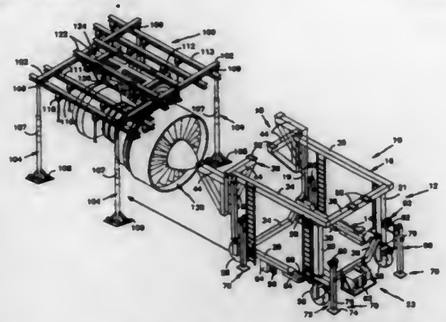
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5,575,607

JET ENGINE TRANSPORT VEHICLE LIFT SYSTEM AND A BUILD CELL

Dennis L. Grout, Oakdale; Francis P. Brochu, Tolland, both of Conn., and James J. Burke, Jr., Feeding Hills, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 2, 1994, Ser. No. 333,400
Int. Cl.[6] B66F 7/16
U.S. Cl. 414—589 3 Claims



1. A system for building, testing, and repairing a gas turbine engine and for transporting said gas turbine engine from a first location to a second location characterized by:

a build cell removably supported by a plurality of pedestals, said build cell adapted to support said gas turbine engine, said build cell supporting a plurality of hoists necessary for disassembly and repair of said gas turbine engine; and

a transporter for moving said build cell and said gas turbine engine secured thereon from said first location to said second location, said transporter having a frame structure supported by a plurality of wheels, said transporter having pivotable arms disposed on one side of said frame structure pivoting open to receive said gas turbine engine within said frame structure, said pivotable arms pivoting into a closed position to support said build cell with said gas turbine engine on said frame structure, said transporter having a plurality of jacks for elevating and lowering said transporter to load and unload said build cell with said gas turbine engine onto said frame structure.

5,575,608

PROTECTIVE SHEATHS FOR FORK LIFT TANGS

Luke S. S. Yan, 4626 Wellston Point, San Diego, Calif. 92130, and George A. Coonis, 7362 Oleander Ave., Fontana, Calif. 92336

Filed Apr. 29, 1996, Ser. No. 638,823
Int. Cl.[6] B66F 9/18
U.S. Cl. 414—607 13 Claims



1. A protective sheath for a forklift tang whicb comprises:

an elongated sheath having an upper, a lower and two side walls, and an open primal end sized to fit over a forklift tang;

means for reducing slippage of a pallet on a forklift tang;

bumper means at the distal end of said sheath for engagement with a tang end to limit damage to a structure impacted by a tang bearing said sheath;

said bumper means comprising at least two spaced apart elastomeric members generally transverse to said sheath; and

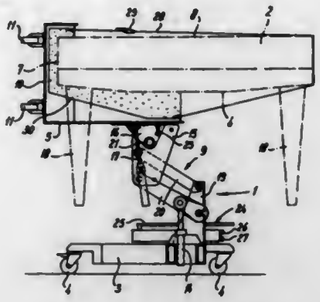
clamp means for clamping the primal end of said sheath to a forklift tang.

5,575,609

DEVICE FOR TILTING, CARRYING AND TRANSPORTING A GRAND PIANO

Ronald E. J. Monkhorst, Stompwijkseweg 33, NL-2266 GD Leidschendam, and Diemer J. Roodenburg, Amsterdam, both of Netherlands, assignors to Ronald E. J. Monkhorst, Leidschendam, Netherlands

Filed Dec. 13, 1994, Ser. No. 295,873
Int. Cl.[6] B60P 1/34
U.S. Cl. 414—743 5 Claims



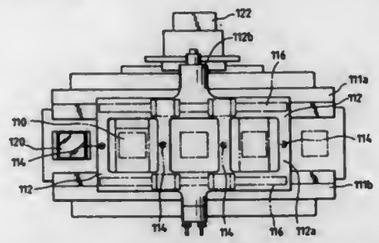
1. Device for tilting, carrying and transporting a grand piano, comprising: a frame provided with wheels, said frame including means for gripping, means for lifting, and means for tilting the piano, said gripping means including a U-shaped member which comprises a first leg for engaging at least a bottom face of said piano, a second leg for engaging a top face of said piano, and a third leg extending from said first leg to said second leg, and having an inner surface for engaging an end face of said piano which end face extends from said top face to said bottom face, said third leg having an outer surface comprising wheels attached thereto, and said gripping means being detachably connected to the lifting means and the tilting means.

5,575,610

TRANSPORT-BY-SUCTION TYPE DIE

Hideki Soyama, Nagano, Japan, assignor to Apic Yamada Corporation, Nagano, Japan

Filed Nov. 30, 1994, Ser. No. 352,103
Claims priority, application Japan, Nov. 30, 1993, 5-299903
Int. Cl.[6] B21J 13/08
U.S. Cl. 414—750 3 Claims



1. A transport-by-suction die for use in a working machine having a plurality of working stages spaced apart at preset intervals and for carrying out working processes, said die comprising:

a feed arm mounted in a position above the working stages in a lower part of said die and operative to slide back and forth in a direction of consecutive feed and vertically movable with respect to a surface of the working stages;

suction pads for supporting a piece part by suction, said suction pads being attached to said feed arm at intervals corresponding to the preset intervals of said working stages;

a negative-pressure aspiration mechanism connected with each of said suction pads;

a drive mechanism for causing said feed arm to move vertically and back and forth in synchronism with operation of the working processes, said drive mechanism comprising a feed drive mechanism provided exteriorly of said die for allowing said feed arm to move back and forth in the direction of consecutive feed; and

a slide guide means for supporting said feed arm in a direction parallel to the direction of consecutive feed and on a lateral surface of the opposite side of the lower part;

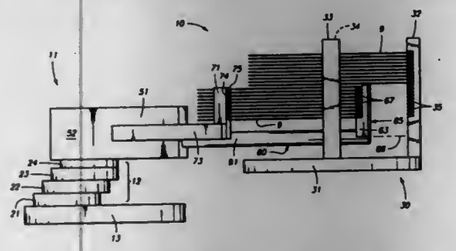
wherein said feed arm comprises a sub-arm which extends toward the opposite side of the lower part of said die, and a butt block that is to be pushed by said feed drive mechanism so as to reciprocate said feed arm by said feed drive mechanism, said butt block being operative to move back and forth only in the direction of consecutive feed.

5,575,611

WAFER TRANSFER APPARATUS

Steven R. Thompson, Somers, and Rikki S. LaBere, Kalispell, both of Mont., assignors to Semitool, Inc., Kalispell, Mont.

Division of Ser. No. 322,754, Oct. 13, 1994. This application Mar. 7, 1996, Ser. No. 614,826
Int. Cl.[6] B65G 65/00
U.S. Cl. 414—786 16 Claims



1. A method for transferring at least one wafer or other panel from a wafer transfer apparatus to a wafer station having at least one wafer support, comprising:

placing the at least one wafer onto the wafer transfer apparatus;

laterally moving the at least one wafer on the wafer transfer apparatus into the wafer station;

locating the at least one wafer adjacent to wafer support features forming a pan of said wafer station;

lowering the at least one wafer onto the wafer support features of the wafer station;

moving a distal wafer engagement head from an upright engaging position into a lateral retracted position;

laterally removing the wafer engagement head from the wafer station.

5,575,612

APPARATUS FOR STACKING BUNDLES OF SHEETS

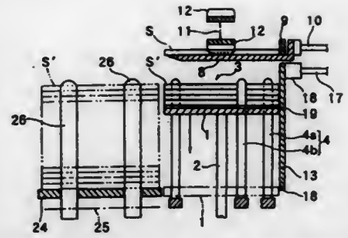
Tadao Uno, 1-84, Matsugaoka 1-chome, Chigasaki-shi, Kanagawa-ken, Japan

Filed Feb. 10, 1995, Ser. No. 386,379
Claims priority, application Japan, Nov. 25, 1994, 6-315611
Int. Cl.[6] B65G 57/06
U.S. Cl. 414—788.9 7 Claims

3. An apparatus for stacking bundles of sheets, comprising:

an elongate stacking table capable of movement upwardly and downwardly, said stacking table being lowered in accordance with increase in stacking amount of the bundles of sheets;

a shutter member located above said stacking table so as to be movable between a support position at which the bundles of sheets are supported and a support-releasing position at which the bundles of sheets are simultaneously dropped onto said stacking table;



a reciprocally movable expulsion pusher for pushing blocks of the bundles of sheets dropped onto and supported in a row in their horizontal posture by an upper surface of said stacking table so that the blocks are moved simultaneously in the direction perpendicular to the direction of the blocks being arranged in a row; and

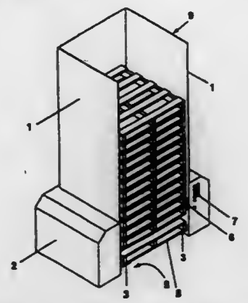
at least one pair of guide pins protruding upwardly above said upper surface of said stacking table, said guide pins being spaced apart from one another in a longitudinal direction of said stacking table so as to receive the bundles of sheets therebetween, and one of said pair of guide pins being movable toward and away from the other of said pair of guide pins in said longitudinal direction of said stacking table to accommodate bundles of sheets having different widths.

5,575,613

PALLET DISPENSER

John V. Lierop, Niagara Park, Australia, assignor to McNeall Engineering Pty. Ltd., Ermington, Australia

Continuation of Ser. No. 152,499, Nov. 16, 1993, abandoned. This application Jun. 27, 1995, Ser. No. 495,264
Claims priority, application Australia, Nov. 16, 1992, PL5891
Int. Cl.[6] B65G 59/06
U.S. Cl. 414—797.4 15 Claims



1. An automatic pallet dispenser having a dispensing station which dispenses pallets from the dispenser;

said station having an entry opening and an exit opening so arranged that pallets enter the station via the entry opening and leave via the exit opening, pallets passing through the entry opening travelling along a first axis and pallets passing through the exit opening travelling along a second axis, said second axis being substantially perpendicular to said first axis;

a sensor for determining the presence or absence of a pallet in said station, said sensor including a body mounted adjacent a side wall of the dispensing station and extending into the station, said body being movable between a first position, when a pallet is absent from the station, and a second position, when a pallet is present in said station; and

biasing means operative to bias said body to said first position;

said body having a shaped engagement surface for slidably engaging a side of a pallet as it passes into said station along said first axis and out of the station along the second axis and for causing said body to move between said first and second positions as the pallet slides past said body into or out of the dispensing station.

5,575,614

METHOD AND APPARATUS FOR SEPARATING BUNDLES OF SAWN TIMBER

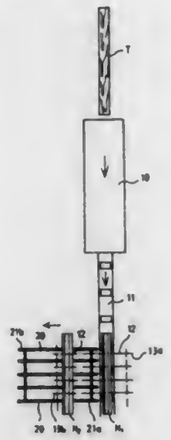
Seppo Anttila, Espoo, and Reijo Taalikka, Vantaa, both of Finland, assignors to Woodma Oy, Helsinki, Finland

Filed Oct. 6, 1995, Ser. No. 540,082

Claims priority, application Finland, Oct. 19, 1994, 944897

Int. Cl.[6] B65G *59/12;3/04*

U.S. Cl. 414—797.6 **10 Claims**



1. A method for unloading elongate timber pieces from bundles formed in a sawing machine, the bundles having a longitudinal direction, comprising the steps of:

transferring the bundles in a direction transverse to their longitudinal direction to at least first and second unloading stations arranged in a direction of unloading, each of said first and second unloading stations having a first position and a second elevated position, said first and second unloading stations being in said second elevated position during transfer of the bundles to said first and second unloading stations, and

unloading the timber pieces from the bundles in the transverse direction by intermittently directing gripping means through said first and second unloading stations to grip a lowermost one of the timber pieces in the bundle to thereby sequentially separate each of the timber pieces from the bundle, said gripping means engaging the timber pieces in said first unloading station when said first unloading station is in said first position and not when said first unloading station is in said second elevated position and engaging the timber pieces in said second unloading station when said second unloading station is in said first position and not when said second unloading station is in said second elevated position, said step of unloading the timber pieces from the bundles comprising the steps of moving said first and second unloading stations from said second elevated position to said first position such that said gripping means engage the timber pieces of the bundle.

5,575,615

MULTIPHASE FLUID TREATMENT

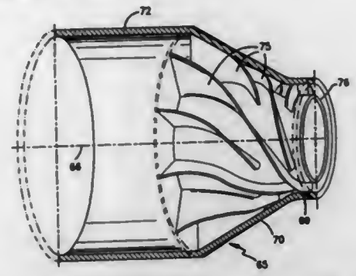
Frank Mohn, London, England, assignor to Framo Developments (UK) Limited, London, United Kingdom

Division of Ser. No. 256,255, Aug. 29, 1994. This application Nov. 1, 1995, Ser. No. 551,315

Claims priority, application United Kingdom, Dec. 30, 1991, 9127474

Int. Cl.[6] B01D *17/00*

U.S. Cl. 415—74 **2 Claims**



1. In an apparatus for the treatment of a multiphase fluid, the apparatus comprising a pretreatment stage (**60**) upstream of a treatment stage, the pretreatment stage being arranged to cause an incoming flow of multiphase fluid to concentrate fluids of greater and lesser specific gravity into respective flow paths for subsequent treatment in the treatment stage and the pretreatment stage comprising a cyclonic separator device (**60**) concentrating fluid or fluids of greater specific gravity into an outer annular flow path around an inner flow path for fluid or fluids of lesser specific gravity; the improvement wherein the treatment stage comprises a centrifuge having a separator drum (**65**) rotatable about the axis (**66**) thereof with an inlet end portion next to said cyclonic separator device (**60**) comprising concentric inner and outer walls (**76, 70**) and helical vanes (**75**) between the walls.

5,575,616

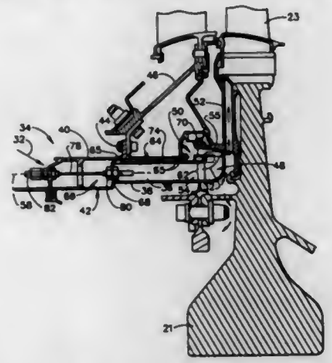
TURBINE COOLING FLOW MODULATION APPARATUS

Michael P. Hagle, Erie, Pa., and John P. McKay, Newport, Ky., assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 11, 1994, Ser. No. 320,637

Int. Cl.[6] F01D *5/00*

U.S. Cl. 415—115 **19 Claims**



1. An apparatus for modulating a flow of cooling air from a compressor to a turbine in a gas turbine engine, comprising:

(a) a channel for receiving said cooling air from said compressor at an upstream end and supplying said cooling air to said turbine at a downstream end, said channel downstream end having a throat oriented radially outward with respect to a centerline of said channel;

(b) a radial flow inducer positioned adjacent to said throat for accelerating the flow of said cooling air therethrough; and

(c) means for modulating the quantity of said cooling air flowing through said throat into said turbine.

5,575,617

APPARATUS FOR COOLING AN AXIAL-FLOW GAS TURBINE

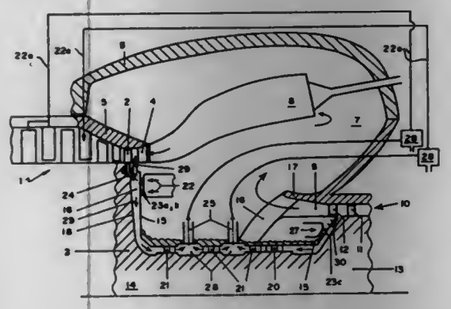
Robert Marmilic, Baden, and René Wälchli, Niedergösgen, both of Switzerland, assignors to ABB Management AG, Baden, Switzerland

Filed Aug. 2, 1995, Ser. No. 510,504

Claims priority, application Germany, Sep. 19, 1994, 44 33 289.0

Int. Cl.[6] F01D *5/08;25/12*

U.S. Cl. 415—115 **5 Claims**



1. An apparatus for cooling an axial-flow gas turbine, comprising:

a multi-stage turbine and a compressor connected on a common shaft, the turbine having a rotor, wherein a portion of the shaft between the turbine and the compressor is formed as a drum,

a drum cover surrounding the drum shaped portion of the shaft and spaced therefrom to define an annular duct connected to the compressor to carry leakage air from the compressor,

a labyrinth seal mounted on the drum cover and disposed in the annular duct for sealing the drum shaped portion of the shaft against the drum cover,

wherein an end face of the drum cover and an adjacent end face of the turbine rotor define therebetween a radially directed wheel side space connected to the annular duct,

at least one separate line for carrying cooling air from the compressor to the end face of the turbine rotor,

at least two swirl nozzles disposed in the at least one separate line to introduce air from the line into the wheel side space,

cooling devices for introducing cooling air from the wheel side space to the turbine rotor and moving-blade rings on the rotor, and

at least one suction device connected to the annular duct in an area of the labyrinth seal for removing the leakage air from the annular duct.

5,575,618

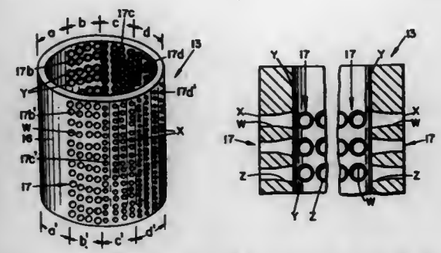
STEAM TURBINE STEAM STRAINER

Ronald E. Brandon, 652 Jubilee St., Melbourne, Fla. 32940, and David E. Brandon, 2166 E. Hampton Rd., Binghamton, N.Y. 13903

Continuation-in-part of Ser. No. 344,862, Nov. 25, 1994, Pat. No. 5,486,088. This application Nov. 27, 1995, Ser. No. 562,707

Int. Cl.[6] F03B *11/08*

U.S. Cl. 415—121.2 **5 Claims**



1. In a steam turbine inlet which includes an annular steam strainer stationarily positioned therein for stopping the passage into the turbine of large metal particles in the steam, the improvement in the strainer which comprises:

a plurality of spaced through holes in a major portion of the strainer circumference, the through holes being of differing diameters, with holes of like diameter being positioned in longitudinally-extending, circumferential zones, holes of the largest diameter being disposed in zones where metal particles are least likely to enter the holes, holes of smaller diameter being disposed in zones where metal particles are most likely to enter the holes, and a longitudinally-extending, circumferential zone in the strainer without holes where the particle velocity and direction of movement would be damaging to any holes located in such a zone, the through holes each having an entrance end on the outer periphery of the strainer, an exit end on the inner periphery of the strainer, and an interior portion disposed between the entrance end and exit end, the exit end having a larger diameter than the interior portion to reversably slow steam velocity and decrease steam pressure drop.

5,575,619

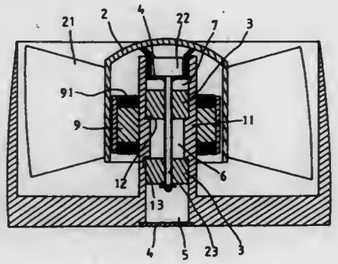
COOLING FAN FOR MOTORS

Jui-Chih Chen, No. 3, Lane 25, Fu-An Street, Mei-Nong Town, Kauhsuing Hsien, Taiwan

Filed Nov. 28, 1995, Ser. No. 563,719

Int. Cl.[6] F04D *29/04*

U.S. Cl. 415—175 **2 Claims**



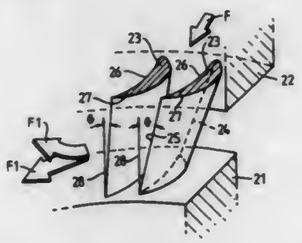
1. A cooling fan for-motors comprising a back cover formed with a through shaft holder at a central portion thereof, said shaft holder having a reduced inner diameter at its middle section and

thereby forming a front and a back stepped surfaces at two ends of said diameter-reduced portion for a first and a second bearings to fixedly position in said shaft holder at each side of said reduced middle portion to respectively abut against said stepped surfaces, said shaft holder further having a first oil ring seal fixed to a front opening thereof to close the same, said first oil ring seal and said first and said second bearings together dividing a space defined by said shaft holder into three oil chambers; said cooling fan for motors further comprising a front cover having integrally formed blades for covering over said shaft holder, said front cover having a plug member provided to an inner central portion thereof and a rotary shaft projected from said plug member, said plug member being fitly received in said front opening of said shaft holder while said rotary shaft sequentially extending through said first oil ring seal, said first and said second bearings with a free end of said rotary shaft projecting out of a back side of said second bearing and be held thereto by means of a washer, whereby lubricant or the like is filled into said oil chambers from a back opening of said shaft holder and is stored therein by means of fixing a second oil ring seal to said back opening of said shaft holder.

5,575,620
TURBINE BLADE ASSEMBLY

Brian R. Haller, West Didsbury; Robert G. Unsworth, Lymm, and Geoffrey L. M. Parker, Kenilworth, all of England, assignors to GEC Alsthom Limited, United Kingdom

Continuation of Ser. No. 294,422, Aug. 23, 1994, abandoned, which is a continuation of Ser. No. 49,983, Apr. 20, 1993. This application Dec. 29, 1995, Ser. No. 580,792
Claims priority, application United Kingdom, May 15, 1992, 9210421
Int. Cl.[6] F01D *9/04*
U.S. Cl. 415—192 **4 Claims**

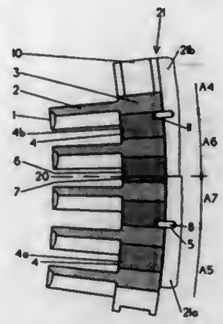


1. An energy efficient turbine, comprising:
(a) a low root reaction axial flow stem turbine stage having
(i) a stator including a fixed blade assembly having a radially inner ring, a radially outer ring and a row of circumferentially aligned and spaced apart fixed blades, each fixed blade being secured at an inner end to the inner ring and at an outer end to the outer ring, and each fixed blade having a leading edge facing a flow of steam through the stage, a trailing edge downstream of the steam flow, a pressure side and a suction side;
(ii) a rotor rotatable about a turbine axis and including a disc and a row of moving blades following the fixed blade assembly downstream of the steam flow, the moving blades being circumferentially aligned and spaced apart, each moving blade being secured at a radially inner end to the disc;
(b) means for maximizing the efficiency of conversion of energy in the steam flowing through the stage into mechanical energy, including
(i) said trailing edge of each fixed blade being straight and having an inner end,
(ii) said trailing edge of each fixed blade leaning at an angle away from a radial line from the turbine axis through said inner end of that trailing edge,
(iii) said fixed blades having a direction and angle of lean such that a fixed blade exit specific mass flow of steam is provided which is substantially uniform between said inner and outer rings,
(iv) said trailing edge of each fixed blade leaning in the direction that the suction side faces, and
(v) said fixed blades having the same said angle of lean in a range from 5 degrees to 12 degrees.

5,575,621
COMPRESSOR WITH A GUIDE VANE FASTENING ARRANGEMENT

Ivan Luketić, Hardackerstr. 18, and Alfred Krähenbühl, Bleumattstr. 26, both of Switzerland, assignors to ABB Management AG, Baden, Switzerland

Filed Jul. 26, 1995, Ser. No. 507,216
Claims priority, application Germany, Oct. 14, 1994, 44 36 731.7
Int. Cl.[6] F01D *9/04;5/30;* **F04D** *29/60*
U.S. Cl. 415—209.2 **6 Claims**



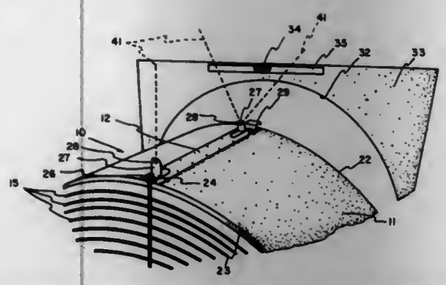
1. A compressor having an axially divided casing, the compressor comprising:
a plurality of casing halves in which guide vanes are fastened by their roots in peripheral grooves of the casing, wherein aggregates which include a plurality of the guide vanes are bordered on each side by bolts which are substantially evenly arranged over a periphery of the casing, and project substantially radially into the peripheral groove.
6. A compressor having an axially divided casing, the compressor comprising:
a plurality of casing halves in which guide vanes are fastened by their roots in peripheral grooves of the casing, wherein bolts are positioned in a groove base of the peripheral grooves, said bolts being distributed over a periphery of the casing, and projecting substantially radially into the peripheral groove, said bolts dividing the guide vanes into aggregates and end aggregates which are situated at a partition plane of the casing.

5,575,622
METHOD AND APPARATUS FOR MOUNTING A FANGUARD

Leon S. Zimmerman, Lititz, and Bryan S. Shive, Myerstown, both of Pa., assignors to Staco, Inc., Schaefferstown, Pa.

Filed Dec. 16, 1994, Ser. No. 357,422
Int. Cl.[6] F04D *29/52*
U.S. Cl. 415—213.1 **14 Claims**

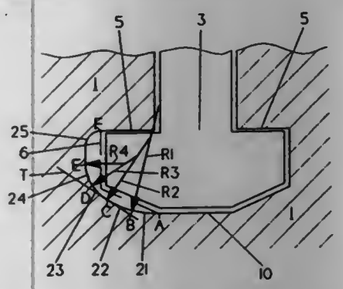
1. An improved fan comprising: a generally air impervious circular shroud having front and rear edges surrounding a power driven fan blade; a plurality of generally L-shaped slot means formed in at least one of said edges; and a least one fan guard having a plurality of hook-like means mounted thereon for engaging said slot means whereby when said hook-like means of said fan guard are placed in said L-shaped slot means and said guard is rotated, said hook-like means will become locked in said slot means.



5,575,623
DRUM ROTOR FOR AN AXIAL-FLOW TURBOMACHINE

Flemming Christensen, Rüthof, and Uy-Liem Nguyen, Baden-Dättwil, both of Switzerland, assignors to ABB Management AG, Baden, Switzerland

Filed Sep. 11, 1995, Ser. No. 526,104
Claims priority, application Germany, Oct. 14, 1994, 44 36 727.9
Int. Cl.[6] F01D *5/30*
U.S. Cl. 416—215 **1 Claim**



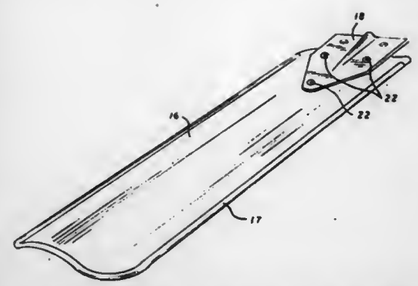
1. A drum rotor for an axial-flow turbo machine, comprising:
a rotor body including a plurality of blade grooves;
plural blades each having a blade body and a blade root connected to said blade body, each blade being fastened to said rotor body by introducing said blade root into a respective one of the blade grooves;
at least a first of said blade grooves on an inlet side being axially asymmetrically contoured, and having an inlet side wall contour formed by plural circular arcs having progressively increasing radii as said contour extends away from said inlet side, wherein adjoining of one said circular arcs have a common tangent at a connecting point of said adjoining arcs.

5,575,624
METAL CONTOURED BLADE FOR A REVERSIBLE CEILING FAN

Gerald L Bogage, 2245 NW. 72nd Ave., Miami, Fla. 33122

Filed Feb. 14, 1996, Ser. No. 601,396
Int. Cl.[6] F04D *29/38*
U.S. Cl. 416—242 **3 Claims**

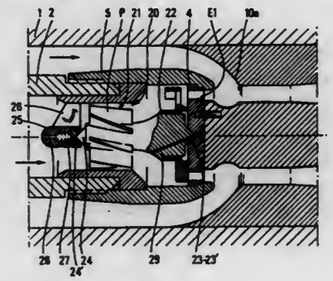
1. A ceiling fan comprising a reversible motor and a plurality of fan blades rotated thereby,
supporting means for supporting the fan from a ceiling or the like,
each fan blade being a contoured metal blade having an S-shaped configuration with an upper surface on the top of the blade and a lower surface on the bottom of the blade,
said upper surface directing air flow upwardly when the fan is rotated in a clockwise direction while simultaneously no air flows downwardly,
said lower surface directing air flow downwardly when the fan is rotated in a counterclockwise direction while simultaneously no air flows upwardly,
each contoured metal blade having a leading edge and a trailing edge joined by an end edge,
a continuous rolled edge is formed on the three edges, and
a quantity of filler putty is inserted in the continuous rolled edge to eliminate any drag caused by the rolled edge.



5,575,625
MULTIPHASE PUMP WITH SEQUENTIAL JETS

Yvon Castel, Croissy sur Seine, France, assignor to Institut Francais du Petrole, Rueil Malmaison, France

Filed Jul. 5, 1995, Ser. No. 498,054
Claims priority, application France, Jul. 5, 1994, 94 08381
Int. Cl.[6] F04F *5/24;5/46*
U.S. Cl. 417—178 **12 Claims**



1. A pumping device employing direct energy exchange between a drive fluid and a primary fluid circulating through a pipe, said pumping device being located within said pipe and comprising, in combination, a static hollow part allowing said drive fluid to pass into said pipe, said static hollow part having at at least one of its ends at least one first orifice, a distributing part having at least two second orifices, said distributing part being situated with respect to the static hollow part such as to allow the drive fluid to pass from the at least one first orifice to at least one second orifice and into the primary fluid, with the distributing part and the static hollow part being joined to each other by a connecting and sealing part, a common meeting space being defined by the distribution part, the connecting and sealing part and the pipe in which the primary fluid circulates wherein the primary fluid and the drive fluid meet, a movable part disposed in a space formed by the static hollow part, the distributing part, and the connecting and sealing part, said movable part having at least one means for blocking at least one of said second orifices such that at least part of said drive fluid is

VOL 1192 ISS 3 NO 19 1996 UMI

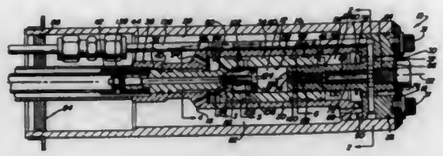
ejected into the primary fluid at said meeting space in the form of liquid pistons when the movable part rotates.

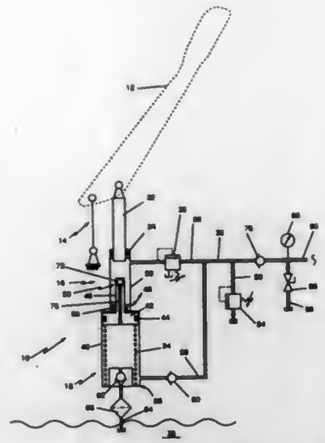
5,575,626

CRYOGENIC PUMP

Bruce G. Brown, Corona, Calif.; Robert E. Crowl, Corpus Christi, Tex., and Phillip J. Westermann, El Toro, Calif., assignors to Cryogenic Group, Inc., Murrieta, Calif.

Filed May 12, 1995, Ser. No. 439,723
Int. Cl.[6] F16J *10/02;* **F04B** *25/04*
U.S. Cl. 417—251 **20 Claims**





1. A submersible cryogenic pump for transferring liquified gas from a container comprising:

an inner housing having a longitudinal axis, an inner wall, an inlet end and a discharge end;

an outer housing surrounding the inner housing;

a reciprocating piston slideably positioned within the inner housing along the longitudinal axis for dividing the inner housing into a supercharger chamber and a sump chamber, the moveable piston having a skirt in sliding engagement with the inner wall of the housing, the volume of the supercharger and sump chambers changing inversely as the reciprocating piston is moved toward and away from the discharge end;

a fixed piston extending within the sump chamber in sliding engagement with the reciprocating piston skirt to form a high pressure chamber between the reciprocating and fixed pistons;

a liquified gas inlet;

a precharge chamber within the outer housing in fluid communication with the inlet end of the inner housing;

a one-way sump chamber valve connecting the liquified gas inlet at the pump discharge end to the sump chamber to allow liquified gas to enter the sump chamber when the reciprocating piston is moved away for the discharge end;

a one-way precharge chamber valve connecting the sump chamber to the precharge chamber to allow liquid to enter the precharge chamber when the reciprocating piston is moved toward the discharge end;

a one-way supercharger chamber valve connecting the precharge chamber to the supercharger chamber to allow liquified gas to enter the supercharger chamber when the reciprocating piston is moved toward the discharge end;

a one-way high pressure chamber valve connecting the supercharger chamber to the high pressure chamber when the moveable piston is moved away from the discharge end;

an outlet for the pressurized liquified gas, and

a one-way discharge valve connecting the high pressure chamber to the outlet when the reciprocating piston is moved toward the discharge end.

5,575,627

HIGH AND LOW PRESSURE TWO STAGE PUMP AND PUMPING METHOD

Scott Vairin, Houston, and Ken Vairin, Irving, both of Tex., assignors to HyVair Corporation, Houston, Tex.

Filed Jan. 12, 1995, Ser. No. 371,878
Int. Cl.[6] F04B *3/00*
U.S. Cl. 417—252 **10 Claims**

1. A pump comprising:

(a) a high pressure pump chamber connected to a low pressure pump chamber with an interchamber seal assembly positioned between the high pressure pump chamber and the low pressure pump chamber;

(b) a high pressure fluid outlet conduit extending from the high pressure pump chamber to an output conduit;

(c) a low pressure fluid outlet conduit extending from the low pressure pump chamber to the output conduit with a check valve therein preventing the flow of fluid from the low pressure fluid outlet conduit into the low pressure pump chamber;

(d) a first piston rod slideably received through a first seal assembly associated with the high pressure pump chamber;

(e) a low pressure piston slideably received in the low pressure pump chamber;

(f) a second piston rod slideably received through the interchamber seal assembly, the second piston rod for reciprocating through the interchamber seal assembly with a first end exposed to the fluid in the high pressure pump chamber and a second end extending into the low pressure pump chamber and connected to the low pressure piston;

(g) an inlet check vane at an inlet end of the low pressure pump chamber for enabling fluid to enter the low pressure pump chamber;

(h) an interchamber fluid passage extending through the second piston rod and low pressure piston, the interchamber fluid passage being open to the high pressure pump chamber and low pressure pump chamber and with a check valve therein for enabling fluid to flow only in the direction from the low pressure pump chamber to the high pressure pump chamber;

(i) biasing means for biasing the low pressure piston away from the inlet end of the low pressure pump chamber;

(j) sequence valve means connected in the high pressure fluid outlet conduit for allowing fluid to flow from the high pressure pump chamber when pressure in the high pressure pump chamber reaches a cutoff pressure; and

(k) means for reciprocating the first piston rod through the first seal assembly.

5,575,628

GAS COMPRESSOR

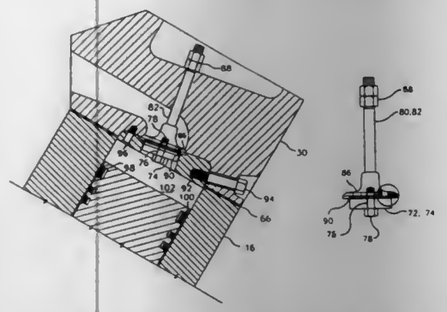
Lynn Caldwell, Rt. 2, Box 159-1, Wetumka, Okla. 74883

Division of Ser. No. 173,988, Dec. 28, 1993, Pat. No. 5,378,113.
This application Sep. 23, 1994, Ser. No. 311,117
Int. Cl.[6] F04B *17/05;41/04*
U.S. Cl. 47—364 **20 Claims**

1. An apparatus for compressing gas, comprising:

a cylinder block defining a cylinder bore;

a crankshaft rotatably disposed in said cylinder block;



a compressor piston disposed in the cylinder bore and connected to said crankshaft;

a head attached to said cylinder block;

an intake compressor valve, wherein said intake compressor valve receives a first bolt therethrough;

an intake compressor valve securing means for securing said intake compressor valve in the apparatus, wherein said intake compressor valve securing means receives said first bolt therein;

a discharge compressor valve, wherein said discharge compressor valve receives a second bolt therethrough; and

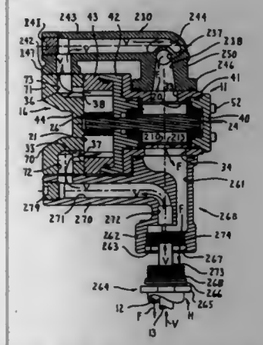
a discharge compressor valve securing means for securing said discharge compressor valve in the apparatus, wherein said discharge compressor valve securing means receives said second bolt therein.

5,575,629

VAPOR CONTROL SYSTEM

Scott M. Olson, Grand Rapids; David O. Roe, Wyoming, and Gregory P. Wood, Kentwood, all of Mich., assignors to Delaware Capital Formation, Inc., Wilmington, Del.

Filed May 2, 1994, Ser. No. 236,205
Int. Cl.[6] F04B *17/00*
U.S. Cl. 417—405 **31 Claims**



1. A motor pump unit, particularly suitable for use in a fuel vapor return system of the kind in which a liquid fuel conducting conduit and fuel vapor conducting conduit define a common fuel vapor return/liquid fuel supply connection to a vapor fuel source and a common fuel vapor return/liquid fuel supply hose connectable to the filling opening of a liquid fuel tank of a vehicle to be fueled, wherein the motor pump unit comprises:

a housing enclosing a motor chamber in said liquid fuel conduit, said motor chamber including a liquid fuel inlet and outlet, said housing also enclosing a pump chamber in said fuel vapor conduit, said pump chamber including a fuel vapor inlet and outlet;

a motor impeller in said motor chamber and rotatable in response to liquid fuel flow through said motor chamber;

a pump impeller in said pump chamber and connected to said motor impeller for rotating thereby and hence for pumping vapor through said fuel vapor conduit;

means for maximizing the rate of liquid fuel flow through said motor pump unit, said means including locating said liquid fuel inlet and outlet in opposite sides of said housing and substantially aligned on an axis transverse to the axis of rotation of said impellers;

a shaft, said motor impeller being connected on said shaft with said pump impeller for rotating same about said axis of rotation in response to liquid fuel flow through said motor chamber, said means for maximizing the rate of liquid fuel flow comprising:

a substantially straight liquid fuel flow path to, through and from said motor pump unit and including:

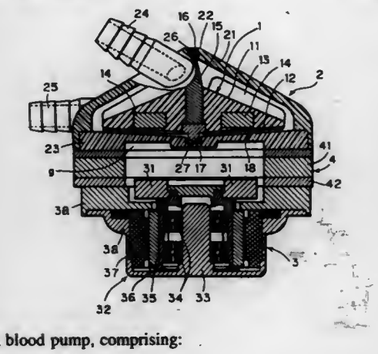
(1) said alignment of said liquid fuel inlet and outlet substantially on said axis transverse to said axis of rotation of said impellers, (2) said common axis of said liquid fuel inlet and outlet substantially perpendicularly intersecting a central portion of said motor impeller, (3) a common first manifold connectable to said motor pump unit fuel vapor outlet and liquid fuel inlet for connecting same to the fuel vapor return/liquid fuel supply connector of a liquid fuel source, (4) a common second manifold connectable to said motor pump unit fuel vapor inlet and liquid fuel outlet for connecting same through a fuel vapor return/liquid fuel supply hose to a vehicle to be fueled, said first and second manifolds each having a connector remote from said motor pump unit housing, said first manifold having a liquid fuel path and a fuel vapor path leading from said motor pump unit housing to its said remote connector, said second manifold having a liquid fuel path and a fuel vapor path leading from said motor pump unit housing to its said remote connector, (5) said liquid fuel paths in said first and second manifolds being in straight alignment along said motor pump unit liquid fuel inlet and outlet axis at least part way to said connectors, (6) said liquid fuel paths in said manifolds having no more than one bend, (7) said vapor flow path in each of said first and second manifolds bending as required to approach said liquid fuel path in the corresponding manifold without requiring deviation of said liquid fuel path from said straight alignment.

5,575,630

BLOOD PUMP HAVING MAGNETIC ATTRACTION

Tadashi Nakazawa; Yoshiyuki Takami; Kenzo Makinouchi, and Yukihiko Nosé, all of Houston, Tex., assignors to Kyocera Corporation, Kyoto, Japan, and Baylor College of Medicine, Houston, Tex.

Filed Aug. 8, 1995, Ser. No. 512,307
Int. Cl.[6] F04B *17/03*
U.S. Cl. 417—420 **12 Claims**



1. A blood pump, comprising:

a rotationally symmetric impeller comprising a plurality of vanes and magnetic means for rotating the impeller,

a casing in which the impeller is rotatably encasable, the casing having an inlet and an outlet,

magnetic drive means disposed outside the casing for rotating the impeller in cooperation with the magnetic means, the magnetic drive means comprising a magnet assembly magnetically connectable with the magnetic means and rotation drive means for rotating the magnet assembly, the magnet assembly and the magnetic means generating a magnetic attraction force therebetween, and

magnetic attraction force adjustment means for adjusting the magnetic attraction force between the magnet assembly and the magnetic means and for substantially balancing the magnetic attraction force and a lifting force applied to the impeller.

5,575,631

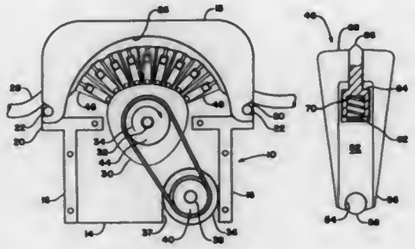
CURVILINEAR PERISTALTIC PUMP

Rogelio B. Jester, Jardines Del Lago, Mexico, assignor to Ahmad-Maher Moubayed, Mission Viejo, Calif.

Filed Mar. 12, 1996, Ser. No. 615,704

Int. Cl.[6] F04B *43/08*

U.S. Cl. 417—474 **20 Claims**



1. A curvilinear peristaltic pump which comprises:

a curved, concave, platen;

a rotatable cam spaced from said platen;

means for rotating said cam in a first direction;

a plurality of pump fingers, each having a first end riding on said cam and a second end adjacent to said platen;

guide means for axially guiding said pump fingers in radial directions;

said cam configured to first sequentially move said pump fingers toward said platen and second sequentially allow said pump fingers to move away from said platen;

each of said pump fingers having a pinch finger extending beyond said second end, transversely across second end;

whereby a resilieot tube may be interposed between said platen and said second pump finger ends so that as said pump fingers are sequentially moved toward said platen, liquid in said tube will be pumped in said first cam rotation direction and each pinch finger will occlude said tube when each said pump finger reaches a position closest to said platen.

5,575,632

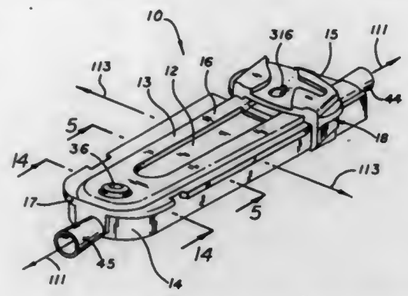
ENGINEERED PUMPING SEGMENT

Matthew G. Morris, San Diego; Charles E. Clemens, Encinitas; Stephen A. Martin, Carlsbad; Don S. Minami, Monte Sereno, all of Calif.; William R. George, Chicago, Ill.; Paul L. Howard, Palo Alto, and Lee H. Laiterman, Los Gatos, both of Calif., assignors to IVAC Medical Systems, Inc., San Diego, Calif.

Filed Sep. 12, 1994, Ser. No. 304,674

Int. Cl.[6] F04B *43/08*

U.S. Cl. 417—477.2 **57 Claims**



1. A fluid conducting segment for use with a fluid pump that acts on the segment for controlled fluid flow to a patient, the segment comprising:

a rigid body portion having:

a pumping portion;

a fluid regulation portion;

a pressure sensor interfacing portion;

an input port; and

an output port;

wherein said input and output ports are disposed in said rigid body portion so that they oppose each other.

5,575,633

HYDRAULIC PUMPING UNIT FOR FEEDING A HYDRAULIC TILTING DEVICE

Gustav H. P. Boel, Scherpenzeel, and Lambertus J. Sonneborn, Oldenzaal, both of Netherlands, assignors to Applied Power Inc., Butler, Wis.

PCT No. PCT/NL93/00168, § 371 Date May 24, 1994, § 102(e) Date May 24, 1994, PCT Pub. No. WO94/03355, PCT Pub. Date Feb. 17, 1994

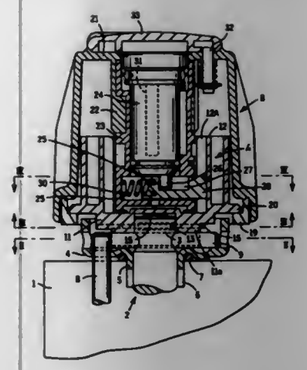
PCT Filed Aug. 10, 1993, Ser. No. 211,502

Claims priority, application Netherlands, Aug. 10, 1992, 9201431

Int. Cl.[6] F04B *39/08*

U.S. Cl. 417—506 **3 Claims**

1. A hydraulic pumping unit comprising a pumping unit housing, a control valve body within said housing and having an end projecting beyond said housing with a handle at said end by means of which the control valve body is turned between at least two positions relative to said housing, characterized in that the handle comprises an inner part that is fixedly connected with the control valve body, and an outer part enclosing said inner part in a free rotating manner, said outer part being coupled with said inner part by means of a key-operated lock cylinder, said outer part forming the handle.



5,575,634

SEALING MATERIAL FOR SCROLL-TYPE COMPRESSOR

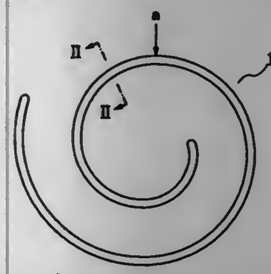
Tadashi Tanaka; Hidehiko Tamura; Nobutaka Hiramatsu; Toshio Egami, and Teruo Abe, all of Nagoya, Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

Filed Sep. 15, 1995, Ser. No. 528,974

Claims priority, application Japan, Oct. 25, 1994, 6-286064

Int. Cl.[5] F01C *1/04*

U.S. Cl. 418—55.4 **12 Claims**



1. A sealing material for a scroll-type compressor, consisting of, by weight, more than 20 and up to 40% PAN-system carbon fiber, 1 to 15% polytetrafluoroethylene resin, optionally not more than 10% hard particles, and the balance of polyphenylene sulfide resin.

5,575,635

SCROLL COMPRESSOR HAVING ECCENTRIC SHAFT LUBRICATION

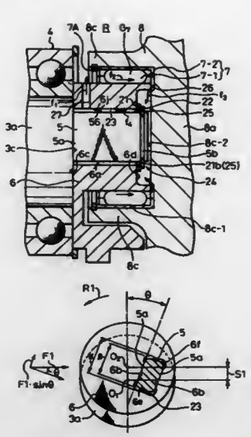
Yuuji Yamamoto, Toyota; Shinichi Watanabe, Nagoya; Tsuyoshi Takemoto, Aichi; Shigeru Hisanaga, Kariya; Tetsuhiko Hukanuma, Kariya; and Shinya Yamamoto, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, both of Japan

Filed Mar. 15, 1995, Ser. No. 404,828

Claims priority, application Japan, Mar. 15, 1994, 6-044352; May 24, 1994, 6-109978

Int. Cl.[6] F04C *18/04;29/02*

U.S. Cl. 418—55.5 **7 Claims**



1. A scroll compressor for a gas including lubricant, comprising:

a housing;

a drive shaft having an axis for a rotation, the drive shaft having a first portion of a small diameter and a second portion of a large diameter;

a first radial bearing for supporting the drive shaft rotatably with respect to the housing;

a stationary scroll member which is in a fixed relationship with respect to the housing;

a movable scroll member arranged eccentric with respect to the stationary scroll member so that a plurality of compression chambers are created between the scroll members, said movable scroll member having a boss portion at a side opposite to said chambers;

an eccentric shaft connected to the drive shaft and eccentric with respect to the drive shaft;

a bushing having a bore of a substantially rectangular cross sectional shape, to which the eccentric shaft is inserted and is axially located in a fixed position, while the rotational movement of the shaft is transmitted to the bushing and the boss portion of the movable scroll member;

a second radial bearing housed in the boss portion of the movable scroll member for supporting the bushing rotatably with respect to the movable scroll member;

an axial space being formed between faced ends of the bushing and the boss portion of the movable scroll member, the axial space being in communication with the second radial bearing;

a self rotation blocking mechanism for the movable scroll member, which prevents the movable scroll member from being rotated about its own axis, so that the orbital movement of the movable scroll member allows the compression chambers to be moved radially from an outward position to an inward position;

an intake means for introducing the gas to be compressed into a compression chamber when it is located at a radially outward position;

an outlet means for discharging the gas as compressed when the compression chamber is located at a radially inward position;

the bore of the bushing defining spaced first inner surfaces, while the eccentric shaft defines spaced first outer surfaces, so that the inner surfaces contact with faced outer surfaces, which allows the rotating movement of the eccentric shaft to be transmitted to the bushing;

the bore further defining spaced second inner surfaces, while the eccentric shaft defining spaced second outer surfaces, so that radially confined spaces are created between faced second inner and outer surfaces, which allows the bushing, along said contacted first inner and outer surfaces, to be relatively radially moved and

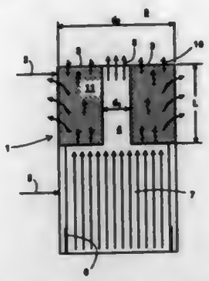
a first passageway for obtaining a communication between the radially confined spaces and said axially confined space, thereby obtaining a transmission of a lubricant between the spaces, wherein the bore of the bushing has, along its inner surface, at least one groove for increasing an amount of the flow of the lubricant in the radially confined spaces.

5,575,636

POROUS NON-FOULING NOZZLE

Hisashi Kobayashi, Putnam Valley; Steven L. Slader, Flushing; Zhiyou Du, Croton-on-Hudson, and William J. Snyder, Ossining, all of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Jun. 21, 1994, Ser. No. 264,084
Int. Cl.[6] F23C *5/00*; F23D *14/12*
U.S. Cl. 431—8 15 Claims



1. A nozzle comprising a front section having a length and a face, a back section joining with a source of a gas from the group consisting of fuel, oxidant, nitrogen, argon and carbon dioxide, at least one passageway suitable for the passage of a first portion of said gas through the length at a velocity greater than 100 feet per second, and said front section comprising porous material which enables a second portion of said gas to pass through the porous material and out from the nozzle across the face.

9. A method for injecting gas into a receiving zone comprising:

(A) providing a nozzle comprising a section having a length and a face, a passageway through the length, and said section comprising porous material,

(B) passing a portion of a gas from the group consisting of fuel, oxidant, nitrogen, argon and carbon dioxide through the passageway and into the receiving zone at a velocity greater than 100 feet per second; and

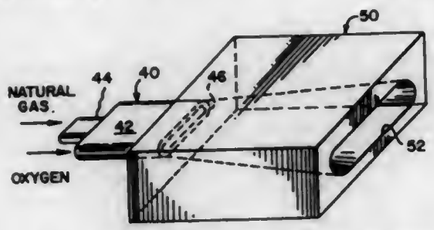
(C) passing another portion of said gas through said porous material and into the receiving zone at the face.

5,575,637

METHOD AND DEVICE FOR LOW-NO_x HIGH EFFICIENCY HEATING IN HIGH TEMPERATURE FURNACES

Aleksandar G. Slavejkov, Allentown; Thomas M. Gosling, Bethlehem, and Robert E. Knorr, Jr., Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 4, 1994, Ser. No. 334,208
Int. Cl.[6] F23C *5/00*
U.S. Cl. 431—8 17 Claims



1. An oxy-fuel burner for producing a generally flat luminous flame comprising in combination:

a housing having a first end and a flame end said housing having a cross-sectional shape with a width and height of different dimension;

a fuel conduit having a first end and a nozzle end disposed in spaced relation to and generally concentrically within said housing said fuel conduit having a cross-sectional shape complementary to that of said housing thus defining a passage between said fuel conduit and said housing, said fuel nozzle having a width to height ratio of between 2 and 60, said nozzle end of said fuel conduit and said flame end of said housing adapted for positioning relative to each other along a longitudial axis of said housing; and

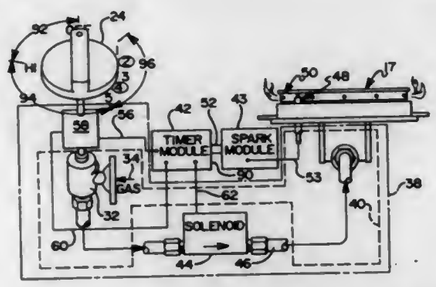
means to introduce fuel into said fuel conduit and an oxidizer into said passage between said fuel conduit and said housing, whereby a flame having a fuel rich core surrounded by an oxygen rich sheath is produced at the nozzle end of said fuel conduit.

5,575,638

STOVE BURNER SIMMER CONTROL

David L. Witham, Huntington Beach, and Michael W. Barbato, Manhattan Beach, both of Calif., assignors to Thermador Corporation, Los Angeles, Calif.

Continuation of Ser. No. 219,388, Mar. 29, 1994, abandoned.
This application Jan. 12, 1995, Ser. No. 371,597
Int. Cl.[6] F23N *5/00*
U.S. Cl. 431—73 13 Claims



1. A burner control for a burner having an ignitor and a gas conduit coupled to a gas source, the control comprising;

a valve coupled to said gas conduit for selectively delivering a variable volume of gas to said burner from the gas source;

an actuator having a valve control responsive to manipulation of said actuator throughout a predetermined range,

an ignitor control for controlling an electrical charge to the ignitor in response to manipulation of said actuator through at least a first portion of said predetermined range; and

means for periodic sequencing of the flow of gas and the ignitor charge when said actuator is in said first portion of said predetermined range of said control, including a switch responsive to manipulation of said actuator throughout said first portion for adjusting the period of sequencing.

5,575,639

COMBUSTION DEVICE ORIFICE CLEANER AND METHOD OF CLEANING

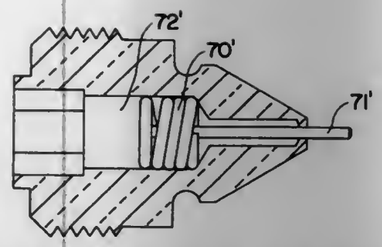
David S. Pearl, II, Fort Lauderdale, Fla., assignor to Uniweld Products, Inc., Fort Lauderdale, Fla.

Filed Mar. 31, 1994, Ser. No. 220,794
Int. Cl.[6] F23D *11/38*
U.S. Cl. 431—123 6 Claims

1. A combustion device comprising:

combustible gas receiving means, including a jet nozzle having an orifice for flow of said combustible gas, said orifice terminating in an orifice opening;

combustion supporting gas receiving means;



means for combining said combustible gas and said combustion supporting gas; and

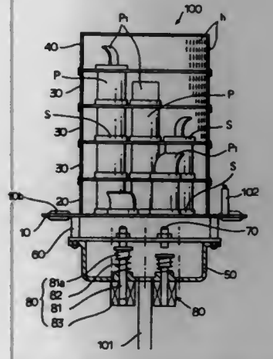
cleaning means comprising a coiled spring portion and a longitudinal portion, said coiled spring portion being permanently movably mounted in said orifice from a first, non-cleaning position in which said longitudinal portion is not in said orifice opening to a second, cleaning position in which said longitudinal portion is in said orifice opening for dislodging any dirt therein.

5,575,640

BURNER FOR GAS BURNING APPARATUS

Gordon W. Fenn, Brevard, N.C., and Myeong C. Park, Kyung Ki-Do, Rep. of Korea, assignors to Frontier, Inc., Ann Arbor, Mich.

Filed Jun. 7, 1995, Ser. No. 482,833
Int. Cl.[6] F23D *14/62*
U.S. Cl. 431—354 5 Claims



1. A burner for a gas burning apparatus comprising:

a swirl plate comprising a central portion surrounded by a periphery and having an upper surface and a lower surface, in which said central portion of said swirl plate comprises a plurality of mixing pipes seats at predetermined circumferential intervals around the central portion, and said periphery comprises a plurality of air suction holes at circumferential intervals around the periphery;

each of said mixing pipe seats comprising a through-hole extending between said upper and lower surfaces of said top wall;

a stack of flame holders comprising a lowest flame holder installed on the upper surface of said swirl plate and comprising a side wall and a top wall and being open at the bottom; said side wall comprising a plurality of flames holes, and in which said top wall comprises mixing pipe seats one fewer in number than the number of said mixing pipe seats of said swirl plate;

said stack further comprising a plurality of further flame holders which are stacked on said lowest flame holder, and each of which comprises a side wall and a top wall cooperatively bounding an interior space that is open at the bottom, said side walls of said further flame holders comprising a plurality of flame holes, and in which the top wall of each further flame holder comprises mixing pipe seats one fewer in number than the number of mixing pipe seats in the top wall of the immediately underlying flame holder, each mixing pipe seat comprising a through-hole extending between the upper and lower surfaces of the top wall of the corresponding flame holder;

one of said plurality of further flame holders being a highest flame holder whose top wall is closed;

mixing pipes interposed between each of the mixing pipe seats of said top wall of said lowest flame holder and a corresponding mixing pipe seat in said swirl plate, and between each of the mixing pipe seats in the top wall of each of said further flame holders, except for the closed top wall of the highest flame holder, and a corresponding mixing pipe of the top wall of an immediately underlying flame holder;

a gas chamber installed under said swirl plate and spaced apart from said swirl plate with a plurality of spacers by a predetermined interval, said gas chamber comprising an upper wall;

a plurality or nozzles installed on the upper wall of said gas chamber, each in a corresponding position below said swirl plate to direct gas to said mixing pipe seats of said swirl plate located thereabove; and

an opening/closing valve for opening/closing each of said plurality of nozzles;

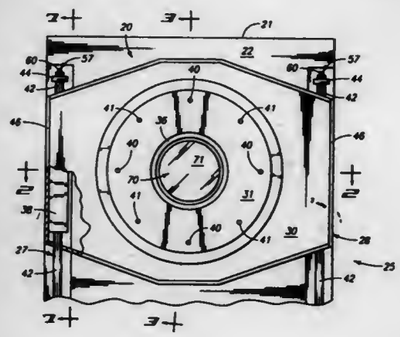
whereby each valve controls the conveyance of gas from said gas chamber to a respective interior space of a respective flame holder.

5,575,641

SEMICONDUCTOR PROCESSOR OPENING AND CLOSURE CONSTRUCTION

Aleksander Owczarz; Ronald J. Ray, and Daniel L. Durado, all of Kalispell, Mont., assignors to Semitool, Inc., Kalispell, Mont.

Division of Ser. No. 86,771, Jun. 30, 1993, Pat. No. 5,449,289, which is a continuation-in-part of Ser. No. 901,613, Jun. 15, 1992, Pat. No. 5,302,120. This application Jul. 31, 1995, Ser. No. 509,704
Int. Cl.[6] F27D *3/00*
U.S. Cl. 432—9 33 Claims



1. A method for operating a semiconductor processor having an access opening through which access is provided into a processing enclosure, and a door which is adapted for closing the access opening; comprising:

aligning the door with the access opening by repositioning the door relative to the access opening;

extending an extendible portion of the door relative to a main part of the door to occlude the access opening;

forming a first seal between the extendible portion of the door and the processing enclosure within or adjacent to the access opening;

forming a second seal between the extendible portion of the door and the processing enclosure within or adjacent to the access opening, said first and second seals being spaced

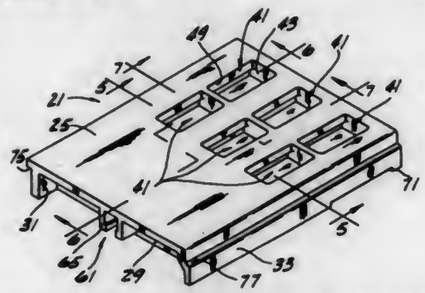
confining a closure isolation area between the first and second seals within or adjacent the access opening to prevent fluids escape from the access opening.

5,575,642

GRATE PLATE

David J. Willis, St. Louis, and Keith C. Houghton, Festus, both of Mo., assignors to The Carondelet Corporation, Pevely, Mo.

Filed Dec. 1, 1995, Ser. No. 565,970
Int. Cl.[6] F27D *15/02*
U.S. Cl. 432—78 17 Claims



1. A grate plate for use in cooling heated material, the grate plate comprising:

a plurality of spaced apart walls including a front wall, side walls, a top wall and a bottom wall, a plenum located generally within the walls for receiving a cooling fluid within the grate plate;

an opening in the grate plate located rearwardly of the front wall for receiving the cooling fluid into the plenum;

the plenum being shaped for delivering at least some cooling fluid from the opening first to the front wall of the grate plate and then rearwardly;

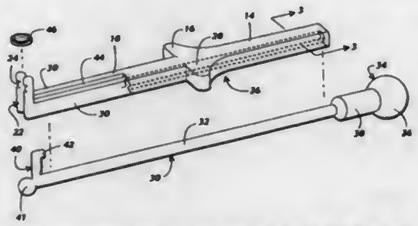
a port disposed for permitting exhaust of the cooling fluid directed rearwardly of the front wall in the plenum through the top wall for cooling the heated material on the grate plate.

5,575,643

ORTHODONTIC TOOL

William F. Green, Rte. 5, Box 84, Fort Payne, Ala. 35967

Filed Feb. 27, 1995, Ser. No. 394,699
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—3 10 Claims



1. An orthodontic tool for placing an elastic band on an orthodontic apparatus in a mouth, comprising:

a shaft having a handle portion and a tined portion and wherein the tined portion has two tines having first and second L-shaped ends;

a channel running the length of the shaft;

a plunger slidably engaged in the channel;

said plunger having a third L-shaped end which slides between said two tines; and

a spreader on the third L-shaped end which spreads the two tines apart from one another as the third L-shaped end is slid away from the first and second L-shaped ends;

so that an elastic band placed around the three L-shaped ends can be stretched into a substantially rectangular shape by sliding the third L-shaped end away from the first and second L-shaped ends.

5,575,644

ORTHODONTIC APPLIANCE

Lee H. Tuneburg, Sheboygan, Wis., assignor to American Orthodontics, Sheboygan, Wis.

Continuation-in-part of Ser. No. 29,762, Mar. 11, 1993, abandoned. This application Aug. 23, 1994, Ser. No. 294,369
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—8 23 Claims

1. An orthodontic appliance comprising:

a main body;

a layer of polysiloxane on the main body; and

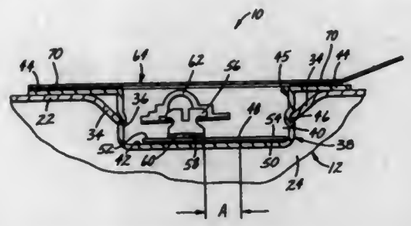
a diamond coating deposited over the layer of polysiloxane.

5,575,645

ADHESIVE FOR PACKAGED ORTHODONTIC APPLIANCE

Dwight W. Jacobs, River Falls, Wis., and Sumita B. Mitra, West St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 902,444, Jun. 19, 1992, Pat. No. 5,354,199, which is a continuation of Ser. No. 739,816, Aug. 2, 1991, abandoned. This application Jul. 15, 1994, Ser. No. 276,094
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—9 20 Claims



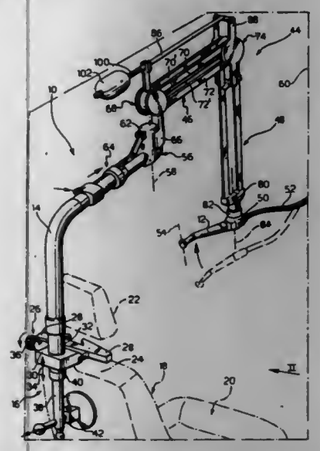
1. An article comprising a container with a cover, an orthodontic appliance received in said container and an adhesive on said appliance, wherein said adhesive includes an adhesively effective quantity of EBDA and is substantially free of TEGDMA so that a storage-stable adhesive is obtained.

5,575,646

SUPPORT DEVICE FOR A DENTIST'S DRILL

Gianni M. Giannella, Via Frejus, 54 I-10139 Torino, Italy, assignor to Gianni M. Giannella, and Francesco Giannella, both of Italy

PCT No. PCT/EP93/01388, § 371 Date Jan. 12, 1995, § 102(e) Date Jan. 12, 1995, PCT Pub. No. WO93/24069, PCT Pub. Date Dec. 9, 1993
PCT Filed Jun. 2, 1993, Ser. No. 347,319
Claims priority, application Italy, Jun. 3, 1992, TO92A0474
Int. Cl.[6] A61C *3/02*
U.S. Cl. 433—76 7 Claims



1. A support device for a dental drill for use in a working region of a dental patient comprising:

a support;

an articulated arm having two articulated quadrilateral devices disposed in series with one another, one of said articulated quadrilateral devices being connected to said support while another of said articulated quadrilateral devices carries a means for attachment of the dental drill in such a way that a working axis having a set angular position of the drill can be located within the working region of the patient whilst remaining constantly parallel to the set angular position; and

an adjustment means operable to vary the direction of the working axis of the drill and located between said support and said articulated arm,

wherein said support is provided with a fixing means for connecting it to a seat back of a chair and wherein said articulated arm is able to assume a working configuration in which said two articulated quadrilateral devices are located 90° to one another, with said one articulated quadrilateral device being situated above the head of the patient and said another articulated quadrilateral device being disposed substantially in front of the patient.

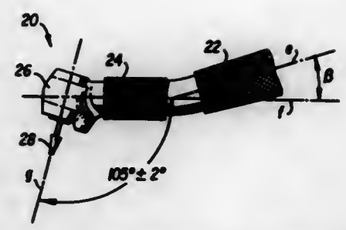
5,575,647

GENERAL PURPOSE DENTAL HANDPIECE

Kenneth Grubbs, Rte. 2, Monroe, Ga. 30655

Filed Jun. 12, 1995, Ser. No. 489,317
Int. Cl.[6] A61C *1/10*
U.S. Cl. 433—114 12 Claims

1. A general purpose dental handpiece comprising a handle portion having a first longitudinal axis, a shank portion having a second longitudinal axis and being connected to the handle portion, a nonarticulatable head portion rigidly fixed to the shank portion, the head portion rotatably supporting a drill burr along a burr axis, said burr axis being disposed at a fixed, burr angle of about 103° to about 107° with respect to the second longitudinal axis of the shank portion, wherein said burr angle is optimum for routine dental procedures performed with a general purpose dental handpiece.

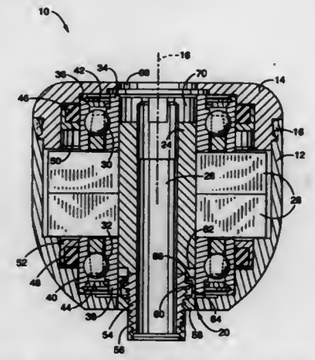


5,575,648

DENTAL TURBINE SPINDLE ASSEMBLY

Jason E. Orgain, and Robert Larsen, both of Chico, Calif., assignors to Lares Research, Inc., Chico, Calif.

Filed Mar. 13, 1995, Ser. No. 404,143
Int. Cl.[6] A61C *1/14*
U.S. Cl. 433—127 4 Claims



1. A dental handpiece spindle assembly, comprising:

(a) a housing, said housing having a longitudinal axis, said housing including an opening along said axis;

(b) a cylindrical spindle rotatably mounted in said housing along said axis, said spindle including a longitudinal bore;

(c) said spindle including a tapered end portion, said end portion including external threads;

(d) means for rotatably actuating said spindle;

(e) a chuck nut, said chuck nut including internal threading;

(f) a circular skirt associated with said chuck nut, said skirt having a circumferential, inwardly disposed lip; and

(g) retaining means associated with said chuck nut and said spindle for retaining said chuck nut on said spindle when said chuck nut is loosened and preventing permanent deformation of said spindle when said chuck nut is tightened.

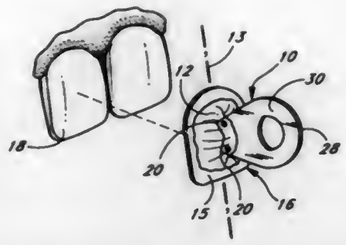
5,575,649

DENTAL RESTORATION HOLDER SYSTEM

Robert L. Lee, 22937 Grand Terrace Rd., Grand Terrace, Calif. 92324

Continuation-in-part of Ser. No. 836,065, Feb. 12, 1992, Pat. No. 5,320,533, and a continuation-in-part of Ser. No. 196,420, Feb. 15, 1994. This application Mar. 30, 1994, Ser. No. 220,115
Int. Cl.[6] A61C *3/00;5/08*
U.S. Cl. 433—141 19 Claims

1. A combination, comprising:



a dental restoration having a surface to be bonded to a tooth and an outer surface which becomes a surface of the tooth when attached to the tooth;

a generally thin, flat gripping element; and

adhesive connecting an edge of said element to said restoration outer surface with said element extending generally perpendicular to said restoration outer surface so that the element forms a finger-gripping tab for facilitating placement of said restoration on a tooth or tooth model.

5,575,650

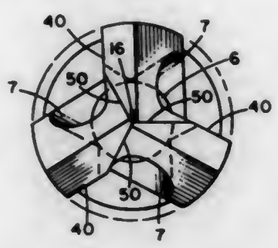
CUTTING DRILL FOR ENDOSSEOUS IMPLANTS

Gerald A. Niznick, Las Vegas, Nev., and Ines A. Traverse, Moorpark of, Calif., assignors to Core-Vent Corporation, Las Vegas, Nev.

Filed Mar. 3, 1995, Ser. No. 398,118

Int. Cl.[6] A61C *3/02*

U.S. Cl. 433—165 **9 Claims**



1. A dental drill for use in drilling an opening in human jawbone tissue comprises:

a cylindrical shank with a proximal end, a distal end, and external lateral surfaces, said shank having an internal passageway for delivering a liquid to said lateral surfaces, said drill also comprising a plurality of cutting blades extending helically around said lateral surfaces and terminating at the distal end of the drill in a cutting point converging upon the center axis of said drill, each of said blades having a primary cutting flute with a relief on its trailing edge, and a secondary cutting flute formed by a split point having a positive rake angle, said split point converging on the center axis of the drill, said secondary cutting flute being offset with respect to said primary cutting flute, precluding chisel edges on said cutting blades.

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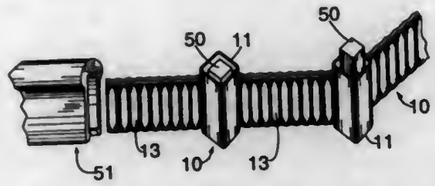
PROSTHETIC DENTAL BRIDGE FOUNDATION

Bernard Weissman, 225 East 48th Street, New York, N.Y. 10017

Continuation-in-part of Ser. No. 281,397, Jul. 27, 1994. This application Oct. 21, 1994, Ser. No. 327,269

Int. Cl.[6] A61C *8/00*

U.S. Cl. 433—173 **29 Claims**



1. A module for forming the foundation of a rigid prosthetic dental bridge, said foundation comprising at least two modules, each module comprising at least one of (a) a post and (b) an extension unit, said post having a first screw end, adapted to anchor said post into rigid dental material selected from the group consisting of tooth stubs and bone matrix, and a second retaining end, for engaging the extension unit; said extension unit comprised of (i) at least one engaging means and (ii) no more than two leaves extending from said engaging means in a direction transversely from said post, each said leaf being selectable by length, said engaging means having a portion so sized and shaped so as to maintain a sloppy fit with the retaining end of said post, said sloppy fit permitting a minor, constrained degree of rotation of said extension unit with respect to said retaining end of said post; said extension unit of one module adapted to couple with at least one other adjacent module.

5,575,652

PROCESS FOR APPLYING ANTIBACTERIAL ORAL COMPOSITION TO DENTAL IMPLANT AREAS

Abdul Gaffar, Princeton, and Ralph P. Santarpia, III, Somerset, both of N.J., assignors to Colgate Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 161,013, Dec. 3, 1993, Pat. No. 5,466,437, which is a division of Ser. No. 961,976, Oct. 16, 1992, Pat. No. 5,294,431, which is a division of Ser. No. 398,592, Aug. 28, 1989, Pat. No. 5,188,821, which is a continuation-in-part of Ser. No. 291,712, Dec. 29, 1988, Pat. No. 4,894,220, and Ser. No. 346,258, May 1, 1989, Pat. No. 5,043,154, which is a continuation of Ser. No. 8,901, Jan. 30, 1987, abandoned, said Ser. No. 291,712is a continuation-in-part of Ser. No. 8,901. This application May 18, 1995, Ser. No. 444,071

Int. Cl.[6] A61K *5/00*; **C08L** *1/26*; **C09J** *3/04*; **A61C** *5/00*

U.S. Cl. 433—173 **17 Claims**

1. A process for attaching, adhering or bonding a plaque-inhibiting antibacterial agent to a dental implant area in the oral cavity, the implant being composed of a titanium alloy fixture affixed to alveolar bone, a titanium alloy collar transmucosal abutment at the gingiva mucosa surface where plaque tends to form and a porcelain prosthesis attached to said collar, which comprises

placing an oral gel mucoadhesive composition in a dental syringe, which oral gel composition has a viscosity of about 150×10^3 to about 360×10^3 cps and comprises in an orally acceptable gel vehicle, an effective antiplaque amount of a substantially water insoluble noncationic antibacterial agent selected from the group consisting of halogenated dipbenyl ethers, halogenated salicylanides, benzoic esters, halogenated carbanilides and phenolic compounds, at least one of an organic surface active agent and a flavoring oil solubilizing material for said antibacterial agent in amount sufficient to dissolve said antibacterial agent in saliva and about 0.005–6% by weight of an antibacterial-enhancing agent having utility as dentifrice or denture adhesive fixative or dental cement which contains at least one acidic delivery-enhancing functional group selected from the group consisting of carboxylic, phosphinic, phosphonic, and sulfonic acids, and their salts, and mixtures thereof and at least one organic retention-enhancing group, wherein said retention-enhancing group comprises the formula—$(X)_n$—R wherein X is O, N, S, SO, SO_2, P, PO or Si, R is hydrophobic alkyl, alkenyl, acyl, aryl, alkaryl, aralkyl, heterocyclic, or their inert-substituted derivatives, and n is zero or 1 or more and wherein said antibacterial enhancing agent is a natural or synthetic polymerizable monomer or a polymer selected from the group consisting of oligomers, homopolymers, copolymers of two or more monomers, ionomers, block copolymers, graft copolymers and crosslinked polymers and monomers, wherein said delivery-enhancing group enhances delivery of said antibacterial agent to oral dental implant and implant/gum surfaces by attaching or substantially adhesively, cohesively or otherwise bonding said antibacterial enhancing agent to said oral surfaces and said retention-enhancing group enhances attachment, adherence or bonding of said antibacterial agent to said antibacterial enhancing agent and indirectly to said oral surfaces, wherein said oral gel composition is free of polyphosphate anticalculus agent in an effective anticalculus amount,

applying said syringe to a dental implant and

extruding said oral gel composition from said syringe onto the surface of said implant including the interface of said dental implant with gum surfaces.

5,575,653

ARTIFICIAL TOOTH BLANK MADE IN SERIES PRODUCTION

Martha Freyer, and Rainer Mattern, both of Bad Säckingen, Germany, assignors to Vita Zahnfabrik H. Rauter GmbH & Co. KG, Bad Sackingen, Germany

Filed Apr. 1, 1993, Ser. No. 41,655

Claims priority, application Germany, Apr. 1, 1992, 42 10 781.4

Int. Cl.[6] A61C *5/08*

U.S. Cl. 433—202.1 **14 Claims**

1. The method of making a tooth blank for an artificial tooth comprising compression-molding and firing a dentin-colored dental ceramic to a retention, such that the tooth blank is smaller than the artificial tooth and bondable to at least one enamel layer to form the artificial tooth.

5,575,654

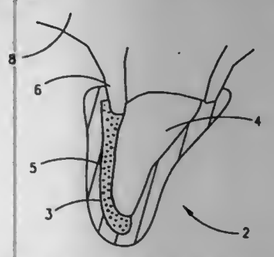
APPARATUS AND METHOD FOR LIGHTENING TEETH

Mark G. Fontenot, 229 Marilyn Dr., Lafayette, La. 70503

Continuation-in-part of Ser. No. 980,635, Nov. 24, 1992, abandoned. This application Mar. 15, 1994, Ser. No. 213,039

Int. Cl.[6] A61C *5/00*

U.S. Cl. 433—215 **87 Claims**



1. A device for treatment of dental arches and periodontal tissue, comprising:

(a) a dental appliance composed of a non-porous polymeric material having a trough for immersing the teeth of the dental arch which is not customized to fit individual dental arches and is thereby, the dental appliance being adaptable to fitting a range of variously sized dental arches;

(b) a premeasured amount of a medicinal agent which is predispensed within the trough of the dental appliance; and

(c) a buffer region for being placed in communication with the portion of the dental appliance around the teeth and periodontal tissue surrounding the teeth subject to treatment, the buffer region containing material to prevent the periodontal tissue from coming in contact with the medicinal agent.

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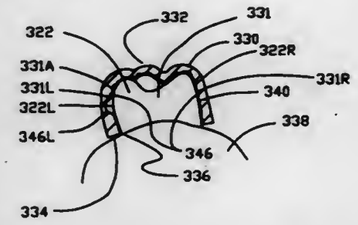
TREATMENT OF A TOOTH

Daniel H. Darnell, Hanceville, Ala., assignor to Dunhall Pharmaceuticals, Inc., Gravette, Ark.

Continuation of Ser. No. 9,355, Jan. 26, 1993, Pat. No. 5,356,291, which is a continuation of Ser. No. 793,244, Nov. 12, 1991, abandoned, which is a continuation of Ser. No. 612,599, Nov. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 374,985, Jul. 3, 1989, Pat. No. 4,968,251. This application Oct. 17, 1994, Ser. No. 324,238

Int. Cl.[6] A61C *15/00*; *17/02*

U.S. Cl. 433—216 **11 Claims**



1. An improved apparatus for treating a tooth embedded in gingiva tissue with an active agent, comprising:

a stint having an internal region and an external region with the internal region of said stint defined for overlaying the tooth;

said stint comprising a sheet of plastic material having an internal surface which is shaped for defining tile tooth surface to be treated in said internal region of said stint, said internal surface including at least one internal side surface disposed for overlaying at least a portion of a side surface of the tooth;

one or more indentations formed in said internal side surface of said plastic material; and

said one or more indentations dimensioned and disposed for retaining the active agent therein enabling the active agent to be maintained in contact with at least a portion of a side surface of the tooth when said stint containing the active agent is applied upon the tooth.

5,575,656

METHOD AND APPARATUS FOR TOOTH RESTORATION

Victor J. Hajjar, 4800 Linglestown Rd., Harrisburg, Pa. 17112

Filed Oct. 21, 1994, Ser. No. 327,668

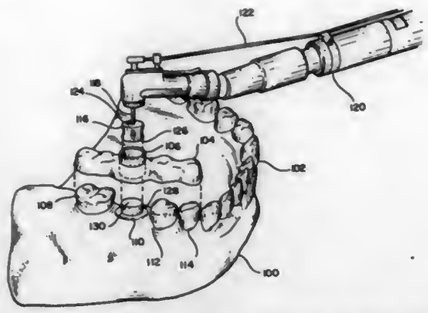
Int. Cl.[6] A61C *5/08*

U.S. Cl. 433—219 **19 Claims**

1. A process for restoring a tooth comprising the steps of:

removing a first portion of said tooth to reduce exterior dimensions of the tooth; and

removing a second portion of said tooth to form an interior of said tooth into a predetermined shape for receiving artificial tooth material wherein said step of removing said second portion further includes steps of:



placing a tooth template having a drill guide mounted thereon over said tooth; and

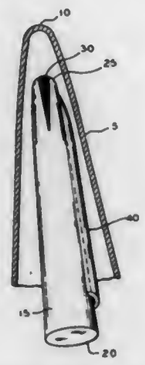
lowering a milling blade through said drill guide to remove said second portion, said milling blade having predetermined dimensions for forming said predetermined shape.

5,575,657

HYDRAULIC ENDONTIA DEVICE

Sidney E. Welch, 11132 S. Lowe, Chicago, Ill. 60628

Filed Jul. 8, 1995, Ser. No. 498,349
Int. Cl.[6] A61C 5/02
U.S. Cl. 433—224 15 Claims



1. A device for obturating an extirpated root canal, comprising:

a primary obturation rod having an objective tip with a collapsible spill gate cut into said objective tip, and a handle end; and

a plurality of secondary obturation rods each having a tip end and a handle end adapted to cooperatively associate longitudinally with said primary obturation rod.

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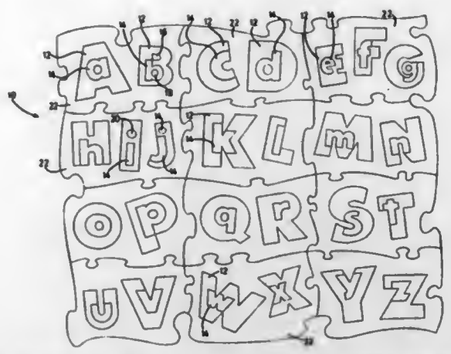
PUZZLE FORMING AN ASSEMBLY OF CHARACTERS AND A METHOD FOR FORMING THE PUZZLE

Craig Barnard, Winnetka, Ill., assignor to Fundustry, Inc., Winnetka, Ill.

Filed Nov. 10, 1994, Ser. No. 337,046
Int. Cl.[6] G09B 1/40
U.S. Cl. 434—160 18 Claims

16. A method for forming a puzzle, the method comprising the steps of:

providing a first set of pieces representing characters from a known set of characters wherein the known set of characters is letters of an alphabet;



providing a second set of pieces representing characters from the known set of characters wherein the first set is upper case letters of the alphabet and the second set is lower case letters of the alphabet;

identifying a lower case letter from the second set corresponding to an upper case letter from the first set; and

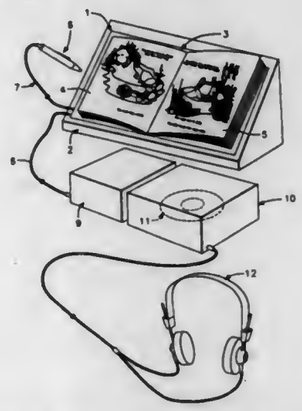
inserting the lower case letter from the second set into the corresponding upper case letter from the first set.

5,575,659

DOCUMENT INTERPRETING SYSTEMS

Reginald A. King, Shrivenham, and Kathleen M. Aitken, Swindon, both of England, assignors to Scanna Technology Limited, London, England

PCT No. PCT/GB92/00302, § 371 Date Aug. 20, 1993, § 102(e) Date Aug. 20, 1993, PCT Pub. No. WO92/15077, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 20, 1992, Ser. No. 107,760
Claims priority, application United Kingdom, Feb. 22, 1991, 9103768
Int. Cl.[6] G09B 5/00
U.S. Cl. 434—467 12 Claims



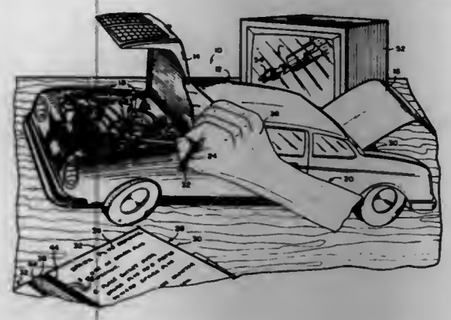
1. A document interpreting system comprising a document support member, location detecting means incorporated in said document support member and on which in use a plurality of documents to be interpreted are stacked, electronic pointing means coupled to said location detecting means and adapted in use to be directed at any arbitrary single point on the topmost document of said stack, said location detecting means being arranged to detect electronically through said stack the location of the arbitrary point on said topmost document to which said pointer means is directed, speech storage means for storing speech relating to different points on each of said documents, and speech reproduction means responsive to said location detecting means for reproducing speech stored in said speech storage means corresponding to the said single point on said topmost document to which said pointing means is directed.

5,575,660

AUTOMOTIVE MAINTENANCE INSTRUCTION KIT

Angela D. Hooks, 1317 C Kenilwood Way, Bowling Green, Ky. 42104

Filed Oct. 6, 1994, Ser. No. 319,462
Int. Cl.[6] G09B 25/02
U.S. Cl. 434—374 1 Claim



1. An automotive maintenance instruction kit comprising:

a) a miniature scale model automobile;

b) a hood on said miniature scale model automobile hinged thereto, so that said hood can open and close;

c) a trunk on said miniature scale model automobile with the lid hinged thereto, so that said trunk can open and close;

d) a plurality of totally removable parts within said miniature scale model automobile exactly like those on a real automobile, so that a person can inspect and study the removable parts therein;

e) means comprising a set of compatible repair tools to be used by the person for removing and installing said removable parts in said miniature scale model automobile and teaching the use of said repair tools in connection with said removable parts for the proper maintenance of a real automobile, and each said repair tool being a specific hand implement used for a particular task so that the person can become skilled in removing and installing said removable parts;

f) means comprising a maintenance and repair manual to be used by the person to provide information describing the steps how to remove and install said removable parts, said manual including a loose leaf type binder with pages having printed thereon for supplying said information; and

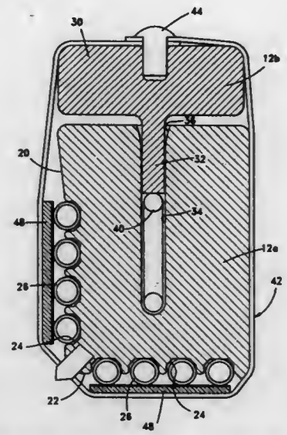
g) means comprising a video tape for insertion into a video player for visually demonstrating the procedure for removing and installing said removable parts, the steps of said procedure corresponding to the steps described in said manual.

5,575,661

FLEXIBLE FILM WITH CIRCUITRY THEREON HAVING IMPROVED LOCAL COMPLIANCE AND FORCE DISTRIBUTION

Dimitry G. Grabbe, Middletown; George R. Schmedding, Hummelstown, and David B. Wrisley, Jr., Harrisburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 31, 1994, Ser. No. 299,221
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—62 13 Claims



1. In an electrical connector of the type utilizing a supported flexible film composite for electrically interconnecting with a planar electronic device, where a normal force must be applied to said film composite in contact with said planar electronic device, the improvement comprising in combination therewith the provision of said normal force being applied by an elastomeric member adjacent a first surface of said flexible film composite, a thin metal shim along a surface of said elastomeric member opposite from said first surface, and a force applying member acting against said metal shim to urge said composite against said planar electronic device.

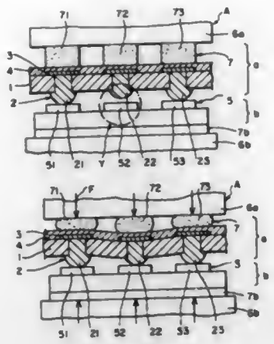
5,575,662

METHODS FOR CONNECTING FLEXIBLE CIRCUIT SUBSTRATES TO CONTACT OBJECTS AND STRUCTURES THEREOF

Yasuhiko Yamamoto; Isao Ohki; Junji Yoshida; Hideo Yamashita; Kazuo Ouchi, and Masayuki Kaneto, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Aug. 11, 1994, Ser. No. 288,913
Claims priority, application Japan, Aug. 27, 1993, 5-213146
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—67 6 Claims

4. A connecting structure of a flexible circuit substrate and a contact object, which comprises a laminate in which the flexible circuit substrate having a plurality of bump contacts is laminated with the contact object having a plurality of portions to be contacted such that said plural bump contacts face to said plural portions to be contacted at a joined surface, corresponding to each other in said flexible circuit substrate, the plural bump contacts mounted on one surface of an insulating film being electrically connected to circuit patterns and an elastic material being mounted in a position corresponding to a back side of the bump contact, and pressurizing means provided so as to pinch said laminate, thereby applying pressure to the entire surface of said laminate in a compressing direction to contact said plural bump contacts with the plural portions to be contacted.

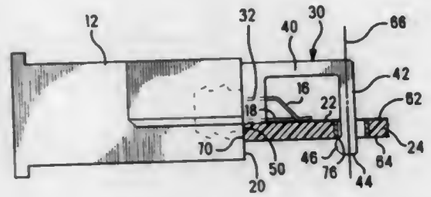


5,575,663

ELECTRICAL CONNECTOR FOR MOUNTING TO AN EDGE OF A CIRCUIT BOARD

John L. Broschard, III, Hershey, and Robert S. Correll, Jr., Harrisburg, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Nov. 29, 1994, Ser. No. 346,050
Int. Cl.[6] H01R 9/09;9/16
U.S. Cl. 439—79 9 Claims



1. In an electrical connector for mounting to an edge of a circuit board, said connector having a housing and a plurality of electrical contacts within said housing, each contact having a solder tail arranged to engage a respective contact pad on a major surface of said circuit board,

a clip for accurately positioning and holding said connector against said major surface adjacent said edge so that said solder tails are in engagement with their said respective contact pads, said clip comprising:

(a) a body having a first abutting surface for engaging said major surface, said first abutting surface defining a plane; said body having a second abutting surface substantially perpendicular to said plane and adapted to abuttingly engage said edge of said circuit board when said connector is mounted thereof;

(b) a shank extending from said body in a first direction, said shank in interfering engagement with an opening in said connector housing;

(c) a first beam extending from said body in a second direction opposite said first direction on one side of said plane;

(d) a second beam extending from said first beam in cantilever fashion and having a free end on a side of said plane opposite said one side, said second beam including a projection extending from said free end in a direction generally toward said second abutting surface,

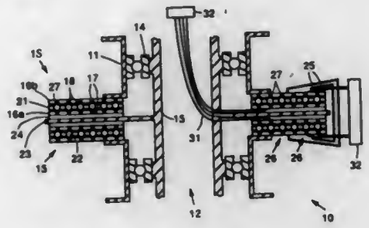
wherein said circuit board has a hole through said major surface and spaced from said edge and, said hole in said circuit board extending completely through said circuit board and intersecting a surface opposite said major surface, and wherein said free end adapted to extend through said hole so that said projection engages an edge of said hole adjacent said opposite surface and said first and second beams are adapted to urge said connector against said edge of said circuit board adjacent said major surface.

5,575,664

BALL CONTACT ROTARY CONNECTOR

Mohi Sobhani, Encino, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 452,932, May 30, 1995, abandoned. This application Feb. 5, 1996, Ser. No. 597,086
Int. Cl.[6] H01R 39/28
U.S. Cl. 439—17 9 Claims



1. A rotary connector comprising:

a housing having an opening therein;

a rotatable shaft disposed through the opening in the housing that is rotatably secured to the housing by means of a bearing that permits relative rotational motion therebetween;

first and second electrically isolated assemblies adjacently coupled to the shaft that each comprise:

two adjacently disposed insulating members having a plurality of conductive grooves formed on adjacent inner surfaces thereof;

an insulating spacer disposed between the adjacent inner surfaces of the respective adjacently disposed insulating members between the conductive grooves thereof that has a plurality of holes formed therethrough in registration with the conductive grooves; and

a plurality of conductive rolling members disposed in the plurality of holes of the insulating spacer that provide for electrical contact between the respective conductive grooves of the adjacently disposed insulating members;

and wherein one said adjacently disposed insulating member of each of the electrically isolated assemblies is secured to the rotatable shaft and wherein the other said adjacently disposed insulating member of each of the electrically isolated assemblies is secured to the housing;

retaining means coupled to the first and second electrically isolated assemblies for compressing them together to insure contact between the conductive grooves and the conductive rolling members of the electrically isolated assemblies; and

a plurality of electrical wires conductively coupled to the conductive grooves of each of the electrically isolated assemblies to permit coupling of electrical signals through the rotary connector.

5,575,665

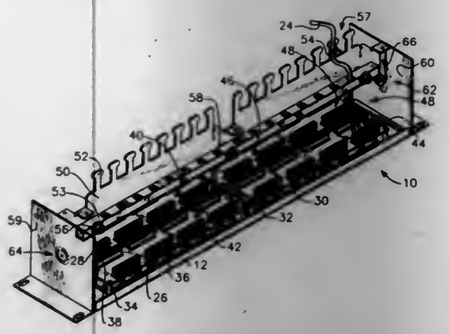
PATCH PANEL WITH HINGED TIE BAR

John G. Shramawick, Weaverville, and R. Bruce Smith, Asheville, both of N.C., assignors to Superior Modular Products Incorporated, Swannanoa, N.C.

Filed Dec. 1, 1995, Ser. No. 565,980
Int. Cl.[6] H01R 9/24
U.S. Cl. 439—49 13 Claims

1. A patch panel comprising:

a face plate having at least one aperture therein for receiving a plurality of jacks;



at least one circuit board mounted to said face plate;

said jacks mounted to one side of said circuit board;

a plurality of wire termination connectors mounted in rows to the other side of said circuit board; said wire termination connectors forming at least one inner row and at least one outer row;

first and second brackets attached to said face plate;

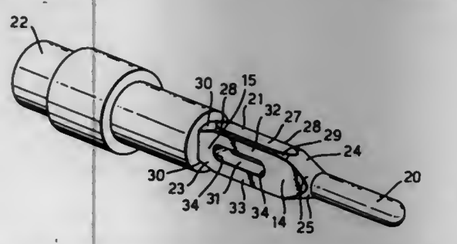
a cable tie bar rotatably attached to said first and second brackets, whereby said cable tie bar may be rotated to various positions with respect to said wire termination connectors for providing unimpaired access to said connectors.

5,575,666

ELECTRICAL CONTACTS

Peter Dent, Wimbledon, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Jul. 10, 1995, Ser. No. 500,002
Claims priority, application United Kingdom, Aug. 4, 1994, 9415765
Int. Cl.[6] H01R 13/41
U.S. Cl. 439—82 11 Claims



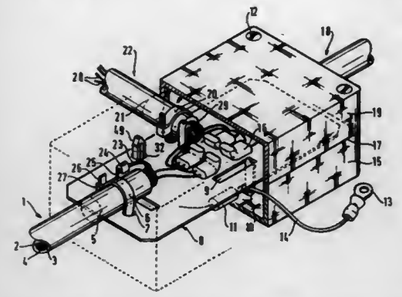
1. A compliant contact for insertion in a conductive hole in a circuit board, wherein the contact comprises: a forward shank region, said shank region having a width less than the diameter of said hole; an entry region, said entry region having two opposite convex surfaces tapering away from one another rearwardly, the width of said entry region between said convex surfaces being less than the diameter of said hole at its forward end and being greater than the diameter of said hole at its rearward end; a compliant region having two parallel flat sides, said compliant region being compliant along a part of its length; a slot extending between said two flat sides to divide a part of said compliant region into two resilient blades, said slot extending longitudinally along a part of the compliant region and being spaced rearwardly of the entry region; two planar surfaces, said planar surfaces extending along outer surfaces of respective ones of said blades; and four edge portions, each said edge portion separating one of said planar surfaces from one of said flat sides, and wherein each of said four edge portions has a forward region that tapers outwardly and reduces in width rearwardly, and a rearward region of substantially constant width.

5,575,667

JUNCTION BOX FOR CONNECTING A PLURALITY OF SCREENED CABLES

Michel Mebez, Sucy en Brie, and Bernard Warusfel, Vanves, both of France, assignors to Cegelec, Levallois Perret, France

Filed Feb. 21, 1995, Ser. No. 391,035
Claims priority, application France, Feb. 18, 1994, 94 01 880
Int. Cl.[6] H01R 4/66
U.S. Cl. 439—98 4 Claims



1. A junction box for connecting a plurality of screened cables, each of said cables having an electromagnetic screen said box including means for fixing the cables, means for interconnecting screens of all the cables and a conductive enclosure forming a Faraday cage and including an opening for each cable;

wherein the means for fixing the cables and the means for interconnecting screens of all the cables comprise:

a metal plate incorporating:

two holes for each of the cables, the distance between said two holes for each of the cables being substantially equal to the diameter of said cables; and

a lug for each of the cables, being cut out from said plate and being bent out of the plane of said plate, the lug providing a connection point for the screen of said cables; and

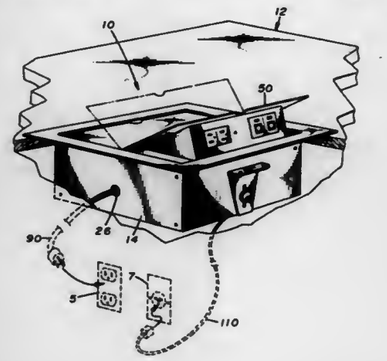
a self-locking tie for each of said cables passing successively through the two holes corresponding to each of said cables, fitting around each of said cables and pressing each of said cables against the plate to attach each of said cables to the plate.

5,575,668

TEMPORARY POWER/DATA TAP

Paul Timmerman, 5528 324th Pl. SE., Fall City, Wash. 98024

Filed Oct. 6, 1995, Ser. No. 544,789
Int. Cl.[6] H01R 13/44
U.S. Cl. 439—131 20 Claims



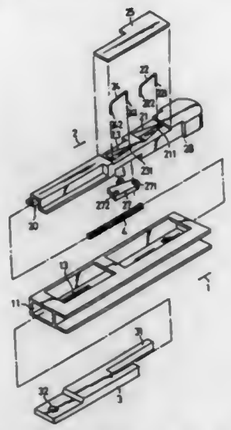
1. A temporary power/data tap, comprising:
a. an enclosure assembly capable of being attached to a work surface, said enclosure assembly having a top opening;
b. a power cord capable of attaching to a standard electrical receptacle and delivering electrical power to said enclosure assembly;
c. a data service line capable of attaching to a standard data port to deliver data communication service to said enclosure assembly;
d. a power distribution assembly located inside said enclosure assembly capable of safely receiving and delivering said electrical power delivered by said power cord to said enclosure assembly, said power distribution assembly also capable of isolating and grounding said electrical power from said data service line thereby reducing radio frequency and magnetic interference therein;
e. at least one outlet enclosure pivotally attached inside said enclosure assembly, said outlet enclosure including a lower box member having a top cover, a front cover and being divided into a first and second compartments, said outlet enclosure capable of being be selectively rotated inside said enclosure assembly thereby enabling said lower box member to be moved between a retracted and extended positions through said top opening in said enclosure assembly;
f. at least one electrical receptacle disposed inside said first compartment in said lower box member of said outlet enclosure, said electrical receptacle being connected to said electric power delivered by power distribution assembly; and,
g. at least one data port disposed inside said second compartment in said lower box member of said outlet enclosure, said data port being connected to said data service line delivered to said enclosure assembly.

5,575,669

EJECTION MECHANISM FOR EXPANSION CARD

Carol S. M. Lin, No. 3, Houng-Shi Rd., Chung-Li City, Tao Yuan Hsien, and C. T. Chiu, No. 4, Alley 825, Ho-Ping Rd., Pa-Te Hsian, Tao-Yuan Hsien, both of Taiwan

Filed Dec. 23, 1993, Ser. No. 172,070
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—157 **11 Claims**



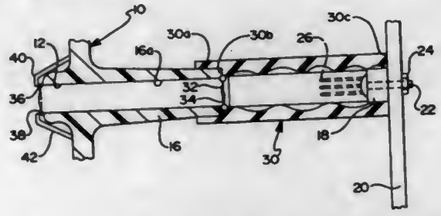
1. An ejection mechanism for a computer expansion card comprising
a body,
a push lever,
two inverted U-shaped guide posts, each having an end that protrudes downwardly past a lower face of the push lever a suitable distance, and which can pivot left and right or move up and down; and
a block that is moved by the guide post end such that as the push lever moves up, one side of the block forms a convex surface and replaces the original position of a contact part of the push lever;
said body includes a sliding channel that includes a cycle-type travel guide channel and a swinging guide channel as related to the guide post ends on said push lever, said guide channels having a depth to accommodate the distance protruded by the guide post ends from lower faces of the push lever, hence allowing the ends of the push lever to be the lead for the cycling of the guide channels;
said upper section of said push lever forms an extension that reacts with the push lever contact part.

5,575,670

DUST PROTECTION FOR PCMCIA CARD AND SOCKET

Yue-Ming Chen, Novi; G. Clark Fortune, Farmington Hills, and Donald M. Stout, Troy, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 6, 1995, Ser. No. 400,055
Int. Cl.[6] H01R *13/453*
U.S. Cl. 439—138 **6 Claims**



1. An apparatus for protecting the electrical connection between a portable data card and a receiving socket, wherein said socket is housed in an enclosed housing and said data card is inserted through an opening formed in said housing, said apparatus comprising:
a compliant boot extending from said housing opening to said socket, said data card being substantially surrounded by said boot within said housing; and
a pair of extending members disposed opposite one another within said boot and being biased into contact with one another, said members allowing said card to pass therethrough.

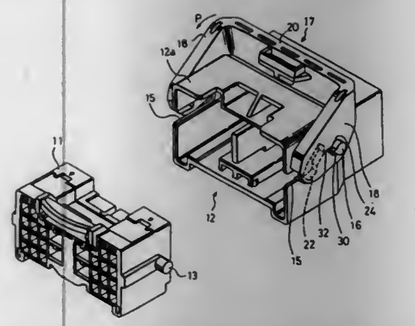
5,575,671

LEVER-TYPE CONNECTOR

Takatoshi Katsuma, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Sep. 30, 1994, Ser. No. 316,336
Claims priority, application Japan, Oct. 4, 1993, 5-273039
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—157 **2 Claims**

1. A lever-type connector in which a U-shaped lever including two cam portions is rotatably mounted to straddle a first connector housing connectable to a second connector housing, said lever being rotatable between at least a disconnecting position in which the first and second connector housings can be separated and a connecting position in which the first and second connector housings can be joined, two cam receiving pins respectively engageable with the two cam portions of the lever and provided on the second connector housing, the lever being selectively rotatable to shift the cam receiving pins to selectively connect and disconnect the connector housings to and from each other, said lever-type connector comprising:
a pair of lever support shafts respectively provided on and projecting from one of said first connector housing and said lever, and a pair of bearing hole portions respectively formed in the other of said first connector housing and said lever and engageable with said lever support shafts for rotatably supporting said lever;
a pair of removal prevention portions formed in one of said lever support shafts and said bearing hole portions and radially projecting relative to an axial direction of said lever support shafts; and
a pair of engaging surfaces respectively provided in the other of said lever support shafts and said bearing hole portions, said pair of engaging surfaces each having a notch with a size and a shape corresponding to one of said pair of removal prevention portions, said engaging surfaces being in contact with said removal prevention portions in the connecting position of said lever, and said notches being aligned with said pair of removal prevention portions in the disconnecting position of said lever to allow said lever to be removed by spreading said lever outward in the axial direction of said lever support shafts in the disconnecting position such that each of said removal prevention portions passes through a respective one of said engaging surfaces.

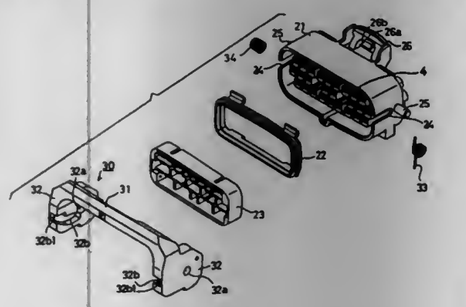


5,575,672

LEVER CONNECTOR WITH CONCAVE-CONVEX ENGAGEMENT MECHANISM FOR HOLDING A LOCKING LEVER AT A LOCK POSITION

Takatoshi Katsuma, Mie Pref., Japan, assignor to Sumitomo Wiring Systems, Ltd., Mie Pref., Japan

Filed Dec. 16, 1994, Ser. No. 356,961
Claims priority, application Japan, Dec. 17, 1993, 5-344458; Mar. 29, 1994, 6-084051; Apr. 7, 1994, 6-095804
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—157 **15 Claims**



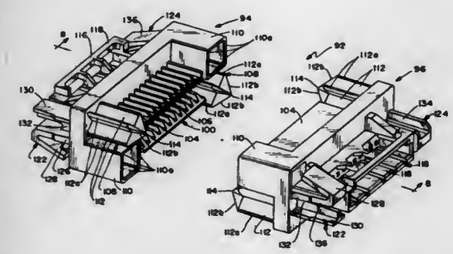
1. A connector assembly comprising:
a first connector housing;
a second connector housing engageable with said first connector housing;
a locking lever rotatably mounted on said first connector housing;
a pair of cam grooves formed on said locking lever, each groove having an open end in a peripheral surface of said locking lever;
a pair of projections extending from opposite sides of said second connector housing and engageable with said cam grooves;
a concavo-convex engagement mechanism including a concave or convex member provided on said locking lever and a convex or concave member provided on said first connector housing; and
a lock control mechanism provided between said first connector housing and said locking lever to laterally move said locking lever relative to said first connector housing for preventing said concave or convex member on said locking lever from engaging said convex or concave member on said first connector housing until said first connector housing is engaged with said second connector housing.

5,575,673

POLARIZING AND/OR FLOATING PANEL MOUNT FOR ELECTRICAL CONNECTORS

Charles M. Dahlem, Carol Stream; Paul Murphy, Naperville; Joseph W. Neiligan, Jr., LaGrange Park; Paul A. Reisdorf, LaGrange, and Stephen A. Sampson, Downers Grove, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Continuation-in-part of Ser. No. 279,033, Jul. 22, 1994, Pat. No. 5,514,000. This application Jan. 19, 1995, Ser. No. 374,080
Int. Cl.[6] H01R *13/74*
U.S. Cl. 439—248 **12 Claims**



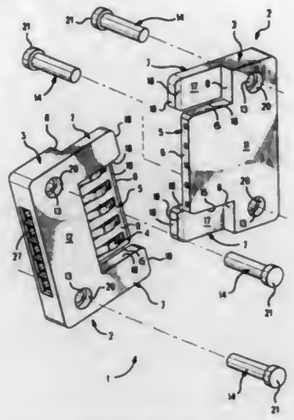
1. A panel mount system for mounting an electrical connector in a mounting aperture in a panel, comprising:
said electrical connector including a mounting flange for interfacing with the panel, and a pair of cantilevered latch structures;
each latch structure including base arm means projecting from the mounting flange and one locking arm deflectably cantilevered at one side of the base arm means from an end of the base arm means remote from the mounting flange such that the locking arm extends angularly from the end of the base arm means and from said one side thereof back toward the mounting flange, the other side of the base arm means opposite the locking arm being substantially rigid, the base arm means of at least said one latch structure comprise a single base arm with the locking arm of the one latch structure being cantilevered therefrom and a substantially rigid post spaced from the base arm at said one end of the base arm means; and
the maximum cross-sectional dimensions of one of the latch structures and its adjacent portion of the mounting aperture being different from the maximum cross-sectional dimensions of the other latch structure and its adjacent portion of the mounting aperture to provide polarization for the connector relative to the panel.

5,575,674

CONNECTOR ADAPTED FOR HERMAPHRODITIC CONSTRUCTION

Wayne S. Davis, Harrisburg; Michael E. Shirk, Grantville, and Robert N. Whiteman, Jr., Middletown, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 29, 1994, Ser. No. 283,132
Int. Cl.[6] H01R *13/28*
U.S. Cl. 439—284 14 Claims



1. An electrical connector comprising:
an insulating housing and electrical contacts in the housing, wherein the contacts are on a blade portion that extends toward a front of the housing, the blade portion is beside a finger receiving recess adapted to receive a guide finger of another duplicate housing, and a guide finger is beside the blade portion to register in a finger receiving recess of another duplicate housing, the housing including a pair of openings extending through a body portion remote from the housing front for receipt of pins having shanks of smaller diameter than said openings and extending to leading ends adapted to be fastened to a panel thus enabling float mounting of the housing to the panel, such that said guide finger is receivable into a corresponding said finger receiving recess of said another housing and bears against bearing surfaces thereof to adjust the position of said housing incrementally laterally to precisely align said housing with said another housing.

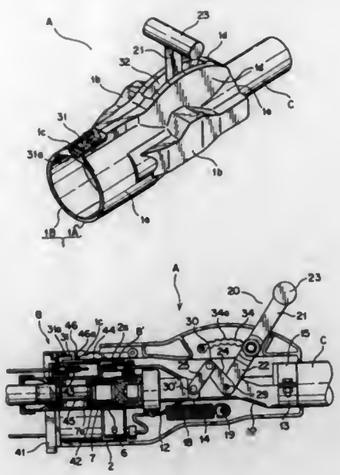
5,575,675

FEEDER CONNECTOR

Takayoshi Endo; Shigemi Hashizawa, and Toshiaki Hasegawa, all of Haibara-gun, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Mar. 30, 1995, Ser. No. 413,957
Claims priority, application Japan, Apr. 1, 1994, 6-064931
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—310 9 Claims

1. A feeder connector comprising a feeding-side connector provided on a side of a power feeding and a receiving-side connector provided in a vehicle body,
said feeding-side connector including a casing, a connector body slidably mounted on a front half section of said casing to accommodate a plurality of terminals, a barrel-shaped wire protection jig for accommodating lead wires connected to said terminals, one end of said wire protection jig being fixed to said connector body and the other end of said wire protection jig being slidably mounted to a rear half section of said casing, a spring for forcing said connector toward a rear of said casing, and a toggle link mechanism for advancing said connector body against said spring in said casing.

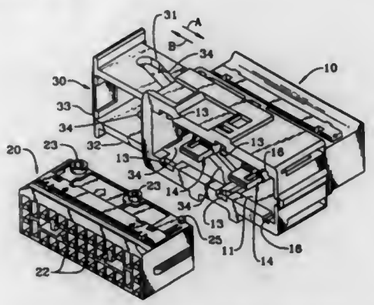


5,575,676

CAM-EQUIPPED CONNECTOR

Masao Tsukakoshi, Machida, and Kazuhisa Betsui, Yokohama, both of Japan, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 11, 1995, Ser. No. 371,248
Claims priority, application Japan, Feb. 25, 1994, 6-028251
Int. Cl.[6] H01R *4/50*
U.S. Cl. 439—347 18 Claims



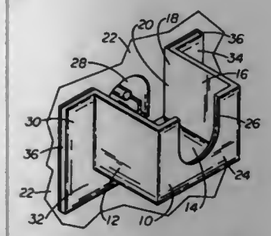
1. A cam-equipped connector assembly comprising a female connector for male contacts and a male connector for female contacts, one of which is equipped with a cam device which makes it possible, by operating said cam device, to join said connectors from an intermediary-joined position to the fully-joined position using only minor effort,
characterized in that protrusions are located on a bottom surface of a joining cavity of the female connector adjacent the middle of said joining cavity, which are longer than the length of contact sections of the male contacts,
on a joining surface of said male connector, cavities are provided for reception of said protrusions, and that
said protrusions and cavities are matched to each other and have intermediary retaining devices to temporarily retain both connectors in the intermediary joined position.

5,575,677

ELECTRICAL POWER PLUG RETAINER

Gregory W. Buckner, 8343 Yearling Way, Riverside, Calif. 92509, and Raymond Patton, 1129 Birch St., Santa Ana, Calif. 92707

Filed Dec. 6, 1994, Ser. No. 349,803
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—373 5 Claims



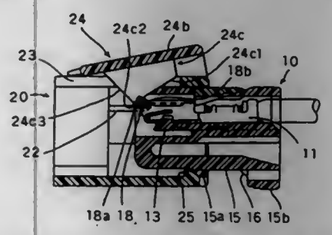
1. An electric power plug retainer comprising;
a hollow body having a pair of sidewalls, an open end, a bottom wall between the pair of sidewalls, an open sidewall opposite the bottom wall, and a closed end wall, said closed end wall having a slot opposite the open end, said slot terminating at the open sidewall, at least two flanges extending outwardly from the sidewalls and the bottom wall at the open end, said at least two flanges perpendicular to the sidewalls, and an adhesive coating on the flanges, said adhesive coating adapted for attachment to a cabinet about a power plug socket, and
Wherein said slot for permitting a plug to be positioned in said hollow body.

5,575,678

LOCKING CONNECTOR

Hitoshi Okumura, and Koichiro Tokuwa, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Dec. 27, 1994, Ser. No. 364,135
Claims priority, application Japan, Dec. 27, 1993, 5-350076
Int. Cl.[6] H01R *13/639*
U.S. Cl. 439—372 8 Claims



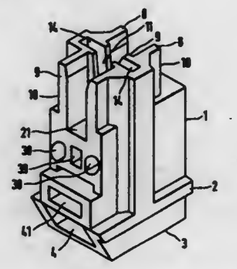
1. A locking electrical connector comprising a first housing and a second housing, said first housing having at least one first terminal mounted therein, said second housing having at least one second terminal mounted therein, said first terminal mates with said second terminal when said first having engages with said second housing,
a projection on a movable and a corresponding contact member on said second housing, said projection and said contact member interacts to urge said first housing and said second housing to move relative to each other, when said first housings moves into said second housing,
said movable member mounted on said first housing and being pivoted to move between an open position, wherein a part of said movable member is spaced apart from said first housing, and a closed position, wherein said movable member is adjacent said first housing, a planar resilient portion, integably formed with said movable member and extending from a rear end of said movable member bearing against said first housing when said movable member is in said open position, whereby said planar resilient portion urges said movable member toward said first housing so that said movable member moves to said closed position.

5,575,679

ELECTRICAL CONNECTION TERMINAL ARRANGEMENT

Dieter Hammer, Waiblingen; Bernhard Albeck, Lorch-Waldhausen, and Karl Biebl, Stuttgart, all of Germany, assignors to Vossloh Schwabe GmbH, Urbach, Germany

Filed Apr. 14, 1994, Ser. No. 227,613
Claims priority, application Germany, Apr. 20, 1993, 43 12 778.9
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—396 17 Claims



1. An electrical connection terminal arrangement having a housing of insulating material, which has at least one insertion slit, open at an edge toward one insertion side for an electric wire and at least one slit-blade insulation-piercing connector located in the housing,
said slit-blade insulation-piercing connector (**17**) having two connector legs (**16**, **16***a*) and a slit-blade insulation-piercing slit (**15**, **15***a*) open at the edge and aimed at the insertion slit for an electric wire connection formed between said connector legs (**16**, **16***a*), at least portions of said legs (**16**, **16***a*) adjacent said insulation-piercing slit (**15**, **15***a*) forming a contact zone,
wherein the slit-blade insulation-piercing connector is formed on a contact spring (**17**, **17***a*),
wherein
the contact spring (**17**, **17***a*) additionally has at least one plug-in contact (**27**, **28**; **27***a*);
a contact (**29**, **70***a*, **71***a*) for an accessory apparatus connection; and
a groove-like indentation (**20**, **21**; **20***a*, **21***a*) formed on at least one side in a portion of the housing (**1**) receiving the slit-blade insulation-piercing connector (**17**) adjoining the insertion slit (**11**, **11***a*), which is deeper and wider than said insulation-piercing slit (**15**, **15***a*), and positioned closely adjacent said insulation-piercing connector (**17**),
the length, depth and width of said indentation (**20**, **21**; **20***a*, **21***a*) being dimensioned such that a cut end of the electric wire placed therein is received within the indentation in an electrical shock-hazard proof manner;
wherein the housing is formed with at least one chamber (**24**, **25**) located beneath the groove-like indentation (**20**, **21**; **20***a*, **21***a*) and having at least one access opening (**36**, **43**) at a face of the housing;
wherein at least one of the plug-in contacts (**27**, **28**; **27***a*) and the accessory apparatus connection contact (**29**, **70***a*, **71***a*) is located in said at least one chamber below the slit-blade insulation-piercing connector (**17**) and the slit-blade insulation-piercing slit (**15**, **15***a*) thereof; and
wherein the plug-in contact and the apparatus connection contact are formed with opposed insertion directions of the connec-

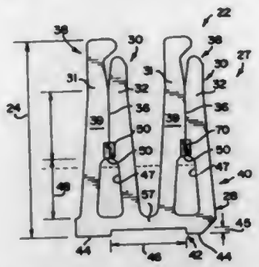
tion parts (52, 50) and said access openings (36, 43) are located on opposite sides of the housing.

5,575,680

INSULATION DISPLACEMENT CONNECTOR AND BLOCK

Louis Suffi, Westchester, Ill., assignor to Reliance Com/Tec Corporation, Franklin Park, Ill.

Filed Feb. 14, 1995, Ser. No. 388,401
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—404 **8 Claims**



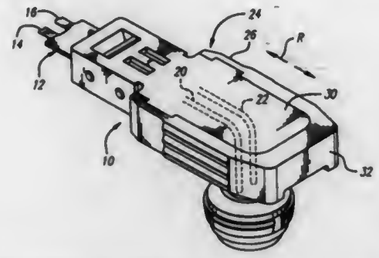
1. An insulation displacement connector comprising: a single-piece unitary body formed from a relatively thin, flat electrically conductive material having a base portion, and two pairs of resilient, wire-engaging arms protruding from said base portion, each of said two pairs of arms defining therebetween a wire-receiving slot configured for displacing insulation from a wire positioned therebetween and for gripping and conductively engaging a conductor of said wire, said two pairs of arms further defining a tool-engaging portion for engagement by a tool for inserting a wire into said wire-receiving slot; and a foot of said base portion positioned oppositely said tool-engaging portions, said foot defining an opening therein extending inwardly in said base towards said tool-engaging portions whereby said opening reduces the dimension of said base portion for improving transmission characteristics of said insulation displacement connector.

5,575,681

CONNECTOR TERMINATION TO FLAT CABLE

Steven Z. Muzslay, Huntington Beach, and Michael S. Finona, Fountain Valley, both of Calif., assignors to ITT Corporation, New York, N.Y.

Filed Dec. 16, 1994, Ser. No. 357,899
Int. Cl.[6] H01R *13/58*
U.S. Cl. 439—459 **9 Claims**



1. An assembly of a connector and a cable, wherein the connector includes a housing having front and rear portions and at least one electrical contact having a contact rear portion lying in said housing rear portion, and wherein said cable includes at least one conductor having a front portion lying in said housing rear portion and connected in a joint to said contact rear portion, wherein:

said cable is a flat cable having a thickness and having a width that is a plurality of times greater than said thickness, with said conductor having a conductor thickness and having a conductor width that is a plurality of times greater than said conductor thickness;

said housing rear portion has upper and lower walls, with each of said walls having at least one through hole aligned with at least one through hole in the other wall;

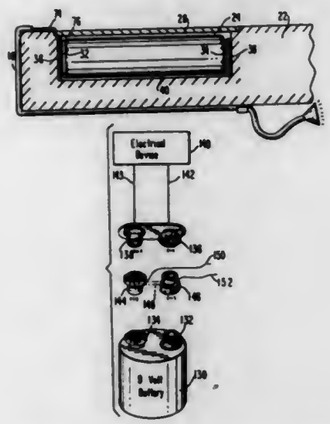
said conductor front portion is welded to said contact rear portion at a location aligned with said through holes in said upper and lower walls.

5,575,682

APPARATUS FOR ACCESSING THE BATTERY POWER OF AN ELECTRICAL DEVICE

Mark Alexander, 25 Rockledge Ave., White Plains, N.Y. 10601

Filed Aug. 3, 1994, Ser. No. 285,112
Int. Cl.[6] H01M *2/06*
U.S. Cl. 439—500 **28 Claims**



1. Apparatus for accessing power of at least one battery having a pair of spaced electrode terminals and situated in a battery compartment of a first electrical device said battery compartment including a pair of battery contacts aligning with respective ones of said battery electrode terminals comprising:

a thin sheet member having opposite surfaces;

a first pair of electrically conductive contact zones on said opposite sheet member surfaces in aligned and electrically coupled relationship with each other, said first pair of contact zones being situated between a first one of said battery contacts and a first one of said battery electrode terminals and electrically coupling said first battery electrode terminal to said first battery contact;

a second pair of electrically conductive contact zones on said opposite sheet member surfaces in aligned and electrically coupled relationship with each other, said contact zones of said first pair being electrically insulated and spaced from the contact zones of said second pair, said second pair of contact zones being situated between a second one of said battery contacts and a second one of said battery electrode terminals and electrically coupling said second battery electrode terminal to said second battery contact; and

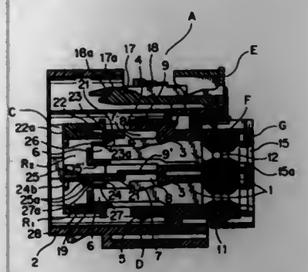
conductor means for electrically connecting said coupled and aligned contact zones of said first pair and said coupled and aligned contact zones of said second pair into an electrical circuit for operating a second electrical device.

5,575,683

CONNECTOR WITH FRONT PIECE FIXING TERMINALS

Hitoshi Saito; Hideki Ohsumi, and Yoshinori Tomita, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jul. 25, 1994, Ser. No. 280,325
Claims priority, application Japan, Aug. 6, 1993, 5-196182; Jun. 24, 1994, 6-143121
Int. Cl.[6] H01R *13/40*
U.S. Cl. 439—595 **3 Claims**



1. A connector comprising:

a front piece for fixing terminals to be slidably attached in an axial direction to a connector housing at a fore portion of said front piece;

in a preliminarily locked stage of said front piece with said connector housing, a deflectable resilient plate on a terminal accommodation slot, for causing a terminal to be inserted into a terminal accommodation slot, wherein said resilient plate and terminal accommodation slot are disposed in said connector housing;

in a locked stage of said front piece with said connector housing, said resilient plate is disposed so as to prevent from deflecting to maintain at least one of said terminals in at least one of said terminal accommodation slot; and

wherein a main locking resilient arm is provided in said front piece, an operating portion extending from a free end of said main locking resilient arm to an outside of said front piece in an opposite direction to said connector housing, and a main locking projection is formed on said main locking resilient arm the main locking projection has a vertical locking face being able to abut a vertical engagement face provided in said connector housing in the preliminary stage said operating free end portion being capable of deflecting said main arm such that said main locking projection is releasable from said connector housing in said preliminary locked stage and in said locked stage.

5,575,684

CONNECTOR HOUSING

Yoshinori Uchida, and Toshihiro Maejima, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Apr. 6, 1995, Ser. No. 417,960
Claims priority, application Japan, Apr. 8, 1994, 6-070740
Int. Cl.[6] H01R *13/40*
U.S. Cl. 439—595 **20 Claims**

1. A connector comprising:

a connector housing;

a terminal insertion hole formed in the connector housing;

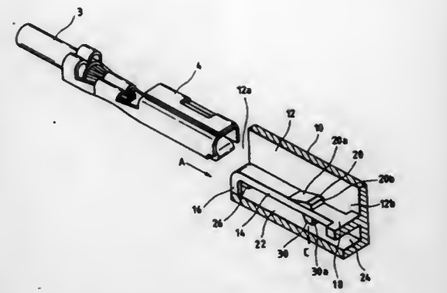
a connection opening provided at a front end of the terminal insertion hole;

a terminal insertion opening provided at a rear end of the terminal insertion hole;

an elastic lock piece provided within the terminal insertion hole;

a terminal engagement portion formed on an upper surface of the elastic lock piece;

a flexure-allowing space provided beneath the elastic lock piece;



a release tool insertion opening in communication with the flexure-allowing space; and

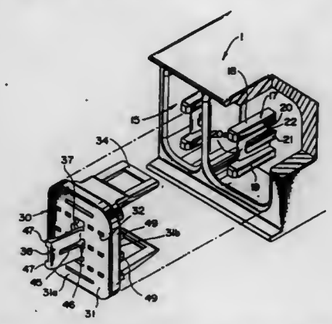
a release-purpose retaining portion formed on the elastic lock piece facing the flexure-allowing space.

5,575,685

ELECTRICAL CONNECTORS

Jean Ittah, Villeneuve la Garenne, and Thierry Badaroux, Saint-Germain en Laye, both of France, assignors to Connecteurs Cinch, Montigny le Bretonneux, France

Filed Oct. 23, 1995, Ser. No. 546,893
Claims priority, application France, Oct. 27, 1994, 94 12895
Int. Cl.[6] H01R *13/514*
U.S. Cl. 439—595 **3 Claims**



1. Electrical connector assembly comprising a first housing member and a second housing member complementary to said first housing member, the second housing member having a series of passages in each of which a female electrical contact member is inserted, said first housing member including a series of passages each adapted to receive a male electrical contact member; said male electrical contact member having a contact part adapted to be inserted into a corresponding female contact member of said second housing member, a body including notches and means for fixing an electrical conductor, each passage including at least one locking member formed by a resilient tang having at least one first projection adapted to be inserted in said notch of said male electrical contact member, slots being provided between said locking members to receive studs of a locking key, means for holding said locking key in at least two positions, said two positions comprising a pre-locked position in which said studs are separated from the slots so that said locking members can move without restriction to enable the fitting of said male electrical contact members and a locked position in which said studs are inserted in said slots to lock said locking members, said first housing member including a face and a second protection on the face adapted to face towards said second housing member, said locking key being mounted on said first housing member on the side of said face

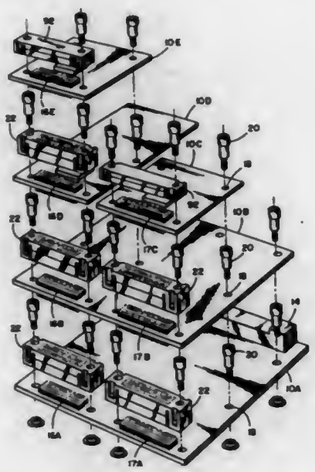
adapted to face towards said second housing member and having a series of slots through which said contact parts of said male electrical contact members and an inclined resilient strip pass and near which an opening is provided for said second projection, said second housing member having a housing adapted to receive said second projection, said resilient strip being mounted so that in said pre-locked position of said key said resilient strip opposes engagement of said second projection in said housing whereas in said locked position of said key said second projection cooperates with said resilient strip to retract the resilient strip so that said second projection can be engaged in said housing to assemble said housing members.

5,575,686

STACKED PRINTED CIRCUIT BOARDS CONNECTED IN SERIES

Rocco J. Noschese, Wilton, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Apr. 14, 1993, Ser. No. 46,625
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—620 **21 Claims**



1. A system for connecting printed circuit boards to each other, the system comprising:

a first electrical connector connecting two of the printed circuit boards to each other, the electrical connector having a housing with a driver circuit therein, the driver circuit including a transceiver for synchronous two way communication between the two boards;

positioners located, at least partially, between the two printed circuit boards, the positioners fixedly positioning the two boards relative to each other in spaced parallel configuration; and

means for delaying transmission of signals through the transceiver.

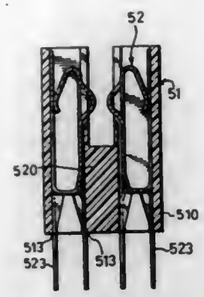
5,575,687

EDGE BO..RD CONNECTOR

Chou-Hsuan Tsai, 4-4Fl, No. 8, Lane 609, Sec. 5, Chung-Hsin Rd., Sanchung City, Taipei Hsien, Taiwan

Filed Jul. 27, 1995, Ser. No. 508,312
Int. Cl.[6] H01R 23/70
U.S. Cl. 439—637 **2 Claims**

1. An edge board connector comprising:



a housing having two opposite side walls, a middle wall unit positioned between said side walls, two terminal chambers formed in said housing between said side walls and located on two sides of said middle wall unit, and a card chamber formed in said housing between said terminal chambers near said middle wall unit and adapted to receive a circuit card in said card chamber; and

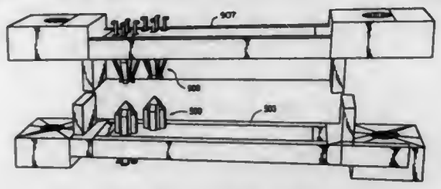
two unitary terminal pins positioned within said terminal chambers respectively, each of said pins being formed from an elongated sheet metal and having a back section abutting against an inner surface of a corresponding one of said side walls, a mounting leg split from an intermediate portion of said back section and extending from said housing, and a curved movable section integrally formed with said back section, said movable section having a positioning part abutting against said middle wall unit, and a generally U-shaped acting part integrally formed with said positioning part end to end and having an intermediate portion which is split to form an elongated and arched clamping sheet that has two ends integrally formed with a remaining portion of said acting part and that extends into said card chamber at a middle portion of said clamping sheet, said acting part having a curved distal end portion abutting against the inner surface of the corresponding one of said side walls so as to position the middle portion of said clamping sheet in said card chamber, whereby, said circuit card can be clamped between said clamping sheets of said pins.

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HIGH-DENSITY ELECTRICAL INTERCONNECT SYSTEM

Stanford W. Crane, Jr., 3934 NW. 57th St., Boca Raton, Fla. 33496

Continuation of Ser. No. 933,083, Dec. 1, 1992, abandoned.
This application Jan. 31, 1995, Ser. No. 381,142
Int. Cl.[6] H01R 9/09:13/26
U.S. Cl. 439—660 **66 Claims**



1. An electrical interconnect system comprising:

a first insulative substrate;

a first array of groups of multiple electrically conductive contacts arranged in rows and columns on the first substrate, each of the contacts of the first array having a contact section extending from a surface of the first insulative substrate, wherein the groups from adjacent rows of the first array are staggered as are the groups from adjacent columns of the first array, and the groups of the first array are interleaved among one another in a nested configuration such that a portion of each group of the first array overlaps into an adjacent row of the groups of the first array or an adjacent column of the groups of the first array;

a second insulative substrate; and

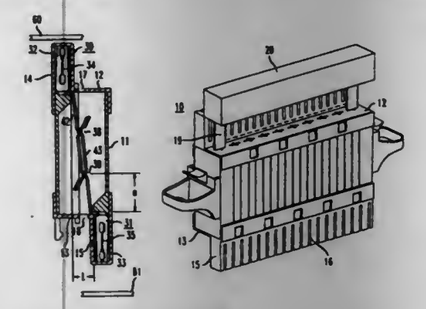
a second array of groups of multiple electrically conductive contacts arranged in rows and columns on the second substrate, each of the contacts of the second array having a contact section extending from a surface of the second insulative substrate, wherein the groups from adjacent rows of the second array are staggered as are the groups from adjacent columns of the second array, the groups of the second array are interleaved among one another in a nested configuration such that a portion of each group of the second array overlaps into an adjacent row of the groups of the second array or an adjacent column of the groups of the second array, each of the contact section of the first and second arrays has a contact surface side of the contact section and an opposing surface located opposite the contact surface on an opposing side of the contact section, the nested configurations of the groups of contacts maintain the contacts in close proximity to one another while allowing adequate clearance between the contacts so that each group of contacts from the first array is received within a corresponding single one of the groups of contacts from the second array when the first and second arrays are mated, the contact surface of each contact section of the first array contacts a corresponding one of the contact surfaces of the contact sections of the second array when the first and second arrays are mated, and each contact section of at least the second array is laterally unsupported on the opposing surface of the contact section both before and after mating of the first and second arrays.

5,575,689

CONNECTOR MODULES

William C. Baggett, Duluth, Gwinnett County, Ga.; Elliot A. Baines, Jr., Morris Township, Morris County; Wayne S. Filus, Lebanon, Hunterdon County both of N.J.; Dianne W. Gilland, Lawrenceville, Gwinnett County, Ga.; Adam S. Kane, Morristown, Morris County, N.J.; Mark G. Spaulding, Florham Park, N.J., and Jeremia P. Starace, Nutley, N.J., assignors to Lucent Technologies Inc., Murray Hill, NJ.

Filed May 17, 1995, Ser. No. 442,866
The portion of the term of this patent subsequent to May 17, 2015, has been disclaimed.
Int. Cl.[6] H01R 9/22
U.S. Cl. 439—709 **5 Claims**



1. A connector module comprising:

an insulating housing having a top and bottom surface;

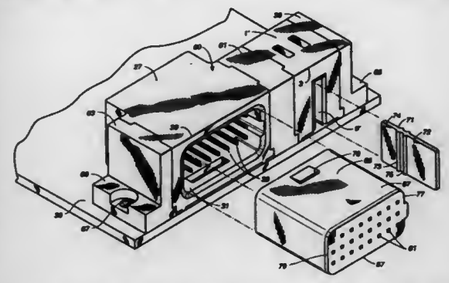
first and second rows of contacts mounted within the housing, each contact including an end portion which is capable of providing electrical connection to a corresponding wire and a stem portion, the contacts being mounted so that the end portions of the first row extend through the top surface and the end portions of the second row extend through the bottom surface, the end portions of the first and second rows being laterally displaced, and the top and bottom surfaces including slots adjacent to the corresponding rows for receiving therein leads which make electrical contact with corresponding contacts.

5,575,690

HYBRID MODULAR ELECTRICAL CONNECTOR SYSTEM

Larry D. Eaton, Fremont, Calif., assignor to TVM, Inc., Fremont, Calif.

Filed Oct. 28, 1994, Ser. No. 330,784
Int. Cl.[6] H01R 9/22
U.S. Cl. 439—717 **32 Claims**



1. A modular connector system for printed circuit boards, comprising:

a first modular connector comprising:

an insulating housing having a locking element on one side thereof and an opening; and

an electrically conductive body in the opening, the electrically conductive body having at least one contact terminal for attaching to a printed circuit board; and

a modular signal connector comprising:

an insulating housing having a cooperating locking element on one side thereof for permanently interlocking with the locking element of the first modular connector and an opening, the insulating housing defining a socket having at least one electrically conductive contact pin therein; and

an electrically conductive body in the opening of the insulating housing of the modular signal connector, the electrically conductive body having at least one contact terminal for attaching to a printed circuit board; and

an electrically conductive contact adaptor for inserting in the socket of the signal insulating housing.

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APPARATUS FOR FRONT OR REAR EXTRACTION OF AN ELECTRICAL CONTACT FROM A CONNECTOR HOUSING

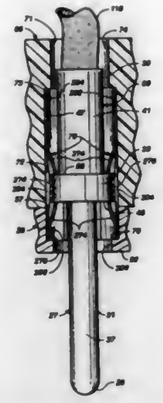
Russell H. Matthews, Modesto, Calif., assignor to Elcon Products International, Fremont, Calif.

Filed May 5, 1995, Ser. No. 435,814
Int. Cl.[6] H01R 13/426
U.S. Cl. 439—744 **15 Claims**

1. A retaining clip for receiving a collar on an electrical contact, the collar having a first face and a second face, said clip comprising:

at least one arcuate element having a first end and a second end, and a retaining means located between the first end and the second end adapted to engage the first face and second face of the collar for removably retaining the electrical contact in the clip, said arcuate element being resiliently biased such that

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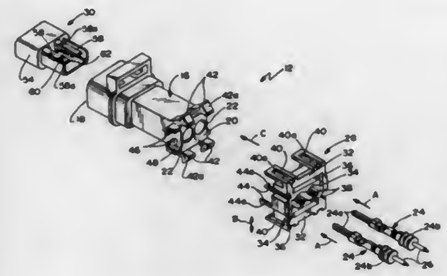
when the arcuate element is deflected the first end, the retaining means is consequently and substantially simultaneously disengaged from both the first face and the second face.

5,575,692

ELECTRICAL CONNECTOR WITH A REAR END MOUNTED TERMINAL POSITION ASSURANCE DEVICE

Paul D. Cecil, Jr., Joliet; Lawrence E. Gelb, Bartlett, and Anthony J. Pill, Naperville, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Dec. 8, 1994, Ser. No. 352,006
Int. Cl.[6] H01R *13/436*
U.S. Cl. 439—752 **17 Claims**



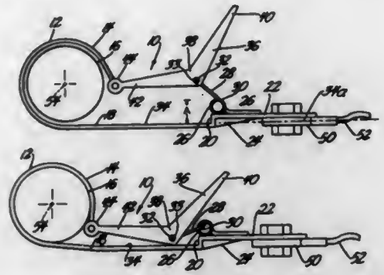
1. An electrical connector, comprising:
a housiog having a forward mating end and a rearward terminating end and at least one terminal-receiving cavity extending along an axis in a direction between the ends;
a terminal insertable into the cavity from the rearward terminating end of the housing, the terminal having a transversely enlarged portion located at a given axial position when the terminal is fully inserted into the cavity; and
a TPA device engageable with the housing at said rearward terminating end thereof, the TPA device including at least two parts interconnected for relative movement transversely of said axis between open and closed positions and defining a passage therebetween for receiving the terminal therethrough when the parts are in their open position, the parts being adapted to abut the enlarged portion of the terminal to prevent movement of the parts to their closed position in the event the terminal is not at least substantially inserted into the cavity and, thereby, indicating a condition of incomplete insertion of the terminal.

5,575,693

BATTERY POST CONNECTOR

Glen D. Dykas, and Daniel G. Lam, both of Macomb County, Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 11, 1995, Ser. No. 541,065
Int. Cl.[6] H01R *4/50*
U.S. Cl. 439—773 **9 Claims**



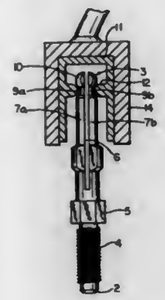
1. A mechanically bistable electrical connector that quickly claps to or releases from a terminal post, comprising:
a band;
a flexible loop of the band;
a portion of the band remote from the loop;
a flexible arm having a distal end and a proximal end, the arm swingably connected at the proximal end to the remote portion of the band;
a lever connected to the distal end of the arm, the lever being pivotable relative to the arm;
a leg of the lever connected to the loop, the leg biased away from the post by the loop;
the connector having a clamping configuration where the distal end of the pivot arm is at a proximal location relative to the band portion;
the connector having another configuration where the distal end is at a location farther from the band portion than the proximal location, and the pivot arm is more deformed than during the proximal location.

5,575,694

ELECTRICAL CONNECTOR FOR ATTACHMENT TO A MEDICAL DEVICE

H. Gene Hawkins, Spencer; Vincent J. Testa, Bloomington, and Randall L. Hacker, Martinsville, all of Ind., assignors to Boston Scientific Corporation, Natick, Mass.

Filed Apr. 19, 1995, Ser. No. 425,085
Int. Cl.[6] H01R *4/28*
U.S. Cl. 439—825 **2 Claims**



1. An electrical connector for attachment to a medical device, said connector comprising:

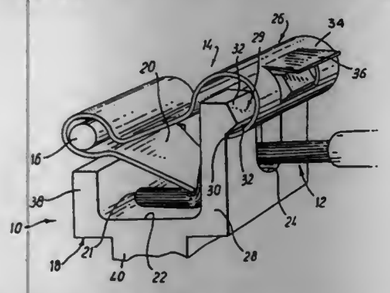
a shaft of electrically conductive material having a proximal end, a distal end and threads disposed on said proximal end;
a longitudinally extending slot extending from the distal end of said connector, said slot forming two legs of said connector;
a hex nut disposed between said proximal end and said longitudinally extending slot;
electrical engaging means extending from the middle of said connector, said means being formed of at least two shoulders extending from the legs of said connector, said shoulders being adapted to engage internal walls of a female connector;
a circumferentially extending recess disposed adjacent the distal end of said connector, said recess forming a head disposed distally of said recess, said recess being adapted to engage a ring disposed within the female connector;
said legs being displaceable such that said legs provide a spring engagement of said connector with the female connector by either said circumferentially extending recess or by said shoulders.

5,575,695

ELECTRICAL CONNECTORS

Bernardo De Bernardis, Lancashire, United Kingdom, assignor to Dynedeem Limited, United Kingdom

Continuation of Ser. No. 962,195, Dec. 21, 1992, abandoned. This application Jan. 30, 1995, Ser. No. 384,588
Claims priority, application United Kingdom, Jun. 21, 1990, 9013869
Int. Cl.[6] H01R *4/48*
U.S. Cl. 439—838 **7 Claims**



1. An electrical connector comprising
(a) a base member (**18**) including an abutment surface (**22**); and
(b) a unitary spring clip member (**14**) rotatably mounted on said base member, said spring clip member including a contact arm portion (**20**) and a catch arm portion (**26**) which are resiliently deformable towards one another, said contact arm portion being rotatable into engagement with said base member abutment surface, said catch arm portion engaging said base member to releasably connect said spring clip and base members together in a deflected position where said contact arm portion and said catch arm portion deflect together, whereby said contact arm portion is resiliently biased against said base member abutment surface to clamp a wire therebetween when said clip member is in the deflected position.

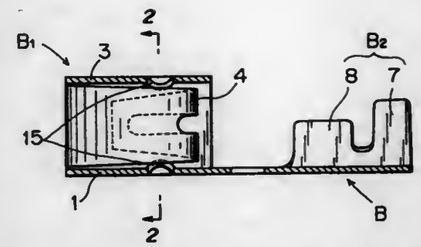
5,575,696

TERMINAL RECEPTACLE

Takayoshi Endo, and Isao Kameyama, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Aug. 30, 1994, Ser. No. 297,787
Claims priority, application Japan, Sep. 1, 1993, 5-47624 U
Int. Cl.[6] H01R *13/11*
U.S. Cl. 439—852 **3 Claims**

1. A metal terminal receptacle comprising:
a base plate;



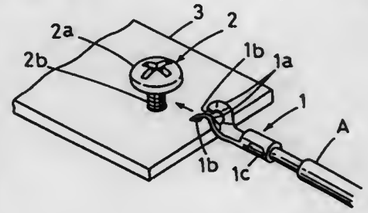
an insertion portion positioned at one end of the base plate and including two side walls extending from the base plate, and an upper wall integrally formed with the side walls;
an elastic tongue extending from one of the side walls at an end of the insertion portion, said elastic tongue having a main body formed in a first U-shape over said one sidewall and having a tip portion thereof bent in a second U-shape into said main body of said elastic tongue;
a wire connecting portion at the other end of the base plate; and
straight-line cutouts formed in the base plate and the upper wall, the cutouts being formed parallel to said two sidewalls,
portions of the base plate and the upper wall adjacent the straight-line cutouts are embossed inwardly to form half-cupped shaped projections,
wherein upper end faces of the projections being formed flush with the straight-line cutouts act as stoppers for limiting the deflection of the main body of the elastic tongue within a predetermined elastic limit thereof to improve durability of said elastic tongue.

5,575,697

CONNECTION DEVICE

Keiko Kaedei, 64, Midorigaoka 4-chome, Yao-shi, Osaka, Japan

Filed Sep. 12, 1994, Ser. No. 302,986
Claims priority, application Japan, Mar. 2, 1994, 6-032250
Int. Cl.[6] H01R *11/11*
U.S. Cl. 439—883 **26 Claims**



1. A connection device for use in connecting a first member to a second member, comprising:
a first member connection portion;
a second member connection portion integrally formed with said first member connection portion;
wherein said first member connection portion includes a substantially planar base portion connected to said second member connection portion, and first and second arm portions extending in a direction away from said base portion and said second member connection portion;
wherein said first and second arm portions are curved outwardly from one another so as to define therebetween a first member receiving hole having a central axis perpendicular to a plane in which lies said substantially planar base portion of said first member connection portion;
wherein said first and second arm portions have first and second tip portions, respectively, at distal ends thereof, and a first

member insertion slit is defined between said tip portions and extends outwardly from said first member receiving hole;

wherein said first and second arm portions are curvilinearly bent so as to be respectively non-planar, so as to be deformable into a substantially annular and planar configuration, and so that each of said first and second arm portions, when viewed in a direction perpendicular to said central axis of said first member receiving hole, has only two inflections and is gradually curved over substantially an entire length thereof; and

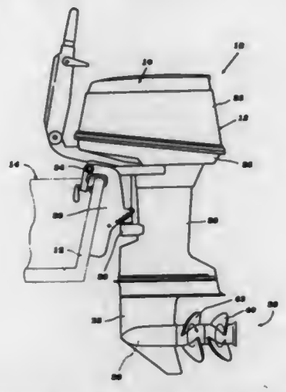
wherein said first member insertion slit is of a width, when viewed in a direction parallel to said central axis of said first member receiving hole, substantially equal to a diameter of said first member receiving hole.

5,575,698

OUTBOARD DRIVE TRANSMISSION SYSTEM

Hiroshi Ogino, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 29, 1994, Ser. No. 346,397
Claims priority, application Japan, Nov. 29, 1993, 5-298656
Int. Cl.[6] B63H *21/28*
U.S. Cl. 440—75 **28 Claims**



1. A transmission for a watercraft outboard drive which selectively couples a drive shaft of the outboard drive to first and second propulsion shafts, each propulsion shaft extending from said transmission to drive a propulsion device along a common axis, said transmission comprising first and second counter-rotating gears driven by the drive shaft, a first clutch element connected to said first propulsion shaft on a side of said first and second gears opposite of the propulsion devices, a second clutch element connected to said second propulsion shaft and coupled to said first clutch, said second clutch interposed between said first and second gears, and a shift operator directly connected to said first clutch element and arranged adjacent to said first clutch element at the same general location along the propulsion shaft axis at which said first clutch element lies.

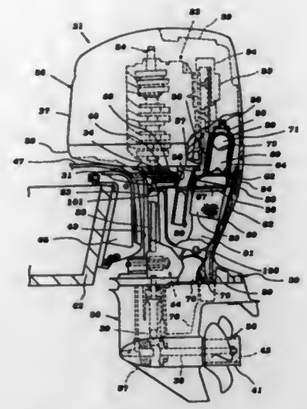
5,575,699

OUTBOARD MOTOR EXHAUST SYSTEM

Atsushi Isogawa, and Manabu Nakayama, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jul. 24, 1995, Ser. No. 505,854
Claims priority, application Japan, Jul. 28, 1994, 6-194579
Int. Cl.[6] B63H *21/32*
U.S. Cl. 440—89 **11 Claims**

1. An outboard motor comprised of the power head containing an internal combustion engine and a surrounding protective cowling, a drive shaft housing and lower unit depending from said power head and containing a propulsion device for an associated



water craft, an exhaust guide plate underlying said engine at the upper end of said drive shaft housing and lower unit and having at least one flow opening, transmission means for driving said propulsion device from said engine, said engine having at least one exhaust port for discharging combustion products therefrom, and an exhaust system, including said exhaust guide plate flow opening for discharging a exhaust gases from said exhaust port to the atmosphere through a body of water which the associated water craft is operating under at least some running conditions, said exhaust system including a catalyst affixed by a flange assembly to the underside of said exhaust guide plate with said catalyst extending across and at least in part into said exhaust guide plate flow opening and through which the exhaust gasses must pass for treating said exhaust gasses.

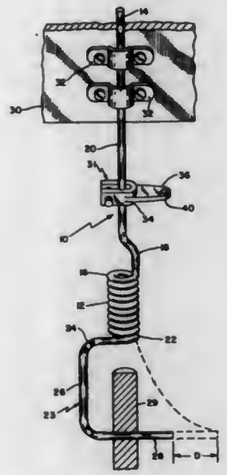
5,575,700

LANDING GEAR FOR MODEL AIRPLANES

Allen J. Cohen, 110 Goodale St., Peabody, Mass. 01960

Filed May 8, 1995, Ser. No. 436,848
Int. Cl.[6] A63H *27/90;17/26*
U.S. Cl. 446—34 **2 Claims**

1. A landing gear assembly for model airplanes with means for



mounting the landing gear assembly to the model plane consisting essentially of:

a single spring wire forming a coil spring about a central axis, said coil spring having a plurality of coils including a bottom coil and a top coil;

a length of said wire depending from said bottom coil and configured to define a wheel mounting means;

a length of said wire extending from the top coil essentially coaxial with said central axis thereby defining a mounting shank; and

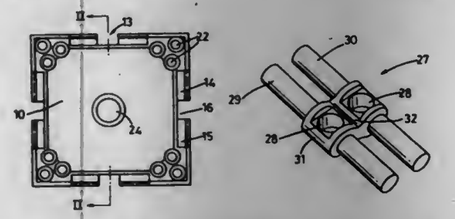
a model aircraft wheel mounted on said wheel mounting means.

5,575,701

CONSTRUCTION APPARATUS

Philip Hantman, Newcastle-upon-Tyne, England, assignor to Orda Industries (1969) Limited, Hagalil, Israel

Filed Apr. 22, 1994, Ser. No. 231,253
Int. Cl.[6] A63H *33/10*
U.S. Cl. 446—104 **4 Claims**



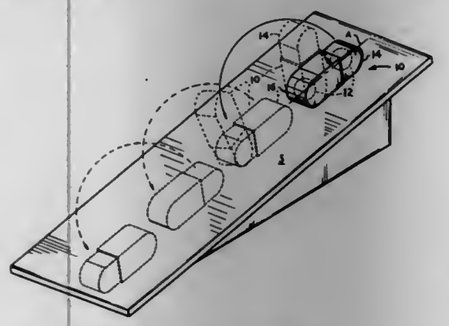
1. Construction apparatus comprising at least two regular polygonal generally planar members, each of said members having along each edge thereof an elongate socket of generally circular cross-section and comprising two mutually aligned, spaced-apart sections, at least one connector comprising a pair of cylindrical rods held together in a mutually generally parallel, laterally spaced side by side relationship by a cross-piece located in the region of the middle of the length of said rods, the diameter of each of said rods being such as to be a close fit within a said elongate socket, each of said generally circular elongate sockets having a linear gap in its circumference, generally parallel to the length of the socket, to permit insertion of a said cylindrical rod, and each of said connectors having a pair of circular sockets adapted to receive the ends of the rods of another connector.

5,575,702

TELESCOPING TUMBLING TOY

Frances C. Silvious, P.O. Box 70, Montross, Va. 22520

Filed Jun. 13, 1995, Ser. No. 489,767
Int. Cl.[6] A63H *15/08*
U.S. Cl. 446—431 **19 Claims**



1. A telescoping tumbling toy, comprising:

an elongate shell having a hollow interior and including a first section and a second section, each having a substantially rectangular cross section, a first and an opposite second contact panel each of substantially planar configuration, a closed first end having a convex curvature and extending between said first and said second contact panel, an open second end disposed opposite said closed first end, and a first and an opposite second side wall each of substantially planar configuration and extending between said first and said second contact panel;

said shell second section having an exterior shape and size configured to fit closely within and to be frictionally and adjustably gripped within said second end of said shell first section, thereby providing for the relative telescoping of said first section and second section and further providing an adjustable length for said shell;

a first weight loosely disposed within said shell, said first weight being free to move between said first end of said first section and said first end of said second section, and;

at least a second weight having a different mass than said first weight;

said first section and said second section being separable and openable to provide access to said hollow interior of said shell and said first weight is removable from said shell to provide for the interchangeability thereof within said shell, whereby;

said first weight may be removed from said shell and said second weight may be installed therein, thereby adjusting the moment of inertia of said toy comprising said shell and said second weight therewithin and accordingly adjusting the tumbling rate of said tumbling toy when said tumbling toy is placed upon a slope to tumble down the slope on said convex first end, said first contact surface, said convex second end, and said second contact surface of said toy; and whereby;

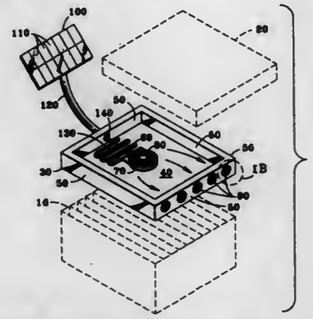
said first section and said second section may be telescopingly adjusted relative to one another to adjust said length of said shell, thereby adjusting the moment of inertia of said toy and accordingly adjusting the tumbling rate of said tumbling toy when said tumbling toy is placed upon a slope to tumble down the slope on said convex first end of said first section, said first contact surface, said convex first end of said second section, and said second contact surface of said toy.

5,575,703

SOLAR-POWERED BEEHIVE COOLER AND VENTILATOR

Gary D. Stearns, R.R. 2 Box 2355, Vergennes, Vt. 05491

Filed Mar. 15, 1995, Ser. No. 404,257
Int. Cl.[6] A01K *47/06*
U.S. Cl. 449—13 **19 Claims**



1. An apparatus for ventilating and cooling a beehive of the type having a beehive body and a removable cover, comprising:

a) a frame adapted to fit between said beehive body and said removable cover, said frame having perimeter walls surrounding an area and having at least one air vent through said perimeter walls,

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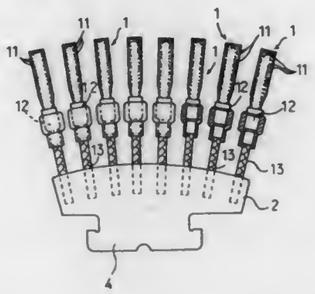
b) a panel supported by said frame and spanning said area, said panel having top and bottom major surfaces and an opening communicating between said top and bottom major surfaces,
c) a thermostatic switch mounted on said bottom major surface of said panel so as to be exposed to the interior air of said beehive body when said panel covers said beehive body,
d) a screen covering said opening to prevent passage of bees therethrough,
e) an electric fan positioned to exhaust hot air from said beehive body through said opening and outward through said at least one vent,
f) a source of electric power energized by solar radiation, and
g) conductive means connecting said thermostatic switch, said source of electric power, and said electric fan, to power said electric fan when the air temperature within said beehive body exceeds a predetermined value.

5,575,704

METHOD OF POLISHING METAL STRIPS

Setsuo Hotani, Wakayama-ken, Japan, assignor to Hotani Co., Ltd., Wakayama-ken, Japan

Filed Jan. 6, 1995, Ser. No. 369,929
Claims priority, application Japan, Jan. 7, 1994, 6-000439
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—36 **3 Claims**



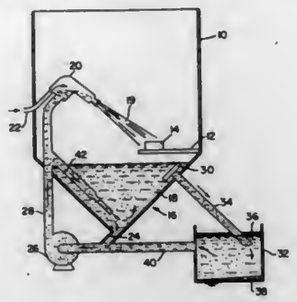
1. A method of polishing or grinding metal strips comprising the steps of:
rotating a rotatable brush roll comprising a plurality of abrasive members mounted in clusters on a shaft of said brush roll, each of said abrasive members comprising a plurality of rod-shaped elastic supports and a plurality of abrasive tips mounted on forward ends of said supports, the abrasive tips comprising a mixture of abrasive grains and a resin, forward ends of said abrasive tips having a diameter of at least 2 millimeters;
bringing a surface of a metal strip into contact with said rotating brush roll;
brushing said metal strip surface with said rotating brush roll under a pressure of at least 1 kg/cm^2, said abrasive members having an elasticity commensurate with a stiffness sufficient to allow said forward ends of said abrasive tips to remain in contact with said metal strip surface under said pressure; and
supplying a mixture selected from the group consisting of grinding fluid and water with abrasive grains to said metal strip surface during said step of brushing.

5,575,705

SLURRY BLASTING PROCESS

Benny S. Yam, Holmdel, and Robert C. Jorgensen, Cherry Hill, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 105,406, Aug. 12, 1993, Pat. No. 5,384,990. This application Jan. 10, 1995, Ser. No. 370,801
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—39 **31 Claims**



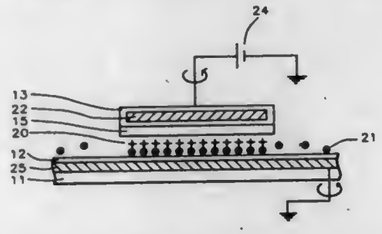
1. A process for blast cleaning comprising; subjecting a work surface to a blast stream comprising a slurry of a carrier liquid and a particulate abrasive material which is soluble in said carrier liquid, said carrier liquid comprising a saturated solution of said soluble particulate abrasive so as to minimize dissolution of said particulate abrasive therein, said blast stream being directed to said work surface by means of a venturi nozzle wherein said blast stream is accelerated through a restricting orifice and subsequently through an expanding outlet section of said nozzle, said blast stream being formed prior to entering said venturi nozzle and directed through said nozzle by a pressurized air stream, said slurry being directed through said nozzle and at said work surface at a pressure of less than 500 psi.

5,575,706

CHEMICAL/MECHANICAL PLANARIZATION (CMP) APPARATUS AND POLISH METHOD

Chia S. Tsai, and Pin-Nin Tseng, both of Hsin-chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed Jan. 11, 1996, Ser. No. 585,068
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—41 **35 Claims**



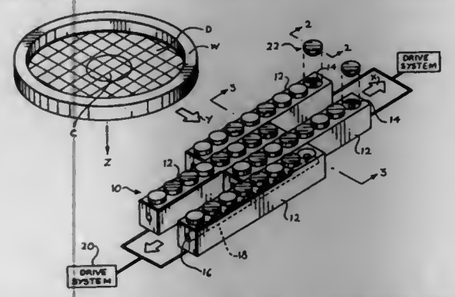
1. An apparatus for planarizing semiconductor wafers comprising:
a rotatable platen and polishing pad for chemical/mechanical polishing (CMP) a surface of a semiconductor wafer;
a reservoir for a polishing slurry and means to dispense the slurry onto the polishing pad;
an electrode embedded in said rotatable platen;
a rotatable wafer carrier and means for holding the surface of the semiconductor wafer in juxtaposition relative to said rotating polishing pad with an applied pressure between the wafer carrier and the polishing pad;
at least one electrode embedded in said rotatable wafer carrier; and
a means to apply an electric field between said electrode embedded in said rotatable platen and said electrode embedded in said rotatable wafer carrier.

5,575,707

POLISHING PAD CLUSTER FOR POLISHING A SEMICONDUCTOR WAFER

Homayoun Talieh, San Jose, and David E. Weldon, Los Gatos, both of Calif., assignors to Ontrak Systems, Inc., Milpitas, Calif.

Filed Oct. 11, 1994, Ser. No. 321,169
Int. Cl.[6] B24B *7/22*
U.S. Cl. 451—173 **15 Claims**



1. A polishing pad cluster for polishing a semiconductor wafer comprising a plurality of integrated circuit dies, said cluster comprising:
a pad support;
a plurality of polishing pads, each pad having a polishing area substantially smaller than the wafer and substantially the same area as an individual one of the integrated circuit dies; and
a plurality of polishing pad mounts, each mount coupled to a respective one of the polishing pads and supported by the support, each mount comprising a respective joint comprising at least two degrees of freedom to allow the associated polishing pad to articulate with respect to the support to conform to the wafer, each mount being substantially rigid in a direction perpendicular to the respective pad toward the pad support.

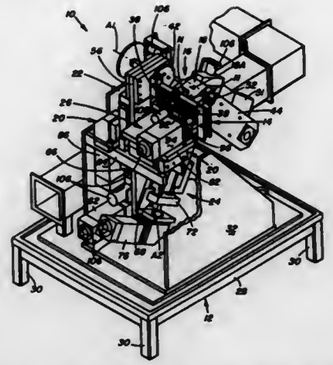
5,575,708

BELT GRINDING MACHINE AND METHOD FOR FORMING CUTTING EDGES ON SURGICAL INSTRUMENTS

Sonny Chau, Gurnee, and Michael T. Dennehey, Arlington Heights, both of Ill., assignors to Alligiance Corporation, McGaw Park, Ill.

Filed Jun. 7, 1995, Ser. No. 485,768
Int. Cl.[6] B24B *21/00*
U.S. Cl. 451—305 **28 Claims**

1. A belt grinding machine for forming cutting edges of complex geometry on surgical instruments, said machine comprising:
(a) a support frame;
(b) a fixture mounted on said support frame for holding at least one instrument with a predetermined site thereon in a preset position for grinding a predetermined surface at the predetermined site thereon;
(c) a grinding assembly mounted on said support frame and including a movable grinding belt having a planar span for grinding the predetermined surface at the predetermined site on the instrument;



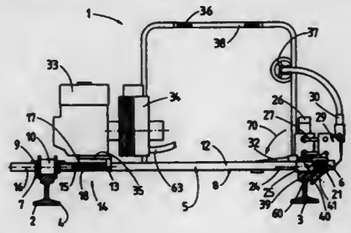
(d) an oscillation producing mechanism mounted on said support frame and coupled to said fixture for oscillating said fixture and the instrument therewith relative to said grinding belt to reciprocally translate the predetermined site on the instrument substantially parallel and relative to said planar span of said grinding belt during said grinding of the predetermined surface at the predetermined site on the instrument by said movable grinding belt; and
(e) a translation producing mechanism mounted on said support frame and supporting said grinding assembly and being operable to selectively translate said grinding assembly and thus said planar span of said grinding belt toward and away from the predetermined site on the instrument to permit receiving and setting up of the instrument in said fixture and to place the instrument in a position for said planar span of said grinding belt to grind the predetermined surface at the predetermined site on the instrument.

5,575,709

RAIL GRINDING MACHINE FOR GRINDING RAILS OF A TRACK

Josef Hertelendi, Freilassing; Sebastian Kreuzeder, Ainring, and Bruno Ströbl, Unterhaching, all of Germany, assignors to Franz Plasser Bahnbaumaschinen-Industrieges.m.b.H., Vienna, Austria

Filed Jan. 24, 1995, Ser. No. 377,367
Claims priority, application Austria, Feb. 1, 1994, 180/94
Int. Cl.[6] B24B *23/00;27/08*
U.S. Cl. 451—347 **24 Claims**



1. A rail grinding machine for grinding rails of a track, comprising:
a machine frame having first support rollers for mobility on one of the rails of a track;
a carrier frame extending in vicinity of the other one of the rails and swingably mounted to said machine frame for rotation about a horizontal pivot axis which extends longitudinally in direction of the track, said carrier frame having second support rollers for mobility on the other rail, with each said second support roller being formed as a track roller having an

axis of rotation which extends perpendicular to the longitudinal direction of the track and to the horizontal pivot axis of said carrier frame;

grinding unit including a grinder adjustably secured to said carrier frame for executing a grinding operation on the rail;

a swivel drive for swingably mounting said carrier frame to said machine frame and effecting rotation of said carrier frame about the pivot axis;

a drive motor secured to said machine frame at a distance to said carrier frame; and

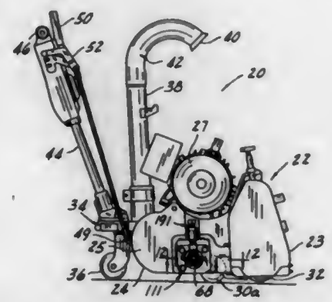
a length compensation unit for effecting a reduction of a distance of said carrier frame and said pivot axis from a first support roller situated in opposition to said grinder in a direction transversely to the track, said length compensation unit including a pressure-exerting element for applying in opposition to the distance reduction a force by which said grinder is pressed against an inner rail bead flank of the rail.

5,575,710

LEVELING MECHANISM FOR FLOOR SANDERS

Michael G. Kramer, Springdale, Ark., assignor to Clarke Industries, Inc., Springdale, Ark.

Filed Oct. 31, 1995, Ser. No. 550,619
Int. Cl.[6] B29B *23/00*
U.S. Cl. 451—350 **11 Claims**



1. A floor sander comprising:

a frame on wheels, at least one of said wheels being rotatable about a wheel axis extending in side-to-side direction with respect to the frame,

a chassis carried by the frame, said chassis having a front, a back, a first side, and a second side opposite the first side,

a motor-driven sanding head mounted on the chassis generally adjacent the front of the chassis for rotation about an axis extending in side-to-side direction with respect to the chassis and with respect to the frame,

a pivot shaft mounted on the frame and extending in side-to-side direction with respect to the frame, said chassis being pivotable on the pivot shaft to raise and lower the sanding head relative to a surface to be sanded,

a first bearing assembly on a first end of the pivot shaft adjacent the first side of the chassis, the first side of the chassis being movable up and down relative to said first bearing assembly,

a guide means for controlling the up and down movement of the first side of the chassis relative to the first bearing assembly so that said movement is in a vertical direction,

a second bearing assembly on a second end of the pivot shaft, the second side of the chassis being secured in substantially fixed vertical position with respect to the second bearing assembly, and

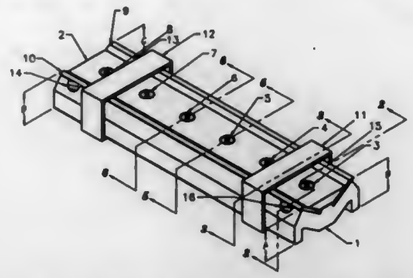
a leveling means operable to effect vertical movement of the first Side of the chassis relative to the first bearing assembly and with respect to the second side of the chassis thereby to adjust the attitude of the chassis to position the axis of rotation of the sanding head in a plane common with said wheel axis.

5,575,711

WOOD JOINTER AND PLANER BLADE SHARPENING AND HONING HOLDER

Dale E. Hupp, 327 Manor Dr., Riverdale, Iowa 52722

Filed Feb. 20, 1996, Ser. No. 604,070
Int. Cl.[6] B24B *19/00*
U.S. Cl. 451—367 **2 Claims**



1. A device for sharpening jointer and planer blades comprising:

(a) a integral elongated base of adequate length to fully clamp the complete length of two blades at opposing angles,

(b) a top clamp to secure the two blades in the said base, and

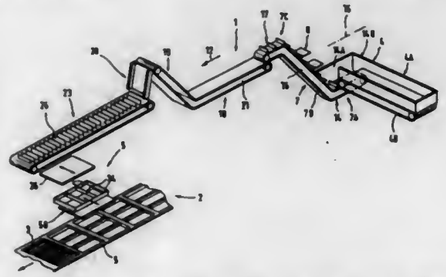
(c) blade jack screws tapped into the said base to adjust the height of each blade.

5,575,712

DEVICE FOR MACHINE

Lars Krewer, Sländgatan 15, S-451 62 Uddevalla, Sweden

PCT No. PCT/SE93/00689, § 371 Date Feb. 22, 1995, § 102(e) Date Feb. 22, 1995, PCT Pub. No. WO94/04417, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 19, 1993, Ser. No. 392,760
Claims priority, application Sweden, Aug. 24, 1992, 9202436
Int. Cl.[6] A22C *17/00;* **B65B** *5/08*
U.S. Cl. 452—177 **6 Claims**



1. A device for handling of sausage between a sausage feeder and a delivering device for sausage to a package by a conveyor acting between the feeder and the device comprising:

a carrier conveyor with transverse walls and a plurality of sausage receiving compartments;

a first receiving part cooperative with and operating beneath the carrier conveyor;

a second receiving part which regulates the number of sausages delivered to a package part by its lateral movement along a substantially horizontal plane for delivery of the sausage to an intended package part and which is cooperative and beneath the first receiving part;

a plurality of sunken box units operating sausage receiving parts having a bottom which can be opened and which is cooperative with and beneath the second receiving part; and

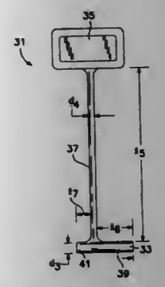
a plurality of intended package parts situated below and corresponding with a sunken box operating sausage receiving part.

5,575,713

PLASTIC FASTENER

James C. Benoit, Needham; Frank T. McCarthy, Lowell, and Gary Buchholz, Winchendon, all of Mass., assignors to Avery Dennison Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 488,622, Jun. 8, 1995. This application Nov. 2, 1995, Ser. No. 560,271
Int. Cl.[6] G09F *3/08;* **B65C** *7/00*
U.S. Cl. 452—198 **7 Claims**



1. A plastic fastener for use in tagging meat or other similar object, said fastener comprising:

a. an elongated filament having a first end and a second end; and

b. a transverse bar disposed at the first end of said elongated filament, said transverse bar being insertable into the meat or other similar object and said transverse bar being interconnected to said filament in an L shaped configuration so as to reduce the likelihood that said transverse bar will break off from said filament on withdrawal of said fastener from the meat or other similar object;

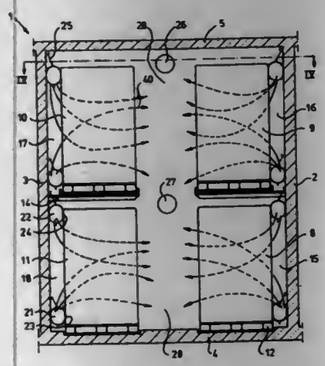
c. wherein said filament has an ovaloid cross-section, the major axis being parallel to the axis of said transverse bar.

5,575,714

METHOD AND APPARATUS TO POUR FLUID AROUND FRESH PRODUCE

Johannes C. M. Rijs, Boskoop, Netherlands, assignor to Binair Groep B.V., Moerkapelle, Netherlands

Filed Feb. 7, 1995, Ser. No. 385,137
Int. Cl.[6] F26B *21/02*
U.S. Cl. 454—174 **37 Claims**



1. Method for providing a stream of fluid around fresh produce, which produce is stored in containers provided with openings in the sides, which comprises:

arranging a row of a multiplicity of said containers along a wall some distance from the latter, in such a way that an interspace is formed between the wall and the row,

inflating at least one bag which extends along at least one edge of the row in said interspace by feeding a fluid to said bag, in such a way that the bag produces a seal against the wall on one side and against the row on the other,

flowing the fluid fed to the bag via outflow openings made in the bag into the interspace and building up an elevated pressure in said interspace, and

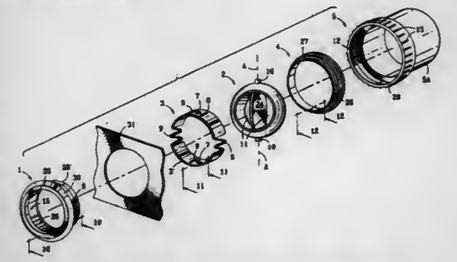
flowing the fluid from the interspace via the openings in the sides of the containers around the fresh produce.

5,575,715

BALL LOUVER WITH LINER ASSEMBLY

Raymond L. Norbury, Jr., Dallas, and Roger H. Simonsen, Sachse, both of Tex., assignors to Cary Products Co., Inc., Hutchins, Tex.

Filed Apr. 7, 1995, Ser. No. 418,365
Int. Cl.[6] F24F *13/065*
U.S. Cl. 454—286 **20 Claims**



1. A ball louver air directing assembly, comprising:

a. ball louver body having a central opening suited for air passage therethrough,

b. a pair of aligned axles projecting outwardly from said body,

c. a liner comprising a selectively continuous and non-continuous style ring having diametrically aligned axle holes extending axially through said liner and being in alignment with and engaging said axles,

d. a front retainer ring having a threaded outer surface and an inner surface to receive said liner in close fitting but manually turnable relation,

e. means in said liner to determine the resistance to be overcome to rotate said ball body by manual application of force.

f. a rear retainer ring having a threaded inner surface to thread onto the front retainer ring, and

g. an inner ring adjoining the rear retainer ring to receive said liner in close fitting but manually turnable relation.

5,575,716

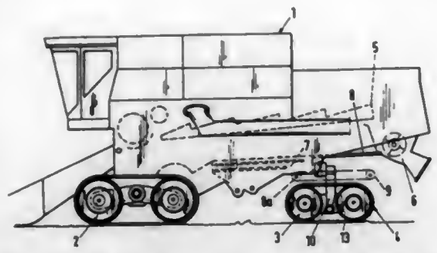
SELF-PROPELLING AGRICULTURAL MACHINE, IN PARTICULAR HARVESTER THRESHER

Wolfgang Jennen, Guetersloh, Germany, assignor to Claas Obg Beschränkt Haftende Offene Handelsgesellschaft, Harsewinkel, Germany

Filed Apr. 17, 1995, Ser. No. 423,037
Claims priority, application Germany, Apr. 30, 1994, 44 15 247.7
Int. Cl.[6] A01F *12/00;* **B62D** *55/00*
U.S. Cl. 460—116 **17 Claims**

1. A self-propelling agricultural machine, comprising a chassis; a traveling mechanism, said traveling mechanism being composed of two forward semi-caterpillars and one rear steerable semi-caterpillar located behind said forward semi-caterpillars as considered in a traveling direction, and said rear steerable semi-caterpillar is arranged substantially centrally as considered in a transverse direction; a separating device having a discharge end; a sieve box having a throwing end; and a transporting and guiding device for

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transporting chaff and having a rear end, said rear steerable semi-caterpillar end having a rear end which is located forwardly of said discharge end of said separating device, forwardly of said rear end of said sieve box, and forwardly of said rear end of said transporting and guiding device.

5,575,717

SYSTEM FOR CREATING MENU CHOICES OF VIDEO GAMES ON A DISPLAY

John W. Houriet, Jr., Yardley, Pa., and Kevin A. Hassan, Mountainside, N.J., assignors to Merit Industries, Inc., Bensalem, Pa.

Filed Aug. 18, 1995, Ser. No. 516,809
Int. Cl.[6] A63F 9/22
U.S. Cl. 463—1 21 Claims

1. An apparatus for providing menu choices of video games on a display, the apparatus comprising:

(a) a mode selector for setting the apparatus in one of either a programming mode for selecting video game menu options or a menu choice selection mode for selecting video game menu choices for game activation;

(b) a video display for displaying and selecting the video game menu options and video game menu choices, the video game menu options being available for selection as video game menu choices; and

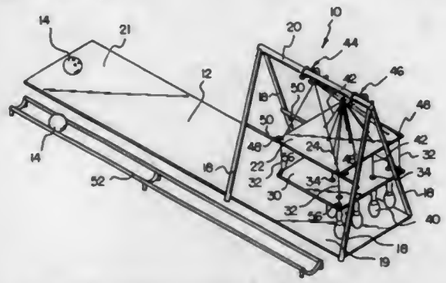
(c) a display controller for simultaneously displaying video game menu options and video game menu choices on the video display when the mode selector is in the programming mode, and for displaying video game menu choices when the mode selector is in the menu choice selection mode.

5,575,718

MANUALLY OPERATED BOWLING APPARATUS

Nathaniel Simmons, 946 Orleans Rd, Ste G-1, #115, Charleston, S.C. 29407

Filed Sep. 1, 1995, Ser. No. 523,124
Int. Cl.[6] A63D 5/08
U.S. Cl. 473—78 6 Claims



1. A manually operated bowling apparatus for use with a bowling lane assembly and a bowling ball, comprising:

a support assembly which includes leg members and which includes an overhead support member which is supported in an elevated position by said leg members,

a tether guide plate supported by said support assembly at a position below said overhead support member, wherein said tether guide plate includes ten pin-tether guide apertures arrayed in a first triangular pin-set arrangement of one, two, three, and four apertures in four respective lines,

a first winch assembly supported by said overhead support member of said support assembly,

a pin guide assembly supported by said first winch assembly, wherein said pin guide assembly includes a pin-guide plate suspended by a plurality of flexible support cables from said first winch assembly, wherein said pin-guide plate includes ten pin-guide apertures arrayed in a second triangular pin-set arrangement of one, two, three, and four apertures in four respective lines, wherein said pin-tether guide apertures and said pin-guide apertures are in registration with each other,

a second winch assembly supported by said overhead support member of said support assembly, and

a set of ten bowling pin assemblies connected to said second winch assembly, wherein each of said bowling pin assemblies includes a bowling pin member and a pin tether connected between said bowling pin member and said second winch assembly, wherein said pin tethers are threaded from said bowling pin members through said pin-guide apertures in said pin-guide plate and through said pin-tether guide apertures in said tether guide plate before connection to said overhead support member of said support assembly,

wherein said first winch assembly is connected to said flexible support cables for controlling raising and lowering of said pin-guide plate, and

wherein said second winch assembly is connected to said pin tethers for controlling raising said bowling pin members into said pin-guide apertures for aligning said bowling pin members in said second triangular pin-set arrangement, and wherein said second winch assembly is for lowering said bowling pin members back onto the bowling lane assembly.

5,575,719

METHOD AND APPARATUS TO DETERMINE OBJECT STRIKING INSTRUMENT MOVEMENT CONDITIONS

William Gobush, North Dartmouth; Diane Pelletier, Fairhaven, and Charles Days, South Dartmouth, all of Mass., assignors to Acushnet Company, New Bedford, Mass.

Division of Ser. No. 209,169, Feb. 24, 1994, Pat. No. 5,501,463. This application Aug. 1, 1995, Ser. No. 510,085
Int. Cl.[6] A63B 69/36
U.S. Cl. 473—223 3 Claims

1. A method of measuring speed, direction and orientation of an instrument as it strikes an object using a shuttered electro-video means and connected input means comprising steps of

a) focusing and calibrating said shuttered electro-video means on a field having an object therein;

b) affixing prior to calibrating said shuttered electro-video means to the instrument having illuminal areas thereon an attachment having additional such areas;

c) placing the instrument in the field with its attachment during calibration to determine the position of the instrument in the field;

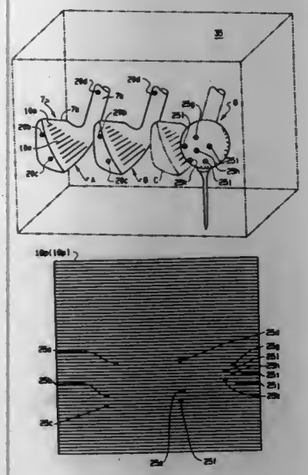
d) removing the attachment from the instrument after calibration and causing the instrument to be swung through the field into contact with the object;

e) causing light at intervals to shine on the instrument areas as the instrument moves in the field prior to object contact;

f) receiving light reflected from such areas into the electro-video means; and

g) causing such computer means to compare such illuminal areas during calibration with areas during instrument swinging

whereby the speed, direction and orientation of the instrument at contact is measured.

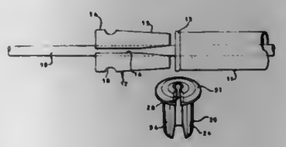


5,575,720

GOLF CLUB PROTECTOR

Benjamin D. Daniel, 1 Hickley Gardens, Brockworth, Gloucester, GL3 4QS, England

Filed Aug. 14, 1995, Ser. No. 514,740
Claims priority, application United Kingdom, Aug. 18, 1994, 9416714
Int. Cl.[6] A63B 69/36
U.S. Cl. 473—282 6 Claims



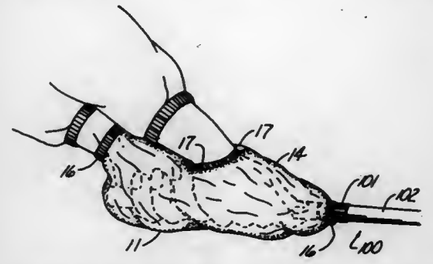
1. A golf club protector comprising a split sleeve which is elongated and which comprises a slot extending lengthwise of the sleeve, the sleeve being adapted to surround a shaft of a golf club, the sleeve having a skirt portion in the form of a tube having an interior and an exterior and a head portion at an end of said skirt, the skirt portion having a plurality of external ribs on the exterior thereof, said ribs protruding outwardly of the skirt a greater distance at the end of the skirt at the head portion than at an end of the skirt opposite the head portion to form a taper, whereby the skirt portion can be inserted as a push-fit into an end of a golf club storage tube.

5,575,721

GOLF GRIP SLEEVE DEVICE

Joseph T. Lilly, 7403 Garland Ave., Takoma Park, Md. 20912

Filed Oct. 20, 1995, Ser. No. 546,239
Int. Cl.[6] A63B 57/00
U.S. Cl. 473—282 11 Claims



1. A golf grip sleeve device for keeping a golfers hands and the handle grip of a golf club dry in wet conditions; wherein, the device comprises:

an elongated open ended sleeve member having a lower end dimensioned to receive the handle and shaft of a golf club, an intermediate portion dimensioned to receive both of the hands of a golfer and an upper end dimensioned to receive one of the hands of a golfer; and,

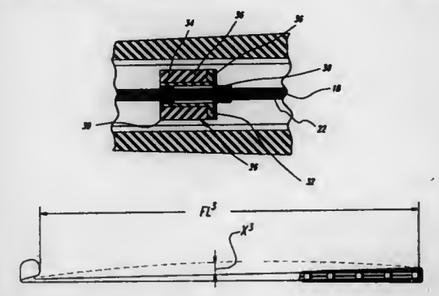
an opening formed in the intermediate portion of the sleeve member; wherein, said opening is dimensioned to receive the other of the hands of the golfer.

5,575,722

GOLF CLUB STABILIZER AND METHOD OF STABILIZING A GOLF CLUB

Carman R. Saia, and Greg Foster, both of Bellingham, Wash., assignors to Vertebrex Golf L.L.C., Bellingham, Wash.

Continuation-in-part of Ser. No. 266,738, Jun. 27, 1994, Pat. No. 5,478,075. This application Sep. 6, 1995, Ser. No. 524,369
Int. Cl.[6] A63B 53/00
U.S. Cl. 473—300 19 Claims



1. A shaft stabilizer for hollow shaft golf clubs of the type having a grip end at one end of the shaft and a head end at the opposite end of the shaft, comprising:

a golf club hollow shaft;

a plurality of elastomeric discs spaced from one another along the shaft and compressed into tight engagement with the hollow shaft; and

a common rod operatively connected to each disc, the rod interconnecting each disc to provide an internal stiffening member providing contact with the shaft at several spaced locations along the grip end of the shaft to stiffen the hollow shaft along the points of engagement; the discs being of a diameter and hardness such that they hold the common rod

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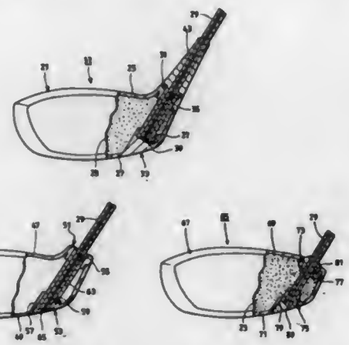
against axial movement in the hollow shaft and stiffen the hollow shaft to change its flexing characteristics.

5,575,723

GOLF CLUB WITH CUSHION MATERIAL BETWEEN SHAFT AND HEAD

Shigeki Take, and Shoichi Dekura, both of Tokyo, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,432
Claims priority, application Japan, Mar. 17, 1994, 6-047272
Int. Cl.[6] A63B 53/02
U.S. Cl. 473—305 **19 Claims**



1. A metal golf club having a head body formed as a hollow shell case of metal, said club comprising;

a filler material substantially filling said hollow shell case;

a pair of shaft support portions provided respectively at a top portion side and a sole portion side of said head body, said support portions being separated from each other;

a shaft inserted into said head body and supported by said shaft support portions;

a top cushioning member interposed between said shaft support portion and said shaft at said top portion side of said head body; and

a bottom cushion member interposed between said shaft support portion and said shaft at said sole portion of said head body, said bottom cushion member being separate from said top cushion member defining a gap therebetween, wherein said shaft contacts said filler material.

5,575,724

ALIGNMENT-ORIENTED GOLF CLUB

Richard H. Hannon, Oceanside, and Carl T. Wagner, Encinitas, both of Calif., assignors to Golfology, Inc., Carlsbad, Calif.

Filed Jul. 19, 1995, Ser. No. 504,124
Int. Cl.[6] A63B 53/14
U.S. Cl. 473—315 **15 Claims**

1. A golf club comprising;

a grip having an outer grip surface and a chamber;

a shaft having a butt and a tip;

a head having a connector and a striking face;

said grip positioned on said butt and said head positioned on said tip each of said shaft, said grip and said head each having an impact-alignment surface and a target-alignment surface;

mounting-alignment means carried by said grip, said head, and said shaft for only allowing registration of said respective impact-alignment surfaces and said target-alignment surfaces of said grip and said head along the same plane whereby said grip, said head, and said shaft can only be assembled when aligned by said mounting-alignment means;



said mounting-alignment means comprising a plurality of substantially flat longitudinal shaft sides on said shaft with a first shaft side being an impact-alignment surface and a second shaft side being a target-alignment surface, a connector on said head, said connector having a plurality of connector sides with a first connector side being an impact-alignment surface and a second connector side being a target-alignment surface, a plurality of substantially flat longitudinal chamber sides in said chamber with a first chamber side being an impact-alignment side and a second chamber side being a target-alignment side such that when said head and said grip are mounted to said shaft, all impact-alignment surfaces align along the same plane in an operational substantially parallel relationship with one another and in a substantially perpendicular relationship with said striking face, all target-alignment surfaces align along the same plane in an operational substantially parallel relationship with one another and in a substantially parallel relationship with said striking face and substantially perpendicular with all impact-alignment surfaces; and

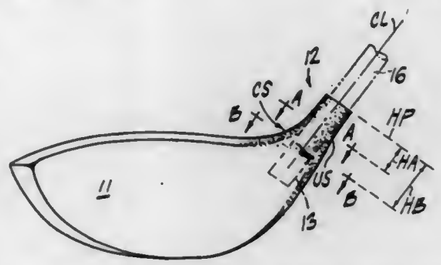
attachment means for attaching said grip to said head and said head to said shaft only when said grip and said head respective impact-alignment surfaces and target-alignment surfaces are in alignment.

5,575,725

GOLF CLUB HOSEL CONFIGURATION

Thomas M. Olsavsky, Escondido, Calif., assignor to Acushnet Company, Fairhaven, Mass.

Filed Jun. 5, 1995, Ser. No. 465,279
Int. Cl.[6] A63B 53/04
U.S. Cl. 473—317 **9 Claims**



1. A golf club having a shaft with a centerline, a hosel, a head, and a ball-striking face on the head, the improvement comprising:

a) a hosel profile surface between a first and second plane passing through the shaft centerline at right angles to such centerline;

b) a third vertical plane at right angles to the first and second planes and to the ball-striking face;

c) an upper hosel circumference having a profile defined by the first plane with the circumference having a teardrop shape with a forward semicircular surface and a rearward half oval surface, said upper hosel profile oriented at a first acute angle to the third plane; and

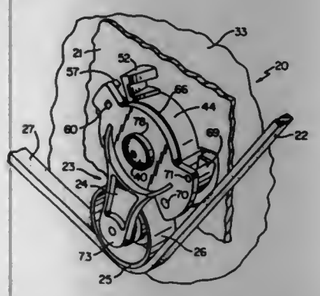
d) a lower hosel circumference having a profile defined by the second plane having substantially the same shape as the upper hosel circumference and oriented at a second acute angle to the third plane, wherein the first acute angle and the second acute angle are not the same.

5,575,726

BELT TENSIONER

David E. Gardner, Royal Oak, and David B. Novak, Ann Arbor, both of Mich., assignors to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 387,522, Feb. 13, 1995, Pat. No. 5,453,057, which is a division of Ser. No. 315,175, Sep. 29, 1994, Pat. No. 5,423,723, which is a continuation of Ser. No. 252,801, Jun. 6, 1994, abandoned, which is a division of Ser. No. 109,792, Aug. 20, 1993, Pat. No. 5,342,249, which is a division of Ser. No. 947,317, Sep. 18, 1992, Pat. No. 5,277,667.
This application Sep. 25, 1995, Ser. No. 533,581
Int. Cl.[6] F16H 7/12
U.S. Cl. 474—135 **2 Claims**



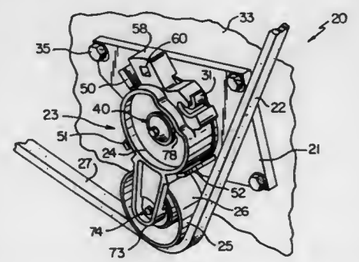
1. In a belt tensioner for a belt tensioning system that comprises a support means having an abutment means and an endless transmission belt construction carried by said support means and arranged to move in a certain path relative to said support means, said tensioner comprising an arm adapted to be pivotally mounted to said support means, a pulley rotatably carried by said arm and being adapted to be in engagement with said belt construction, and a wound coiled spring having opposed ends one of which is adapted to be operatively interconnected to said abutment means of said support means and the other of which is operatively interconnected to said arm whereby the force of said wound coiled spring is adapted to pivot said arm in a direction that urges said pulley against said belt construction with a force that tensions said belt construction, said arm having a shoulder means that is engaged by said one of said opposed ends of said wound coiled spring by the force of said wound coiled spring so as to permit insertion and removal of said arm and said wound coiled spring as a self-contained unit to and from said support means when said arm is pivoted to a certain position where said shoulder means of said arm engages said one end of said wound coiled spring and effectively holds said one end of said wound coiled spring out of contact with said abutment means of said support means, said wound coiled spring comprising a helical spring having said opposed ends thereof comprising an inner end and an outer end, said arm having an opening a bushing having a portion thereof disposed in said opening and fastening means having a portion thereof disposed in said portion of said bushing and having a projection means for mounting said arm to said support means, the improvement wherein said portion of said fastening means and said portion of said bushing respectively having securing means cooperating together to hold said portion of said fastening means in said portion of said bushing in assembled relation therewith and wherein said bushing and said arm respectively have securing means cooperating together to hold said portion of said bushing in said opening of said arm.

5,575,727

BELT TENSIONING SYSTEM AND TENSIONER THEREFOR

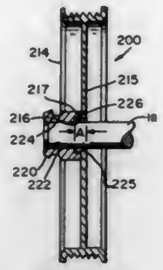
David E. Gardner, Royal Oak, and David B. Novak, Bloomfield Hills, both of Mich., assignors to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 379,055, Jan. 27, 1995, Pat. No. 5,496,221, which is a division of Ser. No. 229,252, Apr. 18, 1994, Pat. No. 5,405,297, which is a division of Ser. No. 99,283, Jul. 29, 1993, Pat. No. 5,334,110, which is a division of Ser. No. 970,345, Oct. 30, 1992, Pat. No. 5,254,048, which is a division of Ser. No. 832,297, Feb. 7, 1992, Pat. No. 5,190,502. This application Nov. 3, 1995, Ser. No. 552,831
Int. Cl.[6] F16H 7/08
U.S. Cl. 474—135 **22 Claims**



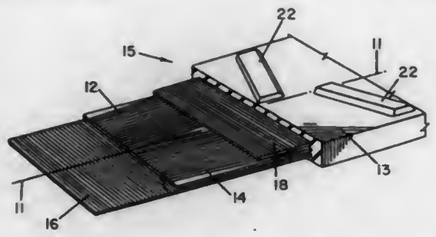
1. In a belt tensioning system comprising a support means having an abutment means, an endless transmission belt construction carried by said support means and arranged to move in a certain path relative to said support means, an arm pivotally mounted to said support means, a pulley rotatably carried by said arm and being in engagement with said belt construction, and a wound coiled spring having opposed ends one of which is operatively interconnected to said abutment means of said support means and the other of which is operatively interconnected to said arm whereby the force of said wound coiled spring tends to pivot said arm in a direction that urges said pulley against said belt construction with a force that tensions said belt construction, the improvement wherein said arm has shoulder means for being engaged by said one of said opposed ends of said wound coiled spring by the force of said wound coiled spring so as to permit removal of said arm and said wound coiled spring as a self-contained unit from said support means when said arm is pivoted to a certain position where said shoulder means of said arm engages said one end of said wound coiled spring and effectively moves said one end of said wound coiled spring out of contact with said abutment means of said support means, said shoulder means further having a projection disposed on the outermost portion of said shoulder means to ensure that said wound coiled spring is retained thereon during said removal.

5,575,728
DRIVE ASSEMBLY WITH INTERFERENCE-FIT MOUNTED PULLEY
Zdenek Cerny, Rexdale, Canada, assignor to Tesma International, Inc., Concord, Canada
Filed Mar. 29, 1995, Ser. No. 412,306
Int. Cl.[6] F16H *55/49*
U.S. Cl. 474—170 15 Claims



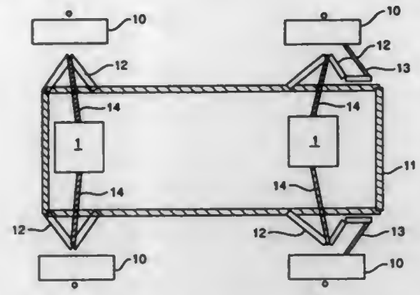
1. A drive assembly for rotating a shaft of a belt driven device, the drive assembly comprising:
a hub machined from stock material or forged in the form of an annular body of ferrous metal having a groove in an external periphery thereof,
a belt driven pulley in the form of ferrous sheet metal, said pulley including a web portion,
a structural connection between said hub and said pulley web portion such that said hub is in fixed, abutted relation with said pulley web portion, said hub and said pulley web portion each having a bore therethrough, each said bore cooperating to define a single, machined annular surface,
said annular surface being constructed and arranged to engage a periphery of the shaft in an interference-fitted manner so as to maintain torque transfer to the shaft in the event of failure of said structural connection,
said groove being constructed and arranged to be operatively engaged by a pulling tool for removing said annular surface from engagement with the shaft.

5,575,729
ELASTOMERIC DRIVE BELT CARCASS AND BELT WITH SAME
Thomas B. Feldmann, St. Mary's, Ohio, and Wesley K. Olson, Monmouth, Ill., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed May 11, 1995, Ser. No. 439,327
Int. Cl.[6] F16G *1/08*
U.S. Cl. 474—260 7 Claims



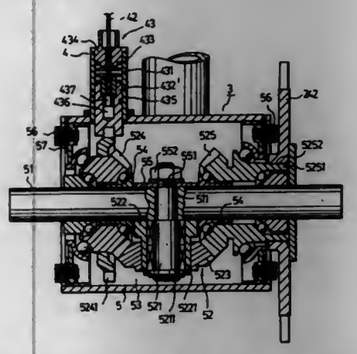
1. A carcass for an endless elastomeric drive belt having a mid-circumferential plane comprising a layer of wire reinforcement made up of two cables spirally wound and lie in abutting relationship on each side of said plane, one in the S direction, the other in the Z direction and encapsulated in an elastomeric matrix.

5,575,730
MULTIPLE-INPUT INFINITE-SPEED INTEGRAL MOTOR AND TRANSMISSION DEVICE
Jonathan Edwards, 41 E. Pax Beach Rd., California, Md. 20619, and Dave Tether, Rte. 3, Box 79, Lexington Park, Md. 20653
Filed May 20, 1994, Ser. No. 246,785
Int. Cl.[6] F16H *48/10*
U.S. Cl. 475—5 5 Claims



1. A combination motor and transmission device comprising:
at least three power input means, hereinafter referred to as a first, second and third power input means, said input means for receiving at least three inputs of electrical power; and
power conversion means for convening said electrical power of said first, second and third inputs for providing at least two outputs, said power conversion means, including a mechanical power transmission unit, said power transmission unit having at least three inputs for respectively receiving mechanical power corresponding to said first, second and third power inputs provided to said first, second and third power input means and at least two outputs for outputting the converted power as rotational mechanical power, wherein the rotational speed of said outputs are continuously variable, and said power conversion means includes, for each of said first, second and third power inputs, a respective integral combination of a respective electric motor element and an element of said mechanical transmission unit, each said integral combination involving said two respective elements thereof being directly associated mechanically and geometrically with each other without substantial spacing or other elements, including bearings and shafts therebetween;
wherein each of said integral combinations are within an envelope containing the other, whereby a compact structure is provided for each said integral combination, and said integral combinations are located closely adjacent each other;
wherein each said envelope is that of said respective motor element of the respective one of said integral combinations, and each said envelope has effectively a cylindrical symmetry; and
wherein said transmission unit comprises a differential unit which includes:
at least three opposing drive gears, corresponding to said at least three inputs of said transmission unit;
a first pair of pinion gears rotating on a first shaft between a first pair of opposing drive gears;
a second pair of pinion gears rotating on a second shaft between a second pair of opposing drive gears;
a third shaft connected at a first end perpendicularly to the center of said first shaft, the other end of said third shaft providing one of said rotational mechanical power outputs;
a fourth shaft connected at a first end perpendicularly to the center of said second shaft, the other end of said fourth shaft providing one of said rotational mechanical power outputs; and
a housing surrounding, at least in part, said drive gears, pinion gears, first, second, third and fourth shafts;
wherein each said integral combination comprises a respective one of said drive gears as the respective element of said transmission unit, each said drive gear being mechanically connected with the respective electric motor element.

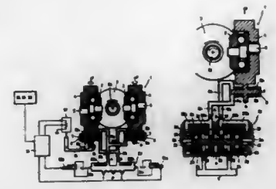
5,575,731
SPEED CHANGING DEVICE FOR A BICYCLE
Chih-Yin Chung, 2F, No. 3, Alley 17 Lane 292, Chi-Hsing Rd., Pei-Tou Dist., Taipei City, Taiwan, assignor to Chih-Yin Chung, Taiwan, and Thian-Chye Ho, Singapore
Filed Jul. 24, 1995, Ser. No. 506,301
Int. Cl.[6] F16H *3/44*
U.S. Cl. 475—307 7 Claims



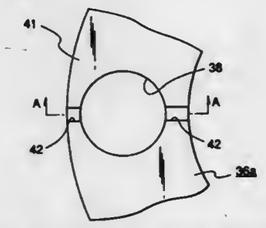
1. A speed changing device for a bicycle, comprising:
a tubular shell mounted on a bicycle frame of the bicycle;
a crank axle extending axially and rotatably through said tubular shell and having two end portions that extend respectively out of said tubular shell;
a gear wheel set disposed in said tubular shell and including
a connecting shaft extending transversely from an intermediate portion of said crank axle,
a driving bevel gear,
unidirectional clutch means for mounting rotatably said driving bevel gear on said connecting shaft and for permitting only unidirectional rotation of said driving bevel gear about said connecting shaft, and
first and second driven bevel gears mounted rotatably on said crank axle and disposed respectively on two sides of said connecting shaft, said first and second driven bevel gears meshing respectively with said driving bevel gear; and
locking means for locking selectively said first driven bevel gear to said tubular shell;
whereby, said driving bevel gear is rotatable about said connecting shaft and about an axis of said crank axle to drive rotatably said second driven bevel gear at a higher speed ratio when said crank axle is rotated while said first driven bevel gear is locked to said tubular shell, than when the first driven bevel gear is not locked to the tubular shell.

5,575,732
TOROIDAL CONTINOUS VARIABLE TRANSMISSION
Eiji Inoue, Sagamihara, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan
Filed Mar. 8, 1995, Ser. No. 400,582
Int. Cl.[6] F16H *13/38*
U.S. Cl. 476—10 8 Claims

1. A toroidal continuous variable transmission comprising an input disc provided on an input shaft; an output disc provided so as to be opposed to said input disc; an output shaft on which said output disc is mounted; a pair of power rollers adapted to be turned in contact with said input and output discs; stagelessly change a speed of rotation of said input and output discs in accordance with variation of an angle of turn of said power rollers with respect to said input and output discs and transmit the resultant speed of rotation to said output disc; trunnions supporting said power rollers rotatably and adapted to be displaced from their neutral positions in the direction of their shafts, whereby said power rollers are turned around said trunnion shafts; hydraulic cylinders having pistons for displacing said trunnions in the direction of said trunnion shafts, and cylinder chambers formed on both sides of said pistons; a spool valve provided with a spool adapted to shut off said cylinder chambers when said spool is in a neutral position, and allow each of said cylinder chambers to communicate alternately with a hydraulic pressure source and a drain at atmospheric pressure when said spool is displaced from said neutral position, such that a first one of said cylinder chambers communicates with the pressure source whenever a second one of said cylinder chambers communicates with said drain; a sleeve fitted slidably in a space between a valve casing for said spool valve and said spool, capable of being shifted axially in accordance with a pressure difference between said cylinder chambers and urged constantly toward a neutral position by a force of springs; and lines setting communication between end surfaces of said sleeve and said cylinder chambers so that a hydraulic pressure in one cylinder chamber is applied to one end surface of said sleeve with a hydraulic pressure in the other cylinder chamber applied to the other end surface thereof.



5,575,733
TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION HAVING RETAINER RING WITH LUBRICATING OIL PATHS
Hisashi Machida, Fujisawa, and Tsutomu Abe, Chigasaki, both of Japan, assignors to NSK Ltd., Tokyo, Japan
Filed Oct. 28, 1994, Ser. No. 331,090
Claims priority, application Japan, Dec. 7, 1993, 5-065285
Int. Cl.[6] F16H *15/38*
U.S. Cl. 476—40 16 Claims



9. A toroidal type continuously variable transmission comprising:
first and second disks that have respective inner side surfaces in opposition to each other;
a trunnion swingable around an axis transverse to respective central axes of said first and second disks;

a power roller disposed between said first and second disks, a peripheral surface of said power roller being in contact with said inner side surfaces of said first and second disks; and

a thrust rolling bearing provided between said power roller and said trunnion to support a load applied to said power roller in a thrust direction, said thrust rolling bearing including a plurality of rolling elements and a retainer for rotatably holding said plurality of rolling elements, wherein said retainer comprises a substantially disk-shaped main body, a plurality of pockets formed in a radially intermediate portion of said main body and holding said rolling elements rotatably therein, and a plurality of lubricating oil paths extending between radially inner and outer peripheries of said main body so as to traverse respective pockets.

5,575,734

VARIABLE-SPEED DRIVE, PARTICULARLY FOR VEHICLES

Antonio Rondinelli, Via B. Spaventa, 20, 10134 Torino, Italy

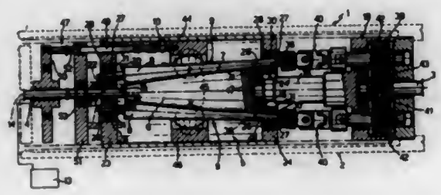
PCT No. PCT/IT92/00104, § 371 Date Jul. 8, 1994, § 102(e) Date Jul. 18, 1994, PCT Pub. No. WO93/05318, PCT Pub. Date Mar. 18, 1993

PCT Filed Aug. 12, 1992, Ser. No. 199,278

Claims priority, application Italy, Sep. 3, 1991, TO91A0672

Int. Cl.[6] F16H *15/04*

U.S. Cl. 476—55 **25 Claims**



1. A variable-speed drive for a vehicle, comprising a rotatable input shaft, a rotatable output shaft, and connecting means for connecting said input shaft to said output shaft in driving engagement and enabling the velocity ratio of the shafts to be varied continuously, said connecting means comprising:

a first rotary drive element angularly secured to a first of said shafts and having a first, curved, lateral surface with a first radius of curvature;

a plurality of second rotary drive elements angularly secured to a second of said shafts and arranged in a ring about said first rotary element, each said second rotary element having a respective second, curved, lateral surface facing said first rotary element with a second radius of curvature;

control means providing for mutual cooperation of said first curved surface of said first rotary member respectively with said second curved surfaces of said second rotary elements at a single point of tangency which is movable along a generating line of said rotary elements; and

means for forcing said curved surfaces against each other at each said point of tangency,

said control means comprising:

a reaction element coaxially arranged with said first rotary element;

a ring of a plurality of roller bodies located between said second rotary elements and said reaction element; and

actuating means for axially moving said ring of roller bodies in relation to said first and second rotary elements;

said first and second curved surfaces of said first and second rotary elements being constructed and arranged to maintain said roller bodies gripped between said second rotary elements and said reaction element regardless of axial position of said roller bodies.

5,575,735

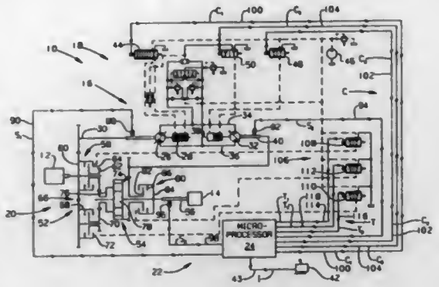
INTEGRATED POWER TRANSMITTING SYSTEM

Alan R. Coutant, Chillicothe; Jerry D. Marr, Metamora, and Sanjay Rajagopalan, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Apr. 6, 1995, Ser. No. 416,394

Int. Cl.[6] F16H *47/04*

U.S. Cl. 475—72 **6 Claims**



1. An integrated power transmitting system for a machine having a source of power and a work system, comprising:

a hydrostatic transmission having a variable displacement pump drivingly connected to the source of power and a variable displacement motor having an output shaft and being fluidly connected to the variable displacement pump;

a microprocessor;

a control arrangement having first and second valve mechanisms and an input control mechanism operative to generate and deliver a command input to the microprocessor for controlling through the first valve mechanism the displacement of the variable displacement pump between its minimum and maximum displacement positions and once the variable displacement pump reaches its maximum displacement position to control the displacement of the variable displacement motor between its maximum and minimum positions in response to the command input establishing the desired speed of the output shaft of the variable displacement motor;

a mechanical transmission drivingly connected to the source of power and having a full range forward and reverse gear mechanism connected to the source of power, a planetary arrangement connected to both the full range forward and reverse gear mechanism and the output shaft of the variable displacement motor and selectively operative to sum the outputs from the gear mechanism and the variable displacement motor, and a final output shaft connected between the planetary arrangement and the work system, the planetary arrangement has a ring gear, a planet and carrier gears, and a sun gear, the output shaft of the variable displacement motor is drivingly connected to the ring gear, the full range forward and reverse gear mechanism is selectively connected to the planet and carrier gears and the sun gear is connected to the final output shaft;

a sensing arrangement operative to sense the input speed from the source of power to the variable displacement pump and the mechanical transmission, the speed of the final output shaft connected to the work system, the speed of the output shaft from the variable displacement motor, and the magnitude and direction of the desired input command; and

the microprocessor being operative to receive the signals from the control mechanism and the sensing arrangement, process the signals and deliver a first set of control signals to the first valve mechanism to progressively control the displacement of the variable displacement pump and the variable displacement motor and a second set of control signals to the second valve mechanism to selectively control the operation of the mechanical transmission.

5,575,736

TOROIDAL-TYPE CONTINUOUSLY VARIABLE TRANSMISSION

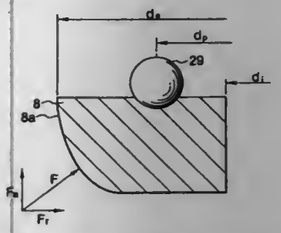
Hiromichi Takemura, Fujisawa, Japan, assignor to NSK, Ltd., Tokyo, Japan

Filed Feb. 15, 1995, Ser. No. 389,051

Claims priority, application Japan, Mar. 8, 1994, 6-037014

Int. Cl.[6] F16H *15/38*

U.S. Cl. 476—46 **1 Claim**



1. A toroidal-type continuously variable transmission, comprising:

first and second discs rotatably supported coaxially with each other and having respective inner faces arranged to face each other;

a trunnion swingable around an axis transverse to respective central axes of said first and second discs;

a displacement shaft extending from an inner face of said trunnion;

a power roller disposed between said first and second discs and rotatably supported around said displacement shaft; and

a thrust ball bearing arranged between an outer face of said power roller and said inner face of said trunnion to allow said power roller to rotate while receiving and supporting a load exerted on said power roller in a thrusting direction,

wherein, when an inner diameter of said power roller is d_i, an outer diameter of said power roller is d_o, and a diameter of a pitch circle of balls constituting said thrust ball bearing is d_p, the following condition is satisfied:

$$3<d_o^2/(d_i \cdot d_p)<5.$$

5,575,737

UTILITY VEHICLE DRIVELINE CONTROL METHOD

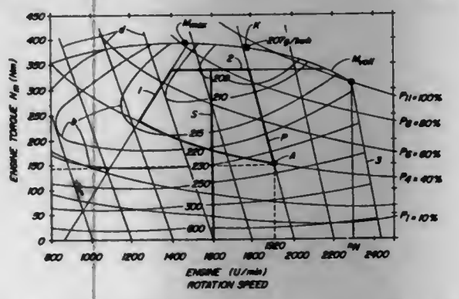
Heinz Weiss, Bensbeim, Germany, assignor to Deere & Company, Moline, Ill.

Filed Aug. 21, 1995, Ser. No. 517,482

Claims priority, application Germany, Aug. 27, 1994, 44 30 447.1

Int. Cl.[6] B60K *41/12*

U.S. Cl. 477—43 **9 Claims**



1. A driveline control system for a utility vehicle having an engine (**10**) with fuel injection control system, a manually-operated throttle lever, and an infinitely variable transmission (**16**), the driveline control system having means for determining and storing in memory an initial engine output rotational speed (N(mo)), an initial wheel rotational speed (N(ro)), an actual engine rotational speed (N(mn)) and an actual wheel rotational speed (N(rn)), the driveline control system performing a method comprising the following steps:

increasing the transmission ratio of the infinitely variable transmission if the actual engine speed N(mn) is less than the initial engine speed N(mo);

decreasing the transmission ratio of the infinitely variable transmission if the actual engine speed N(mn) is greater than the initial engine speed N(mo); and

while the transmission ratio remains constant, adjusting the engine speed until the actual wheel rotational speed N(rn) is the same as the initial wheel rotational speed N(ro).

5,575,738

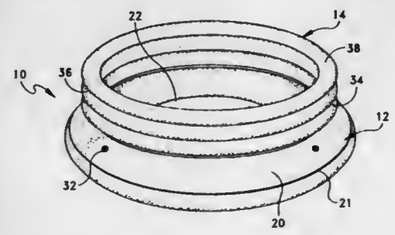
EXERCISE AND PLAY APPARATUS

Charles J. Millington, Lakeville, Mass., and Melissa M. Morgan, Little Compton, R.I., assignors to Hasbro, Inc., Pawtucket, R.I.

Filed Jun. 12, 1995, Ser. No. 489,469

Int. Cl.[6] A63B *5/11*

U.S. Cl. 482—35 **12 Claims**

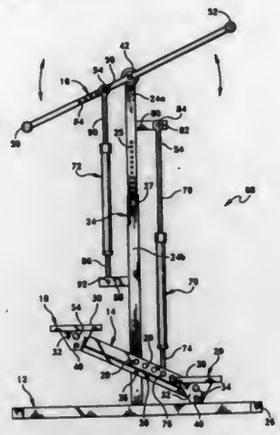


10. An exercise and play apparatus comprising:

an inflatable, substantially horizontally oriented bottom wall having an upper surface, a lower surface and a perimeter, the upper and lower surfaces being spaced apart throughout the bottom wall by a distance sufficient to generate a trampoline effect based on air pressure between the upper and lower surfaces; and

an inflatable, substantially vertical oriented sidewall extending upwardly from and continuously along the upper surface of the bottom wall said sidewall defining a continuous perimeter of an enclosed, upwardly open central play area on said bottom wall and extending upwardly from said bottom wall to provide a cushioned perimeter wall around said play area, the sidewall having a height and thickness selected to retain, as well as cushion the impact of, users jumping on the upper surface of the bottom wall.

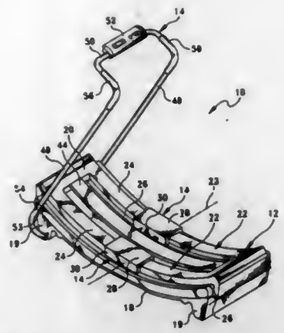
5,575,739
AEROBIC EXERCISE APPARATUS WITH PIVOTING FOOT TREADLES AND HANDLEBAR
Gary D. Piaget, 3390 American Saddler Dr., and Trace O. Gordon, 3880 W. Lariat Rd., both of Park City, Utah 84060
Division of Ser. No. 515,526, Aug. 15, 1995, Pat. No. 5,518,470. This application Mar. 11, 1996, Ser. No. 613,337
Int. Cl.[6] A63B 21/00
U.S. Cl. 482—51 5 Claims



1. An exercise device comprising:
a frame including an upright support member;
a first pivot lever pivotably mounted at a first pivot axis on said support member, said pivot lever including first and second end portions;
first and second foot platforms respectively pivotably mounted on the first and second end portions of said first pivot lever;
a second pivot lever pivotably mounted at a second pivot axis on said support member, said second pivot axis being positioned above said first pivot axis, said second pivot lever including first and second end portions;
a first resistance means connected between said first pivot lever and said support member wherein resistance is provided during reciprocating movement of said first pivot lever; and
a second resistance means connected between said second pivot lever and said support member wherein resistance is provided during reciprocating movement of said second pivot lever.

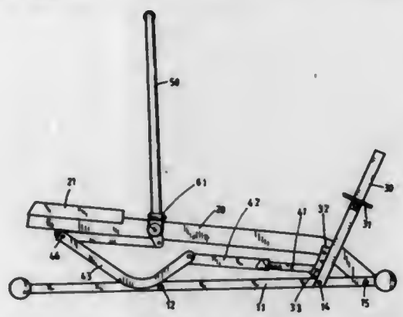
5,575,740
STRIDING EXERCISER WITH UPWARDLY CURVED TRACKS
Gary D. Piaget, 1435 W. Silvermeadows Dr. #48, and Trace O. Gordon, 3880 W. Lariat Rd., both of Park City, Utah 84060
Continuation of Ser. No. 129,592, Sep. 30, 1993, abandoned. This application May 24, 1995, Ser. No. 449,658
Int. Cl.[6] A63B 22/00;69/18
U.S. Cl. 482—70 13 Claims

1. A striding exercise device comprising:
a base including two elongated parallel tracks which curve upwardly in a continuous arc, said tracks each including a center ridge and two spaced grooves respectively positioned on opposing sides of said center ridge, said continuous arc having a curvature which generally corresponds to a natural swinging arc of a human leg as it pivots around its hip joint, said base having a transverse centerline, said curvature being generally symmetrical about said transverse centerline; and
footskate means respectively movably supported on said parallel tracks, for receiving feet of an operator thereon, wherein said operator reciprocates said feet back and forth so that said footskate means move in reciprocating motion along said



upwardly curved tracks, said user having a center of gravity, said curvature generally immobilizing vertical movement of said center of gravity of said operator during said reciprocating motion.

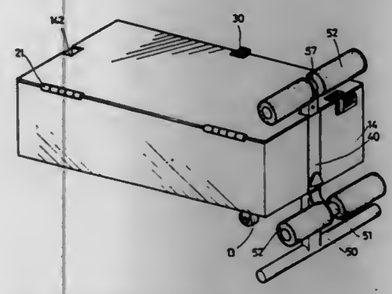
5,575,741
EXERCISE MECHANISM FOR SIMULATING HORSE RIDING TYPE AND ROWING TYPE EXERCISES
Robert Fan, No. 7, Industry North Road 2, Nan Kang Industrial Zone, Nan Tou City, Nan Tou County, Taiwan
Filed Dec. 7, 1995, Ser. No. 568,785
Int. Cl.[6] A63B 21/04
U.S. Cl. 482—72 4 Claims



1. An exercise mechanism for simulating horse riding type exercise and rowing type exercise, said exercise mechanism comprising:
a base including a middle axle, a middle front axle and a front axle,
a foot post means including a lower portion pivotally coupled to said base at said middle front axle and including a foot support means secured thereto,
a seat post means including a front end pivotally coupled to said base at said front axle and including a rear end having a seat cushion secured thereon and including a middle portion having a shaft rotatably secured thereto, said shaft including an extension means extended therefrom and rotated in concert with said shaft,
a lever means including a middle portion pivotally coupled to said base at said middle axle and including a front end and a rear end, said lever means including a rod means secured in said rear end thereof and slidably engaged beneath said rear end of said seat post means,
a link means pivotally coupling said front end of said lever means to said foot post means,
a bar means pivotally coupled between said extensions and said rod means so as to allow said extension means to move said

rod means relative to said shaft and to rotate said lever means about said middle axle, and
a pair of handle means including a lower portion secured to said shaft for rotating said shaft and said extension means,
said rear end of said seat post means being moved upward and downward by said rod means when said lever means is rotated about said middle axle by said extension means.

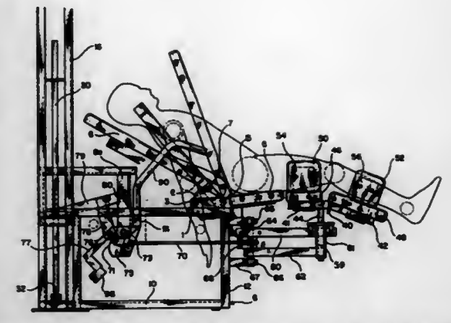
5,575,742
MULTIPURPOSE EXERCISE APPARATUS
Tien-Lai Wu, 58, Ma Yuan West St., Taichung, Taiwan
Filed Mar. 6, 1995, Ser. No. 417,293
Int. Cl.[6] A63B 21/00
U.S. Cl. 482—92 1 Claim



1. An exercise apparatus comprising:
a housing including a hollow interior for accomodating objects, a rear wall and a front wall, an upper portion having a cover pivotally coupled to said housing, a rear portion having wheel means provided thereon for moving said housing,
said rear wall and said front wall each including a hole vertically formed therein,
a handle secured to said front wall for carrying said housing,
means for pivotally coupling said cover and securing said cover to said housing,
two tubes secured in said holes respectively, said tubes each including a bottom portion and an upper portion,
two rods each including a stud extended therefrom for engaging with said bottom portion of said tube so as to form a stable base for said housing,
two bars secured to said upper portion and said lower portion of at least one of said tubes, and
at least one sleeve engaged on each of said tubes.

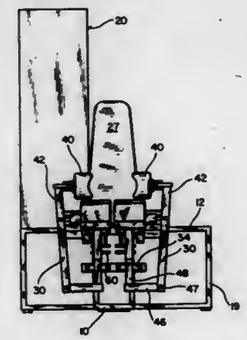
5,575,743
METHOD AND APPARATUS FOR EXERCISING ADDUCTOR MUSCLES
Arthur A. Jones, Ocala, and Philip Sencil, Anthony, both of Fla., assignors to MedX Corporation, Ocala, Fla.
Continuation-in-part of Ser. No. 194,460, Feb. 8, 1994, Pat. No. 5,421,796. This application Mar. 3, 1995, Ser. No. 397,938
Int. Cl.[6] A63B 23/04
U.S. Cl. 482—97 14 Claims

1. An adductor exercise machine including a seat for receiving an exerciser, at least one movement arm mounted for movement about a generally vertical axis between an open position which extends generally laterally from the seat and a closed position which extends generally forwardly of the seat, a resistance means for opposing movement of the movement arm between the open and closed position, transmission means interconnecting the movement arm and the resistance means for moving the resistance



means when the movement arm is moved from the open towards the closed position, said transmission means including a cam mounted for movement about a generally horizontal axis, linkage means interconnecting the movement arm and the cam for rotating the cam about said generally horizontal axis, a cam follower engaged on the cam and means interconnecting the cam follower and the resistance means for moving the resistance means upon rotation of the cam, and an auxiliary actuating means for rotating said cam and moving the movement arm between closed and open positions independently of engagement of the movement arm by the exerciser.

5,575,744
ABDUCTOR EXERCISE MACHINE
Arthur A. Jones, Ocala, and Philip Sencil, Anthony, both of Fla., assignors to MedX Corporation, Ocala, Fla.
Continuation-in-part of Ser. No. 397,938, Mar. 3, 1995, Ser. No. 194,460, Feb. 8, 1994, Pat. No. 5,421,796, and Ser. No. 947,284, Sep. 15, 1992. This application May 12, 1995, Ser. No. 440,475
Int. Cl.[6] A63B 23/04
U.S. Cl. 482—97 12 Claims



1. A machine for exercising the abductor muscles comprising in combination, a seat for receiving a user, a backrest mounted for pivotal movement at a rear portion of the seat for adjusting the angular position of the backrest relative to the seat, at least one movement arm mounted for movement about a generally vertical axis between an inner position and an outer position in response to engagement by outer portions of the thigh of the user upon exerting abductor muscles, resistance means opposing movement of the movement arm in one direction, means for adjusting the inner position of the movement arm in accordance with the size of the user's thigh, said movement arm including a thigh pad and a thigh pad mounting portion movable laterally relative to the movement

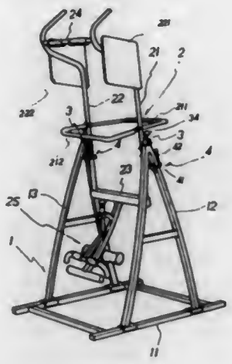
arm to adjust the position of the thigh pad, said thigh pad being mounted on the thigh pad mounting portion, means pivotally mounting the thigh pad for movement about a generally vertical axis relative to the thigh pad mounting portion, means for locking the backrest in selected angular position relative to the seat, and wherein said thigh pad-mounting portion is pivotable laterally to adjust the lateral position of the thigh mounting portion relative to the seat and a user's thigh, and means releasably holding said thigh pad mounting portion in a laterally adjusted position.

5,575,745

SELF-ROTATIONAL EXERCISER

Tzu C. Lin, Fl. 11-5, No. 50, Sec. 4, Roosevelt Road, Taipei, Taiwan

Filed Aug. 21, 1995, Ser. No. 517,552
Int. Cl.[6] A63B *23/02*
U.S. Cl. 482—144 **8 Claims**



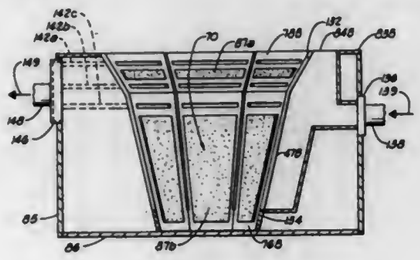
1. A self-rotational exerciser, comprising:
a fixed stand including
a base having two lateral sides.
at least two side supports extending upward from said lateral sides of said base, and
two pivots respectively disposed on said side supports; and
a rotational frame being rotatably connected to said fixed stand via said two pivots, said rotational frame including
two elongated side posts,
a seat lever connected transversely between said two elongated side post,
a foot confining device extending downwardly from said seat lever,
a hand lever connected transversely between said two elongated side posts, and
a stopping handle connected to said hand lever, said stopping handle positioned behind said hand lever such that a clearance is formed for insertion of a user's palm,
wherein said rotational frame is able to freely rotate relative to said fixed stand in either a clockwise or counterclockwise direction about said two pivots or remain fixed depending on a user's body position and movements.

5,575,746

APPARATUS AND METHOD USING AIR PRESSURE AND VACUUM TO FORM FLAT-PANELED FLOWER POT COVER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 965,459, Oct. 23, 1992, Pat. No. 5,286,246, which is a continuation of Ser. No. 805,412, Dec. 10, 1991, Pat. No. 5,176,609, which is a continuation-in-part of Ser. No. 736,348, Jul. 26, 1991, Pat. No. 5,127,817, which is a continuation-in-part of Ser. No. 422,653, Oct. 17, 1989, Pat. No. 5,073,161, which is a continuation-in-part of Ser. No. 397,114, Aug. 22, 1989, Pat. No. 5,029,412, which is a continuation-in-part of Ser. No. 366,588, Jun. 15, 1989, Pat. No. 5,111,613, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned, said Ser. No. 422,653is a continuation-in-part of Ser. No. 367,098, Jun. 15, 1989, Pat. No. Des. 318,030, which is a continuation-in-part of Ser. No. 283,014, Dec. 8, 1988, abandoned, which is a continuation of Ser. No. 652,903, Sep. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 613,053, May 22, 1984, Pat. No. Des. 293,224, said Ser. No. 805,412is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Feb. 15, 1994, Ser. No. 196,683
Int. Cl.[6] B31B *1/44*
U.S. Cl. 493—154 **27 Claims**



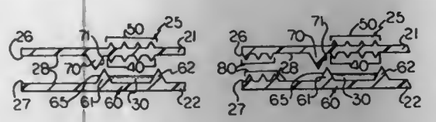
25. A method of forming a sheet of material into a flower pot or flower pot cover, the steps of the method comprising:
positioning a sheet of material over an opening of a female die, the opening having at least three female forming surfaces for a base and a skirt;
moving a male die into the opening of the female die, the male die having a male forming surface corresponding to each female forming surface and the sheet of material being pressed between the corresponding male and female forming surfaces to form the flower pot or flower pot cover as the male die is moved into the opening of the female die;
producing a vacuum at at least one of the forming surfaces of the female die; and
introducing a blast of air into the opening of the female die at each intersection of laterally adjacent female forming surfaces as the male die is moved into the opening of the female die.

5,575,747

ADHESIVE CLOSURE FOR FLEXIBLE BAG

Brian C. Dais, Sanford, and Jose Porchia, Midland, both of Mich., assignors to Dowbrands L.P., Indianapolis, Ind.

Continuation of Ser. No. 228,484, Apr. 15, 1994, Pat. No. 5,527,112. This application May 31, 1995, Ser. No. 454,758
Int. Cl.[6] B31B *1/90;1/84*
U.S. Cl. 493—213 **4 Claims**



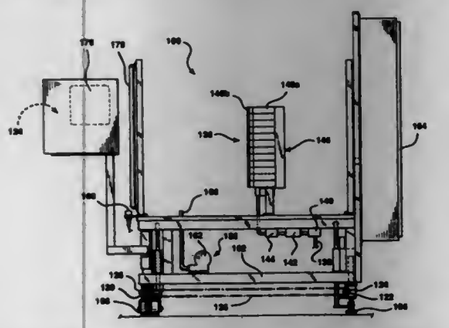
1. A process for producing a thermoplastic bag with a reusable adhesive closure comprising the steps of:
forming first portions of a first inner surface of a first wall of a bag into a pair of channel rib members transversely across a longitudinal width of said bag at a preselected distance from an opening of the bag;
affixing a reusable adhesive strip transversely across the longitudinal width of the first inner surface of the first wall of a bag and in between said pair of channel rib members;
forming a second portion of a second inner surface of a second wall of a bag into a first roughened surface strip transversely across a longitudinal width of said bag at a preselected distance from an opening of the bag and aligning said first roughened surface on the second wall and with said affixed reusable adhesive strip;
said first roughened surface of said bag being pressable against and into said adhesive strip on said first inner surface to form a seal by contacting said adhesive strip with said roughened surface of said second inner surface; and
forming a third portion of said second inner surface of said second wall into one guidance rib member transversely across the longitudinal width of said bag and adjacent said first roughened surface strip.

5,575,748

AIRBAG FOLDING ENGINE ADAPTABLE FOR FOLDING A PLURALITY OF AIRBAG DESIGNS

William J. Budde, Dayton; Douglas M. Donahue, Jr., Bellbrook, both of Ohio; Louis A. Fanty, Palm Harbor, Fla., and Scott F. Mason, New Carlisle, Ohio, assignors to The Omega Company, Inc., Dayton, Ohio

Filed Mar. 10, 1994, Ser. No. 209,303
Int. Cl.[6] B65H *45/02*
U.S. Cl. 493—477 **20 Claims**



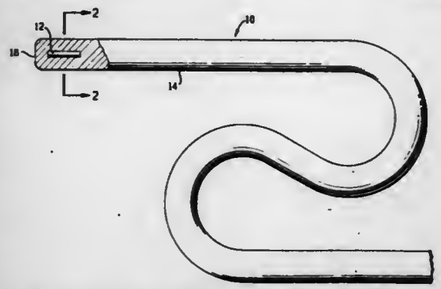
1. An airbag folding engine for supporting one of a plurality of types of airbag folding devices, each type of airbag folding device being capable of folding a different type of airbag, said airbag folding engine comprising:
a frame for removably mounting any one of the plurality of airbag folding devices; and
a driver system mounted on said frame and adapted to be removably connected to the one airbag folding device mounted on said frame for effecting operation of the one airbag folding device.

5,575,749

ULTRA-THIN HIGH DOSE RADIOACTIVE SOURCE WIRE

Samuel F. Liprie, Lake Charles, La., assignor to Omnitron International, Inc., Houston, Tex.

Continuation of Ser. No. 228,400, Aug. 4, 1988, Pat. No. 5,084,002. This application Sep. 27, 1990, Ser. No. 589,079
Int. Cl.[6] A61N *5/00;* **A61B** *6/00*
U.S. Cl. 600—3 **3 Claims**



1. The method of fabricating a radioactive source wire for in situ treatment of malignancies in patients, comprising:
assembling a source composed of material capable of activation to a radioactivity level sufficient for said treatment with a flexible elongate delivery wire of substantially uniform diameter to become a substantially integral unit, by introducing the source into a hole formed in the tip of a delivery wire larger than the desired diameter of the source wire to be used for the treatment and drawing the assembly down to the desired diameter.

5,575,750

Patent Not Issued For This Number

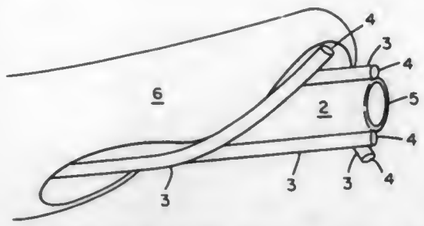
5,575,751

DEVICE FOR MEASURING INCIDENT LIGHT IN A BODY CAVITY

McClellan M. Walther, Gaithersburg; Thomas F. DeLaney, Silver Spring; Frank Harrington, Catonsville; Paul D. Smith, Annapolis, and Walter S. Friauf, Bethesda, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 883,013, May 14, 1992, abandoned. This application Aug. 22, 1994, Ser. No. 294,892
Int. Cl.[6] A61B *1/00;1/06;5/05*
U.S. Cl. 600—104 **11 Claims**

1. An obturator which comprises:
a central hollow tubular member having first and second ends and an outer surface;
at least one auxiliary hollow elongated cylindrical tubular member having first and second ends, and an outer surface,
wherein each of said at least one auxiliary hollow elongated cylindrical tubular members is substantially parallel and



attached directly to said outer surface of said central hollow tubular member along a contact point therebetween so that the outer surface of each of said at least one auxiliary hollow elongate tubular members is exposed except at said contact point and,

said first end of each of said at least one auxiliary hollow elongated cylindrical tubular members is directed in a non-convergent, non-parallel direction with one another and with said central hollow tubular member and in a direction which has a forward component with respect to said first end of said central hollow tubular member and;

means for monitoring light, said means for monitoring light being connectable to each of said at least one auxiliary hollow elongated cylindrical tubular members by optical fibers which pass through said second end of each of said at least one auxiliary hollow elongated cylindrical tubular members and conduct incident light to said means for monitoring light.

5,575,752

ENDOSCOPE SYSTEM, COVER TYPE ENDOSCOPE UNIT, CHANNELED COVER TYPE ENDOSCOPE UNIT, HOLDING TOOL IN ENDOSCOPE SYSTEM, AND HOUSING MEMBER OF COVER TYPE ENDOSCOPE UNIT

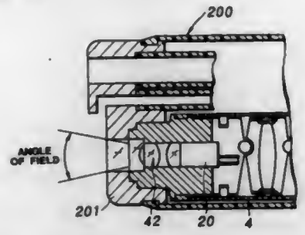
Hisao Yabe; Akira Suzuki; Minoru Yamazaki; Hideo Ito, all of Hachioji; Yoshihiro Iida, Tama; Yoshio Tashiro, Hino; Osamu Tamada, and Hiroshi Ishii, both of Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1993, Ser. No. 37,283

Claims priority, application Japan, Feb. 19, 1993, 5-005603 U; Feb. 19, 1993, 5-005604 U; Feb. 22, 1993, 5-005926 U

Int. Cl.[6] A61B *1/04*

U.S. Cl. 600—121 **5 Claims**



1. An endoscope system comprising:

a cover endoscope fittable with an endoscope cover and used by covering its outer surface with said endoscope cover; and

a coverless endoscope used without being covered with said endoscope cover;

wherein each of said cover endoscope and said coverless endoscope includes an objective optical system provided at a distal end of an insert part, an eyepiece optical system capable of viewing directly with the naked eye and a mask signal generation means, interposed between said objective optical system and said eyepiece optical system, for masking a part of a range of visual field obtained by said objective optical system, a mask configuration by said mask signal generation means for the range of visual field of said objective optical system in said cover endoscope is substantially the same as that in said coverless endoscope, and the ranges of visual fields capable of viewing in said respective eyepiece portions are substantially the same.

5,575,753

ENDOSCOPIC APPARATUS USING A COVERED TYPE ENDOSCOPE FITTED IN AN ENDOSCOPE COVER

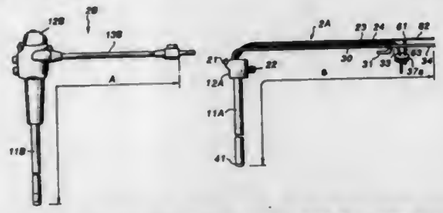
Hisao Yabe, Hachioji; Yoshihiro Iida, Tama; Akira Suzuki; Hideo Itoh, both of Hachioji; Yoshio Tashiro, Hino; Minoru Yamazaki, and Osamu Tamada, both of Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1993, Ser. No. 38,620

Claims priority, application Japan, Mar. 5, 1993, 5-009176 U; Mar. 5, 1993, 5-009177 U; Mar. 5, 1993, 5-045564

Int. Cl.[6] A61B *1/04*

U.S. Cl. 600—123 **7 Claims**



1. A covered endoscope type endoscopic apparatus comprising:

an endoscope having an inserted portion inserted into a body cavity to obtain an observed image, and transmission means for transmitting the observed image, said transmission means consisting of an operated portion formed at a base end of said inserted portion and a universal cord extending from a side portion of said operated portion;

an endoscope cover capable of being fitted around said endoscope and having a fore end component portion, a base end component portion and a soft tubular portion; and

at least one fluid passage having at least a portion provided in said tubular portion;

wherein the overall length of said fluid passage is greater than the overall length of said endoscope including said inserted portion and said transmission means.

5,575,754

ENDOSCOPIC APPARATUS FOR THREE DIMENSIONAL INSTRUMENTATION

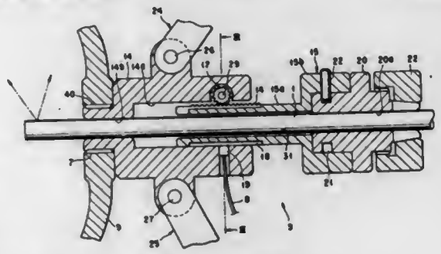
Yutaka Konomura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1995, Ser. No. 412,760

Claims priority, application Japan, Feb. 24, 1995, 7-037103

Int. Cl.[6] A61B *1/04*

U.S. Cl. 600—117 **19 Claims**



1. An endoscopic apparatus comprising:

an endoscope insertable in an object of inspection;

an apparatus body capable of being removably fixed to the object of inspection, the apparatus body including a fixing section capable of being fixed to the endoscope and a retaining section for holding the fixing section, the retaining section including rotation restraining means for restraining the rotation of the fixing section and moving means capable of linearly moving the fixing section;

movement detecting means for detecting the movement of the fixing section;

video signal converting means for converting a monitor image of a subject region in the object of inspection, observed by means of the endoscope, into a video signal; and

instrumentation means including a video signal receiving section for receiving the video signal from the video signal converting means, storage means for storing video information delivered to the video signal receiving section and detected information delivered from the movement detecting means, and computing means for effecting three-dimensional instrumentation for the subject region in accordance with the video information and the detected information for each position of the endoscope moved together with the fixing section by the moving means.

5,575,755

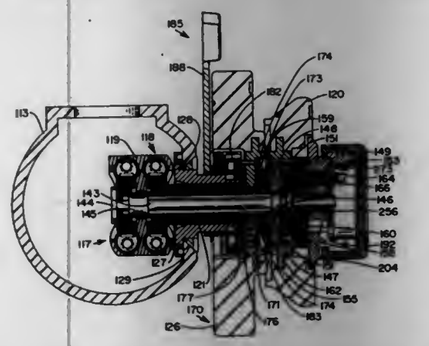
FLUID INSENSITIVE BRAKING FOR AN ENDOSCOPE

Allan I. Krauter, Syracuse, and Michael Kehoskie, Jordan, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Continuation-in-part of Ser. No. 200,383, Feb. 23, 1994, Pat. No. 5,464,007. This application Feb. 13, 1995, Ser. No. 388,280

Int. Cl.[6] A61B *1/00*

U.S. Cl. 600—148 **23 Claims**



1. A steering mechanism for a flexible insertion tube of an endoscope having an articulation section at its distal end and deflection cable means extending from the distal end to the proximal end thereof, said steering mechanism comprising:

a control housing operatively connected to the proximal end of said insertion tube;

a control wheel mounted for rotation on the exterior of said control housing;

connecting means for coupling said control wheel to said deflection cable means for articulating the distal end of said insertion tube;

a brake means mounted adjacent to said control wheel;

coacting means movably mounted on said control wheel for engaging said brake means to resist rotation of said control wheel; and

actuating means for moving said brake means between a first position wherein said brake means is out of engagement with said coacting means and a second position wherein said brake means is in braking engagement with said coacting means.

5,575,756

ENDOSCOPE APPARATUS

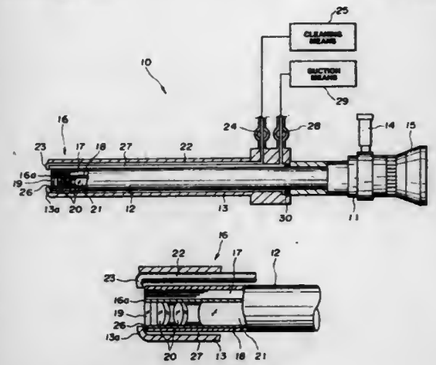
Hitoshi Karasawa; Norio Kobayashi, both of Hachioji; Tatsuya Yamaguchi, Hino; Tetsumaru Kubota, Hachioji; Yukio Kawase, Tokyo; Mitsumasa Okada, and Takao Yamaguchi, both of Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 12, 1994, Ser. No. 289,226

Claims priority, application Japan, Aug. 16, 1993, 5-202335; Oct. 4, 1993, 5-248173; Oct. 8, 1993, 5-253286; Apr. 5, 1994, 6-066905

Int. Cl.[6] A61B *1/12*

U.S. Cl. 600—157 **13 Claims**



1. An endoscope apparatus comprising:

an endoscope including an insertion section;

a sheath attached thereto covering at least said insertion section of the endoscope, wherein a forward end gap portion is formed between an inner surface of an edge portion formed in a forward end portion of said sheath and an outer surface of a forward end portion of said insertion section of the endoscope, and wherein a fluid passage which communicates with said forward end gap portion is formed between an inner surface of said sheath and an outer surface of said insertion section of the endoscope; and

a tubular cleaning channel arranged within said fluid passage for transporting cleaning fluid toward said forward end portion of said insertion section of the endoscope.

5,575,757

ENDOSCOPE WITH FOCUSING MECHANISM

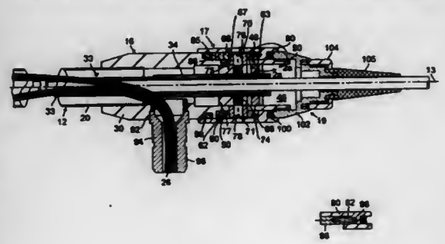
John E. Kennedy, Lowell, Mass.; Paul V. Lucey, Sandown, N.H.; Yury E. Kazakevich, Methuen; Gheorghe Mihalca, Chelmsford, both of Mass.; Gary D. Henley, Yukon, and Clifford A. Dowdy, Piedmont, both of Okla., assignors to Smith & Nephew Endoscopy Inc., Andover, Mass.

Filed Oct. 9, 1992, Ser. No. 958,688

Int. Cl.[6] A61B *1/00*

U.S. Cl. 600—167 **16 Claims**

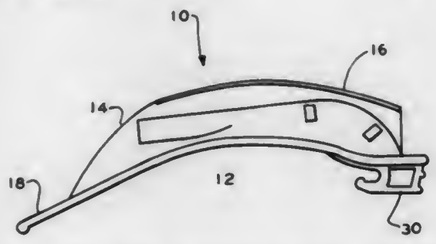
12. An endoscope apparatus for internal inspection of an object,



VOL 1192 ISS 3 NO 19 1996 UMI

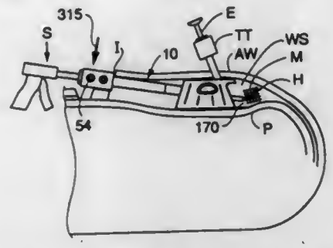
comprising
an insertion section elongated along a longitudinal axis between a distal end to be inserted into said object and a proximal end to be manipulated by a user,
said distal end enclosing a chamber,
a lens assembly disposed in said chamber,
an electro-optical sensor mounted in said chamber proximally of said lens assembly, said sensor being movable along the longitudinal axis,
a focusing mechanism having a focus control element at said proximal end and a mechanical coupling connecting said focus control element to said sensor for causing said sensor to move along said longitudinal axis for focusing in response to activation of said focus control element,
said focus control element including a manipulator that is accessible to and rotatable by said user to provide said activation, said manipulator including an outer sleeve having a surface transverse to said longitudinal axis,
said mechanical coupling comprising
a helical surface disposed on an inner sleeve which surrounds and is rotatable around said proximal end, said outer sleeve surrounding said inner sleeve with said transverse surface of said outer sleeve being disposed in opposing, face-to-face engagement with a transverse surface of said inner sleeve, said inner sleeve and said outer sleeve being connected at said transverse surfaces by a coupling oriented generally parallel to said longitudinal axis so that said outer sleeve can be disconnected from said inner sleeve by moving said outer sleeve axially away from said inner sleeve along the longitudinal axis, and
a rigid actuator including a follower configured to engage said helical surface and to move along said helical surface in response to rotation of said rotatable manipulator, thereby to cause said rigid actuator to move along the longitudinal axis and move said sensor with respect to said lens assembly.

5,575,758
LARYNGOSCOPE BLADE
William A. Easterbrook, III, Westwood, N.J., assignor to Vital Signs, Inc., Totowa, N.J.
Filed Oct. 17, 1994, Ser. No. 323,549
Int. Cl.[6] A61B *1/26*
U.S. Cl. 600—193 **3 Claims**



1. An improved plastic laryngoscope blade providing increased resistance to torsional deformation, the blade for being coupled to a laryngoscope handle, comprising:
a plastic body including a generally curved spatula portion including an edge portion, a web portion including an outer portion and a flange portion extending inwardly from said web portion along said outer portion and residing at least partially over at least a portion of said spatula portion, and coupling means provided on said spatula portion for coupling said body to said handle; and
said spatula portion including an upper surface, said edge portion defining an outer surface of the blade, and said web portion extending from said upper surface of said spatula portion such that said web portion extends from a position adjacent to said edge portion in a direction which is perpendicular to and offset from said upper surface of said spatula portion.

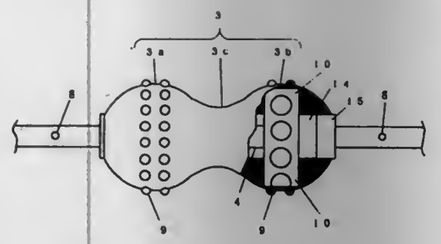
5,575,759
METHODS OF USING INFLATABLE RETRACTION DEVICES IN LAPAROSCOPIC SURGERY
Frederic H. Moll, San Francisco; Daniel T. Wallace, Mountain View; Jeffrey A. Smith, Sunnyvale; David C. Forster, Woodside, and Albert K. Chin, Palo Alto, all of Calif., assignors to Origin Medsystems, Inc., Menlo Park, Calif.
Division of Ser. No. 134,573, Oct. 8, 1993, Pat. No. 5,425,357, which is a continuation-in-part of Ser. No. 794,590, Nov. 19, 1991, Pat. No. 5,309,896, which is a continuation-in-part of Ser. No. 706,781, May 29, 1991, abandoned. This application Jun. 1, 1995, Ser. No. 457,396
Int. Cl.[6] A61B *17/02*
U.S. Cl. 600—207 **16 Claims**



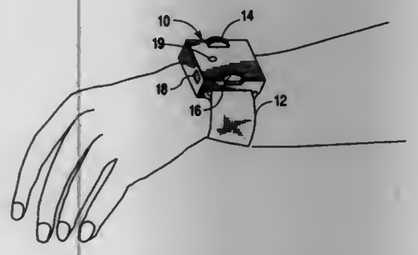
10. A method for retracting an organ to gain access to treat a tissue, the method comprising the steps of:
providing an inflatable retraction device in a compacted state, the inflatable retraction device including:
a main envelope enclosing a main chamber, the main envelope including a window and a removable window, and
a second envelope covering substantially all the main envelope, except the window and the removable window, the second envelope and the main envelope enclosing a second chamber outside the main chamber;
placing the inflatable retraction device in the compacted state adjacent the organ;
passing a fluid into the main chamber to expand the main chamber and the second chamber from the compacted state to retract the organ;
passing a fluid into the second chamber to further expand the second chamber;
releasing fluid from the main chamber; and
detaching the removable window from the main envelope.

5,575,760
ROLLER THERAPEUTIC APPLIANCE
Isamu Masuda, Fukuoka, Japan, assignor to Nihon Kenko Zoushin Kenkyukai Corporation, Fukuoka, Japan
Filed Jan. 3, 1995, Ser. No. 367,638
Claims priority, application Japan, Dec. 15, 1994, 6-333963
Int. Cl.[6] A61H *15/00*
U.S. Cl. 601—19 **3 Claims**

1. A roller therapeutic appliance comprising a longitudinal operating shaft means, a pressure roller means arranged about said operating shaft means for applying localized pressure to a body, means for rotatably supporting said pressure roller means about said shaft means, and annularly shaped magnetic field generating means molded into said pressure roller means for applying magnetic stimulation to a body, said magnetic field generating source means being adjacent an outer periphery of said pressure roller means which contacts a human body, said magnetic field generating means comprising a non-magnetic metal ring having a plurality of permanent magnets embedded, at regular intervals, along an outer peripheral surface of said non-magnetic metal ring.

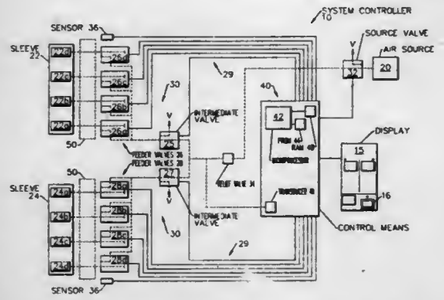


5,575,761
MASSAGE DEVICE APPLYING VARIABLE-FREQUENCY VIBRATION IN A VARIABLE PULSE SEQUENCE
Mohammed-Ali Hajianpour, 1706 Vestal Dr., Coral Springs, Fla. 33071
Filed Jul. 27, 1994, Ser. No. 281,485
Int. Cl.[6] A61H *1/00*
U.S. Cl. 601—48 **15 Claims**



1. A vibrating massager comprising:
first electronic pulse generating means for forming a first series of electrical pulses, wherein said first electronic pulse generating means includes adjustment means for varying each first variable time occurring between a pulse transition in a first direction and a next pulse transition occurring in a direction opposite said first direction, while each time occurring between a pulse transition opposite said first direction and a next pulse transition occurring in said first direction remains constant;
vibration generating means for producing mechanical vibrations, said vibration generating means being driven according to said first series of electrical pulses, wherein said vibration generating means is turned on by said electrical pulses during pulse transitions opposite said first direction, and wherein said vibration generating means is turned off during pulse transitions in said first direction, whereby variation of said adjustment means varies each time delay during which said vibration generating means is turned off between times in which said vibration generating means is turned on while said vibration generating means is left on for a constant pulse duration; and
a housing, surrounding said first electronic pulse generating means and said vibration generating means, transmitting mechanical vibrations produced by said vibration generating means to a protrusion forming a closed integral part of said housing, said protrusion extending outward from a surrounding exterior surface of said housing.

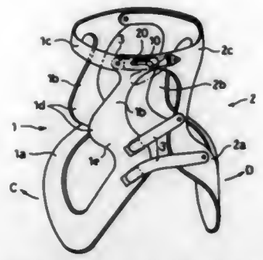
5,575,762
GRADIENT SEQUENTIAL COMPRESSION SYSTEM AND METHOD FOR REDUCING THE OCCURRENCE OF DEEP VEIN THROMBOSIS
Donald H. Peeler; Kenneth M. Bolam; James A. Borgen, and Philip P. Ribando, all of Charlotte, N.C., assignors to Beiersdorf-Jobst, Inc., Charlotte, N.C.
Filed Apr. 5, 1994, Ser. No. 223,429
Int. Cl.[6] A61H *1/00*
U.S. Cl. 601—152 **37 Claims**



1. A method of using a multi-chambered inflatable sleeve to provide a propbylactic modality to a limb of a recumbent user through repeated squeezing and relaxing action, comprising the steps of:
inflating a first chamber of the sleeve to a first predetermined chamber pressure during a first inflation cycle; then
inflating a second chamber of the sleeve to a second predetermined chamber pressure in response to a pressure in the first chamber reaching the first predetermined chamber pressure during the first inflation cycle; then
periodically adjusting the pressures in the first and second chambers during the first inflation cycle, respectively, so that a monotonically decreasing pressure gradient is established in a proximal direction between the first chamber and the second chamber, by
sampling a pressure in the first chamber to obtain a first sample and then adjusting the pressure in the first chamber upward or downward to the first predetermined pressure, based on the first sample;
sampling a pressure in the second chamber to obtain a second sample and then adjusting the pressure in the second chamber upward or downward to the second predetermined pressure, based on the second sample; and
deflating the first and second chambers from the first and second predetermined chamber pressures, respectively, to pressures less than the second predetermined chamber pressure, at the end of the first inflation cycle.

5,575,763
CERVICAL ORTHOSIS
Hiroto Nagata, 8-1, Takadai 4-chome, Nagaokakyo-shi, Kyoto 617, Japan; Shoichi Komaba, Oita; Toru Nagano, Katawo Toyonaka, and Hidenori Kanezaki, Osaka, all of Japan, assignors to Toshinobu Onomura, Nishinomiya; Hiroto Nagata, Nagaokakyo, and Kawamura Gishi Co., Ltd., Osaka, all of Japan
Filed Sep. 26, 1994, Ser. No. 312,542
Claims priority, application Japan, Mar. 24, 1994, 6-054113; Aug. 31, 1994, 6-207452
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—18 **14 Claims**

1. A cervical orthosis comprising:
(a) a front cervical orthosis member including a chest support abutting against the region from the shoulders to the chest, and two front supporting portions continuously extending



from said chest support along both side portions of the anterior of the neck and both side portions of the head;

(b) a rear cervical orthosis member including a back support abutting against the region from the shoulders to the back, two rear supporting portions continuously extending from said back support along both side portions of the posterior of the neck, and an occipital region brace portion provided with the upper end of each of said rear supporting portions, and circumferentially extending against said occipital region so as to brace the occipital region;

(c) an interconnecting member interconnecting the upper end of said front supporting portions with said occipital region brace portion;

(d) a forehead brace member connecting each upper end of said front supporting portions, abutting against the forehead and bracing the frontal region of the head; and

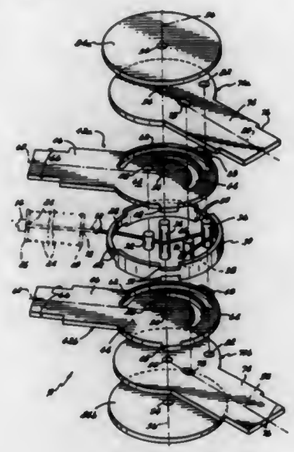
(e) a cheek brace member arranged on the internal surfaces of said front supporting portions so as to brace the cheeks without disturbing the movement of the mandible, wherein said cheek brace member is separate and independent from said front supporting portions and anchored to the internal surfaces of said front supporting portions via detachable tape so that it is adjustable to be positioned in a range from the cheeks to the mandible on the internal surface of said front supporting portions.

5,575,764

PROSTHETIC JOINT WITH DYNAMIC TORQUE COMPENSATOR

Leonard A. Van Dyne, 2638 Oakmont Dr., W., Harrison, Ind. 47060

Filed Dec. 14, 1994, Ser. No. 355,605
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—26 **29 Claims**



29. A constant torque joint comprising:

a joint having a pivot axis;

a cable mounted in said joint for applying resistance to movement of said joint;

a tensioning apparatus for applying tension to said cable, said tensioning apparatus having a deflection range and a force rate;

a cable anchor attached to said cable and movable within said joint as a function of said force rate over said deflection range of said tensioning apparatus to provide a constant torque in response to movement of said joint;

said cable having a moment arm length which varies with the movement of said cable anchor to compensate for vagaries of said tensioning apparatus; and

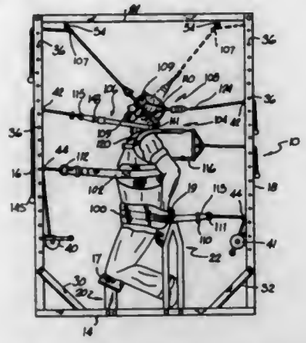
an anchor pin captured in said joint, said moment arm length being defined by a position of said anchor pin relative to said pivot axis of said joint.

5,575,765

TRACTION APPARATUS AND METHOD

Steven K. Foster, 1825-36th Avenue Ct., Greeley, Colo. 80634

Filed Dec. 28, 1995, Ser. No. 579,206
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—32 **14 Claims**



1. A traction apparatus for selectively applying traction forces to the spine of a human subject, the traction apparatus comprising:

a frame having a base member, front and rear vertical columns attached to front and rear ends, respectively, of the base member, and a horizontal toprail member attached to top ends of the front and rear vertical columns;

a knee rest positioned within the frame for receiving the knees of the subject;

a pelvic rest positioned within the frame rearward of the knee rest for receiving the pelvis of the subject;

pelvic traction means including a pelvic belt adapted for positioning around the front of the subject in the area of the pelvis, the pelvic traction means further including pelvic tensioning means coupled to the pelvic belt and the rear vertical column for adjustably applying a rearward force on the pelvic belt;

dorsolumbar traction means including a dorsolumbar belt adapted for positioning around the rear of the subject in the area of the dorsolumbar spine, the dorsolumbar traction means further including dorsolumbar tensioning means coupled to the dorsolumbar belt and the front vertical column for adjustably applying a forward force on the dorsolumbar belt; and

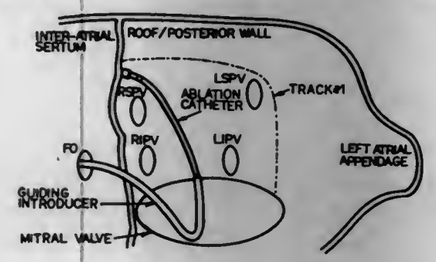
shoulder traction means including a shoulder harness adapted for positioning around each of the shoulders of the subject, the shoulder traction means further including shoulder tensioning means coupled to the shoulder harness and the rear vertical column for adjustably applying a rearward force on the shoulder harness.

5,575,766

PROCESS FOR THE NONSURGICAL MAPPING AND TREATMENT OF ATRIAL ARRHYTHMIA USING CATHETERS GUIDED BY SHAPED GUIDING INTRODUCERS

John F. Swartz, Tulsa, Okla., and John Ockuly, Minneapolis, Minn., assignors to Daig Corporation, Minnetonka, Minn.

Continuation-in-part of Ser. No. 147,168, Nov. 3, 1993, Pat. No. 5,497,774, and Ser. No. 146,744, Nov. 3, 1993, Pat. No. 5,427,119. This application Jul. 8, 1994, Ser. No. 272,014
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—53 **42 Claims**



1. A process for the treatment of atrial arrhythmia within the atria of a human heart by use of ablation and mapping procedures whereby said procedures comprise

introducing into the atria a precurved, guiding introducer, wherein said introducer contains a proximal and a distal end and a lumen running within said guiding introducer from proximal to distal ends,

introducing into said lumen of said guiding introducer an ablation and mapping catheter,

guiding the catheter to a selected area of the atria by use of the guiding introducer, wherein a portion of said catheter extends out the distal end of the lumen of the guiding introducer, and

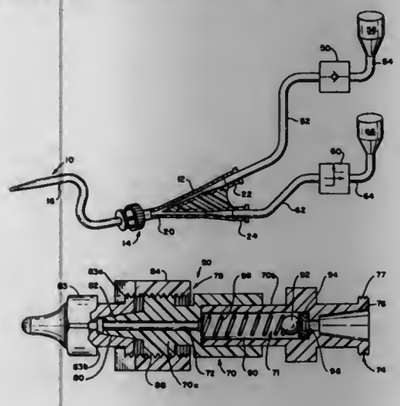
mapping and ablating the selected area of the atria by use of the catheter thereby producing an ablation track.

5,575,767

METHOD AND APPARATUS FOR HIGH PRESSURE ONE-WAY FLUID VALVING IN ANGIOGRAPHY

Robert C. Stevens, 18265 NW. Highway 335, Williston, Fla. 32696

Filed Sep. 16, 1994, Ser. No. 307,347
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—53 **6 Claims**



1. A catheterization method comprising:

providing a catheter having a lumen with a flexible distal tip portion;

providing a first fluid source at a first pressure and connecting the first fluid source to the said lumen through a first fluid supply channel including a check valve operable to block the flow of fluid from the first source whenever the pressure between the said lumen and the check valve exceeds the first pressure;

providing a second fluid source at a second pressure significantly higher than said first pressure and connecting the second fluid source to the said lumen through a second fluid supply channel including an on-off valve; and,

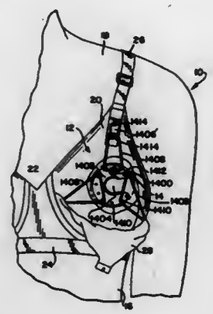
at selected times, moving the on-off valve to an on position to provide fluid from the second source to the lumen and move the check valve to block the flow of fluid from the first source.

5,575,768

DEVICE AND KIT FOR SUPPORTING A BREAST SHIELD AND RELATED PUMP EQUIPMENT

Kathleen A. Lockridge, Crystal Lake; Brian H. Silver; Gotthilf Weniger, both of Cary, and Richard S. Weston, Crystal Lake, all of Ill., assignors to Medela, Inc., McHenry, Ill.

Continuation-in-part of Ser. No. 375,977, Jan. 20, 1995, Pat. No. 5,514,166. This application Nov. 8, 1995, Ser. No. 555,151
Int. Cl.[6] A61M *1/06*
U.S. Cl. 604—74 **32 Claims**



1. A breast pump assembly support device for holding a breast shield in place on a breast for expressing milk, comprising:

a garment to be worn around a woman's torso;

a pair of loops attached to said garment in opposed spaced relation;

a band attachable to each of said loops; and

a mounting element having a plurality of posts extending from said breast shield to which said band is further attachable.

5,575,769

CANNULA FOR A SLIT SEPTUM AND A LOCK ARRANGEMENT THEREFORE

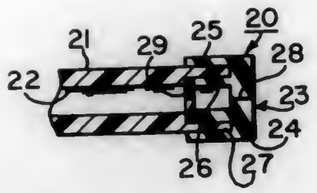
Vincent L. Vaillancourt, 14 Bunyan Dr., Livingston, N.J. 07039

Filed May 30, 1995, Ser. No. 453,624
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—86 **18 Claims**

1. The combination of

a septum of elastomeric material having a slit therein and being of a thickness of from 0.074 inches to 0.160 inches; and

a hollow needle for penetrating said septum through said slit, said needle having an outside diameter in a range of from 0.032 inches to 0.058 inches and a closed distal end with a smooth surface for penetrating into said septum without removing debris from said septum, said needle having at least



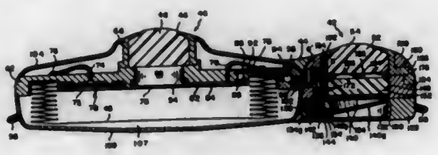
one opening in a sidewall thereof for the passage of fluid into or from within said needle.

5,575,770

IMPLANTABLE DRUG INFUSION SYSTEM WITH SAFE BOLUS CAPABILITY

Gerald S. Melsky, Lexington, and Bradley J. Enegren, Norfolk, both of Mass., assignors to Therex Corporation, Walpole, Mass.

Filed Apr. 5, 1995, Ser. No. 417,240
Int. Cl.[6] A61M *11/00*
U.S. Cl. 604—93 12 Claims



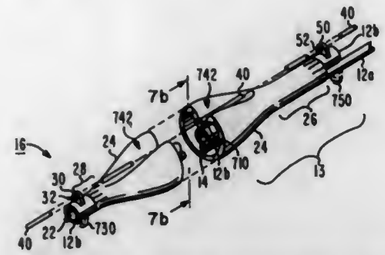
1. An implantable infusion device comprising
a housing having a wall;
a first infusate chamber in the housing;
a first inlet port in said wall, said first inlet port communicating with said first chamber;
a first self-sealing septum closing said first inlet port at said wall;
an outlet catheter extending from said housing;
a first fluid pathway extending from said first chamber to said outlet catheter;
a second inlet port in said wall, said second inlet port extending into the interior of said housing;
a second self-sealing septum closing said second inlet port at said wall;
a third self-sealing septum positioned in the second inlet port and spaced from said second septum therein so as to define between said second and third septa a second infusate chamber in the housing;
a second fluid pathway extending from the second chamber to said outlet catheter;
a valve in said second fluid pathway, said valve being movable between open and closed positions to open and close the second fluid pathway;
means for biasing the valve to its closed position, and
valve actuating means located in the second inlet port on the opposite side of the third septum from the second chamber, said actuating means being adapted to open said valve only when contacted by a needle that penetrates through both the second and third septa.

5,575,771

BALLOON CATHETER WITH EXTERNAL GUIDEWIRE

Paul Walinsky, 8910 Carlisle Rd., Wyndmoor, Pa. 19038-7412

Filed Apr. 24, 1995, Ser. No. 427,748
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 18 Claims



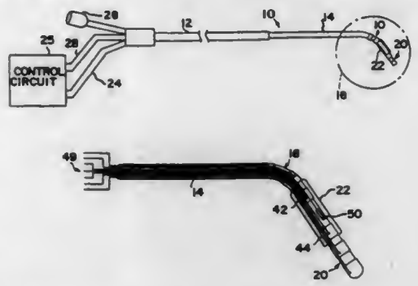
8. A catheter including a perfusion portion defining a channel for the flow of fluids, said catheter being adapted for use with a guidewire, said catheter comprising:
an elongated, flexible body defining a distal end and a proximal end, and also defining a balloon inflation lumen extending from a location near said proximal end of said body to a location near said distal end of said body;
a balloon including an inflatable portion affixed at a location near said distal end of said body, with the interior of said inflatable portion of said balloon in communication with said balloon inflation lumen, said location being selected so that said perfusion portion of said catheter extends through said balloon, and distally beyond said inflatable portion of said balloon, but not through said body of said catheter; and
guidewire retaining means supported on said perfusion portion of said catheter at a location more distal than said inflatable portion of said balloon, said retaining means being dimensioned for allowing said perfusion portion to slide relative to said guidewire, while being maintained adjacent thereto.

5,575,772

ALBATION CATHETERS

Charles D. Lennox, Hudson, N.H., assignor to Boston Scientific Corporation, Natick, Mass.

Continuation of Ser. No. 86,740, Jul. 1, 1993, abandoned. This application Feb. 15, 1996, Ser. No. 601,834
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—96 35 Claims



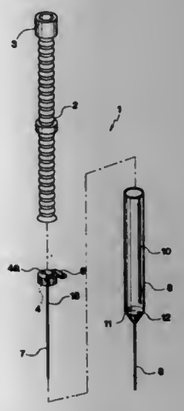
12. A catheter device, comprising:
a catheter shaft constructed for insertion into a body of a living being;
an inflatable balloon mounted on a distal portion of said catheter shaft, said catheter shaft and said balloon being sized and constructed to permit said distal portion of said catheter shaft to be inserted into said body while said balloon is deflated and to permit said balloon to be filled with a fluid inside said body, said balloon being disposed annularly around a distal tip of said catheter shaft and being constructed to extend beyond said distal tip and to be pressed against tissue in an axial direction when inflated;
a heating device mounted on said distal portion of said catheter shaft and constructed to cause tissue in contact with said balloon while said balloon is inflated to be heated; and
an electrode located on a distal tip of said catheter device, said electrode being positioned to be in direct contact with tissue while said balloon is pressed against said tissue in an axial direction.

5,575,773

REVERSIBLE VEIN RESIN NEEDLE SET FOR ONE TIME USE

Kyung J. Song; Young S. Song; Jerng S. Song, and Joong S. Song, all of #1-Ga 57-1, Kyungwon-Dong, Wansan, Junju, Junbuk-Do, Rep. of Korea

Filed May 27, 1994, Ser. No. 250,495
Claims priority, application Rep. of Korea, May 27, 1993, 1993-9246
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—110 14 Claims



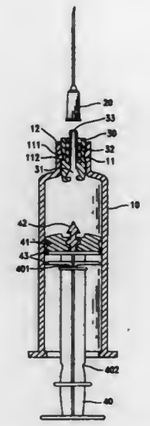
1. A reversible vein needle set comprising:
a needle body cylinder, said needle body cylinder having a transfusion line connector in which a connector of an injectant line is inserted; and
an elongated tube having an interior portion for receipt of a metal needle therein,
whereby said tube may be inserted into a patient, and the metal needle may be inserted into and removed from the interior portion of the tube while the tube remains in the patient,
wherein said needle body cylinder includes an upper part and a lower part, wherein said transfusion line connector is located proximate said upper part, and wherein said reversible vein needle set further includes:
a cylindrical film shield fixed inside of the cylinder to the upper and lower parts of the cylinder;
a piston fixed to an interior central portion of the cylindrical film shield, said piston having a metal needle protruding downwardly therefrom;
a knob located along a sidewall of said cylinder; and
a connecting rod extending through said sidewall and interconnecting said piston with said knob.

5,575,774

STRUCTURAL OF SAFETY HYPODERMIC SYRINGE

Long-Hsiung Chen, 5F, No. 91-3, Chung Cheng Road, Section 1,, Taipei, Taiwan

Filed Oct. 24, 1995, Ser. No. 547,358
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—110 4 Claims



1. A safety hypodermic syringe comprising a barrel having a front neck and an inside flange inside said front neck, a needle holder inserted into said front neck of said barrel and retained in place by said inside flange of said front neck of said barrel, a needle cannula fastened to said needle holder, a plunger moved in said barrel, a rubber stopper connected to said plunger by a connecting member, wherein said inside flange of said front neck of said barrel has a front sloping wall of small slope and a rear sloping wall of different angles for permitting said needle bolder to be pulled backwards to an inside of said barrel and for stopping said needle bolder from being forced forwards out of said front neck of said barrel; said needle bolder comprises a longitudinal center through hole, which imparts a passage between said needle cannula and said barrel, an inner thread around said longitudinal center through hole for mounting said needle cannula, and a rear retaining hole at one end of said longitudinal center through hole remote from said needle cannula; said connecting member has a connecting tip connected to said plunger that can be broken to let said plunger be disconnected from said connecting member; said rubber stopper has a retainer rod at a front end thereof fitting said retaining hole of said needle holder, said retaining rod being forced into engagement with said retaining hole of said needle holder when said rubber stopper is moved to said front neck of said barrel by said plunger, for permitting said needle holder with said needle cannula to be pulled backwards to said inside of said barrel by said plunger; said plunger can be inserted into said front neck of said barrel to deform said needle cannula when said needle holder and said needle cannula are moved to said inside of said barrel and said plunger is disconnected from the connecting tip of said connecting member; said plunger has a locating groove around a periphery of said plunger for engagement with said inside flange of said front neck of said barrel when it is inserted into front end of said barrel to deform said needle cannula.

5,575,775

Patent Not Issued For This Number

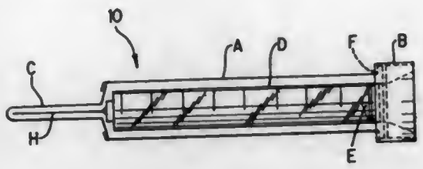
VOL 1192 ISS 3 NO 19 1996 UMI

5,575,776

SINGLE DOSE, PREFILLED, DISPOSABLE SYRINGE

Warren J. Bleiweiss, 12 Fox Run, North Caldwell, N.J. 07006

Continuation of Ser. No. 350,987, Nov. 29, 1994, abandoned.
This application Nov. 2, 1995, Ser. No. 552,229
Int. Cl.[6] A61M 5/00
U.S. Cl. 604—187 14 Claims



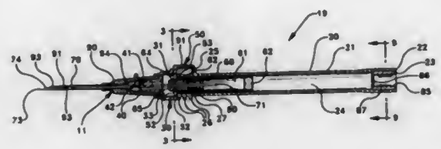
1. A single dose, prefilled, disposable syringe comprising:
a syringe barrel,
a single pointed needle,
a piston, and an outer casing,
wherein said outer casing has an inner diameter larger than said syringe barrel in the packaged state, and wherein said outer casing surrounds said syringe barrel in said packaged state, said outer casing being collapsible to have an outer diameter smaller than an inner diameter of said syringe barrel so that said collapsed outer casing acts as a plunger to force said piston through said syringe barrel thereby ejecting said single dose of prefilled medication.

5,575,777

RETRACTABLE NEEDLE CANNULA INSERTION SET WITH REFINEMENTS TO BETTER CONTROL LEAKAGE, RETRACTION SPEED AND REUSE

Walter E. Cover, Mission Viejo, and Alan A. Davidner, Claremont, both of Calif., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 152,401, Nov. 15, 1993, abandoned.
This application Apr. 10, 1995, Ser. No. 422,662
Int. Cl.[6] A61M 5/32
U.S. Cl. 604—198 7 Claims



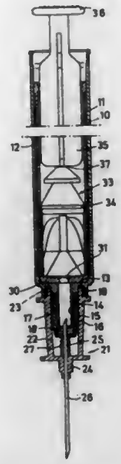
1. An introducer needle assembly, comprising:
a hollow needle having a proximal end and a sharp distal end;
a hollow handle having a distal end and a proximal end;
a needle hub connected to the proximal end of the bollow needle and slidably disposed in the hollow handle wherein the needle hub includes a flashback chamber in fluid communication with the hollow needle for receiving blood from within the hollow needle;
a spring operably connected to the needle hub;
a latch operably engaging the needle hub selectively to maintain the needle hub adjacent to the distal end of the hollow handle against the bias of the spring; and
a means disposed in the hollow handle for slowing the speed of the needle bub when the latch is disengaged from the needle hub and the spring biases the needle hub toward the proximal end of the hollow handle.

5,575,778

BLOOD-TAKING DEVICE

Stefan Hardt, Baunatal, and Frank Finis, Wolfhagen, both of Germany, assignors to B. Braun Melsungen AG, Melsungen, Germany

Filed Sep. 21, 1994, Ser. No. 310,127
Int. Cl.[6] A61B 5/00
U.S. Cl. 604—200 7 Claims



1. A blood-taking device, comprising:
a radially expandable inner tubule having a front end,
an outer tubule surrounding the inner tubule and having a front end, the inner tubule being relatively less rigid than the outer tubule, the inner and outer tubules mutually defining an annular gap therebetween,
a separating member disposed in the inner tubule,
the inner tubule and the outer tubule being clamped together at their respective front ends, whereby the inner tubule and the outer tubule are fixed with respect to each other,
the front end of the inner tubule comprising an integral end wall defining a locking profile,
the front end of the outer tubule comprising an integral end wall having a cone extending therefrom and defining a counter profile,
the locking profile and the counter profile being mutually configured to cooperatively form a lock and seal.

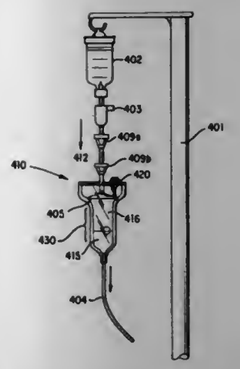
5,575,779

LIQUID REGULATOR AND METHOD OF USE

Robert L. Barry, Queensbury, N.Y., assignor to Namic U.S.A. Corporation, Glens Falls, N.Y.

Filed Dec. 30, 1994, Ser. No. 366,692
Int. Cl.[6] A61M 5/00
U.S. Cl. 604—246 18 Claims

6. A system for regulating the flow of liquids, comprising:
a. a first tubing section having a proximal end and a distal end, a first fluid connector disposed at the proximal end of the first tubing section for connection to a liquid source, and a second fluid connector disposed at the distal end of the first tubing section;
b. a flow regulator comprising: a reservoir having walls, a liquid inlet and a liquid outlet; a deflector disposed so that a liquid entering the reservoir via the liquid inlet is deflected towards the reservoir walls; and a vent in fluid communication with the reservoir;
c. a second tubing section having a proximal end and a distal end, wherein the distal end of the second tubing section is connected to the liquid inlet of the reservoir;



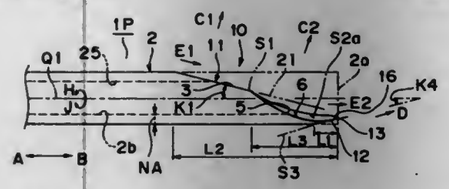
d. a third fluid connector disposed at the proximal end of the second tubing section, wherein the third fluid connector is engageable with the second fluid connector;
e. liquid control means for controlling the flow of liquid into the flow regulator, wherein the liquid control means is disposed in the first tubing section or the second tubing section;
f. one-way liquid flow means disposed in the second tubing section, for preventing liquid flow through the tubing in a direction from the flow regulator toward the liquid source;
g. a third tubing section having a proximal end and a distal end, wherein the proximal end of the third tubing section is connected to the liquid outlet of the reservoir; and
h. a fourth fluid connector disposed at the distal end of the third tubing section.

5,575,780

MEDICAL HOLLOW NEEDLE AND A METHOD OF PRODUCING THEREOF

Yoshikuni Saito, Ooaza Kitanogami 1930, Kurobanemachi, Nasu-gun Tochigi-ken, Japan

Filed Jul. 19, 1995, Ser. No. 504,038
Claims priority, application Japan, Apr. 28, 1995, 7-129297; Jun. 14, 1995, 7-171438
Int. Cl.[6] A61M 5/32
U.S. Cl. 604—272 12 Claims



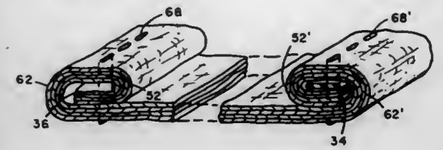
1. A medical hollow needle comprising:
a cylindrical member having a flow path capable of passing a fluid therein along a axis center direction;
a first bevel grinding face formed at a top end portion of said cylindrical member, such that said flow path is open in an oblique direction, having a first inclined angle with respect to said center axis;
a second bevel grinding face formed by-rotating a first rotational angle in a positive direction with respect to said first bevel grinding face with said center axis as its center, having a second inclined angle with respect to said center axis, and a third bevel grinding face formed by rotating a second rotational angle in an opposite direction with respect to said first bevel grinding face with said axis center as its center, having a third inclined angle with respect to said center axis, both formed at said top edge portion of said cylindrical member;
a fourth bevel grinding face in a shape of a plane, grinded and formed at a position opposed to said first bevel grinding face of said top edge portion of said cylindrical member in an oblique direction with respect to said center axis direction of said cylindrical member, thereby thinning a thickness of said cylindrical member; and
a sharp edge portion comprised of at least three grinding faces, that is, said second, said third and said fourth bevel grinding faces.

5,575,781

ABSORBENT ARTICLE USEFUL IN MEDICAL APPLICATIONS

Autry O. V. DeBusk, Powell, Tenn., assignor to DeRoyal Industries, Inc., Powell, Tenn.

Filed Oct. 5, 1995, Ser. No. 539,677
Int. Cl.[6] A61F 13/00
U.S. Cl. 604—362 14 Claims



1. An absorbent article particularly suitable for use in medical applications comprising
a body portion including a plurality of layers of an absorbent material, said layers being overlaid one on the other in stacked relationship to define a stack of said layers,
said layers within said stack having first and second opposite side edges,
at least one elongated relatively flat radiopaque element having a length dimension associated with at least one of said first and second side edges,
said radiopaque element being disposed adjacent said at least one of said first and second side edges and oriented with its length dimension generally parallel to said at least one of said first and second side edges,
said at least one of said first and second side edges being first folded inwardly of said body portion with said radiopaque element being simultaneously folded inwardly of said body portion with the inward folding of said at least one of said first and second side edges to define a first fold having a width dimension that includes the radiopaque element, and thereafter further folded inwardly of said body portion to define a second fold within which the first fold and said radiopaque element associated therewith are captured therein, whereby said radiopaque element is substantially fully disposed in said first and second folds and physically anchored therein by said folds.

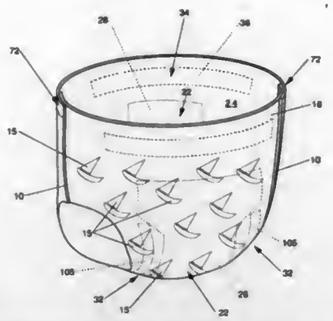
5,575,782

GARMENT-LIKE DISPOSABLE ABSORBENT ARTICLE HAVING A BLOUSED OUTER COVER

Margaret H. Hasse, Wyoming, and Patrick J. Allen, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 3, 1994, Ser. No. 176,055
Int. Cl.[6] A61F 13/15
U.S. Cl. 604—385.1 10 Claims

1. A garment-like elasticized disposable garment comprising:
(a) a chassis having:
(i) a front portion having an end edge, longitudinal side edges, leg edges, a central region, ear flaps, each said ear flap extending laterally outwardly from said central region to said longitudinal side edges and longitudinally along said central region from said end edge to said leg edge;
(ii) a rear portion opposed to said front portion, said rear portion having an end edge, longitudinal side edges, leg edges, a central region, ear flaps, each said ear flap extending laterally outwardly from said central region to said



longitudinal side edges and longitudinally along said central region from said end edge to said leg edge; and

(iii) a crotch portion between said front portion and said rear portion;

said chassis including:

an inner layer having a front portion, crotch portion, end edges, longitudinal side edges, periphery adjacent to said end edges and said longitudinal side edges, and a central area inboard of said periphery;

an elastic ear flap member joined to each said ear flap in said rear portion and said front portion and extending longitudinally from said end edge of said ear flap toward said leg edge of said ear flap to form an elastomeric laminate, each said elastomeric laminate being mechanically stretched to form an elasticized ear flap in each said ear flap of said chassis, each said ear flap being unitary with said chassis in that said elasticized ear flap comprises a portion of at least said inner layer;

an absorbent assembly comprising at least a liquid pervious topsheet joined to said inner layer and an absorbent core positioned between said topsheet and said inner layer;

an oversized outer layer having a front portion, rear portion, crotch portion, end edges, longitudinal side edges, longitudinal side edges, periphery adjacent to said end edges and said longitudinal side edges, and a central area inboard of said periphery, said outer layer being longer than said inner layer, at least a portion of said periphery of said outer layer being joined to a least a portion of said periphery of said inner layer such that said central area of said outer layer blouses away from said central area and inner layer of selected portions, said outer layer additionally having a pattern primed thereon, such that said inner layer with said absorbent assembly joined thereto is substantially unnoticeable to a viewer due to said pattern and said bloused central area of said outer layer; and

(b) seams joining said front portion of said chassis to said rear portion of said chassis adjacent said longitudinal side edges so as to form two leg openings and a waist opening substantially encircled by said end edges.

5,575,783

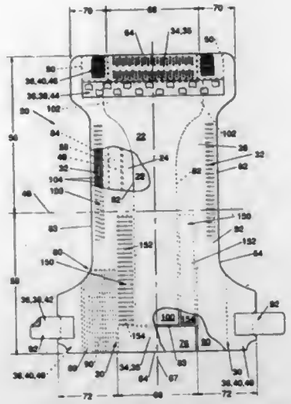
ABSORBENT ARTICLE WITH DYNAMIC ELASTIC FEATURE COMPRISING ELASTICIZED HIP PANELS

Sandra H. Clear, Maineville, Ohio; Keith W. Rollag, Ashiya, and Hiroshi Nakahata, Hyogo, both of Japan, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 951,982, Sep. 28, 1992, abandoned.
This application Apr. 7, 1994, Ser. No. 225,357
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.1 **16 Claims**

1. A disposable absorbent article having a first waist region, a second waist region having a central region and a side panel on each side of said central region, a longitudinal centerline, a lateral centerline, longitudinal edges, and end edges, the absorbent article having comprising:

a liquid pervious topsheet;



a liquid impervious backsheet joined to said topsheet;

an absorbent core having side edges and waist edges and being disposed between said topsheet and said backsheet;

an elasticized side panel disposed in each said side panel of said second waist region, each said elasticized side panel being elastically extensible in the lateral direction; and

an elasticized hip panel disposed in said central region of said second waist region at least longitudinally inwardly from said waist edge of said absorbent core toward said lateral centerline, said elasticized hip panel comprising a stretch laminate comprising a portion of said backsheet and an elastic hip panel member, at least a portion of said elastic hip panel member extending longitudinally outwardly from each said side edge of said absorbent core, said stretch laminate being mechanically stretched so that said backsheet is, at least to a degree, permanently elongated so as to not fully return to its original undeformed configuration such that said elasticized hip panel member is capable of elastically expanding beyond the original planar state of the absorbent article in at least the lateral direction to fit about the hips and buttocks.

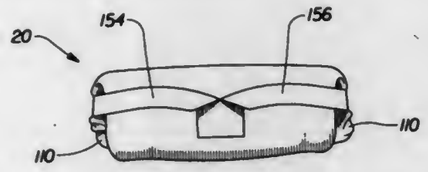
5,575,784

DISPOSABLE TRAINING PANT WITH IMPROVED DISPOSAL MEANS

Kathleen Q. Ames-Ooten, Cincinnati, and Donald C. Roe, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 2, 1995, Ser. No. 552,178
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.1 **13 Claims**

1. A disposable garment comprising:



(a) a chassis having a front portion, a rear portion opposed to said front portion, and a crotch portion positioned between said front portion and said rear portion, said chassis comprising an outer layer and an inner layer;

(b) seams joining said front portion to said rear portion so as to form two leg openings and a waist opening; and

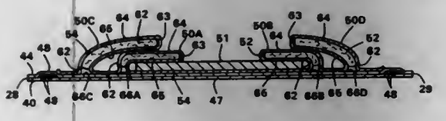
(c) disposal means joined to said outer layer for allowing the disposable garment to be secured in a configuration that provides convenient disposal of the disposable garment, said disposal means comprising a frangible section to provide for separation of said disposal means into independent portions each adapted to secure the disposable garment in a configuration for disposal.

5,575,785

ABSORBENT ARTICLE INCLUDING LIQUID CONTAINMENT BEAMS AND LEAKAGE BARRIERS

Stanley M. Gryskiewicz, Woodstock; Frank J. Akin, Marietta; David M. Jackson, Roswell, all of Ga., and Earle H. Sherrod, Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 7, 1995, Ser. No. 476,742
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.2 **21 Claims**



1. An absorbent article, comprising:

a garment shell comprising a moisture barrier and defining an interior surface;

first and second inner liquid containment beams;

first and second outer liquid containment beams, each of the inner and outer liquid containment beams comprising an absorbent material and having:

longitudinal ends which define therebetween a length dimension;

opposite attachment and free edges which extend between the longitudinal ends, the attachment and free edges defining therebetween a width dimension; and

opposite top and bottom surfaces which define therebetween a thickness dimension; and

leakage barriers comprising a liquid impermeable material, the leakage barriers bonded to the top surfaces of the outer liquid containment beams;

wherein the attachment edge of each of the inner and outer liquid containment beams is bonded to the interior surface, the bottom surface of each of the inner liquid containment beams is adapted to lie against the interior surface, the bottom surface of each of the outer liquid containment beams is adapted to lie against the top surface of one of the inner liquid containment beams, and each of the liquid containment beams is adapted to pivot about an axis defined by its attachment edge and be moveable relative to the moisture barrier.

5,575,786

THIN SANITARY NAPKIN

Thomas W. Osborn, III, 400 Deanview Dr., Cincinnati, Ohio 45224

Division of Ser. No. 122,850, Sep. 17, 1993, which is a continuation of Ser. No. 960,176, Oct. 8, 1992, Pat. No. 5,383,869, which is a continuation of Ser. No. 688,755, Apr. 22, 1991, abandoned, which is a continuation of Ser. No. 570,231, Aug. 20, 1990, Pat. No. 5,009,653, which is a continuation of Ser. No. 293,606, Jan. 4, 1989, Pat. No. 4,950,264, which is a continuation-in-part of Ser. No. 175,559, Mar. 31, 1988, abandoned. This application Sep. 26, 1994, Ser. No. 311,804
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—387 **9 Claims**

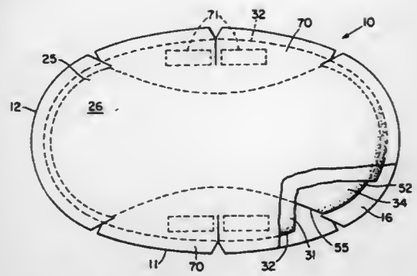
1. A sanitary napkin having a longitudinal centerline, comprising:

a) a liquid permeable topsheet;

b) a liquid-impermeable barrier sheet;

c) an absorbent core positioned between said topsheet and said barrier sheet, said absorbent core having longitudinally-extending significant absorbent portions aligned along the longitudinal centerline of said napkin, said significant absorbent portions having a width of less than 2.5 inches (6.4 cm) and being capable of absorbing at least 20 grams of fluid; and

d) peripheral portions aligned adjacent to said significant absorbent portions, said peripheral portions including said topsheet, said barrier sheet and a tissue therebetween, said peripheral portions having a different stiffness than said significant absorbent portions, the difference in stiffness between said significant absorbent portions and said peripheral portions substantially preventing bunching of said napkin when said napkin is subjected to lateral stresses, and said napkin having a caliper of less than about 5 millimeters.

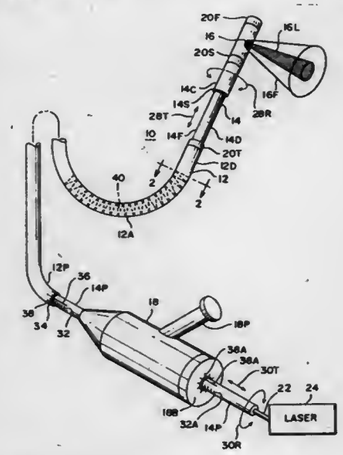


5,575,787

CARDIAC ABLATION CATHETERS AND METHOD

George S. Abela, Wellesley, Mass.; Stephan E. Friedl, Ithaca, N.Y., and Eric D. Mathews, Boston, Mass., assignors to Abela Laser Systems, Inc., Natick, Mass., and University of Florida, Gainesville, Fla.

Division of Ser. No. 123,207, Sep. 20, 1993, Pat. No. 5,464,404.
This application Feb. 27, 1995, Ser. No. 394,763
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—15 **20 Claims**



1. A catheter comprising:

a housing with a side wall;

a first window in said side wall;

an optical fiber having a tip, said first window positioned such that light may pass between said tip and said first window; and

lengthwise offset first and second electrodes mounted to said side wall and operable for detecting the presence of conductive cardiac tissue; and

wherein said side wall includes first and second portions on which said first and second electrodes are respectively disposed, and said first portion is movable relative to said second portion to vary a distance between said first and second electrodes and further comprising

an outer catheter portion having a proximal end and a distal end having at least a first passage extending lengthwise therein, said outer catheter portion having said first portion with said first electrode mounted thereon;

an inner catheter portion disposed at least partly in said first passage and having a proximal end and a distal end, said inner catheter portion having said side wall with said first window therein, said inner catheter portion having an extending portion extendable out said distal end of said outer catheter portion by a variable amount, said inner catheter portion having said second portion with said second electrode mounted thereon.

5,575,788

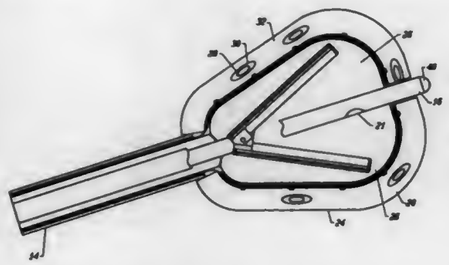
THIN LAYER ABLATION APPARATUS

James Baker, Palo Alto, Calif.; Stuart D. Edwards, 1681 Austin Ave., Los Altos, Calif. 94024; Chris Jones, Palo Alto, Calif.; Kee S. Lee, Daly City, Calif.; Phillip Sommer, Newark, Calif., and Bruno Strul, Palo Alto, Calif., assignors to Stuart D. Edwards, Los Altos, Calif.

Continuation-in-part of Ser. No. 286,862, Aug. 4, 1994, which is a continuation-in-part of Ser. No. 272,162, Jul. 7, 1994, which is a continuation-in-part of Ser. No. 265,459, Jun. 24, 1994, Pat. No. 5,505,730. This application Oct. 6, 1994, Ser. No. 319,373

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—41 **30 Claims**



1. An oblation apparatus for ablating an inner layer in an organ or lumen of a body, comprising:

an expandable member, made of a material with a porous exterior surface. defining an expandable member interior that contains an electrolytic solution, the expandable member releasing the electrolytic solution through the porous exterior surface;

an RF electrode;

a conforming member, with an RF conductive surface and a back side in a surrounding relationship to an exterior surface of the expandable member, made of a material that provides substantial conformity between the RF conductive surface and the inner layer, the conforming member including non-zone areas with a first porosity rate for delivering electrolytic solution to the inner layer and a zone for housing an electrode and receiving at least some of the electrolytic solution delivered to the inner layer, the zone having a second porosity rate that is less than the first porosity rate with electrolytic solution passing through the zone at a slower rate than electrolytic solution passing through non-zone areas of the conforming member; and

an RF power source coupled to the electrode.

5,575,789

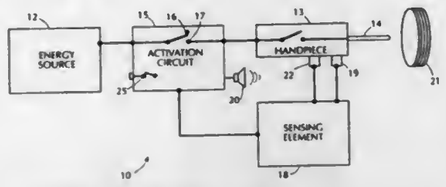
ENERGIZABLE SURGICAL TOOL SAFETY DEVICE AND METHOD

Gregory J. Bell; Jeffrey L. Eggleston, both of Broomfield; Kamala J. Grasso; Jenifer S. Kennedy, both of Boulder; Dale Schmaltz, Boulder, and Kenneth D. Taylor, Broomfield, all of Colo., assignors to Valleylab Inc., Boulder, Colo.

Filed Oct. 27, 1994, Ser. No. 330,278

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—42 **14 Claims**



1. A surgical safety apparatus comprising:

an energizable surgical device, the energizable surgical device having a source of energy and a handpiece connected thereto, the handpiece having a surgical tool supported thereon;

an activation circuit in connection with the source of energy and in connection with the handpiece, the activation circuit having a first state wherein it disconnects the source of energy from the handpiece, the activation circuit having a second state wherein it connects the source of energy to the handpiece;

an electrical switch attached to the surgical tool, the electrical switch disposed to connect the source of energy to the surgical tool when the activation circuit is in the second state;

a sensing element in the activation circuit responsive to a designated timed pattern of successive activations of the electrical switch to change the activation circuit from the first state to the second state.

5,575,790

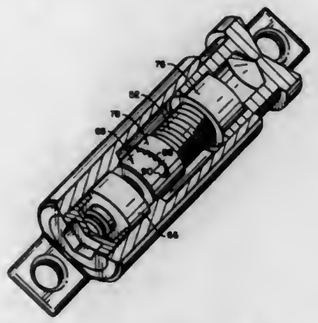
SHAPE MEMORY ALLOY INTERNAL LINEAR ACTUATOR FOR USE IN ORTHOPEDIC CORRECTION

Michael M. Chen, Troy; Robert S. Hirsch, New York City; James A. Fairweather, East Nassau; Andrew B. Wright, Latham; Kevin C. Craig, Corinth, and Allen Carl, Slingerland, all of N.Y., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed Mar. 28, 1995, Ser. No. 440,304

Int. Cl.[6] A61B *17/68*

U.S. Cl. 606—60 **13 Claims**



1. An implantable linear actuator device for use in orthopedic correction procedures, the device comprising:

a housing including a first tubular portion and a second tubular portion, the second tubular portion slidably received in telescoping relationship within the first tubular portion; and

a drive mechanism secured within said housing and connected between said first and second tubular portions, said drive mechanism configured and arranged to convert rotational movement to linear movement to thereby extend said second tubular portion in a direction away from said first tubular portion; and

externally actuatable shape memory alloy means connected to said drive mechanism for imparting rotational motion to said drive mechanism.

5,575,791

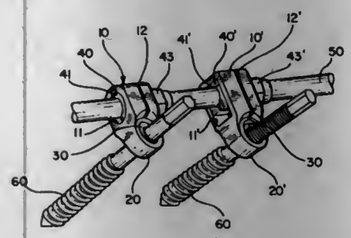
UNIVERSAL ECCENTRIC FIXATION MECHANISM FOR ORTHOPEDIC SURGERY

Chih-I Lin, 14292 Spring Vista La., Chino Hills, Calif. 91709

Filed Jul. 27, 1994, Ser. No. 280,679

Int. Cl.[6] A61B *17/70*

U.S. Cl. 606—61 **8 Claims**



1. A universal eccentric fixation mechanism for orthopedic surgery comprising:

a lateral fixation block including a first portion provided with a through hole adapted to receive a vertebral fixation rod and a second portion defining a universal receiving seat provided therein with a hollow receiving seat of a spherical construction, the first portion of said lateral fixation block including a slit that leads to said universal receiving seat such that said lateral fixation block has first and second sections split by said slit and interconnected by said universal receiving seat;

an eccentric collar of a spherical construction and dimensioned to fit into said hollow receiving seat of said universal receiving seat, said eccentric collar having a hollow portion and an urging slit extending through said eccentric collar to said hollow portion, said eccentric collar having a central longitudinal axis that passes through a spherical center thereof;

a bone fixing element having a first portion held in the hollow portion of said eccentric collar and a second portion adapted to be secured to a bone; and

an urging and fixing means for urging the first and second sections of said lateral fixation block together and indirectly forcing said eccentric collar towards a substantially closed position so that said bone fixing element is held securely and intimately in said hollow portion of said eccentric collar;

wherein said hollow portion of said eccentric collar is cylindrical in shape and has an associated longitudinal axis that is offset from said central longitudinal axis of said eccentric collar.

5,575,792

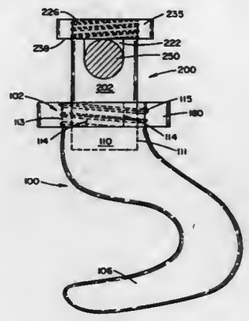
EXTENDING HOOK AND POLYAXIAL COUPLING ELEMENT DEVICE FOR USE WITH TOP LOADING ROD FIXATION DEVICES

Joseph P. Errico, Far Hills; Thomas J. Errico, Summit, and James D. Ralph, Oakland, all of N.J., assignors to Fastenetix, L.L.C., Summit, N.J.

Continuation-in-part of Ser. No. 502,803, Jul. 14, 1995. This application Oct. 13, 1995, Ser. No. 542,529

Int. Cl.[6] A61B *17/70*

U.S. Cl. 606—61 **20 Claims**



1. A polyaxial hook assembly for use with orthopedic rod implantation apparatus, comprising:

a blade portion, having a curved shape for cupping the lamina, a flat extending member for disposition beneath a lamina, and a cylindrical recess in a portion of the blade portion which is disposed above the flat extending member, said cylindrical recess having a selectively contractable upper portion;

a body including

a shaft portion, slideably mountable within said cylindrical recess, whereby selective contraction of said upper portion of said cylindrical recess crush locks said shaft to said blade portion,

a pair of upwardly extending members defining therebetween a channel in the top thereof for receiving therein a support rod of said orthopedic rod implantation apparatus, and

an external surface threading disposed on said pair of upwardly extending members;

means for selectively contracting said selectively contractable upper portion of said cylindrical recess for locking said shaft portion to said blade portion; and

a top locking nut which is mateable with said surface threading on said upper portion.

5,575,793

PATELLA CLAMP APPARATUS

Thomas A. Carls; Khosrow Naraghian, and Chris E. Johnson, all of Memphis, Tenn., assignors to Smith & Nephew Richards Inc., Memphis, Tenn.

Filed Feb. 15, 1995, Ser. No. 389,098

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—80 **14 Claims**

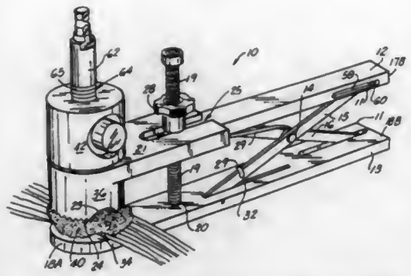
12. A patella clamp and rotary cutting apparatus comprising

a) an instrument frame that includes handle means for manually supporting the frame the frame, having proximal and distal end portions and a patella holder with a center;

b) a drill guide collet, supported at one end of the instrument frame, the collet providing a bore that supports a rotary cutting instrument for preparing a patient's patella posterior surface for receiving a prosthetic patella;

c) a rotary cutting instrument that fits the grill guide collet;

d) the rotary cutting instrument having an adjustment thereon for enabling a surgeon to set a desired depth of cut into the patient's patella;



e) the rotary cutting instrument having a center of rotation; and

f) the frame and drill guide collet being slidably connected for adjusting the position of center cut both proximally and distally relative to the center of the patella holder.

5,575,794

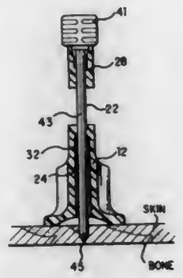
TOOL FOR IMPLANTING A FIDUCIAL MARKER

Richard L. Walus, 69 Trout Farm La., Duxbury, Mass. 02332; Jennifer J. McCrory, 9 Timberland Dr., Lincoln, R.I. 02865; John A. Santangelo, 16 Rounsevell Dr., East Freetown, Mass. 02717, and Raphael Meloul, 340 Grove St., Randolf, Mass. 02368

Continuation-in-part of Ser. No. 17,167, Feb. 12, 1973, abandoned. This application Jan. 27, 1994, Ser. No. 186,946

Int. Cl.[6] A61B *17/00;17/90;17/17*

U.S. Cl. 606—116 **40 Claims**



1. An apparatus for inserting a fiducial marker component into a patient, comprising:

a housing that is generally cylindrically shaped and which has a bore provided therein, said housing having a proximal end and a distal end, at least a portion of the proximal end of the housing flaring outward from the body of the housing so as to provide an area for stably supporting the housing against a surface on a patient;

a cannula guide tube assembly that has a proximal end and a distal end and which contains a bore;

a drill for forming a bore hole at an implantation site; and

an inserter for inserting a fiducial marker component in the bore hole at the implantation site;

wherein the cannula guide tube is shiftable within said bore of said housing and the drill and inserter are each separately insertable into said guide tube and shiftable therein.

5,575,795

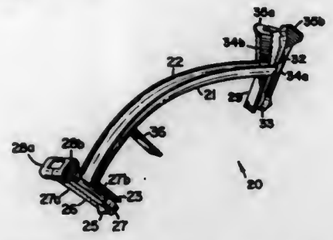
UMBILICAL CORD HOLDER

Sanford J. Anderson, Eden Prairie, Minn., assignor to Minneapolis Children's Medical Center, Minneapolis, Minn.

Continuation-in-part of Ser. No. 95,269, Jul. 21, 1993, Pat. No. 5,372,581. This application Sep. 7, 1994, Ser. No. 301,808

Int. Cl.[6] A61B *17/42*

U.S. Cl. 606—120 **7 Claims**



1. An umbilical cord holder for use while withdrawing placental blood, the umbilical cord holder comprising:

(a) a trough having a first end, a second end, an open top, and a bottom surface, the trough being resistant to puncture by a needle and sized to hold an umbilical cord;

(b) a stem having first and second ends, the first end operatively connected to the bottom surface, wherein the stem allows a user to hold and maneuver the umbilical cord holder during use; and

(c) a first clamp operably connected to the first end of the trough, the first clamp capable of constricting a region of the umbilical cord so that the fluid cannot pass through the constricted region.

5,575,796

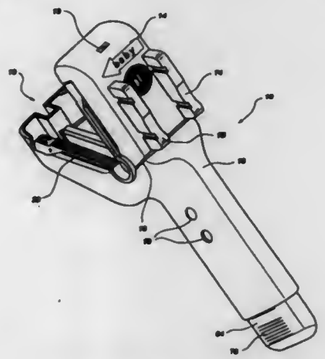
UMBILICAL CORD CUTTER AND SMAPLER

Eric M. King, West Jordan, and Ben D. Shirley, Salt Lake City, both of Utah, assignors to Utah Medical Products, Inc., Midvale, Utah

Filed May 17, 1995, Ser. No. 443,357

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—120 **31 Claims**



1. An apparatus for clamping, cutting, and collecting a blood sample from an umbilical cord comprising:

a housing for receiving and entrapping a section of umbilical cord comprising a handle and a lid, wherein the handle and lid are hingedly connected such that the lid may be moved from an open position to a closed position, and wherein the open position allows an umbilical cord to be inserted between the handle and lid;

a clamp releasably connected to the housing for clamping the umbilical cord;

a blade assembly having a sharp blade surface for cutting an entrapped section of umbilical cord, wherein the blade assembly is slidably located in the lid and configured to slide at an angle less than 90° with respect to the blade surface to provide a slicing motion to cut the umbilical cord;

a blood collection chamber located within the handle such that blood from the umbilical cord drains into the blood collection chamber; and

a fluid passageway between the blood collection chamber and a blood container.

5,575,797

DEVICE FOR EXPLANTING A MEDICAL ELECTRODE DEVICE

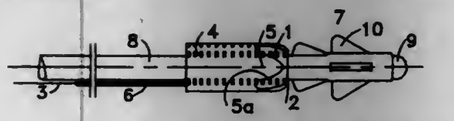
Heinz Neubauer, Jaerfaella; Ulf Lindegren, Enskede, both of Sweden, and Modesto Guerola, Barcelona, Spain, assignors to Siemens Elema AB, Solna, Sweden

Filed Sep. 23, 1994, Ser. No. 310,875

Claims priority, application Sweden, Sep. 24, 1993, 9303122

Int. Cl.[6] A61B *17/22*

U.S. Cl. 606—129 **16 Claims**



1. An explanting device for explanting an implanted electrode device, said electrode device comprising an intravascular or intracardiac electrode device having an electrode cable with a length, a diameter and a distal end, and an electrode head disposed at said distal end, said explanting device comprising:

a stiff sleeve having a length which is substantially shorter than the length of said electrode cable and a diameter which is slightly larger than said diameter of said electrode cable;

an annular cutting edge disposed at one end of said sleeve facing said distal end of said cable; and

control means, manipulatable by a user, connected at an end of said sleeve opposite said cutting edge for sliding said sleeve along an exterior of said implanted electrode device to cut fibrotic tissue.

5,575,798

STEREOTACTIC DEVICE

Panos G. Kontrouvelis, 1201 Ballantrae La., McLean, Va. 22101

Continuation of Ser. No. 235,181, Apr. 19, 1994, abandoned, which is a continuation of Ser. No. 114,495, Aug. 31, 1993, abandoned, which is a continuation of Ser. No. 535,653, Jun. 19, 1990, Pat. No. 5,308,352, which is a continuation of Ser. No. 437,605, Nov. 17, 1989, Pat. No. 5,047,036. This application Aug. 22, 1995, Ser. No. 517,655

Int. Cl.[6] A61B *19/00*

U.S. Cl. 606—130 **19 Claims**

1. A stereotactic device for accurate placement of a medical instrument in a body, comprising:

at least one vertical stanchion;

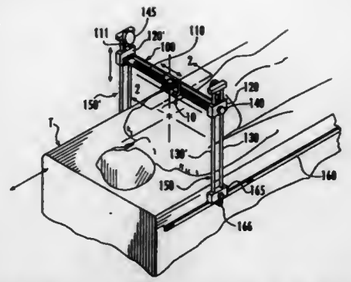
a support member attached to said stanchion, said support member being vertically movable along a portion of said stanchion;

a straight, horizontal bridge member attached to said support member perpendicular to said stanchion, said bridge member defining a longitudinal axis which passes through said support member;

a locking device for selectively securing said support member at a desired location along said stanchion; and

a guidance device mounted on said bridge member, said guidance device being selectively movable relative to said stanchion along the longitudinal axis of said bridge member, said guidance device further being selectively rotatable about an axis of rotation parallel to said longitudinal axis;

wherein said guidance device comprises a carrier adapted to carry the medical instrument for insertion in the body, said carrier being selectively movable along an arc defined by said guidance device to define a range of sagittal angles, said arc having a curvature such that the focus of said arc lies on said axis of rotation of said guidance device.



5,575,799

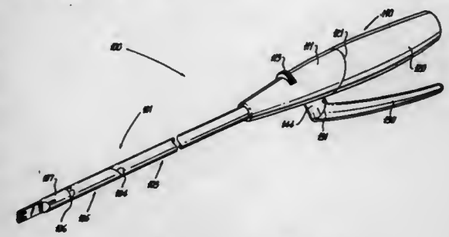
ARTICULATING SURGICAL APPARATUS

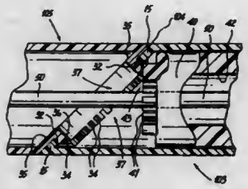
Henry Bolanos, East Norwalk, and Frank J. Viola, Sandy Hook, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Mar. 30, 1995, Ser. No. 413,296

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—139 **21 Claims**





1. An apparatus for use in minimally invasive surgical procedures, which comprises:

a) non-endoscopic portion; and

b) an endoscopic portion having at least first and second segments connected by at least one angled rotary interface joint, wherein the first segment is operatively connected to said non-endoscopic portion and defines a longitudinal first axis, the rotary interface joint defining a plane oriented at a fixed angle with respect to the longitudinal first axis, and wherein the second segment includes a distal operating portion and has a lengthwise second axis, said second segment being rotatable around a third axis which is oriented at an angle from the longitudinal first axis of from about 1° to about 60°,

wherein the second axis traces out a conical geometric surface when said second segment is rotated around the third axis at least one position of the second axis being collinear with the first axis.

VOL 1192 ISS 3 NO 19 1996 UMI

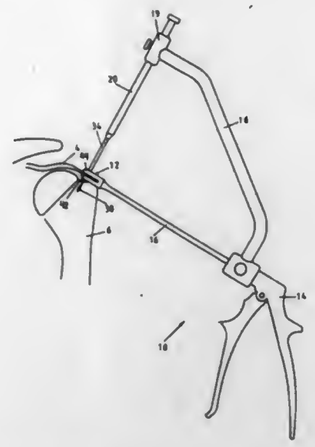
5,575,800
ENDOSCOPIC SUTURE SYSTEM

Norman S. Gordon, Irvine, Calif., assignor to Laurus Medical Corporation, Irvine, Calif.

Continuation of Ser. No. 941,382, Sep. 4, 1992, Pat. No. 5,364,408. This application Nov. 14, 1994, Ser. No. 338,247
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—144 16 Claims



1. A surgical instrument for suturing tissue comprising:
an elongate housing having a longitudinal axis and an internal chamber with a lateral exit opening near a distal end of said elongate housing;
a needle mount dimensioned to accept and hold a surgical needle with a suture attached thereto, said needle mount movably attached to said elongate housing within said internal chamber and dimensioned to fit within said internal chamber in a first configuration; and
means for attaching said needle mount to said internal chamber, said means for attaching configured to permit said needle mount to deploy the needle out of said internal chamber through said lateral exit opening along a path which initially extends away from said housing a predetermined distance to intercept one side of a plane of reference at a first location wherein the plane of reference is substantially parallel to said elongate housing longitudinal axis, said path then passes through the plane of reference at said first location, continues in a direction which extends toward said housing, intercepts the opposite side of the plane of reference at a second location and terminates in a needle catch attached to said housing.



for retrieving the suture, the suture remaining attached to the threaded suture anchor at the repair site within the patient, when the distal end of the bartel is removed from the repair site; and
means for aligning a drill including a receptacle having a longitudinal axis, the longitudinal axis being aligned with the means for receiving the threaded suture anchor, wherein the threaded suture anchor is inserted through the means for receiving the threaded suture anchor, the grasped tissue, and into the bone in a single drilling step.

5,575,801
METHOD AND APPARATUS FOR ARTHROSCOPIC ROTATOR CUFF REPAIR

Peter Habermeyer, Stuttgart, Germany, and Reinhold Schmieding, Naples, Fla., assignors to Arthrex, Inc., Naples, Fla.

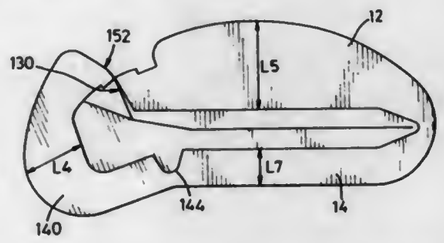
Continuation-in-part of Ser. No. 197,829, Feb. 17, 1994, Pat. No. 5,466,243. This application Aug. 26, 1994, Ser. No. 288,228
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—148 20 Claims

1. An apparatus for arthroscopic reattachment of torn tissue to a bone at a surgical repair site within a patient using a suture anchor threaded with suture, comprising:
an elongated barrel having proximal and distal opposed ends, the distal end being insertable into the patient to the repair site;
grasping means located on the distal end of the barrel for grasping the torn tissue at the repair site within the patient;
means disposed on the grasping means for receiving the threaded suture anchor at the repair site within the patient and

5,575,802
MEDICAL CLIP

Peter H. McQuilkin, and Marcus Filshie, both of Nottingham, England, assignors to Femcare (Cyprus) Limited, Limassol, Cyprus

Filed Jan. 5, 1995, Ser. No. 369,402
Claims priority, application United Kingdom, Jan. 15, 1994, 9400739
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—151 10 Claims

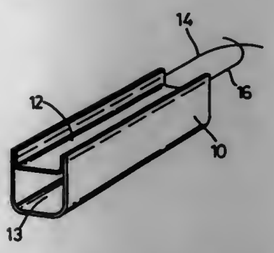


1. A sexual sterilisation clip having a lower jaw member and an upper jaw member hingedly connected at one end to the lower jaw member, and comprising an internal silicone rubber lining, the upper and lower jaw members being provided at an opposite end thereof in relation to the hinge, with co-operating latch means comprising interlocking members in the upper and lower jaws to secure the clip in a closed position, the lower jaw being provided with a second hinge proximate to the co-operating latch means which enables the latch end of the lower jaw to pivot at the position of the second hinge.

5,575,803
SOFT TISSUE STAPLING BUTTRESS

Joel Cooper, St. Louis, Mo.; Sally L. Winegar-Hentges, New Brighton, Minn.; Robert P. Nelson, Orono, Minn.; Kemal Schankereli, Stillwater, Minn., and Kristine M. Teich, Eden Prairie, Minn., assignors to Bio-Vascular, Inc., St. Paul, Minn.

Division of Ser. No. 194,382, Feb. 10, 1994, Pat. No. 5,503,638. This application May 1, 1995, Ser. No. 431,972
Int. Cl.[6] A61B *17/04;* A61F *2/02*
U.S. Cl. 606—151 8 Claims

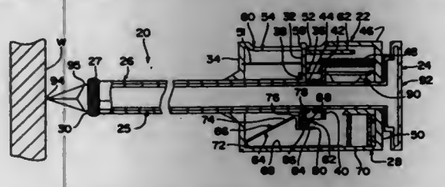


1. In combination with a surgical staple gun used for joining and closing the margins of severed tissue, the staple gun having a staple cartridge support jaw for holding a staple cartridge containing a plurality of staples arranged in a plurality of rows for substantially simultaneous ejection against an anvil jaw when the staple gun is fired through the severed tissue to be closed, the staple gun further including tissue cutting means reciprocally movable in one of the cartridge support jaw and anvil jaw:
(a) first and second strips of host-tissue-compatible animal tissue material operatively coupled to the cartridge support jaw and the anvil jaw, respectively, prior to the firing of the staples from the staple cartridge.

5,575,804
SAFETY PENETRATING INSTRUMENT WITH CANNULA MOVING DURING PENETRATION AND TRIGGERED SAFETY MEMBER PROTRUSION

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation-in-part of Ser. No. 83,220, Jun. 24, 1993, Pat. No. 5,431,635, Ser. No. 83,728, Jun. 29, 1993, Pat. No. 5,466,224, and Ser. No. 115,152, Sep. 2, 1993. This application Sep. 6, 1994, Ser. No. 300,535
Int. Cl.[6] A61M *5/20*
U.S. Cl. 606—185 33 Claims

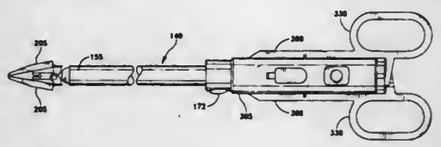


1. A safety penetrating instrument for establishing a portal in the wall of an anatomical cavity comprising
a housing;
an elongate cannula mounted by said housing and having a distal end for introduction in the anatomical cavity and a proximal end for positioning externally of the anatomical cavity;
a penetrating member disposed in said cannula and having a distal end for penetrating the anatomical cavity wall;
extending means for moving said cannula distally from a retracted position where said cannula distal end is disposed proximally of said penetrating member distal end to an extended position where said cannula distal end protrudes distally from said penetrating member distal end;
means for manually moving said cannula proximally relative to said housing from said extended position to said retracted position;
locking means for locking said cannula in said retracted position to prevent distal movement of said cannula relative to said housing beyond said retracted position while permitting proximal movement of said cannula relative to said housing during penetration of the anatomical cavity wall;
bias means for biasing said cannula distally relative to said housing in said retracted position to permit said cannula to move proximally relative to said housing from said retracted position during penetration of the anatomical cavity wall and distally relative to said housing toward said retracted position upon introduction in the anatomical cavity; and
releasing means responsive to movement of said cannula distally toward said retracted position upon introduction in the anatomical cavity for triggering release of said locking means to permit said extending means to move said cannula distally relative to said housing from said retracted position to said extended position.

5,575,805
VARIABLE TIP-PRESSURE SURGICAL GRASPER

Lehmann K. Li, Milford, Conn., assignor to Li Medical Technologies, Inc., Shelton, Conn.

Filed Oct. 7, 1994, Ser. No. 319,865
Int. Cl.[6] A61B *17/32;17/28;17/42;17/44*
U.S. Cl. 606—206 34 Claims



1. A surgical grasper comprising:
a hollow shaft having a distal end and a proximal end;
a handle assembly connected to the proximal end of said shaft, said handle comprising a body portion and at least one handle member movably mounted to said body portion so as to be capable of movement between first and second positions;
a jaw assembly adjacent the distal end of said shaft, said jaw assembly comprising first and second movable jaws with each jaw having a mandible portion with proximal and distal ends and a pivot portion connected to the proximal end of said mandible portion by hinge means, each of said pivot portions being in the form of a yoke having a bridge section connecting two side arm sections, and further wherein said pivot portions are pivotally coupled together by a pivot pin that extends through said side arm sections, said mandible por-

tions being disposed in confronting relation with one another, said jaw assembly further including means for pivotally connecting said pivot portions to one another and coupling said jaw assembly to said shaft, and first spring means for biasing said mandible portions away from one another;

first and second cables having proximal and distal ends with said distal ends attached to the mandible portions of said first and second jaws respectively;

anchor means attached to said proximal ends of said cables, said anchor means being mounted so as to be movable toward and away from said jaws; and

jaw actuating means coupled to said anchor means for causing movement of said anchor means in a direction to exert tension on said cables and thereby cause only the distal ends of said mandible portions of said jaws to close in response to movement of said at least one handle member relative to said body portion.

5,575,806

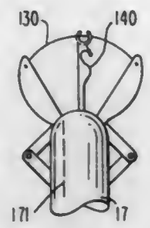
BIOPSY FORCEPS WITH TISSUE EJECTION MEANS

Naomi Nakao, 303 E. 57th St., New York, N.Y. 10022, and John V. Mizzi, 30 Cramer Rd., RFD #3, Poughkeepsie, N.Y. 12603

Filed Mar. 10, 1995, Ser. No. 401,818

Int. Cl.[6] A61B *10/00*

U.S. Cl. 606—207 **18 Claims**



1. A biopsy forceps for retrieving a tissue sample from an organ, comprising:

a flexible, hollow cable with a proximal end and a distal end;

a plurality of opposing cups pivotally attached to said distal end of said hollow cable for severing the tissue sample from the organ;

tissue sample ejection means disposed generally transverse to the axis of the cable in a proximal end of said cups;

a wire slidably disposed within said hollow cable and operably connected to said cups whereby sliding said wire opens and closes said cups;

said wire further being connected to said ejection means whereby sliding said wire moves said means between said cups, ejecting the tissue sample from the cups.

5,575,807

MEDICAL DEVICE POWER SUPPLY WITH AC DISCONNECT ALARM AND METHOD OF SUPPLYING POWER TO A MEDICAL DEVICE

Frederick W. Faller, Burlington, Mass., assignor to ZMD Corporation, Wilmington, Del.

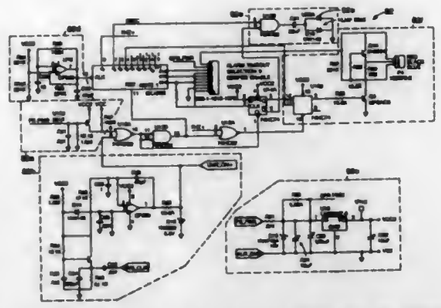
Continuation-in-part of Ser. No. 258,238, Jun. 10, 1994, Pat. No. 5,470,343. This application Dec. 2, 1994, Ser. No. 353,389

Int. Cl.[6] A61N *1/39*

U.S. Cl. 607—5 **21 Claims**

1. A power supply for supplying power from an external power source to a battery-powered medical device for charging a battery of the medical device and operating the medical device, comprising:

an external power connection for bringing external power into the power supply;



a power module connected to receive power from the external power connection and having a power circuit configured to convert power from the external power connection to a form useable by a medical device to which the power supply may be connected;

monitoring circuitry configured to monitor the external power connection to determine whether the external power connection is connected to a source of external power and further configured to determine whether the medical device to which the power supply may be connected is turned on; and

alarm circuitry configured to generate an alarm when the monitoring circuitry determines that the external power connection is not connected to a source of external power and that the medical device to which the power supply may be connected is not turned on.

5,575,808

Patent Not Issued For This Number

5,575,809

ELECTRICAL STIMULATOR

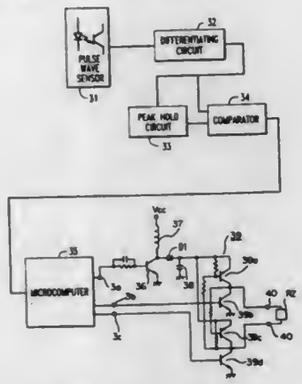
Minoru Sasaki, Yokohama, Japan, assignor to Kabushiki Kaisya Advance, Tokyo, Japan

Filed Jun. 11, 1993, Ser. No. 75,399

Claims priority, application Japan, Jun. 12, 1992, 4-177782; Jun. 12, 1992, 4-177783; Jun. 12, 1992, 4-177784; Jun. 12, 1992, 4-177785; Jun. 12, 1992, 4-177786; Jun. 12, 1992, 4-177787; Jun. 12, 1992, 4-177788; Jun. 12, 1992, 4-177790

Int. Cl.[6] A61N *1/36*

U.S. Cl. 607—62 **2 Claims**



1. An electrical stimulator, comprising:

a pulse wave sensor;

a differentiating means for differentiating a pulse wave electric signal provided by said pulse wave sensor;

a peak hold means for holding every peak value of a differential signal wave provided by said differentiating means;

a comparing means for comparing an output differential wave of said differentiating means with a peak hold output of said peak hold means, and outputs a pulse lasting during a period commencing when said differential wave causes a potential difference of one polarity with respect to said peak hold output and ending when a potential difference of an opposite polarity occurs between said differential wave and said peak hold output;

an electrical stimulation pulse output means for outputting electrical stimulation pulses during at least part of each of the periods set according to the output pulses of said comparing means, and for stopping the output of electrical stimulation pulses at least at the rise or fall of each of the output pulses of said comparing means.

5,575,810

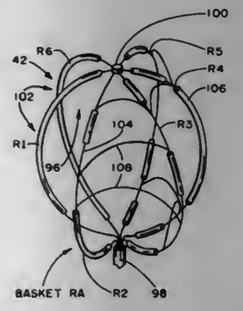
COMPOSITE STRUCTURES AND METHODS FOR ABLATING TISSUE TO FORM COMPLEX LESION PATTERNS IN THE TREATMENT OF CARDIAC CONDITIONS AND THE LIKE

David K. Swanson, Mountain View; Sidney D. Fleischman; Thomas F. Kordis, both of Sunnyvale, Calif., and David L. McGee, Palo Alto, all of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 137,672, Oct. 15, 1993, abandoned. This application Sep. 15, 1995, Ser. No. 528,805

Int. Cl.[6] A61N *1/06*

U.S. Cl. 607—99 **11 Claims**



1. A method of ablating tissue in the heart to treat atrial fibrillation comprising the steps of

introducing into a selected atrium an elongated energy emitting element that can be flexed along its length from a generally straight shape into a variety of curvilinear shapes,

exposing the element to a region of the atrial wall while flexing the element into a desired shape,

applying ablating energy through the element to destroy tissue, forming an elongated lesion having a contour that follows the flexure of the element, and

repeating the exposing, flexing and energy application steps at different regions along the atrial wall to form a convoluted lesion pattern comprising elongated straight lesions and elongated curvilinear lesions that direct electrical impulses within the atrial myocardium along a path that activates the atrial myocardium while interrupting reentry circuits that, if not interrupted, would cause fibrillation.

5,575,811

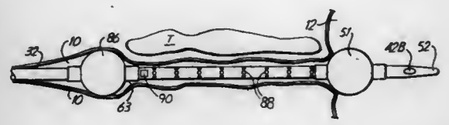
BENIGN PROSTATIC HYPERPLASIA TREATMENT CATHETER WITH URETHRAL COOLING

John M. Reid, Minnetrista; James V. Kauphusman, Champlin, both of Minn.; Christopher H. Porter, Woodinville, Wash., and Bruce H. Neilson, Brooklyn Park, Minn., assignors to Urologix, Inc., Minneapolis, Minn.

Continuation of Ser. No. 88,901, Jul. 8, 1993, Pat. No. 5,464,437. This application May 23, 1995, Ser. No. 447,374

Int. Cl.[6] A61N *5/02*

U.S. Cl. 607—101 **18 Claims**



1. A method for treating tissue adjacent to a body lumen, the method comprising:

inserting a catheter having a catheter shaft into the body lumen;

delivering heat from the catheter to the tissue adjacent to the body lumen;

defining a chamber between the body lumen and the catheter shaft; and

supplying a fluid to the chamber between the body lumen and the catheter shaft such that the fluid comes in direct contact with the body lumen to cool the body lumen.

5,575,812

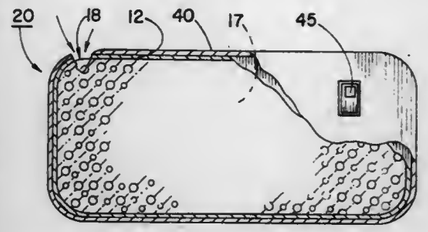
COOLING PAD METHOD

Byron C. Owens, Asheboro, N.C., assignor to Vesture Corporation, Asheboro, N.C.

Continuation of Ser. No. 136,021, Oct. 14, 1993, Pat. No. 5,500,010, which is a continuation of Ser. No. 85,570, Jun. 30, 1993, Pat. No. 5,300,105, which is a continuation of Ser. No. 571,826, Apr. 21, 1992, abandoned, which is a continuation of Ser. No. 643,344, Jan. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 486,806, Feb. 26, 1990, abandoned. This application Apr. 24, 1995, Ser. No. 426,987

Int. Cl.[6] A61F *7/00*

U.S. Cl. 607—114 **4 Claims**



1. A method of cooling a selected object comprising the steps of:

(a) forming a cooling pad having a liquid and a liquid absorbing means sealed within an envelope by placing said liquid and said liquid absorbing means inside said envelope, thereafter compressing said liquid absorbing means by vacuum pressure, and thereafter sealing said envelope while said liquid absorbing means remains compressed;

(b) refrigerating the pad to cool it; and

(c) placing said cooled pad adjacent said selected object.

5,575,813

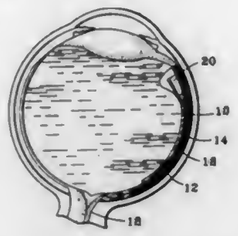
LOW-PRESSURE NEURAL CONTACT STRUCTURE

David J. Edell, Lexington; Joseph Rizzo, III, Boston, and John L. Wyatt, Jr., Sudbury, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 234,725, Apr. 28, 1994, Pat. No. 5,476,494, which is a continuation of Ser. No. 943,513, Sep. 11, 1992, abandoned. This application Apr. 28, 1995, Ser. No. 394,719

Int. Cl.[6] A61N 1/00

U.S. Cl. 607—116 26 Claims



22. A neural contact structure for contact with neural tissue, comprising:

a first portion for anchoring to a location on the neural tissue;

an elongated element extending from the first portion and easily conforming to contours in a surface of the neural tissue to exhibit a weak restoring force in response to curvature of the elongated element to provide a pressure to the surface no greater than 10 mm mercury, the pressure sufficient to permit stimulation of the neural tissue without damage to said neural tissue.

5,575,814

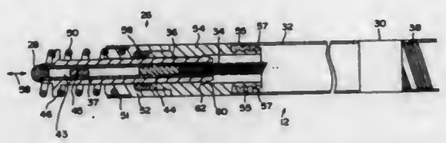
ACTIVE FIXATION MEDICAL ELECTRICAL LEAD HAVING MAPPING CAPABILITY

Vincent Giele, Wilheiminadorp, Netherlands; Kenneth B. Stokes, Elk River, and Mary M. Morris, Mounds View, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Jan. 27, 1995, Ser. No. 379,826

Int. Cl.[6] A61N 1/05

U.S. Cl. 607—127 5 Claims



1. A body-implantable, electrically-conductive lead comprising:

a flexible, elongate lead body having an outer surface defined by a tubular outer sheath having a lumen extending along its longitudinal axis from its proximal end to its distal end;

a tubular inner sheath having a lumen extending along its longitudinal axis from its proximal end to its distal end, the inner sheath being coaxially disposed within the outer sheath's longitudinal lumen and being substantially coextensive with the outer sheath and rotatable within the outer sheath about its longitudinal axis;

a first coiled conductor, disposed within the outer sheath and coiled around the inner sheath, extending from the proximal end of the outer sheath to a ring electrode disposed at a point spaced back from the outer sheath's distal end; and

a second coiled conductor, disposed within the inner sheath and extending from the proximal end of the inner sheath to a tip electrode, the second coiled conductor being axially rotatable independently from the first coiled conductor;

an electrode assembly coupled to the distal end of the lead body, the electrode assembly comprising a helix end cap rigidly coupled to the outer sheath, and a fixation helix coupled to the helix end cap;

a substantially cylindrical sliding sleeve slidably projecting through a longitudinally-oriented lumen in the helix end cap, the sliding sleeve electrically coupled to the second coiled conductor, the sliding sleeve having proximal and distal ends and having a helix-engaging collar substantially near its distal end, engaged in a screw-like manner in the helix;

the tip electrode is disposed on the distal end of the sliding sleeve, and disposed within the helix.

5,575,815

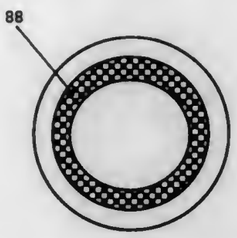
LOCAL POLYMERIC GEL THERAPY

Marvin Slepian, and Stephen P. Massia, both of Tucson, Ariz., assignors to Endoluminal Therapeutics, Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 118,978, Sep. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 987,357, Dec. 7, 1992, abandoned, which is a continuation of Ser. No. 857,700, Mar. 25, 1992, Pat. No. 5,213,580, which is a continuation of Ser. No. 593,302, Oct. 3, 1990, abandoned, which is a continuation of Ser. No. 235,998, Aug. 24, 1988, abandoned. This application Oct. 6, 1993, Ser. No. 132,745

Int. Cl.[6] A61F 2/06;2/02; A61K 9/22

U.S. Cl. 623—1 2 Claims



1. A method for controlled delivery and passage of materials to a tissue surface, the method comprising applying a biocompatible polymeric material to the surface, wherein the polymeric material is applied in a first fluent state and converted in situ to a second non-fluent state, and wherein the material has a controlled porosity and permeability for the passage therethrough of macromolecules, microorganisms, and cells.

5,575,816

HIGH STRENGTH AND HIGH DENSITY INTRALUMINAL WIRE STENT

James J. Rudnick, Waldwick, and Dominik M. Wiktor, Cranford, both of N.J., assignors to Meadox Medicals, Inc., Oakland, N.J.

Filed Aug. 12, 1994, Ser. No. 289,791

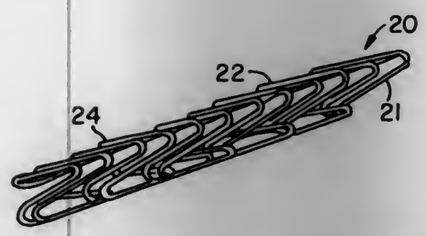
Int. Cl.[6] A61F 2/06;2/04

U.S. Cl. 623—1 10 Claims

1. An intraluminal stent comprising:

a generally elongate tubular body formed of an elongate helically wound wire, said helically wound wire defining longitudinally spaced windings, the wire being formed into successive generally longitudinally aligned waves having a given amplitude along a length of the wire, the waves being arranged in non-overlapping longitudinally spaced succession along a length of said tube, the longitudinal spacing of the helical windings being less than twice the given amplitude of the wave;

said body defining an open area between said helically wound wire and wherein said percentage of open surface area of said



stent in relationship to the total surface area of said stent is less than 28% in the closed condition.

5,575,817

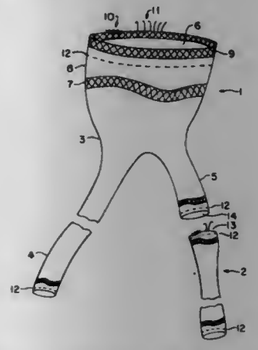
AORTO FEMORAL BIFURCATION GRAFT AND METHOD OF IMPLANTATION

Eric C. Martin, 134 Old Post Rd. N., Croton on Hudson, N.Y. 10520

Filed Aug. 19, 1994, Ser. No. 293,541

Int. Cl.[6] A61F 2/06

U.S. Cl. 623—1 17 Claims



1. An apparatus for reinforcing a bifurcated lumen comprising:

a first section, configured to be positioned within the lumen, comprising:

an upper limb, configured to fit within the lumen upstream of the bifurcation;

a first lower limb, configured to extend into a first leg of said bifurcation when said first section is positioned in the lumen, and

a second lower limb, shorter than said first lower limb, and configured so that when said first section is positioned in the lumen, said second lower limb does not extend into a second leg of said bifurcation.

5,575,818

ENDOVASCULAR STENT WITH LOCKING RING

Leonard Pinchuk, Miami, Fla., assignor to Corvita Corporation, Miami, Fla.

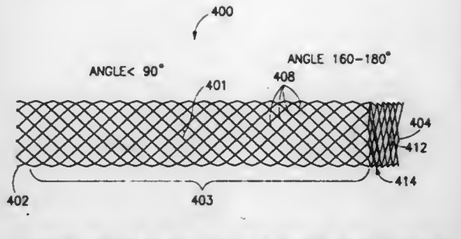
Filed Feb. 14, 1995, Ser. No. 388,612

Int. Cl.[6] A61F 2/06

U.S. Cl. 623—1 24 Claims

1. A prosthetic device for implantation in a body cavity of a living body, comprising:

a braided stent formed from a first plurality of resiliently-deformable wires helically wound in a first direction and a second plurality of resiliently-deformable wires helically wound in a second direction opposite said first direction and



crossing said first wires, said stent having a first cylindrical body portion with said first and second wires crossing at a base pitch angle, and a first substantially cylindrical end portion where said first and second wires cross at a first end portion pitch angle, wherein,

said first end portion pitch angle is substantially greater than said base pitch angle producing greater radial force than that of said body portion.

5,575,819

ARTIFICIAL LIGAMENTS

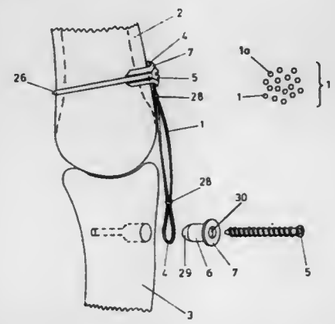
Andrew Amis, London, United Kingdom, assignor to Imperial College of Science and Technology, London, England

Continuation of Ser. No. 827,479, Jan. 29, 1992, abandoned, which is a continuation of Ser. No. 474,678, Feb. 6, 1990, abandoned, which is a division of Ser. No. 97,861, Sep. 17, 1987, abandoned. This application Nov. 28, 1994, Ser. No. 348,199

Claims priority, application United Kingdom, Sep. 19, 1986, 8622563

Int. Cl.[6] A61F 2/08

U.S. Cl. 623—13 5 Claims



1. An artificial ligament for connecting across a skeletal joint, the ligament comprising a plurality of substantially parallel fibres which extend between (a) a first end for accommodating first fixation means by which the ligament can be secured to a first bone of the said joint, and (b) a second end for accommodating second fixation means by which the ligament can be secured across the joint to a second bone of the said joint; each of the fibres being formed from a yarn comprising a plurality of filaments of a biocompatible polymeric material that are slightly twisted together so as to form the yarn, the filaments being unconnected and continuously exposed along substantially their entire surfaces between the first and second ends to facilitate parallel uninhibited ingrowth of collagenous tissue into the structure of the yarn fibres between and along individual ones of the filaments and the fibres resulting in encapsulation of the filaments to form a composite load bearing structure of the filaments and the ingrown collagenous tissue which extends continuously between the first and second bones of the joint, without strangulation of tissue that has ingrown into spaces between the filaments.

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5,575,820

PROCESS FOR THE FIXATION OF DYES CONTAINING AT LEAST ONE POLYMERISABLE DOUBLE BOND BY MEANS OF IONISING RADIATION

Katharina Fritzsche, Weil am Rhein, Germany, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

PCT No. PCT/EP93/01265, § 371 Date Dec. 2, 1994, § 102(e) Date Dec. 2, 1994, PCT Pub. No. WO93/24700, PCT Pub. Date Dec. 9, 1993

PCT Filed May 21, 1993, Ser. No. 343,588

Claims priority, application Switzerland, Jun. 4, 1992, 1804/92; Jun. 4, 1992, 1805/92; Dec. 1, 1992, 3685/92

Int. Cl.[6] D06P *5/20;1/52;3/66*

U.S. Cl. 8—444 35 Claims

1. A process for the dyeing or printing of organic material, which comprises applying a dye containing at least one polymerisable double bond together with at least one colourless cationic compound containing at least one polymerisable double bond and optionally one or more colourless nonionic compounds containing at least one polymerisable double bond and, optionally, further auxiliaries to the organic material, and then fixing the dye by means of ionising radiation.

5,575,821

PROCESS FOR THE PREPARATION OF A MODIFIED FIBER MATERIAL AND PROCESS FOR THE DYEING OF THE MODIFIED MATERIAL WITH ANIONIC TEXTILE DYES

Andreas Schrell, Coesfeld; Werner H. Russ, Flörsheim am Main, and Thomas Riehm, Hattersheim am Main, all of Germany, assignors to Hoechst AG, Frankfurt, Germany

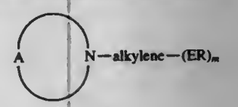
Division of Ser. No. 400,184, Mar. 6, 1995, Pat. No. 5,507,840, which is a continuation of Ser. No. 984,977, Dec. 3, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 475,937

Claims priority, application Germany, Dec. 7, 1991, 41 40 410.6; Jul. 23, 1992, 42 24 283.5

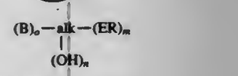
Int. Cl.[6] D06P *5/22;* D06M *13/322*

U.S. Cl. 8—493 12 Claims

1. A process for the modification of a fiber material which comprises causing a fiber material to come under the action of a compound of the formula (1a) or (1b)



(1a)



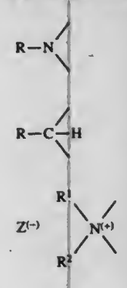
(1b)

in which:

ER is an ester group;

A and N, together with 1 or 2 alkylene groups of 1 to 4 carbon atoms, form the bivalent radical of a heterocyclic ring, in which

A is an oxygen atom or a group of the formula (a), (b) or (c)



(a)

(b)

(c)

in which

R is a hydrogen atom or an amino group or an alkyl group of 1 to 6 carbon atoms, which may be substituted by 1 or 2 substituents from the group consisting of amino, sulfo, hydroxy, sulfato, phosphato and carboxy, or is an alkyl group of 3 to 8 carbon atoms which is interrupted by 1 or 2 hetero groups selected from the group consisting of —O— and —NH— and can be substituted by an amino, sulfo, hydroxy, sulfato or carboxy group,

R^1 is hydrogen, methyl or ethyl,

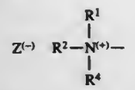
R^2 is hydrogen, methyl or ethyl, and

$z^{(-)}$ is an anion;

B is an amino group of the formula H_2N— or an amino or ammonium group of the formula (d) or (e)



(d)



(e)

in which

R^1, R^2 and $z^{(-)}$ have one of the abovementioned meanings,

R^3 is methyl, or ethyl, and

R^4 is hydrogen, methyl or ethyl;

p is the number 1 or 2;

alkylene is a straight-chain or branched alkylene of 2 to 6 carbon atoms, which can be substituted by 1 or 2 hydroxy groups, or is a straight-chain or branched alkylene of 3 to 8 carbon atoms which is interrupted by 1 or 2 hetero groups selected from the groups consisting of —O— and —NH—;

alk is a straight-chain or branched alkylene of 2 to 6 carbon atoms, or is a straight-chain or branched alkylene of 3 to 8 carbon atoms which is interrupted by 1 or 2 hetero groups selected from the groups consisting of —O— and —NH—;

m is the number 1 or 2;

n is the number from 1 to 4;

and the amino, hydroxy and ester groups can be bound to a primary, secondary or tertiary carbon atom on the alkylene group; in aqueous, alkaline solution at a temperature of between 60 and 230 degrees C.

5,575,822

ENGINE FUELS

Joe S. Wilkins, Jr., 1706 E. Southmore, Pasadena, Tex. 77502

Continuation-in-part of Ser. No. 238,266, May 4, 1994, Pat. No. 5,501,713. This application Jun. 7, 1995, Ser. No. 481,607

Int. Cl.[6] C10L *1/18*

U.S. Cl. 44—307 33 Claims

1. A method for igniting an engine comprising the steps of (a) adding a fuel to said engine, said fuel comprising a terpene and a naphtha compound; and (b) igniting said engine.

5,575,823

DIESEL FUEL COMPOSITIONS

Graeme M. Wallace, Wokingham, and James P. Simmonds, Horbury, both of United Kingdom, assignors to Ethyl Petroleum Additives Limited, Bracknell, England

Filed Dec. 21, 1990, Ser. No. 632,355

Claims priority, application United Kingdom, Dec. 22, 1989, 89-29119

Int. Cl.[6] C10L *1/30*

U.S. Cl. 44—359 24 Claims

1. A heavy diesel fuel composition comprising (i) a major amount of a heavy residual diesel fuel having a viscosity of at least

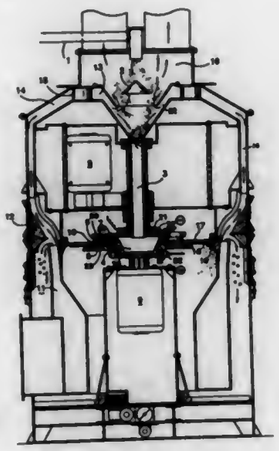
about 100 cSt at 50° C. and a sulfur content of at least about 1% by weight, (ii) at least one cyclomatic manganese tricarbonyl and (iii) at least one ashless dispersant, (ii) and (iii) being present in said fuel in amounts and proportions such that said fuel composition exhibits an improved fuel economy as compared to the same fuel composition not containing said ashless dispersant.

5,575,824

COAL PREPARATION DEVICE

Charles K. Brown, 8317 Robert Bruce Dr., and David K. Brown, 11232 Midlothian Tnpk, #141, both of Richmond, Va. 23235

Filed Jan. 3, 1995, Ser. No. 368,497
Int. Cl.[6] C10L 5/00
U.S. Cl. 44—505 16 Claims



1. A fuel coal processing system, comprising:
a centrifugal coal pulverizer means in the form of a rotor system; and
an electrostatic coal purifier means;
wherein said centrifugal type coal pulverizer means and said electrostatic coal purifier means are combined into one integral fuel coal preparation device.

5,575,825

ABRASIVE

Katsuya Iida; Hideharu Mikami, both of Fujieda, and Hiroaki Nishihara, Yokohama, all of Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

Filed Sep. 14, 1994, Ser. No. 305,838
Claims priority, application Japan, Sep. 27, 1993, 5-239615; Oct. 26, 1993, 5-267615; Nov. 12, 1993, 5-282900
Int. Cl.[6] C09C 1/68
U.S. Cl. 51—307 14 Claims

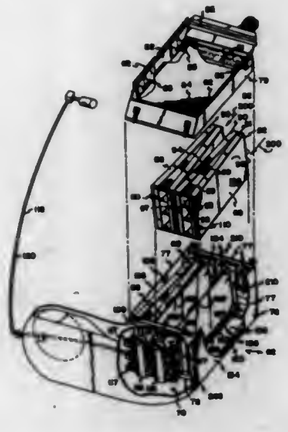
1. An abrasive produced by crushing a cured product of a phenol resin composition into particles, and washing with water and drying the particles, wherein the phenol resin composition comprises as principal constituents a phenol resin and an organic filler selected from the group consisting of woodmeal, plywood meal, powder of cured thermosetting resins, powdered pulp and cotton flocks, and wherein the phenol resin composition comprises 40–70% of a phenol resin and 30–60 wt % of said organic filler.

5,575,826

AIR CLEANER

Gary R. Gillingham; Peter A. Betts, both of Prior Lake; Daniel T. Risch, Minneapolis; James C. Rothman, Burnsville, and Fred H. Wahlquist, Bloomington, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Continuation of Ser. No. 122,153, Sep. 17, 1993, Pat. No. 5,401,285. This application Mar. 28, 1995, Ser. No. 412,771
Int. Cl.[6] B01D 50/00
U.S. Cl. 55—284 19 Claims



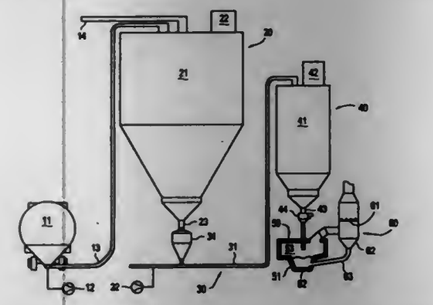
1. An air cleaner construction comprising:
(a) a precleaner arrangement constructed and arranged for directing of air flow therethrough and for selected separating of particulate material from air flow directed therethrough before the air flow is directed outwardly from said precleaner arrangement;
(b) a filter assembly constructed and arranged to receive selected air flow from said precleaner arrangement and to direct same through a filter arrangement;
(i) said filter arrangement including a housing having sidewalls;
(ii) said filter arrangement including at least two filter packs therein, said at least two filter packs comprising a first filter pack and a second filter pack separated by an intermediate wall panel; and,
(c) a scavenger arrangement constructed and arranged to selectively withdraw separated particulate material from both of said precleaner arrangement and said filter assembly; said scavenger arrangement including:
(i) a first perforated scavenger duct having: a first set of scavenger apertures therein oriented to collect particulate material from a space between said first filter pack and said intermediate wall panel; and, a second set of scavenger apertures oriented to collect particulate material from a space between said second filter pack and said intermediate wall panel; and,
(ii) a second perforated scavenger duct having a set of scavenger apertures therein oriented to collect particulate material from a space between said first filter pack and one of said housing sidewalls, and along an opposite side of said first filter pack from said intermediate wall panel.

5,575,827

SYSTEM FOR PRODUCING CEMENTITIOUS MATERIALS FROM FERROUS BLAST FURNACE SLAGS

Ronald R. Pinlecki, Baltimore, Md., assignor to Blue Circle America, Inc., Sparrows Point, Md.

Division of Ser. No. 23,378, Feb. 26, 1993, Pat. No. 5,374,309. This application Jun. 21, 1994, Ser. No. 262,836
Int. Cl.[6] C03B 5/23
U.S. Cl. 65—141 8 Claims



1. A system for producing a cementitious material from molten ferrous slag comprising:
a volumetric feeder for delivering measured amounts of a source of CaO at a rate to molten ferrous slag, said molten slag containing CaO, MgO, and SiO_2, in a slag runner and a baffle projection affixed to said slag runner's side wall for creating turbulence in said molten slag, whereby said a source of CaO is mixed with said molten slag at a mixing point, so that a ratio of CaO to SiO_2 in a range of about 1.06 to 1.25 is obtained, and said slag has a Base Number less than about 1.55, wherein said Base Number equals $(CaO+MgO)/SiO_2$;
a granulating station to produce granulated slag at which water at ambient temperature is are injected into said molten slag at a rate about ten times said molten lag's rate of flow and at a pressure of a least about 30 psi (1551 torr) to granulate said molten slag; and
a ball mill for grinding said granulated slag to a degree of fineness to obtain a hydration rate.

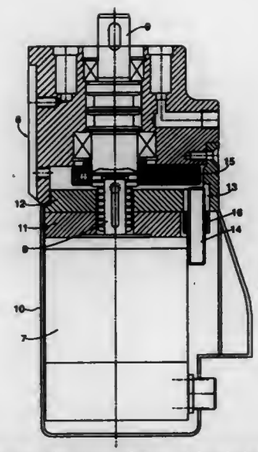
5,575,828

BOTTLE EXTRACTOR FOR HOLLOW GLASS MOLDING MACHINES

Ivo Dutto, and Alfonso Arechaga, both of Llodio, Spain, assignors to Vidrala S.A., and Avacon S.A., both of Spain

Filed Mar. 4, 1994, Ser. No. 206,507
Claims priority, application Spain, Jul. 5, 1993, 9301509
Int. Cl.[6] C03B 9/453;35/04
U.S. Cl. 65—158 2 Claims

1. A bottle extractor for extraction of hollow glass articles from molding machines comprising a drive shaft and a mechanical arm for transfer of the hollow glass articles, said bottle extractor being driven by a stepping motor having an output shaft, said output shaft being directly connected to the drive shaft of the bottle extractor, said bottle extractor being operative through said mechanical arm to extract said hollow glass articles from said molding machines and to transfer said hollow glass articles to a conveyor belt, said stepping motor being insulated from the bottle extractor by means of a sheet of thermal insulating material positioned between said stepping motor and said bottle extractor.



5,575,829

DIRECT USE OF SULFUR-BEARING NICKEL CONCENTRATE IN MAKING NI ALLOYED STAINLESS STEEL

David M. Kundrat, Cincinnati, Ohio, assignor to Armco Inc., Middletown, Ohio

Filed Jun. 6, 1995, Ser. No. 470,308
Int. Cl.[6] C21C 5/52
U.S. Cl. 75—10.35 23 Claims

23. A method for manufacturing a nickel-alloyed stainless steel in a refining vessel including a bottom tuyere, comprising:
melting a solid charge into a molten iron bath in an electric arc furnace at a temperature of at least 1550° C.,
the charge including ferrous scrap, a sulfur-bearing nickel concentrate and a slagging agent, the concentrate containing >2.6 wt. % S_s,
the iron bath covered by a slag having a basicity of at least 1.5 and the ratio of the slag weight to the bath weight being at least 0.10,
transferring the bath to the refining vessel,
passing an oxygen gas through the bottom tuyere to decarburize carbon from the bath until a final carbon specification is obtained,
adding a reductant to the bath, and
passing an inert gas through the bottom tuyere to vigorously rinse the bath to mix the concentrate and the reductant until maximum transfer of sulfur from the bath to a final slag is achieved and dynamic equilibrium is approached whereby a final bath of a stainless steel composition containing ≦2.0 wt. % Al, ≦2.0 wt. % Si, ≦0.03 wt. % S, ≦26 wt. % Cr and 0.05–20 wt. Ni is produced.

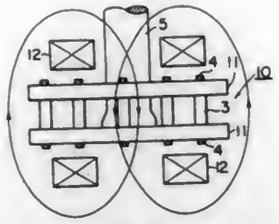
5,575,830

FABRICATION METHODS AND EQUIPMENT FOR GRANULATED POWDERS

Osamu Yamashita, Ibaraki; Tsunekazu Saigo, Mtsubara; Seiichi Kohara, Osaka; Hirokazu Kitayama, Osaka, and Hiroshi Hashikawa, Osaka, all of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan

Filed Dec. 21, 1994, Ser. No. 360,632
Int. Cl.[6] B22F 1/00
U.S. Cl. 75—348 18 Claims

1. A process for preparing magnetically isotropic granulated powder, said process comprising the steps of: adding a binder,



consisting of water and at least one of either methyl cellulose or polyacryl amide or polyvinyl alcohol, to a rare earth containing alloy powder;

stirring said powder and said binder to form a slurry; and

spraying said slurry and drying the sprayed slurry with a rotary disk spray dryer apparatus to form a granulated powder.

5,575,831

METHOD FOR PRODUCING HYDROGEN STORAGE ALLOY

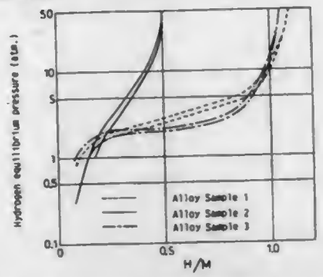
Yasuharu Yamamura, Katano; Hajime Seri, Izumiotsu; Yoichiro Tsuji, Hirakata; Naoko Owada, Katano, and Tsutomu Iwaki, Yawata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 25, 1994, Ser. No. 201,602

Claims priority, application Japan, Mar. 1, 1993, 5-039622

Int. Cl.[6] C22B *34/14;34/22*

U.S. Cl. 75—614 **19 Claims**



1. A method for producing a multi-component hydrogen storage alloy including at least one element selected from the group consisting of zirconium and vanadium, wherein

a raw material including at least one of zirconium and vanadium in its oxide form and further including at least one metal or metal oxide other than zirconium and vanadium in their oxide form, where said at least one metal is present in said alloy, is subjected to calcining in an atmosphere containing oxygen and then to heating in the presence of metal calcium under an inert gas atmosphere up to a temperature at which at least metal calcium melts but below a temperature at which the raw material completely melts, thereby reducing the oxides in said raw material.

5,575,832

REGENERATIVE HYGROSCOPIC FILTER AND METHOD

Steven T. Boyd, Athens, Canada, assignor to Humidtech Research, Inc., Anthens, Canada

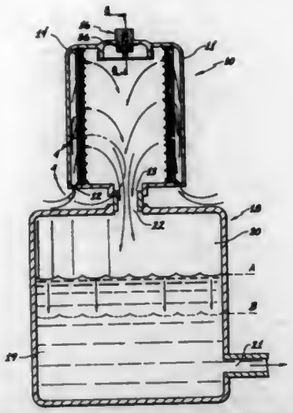
Filed Sep. 21, 1994, Ser. No. 310,149

Int. Cl.[6] B01D *50/00;53/02*

U.S. Cl. 95—91 **13 Claims**

1. A regenerative hygroscopic filter comprising:

a housing containing an inlet port and an outlet port; and,



a hydrophilic filter element positioned within said housing between said inlet and outlet ports, and operatively arranged to filter solid particulate matter and water when gas passes into said inlet port and through said filter element, and to release water via said inlet port when gas passes from said outlet port through said filter element, wherein said filter element comprises an inherently gas permeable substrate treated with a hydrophilic substance, wherein said substrate is impervious to solid particulate matter.

5,575,833

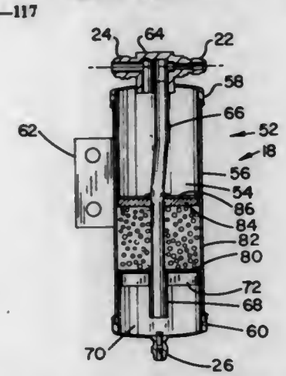
REFRIGERANT RECYCLING SYSTEM AND APPARATUS

Gary E. Griffin, Penn Yan, N.Y., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 951,687, Sep. 25, 1992, abandoned. This application Jul. 1, 1994, Ser. No. 270,206

Int. Cl.[6] B01D *53/02*

U.S. Cl. 95—117 **35 Claims**



32. A method for removing compressor lubricant, water and particles from vapor refrigerant in a refrigerant recycling system, comprising the steps of:

locating a vapor drier/separator in the refrigerant recycling system to receive the vapor refrigerant, said vapor drier/separator including a body having a top, a bottom, and an internal chamber, filter material for removing lubricant, water and particles located within said internal chamber, an imperforate conduit extending from the top of the body to a lower separation chamber at the bottom of the body, and a drain in the separation chamber;

directing the vapor refrigerant with compressor lubricant, water and particles into an inlet opening in the top of the vapor drier/separator body and vertically downward through the conduit toward the bottom of the body directly into the lower separation chamber; separating out by quiescent action the compressor lubricant from the vapor refrigerant in the separation chamber;

periodically draining the lubricant out of the separation chamber through the drain in the separation chamber;

directing the vapor refrigerant vertically upward through the filter material toward the top of the body and removing the water and particles from the vapor refrigerant, and

directing the filtered vapor refrigerant through an outlet in the top of the vapor drier/separator body.

5,575,834

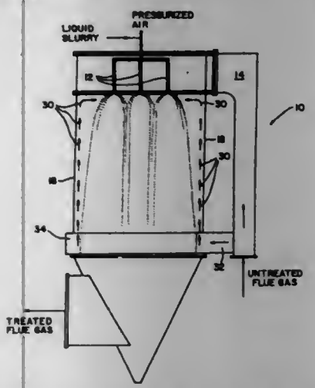
DRY SCRUBBER WITH FORCED RECIRCULATION

Thomas W. Strock, Jackson Township, and Paul Dykshoorn, Alliance, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 388,332, Feb. 14, 1995. This application Jun. 3, 1996, Ser. No. 656,747

Int. Cl.[6] B01D *47/00*

U.S. Cl. 95—149 **5 Claims**



1. An improved dry scrubbing method for spraying a liquid into a flue gas, comprising the steps of:

providing a housing with an inlet connected to a duct supplying a flue gas stream, and an outlet;

positioning at least one atomizer in the housing for spraying a liquid into the flue gas passing therethrough to condition it;

supplying a flue gas stream into the housing;

spraying the liquid into the flue gas for entraining the flue gas and intimately mixing the liquid and flue gas together; and

supplying a flow of counterflowing flue gas along a length of inside walls of said housing in a direction opposite to that of the flow of liquid and flue gas through said housing and using the counterflowing gas to displace a naturally occurring recirculating flow field which occurs at the inside walls of said housing due to said entrainment to prevent deposition of wet material thereon.

5,575,835

APPARATUS FOR REMOVING MOISTURE FROM AN ENVIRONMENT

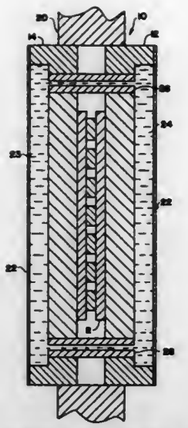
Christian E. Bailey, Port Deposit, and Thomas E. Finan, Silver Spring, both of Md., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Aug. 11, 1995, Ser. No. 514,125

Int. Cl.[6] B01D *53/22*

U.S. Cl. 96—7 **14 Claims**

1. An apparatus for removing moisture from an enclosed environment, the enclosed environment having a predetermined internal atmosphere, and wherein a predetermined external atmosphere surrounds the enclosed environment, the apparatus comprising:



a solid state heat pump having opposed first and second surfaces, the first surface having a predetermined temperature which is greater than a predetermined temperature of the second surface;

a support structure for mounting the solid state heat pump, the support structure defining first and second cavities, the solid state heat pump being mounted in the support structure such that the first heat pump surface thermally communicates with the first cavity and the second heat pump surface thermally communicates with the second cavity;

the support structure having formed therein at least two passages which fluidly connect the first and second cavities, the cavities and passages forming a vertical fluid circuit, wherein the first passage is disposed at a predetermined higher location than the second passage;

a deliquescent solution which fills the first and second cavities;

a first liquid water impermeable, water vapor permeable membrane; and

a second liquid water impermeable, water vapor permeable membrane;

wherein the first and second membranes are attached to the support structure in liquid sealing relation to the first and second cavities, respectively, the first membrane permitting the deliquescent solution in the first cavity to desorb water vapor to the external atmosphere, and the second membrane permitting the deliquescent solution in the second cavity to adsorb water vapor from the internal atmospbere of the enclosed environment.

5,575,836

ELECTRIC DUST COLLECTOR

Sakao Sugiura, Kobe; Osamu Kawabata, Tokyo, and Nobuo Teramura, Kobe, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

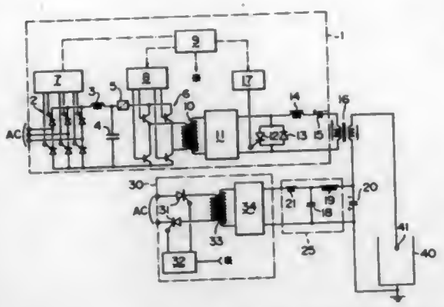
Filed Dec. 20, 1994, Ser. No. 360,139

Claims priority, application Japan, Dec. 28, 1993, 5-353716; Oct. 15, 1994, 6-275646

Int. Cl.[6] B03C *3/66*

U.S. Cl. 96—82 **8 Claims**

1. An electric dust collector which superposes a pulse voltage of negative polarity produced by a pulse power supply circuit on a base voltage of negative polarity produced by a base power supply circuit, so that the two voltages are added to each other in the same direction of polarity and which supplies the superposed voltage to a discharge electrode of negative polarity disposed in a dust collection chamber connected to ground, comprising a capacitor having one end connected to the ground and the other end connected through a secondary winding of a pulse transformer to said



discharge electrode, a positive voltage side output terminal of said base power supply circuit being connected to the ground side terminal of said capacitor, a negative voltage side output terminal of said base power supply circuit being connected through a smoothing circuit to the discharge electrode side terminal of said capacitor, and an output terminal of said pulse power supply circuit being connected to a primary winding of said pulse transformer.

5,575,837

POLISHING COMPOSITION

Hitoshi Kodama, and Shoji Iwasa, both of Aichi-ken, Japan, assignors to Fujimi Incorporated, Aichi-ken, Japan

Continuation of Ser. No. 229,560, Apr. 19, 1994, abandoned. This application Oct. 6, 1995, Ser. No. 539,502

Claims priority, application Japan, Apr. 28, 1993, 5-103059; Feb. 18, 1994, 6-021197

Int. Cl.[6] C09K *13/00*

U.S. Cl. 106—3 **5 Claims**

1. In a polishing composition comprising a slurry of silica particles in water wherein the silica particles are present in the slurry in a size and amount sufficient to render the composition effective in removing a metal from the surface of an integrated circuit by polishing, the improvement wherein the composition consists essentially of water, a sol or gel of silica and a persulfate compound as a polishing accelerator, said persulfate compound being included in the composition in an amount sufficient to increase the effectiveness of the composition in removing the metal by polishing without formation of orange peel on the surface of the integrated circuit.

5,575,838

CONDITIONING FLUID

John Fortune, 27 Wroxton Rd., London SE15 2BN, England

Filed Oct. 31, 1994, Ser. No. 331,706

Claims priority, application United Kingdom, Mar. 3, 1994, 9404048

Int. Cl.[6] C09G *1/18;* **C09D** *191/00*

U.S. Cl. 106—9 **4 Claims**

1. A conditioning fluid comprising between 1 and 3 parts by volume of silicone fluid and between 2 and 6 parts by volume of vegetable oil, and a solvent for said silicone fluid and said vegetable oil, said solvent having a volume that is at least twice that of the combined volume of the silicone fluid and the vegetable, said solvent being constituted by D-limonene and white spirit in the ratio of 4 parts by volume of D-limonene and 10 parts by volume of white spirit, said vegetable oil being 20 percent by volume, said silicone oil being 10 percent by volume, said D-limonene being 20 percent by volume, and said white spirit being 50 percent by volume.

5,575,839

STENCIL PRINTING EMULSION INK

Sadanao Okuda, Tokyo, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,791

Claims priority, application Japan, Dec. 27, 1993, 5-332422

Int. Cl.[6] C09D *11/02;11/06;11/08*

U.S. Cl. 106—20 C **7 Claims**

1. A water-in-oil stencil printing emulsion ink having a water phase dispersed in an oil phase, wherein said emulsion ink consists of 10 to 70% by weight of oil phase and 90 to 30% by weight of a water phase, and said water phase contains a water-insoluble coloring agent having a mean particle diameter of 10 microns or less.

5,575,840

CEMENT MORTAR SYSTEMS USING BLENDS OF POLYSACCHARIDES AND COLD-WATER-SOLUBLE, UNMODIFIED STARCHES

Dennis R. DeWacker, Belle Mead, N.J., assignor to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 254,016, Jun. 3, 1994, abandoned, which is a continuation-in-part of Ser. No. 146,264, Oct. 29, 1993, abandoned. This application Mar. 17, 1995, Ser. No. 406,090

Int. Cl.[6] C04B *24/10;24/38*

U.S. Cl. 106—162.81 **28 Claims**

1. A composition for use as a water retention aid in cementitious formulations, said composition comprising:

from about 1 to 80 weight percent of a cold-water-soluble, unmodified starch; and

from about 20 to 99 weight percent of a polysaccharide selected from the group consisting of cellulose, hemicellulose, cellulose derivatives, and gums, wherein the composition is substantially free of a modified starch.

5,575,841

CEMENTITIOUS MATERIALS

Carolyn M. Dry, 1605 Park Haven Dr., Champaign, Ill. 61821, assignor to Carolyn M. Dry, Champaign, Ill.

Continuation of Ser. No. 540,191, Jun. 19, 1990, abandoned. This application Dec. 29, 1993, Ser. No. 174,751

Int. Cl.[6] C04B *14/38;14/42*

U.S. Cl. 106—711 **19 Claims**

1. A shaped article comprising:

a cured matrix material having a plurality of hollow fibers dispersed therein, said hollow fibers having a releasable modifying agent contained therein, means for maintaining the modifying agent within the fibers until released and means for permitting release of the modifying agent from the hollow fibers into the matrix material in response to at least one external stimulus.

5,575,842

METHOD OF DISPOSAL OF HAZARDOUS PARTICULATE SOLID WASTE BY ASPHALT EMULSION ENCAPSULATION

Angus MacNeil, 9180 Garden City Road, Richmond, Canada, and Michael T. McDowell, 3720 Point Grey Road, Vancouver, Canada

Continuation of Ser. No. 92,666, Jul. 14, 1993, abandoned, which is a continuation of Ser. No. 821,339, Jan. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 448,804, Dec. 11, 1989, abandoned. This application Aug. 25, 1994, Ser. No. 296,099

Int. Cl.[6] C09D *195/00*

U.S. Cl. 106—273.1 **5 Claims**

1. A method of disposing of hazardous particulate waste containing hazardous waste ions comprising the steps of:

(a) determining the ionic charge of said waste ions;

(b) selecting an asphaltic emulsion suitable for forming a stable mixture with said particulate waste;

(c) mixing said particulate waste and said asphaltic emulsion to form a quick setting asphaltic emulsion slurry sealer consisting essentially of said asphaltic emulsion, water and said waste; and,

(d) utilizing said asphaltic emulsion slurry sealer as a coating on pavement in existing commercial uses where a quick setting asphaltic emulsion slurry sealer is useful.

5,575,843

PROCESS FOR IMPROVING COLOR VALUE OF A PIGMENT

Ramasamy Krishnan, Colonia; Marilyn C. Yamat, Bogota, both of N.J.; Manuel Z. Gregorio, and Russell J. Schwartz, both of Cincinnati, Ohio, assignors to Sun Chemical Corporation

Filed Dec. 16, 1994, Ser. No. 357,684

Int. Cl.[6] C09B *63/00*

U.S. Cl. 106—402 **15 Claims**

1. In a process for preparing a pigment which comprises the steps of (a) diazotizing an aromatic monoamine or diamine, (b) coupling a substituted or unsubstituted naphthol or an acetoacetylated aromatic monoamine with the diazotized aromatic monoamine or diamine, (c) conditioning the reaction mixture to induce crystallization of the pigment and (d) recovering the crystallized pigment from the conditioned reaction mixture, the improvement which comprises adding a polymer selected from the group consisting of polyethers and polyesters to the reaction mixture during the conditioning step.

5,575,844

METHOD OF PREPARING GYPSUM PRODUCTS

John J. Bradshaw, Derby, United Kingdom, assignor to BPB Industries Public Limited Company, Slough, United Kingdom

Division of Ser. No. 203,404, Mar. 1, 1994, Pat. No. 5,484,200. This application Jun. 6, 1995, Ser. No. 467,805

Claims priority, application United Kingdom, Mar. 1, 1993, 9304120

Int. Cl.[6] C04B *38/00*

U.S. Cl. 106—680 **12 Claims**

1. A method of preparing gypsum products comprising the steps of:

(i) preparing a foamed slurry of a gypsum plaster comprising:

(a) dispersing gypsum plaster in a liquid medium under conditions of shear to produce an initial dispersion;

(b) blending the initial dispersion with a foam under conditions of lower shear than conditions under which step (i)(a) occurs; and

(ii) forming the foamed slurry into a gypsum product.

5,575,845

CARBON BLACK PRODUCTS FOR COLORING MINERAL BINDERS

James A. Belmont, Acton; Ralph U. Boes, West Concord, and Jameel Menashi, Lexington, all of Mass., assignors to Cabot Corporation, Boston, Mass.

Filed Dec. 15, 1994, Ser. No. 356,664

Int. Cl.[6] C04B *14/00;14/36*

U.S. Cl. 106—712 **11 Claims**

1. A mineral binder composition comprising a mineral binder and a carbon black product comprising a carbon black having attached an organic group containing an ionic or an ionizable group.

5,575,846

MORTAR COMPOSITION INCLUDING A MINERAL MORTAR PASTE

Norbert Arnold, Waldachtal, and Willi Haug, Freudenstadt-Musbach, both of Germany, assignors to fischerwere, Artur Fischer GmbH & Co KG, Waldachtal, Germany

Filed Sep. 15, 1995, Ser. No. 528,955

Claims priority, application Germany, Sep. 15, 1994, 44 32 879.6

Int. Cl.[6] C04B *24/00*

U.S. Cl. 106—802 **7 Claims**

1. A mortar composition for fixing an anchoring element in a drilled hole, said mortar composition consisting of a water component and a mineral mortar paste held separately from the water component in a crushable container, wherein said mineral mortar paste comprises a mixture of mineral mortar and a liquid solvent chemically inert towards the mineral mortar and said mineral mortar paste is hardenable with said water to form a hardened mortar compound and wherein said water component includes water and a thixotropic agent consisting of amorphous pyrogenic silicic acid so that said water component acts like a paste when not subject to shear forces.

5,575,847

APPARATUS FOR PRODUCING SINGLE CRYSTALS

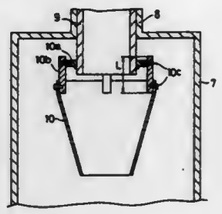
Kaoru Kuramochi, Montgomery, Ohio, and Setsuo Okamoto, Nishinomiya, Japan, assignors to Sumitomo Sitix Corporation, Amagasaki, Japan

Filed Nov. 8, 1994, Ser. No. 337,474

Claims priority, application Japan, Nov. 30, 1993, 5-299797

Int. Cl.[6] C30B *35/00*

U.S. Cl. 117—210 **12 Claims**



1. An apparatus for producing single crystals comprising:

a chamber containing a crucible for containing a melt from which a single crystal is grown, a heating element for heating the melt, and a pulling mechanism for growing the single crystal after contacting the melt with a seed crystal;

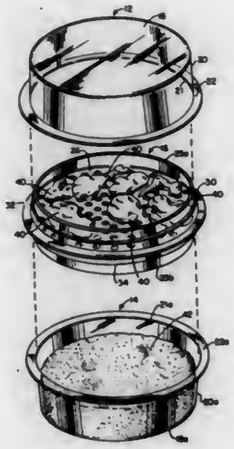
a protective gas inlet pipe arranged to release heat by thermal conduction with the chamber, the protective gas inlet pipe extending downwardly into the chamber and surrounding the pulling mechanism, supporting components installed at intervals, on a lower end of the protective gas inlet pipe, and a heat resistant and heat insulating component supported on the lower end of the protective gas inlet pipe by the supporting components, the heat resistant and heat insulating component surrounding a pulling zone of the single crystal and a lower end of the heat resistant and heat insulating component being above the melt in the crucible, the heat resistant and heat insulating component providing a small temperature gradient and the protective gas inlet pipe providing a high temperature gradient in the single crystal.

5,575,848

APPARATUS FOR APPLYING COATINGS TO FOOD

Darryl J. Chedville, 308 E. Weber St., Gonzales, La. 70737

Filed Dec. 7, 1994, Ser. No. 350,896
Int. Cl.[6] A23G *3/00*
U.S. Cl. 118—13 **14 Claims**



1. An apparatus for applying batter to food comprising, in combination:

a first hollow generally cylindrical container open at one end and closed at the other end, said first container having a planar annular ledge on an exterior thereof, said ledge being disposed on said first container adjacent to said open end;

a second hollow generally cylindrical container open at one end and closed at the other end, said second container having a planar annular ledge on an exterior thereof, said ledge being disposed on said second container adjacent to said open end, said second container receiving a batter coating to be applied to said food; and

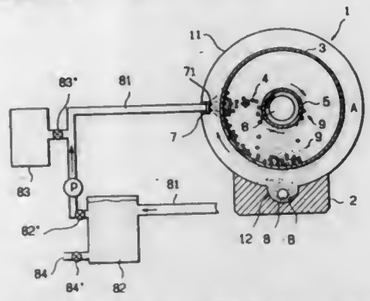
a generally hollow cylindrical coupling member open at both ends, said coupling member including a centered planar annular ledge with tapered shoulders extending from an upper portion and a lower portion of said centered ledge and a perforated platform therein which divides the coupling member into two cylindrical sections, said platform supporting said food, wherein said first and second hollow cylindrical containers slidably engage said shoulders of said coupling member to form a sealed container enabling coating of said food upon shaking said sealed container.

5,575,849

APPARATUS FOR PRODUCING A SUBSTRATE HAVING A SURFACE WITH A PLURALITY OF SPHERICAL DIMPLES FOR PHOTOCONDUCTIVE MEMBERS

Mitsuru Honda, Tokyo; Takahisa Kawamura, Yokohama; Atsushi Koike, Chiba, and Keiichi Murai, Kashiwa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 64,350, May 20, 1993, abandoned, which is a continuation of Ser. No. 949,358, Sep. 23, 1992, abandoned, which is a continuation of Ser. No. 826,634, Jan. 23, 1992, abandoned, which is a continuation of Ser. No. 440,676, Nov. 24, 1989, abandoned. This application Apr. 21, 1994, Ser. No. 232,430
Claims priority, application Japan, Nov. 25, 1988, 63-296210
Int. Cl.[6] B05C *5/00*; B05B *13/02*
U.S. Cl. 118—44 **4 Claims**



1. An apparatus for producing a substrate having a surface with a plurality of spherical dimples, said substrate being suitable for a light receiving member, said apparatus comprising:

a substrate supporting means for supporting a cylindrical substrate in a rotatable state;

a cylindrical rotating vessel having a circumferential wall with external and inner wall faces said cylindrical rotating vessel containing said substrate supporting means coaxially placed therein such that said cylindrical rotating vessel encloses said substrate supporting means while establishing a desired space between said cylindrical substrate supported on said substrate supporting means and said inner wall face of said cylindrical rotating vessel, said cylindrical rotating vessel containing a plurality of freely movable rigid spheres formed of a material selected from the group consisting of steel, aluminum, nickel, brass, ceramic and plastic, said cylindrical rotating vessel being rotatable so as to allow said rigid spheres to move in the rotation direction of said cylindrical rotating vessel as said cylindrical rotating vessel rotates, said circumferential wall of said cylindrical rotating vessel being provided with a plurality of perforations capable of retaining said rigid spheres on the inner wall face of the cylindrical rotating vessel, said plurality of perforations being of a size which is smaller than that of the rigid spheres and which allows a surface coating liquid to pass therethrough under pressure so as to propel the rigid spheres retained on the inner wall face into collisions with the surface of the cylindrical substrate supported on said substrate supporting means;

a cylindrical external wall member coaxially surrounding the cylindrical rotating vessel, said external wall member having a space or storing the surface coating liquid at a lower portion thereof;

a supplying means for supplying the surface coating liquid under pressure toward the cylindrical rotating vessel such that the surface coating liquid is ejected through said plurality of perforations into the cylindrical rotating vessel, said supplying means terminating in a plurality of nozzles arranged at intervals from about 5 mm to about 50 mm, said supplying means having a means for generating an injection force to said surface coating liquid which provides a kinetic energy to the rigid spheres corresponding to the potential energy obtained when the rigid spheres are dropped from a height of from 0.05 to 2.0 meters; and said plurality of nozzles oriented at an angle of ±45° with respect to a horizontal plane to the central axis of the cylindrical rotating vessel to supply the surface coating liquid toward said cylindrical rotating vessel at said angle of ±45° with respect to the horizontal plane to the central axis of the cylindrical rotating vessel;

a storing tank for storing the surface coating liquid; and

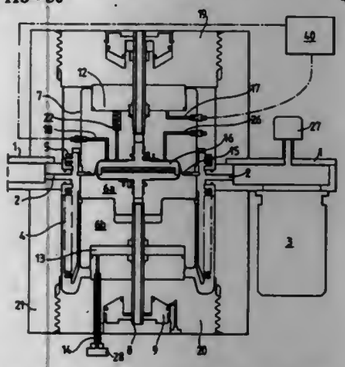
circulating means for circulating the surface coating liquid to the supplying means.

5,575,850

PROCESSING SYSTEM

Andrew I. Jeffryes, and Gordon R. Green, both of Avon, United Kingdom, assignors to Electrotech Limited, Avon, United Kingdom

Division of Ser. No. 426,018, Apr. 20, 1995, Pat. No. 5,518,771, which is a continuation of Ser. No. 964,044, Oct. 21, 1992, abandoned. This application Jan. 25, 1996, Ser. No. 591,026
Claims priority, application United Kingdom, Oct. 25, 1991, 9122676
Int. Cl.[6] B05D *3/04*
U.S. Cl. 118—50 **4 Claims**



1. A processing system for a workpiece comprising:

a pressure vessel, said pressure vessel having a plurality of enclosure parts;

first means for forcing said enclosure parts into abutment, said enclosure parts being shaped so as to define an enclosed void for said workpiece when said enclosure parts are forced into abutment by said first means;

second means for supplying pressurized gas above atmospheric pressure to said void, thereby to process said workpiece by subjecting said workpiece to elevated pressure above atmospheric pressure; and

means defining an opening for said workpiece; wherein said pressure vessel has a flexible wall for each enclosure part, each wall extending from its respective part to the opening to define an enclosed passageway between the opening and the void defining parts.

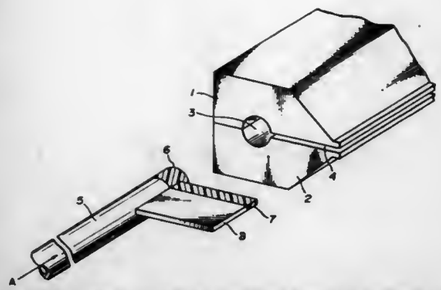
5,575,851

DIE COATER

Tetsuo Abe, Mizumaki-machi; Hitoshi Hatashima, Kitakyushu; Kunihiko Ichikawa, Machida, and Takefumi Yoshikawa, Kodaira, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Oct. 27, 1993, Ser. No. 141,638
Claims priority, application Japan, Oct. 27, 1992, 4-288816; Nov. 16, 1992, 4-305573
Int. Cl.[6] B05C *3/18*
U.S. Cl. 118—410 **8 Claims**

1. A die coater for coating a surface of a sheet, comprising a die having upper and lower mold-pieces which form a manifold and a slit having a slit gap, said slit extending from the manifold, an inner deckle shaft disposed in the manifold, a deckle disposed in the slit in a fluid-tight state, and a deckle guide; the inner deckle shaft having a fluid-tight portion near an end thereof and capable of moving with a fluid-tight state maintained between an outer portion of said fluid-tight portion and an inner portion of said manifold, the deckle and the deckle guide being secured to the inner deckle shaft, and the deckle being connected with the fluid-tight portion of the inner deckle shaft, the inner deckle shaft being a hollow article, and an inside of the inner deckle shaft being connected to a supply of a coating fluid so as to serve as a coating fluid supply channel whereby said die coater applies a width of the coating fluid to the surface of the sheet.

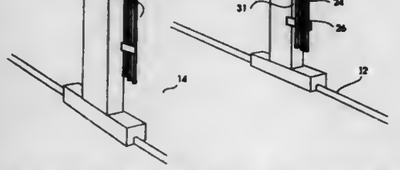


5,575,852

FOAM APPARATUS FOR USE WITH ROLL-OVER AND/OR AUTOMATIC TYPE CAR WASH

Steven A. Chase, 3225 NW. 15th St., Oklahoma City, Okla. 73107

Filed May 26, 1995, Ser. No. 452,404
Int. Cl.[6] B60S *3/04*
U.S. Cl. 118—680 **14 Claims**



1. An automatic wash and wax system for a vehicle of the type having a generally inverted U-shaped frame member, liquid dispensing means disposed on said U-shaped frame member and means pivotally mounting said liquid dispensing means for movement about the vehicle to permit dispensing liquid toward an exterior surface of the vehicle, motive means for reciprocally moving said U-shaped frame member along a path adjacent the vehicle, and detection means for sensing the front end of the vehicle for measuring length of the vehicle, and sensing the rear end of the vehicle such that said motive means can dependably reciprocally move the apparatus in length paths ending adjacent to the front end and rear end of the vehicle further including:

a manifold disposed on said U-frame member having a foam generating zone with means for receiving a foamable solution and air therethrough to generate a foam, a streaming discharge zone communicably connected to said foam generating zone wherein the streaming discharge zone includes a first plurality of aperture surfaces of a first diameter and a second plurality of aperture surfaces of a second diameter larger than said first diameter, wherein the foam is discharged through said aper-

ture surfaces in a stream onto the vehicle, and a buffer zone operatively associated with said foam discharge zone for impeding flow of the foam to said streaming discharge zone.

5,575,853

VACUUM EXHAUST SYSTEM FOR PROCESSING APPARATUS

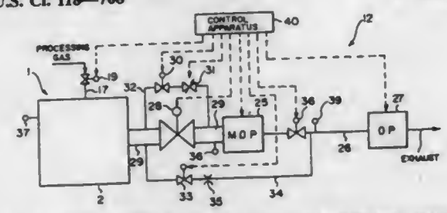
Junichi Arami, Tokyo; Masayuki Kitamura, Fuchu, and Mitsuaki Komino, Tokyo, all of Japan, assignors to Tokyo Electron Limited, and Tokyo Electron Tohoku Limited, both of Japan

Filed Jun. 29, 1995, Ser. No. 496,480

Claims priority, application Japan, Jul. 1, 1994, 6-173427; Oct. 24, 1994, 6-284391

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—708 **8 Claims**



1. A vacuum exhaust system for a processing apparatus comprising:
- a molecular drag pump connected adjacent to a processing chamber by a short main pipeline having a first valve;
- a dry pump connected to an exhaust side of said molecular drag pump by an auxiliary pipeline having a fourth valve and being of a diameter smaller than that of said main pipeline;
- a processing pipeline having a second valve and a pressure control valve, and being connected parallel to said main pipeline in such a manner as to link parts of said main pipeline that are upstream and downstream of said first valve; and
- a roughing pipeline of a diameter smaller than that of said main pipeline, having a third valve, and being connected parallel to said main pipeline in such a manner as to link a part of said main pipeline upstream of said first valve to said auxiliary pipeline.

5,575,854

SEMICONDUCTOR TREATMENT APPARATUS

Shimpei Jinnouchi, Nirasaki; Hiroshi Kuno, Komae, and Hiroshi Otsuki, Tokyo, all of Japan, assignors to Tokyo Electron Limited, and Kabushiki Kaisha Saginomiya Seisakusho, both of Tokyo, Japan

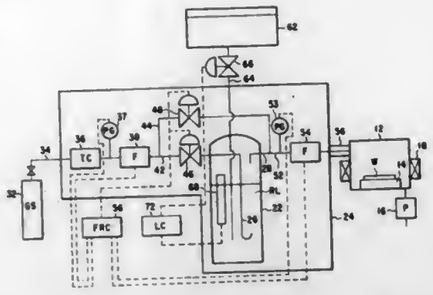
Filed Dec. 30, 1994, Ser. No. 366,452

Claims priority, application Japan, Dec. 30, 1993, 5-351865

Int. Cl.[6] C23C *26/00*

U.S. Cl. 118—715 **18 Claims**

1. An apparatus for treating a substrate while supplying a process chamber with a process gas including first and second gases, comprising:
- the process chamber;
- a support member arranged in the process chamber for supporting the substrate;
- a supply line for supplying the process gas into the process chamber;
- a tank for containing a raw material liquid, from which the second gas is derived, and having a vapor space defined therein above the raw material liquid, the supply line being connected to the tank such that it communicates with the vapor space;
- a primary line for supplying the first gas to the supply line, at least part of the first gas being passed through the raw material liquid in the tank in the form of bubble, thereby to derive the second gas from the raw material liquid and send the second gas to the supply line through the vapor space;
- a first flow sensor provided on the primary line and comprising a first heated element, the first heated element having a thermally-sensitive and electrically conductive wire, whose resistance varies in accordance with a variation in temperature;
- a second flow sensor provided on the supply line and comprising a second heated element, the second heated element having a thermally-sensitive and electrically conductive wire, whose resistance varies in accordance with a variation in temperature; and
- a flow controller connected to the first and second flow sensors for controlling a flow rate of the second gas contained in the process gas, the flow controller generating a first electric signal representing a flow rate of the first gas on the basis of a variation in the resistance of the thermally-sensitive and electrically conductive wire of the first heated element, also generating a second electric signal representing a flow rate of the process gas on the basis of a variation in the resistance of the thermally-sensitive and electrically conductive wire of the second heated element, and calculating a measured value of the flow rate of the second gas on the basis of the difference between the first and second electric signals;
- wherein the thermally-sensitive and electrically conductive wire of each of the first and second heated elements consists of a self-heating body which generates heat by a voltage supplied thereto; and
- wherein each of the first and second heated elements further comprises a thermally conductive tube enclosing the thermally-sensitive and electrically conductive wire, the tube being filled with a thermally conductive and an electrically insulating substance, and having an outer surface exposed to a gas to be measured.



5,575,855

APPARATUS FOR FORMING A DEPOSITED FILM

Masahiro Kanai; Yasushi Fujioka, both of Hikone; Takehito Yoshino, and Tadashi Hori, both of Nagahama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

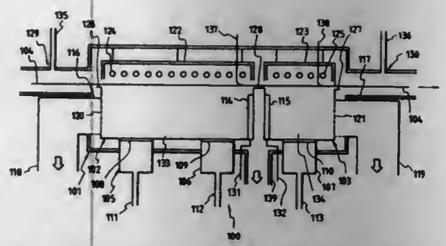
Division of Ser. No. 334,032, Jan. 12, 1994, Pat. No. 5,468,521, which is a continuation of Ser. No. 967,238, Oct. 27, 1992, abandoned. This application May 3, 1995, Ser. No. 433,052

Claims priority, application Japan, Oct. 28, 1991, 3-281644

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—718 **21 Claims**

1. A deposited film forming apparatus comprising:
- conveying means for continuously carrying a long substrate into or out of a vacuum chamber, said vacuum chamber having a film forming vessel therein;
- first gas discharging means for discharging a deposited film forming gas into said vacuum chamber;
- first gas exhausting means for exhausting a gas discharged from said first gas discharging means;



- first gas flow forming means for flowing said gas in a reverse direction parallel to said substrate and opposite to a conveying direction of said substrate;
- second gas discharging means for discharging a deposited film forming gas;
- second gas exhausting means for exhausting a gas discharged from said second gas discharging means;
- second gas flow forming means for flowing said gas in a forward direction parallel to said substrate and equivalent to said conveying direction of said substrate;
- plasma generating means for applying a discharge energy to deposit said gas on said substrate; and
- a grounded guard electrode attached adjacent to said first and second gas flow forming means and said substrate for preventing discharge energy and plasma from leaking out of said film forming vessel.

5,575,856

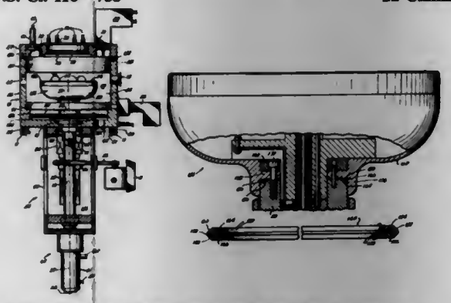
THERMAL CYCLE RESISTANT SEAL AND METHOD OF SEALING FOR USE WITH SEMICONDUCTOR WAFER PROCESSING APPARATUS

Robert F. Foster, Phoenix; Brian Shekerjian, Tempe, and Joseph T. Hillman, Scottsdale, all of Ariz., assignors to Sony Corporation, Tokyo, Japan, and Materials Research Corporation, Orangeburg, N.Y.

Filed May 11, 1994, Ser. No. 241,192

Int. Cl.[6] B21F *41/00*; C23C *16/00*

U.S. Cl. 118—733 **22 Claims**



1. Semiconductor wafer processing apparatus comprising:
- a wafer supporting susceptor having a sealing surface;
- a susceptor drive shaft for connection to said susceptor and having a sealing surface;
- a ring-shaped seal disposed between said susceptor sealing surface and said drive shaft sealing surface having a metallic core of a first hardness and a metallic coating of a second hardness on said core, said first hardness being greater than said second hardness; and
- fasteners connecting said susceptor to said drive shaft and compressing said seal between said susceptor and drive shaft sealing surfaces;
- said seal retaining sealing capability upon being subjected to changes in temperature;
- said seal having a generally diamond-shaped cross-section having upper and lower blunt tips;
- said drive shaft and said seal core being fabricated from material having the same coefficient of thermal expansion.

5,575,857

AQUEOUS ALKALINE METAL DESCALING CONCENTRATE AND METHOD OF USE

Michael S. Lunski, Hightstown, and Richard A. Reynolds, Plainsboro, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Jul. 14, 1995, Ser. No. 502,641

Int. Cl.[6] C02F *5/08*; *5/10*; C23F *4/04*

U.S. Cl. 134—2 **11 Claims**

1. A method of removing alkaline salt-based scale from a surface comprising contacting said scale with an aqueous solution comprising a mixture of alkali metal carbonate salts wherein the alkali metals are different.

5,575,858

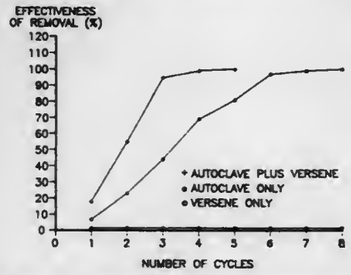
EFFECTIVE CLEANING METHOD FOR TURBINE AIRFOILS

Otis Y. Chen; Kim C. Seow, and Choo B. Lim, all of Singapore, Singapore, assignors to United Technologies Corporation, Hartford, Conn.

Filed May 2, 1994, Ser. No. 236,602

Int. Cl.[6] C23G *1/02*; B08B *3/10*; *9/093*

U.S. Cl. 134—3 **9 Claims**



1. A method for cleaning internal cavities of an airfoil of a gas turbine engine, said method characterized by the steps of:
- cleaning said airfoil in an autoclave cleaning process by exposing said airfoil to high temperature and pressure fluid for a period of time; and
- soaking said airfoil in a chelating agent solution.

5,575,859

METHOD FOR REMOVING PRINTING AND SCREEN PRINTING INK

Claus H. Madsen, Vedbæk, and Charles M. Hansen, Hørsholm, both of Denmark, assignors to CPS Kemi ApS, Vadbaek, Denmark

Continuation of Ser. No. 215,652, Mar. 22, 1994, abandoned, which is a continuation of Ser. No. 68,579, May 27, 1993, abandoned, which is a continuation of Ser. No. 896,886, Jun. 10, 1992, abandoned, which is a continuation of Ser. No. 568,624, Aug. 16, 1990, abandoned, which is a continuation of Ser. No. 293,566, Jan. 3, 1989, abandoned, which is a continuation of Ser. No. 153,829, Feb. 12, 1988, abandoned. This application Dec. 15, 1994, Ser. No. 357,094

Claims priority, application Denmark, Jun. 13, 1986, 2783/86

Int. Cl.[6] B08B *7/00*; C09D *9/00*; C11D *7/50*

U.S. Cl. 134—38 **10 Claims**

1. A method for removing printing and screen printing inks from a substrate which comprises contacting a substrate containing such

ink with an essentially anhydrous liquid containing an essentially anhydrous solvent mixture consisting of:

(a) an effective ink-dissolving amount up to and including 25% by volume of the anhydrous mixture of a solvent selected from δ-butyrolactone or N-methyl-2-pyrrolidone or mixtures thereof;

(b) form 0 up to and including 90% by volume of the anhydroos mixture of propylene carbonate; and

(c) an effective ink-dissolving amount up to and including 91% by volume of the anhydrous mixture of a high-boiling aromatic compound or a mixture of such compounds having a relative evaporation rate with respect to n-butyl acetate of 0.01 or less,

and thereafter removing the liquid containing the ink from the substrate.

5,575,860

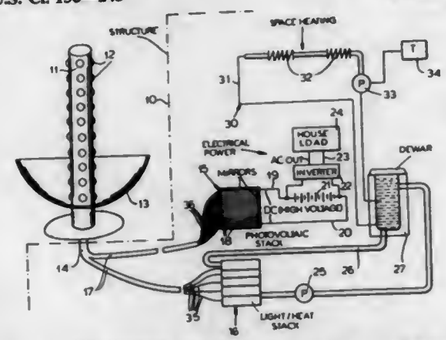
FIBER OPTIC POWER-GENERATION SYSTEM

Matthew Cherney, One Park La., Mount Vernon, N.Y. 10552

Continuation-in-part of Ser. No. 289,285, Aug. 11, 1994, Pat. No. 5,501,743. This application Jan. 18, 1995, Ser. No. 374,308

Int. Cl.[6] H01L *31/045;31/052;31/058*

U.S. Cl. 136—245 **10 Claims**



1. A power-generating assembly comprising a stack of alternating photovoltaic members and light-distributing members positioned to distribute light over surface areas of said photovoltaic members, and means for tapping electricity from said photovoltaic members, said stack having at least one side at which edges of said light-distributing members receive solar energy for distribution to said photovoiltaic members, said stack being collapsible into a compact configuration and expandable into an extended configuration.

5,575,861

PHOTOVOLTAIC SHINGLE SYSTEM

Kais Younan, Troy, and Troy Glatfelter, Royal Oak, both of Mich., assignors to United Solar Systems Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 175,968, Dec. 30, 1993, Pat. No. 5,437,735. This application Jun. 7, 1995, Ser. No. 474,938

Int. Cl.[6] E04D *13/18;* **H01L** *31/048*

U.S. Cl. 136—251 **18 Claims**



1. A photovoltaic roofing member comprising:

a strip of roofing material having a length "L_r" and a width "W_r," said strip including an overlap portion having a width "W_o" which is less than W_r, said strip further including an exposed portion having a width "W_i" which is less than W_r, such that W_i plus W_o equals W_r;

a plurality of photovoltaic devices linearly arrayed in a spaced-apart relationship along the length of the said exposed portion, and each including a positive electrode, a negative electrode, and a body of photovoltaic material disposed there between, each device operative to generate a flow of electrical current between said electrodes in response to the absorption of photons by said body of photovoltaic material;

an interconnect system for establishing electrical communication between said plurality of photovoltaic devices;

a positive electrical terminal and a negative electrical terminal disposed on a bottom surface of said roofing member and in electrical communication with the plurality of photovoltaic devices;

an inactive region interposed between each adjoining pair of said plurality of photovoltaic devices; and

an encapsulant layer of transparent, nonconductive material disposed on said exposed portion so as to overlie said photovoltaic devices and said inactive regions, said encapsulant layer being embossed in portions thereof overlying said inactive regions such that said strip of roofing material is visible through said encapsulant layer.

5,575,862

POLYCRYSTALLINE SILICON PHOTOELECTRIC CONVERSION DEVICE AND PROCESS FOR ITS PRODUCTION

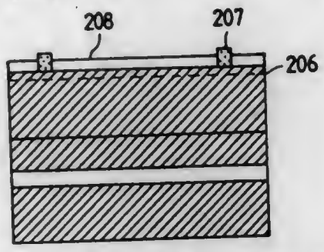
Shoji Nishida, Fujisawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1994, Ser. No. 352,034

Claims priority, application Japan, Nov. 30, 1993, 5-299818; Nov. 25, 1994, 6-291407

Int. Cl.[6] H01L *31/06;31/0368;31/18*

U.S. Cl. 136—258 **34 Claims**



1. A photoelectric conversion device comprising a metallurgical grade silicon substrate, a metal oxide layer provided on the metallurgical grade silicon substrate, selected from at least one of ZnO, NiO, and V_2O_3 and having a layer thickness of from 0.5 to 10 μm, and a polycrystalline silicon semiconductor layer on the metal oxide layer.

5,575,863

PROCESS FOR THE CHEMICAL CLEANING OF METAL COMPONENTS

Béatrice Sala, Jonzieux, and Angel Geipl, Paris, both of France, assignors to Framatome, Courbevoie, France

Filed Jul. 29, 1994, Ser. No. 281,991

Claims priority, application France, Jul. 29, 1993, 93 09360

Int. Cl.[6] C23G *1/00;1/02;* **C02F** *5/08;5/12*

U.S. Cl. 134—2 **11 Claims**

1. A process for chemical cleaning of metal components having an iron oxide deposit upon a layer of compounds having a high silica content, said process comprising the steps of:

(a) preparing an aqueous mixture including an agent for complexing $Si(OH)_4$ and at least one compound for dissolving said layer of compounds having a high silica content selected from the group consisting of:

insertion compounds for inserting OH or F ions in said $Si(OH)_4$, said insertion compounds including electrophilic groups and being selected from the group consisting of conjugated unsaturated systems and unsaturated N-oxide compounds; and

OH-containing organic compounds selected from the group consisting of: organic compounds having at least one alcohol function, aromatic amines, soluble salts of tertiary amines, and aromatic amines causing condensation of OH radicals onto silica; and

(b) contacting said metal components with said aqueous mixture until said layer of compounds having a high silica content has been dissolved.

5,575,864

METHOD FOR CLEANING A HARD SURFACE WITH AN ALL-PURPOSE LIQUID CLEANING COMPOSITION

Kalliopi S. Haley, 8606 Woodruff Dr., Byron Center, Mich. 49315, and Jeffrey J. Fisher, 3936 Summitview, NE., Grand Rapids, Mich. 49505

Division of Ser. No. 216,682, Mar. 23, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 464,970

Int. Cl.[6] B08B *3/04;3/08*

U.S. Cl. 134—42 **8 Claims**

1. A method for cleaning a hard surface with an all-purpose liquid cleaning composition comprising the steps of:

1) providing a concentrated all-purpose homogeneous liquid cleaning composition free of builder salts consisting essentially of:

(a) from about 1% to about 20% of at least one anionic surfactant selected from the group consisting of alkyl ethoxy sulfates, alkyl ethoxy carboxylates and mixtures thereof;

(b) from about 1% to about 20% of at least one nonionic surfactant selected from the group consisting of fatty alcohol ethoxylates, nonylphenol ethoxylates, alkylpolyglycosides and mixtures thereof; and,

(c) from about 20% to about 60% of a solvent selected from the group consisting of water-soluble glycol ethers and mixtures thereof;

2) applying said liquid cleaning composition to the surface to be cleaned and;

3) wiping from said surface said liquid cleaning composition.

5,575,865

PROCESS FOR COATING A WORKPIECE OF STEEL WITH AN ANTI-CORROSIVE AGENT

Rainer Isenberg, Iserlohn Letmathe; Wolfgang Hoffman, Iserlohn; Rudolf Reinecke, Nottebohmstrasse 4, 5880 Ludenscheid, and Hans W. Herr, Werdohl, all of Germany, assignors to ITW Befestigungssysteme GmbH, Letmathe; Eibach Oberflachentechnik GmbH, Finnentrop, and Rudolf Reinecke, Ludenscheid, all of Germany

Continuation of Ser. No. 865,162, Apr. 8, 1992, abandoned. This application Mar. 24, 1995, Ser. No. 409,918

Claims priority, application Germany, Apr. 10, 1991, 41 11 701.8

Int. Cl.[6] C23C *22/24*

U.S. Cl. 148—265 **28 Claims**

1. A process for coating a workpiece of steel with an anti-corrosive agent, comprising the steps of:

providing the surface of said workpiece with a chemo-mechanical layer which includes a galvanized component selected from the group of zinc, tin, aluminum, and cadmium;

chromatizing said chemo-mechanical layer;

providing said chromated layer with a further layer containing predominantly metallic components, resinous organic binding agents, and a solvent;

curing said further layer by means of a heat treatment comprising heating of said further layer upon said coated workpiece to a temperature level of approximately 200° C. for approximately 15–20 minutes so as to cause volatilization of said solvent and cross-linking of said resin components whereby said cured further layer forms an inorganic layer substantially comprising metallic components and resinous binders; and

providing said cured further layer with an organic top layer.

5,575,866

HOT ROLLED STEEL WIRE ROD, FINE STEEL WIRE AND TWISTED STEEL WIRE

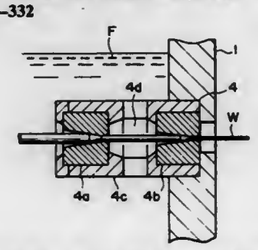
Takaaki Minamida, Tokyo; Kozo Katsube; Katsuji Mizutani, both of Kobe; Mamoru Murahashi; Kenji Ochiai, both of Kobe; Yasuhiro Oki; Nobuhiko Ibaraki, both of Kobe; Tamotsu Shohzaki, Kobe, and Yoshihiro Mitani, Kakogawa, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Continuation of Ser. No. 153,370, Nov. 16, 1993, abandoned. This application Nov. 30, 1995, Ser. No. 565,014

Claims priority, application Japan, Nov. 16, 1992, 4-305488; Apr. 1, 1993, 5-075765; Sep. 22, 1993, 5-236578

Int. Cl.[6] C22C *38/16;38/04*

U.S. Cl. 148—332 **8 Claims**



1. A hot-rolled steel wire rod used for manufacturing a fine steel wire consisting of:

C: 0.85–1.05 wt % (hereinafter, referred to as "%")
Si: 0.1–0.5%
Mn: 0.15–0.6%
P: 0.02% or less
S: less than 0.02%
Al: 0.003% or less
Cu: greater than 0.05% and less than 0.20%
Cr: 0.05–0.6%, and
the balance being essentially Fe and inevitable impurities;
wherein the contents of Cr, Si and Cu satisfy the following equation:

$$1.0 \leqq (Cr\% + Si\%)/Cu\% \leqq 4.0; \text{ and}$$

wherein the hot-rolled steel wire rod has a total scale amount after hot-rolling of from 0.30 to 0.50%.

5,575,867

METHOD OF PREVENTING LOCAL CORROSION AT WELD JOINTS

Michael Renner, Leichlingen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 17, 1995, Ser. No. 516,225

Claims priority, application Germany, Aug. 24, 1994, 44 29 975.3

Int. Cl.[6] C21D *6/00*

U.S. Cl. 148—606 **6 Claims**

1. A method of preventing corrosion damage at weld joints, in the heat affected zones of weld joints, and in heat-treated zones of components made of stainless steels having chromium contents ≧12% by weight, which comprises exposing the weld joints and

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the heat affected zones of the weld joints, or the heat-treated zones, to a water vapor atmosphere at temperatures of 100° to 250° C. for five to sixty minutes.

5,575,868

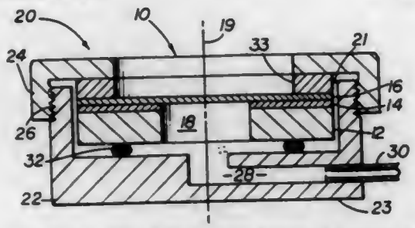
ADHESION TESTING

George E. Mann, 1816 Oak St., South Pasadena, Calif. 91030

Continuation of Ser. No. 910,625, Jul. 8, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 184,429

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—64 **18 Claims**



1. A method for testing the adhesive strength of a testing article bonded to a substrate, the method comprising the steps of:

bonding a first surface of a membrane to the testing article, the adhesive strength of the bond between the membrane and the testing article being greater than the adhesive strength of the bond between the testing article and the substrate; and

determining the critical pressure required to substantially debond a continuous periphery of an aperture in the testing article from the substrate, the critical pressure being directly related to the specific work of adhesion.

5,575,869

METHOD OF PRODUCING VIBRATION INSULATOR

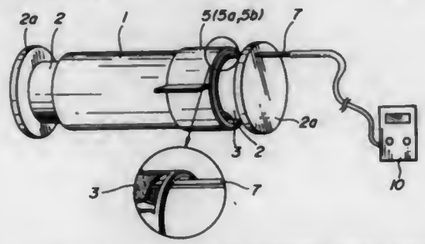
Takashi Fujiwara, and Yosuke Iino, both of Chiba, Japan, assignors to Kinugawa Rubber Ind. Co., Ltd., Chiba, Japan

Filed Mar. 28, 1994, Ser. No. 218,521

Claims priority, application Japan, Mar. 29, 1993, 5-068959

Int. Cl.[6] B29C *65/04*

U.S. Cl. 156—64 **6 Claims**



1. A method of producing a vibration insulator which comprises an outer cylindrical member of fiber-reinforced plastic, an inner cylindrical member of metal, and a compounded rubber block intimately disposed in an annular space between the outer cylindrical member and the inner cylindrical member, said method comprising the steps of:

(a) applying an adhesive having a heat activation temperature to an outer cylindrical surface of said inner cylindrical member and molding about the adhesive-applied inner cylindrical member a compounded rubber block thereby to provide an inner unit;

(b) applying an adhesive having a heat activation temperature to an inner cylindrical surface of said outer cylindrical member thereby to provide an outer unit;

(c) press-fitting said inner unit into said outer unit thereby to constitute a combined unit;

(d) putting an electrode around an outer cylindrical surface of said outer unit;

(e) setting a temperature sensor in said compounded rubber block;

(f) flowing a high frequency current to said electrode to generate a high frequency electric field for selectively heating said compounded rubber block and transmitting heat from said heated compounded rubber block to said adhesive, said high frequency current having a frequency lower than 100 MHz; and

(g) stopping the flowing of the high frequency current when said temperature sensor senses a heat activation temperature of the adhesive which was applied to the inner surface of the outer cylindrical member.

5,575,870

METHOD OF MAKING WINDOW FRAME FOR CONCRETE WALL PANEL

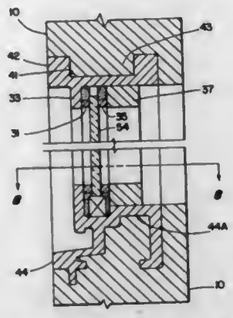
Tatsuo Suenaga; Hiroaki Nakagawa; Shin Terauchi; Takeo Kikuchi; Shinnosuke Aiba; Mikio Kobayashi; Yutaka Katsuta; Kenji Ago; Katsumi Kosuge; Yasuyuki Matsubara; Masato Tanaami; Shunichi Sugishita; Hideki Ikeda; Toshio Furuya, all of Tokyo; Shigeyuki Akihama, Kanagawa, and Takahiro Arai, Saitama, all of Japan, assignors to Kajima Corporation, and Kabushiki Kaisha FRC, both of Tokyo, Japan

Division of Ser. No. 277,608, Jul. 20, 1994, which is a division of Ser. No. 43,268, Apr. 6, 1993, Pat. No. 5,356,687. This application Jun. 1, 1995, Ser. No. 457,376

Claims priority, application Japan, Apr. 8, 1992, 4-087155

Int. Cl.[6] E06B *3/00;7/12*

U.S. Cl. 156—71 **1 Claim**



1. The method of securing a window frame in an opening in a concrete wall panel comprising the steps of:

(a) forming a wall panel mold to define a top, bottom, and side edges of said concrete wall panel;

(b) extruding lengths of concrete with outer faces having mortises and tenons, and inner faces having rectangular flanges with front faces and rear faces;

(c) placing said extruded lengths of concrete together to form a window frame;

(d) fixing said window frame to said wall panel mold;

(e) pouring concrete grout in said wall panel mold, including

(f) pouring said concrete grout about said outer faces of said window frame so as to embed said mortises and said tenons in said concrete grout to form said concrete wall panel;

(g) permitting said concrete grout to harden about said window frame mortises and tenons to form mortise and tenon joints between said window frame and said hardened concrete grout of said concrete wall panel;

(h) placing a front peripheral seal, having front and rear vertical faces, with said front face against said rear faces of said rectangular flanges;

(i) placing a window pane, having front and rear vertical faces, with said front vertical face against said rear vertical face of said front peripheral seal; and

(j) placing a rear peripheral seal between said rear vertical face of said window pane and a front vertical face of at least one blocking member,

whereby said mortise and tenon joints create an air-tight, water-tight, heat and fireproof bond between said hardened grout and said window frame, and said window pane is securely air and water sealed between said rectangular flanges and said at least one blocking member.

5,575,871

HEAT INSULATING MATERIAL AND METHOD FOR PRODUCING SAME

Hiroto Ryoshi, Toyono-gun, and Masanori Okamura, Amagasaki, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jul. 19, 1994, Ser. No. 277,021

Claims priority, application Japan, Jul. 19, 1993, 5-200284; Aug. 16, 1993, 5-223850

Int. Cl.[6] B32B *31/04;3/00*

U.S. Cl. 156—78 **9 Claims**

1. A method for producing a heat insulating material which comprises thermoforming an open cell rigid polyurethane foam obtained by reacting a polyol mixture and an organic polyisocyanate, enclosing the thermoformed foam in a gas barrier material, and evacuating the interior of the enclosure, said polyol mixture having a hydroxyl value of 160–500 mgKOH/g, and comprising:

a) 10–60% by weight of a polyoxyalkylene polyol having an average functionality of 2–3.5, a hydroxyl value of 26–90 mgKOH/g, an oxyethylene unit content of not more than 5% by weight based on whole polyoxyalkylene polyol and a primary hydroxyl group content of not more than 15% based on the total of hydroxyl groups of the whole polyoxyalkylene polyol;

(b) 20–80% by weight of a polyoxyalkylene polyol having an average functionality of 3–6, a hydroxyl value of 150–600 mgKOH/g, an oxyethylene unit content of not more than 5% by weight based on whole polyoxyalkylene polyol and a primary hydroxyl group content of not more than 15% based on the total of hydroxyl groups of the whole polyoxyalkylene polyol; and

(c) 0–25% by weight of a polyoxyalkylene polyol having an average functionality of 2–3 and a hydroxyl value of over 600 mgKOH/g to 840 mgKOH/g,

said organic polyisocyanate being a polymethylenepolyphenylene polyisocyanate, its prepolymer or a mixture thereof and wherein said thermoforming step produces at least a portion of the cells of the foam to have an anisotropic cell dimension.

5,575,872

METHOD FOR FORMING A CERAMIC CIRCUIT SUBSTRATE

Mineharu Tsukada; Masaharu Hida, and Koji Omote, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jun. 10, 1994, Ser. No. 258,223

Claims priority, application Japan, Sep. 20, 1993, 5-233738; Mar. 16, 1994, 6-045921

Int. Cl.[6] B32B *31/06;31/20;31/10*

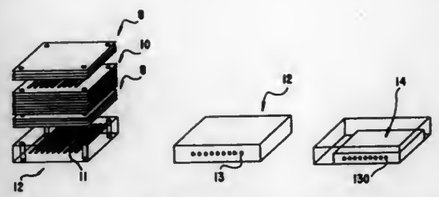
U.S. Cl. 156—89 **15 Claims**

1. A method for forming a ceramic circuit substrate comprising the steps of:

preparing a plurality of blank ceramic green sheets;

forming at least two laminated ceramic green bodies by laminating the plurality of blank ceramic green sheets;

placing a plurality of rod-shaped members in parallel with each other on the first laminated ceramic green body;



sandwiching the rod-shaped members by laminating the second laminated ceramic green body;

pressing the thus laminated ceramic green bodies and the rod-shaped members sandwiched by the first and second laminated ceramic green bodies, and conducting a plastic deformation to the laminated ceramic green bodies to make integral, thereby forming a composite structure composed of a compressed ceramic green body obtained by the compression and deformation of the laminated ceramic green bodies and the rod-shaped members arranged in parallel with each other embedded therein;

pulling out the rod-shaped members from the composite structure, thereby forming a compressed ceramic green body having a plurality of cylindrical spaces, arranged in parallel with each other formed by the removal of the rod-shaped members;

prefiring the compressed ceramic green body to debind an organic binder component in the compressed ceramic green body, thereby forming a presintered ceramic body; and

sintering the presintered ceramic body for producing a sintered body having a plurality of coolant channels formed therein for flowing a coolant,

wherein each of the plurality of rod-shaped members has low wetting property with respect to the organic binder component in the compressed ceramic green body.

5,575,873

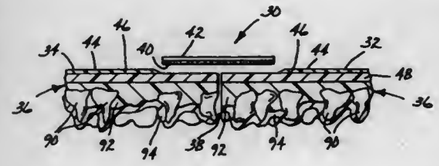
ENDLESS COATED ABRASIVE ARTICLE

Jon R. Pieper, Lindstrom; Donald C. Heinn, Maplewood, both of Minn.; Eric G. Larson, Lake Elmo, Wash., and Thomas E. Boettcher, Hastings, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 6, 1991, Ser. No. 740,706

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—153 **47 Claims**



1. Method of preparing an endless coated abrasive article having a butt splice, said method comprising the steps of:

(1) providing a sheet bearing abrasive grains on one major surface thereof;

(2) cutting said sheet to a desired length in such a manner that said sheet has two ends;

(3) abutting the cut ends of said sheet to form a joint;

(4) applying a layer of radiation curable adhesive onto a portion of each of said cut ends of said sheet on the major surface thereof not bearing abrasive grains;

(5) placing a splice medium over said joint so that said splice medium is in contact with said layers of radiation curable adhesive; and

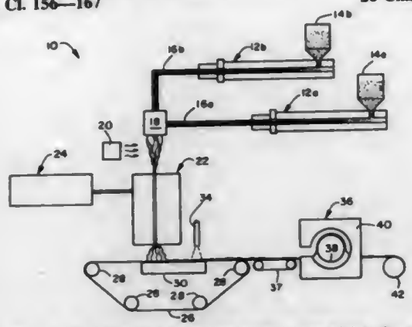
(6) curing said radiation curable adhesive by means of radiation energy, whereby a butt splice comprising said splice medium, said adhesive, and said joint is formed.

5,575,874

METHOD FOR MAKING SHAPED NONWOVEN FABRIC

Henry L. Griesbach, III, Atlanta; Richard D. Pike, Norcross; Sharon W. Gwaltney, Woodstock; Ruth L. Levy, Sugar Hill; Lawrence H. Sawyer, Roswell; Richard M. Shane, Duluth, and Philip A. Sasse, Alpharetta, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 55,449, Apr. 29, 1993, abandoned.
This application May 5, 1995, Ser. No. 435,239
Int. Cl.[6] D04H *3/12;3/14*
U.S. Cl. 156—167 26 Claims



1. Process for making a nonwoven fabric comprising the steps of:
a. melt-spinning continuous polymeric filaments;
b. drawing the continuous filaments;
c. quenching the filaments;
d. thereafter collecting the drawn filaments on a moving surface to form a nonwoven fabric web of continuous filaments, the forming surface being at least partially foraminous and having an array of discrete surface features including recesses;
e. concurrently with collecting the drawn filaments on the forming surface, forcing air through the filaments and the forming surface to arrange the filaments such that the web has an array of surface features resulting in a variance in basis weight across the web and comprising projections corresponding to said forming surface recesses separated by land areas wherein said web projections have a basis weight at least about 30% greater than said land areas, are substantially filled with continuous filaments and have cross-sectional areas having a minimum dimension of at least about 0.03 inch between adjacent land areas;
f. bonding together the filaments of the web with an adhesive component to integrate the web without the application of bonding pressure; and
g. separating the web from the forming surface.

5,575,875

FILAMENT WOUND FIBER REINFORCED THERMOPLASTIC FRAME FOR A GAME RACQUET

David L. Brittingham, Bolingbrook; David W. Repetto, Park Ridge, and David A. Pollock, Glen Ellyn, all of Ill., assignors to Wilson Sporting Goods Co., Chicago, Ill.

Filed Feb. 24, 1994, Ser. No. 201,199
Int. Cl.[6] A63B *49/10*; B65H *81/00*
U.S. Cl. 156—175 18 Claims

1. In a method of making a frame for a game racquet in which a tow of filament material is helically wound over a portion of an elongated mandrel to form a tube, the tow comprising reinforcing fibers and thermoplastic material, the steps of:
helically winding the circuits of the first set the circuits of the first set being wound at ± a first angle relative to the longitudinal axis of the mandrel and the number of circuits in the first set being less than the number of circuits which is required to form a closed pattern at said first angle,
helically winding a second set of circuits of the tow over the first set of circuits, the circuits of the second set being wound at ± a second angle which is different than the first angle and the number of circuits in the second set being less than the number of circuits which is required to form a closed pattern at said second angle,



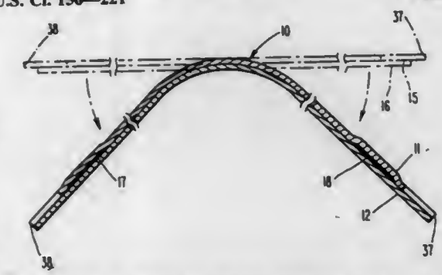
helically winding a third set of circuits of the tow over the second set of circuits, the circuits of the third set being wound at ± a third angle which is different than the second angle and the number of circuits in the third set being less than the number of circuits which is required to form a closed pattern at said third angle,
continuing to wind circuits of the tow until said portion of the mandrel is covered by the tow,
removing the tube from the mandrel,
bending the tube and placing the tube in a mold having the shape of a game racquet,
heating the tube to melt the thermoplastic material while pressurizing the interior of the tube,
allowing the tube to cool and harden to form a molded racquet frame, and
removing the racquet frame from the mold.

5,575,876

METHOD OF MAKING HIP OR RIDGE SHINGLE

Michael J. Noone, Wayne, and Kermit E. Stahl, North Wales, both of Pa., assignors to CertainTeed Corporation, Valley Forge, Pa.

Division of Ser. No. 899,331, Jun. 16, 1992, Pat. No. 5,419,941. This application Feb. 10, 1995, Ser. No. 386,967
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—221 3 Claims



1. A method of making a composite laminated shingle comprising the steps of:
(a) providing a first layer of shingle comprised of a base mat with asphaltic material applied thereto and a covering of granules on a surface thereof;
(b) providing a second layer of shingle comprised of a base mat with asphaltic material applied thereto and a covering of granules on a surface thereof;

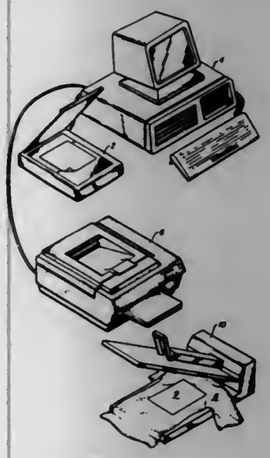
(c) providing adhesive to a surface of at least one layer of shingle;
(d) laminating the layers of shingle together by bringing the layers of shingle facing together with the adhesive therebetween and connecting one granule-covered surface of one layer of shingle with a surface of the other layer of shingle and bending the layers of shingle from generally flat configurations into arcuate three-dimensional configurations; and
(e) holding the layers of shingle in the arcuate configuration until the adhesive sets to maintain the arcuate three-dimensional configurations in a laminated, shaped shingle.

5,575,877

PRINTING METHOD OF APPLYING A POLYMER SURFACE PREPARATION MATERIAL TO A SUBSTRATE

Nathan Hale, and Ming Xu, both of Mt. Pleasant, S.C., assignors to Sawgrass Systems, Inc., Mt. Pleasant, S.C.

Continuation-in-part of Ser. No. 195,851, Feb. 10, 1994, Pat. No. 5,431,501, which is a continuation-in-part of Ser. No. 724,610, Jul. 2, 1991, Pat. No. 5,302,223, which is a continuation-in-part of Ser. No. 549,600, Jul. 9, 1990, abandoned. This application Oct. 14, 1994, Ser. No. 323,390
Int. Cl.[6] B44C *1/16*
U.S. Cl. 156—240 5 Claims



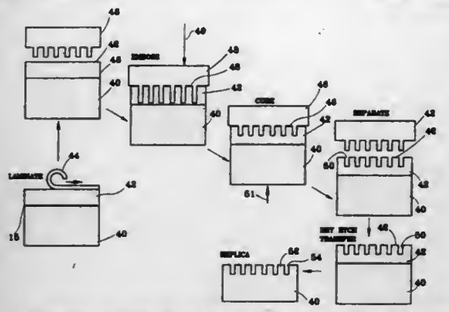
1. A method of printing a design and a polymeric surface material, comprising the steps of:
a. printing by means of a computer driven printer a desired design onto a medium;
b. printing by means of a computer driven printer a polymeric surface material onto the medium so as to cover said design with said polymeric surface material, wherein said polymeric surface material is not substantially printed onto said medium beyond the outside margins of said design, and wherein the printing of said polymeric surface material is at a temperature which is below the temperature at which said polymeric surface material is activated; and
c. transferring said design and said polymeric surface material from said medium to a substrate on which the design is to permanently appear by applying heat to said medium at a temperature which is above the temperature at which said polymeric surface material activates, wherein said polymeric surface material is activated and said polymeric surface material bonds to said substrate, and said design is deposited onto said substrate from said medium and is bonded to said substrate by means of said polymeric surface material.

5,575,878

METHOD FOR MAKING SURFACE RELIEF PROFILERS

J. Allen Cox, New Brighton, and Robert M. Wilke, Maple Grove, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 30, 1994, Ser. No. 347,544
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—247 10 Claims



1. A method for making diffractive optical glass replicas, comprising:
applying a thin adhesion film of PMMA to a surface of a dimensionally stable, optically transparent glass substrate;
laminating a dry photohardenable film to the thin adhesion film, the dry photohardenable film capable of being embossed to form a surface relief profile having submicron features;
embossing a surface relief profile in the photohardenable film by applying a stamper containing a reversal of a surface relief profile of a master diffractive optical glass to be replicated, to the photohardenable film;
effecting the hardening of the photohardenable film while maintaining an embedded contact between the stamper and the photohardenable film, resulting in a photohardened film containing the surface relief profile;
separating the stamper from the photohardened film containing the surface relief profile; and
performing a surface relief profile transfer by applying a removal solution on the photohardened film such that all portions of the surface relief profile are removed at the same rate through the film and into the glass substrate, the rate of removal on all portions of the surface relief profile is at a known rate into the glass substrate, the removal ceasing after all of the photohardened film on the glass substrate is removed, resulting in a glass substrate containing the surface relief profile.

5,575,879

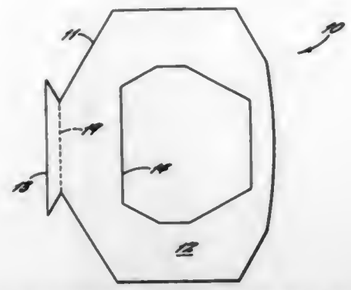
METHOD OF MAKING AN INSULATOR ELEMENT

Matthias Katz, Neckarsulm, and Friedrich Beck, Öhringen-Verrenberg, both of Germany, assignors to Eagle-Picher Industries, GmbH, Verrenberger Weg, Germany

Filed Oct. 12, 1994, Ser. No. 322,056
Claims priority, application Germany, Oct. 12, 1993, 43 34 780.0
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—250 4 Claims

1. A method of making an insulator element comprising an adhesive layer having one and other opposite major surfaces at least one insulating layer adhering to one surface of said adhesive layer, the other surface of which is covered by a removable protective element layer, wherein starting material is provided consisting of at least one insulating layer, at least one adhesive layer, one surface of which adhering to the insulating layer, and a protective element layer covering to the other surface of the adhesive layer; the protective element layer is removed in certain areas by folding it away from the insulating layer and the adhesive layer; a desired shape of the insulator element is cut by at least

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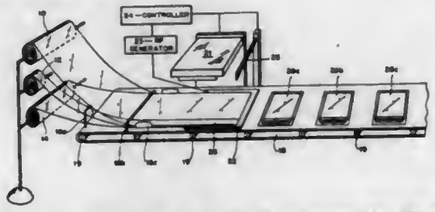
reducing the extension of the insulating layer and of the adhesive layer in the areas of the folded-away protective element layer, the folded-away protective element layer being affected in part only by the cutting and forming a hinged peeling tongue; and the hinged peeling tongue is bent back to protrude from the insulating layer and the adhesive layer.

5,575,880

METHOD FOR STAMPING HEAT-SENSITIVE SHEETS

Gerson Strassberg, 18 Engineers Rd., Roslyn Harbor, N.Y. 11576

Filed Nov. 8, 1994, Ser. No. 336,375
Int. Cl.[6] B32B *31/18;31/20;31/28*
U.S. Cl. 156—251 **3 Claims**



1. A method for forming an envelope with a closure flap adjacent a top edge thereof, comprising the steps of:

inserting a barrier sheet between two equally-sized heat-sensitive sheets, each of said sheets having a top edge and a width, said barrier sheet width being less than the width of said heat-sensitive sheets;

aligning said top edges with each other;

stamping said aligned sheets with a die to fuse portions of said heat-sensitive sheets together to form said envelope, said barrier sheet preventing a section adjacent said top edges from fusing together thereby forming a pair of flaps; and

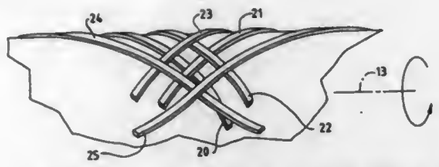
removing one of said flaps, said barrier sheet and waste heat-sensitive sheet material to leave an envelope with a single closure flap.

5,575,881

FILAMENT WOUND FRAME FOR A GAME RACQUET

Louis J. Keester, Lincoln, Nebr.; David L. Brittingham, Bolingbrook, and David W. Repetto, Park Ridge, both of Ill., assignors to Wilson Sporting Goods Co., Chicago, Ill.

Filed Feb. 24, 1994, Ser. No. 201,280
Int. Cl.[6] A63B *49/10;* **B65H** *81/00*
U.S. Cl. 152—175 **21 Claims**



1. In a method of making a frame for a game racquet in which filament material is helically wound over a portion of an elongated rotating mandrel to form a tube, the filament material being fed from a carriage which moves back and forth in opposite directions parallel to the longitudinal axis of the mandrel, the steps of:

helically winding a first set of circuits of filament material, the circuits of the first set being wound at plus a first angle relative to the longitudinal axis of the mandrel by moving the carriage in one direction and at minus the first angle relative to the longitudinal axis of the mandrel by moving the carriage in the opposite direction and the number of circuits in the first set being less than the number of circuits which is required to form a closed pattern at said first angle,

helically winding a second set of circuits of filament material over the first set of circuits, the circuits of the second set being wound at plus a second angle relative to the longitudinal axis of the mandrel which is different than the first angle by moving the carriage in one direction and at minus the second angle relative to the longitudinal axis of the mandrel by moving the carriage in the opposite direction and the number of circuits in the second set being less than the number of circuits which is required to form a closed pattern at said second angle,

helically winding a third set of circuits of filament material over the second set of circuits, the circuits of the third set being wound at plus a third angle relative to the longitudinal axis of the mandrel which is different than the second angle by moving the carriage in one direction and at minus the third angle relative to the longitudinal axis of the mandrel by moving the carriage in the opposite direction and the number of circuits in the third set being less than the number of circuits which is required to form a closed pattern at said third angle,

continuing to wind circuits of filament material by moving the carriage back and forth until said portion of the mandrel is covered by the filament material,

removing the tube from the mandrel,

placing the tube in a mold having the shape of a frame of a game racquet, and

molding the tube into the shape of a frame of a game racquet.

5,575,882

PROCESS FOR THE MANUFACTURE OF COMPOSITES

Kari-Heinz Holz, Frankfurt am Main; Johannes Lüke, Königstein/Taunus, and Wolfgang Riederer, Hofheim am Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 481,874, Feb. 20, 1990, abandoned.
This application May 7, 1991, Ser. No. 700,341
Claims priority, application Germany, Feb. 22, 1989, 39 05 404.7
Int. Cl.[6] C09J *5/02*
U.S. Cl. 156—308.6 **8 Claims**

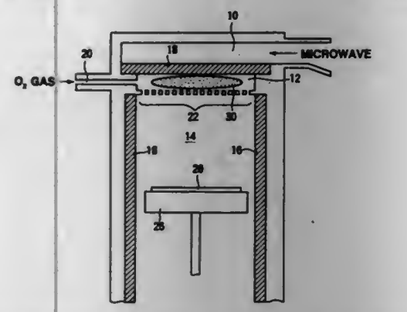
1. A process for the manufacture of a composite from a core and a facing by bonding a core to a facing with a liquid and/or pasty adhesive, wherein the core is wetted with a liquid which also serves as a solvent and/or wetting agent for the adhesive and wherein said core is an impregnated warp-knitted fabric or textile fabric with a mesh structure, shaped in three dimensions.

5,575,883

APPARATUS AND PROCESS FOR FABRICATING SEMICONDUCTOR DEVICES

Kiyoko Nishikawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed May 5, 1994, Ser. No. 238,658
Claims priority, application Japan, Jul. 9, 1993, 5-170365
Int. Cl.[6] H05H *1/00*
U.S. Cl. 156—345 **9 Claims**



1. An apparatus for fabricating semiconductor devices comprising:

a glowing chamber for discharging oxygen-content gas by radio frequencies or microwaves to cause oxygen plasmas to glow, having a wall of metal, an inside of the wall coated with quartz;

means for generating the radio frequencies or microwaves;

means for supplying said oxygen-content gas into the glowing chamber;

blocking means having a surface coated with quartz, for blocking the radio frequencies or the microwaves while passing oxygen atom radicals in the oxygen plasmas generated in the glowing chamber; and

a reaction chamber, wherein no plasma is generated, for conducting a required treatment using the oxygen atom radicals which have passed the blocking means, having a wall of metal, an inside of the wall coated with quartz.

5,575,884

ULTRASONIC PISTON CONVERTER

Stefan Annehed, Palatine; Hisami Mitsuishi, Wheeling; Erik Schott, Buffalo Grove; Dean C. Skonieczny, and Par J. Svensson, both of Palatine, all of Ill., assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Filed Sep. 28, 1994, Ser. No. 315,398
Int. Cl.[6] B32B *31/16*
U.S. Cl. 156—580.1 **14 Claims**

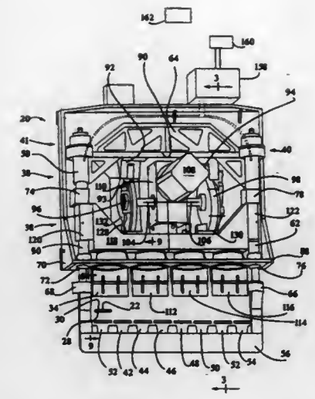
1. An ultrasonic transducer assembly for hygienic ultrasonic sealing, comprising:

A. a hygienic sealing area and a non-hygienic area, separated by a first barrier having an opening defined by a marginal edge;

B. an ultrasonic converter disposed in said opening which is passed through said opening along an axis passing through said opening and is vibrated at an ultrasonic frequency by machinery disposed in said non-hygienic area, said converter having a null area at which said converter is vibrated substantially minimally;

C. a generally cylindrical surface for sealing the non-hygienic area from the hygienic sealing area, said generally cylindrical surface being fixed with respect to a first member which is one of said marginal edge and said null area, said sealing surface facing a second member which is the other of said marginal edge and said null area, said generally cylindrical surface being defined by a sleeve;

D. a second barrier defined by a web extending between said sleeve and said first member; and



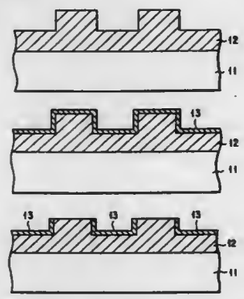
E. a seal mounted to said second member and wiping said generally cylindrical sealing surface as said converter is reciprocated.

5,575,885

COPPER-BASED METAL POLISHING SOLUTION AND METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE

Hideaki Hirabayashi, Tokyo, and Masatoshi Higuchi, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 9, 1994, Ser. No. 352,611
Claims priority, application Japan, Dec. 14, 1993, 5-313406
Int. Cl.[6] H01L *21/00;* **C23F** *1/00;* **B44C** *1/22*
U.S. Cl. 156—626.1 **66 Claims**



15. A method for manufacturing a semiconductor device, comprising the steps of:

forming at least one member selected from the group consisting of a trench and an opening corresponding to a shape of an interconnecting layer in an insulating film on a semiconductor substrate;

depositing an interconnection material film consisting of copper or a copper alloy on said insulating film including said at least one member selected from the group consisting of a trench and an opening; and

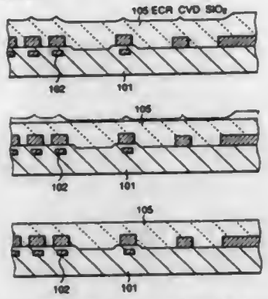
polishing said interconnection material film until a surface of said insulating film is exposed by using a polishing solution containing at least one organic acid selected from the group consisting of aminoacetic acid and amidosulfuric acid, an oxidizer, and water, thereby forming a buried interconnecting layer in said insulating film such that surfaces of said interconnecting layer and said insulting film are level with each other.

5,575,886

METHOD FOR FABRICATING SEMICONDUCTOR DEVICE WITH CHEMICAL-MECHANICAL POLISHING PROCESS FOR PLANARIZATION OF INTERLAYER INSULATION FILMS

Hiroshi Murase, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 17, 1995, Ser. No. 503,088
Claims priority, application Japan, Jul. 30, 1994, 6-197407
Int. Cl.[6] H01L 21/00
U.S. Cl. 156—636.1 5 Claims



1. A method for fabricating a semiconductor device, the method comprising the steps of:

forming an insulation film on a metal interconnect by an Electron Cyclotron Resonance Chemical Vapor Deposition (ECR CVD) process capable of applying a radio frequency bias to a substrate;

planarizing a surface of said insulation film by a chemical-mechanical polishing (CMP) process; and

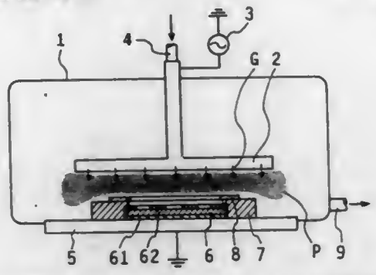
cleaning a surface of said insulation film.

5,575,887

PLASMA ETCHING METHOD AND DEVICE MANUFACTURING METHOD THEREBY

Takahiko Yoshida; Kazushi Asami, both of Okazaki; Muneo Yorinaga, Anjo, and Tsuyoshi Fukada, Aichi-gun, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, and Nippon Soken, Inc., Nishio, both of Japan

Filed Mar. 24, 1995, Ser. No. 409,530
Claims priority, application Japan, Mar. 25, 1994, 6-079384
Int. Cl.[6] H01L 21/00
U.S. Cl. 156—643.1 13 Claims



1. A plasma etching method for a semiconductor substrate having an element part forming surface on one surface and an etching surface on a surface opposing the element part forming surface, the method comprising the steps of:

disposing the semiconductor substrate on a grounding electrode having grounded electric potential at the element part forming surface side, wherein the element part forming surface of the semiconductor substrate is covered with an insulating film and the semiconductor substrate contacts the grounding electrode via the insulating film;

disposing a conductive member having a grounding electric potential around the substrate so as to be electrically connected to a side of the etching surface of the substrate; and

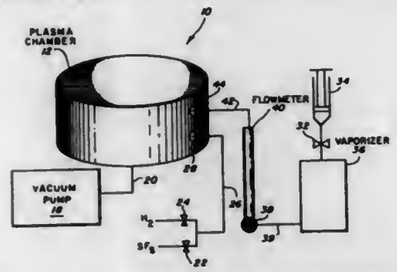
performing an etching by providing an opposite electrode to which a high-frequency electric power is applied so as to face the grounding electrode with a reactive gas interposed therebetween, to form at least one of a concave part and an opening part on the etching surface while the conductive member contacts the etching surface of the substrate to allow electric charge to move to the conductive member.

5,575,888

SIDEWALL PASSIVATION BY OXIDATION DURING REFRACTORY-METAL PLASMA ETCHING

John Kosakowski, Laurel, Md.; William Chu, Poughkeepsie, N.Y.; Kelly W. Foster, Annadale, Va.; Christie R. K. Marrian, Marbury, and Martin C. Peckerar, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 14, 1995, Ser. No. 422,102
Int. Cl.[6] H01L 21/3205
U.S. Cl. 156—651.1 13 Claims



1. A method of passivating a refractory metal during plasma etching, comprising the steps of:

providing a workpiece, said workpiece including a substrate having a layer of a refractory metal thereon, said refractory metal being selected from the group consisting of tungsten, titanium, molybdenum, hafnium, niobium, iridium, and mixtures thereof, said layer of refractory metal having, on its outer surface, a patterned etch mask for plasma etching;

plasma etching said refractory metal layer by subjecting said patterned mask and said refractory metal layer to a plasma of a etchant for plasma etching to provide a refractory metal structure having a sidewall;

halting said plasma etching;

passivating said sidewall, while said plasma etching is halted, by exposing said refractory metal structure to an amount of molecular water vapor sufficient to passivate said sidewall;

continuing said plasma etching step after said passivating step.

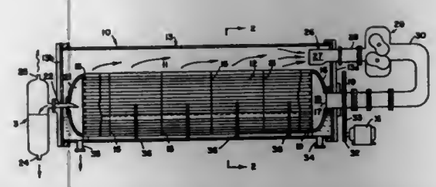
5,575,889

ROTATING FALLING FILM EVAPORATOR

Axel E. Rosenblad, 77 Bayside Dr., Atlantic Highlands, N.J. 07716

Continuation of Ser. No. 13,403, Feb. 4, 1993, abandoned.
This application Jan. 10, 1994, Ser. No. 180,803
Int. Cl.[6] B01D 1/22
U.S. Cl. 159—49 16 Claims

1. An indirect heat exchange falling film evaporator comprising: a fixed evaporator housing for containing a pool of liquid to be evaporated and an enclosed space above the pool of liquid for vapor boiled off from the liquid by evaporation; an inlet for feeding liquid to be evaporated into the housing and an outlet from the housing for liquid concentrated by evaporation; an outlet from the housing for discharging from said enclosed space above the



pool of liquid vapor boiled off from the liquid by evaporation; a plurality of heating elements within the housing mounted for rotation about a common horizontal axis, each of said heating elements having an outer surface for contact with liquid in the pool of liquid to be evaporated within the housing and having an internal passage for heating medium and an element inlet and an element outlet for the heating medium, said element heating medium inlets opening on to a chamber defined within a wall for preventing liquid to be evaporated from entering the internal passages and said element heating medium outlets opening on to another chamber; and means for rotating the heating elements and chambers together with respect to the housing to successively submerge the heating elements in the liquid and withdraw the heating elements from the liquid on the outer surfaces of the elements so that liquid is carried from the pool on the outer surfaces of the elements and falls down said outer surfaces of the elements as a film under the influence of gravity.

12. A method for evaporating liquid by indirect heat exchange falling film evaporation comprising; providing, in a lower portion of a fixed evaporator housing, a pool of liquid to be evaporated: introducing heating medium into a chamber within the housing and passing said heating medium from said chamber within the housing through interior spaces within a plurality of heating elements mounted for rotation about a common horizontal axis in said housing while preventing liquid to be evaporated from entering said interior space; rotating the heating elements and the chamber together with respect to said housing about the common axis of rotation to successively submerge the heating elements in the pool of liquid and to withdraw the heating elements from the liquid so that outer surfaces of the heating elements carry liquid from the pool to fall down said outer surfaces as a film under the influence of gravity, collecting vapor generated by evaporation in an upper portion of said housing and discharging collected vapor from said housing, wherein the heating elements comprise a plurality of horizontal tubes.

5,575,890

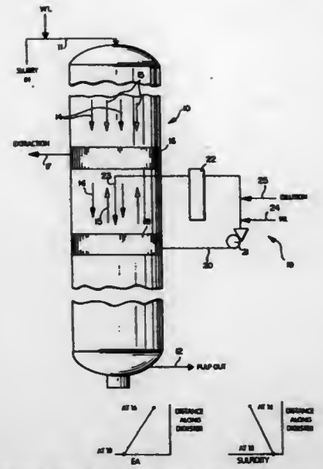
METHOD FOR SELECTIVELY INCREASING THE SULFIDE ION CONCENTRATION AND SULFIDITY OF KRAFT COOKING LIQUOR DURING KRAFT COOKING OF WOOD

J. Robert Prough, Queensbury; Bruno S. Marcoccia, South Glens Falls; Richard O. Laakso, Queensbury, and Carl L. Luhrmann, Glens Falls, all of N.Y., assignors to Kamyr, Inc., Glens Falls, N.Y.

Continuation-in-part of Ser. No. 148,269, Nov. 8, 1993, Pat. No. 5,536,366, which is a continuation-in-part of Ser. No. 127,548, Sep. 28, 1993, Pat. No. 5,547,012, which is a continuation-in-part of Ser. No. 56,211, May 4, 1993, Pat. No. 5,489,363. This application Aug. 18, 1994, Ser. No. 291,918
Int. Cl.[6] D21C 3/26
U.S. Cl. 162—34 14 Claims

1. A method of selectively increasing the sulfide ion concentration and sulfidity of kraft cooking liquor during kraft cooking of comminuted cellulosic fibrous material, comprising the steps of continuously:

(a) in a first treatment zone in which impregnation or kraft cooking of comminuted cellulosic fibrous material takes place, causing the material in a slurry of kraft cooking liquor having a first sulfide ion concentration and sulfidity to flow in a first direction through the first zone, from the beginning of the first zone to the end of the first zone;



(b) extracting black liquor from the material at some point after the first treatment zone;

(c) also at some point after the first treatment zone and distinct from step (b), withdrawing liquid from the material, and adding dilution liquid to the withdrawn liquid, and re-introducing the withdrawn liquid with dilution liquid to the material; and

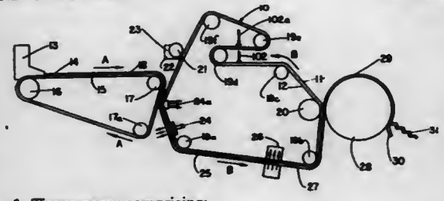
(d) in a second treatment zone after the first zone subjecting the material to a second kraft cooking liquor having a second sulfide ion concentration and sulfidity greater than the first sulfide ion concentration and sulfidity, including by manipulating and controlling the flow rate of extraction in step (b) and the flow rates of withdrawal of liquid and addition of dilution liquid in step (c), wherein steps (b) through (d) are practiced so that the second cooking liquor has a second sulfide ion concentration and sulfidity at least about 20% greater that the first sulfide ion concentration and sulfidity.

5,575,891

SOFT TISSUE PAPER CONTAINING AN OIL AND A POLYHYDROXY COMPOUND

Paul D. Trokhan, Hamilton, and Dean Van Phan, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 31, 1995, Ser. No. 381,250
Int. Cl.[6] D21H 21/22
U.S. Cl. 102—111 29 Claims



1. Tissue paper comprising:

a) wet-laid cellulosic fibers;

b) from about 0.01% to about 5% of a water soluble polyhydroxy compound, based on the dry fiber weight of said tissue paper; and

c) from about 0.01% to about 5% of an oil selected from the group consisting of petroleum-based oils, polysiloxane-based oils, and mixtures thereof, based on the dry fiber weight of said tissue paper;

wherein said tissue paper has a basis weight of from about 10 to about 65 g/m^2 and a density of less than about 0.60 g/cc, said

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polyhdroxy compound and said oil having being applied to at least one surface of a wet tissue paper web.

5,575,892

WET STRENGTH RESIN COMPOSITION

David L Devore, Langhorne; Nancy Clungeon, Wyndmoor, and Stephen A. Fischer, Yardley, all of Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Division of Ser. No. 270,088, Jul. 1, 1994, Pat. No. 5,503,713, which is a division of Ser. No. 142,642, Oct. 25, 1993, Pat. No. 5,350,796, which is a continuation of Ser. No. 695,198, May 3, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 461,345

Int. Cl.[6] D21H *11/00*

U.S. Cl. 162—164.3 **7 Claims**

1. A cellulosic fibrous web comprising cellulose pulp fibers containing from about 1 to about 30 lbs/ton of said cellulose pulp fibers of an aminopolyamide-epichlorobydrin acid salt resin having an E/N ratio of from about 0.6 to about 2.0 and from about 1% to about 35% by weight of said resin of a water soluble cationic polymer consisting of polydimethldilyammonium chloride.

5,575,893

FELT CONDITIONER FOR DEINKED RECYCLED NEWSPRINT PAPERMAKING SYSTEM

Abdul Q. Khan; Kevin D. Curham, and Jeffrey R. Cowart, all of Jacksonville, Fla., assignors to BetzDearborn Inc., Trevose, Pa.

Continuation of Ser. No. 190,417, Feb. 2, 1994. This application Mar. 15, 1995, Ser. No. 404,771

Int. Cl.[6] D21F *1/32*

U.S. Cl. 162—199 **6 Claims**

1. A method for controlling contaminant build-up in a papermaking process utilizing deinked secondary fiber in the furnish comprising adding a combination of: (a) from 5–33% of a nonionic surfactant, (b) from 5–33% of a dispersant or blends thereof, (c) from 1 to 5% of an alkylether hydroxypropyl sultaine, with the remainder water; wherein the nonionic surfactant is selected from the group consisting of ethoxylated nonylphenols having moles of ethoxylation of from 7.5 to 30 and an HLB of about 12 to 17.2 and di-alkyl phenol ethoxylates having moles of ethoxylation of from 15 to 24 and an HLB of about 13 to 15.1; and wherein the dispersant is selected from the group consisting of a sodium salt of naphthalene sulfonate formaldehyde-condensate having an average molecular weight of from about 700 to 3500, a potassium salt of polymerized alkyl naphthalene sulfonic acid having an average molecular weight of approximately 1000 and a sodium or ammonium salt of lignosulfonate, said combination serving to control contaminant build-up in felt, uhle box deposition and maintain felt cleanliness.

5,575,894

WATER AND ORGANIC CONSTITUENT SEPARATOR AND STRIPPER SYSTEM AND METHOD

Adolph J. Foral, Houston, Tex., assignor to Gas Research Institute, Chicago, Ill.

Filed Jan. 25, 1995, Ser. No. 378,552

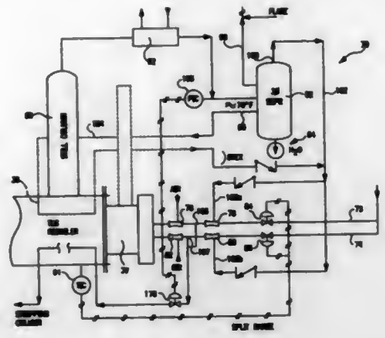
Int. Cl.[6] B01D *3/00*

U.S. Cl. 203—18 **8 Claims**

1. A system for separating water recovered during the dehydration of a gas, such as a natural gas, wherein the system receives a dehydrating solution which has been used to initially absorb water from the gas, the system comprising:

means for heating a dehydrating solution which has been used to absorb water from a gas, so as to drive the water from the dehydrating solution,

said means for heating the dehydrating solution including a gas-fired burner apparatus, a source of gaseous fuel, and



means for delivering the gaseous fuel to the gas-fired burner apparatus, so as to provide for dehydration of the gas,

said means for delivering the gaseous fuel to the gas-fired burner apparatus further including means for controlling the flow of the gaseous fuel to the burner apparatus, substantially independently of the pressure at which the gaseous fuel is supplied from the source of gaseous fuel;

means for condensing the water from the distilling means, operably associated with the means for distilling water; and

means for initially separating the condensed water, from the condensing means, from organic constituents which may also have been drawn from the distilling means, operably associated with the condensing means,

the means for controlling the flow of the gaseous fuel to the burner apparatus, substantially independently of the pressure at which the gaseous fuel is supplied from the source of gaseous fuel further including

at least two conduit means, operably connected for parallel communication of gas from said source of gaseous fuel to said burner apparatus;

valve means, operably disposed in at least one of said at least two conduit means;

temperature sensor means, operably associated with said means for heating the dehydrating solution,

control means operably associated with the valve means and the temperature sensor means, so as to vary the flow of gaseous fuel to the burner apparatus in response to the temperatures sensed by the temperature sensor means.

5,575,895

BIOSENSOR AND METHOD FOR PRODUCING THE SAME

Shin Ikeda, Katano; Mariko Miyahara, Moriguchi; Toshihiko Yoshihiko, Osaka, and Shiro Nankai, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 30, 1995, Ser. No. 452,774

Claims priority, application Japan, Jun. 2, 1994, 6-120933; Oct. 7, 1994, 6-244399

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—403 **20 Claims**

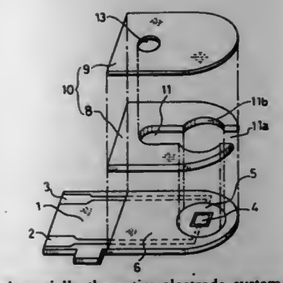
1. A biosensor comprising:

an electrically insulating base plate,

an electrode system including a working electrode and a counter electrode which are provided on a principal face of said electrically insulating base plate,

a reaction layer including at least an oxido-reductase, and

an enclosure member having a hollow space constituting a sample supplying channel having a width which is less than the width of said electrode system on said electrically insulating base plate,



wherein substantially the entire electrode system is located on the bottom of said hollow space and substantially the entire reaction layer is exposed to said hollow space.

5,575,896

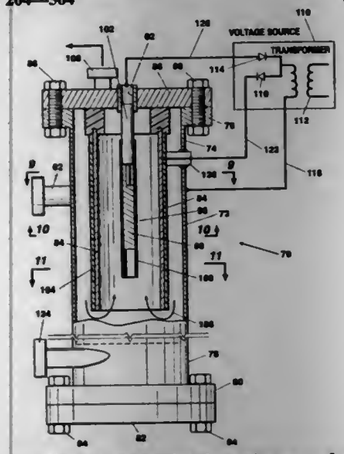
METHOD AND APPARATUS FOR OIL/WATER SEPARATION USING A DUAL ELECRODE CENTRIFUGAL COALESCER

Gary W. Sams, Tulsa; Floyd L. Prestridge, Sapulpa; Merle B. Inman, Tulsa, and Dennis K. Manning, Claremore, all of Okla., assignors to National Tank Company, Houston, Tex.

Continuation-in-part of Ser. No. 223,056, Apr. 6, 1994. This application Jan. 31, 1995, Ser. No. 381,196

Int. Cl.[6] C10G *33/02*

U.S. Cl. 204—564 **9 Claims**



1. An apparatus for augmenting the coalescence of water in a water-in-oil emulsion, which apparatus comprises:

a tubular vessel having a cylindrical sidewall and opposed ends, the cylindrical sidewall having a cylindrical interior surface;

an inlet in said vessel cylindrical sidewall adjacent one of said vessel ends, the inlet communicating tangentially with said vessel cylindrical interior surface;

a tubular electrode of external diameter less than the internal diameter of said vessel, said tubular electrode extending concentrically within said vessel from said one end and being of length less than the length of said vessel;

an elongated electrode extending axially and concentrically within said tubular electrode from said one end;

an outlet in said vessel one end between said tubular electrode and said elongated electrode, said inlet and said outlet serving to cause fluid to flow initially through said vessel in a circumferential path outside said tubular electrode and thereafter axially through said tubular electrode toward said outlet;

means for insulating said vessel, said tubular electrode and said elongated electrode from each other; and

means for applying a first electrical potential between said tubular electrode and said vessel and a second electrical potential between said elongated electrode and said vessel.

5,575,897

METHOD OF MANUFACTURING SOFT-MAGNETIC MULTILAYER THIN FILM INCLUDING RE-DISSOLUTION EFFECT MAGNETICALLY ISOLATING LAYER

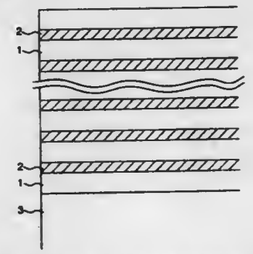
Nobuyuki Komura, Kyoto, and Yuuji Omata, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Division of Ser. No. 144,436, Nov. 2, 1993, abandoned. This application Oct. 24, 1995, Ser. No. 547,560

Claims priority, application Japan, Nov. 2, 1992, 4-294108

Int. Cl.[6] C25D *5/10*

U.S. Cl. 205—103 **3 Claims**



1. A method of manufacturing a soft-magnetic multilayer thin film, which comprises the steps of:

intermittently dissolving an electroplated soft-magnetic film layer by anodic dissolution while forming the layer on a surface to be plated by electroplating, to form a re-dissolution effect layer which is a magnetically isolating layer having a crystal structure different from that of the soft-magnetic film layer; and

forming a soft-magnetic multilayer thin film which comprises a plurality of soft-magnetic film layers magnetically isolated from each other by re-dissolution effect layers interposed therebetween.

5,575,898

PROCESS FOR THROUGH-HOLE PLATING OF TWO-LAYER PRINTED CIRCUIT BOARDS AND MULTILAYERS

Gerhard-Dieter Wolf, Dormagen; Friedrich Jonas, Aachen, and Reinhard Schomäcker, Leverkusen, all of Germany, assignors to Bayer AG, Leverkusen, Germany

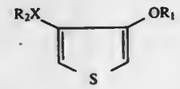
Filed Sep. 20, 1995, Ser. No. 530,998

Claims priority, application Germany, Oct. 12, 1994, 44 36 391.5

Int. Cl.[6] C25D *5/02;5/54;5/56*

U.S. Cl. 205—125 **12 Claims**

1. Process for through-hole plating of printed circuit boards and multilayers by applying a conductive layer of a polythiophene onto the walls of the through-holes and electrodeposition of copper onto the walls of the through-holes, comprising the use of a microemulsion of a monomeric thiophene of the formula (I) to form the conductive polythiophene layer,



(I)

in which

X denotes oxygen or a single bond,

R_1 and R_2 mutually independently denote hydrogen or a C_1–C_4 alkyl group or together form an optionally substituted C_1–C_4 alkylene residue or a 1,2-cyclohexylene residue, wherein the conductive layer of polythiophene is produced on the walls of the through-holes by subsequent or simultaneous treatment with acid and, finally, a metal is electro-deposited on this conductive layer.

5,575,899

ELECTROLYTIC ZINC-NICKEL ALLOY PLATING SOLUTION AND A METHOD OF THE PLATING USING THE SAME

Hisatada Nakakoji; Kazuhiro Hasegawa; Kazuo Mochizuki; Tokumitsu Kimura; Kazuhiro Ohotsuka, and Hidenori Shirai, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Aug. 29, 1995, Ser. No. 521,072

Claims priority, application Japan, Aug. 31, 1994, 6-206852; Jun. 1, 1995, 7-135319

Int. Cl.[6] C25D *3/56*

U.S. Cl. 205—246 **14 Claims**

1. An electrolytic zinc-nickel alloy plating solution, comprising:

a solution comprising:

zinc chloride, nickel chloride and potassium chloride;

polyethylene glycol having a molecular weight of 400–800 as a non-ionic surfactant in an amount of 0.01 to 1.0 gram/liter; and

at least one compound selected from the group consisting of nicotinic acid, urea, thiourea, nicotinamide, thioglycolic acid and sodium thiosulfate as a compound having a lone pair of electrons in an amount of 0.001–1.0 gram/liter.

5,575,900

GOLD PLATING SOLUTIONS

Marvin S. Antelman, Rehovot, Israel, and Perry W. Antelman, Providence, R.I., assignors to Antelman Technologies Ltd., Providence, and Tivian Industries, Ltd., East Providence, both of R.I.

Filed Jul. 3, 1995, Ser. No. 497,907

Int. Cl.[6] C25D *3/48*

U.S. Cl. 205—267 **7 Claims**

1. A plating bath electrolyte for the large scale mass production decorative electroplating of gold comprising:

a) a soluble alkali complex gold cyanide salt wherein the gold concentration is in the range of 0.5 to 1.0 pennyweights per gallon;

b) a primary buffer salt in the pH range from one to seven having the molecular structure RCH_2COOX, where R is either H, OH, $OHCH_2$ or alpha hydroxy structure analogous to the latter, and where X is either H, Na or K; and

c) a secondary buffer of a phosphoric acid soluble salt.

5,575,901

PROCESS FOR PREPARING ORGANIC AND INORGANIC HYDROXIDES OR ALKOXIDES OR AMMONIA OR ORGANIC AMINES FROM THE CORRESPONDING SALTS BY ELECTROLYSIS

David R. Hulme, and Hossein Sharifian, both of Austin, Tex., assignors to Sachem, Inc., Austin, Tex.

Filed Jan. 31, 1995, Ser. No. 381,318

Int. Cl.[6] C02F *1/46;* **B01D** *61/44*

U.S. Cl. 205—413 **29 Claims**

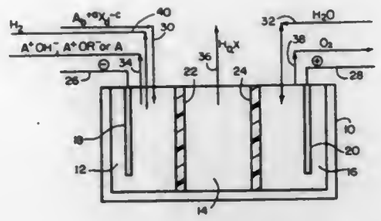
1. A process for preparing organic and inorganic hydroxides or alkoxides, or ammonia and organic amines from the corresponding salts in an electrolysis cell which comprises an anolyte compartment containing an anode and an electrolyte solution, a catholyte compartment containing a cathode, and an intermediate compartment containing a liquid, wherein the intermediate compartment is separated from the catholyte compartment by an anion selective membrane and from the anolyte compartment by a cation selective membrane, said process comprising the steps of:

(A) charging to the catholyte compartment, a mixture comprising an organic or inorganic salt or an amine salt, and a liquid selected from water or organic liquids provided that sufficient water is present in the catholyte mixture to form the desired hydroxide or amine, or sufficient alcohol is present in the catholyte mixture to form the desired alkoxide or amine;

(B) passing a current through the electrolysis cell to produce the desired hydroxide, alkoxide or amine in the catholyte compartment and an acid in the intermediate compartment;

(D) recovering the organic or inorganic hydroxide or alkoxide or the amine from the catholyte compartment; and

(E) recovering the acid from the intermediate compartment.



5,575,902

CRACKING PROCESSES

John V. Heyse, Crockett; Alan G. Kunze, El Cerrito, and Steven E. Trumbull, San Leandro, all of Calif., assignors to Chevron Chemical Company, San Ramon, Calif.

Continuation-in-part of Ser. No. 177,822, Jan. 4, 1994. This application Jul. 1, 1994, Ser. No. 269,764

Int. Cl.[6] C10G *9/16*

U.S. Cl. 208—48 R **1 Claim**



1. A process for cracking hydrocarbons comprising:

(i) providing a carburization, abrasion and peeling resistant and coking resistant Group VIB metal protective layer to a steel portion of a cracking reactor system by (a) applying to the steel portion a Group VIB metal plating, cladding or other coating of Group VIB metal to a thickness effective to isolate the steel portion from hydrocarbons during operation, and (b) forming the protective layer, anchored to the steel portion through an intermediate carbide-rich bonding layer by curing the plating, cladding, or other coating in the presence of a nitrogen-containing compound for a time and at a temperature effective to form the intermediate carbide-rich bonding layer and to incorporate nitride material in a crack or cracks of the cured plating, cladding or other coating; and

(ii) cracking hydrocarbon feed.

5,575,903

DRAIN WATER-INTAKE COVER

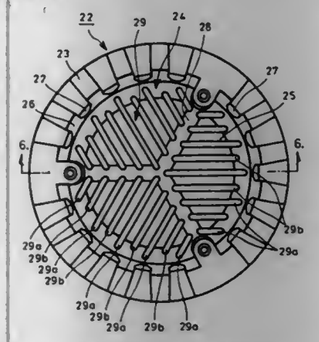
Setsuo Kato, Tokyo, Japan, assignor to Aluteck Co., Ltd., Tokyo, Japan

Filed Mar. 14, 1995, Ser. No. 403,953

Claims priority, application Japan, Jul. 22, 1994, 6-171024

Int. Cl.[6] E03F *5/14*

U.S. Cl. 210—164 **2 Claims**



1. A drain water-intake cover, which comprises:

a fixed brim;

a central convex portion which is low in height wherein an upper water-intake opening is formed in said convex portion and side-wall intake openings are located on a side peripheral wall of the convex portion;

three support arms radially extending and bridging said upper water-intake opening, said arms having an angularly displaced relationship from each other of substantially 120 degrees; and

a plurality of mutually spaced rod-shaped dust stoppers extending centripetally over said upper water-intake opening, said dust stoppers being uneven in height.

5,575,904

FLUID PROCESSING DEVICE WITH FILTER IN HELICAL CHANNEL TUBE

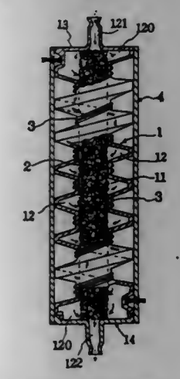
Akira Suzuki, Seto, Japan, assignor to Kabushiki Kaisha Aichi Ceramic Kogyosho, Aichi-ken, Japan

Filed Jun. 15, 1994, Ser. No. 261,382

Claims priority, application Japan, Apr. 2, 1993, 5-100369

Int. Cl.[6] B01D *35/18*

U.S. Cl. 210—186 **6 Claims**



1. A fluid processing device comprising:

a tube having a helical channel, the helical channel including an inward-facing open side communicating with a central through-hole of the tube, the central through-hole being surrounded by turns of the helical channel,

the tube having a screw-like outer surface including a helical concave surface groove;

a porous meshlike filter disposed within the central through-hole in contact with an interior tube portion proximal the open side of the helical channel; and

a heating wire wound within the helical concave surface groove; whereby the helical channel defines a helical fluid path in contact with the filter along an outside surface of the filter and the heating wire may heat fluid within the tube.

5,575,905

IODINATION PROCESS

Lars-Göran Wistrand, Lund, Sweden; Klaes Golman, Rungsted Kyst, Denmark, and Finn Radner, Lund, Sweden, assignors to Nycomed Imaging AS, Oslo, Norway

Filed May 24, 1995, Ser. No. 449,272

Int. Cl.[6] C25B *3/06;* **A61K** *49/00;* **G01N** *31/00;* **C07C** *233/00*

U.S. Cl. 205—426 **19 Claims**

1. A process for the preparation of a 2,4,6-triiodinated-3,5-disubstituted-aniline or a 2,4,6,2',4',6'-hexaiodinated-3,3'-disubstituted-5,5'-linked bisaniline, which process comprises electrochemically iodinating a 3,5-disubstituted-aniline or a 3,3'-disubstituted-5,-5'-linked bisaniline in an aqueous acidic solvent.

5,575,906

PROCESS FOR THE ELECTROCHEMICAL FLUORINATION OF A HYDROCARBON SUBSTRATE

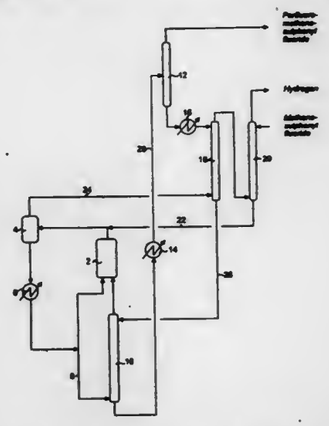
Sven L Hommeltoft, Hillerød, and Ole Ekelund, Lyngby, both of Denmark, assignors to Haldor Topsøe A/S, Denmark

Filed Jun. 30, 1995, Ser. No. 497,649

Claims priority, application Denmark, Jul. 1, 1994, 0786/94

Int. Cl.[6] C25B *3/08*

U.S. Cl. 205—460 **6 Claims**



1. In a process for the electrochemical fluorination of a hydrocarbon substrate a HF-containing electrolyte under electrochemical fluorination conditions to a fluorinated product and a hydrogen gas by-product, the improvement of which comprises additional steps of

(a) continuously separating the formed fluorinated product from the electrolyte by extracting the electrolyte with an extraction agent comprised of perfluorinated compounds, which are immiscible with the electrolyte,

(b) continuously separating residual amounts of the fluorinated product from the hydrogen gas by-product by extraction of the gas with an extraction agent comprised of perfluorinated compounds, which are immiscible with the electrolyte; and

(c) recovering the fluorinated product by distillation of the extraction agent from step (a) and step (b).

5,575,907

PROCESS FOR THE RECOVERY OF RAW MATERIALS FROM PRESORTED COLLECTED WASTE, ESPECIALLY SCRAP ELECTROCHEMICAL BATTERIES AND ACCUMULATORS

Walter Lindermann, Siblingen, Switzerland, assignor to Batenus Umwelt - Und Recyclingtechnologie GmbH & Co. KG, Stuhlingen, Germany

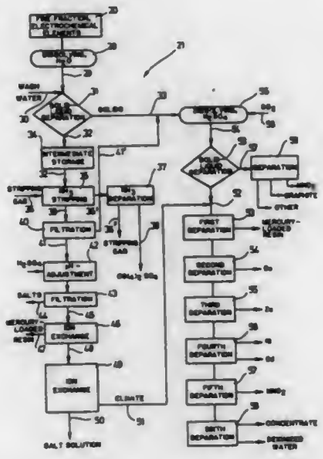
PCT No. PCT/DE93/00644, § 371 Date Mar. 27, 1995, § 102(e) Date Mar. 27, 1995, PCT Pub. No. WO94/02265, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 19, 1993, Ser. No. 374,780

Claims priority, application Germany, Jul. 28, 1992, 42 24 884.1

Int. Cl.[6] C22B *7/00*

U.S. Cl. 205—580 61 Claims



1. Process for recovering raw materials from presorted collected waste materials, especially scrap electrochemical batteries and accumulators of different types, whereby the presorted collected waste materials (**10**) are worked up mechanically and separated into at least one course fraction (**115**) and at least one fine fraction (**16**) that are processed further separately, characterized in that the substances to be recovered from the fine fraction (**16**) in a wet chemical process are dissolved out of the scrap material in stages by using a first and second solvent, resulting in first and second solutions, respectively, and then are recovered individually from the two solutions;

a first suspension (**29**) and solids (**33**) that are not soluble in the first solvent are formed from the first solution (**32**) by adding prior to performing any other dissolving step, a first solvent, namely water, to the fine fraction (**20**), and the wash water (**30**) obtained by washing (**22**) the course fraction (**15**) is added to this suspension, where the first solution (**32**) is separated (**31**) from the insoluble solids (**33**) of the first suspension, where the solids separated from the first solution are mixed with a second solvent, namely an acid, where a second suspension (**54**) is formed from a second solution (**52**) and solids (**57**) that are not soluble in the second solvent, where the solids (**57**) are separated from the second suspension (**54**), and where the two solutions (**32, 52**) are processed further individually in order to recover the solids dissolved in them.

5,575,908

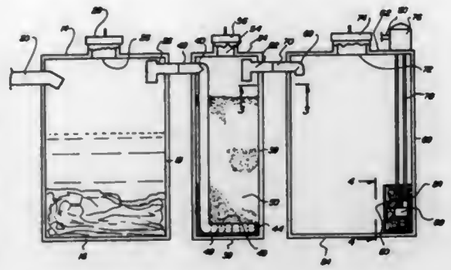
SEWER SYSTEM WATER PURIFIER

Anastacio Monoragon, Jr., P.O. Box 604, Alcalde, N.M. 87511

Filed Jun. 20, 1995, Ser. No. 492,693

Int. Cl.[6] B01D *17/032*

U.S. Cl. 210—257.1 1 Claim



1. A sewer system water purifier for purifying toilet water to be reused in a toilet and for a sprinkler system for a lawn comprising, in combination:

a first tank having a top end, a bottom end, and four side walls therebetween, the first tank receiving a sewer line from a toilet through a top portion of one of the four side walls, the first tank having an exit pipe extending outwardly from one of the side walls opposing the sewer line thus also located through a top portion of one of the four side walls, the top end having an opening therethrough, the opening having a door removably secured therein, whereby once the toilet is flushed, the water and waste within the toilet is drained out and through the sewer line and into the first tank such that any solid waste sinks to the bottom end of the first tank for physical removal and further the water exits out of the exit pipe when enough waste water has been drained into the first tank;

a second tank having a top end, a bottom end, and four side walls therebetween, the second tank having a drainage pipe therein, the drainage pipe having a first end and a second end, the first end coupling with the exit pipe extending outwardly of the first tank, the drainage pipe extending downwardly within the second tank and having a first bent portion paralleling the bottom end, the first bent portion having a plurality of apertures formed therein, the second tank having gravel therein, the gravel filling up ¾ of the second tank, the second tank having an exit pipe extending outwardly of a side wall opposing the drainage pipe with a tapered portion on an end thereof, the top end having an opening therethrough, the opening having a door removably secured therein for allowing the gravel within the second tank to be properly treated and cleaned, whereby after the waste water exits the first tank, it travels through the drainage pipe down within the second tank and into the first bent portion where the waste water permeates through the plurality of apertures after which the waste water travels upwardly through the gravel where it is filtered of impurities and then exits out of the second tank through the exit pipe;

a third tank having a top end, a bottom end, and four side walls therebetween, the third tank having a drainage pipe therein, the drainage pipe having a first end coupling with the exit pipe of the second tank, the top end having an opening therethrough, the opening having a door removably secured therein, the top end having a water pump disposed thereon, the water pump having two pipes extending downwardly towards the bottom end, the bottom end having a housing disposed thereon, the housing having a plurality of apertures formed therein, the housing receiving ends of the two pipes therein, the housing having carbon filament therein, the ends of the two pipes having a foot valve thereon, the water pump serving to pump water from the third tank to a toilet and a sprinkler system, whereby once the waste water exits through the exit pipe of the second tank, the water enters into the third tank via the drainage pipe whereupon the water enters the housing via the apertures at which time the water is filtered and pumped up through the foot valve and up to the water pump; and

a pipe coupled with the water pump of the third tank with a pressure control switch to control the amount of water exiting the third tank and a one way valve to prevent water from entering the third tank, the pipe having an end portion coupled to the sprinkler system, a first extension coupled with a reservoir tank of a toilet with the first extension having a shut off valve to stop flow of water when necessary, a second extension coupled with a potable water supply wherein the second extension is equipped with a one-way valve to prevent any filtered water from entering into the potable water supply, and a third extension coupled with a fresh water well with the third extension being equipped with a one-way valve to prevent any filtered water from entering into the fresh water well.

5,575,909

SEPARATORS

William W. Foster, 16 Gulf Road, Hillsborough, County Down, BT26 6ER, Great Britain

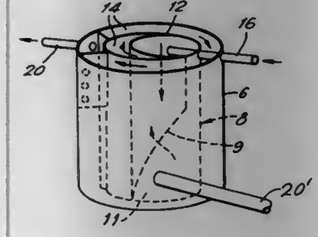
PCT No. PCT/GB92/01923, § 371 Date Jun. 17, 1994, § 102(e) Date Jun. 17, 1994, PCT Pub. No. WO93/07946, PCT Pub. Date Apr. 29, 1993

PCT Filed Oct. 19, 1992, Ser. No. 211,826

Claims priority, application United Kingdom, Oct. 18, 1991, 9122178

Int. Cl.[6] B01D *21/26*

U.S. Cl. 210—304 17 Claims



1. A separator comprising an outer cylindrical first vessel and an elongate unit including a spiral baffle forming a spiral passage in said unit, the spiral baffle having at least two concentric coil portions which extend over a height of said first vessel with an innermost end of the baffle having a cut-away portion which extends from below an upper surface of said baffle on a slope away from the innermost end of said baffle toward a bottom surface of said baffle, the first vessel having a sump and the elongate unit being in fluid communication with the first vessel, an inlet means being provided to convey a mixture into the assembly to be separated, and a first outlet means and a second outlet means being provided through which the separated components of the mixture are separately removable from the assembly, the mixture passing through the first vessel and a spiral passage of the elongated unit with a disposable component of the mixture being discharged through the first outlet means and a residual component of the mixture being held in the first vessel from which it is periodically removed through the first or the second outlet means.

5,575,910

MEMBRANE ADSORBER FILTER MODULE

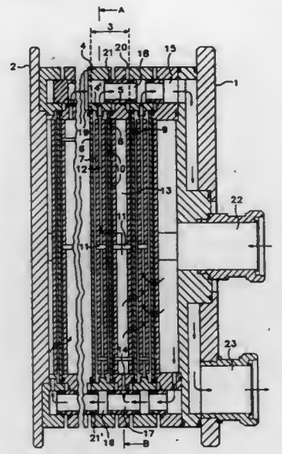
Massoud Karbachsch, Göttingen; Peter Konstantin, Neunkirchen; Günter Pradel, Göttingen, and Dieter Schmidt, Rosdorf, all of Germany, assignors to Sartorius AG, Gottingen, Germany

Filed Sep. 5, 1995, Ser. No. 523,361

Claims priority, application Germany, Sep. 14, 1994, 44 32 627.0

Int. Cl.[6] B01D *63/00*

U.S. Cl. 210—321.75 11 Claims



1. A filtration unit for the separation of substances from fluids on porous membrane adsorbers, comprising:

(a) a fluid feed inlet;

(b) a permeate outlet; and

(c) a plurality of filtration chambers arranged in parallel in such a manner as to have a common fluid feed channel and a common permeate outlet channel, each filtration chamber comprising in sequence

(1) a first membrane adsorber pack,

(2) a fluid feed spacer,

(3) a second membrane adsorber pack, and

(4) a fluid permeate spacer,

wherein said first and second membrane adsorber packs each comprise more than one planar sheet of porous adsorptive membrane, each porous adsorptive membrane in said adsorber packs located immediately adjacent the other porous adsorptive membrane(s) in the same adsorber pack, and wherein said fluid feed spacer and said fluid permeate spacer are in fluid communication and form at least one fluid feed channel and at least one permeate outlet channel.

5,575,911

BACK-FLUSHABLE FILTER HAVING VALVED FLUSING PATHWAY

Peretz Rosenberg, Moshav Beit Shearim, Israel, assignor to Super Disc Filters Ltd., Natania, Israel

Filed Feb. 16, 1995, Ser. No. 389,476

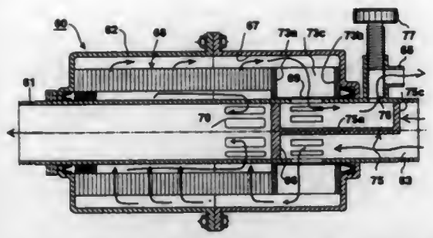
Claims priority, application Israel, Mar. 28, 1994, 109141; Aug. 8, 1994, 110586

Int. Cl.[6] B01D *29/68*

U.S. Cl. 210—333.01 20 Claims

1. A filter operable in either a filtering mode or in a flushing mode, comprising:

a housing including a cylindrical filter chamber, and further including a fluid inlet, a fluid outlet, and a flushing outlet communicating with said filter chamber;



a cylindrical filter body disposed within said filter chamber and having an upstream face communicating with said fluid inlet and a downstream face communicating with said fluid outlet;

a plurality of partitions defining, with the housing and upstream face of the filter body, a plurality of axially-extending, circumferentially-spaced filter compartments each communicating with an axially-extending section of the filter body;

blocking means for blocking communication between said fluid inlet and at least one filter compartment, while unblocking each remaining filter compartment by permitting communication with said fluid inlet;

a flushing pathway between each blocked filter compartment and said flushing outlet;

and a valve in said flushing pathway movable either: (a) to a closed position during the normal filtering mode, wherein a filtering operation is performed in each unblocked filter compartment to filter the fluid flowing from the fluid inlet to the fluid outlet, or (b) to an open position during the flushing mode, wherein the same filtering operation is performed in each unblocked filter compartment, and a flushing operation is performed to flush, via the flushing outlet, in each blocked filter compartment;

said blocking means and filter body being rotatable relative to each other to enable said blocking means to be aligned with, and thereby to perform a flushing operation with respect to, all the axially-extending sections of the filter body.

5,575,912

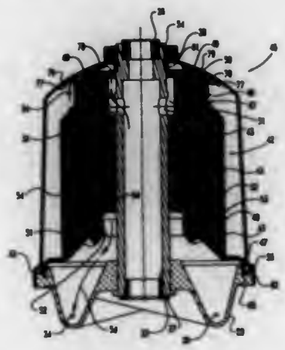
SELF-DRIVEN, CONE-STACK TYPE CENTRIFUGE

Peter K. Herman, and Byron A. Pardue, both of Cookeville, Tenn., assignors to Fleetguard, Inc., Nashville, Ind.

Filed Jan. 25, 1995, Ser. No. 378,197

Int. Cl.[6] B04B *1/08*

U.S. Cl. 210—380.1 **28 Claims**



1. A bypass circuit centrifuge which is constructed and arranged to be assembled within a cover assembly for separating particulate matter out of a circulating liquid, said centrifuge comprising:

a centrifuge bowl constructed and arranged to rotate about an axis;

a base plate assembled to said centrifuge bowl, said base plate including at least one tangential flow nozzle for creating an exit flow jet said exit flow jet causing the centrifuge bowl to rotate;

a hollow centertube axially extending through said base plate and through said centrifuge bowl;

a flow-control plate positioned adjacent a first end of said centertube;

a support plate spaced apart from said flow control plate and positioned adjacent said base plate; and

a plurality of truncated cones positioned into a stacked array which is sandwiched between said flow control plate and said support plate, said plurality of cones being constructed and arranged so as to define a plurality of fluid flow paths from a first opening to a second opening which is located radially inward from said first opening, said fluid flow paths being in flow communication with said at least one tangential flow nozzle.

5,575,913

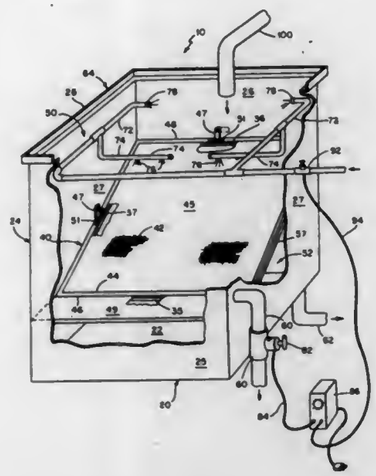
FILTRATION APPARATUS AND METHOD FOR REMOVING PARTICULATE CONTAMINANTS FROM COMMERCIAL LAUNDRY WASTE WATER

James P. Sharkey, 106 Cambon Ave., St. James, N.Y. 11780

Filed Jul. 28, 1995, Ser. No. 508,730

Int. Cl.[6] B01D *35/34;35/22;35/027*

U.S. Cl. 210—409 **15 Claims**



1. A filtration apparatus for filtering commercial laundry waste water containing particulate contaminants, said apparatus comprising:

a housing having a bottom and an upwardly extending surrounding wall, said surrounding wall having an upper edge which defines an inlet for receiving waste water containing particulate contaminants;

a removably mounted, substantially planar filter element having two opposite ends and having an interwoven filtering material and a surrounding frame disposed in said housing and spanning between said surrounding wall, said filter element spaced between said bottom and said inlet of said housing to form an upper chamber in fluid communication with said inlet and a lower chamber;

means for releasably and sealably supporting said frame of said filter element substantially about the entire periphery of said frame onto said surrounding wall thereby defining said upper and lower chamber, said means for supporting including supporting said frame at an angle with one end of said filter element being lower relative to the opposite end;

a first discharge outlet, in fluid communication with said lower chamber, for discharging filtered waste water;

a second discharge outlet, in fluid communication with said upper chamber adjacent said lower end of said filter element, for discharging filtered particulate contaminants; and

a valve operably connected to said second discharge outlet, said valve having an open position for discharging filtered particulate contaminants from said upper chamber and a closed position for preventing discharge of waste water and particulate contaminants from said upper chamber.

5,575,914

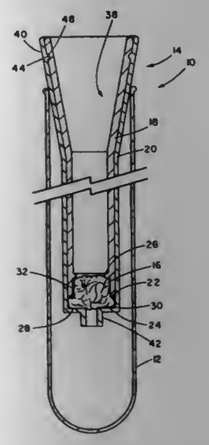
TWO SPERM FILTER TRAP HAVING COMPRESSED GLASS WOOL FILTER MATERIAL

Rajasingam S. Jeyeodran, Wheaton, Ill., assignor to Vance Products Incorporated, Spencer, Ind.

Filed Dec. 23, 1994, Ser. No. 363,710

Int. Cl.[6] B01D *35/30;39/20*

U.S. Cl. 210—445 **23 Claims**



1. A filter trap operable (**10**) for removing spermatozoa of lower viability from a fluid containing both higher and lower viability spermatozoa, comprising:

a conduit (**14**) arranged for the flow of the spermatozoa-containing fluid therethrough; and

glass wool (**16**) in the conduit (**14**), through which the spermatozoa-containing fluid flows;

wherein the conduit (**14**) comprises structure arranged for compressing the glass wool (**16**) both in the direction of and in another direction transverse to the flow of the spermatozoa-containing fluid through the conduit (**14**), to a density adequate to substantially impede movement of the lower viability spermatozoa through the glass wool (**16**), while substantially permitting movement of the higher viability spermatozoa through the glass wool (**16**);

wherein the glass wool (**16**) is capable of substantially impeding the movement of the lower viability spermatozoa but substantially permitting the movement of the higher viability spermatozoa; and

wherein the compression of the glass wool (**16**) provided by the structure (**14**) fixes the density of the glass wool (**16**) and prevents the density of the glass wool (**16**) from changing during handling and use of the filter trap (**10**).

5,575,915

METHODS OF REMOVING SILVER

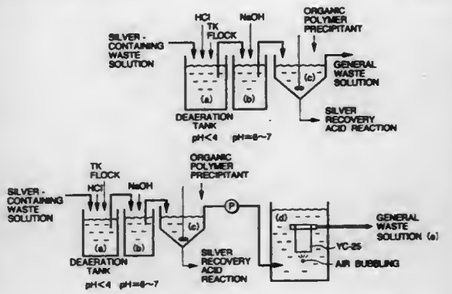
Takashi Nakamura; Yasuhiro Nakayama; Haruhiko Iwano, and Hideo Miyazaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 2, 1995, Ser. No. 458,261

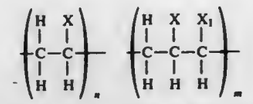
Claims priority, application Japan, Jun. 10, 1994, 6-129048

Int. Cl.[6] C02F *3/02;1/56;1/62*

U.S. Cl. 210—631 **11 Claims**



1. A method of removing silver, comprising adding, into a solution which is generated in the step of producing a photosensitive material and contains silver halide and silver ion, a water-soluble sulfur atom-containing hydrophilic polymer chelating agent wherein said chelating agent is represented by the general formula I,



I

wherein one of the substituents X and X_1 is —SM, —NHCOSM, —$NHCS_2M$ or —CH_2NHCS_2M, and the other is H; M is Li, Na, K or H; $0 \leqq n \leqq 30{,}000$; $0 \leqq m \leqq 30{,}000$; and $n+m>100$ and wherein said chelating agent has a molecular weight in a range of from 50,000 to 500,000 and containing at least one group selected from the group consisting of a dithiocarbamate group, a dithiocarbaminic acid group, and a thiol group.

5,575,916

METHOD OF PROCESSING A CHEESE PROCESSING WASTE STREAM

Barry Brian, Dresher; David A. Zopf, Strafford; Lei Lu, North Wales; John P. McCauley, Jr., Folcroft, and Michael Partsch, Horsham, all of Pa., assignors to Neose Pharmaceuticals, Inc., Horsham, Pa.

Filed Nov. 7, 1994, Ser. No. 337,181

Int. Cl.[6] B01D *11/04*

U.S. Cl. 210—634 **16 Claims**

1. A method of processing a cheese processing waste stream comprising:

i) contacting a cheese processing waste stream with a solvent and extracting a sialyloligosaccharide with said solvent;

ii) separating a sialyloligosaccharide containing solvent from said cheese processing waste stream; and

iii) isolating a sialyloligosaccharide from said sialyloligosaccharide containing solvent.

VOL 1192 ISS 3 NO 19 1996 UMI

5,575,917

PROCESS FOR IMMOBILIZING LINEAR POLYMERS ON A CHEMICALLY INERT CARRIER MATERIAL, ANTIMICROBIAL MATRIX PRODUCED ACCORDING TO THIS PROCESS ON THE BASIS OF AN INERT CARRIER MATERIAL AND A COATING OF POLYIONENES AND USE OF SAID MATRIX

Peter Konstantin, Neunkirchen, and Michael Rinck, St. Ingbert-Hassel, both of Germany, assignors to Fresenius AG, Bad Homburg, Germany

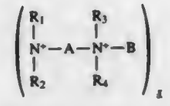
Filed Oct. 27, 1993, Ser. No. 143,685

Claims priority, application Germany, Nov. 6, 1992, 42 37 493.6

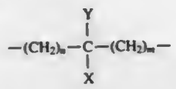
Int. Cl.[6] B01D 69/02

U.S. Cl. 210—638 11 Claims

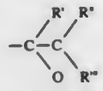
8. In a method of purifying an aqueous solution comprising filtering the solution through a filter to remove one or more impurities, the improvement comprising using as the filter a matrix comprising a chemically inert material and a coating of polyionenes having an antimicrobial effect, wherein the polyionenes do not form direct covalent or ionic bonds to the chemically inert material, but are so firmly bound to the chemically inert material that they have low solubility in aqueous media, said matrix being prepared by a process for immobilizing polyionenes soluble in a hydrophilic solvent on a chemically inert carrier material, wherein said process is characterized in that the two terminal reactive groups of the polyionenes are reacted with an excess of an α, ω-bifunctional compound, the reaction product obtained and then dissolved in a hydrophilic solvent is applied at least once to the carrier material and then cross-linked with a cross-linking agent dissolved in a hydrophobic solvent which is inert to the cross-linking agent and the carrier material, whereby the polyionenes is one of the general Formula I, as shown below:



wherein x designates the degree of polymerization, R_1, R_2, R_3, and R_4 which may be identical or different, each being straight or branched-chain alkyl groups with 1 to 4 carbon atoms, and A and B, which maybe identical or different, respectively designate one of the groups —CH_2, —CH_4— or



with the proviso that the sum of the carbon atoms in the two groups A and B is at least 6, whereby n and m respectively is an integer between 1 and 16 and X and Y are selected from the group consisting of: —H, —CH_3, —OH, —CHO, —NH_2, NHZ, —$N(Z)_2$, wherein X and Y can be the same or different, whereby Z is an alkyl group with 1 to 4 carbon atoms and the substituents Z in —N(Z), and NZ may be the same or different, or represent the group



wherein R', R" and R'", which may be identical or different, respectively represent a hydrogen atom or an alkyl group with 1 to 6 carbon atoms, or X and Y together represent an oxygen atom, whereby the molecular weight of the polyionenes is in the range of 10,000 to 100,000 Dalton.

5,575,918

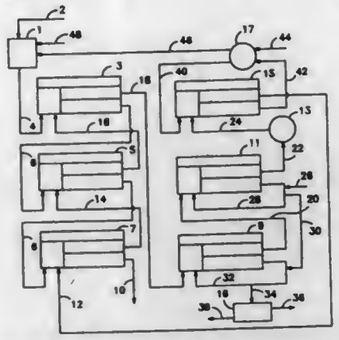
METHOD FOR RECOVERY OF POLYMERS

Michael J. Virnig; Phillip L. Mattison, both of Santa Rosa, and Keith E. Weerts, Windsor, all of Calif., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Feb. 28, 1995, Ser. No. 395,774

Int. Cl.[6] B01D 61/00; 11/00; 15/04

U.S. Cl. 210—652 26 Claims



1. A process for the separation of naphthalenesulfonate-based carbonyl condensates from water, said process comprising:

contacting a mixture comprised of water and a naphthalenesulfonate-based carbonyl condensate with a liquid organic phase comprised of a lipophilic non-quaternary amine and a water-immiscible diluent to form an aqueous phase depleted with respect to said mixture of naphthalenesulfonate-based carbonyl condensate and a liquid organic phase enriched in naphthalenesulfonate-based carbonyl condensate,

separating said aqueous phase depleted with respect to said mixture of naphthalenesulfonate-based carbonyl condensate and said liquid organic phase enriched with respect to naphthalenesulfonate-based carbonyl condensate, wherein said aqueous phase depleted with respect to said mixture of naphthalenesulfonate-based carbonyl condensate has a pH of less than about 3,

stripping said enriched organic phase of at least a portion of the naphthalenesulfonate-based carbonyl condensate with an alkaline aqueous strip solution to form a stripped liquid organic phase and an aqueous strip solution enriched in naphthalenesulfonate-based carbonyl condensate,

recycling at least a portion of said stripped liquid organic phase to contact additional mixture of water and a naphthalenesulfonate-based carbonyl condensate, and

recycling at least a portion of said aqueous strip solution enriched in naphthalenesulfonate-based carbonyl condensate to contact an additional portion of said enriched organic phase.

5,575,919

METHOD FOR REMOVING TOXIC SUBSTANCES IN WATER

Peter F. Santina, 1923 Whitecliff Way, Walnut Creek, Calif., assignor to Peter F. Santina, Walnut Creek, Calif.

Filed Dec. 8, 1994, Ser. No. 352,383

Int. Cl.[6] C02F 1/58

U.S. Cl. 210—695 18 Claims

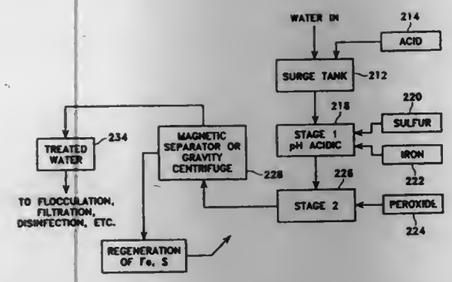
1. A method for removing arsenic from drinking water, comprising,

establishing the pH of the water substantially within a pH range from about 3.5 to about 8.5, including adjusting the pH if necessary,

adding elemental powdered sponge iron to the water,

adding dry powdered adding sulfur to the water,

agitating the water to maintain a slurry with the iron and sulfur dispersed in the water,



the amounts of the powdered iron and of the sulfur being selected in combination to permit recovery of arsenic with additional steps of:

continuing to agitate the slurry,

after a period of time within which the pH of the slurry rises and then substantially stabilizes, oxidizing the slurry sufficiently to effect arsenic recovery as a precipitate including arsenic absorbed and absorbed onto sulfur-activated sponge iron particles, and continuing to agitate the slurry substantially continuously, and

separating the recovered, precipitated arsenic to produce a treated water with reduced arsenic.

5,575,920

METHOD OF INHIBITING SCALE AND CONTROLLING CORROSION IN COOLING WATER SYSTEMS

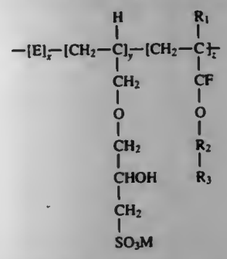
Donald T. Freese, Glenside; Libardo A. Perez, Morrisville; Keith A. Bair, Horsham, and Fu Chen, Newtown, all of Pa., assignors to BetzDearborn Inc., Trevose, Pa.

Continuation of Ser. No. 209,807, Mar. 11, 1994, abandoned. This application Sep. 18, 1995, Ser. No. 529,385

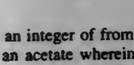
Int. Cl.[6] C02F 5/14

U.S. Cl. 210—697 12 Claims

1. A method for simultaneously controlling the deposition of scale and the formation of corrosion in a cooling water system comprising adding to said system an effective amount for the purpose of a water soluble terpolymer having the structure:



wherein E is a repeat unit obtained after polymerization of an alpha, beta ethylenically unsaturated carboxylic acid or sulfonic acid monomer, amide form thereof, or lower alkyl (C_1-C_6) ester or hydroxylated lower alkyl (C_1-C_5) ester of said carboxylic acid, and salts thereof, the molar ratio of x:y:z is approximately 1–10:1–4:1–4, R_1 is H or lower (C_1-C_4) alkyl, F is H_2 or O, M is a water soluble cation, R_2 is $(CH_2—CH_2-O)_n$,



or mixture of both, n is an integer of from 1 to about 40, R_3 is H, lower (C_1-C_4) alkyl or an acetate wherein the temperature of the cooling water system is in excess of 120° F.

5,575,921

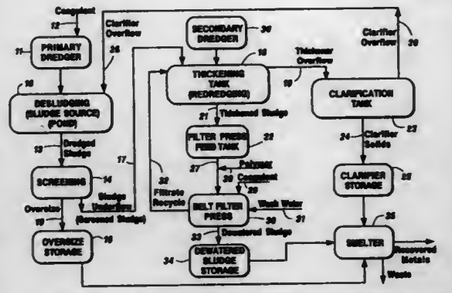
SLUDGE DREDGING AND DEWATERING PROCESS

Ronald C. Askin; Robert J. Kimball, and Sanna M. Yost, all of Helena, Mont., assignors to Hydrometrics, Inc., Helena, Mont.

Filed Feb. 8, 1995, Ser. No. 385,344

Int. Cl.[6] C02F 1/52; E02F 3/88

U.S. Cl. 210—710 8 Claims



1. A method for the remediation of water sites containing waste solids in the form of a sludge which accumulates at the bottom of a site comprising:

dredging the site using a suction dredge to remove the sludge in the form of a water slurry containing waste solids;

separating oversize waste solids in the sludge to produce a screened sludge;

transferring the screened sludge to a tank in which waste solids in the slurry settle to the bottom of the tank;

dredging the settled waste solids in the tank using a portable floating suction dredge machine to produce a thickened sludge having a higher solids content than the screened sludge;

feeding the thickened sludge as a uniform mixture to a filter; and

filtering the thickened sludge to produce a filtrate and a solid sludge material for disposal.

5,575,922

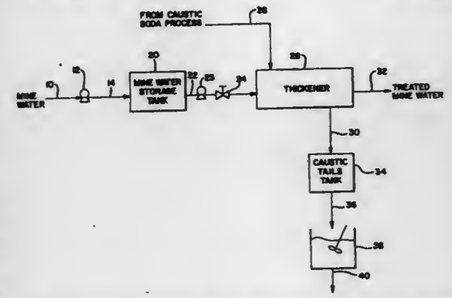
METHOD FOR TREATING MINE WATER USING CAUSTIC SODA

Kevin L. Green, and Robert N. Skogley, both of Green River, Wyo., assignors to Solvay Minerals, Inc., Houston, Tex.

Filed Jun. 30, 1995, Ser. No. 497,212

Int. Cl.[6] C02F 1/66

U.S. Cl. 210—713 38 Claims



1. A method for treating mine water from a trona ore deposit, wherein the mine water contains sodium carbonate and sodium bicarbonate, the method comprising:

pumping the mine water from the trona ore deposit;

introducing a tailings stream including an amount of caustic soda into the mine water to form a reaction solution;

maintaining a pH of between about 11.5 and about 13 in the reaction solution;

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separating a treated mine water from the reaction solution to form a concentrate;

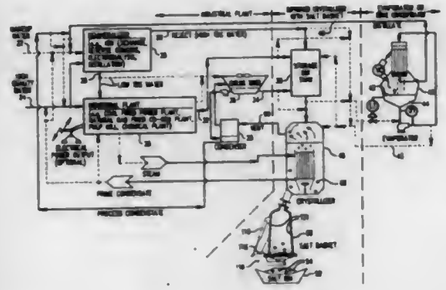
introducing the treated mine water into an alkali production process.

5,575,923

SALT BASKET FOR CRYSTALLIZER AND METHOD OF USE IN ZERO LIQUID DISCHARGE INDUSTRIAL FACILITIES

Robert L. Solomon, Seattle; Ferris C. Standiford, Bellevue; Joseph Bostjancic, Renton; Dan Peterson, Renton, and George R. Jones, Renton, all of Wash., assignors to Ionics, Incorporated, Watertown, Mass.

Division of Ser. No. 51,035, Apr. 20, 1993, Pat. No. 5,472,622.
This application Jun. 7, 1995, Ser. No. 485,347
Int. Cl.[6] C02F *1/04*; B01D *29/94*;*29/84*
U.S. Cl. 210—714 **3 Claims**



1. A process of treating a wastewater stream from an industrial plant in a selected locality, said wastewater having dissolved solids therein, at least a portion of which have solubilities which vary inversely with temperature, said dissolved solids comprising calcium, sodium, chloride and sulfate ions, wherein the steps of the method comprise:

(a) feeding the wastewater stream into an evaporation unit,

(b) evaporating said wastewater

(1) to produce vapors which are condensed to recover a distillate therefrom, and

(2) to produce a concentrated brine while preferentially precipitating at least one inversely soluble solid therefrom, while not appreciably exceeding the solubility limit of any of one of sodium sulfate, or sodium chloride, therein, so as to produce a brine slurry containing dissolved solids and a precipitated first solid;

(c) feeding said waste brine slurry to a crystallization apparatus,

(d) concentrating at least a portion of said remaining dissolved solids above the solubility limit in said brine of any of sodium sulfate, or sodium chloride, to produce crystals therefrom and to thereby produce a slurry comprising free liquid and a precipitate second solids comprising any one salt selected from (i) sodium sulfate, (ii) sodium chloride;

(e) feeding said first and said second solids to a salt basket apparatus having a lower screen portion, a drain, and a door;

(f) slightly pressurizing said salt basket apparatus with a gas selected from either (i) steam or (ii) air, so as to force said free liquids through said screen portion and outward through said drain and to thereby substantially dry said first and said second solids;

(g) depressurizing said salt basket;

(h) automatically opening said salt basket door, so as to allow said dried first and second solids to fall by gravity into a receiver.

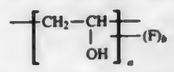
5,575,924

WATER TREATMENT METHODS

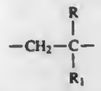
Keith A. Bair, Horsham; Elizabeth V. Bissinger, Yardley, and Ellen M. Meyer, Doylestown, all of Pa., assignors to BetzDearborn Inc., Trevose, Pa.

Filed May 4, 1995, Ser. No. 434,227
Int. Cl.[6] C02F *1/56*
U.S. Cl. 210—734 **17 Claims**

1. A method for reducing the turbidity of an aqueous system comprising adding to said aqueous system an effective amount of a graft copolymer having the formula



whereby the cationic monomer (F) is represented by



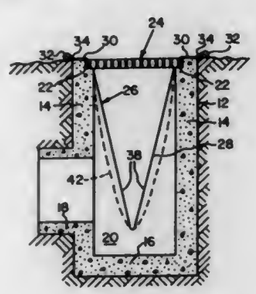
wherein R is hydrogen or a C_1 to C_3 alkyl group, R_1 is the salt of an ammonium cation, and the molar percentage of a:b is from about 95:5 to about 5:95, with the proviso that the sum of a and b equals 100%.

5,575,925

STORM SEWER CATCH BASIN AND FILTER

George E. Logue, Jr., HC 64, Box 298A, Trout Run, Pa. 17771

Filed Dec. 12, 1994, Ser. No. 353,786
Int. Cl.[6] E03F *5/14*
U.S. Cl. 210—747 **15 Claims**



1. A catch basin filter for use with a catch basin and a grate, wherein the catch basin filter includes:

a) a filter bag adapted to be received in the catch basin for capturing the solids which enter the catch basin through an inlet of the catch basin, said bag having an open top adapted to be positioned at the catch basin inlet, a closed bottom and bag sidewalls;

b) a plurality of elongated lift flaps each having a first end and a second end joining the top of the bag and adapted to extend across sidewalls of the catch basin at the catch basin inlet, loops defined in the flaps away from the bag and spaced openings intermediate either end of each flap in the loops, each of said loops adapted to receive a lift rod; and

c) a plurality of lift rods of sufficient length extended into the loops in the flaps so that portions of the rods are exposed at the openings for attachment to lift members, whereby portions of the flaps between the filter bag and the loops are adapted to extend between the grate and the catch basin inlet so that the grate sandwiches the flaps in place against the catch basin and the flaps support the bag in the catch basin.

10. A method of installing a catch basin filter in a catch basin, the catch basin comprising:

an inlet through which water and solids flow into the catch basin, an outlet through which water flows out of the catch basin, wherein the inlet is positioned above the outlet, and a plurality of basin sidewalls, each sidewall having an upper end at the inlet and a recess located at the upper end, the sidewalls defining a chamber, the grate located on the top of the basin inlet and having grate sides positioned in the recesses, and the filter comprising:

a filter bag having an open top, a closed bottom and one or more sidewalls extending between the top and the bottom of the bag; and

a flap joining the top of each sidewall, said method comprising the steps of:

placing the filter bag in the catch basin so that each of the bag sidewalls are adjacent to the catch basin sidewalls and the filter bag open top is positioned above the filter bag closed bottom;

placing each of the filter bag flaps into the recess of the upper end of the catch basin; and

sandwiching each of the filter bag flaps between the top of the basin and the grate sides, thereby holding the bag in place.

5,575,926

DECHLORINATION OF CHLORINATED HYDROCARBONS BY SOLUBLE IRON CITRATE

Deborah A. Haitko, and Gerald R. Eykholt, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 28, 1994, Ser. No. 218,396
Int. Cl.[6] C02F *1/70*
U.S. Cl. 210—757 **5 Claims**

1. A method for dechlorination of aqueous compositions contaminated with chlorinated hydrocarbon compounds consisting essentially of admixing the aqueous composition with an amount of ferrous citrate effective to lower the Fe(II)/Fe(III) oxidation potential relative to the standard Fe(II)/Fe(III) oxidation potential to cause reduction of trichloroethylene and generation of chloride ion in the aqueous compositions, said reduction occurring at a pH of from about 2.4 to 5.0 in an unbuffered solution or at a pH of from about 5 to about 6 in a buffered solution.

5,575,927

METHOD FOR DESTRUCTION OF HALOGENATED HYDROCARBONS

Timothy M. Sivavec, Clifton Park; David P. Horney, Mayfield, and Sunita S. Baghel, Rensselaer, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 6, 1995, Ser. No. 498,830
Int. Cl.[6] C02F *1/70*
U.S. Cl. 210—757 **4 Claims**

1. A method for decontamination of aqueous compositions contaminated with halogenated hydrocarbon compounds by reductive dehalogenation of said compounds at a buffered pH of from about 6.0 to about 8.5 and an oxidation-reduction potential of less than about −325 mV obtained by contacting the contaminated aqueous composition with an effective amount of a composition comprising metallic iron and ferrous sulfide in an admixture of about 1–30 weight percent ferrous sulfide and 70–99 weight percent iron.

5,575,928

PROCESS AND PRODUCT PRODUCED THEREBY FOR DISINFECTION AND AGRICULTURAL REUSE OF ORGANIC SLUDGES

Morris Peltier, Jr., 1140 Honeycomb Dr., Cade, La. 70519, and Eddie P. Mayeux, Jr., 125 Walker Gravel Pit Rd., Dry Prong, La. 71423

Filed Nov. 18, 1994, Ser. No. 341,801
Int. Cl.[6] C02F *1/50*;*11/00*
U.S. Cl. 210—764 **22 Claims**

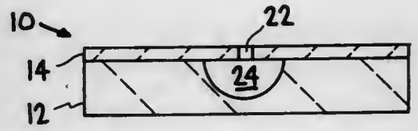
1. A process for exterminating pathogenic bacteria in organic waste sludge comprising the step of thoroughly mixing said organic waste sludge with an effective amount of an aqueous based solution having a solute of at least one of a group of chemical salts, which said salt spontaneously releases gaseous methyl isothiocyanate when said salt is dissolved in an aqueous based solution.

5,575,929

METHOD FOR MAKING CIRCULAR TUBULAR CHANNELS WITH TWO SILICON WAFERS

Conrad M. Yu, Antioch, and Wing C. Hui, Campbell, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jun. 5, 1995, Ser. No. 464,020
Int. Cl.[6] B01D *15/08*
U.S. Cl. 216—10 **7 Claims**



1. A method for making circular tubular channels with two silicon wafers, comprising:

coating a first surface of a first silicon wafer with a first protective coating resistant to etching;

coating a second surface of a second silicon wafer with a second protective coating resistant to etching;

patterning a first slit entry in said first protective coating along a narrow path defined for a wider tubular channel in said first surface of said first silicon wafer;

patterning a second slit entry, which is a mirror-image of said first slit entry, in said second protective coating along said narrow path defined for said tubular channel in said second surface of said second silicon wafer;

isotropically etching said first and second surfaces of said first and second silicon wafers through said first and second slit entries such that said first and second silicon wafer are eroded equally in all directions from said slit entries, wherein respective halves of said tubular channel are formed, each having a semicircular cross section; and

joining together said first and second silicon wafers at said first and second surfaces with said respective halves of said tubular channel aligned to produce an overall circular cross section for said tubular channel.

5,575,930

METHOD OF MAKING GAS PERMEABLE MEMBRANES FOR AMPEROMETRIC GAS ELECTRODES

Jordis Tietje-Girault, 1088 Ropraz, En Vernay, Switzerland; Brian J. Seddon, Chemin De Fonadel 37, CH1008, Prilly, Lausanne, Switzerland, and Jerome F. McAleer, 52 Nobles, Grove, Wantage, Oxfordshire OX12 ONR, United Kingdom

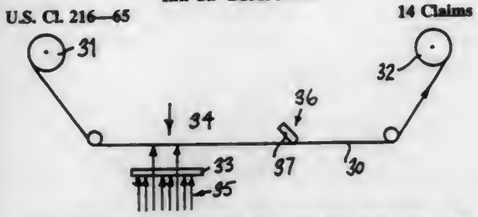
PCT No. PCT/GB93/02076, § 371 Date Mar. 27, 1995, § 102(e) Date Mar. 27, 1995, PCT Pub. No. WO94/08236, PCT Pub. Date Apr. 14, 1994

PCT Filed Oct. 6, 1993, Ser. No. 407,002

Claims priority, application United Kingdom, Oct. 7, 1992, 9221099

Int. Cl.[6] B23K *26/00*

U.S. Cl. 216—65 14 Claims



1. A method of manufacturing a gas-permeable membrane for an amperometric gas electrode from a polymer film metallized on one surface thereof which method comprises demetallizing areas of the metallized film to obtain a regular array of gas-permeable micropores.

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APPARATUS FOR ENGRAVING ON A RUBBER CYLINDRICAL MATRIX

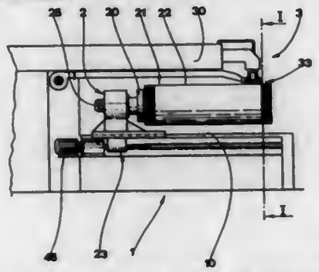
Franco Stefani, Sassuolo, Italy, assignor to Syfal S.r.l., Sassuolo, Italy

Filed Oct. 31, 1994, Ser. No. 331,900

Claims priority, application Italy, Apr. 12, 1994, M094A0051

Int. Cl.[6] B23K *26/14*

U.S. Cl. 219—121.68 7 Claims



1. An apparatus for engraving a cylindrical rubber matrix, comprising:

a frame;

a motor head bearing a chuck which is rotatingly mobile about an axis;

a matrix-bearing head, mounted on the chuck and being provided with a smooth rubber or elastically-deformable external cylindrical surface;

straight guides arranged parallel to a rotation axis of the chuck, the motor head being mounted and translated thereon;

means for controlling rotation of the chuck and translation of the motor head along the guides;

at least one engraving head comprising:

at least one source of a laser beam having an axis which is perpendicular and incident to the rotation axis of the chuck;

a focalizing device of the laser beam;

a blower of air or gas, operating at a same position as the focalizing device and including means for cleaning the device and facilitating evacuation of material removed from the cylindrical surface by the action of the laser beam;

a spacer skate to draggingly contact the external cylindrical surface placed in proximity to an area of the cylindrical surface struck by the laser beam at a prefixed distance from the focalizing device;

a command apparatus including means for commanding a precise positioning of the external cylindrical surface below the focalizing device and activating a command unit of the laser source;

said command apparatus including means for reading, analyzing, and transforming a pattern into a map of uniformly distributed points or small areas, each having individual dimensions;

at least one programmed application of the laser beam being effected for each dimension of each point or small area; and

wherein the skate includes leading edge means for depressing the external cylindrical surface to said prefixed distance from the focalizing device.

5,575,932

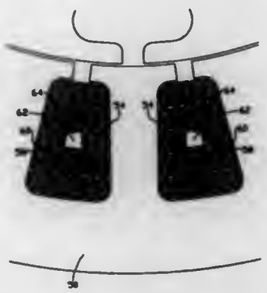
METHOD OF MAKING DENSELY-PACKED ELECTRICAL CONDUCTORS

Jerry K. Goff, Doylestown, Pa., assignor to Performance Controls, Inc., Horsham, Pa.

Filed May 13, 1994, Ser. No. 242,335

Int. Cl.[6] B23K *26/12*

U.S. Cl. 219—121.84 3 Claims



1. A method of making a monolith of densely-packed electric conductors, the method comprising the steps of:

a) selecting an arbitrary monolith to be built, the monolith being selected from the group consisting of all structures having at least one electrical winding,

b) storing information corresponding to a series of successive planar cross-sections of said monolith, wherein all of said successive planar cross-sections together define said monolith in its entirety, at least some of said cross-sections comprising a pattern of conductive and non-conductive regions,

c) depositing a layer of electrically conductive material on a workpiece,

d) cutting a pattern into said layer using a high-energy beam, in the presence of an oxidizing atmosphere, the cutting step being performed so as to duplicate substantially, on said layer, the pattern obtained from one of said cross-sections, and

e) repeating steps (c) and (d) in a series of iterations, wherein each iteration corresponds to one of said cross-sections, the iterations being performed in the same order in which the cross-sections are stored,

wherein the monolith comprises a core forming a rotor and stator of an electric motor, and a plurality of windings formed on the rotor and stator.

5,575,933

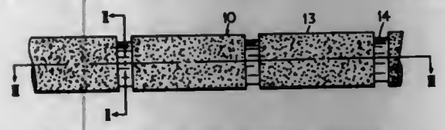
FLEXIBLE ELONGATED WELDING ELECTRODE

Jian M. Ni, 75 Springbrook Drive, Richmond Hill, Ontario, Canada

Continuation-in-part of Ser. No. 195,445, Feb. 17, 1994. This application Apr. 24, 1995, Ser. No. 427,408

Int. Cl.[6] B23K *35/10*

U.S. Cl. 219—145.31 9 Claims



1. A flexible elongated welding electrode comprising,

an elongated continuous flexible metal alloy core having outer surface therein coated with a composite flexible welding flux material coating impregnated with a flexible aggregate material and a bonding carrier material,

a plurality of transverse slots formed along directly opposite sides of said coating and exposing a narrow portion of said core in said slots, and said slots having side walls perpendicular to said core and being formed at evenly spaced distance along the entire length of said electrode and having an equal width.

5,575,934

WELDER MONITOR

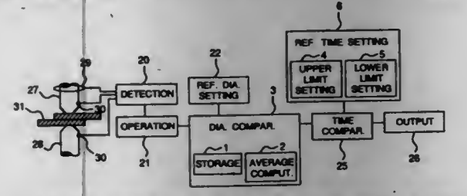
Sadayuki Takakuwa, Takatsuki, and Yasuhiro Goto, Hyogo-ken, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Oct. 13, 1995, Ser. No. 542,629

Claims priority, application Japan, Oct. 17, 1994, 6-250552

Int. Cl.[6] B23K *11/25*

U.S. Cl. 219—109 5 Claims



1. A welder monitor for monitoring a welding quality of materials sandwiched between and welded by two electrodes, said welder monitor comprising:

a detection means for detecting a welding current flowing between the two electrodes and a welding voltage applied between the two electrodes;

an operation means for numerically analyzing, based on a heat conduction model, a temperature distribution of the two electrodes and that of the materials using the welding current and welding voltage both detected by said detection means, to thereby estimate a nugget diameter during welding;

a reference diameter setting means for setting a reference nugget diameter;

a diameter comparing means for comparing the nugget diameter during welding with the reference nugget diameter, to thereby compute a time at which the nugget diameter exceeds the reference nugget diameter;

a reference time setting means for setting a reference time shorter than a given time until which welding of intended materials is not terminated;

a time comparing means for comparing a nugget formation time, at which the nugget diameter during welding exceeds the reference nugget diameter, with the reference time set by said reference time setting means; and

an output means for outputting a comparison result from said time comparing means;

whereby when the nugget formation time is shorter than the reference time, the nugget formation time is outputted to said output means.

5,575,935

LASER BEAM MACHINE

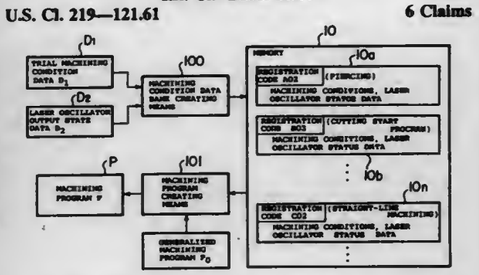
Yoshinori Nakata, Yamanashi, Japan, assignor to Fanuc Ltd., Yamanashi, Japan

Filed Oct. 21, 1994, Ser. No. 327,491

Claims priority, application Japan, Nov. 9, 1993, 5-279199

Int. Cl.[6] B23K *26/00*

U.S. Cl. 219—121.61 6 Claims



1. A laser beam machine for carrying out a laser beam machining operation in accordance with a predetermined machining program, comprising:

machining condition data band creating means for storing a suitable machining condition in a memory area when the suitable machining condition is derived during a trial machining operation of a workpiece, in accordance with a signal entered by an operator, to thereby create a machining condition data bank;

machining program creating means for extracting a machining condition corresponding to a machining path specified in a generalized machining program, from the machining condition data bank, and setting the extracted machining condition in the generalized machining program, to thereby create the predetermined machining program;

laser oscillator control means for outputting a drive signal in response to the predetermined machining program;

a laser beam oscillator which machines the workpiece with a laser beam in response to the drive signal output from the laser oscillator control means; and

direct means for directing the laser beam to the workpiece to machine the workpiece.

5,575,936

PROCESS AND APPARATUS FOR ETCHING AN IMAGE WITHIN A SOLID ARTICLE

Boris Goldfarb, Krasnogorsk, U.S.S.R., assignor to Firebird Traders Ltd., Princeton, N.J.

Continuation of Ser. No. 992,918, Dec. 18, 1992, abandoned. This application Aug. 12, 1994, Ser. No. 290,046

Int. Cl.[6] B23K *26/02*

U.S. Cl. 219—121.68 1 Claim

1. An apparatus for etching an image within a solid article, comprising:

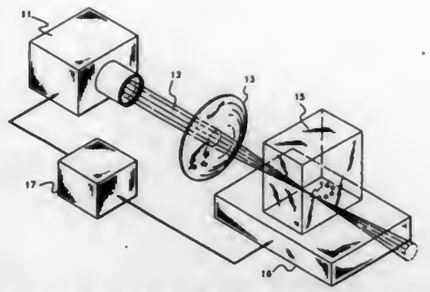
an impulse laser for generating a laser emission having a power rating of 50 Mjoules and a pulse length of 10 nsec and a pulse frequency of 1 Hertz;

a focusing lens located at an operative distance from said laser to focus the laser emission to a focal point within the article;

means for positioning the article with respect to the focal point including

(a) a motor driven support bench for receiving and supporting the article;

(b) a threaded nut attached to said support bench; and



(c) at least one step motor including a threaded rod cooperatively sized to engage said threaded nut, whereby said at least one step motor rotates said threaded rod to move said threaded nut and said support bench linearly along said threaded rod axis;

control means coupled to said impulse laser and said positioning means for firing said laser so that a local disruption having a lower translucence than the article occurs at the focal point within the article, without affecting an area surrounding the focal point, to form the image within the article.

5,575,937

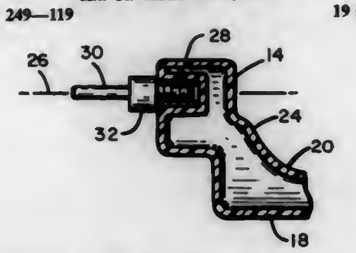
MOLDED BAKERY PROOFER TRAY

Stuart L. Hasse, Bloomington, Minn., assignor to Bakery Solutions, Inc., Bloomington, Minn.

Filed May 26, 1995, Ser. No. 452,413

Int. Cl.[6] A21C *13/02;7/04*

U.S. Cl. 249—119 **19 Claims**



1. A bakery proofer tray, comprising:

an elongate hollow body formed from molded plastic;

said body having a continuous external surface including a top surface, a bottom surface, and opposite raised ends;

the top surface of said body including a plurality of longitudinally spaced apart cups therein for receiving dough balls to be proofed;

each raised end of said body including an outer end wall; and

mounting means including coaxial rigid generally cylindrical inserts molded directly into the outer end walls of the ends of said body for pivotally supporting the tray about a longitudinal tipping axis between conveyor chains moving in a tranverse direction.

5,575,938

FORM PANEL

Tatsuo Ono, 5-20-13, Matsugaoka, Funabashi, Chiba, Japan

Filed Oct. 21, 1993, Ser. No. 140,765

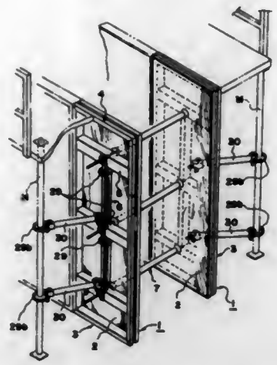
Claims priority, application Japan, Oct. 28, 1992, 4-312988

Int. Cl.[6] E04G *9/10;17/00*

U.S. Cl. 249—189 **7 Claims**

1. A form panel comprising:

a flat board having a front surface and a back surface opposite to said front surface;



a reinforcing frame body secured to said back surface of said flat board and having a surface facing in the same direction as said back surface of said flat board;

at least one flange disposed on said surface of said reinforcing frame body, said flange including a semi-circular frame body and a hooking part including a projection extending along a peripheral edge of said semi-circular frame body.

5,575,939

PROCESS FOR SOFTENING/STUFFING LEATHER AND FUR SKINS

Kurt Dahmen, Monchengladbach; Richard Mertens, Krefeld; Thomas Muller, Dusseldorf, and Helmut Lohmann, Krefeld, all of Germany, assignors to Chemische Fabrik Stockhausen GmbH, Krefeld, Germany

PCT No. PCT/EP93/02880, § 371 Date Jun. 9, 1995, § 102(e) Date Jun. 9, 1995, PCT Pub. No. WO94/10346, PCT Pub. Date May 11, 1994

PCT Filed Oct. 19, 1993, Ser. No. 325,184

Claims priority, application Germany, Oct. 29, 1992, 42 36 556.2

Int. Cl.[6] C14C *9/00;11/00*

U.S. Cl. 252—8.57 **13 Claims**

13. An aqueous dispersion for treating leather or fur skins, comprising an aqueous dispersion of at least one copolymer obtained by

A) polymerizing

a) 25 to 70% by weight maleic anhydride,

b) 25 to 70% by weight esters of (meth)acrylic acid, maleic acid or mixtures thereof with C_{12}–C_{30} alcohols, and

c) 0 to 10% by weight ethylenically unsaturated monomers copolymerizable with monomers a) and b) and different therefrom, with the proviso that the sum of monomers a), b) and c) is 100% by weight;

B) reacting said maleic anhydride prior to, during or after said polymerizing step with monovalent alcohols having at least one ether group therein, wherein the molar ratio of anhydride to alcohol is about 1:0.5 to 1:2, wherein the amount of hydrophilic units of said copolymer is greater than 50 wt %, and

C) partially neutralizing or hydrolyzing acid or anhydride groups in said copolymer to form a dispersion having a copolymer content of at least 40 wt %.

5,575,940

INVERSE LIMITED COALESCENCE PROCESS

Kevin D. Loftus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 888,063, May 26, 1992, abandoned. This application Sep. 20, 1994, Ser. No. 309,431

Int. Cl.[6] C04B *35/26*

U.S. Cl. 252—62.63 **36 Claims**

1. A method of making particles, having a controlled particle size distribution and morphology, from inorganic hydrophilic materials and using a colloidal dispersion of an organic stabilizer, comprising the steps of:

dispersing inorganic hydrophilic material in a polar dispersant to form a dispersion phase;

mixing said dispersion phase with a suspending liquid, which is substantially immiscible with said dispersant and less polar than said dispersant, under high shear to produce a suspension of coalesced dispersion phase droplets in said suspending liquid, wherein said suspension contains a colloidal dispersion of an organic stabilizer which controls said dispersion phase droplets' coalescence; and

removing said dispersant from said coalesced droplets to form particles comprising said inorganic hydrophilic materials and a surface coating comprising said organic stabilizer, said particles having a controlled size distribution and morphology.

5,575,941

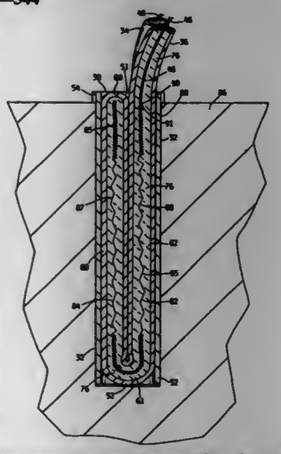
CARTRIDGE HEATER

J. Evan Johnson, 11881 Thornhill Rd., Eden Prairie, Minn. 55344

Filed Aug. 31, 1994, Ser. No. 299,153

Int. Cl.[6] H05B *3/44;* **H01C** *1/02*

U.S. Cl. 219—544 **15 Claims**



1. A cartridge heater for injection molding, the cartridge heater comprising:

a) a continuous metallic tubular sheath, the sheath having an interior, two end portions, an intermediate portion between the two end portions, and two ends, one end on each of the end portions, the sheath open at the ends and closed therebetween;

b) a heater element wire with two ends, the heater element wire extending substantially axially through the interior in the intermediate portion of the metallic sheath;

c) two lead conductors respectively connected to each end of the heater element wire, each lead conductor extending substantially axially from an end of the heater element wire through the respective end portions to an end of the metallic sheath;

d) insulative material surrounding and supporting the heater element wire and lead conductors in the intermediate portion and end portions; and

e) the intermediate portion of the metallic sheath folded to form a plurality of heater segments positioned in a parallel arrangement, a tubular metallic casing having an open and extending circumerentially around the heater segments, the casing engening the heater segments, the heater segments and casing defining a body portion of the cartridge heater, the two end portions of the metallic sheath with the lead conductors extending away ffrom the body portion at the open end of the casing, the end portions and lead conductors defining lead wires, whereby the insulative material and heater element wire of the body portion are enclosed exclusively within the interior of the metallic sheath; and

f) whereby the metallic sheath is continuous and closed rom the ends of the end portions through the lead portions and heater segments.

5,575,942

HEATING ROLLER FOR FIXATION

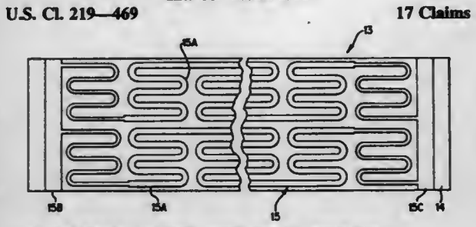
Mitsuyoshi Watanabe, Inazawa, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 7, 1995, Ser. No. 524,568

Claims priority, application Japan, Nov. 16, 1994, 6-308313; May 10, 1995, 7-111887

Int. Cl.[6] H05B *3/16*

U.S. Cl. 219—469 **17 Claims**



14. A heating roller with power supply, comprising:

a hollow roller body;

a heat generating member having a substrate and a serpentine patterned heat generating element on one side of the substrate, the pattern including bands along opposing edges of said substrate, the opposing edges at ends of said hollow roller body when said heat generating member is mounted therein;

means for mounting said heat generating member to an interior surface of said hollow roller body; and

means for applying an electrical current to said heat generating member, wherein the serpentine pattern between the bands has three serpentine regions, a first serpentine region in a center of the pattern and a second serpentine region adjacent one band and a third serpentine region adjacent the other band, wherein the heat generated by the electric current passing through the heat generating means produces a substantially uniform temperature over the outer surface of said hollow roller body.

5,575,943

MICROWAVE OVEN WITH A SINGLE THERMOSTAT TO SENSE TEMPERATURE OF BOTH THE MAGNETRON AND THE MICROWAVE CAVITY

Jong W. Lee, Kyungsangnam-Do, Rep. of Korea, assignor to LG Electronics Inc., Rep. of Korea

Filed Jul. 6, 1995, Ser. No. 498,592

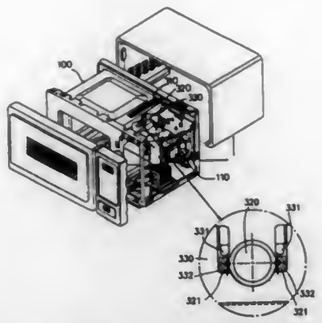
Claims priority, application Rep. of Korea, Jul. 6, 1994, 16683/1994

Int. Cl.[6] H05B *6/68*

U.S. Cl. 219—710 **4 Claims**

1. In a microwave oven having a heating cavity wherein food to be heated is placed and a magnetron for generating microwave energy to the heated cavity for heating the food placed therein, a safety device comprising:

a single thermostatic switch operably connected for switching an external supply of electric power to the microwave oven, the



thermostatic switch being mounted to a sidewall of the heating cavity proximate the magnetron by means of a thermostat bracket for thereby enabling the thermostatic switch to sense a temperature of the heating cavity, the thermostat bracket being connected to a magnetron bracket for mounting the magnetron, whereby the temperature of the magnetron is transmitted to the thermostatic switch through the connected magnetron bracket and thermostat bracket for thereby enabling the thermostatic switch to also sense the temperature of the magnetron, the thermostatic switch being operable for cutting off the external supply of power to the microwave oven when at least one of the respective temperatures of the heating cavity and the temperature of the magnetron exceeds a predetermined temperature.

5,575,944

ACETAL-CONTAINING WORKING FLUID COMPOSITION FOR REFRIGERATING MACHINE

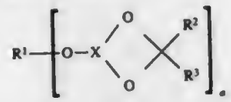
Hiroki Sawada, and Hiroyasu Togashi, both of Wakayama, Japan, assignors to KAO Corporation, Tokyo, Japan

Filed Feb. 28, 1995, Ser. No. 395,827

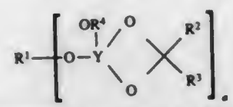
Int. Cl.[6] C09K *5/04*; C10M *105/18*

U.S. Cl. 252—68 **12 Claims**

1. A working fluid composition for a refrigerating machine comprising a refrigeration oil and a hydrofluorocarbon, said refrigeration oil comprising as a base oil a major amount of a compound having one or more cyclic acetal groups in a molecule and also having trihydric to octahydric alcohol residues, wherein the compound is selected from the group consisting of the compounds represented by the general formula (I) and the compounds represented by the general formula (II):

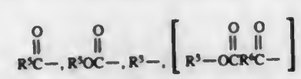


(I)



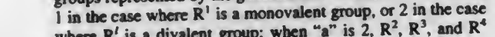
(II)

wherein X represents a polyol residue of glycerol, trimethylolethane, or trimethylolpropane, Y represents a polyol residue of pentaerythritol; R^1 represents a monovalent group or a divalent group, said monovalent group being selected from the groups represented by the general formula (III), and said divalent group being selected from the groups represented by the general formula (IV):



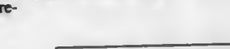
(III)

-continued



(IV)

wherein R^5 represents a hydrogen atom, a linear or branched alkyl group, aryl group, arylalkyl group, each having not more than 20 carbon atoms, or an oxyalkylene group represented by the general formula (V):

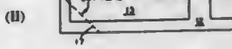


(V)

wherein R^8 represents a linear or branched alkylene group having 2–4 carbon atoms; R^9 represents a hydrogen atom, or a linear or branched alkyl group, aryl group, or arylalkyl group, each having not more than 20 carbon atoms; and q represents a number of 1–40;

R^6 represents a linear or branched alkylene group or arylene group, each having not more than 20 carbon atoms;

R^7 represents a linear or branched alkylene group, arylene group, each having not more than 20 carbon atoms, or an alkylene oxyalkylene group represented by the general formula (VI):



(VI)

wherein R^{10} represents a linear or branched alkylene group having 2–4 carbon atoms; and r represents a number of 1–40;

k represents a number of 0–1; and x represents a number of 0–40; and

wherein R^2 and R^3 independently represent a linear or branched alkyl group, aryl group, or arylalkyl group, each having not more than 20 carbon atoms; R^4 represents a hydrogen atom or a monovalent group selected from the group consisting of the groups represented by the general formula (III); "a" represents 1 in the case where R^1 is a monovalent group, or 2 in the case where R^1 is a divalent group; when "a" is 2, R^2, R^3, and R^4 may be identical or different from one another.

5,575,945

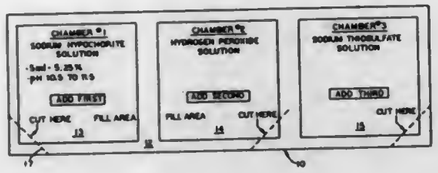
CHEMICAL TREATMENT SYSTEM FOR PRODUCING ODOR AND TASTE-FREE POTABLE WATER

Daniel Perlman, Arlington, Mass., assignor to Brandeis University, Waltham, Mass.

Filed Sep. 14, 1994, Ser. No. 306,018

Int. Cl.[6] C02F *5/10*

U.S. Cl. 252—176 **8 Claims**



1. A system for treating a quantity of contaminated water to produce an odor and taste-free potable water therefrom, the system including premeasured quantities of a first and a second treating solution, the first treating solution containing a chemical capable of providing hypochlorite and the second treating solution comprising hydrogen peroxide, the second treating solution being in a sufficient quantity and concentration to provide a 5–25% stoichiometric excess of hydrogen peroxide when compared to the hypochlorite-containing first treating solution and wherein a third treating solution is provided comprising an aqueous solution of a chemical capable of reducing chloramines, that chemical being sodium thiosulfate.

5,575,946

WATER-SOFTENING COMPOSITIONS

Rudolf Beck, Marl; Frank Krause, Kleve, and Udo Schoenkaes, Haltern, all of Germany, assignors to Chemische Fabrik Stockhausen GmbH, Krefeld, Germany

Filed Apr. 28, 1994, Ser. No. 233,955

Claims priority, application Germany, Apr. 28, 1993, 43 13 908.6

Int. Cl.[6] C02F *5/10*

U.S. Cl. 252—181 **15 Claims**

1. A water-softening composition which, based on the total dry weight of said composition, comprises:

(a) from 1 to 90% by weight of a biodegradable copolymer built up of

(A) a monoethylenically unsaturated dicarboxylic acid and/or salt thereof;

(B) a monoethylenically unsaturated mono-carboxylic acid and/or salt thereof;

(C) a monounsaturated monomer which after polymerization and hydrolysis or saponification gives a monomer unit which has one or more hydroxyl groups on the carbon chain; and

(D) from 0 to 15% by weight of another monomer capable of free-radical copolymerization;

(b) from 10 to 95% by weight of a water-softening inorganic silicate;

(c) from 0 to 80% by weight of a another inorganic salt;

(d) from 0 to 70% by weight of a dispersing and complexing agent; and

(e) from 0 to 5% by weight of a surfactant.

5,575,947

IMIDE-AROMATIC PEROXYACIDS

Carlo Venturello, Novara, and Claudio Cavalotti, Milan, both of Italy, assignors to Ausimont S.r.l., Italy

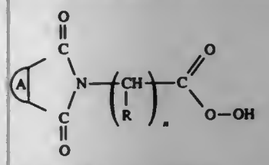
Filed Jan. 19, 1989, Ser. No. 299,017

Claims priority, application Italy, Jan. 20, 1988, 19132/88

Int. Cl.[6] C07D *207/40*; *223/10*

U.S. Cl. 252—186.26 **19 Claims**

1. Aryl-imido (poly)-peralkanoic acids of formula:



(I)

wherein n is an integer from 1 to 5, where

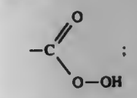
A represents a residue of a benzenic or naphthalenic ring, optionally substituted by a carboxylic group or a COOOH group;

the symbol or symbols R, when n is greater than 1, said symbols R may be equal or different from each other, is (are) selected from

a) hydrogen;

b) carboxylic group (—COOH);

c) per-carboxylic group

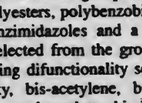


;

d) lower alkyl groups, substituted by a substituent selected from

i) OH, NO_2 and —COOH (carboxylic group);

ii)



(percarboxylic group);

iii) lower alkoxy group.

5,575,948

PROCESS AND COMPOSITION FOR MICROEMULSION GEL HAVING BLEACHING AND ANTISEPTIC PROPERTIES

John Petchul, 2221 Windy Hill La., Lake Orion, Mich. 48363, and Rosemary Gaudreault, Park Ridge, Ill., assignors to John Petchul, Lake Orion, Mich.

Continuation-in-part of Ser. No. 825,560, Jan. 24, 1992, Pat. No. 5,336,432. This application Aug. 8, 1994, Ser. No. 287,887

Int. Cl.[6] C01B *15/01*; B01J *13/00*; A61K *7/135*

U.S. Cl. 252—186.28 **6 Claims**

1. A composition of matter comprising:

a water phase consisting essentially of between 8.0 and 64.0 percent by weight water and between 0.5 and 8.0 percent by weight propylene glycol;

an oil phase consisting essentially of between 1.08 and 40.0 percent by weight of a polyethylene glycol ether of isocetyl alcohol, between 0.5 and 12.0 percent by weight of a polyethylene glycol ether of oleyl alcohol, and between 1.5 and 10.0 percent by weight of a polypropylene glycol ether of steryl alcohol; and

between 2.5 and 35.0 percent by weight hydrogen peroxide;

wherein said composition is a microemulsion gel.

5,575,949

THERMOSET MOLECULAR COMPOSITES

Brian C. Benicewicz; Elliot P. Douglas, and Rex P. Hjelm, Jr., all of Los Alamos, N.M., assignors to The Regents of the University of California, Office of Technology Transfer, Alameda, Calif.

Filed Jun. 2, 1994, Ser. No. 254,081

Int. Cl.[6] C09K *19/52*

U.S. Cl. 252—299.01 **10 Claims**

1. A polymeric composition comprising a liquid crystalline polymer selected from the group consisting of aromatic polyamides, aromatic polyesters, polybenzobisthiazoles, polybenzobisoxazoles, and polybenzimidazoles and a thermosettable liquid crystalline monomer selected from the group consisting of rigid rod monomers including difunctionality selected from the group consisting of bis-epoxy, bis-acetylene, bis-maleimide, bis-nadimine, bis-acrylate, bis-methacrylate, bis-isocyanate, bis-cyanate, and bis-vinyl ether, said polymeric composition characterized by a phase separation between liquid crystalline polymer and thermosettable liquid crystalline monomer phases of less than about 500 Angstroms.

5,575,950

SILICATE DEFOAMING COMPOSITION AND METHODS

Alvin E. Steelman, Havre de Grace, Md., assignor to J. M. Huber Corporation, Edison, N.J.

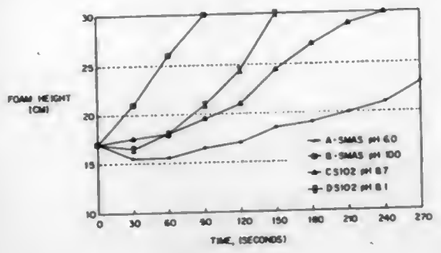
Filed Dec. 6, 1994, Ser. No. 354,020

Int. Cl.[6] B01D *19/02*

U.S. Cl. 252—321 **13 Claims**

1. A defoaming composition comprising:

a) an hydrophobized aluminum treated silicate; and



b) a defoaming carrier.

5,575,951

LIQUID STABILIZER COMPRISING METAL SOAP AND SOLUBILIZED METAL PERCHLORATE

Donald F. Anderson, North Brunswick, N.J., assignor to Akcros Chemicals America, New Brunswick, N.J.

Continuation-in-part of Ser. No. 48,601, Apr. 16, 1993, abandoned. This application Apr. 6, 1995, Ser. No. 418,057

Int. Cl.[6] C09K *15/32;* **C08K** *5/09*

U.S. Cl. 252—400.1 **18 Claims**

1. A homogeneous, clear liquid stabilizer suitable for use in a vinyl chloride polymer consisting essentially of a liquid mixture of (1) at least one metal soap stabilizer and (2) a solubilized metal perchlorate.

5,575,952

TELEPHONE CABLES

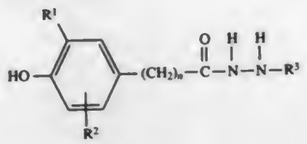
Michael J. Keogh, and Geoffrey D. Brown, both of Bridgewater, N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation of Ser. No. 998,439, Dec. 30, 1992, Pat. No. 5,380,591. This application Oct. 28, 1994, Ser. No. 331,188

Int. Cl.[6] C09K *15/00;* **C10M** *133/40*

U.S. Cl. 252—404 **4 Claims**

1. A mixture comprising one or more hydrazines having the following structural formula:

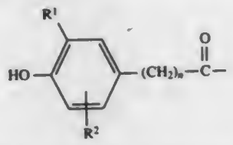


wherein n is 0 or an integer from 1 to 5;

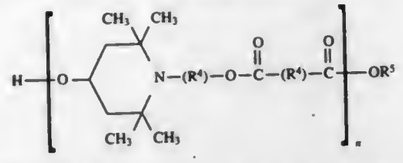
R^1 is an alkyl having 1 to 6 carbon atoms;

R^2 is hydrogen or R^1 and;

R^3 is hydrogen, an alkanoyl having 2 to 18 carbons atoms, or the following structural formula:



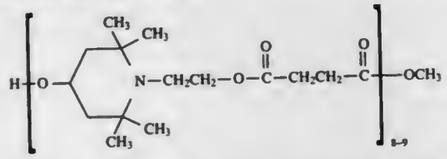
wherein n, R^1 and R^2 are the same as above; and a hindered amine having the following structural formula:



wherein each R^4 is independently a divalent hydrocarbyl having 1 to 6 carbon atoms;

R^5 is hydrogen, alkyl having 1 to 6 carbon atoms, or aryl; and n is 2 to 50.

4. A mixture comprising (A) 1,2-bis(3,5-di-tert-butyl-4-hydroxyhydrocinnamoyl) hydrazine and (B) a hindered amine having the following structural formula:



wherein the number average molecular weight is greater than about 2000 and/or 2,5-bis[2-(3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionylamide)ethylamine] benzoquinone wherein the weight ratio of component (A) to component (B) is in the range of about 3:1 to about 10:1.

5,575,953

COATING COMPOSITIONS FOR THE INNER WALL OF CATHODE-RAY TUBE

Shinichi Tachizono, Chiba, and Hironobu Chiyoda, Kokubunji, both of Japan, assignors to Hitachi Powdered Metals Co., Ltd., Chiba, Japan

Filed Apr. 4, 1995, Ser. No. 416,313

Claims priority, application Japan, Apr. 6, 1994, 6-093079

Int. Cl.[6] H01B *1/18;* **H01J** *31/00;* **C01B** *33/32*

U.S. Cl. 252—504 **8 Claims**

1. A coating composition for the inner wall of a cathode-ray tube which comprises an aqueous dispersion medium consisting essentially of potassium silicate, a dispersing agent and graphite particles, or a combination of graphite particles and metal oxide particles or metal carbide particles suspended therein, wherein the molar ratio of silicon dioxide to potassium oxide (SiO_2/K_2O) in said potassium silicate is in the range of from 4 to 5.

5,575,954

PROCESS FOR PREPARING CONDUCTIVE POLYMERIC PARTICLES WITH LINEAR AND CROSSLINKED PORTIONS

Hadi K. Mahabadi, Toronto; Denise Y. Wright, Calgary; Michael F. Cunningham, Georgetown, all of Canada, and John A. Creatura, Ontario, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 225,855, Apr. 11, 1994, Pat. No. 5,487,847. This application Oct. 23, 1995, Ser. No. 546,627

Int. Cl.[6] G03G *5/00;9/10;* **C08F** *2/14;2/32*

U.S. Cl. 252—511 **33 Claims**

1. A process for the preparation of conductive polymeric particles with linear and crosslinked portions, which comprises in the following order mixing a comonomer with at least one conductive filler, solvent, at least one polymerization initiator in the amount of about 0.1 to about 20 weight percent of said comonomer, and a chain transfer component in the amount of about 0.01 to about 1

weight percent of said comonomer; effecting solution polymerization by heating until from about 80 to about 100 weight percent of the comonomer has been polymerized; drying the mixture by removing the solvent to yield an intimate blend of polymer with conductive filler; dispersing the aforementioned blend of polymer and conductive filler in at least one additional comonomer with at least one polymerization initiator, a crosslinking agent in the amount of about 0.1 to about 5 weight percent of said additional comonomer and a chain transfer agent to form an organic phase; dispersing the resulting organic phase mixture in water containing a stabilizing component in the amount of about 0.1 to about 5 weight percent of said water to obtain a suspension of particles with an average volume diameter of from about 0.05 to about 5 microns in water; polymerizing the resulting suspension by heating; and subsequently optionally washing and drying the polymeric product to produce conductive polymeric particles wherein the total amount of conductive filler is from about 1 to about 50 weight percent and the total amount of polymer is from about 50 to about 99 weight percent.

5,575,955

ELECTRICALLY CONDUCTIVE POLYIMIDE FILM CONTAINING GOLD (III) IONS, COMPOSITION, AND PROCESS OF MAKING

Maggie L. Caplan, Sun City West, Ariz.; Diane M. Stoakley, and Anne K. St. Clair, both of Poquoson, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 22, 1994, Ser. No. 281,804

Int. Cl.[6] H01B *1/22;1/20;1/12;* **B05D** *5/12*

U.S. Cl. 252—514 **12 Claims**

1. An electrically conductive, thermooxidatively stable polyimide comprising an intimate admixture of the following components:

a polyimide synthesized from a dianhydride/diamine combination selected from the group consisting of 3,3',4,4'-benzophenonetetracarboxylic dianhydride and 2,2-bis[4-(4-aminophenoxy)phenyl]hexafluoropropane; 2,2'-bis 3,4-dicarboxyphenyl)hexafluoropropane dianhydride and 4,4'oxydianiline; and 3,3',4,4'-benzophenonetetracarboxylic dianhydride and 2,2-bis(3-aminophenyl)hexafluoropropane; and

gold (III) ions in an amount sufficient to provide between about 17 and 21 percent by weight of gold (III) ions, based on the weight of the electrically conductive, thermooxidatively stable polyimide.

5,575,956

ROOM-TEMPERATURE STABLE, ONE-COMPONENT, ELECTRICALLY CONDUCTIVE, FLEXIBLE EPOXY ADHESIVES

Ralph D. Hermansen, Northridge, and Steven E. Lau, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 19, 1995, Ser. No. 504,002

Int. Cl.[6] H01B *1/22*

U.S. Cl. 252—514 **12 Claims**

1. A flexible electrically-conductive epoxy adhesive composition comprising a combination of the following components:

(a) a polymer mixture comprising

(i) at least one flexible polyepoxide resin selected from the group consisting of the adduct of two moles of bisphenol-A with one mole of linoleic dimer acid, the trifunctional novolac epoxy of cardanol, the difunctional epoxy of cardanol, the diglycidyl ether of polyoxypropylene glycol, the diepoxide of a polyoxypropylene diol, and the polyglycidyl ether of an aliphatic polyol, and

(ii) a substantially stoichiometric amount of at least one latent epoxy resin curing agent selected from the group consisting of aliphatic dihydrazide, adipic acid dihydrazide, icosanedioic acid dihydrazide, 7,11-octadecadiene- 1,18-dicarboxylic acid dihydrazide, valine dihydrazide, the polyamine adduct of epoxy resin, and epoxy-amine adducts, wherein said aliphatic dihydrazide and said adipic acid dihydrazide optionally further comprise an accelerator; and

(b) an electrically-conductive filler comprising a metal, present in the amount of at least about 40 volume percent of said composition

wherein said electrically-conductive epoxy adhesive composition is rheologically stable at room temperature, cures at about 100°–140° C., and, upon cure, exhibits a durometer Shore A of less than about 95 and a volume resisitivity of less than about 10^{-2} ohm-cm at room temperature.

5,575,957

ACICULAR ELECTROCONDUCTIVE TIN OXIDE FINE PARTICLES AND PROCESS FOR PRODUCING SAME

Haruo Okuda; Hideo Futamata; Hideo Takahashi, and Norihiko Sanefuji, all of Yokkaichi, Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

Filed Dec. 22, 1995, Ser. No. 576,909

Claims priority, application Japan, Dec. 27, 1994, 6-340046; Jan. 27, 1995, 7-031506; Feb. 20, 1995, 7-056495; Jun. 23, 1995, 7-180937

Int. Cl.[6] H01B *1/00;1/08*

U.S. Cl. 252—521 **9 Claims**



1. A process for producing acicular electroconductive tin oxide fine particles having a mean diameter of 0.005–1 μm and a mean length of 0.05–10 μm and an aspect ratio of 3 or higher which comprises firing a starting material containing tin, silicon and an alkali metal halide at 700°–1200° C. and removing soluble salts from the resulting fired product.

5,575,958

AQUEOUS DISPERSIONS OF SPARINGLY SOLUBLE UV ABSORBERS

Martin Jöllenbeck, Freiburg, Germany, and Josef Zelger, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 210,976, Mar. 21, 1994, abandoned, which is a continuation of Ser. No. 732,990, Jul. 19, 1991, abandoned. This application Aug. 17, 1994, Ser. No. 292,159

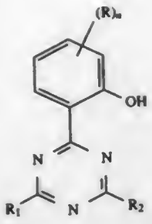
Claims priority, application Switzerland, Jul. 23, 1990, 2430/90

Int. Cl.[6] F21V *9/04;* **C09B** *67/00;* **D06P** *5/02*

U.S. Cl. 252—589 **4 Claims**

1. An aqueous dispersion of a 2-(2'-hydroxyphenyl)-s-triazine comprising

(a) 5 to 50 percent by weight of an s-triazine compound of the formula



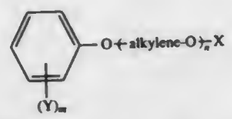
(1)

wherein

R is lower alkyl, lower alkoxy, halogen or hydroxy,

R_1 and R_2 are each independently of the other C_1–C_{18}alkyl, C_1–C_{18}alkyl which is substituted by hydroxy, lower alkoxy, lower alkylthio, amino or mono- or dialkylamino, phenyl or phenyl which is substituted by chloro, hydroxy, lower alkyl and/or lower alkoxy, and n is 0, 1 or 2,

(b) 0 to 18 percent by weight of an anionic compound or mixture of anionic compounds selected from the group consisting of acid esters, or their salts, of alkylene oxide polyadducts of the formula



(4)

wherein

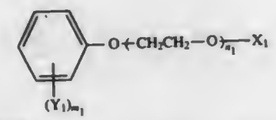
X is the acid radical of an inorganic oxygen-containing acid or the radical of an organic acid, and

Y is C_4–C_{12}alkyl, benzyl or α-methylbenzyl,

alkylene is the ethylene or propylene radical, and

m is 1 to 4 and n is 4 to 50,

acid esters, or their salts, of alkylene oxide polyadducts of the formula



(5)

wherein

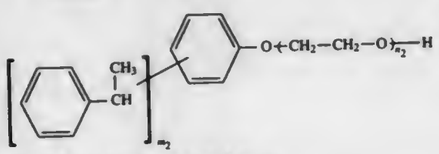
Y_1 is phenyl, tolyl, tolyl-C_1–C_3alkyl or phenyl-C_1–C_3alkyl,

X_1 is an acid radical which is derived from sulfuric acid or o-phosphoric acid, and

m_1 is 1 to 3 and n_1 is 4 to 40,

phosphate esters, or the salts thereof, of a polyadduct of 6 to 30 moles of ethylene oxide with 1 mole of 4-nonylphenol or dinonylphenol, or with 1 mole of a compound which is prepared by addition of 1 to 3 moles of styrene, α-methylstyrene or vinyl toluene to 1 mole of phenol, cresol or xylenol, and

phosphate esters, or the salts thereof, of the polyadduct of the formula



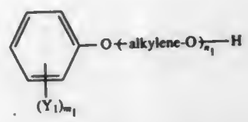
(6)

wherein m_2 is 1 to 3 and n_2 is 8 to 30,

and

(c) 0 to 18 percent by weight of a nonionic compound or mixture of nonionic compounds selected from the group consisting of

(ca) alkylene oxide polyadducts of the formula



(10)

wherein

Y_1 is C_1–C_{12}alkyl, aryl or aralkyl, alkylene denotes the ethylene radical or propylene radical and m_1 is 1 to 4 and n_1 is 4 to 50,

(cb) polyadducts of alkylene oxides with

(cba) saturated or unsaturated monohydric to hexahydric aliphatic alcohols,

(cbb) fatty acids,

(cbc) fatty amines,

(cbd) fatty amides,

(cbe) diamines, or

(cbf) sorbitan esters,

(cc) alkylene oxide condensates (block polymers),

(cd) polymers of vinyl pyrrolidone, vinyl acetate or vinyl alcohol, and

(ce) copolymers or terpolymers of vinyl pyrrolidone with vinyl acetate and/or vinyl alcohol,

with the proviso that at least one of components (b) and (c) is present in the dispersion.

5,575,959

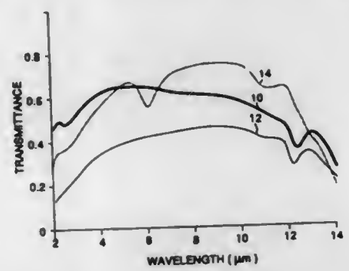
PROCESS FOR MAKING LOW COST INFRARED WINDOWS

Norman H. Harris, Newhall, and Thomas K. Dougherty, Playa Del Rey, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 22, 1994, Ser. No. 232,897

Int. Cl.[6] B29D *11/00*

U.S. Cl. 264—1.21 **18 Claims**



1. A process for making an infrared window comprising the steps of:

(1) mixing a sulfide, a zinc salt, and a gallium dopant in a liquid medium, and forming a coprecipitate comprising zinc sulfide and said gallium dopant

(2) pressing the coprecipitate in a die,

(3) densifying the pressed coprecipitate by hot isostatic pressing to form a densified body; and

(4) annealing the densified body.

5,575,960

METHOD OF MANUFACTURING AN INFRARED OPTICAL FIBER

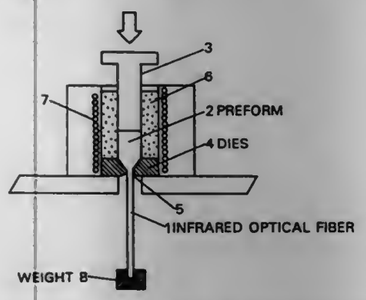
Kazuhiro Kayashima; Fumikazu Tateishi; Kiyoko Ohshima, all of Osaka-fu, and Masaru Ikedo, Nara-ken, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 25,723, Mar. 2, 1993, abandoned, which is a continuation of Ser. No. 759,330, Sep. 13, 1991, abandoned, which is a division of Ser. No. 568,385, Aug. 16, 1990, Pat. No. 5,076,653, which is a continuation-in-part of Ser. No. 445,657, Nov. 17, 1989, abandoned. This application Mar. 30, 1994, Ser. No. 220,408

Claims priority, application Japan, Feb. 17, 1988, 63-34204; Feb. 17, 1988, 63-34208

Int. Cl.[6] B29D *11/00*

U.S. Cl. 264—1.23 **7 Claims**



1. A method of manufacturing an unclad infrared optical fiber by hot extruding silver halide crystals through a nozzle of a die to form a linear shape by applying to the silver halide crystals a pressure of 5 to 15 tons/cm², while applying to said linear shape a tensile load which is greater than a yield stress but smaller than a rupture stress of said linear shape to form said infrared optical fiber, the die being formed from ceramics which have high hardness and excellent corrosion resistance to halide materials and sodium thiosulfate ($Na_2S_2O_3$) for cleaning halide metals,

wherein said unclad infrared optical fiber comprises 30 to 70 weight percent silver chloride in a composition of silver chloride and silver bromide, has a diameter of 0.5 mm or less and is substantially free of foreign particles with a diameter of more than 3 μm, and

wherein said tensile load is in a range of 300 g to 1370 g, thereby obtaining said unclad infrared optical fiber with a radiation spread angle of 19 degrees or less, where 90% of the energy is included in the radiation spread angle.

5,575,961

ROLL-SHAPED MOLD FOR INFORMATION RECORDING MEDIUM

Tetsuo Kuwabara, Urawa, and Osamu Takamatsu, Sagamihara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 128,753, Sep. 30, 1993, abandoned, which is a continuation of Ser. No. 186,145, Apr. 26, 1988, abandoned. This application Jun. 5, 1995, Ser. No. 462,540

Claims priority, application Japan, Apr. 30, 1987, 62-104674; Apr. 30, 1987, 62-104675

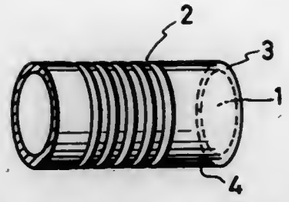
Int. Cl.[6] B29C *43/46*; B29D *11/00*

U.S. Cl. 264—1.33 **15 Claims**

13. A method for producing a substrate for an information recording medium, comprising the steps of:

providing a roll-shaped mold substrate having a mirror polished surface and a pattern forming layer formed around the mirror polished surface, with the pattern forming layer having a preformat pattern on its surface comprised of a pattern of striped grooves parallel with each other and parallel to a circumferential direction of the roll-shaped mold substrate; and

heat molding a resin substrate with the roll-shaped mold to form an information recording medium.



5,575,962

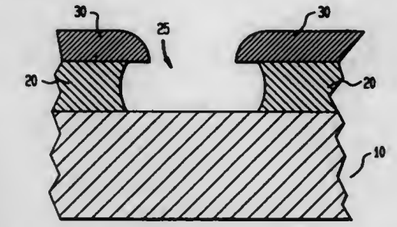
METHOD FOR FABRICATING OPTICAL QUALITY MOLDS WITH PRECISION MICROFEATURES

Ken M. Takahashi, Warren, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 2, 1994, Ser. No. 348,423

Int. Cl.[6] B29D *11/00*

U.S. Cl. 264—2.5 **18 Claims**



1. A method for making a flat panel display from a polymeric resin, the flat panel display having microfeatures monolithically formed thereon, the method comprising:

providing a mold including an optically flat substrate, a layer of metal applied to the substrate and one or more depressions in a predetermined pattern etched in the layer of metal applied to the substrate, portions of the optically flat substrate being exposed in the one or more depressions;

contacting the mold with a polymeric resin in a fluid state such that the resin substantially fills the depressions and contacts exposed portions of the optically flat substrate;

hardening the polymeric resin to form a component of a flat panel display having microfeatures monolithically formed thereon; and

removing the flat panel display component from the mold.

5,575,963

SELECTIVE CLOGGING OF FAILED FIBERS

Abraham Soffer, Arad; Shlomo Saguee, Beer-Sheva; Dan Golub, Omer; Haim Cohen, Beer-Sheva, and Moshe Azariah, Moshav Gilat, all of Israel, assignors to Rotem Industries, Ltd., Israel, and AGA Aktiebolag, Sweden

Filed May 24, 1994, Ser. No. 248,331

Claims priority, application Israel, Jun. 1, 1993, 105875

Int. Cl.[6] B32B *35/00*

U.S. Cl. 264—36 **10 Claims**

1. A method of selective clogging of failed hollow fibers of a membrane module comprising a pack or bundle of fibers in a shell-side and bore-side arrangement, the pack or bundle comprising failed fibers together with a plurality of non-failed fibers, the method comprising the steps of:



clogging bores of all of the fibers at one end of the pack or bundle of the fibers;

substantially evacuating the membrane module both at the shell-side and at the bore-side;

filling the bore-side and the shell-side side with a non-permeant gas;

subsequently holding the membrane module vertically, disconnecting the bore-side of the membrane module from a supply of the non-permeant gas and dipping another end of the membrane module opposite to the clogged end into a reservoir containing a liquid sealant;

applying a reduced pressure to the shell-side for a period of time sufficient to permit suction of the liquid sealant into the bores of the failed fibers through a failure of which vacuum is applied to the bore-side;

allowing the sealant to solidify at least partially to clog the bores of both the failed fibers and the non-failed fibers; and

cutting off a length of the pack or bundle of the fibers such that the bores of the non-failed fibers are exposed while the bores of the failed fibers remain clogged with the sealant.

5,575,964

METHOD FOR PRODUCING SILICA-ALUMINA FIBER

Hiroshi Umezaki; Yasuyuki Oki, and Ken Shimada, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 18, 1994, Ser. No. 292,185

Claims priority, application Japan, Aug. 19, 1993, 5-204960

Int. Cl.[6] B29C *47/88*

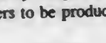
U.S. Cl. 264—60 **14 Claims**

1. A method for producing silica-alumina fibers comprising steps of mixing a polyaluminoxane whicb comprises repeating units of the formula:



(I)

wherein X is an alkyl group, an alkoxy group or a hydroxy group, a silicon-containing compound in an amount of not larger than 40% by weight in terms of the silica content in the silica-alumina fibers to be produced, an aliphatic carboxylic acid of the formula:



(II)

wherein R is an alkyl group having 3 to 11 carbon atoms in an amount of 0.03 to 0.4 mole per one gram atom of aluminum to obtain a spinning liquid,

spinning the spinning liquid under a condition that a content of non-volatile materials in the liquid is maintained at least 97% by weight to form precursor fibers, and

calcining the precursor fibers to obtain silica-alumina fibers.

5,575,965

PROCESS FOR EXTRUSION

Paul J. Caronia, Annandale, and Salvatore F. Sburott, South River, both of N.J., assignors to Union Carbide Chemicals & Plastics Technoloy Corporation, Danbury, Conn.

Filed May 19, 1995, Ser. No. 445,140

Int. Cl.[6] B29C *47/02*

U.S. Cl. 264—171.17 **6 Claims**

1. A process for the co-extrusion of an inner layer around a conductive medium and an outer layer around the inner layer comprising:

(i) introducing into an extruder adapted for profile co-extrusion, a preformed conductive medium; an inner layer formulation comprising a homogeneous polyethylene having a polydispersity in the range of about 1.5 to about 3.5 and an essentially uniform comonomer distribution, and an organic peroxide; and an outer layer formulation comprising (A) one of (a) a copolymer of ethylene and an unsaturated ester; or (b) a polyethylene having a polydispersity greater than about 4.0 and a density of at least 0.916 gram per cubic centimeter, said polymer made by a high pressure process; or (c) a heterogeneous copolymer of ethylene and one or more alpha-olefins having a density of less than 0.916 gram per cubic centimeter, a melt index of at least about 4 grams per 10 minutes, and a polydispersity greater than about 4.0, and (B) optionally, an organic peroxide; and

(ii) co-extruding said formulations around the conductive medium at a temperature no higher than about 160 degrees C.

5,575,966

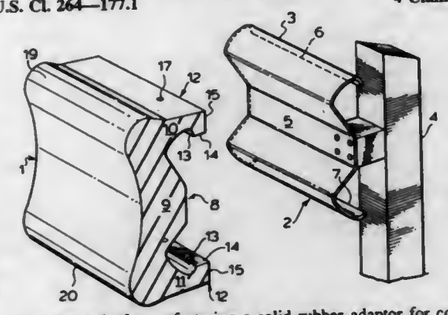
METHOD OF MAKING A RUBBER ADAPTOR FOR HIGHWAY GUARDRAIL

Guenter A. Baatz, 33 Pioneer, Kitchener, Ontario, Canada

Division of Ser. No. 245,569, May 18, 1994, Pat. No. 5,429,449. This application Apr. 14, 1995, Ser. No. 422,244

Int. Cl.[6] B29C *35/00;* **B29B** *17/00*

U.S. Cl. 264—177.1 **4 Claims**



1. A method of manufacturing a solid rubber adaptor for converting an existing highway barrier, said barrier comprising an elongate horizontal guardrail of uniform transverse cross-section connected to supporting posts spaced along the length of the guardrail, the guardrail having a roadside contoured surface and upper and lower edges, said adaptor comprising an elongate channel of uniform transverse cross-section having an outer curbside contoured surface mating the contoured surface of the guardrail, the channel including a central web portion and integral clamping means for resiliently engaging the edges of the guardrail,

said method comprising the steps of:

mixing and knead melting a mixture of:

80 to 90 percent by weight particles of recycled waste rubber;

10 to 20 percent by weight virgin rubber; and an accelerator composition;

forming the mixture to a selected adaptor configuration thus defining an adaptor;

curing the mixture within a chamber at a temperature of 350° C. to 400° C. for a period of time from 3 to 5 hours; and

removing the cured adaptor from the chamber.

5,575,967

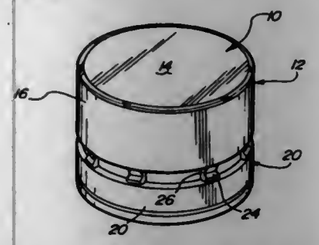
METHOD OF FORMING A TAMPER INDICATING CLOSURE

Randall K. Julian, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Feb. 17, 1995, Ser. No. 390,686

Int. Cl.[6] B29C *59/02*

U.S. Cl. 264—296 **4 Claims**



1. A method of producing a tamper indicating closure comprising the following steps:

molding a cap with an internally threaded generally annular wall and an annular tamper indicating band depending from said annular cap wall, the band being connected to the cap by a plurality of circumferentially spaced, axially extending straps separated by open window areas between the cap wall and the band, said straps being thick enough to provide a free flow of molten plastic from the cap to the band during the molding step, thereby maintaining a uniform molecular structure in said straps, and said straps being too thick to break under unthreading torque;

reforming said straps to reduce their thickness making them frangible upon initial unthreading rotation of the cap; and

wherein said annular tamper indicating band is molded with inwardly projecting stop means which cooperates with outwardly extending stop means on a container neck to resist relative movement between the band and the container neck so that as the closure is unthreaded the frangible straps will break leaving the tamper indicating band on the container neck.

5,575,968

PROCESS FOR THE PREPARATION OF THERMOPLASTIC RESIN FILM

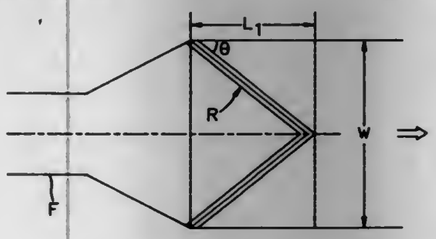
Jeong-Wook Seo, Suwon; Wan-Sup Shim, Kwachun-si; Hyo-Sup Kim, Suwon-si, and Young-Jin Lee, Anyang-si, all of Rep. of Korea, assignors to SKC Limited, Kyungki-do, Rep. of Korea

Filed May 1, 1995, Ser. No. 431,878

Claims priority, application Rep. of Korea, May 6, 1994, 94-9939; May 6, 1994, 94-9940; May 6, 1994, 94-9941; May 6, 1994, 94-9942

Int. Cl.[6] B29C *71/04;55/12*

U.S. Cl. 264—481 **6 Claims**



1. A process for preparing a biaxially oriented thermoplastic resin film which comprises extending a thermoplastic resin sheet in a longitudinal and a transverse directions to form a film thereof, and heat treating the film with a gradient heating capable of creating a descending temperature gradient from both edges to the center of the film along the transverse direction within a zone defined by the following formula (1) by employing a heater which is located over the film with an angle θ of the following formula (3) from said both edges to the center of the film:

$$0.25 \leqq L_1/W \leqq 0.9 \quad (1)$$

$$\tan\theta = W/2L_1 \quad (3)$$

wherein:

L_1 is the distance from the end point of the transverse extending to the end point of the heat treating; and

W is the total width of the film.

5,575,969

METHOD OF ATTACHING CLIP TO BLOW MOLDED ARTICLE AND THE CLIP

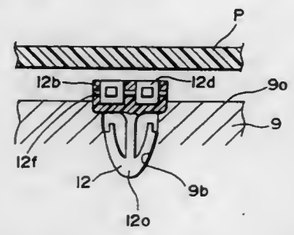
Takashi Yamamori, and Yasuhiko Onishi, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Mar. 13, 1995, Ser. No. 402,116

Claims priority, application Japan, May 17, 1994, 6-103018

Int. Cl.[6] B29C *49/20*

U.S. Cl. 264—516 **3 Claims**



1. A method of attaching a clip to a tubular blow molded article, comprising the steps of:

preparing a clip including a clip body and a clip base which is provided at a base portion of the clip body and has a side wall and a plurality of hollows, each hollow being separated from another hollow by at least one intermediate portion, and a plurality of through-holes extending through the side wall and the at least one intermediate portion for communicating with each hollow;

inserting the clip body of the clip into a cavity formed on a molding surface of a mold such that the clip base projects from the molding surface;

setting softened synthetic resin into the mold; and

bringing the synthetic resin into close contact with the molding surface of the mold by blow molding at a blow pressure so as to deliver the synthetic resin to each hollow and the plurality of through-holes of the clip base such that the synthetic resin is filled into each hollow and the plurality of through-holes of the clip base, whereby the synthetic resin is molded to a blow molded article having the clip projecting from its outer peripheral surface.

5,575,970

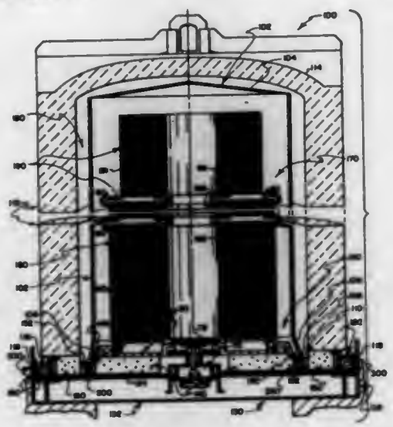
CAST REFRACTORY BASE SEGMENTS AND MODULAR FIBER SEAL SYSTEM FOR PLURAL-STACK ANNEALING FURNACE

Gary L. Coble, RD#2, Box 214, DuBois, Pa. 15801

Division of Ser. No. 423,010, Apr. 14, 1995, which is a continuation-in-part of Ser. No. 32,593, Dec. 21, 1995, Ser. No. 32,592, Dec. 21, 1995, Pat. No. Des. 371,837, Ser. No. 32,591, Dec. 21, 1995, Pat. No. Des. 374,073, Ser. No. 32,587, Dec. 21, 1995, Ser. No. 32,589, Dec. 21, 1995, Pat. No. Des. 371,836, Ser. No. 32,590, Dec. 21, 1995, and Ser. No. 32,588, Dec. 21, 1995, Pat. No. Des. 374,072. This application May 15, 1996, Ser. No. 647,676

Int. Cl.[6] F27D *1/00*

U.S. Cl. 266—44 57 Claims



1. A method of assembling from a set of component parts, at a location atop a base support structure of a plural-stack annealing furnace, 1) a rigid ceramic refractory base for extending in substantially concentric, annular relationship about a plurality of spaced blower mounts of the furnace, for underlying and extending perimetrically about a plurality of charge support structures of the furnace that are of generally circular shape and that are configured to overlie the blower mounts to support a plurality of charges of metal that are to be annealed, and 2) a plurality of relatively resilient annular inner seals that extend perimetrically about the charge support structures, atop which inner enclosures of the furnace can be removably supported for defining a plurality of controlled environment treatment chambers within which charges of metal that are positioned atop the charge support structures can be confined for treatment during an annealing process, comprising the steps of:

a) providing inner segment means including a plurality of sets of cast refractory inner segments, and installing each set of the inner segment means 1) to define a separate associated annular-shaped inner portion of the rigid ceramic refractory base for extending substantially concentrically about a separate associated one of a plurality of blower mounts of a plural-stack annealing furnace, 2) to underlie and support a separate associated one of a plurality of generally circular charge support structures of the furnace, and 3) to define a separate associated one of a plurality of substantially continuous, radially outwardly facing surfaces that each extends substantially concentrically about a separate associated one of the circular charge support structures at a location near the periphery thereof;

b) providing outer segment means including a set of cast ceramic refractory outer segments, and installing the outer segment means so that the outer segments extend side by side to cooperatively define a generally rectangular outer region of the rigid ceramic refractory base atop which a generally rectangular outer enclosure of the furnace can be removably seated, with smaller groups of the outer segments of the set comprising outer segment sub-sets, with the segments of each sub-set extending about an associated separate one of said annular-shaped inner portions to define arcuate portions of a separate associated, radially inwardly facing surface that extends concentrically about a separate associated one of said radially outwardly facing surfaces so as to cooperate therewith to define opposite, radially spaced sides of an associated inner seal positioning trough for extending circumferentially about a separate associated one of the circular charge support structures of the furnace;

c) providing inner Seal means including a plurality of separate inner seals, and installing each of the inner seals atop the base support structure of the furnace and in a separate one of said troughs, with the installed inner seals 1) each extending in an endless, substantially uninterrupted, ring-like manner about the periphery of a separate associated one of the circular charge support structures, 2) each being capable of supporting the weight of a separate associated open-bottom, tank-like inner enclosure of the furnace when bottom rim portions of the associated inner enclosure are seated thereatop, and 3) each being sufficiently resilient to cooperate with the seated bottom rim portions of the associated inner enclosure to form a gas impervious seal for isolating the environment of an associated treatment chamber;

d) with the foregoing steps being carried out such that the installed inner seals each include a separate set of ceramic fiber blocks arranged serially in a circumferentially extending, endless, ring-like array within the confines of an associated one of said troughs, with each of said arrays also including a plurality of relatively thin, perforated metal members interspersed among the ceramic fiber blocks of the array to extend substantially radially at circumferentially spaced intervals within the confines of the associated trough, with said blocks having radially extending widths that are sufficient to extend substantially the full radially-measured distance between said radially outwardly facing surface and said radially outwardly facing surface of the associated trough at such locations therein as are to be occupied by said blocks, and with the blocks that are included in each array being sufficient in number and in size to require that said blocks be compressed in directions extending circumferentially with respect to the associated trough in order for all of said blocks to be inserted serially into the associated trough to form said array.

5,575,971

CIRCLE CIRCUMSCRIBER AND CUTTER OF STEEL PLATES

Jerry L. Bond, 1020 120th Ave. SE., Clara City, Minn. 56222

Filed May 4, 1995, Ser. No. 433,683

Int. Cl.[6] B23K *7/10*

U.S. Cl. 266—66 18 Claims

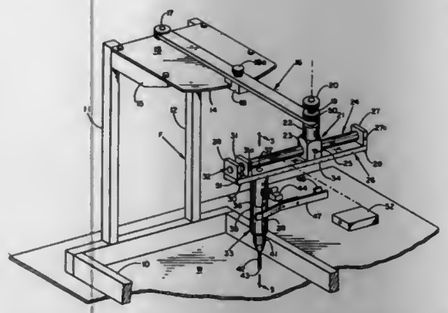
1. A double-pivot circle-cutter comprising,

(a) a support arm swingably mounted to extend substantially parallel to and above a work-supporting surface;

(b) a pivot member pivotally mounted on said support arm for pivotal movement about a vertically extending axis extending through said member;

(c) a mounting base shiftably mounted upon said pivot member for shifting movement relative to said pivot member in a direction generally normal to the axis of pivot of said pivot member; and

(d) a cutting-member holder pivotally mounted on said mounting base in depending relation thereto for pivotal movement



thereof about an axis extending substantially parallel to the axis of pivot of said pivot member whereby a cutting-member, when held by said cutting-member holder in alignment with the axis of pivot of said cutting-member holder, will make a circular cut in a workpiece positioned immediately adjacent to the cutting-member when said pivot member is pivoted 360° about its axis of pivot, the circular cut having a radius equal to the distance between said two axes while the cut is being made.

5,575,972

FE-CR ALLOY AND NOZZLE FOR DIESEL ENGINES

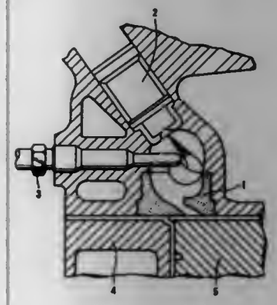
Akira Mitsuhashi; Takanori Matsui, and Saburo Wakita, all of Omiya, Japan, assignors to Mitsubishi Materials Corporation, and Mitsubishi Jidosha Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Feb. 15, 1995, Ser. No. 389,195

Claims priority, application Japan, Feb. 15, 1994, 6-040418; Feb. 15, 1994, 6-040419

Int. Cl.[6] C22C *38/26;* F02B *19/16*

U.S. Cl. 420—34 20 Claims



6. Nozzle for diesel engines cast using an Fe—Cr alloy consisting essentially of:

C:	0.1–0.2% by weight	Si:	0.1–2% by weight
Mn:	0.1–2% by weight	Cr:	16–20% by weight
Mo:	1.1–2.4% by weight	Nb:	0.3–2.1% by weight
Ta:	0.1–2.2% by weight	N:	0.02–0.15% by weight

with a remaining portion therein consisting of Fe and unavoidable impurities.

5,575,973

HIGH STRENGTH HIGH TOUGHNESS SPRING STEEL, AND MANUFACTURING PROCESS THEREFOR

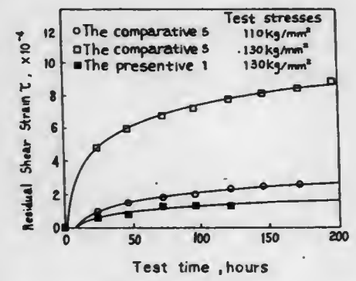
Hae C. Choi; Won J. Nam; Jong K. Choi; Soo D. Bark; Jong H. Choi, and Jang G. Kim, all of Pohang, Rep. of Korea, assignors to Pohang Iron & Steel Co., Ltd., and Research Institute of Industrial Science & Technology, both of Kyong Sang Book-Do, Rep. of Korea

Filed Aug. 9, 1995, Ser. No. 501,120

Claims priority, application Rep. of Korea, Dec. 29, 1993, 1993/31040

Int. Cl.[6] C22C *38/46;38/48;* C21D *9/02*

U.S. Cl. 420—112 2 Claims



1. A high strength high toughness spring steel comprising in weight %: 0.5–0.7% of C, 2.5–3.5% of Si, 0.3–0.6% of Mn, 0.3–0.6% of Cr, 0.15–0.25% of at least one of V and Nb, less than 0.02% of P, less than 0.02% of S, 1.5–2.5% of Ni, and other incidental impurities, the balance being Fe.

5,575,974

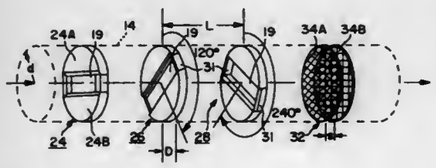
APPARATUS AND METHOD FOR AN ANODIC OXIDATION BIOCIDAL TREATMENT

Stephen R. Wurzburger, P.O. Box C, Goodyear's Bar, Calif. 95944, and James M. Overton, 1127 Nickel La., Yuba City, Calif. 95991

Continuation-in-part of Ser. No. 61,483, May 12, 1993, abandoned. This application Jul. 20, 1994, Ser. No. 277,784

Int. Cl.[6] A61L *2/02*

U.S. Cl. 422—22 5 Claims



1. A water treatment apparatus for destroying bacterial pathogens which comprises:

a conduit having a pair of ports adapted to enable water to flow into either one of said ports, through said conduit and out of said other port;

a pair of electrodes, each electrode of said pair of electrodes being a screen;

each electrode having a surface facing said surface of said other electrode and separated by a space from said surface of said other electrode;

each electrode adapted for connection to an electrical power supply such that an electric field and drop of electrical potential is generated between said surfaces of said electrodes in said space;

said electrodes arranged in operable combination with said conduit such that all of said water flowing through either one of said ports flows through one of said screens and through said space then through said second screen and then out of said other port thereby subjecting all of said water through said conduit to said electric field and drop of electrical potential when said electrodes are connected to said electric power supply.

5,575,975

Patent Not Issued For This Nomber

5,575,976

DEVICE FOR AUTOMATIC CHEMICAL ANALYSIS

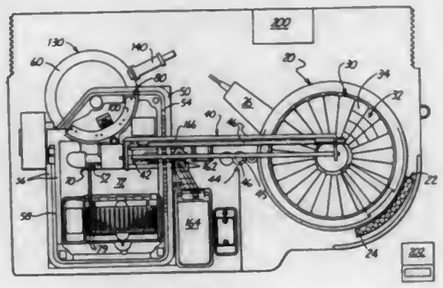
Alfredo Choperena, Eden Prairie; Ross Krogh, Minneapolis; Venkatesh Prasad, Eden Prairie, and Gershon Giter, St. Paul, all of Minn., assignors to Pasteur Sanofi Diagnostics, S.A., France

Division of Ser. No. 370,910, Jan. 10, 1995, which is a continuation of Ser. No. 878,956, May 5, 1992, Pat. No. 5,380,487. This application Jun. 7, 1995, Ser. No. 480,281

Int. Cl.[6] G01N *35/02*

U.S. Cl. 422—64 **16 Claims**

1. An automated chemical analyzer comprising:



(a) an incubation station comprising an elongated, movable track adapted to carry a plurality of reaction vessels along an incubation path;

(b) a wash station comprising a movable track adapted to carry a plurality of reaction vessels along a wash-cycle path;

(c) a read station adapted to carry reaction vessels along a read path the read station comprising signal detection means;

(d) a first transfer station positioned adjacent a first end of the wash-cycle path for transferring a vessel from the incubation path to the wash-cycle path; and

(e) a second transfer station positioned adjacent a second end of the wash-cycle path and a first end of the read path for selectively transferring a vessel from the wash-cycle path to either the incubation path or the read path.

5,575,977

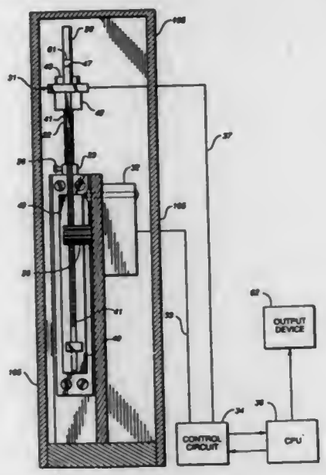
APPARATUS FOR SEDIMENTATION BASED BLOOD ANALYSIS

David K. McKinney; Milton E. Fuller, and Berry V. Carone, all of Reno, Nev., assignors to Solid State Farms, Inc., Reno, Nev.

Division of Ser. No. 259,018, Jun. 13, 1994, Pat. No. 5,487,870, which is a division of Ser. No. 512,845, Apr. 23, 1990, Pat. No. 5,328,822. This application Jan. 18, 1996, Ser. No. 588,537

Int. Cl.[6] G01N *15/05*

U.S. Cl. 422—73 **6 Claims**



1. An apparatus useful in the diagnosis of inflammatory conditions comprising:

settling tube means formed to receive a test specimen of blood for settling of erythrocyte cells from plasma fluid;

sensing means movably mounted proximate said settling tube means and sensing changes in a characteristic of said plasma fluid;

drive means coupled to said sensing means and driving said sensing means to scan said test specimen between a position proximate a top of said test specimen and a position proximate and above a separation boundary between said erythrocyte cells and said plasma fluid; and

means for recording said characteristic coupled to said sensing means and formed for recording said characteristic during scanning of said test specimen.

5,575,978

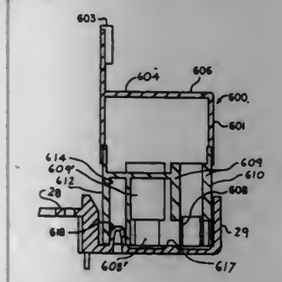
SAMPLE CONTAINER SEGMENT ASSEMBLY

Frederick L. Clark, Plano; Kendall B. Hendrick, Southlake; Richard R. Martin, Irving; Larry W. Moore, Plano, all of Tex.; William J. Raymoure, Lake Bluff, Ill.; Paul R. Schrier, Carrollton, Tex.; Edna S. Walker, Chicago, Ill.; Donny R. Walker, Coppell, Tex.; Gary E. Winter; Kevin M. Cloonan, Round Lake, both of Ill.; David A. Yost, Poolesville, Md.; John M. Clemens, Wadsworth, Ill.; William J. Kanewske, III, Dallas, Tex.; Douglas D. McDowell, Wildwood, Ill.; Carl M. Oleksak, Fort Worth; William D. Rumbaugh, Carrollton, both of Tex.; B. Jane Smith, Vernon Hills, Ill.; James A. Vaught, Euless, Tex.; Apparao Tayi, Grayslake, Ill.; Robert A. Wohlford, Irving, Tex.; James E. Mitchell, Lake Barrington, Ill.; Robert B. Hance, Evanston, Ill.; Peter A. Lagocki, Park Ridge, Ill.; Richard A. Merriam, Dallas, Tex.; Charles D. Pennington, Lake Zurich, Ill.; Linda S. Schmidt, Mundelein, Ill.; Adrian M. Spronk, Lindenhurst, Ill.; Richard L. Vickstrom, Algonquin, Ill.; William E. Watkins, III, Cedar Hill; Gilbert Clift, Mesquite, both of Tex.; Alyn K. Stanton, Barrington, Ill., and David B. Hills, Plano, Tex., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 126,411, Sep. 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 859,218, Mar. 27, 1992, abandoned, said Ser. No. 126,411is a continuation-in-part of Ser. No. 915,162, Jul. 20, 1992, Pat. No. 5,376,313, Ser. No. 915,163, Jul. 20, 1992, Ser. No. 915,164, Jul. 20, 1992, abandoned, Ser. No. 915,166, Jul. 20, 1992, abandoned, Ser. No. 915,167, Jul. 20, 1992, abandoned, Ser. No. 915,168, Jul. 20, 1992, abandoned, Ser. No. 916,425, Jul. 20, 1992, abandoned, Ser. No. 916,551, Jul. 20, 1992, abandoned, Ser. No. 916,556, Jul. 20, 1992, abandoned, Ser. No. 916,737, Jul. 20, 1992, Pat. No. 5,451,528, Ser. No. 917,253, Jul. 20, 1992, abandoned, Ser. No. 917,634, Jul. 20, 1992, abandoned, Ser. No. 27,268, Mar. 18, 1993, Ser. No. 27,270, Mar. 18, 1993, abandoned, Ser. No. 27,387, Mar. 18, 1993, abandoned, Ser. No. 27,388, Mar. 18, 1993, abandoned, and Ser. No. 27,481, Mar. 18, 1993, abandoned, each which is a continuation-in-part of Ser. No. 859,218, said Ser. No. 126,411is a continuation-in-part of Ser. No. 27,269, Mar. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 917,634, said Ser. No. 126,411is a continuation-in-part of Ser. No. 27,482, Mar. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 916,556. This application Jan. 3, 1994, Ser. No. 176,551

Int. Cl.[6] G01N *35/00*

U.S. Cl. 422—104 **6 Claims**



1. A device for supporting a plurality of containers for holding liquid test samples, said device forming one of a plurality of segments positionable on a carousel, said carousel, for kitting the liquid test samples on an automated analytical system for performing assays, said device comprising:

a base formed by opposing inner and outer sidewalls, said sidewalls being arcuate and vertical, said sidewalls closed by endwalls extending radially outwardly from the inner sidewall to the outer sidewall, said base having a bottom defined by the bottoms of the vertical sidewalls and endwalls and a top defined by the tops of the vertical sidewalls and endwalls, the bottom of said base adapted for mounting said device on the carousel; and

a frame formed by a shelf having openings sized for receiving the containers, said frame having an arcuate shape defined generally by the tops of the vertical sidewalls and endwalls of said base, and at least two legs extending from the shelf to the top of said base for supporting the shelf thereon,

said device further comprising a plurality of sleeves tubular in shape and formed from electrically conductive material, each of said sleeves capable of surrounding a bottom portion of the container that contains the liquid test sample.

5,575,979

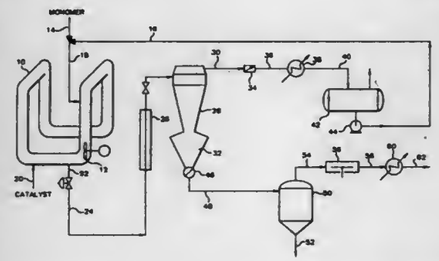
PROCESS AND APPARATUS FOR SEPARATING DILUENTS FROM SOLID POLYMERS UTILIZING A TWO-STAGE FLASH AND A CYCLONE SEPARATOR

Donald O. Hanson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 4, 1991, Ser. No. 663,515

Int. Cl.[6] C08F *2/14*

U.S. Cl. 422—132 **5 Claims**



1. An apparatus for recovering polymer solids from a polymerization effluent extracted from a polymerization reactor at a first temperature and a first pressure, said effluent comprising a slurry of said polymer solids in a liquid diluent, said apparatus comprising:

a first flash vessel in the form of a cyclone having an extended solids reservoir, said first flash vessel being maintained at a second pressure, said second pressure being lower than said first pressure;

means for transferring said effluent from said polymerization reactor to said first flash vessel so that when said effluent is transferred to the first flash vessel a major portion of said diluent is vaporized to produce diluent vapor and said polymer solids settle into said extended solids reservoir;

means for condensing said diluent vapors without compression by heat exchange;

means for passing said diluent vapor from said first flash vessel to said means for condensing;

means for passing at least part of said vapors condensed in said means for condensing from said means for condensing to said polymerization reactor;

a second flash vessel maintained at a third pressure lower than said second pressure; and

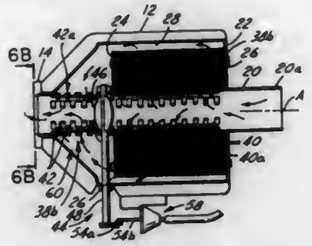
means of passing said polymer solids from said extended solids reservoir to said second flash vessel such that said polymer solids are retained in said extended solids reservoir until it is at least partially full and then passed to said second flash vessel where any residual diluent remaining with said polymer solids is vaporized to residual diluent vapor.

5,575,980

VALVED RADIAL FLOW CATALYTIC CONVERTER

Alan G. Turek, Mayville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 14, 1995, Ser. No. 515,075
Int. Cl.[6] B01D *53/34*; F01N *3/10*
U.S. Cl. 422—181 20 Claims



1. A valved radial flow catalytic converter for being connected with an exhaust system of an internal combustion engine, comprising:

an enclosure having an upstream end and a downstream end;

a tube extending between said upstream and downstream ends of said enclosure in sealing connection therewith, a first set of first slots being provided in said tube, a second set of second slots being provided in said tube spaced from said first set of first slots, said tube having a cylindrical axis;

a catalytic monolith connected with said tube, said catalytic monolith comprising a plurality of serially adjoining foil sheets, each foil sheet of said plurality of foil sheets having a first surface and an opposite second surface wherein each of said first and second surfaces has a selected catalytic material applied thereto, each said foil sheet having a central hole provided therein which collectively form a central hole of said catalytic monolith, each said foil sheet further an outer periphery which collectively form an outer periphery of said catalytic monolith, each said foil sheet being provided with a predetermined corrugation pattern wherein said predetermined corrugation pattern provides a plurality of passageways between mutually adjoining foil sheets, each passageway of said plurality of passageways being oriented in a direction substantially parallel to a centerline axis radial with respect to said cylindrical axis, a selected number of said plurality of passageways extending from said central hole of said catalytic monolith to said outer periphery of said catalytic monolith and fluidically communicating with said first set of first slots;

outer passage means for providing a gas flow passage from said outer periphery of said catalytic monolith to said second set of second slots; and

means for selecting between a closed state of said tube and an open state of said tube, said selecting means being at a selected location inside said tube between said first set of first slots and said second set of second slots;

whereby when said tube is in said closed state exhaust gas passes into said tube, through said first set of first slots, along said selected number of said passageways whereupon the exhaust gas is catalytically reacted by said catalytic material, along said outer passage means, through said second set of second slots and out said tube.

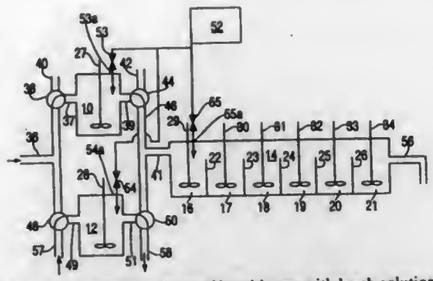
5,575,981

METHOD FOR ACIDIC LEACHING OF LATERITIC ORES

Eberhard Krause, Oakville, Canada, assignor to Goro Nickel S.A., Noumea, New Caledonia

Division of Ser. No. 399,892, Mar. 7, 1995, Pat. No. 5,535,992. This application Jun. 8, 1995, Ser. No. 482,486
Int. Cl.[6] B01F *1/00*; C22B *3/00*;*23/00*;*21/00*
U.S. Cl. 423—132 9 Claims

1. A method of continuously acid pressure leaching comprising the steps of:



a) initially leaching a slurry of lateritic ore with leach solution in a primary autoclave to remove metal values from said slurry of lateritic ore;

b) transferring said initially leached slurry of lateritic ore from said primary autoclave to a multi-compartment autoclave, said multi-compartment autoclave containing a series of chambers,

c) progressively leaching said initially leached slurry of lateritic ore in said multi-compartment autoclave to remove additional metal values from said initially leached slurry of lateritic ore; and

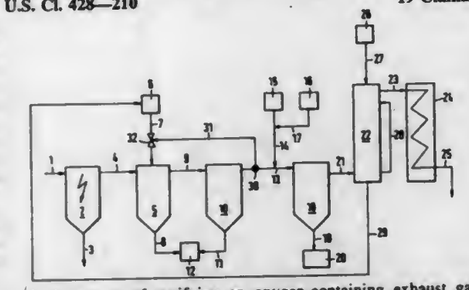
d) cleaning said primary autoclave while said slurry of lateritic ore is being leached in said multi-compartment autoclave.

5,575,982

PROCESS OF PURIFYING EXHAUST GASES PRODUCED BY COMBUSTION OF WASTE MATERIALS

Guenter Reiss, and Georg Schaub, both of Oberursel, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 16, 1994, Ser. No. 358,150
Claims priority, application Germany, Dec. 23, 1993, 43 44 113.0
Int. Cl.[6] B01D *53/50*;*53/64*
U.S. Cl. 428—210 19 Claims



1. A process of purifying an oxygen-containing exhaust gas produced by combustion of waste materials including at least one member of the group consisting of garbage, industrial waste and sewage sludge, wherein said exhaust gas contains dust, SO_2, HCl, HF, heavy metal-containing substances and dioxins and furans, said heavy metal-containing substances including mercury and mercury compounds, said process comprising the steps of:

a) treating the exhaust gas with a suspension of $Ca(OH)_2$ in a spray absorber;

b) after the treating in step a), filtering the exhaust gas in a first filtering stage and a second filtering stage following the first filtering stage so that the exhaust gas leaving the first filtering stage has an SO_2 content of from 20 to 500 mg/sm^3;

c) feeding activated carbon into the exhaust gas upstream of the second filtering stage and downstream of the first filtering stage, and almost entirely absorbing the mercury contained in the exhaust gas; and

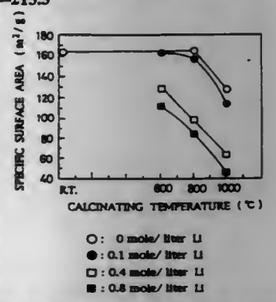
d) after the first and second filtering stage, scrubbing the exhaust gas with a mixture containing water and at least one mixture component selected from the group consisting of NaOH, Na_2CO_3, $Ca(OH)_2$ and $CaCO_3$.

5,575,983

CATALYST FOR PURIFYING EXHAUST GASES AND PROCESS FOR PURIFYING EXHAUST GASES

Hiromasa Suzuki, Seto; Koji Yokota; Tomoko Iijima, both of Nagoya; Tadashi Suzuki, Seto; Koichi Kasahara, and Syuji Tateishi, both of Ogasa-gun, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha; Kabushiki Kaisha Toyota Chuo Kenkyusho, both of Aichi-ken, and Cataler Industrial Co., Ltd., Shizuoka-ken, all of Japan

Filed Sep. 23, 1994, Ser. No. 311,360
Claims priority, application Japan, Sep. 24, 1993, 5-237612
Int. Cl.[6] B01J *23/04*
U.S. Cl. 423—213.5 9 Claims



1. A process for purifying an exhaust gas from a lean-burn engine comprising sulfur oxides, carbon monoxide, hydrocarbons and nitrogen oxides, said process comprising:

bringing said exhaust gas into contact with an exhaust gas purifying catalyst comprising:

a support comprising a solid solution comprising alumina with lithium dissolved therein in an amount of from 0.02 to 0.35 of lithium with respect to one mole of alumina;

at least one first ingredient selected from the group consisting of Pt and Pd, and loaded on said support; and

at least one second ingredient selected from the group consisting of alkali metals, alkaline-earth metals and rare-earth elements, and loaded on said support,

wherein (1) under a lean-burn atmosphere in which oxygen concentrations are above a neutral point that is required for oxidizing components to be oxidized in said exhaust gas, nitrogen oxides in said exhaust gas are adsorbed to said at least one second ingredient and sulfur oxides in said exhaust gas react to form composite sulfates, (2) said exhaust gas is periodically adjusted from lean-burn to fuel-rich, providing a reduction atmosphere in which oxygen concentrations are not greater than said neutral point and (3) under said reduction atmosphere, nitrogen oxides adsorbed to said second ingredient are chemically reduced by a reaction with hydrocarbons and carbon monoxide in said exhaust gas and said composite sulfates decompose due to the presence of lithium therein at temperatures sufficiently low to avoid poisoning said catalyst.

5,575,984

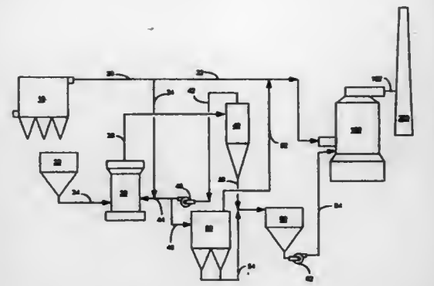
METHOD FOR PREPARING CALCIUM CARBONATE FOR SCRUBBING SULFUR OXIDES FROM COMBUSTION EFFLUENTS

Gerald E. Bresowar, Homewood, Ala., assignor to ABB Environmental Systems, Div. of ABB Flakt, Inc., Knoxville, Tenn.

Continuation-in-part of Ser. No. 257,698, Jun. 9, 1994. This application Dec. 6, 1994, Ser. No. 349,796
Int. Cl.[6] C01B *17/56*
U.S. Cl. 423—244.08 9 Claims

1. A process for preparing finely-ground calcium carbonate in dry form to remove sulfur oxides from flue gases by wet scrubbing, comprising:

(a) dividing a flow of hot flue gas containing SOx from a combustor into at least a first flue gas stream and a second flue gas stream;



(b) introducing the first flue gas stream into a scrubbing tower wherein it flows upwardly, countercurrent to a spray of an aqueous slurry of fine particles of calcium carbonate within a vertical scrubbing section, the slurry falling through the vertical scrubbing section and being collected in a reaction tank at the bottom of the tower;

(c) directing the second flue gas stream into contact with coarse calcium carbonate to dry the calcium carbonate to a moisture content suitable for dry-grinding;

(d) dry-grinding the coarse calcium carbonate; and

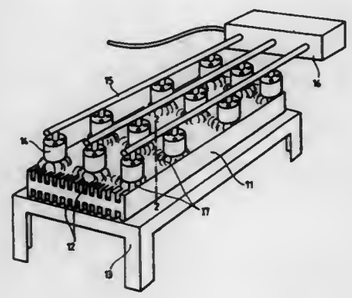
(g) introducing the resulting dry, ground calcium carbonate into the scrubbing tower.

5,575,985

PREPARATION OF STABLE GRAPHITE

Helmut Klotz, Bergisch Gladbach, and Hans D. Pinter, Wermelskirchen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 12, 1995, Ser. No. 440,031
Claims priority, application Germany, May 20, 1994, 44 17 744.5
Int. Cl.[6] C01B *31/04*; C09C *1/56*
U.S. Cl. 423—448 6 Claims



1. In the preparation of a graphite body suitable for use as a cathode in an electrolytic process, comprising the steps of

a) contacting a graphite body with a solution in one or more polyhydric alcohols having 2 to 4 carbon atoms of one or more salts of iridium or rhodium for a time sufficient for the solution to penetrate through the surface of the graphite body to a depth of at least about 1 mm, and

b) heating and then cooling the graphite body, the improvement which comprises effecting the heating by contacting the surface of the graphite body into which the solution has penetrated with a naked gas flame positioned above such surface, the graphite body being heated to about 200° to 450° C. for about 2 to 10 minutes.

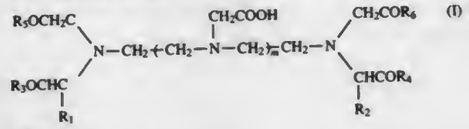
5,575,986

CHELATING AGENT, COMPLEX COMPOUND OF SAID CHELATING AGENT AND METALLIC ATOM, AND DIAGNOSTIC AGENT COMPRISING SAME

Fumio Mori; Tadashi Okano; Kazuki Murakami; Masakazu Shintome; Hiromichi Mukai; Ikuko Miyagi; Takashi Imagawa; Sang-Won Kim, all of Osaka; Taro Marukawa, Nagoya, and Takahiro Kozuka, Kobe, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Continuation of Ser. No. 204,164, Mar. 3, 1994, Pat. No. 5,453,264. This application Apr. 19, 1995, Ser. No. 423,451
Claims priority, application Japan, Jul. 3, 1992, 4-200392
Int. Cl.[6] A61K *49/00;31/32;31/295*
U.S. Cl. 424—9.364 **12 Claims**

1. A compound of the following formula (I)



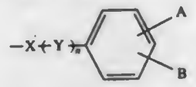
(I)

wherein:

m is an integer of 1 to 3;

R_1 and R_2 are the same or different and each is hydrogen atom or lower alkyl; and

R_3, R_4, R_5 and R_6 are the same or different and each is hydroxy or a group of the formula



wherein:

n is 0 or 1;

x is —NH— or —O—;

Y is alkylene;

A is hydrogen atom, lower alkyl, lower alkoxy, halogen atom or trifluoromethyl; and

B is alkyl or alkenyl, the total carbon number of Y and B is 5 to 7;

with the proviso that two or three of R_3, R_4, R_5 and R_6 are hydroxyl groups and that when two of them are hydroxyl groups, the cases where R_3 and R_5 are hydroxy, and R_4 and R_6 are hydroxy are excluded; or a salt thereof.

5,575,987

METHOD OF PRODUCING SUSTAINED-RELEASE MICROCAPSULES

Shigeru Kamei, Takarazuka; Minoru Yamada, Kawanishi, and Yasuaki Ogawa, Ohyamazaki-cho, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 115,149, Sep. 2, 1993, abandoned. This application Nov. 27, 1995, Ser. No. 562,634
Claims priority, application Japan, Sep. 2, 1992, 4-234821
Int. Cl.[6] A61K *9/48;9/14;9/50;* **B32B** *5/16*
U.S. Cl. 424—451 **1 Claim**

1. A sustained release form of (Pyr)-Glu-His-Trp-Ser-Tyr-D-Leu-Leu-Arg-Pro-NH-C_2H_5 in the form of a plurality of microcapsules of (Pyr)-Glu-His-Trp-Ser-Tyr-D-Leu-Leu-Arg-Pro-NH-C_2H_5 free from aggregation, said microcapsules containing (Pyr)-Glu-His-Trp-Ser-Tyr-D-Leu-Leu-Arg-Pro-NH-C_2H_5 from a W/O emulsion comprising an inner aqueous phase containing said (Pyr)-Glu-His-Trp-Ser-Tyr-D-Leu-Leu-Arg-Pro-NH-C_2H_5 and an external oil phase containing an aliphatic biodegradable polymer based upon an aliphatic ester has an average molecular weight of about 3,000 to 30,000 and a dispersity of about 1.2 to 4.0 and the content of the biodegradable polymer is 90.9% (w/w) to the microcapsules, wherein said microcapsules formed on microencapsulation of said (Pyr)-Glu-His-Trp-Ser-Tyr-D-Leu-Leu-Arg-Pro-NH-C_2H_5 with said biodegradable polymer are then heated at a temperature at or above the glass transition temperature of said aliphatic biodegradable polymer, said heating being conducted at a temperature that does not cause aggregation of the microcapsules.

5,575,988

COMBINATION SUNSCREEN AND INSECT REPELLENT

John H. Knowles, Jr., Essex, and John C. Niles, Marblehead, both of Mass., assignors to LittlePoint Corp., Wakefield, Mass.

Filed Apr. 7, 1995, Ser. No. 418,766
Int. Cl.[6] A61K *7/42;34/16;31/165*
U.S. Cl. 424—59 **14 Claims**

1. A combination insect repellent and sunscreen composition for topical application comprising:

a. an amount of an insect repellent consisting essentially of N,N-diethyl-m-toluamide sufficient to repel insects when applied topically; and

b. an amount of a sunscreen agent consisting essentially of micronized particles of titanium dioxide, zinc oxide or mixtures thereof sufficient to provide an effective sunscreen when applied topically.

5,575,989

POWDER BLEACHING COMPOSITIONS FOR HAIR AND METHOD OF USE THEREOF

Paul F. Caskey, Sussex, N.J., assignor to CCP, Inc., West Patterson, N.J.

Continuation of Ser. No. 10,420, Jan. 28, 1993, abandoned. This application Aug. 23, 1994, Ser. No. 294,437
Int. Cl.[6] A61K *7/135;7/06*
U.S. Cl. 424—62 **14 Claims**

1. A powder composition for bleaching of human hair comprising:

a conditioner of about 2% to about 15% by weight of the powder composition, the conditioner selected from the group consisting of aluminum stearate, sodium stearate, magnesium stearate, hydrolyzed collagen and mixtures thereof;

a bleach accelerator of about 40% to about 60% by weight of the powder composition, the bleach accelerator comprising 25–50% by weight of the of the powder composition of potassium persulfate and 10–15% by weight of the powder composition of ammonium persulfate;

a thickener of about 1% to about 10% by weight of the powder composition;

a silica component of about 2% to about 11% by weight of the powder composition; and

a hydrogen peroxide source of about 15% to about 23% by weight of the powder composition, the hydrogen peroxide source comprising sodium percarbonate.

5,575,990

ANTIPERSPIRANT ROLL-ON COMPOSITIONS

Anthony Benfatto, North Brunswick, N.J., assignor to Bristol-Myers Squibb Company, New York, N.Y.

Continuation-in-part of Ser. No. 144,777, Oct. 28, 1993. This application Feb. 3, 1995, Ser. No. 383,396
Int. Cl.[6] A61K *7/32*
U.S. Cl. 424—65 **15 Claims**

1. In a low-residue oil-in-water microemulsion roll-on antiperspirant composition comprising an aqueous continuous phase containing from about 5 to about 30% of an antiperspirant active component and from about 35 to about 60% water, and a dispersed oil phase containing from about 5 to about 25% PEG-7-glyceryl cocoate, from about 0.5 to about 3% of a liquid organic emollient material having a viscosity of about 2 to about 2000 cps at 25° C., and from about 3 to about 7% cyclomethicone, the improvement comprising incorporating into the dispersed oil phase of said composition from about 0.1 to about 3% of an alkyl polyglucose having 6 to 16 carbons in the alkyl group and above 1 to about 5 glucose units per molecule, all percentages being based upon the total weight of the improved antiperspirant composition, whereby a clear antiperspirant composition is obtained.

5,575,991

HAIR TREATMENT COMPOSITION CONTAINING POLYVINYLPYRROLIDONE AND BETAINE AMPHOTERIC SURFACTANT

Karl-Heinz Kischka, Darmstadt; Dietrich Hoch, Pfungstadt-Eich; Jürgen Schmenger, Weiterstadt, and Ernst Flemming, Heusenstamm, all of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Germany

Filed Jun. 13, 1994, Ser. No. 259,758
Claims priority, application Germany, Jul. 31, 1993, 43 25 817.4
Int. Cl.[6] A61K *7/09;7/11*
U.S. Cl. 424—70.2 **10 Claims**

1. Hair treatment composition comprising:

A) from 0.1 to 10 percent by weight of a member selected from the group consisting of polyvinylpyrrolidone and polyvinylpyrrolidone-vinyl acetate-copolymer;

B) from 0.1 to 9 percent by weight of at least one amphoteric surfactant selected from the group consisting of fatty acid amidoalkylbetaines and fatty acidamidoalkylsulfobetaines;

C) from 0.1 to 5 percent by weight of at least one cationic surfactant;

D) from 0.1 to 2.0 percent by weight of at least one organic acid; and

E) water,

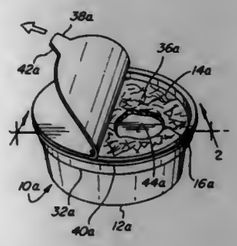
so that said composition provides improved curl droop properties when applied to hair.

5,575,992

EXTENDED RELEASE HOT AND COLD GEL FRAGRANCE CARTRIDGES AND METHOD OF MAKING THE SAME

Walter A. Kunze, Southington, Conn., assignor to Waterbury Companies, Incorporated, Waterbury, Coun.

Division of Ser. No. 207,935, Mar. 8, 1994, abandoned. This application Jun. 13, 1995, Ser. No. 489,806
Int. Cl.[6] A61L *9/04;9/12*
U.S. Cl. 424—76.4 **6 Claims**



1. A process for making a cartridge containing fragrant gel, comprising the steps of:

mixing together at least about fifty percent fragrant agent, at least about fifteen percent gelling agent, and at least about three percent encapsulant;

heating the mixture to between about 120° F. and to about 160° F. until the mixture becomes a liquid blend;

transferring the liquid blend to a cartridge housing through an opening in the cartridge housing; and

covering the cartridge housing opening with an air permeable membrane.

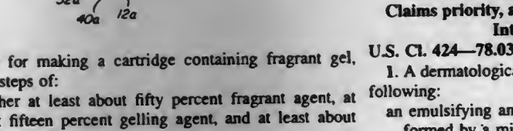
5,575,993

IONENE POLYMERS CONTAINING BIOLOGICALLY-ACTIVE ANIONS

James A. Ward, Eads, and Fernando Del Corral, Memphis, both of Tenn., assignors to Buckman Laboratories International, Inc., Memphis, Tenn.

Filed Aug. 31, 1994, Ser. No. 297,953
Int. Cl.[6] A01N *33/12*
U.S. Cl. 424—78.1 **71 Claims**

1. A water-soluble ionene polymer of formula I:



(I)

wherein

n is an integer from 4 to 400 corresponding to the degree of polymerization of the polymer;

R_1, R_2, R_3 and R_4 represent the same or different substituent selected from the group consisting of hydrogen, a C_1 to C_{16} alkyl group, a C_1 to C_{16} alkyl group substituted with one or more hydroxyl groups, a benzyl group, and a benzyl group substituted with one or more C_1 to C_{16} alkyl groups;

B represents a divalent C_2 to C_{16} aliphatic hydrocarbon radical which can be substituted by hydroxyl, a divalent C_5 to C_9 cyclic hydrocarbon radical, a di-(C_2 to C_6)-alkylene ether, a phenylene or alkyl-substituted phenylene radical, or the divalent group $R_1R_2NBNR_3R_4$ of formula I represents a divalent radical of the structure:

$$R_1R_2N—(CH_2)_p—NR_5—C(O)—NR_6—(CH_2)_p—NR_3R_4$$

where p is an integer from 2 to 6, R_1, R_2, R_3 and R_4 are the same as defined above, and R_5 and R_6 are the same or different and are selected from the group consisting of hydrogen and a C_1 to C_{16} alkyl group, or the divalent radical $R_1R_2NBNR_3R_4$ forms a heterocyclic group selected from 1,2-pyrazolidinyl, 1,3-imidazolindiyl, 1,4-piperazindiyl, aminopyrrolidinyl, or aminopiperidiyl wherein the heterocyclic group may be substituted with one or more groups selected from a C_1 to C_6 alkyl group, a hydroxyl group, a halide, or a phenyl group;

A^- is an anion derived from a biologically-active compound having at least one acid functionality with the proviso that said anion is not a halide anion;

X^- is an anion derived from a mineral or organic acid; and the degree of substitution of the polymer is from about 0.005 to 0.5.

5,575,994

DERMATOLOGICAL AND COSMETIC COMPOSITIONS

Luciano Fontanelli, Pisa, Italy, assignor to Istituto Gentili S.p.A., Pisa, Italy

PCT No. PCT/EP92/02597, § 371 Date May 18, 1994, § 102(e) Date May 18, 1994, PCT Pub. No. WO93/09760, PCT Pub. Date May 27, 1993
PCT Filed Nov. 12, 1992, Ser. No. 244,147
Claims priority, application Italy, Nov. 22, 1991, MI91A3127
Int. Cl.[6] A61K *7/00;7/48;7/06*
U.S. Cl. 424—78.03 **10 Claims**

1. A dermatological and cosmetic composition consisting of the following:

an emulsifying and self-emulsifying agent, having o/w activity formed by a mixture containing (as % w/w)

1') a polyethylene glycol mono- or distearate	0.5–5.0%;
2') a polyglycol ester of a saturated or unsaturated C_{14}–C_{20} fatty acid	1.0–10.0%;
3') cetyl alcohol and 0.75–1.50% of free	1.0–16.0%;

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-continued

or esterified sterols	
2) sodium versenate and an antioxidant agent	0.1–5.0%;
3) an anti-mold and bacteriostatic agent	0.05–0.1%;
4) an active ingredient having anti-wrinkle effect	1–30%;
5) purified water F.U.	q.s. to 100%

5,575,995

FERRIC SUBSULFATE GEL AND METHODS OF USING SAME

Richard L. Giovanoni, 155 Webster St., Hanover, Mass. 02339

Continuation of Ser. No. 314,747, Sep. 29, 1994, abandoned, which is a continuation of Ser. No. 745,195, Aug. 15, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 470,132

Int. Cl.[6] A61K *33/26;* **A61L** *25/00*

U.S. Cl. 424—78.06 **13 Claims**

1. A method of treating lesions on surgically or otherwise traumatized tissue, which comprises applying to such tissue a gel containing a water solution of ferric subsulfate, glycerin as a thickening agent in which said ferric subsulfate is soluble in an amount sufficient to thicken the solution, and polyvinyl pyrrolidone as a film forming material in an amount sufficient to create a gel-like structure such that when removed from a container the gel tends to retain its shape, and in which the iron concentration is substantially less than the 20 to 22% iron present in officially recognized Monsel's solution.

5,575,996

INSECTICIDE BAIT COMPOSITION

Barry C. Erwin, 707 Park Ave., Monroe, La. 71201

Division of Ser. No. 201,892, Feb. 25, 1994, Pat. No. 5,480,638. This application Sep. 25, 1995, Ser. No. 533,264

Int. Cl.[6] A01N *25/12;59/14;65/00*

U.S. Cl. 424—84 **8 Claims**

1. A method of preparing an environmentally safe insecticide composition comprising a comminuted, flowable mixture of dry pet food comprising by weight at least from about 8% to about 12% fat, a colloidal drying agent for coating and absorbing moisture from said pet food, powdered boric acid present in said composition in a weight percent of from about 10% to about 18% and a synthetic pyrethrin present in said composition in a weight percent of from about 0.25% to about 0.55%, comprising the steps of comminuting dry pet food, mixing the pet food with powdered boric acid and a powdered pyrethrin in an effective insecticidal amount of said boric acid and said pyrethrin, to form a flowable powdered mixture and mixing a comminuted drying agent with said powdered mixture to coat said pet food and absorb excess moisture from said pet food.

5,575,997

BIOCOMPATIBLE MONOMER AND POLYMER COMPOSITIONS

Jeffrey C. Leung, and Jeffrey G. Clark, both of Raleigh, N.C., assignors to Tri-Point Medical Corporation, Raleigh, N.C.

Division of Ser. No. 215,584, Mar. 22, 1994, Pat. No. 5,514,371, which is a division of Ser. No. 40,618, Mar. 31, 1993, Pat. No. 5,328,687. This application Jun. 5, 1995, Ser. No. 461,931

Int. Cl.[6] A61K *31/785;31/795;9/14;* **A61F** *2/28*

U.S. Cl. 424—78.35 **17 Claims**

1. A method of dressing living tissue, comprising (a) applying to said living tissue a composition comprising 1) at least one monomer which forms a polymer whose in vivo biodegradation produces formaldehyde; and 2) an effective amount of at least one biocompatible agent effective to reduce active formaldehyde concentration levels; and (b) allowing the composition to polymerize, wherein the at least one monomer has the formula:

CHR=CXY

wherein R is H, C_1–C_4 alkyl group, or —CH=CH_2 group, and X and Y are both strong electron withdrawing groups.

5,575,998

MIXTURE OF MICROORGANISMS, ITS USE FOR THE BIODEGRADATION OF HYDROCARBONS, AS WELL AS PROCESS FOR ITS APPLICATION

Miroslav Nemec, Ceska, and Dana Horakova, Brno, both of Czech Rep., assignors to Biorem AG, Zug, Switzerland

PCT No. PCT/EP93/00897, § 371 Date Nov. 21, 1994, § 102(e) Date Nov. 21, 1994, PCT Pub. No. WO93/21348, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 13, 1993, Ser. No. 318,825

Claims priority, application Czech Rep., Apr. 15, 1992, 1157-92

Int. Cl.[6] C02F *3/00;* **A01N** *63/00;* **C12N** *1/00*

U.S. Cl. 424—93.3 **16 Claims**

1. A mixture of microorganisms for the biodegradation of hydrocarbons, comprising:

Pseudomonas putida and *Geotrichum candidum* in a cell-number ratio of 5:1 to 1:1.

5,575,999

ANIMAL FEED SUPPLEMENT CONTAINING CO-SPRAYED DRIED PLASMA PROTEIN AND AMYLASE

Ralph P. Yoder, Fort Dodge, Iowa, assignor to AMPC, Inc., Ames, Iowa

Continuation of Ser. No. 161,130, Dec. 3, 1993, Pat. No. 5,372,811. This application Oct. 14, 1994, Ser. No. 324,157

Int. Cl.[6] A23K *1/00;* **A23L** *1/31;* **A23J** *1/00*

U.S. Cl. 424—94.6 **8 Claims**

1. A feed supplement for animals comprising:

an effective amount of amylase; and

animal plasma protein wherein the amylase and the animal plasma protein are co-spray dried together.

5,576,000

MOLECULAR CLONES OF HIV-1 VIRAL STRAINS MH-ST1 AND BA-L, AND USES THEREOF

Marvin S. Reitz, Jr., Derwood, Md.; Genoveffa Franchini, Washington, D.C.; Phillip D. Markham, Rockville, Md.; Robert C. Gallo, Bethesda, Md.; Franco C. Lori, Bethesda, Md.; Mikulas Popovic, Bethesda, Md., and Suzanne Gartner, N. Potomac, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 22,835, Feb. 25, 1993, Pat. No. 5,420,030, which is a continuation of Ser. No. 599,491, Oct. 17, 1990, abandoned. This application Feb. 15, 1995, Ser. No. 388,809

Int. Cl.[6] A61K *39/21*

U.S. Cl. 424—188.1 **5 Claims**

1. Isolated envelope protein of HIV-1 strain BA-L having the amino acid sequence of SEQ ID NO:6.

5,576,001

COMPOSITION FOR THE TREATMENT OF DIARRHEA, ITS USE AND ITS PREPARATION

Medhat Abu-Shaaban, 8529 Huntspring Dr., Lutherville, Md. 21093

Filed Feb. 22, 1995, Ser. No. 392,422

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **33 Claims**

1. A therapeutic composition for the treatment of diarrhea comprising carrots, rice, bananas and glucose in powdered form, the carrots and rice having been cooked and dried prior to being ground to a powder.

5,576,002

MENINGOCOCCAL POLYSACCHARIDE CONJUGATE VACCINE

Harold J. Jennings, Gloucester, and Francis Michon, Ottawa, both of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Continuation of Ser. No. 956,830, Oct. 5, 1992, abandoned, which is a continuation of Ser. No. 448,195, Dec. 14, 1989, abandoned. This application May 5, 1994, Ser. No. 238,600

Int. Cl.[6] A61K *39/385;39/116;* **C07K** *17/10;* **C08B** *37/00*

U.S. Cl. 424—197.11 **38 Claims**

1. A modified group B polysaccharide of *Neisseria meningitides* wherein the sialic acid residue N-acetyl groups of the native polysaccharide are replaced by C_4–C_8 acyl groups to an extent that when said modified group B polysaccharide is conjugated to protein the amount of substitution of acyl for acetyl groups is sufficient to reduce the inducement of antibodies which bind native GBMP, compared to the binding of native GBMP to antibodies induced by a N-Pr-GBMP-protein conjugate.

5,576,003

ORNITHOBACTERIUM RHINOTRACHEALE VACCINE AND METHOD OF IMMUNIZATION

Paul K. Storm, and Paul C. M. van Empel, both of Boxmeer, Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

PCT No. PCT/EP93/02873, § 371 Date Jun. 9, 1994, § 102(e) Date Jun. 9, 1994, PCT Pub. No. WO94/09114, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 14, 1993, Ser. No. 244,831

Claims priority, application European Pat. Off., Oct. 14, 1992, 92203154

Int. Cl.[6] A61K *39/02;* **C12N** *1/12*

U.S. Cl. 424—234.1 **14 Claims**

1. A vaccine effective against a disease of the lower respiratory tract in poultry, comprising inactivated *Ornithobacterium rhinotracheale.*

5,576,004

MATRIX WITH IMMUNOMODULATING ACTIVITY

Bror Morein, Ollonstigen 3, Vreta, S-755 90 Uppsala; Karin Lövgren, Lindsbergsgatan 8C, S-752 40 Uppsala, both of Sweden; Kristian Dalsgaard, Ny Vordingborgvej 80, DK-4771 Kalvehave, Denmark; Jan Thurin, 28 University News, Philadelphia, Pa. 19104-4756, and Bo Sundquist, Bellmansgatan 30, S-754 28 Uppsala, Sweden

PCT No. PCT/SE89/00528, § 371 Date May 21, 1991, § 102(e) Date May 21, 1991, PCT Pub. No. WO90/03184, PCT Pub. Date Apr. 5, 1990

PCT Filed Sep. 28, 1989, Ser. No. 671,816

Claims priority, application U.S. Army, Sep. 30, 1988, 251-576; Sweden, Mar. 22, 1989, 8901027; Aug. 16, 1989, 8902780

Int. Cl.[6] A61K 47/08;45/00

U.S. Cl. 424—278.1 **10 Claims**

1. A vaccine comprising an immunomodulating agent having an iscom-like structure and comprising within said iscom-like structure at least one lipid and at least one saponin, said iscom-like structure being free of incorporated antigens; one or more antigens in admixture with said immunomodulating agent but not integrated into said iscom-like structure; and a pharmaceutically acceptable vehicle.

5,576,005

EFFECTIVENESS OF WART REMOVAL BY COMPOSITIONS INCLUDING PROPOLIS

Ronald D. Wise, 9037 Kildare Ave., Skokie, Ill. 60076, and Predrag Konstantinovic, 376 Trinity La., Oakbrook, Ill. 60521

Filed Jun. 27, 1995, Ser. No. 495,219

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—401 **10 Claims**

1. A composition for the topical treatment of warts comprising an amount of propolis and salicylic acid, said amount effective in the treatment of warts, in a pharmacologically accepted topical vehicle, wherein said vehicle is a medium capable of containing the propolis in solution, suspension or emulsion.

5,576,006

ANTIMICROBIAL COMPLEXES

W. Novis Smith, Philadelphia, Pa., assignor to W. Novis Smith and Co., Collingswood, N.J.

Continuation-in-part of Ser. No. 750,425, Aug. 14, 1991, Pat. No. 5,399,343. This application Sep. 23, 1994, Ser. No. 311,151

Int. Cl.[6] A01N *33/00*

U.S. Cl. 424—404 **13 Claims**

1. A method for deodorizing or reducing odors in footwear which comprises treating footwear with a composition in the form of a spray comprising an antifungal, biocidal or antimicrobial film forming complex of a polycarboxylic acid and a functional antimicrobial, biocidal or antifungal compound having at least one site which is quaternary ammonium, amine, a mixture thereof or the salts thereof, said film forming complex being the reaction product of said functional compound and a polycarboxylic acid wherein at least two functional molecules complex or coordinate per molecule of polycarboxylic acid.

5,576,007

ZEOLITE INSECTICIDE FOR TERMITES

Satoshi Ikeda; Yoshiki Inoue, and Naoaki Yamamoto, all of Takamatsu, Japan, assignors to Kabushiki Kaisha Shikoku Sogo Kenkyusho, Kagawa-ken, Japan

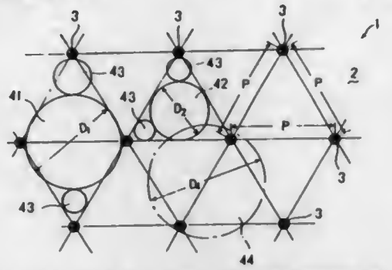
PCT No. PCT/JP92/01364, § 371 Date Oct. 21, 1993, § 102(e) Date Oct. 21, 1993, PCT Pub. No. WO93/07752, PCT Pub. Date Apr. 29, 1993

PCT Filed Oct. 21, 1992, Ser. No. 78,169

Claims priority, application Japan, Oct. 21, 1991, 3-272311; Sep. 4, 1992, 4-237276

Int. Cl.[6] A01N 25/34

U.S. Cl. 424—408 6 Claims



1. A dry insecticide for termites, consisting essentially of:

dry powdered zeolite particles for contacting and covering skin of a termite and preventing release of carbon dioxide gas from the skin covered by zeolite particles, said zeolite particles having a diameter of less than 63 μm, said diameter being less than the distance between body hairs of a termite, and containing at least 40% by weight of the insecticide; and

dry powdered zeolite particles for covering openings of stomata of a termite and preventing intake of air by the termite, said zeolite particles having a diameter of less than 30 μm, said diameter being less than the diameter of a stoma of a termite and containing at least 25% by weight of the insecticide;

whereby the insecticide functions by failure of intake of oxygen through the stomata and failure of exit of carbon dioxide through the skin, causing death of the termite by dehydration and respiratory failure.

5,576,008

PREPARATION OF PESTICIDE MICROCAPSULE

Chien-Chun Yang, and I-Horng Pan, both of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Continuation of Ser. No. 857,265, Jul. 19, 1991, abandoned. This application Jun. 21, 1994, Ser. No. 262,850

Int. Cl.[6] A01N 25/28

U.S. Cl. 424—408 18 Claims

1. A method for preparing a pesticide microcapsule comprising the steps consisting essentially of:

adding to an aqueous urea-formaldehyde prepolymer a vegetable oil and up to 1.3% of the final weight of the microcapsule of an oil-soluble pesticide to form a solution, the amount of vegetable oil added being from about 0.1 to 0.6 gram per ml. of prepolymer, said oil-soluble pesticide being allethrin, deltamethrin, permethrin, cypermethrin, chlorpyrifos, or diazinon and further being added to said solution in an amount of from about 0.0015 to about 0.0063 gram per ml of the prepolymer;

mixing said solution in a water bath at 40°–50° C. at a speed greater than 700 RPM to achieve a thoroughly emulsified state;

adding an acid to said solution to acidify said solution to a pH of between about 1 and 6; and

crosslinking the urea-formaldehyde prepolymer in said acidified solution, in the absence of a surfactant, for a period of from 3 to 6 hours to produce a pesticide microcapsule having a predetermined release rate and release period.

5,576,009

MICROCAPSULATED PESTICIDAL FORMULATIONS, THEIR PREPARATION AND USE

Rudolf Nastke, Rehbrücke; Andreas Leonhardt, Freiburg, both of Germany, and Ernst Neuenschwander, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 135,372, Oct. 12, 1993, abandoned, which is a continuation of Ser. No. 941,588, Sep. 8, 1992, abandoned. This application Aug. 22, 1994, Ser. No. 294,181

Claims priority, application Switzerland, Sep. 11, 1991, 2669/91

Int. Cl.[6] A01N 25/28

U.S. Cl. 424—408 4 Claims

1. A process for the preparation of microcapsules, which comprises stirring with a stirrer, at a speed of 3 to 16 m/sec measured at the farthest point to the axis of rotation of the stirrer, an aqueous solution which is substantially free of the group consisting of formaldehyde and melamine and consisting essentially of a precondensate of urea and glutaraldehyde, in the molar ratio of urea to glutaraldehyde of 1:1 to 1:2.5, into an aqueous dispersion of a water-immiscible pesticide, said aqueous dispersion having a pH from about 1 to 6 and being substantially free of the group consisting of formaldehyde and melamine, wherein the water-immiscible pesticide is (i) a herbicide selected from the class of ureas, sulfonyl ureas, chloroacetanilides or triazines or (ii) an insecticide or acaricide selected from the class of the thioureas.

5,576,010

USE OF DIMETHYL SUBSTITUTED OXYMETHYL CYCLOHEXANE DERIVATIVES FOR THEIR INSECT REPELLENCY PROPERTIES

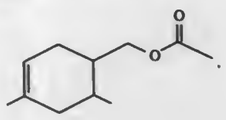
Craig B. Warren, Rumson; Anna B. Marin, Long Branch, both of N.J.; Jerry F. Butler, Gainesville, Fla., and Anubhav P. S. Narula, Hazlet, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y., and The University of Florida, Gainesville, Fla.

Continuation-in-part of Ser. No. 253,244, Jun. 2, 1994, Pat. No. 5,472,701, which is a division of Ser. No. 61,044, May 14, 1993, Pat. No. 5,464,626. This application Jun. 27, 1995, Ser. No. 496,124

Int. Cl.[6] A01N 25/08

U.S. Cl. 424—408 7 Claims

1. A method of repelling at least one member of the insect species: *Musca domestica* L. (Diptera:Muscidae), *Aedes aegypti, Culex nigripalpus; Aedes atlanticus; Culex salinarius; Aedes vexans; Culex spp.; Simulium spp.; Psoroferia ferox; Aedes infirmatus; Drosophila melanogaster;* Coccinellidae; *Anopheles crucians; Psoroferia columbiae; Culicoides spp.; Aedes Spp.* and/or *Haematobia irritans* [L.], and/or *Aedes albopictus* for a finite period of time from a three-dimensional space inhibited by said insect species member consisting essentially of the step of exposing said three-dimensional space to an effective insect species member-repelling concentration and quantity of the compound having the structure:



5,576,011

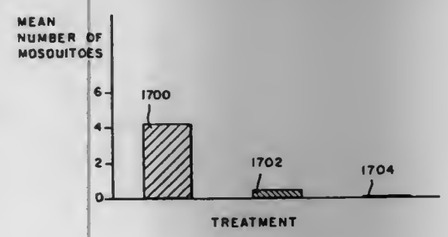
METHOD FOR REPELLING INSECTS USING CYCLIC ORGANIC ALCOHOL OR CARBONATES AND DEVICE USEFUL IN CARRYING OUT SUCH METHOD

Jerry F. Butler, Gainesville, Fla.; Anna B. Marin, Leonardo, N.J.; Craig B. Warren, Rumson, N.J.; Richard A. Wilson, Westfield, N.J., and Braja D. Mookherjee, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y., and The University of Florida, Gainesville, Fla.

Division of Ser. No. 289,570, Aug. 12, 1994, Pat. No. 5,441,988, which is a division of Ser. No. 130,398, Oct. 1, 1993, Pat. No. 5,417,009, which is a continuation-in-part of Ser. No. 982,374, Nov. 25, 1992, Pat. No. 5,281,621, which is a continuation of Ser. No. 789,695, Nov. 8, 1991, abandoned, which is a division of Ser. No. 643,206, Jan. 18, 1991, Pat. No. 5,126,369. This application Apr. 25, 1995, Ser. No. 428,428

Int. Cl.[6] A01N 25/08

U.S. Cl. 424—411 5 Claims

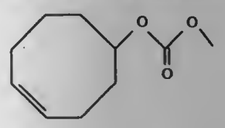


1. A method of repelling at least one of the insect species:

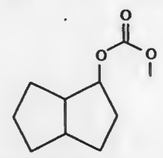
(a) *Musca domestica* L. (Diptera:Muscidae);
(b) *Aedes aegypti;*
(c) *Aedes albopictus;*
(d) Anopheles spp.
(e) *Coquillettidia perturbans;*
(f) Culiseta spp.;
(g) Culex spp.;
(h) Psorophora spp.;
(i) Culicoides spp.;
(j) Lutzomyia spp.;
(k) Aedes spp.;
(l) *Culex nigripalpus;*
(m) *Aedes atlanticus;*
(n) *Culex salinarius;*
(o) *Aedes vexans;*
(p) Simuliidae spp.;
(q) *Psorophora ferox;*
(r) *Aedes infirmatus;*
(s) *Drosophila melanogaster;*
(t) Coccinellidae;
(u) *Anopheles crucian;*
(v) *Psorophora columbiae;* and
(w) *Haemotobia irritans* (L.)

for a finite period of time from a three dimensional space inhabitable by said insect species comprising the step of exposing said three dimensional space for said finite time period to an effective insect species-repelling concentration and quantity of at least one cyclic compound-containing composition of matter selected from the group consisting of:

(1) a mixture of carbonate esters consisting of a major proportion of the compound having the structure:



and a minor proportion of the compound having the structure:

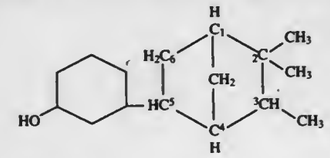


prepared according to the process of:

(a) reacting 1,5-cyclooctadiene with formic acid to form a mixture of formates containing a major quantity of 4-cyclooctenyl formates; and

(b) reacting the resulting mixture of formates with dimethyl carbonate in the presence of an alkali metal methoxide to form a mixture of methyl carbonates containing a major quantity of 4-cyclooctenyl methyl carbonate; and

(2) a composition of matter containing a major proportion of meta-(isocamphyl-5) cyclohexanol having the structure:



produced according to the process of:

(a) reacting catechol or guiacol with camphene in the presence of a Friedel-Crafts catalyst to form an alkylation product; then

(b) treating the alkylation product with hydrogen to form a dioxy intermediate; and then

(c) treating the dioxy intermediate with hydrogen to form a meta-(isocamphyl-5) cyclohexanol-containing mixture.

5,576,012

PHARMACEUTICAL AQUEOUS FORMULATIONS CONTAINING A SPARINGLY SOLUBLE PHARMACEUTICAL ACTIVE COMPOUND WITH A SOLUBILIZING POLYMERIC AGENT

Kurt H. Bauer, 4, Im Finkeler, 79112 Freiburg/Br. 33, and Markus Kiefer, 6, Unter dem Dorf, 7989 Bad Krozingen, both of Germany

PCT No. PCT/EP91/01933, § 371 Date Aug. 10, 1993, § 102(e) Date Aug. 10, 1993, PCT Pub. No. WO92/10211, PCT Pub. Date Jun. 25, 1992

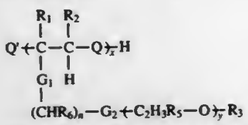
PCT Filed Oct. 11, 1991, Ser. No. 66,039

Claims priority, application Germany, Dec. 12, 1990, 40 39 602.9

Int. Cl.[6] A61K 47/32

U.S. Cl. 424—422 21 Claims

1. A pharmaceutical formulation comprising a pharmaceutically active compound which is sparingly soluble in water and a solubilizing agent, wherein the solubilizing agent is selected from a polymer of the general formula I


(I)

in which R_1, R_2, R_5 and R_6 are identical or different and represent hydrogen or a methyl or ethyl group,

Q represents a valency, and Q' denotes hydrogen,

x is an integer from 3 to 50,

G is an ester and G_2 is O, n is an integer from 4 to 44, y is an integer from 2 to 50, and

R_3 is hydrogen or a lower alkyl having 1–6 C atoms,

wherein said polymer of formula I is present in an amount of up 30 % by weight of the pharmaceutical formulation.

5,576,013

TREATING VASCULAR AND NEOPLASTIC TISSUES

Patricia B. Williams, Norfolk, and John D. Sheppard, Cape Charles, both of Va., assignors to Eastern Virginia Medical School, Norfolk, Va.

Filed Mar. 21, 1995, Ser. No. 408,000

Int. Cl.[6] A61F *2/02;* **A61K** *9/70;* **A61L** *15/16*

U.S. Cl. 424—423 **16 Claims**

1. A method of photodynamic therapy by a process comprising the steps of:

locally applying a photosensitizing agent to target tissue consisting essentially of tissues containing blood-carrying vessels supplying an undesired lesion and avoiding adverse general light sensitivity found with intravenous administration of sensitizing agents, the photosensitizing agent being in a pharmaceutically acceptable composition for contact with said target tissue;

illuminating an area consisting essentially of the treated blood-carrying vessels with light from a laser emitting light of a frequency and energy level lower than that used for general tissue irradiation leading to tissue destruction or genetic changes but which excites the photosensitizing agent and coagulates blood in said vessels.

5,576,014

INTRABUCCALLY DISSOLVING COMPRESSED MOLDINGS AND PRODUCTION PROCESS THEREOF

Takao Mizumoto; Yoshinori Masuda, and Muneo Fukui, all of Shizuoka, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd, Tokyo, Japan

Continuation-in-part of Ser. No. 351,118, Nov. 30, 1994, abandoned. This application Feb. 1, 1995, Ser. No. 385,093

Claims priority, application Japan, Jan. 31, 1994, 6-10112; Apr. 25, 1994, 6-86652

Int. Cl.[6] A61F *13/00*

U.S. Cl. 424—435 **33 Claims**

1. An intrabuccally dissolving compressed molding showing quick disintegration and dissolution in the buccal cavity, which comprises granules comprising a saccharide having low moldability having been granulated with a saccharide having high moldability.

5,576,015

SUBSTANTIALLY PURIFIED BETA (1,3) FINELY GROUND YEAST CELL WALL GLUCAN COMPOSITION WITH DERMATOLOGICAL AND NUTRITIONAL USES

Byron A. Donzis, #18 W. Rivercrest, Houston, Tex. 77042

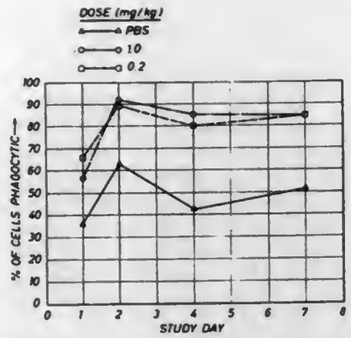
Filed Mar. 2, 1995, Ser. No. 396,490

Int. Cl.[6] A23K *1/165;1/17;* **A61K** *31/715;* **A23L** *1/30*

U.S. Cl. 424—442 **13 Claims**

1. A method for improving the growth and survival of animals comprising:

administering an effective amount of a nutritional supplement to an animal, said nutritional supplement comprising a water-insoluble yeast cell wall extract comprising purified beta (1,3) glucan having a particle size of about 1.0 micron or less.



5,576,016

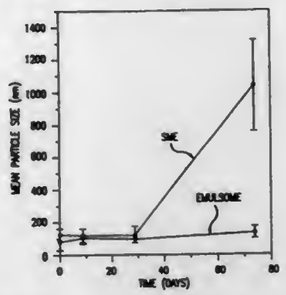
SOLID FAT NANOEMULSIONS AS DRUG DELIVERY VEHICLES

Shimon Amselem, Rehovot, and Doron Friedman, Carmei Yosef, both of Israel, assignors to Pharmos Corporation, New York, N.Y.

Filed May 18, 1993, Ser. No. 63,613

Int. Cl.[6] A61K *9/127;9/16*

U.S. Cl. 424—450 **54 Claims**



1. A pharmaceutical composition comprising a nanoemulsion of a plurality of noncellular lipid particles having a mean diameter of about 10 to 250 nm in a pharmaceutically acceptable carrier solution, wherein each said lipid particle has a core of a lipid which is in a solid phase at a temperature of at least about 25° C. said lipid core being surrounded by at least one phospholipid bilayer, said bilayer comprising two phospholipid layers separated by an aqueous compartment.

5,576,017

HETEROVESICULAR LIPOSOMES

Sinil Kim, Solana Beach, Calif., assignor to DepoTech Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 78,701, Jun. 16, 1993, Pat. No. 5,422,120, which is a continuation-in-part of Ser. No. 496,846, Mar. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 196,590, May 30, 1988, abandoned. This application Feb. 23, 1995, Ser. No. 393,724

Int. Cl.[6] A61K *9/127*

U.S. Cl. 424—450 **8 Claims**

1. A heterovesicular liposome comprising at least two compounds in separate solutions encapsulated in separate chambers of the liposome, wherein one and only one of the compounds is leuprolide.

5,576,018

METHOD FOR TREATING NEUROLOGICAL DISORDERS

Sinil Kim, Solana Beach, and Stephen B. Howell, Del Mar, both of Calif., assignors to DepoTech Corporation, San Diego, Calif.

Division of Ser. No. 62,799, May 14, 1993, Pat. No. 5,455,044. This application Jun. 7, 1995, Ser. No. 484,501

Int. Cl.[6] A61K *9/127*

U.S. Cl. 424—450 **5 Claims**

1. A method for ameliorating a viral disease which comprises intralumbar administration to the cerebrospinal fluid (CSF) of a human with the disease of a therapeutically effective amount of an antiviral drug in a synthetic membrane vesicle such that the antiviral agent persists in the cerebro-ventricular space for a time sufficient to ameliorate the disease.

5,576,019

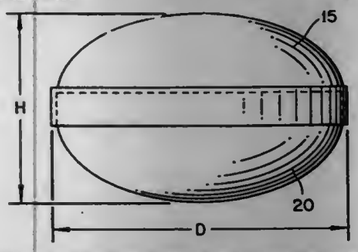
METHOD FOR BLINDING A MEDICATION

Manley A. Paulos, Granger, Ind., assignor to CapTab 11c, Rockford, Ill.

Division of Ser. No. 228,254, Apr. 15, 1994, which is a division of Ser. No. 722,155, Jun. 27, 1991, Pat. No. 5,314,696. This application Jun. 7, 1995, Ser. No. 487,511

Int. Cl.[6] A61K *9/48*

U.S. Cl. 424—453 **20 Claims**



1. A method for blinding a medication comprising placing said medication within a capsule to be swallowed whole having a body portion and cap portion; said body portion comprising an open end and an oppositely positioned closed end, said open end being defined by a circumferential edge, said circumferential edge lying in a first plane, said body portion further including a second plane which contacts an outer surface of the closed end of the body portion and which is parallel to the first plane; said cap portion comprising an open end and an oppositely positioned closed end, said open end being defined by a circumferential edge, said circumferential edge lying in a first plane; said body and cap portions being configured such that when the capsule is closed the greatest straight line distance connecting two points on said circumferential edge of either said body portion or said cap portion is greater than the perpendicular distance between said second plane of said body portion and a second plane of the cap portion which contacts an outer surface of the closed end of the cap portion and which is parallel to the first plane of the cap portion; and then closing said capsule by locking said body portion and cap portion.

5,576,020

ADJUVANT FOR PHARMACEUTICAL PREPARATIONS

Koji Iritani; Tetsuya Kawasaki, both of Hyogo; Nobutaka Tani, Osaka; Shigeki Masuda, and Yoshiaki Yano, both of Hyogo, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

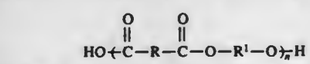
Division of Ser. No. 977,100, Nov. 16, 1992. This application Apr. 14, 1995, Ser. No. 421,781

Claims priority, application Japan, Nov. 15, 1991, 3-300395; Nov. 26, 1991, 3-310873

Int. Cl.[6] A61K *47/30;47/26*

U.S. Cl. 424—465 **12 Claims**

1. A pharmaceutical composition for use in large intestine-selective drug release comprising a pharmaceutically active ingredient coated with a polyester of the following formula (I):



(I)

wherein R is a divalent organic group, R^1 is an oligosaccharide, wherein said oligosaccharide is unsubstituted or substituted with an acyl, and has at least 3 saccharide residues, and is hydrolyzed and/or assimilated in the large intestine, and n is an integer of 2 to 2,000, wherein the structural units numbering n may be the same or different from one another.

5,576,021

SUSTAINED-RELEASE MULTI-GRANULE TABLET

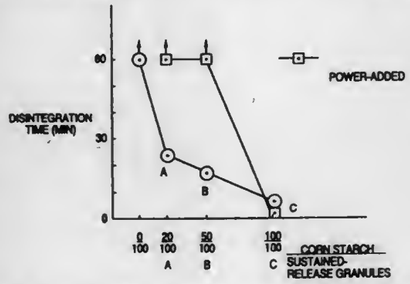
Hidenobu Andoh, Gifu Prefecture; Sumio Watanabe, and Yasuo Miyake, Both of Aichi Prefecture, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 895,464, Jun. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 752,987, Sep. 3, 1991, abandoned, which is a continuation of Ser. No. 595,732, Oct. 10, 1990, abandoned, which is a continuation of Ser. No. 240,343, Aug. 25, 1988, abandoned, which is a continuation of Ser. No. 80,012, Jul. 31, 1987, abandoned. This application Jul. 15, 1994, Ser. No. 275,240

Claims priority, application Japan, Aug. 6, 1986, 61-183414

Int. Cl.[6] A61K *9/22;9/26*

U.S. Cl. 424—468 **14 Claims**



1. An improved oral pharmaceutical sustained-release multi-granule tablet, produced by a process which consists essentially of the steps of:

preparing, as nuclear granules, a plurality of sustained-release granules containing an active substance and a sustained-release substance,

wherein the active substance is bunazosin hydrochloride, and wherein the sustained-release substance is at least one member selected from the group consisting of sucrose-fatty acid ester, ethyl cellulose, methyl cellulose, polyvinyl pyrrolidone, hydroxypropyl cellulose, hydroxypropylmethyl cellulose, a gum arabic, gelatin and sbellac;

coating, in a laminate style, each of said sustained-release granules with at least one layer composed of a first formulation adjuvant or a mixture of the first formulation adjuvant and the active substance, wherein the first formulation adjuvant comprises a water-soluble excipient; and

compressing said coated sustained-release granules with a second formulation adjuvant comprising a lubricant to obtain the sustained-release multi-granule tablet.

5,576,022

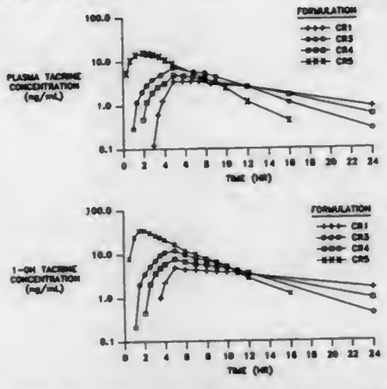
CONTROLLED RELEASE TACRINE DRUG DELIVERY SYSTEMS AND METHODS FOR PREPARING SAME

S. Shirley Yang, Succasunna; Wayne Boisvert, Randolph; Nouman A. Muhammad, Long Valley, and Jay Weiss, East Brunswick, all of N.J., assignors to Warner Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 96,140, Jul. 22, 1993, abandoned. This application Apr. 12, 1995, Ser. No. 422,019

Int. Cl.[6] A61K *9/24*

U.S. Cl. 424—472 **20 Claims**



1. A controlled release tacrine drug delivery system comprising an immediate release composition and a sustained release composition, the immediate release and sustained release compositions being prepared from aqueous systems, wherein:

(I) the immediate release composition comprises in percentages by weight of the immediate release compositioo:

(A) immediate release pellets comprising:

(a) nonpareil seeds in an amount from about 25% to about 75%;

(b) tacrine in an amount from about 10% to about 80%; and

(c) a binding agent in an amount from about 1% to about 10%; and

(B) a sealing layer over the immediate release pellets comprising:

(a) a sealing agent that is an alkyl cellulose derivative in an amount up to about 6%, and

(b) a first plasticizing agent in an amount up to about 5%; and

(2) the sustained release composition comprises in percentages by weight of the sustained release composition;

(A) the immediate release composition; and

(B) a sustaining layer over the immediate release composition comprising;

(a) a water-insoluble polymer in an amount from about 40% to about 90%;

(b) a water-soluble polymer in an amount up to about 10%; and

(c) a second plasticizing agent in an amount up to about 10%; wherein the sustaining layer and the immediate release composition are present in the sustained release composition in a ratio by weight from about 1:9 to about 4:6, respectively, and the immediate release composition and the sustained release composition are present in the drug delivery system in a ratio by weight from about 0.01:1 to about 1:1, respectively, the dissolution rate of tacrine being at least 25% after two (2) hours and at least 50% after six (6) hours when measured in vitro in a type 2 dissolution apparatus according to United States Pharmacopeia.

5,576,023

Patent Not Issued For This Number

5,576,024

BUFFERED MATRIX ASPIRIN

Cynthia M. Blase, English Village Apts., #21, C-2, North Wales, Pa. 19454, and Garnet E. Peck, 808 Cumberland Ave., West Lafayette, Ind. 47906

Continuation of Ser. No. 927,880, Aug. 10, 1992, abandoned, which is a continuation of Ser. No. 702,504, May 20, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 465,381

Int. Cl.[6] A61K *9/36*

U.S. Cl. 424—488 **8 Claims**

1. A uniform buffered aspirin tablet comprising a uniform mixture of:

a. aspirin crystals coated with from about 3 to about 6 percent by weight of an aqueous based polymer selected from the group consisting of polyvinylpyrrolidone and hydroxypropylmethylcellulose;

b. from about 25 to about 40% by weight of a buffer component capable of providing a microenvironment of about ph 5 around the coated aspirin crystals during dissolution, thereby, increasing the solubility of the aspirin, which buffer component is selected from the group consisting of calcium carbonate and magnesium carbonate; and

c. an amount of a hydrophilic gel-forming matrix material in the weight range from about 5% to less than about 15% by weight, which gel-forming material is hydroxypropyl methylcellulose selected from the group consisting of polyvinylpyrrolidone and hydroxypropylmethylcellulose.

5,576,025

GASTROINTESTINAL MUCOSA-ADHERENT MATRIXES, PHARMACEUTICAL PREPARATIONS AND A COATING COMPOSITION

Yohko Akiyama, Osaka; Naoki Nagahara, Amagasaki, and Shin-ichiro Hirai, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 200,539, Feb. 22, 1994, abandoned, which is a continuation of Ser. No. 870,637, Apr. 20, 1992, abandoned. This application Mar. 29, 1995, Ser. No. 412,591

Claims priority, application Japan, Apr. 19, 1991, 3-116745; Aug. 9, 1991, 3-225155

Int. Cl.[6] A61K *9/16*

U.S. Cl. 424—501 **20 Claims**

1. A gastrointestinal mucosa-adherent matrix particle having a melting point of 30° to 120° C., which comprises (i) a polyglycerol fatty acid ester, (ii) an active ingredient and (iii) an agent having the property of becoming viscous on contact with water and

selected from the group consisting of (1) an acrylic acid polymer obtained by polymerization of a monomer containing acrylic acid as a monomer component, having a molecular weight of 1,000,000 to 5,000,000, containing 58.0 to 63.0 percent by weight of carboxyl groups and (2) a salt of said polymer, the active ingredient (ii) and the agent (iii) being dispersed throughout the matrix particle.

5,576,026

LUMBRICUS PRODUCT AND METHOD OF MAKING SAME

Edward A. Charter, 2354 Anora Dr., Abbotsford, British Columbia, Canada, and Seung H. Lee, 31212 Peardonville Rd., Abbotsford, British Columbia, Canada

Filed Sep. 30, 1994, Ser. No. 316,110

Int. Cl.[6] C12P *21/06;* **A61K** *35/12*

U.S. Cl. 424—520 **6 Claims**

1. A method preparing a lumbricus product, comprising:

a. providing a quantity of lumbricus worms and cleaning said worms;

b. masticating the worms;

c. hydrolyzing the masticated worms, said hydrolyzing being accomplished by adding an enzyme ingredient to said masticated worms, with said enzyme ingredient being selected from a group consisting of proteases, pancreatin and combinations thereof;

d. adding an acid and lysozyme to said masticated worms while hydrolyzing is accomplished;

e. drying the hydrolyzed masticated worms to form the lumbricus product.

5,576,027

HYDROXYLATED MILK GLYCERIDES

Amnon Friedman, Marlboro; Stuart B. Polovsky, Matawan; Joseph P. Pavlichko, Helmetta, and Luis S. Moral, East Brunswick, all of N.J., assignors to Amerchol Corporation, Edison, N.J.

Continuation-in-part of Ser. No. 905,379, Jun. 29, 1992, abandoned. This application Jul. 25, 1994, Ser. No. 279,450

Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—535 **25 Claims**

1. A personal care composition comprising: (1) a hydroxylated milk fat composition comprising hydroxylated triglycerides which comprise:

(a) from about 50 to 90 weight percent carbon;

(b) from about 5 to 20 weight percent hydrogen;

(c) from about 5 to 20 weight percent oxygen; wherein said triglycerides have;

(i) a melting point of less than about 60° C.;

(ii) a molecular weight of from about 600 to 750 grams per gram mole; and

(iii) an infrared absorbence spectrum which has an OH absorption band at a wave number of from about 3600 to 3300 cm^{-1} and a CH_2 absorption band at a wave number of from about 740 to 710 cm^{-1};

the ratio of the area of said OH absorption band to the area of said CH_2 absorption band being at least about 10×10^{-2};

(iv) an Iodine Value of less than 10;

(v) an Hydroxyl Value of greater than 20; and and

(vi) an Epoxide Value of greater than 10; and

(2) a carrier:

wherein the hydroxylated milk fat composition is present in an amount effective to enhance at least one of the following properties of the composition; after-feel, dispersibility, emolliency, emulsifiability, gloss, lubricity, moisturizing ability, smoothness, emulsion stability, rub-in, pigment wetting and viscosity.

5,576,028

METHOD OF PRESERVING OPHTHALMIC SOLUTIONS AND COMPOSITIONS THEREFOR

Stephen M. Martin, Roswell, and Fu-Pao Tsao, Lawrenceville, both of Ga., assignors to Ciba Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 259,204, Jun. 13, 1994, abandoned, which is a division of Ser. No. 99,986, Jul. 29, 1993, abandoned, which is a continuation of Ser. No. 968,224, Oct. 29, 1992, abandoned, which is a continuation of Ser. No. 733,485, Jul. 22, 1991, abandoned, which is a continuation of Ser. No. 376,083, Jul. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 229,163, Aug. 4, 1988, abandoned. This application Mar. 29, 1995, Ser. No. 414,150

Int. Cl.[6] A61K *31/16*

U.S. Cl. 424—613 **16 Claims**

1. A sterile, buffered, substantially isotonic saline solution, comprising:

(a) a source of hydrogen peroxide resulting in 0.001 to 0.10 weight percent hydrogen peroxide;

(b) a hydrogen peroxide stabilizer;

(c) a tonicity-enhancing agent in an amount sufficient to form a substantially isotonic solution; and

(d) water.

5,576,029

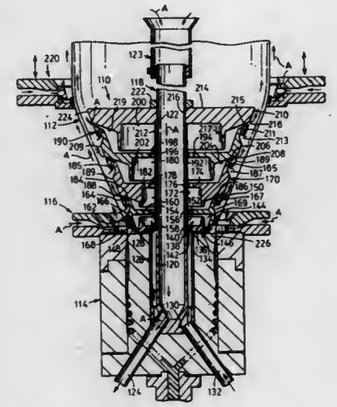
INTERNAL COOLING AIR SUPPLY ASSEMBLY

Mirek Planeta, 170 Traders Blvd., Mississauga, Ont., Canada

Filed Jun. 2, 1995, Ser. No. 458,275

Int. Cl.[6] B29C *47/88*

U.S. Cl. 425—72.1 **10 Claims**



1. An internal cooling air supply assembly for supplying cooling air to the interior of an extruded tubular plastic film after the film has been extruded from an annular die at an elevated temperature, said air supply assembly comprising:

a lower annular member mountable on an annular die so as to be within extruded tubular plastic film as the film leaves the die, said die having an air supply passage to supply cooling air to the interior of the lower annular member and an air removal passage including an air removal chimney extending upwardly from the die through the lower annular member to remove air from the interior of the tubular plastic film,

an intermediate annular member positionable above the lower annular member with the air removal chimney extending upwardly therethrough, said intermediate annular member forming a first chamber with the lower annular member and having an annular lower edge spaced from and co-operating with an annular upper edge of the lower annular member to form a first cooling air outlet from said first chamber, said intermediate annular member having a transfer passage for

transferring cooling air from the first chamber to the interior of the intermediate annular member, and

a first upper annular member positionable above the intermediate annular member with the air removal chimney extending upwardly therethrough, said upper annular member forming a second chamber with the intermediate annular member and having an annular lower edge spaced from and co-operating with an upper annular edge of the intermediate annular member to form a second cooling air outlet from the second chamber,

the intermediate annular member having a first series of circumferentially spaced upwardly directed passages extending from the exterior thereof to said upper annular edge thereof whereby in use cooling air is directed onto the interior of the film from the first and second chambers through the first and second cooling air outlets respectively and cooling air passing through the second cooling air outlet draws cooling air through said first series of inwardly directed passages from the exterior of the intermediate annular member to create suction which draws the film close to the intermediate annular member.

5,576,030

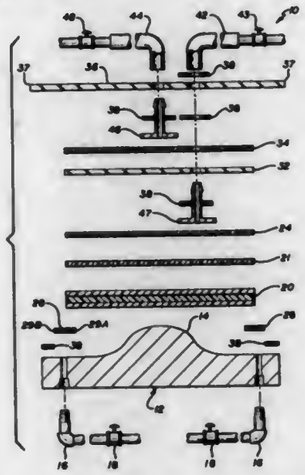
APPARATUS FOR FABRICATING COMPOSITE PARTS

James R. Hooper, Palmdale, Calif., assignor to Lockheed Corporation, Westlake Village, Calif.

Filed Oct. 2, 1995, Ser. No. 537,381

Int. Cl.[6] B29C *70/44;70/48*

U.S. Cl. 425—112 **8 Claims**



1. An apparatus for forming fiber reinforced resin structures including:

a fluid impervious outer first sheet;

a mold surface upon which can be supported a lay-up of at least one layer of fibrous material, and over which can be placed said first fluid impervious outer sheet and its edges marginally sealed upon said mold surface to form a chamber;

a first vacuum port for drawing a vacuum upon said chamber, said first port located in proximity to said lay-up

a first distribution medium for location between said fabric lay-up and said fluid impervious outer sheet for distributing resin into said lay-up;

a second fluid impervious sheet for location between said first distribution medium and said first impervious sheet;

a resin inlet port extending from the exterior of said chamber through said first and second impervious sheets and in communication with said first distribution medium;

a second distribution medium for location between said first and second impervious sheets for providing a flow path from said lay-up to said outlet port, and

a second vacuum port extending from said exterior of said first impervious sheet to said chamber and in communication with said second distribution medium.

5,576,031

MOLDING APPARATUS FOR PATTERNED SHAPED ARTICLE

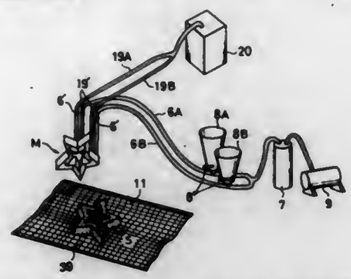
Hiroshi Uchida, Ashikaga; Mituhiro Onuki, Kiryu, and Hideo Watanabe, Ashikaga, all of Japan, assignors to CCA Inc., Tokyo, Japan

Filed Feb. 18, 1994, Ser. No. 198,267

Claims priority, application Japan, Feb. 19, 1993, 5-053139

Int. Cl.[6] B29C *33/54;39/12*

U.S. Cl. 425—130 **32 Claims**



1. A molding apparatus for patterned shaped articles comprising:

a form having at least one partition member defining the boundary of the pattern to be produced, a peripheral frame surrounding the partition member at a prescribed spacing therefrom and a cover for closing the upper ends of the partition member and the peripheral frame,

at least one first feed port for supplying particles into a pattern space enclosed by the partition member,

a least one first suction port for sucking particles out of the pattern space enclosed by the partition member,

at least one second feed port for supplying particles into a pattern space between the partition member and the peripheral frame,

at least one second suction port sucking particles out of the pattern space between the partition member and the peripheral frame,

charging means connected with at least one of the first feed port and the second feed port for supplying particles to at least one of the pattern spaces by compressed air, and

suction means connected with at least one of the first suction port and the second suction port for sucking particles from the pattern spaces.

5,576,032

EXTRUSION DIE WITH INTERCHANGEABLE EXTRUSION NOZZLES

Manfred A. A. Lupke, 92 Elgin Street, Thornhill, Ontario, Canada

PCT No. PCT/CA92/00199, § 371 Date Jan. 13, 1994, § 102(e) Date Jan. 13, 1994, PCT Pub. No. WO92/22417, PCT Pub. Date Dec. 23, 1992

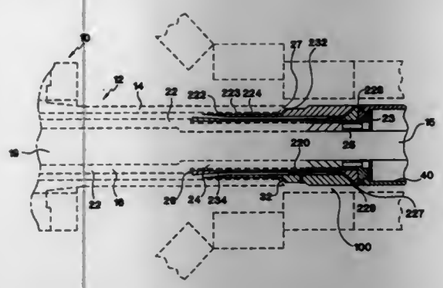
PCT Filed May 11, 1992, Ser. No. 167,943

Claims priority, application United Kingdom, Jun. 17, 1991, 9112997

Int. Cl.[6] B29C *47/06;47/26*

U.S. Cl. 425—186 **10 Claims**

1. An extrusion die system for use in the extrusion of thermoplastics material profiled tube, comprising:



a die body having an elongate extrusion nozzle extending therefrom, the extrusion nozzle having an upstream annular channel disposed between an inner core and an outer sleeve,

said inner core extending out of the die body to beyond a distal end of the outer nozzle sleeve;

the inner core having an upstream portion extending from the die body forming an upstream core portion of a first diameter and a downstream core portion of reduced diameter stepped from the upstream portion through a step housed within the outer nozzle sleeve;

an end fitting for the nozzle;

said end fitting comprising a first annular sleeve to fit about the downstream core portion of the core within the outer nozzle sleeve and abutting the step where the outer surface of the annular sleeve of said end fitting defines the inner wall of an end fitting extrudate channel which is flush with the upstream portion of the core and coaxial with the upstream core channel; said annular sleeve being provided with at least one diverging guide surface for extrudate to direct extrudate to diverge from the extrudate channel, and

said end fitting having an additional annular sleeve extending into the annular channel of the extrusion nozzle when the end fitting abuts the step and supported on the first annular sleeve by a spider to split flow of extrudate within the annular channel into coaxial annular streams.

5,576,033

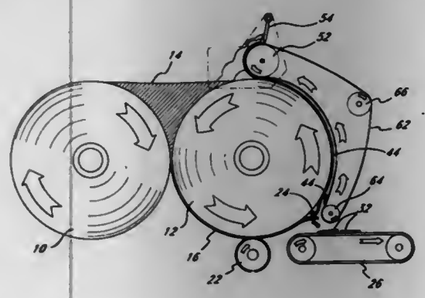
MASA REWORK ASSIST SYSTEM

Michael L. Herrera, Pomona, Calif., assignor to Casa Herrera, Inc., Los Angeles, Calif.

Filed Feb. 17, 1995, Ser. No. 390,526

Int. Cl.[6] A21C *3/02;11/10*

U.S. Cl. 425—217 **18 Claims**



1. A rework assist belt system to ensure that pieces of rework dough do not mix with a product, the rework assist belt system comprising:

at least two shafts, the first shaft located near a top of a roller of a dough sheeting device and the second shaft located near a front stripping means, at least one of the shafts acting as a driving shaft with driving means for revolving the driving shaft in synchrony with the roller, the shafts parallel to said roller and further comprising

adjustment means for repositioning the second shaft in relation to the front roller; and

a belt member, formed as a closed-loop flexible belt, with said shafts drivingly in contact with an inner surface of the belt member so that the belt member travels endlessly around the shafts with an outer surface of the belt member in close proximity to a forward-facing region of the roller from a region near the front stripping means to a region near the top of the roller so as to assist the rework dough in traveling to the top of the roller.

5,576,034

APPARATUS FOR THE PRODUCTION OF HOLLOW BODIES FROM THERMOPLASTIC MATERIAL BY AN EXTRUSION BLOW MOLDING PROCESS

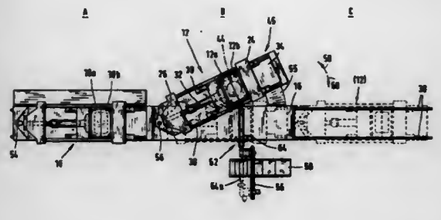
Erich Kiefer, Bonn; Karsten Friedrichs, Bad Honnef, and Klaus Baltes, Bergheim, all of Germany, assignors to Krupp Kautex Maschinenbau GmbH, Bonn, Germany

Filed Feb. 3, 1995, Ser. No. 383,383

Claims priority, application Germany, Feb. 7, 1994, 44 03 698.1

Int. Cl.[6] B29C *49/04*

U.S. Cl. 425—532 **33 Claims**



1. Apparatus for the production of hollow bodies from thermoplastic material by extrusion blow molding, comprising an extrusion system having at least one extrusion head means for extruding preforms; at least two blow molding units, each unit including at least one blow molding mold divided into at least first and second parts and drive means for reciprocating the parts of the respective blow molding mold between an open condition in which the parts are at a spacing from each other and a closed condition in which the parts bear against each other and define a mold cavity whose contour corresponds to a configuration of a hollow body to which an extruded preform is expanded in the cavity by an increased internal pressure; motion means for moving each blow molding unit between a receiving position in which the blow molding mold in an opened condition is oriented to receive the extruded preform and at least one other removal position at a removal station, the receiving position being with the removal station; and removal means with the removal station for removing an expanded preform from an open blow molding mold in the removal position at the removal station; the improvement wherein the motion means moves each blow molding unit from a station remote from the removal station in at least one direction in a first movement into the removal station, the drive means opens the blow molding unit at least by a time when the blow molding unit is located in the removal station, the removal means removes from the blow molding mold a hollow body previously produced in the blow molding mold and then the motion means moves the blow molding unit in a second movement in a direction transverse to the one direction with the blow molding mold open into the receiving position, the receiving position being laterally displaced relative to the path of movement along which the blow molding unit is moved into the removal station.

VOL 1192 ISS 3 NO 19 1996 UMI

5,576,035

METHOD FOR PRESERVING FOOD PRODUCTS AND FOOD PRODUCTS MADE THEREBY

Rod A. Bowling, Downingtown, Pa., and Robert P. Clayton, Kersey, Colo., assignors to Monfort, Inc., Greeley, Colo.

Continuation of Ser. No. 796,052, Nov. 20, 1991, Pat. No. 5,374,433. This application Sep. 29, 1994, Ser. No. 315,231

Int. Cl.[6] A23L *3/00*

U.S. Cl. 426—8 **35 Claims**

1. A method for preserving a food product, comprising:
(a) cleaning said food product to remove spoilage and pathogenic bacteria present on said food product; and
(b) inoculating said food product with an amount of non-spoilage and non-pathogenic bacteria effective to inhibit the growth of spoilage and pathogenic bacteria, prior to packaging said food product in an oxygen impermeable package.

5,576,036

PRE-BAKED MICROWAVEABLE PASTRY SYSTEMS

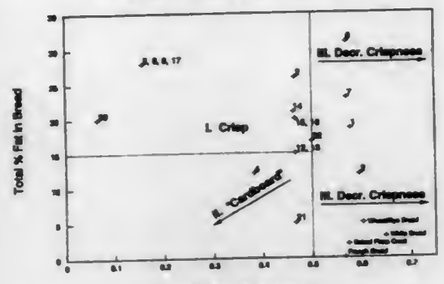
Peter S. Pesheck; Tammy McIntyre, both of Minneapolis, and Liza Levin, Plymouth, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Continuation of Ser. No. 954,756, Sep. 30, 1992, abandoned. This application Jan. 13, 1995, Ser. No. 372,844

Int. Cl.[6] A21D *13/00*

U.S. Cl. 426—94 **17 Claims**

Map of Bread Fat and Dough H2O/Flour Ratio



1. A microwaveable dough composition comprising:
(a) a pre-baked dough, said pre-baked dough comprising flour, from about 5–10 wt-% water, from about 10–35 wt-% of a plasticizer, and a leavening agent;
(b) a dough coating used to adhere a crisping agent to said pro-baked dough; and
(c) a crisping agent, said crisping agent dispersed across the surface of said dough and adhered to the dough with use of a coating wherein crisping agent comprises bread crumbs having a particle size of 1 mm to 7 mm and said crumbs are dispersed across said dough at a concentration ranging from about 20% to 95% coverage per square inch and said microwaveable dough composition is capable of providing an outer crust layer on the surface of a microwaveable product when the product is pre-baked and subjected to microwave energy.

5,576,037

SHRINK BAG WITH INTEGRAL HANDLE AND METHOD OF MAKING SAME

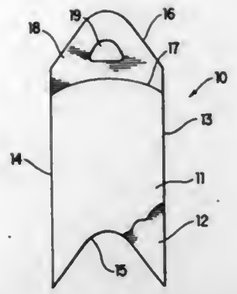
Donald B. Moore, Jr., Moore; Jeffrey D. Gebauer, Greer, and John P. Carson, Spartanburg, all of S.C., assignors to W. R. Grace & Co.-Conn., Duncan, S.C.

Continuation of Ser. No. 924,130, Aug. 3, 1992, abandoned. This application Feb. 3, 1994, Ser. No. 191,448

Int. Cl.[6] B65B *53/00;* **B65D** *65/00;75/00;79/00*

U.S. Cl. 426—110 **21 Claims**

1. A thermoplastic bag comprising:



a) congruent front and rear panels of a thermoplastic material superimposed one against the other and defining a front and rear of a bag pocket, the panels having longitudinal side edges joined to form bag pocket side edges, and the panels having common ends in communication with the longitudinal side edges, and including:
(i) a first end adjacent to but longitudinally spaced from a closed bottom of the bag pocket, and
(ii) an opposite end;
b) a continuous transverse heat seal connecting the front and rear panels adjacent to but spaced from the first end, the heat seal defining the closed bottom of the bag pocket;
c) a skirt defined by the front and rear panels between the first end and the transverse heat seal;
d) the skirt having a generally D shaped handle cut out having a linear portion , the linear portion of the D disposed substantially parallel to the transverse heat seal, and wherein the handle cut out has
(i) an end arc formed by the major curve of the D, the end arc curved toward the first end,
(ii) a first side arc formed by the juxtaposition of one end of the major curve of the D with one end of the linear portion of the D, and
(iii) a second side arc formed by the juxtaposition of the other end of the major curve of the D with the other end of the linear portion of the D;
the shape further defined by
(i) the end arc having a radius (A) of from about (1.75×R) to about (2.25×R),
(ii) the first side arc having a radius of about (R), and
(iii) the second side arc having a radius of about (R),
wherein R is at least about 1 inch; and
wherein the distance between the end arc and the first end is at least 0.5 inches.

5,576,038

LIQUID PACKAGING FILM

Neal E. Moore, Cincinnati; James P. Markey, Milford, both of Ohio, and Jimmy M. Givens, Orange, Tex., assignors to James River Paper Company, Inc., Milford, Ohio

Filed Mar. 10, 1995, Ser. No. 402,425

Int. Cl.[6] B65D *85/80*

U.S. Cl. 426—127 **7 Claims**

1. A coextruded film comprising:
a) a core layer comprising a blend of from about 10% to 40 percent by weight of high density polyethylene and from about 60 to 90 percent of a linear copolymer of ethylene with a minor amount of an alpha-olefin having from three to ten carbon atoms, the linear copolymer having a density from about 0.916 to about 0.935 g/cc, the core layer comprising from about 60 to 90 percent of the thickness of the film, and
b) skin layers comprising a blend of from about 20 to 60 percent by weight of a copolymer of ethylene with 15 to 25 percent by weight of methyl acrylate, and from about 40 to 80 percent of a linear copolymer of ethylene with a minor amount of an alpha-olefin having from three to ten carbon atoms, the linear copolymer having a density from about 0.916 to about 0.935, g/cc each skin layer comprising from about 5 to 20 percent of the thickness of the film.

5,576,039

COLORED JELLY-TYPE SUBSTANCE, METHOD OF PREPARATION, AND COMPOSITION CONTAINING SAME

James A. Lewis, Park Ridge, N.J., assignor to Bush Boake Allen Inc.

Filed Feb. 3, 1995, Ser. No. 383,038

Int. Cl.[6] A23L *1/054;2/00*

U.S. Cl. 426—250 **7 Claims**

1. A method of preparing a colored gel comprising:
preparing a liquid composition including between about 80% and 99.8% by weight water and between about 0.1% and 5% gelling agent including at least gellan gum;
heating the liquid composition until the gelling agent is fully hydrated to obtain a heated liquid composition;
adding between about 0.002% and 1% by weight water-insoluble color to the heated liquid composition to obtain a color-containing liquid composition; and
cooling the color-containing liquid composition,
to form a colored gel that can be incorporated into an acidic liquid and subjected to high heat pasteurization without deterioration or color migration.

5,576,040

PROCESS FOR THE STERILE FILTRATION OF MILK

Wolfgang Moller, Oberusel; Wolfgang Stephan, Stadtprozelten, and Henry Hies, Rodermark, all of Germany, assignors to Biotest Pharma GmbH, Dreieich, Germany

Filed Jul. 29, 1994, Ser. No. 282,256

Claims priority, application Germany, Aug. 9, 1993, 43 26 665.7

Int. Cl.[6] A23C *9/14*

U.S. Cl. 426—271 **18 Claims**

1. A method for obtaining a sterile milk which is substantially unchanged in its biological activities, which comprises removing calcium ions from the milk and then filtering said milk thereby to effect removal of bacteria, fungi and spores which may be present.

5,576,041

PROCESS FOR PRODUCING LATTICED FRIED FOOD AND PRODUCT THEREOF

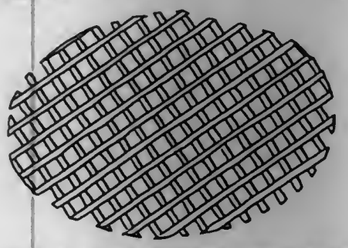
Andrew E. C. Clow, Downley, and Brian D. Hill, Sutton Coldfield, both of United Kingdom, assignors to United Biscuits (UK) Limited, West Drayton, United Kingdom

Filed Dec. 23, 1994, Ser. No. 363,709

Claims priority, application United Kingdom, Jun. 10, 1994, 9411694

Int. Cl.[6] A21C *11/04*

U.S. Cl. 426—439 **26 Claims**



1. A process for producing fried food products, which comprising the steps of:
feeding a dough to a nip between a pair of contrarotating rollers arranged with their curved surfaces in contact with each other, each of the rollers having grooves indented in its curved surface, and wherein the rollers push the dough into the grooves and form the dough into a lattice comprising an array of ridges imparted to the dough by one of the rollers, which ridges are spaced apart from each other and substantially all of which extend in substantially the same direction as each other, and an array of ridges imparted to the dough by the other roller, which ridges are spaced apart from each other and substantially all of which extend in substantially the same direction as each other, the direction in which the ridges of one array extend being at an angle to that of the other array so that the ridges of one array intersect the ridges of the other, and the contacting portions of the curved surfaces of the rollers providing apertures in the dough between the intersecting ridges;
cutting portions from the dough lattice; and
frying the portions to provide food products having a lattice configuration.

5,576,042

HIGH INTENSITY PARTICULATE POLYSACCHARIDE BASED LIQUIDS

Richard C. Fuisz, Great Falls, Va., assignor to Fuisz Technologies Ltd., Chantilly, Va.

Continuation of Ser. No. 782,430, Oct. 25, 1991, abandoned. This application Mar. 2, 1994, Ser. No. 205,026

Int. Cl.[6] A23L *1/236*

U.S. Cl. 426—548 **25 Claims**

1. A method of enhancing the perception of the organoleptic characteristics of a liquid by achieving rapid and uniform dispersibility of an organoleptically-perceivable material therein comprising the steps of:
providing a solid melt-spun matrix comprising a high intensity organoleptically-perceivable material selected from the group consisting of synthetic sweeteners, synthetic flavor oils, natural flavor oils and mixtures thereof uniformly separated and dispersed throughout a solid water-soluble carrier selected from the group consisting of polydextrose, maltodextrin, corn syrup solids and mixtures thereof;
adding said solid melt-spun matrix to a liquid and allowing said matrix to rapidly and uniformly disperse throughout the liquid thereby providing an intense organoleptic perception of said high intensity organoleptically-perceivable material due to the completeness and intensity of the release of said organoleptically-perceivable material.

5,576,043

SHORTENING SUBSTITUTE

Carol Stankus, Chicago; David Mauro, Dolton, both of Ill., and Thomas Treece, Florissant, Mo., assignors to American Maize-Products Company, Hammond, Ind.

Filed Jun. 7, 1995, Ser. No. 478,509

Int. Cl.[6] A23L *1/0522;* **A23D** *7/00*

U.S. Cl. 426—578 **20 Claims**

1. A shortening substitute comprising a mixture of:
(a) about 1 to about 10% by weight pregelatinized, unmodified starch;
(b) about 5 to about 15% by weight pregelatinized, modified, high amylopectin starch, said modified starch being selected from the group consisting of pregelatinized, crosslinked, hydroxypropylated starch and pregelatinized, crosslinked, esterified starch;
(c) about 5 to about 10% by weight emulsifier, said emulsifier comprising at least a monoglyceride;
(d) about 5 to about 25% by weight shortening; and
(e) a remainder of water, wherein said water content is greater than or equal to about 60% by weight.

5,576,044

COFFEE AROMA EMULSION FORMULATIONS

Oliver Chmiel, Marysville, Ohio; Helmut Traitler, Corseaux; Heribert Watzke, Lausanne, both of Switzerland, and Scott A. Westfall, Marysville, Ohio, assignors to Nestec SA, Vevey, Switzerland

Filed Feb. 1, 1995, Ser. No. 382,326
Int. Cl.[6] A23F 5/46
U.S. Cl. 426—594 17 Claims

1. A soluble coffee product comprising soluble coffee in particulate form and an emulsion preconcentrate comprising hydrolyzed coffee oil and coffee aroma, the emulsion preconcentrate at least partially forming an oil-in-water emulsion including droplets of dispersed lipid medium of less than 200 nm upon addition of water at a temperature higher than the melting point of, the hydrelyzed coffee oil.

5,576,045

ANTI-BLOOM TRIGLYCERIDGE COMPOSITIONS

Frederick W. Cain, Dr Blookerstraat 13, Voorburg 2271 VL; Adrian D. Hughes, Torenstraat 147, Den Haag 2513 Br, both of Netherlands, and John H. Pierce, 24 Purbeck Rd., Rushden Northants NN10 9UH, Great Britain

PCT No. PCT/EP93/03254, § 371 Date Jun. 2, 1995, § 102(e) Date Jun. 2, 1995, PCT Pub. No. WO94/12045, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 18, 1993, Ser. No. 448,450
Claims priority, application European Pat. Off., Dec. 2, 1992, 92311016
Int. Cl.[6] A23D 9/00
U.S. Cl. 426—607 8 Claims

1. Triglyceride composition containing H_2M-type triglycerides (H=saturated fatty acids C_{16}–C_{24}; M=saturated fatty acids C_{10}–C_{14}), wherein the composition contains at least 30 wt % of the (H_2M)-fat, while the weight ratio of the two possible H2M-triglycerides (HHM and HMH) i.e. HHM:HMH is more than 3, preferably more than 5, most preferably more than 10.

5,576,046

METHOD OF TREATING FRESH FRUIT

Larry D. Ellis, St. Louis, Mo., assignor to Tastemaker, Inc., Bridgeton, Mo.

Filed Jan. 20, 1995, Ser. No. 375,813
Int. Cl.[6] A23L 1/0524
U.S. Cl. 426—615 19 Claims

1. A method for treating and storing fresh fruit comprising the steps of soaking the fruit in a calcium-enriched aqueouss solution containing an amount of calcium salt sufficient to gel the fruit, holding the fruit in the calcium-enriched solution for a period of time of at leat about two weeks sufficient to gel pectin in the fruit, rinsing said fruit after said fruit is removed from said solution, and recovering a fruit having substantially the firmness and juice content of the fresh fruit.

5,576,047

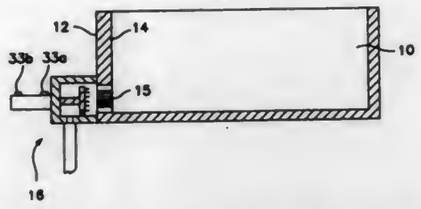
METHOD TO PRODUCE A COOKED, LOW FAT GROUND MEAT PRODUCT

Geoffrey Margolis, 12229 Falkirk La., Los Angeles, Calif. 90049

Filed Sep. 9, 1994, Ser. No. 304,381
Int. Cl.[6] A23L 1/314; 1/317
U.S. Cl. 426—646 8 Claims

1. A method for producing low fat, chunky ground meat comprising the steps of:

(a) placing raw ground meat in a cooking vessel;



(b) cooking the raw ground meat in the cooking vessel so as to form a mixture that includes cooked ground meat defining a layer having an upper region and a lower region, liquified fat and broth;

(c) adding hot water, at a temperature greater than about 180° F., to the mixture in the cooking vessel produced in step (b), in an amount less than the weight of the raw ground meat, but in an amount sufficient to cause a significant percentage of the liquified fat to float in a layer above the mixture;

(d) removing the liquified fat layer from the cooking vessel from a location above the upper region of the cooked meat; and

(e) removing sufficient remaining broth and water from the mixture in the cooking vessel from a location below the lower region of the cooked meat such that a cooked, low fat, chunky ground meat product is produced.

5,576,048

FOODSTUFFS CONTAINING A WAXY WAXY AMYLOSE EXTENDER STARCH

Richard Hauber; Robert Friedman, both of Chicago, Ill., and Frances Katz, Crown Point, Ind., assignors to American Maize-Products Company, Hammond, Ind.

Filed Jun. 7, 1995, Ser. No. 487,466
Int. Cl.[6] A23L 1/0522
U.S. Cl. 426—578 18 Claims

1. A sol comprising water and an effective amount of a starch extracted from a starch bearing plant having a waxy, waxy, amylose extender genotype.

5,576,049

PROCESS OF MANUFACTURING ROTTABLE THIN-WALLED STARCH-BASED SHAPED ELEMENTS

Franz Haas, Vienna; Johann Haas, Klosterneuburg, and Karl Tiefenbacher, Vienna, all of Austria, assignors to Franz Haas Waffelmaschinen Industriegesellschaft M.B.H., Vienna, Austria

PCT No. PCT/AT93/00185, § 371 Date May 31, 1995, § 102(e) Date May 31, 1995, PCT Pub. No. WO94/13734, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 6, 1993, Ser. No. 446,677
Claims priority, application Austria, Dec. 4, 1992, 2402/92
Int. Cl.[6] B05D 3/02
U.S. Cl. 427—389.9 16 Claims

1. A process of applying a watertight coating to at least a portion of a surface of a shaped element produced by baking a starch-containing composition between two halves of a mold, the baked composition having a water content of 6% to 22%, by weight, and the surface containing adsorbed water of hydration, the process comprising the steps of

(a) applying a layer of a lacquer to the surface portion to remove at least a portion of the water of hydration, the lacquer containing

(1) at least one solvent selected from the group consisting of alcohols, ketones and esters, the solvent being miscible with water, boiling below a temperature of 100° C., and being toxicologically innocuous to human beings and to the ecology,

(2) a hydrophobic and decomposable film-forming substance which is not soluble, dispersible and emulsifiable in water, and

(3) a hydrophobic and decomposable plasticizer which is not soluble, dispersible and emulsifiable in water, and

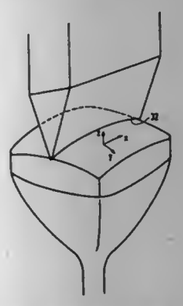
(b) removing the solvent from the lacquer layer until the lacquer layer is free of odor while maintaining a water content of at least 5%, by weight, in the shaped element while the solvent is removed.

5,576,050

METHOD OF CURING A FILM

Dirk Van Houwelingen; Johannes A. G. P. Damsteegt, and Johannes M. A. A. Compen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 165,431, Dec. 10, 1993, abandoned.
This application Aug. 8, 1995, Ser. No. 512,748
Claims priority, application European Pat. Off., Dec. 17, 1992, 92203982
Int. Cl.[6] B05D 5/06
U.S. Cl. 427—64 21 Claims



1. A method of curing a heat curable film on a surface of a part of a cathode ray tube, characterized in that the film is cured by a hot gas flow which is blown onto a limited surface area of the film and which scans the surface as a result of movement of at least one of said hot gas flow and said surface relative to the other.

15. A device for curing a heat curable film on a surface having a curvature of a display window of or for a cathode ray tube without substantial deterioration of the film or cathode ray tube, wherein the device comprises means for blowing a hot gas flow having a temperature in excess of 500° C. onto a specific area of the surface of the display window, and means for scanning the surface with a gas flow by movement of at least one of said hot gas flow and said surface relative to the other, and wherein said means for blowing the hot gas flow approximately follows the curvature of the surface.

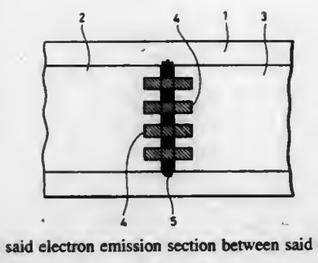
5,576,051

MULTIPLE ELECTRON EMISSION DEVICE

Toshihiko Takeda, Tokyo; Ichiro Nomura, Yomato; Tetsuya Kaneko, Yokohama, and Yoshikazu Banno, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 804,532, Dec. 11, 1991, Pat. No. 5,285,129, which is a continuation of Ser. No. 685,166, Apr. 12, 1991, abandoned, which is a continuation of Ser. No. 357,283, May 26, 1989, abandoned. This application Dec. 1, 1993, Ser. No. 159,597
Claims priority, application Japan, May 31, 1988, 63-131567
Int. Cl.[6] B05D 3/14; H01J 1/13
U.S. Cl. 427—77 2 Claims

1. A method of manufacturing an electron emission device having an electron emission section between electrodes on a substrate, said method comprising the steps of:



forming said electron emission section between said electrodes; and

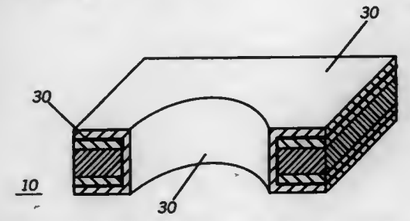
controlling an amount of an electric current between said electrodes by applying a coating member on a portion of said electron emission section.

5,576,052

METHOD OF METALLIZING HIGH ASPECT RATIO APERTURES

John K. Ariedge, Ft. Lauderdale; Thomas J. Swirbel, Davie, and Joaquin Barreto, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 22, 1996, Ser. No. 635,822
Int. Cl.[6] B05D 5/12
U.S. Cl. 427—98 13 Claims



1. A method of manufacturing a circuit carrying substrate, comprising the following steps in the order named:

a) providing a substrate having an aperture therein, the aperture having walls and a high aspect ratio;

b) vacuum depositing a thin film of copper on a major surface of the substrate and in the aperture, in a manner sufficient to form a macroscopically discontinuous copper film on the aperture walls, said macroscopically discontinuous copper film being substantially thinner than the thin film of copper deposited on the major surface; and

c) depositing a catalytic copper coating directly on the vacuum deposited thin film of copper by immersing the substrate in an electroless copper plating bath in a manner sufficient to form a macroscopically continuous copper layer on the aperture walls.

5,576,053

METHOD FOR FORMING AN ELECTRODE ON AN ELECTRONIC PART

Atsuo Senda; Yoshihiko Takano, and Kazuhiro Morita, all of Kyoto-fu, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Continuation-in-part of Ser. No. 240,274, May 10, 1994, abandoned. This application Feb. 28, 1995, Ser. No. 395,620
Claims priority, application Japan, May 11, 1993, 5-133887
Int. Cl.[6] B05D 5/12
U.S. Cl. 427—123 7 Claims

1. A method for forming electrodes on an electronic part comprising the steps of:

forming electrodes on a ceramic substrate,

dipping said ceramic substrate in a noble metal solution for activating surfaces of said electrodes by the use of a noble metal, and

forming a solder layer or a tin layer on said activated surfaces of said electrodes by electroless plating using a trivalent titanium ion as a reducing agent;

wherein in the step of forming a solder layer or a tin layer on said activated surfaces of said electrodes, a metal ion other than tin and lead is added in a plating bath; and

wherein said metal ion added in the plating bath is at least one metal ion selected from the group consisting of Mg^{2+} and Ca^{2+}.

5,576,054

SILICONE RUBBER COMPOSITIONS

Peter Brown, Nr. Warrington, England, assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 76,374, Jun. 14, 1993, abandoned, which is a continuation of Ser. No. 856,280, Mar. 23, 1992, abandoned, which is a division of Ser. No. 368,963, Jun. 19, 1989, abandoned, which is a continuation of Ser. No. 116,741, Mar. 2, 1988, abandoned, which is a continuation of Ser. No. 6,038, Jan. 22, 1987, abandoned. This application Jan. 17, 1995, Ser. No. 373,483

Claims priority, application United Kingdom, Jan. 21, 1986, 8601344; Jan. 27, 1986, 8601874

Int. Cl.[6] B05D *5/06*

U.S. Cl. 427—160 **8 Claims**

1. A method of opacifying a spandrel glass surface, which is intended to be on the interior of a building, to stop light transmission by the glass which method comprises applying to the surface, which is intended to be on the interior of the building, a coating composition comprising an ultraviolet light resistant organopolysiloxane and an opacifier, wherein the opacifier is a mixture of carbon black and titanium dioxide present in the amount of 1 to 25% by weight and in a ratio of between 1:10 and 1:100 by weight carbon black:titanium dioxide, in an amount sufficient to provide to the surface sufficient opacity to light transmission, and curing the coating composition on the surface whereby the bond at the interface between the coating composition and the surface maintains its bond strength without peeling, fading or degradation after exposure to daylight for at least 20 months.

5,576,055

PHOTOCHROMIC MATERIAL, PHOTOCHROMIC THIN FILM, CLAY THIN FILM, AND THEIR PREPARATION

Hideyuki Tagaya, Yamagata, and Tsuneo Kuwahara, Nagano, both of Japan, assignors to TDK Corporation, Tokyo, Japan

Division of Ser. No. 118,297, Sep. 9, 1993, Pat. No. 5,474,715. This application Jun. 6, 1995, Ser. No. 466,132

Claims priority, application Japan, Sep. 10, 1992, 4-268111; Sep. 10, 1992, 4-268112; Sep. 10, 1992, 4-268114; Nov. 5, 1992, 4-321134

Int. Cl.[6] B05D *5/06*

U.S. Cl. 427—162 **25 Claims**

1. A method for preparing a thin film comprising a hydrotalcite compound comprising the steps of:

forming on a support a thin film from an aqueous dispersion containing a hydrotalcite group intercalation compound having a guest species between layers thereof,

drying the film, and

heat treating the film to exclude at least some of the guest species from between the layers.

5,576,056

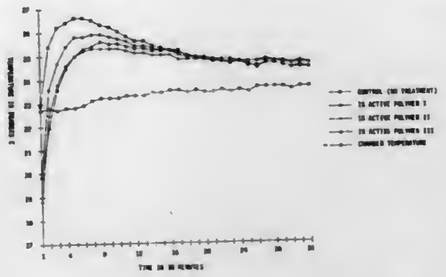
COMPOSITION AND METHOD FOR INHIBITING COAL OXIDATION

Donald C. Roe, Burlington, N.J., assignor to BetzDearborn Inc., Trevose, Pa.

Filed Jan. 20, 1995, Ser. No. 376,317

Int. Cl.[6] B05D *7/00*

U.S. Cl. 427—221 **9 Claims**



1. A method of inhibiting coal oxidation in a coal pile comprising coating all the surfaces of coal exposed to air with an oxidation inhibiting amount of a composition consisting essentially of a water soluble cationic polymer diluted in an aqueous solution.

5,576,057

METHOD OF PRODUCING HIGH PERMEABLE COMPOSITE REVERSE OSMOSIS MEMBRANE

Masahiko Hirose, and Kenichi Ikeda, both of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Dec. 23, 1994, Ser. No. 362,930

Claims priority, application Japan, Jun. 24, 1993, 5-153331

Int. Cl.[6] B05D *5/00;* **B01D** *69/00*

U.S. Cl. 427—245 **9 Claims**

1. A method of producing a high permeable composite reverse osmosis membrane which comprises forming a polyamide layer on a porous support by a process comprising the steps of:

(i) coating a solution A onto the porous support, wherein the solution A comprises a compound having at least two reactive amino groups and a solvent, wherein the solvent comprises a mixture of water and an alcohol in a mixing ratio of from 50/50 to 90/10 by weight, and

(ii) coating a solution B containing a polyfunctional acid halide onto the coating of the solution A, wherein the solution A has a solubility parameter of from 17 to 23 $(cal/cm^3)^{1/2}$, and wherein the difference between the solubility parameter of the solution A and the solubility parameter of the solution B is from 7 to 15 $(cal/cm^3)^{1/2}$.

5,576,058

BATCH LOADING SYSTEM FOR CVD

Tor Norrgrann, Huddinge; Kjell Pålsson, Gimo, and Björn Ljungberg, Enskede, all of Sweden, assignors to Sandvik AB, Sandviken, Sweden

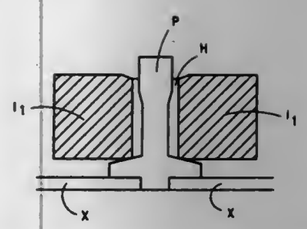
Filed Mar. 17, 1995, Ser. No. 405,782

Claims priority, application Sweden, Mar. 18, 1994, 9400950

Int. Cl.[6] C23C *16/00*

U.S. Cl. 427—248.1 **14 Claims**

1. A method of coating cutting tool inserts by CVD comprising:



providing a support, wherein said support is a peg attached to a carrier, said peg comprising a foot portion, a shoulder portion, a neck, and a head;

supporting an insert on said support, with said peg passing through a hole in said insert and said insert resting on the shoulder portion;

supporting a second carrier on the peg; and

coating the insert by CVD.

5,576,059

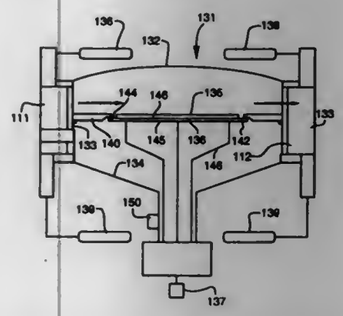
DEPOSITING POLYSILICON FILMS HAVING IMPROVED UNIFORMITY AND APPARATUS THEREFOR

Israel Beinglass, Sunnyvale; Mahalingam Venkatesan, San Jose, and Christian M. Gronet, San Carlos, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Division of Ser. No. 300,111, Sep. 2, 1994, which is a continuation of Ser. No. 3,707, Jan. 13, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 501,343

Int. Cl.[6] C23C *16/24*

U.S. Cl. 427—255 **4 Claims**



1. A method of improving uniformity of silicon films deposited by chemical vapor deposition onto a rotatable substrate supported by a susceptor in a vacuum chamber comprising depositing silicon onto a substrate in said chamber; and providing a barrier during deposition of silicon which prevents access of reaction gases and deposition of solid materials on a backside surface of said susceptor, said barrier comprising in combination a preheat ring that surrounds said substrate and has an extension that mates with an extension of a surface of said susceptor.

5,576,060

CVD PROCESS OF FORMING HYDROGENATED A-SI FILMS

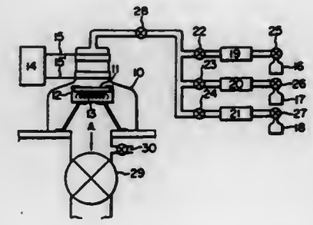
Yutaka Hirai, Tokyo; Toshiyuki Komatsu, Kawasaki, and Katsumi Nakagawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 448,123, May 23, 1995, which is a continuation of Ser. No. 351,561, Dec. 7, 1994, abandoned, which is a continuation of Ser. No. 795,249, Nov. 18, 1991, abandoned, which is a continuation of Ser. No. 782,098, Oct. 24, 1991, Pat. No. 5,257,316, which is a division of Ser. No. 695,428, May 3, 1991, abandoned, which is a continuation of Ser. No. 449,842, Jan. 10, 1990, abandoned, which is a division of Ser. No. 214,045, Jun. 30, 1988, abandoned, which is a division of Ser. No. 971,114, Dec. 19, 1978, Pat. No. 4,265,991. This application Jun. 7, 1995, Ser. No. 487,561

Claims priority, application Japan, Dec. 22, 1977, 52-154629; Jan. 23, 1978, 53-5958

Int. Cl.[6] C23C *16/00;* **B05D** *3/06*

U.S. Cl. 427—255.2 **38 Claims**



1. A process for producing an amorphous silicon film comprising not more than 40 atomic percent of hydrogen atoms and an impurity for controlling conductivity, which comprises: introducing a gas containing silicon atoms and a gas containing the impurity for controlling conductivity into a film-forming space, wherein the concentration of the gas containing the impurity is controlled during film formation to vary the content of the impurity in the thickness direction of the amorphous silicon film.

5,576,061

AQUEOUS, ESSENTIALLY VOC-FREE ADHESIVE EPOXY PRIMER

David E. Sweet, Midland, Mich., assignor to Cytec Technology Corp., Wilmington, Del.

Division of Ser. No. 130,229, Oct. 1, 1993, Pat. No. 5,461,090, which is a continuation of Ser. No. 944,570, Sep. 14, 1992, abandoned. This application May 15, 1995, Ser. No. 441,490

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—379 **6 Claims**

1. A process for adhering a first metal adherend to a second adherend, comprising:

a) applying to said first metal adherend a one component, substantially volatile organic solvent free primer composition, said composition comprising an aqueous dispersion of: (1) one or more non-ionic, particulate epoxy resins having a particle size such that essentially 100 percent of said resin particles have mean diameters less than about 30 μm; and (2) a solid, particulate curing agent selected from the group consisting of solid aromatic diamines having particle sizes such that essentially 100 percent of said curing agent particles have mean diameters less than about 30 μm; such that the amine to epoxy stoichiometry ratio is greater than 0.5, wherein said aqueous dispersion is chemically storage stable,

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and wherein said composition when cured exhibits resistance to organic solvents in an amount such that when cured, a primer coating of from about 0.02 to about 1.0 mils thickness is obtained;

b) curing said primer composition;

c) positioning a thermosettable adhesive between the primed surface of said first metal adherend and said second adherend; and

d) applying heat and pressure such as to cure said thermosettable adhesive.

5,576,062

CHEMICALLY RESISTANT COATING FOR CONCRETE AND MASONRY STRUCTURES

John H. Gaveske, Shakopee, Minn., assignor to Polywall International, Inc., White Bear Lake, Minn.

Filed Jul. 25, 1995, Ser. No. 507,007
Int. Cl.[6] B05D 5/00; C09K 3/00
U.S. Cl. 427—385.5 10 Claims

1. A waterproofing, chemically resistant coating composition comprising:

(a) about 150 to 400 parts by weight of an aromatic hydrocarbon solvent based on the weight of a binder resin;

(b) about 100 parts by weight of a binder resin comprising about 35–95 wt-% polystyrene and a polymer selected from the group consisting of a styrene-butadiene rubber, polybutene rubber, chlorinated rubber, chlorinated sulfonated polyethylene rubber, chlorinated paraffin and mixtures thereof, and

(c) about 1 to 25 parts by weight of an iron oxide based on the weight of a binder resin.

5,576,063

MULTIPLE LAYER COATING METHOD

Rodney L. Briggs, Linden; John W. Rehfuss, West Bloomfield; Walter H. Ohrbom, Commerce Township, and Gregory G. Menovcik, Farmington Hills, all of Mich., assignors to BASF Corporation, Southfield, Mich.

Filed Apr. 21, 1995, Ser. No. 426,340
Int. Cl.[6] B05D 1/38
U.S. Cl. 427—386 32 Claims

1. A method of preparing a coating comprising the steps of:

(1) applying onto a substrate a first curable coating composition comprising two components that are reactive with one another to form urethane linkages, said composition further comprising a third component that includes one or more epoxy groups,

(2) curing said first curable coating composition to form a cured coating,

(3) applying a second curable coating composition onto the surface of said coating from step (2), and

(4) curing said second curable coating composition.

5,576,064

MULTIPLE EMULSIONS

Alain Fructus, Courbevoie, France, assignor to Roussel Uclaf, France

Filed Mar. 3, 1994, Ser. No. 205,599
Claims priority, application France, Mar. 11, 1993, 93 02795
Int. Cl.[6] A61K 7/00
U.S. Cl. 424—401 4 Claims

1. A multiple emulsion to administer at least one water-soluble or liposoluble ingredient in the form of a water/oil/water emulsion consisting essentially of a dispersed phase of a water/oil and an aqueous dispersion medium which is a gelled aqueous phase, the aqueous dispersion phase contains a gelling agent comprised of a polyglyceryl methacrylate solution, carbomers and modified carbomers, the polyglyceryl methacrylate being 5 to 15% by weight of the total composition.

5,576,065

MULTILAYERED SYSTEM FOR WATERPROOFING RIGID STRUCTURAL MATERIALS

John H. Gaveske, Shakopee, Minn., assignor to Poly Wall International, Inc., White Bear Lake, Minn.

Filed Feb. 3, 1995, Ser. No. 383,054
Int. Cl.[6] B05D 3/00; E04B 2/00; E04F 13/00
U.S. Cl. 427—407.1 16 Claims

1. A method of waterproofing a rigid structural unit comprising the steps of:

(a) applying to at least one surface of the rigid structural unit a liquid composition having a solids content of about 35 wt. % to 65 wt. % in an organic solvent vehicle comprising:

(i) about 100 parts by weight of a binder resin comprising a styrene polymer having at least 85 wt. % styrene homopolymer;

(ii) about 0 to 50 phr of a plasticizer;

(iii) about 0 to 200 phr of a filler; and

(iv) about 0 to 100 parts of a particulate solid selected from the group consisting of an opacifying agent and a pigment; and

(b) solidifying the liquid composition to form a continuous film;

(c) applying an elastomeric overcoat to the continuous film wherein the overcoat adheres to the continuous film.

5,576,066

METHOD OF IMPROVING THE WEAR AND CORROSION RESISTANCE OF FERROUS METAL PARTS

Jean Polti, Sury le Comtal, France, assignor to Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement, Andrezieux-Boutheon, France

Continuation-in-part of Ser. No. 273,152, Jul. 22, 1994, abandoned. This application Oct. 13, 1995, Ser. No. 543,033
Claims priority, application France, Aug. 10, 1993, 93 09814
Int. Cl.[6] B05D 1/18; C23C 22/70
U.S. Cl. 427—435 5 Claims

1. Process for improvement of corrosion and wear resistance in ferrous metal parts which have previously been treated using a nitriding, sulfonitriding or carbonitriding thermochemical diffusion technique, comprising immersing the treated parts in a molten salt bath having a temperature ranging from 350° C. to 550° C., and comprising carbonates, nitrates, hydroxides and oxygenated alkali metal salts, wherein the relative anionic proportions by weight of carbonates, nitrates and hydroxides expressed in terms of their sodium salt equivalents and corresponding to an active phase, that is the liquid in the bath, are as follows:

$11 < CO_3^{2-} < 23$

$19 < NO_3^- < 37$

$6 < OH^- < 19$

and wherein the proportion by weight of oxygenated alkali metal salts, expressed in equivalents of $Cr_2O_7^{2-}$, is as follows:

$0.05 < \text{oxygenated anions} < 0.41$,

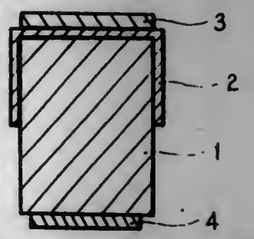
and said step of immersing being carried out for a sufficient period of time to improve the corrosion and wear resistance of said treated parts.

5,576,067

CARBON MONOXIDE (CO) DETECTING SENSOR, AND MANUFACTURING PROCESS THEREFOR

Masaru Miyayama, Kawasaki, Japan, and Byoung C. Shin, Pohang, Rep. of Korea, assignors to Pohang Iron & Steel Co., Ltd., and Research Institute of Industrial Science & Technology, both of Kyong Sang Book-Do, Rep. of Korea

PCT No. PCT/KR94/00083, § 371 Date Mar. 1, 1995, § 102(e) Date Mar. 1, 1995, PCT Pub. No. WO95/01565, PCT Pub. Date Jan. 12, 1995
PCT Filed Jul. 1, 1994, Ser. No. 392,845
Claims priority, application Rep. of Korea, Jul. 2, 1993, 1993/12395
Int. Cl.[6] G01N 27/12;27/26
U.S. Cl. 427—443.2 1 Claim



1. A process for manufacturing a CO gas detecting sensor, comprising the steps of:

press-forming a zinc oxide powder and sintering at 650°–1000° C. for 30 minutes to 3 hours to form a sintered zinc oxide body;

dipping a portion of the sintered zinc oxide body into an aqueous copper nitrate solution to form a composite semiconductor;

heat-treating the composite semiconductor at a temperature of 470°–800° C. for 10 minutes to 2 hours for converting the copper nitrate of the composite semiconductor into copper oxide so as to form a thin copper oxide layer;

spreading silver on the copper oxide layer and a mixture of silver and zinc on a portion of the sintered zinc oxide body where no copper oxide layer is formed, so as to form positive and negative electrodes; and

heat-treating said positive and negative electrodes at a temperature of 550°– 700° C. for 10 minutes to 1 hour.

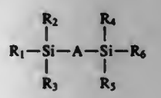
5,576,068

METHOD OF TREATING A PACKAGING ELEMENT, ESPECIALLY FOR MEDICAL OR PHARMACEUTICAL USE; PACKAGING ELEMENT THUS TREATED

Laurent Caburet, La Garenne Colombes; Kamyar Asfardjani, Lille; Odile Deasaux, Lille; Pierre Goudmand, Lille, and Charaffedine Jama, Lille, all of France, assignors to Societe De Transformation Des Elastomers A Usages Medicaux Et Industriels, La Courneuve, France

Filed Jul. 5, 1995, Ser. No. 498,052
Claims priority, application France, May 4, 1995, 95 05333
Int. Cl.[6] C23C 4/04; B32B 15/04
U.S. Cl. 427—452 13 Claims

1. A method of treating a packaging element, comprising the coating with a polymer film of at least a portion of said element, wherein said coating is produced by cold-far-remote-plasma-assisted polymerization of at least one monomer in gaseous form selected from the group consisting of siloxanes and silazanes of formula:



(I)

in which:

A represents an oxygen atom or the NH group and;

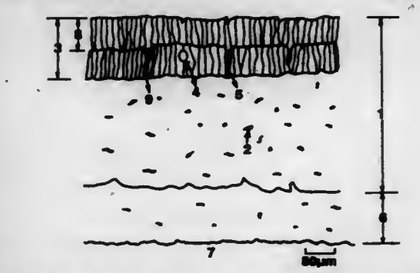
R_1, R_2, R_3, R_4, R_5 and R_6 represent, independently, a hydrogen atom or an alkyl or alkoxy group having from 1 to 4 carbon atoms.

5,576,069

LASER REMELTING PROCESS FOR PLASMA-SPRAYED ZIRCONIA COATING

Chun Chen, 2nd Floor, 9 Lane 111, Sec. 1, Hangchow S. Road, 100 Taipei; Wen-Cheng Wei, 8th Floor, 33 Lane 175, Sec. 1, Chien-Kuo S. Road, 106 Taipei, and Kai-Jai Chang, 2 Ta-Pu-Mei, Ta-Li Chen, 622 Chiayi Hsien, all of Taiwan

Filed May 9, 1995, Ser. No. 437,625
Int. Cl.[6] C23C 4/10
U.S. Cl. 427—454 23 Claims



1. A laser remelting process for improving surface properties of an article having a plasma-sprayed ceramic coating, said process comprising:

laser-remelting the ceramic coating on the article;

after laser-remelting, applying a ceramic suspension onto the remelted ceramic coating; and

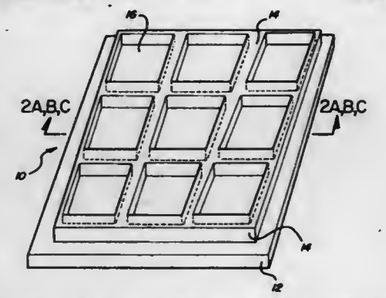
laser-remelting the ceramic coating after the ceramic suspension has been applied.

5,576,070

METHOD OF FABRICATING A LIQUID CRYSTAL DISPLAY

ZVI Yaniv, 30257 High Valley Rd., Farmington Hills, Mich. 48331

Continuation of Ser. No. 68,305, May 28, 1993, Pat. No. 5,281,450, which is a continuation of Ser. No. 890,855, Jun. 1, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 150,788
Int. Cl.[6] C08J 07/04
U.S. Cl. 427—510 13 Claims



1. A method of fabricating a liquid crystal display subassembly, said method comprising the steps of:

providing a substantially transparent substrate member;

disposing a layer of substantially opaque material upon one side of said substrate, said substantially opaque material being a black polyimide material;
forming at least one opening through said layer of substantially opaque material;
disposing a light influencing material in said at least one opening;
disposing a continuous layer of a transparent, passivating material atop said layer of opaque material and said light influencing material; and
disposing a layer of transparent, conductive material atop said passivating layer.

5,576,071

METHOD OF REDUCING CARBON INCORPORATION INTO FILMS PRODUCED BY CHEMICAL VAPOR DEPOSITION INVOLVING ORGANIC PRECURSOR COMPOUNDS

Gurtej S. Sandhu, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Nov. 8, 1994, Ser. No. 336,260
Int. Cl.[6] C23C *16/56*; H05H *1/00*
U.S. Cl. 427—534 **28 Claims**

1. A method of minimizing hydrocarbon incorporation in a layer of material provided atop a wafer by chemical vapor deposition using an organic precursor, the method comprising the following steps:
positioning a wafer within a chemical vapor deposition reactor;
injecting an organic precursor to within the reactor having the wafer positioned therein, and maintaining the reactor at a temperature and a pressure which in combination are effective to deposit a first layer of material onto the wafer which incorporates carbon from the organic precursor in the form of hydrocarbons;
after depositing the first layer, ceasing to inject the organic precursor into the reactor and first injecting hydrogen gas into the reactor and generating a first reactive hydrogen plasma within the reactor against the first layer, the hydrogen effectively diffusing into the first layer and reacting with hydrocarbons in the first layer to produce gaseous products which diffuse outwardly of the first layer and are expelled from the reactor;
after the first reactive hydrogen plasma treatment, injecting the organic precursor and carrier gas to within the reactor, and maintaining the reactor at a temperature and a pressure which in combination are effective to deposit a second layer of the material onto the wafer which incorporates carbon from the organic precursor; and
after depositing the second layer, ceasing to inject the organic precursor into the reactor and second injecting hydrogen gas into the reactor and generating a second reactive hydrogen plasma within the reactor against the second layer, the hydrogen effectively diffusing into the second layer and reacting with carbon in the second layer to produce gaseous products which diffuse outwardly of the second layer and are expelled from the reactor.

5,576,072

PROCESS FOR PRODUCING SLIPPERY, TENACIOUSLY ADHERING HYDROGEL COATINGS CONTAINING A POLYURETHANE-UREA POLYMER HYDROGEL COMMINGLED WITH AT LEAST ONE OTHER, DISSIMILAR POLYMER HYDROGEL

Fritz Hostettler; David Rhum; Michael R. Forman; Michael N. Helmus, and Ni Ding, all of New York, N.Y., assignors to Schneider (USA), Inc., Plymouth, Minn.

Filed Feb. 1, 1995, Ser. No. 382,459
Int. Cl.[6] B05D *3/00*; B29C *71/02*; C04B *41/00*; H05H *1/00*
U.S. Cl. 427—532 **83 Claims**

1. A process for producing a material bearing thereon a coating of a wet, slippery, tenaciously adhering, commingled hydrogel of a hydrophilic polyurethane-polyurea polymer hydrogel and at least one other polymer hydrogel different from said hydrophilic polyurethane-polyurea polymer hydrogel, said process comprising:
a) making the surface of a hydrophilic or hydrophilicized hydrophobic polymer substrate or a metal substrate reactive by affixing thereto reactive chemical functional groups, at least some of which are amine-containing groups;
b) coating the resulting reactive surface with a first coating comprising a hydrophilic polyurethane-urea prepolymer intermediate, which is capable of forming a polyurethane-polyurea hydrogel-forming polymer, and which contains terminal isocyanate groups, such that at least some of said terminal isocyanate groups are reacted with and are covalently bonded to said reactive chemical functional groups on said substrate surface, forming covalent polyurea bonds therewith, resulting in the formation of a tie coat of a polyurethane-polyurea hydrogel-forming polymer on said substrate surface, which tie coat tenaciously adheres to said substrate surface, and wherein at least some of said terminal isocyanate groups of said polyurethane-urea prepolymer intermediate are present in said polyurethane-polyurea hydrogel-forming polymer of said tie coat, such that they remain free to react with other species; and
c) coating the resulting tie coat of the first-coated substrate surface of (b) with a second coating comprising at least one other hydrogel-forming polymer, different from said polyurethane-polyurea hydrogel-forming polymer formed in (b), and a moisture-containing, hydrogel-forming substance, which contains isocyanate-reactive functional groups, such that a barrier coat of a wet, slippery, tenaciously adhering, commingled hydrogel forms upon the application of said second coating to said tie coat of said first-coated substrate;
wherein said moisture of said hydrogel-forming substance binds with said polyurethane-polyurea hydrogel-forming polymer of said tie coat to form a first hydrogel of said commingled hydrogel barrier coat, on said tie coat, such that said first hydrogel of said commingled hydrogel barrier coat is a polyurethane-polyurea polymer hydrogel;
wherein said isocyanate-reactive functional groups of said hydrogel-forming substance react with and covalently bond to at least some of said terminal isocyanate groups of said polyurethane-polyurea hydrogel-forming polymer of said tie coat that remain free to react with other species, thereby rendering said polyurethane-polyurea polymer hydrogel tenaciously adhering to said substrate surface;
wherein said moisture of said hydrogel-forming substance binds with said at least one other hydrogel-forming polymer different from said polyurethane-polyurea hydrogel-forming polymer to form a second hydrogel of said commingled hydrogel barrier coat, such that said second hydrogel of said commingled hydrogel barrier coat is a hydrogel of said other hydrogel-forming polymer; and
wherein said first hydrogel of said commingled hydrogel barrier coat and said second hydrogel of said commingled hydrogel barrier coat are commingled, thereby rendering said second hydrogel of said commingled hydrogel barrier coat tenaciously adhering to said tie coat and thus also tenaciously adhering to said substrate surface.

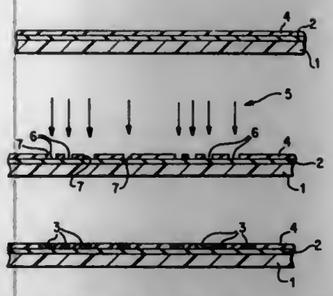
5,576,073

METHOD FOR PATTERNED METALLIZATION OF A SUBSTRATE SURFACE

Joerg Kickelhain, Neustadt, Germany, assignor to LPKF CAD/CAM Systeme GmbH, Garbsen, Germany

Filed Apr. 21, 1995, Ser. No. 427,093
Claims priority, application Germany, Apr. 23, 1994, 44 14 225.0
Int. Cl.[6] B05D *5/12*
U.S. Cl. 427—555 **16 Claims**

1. A method for patterned metallization of a substrate surface, said method comprising the steps of:
applying an electrically nonconductive catalyst-containing prime coat to the full surface of the substrate;
applying an electrically nonconductive cover coat to the full surface of the prime coat, said cover layer being removable by electromagnetic radiation in the ultraviolet range and being



applied in a thickness of at least 1 μm and approximately equal to that of a metal layer to be deposited in the metallization;
ablating partial areas of the cover coat by electromagnetic irradiation in the ultraviolet range to form a pattern having sharp and steep flanks and expose the prime coat in said partial areas; and
depositing a metal layer on the exposed prime coat in said partial areas to form electrical conductors, the deposition of the metal being effected in a reducing bath and being guided by the flanks of the cover layer pattern.

5,576,074

LASER WRITE PROCESS FOR MAKING A CONDUCTIVE METAL CIRCUIT

David C. Weigel, White Bear Lake, and David A. Morgan, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 23, 1995, Ser. No. 518,547
Int. Cl.[6] B05D *3/06*; *3/02*
U.S. Cl. 427—559 **10 Claims**

1. A process for providing a conductive metallic image on a substrate comprising the sequential steps of:
i) providing a laser addressable element comprising said substrate having on at least one surface thereof a non-metallic layer comprising
a) a solid binder which can be converted to a supercooled liquid upon exposure with a coherent radiation source and subsequent cooling to room temperature,
b) a radiation absorbing dye capable of converting radiation from said coherent radiation source to heat, and
c) an optional fluorinated surfactant;
ii) exposing said laser addressable element with said coherent radiation source to form an imagewise pattern of said supercooled liquid;
iii) applying to said imagewise pattern a metallic toner comprising a conductive metal; and
iv) heating said laser addressable element to remove greater than 99% of said non-metallic layer and to fuse said conductive metal leaving a conductive metal image on said substrate.

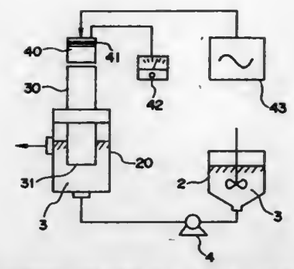
5,576,075

METHOD FOR PRODUCTION OF MAGNETIC RECORDING MEDIUM

Kaoru Kawasaki; Akira Saitoh; Akihiko Seki; Kazuyuki Shimazaki, all of Saku; Takahiro Mori, and Hisato Kato, both of Hino, all of Japan, assignors to TDK Corporation, and Konica Corporation, both of Tokyo, Japan

Filed Nov. 1, 1995, Ser. No. 551,341
Claims priority, application Japan, Nov. 4, 1994, 6-293645
Int. Cl.[6] B05D *3/00*
U.S. Cl. 427—565 **13 Claims**

1. A method for producing a magnetic recording medium by passing a magnetic coating material comprising a ferromagnetic powder and a binder resin through an ultrasonic treating device



under the operating conditions of 10 to 200 kHz of frequency of oscillation and 10 to 100 μm of amplitude of ultrasonic wave thereby effecting ultrasonic treatment of said magnetic coating material and coating the treated magnetic coating material on a substrate either directly or through an undercoating layer, wherein said ultrasonic treating device comprises an ultrasonic treating tank adapted to effect ultrasonic wave treatment of said magnetic coating material by passing said material therethrough, an ultrasonic wave horn inserted into said ultrasonic treating tank and provided with an operating end surface capable of exerting an ultrasonic oscillation on said magnetic coating material, and an ultrasonic wave oscillator connected to a basal part side of said ultrasonic wave horn, an operating depth H defined by the distance from said operating end surface of said ultrasonic wave horn to a bottom wall surface of said ultrasonic treating tank opposed to said operating end surface is set at a magnitude in the range of 2 to 40 mm, and said magnetic coating material to be coated on said substrate is subjected to said ultrasonic treatment by the use of said device with the duration of the irradiation of the ultrasonic wave kept in a range represented by the following formula (1):

$$H/6.6 \leq t \leq 3H \qquad \text{Formula (1)}$$

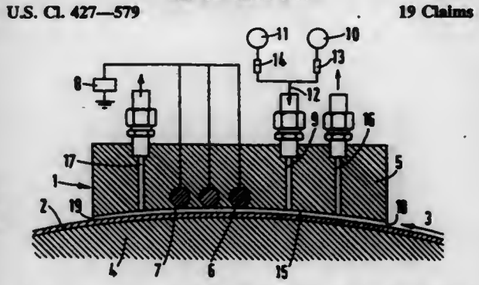
wherein t stands for the duration (seconds) of irradiation of the ultrasonic wave and H stands for the operating depth (mm).

5,576,076

PROCESS FOR CREATING A DEPOSIT OF SILICON OXIDE ON A TRAVELING SOLID SUBSTRATE

Frank Slootman, Saint Cyr L'Ecole; Pascal Bouard, Fontenay Le Fleury; François Coeuret, Guyancourt; Dominique Jouvaud, Paris, all of France, and Eckhard Prinz, Hamfelde, Germany, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Apr. 28, 1994, Ser. No. 234,462
Claims priority, application France, Apr. 29, 1993, 93 05063
Int. Cl.[6] B05D *3/06*
U.S. Cl. 427—579 **19 Claims**



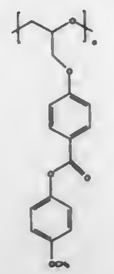
1. A process for depositing silicon oxide on a traveling solid substrate comprising the steps of moving the substrate through an electrical discharge region; subjecting the substrate to an electrical discharge in said region in the presence of an atmosphere containing (a) a silane, (b) oxygen or a gaseous compound containing

oxygen and (c) a carrier gas; maintaining said atmosphere at a pressure higher than 10,000 Pa; circulating said atmosphere in said region and preventing entrainment of oxygen other than that forming part of said atmosphere in said region, thereby forming silicon oxide on said traveling solid substrate.

5,576,077
RETARDATION LAYER HAVING THIN GLASS SUBSTRATES

Martin Bosma; Jan W. Venema; Stephen J. Picken, all of Arnhem, and Gustaaf R. Möhlmann, Dieren, all of Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

Filed Sep. 26, 1994, Ser. No. 312,029
Claims priority, application European Pat. Off., Sep. 29, 1993, 93202788
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 428—1 **7 Claims**



1. A retardation layer for a liquid crystalline display comprising a twisted nematic or supertwisted nematic liquid crystalline polymer which is placed between glass substrates wherein at least one glass substrate has a thickness of 20–500 micrometers and is provided with an orientation layer.

5,576,078
ILLUMINATED CHRISTMAS ORNAMENT

Alan G. Schatz, 65-47 160th St., Flushing, N.Y. 11365

Filed Mar. 27, 1995, Ser. No. 410,919
Int. Cl.[6] F21V *1/00*
U.S. Cl. 428—13 **3 Claims**

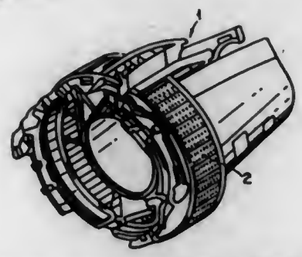


1. An illuminated Christmas ornament which comprises:
a) a transparent member consisting of a solid block of permanently clear and transparent weather-resistant thermoplastic resin having an aperture in a top edge;
b) a light fixture carrying a light bulb extending into said aperture comprising an internally threaded light receptacle and shade means supporting said light receptacle, enclosing the top edge of said block surrounding said receptacle and directing the illumination from said light bulb down into said transparent member, said aperture being only large enough to contain said light bulb;
c) said shade means including a reflective inner surface to help cast back the illumination from said light bulb down into said transparent member;
d) means for electrically connecting said light fixture to a socket of a conventional master light string; and
e) said shade means including a pair of flexible jaws with inner facing teeth formed on opposite sides of said light fixture gripping opposite surfaces of said block for clamping said light fixture to said transparent member adjacent said top edge with said light bulb extending into said aperture, so that said light bulb can provide illumination to said transparent member.

5,576,079
BRAIDED COMPLEX COMPOSITE PARTS AND METHODS OF FORMING SAME

Thomas P. Forman, Greenwich; Rance B. Fox, Milford; George E. Sabak, Monroe, all of Conn.; Timothy A. Sands, Muncy Valley, Pa., and Paul A. Vallier, Kensington, Conn., assignors to Dow-United Technologies Composite Products, Inc., Wallingford, Conn.

Division of Ser. No. 152,508, Nov. 15, 1993, Pat. No. 5,399,395, which is a continuation of Ser. No. 704,999, May 24, 1991, abandoned. This application Aug. 16, 1994, Ser. No. 291,284
Int. Cl.[6] B32B *1/08*
U.S. Cl. 428—34.1 **7 Claims**



1. A multi-vane structure made of a fiber reinforced composite comprising a plurality of vanes disposed between a plurality of platforms, the vanes having shaped surfaces for directing air through a plurality of cavities defined therebetween, the vanes and platforms produced from a plurality of resin impregnated braided fiber cells disposed in a side by side relationship, each cell defining an individual cavity, each cell having walls which provide the vanes and adjacent platform portions, the walls having curved shaped surfaces which define the cavity, at least one outside surface of said cell being a concave shaped surface, the walls of each cell made of continuous braided fibers having a shape to match the shape of the cavity.

5,576,080
POLYETHYLENIC FOAMING COMPOSITIONS AND MOLDED FOAMS

Hiroyuki Sugimoto, Osaka; Toshio Igarashi, Kyoto; Yoshihiro Nakatsuji, Osaka; Masayuki Tatsumi, Tokyo; Kenzou Chikanari, Chiba, and Satoru Funakoshi, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

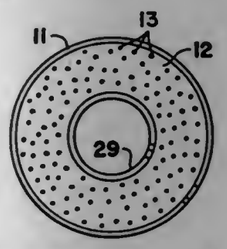
Division of Ser. No. 359,289, Dec. 19, 1994. This application Feb. 29, 1996, Ser. No. 609,913
Claims priority, application Japan, Dec. 20, 1993, 5-319594; Sep. 27, 1994, 6-231181; Oct. 14, 1994, 6-249299
Int. Cl.[6] B29D *22/00*; B32B *7/12*;*5/18*
U.S. Cl. 428—36.5 **4 Claims**

1. A multilayer molded article, comprising a composite foam layer and a thermoplastic resin layer, wherein said composite foam layer is a composite foam layer comprising a foam layer obtained from the powder of a polyethylenic foaming composition (A) and a non-foam layer obtained from the powder of a composition containing a thermoplastic elastomer (B),
wherein (A) is a polyethylenic foaming composition powder comprising (a) 100 parts by weight of an ethylenic copolymer having glycidyl groups consisting of 20 to 99.9% by weight of ethylene units, 0.1 to 30% by weight of a unit of a glycidyl ester of an unsaturated carboxylic acid or an unsaturated glycidyl ether, and 0 to 50% by weight of ethylenically unsaturated ester units other than a glycidyl ester, (b) 0.1 to 30 parts by weight of a carboxylic acid having 2 or more carboxyl groups and a molecular weight of 1500 or less, and (c) 0.1 to 20 parts by weight of a foaming agent of a thermal decomposition type, and
wherein (B) is a thermoplastic elastomer having a complex dynamic viscosity η^* (1) of 1.5×10^5 poise or less and a Newtonian viscosity index n of 0.67 or less, which is a composition comprising an ethylene/α-olefinic copolymeric rubber and a polyolefinic resin, or a partially-crosslinked composition comprising an ethylene/α-olefinic copolymeric rubber and a polyolefinic resin.

5,576,081
COMPOSITE STRUCTURAL ELEMENT AND PROCESS FOR MAKING SAME

Hartley Sandt, 2425 Dogwood La., Orange Park, Fla. 32073

Continuation of Ser. No. 119,064, Sep. 13, 1993, abandoned, which is a continuation-in-part of Ser. No. 138,151, Dec. 28, 1987, Pat. No. 5,004,574. This application Nov. 30, 1995, Ser. No. 565,130
Int. Cl.[6] B27D *22/00*
U.S. Cl. 428—36.9 **16 Claims**

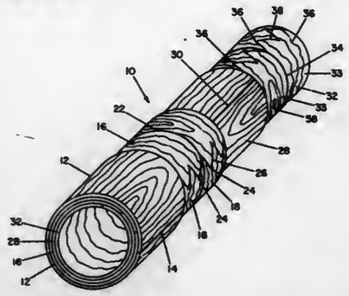


1. A process for preparing a non-extruded elongated structural element characterized by the steps of:
(A) preparing a hollow external solid walled casing of a tubular material being an integral part of the structural element;
(B) preparing a hollow internal solid walled casing of a tubular material being an integral part of the structural element;
(C) positioning the internal casing generally concentrically within the external casing to provide a space therebetween;
(D) filling the space between said external and internal casings with a polymer binder material in liquid form and simultaneously distributing generally uniformly throughout the polymer binder material, a plurality of individual elongated continuous strands of fiber reinforcement material extending substantially parallel and lengthwise of the external and internal casing thereby forming a hollow elongated structural element;
(E) solidifying the polymer binder material with the strands of fiber reinforcement material embedded therein; and wherein step (D) includes the step of:
(F) positioning a plug on the end of the internal casing, which extends outwardly to abut the inside of the external casing; and
(G) moving the plug and internal casing through the length of the external casing to cause polymer binder material, and fiber reinforcement material to be fed into the space between the casings behind the moving plug.

5,576,082
WOOD TUBING

Mark G. Jarrett, St. Clair Shores, Mich., assignor to Hollowood, Inc., Clinton Township, Mich.

Filed Nov. 3, 1994, Ser. No. 333,788
Int. Cl.[6] B32B *3/20*; F16L *9/17*
U.S. Cl. 428—36.91 **11 Claims**



1. A wood tube comprising:
multiple tubular layers of wood veneer with one tubular layer having wood grain extending longitudinally of said tube and an adjacent tubular layer having wood grain extending circumferentially of said tube,
said one tubular layer of wood veneer having edges, said edges being in abutted relation to form a straight, single layer butt joint extending substantially in the direction of the wood grain, and
said adjacent tubular layer of wood veneer having edges, said edges extending transversely to the direction of wood grain and forming a finger joint including fingers on each edge disposed between fingers on the opposite edge.

5,576,083
BLOW MOLDING RESINS

Surendra H. Agarwal, West Nyack, N.Y., assignor to Kraft Foods, Inc., Northfield, Ill.

Filed Nov. 3, 1994, Ser. No. 333,814
Int. Cl.[6] B65D *1/02*; C08L *23/04*;*23/06*
U.S. Cl. 428—36.92 **3 Claims**

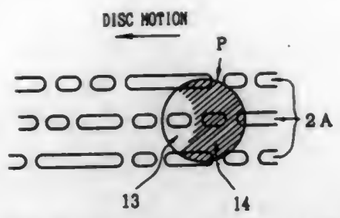
1. A soft and flexible blow-molded bottle produced from a resin having a density of from 0.94 to 0.96 g/cc, a melt index of from 2.0 to about 6.5 and a broad molecular weight distribution of at least 4, said resin being comprised of from 50% to 80% of injection molding grade HDPE having a density of from 0.95 to 0.96 g/cc and a melt index of from 3 to 9 and from 20% to 50% of extrusion coating grade LDPE having a density of from 0.91 to less than 0.94 g/cc and a melt index of at least 1.0.

5,576,084
OPTICAL RECORDING MEDIUM AND THE PRODUCING METHOD OF THE OPTICAL RECORDING MEDIUM

Mikiya Kuroda, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 8, 1994, Ser. No. 335,905
Claims priority, application Japan, Nov. 11, 1993, 5-305883
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—64.1 **11 Claims**

1. An optical recording medium comprising:
a transparent substrate having at least a series of information pits provided thereon, said series of information pits being able to be read out as reproducing signals by being irradiated with a laser beam from an apparatus; and
a masking layer provided on the transparent substrate by vacuum deposition means for minimizing an effective spot diameter of the laser beam to pass through the masking layer,



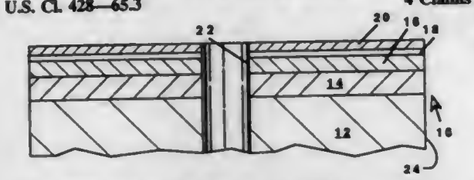
said masking layer having a transmittance reversely changeable corresponding to a change of temperature by being irradiated with the laser beam, said masking layer is made of a thermochromic material consisting of an electron donative color compound and an electron acceptant developer having a sublimation point or boiling point to allow an evaporation thereof in a molecular state.

5,576,085

THIN-FILM RECORDING MEDIUM WITH SOFT MAGNETIC LAYER

Brij B. Lal, San Jose, and Tadashi Shinohara, Fremont, both of Calif., assignors to HMT Technology Corporation, Fremont, Calif.

Filed Nov. 1, 1993, Ser. No. 148,651
Int. Cl.[6] G11B *5/66*; B32B *3/02*
U.S. Cl. 428—65.3 **4 Claims**



1. A magnetic recording system, comprising;
a magnetic recording medium having a substrate, a sputtered chromium underlayer, a sputtered thin-film recording magnetic layer, a sputtered soft ferromagnetic film having a thickness between about 10–100 Å, and a sputtered carbon overcoat, said medium having an inner diameter edge and an outer diameter edge,
means for rotating the medium, and
a zero-bias read-write head, effective to read and write magnetic signals to the medium, when the head is positioned above the rotating medium, wherein said system is characterized by a high frequency signal amplitude, measured at a region adjacent said outer edge using a zero-bias read-write head operating at 18 MHz, that is greater than the high frequency signal amplitude of a medium having a substrate, a chromium underlayer, a magnetic recording layer and a carbon overcoat, but lacking said soft ferromagnetic film.

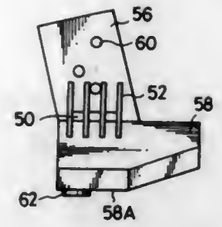
5,576,086

DEFORMATION-FREE MOLDED ARTICLE

Norio Narazaki; Yoshihiro Kayano; Yuko Itagaki, all of Hiratsuka, and Ryoji Ukaji, Isehara, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., and Ichikoh Industries, Ltd., both of Tokyo, Japan

Continuation of Ser. No. 974,499, Nov. 12, 1992, abandoned.
This application Dec. 2, 1994, Ser. No. 353,259
Claims priority, application Japan, Dec. 19, 1991, 3-336758; Dec. 19, 1991, 3-336759; Dec. 19, 1991, 3-336760; Dec. 19, 1991, 3-354612
Int. Cl.[6] B29D *31/00:11/00*
U.S. Cl. 428—131 **3 Claims**

1. An automobile door mirror stay, comprising a one-piece molded thermoplastic or thermosetting resin body comprising a



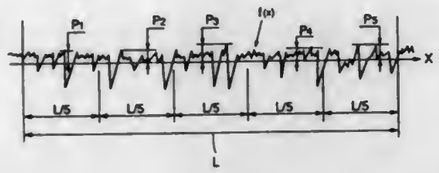
mirror fitting portion defining one plane, an automobile body fixing portion defining another plane, each said plane having an in-plane area, a junction portion joining said mirror fitting portion and said automobile body fixing portion with each other, and ribs integrally molded as one piece with said mirror fitting portion and said automobile body fixing portion extending from said in-plane area of the one said plane, through said junction portion and to said in-plane area of the other said plane, wherein at least one of said mirror fitting portion and said automobile body fixing portion defining one of said planes has an opening portion therein, said opening portion defining a means for preventing angular deformation between said two planes from a desired angle between said two planes when said one-piece body is molded by minimizing differences in the cooling rate at different parts of said one-piece body adjacent to said junction portion, and said opening portion being located between said ribs at least adjacent to and along said junction portion, said opening portion having a length along said junction portion at least 3/10 the length of said junction portion.

5,576,087

MAGNETO-OPTICAL RECORDING MEDIUM

Yukio Watanabe, and Shinichi Tachibana, both of Machida, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 13, 1993, Ser. No. 119,652
Claims priority, application Japan, Sep. 18, 1992, 4-249772
Int. Cl.[6] G11B *5/66*; B32B *3/10*
U.S. Cl. 428—141 **6 Claims**



1. A magneto-optical recording medium comprising a substrate, a recording layer including a magneto-optical recording film, and a protective layer, arranged in that order, wherein a surface of said protective layer which is not opposed to said recording layer has a surface roughness Rpm in the range of 0.1 μm to 0.85 μm, wherein $Rpm=(1/5)(P1+P2+P3+P4+P5)$, where P_n represents a distance between a center line and a straight line that is parallel to the center line and passes the highest crest of a surface portion roughness curve f(x) in each of 5 portions of the surface roughness curve of the protective layer sampled along a line X over a traversing length L.

5,576,088

INK JET RECORDING SHEET AND PROCESS FOR ITS PRODUCTION

Susumu Ogawa; Hideaki Senoh; Masaru Andoh, and Hideki Nomura, all of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Filed Apr. 6, 1995, Ser. No. 417,784
Claims priority, application Japan, May 19, 1994, 6-105310; Jun. 22, 1994, 6-139977; Oct. 20, 1994, 6-255408
Int. Cl.[6] B41M *5/00*
U.S. Cl. 428—327 **20 Claims**

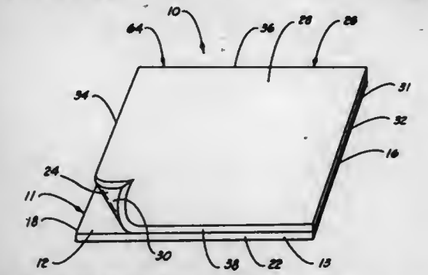
1. An ink jet recording sheet comprising a support, at least one ink-receiving layer in an amount of at least 1 g/m² formed on the support, and a gloss-providing layer formed on the ink-receiving layer, said ink-receiving layer consisting essentially of a pigment and a binder, and said gloss-providing layer consisting essentially of a pigment and a synthetic polymer formed from a latex as binder and having a glossy surface with a 75° specular gloss of at least 25% as stipulated in JIS Z 8741, wherein at least 70 parts by weight in 100 parts by weight of the pigment in the gloss-providing layer are constituted by colloidal particles having an average particle size of at most 300 nm.

5,576,089

OPTICAL EFFECT MATERIAL AND METHODS

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation-in-part of Ser. No. 968,798, Oct. 30, 1992, Pat. No. 5,369,934, which is a continuation of Ser. No. 865,563, Apr. 9, 1992, Pat. No. 5,245,814, which is a continuation of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned, said Ser. No. 179,057is a continuation-in-part of Ser. No. 965,585, Oct. 23, 1992, abandoned, which is a continuation of Ser. No. 893,586, Jun. 2, 1992, Pat. No. 5,181,364, which is a continuation of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned, said Ser. No. 179,057is a continuation-in-part of Ser. No. 24,573, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 464,694, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned, said Ser. No. 179,057is a continuation-in-part of Ser. No. 95,331, Jul. 21, 1993, Pat. No. 5,428,939, which is a continuation-in-part of Ser. No. 963,882, Oct. 20, 1952, Pat. No. 5,408,883, which is a continuation-in-part of Ser. No. 865,563, May 21, 1992, Pat. No. 5,245,814, which is a continuation of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned, said Ser. No. 963,882is a continuation-in-part of Ser. No. 893,586, Jun. 2, 1992, Pat. No. 5,181,364, which is a continuation of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned, said Ser. No. 95,331is a continuation-in-part of Ser. No. 923,117, Jul. 30, 1992, Pat. No. 5,307,605, which is a continuation-in-part of Ser. No. 803,318, Dec. 4, 1991, Pat. No. 5,344,016, which is a continuation-in-part of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned, said Ser. No. 95,331is a continuation-in-part of Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482, which is a continuation-in-part of Ser. No. 926,098, Aug. 5, 1992, which is a continuation-in-part of Ser. No. 803,318, Dec. 4, 1991, Pat. No. 5,344,016, which is a continuation-in-part of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned, said Ser. No. 940,930is a continuation-in-part of Ser. No. 687,701, Apr. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 649,263, Jan. 30, 1991, abandoned, which is a continuation of Ser. No. 248,960, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned, said Ser. No. 926,098is a continuation-in-part of Ser. No. 687,701, Apr. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 649,263, Jan. 30, 1991, abandoned, which is a continuation of Ser. No. 248,960, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned. This application Jan. 7, 1994, Ser. No. 179,057
Int. Cl.[6] B44D *5/06*; B44F *1/14*; B32B *3/00*
U.S. Cl. 428—142 **11 Claims**



1. An optical effect material, comprising:
a first sheet of light transmitting material having an upper surface, a lower surface and an outer periphery;
a second sheet of material having an upper surface, a lower surface and an outer periphery, the second sheet of material being substantially iridescent, the second sheet of material being aligned with and bonded to the first sheet of material;
a third sheet of material having an upper surface, a lower surface and an outer periphery, the third sheet of material having a substantially metallic finish, the third sheet of material being aligned with and bonded to the second sheet of material,
wherein said first sheet of material, said second sheet of material and said third sheet of material together form the optical effect material, and
wherein said optical effect material is shredded to comprise a plurality of optical effect materials.

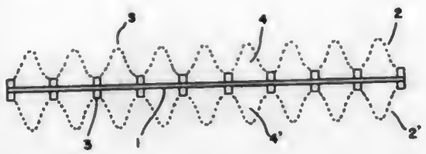
5,576,090

SHEET ELASTIC COMPLEX USED IN SANITARY PRODUCTS ITS MANUFACTURING PROCESS, AND ITS USAGES

Migaku Suzuki, 4-301 Arusu Kamakura, 19-2 Ueki, Kamakura Kanagawa, Japan

Filed Feb. 12, 1993, Ser. No. 17,505
Claims priority, application Japan, Feb. 13, 1992, 4-026818; Feb. 24, 1992, 4-035467; Aug. 18, 1992, 4-219127
Int. Cl.[6] A61F *13/15*; B32B *3/28;31/08;31/20*
U.S. Cl. 428—152 **52 Claims**

1. A sheet elastic complex
comprising a non-elastic backing sheet which has been bonded along multiple, oblong, mutually parallel bonding sections to at least one major surface of a planar elastic sheet under heating conditions, the width of the backing sheet between adjacent ones of said bonding sections being greater than that of said elastic sheet to form channels in combination with the



planar elastic sheet, wherein said bonding sections have a width X, and non-bonding sections between said bonding sections have a width Y, with the ratio

$$\frac{x}{(x+y)} \times 100\%$$

being less than 50%, and wherein Q is the length between said bonding sections in a stretched state of said sheet elastic complex, and P is the length between said bonding sections in a relaxed state of said sheet elastic complex, and a ratio of Q/P is equal to or greater than 1.5.

44. A disposable absorbent article having a waist section comprising:

a main body including a liquid impermeable sheet, and an absorbent material placed on the liquid permeable sheet; and

an elastic composite disposed along said waist section for forming a waist gather,

said elastic composite comprising outer and inner non-elastic sheets each of which has been stretched beyond its extension limit in a direction orthogonal to the lengthwise direction of parallel beat-bonding between each of said non-elastic sheets and an elastic sheet flanked thereby,

each of said outer and inner non-elastic sheets being gathered into a number of pleats and being bonded to said elastic sheet substantially along nadirs of said pleats so as to define spaced bonding regioos, providing said bonding areas, substantially parallel to one another, said inner non-elastic sheet being bonded to said main body substantially along apices of said pleats so as to form said waist gather, wherein said bonding regions have a width X, and non-bonding regions between said bonding regions have a width Y, with the ratio

$$\frac{x}{(x+y)} \times 100\%$$

being less than 50%, and wherein Q is the length between said bonding regions in a stretched state of said elastic composite, and P is the length between said bonding regions in a relaxed state of said elastic composite, and a ratio of Q/P is equal to or greater than 1.5.

5,576,091

RAISED ELASTICIZED BARRIER FOR ABSORBENT ARTICLE

Peter Zajaczkowski, Auburn, and Penny Lovestedt, Renton, both of Wash., assignors to Paragon Trade Brands, Inc., Federal Way, Wash.

Filed Aug. 16, 1994, Ser. No. 291,396

Int. Cl.[6] B32B *23/02*

U.S. Cl. 428—192 **41 Claims**

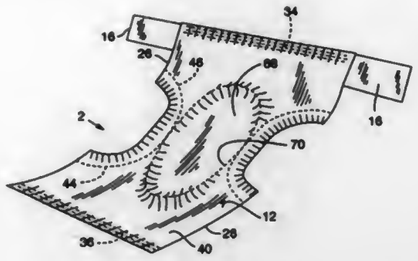
1. An absorbent article, comprising:

a moisture-impervious backing layer;

a liner sheet comprising an integral sheet;

an absorbent core layer positioned between the liner sheet and the backing layer;

elastic means for forming a raised elasticized barrier which defines a pocket for receiving exudates, the elastic means being attached only to the liner sheet in a crotch region of the absorbent article, wherein the liner sheet is not joined to the backing sheet or the absorbent core at regions extending to opposite sides of the elastic means to permit raising of the liner sheet from the backing layer to form the pocket.



5,576,092

DONOR SHEET FOR THERMAL PRINTING

Susan K. Jongewaard, North St. Paul, and Alan G. Miller, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 326,300, Mar. 21, 1989, Pat. No. 5,034,438. This application Jun. 21, 1991, Ser. No. 719,144

Int. Cl.[6] B32B *27/14*

U.S. Cl. 428—195 **7 Claims**

1. A donor suitable for thermal printing comprising a backing, said backing comprising a polymeric material or a fibrous material, said backing having on one major surface thereof a layer of image-forming material, said image-forming material being transferable to a receptor upon application of heat, and said backing having on the opposite major surface thereof an anti-stick layer comprising at least one polymeric material having a non-cyclic, substantially completely saturated hydrocarbon backbone, said backbone having substantially only hydrogen atoms and methyl groups attached to randomly positioned carbon atoms thereon, with no more than one methyl group attached to any one backbone carbon atom.

5,576,093

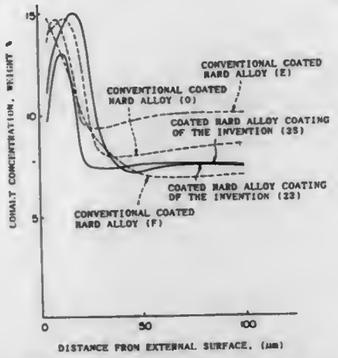
MULTILAYER COATED HARD ALLOY CUTTING TOOL

Hironori Yoshimura; Tetsuya Tanaka; Akira Osada, and Toshikatsu Sudo, all of Ibaraki-ken, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Continuation of Ser. No. 964,947, Oct. 22, 1992, Pat. No. 5,372,873. This application Sep. 7, 1994, Ser. No. 301,584

Int. Cl.[6] C23C *9/00*

U.S. Cl. 428—216 **40 Claims**



1. A coated hard alloy cutting tool, comprising:

a substrate comprising WC and Co, wherein the maximum concentration of Co occurs in a surface layer region of 50 μm from the external surface of said substrate, said maximum concentration is less than 15 wt %, said surface layer region is substantially free of the carbides of Ti, Ta and Nb containing W; the carbonitrides of Ti, Ta and Nb containing W; and the nitrides of Ti, Ta and Nb containing W; and

at least one coating deposited on said surface of said substrate, said coating, sequentially consists of:

(a) a primary layer comprising a TiCN layer;

(b) a secondary layer comprising an Al_2O_3 layer; and

(c) a surface layer comprising at least one layer selected from the group consisting of a TiCN layer and a TiN layer;

wherein said primary layer is produced so that tensile residual stresses therein are not more than 30 Kg/mm^2; and

wherein said layers (a)–(c) are deposited by chemical vapor deposition.

5,576,094

FOAM BOARDS PRODUCED USING HALOGEN-FREE BLOWING AGENTS

Julien N. R. Callens, Merksem; Alfons J. S. van Biesen, Opwijk, both of Belgium; Bernardo Wolff, Mannheim, Germany; Gerhard Alicke, Worms, Germany; Reinhold Weber, Mutterstadt, Germany; Franz-Josef Dietzen, Ludwigshafen, Germany, and Klaus Hahn, Kirchheim, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/01631, § 371 Date Nov. 21, 1995, § 102(e) Date Nov. 21, 1995, PCT Pub. No. WO94/28058, PCT Pub. Date Dec. 8, 1994

PCT Filed May 20, 1994, Ser. No. 537,949

Claims priority, application Germany, May 27, 1993, 43 17 573.2; Feb. 1, 1994, 44 02 989.8

Int. Cl.[6] B32B *3/26;7/12*

U.S. Cl. 428—220 **17 Claims**

1. An extruded foam board having a minimum thickness of 20 mm and a cross section of at least 50 cm^2 produced using halogen-free blowing agents and comprising a thermoplastic matrix based on a styrene polymer, closed cells, which are free of halogen-containing gases and, optionally additives insoluble in the thermoplastic matrix, wherein the thermoplastic matrix has a Vicat softening temperature VST B 50 (in accordance with DIN 53 460) of at most 100° C. and a melt index MVI 200/5 (in accordance with DIN 53 735) of at least 5 ml/10 min.

5,576,095

WATER AND OIL REPELLENT FIBER COMPRISING A PHYSICALLY INCORPORATED PERFLUOROPOLYETHER

Akihiko Ueda; Seiji Takubo, both of Settsu, and Yoshio Amimoto, Osaka, all of Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 167,797, Feb. 22, 1994, abandoned. This application May 24, 1995, Ser. No. 449,117

Claims priority, application Japan, Apr. 23, 1992, 4-104348; Jan. 22, 1993, 5-009062

Int. Cl.[6] D01F *6/92;* **D06M** *15/277;15/233;* **D03D** *3/00*

U.S. Cl. 428—224 **15 Claims**

1. A water- and oil-repellent fiber comprising a synthetic resin composition which contains a fluorine-containing polymer comprising

(a) a repeating unit of the formula:

$$R_fX$$

$$-(OCHCH_2)-$$

wherein R_f is a perfluoroalkyl group or perfluoroalkenyl group having 3 to 21 carbon atoms, and X is a direct bond, $-CH_2-$, $-CH_2OCH_2-$, $-CH_2CH_2OCH_2-$, $-(CH_2)_6\ OCH_2-$, $-CH{=}CHCH_2OCH_2-$, $-CH_2CHICH_2OCH_2-$, $-COOCH_2-$, $-CH_2COOCH_2-$, $-SO_2N(R')CH_2COOCH_2-$ or $-SO_2N(R')CH_2CH_2OCH_2-$, wherein R' is an alkyl group, and wherein said fluorine-containing polymer is incorporated into said synthetic resin composition such that said fluorine-containing polymer is not coated on said fiber.

5,576,096

AGENT FOR WATER-REPELLENT TREATMENT OF FIBERS

Ichiro Ono; Kenichi Isobe, both of Annaka; Hironori Tsukada, Sakai; Kenji Ueji, Kawachinagano, and Masakazu Komemushi, Hirakata, all of Japan, assignors to Shin-Etsu Chemicals Co., Ltd., Tokyo, Japan

Division of Ser. No. 269,276, Jun. 30, 1994, abandoned. This application Oct. 16, 1995, Ser. No. 543,552

Claims priority, application Japan, Jun. 30, 1993, 5-183423; Jun. 24, 1994, 6-166297

Int. Cl.[6] B32B *27/30;* **B05D** *3/02*

U.S. Cl. 428—290 **30 Claims**

1. A method for making fibers water repellent which comprises coating the fibers with a composition comprising an acryl-silicone copolymer prepared by the radical copolymerization reaction of an organopolysiloxane compound containing one radical polymerizable group with radical polymerizable monomers including an acrylate, a methacrylate or a mixture thereof as a main member, wherein the weight ratio of the organopolysiloxane compound to the radical polymerizable monomers is from 30:70 to 80:20.

5,576,097

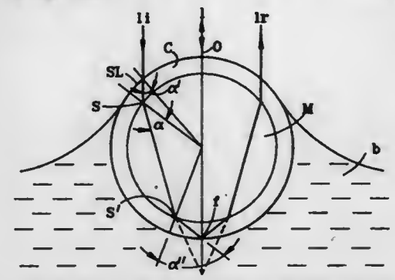
HIGH BRIGHTNESS DURABLE RETRO-REFLECTING MICROSPHERES AND METHOD OF MAKING THE SAME

Charles W. Wyckoff, Needham, Mass., assignor to Brite-Line Industries, Inc., Denver, Colo.

Filed Apr. 24, 1995, Ser. No. 428,801

Int. Cl.[6] B32B *5/16;* **B25G** *3/00*

U.S. Cl. 428—325 **7 Claims**



1. A retro-reflective vitreous glass microsphere encapsulated in a hardened transparent non-vitreous metal-oxide ceramic shell of substantially the same index of fraction as the microsphere.

5,576,098

THIN FILM MAGNETIC HEAD

Yuko Arimoto; Takabumi Fumoto; Keiji Okubo; Osamu Saito; Toyoji Ataka, and Hisashi Yamasaki, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jul. 6, 1993, Ser. No. 85,946

Claims priority, application Japan, Jul. 8, 1992, 4-181115; Jan. 29, 1993, 5-013131

Int. Cl.[6] G11B *5/66;* **B32B** *5/16*

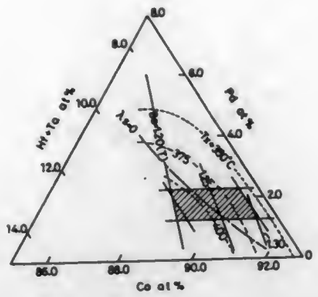
U.S. Cl. 428—332 **23 Claims**

1. A thin film magnetic head comprising:

a substrate; and

a magnetic core provided on the substrate and comprising upper and lower magnetic pole films spaced apart to define a read-write gap and a coil disposed between the upper and lower magnetic pole films in an area outside of the read-write gap;

wherein the upper and lower magnetic pole films each comprise an even number of magnetic thin film layers having a soft magnetic property and having substantially equal thicknesses, and at least one non-magnetic thin film layer inserted between



any adjacent two of said even number of magnetic thin film layers, said magnetic thin film layers and said at least one non-magnetic thin film layer being laminated one on another to form a multilayer thin film laminate; and

wherein said magnetic thin film layers are made from a Co-containing amorphous alloy consisting essentially of 3.0 to 4.0 atomic % of Hf, 4.5 to 5.5 atomic % of Ta, and 1.3 to 2.3 atomic % of Pd, Co making up the remaining atomic %.

5,576,099

INDUCTIVE HEAD LAMINATION WITH LAYER OF MAGNETIC QUENCHING MATERIAL

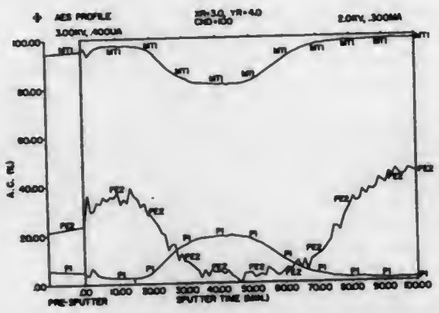
Donald F. Canaperi, Bridgewater, Conn.; Mahadevaiyer Krishnan, Hopewell Junction, N.Y.; Sol Krongelb, Somers, N.Y.; David L. Rath, Stormville, N.Y., and Lubomyr T. Romankiw, Briarcliff Mano, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 9, 1990, Ser. No. 477,696

The portion of the term of this patent subsequent to Jul. 16, 2008, has been disclaimed.

Int. Cl.[6] G11B *5/66*; B32B *5/16*

U.S. Cl. 428—332 **10 Claims**



1. A magnetic recording head comprising a thin film laminate of at least one non-magnetic layer of a magnetic quenching material laminated between two magnetic layers, wherein said non-magnetic layer of magnetic quenching material is NiP and is characterized as having a concentration of at least 10 atomic % phosphorus.

5,576,100

MAGNETO-OPTICAL RECORDING MEDIUM

Peter Hansen, Aachen-Walheim; Dieter Mergel, and Detlef Raasch, both of Aachen, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 27, 1994, Ser. No. 266,049

Claims priority, application Germany, Jul. 1, 1993, 43 21 851.2

Int. Cl.[6] B32B *5/16*; G11B *5/66*

U.S. Cl. 428—332 **11 Claims**

1. A magneto-optical recording medium comprising a magneto-optical layer which is composed of a quaternary alloy of $Nd_xTb_yFe_zCo_m$, the quantitative proportions of the alloying elements x, y, z and m being selected as follows:

x=4–16 at. %

y=20–30 at. %

m=37.5±4.5+x-y at. %

z=100-x-y-m at. %.

5,576,101

GAS BARRIER RUBBER LAMINATE FOR MINIMIZING REFRIGERANT LEAKAGE

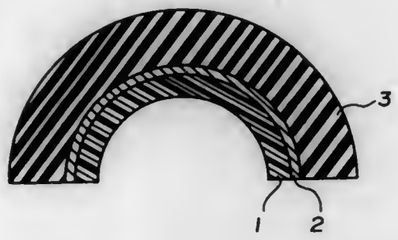
Shinji Saitoh, and Masato Yoshikawa, both of Kodaira, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 168,139, Dec. 17, 1993, abandoned. This application Apr. 12, 1995, Ser. No. 420,794

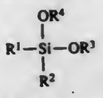
Claims priority, application Japan, Dec. 18, 1992, 4-355712

Int. Cl.[6] B32B *27/34*;*27/32*

U.S. Cl. 428—332 **4 Claims**



1. A gas barrier rubber laminate for minimizing leakage of fluorocarbon gas refrigerant comprising; a film layer of a polyamide or a blend of polyamide with a polyolefin, a layer of rubber selected from the group consisting of natural rubber, butadiene rubber, styrene-butadiene copolymer rubber, chloroprene rubber, acrylonitrile-butadiene rubber and isobutylene-isoprene rubber, and an intermediate gas barrier layer therebetween composed of a cured product of an organosilane of the formula (1):



(1)

wherein each of R^1 and R^2 is a saturated or unsaturated hydrocarbon radical or alkoxy radical, and

each of R^3 and R^4 is a saturated or unsaturated hydrocarbon radical.

5,576,102

MAGNETO OPTICAL RECORDING MEDIUM

Yoshiyuki Kisaka, Gastonia, N.C.; Ichiro Nobuhara, Kurashiki, Japan; Seiki Nojiri, Kurashiki, Japan, and Toshifumi Kawano, Machida, Japan, assignors to Mitsubishi Chemical Corporation, Japan

Continuation of Ser. No. 913,685, Jul. 15, 1992, abandoned. This application Jun. 3, 1994, Ser. No. 253,326

Claims priority, application Japan, Jul. 23, 1991, 3-182678

Int. Cl.[6] G11B *5/66*;*5/70*;*11/00*

U.S. Cl. 428—336 **2 Claims**

1. A magneto optical recording medium comprising:

a substrate comprising polycarbonate;

an interference layer comprising tantalum oxide having a thickness of 500 to 1,200 Å and a refractive index of 2.1 to 2.3, on said substrate directly deposited;

a recording layer comprising a TbFeCo alloy having a thickness of 200 to 300 Å, on said interference layer directly deposited;

a heat insulating layer having a thickness of 200 to 500 Å, on said recording layer directly deposited, said heat insulating layer being a layer comprising silicon nitride having a refractive index of 1.6 to 2.2 or a layer comprising silicon oxide having a refractive index of 1.4 to 2.0; and

a reflective layer of Al alloy containing Ta, wherein the atomic percentage of Ta is 1 to 3% of the atomic amount of Al, and having a thickness of 400 to 1,200 Å, on said heat insulating layer directly deposited.

5,576,103

Patent Not Issued For This Number

5,576,104

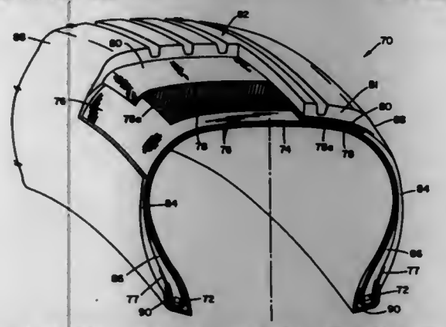
ELASTOMERS CONTAINING PARTIALLY ORIENTED REINFORCING FIBERS, TIRES MADE USING SAID ELASTOMERS, AND A METHOD THEREFOR

Alfredo G. Causa, Akron; Christina H. Obermaier, Stow, and Marc Borowczak, N. Canton, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 1, 1994, Ser. No. 269,744

Int. Cl.[6] B60C *5/00*

U.S. Cl. 428—382 **14 Claims**



7. A pneumatic tire having a tread base comprising a cured elastomeric matrix having dispersed therein 0.5 to 6 phr partially oriented fibers and 0.5 to 8 phr fibrillated pulp fibers, said partially oriented fibers having a modulus of less than 10 GPa, a length of about 0.2 to 12 mm, a diameter of about 0.005 to 0.03 mm and an aspect ratio of 25 to 1000, said partially oriented fibers being selected from the group consisting of polyamides, polyesters and polyolefins, and said fibrillated pulp fibers having a length of about 0.2 to 5 mm, a diameter of about 0.0005 to 0.02 mm and an aspect ratio of 25 to 1000, said fibrillated pulp fiber being selected from the group consisting of aromatic copolyester, p-aramid, liquid crystalline cellulosic fibers, rigid rod aromatic heterocyclic liquid crystalline fibers, gel spun fibers, wet spun acrylic fibers, superoriented aromatic copolyamide fibers and mixtures thereof, and wherein said elastomer matrix material with said fibers has a tensile modulus at 50% elongation of 1 to 7 MPa, a cut growth rate of 1 to 10×10^2 mm/Mc, a hysteresis of 1.5 to 3×10^2 KPa, a tensile strength of 9 to 15 MPa, an ultimate elongation of 300 to 600%, and a Shore A hardness of 52 to 70.

5,576,105

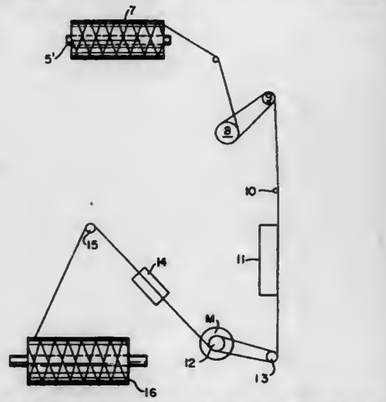
TIRE CORE MADE FROM AN IMPROVED POLYESTER FILAMENT YARN

Peter Reinthaler, Neuenkirch, and Armin Mueller, Emmenbruecke, both of Switzerland, assignors to Rhone - Poulenc Viscosuisse S.A., Emmenbruecke, Switzerland

Division of Ser. No. 523,209, Sep. 5, 1995, which is a continuation-in-part of Ser. No. 934,632, Sep. 14, 1992, abandoned. This application Mar. 1, 1996, Ser. No. 609,455

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—395 **3 Claims**



1. A tire cord made from a pre-adherized polyester filament yarn produced by a process including the steps of:

a) melt-spinning at spinning speeds of 3200 m/min to 3800 m/min to obtain a partially oriented polyester filament yarn having a boiling water shrinkage value < 20%;

b) spin-finishing the partially oriented polyester filament yarn;

c) after the spin-finishing, applying 0.05 to 0.20 % by weight of a pre-adherizer composition, based on fiber weight, to the partially oriented polyester filament yarn while the filament yarn is running;

d) after the applying, taking up the filament yarn on a bobbin at a take-up speed of 3200 to 3800 m/min and treating the partially oriented polyester filament yarn on the bobbin with hot air at temperatures from 50° to 90° C. for 3 to 5 days to form a conditioned partially oriented polyester filament yarn; and then

e) drawing, in a single process step, by passing said conditioned partially oriented polyester filament yarn over a feed roller, a snubbing pin and a hot plate and by pulling the conditioned partially oriented polyester filament yarn over the snubbing pin and the hot plate with a motor-driven take-off roller to form the pre-adherized polyester filament yarn;

wherein said pre-adherized polyester filament yarn has a dimension stability DS of >24,000 cN^2/tex^2, a tenacity of from 60 to 70 cN/tex and a hot air shrinkage value at 190° C. of <3.5%, said hot air shrinkage value being obtained by exposing a yarn sample of said pre-adherized polyester filament yarn under a load of 0.4 cN/dtex to a temperature of 235° C. for 60 seconds, allowing the yarn sample to cool down to room temperature under a load of 0.01 cN/dtex, heating the yarn sample under the load of 0.01 cN/dtex at a temperature rate of

20 K/min and then measuring a residual shrinkage of the yarn sample at 190° C.; so that the tire cord has a rubber adhesion of from 18 daN to 25 daN, an appearance grade of from 2.5 to 4.0 and a breaking strength after impregnation not less than that prior to impregnation.

5,576,106

GRAFTED FLUOROPOLYMER POWDERS

Dewey L. Kerbow, Vienna, W. Va., and Hermann Jenewein, Geneva, Switzerland, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 28, 1994, Ser. No. 281,725

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—403 **14 Claims**

1. A grafted fluoropolymer powder comprising fluoropolymer particles and a non-homopolymerized ethylenically unsaturated compound, wherein said compound is grafted only on the surface of said particles, said fluoropolymer being melt-fabricable, said compound having polar functionality, and the grafting of said compound to said particles occurring by reaction between said compound and the fluoropolymer of said particles.

5,576,107

DIAMOND CRYSTAL AND METHOD FOR FORMING THE SAME

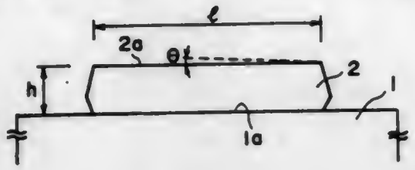
Keiji Hirabayashi, Tokyo, and Yoichi Hirose, Saitama-ken, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 297,901, Aug. 29, 1994, Pat. No. 5,445,851, which is a continuation of Ser. No. 35,624, Mar. 23, 1993, abandoned. This application May 5, 1995, Ser. No. 435,852

Claims priority, application Japan, Mar. 26, 1992, 4-068680

Int. Cl.[6] B05D *1/08*

U.S. Cl. 428—408 **5 Claims**



1. A diamond crystal comprising a tabular diamond crystal formed on a substrate by gas phase synthesis, wherein the diamond crystal has a ratio of thickness to width of from 1:4 to 1:1,000 and the surface of the substrate on which the diamond crystal has been formed and the top surface of the diamond crystal are at an angle ranging from 0° to 10°.

5,576,108

CURING COMPONENT FOR EPOXY RESINS

Uwe Neumann, Bad Schwalbach, and Claus Godau, Kiedrich, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sep. 9, 1994, Ser. No. 301,986

Claims priority, application Germany, Sep. 13, 1993, 43 31 052.4

Int. Cl.[6] C08G *14/06*; C08L *63/00;61/34*

U.S. Cl. 428—413 **12 Claims**

1. A process for producing an amino group-containing curing component for epoxy resins, comprising reacting

(A) a polyhydroxy aromatic which is produced by an acid catalysis reaction of

(1) at least one compound selected from the group consisting of styrene and 2-phenyl propene, and

(2) a polyhydroxy aromatic compound selected from the group consisting of hydroquinone, resorcinol, pyrogallol, phloroglucinol and novolaks of these compounds with formaldehyde,

(B) a polyamine which comprises at least one of 1,3-bis(aminomethyl)benzene or a mixture of 1,3-bis(aminomethyl)benzene with another polyamine and

(C) an aldehyde

by the Mannich reaction.

5,576,109

SURFACE TREATING AGENT AND SURFACE-TREATED SUBSTRATE

Takashige Yoneda; Takeshi Morimoto; Fumiaki Gunji; Kenji Ishizeki, and Yukiko Ono, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Apr. 18, 1995, Ser. No. 425,037

Claims priority, application Japan, Apr. 20, 1994, 6-81627; May 11, 1994, 6-97719

Int. Cl.[6] B32B *25/20*

U.S. Cl. 428—447 **18 Claims**

1. A surface treating agent containing a silicone compound of the formula (A):

$$(R^1)_a(R^2)_b(Z^1)_{3-a-b}SiO\text{—}\{Si(R^3)_c(R^4)_d(Z^2)_{2-c-d}O\}_n\text{—}Si(R^5)_e(R^6)_f(Z^3)_{3-e-f} \quad (A)$$

wherein each of R^1 to R^6 which are independent of one another, is a hydrogen atom or an organic group attached to Si through a carbon atom, provided that at least one of R^1 to R^6 is an organic group;

each of Z^1 to Z^2 which are independent of one another, is an isocyanate group or a hydrolyzable group, wherein at least one of Z^1 to Z^3 in the formula (A) is an isocyanate group;

each of a to f which are independent of one another, is an integer of 0, 1 or 2, provided $1 \leq a+b \leq 3$, $0 \leq c+d \leq 2$, $1 \leq e+f \leq 3$ and $2 \leq a+b+c+d+e+f \leq 7$; and

n is an integer of 0 or at least 1.

5,576,110

ADDITION CURABLE SILICONE PSA WITH HIGH LAP SHEAR STRENGTH

Shaow B. Lin, Schenectady, and Robert C. Rowland, Albany, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 206,489, Mar. 4, 1994, abandoned. This application May 25, 1995, Ser. No. 449,871

Int. Cl.[6] B32B *9/06*; C08F *283/12*

U.S. Cl. 428—447 **18 Claims**

1. An addition curable pressure sensitive adhesive silicone composition comprising components (A), (B), (C), optionally (D), (E), and optionally (F) wherein:

(A) is an aromatic soluble resin or resinous copolymer comprising $R_3SiO_{1/2}$ units and $SiO_{4/2}$ units wherein R is a monovalent alkyl or aromatic radical having from 1 to about 6 carbon atoms, wherein the resinous copolymer comprises from about 0.2% to about 5.0% by weight, based on the total weight of copolymer, of hydroxyl radicals, the molar ratio of $R_3SiO_{1/2}$ to $SiO_{4/2}$ being from about 0.6 to about 0.9 inclusive;

(B) an alkenyl-containing polydiorganosiloxane having a viscosity of at least about 3,000 centipoise at 25° C.;

(C) a set of multi-functional silicones as crosslinkers comprising:

(i) a multi-functional hydride silicone having more than 2 silicon-bonded hydrogens per chain; and

(ii) a multi-functional resinous alkenyl silicone having more than 2 silicon bonded alkenyl groups per chain wherein the weights of (A), (B), (C (i)), and (C (ii)) add to 100 parts by weight with

(A) ranging from 50 to 75 parts per hundred parts by weight and the sum by weight of

(B), (C(i)), and (C(ii)) being the balance to add to 100 parts by weight wherein the quantities of (B), (C(i)), and (C(ii) are determined by the molar ratio of silicon-bonded hydrogen (C(i)) to the molar sum of alkenyl groups in (B) and (C(ii)) being from about 1.1 to 30 and optionally

(D) from 0 to about 100 parts by weight of a reaction mixture comprising from 60 to 100% by weight of component (A) and from 40 to 0% by weight of component (B) wherein the sum by weight of (A), (B), (C(i)), (C(ii)), and (D) ranges from 100 parts by weight to 200 parts by weight when the sum of (A), (B), (C(i)), and (C(ii)) is 100 parts by weight;

(E) a hydrosilation catalyst; and optionally

(F) an organic solvent present in the total composition from about 0 to 40% by weight based on the sum by weight of all components present whereby when said pressure sensitive adhesive silicone is cured the lap shear at 70° C. is 2.2 lbs/in^2 or greater.

5,576,111

MAGNETIC RECORDING MEDIUM

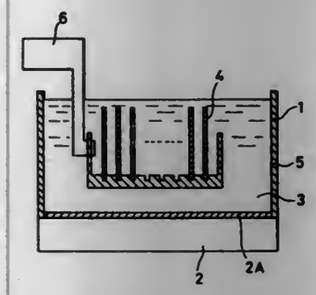
Katsumi Onodera; Koji Ito; Manabu Koike; Tamotsu Hatakoshi; Kazuyoshi Tomita, and Kazuo Nimura, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 966,337, Oct. 26, 1992, abandoned, which is a division of Ser. No. 759,573, Sep. 16, 1991, Pat. No. 5,232,750. This application Jul. 22, 1994, Ser. No. 273,161

Claims priority, application Japan, Sep. 17, 1990, 2-246558; Feb. 18, 1991, 3-022458

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—612 **15 Claims**



1. A magnetic recording medium comprising:

a non-magnetic disc-shaped base plate;

a magnetic layer, and

a protective layer successively formed on said non-magnetic base plate,

wherein an upper surface of said non-magnetic base plate is provided with a texture in a circumferential direction, and a surface roughness of said base plate is such that a center-line mean roughness Ra as measured in the radial direction of the base plate is within the range from 0.0025 μm to 0.0045 μm, an index ΔCv derived from subtraction of a cutting depth corresponding to one percent bearing length ratio on a curve of a profile bearing length ratio from a cutting depth corresponding to ten percent bearing length ratio on said curve is within a range from 0.006 μm to 0.01 μm, and a count number Pc2 equal to the number of projections having a height measured from the center of a surface roughness curve extending in the circumferential direction of the base plate of not less than 0.01 μm, is within a range from 5 to 30 per unit length of 2.5 mm in the circumferential direction of the base plate.

5,576,112

JOINT OF ALUMINUM ALLOY CASTING

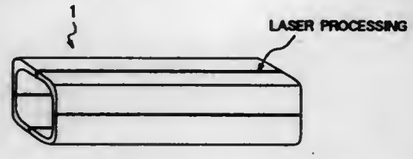
Shuhei Izuchi, and Tsuyoshi Matsumoto, both of Fujisawa, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Aug. 26, 1994, Ser. No. 297,113

Claims priority, application Japan, Aug. 28, 1993, 5-235765

Int. Cl.[6] C22F *3/00*; C22C *21/00*

U.S. Cl. 428—654 **9 Claims**



1. A joint of an automotive frame, wherein said joint is formed from an aluminum alloy casting consisting essentially of aluminum, 3.5 to 12.0 Wt % of Si, having an Fe content of at most 0.10 Wt % and having a hydrogen content of at most 0.3 cc per 100 g of alloy.

5,576,113

BATTERY CAN, SHEET FOR FORMING BATTERY CAN, AND METHOD FOR MANUFACTURING SHEET

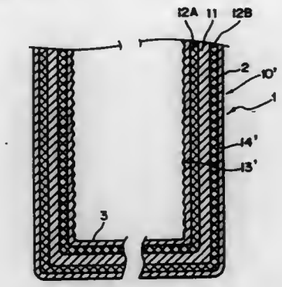
Sugikawa Hirofumi; Michibata Sachio, and Hayashi Keiichi, all of Osaka, Japan, assignors to Katayama Special Industries, Ltd., Osaka-fu, Japan

Filed Jan. 27, 1994, Ser. No. 187,000

Claims priority, application Japan, Jun. 4, 1993, 5-134987; Jun. 4, 1993, 5-134988; Jun. 4, 1993, 5-134989; Jun. 4, 1993, 5-134990

Int. Cl.[6] B32B *15/02*

U.S. Cl. 428—679 **13 Claims**



1. A sheet, to be formed into a battery can which is cylindrical and open in one end thereof and formed by drawing and ironing and comprises a cylindrical wall and a bottom surface disposed at the other end thereof, comprising a cold-rolled steel plate having a plated layer formed on each major surface thereof, in which the plated steel sheet has in-plane anisotropy Δr of less than ±0.15, representing the difference among Lankford values (r), where

$$\Delta r = (r_x + r_y)/2 - r_z$$

in which r_x is a width deformation degree in a lengthwise direction thereof/a thickness deformation degree in the lengthwise direction thereof, r_y is a width deformation degree in a widthwise direction thereof/a thickness deformation degree in the widthwise direction thereof, and r_z is a width deformation degree in an oblique direction thereof/a thickness deformation degree in the oblique direction thereof.

5,576,114
HIGH DENSITY MAGNETIC RECORDING MEDIUM CONTAINING HEXAGONAL SYSTEM FERRITE POWDER

Shunji Korisu; Osamu Kubo; Tatsumi Maeda, and Etsuji Ogawa, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Feb. 3, 1994, Ser. No. 190,927
Claims priority, application Japan, Feb. 4, 1993, 5-017137
Int. Cl.[6] G11B *5/66;5/70*
U.S. Cl. 428—694 B **3 Claims**

1. A magnetic recording medium comprising a nonmagnetic supporting substrate, having provided thereon a magnetic layer comprising a magnetic hexagonal system ferrite powder and a binder, wherein said magnetic powder has a packing ratio of not less than 95%, said packing ratio is a ratio of the saturation magnetization Ms as determined per unit volume of said magnetic layer to the theoretical saturation magnetization Ms' and said magnetic powder, after being packed in a closed container, pressed at a lead of 400 kgf/cm^3, and relieved of the load, exhibits a packing density in the range of 2.5 to 3.5 g/cm^3 and a geometric standard deviation of not more than 1.5 in the particle diameter distribution.

5,576,115
COMPOSITE POLYMERIC ELECTROLYTE

Federico Capuano; Fausto Croce, and Bruno Scrosati, all of Rome, Italy, assignors to Ente per le Nuove Tecnologie, L'Energia e L'Ambiente (ENEA), Rome, Italy

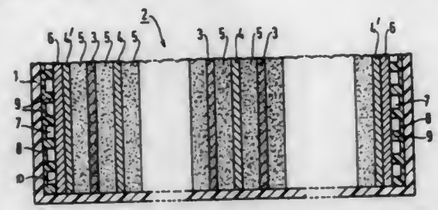
Continuation of Ser. No. 2,879, Jan. 14, 1993, abandoned.
This application Apr. 17, 1995, Ser. No. 424,565
Claims priority, application Italy, Jan. 17, 1992, RM92A0036
Int. Cl.[6] H01M *8/10*
U.S. Cl. 252—62.2 **2 Claims**

1. A composite ternary polymer electrolyte consisting of polyethylene oxide, lithium perchlorate and a zeolite which are respectively present in a weight ratio of 20:70:10.

5,576,116
SEALED STORAGE CELL OPERATING AT LOW PRESSURE

Patrick Sanchez, Le Pian Medoc, and Edith Metayer, Le Bouscat, both of France, assignors to Saft, Romainville, France

Continuation of Ser. No. 187,505, Jan. 28, 1994, abandoned.
This application Feb. 12, 1996, Ser. No. 598,621
Claims priority, application France, Jan. 27, 1994, 94 00885
Int. Cl.[6] H01M *10/52;4/64*
U.S. Cl. 429—59 **15 Claims**

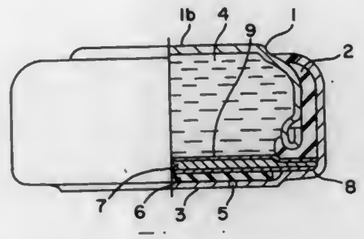


1. In combination, a prismatic electrochemical cell having an alkaline electrolyte comprising a stack placed in a container and composed of at least one anode and at least one cathode containing nickel hydroxide, and an oxygen recombination system, said oxygen recombination system comprising at least one recombination electrode which is at least partially hydrophobic and has first and second opposite faces of large surface area, said first face being joined to said anode, and a rigid structure in direct face-to-face contact with the second face of said recombination electrode, and defining therebetween at least one free, nonreducible space of small width so as to allow oxygen access to said recombination electrode throughout the duration of use of said cell, and wherein said recombination electrode is composed of a porous current collector coated with a mixture of carbon, polytetrafluoroethylene, and a bonding agent.

5,576,117
FLAT-TYPE CELL

Yoshinobu Morita, Hirakata; Fumio Daio, Kitakatsuragi-gun; Norimasa Takahashi, Neyagawa; Kenichi Nakatsu, Mishima-gun, and Naoko Souma, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 6, 1996, Ser. No. 611,684
Claims priority, application Japan, Mar. 7, 1995, 7-046964; Jul. 31, 1995, 7-194562; Sep. 21, 1995, 7-242888
Int. Cl.[6] H01M *2/08*
U.S. Cl. 429—162 **18 Claims**



1. A flat-type cell comprising:
a cup-shaped negative electrode case and a cup-shaped positive electrode case with an insulating gasket in between forming a sealed housing by bending an open edge of said positive electrode case inwardly to, said positive electrode case and said negative electrode case separated by a separator with an electrolyte held between said electrode cases,
wherein, said negative electrode case has an opening edge folded outwardly to form U shaped section, with a cylindrical part expanded outwardly to have an inner diameter larger than the inner diameter of the folded part.

5,576,118
MAGNESIUM BASED HYDROGEN STORAGE ALLOY ELECTRODE

Yunshi Zhang; Deying Song; Youxiao Chen; Jun Chen; Genshi Wang; Huatang Yuan; Zuoxiang Zhou; Xuejun Cao; Taoshi Zang, and Daxin Zhang, all of TianJin, China, assignors to NanKai University, TianJin, China

Continuation of Ser. No. 916,250, Jul. 17, 1992, abandoned.
This application Mar. 29, 1994, Ser. No. 219,752
Claims priority, application China, Jan. 8, 1992, 92100030.8
Int. Cl.[6] H01M *4/46;4/58*
U.S. Cl. 429—218 **12 Claims**

1. An active material of a hydrogen storage alloy electrode comprising a magnesium alloy and a metallic compound comprising nickel and phosphorus;
wherein the magnesium alloy has the compositional formula $Mg_{2-x}Ni_{1-y}A_yB_x$, wherein x is between 0.1–1.5, y is between 0.1–0.5, A is an element selected from the group consisting of Sn, Sb, and Bi, and B is an element selected from the group consisting of Li, Na, K and Al; and
wherein the atomic percentages of the metallic compound is from about 90 to 97% of nickel and from about 1 to 7% of phosphorus.

5,576,119
RECHARGEABLE ELECTROCHEMICAL ALKALI-METAL CELLS

Herzel Yamin, Rehovot, and Yacov C. Carmely, Bat-Yam, both of Israel, assignors to Tadiran Ltd., Holon, Israel

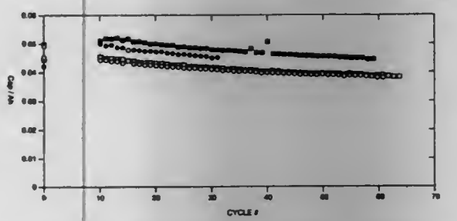
Filed Jun. 3, 1994, Ser. No. 254,029
Int. Cl.[6] H01M *4/58*
U.S. Cl. 429—218 **29 Claims**

1. A rechargeable electrochemical cell comprising:
a first electrode comprising a conductive metal which reversibly incorporates on the surface thereof an alkali metal;
a second electrode which reversibly incorporates therein ions of said alkali metal; and
an electrolyte in contact with said first and second electrodes,
said first electrode having a surface substantially free from said alkali metal prior to charging of the cell.

5,576,120
SOLID SECONDARY LITHIUM CELL BASED ON $LI_xV_5O_{13}$ CATHODE MATERIAL

M. Yazid Saidi, 492 Capitol Village Cir., San Jose, Calif. 95136

Continuation of Ser. No. 184,088, Jan. 19, 1994, abandoned.
This application May 22, 1995, Ser. No. 447,186
Int. Cl.[6] H01M *4/58;4/02*
U.S. Cl. 429—218 **16 Claims**



1. A composite cathode comprising a lithiated vanadium oxide composition, a solid polymeric matrix, and a carbon wherein the lithiated vanadium oxide composition is prepared by a process comprising the steps of:
(a) mixing reactants that comprise V_2O_5 and a lithium compound that is either $LiVO_3$ or Li_2CO_3 provided that when the lithium compound is $LiVO_3$ the mole ratio of V_2O_5 to $LiVO_3$ is about 2 to 1 and when the lithium compound is Li_2CO_3 the mole ratio of V_2O_5 to Li_2CO_3 is about 5 to 1;
(b) heating the reactants to an elevated temperature of about 620° C.; and
(c) maintaining the reaction mixture at said elevated temperature until no significant trace of the reactants is present.

5,576,121
LLITHIUM SECONDARY BATTERY AND PROCESS FOR PREPARING NEGATIVE-ELECTRODE ACTIVE MATERIAL FOR USE IN THE SAME

Kazuo Yamada, Kitakatsuragi-gun; Takehito Mitate, Yamatotakada; Tetsuya Yoneda, Nabari, and Naoto Nishimura, Kitakatsuragi-gun, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

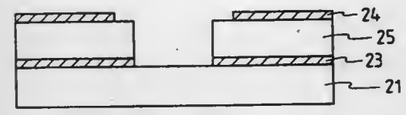
Filed Jun. 6, 1995, Ser. No. 469,926
Claims priority, application Japan, Oct. 27, 1994, 6-264005
Int. Cl.[6] H01M *4/48*
U.S. Cl. 429—220 **17 Claims**

1. A lithium secondary battery comprising:
a positive electrode;
a negative electrode; and
a nonaqueous ion conductor,
said negative electrode including a primary negative-electrode active material of a graphite which intercalates and deintercalates lithium ions, and a secondary negative-electrode active material of a cupric oxide in an amorphous state or a microcrystal-aggregate state obtained by heat treating a copper compound.

5,576,122
PHASE SHIFT MASK AND MANUFACTURING METHOD THEREOF

Young M. Ham, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed Oct. 31, 1994, Ser. No. 331,728
Claims priority, application Rep. of Korea, Oct. 29, 1993, 93-22679
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **7 Claims**

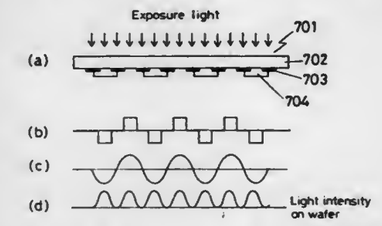


1. A half-tone phase shift mask comprising:
a lower opaque film and a phase shift film deposited on a predetermined area unexposed to the light on a transparent substrate forming raised portions comprising the lower opaque film and the phase shift film above the transparent substrate and leaving portions of the transparent substrate exposed, the lower opaque film having a partial light-transmission degree; and
an upper opaque film formed on the phase shift film substantially covering the phase shift film, wherein edges of an upper surface of the raised portions remain exposed, forming a strip of exposed phase shift film surrounding the upper opaque film on the upper surface of the raised portions, wherein the strip of the exposed phase shift film is adjacent the exposed portions of the transparent substrate.

5,576,123
OVERLYING SHIFTER TYPE PHASE SHIFT PHOTOMASK BLANK, OVERLYING SHIFTER TYPE PHASE SHIFT PHOTOMASK AND METHODS OF PRODUCING THEM

Hiroshi Mohri, and Hiroyuki Miyashita, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

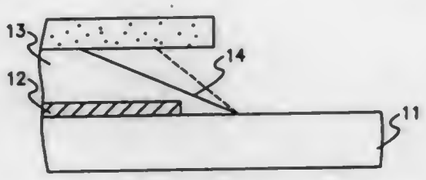
Filed Mar. 16, 1995, Ser. No. 405,807
Claims priority, application Japan, Mar. 16, 1994, 6-070255
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **18 Claims**



1. A method of producing a phase shift photomask, said method comprising the steps of:
forming one of: a light-blocking pattern and a combination of a light-blocking pattern and an etching stopper layer on a substrate;
forming a shifter layer over said light-blocking pattern, said shifter layer filling openings in said light-blocking pattern

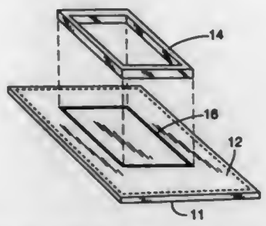
polishing away unevenness on an upper surface of said shifter layer, thereby leveling the surface of said shifter layer; and patterning said shifter layer to form a shifter pattern.

5,576,124
PHASE SHIFT MASK AND METHOD FOR FABRICATING THE SAME
Young M. Ham, Bubaleub, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea
Filed Mar. 21, 1995, Ser. No. 407,234
Claims priority, application Rep. of Korea, Mar. 21, 1994, 1994-5664
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 1 Claim



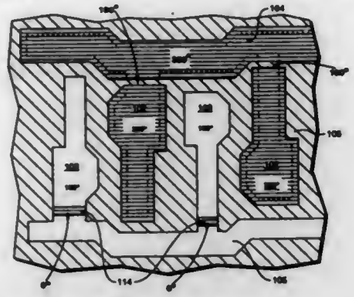
1. A method for fabricating a phase shift mask, comprising the steps of:
forming a light shielding film on a light transmitting film, patterning the light shielding film to have a pattern, and then coating thereon a phase shifter;
coating a photoresist film on the phase shifter;
implanting impurity ions in the phase shifter after the step of coating the phase shifter;
then etching the phase shifter by use of the photoresist film as a mask in a manner that the phase shifter is formed with an inclined edge portion at a boundary between the light transmitting film and the light shielding film; and
removing the photoresist film after the etching step.

5,576,125
METHOD FOR MAKING AN OPTICAL PELLICLE
Qoang R. Bih, San Jose, Calif., assignor to Micro Lithography, Inc., Sunnyvale, Calif.
Filed Jul. 27, 1995, Ser. No. 507,832
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 20 Claims



1. A method of preparing an optical pellicle having a pellicle membrane and a pellicle frame, comprising:
dispensing a quantity of adhesive onto the pellicle membrane in a pattern corresponding to the shape of the pellicle frame;
positioning the pellicle membrane and the pellicle frame relative to each other such that the adhesive and the frame are aligned; and
mounting the pellicle membrane onto the pellicle frame by bringing the adhesive-covered portion of the pellicle membrane into contact with the pellicle frame.

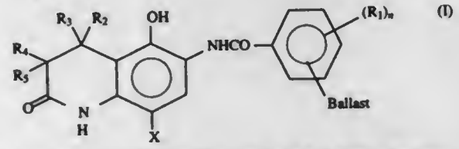
5,576,126
PHASE SHIFTING MASK
J. Brett Rolfson, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Division of Ser. No. 312,408, Sep. 26, 1994, Pat. No. 5,668,578.
This application Oct. 30, 1995, Ser. No. 550,459
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 21 Claims



1. A phase shifting mask comprising:
a transparent substrate;
a pattern of transparent areas formed by an opaque layer formed on the substrate with a pattern of openings;
a pattern of connecting transparent areas which connect adjacent transparent areas occurring in phase conflict areas; and
a first pattern of phase shifters formed in every other transparent area; and
a second pattern of phase shifters formed in the connecting transparent areas for separating features in the phase conflict areas.

5,576,127
COLOR FILTER AND PROCESS FOR PRODUCING THE COLOR FILTER
Hiroyuki Hirai, and Kozo Sato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan
Filed Apr. 20, 1995, Ser. No. 426,010
Claims priority, application Japan, Apr. 22, 1994, 6-084315
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—7 6 Claims

1. A process for producing a color filter, which comprises the steps of
(a) pattern-exposing a light-sensitive material comprising a light-transmitting substrate having thereon at least three silver halide emulsion layers, and
(b) subjecting the exposed light-sensitive material to color development processing, bleaching and fixing processing, and washing processing,
wherein the at least three silver halide emulsion layers (i) comprise a layer containing at least a cyan coupler, a layer containing at least a magenta coupler and a layer containing at least a yellow coupler and (ii) have different color sensitivity; and the cyan coupler is a compound represented by the following formula (I):

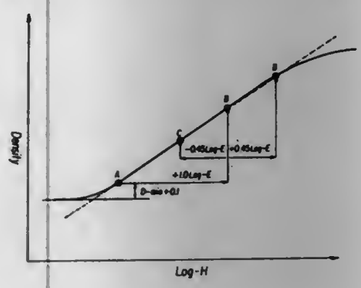


(I)

wherein R_1 represents a halogen atom, an alkyl group, an alkoxy group, an acylamino group or a carbamoyl group, and any two of plural R_1 groups may be combined with each other to form a 5- or 6-membered ring;
n represents an integer of from 0 to 4;

R_2 and R_3 are the same or different and each represents an alkyl group or an aryl group, and R_2 and R_3 may be combined with each other to form a 5- or 6-membered ring;
R_4 and R_5 are the same or different and each represents a hydrogen atom or an alkyl group;
X represents a hydrogen atom or a group which is eliminatable by an oxidation-coupling reaction with a developing agent; and
Ballast represents a nondiffusive dye having 12 or more total carbon atoms,
with the proviso that, when n is 2 or more, the plurality of R_1 groups are be the same or different.

5,576,128
COLOR NEGATIVE FILMS WITH LOW MID-SCALE CONTRAST FOR TELECINE TRANSFER APPLICATIONS
John T. Keech, Penfield, and John C. Brewer, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 5, 1994, Ser. No. 350,203
Int. Cl.[6] G03C 1/46;7/22
U.S. Cl. 430—21 18 Claims

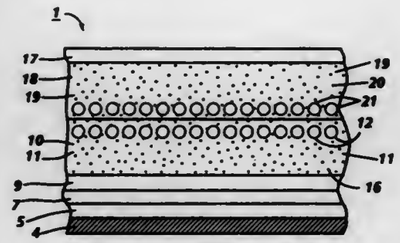


1. An unexposed silver halide color negative photographic film comprising red, green and blue color sensitive silver halide records, wherein at least two of the color records has a mid-scale contrasts less than or equal to 0.40, wherein the mid-scale contrast for a color record is defined as the slope of a straight line connecting a point C and a point D on the characteristic curve of Status M density versus log Exposure for the color record, where points C and D are located by defining a point A on the characteristic curve at a density level 0.1 above minimum density, a point B is located on the characteristic curve at an exposure value +1.0 Log Exposure beyond point A, and points C and D are located at exposure values –0.45 log Exposure and +0.45 log Exposure with respect to point B, respectively.

5. A process of forming a telecine transfer image comprising exposing a film according to claim 1, processing the exposed film to form a developed image, and converting the developed image into video signals representative of the developed image with a telecine transfer device, wherein the contrast of the video signals representative of the color records of the image having a mid-scale contrast less than or equal to 0.45 are raised in the telecine transfer device.

5,576,129
MIGRATION IMAGING MEMEBERS
Edward G. Zwartz; Carol A. Jennings; Man C. Tam, all of Mississauga; Philip H. Soden, Oakville; Arthur Y. Jones, Mississauga; Arnold L. Pundsack, Georgetown, all of Canada; Enrique Levy, Englewood, N.J.; Ah-Mee Hor, Mississauga, Canada; William W. Limburg, Penfield, N.Y.; John F. Yanus, Webster, N.Y.; Damodar M. Pai, Fairport, N.Y., and Dale S. Renfer, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 9, 1994, Ser. No. 353,461
Int. Cl.[6] G03G 13/26
U.S. Cl. 430—41 41 Claims

1. A migration imaging member comprising a substrate, a first



softenable layer comprising a first softenable material and a first-migration marking material contained at least at or near the surface of the first softenable layer spaced from the substrate, and a second softenable layer comprising a second softenable material and a second migration marking material, wherein the first migration material is the same as the second migration marking material, and wherein the first softenable layer is situated between the second softenable layer and the substrate.

5,576,130
PHOTORECEPTOR WHICH RESISTS CHARGE DEFICIENT SPOTS
Robert C. U. Yu; Satchidanand Mishra, both of Webster; Kathleen M. Carmichael, Williamson; Edward F. Grabowski, Webster; Anthony M. Horgan, Pittsford; William W. Limburg; Richard L. Post, both of Penfield; Donald P. Sullivan, Rochester; Donald C. VonHoene, Fairport, and Neil S. Patterson, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 11, 1996, Ser. No. 586,470
Int. Cl.[6] G03G 5/047;5/14
U.S. Cl. 430—58 16 Claims

1. An electrophotographic imaging member comprising a support substrate having a two layered electrically conductive ground plane layer comprising a layer comprising zirconium over a layer comprising titanium,a hole blocking layer, an adhesive layer comprising a thermoplastic polyurethane film forming resin, a charge generation layer comprising perylene or a phthalocyanine particles dispersed in a polycarbonate or polyvinyl butyral copolymer film forming binder, and a hole transport layer, said hole transport layer being substantially non-absorbing in the spectral region at which the charge generation layer generates and injects photogenerated holes but being capable of supporting the injection of photogenerated holes from said charge generation layer and transporting said holes through said charge transport layer.

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5,576,131

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER, ELECTROPHOTOGRAPHIC APPARATUS INCLUDING SAME AND ELECTROPHOTOGRAPHIC APPARATUS UNIT

Hideyuki Takai; Koichi Suzuki, both of Yokohama; Satomi Sugiyama, and Mitsuhiro Kunieda, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1994, Ser. No. 350,105

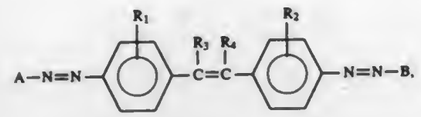
Claims priority, application Japan, Nov. 29, 1993, 5-320840

Int. Cl.[6] G03G *5/06*

U.S. Cl. 430—59 20 Claims

1. An electrophotographic photosensitive member, comprising: a support and at least a photosensitive layer disposed on the support, wherein said photosensitive layer comprises oxytitanium phthalocyanine and a disazo pigment represented by the following formula (I):

(I)



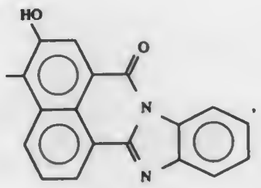
in which

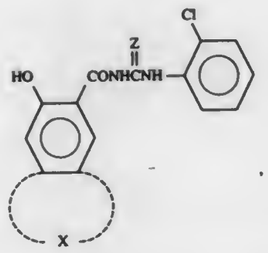
R_1 and R_2 independently denote hydrogen atom, halogen atom, alkyl group or alkoxy group;

R_3 and R_4 independently denote hydrogen atom, halogen atom or cyano group; and

A and B independently denote a coupler residue represented by the following group (i) or (ii):

(i)





wherein X denotes a residual group for forming a substituted or unsubstituted polycyclic aromatic group or a substituted or unsubstituted polycyclic heterocycle through condensation reaction with benzene ring; and Z denotes oxygen atom or sulfur atom.

5,576,132

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR COMPRISING PYRENYLAMINE DERIVATIVE

Chiaki Tanaka, Shizuoka-ken; Masaomi Sasaki, Susono; Tamotsu Aruga, Mishima; Tomoyuki Shimada, Shizuoka-ken, and Hiroshi Adachi, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

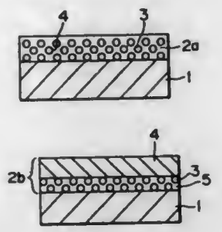
Continuation of Ser. No. 260,920, Jun. 15, 1994, Pat. No. 5,459,275, which is a continuation-in-part of Ser. No. 77,444, Jun. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 996,080, Dec. 23, 1992, Pat. No. 5,344,985. This application Apr. 24, 1995, Ser. No. 427,124

Claims priority, application Japan, Dec. 28, 1991, 3-360363; Apr. 15, 1992, 4-121326; Jun. 8, 1992, 4-173818; Jun. 17, 1992, 4-183142; Jul. 17, 1992, 4-213528; Jul. 17, 1992, 4-213529; Aug. 10, 1992, 4-234323; Dec. 3, 1992, 4-350440; Jun. 15, 1993, 5-168513

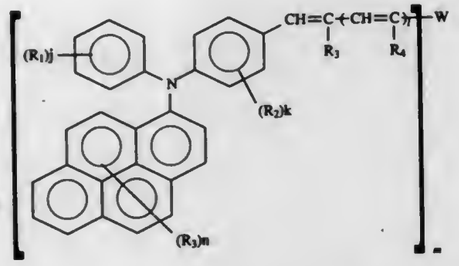
Int. Cl.[6] G03G *5/047*

U.S. Cl. 430—59 7 Claims

1. An electrophotographic photoconductor comprising an electroconductive substrate and a photoconductive layer formed thereon comprising at least one pyrenylamine derivative of formula (I):



(I)



wherein R^1 and R^2 each represent hydrogen, a halogen atom, nitro group, cyano group, an alkyl group having 1 to 12 carbon atoms, an alkoxy group having 1 to 12 carbon atoms, or a phenyl group; R^3 and R^4 each represent hydrogen, cyano group, an alkoxycarbonyl group, an alkyl group having 1 to 12 carbon atoms, or a phenyl group; R' represents hydrogen, an alkyl group having 1 to 12 carbon atoms, or an alkoxyl group having 1 to 12 carbon atoms; W represents hydrogen, an alkyl group having 1 to 12 carbon atoms, a phenylthio group, a bivalent chain unsaturated hydrocarbon group, a monovalent or bivalent carbocyclic aromatic group, or a monovalent or bivalent heterocyclic group; and j is an integer of 1 to 5, k is an integer of 1 to 4, l is an integer of 0 to 2, m is an integer of 1 or 2, n is an integer of 1 to 3, provided that when j, k or n is 2 or more, R^1, R^2, or R^5 may be the same or different.

5,576,133

CARRIER FOR USE IN ELECTROPHOTOGRAPHY, TWO COMPONENT-TYPE DEVELOPER AND IMAGE FORMING METHOD

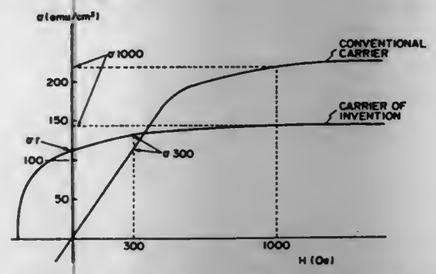
Yoshinobu Babe; Takeshi Ikeda, both of Yokohama; Yasuko Amano, Ebina, and Hitoshi Itabashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 93,957, Jul. 21, 1993, abandoned. This application Jul. 13, 1995, Ser. No. 502,182

Claims priority, application Japan, Jul. 22, 1992, 4-195501; Jul. 22, 1992, 4-195505; Jul. 22, 1992, 4-195506; Jul. 28, 1992, 4-201394

Int. Cl.[6] G03G *9/107*

U.S. Cl. 430—106.6 58 Claims



1. A carrier for use in electrophotography, comprising carrier particles each comprising a binder resin and magnetic fine particles dispersed within the binder resin in an amount of 30–99 wt. %, said carrier particles having an average particle size of 5–100 μm, wherein said carrier has a bulk density of at most 3.0 g/cm³, and magnetic properties measured in a tightly packed state including: a magnetization of 30–150 emu/cm³ under a magnetic field strength of 1000 oersted, a magnetization (residual magnetization σ_r) of at least 25 emu/cm³ under a magnetic field strength of zero oersted, a coercive force of less than 300 oersted and a relationship of:

$$|\sigma_{1000}-\sigma_{300}|/\sigma_{1000} \leqq 0.40$$

wherein σ_{1000} and σ_{300} denote magnetizations under magnetic field strength of 1000 oersted and 300 oersted, respectively.

5,576,134

TWO-COMPONENT TYPE DEVELOPER AND IMAGE FORMING PROCESS

Keiko Ogawa; Michiaki Ishikawa, and Meizo Shirose, all of Hachioji, Japan, assignors to Konica Corporation, Japan

Filed Nov. 29, 1994, Ser. No. 346,015

Claims priority, application Japan, Nov. 30, 1993, 5-300055; Nov. 30, 1993, 5-300057; Feb. 1, 1994, 6-010613

Int. Cl.[6] G03G *13/09*

U.S. Cl. 430—122 15 Claims

1. A method of developing a latent image on an image carrying member with a two component developer including a toner particle and a carrier particle, said method comprising

(1) forming a developer layer on a developing conveyor by a magnet in said developer conveyor, wherein said toner particle comprises a binder resin and a colorant, said carrier particle comprises a magnetic particle and a resin layer coated thereon, wherein said resin layer comprises a resin and a substance selected from the group consisting of magnesium oxide, magnesium hydroxide, and a hydroxidized magnesium compound;

(2) controlling a thickness of said developer layer to be 20 μm to 800 μm by a developer regulator in close proximity to said developer conveyor;

(3) conveying said developer layer to said latent image on said image carrying member; and

(4) conducting non-contact development of said latent image to form a toner image on said image carrying member.

5,576,135

PROCESSING METHOD BASED ON RESIST PATTERN FORMATION, AND RESIST PATTERN FORMING APPARATUS

Masaji Nishikawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1995, Ser. No. 402,107

Claims priority, application Japan, Mar. 29, 1994, 6-059330

Int. Cl.[6] G03G *13/16*

U.S. Cl. 430—126 28 Claims

1. A processing method based on resist pattern formation, comprising:

(a) forming an electrostatic latent image on a recording medium;

(b) forming a toner image on said recording medium by developing the electrostatic latent image with a hot-melt toner;

(c) transferring the toner image on the recording medium onto a processing target member, said target member being made of a metal material capable of being dissolved by an etchant, in accordance with hot-melt transfer; and

(d) processing the processing target member having the toner image thereon as a resist pattern, comprising selectively etching a surface of the processing target member on which the resist pattern has been hot-melt transferred and fixed, thereby providing a fused and a fixed toner image.

5,576,136

DIAZO BASED IMAGING ELEMENT HAVING IMPROVED STORAGE STABILITY

Joan Vermeersch, Deinze; Eric Verschueren, Merksplas, and Guido Hauquier, Nijlen, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Jun. 29, 1994, Ser. No. 267,510

Claims priority, application European Pat. Off., Jul. 14, 1993, 93202164

Int. Cl.[6] G03C *1/93;1/77;* G03F *7/021*

U.S. Cl. 430—159 4 Claims

1. An imaging element comprising on a support a hydrophilic layer containing a hydrophilic (co)polymer or (co)polymer mixture and having been hardened with a hydrolyzed tetraalkyl orthosilicate and a light sensitive layer containing a diazo resin or a diazonium salt characterized in that the total amount of free water in said imaging element satisfies the following formula (I):

$$FW\ (g/m^2) \leqq 0.0043 * WS\ (g/m^2) + 0.46\ (g/m^2) \quad (I)$$

wherein FW represents the amount of free water and WS represents the weight of the support of the imaging element.

5,576,137

MATTED, RADIATION-SENSITIVE RECORDING MATERIAL AND PRINTING PLATE

Werner Frass; Otfried Guschler, both of Wiesbaden; Klaus Joerg, Ingelheim; Guenter Hultzsch, Wiesbaden, and Andreas Elsaesser, Idstein, all of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

Filed Sep. 14, 1994, Ser. No. 305,647

Claims priority, application Germany, Oct. 18, 1993, 43 35 425.4

Int. Cl.[6] G03F *7/11;7/023;* B41N *1/00*

U.S. Cl. 430—166 19 Claims

1. A recording material comprising: a substrate; a radiation-sensitive layer on said substrate; and a matte layer on said radiation-sensitive layer, wherein said radiation-sensitive layer comprises a 1,2-naphthoquinone-2-diazide and an organic, polymeric binder which is insoluble in water and soluble in aqueous alkaline solutions, wherein said matte layer comprises discrete particles in an aqueous carrier, said discrete particles comprising a resin, which contains monomer units which carry at least one of an acid group and a salt group in a total amount of up to 0.80 mmol per gram of resin, and said discrete particles having a mean diameter of less than about 40 μm, a maximum diameter of less

than about 80 μm, a mean height of from about 2 to about 6 μm and a maximum height of up to about 10 μm, and wherein the matting layer is obtained by spraying on and drying an aqueous, anionically or anionically/nonionically stabilized dispersion of the resin.

5,576,138

POSITIVE-WORKING NAPHTHO QUINONE DIAZIDE SULFONIC ACID ESTER PHOTORESIST COMPOSITION CONTAINING SELECT COMBINATION OF ADDITIVES

Yoshito Ando; Atsushi Sawano, both of Fujisawa; Nobuo Tokutake, Kawasaki; Hidekatsu Kohara, and Toshimasa Nakayama, both of Chigasaki, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Japan

Filed Apr. 18, 1995, Ser. No. 423,722
Claims priority, application Japan, Apr. 22, 1994, 6-085106
Int. Cl.[6] G03F 7/023
U.S. Cl. 430—191 11 Claims

1. A positive-working photoresist composition which comprises, as a uniform mixture:

(a) an alkali-soluble resin as a film-forming agent;

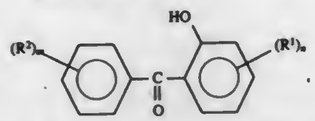
(b) a photosensitizing agent which is an ester compound of a naphthoquinone-1,2-diazidesulfonic acid and an aromatic compound having at least one phenolic hydroxy group; and

(c) from 0.5 to 3.0% by weight, based on the total amount of the components (a) and (b), of a combination of

(c1) a 4,4'-bis(dialkylamino)benzophenone compound, and

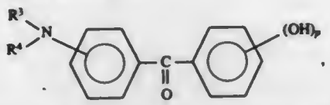
(c2) at least one compound selected from the group consisting of

(c2-1) a first benzophenone compound represented by the general formula



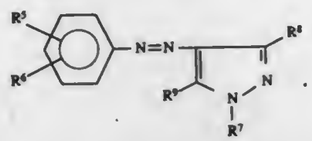
in which R^1 and R^2 are each, independently from the other, a hydroxy group or an alkoxy group having 1 to 4 carbon atoms, the subscript n is 1 or 2 and the subscript m is 0 or a positive integer not exceeding 3,

(c2-2) a second benzophenone compound represented by the general formula



in which R^3 and R^4 are each, independently from the other, a hydrogen atom or an alkyl group having 1 to 4 carbon atoms and the subscript p is a positive integer not exceeding 3, and

(c2-3) a pyrazolylazo compound represented by the general formula



in which R^5 and R^6 are each, independently from the other, a hydrogen atom, halogen atom, hydroxy group, nitro group, carboxyl group, hydroxyalkyl group, cyano group, alkyl group having 1 to 4 carbon atoms or alkoxy group having 1 to 4 carbon atoms, R^7 is an aryl group, alkyl group having 1 to 4 carbon atoms or dialkylamino phenyl group, R^8 is a hydrogen atom or alkyl group having 1 to 4 carbon atoms and R^9 is a hydroxy group, amino group or group denoted by —OZ, Z being a naphthoquinone-1,2-diazidesulfonyl group, in a weight proportion of (c1) to (c2) in the range from 10:1 to 1:10 as a halation-preventing agent.

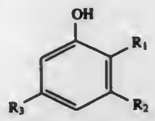
5,576,139

POSITIVE TYPE PHOTORESIST COMPOSITION COMPRISING A NOVOLAK RESIN MADE WITH A SILICA-MAGNESIA SOLID CATALYST

Kazuya Uenishi; Shiro Tan; Yasumasa Kawabe, and Tadayoshi Kokubo, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 28, 1991, Ser. No. 783,346
Claims priority, application Japan, Nov. 9, 1990, 2-304268
Int. Cl.[6] G03F 7/023
U.S. Cl. 430—192 7 Claims

1. A positive photoresist composition, comprising an admixture of an alkali-soluble novolak resin obtained by the condensation of substituted or unsubstituted phenols and aldehydes in the presence of a silica-magnesia solid catalyst, said phenols being comprised of 50 or more percent by weight of phenols represented by the following formula:



wherein R_1, R_2 and R_3, which may be the same or different, each represents a hydrogen atom, a C_{1-4} alkyl group, a C_{1-4} alkoxy group or a halogen atom, and a light-sensitive material containing 1,2-naphthoquinone-diazido-5-(and/or -4-) sulfonate as main components.

5,576,140

IMAGE-RECEIVING SHEET MATERIAL, METHOD FOR FORMING TRANSFER IMAGE AND LAMINATE

Yuichi Wakata, and Hideyuki Nakamura, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 7, 1996, Ser. No. 612,436
Claims priority, application Japan, Mar. 7, 1995, 7-047055
Int. Cl.[6] G03C 8/26;11/12
U.S. Cl. 430—201 29 Claims

16. A method for forming a transfer image comprising:

providing a support having thereon a heat-transferable ink layer, and an image-receiving sheet material, wherein:

said heat-transferable ink layer comprises a pigment and a noncrystalline organic polymer binder; and

said image-receiving sheet material comprises a support having thereon at least two image-receiving layers and at least the image-receiving layer onto which said ink layer is transferred comprises a modified polyvinyl acetal resin prepared from a polyvinyl acetal resin containing hydroxyl groups in which from 0.1 to 1 equivalent of the hydroxyl groups have been converted to a group represented by the following formula (I):



(I)

wherein W represents —CONH—Y^1, —COO—Y^2, —Y^3, —$SiY^4Y^5Y^6$, SO_2Y^7, —CO—Z^1—COOH or —$COCH_2COMe$, Y^1, Y^2, Y^3, Y^4, Y^5, Y^6 and Y^7 each represents a monovalent organic group having from 1 to 20 carbon atoms and Z^1 represents a divalent organic group having from 1 to 20 carbon atoms;

bringing said heat-transferable ink layer into contact with said image-receiving sheet material;

heat transferring said ink layer onto said image-receiving sheet material to form an ink image; and then

transferring said ink image and at least one of the image-receiving layers onto a permanent support.

5,576,141

BENZOTRIAZOLE UV DYES FOR LASER RECORDING PROCESS

Stephen M. Neumann, Rochester, and Richard P. Henzel, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 17, 1995, Ser. No. 390,010
Int. Cl.[6] G03C 5/16
U.S. Cl. 430—269 5 Claims

1. A single sheet process of forming a dye image in the absence of a receiving element comprising imagewise-heating, by means of a laser, a recording element comprising a support having thereon a dye layer comprising an image dye dispersed in a polymeric binder, said dye layer having an infrared-absorbing material associated therewith, said laser exposure taking place through the side of the support having thereon said dye layer, and causing dye to be removed imagewise to obtain said dye image in said recording element, wherein said image dye is a benzotriazole UV-absorbing dye.

5,576,142

2-HYDROXYBENZOPHENONE UV DYES FOR LASER RECORDING PROCESS

Stephen M. Neumann, Rochester, and Richard P. Henzel, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 17, 1995, Ser. No. 390,009
Int. Cl.[6] G03C 5/16
U.S. Cl. 430—269 4 Claims

1. A single sheet process of forming a dye image in the absence of a receiving element comprising imagewise-heating, by means of a laser, a recording element comprising a support having thereon a dye layer comprising an image dye dispersed in a polymeric binder, said dye layer having an infrared-absorbing material associated therewith, said laser exposure taking place through the side of the support having thereon said dye layer, and causing dye to be removed imagewise to obtain said dye image in said recording element, wherein said image dye is a 2-hydroxybenzophenone UV-absorbing dye.

5,576,143

LIGHT-SENSITIVE COMPOSITION

Toshiaki Aoai, and Tadayoshi Kokubo, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 3, 1992, Ser. No. 985,262
Claims priority, application Japan, Dec. 3, 1991, 3-344085; Dec. 3, 1991, 3-344112
Int. Cl.[6] G03C 1/492; G03F 7/004
U.S. Cl. 430—270.1 11 Claims

1. A light-sensitive composition, comprising:

(a) a compound having at least one group capable of decomposing by acid to form an acid decomposed compound, wherein the acid decomposed compound is more soluble in an alkaline developing solution than the compound having at least one group capable of decomposing by acid,

(b) a compound which generates acid by irradiation with actinic rays, and

(c) a compound which generates a base at a temperature of at least 50° C.

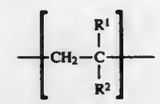
5,576,144

VINYL POLYMER BINDER FOR LASER ABLATIVE IMAGING

Glenn T. Pearce, Fairport, and Richard P. Henzel, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 259,586, Jun. 14, 1994, Pat. No. 5,468,591. This application Oct. 24, 1995, Ser. No. 547,268
Int. Cl.[6] G03C 5/16
U.S. Cl. 430—270.15 20 Claims

1. An ablative recording element comprising a support having thereon a colorant layer comprising a colorant dispersed in a polymeric binder, said colorant layer having an infrared-absorbing material associated therewith, and wherein said polymeric binder comprises a vinyl polymer having recurring units of the following formula:



wherein:

R^1 and R^2 each independently represents a ketal group; an acetal group; a thioketal group; a thioacetal group; or an unsaturated group containing a double or triple bond between any two atoms, one of which is the atom of attachment to the polymer chain; or

R^1 and R^2, as defined above, may be joined together to form a ring, wherein at least one of said colorant and said infrared-absorbing material is a pigment.

5,576,145

ESTERIFIED STYRENE/MALEIC ANHYDRIDE POLYMER AND POLYMER-CONTAINING PHOTOIMAGEABLE COMPOSITION HAVING IMPROVED ALKALINE PROCESS RESISTANCE

Charles R. Keil, San Clemente, and Randall W. Kautz, Irvine, both of Calif., assignors to Morton International, Inc., Chicago, Ill.

Filed Feb. 10, 1995, Ser. No. 386,974
Int. Cl.[6] G03C 1/73
U.S. Cl. 430—281.1 7 Claims

1. A photoimageable composition comprising A) between about 25 and about 75 wt % of a binder polymer, B) between about 20 and about 60 wt % of a photopolymerizeable material which is a multifunctional photopolymerizeable monomer or short chain oligomer, and C) between about 2 and about 20 wt % of a photoinitiator chemical system, the weight percentages being based on the total weight of components A)–C),

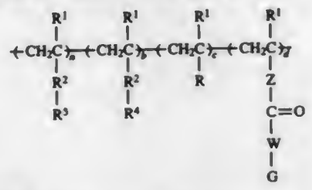
the improvement wherein said binder polymer A) comprises a backbone formed of monomers, between about 45 and about 65 mole percent of which are selected from the group i) consisting of styrene, C_1–C_6-substituted styrene and mixtures thereof and between about 35 and about 55 mole percent of which monomers are selected from the group ii) consisting of maleic anhydride, alkyl-substituted maleic anhydride, aromatic-substituted maleic anhydride and mixtures thereof, monomers of said group ii) providing anhydride groups to the backbone of said polymer, said anhydride groups being mono-esterified to between about 50 and about 65 mole percent with an aryl, cycloalkyl, alkylaryl, or arylalkyl first alcobol a) having a molecular weight of at least 100 or mixture of said first alcobols a), and said anhydride groups being mono-esterified to between about 15 and about 50 mole percent of a C_1–C_3-alkyl second alcohol b) or mixture of said second alcobols b), said polymer A) being mono-esterified to at least about 80 mole percent total of said anhydride groups, said polymer having a weight average molecular weight of between about 80,000 and about 200,000, and an acid number of between about 170 and about 220.

5,576,146
PHOTOSENSITIVE POLYMER-CONTAINING SYSTEMS WITH INCREASED SHELF-LIVES

M. Zaki Ali, Mendota Heights, Minn., assignor to Imation Corp., Woodbury, Minn.

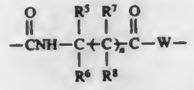
Filed Jan. 17, 1995, Ser. No. 373,575
Int. Cl.[6] G03C 1/73
U.S. Cl. 430—286.1 25 Claims

1. A photosensitive polymer-containing system comprising:
(a) an energy sensitive polymer having the formula:

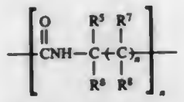


(III)

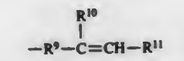
wherein:
R^1 independently is hydrogen or methyl;
^{2} is given by:



wherein:
n is 0 or 1; R^5, R^6, R^7, and R^8 are independently an alkyl group having 1 to 12 carbon atoms or a cycloalkyl group having 5 to 12 carbon atoms, an aryl or aralkyl group having 6 to 12 carbon atoms or at least one of the pairs R^5 and R^6, and R^7 and R^8, taken together with the carbon to which it is joined forms a 5- or 6-membered carbocyclic ring, or any of R^5, R^6, R^7 and R^8 may be H when n is 1;
W is —NH—, NR^{20}, —S— or —O—, wherein R^{20} can be alkyl of 1 to 12 carbon atoms; and
Z represents



wherein R^5, R^6, R^7, R^8, and n are as previously defined;
R^3 is a polymerizable, ethylenically unsaturated group selected from;
(a)

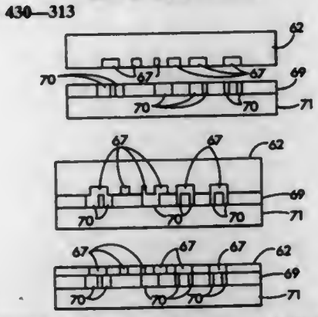


in which R^9 can be an alkylene group having 1 to 12 carbon atoms, an arylene group having 6 to 10 carbon atoms, an oxyalkylene group or a poly(oxyalkylene) in which said alkylene group has 2 to 4 carbon atoms and the number of oxygen atoms is a positive integer less than or equal to four, R^{10} is hydrogen, cyano, a carboxyl group, or a —C(=O)NH_2 group; and R^{11} is hydrogen, an alkyl group having 1 to 12 carbon atoms, or a phenyl group or naphthyl group; or
(b) -R^9-W-T in which R^9 is as defined as in (a), W is as previously defined, and T is an ethylenically unsaturated group selected from the group consisting of: acryloyl, methacryloyl, cinnamoyl, maleoyl, fumaroyl, itaconoyl, and crotonoyl; and
a, b, c, and d independently are integers, wherein a and b are at least 1, and the sum of a+b+c+d is sufficient to provide a polymer having a number average molecular weight in the range of 2,000 to 1,000,000;
G is given by -R^9-N+$R^{12}R^{13}R^{14}X$-, wherein R^9 is as previously defined and wherein R^{12}–R^{14} are independently an alkyl group having 1 to 20 carbon atoms or a cycloalkyl group having 5 to 12 carbon atoms, an aryl or aralkyl group having 6 to 12 carbon atoms or any two or all three of R^{12}–R^{14} taken together with the nitrogen to which they are joined can form a 5- to 8-membered heterocyclic ring, and X^- represents any non-interfering anion including anions located elsewhere on the polymeric backbone or side chains;
R represents an aryl group having from 6 to 30 carbon atoms, cyano, —CO_2H, a carboalkoxy group having from 2 to 40 carbon atoms, or a mono- or dialkylcarbamoyl group having from 2 to 40 carbon atoms; and
R^4 represents hydrogen, or a solubilizing cation or -E-A wherein E represents an organic divalent connecting group having up to a total of about 18 C, N, S, and nonperoxidic atoms, and A is an acid selected from carboxylic acids, sulfonic acids, phosphonic acids and salts thereof;
(b) a vinyl-halomethyl-s-triazine capable of free-radical generation upon excitation with electromagnetic radiation having a wavelength of from about 330–500 nm;
(c) an organic carboxylic acid having a pKa of from about 1.8 to 5.5;
(d) a leuco dye; and
(e) a binder.

5,576,147
FORMATION OF MICROSTRUCTURES USING A PREFORMED PHOTORESIST SHEET

Henry Guckel; Todd R. Christenson, and Kenneth Skrobis, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 340,617, Nov. 16, 1994, Pat. No. 5,496,668, which is a division of Ser. No. 66,988, May 24, 1993, Pat. No. 5,378,583, which is a continuation-in-part of Ser. No. 994,952, Dec. 22, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 461,983
Int. Cl.[6] G03F 7/00; 7/26
U.S. Cl. 430—313 16 Claims



1. A method of forming microstructures comprising the steps of:
(a) providing a first preformed sheet of photoresist material which can be exposed to radiation to affect its susceptibility to a developer;
(b) exposing the first photoresist sheet to radiation in a pattern which will result in susceptibility of the photoresist to a developer partially but not entirely through the thickness of the photoresist sheet;
(c) applying a developer to the exposed photoresist sheet to remove photoresist which is susceptible to the developer to leave a pattern of voids in the exposed side of the photoresist sheet which voids extend partially but not entirely through the photoresist sheet; and.
(d) adhering the first photoresist sheet on the side which has the voids formed therein to a layer of material to form a laminate having a pattern of voids between the first photoresist sheet and the layer of material.

5,576,148
PROCESS FOR PRODUCTION OF PRINTED CIRCUIT BOARD

Genji Imai; Yukari Takeda, both of Hiratsuka; Hideo Kogure, Atsugi, and Naozumi Iwasawa, Hiratsuka, all of Japan, assignors to Kansai Paint Co., Ltd., Hyogo-ken, Japan

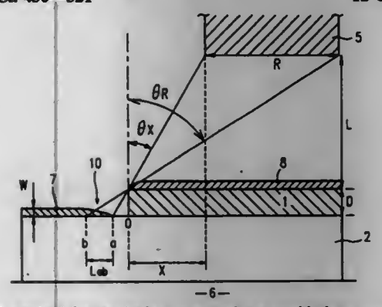
Filed Feb. 1, 1995, Ser. No. 382,155
Claims priority, application Japan, Feb. 1, 1994, 6-027596
Int. Cl.[6] G03F 7/00
U.S. Cl. 430—314 13 Claims

1. A process for producing a printed circuit board, which comprises:
(1) a step of making throughholes in a substrate having an electro-conductive layer on each side and then conducting plating on at least walls of the substrate throughholes;
(2) a step of forming a negative photosensitive resist film on each side of the substrate,
(3) a step of applying an actinic radiation onto the resist film by a direct drawing method in a shape of a pattern to be obtained,
(4) a step of applying, on the walls of the throughholes by electrodeposition, an electropaint capable of forming a film which is insoluble in a developing solution used later and an etching solution used later but is removable with a peeling solution used later,
(5) a step of conducting development with an appropriate developing solution to remove a radiation-non-irradiated portion of the negative photosensitive resist film,
(6) a step of removing an exposed plating layer portion and an electro-conductive layer portion present therebeneath, by etching, and
(7) a step of simultaneously or separately peeling the remaining photosensitive resist film and the electrodeposition film inside the throughholes, with an appropriate peeling solution.

5,576,149
METHOD FOR PRODUCING A TAPERED WAVEGUIDE

Hiroyuki Yamamoto; Yukio Kurata, both of Tenri; Keiji Sakai; Yoshio Yoshida, both of Nara; Kuniaki Okada, Tenri, and Kouji Minami, Gose, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 10, 1994, Ser. No. 337,247
Claims priority, application Japan, Nov. 10, 1993, 5-280768
Int. Cl.[6] G03C 5/00
U.S. Cl. 430—321 12 Claims



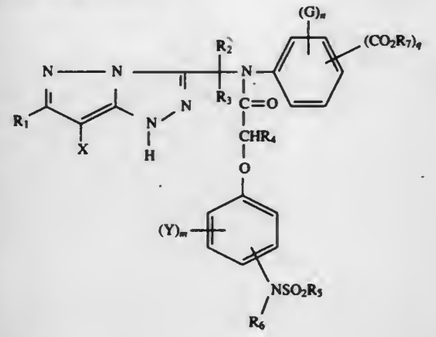
1. A method for producing a tapered waveguide layer comprising the steps of:
forming a resist pattern on a substrate;
setting the substrate in an apparatus for forming a film such that particles constituting the film reach the substrate from a direction which is oblique relative to the substrate;
forming the film on a region of a surface of the substrate which is not covered with the resist pattern, the film having a thickness distribution corresponding to a shadow which the resist pattern creates on the substrate in accordance with an angle between the substrate and the direction; and
removing the resist pattern, thereby forming the tapered waveguide layer consisting of the film on the substrate.

5,576,150
PHOTOGRAPHIC DYE-FORMING COUPLER, EMULSION LAYER, ELEMENT, AND PROCESS

Ping W. Tang; Stanley W. Cowan; David J. Decker, all of Rochester, and Daniel E. Corcoran, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 29, 1996, Ser. No. 608,884
Int. Cl.[6] G03C 7/38
U.S. Cl. 430—386 19 Claims

1. A photographic light sensitive silver halide emulsion layer having associated therewith a pyrazolotriazole dye-forming coupler having the formula:



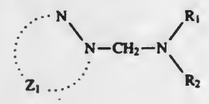
wherein:
R_1 is a substituent bonded to the pyrazolotriazole nucleus by a fully substituted carbon atom;
X is hydrogen or a coupling-off group;
R_2, R_3, R_4, and R_6 are independently hydrogen or substituent groups;
q is from 1 to 3;
R_5 and R_7 are independently alkyl, alkoxy, aryl, or aryloxy groups;
G is a substituent group and n is from 0 to 3; and
Y is a substituent group and m is 0 to 4.

5,576,151
PROCESSING SOLUTION FOR SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS AND METHOD FOR PROCESSING THE MATERIALS WITH USE OF THE PROCESSING SOLUTION

Masakazu Morigaki; Hiroshi Kawamoto, and Shigeru Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

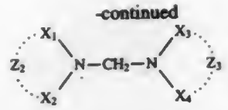
Division of Ser. No. 838,963, Feb. 21, 1992, Pat. No. 5,449,593. This application Apr. 21, 1995, Ser. No. 426,671
Claims priority, application Japan, Feb. 22, 1991, 3-48679; May 20, 1991, 3-142708
Int. Cl.[6] G03C 7/407
U.S. Cl. 430—429 17 Claims

1. A processing solution for a silver halide color photographic material which has been subjected to color development of a dye image, said solution containing at least one compound represented by formula (I) or (III):

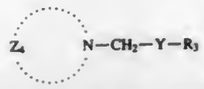


(I)

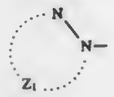
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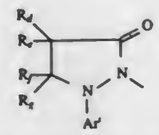
(III)



wherein in formula (I), Z_1 represents a non-metallic atomic group bonding to each nitrogen atom with a carbon atom, an oxygen atom, or a sulfur atom and necessary for forming a 4- to 8-membered ring, and R_1 and R_2, which may be the same or different, each represents a hydrogen atom, an alkyl group, an alkenyl group, an aryl group, a heterocyclic group, an acyl group, a sulfonyl group, a sulfinyl group, a hydroxy group, an acyloxy group, an alkoxycarbonyl group, an alkoxy group, an aryloxy group, an amino group, an alkylamino group, an acylamino group, a sulfonamide group, a ureido group, a sulfamoylamino group, an alkoxycarbonylamino group, a carbamoyl group or a sulfamoyl group, with the proviso that R_1 and R_2 do not form a ring which is formed by bonding R_1 to R_2, and further



is not



wherein Ar' represents an aryl group, R_v, R_w, R_y and R_z each represents a hydrogen atom, an alkyl group or an aryl group; and in formula (III), Z_4 represents a non-metallic atomic group necessary for forming a 4- to 8-membered ring, Y represents —O— or —S—, and R_3 represents an alkyl group, an alkenyl group, an aryl group, a heterocyclic group, an acyl group, a sulfonyl group, a sulfinyl group, an alkoxycarbonyl group, a carbamoyl group, a sulfamoyl group, or an oxalyl group.

5,576,152

PHOTOGRAPHIC PAPER FORMED WITH LOW MOLECULAR WEIGHT POLYVINYL ALCOHOL HAVING LOW OXYGEN PERMEABILITY

Ian M. Hodge, Rochester; David J. Lacz, Honeoye Falls; Todd R. Skochdopole, Pittsford, and Anita M. Fees, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 26, 1994, Ser. No. 296,774

Int. Cl.[6] G03C *5/18;5/26*

U.S. Cl. 430—449 **19 Claims**

1. A method forming a paper, for use in a photographic paper support for a photographic element comprising applying to a paper a polyvinyl alcohol solution of low molecular weight, said solution containing said polyvinyl alcohol in an amount of greater than 15 percent by weight with the proviso that the number average molecular weight of said polyvinyl alcohol is between about 2,000 and 10,000.

12. An imaging element comprising at least one silver halide emulsion layer containing dye forming coupler, overlaying a paper support wherein said paper support comprises paper comprising wood fibers and polyvinyl alcohol of molecular weight of between a number average of 2,000 and 10,000.

5,576,153

PHOTOGRAPHIC FILM

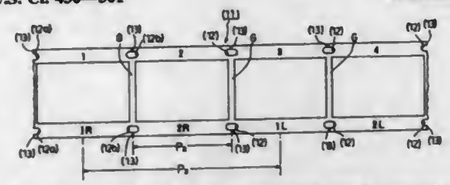
Minoru Inaba, No. 1116, Oaza Samukawa, Oyama-shi, Tochigi-ken, Japan

Filed Aug. 16, 1995, Ser. No. 515,947

Claims priority, application Japan, Apr. 6, 1995, 7-081478; Apr. 25, 1995, 7-101465

Int. Cl.[6] G03C *11/14;9/00;* **G03B** *21/64*

U.S. Cl. 430—501 **6 Claims**



1. A photographic film having a longitudinal length comprising:

a plurality of perforations near both longitudinal edges of the film; and

a plurality of preexposed cutting marks extending from said plurality of perforations to at least one of the longitudinal edges of the film,

whereby said plurality of preexposed cutting marks form a latent image so that when the film is developed visible cutting marks are formed in a gap between photographic picture planes.

6. A photographic film having a plurality of perforations disposed at a gap between photographic picture planes near both upper and lower side edges of a roll film, comprising a plurality of cutting marks described as latent images by preexposure at a longitudinal central edge of said respective perforations and a plurality of frame numbers for a stereo photograph described as latent images by preexposure at a side edges of said photographic picture planes.

5,576,154

PHOTOGRAPHIC RECORDING MATERIALS FOR MEDICAL RADIOGRAPHY

Thomas Müssig-Pabst, Frankfurt am Main, and Alfred Wörsching, Rodgau-Jügesheim, both of Germany, assignors to Sterling Diagnostic Imaging, Inc., Glasgow, Del.

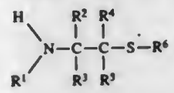
Filed Jun. 22, 1995, Ser. No. 493,734

Claims priority, application Germany, Jun. 28, 1994, 44 22 181.9

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—502 **5 Claims**

1. Photographic recording material for radiography, comprising a support and at least one silver halide emulsion layer coated on said support, characterized in that a difference in sensitivity of the recording material to blue radiation and green radiation is no more than 20% in linear units of the sensitivity to blue radiation and said photographic recording material comprises 0.3 to 300 mg per mole of silver halide of the compound defined by



R^1= alkyl of 1 to 5 carbons, aryl, alkylacyl of 1 to 5 carbons, H or arylacyl;

R^2, R^3, R^4, R^5=H, alkyl of 1 to 4 carbons or COR^7;

R^6= H or alkyl of 1 to 5 carbons,

R^7 = OH, NHR-[6], NR^8R^9 or O-R^{10} where R^{10} is an alkyl of 1 to 5 carbons; and

R8, R9=H or alkyl of 1 to 5 carbons; or

R^1 and R^6 taken together represent one to three methylene groups bridging the nitrogen and the sulfur.

5,576,155

FAST-PROCESSING PHOTOGRAPHIC RECORDING MATERIAL FOR MEDICAL RADIOGRAPHY

Thomas Muessig-Pabst, Frankfurt am Main, and Manfred A. Schmidt, Dietzenbach, both of Germany, assignors to Sterling Diagnostic Imaging, Inc., Glasgow, Del.

Filed Sep. 27, 1995, Ser. No. 534,363

Claims priority, application Germany, Oct. 7, 1994, 44 35 876.8

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—502 **7 Claims**

1. A fast-processing photographic silver halide recording material for medical radiography comprising:

a carrier;

a silver halide emulsion layer applied to both sides of said carrier wherein said silver halide emulsion layer comprises a binder and silver halide grains having a mean grain volume of less than 0.35 μm^3;

an auxiliary layer coated on said emulsion layer;

a total silver coating weight of at least 5.0 g/M^2;

a binder coating weight wherein a weight ratio of said binder coating weight in said silver halide emulsion layer to said total silver coating weight is at least 1.1;

wherein

said silver halide recording material has a process water absorption of less than 20 g/M^2 and said photographic silver halide recording material is processable within 60 seconds in a roll processor.

5,576,156

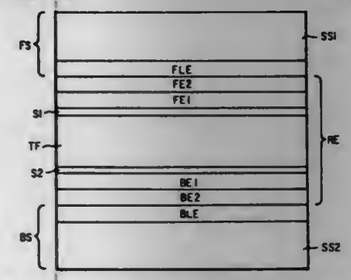
LOW CROSSOVER RADIOGRAPHIC ELEMENTS CAPABLE OF BEING RAPIDLY PROCESSED

Robert E. Dickerson, Hamlin, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 446,379, May 22, 1995. This application Jan. 29, 1996, Ser. No. 593,193

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—502 **10 Claims**



1. A radiographic element comprised of

a film support having first and second major surfaces and capable of transmitting radiation to which the radiographic element is responsive and, coated on each of the major surfaces,

processing solution permeable hydrophilic colloid layers which are fully forehardened including

at least one emulsion comprised of silver halide grains coated at a coverage capable of providing an overall radiographic element maximum density on processing in the range of from 3 to 4,

a spectral sensitizing dye adsorbed by the silver halide grains, and

a particulate dye (a) capable of absorbing radiation to which the silver halide grains are responsive, (b) present in an amount sufficient to reduce crossover to less than 15 percent, and (c) capable of being substantially decolorized during processing,

wherein

from 19 to 33 mg/dm^2 of hydrophilic colloid is coated on each of the major surfaces of the support,

first and second of the hydrophilic colloid layers are coated on each major surface of the support with the first layers located nearer the support than the second layers,

the second layers contain (a) silver halide grains accounting for from 30 to 70 percent of the total weight of the second layers, including tabular grains having a thickness of less than 0.3 μm which have an average aspect ratio of greater than 5 and accounting for greater than 50 percent of total grain projected area within the second layers, and (b) from 20 to 80 percent of the total silver forming the silver halide grains within the radiographic element,

the first layers contain (a) the dye particles and (b) from 20 to 80 percent of the total silver forming the silver halide grains within the radiographic element, and

the dye particles and the silver halide grains together account for from 30 to 70 percent of the total weight of each of the first layers.

5,576,157

PHOTOGRAPHIC ELEMENT CONTAINING EMULSION WITH PARTICULAR BLUE SENSITIVITY

Jon N. Eikenberry, Rochester; John D. Buhr, Webster, and Jeffrey L. Hall, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 228,234, Apr. 15, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 473,685

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—503 **17 Claims**

1. A color photographic negative element comprising a transparent base and a blue sensitive silver halide emulsion layer which satisfies each of the following spectral sensitivity requirements:

$$S_{max(426-444\ nm)} \geq 65\% S_{max(400-500\ nm)}$$

$$IS_{(425-450)} \geq 25\% (IS_{(400-500)})$$

in which $S_{max(426-444\ nm)}$ is the maximum sensitivity between 426 to 444 nm, $S_{max(400-500\ nm)}$ is the maximum sensitivity between 400–500 nm, $IS_{(425-450)}$ is the integrated spectral sensitivity of the blue sensitive layer from 425 to 450 nm, and $IS_{(425-450)}$ is the integrated spectral sensitivity of the blue sensitive layer in the region 400–500 nm, said element having associated therewith an indication for processing by a color negative process.

5,576,158

COLOR PHOTOGRAPHIC REVERSAL ELEMENT WITH IMPROVED COLOR REPRODUCTION

Frederick E. Ford, Victor; Arlyce T. Bowne, Rochester, and Carl Kotlarchik, Jr., Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 5,474, Jan. 15, 1993, Pat. No. 5,378,590. This application Sep. 26, 1994, Ser. No. 311,798

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—504 **16 Claims**

1. A color reversal photographic element comprising:

a support beating a red-sensitive, cyan dye-forming unit, a green-sensitive, magenta dye-forming unit, and a blue-sensitive, yellow dye-forming unit, each unit comprising a photosensitive silver halide layer and an image dye-forming coupler;

said element containing an interimage effect-controlling means;

said interimage effect-controlling means being characterized as having the capability of simultaneously forming a red image

of high relative chroma and a yellow-red tint image of substantially lower relative chroma when said element is exposed to a red color standard object and a yellow-red tint color standard object and thereafter developed;

said red color standard object having CIELab values for D_{55} reference white a^*=30.46, b^*=19.16, C^*=35.98, L^*=40.12;

said yellow-red tint color standard object having CIELab values for D_{55} reference white a^*=17.26, b^*=18.01, C^*=24.95, L^*=66.98;

the resulting said images having a red reproduction coefficient equal to or greater than 0.88 and a ratio of red reproduction coefficient to yellow-red tint reproduction coefficient equal to or greater than 1.15.

5,576,159

PHOTOGRAPHIC ELEMENT WITH COLOR ENHANCING LAYER ADJACENT TO ANEMULSION LAYER AND AN OXIDIZED DEVELOPER SCAVENGER LAYER

Erika M. Sato, Rochester; Paul T. Hahm, Hilton, and Walter H. Isaac, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 17, 1995, Ser. No. 390,448
Int. Cl.[6] G03C *1/46*
U.S. Cl. 430—504 **20 Claims**

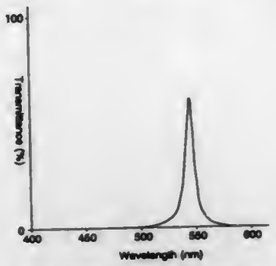
1. A photographic element comprising at least one emulsion layer wherein said at least one emulsion layer comprises non-diffusible coupler and silver halide grains, adjacent to said at least one emulsion layer a color enhancer layer comprising a non-diffusible coupler, and adjacent to said color enhancer layer an oxidized developer scavenging layer, with the proviso that said color enhancer layer does not contain silver halide.

5,576,160

COMPOSITE OF SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL AND RADIATION FLUORESCENT SCREEN

Kazuyoshi Goan; Haruhiko Sakuma; Takuji Hasegawa, and Kazuhiro Iwasaki, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jul. 5, 1995, Ser. No. 498,777
Claims priority, application Japan, Jul. 11, 1994, 6-158738
Int. Cl.[6] G03C *5/17*
U.S. Cl. 430—509 **10 Claims**



1. A composite for radiography comprising a) a silver halide photographic light-sensitive material comprising a transparent support and at least one light-sensitive silver halide emulsion layer provided on each side of the support, b) fluorescent screen A having a 80 kVp X-ray energy absorption of 40% or more and c) fluorescent screen B having a 80 kVp X-ray energy absorption of not less than 25% more than fluorescent screen A, the material being sandwiched between the screens A and B in such a manner that emulsion layer A is in close contact with screen A and emulsion layer B is in close contact with screen B, and screen A being positioned on the X-ray radiation source side, wherein the slope of the straight portion in the characteristic curve of emulsion layer A is less than that of emulsion layer B and emulsion layers A and B of the silver halide photographic light-sensitive material have sensitivity on an exposed side that, when the material is exposed to a monochromatic light having the same wavelength as a main emission peak wavelength of the screens and having a half band width of 15±5 nm and developed at 35° C. for 25 seconds with the following developer, an exposure necessary to give a density of the minimum density+0.5 is 0.027 to 0.040 lux·second,

Developer	
Potassium hydroxide	21 g
Potassium sulfite	63 g
Boric acid	10 g
Hydroquinone	26 g
Triethylene glycol	16 g
5-methylbenzotriazole	0.06 g
1-phenyl-5-mercaptotetrazole	0.01 g
Glacial acetic acid	12 g
1-phenyl-3-pyrazolidone	1.2 g
Glutaraldehyde	5 g
Potassium bromide	4 g

Water added to 1 liter, and pH adjusted to 10.0.

5,576,161

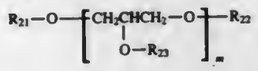
SILVER HALIDE LIGHT-SENSITIVE PHOTOGRAPHIC MATERIAL AND METHOD OF PROCESSING THEREOF

Motoi Nishimura; Hirokazu Sato, and Hiroshi Kita, all of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

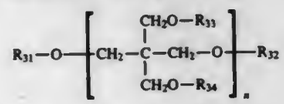
Filed Jul. 24, 1995, Ser. No. 505,901
Claims priority, application Japan, Aug. 12, 1994, 6-190647
Int. Cl.[6] G03C *1/10*
U.S. Cl. 430—512 **5 Claims**

1. A silver halide color photographic material comprising a support having thereon a light-sensitive silver halide emulsion layer and a nonlight-sensitive layer, wherein said nonlight-sensitive layer contains a UV absorbent having a melting point of 35° C. or less and said silver halide emulsion layer contains a polyhydric alcohol,

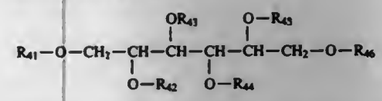
wherein said polyhydric alcohol is a compound selected from the group consisting of:



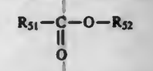
wherein R_{21}, R_{22} and R_{23} independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, a cycloalkenyl group, an acyl group, a sulfonyl group, a phosphonyl group, a carbamoyl group, or a sulfamoyl group; m represents an integer from 1 to 20, provided that when m is 1, two of R_{21}, R_{22} and R_{23} are hydrogen atoms and the other is not a hydrogen atom, and that when m is 2 or more, at least two are hydrogen atoms and R_2, R_{22} and R_{23} are not all simultaneously hydrogen atoms;



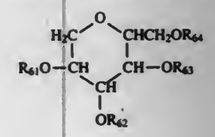
wherein R_{31} through R_{34} independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, a cycloalkenyl group, an acyl group, a sulfonyl group, a phosphonyl group, a carbamoyl group or a sulfamoyl group; n represents an integer from 1 to 20, provided that when n is 1, at least two are hydrogen atoms and R_{31}, R_{33} and R_{34} are not all simultaneously hydrogen atoms, and that when n is 2 or more, at least two of R_{31}, R_{32}plural R_{33}'s and plural R_{34}'s are hydrogen atoms and R_{31}, R_{32}, R_{33} and R_{34} are not all simultaneously hydrogen atoms;



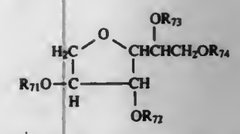
wherein R_{41} through R_{46} independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, a cycloalkenyl group, an acyl group, a sulfonyl group, a phosphonyl group, a carbamoyl group or a sulfamoyl group, provided that at least two are hydrogen atoms and R_{41} through R_{46} are not all simultaneously hydrogen atoms;



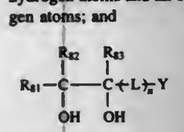
wherein R_{51} represents an alkyl group or an alkenyl group, each of which contains two or more hydroxy groups; R_{52} represents an alkyl group, an alkenyl group, a cycloalkyl group, or a cycloalkenyl group; or R_{51} and R_{52} are combined with each other to form a lactone ring;



or



wherein R_{61}, R_{62}, R_{63}, R_{64}, R_{71}, R_{72}, R_{73} and R_{74} are hydrogen atoms and all of them are not simultaneously hydrogen atoms; and



wherein R_{81}, R_{82} and R_{83} independently represent a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, a cycloalkenyl group, an aryl group or a carbamoyl group; L represents an alkene group or an arylene group; Y represents a hydrogen atom, a carbamoyl group, a sulfamoyl group or an acyl group and n represents 0 or 1.

5,576,162

IMAGING ELEMENT HAVING AN ELECTRICALLY-CONDUCTIVE LAYER

Kimon Papadopoulos, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 18, 1996, Ser. No. 588,180
Int. Cl.[6] G03C *1/85*
U.S. Cl. 430—527 **30 Claims**

1. An imaging element for use in an image-forming process; said imaging element comprising a support, an image-forming layer, and an electrically-conductive layer; said electrically-conductive layer comprising a dispersion of carbon nanofibers in a film-forming binder.

5,576,163

IMAGING ELEMENT HAVING A PROCESS-SURVIVING ELECTRICALLY-CONDUCTIVE LAYER WITH POLYESTERIONOMET BINDER

Charles C. Anderson, Penfield, and Mario DeLaura, Hamlin, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 1, 1996, Ser. No. 625,118
Int. Cl.[6] G03C *1/89*; B32B *27/06*; C08K *3/10*; H01B *1/06*
U.S. Cl. 430—529 **15 Claims**

1. An imaging element for use in an image-forming process; said imaging element comprising a support, an image-forming layer and an electrically-conductive layer; said electrically-conductive layer comprising a vanadium pentoxide colloidal gel, a polyesterionomer binder and a methoxyalkylmelamine.

5,576,164

PHOTOGRAPHIC ELEMENT HAVING A POLYESTER SUBSTRATE WITH AN OXYGEN MODIFIED SURFACE REGION

Jeremy M. Grace; Janglin Chen, both of Rochester; Louis J. Gerenser, Webster, and David A. Glocker, West Henrietta, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 199,416, Feb. 22, 1994, Pat. No. 5,425,980. This application May 15, 1995, Ser. No. 440,587
Int. Cl.[6] G03C *1/76*
U.S. Cl. 430—537 **7 Claims**

1. A photographic element comprising:

a polyester substrate having a surface approximately 5.0 nm thick, the surface including oxygen in the form of hydroxyl, ether, epoxy, carbonyl and carboxyl groups wherein the oxygen is from about 4 atomic percent to about 10 atomic percent above the original surface content wherein a contact angle of the surface with a buffered aqueous solution having a pH of between 11 and 12 is from about 10 to about 12 degrees and a second contact angle of the surface with a buffered aqueous solution having a pH of between 2.5 and 3.5 is from about 23 to 36 degrees;

a hydrophilic nonphotosensitive coating applied to the surface of the substrate; and

a photographic emulsion applied to the hydrophilic nonphotosensitve coating.

5,576,165

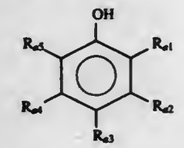
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Yasushi Nozawa, and Masakazu Morigaki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

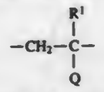
Continuation of Ser. No. 271,726, Jul. 7, 1994, abandoned. This application Jan. 17, 1996, Ser. No. 586,310
Claims priority, application Japan, Jul. 7, 1993, 5-191815
Int. Cl.[6] G03C *1/34*
U.S. Cl. 430—545 **18 Claims**

1. A silver halide color photographic material comprising at least one negative silver halide emulsion layer on a support, wherein said material contains in at least one hydrophilic colloid layer provided on the support (i) at least one compound represented by formula (A) and (ii) at least one polymer having repeating units of formula (I) or (II):

(A)

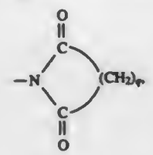


wherein R_{a1} to R_{a5} may be the same or different and each represents ① a hydrogen atom, ② a substituted or unsubstituted alkyl group, or ③ —X—R_{a0}, or ④ two of R_{a1} to R_{a5} which are ortho-positioned are bonded to each other to form a chroman ring with the benzene ring of formula (A); X represents —$C(R_{a6})(R_{a7})$—, —O— or —S—; R_{a6} and R_{a7} each represents a hydrogen atom or a substituted or unsubstituted alkyl group; and R_{a0} represents a hydroxyphenyl group, except that R_{a0} represents either a hydroxyphenyl group or a substituted or unsubstituted alkyl group when X is —$C(R_{a6})(R_{a7})$—, R_{a6} and R_{a7} both are substituted or unsubstituted alkyl groups and R_{a1} and R_{a5} both are —X—R_{a0}; provided that R_{a3} must not be a hydrogen atom, that at least one of R_{a1} to R_{a5} is the group of ③ or ④, and that both R_{a1} and R_{a5} must not be hydrogen atoms when R_{a3} is —X—R_{a0} and R_{a0} is a hydroxyphenyl group;

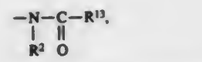


(I)

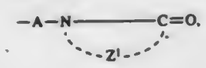
wherein R^1 represents a hydrogen atom or a substituted or unsubstituted alkyl group; and Q represents a group selected from the group consisting of groups represented by formulae 1) to 4):



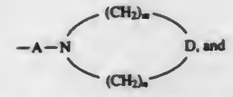
1)



2)



3)



4)

wherein q represents an integer of from 2 to 4; R^2 and R^{13} each represents a hydrogen atom or a substituted or unsubstituted alkyl group; Z^1 represents an atomic group necessary for forming a substituted or unsubstituted lactam ring, or a substituted or unsubstituted oxazolidone ring; A represents a chemical bond, —CO— or —CO—B—(CH_2)—; B represents —O— or —NHR^4— (wherein R^4 represents a hydrogen atom or a substituted or unsubstituted alkyl group); l represents an integer of from 1 to 6; D represents a single bond, —O—, or —NR^5—; m and n each represents an integer of from 1 to 6, provided that m+n=4 to 7; and R^5 represents a hydrogen atom, a substituted or unsubstituted alkyl group, or —COR^6 (wherein R^6 represents a substituted or unsubstituted alkyl group);



(II)

wherein E represents —COR_{21}, —$COOR_{22}$, —$CONHR_{23}$, —$CONHCOR_{24}$ or —SO_2R_{25} wherein R_{21}, R_{22}, R_{23}, R_{24} and R_{25} each represent a substituted or unsubstituted alkyl, aryl or cycloalkyl group, or a hydrogen atom; and G represents a substituted or unsubstituted alkylene group having from 2 to 5 carbon atoms.

5,576,166

SILVER HALIDE LIGHT-SENSITIVE COLOR PHOTOGRAPHIC

Shuichi Sugita; Shinri Tanaka; Takatugu Suzuki, and Manabu Kaneko, all of Hino, Japan, assignors to Konica Corporation, Japan

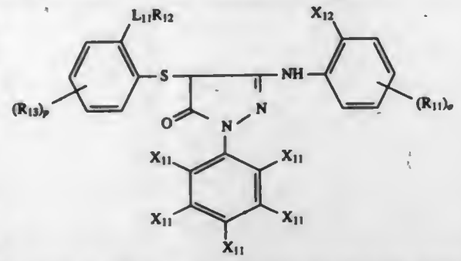
Filed Jun. 7, 1995, Ser. No. 484,448

Claims priority, application Japan, Jun. 9, 1994, 6-127691

Int. Cl.[6] G03C *7/384*

U.S. Cl. 430—555 **6 Claims**

1. A silver halide light-sensitive color photographic material which comprises a coupler represented by formula M-II



wherein, R_{11} represents a group selected from the group consisting of an amide group, an amido group, a sulfonamide group, an imide group, a carbamoyl group, a sulfamoyl group, an oxycarbonyl group, an oxycarbonylamino group and a ureide group, each of which has not more than 10 carbon atoms; R_{12} represents a group selected from the group consisting of an alkyl group, an aryl group, and a heterocyclic group; R_{13} represents a group which can be substituted on a benzene ring; X_{11} represents a halogen atom; X_{12} represents a halogen atom or an alkoxy group; L_{11} represents an atom or a group selected from the group consisting of an oxygen atom, a sulfur atom, a —NR_{14} group, a — SO_2 group, a —$NR_{14}CO$— group, a —COO— group, a —$NR_{14}SO_2$— group, a —NHCOO— group, —CONH— group, and a —$NR_{14}CONR_{14}$— group; R_{14} represents a hydrogen atom, an alkyl group, an aryl group, or a heterocyclic group; o represents an integer of one, two or three; and p represents an integer of zero to four.

5,576,167

PHOTOGRAPHIC ELEMENT CONTAINING A STABLE ARYLOXYPYRAZOLONE COUPLER AND PROCESS EMPLOYING SAME

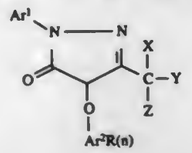
Jerrold N. Poslusny, Rochester, N.Y.; Lawrence G. Anderson, Pittsburgh, Pa.; Jared B. Mooberry, Rochester, and Zheng Z. Wu, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 30, 1994, Ser. No. 367,552

Int. Cl.[6] G03C *7/384;7/305*

U.S. Cl. 430—555 **22 Claims**

1. A photographic element comprising a light-sensitive silver halide emulsion layer having associated therewith a coupler based on a 1-aryl-2-pyrazolin-5-one ring and represented by formula I:



I

wherein:

Ar^1 and Ar^2 are each independently aryl groups comprising a carboaromatic or heteroaromatic ring;

X, Y, and Z are bonded to a carbon atom alpha to the 3-position and are independently selected from the group consisting of hydrogen and substituent groups such that the sum of the Taft σ^* values for X, Y, and Z is at least 1.5, provided that at least one of X, Y, and Z is a substituent including an atom bonded to the carbon atom alpha to the 3-position selected from the group consisting of a sulfur atom, an oxygen atom, and a nitrogen atom;

R represents n independently selected substituent groups bonded to the Ar^2 ring, provided that the sum of the Hammett σ constants for all R substituent groups, including any adjustment for heteroatoms contained in the Ar^2 ring, is at least 0.3, and provided further that two of X, Y, and Z may join to form a ring; and

n is 0 to 5;

provided that R may not be a nitro group ortho to the oxygen atom bonding Ar^2 to the 1-aryl-2-pyrazolin-5-one ring.

5,576,168

ULTRATHIN TABULAR GRAIN EMULSIONS WITH SENSITIZATION ENHANCEMENTS

Richard L. Daubendiek, Rochester; Donald L. Black, Webster; Joseph C. Deaton, Rochester; Timothy R. Gersey, Rochester; Joseph G. Lighthouse, Rochester; Myra T. Olm, Webster; Xin Wen, and Robert D. Wilson, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 26, 1994, Ser. No. 297,195

Int. Cl.[6] G03C *1/035;1/015*

U.S. Cl. 430—567 **23 Claims**

1. A process of sensitizing an ultrathin tabular grain emulsion containing the steps of

(1) providing an ultrathin tabular grain host emulsion comprised of a dispersing medium and silver halide grains including tabular grains

(a) having {111} major faces,

(b) containing greater than 70 mole percent bromide and at least 0.25 mole percent iodide, based on silver,

(c) accounting for greater than 90 percent of total grain projected area,

(d) exhibiting an average equivalent circular diameter of at least 0.7 μm, and

(e) exhibiting an average thickness of less than 0.07 μm, and

(2) chemically and spectrally sensitizing the emulsion,

wherein

during step (2) silver and halide ions including iodide and chloride ions are added to the ultrathin tabular grain host emulsion to precipitate silver halide protrusions forming epitaxial junctions with up to 50 percent of the surface area of the tabular grains, the protrusions

(a) having an isomorphic face centered cubic crystal structure,

(b) including at least a 10 mole percent higher chloride ion concentration than the tabular grains, and

(c) including an iodide concentration that is increased by the iodide ion addition of this step.

5,576,169

SILVER BROMOIODIDE CORE-SHELL GRAIN EMULSION

Mario Mariotti, Carcare; Bruno Barletta, Serole, and Mauro Besio, Vado Ligure, all of Italy, assignors to Imation Corp., Woodbury, Minn.

Filed Mar. 7, 1995, Ser. No. 399,611

Claims priority, application European Pat. Off., Apr. 21, 1994, 94106187

Int. Cl.[6] G03C *1/035*

U.S. Cl. 430—567 **15 Claims**

1. A core-shell silver bromoiodide emulsion having an inner core portion consisting essentially of silver bromoiodide and an outer shell portion consisting essentially of silver bromoiodide, wherein said inner core portion has a silver iodide content ranging from 30 to 50 mol %, said outer shell portion has a silver iodide content ranging from 1 to 10 mol %, and the average total silver iodide content ranges from 5 to 12 mol %, and wherein the ratio between the area of the X-ray diffraction peak corresponding to said outer shell portion and the area of the X-ray diffraction peak corresponding to said inner core portion is higher than 9:1.

5,576,170

PHOTOGRAPHIC ELEMENT AND METHOD OF MAKING A SILVER HALIDE EMULSION

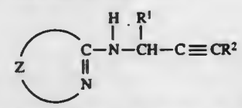
Jon N. Eikenberry, Rochester, and Robert E. Bernard, Victor, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 28, 1995, Ser. No. 430,954

Int. Cl.[6] G03C *1/08;1/09;1/34*

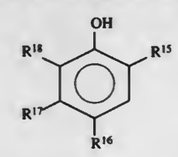
U.S. Cl. 430—567 **16 Claims**

1. A photographic element comprising a support having situated thereon a silver halide emulsion, the emulsion comprising an alkynylamine compound of the formula:



(I)

wherein Z represents atoms necessary to complete a 5 to 10-membered heterocyclic ring system, R^1 represents hydrogen or an alkyl of from 1 to 5 carbon atoms, and R^2 represents hydrogen, or an alkyl, aryl, heteroaryl, carbocyclic or heterocyclic group; and at least one dihydroxy aryl compound of the formula:



wherein one of R^{15} or R^{16} represents a hydroxy group and the other represents a sulfonate group; and

R^{17} and R^{18} independently represent hydrogen, an alkyl group having 1 to 5 carbon atoms or a sulfonate group with the proviso that at least one of R^{17} or R^{18} represents a sulfonate group;

wherein the dihydroxy aryl compound has been added to the emulsion prior to the heating step of chemical sensitization.

5,576,171

TABULAR GRAIN EMULSIONS WITH SENSITIZATION ENHANCEMENTS

Myra T. Olm, Webster; Richard L. Daubendiek; Joseph C. Deaton, both of Rochester; Donald L. Black, Webster; Timothy R. Gersey, Rochester; Joseph G. Lighthouse, Rochester; Xin Wen, Rochester, and Robert D. Wilson, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 15, 1995, Ser. No. 442,228

Int. Cl.[6] G03C *1/035;1/09*

U.S. Cl. 430—567 **13 Claims**

1. A radiation-sensitive emulsion comprised of

(1) a dispersing medium,

(2) silver halide grains including tabular grains

(a) having {111} major faces,

(b) containing greater than 70 mole percent bromide and at least 0.25 mole percent iodide, based on silver,

(c) accounting for greater than 90 percent of total grain projected area,

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(d) exhibiting an average equivalent circular diameter of at least 0.7 μm,

(e) exhibiting an average thickness in the range of from less than 0.3 μm to at least 0.07 μm, and

(f) having latent image forming chemical sensitization sites on the surfaces of the tabular grains, and

(3) a spectral sensitizing dye adsorbed to the surfaces of the tabular grains,

wherein the surface chemical sensitization sites include silver halide protrusions forming epitaxial junctions with the tabular grains, the protrusions being located on up to 50 percent of the surface area of the tabular grains, having a higher overall solubility than at least that portion of the tabular grains forming epitaxial junctions with the protrusions, forming a face centered cubic crystal lattice, and including a speed enhancing dopant comprised of a coordination complex that

(a) displaces ions in the silver halide crystal lattice of the protrusions and exhibits a net valance more positive than the net valence of the ions it displaces,

(b) contains at least one ligand that is more electronegative than any halide ion,

(c) contains a metal ion having a positive valence of from +2 to +4 and having its highest energy electron occupied molecular orbital filled, and

(d) has its lowest energy unoccupied molecular orbital at an energy level higher than the lowest energy conduction band of the silver halide crystal lattice forming the protrusions.

5,576,172

ELEVATED IODIDE SURFACE LAMINAE TABULAR GRAIN EMULSIONS

Myra T. Olm, Webster; Roger A. Bryant, Rochester; Elizabeth K. Lelental, Rochester; Sharon Gould, Rochester, and Sherrill A. Puckett, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 15, 1995, Ser. No. 442,232

Int. Cl.[6] G03C *1/035;1/09*

U.S. Cl. 430—567 **9 Claims**

1. An emulsion comprised of a dispersing medium and radiation-sensitive silver halide grains including tabular grains

(a) accounting for at least 50 percent of total grain projected area,

(b) having a thickness of less than 0.3 μm,

(c) containing greater than 70 mole percent bromide and at least 0.25 mole percent iodide,

(d) having {111} major faces,

(e) comprised of laminae located adjacent the {111} major faces each having a thickness of less than 35 nanometers and containing at least 1 mole percent higher iodide than a host portion of the tabular grains on which they are deposited, and

(f) containing a combination of an iridium dopant capable of reducing low intensity failure and a speed enhancing dopant

wherein

(g) the speed enhancing dopant is comprised of a divalent Group 8 dopant chosen from among Fe^{+2}, Ru^{+2} and Os^{+2} and at least one ligand more electron withdrawing than fluoride ion,

(h) the Group 8 dopant is present in a concentration of from 20 to 300 molar parts per million in interior regions of the tabular grains accounting for up to 90 percent of total silver, and

(i) the iridium dopant is located in one portion of the tabular grains and at least 20 molar parts per million of the Group 8 dopant are restricted to another portion of the tabular grains separated from the one portion by an intervening portion accounting for at least 10 percent of total silver forming the tabular grains.

5,576,173

PHOTOGRAPHIC ELEMENTS WITH J-AGGREGATING DICARBOCYANINE INFRARED SENSITIZING DYES

Richard L. Parton, Webster, and Anthony Adin, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

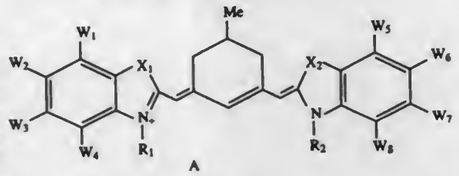
Continuation-in-part of Ser. No. 304,038, Sep. 9, 1994, abandoned. This application Jul. 13, 1995, Ser. No. 501,889

Int. Cl.[6] G03L *1/20;1/09*

U.S. Cl. 430—584 **16 Claims**

1. A silver halide photographic element comprising a silver halide emulsion layer, in which the silver halide is silver bromide or bromoiodide, chemically sensitized in the absence of tellurium with a chemical sensitizer selected from active gelatin, sulfur, selenium, gold, platinum, palladium, iridium, osmium, ruthenium, phosphorus, or combinations thereof, and sensitized with a sensitizing dye of formula (I) which provides a maximum sensitivity at between 700 to less than 730 nm and which emulsion layer has substantially no dye deaggregating compound therein:

I



A

wherein:

X_1 and X_2 are independently sulfur, selenium or oxygen provided that X_1 and X_2 are not both oxygen;

R_1 and R_2 each independently represent an alkyl, aryl or heterocyclic group and at least one of R_1 or R_2 has an acid or acid salt substituent;

W_1 to W_3, and W_5 to W_7 each independently represent hydrogen, a halogen, an alkyl group, an acyl group, an acyloxy group, an alkoxycarbonyl group, a carbonyl group, a sulfamoyl group, carboxyl group, cyano group, hydroxy group, an amino group, an acylamino group, an alkoxy group, an alkylthio group, an alkylsulfonyl group, sulfonic acid group, aryl group, aryloxy group, or heterocyclic group, and W_4 and W_8 each independently represent hydrogen, a halogen, an acyl group, an acyloxy group, an alkoxycarbonyl group, a carbonyl group, a sulfamoyl group, carboxyl group, cyano group, hydroxy group, an amino group, an acylamino group, an alkylthio group, an alkylsulfonyl group, sulfonic acid group, aryl group, or heterocyclic group, and provided further that adjacent ones of W_1 to W_8 groups can bond to each other via their carbon atoms to form a condensed ring; and

A is a counterion as needed to balance the charge.

5,576,174

CATALYTIC ANTIBODY WITH PRIMARY AMINE COFACTOR

Jean-Louis Reymond, Del Mar, and Yuanwei Chen, San Diego, both of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Filed Apr. 5, 1995, Ser. No. 417,370

Int. Cl.[6] C12Q *1/25;* **C12N** *9/00*

U.S. Cl. 435—4 **10 Claims**

1. A catalytically active mixture comprising:

a solvent,

a catalytic antibody or antibody fragment admixed within said solvent, and

a primary or secondary amine cofactor admixed within said solvent,

said catalytic antibody having a catalytic activity dependent upon the presence of said primary or secondary amine cofactor for catalyzing a stereoselective aldolization reaction.

5,576,175

COMPLEX SUITABLE FOR CARRYING OUT A METHOD OF PURIFYING PRE-S HEPATITIS B SURFACE ANTIGEN

Johann Eibl; Friedrich Dorner, both of Vienna, and Artur Mitterer, Orth/Donau, all of Austria, assignors to Immuno Aktiengesellschaft, Vienna, Austria

Continuation-in-part of Ser. No. 115,752, Sep. 3, 1993, Pat. No. 5,340,575, which is a division of Ser. No. 789,743, Nov. 8, 1991, Pat. No. 5,274,081, which is a division of Ser. No. 578,939, Sep. 7, 1990, abandoned. This application May 6, 1994, Ser. No. 238,847

Claims priority, application Austria, Sep. 20, 1989, 2198/89

Int. Cl.[6] A61K *39/29;* **C07K** *1/22*

U.S. Cl. 435—5 **17 Claims**

1. A complex comprised of (i) an insoluble polymer carrier, (ii) monomeric human albumin and (iii) pre-S hepatitis B surface antigen comprising a pre-S(1) and pre-S(2) region, wherein said monomeric human albumin is bound to said carrier, and wherein said pre-S hepatitis B surface antigen is bound in an elutable form to said monomeric human albumin.

5,576,176

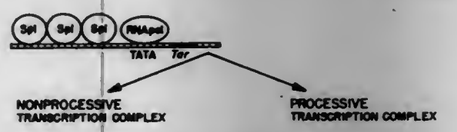
MARKER AND AN ASSAY FOR DETECTION AND MONITORING OF HUMAN IMMUNODEFICIENCY VIRUS

Melanie Adams; Joseph Romeo; Boris M. Peterlin, all of San Francisco, and Michael P. Busch, Corte Madera, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Mar. 3, 1994, Ser. No. 206,384

Int. Cl.[6] C07H *21/04;* **C12Q** *1/70;1/68;* **C12P** *19/34*

U.S. Cl. 435—5 **16 Claims**



1. A method for assessment of HIV transcriptional activity and disease progression wherein nonprocessive transcription indicates viral latency and processive transcription indicates active viral gene expression, wherein the method comprises determining a ratio of total RNA transcripts to processive RNA transcripts in infected cells of HIV positive subjects, and correlating a change in said ratio with disease progression wherein total RNA transcripts plus long transcripts and wherein short transcripts consist of SEQ ID NO: 1 and long transcripts comprise SEQ ID NO: 1 as a leader sequence of the full length viral mRNA wherein the level of said ratio indicates nonprocessive or processive transcription and the change in said ratio indicates a transition from latency to activation and correlates with disease progression.

5,576,177

BIOASSAY FOR REVERSE TRANSCRIPTASE INHIBITORS

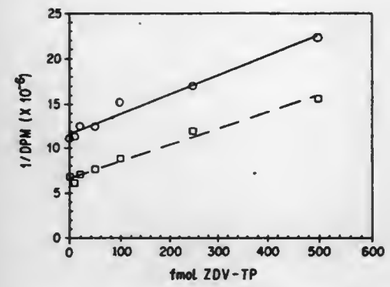
Arnold Fridland, and Brian L. Robbins, both of Memphis, Tenn., assignors to St. Jude Children's Research Hospital, Memphis, Tenn.

Filed Mar. 9, 1994, Ser. No. 208,109

Int. Cl.[6] C12Q *1/70;1/68;* **G01N** *33/48*

U.S. Cl. 435—5 **17 Claims**

1. A method for determining intracellular levels of a nucleoside reverse transcriptase inhibitor or metabolites thereof in an individual treated with said nucleoside reverse transcriptase inhibitor or metabolites thereof, said method comprising:



a. obtaining a bodily sample suspected to contain said nucleoside reverse transcriptase inhibitor or metabolites thereof;

b. detecting the inhibitor or metabolites thereof in the sample using a reverse transcriptase assay.

5,576,178

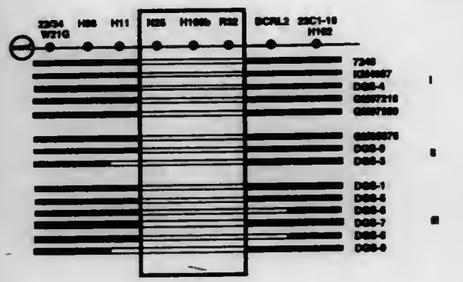
METHOD OF DETECTING GENETIC DELETIONS AND MUTATIONS ASSOCIATED WITH DIGEORGE SYNDROME, VELOCARDIOFACIAL SYNDROME, CHARGE ASSOCIATION, CONOTRUNCAL CARDIAC DEFECT, AND CLEFT PALATE AND PROBES USEFUL THEREFORE

Beverly S. Emanuel, Broomall; Marcia L. Budarf, Moylan, and Deborah Driscoll, Wynnewood, all of Pa., assignors to The Childrens Hospital of Philadelphia, and The Trustees of the University of Pennsylvania, both of Philadelphia, Pa.

Continuation of Ser. No. 911,534, Jul. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 770,758, Oct. 4, 1991, abandoned. This application Nov. 22, 1993, Ser. No. 156,672

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/02;21/04*

U.S. Cl. 435—6 **6 Claims**



1. A method of detecting genetic deletions and mutations associated with at least one condition selected from the group consisting of DiGeorge syndrome, Velocardiofacial syndrome, CHARGE association, conotruncal defect and cleft palate in a human patient comprising the steps of:

isolating a diagnostic probe by PCR amplifying a region of normal human genomic DNA using a pair of PCR primers having sequences selected from the group consisting of: 5'ACACTGGTCCACAGTGCCAG3' (SEQ ID NO:1) and 5'TGTGAGGGCTTGCTCTGAGC3' (SEQ ID NO:2); 5'TGGTACCGCTGCTCAGAGGGC3' (SEQ ID NO:3) and

5'TCCCAGCCTCTGGCCTGAGTG3' (SEQ ID NO:4); and 5'CTAACACCTATCCTCCGCCG3' (SEQ ID NO:5) and 5'GGCAGCAGGGAAACAGAAAC3' (SEQ ID NO:6);

probing a library containing human chromosome 22 sequences with said amplified DNA to isolate a probe which hybridizes with said amplified DNA;

detectably labeling said diagnostic probe;

providing a DNA containing test sample from said patient;

contacting the detectably labeled diagnostic probe with DNA from said test sample under hybridization conditions; and

detecting hybridization of said detectably labeled diagnostic probe with said DNA from said test sample,

whereby the absence of hybridization of said detectably labeled diagnostic probe is diagnostic of the likelihood said human has a deletion or mutation associated with at least one of DiGeorge syndrome, Velocardiofacial syndrome, CHARGE association, conotruncal cardiac defect and cleft palate.

5,576,179

METHOD OF DETECTING TOXIN-INSENSITIVE URF13-T PROTEIN

Charles S. Levings, III, Raleigh, N.C.; Ralph E. Dewey, Metuchen, N.J., and Carl J. Braun, Raleigh, N.C., assignors to Mycogen Plant Sciences, Inc., San Diego, Calif., and North Carolina State University, Raleigh, N.C.

Division of Ser. No. 58,052, May 5, 1993, Pat. No. 5,409,837, which is a continuation of Ser. No. 342,199, Apr. 24, 1989, abandoned, which is a continuation-in-part of Ser. No. 144,557, Jan. 14, 1988, abandoned. This application Apr. 21, 1995, Ser. No. 426,302

Int. Cl.[6] C12Q *1/68; 1/02; 1/18;* C12N *1/20*

U.S. Cl. 435—6 **2 Claims**

1. A method of detecting a toxin-insensitive protein encoded by a modified urf13-T gene comprising:

(a) subcloning the modified gene in a plasmid expression vector;

(b) expressing the modified gene in a host microorganism capable of being transformed by, replicating and expressing the modified urf13-T gene in the plasmid expression vector; and

(c) measuring respiration or ion leakage of the host microorganism in the presence and absence of *Bipolaris maydis* race T toxin methomyl or toxin analogs thereof having similar toxic specificity.

5,576,180

PRIMERS AND METHODS FOR SIMULTANEOUS AMPLIFICATION OF MULTIPLE MARKERS FOR DNA FINGERPRINTING

Serge B. Melançon, Outremont; Damian Labuda; Jian Q. Tang, both of Montréal, and Michel Vanasse, Ville Mont-Royal, all of Canada, assignors to Centre de Recherche de l'Hôpital, Quebec, Canada

Filed May 1, 1995, Ser. No. 432,023

Int. Cl.[6] C12Q *1/68;* C12P *19/34;* C07H *21/04*

U.S. Cl. 435—6 **6 Claims**

2. A method for the DNA fingerprinting identification of genetically related or unrelated individuals, which comprises the steps of:

a) collecting genomic DNA sample of said individuals;

b) performing DNA amplification of said DNA samples of step a) using the primer pair R14B264/Q560mak (SEQ ID NO:1/SEQ ID NO:2); and

c) separating said amplified DNA segments of step b);

whereby three markers of said genomic DNA of different size are amplified and serve as DNA finger-printing of said individuals.

5,576,181

PROCESS FOR SELECTIVE REMOVAL OF SALIVARY α-AMYLASE AND ASSAY FOR PANCREATIC α-AMYLASE

David J. Torrens, Maidstone, and Howard J. Marriage, Wadhurst, both of Great Britain, assignors to Genzyme Ltd., Haverhill, United Kingdom

Filed Nov. 15, 1991, Ser. No. 793,060

Claims priority, application United Kingdom, Nov. 16, 1990, 9024970

Int. Cl.[6] G01N *33/573*

U.S. Cl. 435—7.4 **6 Claims**

1. A process for the selective removal of salivary alpha-amylase from a sample comprising salivary alpha-amylase and pancreatic alpha-amylase, said process comprising:

contacting the sample with a monoclonal antibody specific for salivary alpha-amylase and not pancreatic alpha-amylase, said antibody being identified as ECACC 90031302 and being coupled to a super-paramagnetic support;

allowing the antibody to bind to the salivary alpha-amylase, forming a complex, and

removing the complex from the sample.

5,576,182

ANTI-MUCUS GLYCOPROTEIN MONOCLONAL ANTIBODY

Makoto Kurihara, Isehara; Kazuhiko Ishihara, Sagamihara; Kyoko Hotta, Tokyo; Hiromi Tanaka, and Shiro Shimauchi, both of Isehara, all of Japan, assignors to Kanto Kagaku Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP94/00838, § 371 Date Jan. 19, 1995, § 102(e) Date Jan. 19, 1995, PCT Pub. No. WO94/28158, PCT Pub. Date Dec. 8, 1994

PCT Filed May 26, 1994, Ser. No. 373,220

Claims priority, application Japan, May 26, 1993, 5-159891

Int. Cl.[6] C12P *21/08;* C12N *5/20;* G01N *33/577*

U.S. Cl. 435—7.9 **5 Claims**

1. An IgM class monoclonal antibody which specifically reacts with Class III mucus glycoproteins and which does not react with human gastric surface mucous cells or the mucus glycoproteins secreted thereby.

5. A method of determining the presence or amount of Class III mucus glycoproteins comprising:

obtaining a sample of human body fluid;

contacting said sample with the monoclonal antibody of claim 1;

measuring formation of any specific binding complexes comprising the monoclonal antibody of claim 1; and correlating the presence or amount of said specific binding complexes to the presence or amount of said class III mucus glycoproteins in said sample.

5,576,183

MONOCLONAL ANTIBODY RECOGNIZING FK506-BINDING PROTEIN, METHOD FOR ASSAYING FK506-BINDING PROTEIN LEVEL, AND KIT THEREFOR

Masakazu Kobayashi, Takarazuka; Kazuyuki Obtsuka, Osaka; Hirokazu Tanaka, Takarazuka, and Mineo Niwa, Muko, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP93/01136, § 371 Date Feb. 10, 1995, § 102(e) Date Feb. 10, 1995, PCT Pub. No. WO94/04700, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 11, 1993, Ser. No. 379,563

Claims priority, application Japan, Aug. 12, 1992, 4-214967

Int. Cl.[6] G01N *33/53;* C07K *16/18*

U.S. Cl. 435—721 **3 Claims**

1. A monoclonal antibody which recognizes an antigenic determinant in an FK506-binding protein, wherein said monoclonal antibody binds both to said FK506-binding protein and to said FK506-binding protein bound to FK506 without inhibiting the binding between said FK506-binding protein and FK506, and wherein said FK506-binding protein is human FKBP-12.

5,576,184

PRODUCTION OF CHIMERIC MOUSE-HUMAN ANTIBODIES WITH SPECIFICITY TO HUMAN TUMOR ANTIGENS

Marc D. Better; Arnold H. Horwitz; Randy R. Robinson; Shau-Ping Lei, all of Los Angeles, and Changtung Chang, Chatsworth, all of Calif., assignors to Xoma Corporation, Berkeley, Calif.

Continuation of Ser. No. 659,401, May 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 240,624, Sep. 6, 1988, abandoned, and a continuation-in-part of Ser. No. 241,744, Sep. 8, 1988, abandoned, and a continuation-in-part of Ser. No. 243,739, Sep. 13, 1988, abandoned, and a continuation-in-part of Ser. No. 367,641, Jun. 19, 1989, abandoned, and a continuation-in-part of Ser. No. 382,768, Jul. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 253,002, Oct. 4, 1988, abandoned. This application Dec. 27, 1994, Ser. No. 364,001

Int. Cl.[6] G07K *16/30;* G01N *33/574*

U.S. Cl. 435—7.23 **4 Claims**

2. A chimeric antibody comprising two light chains and two heavy chains, each of said heavy chains comprising a human IgG1 constant region and a variable region, and each of said light chains comprising a human light chain constant region and a variable region, wherein:

(a) said chimeric antibody recognizes a human tumor antigen bound by antibody ING-1;

(b) the antigen combining site of said chimeric antibody competitively inhibits the immunospecific binding of antibody ING-1 produced by cell line HB9812 as deposited with the ATCC; and

(c) said chimeric antibody mediates an antibody-dependent cellular cytotoxity lysis of target cells at an effector to target ratio of 50:1 when said chimeric antibody concentration is 0.001 μg/ml.

5,576,185

METHOD OF POSITIVE OR NEGATIVE SELECTION OF A POPULATION OR SUBPOPULATION OF A SAMPLE UTILIZING PARTICLES AND GRAVITY SEDIMENTATION

Wallace H. Coulter, Miami; Robert K. Zwerner, Ft. Lauderdale; Robert J. Schmittling, Cooper City, and Thomas R. Russell, Miami, all of Fla., assignors to Coulter Corporation, Miami, Fla.

Filed Apr. 15, 1994, Ser. No. 228,791

Int. Cl.[6] G01N *33/574*

U.S. Cl. 435—7.23 **93 Claims**

1. A method for removing at least one preselected population or subpopulation of cells from a fluid sample, comprising:

providing a plurality of particles having bound thereto a reactant which specifically binds to the cells of at least one preselected population or subpopulation and having a density sufficient to provide differential gravity settling of said preselected population or subpopulation from the remaining sample, said particle density being at least two times the density of the cells;

mixing a portion of said sample with said particles to bind said particles to said preselected population or subpopulation without substantially physically damaging said preselected population or subpopulation, said mixing being effected by causing said particles to repeatedly settle through a substantial part of said sample portion;

settling said particles with said bound population or subpopulation in said sample portion, producing a supernatant substantially free from said bound population or subpopulation, said settling being accomplished primarily by gravity; and

separating at least a portion of the resultant supernatant of said sample portion including a non-selected population or subpopulation from said particles and said bound population or subpopulation.

5,576,186

DIAGNOSIS AND MONITORING OF RHEUMATOLOGICAL DISEASES BY DETECTION OF ANTI-EF1-α ANTIBODIES

Dean A. Stetler, Lawrence, Kans., assignor to The University of Kansas, Lawrence, Kans.

Filed Sep. 1, 1994, Ser. No. 299,351

Int. Cl.[6] G01N *33/543;33/564*

U.S. Cl. 435—7.92 **25 Claims**

1. An assay kit for use in aiding in the detection of a rheumatological disease selected from the group consisting of SLE and scleroderma, comprising a solid support having a quantity of substantially purified enzyme from the EF-1α family bound to said support, said enzyme having a capacity for functioning as an antigen for anti-EF-1α antibody.

5,576,187

STANDARDS FOR PHOSPHOROTHIOATE INSECTICIDE IMMUNOASSAYS

Fernando M. Rubio, Doylestown, Pa., and Timothy S. Lawruk, New Castle, Del., assignors to OHMICRON Technology, Inc., Wilmington, Del., and DowElanco, Indianapolis, Ind.

Continuation-in-part of Ser. No. 127,583, Sep. 28, 1993, abandoned. This application Sep. 9, 1994, Ser. No. 303,343

Int. Cl.[6] G01N *33/353*

U.S. Cl. 435—7.93 **39 Claims**

1. An immunoassay process comprising the steps of:

1) reacting a sample with an antibody, said sample comprising an amount of analyte, said antibody reactive against said analyte,

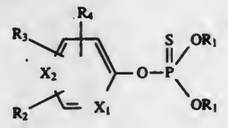
2) reacting a known amount of a standardizing compound with an antibody of the same specificity as that used in step (1),

3) quantitating the amount of antibody that reacted with the sample in step (1);

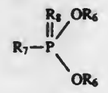
4) quantitating the amount of antibody that reacted with the standardizing compound in step (2);

5) utilizing the amounts quantitated in steps (3) and (4) and the known amount in step (2) to calculate the amount of analyte present in the sample used in step (1),

wherein the analyte is

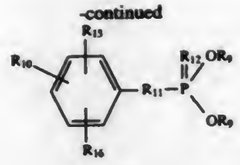


wherein the standardizing compound is either

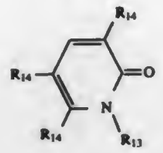


or

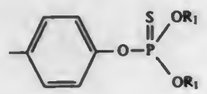
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or



wherein
X_1 is C or N,
X_2 is C if X_1 is C,
X_2 is C or N if X_1 is N,
R_1 is C_1–C_4 alkyl,
R_2 is H, C_1–C_4 alkyl, NO_2, a dialkylamino that is di(C_1–C_4 alkyl)amino, Cl, Br, I, (C_1–C_4 alkyl)—S—, C_1–C_4 alkyl-(O═S)—, $—SO_2NH_2$, or —S—R_5, provided that R_2 is —S—R_5 only if X_1 and X_2 are both C and R_2 is in the para position (4-position on the benzene ring)
R_3 is H, Cl, Br, or I,
R_4 is H, Cl, Br, or I,
R_5 is



wherein
R_6 is C_1–C_4 alkyl,
R_7 is Cl, Br, I, OH, $(CH_2)_mCH_3$, benzyl or benzyl substituted with I, Cl, Br, CH_3, OCH_3, $O(CH2)_mCH_3$, and m is an integer in the range 1 through 10 (i.e., 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10)
R_8 is O, NH, or S,
R_9 is H or C_1–C_4 alkyl,
R_{10} is Cl, Br, I, CH_3, $(CH_2)_qCH_3$, OCH_3, or $O(CH_2)_qCH_3$, and q is an integer in the range 1 through 10,
R_{11} is $(CH_2)_y$, and y is an integer in the range 1 through 10
R_{12} is O, NH, or S,
R_{13} is CH_3, $(CH_2)_zCH_3$, OCH_3, or $O(CH_2)_zCH_3$ and wherein z is an integer in the range 1 through 10,
R_{14} is Cl, I or Br,
R_{15} is H, Cl, Br, or I,
R_{16} is H, Cl, Br, or I,
provided that R_2, R_3, and R_4, are not joined to X_1 if it is N or to X_2 if it is N.

5,576,188

IMMUNOLOGICAL DETECTION OF METOLACHLOR

Jean-Marc Schlaeppi, Basel; Klaus Ramsteiner, Hofstetten, and Hans Moser, Magden, all of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 35,872, Mar. 23, 1994, abandoned, which is a continuation of Ser. No. 665,397, Mar. 6, 1991, abandoned. This application Dec. 20, 1994, Ser. No. 359,689
Claims priority, application Switzerland, Mar. 9, 1990, 762/90; Nov. 23, 1990, 3378/90
Int. Cl.[6] G01N *33/577;* **C12P** *21/08;* **C07K** *16/44*
U.S. Cl. 435—7.93 **43 Claims**

5. A monoclonal antibody and derivatives thereof which is produced by a hybridoma cell line which has the characteristic features of ECACC 9002 1701.

34. Method for the immunological detection of metolachlor in a sample, wherein a monoclonal antibody of claim 5 is used in one of the known immunoassays to bind to hapten present in the sample.

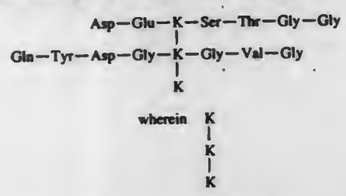
5,576,189

ANTIBODY TO TYPE-I COLLAGEN AMINO-TERMINAL TELOPEPTIDE

David R. Eyre, Mercer Island, Wash., assignor to Washington Research Foundation, Seattle, Wash.

Continuation of Ser. No. 221,705, Apr. 1, 1994, Pat. No. 5,473,052, which is a continuation of Ser. No. 614,719, Nov. 21, 1990, Pat. No. 5,300,434, which is a continuation-in-part of Ser. No. 444,881, Dec. 1, 1989, Pat. No. 5,140,103, which is a continuation-in-part of Ser. No. 118,234, Nov. 6, 1987, Pat. No. 4,973,666. This application Jun. 1, 1995, Ser. No. 457,831
Int. Cl.[6] G01N *33/53;33/543;* **C07K** *16/18;* **C12N** *5/20*
U.S. Cl. 435—7.93 **3 Claims**

1. An immunological binding partner that binds to



wherein K
K
K

is hydroxylysyl or lysyl pyridinoline, wherein Gln is glutamine or pyrrolidine carboxylic acid, and wherein said immunological binding partner cross-reacts in a competitive binding assay with a monoclonal antibody produced by cell line ATCC No. HB 10611.

5,576,190

BACTERIOPHAGE LAMBDA PL PROMOTERS

Rama M. Belagaje, Indianapolis; Charles L. Hershberger, New Palestine; Hansen M. Hsiung, Carmel; Paul R. Rosteck, Jr., and Jane L. Sterner, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 511, Jan. 4, 1993, abandoned, which is a continuation of Ser. No. 739,280, Aug. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 565,783, Aug. 13, 1990, abandoned. This application Nov. 23, 1993, Ser. No. 156,325
Int. Cl.[6] C12N *1/21;15/11;15/67;15/73*
U.S. Cl. 435—69.1 **26 Claims**

1. A transcriptional activating sequence that is selected from the group consisting of:

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5'-CATACAGATAACCATCTGCGGTGATAAATTA
   ||||||||||||||||||||||||||||||||
3'-GTATGTCTATTGGTAGACGCCACTATTTAAT

          TCTCTGGCGGTGTTGACA
          |||||||||||||||||
          AGAGACCGCCACAACTGT

   TAAATACCACTGGCGGTGATACTGAGCACATCA-3'
   ||||||||||||||||||||||||||||||||||||
   ATTTATGGTGACCGCCACTATGACTCGTGTAGT-5';

5'-CATACAGATAACCATCTGCGGTGATAAATTATC
   |||||||||||||||||||||||||||||||||
3'-GTATGTCTATTGGTAGACGCCACTATTTAATAG
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          TCTGGCGGTGTTGACA
          |||||||||||||||||
          AGACCGCCACAACTGT

   TAAATACCACTGGCGGTTATAATGAGCACATCA-3'
   ||||||||||||||||||||||||||||||||||||
   ATTTATGGTGACCGCCAATATTACTCGTGTAGT-5';

5'-CATACAGATAACCATCTGCGGTGATAAATT
   ||||||||||||||||||||||||||||||
3'-GTATGTCTATTGGTAGACGCCACTATTTAA

          ATCTCTGGCGGTGTTGACA
          |||||||||||||||||||
          TAGAGACCGCCACAACTGT

   TAAATACCACTGGCGATTATAATGAGCACATCA-3'
   ||||||||||||||||||||||||||||||||||||
   ATTTATGGTGACCGCTAATATTACTCGTGTAGT-5';

5'-CAAAAAATAAATTCATATAAAA
   ||||||||||||||||||||||
3'-GTTTTTTATTTAAGTATATTTT

          AACATACAGTTATTTATCTCTGG
          |||||||||||||||||||||||
          TTGTATGTCAATAAATAGAGACC

          CGGTGTTGACATAAATACCACTG
          |||||||||||||||||||||||
          GCCACAACTGTATTTATGGTGAC

                GCGGTTATAATGAGCACATCA-3'
                ||||||||||||||||||||||
                CGCCAATATTACTCGTGTAGT-5';
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wherein A is deoxyadenyl; G is deoxyguanyl; C is deoxycytidyl; T is thymidyl.

5,576,191

CYTOKINE THAT BINDS ST2

Margit Gayle, Woodinville; Jennifer L. Slack, Poulsbo; Hans-Juergen Gruss, Bainbridge Island; John E. Sims, Seattle, and Steven K. Dower, Redmond, all of Wash., assignors to Immunex Corporation, Seattle, Wash.

Filed Jun. 17, 1994, Ser. No. 265,086
Int. Cl.[6] A61K *38/17;* **C07K** *14/47;* **C07H** *21/04*
U.S. Cl. 435—69.1 **22 Claims**

1. An isolated DNA sequence encoding an ST2 ligand polypeptide, wherein said ST2 ligand comprises an amino acid sequence selected from the group consisting of amino acids –23 to 204 of SEQ ID NO:2, amino acids 1 to 204 of SEQ ID NO:2, and amino acids 1 to 203 of SEQ ID NO:4.

5,576,192

PROSTAGLANDIN E RECEPTORS, THEIR DNA AND PRODUCTION

Atsushi Ichikawa, Osaka, and Shuh Narumiya, Kyoto, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 24,179, Feb. 23, 1993, abandoned. This application Feb. 17, 1995, Ser. No. 390,162
Claims priority, application Japan, Feb. 24, 1992, 4-036580; Mar. 23, 1992, 4-064889
Int. Cl.[6] C12N *15/12;* **C07K** *14/705*
U.S. Cl. 435—69.1 **8 Claims**

1. A recombinant DNA coding for a prostaglandin E receptor comprising the amino acid sequence set forth in SEQ ID NO:2or SEQ ID NO:6.

5,576,193

PROTEIN HAVING HUMAN PLASMIN INHIBITING ACTIVITY

Yoshihiko Sumi, Hino; Yataro Ichikawa, Tokorozawa; Nobuo Aoki, Tokyo, and Masami Muramatsu, Tokorozawa, all of Japan, assignors to Teijin Limited, Japan

Division of Ser. No. 185,162, Jan. 24, 1994, Pat. No. 5,463,025, which is a continuation of Ser. No. 60,691, May 13, 1993, abandoned, which is a continuation of Ser. No. 419,913, Sep. 5, 1989, abandoned. This application May 8, 1995, Ser. No. 437,234
Claims priority, application Japan, Sep. 5, 1988, 63-220437
Int. Cl.[6] C12P *21/02;* **C12N** *15/12*
U.S. Cl. 435—69.2 **7 Claims**

1. A DNA fragment encoding an isolated, substantially pure recombinant protein having human plasmin inhibiting activity of about 70 to 110% of the reactivity with human plasmin to human α_2-plasmin inhibitor derived from plasma, capable of binding to human fibrin at a level of about ¼ to about ⅓ of that of the human α_2-plasmin inhibitor derived from plasma, capable of binding to human fibrin at a level of about ¼ to about ⅓ of that of the human α_2-plasmin inhibitor derived from plasma, when measured by the amount of I^{125} labelled protein taken up into a fibrin clot, by means of a gamma-counter, and a molecular weight of about 50,000 to about 77,000.

5,576,194

IMPROVED RECOMBINANT PROTEIN PRODUCTION

Sham Y. Chan, El Sobrante, Calif., assignor to Bayer Corporation, West Haven, Conn.

Continuation of Ser. No. 809,855, Dec. 18, 1991, abandoned, which is a continuation of Ser. No. 297,705, Jan. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 884,412, Jul. 11, 1986, abandoned. This application Oct. 1, 1993, Ser. No. 130,404
Int. Cl.[6] C07K *14/755;* **C12N** *5/02;5/10;15/12*
U.S. Cl. 435—69.6 **6 Claims**

1. A method for expressing recombinant Factor VIII in a mammalian host cell carrying the gene therefor, said method comprising culturing said mammalian host cell in a serum-free nutrient medium supplemented with insulin, transferrin and total bovine lipoprotein, wherein said mammalian host cell is selected from the group consisting of baby hamster kidney cells, human kidney cells and Chinese hamster ovary cells, and wherein the amount of said total bovine lipoprotein in said nutrient medium is from about 0.2 mg/ml to about 1.0 mg/ml.

5,576,195

VECTORS WITH PECTATE LYASE SIGNAL SEQUENCE

Randy R. Robinson; Marc Better; Shau-Ping Lei, all of Los Angeles, all of Calif., and Gary L. Wilcox, Mill Creek, Wash., assignors to Xoma Corporation, Berkeley, Calif.

Continuation of Ser. No. 20,671, Feb. 22, 1993, abandoned, which is a division of Ser. No. 987,555, Dec. 8, 1992, abandoned, which is a continuation of Ser. No. 501,092, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 77,528, Jul. 24, 1987, abandoned, which is a continuation-in-part of Ser. No. 793,980, Nov. 1, 1985, abandoned, said Ser. No. 501,092is a continuation-in-part of Ser. No. 142,039, Jan. 11, 1988, abandoned. This application Dec. 9, 1994, Ser. No. 357,234

Int. Cl.[6] C12P *21/00;* C12N *15/31;15/62;1/21*

U.S. Cl. 435—69.8 35 Claims

1. In a method for production of a protein in a gram-negative bacterial host which comprises transforming said host with a recombinant vector which contains a promoter sequence operably linked to a first DNA sequence encoding said protein, the improvement comprising employing a recombinant vector which comprises a second DNA sequence encoding a pectate lyase signal peptide sequence MetLysTyrLeuLeuProThrAlaAlaAlaGlyLeuLeuLeuLeuAlaAlaGlnProAlaMetAla, operably linked to said first DNA sequence encoding said protein, wherein said protein is foreign to said pectate lyase signal peptide.

5,576,196

PROCESS FOR REDUCING RNA CONCENTRATION IN A MIXTURE OF BIOLOGICAL MATERIAL USING DIATOMACEOUS EARTH

Nancy Horn, San Diego; Magda Marquet, La Jolla; Jennifer Meek, and Gregg Budahazi, both of San Diego, all of Calif., assignors to VICAL Incorporated, San Diego, Calif.

Filed Jan. 13, 1995, Ser. No. 372,236

Int. Cl.[6] C12P *19/34;* C12Q *1/68;1/70;* G01N *33/53*

U.S. Cl. 435—91.1 20 Claims

1. A process for reducing RNA concentration in a mixed solution of RNA and DNA comprising the steps of:

(a) providing RNA and DNA in a solution, said solution having a first concentration of RNA;

(b) filtering said solution through an effective amount of diatomaceous earth, wherein the RNA will bind to diatomaceous earth more strongly than will DNA, to produce a filtrate having a second concentration of RNA, wherein the second concentration is less than the first concentration; and

(c) collecting said filtrate having a reduced RNA concentration, wherein said process is conducted in the absence of a toxic organic solvent.

5,576,197

POLYMERASE CHAIN REACTION CONTAINER AND METHODS OF USING THE SAME

Robert Arnold, San Diego, Calif., assignor to Molecular Bio-Products, San Diego, Calif.

Filed Apr. 7, 1995, Ser. No. 418,537

Int. Cl.[6] C12P *19/34;* C12Q *1/68;* C10G *73/36*

U.S. Cl. 435—91.2 10 Claims

1. A PCR container consisting of the following elements:

a) a container that is suitable for PCR; and

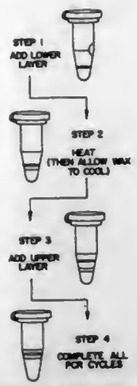
b) has a closed end, an open end distal to the closed end, and a lumen; and

c) a wax attached to the inside surface of the container wherein:

d) the wax is at about the meniscus or above the meniscus position of a PCR mixture added to the container;

e) the wax does not completely occlude the lumen of the container such that the PCR mixture can be added to, the container below the wax without penetrating the wax;

f) the wax is solid at about 40° C. or below 40° C. and liquid above 40° C.;



g) the wax, when liquefied, spontaneously covers the surface of the PCR mixture in the container; and

h) the wax is in an amount that, when liquefied, completely covers the surface of the PCR mixture, with the provision that the inside surface to which the wax is attached is not the bottom of the container and the PCR mixture has not been added to the container.

5,576,198

CONTROLLED EXPRESSION OF TRANSGENIC CONSTRUCTS IN PLANT PLASTIDS

Kevin E. McBride, and David M. Stalker, both of Davis, Calif., assignors to Calgene, Inc., Davis, Calif.

Filed Dec. 14, 1993, Ser. No. 167,638

Int. Cl.[6] A01H *4/00;* C12N *15/82*

U.S. Cl. 435—91.3 16 Claims

1. A method of providing for transcription of a DNA sequence of interest in a plant plastid organelle wherein said method comprises,

growing a plant comprising cells, wherein the nuclei of said plant cells comprise a DNA construct comprising the following operably joined components in the 5' to 3' direction of transcription,

a promoter functional in said nuclei, an encoding sequence for a plastid transit peptide, an encoding sequence for a viral single subunit RNA polymerase from a member of the T7 class of bacteriophage, and a transcriptional termination region functional in said nuclei, wherein said transit peptide encoding sequence and said RNA polymerase encoding sequences are present in the same translational reading frame, and

wherein the genome of said plastid organelle comprises a DNA construct comprising the following operably joined components in the 5' to 3' orientation of transcription, a promoter specific for said viral single subunit RNA polymerase, said DNA sequence of interest, and a transcription termination region.

5,576,199

PROCESS FOR PRODUCTION OF B AVERMECTINS

Edmund W. Hafner, East Lyme, Conn.; Kelvin S. Holdom, Ramsgate, England, and S. Edward Lee, Waterford, Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 56,441, Apr. 30, 1993, abandoned, which is a division of Ser. No. 660,971, Feb. 26, 1991, Pat. No. 5,234,831, which is a continuation of Ser. No. 126,650, Dec. 1, 1987, abandoned, which is a continuation-in-part of Ser. No. 6,512, Jan. 23, 1987, abandoned. This application Oct. 14, 1994, Ser. No. 323,198

Int. Cl.[6] C12P *17/18;* C12N *1/20*

U.S. Cl. 435—119 19 Claims

1. A process for preparation of a B avermectin comprising culturing a mutant strain of *Streptomyces avermitilis* which lacks

branched-chain 2-oxo-acid dehydrogenase activity and avermectin B O-methyltransferase under aerobic conditions in an aqueous nutrient medium comprising, in addition to an assimilable source of nitrogen, carbon and inorganic salts,

(1) an acid of the formula RCOOH, or

(2) a precursor of said acid having the formula

$$R—(CH_2)_n—Z$$

wherein n is 0, 2, 4, or 6; Z is $—CH_2OH$, —CHO, $—COOR^4$, CH_2NH_2 or $—CONHR^5$ wherein R^4 is H or $(C_1–C_6)$alkyl; R^5 is hydrogen, $(C_1–C_4)$alkyl, $—CH(COOH)CH_2COOH$, $—CH(COOH)(CH_2)_2COOH$ or $—CH(COOH)(CH_2)_2SCH_3$, and wherein R is an alpha-branched chain group, the carbon atom thereof to which is attached the —COOH group is also attached to at least two other atoms or groups other than hydrogen; and recovering said B avermectin.

5,576,200

PROCESS FOR PRODUCTION OF AVERMECTIN AGLYCONES AND CULURES THEREFOR

Lapyuen Lam, Mystic; Hamish A. I. McArthur, Gales Ferry, and Richard G. Wax, Waterford, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 60,451, May 19, 1993, abandoned, which is a division of Ser. No. 660,972, Feb. 26, 1991, Pat. No. 5,240,850, which is a continuation of Ser. No. 112,972, Oct. 23, 1987, abandoned. This application Oct. 14, 1994, Ser. No. 323,479

Int. Cl.[6] C12P *17/18;* C12N *1/20*

U.S. Cl. 435—119 14 Claims

1. A process for preparing an avermectin aglycone comprising culturing a mutant strain of *Streptomyces avermitilis* which produces only avermectin aglycones and which lacks branched-chain 2-oxo acid dehydrogenase activity under aerobic conditions in an aqueous nutrient medium comprising, in addition to an assimilable source of nitrogen, carbon and inorganic salts,

(1) an acid of the formula RCOOH, or

(2) a precursor of said acid having the formula $R—(CH_2)_n—Z$ wherein n is 0, 2, 4, or 6; Z is $—CH_2OH$, —CHO, $—COOR^5$, $—CH_2NH_2$ or $—CONHR^6$ wherein R^5 is H or $(C_1–_6)$alkyl; R^6 is hydrogen, $(C_1–_4)$alkyl, $—CH(COOH)CH_2COOH$, $—CH(COOH)(CH_2)_2COOH$ or $—CH(COOH)(CH_2)_2SCH_3$; and wherein R is an alpha-branched chain group, the carbon atom thereof to which is attached the —COOH group is also attached to at least two other atoms or groups other than hydrogen;

and recovering said avermectin aglycone.

5,576,201

RETROVIRAL VECTOR PARTICLES FOR TRANSDUCING NON-PROLIFERATING CELLS

James M. Mason, Wallingford, and Scott P. Kennedy, Southington, both of Conn., assignors to Alexion Pharmaceuticals, Inc., New Haven, Conn.

Filed Jan. 14, 1994, Ser. No. 182,612

Int. Cl.[6] C12N *15/86;5/10;* C12P *21/00;* C07H *21/04*

U.S. Cl. 435—172.1 7 Claims

4. A method for introducing an exogenous gene into a target cell comprising:

(a) providing a retroviral packaging cell expressing an oncoretroviral gag protein which has been mutated so as to contain a nuclear localization signal sequence, wherein the gag protein is a gag matrix protein;

(b) introducing a retroviral vector containing said exogenous gene into the packaging cell;

(c) incubating the packaging cell of step (b) under conditions wherein retroviral vector particles are produced; and

(d) transducing the target cell with the retroviral vector particles of step (c).

5,576,202

VIRUS-RESISTANT TRANSGENIC PLANTS

Eija Pehu; Tuula Pehu; Tuula Maki-Valkama; Jari Valkonen; Kimmo Koivu, and Kirsi Lehto, all of Helsinki, Finland, assignors to Helsinki University Licensing, Ltd., Helsinki, Finland

Filed May 19, 1994, Ser. No. 246,123

Int. Cl.[6] C12N *15/00;5/14;* A01H *1/04*

U.S. Cl. 435—172.3 5 Claims

5. A method for production of potato plants having resistance to potato virus Y, comprising the steps of:

a) transforming a potato plant or a potato plant shoot with a P1 DNA of potato virus Y; and

b) cultivating said potato plant or potato plant shoot.

5,576,203

MODIFIED 7S LEGUME SEED STORAGE PROTEINS

Leslie M. Hoffman, Madison, Wis., assignor to Mycogen Plant Sciences, Inc., San Diego, Calif.

Division of Ser. No. 626,682, Dec. 12, 1990, which is a division of Ser. No. 902,223, Aug. 29, 1986, Pat. No. 5,003,045. This application Jun. 7, 1995, Ser. No. 476,743

Int. Cl.[6] C12N *15/29;5/14;15/82;* A01H *5/00*

U.S. Cl. 435—172.3 4 Claims

1. A method for producing a modified 7S legume seed storage protein in a plant cell which comprises the steps of

(a) modifying a DNA sequence of a structural gene encoding a 7S legume seed storage protein, whereto said structural gent comprises a conserved region corresponding to the conserved region of a phaseolin gene that flanks an XbaI site, by inserting a nucleotide sequence comprising a methionine codon into said conserved region;

(b) transforming a plant cell with the modified 7S legume seed protein structural gene such that the modified structural gent is expressible in a plant cell; and

(c) regenerating a plant descended from the transformed plant cell, whereby a plant that expresses the modified 7S legume seed storage protein structural gene is produced.

5,576,204

φ29 DNA POLYMERASE

Luis Blanco; Antonio Bernad, and Margarita Salas, all of Madrid, Spain, assignors to Consejo Superior Investigaciones Cientificas, Madrid, Spain

Division of Ser. No. 668,945, Mar. 13, 1991, Pat. No. 5,198,543, which is a division of Ser. No. 328,462, Mar. 24, 1989, Pat. No. 5,001,050. This application Feb. 11, 1993, Ser. No. 10,568

Int. Cl.[6] C12N *9/12*

U.S. Cl. 435—193 6 Claims

1. A Φ29-type DNA polymerase produced from a non-naturally occurring DNA fragment consisting of DNA encoding a modified Φ29-type DNA polymerase, wherein said polymerase comprises sufficient DNA polymerase activity for use in DNA sequencing, and an exonuclease activity which is less than 10% the activity of the corresponding naturally occurring Φ29-type DNA polymerase.

5,576,205

KAINATE-BINDING IIUMAN CNS RECEPTORS OF THE EAA1 FAMILY

Rajender Kamboj, Mississauga; Stephen L. Nutt, Etobicoke; Lee Shekter, Toronto, and Michael A. Wosnick, Thornhill, all of Canada, assignors to Allelix Biopharmaceuticals, Inc., Missassauga, Canada

Continuation of Ser. No. 750,090, Aug. 26, 1991, abandoned. This application Jan. 24, 1994, Ser. No. 185,232
Int. Cl.[6] C12N *1/21;5/10;15/12;15/79*
U.S. Cl. 435—240.2 26 Claims

1. An isolated polynucleotide that codes for
an EAA1a receptor having the amino acid sequence of 1–936 of SEQ ID NO: 2;
an EAA1b receptor having the amino acid sequence of 1–936 of SEQ ID NO: 2 wherein the amino acid at position 508 is isoleucine;
an EAA1c receptor wherein the polynucleotide coding for said receptor includes nucleotides 216 to 3023 of SEQ ID NO: 1 or degenerate codon equivalents thereof, in which nucleotides 1427–1450 are deleted and the codon at position 1713 encodes isoleucine; and
an EAA1d receptor, wherein the polynucleotide coding for said receptor includes nucleotides 216–3023 of SEQ ID NO: 1, or degenerate codon equivalents thereof, in which nucleotides 1412–1460 are replaced by SEQ ID NO: 13.

5,576,206

HUMAN PAPILLOMA VIRUS GENES AND THEIR USE IN GENE THERAPY

Richard Schlegel, Rockville, Md., assignor to Georgetown University

Division of Ser. No. 874,397, Apr. 27, 1992, Pat. No. 5,376,542. This application May 20, 1994, Ser. No. 246,704
Int. Cl.[6] C12N *5/22;15/85*
U.S. Cl. 435—240.2 7 Claims

1. A non-tumorigenic immortalized human epithelial cell line which retains the phenotypic properties of the parent epithelial cells used for immortalization which is produced by a method comprising;
(i) transfecting epithelial cells selected from the group consisting of epithelial cells lining the oral and nasal mucosa, larynx, trachea, lung, esophagus, stomach, duodenum, jejunum, ileum, colon, liver, pancreas, kidney, bladder, adrenal, hair follicle and dermal papillae epithelial cells with a DNA vector containing a subgenomic fragment of a human papillomavirus type 16 or 18 comprising the E6 and E7 genes or the E7 gene of human papillomavirus type 16 or 18; and
(ii) selecting for an immortalized non-tumorigenic epithelial cell line which possesses the phenotypic properties of the parent epithelial cells.

5,576,207

METHOD OF EXPANDING HEPATIC PRECURSOR CELLS

Lola M. Reid, Chapel Hill, N.C.; Maria Ageili, Summit, N.J., and Andreas Ochs, Bronx, N.Y., assignors to Albert Einstein College of Medicine of Yeshiva University, a Division of Yeshiva University, Bronx, N.Y.

Continuation of Ser. No. 741,128, Aug. 7, 1991, abandoned. This application Jun. 24, 1994, Ser. No. 265,696
Int. Cl.[6] C12N *5/00;5/06;5/08*
U.S. Cl. 435—240.2 13 Claims

1. A method of expanding hepatic precursor cells comprising culturing immature liver cells which contain at least a population of hepatic precursor cells in serum-free culture medium, an extracellular matrix and liver stromal cells such that hepatic precursor cells contained within the cell culture are expanded.

5,576,208

ANTISENSE OLIGONUCLEOTIDE INHIBITION OF THE RAS GENE

Brett P. Monia, Carlsbad; Susan M. Freier, San Diego, and David J. Ecker, Leucadia, all of Calif., assignors to Isis Pharmaceuticals Inc., Carlsbad, Calif.

Continuation of Ser. No. 7,996, Jan. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 715,196, Jun. 14, 1991, abandoned, and a continuation-in-part of Ser. No. 958,134, Oct. 5, 1992, abandoned. This application Aug. 26, 1994, Ser. No. 297,248
Int. Cl.[6] C12N *5/06;* C07H *21/04*
U.S. Cl. 435—240.2 4 Claims

1. An antisense oligonucleotide having SEQ ID NO: 1, 2, 3, 4, 5, 6, 7, 11, 13, 14, 15, 16, 17, 18 or 19 comprising a phosphodiester backbone, a phosphorothioate backbone, or a chimeric backbone between the two, wherein the 2' position may be a 2'O'alkyl or a 2'-fluoro.

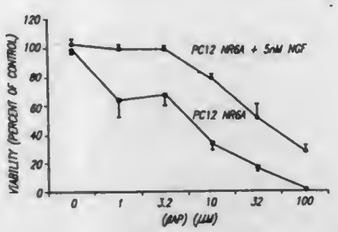
3. A method of inhibiting expression of a mutant H-rag gene in a cell or tissue comprising contacting cells or tissue in vitro with an antisense oligonucleotide so that expression of a mutant H-ras gene in a cell is inhibited, said oligonucleotide having SEQ ID NO: 1, 2, 3, 4, 5, 6, 7, 11, 13, 14, 15, 16, 17, 18 or 19 and comprising a phosphodiester backbone, a phosphorothioate backbone, or a chimeric backbone between the two, wherein the 2' position may be a 2'-O'alkyl or a 2'-fluoro.

5,576,209

METHOD FOR INCREASING THE RESISTANCE OF NEURAL CELLS TO β-AMYLOID PEPTIDE TOXICITY

Dale E. Bredesen, Palos Verdes Estates, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Oct. 24, 1994, Ser. No. 328,581
Int. Cl.[6] C12N *5/06;5/08;* A61K *38/18*
U.S. Cl. 435—240.2 4 Claims



1. A method for increasing the resistance of neural cells to B-amyloid peptide toxicity wherein said neural cells naturally express the $p75^{NTR}$, said method comprising the steps of:
providing a neural cell culture which comprises a plurality of neural cells which naturally express $p75^{NTR}$ and which have a low resistance to B-amyloid peptide toxicity;
treating said neural cell culture with a sufficient amount of a binding agent to bind said $p75^{NTR}$ which are expressed by said neural cells to form a modified neural cell culture which comprises neural cells wherein the $p75^{NTR}$ of said neural cells are bound to said binding agent; and
exposing said modified neural cell culture to B-amyloid peptide wherein the resistance of said modified neural cell culture to B-amyloid peptide toxicity is higher than the resistance of said neural cell culture to B-amyloid peptide toxicity.

5,576,210

MAMMALIAN/YEAST HYBRID G PROTEIN-COUPLED RECEPTORS

Andrzej Z. Sledziewski, Seattle, and Paul O. Sheppard, Redmond, both of Wash., assignors to ZymoGenetics, Inc., Seattle, Wash.

Division of Ser. No. 478,100, Feb. 8, 1990, Pat. No. 5,284,746. This application Feb. 7, 1994, Ser. No. 192,634
Int. Cl.[6] C12N *1/19;15/62*
U.S. Cl. 435—254.21 18 Claims

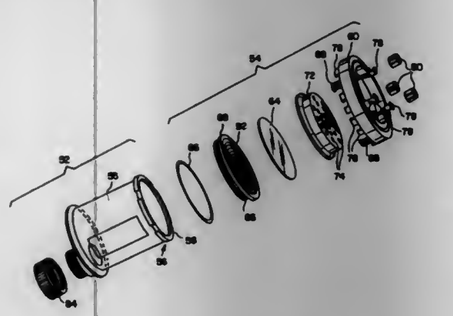
1. A DNA molecule comprising a sequence encoding a biologically active hybrid G protein-coupled receptor, said receptor consisting of a mammalian G protein-coupled receptor having at least one domain other than a ligand-binding domain replaced with the corresponding domain of a yeast G protein-coupled receptor, wherein said domain is a third internal effector domain or a third internal effector domain and a carboxy-terminal internal effector domain.

5,576,211

MODULAR CULTURE VESSEL FOR CELL CULTURES

Frank W. Falkenberg, Witten; Hans-Otto Nagels, Bovenden, and Heinz-Gerhard Kohn, Dransfeld, all of Germany, assignors to Heraeus Instruments GmbH, Hanau, Germany

Continuation-in-part of Ser. No. 115,099, Sep. 2, 1993, Pat. No. 5,449,617. This application Apr. 18, 1995, Ser. No. 423,575
Int. Cl.[6] C12M *1/00;3/00*
U.S. Cl. 435—297.1 17 Claims



1. Apparatus for cell culture comprising a cell culture chamber module, a nutrient supply chamber module, and means for releasably interconnecting said culture chamber module and nutrient supply chamber module, wherein said interconnecting means includes a plurality of snap elements associated with at least one of said cell culture chamber module and said nutrient chamber module, said cell culture chamber module includes a housing the interior of which defining the cell culture chamber and having a pair of openings, a gas diffusion membrane mounted on said housing and positioned to cover one of said housing openings, and a dialysis membrane mounted on said housing and positioned to cover the other housing opening, said modules being operatively interconnected at the location of said other housing opening, said gas diffusion membrane and said dialysis membrane being separable from said nutrient supply module together with said housing, said housing being ring-shaped and said housing openings are located in the opposed axial end faces of said housing.

5,576,212

OXIDIZING COMPOSITION IN POWDER FORM

Katsu Honzawa, Hamamatsu; Seiji Kawaguchi, Ayase; Kazuhiro Atsumi; Fumihiko Shimomura, both of Hamamatsu; Takahiko Ishiguro, Ayase, and Hisaya Motojima, Toshima-ku, all of Japan, assignors to Biosensor Laboratories Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1994, Ser. No. 338,740
Claims priority, application Japan, Nov. 12, 1993, 5-283516
Int. Cl.[6] G01N *21/76*
U.S. Cl. 436—8 6 Claims

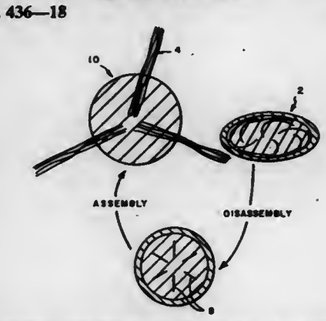
1. An oxidizing agent composition in dry particulate form comprising effective amounts of:
(a) sodium perborate tetrahydrate,
(b) sodium carbonate,
(c) citric acid, and
(d) binder,
wherein the ratio of the sodium perborate tetrahydrate to the sodium carbonate contained in said composition is in the range of about 1:1 to about 1:30 by weight, and wherein the particle size of said oxidizing agent composition is less than about 1,000 μm.

5,576,213

PRESERVATION OF BLOOD PLATELETS

Thomas P. Stossel, Belmont; John H. Hartwig, Jamaica Plain, and Paul A. Janmey, Arlington, all of Mass., assignors to Brigham & Women's Hospital, Inc., Boston, Mass.

Division of Ser. No. 19,045, Feb. 18, 1993, Pat. No. 5,358,844. This application Jul. 22, 1994, Ser. No. 279,226
Int. Cl.[6] G01N *33/49*
U.S. Cl. 436—18 7 Claims



1. A storage composition for preventing cold-induced platelet activation, comprising,
plasma containing a plurality of platelets;
a non-naturally occurring first agent for inhibiting actin filament severing; and
a non-naturally occurring second agent for inhibiting acting polymerization, wherein the first and second agents are present in the composition in sufficient amounts so as to prevent cold-induced platelet activation and wherein said composition is stored at a temperature of less than about 15° C.

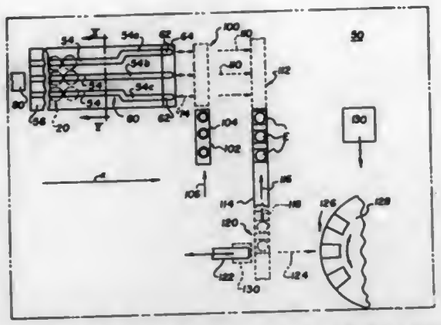
5,576,214

METHOD OF SUPPLYING DISPOSABLE TIPS TO AN ASPIRATOR

James D. Shaw, Hilton, N.Y., assignor to Johnson & Johnson Clinical Diagnostics, Inc., Rochester, N.Y.

Filed Sep. 14, 1994, Ser. No. 306,276
Int. Cl.[6] G01N *37/00*
U.S. Cl. 436—43 3 Claims

1. A method of supplying disposable tips to an aspirator, each tip having an aspirator-engaging end and a liquid ingress end, comprising the steps of:



a) assembling the tips in at least one column with the aspirator-engaging ends all adjacent;

b) joining said column of tips together in a temporary array by forming discontinuous junctions spaced around the periphery of each of said tips adjacent to said aspirator-engaging end, by hot-welding said aspirator-engaging end of each tip to an adjacent tip in said column;

c) joining said at least one column to a second column of tips formed substantially identically to said at least one column, by forming discontinuous junctions spaced around the periphery of each of said tips of adjacent columns at locations adjacent to said aspirator-engaging end;

d) supplying said temporary column array to an aspirator;

e) severing each of said columns from said array while maintaining the junctions between tips in each column wherein said steps d) and e) comprise mounting said array in a plurality of tracks, each column to a track, said tracks having a distance spacing them apart that is approximately equal to the spacing apart of said columns while joined in the array; and said severing step comprises moving said array to a continuance of said tracks wherein said spacing apart of said tracks is greater than the spacing apart of said columns, so that junctions between columns, but not within columns, are broken; and

f) severing a tip one at a time from said column.

5,576,215

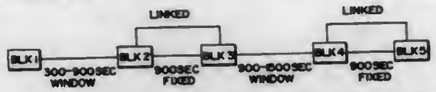
ADAPTIVE SCHEDULING SYSTEM AND METHOD FOR OPERATING A BIOLOGICAL SAMPLE ANALYZER WITH VARIABLE INTERVAL PERIODS

Kathleen L. Burns, Hawthorne Woods; Ilya Ratner, Highwood; Jeanine T. Douglas, Gurnee; Erica J. Kline, Grayslake, and Cass J. Grandone, Lake Forest, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jun. 3, 1991, Ser. No. 709,723

Int. Cl.[6] G01N *35/10*

U.S. Cl. 436—50 **30 Claims**



1. In an analyzer having an analyzer unit into which a plurality of biological samples can be loaded for performing an assay of each of the samples, analyzer instrument systems in the unit for handling the samples and one or more reagents for conducting the assays, and means for operating the instrument systems to automatically perform operations to conduct the assay of each of the samples loaded into the analyzer, the improvement comprising:

means for developing a schedule for performing the operations to be executed by the analyzer instrument systems, said schedule developing means comprising:

means for automatically and adaptively calculating an interval period between at least two operations performed by the analyzer instrument systems on at least one of the biological samples as a function of an entered load list unless a fixed interval period between operations is required; and

means for scheduling instrument system operations and the calculated interval periods.

5,576,216

UNIVERSAL STANDARD REAGENTS, METHOD OF PREPARING SAME AND USE THEREOF

Avraham Patchornik, Nes Ziona, Israel, assignor to Zipora Patchornik, Nes-Ziona, Israel

PCT No. PCT/US93/06980, § 371 Date Jan. 5, 1995, § 102(e) Date Jan. 5, 1995, PCT Pub. No. WO94/01771, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 14, 1993, Ser. No. 362,519

Claims priority, application Israel, Jul. 14, 1992, 102495

Int. Cl.[6] G01N *33/00*

U.S. Cl. 436—86 **9 Claims**

1. A method for the quantitative determination of an organic compound designated herein by A, said compound A having quantitatively reactable functional groups, said method consisting essentially of:

quantitatively reacting compound A, in a sample containing compound A, with a reagent comprising a compound of the general formula 1:

Q-B-f (I)

wherein:

Q stands for an organic moiety which can be measured quantitatively, visually by color, spectroscopically, or fluorometrically;

B represents a non-reactive organic bridging unit linking the moiety Q to a reactive functional group f, said bridging unit including non-reactive CH_2—CH_2 linkages and being of sufficient length or size to prevent any possible interaction of Q that might alter its spectroscopic properties even upon derivatization; and

f is a reactive group which can react with a compound to form covalently bonded derivatives, according to the reaction:

$$n(Q\text{-}B\text{-}f)+A \rightarrow Q\text{-}B\text{-}f\text{-}A+(n-1)Q\text{-}B\text{-}f$$

wherein: Q, B and f are as defined as above and n equals 1 or more;

separating any excess reagent (n−1)Q-B-f; and

measuring the absorption of the reaction product Q-B-f-A wherein the molar absorptivity ϵ of said reaction product Q-B-f-A and said reagent Q-B-f are substantially constant and wherein the molar concentration of the reaction product Q-B-f-A is equal to the measured absorption divided by ϵ, whereby division of said measured absorption by ϵ provides the value of the molar concentration of the reaction product, thus eliminating the requirement for comparing the result with an external standard.

5,576,217

SOLID PHASE MICROEXTRACTION OF TRACE AMOUNTS OF ORGANIC ANALYTES

C-P. Sherman Hsu, Basking Ridge, N.J., assignor to Mallinckrodt Baker, Inc., Phillipsburg, N.J.

Filed Feb. 28, 1995, Ser. No. 396,124

Int. Cl.[6] G01N *30/48*

U.S. Cl. 436—126 **20 Claims**

1. In a method for detecting trace organic analytes suspected to be extracted into or dissolved in an organic solvent carrier matrix, which method comprises optionally concentrating said trace organic analytes in said organic solvent carrier matrix, and subsequently absorbing said trace organic analytes onto a fiber of a solid phase microextraction device and thereafter desorbing said trace organic analytes from said fiber into an analytical instrument for

detection of one or more of said trace organic analytes, the improvement comprising:

prior to absorbing the trace organic analytes onto said fiber, conducting a matrix exchange by adding water to said organic solvent carrier matrix containing said trace organic analytes to produce a mixture and thereafter removing the organic solvent carrier matrix from said mixture to produce a detection sample of trace organic analytes in an aqueous carrier matrix for enhancing said adsorption of said trace organic analytes onto said fiber.

5,576,218

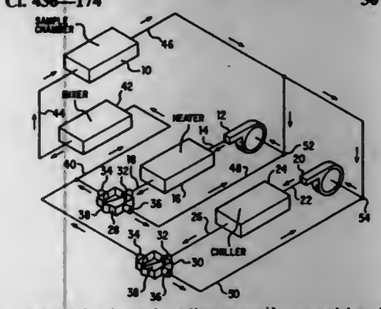
METHOD FOR THERMAL CYCLING NUCLEIC ACID ASSAYS

Thomas F. Zurek, River Forest; Kathleen A. Hanley, Gurnee, and Curtis J. Pepe, McHenry, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 179,845, Jan. 11, 1994, abandoned. This application Apr. 14, 1995, Ser. No. 422,688

Int. Cl.[6] G01N *1/00;25/00*

U.S. Cl. 436—174 **30 Claims**



1. A method for thermal cycling a sample comprising the steps of:

a. directing the flow of a composite stream into the environment of a sample to achieve a first sample-target-temperature, wherein said composite stream is composed of a plurality of component fluid streams each from a distinct source and each maintained at a different constant temperature;

b. maintaining said first sample-target-temperature for a preselected period;

c. adjusting said composite stream to achieve a second sample-target-temperature wherein when said first sample-target-temperature is less than said second sample-target-temperature, a sample-ramp-speed of at least 1.0° C./second is achieved, and wherein said adjusting is achieved by selectively blending in varying ratios said component fluid streams; and

d. maintaining said second sample-target-temperature for a preselected period.

5,576,219

STANDARD SOLUTIONS FOR DETERMINATION OF THYROXINE-BINDING CAPACITY IN SERUM

Gerhard Bienhaus, Wörthesee, and Helmut Jering, Tutzing, both of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Continuation of Ser. No. 869,905, Apr. 15, 1992, abandoned, which is a continuation of Ser. No. 334,675, Apr. 6, 1989, abandoned. This application Feb. 2, 1994, Ser. No. 190,705

Claims priority, application Germany, Apr. 15, 1988, 38 12 610.9

Int. Cl.[6] G01N *33/78*

U.S. Cl. 436—500 **8 Claims**

2. In a process for the determination of thyroxine-binding capacity in serum wherein a characteristic related to the capacity is determined by effective methods of determination, the improvement consisting essentially of

calibrating said effective determination by means of two different serum-free standard solutions wherein

a first standard solution contains a buffer system having a pH range of 6–8, 40–80 mg/ml albumin, 10 to 60 μg/ml thyroxine-binding globulin thereby corresponding to the highest thyroxine-binding capacity of buman serum and a second standard solution contains a buffer system having a pH rang of 6–8, 40–80 mg/ml albumin, 10 to 60 μg/ml thyroxine-binding globulin and 100–500 ng/ml thyroxine thereby corresponding to the lowest thyroxine-binding capacity of buman serum and

adding each standard to a separate container having T4 antibody,

further adding a predetermined amount of a reagent containing T4 and enzyme-conjugated T4 to each container,

incubating the containers to permit competitive binding of the T4 and enzyme-conjugated T4 to thyroxine-binding protein and the anti-T4,

removing unbound immunoreactants,

adding substrate for the enzyme,

determining, the amount of enzyme bound by measuring the colored product formed to produce a calibration curve from the values as determined above for the two standards,

and determining the amount of thyroxine-binding capacity by the effective method for determination with reference to the above calibration curve.

5,576,220

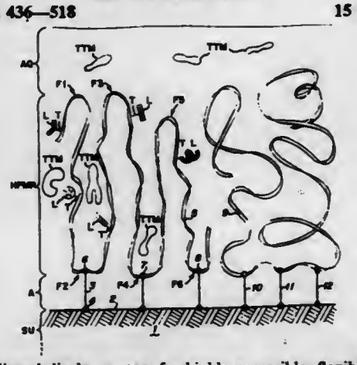
THIN FILM HPMP MATRIX SYSTEMS AND METHODS FOR CONSTRUCTING AND DISPLAYING LIGANDS

Derek Hudson, San Anselmo; Charles R. Johnson, Berkeley; Michael J. Ross, Hillsborough; Kevin R. Shoemaker, San Francisco; Robert T. Cass, San Mateo, and Lutz B. Giebel, Burlingame, all of Calif., assignors to Arris Pharmaceutical Corporation, South San Francisco, Calif.

Filed Feb. 19, 1993, Ser. No. 19,725

Int. Cl.[6] G01N *33/543*

U.S. Cl. 436—518 **15 Claims**



1. A ligand display system for highly accessible, flexible three dimensional display of tethered ligands for affinity binding to displacable tagged target molecules which comprises in operative combination:

a) a biocompatible non-gold substrate having a surface; and

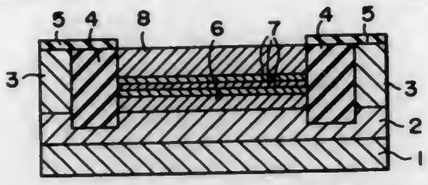
b) a biocompatible hydrophilic polar multi-functionalized substantially non-crosslinked, long-chain polysaccharide, wherein said long-chain polysaccharide is anchored to said substrate surface by a plurality of covalent bonds at multiple points spaced along the length of said long-chain polysaccharide, wherein said covalent bonds are present in an amount sufficient to minimize loss of polysaccharide chain from said surface upon exposure to trifluoroacetic acid and to minimize the effect of hydrolysis in said long-chain polysaccharide during peptide synthesis deprotection, to form a thin film three dimensional functionalized matrix layer above said sub-

strate, in an open, freely permeable configuration for the covalent tethering of ligands thereon, and for access thereinto of target molecules for affinity binding to preselected ligands.

5,576,221
MANUFACTURING METHOD OF SEMICONDUCTOR DEVICE

Hisashi Takemura, and Tsutomu Tashiro, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,455
Claims priority, application Japan, Dec. 20, 1993, 5-319538
Int. Cl.[6] H01L 27/144;21/20
U.S. Cl. 437—2 12 Claims

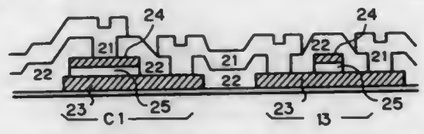


1. A manufacturing method of a semiconductor device comprising the steps of;
forming on a first conductivity type silicon substrate, a second conductivity type buried layer and a second conductivity type silicon layer;
forming a first groove whose side walls are covered with a silicon oxide film in said second conductivity type silicon layer;
removing said second conductivity type silicon layer which is bounded by said groove down to predetermined depth;
selectively forming a first silicon layer of first conductivity type on said second conductivity type silicon layer or said second conductivity type buried layer which is exposed;
forming a Si/Ge_xSi_{1-x} layer through alternate growth of a silicon layer and a Ge_xSi_{1-x} layer on said first silicon layer of first conductivity type; and
forming a second silicon layer of first conductivity type on said Si/Ge_xSi_{1-x} layer.

5,576,222
METHOD OF MAKING A SEMICONDUCTOR IMAGE SENSOR DEVICE

Michio Arai; Masaaki Ikeda; Kazushi Sugiura; Nobuo Furukawa, all of Tokyo; Mitsufumi Kodama, Kanagawa; Yukio Yamauchi, Kanagawa; Naoya Sakamoto, Kanagawa; Takeshi Fukada, Kanagawa; Masaaki Hiroki, Kanagawa, and Ichirou Takayama, Kanagawa, all of Japan, assignors to TDK Corp., Tokyo, and Semiconductor Energy Laboratory Co. Ltd., Kanagawa, both of Japan

Continuation-in-part of Ser. No. 189,498, Jan. 31, 1994, Pat. No. 5,442,198, which is a division of Ser. No. 825,552, Jan. 27, 1992, Pat. No. 5,298,455. This application Oct. 18, 1994, Ser. No. 324,737
Claims priority, application Japan, Oct. 19, 1993, 5-260859
Int. Cl.[6] H01L 27/14;27/01;21/336;21/71
U.S. Cl. 437—4 7 Claims

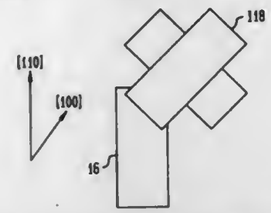


1. A method for producing a non single crystal semiconductor device comprising the steps of;
placing an amorphous silicon layer on a substrate through low pressure CVD process using disilane gas,
effecting solid phase growth to said amorphous silicon layer to obtain an active layer by heating said substrate together with said layer at temperature in the range 500° C.–650° C. for 4–50 hours,
producing an insulation layer on said solid phase growth layer by oxidizing the surface of said solid phase growth layer at a temperature in the range 900° C.–1100° C. in an atmosphere selected from dry atmosphere and wet atmosphere,
implanting donor impurities into said solid phase growth layer around said insulation layer to form a source and a drain of a transistor, and
placing a conductive layer on said insulation layer as a gate electrode,
and further comprising depositing a capacitor, a resistor and a switching transistor on said substrate, including the steps of;
depositing a resistor layer together with a conductive wiring layer coupled with said resistor layer, said resistor layer being provided at the same time as said conductive layer on said insulation layer as a gate electrode.
depositing a capacitor having a dielectric layer sandwiched by a pair of conductive layers, said dielectric layer being provided at the same time as said insulation layer, and said pair of conductive layers being provided at the same time as said active layer and said conductive layer on said insulation layer as a gate electrode, and
depositing at least one transistor of MOS structure having an active layer, a gate insulation layer, and a gate electrode, said deposition of said transistor being performed at the same time as said non single crystal semiconductor device.

5,576,223
METHOD OF DEFECT DETERMINATION AND DEFECT ENGINEERING ON PRODUCT WAFER OF ADVANCED SUBMICRON TECHNOLOGIES

Heinz Zeininger, Erlangen, and Werner M. Klingenstein, Kirchheim, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 40,695, Mar. 31, 1993, abandoned.
This application Oct. 3, 1994, Ser. No. 317,148
Int. Cl.[6] H01L 21/26; G01N 31/26
U.S. Cl. 437—8 7 Claims

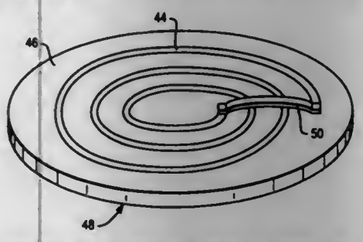


1. A method of testing an integrated circuit manufacturing process, which comprises a set of sequential processing steps, for crystalline defect densities produced by the process so that the process may be modified to achieve a decrease in the crystalline defect density in the integrated circuits comprising the steps of:
processing a plurality of semiconductive bodies, some by a process that includes all of the set of sequential processing steps of the process being tested including steps for forming trenches in the semiconductive bodies having specific crystallographic orientations, and others by a process that includes different subsets of said set, the subsets including steps for forming trenches in the semiconductive bodies having crystallographic orientations different from the specific orientations; and
comprising the defect densities in the plurality of processed semiconductive bodies for determining the effect on defect densities of the steps of the manufacturing process for use in modifying the manufacturing process for reducing the defect density of the integrated circuits produced.

5,576,224
METHOD FOR MANUFACTURING A MONITOR ELEMENT

James P. Yakura, Colorado Springs; Richard K. Cole, Woodland Park; Matthew S. Von Thun, Colorado Springs; Crystal J. Hass, Colorado Springs, and Derryl D. J. Allman, Colorado Springs, all of Colo., assignors to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios Logic Inc., Fort Collins, Colo.

Division of Ser. No. 123,664, Sep. 20, 1993, Pat. No. 5,466,614.
This application Jun. 2, 1995, Ser. No. 460,287
Int. Cl.[6] H01L 21/66;21/465
U.S. Cl. 437—8 13 Claims

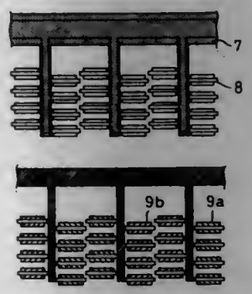


1. A process for fabricating a monitor element, said monitor element being a coil, comprising the following steps:
(a) providing a silicon substrate;
(b) forming a layer of dielectric material on said silicon substrate; and
(c) depositing on the dielectric a layer of material to form said coil.

5,576,225
METHOD OF FORMING ELECTRIC CIRCUIT USING ANODIC OXIDATION

Hongyong Zhang; Hideki Uochi; Hiroki Adachi; Itaru Koyama, all of Kanagawa, and Shunpei Yamazaki, Tokyo, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Filed Apr. 28, 1993, Ser. No. 53,227
Claims priority, application Japan, May 9, 1992, 4-143319; Sep. 28, 1992, 4-282352; Dec. 28, 1992, 4-360192
Int. Cl.[6] H01L 21/84
U.S. Cl. 437—21 16 Claims

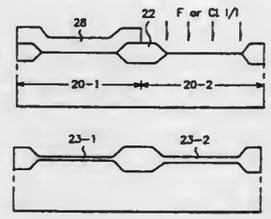


1. A method for forming an electric circuit comprising:
forming a gate electrode and a wiring electrically connected to said gate electrode on an insulating surface of a substrate;
forming an organic coating on said wiring;
applying a voltage to said wiring in an electrolyte in order to anodic oxidize a surface of said gate electrode which is not provided with said organic coating;
removing at least a portion of said organic coating to expose a surface of said wiring; and
removing at least a portion of said wiring which is not formed with an anodic coating thereon.

5,576,226
METHOD OF FABRICATING MEMORY DEVICE USING A HALOGEN IMPLANT

Hyun S. Hwang, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Seoul, Rep. of Korea

Filed May 17, 1994, Ser. No. 245,744
Claims priority, application Rep. of Korea, Apr. 21, 1994, 8466/1994
Int. Cl.[6] H01L 21/31;21/8239
U.S. Cl. 437—24 4 Claims



1. A method of fabricating a memory device, comprising the steps of:
(a) forming a cell-transistor area and a peripheral area by forming a field oxidation layer over a first conductivity-type semiconductor substrate;
(b) coating a photoresist film over the entire surface of the substrate;
(c) exposing a surface area of the substrate by removing a portion of the photoresist film corresponding to the cell-transistor area and leaving a portion of the photoresist film corresponding to the peripheral area;
(d) implanting a halogen into the exposed area of the substrate;
(e) exposing the surface area of the substrate by removing the overlying photoresist film on the peripheral area;
(f) after step (d), performing an oxidation to form a first gate oxidation layer over a portion of the substrate corresponding to the cell-transistor area and a second gate oxidation layer, which is thinner than the first gate oxidation layer, over a portion of the substrate corresponding to the peripheral area;
(g) forming a first gate over the first gate oxidation layer and a second gate over the second gate oxidation layer by a process of deposition and then patterning of a polysilicon layer; and
(h) implanting second conductivity-type ions into the substrate partly covered with the gates as a mask to form highly-doped source/drain areas in the respective cell-transistor and peripheral areas, thereby forming respective MOS transistors on each of the cell-transistor area and the peripheral area.

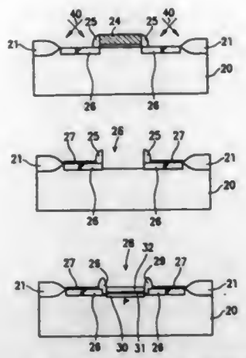
5,576,227
PROCESS FOR FABRICATING A RECESSED GATE MOS DEVICE

Chen-Chung Hsu, Taichung, Taiwan, assignor to United Microelectronics Corp., Hsinchu, Taiwan

Filed Nov. 2, 1994, Ser. No. 333,219
Int. Cl.[6] H01L 21/265;21/44;21/48
U.S. Cl. 437—35 14 Claims

1. A process for fabricating a MOS device having a recessed gate on a silicon substrate, comprising the steps of:

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forming a barrier layer on said silicon substrate where a gate electrode is to be formed;

forming first sidewall spacers on side walls of said barrier layer;

implanting impurities of a first conductivity type into said silicon substrate at an oblique angle to form source/drain regions by using said barrier layer and said first sidewall spacers as a first mask, wherein said source/drain regions extending to the areas underlying said first sidewall spacers;

forming a metal silicide layer on the surface of said source/drain regions;

sequentially etching said barrier layer and portion of said silicon substrate underlying said barrier layer to form a trench by using said first sidewall spacers and said metal silicide layer as a second mask;

forming second sidewall spacers on side walls of said trench;

implanting impurities of a second conductivity type into portion of said silicon substrate underlying said trench to form an anti-punchthrough region; and

sequentially forming a gate oxide layer and a gate layer in said trench.

5,576,228

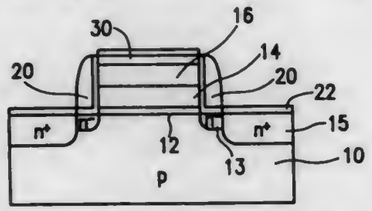
METHOD FOR FABRICATING POLYCIDE GATE MOSFET DEVICES

Ancher Chen, Taichung, and Gary Hong, Hsinchu, both of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Division of Ser. No. 338,951, Nov. 14, 1994, Pat. No. 5,472,896. This application May 22, 1995, Ser. No. 446,225

Int. Cl.[6] H01L *21/336;21/28*

U.S. Cl. 437—35 **5 Claims**



1. A method for fabricating metal oxide semiconductor field effect transistor device on a semiconductor substrate, comprising the steps of:

sequentially forming a gate oxide layer, a polysilicon gate layer, and a refractory metal silicide layer over said semiconductor substrate;

forming a barrier cap layer over said refractory metal silicide layer, wherein said refractory metal silicide layer being transformed from its amorphous form into its crystalline form simultaneously;

selectively etching said barrier cap layer, said refractory metal silicide layer, said polysilicon gate layer, and said gate oxide layer to form a gate electrode structure;

transforming sidewall portions of said refractory metal silicide layer from its crystalline form into its amorphous form by a first ion implantation;

forming a first thin thermal oxide layer over the exposed surfaces of said gate electrode structure and said semiconductor substrate;

forming lightly doped source/drain regions in said semiconductor substrate by a second ion implantation using said gate electrode structure as a mask;

forming a dielectric layer over said first thin thermal oxide layer;

anisotropically etching said dielectric layer and said first thin thermal oxide layer to form sidewall spacers on the side walls of said gate electrode structure;

forming a second thin thermal oxide layer over the exposed surfaces of said gate electrode structure, and said semiconductor substrate; and

forming heavily doped source/drain regions in said semiconductor substrate by a third ion implantation using said gate electrode structure and said sidewall spacers as a mask, completing said metal oxide semiconductor field effect transistor device.

5,576,229

METHOD OF FABRICATING A THIN-FILM TRANSISTOR AND LIQUID-CRYSTAL DISPLAY APPARATUS

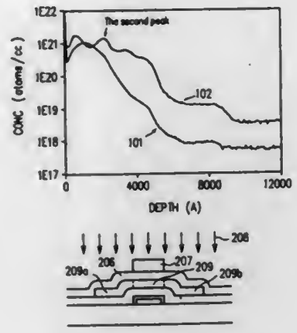
Yasuaki Murata, Tenri, and Atsushi Yoshinouci, Kashiba, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 31, 1995, Ser. No. 454,868

Claims priority, application Japan, Aug. 30, 1994, 6-205681

Int. Cl.[6] H01L *21/266*

U.S. Cl. 437—40 **6 Claims**



1. A method of fabricating a thin-film transistor, including the step of forming a source region and a drain region in a semiconductor thin film having a capping film thereon, by accelerating a plasma source including hydrogen ions and one of Group III ions and Group V ions of the Periodic table, and simultaneously implanting the hydrogen ions and one of the Group III ions and the Group V ions into the semiconductor thin film, wherein there exist a plurality of peaks in a depth profile of a concentration of the hydrogen ions implanted into the semiconductor thin film having the capping film thereon and a second peak from a surface of the capping film among the plurality of the peaks is made to exist in the semiconductor thin film.

5,576,230

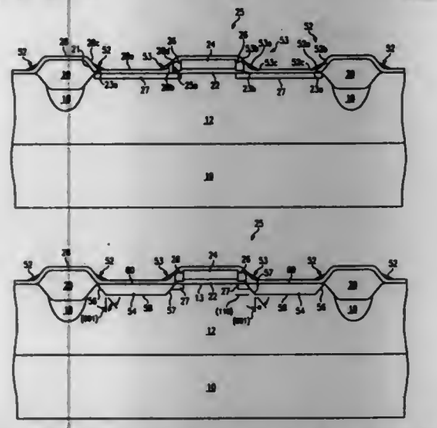
METHOD OF FABRICATION OF A SEMICONDUCTOR DEVICE HAVING A TAPERED IMPLANTED REGION

Richard L. Guldi, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 2, 1994, Ser. No. 300,301

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—41 **15 Claims**



1. A method for forming an implanted region in a semiconductor layer, comprising the steps of:

forming a surface extending upwardly from a face of said semiconductor layer to define a corner adjacent said face;

forming an insulating layer over said face and said surface extending upwardly from said face;

forming a fillet over said insulating layer adjacent said corner, said fillet having a first surface adjacent said face, a second surface adjacent said surface extending upwardly from said face, and a third surface extending from an edge of said second surface to an edge of said first surface; and

implanting an impurity through said fillet into said semiconductor layer to form an implanted region having a side edge and a bottom edge, said side edge sloped at an angle with respect to a plane perpendicular to said face, said bottom edge parallel to said face.

5,576,231

PROCESS FOR FABRICATING AN INSULATED GATE FIELD EFFECT TRANSISTOR WITH AN ANODIC OXIDIZED GATE ELECTRODE

Toshimitsu Konuma; Akira Sugawara, and Takahiro Tsuji, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Division of Ser. No. 328,826, Oct. 25, 1994. This application Jun. 2, 1995, Ser. No. 460,775

Claims priority, application Japan, Nov. 5, 1993, 5-301173

Int. Cl.[6] H01L *21/336*

U.S. Cl. 437—41 **9 Claims**

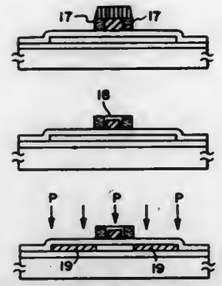
1. A process for fabricating a thin film transistor comprising:

a first step of forming a gate insulating film on the surface of an active region formed on the substrate;

a second step of forming a first coating which is capable of being anodically oxidized on the gate insulating film, and forming further on said first coating a second coating which provides a masking material;

a third step of patterning said first and said second coating to form a gate electrode and the masking material on said gate electrode;

a fourth step of forming an anodic oxide on a side of the gate electrode with the masking material by applying a current to said gate electrode;



a fifth step of applying a current to the gate electrode to form an anodic oxide on at least an upper side of the gate electrode after removing the masking material; and

a sixth step of introducing an impurity into the active region by using the anodic oxide and the gate electrode obtained in at least one of the fourth and fifth step above as the masks.

5,576,232

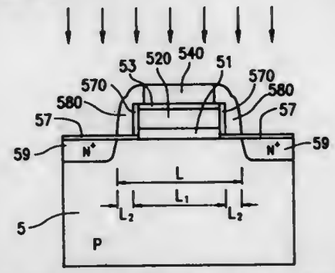
FABRICATION PROCESS FOR FLASH MEMORY IN WHICH CHANNEL LENGTHS ARE CONTROLLED

Gary Hong, Hsin-chu, Taiwan, assignor to United Microelectronics Corp., Hsinchu, Taiwan

Filed Dec. 12, 1994, Ser. No. 353,673

Int. Cl.[6] H01L *21/8247*

U.S. Cl. 437—43 **7 Claims**



1. A process for fabricating memory cells for semiconductor flash memory devices comprising the steps of:

forming in sequence a gate oxide layer, a first conducting layer, and a gate dielectric layer on a semiconductor substrate;

forming a conducting strip on said gate dielectric layer, and covering said conducting strip with a shielding layer subsequently;

etching said gate dielectric layer, said first conducting layer and said gate oxide utilizing said shielding layer as a shielding mask to form a control gate for said memory cell;

implementing a thermal oxidation to an entire substrate utilizing said shielding layer as a thermal oxidation shielding mask to form a tunnel oxide layer on the surface of the substrate and forming isolating oxide layers on the sidewalls of said control gate;

removing said shielding layer;

forming electrically conducting sidewall spacers on both sidewalls of said conducting strip, each of said conducting sidewall spacers also covering a portion of said tunnel oxide layer, and is electrically isolated from said control gate by said isolating oxide layers, thereby forming a floating gate for the memory cell; and

implementing an impurity implantation process utilizing said conducting strip and said conducting sidewall spacers as a floating gate shielding mask to both form source and drain regions on said substrate for said memory cell and to provide floating gate channel lengths in the semiconductor substrate.

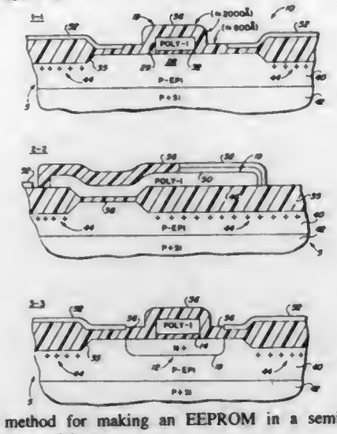
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5,576,233

METHOD FOR MAKING AN EEPROM WITH THERMAL OXIDE ISOLATED FLOATING GATE

Louis N. Hutter, Richardson, and John P. Erdeljac, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 21, 1995, Ser. No. 493,377
Int. Cl.[6] H01L *21/8247*
U.S. Cl. 437—43 **18 Claims**



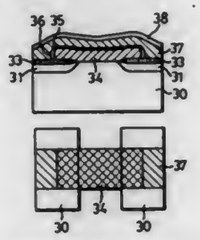
1. A method for making an EEPROM in a semiconductor substrate, comprising:
forming a gate dielectric on a surface of said substrate;
forming a polysilicon floating gate on said gate dielectric extending over a channel region of said EEPROM, said polysilicon floating gate having an upper surface and sidewall surfaces;
forming an insulation layer on said upper surface and said sidewall surfaces of said polysilicon floating gate;
removing a portion of said insulation layer from said polysilicon floating gate to expose regions of said upper surface and said sidewall surfaces of said polysilicon floating gate that a control gate will not cover;
forming a thermal oxide layer on said polysilicon floating gate in said exposed regions;
forming said control gate partially overlying said polysilicon floating gate; and
forming source and drain regions in said substrate on respective sides of said channel region.

5,576,234

METHOD FOR MANUFACTURING AN EPROM

Kuei-Chang Liang, and Yeu-Haw Yang, both of Hsin-Chu, Taiwan, assignors to Hualon Microelectronics Corporation, Hsin-Chu, Taiwan

Filed Nov. 13, 1995, Ser. No. 554,969
Int. Cl.[6] H01L *21/8247*
U.S. Cl. 437—43 **12 Claims**



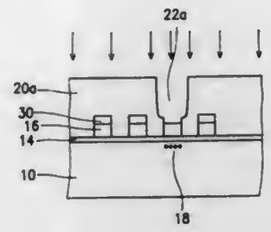
1. A method for manufacturing a memory cell, comprising the steps of:
(a) implanting impurities into a silicon substrate so as to form first and second buried regions that are spaced by a channel;
(b) depositing a gate oxide layer over said silicon substrate;
(c) removing a portion of said gate oxide layer which is over said channel;
(d) depositing a first polysilicon layer over remaining portions of said gate oxide layer and over exposed portion of said silicon substrate;
(e) growing an insulating layer over said first polysilicon layer;
(f) providing a first mask on said insulating layer, said first mask extending along said channel and having a length shorter than that of said insulating layer, said first mask further having two end portions which overlap respectively said first and second buried regions;
(g) etching portions of said insulating layer and said first polysilicon layer not covered by said first mask down to said gate oxide layer;
(h) removing said first mask;
(i) depositing a thin oxide layer over a remaining portion of said insulating layer;
(j) depositing a second polysilicon layer over said thin oxide layer and over said first and second buried layers;
(k) providing a second mask on said second polysilicon layer to define a control gate region, said second mask having a width narrower than that of said second polysilicon layer;
(l) etching portions of said second polysilicon layer not covered by said second mask so as to form a control gate;
(m) removing said second mask;
(n) growing a thick oxide layer on a remaining portion of said second polysilicon layer, said thick oxide layer being thicker than said insulating layer; and
(o) etching said insulating layer and said first polysilicon layer with said thick oxide layer serving as a mask so as to form a floating gate beneath said control gate.

5,576,235

ROM CODING PROCESS WITH SELF-ALIGNED IMPLANTATION AND THE ROM PRODUCED THEREBY

Gary Hong; Chen-Chiu Hsue, and Chen-Hui Chung, all of Hsinchu, Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Division of Ser. No. 264,461, Jun. 23, 1994, abandoned. This application Nov. 21, 1994, Ser. No. 342,630
Int. Cl.[6] H01L *21/8246*
U.S. Cl. 437—48 **4 Claims**



1. A ROM coding process with a self-aligned implantation, comprising the steps of:
providing a substrate with a plurality of bit-lines formed therein, a gate oxide layer formed on said bit-lines;
depositing a conducting layer on the gate oxide layer and an aligning layer on the conducting layer;
forming a plurality of word-lines having an aligning layer thereon by patterning the conducting layer and aligning layer, said bit-lines and said word-lines together forming an array of memory cells;

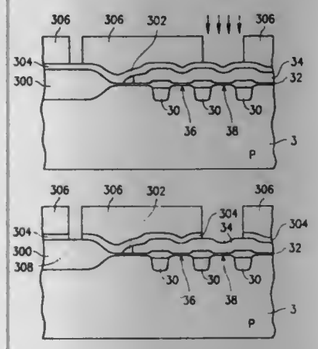
coating a photoresist on said gate oxide layer, said aligning layer and sidewalls of said word-lines not covered by said aligning layer;
partially etching through portions of said photoresist not covered by a mask pattern to said aligning layer so as to form openings exposing portions of said memory cells that will be programmed to operate in a first state;
removing portions of said aligning layer exposed through said openings; and
implanting impurities through said openings into said substrate using the photoresist as a mask to program said memory cells that will be programmed to operate in said first state, and leave other non-programmed memory cells operating in a second state.

5,576,236

PROCESS FOR CODING AND CODE MARKING READ-ONLY MEMORY

Tsun-Tsai Chang, Hsinchu; Vicent Liu, Keelung, and Ming-Tsung Liu, Hsinchu, all of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Jun. 28, 1995, Ser. No. 496,209
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—48 **13 Claims**



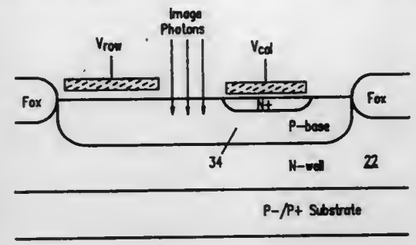
1. A process for coding and code marking a read-only memory device on a semiconductor substrate of a first conductivity type, comprising:
(a) forming a code-marking layer on said semiconductor substrate to define an active region;
(b) forming a plurality of spaced-apart and parallel bit lines of a second conductivity type in said substrate within said active region, a longitudinal direction of said bit lines being oriented along a first direction;
(c) forming a dielectric layer covering said active region;
(d) forming a plurality of spaced-apart and parallel word lines on said dielectric layer, said word lines having a longitudinal direction oriented along a second direction;
(e) forming a buffer layer overlying an entire surface of said substrate; and
(f) forming a mask layer with a designated pattern of said coding and said code marking of said read-only memory device on said buffer layer;
(g) coding said memory device by implanting impurities of said first conductivity type into said substrate through the pattern of said mask layer; and
(h) forming a code mark over said code-marking layer by etching said buffer layer using said mask layer as an etch mask.

5,576,237

METHOD OF MANUFACTURING A CAPACITOR COUPLED CONTACTLESS IMAGER WITH HIGH RESOLUTION AND WIDE DYNAMIC RANGE

Albert Bergemont, Palo Alto; Carver A. Mead, Pasadena; Minhwa Chi, Palo Alto, and Hosam Haggag, Santa Clara, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 436,181, May 9, 1995. This application Oct. 17, 1995, Ser. No. 543,960
Int. Cl.[6] H01L *21/8222*
U.S. Cl. 437—50 **1 Claim**



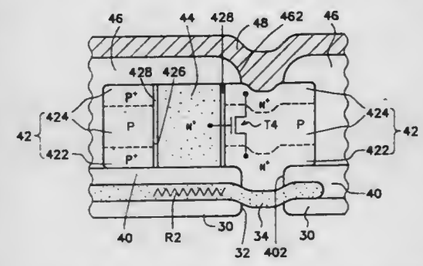
1. A method of manufacturing a capacitor coupled contactless imager structure in a semiconductor substrate, the method comprising:
forming a collector region of N-type conductivity in the semiconductor substrate;
forming a base region of P-type conductivity in the collector region;
forming an n-doped polysilicon emitter contact in contact with a surface of the base region such that an n+ epitaxial emitter region is formed in the base region beneath the polysilicon emitter contact;
forming silicon dioxide over the polysilicon emitter contact and exposed surfaces of the base region; and forming a layer of second polysilicon about 3000–4000 Å thick on the silicon dioxide such that the layer of second polysilicon only partially covers the base region.

5,576,238

PROCESS FOR FABRICATING STATIC RANDOM ACCESS MEMORY HAVING STACKED TRANSISTORS

Chien-Chih Fu, Hsinchu, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Jun. 15, 1995, Ser. No. 490,787
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—52 **12 Claims**



1. A process for fabricating memory cells of a static random access memory (SRAM) device having a plurality of memory cells formed on a semiconductor substrate, each of said SRAM memory cells includes:

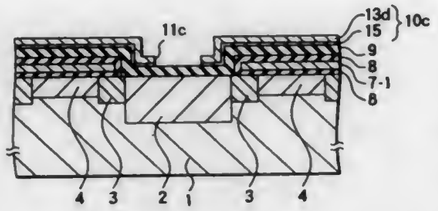
a first MOS transistor having one of a drain/source pair thereof coupled to a first voltage for said SRAM device;
a second MOS transistor having one of the drain/source pair thereof coupled to said first voltage, the other of the drain/source pair thereof being coupled to the gate of said first MOS transistor and forming a second node, and the gate of said second MOS transistor being coupled to the other of said drain/source pair of said first MOS transistor and forming a first node;
a first resistor coupled to said first node at one end and to a second voltage at the other;
a second resistor coupled to said second node at one end and to said second voltage at the other;
a third MOS transistor having drain/source pair coupled to said first node and a first bit line, and a gate thereof coupled to a word line, respectively; and
a fourth MOS transistor having a pair of drain/source coupled to said second node and a second bit line, and gate thereof coupled to said word line, respectively;
wherein said process comprises:
forming said first and second MOS transistors on said semiconductor substrate;
forming said first and second resistors over said first and second MOS transistors, respectively;
forming said third and fourth MOS transistors and said word line over said first and second resistors, and
forming said first and second bit lines over said third and fourth MOS transistors, respectively.

5,576,239

METHOD OF MANUFACTURING SOLID STATE IMAGE SENSING DEVICE

Keisuke Hatano, and Kazuma Minami, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 31, 1995, Ser. No. 455,996
Claims priority, application Japan, May 31, 1994, 6-119116
Int. Cl.[6] H01L *21/70*
U.S. Cl. 437—53 **8 Claims**



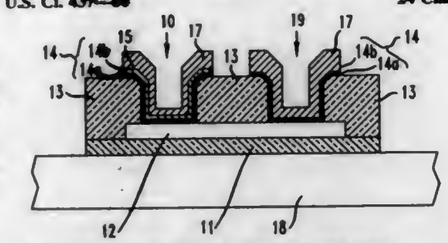
1. A method of manufacturing a solid state image sensing device comprising the steps of:
forming a gate insulating film on a semiconductor substrate provided with a photoelectric converting area and a transfer channel for receiving and transferring charges from said photoelectric converting area, and forming a plurality of transfer electrodes on said gate insulating film, said gate insulating film covering a surface of said transfer channel;
depositing an interlayer insulating film on an entire surface of a resultant structure;
depositing a film of metal or alloy and performing a heat treatment at a temperature lower than a melting point of said metal or alloy film to reflow said metal or alloy film;
forming a refractory metal film after reflowing of said metal or alloy film; and
forming openings in said film of metal or alloy and said refractory metal film above said photoelectric converting area, forming a light shielding film made of said metal or alloy and said refractory metal film.

5,576,240

METHOD FOR MAKING A METAL TO METAL CAPACITOR

Joseph R. Radosevich, Orlando, Fla., and Ranbir Singh, Macungie, Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 9, 1994, Ser. No. 353,015
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—60 **24 Claims**



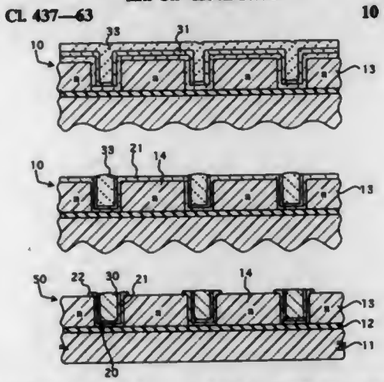
1. A method for fabricating a capacitor comprising:
a) forming a field dielectric layer on a silicon substrate;
b) forming a conductive first layer in contact with said field dielectric layer; then
c) depositing interlevel dielectric on said conductive first layer as a patterned layer, said interlevel dielectric having at least one window having at least one side wall; then
d) forming a bottom plate of the capacitor comprising a conductive second layer including a first metal in electrical contacting relation with said conductive first layer by depositing said first metal in said window such that a portion of said first metal is deposited on said at least one side wall and overlies said interlevel dielectric;
e) forming a layer of capacitor dielectric in contact with said bottom plate of the capacitor, said first metal remaining on said at least one side wall of the window and overlying the interlevel dielectric when said capacitor dielectric layer is formed; and
f) forming a top plate of the capacitor comprising a conductive third layer including a second metal onto said capacitor dielectric.

5,576,241

METHOD OF SEPARATING SEMICONDUCTOR WAFER WITH DIELECTRICS

Yoshiyuki Sakai, Nagano, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed May 31, 1995, Ser. No. 455,173
Claims priority, application Japan, May 31, 1994, 6-117296
Int. Cl.[6] H04L *21/76*
U.S. Cl. 437—63 **10 Claims**



1. A method for separating a wafer for integrated circuit apparatuses with dielectrics into a plurality of semiconductor regions

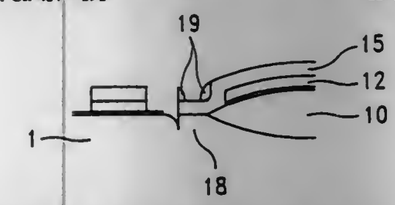
insulated from each other, wherein said wafer includes a semiconductor substrate on an insulation film, the method comprising the steps of:
digging at least one trench in said semiconductor substrate, wherein a depth of said trench is effective to expose said insulation film, wherein said trench is effective to form a first semiconductor substrate separated from a second semiconductor substrate;
covering a surface of said wafer, said surface including said at least one trench and said first semiconductor substrate and said second semiconductor substrate, with a dielectrics film;
depositing a poly-crystalline silicon under layer on an entire surface of said wafer, wherein said under layer is in a contacting relationship with said dielectrics film;
depositing a poly-crystalline silicon filler layer and filling said at least one trench with said poly-crystalline silicon filler layer, wherein said poly-crystalline silicon under layer has a smaller average grain size and a smaller range of grain size than said poly-crystalline silicon filler layer; and
removing each of said under layer and said filler layer from a part of said surface of said wafer wherein said part of said surface including said first semiconductor substrate and said second semiconductor substrate and said part of said surface excludes said at least one trench.

5,576,242

METHOD OF FORMING SELF-ALIGNED BURIED CONTACT

Ming-Hua Liu, Tai-Chung, Taiwan, assignor to United Microelectronics Corp., Taiwan

Filed Dec. 15, 1995, Ser. No. 573,962
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—191 **11 Claims**



1. A process for forming self-aligned buried contact on a semiconductor substrate having a field oxide and a gate oxide grown thereon and a first polysilicon layer deposited thereon and a buried contact region formed thereon by etching, comprising the following steps of:
depositing a second polysilicon layer thereon while forming a recess on the buried contact region;
forming a sidewall spacer within said recess;
depositing a tungsten silicate layer thereon;
depositing and defining a second photoresist thereon;
anisotropically etching said tungsten silicate layer and said second polysilicon layer; and
removing said second photoresist.

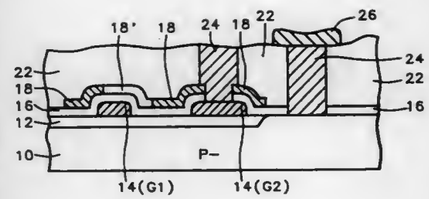
5,576,243

PROCESS FOR FORMING STACKED CONTACTS AND METAL CONTACTS ON STATIC RANDOM ACCESS MEMORY HAVING THIN FILM TRANSISTORS

Shou-Gwo Wuu; Mong-Song Liang; Chung-Hui Su, and Chen-Jong Wang, all of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Division of Ser. No. 429,725, Apr. 27, 1995, Pat. No. 5,547,892. This application Apr. 8, 1996, Ser. No. 629,253
Int. Cl.[6] H01L *21/44;21/48*
U.S. Cl. 437—195 **5 Claims**

1. A method for fabricating stacked contacts and metal contacts simultaneously on a substrate, comprising the steps of:



providing a semiconductor substrate having device areas surrounded by field oxide areas and having integrated circuit devices;
depositing a first insulating layer on said substrate;
depositing a N doped polysilicon layer on said first insulating layer;
patterning said N doped polysilicon layer and thereby forming electrically conducting stripes on said first insulating layer;
depositing a second insulating layer on said patterned N polysilicon layer;
depositing an P type polysilicon layer on said second insulating layer;
patterning said P type polysilicon layer, and thereby forming electrically conducting stripes on said second insulating layer and extending over said N doped polysilicon layer;
photoresist masking and etching openings in said P type polysilicon layer to said second insulating layer;
depositing a third insulating layer over said patterned P type polysilicon layer and said openings;
forming a patterned photoresist mask on said third insulating layer having openings aligned over said openings in said P type polysilicon layer, said photoresist mask openings being larger in size, and further said photoresist mask having openings for first metal contacts over said device areas;
anisotropically and selectively etching said third insulating layer in said photoresist opening to said P-type polysilicon layer, and etching further in said openings said second insulating layer to said N doped polysilicon layer forming stacked contact openings, and simultaneously forming first metal contact openings to said device areas elsewhere on the said substrate;
forming conducting plugs in said stacked contact and metal contact openings;
depositing a first metal layer and patterning said metal layer to form the first interconnecting metal layer, and thereby completing a plug structure for said integrated circuit devices on said substrate.

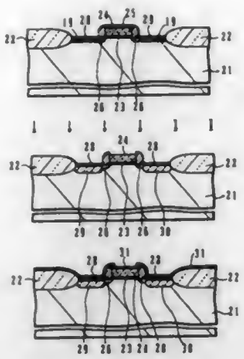
5,576,244

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES HAVING SILICIDE ELECTRODES

Hiromi Hayashi, and Atsuo Fushida, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 295,537, Aug. 25, 1994, Pat. No. 5,482,895. This application Jul. 13, 1995, Ser. No. 502,315
Claims priority, application Japan, Aug. 26, 1993, 5-211279
Int. Cl.[6] H01L *21/28*
U.S. Cl. 437—200 **11 Claims**

1. A method of manufacturing a semiconductor device comprising the steps of:
forming, on a silicon substrate, a gate insulation film and a silicon gate electrode thereon;
covering the exposed surface of said silicon gate electrode with an insulation film;
exposing the surface of said substrate on the opposite sides of said gate electrode;
forming a first refractory metal film over said substrate surface;

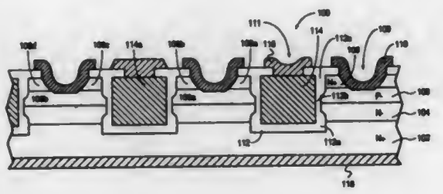


heating said substrate to progress a silicidation reaction between said first refractory metal film, and said substrate surface to form a first refractory metal silicide film;
removing an unreacted portion of said first refractory metal film;
removing said insulation film on said gate electrode to expose the surface of said gate electrode;
simultaneously implanting impurity ions into said silicon gate electrode, where there is no silicide thereon, and into said substrate surface through said first refractory metal silicide film; and
heating said substrate to activate said impurity ions.

5,576,245
METHOD OF MAKING VERTICAL CURRENT FLOW FIELD EFFECT TRANSISTOR

Adrian I. Cogan, San Jose, and Richard A. Blanchard, Los Altos, both of Calif., assignors to Siliconix Incorporated, Santa Clara, Calif.

Division of Ser. No. 910,864, Jul. 8, 1992, Pat. No. 5,298,781, which is a division of Ser. No. 107,725, Oct. 8, 1987, Pat. No. 5,164,325. This application Nov. 18, 1992, Ser. No. 978,201
Int. Cl.[6] H01L *21/336*
U.S. Cl. 437—203 **6 Claims**

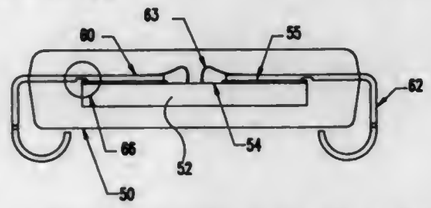


1. A method for making a transistor comprising the steps of:
providing a first semiconductor region of a first conductivity type;
providing a second semiconductor region of said first conductivity type on said first region, said second region having a first portion having a dopant concentration less than the dopant concentration of said first region;
forming a first groove in said second region;
extending said first groove to at least said first region;
forming a first insulator on the bottom but not on the sidewalls of said first groove;
forming a second insulator over the bottom and sidewalls of said first groove; and
forming a first conductor in said groove.

5,576,246
PERSONALIZED AREA LEADFRAME COINING OR HALF ETCHING FOR REDUCED MECHANICAL STRESS AT DEVICE EDGE

Harold W. Conru, Essex Junction; Francis E. Froebel, Essex Junction; Albert J. Gregoritsch, Jr., South Burlington; Sheldon C. Rieley, Burlington; Stephen G. Starr, Essex Junction; Ronald R. Uttecht, Essex Junction; Eric J. White, Essex Junction, all of Vt., and Jens G. Pohl, Bernmardswald-Eribach, Germany, assignors to International Business Machines, Corporation, Armonk, N.Y., and Siemens Aktiengeselischaft, Munich, Germany

Division of Ser. No. 334,478, Nov. 4, 1994, Pat. No. 5,545,921. This application Jun. 2, 1995, Ser. No. 458,848
Int. Cl.[6] H01L *21/60*
U.S. Cl. 437—216 **8 Claims**



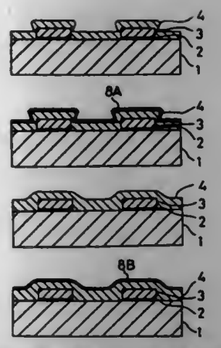
1. A method of manufacturing a planar lead-on-chip (LOC) semiconductor package having a plurality of lead-fingers, said plurality of lead-fingers suitable for dissipating heat from said semiconductor package, said method comprising the steps of:
applying an adhesive layer to an active face of a semiconductor chip, said adhesive layer terminating at a peripheral edge of said semiconductor chip;
forming a notch in each of said plurality of lead-fingers;
attaching said plurality of lead-fingers to said adhesive layer having said notch in each of said plurality of lead-fingers positioned directly over said peripheral edge;
wirebonding said plurality of lead-fingers to said semiconductor chip at a connection strip centered across said active chip face; and
encapsulating said semiconductor chip and said plurality of lead-fingers in a protective housing, a portion of said lead-fingers projecting from said protective housing.

5,576,247
THIN LAYER FORMING METHOD WHERE IN HYDROPHOBIC MOLECULAR LAYERS PREVENTING A BPSG LAYER FROM ABSORBING MOISTURE

Kousaku Yano; Masayuki Endo; Yuka Terai, all of Osaka; Noboru Nomura, Kyoto; Tomoyasu Murakami, Osaka; Tetsuya Ueda, Osaka, and Satoshi Ueda, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 27, 1993, Ser. No. 97,231
Claims priority, application Japan, Jul. 31, 1992, 4-204659
Int. Cl.[6] H01L *21/316*
U.S. Cl. 437—225 **3 Claims**

1. A thin layer forming method comprising:
a first step of forming, on a substrate, a silicon oxide layer containing at least one substance selected from the group consisting of boron, phosphorus and arsenic by chemical vapor deposition;
a second step of forming a first molecular layer for preventing said substance from absorbing moisture which comprises molecules having hydrophobic groups, on the surface of said silicon oxide layer formed at said first step;
a third step of thermally heating said silicon oxide layer on the surface of which said first molecular layer has been formed at said second step;
a fourth step of forming a second molecular layer comprising molecules having hydrophobic groups, on the surface of said silicon oxide layer as thermally treated at said third step; and

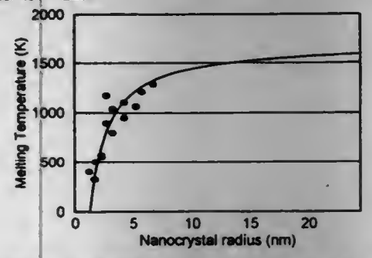


a fifth step of forming a thin layer on said silicon oxide layer on the surface of which said second molecular layer has been formed at said fourth step wherein said second step is carried out before precipitates are generated on the surface of said silicon oxide layer formed at said first step.

5,576,248
GROUP IV SEMICONDUCTOR THIN FILMS FORMED AT LOW TEMPERATURE USING NANOCRYSTAL PRECURSORS

Avery N. Goldstein, Midland, Mich., assignor to Starfire Electronic Development & Marketing, Ltd., Bloomfield Hills, Mich.

Filed Mar. 24, 1994, Ser. No. 217,160
Int. Cl.[6] H01L *21/20;21/208*
U.S. Cl. 437—225 **5 Claims**



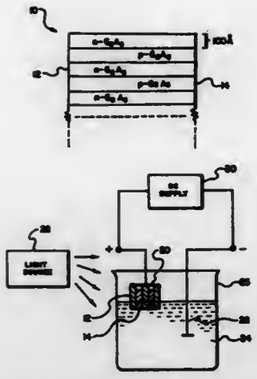
1. A method of forming a solid, continuous film of a Group IV semiconductor material on a surface, comprising the steps of:
depositing on the substrate surface a thin, contiguous layer of nanocrystals of the semiconducting material, the size of the nanocrystals being sufficiently small that surface effects contribute to melting temperature;
melting the nanocrystals at a temperature below the bulk melting temperature of the semiconductor material in order to form a continuous liquid thin film; and
cooling the liquid thin to form a solid thin film.

5,576,249
ELECTROCHEMICALLY ETCHED MULTILAYER SEMICONDUCTOR STRUCTURES

Wei-yu Wu, Calabasas, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 81,950, Aug. 5, 1987, abandoned. This application Oct. 21, 1988, Ser. No. 260,980
Int. Cl.[6] H01L *21/465*; C03C *25/06*
U.S. Cl. 437—228 **17 Claims**

1. A method of selectively etching a material of a certain conductivity type from a semiconductor structure having alternating n-type and p-type layers, said structure having two ends on

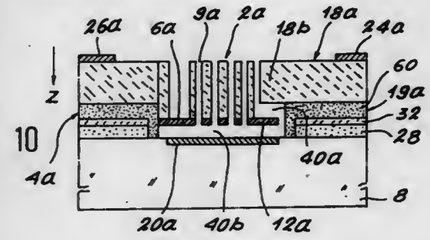


opposite sides of the structure such that each end comprises at least one pair of alternating n-type and p-type layers, the method comprising the steps of:
a. preparing a liquid electrolyte;
b. connecting an electrode to said liquid electrolyte;
c. forming an ohmic contact across one end of said semiconductor structure;
d. immersing the opposite end of said semiconductor structure in the liquid electrolyte; and
e. applying a predetermined electric potential difference between said ohmic contact and said electrode connected to said liquid electrolyte, with a positive polarity being applied to said electrode for a time sufficient to selectively etch the layers of the material having that certain conductivity-type.

5,576,250
PROCESS FOR THE PRODUCTION OF ACCELEROMETERS USING SILICON ON INSULATOR TECHNOLOGY

Bernard Diem, Chirolles, and Marie-Thérèse Delaye, Grenoble, both of France, assignors to Commissariat a L'Energie Atomique, Paris, France

Filed Dec. 27, 1993, Ser. No. 172,827
Claims priority, application France, Dec. 28, 1992, 92 15771
Int. Cl.[6] H01L *21/465*
U.S. Cl. 437—228 **17 Claims**



1. A process for the production of an integrated accelerometer having moving elements, the process comprising the steps of:
(a) producing a monocrystalline silicon film on a silicon substrate and separated from the latter by an insulating layer;
(b) etching the monocrystalline silicon film and insulating layer down to the substrate in order to form the moving elements having shape; and
(c) removing portions of the insulating layer in order to separate the moving elements, the remainder of the insulating layer remains an integral part of the moving elements and the substrate.

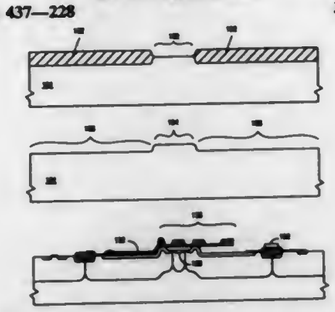
VOL 1192 ISS 3 NO 19 1996 UMI

5,576,251

PROCESS FOR MAKING A SEMICONDUCTOR SENSOR WITH A FUSION BONDED FLEXIBLE STRUCTURE

Rafi M. Garabedian, San Leandro; M. Salleh Ismail, Newark; Gary J. Pashby, San Jose, and Jeffrey K. K. Wong, Fremont, all of Calif., assignors to Kavlico Corp., Moorpark, Calif.

Division of Ser. No. 318,918, Oct. 6, 1994. This application Feb. 22, 1995, Ser. No. 395,397
Int. Cl.[6] H01L *21/465*
U.S. Cl. 437—228 35 Claims



1. A process for making a semiconductor device containing a flexible structure, comprising the steps of:

oxidizing a portion of a surface of a first semiconductor substrate to form a first oxide region and leave an unoxidized region on the surface;

removing the first oxide region to form a depression in the first substrate; and

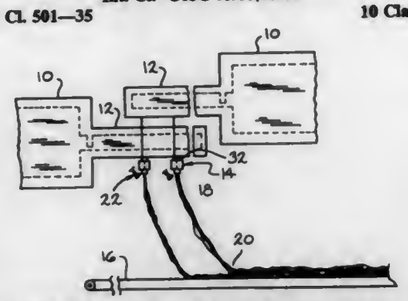
bonding a second substrate to the unoxidized region of the first substrate so that a portion of the second substrate overlies the depression.

5,576,252

IRREGULARLY-SHAPED GLASS FIBERS AND INSULATION THEREFROM

Charles F. Rapp, Newark; Neil M. Cameron, Granville, and Ron W. Mayhew, Newark, all of Ohio, assignors to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.

Filed May 4, 1995, Ser. No. 434,620
Int. Cl.[6] C03C *13/00;13/06*
U.S. Cl. 501—35 10 Claims



1. Irregularly-shaped glass fibers suitable for insulation, each glass fiber comprising two distinct glasses, each glass having a different coefficient of thermal expansion, wherein the coefficients of thermal expansion differ by at least 2.0 ppm/°C., each glass having a different glass composition and each glass composition being boron-free, wherein the first boron-free glass composition consists essentially of:

Ingredients	Weight Percent
SiO_2	35–65
Al_2O_3	0–17
MgO	0–30
CaO	5–40
FeO	0–17
$Na_2O + K_2O$	0–10
$SiO_2 + Al_2O_3$	≧45
	≦70
Temperature for a Viscosity of 10 Poise	>2,350° F. <3,400° F.

having a liquidus temperature at least 50° F. below the 10 poise viscosity temperature; and the second boron-free glass composition consists essentially of:

Ingredients	Weight Percent
SiO_2	35–65
Al_2O_3	0–17
MgO	0–30
CaO	5–40
FeO	0–17
$Na_2O + K_2O$	0–25
$SiO_2 + Al_2O_3$	≧45
	≦70
Temperature for a Viscosity of 10 Poise	>2,350° F. <3,400° F.

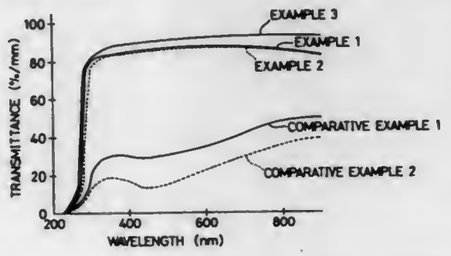
having a liquidus temperature of at least 50° F. below the 10 poise viscosity temperature.

5,576,253

OXYNITRIDE GLASS, METHOD OF PREPARING THE SAME AND GLASS FIBER

Haruo Osafune; Satoshi Kitamura, both of Kyoto, and Takashi Kawasaki, Ibaragi, all of Japan, assignors to Shimadzu Corporation, Kyoto, and Asahi Fiber Glass Co. Ltd., Tokyo, both of Japan

Filed Oct. 12, 1994, Ser. No. 321,519
Claims priority, application Japan, Oct. 14, 1993, 5-281688
Int. Cl.[6] C03C *3/11*
U.S. Cl. 501—56 2 Claims



1. Oxynitride glass containing 0.1 to 15 percent by weight of nitrogen, and Si particles or Si alloy particles of at least 0.1 μm and not more than $1.0\times10^9/cm^3$ in number, said oxynitride glass having transmittance of at least 80%/mm at a wavelength of 400 to 800 nm.

5,576,254

CARBON REFRACTORY FOR BLAST FURNACE AND METHOD FOR MANUFACTURING SUCH CARBON REFRACTORY

Hitoshi Nakamura, Kimitsu; Yorihito Mikami, Ohita; Yutaka Takasagawa, Ihara-gun, and Tsutomu Wakasa, Fuji, all of Japan, assignors to Nippon Steel Corporation, and Nippon Electrode Company, Ltd., both of Tokyo, Japan

Filed Sep. 12, 1995, Ser. No. 526,954
Claims priority, application Japan, Sep. 14, 1994, 6-219743
Int. Cl.[6] L04B *35/52;35/532*
U.S. Cl. 501—100 11 Claims

1. A carbon refractory for a blast furnace formed by a process comprising:

a synthetic coarse-grain aggregate with a particle size of 1 to 5 mm which is formed from a mixed material that is baked, crushed, and screened;

the mixed material consisting of adding an organic binder to 100 weight parts of a mixture of 70 to 90 weight parts of carbon material having a content of 70 wt % or more of one of flake graphite, artificial graphite, or a mixture thereof, 5 to 15 parts by weight of alumina particulates, and 5 to 15 parts by weight of metallic silicon particulates.

5,576,255

REFRACTORY SAND COMPOSITION

Yvan Huard, Thetford-Mines; Gilles Mathieu, Aylmer, and Jay Aota, Kanata, all of Canada, assignors to Les Sables Olimag, Inc., Quebec, Canada

Continuation-in-part of Ser. No. 257,030, Jun. 8, 1994, Pat. No. 5,453,408, which is a continuation of Ser. No. 839,508, Feb. 21, 1992, Pat. No. 5,374,593. This application Sep. 13, 1995, Ser. No. 527,552
Int. Cl.[6] C04B *35/04;35/16*
U.S. Cl. 501—122 20 Claims

1. A synthetic forsterite-rich refractory sand composition for use as a taphole nozzle refractory sand for a sliding gate system of a steel ladle, said synthetic forsterite-rich sand composition comprising a mixture, said mixture comprising:

a) a carbon bridging agent, said carbon bridging agent being present in said mixture in a proportion of from 5 to 15 percent by weight of said mixture; and

b) a synthetic forsterite-rich sand, said synthetic forsterite-rich sand being free-flowing, having a $MgO:SiO_2$ weight ratio of at least 1.2, a specific gravity of approximately 3 g/cm^3, a void volume of less than approximately 50 percent by volume of said synthetic forsterite-rich sand, and a fusion point of at least 1610° C.,

wherein

i) at least 50 percent by weight of said synthetic forsterite-rich sand is forsterite, and

ii) from 3 to 27 percent by weight of said synthetic forsterite-rich sand is maghemite.

5,576,256

HYDROPROCESSING SCHEME FOR PRODUCTION OF PREMIUM ISOMERIZED LIGHT GASOLINE

Reinaldo Monque, Caracas; Wolfgang Garcia, Edo Mibanda; Roberto Gallasso, San Antonio, and Jose A. Perez, Caracas, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed May 23, 1994, Ser. No. 247,319
Int. Cl.[6] B01J *29/06*
U.S. Cl. 502—61 43 Claims

1. A hydroconversion catalyst system, comprising:

a catalytically active matrix;

a support medium distributed through the matrix and comprising a silicious molecular sieve material; and

a catalytically active phase supported on the support medium and comprising a first metal selected from group IIIA of the periodic table of elements and a second metal selected from group VIB of the periodic table of elements.

5,576,257

ORGANOPHILIC CLAY WITH DUAL MODIFIERS, AND METHOD FOR ITS MANUFACTURE

Frank W. Jordan, Clarkston, Mich., assignor to T.O.W. Inc., Clarkston, Mich.

Filed Jun. 19, 1995, Ser. No. 491,635
Int. Cl.[6] C09C *1/42*
U.S. Cl. 502—62 19 Claims

1. An organically modified clay comprising:

a smectite clay having exchangeable, inorganic cations therein, wherein at least a portion of said inorganic cations have been substituted by a mixture of organic cations comprising $X_2R_2N^+$ and XYR_2N^+, wherein X is methyl, Y is benzyl and R is a saturated alkyl.

5,576,258

MODIFIED Y-ZEOLITE, PROCESS FOR THE PREPARATION THEREOF, AND MODIFIED Y-ZEOLITE-CONTAINING FCC CATALYST

Oscar R. Chamberlain; Eduardo F. Souza-Aguiar, both of Rio de Janeiro, Brazil, and Avelino C. Canos, Valencia, Spain, assignors to Petroleo Brasileiro S.A. Petrobras, Rio De Janeiro, Brazil

Filed Feb. 8, 1995, Ser. No. 385,251
Claims priority, application Brazil, Feb. 9, 1994, 9400475
Int. Cl.[6] B01J *21/00*
U.S. Cl. 502—73 6 Claims

1. A process for preparing a phosphorus-containing Y-zeolite which comprises:

a) exchanging a NaY zeolite with a solution of an ammonium salt in a manner so as to lower the amount of Na_2O in the zeolite to a value below 7 wt. %;

b) contacting the product obtained in step a) with an aqueous acidic aluminum-containing solution with a pH between 2 and 4, until the zeolite contains from 0.5 to 6 wt. % of exchanged aluminum, calculated as Al_2O_3;

c) isolating and washing the product of step b), and calcining the resulting product in a steam atmosphere at a temperature of from 450° to 800° C. for a period of from 15 minutes to 4 hours; and

d) treating the calcined zeolite obtained in step c) with a phosphorus-containing compound, to incorporate from 0.1 to 4 wt. % of phosphorus, calculated as P_2O_5, into the zeolite.

5,576,259

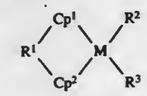
PROCESS FOR PRODUCING α-OLEFIN POLYMER

Saiki Hasegawa; Hisami Yasuda, and Akihiro Yano, all of Mie-ken, Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Filed Oct. 6, 1994, Ser. No. 319,035
Claims priority, application Japan, Oct. 14, 1993, 5-257072
Int. Cl.[6] B01J *31/12*
U.S. Cl. 502—117 1 Claim

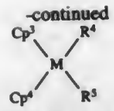
1. A catalyst for polymerization of olefin, consisting essentially of: a) a metallocene compound, b) an ionizing ionic compound, c) organoaluminum compound, and d) a Lewis base compound:

a) the metallocene compound being represented by General Formula (1) or (2):



(1)

-continued

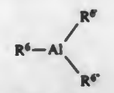


(2)

where Cp^1, Cp^2, Cp^3 and Cp^4 are independently a substituted or unsubstituted cyclopentadienyl, indenyl, or fluorenyl group; R^1 is a substituted or unsubstituted alkylene, dialkylsilanediyl, dialkylgermanediyl, alkylphosphinediyl, or alkylimino group, and R^1 links Cp^1 with Cp^2 by bridging; M is a titanium atom, a zirconium atom, or a hafnium atom; and R^2, R^3, R^4 and R^5 are independently a hydrogen atom, a halogen atom, a hydrocarbon group of 1 to 12 carbon atoms, an alkoxy group, or aryloxy group;

b) the ionizing ionic compound being a compound which is capable of changing the above a) metallocene compound into a cationic metallocene compound;

c) the organoaluminum compound being represented by General Formula (3):



(3)

where R^6, $R^{6'}$, and $R^{6''}$ are independently a hydrogen atom a halogen atom, an amino group, an alkyl group, an alkoxy group, or an aryl group, and at least one of R^6, $R^{6'}$, and $R^{6''}$ is an alkyl group;

d) the Lewis base compound being capable of donating an electron to the formed cationic metallocene compound, said Lewis base compound being present in an amount between 10 and 1,000 moles per mole of the metallocene compound.

5,576,260

METALLOCENE-BASED CATALYSTS

Andreas Winter, Glashütten; Frank Küber, Oberursel; Michael Aulbach, Hofheim; Bernd Bachmann, Eppstein; Robert Klein, Frankfurt am Main; Klaus Kühlein, Kelkheim; Walter Spaleck, Liederbach, and Christian Kohlpaintner, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

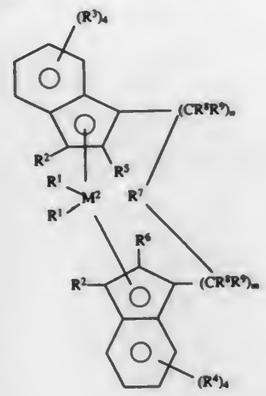
Division of Ser. No. 361,762, Dec. 22, 1994, Pat. No. 5,532,396. This application Jun. 7, 1995, Ser. No. 475,938

Claims priority, application Germany, Dec. 27, 1993, 43 44 689.2

Int. Cl.[6] C08F *4/64*

U.S. Cl. 502—117 **4 Claims**

1. A catalyst composition comprising a metallocene and a cocatalyst thereof, wherein the metallocene is a compound of the formula I



(I)

where

M^2 is a metal of group IVb, Vb or VIb of the Periodic Table,

the radicals R^1 are identical or different and are a hydrogen atom, a C_1–C_{10}-alkyl group, a C_1–C_{10}-alkoxy group, a C_6–C_{10}-aryl group, a C_6–C_{10}-aryloxy group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_7–C_{40}-alkylaryl group, a C_8–C_{40}-arylalkenyl group or a halogen atom,

the radicals R^2 are identical or different and are hydrogen, a halogen atom, a C_1–C_{10}-alkyl group which can be halogenated,

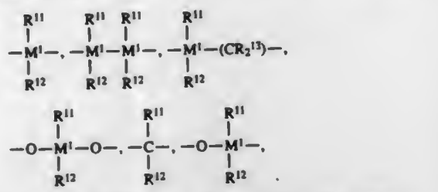
a C_6–C_{10}-aryl group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_7–C_{40}-alkylaryl group, a C_8–C_{40}-arylalkenyl group, a $—NR_2^{10}$, $—OR^{10}$, $—SR^{10}$, $—OSiR_3^{10}$, $—SiR_3^{10}$ or $—PR_2^{10}$ radical, where R^{10} is a halogen atom, a C_1–C_{10}-alkyl group or a C_6–C_{10}-aryl group,

the radicals R^3 are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{20}-alkyl group,a C_1–C_{20}-fluoroalkyl group, a C_6–C_{30}-aryl group, a C_6–C_{30}-fluoroaryl group, a C_1–C_{20}-alkoxy group, a C_2–C_{20}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group, a C_7–C_{40}-alkylaryl group, a $—NR_2^{10}$, $—OR^{10}$, $—SR^{10}$, $—OSiR_3^{10}$, $—SiR_3^{10}$ or $—PR_2^{10}$ radical, where R^{10} is a halogen atom, a C_1–C_{10}-alkyl group or a C_6–C_{10}-aryl group, or two or more radicals R^3 together with the atoms connecting them form a ring system; but not all radicals R^3 are hydrogen when all radicals R^4 are hydrogen;

the radicals R^4 are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{20}-alkyl group, a C_1–C_{20}-fluoroalkyl group, a C_6–C_{30}-aryl group, a C_6–C_{30}-fluoroaryl group, a C_1–C_{20}-alkoxy group, a C_2–C_{20}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group, a C_7–C_{40}-alkylaryl group, a $—NR_2^{10}$, $—OR^{10}$, $—SR^{10}$, $—OSiR_3^{10}$, $—SiR_3^{10}$ or $—PR_2^{10}$ radical where R^{10} is a halogen atom, a C_1–C_{10}-alkyl group or a C_6–C_{10}-aryl group, or two or more radicals R^4 together with the atoms connecting them form a ring system; but not all radicals R^4 are hydrogen when all radicals R^3 are hydrogen;

R^5 is a halogen atom, a C_1–C_{10}-alkyl group, which can be halogenated, a C_6–C_{10}-aryl group, a C_7–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_7–C_{40}-alkylaryl group, a C_8–C_{40}-arylalkenyl group, a $—NR_2^{10}$, $—OR^{10}$, $—SR^{10}$, $—OSiR_3^{10}$, $—SiR_3^{10}$ or $—PR_2^{10}$ radical, where R^{10} is a halogen atom, a C_1–C_{10}-alkyl group or a C_6–C_{10}-aryl group,

R^6 is a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group, which can be halogenated, a C_6–C_{10}-aryl group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_7–C_{40}-alkyloxy group, a C_8–C_{40}-arylalkenyl group, a $—NR_2^{10}$, $—OR^{10}$, $—SR^{10}$, $—OSiR_3^{10}$, $—SiR_3^{10}$ or $—PR_2^{10}$ radical, where R^{10} is a halogen atom, a C_1–C_{10}-alkyl group or a C_6–C_{10}-aryl group, R^7 is



$=BR^{11}$, $=AlR^{11}$, $-Ge-$, $-Sn-$, $-O-$, $-S-$, $=SO$,

$=SO_2$, $=NR^{11}$, $=CO$, $=PR^{11}$ or $=P(O)R^{11}$,

where

R^{11}, R^{12} and R^{13} are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group, a C_1–C_{20}-fluoroalkyl group, a C_6–C_{30}-aryl group, a C_6–C_{30}-fluoroaryl group, a C_1–C_{20}-alkoxy group, a C_2–C_{20}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group, a C_7–C_{40}-alkylaryl group, or R^{11} and R^{12} or R^{11} and R^{13} together with the atoms connecting them form a ring, M^1 is silicon, germanium or tin,

R^8 and R^9 are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{20}-alkyl group, a C_1–C_{20}-fluoroalkyl group, a C_6–C_{30}-aryl group, a C_6–C_{30}-fluoroaryl group, a C_1–C_{20}-alkoxy group, a C_2–C_{20}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-arylalkenyl group, a C_7–C_{40}-alkylaryl group, or R^8 and R^9 together with the atoms connecting them form a ring,

m and n are identical or different and are zero, 1 or 2, where m plus n is zero, 1 or 2, wherein the two indenyl ligands have substitution patterns different from one another on the six-member ring of the indenyl ligands.

5,576,261

HYDRODEAROMATIZATION CATALYST COMPOSITION

Chakka Sudhaker, Wappingers Falls; Frank Dolfinger, Jr., Poughkeepsie, and Max R. Cesar, Newburgh, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 990,381, Dec. 14, 1992, abandoned. This application Jul. 22, 1994, Ser. No. 279,362

Int. Cl.[6] B01J *23/24;27/049;27;051*

U.S. Cl. 502—185 **4 Claims**

1. A catalyst characterized by its ability, when sulfided, to hydrodearomatize an essentially asphaltene free hydrocarbon feedstock in the presence of hydrogen while simultaneously effecting hydrodesulfurization and hydrodenitrogenation of the hydrocarbon feedstock which comprises a carbon support bearing

(i) 1–40 wt % of at least one of tungsten or molybdenum, and

(ii) 0.1–15 wt % of nickel or cobalt or iron, and

(iii) 0.2–10 wt % of chromium, based on the total catalyst weight,

(iv) wherein the carbon support has a B.E.T. surface area of at least 800 m^2/g, a total pore volume for nitrogen of at least 0.4 cc/g, and average pore diameter by nitrogen adsorption, defined as

$$\text{Average Pore Diameter (Angstroms)} = \frac{40{,}000 \times \text{Pore Volume for nitrogen in cc/g}}{\text{Nitrogen } BET \text{ surface area in } m^2/g}$$

of between 16 and 50 Angstroms, and

(v) wherein the carbon supported catalyst is prepared by conventional impregnation methods using aqueous solutions of salts of the elements, and wherein the carbon support is preformed.

5,576,262

GLYCOL ETHER COMPOUNDS FOR THE PRODUCTION OF POLYOLEFIN CATALYSTS AND SUPPORTS

Dean A. Denton, Baltimore, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jun. 2, 1994, Ser. No. 252,860

Int. Cl.[6] B01J *21/06*

U.S. Cl. 502—233 **11 Claims**

11. A method of producing an oxide xerogel suitable for use as a polyolefin catalyst by removing water from an oxide hydrogel, the method comprising:

(a) contacting a water-containing oxide hydrogel selected from the group consisting of silica gel, chromium-silica cogel, silica-titania cogel, chromium-silica-titania tergel and mixtures thereof with an organic liquid selected from the group consisting of ethoxy ethyl acetate, tert-butoxy propanol, methoxy propyl acetate, n-butoxy propanol, ethoxy ethyl propionate and mixtures thereof in the amount of about 100–300% based on the volume of said hydrogel to form a mixture,

(b) removing water from the hydrogel resulting from step (a) by azeotropic distillation to form a chromium impregnated xerogel containing said organic liquid, and

(c) removing said organic liquid from said xerogel.

5,576,263

CHROMIUM CATALYST COMPOSITIONS AND ETHYLENE POLYMERIZATION PROCESSES THEREWITH

Rickey D. Badley, Dewey, Okla.; Kent W. Rollmann, Searcy, Ark., and Max P. McDaniel, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 28, 1993, Ser. No. 174,938

Int. Cl.[6] B01J *23/26*

U.S. Cl. 502—237 **18 Claims**

1. A chromium catalyst composition that is useful for homopolymerizing ethylene, or copolymerizing ethylene with a comonomer, to produce an ethylene polymer that has an increased amount of long chain branching and a decreased amount of die swell, said chromium catalyst composition comprises:

a support that comprises silica, wherein said support has a surface area (SA) to pore volume relationship as follows

$$0.5 \leqq \text{Pore volume} \leqq f(SA)$$

wherein said f(SA) is

$$(1.14\times10^{-7})(SA)^3-(1.19\times10^{-4})(SA)^2+(3.19\times10^{-2})(SA)+0.20;$$

and

a hexavalent chromium compound; wherein the surface concentration of said hexavalent chromium on said support is from 0.4 to 1 hexavalent chromium atoms per square nanometer.

5,576,264

RECEIVING-LAYER TRANSFER SHEET

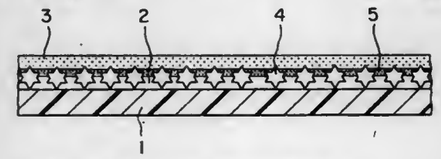
Takeshi Ueno; Yoshinori Nakano, and Ryohei Takiguchi, all of Tokyo-To, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed Nov. 22, 1994, Ser. No. 345,746

Claims priority, application Japan, Nov. 24, 1993, 5-315778; Nov. 24, 1993, 5-315779; Jan. 17, 1994, 6-015694

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **23 Claims**



1. A receiving layer transfer sheet comprising:

a substrate film; and

a transferable resin laminate formed on one surface of said substrate film, said transferable resin laminate comprising a dye receiving layer formed on said substrate film and an adhesive layer formed on said dye receiving layer, wherein at least one layer of said transferable resin laminate contains at least one of a foam and a foaming agent, and said adhesive layer comprises a mixture of at least two heat-sensitive adhesive materials having varying softening temperatures.

5,576,265

COLOR FILTER ARRAYS BY STENCIL PRINTING

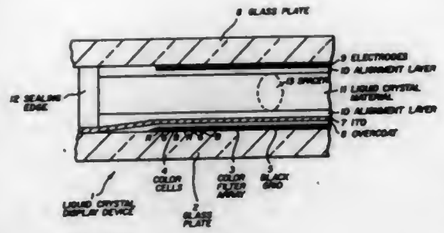
Charles DeBoer, Rochester; Michael E. Long, Bloomfield; Judith L. Fleissig, Rochester; Kathleen S. Hollis, Dalton, and John R. Debesis, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 26, 1995, Ser. No. 428,469

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **5 Claims**

1. A method for preparing a color filter array element comprising the steps of:



a) forming an assembly by providing:
  i) a support on which is coated a polymeric dye image-receiving layer;
  ii) a stencil pattern on the dye image-receiving layer with holes corresponding to the desired color pixel array pattern; and
  iii) a dye donor sheet over the stencil, the dye donor having a support film overcoated with a mixture of color dye, polymeric binder, and light absorber; and
b) exposing the assembly to high intensity light to briefly heat the dye layer and thereby transfer the dye from the donor to the polymeric dye receiving layer so that a colored pattern of pixel elements are formed in or on the image-receiving layer.
e) removing said stencil mask;
f) removing all unfused dye with a solvent wash; and
g) repeating steps b) to f) twice using different additive primary color dyes.

5,576,266

MAGNETIC LAYER IN DYE-DONOR ELEMENT FOR THERMAL DYE TRANSFER

Linda Flosenzier; Robert O. James, and Philip G. Walker, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 12, 1996, Ser. No. 599,692
Int. Cl.[6] B41M *5/035;5/38*
U.S. Cl. 503—227 **12 Claims**

5. A process of forming a dye transfer image comprising:
(a) imagewise-heating a dye-donor element comprising a support having on one side thereof a dye layer and on the other side thereof in the direct opposite area to at least a portion of said dye layer, a magnetic recording layer and a slipping layer, in that order, and
(b) transferring a dye image to a dye-receiving element to form said dye transfer image.

5,576,267

METHOD OF MAKING A COLOR FILTER ARRAY ELEMENT

Charles D. DeBoer, Palmyra, and Werner N. Fassler, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1996, Ser. No. 633,283
Int. Cl.[6] B41M *5/035;5/38;* G02B *5/22*
U.S. Cl. 503—227 **7 Claims**

1. A method of preparing a color filter array element comprising the following steps:
a) coating a glass support with a polymeric dye image-receiving layer;
b) coating said polymeric dye image-receiving layer with at least one additive primary color dye from a solvent that does not swell or penetrate said polymeric dye image-receiving layer;
c) placing a stencil mask of a desired pixel shape in intimate contact with the surface of said polymeric dye image-receiving layer;
d) fusing the dye into said polymeric dye image-receiving layer by heating or by using a solvent vapor treatment using a solvent which will swell or penetrate said dye image-receiving layer;

5,576,268

LASER RECORDING ELEMENT

Mitchell S. Burberry, Webster, and Bruce C. Campbell, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1996, Ser. No. 633,397
Int. Cl.[6] B41M *5/035;5/38*
U.S. Cl. 503—227 **11 Claims**

1. A laser recording element comprising a base having thereon a dye layer comprising an image dye dispersed in a polymeric binder, said dye layer having an infrared-absorbing material associated therewith, said base comprising a composite film laminated to at least one side of a support, said dye layer being on the composite film side of said base, and said composite film comprising a microvoided thermoplastic core layer and at least one substantially void-free thermoplastic surface layer.

9. A process of forming a dye image comprising imagewise-heating, by means of a laser, the laser recording element of claim 1, said laser exposure taking place through the dye side of said element, and causing dye to be removed imagewise to obtain said dye image in said recording element.

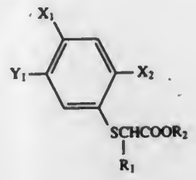
5,576,269

HERBICIDAL COMPOSITION COMPRISING OXADIAZOLO-OR THIADIAZOLO-[3,4A]-PYRIDAZINE DERIVATIVES, AN N-ALKYLPYRROLIDONE, AND ORGANIC SOLVENT

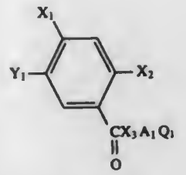
Yoshinori Hirabayashi, Shizuoka; Shigeki Fujita, Yaizu; Kanji Nakamura, and Susumu Kato, both of Shizuoka, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 185,965, Feb. 8, 1994, abandoned. This application Aug. 11, 1995, Ser. No. 514,519
Claims priority, application Japan, Jul. 10, 1992, 4-206216
Int. Cl.[6] A01N *43/90*
U.S. Cl. 504—236 **15 Claims**

1. A herbicidal composition, comprising a condensed heterocyclic compound of the formula:

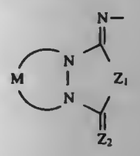


or

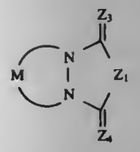


wherein each of X_1 and X_2 is hydrogen;
R_1 is hydrogen or halogen;
R_2 is hydrogen, alkyl, cycloalkyl or alkoxyalkyl;
X_3 is an oxygen atom or a sulfur atom;

A_1 is a linear or branched alkylene;
Q_1 is phenyl, halogen-substituted phenyl, cycloalkoxycarbonyl, alkylthio, alkoxycarbonyl, alkoxyalkoxycarbonyl, alkoxycarbonylalkylthio or alkylthioalkoxycarbonyl, and
Y_1 is a group of the formula:



or



wherein each of Z_1, Z_2, Z_3 and Z_4 is an oxygen atom or a sulfur atom; and
M is C_4-alkylene or C-alkenylene, and
N-alkyl-2-pyrrolidone and another organic solvent,
and wherein sad another organic solvent is selected from the group consisting of a glycol, an alcohol, a vegetable oil, a mineral oil, an aromatic hydrocarbon, a fatty acid and an ester, and is present in an amount which increases the storage stability of the composition.

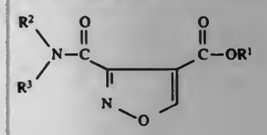
5,576,270

ISOXAZOLECARBOXAMIDES, THEIR PREPARATION AND THEIR USE

Volker Maywald, Ludwigshafen; Thomas Knekenhoehner, Boehl-Iggelheim; Peter Muenster, Neulussheim; Wolfgang von Deyn, Neustadt; Helmut Walter, Obrigheim; Matthias Gerber, Limburgerhof; Karl-Otto Westphalen, Speyer, and Uwe Kardorff, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP93/00918, § 371 Date Sep. 29, 1994, § 102(e) Date Sep. 29, 1994, PCT Pub. No. WO93/22295, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 16, 1994, Ser. No. 313,176
Claims priority, application Germany, Apr. 29, 1992, 42 14 010.2
Int. Cl.[6] A61K *31/42;* C07D *261/06*
U.S. Cl. 504—271 **5 Claims**

1. An isoxazolecarboxamide of the formula I



where
R^1 is unsubstituted C_1–C_6-alkyl;
R^2 is hydrogen;
R^3 is unsubstituted C_1–C_6-alkyl;
or the plant-tolerated salts thereof.

5,576,271

COMPOSITION AND PROCESS FOR STABILIZING VISCOSITY OR CONTROLLING WATER LOSS OF POLYMER–CONTAINING WATER BASED FLUIDS

Bharat B. Patel, Bartlesville, Okla., assignor to Phillips Petroleum Compay, Bartlesville, Okla.

Continuation-in-part of Ser. No. 61,639, May 12, 1993, abandoned. This application Aug. 31, 1994, Ser. No. 298,740
Int. Cl.[6] C09K *7/02*
U.S. Cl. 507—110 **48 Claims**

30. A process for an oil field operation comprising contacting a water-based fluid with a composition which comprises a polymer; a magnesium compound; and a metal aluminate wherein said polymer is selected from the group consisting of a polysaccharide, a cellulose ether, an acrylamide-containing polymer, and combinations of two or more thereof; said metal aluminate is selected from the group consisting of an alkali metal aluminate, an alkaline earth metal aluminate, and combinations of two or more thereof; and said polymer, metal aluminate, and magnesium compound are each present in an effective amount sufficient to viscosify said water-based fluid.

5,576,272

GREASE COMPOSITION FOR CONSTRUCTION EQUIPMENTS

Satoshi Okawa, Kawasaki; Akimi Kimura, and Hiroshi Kimura, both of Fujisawa, all of Japan, assignors to Komatsu Ltd., and Kyodo Yushi Co., Ltd., both of Tokyo, Japan

Filed Mar. 19, 1996, Ser. No. 616,476
Claims priority, application Japan, Aug. 4, 1995, 7-199349
Int. Cl.[6] C10M *125/28;125/24*
U.S. Cl. 508—159 **10 Claims**

1. A grease composition for construction equipment comprising a lubricating grease, a) 1 to 5% by weight of phosphate glass and b) 1 to 5% by weight of a sulfur-phosphorus type extreme-pressure additive based on the total weight of the grease composition.

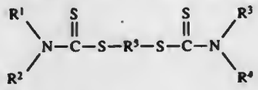
5,576,273

LUBRICATING COMPOSITIONS CONTAINING BISMUTH COMPOUNDS

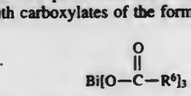
Thomas J. Karol, Norwalk; Steven G. Donnelly, New Fairfield, and Ronald J. Hiza, Monroe, all of Conn., assignors to R.T. Vanderbilt Company, Inc., Norwalk, Conn.

Filed Nov. 20, 1995, Ser. No. 560,669
Int. Cl.[6] C10M *129/16;135/18;141/12;157/10*
U.S. Cl. 508—364 **10 Claims**

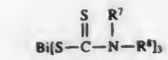
1. A synergistic extreme pressure composition consisting of
(a) a bisdithiocarbamate compound of the formula



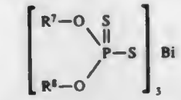
wherein R^1, R^2, R^3 and R^4 are aliphatic hydrocarbyl groups having 2 to 13 carbon atoms and R^5 is an alkylene group having 1 to 8 carbon atoms; and
(b) a bismuth compound selected from the group consisting of
(i) bismuth carboxylates of the formula



wherein R^6 represents alkyl and alkenyl group, fatty alkyl radical and naphthenic radical, (ii) bismuth dithiocarbamates of the formula



wherein R^7 and R^8 are hydrocarbyl groups selected independently from alkyl, alkenyl, cycloalkyl, aryl, alkaryl and arylalkyl groups, and (iii) bismuth phosphorodithioates of the formula



wherein R^7 and R^8 represent hydrocarbyl groups selected independently from alkyl, alkenyl, cycloalkyl, aryl, alkaryl and arylalkyl groups and the ratio of the bisdithiocarbamate compound to the bismuth compound based on the weight of bismuth is about 1 to 0.0035 to about 1 to 0.089.

5,576,274

FUEL AND LUBRICANT ADDITIVES DERIVED FROM DIHYDROXY-AROMATIC COMPOUNDS

Abhimanyu O. Patil, Westfield, N.J., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 134,246, Oct. 8, 1993, Pat. No. 5,399,277. This application Mar. 20, 1995, Ser. No. 406,828

Int. Cl.[6] C10M *149/12*; C10L *1/22*; C07C *229/62*

U.S. Cl. 508—560 **20 Claims**

1. A process for the production of fuel and lubricant additives, said process comprising:

providing an alkylated dihydroxyaromatic compound having been alkylated with a polymer alkylating agent having a number average molecular weight of at least about 700 and containing at least one reactive carbon-carbon double bond; and

aminating said alkylated dihydroxyaromatic compound with at least one amine under conditions effective in oxidizing the hydroxyl groups of said alkylated dihydroxyaromatic compound to carbonyl groups.

5,576,275

OIL SOLUBLE POLYALKYLENE GLYCOLS

John R. Mozey, Southhampton, England, assignor to BP Chemicals Limited, London, England

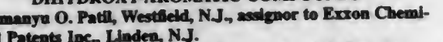
Continuation of Ser. No. 938,361, Aug. 31, 1992, abandoned. This application Jan. 24, 1995, Ser. No. 377,481

Claims priority, application United Kingdom, Sep. 19, 1991, 9119291

Int. Cl.[6] C10M *145/34*

U.S. Cl. 508—562 **7 Claims**

1. A sequential block copolymer of the formula:



containing

(i) a moiety R^1X derived from a starter molecule having at least one active hydrogen wherein R^1 is either a C_{10}–C_{24} alkyl or a C_9–C_{24} alkaryl group, X is 0, S or N,

(ii) a polymeric block derived from at least one alkylene oxide of formula $C_xH_{2x}O$ wherein x is either 3 or 4, and

(iii) a polymeric block derived from at least one alkylene oxide of formula $C_yH_{2y}O$ wherein y is an integer in the range from 12 to 16, and

wherein q is 1 when X is O or S, and q is 2 when X is N; and m and n are such that the molecular weight is in the range from 600 to 4000; and the $(C_yH_{2y}O)$ polymeric block derived from the alkylene oxide of formula $C_yH_{2y}O$ forms from 1 to 40% by weight of the copolymer, and the polymeric block derived from the alkylene oxide of formula $C_xH_{2x}O$ constitutes the first polymeric block of the sequential block copolymer and is linked directly to the moiety R^1X.

5,576,276

METHOD OF CLEANING OPHTHALMIC LENSES WITH ALKALINE COMPOSITION

Fu-Pao Tsao, Lawrenceville, and Rosalind Dandridge, Doraville, both of Ga., assignors to Ciba Geigy Corp., Tarrytown, N.Y.

Division of Ser. No. 258,909, Jun. 13, 1994, which is a continuation of Ser. No. 993,500, Dec. 18, 1992, abandoned, which is a continuation of Ser. No. 748,603, Aug. 22, 1991, abandoned, which is a continuation of Ser. No. 451,488, Dec. 15, 1989, abandoned. This application Apr. 3, 1995, Ser. No. 415,817

Int. Cl.[6] C11D *1/38*

U.S. Cl. 510—112 **15 Claims**

1. A method of removing proteinaceous deposits from an ophthalmic lens, comprising the steps of:

(a) contacting the contact lens an aqueous solution;

(b) contacting said aqueous solution with a tonicity builder including a water soluble salt compatible with occular tissue; and

(c) contacting said aqueous solution with a pH regulator,

whereby the pH regulator maintains the pH of the aqueous solution contacting the lens from about 7.5 to 11.5 for a cleaning period of 10 minutes to 24 hours.

5,576,277

GRANULAR DETERGENT COMPOSITIONS

Fiona S. MacBeath, and Suzanne Powell, both of Gosforth, Great Britain, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US93/01897, § 371 Date Sep. 8, 1994, § 102(e) Date Sep. 8, 1994, PCT Pub. No. WO93/18124, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 5, 1993, Ser. No. 295,892

Claims priority, application United Kingdom, Mar. 10, 1992, 9205189

Int. Cl.[6] C11D *1/52;1/83;1/28;3/32*

U.S. Cl. 510—113 **14 Claims**

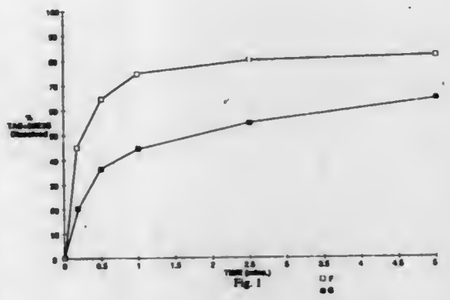


Fig. 1

1. A particulate composition which is essentially free of alkylbenzene sulfonate and comprises:

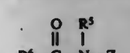
(a) from 5 to 60% by weight of a primary anionic or nonionic surfactant selected from the group consisting of;

(1) a C_{14}–C_{20} alkyl sulfate salt;

(2) an aliphatic C_{12}–C_{20} alkane sulfonate salt;

(3) a C_{12}–C_{20} alkyl methyl ester sulfonate salt;

(4) a polyhydroxy fatty acid amide having the formula



where R^5 is H, C_1–C_4 hydrocarbyl, 2 hydroxyethyl, 2 hydroxypropyl or a mixture thereof, R^6 is C_{11}–C_{31} hydrocarbyl and Z is a polyhydroxyhydrocarbyl having a linear hydrocarbon chain with at least three hydroxy groups directly connected to said chain or an alkyloxylated derivative thereof; and

(5) mixtures of any of the foregoing;

(b) 0.25–5.0% of a water soluable C_{11}–C_{18} alkyl ethyoxysulfate salt containing an average of from 1 to 7 ethoxy groups per mole;

(c) from 15 to 95% by weight of an organic and/or inorganic builder salt or a mixture of such salts; and

wherein components (a) and (b) are in intimate admixture and the weight ratio of (a):(b) is between 2:1 to 19:1, wherein said particulate composition is admixed in a detergent composition having density greater than 550 grams per liter, and wherein the total weight of (a) and (b) constitutes 5 to 10% by weight of the detergent composition.

5,576,278

STABLE LIQUID ENZYME COMPOSITIONS AND METHODS OF USE

Barry F. Van Duzee, Weatherford, and Ralph P. Stone, Arlington, both of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Jun. 7, 1995, Ser. No. 477,000

Int. Cl.[6] C11D *3/386;3/02;3/20*

U.S. Cl. 510—114 **17 Claims**

1. A stable, concentrated, liquid enzyme composition for cleaning contact lenses comprising:

an enzyme in an amount effective to clean the lens, said enzyme having a gel electrophoretic ratio of at least 99:1; 4–8% weight/volume of a borate compound; 50–70% weight/volume of a 2–3 carbon polyol; and water; wherein the enzyme is substantially undenatured upon dilution in an aqueous solvent.

5,576,279

STABLE CONDITIONING SHAMPOO CONTAINING AN ANIONIC SURFACTANT A FATTY ALCOHOL, AND POLYETHYLENEIMINE

Daniel R. Pyles, Chicago, Ill., assignor to Helene Curtis, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 305,069, Sep. 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 63,015, May 17, 1993, abandoned. This application Oct. 3, 1995, Ser. No. 538,249

Int. Cl.[6] C11D *1/02;3/37*

U.S. Cl. 510—122 **13 Claims**

1. A hair conditioning shampoo composition comprising an emulsion of water; about 5 to about 65 percent by weight of an anionic cleaning surfactant; about 0.01 to about 4 percent by weight of a cationic polyethyleneimine, and from about 0.5 to about 10 weight percent of a long-chain fatty alcohol having predominantly about 8 to about 18 carbons in the long chain, wherein lauryl alcohol is included in the composition in a weight ratio of lauryl alcohol to polyethyleneimine of about 0.75 to 1 to about 20 to 1; said composition having a pH of about 4 to about 8 wherein the composition is stable and wherein no particles are visible when the composition is smeared on a watch glass..

5,576,280

SOLID PERSONAL CLEANSING COMPOSITION COMPRISING A PRECOMPLEX OF CATIONIC SURFACTANTS AND ANIONIC MATERIALS

Suman K. Chopra, Dayton; Teresa R. Carale, Princeton, and Amrit Patel, Dayton, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 21, 1994, Ser. No. 327,158

Int. Cl.[6] C11D *1/65;1/86;17/00*

U.S. Cl. 510—155 **11 Claims**

1. A solid personal cleansing composition comprising

a. one or more cationic surfactant precomplexed with one or more anionic hydrotropes and

b. one or more non complexed anionic materials selected from the group consisting of anionic surfactants and anionic hydrotropes wherein no more than about 25 mole % of total anionic materials present in the composition is precomplexed and the anionic material is from about 1 to 99 wt % of the composition.

5,576,281

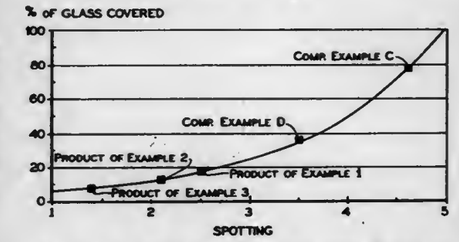
BIOGRADABLE LOW FOAMING SURFACTANTS AS A RINSE AID FOR AUTODISH APPLICATIONS

Henry S. Bunch, Stamford; Theodore Groom, Northford; Frank R. Groser, Bethany; Michael Scardera, Hamden; Tom S. Targos, New Haven, all of Conn., and Arthur R. Vanover, Brandenburg, Ky., assignors to Olin Corporation, Cheshire, Conn.

Filed Apr. 5, 1993, Ser. No. 43,108

Int. Cl.[6] C11D *1/68*

U.S. Cl. 510—220 **7 Claims**



1. An automatic dishwasher composition comprising an epoxy-capped poly(oxyalkylated) alcohol represented by the formula:

wherein R_1 is a linear, aliphatic hydrocarbon radical having from 4 to 18 carbon atoms including mixtures thereof; and R_2 is a linear, aliphatic hydrocarbon radical having from 2 to 26 carbon atoms including mixtures thereof; x is an integer having a value from 1 to 3; y is an integer having a value from 5 to 30, the ratio of x:y being between about 1:5 and about 1:30, and at least one component selected from the group consisting of detergent builder, bleach, anti-wear agent, and mixtures thereof.

5,576,282

COLOR-SAFE BLEACH BOOSTERS, COMPOSITIONS AND LAUNDRY METHODS EMPLOYING SAME

Gregory S. Miracle; Michael E. Burns, both of Hamilton; Patti J. Kellett, and James C. T. R. Burckett-St. Laurent, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 11, 1995, Ser. No. 526,623

Int. Cl.[6] C11D *3/28;3/39;3/395*; D06L *3/02*; C07D *217/00*

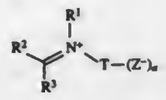
U.S. Cl. 510—276 **31 Claims**

1. A bleaching composition comprising:

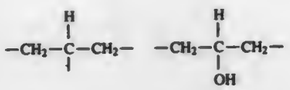
VOL 1192 ISS 3 NO 19 1996 UMI

from about 0.01% to about 60% by weight of a peroxygen source and

from about 0.01% to about 10% by weight of a bleach booster selected from the group consisting of zwitterionic imines, anionic imine polyions having a net negative charge of from about −1 to about −3, and mixtures thereof, said bleach booster has the formula:



wherein R^1–R^3 are moieties having a total charge of from about 0 to about −1; R^1 and R^2 form part of a common ring; T is selected from the group consisting of: $—(CH_2)_b—$ wherein b is from about 1 to about 8, $—(CH(R^5))—$ wherein R^5 is C_1–C_8 alkyl, $—CH_2(C_6H_4)—$,



and $—(CH_2)_d(E)(CH_2)_f—$ wherein d is from 2 to 8, f is from 1 to 3 and E is —C(O)O—, —C(O)NR⁶— or:



wherein R^6 is H or C_1–C_4 alkyl; Z is covalently bonded to T; and Z is selected from the group consisting of $—CO_2^-$, $—SO_3^-$ and $—OSO_3^-$; and a is either 1 or 2.

5,576,283

LIQUID DETERGENTS CONTAINING A PEPTIDE ALDEHYDE

James P. Johnston, Overijse; Regine Labeque, Neder-over-Heembeek, both of Belgium; Pierre M. A. Lenoir, Zurich, Switzerland; Christiaan A. J. K. Thoen, Haasdonk, Belgium, and John M. McIver, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 8, 1995, Ser. No. 381,892

Claims priority, application European Pat. Off., Aug. 14, 1992, 92870121.8

Int. Cl.[6] C11D *3/386*

U.S. Cl. 510—321 **6 Claims**

1. A liquid aqueous detergent composition comprising:

(a) from 1% to 80% of a detersive surfactant;

(b) from 0.0001% to 1.0% of active proteolytic enzyme or mixtures thereof; and

(c) from 0.00001% to 5% of a peptide aldehyde comprising 2–3 amino acids with a C terminal end aldehyde of an amino acid and the N-terminal end protected by a carbamate or an urea group.

5,576,284

DISINFECTING CLEANSER FOR HARD SURFACES

Gregory van Buskirk, Danville, Calif.; Karl-Heinz Disch, Haan, Germany; Carsten Friese, Hamburg, Germany; Eva Klewert, Duesseldorf, and Birgit Middelhauve, Monheim, Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Filed Sep. 26, 1994, Ser. No. 312,354

Int. Cl.[6] C11D *1/72;1/825;3/48*

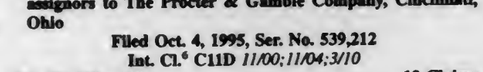
U.S. Cl. 510—384 **4 Claims**

1. A hard surface disinfectant-containing cleaner composition, said composition comprising from 0.01 to 5% by weight of a disinfectant comprising nitrogenous substances obtained by reacting

∝)— N-substituted propylene diamines corresponding to Formula III

$$R^3\text{-}N(R^4)\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}NH_2 \quad \text{(III)}$$

in which R^3 represents a linear alkyl group with 6 to 22 carbon atoms, and in which R^4 represents H or CH_2 -CH_2-CH_2-NH_2 with—compounds corresponding to Formula IV



(IV)

in which R^5 represents an alkyl group with 1 to 4 carbon atoms or hydrogen atom,

β) and optionally, further reacting the products obtained according to α) with ethylene oxide or propylene oxide,

γ) and optionally, with salts of the products obtained according to α) or β) with inorganic or organic acids from 0.2 to 10% by weight of an alkyl or alkenyl oligoglycoside corresponding to Formula I

$$R^1\text{-}O\text{-}[G]_p \quad \text{(I)}$$

in which R^1 represents a linear or branched alkyl or alkenyl group with 8 to 22 carbon atoms, [G] represents a glycose unit with 5 or 6 carbon atoms, and p represents a number from 1 to 10, and from 0.1 to 10% by weight of an alkyl ether corresponding to Formula II



(II)

in which R^2 represents a linear or branched aliphatic alkyl or alkenyl group with 8 to 18 carbon atoms, x represents 0 or a number of up to 3, and y represents a number from 1 to 15, all weights being based on the weight of said composition.

5,576,285

PROCESS FOR MAKING A LOW DENSITY DETERGENT COMPOSITION BY AGGLOMERATION WITH AN INORGANIC DOUBLE SALT

Paul A. France, West Chester; Steven B. Rogers, Cincinnati, both of Ohio, and Wayne E. Beimesch, Covington, Ky., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 4, 1995, Ser. No. 539,212

Int. Cl.[6] C11D *11/00;11/04;3/10*

U.S. Cl. 510—444 **13 Claims**

1. A process for preparing a low density detergent composition comprising the steps of:

(a) agglomerating a detergent surfactant paste and dry starting detergent material in a high speed mixer to obtain detergent agglomerates, wherein said dry staring detergent material includes $Na_2SO_4.Na_2CO_3$ and sodium carbonate in a weight ratio of from about 1:10 to about 10:1; and

(b) drying said detergent agglomerates so as to form said detergent composition having a density of from about 300 g/l to 500 g/l.

5,576,286

LIQUID POTPOURRI AND METHOD OF MANUFACTURE

Randy Y. Karp, Long Grove; Merle Tresser, Chicago, both of Ill.; John V. Pascale; Gregory S. Bennett, both of Granger, Ind., and Bruce Bennett, Barrington, Ill., assignors to Scentex, Inc., Chicago, Ill.

Continuation of Ser. No. 183,647, Jan. 18, 1994, abandoned. This application Jul. 13, 1995, Ser. No. 501,884

Int. Cl.[6] A61K *7/46*

U.S. Cl. 512—2 **25 Claims**

1. A method for manufacturing a liquid potpourri having a long shelf-life comprising the steps of:

a. adding water at room temperature to a container;

b. adding slowly, while stirring, hydroxypropylcellulose in an amount equal to 1.0%–3.0% of the final volume;

c. stirring until all of said hydroxypropylcellulose is evenly dispersed in said water;

d. adding a polymer of acrylic acid cross-linked with allyl ethers of pentaerythritol or allyl ethers of sucrose in an amount between 0.1% and 0.5% of the total final volume and stirring until said copolymer is fully dispersed;

e. adding water soluble polymer encapsulated fragrance droplets, in an amount equal to 1%–2% of the total volume and then stirring slowly and gently to disperse said capsules;

f. adjusting the Ph of the liquid potpourri solution to between 5 and 7 to form a liquid potpourri which releases said fragrance only upon the application of heat between about 60° C. and about 70° C.

19. A liquid potpourri solution having a long shelf-life and a pH between 5 and 7 comprising:

a. A polymer of acrylic acid cross-linked with allyl ethers of pentaerythritol or allyl ethers of sucrose in an amount between 0.1% and 0.5% of the total volume of said potpourri;

b. hydroxypropylcellulose in an amount between 1.0% and 3.0% of the total volume of said liquid potpourri solution;

c. water, in an amount between 94.0% and 97.8% of the total volume of said liquid potpourri solution;

d. water soluble polymer encapsulated fragrance droplets, in an amount between 1% and 2% of the total volume of said liquid potpourri solution, said fragrance being released on the application of heat between about 60° C. and about 70° C.

5,576,287

METHOD FOR TREATING ACUTE RENAL DISEASE AND FAILURE

Gary P. Zaloga, and Pamela Roberts, both of Winston-Salem, N.C., assignors to Wake Forest University, Winston-Salem, N.C.

Filed Apr. 29, 1994, Ser. No. 236,501

Int. Cl.[6] A61K *38/00;31/415;31/40;31/195*

U.S. Cl. 514—2 **17 Claims**

1. A method for treating or preventing acute renal failure comprising the step of administering to a patient having acute renal failure or at risk of same a nutritional composition comprising a source protein including meat proteins, in an amount effective to increase renal blood flow and glomerular filtration rate in said patient.

5,576,288

FIBROBLAST GROWTH FACTOR CONJUGATES

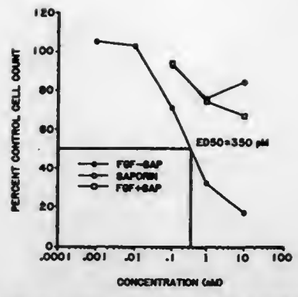
Douglas A. Lappi, Del Mar, and J. Andrew Baird, San Diego, both of Calif., assignors to The Salk Institute For Biological Studies, La Jolla, Calif.

Continuation of Ser. No. 24,682, Mar. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 344,109, Apr. 27, 1989, Pat. No. 5,191,067. This application Jun. 10, 1994, Ser. No. 257,958

Int. Cl.[6] A61K *38/18;38/45;* **C07K** *14/50;14/415*

U.S. Cl. 514—2 **9 Claims**

1. A conjugate, comprising a cytotoxic agent and a polypeptide reactive with a high affinity fibroblast growth factor (FGF) receptor, wherein the polypeptide reactive with the receptor is selected from the group of polypeptides consisting of polypeptides that exhibit FGF mitogenic activity mediated through binding to an FGF receptor and fragments of polypeptides that exhibit FGF mitogenic activity mediated through binding to an FGF receptor and that bind to an FGF receptor and are transported into the cell, thereby internalizing the linked cytotoxic agent.



5,576,289

METHODS FOR TREATING MOTOR DEFICITS

John McMichael, Delanson, N.Y., assignor to Milkhaus Laboratory, Delanson, N.Y.

Filed Apr. 13, 1995, Ser. No. 421,231

Int. Cl.[6] A61K *38/00*

U.S. Cl. 514—2 **4 Claims**

1. A method for treating motor deficit symptoms of a disease state characterized by a motor deficit selected from the group consisting of multiple sclerosis and Tourette's Syndrome, comprising the step of:

administering an effective amount of streptolysin O in a pharmaceutically-acceptable vehicle to a patient having a disease characterized by a motor deficit.

5,576,290

COMPOSITIONS AND METHODS FOR THE DIAGNOSIS AND TREATMENT OF PSYCHOGENIC ERECTILE DYSFUNCTION

Mac E. Hadley, Tucson, Ariz., assignor to Competitive Technologies, Inc., Westport, Conn.

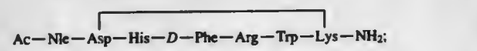
Continuation of Ser. No. 43,159, Apr. 5, 1993, abandoned. This application Jun. 24, 1994, Ser. No. 264,921

Int. Cl.[6] A61K *38/08;38/12;49/00;* **C07K** *14/685*

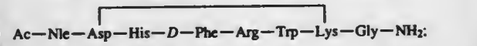
U.S. Cl. 514—11 **17 Claims**

1. A method for bringing about the erection of the penis in an animal biologically and physically capable of achieving an erection which comprises administering to said animal an erectogenic amount of a peptide selected from the group consisting of:

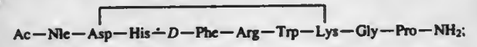
Ac—Nle—Asp—His—*D*—Phe—Arg—Trp—Lys—NH_2;



Ac—Nle—Asp—His—*D*—Phe—Arg—Trp—Lys—NH_2;

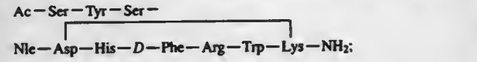


Ac—Nle—Asp—His—*D*—Phe—Arg—Trp—Lys—Gly—NH_2;

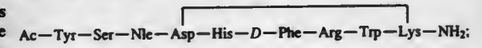


Ac—Nle—Asp—His—*D*—Phe—Arg—Trp—Lys—Gly—Pro—NH_2;

Ac—Ser—Tyr—Ser—

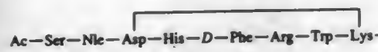


Nle—Asp—His—*D*—Phe—Arg—Trp—Lys—NH_2;



Ac—Tyr—Ser—Nle—Asp—His—*D*—Phe—Arg—Trp—Lys—NH_2;

-continued



Ac—Ser—Nle—Asp—His—*D*—Phe—Arg—Trp—Lys—NH_2;

a mixture of peptides taken from said group.

5,576,291

ACTIVATED FACTOR VIII AS A THERAPEUTIC AGENT AND METHOD OF TREATING FACTOR VIII DEFICIENCY

Joseph E. Curtis, Glendora; Sam L. Helgerson, Pasadena, both of Calif.; Roger L. Lundblad, Chapel Hill, N.C., and Shu-Len Liu, Cerritos, Calif., assignors to Baxter International Inc., Deerfield, Ill.

Filed Sep. 13, 1993, Ser. No. 120,894

Int. Cl.[6] A61K *38/36;38/37;* **C07K** *14/745;14/755*

U.S. Cl. 514—12 **20 Claims**

1. A method of treating a patient having a deficiency of Factor VIII available to produce hemostasis with a therapeutically effective amount of stabilized, activated Factor VIII to produce a hemostatic condition in said patient.

5,576,292

BIOLOGICALLY ACTIVE BACTERICIDAL/PERMEABILITY-INCREASING PROTEIN FRAGMENTS

Peter Elsbach, and Jerrold Weiss, both of New York, N.Y., assignors to New York University, New York, N.Y.

Continuation of Ser. No. 754,284, Aug. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 621,473, Dec. 3, 1990, abandoned, which is a continuation-in-part of Ser. No. 228,035, Aug. 5, 1988, abandoned, which is a continuation-in-part of Ser. No. 84,335, Aug. 11, 1987, abandoned. This application Dec. 23, 1993, Ser. No. 173,968

Int. Cl.[6] A61K *38/16*

U.S. Cl. 514—12 **2 Claims**

1. A method for inhibiting the endotoxin-mediated release of Tumor Necrosis Factor in a mammal comprising administering to said mammal an effective amount of a peptide selected from the group consisting of a peptide having the amino acid sequence from about amino acid residue 200 to about amino acid residue 456 as set out in FIG. 5, a peptide having the amino acid sequence from about amino acid residue 204 to about amino acid residue 456 as set out in FIG. 5 and mixtures thereof.

5,576,293

INHIBITORS OF FARNESYL-PROTEIN TRANSFERASE

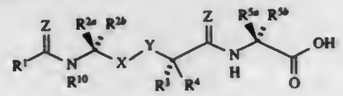
S. Jane deSolms, Norristown; Victor M. Garsky, Blue Bell; Elizabeth A. Giuliani, Lansdale; Robert P. Gomez, Perkasie; Samuel L. Graham, Schwenksville; Gerald E. Stokker, Gwynedd Valley, and Catherine M. Wiscount, Allentown, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 129,868, Sep. 30, 1993, abandoned. This application Sep. 29, 1994, Ser. No. 314,987

Int. Cl.[6] A61K *38/00;* **C07K** *5/00;7/00;17/00*

U.S. Cl. 514—19 **25 Claims**

1. A compound which inhibits Ras farnesyl-transferase having the formula I:



wherein:

R^1 is selected from:

a) heterocycle, and

b) C_1–C_{10} alkyl, which is substituted with heterocycle and which is optionally substituted with one or more of C_1–C_4 alkyl, hydroxy or amino groups;

R^{2a} and R^{2b} are independently selected from:

a) a side chain of a naturally occurring amino acid,

b) an oxidized form of a side chain of a naturally occurring amino acid which is:

i) methionine sulfoxide, or

ii) methionine sulfone,

c) substituted or unsubstituted C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_3–C_{10} cycloalkyl, aryl or heterocyclic group, wherein the substituent is selected from F, Cl, Br, NO_2, R^8O—, $R^9S(O)_m$—, $R^8C(O)NR^8$—, CN, $(R^8)_2N$—$C(NR^8)$—, $R^8C(O)$—, $R^8OC(O)$—, N_3, —$N(R^8)_2$, $R^9OC(O)NR^8$— and C_1–C_{20} alkyl, and

d) C_1–C_6 alkyl substituted with an unsubstituted or substituted group selected from aryl, heterocycle and C_3–C_{10} cycloalkyl; or R^{2a} and R^{2b} are combined to form —$(CH_2)_s$—;

R^3 and R^4 are independently selected from:

a) a side chain of a naturally occurring amino acid,

b) an oxidized form of a side chain of a naturally occurring amino acid which is:

i) methionine sulfoxide, or

ii) methionine sulfone, and

c) substituted or unsubstituted C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_3–C_{10} cycloalkyl, aryl or heterocyclic group, wherein the substituent is selected from F, Cl, Br, $N(R^8)_2$, NO_2, R^8O—, $R^9S(O)_m$—, $R^8C(O)NR^8$—, CN, $(R^8)_2N$—$C(NR^8)$—, $R^8C(O)$—, $R^8OC(O)$—, N_3, —$N(R^8)_2$, $R^9OC(O)NR^8$— and C_1–C_{20} alkyl, and

d) C_1–C_6 alkyl substituted with an unsubstituted or substituted group selected from aryl, heterocyclic and C_3– C_{10} cycloalkyl; or

R^3 and R^4 are combined to form —$(CH_2)_s$—;

R^{5a} and R^{5b} are independently selected from:

a) a side chain of a naturally occurring amino acid,

b) an oxidized form of a side chain of a naturally occurring amino acid which is:

i) methionine sulfoxide, or

ii) methionine sulfone,

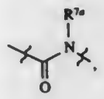
c) substituted or unsubstituted C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_3–C_{10} cycloalkyl, aryl or heterocycle group, wherein the substituent is selected from F, Cl, Br, $N(R^8)_2$, NO_2, R^8O—, $R^9S(O)_m$—, $R^8C(O)NR^8$—, CN, $(R^8)_2N$—$C(NR^8)$—, $R^8C(O)$—, $R^8OC(O)$—, N_3, —$N(R^8)_2$, $R^9OC(O)NR^8$— and C_1–C_{20} alkyl, and

d) C_1–C_6 alkyl substituted with an unsubstituted or substituted group selected from aryl, heterocyclic and C_3–C_{10} cycloalkyl; or

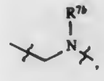
R^{5a} and R^{5b} are combined to form —$(CH_2)_s$— wherein one of the carbon atoms is optionally replaced by a moiety selected from: O, $S(O)_m$, —NC(O)—, and —$N(COR^8)$—;

X-Y is

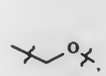
a)



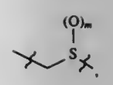
b)



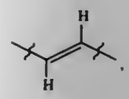
c)



d)



e)



or

f) —CH_2—CH_2—;

R^{7a} is selected from

a) hydrogen,

b) unsubstituted or substituted aryl,

c) unsubstituted or substituted heterocyclic,

d) unsubstituted or substituted cycloalkyl, and

e) C_1–C_6 alkyl substituted with hydrogen or an unsubstituted or substituted group selected from aryl, heterocyclic and cycloalkyl;

R^{7b} is selected from

a) hydrogen,

b) unsubstituted or substituted aryl,

c) unsubstituted or substituted heterocyclic,

d) unsubstituted or substituted cycloalkyl,

e) C_1–C_6 alkyl substituted with hydrogen or an unsubstituted or substituted group selected from aryl, heterocyclic and cycloalkyl,

f) a carbonyl group which is bonded to an unsubstituted or substituted group selected from aryl, heterocyclic, cycloalkyl and C_1–C_6 alkyl substituted with hydrogen or an unsubstituted or substituted group selected from aryl, heterocyclic and cycloalkyl, and

g) a sulfonyl group which is bonded to an unsubstituted or substituted group selected from aryl, heterocyclic, cycloalkyl and C_1–C_6 alkyl substituted with hydrogen or an unsubstituted or substituted group selected from aryl, heterocyclic and cycloalkyl;

R^8 is independently selected from hydrogen, C_1–C_6 alkyl and aryl;

R^9 is independently selected from C_1–C_6 alkyl and aryl;

R^{10} is independently selected from hydrogen and C_1–C_6 alkyl;

Z is independently H_2 or O;

m is 0, 1 or 2; and

s is 4 or 5;

or a pharmaceutically acceptable salt thereof.

5,576,294

HUMAN KUNITZ-TYPE PROTEASE INHIBITOR VARIANT

Fanny Norris; Kjeld Norris, both of Hellerup; Søren E. Bjørn, Lyngby; Lars C. Petersen, Hørsholm, and Ole H. Olsen, Brønshøj, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 21,610, Feb. 22, 1993, abandoned. This application Oct. 12, 1994, Ser. No. 321,658

Claims priority, application WIPO, Jan. 7, 1992, PCT/DK92/00001

Int. Cl.[6] A61K *38/00;* **C12P** *21/06;* **C07K** *1/00;* **C07H** *19/00*

U.S. Cl. 514—12 **12 Claims**

1. A variant of human Kunitz-type protease inhibitor domain II of tissue factor pathway inhibitor (TFPI), the variant comprising the following amino acid sequence:

Xaa Xaa Xaa Xaa Xaa Asp Phe Cys Phe Leu Glu Glu Asp Xaa
1 5 10

Gly Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Tyr Phe Tyr Asn Asn
15 20 25

-continued

Gln Thr Lys Gln Cys Glu Arg Phe Xaa Tyr Gly Gly Cys Xaa
30 35 40

Xaa Xaa Met Asn Asn Phe Xaa Thr Leu Glu Glu Cys Lys Asn
45 50 55

Ile Cys Glu Asp Xaa Xaa Xaa Xaa Xaa (SEQ ID NO:1)
60 65

wherein

Xaa at position 1 is Lys;

Xaa at position 2 is Pro;

Xaa at position 3 is absent;

Xaa at position 4 is absent;

Xaa at position 5 is absent;

Xaa at position 14 is Pro,

Xaa at position 16 is Ile;

Xaa at position 18 is Lys, Arg, Val, Thr, Leu, Phe, Trp, or Tyr;

Xaa at position 19 is Ala or Gly;

Xaa at position 20 is Arg, Lys, or Tyr;

Xaa at position 21 is Ile;

Xaa at position 22 is Ile, Thr, or Leu;

Xaa at position 23 is Arg;

Xaa at position 37 is Ile, Lys, Thr, Leu, or Val;

Xaa at position 42 is Arg or Lys;

Xaa at position 43 is Gly;

Xaa at position 44 is Asn;

Xaa at position 49 is Asp, Glu, Gln, Asn, Arg, or Lys;

Xaa at position 61 is absent;

Xaa at position 62 is absent;

Xaa at position 63 is absent;

Xaa at position 64 is absent; and

Xaa at position 65 is Gly;

with the proviso that at least one of the amino acid residues designated Xaa is different from the amino acid residue of the native sequence, and wherein the variant has serine protease inhibitory activity.

5,576,295

AGENT FOR SUPPRESSING THE MOTOR ACTIVITY OF GASTROINTESTINAL TRACTS

Seiki Matsuno; Iwao Sasaki; Akira Ohneda, all of Sendai, and Kazuyuki Sasaki, Saitama-ken, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1994, Ser. No. 324,502

Claims priority, application Japan, Oct. 18, 1993, 5-259798

Int. Cl.[6] A61K *38/04;49/00*

U.S. Cl. 514—12 **6 Claims**

1. A method for suppressing the motor activity of the gastrointestinal tract immediately prior to examination, comprising:

administering an effective amount of glicentin to a subject undergoing medical examination.

5,576,296

GALANIN ANTAGONIST

Tamas Bartfai, Stocksund; Tomas Hökfelt, Djursholm; Ulo Langel, Stockholm; Bo Ahrén; Stefan Lindskog, both of Lund, all of Sweden; Silvana Consolo, Milan, Italy; Tlit Land, Stockholm, and Zsuzsanna Wiesenfeld-Hallin, both of Stockholm, Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

Continuation of Ser. No. 146,139, Nov. 12, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,514

Claims priority, application Sweden, May 15, 1991, 9101472

Int. Cl.[6] C07K *5/00;7/00;17/00;* **A61K** *38/00*

U.S. Cl. 514—13 **5 Claims**

1. A galanin antagonist which is a galanin receptor ligand, wherein said antagonist is selected from he group consisting of the peptides

H—Gly—Trp—Thr—Leu—Asn—Ser—Ala—Gly—Tyr—Leu—
Leu—Gly—Pro—Gln—Gln—Phe—Phe—
Gly—Leu—Met—X (SEQ ID NO: 1),

H—Gly—Trp—Thr—Leu—Asn—Ser—Ala—Gly—Tyr—Leu—
Leu—Gly—Pro—Pro—Pro—Gly—Phe—
Ser—Pro—Phe—Arg—X (SEQ ID NO: 2),

H—Gly—Trp—Thr—Leu—Asn—Ser—Ala—Gly—Tyr—Leu—
Leu—Gly—Pro—Pro—Pro—Leu—Phe—
Gly—Gly—Tyr—X (SEQ ID NO: 3),

and

H—Gly—Trp—Thr—Leu—Asn—Ser—Ala—Gly—Tyr—Leu—
Leu—Gly—Pro—Lys—X
|
Pro—Leu—Phe—Gly—Gly—Tyr—H

wherein X represents —NH_2 or —OH (amide or free acid), and functional analogues and functional derivatives thereof which exhibit the same galanin antagonistic effect as said peptides.

5,576,297

EMBODIMENTS OF NATURAL AND SYNTHETIC LETHAL TOXIN NEUTRALIZING FACTORS AND THEIR UTILITY AS TREATMENT FOR ENVENOMATION

Binie V. Lipps, and Frederick W. Lipps, both of 4509 Mimosa Dr., Bellaire, Tex. 77401

Continuation-in-part of Ser. No. 58,387, May 10, 1993, abandoned. This application Sep. 22, 1994, Ser. No. 310,340

Int. Cl.[6] A61K *38/10;38/16;* **C07K** *7/08;14/47*

U.S. Cl. 514—14 **11 Claims**



1. A method for treating a victim of envenomation, said method comprising injecting intravenously a composition into said victim, wherein said composition contains a lethal toxin neutralizing factor obtained from the sera of an opossum from the family Didelphis, wherein the victim has been envenomated by a bee.

5,576,298

PEPTIDES FROM PSEUDOMONAS SYRINGAE POSSESSING BROAD-SPECTRUM ANTIBIOTIC ACTIVITY

Gary A. Strobel, Bozeman, Mont.; Leslie A. Harrison, Chesterfield, Mo., and David B. Teplow, Waban, Mass., assignors to Research and Development Institute, Inc. at Montana State University, Bozeman, Mont.

Continuation-in-part of Ser. No. 982,687, Nov. 30, 1992, abandoned. This application Sep. 15, 1994, Ser. No. 305,943

Int. Cl.[6] A61K *38/08*

U.S. Cl. 514—15 **28 Claims**

1. A composition comprising one or more isolated and substantially pure pseudomycin peptides obtained from *P. syringae*, said one or more peptides being sufficiently pure and active to be administered to plants or animals as an antibiotic without substantial side effects, wherein said one or more peptides are selected from the group consisting of:

a) Pseudomycin A, having a molecular weight of about 1223 Daltons;

b) Pseudomycin B, having a molecular weight of about 1207 Daltons; and

c) Pseudomycin C, having a molecular weight of about 1251 Daltons;

wherein each of said Pseudomycins A, B and C are cyclic esters, and wherein each of said Pseudomycins A, B and C comprise the amino acid sequence

—AA^1—AA^2—
|
—Ser—Dab—Asp—

wherein

AA^1=L-3-hydroxy-aspartyl

AA^2=L-4-chlorothreonyl

Ser=L-serinyl

Dab=D-diaminobutyryl

ASP=L-aspartyl

and the carboxyl group of AA^2 is joined to the serinyl hydroxyl group by an ester linkage.

5,576,299

FORMULATED MEDICINE FOR TREATMENT AND PREVENTION OF OPPORTUNISTIC INFECTIOUS DISEASES COMPLICATED BY INFECTION WITH LENTIVIRUS

Kunio Ando, Kanagawa, and Junichi Kishimoto, Tokyo, both of Japan, assignors to Immuno Japan, Inc., Japan

Filed Mar. 2, 1993, Ser. No. 25,395

Claims priority, application Japan, Mar. 2, 1992, 4-093933

Int. Cl.[6] A61K *38/40*

U.S. Cl. 514—21 **8 Claims**

1. A method of potentiating the host immune system in an immunocompromised mammal in need thereof, comprising adding an amount of raw but not denatured lactoferrin, effective to potentiate the host immune system against opportunistic microorganisms, to a pharmaceutically acceptable carrier, and administering said lactoferrin and carrier to said immunocompromised mammal, wherein the immunocompromised condition is caused by Lentiviral infection, and wherein said opportunistic microorganisms are protozoans or fungi.

5,576,300

METHOD FOR INHIBITION OF HUMAN ROTAVIRUS INFECTION

Pradip Mukerji, Gahanna; Pedro A. Prieto, Columbus; Amanda E.-Y. Seo, Gahanna; Jeffrey H. Baxter, Galena, all of Ohio, and Richard D. Cummings, Edmond, Okla., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Sep. 16, 1994, Ser. No. 308,883

Int. Cl.[6] A61K *38/00;* **C07K** *1/00*

U.S. Cl. 514—21 **3 Claims**

1. A method of retarding the onset of or treating an infection caused by human rotavirus of a human cell in which rotavirus grows and produces antigen comprising contacting the cell with an effective amount of an agent selected from the group consisting of native or recombinant unhydrolyzed human kappa-casein and unhydrolyzed bovine kappa-casein.

5,576,301

LOW MOLECULAR GROWTH POTENTIATING PEPTIDES

Wesley C. Hymer, Boalsburg; Krishnaswamy Krishnan, State College, both of Pa., and Wayne Lanham, Glen Carbon, Ill., assignors to The Penn State Research Foundation, University Park, Pa.

Continuation-in-part of Ser. No. 110,671, Aug. 23, 1993, abandoned, which is a continuation of Ser. No. 800,182, Nov. 27, 1991, abandoned. This application Oct. 12, 1994, Ser. No. 322,042

Int. Cl.[6] A61K *38/00;* **C07K** *1/02*

U.S. Cl. 514—21 **15 Claims**

1. A purified human tibial growth potentiating peptide which has the following characteristics:

potentiates tibial plate width growth when administered to hypophysectomized rats;

a molecular weight of less than 10,000 daltons; and

is unreactive in an enzyme immunoassay for human growth hormone.

5,576,302

OLIGONUCLEOTIDES FOR MODULATING HEPATITIS C VIRUS HAVING PHOSPHOROTHIOATE LINKAGES OF HIGH CHIRAL PURITY

Phillip D. Cook, San Marcos, Calif., and Glenn Hoke, Mt. Airy, Md., assignors to ISIS Pharmaceuticals, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 297,703, Aug. 29, 1994, Pat. No. 5,506,212, and Ser. No. 58,023, May 5, 1993, Pat. No. 5,521,302, which is a division of Ser. No. 777,670, Oct. 15, 1991, Pat. No. 5,212,295, which is a continuation-in-part of Ser. No. 777,007, Oct. 16, 1991, abandoned, said Ser. No. 297,703is a continuation of Ser. No. 777,007. This application Jun. 6, 1995, Ser. No. 468,447

Int. Cl.[6] A61K *31/70;* **C07H** *21/00*

U.S. Cl. 514—44 **30 Claims**

1. An oligonucleotide represented by SEQ ID NO: 1 wherein at least 75% of the nucleoside units are joined together by Sp phosphorothioate 3' to 5' linkages.

21. A composition containing an oligonucleotide of claim 1 and an acceptable carrier.

5,576,303

ENERGY-SUPPLEMENTING SACCHARIDE SOURCE AND ITS USES

Takashi Shibuya; Toshiyuki Sugimoto, and Toshio Miyake, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Continuation-in-part of Ser. No. 212,937, Mar. 15, 1994, abandoned. This application Oct. 17, 1994, Ser. No. 322,528

Claims priority, application Japan, Mar. 16, 1993, 5-93513

Int. Cl.[6] A61K *31/715;* **A23G** *3/00*

U.S. Cl. 514—53 **25 Claims**

1. An energy-supplementing saccharide source which contains as an effective ingredient α,α-trehalose in an amount of at least 50 w/w % against the total weight, on a dry solid basis, said α,α-trehalose being enzymatically prepared by

(a) allowing a non-reducing saccharide-forming enzyme to act on a solution of a partial starch hydrolysate which exhibits a reducing power and has a degree of glucose polymerization (DP) of 3–25 to form a saccharide solution containing α,α-trehalose;

(b) purifying the resultant saccharide solution to increase the purity of α,α-trehalose; and

(c) recovering the purified α,α-trehalose.

5,576,304

ANTITHROMBOTIC COMPOSITION

Vijay V. Kakkar, Bickley, and Michael F. Scully, Crays Hill, both of Great Britain, assignors to Thrombosis Research Institute, London, Great Britain

PCT No. PCT/EP89/01341, § 371 Date Jul. 9, 1991, § 102(e) Date Jul. 9, 1991, PCT Pub. No. WO90/04970, PCT Pub. Date May 17, 1990

PCT Filed Nov. 9, 1989, Ser. No. 688,931

Claims priority, application United Kingdom, Nov. 11, 1988, 8826448

Int. Cl.[6] A61K *31/725;* **C08B** *37/10*

U.S. Cl. 514—56 **10 Claims**

1. A method for increasing the anti-factor Xa activity within the bloodstream of a patient in need thereof, comprising simultaneously co-administering a mixture of dermatan sulphate and a low molecular weight heparin, wherein said mixture exhibits a synergistic enhancement of the anti-factor Xa activity with only an additive enhancement of the APTT activity, such that the anti-factor Xa/APTT activity ratio of the mixture is increased as compared with either component tested alone.

5,576,305

INTERCELLULAR ADHESION MEDIATORS

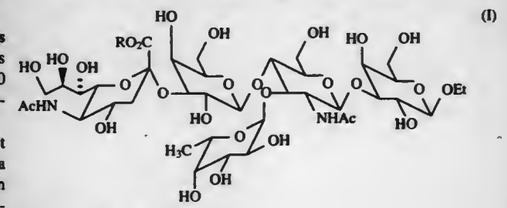
Robert M. Ratcliffe, Carlsbad, Calif., assignor to Cytel Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 63,181, May 14, 1993, which is a continuation-in-part of Ser. No. 810,789, Dec. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 716,735, Jun. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 632,390, Dec. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 619,319, Nov. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 538,853, Jun. 15, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 466,040

Int. Cl.[6] A61K *31/73;* **C07H** *3/06*

U.S. Cl. 514—25 **8 Claims**

1. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and a compound having the formula:



(I)

in which R is an alkyl group.

VOL 1192 ISS 3 NOV 19 1996 UMI

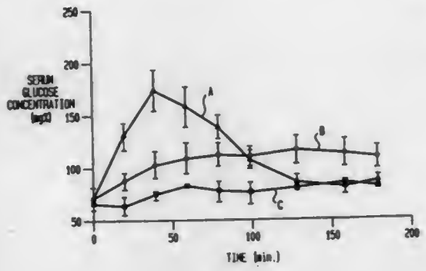
5,576,306
PHARMACEUTICAL COMPOSITIONS AND USES OF WATER-SOLUBLE, HIGH-VISCOSITY GRADE CELLULOSE ETHERS

Jennifer B. Dressman, Paris, France; Christos Reppas, Athens, Greece; Stephen W. Tobey, Midland, Mich., and Cynthia W. Sowle, Carmel, Ind., assignors to Dow Chemical Company, Midland, and Board of Regents Acting for and on Behalf of the University of Michigan, Ann Arbor, both of Mich.

Continuation of Ser. No. 62,697, May 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 870,601, Feb. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 663,381, Mar. 19, 1991, abandoned. This application Dec. 9, 1994, Ser. No. 353,949

Int. Cl.[6] A01N *43/04;25/00;* **A61K** *47/00*

U.S. Cl. 514—57 **13 Claims**



1. A composition in the form of an aqueous gelatin composition, the composition comprising:

a. between about 60% and about 99% by weight of water;

b. between about 0.5% and about 10% by weight of gelatin; and

c. between about 0.5% and about 5.0% by weight of water-soluble, high-viscosity grade cellulose ether having a viscosity characteristic of from about 10,000 cP (10,000 mPa•s) to about 2,000,-000 cP (2,000,000 mPa•s) when in a 2 weight percent aqueous solution at 20° C.

5,576,307
METHODS AND COMPOSITIONS FOR INHIBITION OF CELL INVASION AND FIBROSIS USING DEXTRAN SULFATE

Dikla Roufa, St. Louis, Mo.; Adrian Harel, Woodmere, and Robert C. A. Frederickson, Beutleyville, both of Ohio, assignors to Gliatech, Inc., Beachwood, Ohio

Filed May 31, 1991, Ser. No. 708,660

Int. Cl.[6] A61K *31/715*

U.S. Cl. 514—59 **50 Claims**

1. A composition comprising:

(a) an amount of dextran sulfate effective to inhibit fibrosis at the site of a lesion in a mammal in which the average molecular weight of the dextran sulfate is in the range of about 40,000 to 2,000,000 Daltons; and

(b) an amount of an adhesive protein effective to anchor the dextran sulfate at the site of the lesion.

5. A method for inhibiting fibrosis at a site of a lesion in a mammal comprising administering to a site of a lesion in a mammal a composition comprising an amount of dextran sulfate effective to inhibit fibrosis at the site of administration in which the average molecular weight of the dextran sulfate is in the range of about 40,000 to 2,000,000 Daltons.

5,576,308
ORGANOPHOSPHORUS COMPOUNDS AND INSECTICIDES, ACARICIDES AND NEMATOCIDES CONTAINING SAME

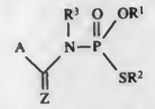
Shinya Henmi, Kawaguchi; Hideyo Fujii, Kawagoe, and Akinori Kariya, Murayama, all of Japan, assignors to Agro-Kanesho Co., Ltd., Tokyo, Japan

Filed May 27, 1994, Ser. No. 250,616

Int. Cl.[6] A01N *57/28;* **C07F** *9/24*

U.S. Cl. 514—112 **15 Claims**

1. An organophosphorus compound represented by formula (I):



wherein R^1, R^2 and R^3 each represents C_1 to C_4 alkyl; A represents H, C_1 to C_4 alkyl, C_1 to C_4 alkylthio or $N(R^4)R^5$ wherein R^4 and R^5 each represents H or C_1 to C_4 alkyl; Z represents $C(CN)R^6$ wherein R^6 represents CN, C_1 to C_3 alkylsulfonyl, C_1 to C_3 alkylsulfonyl substituted with halogen, C_1 to C_3 alkylcarbonyl, C_1 to C_3 alkylcarbonyl substituted with halogen, C_1 to C_4 alkoxycarbonyl, C_1 to C_4 alkoxycarbonyl substituted with halogen, C_1 to C_4 alkylthiocarbonyl, C_1 to C_3 monoalkylaminocarbonyl or C_1 to C_3 dialkylaminocarbonyl or N-R^7 wherein R^7 represents NO_2, C_1 to C_3 alkylsulfonyl and C_1 to C_3 alkylsulfonyl substituted with halogen.

5,576,309
ESTRADIOL DERIVATIVE-CHLORAMBUCIL CONJUGATE, PROCESS FOR PREPARING THE SAME, AND PHARMACEUTICAL COMPOSITION

Fumio Tamura; Tsuyoshi Saito, both of Ibaraki; Satoshi Mitsuhashi; Tadahiro Matsudaira, both of Saitama, and Kiro Asano, Ibaraki, all of Japan, assignors to Kureha Chemical Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 253,552, Jun. 3, 1994, abandoned, which is a division of Ser. No. 70,797, Jun. 3, 1993, Pat. No. 5,354,745. This application May 15, 1995, Ser. No. 440,839

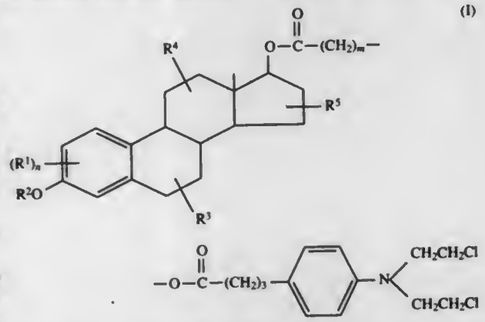
Claims priority, application Japan, Jun. 11, 1992, 4-177363

Int. Cl.[6] A61K *31/56*

U.S. Cl. 514—178 **7 Claims**

1. A method for treating a hematopoietic tumor or a solid tumor comprising administering to an animal in need of such treatment an anti-hematopoietic tumor or anti-solid tumor effective amount of an estradiol derivative-chlorambucil conjugate of formula (I):

(I)



wherein R^1 is an alkyl group or an alkoxyl group of 1 to 4 carbon atoms; R^2 is an acyl group, a dansyl group, or an alkyl group; , R^3,

R^4, and R^5 are each independently selected from the group consisting of a H atom, an oxo group, an OH group, and an acyloxy group; m is an integer of 1 to 3; and n is an integer of 0 to 3; provided that when n is 0, all of R^3, R^4, and R^5 are not H at the same time, and at least one of R^3, R^4, and R^5 is a group other than H and OH; and further, when n is 2 or 3, each R^1 is the same or different.

5,576,310
11-BENZALDOXIME-17β-METHOXY-17α-METHOXYMETHYL-ESTRASDIENE DERIVATIVES, METHODS FOR THEIR PRODUCTION AND PHARMACEUTICALS CONTAINING SUCH COMPOUNDS

Gerd Schubert; Günther Kaufmann; Lothar Sobeck; Michael Oettel, all of Jena; Walter Elger, Berlin, and Anatoli Kurischko, Jena, all of Germany, assignors to Jenapharm GmbH, Jena, Germany

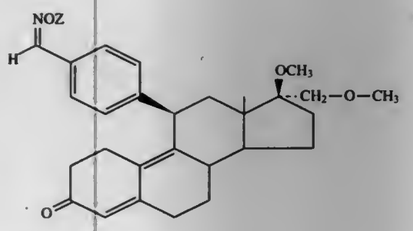
Filed Sep. 20, 1994, Ser. No. 309,270

Int. Cl.[6] A61K *31/56*

U.S. Cl. 514—179 **4 Claims**

1. A 11β-benzaldoxime-estra-4,9-diene-derivative of the general formula I:

Formula I



wherein,

Z is —CO—CH_3, —CO—O—C_2H_5, —CO—NH-phenyl, —CO—NH—C_2H_5, —CO—C_2H_5, —CH_3, or CO-phenyl, and pharmaceutically acceptable salts thereof.

5,576,311
CYCLODEXTRINS AS SUSPENDING AGENTS FOR PHARMACEUTICAL SUSPENSIONS

Yaacov J. Guy, Rehovot, Israel, assignor to Pharmos Corporation, New York, N.Y.

Filed Nov. 30, 1994, Ser. No. 346,954

Int. Cl.[6] A61K *31/56;47/00*

U.S. Cl. 514—179 **25 Claims**

1. A stable suspension of a drug comprising:

an aqueous medium,

component (A) of a therapeutic concentration of a drug in a particulate form that does not appreciably dissolve in the aqueous medium, and

component (B) of a suspension agent comprising an amorphous cyclodextrin

wherein the drug is retained in suspension in the aqueous medium without forming a soluble inclusion complex with the cyclodextrin.

5,576,312
1-AZATRICYCLO[7.2.0.0^{3,8}]UNDEC-2-ENE-2-CARBOXYLATES AS ANTIBACTERIAL COMPOUNDS

Roberto Cariesso, Verona, Italy; Stuart Holman, Greenford, Great Britain; Alcide Perboni, and Tino Rossi, both of Verona, Italy, assignors to Glaxo SpA, Verona, Italy

PCT No. PCT/EP93/02274, § 371 Date Feb. 21, 1995, § 102(e) Date Feb. 21, 1995, PCT Pub. No. WO94/05666, PCT Pub. Date Mar. 17, 1994

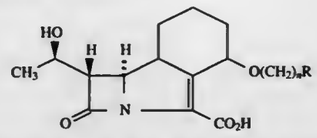
PCT Filed Aug. 25, 1993, Ser. No. 381,873

Claims priority, application United Kingdom, Aug. 27, 1992, 9218240

Int. Cl.[6] C07D *487/08;* **A61K** *31/40*

U.S. Cl. 514—210 **21 Claims**

1. Compounds of formula (I)



and salts and metabolically labile esters thereof; wherein R is a 5 or 6 membered nitrogen containing heteroaryl group, which heteroaryl group optionally contains 1 or 2 additional heteroatoms selected from nitrogen, oxygen or sulphur and said heteroaryl group is linked to the alkylene chain $(CH_2)n$ via a nitrogen atom in the heteroaryl group; n is an integer from 2 to 4.

5,576,313
INHIBITORS OF FARNESYL-PROTEIN TRANSFERASE

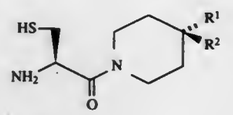
Thorsten E. Fisher, Hatfield; John S. Wai, Harleysville; J. Christopher Culberson, Hatfield, all of Pa., and Walfred S. Saari, St. George, Me., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 29, 1994, Ser. No. 298,478

Int. Cl.[6] A61K *31/435;31/44;31/54;31/545;* **C07D** *211/06;401/12;413/14;417/14*

U.S. Cl. 514—211 **11 Claims**

1. A compound which inhibits farnesyl-protein transferase of the Formula I:



wherein:

R^1 is selected from:

a) COR,

b) CO_2R,

c) CONHR,

d) OH,

e) OCOR,

f) CN,

g) CH_2OR,

h) NHCOR,

i) $NHSO_2R$, or

j) COR^5;

R is selected from:

a) C_{1-4} alkyl, unsubstituted or substituted with:

i) C_{1-4} alkoxy,

ii) NR^3R^4,

iii) C_{3-6} cycloalkyl,

iv) aryl or heterocycle; or

b) aryl or heterocycle;

R^2 is selected from: aryl, aralkyl, heterocycle, or heteroaralkyl, unsubstituted or substituted with one or more of:

a) C_{1-4} alkyl, unsubstituted or substituted with:

i) C_{1-4} alkoxy,
ii) NR^3R^4,
iii) C_{3-6} cycloalkyl, or
iv) aryl or heterocycle;
b) aryl or heterocycle,
c) halogen,
d) OR^3,
e) NR^3R^4,
f) CN,
g) NO_2, or
h) CF_3;
R^3 and R^4 are independently selected from: H, C_{1-4} alkyl, C_{3-6} cycloalkyl, heterocycle, aryl, aroyl, heteroaryl, arylsulfonyl, heteroarylsulfonyl, unsubstituted or substituted with one or more of:
a) C_{1-4} alkoxy,
b) aryl or heterocycle,
c) halogen, or
d) HO, wherein
or R^3 and R^4 may be joined in a ring;
R^5 is selected from:
a) a naturally occurring amino acid, or
b) an oxidized form of a naturally occurring amino acid which is:
i) methionine sulfoxide, or
ii) methionine sulfone;
or the pharmaceutically acceptable salt thereof.

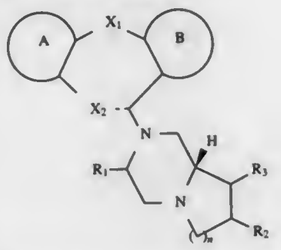
5,576,314

BICYCLIC NONANE AND DECANE COMPOUNDS HAVING DOPAMINE RECEPTOR AFFINITY

Patricia L. Power, Milton, and Sumanas Rakhit, Mississauga, both of Canada, assignors to Allelix Biopharmaceuticals Inc., Mississauga, Canada

Filed Dec. 12, 1994, Ser. No. 354,906
Int. Cl.[6] C07D *513/00;487/00;498/00;* **A61K** *31/55*
U.S. Cl. 514—211 **20 Claims**

1. A compound of Formula II



II

wherein:
A and B are independently benzene unsubstituted or substituted with 1 or 2 substituents selected independently from hydroxyl, halo, C_{1-4}alkyl, amino, nitro, cyano, halo-substituted C_{1-4}alkyl, C_{1-4}alkoxy, halo-substituted C_{1-4}alkoxy, C_{1-4}alkoxycarbonyl, C_{1-4}acyl, cyclo-C_{1-4}alkyl, thio-C_{1-4}alkylene, C_{1-4}alkylthio, halo-substituted C_{1-4}alkylthio, cyanothio, tetrazolyl, N-piperidinyl, N-piperazinyl, N-morpholinyl, acetamido, C_{1-4}alkylsulfonyl, halosulfonyl, halo-substituted, C_{1-4}alkylsulfoxyl, C_{1-4}alkylsulfonyl, sulfonamido, C_{1-4}alkylseleno, and OSO_3H
either X_1 is O, S, SO or SO_2 and
X_2 is N; or
X_1 is NH, N-C_{1-4}alkyl or N-acetyl and
X_2 is O or S;
n is 1 or 2,
R_1 is selected from H and an α carbon side chain of an amino acid;
R_2 is selected from H, OH, C_{1-9}alkyl, C_{1-9}alkoxy, and benzyloxy; and
R_3 is selected from H, OH, halo, cyano, C_{1-4}alkyl, C_{1-4}alkoxy, phenoxy, benzyloxy, =O, =S, C_{1-4}alkylsulfoxyl, C_{1-4}alkylsulfonyl, C_{1-4}alkylthio, amino, and aminocarbonyl;
and acid addition salts, solvates and hydrates thereof, wherein said compound is essentially free of any 6-R enantiomeric form thereof.

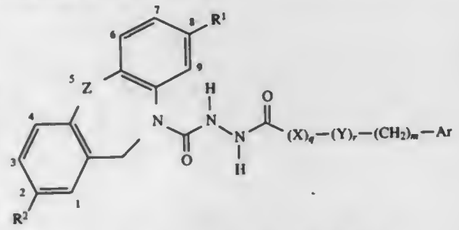
5,576,315

SUBSTITUTED DIBENZOXAZEPINE COMPOUNDS AND METHODS FOR TREATING OSTEOPOROSIS AND ISCHEMIA

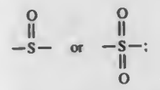
E. Ann Hallinan, Evanston; Timothy J. Hagen, Glenview; Robert K. Husa, Vernon Hills; Sofya Tsymbalov, Des Plaines, all of Ill.; Jean-Pierre Van Hoeck, Chastre, Belgium, and Albert C. Lee, Fort Collins, Colo., assignors to G.D. Searle & Co., Chicago, Ill.

Division of Ser. No. 295,302, Aug. 24, 1994, Pat. No. 5,464,830, which is a continuation of Ser. No. 108,551, Aug. 24, 1993, Pat. No. 5,378,840, which is a continuation-in-part of Ser. No. 695,654, May 3, 1991, abandoned. This application Aug. 1, 1995, Ser. No. 509,846
Int. Cl.[6] C07D *413/12;267/20;281/16;* **A61K** *31/55*
U.S. Cl. 514—211 **4 Claims**

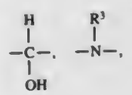
1. A method for treating osteoporosis in an animal comprising administering to said animal a therapeutically-effective amount of a compound having the structure:



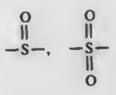
or a pharmaceutically-acceptable salt thereof, wherein:
R^1 is: hydrogen, halogen or $—CF_3$;
R^2 is: hydrogen, halogen, —OH or $—OCH_3$;
Z is: oxygen, sulfur,



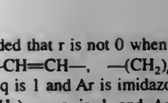
X is: $—CH=CH—$, $—CF_2—$, —CHF—, $—(CH_2)_n—$ or $—(CH_2)_p—CH=CH—$;
Y is:



sulfur,

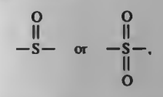


or oxygen;
q is: 0 or 1;
r is: 0 or 1, provided that r is not 0 when:
(1) X is $—CH=CH—$, $—(CH_2)_n—$ or $—(CH_2)_p—CH=CH—$, q is 1 and Ar is imidazolyl or phenyl,
(2) X is $—(CH_2)_n—$, q is 1 and Ar is phenyl or alkyl-substituted phenyl, or
(3) q is 0, m is 1, 2, 3, 4, 5 or 6, and Ar is imidazolyl, phenyl or alkyl-substituted phenyl;
m is: an integer of from 0 to 6, provided that m is not 0 when X is $—(CH_2)_n—$,
q is 1, Y is oxygen, sulfur,



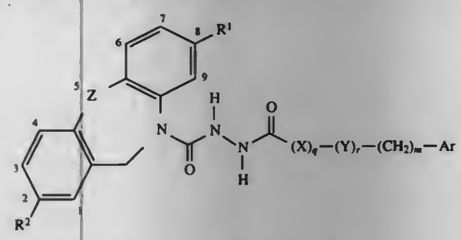
r is 1, and Ar is phenyl or alkyl-substituted phenyl;
n is: an integer of from 1 to 6;
p is: an integer of from 1 to 6;
R^3 is: hydrogen or t-butyloxycarbonyl; and
Ar is: aryl, alkyl-substituted aryl or aryl-substituted aryl.

(2) X is $—(CH_2)_n—$, q is 1 and Ar is phenyl or alkyl-substituted phenyl, or
(3) q is 0, m is 1, 2, 3, 4, 5 or 6, and Ar is imidazolyl, phenyl or alkyl-substituted phenyl;
m is: an integer of from 0 to 6, provided that m is not 0 when X is $—(CH_2)_n—$,
q is 1, Y is oxygen, sulfur,

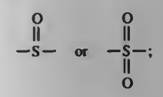


r is 1, and Ar is phenyl or alkyl-substituted phenyl;
n is: an integer of from 1 to 6;
p is: an integer of from 1 to 6;
R^3 is: hydrogen or t-butyloxycarbonyl; and
Ar is: aryl, alkyl-substituted aryl or aryl-substituted aryl.

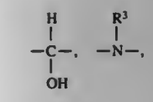
3. A method for treating ischemia in an animal comprising administering to said animal a therapeutically-effective amount of a compound having the structure:



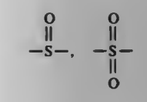
or a pharmaceutically-acceptable salt thereof, wherein:
R^1 is: hydrogen, halogen or $—CF_3$;
R^2 is: hydrogen, halogen, —OH or $—OCH_3$;
Z is: oxygen, sulfur,



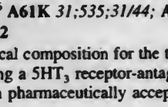
X is: $—CH=CH—$, $—CF_2—$, —CHF—, $—(CH_2)_n—$ or $—(CH_2)_p—CH=CH—$;
Y is:



sulfur,



or oxygen;
q is: 0 or 1;
r is: 0 or 1, provided that r is not 0 when:
(1) X is $—CH=CH—$, $—(CH_2)_n—$ or $—(CH_2)_p—CH=CH—$, q is 1 and Ar is imidazolyl or phenyl,
(2) X is $—(CH_2)_n—$, q is 1 and Ar is phenyl or alkyl-substituted phenyl, or
(3) q is 0, m is 1, 2, 3, 4, 5 or 6, and Ar is imidazolyl, phenyl or alkyl-substituted phenyl;
m is: an integer of from 0 to 6, provided that m is not 0 when X is $—(CH_2)_n—$,
q is 1, Y is oxygen, sulfur,



r is 1, and Ar is phenyl or alkyl-substituted phenyl;
n is: an integer of from 1 to 6;
p is: an integer of from 1 to 6;
R^3 is: hydrogen or t-butyloxycarbonyl; and
Ar is: aryl, alkyl-substituted aryl or aryl-substituted aryl.

5,576,316

METHOD FOR INHIBITING TUMOR GROWTH RATE USING CREATINE OR CREATINE ANALOGS

Mildred Cohn, Narberth, Pa., assignor to University of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 25,516, Mar. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 10,667, Jan. 28, 1993, abandoned. This application Apr. 4, 1995, Ser. No. 416,499
Int. Cl.[6] A61K *31/415;31/505;* **A01N** *43/54;43/58*
U.S. Cl. 514—218 **6 Claims**

1. A method for inhibiting the growth rate of a tumor in a mammal, comprising:
administering to a subject a tumor growth rate inhibiting amount of creatine such that the growth rate of a tumor in the subject is inhibited.

5,576,317

NK-1 RECEPTOR ANTAGONISTS AND $5HT_3$ RECEPTOR ANTAGONISTS FOR THE TREATMENT OF EMESIS

Susan F. Gonsalves, Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Dec. 9, 1994, Ser. No. 353,049
Int. Cl.[6] A61K *31;535;31/44;* **A01N** *43/90*
U.S. Cl. 514—231.2 **14 Claims**

1. A pharmaceutical composition for the treatment or prevention of emesis comprising a $5HT_3$ receptor-antagonist, an NK-1 receptor antagonist and a pharmaceutically acceptable carrier.

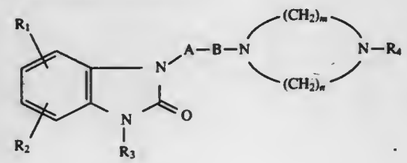
5,576,318

NEW BENZIMIDAZOLONE DERIVATIVES

Giuseppe Bietti, Milan; Franco Borsini, Prato; Marco Turconi, Voghera; Ettore Giraldo, and Maura Bignotti, both of Milan, all of Italy, assignors to Boehringer Ingelheim Italia S.p.A., Milan, Italy

Continuation of Ser. No. 39,002, Mar. 25, 1993, abandoned. This application Mar. 23, 1994, Ser. No. 216,742
Claims priority, application Mali, Jul. 30, 1991, MI91A2118
Int. Cl.[6] A61K *31/495;* **C07D** *403/00;473/00*
U.S. Cl. 514—253 **6 Claims**

1. A compound of formula I



wherein
R_1 and R_2 may each independently be a hydrogen atom, halogen, C_{1-3} alkyl or C_{1-3} alkoxy,
R3 is hydrogen, C_{1-3} alkyl or C_{2-6} alkenyl
A is —CO— or —CONH— or it is absent;
B is a straight chain C_{2-6} alkyl;
m and n are both the integer 2;
R_4 is pbenyl, naphtyl, benzodioxanyl, or pyrimidinyl, each being optionally substituted by one substituent selected from halogen, trifluoromethyl, C_{1-3} alkoxy,
or a physiologically acceptable acid addition salt thereof.

5,576,319

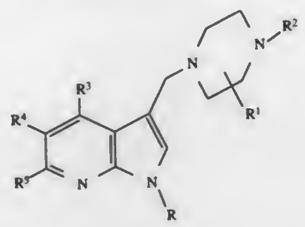
PYRROLO-PYRIDINE DERIVATIVES

Raymond Baker, Green Tye; Janusz J. Kulagowski, Bishops Stortford; Neil R. Curtis, Puckeridge; Paul D. Leeson, Cambridge; Mark P. Ridgill, Watton-At-Stone, and Adrian L. Smith, Bishops Stortford, all of England, assignors to Merck, Sharp & Dohme Ltd., Hoddesdon, England

Filed Aug. 26, 1994, Ser. No. 296,574
Int. Cl.[6] A61K *31/495;* **C07D** *401/02;241/02;403/02*
U.S. Cl. 514—253 **30 Claims**

1. A method for the treatment and/or prevention of schizophrenia, which comprises administering to a patient in need of such treatment an effective amount of a compound of formula I, or a pharmaceutically acceptable salt thereof:

(I)



wherein
R represents hydrogen or C_{1-6} alkyl;
R^1 represents hydrogen, halogen, or an optionally substituted C_{1-6} alkyl, C_{1-6} alkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, aryl which is selected from the group consisting of phenyl and naphthyl, aryl(C_{1-6})alkyl, aryloxy(C_{1-6})alkyl, aryl(c_{1-6})alkoxy, aryl(C_{2-6})alkenyl, aryl(C_{2-6})alkynyl group;
R^2 represents an optionally substituted C_{1-6} alkyl, C_{1-6}alkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, aryl, aryl(C_{1-6})alkyl, aryloxy(C_{1-6})alkyl, aryl(C_{1-6})alkoxy, aryl(C_{2-6})alkenyl, aryl(C_{2-6})alkynyl, C_{3-7} heterocycloalkyl(C_{1-6})alkyl, wherein heterocycloalkyl is selected from the group consisting of azetidinyl, pyrrolidyl, piperidyl, piperazinyl, morpholinyl and tetrahydrofuryl; heteroaryl, selected from the group consisting of pyridyl, quinolyl, isoquinolyl, pyrimidinyl, pyrazinyl, pyranyl, furyl, benzofuryl, dibenzofurly, thienyl, benzthienyl, indolyl, indazolyl, imidazolyl, benzimidazolyl, oxathiazolyl and thiadiazolyl; heteroaryl(C_{2-6})alkenyl or heteroaryl(C_{2-6})alkynyl group;
R^3, R^4 and R^5 independently represent hydrogen, halogen, cyano, trifluoromethyl, nitro, amino, C_{1-6}alkylamino, di(C_{1-6})alkylamino, C_{1-6}alkyl, C_{1-6} alkoxy, aryl(C_{1-6})alkoxy, and C_{2-6}alkylcarbonyl.

5,576,320

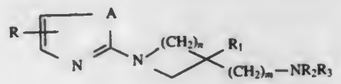
1-HETERUARYLAZETIDINES AND -PYRROLIDINES, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Marco Baroni, Vanzago; Umberto Guzzi; Antonina Giudice, both of Milan; Marco Landi, Bussero, and Vivian Mazza, Legnano, all of Italy, assignors to Sanofi, Paris, France

Division of Ser. No. 368,915, Jan. 5, 1995, which is a division of Ser. No. 127,038, Sep. 24, 1993, Pat. No. 5,410,057. This application Jun. 6, 1995, Ser. No. 466,912
Claims priority, application European Pat. Off., Sep. 25, 1992, 92402642; Sep. 25, 1992, 92402643
Int. Cl.[6] A61K *31/50;31/505;* **C07D** *403/04*
U.S. Cl. 514—255 **20 Claims**

1. 1-Heteroarylazetidine or -pyrrolidine of formula (I)

(I)



in which
A denotes a, —CH=N— or —N=CH— group;
R denotes a hydrogen atom, a halogen atom, a C_1–C_4 alkyl, C_1–C_4 alkoxy or C_1–C_4 alkylthio group, a cyano, carboxamido, trifluoromethyl, vinyl or formyl group, a carboxyl group in free, salt or esterified form, a hydroxyl, hydroxymethyl or mercapto group or an amino, mono- or di(C_1–C_4 alkyl)amino, aminomethyl, mono- or di(C_1–C_4 alkyl)aminomethyl, 1-piperidino, 1-pyrrolidino, 1-piperazino or 4-(C_1–C_4 alkyl)-1-piperazino group, it being possible for this group R to replace any one of the hydrogen atoms of the heteroaryl nucleus;
R_1 is a hydrogen atom or a methyl group;
R_2 and R3, which are identical or different, denote a hydrogen atom or a C_1–C_4 alkyl group;
n is 1 or 2, m is 0 or 1 and m+n≧2 and its addition salts with inorganic or organic acids.

5,576,321

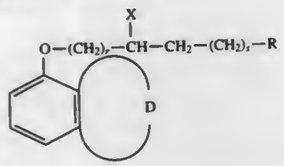
COMPOUNDS HAVING EFFECTS ON SEROTONIN-RELATED SYSTEMS

Joseph H. Krushinski, Jr., Indianapolis; Kurt Rasmussen, Fishers; Vincent P. Rocco, Indianapolis; John M. Schaus, Zionsville, and Dennis C. Thompson, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 373,823, Jan. 17, 1995, abandoned. This application Jun. 6, 1995, Ser. No. 468,900
Int. Cl.[6] A61K *31/40;* **C07D** *209/10;209/12;209/14*
U.S. Cl. 514—255 **14 Claims**

1. A compound of the formula

1



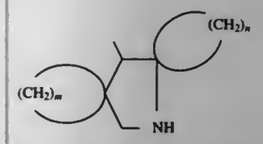
wherein
r is 0–4;
s is 0–1;
D is a residue which combines with the carbon atoms to which it is attached to complete a pyrrolyl group; wherein X is hydrogen, phenyl, hydroxy or methoxy; provided that X is hydrogen or phenyl when r is 0;

R is

—NH—R^1 II

R^1 is piperidinyl, piperazino, morpholino or pyrrolyl, substituted with 0–1 phenyl or benzyl group or 0–4 C_1–C_3 alkyl, C_1–C_3 alkoxy or halo groups; which phenyl or benzyl group is substituted with 0–2 C_1– C_3 alkyl, halo, trifluoromethyl or C_1–C_3 alkoxy groups;
or R^1 is

VI



n and m are independently 4–5, and the group of Formula VI may be substituted with 0–1 oxo group and 0–2 C_1–C_3 alkyl, C_1–C_3 alkoxy or halo groups;
or R^1 is C_1–C_4 alkyl, substituted with pyrrolyl, furyl, thienyl, morpholinyl, piperidinyl, tetrahydropyrrolyl, piperazinyl, tetrahydrofuryl, benzazepinyl, dibenzazepinyl or quinotinyl, substituted with 0–4 C_1–C_3 alkyl, C_1–C_3 alkoxy or halo groups;
or a pharmaceutically acceptable salt thereof.

5,576,322

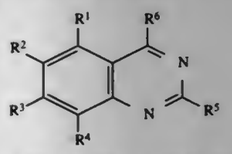
ANTI-ISCHEMIC 2,4-DIAMINOQUINAZOLINES

Yasutaka Takase; Nobuhisa Watanabe, both of Ibaraki; Makoto Matsui, Aichi; Hironori Ikuta, Ibaraki; Teiji Kimura, Ibaraki; Takao Saeki, Ibaraki; Hideyuki Adachi, Ibaraki; Tadakazu Tokumura, Ibaraki; Hisatoshi Mochida, Aichi; Yasunori Akita, Chiba, and Shigeru Souda, Ibaraki, all of Japan, assignors to Eisai Co., Ltd., Japan

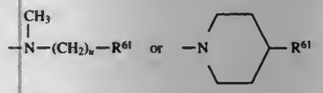
PCT No. PCT/JP92/01258, § 371 Date Feb. 18, 1994, § 102(e) Date Feb. 18, 1994, PCT Pub. No. WO93/07124, PCT Pub. Date Apr. 15, 1993
PCT Filed Sep. 30, 1992, Ser. No. 196,110
Claims priority, application Japan, Sep. 30, 1991, 3-320853
Int. Cl.[6] A61K *31/505;31/445;* **C07D** *239/95;239/94*
U.S. Cl. 514—260 **11 Claims**

1. A compound, or the pharmacologically acceptable salt thereof, represented by the formula (I):

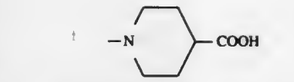
(I)



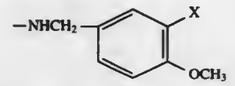
wherein R1, R3, and R4, each of which may be the same or different from each other, may each represent a hydrogen atom, a halogen atom or a lower alkyl group or a lower alkoxy hydrogen atom, R2 is a halogen or cyan group R5 is a group represented by the formula:



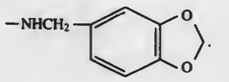
wherein u is 3 or 4 and R61 represents a carboxyl group which may be protected or a heteroaryl group; or R5 is a group represented by the formula:



and R6 is a group represented by the formula



wherein X is hydrogen atom or a halogen atom or



5,576,323

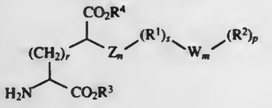
EXCITATORY AMINO ACID RECEPTOR ANTAGONISTS

Lawrence J. Heinz, Pittsboro; William H. W. Lunn, and Darryle D. Schoepp, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 161,830, Dec. 3, 1993, abandoned. This application Oct. 13, 1994, Ser. No. 322,632
Int. Cl.[6] A61K *31/435;31/41;31/34;31/195*
U.S. Cl. 514—277 **26 Claims**

1. A method of affecting one or more excitatory amino acid receptors in mammals, which comprises administering to a mammal requiring modulated excitatory amino acid neurotransmission a pharmaceutically-effective amount of a compound of the formula

1



wherein:
Z is NR^5, O, or S;
W is $CH_{(3-p)}$, —$(CH_2)_q$—, —$(CH_2)_qCH_{(3-p)}$, —$(CH_2)_qCO$—, —$(CH_2)_qO$—, —$(CH_2)_qCH$═CH $(CH_2)_q$—, —$(CH_2)_q$CH═CH—, —CH═CHCO—, —CH═CHCOR^6, —$(CH_2)_q$CHOHR^6, —$(CH_2)_q$CHOH—, —$(CH_2)_q$COR^6, —O$(CH_2)_q$—, NR^5, O, S, SO, or SO_2;
n is 0 or 1; m is 0 or 1; p is 0, 1, 2, or 3; q is 0–6; r is or 2; s is 0 or 1, provided that the sum of n, m, p and s is at least 1;
R^1 and R^2 are independently aryl, substituted aryl, heterocycle, or substituted heterocycle;
R^3 is hydrogen or a carboxy protecting group;
R^4 is hydrogen or a carboxy protecting group;
R^5 is hydrogen, C_1–C_{10} alkyl, acyl, or SO_2(C_1–C_4 alkyl);
R^6 is C_1–C_{10} alkyl;
provided that when n is 0 and s is 1, R^1 is selected from the group consisting of tetrazolyl, triazolyl, pyridazinyl, pyrimidinyl, pteridinyl, 1,2,4-triazine-3,5-dionyl, pyrazolonyl, 7H-purinyl, xanthinyl, 3-ethyl-5-hydroxy-1,2,4-thiadiazolyl, 3-hydroxy-1,2,4-thiadiazolyl, rhodaninyl, hydantoinyl, and pseudothiohydantoinyl;
further provided that when n is 1, m is 1, and W is NR^5, O, S, SO, or SO_2, s is 1; and when n is 0 and s is 0, m is 1 and W is —$(CH_2)_qCO$—, —$(CH_2)_qO$—, —CH═CHCO—, —CH═CHCOR^6, —$(CH_2)_q$CHOHR^6, —$(CH_2)_q$CHOH—, —$(CH_2)_q$COR^6, —O$(CH_2)_q$—, NR^5, O, S, SO, or SO_2;
or a pharmaceutically acceptable salt thereof.

5,576,324

QUINOLINE DERIVATIVES OR SALT THEREOF AND REMEDY FOR CARDIAC DISEASES CONTAINING THE SAME

Yoshinori Kyotani, Higashiyamoto; Tadaaki Ohgiya, Higashimurayama; Tsutomu Toma, Higashimurayama; Yuji Kurihara, Higashimurayama; Takahiro Kitamura, Tokyo; Takashi Yamaguchi, Urawa; Kazuhiro Onogi, Iruma; Seiichi Sato; Hiromichi Shigyo, Hachu; Tomio Ohta, Sayama; Mitsuo Kawada, Tokorozawa, and Yasumi Uchida, Ichikawa, all of Japan, assignors to Kowa Co., Ltd., Nagoya, Japan

PCT No. PCT/JP93/00566, § 371 Date Oct. 27, 1994, § 102(e) Date Oct. 27, 1994, PCT Pub. No. WO93/22317, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 28, 1993, Ser. No. 325,270

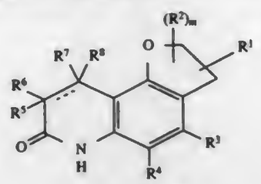
Claims priority, application Japan, May 1, 1992, 4-112862

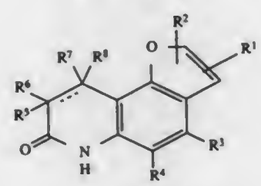
Int. Cl.[6] A61K *31/44*; C07D *491/04*

U.S. Cl. 514—291 **7 Claims**

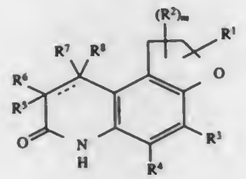
1. A quinoline derivative having formula selected from the group consisting of formulas (1*a*)–(1*d*):

(1a)

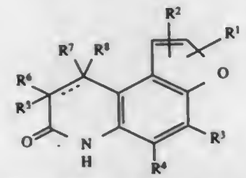




(1c)



(1d)



R^1 is hydroxy, carboxy, alkoxycarbonyl, carbamoyl, alkenyl, formyl, cyano, alkyl optionally having an operative substituent, or a group



(wherein R^9 is amino or alkyl, and R^{10} is hydrogen or hydroxy);

each R^2 is the same or different, and represents hydrogen, alkyl optionally having an operative substituent, alkenyl, acyl, or hydroxy;

R^3, R^4 are the same or different, and represent hydrogen, halogen, alkyl optionally having an operative substituent, amino optionally having an operative substituent, alkoxy, alkylthio, carboxy, alkoxycarbonyl, acyl, carbamoyl, cyano or nitro;

R^5, R^6, R^7, R^8 are the same or different, and represent hydrogen or alkyl;

m is a whole number from 0 to 3;

- - - means optionally having a double bond formed by R^6 and R^8; or a medicinally acceptable salt thereof.

5,576,325

PYRROLYL-4H-PYRANOQUINOLINES

Andrew C. Williams, Camberley, United Kingdom, assignor to Lilly Industries Limited, Basingstoke, England

Division of Ser. No. 215,344, Mar. 21, 1994, Pat. No. 5,514,699. This application Jun. 6, 1995, Ser. No. 463,530

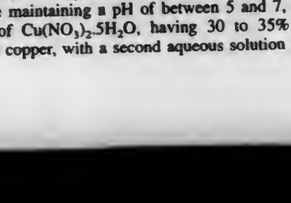
Claims priority, application United Kingdom, Mar. 24, 1993, 9306062

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—291 **8 Claims**

1. A compound of the formula:

(1a)



(1b) in which

A - - - B is CH═CH;

X is a pyridine ring;

n is 0;

X and the ring adjacent to it form quinolyl;

R^2 is phenyl, methylenedioxyphenyl, nitrophenyl, dichlorophenyl, methyl benzoate, pyridyl, or thienyl;

R^2 is phenyl, methylenedioxyphenyl, nitrophenyl, dichlorophenyl, methyl benzoate, pyridyl, or thienyl;

R^3 is nitrile, carboxy, —COOR[8] where R^8 is an alkyl group; and

(1c) R^4 is 1-pyrrolyl;

and salts thereof.

5,576,326

COPPER AMINO ACIDATE DIIMINE NITRATE COMPOUNDS AND THEIR METHYL DERIVATIVES AND A PROCESS FOR PREPARING THEM

(1d) **Lena R. Azuara, Villa de Cortes, Mexico, assignor to Universidad Nacional Autonoma de Mexico (UNAM), Mexico**

Continuation of Ser. No. 115,250, Sep. 1, 1993, abandoned, which is a continuation of Ser. No. 987,063, Dec. 7, 1992, abandoned, which is a continuation of Ser. No. 853,867, Mar. 20, 1992, abandoned, which is a continuation of Ser. No. 628,528, Dec. 11, 1990, abandoned. This application Sep. 8, 1994, Ser. No. 303,141

Claims priority, application Mexico, Dec. 20, 1989, 18801

The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.

Int. Cl.[6] A61K *31/44*; C07D *471/14*

U.S. Cl. 514—292 **11 Claims**

1. A process for preparing a copper amino acidate diimine nitrate compound of the formula $[CU(N—N)(N—O)]^+NO_3^-$, where the (N—N) ligand is a diimine selected from the group consisting of 1,10-phenanthroline and 4,7-dimethyl-1,10-phenanthroline and the (N—O) ligand is an amino acidate selected from the group consisting of tyrosine-alaninate, threoninate, tryptophanate, valinate, isoleucinate, cysteinate, diglycinate, phenylalaninate, glycinate, histidiante, serinate, tryosinate, aspartate, and alaninate; consisting essentially of the steps of reacting at room temperature in a reactor and while maintaining a pH of between 5 and 7, a first aqueous solution of $Cu(NO_3)_2.5H_2O$, having 30 to 35% by weight of elemental copper, with a second aqueous solution of said diimine having a ratio of 50 to 55% by weight diimine to solution to form a monodiimine nitrate as an intermediate reaction product having the formula $[Cu(N—N)(H_2O)_2]^+NO_3^-$ and then reacting said reaction product with a third aqueous solution containing 10 to 15% by weight of an amino acid selected from the group consisting of tyrosine-alanine, threonine, tryptophan, valine, isoleucine, cysteine, diglycine, phenylalanine, glycine, histidine, serine, tryosine, aspartic acid, and alanine, while keeping an alkaline pH between 7 and 8 with an aqueous-ammonical solution, to obtain a solution of a copper amino acidate diimine nitrate compound selected from the group consisting of:

[Cu(1,10-phenanthroline)(tyrosine-alaninate)]NO_3;
[Cu(1,10-phenanthroline)(threoninate)]NO_3;
[Cu(1,10-phenanthroline)(tryptophanate)]NO_3;
[Cu(1,10-phenanthroline)(valinate)]NO_3;
[Cu(1,10-phenanthroline)(isoleucinate)]NO_3;
[Cu(1,10-phenanthroline)(cysteinate)]NO_3;
[Cu(1,10-phenanthroline)(diglycinate)]NO_3;
[Cu(1,10-phenanthroline)(phenylalinate)]NO_3;
[Cu(1,10-phenanthroline)(glycinate)]NO_3;
[Cu(1,10-phenanthroline)(histidinate)]NO_3;
[Cu(1,10-phenanthroline)(serininate)]NO_3;
[Cu(1,10-phenanthroline)(tyrosinate)]NO_3;
[Cu(1,10-phenanthroline)(aspartate)]NO_3;
[Cu(1,10-phenanthroline)(alaninate)]NO_3;
[Cu(4,7-dimethyl,1,10-phenanthroline)(phenylalaninate)]NO_3;
[Cu(4,7-dimethyl,1,10-phenanthroline)(glycinate)]NO_3;
[Cu(4,7-dimethyl,1,10-phenanthroline)(histidinate)]NO_3;
[Cu(4,7-dimethyl,1,10-phenanthroline)(tyrosinate)]NO_3;
[Cu(4,7-dimethyl,1,10-phenanthroline)(alaninate)]NO_3;

and then separating the compound from the solution.

5,576,327

TREATMENT OF HEART RHYTHYM DISORDERS BY ADMINISTRATION OF 3-PHENYLSULFONYL-3, 7-DIAZABICYCLO[3.3.1]NONANE COMPOUNDS

Uwe Schoen, Burgdorf; Arman Farjam, Moenchengladbach; Reinhard Brueckner, Hanover, and Dieter Ziegler, Hemmingen, all of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Germany

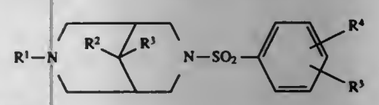
Filed Feb. 1, 1995, Ser. No. 382,262

Claims priority, application Germany, Feb. 1, 1994, 44 02 931.4

Int. Cl.[6] A61K *31/435*; C07D *471/08*

U.S. Cl. 514—300 **4 Claims**

1. A method of treating cardiac arrhythmias in a mammal comprising identifying a mammal in need of such treatment and then administering to said mammal an effective cardiac rhythm affecting amount of a 3-phenylsulfonyl-3,7-diazabicyclo[3.3.1]nonane compound corresponding to the formula I



wherein

R^1 is an alkyl group having 1–6 carbon atoms or a cycloalkylalkyl group having 4–7 carbon atoms,

R^2 and R^3 are each independently lower alkyl or together form an alkylene chain having 3–6 carbon atoms,

R^4 is halogen, nitro, trifluoromethyl or cyano, an R^6—O—CO— group in which R^6 is lower alkyl, an R^7-SO_2-NH- group in which R^7 is lower alkyl, or an R^8—CO—NH— group in which R^8 is lower alkyl or a phenyl ring which is optionally substituted by halogen, cyano, nitro or an R^9—SO_2— radical in which R^9 is lower alkyl, or an imidazolyl radical located in the 4-position of the phenyl ring, and

R^5 is hydrogen or halogen;

or a physiologically acceptable acid addition salt thereof.

5,576,328

METHOD FOR THE SECONDARY PREVENTION OF ISCHEMIC EVENTS

Jean-Marc Herbert, Tournefeuille; Daniel Frehel, Toulouse; André Bernat, Cugnaux; Alain Badorc, Roquettes; Pierre Savi, Seysses; Denis Delebassé, Goyrans; Gilles Kieffer, Montpellier; Ghislain Defreyn, Eaunes, and Jean-Pierre Maffrand, Portet/Garonne, all of France, assignors to Elf Sanofi, Paris, France

Filed Jan. 31, 1994, Ser. No. 190,332

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—301 **20 Claims**

1. A method for preventing the occurrence of a secondary ischemic event comprising administering to a patient who has suffered a primary ischemic event a therapeutically effective amount of a compound selected from clopidogrel and a pharmaceutically acceptable acid addition salt thereof, together with a pharmaceutically acceptable carrier.

5,576,329

METHOD FOR TREATING TENDON OR JOINT INFLAMMATION WITH PAPAVERINE HCL

Richard K. Hennessey, 803 Cottonwood Dr., Severna Park, Md. 21146

Continuation-in-part of Ser. No. 917,891, Jul. 24, 1992, Pat. No. 5,278,172. This application Jan. 10, 1994, Ser. No. 179,553

Int. Cl.[6] A61K *31/47*

U.S. Cl. 514—307 **5 Claims**

1. A process for treating inflammation of a tendon and/or joint of a patient in need of such treatment, comprising topically administering, to an external area near to the tendon and/or joint, an effective amount of a composition comprising:

(a) a therapeutically effective amount of an active ingredient comprising papaverine hydrochloride; and

(b) a carrier for the topical administration of said active ingredient, wherein said carrier predominantly comprises water, and wherein

said active ingredient is at least partially soluble in said carrier, and said carrier enables the penetration of the active ingredient through the skin and absorption of said active ingredient into the subcutaneous tissue such that said active ingredient contacts the tendon and/or joint.

5,576,330

BIOLOGICALLY ACTIVE 3-SUBSTITUTED OXINDOLE DERIVATIVES USEFUL AS ANTI-ANGIOGENIC AGENTS

Franco Buzzetti, Monza; Antonio Longo, Milan; Maria G. Brasca, Cusago; Fabrizio Orzi, Milan; Angelo Crugnola, Varese; Dario Ballinari, S. Donato Mil., and Mariangela Mariani, Desio, all of Italy, assignors to Farmitalia Carlo Erba S.r.l., Milan, Italy

Filed Dec. 12, 1994, Ser. No. 354,215

Claims priority, application United Kingdom, Dec. 22, 1993, 9326136

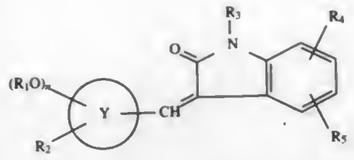
Int. Cl.[6] A61K *31/47*;*31/40*;*31/015*

U.S. Cl. 514—307 **22 Claims**

1. A composition comprising

(a) a therapeutically effective amount an angiogenesis inhibitor of the formula (I) :

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(I)

or a pharmaceutically acceptable salt thereof, wherein

Y is a bicyclic ring selected from naphthalene, tetralin, quinoline, isoquinoline and indole;

n is zero or an integer of 1 to 3;

R_1 is hydrogen, C_1–C_6 alkyl or C_1–C_6 alkanoyl;

R_2 is hydrogen, halogen, C_1–C_6 alkyl, cyano, carboxy, nitro or NHR, wherein R is hydrogen or C_1–C_6 alkyl;

R_3 is hydrogen or C_1–C_6 alkyl;

R_4 is hydrogen, hydroxy, C_1–C_6 alkoxy, C_2–C_6 alkanoyloxy, carboxy, nitro or NHR, wherein R is as defined above; and

R_5 is hydrogen, C_1–C_6 alkyl or halogen;

wherein when Y is tetralin, quinoline, isoquinoline or indole then n is zero, 1 or 2; when Y is naphthalene, quinoline, isoquinoline or indole, then each of the substituents OR_1, R_2 and oxindolylidene may be independently on either of the aryl or heteroaryl moieties of Y, whereas only the benzene moiety is substituted when Y is tetralin; and when Y is naphthalene, tetralin, quinoline or isoquinoline, then R_2 is hydrogen, halogen, cyano or C_1–C_6 alkyl and R_3, R_4 and R_5 are hydrogen; whereas when Y is indole, then R_2 is hydrogen, halogen, C_1–C_6 alkyl, cyano, carboxy, nitro or —NHR, in which R is as defined above, R_3 is hydrogen or C_1–C_6 alkyl, R_4 is hydrogen, hydroxy, C_1–C_6 alkoxy, C_2–C_6 alkanoyloxy, carboxy, nitro or —NHR, wherein R is as defined above, and R_5 is hydrogen, halogen or C_1–C_6 alkyl; and

(b) an effective amount of an antitumor agent.

5,576,331

AGENT FOR PREVENTING AND TREATING DISTURBANCES OF INTESTINAL MUCOUS MEMBRANE

Katsuya Yamasaki; Kazushi Sakurai; Kazue Akiyama, and Toshihiro Osaka, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/01700, § 371 Date Jul. 22, 1994, § 102(e) Date Jul. 22, 1994, PCT Pub. No. WO94/12182, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 19, 1993, Ser. No. 256,372

Claims priority, application Japan, Nov. 26, 1992, 4-316852; Sep. 17, 1993, 5-231353

Int. Cl.[6] A61K *31/47*

U.S. Cl. 514—312 **9 Claims**

1. A method for preventing and treating disturbances of intestinal mucous membrane comprising administering to a patient in need thereof a pharmaceutical composition comprising, as the active ingredient, an effective amount for preventing and treating disturbances of intestinal mucous membrane of 2-(4-chlorobenzoylamino)-3-(2-quinolon-4-yl) propionic acid or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier.

5,576,332

SOFT BETA-ADRENEGIC BLOCKING AGENTS

Nicholas S. Bodor, 7211 Southwest 97th La., Gainesville, Fla. 32608

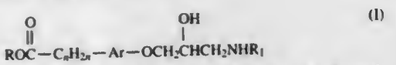
Division of Ser. No. 239,414, May 6, 1994, Pat. No. 5,482,961, which is a division of Ser. No. 997,248, Dec. 28, 1992, Pat. No. 5,334,601, which is a division of Ser. No. 822,127, Jan. 17, 1992, Pat. No. 5,202,347, which is a division of Ser. No. 692,260, Apr. 26, 1991, Pat. No. 5,135,926, which is a continuation of Ser. No. 286,879, Dec. 20, 1988, abandoned, which is a division of Ser. No. 922,462, Oct. 23, 1986, Pat. No. 4,829,086, which is a continuation of Ser. No. 741,846, Jun. 6, 1985, abandoned, which is a continuation-in-part of Ser. No. 589,359, Mar. 14, 1984, abandoned. This application May 31, 1995, Ser. No. 454,946

Claims priority, application Canada, Mar. 13, 1985, 07/476391

Int. Cl.[6] A61K *31/215;* **C07C** *69/616*

U.S. Cl. 514—312 **11 Claims**

1. A compound of the formula



(I)

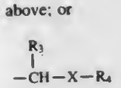
or a pharmaceutically acceptable acid addition salt thereof, wherein:

n is one;

R is:

$—CH_2—X—R_2$ wherein X is S, SO or SO_2 and R_2 is C_1–C_7 alkyl or C_3–C_{12} cycloalkyl;

$—CH_2—$



wherein R_2 is defined as above; or

wherein X is defined as above, and wherein R_3 is C_1–C_7 alkyl and R_4 is C_1–C_7 alkyl, or wherein R_3 and R_4 together represent $—(CH_2)_m—$ wherein m is 3 or 4 and $—(CH_2)_m—$ is optionally substituted by one to three C_1–C_7 alkyl;

R_1 is C_1–C_7 alkyl; and

Ar is a divalent fused ring system having two or three rings and at least one benzene nucleus, and optionally having one or two hetero ring atoms selected from the group consisting of N, O and S.

5,576,333

CARBOXAMIDE DERIVATIVES

Scott C. Miller, Wilmington, Del., assignor to ZENECA Limited, London, England

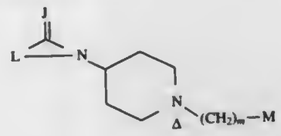
Continuation-in-part of Ser. No. 971,141, Nov. 3, 1992, abandoned. This application Nov. 3, 1993, Ser. No. 148,184

Claims priority, application United Kingdom, Jul. 16, 1993, 9314783

Int. Cl.[6] C07D *211/26;401/04;* **A61K** *31/445*

U.S. Cl. 514—316 **21 Claims**

1. A compound of formula Id:



(Id)

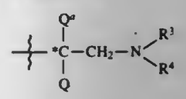
wherein

J is oxygen, sulfur or NR^a in which R^a is hydrogen or (1–3) alkyl;

L is a divalent hydrocarbon group selected from trimethylene, tetramethylene and cis-butenylene, which divalent group L itself may bear one or two methyl substituents;

m is 2 or 3;

M is a residue of formula Ia:



(Ia)

wherein

Q is phenyl which may bear one or two substituents independently selected from halo, trifluoromethyl, hydroxy, (1—3C)alkoxy, (1–3C)alkyl and methylenedioxy; or Q is thienyl, imidazolyl, benzo[b]thiophenyl or naphthyl any of which may bear a halo substituent; or Q is biphenylyl; or Q is carbon-linked indolyl which may bear a benzyl substituent at the 1-position;

Q^a is hydrogen, (1–4C)alkyl, or a radical of formula $—(CH_2)_q—NR^7R^8$ in which q is 2 or 3 and R^7 and R^8 are independently (1–4C)alkyl or NR^7R^8 is piperidino or 4-benzylpiperidino;

R^5 is hydrogen, methyl or (2–6C)n-alkyl which may bear a terminal amino radical; and

R^4 is $—COR^5$, $—COOR^5$ or $—C(=J^1)NHR^5$ in which J^1 is oxygen or sulfur and R^5 is hydrogen, (1–6C)alkyl, phenyl(1–3C)alkyl (in which the phenyl may bear one or two halo, hydroxy, (1–4C)alkoxy or (1–4C)alkyl substituents), pyridyl(1–3C)alkyl, naphthyl(1–3C)alkyl, pyridylthio(1–3C)alkyl, styryl, 1-methylimidazol-2-ylthio(1–3C)alkyl, phenyl, or an ortho-fused bicyclic carbocyclic radical having about nine to ten ring atoms in which at least one ring is aromatic, wherein the phenyl or the ortho-fused bicyclic carbocyclic radical may bear one or two halo, hydroxy, (1–4C)alkoxy or (1–4C)alkyl substituents; or when R^4 is $—COR^5$, R^5 is α-hydroxybenzyl;

or a pharmaceutically acceptable salt thereof.

5,576,334

ACYLUREA DERIVATIVES

George R. Brown, Wilmslow, and Richard E. Shute, Macclesfield, both of United Kingdom, assignors to Zeneca Limited, London, United Kingdom

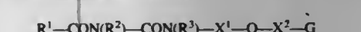
Filed Jun. 27, 1994, Ser. No. 266,462

Claims priority, application United Kingdom, Jun. 28, 1993, 9313268

Int. Cl.[6] A61K *31/235;31/17;* **C07D** *211/92;225/00*

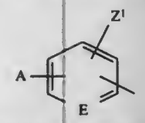
U.S. Cl. 514—317 **11 Claims**

1. A compound of formula I



I

wherein R^1 represents a group of formula II



II

in which A is attached meta or para to the position where the group $CONR^2CONR^3$ is attached and is selected from guanidino and $R^aN{=}C(NH_2)—$ where R^a is hydrogen or phenyl which is unsubstituted or substituted by 1 or 2 of halogeno, (1–4C)alkyl, (1–4C)alkoxy, cyano and nitro,

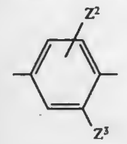
E is CH or N, and

Z^1 is hydrogen, halogeno, (1–4C)alkyl, (1–4C)alkoxy;

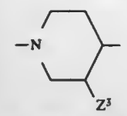
R^2 and R^3 which may be the same or different represent hydrogen (1–4C)alkyl or ar(1–4C)alkyl;

X^1 is a bond or (1–4C)alkylene, provided that when Q is a group of formula V, X^1 is not methylene;

Q is a group of formula IV or V



IV



V

in which Z^2 is hydrogen, halogeno, (1–4C)alkyl, (1–4C)alkoxy, cyano or nitro, and

Z^3 is a group of formula $X^2—G^a$ in which X^2 can have any of the values given hereinafter for X^2 and G^a can have any of the values given hereinafter for G, or G^a has any of the values given hereinbefore for Z^2;

or the partial structure of formula NR^3X^1Q is a group of formula V in which Z^3 can have any of the values given hereinbefore for Z^3;

X^2 is a bond, (1–4C)alkylene, oxy(1–3C)alkylene, (1–3C)alkylene-oxy(1–3C)alkylene or a group of formula $CH_2CH(NHXR^4)$ in which X is SO_2, CO or CO_2 and R^4 is (1–6C)alkyl, (6–12C)aryl or (6–12C)aryl(1–4C)alkyl in which any aryl group is optionally substituted by (1–4C)alkyl, or X^2 is a group of formula $CH_2CH(CH_2CH_2O(1–4C)alkyl)$; and

G is a carboxy group or a pharmaceutically acceptable metabolically labile ester or amide thereof;

or a pharmaceutically acceptable salt thereof.

5,576,335

UREA DERIVATIVES AND THEIR USE AS ACAT INHIBITORS

Noriyoshi Sueda, Saitama-ken; Kazuhiko Yamada, Komoro; Makato Yanai, Saitama-ken; Katsutoshi Miura, Saitama-ken; Masato Horigome, Saitama-ken; Norio Oshida, Saitama-ken; Shigeru Hiramoto, Saitama-ken; Koichi Katasuyama, Saitama-ken; Fumihisa Nakata, Saitama-ken; Nobuhiro Kinoshita, Saitama-ken, and Yoko Tsukada, Saitama-ken, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Saitama-ken, Japan

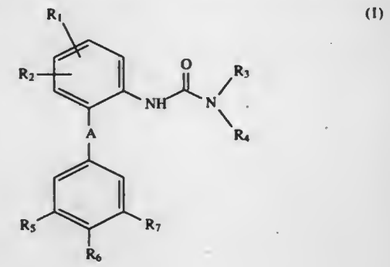
Filed Sep. 29, 1994, Ser. No. 314,814

Claims priority, application Japan, Feb. 1, 1994, 6-027560

Int. Cl.[6] C07D *211/26;213/36;* **A61K** *31/445;31/44*

U.S. Cl. 514—317 **7 Claims**

1. A compound of formula (1) or a pharmaceutically acceptable salt thereof



(I)

in which:

R_1 and R_2, which may be the same or different, each represents
- a hydrogen atom,
- a halogen atom,
- a (C_1–C_6) alkoxy group,

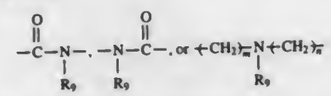
R_3 and R_4, which may be the same or different, each represents
- a hydrogen atom,
- a (C_1–C_8) alkyl group,
- a cyclo(C_3–C_8) alkyl group,
- an aryl(C_1–C_6) alkyl group,
- in which the aryl moiety is optionally substituted by one or two substituents selected from the group consisting of halogen, (C_1–C_6) alkyl and (C_1–C_6) alkoxy,
- a diaryl(C_1–C_6) alkyl group,
- a pyridyl(C_1–C_6) alkyl group,
- an adamantyl group or
- a piperidyl group optionally substituted by aryl(C_1–C_6) alkyl,

R_5 and R_7, which may be the same or different, each represents a hydrogen atom or a (C_1–C_6) alkyl group,

R_6 represents $—OR_8$ or $—N(R_8)_2$ wherein R_8 represents a hydrogen atom or a (C_1–C_6) alkyl group, or $—C(O)NHR_3$ wherein R_3 is as defined above,

R_6 and R_7 together may form $—O—CH_2—O—$ which may be fused with a phenyl ring,

A represents



wherein R_9 represents a hydrogen atom, a (C_1–C_6) alkyl group, a (C_1–C_6) alkylcarbonyl group, a geranyl group or $—C(O)NHR_3$, and m is 0 when n is 1 or m is 1 when n is 0 the alkyl and alkoxy groups or moieties represented by R_1 to R_9 may be straight or branched with the proviso that when A is



and R_6 is OR_8, R_8 is not a (C_1–C_6)alkyl group.

5,576,336

INDOLE DERIVATIVES AS DOPAMINE D_4 ANTAGONISTS

Raymond Baker, Green Tye; Howard B. Broughton, Harlow; Janusz J. Kulagowski, Bishops Stortford; Paul D. Leeson, Cambridge, and Ian M. Mawer, Bishops Stortford, all of Great Britain, assignors to Merck Sharp & Dohme Limited, Hoddesdon, England

PCT No. PCT/GB94/00527, § 371 Date Sep. 13, 1995, § 102(e) Date Sep. 13, 1995, PCT Pub. No. WO94/21627, PCT Pub. Date Sep. 29, 1994

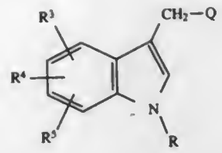
PCT Filed Mar. 16, 1994, Ser. No. 525,695

Claims priority, application United Kingdom, Mar. 18, 1993, 9305642; Aug. 10, 1993, 9316627

Int. Cl.[6] A61K *31/40*; C07D *211/14*

U.S. Cl. 514—323 **9 Claims**

1. A compound of formula I, or a salt or prodrug thereof:

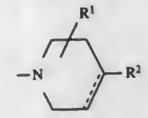


(I)

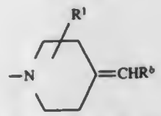
wherein

R represents hydrogen or C_{1-6} alkyl;

Q represents a moiety of formula Qa or Qb:



(Qa)



(Qb)

in which the broken line represents an optional chemical bond;

R^1 represents hydrogen, or an optionally substituted C_{1-6} alkyl, C_{1-6} alkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, aryl, aryl(C_{1-6}) alkyl, aryloxy(C_{1-6}) alkyl, aryl(C_{1-6})alkoxy, aryl(C_{1-6})alkylthio, aryl(C_{2-6})alkenyl, aryl(C_{2-6})alkynyl, C_{3-7} heterocycloalkyl(C_{1-6})alkyl, heteroaryl, heteroaryl(C 1–6)alkyl, heteroaryl(C_{2-6})alkenyl or heteroaryl(C_{2-6})alkynyl group;

R^2 represents an optionally substituted C_{1-6} alkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl or C_{3-7} heterocycloalkyl(C_{1-6})alkyl group; or aryl(C_{2-6})alkyl, aryloxy(C_{1-6})alkyl, aryl(C_{1-6})alkoxy, aryl(C_{1-6})alkylthio, aryl(C_{2-6})alkenyl, aryl(C_{2-6})alkynyl, heteroaryl(C_{2-6})alkyl, heteroaryl(C_{2-6})alkenyl or heteroaryl(C_{2-6})alkynyl, any of which groups may be optionally substituted on the aromatic moiety;

R^6 represents an optionally substituted C_{1-6} alkyl, C_{1-6} alkoxy, C_{2-6} alkenyl, C_{2-6} alkynyl, aryl, aryl(C_{1-6})alkyl, aryloxy(C_{1-6})alkyl, aryl(C_{1-6})alkoxy, aryl(C_{1-6})alkylthio, aryl(C_{2-6})alkenyl, aryl(C_{2-6})alkynyl, C_{3-7} heterocycloalkyl(C_{1-6})alkyl, heteroaryl, heteroaryl(C_{1-6})alkyl, heteroaryl(C_{2-6})alkenyl or heteroaryl(C_{2-6})alkynyl group;

R^3, R^4 and R^5 independently represent hydrogen, hydrocarbon, a heterocyclic group, halogen, cyano, trifluoromethyl, nitro, $—OR^a$, $—SR^a$, $—SOR^a$, $—SO_2R^a$, $—SO_2NR^aR^b$, $—NR^aR^b$, $—NR^aCOR^b$, $—NR^aCO_2R^b$, $—COR^a$, $—CO_2R^a$ or $—CONR^aR^b$; and

R^a and R^b independently represent hydrogen, hydrocarbon or a heterocyclic group.

5,576,337

METHOD OF TREATING ANXIETY BY INHIBITING PHYSIOLOGICAL CONDITIONS ASSOCIATED WITH AN EXCESS OF NEUROPEPTIDE Y

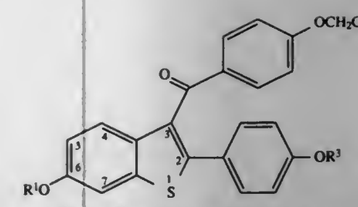
Robert F. Bruns, Jr., Carmel; Donald R. Gehlert, Indianapolis, both of Ind.; J. Jeffry Howbert, Bellevue, Wash., and William H. W. Lunn, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 326,675, Oct. 20, 1994. This application Aug. 21, 1996, Ser. No. 517,316

Int. Cl.[6] A61K *31/445*;*31/40*

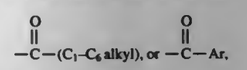
U.S. Cl. 514—324 **4 Claims**

1. A method of inhibiting a physiological disorder associated with an excess of neuropeptide Y, comprising administering to a human in need thereof an effective amount of a compound having the formula



(I)

wherein R^1 and R^3 are independently hydrogen, $—CH_3$,



wherein Ar is optionally substituted phenyl;

R^2 is selected from the group consisting of pyrrolidine, hexamethyleneimino, and piperidino; or a pharmaceutically acceptable salt of solvate thereof, wherein the condition associated with an excess of neuropeptide Y is anxiety.

5,576,338

BIS (BIARYL) COMPOUNDS AS INHIBITORS OF LEUKOTRIENE BIOSYNTHESIS

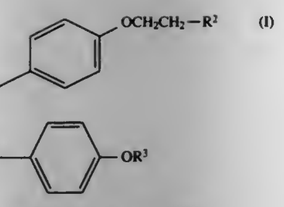
Richard Friesen, Dollard des Ormeaux; Yves Ducharme, Montreal; Daniel Dube', St. Lazare; Carole Lepine, Laval; Daniel Delorme, St. Lazare, and Pierre Hamel, Laval, all of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

Filed Feb. 15, 1995, Ser. No. 388,787

Int. Cl.[6] A61K *31/44*; C07C *311/02*; C07D *401/04*

U.S. Cl. 514—337 **12 Claims**

1. A compound of Formula I:



I

wherein:

Ar^1 is Ph—$(R^1)_2$, Py, Fu, Th or Tz;

Ar^2 is Phe-$(R^2)_2$, or Pye;

Ar^3 is 2H-1-benzopyran-2-one;

Ar^4 is Ph—$(R^1)_2$, Py, Fu, Ox, or Pyr;

X is OCH_2, CH_2O, S, S(O), or $S(O)_2$;

R^1 is H, lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl, CN, CF_3, CO_2R^4, or halogen;

R^2 is H, lower alkyl, lower alkoxy, lower alkylthio, CN, CF_3 or halogen; and

R^4 is H or lower alkyl.

5,576,339

PYRIDYL SUBSTITUTED CYCLOPENTADIENES FOR THE TREATMENT OF INFLAMATION

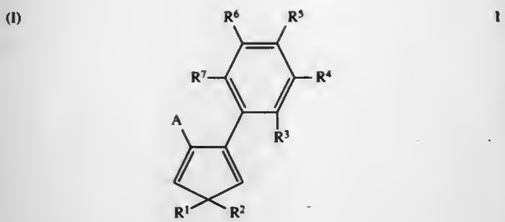
Horng-Chih Huang, 15481 Duxbury Way, and David R. Reitz, 14814 Pleasant Ridge Ct., both of Chesterfield, Mo. 63017

Continuation of Ser. No. 238,101, May 4, 1994, Pat. No. 5,418,254. This application Apr. 5, 1995, Ser. No. 417,341

Int. Cl.[6] A61K *31/44*

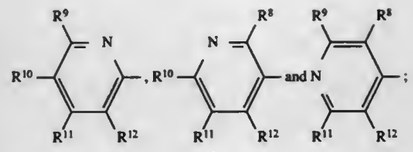
U.S. Cl. 514—345 **31 Claims**

1. A pharmaceutical composition comprising a therapeutically-effective amount of a compound, said compound selected from a family of compounds of Formula I



I

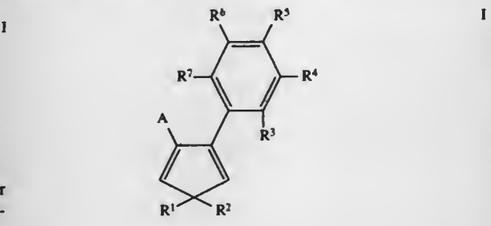
wherein A is selected from



wherein each of R^1 and R^2 is independently selected from alkyl, hydrido, hydroxyalkyl, halo, haloalkyl, alkoxycarbonyl and carboxyl; and

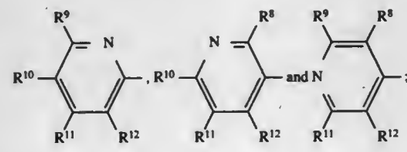
wherein each of R^3 through R^{12} is independently selected from hydrido, halo, alkyl, alkylthio, cyano, hydroxyl, mercapto, haloalkyl, alkoxy, haloalkoxy, hydroxyalkyl, alkoxyalkyl, alkylsulfonyl, haloalkylsulfonyl and sulfamyl; or a pharmaceutically suitable salt thereof.

14. A method of treating inflammation or an inflammation-associated disorder in a subject, said method comprising administering to the subject having or susceptible to said inflammation or inflammation-associated disorder, a therapeutically-effective amount of a compound of Formula I



I

wherein A is selected from



wherein each of R^1 and R^2 is independently selected from alkyl, hydrido, hydroxyalkyl, halo, haloalkyl, alkoxycarbonyl and carboxyl; and

wherein each of R^3 through R^{12} is independently selected from hydrido, halo, alkyl, alkylthio, cyano, hydroxyl, mercapto, haloalkyl, alkoxy, haloalkoxy, hydroxyalkyl, alkoxyalkyl, alkylsulfonyl, haloalkylsulfonyl and sulfamyl; or a pharmaceutically suitable salt or prodrug thereof.

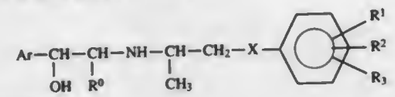
5,576,340

AROMATIC AMINO-ALCOHOL DERIVATIVES HAVING ANTI-DIABETIC AND ANTI-OBESITY PROPERTIES, THEIR PREPARATION AND THEIR THERAPEUTIC USES

Takashi Fujita; Takao Yoshioka; Horoyoshi Horikoshi, and Shinji Yoshioka, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Continuation of Ser. No. 178,465, Jan. 6, 1994, abandoned, which is a continuation of Ser. No. 979,180, Nov. 20, 1992, abandoned. This application Jan. 26, 1995, Ser. No. 378,879
Claims priority, application Japan, Nov. 20, 1991, 3-304581
Int. Cl.[6] A61K *31/475;* C07D *277/34*
U.S. Cl. 514—369 66 Claims

1. A compound of formula (I):



(I)

wherein:

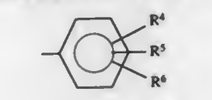
R^0 represents a hydrogen atom, a methyl group or a hydroxymethyl group;

R^1 represents a substituted alkyl group having from 1 to 12 carbon atoms, which group is substituted by at least one substituent selected from substituents A, defined below;

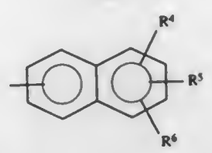
R^2 and R^3 are independently selected from the group consisting of: hydrogen atoms; halogen atoms; hydroxy groups; alkoxy groups having from 1 to 5 carbon atoms; carboxy groups; alkoxycarbonyl groups having from 2 to 7 carbon atoms; alkyl groups having from 1 to 5 carbon atoms; nitro groups; haloalkyl groups having from 1 to 4 carbon atoms; and substituted alkyl groups which have from 1 to 12 carbon atoms and which are substituted by at least one substituent selected from substituents A, defined below;

X represents an oxygen or sulfur atom; and

Ar represents a group of formula (II) or (III):



(II)



(III)

wherein:

R^4 represents a hydrogen atom, a halogen atom, a hydroxy group, a hydroxymethyl group, an alkoxy group having from 1 to 5 carbon atoms, an alkyl group having from 1 to 5 carbon atoms, an aliphatic carboxylic acyloxy group having from 1 to 6 carbon atoms, a nitro group, a cyano group, an aralkyloxy group, in which the aralkyl part is as defined below, an aryloxy group in which the aryl part is as defined below, an aryl group as defined below or a haloalkyl group having from 1 to 4 carbon atoms;

R^5 represents a hydrogen atom, a halogen atom, a hydroxy group, an alkoxy group having from 1 to 5 carbon atoms, an alkyl group having from 1 to 5 carbon atoms or a nitro group; and

R^6 represents a hydrogen atom, a halogen atom, a hydroxy group, an alkoxy group having from 1 to 5 carbon atoms or an alkyl group having from 1 to 5 carbon atoms;

said aralkyl part is an alkyl group which has from 1 to 3 carbon atoms and which is substituted by 1 or 2 aryl groups as defined below:

said aryl groups are carbocyclic aryl groups which have from 6 to 10 ring carbon atoms and which are unsubstituted or are substituted by at least one substituent selected from the group consisting of substituents B, defined below;

said substituents A are 2,4-dioxothiazolidin-5-yl groups; and

said substituents B are selected from the group consisting of halogen atoms, alkyl groups having from 1 to 4 carbon atoms, alkoxy groups having from 1 to 3 carbon atoms, nitro groups, haloalkyl groups having from 1 to 4 carbon atoms and hydroxy groups;

or a pharmaceutically acceptable salt thereof.

5,576,341

2-[[2-(N-ISOBUTYL-N-METHYL)AMINO]BENZYLSULFINYL]-BENZIMIDAZOLE AS ANTIMICROBIAL AGENT

Mitsuo Masaki; Tomio Yamakawa; Yutaka Nomura, all of Chiba, and Hitoshi Matsukura, Saitama, all of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1994, Ser. No. 228,750
Claims priority, application Japan, Apr. 16, 1993, 5-113942
Int. Cl.[6] A61K *31/415*
U.S. Cl. 514—395 2 Claims

1. A method for treating infections caused by *Helicobacter pylori* consisting essentially of administering to a patient 2-[[2-(N-isobutyl-N-methyl)amino]benzylsulfinyl]benzimidazole in an amount sufficient to the treatment of the infection.

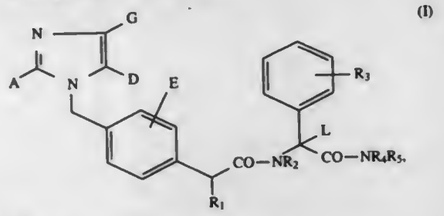
5,576,342

PHENYLGLYCINAMIDES OF HETEROCYCLICALLY SUBSTITUED PHENYLACETIC ACID DERIVATIVES

Ulrich Müller, Wuppertal; Jürgen Dressel, Radevormwald; Peter Fey, Wuppertal; Rudolf Hanko, Essen; Walter Hübsch; Thomas Krämer, both of Wuppertal; Matthias Müller-Gliemann, Solingen; Martin Beuck, Erkrath; Stanislav Kazda, Wuppertal; Stefan Wohlfeil, Hilden; Andreas Knorr, Erkrath; Johannes-Peter Stasch, Solingen, and Siegfried Zaiss, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 25,479, Mar. 3, 1993, Pat. No. 5,352,687, and Ser. No. 25,495, Mar. 3, 1993, Pat. No. 5,420,149. This application Mar. 18, 1994, Ser. No. 210,810
Claims priority, application Germany, Mar. 26, 1993, 43 09 968.8
Int. Cl.[6] A61K *31/535;31/415;* C07D *413/10;403/10*
U.S. Cl. 514—399 9 Claims

1. A phenylglycinamide of the formula



(I)

in which

A represents straight-chain or branched alkyl or alkenyl each having up to 8 carbon atoms, or represents cycloalkyl having 3 to 8 carbon atoms,

G represents hydrogen, halogen or perfluoroalkyl having up to 5 carbon atoms,

D represents a group of the formula $—CH_2—OR^6$ or —CO—R^7,

in which

R^6 denotes hydrogen or straight-chain or branched alkyl having up to 8 carbon atoms,

R^7 denotes hydrogen, hydroxyl or straight-chain or branched alkoxy having up to 8 carbon atoms,

E represents hydrogen, halogen, nitro, hydroxyl, trifluoromethyl, trifluoromethoxy, straight-chain or branched alkyl, alkoxy or alkoxycarbonyl each having up to 6 carbon atoms, cyano or carboxyl,

L represents hydrogen or straight-chain or branched alkyl having up to 4 carbon atoms,

R^1 represents cycloalkyl having 3 to 8 carbon atoms, or represents straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by cycloalkyl having 3 to 8 carbon atoms,

R^2 represents hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms,

R^3 represents hydrogen, hydroxyl, halogen or straight-chain or branched alkoxy having up to 6 carbon atoms,

R^4 and R^5 are identical or different and represent hydrogen, pyridyl, cycloalkyl having 3 to 8 carbon atoms, phenyl, or straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by hydroxyl, pyridyl, carboxyl, straight-chain or branched alkoxycarbonyl having up to 6 carbon atoms or by a group of the formula $—NR^8R^9$,

in which

R^8 and R^9 are identical or different and denote hydrogen or straight-chain or branched alkyl having up to 4 carbon atoms

or

R^4 and R^5, together with the nitrogen atom, form a morpholine piperazine or piperidine ring or a salt therof.

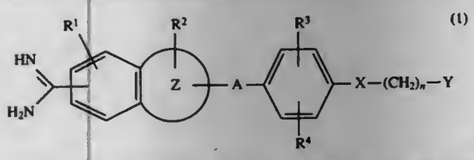
5,576,343

AROMATIC AMIDINE DERIVATIVES AND SALTS THEREOF

Takayasu Nagahara; Naoaki Kanaya; Kazue Inamura, and Yukio Yokoyama, all of Tokyo, Japan, assignors to Daiichi Pharmaceutical Co., Ltd., Tokyo, Japan

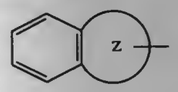
Division of Ser. No. 282,571, Jul. 29, 1994, abandoned, which is a continuation of Ser. No. 969,396, Oct. 30, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 468,304
Claims priority, application Japan, Oct. 31, 1991, 3-286088
Int. Cl.[6] A61K *31/40;* C07D *207/09*
U.S. Cl. 514—422 14 Claims

1. An aromatic amidine derivative represented by the following general formula (1) or a pharmaceutically acceptable salt thereof:



(1)

wherein R^1 is a hydrogen atom or a lower alkoxy group; R^2 is a hydrogen atom, a lower alkyl group, a lower alkoxy group, a carboxyl group, an alkoxycarbonyl group, a carboxyalkyl group or an alkoxycarbonylalkyl group; R^3 is a hydrogen atom, a carboxyl group, an alkoxycarbonyl group, a carboxyalkyl group, an alkoxycarbonylalkyl group, a carboxyalkoxy group or an alkoxycarbonylalkoxy group; R^4 is a hydrogen atom, a hydroxyl group, a lower alkyl group or a lower alkoxy group; n is an integer of 0 to 4; A is an alkylene group having a carbon number of 1 to 4, which may have 1 or 2 substituents selected from the group consisting of hydroxyalkyl, carboxyl, alkoxycarbonyl, carboxyalkyl and alkoxycarbonylalkyl; X is a single bond, an oxygen atom, a sulfur atom or a carbonyl group; Y is a substituted or unsubstituted pyrrolidinyl group; the group represented by



is a member selected from the group consisting of indolyl, benzofuranyl, benzothienyl, benzimidazolyl, benzoxazolyl, benzothiazolyl, naphthyl, tetrahydronaphthyl and indanyl; and said lower alkyl or alkoxy group has a carbon number of 1 to 6.

5,576,344

PROCESS FOR REDUCING THE ADVERSE TASTE AND MALODOR ASSOCIATED WITH H_2-ANTAGONISTS

Patricia L. Sandler, Philadelphia, Pa.; Annabelle Mogavero, Marlton, N.J.; Kalpana Patel, Voorhees, N.J., and Alexander Seabrook, Sicklerville, N.J., assignors to American Home Products Corporation, Madison, N.J.

Filed Aug. 30, 1994, Ser. No. 300,494
Int. Cl.[6] A61K *9/08*
U.S. Cl. 514—427 12 Claims

1. A process for reducing the adverse taste and malodor associated with an H_2-antagonist selected from the group consisting of cimetidine, nizatidine and famotidine comprising

(a) forming an aqueous solution of the H_2-antagonist, and

(b) subjecting said aqueous solution to elevated temperatures sufficient for a period sufficient to cause a reduction in the adverse taste and/or malodor of the H_2-antagonist.

5,576,345

METHOD AND MEANS FOR INHIBITING POSTERIOR CAPSULE OPACIFICATION

Per Månsson, Sollentuna; Wenche Rolfsen, and Kerstin Wickström, both of Uppsala, all of Sweden, assignors to Pharmacia & Upjohn AB, Uppsala, Sweden

PCT No. PCT/SE94/00371, § 371 Date Feb. 26, 1996, § 102(e) Date Feb. 26, 1996, PCT Pub. No. WO94/25020, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 26, 1994, Ser. No. 553,529
Claims priority, application Sweden, Apr. 28, 1993, 9301422
Int. Cl.[6] A61K *31/335*
U.S. Cl. 514—449 12 Claims

1. A method for preventing secondary cataract after extracapsular cataract extraction, comprising administering taxol or a pharmaceutically active and ophthalmologically acceptable derivative thereof to the intraocular area after extracapsular cataract extraction.

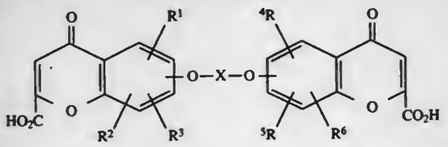
5,576,346

PROCESS FOR TREATING UREMIC PRURITUS

Emmett Clemente, Manchester; Robert W. Mendes, Dedham; Aloysius O. Anaebonam, Burlington, and Mumtaz Ahmed, Westford, all of Mass., assignors to Ascent Pharmaceuticals, Inc., Billerica, Mass.

Filed Apr. 3, 1995, Ser. No. 415,718
Int. Cl.[6] A61K *31/35*
U.S. Cl. 514—456 11 Claims

1. A process for treatment of uremic pruritus in humans comprising topically administering to the pruritic lesion of said human a composition of a pharmacologically acceptable carrier having dissolved or dispersed therein a therapeutically effective amount of a substituted chromone compound or a pharmacologically acceptable salt, ester or amide thereof, said chromone compound having a structure represented by the formula:



I

wherein

(a) R^1, R^2, R^3, R^4, R^5, and R^6 can each be the same, or different, and each R group is selected from the group consisting of hydrogen, a halo group, a C_1–C_6 lower alkyl group, hydroxyl, C_1–C_6 lower alkoxy, substituted C_1–C_6 lower alkoxy group, and a substituted C_1–C_6 lower alkyl, where the substituent is selected from the group consisting of a hydroxyl, a lower (C_1–C_6) alkoxy group, a carboxy group, a halo group, a lower alkenyl group, a benzyl group and nitro group;

(b) the X group can be a straight or branched, saturated or unsaturated hydrocarbon chain having between 3 and 10 carbon atom, whose hydrocarbon chain can be interrupted by a substituent selected from the group consisting of oxygen, a carbonyl group, a carbocyclic or heterocyclic ring and can contain a substituent selected from the group consisting of a halo group, a hydroxyl group, and a C_1–C_6 lower alkoxy group.

5,576,347

METHOD OF TREATING GASTRIC ULCERS

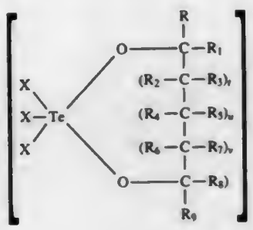
Benjamin Sredni, Shachal 3 Street, Kfar-Saba, and Michael Albeck, 8 Harel Street, Ramat-Gan, both of Israel

Filed Nov. 14, 1994, Ser. No. 339,334

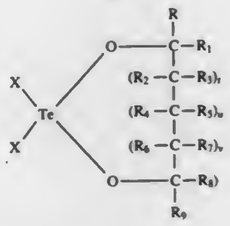
Int. Cl.[6] A61K *31/35;31/335;31/095*

U.S. Cl. 514—467 **11 Claims**

1. A method for treating gastritis which is induced by hydrochloric acid, a hydrochloric acid precursor or a non-steroidal anti-inflammatory agent, or peptic ulcers which comprises administering to a bost an effective amount of a tellurium compound of the formula:



(A)



or

or

TeO_2 or complexes of TeO_2

or

$PhTeCl_3$ (D)

or

$(C_6H_5)_4$ P+($TeCl_3(O_2C_2H_4)$)—TeX_4.

wherein; t is 1 or 0; u is 1 or 0; v is 1 or 0; R, R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8, and R_9 are the same or different and are independently selected from the group consisting of hydrogen, hydroxyalkyl of 1 to 5 carbons, hydroxy, alkyl of 1 to 5 carbon atoms, halogen, haloalkyl of 1 to 5 carbon atoms, carboxy, alkylcarbonylalkyl of 2 to 10 carbons, alkanoyloxy of 1 to 5 carbon atoms, carboxyalkyl of 1 to 5 carbons atoms, acyl, amido, cyano, amidoalkyl of 1 to 5 carbons, N-monoalkylamidoalkyl of 2 to 10 carbons, N,N-dialkylamidoalkyl of 4 to 10 carbons, cyanoalkyl of 1 to 5 carbons alkoxy of 1 to 5 carbon atoms, alkoxyalkyl of 2 to 10 carbon atoms and —COR_{10} wherein R_{10} is alkyl of from 1 to 5 carbons; and X is halogen and complexes thereof.

5,576,348

PHARMACEUTICAL PREPARATION COMPRISING AN ACYLCARNITINE

Hirohiko Kuratsune, 3-2-10, Kamishinden,, Toyonaka, and Teruo Kitani, 28-15, Fujishirodai 2-chome, Suita, both of Osaka 565, Japan

Filed May 11, 1995, Ser. No. 438,969

Claims priority, application Japan, May 12, 1994, 6-124438

Int. Cl.[6] A61K *31/225*

U.S. Cl. 514—547 **4 Claims**

1. A method of treating a symptom in a patient suffering from Acylcarnitine Metabolic Dysfunction Syndrome caused by acylcarnitine metabolic dysfunction, which comprises administering orally or parenterally a therapeutically effective amount of an acylcarnitine or a pharmacologically acceptable salt thereof to a patient in need thereof, wherein said patient has a decreased serum acylcarnitine level without a decreased serum free carnitine level.

5,576,349

RETIONOIC ACID TREATMENT OF CARDIAC ARRHYTHMIA

Alexander Leaf, Winchester, and Jing X. Kang, North Andover, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

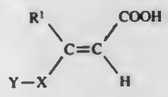
Filed Nov. 30, 1995, Ser. No. 565,160

Int. Cl.[6] A61K *31/20;31/07*

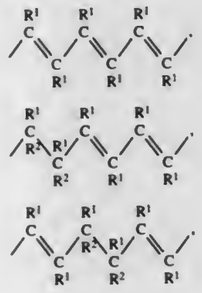
U.S. Cl. 514—559 **13 Claims**

1. A method for terminating an existing potentially lethal cardiac arrhythmia, or preventing an imminent potentially lethal cardiac arrhythmia, said method comprising administering a composition comprising an effective amount of antiarrhythmic compound defined by the formula:

(B)

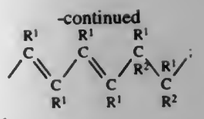


wherein X is selected from the group consisting of:

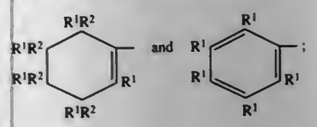


and

-continued



Y is selected from the group consisting of:



R^1 is selected from the group consisting of H, methyl, and ethyl; and R^2 is selected from the group consisting of H, methyl, and ethyl.

5,576,350

METHOD FOR PROTECTING AGAINST ENDOTOXIN-INDUCED SHOCK USING SPERMIDINE

Soo R. Wang, Taipei, Taiwan, assignor to National Science Council, Taipei, Taiwan

Division of Ser. No. 44,233, Apr. 7, 1993, Pat. No. 5,436,270. This application May 18, 1995, Ser. No. 443,538

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—565 **4 Claims**

1. A method for the treatment of shock in a patient induced by endotoxin or bacteremia comprising administering to the patient a therapeutically effective amount of spermidine dissolved in a pharmaceutically acceptable carrier.

5,576,351

USE OF ARGININE AS AN IMMUNOSTIMULATOR

Norman N. Yoshimura, Westminster, Calif.; Adrian Barbul, Baltimore, Md.; Robert C. Tao, Huntington Beach, Calif.; Michael C. Storm, Laguna Niguel, Calif.; Robert E. Kelly, Orange, Calif., and Brenda L. Reis, Costa Mesa, Calif., assignors to McGaw, Inc., Irvine, Calif.

Continuation of Ser. No. 964,567, Oct. 21, 1992, abandoned, which is a continuation of Ser. No. 635,746, Dec. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 458,996, Dec. 29, 1989, abandoned. This application Nov. 16, 1994, Ser. No. 341,443

Int. Cl.[6] A61K *31/195;31/19*

U.S. Cl. 514—565 **38 Claims**

1. An arginine supplemented dietary composition for enteral administration to human patients who have an impaired immune response due to accidental or surgical trauma, or due to old age, or due to severe malnourishment, the composition including the following concentrations of ingredients in terms of w/w %:

Ingredient	Concentration
L-arginine	6.1%
Other essential and non-essential amino acids	26.5%
Fats	8.9%
Carbohydrates	48.7%
Vitamins and Minerals	4.6%

the remaining ingredients comprising flavorings and emulsifiers.

5,576,352

METHOD OF INHIBITING GASTRIC ACID SECRETION WITH ARYLOXYPROPANOLAMINES

Jaswant S. Gidda, Carmel, and John M. Schaus, Zionsville, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 219,157, Mar. 29, 1994, Pat. No. 5,457,120, which is a division of Ser. No. 68,723, May 26, 1993, Pat. No. 5,340,838, which is a division of Ser. No. 898,991, Jun. 15, 1992, Pat. No. 5,258,379, which is a division of Ser. No. 707,357, May 29, 1991, Pat. No. 5,158,956, which is a continuation-in-part of Ser. No. 519,388, May 4, 1990, Pat. No. 5,096,908. This application Feb. 13, 1995, Ser. No. 387,492

Int. Cl.[6] A61K *31/135*

U.S. Cl. 514—647 **6 Claims**

1. A method of inhibiting gastric acid secretion in mammals in need of gastric acid secretion inhibition comprising administering to said mammal a pharmaceutically effective dose of a direct acting 5-HT_{1A} agonist which is an aryloxypropanolamine or a pharmaceutically acceptable acid addition salt thereof.

5,576,353

METHOD OF TREATING MEMORY DISORDERS USING R-ENANTIOMERS OF N-PROPARGYL-AMINOINDAN COMPOUNDS

Moussa B. H. Youdim, Haifa; John P. M. Finberg, Tivon; Ruth Levy, Tel-Aviv, and Haim Yellin, Ramat-Gan, all of Israel, assignors to Teva Pharmaceutical Industries Ltd., Jerusalem, and Technion Research and Development Foundation, Ltd., Haifa, both of Israel

Division of Ser. No. 198,205, Feb. 17, 1994, Pat. No. 5,457,133, which is a continuation of Ser. No. 63,461, May 18, 1993, abandoned, which is a continuation of Ser. No. 632,184, Dec. 21, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 459,402

Claims priority, application Israel, Jan. 3, 1990, 92952

Int. Cl.[6] A61K *31/135*

U.S. Cl. 514—647 **7 Claims**

1. A method of treating a subject for memory disorders which comprises administering to the subject an amount of R(+)-N-propargyl-1-aminoindan or a pharmaceutically acceptable salt thereof effective to treat the subject.

5,576,354

PHOTOSTABLE COSMETIC SCREENING COMPOSITION CONTAINING A UV-A SCREENING AGENT AND AN ALKYL β, β-DIPHENYLACRYLATE OR β-CYANO-β, β-DIPHENYLACRYLATE

André Deflandre, Orry-la-Ville; Michel DuBois, Coulommiers; Serge Forestier, Claye-Scuilly, and Hervé Richard, Paris, all of France, assignors to L'Oreal, Paris, France

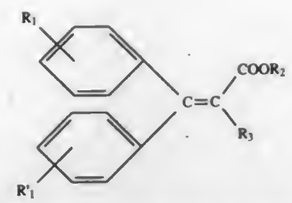
Division of Ser. No. 937,886, Oct. 14, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 463,516

Claims priority, application France, Feb. 14, 1990, 90 01761

Int. Cl.[6] A61K *31/12;7/42;7/40*

U.S. Cl. 514—685 **27 Claims**

1. Process for stabilizing dibenzoylmethane derivatives with respect to UV radiation of wavelengths between 280 and 380 nm, comprising adding at least 1% by weight of an alkyl β,β-diphenylacrylate or a α-cyano-β,β-diphenylacrylate of formula:



(I)

in which

R_1 and R'_1, which may be identical or different, represent a hydrogen atom, a straight- or branched-chain C_1–C_8 alkoxy radical or a straight- or branched-chain C_1–C_4 alkyl radical, R_1 and R'_1 being in the para or meta position; R_2 represents a straight- or branched-chain C_1–C_{12} alkyl radical; and

R_3 represents a hydrogen atom or a —CN radical; to a cosmetic screening composition containing a cosmetically acceptable vehicle having at least one fatty phase and 1 to 5% by weight of a dibenzoylmethane derivative, the mole ratio of the compound of formula (I) to the dibenzoylmethane derivative being not less than 0.8.

5,576,355

DIAMONDOID DERIVATIVES FOR PHARMACEUTICAL USE

Catherine S. H. Chen, Berkeley Hts., N.J., and Dong-ming Shen, Langhorne, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

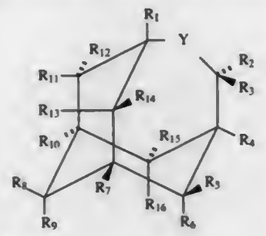
Continuation-in-part of Ser. No. 71,382, Jun. 4, 1993, Pat. No. 5,380,947. This application Dec. 15, 1993, Ser. No. 167,681

Int. Cl.[6] **A61K** *31/14;31/045;31/12;31/195*

U.S. Cl. 514—729 **13 Claims**

1. A method of inhibiting a retrovirus which comprises contacting the virus, a virus-infectable cell or a virus-infected cell with a compound of formula I, formula II or combinations thereof:

formula I



wherein

Y is a bond,

R_1, R_4, R_7 and R_{10} are individually hydrogen, hydroxyl or methyl;

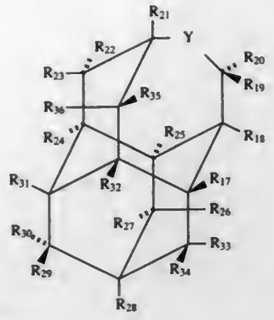
R_2, R_3, R_5, R_6, R_8, R_9, R_{11}, R_{12}, R_{13}, R_{14}, R_{15} and R_{16} are individually hydroxyl double bonded oxygen



an amino acid, a secondary amine, a tertiary amine or hydrogen;

except R_1–R_{16} are not all hydrogen and at least one of R_1–R_{16} is a polar group, or

formula II



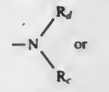
wherein

Y is a bond,

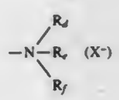
R_{17}, R_{18}, R_{21}, R_{24}4 R_{25}, R_{28}, R_{31} and R_{32} are hydrogen;

R_{19}, R_{20}, R_{22}, R_{23}, R_{26}, R_{27}, R_{29}, R_{30}, R_{33}, R_{34}, R_{35} and R_{36} are individually hydrogen, double-bonded oxygen,

formula B



formula C



wherein

R_e is methyl

R_d is methyl,

R_c is $(CH_2)_n\overset{+}{N}R'R''R'''(CH_3)_3(X^-)$, n=2 or 3, or lower alkyl of 1 to 8 carbons,

R_f is methyl

X is a counterion except that R_{17}–R_{36} are not all hydrogen and at least one of R_{17}–R_{36} is a polar group

with the proviso that the compounds of formula I have one, two or four polar groups and when the compound of formula I has more than one polar group, the polar groups are present in a 1,3; 2,4; or 1,3,5,7 relationship; and the compounds of formula II have one polar group, wherein the compound is selected from the group consisting of diamondoid alcohols, diamondoid polyols, diamondoid amino acids, diamondoid quaternary ammonium salts and diamondoid ketones.

5,576,356

CATIONICALLY CO-CURABLE POLYSILOXANE RELEASE COATINGS

Charles M. Leir, Falcon Heights; William R. Berggren, Woodbury; William R. Bronn, Maplewood; David J. Kinning, and Oiester Benson, Jr., both of Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 955,486, Oct. 2, 1992, abandoned. This application Nov. 2, 1994, Ser. No. 333,354

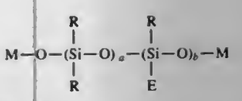
Int. Cl.[6] **C08F** *2/50;* **C08L** *83/07;83/06;83/10*

U.S. Cl. 522—31 **45 Claims**

1. A radiation curable release coating composition comprising:

(a) about 1 to about 50 percent by weight of a cationically reactive polydiorganosiloxane liquid rubber having the following formula:

Formula I



wherein

R are monovalent moieties which can be the same or different selected from the group consisting of alkyl and aryl, wherein at least about 50% of the total number of silicon atoms have two methyl groups bonded thereto;

E is an organic monovalent functional group comprising from about 1 to about 20 carbon atoms having at least one cationically co-reactive functional group;

a and b both represent integers, wherein the sum of a plus b is an integer of about 10 to about 1200;

b has a value ranging from about 0 to about 0.2a;

a is an integer of about 10 to about 1000; and

M is a silyl group which must contain at least one cationically co-reactive functional group when b=0 and may contain at least one cationically co-reactive group when b is greater than 0;

(b) about 50 to about 99 percent by weight of cationically co-reactive monomer(s) copolymerizable with said cationically co-reactive functional group of said polydiorganosiloxane liquid rubber, wherein at least one of said cationically co-reactive monomer(s) is a monomer having a higher reactivity than epoxides;

wherein the percentages of (a) and (b) are based on the total weight of (a) plus (b); and

(c) about 0.5 to about 4 parts by weight of a photoactive radiation activatable cationically reactive catalyst based on the weight of (a) plus (b).

5,576,357

ONE-COMPONENT REACTIVE RESIN SYSTEM COMPRISING A CURE-INHIBITING GLYCIDYL PHOSPHORUS COMPOUND

Heiner Bayer, Olching; Winfried Plundrich, Germering, and Ernst Wipfelder, München, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE93/01024, § 371 Date May 3, 1995, § 102(e) Date May 3, 1995, PCT Pub. No. WO94/10223, PCT Pub. Date May 11, 1994

PCT Filed Oct. 27, 1993, Ser. No. 428,251

Claims priority, application Germany, Nov. 3, 1992, 42 37 132.5

Int. Cl.[6] **C08G** *59/30;59/22;59/38;* **G03F** *7/038*

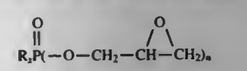
U.S. Cl. 522—170 **15 Claims**

1. A one-component reactive resin system comprising:

a phosphorus-free epoxy resin;

a photoinitiator for a cationic curing process; and

a phosphorus compound of the general formula



in which the radicals R independently of one another are an alkyl, aryl, hydroxyalkyl or alkyloxy radical, n=2 or 3 and x=(3–n) and wherein the reactive resin system comprises the phosphorus compound in an amount of more than 5 percent by weight, said reactive resin system exhibiting non-curing thermal stability prior to photoactivation at temperatures up to about 150° C. and after photoactivation exhibiting non-curing room temperature stability for a period of months and being thermally curable at temperatures of from about 100° C. to about 150° C.

5,576,358

COMPOSITION FOR USE IN FRICTION MATERIALS AND ARTICLES FORMED THEREFROM

Kwok W. Lem, Randolph, N.J.; John W. Lokerson, Panama City, Fla., and Young D. Kwon, Mendham, N.J., assignors to AlliedSignal Inc., Morris Township, N.J.

Filed Feb. 3, 1995, Ser. No. 383,390

Int. Cl.[6] **C08J** *5/14;* **C08K** *3/08;* **B01D** *5/00;* **C25B** *5/00*

U.S. Cl. 523—153 **22 Claims**

1. A composition comprised of:

a) a cure promoting compound, and

b) a matrix resin for binding the components of said composition, said matrix resin is composed of a thermoplastic resin, a thermoset resin, and combinations thereof,

wherein an effective amount of said cure promoting compound has an effective aspect ratio such that said composition is rapidly cured in the presence of electromagnetic enemy.

5,576,359

DEEP ULTRAVIOLET ABSORBENT COMPOSITION

Fumiyoshi Urano; Keiji Oono; Hiroshi Matsuda, all of Kawagoe; Masayuki Endo, Izumi, and Satoshi Kobayashi, Kadoma, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., and Matsushita Electric Industrial Co., Ltd., both of Osaka, Japan

Filed Jul. 11, 1994, Ser. No. 272,752

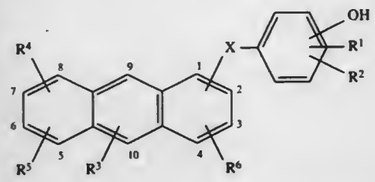
Claims priority, application Japan, Jul. 20, 1993, 5-200417; Apr. 1, 1994, 6-087770

Int. Cl.[6] **C08L** *63/02*

U.S. Cl. 523—400 **4 Claims**

1. A heat-crosslinkable, film-forming, deep ultraviolet absorbent composition comprising: at least one compound having one or more glycidyl groups in the molecule; and at least one anthracene compound of formula [1]

[1]



wherein X represents —O—SO_2—, —O—CO— or —CO—; R^1 and R^2 represent independently a hydrogen atom, an alkyl group, an alkoxyl group, a halogen atom or a hydroxyl group; R^3, R^4, R^5, and R^6 represent independently a hydrogen atom, an alkyl group, an alkyoxyl group, a halogen atom or a group of formula [2]

[2]



wherein X, R^1 and R^2 are as defined above; provided that at least one of R^3 through R^6 is a group of formula [2], and further provided that groups of formula [2] cannot be present at the 1, 8, and 9 positions of the anthracene ring at the same time;

said compounds being dissolved in a solvent.

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5,576,360

LOW VOC, AQUEOUS DISPERSED, EPOXY CROSSLINKED POLYESTER ACRYLIC COATINGS

Gary P. Craun, Berea, and Victor V. Kaminski, Seven Hills, both of Ohio, assignors to The Glidden Company, Cleveland, Ohio

Filed Jul. 14, 1994, Ser. No. 274,804
Int. Cl.[6] C08K 3/20; C08L 63/02
U.S. Cl. 523—407 23 Claims

1. An aqueous dispersed, protective coating composition substantially free of volatile organic compounds, the coating containing a film-forming polymeric binder dispersed into water, the polymeric binder comprising on a weight basis:

(a) between 2% and 95% of a preformed, carboxyl functional, addition copolymer dispersant of non-aqueous copolymerized ethylenically unsaturated monomer, the monomers containing at least 5% by weight carboxylic acid monomer, where the addition copolymer has an Acid No. above 35 and a number average molecular weight between 1,000 and 50,000;

(b) between 1% and 97% of a low molecular weight, carboxyl functional polyester oligomer having an Acid No. between 20 and 200 and a number average molecular weight between about 600 and 5,000;

(c) between 1% and 50% of a low molecular weight epoxy resin having an epoxide equivalent weight between about 100 and 1,000; and

where the polymeric binder is an epoxy crosslinked microgel copolymer produced by the addition copolymer dispersant and the polyester being dispersed into an aqueous medium to form an aqueous resin mixture, dispersing epoxy resin into the aqueous resin mixture, and crosslinking the epoxy resin with the carboxyl functionality on the addition copolymer dispersant and carboxyl functionality on the polyester to produce aqueous dispersed epoxy crosslinked microgel polymer particles having a particle size less than about 0.2 microns, where the epoxy crosslinked microgel polymer has an Acid No. between about 20 and 100, and the microgel polymer particles are stably dispersed into water free of surfactant.

5,576,361

ZERO VOC, AQUEOUS DISPERSED, POLYESTER MODIFIED ACRYLIC-EPOXY MICROGEL POLYMERS

Gary P. Craun, Berea, Ohio, assignor to The Glidden Company, Cleveland, Ohio

Filed Apr. 20, 1995, Ser. No. 421,269
Int. Cl.[6] C08K 3/20
U.S. Cl. 523—423 14 Claims

1. An aqueous dispersed protective coating composition substantially free of volatile organic solvents and containing an aqueous dispersed microgel polymeric binder, the microgel polymeric binder comprising on a weight basis:

between 1% and 70% polyester diluent having a number average molecular weight between about 300 and 10,000 and a melt viscosity below about 50 poise at 150° C. and an Acid No. below about 40;

between 1% and 70% epoxy resin having a number average molecular weight between about 1,500 and 15,000;

between 10% and 80% carboxyl functional, in-situ formed addition copolymer of copolymerized ethylenically unsaturated monomers including at least 5% carboxyl monomer based on the weight of the ethylenic monomers copolymerized; and

between 1% and 40% low molecular weight diepoxide crosslinking resin having an epoxy equivalent weight between about 100 and 500;

where the microgel polymer is produced by the process steps of a) the polyester diluent being mixed with the high molecular weight epoxy resin in the absence of water to form a fluid resin mixture, b) copolymerizing the ethylenically unsaturated monomers in the presence of the fluid resin mixture to produce an in-situ formed non-aqueous resin mixture of addition copolymer dispersant in polyester diluent arid epoxy resin; c) dispersing the in-situ formed resin mixture into water while adding the diepoxide crosslinking resin with the in-situ modified resin mixture or after the in-situ modified resin mixture is dispersed into water; and d) crosslinking the carboxyl functional addition polymer with the diepoxide resin to produce stable, aqueous dispersed, microgel polymer particles having a particle size less than 2 microns an Acid No. above 30.

5,576,362

INSULATING MATERIAL AND A CIRCUIT SUBSTRATE IN USE THEREOF

Chiharu Watanabe, Shibukawa; Tatsuo Nakano, and Kazuo Kato, both of Machida, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 52,032
Claims priority, application Japan, Apr. 20, 1992, 4-125459
Int. Cl.[6] C08L 63/00
U.S. Cl. 523—440 14 Claims

1. A circuit substrate comprising a metal plate laminated with a conductive foil interposing an insulating material wherein said insulating material is made by curing a mixture comprising from 10 to 40 vol % of a bisphenol A epoxy resin purified by molecular distillation having a purity which is equal to or more than 98%, free of organic chlorine and α-glycol impurities and dimer, trimer and oligomers, and from 90 to 60 vol % of an inorganic filler, the thermal conductivity thereof is in the range of 5.0×10^{-3} to 18.0×10^{-3} cal/°C.·cm·sec and the glass transition temperature thereof is in the range of 164° to 240° C.

5,576,363

THERMOSETTING ASPHALT

Kevin P. Gallagher, Pataskala, and Donn R. Vermilion, Newark, both of Ohio, assignors to Owens Corning Fiberglas Technology, Inc., Summit, Ill.

Filed Dec. 23, 1994, Ser. No. 363,154
Int. Cl.[6] C08L 95/00
U.S. Cl. 524—64 21 Claims

1. A thermosetting asphalt product comprising a mixture of a.) a blend of an asphalt and an epoxy-functionalized polymer, the epoxy-functionalized polymer being present in an amount within the range of from about 4 to about 30 percent of the combination of asphalt and epoxy-functionalized polymer, and b.) a second asphalt which is chemically modified by incorporating one or more of the group comprising amines, anhydrides, alcohols, carboxylic acids and thiols.

5,576,364

HYDRODISINTEGRATABLE BINDER COMPOSITIONS

Robert L. Isaac, Bethesda, Md., and Bernard Cohen, Berkeley Lake, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 107,490, Aug. 17, 1993, Pat. No. 5,466,518. This application May 22, 1995, Ser. No. 446,373
Int. Cl.[6] C08K 5/15
U.S. Cl. 524—80 12 Claims

1. A hydrodisintegratable binder composition comprising:

from about 10 to about 40 weight percent of a water dispersible polymer selected from the group consisting of high molecular weight amorphous polyesters having one or more ionic substituents attached thereto;

from about 10 to about 40 weight percent of an elastomeric latex emulsion;

from about 20 to about 40 weight percent of a xerogellant; and

from about 5 to about 20 weight percent of a plasticizing agent.

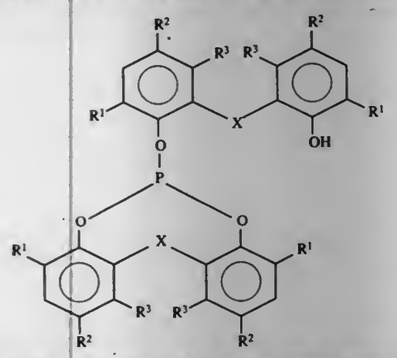
5,576,365

PHOSPHORUS TYPE STABILIZER AND AN ORGANIC MATERIAL STABILIZED BY THE SAME

Kanako Fukuda; Tetsuo Yamaguchi; Shinya Tanaka, all of Osaka, and Manji Sasaki, Hyogo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 19, 1995, Ser. No. 444,951
Claims priority, application Japan, May 25, 1994, 6-111297; Feb. 28, 1995, 7-039944
Int. Cl.[6] C08K 5/527; C07F 9/6574
U.S. Cl. 524—117 6 Claims

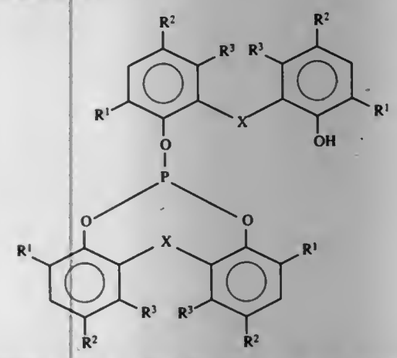
1. A composition comprising an organic material and an organic phosphorus compound represented by the following formula (I):



(I)

wherein R^1 and R^2, which are same or different, independently represent an alkyl group having 1–8 carbon atoms, a cycloalkyl group having 5–8 carbon atoms, an alkylcycloalkyl group having 6–12 carbon atoms, an arylalkyl group having 7–12 carbon atoms or a phenyl group; R^3 represents hydrogen or an alkyl group having 1–8 carbon atoms, X represents a direct bond or —CH(R^4)— wherein R^4 represents hydrogen or an alkyl group having 1–8 carbon atoms, wherein the amount of the organic phosphorus compound is 0.01 part by weight or more per 100 parts by weight of the organic material.

6. A method for stabilizing an organic material which comprises adding an organic phosphorus compound represented by the following formula (I):



(I)

wherein R^1 and R^2, which are same or different, independently represent an alkyl group having 1–8 carbon atoms, a cycloalkyl group having 5–8 carbon atoms, an alkylcycloalkyl group having 6–12 carbon atoms, an arylalkyl group having 7–12 carbon atoms or a phenyl group; R^3 represents hydrogen or an alkyl group having 1–8 carbon atoms, X represents a direct bond or —CH(R^4)— wherein R^4 represents hydrogen or an alkyl group having 1–8 carbon atoms, to an organic material.

5,576,366

DYEABLE POLYOLEFIN COMPOSITIONS AND METHOD

Paresh J. Sheth, Sugar Land, Tex., assignor to Lyondell Petrochemical Company, Houston, Tex.

Continuation-in-part of Ser. No. 384,716, Feb. 3, 1995, Pat. No. 5,550,192. This application May 16, 1995, Ser. No. 442,304
Int. Cl.[6] D06P 3/79; D01F 6/46; C08L 23/12
U.S. Cl. 524—140 91 Claims

13. A polyolefin composition, comprising:

(a) about 99 to 70% by weight polyolefin;

(b) 0.1 to 15% by weight polyester;

(c) a hydrophilic modifier in an amount by weight of from 0.1 to 2% of the composition, the hydrophilic modifier comprising a monoglyceride and a long chain hydrocarbon with a hydrophilic group; and

(d) a selected amount of a polar group material selected from a group consisting of (1) an ethylene copolymer comprising 70 to 82% and about 30 to 18% by weight of an alkyl acrylate wherein the alkyl acrylate has 1 to 4 carbon atoms, the alkyl acrylate being present in an amount of from 0.2 to 3.0% by weight of the composition, (2) a maleic anhydride comprising about 0.1 to 10% by weight of the composition, and (3) an acrylic acid comprising about 0.1 to 2.0% by weight of the composition.

55. A polyolefin composition, comprising:

(a) about 99 to 70% by weight polyolefin;

(b) 0.1 to 15% by weight polyester; and

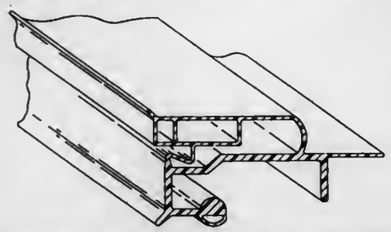
(c) a selected amount of a polar group material comprising an ethylene copolymer comprising 70 to 82% and about 30 to 18% by weight of an alkyl acrylate wherein the alkyl acrylate has 1 to 4 carbon atoms, the alkyl acrylate being present in an amount of from 0.2 to 3.0% by weight of the composition.

5,576,367

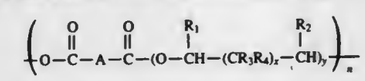
POLYESTER GASKET PLASTICIZERS SUITABLE FOR USE WITH INTERNALLY PLASTICIZED APPLIANCE COATINGS

William L. O'Brien, and William J. Mertz, both of Cincinnati, Ohio, assignors to Henkel Corporation, Ambler, Pa.

Filed Jan. 3, 1990, Ser. No. 460,422
Int. Cl.[6] C08K 5/09
U.S. Cl. 524—291 11 Claims

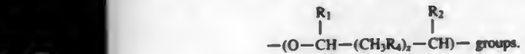


1. A composition comprising a thermoplastic polyvinyl chloride homopolymer or copolymer containing an amount of a liquid polyester effective to plasticize said homopolymer or copolymer; wherein said liquid polyester is unterminated and has the formula



wherein in each subunit (n) of said polyester A is independently selected from the group consisting of straight or branched, saturated hydrocarbon chains, containing from 1 to 10 carbon atoms, or substituted or unsubstituted arylene moieties, and R_1, R_2, R_3, and R_4 are each independently selected from the group consisting of hydrogen or alkyl containing from 1 to 4 carbon atoms; n=4–20, x=0–4 and y=1–3, said polyester having a hydroxyl value of at

least 25, a weight average molecular weight of from about 3,000 to about 10,000, and wherein at least two subunits contain different



—(O—CH—$(CH_2R_4)_z$—CH)— groups.

5,576,368

STEERING WHEEL PAD MOLDED OF A SOFT VINYL CHLORIDE RESIN COMPOSITION

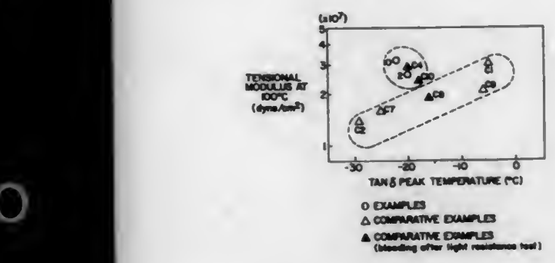
Junji Koizumi, and Tsugunori Sugiura, both of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Japan

Continuation of Ser. No. 147,433, Nov. 5, 1993, abandoned, which is a continuation of Ser. No. 887,013, May 22, 1992, abandoned. This application Feb. 28, 1995, Ser. No. 396,088

Claims priority, application Japan, May 24, 1991, 3-149799; May 24, 1991, 3-149800

Int. Cl.[6] C08J *3/18;* **C08K** *5/11*

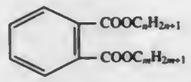
U.S. Cl. 524—297 **7 Claims**



1. A steering wheel pad made of a soft vinyl chloride resin composition comprising:

100 parts by weight of a vinyl chloride resin having an average polymerization degree of 700 to 2500; 20 to 150 parts by weight of a heat treated thermoplastic aliphatic polyurethane; and

60 to 150 parts by weight of an alkyl phthalic ester having the following chemical formula:



wherein m and n are 7 to 9, and said alkyl phthalic ester having a linear chain ratio of an ester group of 80% or more.

5,576,369

FRICTION MATERIAL

Takashi Kudo, and Osamu Nakajima, both of Saitama, Japan, assignors to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1994, Ser. No. 255,870

Claims priority, application Japan, Jun. 8, 1993, 5-137904

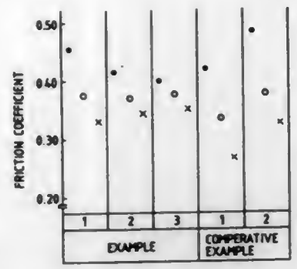
Int. Cl.[6] C08J *5/14;* **C08K** *3/10;* **C08L** *101/12*

U.S. Cl. 524—413 **5 Claims**

1. A friction material comprising:

metal reinforcing fibers, a bonding material, a friction modifier, and fillers, characterized in that said friction material contains copper oxide particles as said friction modifier; and

said copper oxide particles being present in a range of from 0.5



to 20% by weight relative to the total amount of said friction material to prevent low frequency noise.

5,576,370

POLYMER SCALE PREVENTIVE AGENT CONTAINING A CONDENSATION PRODUCT OF A HYDROXYNAPHTHALENE

Toshihide Shimizu, Urayasu; Mikio Watanabe, and Toshihiko Nakano, both of Kamisu, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 149,948, Nov. 10, 1993, abandoned. This application Oct. 11, 1994, Ser. No. 321,467

Claims priority, application Japan, Nov. 10, 1992, 4-324887

Int. Cl.[6] C08K *3/22;3/36;2/20*

U.S. Cl. 524—413 **6 Claims**

1. A polymer scale preventive agent for use in polymerization of a monomer having an ethylenically unsaturated double bond, consisting of an alkaline solution of pH 9 to 14 of:

(A) a condensation product consisting of

(A-1) a hydroxynaphthalene compound (1): having the following general formula

(1)

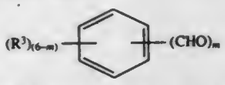
wherein R^1 group or groups, which may be the same or different from each other, are each a member selected from the group consisting of —H, —SO_3H and —COOH, i is an integer from 1 to 4, and j is an integer from 0 to 4, and

(A-2) at least one aldehyde compound selected from the group consisting of the compounds of the following general formulas (2) and 4):



(2)

wherein R^2 is —H, —COOH, —CHO or an alkyl group of from 1 to 5 carbon atoms;



(3)

wherein R^3 group or groups, which may be the same or different from each other, are each a member selected from the group selected from the group consisting of —H and —OH, and m is an integer from 1 to 6; and



(4)

wherein R^4 is a hydrogen atom or an alkyl group of 1 to 5 carbon atoms, and, where plural R^4's are present, they may be the same or different, and n is an integer from 1 to 4,

(B) an inorganic colloid of silica, an oxide, a hydroxide or a mixture of two or three thereof, said oxide and hydroxide being those of a metal selected from the group consisting of aluminum, titanium, zirconium, tin and iron, and

(C) a water-soluble polymeric compound selected from the group consisting of gelatin, casein, polyacrylic acid, carboxymethyl cellulose, polyvinyl pyrrolidone and pectin, in a mixed solvent containing water and a organic solvent miscible with water, said organic solvent being present in an amount of not more than 50% by weight based on said mixed solvent.

5,576,371

CORROSION-RESISTANT COATING COMPOSITION HAVING HIGH SOLIDS CONTENT

Ming C. Kuo, Fox Point, Wis.; Staer S. Kirsten, Copenhagen, Denmark, and Gary W. Marshall, Advance, N.C., assignors to A. O. Smith Corporation, Milwaukee, Wis.

Filed Jan. 19, 1995, Ser. No. 375,030

Int. Cl.[6] C08G *59/24*

U.S. Cl. 524—413 **12 Claims**

1. A coating composition for preventing corrosion of a substrate including corrodable material, said coating composition being a liquid which is applied to the substrate by dipping the substrate therein, said coating composition comprising:

about 64% of 3,4 epoxycyclohexymethyl-3,4 epoxycyclohexane-carboxylate;

about 5% of a polyester compound in the form of powder;

about 0.3% of the diethylammonium salt of trifluoromethane-sulfonic acid ($CF_3SO_3H{\cdot}HNCC_2H_5)_2$; and

about 16% of a polyol.

5,576,372

COMPOSITE TIRE INNERLINERS AND INNER TUBES

Edward N. Kresge, Watchung, and David J. Lohse, Bridgewater, both of N.J., assignors to Exxon Chemical Patents Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 471,427, Jun. 6, 1995, which is a division of Ser. No. 42,972, Apr. 5, 1993. This application Jun. 7, 1995, Ser. No. 474,804

Int. Cl.[6] C08K *3/00*

U.S. Cl. 524—442 **16 Claims**

1. A pneumatic tire having an inner-liner, said inner-liner comprising:

(a) a complex comprising a reactive rubber having a positively charged group and a layered silicate uniformly dispersed therein, and

(b) a solid rubber.

5,576,373

COMPOSITE TIRE INNERLINERS AND INNER TUBES

Edward N. Kresge, Watchung, and David J. Lohse, Bridgewater, both of N.J., assignors to Exxon Chemical Patents Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 467,257, Jun. 6, 1995, which is a division of Ser. No. 42,972, Apr. 5, 1993. This application Jun. 7, 1995, Ser. No. 473,601

Int. Cl.[6] C08K *3/34*

U.S. Cl. 524—445 **16 Claims**

1. A tire inner-tube comprising a complex and solid rubber, said complex being composed of reactive rubber having a positively charged group and a layered silicate uniformly dispersed therein, the interlayer distance of said layered silicate being greater than 12 angstroms and the reactive rubber being soluble in or crosslinkable with the solid rubber.

5,576,374

IMPACT MODIFICATION OF FILLED THERMOPLASTICS

Stephen R. Betso, Horgen, Switzerland, and Martin J. Guest, Terneuzen, Netherlands, assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 45,330, Apr. 8, 1993, which is a continuation-in-part of Ser. No. 945,034, Sep. 15, 1992, abandoned. This application Feb. 10, 1994, Ser. No. 194,236

Int. Cl.[6] C08K *3/34*

U.S. Cl. 524—451 **21 Claims**

1. A thermoplastic olefinic polymer composition having good low temperature impact performance comprising:

(A) a polyolefin,

(B) at least one substantially linear interpolymer of ethylene with at least one C_3– C_{20} α-olefin, wherein the substantially linear interpolymer is characterized as having:

a) a melt flow ratio, $I_{10}/I_2 \geqq 5.63$,

b) a molecular weight distribution, M_w/M_n, defined by the equation: $M_w/M_n \leqq (I_{10}/I_2)-4.63$, and

c) a critical shear rate at onset of surface melt fracture of at least 50 percent greater than the critical shear rate at the onset of surface melt fracture of a linear ethylene/a-olefin polymer having about the same I_2 and M_w/M_n,

(C) from about 0.1% to about 80% of at least one filler.

5,576,375

POLY (PHENYLENE-VINYLENE) RESINS FROM VINYLETHYNYLBENZENE AND DIETHYNYLBENZENE

Robert E. Olsen, Placerville; Harlan F. Reese, Sacramento, and Stephen J. Backlund, Fair Oaks, all of Calif., assignors to Aerojet- General Corporation, Sacramento, Calif.

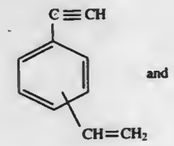
Filed Jun. 15, 1988, Ser. No. 207,321

The portion of the term of this patent subsequent to Jun. 15, 2008, has been disclaimed.

Int. Cl.[6] C08F *38/04;* **C08K** *5/01;* **C08L** *49/00*

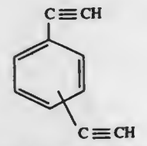
U.S. Cl. 524—481 **20 Claims**

1. A poly(phenylene-vinylene) polymer formed by the copolymerization of a monomer mixture consisting essentially of the following monomers



(a)

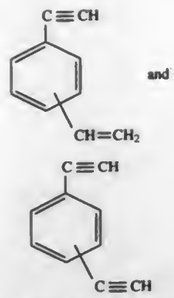
and



(b)

by reaction at the triple bonds thereof by heat only, said polymer containing at least substantial portions of the —C≡CH groups and —CH=CH_2 groups from said monomers.

15. A poly(phenylene-vinylene) resin solution comprising a copolymer of a monomer mixture consisting essentially of the following monomers



and

reacted at the triple bonds thereof by heat only, said copolymer containing at least substantial portions of the —C≡CH groups and —CH=CH_2 groups from said monomers, and said copolymer dissolved in a mixture of said monomers.

5,576,376

RUBBER COMPOSITION CONTAINING A CONJUGATED DIENE POLYMER

Tadashi Shibata, and Ryota Fujio, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Mar. 28, 1994, Ser. No. 219,284

Claims priority, application Japan, Mar. 26, 1993, 5-068294

Int. Cl.[6] C08F *36/00;8/34*

U.S. Cl. 524—495 **21 Claims**

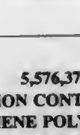
1. A rubber composition for high performance pneumatic tires comprising a rubber component comprising:

at least 40 wt % of a polymer chain of a conjugated diene monomer and/or an aromatic vinyl hydrocarbon monomer, wherein said polymer chain has at least one nitrogen-containing group in or at the end of the polymer chain and a weight average molecular weight of 70×10^4 to 250×10^4;

60 to 200 parts by weight of carbon black per 100 parts by weight of rubber (phr); and

a softener comprising 30 to 250 phr of a process oil and/or 5 to 100 phr of a liquid polymer,

wherein the nitrogen atom of the nitrogen-containing group in or at the end of the polymer chain is introduced in or at the end of the polymer chain by polymerizing the conjugated diene monomer and/or aromatic vinyl hydrocarbon monomer with a nitrogen-containing lithium compound as an initiator, wherein the nitrogen-containing lithium compound is the reaction product of an organolithium compound and an amine compound represented by formula (B):



(B)

wherein X is selected from the group consisting of:

X-I: a saturated group having the formula $(CR^3R^4)_n$;

X-II: a saturated group having the formula $(CR^5R^6)_m$-Y-(CR^5R^6) wherein Y is NR^7 or O; and

X-III: an unsaturated group having a carbon—carbon double bond;

wherein R^3, R^4, R^5 and R^6 each independently represents a hydrogen atom, an aliphatic group, an aromatic hydrocarbon group, or a cycloaliphatic hydrocarbon group; R^7 is an aliphatic hydrocarbon group, an aromatic hydrocarbon group, or a cycloaliphatic hydrocarbon group; n is an integer between 3 and 20; and m and l are each an integer, the sum of which ms from 2 to 9.

5,576,377

(a) **POLYMER MOULDING MATERIALS FOR PRODUCING A PARTIAL COLOR CHANGE BY LASER ENERGY, PARTICULARLY FOR THE PRODUCTION OF COLORED MARKINGS**

(b) **Aziz El Sayed, Leverkusen; Frank Gerling, Düsseldorf; Salvatore Messina, Rheda-Wiedenbrück; Herbert Magerstedt, Moers; Karsten-Josef Idel, Krefeld, and Edgar Ostlinning, Düsseldorf, all of Germany, assignors to Bayer AG, Leverkusen, Germany**

Filed Mar. 20, 1995, Ser. No. 406,493

Claims priority, application Germany, Mar. 30, 1994, 44 11 067.7

Int. Cl.[6] C08K *3/04;* **C08J** *3/28;* **C08F** *2/46*

U.S. Cl. 524—495 **6 Claims**

1. A laser-inscribable polymer molding material comprising a polymer selected from the group consisting of polyamide, polyester, polycarbonate, polyester carbonate, polymethacrylate, BS, polystyrene, polyoxymethylene and polyolefin, and 0.1 to 3% by weight of a colorant combination containing an organic dye or pigment, an inorganic pigment of the same color, and carbon black, wherein the polymer molding material has an initial color and further wherein portions of the polymer molding compound that have absorbed laser energy have the same color as said initial color but a lighter tone than portions of the polymer molding material that have not absorbed said laser energy.

5,576,378

HIGH TG POLYMER AND REDISPERSIBLE POWDER FOR USE IN HYDRAULIC PORTLAND CEMENT MORTAR AND CONCRETE

Louis A. Kuhlmann; James W. Young, Jr., and Daniel Moldovan, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 778,425, Oct. 16, 1991, abandoned. This application Feb. 24, 1994, Ser. No. 201,295

Int. Cl.[6] C08J *3/00;* **C08L** *33/00;* **C08K** *5/54;5/06*

U.S. Cl. 524—523 **26 Claims**

1. A cement additive comprising:

(A) from about 70 to about 99 parts by weight of a polymer characterized by a Tg greater than 100° C., the polymer produced by polymerizing a polymerization mixture which contains monomers consisting essentially of one or more monomers selected from mono-unsaturated aromatic monomers, aliphatic conjugated diene monomers, esters of (meth-)acrylic acid monomers, and monoethylenically unsaturated carboxylic acid monomers including the anhydrides, esters, amides and imides thereof; and, based on 100 parts of the polymer solids,

(B) from about 1 to about 15 parts by weight of a stabilizer, and,

(C) up to about 15 parts by weight of a foam depressant; or

(A) from about 70 to about 99 parts by a Tg weight of a polymer characterized by greater than 1000° C., polymer produced by polymerizing a polymerization mixture which contains monomers comprising one or more monomers selected from mono-unsaturated aromatic monomers, aliphatic conjugated diene monomers, esters of (meth)acrylic acid monomers, and monoethylenically unsaturated carboxylic acid monomers including the anhydrides, esters, amides and imides thereof; and, based on 100 parts of the polymer solids,

(B) from about 1 to about 15 parts by weight of a stabilizer, and,

(C) up to about 15 parts by weight of a foam depressant.

5,576,379

Patent Not Issued For This Number

5,576,380

Patent Not Issued For This Number

5,576,381

AQUEOUS DISPERSION OF FLUOROPOLYMERS, ITS PREPARATION AND USE FOR COATINGS

Hermann Blädel, Emmerting; Bernd Felix, Burgkirchen; Klaus Hintzer, Kastl; Gernot Löhr, and Wolf D. Mitterberger, both of Burgkirchen, Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Nov. 29, 1994, Ser. No. 346,410

Claims priority, application Germany, Dec. 1, 1993, 43 40 943.1

Int. Cl.[6] C08L *27/12*

U.S. Cl. 524—544 **18 Claims**

1. An aqueous fluoropolymer dispersion comprising:

A) a first dispersed solid fluoropolymer having an average particle size, on a number average basis, of from 180 to 440 nm, and

B) a second dispersed solid fluoropolymer having an average particle size which is lower than that of said first dispersed fluoropolymer by a factor of from about 0.3 to about 0.7, so that the total dispersion has a non-monomodal number distribution of the particle diameter, said first and second fluoropolymers having been obtained by emulsion polymerization, being not processable from the melt, and forming a film upon sintering.

5,576,382

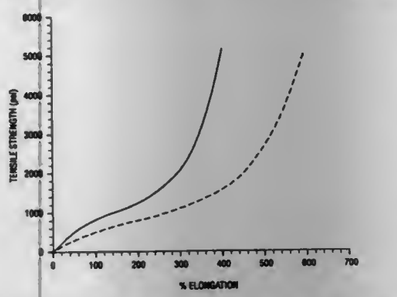
AQUEOUS POLYURETHANE DISPERSIONS BASED ON POLYETHER POLYOLS OF LOW MONOL CONTENT

Stephen D. Seneker, Sissonville, and Nigel Barksby, Dunbar, both of W. Va., assignors to ARCO Chemical Technology, L.P., Greenville, Del.

Filed May 5, 1996, Ser. No. 437,341

Int. Cl.[6] C08J *3/00;* **C08K** *3/20;* **C08L** *75/00*

U.S. Cl. 524—591 **20 Claims**



1. An aqueous polyurethane dispersion wherein the polyurethane dispersed phase comprises the reaction product of:

a) an aqueous dispersion of an isocyanate-terminated polyurethane prepolymer having an isocyanate group content of from 1 to about 8 percent by weight relative to said isocyanate-terminated polyurethane prepolymer, prepared by reacting:

i) an organic di- or polyisocyanate,

ii) a polyol component, and

iii) a dispersing aid component,

wherein said polyol component comprises, in major part, one or more polyoxypropylene diols, said one or more polyoxypropylene diols having a number average unsaturation of less than 0.020 meq/g and a number average equivalent weight of from about 1000 Da to about 8000 Da; with

b) a chain extender reactive with said isocyanate-terminated prepolymer.

5,576,383

METHOD FOR PRODUCTION OF ANTISTATIC POLYMER MATERIALS

Vitaly I. Kryshtob, Mytnaya Ul., 52/54, 41, 113162 Moscow, Russian Federation

Filed Feb. 6, 1995, Ser. No. 384,124

Claims priority, application Russian Federation, Jun. 7, 1993, 93031290/05

Int. Cl.[6] C08K *5/05;5/01*

U.S. Cl. 524—765 **6 Claims**

1. A method for producing antistatic polymer materials, comprising the steps of:

(a) incorporating into a polymer matrix, during its processing, an antistatic agent in a form of a homogeneous solution consisting of an antistatic compound in an organic solvent, said solution being compatible with the polymer matrix;

(b) processing the composition at temperatures not exceeding the least of the temperatures: T_{p1}, T_{p2}, T_{k1}, T_{k2} where T_{p1} and T_{p2} are decomposition temperatures of the antistatic and solvent, and T_{k1} and T_{k2} are boiling points of the antistatic and solvent, respectively,

(c) said antistatic compound being at least one compound selected from the group consisting of organic salts, inorganic salts, complex compounds and bases.

5,576,384

LOW-EMISSION DISPERSION PAINTS, COATING MATERIALS AND SYNTHETIC RESIN DISPERSION PLASTERS AS WELL AS PROCESSES FOR THE PREPARATION THEREOF

Ernst Nölken, Bad Soden am Taunus; Helmut Braun, Kriftel, and Michael Lonitz, Trechtingshausen, all of Germany, assignors to Hoechst AG, Germany

Continuation of Ser. No. 855,734, Mar. 19, 1992, abandoned, which is a continuation of Ser. No. 633,276, Dec. 24, 1990, abandoned, which is a continuation of Ser. No. 306,881, Feb. 3, 1989, abandoned. This application May 23, 1995, Ser. No. 447,389

Claims priority, application Germany, Feb. 5, 1988, 38 03 450.6

Int. Cl.[6] C08L *83/04*

U.S. Cl. 524—806 **9 Claims**

1. A low emission dispersion paint, coating material and synthetic resin dispersion plaster in the form of aqueous preparations based on aqueous synthetic resin dispersion polymers derived from olefinically unsaturated monomers having a pigment volume concentration (PVC) of at least 60% and containing water, fillers, pigments, synthetic resin dispersion polymers and auxiliaries selected from the group of wetting agents, disperants, emulsifiers, protective colloids, thickeners, antifoams, dyes and preservatives, wherein the non-volatile part of the aqueous preparations contains

35 to 94% by weight of a filler,

2 to 30% by weight of pigment,

0.1 to 10% by weight of an auxiliary and

4 to 35% by weight of synthetic resin dispersion

copolymer, based on the total non-volatile part, the aqueous dispersion of which copolymer possesses a minimum film-forming temperature (MFT) of <10° C., and the synthetic dispersion copolymer has a content of 0.05 to 0.4% by weight of monomeric units derived from unsaturated hydrolyzable organic silicon compounds of the formula



in which R denotes an organic radical olefinically unsaturated in the $^{\omega}$-position and R^1, R^2 and R^3 which may be identical or different, denote halogen or the group -OZ, Z denoting primary or secondary alkyl radicals or acyl radicals optionally substituted by alkoxy groups, or hydrogen, the content of volatile non-aqueous constituents of the aqueous preparations being 0.1% by weight, based on the total non-volatile part, and the pH of the aqueous preparation being in the range from 5.5 to 10 wherein after the copolymer having been copolymerized, residual monomers being removed by distillation.

5,576,385

TRANSPARENT, IMPACT-RESISTANT MOLDING MATERIALS HAVING HIGH STRESS CRACKING RESISTANCE AND A DULL SURFACE

Kristin Tiefensee, Westheim; Norbert Güntherberg, Speyer; Rainer Neumann, Mutterstadt, and Ekkehard Jahns, Hirschberg, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Aug. 29, 1995, Ser. No. 520,697

Claims priority, application Germany, Sep. 6, 1994, 44 31 732.8

Int. Cl.[6] C08L *51/04*

U.S. Cl. 525—77 **3 Claims**

1. Thermoplastic molding material containing a mixture comprising

(A) from 15 to 70% by weight of a methacrylate polymer obtained by polymerization of a mixture consisting essentially of

(A1) from 90 to 100% by weight, based on (A), of methyl methacrylate and

(A2) from 0 to 10% by weight, based on (A), of a C_1–C_8-alkyl ester of acrylic acid, and

(B) from 10 to 50% by weight of a copolymer obtained by polymerization of a mixture consisting essentially of

(B1) from 78 to 88% by weight, based on (B), of a vinylaromatic monomer and

(B2)from 12 to 22% by weight, based on (B), of a vinyl cyanide, and

(C) from 20 to 50% by weight of a graft copolymer, obtained from

(C1)50 to 80% by weight of a core obtained by polymerization of a monomer mixture consisting essentially of

(C11)from 50 to 100% by weight of a 1,3-diene and

(C12)from 0 to 50% by weight of a vinylaromatic monomer and and

(C2)20 to 50% by weight of a graft shell obtained by polymerization of a monomer mixture in the presence of the core (C1) consisting essentially of

(C22)from 0 to 60% by weight of a vinylaromatic monomer,

with the proviso that the median particle size (d_{50}) of the graft copolymer is chosen in the range from 40 to 500 nm, and

(D) from 0.5 to 15% by weight of a crosslinked methacrylate polymer obtained by polymerization of a mixture consisting essentially of

(D1)from 80 to 99.5% by weight of a C_1–C_8-alkyl ester of methacrylic acid,

(D2)from 0 to 15% by weight of a C_1–C_8-alkyl ester of acrylic acid,

(D3)from 0.5 to 5% by weight of a crosslinking monomer copolymerizable with D1 and D2 and

(D4)from 0 to 10% by weight of a polar momoner selected from the group consisting of methacrylic acid, acrylic acid, hydroxyethyl acrylate, hydroxyethyl methacrylate, dimethylaminoethyl acrylate and dimethylaminoethyl methacrylate,

with the proviso that the median particle size (d_{50}) of D is chosen in the range from 50 to 80,000 nm, and

(E) from 0 to 20% by weight of conventional additives, based on the sum of the components A, B, C and D, where the stated % by weight of A, B, C and D sum to 100 and the difference between the refractive index of the component C and that of the mixture of the components A, B and D or that of the mixture of the components A, B, D and E is less than 0.005.

5,576,386

CONTINUOUS POLYMERIZATION OF VINYL MONOMERS

Fritz E. Kempter, Mannheim; Manfred Niessner, Schifferstadt; Ralph Diener, St. Martin; Heino Thiele, Ludwigshafen; Wolfram Weiss, Mutterstadt, and Hans Renz, Meckenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jan. 28, 1993, Ser. No. 10,060

Claims priority, application Germany, Feb. 6, 1992, 42 03 277.6; Feb. 6, 1992, 42 03 278.4

Int. Cl.[6] C08F *2/02*

U.S. Cl. 526—88 **18 Claims**

1. A process for the continuous polymerization of vinyl monomers to form vinyl polymers, which comprises:

(a) carrying out free radical initiated or thermally initiated polymerization within an annular gap reactor wherein said annular gap reactor comprises an outer tube and a cylindrical rotor inserted Within said outer tube to form an annular gap between said rotor and said outer tube of from 0.5 to 10 mm in width, giving a residence period of from 1 to 10 minutes, wherein said outer tube is temperature controlled, and

(b) carrying out the polymerization at from 150 ° to 270 ° C. to provide a vinyl polymer having a molecular weight Mn of from 1000 to 20,000 and a polydispersity value Mw/Mn < 3.5.

5,576,387

PPE/POLYAMIDE COMPOSITIONS OF IMPROVED MELT STRENGTH

Gregory R. Chambers, Newburgh, Ind., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 815,212, Dec. 31, 1991, abandoned. This application Nov. 12, 1993, Ser. No. 152,068

Int. Cl.[6] C08L *71/12;77/00*

U.S. Cl. 525—92 B **27 Claims**

1. A thermoplastic composition comprising a polyphenylene ether polymer and a polyamide, said polyamide being formed from a diamine, a second amine, and a dicarboxylic acid, said second amine being a polyamine, said second amine being included in an amount sufficient to improve the melt strength of the composition.

5,576,388

TELECHELIC POLYMERS AND HETEROTELECHELIC POLYDIENE BLOCK POLYMERS WITH DUAL CURE SYSTEMS

David J. St. Clair, Houston, and James R. Erickson, Katy, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 320,808, Oct. 11, 1994, abandoned. This application Aug. 28, 1995, Ser. No. 519,885

Int. Cl.[6] C08L *53/00;53/02;33/08;67/02*

U.S. Cl. 525—99 **6 Claims**

1. Pressure sensitive structural adhesive and sealant compositions comprising:

(a) a polymer system comprising from 95 to 15 percent by weight of a telechelic polymer and from 5 to 85 percent by weight of a heterotelechelic polydiene block polymer wherein at least one of the functionalities on the heterotelechelic polydiene block polymer is the same as the functionality on the telechelic polymer, and

(b) a dual curing system wherein one element of the curing system cures the telechelic polymer at ambient conditions such that a pressure sensitive adhesive or sealant is formed and the other element cures the heterotelechelic polydiene block polymer upon baking at least at 100° C. to form a structural adhesive or sealant composition.

5,576,389

POWDER COATING COMPOSITION

Tasaburo Ueno; Akimitsu Uenaka; Harunori Gohji; Yuji Toyoda, and Kouichi Tsutsui, all of Osaka-fu, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 722,671, Jun. 28, 1991, abandoned. This application Aug. 14, 1995, Ser. No. 514,891

Claims priority, application Japan, Jun. 28, 1990, 2-171897

Int. Cl.[6] C08L *33/02*

U.S. Cl. 525—119 **8 Claims**

1. A thermosetting powder coating composition consisting essentially of (A) a base resin having 2 or more oxirane groups in its molecule, said base resin being selected from the group consisting of a polyester resin and an epoxy resin, (B) an effective hardening amount of a hardener for an epoxy resin selected from the group consisting of amines, polybasic acids, acid anhydrides, and polyesters which have 2 or more carboxyl groups in the polyester molecule, and (C) 0.5% to 10% by weight of the base resin of a vinyl resin, said vinyl resin containing 1 to 10% by weight, based on the weight of the vinyl resin, of at least one aliphatic dicarboxylic acid component selected from the group consisting of thiomalic acid, maleic acid, fumaric acid and itaconic acid and having a number average molecular weight of 1000 to 8000 and a glass transition temperature of –40° to 100° C.

5,576,390

POLYISOBUTYLENES HAVING ASPARTIC ACID ESTER TERMINAL GROUPS

Burkhard Köhler; Wolfgang Ebert, both of Krefeld; Klaus Horn, Dormagen; Richard Weider, Leverkusen, and Thomas Scholl, Bergisch Gladbach, all of Germany, assignors to Bayer AG, Leverkusen, Germany

Filed Jun. 8, 1995, Ser. No. 488,654

Claims priority, application Germany, Jun. 20, 1994, 44 21 556.8

Int. Cl.[6] C08F *8/32*

U.S. Cl. 525—146 **5 Claims**

1. Polyisobutylenes having aspartic acid ester terminal groups or having N-alkyl-aspartic-acid ester terminal groups.

5,576,391

AMMONIUM POLYPHOSPHATE MICROENCAPSULATED WITH AMINO-PLASTIC RESINS

Roberto Cipolli, Novara; Roberto Oriani, Milan; Enrico Masarati, Piacenza, and Gilberto Nucida, Milan, all of Italy, assignors to Ministero Dell'Universita' E Della Ricerca Scientifica E Tecnologica, Rome, Italy

Continuation of Ser. No. 976,319, Nov. 13, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 460,696

Claims priority, application Italy, Nov. 14, 1991, MI91A3042

Int. Cl.[6] C08F *8/00;* **C08L** *81/00;85/02*

U.S. Cl. 525—150 **9 Claims**

1. A composite consisting essentially of ammonium polyphosphate having the formula (I):

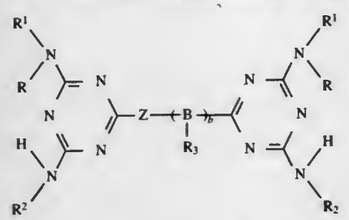
$$(NH_4)_{n+2}P_nO_{3n+1}$$

wherein n is an integer of from 2 to 800, microencapsulated with 10–80% by weight of a resin obtained by:

(i) polymerizing with aldehydes a mixture comprising:

(a) from 0 to 50 parts by weight of one or more polyaminic derivatives selected from the group consisting of urea, ethylene urea, thiourea, ethylene thiourea, propylene urea, melamine, acetoguanamine, propionoguanamine, butyroguanamine, isobutyroguanamine, caprinoguanamine, succinoguanamine, benzoguanamine, metamethylbenzoguanamine, benzylguanamine, hydantoin, piperazine-2, 5-dione, and barbituric acid;

(b) from 50–100 parts by weight of one or more derivatives of 2,4,6-triamino-1,3,5-triazine having the formula (II):



wherein the radicals from R to R_2, which may be the same or different, and which may have different meanings on each triazinic ring, are selected from the group consisting of hydrogen, C_1–C_{18} alkyl, C_2–C_8 alkenyl, C_6–C_{16} alkylcycloalkyl, hydroxy-substituted C_6–C_{16} alkylcycloalkyl, C_1–C_4 hydroxyalkyl-substituted C_6–C_{16} alkylcycloalkyl, C_1–C_4 hydroxyalkyl-substituted C_6–C_{16} alkylcycloalkyl, $—CH_2—(C_mH_{2m})—O—R_4$, and $—CH_2—(C_pH_{2p})—N(R_5)_2$

wherein:

m=an integer comprised within the range of from 1 to 7;

p=an integer comprised within the range of from 1 to 5;

R_4 is selected from the group consisting of hydrogen, C_1–C_8 alkyl, C_2–C_6 alkenyl, and $—(C_qH_{2q})—O—R_6$

wherein q is an integer of from 1 to 4 and R_6 is selected from the group consisting of hydrogen, C_1–C_4 alkyl, C_6–C_{12} cycloalkyl, and C_6–C_{12} alkylcycloalkyl;

the radicals R_5, which may be the same or different, are selected from the group consisting of hydrogen, C_1–C_8 alkyl, C_2–C_6 alkenyl, C_6–C_{12} cycloalkyl or alkylcycloalkyl, and C_1–C_4 hydroxyalkyl;

or the moiety



is replaced by a heterocyclic radical linked to the alkyl chain through the nitrogen atom, and optionally containing another hetero atom;

or in formula (II) the moiety

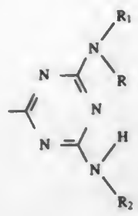


is replaced by a heterocyclic radical linked to the triazinic ring through the nitrogen atom, and optionally containing another hetero atom;

a is 0 or 1;

b is 0 or an integer of from 1 to 5;

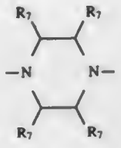
R_3 is hydrogen or



and its meaning may vary within each repeating unit;

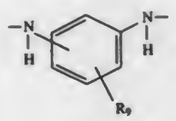
when b is 0, Z is a divalent radical selected from the group consisting of

(III)

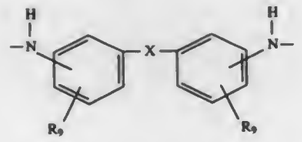


wherein the radicals R_7, which are the same or different, are hydrogen or C_1–C_4 alkyl;

(VIII)



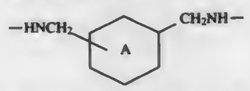
(IX)



wherein X is a single carbon-carbon bond, an oxygen atom, a sulfur atom, a sulfur-sulfur bond, SO, SO_2, NH, $NHSO_2$, NHCO, N=N or CH_2'

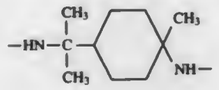
R_9 is hydrogen, hydroxy, C_1–C_4 alkoxy, or

(X)

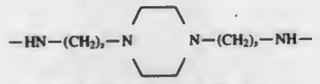


wherein A may be a saturated or unsaturated ring; and

(XI)

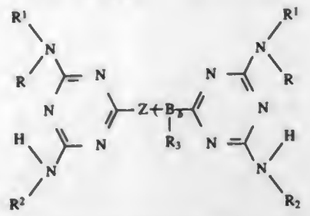


(XII)



wherein s is an integer of from 2 to 5;

when b is an integer of from 1 to 5, the



is a multivalent moiety selected from the group consisting of

(XIII)



wherein R_{10} is hydrogen or C_1–C_4 alkyl;

c is an integer within the range of from 1 to 5; s, which are the same or different from each other, have the same meaning as defined above: and

(XIV)

wherein R_{10} has the same meaning as defined above, w is an integer of from 2 to 4, d is either 1 or 2; and

(ii) causing the resulting product to turn into a resin by acidifying at a pH of from 1 to 5;

and wherein said aldehyde is formaldehyde or a mixture containing formaldehyde and up to 20% by mole another aldehyde with general formula (XI): R_{11}—CHO, where R_{11} is a C_1–C_8 alkyl; a C_2–C_6 alkenyl; a C_6–C_{12} aryl.

5,576,392

RESIN COMPOSITION

Yohzoh Yamamoto, and Masashi Yatoumaru, both of Wakicho, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan, and Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Sep. 22, 1995, Ser. No. 532,483

Claims priority, application Japan, Sep. 26, 1994, 6-230097

Int. Cl.[6] C08F *277/00;* **C08L** *45/00;51/00*

U.S. Cl. 525—289 **5 Claims**

1. A resin composition comprising:

(A) at least one cycloolefin resin selected from the group consisting of:

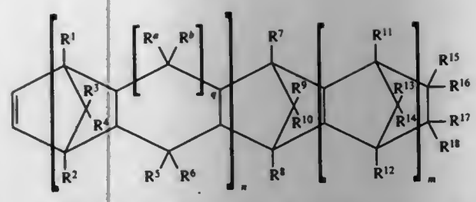
a random copolymer of a cycloolefin represented by the following formula (I) or (II) and ethylene,

a (co)polymer obtained by a ring-opening polymerization of a cycloolefin represented by the following formula (I) and (II) and

a product of hydrogenation of said ring-opening (co)polymer, and

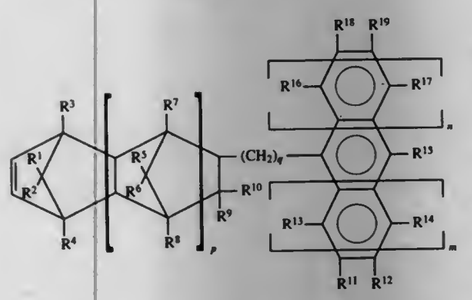
(B) at least one oligomer having an alicyclic structure and/or an aromatic ring structure selected from the group consisting of rosin resin oligomers, terpene resin oligomers, petroleum resin oligomers, xylene resin oligomers, alkylphenol resin oligomers and coumarone-indene resin oligomers;

Formula (I)



wherein a is 0 or 1, m is 0 or a positive integer, q is 0 or 1 and each of R^1 to R^{18}, R^a and R^b independently represents a hydrogen atom, a halogen atom or a hydrocarbon group, provided that R^{15} to R^{18} may mutually bond to form a monocyclic or polycyclic ring structure which may contain a double bond, and that a combination of R^{15} and R^{16}, or a combination of R^{17} and R^{18} may form an alkylidene group; or

Formula (II)



wherein each of p and q is 0 or an integer of 1 or greater, each of m and n is 0, 1 or 2 and each of R^1 to R^{19} independently represents a hydrogen atom, a halogen atom, an aliphatic hydrocarbon group, an alicyclic hydrocarbon group, an aromatic hydrocarbon group or an alkoxy group, provided that a carbon atom with which R^9 and R^{10} bond and either a carbon atom with which R^{13} bonds or a carbon atom with which R^{11} bonds may bond with each other directly or through an alkylene group having 1 to 3 carbon atoms and that, when n=m=0, a combination of R^{15} and R^{19} may mutually bond to form a monocyclic or a polycyclic aromatic ring.

5,576,393

POLYMER PARTICLES, METHOD OF PRODUCING THE SAME, AND TONER FOR USE IN ELECTROPHOTOGRAPHY COMPRISING THE POLYMER PARTICLES

Hiroshi Yamashita, Numazu; Hiromitsu Kawase, Mishima, and Keiko Shiraishi, Susono, all of Japan, assignors to Ricoh Company, Ltd., Tōkyo, Japan

Division of Ser. No. 449,424, May 24, 1995, Pat. No. 5,541,031, which is a continuation of Ser. No. 165,101, Dec. 10, 1993, abandoned. This application May 26, 1995, Ser. No. 452,332

Claims priority, application Japan, Dec. 10, 1992, 4-330293

Int. Cl.[6] C08F *265/04;257/02;2/14*

U.S. Cl. 525—293 **1 Claim**

1. A polymerization method comprising the steps of:

polymerizing a vinyl monomer in the presence of a polymeric dispersing agent in a hydrophilic organic liquid in which said vinyl monomer is soluble, but in which a polymer formed from said vinyl monomer swells or is substantially insoluble, optionally in the presence of a cross-linking agent and a chain transfer agent, thereby preparing first polymer particles, said dispersing agent, said liquid, said monomer and said particles when prepared constituting a polymerization system; and

continuing the polymerization with the addition to said polymerization system of a vinyl monomer which, when polymerized, provides a polymer with a glass transition point higher than that of said first polymer particles, and an anionic monomer or a cationic monomer, thereby producing polymer particles which are substantially spherical and have protrusions on the surface of each polymer particle, with a narrow particle size distribution.

5,576,394

FUNCTIONAL GROUP-CONTAINING BUTADIENE BASED IMPACT MODIFIER

Cheng-Lung Chao; Juh-Shyong Lee, and Feng-Chih Chang, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jun. 27, 1995, Ser. No. 496,126

Int. Cl.[6] C08F *279/02;257/02;265/04*

U.S. Cl. 525—310 **19 Claims**

1. A functional group-containing alkyl methacrylate-butadiene-aromatic vinyl compound copolymer, which is obtained from the following layers by emulsion graftlinking polymerization:

(a) an inner layer comprising polybutadiene;

(b) a middle layer comprising an aromatic vinyl compound and an alkyl methacrylate copolymer; and

(c) an outer layer comprising an alkyl methacrylate and a functional group-containing vinyl compound copolymer.

5,576,395

LOW VISCOSITY ADHESIVE COMPOSITIONS CONTAINING ASYMMETRIC RADIAL POLYMERS

Bridget A. Spence; Jeffrey G. Southwick; Steven S. Chin, and Ronald J. Hoxmeier, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 336,458, Nov. 9, 1994, Pat. No. 5,550,196. This application May 8, 1995, Ser. No. 435,067

Int. Cl.[6] C08F *297/04;* **C08G** *81/02*

U.S. Cl. 525—314 **10 Claims**

1. A low viscosity asymmetric radial block copolymer of a vinyl aromatic hydrocarbon and at least one conjugated diene having from 3 to 6 polymer arms, which:

(i) contains from 40 to 80% by weight of polyvinyl aromatic hydrocarbon block/polydiene block copolymer arms and the balance polydiene homopolymer arms,

(ii) has vinyl aromatic hydrocarbon blocks with block molecular weights of from 8000 to 30,000,

(iii) has conjugated diene blocks in the copolymer arms with a molecular weight of at least 6000, and

(iv) has a polyvinyl aromatic hydrocarbon content of from to 40% by weight.

5,576,396

LOW-HAZE IONOMERS OF COPOLYMERS OF α-OLEFINS, CARBOXYLIC ACID ESTERS, AND OPTIONAL COMONOMERS, AND PROCESSES FOR MAKING AND ACIDIFYING THESE IONOMERS

James H. Wang, Appleton, Wis.; David Rosendale, Mauriceville, Tex.; Victor P. Kurkov, San Rafael, Calif.; Leslie P. Theard, Houston, Tex.; Ta Y. Ching, Novato, Calif.; Lewis R. Compton; Tor H. Gustav Palmgren, both of Orange, Tex., and Mitchell P. Eichelberger, The Woodlands, Tex., assignors to Chevron Chemical Company, San Ramon, Calif.

Continuation-in-part of Ser. No. 144,173, Oct. 27, 1993, abandoned. This application Oct. 27, 1994, Ser. No. 330,290

Int. Cl.[6] C08F *8/42*

U.S. Cl. 525—367 **9 Claims**

1. A method of making an ionomer composition comprising:

A) contacting:

(1) a Group 1A metal-containing solution with

(2) a molten or fluid copolymer comprising alpha-olefins having from two to eight carbon atoms and esters of alpha, beta-ethylenically-unsaturated carboxylic acids having from four to twenty two carbon atoms and having a melt index between about 100 and about 2000 g/10 min., as measured by ASTM method D 1239 at 190° C.; and

B) intensively mixing the copolymer and Group 1A metal-containing solution at a temperature and to an extent which provides an ionomer composition having no more than ten percent haze.

5,576,397

ACID-MODIFIED POLYESTERS AND THEIR USE IN STOVING ENAMELS

Paul Oberressl, Wiesbaden, and Joachim Zoeller, Mainz, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 201,211, Feb. 24, 1994, abandoned. This application Feb. 16, 1995, Ser. No. 389,324

Claims priority, application Germany, Feb. 26, 1993, 43 05 990.2

Int. Cl.[6] C08G *63/20*

U.S. Cl. 525—444 **9 Claims**

1. An acid-modified polyester consisting of reaction products of educts selected from the group consisting of the following reactants

(a) from 20 to 60 mol % of at least one dicarboxylic acid selected from the group consisting of oxalic, malonic, glutaric, adipic, pimelic, azelaic, sebacic, succinic, fumaric, maleic acid itaconic acid, 1,2-cyclohexandedicarboxylic acid, 1,3-cyclohexanedicarboxylic acid, 1,4-cyclohexanedicarboxylic acid, phthalic, terephthalic and isophthalic acid, 2,5-norbornanedicarboxylic acid, 1,4-naphthalene-dicarboxylic acid, biphenyldicarboxylic acid, 4,4'-sulfonyldibenzoic acid and 2,5-naphthalenedicarboxylic acid, and esters or anydrides thereof,

(b) from 3 to 30 mol % of a dihydroxyalkanecarboxylic acid,

(c) from 10 to 60 mol % of a diol selected from the group consisting of ethylene glycol, 1,2- and 1,3-propane diol, 2,2-dimethyl-1,3-propane diol, 1,3- and 1-4 butane diol, 1,5-pentane diol, 1,6-hexane diol, 2,2,4-trimethyl 1,6-hexane diol, 1,2-, 1,3- and 1,4-cyclohexane dimethanol, perhydrobisphenol A, p-xylylene diol, 2-ethyl and 2-butyl propane diol,

(d) from 5 to 30 mol % of a polyalcobol having more than two OH groups selected from the group consisting of trimethylolpropane, trimethylolethane, glycerol, ditrimethylolpropane, pentaerythritol, dipentaeythritol, or a polycarboxylic acid having 3 to 6 carboxyl groups, and

(e) from 0 to 20 mol % of a monocarboxylic acid selected from the group consisting of fatty acids of 10 to 18 carbon atoms, isovaleric acid and isooctanoic acid,

the ratio of the sum of the hydroxyl equivalents to the sum of the carboxyl equivalents in the reactants being between 0.5 and 2.0, the quantities of free hydroxyl groups in the end product being between 30 and 350 mmol of hydroxyl groups per 100 g of solid resin, and the content of free, neutralized and/or neutralizable acid groups being between 5 and 340 mmol of acid groups per 100 g of solid resin wherein the polyester is prepared in a multi-step process, step 1 comprising the synthesis of a hydroxy-functional polyester, and step 2 comprising the reaction of the hydroxy-functional polyester with the dihydroxyalkane carboxylic acid (b) and further dicarboxylic acid (a).

5,576,398

THERMOSETTING RESIN COMPOSITION

Masayuki Takahashi, Tsukuba; Hiromi Komatsu, Tokyo; Kazuo Kawaguchi, and Shuetsu Fujiwara, both of Tsukuba, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1995, Ser. No. 561,626

Claims priority, application Japan, Jul. 7, 1995, 7-194028

Int. Cl.[6] C08F *283/00*

U.S. Cl. 525—528 **22 Claims**

1. A thermosetting resin composition which comprises:

(A) a resin in which at least one compound having a graft-reactive group and a carboxylic anhydride group has been grafted on a polycarbodiimide having a repeating unit represented by the general formula (1):

$$-N=C=N-R^1- \quad (1)$$

wherein R^1 represents a divalent organic group, and

(B) an epoxy compound.

5,576,399

EPOXY ACRYLATES

Martin Roth, Giffers, Switzerland; Roger Salvin, Weil am Rhein, Germany; Kurt Meier, Therwil; Bernhard Sailer, Basle, both of Switzerland, and Rolf Wiesendanger, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

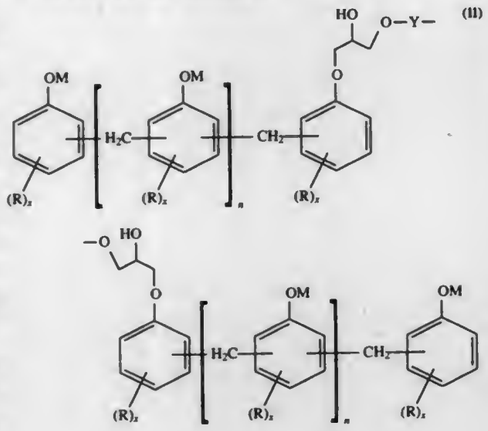
Filed Jun. 28, 1994, Ser. No. 268,095

Claims priority, application Switzerland, Jul. 2, 1993, 2004/93

Int. Cl.[6] C08F *283/00*

U.S. Cl. 525—531 **6 Claims**

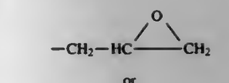
1. An epoxy acrylate of formula II



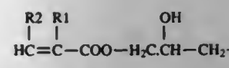
(II)

wherein

M is the group of formula



or

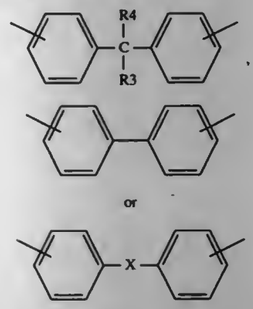


R_1 is —H or —CH_3, R_2—H, —CH_3 or phenyl,

R is C_1–C_4alkyl or halogen,

x is an integer from 0 to 3, and

Y is a linking group of formula

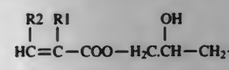


wherein R_3 and R_4 are each independently of the other hydrogen or C_1–C_4alkyl and the aromatic radicals of the linking group Y are unsubstituted or substituted by halogen or C_1–C_4alkyl,

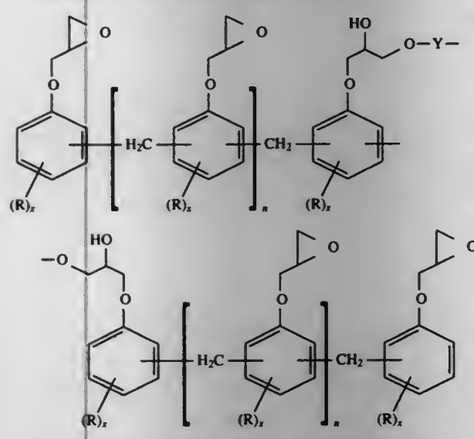
X is —O—, or —SO_2—, and

is an integer from 0 to 300,

with the proviso that at least 10 mol % of the radicals M have the structure of formula



in which R_1 and R_2 are as defined above and with the proviso that the advanced epoxy novolak of formula I



used as starting material for the preparation of the epoxy novolak of the above-identified formula II is obtained by polyaddition of a bisphenol of formula HO—Y—OH to the epoxy novolak in a molar amount of bisphenol being 0.01. to 0.1 mol per epoxy group in the epoxy novolak, wherein Y, R, and x in formula I have the above definitions.

5,576,400

PROCESS FOR PRODUCING OLEFIN POLYMER

Yoshinori Suga, Tokyo, and Nobuo Enokido, Kanagawa, both of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Continuation of Ser. No. 916,608, Jul. 22, 1992, abandoned. This application Aug. 2, 1993, Ser. No. 100,183

Claims priority, application Japan, Jul. 23, 1991, 3-182676; Jun. 30, 1992, 4-173153

Int. Cl.[6] C08F *4/642;10/02*

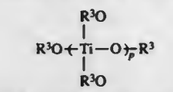
U.S. Cl. 526—65 **13 Claims**

1. A process for producing an ethylene homopolymer or an ethylene copolymer containing up to 10% by weight of other α-olefins by slurry polymerization in the presence of a catalyst system comprising (A) a hydrocarbon-insoluble solid catalyst component obtained by treating a uniform hydrocarbon solution containing:

(a) a magnesium compound represented by the formula $Mg(OR^1)_mX^1_{2-m}$, wherein R^1 represents an alkyl group, an aryl group, or a cycloalkyl group, x^1 represents a halogen atom; and m represents 1 or 2,

(b) a titanium compound represented by the formula $Ti(OR^2)_nX^2_{4-n}$, wherein R^2 represents an alkyl group, an aryl group, or a cycloalkyl group; X^2 represents a halogen atom; and n represents an integer of from 1 to 4, and

(c) a polyalkyltitanate represented by formula (1):



(I)

wherein plural R^3's, which may be the same or different, each represent an alkyl group, an aryl group, or a cycloalkyl group: and p represents an integer of from 2 to 20,

with a halogenating agent selected from the group consisting of titanium tetrachloride and silicon tetrachloride, wherein said magnesium compound (a), titanium compound (b), and polyalkyltitanate (c) are used in molar ratios of $0.01 \leqq (b)/(a) \leqq 10$ and $0.5 \leqq (c)/(a) \leqq 50$ and (B) an organoaluminum compound, wherein said organoaluminum compound (B) is present in a concentration of from 0.01 to 0.5 mmol/l based on the amount of a polymerization solvent used and at an atomic ratio of Al to Ti in said solid catalyst (I)component (A) of from 0.1 to 3.5.

5,576,401

PROCESS FOR THE PRODCTION OF GEL-FREE ETHYLENE/VINYL ACETATE COPOLYMERS WITH A HIGH CONTENT OF COPOLYMERIZED VINYL ACETATE AND A HIGH MOONEY VISCOSITY

Roland Steiger, Dormagen; Erhard Asch, Köln; Wolfgang Baade, Dormagen, and Werner Obrecht, Moers, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 262,484, Jun. 20, 1994, abandoned. This application Oct. 19, 1995, Ser. No. 545,375

Claims priority, application Germany, Jun. 30, 1993, 43 21 764.8

Int. Cl.[6] C08F *2/06*

U.S. Cl. 526—65 **3 Claims**

1. A process of preparing ethylene/vinyl acetate copolymers consisting of producing gel-free ethylene/vinyl acetate copolymers having 30–90% copolymerized vinyl acetate and a Mooney viscosity of 10–80 by polymerizing ethylene and vinyl acetate in a solution which is free of other monomers and which contains 20–45% by weight, based on weight of solution, of tert.-butanol, in the presence of an azo initiator, at temperatures of 50°–80° C. and

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under pressures of 300 to 450 bar, in a cascade of stirred reactors with an average residence time of the solution in the reactor cascade of 5–9 hours and a conversion of 50–70% by weight, based on vinyl acetate used.

5,576,402

PROCESS FOR THE PREPARATION OF A MODIFIED POLYTETRAFLUOROETHYLENE AND ITS USE

Bernd Felix, Burgkirchen; Klaus Hintzer, Kastl; Gernot Löhr, Burgkirchen, and Thomas Schöttle, Burghausen, all of Germany, assignors to Hoechst Aktienjesellschaft, Germany

Continuation of Ser. No. 310,633, Sep. 22, 1994, abandoned. This application Nov. 7, 1995, Ser. No. 554,466

Claims priority, application Germany, Sep. 25, 1993, 43 32 712.5

Int. Cl.[6] C08F *2/00*

U.S. Cl. 526—229 **6 Claims**

1. A process for the preparation of a non-melt-processable tetrafluoroethylene polymer having a content of 0.01 to 1% by weight of perfluoro-(alkyl vinyl) ether units with 1 to 4 carbon atoms in the perfluoroalkyl chain, which comprises the step of reacting the monomers by suspension process in an aqueous medium containing at least one initiator and at least one polymerization auxiliary, said aqueous medium being essentially free of ammonium salts, the amount of tetrafluoroethylene and the amount of perfluoro-(alkyl vinyl) ether units being selected such that the resulting polymer is non-melt-processable.

5,576,403

SOLUTION POLYMERIZATION OF VINYL MONOMERS WITH WATER SOLUBLE INITIATORS IN SUBSTANTIALLY NON-AQUEOUS MEDIA

Rama S. Chandran, S. Bound Brook, and George Gallaway, Asbury, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Jul. 28, 1994, Ser. No. 281,895

Int. Cl.[6] C08F *4/30*

U.S. Cl. 526—212 **11 Claims**

1. In a process for the homogeneous polymerization of water insoluble polymers containing greater than 50% by weight of monomers selected from the group consisting of C1–C18 acrylate or methacrylate esters, N-substituted acryl or methacylamides and mixtures thereof in substantially non-aqueous organic solutions where the solvent contains at least 40% by weight of ethanol, the improvement which comprises using as the polymerization initiator a water soluble initiator dissolved in sufficient amount of water to dissolve the initiator, the total amount of water employed comprising 5 to 25% by weight of the solvent, whereby the resultant polymer is characterized by lower residual monomer levels than are obtained using equivalent amounts of water-insoluble initiators.

5,576,404

AQUEOUS POLYMER DISPERSIONS

Wilhelm F. Beckerle, Bobenheim-Roxheim; Rolf Petri, Frankenthal; Bernhard Dotzauer, Maxdorf; Manfred Schwartz, Ludwigshafen, and Maximilian Angel, Schifferstadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 246,828, May 20, 1994, Pat. No. 5,512,629. This application Dec. 14, 1995, Ser. No. 572,740

Claims priority, application Germany, May 21, 1993, 43 17 035.8

Int. Cl.[6] C08L *35/06*

U.S. Cl. 526—317.1 **7 Claims**

1. A polymer powder whose polymer in polymerized form comprises:

(a) from 70 to 85% by weight of at least one monomer selected from the group consisting of styrene, vinyltoluenes, nitriles of α,β-monoethylenically unsaturated carboxylic acids of 3 to 6 carbon atoms and alkanols of 1 to 12 carbon atoms,

(b) from 15 to 25% by weight of at least one α,β-monoethylenically unsaturated carboxylic acid of 3 to 6 carbon atoms or amides thereof and

(c) from 0 to 5% by weight of other copolymerizable monomers, with the proviso that the monomers b comprise at least 50% by weight, based on their total amount, of methacrylic acid, the composition of the monomers a, b and c is chosen so that a glass transition temperature of from 80° to 160° C. results according to the Fox relationship for a polymer composed of these monomers and the K value of the polymer, determined in its fully acidic form in dimethylformamide at 23° C. and a polymer content of 0.14 by weight, is from 15 to 40.

5,576,405

LIQUID-RESIN, PROCESS FOR THE PRODUCTION THEREOF AND ITS USE

Miki Kawashima, and Kunio Horiuchi, both of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1994, Ser. No. 257,050

Claims priority, application Japan, Jun. 11, 1993, 5-140533

Int. Cl.[6] C08F *220/10;220/18;220/44;212/06*

U.S. Cl. 526—318.4 **10 Claims**

1. A liquid resin having a number average molecular weight of 10,000 to 200,000 and a viscosity, measured at 50° C., of 500 to 30,000 cps, obtained by the copolymerization of a composition containing

(a) 35 to 98% by weight of a monomer of the formula,

$$CH_2{=}C(R^1)COOR^2$$

wherein R^1 is hydrogen or methyl and R^2 is a hydrocarbon group having 9 to 22 carbon atoms,

(b) 2 to 40% by weight of a polymerizable unsaturated carboxylic acid, and

(c) 0 to 60% by weight of other polymerizable vinyl monomer.

5,576,406

CURABLE COMPOSITION AND METHOD FOR FORMING A FILM USING THE SAME

Kazuo Yamamura, Sakai, and Masataka Ooka, Nara, both of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

PCT No. PCT/JP94/00648, § 371 Date Dec. 15, 1994, § 102(e) Date Dec. 15, 1994, PCT Pub. No. WO94/24212, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 20, 1994, Ser. No. 351,416

Claims priority, application Japan, Apr. 20, 1993, 5-092968; Apr. 21, 1993, 5-094295; Sep. 6, 1993, 5-221115; Oct. 20, 1993, 5-262344; Dec. 20, 1993, 5-319700; Mar. 10, 1994, 6-039632

Int. Cl.[6] C08L *101/08;* C08F *220/28;220/32;218/16*

U.S. Cl. 526—320 **20 Claims**

1. A curable composition comprising as an essential component a polymer (A) possessing both at least one substituted methyl ester group represented by the general formula I,

$$—CO_2CH_2OX \qquad I$$

wherein X represents a monovalent organic group and at least one active hydrogen-containing group and/or one epoxy group.

5,576,407

COPOLYMERS OF HYDROXYALKYL VINYL ETHERS FOR USE IN DETERGENTS AND CLEANING AGENTS

Matthias Kroner, Eisenberg; Heinrich Hartmann, Limburgerhof; Gerhard Wolf, Mannheim; Richard Baur; Paul Diessel, both of Mutterstadt; Hans-Ulrich Jaeger, Neustadt; Volker Schwendemann, Neustadt, and Johannes Perner, Neustadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP92/02041, § 371 Date Feb. 10, 1994, § 102(e) Date Feb. 10, 1994, PCT Pub. No. WO93/06142, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 4, 1992, Ser. No. 185,971

Claims priority, application Germany, Sep. 13, 1991, 41 30 428.4

Int. Cl.[6] C08F *216/16;220/56*

U.S. Cl. 526—332 **7 Claims**

1. A copolymer of a hydroxyalkyl vinyl ether, said copolymer being formed by cationic or free radical polymerization of monomers, comprising:

a) from 90 to 10% by weight of a hydroxyalkyl vinyl ether selected from the group consisting of hydroxyether vinyl ether, 3-hydroxpropyl vinyl ether, 2-hydroxypropyl vinyl ether, 2-hydroxy-2-methylpropyl vinyl ether, 2-hydroxybutyl vinyl ether, 3-hydroxybutyl vinyl ether, 4-hydroxybutyl vinyl ether, 2-hydroxy-2-ethylethyl vinyl ether, 3-hydroxy-3-methylpropyl vinyl ether, 3-hydroxy-2-methylpropyl vinyl ether, 3-hydroxy-1-methylpropyl vinyl ether, hydroxypentyl vinyl ether, 6-hydroxyhexyl vinyl ether, 4-hydroxy-1,4-dimethylbutyl vinyl ether, 2-hydroxycyclohexyl vinyl ether, 3-hydroxycyclohexyl vinyl ether, 4-hydroxycyclohexyl vinyl ether, hydroxylheptyl vinyl ether, hydroxyoctyl vinyl ether, 4-(hydroxymethyl)-cyclohexyl- methyl vinyl ether and hydroxydecyl vinyl ether;

b) from 10% to 90% by weight of an adduct of a C_2–C_4-alkylene oxide with said hydroxyalkyl vinyl ether of clause a); and

c) other copolymerizable monomers from 0 to up to a total of 100% by weight of (a), (b), and (c)..

5,576,408

PROCESS FOR PREPARING LOW MOLECULAR WEIGHT ORGANOSILOXANE TERMINATED WITH SILANOL GROUP

Minoru Igarashi, and Masaharu Takahashi, both of Usui-gun, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1995, Ser. No. 518,881

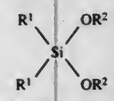
Claims priority, application Japan, Aug. 25, 1994, 6-224158; Mar. 14, 1995, 7-81706

Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—12 **18 Claims**

1. A process for preparing a low molecular weight organosiloxane having a silanol group comprising the steps of:

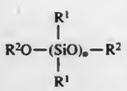
effecting hydrolysis of a dialkoxysilane of the following general formula (3):



(3)

wherein R^1 is independently selected from substituted or unsubstituted monovalent hydrocarbon groups, R^2 is independently selected from alkyl groups having 1 to 4 carbon atoms,

in the presence of a cation exchange resin by adding water thereto in an amount of 0.1 mol to less than 1 mol per mol of the alkoxy group in the dialkoxysilane molecule, and agitating the resulting mixture, thereby forming a dialkoxysiloxane of the general formula (2)



(2)

wherein R^1 and R^2 are as defined above and letter n is an integer of 2 to 5, and

effecting hydrolysis of the resulting dialkoxysiloxane of formula (2) in the presence of a cation exchange resin by adding water thereto in an amount of at least 1.0 mol per mol of the alkoxy group in said alkoxysiloxane and agitating the resulting mixture.

5,576,409

INTERNAL MOLD RELEASE COMPOSITIONS

Paul W. Mackey, Sylvan Lake, Mich., assignor to Imperial Chemical Industries PLC, London, England

Filed Aug. 25, 1995, Ser. No. 520,279

Int. Cl.[6] C08G *18/34*

U.S. Cl. 528—49 **18 Claims**

1. A reaction system comprising: (1) an organic polyisocyanate, (2) at least one compound containing a plurality of isocyanate-reactive groups and (3) an internal mold release system comprising (a) a carboxylic acid and (b) a compound selected from the group consisting of a fatty polyester, a fatty acid ester and a fatty amide.

5,576,410

DIAMINOUREA COMPOUND AND PROCESS FOR PRODUCTION THEREOF AND HIGH HEAT RESISTANT POLYURETHANEUREA AND PROCESS FOR PRODUCTION THEREOF

Akihiko Yosizato, and Satoshi Furubeppu, both of Moriyama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

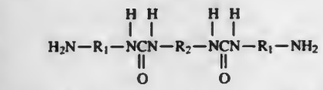
Division of Ser. No. 176,503, Dec. 30, 1993, Pat. No. 5,414,118, which is a continuation of Ser. No. 956,014, Dec. 9, 1992, abandoned. This application Jan. 25, 1995, Ser. No. 378,387

Claims priority, application Japan, Apr. 12, 1991, 3-106496; Jul. 22, 1991, 3-204540; Oct. 8, 1991, 3-260784

Int. Cl.[6] C08G *18/32*

U.S. Cl. 528—64 **3 Claims**

1. A process for production of a polyurethaneurea comprising reacting an excess molar amount of organic diisocyanate with a polymer diol having a number average molecular weight of 500 to 100,000 to synthesize an intermediate polymer having an isocyanate group at its ends, then reacting the intermediate polymer with a bifunctional diamine compound, wherein the diaminourea compound having the formula (I) is used as a part or all of the said bifunctional diamine compound:



(I)

wherein R_1 is a straight or branched chain alkylene group having 2 to 8 carbon atoms and R_2 is a phenylene group, a C_1–C_4 alkyl-substituted phenylene group, a C_1–C_4 mono- or di- alkylene substituted phenylene group, or a methanediphenylene group.

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5,576,411
LOW SURFACE ENERGY POLYISOCYANATES AND THEIR USE IN ONE-OR TWO COMPONENT COATING COMPOSITIONS

Philip E. Yeske; Edward P. Squiller, both of Pittsburgh, Pa., and William E. Slack, Moundsville, W. Va., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Sep. 14, 1994, Ser. No. 306,553
Int. Cl.[6] C08G *18/28*
U.S. Cl. 528—70 **16 Claims**

1. A polyisocyanate mixture
i) having an NCO content of 5 to 35% by weight and prepared from an organic diisocyanate,
ii) containing at least 5% by weight of isocyanurate groups (calculated as $N_3C_3O_3$, MW 126),
iii) containing allophanate groups in an amount such that there are more equivalents of allophanate groups than urethane groups and
iv) containing fluorine (calculated as F, AW 19) in an amount of 0.001 to 50% by weight,
wherein the preceding percentages are based on the solids content of the polyisocyanate mixture, excluding any unreacted organic diisocyanate, and wherein fluorine is incorporated by reacting an isocyanate group with a compound containing two or more carbon atoms, one or more hydroxyl groups and one or more fluorine atoms to form urethane groups and converting a sufficient amount of said urethane groups to allophanate groups to satisfy the requirements of iii), provided that the polyisocyanate mixture contains sufficient allophanate groups to ensure that the polyisocyanate mixture remains stable and homogeneous in storage for 3 months at 25° C.

5,576,412
OPTICAL URETHANE RESIN

Fumiaki Hirata, Sakai; Tatsuya Nakashima, Nishinomiya, and Ichiro Minato, Kobe, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed May 13, 1994, Ser. No. 242,240
Claims priority, application Japan, May 20, 1993, 5-118103
Int. Cl.[6] C08G *18/32*
U.S. Cl. 528—85 **7 Claims**

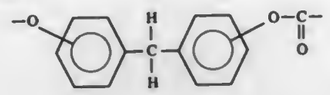
1. An optical urethane resin obtained by reacting a polyisocyanate selected from the group consisting of an alicyclic polyisocyanate and an araliphatic polyisocyanate, said polyisocyanate having a hydrolyzable chlorine content of not greater than 100 ppm, with an active hydrogen compound selected from the group consisting of a polyol compound, a polythiol compound and a hydroxythiol compound.

5,576,413
FLAME RETARDANT POLYCARBONATE COMPOSITIONS

Jan Bussink, Bergen op Zoom, Netherlands; Henricus G. C. Denissen, Weelde, Belgium; Erwin M. A. Gijzen, Poortvliet, Netherlands; Hendrik T. van de Grampel; Theodorus L. Hoeks, both of Bergen op Zoom, Netherlands, and Henricus H. M. van Hout, Halsteren, Netherlands, assignors to General Electric Company, Pittsfield, Mass.

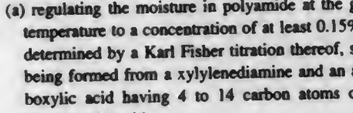
Filed Apr. 25, 1994, Ser. No. 233,285
Int. Cl.[6] C08G *64/00*
U.S. Cl. 528—196 **21 Claims**

1. A copolycarbonate consisting essentially of structural units of the formulae



I

-continued
and



II

wherein said copolycarbonate contains no more than about 95 percent by weight of formula II based on total weight of copolycarbonate in the polycarbonate composition.

5,576,414
PROCESS FOR GENERATING A VACUUM IN PRODUCTION OF POLYCARBONATE

Fritz Wilhelm, Karben; Rudolf Kaempf, Gruendau; Walter Wenzel, Rossdorf, and Klaus Mackensen, Frankfurt/Main, all of Germany, assignors to Zimmer Aktiengesellschaft, Germany

Filed Oct. 5, 1995, Ser. No. 539,733
Claims priority, application Germany, Nov. 15, 1994, 44 40 741.6
Int. Cl.[6] C08G *64/00*
U.S. Cl. 528—199 **8 Claims**

1. In a process for generating a vacuum and separating the condensable components in the vapors of melt-phase condensation in the production of polycarbonate, the improvement which comprises
generating said vacuum by at least one vapor jet connected to the suction side of the polycondensation reactor to be evacuated, and separating said condensable components in a downstream spray condenser, and
injecting diphenyl carbonate vapor as the motive vapor into said vapor jet at an absolute pressure in the range of about 0.3 to about 1.5 bar and spraying liquid diphenyl carbonate into said spray condenser.

5,576,415
METHOD FOR DRYING POLYAMIDE AND METHOD FOR SOLID-PHASE POLYMERIZATION OF POLYAMIDE

Kazumi Tanaka, Niigata, Japan, assignor to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Aug. 7, 1995, Ser. No. 511,679
Claims priority, application Japan, Sep. 8, 1994, 5-214622
Int. Cl.[6] C08G *69/28*
U.S. Cl. 528—310 **20 Claims**

1. A method for drying a crystallizable polyamide being in an amorphous state which comprises:
(a) regulating the moisture in polyamide at the glass transition temperature to a concentration of at least 0.15% by weight as determined by a Karl Fisher titration thereof, said polyamide being formed from a xylylenediamine and an aliphatic dicarboxylic acid having 4 to 14 carbon atoms or an aromatic dicarboxylic acid;
(b) heating the polyamide from step (a) at a pressure of at least one atm without reducing the moisture concentration to crystallize the polyamide up to a crystallinity of at least 15% and;
(c) further heating the crystallized polyamide from step (b) at a drying temperature lower than the melting point of the polyamide under reduced pressure with a batchwise heating apparatus.

5,576,416
AMIDE-CONTAINING SELF-EMULSIFYING EPOXY CURING AGENT

Frederick H. Walker, Doylestown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 13, 1994, Ser. No. 355,149
Int. Cl.[6] C08G *69/26*
U.S. Cl. 528—340 **29 Claims**

1. An epoxy hardener composition comprising the reaction product of (A) a poly(alkylene oxide) mono- or diamine having a number average molecular weight (Mn) of 500 to 3000 and (B) a polycarboxylic acid in a ratio of moles of polycarboxylic acid to equivalents of amine of about 1:1 to 6:1 to yield an intermediate (C) which is reacted with (D) a polyamine which is selected from the group consisting of aliphatic diamines and polyamines, araliphatic diamines and polyamines, aromatic diamines and polyamines, cycloaliphatic diamines and polyamines, heterocyclic diamines and polyamines, and mixtures thereof, the amount of the poly(alkylene oxide) monoamine or diamine used to produce intermediate (C) being sufficient to provide a stable solution or emulsion of the epoxy hardener composition in an aqueous medium.

5,576,417
METHOD FOR SYNTHESIZING AROMATIC POLYMERS

Kazuhiko Takeuchi; Yoshihiro Kubota; Takaaki Hanaoka; Takehiko Matsuzaki; Yoshihiro Sugi, all of Tsukuba; Tatsuya Eto, Ibaraki-ken; Tokio Hagiwara, Tokyo, and Tadashi Narita, Yokohama, all of Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Sep. 13, 1994, Ser. No. 304,949
Claims priority, application Japan, Dec. 24, 1993, 5-347977
Int. Cl.[6] C08G *69/26*
U.S. Cl. 528—343 **20 Claims**

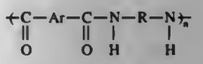
1. A method for producing aromatic polyamides represented by the following formula (III), which comprises reacting an aromatic dihalogen compound represented by the following formula (I) with a diamine compound represented by the following formula (II) in the presence of cobalt/phosphine complex and a basic substance under carbon monoxide atmosphere:

$$X_1—Ar—X_2 \qquad \text{formula (I)}$$

wherein Ar represents an aromatic residue and X_1 and X_2 each represent a bromine or iodine atom,

$$H_2N—R—NH_2 \qquad \text{formula (II)}$$

wherein R represents a divalent hydrocarbon group, and formula (III)



wherein Ar and R each have the same meaning as the above, and n is a positive integer.

5,576,418
RESORBABLE BIOCOMPATIBLE COPOLYMERS AND THEIR USE

Christian Jurgens, Hochallee 19, 2000 Hamburg 13, Germany

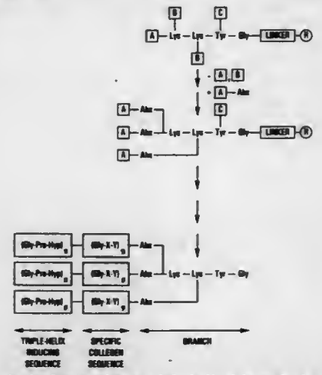
Division of Ser. No. 906,319, Jun. 29, 1992, Pat. No. 5,466,444. This application Jul. 10, 1995, Ser. No. 500,088
Int. Cl.[6] C08G *63/08;63/82;* **A61K** *31/74*
U.S. Cl. 528—361 **1 Claim**

1. A copolymer prepared by reacting racemic lactide and a monomer selected from the group consisting of ε-capro-lactone, δ-valerolactone, γ-decalactone or β-hydroxybutyric acid, wherein the molar ratio of lactide to monomer is approximately 95–70 to 5–30, and wherein the reaction is carried out in the presence of a tin-II-diethylhexanoate initiator in a ratio of lactide and monomer to initiator of from 100 to 1 to 500 to 1, at a temperature of about 150° C. for a period of about 16 to 48 hours.

5,576,419
MILD SOLID-PHASE SYNTHESIS OF ALIGNED BRANCHED TRIPLE-HELICAL PEPTIDES

Gregg B. Fields, Brooklyn Park, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation of Ser. No. 85,633, Jun. 30, 1993, abandoned. This application Sep. 27, 1995, Ser. No. 534,342
Int. Cl.[6] C07K *1/04;1/06;14/00;14/78*
U.S. Cl. 530—322 **54 Claims**



1. A method of preparing a triple-helical branched polypeptide by solid phase peptide synthesis under conditions which do not disrupt O-glycosidic bonds or ^2H labelled residues in the polypeptide comprising:
(a) assembling a polypeptide on a support material using a linker and an N^{α}-amino protecting group and non-acidic conditions; wherein said polypeptide comprises:
(i) two amino acid residues each having a single side-chain amino protecting group; and
(ii) at least one chromophoric amino acid optionally having a side-chain protecting group;
(b) removing the side-chain amino protecting groups to form two amino termini under non-strong acid conditions;
(c) removing the N^{α}-amino protecting group under non-acidic conditions to form a third amino terminus;
(d) incorporating a spacer group on the three amino termini under non-acidic conditions;
(e) assembling an amino acid sequence of interest on the spacer group under non-acidic conditions, wherein the amino acid sequence of interest optionally contains O-glycosidic bonds or ^2H labelled residues; and
(f) assembling a triple-helical inducing sequence on the amino acid sequence of interest, under non-acidic conditions.

5,576,420
SUBTILIN VARIANT OF ENHANCED STABILITY AND ACTIVITY

J. Norman Hansen, Silver Spring, Md., assignor to University of Maryland, College Park, Md.

Division of Ser. No. 981,525, Nov. 25, 1992, Pat. No. 5,516,682, which is a continuation-in-part of Ser. No. 214,959, Jul. 5, 1988, Pat. No. 5,218,101. This application Mar. 30, 1994, Ser. No. 220,033
Int. Cl.[6] C07K *14/32;* **C12P** *21/00;* **C12N** *15/00*
U.S. Cl. 530—324 **11 Claims**

1. An antibiotic having the amino acid sequence of native subtilin, save that the 4-position of the native sequence is substituted for by isoleucin.

5,576,421

RECOMBINANT CHIMERIC HIV-1 GAG-ENV FUSION PROTEINS

Atsushi Saito, Kagawa-ken; Hideo Sinagawa, Suita, and Atsuo Nakata, Toyonaka, all of Japan, assignors to The Research Foundation for Microbial Diseases of Osaka University, Osaka, Japan

Continuation of Ser. No. 985,949, Dec. 4, 1992, abandoned. This application Jan. 18, 1995, Ser. No. 375,510
Claims priority, application Japan, Jun. 4, 1992, 4-170270
Int. Cl.[6] C07K *1/00;14/00;17/00;* A61K *39/21*
U.S. Cl. 530—350 3 Claims

1. An HIV-1 Gag-Env fusion protein consisting of amino acids 308–406 of the Gag protein of SEQ. ID. NO. 1 and amino acids 512–611 of the Env protein of SEQ. ID. NO. 2, wherein the amino terminus of the Env peptide is fused to the carboxyl terminus of the Gag peptide.

5,576,422

MCC PROTEIN AND ANTIBODY

Bert Vogelstein; Kenneth W. Kinzler, both of Baltimore, Md.; Raymond White, Salt Lake City, Utah, and Yusuke Nakamura, Tokyo, Japan, assignors to The Johns Hopkins University, Baltimore, Md.; University of Utah, Salt Lake City, Utah, and The Cancer Institute, Japan

Division of Ser. No. 220,674, Mar. 31, 1994, which is a division of Ser. No. 670,611, Mar. 13, 1991, Pat. No. 5,330,892. This application May 19, 1995, Ser. No. 445,186
Int. Cl.[6] C07K *14/82;16/32*
U.S. Cl. 530—350 3 Claims

1. An isolated human protein, wherein the amino acid sequence of said protein is that shown in SEQ ID NO: 2.

5,576,423

ANTIBODIES TO THE SLAM PROTEIN EXPRESSED ON ACTIVATED T CELLS

Gregorio Aversa, Palo Alto; Chia-Chun J. Chang, San Jose; Benjamin G. Cocks, Mountain View, and Jan E. de Vries, Los Altos, all of Calif., assignors to Schering Corporation, Kenilworth, N.J.

Filed Dec. 2, 1994, Ser. No. 348,792
Int. Cl.[6] A61K *39/395;* C07K *16/28;* C12P *21/08;* C12N *15/06*
U.S. Cl. 530—388.75 26 Claims

1. A monoclonal antibody or antigen binding fragment thereof, which specifically binds a SLAM protein wherein said SLAM protein is characterized by expression on an activated T cell.

5,576,424

HALOALKYL DERIVATIVES OF REPORTER MOLECULES USED TO ANALYZE METABOLIC ACTIVITY IN CELLS

Fei Mao, Eugene, Oreg.; Ram Sabnis, Sacramento, Calif.; John Naleway, Eugene, Oreg.; Nels Olson, Homer, Ak., and Richard P. Haugland, Eugene, Oreg., assignors to Molecular Probes, Inc., Eugene, Oreg.

Continuation-in-part of Ser. No. 26,633, Mar. 5, 1993, Pat. No. 5,362,628, which is a continuation of Ser. No. 749,256, Aug. 23, 1991, abandoned. This application Nov. 8, 1994, Ser. No. 336,285
Int. Cl.[6] C07H *17/00;* C07D *309/00*
U.S. Cl. 536—17.9 24 Claims

1. A substrate having the formula:

XR-SPACER-REPORTER-BLOCK

wherein BLOCK is a monovalent moiety derived by removal of a hydroxy group from phosphate or from sulfate, or a biologically compatible salt thereof; or a monovalent moiety derived by removal of a hydroxy group from a carboxy group of an aromatic carboxylic acid or of an amino acid, protected amino acid, peptide, or protected peptide; or a monovalent moiety derived by removal of a hydroxy group from an alcohol or from a mono- or polysaccharide, where said BLOCK is selected to be removable from -REPORTER by action of an enzyme; -REPORTER- is an anthracene, a benzphenalenone, an acridinone, a coumarin, a fluorescein, a naphthalene, a phenalenone, a pyrene, a resorufin, a rhodol, or a rhodamine, that when no longer bound to BLOCK by a BLOCK-REPORTER bond, is fluorescent; -SPACER- is a single covalent bond, or a covalent linkage having 0–8 carbon atoms and 1–4 heteroatoms, wherein said heteroatoms, which may be the same or different, are selected from the group consisting of O, N and S; and XR— is a haloalkyl moiety, where X is a single Cl, I, or Br, and R is an alkyl linkage having 1–4 carbons.

5,576,425

PROCESS FOR THE DIRECT PRODUCTION OF ALKYL GLYCOSIDES

Karlheinz Hill, Erkrath; Manfred Biermann, Muelheim; Henry Rossmaier; Rainer Eskuchen, both of Duesseldorf; Willi Wuest, Ratingen; Josef Wollmann, Herzogenrath; Andreas Bruns, Langenfeld; Guenter Hellmann, Hilden; Karl-Heinz Ott, Erkrath; Walter Winkle, Monheim, and Klaus Wollmann, Haan, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Continuation of Ser. No. 112,838, Aug. 26, 1993, abandoned, which is a continuation of Ser. No. 671,733, Jun. 5, 1991, abandoned. This application Jul. 25, 1994, Ser. No. 279,673
Claims priority, application Germany, Oct. 5, 1988, 38 33 780.0
Int. Cl.[6] C07G *3/00;* C07H *1/00;15/04*
U.S. Cl. 536—18.6 22 Claims

1. In a process for the direct production of alkyl glucosides by acetalization of aliphatic primary alcohols having from 1 to about 30 carbon atoms with glucose in the presence of an acidic catalyst, at a temperature of from about 80° C. to about 120° C. with rapid removal of the water of reaction, neutralization of the catalyst with a base, removal of unreacted alcohol by distillation, conversion of the reaction product into an aqueous paste and bleaching of the paste with hydrogen peroxide, the aliphatic alcohol being present in a molar excess to the glucose, the formation and removal of the water of reaction taking place at reaction temperatures above 80° C. under reduced pressure the improvement which comprises:

a) preparing a mixture of said aliphatic primary alcohol, glucose and acidic catalyst and reacting the mixture at a temperature of from about 100° C. to about 120° C. by a method selected from the group consisting of

(i) mixing a first portion of the alcohol with the catalyst, heating the mixture of alcohol and catalyst and adding a heated suspension of the glucose in a second portion of alcohol to the heated alcohol/catalyst mixture and distilling the water of reaction formed under a reduced pressure of from about 10 to about 15 mbar, or

(ii) forming a mixture of the alcohol and the glucose and heating the mixture of alcohol and glucose, adding the acidic catalyst to the heated mixture, applying a reduced pressure of from about 10 to about 15 mbar to the mixture and further heating the mixture and distilling off the water of reaction formed:

b) the molar ratio of glucose to aliphatic alcohol being from 1:2 to 1:10;

c) maintaining the reaction mixture at the reaction temperature and under the reduced pressure, while mixing, to remove the water of reaction to form a reaction mixture comprising unreacted alcohol;

d) cooling the reaction mixture and neutralizing the reaction mixture to a pH in the range of from at least 8 to 10 with an inorganic basic alkali, alkaline-earth, aluminum or alkali/aluminum compound selected from the group consisting of an alkali metal oxide, hydroxide, or carbonate; an alkaline-earth metal oxide, hydroxide, or carbonate; zeolites NaA or NaX;

e) distilling the unreacted alcohol from the alkaline mixture under a reduced pressure of from about 0.01 to about 1.0 mbar with heating to a temperature of from about 160° C. to about 180° C. to form a reaction product with an alcohol content below 5% by weight of the reaction product;

f) cooling the reaction product from about 105° to 130° C.; and

g) producing a bleached paste containing 30 to 70% of the reaction product by addition of water and an active oxygen compound with stirring while maintaining the pH at 8 to 10 during the bleaching process.

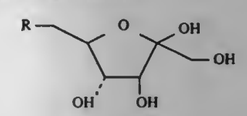
5,576,426

ALDOLASE CATALYZED STEREOSELECTIVE SYNTHESIS OF ARABINOHEXULOSE, XYLOHEPTULOSE, THREOHEXULOSE AND XYLOHEXULOSE

Chi-Huey Wong, Rancho Santa Fe, Calif.; John R. Durrwachter, Corpus Christi, Tex., and Richard L. Pederson, Bend, Oreg., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation of Ser. No. 857,016, Mar. 24, 1992, abandoned, which is a division of Ser. No. 238,756, Aug. 30, 1988, Pat. No. 5,143,831. This application Sep. 8, 1994, Ser. No. 303,289
Int. Cl.[6] C07H *5/04;5/06*
U.S. Cl. 536—18.7 1 Claim

1. A compound of the formula:



wherein R is selected from the group consisting of N_3, CF_3CONH— and $C_6H_5CH_2OCONH$—.

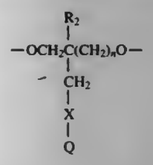
5,576,427

ACYCLIC NUCLEOSIDE ANALOGS AND OLIGONUCLEOTIDE SEQUENCES CONTAINING THEM

Philip D. Cook, Carlsbad, Calif.; Daniel J. Delecki, Radnor, Pa., and Charles Guinosso, Vista, Calif., assignors to Sterling Winthrop, Inc., New York, N.Y.

Continuation of Ser. No. 40,326, Mar. 30, 1993, abandoned. This application May 26, 1995, Ser. No. 452,196
Int. Cl.[6] C07H *21/04;21/02;* C07D *473/34;473/18*
U.S. Cl. 536—23.1 8 Claims

8. A method of inhibiting nuclease degradation of an oligonucleotide comprising replacing one or more nucleosides at the 3' terminus of said oligonucleotide by a residue of formula



wherein

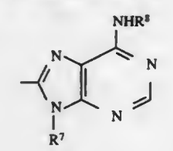
R_2 is hydrogen, nitro, lower-alkyl amino, diloweralkyl amino or methyl;

X is oxygen, sulfur or —NR^6;

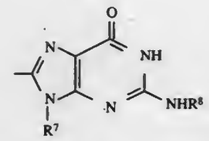
n is 0 to 2;

R^6 is hydrogen or lower-alkyl;

Q is chosen from the group consisting of



and



R^7 is lower-alkyl or loweralkyloxy ethylene; and

R^8 is hydrogen, benzoyl, anisoyl, or lower-alkyl carbonyl.

5,576,428

INVERTASE GENE(S) AND USES THEREOF

William O. Butler, San Diego, Calif.; Yoshihiro Konno, Gunma, Japan; Craig D. Dickinson, San Diego, Calif.; Leona C. Fitzmaurice, San Diego, Calif.; Theodore E. Mirkov, San Diego, Calif., and Kathryn J. Elliott, San Diego, Calif., assignors to The Salk Institute Biotechnology/Industrial Associates, Inc., La Jolla, Calif.

Continuation-in-part of Ser. No. 771,331, Oct. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 660,344, Feb. 22, 1991, abandoned. This application Aug. 20, 1993, Ser. No. 107,748
Int. Cl.[6] C07H *21/04;* C12N *15/11;15/29;15/82*
U.S. Cl. 536—24.1 13 Claims

1. An isolated DNA sequence which comprises a tomato vacuolar invertase promoter region having the nucleotide sequence set forth in nucleotides 1-3519 of Sequence ID No. 2 or a fragment thereof which is capable of controlling the transcription of a coding sequence which is operatively linked thereto.

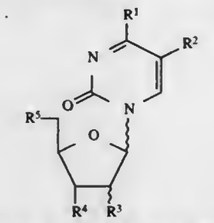
5,576,429

5-SUBSTITUTED PYRIMIDINE NUCLEOSIDES AND NUCLEOTIDES

Karl N. G. Johansson, Enhörna; Hans C. G. Malmberg, Södertälje; S. C. Sahlberg, Hägersten; Daniel D. Sohn, Södertälje, and Saló Gronowitz, Lund, all of Sweden, assignors to Medivir AB, Huddinge, Sweden

Division of Ser. No. 613,900, Jan. 18, 1991, Pat. No. 5,440,040. This application Feb. 28, 1995, Ser. No. 395,877
Claims priority, application Sweden, Jun. 10, 1988, 8802173
Int. Cl.[6] C07H *19/00;19/06*
U.S. Cl. 536—26.8 14 Claims

1. A compound of the formula

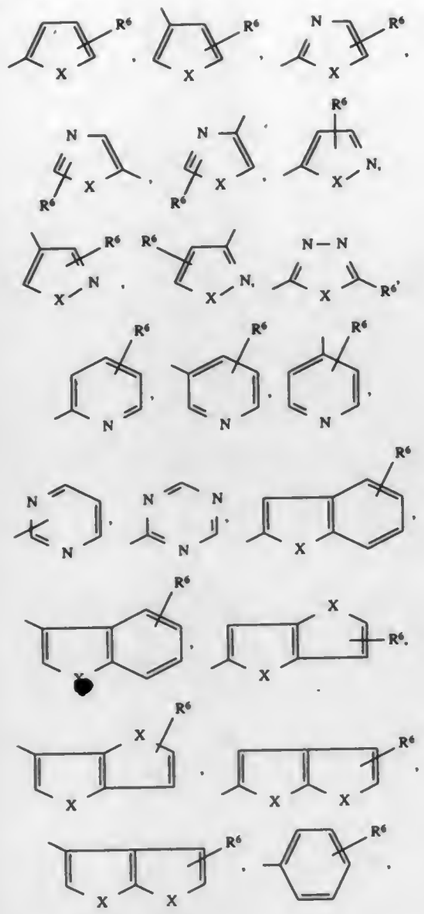


wherein the radicals R^1, R^2, R^3, R^4 and R^5 are defined as follows:

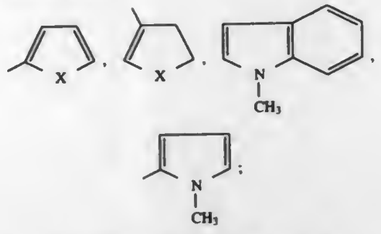
R^1: OH, NH_2;

VOL 1192 ISS 3 NO 19 1996 UMI

R^2:



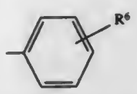
then R^2 is not



ii when R^1 is OH, R^3 is H, R^4 is OH, R^5 is OH,



and R^2 is



then R^6 is not H, OH, CH_3, OCH_3, Br, $COOCH_3$, NH_2, $N(CH_3)_2$ in para-position;

iii when R^2 is phenyl, R^3, R^4 and R^5 are all OH, then R^6 is not H or nitro;

iv when R^2 is phenyl, R^3 is F and R^4 and R^5 are OH or an ester thereof, then R^6 is not H, CH_3, OCH_3, halo, amino or nitro.

5,576,430

1,8-DIAZABICYCLO[5.4.0]UNDEC-1(7)-ENIUM CYANIDE AND METHOD OF MAKING THEREOF

John J. Partridge, Chapel Hill, and Brian L. Bray, Graham, both of N.C., assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

Division of Ser. No. 44,339, Apr. 7, 1993, Pat. No. 5,329,008.
This application Jul. 7, 1994, Ser. No. 271,594
Int. Cl.[6] C07D *487/04;473/18;* **C07B** *35/08*
U.S. Cl. 540—523 **2 Claims**

1. A compound 1,8-diazabicyclo[5.4.0]undec-1(7)-enium cyanide.

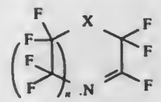
5,576,431

METHOD FOR PRODUCTION OF PERFLUORO-CYCLIC IMINE

Masakazu Nishida, Nagoya; Takashi Abe, Kasugai, and Haruhiko Fukaya, Oobu, all of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

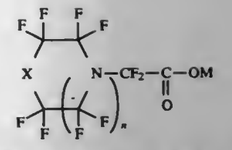
Filed Dec. 7, 1995, Ser. No. 568,509
Claims priority, application Japan, Dec. 13, 1994, 6-332947
Int. Cl.[6] C07D *265/30;211/72*
U.S. Cl. 544—98 **6 Claims**

1. A method for the production of a perfluoro-cyclic imine represented by the formula:



(2)

by placing in a reaction vessel a perfluoro compound represented by the formula:



(I)

wherein X stands for one member selected from among CF_2, $CF(CF_3)$, and oxygen atom, M for one member selected from among monovalent alkali metal ions and alkaline earth metal ions, and n for 0, 1, or 2 and heating the perfluoro compound to a temperature in the approximate range of 100° C. to 500° C.

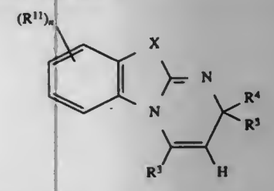
5,576,432

PROCESS FOR THE MANUFACTURE OF DIHYDROPYRIMIDINES

Roger Lok, and Antony J. Williams, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 23, 1994, Ser. No. 363,148
Int. Cl.[6] C07D *498/04;513/04;517/04*
U.S. Cl. 544—250 **12 Claims**

1. A process of preparing a dihydropyrimidine compound of the following structure (I):



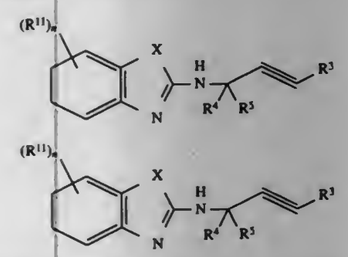
wherein

R^3, R^4, and R^5 are independently hydrogen or an unsubstituted alkyl group having less than 12 carbon atoms or an unsubstituted phenyl group; and

X is oxygen, sulfur, or selenium;

R^{11} is independently hydrogen or halogen atoms, or alkyl, alkoxy, carboxy, phenyl or cyano groups, and n is 0, 1 or 2;

comprising combining a compound of the following structure (A):



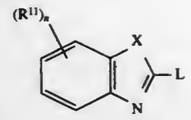
wherein X, R^3, R^4, R^5, R^{11}, and n are as previously defined, with a catalytic amount of silver or gold cation catalyst at a temperature of less than about 50° C. and in the presence of an organic solvent, to form compound (I).

8. A process of synthesizing a dihydropyrimidine compound, said process comprising reacting an alkynylamine or its ammonium salt, said alkynylamine having the structure:



wherein R^3, R^4 and R^5 are independently hydrogen or an unsubstituted alkyl group having less than 12 carbon atoms or an unsubstituted aryl group; with a compound having the structure

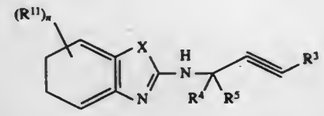
(III):



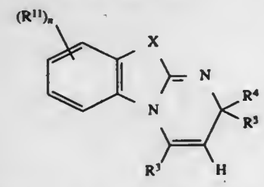
wherein R^{11} is independently hydrogen or halogen atoms, or alkyl, alkoxy, carboxy, phenyl or cyano groups and n is 0, 1 or 2;

X is oxygen, sulfur, or selenium; and

L is a leaving group; to form a heterocyclic alkynylamine having the structure (A):



wherein X, R^3, R^4, R^5, and R^{11}, and n are as previously defined; and reacting the heterocyclic alkynylamine at a temperature of less than about 50° C. with a silver or gold cation catalyst in an organic solvent to form a dihydropyrimidine compound having the structure (I):



wherein X, R^3, R^4, R^5, R^{11}, and n are as previously defined.

5,576,433

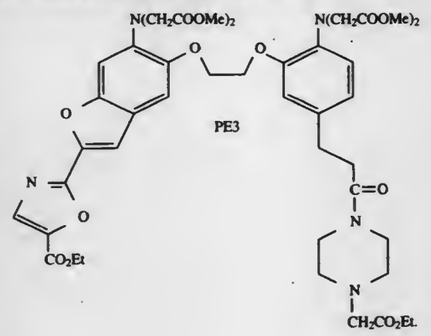
FLUORESCENT CALCIUM INDICATORS TARGETED TO SPECIFIC INTRACELLULAR ENVIRONMENTS

Martin F. Poenie, and Akwasi Minta, both of Austin, Tex., assignors to Texas Fluorescence Laboratories, Inc., Austin, Tex.

Filed Oct. 12, 1994, Ser. No. 322,059
Int. Cl.[6] C07D *413/14;413/12;403/12;209/20*
U.S. Cl. 544—369 **3 Claims**

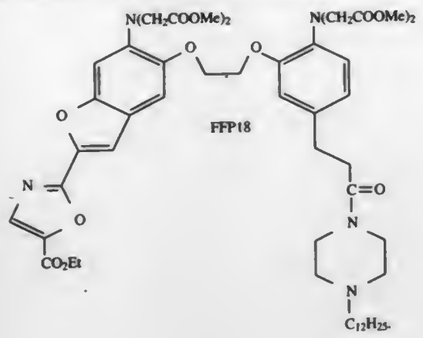
1. A class of cellular calcium indicators consisting of

a) a chemical compound having the formula:



or

b) a chemical compound having the formula:



5,576,434

(1-AZABICYCLO[2.2.2]OCT-3-YL) (1,2,3,4-TETRAHYDRONAPHTHALEN-1-YLMETHYL)AMINE AND N-(1-AZABICYCLO[2.2.2]OCT-3-YL)-1,2,3,4-TETRAHYDRONAPHTHALEN-1-YLCARBOXAMIDE

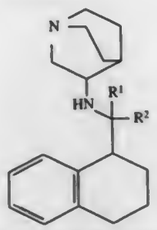
James Robinson, III; John C. Rohloff, and Bruce A. Kowalczyk, all of 3401 Hillview Ave., P.O. Box 10850, Palo Alto, Calif. 94303

Division of Ser. No. 280,265, Jul. 26, 1994, Pat. No. 5,510,486. This application Jan. 24, 1996, Ser. No. 590,848

Int. Cl.[6] C07D *453/02*

U.S. Cl. 546—133 **5 Claims**

I. A compound of Formula 6:



in which R^1 and R^2 are each hydrogen or together form =O.

5,576,435

PROCESS AND INTERMEDIATES FOR THE PREPARATION OF EXCITATORY AMINO ACID RECEPTOR ANTAGONISTS

Anita Melikian-Badalian, and Paul L. Ornstein, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

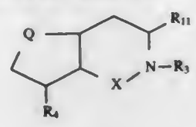
Division of Ser. No. 977,940, Nov. 18, 1992, Pat. No. 5,470,978. This application May 19, 1995, Ser. No. 444,692

Int. Cl.[6] C07D *217/24;217/26*

U.S. Cl. 546—150 **8 Claims**

1. A compound of the Formula (II)

(II)



wherein R_{11} is CO_2R_2, $CON(R_2)_2$, CN, CH_2OH, or protected hydroxymethyl;

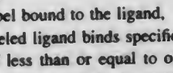
R_2 is independently hydrogen, C_1"C_6 alkyl, C_3–C_6 alkenyl, aryl, or C_7–C_{16} arylalkyl; or

the R_2 groups of the $CON(R_2)_2$ together with the nitrogen form a 3- to 8-member heterocyclic ring;

R_3 is hydrogen, C_1"C_6 alkyl, C_3–C_6 alkenyl, $CON(R_6)_2$, SO_2R_6, COR_6, CO_2R_6, benzyl, or substituted benzyl having from one to two substituents independently selected from the group consisting of C_1–C_6 alkyl, C_3–C_8 cycloalkyl, NO_2, halo, halo(C_1–C_6)alkyl, C_3–C_6 alkenyl, C_3–C_8 cycloalkyl-(C_1–C_3)alkyl, phenyl, C_5–C_8 cycloalkenyl, C_5–C_8 cycloalkenyl-(C_1–C_3) alkyl, COR_2, C_1–C_{10} alkanoyl, OR_2, and C_7–C_{16} arylalkyl;

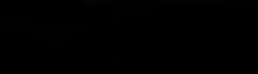
R_4 is hydrogen, SO_2R_7, CO_2R_7, $SiMe_3$, or CHO;

X is



R_6, and R_7 independently are selected from the group consisting of C_1–C_6 alkyl, aryl, C_7–C_{16} arylalkyl, and C_3–C_6 alkenyl.

Q is



and

R_{10} is silyl, C_1–C_4 alkyl, or C_1–C_{10} alkanyoyl; or a pharmaceutically acceptable salt thereof.

6

5,576,436

FLUORESCENT LIGANDS

R. Tyler McCabe, South Salem, N.Y.; Christopher A. Rhodes, Stamford, Conn., and Bruce F. DeCosta, Yonkers, N.Y., assignors to Pharmaceutical Discovery Corporation, Elmsford, N.Y.

Continuation-in-part of Ser. No. 923,837, Jul. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 739,183, Aug. 1, 1991, abandoned. This application Mar. 2, 1994, Ser. No. 204,559

Int. Cl.[6] C07D *271/12*

U.S. Cl. 546—156 **10 Claims**

1. A fluorescent conjugate comprising

a ligand selected from the group consisting of compounds specifically and selectively binding to N-methyl-D-aspartate, cannabinoid, glycine, sodium channel, and potassium channel receptors, and

a fluorescent label bound to the ligand,

wherein the labeled ligand binds specifically to a receptor with an affinity of less than or equal to one micromolar and the label is directly detectable in the visible spectrum.

5,576,437

7-(2-IMIDAZOLNYLAMINO) QUINOLINE COMPOUNDS USEFUL AS ALPHA-2 ADRENOCEPTOR AGONISTS

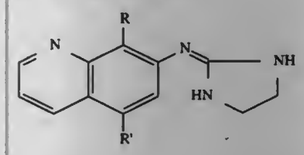
Thomas L. Cupps, Oxford, and Sophie E. Bogdan, Mainville, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 169,342, Dec. 17, 1993, abandoned. This application Aug. 18, 1994, Ser. No. 292,672

Int. Cl.[6] C07D *215/20;215/22;215/227*

U.S. Cl. 546—171 **6 Claims**

I. A compound having the structure:



wherein:

(a) R is unsubstituted alkanyl or alkenyl having from 1 to about 3 carbon atoms; and

(b) R' is selected from the group consisting of hydrogen; unsubstituted alkanyl or alkenyl having from 1 to about 3 carbon atoms; unsubstituted alkylthio or alkoxy having from 1 to about 3 carbon atoms; hydroxy; thiol; cyano; and halo.

5,576,438

ISOSERINE DERIVATIVES AND THEIR USE AS LEUKOTRIENE ANTAGONISTS

Dorte Kirstein, Lyngby, and Schneur Rachlin, Vaerløse, both of Denmark, assignors to Leo Pharmaceutical Products Ltd. A/S Løvens Kemiske Fabrika Produktionsaktiesel Skab, Ballerup, Denmark

PCT No. PCT/DK93/00254, § 371 Date Jan. 3, 1995, § 102(e) Date Jan. 3, 1995, PCT Pub. No. WO94/02338, PCT Pub. Date Mar. 2, 1994

PCT Filed Aug. 5, 1993, Ser. No. 335,860

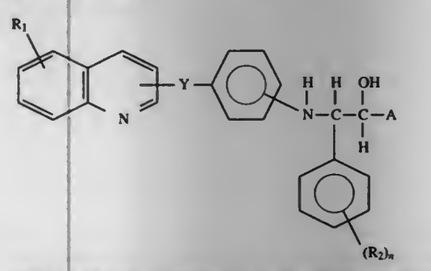
Claims priority, application United Kingdom, Aug. 7, 1992, 9216768

Int. Cl.[6] C07D *215/06;215/18*

U.S. Cl. 546—476 **5 Claims**

1. A compound selected from the group consisting of compounds of the formula I

I



in which Y stands for —CH=CH—; R_1 is hydrogen or halogen; R_2 is halogen, CH_3, OCH_3, NO_2 or CF_3, and n=0–3; A stands for carboxy, 1-H-tetrazolyl or a hydroxamic acid group; pharmaceutically acceptable, non-toxic salts thereof or in-vivo hydrolysable esters thereof.

5,576,439

DIHYDROPYRIDINECARBOXYLIC ACID ANHYDRIDES

Benjamin B. Mugrage, Basking Ridge, N.J., assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

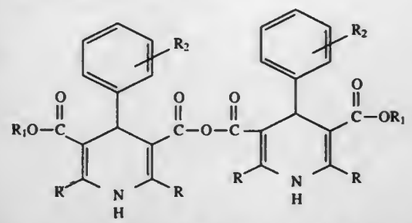
Filed Oct. 28, 1994, Ser. No. 331,071

Int. Cl.[6] C07D *213/79;213/80;* **A61K** *31/44*

U.S. Cl. 546—263 **11 Claims**

1. A compound of the formula

(I)



wherein R is lower alkyl or hydrogen; R_1 is hydrogen, lower alkyl or aryl-lower alkyl; R_2 is hydrogen, nitro, cyano trifluoromethyl, halo, lower alkoxy, lower alkyl, lower alkoxycarbonyl, aminocarbonyl or mono- or di-lower alkylaminocarbonyl, amino or mono- or di-lower alkylamino; or a pharmaceutically acceptable salt thereof when R_1 is hydrogen.

5,576,440

2-PYRIDYLSULFONAMIDES

Heinz Kehne, Hofheim am Taunus; Lothar Willms, Hillscheid; Oswald Ort, Kelkheim/Taunus; Klaus Bauer, Hanau, and Hermann Bieringer, Eppstein/Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 108,480, Aug. 18, 1993, abandoned, which is a division of Ser. No. 859,513, Jun. 8, 1992. This application Jan. 4, 1995, Ser. No. 368,742

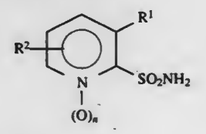
Claims priority, application Germany, Jan. 10, 1990, 40 00 503.8; Sep. 27, 1990, 40 30 557.5

Int. Cl.[6] C07D *213/71;409/12;417/04*

U.S. Cl. 546—294 **65 Claims**

1. A compound of the formula (II)

(II)



in which

R^1 is $—NR^6R^7$,

R^2 is H, (C_1–C_4)alkyl, (C_1–C_3)haloalkyl, halogen, NO_2, CN, (C_1–C_3)alkoxy, (C_1–C_3)haloalkoxy, (C_1–C_3)alkylthio, (C_1–C_3)alkoxy-(C_1–C_3)alkyl, (C_1–C_3)alkoxycarbonyl, (C_1–C_3)alkylamino, di((C_1–C_3)alkyl)amino, (C_1–C_3)alkylsulfinyl, (C_1–C_3)alkylsulfonyl, $SO_2NR^aR^6$ or $C(O)NR^aR^6$,

R^a and R^6 independently of one another are H, (C_1–C_3)alkyl, (C_3–C_4)alkenyl, or propargyl;

R^6 is H, (C_1–C_8)alkyl, which is unsubstituted or substituted by one or more halogen atoms, (C_1–C_4)alkoxy, (C_1–C_4)alkylthio, (C_1–C_4)alkylsulfinyl, (C_1–C_4)alkylsulfonyl, (C_1–C_4)alkoxycarbonyl or CN, or is (C_3–C_6)alkenyl which is unsubstituted or substituted by one or more halogen atoms, or is (C_3–C_6)alkynyl which is unsubstituted or substituted by one or more halogen atoms, or is (C_1–C_4)alkylsulfonyl which is unsubstituted or substituted by one or more halogen atoms, or is phenylsulfonyl where the phenyl radical is unsubstituted or substituted by one or more halogen atoms, (C_1–C_4)alkyl or (C_1–C_4)alkoxy, or is (C_1–C_4)alkoxy or (C_1–C_4)alkylcarbonyl which is unsubstituted or substituted by one or more halogen atoms,

R^7 is (C_1–C_4)alkylsulfonyl which is unsubstituted or substituted by one or more halogen atoms, phenylsulfonyl where the

phenyl radical is unsubstituted or substituted by one or more halogen atoms, (C_1–C_4)alkyl or (C_1–C_4)alkoxy, or is (di-(C_1–C_4)alkyl)aminosulfonyl or

R^6 and R^7 together are a chain of the formula $—(CH_2)_m—SO_2—$, where m is 3 or 4, and

n is zero or 1.

5,576,441

PHOTOSENSITIVE BIS(HALOMETHYLOXADIAZOLE) COMPOUND AND PHOTOSENSITIVE TRANSFER SHEET USING THE SAME

Masatoshi Yumoto; Naoto Yanagihara; Ken Iwakura; Juniti Fujimori; Shinji Fujimoto, and Minoru Maeda, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

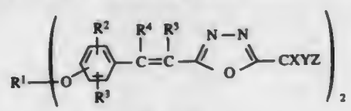
Filed Sep. 6, 1995, Ser. No. 524,031

Claims priority, application Japan, Sep. 6, 1994, 6-212794; Sep. 22, 1994, 6-227984; Feb. 27, 1995, 7-038743; Feb. 28, 1995, 7-040261

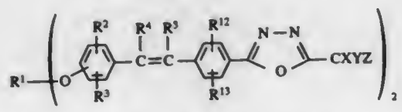
Int. Cl.[6] C07D *413/12*

U.S. Cl. 548—143 **3 Claims**

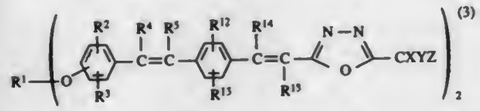
1. A photosensitive bis (halomethyloxadiazole) compound represented by one of the following general formulae (1) to (4):



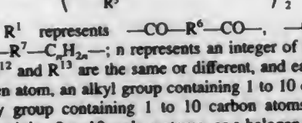
(1)



(2)



(3)



(4)

wherein R^1 represents —CO—R^6—CO—, $—C_nH_{2n}—$, or $—C_mH_{2m}—R^7—C_kH_{2k}—$; n represents an integer of from 1 to 20; R^2, R^3, R^{12} and R^{13} are the same or different, and each represents a hydrogen atom, an alkyl group containing 1 to 10 carbon atoms, an alkoxy group containing 1 to 10 carbon atoms, an acyloxy group containing 2 to 10 carbon atoms, or a halogen atom; R^4, R^5, R^{14} and R^{15} are the same or different, and each represents a hydrogen atom, an alkyl group containing 1 to 10 carbon atoms, an unsubstituted phenyl group, or a substituted phenyl group substituted with an alkyl or alkoxy group containing 1 to 6 carbon atoms or a halogen atom; X, Y and Z are the same or different, and each represents a hydrogen atom or a halogen atom, providing that all of X, Y and Z cannot be hydrogen atoms simultaneously; R^8 represents $—C_mH_{2m}—$ or $—OC_mH_{2m}O—$; m represents an integer of from 2 to 20; R^7; represents —O—, —S—, —N(R^8)—, $—SO_2—$, —O—SO—O—, —O—CO—R^9—CO—O—, $—SO_2—R^9—SO_2—$, —CO—R^9—CO—, or —O—R^{10}—O—; R^8 represents an alkyl group containing 1 to 10 carbon atom, an unsubstituted phenyl group, or a substituted phenyl group substituted with an alkyl or alkoxy group containing 1 to 6 carbon atoms or a halogen atom; R^9 represents $—C_1H_{21}—$, $—C_1H_{21}O—R^{11}—OC_1H_{21}—$, $—NHC_kH_{2k}NH—$, $—NHC_kH_{2k-2}NH—$, $—NHCH_2—C_6H_4—CH_2NH—$, $—OC_kH_{2K}O—$, or $—C_6H_4—$; l represents an integer of from 1 to 20; k represents an integer of from 2 to 20; R^{10} represents $—C_pH_{2p}—$ or $—C_pH_{2p}—O—R^{11}—OC_pH_{2p}—$; p represents an integer of from 2 to 20; R^{11} represents $—C_6H_4—C_qH_{2q}—$, $—C_6H_4—$, $—C_6H_{4}—S—C_6H_4—$, $—C_6H_4—SO_2—C_6H_4—$, $—C_6H_4—$, $—C_6H_4—SO_2—C_6H_4—$, $—C_6H_4—C(CF_3)_2—CH_4—$ or $—C_6H_4—C_6H_4—$; and q represents an integer of from 2 to 10.

5,576,442

PROCESS AND CHIRAL INTERMEDIATES FOR THIAZOLE ANTIDIABETICS

George J. Quallich, North Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

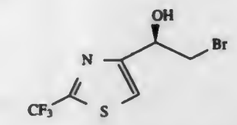
PCT No. PCT/US92/05434, § 371 Date Dec. 2, 1993, § 102(e) Date Dec. 2, 1993, PCT Pub. No. WO93/02061, PCT Pub. Date Feb. 4, 1993

PCT Filed Jul. 1, 1992, Ser. No. 162,036

Int. Cl.[6] C07D *277/24*

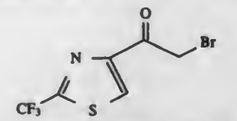
U.S. Cl. 548—203 **10 Claims**

1. A process for the stereoselective preparation of the compound of the formula



which comprises treating a ketone of formula III,

III



with about 1.1–2.0 molar equivalents of a borane reducing agent in the presence of a chiral oxazaborolidine catalyst in a cyclic ether solvent at a temperature of about −20° C. to about 40° C.

5,576,443

THIOHETEROCYCLIC NEAR-INFRARED ABSORBING DYES

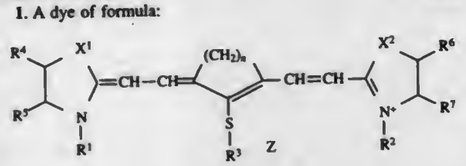
Dietrich M. Fabricius, Hendersonville, N.C., and Gregory C. Weed, Towanda, Pa., assignors to Sterling Diagnostic Imaging, Inc., Brevard, N.C.

Continuation-in-part of Ser. No. 72,851, May 26, 1993, Pat. No. 5,440,042. This application Mar. 30, 1995, Ser. No. 413,530

Int. Cl.[6] C07D *263/08;263/02;249/12;249/08*

U.S. Cl. 548—237 **13 Claims**

1. A dye of formula:



wherein

X^1 and X^2 independently represents —O—;

n is an integer of 2 or 3;

R^1 and R^2 independently represent alkyl of 1 to 10 carbons or an alkyl of 1 to 10 carbons substituted with at least one substituent chosen from a group consisting of sulfonate, carboxyl, hydroxy, halogen, carbonylalkyl, amine, aryl or —OL^1, where L^1 is an alkyl of 1–10 carbons;

R^3 represents an aryl ring, or an aryl substituted with at least one substituent chosen from a group consisting of sulfonate, carboxyl, hydroxy, halogen, carbonylalkyl, amine, aryl or —OL^2, where L^2 is an alkyl of 1–10 carbons;

R^4 and R^5 independently represent hydrogen, alkyl of 1–10 carbons or an alkyl of 1–10 carbons substituted with at least one substituent chosen from a group consisting of sulfonate, carboxyl, hydroxy, halogen, carbonylalkyl, amine, aryl or —OL^3, where L^3 is an alkyl of 1–10 carbons, or R^4 and R^5 taken together represent the atoms necessary to form a 5 or 6-membered aliphatic ring, an aromatic six-membered ring, an aromatic 10-membered ring, an aromatic six-member ring substituted with at least one substituent chosen from a group consisting of sulfonate, carboxyl, hydroxy, halogen, carbonylalkyl, amine, aryl or —OL^4, where L^4 is an alkyl of 1–10 carbons or an aromatic 10-member ring substituted with at least one substituent chosen from a group consisting of sulfonate, carboxyl, hydroxy, halogen, carbonylalkyl, amine, aryl or —OL^5, where L^5 is an alkyl of 1–10 carbons;

R^6 and R^7 independently represent hydrogen, alkyl of 1–10 carbons or an alkyl of 1–10 carbons substituted with at least one substituent chosen from a group consisting of sulfonate, carboxyl, hydroxy, halogen, carbonylalkyl, amine, aryl or —OL^6, where L^6 is an alkyl of 1–10 carbons, or R^6 and R^7 taken together represent atoms necessary to form a 5 or 6-membered aliphatic ring, an aromatic six-membered ring, an aromatic 10-membered ring, an aromatic six-member ring substituted with at least one substituent chosen from a group consisting of sulfonate, carboxyl, hydroxy, halogen, carbonylalkyl, amine, aryl or —OL^7, where L^7 is an alkyl of 1–10 carbons or an aromatic 10-member ring substituted with at least one substituent chosen from a group consisting of sulfonate, carboxyl, hydroxy, halogen, carbonylalkyl, amine, aryl or —OL^8, where L^8 is an alkyl of 1–10 carbons; and

Z is an anion or cation suitable to balance the charge.

5,576,444

CYCLIC IMINO DERIVATIVES, PROCESSES FOR PREPARING THEM AND PHARMACEUTICAL COMPOSITIONS CONTAINING THESE COMPOUNDS

Frank Himmelsbach, Mittelbiberch; Austel Volkhard; Helmut Pieper, both of Biberach; Guenter Linz, Mittelbiberach; Johannes Weisenberger, and Thomas Mueller, both of Biberach, all of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Germany

Filed Apr. 26, 1993, Ser. No. 53,037

Claims priority, application Germany, Apr. 28, 1992, 4213919.8

Int. Cl.[6] C07D *207/26*

U.S. Cl. 548—413 **5 Claims**

1. (3S,5S)-5-[(4'-amidino-4-biphenylyl)oxymethyl]-3-[[[1-(cyclohexyloxycarbonyloxy)ethyl]oxycarbonyl]methyl]-2-pyrrolidinone or a pharmaceutically acceptable salt thereof.

5,576,445

INTERMEDIATES FOR REACTIVE DYES

Paul Herzig, Basle, and Anton Andreoli, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

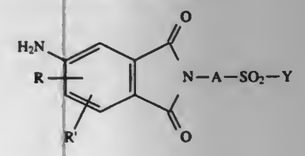
Filed May 26, 1995, Ser. No. 451,355

Claims priority, application Switzerland, May 30, 1994, 1678/94

Int. Cl.[6] C07D *209/48*

U.S. Cl. 548—477 **8 Claims**

1. A compound of the formula



(1)

in which

R and R' independently of one another are each hydrogen, sulfo, hydroxyl, C_1–C_4alkoxy, halogen or cyano,

A is C_1–C_6alkylene which is unsubstituted or substituted by halogen, hydroxyl, sulfato, carboxyl, cyano, C_2–C_4alkanoyloxy, C_1–C_4alkoxycarbonyl or carbamoyl or interrupted by a group —O— or —NR_1—, or is C_1–C_6alkylenephenylene which is unsubstituted or substituted in the phenyl part by C_1–C_4alkyl, C_1–C_4alkoxy, halogen or sulfo,

R_1 is hydrogen or C_1–C_4alkyl,

Y is vinyl, β-bromo- or β-chloroethyl, β-acetoxyethyl, β-benzoyloxyethyl, β-phosphatoethyl, β-sulfatoethyl or β-thiosulfatoethyl.

5,576,446

1-AMINO-2-(SUBSTITUTED)PYRROLES AND RELATED COMPOUNDS

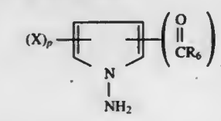
Lawrence L. Martin, Lebanon; Raymond W. Kosley, Jr.; Denise M. Flanagan, both of Bridgewater, all of N.J.; Gert U. Kuerzel, Hofheim, Germany; Peter A. Nemoto, Raritan, and David G. Wettlaufer, Phillipsburg, both of N.J., assignors to Hoechst Marion Roussel, Inc., Cincinnati, Ohio

Division of Ser. No. 102,181, Sep. 28, 1993, Pat. No. 5,428,013, which is a division of Ser. No. 922,291, Jul. 30, 1992, Pat. No. 5,274,116. This application Nov. 7, 1994, Ser. No. 334,910

Int. Cl.[6] C07D *403/06*

U.S. Cl. 548—517 **10 Claims**

1. A compound of the formula

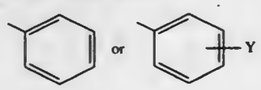


where

X is hydrogen, halogen, cyano, loweralkyl, aryl, hydroxyloweralkyl, aminoloweralkyl, aryloweralkyl, arylhydroxyloweralkyl, loweralkylaminoloweralkyl, diloweralkylaminoloweralkyl, arylsulfonyl or loweralkylsulfonyl;

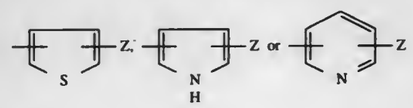
p is 0, 1 or 2, and q is 0 or 1;

R_6 is hydrogen, hydroxy, loweralkyl, loweralkoxy, amino, loweralkylamino, diloweralkylamino or



where

Y is hydrogen, halogen, loweralkyl, loweralkoxy, hydroxy, trifluoromethyl or nitro or heteroaryl selected from



where

Z is hydrogen, halogen or loweralkyl, with the proviso that when R_6 is phenyl or substituted phenyl and the carbonyl group is attached at the 2-position of the pyrrole ring, Y cannot be hydrogen, halogen, loweralkyl, trifluoromethyl or nitro; or a pharmaceutically acceptable acid addition salt thereof.

5,576,447

PROCESS FOR THE PREPARATION OF AMIDINO PHENYL PYRROLIDINE β-ALANINE UREA ANALOGS

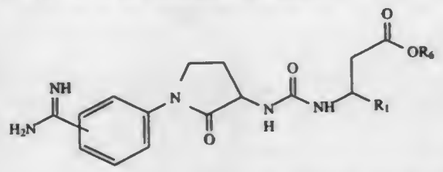
Norman A. Abood, Morton Grove; Daniel L. Flynn, Mundelein; Scott A. Laneman, Vernon Hills; Roger Nosal, Buffalo Grove, and Lori A. Schretzman, Gurnee, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 349,333, Dec. 5, 1994. This application Jun. 5, 1995, Ser. No. 465,212

Int. Cl.[6] C07D *207/26*

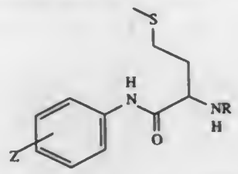
U.S. Cl. 548—550 7 Claims

1. A process for the preparation of a compound of the formula

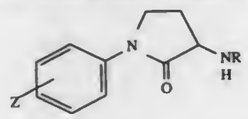


wherein R_1 is selected from the group consisting of hydrogen, lower alkyl, aryl, and monocyclic heterocyclyls wherein 1 to 2 carbon atoms are replaced by a nitrogen, oxygen or sulfur atom; R_6 is selected from the group consisting of lower alkyl, aryl, arylalkyl and acyloxymethyl comprising:

treating a methionine analog of the formula

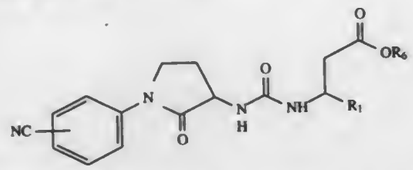


wherein R is selected from the group consisting of BOC or CBZ and Z is $—CONH_2$; with a compound selected from trimethylsulfonium halide and trimethylsulfoxonium halide, in the presence of a base in an aprotic solvent to afford a lactam of the formula



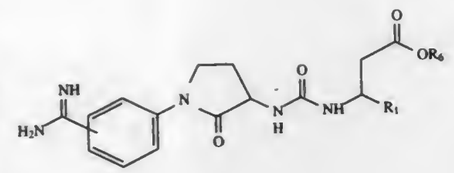
dehydrating and deprotecting the lactam;

reacting the resulting product with a β-amino ester in the presence of 1,1-carbonyldiimidazole to produce a urea compound of the formula



reacting the urea compound with hydroxylamine hydrochloride to produce an amidoxime intermediate,

hydrogenating the amidoxime; and isolating a compound of the formula



5,576,448

N-(3-HYDROXY-4-PIPERIDINYL) (DIHYDROBENZOFURAN, DIHYDRO-2H-BENZOPYRAN OR DIHYDROBENZODIOXIN)CARBOXAMIDE DERIVATIVES

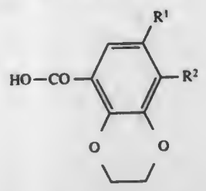
Georges H. P. Van Daele, Turnhout, and Frans M. A. Van den Keybus, Essen, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 301,825, Sep. 7, 1994, which is a division of Ser. No. 489,419, Mar. 6, 1990, Pat. No. 5,374,637, which is a continuation-in-part of Ser. No. 326,941, Mar. 22, 1989, abandoned. This application Apr. 3, 1995, Ser. No. 415,885

Int. Cl.[6] C07D *319/14*

U.S. Cl. 549—366 4 Claims

1. A chemical intermediate of the formula:



a salt or a stereochemically isomeric form thereof, wherein:

wherein one or two hydrogen atoms in the dihydro-1,4-dioxane moiety may be replaced by a C_{1-6}alkyl group;

R^1 represents halo; and

R^2 represents amino, mono- or di(C_{1-6}alkyl)amino, arylC_{1-6}alkylamino, or C_{1-6}alkylcarbonylamino.

5,576,449

PREPARATION OF 2-SUBSTITUTED BUT-2-ENE-1,4-DIAL-4-ACETALS AND NOVEL HEMIACETALS OF GLYOXAL MONOACETALS

Jürgen Frank, Ludwigshafen; Johann-Peter Melder, Mannheim; Franz Merger, Frankenthal, and Tom Witzel, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

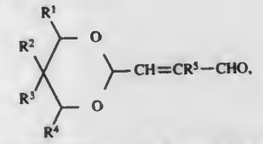
Filed Sep. 29, 1994, Ser. No. 314,955

Claims priority, application Germany, Sep. 30, 1993, 43 33 239.0

Int. Cl.[6] C07D *319/06*

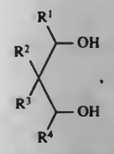
U.S. Cl. 549—375 5 Claims

1. A process for the preparation of a 2-substituted but-2-ene-1,4-dial-4-acetal of the formula I



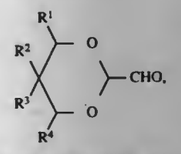
in which the substituents R^1 to R^4 stand for hydrogen or C_1–C_6 aliphatic radicals, and R^2 and R^3 or R^1 and R^2 are in each case common members of a cycloalyphatic 4-membered to 7-membered ring, which can contain a hetero atom, and R^5 denotes an alkyl radical of 1–12 C atoms or an alkenyl, or alkynyl radical having up to 12 C atoms, wherein

a) glyoxal is caused to react with a 1,3-propanediol of the formula II



II

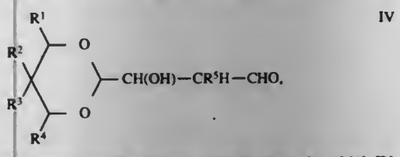
in aqueous solution in the presence of an acid to form a monoacetal of the formula III



III

the monoacetal III is neutralized, and optionally the components more readily volatile than the monoacetal III are distilled off,

b) the monoacetal III obtained is caused to react with an aldehyde $R^5CH_2—CHO$ in the presence of from 0.01 to 10 mol %, based on glyoxal, of a catalyst mixture of a secondary amine and an acid to form an aldol of the formula IV



IV

the components which are more volatile than the aldol IV optionally being distilled off, and

c) the aldol IV is dehydrated in the presence of a water-eliminating agent to form the product I.

5,576,450

PROCESS FOR PREPARING TAXOIDS

Hervé Bouchard, Ivry sur Seine; Jean-Dominique Bourzat, Vincennes, and Alain Commerçon, Vitry-sur-Seine, all of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

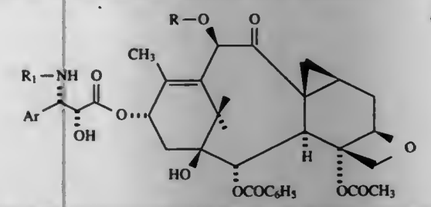
Division of Ser. No. 162,984, Dec. 8, 1993. This application Jun. 7, 1995, Ser. No. 474,551

Claims priority, application France, Dec. 9, 1992, 92 14813

Int. Cl.[6] C07D *305/14*

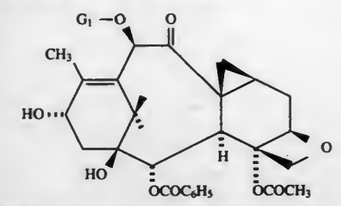
U.S. Cl. 549—510 65 Claims

1. A process for preparing a taxoid of the formula I



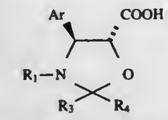
(I)

in which R represents a hydrogen atom or an acetyl, alkoxyacetyl or alkyl radical, R_1 represents a benzoyl radical or a radical $R_2—O—CO$ in which R_2 represents an alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, bicycloalkyl, phenyl or heterocyclyl radical, and Ar represents an aryl radical, comprising the steps of esterifying a product of the formula VI:



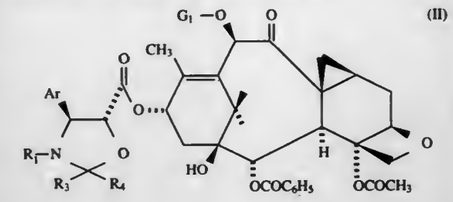
(VI)

in which G_1 represents a hydrogen atom or an acetyl, alkoxyacetyl or alkyl radical or a hydroxy-protecting group, with a free acid of the formula VII:



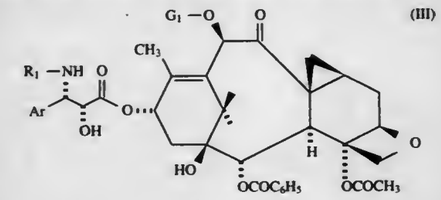
(VII)

in which Ar and R_1 are defined as above, R_3 represents a hydrogen atom or an alkoxy radical containing 1 to 4 carbon atoms or a substituted or unsubstituted aryl radical and R_4 represents a hydrogen atom, to give a compound of the formula II:



(II)

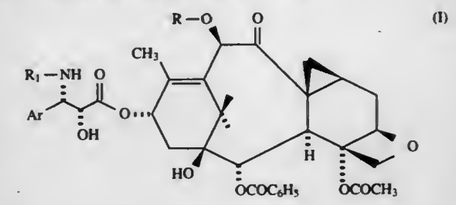
treating the compound of formula II in acidic medium to give a product of the formula I or a compound of the formula III:



(III)

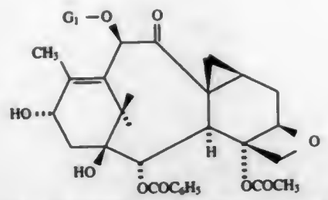
wherein G_1 of formula III represents a protecting group that is removed to give a product of formula I.

14. A process for preparing a taxoid of formula I



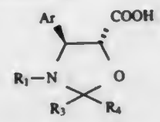
(I)

in which R represent a hydrogen atom or an acetyl, alkoxyacetyl or alkyl radical, R_1 represents a radical $R_2—O—CO—$ in which R_2 represents an alkyl radical, and Ar represents an aryl radical, comprising the steps of esterifying a product of the formula VI:



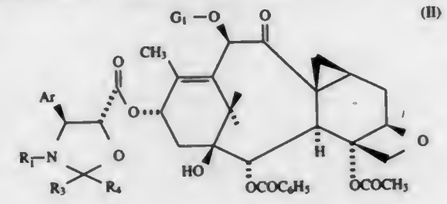
(VI)

in which G_1 represents a hydrogen atom or an acetyl, alkoxyacetyl or alkyl radical or a hydroxy-protecting group, with a free acid of the formula VII:



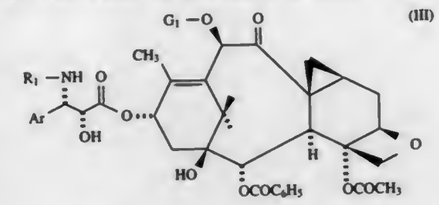
(VII)

in which Ar and R_1 are defined as above, R_3 represents a hydrogen atom or an alkoxy radical containing 1 to 4 carbon atoms or a substituted or unsubstituted aryl radical, and R_4 represents a hydrogen atom, to give a compound of the formula II:



(II)

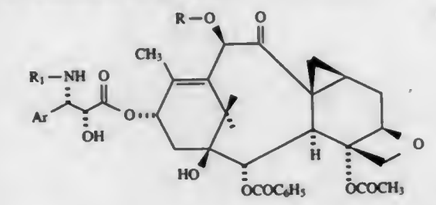
treating the compound of formula II in acidic medium to give a product of the formula I or a compound of the formula III:



(III)

wherein G_1 of formula III represents a protecting group that is removed to form a product of formula I.

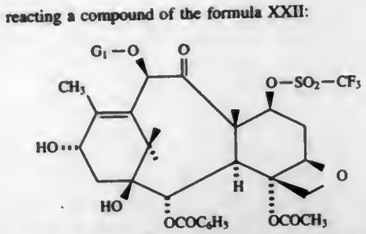
27. A process for preparing a taxoid of the formula I:



(I)

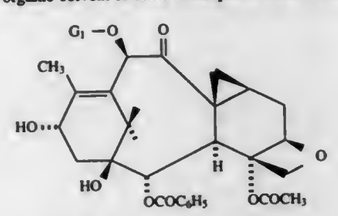
in which R represents a hydrogen atom or an acetyl, alkoxyacetyl or alkyl radical, R_1 represents a benzoyl radical or a radical R_2—O—CO— in which R_2 represents an alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, bicycloalkyl, phenyl or heterocyclyl radical, and Ar represents an aryl radical, comprising the steps of

reacting a compound of the formula XXII:



(XXII)

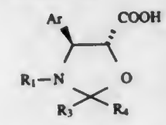
with an alkali metal halide or an alkali metal azide or a quaternary ammonium salt or an alkali metal phosphate in an organic solvent to form a compound of the formula VI:



(VI)

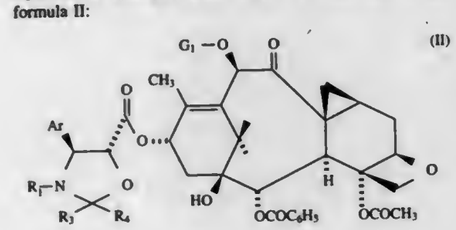
in which G_1 represents a hydrogen atom or an acetyl, alkoxyacetyl or alkyl radical or a hydroxy protecting group,

esterifying the compound of formula VI with a free acid of the formula VII:



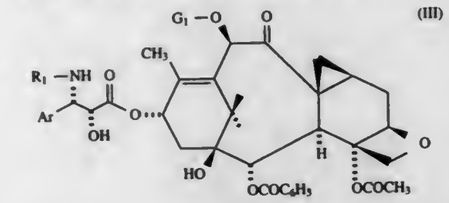
(VII)

in which Ar and R_1 are defined as above, R_3 represents a hydrogen atom or an alkoxy radical containing 1 to 4 carbon atoms or a substituted or unsubstituted aryl radical and R_4 represents a hydrogen atom, to give a compound of the formula II:



(II)

treating the compound of formula II in acidic medium to give a product of the formula I or a compound of the formula III:



(III)

wherein G_1 represents a protecting group that is removed to give a product of formula I.

5,576,451

ESTERS OF FATTY ACIDS WITH ETHOXYLATED POLYOLS

Antonio Trius Oliva, Valldoreix; Oriol Ponsati Obiols, Barcelona; Joaquim Bigorra Llosas, Sabadell, and Esther Prat Queralt, Alella, all of Spain, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP92/02525, § 371 Date May 13, 1994, § 102(e) Date May 13, 1994, PCT Pub. No. WO93/10072, PCT Pub. Date May 27, 1993

PCT Filed Nov. 4, 1992, Ser. No. 244,066

Claims priority, application Germany, Nov. 13, 1991, 41 37 317.0

Int. Cl.[6] C07C *59/00*

U.S. Cl. 554—227 **20 Claims**

1. Esters of fatty acids with ethoxylated polyols obtainable by:

(a) ethoxylating polyols with 110 to 200 moles of ethylene oxide per mole of polyol at elevated temperatures in the presence of basic catalysts and

(b) subsequently reacting product of the ethoxylating of step (a) with 1 to 1.3 moles of fatty acid per mole of the hydroxyl groups present in the original polyol in the presence of acidic catalysts.

5,576,452

CONTINUOUS PROCESS FOR THE PRODUCTION OF A ZINC CONTAINING CHEMICAL PRODUCT

James L. Dever, Medina, and Anthony F. Guerini, Jr., Aurora, both of Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Filed Aug. 29, 1995, Ser. No. 520,581

Int. Cl.[6] C07F *3/06*

U.S. Cl. 556—130 **14 Claims**

13. A zinc oxide/pentaerythritol chemical product made by a continuous melt process, said continuous melt process comprises the process of feeding zinc oxide and pentaerythritol into the product feed zone of a continuous processor to provide a raw material mixture consisting essentially of said zinc oxide and said pentaerythritol, said raw material mixture consisting essentially of from about 1.7 to about 2.3 moles of said pentaerythritol for about every 1 mole of said zinc oxide, transporting said raw material mixture into the reaction zone of the continuous processor with the reaction zone providing a melt temperature of from about 185° C. to about 245° C. such that said raw material mixture maintains a residence time in said reaction zone of from about 10 to about 60 seconds for said raw material mixture so as to provide a reacted zinc oxide/pentaerythritol chemical product, and transporting said chemical product into the discharge zone of the continuous processor.

5,576,453

STABLE, STERICALLY-PROTECTED, BONDED PHASE SILICAS PREPARED FROM BIFUNCTIONAL SILANES

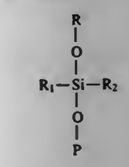
Mark A. Buese, Gainesville, Fla., assignor to ES Industries, Berlin, N.J.

Filed Jul. 18, 1994, Ser. No. 276,339

Int. Cl.[6] C07F *7/08*

U.S. Cl. 556—400 **6 Claims**

1. A composition of Formula (I):



(I)

wherein

R is selected from a group consisting of an alkyl, substituted alkyl, alkenyl, substituted alkenyl, aryl and substituted aryl;

R_1 and R_2 are sterically-protecting groups; and

P is a hydrate metal oxide, a hydrated metalloid oxide, or an organic polymer.

5,576,454

PROCESS FOR PREPARING ALKANEPHOSPHONIC ANHYDRIDES

Günter Roscher, Kelkheim, Germany, assignor to Hoechst AG, Germany

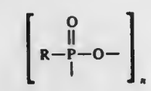
Filed Oct. 28, 1994, Ser. No. 331,128

Claims priority, application Germany, Oct. 30, 1993, 43 37 190.6

Int. Cl.[6] C07F *9/02*

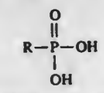
U.S. Cl. 558—386 **16 Claims**

1. A process for preparing phosphonic anhydrides of the formula (I)



(I)

in which R is $(C_1$–$C_{10})$-alkenyl, $(C_1$–$C_{10})$-alkyl which is unsubstituted or substituted by alkyl groups, alkoxy groups, fluorine, chlorine or bromine atoms, nitro groups, cyano groups, trifluoromethyl groups, unsubstituted or substituted phenyl groups, wherein said substituents for the phenyl groups are alkoxy groups, fluorine, chlorine, bromine atoms, nitro groups, cyano groups or alkoxycarbonyl groups, and $n \geq 3$ and less than or equal to 100, which process comprises reacting a phosphonic acid of the formula (II)



(II)

in which R has the meaning given, with diketene, a temperature of between 50° and 180° C.

5,576,455

PROCESS FOR THE PREPARATION OF FLUORINATED BENZOIC ACIDS

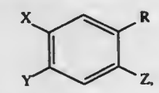
Xiu C. Wang, Park City, Ill.; Panos Kalaritis, New Providence, N.J., and Michelle L. Chang, Vernon Hills, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 232,117, May 2, 1994, which is a continuation-in-part of Ser. No. 785,851, Oct. 31, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 461,782

Int. Cl.[6] C07C *255/03;205/06*

U.S. Cl. 558—406 **1 Claim**

1. A compound having the formula



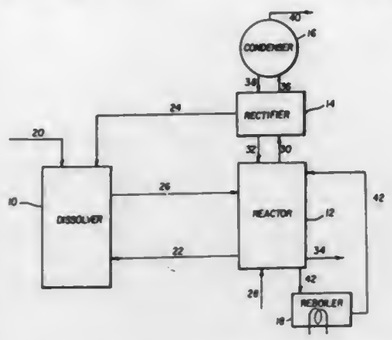
wherein X is chloro or fluoro; one of Y and Z is chloro and the other is nitro; and R is a radical selected from the group consisting of $—CCl_3$, $—CH_2NO_2$, $—CH(NO_2)R^1$, $—CH(CO_2R^1)_2$, $—CH(C(O)R^2)_2$, $—CH(CN)CO_2R^1$, $—CH(CO_2R^1)COR^2$ and where R^1 is alkyl or arylalkyl and R^2 is alkyl, and, where appearing more than once in such a radical, R^1 and R^2 may be the same or different at each occurrence.

5,576,456

RECOVERY OF COMPONENTS FROM POLYESTER RESINS

William J. Gamble, Rochester, and Andrius A. Naujokas, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 22, 1996, Ser. No. 589,444
Int. Cl.[6] C07C 67/60
U.S. Cl. 560—78 8 Claims



1. A process for depolymerizing polyester into its components using apparatus that comprises:

a dissolver for receiving polyester and

a staged column reactor for depolymerizing polyester into monomer components and for separating monomer components from higher boiling materials,

the process comprising the steps of:

a) adding polyester to the dissolver and combining it with liquid from the reactor to form a melt of reduced chain length polyester,

b) passing super-heated methanol through the reactor to form a continuous phase of methanol vapor in the reactor,

c) transferring reduced chain length polyester from the dissolver to the reactor to form a discontinuous phase which contacts the methanol vapor to depolymerize the polyester into component monomers which exit the reactor with the methanol vapor,

d) removing higher molecular weight materials from the reactor as a liquid phase, and

e) removing methanol and component monomers from the reactor as a vapor phase.

5,576,457

CATALYST AND PROCEDURE FOR PREPARATION OF VINYL ACETATE

Roland Abel, Oberhausen, Germany, assignor to Hoechst Celanese Corporation, North Somerville, N.J.

Filed May 23, 1995, Ser. No. 448,146
Int. Cl.[6] C07C 67/05
U.S. Cl. 560—245 5 Claims

1. In the process for preparation of vinyl acetate in the vapor phase comprising reacting ethylene, acetic acid and oxygen or oxygen-containing gases in the presence of a catalyst containing palladium and/or its compounds, cadmium, and alkali metal compounds on a support, the improvement comprising using a catalyst that additionally contains at least a rhenium and/or a zirconium compound.

5,576,458

PROCESS FOR PREPARING ORGANIC CARBOXYLIC ACID

Takeshi Minami; Kazuhiko Hamato; Kenji Shimokawa, and Yoshimi Shiroto, all of Kanagawa-ken, Japan, assignors to Chiyoda Corporation, Yokohama, Japan

Filed Mar. 21, 1995, Ser. No. 407,612
Claims priority, application Japan, Mar. 25, 1994, 6-077826; Oct. 21, 1994, 6-282719
Int. Cl.[6] C07C 45/50
U.S. Cl. 562—519 14 Claims

1. A process for preparing an organic carboxylic acid, comprising:

a production step in which alcohol is reacted with carbon monoxide in a reaction solvent in the presence of a rhodium-containing solid catalyst obtained by immobilizing rhodium in an insoluble carrier (I) containing a pyridine ring in its resin structure and an alkyl iodide containing an alkyl group of 1 to 5 carbon atoms, to obtain a reaction product having a water content of 0.5 to 10% by weight; and

a removing step in which an organic carboxylic acid is separated and recovered from the reaction product, and the recovered organic carboxylic acid is contacted with an insoluble carrier (II) containing a pyridine ring in its resin structure, to remove an iodide contained in the organic carboxylic acid.

5,576,459

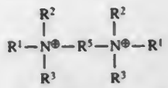
QUATERNARY NITROGEN OR PHOSPHORUS CHIRATES

Morey E. Osborn, Austin, Tex., assignor to Sachem, Inc., Austin, Tex.

Continuation of Ser. No. 190,633, Feb. 2, 1994, abandoned.
This application Jun. 6, 1995, Ser. No. 471,843
Int. Cl.[6] C07C 59/08
U.S. Cl. 562—589 3 Claims

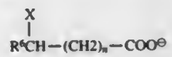
1. An optically-active compound comprising

(A) at least one quaternary nitrogen cation represented by the formula

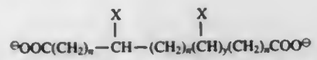

(II)

wherein R^1, R^2 and R^3 are each independently alkyl groups, hydroxyalkyl groups which are free of chlorine, alkoxyalkyl groups, aryl groups, hydroxyaryl groups, or R^1 and R^2 together with N may form a heterocyclic group provided that if the heterocyclic group contains a C=N group, R^3 is the second bond, and R^5 is a divalent alkylene or arylene group; and

(B) at least one optically-active anion, represented by the formulae


(V)

or


(VI)

wherein R^6 is an alkyl, aryl, or arylalkyl group, X is selected from the group consisting of R, OH, OR, NH_2 or a halide group wherein R is an alkyl or aryl group, R^6 and X in Formula V and the two X groups in Formula VI may be joined to form a cyclic group, each n is independently an integer of from 0 to 10 and y is an integer of from 0 to 4 provided the anion (VI) is not a tartrate anion.

5,576,460

PREPARATION OF ARYLAMINES

Stephen L. Buchwald, and Anil Guram, both of Somerville, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 27, 1994, Ser. No. 281,449
Int. Cl.[6] C07C 209/10
U.S. Cl. 564—386 14 Claims

1. A method of preparing an arylamine compound, comprising the steps of:

reacting an amine with an aromatic compound comprising an activated substituent at a temperature less than about 120° C. in the presence of a catalyst selected from the group consisting of nickel and palladium catalyst, and a base to form an arylamine,

wherein the aromatic compound has a formula, $Ar(Z)_nX$, and Ar is an aryl or heteroaryl moiety, X is an activated substituent selected from the group consisting of chloride, bromide, iodide, triflate, mesylate, tosylate, diazonium, and SR, where R is aryl or alkyl, and Z is selected from the group consisting of alkyl, aryl, heteroaryl, amino, carboxylic ester, carboxylic acid, acyl, hydrogen, ether, thioether, carboxamide, amide, nitro, phosphonic acid, sulphonic acid, halide, pseudohalide groups, and substituted derivatives thereof, and n is in the range of 0 to 5.

5,576,461

PREPARATION OF SULPHOXONIUM SALTS

Edward Irving, Higher Whitley; Robert J. Lunn, Bar Hill; David A. Taylor, Cambridge; Alan H. Haines, Taverham, and John P. Innocenzi, Ashton, all of England, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Dec. 6, 1990, Ser. No. 622,905
Claims priority, application United Kingdom, Dec. 6, 1989, 8927530
Int. Cl.[6] C07C 315/00
U.S. Cl. 568—27 15 Claims

1. A process for preparing a triaryl sulphoxonium salt from the corresponding sulphonium salt which comprises

oxidizing the sulphonium salt using a peracid, under basic conditions, in a solvent other than a ketone which is an alcohol, chlorinated hydrocarbon or heterocyclic compound.

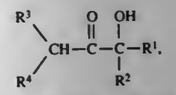
5,576,462

PREPARATION OF ALPHA-HYDROXYKETONES

Norbert Rieber, Mannheim, and Joaquim H. Teles, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

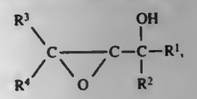
Filed Aug. 3, 1995, Ser. No. 510,753
Int. Cl.[6] C07C 49/395;49/403;49/497
U.S. Cl. 568—341 10 Claims

1. A process for the preparation of an α-hydroxyketone of the formula


I

wherein each of R^1, R^2, R^3 and R^4 represents hydrogen or C_1–C_8-alkyl and R^1 and R^3 when taken together may also form a C_2–C_{10}-alkylene chain optionally mono- to tri-substituted by methyl and/or ethyl, which process comprises:

catalytically reacting a 2,3-epoxyalcohol of the formula


II

wherein R^1, R^2, R^3 and R^4 have the above meanings, at a temperature of from −10° C. to 120° C. and a pressure of from 0.01 to 20 bar in the presence of a hydridocobalt compound acting as the catalyst.

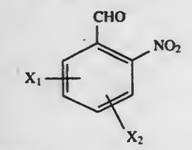
5,576,463

PROCESS FOR THE PREPARATION OF 2-NITROBENZALDEHYDES

Albert Schnatterer, and Helmut Fiege, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 3, 1995, Ser. No. 398,228
Claims priority, application Germany, Mar. 10, 1994, 44 08 007.7
Int. Cl.[6] C07C 45/32
U.S. Cl. 568—431 13 Claims

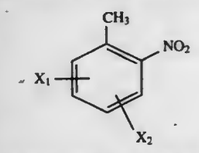
1. In the preparation of a 2-nitrobezaldehyde of the formula


(I)

in which

X_1 and X_2 each independently is hydrogen or halogen, or one is nitro and the other is hydrogen,

by oxidation of a 2-nitrotoluene of the formula


(II)

with an oxygen-containing gas, the improvement which comprises carrying out the reaction in the presence of at least one alkoxyalkylamine as a solvent and in the presence of at least one strong base selected from the group consisting of alkali metal and alkaline earth metal hydroxides, alkoxides and amides, aluminum alkoxides and amides.

5,576,464

REMOVAL OF METHANOL FROM METHYL TERTIARY BUTYL ETHER

Kyle L. Preston, Port Arthur, Tex., assignor to Texaco Chemical Inc., White Plains, N.Y.

Filed Aug. 8, 1995, Ser. No. 512,585
Int. Cl.[6] C07C 41/09
U.S. Cl. 568—697 3 Claims

1. A method comprising the steps of:

a. charging a mixture of methanol and tertiary butyl alcohol in the molar ratio of about 0.5 to 4 moles of methanol per mole of tertiary butyl alcohol to an etherification reaction zone containing a bed of an etherification catalyst under reaction conditions including a pressure of about 30 to about 500 psia, a temperature of about 90° to about 140° C. and a flow rate of about 0.5 to about 20 volumes of feed mixture per volume of etherification catalyst per hour to thereby form a reaction product comprising unreacted methanol, unreacted tertiary butyl alcohol, water, isobutylene, DME and methyl tertiary butyl ether;

b. charging the reaction product to a first methyl tertiary butyl ether recovery distillation zone and separating it therein into a

first lower boiling (lighter) distillation fraction comprising isobutylene, DME, methanol, water and methyl tertiary butyl ether and a first higher boiling (heavier) distillation fraction comprising methanol, tertiary butyl alcohol and water;

c. charging the first lower boiling (lighter) distillation fraction to a methanol solvent extraction zone and countercurrently contacting it therein with water in the ratio of about 1 to about 10 volumes of the first lighter distillation fraction per volume of water per hour under extraction conditions including a temperature of about 20° to about 60° C. and a pressure of about 50 to about 500 psia to thereby provide an overhead extract comprising isobutylene, DME, water and methyl tertiary butyl ether and a raffinate comprising methanol, MTBE, isobutylene, dimethyl ether and water;

d. charging the extract to a second methyl tertiary butyl ether purification distillation zone and separating it therein into a second lower boiling (lighter) distillation fraction comprising isobutylene, DME and water and a second higher boiling (heavier) distillation fraction comprising methyl tertiary butyl ether;

e. charging the second lower boiling (lighter) distillation fraction to a decantation separation zone and separating it therein into an isobutylene fraction and a water fraction;

f. charging at least a portion of the isobutylene fraction and added methanol to an isobutylene conversion reaction zone in the molar ratio of about 0.3 to about 0.8 mole of methanol per mol of isobutylene and contacting them therein with a solid resin etherification catalyst under conversion conditions including a temperature of about 35° to about 100° C., a pressure of about 150 to about 250 psia and a flow rate of about 0.5 to about 10 volumes of total reactor feed per volume of solid resin etherification catalyst per hour to thereby convert the methanol and a portion of the isobutylene and to methyl tertiary butyl ether and form an isobutylene conversion product comprising methyl tertiary butyl ether, unreacted isobutylene, less than 0.5 wt. % of methanol, DME, tertiary butyl alcohol and water; and

g. recycling said isobutylene conversion product to said second methyl tertiary butyl ether purification distillation zone.

5,576,465

PROCESS FOR PREPARING UNSATURATED ETHERS

Manfred Kaufhold, Marl, Germany, assignor to Huels Aktiengesellschaft, Marl, Germany

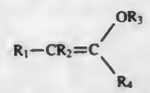
Filed Jun. 2, 1995, Ser. No. 460,693

Claims priority, application Germany, Sep. 23, 1994, 44 33 949.6

Int. Cl.[6] C07C *41/28;43/16*

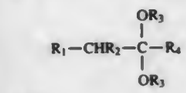
U.S. Cl. 568—691 **10 Claims**

1. A process for preparing an unsaturated ether of formula (1)



(1)

from an acetal or ketal of the formula (2)



(2)

where

R_1 is H or C_{1-8} alkyl,

R_2 is H, CH_3, C_2H_5 or Cl,

R_3 is C_{1-8} alkyl,

R_4 is H, CH_3, C_2H_3 or C_3H_7, or

R_1 and R_4, are bonded together to form a 5-membered to 7-membered ring,

comprising the steps of heating said acetal or ketal at 100°–250° C. in a branched carboxylic acid to form a mixture containing said unsaturated ether, wherein said carboxylic acid has a boiling point of 250°–400° C.

5,576,466

PROCESS FOR THE ISOMERISATION OF STRAIGHT HYDROCARBONS CONTAINING AT LEAST 7 CARBON ATOMS USING CATALYSTS WITH A BASE OF MOLYBDENUM OXYCARBIDE

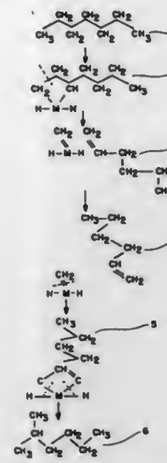
Marc J. Ledoux; Jean-Louis Guille, both of Strasbourg; Cuong P. Hou, Saverne, all of France; Edd Blekkan, Flataasen, Norway, and Eric Peschiera, Avon, France, assignors to Pechiney Recherche, Courbevoie, France

Filed Nov. 8, 1994, Ser. No. 337,368

Claims priority, application France, Nov. 18, 1993, 93 14199

Int. Cl.[6] C07C *5/13*

U.S. Cl. 585—735 **17 Claims**



1. A process for the isomerization of straight chain hydrocarbons having at least seven carbon atoms, comprising forming a reaction mixture including at least one straight chain hydrocarbon having at least seven carbon atoms and hydrogen, and passing the reaction mixture over a catalyst comprising a molybdenum compound, said catalyst having at least a surface portion thereof formed of molybdenum carbide partially oxidized in the form of at least one oxycarbide.

5,576,467

METHOD OF PREPARING AN ALCOHOL

Kyoko Takahashi; Makoto Shibagaki, and Hajime Matsushita, all of Yokohama, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

Continuation of Ser. No. 109,268, Aug. 20, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 476,327

Claims priority, application Japan, Aug. 21, 1992, 4-244050

Int. Cl.[6] C07C *27/04;29/16;31/34*

U.S. Cl. 568—885 **18 Claims**

1. A method of preparing an alcohol from a carboxylic acid having 1 to 18 carbon atoms or an ester, nitrile or amide derivative thereof, comprising reacting said carboxylic acid or derivative thereof and an alcohol as a hydrogen source in the presence of a zirconium-titanium double oxide catalyst having an atomic molar ratio of zirconium to titanium in the range of 1:0.3 to 1:1.0, to thereby hydrogenate said carboxylic acid or derivative thereof.

5,576,468

METHODS FOR ENCAPSULATING WASTE AND PRODUCTS THEREOF

Hyman R. Lubowitz, Rolling Hills Estates, Calif., assignor to Environmental Protection Polymers, Inc., Rolling Hills Estates, Calif.

Division of Ser. No. 97,295, Jul. 26, 1993, Pat. No. 5,401,452. This application Mar. 22, 1995, Ser. No. 409,356

Int. Cl.[6] G21F *9/00*

U.S. Cl. 588—8 **4 Claims**

1. A resin encapsulated waste agglomerate, comprising:

a substantially rigid agglomerate formed by mixing waste material with a thermosetting binder and subjecting the mixture to heat and pressure;

an agglomerate enclosing coat of resin formed from a thermoplastic sheet fused to said agglomerate by application of heat and pressure; and,

an enclosing jacket of resin formed from a thermoplastic particulate resin approximately one centimeter thick fused to said coat by application of heat and pressure.

5,576,469

PARAFFIN AMMOXIDATION USING VANADIUM ANTIMONY OXIDE BASED CATALYSTS WITH HALIDE PROMOTERS

James F. Brazdil, Jr., Highland Heights, and Fernando A. P. Cavalcanti, South Euclid, both of Ohio, assignors to The Standard Oil Co., Cleveland, Ohio

Filed Jun. 5, 1995, Ser. No. 461,997

Int. Cl.[6] B01J *23/18*

U.S. Cl. 558—319 **12 Claims**

1. The process for the ammoxidation of a C_3 to C_5 paraffinic hydrocarbon to its corresponding α,β-unsaturated hydrocarbon comprising reacting the C_3 to C_5 paraffinic hydrocarbon with ammonia and oxygen in a fluid bed reactor at a temperature of between 250° C. to 600° C. in the presence of a catalyst having the empirical formula as follows:

$$V_vSb_mA_aD_dO_x$$

wherein A when present is Sn and/or Ti;

D when present is one or more of Li, Mg, Na, Ca, Sr, Ba, Co, Fe, Cr, Ga, Ni, Zn, Ge, Nb, Zr, Mo, W, Cu, Te, Ta, Se, Bi, Ce, In, As, B, Al, P and Mn; and

wherein v is 1, m is 0.5–75, a is 0 to 25, d is 0 to 25, and x is determined by the oxidation state of the cations present,

and a minor quantity of an halogen-containing component.

5,576,470

POLYOL ESTERS OF ETHER CARBOXYLIC ACIDS AND FIBER FINISHING METHODS

F. Norman Tuller, Simpsonville, and Michael E. Allen, Greenville, both of S.C., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Aug. 29, 1994, Ser. No. 297,282

Int. Cl.[6] C07C *69/66*

U.S. Cl. 560—154 **11 Claims**

1. A compound of the general formula (I)



(I)

wherein R is alkyl from about 4 to about 22 carbon atoms, R^1 and R2 independently of one another, are alkyl from about 1 to about 22 carbon atoms, X is either sulphur or oxygen, Y is $—C_2H_4O—$ or $—C_3H_6O—$, or a mixture of $—C_2H_4O$ and $—C_3H_6O—$, m is a number from about 1 to about 20, n is a number from about 1 to about 6, p is a number from 2 to 4, q is a number from 0 to about 2 and r is a number from 0 to about 2, with q+r+p being the integer 4.

5,576,471

COBALT-CATALYZED PROCESS FOR PREPARING 1,3-PROPANEDIOL USING A LIPOPHILIC DIHYDROXYARENE PROMOTER

Thomas C. Semple, Friendswood; Joseph B. Powell; Lynn H. Slaugh, both of Houston; Thomas C. Forschner, Richmond, and Paul R. Welder, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 30, 1994, Ser. No. 316,669

Int. Cl.[6] C07C *27/04*

U.S. Cl. 568—862 **16 Claims**

1. A process for preparing 1,3-propanediol comprising the steps of:

(a) contacting, at a temperature within the range of about 50° to about 100° C. and a pressure within the range of about 500 to about 5000 psig, ethylene oxide with carbon monoxide and hydrogen in an essentially non-water miscible solvent in the presence of an effective amount of a non-phosphine-ligated cobalt catalyst and an effective amount of a lipophilic dihydroxyarene promoter under reaction conditions effective to produce an intermediate product mixture comprising less than 15 wt % 3-hydroxypropanal;

(b) adding an aqueous liquid to said intermediate product mixture and extracting into said aqueous liquid a major portion of the 3-hydroxypropanal at a temperature less than about 100° to provide an aqueous phase comprising 3-hydroxypropanal in greater concentration than the concentration of 3-hydroxypropanal in the intermediate product mixture, and an organic phase comprising at least a portion of the cobalt catalyst or a cobalt-containing derivative thereof and at least a portion of the lipophilic dihydroxyarene;

(c) separating the aqueous phase from the organic phase;

(d) contacting the aqueous phase comprising 3-hydroxypropanal with hydrogen in the presence of a hydrogenation catalyst at a temperature during at least a portion of the hydrogenation step of at least about 40° C. to provide a hydrogenation product mixture comprising 1,3-propanediol;

(e) recovering 1,3-propanediol from the hydrogenation product mixture; and

(f) returning at least a portion of the organic phase comprising cobalt compound and lipophilic dihydroxyarene to the process of step (a).

5,576,472

HYBRID MAIZE PLANT AND SEED (3375)

Theron E. Roundy, North Platte, Nebr., assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Mar. 3, 1995, Ser. No. 398,471

Int. Cl.[6] A01H *5/00;4/00;1/00;* C12N *5/04*

U.S. Cl. 800—200 **7 Claims**

1. Hybrid maize seed designated 3375, representative seed having been deposited and having ATCC accession number 97514.

5,576,473

INBRED CORN LINE 7054

John A. Schillinger, Kalamazoo, Mich., assignor to Asgrow Seed Company, Kalamazoo, Mich.

Filed Jul. 5, 1995, Ser. No. 436,350

Int. Cl.[6] A01H *5/00;4/00;1/00;* C12N *5/04*

U.S. Cl. 800—200 **11 Claims**

1. A corn seed or seeds designated 7054, a sample of said seeds having been deposited as ATCC accession No. 75338.

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5,576,474
SOYBEAN CULTIVAR A1923
Roger Lussenden, Redwood Falls, Minn., assignor to Asgrow Seed Company, Kalamazoo, Mich.
Filed Oct. 6, 1995, Ser. No. 539,942
Int. Cl.[6] A01H *5/00;5/10;* C12N *5/04*
U.S. Cl. 800—200 9 Claims

1. A soybean seed designated A1923, deposited as ATCC Accession Number 97630.

5,576,475
SOYBEAN CULTIVAR HT261STS
Kevin W. Matson, Ames, Iowa, assignor to Asgrow Seed Company, Kalamazoo, Mich.
Filed Oct. 6, 1995, Ser. No. 540,100
Int. Cl.[6] A01H *5/00;5/10;* C12N *5/04*
U.S. Cl. 800—200 9 Claims

1. A soybean seed designated HT261STS, deposited as ATCC Accession Number 97632.

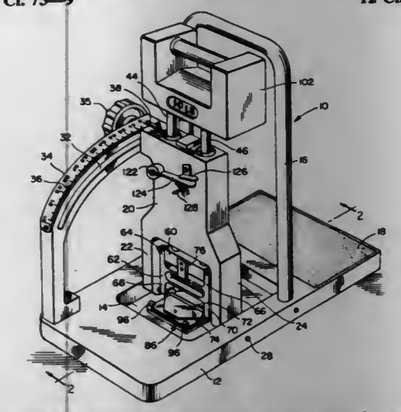
5,576,476
SOYBEAN CULTIVAR A3732
Craig K. Moots, Taylorville, Ill., assignor to Asgrow Seed Company, Kalamazoo, Mich.
Filed Oct. 20, 1995, Ser. No. 545,963
Int. Cl.[6] A01H *5/00;5/10;* C12N *5/04*
U.S. Cl. 800—200 9 Claims

1. A soybean seed designated A3732, deposited as ATCC Accession Number 97635.

5,576,477
SOYBEAN CULTIVAR A2704
Kevin W. Matson, Ames; Deborah L. Drzycimski, Slater, both of Iowa, and Yolanda I. Otero-Ortiz, Aguadille, Puerto Rico, assignors to Asgrow Seed Company, Kalamazoo, Mich.
Filed Nov. 3, 1995, Ser. No. 552,903
Int. Cl.[6] A01H *5/00;5/10;* C12N *5/04*
U.S. Cl. 800—200 9 Claims

1. A soybean seed designated A2704, deposited as ATCC Accession Number 97634.

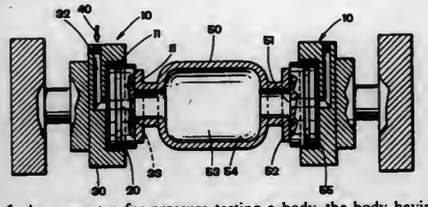
5,576,478
PORTABLE TESTER FOR MEASURING SLIP RESISTANCE
Robert J. Brungraber, 1900 Fourth Ave./POB 387, Spring Lake, N.J. 07762
Filed Aug. 28, 1995, Ser. No. 519,705
Int. Cl.[6] G01N *19/02*
U.S. Cl. 73—9 12 Claims



1. A portable apparatus for testing slip resistance of a surface comprising an articulated linkage having upper and lower pivotally interconnected links, the upper link comprising a pair of elongated rods, a foot plate assembly pivotally interconnected to the lower link for supporting a foot pad of friction material to be applied to the surface to be tested, a frame having bores slidably receiving each of said rods, support means for setting the frame at selected angles relative to the surface to be tested, load applying means for applying a downwardly directed load to the articulated linkage at a selected angle of the frame; and trigger means having a set position for restraining the linkage from moving under the influence of said load applying means, the trigger means being manually movable out of said set position for releasing the linkage and providing substantially instantaneous application of said downwardly directed load to the linkage, wherein the trigger means includes a trigger bar mounted in said frame about a trigger axis disposed transversely to and adjacent a longitudinal axis of one of the rods, and said trigger bar and said one rod having respective formations which are engageable and disengageable by swivelling movements of said trigger bar about the trigger axis for moving said trigger means into and out of the set position.

10. A portable apparatus for testing slip resistance of a surface comprising an articulated linkage having upper and lower pivotally interconnected links, the upper link comprising a pair of elongated rods, a foot plate assembly pivotally interconnected to the lower link for supporting a foot pad of friction material to be applied to the surface to be tested, a frame having bores slidably receiving each of said rods, support means for setting the frame at selected angles relative to the surface to be tested, load applying means for applying a downwardly directed load to the articulated linkage at a selected angle of the frame; and trigger means having a set position for restraining the linkage from moving under the influence of said load applying means, the trigger means being manually movable out of said set position for releasing the linkage and providing substantially instantaneous application of said downwardly directed load to the linkage, wherein the foot plate assembly comprises an upper plate pivotally connected about a generally horizontally extending pivot axis to the lower link, a V-shaped plate under the upper plate having an apex extending generally horizontally and at right angles to the pivot axis connecting said upper plate to said lower link, a lower plate under the V-shaped plate, and pin means interconnecting the upper plate, the V-shaped plate and the lower plate for rocking movement of the lower plate about said apex of said V-shaped plate, the lower plate having attachment means for a foot pad assembly which includes said foot pad.

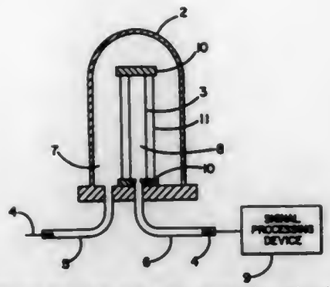
5,576,479
APPARATUS AND METHOD FOR PRESSURE TESTING A BODY HAVING A CHAMBER THEREIN
John P. Emmitte, Jr., 8418 Scranton, Houston, Tex. 77061
Filed Mar. 30, 1995, Ser. No. 413,546
Int. Cl.[6] G01M *3/00;3/02*
U.S. Cl. 73—37 3 Claims



1. An apparatus for pressure testing a body, the body having a chamber therein and at least one end, comprising:
(a) a frame;
(b) a source of fluid pressure; and
(c) a differential pressure seal for sealing at least one end of the body within the frame, disposed in fluid communication with the source of fluid pressure and including:
(1) at least one seal member having first and second ends, a first sealing surface with a surface area and a periphery associated with the first end of the seal member, a second sealing surface with a periphery associated with the second end of the seal member, and an outer surface, the second sealing surface having a surface area greater than the surface area of the first sealing surface, a recess in the first sealing surface for removably receiving an elastomeric O-ring, a recess in the outer surface of the seal member for removably receiving an elastomeric O-Ring, a seal member conduit disposed between the first sealing surface and the second sealing surface to provide fluid communication between the source of fluid pressure and the body chamber, and an elastomeric sealing ring disposed in the recess of the first sealing surface of the seal member for providing a substantially fluid tight seal between the seal member and the body to be tested,
(2) a seal head having an annular recess formed centrally in the seal head, which substantially mates with, and receives, the outer surface of the seal member, and a seal head conduit disposed between the annular recess and the source of fluid pressure to provide fluid communication between the source of fluid pressure and the annular recess, and
(3) an elastomeric sealing ring disposed in the recess of the outer surface of the seal member for providing a substantially fluid tight seal between the seal member and the seal head, for allowing telescopic movement between the seal member and the seal head, and for allowing separation of the seal member from the seal head, the source of fluid pressure being disposed in fluid communication with a portion of the first sealing surface and the second sealing surface to provide a seal, whereby the body can be pressure tested without undesired forces being exerted upon the body.

5,576,480
SYSTEM AND METHOD FOR TESTING THE INTEGRITY OF POROUS ELEMENTS
Scott D. Hopkins, Dryden; Daniel W. Spencer, Cortland; Charles P. Lipari, Port Jefferson, and George A. Altemose, Stony Brook, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.
Continuation-in-part of Ser. No. 971,605, Nov. 6, 1992, abandoned. This application May 25, 1994, Ser. No. 249,373
Int. Cl.[6] G01N *15/08;29/14*
U.S. Cl. 73—38 200 Claims

1. A porous element testing system for testing a porous element wetted with a wetting solution, the porous element testing system comprising:



a housing having a first side and a second side, wherein the first side is divided from the second side by the wetted porous element and wherein the first side and the second side are both filled with a gas;

a differential pressure generator generating a differential pressure across the wetted porous element;

a transducer disposed in the vicinity of the porous element and receiving acoustic signals generated within the housing;

a signal processing device, coupled to the transducer, analyzing the acoustic signals received from the transducer for determining whether the porous element is defective.

5,576,481

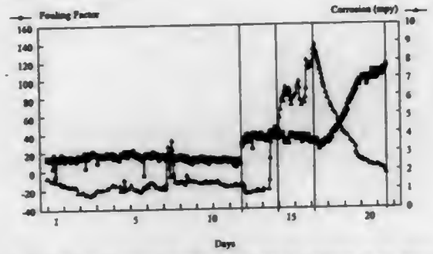
METHOD AND APPARATUS FOR DETECTING MICROBIOLOGICAL FOULING IN AQUEOUS SYSTEMS

Edward S. Beardwood, Aurora, Canada, assignor to Ashland, Inc., Columbus, Ohio

Filed Oct. 2, 1995, Ser. No. 538,304

Int. Cl.[6] G01N *30/62*

U.S. Cl. 73—61.62 **21 Claims**



1. A method of detecting microbiological fouling in an aqueous system, said method comprising the steps of:

a) determining a baseline corrosion rate;

b) continuously measuring corrosion rate;

c) measuring a change in said corrosion rate;

d) measuring a maximum corrosion rate;

e) determining a baseline fouling factor by measuring and monitoring parameters of a fluid in said aqueous system;

f) determining an increase in fouling factor over the baseline;

g) integrating a change in said corrosion rate with respect to time over an interval of from a time of said determination of said baseline corrosion rate to a time that said maximum corrosion rate occurs;

h) integrating change in said fouling factor with respect to time over an interval from a time of a said determination of said baseline fouling factor to a time of said determination of said increase in fouling factor; and

i) comparing said fouling factor and said corrosion rate to determine if said fouling is microbiological.

5,576,482

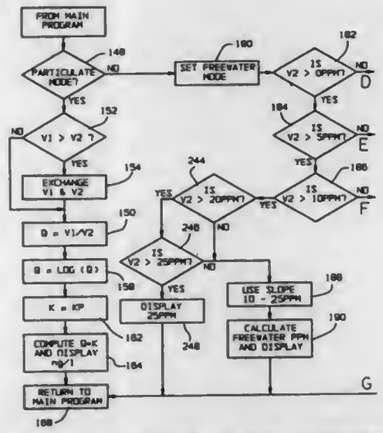
PARTICULATE AND FREE WATER CONTAMINATION MEASURING APPARATUS

Daniel G. Russ, deceased, late of Fort Wayne, Ind., and Karl I. Haddad, Fort Wayne, Ind., assignors to Telectro-Mek, Inc., Fort Wayne, Ind.

Filed Mar. 22, 1995, Ser. No. 408,340

Int. Cl.[6] G01N *21/00*

U.S. Cl. 73—61.43 **21 Claims**



1. An apparatus for measuring free water contamination of a fluid, said apparatus comprising:

free water detection means for detecting free water in a sample of the fluid and generating an electrical signal proportional to the presence of free water when the filter sample of said fluid is placed proximate thereto;

location detection means for generating an electrical signal in response to the filter sample being located proximate to said free water detecting means;

digital computer means connected to said free water detection means and to said location detection means, said computer means programmed for reading and storing a free water value input from said free water detection means in response to a signal from said location detection means;

said computer means further programmed to calculate and store a free water resulting value using a stored constant with no operator or calibration intervention; and,

said computer means further programmed to calculate a quotient by dividing the larger of said first and second particulate value inputs by the smaller of said first and second particulate value inputs, calculating the logarithm of said

display means connected to said computer for displaying output from said computer means in human understandable form, said computer means being programmed to output for display on said display means said free water resulting value.

5,576,483

CAPACITIVE TRANSDUCER WITH ELECTROSTATIC ACTUATION

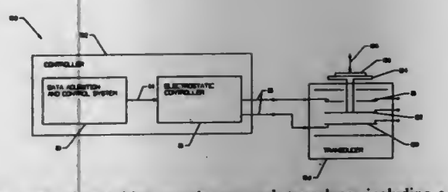
Wayne A. Bonin, North Oaks, Minn., assignor to Hysitron Incorporated, Minneapolis, Minn.

Continuation-in-part of Ser. No. 327,979, Oct. 24, 1994, Pat. No. 5,553,486, which is a continuation-in-part of Ser. No. 131,405, Oct. 1, 1993, abandoned. This application Nov. 14, 1994, Ser. No. 337,741

Int. Cl.[6] G01B *5/28*

U.S. Cl. 73—105 **37 Claims**

1. A high precision force and displacement transducer comprising:



a. a pair of capacitive transducers, each transducer including a separate drive plate, and a shared pick-up plate positioned between the separate drive plates; and be means for selectively imparting a force on a remote object via the pick-up plate.

5,576,484

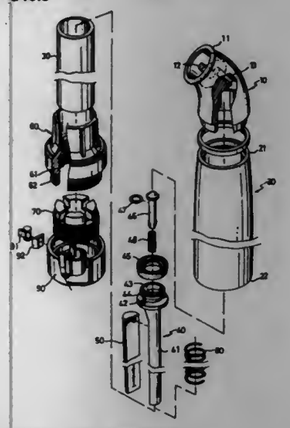
TIRE PRESSURE GAGE

Raymond Hwang, No. 35, Ding Tsao Road, Sec. 4, Tsao Chung Li, Lu Kang, Chang Hua Hsien, Taiwan

Filed Oct. 13, 1995, Ser. No. 542,923

Int. Cl.[6] B60C *23/02*

U.S. Cl. 73—146.8 **4 Claims**



1. A tire pressure gage comprising:

a cylindrical casing having a top end and a bottom end;

a detecting head mounted on the top end of said cylindrical casing, having an air valve, a valve rod, and an air inlet;

an inner tube mounted inside said cylindrical casing;

a pressure measuring scale mounted inside said inner tube, said pressure measuring scale comprising an elongated scale body, a receptacle at a top end of said elongated scale body, a shoulder on said elongated scale body adjacent to said receptacle, a longitudinal center through hole at the center of said receptacle through the longitudinal central axis of said elongated scale body, a cushion mounted around said receptacle and supported on said shoulder;

a T-shaped piston mounted in the longitudinal center through hole of said pressure measuring scale;

a pressure setting scale slidably mounted inside said inner tube for setting the desired tire pressure value;

an inner tube locating cap fastened to the bottom end of said cylindrical casing to hold said inner tube in place, having an inner thread and an outer thread;

a fine adjustment screw threaded into the inner thread of said inner tube locating cap;

a pressure spring supported between the shoulder of said pressure measuring scale and said fine adjustment screw, the spring force of said pressure spring being adjusted by said fine adjustment screw; and

a bottom cap threaded onto the outer thread of said inner tube, having a lock means for locking said pressure setting scale in position,

wherein said pressure setting scale can be set subject to the desired tire pressure so that said T-shaped piston can automatically open the longitudinal center through hole of said pressure measuring scale for permitting excessive tire pressure to be drawn away.

5,576,485

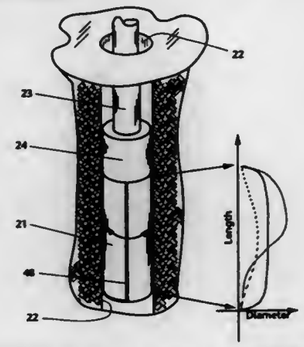
SINGLE FRACTURE METHOD AND APPARATUS FOR SIMULTANEOUS MEASUREMENT OF IN-SITU EARTHEN STRESS STATE AND MATERIAL PROPERTIES

Shosei Serata, 3640 Ridgewood Way, Richmond, Calif. 94806

Filed Apr. 3, 1995, Ser. No. 415,196

Int. Cl.[6] G01N *33/24;* **E21B** *47/00;* **G01V** *1/00*

U.S. Cl. 73—152.17 **36 Claims**



4. An apparatus for measuring stress state and material properties in underground media surrounding a borehole, including;

a tubular central mandrel extending along an axis of symmetry common to the apparatus and borehole;

a tubular expansion member disposed concentrically about said mandrel;

means for delivering high pressure hydraulic fluid through said mandrel to inflate said tubular expansion member and impinge on and deform the wall of the borehole;

means for joining said tubular expansion member to said mandrel to retain high pressure fluid within said tubular expansion member;

means for defining a datum plane of said apparatus, said datum plane passing through said axis;

means for directing expansion of said tubular expansion member in a direction orthogonal to said datum plane;

sensor means for measuring the expansion of the outer surface of said tubular expansion member from said datum plane as a function of loading pressure.

5,576,486

ELECTRONIC FLOWMETER SYSTEM WITH A STOPPER AGAINST UNDESIRABLE FLOWS, LEAK DETECTOR AND BYPASS FOR MEASURING LOW FLOWS

Ilan Paz, Gush Etzion, Israel, assignor to S.F.M. Sophisticated Water Meters Ltd., Arba, Israel

Filed Dec. 2, 1994, Ser. No. 353,250

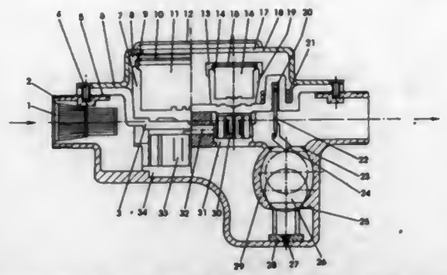
Claims priority, application Israel, Dec. 2, 1993, 107848

Int. Cl.[6] G01F *7/00*

U.S. Cl. 73—197 **12 Claims**

1. A liquid flow measuring system comprising a power source; a main flow meter and a secondary low flow meter located in a

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by-pass pipe to said main flow meter; a three position valve connected to both said main and secondary meters, said three position valve having a flow path adjuster moveable between a first position, a second position, and a third position to establish a selected flow path through the valve, and a latch mechanism permitting or preventing movement of the flow path adjuster into the third position, wherein the first position of said flow path adjuster substantially prevents liquid flow to said main flow meter at a predetermined low flow rate and permits operation of only said secondary flow meter, wherein the second position of said flow path adjuster enables, at a predetermined normal flow rate, liquid to flow through both flow meters, and wherein the third position of said flow path adjuster enables blockage of substantially all fluid flow through both flow meters at a predetermined high flow rate; and a microprocessor responsive to signals representative of flow meter data, for controlling flow measurements by operating the three position valve and said latch mechanism.

5,576,487

APPARATUS FOR CALIBRATING A FLUID MASS FLOWMETER

Christopher J. Gimson, Westhoughton, United Kingdom, assignor to Endress +Hauser Limited, Manchester, United Kingdom

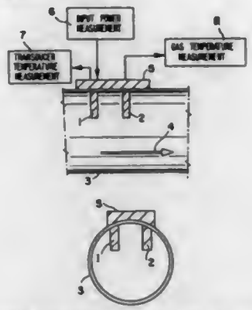
PCT No. PCT/GB92/02025, § 371 Date Jul. 26, 1994, § 102(e) Date Jul. 26, 1994, PCT Pub. No. WO93/15381, PCT Pub. Date Aug. 5, 1993

PCT Filed Nov. 3, 1992, Ser. No. 256,876

Claims priority, application United Kingdom, Jan. 28, 1992, 9201753

Int. Cl.[6] G01F *1/68*

U.S. Cl. 73—204.11 **15 Claims**



1. A fluid mass flowmeter for measuring the mass flow rate of a non-calibrated target fluid travelling through a conduit, the flowmeter comprising

a transducer located in the conduit,

means for supplying heating power to the transducer,

means for measuring the rate that heating power is supplied to the transducer,

means for measuring the temperature of said non-calibrated target fluid,

means for measuring the temperature of the transducer,

means for calculating a temperature of said non-calibrated target fluid adjacent to the transducer from the measured temperature of the transducer and the measured temperature of said non-calibrated target fluid,

means for calculating a viscosity of said non-calibrated target fluid and a thermal conductivity of said non-calibrated target fluid from the calculated temperature of the target fluid adjacent to the transducer,

means for calibrating the flowmeter based upon a known fluid, the calibrating means including means for storing a relationship between Reynolds number and Nusselt number for the known fluid passing through the flowmeter at a plurality of flow velocities and at a plurality of heating power levels supplied to the transducer,

means for calculating a Nusselt number for said non-calibrated target fluid from the measured rate of heating power supplied to the transducer, the difference between the measured temperature of the transducer and measured temperature of said non-calibrated target fluid, and the thermal conductivity of said non-calibrated target fluid,

means for determining a Reynolds number for said non-calibrated target fluid based upon the Nusselt number and the relationship between Reynolds number and Nusselt number, and

means for calculating the mass flow rate of said non-calibrated target fluid passing through the conduit from the Reynolds number and the calculated viscosity.

5,576,488

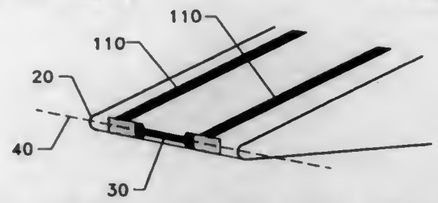
MICRO-SENSOR THIN-FILM ANEMOMETER

Mark Sheplak, Keystone Heights, Fla.; Catherine B. McGinley, Newport News, Va.; Eric F. Spina, Syracuse, N.Y.; Ralph M. Stephens, Norfolk, Va.; Purnell Hopson, Jr., Seaford, Va., and Vincent B. Cruz, Hayes, Va., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 21, 1994, Ser. No. 361,601

Int. Cl.[6] G01F *1/68*

U.S. Cl. 73—204.26 **15 Claims**



1. A thin-film probe for measuring turbulence in high-speed flows, comprising;

a substrate having a back end and a front end, the front end having a bottom surface, wherein the front end has a half-wedge shape to prevent detached shock, the tip of the half-wedge having a suitable radius of curvature to minimize flow disturbance and accommodate attachment of a thin-film sensor;

a thin-film sensor having a first end and a second end, wherein the thin-film sensor is fixedly disposed along the stagnation line of the tip of the half-wedge; and

a pair of electrical leads, each electrical lead connected to a corresponding end of the thin-film sensor.

5,576,489

MEASURING DEVICE FOR OSCILLATING PISTON LIQUID METER

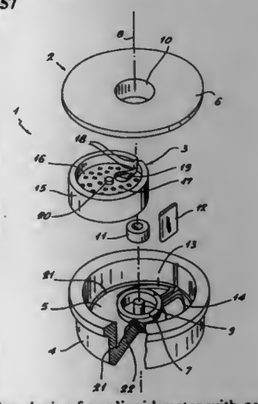
Christophe Munck, Saint-Louis, and Aimé Zimmermann, Cernay, both of France, assignors to Sappel, Saint-Louis Cedex, France

Filed Apr. 14, 1995, Ser. No. 422,230

Claims priority, application France, May 6, 1994, 94 05607

Int. Cl.[6] C01F *3/08*

U.S. Cl. 73—257 **20 Claims**



1. A measuring device for a liquid meter with oscillating piston comprising:

a hollow chamber pierced with two apertures and limited by a cylindrical side wall, a bottom and a lid;

a piston enclosed in said chamber and held movably, along a partition wall about a weil;

wherein this device further comprises:

at least one horizontal groove, made in the corners formed between the bottom and elements supported by the bottom, that opens into the hollow of the chamber, in a space formed between the well and the side walls, and is designed to receive deposits of particles introduced into said device by the liquid to be metered.

5,576,490

MODULAR ROTARY ELEMENT PROCESSOR

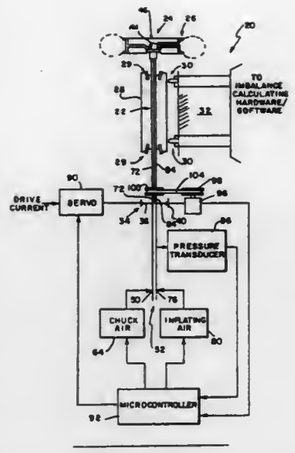
Peter L. Gross, Indianapolis, and Roy F. Carlson, New Palestine, both of Ind., assignors to Illinois Tool Works, Inc., Glenview, Ill.

Filed Sep. 30, 1994, Ser. No. 315,895

Int. Cl.[6] G01M *1/22*

U.S. Cl. 73—462 **33 Claims**

1. In a rotary element dynamic imbalance determining apparatus including a spindle having a first end including means for removably supporting a rotary element, the imbalance of which is to be determined, a housing for rotatably mounting the spindle, and means for providing an output signal related to imbalance in the supported rotary element as the spindle rotates, a motor, the motor having a rotatable motor rotor and a stationary motor stator, means for rotating the spindle, the spindle rotating means comprising the motor rotor, means for mounting the motor rotor on the spindle, means for mounting the motor stator on the housing, the rotary element comprising a mounting hole and the means for removably supporting the rotary element on the first end of the spindle comprising a fluid-operated chuck for engaging the mounting hole to grip the rotary element removably and for disengaging from the mounting hole to release the rotary element, and means for providing on the spindle a rotary fluid coupling for permitting fluid flow to and from the fluid-operated chuck.



5,576,491

ACCELERATION RECORDER AND PLAYBACK MODULE

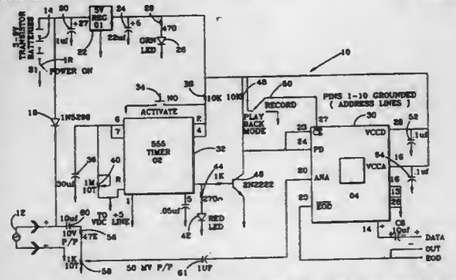
Richard J. Bozeman, Jr., Dickinson, Tex., assignor to The United States of America as represented by the Administrator, National Aeronautics and Space, Washington, D.C.

Division of Ser. No. 940,420, Sep. 3, 1992, Pat. No. 5,359,896.

This application Jul. 21, 1994, Ser. No. 281,800

Int. Cl.[6] G11B *20/10*

U.S. Cl. 73—491 **7 Claims**



1. An acceleration recorder and playback module responsive to an analog signal from an accelerometer transducer, said analog signal having an amplitude that varies responsively to acceleration, comprising:

an accelerometer signal amplitude regulating circuit, said circuit including means for regulating said amplitude of said analog signal said accelerometer signal amplitude regulating circuit comprising an output contact for outputting an amplitude regulated analog accelerometer signal;

a solid state analog signal storage integrated circuit for storing said amplitude regulated analog accelerometer signal, said solid state analog storage device having a storage capacity to store said amplitude regulated analog accelerometer signal for a first predetermined time duration, said solid state analog signal storage integrated circuit having an analog signal input connection for receiving said amplitude regulated analog accelerometer signal, at least one terminal for receiving a playback—record control signal, and at least one activation control terminal for receiving an activation control signal;

a playback—record switching means, said playback-record switching means being operative to provide said playback—record control signal to said at least one terminal for receiving said playback—record control signal; and

a timing circuit including means for producing a timing signal having a second predetermined time duration less than or equal to said first predetermined time duration, said timing

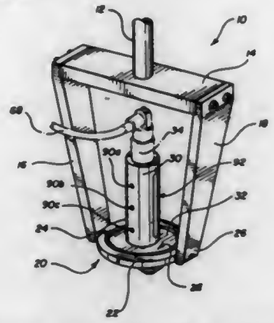
circuit having output circuitry connected to said at least one activation control terminal to provide said activation control signal for enabling operation of said solid state analog signal storage integrated circuit for said second predetermined time duration.

5,576,492

MECHANICAL CONTOUR FOLLOWER

Mark C. Phalin, Enfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jan. 26, 1995, Ser. No. 378,702
Int. Cl.[6] G01N 29/26;29/24
U.S. Cl. 73—634 6 Claims



1. A mechanical contour follower for maintaining a sensor at ninety degrees to a surface of a workpiece with respect to longitudinal and transverse axes of the surface and for maintaining the sensor at a constant distance from the surface of the workpiece being inspected by the sensor, comprising:

a. a plunger post slideably affixed to a test apparatus;

b. a support frame affixed to the plunger post; and

c. a gimballed mounting means mounting the sensor and pivotally affixed to opposed first and second pivot arms of the support frame for producing a gimbal effect on the sensor as the mechanical contour follower contacts and moves along the workpiece surface while the sensor inspects the workpiece wherein the gimballed mounting means includes a transducer alignment means for aligning and securing the sensor in a barrel of the gimballed mounting means within a plurality of specific distances from the workpiece surface.

5,576,493

METHOD AND MEANS FOR FILTERING CONTAMINANTS FROM A GAS STREAM TO DETECT FILTER CONDITION IN SITU

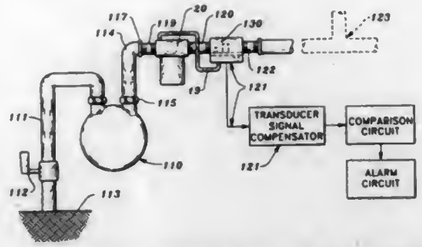
Richard F. Sowinski, 996 Arnold Dr., Martinez, Calif. 94553

Continuation of Ser. No. 155,951, Nov. 19, 1993, Pat. No. 5,437,180. This application Jun. 7, 1995, Ser. No. 479,647
Int. Cl.[6] G01L 13/00
U.S. Cl. 73—708 5 Claims

1. A sensor circuit for indicating an upstream filter capacity of a filter assembly in an end user-customer's piping network, comprising,

a pressure resistive sensor for sensing differential pressure within a natural gas piping network owned by the end user-customer between unfiltered and filtered samples of natural gas flowing therein, by generating first and second signals associated therewith wherein a differential signal thereof relates to the magnitude of sensed differential pressure of said samples of natural gas,

an adjustment circuit connected to said pressure resistive sensor for receiving said first and second signals and providing a response output signal having a desired magnitude variation



characteristic as a function of pressure and temperature as well as indicates flow rate of natural gas within the piping network,

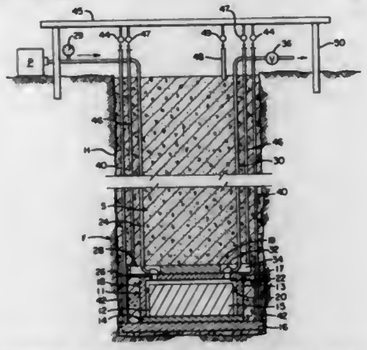
said adjustment circuit including resistive means for adjusting (i) span of said desired output signals as a function of differential pressure, (ii) absolute offset of said output signal with respect to said first and second signals and (iii) temperature dependent resistive coefficient of variation of both of said offset and said span based on the measured temperature of the natural gas, said temperature dependent resistive coefficient of variation also indicative of natural gas flow within an end-user' domain.

5,576,494

METHOD AND APPARATUS FOR SUBTERRANEAN LOAD-CELL TESTING

Jorj O. Osterberg, 16416 E. Powers Pl., Aurora, Colo. 80015

Filed May 26, 1995, Ser. No. 451,661
Int. Cl.[6] G01N 3/24
U.S. Cl. 73—784 20 Claims



1. Apparatus for measuring the load-bearing capacity of a concrete-filled subterranean shaft disposed in a hole wherein a fluid expansion member is disposed in proximity to a bottom surface of the hole beneath said shaft, said fluid expansion member being capable of undergoing vertically directed movement in response to fluid pressure applied thereto, the improvement comprising:

fluid pressure conduit means extending downwardly into the hole into communication with said expansion member for delivering fluid under pressure into said expansion member;

fluid return conduit means extending downwardly into the hole into communication with said expansion member for selectively removing fluid under pressure from said expansion member;

valve means associated with said fluid return conduit means for selectively opening and closing said fluid return conduit means; and

means for delivering fluid under pressure to said fluid pressure conduit means into said expansion member when said valve means for said fluid return conduit means is closed whereby

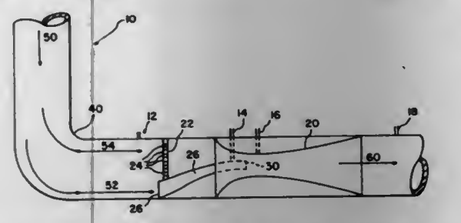
to impart upwardly and downwardly directed forces to a top and bottom of said expansion member.

5,576,495

TWO PHASE FLOW METER

Richard C. Vetterick, Akron, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Oct. 23, 1995, Ser. No. 546,881
Int. Cl.[6] G01F 1/74
U.S. Cl. 73—861.04 20 Claims



1. An apparatus for determining the relative flows of a two phase flow through a pipe having a longitudinal axis, an upstream end and a downstream end, and means for providing a two phase flow to the upstream end of the pipe, comprising:

means for substantially separating the two phase fluid flow into a dense phase and a light phase inside the pipe adjacent the upstream end;

first means for transporting the dense phase separately through a first section of the pipe to a second section of the pipe downstream of the first section;

second means for transporting the light phase separately through the first section of the pipe to the second section of the pipe downstream of the first section;

means for thoroughly mixing the dense phase and the light phase in the second section of the pipe; and

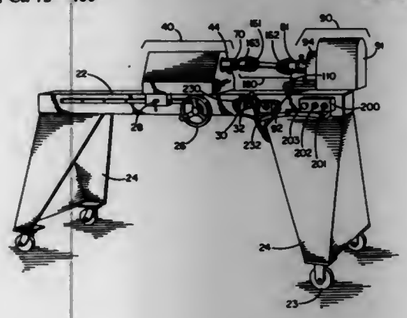
four pressure measurement devices connected to at least four different points within said pipe to obtain four different pressure measurements which can be used to determine the rate of flow of each of the dense phase and light phase through the sections of the pipe.

5,576,496

METHOD AND MEANS FOR TESTING CV DRIVEAXLES

Sean M. Carlini, Rockford; Lynn R. Smith, Machesney Park, both of Ill.; Arthur J. Zangerle, Muskego, Wis., and Douglas Vandenberg, St. Charles, Ill., assignors to Rockford Acromatic Products Co., Rockford, Ill.

Filed Oct. 6, 1995, Ser. No. 540,547
Int. Cl.[6] G01M 1/16
U.S. Cl. 73—460 20 Claims



1. A test unit for testing driveaxles which include two constant velocity universal (CV) joints, the test unit being adapted to identify driveaxles which exhibit undesirable vibration under load, the test unit comprising in combination:

a base supporting a drive assembly and a brake assembly,

a motor connected to a drive spindle in the drive assembly,

a brake connected to a brake spindle in the brake assembly,

a plurality of spindle adaptors for the drive spindle and the brake spindle, having splined sockets for receiving splined shafts of drive axles of a plurality of configurations, the drive and brake spindles having quick-change fixtures including a quick release detent and a slidable keyway for quick interchange of adaptors, the keyway being of adequate dimension to reliably transmit a predefined torque through a drive axle under test,

translation means for controllably translating one of said assemblies with respect to the other to facilitate the engagement of the splines of a driveaxle with splined sockets in the spindle adaptors to mount a drive axle into the test stand for testing,

pivoting control means for controllably pivoting the brake spindle with respect to the drive spindle to controllably flex at least one of the CV joints in the driveaxle during a driveaxle test, and

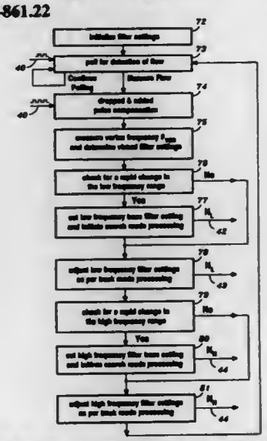
a control system for energizing the motor to rotate the driveaxle, then controllably engaging the brake to load the driveaxle and engaging the pivoting control means for flexing at least one of the CV joints to detect the presence of any vibrations in the CV joint being flexed at particular angles of flex.

5,576,497

ADAPTIVE FILTERING FOR A VORTEX FLOWMETER

James H. Vignos, Needham Heights; M. Charles Cheney, Wrentham, both of Mass.; Michael G. Drainville, Manville, R.I.; Norman O. Fonteneau, Achusnet, and Joseph J. Lewicke, Foxboro, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed May 9, 1995, Ser. No. 437,336
Int. Cl.[6] G01F 1/32
U.S. Cl. 73—861.22 13 Claims



1. A method for processing vortex generated signal pulses representing the shedding frequency of alternating differential pressure vortices of a process flow, said method comprising:

a) determining an operating range, the operating range representing a range of vortex shedding frequencies of the process flow, said operating range bounded by a first frequency limit and a second frequency limit;

b) receiving the vortex generated signal;

c) filtering the vortex generated signal relative to a bandwidth, the bandwidth representing a range of vortex shedding frequencies within the operating range which will be preserved,

said filtering attenuating a range of vortex shedding frequencies outside of the bandwidth;

d) computing the vortex shedding frequency of the vortex generated signal and generating a vortex frequency signal representative thereof;

e) checking for a rapid change within the vortex frequency signal and altering said filtering step to widen the bandwidth to at least one of said first frequency limit and said second frequency limit if the rapid change is detected;

f) adjusting said filtering step to preserve the bandwidth about the vortex frequency signal; and

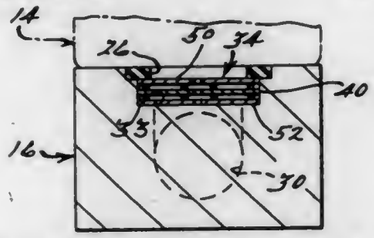
g) transmitting the vortex frequency signal to further signal processing circuitry for outputting the vortex frequency signal in a desired manner.

5,576,498

LAMINAR FLOW ELEMENT FOR A FLOWMETER

Ali Shambayati, Tucson, Ariz., assignor to The Rosaen Company, Hazel Park, Mich.

Filed Nov. 1, 1995, Ser. No. 551,371
Int. Cl.[6] G01F *1/37*
U.S. Cl. 73—861.52 **4 Claims**



1. In a fluid flowmeter comprising a housing having an internal cavity, a fluid inlet at one end of the cavity, a fluid outlet at the other end of the cavity, and flow sensing means communicating with the cavity, an improved laminar flow element for establishing laminar flow of fluid between the inlet and outlet of the cavity in said housing comprising:

a flat wire carrier plate; and

a wire wound on said plate defining a portion of a laminar flow channel extending between the inlet and outlet of the cavity in said housing, the diameter of the wire defining the depth of said channel.

5,576,499

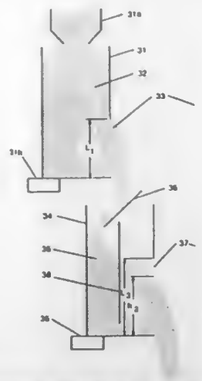
MEASURING AND MONITORING THE SIZE OF PARTICULATE MATERIAL

Clive E. Davies, Lower Hutt, New Zealand, assignor to Industrial Research Limited, Wellington, New Zealand

PCT No. PCT/NZ93/00028, § 371 Date Jan. 13, 1995, § 102(e) Date Jan. 13, 1995, PCT Pub. No. WO93/22652, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 23, 1993, Ser. No. 318.842
Claims priority, application New Zealand, Apr. 24, 1992, 242499
Int. Cl.[6] G01L *5/10*
U.S. Cl. 73—861.41 **24 Claims**

1. Apparatus for monitoring a characteristic diameter of a flowing particulate material, comprising

a chamber having a particle size measurement outlet of known dimensions through which the flowing particulate material or a part thereof passes,



means for determining substantially continuously the flow rate of the flowing particulate material through the particle size measurement outlet, and

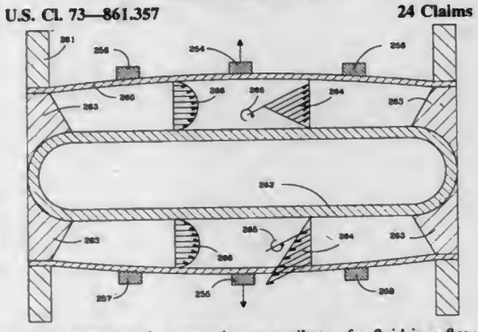
means to determine the characteristic diameter of the flowing particulate material as a function of the dimensions of the particle size measurement outlet, the bulk density, and the flow rate of the flowing particulate material.

5,576,500

CORIOLIS MASS FLOW RATE METER HAVING MEANS FOR MODIFYING ANGULAR VELOCITY GRADIENT POSITIONED WITHIN A CONDUIT

Donald R. Cage, Longmont; Steven W. Campbell, Mead, and David T. Hahn, Longmont, all of Colo., assignors to Direct Measurement Corporation, Longmont, Colo.

Division of Ser. No. 326,751, Oct. 20, 1994, Pat. No. 5,448,921, and a continuation of Ser. No. 83,975, Jun. 28, 1993, abandoned, and a continuation-in-part of Ser. No. 167,719, Dec. 15, 1993, Pat. No. 5,373,745, and a continuation of Ser. No. 843,519, May 8, 1992, abandoned, and a continuation-in-part of Ser. No. 651,301, Feb. 5, 1991, abandoned. This application Apr. 10, 1995, Ser. No. 419,360
Int. Cl.[6] G01F *1/84*
U.S. Cl. 73—861.357 **24 Claims**



1. An apparatus for measuring an attribute of a fluid in a flow conduit, comprising:

means for inducing a radial mode vibration in said conduit, said radial mode vibration causing deformation of said conduit;

means for measuring a change in said deformation; and

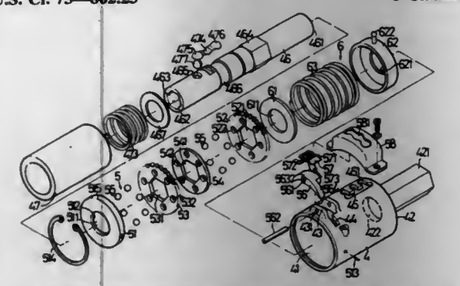
means for modifying an angular velocity gradient of said fluid in said conduit, said modifying means positioned within said conduit.

5,576,501

TORQUE-CONTROLLING RATCHET CONNECTOR STRUCTURE

Chin-Tan Huang, No. 39, Lane 240, Li-Jen Road, Ta-Li City, Taichung Hsien, Taiwan

Filed Jan. 3, 1996, Ser. No. 586,933
Int. Cl.[6] B25B *23/00*
U.S. Cl. 73—862.23 **5 Claims**



1. A torque-controlling ratchet connector structure comprising:

a hollow main body having a first open end and a second end integrally connected with an axially outward extending hexagonal section, two locating seats being disposed at the first end of the main body, a receiving slot being formed between the locating seats, a controlling stopper slot being formed at the second end of the main body, a shaft hole being formed on inner side of the second end of the main body adjacent to the hexagonal section;

a rotary shaft disposed in the main body, having a first end located in the shaft hole of the main body and a second end located in and protruding out of a central shaft hole of a toothed disk disposed in the first open end of the main body, the second end being formed with an axial hexagonal socket, a hexagonal section being formed on a middle section of the rotary shaft, between the second end and the hexagonal section being disposed a conic hole communicating with the hexagonal socket and an annular groove with a predetermined depth, a stopper body being disposed between the annular groove and the hexagonal section;

a slide sleeve fitted around the second end of the rotary shaft, a first and a second flanges being formed on inner side of the slide sleeve, a spring being disposed between the first flange and the stopper body of the rotary shaft, the second flange being positioned between a first and a second ends of an urging member, each of the first and second ends having a highest position higher than a lowest position of the second flange, the first end pressing a ball member into the conic hole of the rotary shaft and the second end being positioned at the annular groove of the rotary shaft, whereby the second flange of the slide sleeve is movable between the first and second ends of the urging member and the slide sleeve is prevented from axially detaching from the second end of the rotary shaft;

a torque mechanism including:

a toothed disk formed with a central shaft hole and a toothed face facing the interior of the main body and secured at the first end of the main body, a flange with a predetermined length and width being disposed along outer periphery of the toothed face;

a first and a second ratchet wheels formed with hexagonal holes for the hexagonal section of the rotary shaft to fit thereinto, multiple equally spaced ball holes being formed between the peripheries of the ratchet wheels and the hexagonal holes;

a washer disposed between the first and second ratchet wheels and formed with a hexagonal hole and multiple ball holes identical to those of the first and second ratchet wheels;

multiple steel balls having a diameter identical to that of the ball holes, two steel balls being placed in each ball hole of the first and second ratchet wheels and the washer, which communicates with the other, the thickness of the two steel balls being larger than the total thickness of the first and second ratchet wheels and the washer, so that one of the steel balls is flush with the end face of the first ratchet wheel, while the other steel ball protrudes beyond the end face of the second ratchet wheel to contact with the toothed face of the toothed disk; and

a controlling body pivotally connected with the locating seats of the main body at middle section, the controlling body being disposed with a first and a second stopper blocks respectively positioned above the toothed peripheries of the first and second ratchet wheels; and

a pressure adjustment mechanism including;

a pressing plate formed with a shaft hole for the first end of the rotary shaft to fit therein, the pressing plate being attached to the first ratchet wheel and the steel balls;

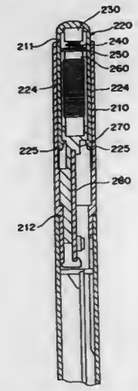
a pressure adjustment body formed with a shaft hole for the first end of the rotary shaft to fit therein and having a driving post extending outside the controlling stopper slot of the main body, a spring being disposed between the pressure adjustment body and the pressing plate, the controlling stopper slot being parallel to the axis of the main body and having several notches on one side for the driving post to insert thereinto.

5,576,502

POINTING UNIT AND IMPROVED STYLUS PEN

Yasuyuki Fukushima, and Minoru Wakabayashi, both of Otone-machi, Japan, assignors to Wacom Co., Ltd., Japan

Filed Sep. 18, 1995, Ser. No. 529,545
Claims priority, application Japan, Jun. 6, 1995, 7-162866
Int. Cl.[6] G08C *21/00*
U.S. Cl. 73—862.68 **13 Claims**



1. A pointing unit adapted for a stylus pen, comprising:

a casing formed in a substantially cylindrical shape;

a support member installed in the interior of the casing, the support member being limited to move in the reverse direction of the opening end of the casing;

a cap member being located close to the opening end of the casing and formed in a cylindrical shape with a dome shape end protruding in the outward direction of the opening end by a predetermined length therefrom and the external diameter being slightly smaller than the internal diameter of the casing, the cap member being limited to move from the predetermined position in the outward direction of the opening end and on the contrary movable freely sliding in the inward direction;

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a magnetic member made of magnetic material, arranged close to the inner surface of the dome shape end of the cap member;

a coil member including a magnetic core, interposed between the cap member and the support member; and

an elastic member arranged in a narrow space defined between the coil member and the inner surface of the dome shape end of the cap member to urge said cap member in the outward direction with respect to the coil member so that the dome shape end of the cap member is defined at the predetermined position protruding some length from the opening end of the casing.

5,576,503

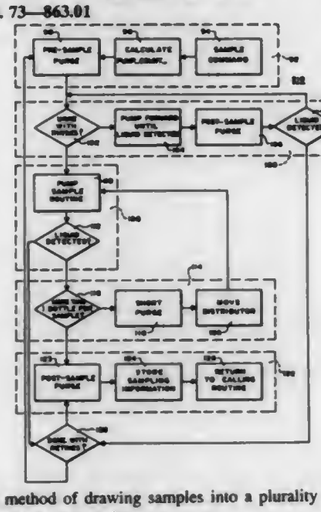
PUMPING SYSTEM

Frederick A. Nabity; Robert R. Fiedler; James P. Masek; Brian D. Dawson; Russell T. Barker; Frederick D. Sueverkruepp, III; Ralph E. Setter, all of Lincoln; Paul G. Wright, Pleasant Dale, and Larry L. Fritz, Lincoln, all of Nebr., assignors to Isco, Inc., Lincoln, Nebr.

Continuation-in-part of Ser. No. 120,724, Sep. 13, 1993, abandoned, which is a division of Ser. No. 807,200, Dec. 16, 1991, Pat. No. 5,401,139, which is a division of Ser. No. 474,154, Feb. 2, 1990, Pat. No. 5,125,801. This application Feb. 13, 1995, Ser. No. 387,595

Int. Cl.[6] G01N *1/14*

U.S. Cl. 73—863.01 **12 Claims**



1. A method of drawing samples into a plurality of containers comprising the steps of:

calibrating a distributor arm as to position;

drawing samples with a peristaltic pump;

selecting a designated container;

moving the distributor arm directly to the designated container without applying samples to containers between the starting position of the calibrated distributor arm and the designated container by counting changes in incremental angular movement of the distributor arm until it is over the designated container wherein an outlet end of the distributor is connected to the distributor arm;

causing at least one of said samples to flow into the designated container by rotating the outlet end of the distributor over the designated container and causing the sample to flow through the distributor into the designated container; and

continually updating the position of the distributor arm in memory.

5,576,504

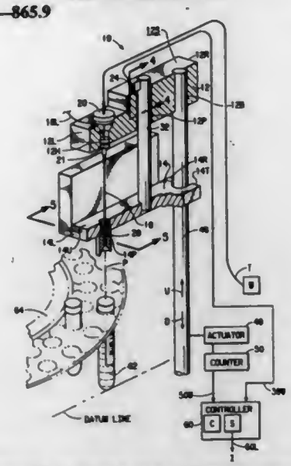
CONTAINER IDENTIFICATION APPARATUS

Timothy P. Evers, Wilmington, Del., assignor to Dade Chemistry Systems Inc., Deerfield, Ill.

Division of Ser. No. 276,187, Jul. 15, 1994, Pat. No. 5,517,867. This application Aug. 18, 1995, Ser. No. 516,593

Int. Cl.[6] G01M *19/00*

U.S. Cl. 73—865.9 **7 Claims**



1. Apparatus for identifying each of a predetermined plurality of liquid containers, some of which are stoppered and others of which are open-mouthed, the apparatus comprising:

an upper arm and a lower arm, the lower arm being mounted for relative movement along a vertical axis with respect to the upper arm;

an actuator connected to the upper arm for rectilinearly displacing the same;

a sensor responsive to relative motion between the upper and the lower arms to generate a first signal;

means responsive to the first signal for generating a signal representative of the magnitude of the displacement of the upper arm;

means responsive to the magnitude of the displacement signal for generating a container identity signal,

the upper and the lower arms being initially displaceable as a unit by the actuator until abutting contact between the lower arm and a container to be identified prevents further advance of the lower arm and substantially simultaneously causes relative motion between the upper and the lower arms such that the sensor responds to the relative motion to generate the first signal.

5,576,505

MUSIC PROMPTER FOR INDICATING NOTE/CHORD CHANGES TO DEVELOPMENTALLY DISABLED INDIVIDUALS OR ORCHESTRAS

Gair Linhart, P.O. 26, La Joya, N.M. 87028, assignor to Gair Linhart, La Joya, N.M.

Filed Aug. 9, 1994, Ser. No. 287,865

Int. Cl.[6] G09B *15/02*

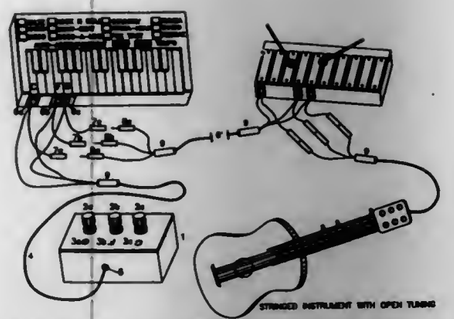
U.S. Cl. 84—477 R **1 Claim**

1. A decentralized, expandable prompter device for special musicians and orchestras, comprising:

a) prompter control box containing three battery-powered momentary switches;

b) conductor cable connecting said prompter control box to variously colored light emitting diodes (L.E.D.'s);

c) velcro strips for holding said light emitting diodes (L.E.D.'s) proximate to the corresponding keys or frets of up to 10 instruments;



d) note indicator letters affixed to said control box; and

e) in-one connectors, downstream from said light emitting diodes (L.E.D's), which optionally accommodate mini-jacks which connect additional extensions to said control box, thereby making it possible to prompt extra instruments.

5,576,506

DEVICE FOR EDITING AUTOMATIC PERFORMANCE DATA IN RESPONSE TO INPUTTED CONTROL DATA

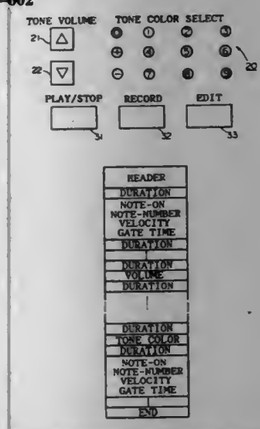
Susumu Kawashima, and Masao Kondo, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 910,648, Jul. 8, 1992, abandoned. This application Feb. 28, 1995, Ser. No. 396,074

Claims priority, application Japan, Jul. 9, 1991, 3-168511

Int. Cl.[6] G10H *7/00*

U.S. Cl. 84—602 **8 Claims**



1. An automatic performance data editing device comprising:

memory means for storing performance data used for carrying out automatic performance, the performance data including control data for controlling the automatic performance;

input means for providing control data while carrying out the automatic performance; and

control means for editing the performance data stored in the memory means in such a manner that when control data is provided by the input means, control data which has been read out from the memory means to control the automatic performance is updated by the control data provided by the input means, the control means comprising address storage means for storing an address of the control data which has been read out from the memory means, and writing control means for writing the input control data provided by the input means in an area of the memory means designated by the address storage means;

control data which has been read out from the memory means to control the automatic performance being updated by rewriting control data read out from the memory means immediately prior to control data being provided by the input means.

5,576,507

WIRELESS REMOTE CHANNEL-MIDI SWITCHING DEVICE

Frank LaMarra, 522 North Center, Royal Oak, Mich. 48067

Filed Dec. 27, 1994, Ser. No. 364,553

Int. Cl.[6] G10H *1/00*

U.S. Cl. 84—645 **14 Claims**



8. A wireless remote controlled musical instrument switching system for use with a musical instrument of the type that produces a music signal representing musical notes and for use with a signal processor or amplifier that alters the quality of the music signal, comprising:

a switch bank including at least one manually actuable switch having means for mounting directly to said musical instrument;

a transmitter coupled to said switch bank for emitting a radiated signal in response to actuation of said switch;

said radiated signal comprising sound effecting information different than said music signal;

a receiver for receiving said radiated signal and for producing a control signal corresponding to the actuation of said switch;

a musical device switching interface coupled to said receiver for producing ON/OFF signals in accordance with said control signal said interface being adapted to control said signal processor or amplifier in accordance with said sound effecting information.

5,576,508

EXTENDABLE ARMOR

John G. Korpi, Wayne County, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 26, 1995, Ser. No. 536,308

Int. Cl.[6] F41H *5/00*

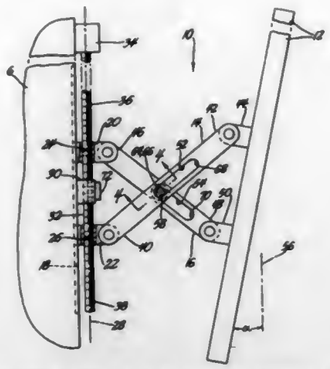
U.S. Cl. 89—36.01 **7 Claims**

1. An extendable armor assembly for ballistically protecting an exterior zone of a vehicle, comprising:

a track recessed in the exterior zone;

a first carrier closely fit to the track and translatable along the track;

a first through aperture in the first carrier;



a second carrier closely fit to the track and translatable along the track;
a second through aperture in the second carrier;
wherein the first aperture is threaded oppositely from, and has a different thread pitch than, the second aperture;
a rod disposed along and parallel to the track, the rod having a first portion threaded with the first aperture and a second portion threaded with the second aperture, whereby rotation of the rod translates the carriers in opposite axial directions at different speeds relative to the rod;
means for rotating the rod;
a first arm;
an inboard end of the first arm pivotally connected to the first carrier;
a second arm longer than the first arm;
an inboard end of the second arm pivotally connected to the second carrier;
the first arm defining a first elongate slot;
the second arm defining a second elongate slot, the second slot being longer than the first slot;
a pin connecting the arms at an intersection of the arms, the pin closely but slidably fitting the elongate slots, the arms being simultaneously translatable and rotatable relative to the pin;
an armor element;
an outboard end of the first arm;
a first hinge element fixed to the armor element and pivotally connected to the outboard end of the first arm;
an outboard end of the second arm;
a second hinge element fixed to the armor element and pivotally connected to the outboard end of the second arm;
wherein the armor element is movable between a retracted position parallel to the exterior zone and a deployed position oblique to the exterior zone, the deployed position being further from the exterior zone than the retracted position;
means for preventing the arms from locking up in the retracted position.

5,576,509

PYROTECHNIC DETONATOR AND METHOD FOR MANUFACTURING SAME

Joseph Refouvelet, Tarbes; HervéLebreton, La Loubere; Jean-Claude Bernardy, Aureilhan, and Yves Castel, Tarbes, all of France, assignors to Giat Industries, Versailles, France

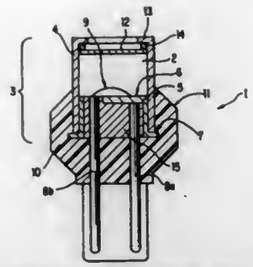
Filed Jan. 4, 1995, Ser. No. 368,307

Claims priority, application France, May 31, 1994, 94 06605

Int. Cl.[6] F42B *3/10;* **F42C** *19/12*

U.S. Cl. 102—202.7 **15 Claims**

1. A pyrotechnic detonator comprising:
a pyrotechnic substance;
a casing for housing said pyrotechnic substance, said casing having a metal wall attached to a metal endplate, the metal endplate being penetrated by at least one of at least two



electrodes disposed within the casing below the pyrotechnic substance, and at least one of said at least two electrodes being electrically insulated from the metal endplate by an insulating material; and
a molded plastics material surrounding at least the metal endplate and a portion of the at least two electrodes.

5,576,510

PERCUSSION FUSE FOR AMMUNITION

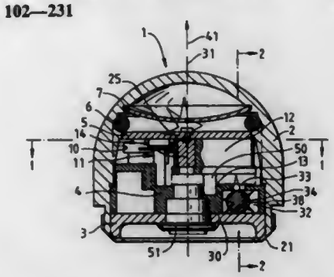
Werner Rüdenauer, Roth, Germany, assignor to Gebruder Junghans GmbH, Schramberg, Germany

Filed Nov. 16, 1995, Ser. No. 558,534

Claims priority, application Germany, Dec. 1, 1994, 9419261 U

Int. Cl.[6] F42C *15/26;9/16*

U.S. Cl. 102—231 **6 Claims**



1. An impact fuse for a rotatable projectile, comprising:
a main detonator;
a firing needle;
a rotor mounted for rotation about an axis from a safety position to a firing position under the influence of centrifugal force upon launching of the projectile, one of said main detonator and firing needle being carried by said rotor and arranged to become aligned with the other of said main detonator and firing needle in response to rotation of said rotor to said firing position, said rotor being movable along said axis in response to target impact when in said firing position to cause said firing pin to detonate said main detonator;
a delay detonator for emitting a gas flow after a predetermined time period following piercing of said delay detonator;
a piercing pin arranged to pierce and detonate said delay detonator in response to acceleration forces occurring upon launching of the projectile; and
a gas-directing passage for directing the gas flow against said rotor to move said rotor along said axis to cause said firing pin to detonate said main detonator, in the absence of target impact.

5,576,511

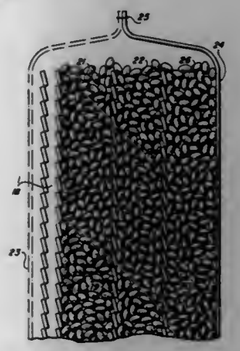
ANTI-EXPLOSION PADS WITH STEEL MESH, SLITTED METAL FOIL AND EXPANDED METAL NET

Shaikh G. M. Y. Alhamad, P. O. Box 31590 Riyadh, 11418 Kingdom, Saudi Arabia

Continuation-in-part of Ser. No. 414,481, Mar. 31, 1995, which is a continuation-in-part of Ser. No. 393,504, Feb. 23, 1995, abandoned, which is a continuation of Ser. No. 257,484, Jun. 9, 1994, abandoned, which is a continuation of Ser. No. 784,171, Oct. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 605,540, Oct. 29, 1990, Pat. No. 5,142,755, which is a division of Ser. No. 417,696, Oct. 5, 1989, Pat. No. 5,001,017, which is a continuation of Ser. No. 280,317, Dec. 6, 1988, abandoned. This application Jun. 6, 1995, Ser. No. 465,837

Int. Cl.[6] F42D *5/00*

U.S. Cl. 102—303 **7 Claims**



1. A stratiform anti-explosion pad for protecting against the destructive impact of a heavy explosion, said pad having a porosity in the range of 80 to 99% and a specific internal surface area above 250 square feet per cubic foot, and comprising a first layer of steel mesh, a second layer of steel mesh spaced apart from said first layer, an inner layer of slitted metal foil, and an inner core layer at least 4 inches thick comprising an assembly of ellipsoids formed from expanded metal net.

5,576,512

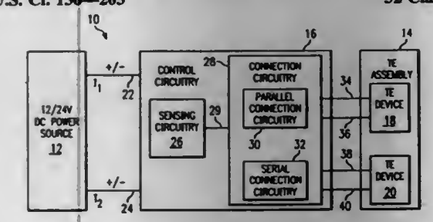
THERMOELECTRIC APPARATUS FOR USE WITH MULTIPLE POWER SOURCES AND METHOD OF OPERATION

Michael J. Doke, Dallas, Tex., assignor to Marlow Industries, Inc., Dallas, Tex.

Filed Aug. 5, 1994, Ser. No. 286,622

Int. Cl.[6] H01L *35/02*

U.S. Cl. 136—203 **32 Claims**



1. A thermoelectric apparatus compatible with multiple power sources, each source providing a different voltage, the apparatus comprising:
a thermoelectric assembly having a plurality of thermoelectric devices; and
control circuitry coupled between the thermoelectric assembly and a power source providing a voltage, the control circuitry operable to sense the voltage provided by the power source and to electrically configure the thermoelectric devices in the thermoelectric assembly between parallel and serial electrical configuration in response to the sensed voltage from the power source and to couple the thermoelectric devices to the power source.

5,576,513

HF-TIGHT COMPONENT CARRIER

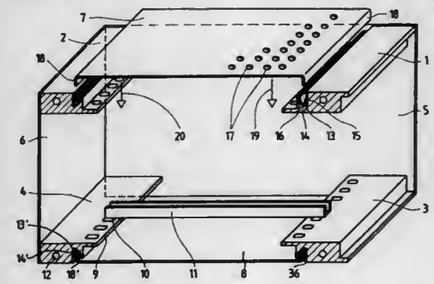
Hans-Ulrich Günther, Pfenztal, and Klaus Pfeifer, Karlsruhe, both of Germany, assignors to Schroff GmbH, Straubenhardt, Germany

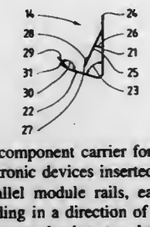
Filed Jul. 16, 1993, Ser. No. 92,414

Claims priority, application Germany, Jul. 16, 1992, 42 23 322.4

Int. Cl.[6] H05K *9/00*

U.S. Cl. 174—35 R **10 Claims**





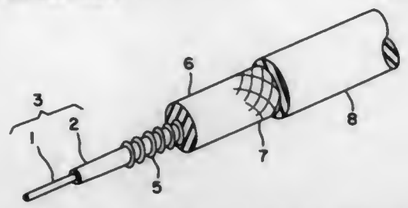
1. An HF-tight component carrier for receiving components of electrical and electronic devices inserted therein, comprising:
two upper, parallel module rails, each having a longitudinal groove extending in a direction of a length of the respective rails, each groove having a substantially V-shaped cross-sectional profile which is open toward an exterior of the component carrier and which is formed by a planar rear wall and a concave front wall opposite and contiguous with the rear wall;
two lower, parallel module rails;
two oppositely located side walls fastened to the respective ends of the upper and lower module rails;
a bottom provided below the lower module rails;
a cover detachably fastened to the upper module rails, and having two beveled, narrow edge strips, each projecting towards, and engagable with, a respective longitudinal groove; and
at least one metal spring member having a V-shaped cross sectional profile corresponding essentially to the profile of the longitudinal groove and being inserted in a clamping manner into the respective longitudinal grooves to ensure electrical contact between the respective module rail and the detachably fastened cover, the spring member including a planar rear leaf portion that contacts the rear wall of the longitudinal groove, a spring leaf portion attached to the rear leaf portion to form a first acute angle therebetween and which presses against the front wall of the longitudinal groove, and a spring tongue attached near a free edge of the rear leaf portion and being spread away from the rear leaf portion at a second acute angle so that a free end thereof points toward the spring leaf portion for engagement with a respective edge strip of the cover.

5,576,514

COIL TYPE HIGH-VOLTAGE RESISTIVE CABLE FOR PREVENTING NOISE

Terutsugu Fujimoto; Makoto Higashikozono, and Hiroshi Inoue, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Apr. 11, 1995, Ser. No. 420,295
Claims priority, application Japan, Jun. 30, 1994, 6-148900
Int. Cl.[6] H01B 7/02
U.S. Cl. 174—110 R 6 Claims



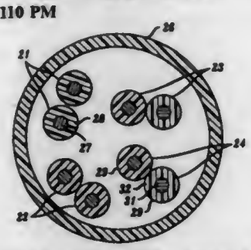
6. A coil type high-voltage resistive noise-preventing cable for connecting an ignition coil and a spark plug in a lean-burn engine, comprising a resistance wire (5) wound around a core (3) in a direction normal to the longitudinal axis of the core (3) and an insulator layer (6) formed around the core (3) wound with the resistance wire (5), wherein the diameter and electrical resistivity of the resistance wire (5) is 35 to 55 μm and 5 to 35 μΩ.cm, respectively, and the resistance wire (5) is wound around the core (3) at a pitch of at least 10000 turns/m, so that the resistance value of the wound resistance wire as a conductor can be set at 4 to 7 kΩ/m.

5,576,515

FIRE RESISTANT CABLE FOR USE IN LOCAL AREA NETWORKS

Larry L. Bleich, Omaha, Nebr.; Tommy G. Hardin, Lilburn, Ga.; William Meyers, and Warren F. Moore, both of Omaha, Nebr., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 3, 1995, Ser. No. 383,135
Int. Cl.[6] H01B 3/24;3/28
U.S. Cl. 174—110 PM 6 Claims



1. An unshielded fire-retardant cable suitable for the transmission of high frequency signals, said cable comprising:

a core comprising a plurality of twisted pairs of insulated conductors, each of said insulated conductors of each of said twisted pairs comprising an elongated metallic conducting member encased in an insulation layer of a tetrafluoroethylene/hexafluoropropylene copolymer having a dissipation factor less than 0.001 at 1 MHz and a dielectric constant less than 2.5 at 1 MHz, and at least one twisted pair of insulated conductors wherein each insulated conductor of said at least one twisted pairs comprises an elongated metallic conducting member encased in a layer consisting essentially of a high density polyethylene material having a dissipation factor of 0.001 or less at 1 MHz and a dielectric constant less than 2.5 at 1 MHz; and

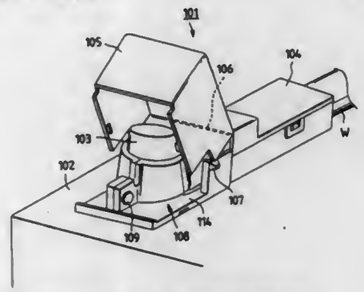
a jacket member surrounding said core, said jacket member comprising a plasticized fire retardant material.

5,576,516

COVER OF BATTERY CONNECTING TERMINAL

Yasushi Kameyama, Hiroshima, and Jun Ono, Shizuoka, both of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Sep. 12, 1994, Ser. No. 304,692
Claims priority, application Japan, Sep. 13, 1993, 5-249700
Int. Cl.[6] H01M 2/32
U.S. Cl. 174—138 F 10 Claims



1. A protective cover for a terminal comprising:

a cover base (114) for holding a terminal;

a cover body for covering the terminal mounted on said cover base, said cover body comprising a hinge (106), and a freely operable lid (105) supported by said hinge; and

temporary opening holding means for holding said lid at a predetermined angle in a temporary open position to permit access to the terminal and for preventing an external force applied to said lid from being concentrated on said hinge.

5,576,517

LOW DIELECTRIC CONSTANT MATERIALS FOR HIGH SPEED

Robert J. Wojnarowski, Ballston Lake; Herbert S. Cole, Burnt Hills; Theresa A. Sitnik-Nieters, Scotia, and Wolfgang Daum, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 247,820, May 23, 1994, Pat. No. 5,449,427. This application Mar. 27, 1995, Ser. No. 411,176
Int. Cl.[6] H05K 1/03;1/18
U.S. Cl. 174—262 6 Claims



1. A structure, comprising:

a substrate;

a circuit chip having chip pads and supported by the substrate;

a low dielectric constant uniformly porous polymer layer over the substrate and circuit chip, the porous polymer layer having pores, the porous polymer layer having at least one via therein aligned with at least one of the chip pads; and

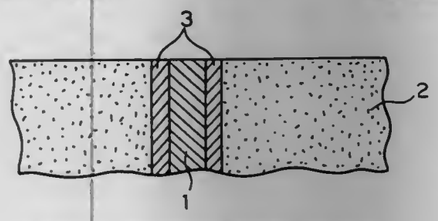
a pattern of electrical conductors extending over a portion of the porous polymer layer and into the at least one via, the pattern of electrical conductors not significantly protruding into the pores of the porous polymer layer.

5,576,518

VIA-STRUCTURE OF A MULTILAYER INTERCONNECTION CERAMIC SUBSTRATE

Akinobu Shibuya, and Mitsuru Kimura, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 12, 1995, Ser. No. 439,945
Claims priority, application Japan, May 13, 1994, 6-099817
Int. Cl.[6] H05K 1/02
U.S. Cl. 174—264 20 Claims



1. A multilayer interconnection substrate comprising:

a ceramic substrate,

a via-conductor formed by sintering and penetrating said ceramic substrate, and

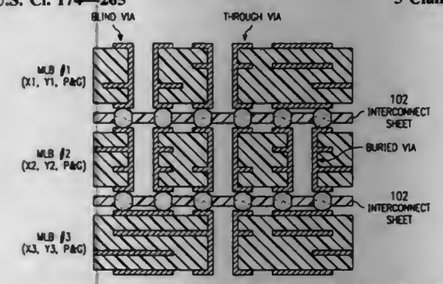
a resin layer formed at an interface between said via-conductor and said ceramic substrate and at least in a vicinity of a surface of said ceramic substrate.

5,576,519

ANISOTROPIC INTERCONNECT METHODOLOGY FOR COST EFFECTIVE MANUFACTURE OF HIGH DENSITY PRINTED WIRING BOARDS

Deepak N. Swamy, Austin, Tex., assignor to Dell U.S.A., L.P., Austin, Tex.

Division of Ser. No. 177,055, Jan. 4, 1994. This application Mar. 23, 1995, Ser. No. 409,289
Int. Cl.[6] H05K 1/14
U.S. Cl. 174—265 5 Claims



1. An interconnect sheet for connecting circuit layers in printed wiring boards comprising through holes spaced to a first pitch, the interconnect sheet comprising:

a dielectric; and

an area grid of solder columns comprised in said dielectric;

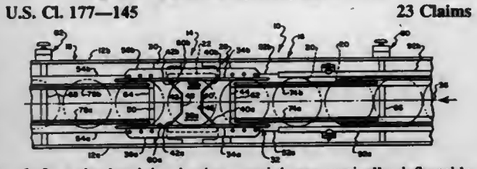
wherein the solder columns of the grid have a second pitch which is less than the first pitch, thereby making the interconnect sheet anisotropic.

5,576,520

CHECKWEIGHER HAVING VARIABLE WEIGH PLATFORM

David Waterman, Dryden, and John Lindstrom, Newfield, both of N.Y., assignors to Hi-Speed Checkweigher Co., Inc., Ithaca, N.Y.

Continuation of Ser. No. 52,559, Apr. 23, 1993, abandoned. This application Jul. 25, 1994, Ser. No. 279,953
Int. Cl.[6] G01G 19/00;21/22; B65G 15/10
U.S. Cl. 177—145 23 Claims



1. In a checkweigher having a weigh pan vertically deflectable to provide a signal indicative of the weight of products to be weighed and a product conveyor having a pair of parallel, product footprint supporting conveyor elements arranged to move across and in engagement with a surface of said weigh pan for transporting said products one at a time across said weigh pan to effect weighing thereof, an improvement for permitting the weighing of a series of groups of said products, wherein said products of each group have a given dimension, as measured in the direction of movement of said conveyor, and said given dimension of products of one group varies from said given dimension of products of other groups of said series of groups, said improvement comprising in combination:

said surface of said weigh pan is essentially planar and defines pairs of parallel surface lengths disposed in alignment with said direction of movement, said pairs of surface lengths corresponding in number to the number of said groups of said series and each of said pairs of surface lengths having a length corresponding essentially to said given dimension of products of one said groups; and

adjustment means are provided to adjustably move said conveyor elements transversely of said direction of movement to overlie one of said pairs of surface lengths whose length corresponds essentially to said given dimension of products of a group of products to be weighed.

5,576,521

MULTIPLE READOUT SPRING SCALE

Werner F. Dubach, Maur, Switzerland, assignor to Createchnic AG, Dietlikon, Switzerland

PCT No. PCT/CH92/00115, § 371 Date Feb. 15, 1994, § 102(e) Date Feb. 15, 1994, PCT Pub. No. WO93/25873, PCT Pub. Date Dec. 23, 1993
PCT Filed Jun. 15, 1992, Ser. No. 196,073
Int. Cl.[6] G01G 3/02;19/56
U.S. Cl. 177—233 8 Claims

1. A spring scale comprising

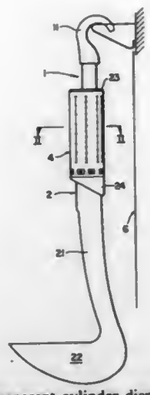
a tubular upper housing part;

a tubular lower housing part wherein said tubular upper housing part can slide within said tubular lower housing part telescopically and wherein said tubular upper housing part and said tubular lower housing part are provided having a predetermined cross-sectional shape selected such that said tubular upper housing part and said tubular lower housing part cannot rotate relative to each other and wherein said tubular lower housing part is provided having a lengthwise slot therein;

a spring having a first end and a second end, the first end of said spring attached to an internal surface of said tubular upper housing part, the second end of said spring attached to an internal surface of said tubular lower housing part;

an indicator blade, coupled to said upper housing part and disposed such that said indicator blade projects through the lengthwise slot with lateral clearance; and

a transparent cylinder, rotatably mounted on said tubular lower housing part and enclosing said tubular lower housing part,



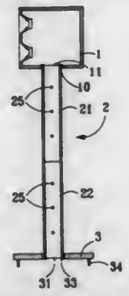
wherein said transparent cylinder displays calibrated readout scales on at least a portion of a first surface thereof.

5,576,522

TUBE-ANNEXED SPEAKER CABINET

Ye M. Taso, Basement, No. 4, Lane 137, Wanta Rd., Taipei, Taiwan

Filed Jan. 24, 1995, Ser. No. 377,893
Int. Cl.[6] A47B *81/06*
U.S. Cl. 181—199 **6 Claims**



1. A tube-annexed speaker cabinet comprising:
a cabinet having an opening formed on a bottom wall with a connecting device being disposed around said opening;
a tube assembly having an upper end that engages with said connecting device; and
a supporting pedestal that engages with a lower end of said tube assembly through a second connecting deice such that an effective volume of said speaker cabinet is increased.

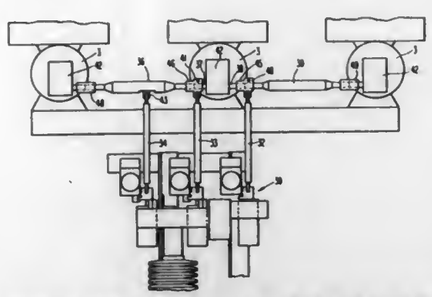
5,576,523

INDEPENDENT POLE OPERATION LINKAGE

Jeffry R. Meyer, Greensburg, Pa., assignor to ABB Power T&D Company, Inc., Raleigh, N.C.

Filed Feb. 14, 1994, Ser. No. 196,590
Int. Cl.[6] H01H *33/42;33/46;33/53*
U.S. Cl. 200—17 R **9 Claims**

1. A mechanical linkage for independently opening and closing a plurality of associated switches, comprising:
a plurality of independently operative linking elements, each linking element being operatively coupled to one switch to open and close said one switch;
a plurality of connecting rods extending from a driving mechanism and being operatively coupled to said plurality of linking elements for actuating said plurality of linking elements to open and close said plurality of switches;



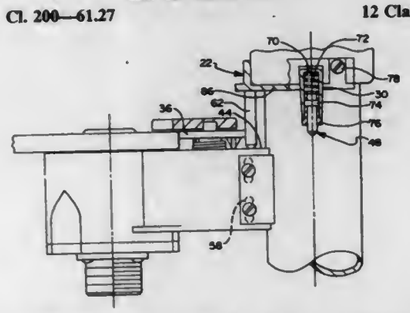
means for rotationally supporting said linking elements at an interface between said linking elements, said means comprising:
a plurality of lever assemblies capable of pivotally coupling one of said plurality of connecting rods with one of said plurality of linking elements to operatively rotate said linking element; and,
a plurality of bearing means providing a supporting link at an interface between two of said plurality of linking elements so that said two linking elements are each independently rotatable with respect to one another at said interface therebetween.

5,576,524

METHOD AND APPARATUS FOR ALIGNING TURN SIGNAL SWITCH

Peter H. Strom, Big Rapids, and David Bull, Hersey, both of Mich., assignors to Nartron Corporation, Reed City, Mich.

Filed Oct. 3, 1994, Ser. No. 316,774
Int. Cl.[6] H01H *3/16*
U.S. Cl. 200—61.27 **12 Claims**



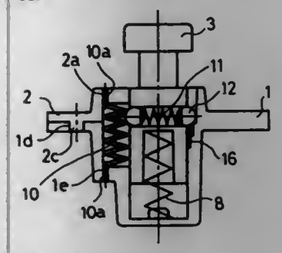
1. A turn signal switch mount for a motor vehicle steering column rotatably carrying a steering wheel hub, the mount comprising:
a housing carrying a turn signal switch assembly comprising an exposed actuator and having a gauge surface exposed adjacent to said actuator, said housing having a support for securing the housing on the steering column with said gauge surface at a selectively fixed axial position along a column axis;
a cancellation engager secured to a steering hub for rotation with the hub, and having a protrusion mounted for extension at a radially extended position for arcuate registration with said actuator; and
a gauge pin removably mounted to one of said housing and said engager to position said gauge surface a predetermined axial distance from said engager, whereby said protrusion registers in abutting contact with the actuator during a rotary displacement with said hub when said gauge pin is removed.

5,576,525

PUSH BUTTON DETENT OR RETAINING MECHANISM FOR PUSH BUTTON SWITCH

Heihachiro Umemura, Sakai, Japan, assignor to Shinkoh Electric Co., Ltd., Osaka, Japan

Filed Nov. 16, 1995, Ser. No. 558,654
Claims priority, application Japan, Nov. 22, 1994, 6-312772
Int. Cl.[6] H01H *3/20*
U.S. Cl. 200—539 **9 Claims**



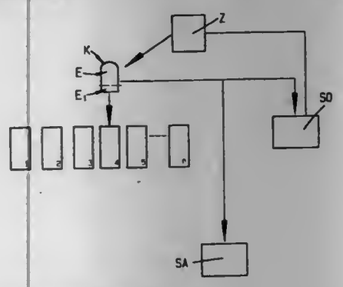
1. A push button switch comprising:
a switch body;
a push button member mounted in said switch body to be movable with respect thereto in a press down direction between plural pressed down positions;
a retaining spring mounted in said switch body and extending parallel to said press down direction, said retaining spring having an outer contour defining therein plural gaps spaced in said press down direction;
at least one ball member mounted on said push button member; and
a ball spring mounted to urge said at least one ball member to move relative to said push button member in a direction such that when said push button member is moved in said press down direction to one of said pressed down positions, said ball spring moves said at least one ball member into a respective said gap in said retaining spring, thereby retaining said push button member in said one pressed down position.

5,576,526

CLOSURE SYSTEM

Armin Eisermann, Velbert, Germany, assignor to Schulte-Schlagbaum Aktiengesellschaft, Velbert, Germany

PCT No. PCT/EP93/01129, § 371 Date Nov. 7, 1994, § 102(e) Date Nov. 7, 1994, PCT Pub. No. WO93/23644, PCT Pub. Date Nov. 25, 1993
PCT Filed May 8, 1993, Ser. No. 325,302
Claims priority, application Germany, May 13, 1992, 42 15 794.3
Int. Cl.[6] G06K *5/00;19/06*
U.S. Cl. 235—382 **6 Claims**



1. A closure system comprising

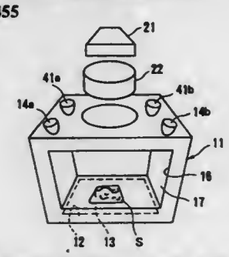
a central unit,
card keys adapted to be issued from said central unit in coded form, a broad side surface of said card keys are divided into first individual fields which can be differently magnetically coded with closure codes for individual locks and second individual fields which can be magnetically coded with magnetization polarity,
at least one lock, the lock having magnetic locking pins serving as tumblers of the lock, wherein said card keys are insertable into a shaft of the lock in which a part of the first coded individual fields move correspondingly positioned magnetic locking pins into an open position,
an off-line service station with a second card key reading device, said off-line service station is unconnected to said central unit,
said second individual fields of the card keys via their magnetization polarity is readable by the second reading device also incorporating data identification for accounting, without cash, of services and/or goods used by the card-holders at said service station, and
an evaluation station connected with the central unit,
the service station comprising means for re-coding the data identification of said second individual fields of the card keys so as to increase or reduce their value, and
said evaluation station has a first card key reading device, for noting and storing said re-coding of said second individual fields in association with other codings of the card keys when said card keys respectively are returned to said central unit for reading by said first card key reading device and for evaluation by said evaluation station.

5,576,527

OPTICAL READER FOR INFORMATION PATTERN REPRESENTING CODED DATA

Keiji Sawanobori, Itabashi-ku, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 19, 1995, Ser. No. 491,765
Claims priority, application Japan, Jun. 20, 1994, 6-160552
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—455 **9 Claims**



1. An optical reader for optically reading an information pattern representing coded data, comprising:
a reading head having a hollow casing with a first opening formed in a wall portion for defining a reading area;
light source means for illuminating said reading area, and
said hollow casing having a second opening formed in another wall portion of the hollow casing;
an optical filter closing said second opening, which exhibits a transmissivity to a portion of the light emitted from said light source means within a predetermined wavelength band, whereby said reading area is visible through said optical filter.

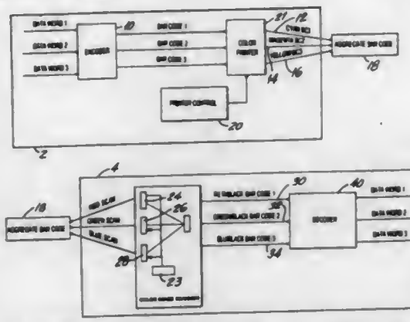
VOL 1192 ISS 3 NO 19 1996

5,576,528

COLOR PROCESSING FOR BAR CODE SYMBOL COMPACTION

Steven M. Chew, Northport; Sundeep Kumar, East Setauket, and Michael O'Haire, Smithtown, all of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Filed Dec. 23, 1994, Ser. No. 363,472
Int. Cl.[6] G06F 7/12
U.S. Cl. 235—469 **20 Claims**



1. A method of compacting a plurality of constituent bar code symbols into an aggregate bar code symbol capable of being scanned and resolved by an imaging device back into the constituent bar code symbols, said method comprising the steps of

a) generating a plurality of constituent bar code symbols, wherein each of said constituent bar code symbols comprises bars and spaces in a pattern indicative of data encoded therein;

b) encoding each of said constituent bar code symbols in a different color; and

c) forming an aggregate bar code symbol by overlaying each of said differently colored constituent bar code symbols on top of each other;

whereby a bar of any constituent bar code symbol which overlaps a bar of another constituent bar code symbol forms a section having a color different from any of the colors of each of said constituent bar code symbols.

5,576,529

HAND-HELD OPTICALLY READABLE INFORMATION SET READER FOCUS WITH OPERATION OVER A RANGE OF DISTANCES

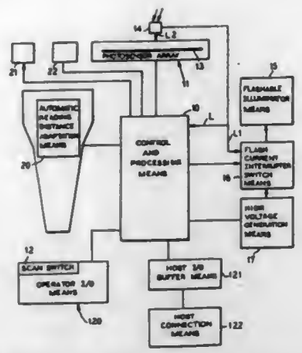
Steven E. Koenck; Jonathan R. White; Phillip Miller, all of Cedar Rapids, Iowa; George E. Hanson, Andover, Kans.; Arvin D. Danielson, Solon, and Dennis A. Durbin, Cedar Rapids, both of Iowa, assignors to Norand Technology Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 215,112, Mar. 17, 1994, which is a continuation-in-part of Ser. No. 947,036, Sep. 16, 1992, Pat. No. 5,308,966, which is a continuation of Ser. No. 875,791, Apr. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 422,052, Oct. 16, 1989, abandoned, which is a division of Ser. No. 894,689, Oct. 8, 1986, Pat. No. 4,877,949. This application Sep. 19, 1994, Ser. No. 309,334
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—472 **5 Claims**

1. In an optically readable information set reader system, a hand-held bar code reader positionable by hand at varying distances from an information set to be read and operable for reading information sets at distances from said reader within a certain operative range, said reader comprising:

(a) optically readable information set sensor means for generating an output signal in accordance with an information set image incident thereon;

(b) distance measurement means for automated reading of distances of an information set from the reader;



(c) reading distance adaptation means for automatically adapting the reader to the reading of an information set at varying distances therefrom; and

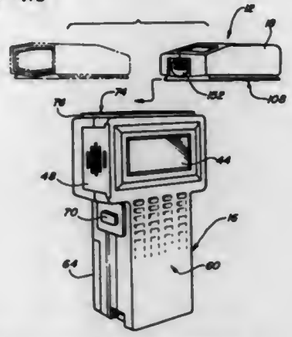
(d) control means to enable or inhibit readings by said sensor means and for adjustment of said reading distance adaptation means in response to said distance measurement means.

5,576,530

PORTABLE DATA TERMINAL INCLUDING A SCANNING HEAD THAT IS SECURED TO THE TERMINAL IN A MANNER THAT ALLOWS THE SCANNING HEAD TO BE POSITIONED IN OPPOSITE ORIENTATIONS

Joseph J. Hagerty, Ortonville, Mich., assignor to Universal Data Incorporated, Clarkston, Mich.

Filed May 11, 1995, Ser. No. 439,359
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—472 **17 Claims**



1. A portable scanning terminal comprising:

a terminal housing including a top panel, said top panel including a slot and tab structure and at least one electrical contact; and

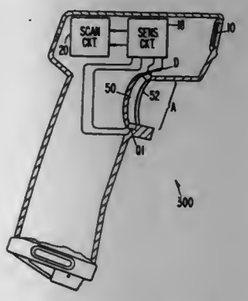
a scanning head that emits a radiation beam in a predetermined direction relative to the scanning head, said scanning head including a scanning head housing having a bottom panel, said bottom panel including a tab and slot structure and at least one electrical contact, wherein the slot and tab structure of the top panel of the terminal housing and the tab and slot structure of the scanning head are configured to secure the scanning head to the terminal housing in a first orientation such that the at least one electrical contact of the scanning head is electrically connected to the at least one electrical contact of the terminal housing, and wherein the slot and tab structure of the top panel of the terminal housing and the tab and slot structure of the scanning head are also configured to secure the scanning head to the terminal housing in a second orientation such that the at least one electrical contact of the scanning head is electrically connected to the at least one electrical contact of the terminal housing, said first orientation being opposite to the second orientation, said scanning head further including a locking mechanism, said locking mechanism operable to lock the scanning head to the terminal housing when the scanning head is in the first orientation and the second orientation.

5,576,531

HAND HELD BAR CODE SCANNING DEVICE HAVING A MANUALLY OPERATED OPTICAL TRIGGER SWITCH

Joseph F. Murphy, Webster, N.Y., assignor to PSC Inc., Webster, N.Y.

Continuation of Ser. No. 366,761, Dec. 30, 1994, abandoned, which is a division of Ser. No. 189,381, Jan. 31, 1994, abandoned. This application Sep. 18, 1995, Ser. No. 529,350
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—472 **4 Claims**



1. A hand-held code reading device having a scanning circuitry for scanning codes, comprising:

a housing having a portion adapted to be hand held by an operator;

a light source for generating a light beam;

an optical waveguide for directing the light beam along a first light path external to the housing;

an optical switching device located along the first light path and arranged to receive the light beam, and adapted to be selectively activated by a first portion of the hand holding the reading device;

a light intercepting means located adjacent the first light path for intercepting and diverting the light beam to a second path that is different from the first path;

a power switch on the housing, adapted to be turned on with a second portion of the hand holding the reading device; and

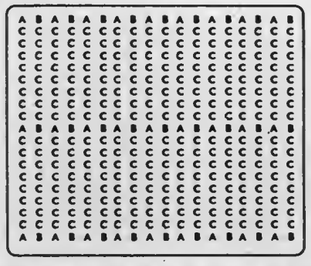
a circuitry for initiating a scanning operation, wherein the initiating circuitry initiates the scanning operation when the first portion of the hand holding the reading device touches or presses the power switch and the second portion of the hand holding the reading device touches or presses the light intercepting means, whereupon the light beam is diverted to the second path so that the optical switching device receives only a portion of the light beam, and wherein the circuitry disables the scanning operation when either the first hand portion is released from the light intercepting means or the second hand portion is released from the power switch.

5,576,532

INTERLEAVED AND INTERLACED SYNC CODES AND ADDRESS CODES FOR SELF-CLOCKING GYLPH CODES

David L. Hecht, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1995, Ser. No. 368,113
Int. Cl.[6] G06K 19/06
U.S. Cl. 235—494 **5 Claims**



1. A process for constructing an embedded data structure on a recording medium, said process comprising the steps of

encoding a first predetermined code in a first set of embedded data characters,

encoding a second predetermined code in a second set of embedded data characters and

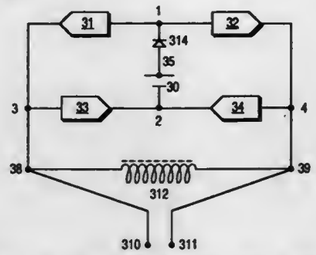
writing said first set and said second set of embedded data characters on said recording medium in a spatially interleaved relationship with respect to each other.

5,576,533

CIRCUIT FOR CONVERTING SOLAR ENERGY INTO AC POWER

Wirojana Tantraporn, Bangkok THX, assignor to Premier Global Corporation Ltd., Praves THX

Filed Oct. 17, 1994, Ser. No. 323,816
Int. Cl.[6] H01J 40/14
U.S. Cl. 250—214 R **8 Claims**



1. A circuit for converting solar energy into ac power supplementary to household ac power, comprising the combination of:

a plurality of solar photovoltaic cells chosen to be as nearly identical as possible;

means for connecting said cells in parallel in one or more groups of a certain number of cells, each group having a group short-circuit current, such that when illuminated the group's short-circuit current exceeds a value of application interest;

means for connecting said groups of parallel-connected cells in series forming an ensemble such that the open-circuit voltage of the ensemble is 5–20% greater than an absolute value of a peak voltage of the household ac power;

four units of switching devices each of which can be operated to pass a current in one direction and having a positive and a negative electrode, the units being connected in a bridge configuration in which the positive electrodes of two units are electrically connected at a first terminal, the negative elec-

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trodes of the two other units are electrically connected at a second terminal, and in which one unit of said two units is connected to one unit of said other two units, through a third terminal, the other unit of said two units being connected to the other unit of said other two units through a fourth terminal;

means for connecting the ensemble comprising the series connected groups of parallel solar cells to said bridge with the positive voltage terminal of the ensemble connected to the first bridge terminal and the negative voltage terminal of the ensemble to the second bridge terminal;

an isolation transformer having a primary coil and a pair of input terminals and at least four low voltage secondary output coils which are isolated from one another and from the primary coil, each having a pair of output terminals;

means for connecting the third and fourth terminals of said bridge to the terminals of the primary coil of the transformer;

plug which can be plugged into the ac power line; and

means for connecting the output terminals of each secondary coil across a pair of control electrodes of the switching devices such that in use the voltages on the control electrodes of the devices on the opposite arms of the bridge have the same ac phase as each other and a phase which is 180° different from the ac phase on the control electrodes of the other two switching devices on adjacent arms of the bridge.

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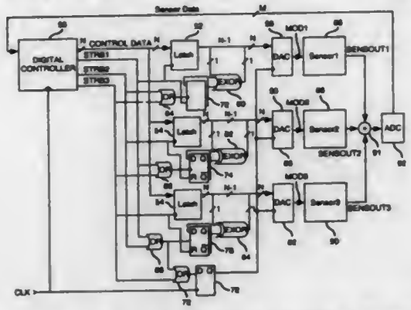
ERROR REDUCTION BY QUASI NON-MULTIPLEXED SIGNAL PROCESSING IN A MULTIPLEXED FIBER OPTIC ROTATION SENSOR LOOP

Juergen K. P. Flamm, Tarzana, and Daniel A. Tazartes, West Hills, both of Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed Jul. 29, 1994, Ser. No. 282,754

Int. Cl.[6] G01B *9/02*; G01C *19/72*

U.S. Cl. 250—227.19 **8 Claims**



1. Apparatus for modulating the phase of a triaxial fiber optic rotation sensor that includes three fiber optic rotation sensors arranged to sense rotations about three mutual perpendicular axes, comprising:

a digital controller apparatus arranged to produce control data signals to be applied to each of the three fiber optic rotation sensors and to produce strobe signals corresponding to each fiber optic rotation sensor;

signal combining apparatus connected to receive sensor signals output from the three fiber optic rotation sensors;

an analog to digital converter connected between the signal combining apparatus and the digital controller to sequentially input signals output from the three fiber optic rotation sensors to the digital controller;

apparatus for providing modulation cycles to keep all three fiber optic rotation sensors active simultaneously, comprising:

a first OR gate connected to the digital controller to receive the first and second strobe signals;

a second OR gate connected to the digital controller to receive the third strobe signal and connected to the output of the first OR gate;

a flip flop connected to receive the output of the second OR gate;

a clock signal input to the flip flop; and

first, second and third digital to analog converters connected between corresponding fiber optic rotation sensors and the second OR gate, the digital controller sequentially supplying the first, second and third strobe signals, such that the first and second OR gates and the flip flop cooperate to provide simultaneous signals to each of the first, second and third digital to analog converters; and

apparatus for sampling each sensor sequentially during a τ period;

apparatus for applying feedback modulation control data signals sequentially to the three sensors during the τ period for each sensor when the sensor was sampled; and

apparatus for isolating feedback modulation control data signals from each fiber optic rotation sensor except for the τ periods in which it is sampled.

5,576,535

POSITION DETECTION SYSTEM HAVING GROUPS OF UNIQUE, PARTIALLY OVERLAPPING SEQUENCES OF SCANNER READABLE MARKINGS

Alexander Oosterwijk, Neunen, and Gerrit Bootsman, Hoofddorp, both of Netherlands, assignors to Bootsman Holding B.V., Hoofddorp, Netherlands

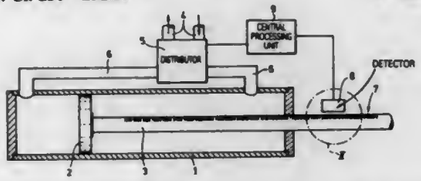
PCT No. PCT/NL93/00130, § 371 Date Dec. 15, 1994, § 102(e) Date Dec. 15, 1994, PCT Pub. No. WO93/25865, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 15, 1993, Ser. No. 356,268

Claims priority, application Netherlands, Jun. 15, 1992, 9201059

Int. Cl.[6] G01D *5/34*

U.S. Cl. 250—231.18 **8 Claims**



1. Position detecting system for a body which changes position, comprising a series of markings separated by a substantially constant spacing, said markings being of a first and a second type, said first type being different from said second type, and a scanner unit, which is movable with respect to said series of markings, for scanning said markings, the series of markings or the scanner unit being connected to the body, the markings being disposed in a plurality of groups comprising a fixed number of at least two successive markings, the markings of each of said plurality of groups always being disposed in a sequence such that said sequence is unique to only one group thus providing a unique code, said plurality of groups overlapping each other such that each two successive groups have a fixed number of markings in common, which fixed number is less than a total number of markings in each group.

5,576,536

IMAGE FORMING APPARATUS INCLUDING MOTOR-DRIVEN ROTARY SCANNER AND SYSTEM FOR JUDGING IF MOTOR ROTATION COMES TO STEADY STATE AND FOR MAINTAINING ROTATION AT STEADY STATE

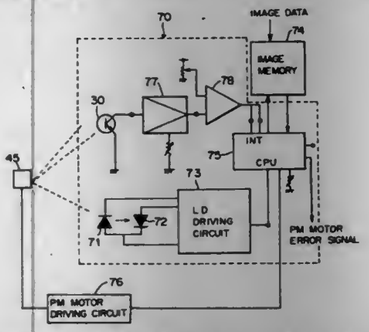
Koji Hiramatsu, and Toshihisa Yamanaka, both of Toyokawa, Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Aug. 17, 1994, Ser. No. 291,758

Claims priority, application Japan, Aug. 20, 1993, 5-206130; Aug. 30, 1993, 5-214382

Int. Cl.[6] H01J *3/14*

U.S. Cl. 250—236 **5 Claims**



1. An image forming apparatus wherein a rotary scanner having a plurality of facets scans a light beam on a light receiving surface line by line, the image forming apparatus comprising:

a motor for rotating the rotary scanner;

a sensor which receives the light beam deflected by the rotary scanner and generates an electric signal corresponding to the received light beam;

a counter for counting the number of occurrences of the electric signal during a specified time period beginning from a start of the motor; and

a judging means for comparing a result of the counter with a reference value for judging whether the motor has come to a steady rotation state.

5,576,537

PHOTOELECTRIC POSITION MEASURING SYSTEM USING GRATINGS HAVING SPECIFIED DIMENSIONS TO SUPPRESS HARMONICS

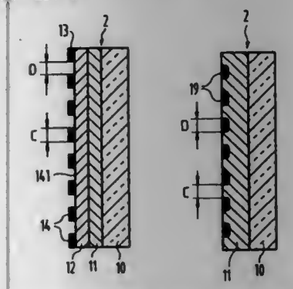
Wolfgang Holzapfel, Obing, and Andreas Franz, Trostberg, both of Germany, assignors to Dr. Johannes Heidenhain GmbH, Traunreut, Germany

Filed Jul. 7, 1994, Ser. No. 271,641

Claims priority, application Germany, Jul. 15, 1993, 43 23 712.6

Int. Cl.[6] H01J *3/14;40/14*

U.S. Cl. 250—237 G **18 Claims**



1. A photoelectric measuring system comprising:

a light source having a plurality of light emitting areas which are separated from each other by non-emitting areas in the measuring direction;

a movable scale having a periodic graduation positioned to receive light emitted from the light-emitting areas of the light source; and

a scanning plate used to scan the scale and generate at least one position-dependent scanning signal, the scanning plate having a plurality of light sensitive areas which are separated from each other by non-sensitive areas in the measuring direction,

wherein the light-emitting areas of the light source are dimensioned to suppress predetermined orders of harmonics and the light sensitive areas of the scanning plate are dimensioned to suppress predetermined additional orders of harmonics wherein if the predetermined orders suppressed by the light source are even ordered then the predetermined orders suppressed by the scanning plate are odd ordered and if the predetermined orders suppressed by the light source are odd ordered, then the predetermined orders suppressed by the scanning plate are even ordered.

5,576,538

APPARATUS AND METHOD FOR ION BEAM NEUTRALIZATION

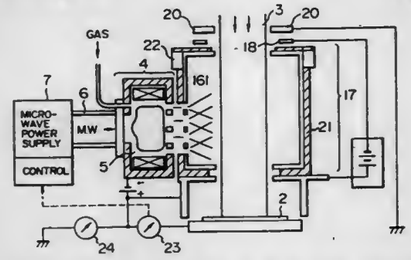
Katsuhiko Sakai, Mito; Osamu Nasu, Katsuta, and Yoichi Ose, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 20,802, Feb. 22, 1993. This application Mar. 27, 1995, Ser. No. 411,150

Claims priority, application Japan, Feb. 21, 1992, 4-033787; Jun. 8, 1992, 4-147195; Jul. 30, 1992, 4-202782

Int. Cl.[6] H05H *3/00*

U.S. Cl. 250—251 **22 Claims**



7. An apparatus for neutralization of an ion beam, comprising:

means for ionizing a source gas to form electrons and ions; and

means for supplying only said electrons from the ionized source gas having the formed electrons and ions therein to the ion beam so as to enable neutralization of the ion beams.

5,576,539

METHOD OF DETECTING SELECTED ION SPECIES IN A QUADRUPOLE ION TRAP

Gregory J. Wells, Fairfield, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Jun. 6, 1995, Ser. No. 469,405

Int. Cl.[6] H01J *49/42*

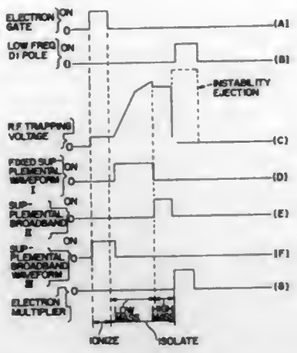
U.S. Cl. 250—282 **9 Claims**

1. A method of using a quadrupole ion trap mass spectrometer, comprising the steps of:

isolating a selected ion species within the ion trap,

rapidly changing the trapping field parameters such that the isolated ion species is no longer stably trapped within the trapping field,

detecting the unstable ions using an external detector.

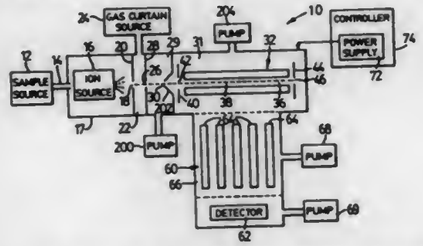


5,576,540

MASS SPECTROMETER WITH RADIAL EJECTION

Charles L. Jolliffe, Kettleby, Canada, assignor to MDS Health Group Limited, Etobicoke, Canada

Filed Aug. 11, 1995, Ser. No. 514,369
Int. Cl.[6] H01J *49/42*
U.S. Cl. 250—292 **5 Claims**



1. A method of mass analyzing a sample comprising the steps of:
(a) defining a volume between a set of elongated rods, said volume having an elongated axial dimension and a pair of ends, and a radial dimension,
(b) injecting into or forming ions of interest in said volume,
(c) creating an electric field in and adjacent to said volume to contain said ions in a mass range of interest in said volume, establishing an axial field lengthwise along said rods, and oscillating said axial field to dissociate said ions contained in said
(d) volume to form the dissociated ions,
(e) ejecting at least some of said dissociated ions of interest radially from said volume, for detection,
(f) and detecting at least some of the ejected ions.

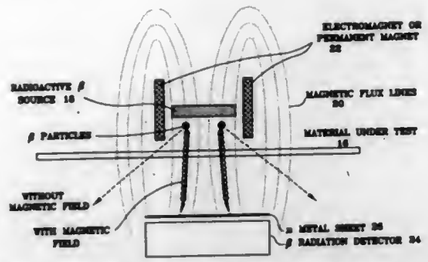
5,576,541

APPARATUS FOR MEASURING THE BASIS WEIGHT

Martin Bickert, Obere Meerbach 6, D-56179 Vallendar, Germany

Filed Mar. 12, 1996, Ser. No. 614,218
Claims priority, application Germany, Mar. 17, 1995, 195 09 642.8
Int. Cl.[6] G01N *23/16*
U.S. Cl. 250—308 **7 Claims**

1. An apparatus for measuring the basis weight of a web-shaped material under (16) test comprising:



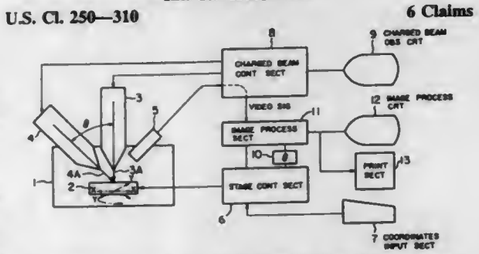
a) a magnet (22), arranged on a first side of the web-shaped material under test (16) to generate a magnetic field (20) which is essentially normal to the web-shaped material under test (16);
b) a radioactive β radiation source (18) arranged on the first side of the web-shaped material under test (16), and further wherein the radioactive β radiation source (18) is arranged within the magnetic field (20); and
c) a β radiation detector (24), arranged on a second side of the web-shaped material under test (16) such that β particles emitted from the radioactive β radiation source (18) are focused on the web-shaped material under test (16) and on the β radiation detector (24).

5,576,542

SUBSTRATE CROSS-SECTION OBSERVING APPARATUS

Yasuhiro Kaga, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 8, 1994, Ser. No. 352,223
Claims priority, application Japan, Dec. 8, 1993, 5-308014
Int. Cl.[6] H01J *37/26*
U.S. Cl. 250—310 **6 Claims**



1. A substrate cross section observing apparatus, comprising:
stage means for mounting a substrate to be observed;
a first charged beam irradiating means for irradiating a processing charged beam at roughly a right angle upon a surface of the substrate, to form an almost vertical observation surface therein;
a second charged beam irradiating means being inclined relative to the first charged beam irradiating means, for irradiating an observing charged beam at a predetermined inclination angle upon the formed observation surface of the substrate;
detecting means for detecting secondary electrons generated by the irradiation of the observing charged beam, and for generating video signals;
inclination angle signal generating means for generating an inclination angle signal indicative of the predetermined inclination angle;
image processing means for correcting the image signals generated by said detecting means on the basis of the inclination angle signal generated by said inclination angle signal generating means; and

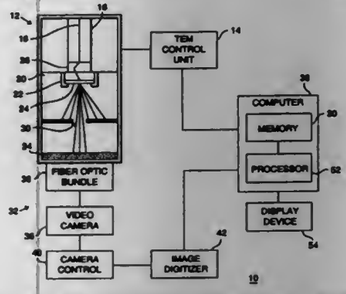
display means for displaying an image of the observation surface on the basis of the corrected image signals.

5,576,543

METHOD AND APPARATUS FOR DETERMINING CRYSTALLOGRAPHIC CHARACTERISTICS

David J. Dingley, Provo, Utah, assignor to TexSEM Laboratories, Inc., Provo, Utah

Filed Aug. 21, 1995, Ser. No. 517,146
Int. Cl.[6] H01J *37/26*
U.S. Cl. 250—311 **20 Claims**



1. A method for determining crystallographic characteristics throughout a specimen having one or more crystals, said method comprising the steps of:
obtaining a plurality of dark field images of said specimen;
defining, for each of said dark field images, a plurality of image regions, each of said image regions being related to at least one of said one or more crystals;
analyzing said image regions to identify a plurality of crystal lattice planes associated with said one or more crystals;
determining a relative spatial location for each of said one or more crystals; and
determining a relative rotational aspect for each of said one or more crystals.

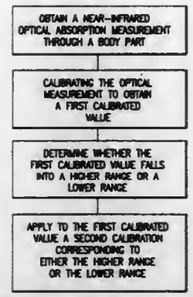
5,576,544

METHOD FOR PROVIDING GENERAL CALIBRATION FOR NEAR INFRARED INSTRUMENTS FOR MEASUREMENT OF BLOOD GLUCOSE

Robert D. Rosenthal, Gaithersburg, Md., assignor to Futrex, Inc., Gaithersburg, Md.

Continuation of Ser. No. 717,198, Jun. 18, 1991, Pat. No. 5,204,532, which is a continuation-in-part of Ser. No. 682,249, Apr. 9, 1991, Pat. No. 5,068,536, which is a continuation-in-part of Ser. No. 565,302, Aug. 10, 1990, Pat. No. 5,077,476, which is a continuation-in-part of Ser. No. 544,580, Jun. 27, 1990, Pat. No. 5,086,229, which is a continuation-in-part of Ser. No. 298,904, Jan. 19, 1989, Pat. No. 5,028,787. This application Jan. 22, 1993, Ser. No. 7,967
Int. Cl.[6] G01N *33/50*
U.S. Cl. 250—341.1 **3 Claims**

1. A method for accurately calibrating a near-infrared analysis instrument for the measurement of a blood analyte, said method comprising:
(a) obtaining a near-infrared optical absorption measurement in a body part of an individual, wherein said near-infrared optical measurement is made using energy of between about 600 to 1000 nanometers;
(b) applying said optical measurement to an initial calibration means for calibrating said optical measurement over substantially the entire range of possible blood analyte concentrations and determining a first calibrated value;
(c) determining whether said first calibrated value falls into at least a first higher range of possible blood analyte concentrations or a first lower range of possible blood analyte concentrations, said first higher range and said first lower range comprises substantially non-overlapping portions of said entire range of possible blood analyte concentrations, said first higher range and said first lower range each comprising a second calibration means corresponding thereto;



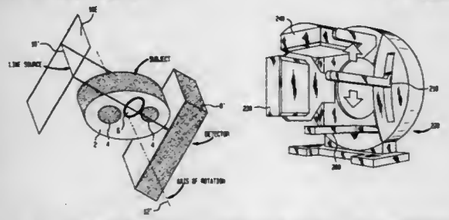
(d) applying to said first calibrated value said second calibration means corresponding to said first higher range or said first lower range based on the determination whether said first calibrated value falls within said first higher range or said first lower range, and producing a second calibrated value representing the measurement of said blood analyte.

5,576,545

LINE SOURCE FOR ATTENUATION CORRECTION IN NUCLEAR MEDICINE STUDIES AND APPARATUS AND METHODS FOR USING THE SOURCE

Everett W. Stoub, Crystal Lake, and William R. George, Chicago, both of Ill., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Jun. 16, 1995, Ser. No. 491,422
Int. Cl.[6] G01T *1/161; 1/166*
U.S. Cl. 250—363.04 **9 Claims**



1. A scintillation camera system that carries out attenuation correction, comprising:
means for supporting a patient;
at least one scintillation camera detector;
a gantry for rotating said at least one detector about an axis of rotation;
computer means, operatively connected at least to said gantry and said at least one detector, for collecting SPECT data and transmission CT data and reconstructing tomographic images from the SPECT data;
a line source, the line source being parallel to said axis of rotation; and
means for scanning the line source in a plane while maintaining the line source parallel to said axis of rotation, said means being operatively connected to said computer means.

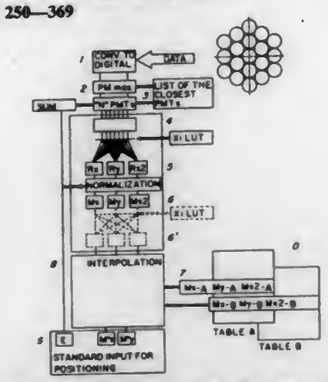
5,576,546
DEPTH-OF-INTERACTION NORMALIZATION OF SIGNALS FOR IMPROVED POSITIONING, AND ENERGY RESOLUTION IN SCINTILLATION CAMERA

Daniel Gagnon, Blainville, Canada, assignor to Park Medical Systems Inc., Lachine, Canada

Continuation-in-part of Ser. No. 967,318, Oct. 28, 1992, abandoned. This application Apr. 19, 1994, Ser. No. 230,145

Int. Cl.[6] G01T *1/164*

U.S. Cl. 250—369 **7 Claims**



1. A method for determining a scintillation event position value in a scintillation camera having an array of photodetectors optically coupled to a scintillator, comprising steps of:

measuring photodetector light intensity signals from the scintillation event;

calculating first order moment values, M_x and M_y, from said intensity signals to obtain initial position values;

determining a second order moment light dispersion value M^2_x or M^2_y, from said intensity signals indicative of scintillation event light spread-out and thus a depth of the scintillation event in the scintillator;

obtaining predetermined correction values for said initial position values and said light dispersion value; and

applying said correction values to said initial position values to obtain said scintillation event position value.

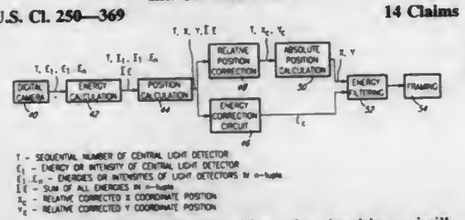
5,576,547
POSITION CALCULATION AND ENERGY CORRECTION IN THE DIGITAL SCINTILLATION CAMERA

Abel Ferreira, Ontario; Vuk Bartulovic, Beaconsfield, and Miljenko Lucic, Lachine, all of Canada, assignors to Park Medical Systems Inc., Canada

Continuation-in-part of Ser. No. 97,674, Jul. 27, 1993. This application Dec. 23, 1994, Ser. No. 362,900

Int. Cl.[6] G01T *1/208*

U.S. Cl. 250—369 **14 Claims**



1. A method of producing a position value signal in a scintillation camera having a scintillator, light detectors optically coupled to said scintillator for producing light detector signals, the method comprising the steps of:

(a) determining from said light detector signals a center light detector receiving a maximum amount of light from a scintillation;

(b) selecting a group of light detectors surrounding said center light detector;

(c) calculating based on values from said group of surrounding light detectors a relative coordinate of a scintillation relative to said center light detector;

(d) providing a transformation value table for a matrix of positions of scintillations within a scope of each of said center light detectors; and

(e) transforming said relative coordinate of said scintillation using one of said transformation values from said table, said one of said transformation values having a position in said matrix corresponding to said coordinates, to obtain a value for generating said position value signal.

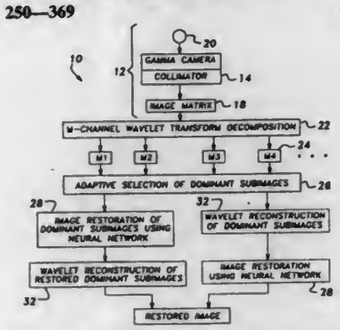
5,576,548
NUCLEAR IMAGING ENHANCER

Laurence P. Clarke, Temple Terrace; Wei Qian, Wesley Chapel, and Maria Kallergi, Tampa, all of Fla., assignors to University of South Florida, Tampa, Fla.

Filed Jun. 5, 1995, Ser. No. 464,393

Int. Cl.[6] G01T *1/20*

U.S. Cl. 250—369 **8 Claims**



1. A method of detecting a nuclear image and filtering noise from the detected image, the method including the steps of:

detecting a nuclear image and producing an image signal;

storing the image signal;

decomposing the image signal based on wavelet transform into a plurality of subimages of different resolution to concentrate image noise in at least one of the subimages and to concentrate the image signal in another of the subimages;

selecting dominant subimages based on resolution representative of the nuclear image to eliminate the concentrated noise subimage;

restoring the selected dominant subimages to a restored image of improved resolution by a neural network; and

reconstructing the selected dominant subimages to a single high resolution image signal.

4. A filter assembly for use with a nuclear detector to received nuclear image signals and to increase resolution thereof while decreasing the amount of noise, said assembly comprising:

storing device for detecting and storing a nuclear image signal;

decomposition means for decomposing the nuclear image based on wavelet transform into a plurality of subimages of different resolution to concentrate noise in at least one of the subimages and to concentrate the image signals in another of the subimages;

selection means for selecting dominant subimages based on resolution representative of the nuclear image signal to eliminate the concentrate noise subimage;

restoration means for restoring the selected dominant subimages to a restored image of improved resolution, said restoration means including a neural network; and

reconstruction means for reconstructing the selected dominant subimages to a single high resolution image signal.

5,576,549
ELECTRON GENERATING ASSEMBLY FOR AN X-RAY TUBE HAVING A CATHODE AND HAVING AN ELECTRODE SYSTEM FOR ACCELERATING THE ELECTRONS EMANATING FROM THE CATHODE

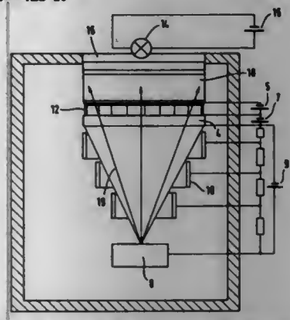
Erich Hell, Erlangen, and Manfred Fuchs, Nuernberg, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 28, 1995, Ser. No. 496,277

Claims priority, application Germany, Jul. 20, 1994, 44 25 683.3

Int. Cl.[6] H01J *29/48*

U.S. Cl. 250—423 R **17 Claims**



12. An electron generating assembly for an x-ray tube, said electron generating assembly comprising:

a radiation source;

a photocathode which emits electrons controlled by said radiation source, said electrons traveling in an electron path;

an electron multiplier disposed in said electron path having a plurality of channels therein through which said electrons pass;

control means for controlling said electron multiplier for selecting said channels through which said electrons pass; and

electrode means for accelerating said electrons emitted by said cathode and for focussing said electrons onto a target.

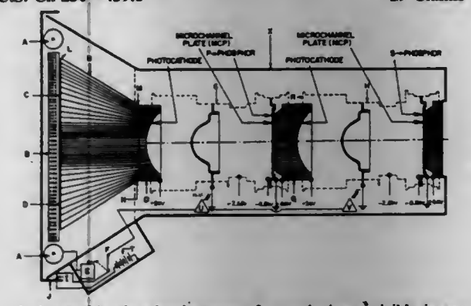
5,576,550
PHYTOLUMINOMETER

Mahesh M. Koppikar, Great Falls, Va., assignor to Photonucleonics NDT, Inc., Lexington, Ky.

Division of Ser. No. 140,278, Oct. 21, 1993, Pat. No. 5,406,089, which is a continuation of Ser. No. 421,835, Oct. 16, 1989, abandoned. This application Jan. 20, 1995, Ser. No. 376,000

Int. Cl.[6] G01N *21/76*

U.S. Cl. 250—459.1 **29 Claims**



1. A portable phytoluminometer, for producing a visible image of at least a portion of a green leaf including a two-dimensional distribution of active photosynthetic sites by using the photoluminescence of such sites as the illumination reproduced in the image, comprising:

means for having at least said portion of said leaf in direct optical coupling with an optical input surface;

means for detecting said photoluminescence at said sites in said distribution; and

means for producing a visible image of said distribution of sites by using said detected photoluminescence; said means together comprising a device of sufficiently small size and low weight as to be readily transportable and operated by a single individual and including a lightweight self-contained power supply carried therewith, said means further comprising at least one electron-amplifying image-intensifier powered by said self-contained supply.

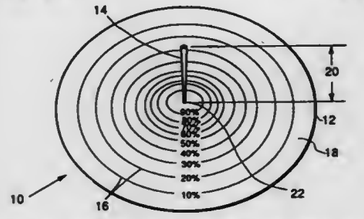
5,576,551
ULTRAVIOLET SUNDIAL

John E. Adair, 7864 Toland Ave., Los Angeles, Calif. 90045

Filed Dec. 16, 1994, Ser. No. 358,109

Int. Cl.[6] G01J *1/38*

U.S. Cl. 250—472.1 **18 Claims**



1. A device for indicating ultraviolet radiation comprising:

a planar member having a plurality of spaced concentric rings on a top surface thereof, said concentric rings each defining an inscribed circumference for indicating a percentage of ultraviolet radiation; and

a gnomon-like member supported in about a center of said planar member and projecting into a plane perpendicular to said planar member whereby said gnomon like member has a height relative to said concentric rings adapted to the casting of a shadow across said concentric rings when said device is in ambient sunlight thereby indicating the percentage of ultraviolet radiation corresponding to the sun's altitude relative to said planar member.

5,576,552
IMAGE PLATE FOR INTRAORAL DENTAL RADIOGRAPHY

Matti Rantanen, Kirkonummi, Finland, assignor to Orion-Yhtyma OY, Espoo, Finland

PCT No. PCT/FI93/00439, § 371 Date Apr. 10, 1995, § 102(e) Date Apr. 10, 1995, PCT Pub. No. WO94/10605, PCT Pub. Date May 11, 1994

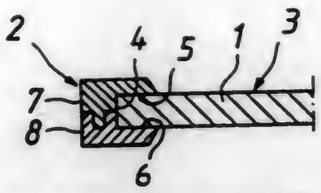
PCT Filed Oct. 26, 1993, Ser. No. 416,777

Claims priority, application Finland, Oct. 27, 1992, 924873

Int. Cl.[6] G03B *42/04*

U.S. Cl. 250—484.4 **8 Claims**

1. An image recording means for intraoral dental radiography, comprising an image plate closed within a cover permeable to X-rays, said plate being adapted to be removed from said cover after the X-raying to let the image as recorded to be read from the



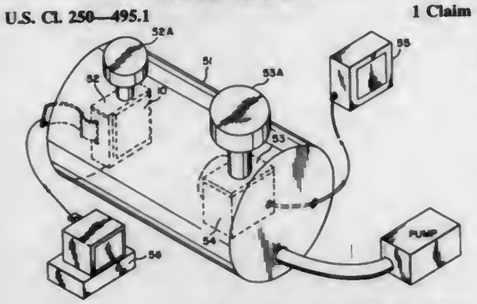
plate, the edges of said plate being equipped with a protective frame projecting from the plane of the surface of the plate at least on the side of the plate on which the image is recorded.

5,576,553

TWO DIMENSIONAL THERMAL IMAGE GENERATOR

Yoshi Adachi, 16214 Watson Clr., Westminster, Calif. 92683

Filed Sep. 23, 1994, Ser. No. 311,189
Int. Cl.[6] H05B 3/26
U.S. Cl. 250—495.1 1 Claim



1. A two dimensional thermal image generator system, comprising:

A cooling chamber for creating a cryogenically cold environment to below 75K. including first and second cooling sinks;

A two dimensional thermal image generator integrated circuit mounted in said chamber at said first cooling sink, for generating multi-frame per second display, each frame having a 65 millisecond period, comprising:

An Alumina base 2×2 inches, having power lines in a first orientation, 100 micrometers separation;

Resistor heating elements deposited on the base using high resistance Silicone material, the resistor thickness being 300 Angstroms and resistivity 1.2 K Ohms, total length/width ratio=20/1, and 10 micrometers width connected by Gold lines forming a two dimensional array, one square inch size, 100×100 micrometer, 256×256 resistor heating elements; and

Power switch connector means for energizing any of said resistor heating elements selectively for less than i microsecond including,

Computer connector means for connecting the resistor heating elements;

Computer means connected to said computer connector means for directing power to the resistor heater elements in accordance with an animation program, said computer means electrically commutating any one of said resistor heating elements connected to selector grid lines and selectively energizing any of said resistor heating elements for less than 1 microsecond;

Observation means in said chamber including a CCD recording camera having a field of view coincident with said two dimensional thermal image generator integrated circuit, and electrical signals output for frame and intensity, said observation means mounted in said chamber at said second cooling sink; and

Readout means external to said cooling chamber receiving thermal output electrical signals from said CCD camera in said chamber, for application as a thermal image generator to provide dynamic thermal image data to a device to be tested;

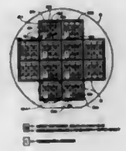
Whereby heat seeking infrared devices connected to said readout means can be evaluated.

5,576,554

WAFER-SCALE INTEGRATED CIRCUIT INTERCONNECT STRUCTURE ARCHITECTURE

Fu-Chieh Hsu, Saratoga, Calif., assignor to Monolithic System Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 787,984, Nov. 5, 1991, abandoned. This application Dec. 10, 1993, Ser. No. 165,563
Int. Cl.[6] H01L 27/02
U.S. Cl. 257—48 4 Claims



1. A semiconductor circuit formed at least partly on a semiconductor substrate and comprising:

a plurality of circuit blocks fabricated on the substrate, each circuit block having substantially the same size and arranged in a grid which extends along first and second directions, each block comprising a plurality of circuit modules;

at least one redundant circuit module in one of the circuit blocks; and

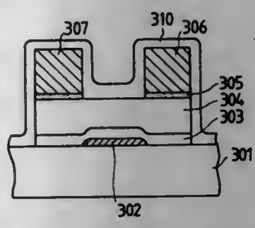
interconnect circuitry including signal lines formed on the substrate alongside the circuit blocks for interconnecting each of the circuit blocks, the interconnect circuitry extending to each circuit block and having at least one programmable connection connecting inside each circuit block, wherein the interconnect circuitry comprises a plurality of interconnect segments along at least one of the first and second directions defined by the grid, each segment including signal lines and redundant signal lines, wherein each segment is connected to an in-line probe pad, whereby testing of segments for defects within and between segments can be carried out by probing of the probe pad.

5,576,555

THIN FILM SEMICONDUCTOR DEVICE

Masato Yamanobe, Machida, and Takayuki Ishii, Hiratsuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 96,861, Jul. 27, 1993, abandoned, which is a continuation of Ser. No. 675,333, Mar. 26, 1991, abandoned. This application May 26, 1995, Ser. No. 451,968
Claims priority, application Japan, Mar. 27, 1990, 2-78403; Mar. 27, 1990, 2-78404; Mar. 27, 1990, 2-78406
Int. Cl.[6] H01L 29/04
U.S. Cl. 257—53 25 Claims



6. A thin film semiconductor device comprising:

a support;

a gate electrode provided on said support;

a gate insulating layer on said gate electrode;

a thin film semiconductor layer provided through said gate insulating layer on said gate electrode;

first and second ohmic layers separated from each other and in contact with said thin film semiconductor to form a gap therebetween;

source and drain electrodes provided in contact with said first and second ohmic layers, respectively; and

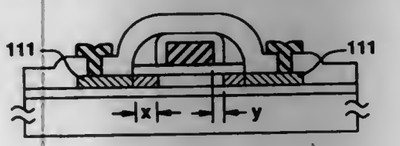
an insulating protective layer provided on said thin film semiconductor layer at the gap, wherein said protective layer includes an impurity identical to one capable of controlling a conductivity of said thin film semiconductor layer for forming an energy band profile so as to collect a major carrier in said thin film semiconductor layer in an inner direction.

5,576,556

THIN FILM SEMICONDUCTOR DEVICE WITH GATE METAL OXIDE AND SIDEWALL SPACER

Yasuhiko Takemura; Hongyong Zhang, and Toshimitsu Konuma, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 378,316, Jan. 25, 1995, which is a continuation of Ser. No. 131,958, Oct. 8, 1993, abandoned. This application Aug. 16, 1994, Ser. No. 291,028
Claims priority, application Japan, Aug. 20, 1993, 5-227891
Int. Cl.[6] H01L 27/092;29/04;29/786
U.S. Cl. 257—69 29 Claims



1. A semiconductor device comprising:

a substrate having an insulting surface; and

a plurality of thin film transistors formed on said insulating surface, at least one of said thin film transistors comprising a silicon semiconductor layer including source, drain and channel regions, metal silicide regions connected to said source and drain regions, a gate insulating layer formed on said semiconductor layer, a gate electrode formed on said gate insulating layer, and an oxide insulating layer comprising an oxide of a material of said gate electrode formed on at least side surfaces of said gate electrode,

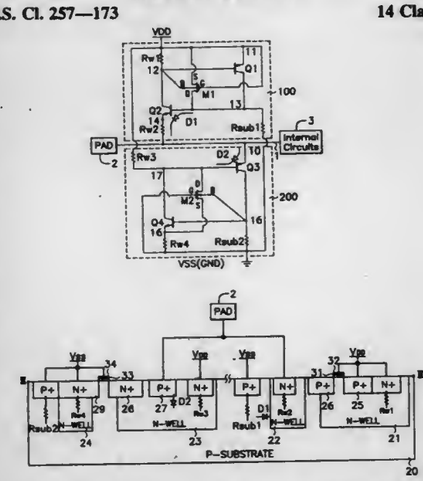
wherein said at least one of the thin film transistors is provided with side spacers adjacent to the side surfaces of said gate electrode with said oxide insulating layer interposed therebetween, and inner edges of said metal silicide regions are substantially aligned with outer edges of said side spacers.

5,576,557

COMPLEMENTARY LVTSCR ESD PROTECTION CIRCUIT FOR SUB-MICRON CMOS INTEGRATED CIRCUITS

Ming-Dou Ker, Tainan Hsien; Chung-Yu Wu, Hsinchu; Hun-Hsien Chang, Taipei Hsien; Chung-Yuan Lee, Chungli, and Joe Ko, Hsinchu, all of Taiwan, assignors to United Microelectronics Corp., Hsinchu, Taiwan

Filed Apr. 14, 1995, Ser. No. 422,225
Int. Cl.[6] H01L 29/74
U.S. Cl. 257—173 14 Claims



1. A circuit arrangement for electrostatic discharge protection of a semiconductor integrated circuit (IC) device, one said circuit being located between each I/O buffering pad that connects to one lead pin with internal circuitry of said IC, said circuit arrangement being connected to both of a pair of power terminals and a conductor connecting said I/O buffering pad and said internal circuitry, said circuit arrangement comprising:

a first SCR having an anode, a cathode, an anode gate and a cathode gate, said anode and anode gate of said first SCR being connected to the first of said pair of power terminals, said cathode of said first SCR being connected to its associated buffering pad, and said cathode gate of said first SCR being connected to the second of said pair of power terminals;

a PMOS transistor having drain, source, gate, and bulk terminals, said gate, source and bulk terminals of said PMOS transistor being connected to the first of said pair of power terminals, said drain terminal of said PMOS transistor being connected to said cathode gate of said first SCR;

a second SCR having an anode, a cathode, an anode gate and a cathode gate, said cathode and cathode gate of said second SCR being connected to the second of said pair of power terminals, said anode of said second SCR being connected to its associated I/O buffering pad, and said anode gate of said second SCR being connected to the first of said pair of power terminals; and

an NMOS transistor having drain, source, gate, and bulk terminals, said gate, source and bulk terminals of said NMOS transistor being connected to the second of said pair of power

terminals, said drain terminal of said NMOS transistor being connected to said anode gate of said second SCR.

5,576,558

PRIMER COMPOSITION CONTAINING POLYISOCYANATE AND PHOSPHATE FOR BONDING TO A HARD-TO-BOND MATERIAL

Hideyuki Matsuda, Fujisawa; Yoshinobu Ohashi, Yokohama, and Masamichi Danjo, Hadano, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Japan

Continuation-in-part of Ser. No. 63,430, May 19, 1993, abandoned. This application Dec. 1, 1994, Ser. No. 352,172
Claims priority, application Japan, May 21, 1992, 4-128828
Int. Cl.[6] C08K *3/32;3/34*
U.S. Cl. 252—182.2 **10 Claims**

1. A primer composition comprising:

(a) at least one non-blocked polyisocyanate component selected from the group consisting of 4,4'-diphenylmethane diisocyanate, tolylene diisocyanate, xylene diisocyanates, hexamethylene diisocyanate, hydrogenated 4,4'-diphenylmethane diisocyanate, hydrogenated tolylene diisocyanates, hydrogenated xylene diisocyanates, isophorone diisocyanate, aromatic aliphatic polyisocyanates, aromatic polyisocyanates, triphenylmethane triisocyanates, and tris(p-isocyanatophenyl) thiophosphate, polymeric diphenylmethane diisocyanates and mixtures thereof; and

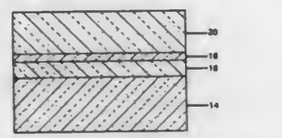
(b) at least one phosphate component selected from the group consisting of aluminum phosphate, zinc phosphate, and aluminum dihydrogentripolyphosphate, said phosphate having silicon dioxide, zinc oxide or a mixture thereof on the surface of the phosphate.

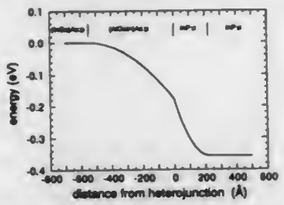
5,576,559

HETEROJUNCTION ELECTRON TRANSFER DEVICE

Gary A. Davis, Fremont, Calif., assignor to INTEVAC, Inc., Santa Clara, Calif.

Filed Nov. 1, 1994, Ser. No. 332,880
Int. Cl.[6] H01L *27/14*
U.S. Cl. 257—191 **21 Claims**





1. A III-V semiconductor heterojunction structure comprising:

a p-type (InGa)As electron source layer of conduction electrons through photogeneration or diffusion transport of electrons;

a depleted p-type III-V semiconductor grading layer formed over the (InGa)As layer;

a depleted n-type InP built-in field layer formed over the semiconductor grading layer;

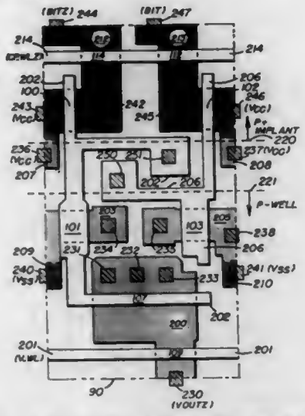
an undoped InP:ø electron collector layer formed over the built-in field layer.

5,576,560

DUAL PORT MEMORY, SUCH AS USED IN COLOR LOOKUP TABLES FOR VIDEO SYSTEMS

Thomas J. Runaldue, San Jose, and William Plants, Santa Clara, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 754,910, Sep. 4, 1991, Pat. No. 5,235,338. This application Jun. 27, 1994, Ser. No. 267,036
Int. Cl.[6] H01L *27/10*
U.S. Cl. 257—208 **8 Claims**



1. On an integrated circuit, a circuit including a first memory cell having a left edge, a right edge, an upper edge, and a lower edge and having an upper part adjacent to said upper edge and a lower part adjacent to said lower edge, wherein the first memory cell comprises:

a substrate of a first doping type;

a first layer of regions including:

a well of a second doping type located in said lower part of said memory cell;

a first region and a second region of the second doping type, said first region extending to the left and upper edges, and said second region extending to the upper and right edges;

a third region, a fourth region, and a fifth region of the first doping type, said third region in said lower part and extending from said left edge, said fourth region in said lower part and extending from said right edge, said fifth region in said lower part and extending from said lower edge;

first, second, third, and fourth polysilicon regions;

said first polysilicon region extending across said first region, said third region and said fifth region; said second polysilicon region extending across said second region and said fourth region;

said third polysilicon region extending from said left edge to said right edge and extending across said fifth region;

said fourth polysilicon region extending from said left edge to said right edge and extending across said first and second regions; and

a first set of contacts including:

a first contact connected to said first polysilicon region;

a second contact connected to said second polysilicon region;

a third contact connected to said first region;

a fourth contact connected to said first region and located astride said left edge;

a fifth contact connected to said first region and located astride said upper edge;

a sixth contact connected to said second region;

a seventh contact connected to said second region and located astride said right edge;

an eighth contact connected to said second region and located astride said upper edge;

a ninth contact connected to said third region;

a tenth contact connected to said fourth region;

an eleventh contact connected to said fourth region and located astride said right edge;

a twelfth contact connected to said fifth region and located astride said lower edge; and

a thirteenth contact connected to said fifth region;

a second layer of regions including:

a first metal region extending from said upper edge and connecting said fifth contact to a fourteenth contact;

a second metal region extending from said upper edge and connecting said eighth contact to a fifteenth contact;

a third metal region extending from said left edge to said right edge and located in said upper part of said memory cell;

a fourth metal region extending from said left edge and connecting said fourth contact to a sixteenth contact;

a fifth metal region connecting said second, third, and ninth contacts;

a sixth metal region connecting said first, sixth, and tenth contacts;

a seventh metal region extending from said right edge and connecting said seventh contact to a seventeenth contact;

an eighth metal region extending from said left edge to said right edge and connecting said eleventh and thirteenth contacts;

a ninth metal region extending from said left edge to said right edge and located in said lower part of said memory cell;

a tenth metal region extending from said lower edge and connecting said twelfth contact to an eighteenth contact; and

a third layer of regions, each region extending from said upper edge to said lower edge, including:

an eleventh metal region connected to said sixteenth contact;

a twelfth metal region connected to said fourteenth contact;

a thirteenth metal region connected to said eighteenth contact;

a fourteenth metal region connected to said fifteenth contact; and

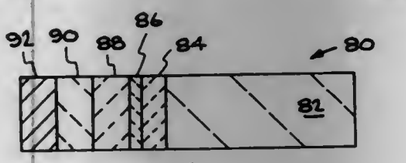
a fifteenth metal region connected to said seventeenth contact.

5,576,561

RADIATION-TOLERANT IMAGING DEVICE

Nicholas J. Colella, Livermore, and Joseph R. Kimbrough, Pleasanton, both of Calif., assignors to United States Department of Energy, Washington, D.C.

Filed Aug. 18, 1994, Ser. No. 291,085
Int. Cl.[6] H01L *27/148;29/768*
U.S. Cl. 257—217 **14 Claims**



1. A CCD imaging device, comprising:

a silicon wafer having a bulk volume and a collection volume;

means for preventing charge created in the bulk volume of the silicon wafer from entering the collection volume of each pixel in the imaging device; a metal-containing layer formed on the collection volume for generating charges from photons; and

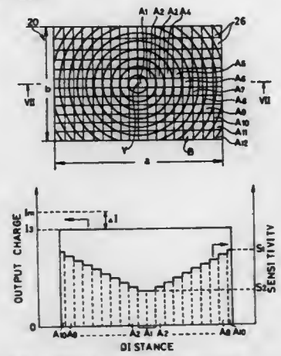
a CCD readout layer formed on the metal-containing layer for detecting the charges in the metal-containing layer.

5,576,562

SOLID-STATE IMAGING DEVICE

Kazuo Konuma, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 463,357
Claims priority, application Japan, Jun. 6, 1994, 6-123423
Int. Cl.[6] H01L *27/148;29/768*
U.S. Cl. 257—232 **14 Claims**



1. A solid-state imaging device comprising:

a plurality of pixels arranged in an array, said plurality of pixels forming an image area of said imaging device;

a plurality of photodetectors for detecting incident light to generate signal charges;

a plurality of charge transfer devices for transferring said signal charges generated in said plurality of photodetectors;

each of said plurality of pixels containing one of said plurality of photodetectors and one of said plurality of charge transfer devices; and

sensitivity of said plurality of photodetectors varies according to placement of said photodetectors in said image area;

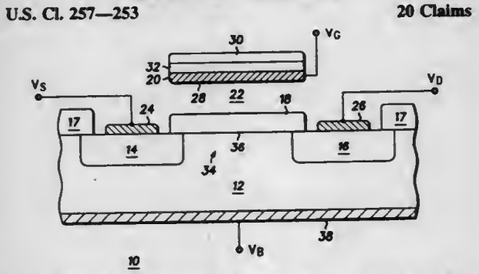
wherein said sensitivity has a distribution that cancels nonuniformity of said incident light in said image area.

5,576,563

CHEMICAL PROBE FIELD EFFECT TRANSISTOR FOR MEASURING THE SURFACE POTENTIAL OF A GATE ELECTRODE IN RESPONSE TO CHEMICAL EXPOSURE

Young S. Chung, Gilbert, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Apr. 24, 1995, Ser. No. 427,389
Int. Cl.[6] H01L *23/58;31/058*
U.S. Cl. 257—253 **20 Claims**



1. A field effect transistor for measuring a change in a surface potential of a gate electrode of said transistor exposed to a fluid, comprising:

a semiconductor substrate having a first surface;

a source region and a drain region disposed at said first surface of said semiconductor substrate;

a channel region defined between said source region and said drain region;

a gate insulating layer overlying said first surface of said semiconductor substrate and disposed between said source region and said drain region;

a gate electrode layer, having a second surface facing said gate insulating layer, disposed above said gate insulating layer and over said channel region, wherein a gap is provided between said gate insulating layer and said gate electrode layer that allows passage of said fluid onto said second surface of said gate electrode layer; and

a heating layer disposed overlying said gate electrode layer wherein said heating layer and said gate electrode layer are controlled by separate voltages.

5,576,564

FERROELECTRIC THIN FILM WITH INTERMEDIATE BUFFER LAYER

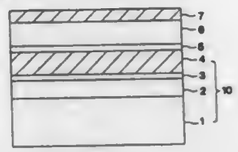
Sakiko Satoh; Hironori Matsunaga; Kenji Nakanishi; Yoshiyuki Masuda, all of Chiba-ken, and Masayoshi Koba, Nara-ken, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

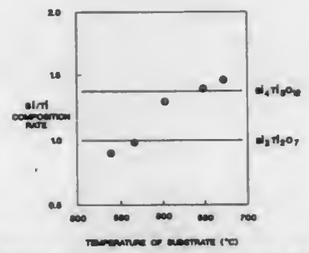
Filed Dec. 28, 1994, Ser. No. 365,542

Claims priority, application Japan, Dec. 28, 1993, 5-350258

Int. Cl.[6] H01L *29/76*

U.S. Cl. 257—295 **6 Claims**





1. A substrate providing a ferroelectric crystal thin film, comprising:

a semiconductor single crystal substrate;

an electrode formed on said substrate;

a buffer layer on said electrode, wherein said buffer layer contains Bi, Ti, and O, and continuously varies in its composition of Bi, Ti and O from $Bi_2Ti_2O_7$ to $Bi_4Ti_3O_{12}$ in a direction from the electrode to the ferroelectric crystal thin film; and

a ferroelectric crystal thin film comprising $Bi_4Ti_3O_{12}$ formed on said buffer layer.

5,576,565

MIS CAPACITOR AND A SEMICONDUCTOR DEVICE UTILIZING SAID MIS CAPACITOR

Seiji Yamaguchi; Tsuguyasu Hatsuda, both of Osaka, and Ichirou Matsuo, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

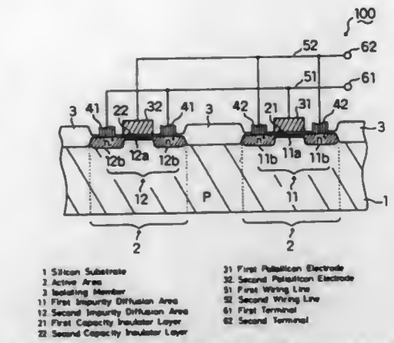
Filed Mar. 30, 1994, Ser. No. 220,282

Claims priority, application Japan, Mar. 31, 1993, 5-073166

Int. Cl.[6] H01L *27/108;29/76;21/70*

U.S. Cl. 257—296 **13 Claims**

1. A MIS capacitor adapted to be interposed between two terminals, i.e., first and second terminals, connected to an electric circuit, comprising:



first and second capacity insulator layers formed on a common semiconductor substrate;

first and second electrically conductive layers respectively formed on said first and second capacity insulator layers:

first and second impurity diffusion areas formed by introducing impurities of the same electrically conductive type, into those portions of said semiconductor substrate which are located under said first and second capacity insulator layers;

a first wiring line which connects said first electrically conductive layer and said second impurity diffusion area to said first terminal; and

a second wiring line which connects said second electrically conductive layer and said first impurity diffusion area to said second terminal.

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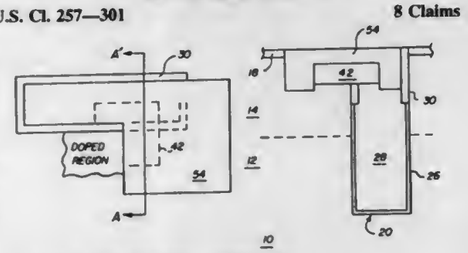
SEMICONDUCTOR TRENCH CAPACITOR CELL HAVING A BURIED STRAP

Donald M. Kenney, Shelburne, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 13, 1995, Ser. No. 421,714

Int. Cl.[6] H01L *27/108*

U.S. Cl. 257—301 **8 Claims**



1. A semiconductor device, comprising:

a semiconductor substrate;

a first trench extending from an upper trench level into said substrate, said trench having a first insulating portion with a conductive material situated therein;

a doped region disposed adjacent said trench below said upper trench level; and

a second trench extending into said doped region and partially intersecting said first trench, said second trench having a first conductive strap adjacent both said conductive material within said first trench and said doped region, said second trench having a second insulation portion at least partially filling said second trench and positioned over and adjacent said first conductive strap of said second trench.

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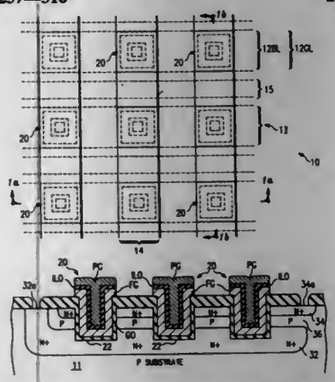
VERTICAL MEMORY CELL ARRAY AND METHOD OF FABRICATION

Kiyoshi Mori, San Antonio, Tex., assignor to Texas Instruments Incorporated

Continuation of Ser. No. 996,354, Dec. 22, 1992, abandoned, which is a continuation of Ser. No. 805,345, Dec. 9, 1991, abandoned, which is a division of Ser. No. 546,490, Jun. 28, 1990, Pat. No. 5,071,782. This application Feb. 22, 1994, Ser. No. 200,834

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—316 **20 Claims**



1. A vertical memory cell array, using vertical floating gate FET memory cells, formed in a substrate of a first conductivity type, comprising:

multiple rows of buried drain bitlines of a second conductivity type and a certain width formed in the substrate to form a continuous conductive path along each row;

multiple rows of buried source groundlines of a second conductivity type, each formed substantially under a respective drain bitline to form a continuous conductive path along each row;

each drain bitline and source groundline being separated to define a channel layer with a selected channel length of one doping density to form a continuous conductive path along each row;

for each row, multiple trench areas of a selected configuration formed in the substrate, each trench having substantially vertical sidewalls and a substantially horizontal bottom, the sidewalls and the bottom being contiguous and defining an opening down into the substrate of a width less than the certain width of the drain line and extending through said drain and channel bitline regions and at least partially into said source bitline region, thereby defining corresponding drain and channel regions in the sidewalls of each trench and source regions at least in the bottom of each trench;

for each trench, a floating gate conductor insulatively disposed vertically into the opening of said trench, and therefore over the associated channel region, such that said vertical floating gate is capacitively coupled to said channel region in four sidewalls of the trench, each floating gate conductor forming an upwardly opening cavity having a horizontal bottom surface, each floating gate conductor having four substantially vertical side walls contiguous with each of substantially horizontal bottom walls; and

multiple columns of program gate wordline conductors insulatively disposed over respective columns of trenches and extending down into said cavities, and therefore over respective floating gates including said horizontal bottom walls of said floating gates.

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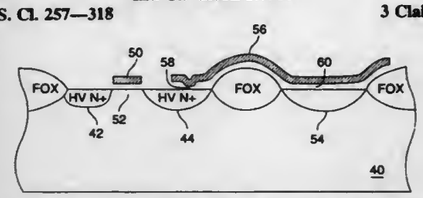
SINGLE-TRANSISTOR ELECTRICALLY-ALTERABLE SWITCH EMPLOYING FOWLER NORDHEIM TUNNELING FOR PROGRAM AND ERASE

Vikram Kowshik, Fremont, Calif., assignor to Actel Corporation, Sunnyvale, Calif.

Filed Jan. 18, 1995, Ser. No. 374,494

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—318 **3 Claims**



1. A one-transistor, electrically-alterable switch in combination with a pass transistor, including:

a first MOS transistor having a drain, a gate, and a source;

a pass transistor having a drain, a source and a floating gate, said floating gate capacitively coupled to the source of said first MOS transistor through a tunneling dielectric, said drain and source of said pass transistor connected to user-programmable circuit paths in a user-programmable circuit;

an erase electrode capacitively coupled to said floating gate through a coupling dielectric; and

wherein said user-programmable circuit paths provide one of the functions of defining the function of circuit elements and of defining circuit paths within said user-programmable circuit.

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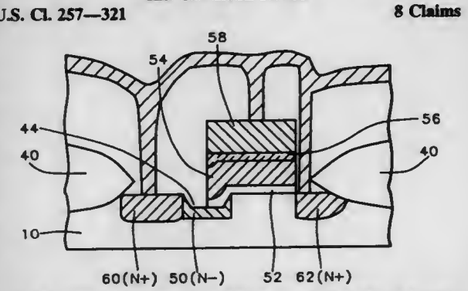
ELECTRICALLY PROGRAMMABLE AND ERASABLE MEMORY DEVICE WITH DEPRESSION IN LIGHTLY-DOPED SOURCE

Sheng-Hsing Yang, Hsinchu, and Jyn-Kuang Lin, I-Lan, both of Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan

Division of Ser. No. 239,364, May 6, 1994, Pat. No. 5,424,233. This application Apr. 24, 1995, Ser. No. 427,208

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—321 **8 Claims**



1. An improved electrically programmable erasable read only memory device with enhanced source side injection and write/erase operations comprising:

a semiconductor substrate having the background dopant of a first type impurity;

spaced source and drain regions of a second opposite conductivity type in said substrate separated by a channel region;

a lightly doped source region, adjacent to the source region, disposed between the source region and drain region;

a channel region disposed between said lightly doped source region and said drain region;

a tunnel oxide on said substrate overlying at least said channel region and partially overlying said lightly doped drain region;

a floating gate region overlying said channel region and partially overlying said lightly doped source region;

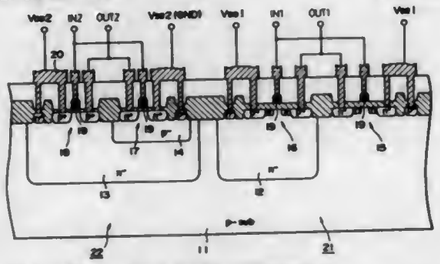
a gate insulation layer over said floating gate region;
a control gate region over said floating gate;
a surface depression over said lightly doped source region;
a portion of said tunnel oxide extending into said depression;
and a portion of said floating gate extending into said depression.

5,576,570

SEMICONDUCTOR DEVICE HAVING CMOS CIRCUIT

Nobuhiko Ohsawa; Shinichi Ito, and Hideshi Abe, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 291,496, Aug. 17, 1994, abandoned.
This application May 10, 1995, Ser. No. 438,366
Claims priority, application Japan, Aug. 19, 1993, 5-228298
Int. Cl.[6] H01L 29/76;29/94;31/062;29/00
U.S. Cl. 257—369 9 Claims



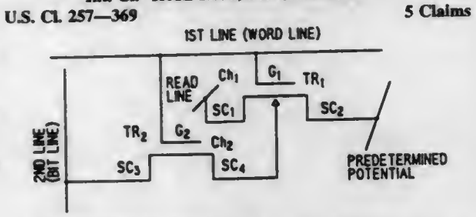
1. A CMOS integrated circuit, comprising:
a semiconductor substrate of first conductivity type having formed therein a first CMOS circuit and a second CMOS circuit;
said first CMOS circuit comprising a first well of second conductivity type formed in said semiconductor substrate, a first MOS transistor of second conductivity type having second conductivity type source and drain regions formed in said substrate, and a second MOS transistor of first conductivity type having first conductivity type source and drain regions formed in said first well and directly adjacent said first transistor outside of said first well;
said second CMOS circuit comprising a second well of second conductivity type formed in said semiconductor substrate, a third well of first conductivity type formed in said second well, a third MOS transistor of first conductivity type having first conductivity type source and drain regions formed in said second well, and a fourth MOS transistor of second conductivity type having second conductivity type source and drain regions formed in said third well;
said first well lying directly adjacent said second well without any MOS transistor therebetween, and said first well lying between said first MOS transistor and said second well;
a gate of the first MOS transistor being connected to a gate of the second MOS transistor, one end of each channel of the first and second MOS transistors being connected via respective drain regions, gates of said third and fourth MOS transistors being connected, and one end of each channel of said third and fourth MOS transistors being connected via respective drain regions; and
the first and second MOS transistors of the first CMOS circuit being connected in series between a relatively high positive voltage and a negative voltage, and the third and fourth MOS transistors of the second CMOS circuit being connected in series between a relatively low positive voltage lower than said high positive voltage and a reference potential higher than said negative voltage.

5,576,571

SEMICONDUCTOR MEMORY CELL HAVING INFORMATION STORAGE TRANSISTOR AND SWITCHING TRANSISTOR

Yutaka Hayashi, and Takeshi Matsushita, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 420,068, Apr. 11, 1995, Pat. No. 5,506,436, which is a division of Ser. No. 164,812, Dec. 10, 1993, Pat. No. 5,428,238. This application Oct. 11, 1995, Ser. No. 541,173
Claims priority, application Japan, Dec. 10, 1992, 4-352200; May 7, 1993, 5-130130; Sep. 7, 1993, 5-246264
Int. Cl.[6] H01L 29/76;29/94;31/062;31/113
U.S. Cl. 257—369 5 Claims



1. A semiconductor memory cell comprising:
an information storage transistor of a first conductivity type, comprising a first semiconductor channel forming region; first and second conductive regions each forming a rectifier junction in contacting relationship with a surface region of said first semiconductor channel forming region; and a first conductive gate disposed above said first channel forming region, with a first barrier layer interposed therebetween, in such a manner as to bridge said first conductive region and said second conductive region, and
a switching transistor of a second conductivity type opposite to the first conductivity type, comprising a second semiconductor channel forming region; third and fourth conductive regions each forming a rectifier junction in contacting relationship with a surface region of said second semiconductor channel forming region; and a second conductive gate disposed above said second semiconductor channel forming region, with a second barrier layer interposed therebetween, in such a manner as to bridge said third conductive region and said fourth conductive region, wherein
said first conductive gate of said information storage transistor and said second conductive gate of said switching transistor are connected to a first memory-cell-selection line;
said fourth conductive region of said switching transistor is connected to said first semiconductor channel forming region of said information storage transistor;
said third conductive region of said switching transistor is connected to a second memory-cell-selection line, and
said first conductive region of said information storage transistor is connected to a read line.

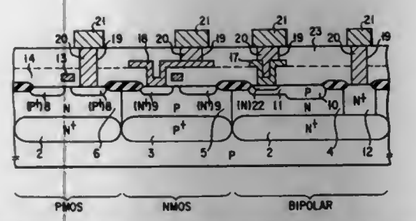
5,576,572

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND METHOD OF MANUFACTURING THE SAME

Takeo Maeda, Tokyo, and Hiroshi Gojohbori, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 45,125, Apr. 12, 1993, abandoned.
This application Apr. 29, 1994, Ser. No. 235,214
Claims priority, application Japan, Apr. 13, 1992, 4-119804
Int. Cl.[6] H01L 29/76
U.S. Cl. 257—378 9 Claims

1. A semiconductor integrated circuit device comprising:
a semiconductor substrate;
a bipolar transistor formed on said substrate and including an emitter region;
a MOS transistor formed on said semiconductor substrate and including n-type source and drain regions;



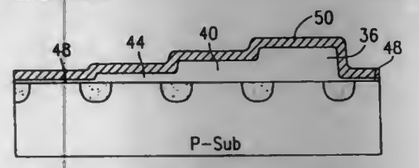
an emitter electrode formed on the emitter region of said bipolar transistor and made of polysilicon doped with a first n-type impurity having a small diffusion coefficient;
a polysilicon wired layer formed on one of said n-type source and drain regions and doped with a second n-type impurity, said second n-type impurity removing undesired native oxide films on the semiconductor substrate, said polysilicon wired layer being doped with the second n-type impurity to the exclusion of the first n-type impurity;
a high melting-point metal film formed on the surface of said emitter electrode and said polysilicon wired layer, said film being a silicide film selected from the group consisting of tungsten silicide, molybdenum silicide, titanium silicide and tantalum silicide; and
a barrier metal disposed between said silicide film and said polysilicon wired layer.

5,576,573

STACKED CVD OXIDE ARCHITECTURE MULTI-STATE MEMORY CELL FOR MASK READ-ONLY MEMORIES

Kuan-Cheng Su, Taipei, and Shing-Ren Sheu, Taoyuan, both of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed May 31, 1995, Ser. No. 454,701
Int. Cl.[6] H01L 29/76;29/94;31/062;31/113
U.S. Cl. 257—391 11 Claims



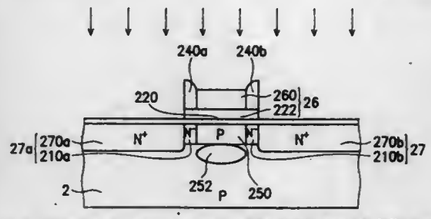
1. A multi-state memory cell for a mask ROM device on a semiconductor silicon substrate, said memory cell comprising:
a plurality of source/drain region strips, each one of said plurality of source/drain region strips having a longitudinal axis extending along a first direction on said substrate and constituting a bit line for said mask ROM device;
a plurality of gate oxide layer strips formed over said substrate, each one of said plurality of gate oxide layer strips having a longitudinal axis extending along a second direction perpendicular to said first direction, the regions underneath each of said gate oxide layer strips and between two neighboring bit lines constituting the transistor channel region for said memory cell; and
a plurality of gate electrodes each formed on each of said gate oxide layers strips, each one of said plurality of gate electrodes having a longitudinal axis extending along said second direction;
wherein each of said gate oxide layer strips above said transistor channel region have a plurality of selected thicknesses arranged in a differential series, and
wherein each said transistor channel region, together with a corresponding one of a neighboring source/drain pair, corresponding gate oxide layer strips, and corresponding gate electrode, constitute one of said memory cells having a variable threshold voltage among said selected thicknesses arranged in a differential series to allow for storage of a multi-bit equivalent of memory content for said memory cell.

5,576,574

MOSFET WITH FULLY OVERLAPPED LIGHTLY DOPED DRAIN STRUCTURE AND METHOD FOR MANUFACTURING SAME

Gary Hong, Hsinchu, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Jun. 30, 1995, Ser. No. 497,521
Int. Cl.[6] H01L 29/76;21/265
U.S. Cl. 257—408 8 Claims



1. A method for manufacturing a MOSFET with a fully overlapped lightly doped drain structure which is manufactured on a first type of semiconductor material, the method comprising the steps of:
doping a second type of dopant into the first type of semiconductor material to form a second type of lightly doped region;
sequentially forming a gate insulator and a first conductive layer on the first type of semiconductor material;
forming a masking layer on the first conductive layer, the masking layer being formed with an opening defining a channel region of the MOSFET;
forming sidewall spacers on sidewalls of the opening;
doping a first type of dopant into the second type of lightly doped region to form the channel region by using the masking layer and the sidewall spacers as a mask;
forming a second conductive layer on the first conductive layer and between the sidewall spacers;
removing the masking layer;
removing a portion of the first conductive layer not positioned under the second conductive layer and the sidewall spacers so that the second conductive layer and a remainder of the first conductive layer define a gate of the MOSFET; and
doping a second type of dopant into the first type of semiconductor material by using the gate as a mask to form a second type of heavily doped regions;
whereby the second type of heavily doped regions combined with the second type of lightly doped regions under the gate form a source and a drain, respectively, of the MOSFET.

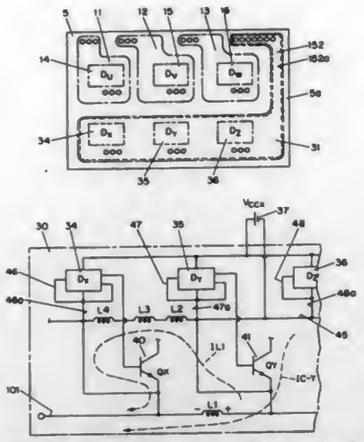
5,576,575

SEMICONDUCTOR CONVERSION DEVICE

Noriho Terasawa, Nagano, Japan, assignor to Fuji Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 154,621, Nov. 18, 1993, abandoned.
This application Dec. 6, 1995, Ser. No. 567,796
Claims priority, application Japan, Nov. 18, 1993, 4-307397
Int. Cl.[6] H01L 29/00
U.S. Cl. 257—503 17 Claims

1. A semiconductor conversion device having a bridge circuit configuration, which comprises:
a main circuit having two branches, an upper arm and a lower arm;
at least one semiconductor switching element contained within each of the lower-arm and upper-arm circuit branches;
a drive-circuit wiring substrate having an insulation layer; and



a drive-circuit network mounted on the drive-circuit wiring substrate, the drive-circuit network having a first common ground-potential line, and individual component drive circuits corresponding to the respective semiconductor switching elements for controlling switching operations, the individual component drive circuits being formed on wiring patterns on the drive-circuit wiring substrate, each individual component drive circuit having a plurality of ground-potential points, with each of the plurality of ground-potential points within each individual component drive circuit being connected to a respective second common ground-potential line which is connected to the first common ground-potential line, so that, in device operation, each of the plurality of ground-potential points within each individual component drive circuit is at the same respective potential;

wherein the wiring patterns for the component drive circuits associated with the upper-arm circuit branch are positioned relative to the wiring patterns for the component drive circuits associated with the lower-arm circuit branch such that any pair of the wiring patterns for the component drive circuits, consisting of a first wiring pattern for the component drive circuit associated with one of the upper-arm circuit branches and a second wiring pattern for the component drive circuit associated with one of the lower-arm circuit branches, do not mutually oppose each other with the first and the second wiring patterns being separated by the insulation layer of the drive-circuit wiring substrate.

5,576,576

ABOVE VIA METAL-TO-METAL ANTIFUSE

Frank W. Hawley, Campbell, and Yeouchung Yen, San Jose, both of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

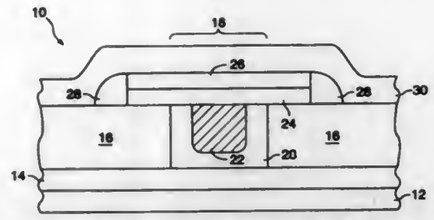
Continuation of Ser. No. 122,747, Sep. 17, 1993, abandoned, which is a division of Ser. No. 971,737, Nov. 5, 1992, Pat. No. 5,301,232. This application Jan. 24, 1995, Ser. No. 377,496

Int. Cl.[6] H01L *29/04;27/10;29/00*

U.S. Cl. 257—530 **26 Claims**

1. An above-via antifuse disposed in a microcircuit, said antifuse comprising:

a first metal interconnect layer disposed over an electrically insulating portion of the microcircuit;



an interlayer dielectric layer disposed over said first metal interconnect layer, said interlayer dielectric layer having an upper surface, said interlayer dielectric layer having an antifuse via formed therein to expose said first metal interconnect layer;

a metal layer disposed in said antifuse via in electrical contact with said first metal interconnect layer and having a cup-like shape with a conductive rim;

an electrically non-conductive planarizing material disposed in a volume of said antifuse via not occupied by said metal layer, said conductive rim of said metal layer, said planarizing material and said upper surface of said interlayer dielectric layer forming a substantially planar surface;

an antifuse material layer disposed over said substantially planar surface and in contact with said conductive rim of said metal layer and said planarizing material; and

a second metal interconnect layer disposed over and in contact with said antifuse material layer.

5,576,577

MULTI-LAYER LEAD-FRAME FOR A SEMICONDUCTOR DEVICE

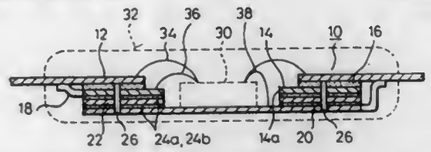
Toshikazu Takenouchi; Kuniyuki Hori, and Mitsuharu Shimizu, all of Nagano, Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan

Continuation of Ser. No. 248,175, May 24, 1994, abandoned. This application May 4, 1995, Ser. No. 434,733

Claims priority, application Japan, May 24, 1993, 5-121328

Int. Cl.[6] H01L *23/495*

U.S. Cl. 257—672 **5 Claims**



1. A multi-layer lead-frame for a semiconductor device comprising:

a signal layer made of a metal strip having a signal pattern therein and including a plurality of lead lines;

a first metal layer;

an insulation sheet adhering and laminating said first metal layer to a surface of said signal layer;

a second metal layer;

a ceramic plate, comprising a sintered body consisting essentially of barium titanate and strontium titanate and a ceramic base material and excluding any polyimide, having opposite major surfaces and disposed between said first metal layer and said second metal layer;

respective metallic films formed on the opposite major surfaces of said ceramic plate; and

electrically conductive adhesive material disposed between and adhering said respective metallic films formed on said opposite major surfaces of said ceramic plate to said first metal layer and said second metal layer, respectively.

5,576,578

HIGH VOLTAGE INSULATING DISK

Wolfgang Führer, Herzogenaurach; Olaf Niermeyer, Möhrendorf, and György Papp, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, München, Germany

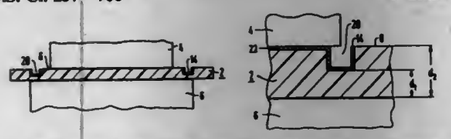
PCT No. PCT/DE91/00973, § 371 Date May 16, 1994, § 102(e) Date May 16, 1994, PCT Pub. No. WO93/10560, PCT Pub. Date May 27, 1993

PCT Filed Dec. 13, 1991, Ser. No. 244,073

Claims priority, application Germany, Nov. 15, 1991, 9114268 U

Int. Cl.[6] H01L *23/10;23/34*

U.S. Cl. 257—706 **9 Claims**



1. An insulating disk for arrangement between a semiconductor and a heat sink, the insulating disk:

being composed of electrically insulating and thermally conducting material; and

having one side provided with a circumferential groove defining inner and outer walls, the walls being conductively coated, and the circumferential groove being disposed such that a cross-sectional area enclosed by the outer wall of the groove is larger than the cross-sectional area of a contact surface of at least one of the semiconductor and the heat sink.

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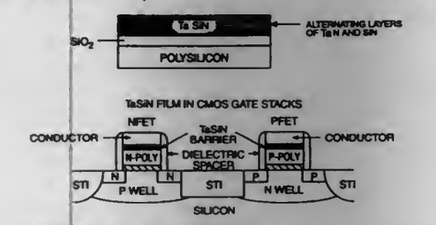
TASIN OXYGEN DIFFUSION BARRIER IN MULTILAYER STRUCTURES

Paul D. Agnello, Wappingers Falls; Cyril Cabral, Jr., Ossining; Alfred Grill, White Plains; Christopher V. Jahnes, Monsey; Thomas J. Licata, Lagrangeville, and Ronnen A. Roy, Briarcliff Manor, all of N.Y., assignors to International Business Machines Corporation

Filed Jan. 12, 1995, Ser. No. 371,627

Int. Cl.[6] H01L *29/43*

U.S. Cl. 257—751 **4 Claims**



1. A multilayer structure comprising:

a conducting base layer having a top surface, and a refractory metal-silicon-nitrogen layer adhered to the top surface of said conducting base layer, said refractory metal-silicon-nitrogen layer comprises alternating sub-layers of refractory metal-nitrogen and silicon-nitrogen each having a thickness of less than about 10 nm.

5,576,580

DC POWER SUPPLY CIRCUIT

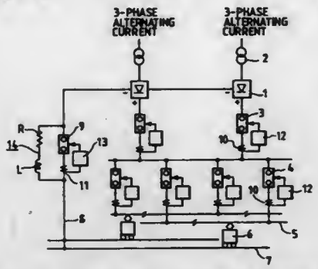
Minoru Hosoda; Toru Yoshida; Shigetoshi Ouchi; Haruo Honda; Yasunobu Fujita; Fumihisa Ichikawa, and Kouya Yamada, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,764

Claims priority, application Japan, Dec. 28, 1993, 5-334917

Int. Cl.[6] H02J *9/06*

U.S. Cl. 307—42 **10 Claims**



1. A dc power supply circuit, connecting a plurality of first dc circuit breakers to a semi-conductor converter and returning again an electric line thereof to said semi-conductor converter through a dc driving unit connected to said first dc circuit breakers, comprising:

a second dc circuit breaker of a larger interruption capacity than said dc circuit breakers; and

current decreasing means connected in parallel with said second dc circuit breaker;

wherein said plurality of first dc circuit breakers and said second dc circuit breaker are respectively constructed so that when said second dc circuit breaker is operated on receipt of an accident current so as to interrupt flow of the accident current therethrough, the accident current flows through said current decreasing means, thereby decreasing the accident current such that at least one of said plurality of first circuit breakers then operates to interrupt the decreased accident current flowing through the dc power supply circuit.

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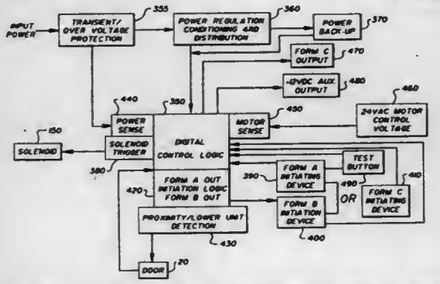
DOOR CONTROL SYSTEM AND RELEASE MECHANISM

Nelson A. Iannuzzi, and George M. Mehalshick, both of Hazleton, Pa., assignors to Solid State Securities, Inc., Hazleton, Pa.

Filed Nov. 17, 1993, Ser. No. 153,590

Int. Cl.[6] H01H *37/00*

U.S. Cl. 307—117 **8 Claims**



1. An electronic circuit for controlling a mechanical release mechanism for a rolling fire door comprising:

a mechanical release mechanism for releasing the rolling fire door when a condition in an outside environment requires that the door be released;

digital logic means for processing signals which are indicative of the condition in the outside environment and for providing a trigger that will actuate the mechanical release mechanism in response to the condition, thereby releasing the rolling fire door;

power means for providing regulated power to the electronic circuit in response to input power, the regulated power being used to operate the digital logic means; and

power backup means interfaced to the power means for providing the regulated power for a predetermined time to the digital logic means in the event of an input power failure so that the digital logic means can be operated for the predetermined time during the input power failure and so that the fire door can be released in response to the condition in the absence of input power.

5,576,582

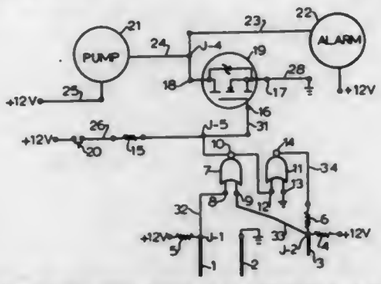
AUTOMATIC PUMP CONTROL

Paul S. White, 3402 Hwy. 58, Swansboro, N.C. 28584

Filed Sep. 15, 1994, Ser. No. 306,378

Int. Cl.[6] F04B *49/06;* **B63B** *13/00*

U.S. Cl. 307—118 **11 Claims**



1. An automatic control system for controlling the level of water at a location at which the conditions permit such level to be controlled by pumping comprising:

(a) means providing a positive voltage source and a ground potential;

(b) an electrically operated pump having one side connected to said positive voltage source and an opposite side connectable to said ground potential;

(c) a transistor device having a drain terminal connected to said opposite side of said pump, a source terminal connected to said ground potential and a gate terminal operable when connected to said positive voltage source to cause an electrical path to be established between said drain and source terminals thereby providing means by which said opposite side of said pump may be connected to said ground potential and said pump to operate;

(d) a first electrically conductive probe extending between upper and lower ends and having its lower end mounted so as to contact the water whose level is being controlled at some predetermined low level;

(e) a second electrically conductive probe extending between upper and lower ends, laterally spaced from said first probe, having its lower end mounted so as to contact the water whose level is being controlled at said low level and having its upper end connected to said ground potential;

(f) a third electrically conductive probe extending between upper and lower ends, laterally spaced from said second probe and having its lower end mounted so as to contact the water whose level is being controlled at some predetermined high level higher than said low level;

(g) first and second integrated logic devices each having first and second input terminals and an output terminal, each said logic device capable of having its output terminal assume a high state depending on both of its respective input terminals assuming a low state and being inoperative to produce such output terminal high state when such condition does not prevail;

(h) said upper end of said first probe connected by a first connection through a first current limiting resistor to said positive voltage source and through a second connection to said first input terminal of said first logic device;

(i) a third connection between said output terminal of said first logic device and said gate terminal of said transistor device;

(j) a fourth connection between said output terminal of said first logic device and said first input terminal of said second logic device;

(k) a fifth connection between said second input terminal of said second logic device and said ground potential;

(l) a sixth connection between said output terminal of said second logic device and said upper end of said third probe and extending through a second current limiting resistor;

(m) a seventh connection between said second input terminal of said first logic device and said upper end of said third probe;

(n) an eighth connection between said upper end of said third probe through a third current limiting resistor and said positive voltage source; and

(o) the values of said resistors being selected such that:

(i) when said water level reaches the lower end of said first and second probes, said positive voltage source is grounded through second probe and said first input terminal of said first logic device is brought to a low state;

(ii) when said water level reaches the lower end of said third probe said voltage source is further grounded through said second probe, the second said input terminal of said first logic device is brought to a low state, the output terminal of said first logic device is brought to a high state, said gate terminal of said transistor device assumes said positive voltage and said pump is connected to said ground potential through said drain and source terminals and is caused to operate;

(iii) when said water level recedes below the lower end of said third probe but above the lower end of said first and second probes, said second logic device acts to maintain said second input terminal of said first logic device in a low state and thereby maintains said pump in operation; and

(iv) when said level drops below the lower ends of said first and second probes said gate terminal is deenergized and said pump stops operating.

5,576,583

SWING-TYPE ACTUATOR

Teruo Umehara, Hanyu, Japan, assignor to Hitachi Metals, Ltd., Tokyo, Japan

Division of Ser. No. 53,662, Apr. 29, 1993, Pat. No. 5,459,359. This application Apr. 28, 1995, Ser. No. 431,321

Claims priority, application Japan, Apr. 30, 1992, 4-11240; Apr. 30, 1992, 4-11241

Int. Cl.[6] H02K *41/02;* **G11B** *5/55*

U.S. Cl. 310—13 **13 Claims**

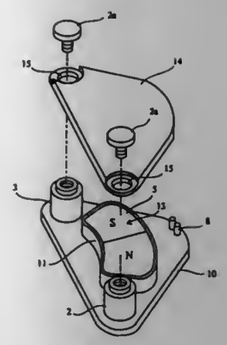
1. A swing-type actuator comprising:

(a) an upper yoke made of a ferromagnetic material;

(b) a permanent magnet assembly having a lower yoke of ferromagnetic material opposing said upper yoke and having a flat permanent magnet attached to said lower yoke;

(c) a base member of thermoplastic resin having a hold portion on an upper surface for holding said permanent magnet assembly and support portions on said upper surface for fixing said upper yoke in relation to said permanent magnet assembly to define a magnetic gap therebetween, said hold portion and said support portions being integrally provided on the upper surface of said base member and said permanent magnet assembly being integrally molded to said base member inside said hold portion; and

(d) a swingable arm adapted to receive a movable coil at one end and a function member at the other end, said movable coil being swimgable in said magnetic gap.



5,576,584

STATOR OF A VEHICULAR ALTERNATING CURRENT GENERATOR AND ITS MANUFACTURING METHOD

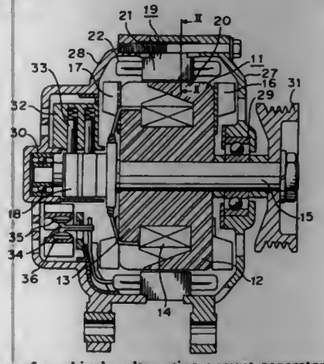
Katsuhiko Kusumoto; Hiroki Katayama, and Katsumi Adachi, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 12, 1994, Ser. No. 273,707

Claims priority, application Japan, Mar. 16, 1994, 6-045759

Int. Cl.[6] H02K *15/12;* **H01F** *27/32*

U.S. Cl. 310—45 **5 Claims**



1. A stator of a vehicular alternating current generator comprising:

a stator core having slots;

a stator coil wound in the slots of the stator core; and

a resin having a peak or peaks of a loss tangent, which is a value of a loss elastic modulus divided by a storage elastic modulus in a temperature range of from 100° C. to 250° C. disposed among coil strands of the stator coil and/or between the stator core and the stator coil.

5,576,585

METHODS AND APPARATUS FOR PRODUCING DYNAMO-ELECTRIC MACHINE ARMATURES WITH IMPROVED BALANCE

Giuseppe Cardini; Federico Sbalchiero, and Sabatino Luciani, all of Florence, Italy, assignors to Axis USA, Inc., Tampa, Fla.

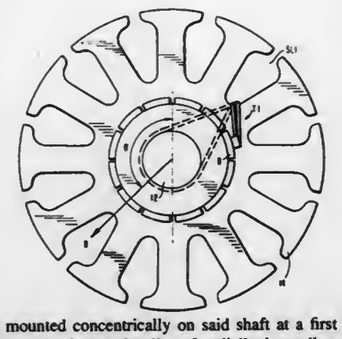
Continuation-in-part of Ser. No. 113,852, Aug. 30, 1993. This application Feb. 7, 1994, Ser. No. 192,719

Int. Cl.[6] H02K *15/09;3/12*

U.S. Cl. 310—51 **8 Claims**

1. An armature for a dynamo-electric machine comprising:

a shaft;



a core mounted concentrically on said shaft at a first location, said core having a plurality of radially inwardly projecting slots aligned with said shaft and spaced from one another around said shaft;

a commutator mounted concentrically on said shaft at a different second location, said commutator having a plurality of electrically conductive regions that are electrically insulated from one another and spaced from one another around said shaft;

a plurality of normal coils of wire wound on said core by having legs of each of said normal coils disposed in spaced slots of said core, each of said normal coils having at least a start lead and a finish lead, the start and finish leads of each of said normal coils being connected to different ones of said regions; and

a turn of wire wound on said core by having legs of said turn of wire disposed in at least one of said slots, said turn of wire beginning and ending at a predetermined one of said regions without extending to any others of said regions between said beginning and ending.

5,576,586

ELECTRIC MOTOR, PARTICULARLY A COMMUTATOR MOTOR SEALED TO BE LIQUID-TIGHT, FOR DRIVING AN AXIALLY FLANGE-MOUNTED HYDRAULIC PUMP

Rainer Blumenberg, Oldenburg, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main,, Germany

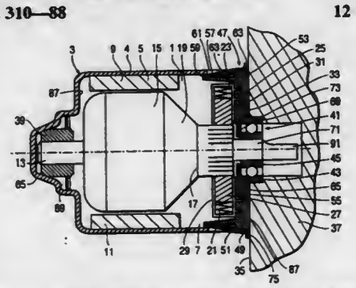
PCT No. PCT/DE93/00993, § 371 Date Oct. 4, 1994, § 102(e) Date Oct. 4, 1994, PCT Pub. No. WO94/10738, PCT Pub. Date May 11, 1994

PCT Filed Oct. 20, 1993, Ser. No. 256,071

Claims priority, application Germany, Oct. 24, 1992, 42 35 962.7

Int. Cl.[6] H02K *5/10;5/00*

U.S. Cl. 310—88 **12 Claims**



1. An electric motor and drive housing assembly, comprising

(a) a motor housing having an open end;

(b) a drive housing having an outer surface; said motor housing being affixed to said drive housing such that said opening of said motor housing faces said outer surface of said drive housing; said drive housing having a bearing recess;

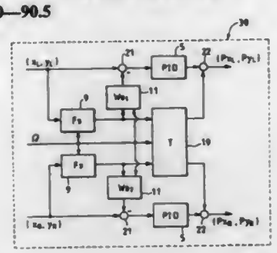
(c) a rotor accommodated in said motor housing; said rotor having a rotor shaft supported in said motor housing and extending through said opening;
(d) a commutator mounted on said rotor shaft in a region of said opening;
(e) a brush carrier plate made of an insulating material and being attached directly to said motor housing and closing said opening; said brush carrier plate having
(1) an end face being in engagement with said outer surface of said drive housing; said brush carrier plate forming an end plate of said motor housing and a liquid-tight seal between said motor housing and said drive housing; and
(2) a centering recess provided in said end face;
(f) brushes mounted on said brush carrier plate for cooperation with and shifting movement with respect to said commutator; and
(g) a shaft bearing having inner and outer bearing rings; said outer bearing ring being seated in said centering recess of said brush carrier plate and in said bearing recess of said drive housing.

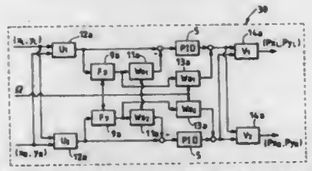
5,576,587

HIGH-SPEED ROTOR AND CONTROLLER FOR CONTROLLING MAGNETIC BEARINGS USED THEREFOR

Naohiko Takahashi, Ibaraki-ken; Minoru Hiroshima, Ushiku, and Yasuo Fukushima, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,742
Claims priority, application Japan, Mar. 18, 1994, 6-048278
Int. Cl.[6] H02K *7/09*
U.S. Cl. 310—90.5 **8 Claims**





1. A high-speed rotor assembly comprising a rotor, active magnetic bearings for supporting the rotor, displacement detection means for detecting a displacement of said rotor, and magnetic bearing control means for controlling said active magnetic bearings, wherein said magnetic bearing control means comprises filter means which picks up a rotational speed synchronous component of said rotor from a displacement in a complex domain detected by said displacement detection means, mode decomposing means which decomposes the output of said filter means into a N-th order mode vibration and a (N+1)-th order mode vibration, and means that generates a control signal such that the phase of said displacement in a complex domain is varied according to the rotational speed in which the displacement is detected by said displacement detection means for at least either the N-th order mode or the (N+1)-th order mode decomposed by said mode decomposing means.

5,576,588

ROTATING MACHINE WITH PERMANENT MAGNET RETAINING PORTION PROVIDED AT INTERNAL GEAR COVERING PLATE

Satoshi Moribayashi; Shuzou Isozumi, and Takeo Gotou, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 207,199, Mar. 8, 1994, Pat. No. 5,481,148.
This application Jun. 7, 1995, Ser. No. 478,649
Claims priority, application Japan, Mar. 26, 1993, 5-68215
Int. Cl.[6] H02K *1/18*
U.S. Cl. 310—154 **1 Claim**



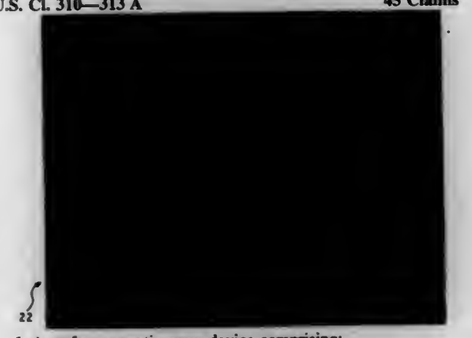
1. A permanent magnet type rotating machine comprising:
a cylindrical yoke;
a plurality of permanent magnets installed on an inner periphery of the cylindrical yoke;
a rotor rotatably installed at an inner peripheral portion of the plurality of permanent magnets;
a planetary gear speed reducing mechanism for reducing a speed of the rotor;
a packing installed at an internal gear of the planetary gear speed reducing mechanism; and
a retaining portion provided at the packing to elastically retain the plurality of permanent magnets in an axial direction.

5,576,589

DIAMOND SURFACE ACOUSTIC WAVE DEVICES

David L. Dreifus, and Michelle L. Hartsell, both of Cary, N.C., assignors to Kobe Steel USA, Inc., Durham, N.C.

Filed Oct. 13, 1994, Ser. No. 322,710
Int. Cl.[6] H03H *9/145;* **H01L** *41/18*
U.S. Cl. 310—313 A **45 Claims**



1. A surface acoustic wave device comprising:
a highly oriented diamond layer comprising a plurality of side-by-side columnar diamond grains each oriented relative to one another and with a tilt and azimuthal misorientation of less than about 8°;

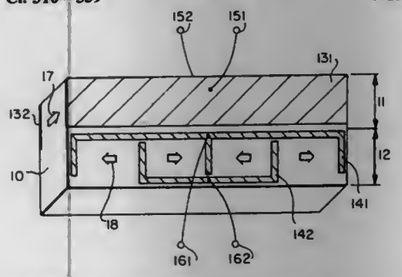
a piezoelectric layer on said highly oriented diamond layer; and
at least one interdigitated electrode on said piezoelectric layer;
wherein said piezoelectric layer comprises first and second portions in laterally spaced apart relation, and wherein said at least one interdigitated electrode comprises first and second interdigitated electrodes on respective first and second piezoelectric layer portions.

5,576,590

PIEZOELECTRIC CERAMIC TRANSFORMER

Osamu Ohnishi, and Takeshi Inoue, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 25, 1994, Ser. No. 348,925
Claims priority, application Japan, Jul. 26, 1994, 6-174415; Jul. 26, 1994, 6-174416; Jul. 26, 1994, 6-174417
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—359 **4 Claims**



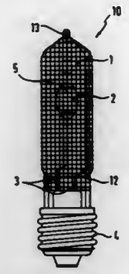
1. A piezoelectric ceramic transformer comprising:
a piezoelectric ceramic plate which is a piezoelectric vibration material in the form of a rectangular plate comprising at least one driver and at least one generator, each of the drivers and generators being arranged in a line along the longitudinal direction;
input terminals for applying a common voltage to each driver; and
output terminals for picking up a common voltage from each generator;
each driver having a pair of opposing external electrodes, one on each side of the piezoelectric ceramic plate in the direction of thickness, the piezoelectric ceramic plate of the driver being polarized in the direction of thickness, each generator having an interdigital electrode assembly provided on at least one surface of the piezoelectric ceramic plate in the direction of thickness; one part of the interdigital electrode assembly being made up of a plurality of electrode fingers spaced at intervals and parallel to the direction of width of the piezoelectric ceramic plate, and a connecting electrode linking these electrode fingers; said one part and another part of similar construction as said one part being arranged such that electrode fingers of both said parts alternately project so as to oppose each other across the width of the piezoelectric ceramic plate; and moreover, the piezoelectric ceramic plate of the generator being polarized in alternating longitudinal directions between each adjacent pair of electrode fingers; said input terminals being connected to the pair of external electrodes of each driver and said output terminals being connected to the interdigital electrode assembly of each generator, all input and output terminals being connected at points that are nodes of vibration when the piezoelectric ceramic plate is driven at longitudinal vibration resonance frequency of the piezoelectric ceramic plate.

5,576,591

GAS DISCHARGE LAMP HAVING A TRANSPARENT ENVELOPE BULK AND A BURSTING GUARD

Werner Block, Taufkirchen, and Holger Claus, Pfaffing, both of Germany, assignors to BLV Licht-und Vakuumtechnik GmbH, Steinhoring, Germany

Filed May 12, 1994, Ser. No. 241,906
Claims priority, application Germany, May 24, 1993, 43 17 252.0
Int. Cl.[6] H01K *1/34;* **H01J** *61/34*
U.S. Cl. 313—25 **17 Claims**



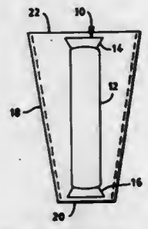
1. A gas discharge lamp comprising:
a) a gas discharge tube containing light-emitting gas;
b) a transparent envelope,
b1) which is constructed as a completely closed envelope bulb having a closed upper tip and a lower pinched base,
b2) said gas discharge tube is encapsulated in said closed envelope bulb in vacuum-tight manner;
c) lead-in wires for said gas discharge tube, said lead-in wires passing into said closed envelope bulb through said lower pinched base;
d) a net-like bursting guard,
d1) which is applied on said envelope bulb and extends from said closed tip to said pinched lower base, wherein said closed envelope bulb is completely covered by said bursting guard,
d2) said bursting guard is melted on said closed envelope bulb at least at the lower pinched base; and
e) contact means for providing electrical energy to said gas discharge tube via said lead-in wires.

5,576,592

HIGH INTENSITY DISCHARGE LAMP WITH SUBSTANTIALLY ISOTHERMAL ARC TUBE

William D. Koenigsberg, Concord; Michael J. Shea, Salem, and Gregory Zaslavsky, Marblehead, all of Mass., assignors to Osram Sylvania Inc., Danvers, Mass.

Filed Nov. 28, 1995, Ser. No. 563,419
Int. Cl.[6] H01J *1/02;7/24;61/52;17/16*
U.S. Cl. 313—25 **8 Claims**



1. A high intensity arc discharge lamp comprising a heat and

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light emitting arc discharge tube enclosed within a vitreous outer lamp envelope and means for coupling electrical energy to said arc discharge tube, wherein one portion of said arc tube surface is cooler than other portions of said surface and wherein at least a portion of said arc tube is surrounded by a heat absorbing and light transmitting shroud positioned closer to said cooler portion of said arc tube surface for absorbing heat emitted by said arc tube and transmitting more of said absorbed heat back to said cooler arc tube surface than to said other portions, thereby providing a more nearly isothermal arc tube surface than there would be if the distance between said shroud and all portions of said arc discharge tube was uniform.

5,576,593

APPARATUS FOR ACCELERATING ELECTRICALLY CHARGED PARTICLES

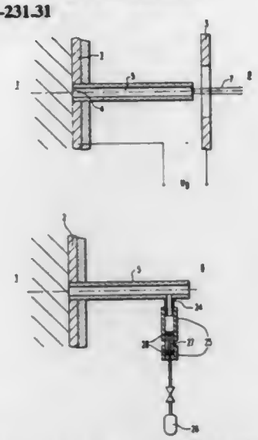
Christoph Schultheiss, Karlsruhe; Martin Konijnenberg, Alsbach, and Markus Schwall, Eggenstein-Leopoldshafen, all of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Germany

Filed Sep. 6, 1994, Ser. No. 301,078

Claims priority, application Germany, Mar. 19, 1992, 42 08 764.3

Int. Cl.[6] H05H *9/00*

U.S. Cl. 313—231.31 **12 Claims**



1. A particle accelerator for accelerating electrically charged particles, comprising: a pulsed plasma reservoir of high particle density, a dielectric tubular chamber having an inner diameter d and extending from said reservoir, at least two electrodes disposed around said tubular chamber in spaced relationship from one another, one electrode being arranged along on inside wall of said reservoir, means for evacuating said dielectric tubular chamber to maintain only a residual gas charge with a sufficiently low pressure p such that the product of the gas pressure p and the inner diameter d of the dielectric tube (pxd) is low enough to avoid parasitic discharges in said residual gas charge, means for applying a voltage to said electrodes for drawing said charged particles from said reservoir into said dielectric tubular chamber and for accelerating them therein so as to form a charged particle beam in said dielectric tubular chamber by which the residual gas charge in said dielectric tubular chamber is ionized along the inside wall thereof and polarized providing for wall repulsive and axis attractive forces capable of electrostatically focusing said charged particle beam exiting said dielectric tubular chamber.

5,576,594

CATHODE DEVICE HAVING SMALLER OPENING

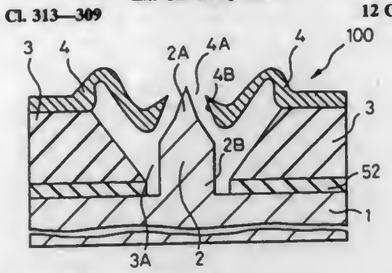
Osamu Toyoda; Kelichi Betsui; Shinya Fukuta, and Tadashi Nakatani, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 259,694, Jun. 13, 1994, abandoned. This application Nov. 6, 1995, Ser. No. 554,032

Claims priority, application Japan, Jun. 14, 1993, 5-141654

Int. Cl.[6] H01J *1/02*

U.S. Cl. 313—309 **12 Claims**



1. A cathode device comprising:
a substrate;
at least one emitter tip formed on the substrate and having a conical tip end portion; and
a gate electrode layer formed above the substrate and having an opening through which the tip end portion of the emitter tip is exposed;
wherein a diameter of the opening of the gate electrode layer is smaller than that of a portion of the emitter tip at a juncture thereof with the substrate, wherein an inner circumferential wall of the opening of the gate electrode layer has a surface extending at least partly opposite to and approximately parallel with the conical tip end portion of the emitter tip, and surrounding the conical tip end portion of the emitter tip, wherein a width of the inner circumferential wall of the opening of the gate electrode layer is larger than a thickness of the gate electrode layer, and wherein a lowest point of the inner circumferential wall of the opening is below a lower surface of a portion of the gate electrode layer adjacent the opening.

5,576,595

SHADOW MASK COLOR PICTURE TUBE

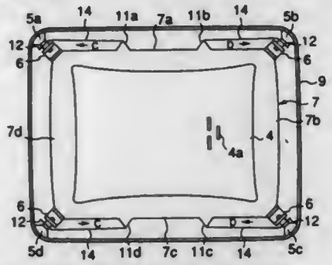
Hiroyoshi Inoue, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1995, Ser. No. 391,514

Claims priority, application Japan, Feb. 21, 1994, 6-022456

Int. Cl.[6] H01J *29/80*

U.S. Cl. 313—402 **21 Claims**



1. A shadow mask color picture tube comprising:
a neck provided with an electron gun;
a funnel joined to said neck;
a panel including a rectangular image display screen whereon a plurality of phosphors are positioned and a skirt extending from edges of said image display screen to said funnel;
a shadow mask having a plurality of throughholes through which electron beams from said electron gun pass and facing said image display screen;
a frame for holding said shadow mask having two first parts each extending in a same direction and two second parts each extending in a perpendicular direction with respect to said first parts;
stud pins provided at the corners of said skirt;
first supporting members provided on the corners of said frame and connected to said stud pins so as to support said frame elastically on said skirt; and
non-extensible, flexible, elongated and thin second supporting members extending substantially along said first parts which pull both of said two first parts of said frame with equal forces with respect to said skirt of said panel when said color picture tube is positioned such that said first parts extend in a direction perpendicular to a direction of gravity, wherein the forces act in a direction substantially parallel to that in which said first parts extend.

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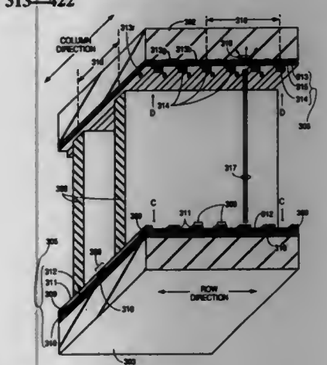
OPTICAL DEVICES SUCH AS FLAT-PANEL CATHODE RAY TUBE, HAVING RAISED BLACK MATRIX

Christopher J. Curtin, Cupertino; Ronald S. Nowicki, Sunnyvale; Theodore S. Fahlen, San Jose; Robert M. Duboc, Jr., Menlo Park, and Paul A. Lovoi, Saratoga, all of Calif., assignors to Silicon Video Corporation, San Jose, Calif.

Division of Ser. No. 188,856, Jan. 31, 1994, Pat. No. 5,477,105, which is a continuation-in-part of Ser. No. 12,542, Feb. 1, 1993, which is a continuation-in-part of Ser. No. 867,044, Apr. 10, 1992, Pat. No. 5,424,605. This application May 25, 1995, Ser. No. 450,458

Int. Cl.[6] H01J *29/18*

U.S. Cl. 313—422 **10 Claims**



1. An optical device comprising:
first and second plates having respective interior surfaces that face, and are spaced apart from, each other;
a pattern of ridges situated over the interior surface of the first plate, each ridge comprising a dark region that consists primarily of at least one of metal, ceramic, semiconductor, and carbide;
a plurality of light-emissive regions situated over the interior surface of the first plate in spaces between the ridges, the first plate being transparent at least in portions extending under the light-emissive regions, the ridges extending further away from the first plate than the light-emissive regions;
an array of laterally separated sets of electron-emissive elements situated over the interior surface of the second plate, light being produced by the light-emissive regions upon receiving electrons from the electron-emissive elements, the ridges being substantially non-emissive of light relative to the light-emissive regions when the ridges receive electrons from the electron-emissive elements; and
supporting structure that supports the plates and keeps them spaced apart from each other.

5,576,597

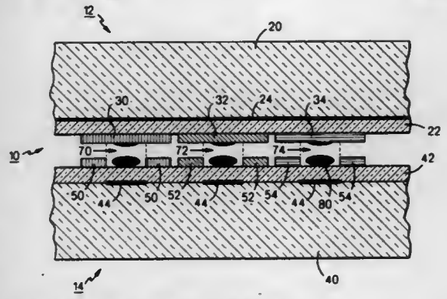
PLASMA DISPLAY HAVING BARRIERS FORMED OF PHOSPHOR

Jeffery S. Reynolds, Fishers, Ind., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 13, 1994, Ser. No. 274,514

Int. Cl.[6] H01J *17/49*

U.S. Cl. 313—582 **2 Claims**



1. A plasma display panel, comprising:
(a) two parallely spaced apart dielectric glass layers;
(b) a plurality of gas discharge cells formed between said dielectric glass layers, boundaries of said gas discharge cells being defined by phosphor materials, and said phosphor materials serving as barriers between said gas discharge cells; and
(c) means to cause gas discharge in said gas discharge cells.

5,576,598

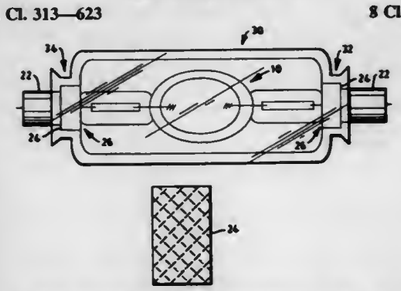
LAMP WITH GLASS SLEEVE AND METHOD OF MAKING SAME

Gregory Zaslavsky, Marblehead, and Joseph V. Lima, Salem, both of Mass., assignors to OSRAM Sylvania Inc., Danvers, Mass.

Filed Aug. 31, 1995, Ser. No. 521,716

Int. Cl.[6] H01J *61/36*

U.S. Cl. 313—623 **8 Claims**

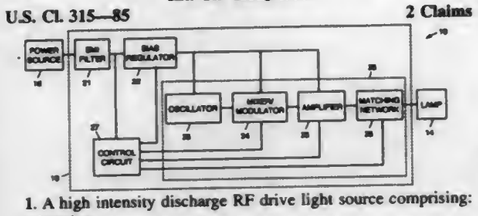


1. A lamp comprising: a light transmissive glass envelope including a light source chamber; at least one glass extension affixed to said light source chamber; a sealing area surrounding a portion of said extension; a patterned metal foil affixed to and surrounding said sealing area; a glass shroud surrounding at least said light source chamber and having an end sealed to said metal foil.

5,576,599
LOW EMI HIGH INTENSITY DISCHARGE RF DRIVEN LAMP

Charles E. Nourrcier, Lakewood, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 7, 1995, Ser. No. 478,638
Int. Cl.[6] H01J *1/00*
U.S. Cl. 315—85 **2 Claims**

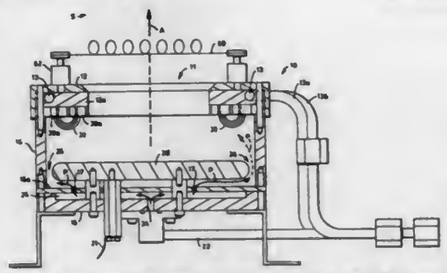


1. A high intensity discharge RF drive light source comprising:
a housing;
a reflector secured to the housing;
a lens secured to the housing;
an RF discharge lamp disposed relative to the reflector so as to generate light output that is reflected from the reflector and transmitted out of the housing by way of the lens;
a power source; and
a control circuit coupled between the power source and the lamp comprising:
(i) an EMI filter coupled to the power source,
(ii) a bias regulator coupled to the EMI filter,
(iii) an RF drive source, coupled between the bias regulator and the lamp, that comprises an oscillator, a mixer/modulator, and an impedance matching network coupled to the amplifier, and
(iv) a pseudo-random sequence generator coupled to the EMI filter, the bias regulator, the oscillator and the mixer/modulator, said generator comprising flip flops and logic gates, that generates a pseudo-random sequence of pulses to modulate the mixer/modulator and thus control light output produced by the lamp and reduce EMI spectral density output generated while driving the lamp.

5,576,600
BROAD HIGH CURRENT ION SOURCE

Leon E. McCrary, Scituate, Mass., and Ronald R. Willey, Melbourne, Fla., assignors to DynaTenn, Inc., Weymouth, Mass.

Continuation-in-part of Ser. No. 362,717, Dec. 23, 1994. This application Mar. 7, 1995, Ser. No. 399,448
Int. Cl.[6] H01J *7/24*
U.S. Cl. 315—111.81 **20 Claims**

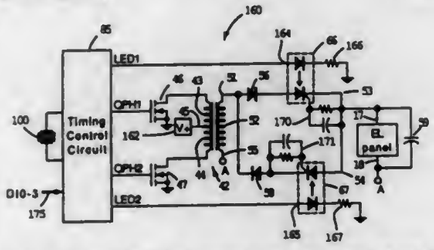


1. An ion source having a peripheral wall, a back face and a from face together defining a plasma chamber, an anode plate which channels an ionizable fluid to said chamber adjacent said peripheral wall to diffuse toward said front face, the front face further having a large aperture opening centrally located therein for emitting ions from the chamber, so that said peripheral wall and an annular portion of the front face form a containment band of said plasma chamber ionizing the fluid for emission through said large aperture opening, a source of electrons proximate said opening to provide electrons to the plasma chamber, and a plurality of pairs of magnets disposed around said containment band having magnetic field lines curving into said containment band such that the electrons are trapped in the band and fluid diffusing outward from said peripheral region is efficiently ionized as it travels to the central aperture.

5,576,601
DRIVE CIRCUIT FOR ELECTROLUMINESCENT PANELS AND THE LIKE

Steven E. Koenck; Roger L. Wolf, both of Cedar Rapids, and Daniel E. Alt, Marion, all of Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation of Ser. No. 989,198, Dec. 11, 1992, Pat. No. 5,345,146, which is a continuation-in-part of Ser. No. 776,059, Oct. 11, 1991, abandoned. This application Jul. 8, 1994, Ser. No. 269,910
Int. Cl.[6] G09G *3/10*
U.S. Cl. 315—169.3 **2 Claims**



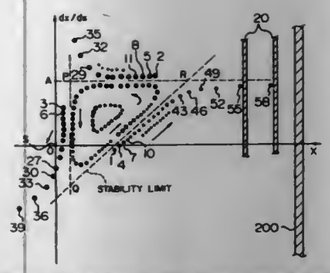
1. A process for driving an electroluminescent panel having two terminals, comprising:
(a) providing a series of high frequency positive current pulses to a first terminal of said electroluminescent panel so as to ramp up the voltage provided at said first terminal; with respect to the second terminal
(b) providing a series of high frequency negative current pulses, between said high frequency positive current pulses, to said first terminal of said electroluminescent panel so as to ramp down the voltage provided at said second terminal; and said first terminal with respect to
(c) controlling the width of the high frequency positive and negative pulses so as to provide output control by selectively altering the time period between pulses whereby the time for ramping up and ramping down the voltage to the panel is controlled.

5,576,602
METHOD FOR EXTRACTING CHARGED PARTICLE BEAM AND SMALL-SIZED ACCELERATOR FOR CHARGED PARTICLE BEAM

Kazuo Hiramoto; Masahiro Tadokoro, both of Hitachiota; Junichi Hirota, Hitachi; Masatsugu Nishi, Katsuta; Akira Noda, and Makoto Inoue, both of Kyoto, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 16, 1994, Ser. No. 291,560
Claims priority, application Japan, Aug. 18, 1993, 5-204142
Int. Cl.[6] H05H *7/10*
U.S. Cl. 315—507 **19 Claims**

1. An accelerator comprising:
a radio frequency accelerating cavity body for accelerating a charged particle beam;

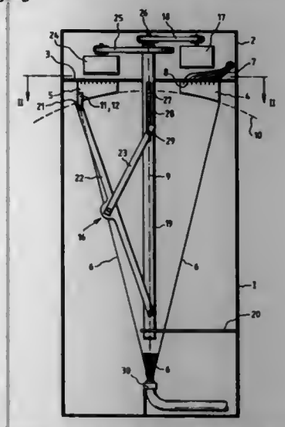


a radio frequency applying unit for increasing an amplitude of betatron oscillations of said charged particle beam for making said beam exceed a stability limit;
a multipole magnet for resonating the betatron oscillations of said charged particle beam having exceeded the stability limit;
a first bending magnet for horizontally focusing said charged particle beam, vertically defocusing said beam and bending said beam; and
a second bending magnet for horizontally defocusing said charged particle beam, vertically focusing said beam and bending said beam.

5,576,603
AUTOMATIC DISTRIBUTION DEVICE FOR TELECOMMUNICATION AND DATA LINES

Claus Sander, Berlin, Germany, assignor to Krone Aktiengesellschaft, Berlin-Zehlendorf, Germany

Filed Jun. 6, 1995, Ser. No. 470,069
Claims priority, application Germany, Jun. 16, 1994, 44 20 806.5
Int. Cl.[6] H02B *1/01*; H04Q *1/14*
U.S. Cl. 318—3 **8 Claims**



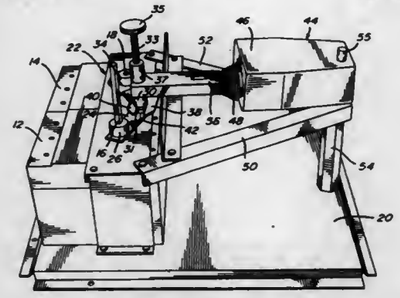
1. An automatic distribution device for telecommunication and data lines, comprising:
connection terminals for exchange and subscriber cables, said connection terminals being disposed in terminal blocks, said terminal blocks being oriented radially with respect to a central axis;
connection means including a connection device with a grip element, said connection means being controllable remotely, said connection device being pivotably supported along said central axis, said grip element being movable radially to be swung out from the connection device.

171–488 O.G.–96–18: QL3

5,576,604
LINEAR MOTOR DRIVEN TRANSFER SWITCH ASSEMBLY

Armin Kunert, Pointe-Claire, and Bruno Goupil, Beaconsfield, both of Canada, assignors to Tornatech Inc., Montreal, Canada

Filed Mar. 15, 1995, Ser. No. 404,801
Claims priority, application Canada, Jul. 29, 1994, 2129177
Int. Cl.[6] H01H *33/66*
U.S. Cl. 318—135 **18 Claims**



1. A transfer switch assembly for alternatively connecting an electrical load to a primary electrical power source and to a secondary electrical power source, said transfer switch comprising:
first electrical switching means for connection between the electrical load and the primary electrical power source, said first electrical switching means including a first rotatable actuating member that is movable between an opened position and a closed position;
second electrical switching means for connection between the electrical load and the secondary electrical power source, said second electrical switching means including a second rotatable actuating member that is movable between an opened position and a closed position;
an electrical linear motor having a fixed portion and a linearly movable portion;
coupling means mechanically joining said first and second rotatable actuating members to said linearly movable portion of said linear motor; said coupling means including first and second lever means having respective first and second ends, said first end of said first lever means being mounted to said first rotatable actuating member while said first end of said second lever means being mounted to said second rotatable actuating member; said coupling means also including a connecting means for connecting said second ends of said first and second lever means, said connecting means being also connected to said linearly movable portion of said linear motor;
wherein, (a) linear motion of said coupling means in a first direction brings one of said first and second rotatable actuating members from a closed position to an opened position, and subsequently brings the other of said first and second rotatable actuating members from an opened position to a closed position, and (b) linear motion of said coupling means in a second direction brings the other of said first and second rotatable actuating members from the closed position to the opened position, and subsequently bring one of said first and second rotatable actuating members from the opened position to the closed position, to thereby cause a connection of the electrical load to change from one of the primary electrical power source and the secondary electrical power source to the other of the primary electrical power source and the secondary electrical power source.

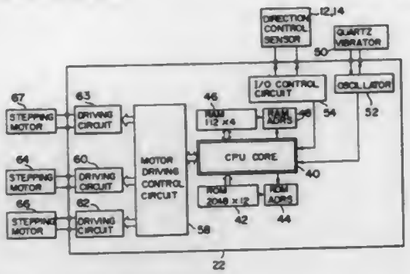
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5,576,605

MICRO ROBOT AND HOLDING CASE THEREFOR

Osamu Miyazawa, Nagano-ken, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

PCT No. PCT/JP93/01654, § 371 Date Jul. 14, 1994, § 102(e) Date Jul. 14, 1994, PCT Pub. No. WO94/12918, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 12, 1993, Ser. No. 256,605
Claims priority, application Japan, Nov. 20, 1992, 4-312063; Dec. 9, 1992, 4-329385
Int. Cl.[6] B25J 5/00
U.S. Cl. 318—568.12 15 Claims



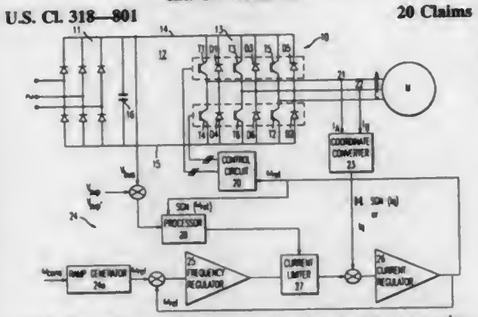
1. A micro robot comprising:
at least two sensor means each having a detection area partly overlapping each other, and generating an output in accordance with a detected quantity, at least one pair of wheel driving means adapted to be driven independently of each other;
a control means including a CPU for controlling said wheel driving means in accordance with the outputs of said sensor means;
a power supply unit including a rechargeable battery for supplying a power supply voltage to said sensor means, said wheel driving means and said control means; and
a reset circuit responsive to reception of an external command in a non-contact manner to send a reset signal to said control means.

5,576,606

ASYNCHRONOUS MOTOR POWER SUPPLY CONTROL SYSTEM

Vinh T. Nguyen Phuoc, Boulogne sur Seine, and Christian Conrath, Rueil Malmaison, both of France, assignors to Schneider Electric SA, Boulogne-Billancourt, France

Filed Dec. 16, 1994, Ser. No. 357,854
Claims priority, application France, Dec. 16, 1993, 93 15273
Int. Cl.[6] H02P 5/34
U.S. Cl. 318—801 20 Claims



1. System for controlling the supply of power to an asynchronous motor supplied with power from an AC line voltage intermediate circuit including a capacitor, and an inverter including switches controlled by a control circuit and connected to phase windings of said motor, wherein:
said system includes a cascade regulation structure including a frequency regulator, a current limiter and a current regulator driving said control circuit, said frequency regulator input being connected to a ramp generator supplying a motor start speed and said frequency regulator output being connected to said current limiter, the output of the current limiter being connected to said current regulator;
said cascade regulation structure is associated with said intermediate circuit to limit the DC voltage at said capacitor by means of said current limiter included in said cascade regulation structure when said motor is operating as a generator and
wherein said DC voltage is limited relative to a threshold voltage dependent on a nominal AC line voltage and on a maximum voltage that said capacitor is rated to withstand.

5,576,607

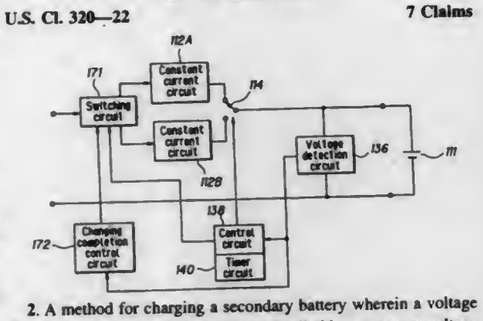
Patent Not Issued For This Number

5,576,608

METHOD FOR CHARGING SECONDARY BATTERY AND CHARGER USED THEREFOR

Tamimi Nagai, Kanagawa, and Hitoshi Akiho, Miyagi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 3, 1994, Ser. No. 237,299
Claims priority, application Japan, May 14, 1993, 5-112639; May 18, 1993, 5-155783
Int. Cl.[6] H01M 10/44
U.S. Cl. 320—22 7 Claims



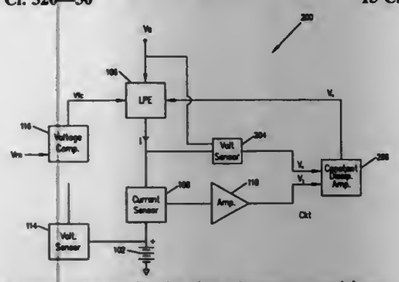
2. A method for charging a secondary battery wherein a voltage applied to the secondary battery is controlled by a constant voltage source supplying to the secondary battery a constant voltage equal to a full charging voltage and said secondary battery is charged with a current supplied from a constant current source, said method comprising the steps of:
detecting an amount of decrease in the current supplied to said secondary battery when the voltage applied to said secondary battery is controlled by said constant voltage source;
comparing the detected amount of decrease in the current with a predetermined reference value;
continuing a charging operation when the comparison indicates the detected amount of decrease in the current exceeds the reference value; and
charging said secondary battery with said constant current for a predetermined period of time when the comparison indicates the detected amount of decrease in the current is less than the reference value.

5,576,609

CONSTANT POWER DISSIPATION CONTROL OF A LINEAR PASS ELEMENT USED FOR BATTERY CHARGING

ALan E. Brown, Georgetown, and Farzad Khosrowpour, Austin, both of Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed Apr. 20, 1995, Ser. No. 425,177
Int. Cl.[6] H02J 7/10
U.S. Cl. 320—30 18 Claims



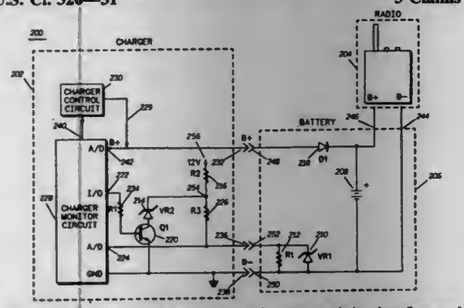
9. A battery charger for charging a battery, comprising:
a voltage source for providing a relatively constant supply voltage;
a linear pass element coupled in series with said voltage source and the battery for controlling charge current;
a current sensor coupled to measure said charge current;
a voltage sensor coupled to measure the voltage of the battery; and
a control amplifier coupled to said current and voltage sensors and said linear pass element for increasing said charge current while the battery voltage increases so that the power dissipation of said linear pass element is maintained at or below a predetermined maximum level.

5,576,610

METHOD AND APPARATUS FOR DETERMINING BATTERY CHARACTERISTICS

Joseph Patino, Pembroke Pines; Henry A. Bogut, Coral Springs, and Jose M. Fernandez, Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 5, 1994, Ser. No. 270,618
Int. Cl.[6] H01M 10/46;10/48
U.S. Cl. 320—31 5 Claims



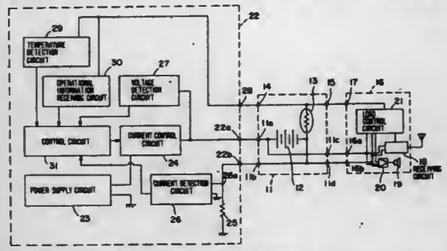
1. A battery charger for charging a battery pack having first and second battery characterization devices coupled to a battery contact, the second characterization device comprising a zener diode having a zener voltage, the battery charger comprising:
a controller having an input terminal for coupling to the battery contact;
a switching device responsive to the controller for switching between first and second states, while in the first state, the switching device causes a first voltage level to become coupled to the battery contact in order for the controller to determine the value of the zener voltage at the controller input terminal, while in the second state, the switching device causes a second voltage level to become coupled to the battery contact in order for the controller to determine the value of the first battery characterization device at the controller input terminal, and wherein the first voltage level coupled to the battery contact is greater than the second voltage level.

5,576,611

BATTERY CHARGING SYSTEM

Takeshi Yoshida, Fukuoka, Japan, assignor to Matsysguta Electric Indistrial Co., Ltd., Kadoma, Japan

Filed Nov. 15, 1994, Ser. No. 339,934
Claims priority, application Japan, Nov. 16, 1993, 5-286449
Int. Cl.[6] H02J 7/04; H01M 10/44
U.S. Cl. 320—31 18 Claims



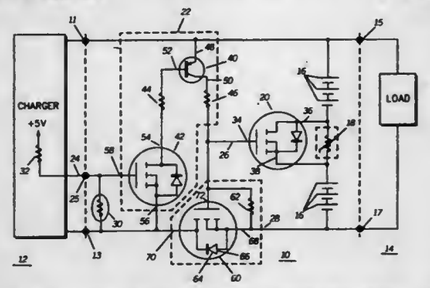
7. A battery charging system comprising:
power supply means for supplying a charging current to a battery connected to a load appliance;
voltage detection means for detecting a terminal voltage of said battery; and
control means for (1) suspending operation of said power supply means when said terminal voltage is judged to be dropping according to the detected terminal voltage from said voltage detection means, and (2) suspending the operation of said voltage detection means in response to operation of said load appliance.

5,576,612

ULTRAFAST RECHARGEABLE BATTERY PACK AND METHOD OF CHARGING SAME

Scott M. Garrett; Jose M. Fernandez, both of Lawrenceville, Ga., and Joseph Patino, Pembroke Pines, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 23, 1995, Ser. No. 376,613
Int. Cl.[6] H01M 10/44; H02J 7/04
U.S. Cl. 320—54 6 Claims



1. A battery pack having at least one rechargeable battery cell, said battery pack comprising:
a current interrupt device coupled in series with said at least one battery cell;
a transistor device connected parallel to said interrupt device and responsive to an actuating signal;

a control circuit comprising a first switch transistor for providing said actuating signal and a second switch transistor for driving said first switch transistor in response to a voltage signal;

first and second contact sets; and

a transistor switch connected between said at least one rechargeable cell and at least one of said contact sets, said transistor switch being switchable between a high and low resistance states in response to said actuating signal.

5,576,613

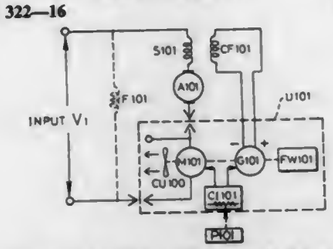
DC MOTOR-GENERATOR CONTROL CIRCUIT

Tai-Her Yang, 5-1 Taipin Street, Si-Hu Town Dzan-Hwa, Taiwan

Continuation-in-part of Ser. No. 32,136, Mar. 17, 1993, abandoned. This application Nov. 14, 1994, Ser. No. 338,692

Int. Cl.[6] H02P *9/04*

U.S. Cl. 322—16 **8 Claims**



1. A DC motor-generator control circuit for an electrical machine, said electrical machine having an auxiliary field winding for accepting feedback control, said control circuit comprising:

a current follower motor arranged to receive and be driven by electrical energy from said electrical machine;

an auxiliary generator electrically coupled to said auxiliary field winding of said electrical machine and mechanically driven by said current follower motor; and

a control interface for controlling the amount and polarity of the output of said auxiliary generator for feedback to said auxiliary field winding,

wherein said electrical machine includes a main motor-generator set comprising a main motor, said main motor of said main motor-generator set further having an armature and a series field winding.

5,576,614

CIRCUIT FOR SUPPLYING CONSTANT VOLTAGE TO A LAMP FROM AN AC INPUT

David J. Meads, Hitchin; Keith L. Bedford, Letchworth; Robert Kennedy, Portsmouth, and Clive R. Harris, Hitchin, all of United Kingdom, assignors to Xerox Corporation, Stamford, Conn.

Filed May 27, 1994, Ser. No. 250,083

Int. Cl.[6] G05F *1/40*

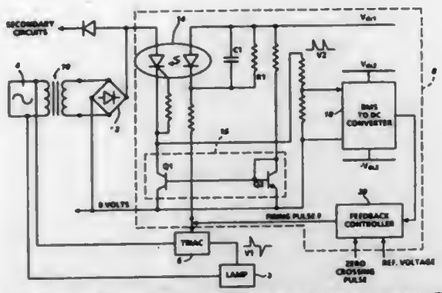
U.S. Cl. 323—239 **4 Claims**

1. A circuit for supplying constant RMS voltage to a lamp from an AC voltage supply comprising:

a first switching element for applying a voltage V1 across a lamp upon application of power from the AC supply,

sampling means synchronized with application of said AC voltage to said first switching element for generating an instantaneous RMS voltage V2 modeled to conform to said voltage V1,

conversion means for converting said RMS voltage V2 into a DC voltage, and



feedback controller means for comparing said converted DC voltage with a reference voltage representing an optimum lamp intensity output and for generating and applying a firing pulse to said switching element thereby controlling the phase angle firing of said switching element.

5,576,615

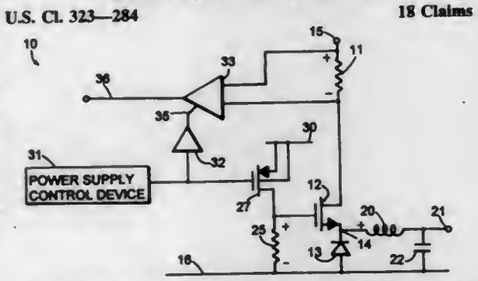
METHOD AND CIRCUIT FOR DETECTING FAULTY RECIRCULATION DIODE IN A SWITCHED MODE POWER SUPPLY

Andrew Marshall, Dallas, and Stephen C. Kwan, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 22, 1994, Ser. No. 231,552

Int. Cl.[6] G05F *1/573;* **H02H** *3/087*

U.S. Cl. 323—284 **18 Claims**



1. A circuit for detecting a fault in a recirculation diode in a switched power supply in which a switching transistor is connected to be turned on and off in response to a power supply control device to switchably apply a supply voltage to an output, and the recirculation diode is connected between the output and a reference potential, comprising:

a sense resistor in series between the supply voltage and the switching transistor;

a biasing element connected to clamp a current control electrode of said switching transistor to the reference potential when the switching transistor is switched off, a fault in the recirculation diode causing a current to flow in the switching transistor when the switching transistor would normally be turned off; and

an amplifier connected across the sensing resistor, said amplifier having a variable gain connected to be controlled in response to the power supply control device to increase the gain of said amplifier when said switching transistor is turned off, said amplifier providing an output when the switching transistor would normally be turned off to indicate that a fault exists in said recirculation diode.

5,576,616

STABILIZED REFERENCE CURRENT OR REFERENCE VOLTAGE SOURCE

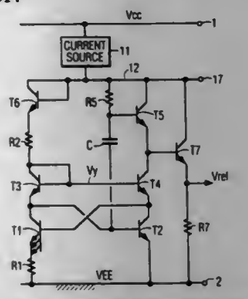
Timothy J. Ridgers, Bretteville L'Orgueilleuse, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 9, 1995, Ser. No. 386,237

Claims priority, application France, Mar. 30, 1994, 94 03775

Int. Cl.[6] G05F *3/16*

U.S. Cl. 323—314 **13 Claims**



1. A control circuit supplying a stabilised voltage, connected between a supply terminal and a reference terminal, and comprising: four transistors of the same conductivity type, each having an emitter, a base and a collector, a first transistor having its emitter coupled to the reference terminal via a first resistor, a second transistor having its emitter connected to the reference terminal, the bases and the collectors of the first and the second transistor being cross-coupled, a third transistor having its emitter connected to the collector of the first transistor and having its base and its collector connected together to one end of a second resistor, and a fourth transistor having its emitter connected to the collector of the second transistor and having its base connected to the base and to the collector of the third transistor, wherein the emitter area of the first transistor is larger than that of the second transistor, a fifth transistor of the same conductivity type as the four transistors and with an emitter connected to the collector of the fourth transistor, a base coupled to its collector via a base resistor whose value is at least equal to twice the value of the second resistor, and wherein a node between said base resistor and the collector of the fifth transistor is coupled to the other end of the second resistor and to the supply terminal via a current source.

5,576,617

APPARATUS & METHOD FOR MEASURING THE AVERAGE ASPECT RATIO OF NON-SPHERICAL PARTICLES IN A SUSPENSION

Terence W. Webb, and Leonard F. Gate, both of St. Austell, United Kingdom, assignors to ECC International Limited, Great Britain

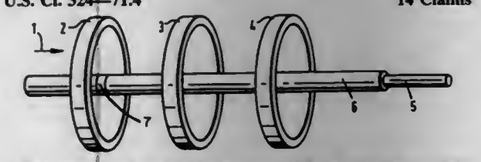
PCT No. PCT/GB94/00090, § 371 Date Sep. 16, 1994, § 102(e) Date Sep. 16, 1994, PCT Pub. No. WO94/16308, PCT Pub. Date Jul. 21, 1994

PCT Filed Jan. 17, 1994, Ser. No. 302,851

Claims priority, application United Kingdom, Jan. 18, 1993, 9300845

Int. Cl.[6] G01N *15/02;27/00*

U.S. Cl. 324—71.4 **14 Claims**



1. A method of obtaining a measure of the average aspect ratio of non-spherical particles comprising the steps of:

obtaining a fully-deflocculated suspension of the particles;

causing the particles in the suspension to orientate generally in one direction;

measuring the conductivity of the particles suspension substantially in said one direction

simultaneously or substantially simultaneously measuring the conductivity of the particle suspension in a direction transverse to said one direction; and

using the difference in the two conductivity measurements as a measure of the average aspect ratio of the particles in suspension.

5,576,618

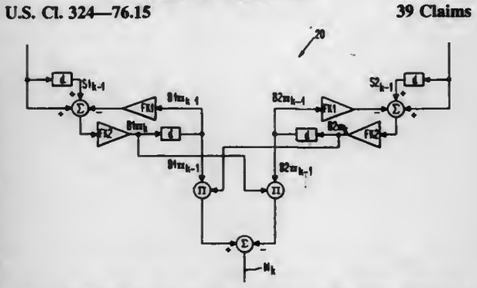
PROCESS AND APPARATUS FOR COMPARING IN REAL TIME PHASE DIFFERENCES BETWEEN PHASORS

Fernando Calero, Miami, Fla., assignor to ABB Power T&D Company, Inc., Raleigh, N.C.

Filed Oct. 20, 1994, Ser. No. 326,720

Int. Cl.[6] G01K *25/00*

U.S. Cl. 324—76.15 **39 Claims**



26. A real-time process for determining a phase difference between two waveforms, each of said waveforms having a magnitude and a phase angle, comprising the steps of:

(a) obtaining a plurality of samples of each said two waveforms representative of the magnitude of each said two waveforms at at least two different times; and

(b) on the basis of said samples, computing a value M_{k+1} indicative of the phase difference between said two waveforms..

5,576,619

METHOD AND APPARATUS USING AN ELECTRICAL SENSOR FOR MONITORING A MOVING MEDIUM

Dieter Buser, Birkenau, and Wolfgang Frank, Vienheim, both of Germany, assignors to SIE Sensorik-Industrie-Elektronik GmbH, Viernheim, Germany

Filed Sep. 21, 1994, Ser. No. 309,939

Claims priority, application Germany, Sep. 21, 1993, 43 31 973.4

Int. Cl.[6] G01R *29/00*

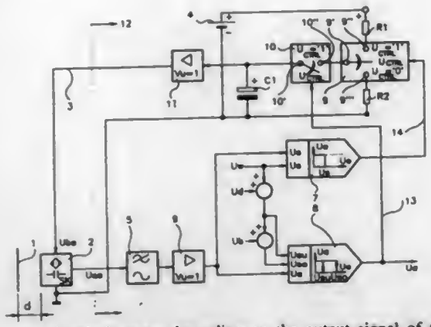
U.S. Cl. 324—76.79 **27 Claims**

1. A method for a monitoring of a moving medium comprising employing an electrical sensor;

connecting a first terminal of the electrical sensor to an adjustable input supply voltage source (Ubs) and subjecting the electrical sensor to an adjustable input supply voltage delivered by the adjustable input supply voltage source (Ubs);

feeding an output signal (Uas) of the electrical sensor back in a feedback loop to the first terminal of the electrical sensor for a suppression of slowly changing interfering values which are capable of generating a change of the output signal (Uas) which change is less than an absolute value of ±0.5 V/min as referred to voltage and which change is less than an absolute value of ±5° C./min as referred to temperature wherein the output signal (Uas) is changed together with changing a position of a moving medium to be detected, and wherein the feedback loop changes the changeable input supply voltage of

VOL 1192 ISS 3 NO 19 1996 UMI



the electrical sensor depending on the output signal of the electrical sensor such that the sensitivity of the electrical sensor substantially remains constant;

opening the feedback loop upon occurrence of a sufficiently fast change of the output signal (Uas) of the electrical sensor of more than 0.1 V/sec in case of a change of the position of a medium and representing a signal jump relative to the quiescent output signal (Uw) in absence or rest of the medium upon a spatially-geometric motion of the medium; and

interpreting the opening and interruption of the feedback loop as a local change of the medium position.

5,576,620

DEVICE FOR DETECTING MOTOR SPEED OF AUTOMATIC WASHING MACHINE

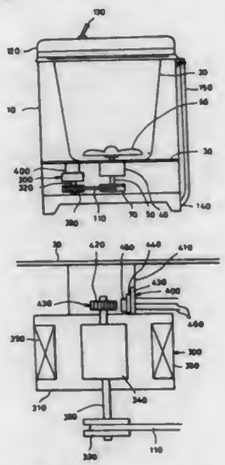
Dal H. Cheong, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 30, 1994, Ser. No. 352,070

Claims priority, application Rep. of Korea, Mar. 17, 1994, 5349/1994

Int. Cl.[6] G01P *3/48;* **D06F** *33/00*

U.S. Cl. 324—174 **4 Claims**



1. A device for detecting motor speed of an automatic washing machine comprising:

a housing;

a washing tub placed in said housing;

a support plate for supporting said washing tub in said housing, said support plate being horizontally placed under the washing tub in the interior of the housing;

a motor unit exteriorly provided on the bottom surface of said support plate, said motor unit cased by a motor casing, said motor unit having a motor shaft extending exteriorly of said motor casing; and

a motor speed detecting unit for detecting rotative speed of the motor unit, said detecting unit being interposed between said support plate and said motor unit, and encased by a detecting unit casing and including:

a gear shaped detecting member mounted to a top end of said motor shaft exteriorly of said motor casing, said detecting member having a predetermined thickness and a predetermined diameter;

a rectangular base plate interiorly mounted to a side wall of said detecting unit casing;

a magnet for generating a magnetic flux and scanning the magnetic flux on said detecting member, said magnet being mounted to said base plate; and

a Hall effect linear sensor for sensing change of density of the magnetic flux, said sensor being mounted to said magnet.

5,576,621

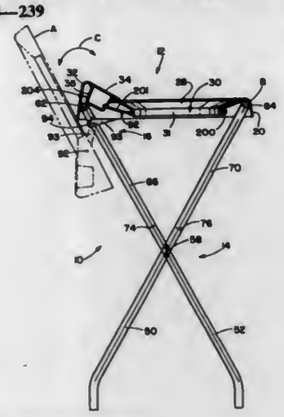
HINGED METAL DETECTION COVER FOR A RECEPTACLE

Philip E. Clements, Littleton, Colo., assignor to Denver Dynamics, Inc., Englewood, Colo.

Filed Mar. 10, 1994, Ser. No. 209,394

Int. Cl.[6] G01R *33/12;* **G01N** *27/72;* **G08B** *21/00;* **B07C** *5/344*

U.S. Cl. 324—239 **14 Claims**



1. A metal detector, comprising:

a housing provided with an aperture adapted for the passage of articles therethrough, said housing having a substantially rectangular shape and including a downwardly depending peripheral skirt portion adapted to at least partially overlie a receptacle for receiving articles inserted through said aperture;

means in said housing for detecting the passage of metal articles through said aperture in said housing; and

a hinge on said housing for mounting said housing to said receptacle for movement between an open position allowing access to the receptacle and a closed position for substantially blocking access to the receptacle, except through said aperture in said housing.

5,576,622

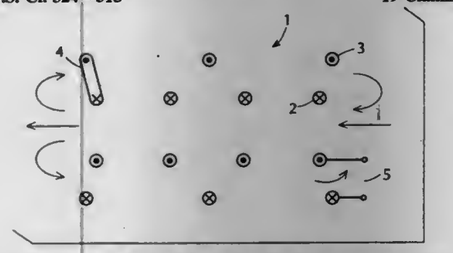
SHIELDED NMR RADIO FREQUENCY COIL AND METHOD OF PERFORMING AN NMR EXPERIMENT

Terry Morrone, Greenlawn, and Jan V. Votruba, Port Jefferson Station, both of N.Y., assignors to Fonar Corporation, Melville, N.Y.

Filed Nov. 14, 1991, Ser. No. 791,338

Int. Cl.[6] G01R *33/28*

U.S. Cl. 324—318 **19 Claims**



1. A radio frequency coil for use in NMR measurements, comprising:

a first, inner coil section for being positioned proximate a specimen from which NMR signals are emitted and having induced therein currents in response to received NMR signals; and

a second, outer coil section connected in series with said first coil section and through which flows the currents induced by the NMR signals received from the specimen, said second coil section being positioned relative to said first coil section for at least partially canceling the magnetic field developed by said radio frequency coil in regions of space external to said radio frequency coil.

5,576,623

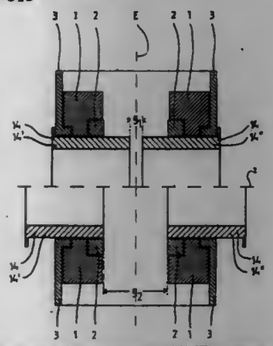
GRADIENT SYSTEM FOR AN NMR TOMOGRAPH

Wolfgang Muller, Karlsruhe, Germany, assignor to Bruker Analytische Messtechnik GmbH, Rheinstetten, Germany

Filed Jul. 12, 1995, Ser. No. 501,716

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—318 **18 Claims**



1. A nuclear magnetic resonance (NMR) tomograph having a main magnet system for generating a homogeneous magnetic field directed along a z-axis inside a measuring volume, wherein the main magnet system provides an access to the measuring volume in a direction transverse to the z-axis, and comprising a gradient system for applying a magnetic field gradient to the said homogenous magnetic field, the gradient system comprising at least two first partial gradient systems which are respectively located on opposite sides of a central plane perpendicular to the z-axis and passing through the measuring volume, each said partial gradient system comprising at least one gradient coil, wherein the gradient coil of at least one of the first partial gradient systems is movable between at least two predetermined positions along the z-axis.

5,576,624

PULSE INDUCTION TIME DOMAIN METAL DETECTOR

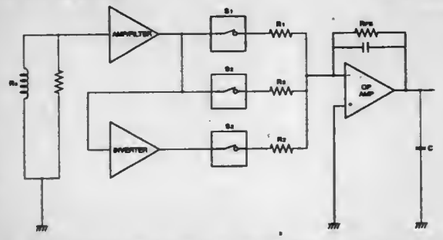
Bruce H. Candy, Basket Range, Australia, assignor to BHC Consulting Pty Ltd., Glenside, Australia

Continuation-in-part of Ser. No. 468,471, Jan. 12, 1990, abandoned. This application Jun. 3, 1994, Ser. No. 253,870

Claims priority, application Australia, Jan. 12, 1989, PJ2261

Int. Cl.[6] G01V *3/11;* **G01R** *33/12*

U.S. Cl. 324—329 **37 Claims**



1. A conducting metal detection apparatus comprising:

transmission means including a transmit coil for transmitting a discontinuous pulse voltage waveform in order to transmit a magnetic field to a target volume, the discontinuous pulse voltage waveform providing periods of non-transmission of the magnetic field;

a detector coil for producing a detected signal by detecting changes in magnetic fields;

measurement means for measuring the detected signal during at least a first and second pre-determined period which is separate from that period which has significant signal resulting from decay of ground eddy currents, the measuring occurring during the periods of non-transmission of the magnetic field, the measurement means producing at least a first and a second measurement respectively; and

processing means for processing at least two of the measurements to provide an output signal derived by substantially removing that component of the detected signal due to electrically non-conducting ferrite within the target volume from the said detected signal by forming a combination of the at least two measurements, said combination being dependent upon the first time derivative of the magnetic field due to the electrically non-conducting ferrite during the periods of non-transmission, wherein the first time derivative of the magnetic field is dependent upon the duration and temporal evolution of the transmitted magnetic field, the output signal thus being useful to indicate the presence of a metallic object within the target volume.

5,576,625

TEST METHOD AND APPARATUS FOR TESTING A PROTECTIVE RELAY SYSTEM

Yukio Sukegawa, and Tetsuo Matsushima, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

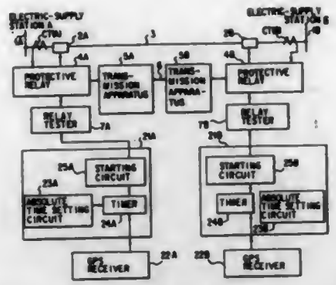
Filed Feb. 2, 1995, Ser. No. 382,764

Claims priority, application Japan, Feb. 7, 1994, 6-013288

Int. Cl.[6] H02H *7/26*

U.S. Cl. 324—424 **3 Claims**

1. A relay test apparatus for testing a protective relay operation



of a protective relay system including: protective relays, provided in electric-supply stations connected through electric transmission lines, for performing an accident judging operation using electricity amounts detected in the electric-supply stations; and a transmission system, connecting the protective relays, for transmitting an electricity amount signal, corresponding to the electricity amount detected in the one electric-supply stations, to the other protective relay,

the relay test apparatus comprising:

GPS receivers, respectively connected to the protective relays, each GPS receiver analyzing time data included in a signal transmitted from a satellite and outputting a time signal;

simulation signal generators, respectively connected to the protective relays, each simulation signal generator generating a simulation signal simulating the electricity amount signal and inputting the simulation signal to a corresponding protective relay as the electricity amount signal; and

synchronous starting units, respectively provided in the protective relays, each synchronous starting unit starting a corresponding simulation signal generator to generate the simulation signal, when time signals output from the GPS receivers coincide with a preset time at a same time.

5,576,627

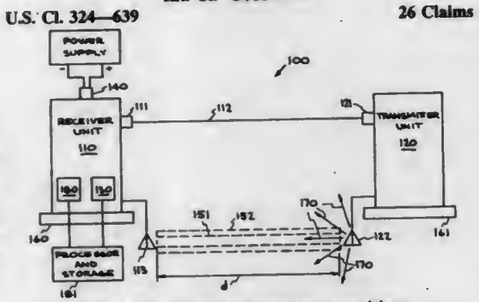
NARROW FIELD ELECTROMAGNETIC SENSOR SYSTEM AND METHOD

Thomas E. McEwan, Livermore, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 300,909, Sep. 6, 1994, Pat. No. 5,510,800. This application Mar. 17, 1995, Ser. No. 405,644

Int. Cl.[6] G01S *13/00*

U.S. Cl. 324—639 **26 Claims**



1. A narrow field electromagnetic sensor, comprising:

a transmitter which transmits a sequence of electromagnetic signals in response to a transmit timing signal;

a receiver which samples the sequence of electromagnetic signals in response to a receive timing signal, and generates a sampled signal;

a timing circuit which supplies the transmit timing signal to the transmitter and the receive timing signal to the receiver, the receive timing signal gating the receiver to sample a portion of each electromagnetic signal that travels along a direct electromagnetic signal propagation path between the transmitter and the receiver; and

a signal processor coupled to the output of the receiver and responsive to the sampled signal to provide an indication of a characteristic of an object in the direct path between the transmitter and the receiver.

5,576,626

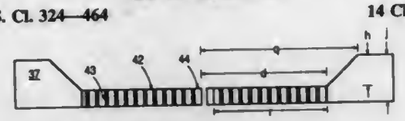
COMPACT AND LOW FUEL CONSUMPTION FLAME IONIZATION DETECTOR WITH FLAME TIP ON DIFFUSER

Chi K. Lo, Fremont, Calif., assignor to Microsensor Technology, Inc., Fremont, Calif.

Filed Jan. 17, 1995, Ser. No. 375,330

Int. Cl.[6] G01N *27/62*

U.S. Cl. 324—464 **14 Claims**



1. A flame ionization detector comprising:

a base;

a tube attached to the base for carrying fuel and a fluid sample and being a bias electrode;

a diffuser attached to the base, a distal end of the tube extending through a surface of the diffuser;

a passage in the base for admitting an oxidant to the diffuser;

a collector electrode defining a central cavity and held spaced apart from the distal end of the tube;

whereby oxidant flowing through the passage in the base flows through the diffuser to the distal end of the central tube, and wherein the distal end of the tube is spaced apart less than 5 mm from the surface of the diffuser, thereby minimizing turbulence at the distal end of the tube.

5,576,628

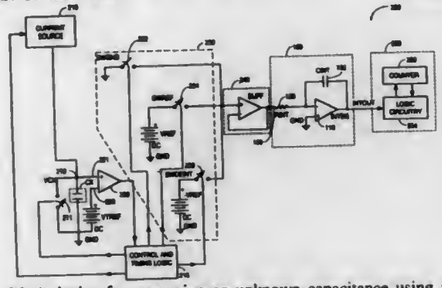
METHOD AND APPARATUS TO MEASURE CAPACITANCE

Amado A. Caliboso, Sunnyvale, and S. Fred Dabney, Jr., Saratoga, both of Calif., assignors to Telcom Semiconductor, Inc., Mountain View, Calif.

Filed Sep. 30, 1994, Ser. No. 316,598

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—678 **21 Claims**



16. A device for measuring an unknown capacitance using an integrating circuit having a feedback capacitor, said device comprising:

means for charging said unknown capacitance;

means for charging said feedback capacitor beginning at substantially the same time as said charging of said unknown capacitance;

means for comparing a voltage across said unknown capacitance to a voltage threshold and providing a control signal indicative of when said voltage across said unknown capacitance is charged to be substantially equal to said voltage threshold;

means for terminating the charging of said feedback capacitor when said control signal indicates that said voltage across said unknown capacitance is substantially equal to said voltage threshold;

means for discharging said feedback capacitor;

means for measuring the time necessary to substantially discharge said feedback capacitor; and

means for determining the value of said unknown capacitance from said measured time.

5,576,629

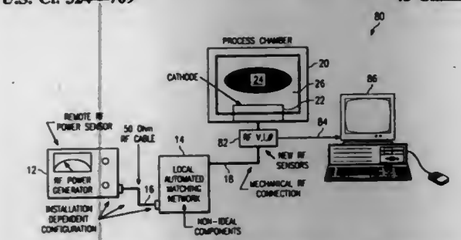
PLASMA MONITORING AND CONTROL METHOD AND SYSTEM

Terry R. Turner, Austin; James D. Spain, Georgetown, and John R. Swyers, Austin, all of Tex., assignors to Fourth State Technology, Inc., Austin, Tex.

Filed Oct. 24, 1994, Ser. No. 328,069

Int. Cl.[6] C23C *14/00;14/34;* **H01L** *21/306*

U.S. Cl. 324—709 **43 Claims**



1. A method for controlling the generation of plasma in a electronic device fabrication reactor, comprising the steps of:

sensing the voltage of the radio frequency power directed to a plasma-producing gas at the input to the plasma-producing environment of the electronic device fabrication reactor;

sensing the current of the radio frequency power directed to the plasma-producing gas at the input to the plasma-producing environment;

sensing the phase angle of the radio frequency power directed to the plasma-producing gas at the input to the plasma-producing environment;

measuring the full load impedance of the plasma-producing environment fabrication reactor; and

controlling the voltage, current, and phase angle of the radio frequency power directed to the plasma-producing gas within a predetermined region of variability.

5,576,630

PROBE STRUCTURE FOR MEASURING ELECTRIC CHARACTERISTICS OF A SEMICONDUCTOR ELEMENT

Kazuhide Fujita, Osaka, Japan, assignor to Nitto Denko Corporation, Osaka, Japan

Filed Jun. 16, 1994, Ser. No. 260,992

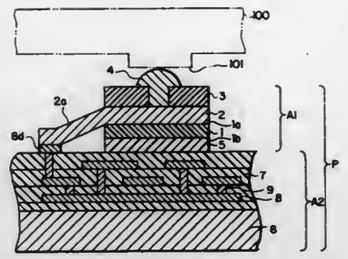
Claims priority, application Japan, Jun. 16, 1993, 5-144959; Jun. 16, 1993, 5-144964; Aug. 19, 1993, 5-205390; Aug. 19, 1993, 5-205393

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—760 **6 Claims**

1. A probe structure comprising:

a first electrically conductive circuit board having a structure wherein contact portions, which are contacted with the terminals of a material to be tested, are disposed in a first insulator in the direction of the thickness thereof so as to penetrate the



insulator and the contact portions are connected to a first electrically conductive wiring formed between the first insulator and a second insulator; and

a second electrically conductive circuit board having a coefficient of thermal expansion which is the same as or similar to that of the material to be tested, and having a structure wherein the first electrically conductive wiring is connected to a second electrically conductive wiring which is connected to an electric tester for testing the electric characteristics of the material to be tested; wherein,

said first electrically conductive circuit board is electrically connected to said second electrically conductive circuit board, and an elastic body is disposed between the first electrically conductive circuit board and the second electrically conductive circuit board.

5,576,631

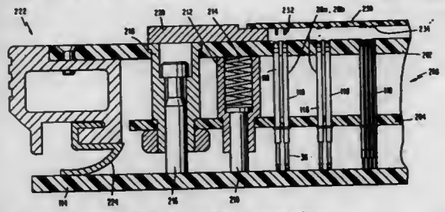
COAXIAL DOUBLE-HEADED SPRING CONTACT PROBE ASSEMBLY

Jeffrey P. Stowers, Stanton; Henri T. Burgers, Grottoes, and Paul D. Blackard, Waynesboro, all of Va., assignors to Virginia Panel Corporation, Waynesboro, Va.

Continuation-in-part of Ser. No. 848,894, Mar. 10, 1992, Pat. No. 5,227,718, and Ser. No. 49,395, Apr. 21, 1993, Pat. No. 5,420,519. This application Oct. 11, 1994, Ser. No. 320,514

Int. Cl.[6] G01R *15/12*

U.S. Cl. 324—761 **45 Claims**



22. An electrical interface board, comprising:

a frame including a first plate, said frame is positioned on a personality board, and includes a lower surface having a gasket, and the gasket provides a compressible air seal between said frame and the personality board; and

a plurality of double-headed probe assemblies extending axially through said first plate, each of said double-headed probe assemblies including

(i) a housing having first and second opposite open ends,

(iii) a first plunger partially .positioned within said housing, said first plunger having a first portion extending out from said housing through said first open end and terminating in a first electrical contact probe,

(iii) a second plunger partially positioned within said housing, said second plunger having a first portion extending out from said housing through said second open end and terminating in a second electrical contact probe, and

(iv) a compression spring positioned within said housing, axially biasing said first and second plungers outward from said housing,

wherein each of said first plungers further include a rod-like second portion, lengthwise contiguous with said first portion, positioned within respective housing, said second portion having a bearing surface for transmitting a torque, and each of said second plungers further include a tubular second portion, lengthwise contiguous with said first portion, positioned within said respective housing with said second portion of said first plunger positioned within said second portion of said second plunger, said second portion of said second plunger having an aperture for engaging said bearing surface of said first plunger, said first and second plungers being free to rotate within said housings and axially sliding and rotating the first and second electrical contact probes relative to each other.

5,576,632

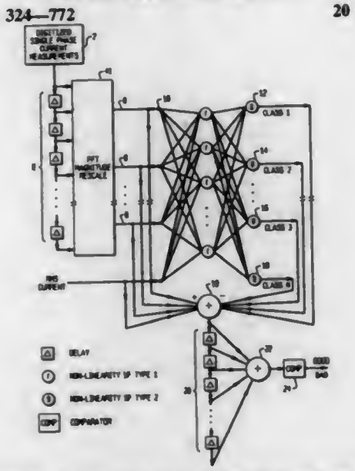
NEURAL NETWORK AUTO-ASSOCIATOR AND METHOD FOR INDUCTION MOTOR MONITORING

Thomas Petsche, Neshanic Station, and Stephen J. Hanson, Princeton, both of N.J., assignors to Siemens Corporate Research, Inc., Princeton, N.J.

Filed Jun. 30, 1994, Ser. No. 269,466

Int. Cl.[6] G06G *7/60;* **H02P** *7/36*

U.S. Cl. 324—772 **20 Claims**



1. Apparatus for detecting a departure from normal operation of an electric motor, comprising:

sensing means for measuring a set of current values for a motor being monitored;

first signal processing means coupled to said sensing means for deriving frequency spectral components associated with said set of current values;

a neural network auto-associator coupled to said first signal processing means and further coupled to said sensing means for receiving at least a portion of said frequency spectral components and at least a portion of said set of current values as an input vector and having output terminals for providing an output vector; and

second processing means coupled to said output terminals for comparing said input and output vectors for providing an error metric.

5,576,633

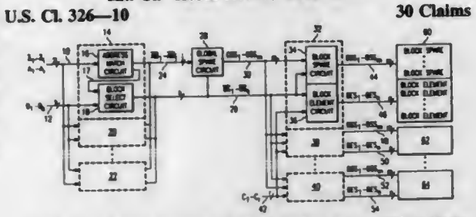
BLOCK SPECIFIC SPARE CIRCUIT

Robert N. Rountree; Dan Cline, both of Plano; Darryl G. Walker, Sugar Land, all of Tex.; Francis Hii, Singapore, Singapore, and David W. Bergman, Bedford, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 249,499, May 26, 1994. This application Jun. 7, 1995, Ser. No. 484,224

Int. Cl.[6] H03K *19/003;* **G06F** *11/16*

U.S. Cl. 326—10 **30 Claims**



1. A circuit for selecting a block spare in a semiconductor device, the circuit comprising:

a programmable circuit, responsive to a first group of address signals and a second group of address signals and first and second stored internal addresses, for producing an address match signal and a block select signal;

a global spare circuit, responsive to the address match signal, for producing a global spare select signal; and

a plurality of N block spare circuits receiving the global spare select signal, at least one block spare circuit, responsive to the global spare select signal and the block select signal, for producing a block spare select signal, thereby selecting a block spare.

5,576,634

BUS DRIVER FOR HIGH-SPEED DATA TRANSMISSION WITH WAVEFORM ADJUSTING MEANS

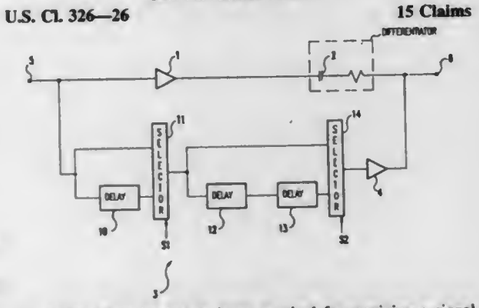
Hiroshi Kamiya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 18, 1995, Ser. No. 544,581

Claims priority, application Japan, Oct. 31, 1994, 6-267013

Int. Cl.[6] H03K *19/0175*

U.S. Cl. 326—26 **15 Claims**



1. A bus driver having an input terminal for receiving a signal and an output terminal for driving a bus, comprising:

a first buffer circuit having input and output terminals, said input terminal of said first buffer circuit being connected to said input terminal of said bus driver;

a differentiating circuit having input and output terminals, said input and output terminals of said differentiating circuit being connected to said output terminal of said first buffer circuit and said output terminal of said bus driver, respectively;

a delay circuit having input and output terminals, said input terminal of said delay circuit being connected to said input terminal of said bus driver; and

a second buffer circuit having input and output terminals, said input and output terminals of said second buffer circuit being connected to said output terminal of said delay circuit and said output terminal of said bus driver, respectively.

5,576,635

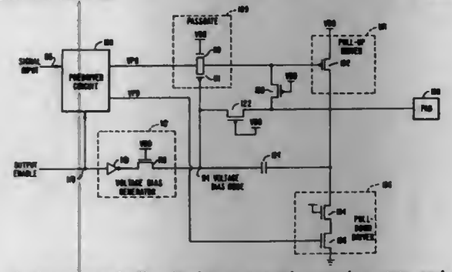
OUTPUT BUFFER WITH IMPROVED TOLERANCE TO OVERVOLTAGE

Hamid Partovi, Sunnyvale, and Matthew P. Crowley, Fremont, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 389,783, Feb. 14, 1995, abandoned. This application Apr. 17, 1995, Ser. No. 423,567

Int. Cl.[6] H03K *19/0185*

U.S. Cl. 326—27 **37 Claims**



1. An output buffer, having a normal operation state and a high-impedance state, comprising:

a pad, for providing and receiving a signal;

a passgate, comprising a first transistor having a gate coupled to a first supply voltage and a second transistor coupled in parallel with said first transistor and having a gate coupled to a voltage bias node;

a voltage bias generator, coupled to said voltage bias node, said voltage bias generator generates a first reference voltage when the output buffer is in the normal operation state and a second reference voltage when the output buffer is in the high-impedance state;

a pull-up transistor, having a source-to-drain path operatively coupling said first supply voltage to said pad, wherein said pull-up transistor provides a controlled variable impedance along said source-to-drain path in response to a control signal from a predriver coupled to a gate of said pull-up transistor through said passgate;

a first tracking transistor, coupled between a gate of said pull-up transistor and said pad and having a gate coupled to said first supply voltage;

a second tracking transistor, coupled between said pad and said voltage bias node and having a gate coupled to said first supply voltage; and

a coupling capacitor, coupled between said pad and said voltage bias node.

5,576,636

LOW POWER PROGRAMMABLE LOGIC ARRAYS

Terry L. Baucom, Folsom, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Aug. 15, 1995, Ser. No. 515,248

Int. Cl.[6] H03K *19/177;19/094*

U.S. Cl. 326—39 **8 Claims**

1. A programmable logic array for realizing a Boolean function from a plurality of inputs comprising:

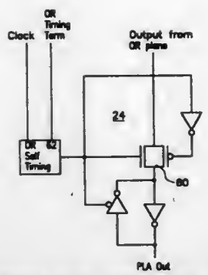
a plurality of AND gates that provide product terms from the plurality of inputs;

a plurality of OR gates that provide the Boolean function as output signals from the product terms;

a first field-effect transistor associated with each of the plurality of inputs, each input being coupled to the gate of the first field-effect transistor, with the source and drain of the first field-effect transistor being coupled to provide a source potential to a product term; and

a second field-effect transistor, the source, drain, and gate of the second field-effect transistor being coupled to the drains of each of the first field-effect transistors, a ground potential, and a clock signal, respectively;

a plurality of output circuits coupled to receive output signals from one of the plurality of OR gates, each of the output circuits including a switching circuit and a self-timing circuit, the switching circuit being enabled by a signal produced by the self-timing circuit to transfer an output signal to an output terminal, the signal being produced by gating the clock signal with an OR timing term.



5,576,637

XOR CMOS LOGIC GATE

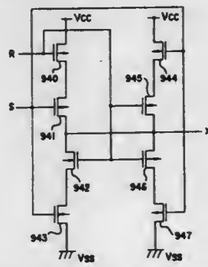
Takao Akaogi; Hiromi Kawashima; Tetsuji Takeguchi; Ryoji Hagiwara; Yasushi Kasa; Kiyoshi Itano, all of Kawasaki; Yasushige Ogawa, Kasugai, and Shouichi Kawamura, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 98,406, Aug. 6, 1993, abandoned. This application May 15, 1995, Ser. No. 441,460

Claims priority, application Japan, Dec. 9, 1991, 3-324701; Dec. 27, 1991, 3-346571; Jan. 14, 1992, 4-4678; Mar. 19, 1992, 4-64143; Jun. 5, 1992, 4-145300; Jun. 15, 1992, 4-154958; Sep. 15, 1992, 4-256594; Nov. 10, 1992, 4-299987; WIPO, Dec. 9, 1992, PCT/JP92/01608

Int. Cl.[6] H03K *19/21*

U.S. Cl. 326—55 **1 Claim**



1. An exclusive OR circuit, comprising:

a first series circuit in which the source of a first pMIS transistor (**940**) is connected to a positive-voltage power supply line, the drain of said first pMIS transistor is connected to the drain of a first nMIS transistor (**942**) via a second nMIS transistor (**941**), and the source of said first nMIS transistor is connected to a low-voltage power supply line via a fourth nMIS transistor (**943**); and

a second series circuit in which the drain of a third nMIS transistor (945) is connected to said high-voltage power supply line Vcc via a second pMIS transistor (944), the source of said third nMIS transistor is connected to the source of a third pMIS transistor (946), and the drain of said third pMIS transistor is connected to said low-voltage power supply line via a fourth pMIS transistor (947);

the gates of said first nMIS transistor, said third nMIS transistor, said first pMIS transistor, and said third pMIS transistor being connected to one another and provided with a first input (R); the gates of said second nMIS transistor, said fourth nMIS transistor, said second pMIS transistor, and said fourth pMIS transistor being connected to one another and provided with a second input (S); the sources of said second nMIS transistor and said third nMIS transistor being connected to each other and providing the exclusive OR (X) of said first and second inputs.

5,576,638

LEVEL SHIFT CIRCUIT WITH DC COMPONENT EXTRACTION AND CONTROLLED CURRENT MIRRORS

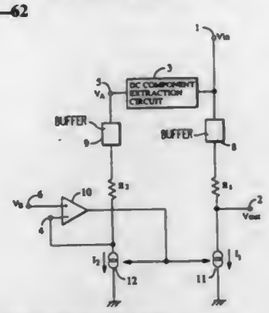
Toshiro Yada, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1995, Ser. No. 490,615

Claims priority, application Japan, Dec. 27, 1994, 6-325303

Int. Cl.[6] H03K *19/0175*

U.S. Cl. 326—62 **27 Claims**



1. A level shift circuit comprising:

a first circuit comprising a first buffer, a first resistor connected to said first buffer, and a first constant current source connected to said first resistor;

a DC component extraction circuit connected to an input node of said first buffer;

a second circuit comprising a second buffer connected to said DC component extraction circuit, a second resistor connected to said second buffer, and a second constant current source connected to said second resistor; and

an operational amplifier having an inverted node and a non-inverted node;

wherein an input signal of said level shift circuit is applied to said first circuit, a DC component voltage extracted from said input signal is applied to said second circuit, a voltage output from said second resistor is subtracted from said DC component voltage and is applied to said inverted node of the operational amplifier, and a reference voltage is applied to said non-inverted node of said operational amplifier, and

wherein the first and second constant current sources are controlled by an output node of the operational amplifier.

5,576,639

BICMOS LEVEL SHIFTER OF A SEMICONDUCTOR INTEGRATED CIRCUIT AND DATA OUTPUT BUFFER USING THE SAME

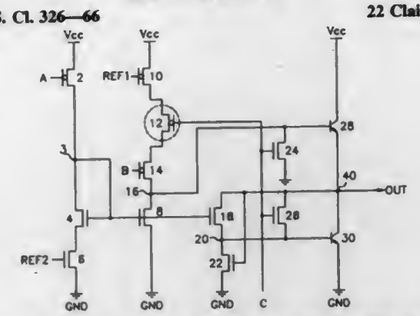
Chul-Sung Park, Ahnsan, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 4, 1995, Ser. No. 368,793

Claims priority, application Rep. of Korea, Jan. 14, 1994, 619/1994

Int. Cl.[6] H05K *19/08*

U.S. Cl. 326—66 **22 Claims**



1. A BICMOS level shifter of a semiconductor integrated circuit an input circuit for receiving and differentially amplifying first and second input signals to generate first and second amplified output signals, said input circuit including:

a pull-down transistor formed on a pull-down path of said input circuit to control a pull-down operation of a first output of said input circuit and which is controlled by a first reference signal having a first voltage level, said first amplified output signal being generated on said first output; and

a pull-up transistor formed on a pull-up path of said input circuit to control a pull-up operation of a second output of said input circuit and controlled by a second reference signal having a second voltage level which has a constant difference from said first voltage level, said second amplified output signal being generated on said second output; and

an output circuit for outputting a level shifted signal corresponding to said first and second amplified output signals.

5,576,640

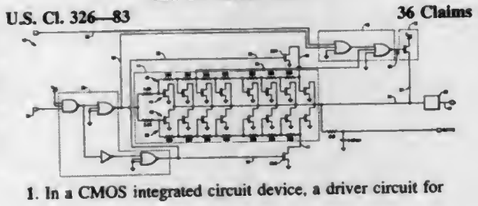
CMOS DRIVER FOR FAST SINGLE-ENDED BUS

Raymond F. Emmett; Eugene E. Freeman; Mark J. Jander; William K. Petty; Brian G. Reise, and Kevin M. Rishavy, all of Colorado Springs, Colo., assignors to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios Logic Inc., Fort Collins, Colo.

Filed Sep. 25, 1992, Ser. No. 952,674

Int. Cl.[6] H03K *19/0175*

U.S. Cl. 326—83 **36 Claims**



1. In a CMOS integrated circuit device, a driver circuit for

driving a bus line from a first voltage level to a second voltage level, said bus line being coupled to a terminator circuit that restores said bus line to said first voltage level from said second voltage level, said driver circuit comprising:

an active deassertion assist device coupled to said bus line for assisting said terminator circuit in restoring said bus line to said first voltage level from said second voltage level; and

a programmable control signal operable to control said active deassertion assist device.

5,576,641

OUTPUT BUFFER

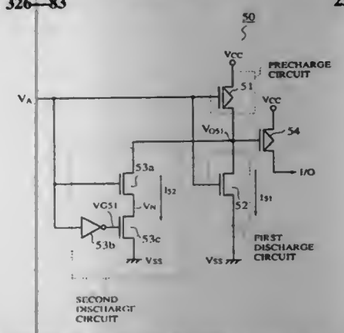
Kazuhide Yoneya, Kawasaki, and Hiroyuki Koinuma, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed May 25, 1995, Ser. No. 449,760

Claims priority, application Japan, May 30, 1994, 6-117022

Int. Cl.[6] H03K *19/0175;19/094*

U.S. Cl. 326—83 **25 Claims**



1. An output buffer having an input terminal and an output terminal, the input terminal receiving a control signal and the output terminal outputting high level data in response to the control signal, comprising:

a precharge circuit comprising a first PMOS transistor connected between a power source and a control node, a gate of the first PMOS transistor being connected to the input terminal, the precharge circuit charging the control node to a voltage potential;

a first discharge circuit, connected between the control node and a ground source, for discharging the voltage potential of the control node;

a second discharge circuit, connected between the input terminal and the control node, for discharging the voltage potential of the control node;

an output transistor comprising a second PMOS transistor connected between the power source and the output terminal, a gate of the second PMOS transistor being connected to the control node, the second PMOS transistor generating the high level data at the output terminal in response to the voltage potential of the control node,

wherein the precharge circuit stops charging the control node in response to the control signal, and the first discharge circuit and the second discharge circuit both begin discharging the control node in response to the first control signal, and the second discharge circuit stops discharging the control node before the second PMOS transistor is substantially turned on, while the first discharge circuit continues to discharge the control node until the second PMOS transistor is substantially turned on.

5,576,642

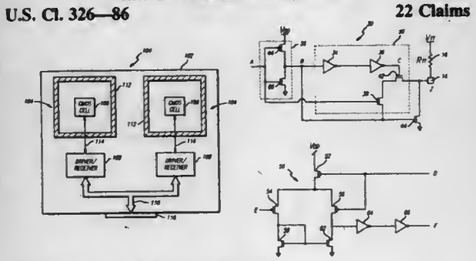
ELECTRONIC SYSTEM INCLUDING HIGH PERFORMANCE BACKPLANE DRIVER/RECEIVER CIRCUITS

Trung Nguyen, San Jose, and Anthony Y. Wong, Saratoga, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 828,404, Jan. 31, 1992, Pat. No. 5,408,146. This application Apr. 17, 1995, Ser. No. 422,844

Int. Cl.[6] H03K *19/0185;19/0948*

U.S. Cl. 326—86 **22 Claims**



1. An electronic device, comprising:

a substrate;

a CMOS circuit formed on the substrate;

a terminated bus line for signal transmission formed on the substrate;

a driver/receiver circuit formed on the substrate spaced from the CMOS circuit; and

a guard ring formed on the substrate around at least a part of the CMOS circuit which faces the driver/receiver circuit;

the driver/receiver circuit comprising:

a driver for receiving an input logic signal from the CMOS circuit and inducing a corresponding signal onto the bus line; and

a receiver for receiving an output signal from the bus line and providing a corresponding output logic signal to the CMOS circuit, the receiver comprising;

a receiver transistor having a gate electrically connected to the bus line and producing a current in relation to the received signal;

comparing means for comparing a voltage level of the received signal to a reference voltage level and for splitting the current into a first path having a current inversely proportional to the received signal and a second path having a current in proportion to the received signal; and

output means for providing the CMOS logic signal at a first logic state when the current in the first path is greater than the current in the second path, and for providing the CMOS logic signal at a second logic state when the current in the first path is less than the current in the second path.

5,576,643

DATA TRANSFER CIRCUIT DEVICE

Isamu Kobayashi, and Yasuhiro Yamamoto, both of Kasugai, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 6, 1995, Ser. No. 540,626

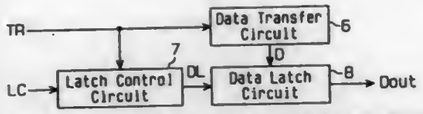
Claims priority, application Japan, Dec. 9, 1994, 6-306196

Int. Cl.[6] H03K *19/00*

U.S. Cl. 326—94 **7 Claims**

1. A data transfer circuit unit comprising:

a data transfer circuit for outputting transfer data therefrom in response to a transfer signal externally supplied thereto;



a latch control circuit for generating a data latch signal based on the transfer signal and a latch control signal, which are externally supplied thereto; and

a data latch circuit for latching the transfer data supplied from said data transfer circuit, based on the data latch signal from said latch control circuit, and for thereafter outputting the latched transfer data as output data,

wherein when the transfer data to said data latch circuit is being switched, said latch control circuit prevents the data latch signal from being supplied to said data latch circuit.

5,576,644

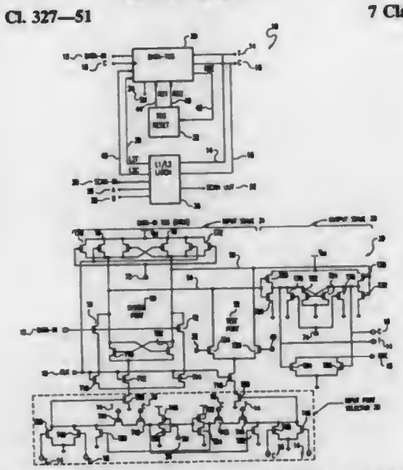
FAST EDGE TRIGGERED SELF-RESETTING CMOS RECEIVER WITH PARALLEL L1/L2 (MASTER/SLAVE) LATCH

Antonio R. Pelella, Highland Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 257,852, Jun. 10, 1994, Pat. No. 5,465,060. This application Jun. 2, 1995, Ser. No. 459,874

Int. Cl.[6] H03K *5/153*

U.S. Cl. 327—51 **7 Claims**



1. A method for receiving and generating full logic level true and complement data from a single-ended input signal, comprising the steps of:

receiving an input signal into a first input port on the rising edge of a clock pulse;

generating a voltage differential with a complementary current switch to create a true and a complement data signal for said input signal;

amplifying said true and said complement data signals to full logic levels at an output port;

generating a disable signal to disable said first input port;

generating a first reset signal from said true and complement data signals to reset said first input port; and

generating a second reset signal from said true and complement data signals to reset said output port.

5,576,645

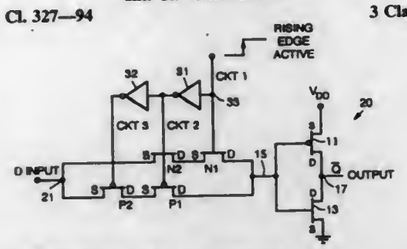
SAMPLE AND HOLD FLIP-FLOP FOR CMOS LOGIC

William D. Farwell, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 5, 1995, Ser. No. 465,669

Int. Cl.[6] G11C *27/02*

U.S. Cl. 327—94 **3 Claims**



1. A sample and hold flip-flop comprising:

clocking means responsive to a first clock signal for producing a second clock signal and a third clock signal, wherein the second clock signal is delayed inverted replica of the first clock signal and wherein the third clock signal is a delayed inverted replica of the second clock signal;

a CMOS inverter having an input and an output, wherein said output of said CMOS inverter forms the output of the sample and hold flip-flop;

a first MOS transistor of a first type having a gate terminal, a source terminal, and a drain terminal, said gate terminal being connected to said first clock signal and said drain terminal being connected to said input of said CMOS inverter;

a second MOS transistor of the first type having a gate terminal, a source terminal, and a drain terminal, said gate terminal being connected to said second clock signal, and said drain terminal being connected to said source terminal of said first MOS transistor of the first type;

a first MOS transistor of a second type having a gate terminal, a source terminal, and a drain terminal, said gate terminal being connected to said second clock signal and said drain terminal being connected to said input of said CMOS inverter;

a second MOS transistor of the second type having a gate terminal, a source terminal, and a drain terminal, said gate terminal being connected to said third clock signal, and said drain terminal connected to said source terminal of said first MOS transistor of the second type; and

wherein said source terminal of said second MOS transistor of the first type and said source terminal of said second MOS transistor of the second type are connected together to form an input of the sample and hold flip-flop.

5,576,646

TRANSCONDUCTOR CIRCUIT WITH HIGH-LINEARITY DOUBLE INPUT AND ACTIVE FILTER THEREOF

Francesco Rezzi, Pavia; Andrea Baschirotto, Tortona, and Rinaldo Castello, Arcore, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed Jun. 7, 1995, Ser. No. 473,533

Claims priority, application European Pat. Off., Jun. 30, 1994, 94830324

Int. Cl.[6] H03K *5/22;17/60*

U.S. Cl. 327—103 **28 Claims**

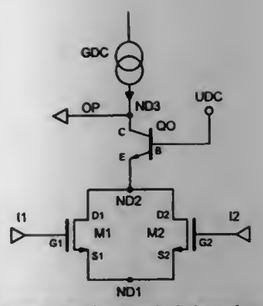
1. A transconductor circuit comprising:

a pair of field effect transistors connected in parallel, and each connected to receive a respective input signal on a gate terminal thereof; and

a bipolar transistor, having

a base terminal thereof connected to a constant voltage, and

a first current-carrying terminal thereof connected to be driven by the parallel combination of said field-effect transistors, and



a second current-carrying terminal thereof connected to be driven by a current generator and connected to provide an output;

whereby said bipolar transistor provides a reduced noise contribution when said respective input signals are at least partially out of phase.

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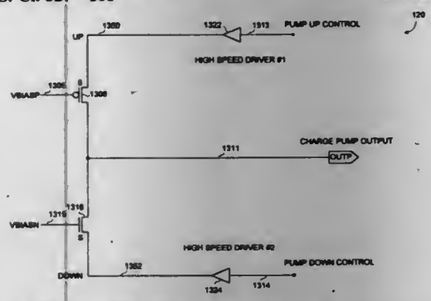
CHARGE PUMP FOR PHASE LOCK LOOP

Pantas Sutardja, San Jose, and Sehat Sutardja, Cupertino, both of Calif., assignors to Marvell Technology Group, Ltd., Bermuda

Filed Jun. 22, 1995, Ser. No. 493,799

Int. Cl.[6] H03K *5/13;* **H03L** *7/093*

U.S. Cl. 327—108 **3 Claims**



3. A uni-directional charge pump comprising:

a high speed switching driver having an output for providing an output signal having a voltage that rapidly swings up or down responsive to an input control signal; and

a transistor having a drain coupled to the output of the charge pump, having a gate coupled to a voltage bias line, and having a source coupled to the high speed switching driver.

5,576,648

TEMPERATURE STABLE CIRCUIT FOR CONTROLLED CURRENT DISCHARGE DURING THE DRIVING OF AN INDUCTIVE LOAD

Giorgio Rossi, Nerviano; Franco Cocetta, Cornaredo, and Fabio Marchio, Sedriano, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed Feb. 23, 1994, Ser. No. 202,043

Claims priority, application European Pat. Off., Apr. 30, 1993, 93830189

Int. Cl.[6] H03K *3/00;17/16;17/687;* **G05F** *1/40*

U.S. Cl. 327—110 **34 Claims**

1. A circuit for controlled discharge of energy from an inductive load, comprising:

an active semiconductor element having first and second terminals whereby it is cinnected in series with the inductive load between first and second terminals of a voltage supply source, and a control terminal for connection to a driver circuit: and

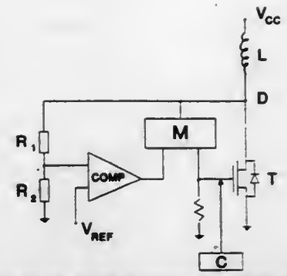
a control circuit, connected between the inductive load and the control terminal of the active element comprising

a voltage divider connected between the inductive load and the first terminal of the voltage supply source, and

a comparator having first and second input terminals respectively connected to an internal node of the voltage divider and to a temperature-independent and supply-voltage-independent voltage reference, and

an output terminal coupled to the control terminal of the active element, and

a current mirror circuit having an input leg connected to the output terminal of the comparator and an output leg connected to the control terminal of the active element.



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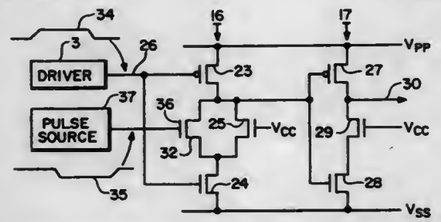
REPEATER WITH THRESHOLD MODULATION

Richard C. Foss, Kirkcaldy Fife, Scotland, assignor to Mosaid Technologies Incorporated, Kanata, Canada

Continuation of Ser. No. 923,534, Aug. 3, 1992, abandoned. This application Mar. 9, 1995, Ser. No. 401,300

Int. Cl.[6] H03B *1/00;* **H03K** *3/037*

U.S. Cl. 327—111 **9 Claims**



1. A VLSI circuit having at least one conductive track containing distributed parasitic elements, the track being divided into two or more separate segments, a repeater comprising at least one inverter joining each pair of segments together, a first of said at least one inverter having a controllable threshold of conduction, means for applying a modulating signal to said first of said at least one inverter for controlling said threshold of conduction, in which said repeater is comprised of a first stage formed of a first pair of complementary field effect transistors (FETs) having their gates connected together and to the end of an input segment, a source of one FET of one polarity type of said pair connected to one voltage rail, a source of a second FET of opposite polarity type at said pair being connected to another voltage rail, and a third FET of the same polarity type as the second FET having its source-drain circuit connected between the drains of the first and second FETs respectively, means for providing a first stage output signal from the drain of the first FET, and means for applying said modulating signal for controlling said threshold to the gate of the third FET.

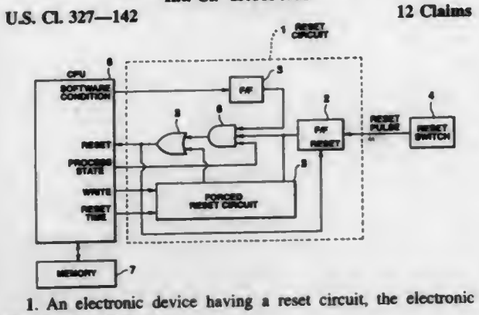
VOL 1192 ISS 3 NO 19 1996 UMI

5,576,650

RESET CIRCUIT OF ELECTRONIC DEVICE

Takayuki Hirotani, Yokohama; Takashi Orimoto, Akikawa; Kouji Moriya, Higashiyamato; Katsuyoshi Kaneko, Hamura, and Kazuyoshi Watanabe, Tokyo, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1995, Ser. No. 420,300
Claims priority, application Japan, Apr. 25, 1994, 6-110529
Int. Cl.[6] H03K *3/02*
U.S. Cl. 327—142 12 Claims



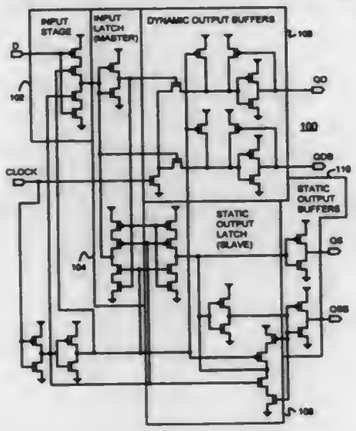
1. An electronic device having a reset circuit, the electronic device comprising:
a memory;
a processor having a reset terminal and a process state (PS) terminal for outputting a PS signal representing at least a data write state to said memory;
a reset switch; and
a reset circuit including a condition storage circuit and a gate circuit for controlling to pass a reset signal from said reset switch to said reset terminal of said processor,
wherein said processor causes said condition storage circuit to store reset inhibition data for inhibiting a reset operation before a predetermined program is executed, and
said gate circuit is controlled by said processor so as to be disabled, to prevent passing of the reset signal, when the PS signal represents the data write state and when said condition storage circuit stores the reset inhibition data.

5,576,651

STATIC/DYNAMIC FLIP-FLOP

Larry B. Phillips, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 22, 1995, Ser. No. 449,410
Int. Cl.[6] H03K *3/356;3/037*
U.S. Cl. 327—202 16 Claims



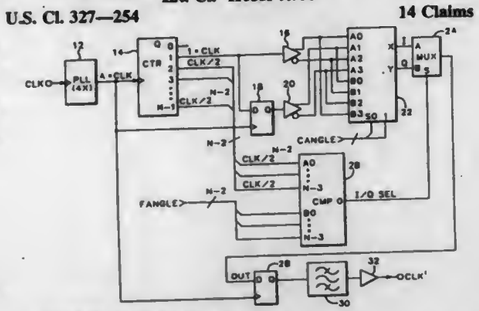
1. A storage element comprising:
first means for receiving dynamic and static input signals and providing static output signals in response thereto, the first means including a static flip-flop coupled to a static input latch for providing first and second intermediate complementary outputs on first and second intermediate output terminals, respectively; and
second means connected to the first and second intermediate output terminals for providing dynamic output signals, the second means including,
a first switching element having first terminal connected to a first node, a control terminal responsive to the first intermediate complementary output signal and a second terminal for providing a third intermediate complementary output signal,
a second switching element having a first terminal connected to the first node, a control terminal responsive to the second intermediate complementary output signal and a second terminal for providing a fourth intermediate complementary output signal, and
a third switching element having a first terminal connected to the first node, a second terminal connected to ground and a control terminal connected to a source of a clock signal.

5,576,652

DIGITAL PHASE SHIFTER

Kenneth A. Boehlke, Beaverton, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 262,119, Jun. 17, 1994, abandoned.
This application Oct. 18, 1995, Ser. No. 544,570
Int. Cl.[6] H03H *11/16*
U.S. Cl. 327—254 14 Claims



1. A digital phase shifter comprising:
means for digitally generating from an input clock signal two sets of complementary clock signals, the clock signals of one set being in quadrature with the clock signals of the other set; and
means, having the two sets of complementary clock signals input as quadrature pairs, for mixing the clock signals of a selected one of the quadrature pairs as a function of a desired phase shift to produce a phase shifted clock signal representing the input clock signal shifted in phase by the desired phase shift.

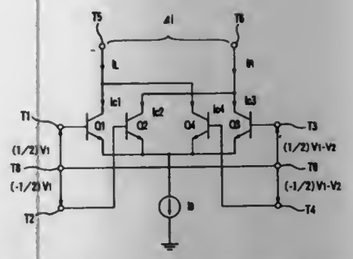
5,576,653

ANALOG MULTIPLIER OPERABLE ON A LOW SUPPLY VOLTAGE

Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 162,261, Dec. 7, 1993, abandoned.
This application Jun. 1, 1995, Ser. No. 458,008
Claims priority, application Japan, Dec. 8, 1992, 4-328258
Int. Cl.[6] G06F *7/44;* G06G *7/12*
U.S. Cl. 327—356 10 Claims

1. An analog multiplier for producing, across first and second output terminals, an output voltage equal to a product of a primary



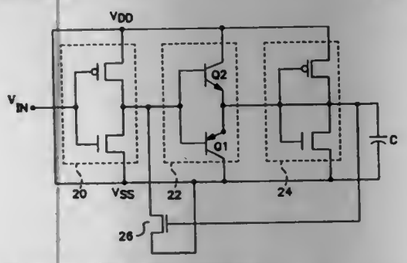
input voltage supplied across first and second input terminals and a secondary input voltage supplied across third and fourth input terminals, said analog multiplier comprising a first pair of first and second bipolar transistors and a second pair of third and fourth bipolar transistors, each of said transistors having a base electrode, an emitter electrode, and a collector electrode, wherein:
the base electrodes of said first and said second bipolar transistors are connected to said first and said second input terminals, respectively;
the base electrodes of said third and said fourth bipolar transistors being connected to said third and said fourth input terminals, respectively;
the collector electrodes of said first and said fourth bipolar transistors being connected in common to said first output terminal;
the collector electrodes of said second and said third bipolar transistors being connected in common to said second output terminal;
the emitter electrodes of said first through said fourth bipolar transistors being commonly connected.

5,576,654

BIMOS DRIVER CIRCUIT AND METHOD

Tzi-Hsiung Shu, Melbourne, and Kantilal Bacrania, Palm Bay, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed May 16, 1995, Ser. No. 441,726
Int. Cl.[6] H03K *17/60;17/687*
U.S. Cl. 327—433 20 Claims



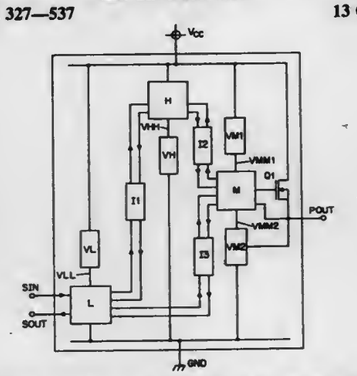
1. A BIMOS driver circuit comprising:
a first inverter connected to the BIMOS driver circuit input voltage for being driven thereby;
a push-pull device comprising a pair of PNP and NPN bipolar transistors having bases connected to an output from said first inverter for being driven thereby;
a second inverter connected to an output from said push-pull device for being driven thereby, an output from said second inverter being connected to a capacitive load driven by the BIMOS driver circuit; and
a feedback transistor having its control terminal connected to the output from said second inverter for being driven thereby, said feedback transistor being further connected to a base of a slower one of said PNP and NPN transistors of said push-pull device and to one of a power supply and a reference voltage for removing a base charge in said slower transistor.

5,576,655

HIGH-WITHSTAND-VOLTAGE INTEGRATED CIRCUIT FOR DRIVING A POWER SEMICONDUCTOR DEVICE

Tatsuhiko Fujihira, and Masaharu Nishiura, both of Nagano, Japan, assignors to Fuji Electric Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 978,270, Nov. 18, 1992, Pat. No. 5,399,916. This application Feb. 24, 1995, Ser. No. 394,185
Claims priority, application Japan, Nov. 29, 1991, 3-315688
Int. Cl.[6] H03K *3/01*
U.S. Cl. 327—537 13 Claims



1. A high-withstand-voltage integrated circuit for driving a power semiconductor device comprising:
a first main power-source terminal for providing a high main power-source potential;
a second main power-source terminal for providing a low main power-source potential;
a plurality of power sources for providing different potentials between the high and low main power-source potentials, comprising a low-potential power source and a high-potential power source;
respective-potential circuits comprising a low-potential circuit connected to the low-potential power source and said low main power-source potential and a high-potential circuit connected to the high-potential power source and said high main power-source potential, each respective-potential circuit having a respective high-potential side and a respective low-potential side with potential of the high-potential side of the high-potential circuit being higher than potential of the high-potential of the low-potential circuit and with potential of the low-potential side of the high-potential circuit being higher than potential of the low potential side of the low-potential circuit; and
a first interface-circuit means connected between the low-potential circuit and the high-potential circuit for transmitting signals between the low-potential circuit and the high potential circuit.

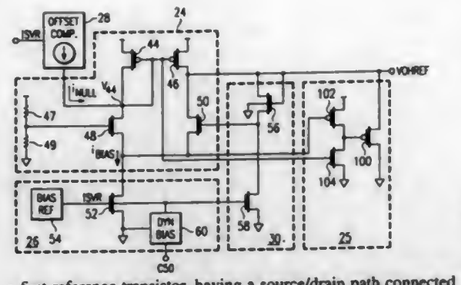
5,576,656

VOLTAGE REGULATOR FOR AN OUTPUT DRIVER WITH REDUCED OUTPUT IMPEDANCE

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation-in-part of Ser. No. 360,229, Dec. 20, 1994. This application Mar. 31, 1995, Ser. No. 414,103
Int. Cl.[6] G05F *1/10*
U.S. Cl. 327—538 17 Claims

1. A voltage reference circuit, comprising:



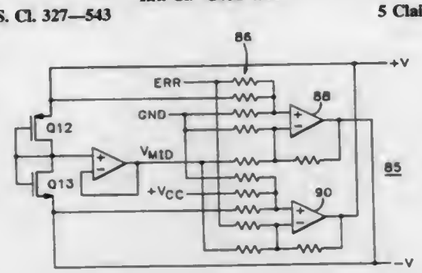
a first reference transistor, having a source/drain path connected on a first end to a power supply voltage, and having a gate connected to a drain end of its source/drain path;
a second reference transistor, having a source/drain path connected between a second end of the source/drain path of the first reference transistor and a common node, and having a gate for receiving a reference voltage;
a first mirror transistor, having a source/drain path connected between the power supply voltage and an output node, and having a gate connected to the gate of the first reference transistor;
a second mirror transistor, having source/drain path connected between the output node and the common node, and having a gate;
a bias current source, coupled to the common node, for conducting a current including the sum of the currents in the second reference transistor and the second mirror transistor; and
a sink current path circuit, connected to the output node, for conducting current responsive to the voltage at the output node exceeding a desired level, wherein the sink current path circuit comprises:
a sink transistor having a conduction path connected between the output node and ground, and having a control electrode;
a sink bias circuit coupled to the control electrode of the sink transistor, for turning on the sink transistor responsive to a rise in the voltage at the output node.

5,576,657

VARIABLE REFERENCE VOLTAGE GENERATOR

Arnold M. Frisch, Portland, and Thomas A. Almy, Tualatin, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Division of Ser. No. 138,856, Oct. 18, 1993, Pat. No. 5,428,626. This application Jun. 26, 1995, Ser. No. 495,015
Int. Cl.[6] G05F *1/10*
U.S. Cl. 327—543 **5 Claims**



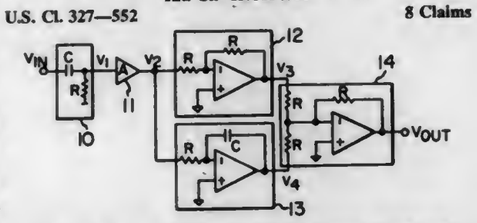
1. An apparatus for generating a pair of variable voltage rails in response to a control signal comprising:
a pair of opposite polarity field effect transistors having their drains and gates coupled together and providing a positive voltage rail at one source and a negative voltage rail at the other source as the pair of variable voltage rails; and
a positive voltage source coupled between the one source and a positive terminal of a power supply and a negative voltage source coupled between the other source and a negative terminal of the power supply so that the control signal is added to the positive terminal of the power supply and subtracted from the negative terminal of the pair of voltage rails that approaches the power supply voltage.

5,576,658

PULSE SHAPING CIRCUIT

Kazuo Hushimi, and Masahiko Kuwata, both of Tokyo, Japan, assignors to JEOL Ltd., and JEOL Engineering Co. Ltd., both of Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 466,825
Claims priority, application Japan, Jun. 6, 1994, 6-123516
Int. Cl.[6] H03K *5/00*
U.S. Cl. 327—552 **8 Claims**



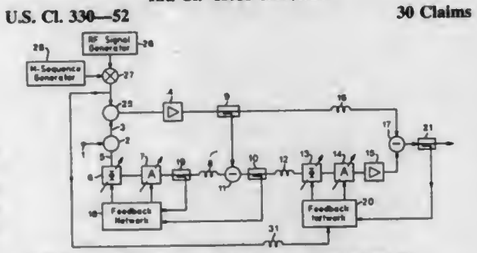
1. A pulse shaping circuit for a step input signal comprising:
a differentiator circuit having an input and an output, said differentiator circuit connected for differentiating said step input signal, said differentiator circuit having a time constant;
an integrator circuit having an input and an output, and a time constant equal to the time constant of said differentiator circuit, said integrator circuit connected to integrate an output signal from said differentiator circuit; and
an adding circuit having inputs and an output, said adding circuit coupled to said differentiator circuit and said integrator circuit for adding the output signal from said differentiator circuit and the output signal from said integrator circuit to provide an amplified step output.

5,576,659

METHOD AND APPARATUS FOR SIGNAL PROCESSING USING REFERENCE SIGNALS

Peter B. Kenington, Winterbourne; Mark A. Beach, Lower Langford, and Joseph P. McGeehan, Corsham, all of England, assignors to British Technology Group Limited, London, England

PCT No. PCT/GB93/02379, § 371 Date Jun. 14, 1995, § 102(e) Date Jun. 14, 1995, PCT Pub. No. WO94/14238, PCT Pub. Date Jun. 23, 1994
PCT Filed Nov. 19, 1993, Ser. No. 448,523
Claims priority, application United Kingdom, Dec. 15, 1992, 9226145; Feb. 18, 1993, 9303248
Int. Cl.[6] H03F *3/66;1/26*
U.S. Cl. 330—52 **30 Claims**



1. A method of processing signals comprising steps of:
combining a spread spectrum reference signal with an input signal to be processed into a combined signal;

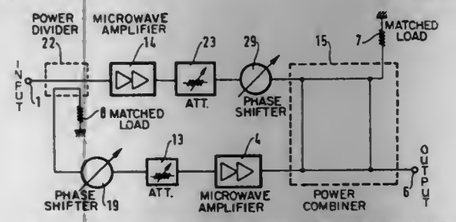
processing said combined signal to provide a processed combined signal;
deriving an intermediate signal dependent on said processed combined signal and Said input signal;
adjusting at least one of a phase and an amplitude of said intermediate signal in response to control signals to form an adjusted intermediate signal;
combining said adjusted intermediate signal with at least one of said combined signal and said processed combined signal to form a resultant signal; and
deriving said control signals from said resultant signal.

5,576,660

BROADBAND PREDISTORTION LINEARIZER WITH AUTOMATIC TEMPERATURE COMPENSATION FOR MICROWAVE AMPLIFIERS

Michel Pouysegur, Noe, and François Nicolas, St Orens De Gameville, both of France, assignors to Alcatel Espace, Nanterre Cedex, France

Filed May 5, 1995, Ser. No. 435,660
Claims priority, application France, May 11, 1994, 94 05821
Int. Cl.[6] H03F *1/26;1/30*
U.S. Cl. 330—149 **11 Claims**



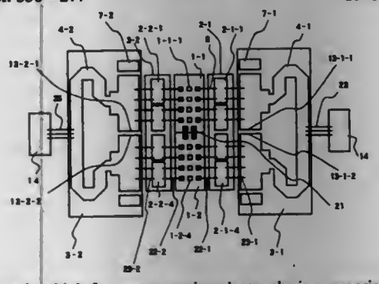
1. A predistortion linearizer for microwave amplifiers including:
an input power divider having one input and two outputs with a relative phase-shift of 90° between said two outputs;
a linear channel and a non-linear channel, said linear and non-linear channels having substantially the same electrical length and comprising identical circuit elements; and
an output power combiner having two inputs and one output with a relative phase-shift of 90° between said two inputs.

5,576,661

FREQUENCY CHARACTERISTIC OF SEMICONDUCTOR DEVICE IN ULTRA-HIGH FREQUENCY BAND

Akira Kumagai, Yamagata, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 428,349
Claims priority, application Japan, Apr. 28, 1994, 6-090883
Int. Cl.[6] H03F *3/193*
U.S. Cl. 330—277 **13 Claims**



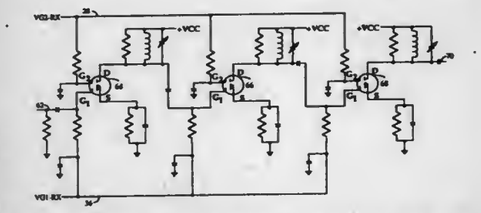
4. An ultra-high frequency semiconductor device comprising:
Field Effect transistor (FET) chips, each including FET elements, said FET chips being connected to each other by bonding wires, and
an internal matching circuit having a concentrated parameter circuit and a distributed parameter circuit;
wherein said concentrated parameter circuit includes capacitor chips provided on input and output sides of said FET chips and including a plurality of chip capacitors each of which is connected to said corresponding FET elements;
wherein each of said chip capacitors has a length predetermined based on a frequency band used in practice;
wherein said distributed parameter circuit includes a microstrip line having branch ports provided with a gap; and
wherein said semiconductor device further comprises a bonding wire connected between the branch ports.

5,576,662

COMPENSATED GAIN-CONTROLLED AMPLIFIER HAVING A WIDE LINEAR DYNAMIC RANGE

J. Michael Price, La Mesa; Charles E. Wheatley, III, Del Mar, and Katherine W. White, San Diego, all of Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Continuation of Ser. No. 336,623, Nov. 9, 1994, abandoned, which is a division of Ser. No. 76,228, Jun. 14, 1993, Pat. No. 5,408,697. This application Oct. 24, 1995, Ser. No. 547,340
Int. Cl.[6] H03F *3/16;* H03G *3/30*
U.S. Cl. 330—277 **12 Claims**



1. An amplifier circuit for amplifying a received signal, the amplifier circuit comprising:
a gain setting circuit for generating a gain compensation signal which remains constant as a function of temperature;
a temperature sensing circuit for generating a temperature compensation signal which remains constant as a function of said gain compensation signal, and
a dual gate field effect transistor circuit having a first gate coupled to said temperature sensing circuit and coupled to said receive signal and a second gate coupled to said gain setting circuit, the field effect transistor generating an amplified signal from the received signal in response to the temperature compensation signal and the gain compensation signal.

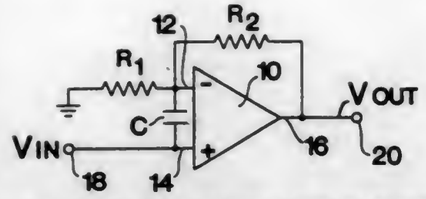
5,576,663

WIDEBAND GAIN STABLE AMPLIFIER

Leonard L. Kleinberg, Greenbelt, Md., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 24, 1995, Ser. No. 412,776
Int. Cl.[6] H03F *3/189*
U.S. Cl. 330—306 **18 Claims**

16. A method of increasing the 3 dB drop-off frequency of a wideband amplifier having an inverting input, a non-inverting input and an output, and wherein an input signal is coupled to one of said inputs, comprising the steps of:



adding a feedback network between said output and one input of said inverting and non-inverting inputs and feeding a portion of an output signal back to said one input; and

connecting a capacitive reactance across said inverting and non-inverting inputs and having a capacitance value inversely proportional to $\alpha f_C \beta$, where αf_C is the closed loop gain with α being said portion of the output signal fed back to said one input and f_C being the gain-bandwidth product DC or 0 Hz and a 3 dB drop-off frequency and where β is a factor which equates the absolute value of the gain of the amplifier circuit at two different operational frequencies f_m and f_n between 0 Hz and the 3 dB drop-off frequency.

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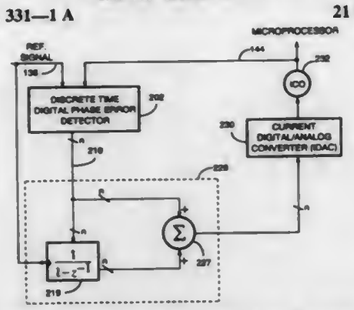
DISCRETE TIME DIGITAL PHASE LOCKED LOOP

Barry W. Herold, Boca Raton; Scott R. Humphreys, Boynton Beach; Phillip Johnson, Lake Worth; Raymond L. Barrett, Jr., Ft. Lauderdale, and Grazyna A. Pajunen, Delray Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 2, 1995, Ser. No. 556,882

Int. Cl.[6] H03L *7/093*

U.S. Cl. 331—1 A **21 Claims**



1. A discrete time digital phase locked loop for maintaining a generated signal locked to a reference signal, the discrete time digital phase locked loop comprising:

a discrete time digital phase error detector coupled to the reference signal and coupled to the generated signal for sequentially producing a plurality of discrete time digital phase error samples, each indicative of a phase difference between the reference signal and the generated signal, the plurality of discrete time digital phase error samples including a current sample;

an accumulator coupled to the discrete time digital phase error detector and coupled to the reference signal for calculating an accumulator output value equal to a first sum of the current sample and all of the plurality of discrete time digital phase error samples produced prior to the current sample;

an adder coupled to the discrete time digital phase error detector and coupled to the accumulator for forming a second sum of the current sample and the accumulator output value; and

a controlled oscillator coupled to the adder for receiving the second sum, which is utilized for controlling the controlled oscillator, wherein the controlled oscillator is also coupled to the discrete time digital phase error detector for providing the generated signal thereto.

5,576,665

METHOD AND DEVICE FOR PHASE-SHIFTING A PHASE LOCKED LOOP OUTPUT SIGNAL

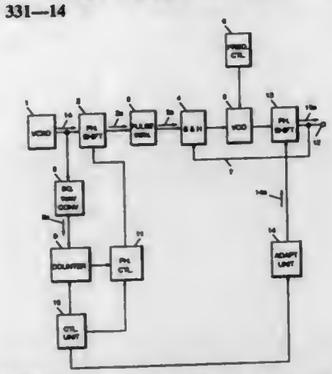
Lars Erhage, Göteborg, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jun. 30, 1995, Ser. No. 497,049

Claims priority, application Sweden, Jul. 6, 1994, 9402384

Int. Cl.[6] H03L *7/081;7/16*

U.S. Cl. 331—14 **7 Claims**



1. A method for changing a phase of a generated signal by a predetermined value in a device for frequency generation in which the generated signal is phase locked to a reference signal, whereby the generated signal, whose frequency can be a non-integer multiple of a frequency of the reference signal, is phase locked to the reference signal by changing a phase of the reference signal every period by a value that determines the frequency of the generated signal, wherein the changing of the phase of the generated signal is performed by not changing the phase of the reference signal during at least one period of the reference signal.

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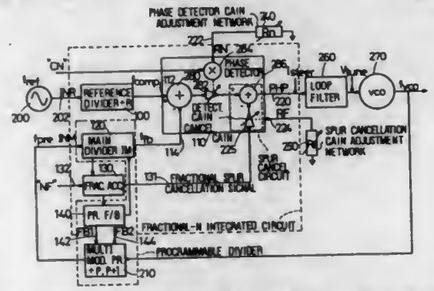
FRACTIONAL-N FREQUENCY SYNTHESIZER WITH TEMPERATURE COMPENSATION

Roger Rauvola, Carlsbad, Calif., assignor to Nippondenso Technical Center USA, Inc., Carlstad, Calif.

Filed Nov. 12, 1993, Ser. No. 150,881

Int. Cl.[6] H03L *7/18;7/08*

U.S. Cl. 331—25 **12 Claims**



1. A temperature compensated fractional-N phase locked loop, which synthesizes a desired output frequency from a given reference frequency, by using fractional division ratios, comprising:

a phase detector, which compares a phase of the reference frequency with a phase of a feedback frequency, and outputs an oscillator steering signal indicative of a difference therebetween;

a voltage controlled oscillator, which produces said desired output frequency based at least partly on said oscillator steering signal;

a programmable divider, receiving said frequency from said voltage controlled oscillator, and dividing said frequency by a dividing ratio, determined from at least two dividing ratios based on a dividing control signal and whose average dividing value has a fractional portion, to produce at its output said feedback frequency;

an accumulator, which controls said fractional portion of said programmable divider's average dividing ratio via said dividing control signal and whose state indicates an error caused by a difference between a current dividing ratio and a desired average dividing ratio, with said error modulating said oscillator steering signal, causing an unwanted spur in an output frequency spectrum of said voltage control oscillator,

said phase detector including:

a phase detector gain adjustment port,

a phase detector gain adjustment network attached to said gain adjustment port that at least partially determines a gain of said phase detector,

a spur cancellation gain adjustment port,

a spur cancellation gain network attached to said spur cancellation port,

a spur cancellation circuit to which said spur cancellation gain adjustment port is coupled and receiving from said accumulator a signal indicative of said error and using said signal indicative of error to reduce said spur caused by said error by 1) amplifying said signal indicative of error using a spur cancellation gain element by an amount dependent on values of components of said spur cancellation gain network, and by 2) combining said amplified signal indicative of error with said error modulated oscillator steering signal,

wherein said spur cancellation gain network includes only non-temperature compensated components therein and said phase detector gain adjustment network includes a temperature compensation component therein to temperature compensate simultaneously a gain of said phase detector gain and said spur cancellation, and where an uncompensated temperature variation in said phase detector gain controlled by said gain adjustment network, has a greater effect on spur level than an uncompensated temperature variation of said spur cancellation gain controlled by said spur cancellation gain network.

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VOLTAGE CONTROL TYPE OSCILLATOR

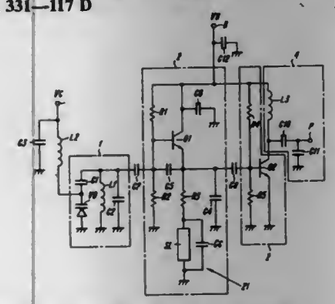
Shinji Goma, Komatsu, Japan, assignor to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Nov. 21, 1995, Ser. No. 561,317

Claims priority, application Japan, Nov. 22, 1994, 6-287830

Int. Cl.[6] H03B *5/18*

U.S. Cl. 331—117 D **17 Claims**



1. A voltage control type oscillator comprising:

a resonance circuit including a parallel resonance circuit; and

an oscillation stage wherein an oscillation frequency of said oscillation stage varies within a predetermined frequency band by varying a resonance frequency of the parallel resonance circuit of said resonance circuit on the basis of an inputted control voltage, said oscillation stage including:

an active element having a current output terminal and adapted to compensate for a power loss in said parallel resonance circuit;

a bias resistor for regulating the DC bias of the current output terminal of said active element;

a strip line connected in series with said bias resistor, said strip line having an inductance larger than that of said bias resistor within a predetermined frequency band; and

a chip capacitor which is connected in parallel to said strip line and whose capacitance value is determined so that said chip capacitor resonates at a predetermined frequency in cooperation with said strip line.

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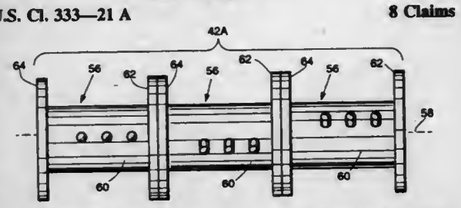
TANDEM CIRCULAR POLARIZER

Robert T. Clark, Buena Park, and Alan R. Keith, Fullerton, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 26, 1995, Ser. No. 379,402

Int. Cl.[6] H01P *1/17*

U.S. Cl. 333—21 A **8 Claims**



1. A polarizer system operative with an electromagnetic wave to introduce a predetermined relative amplitude and a predetermined relative phase between orthogonal components of said wave, the system comprising:

a first polarizer section and a second polarizer section disposed in tandem along a path of propagation of said waves and being rotatable relative to each other about a longitudinal axis extending through said first and said second polarizer sections, said longitudinal axis being parallel to said path of propagation;

wherein each of said polarizer sections comprises a section of waveguide extending along said longitudinal axis, an adjustable phase shift means positioned for interaction with said wave within said section of waveguide, said interaction with said wave being dependent on an orientation of said polarizer section about the longitudinal axis relative to a direction of polarization of said wave;

each of said first and said second polarizer sections is oriented approximately at a selected orientation which provides equal interaction with orthogonal components of said wave;

said first and said second polarizer sections are offset in opposite directions from said selected orientation by rotation about said longitudinal axis to provide a predetermined amount of phase shift between said orthogonal components concurrently with a predetermined ratio of amplitudes of said orthogonal components; and

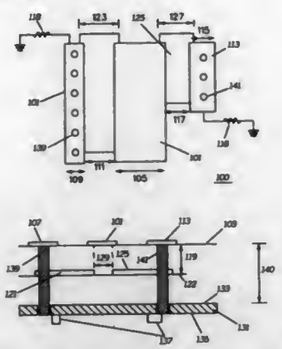
a third polarizer section being rotated about said axis to an orientation closer to said selected orientation than said first and said second polarizer sections.

5,576,669

MULTI-LAYERED BI-DIRECTIONAL COUPLER

Charles R. Ruelke, Davie, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 28, 1995, Ser. No. 431,177
Int. Cl.[6] H01P 5/18
U.S. Cl. 333—116 28 Claims



24. A method of increasing the coupling coefficient of a bi-directional coupler device which includes at least one transmission line and at least one parasitic coupling device comprising the steps of:

positioning a coupling structure in a parallel plane with said transmission line and said at least one parasitic coupling device;

aligning said coupling structure at a predetermined distance from said at least one transmission line and said coupling device so said coupling structure occupies an area in said parallel plane which is substantially between said transmission line and said coupling device; and

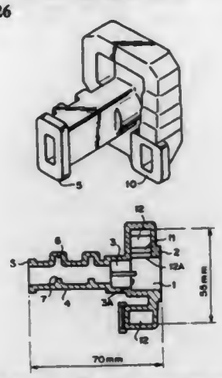
electrically interconnecting the at least one parasitic coupling device and coupling structure using at least one via.

5,576,670

BRANCHING FILTER FOR TRANSMITTER-RECEIVER

Takuya Suzuki, and Yoshio Minowa, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Dec. 23, 1994, Ser. No. 363,414
Claims priority, application Japan, Dec. 28, 1993, 5-334262
Int. Cl.[6] H01P 5/16
U.S. Cl. 333—126 13 Claims



1. A branching filter used for a transmitter-receiver comprising:

an orthogonal-mode transducer having a central axis, a transmission side and a reception side, an antenna connection port connected opposite said reception side, and a first impedance transducer coupled to the reception side;

a reception filter having opposed sides with a receiver port on one side, and being connected on the other side to said reception side of said first impedance transducer, said reception filter extending along said central axis of said orthogonal-mode transducer; and

a transmission filter having a cut off waveguide for attenuating signals on a reception frequency band and which is orthogonally and directly connected to said orthogonal-mode transducer at one end of the cut off waveguide, and a transmitter port at the other end of the cut off waveguide,

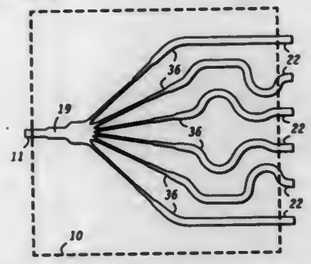
wherein said orthogonal-mode transducer, said reception filter and said transmission filter are an integral single body.

5,576,671

METHOD AND APPARATUS FOR POWER COMBINING/DIVIDING

Bill T. Agar, Jr., Chandler; David W. Corman, Gilbert, and Kenneth V. Buer, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 24, 1995, Ser. No. 427,323
Int. Cl.[6] H01P 5/12
U.S. Cl. 333—128 14 Claims



1. A power combiner for adding a plurality of input signals to produce a single output signal, the power combiner comprising:

a substrate;

a phase delay network on the substrate, the phase delay network comprising a plurality of parallel coupled transmission line elements, having an electrical length θ longer than a preceding line and θ shorter than a next line, where θ=180 degrees divided by n, and n is a number of the plurality of input signals to be combined;

a plurality of input transmission lines each having an input characteristic impedance and each comprised of a serial combination of varying characteristic impedances on the substrate, wherein the plurality of input transmission lines receive the plurality of input signals from the plurality of transmission line elements in the phase delay network at first ends and combine the plurality of input signals into a combined signal at a second end comprising a common node with an intermediate characteristic impedance; and

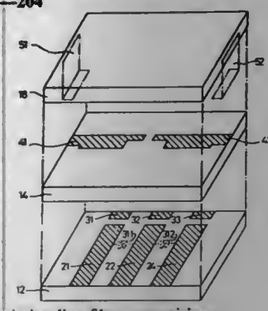
an output transmission line comprised of a serial combination of varying characteristic impedances on the substrate, wherein the output transmission line receives the combined signal at a first end and produces the combined signal at a second end with an output characteristic impedance wherein the intermediate characteristic impedance is an intermediate impedance between the input characteristic impedance of the plurality of input transmission lines and the characteristic impedance of the output transmission line.

5,576,672

LAYERED STRIPLINE FILTER INCLUDING CAPACITIVE COUPLING ELECTRODES

Takami Hirai, Nishikamo-gun, and Shinsuke Yano, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 24,303, Mar. 1, 1993, Pat. No. 5,412,358.
This application Jan. 30, 1995, Ser. No. 380,667
Claims priority, application Japan, Feb. 28, 1992, 4-043313; Feb. 28, 1992, 4-043315
Int. Cl.[6] H01P 1/20
U.S. Cl. 333—204 13 Claims



1. A transmission line filter, comprising:

a first ground electrode;

a dielectric layer disposed on said first ground electrode;

an input-side resonator disposed in said dielectric layer along a first plane;

an output-side resonator disposed in said dielectric layer along said first plane;

a coupling electrode disposed in said dielectric layer along a second plane which is parallel to said first plane and in an opposed facing relationship both to a portion of said input-side resonator and to a portion of said output-side resonator; and

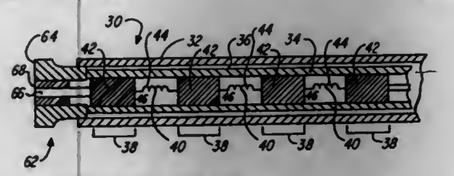
an input electrode and an output electrode, one of said input electrode and said output electrode being disposed in said dielectric layer along a third plane which is parallel to said second plane and in an opposed facing relationship to a portion of said coupling electrode.

5,576,673

SMALL, LOW-PASS FILTER FOR HIGH POWER APPLICATIONS

Ajay Asija, Brighton, N.Y., assignor to Harris Corporation, Melbourne, Fla.

Filed Sep. 8, 1994, Ser. No. 302,413
Int. Cl.[6] H01P 1/205; 1/202
U.S. Cl. 333—206 34 Claims



1. An electrical filter comprising:

an alternating series of at least one capacitive element and at least one inductive element,

said series being within an intermediate dielectric surrounded by an outer electrical conductor,

said capacitive element comprising an inner electrical conductor that contacts said intermediate dielectric, and

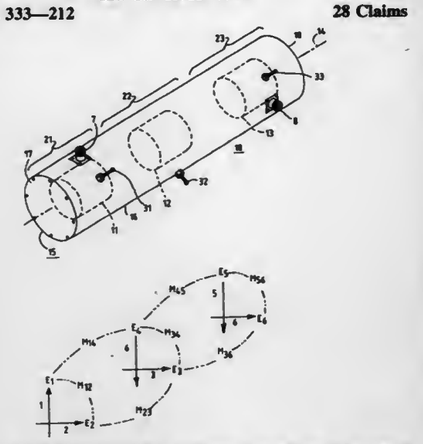
said inductive element comprising an inner dielectric other than air that contacts said intermediate dielectric and said inner electrical conductor.

5,576,674

OPTIMUM, MULTIPLE SIGNAL PATH, MULTIPLE-MODE FILTERS AND METHOD FOR MAKING SAME

Douglas R. Jachowski, Maui, Hi., assignor to Allen Telecom Group, Incorporated, Solon, Ohio

Filed Mar. 17, 1995, Ser. No. 406,119
Int. Cl.[6] H01P 1/208
U.S. Cl. 333—212 28 Claims



1. A method for constructing a multiple signal path, frequency spectrum filter, the filter including:

material elements giving rise to at least five resonances at a common frequency, f_0;

means for coupling signal energy between at least some of said resonances;

signal input means for coupling an input signal to at least one of said resonances;

signal output means for coupling an output signal from at least one of said resonances;

sequential connections of one or more of said means for coupling signal energy forming signal paths;

at least two signal paths connecting the input means with the output means; and

said two signal paths differing in at least one coupling; the method comprising the steps of:

(a) forming a matrix of resonator coupling coefficients, m, representing and satisfying a pre-determined power transfer characteristic;

(b) selecting an ordered set of plane rotation matrices $\{R_{p1,q1}, R_{p2,q2}, \ldots, R_{pn,qn}\}$, with each plane rotation matrix, $R_{pi,qi}$, where i=1,2, . . . , n, a modified identity matrix comprising:

a rotation angle, $\theta_{pi,qi}$;

matrix elements $R_{pi,pi}=R_{qi,qi}=\cos[\theta_{pi,qi}]$;

matrix elements $R_{pi,qi}=(-R_{qi,pi})=\sin[\theta_{pi,qi}]$;

where the subscripts pi and qi of said rotation matrix elements represent the matrix row and column indices, respectively; and

where at least one of said rotation angles of said plane rotation matrices is selected as an independent variable;

(c) performing a sequence of ordered orthogonal similarity transformation updates on the coupling coefficient matrix wherein said sequence of orthogonal similarity transformations is of the form:

$$M_i=S(M_{i-1},R_{pi,qi})\,[R_{pi,qi}{}^{T}\cdot M_{i-1}\cdot R_{pi,qi}],$$

where M_0=m and i=1, 2, . . . , n, and where $S(M_{i-1}, R_{pi,qi})$ is an orthogonal similarity transformation of coupling coefficient matrix M_{i-1} by said plane rotation matrix $R_{pi,qi}$;

(d) constructing a plot of functions of at least some of the matrix elements of the orthogonally transformed coupling coefficient matrix, M_n, as a function of said at least one independent rotation angle variable to create a design space plot;

(e) selecting, in accordance with at least one predetermined criterion, a preferred filter realization, corresponding to a particular value of each of said independent variables, from the design space plot; and

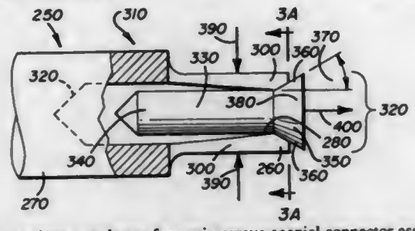
(f) constructing a filter in accordance with the preferred filter realization.

5,576,675

MICROWAVE CONNECTOR WITH AN INNER CONDUCTOR THAT PROVIDES AN AXIALLY RESILIENT COAXIAL CONNECTION

William W. Oldfield, Redwood City, Calif., assignor to Wiltron Company, Morgan Hill, Calif.

Filed Jul. 5, 1995, Ser. No. 498,181
Int. Cl.[6] H01P 1/04
U.S. Cl. 333—260 16 Claims



1. An inner conductor for a microwave coaxial connector assembly for mating with a microwave device, comprising:

a cylindrical conducting member having a central bore and slots forming fingers; and

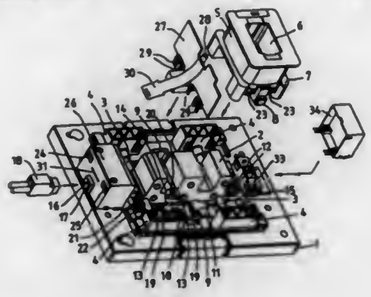
a cylindrical pressure contact member having a tapered end said cylindrical pressure contact member being inserted into said central bore so that said tapered end contacts said fingers to produce pressure along a central axis of said cylindrical pressure contact member to force said cylindrical pressure contact member out of said central bore as said cylindrical pressure contact member is inserted into said central bore and said tapered end contacts said fingers.

5,576,676

BASE PLATE MODULE FOR AN ELECTROMAGNETIC SWITCHING DEVICE SPECIFICALLY OF A CONTACTOR

Erich Koller, Othmarsingen AG; Hans Weichert, Graenichen AG, and Daniel Zumkeller, Muenchwilen AG, all of Switzerland, assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Jan. 26, 1996, Ser. No. 592,825
Claims priority, application Switzerland, Mar. 25, 1995, 00850/95
Int. Cl.[6] H01H 67/02
U.S. Cl. 335—132 8 Claims



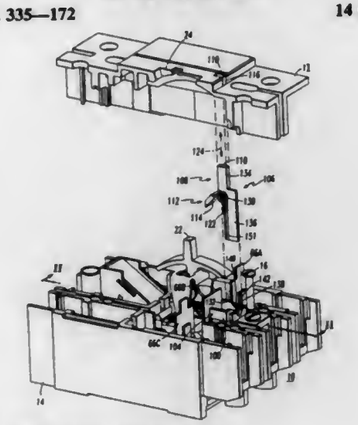
1. The base-plate module of an electromagnetic switching device, specifically that of a contactor, consisting of a base plate, the core of an electromagnet which is installed in said base plate module, a magnet coil for activating the electromagnet, and a printed circuit board consisting mainly of electrically insulating material, where said printed circuit board provides electrical connections between the terminals in the base-plate module and the externally accessible terminals of the switching device, and where said base plate module contains, at least on one side, several strip conductors and is characterized in that strip conductors (12, 13, 14), at the side facing core (2) of circuit board (10), which is mounted on base plate (1), feature several spring-loaded stub contacts (19, 20) and/or contact plugs (21,22), all of which are oriented vertically to circuit board (10), and where said strip conductors are connected at least to terminals (23) of magnet coil (5), which are installed on flange (7) of coil module (6).

5,576,677

DUAL ACTION ARMATURE

Richard P. Malingowski, Union Township; Michael J. Erb, Franklin Township, and Joseph F. Changle, Scott Township, all of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 7, 1995, Ser. No. 481,717
Int. Cl.[6] H01H 9/00
U.S. Cl. 335—172 14 Claims



1. A circuit breaker, comprising:

a housing having an opening;

separable electrical contacts disposed within said housing and moveable between a closed position and an open position;

operating means for moving said separable electrical contacts between the closed position and the open position, said operating means having a trip position wherein said separable electrical contacts are tripped open;

trip means cooperating with said operating means for tripping said operating means to the trip position;

automatic means cooperating with said trip means for sensing an electrical condition of said separable electrical contacts and engaging said trip means in response to a predetermined electrical condition of said separable electrical contacts;

manual means operatively associated with the opening of said housing and cooperating with said automatic means for engaging said automatic means, in order to engage said trip means, trip said operating means to the trip position, and trip open said separable electrical contacts;

wherein said automatic means includes a movable armature which engages said trip means includes engaging means for engaging the movable armature; and

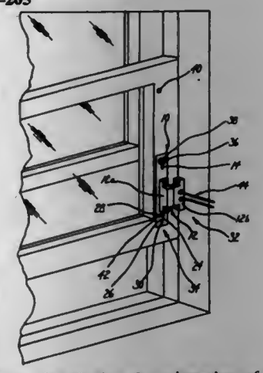
wherein said manual means further includes pushbutton means having a longitudinal axis, wherein the pushbutton means moves along the longitudinal axis thereof in order to engage the movable armature, and wherein the engaging means has a surface which is generally oblique with respect to the longitudinal axis, the oblique surface for engaging the movable armature.

5,576,678

APPARATUS AND METHOD FOR MAGNETIC PROXIMITY SWITCH ALTERATION

Reginald E. Saunders, P.O. Box 1116, Piscataway, N.J. 08855

Filed Jun. 12, 1995, Ser. No. 493,157
Int. Cl.[6] H01H 9/00
U.S. Cl. 335—205 8 Claims



1. An apparatus for altering the orientation of the permanent magnet portion of a conventional window surface mounted magnetic proximity switch comprising

a flat elongated member forming a mounting bracket containing a plurality of openings located on various portions thereof;

the first of said opening being elongated such that it forms a slot;

the second and third of said openings being situated in such a manner as to be coincident with the mounting openings of the external permanent magnet portion of a conventional window surface mounted magnetic proximity switch; and

the fourth of said openings being comprised of a dominant central portion and two opposing slotted extensions.

5,576,679

CYLINDRICAL PERMANENT MAGNET UNIT SUITABLE FOR GYROTRON

Ken Ohashi; Takeo Takada, both of Fukui, and Toshiyuki Kikunaga, Hyogo, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., and Mitsubishi Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Oct. 24, 1995, Ser. No. 547,343
Claims priority, application Japan, Oct. 25, 1994, 6-284132
Int. Cl.[6] H01F 7/02
U.S. Cl. 335—306 24 Claims

1. A cylindrical permanent magnet unit suitable for application to gyrotrons, comprising:

a first cylindrical permanent magnet which is an assembly of a plurality of coaxially juxtaposed ring-like permanent magnets each of which is magnetized in approximately radial directions from the inside toward the outside;

a second cylindrical permanent magnet which is an assembly of a plurality of coaxially juxtaposed ring-like permanent magnets each of which is magnetized in approximately radial directions from the outside toward the inside, wherein

the first and second cylindrical permanent magnets are longitudinally aligned to have a common center axis and to provide a space between the first and second tubular magnets, each of the ring-like permanent magnets of the first and second cylindrical permanent magnets being constructed of a plurality of segments arranged around a circumference, each of said segments being a permanent magnet magnetized in an approximately radial direction with respect to said circumference;

a ring-like member of a nonmagnetic material which is inserted in the space between the first and second cylindrical permanent magnets; and

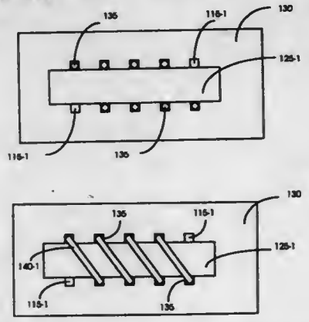
a plurality of elongate pieces of a ferromagnetic material which are adjustably inserted into said ring-like member in approximately radial directions from the outside.

5,576,680

STRUCTURE AND FABRICATION PROCESS OF INDUCTORS ON SEMICONDUCTOR CHIP

Peiching Ling, San Jose, Calif., assignor to Amer-Soi, Sunnyvale, Calif.

Filed Mar. 1, 1994, Ser. No. 203,991
Int. Cl.[6] H01F 5/00
U.S. Cl. 336—200 23 Claims



1. An integrated-circuit (IC) device includes a plurality of IC circuits integrated on a semiconductor chip, said device comprising:

an inductive circuit including an inductive line formed by connecting a plurality of conductive lines disposed on several layers in said semiconductor chip by utilizing a plurality of lithographically-formed via-connecting lines penetrating between said several layers in said semiconductor chip thus forming an IC inductive coil in said semiconductor chip; and

said inductive line disposed on several layers and said plurality of via-connecting lines are fabricated by lithographic processes on said semiconductor chip wherein said line-widths between said inductive lines and said via-connecting lines being substantially in a submicron range whereby said IC

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inductive circuit are integratable with said plurality of IC circuits of said IC device in a very large scale integrated (VLSI) circuit and ultra large scale integrated (ULSI) circuit.

5,576,681

HIGH VOLTAGE TRANSFORMER

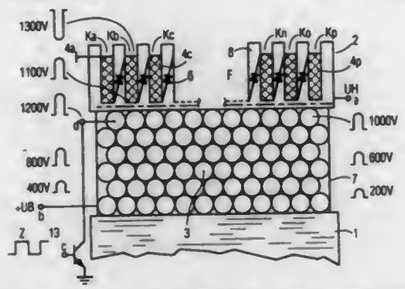
Hans-Werner Sander, Hanover; Wolfgang Reichow, Garbsen, and Walter Goseberg, Hanover, all of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schweningen, Germany

Continuation of Ser. No. 73,436, Jun. 9, 1993, abandoned. This application Apr. 5, 1995, Ser. No. 417,482

Claims priority, application Germany, Dec. 10, 1990, 40 39 373.9

Int. Cl.[6] H01F *27/30*

U.S. Cl. 336—208 **9 Claims**



1. A high voltage transformer for a television receiver comprising:

a primary winding;

a compartmentalized secondary winding separated from said primary winding by a space, said secondary winding having a plurality of partial windings arranged in cells of a compartmentalized coil form and connected to one another by diodes, and

means for causing substantially equal pulse voltages of like polarity to exist at said primary winding and said partial windings in the vicinity of said space, to substantially eliminate pulse electric fields in said space.

5,576,682

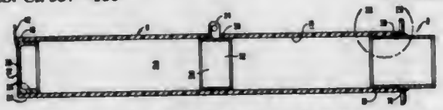
FUSE HOLDER AND METHOD FOR ASSEMBLING

John L. Fisher, Lexington; J. D. Richerson, Versailles; Ronald F. Dornbrock, Versailles; John E. Cloyd, Versailles, and Stephen D. Smith, Lawrenceburg, all of Ky., assignors to Kuhlam Electric Corporation, Versailles, Ky.

Filed Mar. 21, 1994, Ser. No. 210,838

Int. Cl.[6] H01H *85/02;85/50*

U.S. Cl. 337—186 **19 Claims**



1. A fuse holder, for use with an electrical apparatus, comprising:

a tubular body having an inner end, an open outer end and an inner surface, the inner surface including a recess towards the outer end;

a first electrical contact element at the inner end of the body;

a second electrical contact element at a chosen location along the body between the inner and outer ends and spaced-apart from the outer end;

a mounting flange assembly at the outer end of the body adapted to sealably mount the tubular body to the electrical apparatus so that at least a substantial portion of the tubular body is within the electrical apparatus; and

the mounting flange assembly including a first portion sized to fit within the outer end of the body, the first portion including a non-elastomeric spring lock element adapted to fixedly engage the recess when the first portion is inserted into the outer end so to lock the flange assembly to the body.

5,576,683

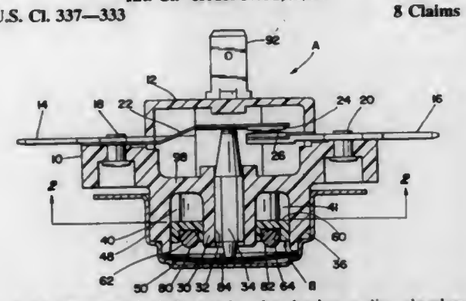
THERMOSTAT WITH THERMAL INSULATOR FOR PROTECTION AGAINST OVERHEATING

Derek J. Rose, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Jun. 13, 1995, Ser. No. 489,844

Int. Cl.[6] H01H *37/52;61/02*

U.S. Cl. 337—333 **8 Claims**



1. A thermostat including a housing having a disc chamber receiving a bimetal disc, said housing including a dielectric body having a cavity facing said bimetal disc, an electric resistance heater in said cavity adjacent said disc, and a thermal insulator interposed between said heater and said body.

5,576,684

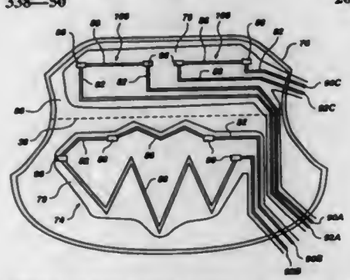
HORN CONTROL SYSTEM RESPONSIVE TO RAPID CHANGES IN RESISTANCE OF A FLEXIBLE POTENTIOMETER

Gordon B. Langford, Sandy, Utah, assignor to Sensitron Inc., Salt Lake City, Utah

Division of Ser. No. 219,106, Mar. 29, 1994, abandoned, which is a continuation of Ser. No. 60,346, May 10, 1993, Pat. No. 5,309,135, which is a continuation-in-part of Ser. No. 963,855, Oct. 20, 1992, abandoned, which is a continuation of Ser. No. 552,575, Jul. 13, 1990, Pat. No. 5,157,372. This application May 17, 1995, Ser. No. 443,350

Int. Cl.[6] H01C *13/00*

U.S. Cl. 338—50 **20 Claims**



1. An automobile horn control system for use in an automobile having a horn that is activated in response to reception of an activation signal, the system comprising:

a flexible potentiometer in which a resistance thereof is changed when the flexible potentiometer is deflected by a user of the automobile; and

a horn control circuit electrically connected to the flexible potentiometer, the horn control circuit producing the activation signal in response to a rapid change in the the resistance, but not to a more gradual change in the resistance.

5,576,685

SOUND GENERATION APPARATUS RESPONSIVE TO ENVIRONMENTAL CONDITIONS FOR USE IN A PUBLIC SPACE

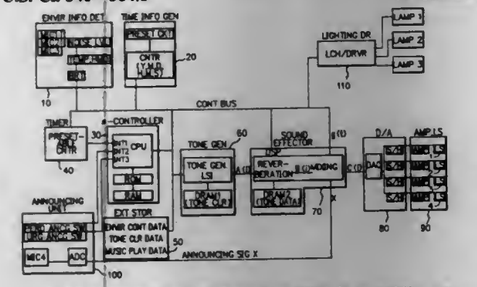
Tsutomu Saito, Iwata, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka-ken, Japan

Continuation of Ser. No. 998,868, Dec. 30, 1992, abandoned. This application Nov. 7, 1994, Ser. No. 336,695

Claims priority, application Japan, Jan. 29, 1992, 4-054506

Int. Cl.[6] G08B *3/00*

U.S. Cl. 340—384.1 **51 Claims**



1. A sound generation apparatus installed in a public space, comprising:

ambient environment information detection means for detecting at least two types of environment information, such information including ambient noise level information, and at least one of ambient temperature information, ambient humidity information, and ambient brightness information, such information being detected near a place where said sound generation apparatus is installed;

control data generation means for storing a plurality of samples of the ambient environment information in serial time sequence, and generating tone control data for controlling at least one of a tone color, a tone pitch, a play number assigned to a stored tone source, and a tempo, on the basis of the plurality of samples of environment information;

time means for producing time data;

input means, responsive to the time means, for causing the control data generation means to accept new data from the ambient environment information detection means at predetermined intervals;

tone generation means for generating digital tone generation data on the basis of the tone control data;

D/A conversion means for converting the digital tone generation data into analog tone signals;

tone production means for amplifying the analog tone signals, and producing output sounds corresponding to the analog tone signals; and

means for cancelling the sound signal, corresponding to the sound output by the tone production means, from the environment information detected by the ambient environment information detection means, via subtracting the sound signal from the environment information;

wherein the control data generation means generates new tone control data in response to receiving new data from the environment information detection means such that the sound generation apparatus responds at said predetermined intervals to changes in the environment information.

5,576,686

SWITCH ARRANGEMENT FOR REDUCING THE CLOSED CIRCUIT CURRENT WHEN MOTOR VEHICLES ARE PARKED

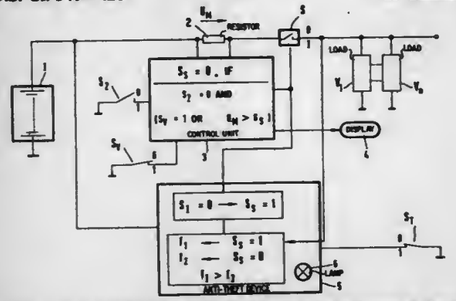
Gerhard Westermeir, Parsdorf; Reinhard Busch, Icking, and Johann Leupolz, Amberg, all of Germany, assignors to Bayerische Motoren Werke AG, Munich, Germany

Filed Nov. 2, 1994, Ser. No. 332,806

Claims priority, application Germany, Nov. 2, 1993, 43 37 274.0

Int. Cl.[6] B60R *25/10*

U.S. Cl. 340—426 **15 Claims**



1. A switch arrangement for reducing closed circuit current from a vehicle battery when a motor vehicle is parked, comprising:

a controllable switch coupled to the vehicle battery for centrally disconnecting power supply consuming devices in the motor vehicle from the vehicle battery; and

an electric anti-theft device operatively arranged in the motor vehicle having an electric supply input inseparably connected with the vehicle battery while bypassing said controllable switch.

5,576,687

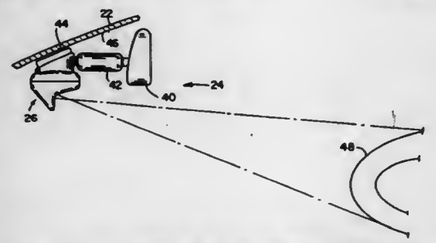
VEHICLE INFORMATION DISPLAY

Rodney K. Blank, Holland; Ken L. Schierbeek, and Jerry L. Beck, both of Zeeland, all of Mich., assignors to Donnelly Corporation, Holland, Mich.

Continuation-in-part of Ser. No. 142,509, Oct. 25, 1993, which is a continuation-in-part of Ser. No. 811,578, Dec. 20, 1991, Pat. No. 5,255,442. This application Feb. 10, 1994, Ser. No. 195,353

Int. Cl.[6] B60Q *1/00*

U.S. Cl. 340—438 **55 Claims**



1. An information display for use in a vehicle, comprising:

a module adapted for mounting behind and separate from an interior mirror assembly and having a display window adapted to extend from behind the mirror assembly and observable by an occupant of the vehicle when said module is mounted in the vehicle;

said module includes a housing separate and apart from said mirror assembly;

said housing includes a first portion adapted for attachment to said interior rear-view mirror assembly;

said first portion of said housing includes a couple for engaging a mount for supporting said interior rearview mirror assembly; and

said coupler includes a tab at one end for catching said mount, and a clip at another end to engage a portion of said interior rearview mirror assembly.

5,576,688

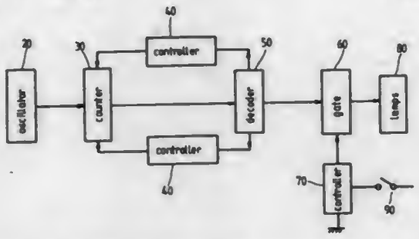
SIGNAL LIGHT SYSTEM FOR VEHICLE

Jun-Da Wu, P.O. Box 1032, Tainan; Chen Ting-Yen, No.128, Chi Ku Tsun, Chi Ku Hsiang, Tainan Hsien, and Lin Tien-Wang, No.46, Yi An Street, Tainan, all of Taiwan

Filed Nov. 16, 1994, Ser. No. 340,713

Int. Cl.[6] B60Q *1/22*

U.S. Cl. 340—463 **2 Claims**



1. A signal light system comprising:

a stabilizing circuit for supplying stabilized power,

an oscillator for generating pulse waves,

a counter coupled to said oscillator,

at least a first controller connected to said counter for controlling said counter,

a decoder connected to said first controller for receiving signal from said oscillator,

a plurality of AND gates connected to said decoder,

a plurality of lamps connected to said AND gates, said AND gates receiving low potential for energizing all of said lamps and said lamps being actuated in series when said AND gates receives no low potential,

a second controller connected to said AND gates, and

means for actuating said second controller so as to propagate said low potential to said AND gates.

5,576,689

SELF TESTING PERSONAL RESPONSE SYSTEM WITH PROGRAMMABLE TIMER VALUES

Andrew Queen, 4744 S. Ocean Blvd., Highland Beach, Fla. 33487

Filed Aug. 27, 1993, Ser. No. 113,614

Int. Cl.[6] G08B *29/00;26/00;1/08;23/00*

U.S. Cl. 340—514 **17 Claims**

1. A self testing personal response system, comprising:

a response center for monitoring a plurality of help consoles, the response center further comprising;

first communications means to communicate with the help consoles;

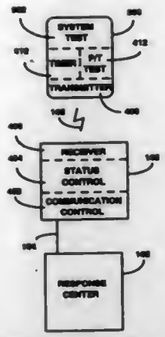
means to transmit timer values to the help console;

means to monitor testing of the help console; and

at least one help console, further comprising:

second communication means to communicate with the response center;

first timer means;



means to receive timer values from the response center;

means to automatically execute self tests of the help console under control of the first timer means; and

means to update the first timer means with the received timer values.

5,576,690

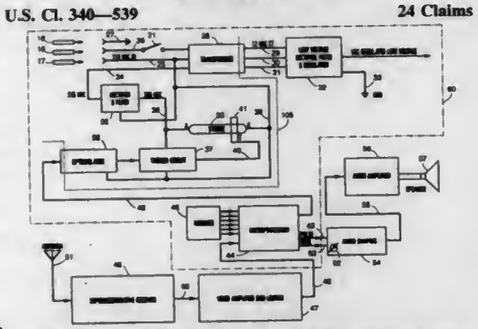
COMBINED AUDIBLE AND VISUAL SIGNALING DEVICE

David Waugh, Tuckahoe, and Leslie M. Orloff, Cold Spring Harbor, both of N.Y., assignors to Fred M. Schildwachter & Sons, Inc., Bronx, N.Y.

Continuation of Ser. No. 242,305, May 13, 1994. This application Aug. 7, 1995, Ser. No. 511,914

Int. Cl.[6] G09B *1/08*

U.S. Cl. 340—539 **24 Claims**



1. A combined audible and visual signaling device for handicapped people comprising in combination an audible signal generator, a high intensity light emitting generator including a strobe light capable of producing a burst of plural flashes, apparatus having means for receiving a plurality of separately distinguishable input signals, said apparatus having outputs coupled to both of said signal generators and responsive to any one of said plurality of input signals for energizing both of said signal generators, said apparatus having a plurality of modes of operation with each mode corresponding to a different one of said plurality of separately distinguishable input signals such that for each mode of operation of said apparatus each of said generators produces a respective energized signal that is distinctly different from that produced by such generator in response to another of said modes of operation, and separate switch controlled means for producing respectively each of said separately distinguishable input signals, said switch controlled means being locatable at separate entryways to an occupiable structural enclosure, with both of said signal generators being locatable within said enclosure.

5,576,691

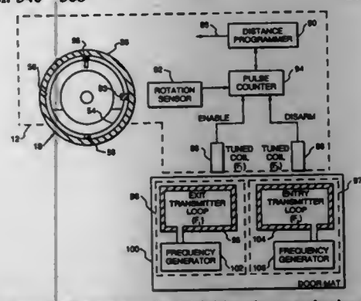
METHOD AND APPARATUS FOR DETERRING THEFT OF MANUALLY OPERATED WHEELED VEHICLES

George Coakley, Los Gatos; Alexander Pummer, Pleasanton; Matthew Homer, San Jose; James P. Johnson, Antioch, and Joseph Fanelli, Danville, all of Calif., assignors to Polytracker, Inc., San Jose, Calif.

Filed Jan. 12, 1995, Ser. No. 372,486

Int. Cl.[6] G08B *13/14*

U.S. Cl. 340—568 **17 Claims**



1. An anti-theft apparatus for inhibiting the unauthorized use and removal of a shopping cart from a designated use area, comprising:

a wheel;

a rotation-inhibiting means in association with said wheel, said rotation-inhibiting means including a rigid locking member movable between an unlocked position and a locked position in which it immobilizes said wheel against movement;

a counting means;

means for detecting passages of said shopping cart past a predetermined reference point and operative to set and reset said counting means, said predetermined reference point being identified by means generating a first magnetic field oscillating at a first frequency and a second magnetic field oscillating at a second frequency, said detecting means including a first tuned coil responsive to said first magnetic field and operative to set said counting means, and a second tuned coil responsive to said second frequency and operative to reset said counting means;

a sensor means for sensing rotation of said wheel and for generating an output which can be counted by said counting means; and

a means activated by said counting means and operative to actuate said rotation-inhibiting means after a predetermined count has been reached by said counter after it has been set.

5,576,692

NATIONWIDE AIRPORT LUGGAGE TRACKING SYSTEM AND METHOD

Eugene Tompkins, 1016 E. Warren, Detroit, Mich. 48224, and William Hayes, 24150 Inkster Rd., Southfield, Mich. 48034

Continuation-in-part of Ser. No. 208,512, Mar. 10, 1994, abandoned. This application Jun. 26, 1995, Ser. No. 494,889

Int. Cl.[6] G08B *13/14*

U.S. Cl. 340—571 **4 Claims**

1. A method of locating a piece of luggage lost in transit between a system of airports in a defined geographic area, the method comprising the steps of:

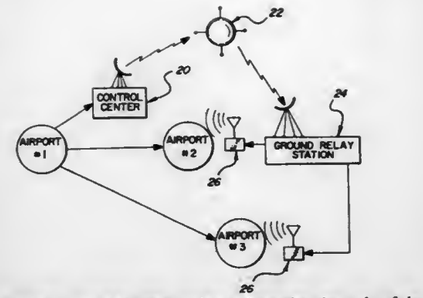
at a first airport in the system, collecting a series of luggage pieces intended for transport to a second airport in the system;

attaching a series of pagers of various codes to the series of luggage pieces;

recording the respective codes of the pagers attached to the respective luggage pieces in the series;

transporting the luggage pieces to the second airport;

inventorying the series of luggage pieces upon arrival at the second airport to identify a missing luggage piece in the series;



checking the recorded pager codes to determine the code of the pager corresponding to the missing luggage piece;

transmitting a radio signal of a unique code corresponding to the code of the pager attached to the missing luggage piece to all airports in the system to activate the pager attached to the missing luggage piece to emit an audible signal to alert a luggage attendant that the emitting luggage piece is the object of a lost luggage search;

transmitting a signal to the second airport to report the location of the missing luggage piece;

transporting the missing luggage piece to the second airport; and

removing the pagers from the luggage pieces for reuse in carrying out the above steps with respect to a new series of luggage pieces intended for transport to another airport in the system.

5,576,693

METHOD AND DEVICE FOR REMOTE SENSING OF OBJECTS

Carl Tyren, Antibes, France, and Leif Persson, Staffanstorp, Sweden, assignors to RSO Corporation N.V., Netherlands

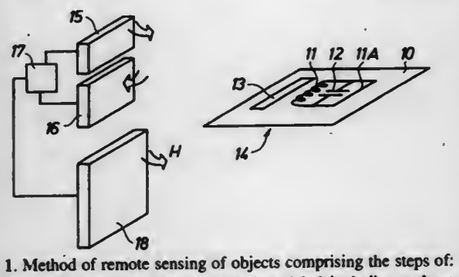
PCT No. PCT/SE93/00036, § 371 Date Sep. 6, 1994, § 102(e) Date Sep. 6, 1994, PCT Pub. No. WO93/14478, PCT Pub. Date Jul. 22, 1993

PCT Filed Jan. 20, 1993, Ser. No. 256,483

Claims priority, application Sweden, Jan. 20, 1992, 9200145

Int. Cl.[6] G08B *13/187*

U.S. Cl. 340—572 **20 Claims**



1. Method of remote sensing of objects comprising the steps of:

marking said objects with at least one label including at least one electrical resonance circuit having an inductive element and a capacitive element;

exciting said resonance circuit to oscillate at a resonance frequency within a radio frequency spectrum; and

detecting the resonance frequency of the resonance circuit through the electromagnetic energy transmitted from said resonance circuit, the detecting step including the steps of

inductively coupling an element of magnetic material having a varying permeability to said inductive element,

affecting the resonance frequency of the resonance circuit through the permeability of the element of magnetic material, and

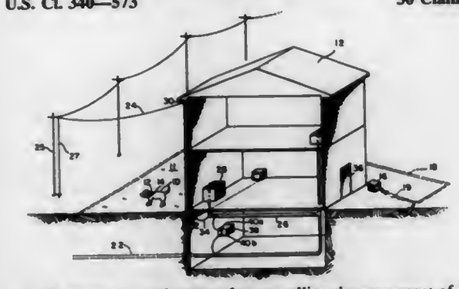
exposing said element of magnetic material to an external and spatially heterogeneous magnetic bias field to control the permeability of said element of magnetic material.

5,576,694

ELECTRONIC ANIMAL CONTROL SYSTEM WITH MASKING SIGNAL GENERATOR

Scott F. Touchton, Malvern, and Albert T. Ernst, Jr., Pottstown, both of Pa., assignors to Invisible Fence Company, Inc., Malvern, Pa.

Filed May 24, 1995, Ser. No. 449,211
Int. Cl.[6] A01K *3/00*
U.S. Cl. 340—573 **36 Claims**



1. An animal control system for controlling the movement of an animal relative to a predetermined area in the vicinity of a coupling structure configured to couple and reradiate incident electromagnetic radiation, the system comprising:

a) a transmitter for generating a predetermined electromagnetic signal;

b) an antenna connected with the transmitter and configured for positioning at the selected area;

c) a receiver mounted to the animal for receiving the predetermined electromagnetic signal and having transducer means for applying a stimulus to the animal in response to receiving said predetermined electromagnetic signal; and

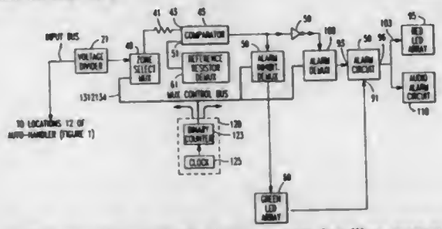
d) a disruption generator for connection with said coupling structure, said disruption generator configured for producing a second electromagnetic signal for disrupting reception of said predetermined electromagnetic signal by said receiver in the vicinity of the coupling structure.

5,576,695

RESISTANCE-MEASUREMENT BASED ARRANGEMENT FOR MONITORING INTEGRITY OF TRAVEL PATH GROUND LINK IN ELECTRONIC COMPONENTS HANDLING APPARATUS

William O. Minger; Michael G. Lewis, and Kevin B. Kincaid, all of Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Oct. 12, 1993, Ser. No. 135,092
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—649 **17 Claims**



1. For use with an electronic component handling apparatus through which an electronic component travels in the course of being processed, said handling apparatus having a travel path that is coupled to a prescribed potential to prevent the occurrence of an electrical discharge between said handler and said electronic component and thereby prevent electrical discharge damage of said component, a method of monitoring the ability of said handling apparatus to maintain said travel path coupled to said prescribed potential and thereby protect said electronic component against a potentially damaging electrical discharge comprising the steps of:

(a) monitoring a prescribed electrical characteristic of said handling apparatus at plurality of locations along said travel path;

(b) determining whether or not the prescribed electrical characteristic of a respective location monitored in step (a) satisfies a prescribed criterion; and

(c) in response to the prescribed electrical characteristic monitored in step (a) failing to satisfy said prescribed criterion, generating a first output signal, and

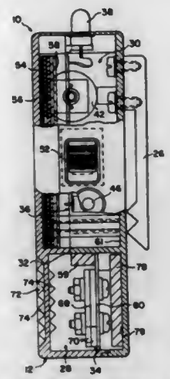
wherein step (a) comprises measuring the effective resistance of an electrical path coupling said prescribed potential to respective ones of said plurality of locations along said travel path, step (b) comprises determining whether or not said effective resistance is no greater than a prescribed reference resistance value, and step (c) comprises, in response to said effective resistance exceeding said prescribed reference resistance value, generating said first output signal and, in response to said effective resistance being no greater than said prescribed reference resistance value, generating a second output signal.

5,576,696

PERSONAL RADIATION HAZARD METER

Zdenek Adler, West Hempstead, N.Y., assignor to General Microwave Corporation, Amityville, N.Y.

Filed Aug. 20, 1993, Ser. No. 109,837
Int. Cl.[6] G08B *17/12*
U.S. Cl. 340—600 **8 Claims**



1. An electromagnetic radiation monitor for use in close proximity with a human body comprising:

an electromagnetic radiation sensor means having front and back sides;

shield means mounted in back of the radiation sensor means a selected distance such that when the radiation monitor is used in close proximity with a human body, the shield means defines a radiation barrier between the human body and the entire back side of the sensor means; and

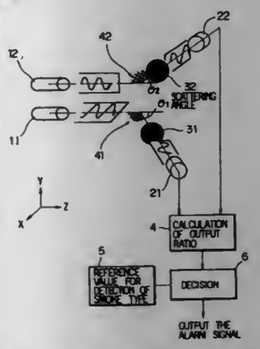
means for preventing reflective interference from said shield means with said sensor means consisting essentially of a single layer of uniform lossy material mounted a selected spaced distance behind said sensor means in front of said shield means.

5,576,697

FIRE ALARM SYSTEM

Tetsuya Nagashima, Sagamihara, and Masato Aizawa, Hachioji, both of Japan, assignors to Hochiki Kabushiki Kaisha, Shinagawa-ku, Japan

Filed Apr. 19, 1994, Ser. No. 229,613
Claims priority, application Japan, Apr. 30, 1993, 5-103369
Int. Cl.[6] G08B *17/107*
U.S. Cl. 340—630 **14 Claims**



1. A fire alarm system comprising light emitting means for illuminating a smoke detection space, and light receiving means for receiving light scattered by smoke wherein the occurrence of a fire is detected by comparing the amount of the light received by said light receiving means to a predetermined reference value, said fire alarm system characterized in that:

said light emitting means emits plane-polarized light which is polarized parallel to a scattering plane as well as plane-polarized light which is polarized perpendicular to the scattering plane wherein said scattering plane is defined by the optical axis of said light emitting means and the axis of said light receiving means wherein both axes cross each other at a point in said smoke detection space;

said light receiving means receives light which is parallel polarized component to said scattering plane and light which is perpendicular polarized component to said scattering plane;

said fire alarm system further comprises:

photoelectric conversion means for detecting the amount of each polarized light received by said light receiving means;

calculation means for calculating the ratio of the amount between the parallel polarized competent to said scattering plane and the perpendicular polarized component to said scattering plane wherein the amount of the light polarized in each plane is obtained by said photoelectric conversion means and

decision means which compares the ratio obtained by said calculation means to a reference value preset for each type of smoke whereby the judgement of whether there is a fire or not is performed based on said reference value for each type of smoke.

5,576,698

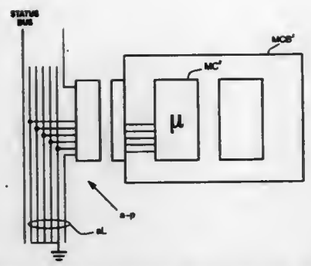
PHYSICAL ADDRESSING OF MODULES

Daniel C. Card, and Kevin A. Dickson, both of Winnipeg, Canada, assignors to Unisys Corporation, Blue Bell, Pa.

Filed Sep. 22, 1994, Ser. No. 311,613
Int. Cl.[6] H04Q *1/02*
U.S. Cl. 340—825.52 **3 Claims**

1. A method of addressing an array of system modules, each linked in parallel to a common control unit by a like set of connect lines, said method comprising:

bussing said connect lines in each set to all said modules in parallel, and connecting each said module thereto by a like set of respective removable pin means, with one pin means for each line so as to allow each module address value to be generated solely according to which said pin means thereof are removed, so that, with pin #0 having a binary address value (BAV)=2°, pin #1 having a BAV=2^1; pin #2 having a BAV=2^2, and so on, each said module is thus given a unique BAV simply by removing a unique pattern of said pins thereat for a total of 2^N possible BAV; so as to, define each module address as a unique one of 2^N possible binary address values.



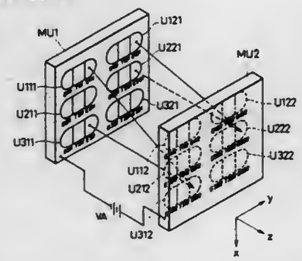
5,576,699

METHOD AND APPARATUS FOR TRANSFERRING INFORMATION BY UTILIZING ELECTRON BEAM

Fumitaka Kan, Tokyo; Kenji Nakamura, Hadano; Masanori Takenouchi, Atsugi; Naoji Hayakawa, Yokohama; Isamu Shimoda, Zama, and Masahiko Okunuki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 242,236, May 13, 1994, which is a continuation of Ser. No. 902,783, Jun. 24, 1992, Pat. No. 5,355,127, which is a continuation of Ser. No. 64,299, Jun. 19, 1987, abandoned. This application May 24, 1995, Ser. No. 449,834

Claims priority, application Japan, Jun. 23, 1986, 61-144735; Aug. 15, 1986, 61-181863; Aug. 15, 1986, 61-191851; Aug. 15, 1986, 61-191852; Aug. 15, 1986, 61-191853; Aug. 15, 1986, 61-191855; Aug. 15, 1986, 61-191856; Aug. 15, 1986, 61-191862; Aug. 15, 1986, 61-191864
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.97 **2 Claims**



2. A method of transferring information, using a plurality of units each of which comprises an electron beam generator, an electron beam detector and an electron beam generator driving means formed on one semiconductor substrate, said method comprising the steps of:

directing at least one of an electron beam from a first unit and an electron beam from a second unit to an electron beam detector of a third unit; and

performing a logical operation on the basis of an amount of charge accumulated in the electron beam detector of the third unit.

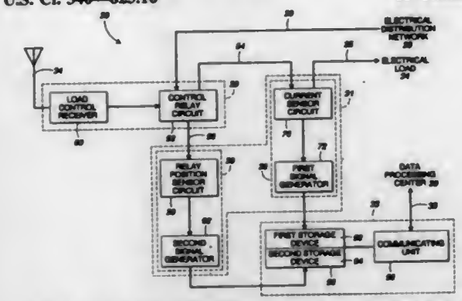
VOL 1192 ISS 3 NO 19 1996 UMI

5,576,700

APPARATUS AND METHOD FOR CONTROLLING AN ELECTRICAL LOAD AND MONITORING CONTROL OPERATIONS AND THE ELECTRICAL LOAD

Glenn A. Davis, Lilburn, and James M. Massara, Dunwoody, both of Ga., assignors to Scientific-Atlanta, Atlanta, Ga.

Filed Aug. 26, 1992, Ser. No. 935,837
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.16 **65 Claims**



1. In an electrical load management system, said system including a plurality of an improved load control switching and monitoring apparatus, each of said improved apparatus located proximate to an electrical load to be controlled, and a data processing center remotely located and separated from said electrical load, for causing electrical load reductions in an electrical distribution network and monitoring each of said electrical load reductions and energy supplied to said electrical load, said apparatus comprising:

control means for controlling said electrical load in said electrical distribution network in response to command signals transmitted by a command center, said command center remotely located from said electrical load;

first monitoring means for generating electrical load data in response to detecting the distribution and interruption of said energy to said electrical load;

second monitoring means for generating electrical load control data in response to detecting the control operation of said control means; and

data collection means for collecting said electrical load data and said electrical load control data and communicating said electrical load data and said electrical load control data to said data processing center, said data processing center operative to process said electrical load data and said electrical load control data to determine the effectiveness of said electrical load management system.

5,576,701

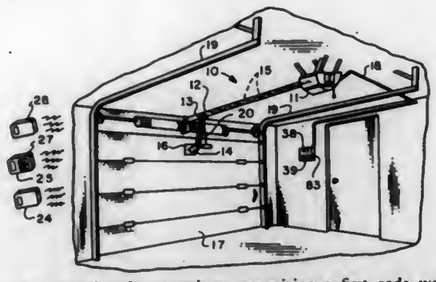
REMOTE ACTUATING APPARATUS COMPRISING KEYPAD CONTROLLED TRANSMITTER

Carl T. Heitschel, Downers Grove, and Colin B. Willmott, Buffalo Grove, both of Ill., assignors to The Chamberlain Group, Inc., Elmhurst, Ill.

Continuation of Ser. No. 376,058, Jan. 20, 1995, abandoned, which is a continuation of Ser. No. 224,988, Apr. 8, 1994, abandoned, which is a continuation of Ser. No. 939,407, Sep. 1, 1992, abandoned, which is a continuation of Ser. No. 626,909, Dec. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 552,769, Jul. 16, 1990, abandoned. This application Jun. 5, 1995, Ser. No. 465,605
Int. Cl.[6] H01Q *1/00*
U.S. Cl. 340—825.310 **10 Claims**

1. A remote garage door opening system for selectively opening a door, comprising:

a keypad transmitter comprising a plurality of keys, for transmitting keypad type door open request signals, each keypad type door open request signal including a keypad type security code word sequence and having keypad transmitter indicia;



a first stored code transmitter, comprising a first code word sequence stored in long-term storage, for transmitting first stored security code type door open request signals, each first stored security code type door open request signal including said first stored code word sequence and having first stored code transmitter indicia distinguishable from said keypad type transmitter indicia;

a second stored code transmitter, comprising a second security code word sequence stored in long-term storage, for transmitting second stored code type door open request signals, each second stored cnde type door open request signal including said second stored security code word sequence and having a second stored code transmitter indicia distinguishable from said keypad type transmitter indicia and from said first stored code type transmitter indicia;

receive means for receiving said keypad type door open request signals and said first and said second stored code type door open request signals;

determining means responsive to the keypad transmitter indicia of a received keypad type door open request signal for determining that the received door open request signal is a keypad type door open request signal and responsive to the first and second stored code transmitter indicia of a received stored code type door open request signal for determining that the received door open request signal is a stored code type door open request signal;

operator controlled security switch means having a first and a second position; and

control means for storing keypad type and stored code type security code sequences, said control means being responsive to said determining means and said security switch means for permitting the selective opening of the door in response to keypad type and both said first and said second stored code type door open request signals which match a stored security code sequence of the same type when said security switch is in the first position, for permitting the selective opening of the door in response to door open request signals which match a stored keypad type security code sequence determined by the determining means to be keypad type door open request signals when said security switch is in the second position and for inhibiting the opening of the door in response to door open request signals determined by the determining means to be either of said first and said second stored code type door open request signals when said security switch is in the second position.

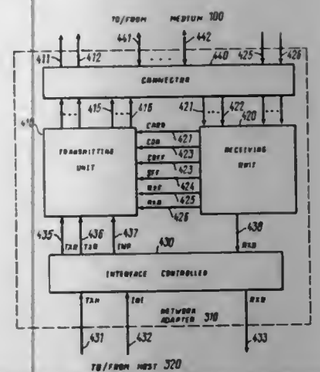
5,576,702

METHOD AND APPARATUS FOR FAULT-TOLERANT TRANSMISSION IN MULTI-CHANNEL NETWORKS

Stanislav L Samoylenko, 33-75 Ostrovityanov Street, Moscow, Russian Federation

Filed Jan. 10, 1995, Ser. No. 370,387
Int. Cl.[6] H04Q *11/04*
U.S. Cl. 340—825.5 **40 Claims**

1. In a communication network including a communication medium and a plurality of stations, each having a unique initial access number and being connected to the medium, said medium having at least one channel for transmitting data between the



stations, the data being composed of frames for transmitting messages and sync-signals for network synchronization; each station including transmitting means for transmitting data to the medium, receiving means for receiving data from the medium, an access timer for computing idle time during which all the channels connected to the station are quiescent, and detecting means for detecting the presence or absence of transmission on the channels connected to the station; a method of transmitting data to the medium by each station comprising the steps of:

assigning each station a current access number representative of the station's initial access number and the number of frames received and transmitted by the station after the sync-signal has been received or transmitted;

starting the access timer at each station upon detecting the absence of transmission on all channels connected to the station;

stopping the access timer at each station upon detecting the presence of transmission on a channel connected to the station;

assigning each station a predefined value of time of frame transmission, TFR, representative of the station's current access number and a network time slot, TS;

assigning each station a predefined value of time of synchro-signal transmission, TSS, representative of the station's current access number, the number of stations on the network and the network time slot TS;

opening an access window of predetermined duration for a station when the access timer idle time of the station reaches the value of the TFR; and

permitting transmission of a frame from a station to all output channels to which the transmitting means of this station is connected, starting the transmission when the access window of this station is open.

5,576,703

METHOD AND APPARATUS FOR COMMUNICATING SIGNALS FROM WITHIN AN ENCASED BOREHOLE

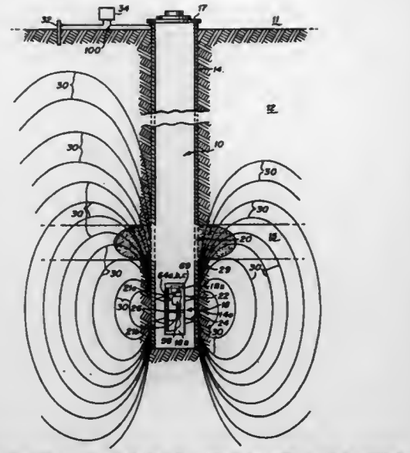
Norman C. MacLeod, deceased, late of Sunnyvale; Roger N. Samdahl, San Jose, both of Calif., and Thomas R. Bandy, Katy, Tex., assignors to Gas Research Institute, Chicago, Ill.

Division of Ser. No. 71,797, Jun. 4, 1993. This application Dec. 19, 1995, Ser. No. 574,950
Int. Cl.[6] G01V *1/00*
U.S. Cl. 340—854.4 **5 Claims**

1. A tool disposed within an elongated, electrically conductive casing beneath the surface of the earth, the tool comprising:

at least one sensor for sensing an environmental condition proximate the tool and outputing sensor data indicative thereof;

signal generator responsive to the sensor data output from the at least one sensor, the signal generator generating a signal indicative of the sensor data at first and second terminals thereof;



an enclosed housing encasing the signal generator, the housing having a first distal end including a first conductive housing portion and a second distal end including a second conductive housing portion, the first and second conductive housing portions being electrically insulated from each other, the first and second terminals of the transmitter being electrically connected to the first and second conductive housing portions, respectively;

first contacting member for electrically connecting an outer surface of the first conductive housing portion to the electrically conductive casing at a first position proximate the first distal end of the housing; and

a second contacting member for electrically connecting an outer surface of the second conductive housing portion to the electrically conductive casing at a second position proximate the second distal end of the housing,

wherein a modulating current indicative of the data output from the at least one sensor is caused to flow through a casing conducting portion of the electrically conductive casing between the first and second positions, creating a voltage potential therebetween, inducing an electromagnetic field which propagates to a receiver proximate the surface.

5,576,704

CAPACITIVE JOYSTICK APPARATUS

Thomas M. Baker, Peoria, Ill.; Michael Furlong, Cambridge, Minn.; John F. Szentes, Peoria, Ill., and Jay Tschetter, Plymouth, Minn., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 1, 1994, Ser. No. 347,663
Int. Cl.[6] H03K *17/94*
U.S. Cl. 341—20 **16 Claims**

1. A joystick, comprising:

a control shaft baving an operator handle;

a base;

means for universally, pivotally mounting the control shaft to the base;

an actuating body rigidly attached to the control shaft and adapted, upon pivotal movement of the control shaft from a central position, to approach the base on one side and to move away from the base on the other side; and

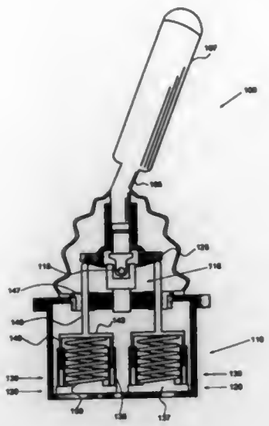
a plurality of sensors located on the base, each sensor comprising:

a pair of spaced apart electrodes establishing an electrostatic capacity with each other;

a dielectric body being disposed between the electrode pair; and

wherein the actuating body engages the dielectric body thereby moving the dielectric body relative to the electrode pair in response to pivotal movement of the control shaft.

VOL 1192 ISS 3 NO 19 1996 UMI



5,576,705
INFORMATION INPUT DEVICE

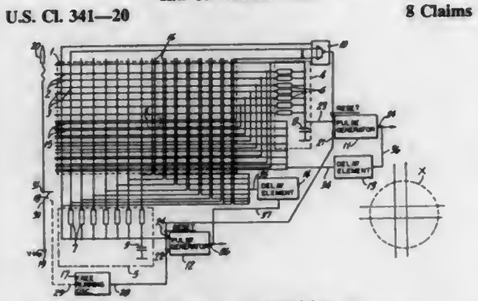
Vitali F. Bardachenko, Kiev, Ukraine; Vitali I. Khokhlov, Moskau, Russian Federation; Michael Münker, Munich, Germany, and Igor O. Shorchkov, Moskau, Russian Federation, assignors to Ernst-Otto Schneider, Munich, Germany

Filed Jul. 20, 1994, Ser. No. 278,044

Claims priority, application Germany, Jan. 21, 1992, 42 01 488.3

Int. Cl.[6] H03M *11/00*

U.S. Cl. 341—20 **8 Claims**



1. An information input device, comprising:

a connecting matrix including a plurality of n first parallel row conductor lines and a plurality of m first parallel column conductor lines being disposed orthogonally to said row conductor lines, m being equal to or unequal to n, and the crossing points of said first row conductor lines and said first column conductor lines forming nodes of the connecting matrix;

a voltage source;

a probe pin being coupled to said voltage source for connecting with and closing the row conductor lines and the column conductor lines at the nodes of the connecting matrix;

a first multiple channel delay circuit, the number of channels of said first multiple channel delay circuit depending on the number n of the first row conductor lines, wherein the delay time in each of said channels differs from the delay time in all other channels of said first multiple channel delay circuit, the input terminal of each channel of said first multiple channel delay circuit being connected to first ends of associated conductor lines of said first row conductor lines of said connecting matrix and the output terminals of said channels being connected together and form the output terminal of said first multiple channel delay circuit;

a second multiple channel delay circuit, the number of channels of said second multiple channel delay circuit depending on the number m of said first column conductor lines, wherein the delay time in each of said channels of said second multiple channel delay circuit differs from the delay time in all other channels of said second multiple channel delay circuit, the input terminal of each channel being connected with first ends of associated conductor lines of said first column conductor lines, and the output terminals of said channels are connected together and forming the output of said second multiple channel delay circuit;

a NOR circuit having multiple inputs being connected either to all second ends of said first column conductor lines or to all second ends of said first row conductor lines;

a first pulse generator having its trigger input connected to an output of said NOR circuit and its reset input connected to said output of said first multiple channel delay circuit; and

a second pulse generator having its trigger input connected to said output of said NOR circuit and its reset input connected to said output of said second multiple channel delay circuit, wherein the duration of pulses generated at the respective output terminals of said first and second pulse generators correspond respectively to coordinates of row conductor line and column conductor line being closed and energized at the present moment by the probe pin, wherein the number of the channels of said first multiple channel delay circuit is equal to or greater than n/2;

said n first row conductor lines comprise a first portion of row conductor lines their number corresponding to said number of said channels of said first multiple channel delay circuit, said first portion of row conductor lines being provided as single row conductor lines within the connecting matrix and the remaining portion of said first row conductor lines comprising additional row conductor lines, each additional row conductor line being provided in parallel and adjacent to an associated line of the second portion of said first row conductor lines, wherein the additional row conductor lines also form nodes of the connecting matrix in combination with crossing column conductor lines and in combination with said adjacent first row conductor lines, first end terminals of all of said additional row conductor lines being connected together and to an input of a first additional delay element having an output being connected to said output of said first pulse generator,

said first additional delay element generating a signal being inverted with respect to the signal at the output of said first pulse generator a pre-determined fixed, time interval after a contact of said probe pin at a respective node of the connecting matrix is effected within the region of said additional row conductor lines, whereby said inverted signal is an indication that the duration of an output pulse generated by said first pulse generator indicates the respective coordinate of a row conductor line of the second portion within the region of said additional row conductor lines.

5,576,706
METHODS AND APPARATUS FOR USING MULTIPLE KEYBOARDS CONNECTED IN A DAISY CHAIN TO A KEYBOARD PORT OF A COMPUTER

Darrin P. Daigle, and John L. Hilburn, both of Baton Rouge, La., assignors to Infogrip, Inc., Carpinteria, Calif.

Filed Feb. 3, 1994, Ser. No. 191,204

Int. Cl.[6] H03K *17/94*

U.S. Cl. 341—22 **17 Claims**



1. A keyboard system comprising:

a plurality of keys corresponding to characters;

an input connector for connecting the keyboard system to a child keyboard system that includes a plurality of keys corresponding to characters;

an output connector, for connecting the keyboard system to one of a computer, via a keyboard port of the computer, and a parent keyboard system that includes a plurality of keys corresponding to characters;

means for receiving an input character generated by pressing a key on one of the keyboard system and the child keyboard system when the child keyboard system is connected to the input connector; and

processing and outputting means for processing the received input character, and for outputting a processed character to the computer when the computer is connected to the output connector and to the parent keyboard system when the parent keyboard system is connected to the output connector.

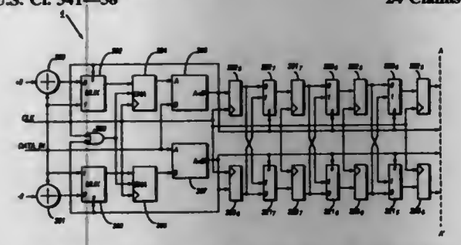
5,576,707
METHOD AND APPARATUS FOR DETECTING AND DECODING DATA IN A PRML CLASS-IV DIGITAL COMMUNICATION CHANNEL

Christopher P. Zook, Longmont, Colo., assignor to Cirrus Logic, Inc., Fremont, Calif.

Filed Jun. 10, 1994, Ser. No. 257,853

Int. Cl.[6] H03M *13/12;7/00*

U.S. Cl. 341—58 **24 Claims**



1. An apparatus for processing an input stream of pulse samples in a PRML communication channel, comprising:

(a) a receiver connected to receive the input stream of pulse samples;

(b) at least one sequence detector, connected to receive the pulse samples, for detecting a digital sequence of binary data from the pulse samples, comprising a plurality of path memories, the path memories comprising a plurality of memory elements, each memory element storing one bit of the digital sequence;

(c) at least one parity generator for generating a parity signal having two states, active and inactive, responsive to the number of "1" bits stored in at least two of the memory elements of at least one of the path memories of the sequence detector;

(d) at least one path selector for selecting one of two of the path memories out of the plurality of path memories of the sequence detector, the path selector using the parity signal for selecting the path memory; and

(e) at least one look ahead generator for generating a look ahead signal having two states, active and inactive, responsive to the bits stored in at least one of the memory elements of at least two of the path memories of the sequence detector, the path selector using the look ahead signal for selecting the path memory.

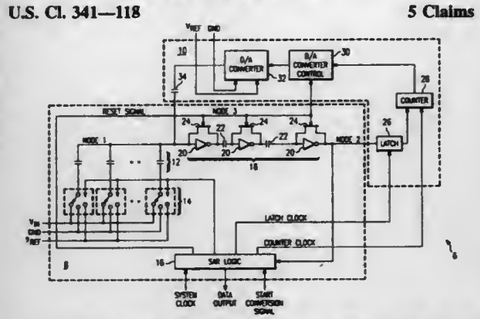
5,576,708
AUTOMATIC OFFSET TRACKING AND CORRECTING CIRCUIT AND METHOD OF OPERATION

Michiel De Wit, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 177,830, Jan. 5, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 488,357

Int. Cl.[6] H03M *1/06*

U.S. Cl. 341—118 **5 Claims**



1. A method of tracking and correcting an offset voltage in an analog-to-digital conversion system, comprising the steps of:

sensing an offset voltage present on a node in an analog-to-digital conversion system;

setting a charge sign and an amount of charge to provide to the node;

reducing the offset voltage by injecting the amount of charge onto the node when the charge sign is positive and by pulling the amount of charge from the node when the charge sign is negative; and

repeating the steps of sensing, setting and reducing after each conversion and before a next conversion.

5,576,709
DELAY CIRCUIT USING A DIGITAL MEMORY

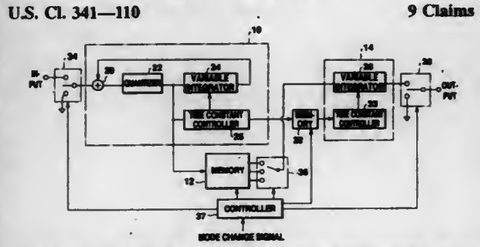
Masato Onaya, Ora-Gun, and Tsutomu Ishikawa, Ota, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jun. 28, 1994, Ser. No. 267,477

Claims priority, application Japan, Jun. 30, 1993, 5-189095; Jul. 21, 1993, 5-179515

Int. Cl.[6] H03M *1/00*

U.S. Cl. 341—110 **9 Claims**



1. A delay circuit for converting an input analog signal into a digital signal and delaying the resultant digital signal, then converting the delayed digital signal into an analog signal for output, said delay circuit comprising:

an A/D converter for converting the input analog signal into a pulse string signal, conversion characteristics of said A/D converter being controlled in response to a state of the pulse string signal output;

a memory for storing the pulse string signal output from said A/D converter as digital data and for outputting the pulse string signal delayed by a delayed period;

a D/A converter for converting the pulse string signal output from the memory into the analog signal for output; and

means for transferring data on the conversion characteristics of said A/D converter to said D/A converter,

wherein the A/D converter has a converting portion for converting the input analog signal into the pulse string signal and a control portion for generating a control signal in response to the state of the pulse string signal output, wherein the conversion characteristics of said converting portion are controlled in response to the control signal,

wherein the means for transferring data transfers the control signal to the D/A converter after delaying the control signal by a predetermined period which corresponds to the delayed period of the pulse string signal output from the memory,

and wherein the conversion characteristics of the D/A converter are controlled in response to the control signal provided from the means for transferring data.

5,576,710

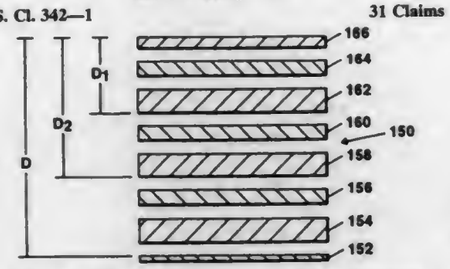
ELECTROMAGNETIC ENERGY ABSORBER

John F. Broderick, Andover; Noel J. Tessier, North Attleboro; Michael S. Heafey, Billerica, and Michael T. Kocsik, Ashland, all of Mass., assignors to Chomerics, Inc., Woburn, Mass.

Continuation-in-part of Ser. No. 883,545, May 15, 1992, Pat. No. 5,325,096, which is a continuation-in-part of Ser. No. 489,924, Feb. 16, 1990, Pat. No. 5,214,432, which is a continuation-in-part of Ser. No. 177,518, Apr. 11, 1988, Pat. No. 5,223,849, which is a continuation-in-part of Ser. No. 10,448, Feb. 3, 1987, abandoned, which is a continuation-in-part of Ser. No. 934,716, Nov. 25, 1986, abandoned. This application Jun. 16, 1994, Ser. No. 261,386

Int. Cl.[6] H01Q *17/00*

U.S. Cl. 342—1 **31 Claims**



1. A broadband electromagnetic energy absorber comprising:

a conductive ground surface;

a first dielectric layer positioned over the ground surface;

a first resistive layer defining a first predetermined broken pattern thereon positioned over the first dielectric layer;

a second dielectric layer positioned over the first resistive layer;

a second resistive layer defining a second predetermined broken pattern thereon positioned over the second dielectric layer;

a third dielectric layer positioned over the second resistive layer;

a third resistive layer defining a third predetermined broken pattern thereon positioned over the third resistive layer; and

a dielectric skin layer, comprising an outermost layer, positioned over the third resistive layer, wherein each of the first resistive layer, the second resistive layer and the third resistive layer are spaced from the ground surface so that the absorber absorbs electromagnetic energy over a broad frequency range.

5,576,711

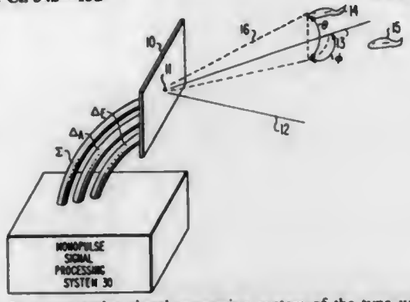
MONOPULSE SIGNAL PROCESSOR AND METHOD USING SAME

Randall D. Morris, Medford Lakes, N.J., and Raymond S. Berkowitz, Philadelphia, Pa., assignors to Martin Marietta Corporation, Moorestown, N.J.

Filed Oct. 17, 1984, Ser. No. 661,795

Int. Cl.[6] G01S *13/00*

U.S. Cl. 342—152 **9 Claims**



1. In a monopulse signal processing system of the type which receives an in-phase difference signal (Δ_I) and a quadrature difference signal (Δ_Q) in a first coordinate and an in-phase sum signal (Σ_I) and a quadrature sum signal (Σ_Q), all derived from an antenna system and which provides target tracking information with respect to a target which is a source of at least some of the energy in said received signals and in the process converts each of said received signals to a series of digital signals, each representative of an instantaneous amplitude of that received signal and derives from those digital signals a first monopulse ratio signal which corresponds to the angle in said first coordinate between the receive beam axis of said antenna system and a line to said target, and said system is of the type which includes means responsive to said Σ_I and Σ_Q digital signals for providing a digital signal α which is the sum of their squares ($\Sigma_I^2+\Sigma_Q^2$), means responsive to said Σ_I, Σ_Q, Δ_I and Δ_Q digital signals for providing a digital signal γ which is the sum of the product of said Σ_I and Δ_I signals and the product of said Σ_Q and Δ_Q signals ($\Sigma_I\Delta_I+\Sigma_Q\Delta_Q$), the improvement comprising:

means responsive to said Δ_I and Δ_Q digital signals for providing a digital signal β which is the sum of their squares ($\Delta_I^2+\Delta_Q^2$); and

means for deriving said first monopulse ratio signal from said α, β and γ digital signals.

5,576,712

METHOD AND DEVICE FOR THE ELIMINATION OF THE INTERMEDIATE FREQUENCY FIXED ECHOES IN A COHERENT PULSE RADAR

Gilbert Bian, Loperhet; Patrick Garrec, Locmaria; Herve Lemonnier, Renan, and Patrick Louedec, Brest, all of France, assignors to Thomson-CSF, Paris, France

Filed Apr. 20, 1995, Ser. No. 425,982

Claims priority, application France, May 3, 1994, 94 05374

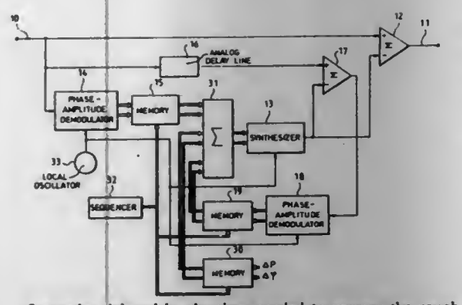
Int. Cl.[6] G01S *13/524*

U.S. Cl. 342—160 **6 Claims**

1. A method to eliminate the intermediate frequency echoes of fixed targets in a coherent pulse radar, wherein a replica of the response, in intermediate frequency band, to the first pulse of a burst is subtracted from the intermediate frequency response to each of the subsequent pulses of the burst, wherein said method consists in:

carrying out a first sampling, after demodulation, of the amplitude in logarithmic scale and of the phase of the signal received in response to the first pulse of a burst and in carrying out a synthesis, in intermediate frequency band, of a rough replica of this signal,

carrying out a subtraction, in intermediate frequency band, of the rough replica from the signal received in response to the



first pulse delayed by the time needed to prepare the rough replica to obtain a modelling error signal,

carrying out a second sampling, after demodulation, of the amplitude in logarithmic scale and of the phase of the modelling error signal,

making a synthesis, from the first and second sampling operations, of a more precise replica, in intermediate frequency band, of the signal received in response to the first pulse of a burst, and

subtracting this more precise replica from each of the signals received in response to the subsequent pulses of the burst.

5,576,713

COMPENSATION CIRCUIT FOR IMPROVING MODULATION CHARACTERISTIC, AND MODULATOR AND RADAR EQUIPMENT USING THE SAME

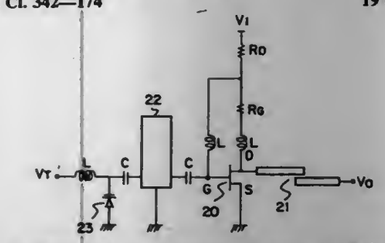
Hiroshi Suzuki, Kawasaki, and Masayoshi Shono, Kobe, both of Japan, assignors to Fujitsu Limited, and Fujitsu Ten Limited, both of Japan

Filed May 16, 1995, Ser. No. 442,201

Claims priority, application Japan, Jul. 4, 1994, 6-174715

Int. Cl.[6] G01S *7/40*

U.S. Cl. 342—174 **19 Claims**



1. A compensation circuit operatively connected to an input of a voltage-controlled oscillator of which an oscillating frequency is controlled by a control voltage for compensating a differential gain of the voltage-controlled oscillator, the compensation circuit comprising:

a first resistor connected to an input side of the voltage-controlled oscillator in series;

a series circuit of a second resistor and a first diode connected to the input side of the voltage-controlled oscillator in parallel; and

a first bias electric source for providing a forward bias voltage to the first diode.

5,576,714

Patent Not Issued For This Number

5,576,715

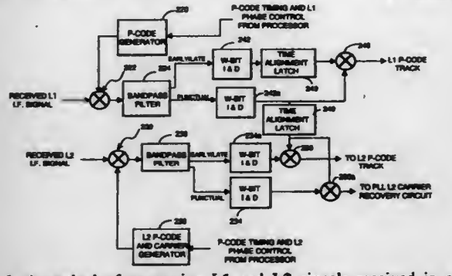
METHOD AND APPARATUS FOR DIGITAL PROCESSING IN A GLOBAL POSITIONING SYSTEM RECEIVER

James D. Litton; Graham Russell, both of Los Angeles County, and Richard K. Woo, Orange County, all of Calif., assignors to Leica, Inc., Buffalo, N.Y.

Filed Mar. 7, 1994, Ser. No. 207,972

Int. Cl.[6] G01S *5/02*

U.S. Cl. 342—357 **30 Claims**



1. A method of processing L1 and L2 signals received in a global positioning system (GPS), each of said L1 and L2 signals including a unique frequency carrier with a known pseudo-random P-code and unknown code modulated thereon, said method comprising the steps of:

demodulating each of the received L1 and L2 signals with a locally generated replica of their respective carrier signals and with locally generated replicas of the known P-code that is contained therein to generate first and second modulated L1 signals and first and second demodulated L2 signals;

separately integrating the first and second demodulated L1 signals and the first and second demodulated L2 signals over a time period equal in length to a plurality of P-code cycles to generate first and second integrated demodulated L1 signals and first and second integrated demodulated L2 signals;

correlating the second integrated demodulated L1 signal with said second integrated demodulated L2 signal in order to provide a correlated L2 signal, and correlating the second integrated demodulated L1 signal with the first integrated demodulated L1 signal in order to generate an L1 tracking signal, and

adjusting the phases of the locally generated carrier signal and P-code replicas relative to the received L1 and L2 signals based upon said L1 tracking signal and upon said correlated L2 signal, said locally generated carrier and P-code phases being useable to recover at least said unique L2 frequency carrier with favorable signal to noise ratio.

5,576,716

OWNER ORIENTED SYSTEM FOR LOCATING LOST OR STOLEN PROPERTY

Kermit M. Sadler, 17318 Tall Cypress Dr., Spring, Tex. 77388

Filed Dec. 7, 1994, Ser. No. 351,494

Int. Cl.[6] G01S *5/02*

U.S. Cl. 342—357 **10 Claims**

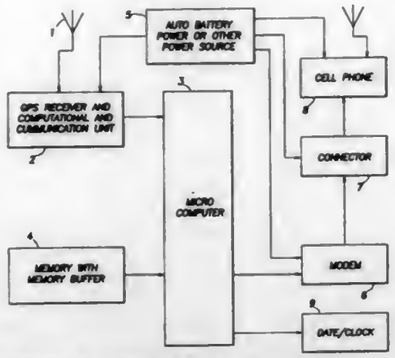
1. An owner oriented system for locating lost or stolen property, comprising:

(a) powering up a GPS module including a receiver, an antenna and a GPS computational and communications unit operatively connected within a vehicle to a microcomputer attached to a memory having a buffer and a modem attached to a mobile phone; and

(b) regularly and automatically receiving GPS signals through the antenna into the GPS receiver and computational and communication unit; converting the signals to position data;

(c) regularly and automatically testing for availability of position data from the GPS module through control of an activated program in the microcomputer;

(d) testing position data for novelty;



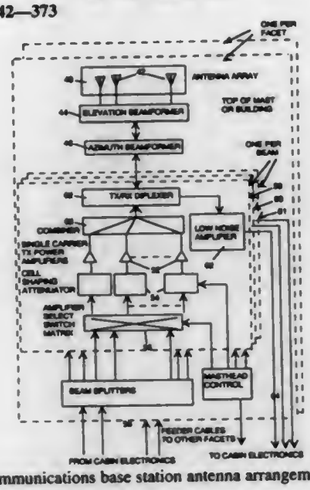
(e) queuing in a memory buffer novel position data;
(f) regularly and automatically testing for an incoming call through the mobile phone;
(g) testing an incoming call for a password and a vehicle position request; and
(h) serially downloading contents of a buffer upon the detection of the password and a position request.

5,576,717

BASE STATION ANTENNA ARRANGEMENT

Jeffrey G. Searle, Galmpton, United Kingdom; Stuart J. Dean, Nepean, Canada; Keith R. Broome, Babbacombe, United Kingdom; Peter J. Chrystie, Galmpton, United Kingdom, and Christopher R. Cox, East Portlemouth, United Kingdom, assignors to Northern Telecom Limited, Montreal, Canada

Division of Ser. No. 289,920, Aug. 12, 1994. This application May 16, 1995, Ser. No. 441,776
Claims priority, application United Kingdom, Aug. 12, 1993, 9316830
Int. Cl.[6] H01Q *3/22*
U.S. Cl. 342—373 **7 Claims**



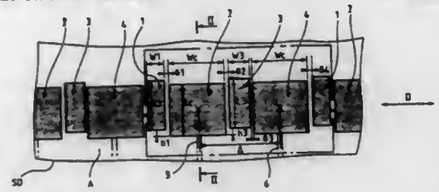
2. A communications base station antenna arrangement comprising:
a plurality of layered antenna arrays;
each antenna array including azimuth and elevation beam forming means whereby each antenna array is capable of forming a multiplicity of separate overlapping narrow beams in azimuth;
a plurality of r.f. transceivers each for transmitting and receiving r.f. signals for one or more calls;
wherein the plurality of antenna arrays are positioned such that the beams provide a coverage in azimuth wider than that provided by each antenna array;
and including means for independent adjustment of receiver gain and/or transmitter radiated power level of individual beams.

5,576,718

THIN BROADBAND MICROSTRIP ARRAY ANTENNA HAVING ACTIVE AND PARASITIC PATCHES

Bernard Burailli, Cannes-La-Bocca; Marc Monaco, Nice, and Jean-Pierre Boisset, Mougins, all of France, assignors to Aerospatiale Societe Nationale Industrielle, France

Continuation of Ser. No. 57,727, May 5, 1993, abandoned. This application Feb. 5, 1996, Ser. No. 596,929
Claims priority, application France, May 5, 1992, 92 05509
Int. Cl.[6] H01Q *1/38*
U.S. Cl. 343—700 MS **21 Claims**



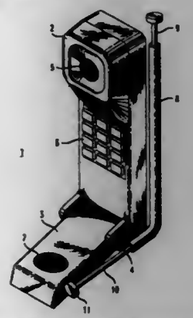
1. An array antenna comprising:
a dielectric support; and
a plurality of rectangular microstrip patches successively arranged on said dielectric support parallel to an alignment direction, wherein said plurality of rectangular microstrip patches establishes a periodic succession including more than a single period, each said period including more than one rectangular microstrip patch of said plurality of rectangular microstrip patches, and comprises:
a plurality of parasitic patches and a plurality of active patches disposed on said dielectric support in a parasitic patch/active patch alternating arrangement where each of said plurality of active patches is separated by one of said plurality of parasitic patches and each of said plurality of parasitic patches is separated by one of said active patches, each of said plurality of active patches are identically dimensioned to have substantially the same resonant frequency, each of said plurality of active patches further being disposed on said dielectric support so that respective phase centers of consecutive ones of said active patches in each said period are separated by a distance less than a wavelength in air λ_o associated with the resonant frequency, each of said plurality of active patches further being fed with electromagnetic energy to produce radiating sides parallel to said alignment direction, each of said plurality of parasitic patches having respective resonant frequencies near the resonant frequency of said plurality of active patches, each of said plurality of parasitic patches further being disposed on said dielectric support to be separated from adjacent active patches by a slot of constant non-null width extending transversely to said alignment direction, and each parasitic patch of said plurality of parasitic patches is necessarily electromagnetically coupled to two active patches of said plurality of active patches.

5,576,719

AUTOMATIC TELESCOPIC ANTENNA MECHANISM

Irwin Gerszberg, Kendall Park; Norman P. Graule, Hackettstown, and Eugene T. Kendig, Brick Township, Ocean County, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 125,577, Sep. 23, 1993, abandoned. This application May 19, 1995, Ser. No. 446,181
Int. Cl.[6] H01Q *1/24*
U.S. Cl. 343—702 **4 Claims**



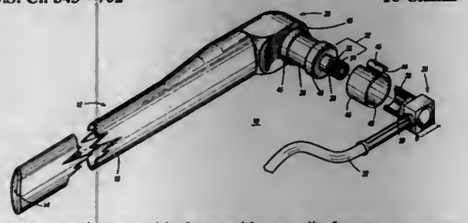
3. An antenna mechanism for a radiotelephone handset having a body and a mouthpiece rotatably fastened to said body about a pivot axis, said antenna mechanism comprising:
a hollow sleeve connected to the body, said hollow sleeve comprising an elongated body portion having a longitudinal axis aligned with the longitudinal axis of said handset body:
an antenna assembly having a first end extending from one end of said sleeve, a second end extending from the other end of said sleeve and being connected to said mouthpiece, and a central portion slidably positioned within said sleeve;
wherein rotation of said mouthpiece causes rotation of the second end of said antenna assembly about the pivot axis to move the antenna assembly within the sleeve to extend or retract said first end of said antenna assembly; and
wherein the other end of said sleeve is curved with respect to said elongated body portion, said second end of said antenna assembly being connected to an attachment point on the mouthpiece, and wherein the radius between the attachment point and the point of maximum curvature on said curved end of said sleeve is greater than the radius from the attachment point to the rotatable axis of the mouthpiece.

5,576,720

ASSEMBLY FOR MOUNTING A RADIO FREQUENCY ANTENNA TO A COMMUNICATION DEVICE

Harold Gorenz, Jr., Lisle; William R. Groves, Naperville, and Charles D. Hood, III, Elmhurst, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 3, 1995, Ser. No. 383,393
Int. Cl.[6] H01Q *1/24;1/50*
U.S. Cl. 343—702 **16 Claims**



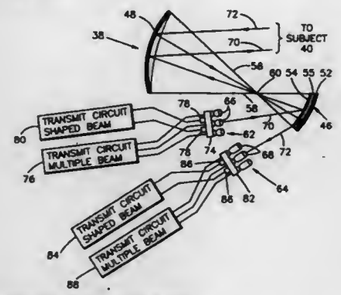
1. A mounting assembly for attaching a radio frequency antenna to a housing of a communication device for removably securing the antenna to the communication device, the assembly comprising:
a substantially circular base member extending from the antenna;
a mounting structure in the housing defining a generally tubular shaped opening;
the opening having a substantially circular cross-section for removably receiving the substantially circular base member and having an outside face, an inside face, and a recessed locking slot extending from the outside face towards the inside face;
a non-contiguous locking band coaxially surrounding a portion of the substantially circular base member for providing slidably frictional rotation of the base member within the locking band and configured to axially retain the circular base member within the locking band;
the locking band having a radially projecting tongue adapted to engage the locking slot to prevent rotation of the locking band relative to the housing while permitting rotation of the circular base member, the locking band adapted to resist axial displacement of the base member relative to the housing; and
a coupler mechanism connected to a portion of the circular base member adapted to couple the circular base member to an RF coupling.

5,576,721

COMPOSITE MULTI-BEAM AND SHAPED BEAM ANTENNA SYSTEM

Yeongming Hwang, Los Altos Hills, and Vito J. Jakstys, Penn Valley, both of Calif., assignors to Space Systems/Loral, Inc., Palo Alto, Calif.

Continuation of Ser. No. 41,397, Mar. 31, 1993, abandoned. This application Nov. 21, 1994, Ser. No. 342,653
Int. Cl.[6] H01Q *19/06*
U.S. Cl. 343—753 **23 Claims**



1. An antenna system comprising:
collimating means having a least one optical element;
a plurality of radiators arranged in at least one array, said one array of radiators illuminating said one optical element with radiation, said collimating means serving to form multiple beams of radiation from multiple ones of said radiators for illuminating a subject with said beams;
wherein said one optical element has a cross-sectional dimension which is much larger than cross-sectional dimensions of individual ones of said radiators for forming the beams of radiation from respective ones of said radiators, individual ones of the beams illuminating contiguous regions of the subject;

the subject has an irregular configuration with undulations, and individual ones of said radiators are positioned in said one array in a two-dimensional arrangement which conforms to the undulations in the configuration of the subject;

sizes of radiating apertures of said radiators differ wherein radiators of smaller radiating aperture are employed to illuminate a portion of the subject having a boundary with complex undulation while radiators of larger radiating aperture are employed to illuminate a portion of the subject having a boundary with gradual undulation;

cross-sectional dimensions of said radiators of smaller radiating aperture are less than a wavelength of the radiation, and cross-sectional dimensions of said radiators of larger radiating aperture are greater than a plurality of wavelengths of the radiation;

said system further comprises beam-forming means coupled to said radiators and having a network for energizing clusters of said radiators to provide multiple beams of radiation, there being a separate beam from each of said clusters, at least one of said beams from one of said clusters having an irregular two-dimensional footprint; and

energizing means connecting with said network for energizing all of said clusters of radiators simultaneously to provide a shaped-beam illumination of said subject.

5,576,722

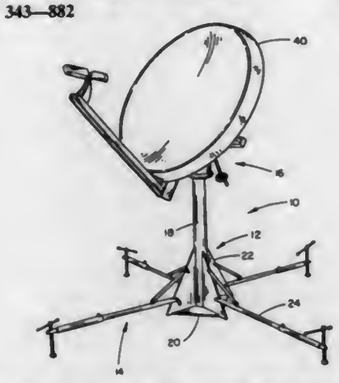
MOBILE SATELLITE ANTENNA BASE AND ALIGNMENT APPARATUS

Manuel D. Bustillos, ElPaso, Tex., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 13, 1994, Ser. No. 305,230

Int. Cl.[6] H01Q *3/02*

U.S. Cl. 343—882 **5 Claims**



1. A satellite antenna base and alignment apparatus, comprising:

a vertical support mast having a lower end and an upper end;

a plurality of adjustable stabilizer legs pivotally attached to said lower end of said mast;

means, affixed to said upper end of said means, for adjusting the azimuth of an antenna;

means, mounted on said azimuth adjusting means, for adjusting the elevation of said antenna; and

means for aligning said mast vertically wherein each of said adjustable stabilizer legs comprises a detachable leveler having a screw foot, a rod, a brace, said brace comprising two ends, one end of which is pivotably and removably attached to a triangular brace rigidly attached to said lower end of said support mast and wherein the other end of said brace is pivotably attached to said rod, and wherein said detachable leveler further comprises a short tube and said screw foot wherein said short tube is attached to said rod with a lock pin.

5,576,723

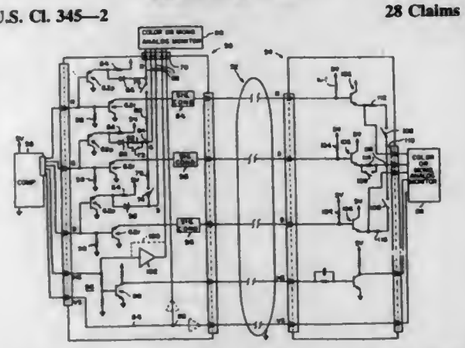
VGA SIGNAL CONVERTER FOR CONVERTING VGA COLOR SIGNALS TO VGA MONOCHROME SIGNALS

Robert R. Asprey, Harvest, Ala., assignor to Cybex Computer Products Corporation, Huntsville, Ala.

Continuation-in-part of Ser. No. 597,544, Oct. 12, 1990, Pat. No. 5,299,306, which is a continuation-in-part of Ser. No. 488,710, Mar. 5, 1990, Pat. No. 5,268,676, which is a continuation-in-part of Ser. No. 447,010, Dec. 5, 1989, Pat. No. 5,193,200, which is a continuation-in-part of Ser. No. 95,140, Sep. 11, 1987, Pat. No. 4,885,718. This application Mar. 29, 1994, Ser. No. 219,979

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—2 **28 Claims**



1. A computer-monitor interface for converting analog VGA color signals to gray scale monochrome signals for feeding to the input of a monochrome monitor, comprising:

a source of color analog VGA signals, consisting of discrete R, G, and B signals, one of each said VGA signals being applied to a separate conductor, wherein said R, G, and B signal conductors together provide all color signal information;

analog buffering means in circuit with one of each said conductors for receiving discrete color analog VGA signals;

a common junction coupled to a load impedance; and

first, second, and third unidirectional proportioning means, each being in circuit with a respective one of said buffering means, for unidirectionally providing an output current flow to said common junction, and each comprising signal unidirectional means and impedance means through which current flows to said common junction, whereby current flow to said common junction is only additive.

5,576,724

VEHICULAR EXTREME POSITION DISPLAY SYSTEM

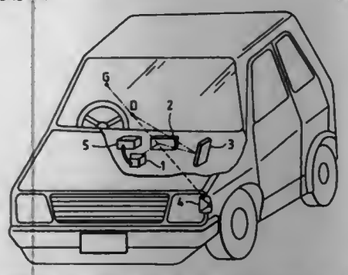
Yoshiaki Fukatsu, Nagoya, and Shunichi Ogawa, Toyota, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 1, 1993, Ser. No. 69,709

Claims priority, application Japan, Jun. 1, 1992, 4-140430; May 24, 1993, 5-121463

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—7 **9 Claims**



1. A vehicular extreme position display system in which an image of a display object is formed on a transparent member arranged at a front side of a vehicle so as to be displayed near an extreme position of the vehicle, thereby allowing an estimation of a distance between the image of the display object and an obstacle located forward of the vehicle for judging a distance between the extreme position of the vehicle and the obstacle, said vehicular extreme position display system comprising:

optical displaying means; and

said display object which is three-dimensional and in the form of a polyhedron having a plurality of surfaces and ridge lines between said surfaces;

wherein said optical displaying means includes light emitting means backward of said display object so that said display object transmits therethrough light emitted from said light emitting means;

wherein said display object includes light-transmittance changing means for providing different light-transmittance levels between at least some of said plurality of surfaces so that the image of the display object represented by the light having passed through said display object bears shading contrast and is thus formed on said transparent member as a stereoscopic image having the shading contrast, and wherein said display object is in the form of a frustum of quadrangular pyramid, and wherein said light-transmittance changing means decreases the light transmittance of the display object in the order of one of right and left side surfaces, an upper surface, a front surface, a bottom surface and the other of the right and left side surfaces with respect to an advancing direction of the light emitted from said light emitting means.

5,576,725

IMAGE DISPLAY DEVICE

Satoshi Shimada, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Dec. 16, 1993, Ser. No. 167,097

Claims priority, application Japan, Dec. 29, 1992, 4-360471

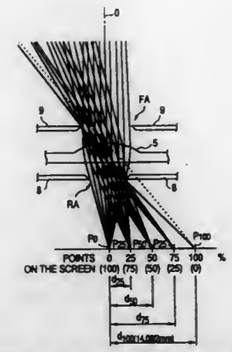
Int. Cl.[6] G02B *5/18*

U.S. Cl. 345—32 **5 Claims**

1. An image display device comprising:

a plurality of image projection means for projecting a plurality of fractional images on a screen, said plurality of fractional images, as displayed by said image display means on the screen, being synthesized in a manner wherein a screen-size image is displayed;

means for projecting said fractional images on said screen so that adjacent fractional images are projected with overlapping portions, and



gradual decrease type projection angle control means, including a light attenuator, for gradually decreasing the light in said overlapping portions for providing uniform lightness of said overlapping portions of the adjacent fractional images as displayed on said screen;

wherein said light attenuator comprises an optical attenuator which comprises an optical aperture device for gradually decreasing the light in the overlapping portion of adjacent fractional images, and wherein said image projection means includes a projection lens and said optical attenuator device comprises at least two aperture devices, one positioned in front of and one behind said projection lens in the direction of said screen.

5,576,726

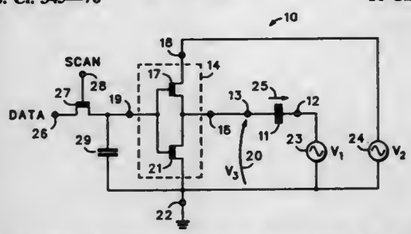
ELECTRO-LUMINESCENT DISPLAY DEVICE DRIVEN BY TWO OPPOSITE PHASE ALTERNATING VOLTAGES AND METHOD THEREFOR

George W. Rhyne, Scottsdale, and Curtis D. Moyer, Phoenix, both of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Nov. 21, 1994, Ser. No. 342,968

Int. Cl.[6] G09G *3/30*

U.S. Cl. 345—76 **10 Claims**



1. A method of controlling an electro-luminescent display comprising:

providing a pixel element of the electro-luminescent display, the pixel element having a first electrode and a second electrode;

applying a first alternating voltage to the first electrode;

coupling an output of a complementary field effect transistor driver to the second electrode, which is comprising:

coupling a first current electrode of a P-channel transistor to the second alternating voltage,

coupling a second current electrode of the P-channel transistor to the output of the complementary field effect transistor driver,

coupling a control electrode of the P-channel transistor to an input of the complementary field effect transistor driver,

coupling a first current electrode of an N-channel transistor to a ground reference,

coupling a second current electrode of the N-channel transistor to the output of the complementary field effect transistor driver, and

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coupling a control electrode of the N-channel transistor to the input of the complementary field effect transistor driver; and applying a second alternating voltage to a current electrode of the complementary field effect transistor driver.

5,576,727

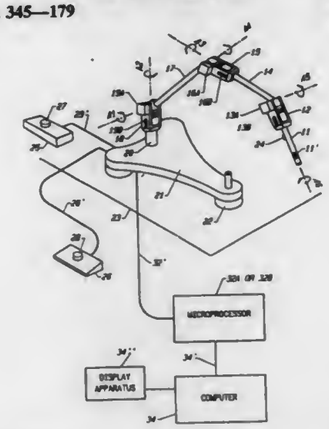
ELECTROMECHANICAL HUMAN-COMPUTER INTERFACE WITH FORCE FEEDBACK

Louis B. Rosenberg, and Bernard G. Jackson, both of Mountain View, Calif., assignors to Immersion Human Interface Corporation, San Jose, Calif.

Continuation of Ser. No. 92,974, Jul. 16, 1993. This application Jun. 5, 1995, Ser. No. 461,170

Int. Cl.[6] G06F *3/033*

U.S. Cl. 345—179 **50 Claims**



1. An interactive device for use in conjunction with a host computer, images displayed on a computer display screen, and a fixed surface, comprising:

a stylus having a pencil-like configuration to allow writing-like manipulations between fingers of a user;

a mechanical linkage coupled to a fixed surface and coupled to said stylus for supporting said stylus while allowing at least five degrees of freedom in the motion of said stylus, said mechanical linkage providing a user the ability to manipulate both the orientation and location of said stylus in three-dimensional space; and

a sensor for producing an interactive stylus locative signal which is responsive to and corresponding with the position and movement of the stylus at any point in time during its normal operation, said stylus locative signal providing information about the orientation, location, and movement of said stylus for use by said host computer and said computer display screen to manipulate images displayed by said computer display screen in accordance with said orientation, location, or movement of said stylus, said images including a cursor whose position on said computer display screen is controlled by said stylus locative signal; and

a force generator for generating a force on said stylus in at least one of said five degrees of freedom in response to force signals provided to said interactive device, said force signals correlated to information displayed on said computer display screen.

5,576,728

DRIVING METHOD FOR AN ELECTROOPTICAL DEVICE

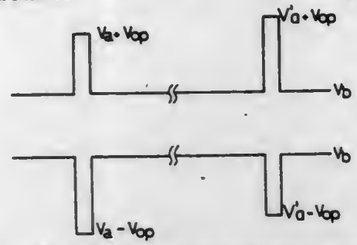
Takeshi Maeda, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Continuation of Ser. No. 755,490, Sep. 5, 1991, abandoned. This application Oct. 6, 1993, Ser. No. 132,684

Claims priority, application Japan, Sep. 13, 1990, 2-245073

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—91 **8 Claims**



1. A driving method for an electrooptical device having signal electrodes, first and second groups of scan electrodes, pixel electrodes, first and second groups of nonlinear resistance elements, each nonlinear resistance element in the first group of nonlinear resistance elements being connected between a respective one of the scan electrodes in the first group of scan electrodes and a respective one of the pixel electrodes, and each nonlinear resistance element in the second group of nonlinear resistance elements being connected between a respective one of the scan electrodes in the second group of scan electrodes and a respective one of the pixel electrodes, and electrooptical material interposed between the signal electrodes and the pixel electrodes, comprising the steps of: applying selected voltages which include an operation voltage value V_{op} to first and second scan electrodes in the first and second groups of scan electrodes during a selection period, wherein the polarity of the value V_{op} applied to the first scan electrode is opposite to the polarity of that applied to the second scan electrode; applying nonselected voltages having a smaller magnitude than the operation voltage value V_{op} to both said first and second scan electrodes during a nonselection period; and applying data voltages to said signal electrodes for controlling charge injected to said electrooptical material during the selection period; wherein a center voltage level between an ON voltage level and an OFF voltage level of the data voltages is set substantially equal to a voltage level of the nonselected voltages.

5,576,729

LIQUID CRYSTAL DISPLAY DEVICE AND ELECTRONIC EQUIPMENT USING THE SAME

Katsunori Yamazaki, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

PCT No. PCT/JP93/00639, § 371 Date Jan. 3, 1994, § 102(e) Date Jan. 3, 1994, PCT Pub. No. WO93/23845, PCT Pub. Date Nov. 25, 1993

PCT Filed May 14, 1993, Ser. No. 170,355

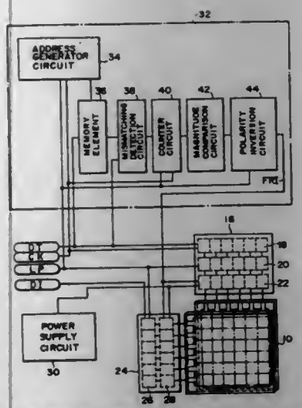
Claims priority, application Japan, May 14, 1992, 4-122141; Sep. 10, 1992, 4-242227

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—94 **17 Claims**

1. A liquid crystal display device comprising:

a liquid crystal display panel having a plurality of pixels and comprising a liquid crystal layer sandwiched by a plurality of scanning electrodes and a plurality of signal electrodes, each of the plurality of pixels formed by an overlap between one of the plurality of scanning electrodes and one of the plurality of signal electrodes;



first voltage applying means for applying scanning voltages comprising a selection voltage and a non-selection voltage to said plurality of scanning electrodes of said liquid display panel;

second voltage applying means for applying signal voltages comprising an on-voltage and an off-voltage to said plurality of signal electrodes of said liquid crystal display panel;

polarity inversion control means, connected to said first voltage applying means and said second voltage applying means, for controlling a polarity inversion of a driving voltage, the driving voltage being a potential difference between each scanning electrode and a corresponding signal electrode, based on an on/off-status of each pixel corresponding to at least a current one and a prior one of the scanning electrodes of said liquid crystal display panel when said selection and non-selection voltages applied by said first voltage applying means are switched between said scanning electrodes;

wherein said liquid crystal display panel is driven by an AC driver.

5,576,730

ACTIVE MATRIX SUBSTRATE AND A METHOD FOR PRODUCING THE SAME

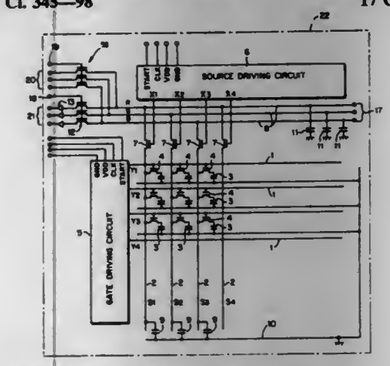
Takayuki Shimada, Ikoma-gun; Toshihiro Yamashita, and Yutaka Takafuji, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 6, 1993, Ser. No. 43,384

Claims priority, application Japan, Apr. 8, 1992, 4-087283

Int. Cl.[6] G01R *31/28*

U.S. Cl. 345—98 **17 Claims**



1. An active matrix substrate, comprising:

a plurality of pixel electrodes arranged in a matrix;

a plurality of data lines for supplying video signals to the pixel electrodes;

a plurality of scanning lines for supplying scanning signals for selecting at least one of the pixel electrodes which is to be supplied with the video signals; and

external signal supplying means for externally supplying the video signals to the data lines;

wherein the external signal supplying means includes:

a data line connection section connected to the data lines, said data line connection section being on said substrate,

an inspection signal inputting section connectable to a first connection to the data line connection section, and said inputting section receiving a sequence of test signals and sequentially applying the test signals via the data lines to impart capacitive charges to the electrodes,

an inspection signal outputting section connectable to a second connection, separate from said first connection, to the data line connection section, and said outputting section receiving a sequence of signals via the data lines indicative of whether the charges were retained by each of the electrodes, and the outputting section including an amplifier for amplifying the sequence of signals; and

a switching means for sequentially electrically connecting the inspection signal inputting section and then the inspection signal outputting section for each pixel electrode to the data line connection section, where said switching means is on the substrate.

5,576,731

DISPLAY LINE DISPATCHER APPARATUS

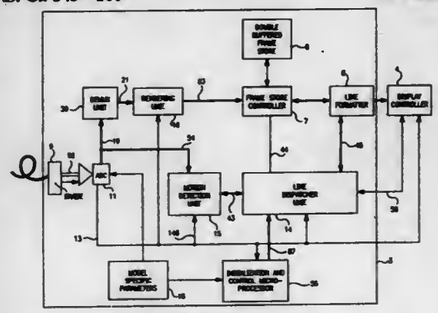
Rodney J. Whitby, Ermington, and David R. Brown, East Roseville, both of Australia, assignors to Canon Inc., Tokyo, Japan

Continuation of Ser. No. 177,450, Jan. 5, 1994, abandoned. This application Jun. 12, 1995, Ser. No. 489,634

Claims priority, application Australia, Jan. 11, 1993, PL6762

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—100 **21 Claims**



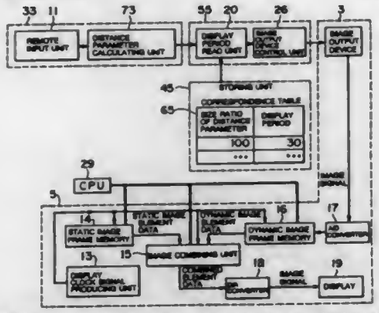
1. A display control apparatus, comprising:

means for displaying an input image having a first refresh rate on a display having a memory function and a second refresh rate, the second refresh rate being lower than the first refresh rate;

means for detecting motion characteristics of the input image by comparing information of a portion of an image frame in a sequence of a plurality of the image frames; and

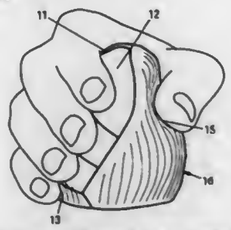
means for maintaining the motion characteristics of the input image at substantially the first refresh rate.

5,576,732
DYNAMIC IMAGE DISPLAY DEVICE
Yu Minakuchi; Satoshi Okuyama; Toshimitsu Suzuki, and Katsutoshi Yano, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Division of Ser. No. 269,779, Jul. 1, 1994. This application Jun. 5, 1995, Ser. No. 463,922
Claims priority, application Japan, Jul. 22, 1993, 5-181678
Int. Cl.[6] G09G 5/00
U.S. Cl. 345—127 **1 Claim**



1. A dynamic image display device which successively reads out each of a plurality of frames from dynamic image data stored as successive frames to display each of said plurality of frames at each predetermined display period on a window of a display device, said predetermined display period being changeable, said dynamic image display device comprising:
distance parameter input unit for inputting a distance parameter between a display screen displaying said window and a person looking at a dynamic image on said display screen;
a storage device having a definition correlating said distance parameter with said predetermined display period;
means for reading out from said storage device said predetermined display period corresponding to said distance parameter inputted by said distance parameter input unit; and
means for displaying each of said plurality of frames on said window of said display device during each said predetermined display period.

5,576,733
ERGONOMIC COMPUTER MOUSE
Jack Lo, 1415 Eddington La., Daly City, Calif. 94014
Filed May 25, 1994, Ser. No. 248,737
Int. Cl.[6] G09G 3/02
U.S. Cl. 345—163 **17 Claims**



1. An ergonomic computer mouse for translation over a horizontal stationary surface, comprising:
a generally horizontal bottom surface for stably and translatably positioning said mouse over said stationary surface;
a housing attached on top of said bottom surface, said housing having a forward end, a rear end, and opposite sides extending continuously between said forward end and said rear end;
one of said sides being a generally vertical finger-supporting surface for supporting the fingers of a generally upright hand in a generally vertical stack, so that the little finger is at the bottom thereof and the index finger is at the top thereof, said finger-supporting surface being generally elongated in a horizontal direction for supporting the fingers in generally straight positions; and
another one of said sides being a thumb-supporting surface for supporting the thumb of said hand, so that said mouse is securely gripped between the thumb and the fingers, and is easily maneuvered by flexing the straight fingers and the thumb, and the hand is in a relaxed, untwisted, and naturally upright position.

5,576,734
KEYBOARD EMULATOR SYSTEM
Joseph A. Daniele, Leeds Point, and Haim S. Gabrieli, Margate, both of N.J., assignors to The Mitre Corporation, Bedford, Mass.
Continuation of Ser. No. 142,083, Oct. 28, 1993, abandoned. This application Apr. 11, 1995, Ser. No. 420,714
Int. Cl.[6] G09G 5/00
U.S. Cl. 345—168 **7 Claims**



writing region controlling means, responsive to said timing signal, for providing a plurality of write addresses corresponding to said address space for said first and second expanded image data signals when said image data writing means writes said expanded image data signals in said frame memory means, and

timing controller means for controlling each one of said compressed image data expanding means, said data transferring means, said image data writing means, and said writing region controlling means by producing said timing signal.

5,576,737

LIQUID CRYSTAL DRIVE DEVICE, LIQUID CRYSTAL DISPLAY DEVICE, AND LIQUID CRYSTAL DRIVE METHOD

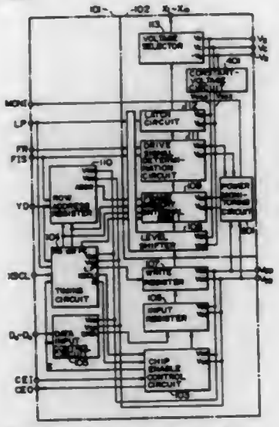
Shingo Isozaki, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,384

Claims priority, application Japan, Dec. 22, 1993, 5-325169

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—211 **39 Claims**



1. A liquid crystal drive device comprising:

a low-voltage amplitude operating portion having at least a control logic unit and operating on the supply of a first power voltage group; and

a high-voltage-amplitude operating portion operating on the supply of a second power voltage group, said high-voltage-amplitude operating portion containing a voltage difference between at least one pair of power voltages included within said second power voltage group, one on a high-potential side and one on a low-potential side, said voltage difference being greater than a voltage difference between a power voltage on a high-potential side and a power voltage on a low-potential side within said first power voltage group, said second power voltage group being used to drive liquid crystal elements of a liquid crystal panel;

said liquid crystal drive device further comprising:

data storage means for storing image data for driving the liquid crystal elements of said liquid crystal panel; and

means for supplying an operating power source to said data storage means, said operating power source being a voltage group that is one of said second power voltage group and a third power voltage group which is obtained by converting said second power voltage group.

5,576,738

DISPLAY APPARATUS WITH MEANS FOR DETECTING CHANGES IN INPUT VIDEO

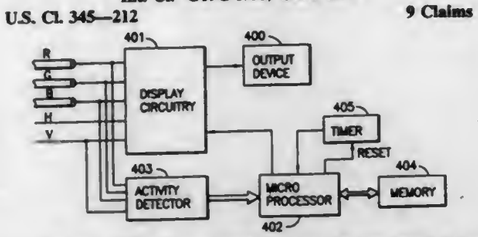
Edward Anwyl, Eastleigh; John Beeteson, Skelmorlie; Shaun Kerigan, Kilmalcolm; Andrew Knox, Kilbirnie, all of Great Britain, and Peter Martinez, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 3, 1994, Ser. No. 237,708

Claims priority, application United Kingdom, Sep. 24, 1993, 9319766

Int. Cl.[6] G09G *5/00*; G06F *1/00*

U.S. Cl. 345—212 **9 Claims**



1. Display apparatus comprising: a display screen; and a drive circuit for receiving an input video signal, the drive circuit being connected to the display screen to generate an image on the display screen in response to the input video signal; characterised in that the apparatus comprises: a timer for generating a count in response to a clock signal; a detector for receiving the input video signal and for resetting the timer on detection of a change in image content between successive frames of the input video signal; and control means connected to the timer and to the drive circuit for at least partially disabling the drive circuit in response to the count stored in the timer exceeding a predetermined threshold, wherein the detector comprises:

thresholding means for providing a video signal threshold level and for generating a pulse signal including a plurality of pulses in response to transitions in the input video signal crossing the predetermined video signal threshold; a counter for counting the pulses of the pulse signal to generate a pulse count indicative of the number of transitions in the input video signal; means for resetting the counter at the beginning of each frame of video signal; a microprocessor connected to the counter and including a memory unit for storing pulse counts and a comparator for comparing the pulse count in the counter at the end of a first frame of the input video signal with the pulse count in the counter at the end of the next frame of the input video signal; and means for resetting the timer if the comparator determines that the pulse counts corresponding to successive frames of the input video signal are different.

5,576,739

CARBON MONOXIDE SAFETY SYSTEM

Richard F. Murphy, Oaklawn, Ill., assignor to Phy-Con. Inc., Oak Lawn, Ill.

Continuation-in-part of Ser. No. 900,325, Jun. 18, 1992, abandoned. This application Aug. 24, 1994, Ser. No. 295,519

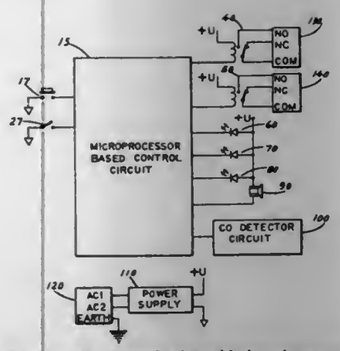
Int. Cl.[6] G05B *23/02*; G08B *17/10*; F27D *21/04*

U.S. Cl. 340—825.06 **1 Claim**

1. A carbon monoxide gas detector and controller for controlling a device producing the carbon monoxide gas and for decreasing the concentration of carbon monoxide in an affected space, the controller comprising:

a detector for measuring the concentration of the gas, the detector capable of producing a signal when the carbon monoxide concentration reaches predetermined levels, a microprocessor in electrical communication with the detector for receiving the signals from the carbon monoxide detector;

means for visually or audibly indicating a first predetermined level of carbon monoxide gas said means operatively connected to the microprocessor;



a relay in electrical communication with the microprocessor and including a first normally open contact for activating the electrical power circuit of a device for decreasing the concentration of gas in an affected space and a second normally closed contact for deactivating the electrical power circuit of a device producing the gas, when the detector senses a second predetermined level of gas, said microprocessor energizing the relay when the detector senses second predetermined level of gas;

the microprocessor operative to actuate the visual or audible indicating means when it receives a signal from the detector representing the first predetermined level of gas and activating the relay when it receives a signal representing the second predetermined level of gas;

means for deactivating the detector and controller in the event of a malfunction;

the microprocessor capable of sensing a malfunction of the detector and activating visual or audible means for indicating the malfunction.

5,576,740

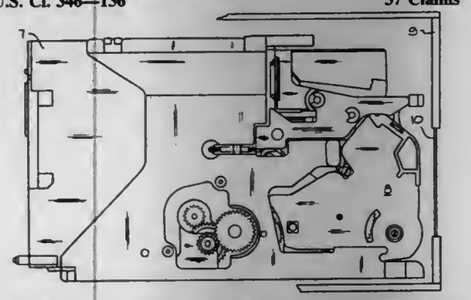
CHART RECORDER HAVING REVIEW MEANS

Sean C. Keeping, 59 Kimberley Road, West Croydon, Surrey CR0 2PY; John C. Emmerson, 64 Kings Hill, Beech, Alton, Hampshire GL34 4AN, and David J. Claydon, 7 West Street, Great Gransden, Sandy, Bedfordshire SG19 3AT, all of England

Filed May 19, 1994, Ser. No. 246,358

Int. Cl.[6] G01D *15/24*

U.S. Cl. 346—136 **37 Claims**



22. A chart recorder comprising a chassis; a data input port for receiving data provided on the chassis; a recording head floatingly supported on the chassis for recording a representation of said data on a chart; a chart cassette removably mounted on the chassis; first chart storage means for storing an elongate chart strip provided in the chart cassette; chart transport means for uniform transport of the elongate chart strip from the first storage means past the recording head; a platen on the cassette, positioned so as to support the transported chart strip for recording; head alignment means having two mutually abutting parts, one mounted on the cassette in fixed position relative to the platen and the other floating in the chassis with the recording head; an inspection window enabling visual inspection of a region of the chart strip bearing the recorded data representation; and second chart storage means provided in the chart cassette for collecting the chart strip from the recording head and platen; whereby inter-engagement of the two parts of the head alignment means serves on introduction of the chart cassette into the chassis to align the recording head relatively to the platen.

5,576,741

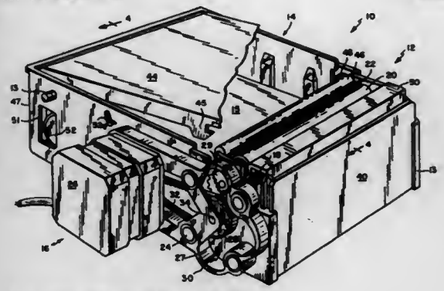
CONFIGURABLE CHART RECORDER

Stephen Johnson, Hingham, Mass.; Alfred C. Mecklenburg, Salt Lake City, Utah; Daniel E. Morgan, Salem; William S. Oakland, Littleton, both of Mass., and Edward H. Yonkers, Contoocook, N.H., assignors to General Scanning Inc., Watertown, Mass.

Filed Dec. 28, 1993, Ser. No. 174,150

Int. Cl.[6] G01D *15/00*; B41J *13/10*

U.S. Cl. 346—145 **13 Claims**



9. A strip chart recorder including:

A. a print head;

B. a roller for advancing a print medium past said print head;

C. a motor for driving said roller;

D. a tray for housing the print medium, said tray including an end wall and a door with catches; and

E. a chassis, including a pair of opposing sides, a front and a chassis end wall opposite the front, for

i. supporting between said sides said print head and roller,

ii. mounting said motor on either side of said chassis on studs extending outwardly from each of said sides,

iii. holding said tray in proximity to said roller, said chassis end wall including a lip which extends across a top edge of said wall, said lip engaging a top edge of said end wall and a bottom edge of said chassis end wall mating with a bottom edge of said box end wall for securing said box end wall to said chassis end wall,

iv. supporting one or more pivoting latches mounted on one or more of said sides, said latches each including a first end which engages one of said catches on said door to retain said door in a closed position, and

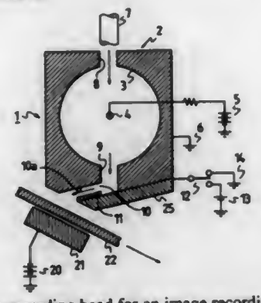
v. a release means for controlling said latches, said release means being in engagement with said latches and accessible from the front of said chassis and, when sufficient force is applied to said release means, said means pivots the latches out of engagement with the catches, wherein said door is released from the closed position.

5,576,742

IMAGE RECORDING HEAD HAVING CORROSION RESISTANT CONTROL ELECTRODES

Keizo Abe, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1993, Ser. No. 159,222
Claims priority, application Japan, Dec. 1, 1992, 4-343628
Int. Cl.[6] G01D 9/00; B41J 2/06;2/39;2/40
U.S. Cl. 346—150.1 8 Claims



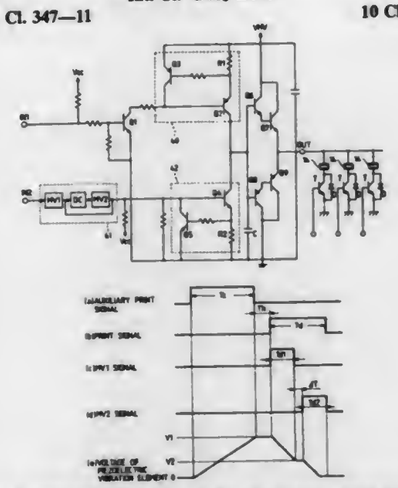
1. An image recording head for an image recording apparatus in which a voltage is applied to fine pattern electrodes to form an image, wherein at least a part of said fine pattern electrodes is exposed to atmosphere and comprises a member selected from the group consisting of tungsten, titanium, tantalum, and an alloy of titanium including at least one of a group VIII metal of the periodic table.

5,576,743

INK JET RECORDING APPARATUS AND METHOD OF CONTROLLING THEREOF

Kaoru Momose; Munehide Kanaya; Masahiko Yoshida, and Hikonosuke Uwai, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Mar. 1, 1994, Ser. No. 203,312
Claims priority, application Japan, Mar. 1, 1993, 5-040054; Feb. 21, 1994, 6-046363
Int. Cl.[6] B41J 2/045
U.S. Cl. 347—11 10 Claims



7. A method of controlling an ink jet recording apparatus, said ink jet recording apparatus including an ink jet recording head comprising at least one pressure chamber having a nozzle opening and at least one piezoelectric vibration element which abuts the pressure chamber, wherein an ink is sucked into said pressure chamber by expanding said pressure chamber according to a contraction of said piezoelectric vibration element and an ink droplet is jetted from the nozzle opening by contracting the pressure chamber according to an extension of said piezoelectric vibration element,

said method including a step of eliminating residual vibration of the piezoelectric vibration element when the ink droplet is jetted from the nozzle opening by temporarily stopping charge or discharge of a capacitor in order to control a forced contraction and extension of the piezoelectric vibration element,

said step of eliminating the residual vibration comprising the steps of:

setting a temporary stop to be made during the extension process of the piezoelectric vibration element to such an extension speed and timing as to exactly end inertial force-induced extension where a length of the piezoelectric vibration element has reached a natural length, the inertial force-induced extension being caused by interrupting a forced extension while the forced extension is still being performed;

then setting the temporary stop to an interval from a timing at which the inertial force-induced extension is started to a timing at which the length of the piezoelectric vibration element has reached the natural length and the piezoelectric vibration element is thereby about to start contracting; and

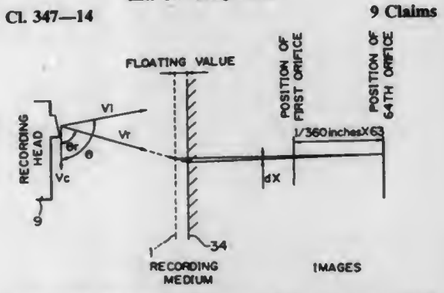
then setting the extension process resumption to such an extension speed and timing as to allow the piezoelectric vibration element to restore the natural length with apparently few vibration by causing the resumed extension process of the piezoelectric vibration element extending from the natural length to cancel out contraction attributable to residual vibration.

5,576,744

RECORDING APPARATUS AND METHOD COMPENSATING FOR VARYING GAP BETWEEN RECORDING HEAD AND RECORDING MEDIUM

Takeji Niikura, Kawasaki; Masasumi Nagashima, Yokohama, and Yasushi Kolke, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1993, Ser. No. 86,111
Claims priority, application Japan, Jul. 6, 1992, 4-178110; May 28, 1993, 5-127083
Int. Cl.[6] B41J 29/38
U.S. Cl. 347—14 9 Claims



1. A recording apparatus for performing recording on a recording medium with a recording portion including a recording head having a plurality of recording elements, said apparatus comprising:

information acquisition means for acquiring a first distance between the recording medium and an upper positioned recording element, and a second distance between the recording medium and a lower positioned recording element;

establishment means for establishing a correction value for ink ejection timing of said recording head on the basis of the difference between the first distance and the second distance acquired by said information acquisition means; and

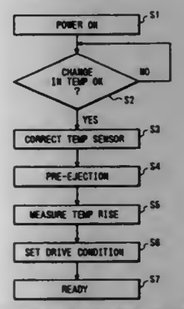
control means for controlling said recording portion to record on the basis of the correction value for ink ejection timing established by said establishment means.

5,576,745

RECORDING APPARATUS HAVING THERMAL HEAD AND RECORDING METHOD

Miyuki Matsubara, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1994, Ser. No. 248,492
Claims priority, application Japan, May 27, 1993, 5-125930
Int. Cl.[6] B41J 2/05
U.S. Cl. 347—14 58 Claims



1. A recording apparatus having a recording head mounted thereon for recording by using thermal energy, the recording head having a thermal characteristic, said apparatus comprising:

heat means for driving and heating said mounted recording head under predetermined conditions;

detection means for detecting a temperature change of said recording head caused by the heating by said heat means;

determination means for determining the thermal characteristic of said recording head based on the temperature change detected by said detection means;

set means for setting a driving condition of said mounted recording head in accordance with the thermal characteristic of said recording head determined by said determination means; and

drive means for driving said recording head in accordance with the driving condition set by said set means.

5,576,746

APPARATUS AND METHOD FOR MAINTAINING IMAGE QUALITY WHEN IMAGE RECORDING IS INTERRUPTED

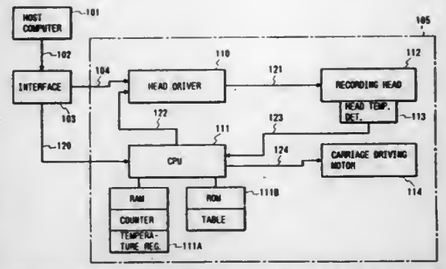
Akio Suzuki, Yokohama; Yasushi Miura, Kawasaki, and Masami Izumizaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 186,886, Jan. 26, 1994, Pat. No. 5,361,090, which is a continuation of Ser. No. 112,232, Aug. 27, 1993, abandoned, which is a continuation of Ser. No. 770,534, Oct. 3, 1991, abandoned. This application Sep. 8, 1994, Ser. No. 302,426
Claims priority, application Japan, Oct. 4, 1990, 2-265064; Nov. 28, 1990, 2-322444; Nov. 29, 1990, 2-325999; Nov. 30, 1990, 2-329516
Int. Cl.[6] B41J 2/05
U.S. Cl. 347—14 29 Claims

1. An image recording apparatus having a stand-by mode in which a recording operation is interrupted during recording for stand-by, comprising:

a recording head for recording on a recording medium;

head temperature detecting means for detecting the temperature of said recording head;



memory means for storing temperature information detected by said head temperature detecting means, so that a temperature of the recording head when recording is interrupted is stored;

stand-by time counting means for counting an interruption time for the recording operation in said stand-by mode; and

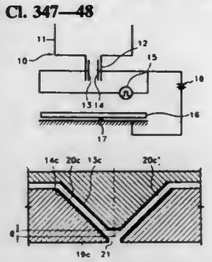
head driving controlling means for giving a driving signal to said recording head, in accordance with the temperature stored in said temperature memory means and an interruption time calculated by said stand-by time counting means on resuming the recording operation.

5,576,747

ELECTROSTATIC HYDRODYNAMIC JET WRITING METHOD USING ELECTRO-RHEOLOGICAL FLUID AND APPARATUS THEREOF

Sang-suk Sohn, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Continuation of Ser. No. 999,117, Dec. 31, 1992, abandoned. This application Sep. 22, 1994, Ser. No. 309,471
Claims priority, application Rep. of Korea, Jun. 30, 1992, 92-11633
Int. Cl.[6] B41J 2/06
U.S. Cl. 347—48 10 Claims



1. An electrostatic hydrodynamic jet writing method for writing a desired image using an electro-rheological fluid, said method comprising the steps of:

(a) storing an ejection head having a nozzle with an electro-rheological ink of lowered viscosity;

(b) applying a writing potential to said nozzle for forming an electric field according to a writing signal to vary said electro-rheological ink into a high viscosity fluid thereby controlling the unwanted flow of said electro-rheological ink in the passage inside said nozzle; and

(c) cutting off said writing potential and simultaneously applying an accelerating potential between said nozzle and an accelerating electrode on which paper is guided so as to transfer said electro-rheological ink of lowered viscosity from said accelerating electrode to perform writing,

VOL 1192 ISS 3 NO 19 1996 UMI

wherein said nozzle of said ejecting head comprises a nozzle body and a pair of passages formed at an equal angle in said nozzle body and which converge on an opening of an aperture in said nozzle body.

5,576,748

RECORDING HEAD WITH THROUGH-HOLE WIRING CONNECTION WHICH IS DISPOSED WITHIN THE LIQUID CHAMBER

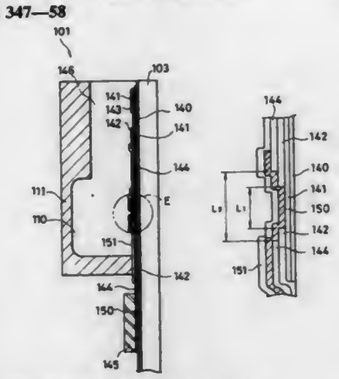
Hideo Tamura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 961,035, Oct. 14, 1992, Pat. No. 5,227,812, which is a continuation of Ser. No. 659,702, Feb. 25, 1991, abandoned. This application May 20, 1993, Ser. No. 63,683

Claims priority, application Japan, Feb. 26, 1990, 2-42533; Feb. 28, 1990, 2-49873

Int. Cl.[6] B41J *2/05*

U.S. Cl. 347—58 **2 Claims**



1. An ink jet recording device comprising:

a substrate;

a plurality of electro-thermal converting elements, disposed on said substrate, each said element having a heat generating resistor and a pair of electrodes electrically connected to that said heat generating resistor;

a protective layer formed on said substrate and covering said electro-thermal converting elements, said protective layer comprising a first insulating layer of an inorganic material, a second insulating layer of an organic material which covers said first insulating layer, and a third insulating layer of an organic material which covers said second insulating layer;

a plurality of ink discharge orifices for discharging an ink fed thereto;

a liquid chamber in fluid communication with said ink discharge orifices through a plurality of ink flowing paths, and holding the ink which is fed to said ink discharge orifices;

driving signal generating means for generating a driving signal for driving said electro-thermal converting elements,

a wiring electrode for applying said driving signal to at least one of said electro-thermal converting elements,

wherein said wiring electrode is formed between said second insulating layer and said third insulating layer, and said wiring electrode is electrically connected to one of the pair of electrodes via a through-hole formed in said first insulating layer and a second through-hole formed in said second insulating layer, in said liquid chamber, and

said second through-hole in said second insulating layer is larger than said first through-hole in said first insulating layer.

5,576,749

INK-JET RECORDING APPARATUS AND INK TANK CARTRIDGE THEREFOR

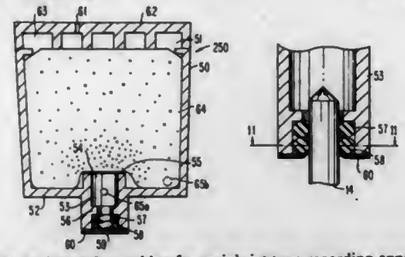
Seiji Mochizuki; Kuzuhisa Kawakami; Masahiro Nakamura; Keiichi Ohshima, and Masanori Yoshida, all of Suwa, Japan, assignors to Seiko Epson Corproation, Tokyo, Japan

Continuation of Ser. No. 928,936, Aug. 11, 1992, which is a continuation-in-part of Ser. No. 742,529, Aug. 7, 1991, Pat. No. 5,255,019, which is a continuation of Ser. No. 642,761, Jan. 18, 1991, Pat. No. 5,070,346. This application Apr. 17, 1995, Ser. No. 422,971

Claims priority, application Japan, Jan. 28, 1992, 4-12834; Feb. 19, 1992, 4-32226; Mar. 16, 1992, 4-58151; Jun. 26, 1992, 4-193402

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—86 **69 Claims**



25. An ink tank cartridge for an ink-jet type recording apparatus being removably mountable onto an ink supply needle of a recording apparatus body, said ink supply needle having at least one throughhole to allow ink to pass therethrough, the ink tank cartridge comprising:

a housing formed with a chamber therein;

an ink supply port extending through and projecting from a wall of said housing, said ink supply port having a first opening directed towards said chamber of said housing and a second opening directed away from said wall of said housing;

a packing member provided within said ink supply port towards said second opening, said packing member being formed with a hole therethrough dimensioned to receive said ink supply needle and to resiliently abut against an outer periphery of said ink supply needle of the ink jet type recording apparatus, said packing member preventing the flow of ink through said ink supply port other than through said ink supply needle when said needle is positioned in said ink supply port;

a sealing member separate from said packing member positioned to seal said second opening of said ink supply port before said ink tank cartridge is mounted on said ink supply needle and to be penetrated by said needle when said ink tank cartridge is mounted on said ink supply needle; and

a stopping member provided between said packing member and said sealing member positioned and dimensioned to prevent pieces of said sealing member produced when said ink supply needle penetrates said sealing member from entering said ink supply port past said sealing member.

5,576,750

RELIABLE CONNECTING PATHWAYS FOR A THREE-COLOR INK-JET CARTRIDGE

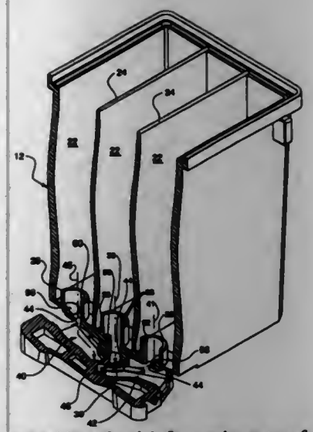
Fred Y. Brandon, Lexington, Ky.; Curtis R. Droege, Centralia, Ill.; Bruce D. Gibson, Lexington, Ky.; Kenneth J. Harshbarger, Lexington, Ky.; James H. Powers, Lexington, Ky.; William M. Toon, Lexington, Ky., and John D. Zbrozek, Lexington, Ky., assignors to Lexmark International, Inc., Lexington, Ky.

Filed Oct. 11, 1994, Ser. No. 321,344

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—87 **16 Claims**

1. An ink-jet printer cartridge body having a center ink reservoir chamber connected by a first ink flow pathway to a first exit port and second and third ink reservoir chambers disposed on opposite sides of said center ink reservoir chamber and connected to second and third exit ports by second and third ink flow pathways, said second and third ink flow pathways having portions of generally trapezoidal cross-section, and plugs for closing one end of each of said portions of generally trapezoidal cross-section, said plugs each having two end surfaces forming obtuse angles with each other, one of said end surfaces forming an obtuse angle with a bottom wall of said portion of generally trapezoidal cross-section.



5,576,751

APPARATUS FOR EITHER CONTINUOUS OR INTERMITTENT THERMAL TRANSFER RECORDING

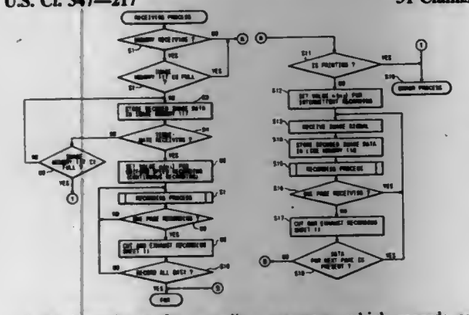
Satoshi Wada, Kawasaki; Takehiro Yoshida, Tokyo; Takeshi Ono; Tomoyuki Takeda, both of Yokohama; Masaya Kondo, Tokyo; Makoto Kobayashi, Tama; Takahiro Kato; Takashi Awai, both of Yokohama; Yasushi Ishida, Tokyo; Akihiro Tomoda, Yokohama; Minoru Yokoyama, Yokohama, and Masakatsu Yamada, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 44,101, Apr. 6, 1993, abandoned, which is a continuation of Ser. No. 648,140, Jan. 30, 1991, abandoned. This application Mar. 27, 1995, Ser. No. 412,206

Claims priority, application Japan, Feb. 1, 1990, 2-020405

Int. Cl.[6] B41J *2/325*

U.S. Cl. 347—217 **31 Claims**



1. A thermal transfer recording apparatus, which records an image on a recording medium by transferring ink of an ink sheet on said recording medium, comprising:

conveyance means for conveying said ink sheet in a first direction by a first amount and conveying said recording medium in a second direction by a second amount;

recording means for recording an image on said recording medium by operating on said ink sheet;

detection means for detecting whether the recording is intermittent or continuous and outputting a detection result; and

control means for changing the first amount of conveyance of said ink sheet by said conveyance means in accordance with said detection result.

5,576,752

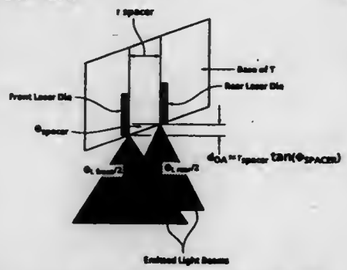
OFFSET MOUNTING OF NONMONOLITHIC MULTIWAVELENGTH LASERS

Gregory J. Kovacs, Sunnyvale; R. Donald Yingling, Jr. deceased, late of San Francisco, and Tibor Fisli, Los Altos Hills, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 22, 1993, Ser. No. 156,219

Int. Cl.[6] B41J *2/45*; H01S *3/19*

U.S. Cl. 347—238 **18 Claims**



7. An array of light emitting elements, comprising:

a thermally conductive base;

a thermally conductive spacer protruding from said base and having a front surface which joins with at least two mounting surfaces to form at least two front edges, and such that a plane of said front surface forms oblique angles with planes of said at least two mounting surfaces; and

at least two light emitting elements of different wavelengths, each mounted on, and in thermal contact with, an associated one of said at least two mounting surfaces;

wherein a width of said spacer controls a separation of said laser mounting surfaces.

5,576,753

IMAGE FORMING APPARATUS WHICH PERFORMS REGISTRATION CORRECTION FOR PLURAL IMAGE

Tatsuhito Kataoka, Tokyo; Hiroyuki Takahashi, and Motoaki Tahara, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 20, 1993, Ser. No. 93,693

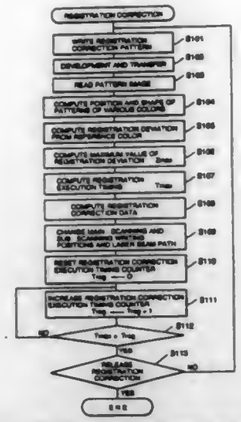
Claims priority, application Japan, Jul. 30, 1992, 4-203971

Int. Cl.[6] H04N *1/21*

U.S. Cl. 347—248 **56 Claims**

1. An image forming apparatus which determines a timing between detection of each of plural registration images, said image forming apparatus comprising:

image forming means for forming plural registration images;



detecting means for detecting each registration image and for determining a registration deviation by which each registration image deviates from a predetermined position; and

determining means for determining a timing at which said detecting means operates to detect a subsequent registration image on the basis of the registration deviation determined by said detecting means.

5,576,754

SHEET HOLDING DEVICE FOR AN ARCUATE SURFACE WITH VACUUM RETENTION

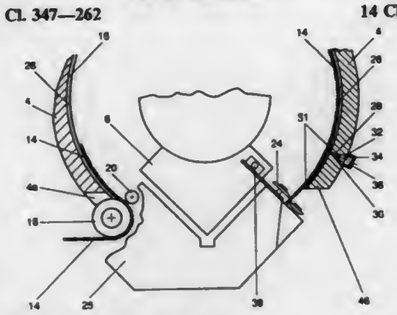
Aharon Korem, Herzliya, Israel, assignor to Scitex Corporation Ltd., Herzliya, Israel

Filed Mar. 24, 1994, Ser. No. 217,167

Claims priority, application Israel, Apr. 2, 1993, 105275

Int. Cl.[6] B41J 2/47

U.S. Cl. 347—262 **14 Claims**



1. A sheet holding device, including:

a sheet-holding member having a concavely-curved surface for receiving a sheet fed thereon;

sheet feeding means at a first end of said concavely-curved surface for feeding a sheet thereon such that a leading edge of said sheet moves over said concavely-curved surface from said first end thereof to a second end thereof, said feeding means being capable of holding a trailing edge of said sheet against said concavely-curved surface; and

releasable holding means at said second end of said concavely-curved surface selectively actuatable to hold only said leading edge of the sheet against said concavely-curved surface, or to release said leading edge therefrom;

said releasable holding means comprising:

recess means in said concavely-curved surface at said second end thereof located to be covered by said leading edge of the sheet; and

vacuum-producing means selectively actuatable to produce vacuum in said recess means when covered by said leading edge of the sheet, for holding only said leading edge against said concavely-curved surface and thereby for permitting the sheet feeding means, by additionally feeding said sheet when its leading edge is so held against said concavely-curved surface, to press the remainder of the sheet firmly against said concavely-curved surface,

wherein said recess means comprises a plurality of grooves formed in said concavely-curved surface at said second end thereof extending parallel to the direction of movement of the sheet over said concavely-curved surface and spaced transversely to said direction of movement of the sheet.

5,576,755

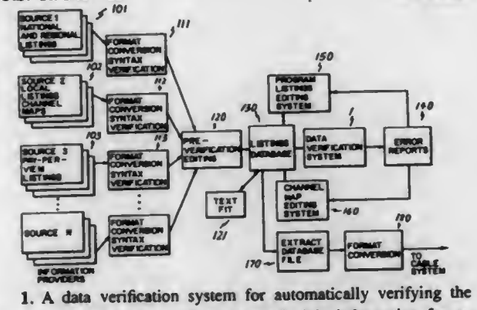
SYSTEM AND METHOD FOR VERIFICATION OF ELECTRONIC TELEVISION PROGRAM GUIDE DATA

Bruce Davis, 5505 Preserve Pkwy. South, Greenwood Village, Colo. 80121; Paul Darata, 2599 W. Long Cir., Littleton, Colo. 80120; Michael Morris, 30 Whistling Swan La., Downington, Pa. 19355; Michael S. Schwartz, 2900 Knights Rd. A-16, Bensalem, Pa. 19020; Debbie Collins, 1 Ashbourne Rd., Darby, Pa. 19023; John H. Dasch, 761 Collins Ave., Lansdale, Pa. 19446; Jonathan S. Zucker, 1559 Fitzwatertown Rd., Willow Grove, Pa. 19090, and Mitchell S. Gorman, 2807 Sagemore Dr., Marlton, N.J. 08053

Filed Oct. 28, 1994, Ser. No. 330,684

Int. Cl.[6] H04N 7/14

U.S. Cl. 348—13 **50 Claims**



1. A data verification system for automatically verifying the integrity of a database of program schedule information for an electronic television program guide comprising:

storage means for storing a database of television program schedule listings, said database comprising a plurality of data fields for a plurality of television stations;

means for selecting a station from said plurality of stations for verification of one or more of said data fields for said selected station;

means for selecting a time range for said verification of said one or more data fields;

data processing means for automatically analyzing said data fields for said selected station in said database for at least one of schedule gaps and schedule overlaps in the schedule data for said station, and

editing means for editing said data fields for said selected station in said database.

5,576,756

ELECTRICAL NETWORKS FOR EMULATING THE RESPONSE OR CO-AXIAL TRANSMISSION CABLE TO SERIAL DIGITAL VIDEO SIGNALS

David C. Baty, Stoke-on-Trent, and Barry D. R. Miles, Newbury, all of Great Britain, assignors to Faraday Technology Limited, United Kingdom

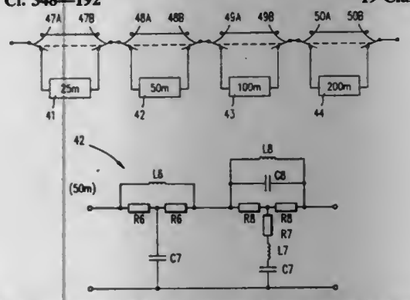
PCT No. PCT/GB93/00768, § 371 Date Jan. 13, 1994, § 102(e) Date Jan. 13, 1994, PCT Pub. No. WO93/21696, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 13, 1993, Ser. No. 162,183

Claims priority, application United Kingdom, Apr. 13, 1992, 9208087

Int. Cl.[6] H04N 17/00; H04R 3/40

U.S. Cl. 348—192 **19 Claims**



19. A method of testing the amount of degradation in a serial digital video signal caused by transmission over a length of an electrical transmission cable, the method comprising the steps of:

providing a plurality of filter sections, each configured to emulate the response of a predetermined length of coaxial transmission cable to serial digital video signals, wherein each filter section comprises a plurality of filter circuits, each filter circuit comprising at least an inductor, a capacitor and a pair of series-connected resistors;

selectively coupling one or more of the filter sections in cascade to create test circuit which emulates the length of the electrical transmission cable;

connecting the test circuit in series with existing cable;

applying a serial digital video signal to the test circuit; and

assessing the level of degradation of the serial digital video signal introduced by the test circuit.

5,576,757

ELECTRONIC STILL VIDEO CAMERA WITH DIRECT PERSONAL COMPUTER (PC) COMPATIBLE DIGITAL FORMAT OUTPUT

Marc K. Roberts, Lane Burke; Matthew A. Chikosky, Springfield, and Jerry A. Speasl, Vienna, all of Va., assignors to St. Clair Intellectual Property Consultants, Inc., Grosse Pointe, Mich.

Continuation of Ser. No. 878,603, May 5, 1992, abandoned, which is a continuation of Ser. No. 615,848, Jan. 20, 1990, Pat. No. 5,138,459. This application Jul. 29, 1993, Ser. No. 98,787

The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.

Int. Cl.[6] H04N 5/225

U.S. Cl. 348—207 **14 Claims**

1. An electronic still image camera comprising:

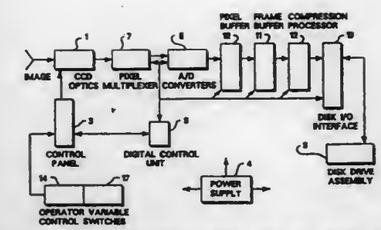
an optical lens,

a shutter mechanism operably associated with said lens,

light sensing means for generating analog signals corresponding to a subject image,

means for converting said analog signals into corresponding digital data,

buffer storage means for accumulating a complete image frame of said digital data,



memory means for storing an output data file format determining code data,

output data file format determining means for retrieving said previously stored output data file format code data corresponding to one of a plurality of different input data formats for different formats for different types of information handling apparatus,

logic means responsive to said output data file format determining means for selectively arranging said digital data and said output format code data into a predetermined formatted output data file wherein said predetermined formatted output data file corresponds in file structure and arrangement to the input data file format of a predetermined type of data processing apparatus,

memory formatting control means for checking the formatted status of a removably mounted digital memory means to ensure correspondence with said stored output data file format determining code data, and

means for removably mounting said digital memory means for storing said formatted output data.

5,576,758

ELECTRIC STILL CAMERA HAVING A DISPLAY FOR DISPLAYING AN IMAGE COMPRESSION RATIO

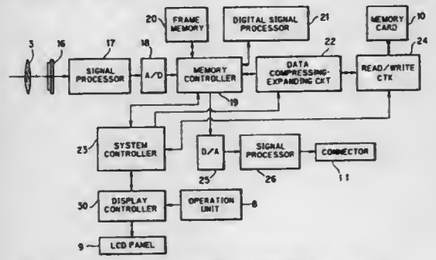
Minoru Arai, and Kiyotaka Kaneko, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 936,655, Aug. 28, 1992, abandoned. This application Jun. 8, 1994, Ser. No. 255,909

Claims priority, application Japan, Aug. 30, 1991, 3-246876

Int. Cl.[6] H04N 5/225

U.S. Cl. 348—220 **29 Claims**



1. A digital electric still camera comprising:

a solid state imaging device for photographing an image;

a memory for storing digital image data of at least one picture frame photographed by said solid state imaging device;

data compressing means for compressing said digital image data;

data compression rate setting means for setting a data compression rate of said data compressing means during recording;

writing means for writing said data compression rate, corresponding to said digital image data compressed at said data compression rate, in said memory;

reading means for reading out digital image data of a picture frame, along with a data compression rate corresponding thereto, from said memory;

processing means, responsive to the reading means, for processing said digital image data based on said data compression rate corresponding thereto and developing a video signal reproduction of the picture frame; and

display means, responsive to the processing means and to the reading means, for displaying the video signal reproduction of the picture frame and for displaying, in association therewith, the compression rate corresponding thereto which was read from the memory.

5,576,759

IMAGE PROCESSING SYSTEM FOR CLASSIFYING REDUCED IMAGE DATA

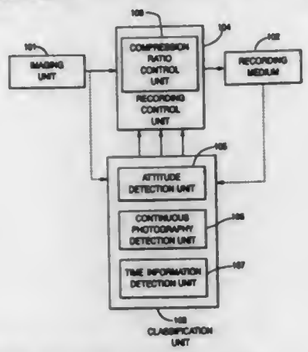
Koichiro Kawamura, Katsushika-gun, and Masahiro Suzuki, Kawasaki, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed May 15, 1995, Ser. No. 441,012

Claims priority, application Japan, Dec. 7, 1992, 4-326858

Int. Cl.[6] H04N *5/225;5/76*

U.S. Cl. 348—231 **19 Claims**



1. An image processing system, comprising:

an image processing unit to produce digital image data corresponding to an imaged subject;

a memory card including plural regions to receive the digital image data and to store the digital image data in a respective one of the plural regions;

a reading unit to read the digital image data stored in the memory card automatically when the stored image data reaches a predetermined level;

a reducing unit to reduce the digital image data read by the reading unit and to produce a reduced digital image data; and

a recording unit to record the reduced digital image data in the memory card.

5,576,760

HIGH RESOLUTION TELEVISION CAMERA USING FRAME MEMORY

Ikuo Akiyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 23, 1995, Ser. No. 494,247

Claims priority, application Japan, Jun. 23, 1994, 6-141426

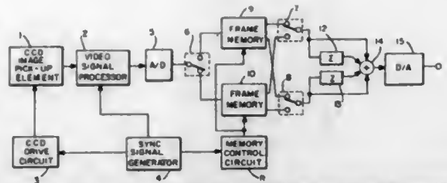
Int. Cl.[6] H04N *5/228*

U.S. Cl. 348—231 **4 Claims**

1. A high sensitivity television camera comprising:

pick-up means capable of being scanned progressively;

storage time control means for controlling a storage time of said pick-up means;



frame memory means for storing image data obtained by reading an amount of electric signal charge stored during the storage time; and

adder means for adding the image data corresponding to four pixels of the image data stored in said frame memory means, which are adjacent vertically and horizontally to each other in a frame, wherein an output signal is formed from the image data added by said adder means.

5,576,761

SOLID-STATE SENSOR HAVING DIRECT CURRENT CONTROL CIRCUITRY AND LOGARITHMIC OUTPUT SIGNAL

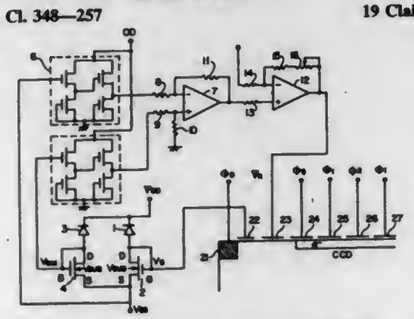
Tsuyoshi Iwamoto, Amagasaki, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 200,660, Feb. 23, 1994, abandoned. This application Nov. 3, 1995, Ser. No. 552,435

Claims priority, application Japan, Feb. 25, 1993, 5-036400; Jan. 31, 1994, 6-009132

Int. Cl.[6] H04N *5/16*

U.S. Cl. 348—257 **19 Claims**



13. A solid-state image sensing apparatus, comprising:

a charge coupled device having a first electrode and a second electrode;

receiving means for receiving incident light;

first generating means for generating a first voltage that is logarithmically proportional to an intensity of the incident light received by the light receiving means, the first generating means outputting the first voltage to the first electrode of said charge coupled device; and

second generating means for generating a second voltage that is logarithmically proportional to an average intensity of the incident light received by the receiving means during image sensing, the second generating means outputting the second voltage to the second electrode of said charge coupled device;

whereby signal charges are injected into said charge coupled device depending on the first and second voltages on the first and second electrodes, and thereby controlling a direct current component of an output of the charge coupled device.

5,576,762

SOLID-STATE IMAGE PICKUP DEVICE

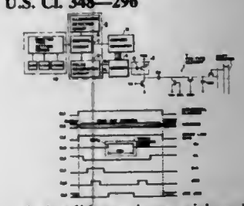
Yoshiro Udagawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 87,112, Jul. 1, 1993, abandoned, which is a continuation of Ser. No. 788,287, Nov. 5, 1991, abandoned. This application Feb. 22, 1995, Ser. No. 393,883

Claims priority, application Japan, Nov. 7, 1990, 2-299930

Int. Cl.[6] H04N *5/335*

U.S. Cl. 348—296 **20 Claims**



1. A solid-state image pickup device comprising:

solid-state image pickup elements for obtaining image signals by sequentially selecting horizontal pixel trains, wherein each of said image pickup elements has a reset electrode to receive a reset pulse for clearing an accumulated signal therein;

reset pulse supply means for supplying a reset pulse having a predetermined pulse width to said reset electrode of each said image pickup element;

detecting means for detecting illuminance of an object; and

reset pulse width control means for causing said reset pulse supply means to widen said reset pulse when said detecting means detects a predetermined low illuminance condition.

5,576,763

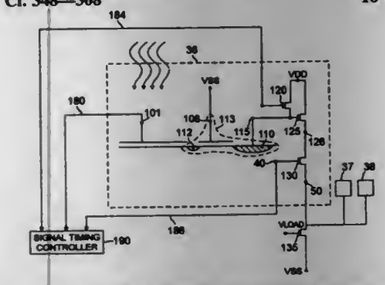
SINGLE-POLYSILICON CMOS ACTIVE PIXEL

Bryan D. Ackland, Old Bridge; Alexander G. Dickinson, Neptune; El-Sayed I. Eid, Freehold, and David A. Inglis, Long Branch, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 22, 1994, Ser. No. 344,785

Int. Cl.[6] H04N *5/335*

U.S. Cl. 348—308 **16 Claims**



1. A single polysilicon CMOS active pixel for converting an optical signal to an electronic signal by applying a first collection voltage and a second transfer voltage, comprising:

a semiconductor substrate wherein charge carriers are generated from incident photonic energy;

a photo gate and a transfer transistor gate defined in a single layer of polysilicon disposed on the semiconductor substrate, the photo gate having a first and a second state wherein in the first state the first collection voltage is applied to the photo gate that causes the charge carriers to be stored in a first region within the semiconductor substrate beneath the photo gate, the stored charge carriers defining a signal, and in the second state the second transfer voltage is applied which results in movement of the charge carriers from the first region;

a transfer transistor comprising the transfer transistor gate, a first diffusion region and a second diffusion region, wherein the first diffusion region is located between the photo gate and the transfer transistor gate and functions as a source of the transfer transistor, and wherein the second diffusion region functions as a drain of the transfer transistor, the second diffusion region having a first potential and a second potential, wherein the second potential is a predetermined fixed value based on the first collection voltage and the first potential is a function of the second potential and the signal;

output electronics, electrically connected to the second diffusion region, which receives the signal from the second diffusion region and conducts the signal to processing electronics; and

reset electronics to reset the second diffusion region to the second potential;

wherein in the first state of the transfer transistor, the transfer transistor is inactive so that the signal remains in the first region and in the second state the transfer transistor is active so that the signal flows from the first region to the first diffusion and to the output electronics.

5,576,764

AUTOMATIC FOCUSING APPARATUS AND METHOD FOR VIDEO CAMERA SYSTEM BY PROCESSING LUMINESCENCE SIGNAL

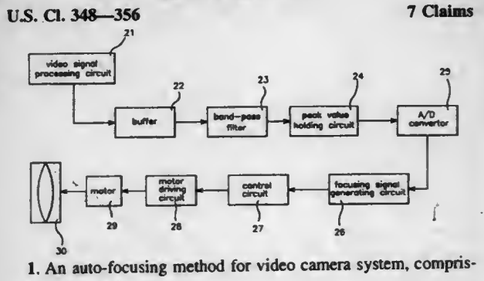
Dae H. Noh, and Joong S. Song, both of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 57,839, May 7, 1993, abandoned. This application Dec. 8, 1994, Ser. No. 355,204

Claims priority, application Rep. of Korea, May 7, 1992, 7714/1992; May 15, 1992, 8214/1992; May 15, 1992, 8215/1992; May 15, 1992, 8216/1992

Int. Cl.[6] H04N *5/232*

U.S. Cl. 348—356 **7 Claims**



1. An auto-focusing method for video camera system, comprising the steps of:

receiving an optical video signal indicative of an image of an object and detecting color difference signals and luminance signals;

extracting only the luminance signals from the detected signals;

sampling/holding the level of the luminance signals within a predetermined period of reference time;

obtaining the maximum peak value and the minimum peak value of sampled/held values;

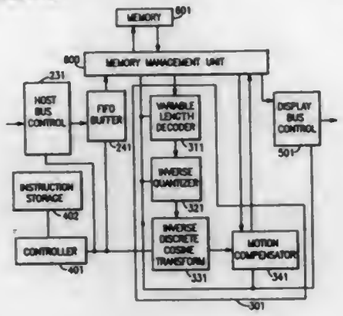
obtaining a focus value by performing a focus value generating operation including the maximum and minimum peak values as operation data for the focus value; and

moving a focus lens so that the focus value becomes the maximum value.

5,576,765
VIDEO DECODER

Dennis P. Cheney, Vestal; Vincent C. Conzola; Chuck H. Ngai, both of Endwell; Richard T. Pfeiffer, Endicott, all of N.Y., and James E. Phillips, Round Rock, Tex., assignors to International Business Machines, Corporation, Armonk, N.Y.

Filed Mar. 17, 1994, Ser. No. 214,929
Int. Cl.[6] H04N *7/30;7/50*
U.S. Cl. 348—407 **5 Claims**



1. A digital signal decoder system for receiving compressed encoded digital video signals and transmitting decompressed decoded digital video signals, said decoder system comprising:

a. a FIFO Data Buffer;

b. a RAM having (1) a compressed, encoded Data Buffer connected to the FIFO Data Buffer and adapted to receive and store encoded compressed digital video data from the FIFO Data Buffer, and (2) a data portion for storing decompressed digital video data;

c. a Memory Management Unit for managing the RAM;

d. a Variable Length Code Decoder for receiving encoded data from the compressed, encoded Data Buffer portion of the RAM, and providing a decoded bit stream thereof;

e. a (2,3,3) parallel counter Inverse Quantizer having the Boolean representation:

$C^*=(U \text{ NAND } V) \text{ NAND } ((U \text{ XOR } V) \text{ NAND } ((X \text{ NAND } Y) \text{ NAND } (X \text{ NAND } Z) \text{ NAND } (Y \text{ NAND } Z)))$,

$C^*=(U \text{ XOR } V) \text{ XOR } ((X \text{ NAND } Y) \text{ NAND } (X \text{ NAND } Z) \text{ NAND } (Y \text{ NAND } Z))$ and

$S=(X \text{ XOR } Y) \text{ XOR } Z$, where U, V, X, Y, and Z are inputs to the (2,3,3) parallel counter and C^*, C^*, S are outputs of the (2,3,3) parallel counter,

for dequantizing the decoded data from the variable length decoder;

f. an Inverse Discrete Cosine Transform Decoder for inverting the dequantized, decoded data into Intrapictures, Predicted Pictures, and Bidirectional predicted Pictures;

g. a Motion Compensator for receiving Intrapictures and other information from the RAM, and error functions, and forming motion compensated predicted pictures therefrom for return to the RAM;

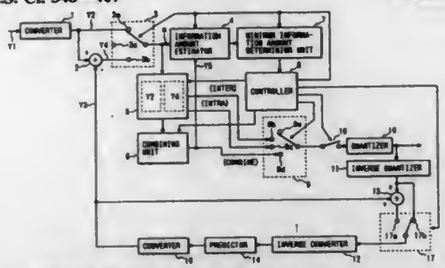
h. a Display Unit to output motion compensated pictures from the RAM; and

i. a Reduced Instruction Set Controller to control the Memory Management Unit, the Variable Length Code Decoder, the Inverse Quantizer, the Inverse Discrete Cosine Transform Decoder, the Motion Compensator, and the Display Unit.

5,576,766
MOVING PICTURE ENCODER

Shuichi Matsumoto; Shigeyuki Sakazawa, and Takahiro Hamada, all of Tokyo, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Oct. 26, 1994, Ser. No. 329,530
Claims priority, application Japan, Nov. 12, 1993, 5-306140
Int. Cl.[6] H04N *7/32;7/30*
U.S. Cl. 348—407 **11 Claims**



1. A moving picture encoder comprising:

means for converting each of a plurality of small division areas of a picture;

means for generating signals in a plurality of different encoding modes and a combination pattern of these signals for each converted small area;

means for determining what corresponds to the minimum amount of information generated at the time of encoding among the individual encoding mode signals and combination pattern; and

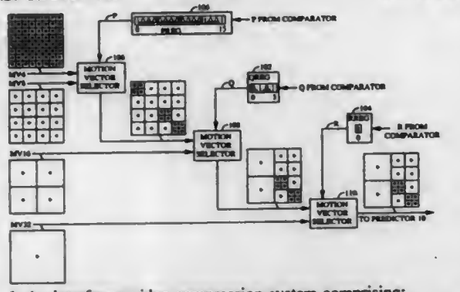
means for quantizing the encoding mode signal or combination pattern that corresponds to the minimum amount of information generated at the time of encoding; and

means for transmitting the result of quantization.

5,576,767
INTERFRAME VIDEO ENCODING AND DECODING SYSTEM

Chong U. Lee, and Donald Pian, both of San Diego, Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Continuation of Ser. No. 407,427, Mar. 17, 1995, abandoned, which is a continuation of Ser. No. 12,814, Feb. 3, 1993, abandoned. This application Sep. 21, 1995, Ser. No. 532,042
Int. Cl.[6] H04N *7/32*
U.S. Cl. 348—413 **24 Claims**



1. An interframe video compression system comprising:

a first motion predictor having an input for receiving a block of pixel data and having an output for providing a first image prediction;

a first distortion calculator having a first input for receiving said block of pixel data and having a second input for receiving said first image prediction and having an output for providing a first distortion value;

at least one additional motion predictor provided in parallel with said first motion predictor having an input for receiving said block of pixel data and having an output for providing additional image predictions;

a second distortion calculator having a first input for receiving said block of pixel data and having a second input for receiving said additional image predictions and having a first output for providing a second distortion value;

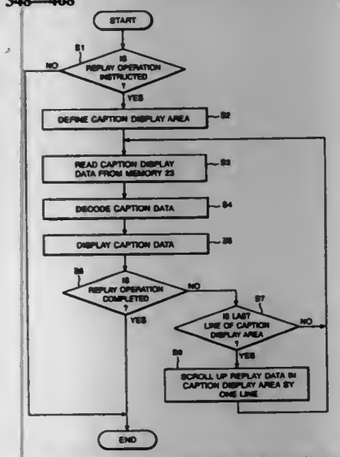
an encoding format selector having a first input coupled to said first distortion calculator output and having a second input coupled to said second distortion calculator output and having an output for providing a selected encoding format; and

encoder having a first input coupled to said encoding format selector output and having an output for providing a selectively encoded residual frame, having a second input for receiving a first displaced frame difference generated in accordance with said first image prediction and having a third input for receiving a second displaced frame difference generated in accordance with said second image prediction and for selectively encoding said first displaced frame difference and said second displaced frame difference in accordance with said selected encoding format.

5,576,768
CAPTION INFORMATION RECEIVING APPARATUS

Takao Gomikawa, Saitama-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 27, 1995, Ser. No. 432,422
Claims priority, application Japan, Apr. 28, 1994, 6-092532
Int. Cl.[6] H04N *7/087*
U.S. Cl. 348—468 **6 Claims**



1. A caption information receiving apparatus for extracting a caption signal from an input video signal, wherein the caption signal contains a digital signal carried during the vertical retrace line period of the video signal, decoding the digital signal contained in the caption signal and displaying the decoded data on a display screen, comprising:

key input means having a key for instructing display operations of the caption signal and its associated video signal simultaneously, and a key for instructing a replay operation of the caption signal;

a caption data memory for storing the digital signal;

a caption data extractor for extracting the digital signal contained in the caption signal which is carried on the input video signal;

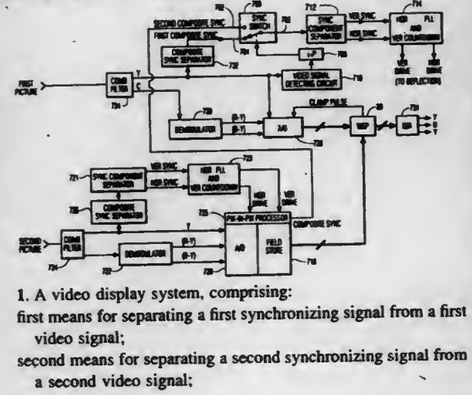
a decoding controller for storing the digital signal in the caption data memory, and in response to the replay operation instruction, for reading the caption signals associated with an image displayed immediately preceding selection of the replay operation instruction; and

a display controller provided for constituting caption information based on decoded data from the decoding controller, and for defining a caption display area for displaying caption information from the digital signal on the display screen in the caption display area.

5,576,769
AUTOMATIC SYNCHRONIZATION SWITCH FOR SIDE-BY-SIDE DISPLAYS

Jeffery B. Lendaro, Noblesville, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Continuation of Ser. No. 982,706, Nov. 30, 1992, abandoned. This application Jun. 3, 1994, Ser. No. 253,825
Int. Cl.[6] H04N *9/74*
U.S. Cl. 348—511 **8 Claims**



1. A video display system, comprising:

first means for separating a first synchronizing signal from a first video signal;

second means for separating a second synchronizing signal from a second video signal;

video display means;

means operable in a first mode of operation for implementing a single picture display by supplying said first video signal to said video display means and operable in a second mode of operation for implementing a multiple picture display by supplying a portion of each of said first and second video signals to said video display means;

means for indicating operation of said display implementing means in at least one of said first and second modes of operation;

switch means coupled for receiving said first and second synchronizing signals as inputs and selectably coupling one of said first and second synchronizing signals to said video display means;

means for sensing a synchronizing component of said first video signal; and,

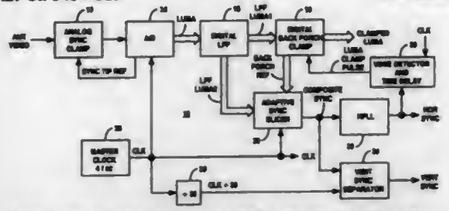
control means responsive to said indicating means and said sensing means, operable in said first mode of operation to supply to said video display means an on screen display indicative of loss of signal when said synchronizing component of said first video signal is not sensed, and operable in said second mode of operation for operating said switch means to supply said first synchronizing signal to said video display means when said synchronizing component of said first video signal is sensed and for otherwise operating said switch means to supply said second synchronizing signal to said video display means.

5,576,770

ADAPTIVE SYNCHRONIZING SIGNAL SEPARATOR

Mark F. Rumreich, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Dec. 6, 1994, Ser. No. 349,780
Int. Cl.[6] H04N 5/04
U.S. Cl. 348—525 26 Claims



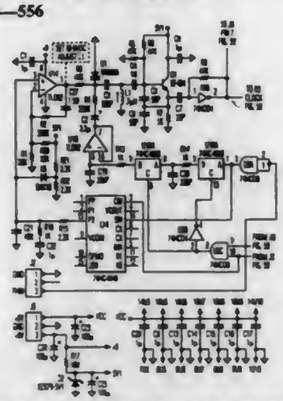
1. An adaptive synchronizing signal separator, comprising:
a source of a digitized luminance signal, said signal including a synchronizing component disposed on a back porch portion;
means for clamping said back porch portion to a predetermined level;
means for generating an output reference signal having a value indicative of successive IRE levels of said back porch portion prior to operation of said means for clamping;
means for generating slice level values indicative of a numerical relationship of said reference signal value and a fixed value; and,
means for generating a composite synchronizing signal by comparing said digitized luminance signal to said slice level values.

5,576,771

HORIZONTAL PICTURE COMPRESSION IN WIDESCREEN TELEVISION RECEIVERS

Willem C. Van Tol, Knoxville, Tenn., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Jun. 13, 1994, Ser. No. 259,251
Int. Cl.[6] H04N 5/46
U.S. Cl. 348—556 2 Claims



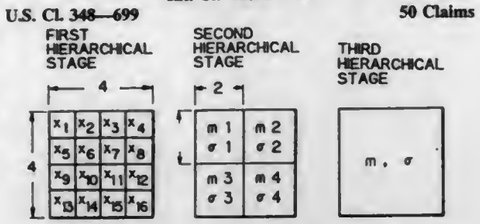
1. A circuit in a widescreen television receiver for effecting horizontal picture compression on a standard aspect ratio video signal comprising:
means for storing at least one field of said video signal;
means for generating a read clock signal for reading said video signal from said storing means, said read clock signal having a frequency equal to F_R;
means for generating a write clock signal for writing said video signal into said storing means, said write clock signal having a frequency equal to $F_W = \frac{3}{4} F_R$;
write means for writing each line in said video signal in to said storing means using said write clock signal; and
read means for reading each line of said stored video signal from said storing means using said read clock signal, whereby said read-out video signal forms, on display, a picture occupying ¾ of the horizontal width of a display of said widescreen television receiver, characterized in that said means for generating a write clock signal comprises:
means for dividing said read clock signal by a factor of 4; and
means, coupled to the output of said dividing means, for multiplying said divided read clock signal by a factor of 3, wherein said means for multiplying said divided read clock signal comprises a band-pass filter tuned to F_W, whereby said band-pass filter chooses a third harmonic of said divided read clock signal.

5,576,772

MOTION VECTOR DETECTION APPARATUS AND METHOD

Tetsujiro Kondo, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 8, 1994, Ser. No. 302,420
Claims priority, application Japan, Sep. 9, 1993, 5-248814
Int. Cl.[6] H04N 7/50
U.S. Cl. 348—699 50 Claims



1. A motion vector detecting apparatus, comprising:
means for supplying image data of a base block of a first image;
first extracting means for obtaining a constant component and a transient component of said base block;
means for supplying image data of an inspection block of a second image in response to a control signal;
second extracting means for obtaining a constant component and a transient component of said inspection block;
first comparison means for comparing said constant and transient components of said base and inspection blocks to determine a first position of said inspection block in said second image which best matches said base block;
means for indicating different positions in said second image as said control signal as a function of the first best matching position of said inspection block; and
second comparison means for comparing said image data of said base block and said image data of said inspection block as the position of said inspection block is varied in the neighborhood of said first best matching position to determine a second position of said inspection block in said neighborhood of said first best matching position which best matches said base block.

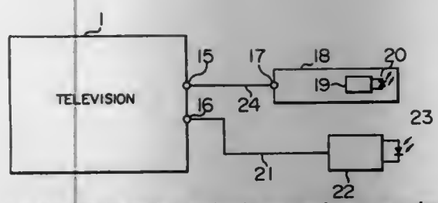
5,576,773

TELEVISION RECEIVER WHICH CONTROLS THE PROGRAM RESERVE IN A VCR

Tsuguo Itagaki, Yokohama; Hideo Tomita, Ebina, and Sigeya Tanaka, Gifu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 28, 1994, Ser. No. 267,478
Claims priority, application Japan, Jul. 7, 1993, 5-167719; Oct. 20, 1993, 5-262093
Int. Cl.[6] H04N 5/44
U.S. Cl. 348—734 4 Claims

1. A television receiver comprising:
a program reserve control unit for controlling program reserve;



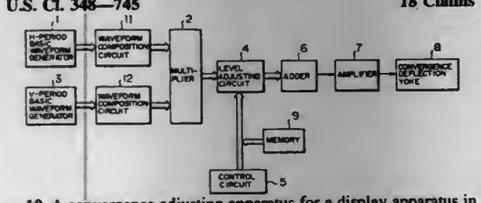
a storage unit for storing previously generated remocon codes of an external picture recording apparatus in a memory of said program reserve control unit;
a remocon output terminal for outputting a remocon code, of the stored remocon codes, corresponding to a predetermined function at a predetermined time;
a wire unit having one end connected to said remocon output terminal and another end connected to an infrared ray signal emitting portion driven by the remocon codes;
means, provided with a video and sound output terminal which outputs a video signal and a sound signal of channels of a receiving tuner in a predetermined frequency band, for responding to a command from said program reserve control unit, for outputting remocon codes from said storage unit storing said remocon codes, and for driving said infrared ray signal emitting portion to generate an output to be received by a remocon receiver of said external picture recording apparatus and to control a picture recording reserve of said external picture recording apparatus; and
means, provided with a storage unit, for storing information representing whether or not said external picture recording apparatus includes said receiving tuner in a memory of said program reserve control unit,
wherein on the basis of the information stored in said storage unit representing whether or not said external picture recording apparatus includes the receiving tuner, said program reserve control unit operates in such a way that in a case where said external picture recording apparatus includes the receiving tuner, said external picture recording apparatus receives, as an input, a signal output from the receiving tuner, and in a case where said external picture recording apparatus does not include the receiving tuner, said external picture recording apparatus receives, as an input, the video and sound signals of the desired receiving channel output from said television receiver, thereby enabling the picture recording reserve of the desired receiving channel to be executed.

5,576,774

CONVERGENCE ADJUSTING APPARATUS CAPABLE OF INDEPENDENTLY PERFORMING CONVERGENCE ADJUSTMENTS ON ONE ADJUSTMENT POINT WITHOUT AFFECTING THE CONVERGENCE OF THE REMAINING ADJUSTMENT POINTS

Kenichiro Hosoi; Junya Ochi, and Nobuaki Kobayashi, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 17, 1994, Ser. No. 262,030
Claims priority, application Japan, Jun. 18, 1993, 5-148157; Jun. 13, 1994, 6-130596
Int. Cl.[6] H04N 3/26
U.S. Cl. 348—745 18 Claims



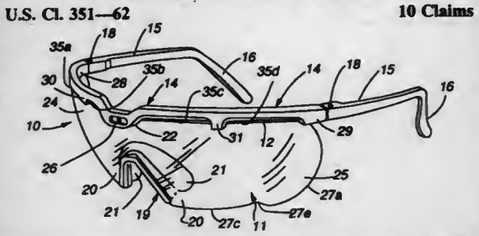
10. A convergence adjusting apparatus for a display apparatus in which convergence adjustment is effected for a plurality of adjustment points on a display on which a two-dimensional image is formed by a luminescence point moving in horizontal and vertical directions synchronously with horizontal and vertical synchronous signals, said apparatus comprising:
basic waveform signal generating means for generating a direct current waveform signal having a predetermined level as a zero order waveform signal, a sawtooth waveform signal as a first order waveform signal, and a parabolic waveform signal as a second order waveform signal, wherein said sawtooth waveform signal and said parabolic waveform signal are synchronous with said horizontal and vertical synchronous signals;
adjustment-use waveform signal generating means for generating waveform signals for adjustment based on each of the waveform signals obtained by said basic waveform signal generating means, each level of the waveform signals for adjustment becoming zero at said adjustment points on said display except for one adjustment point; and
level adjusting means for receiving said waveform signals for adjustment generated by said adjustment-use waveform signal generating means, for adjusting the levels of said waveform signals for adjustment in accordance with convergence adjusting signals, and for supplying a convergence deflection yoke with the waveform signals having adjusted levels.

5,576,775

EYEGLASSES WITH CONTROLLED VENTILATION FRAME AND LENS

Maurice Bolle, Oyonnax, France, assignor to Etablissements Bolle S.n.c., Oyonnax, France

Filed Jun. 9, 1995, Ser. No. 488,950
Int. Cl.[6] G02C 11/08;1/04; A61F 9/02
U.S. Cl. 351—62 10 Claims



1. Eyeglasses comprising a single lens having a outwardly facing surface and an opposing and substantially rearwardly facing surface, a frame supporting said lens along the upper edge thereof, said frame having a front half, a back half, and a lower surface, temples hingedly attached to said frame at the outer sides thereof, a central depending boss on said frame, a hinge boss at each outer side of said frame mounting said temple hinges, and a depending supporting intermediate boss on said frame intermediate said central boss and each hinge boss, wherein said lower surface of said frame includes a plurality of flat lower surface portions spaced apart from said lens, one each said flat lower surface portions extending between adjacent each hinge bosses, intermediate bosses and said central depending boss, each of said bosses defining a medial slot effectively bisecting said bosses, for receiving and retaining the upper edge of said lens, said boss slots being of a depth for supporting said lens with said upper edge thereof in spaced relation from said frame, wherein said front half of said frame extends over said outwardly facing surface of said lens and said back half of said frame extends over said rearwardly facing surface of said lens.

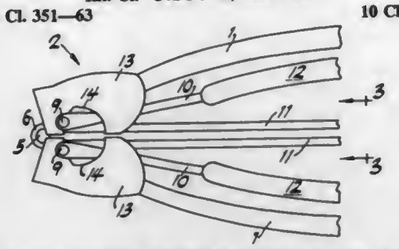
VOL 1192 ISS 3 NO 19 1996 UMI

5,576,776

FOLDING EYEGLASSES

Hansruedi Scheller, Moorschwand, 8815 Horgenberg, Switzerland

Filed Feb. 8, 1995, Ser. No. 385,360
Claims priority, application Switzerland, Feb. 15, 1994, 454/94
Int. Cl.[6] G02C 5/08; A61F 9/02
U.S. Cl. 351—63 10 Claims



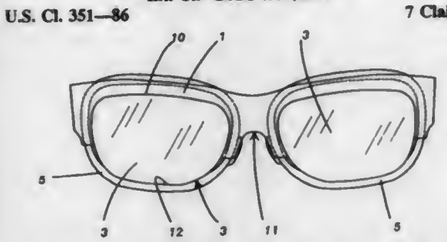
1. Folding eyeglasses including in combination a pair of members each having a lens and a half-nosepiece and a half-bridge, means disposed on the half-bridges for affording rotation of the members relative to one another about a vertical axis, a pair of temples, means mounting the temples on the respective members remote the half-bridges for rotation about a vertical axis, each temple having an intermediate hinge dividing the temple into a front part and a rear part rotatable relative to one another about a vertical axis, wherein each rear part may be rotated inwardly to contact its corresponding front part, each lens having a rear surface, each half-bridge and corresponding half-nosepiece extending rearwardly of said rear surface and being provided with a horizontally extending recess therebetween, wherein each contacting front and rear part may be rotated into a corresponding recess and the two members may be folded until the half-nosepieces are in proximity to one another, in the folded position of the members the two recesses forming an aperture and the intermediate hinges extending into said aperture.

5,576,777

FRAME FOR GLASSES WITH INTERCHANGEABLE LENSES

Giovanni Gioacchini, Ripe, Italy, assignor to F.lli Guzzini S.p.A., Recanti Macerata, Italy

Filed Jan. 12, 1995, Ser. No. 371,760
Int. Cl.[6] G02C 1/00;1/04
U.S. Cl. 351—86 7 Claims



1. An eyeglass frame having interchangeable contoured lenses on each side of said frame, comprising:

a front element that includes rigid arched supports integrally formed on each of said frame sides, each of said arched supports formed by an upper portion and a pair of integral, curved side portions, each said arched support defining a peripheral edge, said peripheral edge having a groove integrally formed in said side portions for receiving a ring, said groove having a surface which forms an interface snap-fit connection;

a said ring on each side of said frame which encircles a peripheral edge of said lenses, protects said edge from chipping and defining a ring circumference, said ring having an inside surface and an outside surface, said inside surface provided with an internal recess along said circumference for receiving said peripheral edge of said lens, said internal recess having a shape which is dependent upon a contour of said lens,

said ring elastically deformable about said circumference and including a nose support tab for supporting said frame on a nose, said nose tab integrally formed as part of said ring, said ring outside surface having a complementary shape to said groove of said arched support, said shape being independent of said contour of said lens,

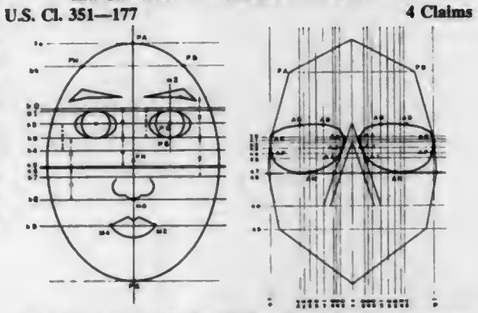
wherein said ring is removably connected to said front element by snap-fitting said outside surface of said ring into said interference connection on said arched supports.

5,576,778

DESIGN SYSTEM FOR DESIGNING SHAPES OF EYEGLASSES

Ryuto Fujie, Himeji; Hiroyuki Fujie, Kobe, and Kunie Takeuchi, Himeji, all of Japan, assignors to Paris Miki Inc., Tokyo, Japan

Filed Sep. 27, 1994, Ser. No. 312,627
Claims priority, application Japan, Dec. 15, 1993, 5-342232
Int. Cl.[6] G02C 13/00; A61B 3/10; G01B 1/00
U.S. Cl. 351—177 4 Claims



1. A design system for designing shapes of eyeglasses comprising:

means for inputting an image of a face of a person as image data to be processed by a computer;

means for effecting image processing on said image data so that color compensation and profile emphasis are effected;

means for extracting feature points which represent a feature of the profile of the face and features of hair, eyebrows, eyes, nose and mouth of the person;

wherein the feature points which represent features of the profile of the face include points predetermined on the hairline, on the contour line from the forehead to the cheek, and on the chin,

the feature points which represent features of the eyebrows include points predetermined at the inner end of the eyebrow, at the top of the eyebrow, at the tail or outer end of the eyebrow, and on a lower edge of the eyebrow,

the feature points which represent features of the eyes include points predetermined at the center of the pupil, on the profile line of the iris, and on the eyelid,

the feature points which represent features of the nose include points predetermined at the tip of the nose and at the peaks of the wings of the nose,

the feature points which represent features of the lips include points predetermined at the depressed center portion of the upper lip, at both ends of the lips, and at the lower end of the lower lip;

means for setting a plurality of horizontal, vertical and inclined auxiliary lines and auxiliary points on said auxiliary lines, based on said feature points, and

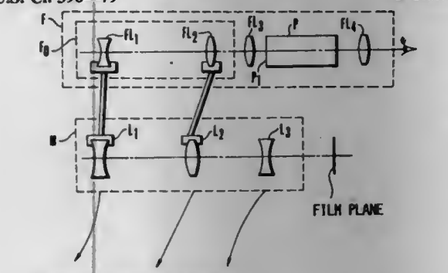
means for determining anchor points of a Bezier curve which defines the shapes of lenses and a front frame of eyeglasses.

5,576,779

CAMERA SYSTEM

Keiji Ikemori, and Yoshinori Itoh, both of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 3,873, Jan. 11, 1993, abandoned, which is a continuation of Ser. No. 526,596, May 22, 1990, abandoned. This application Oct. 11, 1994, Ser. No. 320,555
Claims priority, application Japan, May 25, 1989, 1-132192
Int. Cl.[6] G03B 3/00
U.S. Cl. 396—79 8 Claims



1. A camera system comprising:

photographic lens means for transmitting light used in a photographing operation, having a plurality of lens units, wherein more than one of said lens units moves along a photographic optical axis during zooming;

finder optical means for transmitting light to be viewed by a user, having a plurality of lens units, wherein more than one of said lens units moves along a finder optical axis during zooming;

means for connecting at least one of said lens units of said photographic lens means and one of said lens units of said finder optical means so that said at least one of the lens units of said photographic lens means and said at least one of the lens units of said finder optical means are displaced by the same amount during zooming, wherein said photographic lens means has, from front to rear, at least a first lens unit having a negative refractive power and a second lens unit having a positive refractive power, and wherein said finder optical means has, from front to rear, at least a first finder lens unit having a negative refractive power and a second finder lens unit having a positive refractive power;

means for causing the amount of displacement during zooming of said first lens unit and said first finder lens unit to be the same, wherein said first lens unit, when focusing, moves along an optical axis and said first finder lens unit has a movable lens arranged during focusing to move in unison with said first lens unit, wherein the focal lengths of said first lens unit and said movable lens denoted by F1 and f11, respectively, satisfy the following condition:

$$0.8<f11/F1<1.2$$

; and

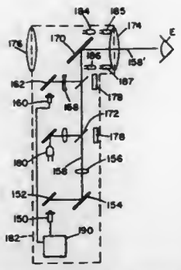
means for causing the amount of displacement during zooming of said second lens unit and said second finder lens unit to be the same.

5,576,780

METHOD FOR EVALUATION OF LENGTH OF FOCUS OF THE EYE

Don R. Yancey, Keaau, Hi., assignor to Cain Research Pty. Ltd., Warriewood, Australia

Continuation of Ser. No. 267,123, Jun. 27, 1994, and a continuation-in-part of Ser. No. 888,166, May 26, 1992, Pat. No. 5,329,322. This application Jun. 6, 1995, Ser. No. 490,604
Int. Cl.[6] A61B 3/10;3/14;3/00
U.S. Cl. 351—211 8 Claims



1. In an interactive virtual reality imaging system, a process for determining length of focus of an eye of a system user for adapting focus of an image generated by the imaging system, wherein said eye has a lens, a cornea and a retina, the process comprising:

identifying an optical path to the retina of said eye;

projecting a first image along said optical path to the retina of said eye, said first image being focused at a first focal point along said optical path beyond the retina of said eye;

detecting said first image from said optical path reflected from the retina of said eye and generating a first signal proportional to an intensity of said first image;

projecting a second image along said optical path to the retina of said eye, said second image being focused at a second focal point along said optical path in front of the retina of said eye;

detecting said second image from said optical path reflected from the retina of the eye and generating a second signal proportional to an intensity of said second image;

comparing said first and second signals for indicating a relative intensity of said first and second images to determine an accommodation of said eye to provide the system user's length of focus; and

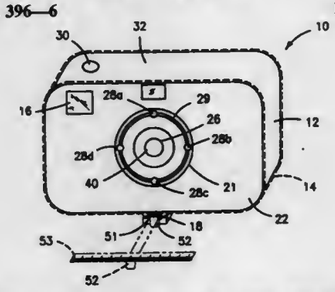
adjusting the focus of the image to correspond to the user's length of focus.

5,576,781

DISPOSABLE CAMERA

Paul Deleeuw, 181 Crandon Blvd., #301, Key Biscayne, Fla. 33149

Filed May 16, 1994, Ser. No. 243,371
Int. Cl.[6] G03B 17/08
U.S. Cl. 396—6 17 Claims



1. A disposable, single-use type still frame camera for use in contamination sensitive applications and environments, comprising:

a disposable, single-use type inner camera portion means for securing still frame film, exposing frames of said film and advancing said film;

a disposable, single-use type camera housing which encloses said inner continuous camera portion means;

a continuous fluid impervious, sterilized, disinfected and flexible transparent plastic material encasing said camera housing for protecting said camera and the environment from contamination, said plastic material closely fit to substantially the entirety of said camera housing;

a view finder attached to said camera housing, said view finder extending substantially outwardly from said camera housing at a distance which allows substantial separation of the camera user from the camera housing, said view finder including a body portion and a viewing portion; and

a disposable view finder cover means for covering said body portion and view portion of said view finder and protecting said view portion and camera from contamination, said view finder cover means including tab means extending therefrom for assisting the release of said view finder cover means from said view finder.

5,576,782

LEN-FITTED PHOTO FILM UNIT FOR USE WITH TAKING LENSES OF DIFFERENT FOCAL LENGTH

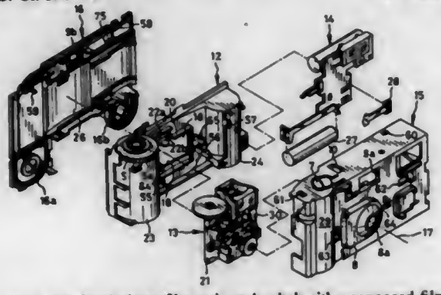
Nobuyuki Kameyama, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 26, 1994, Ser. No. 329,323

Claims priority, application Japan, Oct. 29, 1993, 5-272825

Int. Cl.[6] G03B *13/02;17/02*

U.S. Cl. 396—6 **16 Claims**



11. A lens-fitted photo film unit preloaded with unexposed film, and including an exposure aperture, a taking lens, a shutter device, and a viewfinder comprising an eyepiece lens and an objective lens, said lens-fitted photo film unit comprising:

an exposure unit including said shutter device and said viewfinder, and selected from a group of plural different exposure units;

a film containing section, in which said exposure aperture is formed, which is provided with said selected exposure unit secured in front thereof, and which contains said film;

a rear cover, secured behind said film containing section, for covering said film containing section and for supporting said film behind said exposure aperture;

plural eyepiece openings, formed in said rear cover, and respectively located to be disposed behind differently positioned said viewfinders of said plural different exposure units, such that there will be one said eyepiece opening behind a said viewfinder no matter which of said different exposure units is employed;

a packaging disposed around at least a portion of said exposure unit, said film containing section and said rear cover; and

a single eyepiece hole, formed in said packaging, and superposed on one of said plural eyepiece openings in correspondence with said viewfinder of said selected exposure unit, the remainder of said plural eyepiece openings being blocked by said packaging.

5,576,783

RECORDING AND REPRODUCING A 3-DIMENSIONAL IMAGE

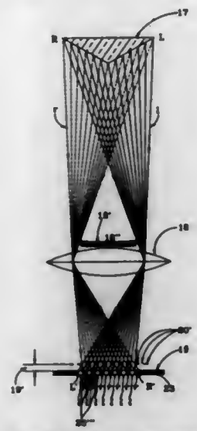
Sung Lee, 11-1, 788-15, Mora-Dong, Buk-Ku, Pusan, Rep. of Korea

Continuation of Ser. No. 843,999, Feb. 19, 1992, abandoned. This application Oct. 21, 1994, Ser. No. 327,395

Claims priority, application Rep. of Korea, Jun. 12, 1991, 91-9634; Aug. 8, 1991, 91-13676; Sep. 4, 1991, 91-15393; Nov. 4, 1991, 91-19481

Int. Cl.[6] G03B *35/00*

U.S. Cl. 396—322 **14 Claims**



1. A method for resolving 3-dimensional optical information, in recording 3-dimensional image information, comprising the steps of:

passing optical information of a subject through a light shielder with left and right transparent portions defined therein that are arranged vertical to a ground surface;

collimating said optical information through an optical system;

passing said optical information through a multiple slit grating having a selected number y of transparent portions and opaque portions defining a Fresnel zone, and which grating is arranged vertical to the ground surface, thereby resolving said image information into a number 2y of 3-dimensional image information $r_1, r_2, r_3 \ldots r_y, l_1, l_2, l_3 \ldots l_y$, the $r_1, r_2, r_3 \ldots r_y$ image information being from the right and the $l_1, l_2, l_3 \ldots l_y$ image information being from the left transparent portions of the light shielder; and

producing an image without deficit or overlap of a number y of the 3-dimensional image information $r_1, r_2, r_3 \ldots r_y$ and a number y of 3-dimensional image information $l_1, l_2, l_3 \ldots l_y$ with a sequence of $l_1, r_1, l_2, r_2 \ldots l_y, r_y$ on an image plane positioned within the Fresnel zone behind the multiple slit grating.

5,576,784

FILM TRANSPORT DEVICE OF CAMERA

Katsuhiko Tsunefuji, Sagamihara, and Takashi Watanabe, Akishima, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1994, Ser. No. 356,694

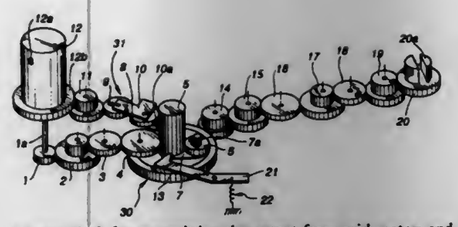
Claims priority, application Japan, Dec. 17, 1993, 5-318459

Int. Cl.[6] G03B *1/18*

U.S. Cl. 396—418 **29 Claims**

1. A film transport device of a camera in which a film wind speed for winding a film on a wind spool is set higher than a film feed-out speed for winding the film by rotating a spool shaft in a film patrone, comprising:

a motor for producing an output for feeding out or winding the film;



a motor shaft for transmitting the output from said motor; and

a differential gear mechanism for absorbing a driving force from said spool shaft in said film patrone by a differential operation when a peripheral speed difference is caused between said wind spool and said spool shaft, and for preventing a speed-up rotation of said motor shaft.

5,576,785

FILM FEEDING CONTROL DEVICE FOR ACCURATE ALIGNMENT OF FILM FRAMES AND CAMERA APERTURE

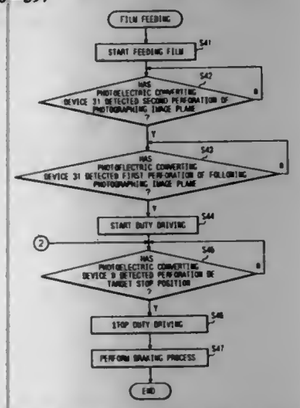
Kazuyuki Kazami, and Norikazu Yokonuma, both of Tokyo, Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 222,360, Apr. 4, 1994, which is a continuation of Ser. No. 801,905, Dec. 3, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 482,557

Claims priority, application Japan, Dec. 6, 1990, 2-406295; Dec. 6, 1990, 2-406296; Dec. 10, 1990, 2-409808

Int. Cl.[6] G03B *1/18*

U.S. Cl. 396—397 **5 Claims**



1. A film feeding cessation device for a camera, comprising:

film feeding means for feeding a film in which each frame has only two perforations, said two perforations being spaced in a longitudinal direction of the frame and being positioned adjacent to respective ends of the frame;

first perforation detection means for detecting perforations provided in the film;

second perforation detection means provided upstream of said first perforation detection means with respect to a direction in which the film is fed for detecting the perforations; and

control means for decreasing a film feeding speed of said film feeding means when said second perforation detection means detects a predetermined perforation and for stopping film feeding of said film feeding means when said first perforation detection means detects a predetermined perforation.

5,576,786

CAMERA SYSTEM

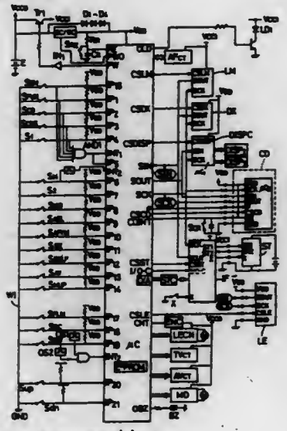
Takehiro Katoh; Yoshihiko Azuma; Masayasu Hirano; Naohiro Kageyama; Toshihiko Ishimura; Kenji Tsuji, and Hiroshi Ootsuka, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 202,754, Feb. 28, 1994, Pat. No. 5,504,552, which is a continuation of Ser. No. 963,400, Nov. 25, 1992, Pat. No. 5,319,413, which is a continuation of Ser. No. 568,190, Aug. 16, 1990, Pat. No. 5,223,884, which is a continuation of Ser. No. 511,962, Apr. 19, 1990, Pat. No. 5,006,877, which is a continuation of Ser. No. 352,495, May 16, 1989, abandoned. This application Jul. 20, 1994, Ser. No. 277,662

Claims priority, application Japan, May 16, 1988, 63-120305; May 28, 1988, 63-131289; May 28, 1988, 63-131290

Int. Cl.[6] G03B *5/00*

U.S. Cl. 354—195.1 **19 Claims**



1. A camera system comprising:

a taking lens;

a driver which drives the taking lens;

an exposure device;

a timer which counts a time of a shutter opening during an exposure operation performed by the exposure device; and

a controlling circuit which starts, while the exposure operation is performed by the exposure device, a drive of the taking lens by the driver when the timer shows that a predetermined period of time has elapsed since the opening of the shutter has started.

5,576,787

CAMERA HAVING AN IMAGE BLUR SUPPRESSION DEVICE

Tadao Kai, Kawasaki; Akira Katayama, Koganei, and Etsuo Tanaka, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 305,759, Sep. 14, 1994, abandoned, which is a continuation of Ser. No. 83,252, Jun. 29, 1993, abandoned. This application Nov. 17, 1995, Ser. No. 558,223

Claims priority, application Japan, Jul. 28, 1992, 4-200060; Nov. 17, 1992, 4-330975

Int. Cl.[6] G03B *17/18;17/38*

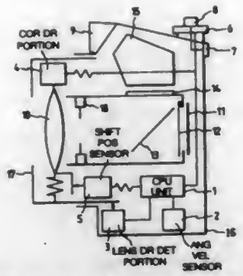
U.S. Cl. 396—55 **16 Claims**

1. A condition output apparatus comprising:

an angular velocity sensor;

a plurality of filtering circuits for inputting thereto an output from said angular velocity sensor;

a switch for simultaneously alternately turning on and off said filtering circuits;



a time counter for counting a time from when said filtering circuits are turned on;

a comparing circuit for comparing the time counted by said time counter and a predetermined time corresponding to each time constant of said filtering circuits; and

an informer for informing the result of the comparing externally from said condition output apparatus.

5,576,788

CAMERA SHAKE AMOUNT DISPLAY APPARATUS FOR CAMERA

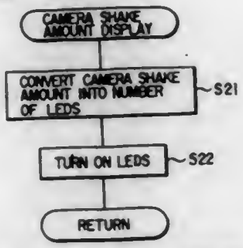
Azuma Miyazawa; Yuji Imai; Hisayuki Matsumoto; Hideto Kitazawa; Yoshinori Matsuzawa, all of Tokyo, and Juro Kikuchi, Yamanashi-ken, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1994, Ser. No. 229,461

Claims priority, application Japan, Apr. 21, 1993, 5-094553

Int. Cl.[6] G03B *17/18;17/00*

U.S. Cl. 396—52 **4 Claims**



1. A camera shake amount display apparatus for a camera, comprising:

camera shake detecting means for detecting a camera shake amount of said camera;

shutter timing determining means for determining a shutter release timing of a shutter of said camera on the basis of an output from said camera shake detecting means;

mode input and setting means for inputting an instruction for selecting at least a camera shake learning mode and for setting said camera in a selected mode;

means for preventing an exposure operation on a film in the camera when the camera shake learning mode is selected by said mode input and setting means;

display data converting means for converting the camera shake amount detected by said camera shake detecting means into display data when the camera shake learning mode is selected by said mode input and setting means; and

display means for displaying the display data obtained by said display data converting means when the camera shake learning mode is selected.

5,576,789

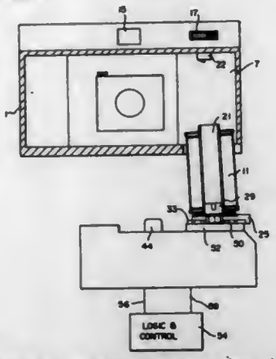
FILM REWINDING AND FILM CASSETTE UNLOADING DEVICE AND METHOD OF USE

David L. Patton, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 27, 1995, Ser. No. 411,139

Int. Cl.[6] G03B *1/00*

U.S. Cl. 396—418 **22 Claims**



1. An apparatus for use with a camera having a lighttight body compartment sized for retaining a film cassette, comprising:

film winding means for engaging a film spool of a film cassette contained in said lighttight body compartment for winding film into said film cassette, is characterized in that:

said apparatus includes film cassette unloading means for engaging said lighttihgt body compartment and for automatically opening a detachable portion of said lighttight body compartment to allow extraction of said film cassette and said detachable portion from the camera after the film winding means has wound all the film into the cassette.

5,576,790

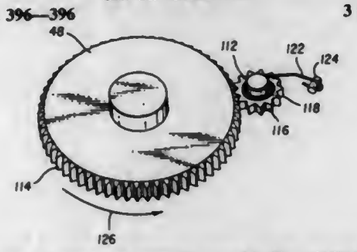
ANTI-BACKUP MECHANISM FOR PREVENTING REVERSE ROTATION OF FILM WINDER IN CAMERA

Mark A. Lamphron, and Alan G. Codd, Jr., both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 7, 1996, Ser. No. 594,880

Int. Cl.[6] G03B *1/00*

U.S. Cl. 396—396 **3 Claims**



1. A camera comprising manually rotatable film winding means, and a uni-directional clutch coupled to said film winding means to permit film winding rotation of the film winding means and to prevent reverse rotation of the film winding means, is characterized in that:

said film winding means includes a rotatable winder wheel having a toothed periphery; and

said uni-directional clutch includes a rotatable idler wheel having a toothed periphery engaging said toothed periphery of said winder wheel and provided with less teeth than the toothed periphery of the winder wheel, and a coil spring coiled tightly about a shank of said idler wheel and having an end portion secured with respect to said shank, whereby said coil spring will tighten on said shank to prevent said idler wheel and said winder wheel from being engagingly rotated when reverse rotation of said film winding means is attempted and will relax on the shank to permit the idler wheel and the winder wheel to be engagingly rotated when film winding rotation of the film winding means is initiated.

5,576,791

CAMERA

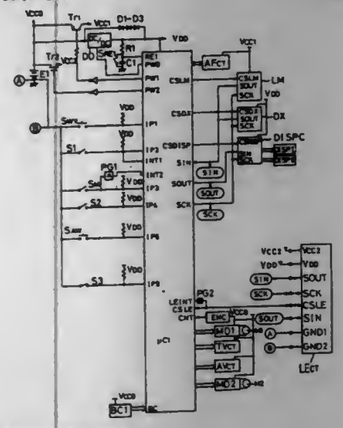
Kenji Ishibashi, Sakai; Yoshihiro Hara, Kishiwada; Kazuhiko Yukawa, Wakayama; Akihiko Fujino, Sakai; Yasuo Maeda, Kawachinagano; Shigeto Ohmori, Sakai; Fumiaki Ishito, Sakai; Hiroshi Ootsuka, Sakai, and Masayuki Miyazawa, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Division of Ser. No. 233,943, Apr. 28, 1994, Pat. No. 5,386,262, which is a division of Ser. No. 743,241, Aug. 9, 1991, Pat. No. 5,319,411. This application Oct. 18, 1994, Ser. No. 324,962

Claims priority, application Japan, Aug. 11, 1990, 2-212675; Aug. 11, 1990, 2-212676; Aug. 11, 1990, 2-212677; Aug. 11, 1990, 2-212678; Aug. 11, 1990, 2-212679; Sep. 11, 1990, 2-241979; Sep. 11, 1990, 2-241980; Nov. 2, 1990, 2-298624

Int. Cl.[6] G03B *13/10*

U.S. Cl. 396—379 **39 Claims**



1. A camera comprising:

a finder whose angle of view is variable:

a first changer which changes an angle of view of said finder:

a second changer which changes between a first mode in which the entire area of an object field which is viewed through said finder is photographed and a second mode in which a portion of the area of the object field which is viewed through said finder is photographed; and

a controller which operates said first changer in response to a change-over from the first mode to the second mode so that the viewed area coincides with an object field to be photographed when the first mode is selected and the viewed area is enlarged relative to said object field when the second mode is selected.

5,576,792

METHOD FOR ASSEMBLING AN IRIS DIAPHRAGM

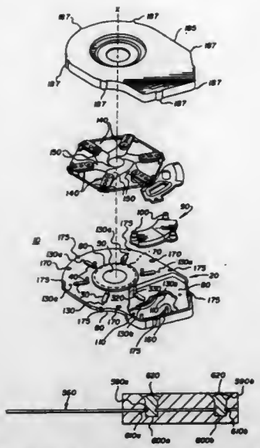
Michael J. O'Brien, Rochester; Richard A. Colleluori, both of Rochester, and William P. Luce, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 19, 1995, Ser. No. 445,434

Int. Cl.[6] G03B *9/02*

U.S. Cl. 396—510 **6 Claims**

1. A method for assembling an iris diaphragm, the method comprising the steps of:



(a) providing an iris blade having an end portion for forming a portion of an aperture of the iris diaphragm, and the blade having a hole therethrough;

(b) interpoising the iris blade between a yoke assembly having a top and bottom portion both having a bole in registry with each other and in registry with the hole in the blade; and

(c) dispensing an adhesive into the boles in the top and bottom portions and the hole in the iris blade for, in effect, forming a mechanical fastener for attaching the iris blade to both the top and bottom portions.

5,576,793

LENS-FITTED PHOTOGRAPHIC FILM UNIT

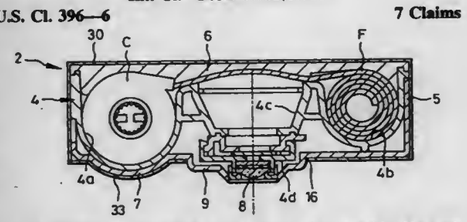
Hiroshi Hara, Kanagawa; Takuya Arai, Tokyo, and Fuyuki Yonehara, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 203,558, Mar. 1, 1994, Pat. No. 5,537,176. This application Dec. 27, 1995, Ser. No. 579,285

Claims priority, application Japan, Mar. 1, 1993, 5-40199; Mar. 1, 1993, 5-40200

Int. Cl.[6] G03B *17/02;17/26*

U.S. Cl. 396—6 **7 Claims**



1. A method of producing a lens-fitted photographic film unit constituted by a film housing and a packaging for covering said film housing at least partially, said film housing being preloaded with photographic film and a cassette for receiving said film and having a photograph-taking means assembled therein, comprising the steps of:

forming a protuberant portion on the outside of said film housing;

disposing a said cassette in said protuberant portion of said film housing with its axis upright;

subjecting at least a portion of said packaging to pressure molding, for deforming a portion of said packaging to project outwardly; and

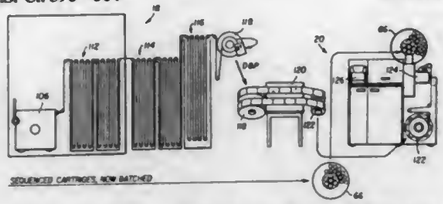
mounting said packaging around said film housing, while fitting said pressure-molded portion onto said protuberant portion.

5,576,794

RANDOM BATCH PHOTOFINISHING

Jack C. DeMarti, Jr., Rochester; Walter C. Slater, Prattsburg, and Joseph P. Kent, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 12, 1994, Ser. No. 241,986
Int. Cl.[6] G03D *13/00*
U.S. Cl. 396—564 11 Claims



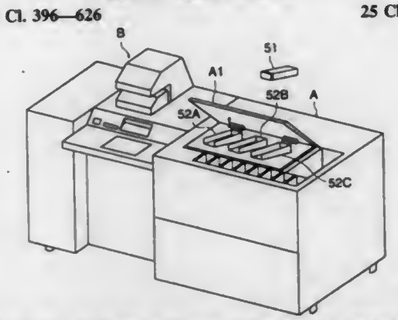
1. A process for developing and printing photographic film in high volumes, including a film developing step, followed by a film printing step, followed by an inspection step, is characterized by:
developing said film in said developing step in a first batch;
printing said film in said film printing step in a second batch different from said first batch, wherein said first batch is defined by a random ordering of filmstrips, and said second batch is defined by a second ordering of said film strips different from said random ordering; and
inspecting said film.

5,576,795

AUTOMATIC PROCESSING APPARATUS FOR SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Tetsuya Kurimoto; Ryuji Uesugi, and Tsuyoshi Haraguchi, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 387,112, Feb. 10, 1995. This application Jun. 9, 1995, Ser. No. 489,170
Claims priority, application Japan, Feb. 15, 1994, 6-018601; May 11, 1994, 6-097722; Jun. 13, 1994, 6-130422
Int. Cl.[6] G03D *3/02;13/00*
U.S. Cl. 396—626 25 Claims



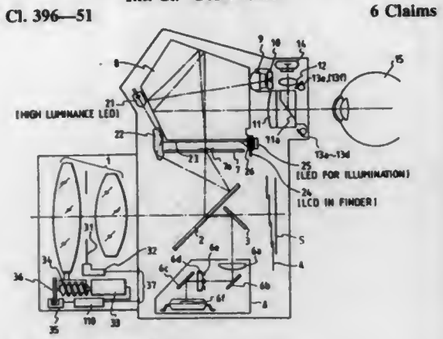
1. An apparatus for processing a silver halide photographic light-sensitive material, comprising:
(a) a processing tank for receiving the material and for storing a processing solution to process the material; and
(b) supply means for supplying a solid processing agent to said processing tank,
wherein when a supply-shortage of the solid processing agent reaches a preset amount, further receiving of the material for processing is inhibited.

5,576,796

OPTICAL APPARATUS HAVING FUNCTION TO DETECT VISUAL AXIS

Akira Akashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1994, Ser. No. 348,226
Claims priority, application Japan, Nov. 30, 1993, 5-323322
Int. Cl.[6] G03B *13/00*
U.S. Cl. 396—51 6 Claims



1. A camera comprising:
a finder having a view field;
detecting means for detecting a distribution of intensity of light from an eye of a photographer; and
a controlling device comprising calculating means for calculating a direction of a visual axis by using an output of said detecting means and correction data, for controlling said camera based on the direction of the visual axis calculated by said calculating means;
said controlling device automatically forming the correction data by using an output of said detecting means during a phototaking operation.

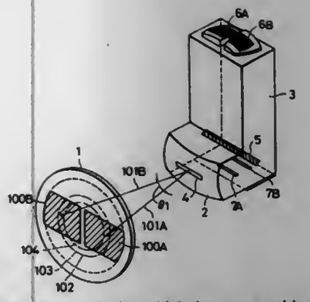
5,576,797

CAMERA WITH FOCUS DETECTING DEVICE FOR REMOVING VIGNETTING EFFECTS

Yosuke Kusaka, and Ken Utagawa, both of Kawasaki, Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 375,010, Jan. 18, 1995, Pat. No. 5,523,553, which is a continuation of Ser. No. 261,872, Jun. 17, 1994, abandoned, which is a continuation of Ser. No. 150,289, Nov. 10, 1993, abandoned, which is a continuation of Ser. No. 26,199, Feb. 26, 1993, abandoned, which is a continuation of Ser. No. 912,720, Jul. 13, 1992, abandoned, which is a division of Ser. No. 795,262, Nov. 19, 1991, Pat. No. 5,191,201, which is a continuation of Ser. No. 540,324, Jun. 19, 1990, abandoned, which is a division of Ser. No. 506,553, Apr. 9, 1990, Pat. No. 4,977,311, which is a continuation of Ser. No. 418,899, Oct. 6, 1989, abandoned, which is a continuation of Ser. No. 262,151, Oct. 12, 1988, abandoned, which is a continuation of Ser. No. 77,290, Jul. 24, 1987, abandoned, which is a division of Ser. No. 661,456, Oct. 16, 1984, Pat. No. 4,687,917. This application Jun. 7, 1995, Ser. No. 479,133
Claims priority, application Japan, Oct. 19, 1983, 58-195434; Jan. 31, 1984, 59-15509; Jul. 4, 1984, 59-138809
Int. Cl.[6] G01J *1/20*
U.S. Cl. 396—121 9 Claims

1. A camera having a photo-taking lens and comprising:
an image sensing device having first areas and second areas;
an optical system which directs light from an object to be photographed to said first areas and said second areas, said image sensing device generating outputs according to intensity distributions of light incident on said first areas and said second areas;
a displacement amount calculating device which calculates a displacement amount based on outputs of said image sensing device;



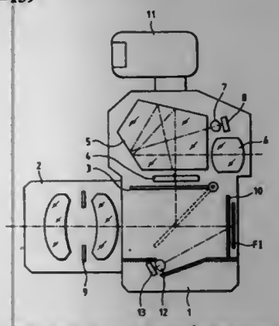
a main area detection device which detects a position of a main area in the light from the object directed to said first areas and said second areas by said optical system, and which generates a corresponding detection signal; and
a focus detection device which adjusts the calculated displacement amount based on said detection signal, and which detects focus of the photo-taking lens.

5,576,798

AUTOMATIC FLASH AMOUNT CONTROL APPARATUS OF CAMERA

Tadao Takagi, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 266,301, Jun. 27, 1994, abandoned, which is a continuation of Ser. No. 112,051, Aug. 26, 1993, abandoned, which is a continuation of Ser. No. 899,643, Jun. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 789,967, Nov. 12, 1991, Pat. No. 5,172,157. This application Mar. 28, 1995, Ser. No. 411,910
Claims priority, application Japan, Jun. 20, 1991, 3-176136
Int. Cl.[6] G03B *15/05*
U.S. Cl. 396—159 12 Claims



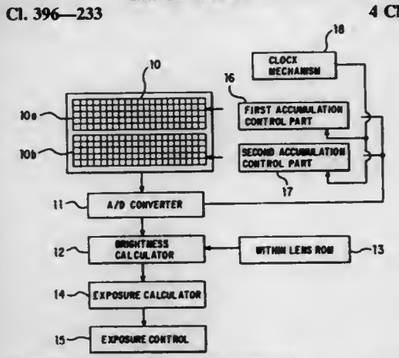
1. An automatic flash amount control apparatus of a camera, comprising:
a flashing device;
a first metering device for executing photometering of a field to be photographed while dividing said field into a plurality of first metering regions without flashing of said flashing device;
a second metering device for metering an optical flux emitted by said flashing device and then reflected by the field to be photographed while dividing said flux into a plurality of second metering regions;
a flash amount control region determining portion for separating said second metering regions into two groups, one of which is to contribute to and the other of which is not to contribute to flash amount control, according to respective results of metering of said first metering regions, said flash amount control region determining portion including a predetermined number of said second metering regions in said one group when the number of second metering regions separated into said one group according to said metering results of said first metering regions is less than said predetermined number;
a flash amount controller for controlling, upon flashing of said flashing device, an amount of flash of said flashing device according to results of metering of each second metering region included in said one group; and
a total number outputting portion for outputting a total number of the second metering regions included in said one group;
and wherein said flash amount controller controls the amount of flash of said flashing device based on said total number.

5,576,799

CAMERA PHOTOMETRY SYSTEM

Hiroyuki Iwasaki, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Mar. 3, 1994, Ser. No. 205,366
Claims priority, application Japan, Mar. 30, 1993, 5-095202
Int. Cl.[6] G03B *7/08*
U.S. Cl. 396—233 4 Claims



1. A camera photometry system, comprising:
a two dimensional photometry mechanism made up of a plurality of accumulation-type photoelectric elements; and
an accumulation control mechanism for controlling an accumulation time for a charge in said accumulation-type photoelectric elements, wherein said accumulation-type photoelectric elements are grouped in certain separate areas and said accumulation control mechanism has a control element for each of said certain separate areas to separately control the charge accumulation time of the accumulation-type photoelectric elements therein, wherein the separate control elements control the charge accumulation times for said certain separate areas to be different from one another.

5,576,800

CAMERA HAVING AN AUXILIARY PHOTOGRAPHING FUNCTION

Tadao Takagi, Yokohama, and Hiroyuki Iwasaki, Kawasaki, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 376,433, Jan. 23, 1995, abandoned, which is a continuation of Ser. No. 156,927, Nov. 24, 1993, abandoned, which is a continuation of Ser. No. 968,053, Oct. 28, 1992, abandoned. This application Nov. 7, 1995, Ser. No. 554,869
Claims priority, application Japan, Nov. 21, 1991, 3-306300
Int. Cl.[6] G03B *7/08*
U.S. Cl. 396—238 8 Claims

1. A camera comprising:
photometering means for photometering an area to be photographed and outputting a luminance value;
exposure value calculation means for calculating an initial exposure value based on the luminance value outputted from said photometering means;

MODE	DISP	STAT LIT	FL LIT	PROG DIAG	
				NATR LIT	FL LIT
SILHOUETTE	SE	AMP - 1	INHB FL	P - 1	
SCENE	LS	AMP - 2		P - 2	
SPORTS	SP			P - 3	
PORTRAIT	PR	AMP - 3	SB - 1	P - 4	P - T
MEMORIAL PHOTO	PF			P - 5	
CLOSE UP	CU			P - 6	

photographing mode selection means for selecting a photographing mode from a plurality of photographing modes corresponding, respectively, to different types of subjects to be photographed; and

exposure value setting means for automatically setting a final exposure value different from said initial exposure value, according to said photographing mode selected by said photographing mode selection means.

5,576,801

PROJECTION EXPOSURE APPARATUS

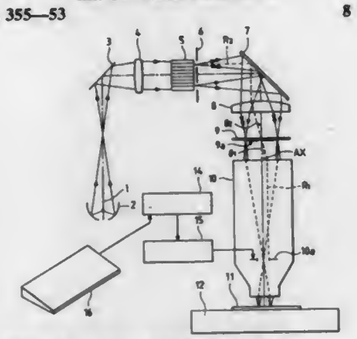
Kazuo Ushida, and Masaomi Kameyama, both of Tokyo, Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 370,216, Dec. 7, 1994, which is a continuation of Ser. No. 274,369, Jul. 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 166,153, Dec. 14, 1993, abandoned, which is a continuation of Ser. No. 991,421, Dec. 16, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 480,863

Claims priority, application Japan, Dec. 25, 1991, 3-343601

Int. Cl.[6] G03B *27/42;27/54*

U.S. Cl. 355—53 **8 Claims**



1. A projection exposure apparatus including:

an illuminating optical system; and

a projection optical system,

said illuminating optical system including a light source, an optical integrator, a first annular stop, a second annular stop and a condenser optical system;

said projection optical system including an aperture stop;

light from said light source passing through said optical integrator, said condenser optical system, a projection negative and said projection optical system and onto a substrate;

said first and second annular stops satisfying the following condition:

$$t/3 \leq d_1/d_2 \leq 2/3$$

where d_1 is an inner diameter of aperture portions of said annular stops and d_2 is an outer diameter of aperture portions of said annular stops;

said first and second annular stops being selectively disposed at a position of an annular secondary light source comprising a plurality of light source images formed by said illuminating optical system; and

the aperture stop of said projection optical system and said first and second annular stops satisfying the following condition:

$$0.45 \leq NA_2/NA_1 \leq 0.8,$$

where NA_1 is the numerical aperture of said projection optical system at a side of said projection negative, and NA_2 is the numerical aperture of said illuminating optical system determined by an outer diameter of said annular secondary light source.

5,576,802

DETACHABLE TWO-FRAME PROCESS CARTRIDGE FOR AN IMAGE FORMING APPARATUS

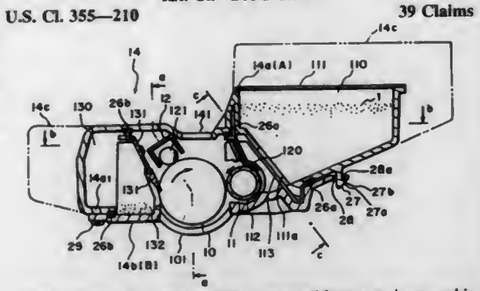
Yoshiya Nomura, Tokyo; Tadayuki Tsuda, Kawasaki; Shinichi Sasaki, Fujisawa; Isao Ikemoto, Kawasaki; Kazushi Watanabe, Yokohama; Hiroyuki Shirai, and Toshiyuki Karakama, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 170,908, Dec. 21, 1993, which is a continuation of Ser. No. 68,287, May 28, 1993, Pat. No. 5,294,960, which is a continuation of Ser. No. 785,401, Oct. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 689,517, Apr. 23, 1991, Pat. No. 5,208,634. This application Aug. 26, 1994, Ser. No. 295,077

Claims priority, application Japan, Nov. 6, 1990, 2-301779; Mar. 19, 1991, 3-05446

Int. Cl.[6] G03G *21/18*

U.S. Cl. 355—210 **39 Claims**



1. A process cartridge detachably mountable to a main assembly of an image forming apparatus, the cartridge comprising:

a photosensitive member;

developing means for developing a latent image formed on said photosensitive member;

a first frame containing said developing means; and

a second frame coupled with said first frame, said second frame including a developer containing portion for containing a developer to be supplied to said developing means to develop the latent image;

wherein said second frame is a selected one of plural secondary frames engageable with said first frame and having different developer containing capacities.

5,576,803

ELECTROSTATOGRAPHIC IMAGING DRUM END CAP AND DRUM ASSEMBLY

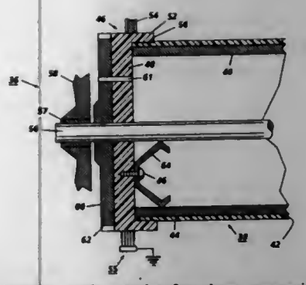
Edward C. Williams, Palmyra; Geoffrey M. T. Foley, Fairport; Robert S. Foltz, Rochester, and William G. Herbert, Williamson, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1993, Ser. No. 171,040

Int. Cl.[6] G03G *5/00*

U.S. Cl. 355—211 **10 Claims**

1. An electrostatographic imaging member assembly comprising a hollow electrostatographic imaging drum having a first end and a second end, at least one coating on said drum extending to at least said first end of said drum, said coating having an outer electros-



tatographic imaging surface and a first drum supporting end cap mounted on said first end of said drum, said first drum supporting end cap comprising a disk shaped member having an annular skirt encircling an exterior surface of said first end of said drum, said annular skirt having an imaginary axis coextensive with an imaginary axis of said drum, said end cap having an exposed circular periphery comprising an annular landing strip surface extending around said periphery, said annular landing strip surface being parallel to said imaging surface, and said annular landing strip surface having a width of at least about 3 millimeters.

5,576,804

APPARATUS AND METHOD FOR INHIBITING DUST ADHERENCE TO THE CONTACT PLATE OF A COPYING MACHINE

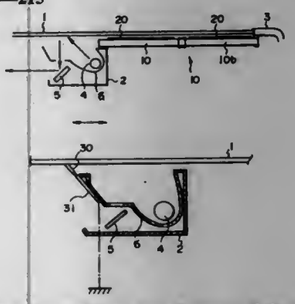
Atsushi Hakamoto; Jyunko Mizuno, and Seiichi Yamashita, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jun. 2, 1995, Ser. No. 459,800

Claims priority, application Japan, Jun. 8, 1994, 6-126144; Jun. 8, 1994, 6-126648; Jun. 8, 1994, 6-126649

Int. Cl.[6] G03G *15/04*

U.S. Cl. 355—215 **6 Claims**



6. A method for inhibiting the adherence of dust to a lower surface of a contact glass in a copy machine, comprising:

providing a copy machine comprising:

a contact glass, having an upper surface and a lower surface, said contact glass being supportable of a document on its upper surface,

a moving optical system assembly disposed under said contact glass and spaced apart therefrom, said moving optical system assembly comprising:

a moving frame equipped with a source of light, and a document sensor arm, having an upper surface facing said lower surface of said contact glass, said upper surfacing having an area, a plurality of document sensors disposed on said upper surface of said document sensor arm, said document sensor arm coupled to said moving frame and undergoing expansion or contraction accompanying movement of said moving frame, said document sensor arm, in its expanded state, extending over nearly the whole contact glass;

providing a transparent electrically conducting film over substantially the whole area of said upper surface of said document sensor arm, whereby dust adherence to said lower surface of said contact glass is inhibited.

5,576,805

CONTACT CHARGING MEMBER FOR CHARGING A PHOTOSENSITIVE DRUM HAVING IMPROVED DURABILITY AND A METHOD FOR MAKING THE SAME

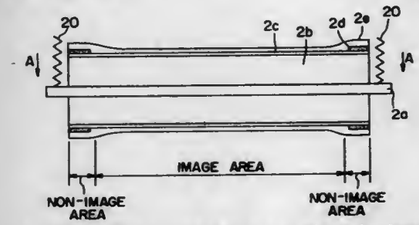
Yuzi Ishihara; Kiyoshi Mizoe, both of Kawasaki, and Tsunenori Ashibe, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 16, 1995, Ser. No. 404,912

Claims priority, application Japan, Mar. 16, 1994, 6-071534; Dec. 29, 1994, 6-340063; Mar. 7, 1995, 7-047227

Int. Cl.[6] G03G *15/02*

U.S. Cl. 355—219 **57 Claims**



1. A charging member contactable to a member to be charged to electrically charge it, the improvement residing in that a microhardness of an end region, with respect to a longitudinal direction, of said charging member is larger than that in a central region of said charging member.

5,576,806

CHARGING ROLL FOR ELECTROPHOTOGRAPHY

Kozo Oka; Kazuhiko Yanagida; Taketoshi Hoshizaki, and Kazuhiro Koseki, all of Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 21, 1995, Ser. No. 517,207

Claims priority, application Japan, Aug. 24, 1994, 6-220851

Int. Cl.[6] G03G *15/02*

U.S. Cl. 355—219 **17 Claims**

1. A charging roll for electrophotography, which comprises a conductive shaft having formed thereon a conductive layer, wherein said conductive layer comprises a layer in which SnO_{2-x}-coated $BASO_4$ particles are dispersed in a resin, said SnO_{2-x}-coated $BASO_4$ particles having an electric resistance of 0.1 to 10 Ω·cm, and the value of x being 0 to 1.

5,576,807

IMAGE FORMING APPARATUS HAVING A CONTACT TYPE CHARGING DEVICE

Izumi Osawa, Ikeda; Kazuko Taniguchi, Takatsuki, and Masashi Yamamoto, Settsu, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Nov. 6, 1995, Ser. No. 554,268

Claims priority, application Japan, Nov. 7, 1994, 6-272390

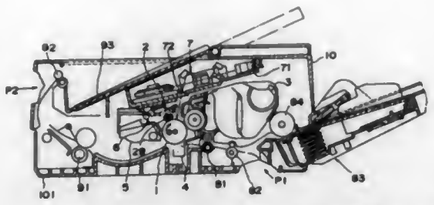
Int. Cl.[6] G03G *15/02*

U.S. Cl. 355—219 **6 Claims**

1. An image forming apparatus comprising:

a rotatable photosensitive member;

a charging device for charging a surface of the photosensitive member prior to forming an electrophotographic latent image, the charging device including a rotatable brush member which



is formed by implanting piles formed by brush fibers on a base member and provided in contact with the photosensitive member;

a power source for applying a charge voltage which includes at least AC component to said charging device, wherein said photosensitive member and charging device and power source are provided to satisfy the following condition:

$$V_D=K\sqrt{f_{AC}-fP}(0<K\leqq 3),$$

wherein V_D is a moving speed of the surface of said photosensitive member, K is a constant, f_{AC} is frequency of the AC component and fp is a pile frequency which is represented by V_B/d, wherein V_B is the moving speed of the base material and d is a pile pitch.

5,576,808

IMAGE FORMING APPARATUS HAVING CONTACT CHARGER

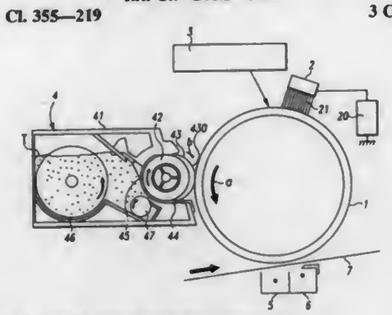
Akihito Ikegawa, and Masashi Yamamoto, both of Osaka, Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Nov. 7, 1995, Ser. No. 554,452

Claims priority, application Japan, Nov. 8, 1994, 6-273557

Int. Cl.[6] G03G *15/02*

U.S. Cl. 355—219 **3 Claims**



1. An image forming apparatus comprising:

a photosensitive member;

a contact charging unit having a charging member in contact with the photosensitive member;

a charging power source for applying a charging voltage at least containing an a.c. component to the contact charging unit;

a laser beam irradiator having a polygon mirror for use in exposing the photosensitive member to an image over an area thereof charged by the charging unit to form an electrostatic latent image; and

a developing unit for developing the latent image into a visible image and collecting residual developer remaining on the surface of the photosensitive member after the visual image is transferred to a transfer material;

the number of revolutions Fp(rps) of the irradiator polygon mirror, the frequency Fb(Hz) of the a.c. component to be applied to the contact charging unit and the system velocity Vp(cm/sec) having a correlation so determined as to meet the requirement of:

$|Fp-2\times Fb|<Vp$ or $|Fp-2\times Fb|>Fp/2$.

5,576,809

CHARGE SCREENING MEMBER FOR A CORONA DISCHARGE DEVICE OF AN IMAGE FORMING APPARATUS

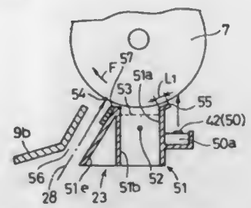
Hiroaki Yazawa; Shougo Sato; Shinji Ito, and Tomoaki Hattori, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 11, 1995, Ser. No. 500,624

Claims priority, application Japan, Jul. 26, 1994, 6-174329; Aug. 31, 1994, 6-206487

Int. Cl.[6] G03G *15/02*

U.S. Cl. 355—225 **17 Claims**



1. An image forming apparatus comprising:

an image carrying member;

charging means for charging said image carrying member;

exposure means for directing a light beam on said image carrying member charged by said charging means at an exposure position to form a latent image on the image carrying member;

developing means for converting the latent image on said image carrying member to a toner image;

transfer means for transferring the toner image formed on said image carrying member to a recording medium;

a case extending parallel to a rotational axis of said image carrying member;

a screening means for preventing ions generated by said charging means from reaching the exposure position where the latent image is formed, said screening means positioned on said case adjacent to said charging means and between said charging means and said exposure position; and

pre-charging means supported by said case for emitting light to fully discharge said image carrying member prior to charging said image carrying member using said charging means, wherein said case comprises:

a partition wall extending towards said image carrying member between said charging means and said pre-charging means, and

a blocking wall formed at an end of said partition wall near said image carrying member and extending from the end of said partition wall along a circumference of said image carrying means, wherein said blocking wall prevents the light emitted by said pre-charging means from extending past said partition wall toward said charging means.

5,576,810

IMAGE FORMING METHOD

Shuichi Aita, Yokohama; Toshiyuki Yoshihara, Kawasaki; Tsutomu Kukimoto, Yokohama; Satoshi Yoshida, Tokyo; Yoshifumi Hano, Inagi, and Yuki Nishio, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1995, Ser. No. 536,843

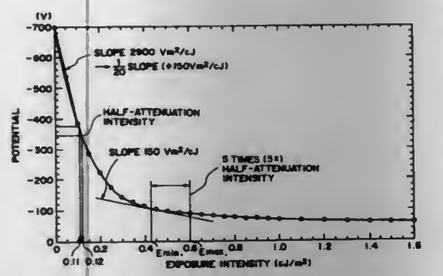
Claims priority, application Japan, Oct. 3, 1994, 6-238974; Oct. 3, 1994, 6-238975

Int. Cl.[6] G03G *15/04*

U.S. Cl. 355—228 **50 Claims**

1. An image forming method, comprising:

a charging step of charging an electrophotographic photosensitive member,



an exposure step of exposing the charged photosensitive member to form an electrostatic latent image thereon,

a developing step of developing the electrostatic latent image with a toner to form a toner image, and

a transfer step of transferring the toner image onto a transfer material, residual toner remaining on the photosensitive member after the transfer step being recovered in the developing step,

wherein the photosensitive member is exposed in the exposure step at an exposure intensity which is at least a minimum exposure intensity and below a maximum exposure intensity; said minimum exposure intensity being determined on a surface potential-exposure intensity characteristic curve of the photosensitive member by determining a first slope S1 of a straight line connecting a point giving a dark part potential Vd and a point giving a value of (Vd+ a residual potential Vr)/2, determining a contact point between a tangent line having a slope of S1/20 and the surface potential-exposure intensity characteristic curve and determining the minimum exposure intensity as an exposure intensity at the contact point; said maximum exposure intensity being determined as 5 times a half-attenuation exposure intensity.

5,576,811

IMAGE RECORDING APPARATUS FOR CONTROLLING IMAGE IN HIGH QUALITY AND IMAGE QUALITY CONTROL METHOD THEREOF

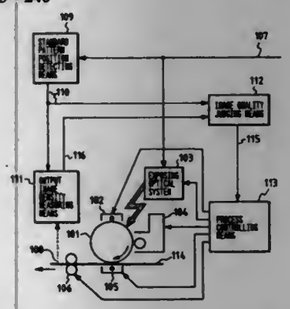
Shinya Kobayashi, Mito; Kunio Sato, Hitachi, and Katsuhiro Ono, Hitachinaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 16, 1995, Ser. No. 407,516

Claims priority, application Japan, Mar. 18, 1994, 6-048237

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—246 **13 Claims**



1. An image recording apparatus for recording visible images on a recording medium by way of successively inputting electric image signals forming the visible images, comprising:

a first standard pattern detector detecting one of a plurality of standard patterns from the input electric image signals;

an image density measuring device measuring density of a visible image recorded on the recording medium corresponding to the detected standard pattern;

an image quality judging device judging image quality of the recorded visible image corresponding to the detected standard pattern on the basis of an output from said image density measuring device, and

a process controller deciding process parameters on the basis of signals output from said image quality judging device before controlling image quality of a visible image using the process parameters.

5,576,812

DEVELOPING METHOD WITH CARRIER CHAINS CONTACTED TO IMAGE BEARING MEMBER

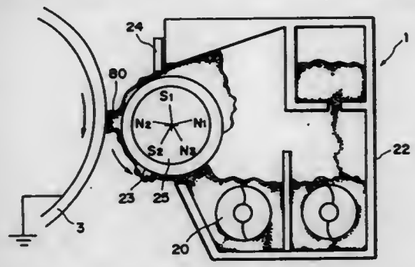
Masaru Hibino, Kawasaki; Yukio Nagase, Tokyo; Kenichiro Waki, Kawasaki, and Hiroyuki Suzuki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1994, Ser. No. 314,303

Claims priority, application Japan, Oct. 1, 1993, 5-270000

Int. Cl.[6] G03G *15/09*

U.S. Cl. 355—251 **8 Claims**



1. A developing method, comprising the steps of:

forming a magnetic field between an image bearing member bearing an electrostatic image and a developer carrying member carrying a developer comprising toner particles and carrier particles; and

contacting chains of carrier particles formed on the developer carrying member to the image bearing member;

wherein an increasing rate of an absolute value of an intensity of the magnetic field in a movement direction of the developer carrying member is positive over an entire portion of the developer carrying member where the carrier is contacted to the image bearing member.

5,576,813

DEVELOPING DEVICE HAVING A DISPERSION BLOCKING PLATE AND ELECTROSTATIC RECORDING DEVICE INCLUDING THE SAME

Toshimasa Toyama, and Akihiko Uematsu, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

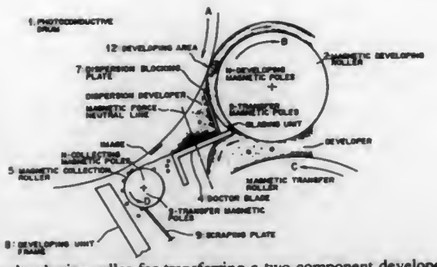
Filed Sep. 25, 1995, Ser. No. 533,516

Claims priority, application Japan, Sep. 27, 1994, 6-231407

Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—251 **13 Claims**

1. A developing device comprising:



a developing roller for transferring a two-component developer by creating a magnetic brush and for brushing the magnetic brush against an electrostatic latent image carrier on which a latent image is formed, said developing roller moving in a direction opposite to a moving direction of said electrostatic latent image carrier in a developing area to said electrostatic latent image carrier:

a developer regulating plate for regulating an amount of said two-component developer to said developing roller; and

a dispersion blocking plate protruding toward said developing area from said developer regulating plate, wherein said dispersion blocking plate has a length longer than that of said developing roller in an axial direction of said developing roller.

5,576,814

DEVELOPING UNIT USING TONER HAVING A MAGNETIC SHIELD BETWEEN THE AGITATION CHAMBER AND A DEVELOPING ROLLER

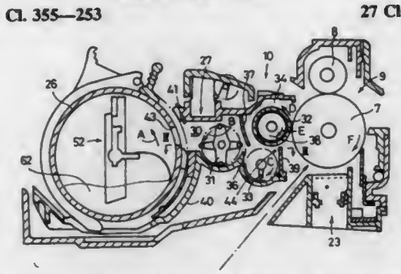
Soichiro Nishimura, and Kazumasa Makino, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 27, 1994, Ser. No. 364,231

Claims priority, application Japan, Feb. 8, 1994, 6-014249; Apr. 19, 1994, 6-080080

Int. Cl.[6] G03G *15/09*

U.S. Cl. 355—253 **27 Claims**



14. A developer feeding system for feeding a developer made up of toner and a magnetic carrier in a printing apparatus, comprising:

a developing case;

an agitation chamber in said developing case;

a developing chamber in said developing case;

a rotating shaft;

a magnet roller mounted on said shaft to rotate in a first direction;

a developing roller mounted coaxial with and radially outward of said magnet roller rotatable in a second direction opposite to the first direction; and

a restriction member between said agitation chamber and said developing chamber, wherein the developer flows from said agitation chamber to said developing chamber through a slit formed between a free end of said restriction member and a wall portion of said developing case; and

a stationary magnetic member mounted in said developing chamber.

5,576,815

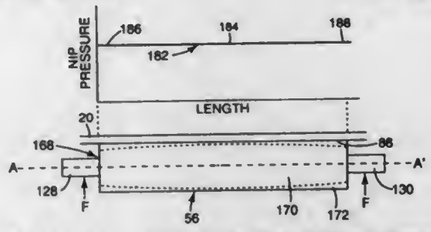
DEVELOPMENT APPARATUS FOR A LIQUID ELECTROGRAPHIC IMAGING SYSTEM

Brian P. Teschendorf, St. Paul; Truman F. Kellie, Lakeland; Edward J. Moe, St. Paul; W. Blake Kolb, St. Paul; Joseph T. Brophy, St. Paul; Thomas M. Milbourn, Mabtomedi; Arthur V. Lang, Maplewood; Donald H. Larson, Stillwater; Alberto Goenaga, St. Paul; Steven C. Jensen, Maplewood, and John D. Watson, Centerville, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 29, 1995, Ser. No. 536,135

Int. Cl.[6] G03G *15/10*

U.S. Cl. 355—256 **24 Claims**



10. A development system for developing a latent electrostatic image on an imaging substrate in a liquid electrographic imaging system, the imaging substrate being moved in a first direction during development of the latent image, the development system comprising:

a development device for delivering developer liquid to an imaging region of the imaging substrate to develop the latent electrostatic image;

a squeegee roller;

a loading mechanism for loading the squeegee roller against the imaging substrate, the squeegee roller being driven by the imaging substrate in the first direction, wherein the squeegee roller removes from an imaging region of the imaging substrate first excess developer liquid applied by the development device during development of the latent electrostatic image in the imaging region of the imaging substrate; and

a drive mechanism for driving the squeegee roller in a second direction opposite to the first direction upon movement of a nonimaging region of the imaging substrate past the squeegee roller, the squeegee roller substantially removing from the imaging substrate second excess developer liquid formed by termination of application of developer liquid to the imaging substrate by the development device,

wherein the squeegee roller has a shaft with a first end, a second end, and a core extending between the first end and the second end along a longitudinal axis of the shaft, and an elastomeric material formed about the core, wherein the core has a cross-sectional area oriented perpendicular to the longitudinal axis that varies along the longitudinal axis, wherein the loading mechanism is configured to apply a loading force to each of the first end and the second end to load the core of the

squeegee roller against the imaging substrate, thereby forming a pressure nip between the elastomeric material and the imaging substrate, and wherein the cross-sectional area of the core and the loading force applied to each of the first end and the second end are selected to produce a substantially uniform pressure along the nip, the squeegee roller thereby removing the first and second excess developer liquid from the imaging substrate in a substantially uniform manner.

5,576,816

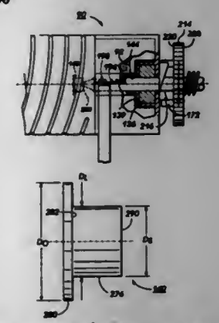
TONER CARTRIDGE INTERNAL PLUG

Rhonda L. Staudt, Webster; Timothy G. Struczewski, Rochester, and Gene S. Serafine, Henrietta, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 584,024

Int. Cl.[6] G03G *15/08*

U.S. Cl. 355—260 **26 Claims**



1. A device for storing a supply of particles for use in a developer unit of an electrophotographic printing machine, comprising:

an open ended container defining a chamber in communication with the open end thereof with the particles being stored in the chamber of said container;

a puncturable seal attached to the open end of said container for sealing the chamber, said container being installable into the developer unit without removal of said seal; and

an internal seal attached to the open end of said container and internal to said puncturable seal, said internal seal having a surface closely conforming to the open end of said container, said internal seal being removable from the open end of said container by displacement of said internal seal into the chamber of said container.

5,576,817

DUAL ZONE DEVELOPMENT FOR LIQUID DEVELOPERS

George A. Gibson, Fairport; Edward B. Caruthers, Rochester, and Inan Chen, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1995, Ser. No. 475,279

Int. Cl.[6] G03G *15/06*

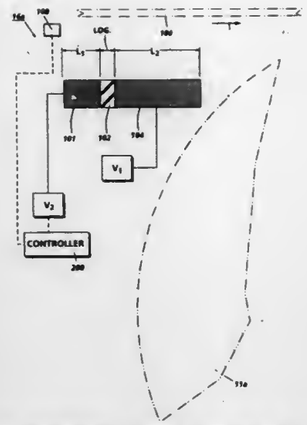
U.S. Cl. 355—262 **16 Claims**

1. An apparatus for developing a latent image recorded on a surface with liquid developer, comprising:

a housing defining a chamber for holding the liquid developer;

means for advancing the liquid developer from the chamber of the housing to a development zone;

an electrode member including a plurality of segments with each of said plurality of segments being electrically insulated from one another and an insulating layer interposed between and connecting adjacent ones of said plurality of segments, said electrode member positioned opposed from the surface defining a gap therebetween forming the development zone; and



means for independently electrically biasing the segments of said electrode member.

5,576,818

INTERMEDIATE TRANSFER COMPONENT HAVING MULTIPLE COATINGS

Santokh S. Badesha, Pittsford; George J. Heeks, Rochester, and Arnold W. Henry, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 26, 1995, Ser. No. 494,512

Int. Cl.[6] G03G *15/14;13/20*

U.S. Cl. 355—271 **14 Claims**

1. An intermediate toner transfer component comprising:

(a) an electrically conductive substrate;

(b) a conformable and electrically resistive layer comprised of a first polymeric material; and

(c) a toner release layer comprised of a second polymeric material selected from the group consisting of a fluorosilicone and a substantially uniform integral interpenetrating network of a hybrid composition of a fluoroelastomer and a polyorganosiloxane, wherein the resistive layer is disposed between the substrate and the release layer.

5,576,819

TRANSFER ELEMENT DETECT DEVICE

Fumio Furusawa, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1995, Ser. No. 543,359

Claims priority, application Japan, Oct. 19, 1994, 6-253876

Int. Cl.[6] G03G *15/14*

U.S. Cl. 355—271 **9 Claims**

1. A transfer element detect device, comprising:

transfer element attracting means for attracting a transfer element on the surface thereof;

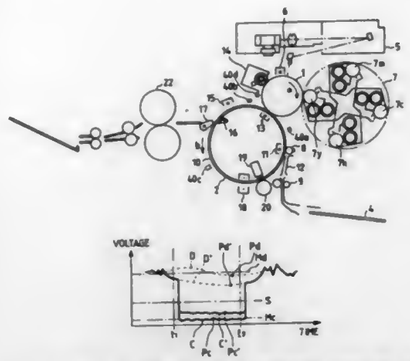
a light sensor for receiving the reflected light or transmitted light of said transfer element attracting means;

threshold value setting means for setting a threshold value between the average value of the received light signal levels of said light sensor in the same area of the surface of said transfer element attracting means when a transfer element is attracted on the surface of said transfer element attracting means and a peak value on the side of said average value when the transfer element is not attracted thereon, and for setting a threshold value according to said peak value;

means for storing said threshold value; and,

detect means for detecting the passage of the transfer element on the surface of said transfer element attracting means based on

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a comparison between said stored threshold value and signal level of the light received from said transfer element attracting means.

5,576,820

XEROGRAPHIC APPARATUS WITH A DETACHABLE CORONA CHARGER

Hideaki Hagihara, Nara, and Masakiyo Okuda, Ikoma-gun, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 31, 1995, Ser. No. 455,040
Claims priority, application Japan, Jun. 24, 1994, 6-143047
Int. Cl.[6] G03G *15/02*
U.S. Cl. 355—274 **4 Claims**

1. A xerographic apparatus which is equipped with a detachable corona charger type transferring device including holders located at both ends of a charger box for fixing a charger wire thereto, the apparatus comprising:

a first engagement section which matches a first protrusion section provided at the holder located at one end of the transferring device for positioning with respect to the apparatus;

a second engagement section which matches a second elastically deformable protrusion section for engagement with the apparatus and which is provided at the holder located at the other end of the transferring device;

biasing means for biasing the transferring device upward; and

a first sidewall having an opening section which is located facing the second protrusion section in order to confine the site of the second protrusion section to be subjected to elastic deformation by pressing and which allows the pressing therethrough,

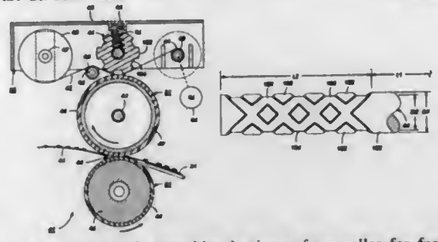
wherein the second engagement section releases engagement by virtue of elastic deformation of the second protrusion section due to the pressing.

5,576,821

FUSER RELEASE AGENT MANAGEMENT (RAM) SYSTEM HAVING A NON-CONTINUOUS PATTERN AGENT ROLL

Kenneth R. Rasch, Fairport; Russell A. Parisi, Williamson; Barry J. Gheer; Bruce A. LaPlant, both of Webster, and Tab A. Tress, Henrietta, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 18, 1995, Ser. No. 573,984
Int. Cl.[6] G03G *15/20*
U.S. Cl. 355—284 **11 Claims**



1. In a reproduction machine having a fuser roller for fusing toner images on an image bearing sheet, a release agent management (RAM) system for applying an image offset preventing release agent to the fuser roller, the RAM system comprising:

(a) a rotatable supply core located to a first side of the fuser roller;

(b) a rotatable take-up core located to a second side of the fuser roller;

(c) a movable release agent impregnated web member including a section threaded from said supply core to said take-up core for contacting, and applying release agent to, the fuser roller; and

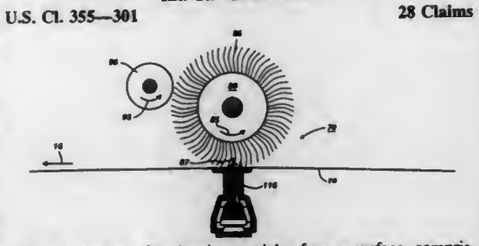
(d) a release agent supplying roll positioned for contacting and supplying release agent to said threaded portion of said web member at a point between said supply core and said take-up core, said release agent supplying roll having a non-continuous surface pattern comprising release agent supplying surface areas for contacting said threaded section of said web member, and release agent non-supplying surface areas out of contact with said threaded section of said web member.

5,576,822

ULTRASONIC TRANSDUCER FOR BRUSH DETONING ASSIST

Nero R. Lindblad, Ontario, and David B. Montfort, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 352,939, Dec. 9, 1994, abandoned.
This application Mar. 29, 1996, Ser. No. 625,788
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—301 **28 Claims**



1. An apparatus for cleaning particles from a surface, comprising:

a rotatable brush having a multiplicity of fibers extending outwardly therefrom contacting a side of the surface and being deflected to form a cleaning region, having a width, to remove particles from the surface thereat, the cleaning region having an active zone therein being smaller in width than the width of said cleaning region to prevent disturbing particles from the surface beyond the cleaning region; and

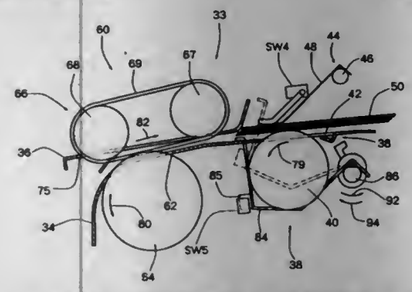
vibrational means located opposed from the cleaning region and having a central axis substantially co-linear with an axis substantially perpendicular to the surface and centrally located in the cleaning region with the surface being interposed between said rotatable brush and said vibrational means, said vibrational means having two adjacent damping members on either side of said central axis to isolate vibration to a narrow area of the surface contacting a central location of the cleaning region, said vibrational means reducing surface adhesion between the particles and the surface to facilitate removal therefrom by said rotatable brush.

5,576,823

AUTOMATIC DOCUMENT FEEDER HAVING DOCUMENT SEPARATING MECHANISM

Masayuki Kakuta, and Ikuo Shigemitsu, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Aug. 22, 1995, Ser. No. 517,622
Claims priority, application Japan, Sep. 1, 1994, 6-208760
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—308 **2 Claims**



1. An automatic document feeder for a document processor having a transparent panel for placement thereon of a document to be processed, said automatic document feeder comprising:

document bearing means for bearing documents to be processed;

forwarding means, including a forwarding roller, for forwardly delivering documents borne on said document bearing means, and a pressing mechanism for pressing the documents at the time of document delivery by said forwarding roller;

document separating means, including a paper feed roller disposed downstream of said forwarding means and adapted to be rotated in the direction of conveyance, and a separating mechanism disposed opposite said paper feed roller and adapted to be operated in a direction opposite said direction of conveyance;

a resist roller pair disposed downstream of said document separating means for temporarily stopping a document carried by said paper feed roller and carrying the stopped document toward the transparent panel of the document processor;

document conveying means for conveying the document carried by said resist roller pair to a predetermined position on the transparent panel and discharging the document to the transparent panel; and

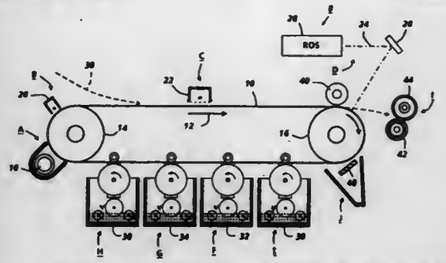
controlling means for actuating and controlling said forwarding means, said document separating means, said resist roller pair, and said document conveying means, said controlling means responsive to a copy start signal, for energizing said pressing mechanism of said forwarding means, actuating said forwarding roller, and actuating said document separating means to carry the document on said document bearing means, and further responsive to the front end of the document passing through said document separating means for deenergizing said pressing mechanism of said forwarding means for a predetermined time not greater than the time required for the front end of the document to reach said resist roller pair and then again energizing said pressing mechanism.

5,576,824

FIVE CYCLE IMAGE ON IMAGE PRINTING ARCHITECTURE

Jeffrey J. Folkins, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1995, Ser. No. 472,164
Int. Cl.[6] G03G *15/01*
U.S. Cl. 355—327 **3 Claims**



1. A method of producing a color image using a printing machine having a continuous photoreceptive member, the method comprising the step of:

(a) identifying an image area on the photoreceptive member;

(b) producing a first toner image on the image area during a first cycle of the image area through the printing machine by performing the steps of.

charging the image area to a substantially uniform potential:

exposing the charged image area so as to create a first latent representation of a first color image;

developing the first latent representation so as to produce a first toner layer using toner of a first color;

(c) producing a second toner image on the image area during a second cycle of the image area through the machine by performing the steps of:

recharging the image area to a substantially uniform potential;

exposing the recharged image area so as to create a second latent representation of a second color image;

developing the second latent representation so as to produce a second toner layer using toner of a second color;

(d) producing a third toner layer on the image area during a third cycle of the image area through the machine by performing the steps of:

recharging the image area to a substantially uniform potential;

exposing the recharged image area so as to create a third latent representation of a third color image;

developing the third latent representation so as to produce a third toner layer using toner of a third color;

(e) producing a fourth toner layer on the image area during a fourth cycle of the image area through the machine by performing the steps of:

recharging the image area to a substantially uniform potential;

exposing the recharged image area so as to create a fourth latent representation of a fourth color image;

developing the fourth latent representation so as to produce a fourth toner layer using toner of a fourth color;

(f) transferring the toner layers on the image area onto a substrate during a fifth cycle of the image area through the printing machine; and

(g) passing the substrate between the photoreceptor and an exposure station.

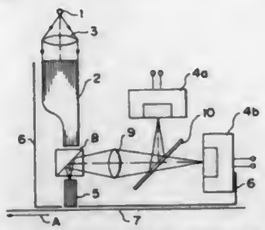
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5,576,825

PATTERN DETECTING APPARATUS

Tohru Nakajima, and Mituhiro Nagase, both of Tokyo, Japan, assignors to Laurel Bank Machines Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 151,033, Nov. 12, 1993, abandoned.
This application Jun. 2, 1995, Ser. No. 459,987
Claims priority, application Japan, Nov. 13, 1992, 4-304181; Nov. 5, 1993, 5-276645
Int. Cl.[6] G06K 9/20
U.S. Cl. 356—71 13 Claims



1. A pattern detecting apparatus for detecting a pattern of an object comprising:

at least one light source;

an optical fiber bundle comprising a plurality of first optical fibers for guiding light from said light source, said first optical fibers being arranged to provide light onto a plurality of micro areas on a surface of said object;

light detecting means including a plurality of pixels for detecting light reflected from said surface of said object, said pattern on said surface of said object being detected based on information from said light detecting means;

light transmitting means comprising a plurality of second optical fibers for transmitting light advancing in a first predetermined direction, said light transmitting means being positioned between said object and said optical fiber bundle such that said predetermined first direction coincides with a second direction in which light reflected from said object advances, said plurality of second optical fibers being arranged to receive said light reflected from said plurality of micro areas on said surface of said object;

a first beam splitter positioned between said optical fiber bundle and said light transmitting means for transmitting light from said optical fiber bundle and reflecting said light reflected from said surface of said object and transmitted through said light transmitting means so that said light detecting means can receive said light reflected by said first beam splitter; and

a second beam splitter for reflecting said light reflected from said first beam splitter so that said light detecting means can receive said light reflected by said second beam splitter;

said plurality of pixels of said light detecting means receiving light from said plurality of second optical fibers via said first beam splitter; and

said plurality of pixels receiving substantially only information representative of said plurality of micro areas on said surface of said object.

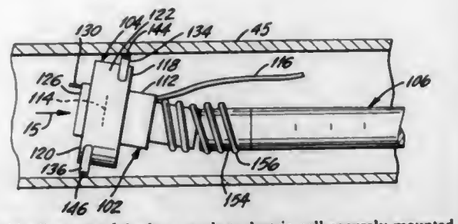
5,576,826

ALIGNMENT LASER WITH OVER-FLOODED APERTURE SYSTEM AND DUAL-MODE SELF-CENTERING TARGET

Martin R. Hamar, Wilton, Conn., assignor to Hamar Laser Instruments, Inc., Wilton, Conn.

Filed May 3, 1995, Ser. No. 434,522
Int. Cl.[6] G01B 11/27
U.S. Cl. 356—138 27 Claims

1. A target assembly for aligning a barrel to a laser beam, said barrel having a substantially cylindrical bore therein defining an inside diameter, said target assembly comprising a rigid housing, a plurality of bore supports projecting radially outwardly from said housing and defining a maximum outside diameter greater than the inside diameter of the bore, a photoelectric cell securely mounted in the housing and being operative to generate electrical signals indicative of locations at which the laser beam impinges thereon, said photoelectric cell having a center disposed at the midpoint of the maximum outside diameter defined by the bore supports, whereby the bore supports must be angularly aligned to diameters of said bore for insertion of said target assembly into said bore and whereby the center of the photoelectric cell is disposed on the axis of the bore for any angular alignment of the bore supports relative to the bore.

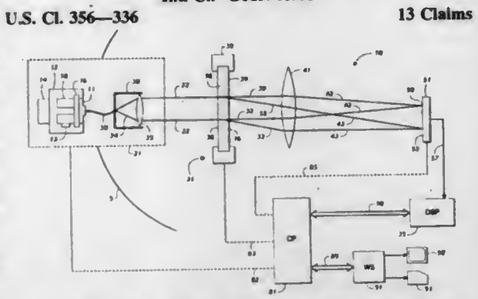


5,576,827

APPARATUS AND METHOD FOR DETERMINING THE SIZE DISTRIBUTION OF PARTICLES BY LIGHT SCATTERING

Michael L. Strickland, Marietta; James P. Olivier, Lawrenceville; William B. Conklin, Lawrenceville, and Warren P. Hendrix, Lawrenceville, all of Ga., assignors to Micromeritics Instrument Corporation, Norcross, Ga.

Filed Apr. 15, 1994, Ser. No. 228,965
Int. Cl.[6] G01N 15/02
U.S. Cl. 356—336 13 Claims



1. A method of obtaining particle size distribution data for a group of dispersed particles, comprising the steps of:

illuminating a plurality of dispersed particles with a dose of light in a collimated beam from a light source for a plurality of distinct exposures;

passing at least a portion of said light scattered by said particles during said illuminating step through a lens such that rays parallel to one another are focused at one location in a focal surface of said lens;

detecting at least a portion of light rays of said beam scattered by said particles during said exposures with an array of light-sensitive elements;

varying in each of said exposures one or more characteristics of illumination of said particles;

reading output data from said elements following each of said exposures into a memory device;

determining from said output data intensity values for selected angle classes into which said light has been scattered for each of said exposures; and

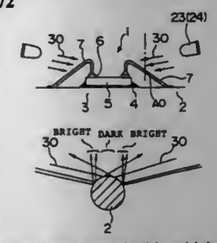
determining for each angle class a composite intensity value based on all of said exposures and scaled to compensate for differences in illumination characteristics during each of said exposures.

5,576,828

BONDING WIRE DETECTION METHOD

Hiromi Tomiyama, Musashimurayama, and Satoru Nagai, Iruma, both of Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Sep. 8, 1995, Ser. No. 525,284
Claims priority, application Japan, Sep. 9, 1994, 6-240790
Int. Cl.[6] G01B 11/00;11/24
U.S. Cl. 356—372 3 Claims



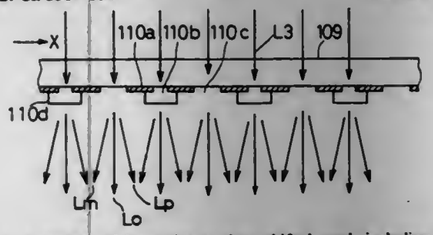
1. A bonding wire detection method in which a wire bonded to a pad of a semiconductor chip and a lead of a lead frame is detected by illuminating said wire with a low-angle illuminating device of an illuminating means so as to image said wire with an imaging device through an optical system, said method being characterized in that said wire is illuminated with an illumination of said low-angle illuminating device set at an angle between seven (7) to twelve (12) degrees with respect to a horizontal plane, and a focal depth of said optical system is set at a shallow depth, so that a dark area is created in a central portion of said wire at a focal point of said optical system, and a wire height and/or wire shape of said wire is detected by detecting this dark area.

5,576,829

METHOD AND APPARATUS FOR INSPECTING A PHASE-SHIFTED MASK

Naomasa Shiraishi, and Nobutaka Magome, both of Kanagawa, Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 286,804, Aug. 5, 1994, abandoned, which is a continuation of Ser. No. 32,430, Mar. 15, 1993, abandoned, which is a continuation of Ser. No. 773,350, Oct. 7, 1991, abandoned. This application Apr. 28, 1995, Ser. No. 430,266
Claims priority, application Japan, Oct. 8, 1990, 2-270213; Nov. 16, 1990, 2-308582; Nov. 16, 1990, 2-308583
Int. Cl.[6] G01B 9/02
U.S. Cl. 356—354 29 Claims



1. A method of inspecting a phase-shifted mask including at least one phase shifter adapted to change the phase of light and selectively deposited in correspondence to a desired pattern configuration, said method comprising the steps of: illuminating said mask for forming an image of a pattern to be inspected at a predetermined imaging position from light passed through a phase-shifter deposited portion on said mask and light passed through a phase-shifter non-deposited portion on said mask respectively;

detecting first information corresponding to a light quantity at a position corresponding to said phase-shifter deposited portion within the inspection pattern image and second information corresponding to a light quantity at a position corresponding to a light quantity at a position corresponding to said phase-shifter non-deposited portion within the inspection pattern image at least one position relatively moved in an optical axis direction from said imaging position of said mask; and

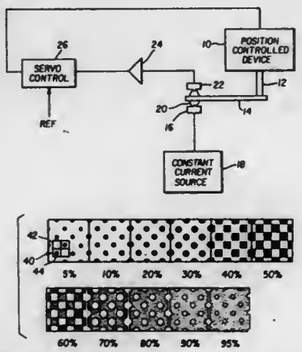
calculating a phase difference between said light passed through said phase-shifter deposited portion and said light passed through said phase-shifter non-deposited portion in accordance with a ratio between said first information and said second information wherein the detection of said first information and said second information is effected at each of a plurality of positions in said optical axis direction.

5,576,830

POSITION SENSOR WITH HALF TONE OPTICAL GRADIENT WEDGE

Michael J. O'Brien, Rochester; Jeffrey R. Hawver, Henrietta, and Andrea S. Rivers, Bloomfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 23, 1995, Ser. No. 447,872
Int. Cl.[6] G01B 11/00
U.S. Cl. 356—373 5 Claims



1. Position sensor comprising:

an opto-sensor having a light source and a photo sensor forming an optical beam therebetween;

an optical gradient wedge photo interrupter translatable between said light source and photosensor, the optical gradient wedge comprising a half tone dot pattern having a variable optical density the optical density of the half tone dot pattern varies from a predetermined low density range through a predetermined middle optical density range to a predetermined high optical density range, the dot pattern of the low density range having a uniform center fill pattern, the middle density range having a random center weighted pattern and the high density range having a random edge weighted pattern.

5,576,831

WAFER ALIGNMENT SENSOR

Mehrdad Nikoonahad, Menlo Park, and James A. Tebelskis, San Jose, both of Calif., assignors to Tencor Instruments, Santa Clara, Calif.

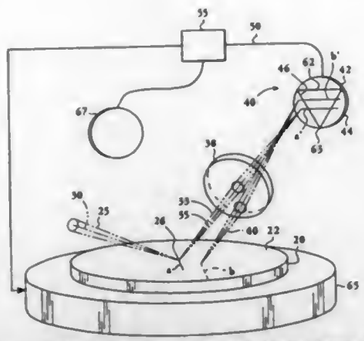
Filed Jun. 20, 1994, Ser. No. 263,203
Int. Cl.[6] G01B 11/00
U.S. Cl. 356—375 35 Claims

1. A system for detecting a height of a body to be optically inspected comprising,

an incident beam of light directed obliquely at a surface of said body, said incident beam being at least partly reflected from said surface as a reflected beam,

a scanning means for deflecting said incident beam across said surface in a line,

a focusing means for focusing said reflected beam, and



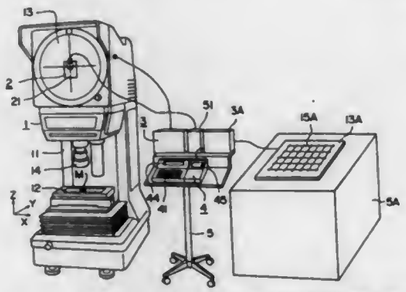
a first sensor disposed in a path of said reflected beam near an image plane of said surface formed by said focusing means, said sensor having a light sensitivity with a periodic variance along a direction transverse to said line and along which a position of an image of said line varies with a height of said surface, whereby a variation in said height of said surface results in a corresponding variation in phase, frequency or waveform of an output from said sensor.

5,576,832

OPTICAL MEASURING APPARATUS AND MEASURING METHOD OF THE SAME

Fumio Yamamoto, Kure, Japan, assignor to Mitutoyo Corporation, Tokyo, Japan

Continuation of Ser. No. 91,346, Jul. 14, 1993, abandoned.
This application Jun. 29, 1995, Ser. No. 498,248
Claims priority, application Japan, Jul. 15, 1992, 4-188114; Apr. 5, 1993, 5-078106
Int. Cl.[6] G01B *9/08*
U.S. Cl. 356—391 **15 Claims**



1. An optical measurement apparatus for measuring the shape of an object, the object having an edge, said apparatus including:

a projection system including a projection system screen, said projection system being configured to present an image of the object on said projection system screen around a projection system optical axis so that the edge of the object image is visible;

a displacement system for relatively shifting the object or said projection system so that the object image on said projection system screen shifts location on said screen relative to said projection system optical axis, said displacement system having a displacement system initial position at which the object image is presented at an object image initial position on said projection system screen and being configured to shift the location of the object image from the object image initial position in response to displacement system drive signals applied thereto and configured to generate displacement system position signals representative of the shift of said displacement system from the displacement system initial position;

an optical edge detector disposed on said projection system screen, said optical edge detector being configured to monitor the object image presented on said projection system screen at a point defined by an intersection of said projection system optical axis with said projection system screen and to generate an edge-sensed signal when, as the object image on said projection system screen shifts positions, the edge of the object image crosses said projection system optical axis and said optical edge detector;

a cursor assembly, said cursor assembly including a movable cursor for placement on said projection system screen and a cursor position detector at least partially disposed on said projection system screen, said cursor position detector being configured to generate cursor position signals representative of cursor position points of said moveable cursor on said projection system screen relative to the object image initial position on said projection system screen; and

a control unit connected to said cursor assembly for receiving said cursor position signals, to said displacement system for applying said displacement system drive signals thereto and for receiving said displacement system position signals therefrom and to said optical edge detector for receiving said edge-sensed signals therefrom, said control unit being configured to:

generate said displacement system drive signals based on said cursor position signals so as to cause the shifting of said displacement system from the displacement system initial position so that the object image shifts position on said projection system screen across said projection system optical axis and across said optical edge detector along a plurality of paths of travel, each said path of travel intersecting at least one said cursor position point represented by said cursor position signals received by said control unit; and

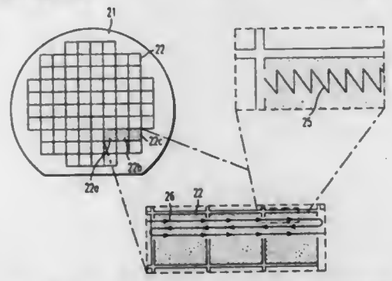
receive said edge-sensed signals and said displacement system position signals as the object image moves across said projection system screen as a result of the shifting of said displacement system so as to collect data representing a plurality of points at which the shift of the displacement system from the displacement system initial position results in the edge of the object image being detected.

5,576,833

WAFER PATTERN DEFECT DETECTION METHOD AND APPARATUS THEREFOR

Motosuke Miyoshi, and Yuichiro Yamazaki, both of Tokyo-To, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 10, 1995, Ser. No. 402,486
Claims priority, application Japan, Mar. 11, 1994, 6-041346
Int. Cl.[6] G01B *11/00*
U.S. Cl. 356—394 **11 Claims**



1. A wafer pattern defect detection apparatus, comprising:

rectangular electron beam generation means having a multipole electrostatic lens for generating a rectangular electron beam from a rectangular electron source, the rectangular electron beam being of a size adjusted for the size of the pattern on a wafer under inspection, the rectangular electron beam being focused, by the multipole electrostatic lens, on the part of the wafer to be inspected;

signal detecting means for detecting an electron signal which is generated from said wafer under inspection; and

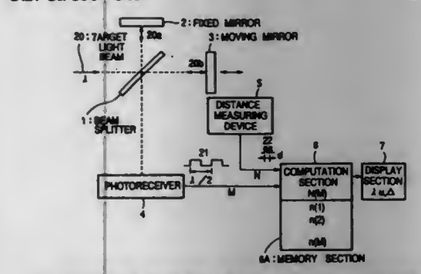
a defect detection means for detecting the presence of a defect inside wafer under inspection, by means of electron signal image data which is based on an output signal from said electron signal detection means.

5,576,834

OPTICAL WAVEMETER UTILIZING NUMERICAL FRACTION DIFFERENCE OF PULSES FOR DETERMINING ABSOLUTE WAVE LENGTH

Madoka Hamada, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Sep. 18, 1995, Ser. No. 529,638
Claims priority, application Japan, Sep. 30, 1994, 6-261733
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—346 **2 Claims**



1. A wavemeter apparatus for determining a wavelength λ of a target light beam (**20**) comprising: a beam splitter (**1**) for dividing said target light beam (**20**) into a first beam (**20***a*) and a second beam (**20***b*); a fixed mirror (**2**) for receiving said first beam (**20***a*) to be reflected back to said beam splitter (**1**); a moving mirror (**3**) for receiving said second beam (**20***b*) to be reflected back to said beam splitter (**1**); a photoreceiver (**4**) for converting an interference fringe, having two λ/2 spacings, produced by optical interference of said first beam (**20***a*) with said second beam (**20***b*) in accordance with a travel distance of said moving mirror (**3**), and generating a first pulse signal (**21**) for every λ/2 spacing; a first distance measuring device (**5**) having a first resolution capability d, defining a unit of said travel distance of said moving mirror (**3**), and generating a second pulse signal (**22**) for each unit; a computation section (**6**) for counting first pulse signals (**21**) produced by said photoreceiver (**4**) to generate a first cumulative count M, for counting a plurality of said second pulse signals (**22**) produced by said first distance measuring device (**5**) to generate a second cumulative count N(M) and for computing a first estimated wavelength λM of said target wavelength λ as λM=2dN(M)/M based on a relation Mλ/2=d(N(M)+εM) where εM is a numerical fraction of said second pulse signals (**22**) at M; a display section (**7**) for displaying a result of said first estimated wavelength λM; wherein

said wavemeter apparatus is provided with further memory section (**6A**) in said computation section (**6**) such that:

said memory section (**6A**) stores a number of counts n(M) of said second pulse signals (**22**) in a fringe spacing between M and M-1, for all values of M between 1 and a maximum count MMAX;

said computation section (**6**) computes a value of a first fraction ε1 from a relation, ε1=N(M)/M-n(1) where ε1 is a numerical fraction of said second pulse signals (**22**) in a first fringe spacing;

determining a sampling interval KD by using said ε1 and an integer coefficient k which minimizes an absolute value of said numerical fraction; determining a starting count m from an integer section of a value given by a relation m=(MMAX-KD)/| D|, where D is a minimum value of said numerical fraction and |D| is an absolute value of D, to compute a second estimated wavelength λMM nearest to said wavelength λ so that:

when D>0, a maximum wavelength value of λMM is computed by a relation λMM=2dN(m)/m and a wavelength measurement error Δ is given by a relation Δ=2dD/m; and

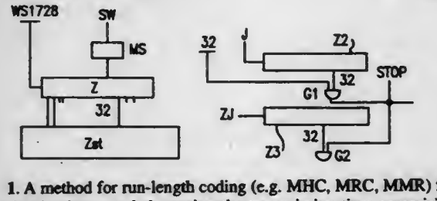
when D<0, a maximum wavelength value of λMM is computed by a relation λMM=2dN(m+kD)/(m+kD) and a wavelength measurement error Δ is given by a relation Δ=2dD/(m+kD).

5,576,835

METHOD FOR RUN-LENGTH CODING FOR SHORTENING TRANSMISSION TIME

Josef Dirr, Neufahrner Strasse 5, D-81679 Munich, Germany

PCT No. PCT/EP92/02977, § 371 Date Sep. 3, 1993, § 102(e) Date Sep. 3, 1993, PCT Pub. No. WO93/04572, PCT Pub. Date Mar. 18, 1993
PCT Filed Dec. 12, 1992, Ser. No. 108,594
Claims priority, application Germany, Feb. 24, 1992, 42 05 570.9; Nov. 6, 1992, 42 37 596.7
Int. Cl.[6] H04N *1/41;1/415;1/419*
U.S. Cl. 358—261.1 **12 Claims**



1. A method for run-length coding (e.g. MHC, MRC, MMR) for saving hardware and shortening the transmission time comprising the steps of:

assigning for white and black the same code words to the numerically defined run-lengths,

providing at the receiver side the sequence criterion white/black defined by each line starting with white and having an EOL-criterion,

providing means at the receiver side which switch over from white to black and from black to white according to the sequence criterion,

transmitting in case of gray-scale transmission the quantization values directly with a predetermined code to the receiver, and

transposing the quantization values at the receiver side according to the Dither-principle.

5,576,836

MULTI-PICTURE IMAGE PRINTING SYSTEM

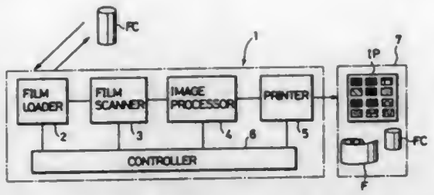
Homare Sano, Sagamihara; Katsumi Miwa, Machida; Norimasa Kubota, Sakai, and Kimitoshi Hori, Takasuki, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Oct. 28, 1994, Ser. No. 331,285
Claims priority, application Japan, Oct. 29, 1993, 5-272403
Int. Cl.[6] H04N *1/21;1/46;* **G03B** *27/52*
U.S. Cl. 358—302 **17 Claims**

1. A multi-picture image printing system comprising:

a reception portion for receiving a plurality of recording mediums sequentially, each recording medium carrying a plurality of pictures;

a multi-picture image generator operable to read the plurality of pictures recorded on each recording medium and generate a multi-picture image based on the read plurality of pictures;



a printer operable to print the generated multi-picture image on a sheet;

a medium discharger operable to discharge recording mediums;

a sheet discharger operable to discharge printed sheets;

a storing unit including a plurality of containers for containing discharged recording medium and printed sheet; and

a controller operable to control the medium discharger, sheet discharger, and the storing unit to place a recording medium and a printed sheet bearing a multi-picture image having pictures recorded on the recording medium in the same container.

5,576,837

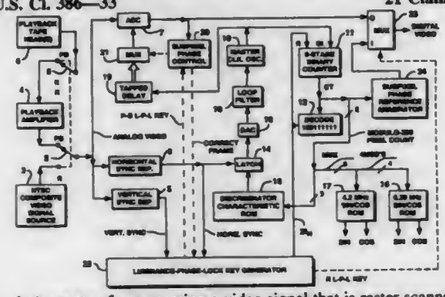
DIGITAL MODULATORS FOR USE WITH SUB-NYQUIST SAMPLING OF RASTER-SCANNED SAMPLES OF IMAGE INTENSITY

Christopher H. Strolle, Glenside, Pa., and Hermann J. Weckenbrock, Bordentown, N.J., assignors to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Division of Ser. No. 819,890, Jan. 13, 1992, Pat. No. 5,532,820, which is a continuation-in-part of Ser. No. 787,690, Nov. 4, 1991, which is a continuation-in-part of Ser. No. 635,197, Jan. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 569,029, Aug. 17, 1990, Pat. No. 5,113,262. This application Aug. 26, 1994, Ser. No. 296,796

Int. Cl.[6] H04N *9/79;7/12;11/04;11/02*

U.S. Cl. 386—33 **21 Claims**



1. Apparatus for processing a video signal that is raster scanned, with successive scan lines occurring at a prescribed scan line rate within image fields and occurring in first and second spatially interleaved sets of scan lines within each image field, said video signal being a baseband video signal of a prescribed bandwidth extending up to a prescribed maximum frequency, said apparatus comprising:

means for providing a sampled video signal by sampling said video signal;

a band-splitting filter with a crossover frequency of one-half said prescribed maximum frequency, responding to said sampled video signal for separating therefrom samples of a lower-frequency-band component and samples of a higher-frequency-band component of said sampled video signal;

means for generating first and second weighted sums of said lower-frequency-band component and said higher-frequency-band component, said lower-frequency-band component and said higher-frequency-band component both being weighted by a first weighting factor in generating said first weighted sum, and both being weighted by second weighting factors of the same amplitude but of opposite polarities in generating said second weighted sum; and

means for selecting alternate samples of said first and second weighted sums to generate a folded-video signal.

5,576,838

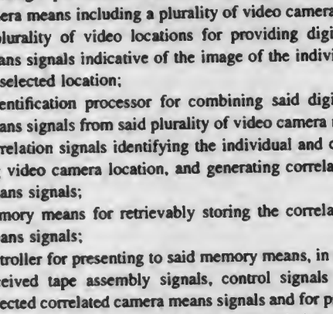
PERSONAL VIDEO CAPTURE SYSTEM

Richard L. Renie, Henderson, Nev., assignor to Renievision, Inc., Las Vegas, Nev.

Filed Mar. 8, 1994, Ser. No. 207,920

Int. Cl.[6] H04N *5/76*

U.S. Cl. 386—117 **10 Claims**



1. A system that records an image of an individual at a preselected location and retrievably stores digital signals of the image for preparing a personalized video tape, the system comprising:

a camera means including a plurality of video camera at each of a plurality of video locations for providing digital camera means signals indicative of the image of the individual at the preselected location;

an identification processor for combining said digital camera means signals from said plurality of video camera means with correlation signals identifying the individual and corresponding video camera location, and generating correlated camera means signals;

a memory means for retrievably storing the correlated camera means signals;

a controller for presenting to said memory means, in response to received tape assembly signals, control signals to retrieve selected correlated camera means signals and for presenting to said identification processor said correlation signals in response to received individual information signals and further for generating tape initiating signals to begin personalized video tape assembly;

an input reader means for receiving signals from the individual containing identifying information and generating therefrom said individual information signals;

video storage means having stored therein signals corresponding to a standard video image of said preselected location without the individual;

a means for generating said tape assembly signals for initiating tape assembly and identifying selected correlated camera means signals; and

a video assembly means for generating, in response to said tape initiation signals, a personalized video tape including said standard video signals combined with said selected correlated camera means signals.

5,576,839

CAMERA SYSTEM INCLUDING A SEPARATABLE RECORDER

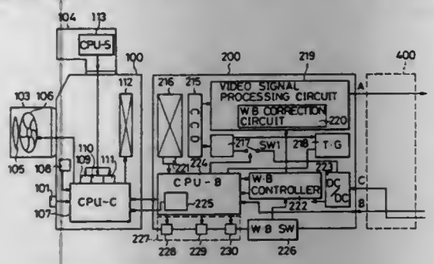
Yasuhiro Morimoto, Takatsuki; Hirokazu Naruto, Higashiosaka; Tsutomu Honda, Takatsuki, and Gen Sasaki, Toyonaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 949,579, Sep. 23, 1992, abandoned. This application Mar. 18, 1994, Ser. No. 215,966

Claims priority, application Japan, Sep. 25, 1991, 3-245824; May 12, 1992, 4-119320; May 12, 1992, 4-119321

Int. Cl.[6] H04N *5/76;* **G11B** *15/18*

U.S. Cl. 386—113 **6 Claims**



1. A recording system comprising:

a mount portion in which one of a record medium and a cleaning member is mounted;

a device for recording data on the record medium;

a first device for discriminating whether an error occurs in a recording operation;

a device responsive to said first discriminating device for discharging the record medium from said mount portion when an error is discriminated to occur;

a second device for discriminating whether the cleaning member is mounted in said mount portion in place of the record medium; and

a control device responsive to said first and second discriminating devices for controlling said recording device to suspend the recording operation unless the cleaning member is discriminated to be mounted in the case of the record medium being discharged for occurrence of an error.

5,576,840

RECORDING APPARATUS

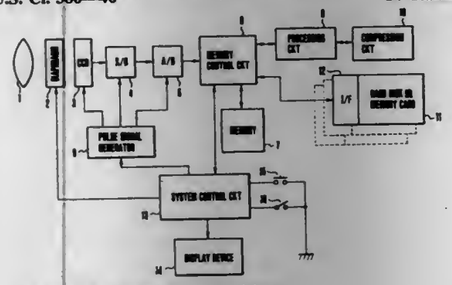
Nobuo Fukushima, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 910,418, Jul. 8, 1992, abandoned. This application Mar. 23, 1994, Ser. No. 216,768

Claims priority, application Japan, Jul. 18, 1991, 3-178227; Jan. 30, 1992, 4-015063

Int. Cl.[6] H06N *5/76;* **G11B** *5/00*

U.S. Cl. 386—46 **14 Claims**



1. A recording apparatus, comprising:

a) recording means for recording data;

b) switching means for selectively switching a mode between a first mode for recording the data on a first medium having a relatively small storing capacity and a second mode for recording the data on a second medium having a relatively large storing capacity;

c) display means; and

d) control means associated with said switching means and arranged to cause the display means to display a remaining storing capacity by a unit number of storable data in the first mode and to display a remaining storing capacity by a proportion of storable data and the whole storing capacity of said second medium in the second mode.

5,576,841

SIGNAL PROCESSING SYSTEM USING EXTERNAL STORAGE DEVICE

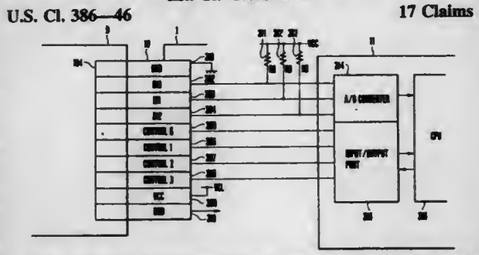
Teruo Hieda, and Koji Takahashi, both of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 720,913, Jun. 25, 1991, abandoned. This application Jan. 12, 1995, Ser. No. 371,596

Claims priority, application Japan, Jun. 28, 1990, 2-171591

Int. Cl.[6] H04N *5/76*

U.S. Cl. 386—46 **17 Claims**



7. A signal processing device to be set with a plurality of storing devices each having storing means and resistance means having different resistance values according to the kinds of the storing devices, comprising:

a) connection means for connecting with the resistance means;

b) detection means for detecting the resistance values of the resistance means connected to the connection means; and

c) discrimination means for discriminating the kinds of the storing devices on the basis of detection results of the detection means.

5,576,842

DATA DETECTION METHOD AND APPARATUS THEREFOR FOR USE IN A DIGITAL RECORDING/REPRODUCTION SYSTEM

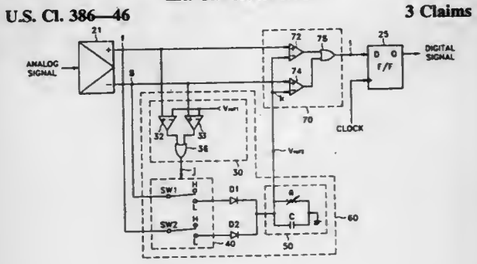
Kyung-hwan Choi, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jun. 7, 1995, Ser. No. 483,842

Claims priority, application Rep. of Korea, Dec. 19, 1994, 94-35069

Int. Cl.[6] H04N *5/92*

U.S. Cl. 386—46 **3 Claims**



2. A data detection apparatus of a digital recording/reproduction system for recording a digital signal on a recording medium, and for reproducing recorded data as an analog signal and outputting said reproduced data as digital data in a digital recording/reproduction system, said apparatus comprising:

first comparing means for receiving said reproduced analog signal, comparing the voltage level thereof with a first reference voltage of a predetermined level, and outputting a first comparison result;

switching means for switching on and off a connection with said reproduced analog signal in accordance with said first comparison result output from said first comparing means;

reference voltage adjusting means for charging or discharging a charge element in accordance with the on/off state of said switch in said switching means, and adjusting a second reference voltage for data detection;

second comparing means for receiving said reproduced analog signal, comparing the voltage level thereof with said second reference voltage adjusted in said reference voltage adjusting means, and outputting a second comparison result; and

restoring means for receiving said second comparison result, synchronizing said received second comparison result with a clock signal, and restoring said synchronized signal into a digital signal.

5,576,843

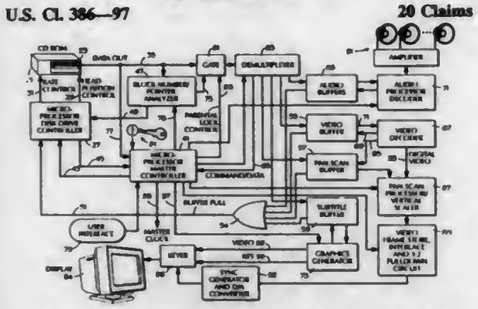
SYSTEM AND METHOD FOR CONTROLLING PLAY OF MULTIPLE DIALOG AUDIO TRACKS OF A SOFTWARE CARRIER

Christopher J. Cookson; Lewis S. Ostrover, and Warren N. Lieberfarb, all of Los Angeles, Calif., assignors to Time Warner Entertainment Co., L.P., Burbank, Calif.

Filed Oct. 29, 1993, Ser. No. 144,791

Int. Cl.[6] H04N *5/91*

U.S. Cl. 386—97 **20 Claims**



1. A system for controlling play of the audio tracks of a software carrier, said software carrier having recorded thereon a plurality of datablocks which represent an image program, a plurality of audio tracks synchronized with said image program, and a code for each of said audio tracks identifying its use as either a switching master including music and effect and dialog language, a mixing master containing only music and effects, a track to be switched with a switching master, or a track to be mixed with a mixing master, comprising means for selecting a switching master of predetermined length and a shorter track containing audio segments to be switched with said switching master, or a mixing master of predetermined length and a shorter track containing audio segments to be mixed with said mixing master, and codes in the data blocks that specify to automatically switch between or mix the selected tracks.

5,576,844

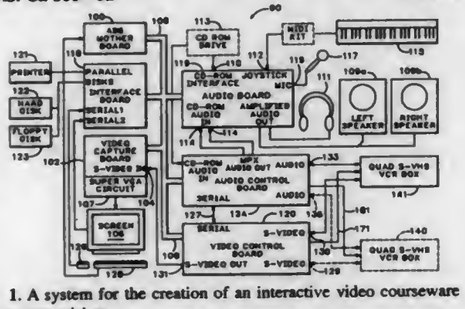
COMPUTER CONTROLLED VIDEO INTERACTIVE LEARNING SYSTEM

Ronald K. Anderson, Aloha; Duane F. Benson, Canby; Michael K. Crock, Lake Oswego; Bruine R. Hack, Wilsonville; James E. Howard, Portland, all of Oreg.; Ray S. McKaig, Boulder Creek, Calif., and John Peers, West Linn, Oreg., assignors to Unilearn, Inc., Wilsonville, Oreg.

Filed Sep. 6, 1994, Ser. No. 300,990

Int. Cl.[6] H04N *5/91;9/79;5/76;* **G11B** *27/02*

U.S. Cl. 386—52 **1 Claim**



1. A system for the creation of an interactive video courseware tape comprising:

(a) a system bus electrically connecting a mother board, interface board, video capture board, audio control board, audio board and video control board together;

(b) said mother board including a microprocessor with associated random access memory for executing editing software;

(c) said editing software including a port structure and a host/VCB interface for communications to and from the video control board;

(d) said interface board electrically connected with a disk drive for the transmission of and receipt of information;

(e) said video capture board capable of receiving digital data from said system bus and displaying said digital data as an image on a computer screen;

(f) said video capture board also capable of receiving video signals and displaying said video signals on said computer screen as an image;

(g) said video control board including a serial interface and a video interface for sending and receiving signals from a video cassette recorder control board, said video control board further comprising:

(i) a host interface connected to said system bus;

(ii) a microprocessor, random access memory and read only memory to process commands;

(iii) an error correction chip with an associated tri-state buffer which under control of the microprocessor that can add additional error correction bytes to digital data;

(iv) a digital video generator/recover circuit to encode digital data into a binary video signal by gating the digital data controlled by a timing control circuit;

(v) a video mux operatively connected with said generator/recover circuit to selectively gate said binary video signal with video control signals to create a complete video signal;

(vi) said complete video signal transmitted on said video interface;

(h) said audio control board serially connected to said video control board through a video controller interface, and said audio control board operating in two modes, namely;

(i) a first mode that is a pass-through mode where digital signals from said video control board are recorder board for recording on said tape's linear audio track;

(ii) a second mode that generates command codes to control a video cassette recorder connected to said audio control board's serial port;

(i) said video cassette recorder control board connected to said video control board and said audio control board to pass commands to said video cassette recorders and read and write video signals from said video cassette recorders, and further comprising;

(i) a relay for selecting the linear audio track;

(ii) damping circuits in the outputs of the video cassette recorder board selected for the source video cassette recorder;

(iii) a microprocessor.

5,576,845

ENCODING APPARATUS AND METHOD FOR PROCESSING COLOR DATA IN BLOCKS

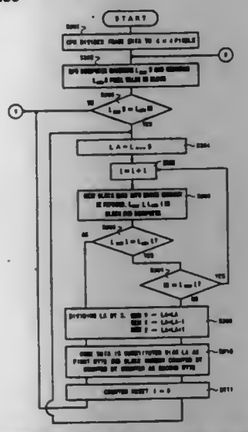
Manabu Komatsu, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed May 19, 1994, Ser. No. 246,086

Claims priority, application Japan, May 19, 1993, 5-141524

Int. Cl.[6] H04N *1/419;1/415*

U.S. Cl. 358—433 **4 Claims**



1. An image encoding apparatus encodes multi-valued image data by dividing the image data into blocks and generating code data for each of the blocks, said image encoding apparatus comprising:

a controller for extracting data having pixel values in each of said blocks,

means for changing composition of said code data according to said data in each block, and

means for switching composition of said code data according to the remainder obtained when a value in a block, which is a portion of said code data, is divided by an integral number.

5,576,846

DOCUMENT PROCESSING APPARATUS

Takahiro Tsukamoto, Hoya; Naohiro Hosokawa, Kawasaki, and Atsushi Nakamura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

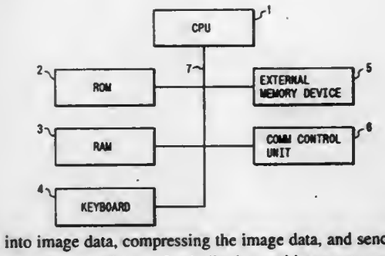
Continuation of Ser. No. 863,450, Apr. 3, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 475,420

Claims priority, application Japan, Apr. 5, 1991, 3-100497; May 31, 1991, 3-128957; May 29, 1991, 3-124346; Jun. 25, 1991, 3-153016; Jun. 25, 1991, 3-153017; Jun. 27, 1991, 3-156503

Int. Cl.[6] G06F *3/00*

U.S. Cl. 358—444 **8 Claims**

1. A document processing apparatus which has a function of creating and editing a document based on predetermined character code data, and also has a function of converting the character code data into image data, compressing the image data, and sending the compressed image data as facsimile data, said apparatus comprising:



an auxiliary memory device for storing document data to be transmitted and document data which has been transmitted; and

control means for discriminating whether the transmitted document data has already been stored in said auxiliary memory device or not, and for controlling an operation of storage of the transmitted document data into said auxiliary memory device in accordance with a discrimination result.

5,576,847

IMAGE PROCESSING SYSTEM

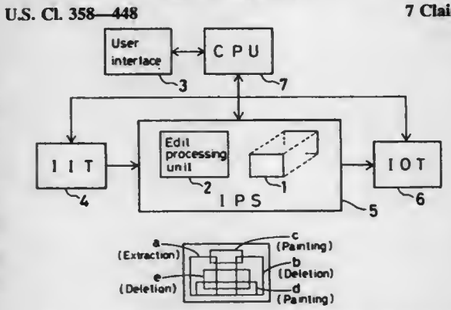
Hiroshi Sekine, Ebina, and Kiyomasa Endo, Tokyo, both of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 882,135, May 13, 1992, abandoned. This application May 11, 1995, Ser. No. 438,989

Claims priority, application Japan, May 14, 1991, 3-107972

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—448 **7 Claims**



1. An image edit processing system for executing edit processing of image data by storing an edit command for each area of an image, comprising:

image input means for inputting said image data;

image processing means, comprising

a plurality of plane memories for storing at least one edit command; and

edit processing means for storing and reading each said edit command to said plane memories based on an edit function and on instructions for designation and execution for each said image area and for executing edit processing of said image data inputted from said image input means;

image output means for outputting said image data processed through edit processing by said image processing means;

user interface means for inputting a designation of each said image area and for inputting a user command including a command for executing edit processing; and

control means for executing the user command in order to designate each of said image areas, whereby:

said plane memories consist of a plurality of plane memories for work and a plurality of plane memories for storing area commands for each designated image area;

said edit processing means stores data for areas other than extracted and deleted areas in a second memory of said plane memories for work, and copies the stored data for said other areas to at least one plane memory for storing said area commands;

data for said extracted area are then stored in the second memory of said plane memories for work, said data for said extracted area are copied to a third memory of said plane memories for work, data to be stored in the first memory of said plane memories for work are presented to the first memory of said plain memories for work, data for said deleted area are stored in the second memory of said plane memories for work, said data for said deleted area are inverted and copied to the first memory of said plane memories for work, said data for said deleted area copied in the first memory of said plane memories for work are copied and combined, with priority on later designation, with said data for said extracted area copied in the third memory of said plane memories for work, and said combined data for said deleted and extracted areas are copied together, with said priority on later designation, to said at least one plane memory for storing area commands where data for areas other than extracted or deleted areas are copied.

5,576,848

IMAGE READING APPARATUS WHICH COMPARES MARGIN WIDTH OUTSIDE IMAGE AREA OF ORIGINAL IMAGE ON SHEET WITH WIDTH OF SEPARATE IMAGE FOR SYNTHESIS AND PRINTING OF IMAGES

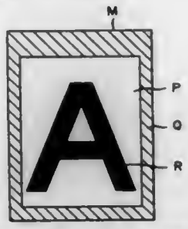
Hideaki Kusano, Isehara, and Hiroshi Miura, Yokohama, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Sep. 27, 1994, Ser. No. 313,565

Claims priority, application Japan, Oct. 12, 1993, 5-254310

Int. Cl.[6] H04N *1/387;393*

U.S. Cl. 358—449 **12 Claims**



1. An image reading apparatus for synthesizing an original image composed of an image area and a non-image area with a separate image and emitting the synthesized image in such a manner as to be printed on a sheet, comprising:

a detector which detects a width of a margin outside the image area appearing as the difference between the sheet and the image area inside the original image when the original image is printed on the sheet;

a comparator which compares a width of the separate image subjected to synthesis with the width of the margin outside the image area detected by said detector; and

a controller which shifts and emitts as an output the position for printing the image area within the original image based on the result of the comparison by said comparator.

5,576,849

IMAGE DATA TRANSFORMATION APPARATUS AND IMAGE ENTRY APPARATUS

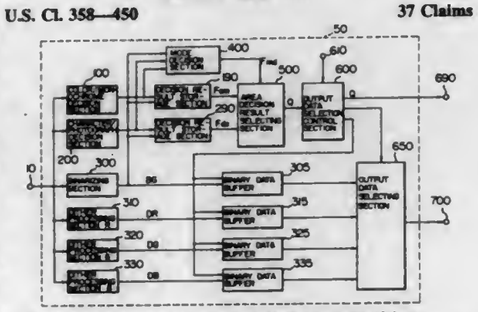
Tatsuya Morakami, Tachikawa; Eiichi Hadano, Kokubunji; Kazuyuki Kodama, Nishitama-gun; Hiromichi Fujisawa, Tokorozawa, and Masaaki Fujinawa, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 890,709, May 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 479,615, Feb. 13, 1990, Pat. No. 5,128,748. This application Mar. 3, 1995, Ser. No. 400,385

Claims priority, application Japan, May 29, 1991, 3-124271

Int. Cl.[6] H04N *1/46*

U.S. Cl. 358—450 **37 Claims**



1. An image data transformation apparatus, comprising:

binarizing means for converting image data inputted thereto into binary image data associated with a plurality of different colors;

binary image data buffer means for temporarily storing therein the binary image data;

monochrome/color decision means for deciding based on the inputted image data whether a monochrome output or a color output is to be produced; and

binary image data selection/output means for reading, for the monochrome output, from said binary image data buffer means, a data item of the binary image data associated with the plural colors and for reading therefrom, converted for the color output, at least two data items of the binary image associated with the plural colors, thereby outputting the attained data;

wherein said monochrome/color decision means makes the decision based on the number of monochrome pixels and the number of color pixels in an overall area or a partial area of a frame of image of the input image data.

5,576,850

IMAGE MEMORY EDITING APPARATUS

Yoshiyasu Takeuchi, Tokyo; Kozi Hatano, Yokohama, both of Japan; Masaki Kiyono, Cheshire, United Kingdom; Ryuji Yasukohchi; Hayashi Ito, both of Tokyo, Japan, and Hiroyuki Ito, Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 58,058, May 7, 1993, abandoned. This application Dec. 8, 1994, Ser. No. 354,743

Claims priority, application Japan, May 11, 1992, 4-117116

Int. Cl.[6] H04N *1/387*

U.S. Cl. 358—452 **11 Claims**

1. An image editing apparatus comprising:

image plane memory means for memorizing an image plane having a designated original size, said image plane occupying a continuous region in said image plane memory;

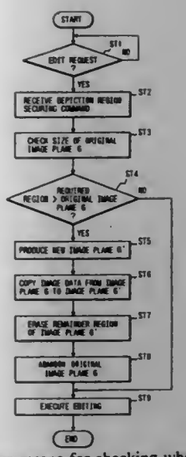


image plane editing means for checking whether the designated original size of the memorized image plane is adequately large to conform with a required editing operation for newly adding an image to said memorized image plane and, when the designated original size of said memorized image plane is determined by said image plane editing means to be inadequate for the required editing operation, for autonomously generating a request for adding to said memorized image plane an additional editing region having a size proportional to a volume of the image to be newly added to said memorized image plane; and

image plane administration means for responding to said request from said image plane editing means and initiating creation of a new image plane, having a new size, larger than said designated original size, by:

adding a new editing region having a designated editing size proportional to the volume of the image to be newly added at a designated position of said memorized image plane without overwriting said memorized image plane, and

then by replacing said memorized image plane having the designated original size by said new image plane having the new, larger, size;

said image plane editing means editing said new editing region added by said image plane administration means for finally creating a renewed image plane having the new, larger, size.

5,576,851

ENCODED SYMBOL READER FOR A TWO-DIMENSIONAL ENCODED SYMBOL

Harumi Aoki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 16, 1995, Ser. No. 404,982

Claims priority, application Japan, Mar. 16, 1994, 6-071578

Int. Cl.[6] G06K *9/18;7/00;9/00*

U.S. Cl. 358—470 **11 Claims**

1. An encoded symbol reader for reading a two-dimensional encoded symbol, said encoded symbol reader comprising:

means for reading an image of said encoded symbol, said reading means outputting an electrical signal corresponding to said read image;

means for generating primary image data based on said output electrical signal;

means for generating secondary image data by compressing said primary image data; and

means for detecting an edge of said image of said encoded symbol by using said secondary image data.

5,576,852

SYNCHRONIZATION SIGNAL GENERATING UNIT OF AN IMAGE FORMING APPARATUS

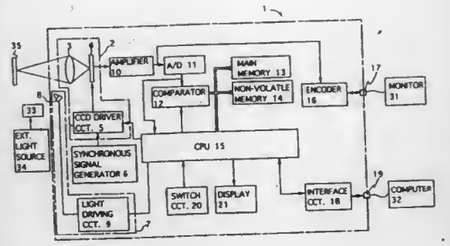
Kouichi Sawada; Yoshiyuki Ichihara, and Jun Nakagawa, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

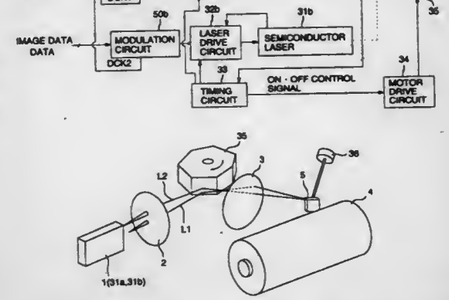
Filed Dec. 30, 1994, Ser. No. 366,906

Claims priority, application Japan, Jan. 14, 1994, 6-002456; Mar. 30, 1994, 6-061343

Int. Cl.[6] H01J *3/14*

U.S. Cl. 358—475 **10 Claims**





1. An image forming apparatus for simultaneously recording plural image lines on a recording medium by scanning simultaneously with plural light beams along parallel scanning lines in a primary scanning direction, comprising:

a plurality of light beam generators, each for generating a light beam having a beam diameter;

a beam power controller for adjusting electric power supplied to each of the light beam generators so that the beam diameter of each light beam is adjusted;

a deviation detector for detecting deviation of the plural light beams in the primary scanning direction; and

a synchronizing circuit for generating a synchronizing signal for each light beam based on the deviation detected by the deviation detector so that each light beam is synchronized with timing of an image recording.

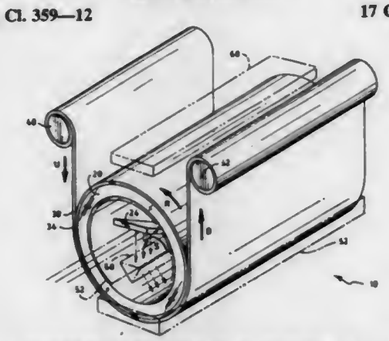
the beam power controller adjusting the electric power supplied to each of the light beam generators so that beam diameters of respective light beams are equal before the deviation detector detects deviation.

5,576,853

APPARATUS AND METHODS FOR MAKING TRANSMISSION HOLOGRAMS

William J. Molteni, Waltham, and Michael M. Wenyon, Boston, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 20, 1994, Ser. No. 360,210
Int. Cl.[6] G03H *1/20*
U.S. Cl. 359—12 17 Claims



1. A holographic imager useful in the production of a transmission hologram on a recording medium, the holographic imager comprising

a radiation source for propagating an irradiating wavefront, the irradiating wavefront effecting the production of transmitted wavefronts where said irradiating wavefront is transmitted through a transmissive master, the transmitted wavefronts combining to form a recordable interference pattern, the interference pattern being holographically representative of the transmissive master;

a cylindrical member continuously rotatable on a longitudinal axis, an area of the cylindrical member configured to substantially transmit said irradiating wavefront, the cylindrical member having the transmissive master in said area, the transmissive master producing said transmitted wavefronts where exposed to said irradiating wavefront;

means for continuously conveying the recording medium onto the cylindrical member in register with the transmissive master; and

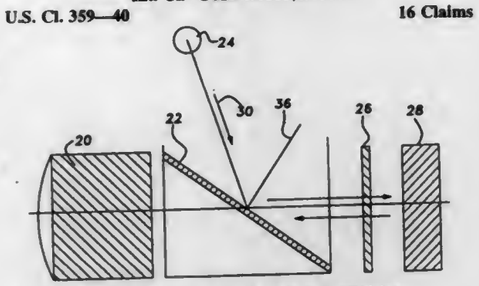
directing means for directing said irradiating wavefront propagated from the radiation source through the transmissive master toward the recording medium in a single predetermined direction as the cylindrical member continuously rotates the directing means configured so that said single predetermined direction is fixedly maintained independent of the rotation of the cylindrical member, the directing means comprising a reflective optical element, the reflective optical element being mounted independently from the cylindrical member, the reflective optical element positioned to reflect the irradiating wavefront propagated from the radiation source through the transmissive master at an angle of incidence appropriate to effect production of said transmitted wavefronts.

5,576,854

LIQUID CRYSTAL LIGHT VALVE PROJECTOR WITH IMPROVED CONTRAST RATIO AND WITH 0.27 WAVELENGTH COMPENSATION FOR BIREFRINGENCE IN THE LIQUID CRYSTAL LIGHT VALVE

Jack H. Schmidt, Carlsbad; Ned Nestorovic, San Diego; Rodney D. Sterling, Carlsbad; Joseph M. Haggerty, Fallbrook; Javier A. Ruiz, Oceanside; Robert Edwards, San Marcos, and Roger Hollister, Torrance, all of Calif., assignors to Hughes-JVC Technology Corporation, Carlsbad, Calif.

Filed Nov. 12, 1993, Ser. No. 152,996
Int. Cl.[6] G02F *1/1335;1/1333*
U.S. Cl. 359—40 16 Claims



1. A polarization based projection system comprising:

an illumination source for providing illumination light,

polarization means disposed adjacent to said illumination means for directing polarized light from said illumination source,

liquid crystal light valve means disposed adjacent to said polarization means for receiving polarized light reflected from said polarization means, said liquid crystal light valve being capable of altering the polarization state of the polarized illumination light reflected from said polarization means,

projection lens for projecting light transferred from said liquid crystal light valve means through said polarization means to said projection lens for projecting an image on a screen,

compensator means disposed between said polarization means and said liquid crystal light valve means for changing the phase angle of the polarized light reflected from said polarization means through said compensator means to said liquid crystal light valve means and back through said compensator means to said polarization means wherein said compensator means has shifted the polarization of said reflected light so that said reflected light has a phase shift in its polarization of approximately 180°; and

wherein said compensator means has a total retardance of greater than 0.25, wherein the additional retardance above 0.25 compensates for birefringence in the liquid crystal light valve means.

5,576,855

LIQUID CRYSTAL DISPLAY HAVING EMBOSSED APPEARING CHARACTERS

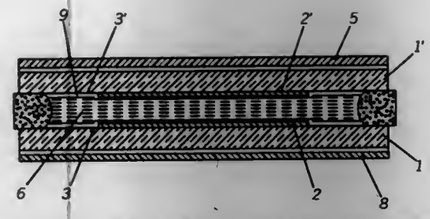
Thomas J. Swirbel, Davie, and Patrick M. Dunn, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 8, 1995, Ser. No. 438,144
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 359—40 14 Claims

1. A transmissive liquid crystal display device with characters having an embossed appearance, comprising:

first and second transparent substrates arranged in parallel fashion, forming a uniform gap between them;

a liquid crystal fluid disposed in the uniform gap, to form an active display area for displaying an embossed character having an appearance of being embossed from a background that appears substantially the same as the character, the character having a border that appears substantially darker than the background;



the liquid crystal display device having a sole polarizer disposed on an exterior face of the first substrate;

birefringent means disposed on an exterior face of the second substrate; and

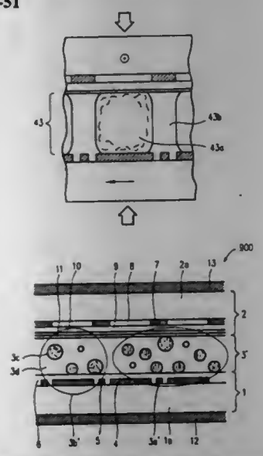
whereby the liquid crystal display device displays the embossed appearing characters using only one polarizer.

5,576,856

LIQUID CRYSTAL DISPLAY DEVICE AND METHOD FOR PRODUCING THE SAME USING PHOTOPOLYMERIZATION WITH LINEARLY POLARIZED LIGHT

Naoko Kawazu, Nara, and Shinji Shimada, Kashihara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 10, 1995, Ser. No. 401,780
Claims priority, application Japan, Mar. 17, 1994, 6-047427
Int. Cl.[6] G02F *1/1333*
U.S. Cl. 359—51 7 Claims



1. A method for producing a liquid crystal display device comprising: a pair of substrates, at least one of which is a flexible film having polarizer properties; and a display medium sandwiched between the pair of substrates,

the method comprising the steps of:

disposing the pair of substrates so as to face each other,

injecting a mixture solution including liquid crystal and photopolymerizing prepolymer into a gap between the pair of substrates, and

phase separating for forming a liquid crystal phase and a polymer phase by applying light to the mixture solution through the flexible film and polymerizing the prepolymer so as to generate a polymer binder,

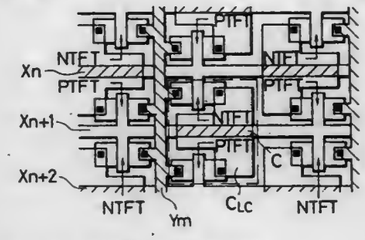
wherein the light used in the step of applying light is linearly polarized ia a direction parallel to a direction of a transmission axis of the flexible film.

5,576,857

ELECTRO-OPTICAL DEVICE WITH TRANSISTORS AND CAPACITORS METHOD OF DRIVING THE SAME

Yasuhiko Takemura, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Filed Mar. 30, 1993, Ser. No. 40,275
Claims priority, application Japan, Apr. 2, 1992, 4-109340; Apr. 17, 1992, 4-124323; Apr. 17, 1992, 4-124325; Apr. 17, 1992, 4-124326
Int. Cl.[6] G02F *1/1343;1/136;* G09G *3/36*
U.S. Cl. 359—59 21 Claims



1. An electro-optical device comprising:

a first gate line;

a first pixel electrode connected with said first gate line through a first transistor;

a second gate line being adjacent to said first gate line and connected with a second pixel electrode through a second transistor;

a data line connected with said first transistor and said second transistor and extending across said first gate line and said second gate line;

a capacitor comprising said first pixel electrode, said second gate line, and an insulator provided between said first pixel electrode and said second gate line;

a third gate line extending in parallel with said first gate line with said second gate line intervening between said first and third gate lines;

a fourth gate line extending in parallel with said first gate line with said third gate line intervening between said second and fourth gate lines,

wherein said first pixel electrode and said second pixel electrode are arranged so that said data line extends therebetween and wherein said first pixel electrode extends substantially from said first gate line to said third gate line and said second pixel electrode extends substantially from said second gate line to said fourth gate line.

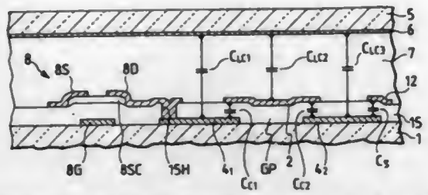
5,576,858

GRAY SCALE LCD CONTROL CAPACITORS FORMED BETWEEN A CONTROL CAPACITOR ELECTRODE ON ONE SIDE OF AN INSULATING LAYER AND TWO SUBPIXEL ELECTRODES ON THE OTHER SIDE

Yasuhiro Ukai, Kobe; Tomihisa Sunata, Miki, and Toshiya Inada, Akashi, all of Japan, assignors to Hosiden Corporation, Osaka, Japan

Continuation of Ser. No. 66,143, Jun. 1, 1993, abandoned.
This application Sep. 27, 1995, Ser. No. 534,885
Claims priority, application Japan, Oct. 14, 1991, 3-264561
Int. Cl.[6] G02F *1/136;1/1343*
U.S. Cl. 359—59 2 Claims

1. A gray-scale liquid crystal display panel comprising first and second transparent substrates disposed in parallel with liquid crystal interposed therebetween, said first substrate having an interior surface on which a plurality of pixels are arranged in a matrix form, a plurality of thin film transistors connected to said pixels,



respectively, source lines connected to sources of said thin film transistors of each column of said matrix to apply thereto a drive voltage and gate lines connected to gates of said thin film transistors of each row of said matrix to apply thereto a gate signal for ON-OFF control thereof, said second substrate being coated all over its interior surface with a transparent common electrode opposite all of said pixels, each of said pixels comprising:

a transparent insulating layer formed on said first substrate;

at least first and second subpixel electrodes formed on one side of said insulating layer, said first and second subpixel electrodes being separated by a gap;

a drain electrode of the thin film transistor corresponding to said each pixel being formed on said insulating layer at the side opposite from said first and second subpixel electrodes and electrically connected directly to said first subpixel electrode through a contact hole made in said insulating layer; and

at least one control capacitor electrode formed on the other side of said insulating layer, covering substantially the entire area of said gap and overlapping said first and second subpixel electrodes across said insulating layer over predetermined areas thereof to form first and second control capacitors, one side of said first control capacitor being connected to said drain electrode, the other side of said first control capacitor being connected to one side of said second capacitor, and the other side of said second control capacitor being connected to said second subpixel electrode.

5,576,859

DEVICE FOR IMPROVING THE CONTRAST OF A LIQUID CRYSTAL SCREEN AND ITS METHOD OF MANUFACTURE THROUGH THE USE OF OPAQUE BANDS

Donald Castleberry, Schenectady, N.Y., assignor to Thomson-LCD, Paris, France

PCT No. PCT/FR92/00944, § 371 Date Aug. 29, 1994, § 102(e) Date Aug. 29, 1994, PCT Pub. No. WO93/07528, PCT Pub. Date Apr. 15, 1993

PCT Filed Oct. 9, 1992, Ser. No. 211,434

Claims priority, application France, Oct. 11, 1991, 91 12586

Int. Cl.[6] G02F *1/1335*

U.S. Cl. 359—67 **19 Claims**

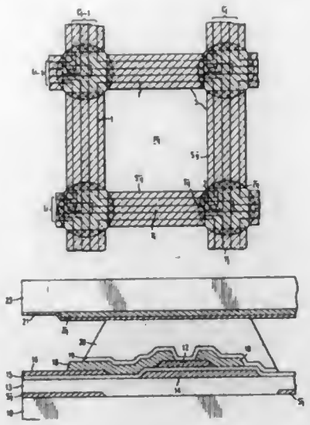
1. A display screen comprising:

a first plate on one face of which are deposited electrodes, thin film components controlling the electrodes and contact lines to which the thin film components are connected;

a back plate comprising a counter-electrode covering a face of the first plate;

a liquid crystal material formed between the first plate and the back plate; and

opaque bands separating the deposited electrodes into lines and columns forming a criss-cross network, and the opaque bands being deposited at least partially on the first plate and partially on the back plate, at least a part of the opaque bands being deposited under the thin film components and the contact lines.



5,576,860

LIQUID CRYSTAL DISPLAY DEVICE IN WHICH THE HEIGHTS OF THE REFLECTION PLATE PROJECTIONS ARE LESS THAN HALF THE THICKNESSES OF THE TWO ALIGNING FILMS TOGETHER

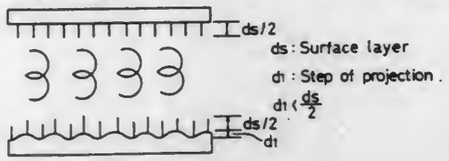
Kozo Nakamura, Kashiba; Seiichi Mitsui, and Naofumi Kimura, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 17, 1993, Ser. No. 111,147

Claims priority, application Japan, Aug. 19, 1992, 4-220438

Int. Cl.[6] G02F *1/1335;1/1337;1/13;* **C09K** *19/60*

U.S. Cl. 359—70 **7 Claims**



Model view in the present invention

1. A liquid crystal display device which uses a phase transition type guest-host mode, the device comprising:

a pair of substrates with at least one substrate being a transparent substrate and having in the following order a transparent electrode and a first aligning film formed thereon, the other substrate located opposite to the transparent substrate with a liquid crystal composition disposed therebetween, said other substrate having in the following order an insulating film, a reflection plate, and a second aligning film formed thereon;

the reflection plate having projections at the surface thereof which is formed through the intermediary of the insulating film having projections at the surface thereof on the substrate;

the aligning films being subjected to a vertical aligning treatment relative to the respective substrates; and

the liquid crystal composition comprising a nematic liquid crystal, a chiral additive and a two-tone pigment;

wherein a helical pitch (P_o) of the liquid crystal composition and the cell thickness (d) of the liquid crystal display device satisfy the relation of $1.5<d/P_o<4$;

wherein a height (d_1) of a projection of the reflection plate and a depth (d_s) of the surface layer formed by adding the thickness of the two aligning films on the pair of the substrates subjected to the aligning treatment satisfy the condition of $d_1<d_s/2$.

5,576,861

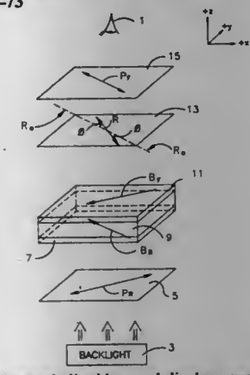
LIQUID CRYSTAL DISPLAY HAVING A RETARDER WITH 100-200NM RETARDATION AND HAVING HIGH CONTRAST VIEWING ZONE CENTERED IN POSITIVE OR NEGATIVE VERTICAL REGION

Adiel Abileah, Farmington Hills, and Gang Xu, Royal Oak, both of Mich., assignors to OIS Optical Imaging Systems, Inc., Northville, Mich.

Continuation-in-part of Ser. No. 167,652, Dec. 15, 1993, and Ser. No. 235,691, Apr. 29, 1994. This application Jun. 8, 1994, Ser. No. 255,971

Int. Cl.[6] G02F *1/1335;1/13*

U.S. Cl. 359—73 **13 Claims**



1. A twisted nematic liquid crystal display capable of displaying an image to a viewer, said display comprising:

a pair of electrodes sandwiching a twisted nematic liquid crystal layer therebetween, said pair of electrodes for applying a voltage across said liquid crystal layer;

first and second orientation means disposed adjacent said liquid crystal layer on opposite sides thereof, said first orientation means defining a first orientation or buffing direction and said second orientation means defining a second orientation or buffing direction, said first and second orientation directions for aligning the liquid crystal molecules of said liquid crystal layer in a predetermined manner;

a positively birefringent uniaxial retardation film having a retardation value "d·Δn" in the range of about 100–200 nm, where "d" is the thickness of said retardation film and "Δn" is its birefringent value, wherein said retardation film is disposed on the same side of said liquid crystal layer as said first orientation means, said retardation film being oriented such that its optical axis is substantially parallel plus or minus about 25° to the second orientation or buffing direction of said second orientation means thereby enabling said liquid crystal display to display to the viewer an image with improved contrast ratios and reduced inversion.

5,576,862

POSITIVE ORIENTATIONS OF LIQUID CRYSTAL MOLECULES IN A MULTI-DOMAIN LIQUID CRYSTAL DISPLAY CELL

Takashi Sugiyama; Yasuo Toko, both of Yokohama; Shunsuke Kobayashi, Tokyo, and Yasufumi Iimura, Asaka, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Jun. 24, 1994, Ser. No. 265,654

Claims priority, application Japan, Jun. 29, 1993, 5-159606; Dec. 24, 1993, 5-326990

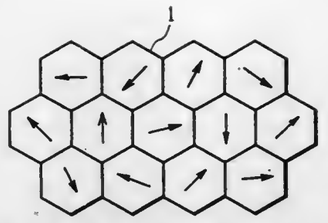
Int. Cl.[6] G02F *1/1337*

U.S. Cl. 359—75 **30 Claims**

1. A liquid crystal display cell comprising:

a pair of transparent substrates,

a layer of liquid crystal molecules sandwiched between said pair of transparent substrates;



means for positively orientating liquid crystal molecules, disposed on at least one of said substrates and having a multiplicity of micro domains with different orientation directions, the orientation direction being uniform in each micro domain; and

orientation directions of said micro domains occur in substantially every direction at substantially equal probability.

5,576,863

GRAY SCALE MULTI DOMAIN LIQUID CRYSTAL DISPLAY PANEL HAVING CAPACITIVE VOLTAGE DIVISION CHARACTERISTICS

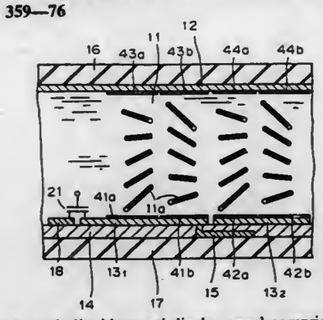
Shigeo Aoki; Yasuhiro Ukai, both of Kobe; Tomihisa Sunata, Miki; Takanobu Nakagawa, and Minori Shibazaki, both of Kobe, all of Japan, assignors to Hosiden Corporation, Osaka, Japan

Filed May 19, 1994, Ser. No. 246,302

Claims priority, application Japan, May 26, 1993, 5-124204

Int. Cl.[6] G02F *1/1343;1/1335;1/1337*

U.S. Cl. 359—76 **16 Claims**



1. A gray scale liquid crystal display panel comprising:

first and second transparent substrates disposed in spaced parallel relationship, each having inner and outer surfaces;

a liquid crystal confined between said first and second transparent substrates;

pixel electrodes arranged on the inner surface of said first transparent substrate in the form of a matrix, each pixel electrode being divided into a plurality of subpixel electrodes;

a thin film transistor provided for each of said pixel electrodes for supplying driving voltage to the pixel electrode;

a common electrode disposed on the inner surface of said second transparent substrate in opposing relation to all of said pixel electrodes;

capacitance type voltage divider means for capacitance-dividing the driving voltage supplied to each of said pixel electrodes and for applying to said plurality of subpixel electrodes respective voltages at ratios different from each other;

first alignment layer means formed on surfaces of said subpixel electrodes, said first alignment layer means including a plurality of alignment layers, the surface of each of said subpixel electrodes having at least one of said plurality of alignment layers formed thereon; and

second alignment layer means formed on a surface of said common electrode, said second alignment layer means including a plurality of alignment layers each opposed to the align-

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ment layers of said first alignment layer means, respectively, said first and second alignment layer means in combination being operative to so orient said liquid crystal that pretilt angles of the liquid crystal in opposed regions adjacent to the surfaces of the subpixel electrodes and the common electrode are different from each other.

5,576,864

CHIRAL SMECTIC LIQUID CRYSTAL DEVICE HAVING FLUORINE-CONTAINING POLYMERIC ALIGNMENT FILM WITH PREDETERMINED REFRACTIVE INDEX ANISOTROPY AFTER RUBBING

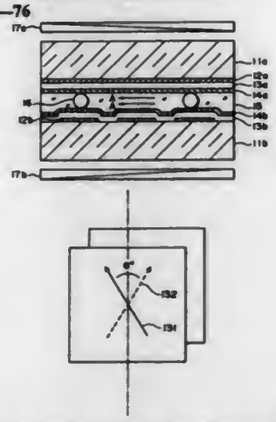
Hideaki Takao, Sagamihara; Masanobu Asaoka, Yokohama, and Makoto Kojima, Hino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 272,846, Jul. 11, 1984, abandoned, which is a division of Ser. No. 180,459, Jan. 12, 1994, Pat. No. 5,400,159, which is a division of Ser. No. 925,200, Aug. 6, 1992, abandoned. This application Apr. 26, 1995, Ser. No. 429,017

Claims priority, application Japan, Aug. 6, 1991, 3-219385; Oct. 30, 1991, 3-310129

Int. Cl.[6] G02F *1/1337;1/141*

U.S. Cl. 359—76 **13 Claims**



1. An electrode plate for a liquid crystal device, comprising: a substrate, and an alignment film formed on the substrate; wherein said alignment film comprises a fluorine-containing polymer having a surface energy of at most 35 dyne/cm before rubbing and has been rubbed to have a refractive index anisotropy of at least 0.02.

5,576,865

PROCESS FOR PRODUCING LIQUID CRYSTAL PANEL INCLUDING REDUCING THE PRESSURE TO NO MORE THAN 25 TORR/MINUTE

Yasuyuki Watanabe, Chigasaki; Kazuya Ishiwata, Yokosuka; Masaaki Suzuki, Yokohama; Noriyuki Nakai, Ayase; Takashi Enomoto, Sagamihara; Naoya Nishida, Hadano; Tatsuo Murata, Isehara; Mutsuo Mitsui, Hachiohji, and Masayuki Shimamune, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 107,081, Aug. 17, 1993, Pat. No. 5,479,284. This application Apr. 26, 1995, Ser. No. 429,042

Claims priority, application Japan, Aug. 19, 1992, 4-241413

Int. Cl.[6] G02F *1/13;1/1341;1/1339*

U.S. Cl. 359—80 **2 Claims**

1. A process for producing a liquid crystal panel, comprising the steps of: applying a pair of substrates to each other with adhesive particles for providing a prescribed gap and a sealing member for enclosing a liquid crystal material disposed therebetween so as to provide a blank panel with an adhesive strength of 10–50 g/mm^2 by the adhesive particles, and injecting a liquid crystal material into the blank panel,

wherein the blank panel before the liquid crystal injection is substantially reduced in pressure at a rate not exceeding 25 torr/min.

5,576,866

LIQUID CRYSTAL DISPLAY HAVING POLYMER WALLS WITH A CHIRAL PITCH AND METHOD FOR PRODUCING THE SAME

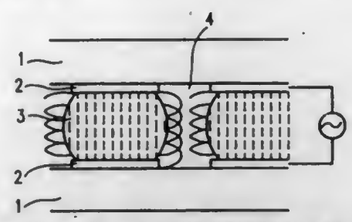
Nobuaki Yamada, Higashiosaka, and Shuichi Kozaki, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 24, 1995, Ser. No. 394,946

Claims priority, application Japan, Mar. 25, 1994, 6-056309

Int. Cl.[6] G02F *1/1339;1/13*

U.S. Cl. 359—81 **15 Claims**



1. A liquid crystal display element comprising walls made from a polymer material and liquid crystal regions in contact with the walls between a pair of substrates, each having electrodes,

wherein the liquid crystal region is in a selective reflection state and a chiral pitch of liquid crystal contained in the liquid crystal regions is longer than a chiral pitch of the walls made from a polymer material.

5,576,867

LIQUID CRYSTAL SWITCHING ELEMENTS HAVING A PARALLEL ELECTRIC FIELD AND β_o WHICH IS NOT 0° OR 90°

Günter Baur, Freiburg; Waltraud Fehrenbach, München; Barbara Weber nee Staudacher, Münchgrund; Friedrich Windscheid, Freiburg-Tiengen, and Rudolf Kiefer, Vorstetten, all of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

Continuation of Ser. No. 363,968, Dec. 23, 1994, abandoned, which is a continuation of Ser. No. 877,187, Aug. 6, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 466,068

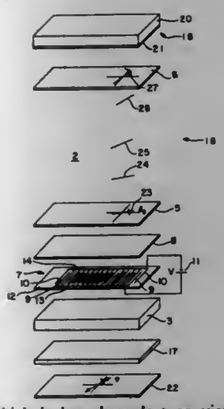
Claims priority, application Germany, Jan. 9, 1990, 40 00 451.1; WIPO, Jan. 9, 1990, PCT/EP91/00022

Int. Cl.[6] G02F *1/1343;1/1337;1/141*

U.S. Cl. 359—87 **127 Claims**

57. In an electro-optical display device comprising a layer of liquid crystal molecules having a surface which provides an image which is switched under control of an electric field predominantly parallel to said surface, the improvement wherein said molecules have an orientation angle β_o which is larger than zero degrees but not larger than 20 degrees in the case of negative dielectric anisotropy or an orientation angle β_o which is not smaller than 70 degrees but less than 90 degrees in the case of positive dielectric anisotropy.

62. In an electro-optical display device comprising a layer of liquid crystal molecules having a surface which provides an image which is switched under control of an electric field predominantly parallel to said surface, the improvement wherein said molecules have an orientation angle β_o whereby said display device has an image contrast which is less dependent on viewing angle than identical display devices which have β_0=0° and β_0=90°, respectively.



5,576,868

LIQUID CRYSTAL DISPLAY HAVING IC DRIVING CIRCUITS FORMED ON FIRST AND SECOND SUBSTRATES

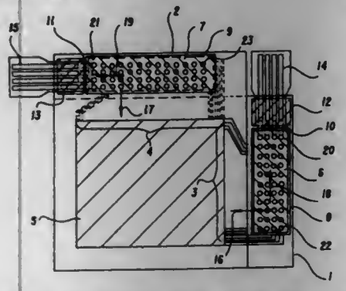
Seigo Togashi, Sakado, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/00458, § 371 Date Dec. 8, 1994, § 102(e) Date Dec. 8, 1994, PCT Pub. No. WO94/24604, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 9, 1993, Ser. No. 338,540

Int. Cl.[6] G02F *1/1343*

U.S. Cl. 359—88 **4 Claims**



1. A liquid crystal display having first and second substrates comprising:

a display portion;

driving electrodes which are connected to the output terminals of first and second driver ICs for accessing said display portion;

IC mounting portions formed on said first and second substrates for mounting said first and second driver ICs, respectively, thereon; and

first and second outward connecting portions for connecting input electrodes which are connected to input terminals of said first and second driver ICs, respectively, to external wirings;

wherein a direction of said outward connecting portion of said each IC mounting portion viewed from said IC mounting portion is arranged substantially perpendicular to that of said display portion viewed from said IC mounting portion, and wherein said first and said second outward connecting portions extend separately from different locations on the first and second substrates, respectively.

5,576,869

LIQUID CRYSTAL DISPLAY APPARATUS INCLUDING AN ELECTRODE WIRING HAVING PADS OF MOLYBDENUM FORMED ON PORTIONS OF INPUT AND OUTPUT WIRING

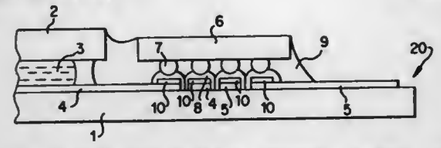
Hirokazu Yoshida, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 100,072, Jul. 29, 1993, Pat. No. 5,500,787, which is a continuation of Ser. No. 897,604, Jun. 10, 1992, abandoned, which is a continuation of Ser. No. 594,301, Oct. 9, 1990, abandoned. This application May 3, 1995, Ser. No. 434,455

Claims priority, application Japan, Oct. 9, 1989, 1-263478

Int. Cl.[6] G02F *1/1343;1/1345*

U.S. Cl. 359—88 **14 Claims**



1. An electrode wiring formed on a substrate of a liquid crystal display panel and adapted for use in a liquid crystal display apparatus, comprising:

an input and output pattern wiring formed on the substrate, the input and output pattern wiring being made of at least one material other than molybdenum; and

pads formed on portions of the input and output pattern wiring, for receiving bumps of an integrated circuit through conductive paste, the pads including molybdenum.

5,576,870

LIQUID CRYSTAL DISPLAY PANEL HAVING A PHASE GRATING FORMED OF LIQUID CRYSTAL MOLECULES

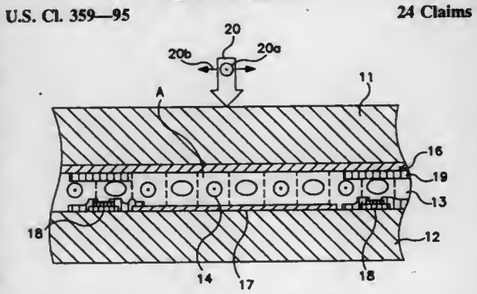
Ohmae Hideki, Suita, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 21, 1994, Ser. No. 230,823

Claims priority, application Japan, Apr. 23, 1993, 5-097588

Int. Cl.[6] G02F *1/13*

U.S. Cl. 359—95 **24 Claims**



1. A projection display apparatus comprising:

a light source;

at least one liquid crystal display panel comprising a first substrate and a second substrate, at least one said substrates being light-transmissive, a respective electrode layer disposed on each of the substrates, the electrode layers confronting each

other, and a liquid crystal layer of liquid crystal molecules interposed between the first and the second substrates, the liquid crystal layer having a first side facing said first substrate and a second side facing said second substrate, the liquid crystal layer defining a plurality of first regions and a plurality of second regions each extending from the first side of the liquid crystal layer to the second side of the liquid crystal layer, each of said second regions being located between two adjacent ones of said first regions and spaced from one another with a regular periodicity, all of the liquid crystal molecules in said first regions being oriented in the same first direction such that all of the liquid crystal molecules that are located between the electrode layers within said first regions are in a homogeneous state of alignment, and all of the liquid crystal molecules in said second regions being oriented in the same second direction, the second direction being different from said first direction, such that all the liquid crystal molecules that are located between the electrode layers within said second regions are in a homogeneous state of alignment;

a first optical part interposed between said light source and said liquid crystal display panel along the optical axis of the apparatus so as to light from said light source to the liquid crystal display panel;

a second optical part disposed downstream from said liquid crystal display panel along the optical axis of the apparatus so as to receive light from the liquid crystal display panel and project the received light; and

a color filter separating light generated by the light source into blue light, green light, and red light, and wherein said at least one liquid crystal display panel comprises liquid crystal display panels optically associated with each of the blue, green and red lights, respectively, and the width of each of the regions of at least one of the liquid crystal display panels is different from width of each of the regions of the other liquid crystal display panels.

5,576,871

METHOD FOR OPTICAL COMMUNICATIONS

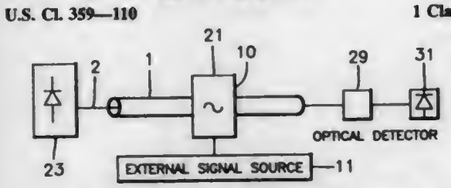
Hijiri Nimura; Akira Fujisaki, and Haruki Ohgoshi, all of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed May 25, 1995, Ser. No. 449,945

Claims priority, application Japan, Jul. 25, 1994, 6-192843

Int. Cl.[6] H04B *10/08*

U.S. Cl. 359—110 **1 Claim**



1. A method for optical telecommunications comprising a step of transmitting an optical signal through an optical path (1) of an optical fiber (2) in a plurality of optical paths (1) laid in the form of a cable from the transmission side, applying an external signal to the optical path (1) to modulate the optical signal being transmitted therethrough for the plane of polarization and receiving the optical signal at the receiving side to determine the presence or absence of a modulated optical signal, characterized in that the optical signal is modulated by continuous pulses (a) at the transmitting side and a predetermined number (n) of pulses (a) are extracted within a given period of time in synchronism at the receiving side so that the presence of a modulated optical signal is acknowledged only when (m) or more than (m) pulses (a) are received within a set period of time (n≧m), and further characterized in that the absence of a modulated optical signal is acknowledged even when the above defined number of pulses (a) are received within a set period of time if k or more than k (k≧1) noise signals (b) are found between any successive two of the received pulses (a).

5,576,872

OPTICAL DISTRIBUTION DEVICE, OPTICAL DISTRIBUTION CIRCUIT, AND SYNTHESIZING METHOD OF DISTRIBUTION CIRCUITS

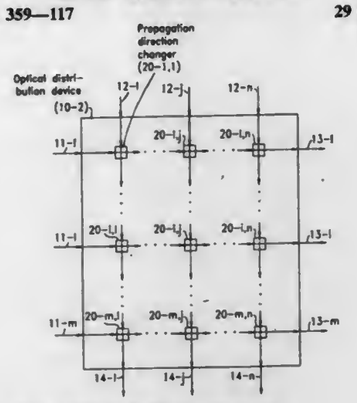
Shigeki Kitajima, and Toshio Kirihara, both of Kokubunji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 9, 1994, Ser. No. 209,751

Claims priority, application Japan, Mar. 9, 1993, 5-047729

Int. Cl.[6] H04J *14/00*; G02B *6/26*

U.S. Cl. 359—117 **29 Claims**



1. An optical distribution device comprising:

one or more (m) first optical paths;

one or more (n) second optical paths;

one or more (m×n) light power dividing and propagation direction changing means interconnecting said first and second optical paths and being arranged in a matrix form of (m×n), each of said light power dividing and propagation direction changing means having a first optical path input for connection to one of said first optical paths, a first optical path output for connection to said one of said first optical paths, a second optical path input for connection to one of said second optical paths and a second optical path output for connection to said one of said second optical paths, wherein

photosignals inputted to one of said first optical paths are sent to (n) of said light power dividing and propagation direction changing means which are arranged along said one of the first optical paths, and

each of said light power dividing and propagation direction changing means operates in a non-separation mode and a separation mode such that (i) in the non-separation mode, photosignals presented at the first optical path input are allowed only to pass to the first optical path output and photosignals presented at the second optical path input are allowed only to pass to the second optical path output, and (ii) in the separation mode, the photosignals presented at the first optical path input are allowed to pass to the first optical path output and are also separated and passed to the second optical path output.

5,576,873

TELECOMMUNICATIONS SWITCH ARCHITECTURE

William A. Crossland; Robert W. Scarr, both of Essex; Martin J. Birch, Middlesex, and Adrian P. Sparks, Essex, all of United Kingdom, assignors to Northern Telecom Limited, Montreal, Canada

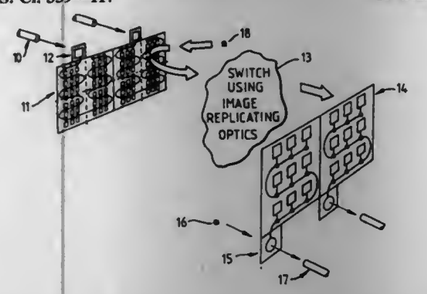
PCT No. PCT/GB93/01584, § 371 Date May 3, 1995, § 102(e) Date May 3, 1995, PCT Pub. No. WO94/04007, PCT Pub. Date Feb. 17, 1994

PCT Filed Jul. 27, 1993, Ser. No. 379,515

Claims priority, application United Kingdom, Aug. 1, 1992, 9216412

Int. Cl.[6] H04J *14/00*

U.S. Cl. 359—117 **19 Claims**



1. A switching architecture, including a plurality of incoming links and a plurality of outgoing links, and switch means for switching data between the incoming and outgoing links, which data is in serial form on said incoming links, the architecture further including means for convening said serial data into parallel form and comprising; for each incoming link, address decode and memory write means; one or more input memory blocks in which said data is stored at specific addresses; means for replicating the data whereby all incoming data are available for all or selected outgoing links, said converting, storing and replicating means being interconnected whereby the storage occurs before the replication or concurrently therewith and the replication occurs when the data is in serial or parallel form; means for each replication, for transferring data from one of said memory blocks to the appropriate one of said outgoing links, which transfer means is arranged either to read directly from the relevant address in said input memory blocks or to transfer the content of all or part of said input memory blocks simultaneously en bloc and in parallel to a plurality of output memory blocks, each associated with a respective outgoing link; and means for each outgoing link for taking the incoming data intended therefor and reading that data out in serial form, wherein there is a respective source memory for each incoming link, the decoded address information being stored in a respective area of the source memory, each of which source memories comprises a said input memory block, wherein means are provided to convert the source memory content to optical form and the replicating means comprises optical replicating means for acting on said optical form of the source memory content, there being a respective destination memory for each said outgoing link, each of which destination memories comprises a said output memory block, a respective read-out means being connected to each said destination memory, each outgoing link being connected to a respective read-out means and the read-out means serving only to read out the memory content intended for that outgoing link as determined from said stored address information, and including central or distributed control means controlling the operation of the address decode and memory write means, the source memories, the destination memories and the read-out means.

5,576,874

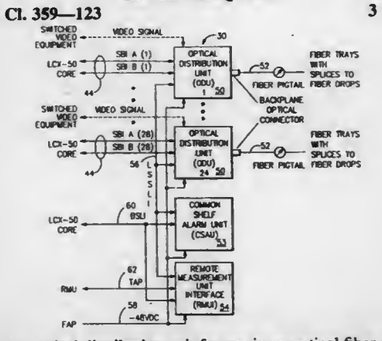
OPTICAL DISTRIBUTION SHELF FOR A REMOTE TERMINAL OF AN OPTICAL FIBER TELECOMMUNICATIONS NETWORK

Richard M. Czerwiec; Joseph E. Sutherland, both of Raleigh; Marlin V. Simmering, Wendell; Andrew L. Withers, and Robert S. Kroninger, both of Raleigh, all of N.C., assignors to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Jul. 31, 1991, Ser. No. 738,315

Int. Cl.[6] H04Q *14/00*

U.S. Cl. 359—123 **3 Claims**



1. An optical distribution unit for use in an optical fiber communications network, said optical distribution unit comprising:

means for receiving an electrical TDM baseband telephony signal comprising a plurality of channels;

means for receiving broadband video channels;

means for frequency division multiplexing the broadband video channels with the baseband signals; and

means for providing an optical output corresponding to said frequency division multiplexed video channels and the baseband signals.

5,576,875

TELECOMMUNICATIONS NETWORK ORGANIZED IN RECONFIGURABLE WAVELENGTH-DIVISION-MULTIPLEXED OPTICAL LOOPS

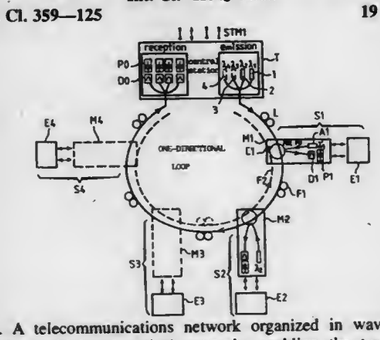
Mouhammad J. Chawki; Valérie Tholey, both of Lannion, and Ivan Le Gac, Perros Guirec, all of France, assignors to France Telecom, Paris, France

Filed Apr. 10, 1995, Ser. No. 419,019

Claims priority, application France, Apr. 13, 1994, 94 04394

Int. Cl.[6] H04J *14/02*

U.S. Cl. 359—125 **19 Claims**



1. A telecommunications network organized in wavelength-division-multiplexed optical networks enabling the transfer of information elements, comprising:

an optical loop;

a plurality of stations disposed at points along the optical loop, each station including

a tunable optical frequency reception device, the tunable reception device being tuned to a reception frequency,

an optical transmission device, the optical transmission device being tuned to a transmission frequency which is different than the reception frequency of the same station,

and wherein the tunable optical receivers of at least two stations are tuned as a function of the density traffic between the plurality of stations, the tunable optical receivers of the at least two stations being tuned to the same reception frequency and the at least two stations sharing data elements of a same frame, and the at least two stations being low traffic stations based on the density of the traffic to the at least two stations.

5,576,876

OPTICAL REGENERATOR AND AN OPTICAL TRANSMISSION SYSTEM

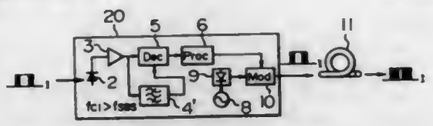
Ryoji Takeyari, Koganei; Takashi Funada, Yokosuka; Yukihiko Wakai, and Kazuo Hagimoto, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan

Filed Feb. 7, 1995, Ser. No. 384,838

Claims priority, application Japan, Feb. 7, 1994, 6-013307

Int. Cl.[6] H04B *10/16*

U.S. Cl. 359—176 **22 Claims**



1. An optical regeneration repeater comprising:

means for receiving an optical signal from a different optical regeneration repeater or transmitter, said means regenerating data from a received said optical signal;

means for generating a transmission optical carrier having an uncontinuous phase in such a manner so as to suppress a stimulated Brillouin scattering;

means for modulating said transmission optical carrier on a basis of the data regenerated by said means for receiving;

means for transmitting said modulated optical signal;

first clock extraction means for recovering a first clock from said optical signal, said first clock incorporating a jitter; and

second clock extraction means for generating from said optical signal a second clock for giving a timing for said transmission optical carrier, said second clock not incorporating said jitter.

5,576,877

AUTOMATED SYSTEM, AND CORRESPONDING METHOD, FOR MEASURING RECEIVER SIGNAL DETECT THRESHOLD VALUES OF ELECTRO-OPTIC MODULES

Nancy R. Aulet, Austin, Tex.; Muhammed I. Hussain, Hopewell Junction, N.Y.; George W. Hutt, Hyde Park, N.Y.; David C. Bogdan, Vestal, N.Y.; Donald L. Pearl, Endwell, N.Y., and David T. Pribula, Port Crane, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

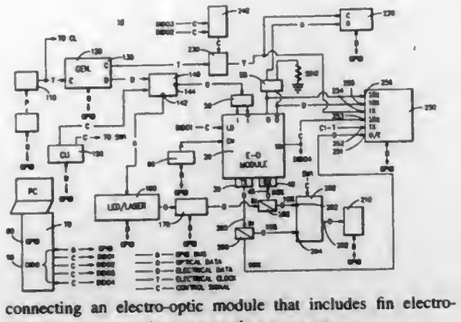
Division of Ser. No. 13,460, Feb. 4, 1993. This application May 23, 1995, Ser. No. 448,065

Int. Cl.[6] H04B *10/08*

U.S. Cl. 359—189 **10 Claims**

1. A method for testing an electro-optic module which includes an electro-optic receiver, comprising the steps of:

providing an automated test system for testing electro-optic modules that include electro-optic receivers;



connecting an electro-optic module that includes fin electro-optic receiver to the automated test system;

automatically measuring a receiver signal detect threshold associated with said electro-optic receiver and said module, wherein the electro-optic receiver receives from the automated test system a digital optical signal having square wave pulses and produces corresponding electrical pulses and produces a voltage signal that indicates when an input signal to the electro-optic receiver is below a receiver signal detect threshold level, such that the receiver signal detect threshold is measured by reducing power of the digital optical signal to the electro-optic receiver until the receiver signal detect threshold voltage signal is produced by the electro-optic receiver.

5,576,878

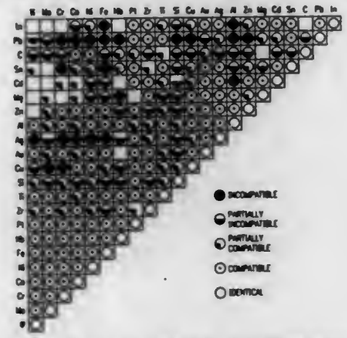
USE OF INCOMPATIBLE MATERIALS TO ELIMINATE STICKING OF MICRO-MECHANICAL DEVICES

Steven A. Henck, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 30, 1994, Ser. No. 220,429

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—224 **6 Claims**



1. A method of preventing adhesion of contacting elements of a micro-mechanical device, comprising the steps of:

selecting two solid materials that are incompatible, as evidenced by a low solubility of the higher melting point material in the lower melting point material, and said two materials being capable of forming intermetallic compounds being tantalum and titanium;

manufacturing one of said contacting surfaces with one of such materials; and

manufacturing the other of said contacting surfaces with the other of said materials.

5,576,879

COMPOSITE OPTICAL MODULATOR

Keiichi Nashimoto, Minami Ashigara, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1994, Ser. No. 325,570

Claims priority, application Japan, Jan. 14, 1994, 6-014968

Int. Cl.[6] G02F *1/03*

U.S. Cl. 359—248 **12 Claims**



1. A composite optical modulator comprising:

a semiconductor substrate;

a semiconductor laser device having an active layer formed on a first region of said semiconductor substrate;

an epitaxial or oriented ferroelectric layer formed on a second region of said semiconductor substrate; and

a buffer layer provided at an interface between said semiconductor substrate and said ferroelectric layer for controlling the epitaxial growth or orientation of said ferroelectric layer,

a laser beam emitted from said active layer being coupled to said ferroelectric layer.

5,576,880

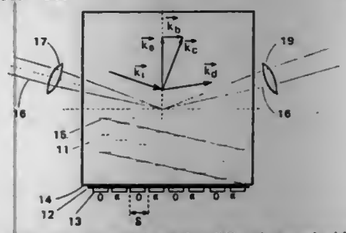
ACOUSTO-OPTIC BRAGG CELL

I-Cheng Chang, Sunnyvale, Calif., assignor to Aurora Photonics, Inc., Santa Clara, Calif.

Filed Mar. 31, 1994, Ser. No. 220,746

Int. Cl.[6] G02F *1/33*

U.S. Cl. 359—305 **11 Claims**



1. An acousto-optic modulator for diffracting an incident light beam having an incident wavevector k_i and a first polarization to a diffracted light beam having a diffracted wavevector k_d and a second polarization that is orthogonal to the first polarization, said modulator comprising:

a) an optically birefringent medium;

b) means for focusing and passing said incident light beam through said optically birefringent medium; and

c) an acoustical phased array comprising a plurality of acoustic transducers where each of said transducers excites an acoustic wave with a wave vector k_a, said plurality of transducers having proper relative phases forms a phased array with an array vector k_b, and superposition of all the acoustic waves from said phased array generates a spatially modulated acoustic wave with a resultant wave vector k_c being equal to the vector sum of said acoustic wave vectors k_a and array vector k_b, and where the direction of said resultant wave vector k_c is selected such that the tangents to the locus of the incident wave vector k_i and the locus of the diffracted wave vector k_d are substantially parallel.

5,576,881

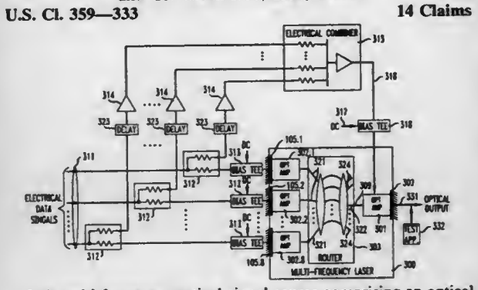
MULTI-FREQUENCY OPTICAL SIGNAL SOURCE HAVING REDUCED DISTORTION AND CROSSTALK

Christopher R. Doerr, Atlantic Highlands; Charles H. Joyner, and Martin Zirngibl, both of Middletown, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 29, 1995, Ser. No. 521,100

Int. Cl.[6] H01S *3/00;* **H04J** *14/08*

U.S. Cl. 359—333 **14 Claims**



1. A multi-frequency optical signal source comprising an optical output amplifier, an optical combiner having a plurality of inputs and an output connected to the optical output amplifier, and a plurality of input optical sources, each connected to a respective one of the plurality of inputs of the optical combiner, the multi-frequency optical signal source further comprising

a plurality of power splitters, each connected to obtain a portion of an electrical data signal used to modulate a different one of the plurality of input optical sources,

a plurality of delay means, each connected to an output of a different power splitter, each delay means providing a different predetermined signal delay, and

electrical signal combiner having a plurality of inputs, each input connected to a different output of the respective delay means, for combining a portion of the modulation signal received from the connected delay means to form a combined electrical signal at an output of the combining means, the output of the electrical signal combiner providing a biasing signal to optical output amplifier.

5,576,882

ENDOSCOPE

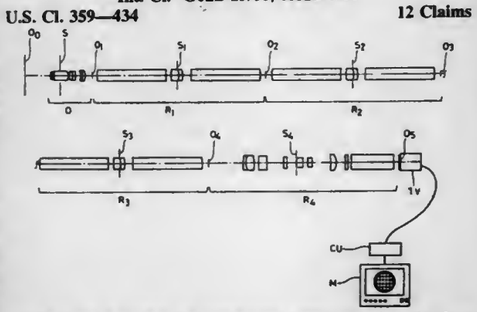
Iwao Kanamori, Kanagawa-ken, Japan, assignor to Olympus Optical Co., Ltd., Tokyo-to, Japan

Filed Apr. 7, 1993, Ser. No. 44,380

Claims priority, application Japan, Apr. 8, 1992, 4-114305

Int. Cl.[6] G02B *23/00;* **A61B** *1/00*

U.S. Cl. 359—434 **12 Claims**



1. An optical system for endoscopes comprising, in order from the object side:

an objective lens; and

n image relaying lenses for relaying an image formed by said objective lens;

said objective lens and said image relaying lenses being disposed on a common optical axis;

said optical system comprising, in an (n−1)th one of said image relaying lenses, means for producing positive distortion cancelling negative distortion produced by said objective lens, said means for producing positive distortion being an aspherical surface and satisfying at least one of the following conditions (2) and (3):

(2) $|AS_{n-1}|L_{n-1}<0.3$

(3) $|AS_{n-1}|'L_{n-1}<0.65$

wherein said reference symbol AS_{n-1} represents a distance as measured from an image formed by an (n−2)th one of said image relaying lenses to said aspherical surface when said aspherical surface is located on an incidence side of a pupil of said (n− 1)th one of said image relaying lenses, said reference symbol AS_{n-1}' designates a distance as measured from an image formed by said (n−1)th one of said image relaying lenses to said aspherical surface when said aspherical surface is located on an emergence side of said pupil of said (n−1)th one of said image relaying lenses, said reference symbol L_{n-1} denotes a distance defined by said image formed by said (n−2)th one of said image relaying lenses and said image formed by said (n−1)th one of said image relaying lenses, and n is greater than 2.

5,576,883

SPECTRAL POLARISATION SEPARATOR

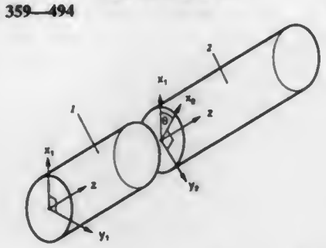
Paul R. Morkel, London; Stephen R. Desbruslais, Kent, and Nigel H. Taylor, London, all of United Kingdom, assignors to Northern Telecom Limited, Montreal, Canada

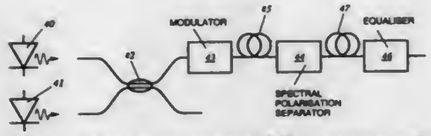
Filed Jan. 13, 1995, Ser. No. 372,150

Claims priority, application United Kingdom, Feb. 26, 1994, 9403740

Int. Cl.[6] G02B *5/30*

U.S. Cl. 359—494 **15 Claims**





1. A spectral polarisation separator (SPS) comprising, optically in series between first and second ends thereof, a plurality of birefringent elements having differential delays not all of the same magnitude, and principal axes orientations not all of the same orientation, which elements are arranged to have relative differential delays and relative principal axes orientations selected to provide the SPS, for a light of a first wavelength and for light of a second wavelength different from the first wavelength, with a first property, the property that light of either of a two orthogonally related polarisation states launched into said first end of the SPS will propagate through to the other end with a single transit time, and to provide the SPS with the second property, the property that, for light of said first and second wavelengths launched into said first end of the SPS with a particular one of said two orthogonally related polarisation states, said light of said first and second wavelengths emerges from said second end of the SPS with emergent polarisation states that are orthogonally related.

5,576,884

BASE BODY OF REFLECTING MIRROR AND METHOD FOR PREPARING THE SAME

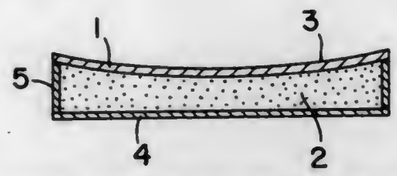
Yoshiaki Ise; Hiroyuki Miyazawa, both of Takefu; Hiroyuki Kimura, Fukui; Shinichi Okoshi, Takefu; Tatsumasa Nakamura, Omiya, and Toshiyuki Kato, Kooriyama, all of Japan, assignors to Shin-Etsu Quartz Co., Ltd., Tokyo, Japan

Division of Ser. No. 775,095, Oct. 11, 1991. This application Jun. 2, 1995, Ser. No. 458,672

Claims priority, application Japan, Mar. 30, 1991, 3-93212; May 30, 1991, 3-155593

Int. Cl.[6] G02B *5/08;7/182;* **C03B** *23/20;23/00*

U.S. Cl. 359—514 **1 Claim**



1. A method for the preparation of a base body of a reflecting mirror comprising (A) a front plate having an optically flat or curved surface made from transparent-fused quartz glass or high-silica glass, (B) a porous foamed body of fused quartz glass or high-silica glass bonded to the surface of the front plate opposite to the optically flat or curved surface, (C) a rear plate made from fused quartz glass or high-silica glass bonded to the surface of the porous foamed body opposite to the front plate and (D) a reinforcing side layer of fused quartz glass or high-silica glass bonded to the side surface of the porous foamed body, which method comprises the steps of:

(a) sandwiching said porous foamed body of fused quartz glass or high-silica glass with two plates of fused quartz glass or high-silica glass to serve, one, as the front plate and, the other, as the rear plate with an interposed layer of a finely divided silica powder between the front plate and the porous foamed body and between the rear plate and the porous foamed body;

(b) surrounding the porous foamed body with a hoop of fused quartz glass or high-silica glass keeping a gap between the hoop and the side surface of the porous foamed body;

(c) filling the gap between the hoop and the side surface of the porous foamed body with a finely divided silica powder; and

(d) heating the assemblage of the front plate, porous foamed body, rear plate and hoop with the interposed layers of a finely divided silica powder at a temperature higher than the softening point of the silica powder so as to integrate the front plate and rear plate and hoop with the porous foamed body.

5,576,885

HEATABLE MIRROR INCLUDING A NON-METALLIC REFLECTING COATING ON A GLASS SUBSTATE

Martin Lowe, and Timothy Jenkinson, both of Manchester, United Kingdom, assignors to Pilington Glass Limited, United Kingdom

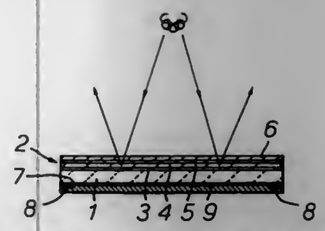
Filed Jan. 9, 1995, Ser. No. 370,410

Claims priority, application United Kingdom, Jan. 10, 1994, 9400323

Int. Cl.[6] H05B *3/20;* **G02B** *5/28;1/10*

U.S. Cl. 359—585 **8 Claims**

1. A heatable mirror comprising a glass substrate carrying a non-metallic reflecting coating comprising a reflecting layer and at least two reflection enhancing layers, the reflection enhancing layers comprising an intermediate layer of the coating of relatively low refractive index and a layer adjacent to the intermediate layer of relatively high refractive index, the two layers other than the intermediate layer being outer and inner layers of the coating each having a refractive index of at least 1.6, the intermediate layer having a refractive index less than the refractive index of either said inner layer or said outer layer and less than 3, at least one of



said inner and outer layers being of silicon, the aggregate refractive index of the inner and outer layers being at least 5.5, and the thickness of the layers being such that the mirror has a visible light reflection in the range 70% to 90%, and an electroconductive heating layer deposited on the coated substrate.

5,576,886

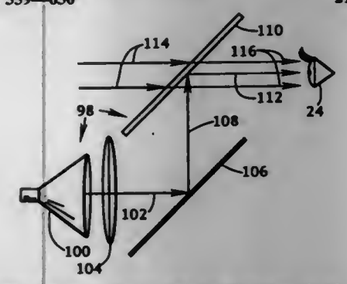
HUD WITH A SPECTRAL CONTOUR DIELECTRIC COMBINER

Ronald A. Ferrante, St. Charles, Mo., assignor to McDonnell Douglas Corp., St. Louis, Mo.

Filed Aug. 8, 1994, Ser. No. 287,613

Int. Cl.[6] G02B *27/14*

U.S. Cl. 359—630 **21 Claims**



1. A head-up display system that superimposes visual data on a background scene including:

a CRT for producing visual data as a light output, said CRT having:

an output light spectrum of frequencies with a plurality of peaks of shaped intensity so that most of the light output thereof is at frequencies within said plurality of peaks of shaped intensity; and

a combiner having:

a transparent substrate; and

a contoured spectrum reflector on said substrate that produces reflectance in a frequency band that includes the frequencies of at least one of said peaks of shaped intensity of said output light spectrum, said contoured spectrum combiner including:

a plurality of first dielectric layers each having:

a refractive index in a first range; and

a thickness near the quarter wavelength of a frequency in said CRT output light spectrum; and

a plurality of second dielectric layers each having:

a refractive index in a second range lower than said first range; and

a thickness near the quarter wavelength of a frequency in said CRT output light spectrum, said contoured spectrum reflector having said second dielectric layers interleaved with said first dielectric layers, said combiner being positioned and angled with respect to the background scene and said light output of said CRT to superimpose visual data at frequencies at at least one of said peaks of shaped intensity on the background scene.

171–488 O.G.–96–21: QL3

5,576,887

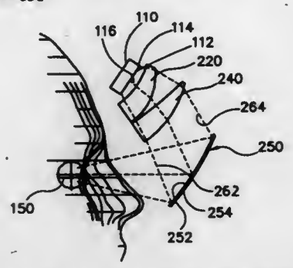
HEAD GEAR DISPLAY SYSTEM USING OFF-AXIS IMAGE SOURCES

Frank J. Ferrin, Plymouth, and Justin G. Droessler, Fridley, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 22, 1995, Ser. No. 493,780

Int. Cl.[6] G02B *27/14;* **G09G** *5/00*

U.S. Cl. 359—631 **8 Claims**



1. A head gear display system, intended to be mounted to head gear, for projecting visual information toward the eye of the wearer of said head gear display system, the head gear display system comprising:

a toricly shaped reflective surface spatially located between the eye of the wearer of the head gear display system and an external scene, said toricly shaped reflective surface having a central optical axis associated therewith;

display source means for generating a visual image to provide visual information at a display surface, and where associated with said display surface is an image plane and a central image reference axis perpendicular to said image plane;

first and second lenses spatially positioned such that said visual image passes successively through said first and second lenses and impinges on said toricly shaped reflective surface, said first and second lenses each having a central axis associated therewith and arranged such that said central axis of said first lens is aligned with said central lens axis of said second lens, and said central axis of said first and second lenses are tilted and decentered relative to said central image reference axis; and

said toricly shaped reflective surface is partially reflective and partially transmissive, and is spatially oriented such that said central axis associated therewith is tilted and decentered relative to said central axes of said first and second lenses, and said toricly shaped reflective surface is configured to reflect, at least in part, said impinging visual image, thereon, toward the eye of the wearer of said head gear display system.

5,576,888

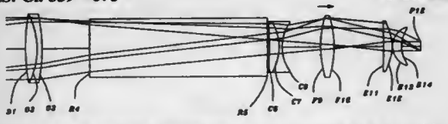
WIDE ANGLE BINOCULAR SYSTEM WITH VARIABLE POWER CAPABILITY

Ellis I. Betensky, Redding, Conn., assignor to BenOpcon, Inc., Cincinnati, Ohio

Continuation of Ser. No. 336,783, Nov. 9, 1994, abandoned, which is a division of Ser. No. 28,413, Mar. 9, 1993, Pat. No. 5,371,626. This application Dec. 1, 1995, Ser. No. 566,321

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—676 **8 Claims**



1. An optical system for imaging an object comprising a positive first lens unit for forming an intermediate image of the object, a fixed negative second lens unit positioned before the intermediate image, a positive third lens unit in the vicinity of the intermediate

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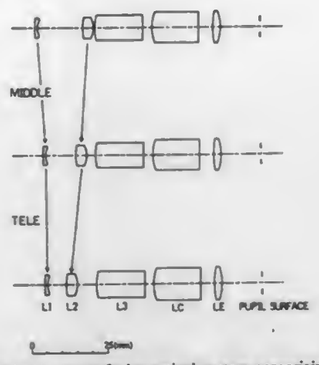
image, and a positive fourth lens unit positioned after the intermediate image, said positive fourth lens unit including only positive lens elements, said optical system having an aided static semi field of view in image space of at least about 30°.

5,576,889

REAL-IMAGE ZOOM FINDER OPTICAL SYSTEM

Kyoichi Miyazaki, Sennan, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Nov. 29, 1994, Ser. No. 346,574
Claims priority, application Japan, Dec. 1, 1993, 5-301986
Int. Cl.[6] G02B *15/14*; G03B *13/08*
U.S. Cl. 359—686 12 Claims



1. A real-image zoom finder optical system comprising, from an object side, an objective lens system of a positive refractive power and an eyepiece system of a positive refractive power, said objective lens system including, along an optical axis, from the object side, a first lens unit of a negative refractive power, a second lens unit of a positive refractive power and a third lens unit of a positive refractive power, zooming being performed by moving the first and second lens units along the optical axis,

wherein each of the first and second lens units comprises a single lens including at least one aspherical surface and wherein the third lens unit includes a lens prism which has at least one reflecting surface and at least an incident surface which is an aspherical surface, wherein said aspherical surface used as the incident surface of the lens prism has a curvature increasing from a center to an edge along a height traverse to the optical axis.

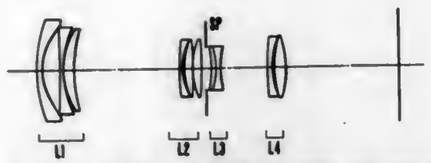
5,576,890

ZOOM LENS

Tsunefumi Tanaka, Kanagawa-ken; Hideki Ogawa, Tokyo, and Hiroshi Endo, Kanagawa-ken, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 22,156, Feb. 23, 1993, abandoned.
This application May 15, 1995, Ser. No. 440,980
Claims priority, application Japan, Feb. 28, 1992, 4-078433; May 11, 1992, 4-144746
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—686 4 Claims

1. A zoom lens comprising at least, from an object side to an image side, first lens unit of negative refractive power, a second lens unit of positive refractive power, a third lens unit of negative refractive power and a fourth lens unit of positive refractive power zooming from a wide-angle end to a telephoto end being performed by moving at least said first, second and fourth lens units in such a way that an air separation between said first and second lens units decreases, an air separation between said second and third



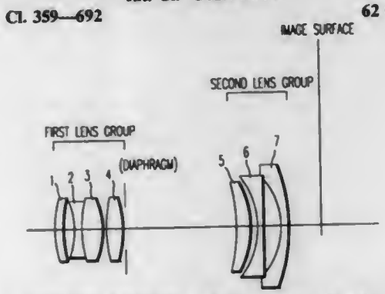
lens units increases and an air separation between said third and fourth lens units decreases, said first lens unit consisting of a negative lens having a meniscus shape having a concave surface facing the image side, a negative lens and a positive lens having a meniscus shape having a convex surface facing the object side, said third lens unit having a positive lens and a negative lens and said fourth lens unit consisting of a negative lens and a positive lens, and having an aspheric surface.

5,576,891

ZOOM LENS USING A FIRST LENS GROUP HAVING A POSITIVE FOCAL LENGTH AND A SECOND LENS GROUP HAVING A NEGATIVE FOCAL LENGTH

Kazuyasu Ohashi, Funabashi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 21, 1994, Ser. No. 230,920
Claims priority, application Japan, Apr. 22, 1993, 5-096235; Apr. 30, 1993, 5-104426; Dec. 3, 1993, 5-304420
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—692 62 Claims



1. A zoom lens which has a first lens group having a positive focal length disposed at the front (toward an object) and has a second lens group having a negative focal length disposed at the back (toward an image), and in which a variable power is obtained by changing the distance between the first lens group and the second lens group,

wherein the first lens group comprises a first lens embodied by a positive meniscus lens whose convex surface faces the object, a second lens embodied by a biconcave lens, a third lens embodied by a biconvex lens and a fourth lens embodied by a biconvex lens, the lenses being arranged in the stated order when viewed from the object side,

the second lens group comprises a fifth lens embodied by a positive meniscus lens whose convex surface faces the image, a sixth lens embodied by a negative lens and a seventh lens embodied by a negative meniscus lens whose convex surface faces the image, the lenses being arranged in the stated order when viewed from the object side, and

providing, when the first and second lens groups are in an arrangement characterized by the longest focal length, that the focal length of the whole system is f_T, that the focal length of the first lens group is f_1, that the focal length of the second lens group is f_2, and that the distance between the first lens group and the second lens group is d_a+d_{aT}, the following conditions are satisfied,

$$0.27<f_1/f_T<0.31 \quad (1)$$

$$(d_a+d_{aT})/f_T<0.035 \quad (2)$$

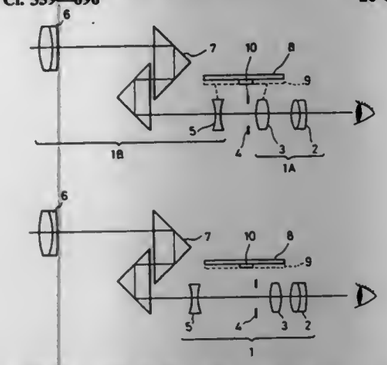
$$-1.1<f_2/f_1<-0.9 \quad (3).$$

5,576,892

VARIABLE POWER OPTICAL SYSTEM

Keiichi Hotta; Ryota Ogawa, both of Tokyo, and Hiroyuki Kato, Nagano-ken, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 987,996, Dec. 9, 1992, abandoned, which is a continuation of Ser. No. 766,333, Sep. 27, 1991, abandoned, which is a continuation of Ser. No. 635,936, Dec. 28, 1990, Pat. No. 5,140,467. This application Dec. 27, 1994, Ser. No. 364,014
Claims priority, application Japan, Dec. 29, 1989, 1-151247; Oct. 9, 1990, 2-271196; Nov. 8, 1990, 2-117847 U; Nov. 30, 1990, 2-128640 U; Dec. 27, 1990, 2-407088 U
Int. Cl.[6] G02B *15/14;23/00*
U.S. Cl. 359—696 20 Claims



1. A variable power optical system comprising:

an objective optical system which is located closer to an object than a field ring defining a field frame; and

an ocular optical system which is located closer to an eye than the field ring, said ocular optical system comprising an optical system whereby rays from an image point of said objective optical system transmitted through the ocular optical system are parallel;

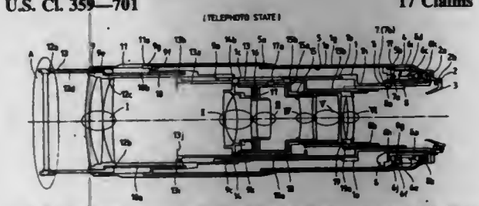
wherein a power of the variable optical system is varied by moving at least a part of the ocular optical system, and a reference diopter being maintained constant upon movement of said at least a part of the ocular optical system to vary the power of said variable power optical system, said reference diopter being −1 diopter.

5,576,893

ZOOM LENS BARREL

Haruhiko Yamanouchi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1991, Ser. No. 793,609
Claims priority, application Japan, Nov. 20, 1990, 2-316237; Nov. 20, 1990, 2-316240; Nov. 20, 1990, 2-316241; Nov. 20, 1990, 2-316242; Nov. 20, 1990, 2-316243
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—701 17 Claims



1. A zoom lens barrel in which a region of movement made by a focus lens for focusing is altered in accordance with a change of a focal length caused by a zooming operation, said barrel comprising:

a moving mechanism for rotating a cam member around an optical axis, and for moving the cam member in the direction of the optical axis, in response to the zooming operation;

a first cam for engaging with a first cam follower connected with a zoom lens which provides a zooming function and for moving the zoom lens at least in the direction of the optical axis on the basis of the rotation around the optical axis and the movement in the direction of the optical axis of the cam member; and

a second non-straight cam for engaging with a second cam follower connected with a focus lens which provides a focusing function and for moving the focus lens at least in the direction of the optical axis on the basis of the rotation around the optical axis and the movement in the direction of the optical axis of the cam member, said second cam providing different regions within which said second cam follower is guided during a focusing operation, said different regions corresponding to respective focal lengths of said zoom lens barrel;

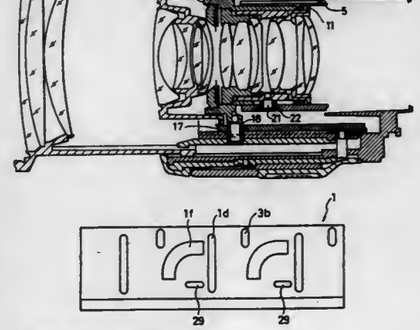
wherein said first cam and said second cam are provided for the cam member.

5,576,894

ZOOM LENS BARREL BASED ON THE VARI-FOCAL OPTICAL SYSTEM

Minoru Kuwana, Osaka; Masaaki Miyano, Sakai; Masayuki Miyazawa, Kawachinagano; Masayuki Ueyama, Takarazuka, and Shinichi Suzuki, Izumiootsu, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Oct. 19, 1994, Ser. No. 325,075
Claims priority, application Japan, Oct. 21, 1993, 5-263367; Jul. 29, 1994, 6-196179
Int. Cl.[6] G02B *15/14;7/02*
U.S. Cl. 359—701 16 Claims



1. A lens barrel comprising:

a zooming optical system which varies the focal length by moving along the optical axis;

a focal point adjusting optical system which implements focusing by moving along the optical axis; and

a drive mechanism which moves said focal point adjusting optical system based on the mechanical operation caused by the movement of said zooming optical system,

wherein said lens barrel further includes:

a fixed tube;

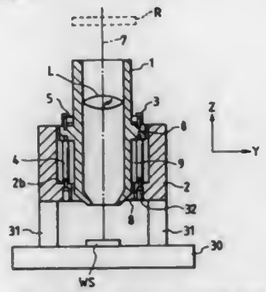
a zoom cam ring which is supported to move only rotatably about the optical axis with respect to said fixed tube;
a focus cam ring which is linearly movable along the optical axis with respect to said fixed tube; and
an inhibition mechanism which inhibits said focus cam ring from rotating about the optical axis with respect to said fixed tube.

5,576,895

APPARATUS FOR HOLDING A LENS BARREL FOR PROVIDING ACCURATE LENS ADJUSTMENT REGARDLESS OF ENVIRONMENTAL CONDITIONS

Masatoshi Ikeda, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Apr. 8, 1994, Ser. No. 225,963
Claims priority, application Japan, Apr. 14, 1993, 5-087270
Int. Cl.[6] G02B *7/02*
U.S. Cl. 359—811 **14 Claims**



1. A lens barrel bolding apparatus, comprising: a lens barrel bolding bed having a cylindrical recess;
a lens barrel holding at least one optical element, said lens barrel being affixed to said lens barrel holding bed, said lens barrel having a flange portion formed along a circumferential direction of an outer peripheral portion of said lens barrel, said cylindrical recess of said lens barrel holding bed with a diameter larger than an outer diameter of said flange portion, and said flange portion being recessed in said cylindrical recess;
a plurality of bar-like first supporting members coupling the bottom surface of said recess and said flange portion together; and
a second supporting member having at least three bar members disposed on the upper part of said flange portion along the circumferential direction of said flange portion so as to surround said lens barrel,
said at least three bar members being coupled to said flange portion and said lens barrel holding bed.

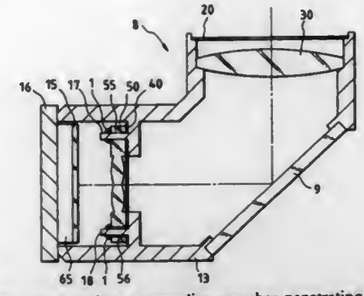
5,576,896

STRUCTURE FOR ATTACHING A LENS TO PREVENT DISTORTION FROM CHANGES IN THE AMBIENT CONDITIONS

Naoki Kitaoka, Sakura, and Keiji Ohsawa, Tokyo, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Dec. 8, 1994, Ser. No. 354,170
Claims priority, application Japan, Dec. 29, 1993, 5-351711
Int. Cl.[6] G02B *7/02*
U.S. Cl. 359—813 **13 Claims**

1. A structure of fixing a lens, comprising:



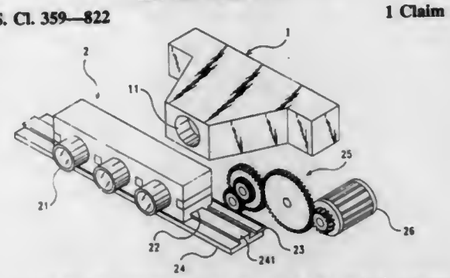
a base body having a protruding member penetrating the lens and extending therethrough so that a portion of the protruding member extends outward from the lens, the portion having an end and side surfaces extending beyond the lens, for supporting the lens; and
attaching means, provided at the side surfaces of said portion of said protruding member extending beyond the lens, for attaching the lens to said base body, and for regulating movement in an optical-axis direction of the lens with respect to said base body but permitting a movement in a direction orthogonal to the optical axis of the lens caused by changes in shape of the lens.

5,576,897

MULTI-LENS OPTICAL DEVICE FOR USE IN AN OPTICAL SCANNER

Shih-Hung Kuo, Hsin Chu, Taiwan, assignor to Tamarack Telecom, Inc., Taipei, Taiwan

Filed Jan. 24, 1995, Ser. No. 379,200
Int. Cl.[6] G02B *7/02*
U.S. Cl. 359—822 **1 Claim**



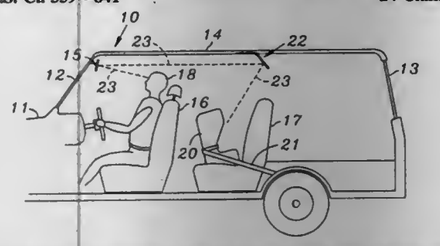
1. A multi-lens optical device for use in an optical scanner comprising:
an image sensor holder having a viewing aperture;
a lens unit disposed in front of said viewing aperture, wherein said lens unit comprises a lens bolder and a plurality of lenses of different magnifying powers respectively mounted on said lens bolder;
a reversible motor; and
a reduction gearing driven by said reversible motor;
said lens holder being made of elongated shape having a dovetail groove matched with a dovetail tongue on a base frame, and a long side, fixedly mounted to the lens bolder, having a rack mesbed with said reduction gearing, whereby said lens holder is moved along said dovetail tongue by said reversible motor through said reduction gearing via said rack to let one lens at a time be aligned with said viewing aperture for scanning.

5,576,898

OPTICAL SYSTEM FOR VIEWING THE REAR SEAT OF A VEHICLE

Sheri J. Rubin, 16161 Ventura Blvd., Suite 613, Encino, Calif. 91436

Filed Jul. 7, 1995, Ser. No. 499,735
Int. Cl.[6] G02B *5/08;7/182;* **B60R** *1/04*
U.S. Cl. 359—841 **24 Claims**



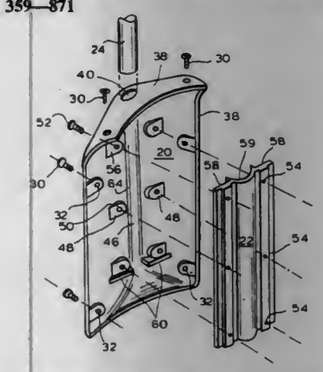
1. An optical system in a vehicle having a front and rear seat and a front window and rear window joined at their upper edges by a roof structure so as to define a compartment for passengers, comprising:
a rear facing mirror carried on the front window;
a forward facing mirror mounted on a headliner mounted below the roof structure so as to be located between the front window and rear window at a location removed from the rear window;
an optical axis established from the front seat to the rear seat via the rear facing mirror and the forward facing mirror; and
the forward facing mirror having adjustment means for movably aligning the mirror with respect to the rear facing mirror for viewing a selected area of the rear seat, and
wherein the forward facing mirror includes means to selectively permit a relatively substantially flush position of the forward facing mirror with the headliner of the roof of the vehicle.

5,576,899

MIRROR MOUNT FOR VEHICLES

Sol Englander, Flushing, N.Y., assignor to Rosco, Inc., Queens, N.Y.

Continuation of Ser. No. 709,390, Jun. 3, 1991, abandoned. This application Mar. 11, 1993, Ser. No. 29,928
Int. Cl.[6] G02B *7/182;* **A47G** *1/16;* **B60R** *1/06*
U.S. Cl. 359—871 **6 Claims**



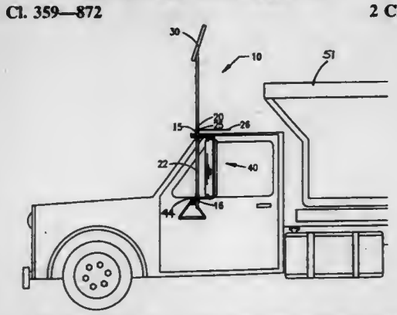
1. A mirror mount, comprising;
a mount body, formed as an integrally molded plastic piece, having an interior surface facing and defining an interior chamber, and a periphery shaped to mate with an external surface of a vehicle body to which the mount body is attachable in a manner such that the interior surface of the mount faces the external surface, the interior chamber being constructed so that when the mount body is mounted to the external surface of the vehicle body the interior chamber is substantially closed off, the mount body comprising a pair of panels which converge toward one another and define a nestling region for a mirror pole;
securing means for fixedly securing the mount body in contact with the external surface of the vehicle body;
a clamping plate fully disposed within the interior chamber;
tightening means accessible and operable from an exterior surface of the mount body and effective for engaging the clamping plate and pulling the same toward the interior surface;
wherein the clamping plate is fabricated of metal;
wherein the tightening means comprises a plurality of threaded holes in the clamping plate and screw means passing through the mount body and engageable with the threaded holes in the clamping plate; and
further comprising at least one rib in the mount body providing a stop for the mirror pole.

5,576,900

ADJUSTABLE REAR VIEW MIRROR ASSEMBLY FOR TRUCKS

Thomas K. Baumler, 12375 Oak Park Blvd. NE., #205, Blaine, Minn. 55434, and Raymond P. Baumler, 4161—149 "R"Ave. SE., Wheatland, N. Dak. 58079

Filed Jan. 13, 1995, Ser. No. 372,145
Int. Cl.[6] G02B *7/182;* **B60R** *1/06*
U.S. Cl. 359—872 **2 Claims**



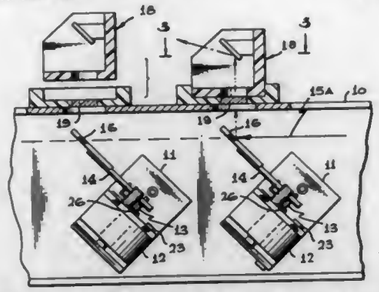
1. An adjustable rear view mirror assembly for trucks comprising:
a pair of sleeves each having a bracket member fixedly attached thereto and removeably fastened to a frame of a conventional side mirror assembly on a truck, said sleeves being disposed in vertical relationship and alignment to one another, further said sleeves depending from said frame;
a mirror support having a top end and a lower portion which is slidably and rotatably mounted through said sleeves, said mirror support having a collar removeably fastened thereabout to adjustably set said mirror support in vertical relationship to a box of said truck, said mirror support further having an eyelet member at said top end, said mirror support being essentially telescopic tubular members capable of vertically extending above said box of said truck, said telescopic members including a base member which is slidably and rotatably mounted through said sleeves, a first extension member which is securingly extendable from and retractable into said base member, and a second extension member which is securingly extendable from and retractable into said first extension member; and
a mirror having a pivot member fixedly and centrally disposed in a side of said mirror, said pivot member pivotably attached to said top end of said mirror support and received by said eyelet member, for vertically adjusting said mirror upon a horizontal axis.

5,576,901

DC MOTOR ACTUATOR LIGHT MODIFICATION

Neville Hanchett, 6569 Cleomore Ave., West Hills, Calif. 91307

Filed May 31, 1995, Ser. No. 455,013
Int. Cl.[6] G02B 7/182
U.S. Cl. 359—877 18 Claims



1. In a light system including an elongated frame, a laser light generator creating a beam of laser light, a plurality of electric motors having motor shafts supported in said frame, a support arm attached to each of said motor shafts, a light modifying device attached to each of said support arms, a controller for providing individual input signals to said electric motors to individually move selected light modifying devices into the path of said beam of laser light, and stops limiting the rotation of said support arms:

characterized in that said electric motors are direct current permanent magnet motors,

a subframe is fastened to each of said electric motors, each subframe is fastened to said elongated frame, and

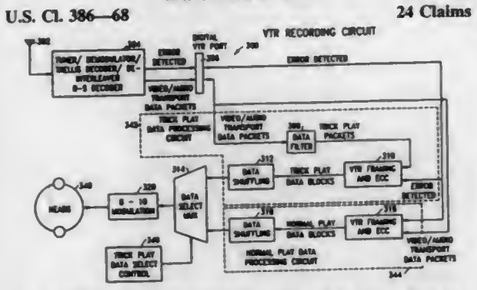
springs are secured between each of said support arms and its corresponding subframe urging each of said support arms toward one of said stops against the force of said electric motors.

5,576,902

METHOD AND APPARATUS DIRECTED TO PROCESSING TRICK PLAY VIDEO DATA TO COMPENSATE FOR INTENTIONALLY OMITTED DATA

Frank A. Lane, Cranbury; Jill M. Boyce, East Windsor; Jack S. Fuhrer, Princeton Junction; John G. N. Henderson, Princeton, all of N.J., and Michael A. Plotnick, Southampton, Pa., assignors to Hitachi America, Ltd., Tarrytown, N.Y.

Continuation of Ser. No. 3,889, Jan. 13, 1993, Pat. No. 5,377,051. This application Nov. 1, 1994, Ser. No. 333,097
Int. Cl.[6] H04N 5/78
U.S. Cl. 386—68 24 Claims



1. A digital video tape recorder (VTR) circuit for generating a digital video data stream, the video data stream including normal play video data output by the digital VTR during normal VTR playback operation, and trick play video data and a trick play video data processing command output by the digital VTR during trick playback operation, each trick play video data processing command including an instruction for processing the trick play video data, the trick play video data including a subset of the normal play video data, the VTR circuit comprising:

a set of heads for reading data from a tape;

a bitstream reformatter coupled to the set of heads for generating, from the data read from the tape, the normal play video data output by the VTR during normal play operation and the trick play video data read from the tape during trick playback operation; and

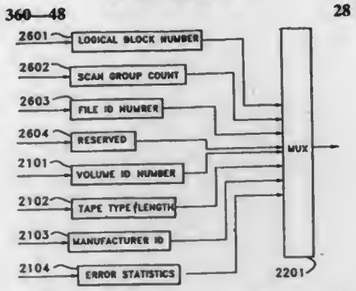
a VTR command generator coupled to the bitstream reformatter for generating the trick play video data processing command output by the digital VTR during trick playback operation, each trick play video processing command including an instruction to process the subset of normal play video data to compensate for normal play video data intentionally omitted from the trick play video data.

5,576,903

METHOD AND APPARATUS FOR ADMINISTERING DATA ON MAGNETIC TAPE MEDIUM BY WAY OF A HEADER SEGMENT

Thomas M. Brown; William C. Dodt, both of Broomfield; Donald F. McCarthy, Westminster; Richard Mendoza, Boulder, and Charles A. Milligan, Golden, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Continuation-in-part of Ser. No. 791,793, Nov. 12, 1991, Pat. No. 5,369,641. This application Jun. 27, 1994, Ser. No. 266,026
Int. Cl.[6] G11B 5/09
U.S. Cl. 360—48 28 Claims



1. In a helical scan tape drive which reads and writes a stream of data records, received from a host processor, in stripes on a magnetic tape, apparatus operationally independent of said host processor for providing administrative data relating to data records written on said magnetic tape, comprising:

means for creating a header segment having a defined extent on said magnetic tape wherein said header segment is located at a beginning of said magnetic tape before said data records and wherein said header segment contains administrative data relating to said data records written on said magnetic tape;

means for writing data records received from said host processor on said magnetic tape exclusive of said header segment;

means, responsive to receipt of a data record from said host processor, for generating said administrative data, comprising:

means for inserting data record location information into said administrative data and associated with a selected data record to identify a physical location of said selected data record on said magnetic tape,

means for inserting media information into said administrative data to identify media characteristics; and

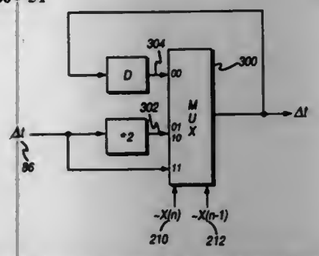
means for writing said administraive data in said header segment of said magnetic tape, independent of said host processor.

5,576,904

TIMING GRADIENT SMOOTHING CIRCUIT IN A SYNCHRONOUS READ CHANNEL

Richard T. Behrens, Louisville, Colo., assignor to Cirrus Logic, Inc., Fremont, Calif.

Division of Ser. No. 313,491, Sep. 27, 1994, abandoned. This application Aug. 29, 1995, Ser. No. 520,520
Int. Cl.[6] G11B 53/01
U.S. Cl. 360—51 4 Claims



1. A timing recovery circuit in a synchronous read channel utilized in reading data from a magnetic medium, said synchronous read channel detects digital data from a sequence of discrete time sample values Y(n) generated by sampling pulses in an analog read signal from a magnetic read head positioned over the magnetic medium, said timing recovery circuit for adjusting a phase and frequency of a sampling clock signal relative to a phase and frequency of the pulses, said timing recovery circuit comprises a timing gradient circuit and a gradient adjuster circuit, the gradient adjuster circuit comprising:

(a) a first input for receiving a timing gradient value from the timing gradient circuit representing a minimum mean squared error between the discrete time sample values Y(n) and a corresponding sequence of estimated sample values ~X(n);

(b) a second input for receiving the sequence of estimated sample values ~X(n) utilized by the timing gradient circuit to generate the timing gradient value; and

(c) an adjustment circuit for adjusting the timing gradient value when at least one of the estimated sample values ~X(n) utilized in generating the timing gradient value is zero.

5,576,905

SERVO CONTROL OF BI-DIRECTIONAL REEL-TO-REEL TAPE DRIVES USING FINE-LINE TACHOMETERS WITH INDEX LINES

Joe L. Garcia; Paul Y. Hu, and John A. Koski, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 76,508, Jun. 14, 1993, abandoned. This application Feb. 28, 1995, Ser. No. 396,094
Int. Cl.[6] G11B 15/54;15/67
U.S. Cl. 360—73.14 11 Claims

1. An apparatus for controlling the motion of a magnetic tape in a tape drive, the apparatus including:

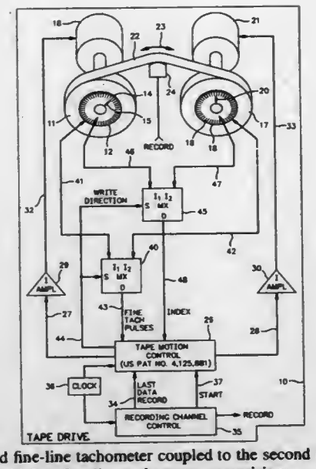
a first reel assembly for rotating in a first direction to supply a magnetic tape and for rotating in a second direction to take up the magnetic tape;

a second reel assembly for rotating in the first direction to take up magnetic tape supplied by the first reel assembly and for rotating in the second direction to supply magnetic tape to the first reel assembly;

a first fine-line tachometer coupled to the first reel assembly, said first fine-line tachometer comprising:

a first circular array of a plurality of fine tachometer lines to produce a first fine-line tachometer pulse stream comprising a plurality of first fine-line tachometer pulses generated each revolution of the first reel assembly; and

a first index line to produce a first index pulse stream comprising a first index pulse generated once each revolution of the first reel assembly;



a second fine-line tachometer coupled to the second reel assembly, said first fine-line tachometer comprising:

a second circular array of a plurality of fine tachometer lines to produce a second fine-line tachometer pulse stream comprising a plurality of second fine-line tachometer pulses generated each revolution of the second reel assembly; and

a second index line to produce a second index pulse stream comprising a second index pulse generated once each revolution of the second reel assembly;

a control unit providing at a control unit output a write direction signal indicating whether the first and second reel assemblies are rotating in the first direction or in the second direction; and

a switch coupled to the first and second fine-line tachometers and the control unit output, said switch having a switch output, said switch providing at the switch output signals representative of the first fine-line tachometer pulse stream and the second index pulse stream exclusively when the write direction signal indicates that the first and second reel assemblies are rotating in the first direction, said switch providing at the switch output signals representative of the second fine-line tachometer pulse stream and the first index pulse stream exclusively when the write direction signal indicates that the first and second reel assemblies are rotating in the second direction.

5,576,906

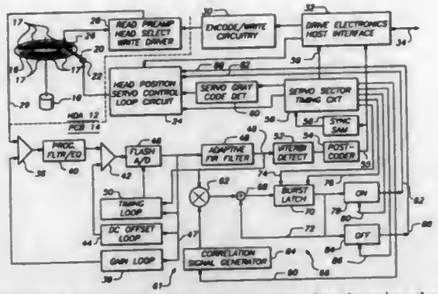
SYNCHRONOUS DETECTION OF CONCURRENT SERVO BURSTS FOR FINE HEAD POSITION IN DISK DRIVE

Kevin D. Fisher, Palo Alto; Jim Fitzpatrick, Mountain View, and Xiaodong Che, Sunnyvale, all of Calif., assignors to Quantum Corporation, Milpitas, Calif.

Filed Oct. 11, 1994, Ser. No. 320,540
Int. Cl.[6] G11B 5/596
U.S. Cl. 360—77.08 25 Claims

1. A method for synchronously detecting fine head position information recorded within an embedded servo sector within a track defined on a moving magnetic storage medium as a first plurality of longitudinal sinewave phase coherent patterns in phase opposition along a first longitudinal boundary and a second plurality of longitudinal sinewave phase coherent patterns in phase opposition along a second longitudinal boundary and separated from the first plurality by a phase coherent reference pattern within the track, the first and second longitudinal boundaries being located in relation to a centerline of the track, the synchronous detection being accomplished with a magnetic read head having an effective electrical width less than a nominal width of the track and a partial response maximum likelihood sampling data detection channel, wherein the patterns are recorded at a rate manifesting

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intersymbol interference within the sampling data detection channel, the method comprising the steps of:

establishing initial timing and gain control conditions within the sampling data detection channel,

reading the first plurality of phase coherent patterns with the magnetic read head to produce a first analog servo signal stream,

reading the phase coherent reference pattern to produce a reference analog signal stream,

reading the second plurality of phase coherent patterns with the magnetic read head to produce a second analog servo signal stream,

analog filtering the first and second analog servo signal streams with an analog filter within the sampling data detection channel to produce a pair of filtered analog signal stream sequences,

synchronously quantizing the first analog signal stream sequence to provide first synchronous digital burst samples along the first longitudinal boundary,

synchronously quantizing the reference analog signal stream to provide reference synchronous digital burst samples,

synchronously quantizing the second analog signal stream sequence to provide second synchronous digital burst samples along the second longitudinal boundary,

filtering the first and second synchronous digital burst samples within a matched filter to maximize output peak signal to noise to produce filtered fine head position values relative to track centerline,

providing the filtered fine head position values to a head positioner circuit for positioning the magnetic read head relative to track centerline, and

using the filtered reference samples to update the timing and gain control conditions within the sampling data detection channel before the second plurality of phase coherent patterns are read.

5,576,907

VARIABLE SPEED RECORDING AND/OR REPRODUCING APPARATUS INCLUDING A PLURALITY OF ROTARY HEADS ARRANGED WITH HEAD GAPS HAVING PARTICULAR AZIMUTH ANGLES

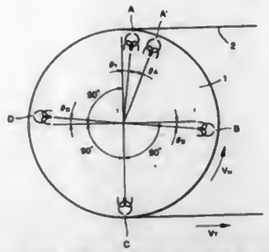
Masahide Hasegawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 94,316, Jul. 21, 1993, abandoned.
This application Jun. 7, 1995, Ser. No. 476,044
Claims priority, application Japan, Jul. 31, 1992, 4-224699; Jul. 31, 1992, 4-224700
Int. Cl.[6] G11B *15/14;5/52;21/04;21/18*
U.S. Cl. 360—64 **14 Claims**

1. An apparatus for recording information on and/or reproducing information from a recording medium using a plurality of heads, said apparatus comprising:

a rotatable drum for mounting the plurality of heads;

a first head, a second head, a third head, and a fourth head consecutively arranged on the periphery of said rotatable drum in the named order, in one of (i) a rotational direction of said drum and (ii) a direction opposite to the rotational direction of said drum, said first and third heads having a head gap with a first azimuth angle and said second and fourth heads having a head gap with a second azimuth angle, each of said heads being disposed at one of (i) a respective reference position and (ii) a respective offset position that is offset from a corresponding reference position in the rotational direction of said drum, the reference positions of said heads being arranged at equal intervals on the periphery of said drum and at least said first head being disposed at the respective offset position; and



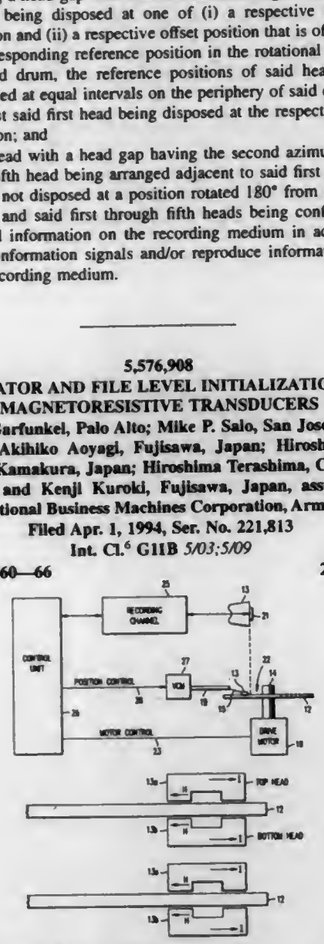
a fifth head with a head gap having the second azimuth angle, said fifth head being arranged adjacent to said first head and being not disposed at a position rotated 180° from said third head, and said first through fifth heads being configured to record information on the recording medium in accordance with information signals and/or reproduce information from the recording medium.

5,576,908

ACTUATOR AND FILE LEVEL INITIALIZATION OF MAGNETORESISTIVE TRANSDUCERS

Glen A. Garfunkel, Palo Alto; Mike P. Salo, San Jose, both of Calif.; Akihiko Aoyagi, Fujisawa, Japan; Hiroshi Yanagisawa, Kamakura, Japan; Hiroshima Terashima, Chigasaki, Japan, and Kenji Kuroki, Fujisawa, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 1, 1994, Ser. No. 221,813
Int. Cl.[6] G11B *5/03;5/09*
U.S. Cl. 360—66 **20 Claims**



1. A magnetic storage system comprising:

at least one magnetic storage medium having top and bottom surfaces, said top and bottom surfaces having a plurality of data tracks defined therein for recording of data;

for each surface of said at least one magnetic storage medium, at least one magnetic transducer formed on a surface of a slider and maintained in a closely spaced relationship adjacent said surface, said magnetic transducer including a magnetoresistive sensor and a write head, said sensor and said write head being physically offset from one another; and

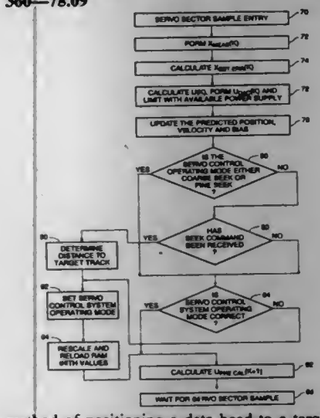
actuator means coupled to each slider for moving selected magnetic transducers to selected data tracks on said magnetic storage medium, said sliders assembled with said actuator forming an actuator head stack, a sense current flowing through each said magnetoresistive sensor, the direction of current flow through said magnetoresistive sensors being the same for all of said magnetoresistive sensors with respect to said actuator means, thereby facilitating concurrent initialization of all said magnetoresistive sensors by the application of a homogeneous magnetic field to said head stack.

5,576,909

METHOD FOR POSITIONING A DATA TRANSDUCER HEAD IN A ROTATING DISK DRIVE DATA STORAGE DEVICE

Franz J. Dierkes, Los Gatos; Fidencio Mederos, and Ich V. Pham, both of San Jose, all of Calif., assignors to Ministor Peripherals International Limited, San Jose, Calif.

Filed Feb. 16, 1995, Ser. No. 394,534
Int. Cl.[6] G11B *5/596*
U.S. Cl. 360—78.09 **44 Claims**



32. A method of positioning a data head to a target track on a data disk surface having at least 2^n concentric data tracks, wherein n is a number of data bits needed to enumerate all of said at least 2^n concentric data tracks, in a data disk file wherein said data head is connected to an actuator by a support arm assembly, said data disk file having at least one disk surface having recorded thereon data track number identification information and servo burst information identifying said data head position within a data track, said data disk file having a servo control loop directed by one of at least a first, second and third operating mode, said first operating mode selected for operation while said data head is between a first number of tracks and a second number of tracks of radial distance from said target track, said second number less than said first number, said second operating mode selected for operation while said data head is between said second number of tracks and less than one track of radial distance from said target track, said third operating mode selected for operation while said head is less than one track of radial distance from said target track, said method comprising the steps of:

sensing the position of the data head over the disk surface to supply data head position information to a CPU in the servo control loop by reading data track number identification information of the one of the 2^n concentric data tracks on the disk surface over which the data head is flying and reading servo burst information of said one of the 2^n concentric data tracks to measure the position of the data head in the data track to a resolution of at least one part in 2^m, wherein m is a number of data bits needed to represent the position of the data head to said resolution of said at least one part in 2^m;

encoding said data head position information into a data field having a width less than m+n bits to supply data head position on the disk surface information to said CPU having a data input path of less than m+n bits;

predicting by said CPU using said encoded data head position information a data head position, a data head velocity and a data bead bias to generate a servo control signal;

generating said servo control signal by said CPU to move the data head; and

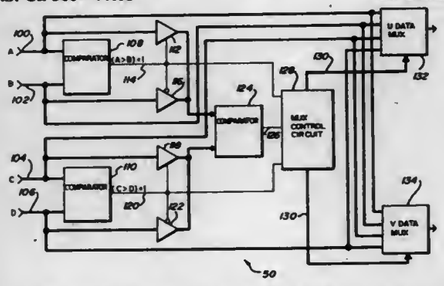
moving the data bead in response to said servo control signal.

5,576,910

BURST COMPARISON AND SEQUENTIAL TECHNIQUE FOR DETERMINING SERVO CONTROL IN A MASS STORAGE DISK DEVICE

Paul M. Romano; Larry D. King; Mike Machado, all of Boulder, Colo.; Petro Estakhri, Pleasanton, Calif.; Son Ho, Sunnyvale, Calif.; Phuc Tran, Fremont, Calif., and Maryam Imam, Fremont, Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Continuation of Ser. No. 71,472, Jun. 4, 1993, abandoned.
This application May 15, 1995, Ser. No. 441,676
Int. Cl.[6] G11B *5/596*
U.S. Cl. 360—77.08 **24 Claims**



1. A servo system controller for use with a disk drive of the type having a rotating mass storage disk with information tracks recorded on the disk and a transducer head selectively moveable with respect to the tracks in response to head control signals to perform read and write operations, at least one of the tracks including a servo field containing a predetermined number of bursts each of which is recorded at a predetermined location with respect to a center line of the track, the movement of the bursts relative to the head during rotation of the disk deriving corresponding burst signals that have a magnitude indicative of the position of the head relative to the track center line, the disk drive further including a read write channel which receives burst signals from the head and supplies the burst signals to said servo system controller; said servo system controller comprising:

a data processor to derive head control signals and to apply the head control signals to the disk drive; and

a burst magnitude comparator separately connected to the data processor and responsive to the magnitude of the burst signals, the burst magnitude comparator comparing the relative magnitudes of a plurality of the burst signals and selecting at least two of the burst signals based on the comparison of the burst signals and supplying the selected burst signals in a predetermined order for use by the data processor;

the data processor responding to the burst signals in the order supplied to calculate a correction head control signal to use in moving the head toward the track center line.

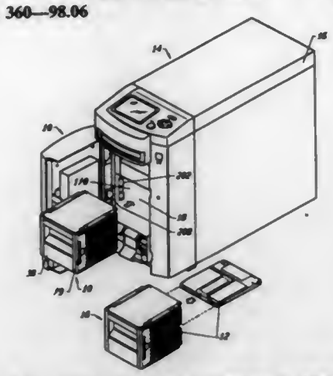
VOL 1192 ISS 3 NO 19 1996 UMI

5,576,911

CARTRIDGE LOCKING MECHANISM AND INTERFACE

Ryan S. Porter, Monument, Colo., assignor to Sony Corporation, Tokyo, Japan, and Sony Electronics Inc., Boulder, Colo.

Filed Oct. 25, 1994, Ser. No. 328,470
Int. Cl.[6] G11B *17/08*
U.S. Cl. 360—98.06 19 Claims



1. A disk cartridge magazine for holding a plurality of disk cartridges comprising:

(a) a frame having a first side member and a second side member connected to the first side member in spaced relationship, said side members having respective first and second interior sides, each of which faces the other of the first and second interior sides;

(b) a plurality of cartridge separators connected to the frame and positioned between the first and second side members to form a plurality of cartridge slots; and

(c) a spring member connected to the first interior side and having a cartridge contacting end adjacent to at least one of the cartridge slots and extending towards the second interior side such that, when a disk cartridge is positioned in said one of the cartridge slots, the disk cartridge is retained between the cartridge contacting end of the spring member and the second interior side, the cartridge contacting end being deflectable in a direction away from the second interior side upon application of pressure against the cartridge contacting end, the spring member having:

(i) an unlocked condition in which, when a disk cartridge is positioned in said one of the cartridge slots, the cartridge contacting end is deflectable away from the disk cartridge to permit sliding of the disk cartridge within the slot, and

(ii) a locked condition in which the cartridge contacting end is constrained from deflecting away from a disk cartridge positioned in said one of the cartridge slots to constrain the disk cartridge between the spring member and the second interior side; and

(d) locking means for locking the spring member in the locked condition.

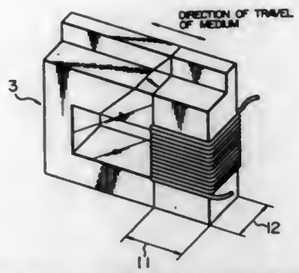
5,576,912

FLOATING MAGNETIC HEAD WITH REDUCED MAGNETOSTRICTION VIBRATION NOISE

Chiharu Mitsumata, Gunma-ken; Masanobu Yamazaki, and Ryo Goto, both of Mooka, all of Japan, assignors to Hitachi Metals Limited, Tokyo, Japan

Continuation of Ser. No. 963,728, Oct. 20, 1992, abandoned. This application May 11, 1994, Ser. No. 240,813
Claims priority, application Japan, Oct. 22, 1991, 3-273636
Int. Cl.[6] G11B *5/60*
U.S. Cl. 360—103 2 Claims

1. A floating magnetic head including an electromagnetic transducer element for reading or writing magnetic information to or from a magnetic medium which travels in a given direction past the magnetic head, said transducer element having a monocrystalline structure made of a MnZn ferrite material, said monocrystalline MnZn ferrite transducer element being positioned on the head with a crystal orientation such that (a) the <111> axis of the monocrystalline MnZn ferrite transducer element is inclined at an angle no greater than 10 degrees relative to the direction of travel of the magnetic medium past the magnetic head in a case of $|\lambda_{111}|+2\times10^{-6}\leq|\lambda_{100}|$, and (b) the <100> axis of the monocrystalline MnZn ferrite transducer element is inclined at an angle no greater than 10 degrees relative to the direction of travel of the magnetic medium past the magnetic head in a case of $|\lambda_{111}|\leq|\lambda_{100}|+2\times10^{-6}$, where λ_{111} and λ_{100} represent linear magnetostriction constants of said monocrystalline MnZn ferrite transducer element in the <111> and <100> directions, respectively.

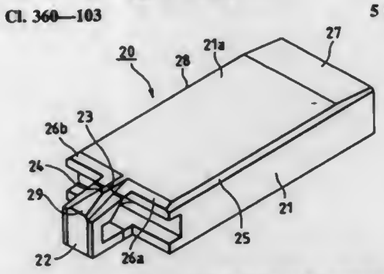


5,576,913

MAGNETIC HEAD FOR HARD DISK HAVING READING CORE AND TRAILING CORE

Noriaki Kudo; Hiroshi Sampei, and Masashi Sato, all of Yamagata, Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 361,562
Claims priority, application Japan, Dec. 29, 1993, 5-076018 U
Int. Cl.[6] G11B *5/60*
U.S. Cl. 360—103 5 Claims



1. A magnetic head for a hard disk magnetic storage device, comprising:

a reading core;

a single air bearing surface formed on a side of said reading core, said single air bearing surface having a smooth upper surface and a first chamfered side surface;

a trailing core connected to said reading core; and

a magnetic gap regulated by a track width and being formed between said reading core and said trailing core;

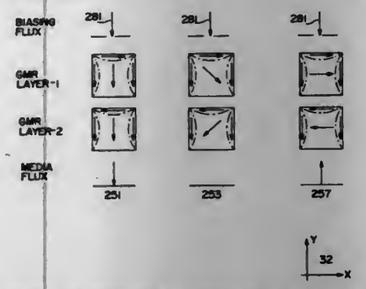
said track width being defined by a second chamfered side surface formed on said trailing core, and said second chamfered side surface being arranged on an extension line defined by extending said first chamfered side surface.

5,576,914

COMPACT READ/WRITE HEAD HAVING BIASED GMR ELEMENT

Robert E. Rottmayer, Fremont, Calif., and Jian-Gang Zhu, Roseville, Minn., assignors to Read-Rite Corporation, Milpitas, Calif.

Filed Nov. 14, 1994, Ser. No. 337,878
Int. Cl.[6] G11B *5/127;5/33*
U.S. Cl. 360—113 6 Claims



1. A method for detecting flux transitions of an external excitation field with a magnetoresistive element having at least first and second magnetoresistive layers, each layer characterized by a central main subregion having a magnetic domain orientation, and edge subregions of magnetic domain orientations, comprising the steps of:

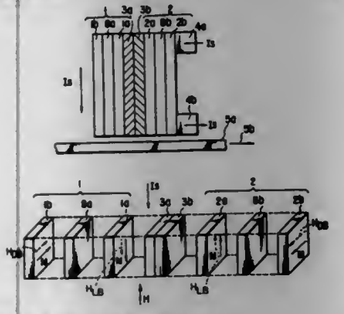
magnetically biasing said magnetoresistive element such that, when the external excitation field has essentially no strength, the magnetic domain orientations of said central main subregions of said first and second magnetoresistive layers define a scissor configuration.

5,576,915

MAGNETORESISTIVE HEAD WITH ANTIFERROMAGNETIC SUBLAYERS INTERPOSED BETWEEN FIRST AND SECOND SPIN-VALVE UNITS TO EXCHANGE BIAS INNER MAGNETIC FILMS THEREOF

Junichi Akiyama; Hiroaki Yoda, both of Kawasaki; Yuichi Ohsawa, and Hitoshi Iwasaki, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 212,865, Mar. 15, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 472,487
Claims priority, application Japan, Mar. 15, 1993, 5-053495; Sep. 13, 1993, 5-227185
Int. Cl.[6] G11B *5/39*
U.S. Cl. 360—113 8 Claims



1. A magnetoresistive head comprising:

a first spin-valve unit formed of a first inner magnetic film, a first outer magnetic film and a nonmagnetic film interposed between and in direct physical contact with the first inner magnetic film and the first outer magnetic film;

a second spin-valve unit formed of a second inner magnetic film, a second outer magnetic film and a nonmagnetic film interposed between and in direct physical contact with the second inner magnetic film and the second outer magnetic film; and

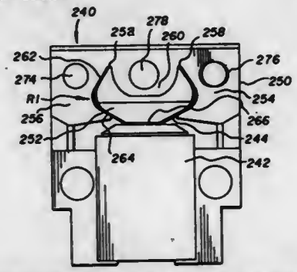
an antiferromagnetic portion interposed between the first and second spin-valve units, and formed of a first antiferromagnetic sublayer and a second antiferromagnetic sublayer laminated on said first antiferromagnetic sublayer, said first antiferromagnetic sublayer being in direct physical contact with said first inner magnetic film, and said second antiferromagnetic sublayer being in direct physical contact with said second inner magnetic film, wherein sense current supply directions through said first and second spin-valve units are perpendicular to a head facing surface of a magnetic recording medium, said first antiferromagnetic sublayer applies a first exchange bias magnetic field to said first inner magnetic film in a direction perpendicular to the surface of the magnetic recording medium, and said second antiferromagnetic sublayer applies a second exchange bias magnetic field to said second inner magnetic film in a direction perpendicular to the surface of the magnetic recording medium, said second exchange bias magnetic field having a polarity opposite to that of said first exchange bias magnetic field.

5,576,916

MAGNETIC HEAD-TO-MEDIA BACKER DEVICE

Dale W. Ryan; David L. Rowden, and Thomas C. Merle, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 28, 1995, Ser. No. 431,708
Int. Cl.[6] G11B *15/62*
U.S. Cl. 360—130.31 18 Claims



1. A magnetic head-to-media backer device for holding a spring member, the spring member being adapted to urge a flexible magnetic media into contact with a magnetic head, comprising:

a frame for holding the spring member therein, the frame having a cavity defined at least by a pair of opposite generally convex shaped side walls for bending the spring member into an arc with two opposite leg portions and a center portion, each leg portion having a desired thickness and an end, the center portion of the spring member protruding from a convex shaped opening to the cavity to permit the spring member to be depressed at least part way into the opening to conform the leg portions substantially against the convex surface of the side walls and

a retention support with a base upstanding in the cavity, the retention support base spaced from the opposite side walls to constrain the leg portions of the spring member between the retention support base and the opposite side walls whereby significant rotation of the spring member within the opening is prevented, and the retention support is spaced from the cavity opening so that when the center portion of the spring member is depressed the portions of the spring member between each leg end remain separated from the retention support.

5,576,917

CARTRIDGE FOR CONTAINING RECORDING MEDIUM AND HAVING L-SHAPED PROJECTION WELDED IN L-SHAPED RECESS WITH EXCESS MATERIAL ACCOMMODATED IN GAP THEREBETWEEN

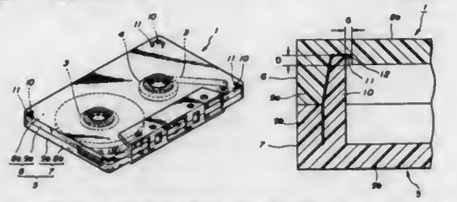
Kenji Shimokuni, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 255,072, Jun. 7, 1994, abandoned, which is a continuation of Ser. No. 988,485, Dec. 10, 1992, abandoned. This application Jun. 22, 1995, Ser. No. 493,510

Claims priority, application Japan, Dec. 16, 1991, 3-331050

Int. Cl.[6] G11B *23/02;23/027;* B23K *26/00;* B65D *6/00*

U.S. Cl. 360—132 7 Claims



1. A cartridge for containing a recording medium, said cartridge comprising:

a rectangular first casing shell having a first planar portion, a first side wall mounted on said planar portion and having a first side wall portion substantially perpendicular to a first adjacent side wall portion, and four recesses formed in said first planar portion proximate said first side wall at respective corners of said first casing shell, each of said recesses having a first predetermined width, at least one of said recesses having a first recessed extension substantially parallel to said first side wall portion and a second recessed extension substantially parallel to said first adjacent side wall portion with said first and second recessed extensions converging substantially perpendicular to one another, said first side wall having an edge opposite said first planar portion, said edge forming a first abutment surface;

a rectangular second casing shell having a second planar portion and a second side wall including a second abutment surface engageable with said first abutment surface and having a second side wall portion substantially perpendicular to a second adjacent side wall portion, said second casing shell having four projections formed on said second planar portion at locations corresponding to said four recesses, each of said four projections having a length extending beyond said second side wall and having a contact surface at an extreme end thereof furthest from a point of attachment of said projections to said second casing shell, each said extreme end having a second predetermined width less than said first predetermined width, at least one of said projections having a first projection extension substantially parallel to said second side wall portion and a second projection extension substantially parallel to said second adjacent side wall portion with said first and second projection extensions converging substantially perpendicular to one another, wherein each said contact surface is joined by welding to a bottom surface of a respective one of said recesses for connecting said first casing shell and said second casing shell with said contact surface of said at least one of said projections being joined by said welding to said bottom surface of said at least one of said recesses, a difference between said second predetermined width and said first predetermined width defining a gap between an outer side surface of each said extreme end of each said projection and an inner side surface of each respective said recess when each said projection is inserted in each respective said recess during joining of said first and second casing shells, wherein a burr comprising excess material of each said protection is formed on each said projection when each respective said extreme end is melted during said welding and said burr wholly resides in said gap; and

said first and second casing shells enclosing a space for accommodating the recording medium.

5,576,918

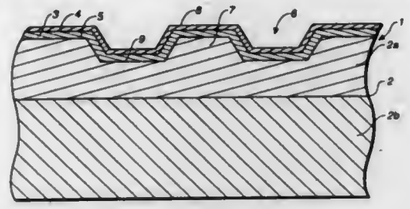
MAGNETIC DISK MEDIUM WITH DESIGNED TEXTURED SURFACES AND CONTROLLED SURFACE ROUGHNESS AND METHOD OF PRODUCING SAME

Ronny Bar-Gadda, Palo Alto, and Robert L. Cargill, San Jose, both of Calif., assignors to Baradun R&D Ltd., Los Gatos, Calif.

Continuation of Ser. No. 808,867, Dec. 17, 1991. This application Dec. 21, 1993, Ser. No. 171,260

Int. Cl.[6] G11B *5/82*

U.S. Cl. 360—135 14 Claims



1. A magnetic disk medium comprising:

a non-magnetic substrate disk having a surface into which is etched a predetermined designed topography to define a regular array of protruding sized shapes, each of the sized shapes protruding relative to an etched continuous planar recessed region of the disk completely surrounding each of the sized shapes, the array forming a texture, the sized shapes being uniformly spaced from one another by the continuous planar recessed region and being substantially the same in size to one another, each of the sized shapes having a substantially planar top portion and a continuous perimeter, each of the perimeters circumscribing and being limited to a single one of the sized shapes; and a continuous magnetic film provided on the surface of the substrate disk, the magnetic film conforming to the designed topography.

5,576,919

SPARK SUPPRESSOR CIRCUIT FOR PROTECTION OF AN ELECTRICAL SWITCH, AND ELECTRICAL THERMAL APPLIANCE COMPRISING SUCH A CIRCUIT

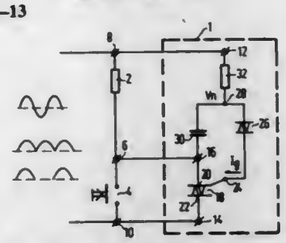
Bernardus F. R. I. Wilkens, Singapore, Singapore, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 17, 1994, Ser. No. 243,895

Claims priority, application European Pat. Off., Jun. 1, 1993, 93201553

Int. Cl.[6] H01G *2/12*

U.S. Cl. 61—13 18 Claims



1. A spark suppressor circuit (1) for protection of an electrical switch (4) which in series with a load (2) is connected between a first supply voltage terminal (8) and a second supply voltage terminal (10), the load (2) and the electrical switch (4) being interconnected at a switch terminal (6), the spark suppressor circuit (1) comprising:

a first (12), a second (14), and a third (16) connection terminal connectable to the first supply voltage terminal (8), the second supply voltage terminal (10) and the switch terminal (6), respectively,

a triggerable electronic switch (18) having a first main electrode (20) connected to the third connection terminal (16), having a second main electrode (22) connected to the second connection terminal (14), and having a gate electrode (24), and

trigger means for triggering the triggerable electronic switch, wherein the trigger means comprises

current supply means (32) coupled between the first connection terminal (12) and the gate electrode (24) of the triggerable electronic switch (18) and supplying bidirectional current to said gate electrode (24)

a threshold device (26) connected between the gate electrode (24) of the triggerable switch (18) and a node (28) connected to the current supply means, said threshold device passing current to the gate electrode (24) when the voltage difference between the gate electrode (24) and the node (28) exceeds a predetermined value, and

a capacitor (30) connected directly between the node (28) and the third connection terminal (16).

5,576,920

ELECTROSTATIC DESTRUCTION PREVENTING CIRCUIT AND RECEIVING APPARATUS HAVING THE SAME

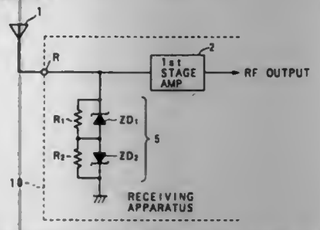
Tadashi Kosuga; Kazuhiko Takahashi, and Yoshimi Tsuboi, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo-to, Japan

Filed May 2, 1995, Ser. No. 433,525

Claims priority, application Japan, May 2, 1994, 6-093295

Int. Cl.[6] H02H *9/00*

U.S. Cl. 361—56 6 Claims



1. An electrostatic destruction preventing circuit for a receiving apparatus, comprising:

a first Zener diode coupled to a receiving terminal of the receiving apparatus;

a second Zener diode coupled to a ground terminal of the receiving apparatus, and connected to said first Zener diode in series and in reverse polarities to each other;

a first resistor connected in parallel to said first Zener diode; and

a second resistor connected in parallel to said second Zener diode.

5,576,921

AGGREGATE CURRENT TRANSFORMER

Markus Brunner, Bessenbach, Germany, assignor to Vacuumschmelze Gmbh, Hanau, Germany

Filed Jul. 6, 1995, Ser. No. 498,897

Claims priority, application Germany, Jul. 6, 1994, 44 23 622.0

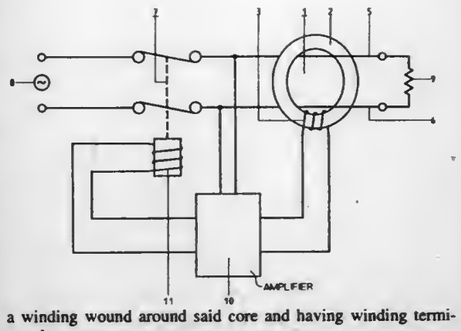
Int. Cl.[6] H02H *3/16;* H01F *17/04*

U.S. Cl. 361—93 8 Claims

1. A sum current transformer comprising;

a core composed of a high-permeability, soft-magnetic metallic alloy having a content of at least 40% nickel and having a positive temperature coefficient for electrical resistance, said core being solid without any cross-sectional divisions;

a plurality of conductors, each carrying a current, passing through said core;



a winding wound around said core and having winding terminals;

amplifier means connected to said winding terminals for acquiring a sum of said currents carried by said conductors and for generating an output signal dependent on said sum; and

a switch supplied with said output from said amplifier means, said switch having a plurality of switching states controlled dependent on said output from said amplifier means.

5,576,922

SURGE ABSORBING STRUCTURE, SURGE ABSORBING ELEMENT, CONNECTOR AND CIRCUIT DEVICE USING THESE STRUCTURE AND ELEMENT

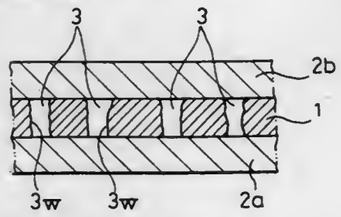
Yujiro Sugaya, Tochigi-ken, and Michitoshi Mitani, Kanagawa-ken, both of Japan, assignors to Iriso Electronics Co., Ltd., Kawasaki, Japan

Filed Jan. 25, 1995, Ser. No. 377,999

Claims priority, application Japan, May 18, 1994, 6-103875; Sep. 16, 1994, 6-222271

Int. Cl.[6] H02H *1/04*

U.S. Cl. 361—120 13 Claims



1. A surge absorbing structure, comprising:

a pair of electrodes facing each other; and

a porous layer formed by a nonconductive material and having many holes, the porous layer being sandwiched between the pair of electrodes such that the structure executes surge absorption by allowing the electrodes to be conducted by electric discharge generated through the holes in the porous layer.

5,576,923

APPARATUS FOR GENERATING ANIONS IN VIDEO APPLIANCES

Hyun W. Park, Kyungsangbuk-Do, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

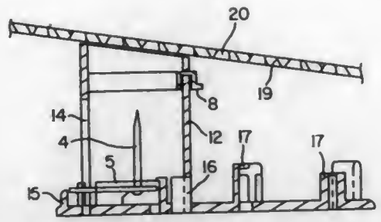
Filed Mar. 10, 1995, Ser. No. 403,256

Claims priority, application Rep. of Korea, Mar. 12, 1994, 94-4914

Int. Cl.[6] H01T *23/00*

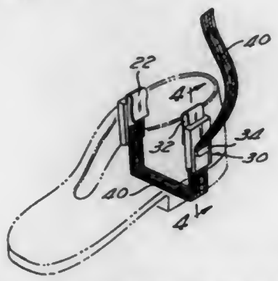
U.S. Cl. 361—213 1 Claim

1. An apparatus for generating anions in video appliances, comprising:



means for generating a high voltage;
means for creating anions by said high voltage generated from said high voltage generating means; and
means for releasing anions created by said anion creating means out of a main body by using convection caused by heat radiated from heating elements provided in said main body, wherein said anion releasing means receives and supports said anion creating means therein, and wherein said anion releasing means comprises an air inlet formed at the lower part of said anion releasing means and an opening formed at the upper part of said anion releasing means and being opposite to ventilating holes formed on said main body.

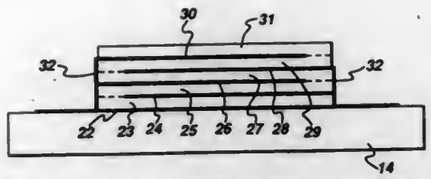
5,576,924
HEEL GROUNDING DEVICE
Roland Hee, 201 Bougainvilla Street, Ayala Alabang Village, Muntinlupa, Philippines
Filed Jul. 31, 1995, Ser. No. 509,712
Int. Cl.[6] H05F *3/02*
U.S. Cl. 361—223 **5 Claims**



1. A grounding device adaptable to be worn around the heel portion of the wearer's shoe, said grounding device comprising:
a first and a second buckle, said buckles each having a hook member attaching the buckle to the upper portion of the wearer's shoe; and
a conductive strap extending from the first buckle around the heel portion of the wearer's shoe to the second buckle, said conductive strap further extending to be in electrical contact with the wearer's leg;
whereby electrostatic voltages are dissipated from the wearer to ground.

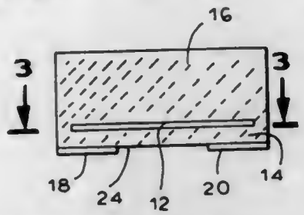
5,576,925
FLEXIBLE MULTILAYER THIN FILM CAPACITORS
Bernard Gorowitz, Clifton Park; Paul A. McConnelee, Schenectady; Michael W. DeVre, Scotia; Stefan J. Rzad, Rexford, all of N.Y., and Ernest W. Litch, Ft. Wayne, Ind., assignors to General Electric Company, Schenectady, N.Y.
Filed Dec. 27, 1994, Ser. No. 364,640
Int. Cl.[6] H01G *4/005;4/06*
U.S. Cl. 361—301.2 **18 Claims**

1. A flexible multilayer thin film capacitor comprising:
a flexible substrate; and



at least two electrode layers mounted on the substrate alternately with at least one dielectric layer, the at least one dielectric layer comprising amorphous hydrogenated carbon, the at least two electrode layers and the at least one dielectric layer capable of acting as at least one capacitor;
the flexible substrate capable of being manipulated so as to have a shape appropriate for a predetermined application.

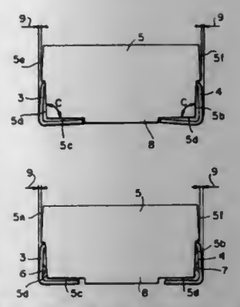
5,576,926
CAPACITOR WITH BURIED ISOLATED ELECTRODE
Richard Monsorno, Jacksonville, Fla., assignor to American Technical Ceramics Corporation, Huntington Station, N.Y.
Filed Apr. 3, 1995, Ser. No. 415,499
Int. Cl.[6] H01G *4/005*
U.S. Cl. 361—303 **20 Claims**



1. A buried layer capacitor comprising:
a first dielectric layer, with said first dielectric layer having a length dimension and a width dimension, and with said first dielectric layer having a first surface and a second surface;
an electrode layer, with said electrode layer having a length dimension and a width dimension, with said length and width dimensions of said electrode layer smaller than said length and width dimensions respectively of said first dielectric layer, and with said electrode layer mounted on said first surface of said first dielectric layer, spaced from contact with any electrical conductor;
a second dielectric layer, with said second dielectric layer having a length dimension and a width dimension and with said length and width dimensions of said second dielectric layer coextensive with said length and width dimensions respectively of said first dielectric layer;
two spaced apart contact members with said contact members in contact with said second surface of said first dielectric layer, each of said contact members provided with a different polarity from that of said other contact member.

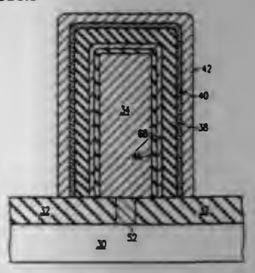
5,576,927
ELECTROLYTIC CHIP CAPACITOR
Yoshinori Sekiguchi, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan
Filed Oct. 31, 1995, Ser. No. 550,860
Claims priority, application Japan, Oct. 31, 1994, 6-266739
Int. Cl.[6] H01G *4/228;4/248;* **H05K** *5/06*
U.S. Cl. 361—306.1 **2 Claims**

1. A solid electrolytic chip capacitor comprising:
a capacitor element;
a box-shaped resin sheathing portion that sheathes said capacitor element; and



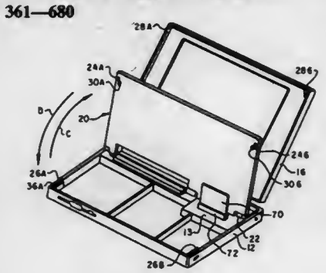
an anode terminal and cathode terminal in the form of two mutually opposed L-shapes that emerge from the side surfaces of said resin sheathing portion, said capacitor element being interposed between;
said resin sheathing portion having projecting side surfaces above the emergence points of said anode terminal and said cathode terminal, and an extended standoff portion at a bottom surface thereof; and
wherein the L-shaped portions of said anode terminal and said cathode terminal have a length that is longer than a circumference from the emergence point of said terminals to said standoff portion so that when a tip of each of said terminals touches said standoff portion, said terminals are forming slanting surfaces that project beyond the projecting surfaces of said resin sheathing portion.

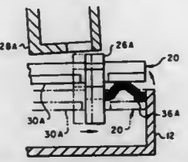
5,576,928
HIGH-DIELECTRIC-CONSTANT MATERIAL ELECTRODES COMPRISING THIN PLATINUM LAYERS
Scott R. Summerfelt, Dallas; Howard R. Beratan, Richardson, both of Tex.; Peter S. Kirlin, Bethel, Conn., and Bruce E. Gnade, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex., and Advanced Technology Materials, Inc., Danbury, Conn.
Continuation of Ser. No. 283,881, Aug. 1, 1994. This application Jun. 7, 1995, Ser. No. 475,121
Int. Cl.[6] H01G *4/10*
U.S. Cl. 361—321.1 **20 Claims**



1. A microelectronic capacitor comprising:
(a) a high-dielectric-constant material pillar, said pillar comprising an outer vertical surface and an open-ended cavity with an inner vertical surface;
(b) an inner thin ruthenium dioxide film disposed on said inner vertical surface and an outer thin ruthenium dioxide film disposed on said outer vertical surface; and
(c) an inner non-Ru, non-RuO_2 conductive electrode disposed on said inner thin ruthenium dioxide film and an outer non-Ru, non-RuO_2 conductive electrode disposed on said outer thin ruthenium dioxide film.

5,576,929
STRUCTURE HAVING A LATCH MECHANISM ENGAGING AN INTERMEDIATE COVER AND AN OUTER COVER AND LIFTING THE INTERMEDIATE COVER BY DEFORMATION OF ELASTIC MEMBER
Yoshiharu Uchiyama; Fusanobu Nakamura; Michio Suzuki, and Tetsuya Ohtani, all of Kanagawa, Japan, assignors to International Buisness Machines Corporation, Armonk, N.Y.
Filed Jul. 22, 1994, Ser. No. 278,735
Claims priority, application Japan, Jul. 22, 1993, 5-181594
Int. Cl.[6] G06F *1/16;* **H05K** *5/00*
U.S. Cl. 361—680 **9 Claims**

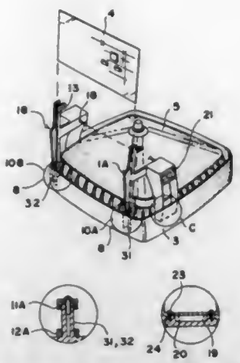




1. A structure having a cover, said structure having a main body and a cover which is provided at said main body so as to pivot around an edge portion of said cover so as to be openable and closable, said structure having a cover comprising:
an engaging member movable between an engaging position, at which said engaging member engages said cover to said main body, and a releasing position, at which an engaged state of said cover and said main body is released; and
an elastic member usually urging said engaging member from said releasing position toward said engaging position, and deforming in accordance with movement of said engaging member so as to urge said cover in an opening direction when said engaging member moves to said releasing position.
2. A structure having a cover, said structure comprising:
a main body;
a cover being provided at said main body so as to pivot around an end portion of said cover so as to be openable and closable:
an intermediate cover being provided at said main body so as to pivot around an end portion of said intermediate cover so as to be openable and closable; and
engaging means for engaging both a region of said cover, which is nearer to a pivoting edge of said cover than to a center of pivoting of said cover, and a region of said intermediate cover, which is nearer to a pivoting edge of said intermediate cover than to a center of pivoting of said intermediate cover, to said main body.

5,576,930
RACK PAIR MOUNTING SPEAKERS AND SYSTEM BOARD IN A MONITOR OF A COMPUTER SYSTEM
Lung-Chih Kuo, and Sam Liu, both of Taoyuan, Taiwan, assignors to Delta Electronics, Inc., Taoyuan, Taiwan
Filed Sep. 1, 1995, Ser. No. 522,937
Int. Cl.[6] H02B *1/052*
U.S. Cl. 361—683 **12 Claims**

1. A pair of racks for mounting speakers and a system board in a monitor having a front frame a rear housing with a display tube, a plurality of speakers and a system board disposed inside said



monitor, each rack comprising: a main frame having an inner side with a longitudinal groove having a width larger than a thickness of said system board to mount said system board in the longitudinal grooves between said pair of racks; speaker cabinet members having a speaker mounted therein; connecting means extending toward the display tube in said monitor to connect the speaker cabinet member to the main frame; and locating means on a lower portion of said front frame of said monitor engaging the locating means on each rack so that each of said racks are firmly mounted in said monitor for mounting speakers in said monitor together with said system board.

5,576,931

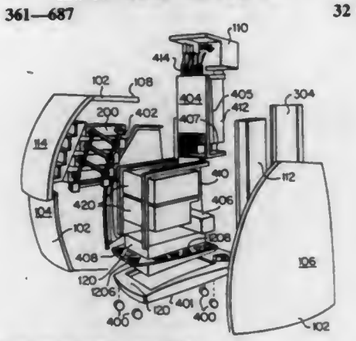
COMPUTER WITH TWO FANS AND TWO AIR CIRCULATION AREAS

Stanford W. Crane, Jr.; Maria M. Portuondo, both of Boca Raton, Fla.; Edward V. Cruz, Newbury Park, Calif.; Vincent R. Razo, Granada Hills, Calif., and Shaun Fynn, West Hollywood, Calif., assignors to The Panda Project, Boca Raton, Fla.

Filed May 3, 1994, Ser. No. 237,366

Int. Cl.[6] H05K *7/20;* **G06F** *1/16*

U.S. Cl. 361—687 **32 Claims**



1. A computer system comprising:
a casing having an air vent;
a peripheral device mounted within said casing;
a base for supporting said casing, said base including a top portion having a plurality of air vents;
a power supply received in the top portion of said base;
a card cage disposed in said casing, said card cage including a bottom floor and an opening in communication with the air vent of said casing, wherein a first air circulation area is defined by the top portion of said base, a lower surface of said peripheral device, and the bottom floor of said card cage, and a second air circulation area separate from the first air circulation area is defined within said card cage;
a plurality of circuit boards arranged vertically within said card cage;
a first fan for circulating air through the plurality of air vents in the top portion of said base, into the first air circulation area and past said power supply, and out of the first air circulation area external of said casing and said base, thereby cooling said power supply; and
a second fan within said card cage for circulating air through the air vent in said casing, through the opening in said card cage, into said second air circulation area and past said vertically-arranged circuit boards, and out of the second air circulation area through a top of said card cage, thereby cooling said circuit boards.

5,576,932

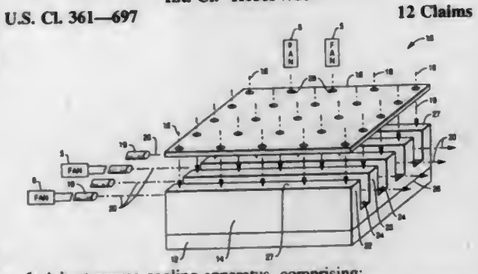
METHOD AND APPARATUS FOR COOLING A HEAT SOURCE

Eugene H. Bishop, Clemson; James A. Liburdy, Seneca; Richard S. Figliola, Central, all of S.C., and Gregory A. Failla, Hauppauge, N.Y., assignors to AT&T Global Information Solutions Company, Dayton, Ohio

Filed Aug. 31, 1995, Ser. No. 524,022

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—697 **12 Claims**



1. A heat source cooling apparatus, comprising:
a thermally conductive base having a plurality of channels defined therein, said base adapted to be positioned in contact with a heat source;
means for advancing a first flow of fluid against said base; and
means for advancing a second flow of fluid into the channels,
wherein said base includes a plurality of fins which define the plurality of channels,
wherein said first flow advancing means is adapted to advance the first flow of fluid against the plurality of fins so as to form a quantity of spent fluid,
wherein the quantity of spent fluid is advanced into the plurality of channels, and
wherein said second flow advancing means is adapted to force the quantity of spent fluid out of the plurality of channels.

5,576,933

CLAMPING HEAT SINK FOR AN ELECTRIC DEVICE

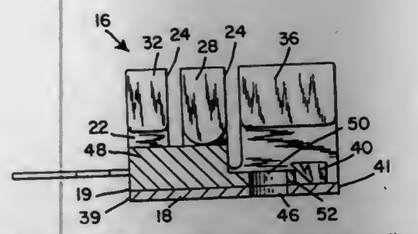
Vincent Campanella, Wakefield, and Osvaldo M. Vasconcelos, Milton, both of Mass., assignors to Wakefield Engineering, Inc., Wakefield, Mass.

Filed May 15, 1995, Ser. No. 440,753

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—704 **12 Claims**

1. A heat sink frictionally engaging a solid state electronic device, said electronic device having a top surface, said heat sink comprising:
(a) a flat horizontal base having a front end and a rear end;
(b) a pair of oppositely facing vertical side walls directly connected to the base and extending upwardly front the base, each of said vertical side walls having a top end, said side walls and said base forming an enclosure containing a solid state electronic device and a front opening to said enclosure at said front end receiving the electronic device;



(c) a pair of opposed resiliently deflectable fingers directly attached to the vertical side walls and extending downwardly into said enclosure from the top ends of said vertical side walls, each of said fingers lying in a respective front-to-back plane which is at an acute angle to said vertical side walls, each of said fingers having a front edge, a back edge and a rounded free end edge which extends from said front edge to said back edge within the front-to-back plane of the finger, engaging the top surface of the solid state electronic device which is inserted into said enclosure through said front opening, said fingers being deflected upwardly by the solid state electronic device which is inserted into said enclosure so that said fingers exert a downward biasing force on said electronic device for clamping said solid state electronic device between said fingers and said base; and
(d) a stop which extends upwardly from said base at a point which is spaced from said front opening thereby positioning said solid state electronic device within said enclosure.

5,576,934

MOUNTING UNIT FOR A MULTILAYER HYBRID CIRCUIT HAVING POWER COMPONENTS INCLUDING A COPPER COATED CERAMIC CENTER BOARD

Walter Roethlingshoefer, and Ulrich Goebels, both of Reutlingen, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

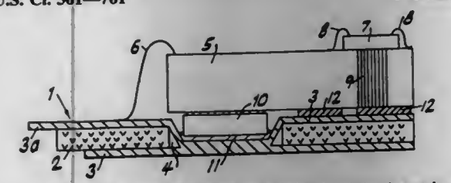
PCT No. PCT/DE93/00548, § 371 Date Dec. 9, 1994, § 102(e) Date Dec. 9, 1994, PCT Pub. No. WO94/01889, PCT Pub. Date Jan. 20, 1994

PCT Filed Jun. 24, 1993, Ser. No. 367,181

Claims priority, application Germany, Jul. 9, 1992, 42 22 474.8

Int. Cl.[6] H05K *1/18;7/20*

U.S. Cl. 361—761 **5 Claims**



1. A mounting unit for a multilayer hybrid circuit having at least one integrated circuit semiconductor power component, comprising:
a substrate board, having a thickness in the range of 0.3 mm to 2.0 mm, including a ceramic center board, the center board being coated on a first side and a second side with a copper film, at least one recess portion being formed in the center board between the first side and the second side,
wherein the at least one recess portion receives the at least one integrated circuit semiconductor power component, and the copper film conforms to a chip thickness of the at least one integrated semiconductor power component.

5,576,935

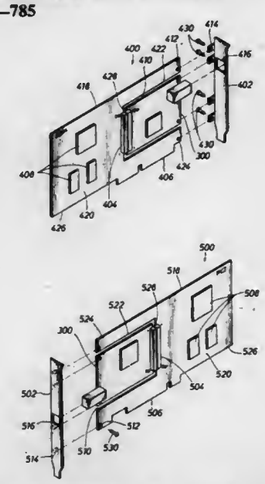
COMMON CIRCUIT BOARD CONNECTABLE TO MULTIPLE ALTERNATIVE SINGLE-SIDED EXPANSION BOARDS

Raymond A. Freer; Michael L. Marshall, both of Houston; Ronald D. Noblett, Bellaire, and Joseph R. Allen, Tomball, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Mar. 24, 1995, Ser. No. 410,115

Int. Cl.[6] H01R *23/70;9/09;* **H05K** *1/11;7/14*

U.S. Cl. 361—785 **7 Claims**



1. A family of expansion boards for inclusion in computer systems and for connecting to a plurality of expansion buses, the family of expansion boards comprising:
a common printed circuit board (PCB) having a component side for receiving components, and a back side opposing said component side, and mounted thereon only one PCB to PCB connector, said PCB to PCB connector being mounted on said component side and said common PCB having components substantially only on said component side;
a first expansion board including:
a main PCB having a component side for receiving components, a back side opposing said component side, an edge for connection to a first of the plurality of expansion buses and a cutout area substantially the shape of said common PCB;
only one PCB to PCB connector adapted to mate with said PCB to PCB connector of said common PCB, said PCB to PCB connector of said first expansion board being mounted on said component side of said first expansion board main PCB; and
means located at said edge of said first expansion board main PCB for connecting said first expansion board main PCB to said first expansion bus; and
a second expansion board including:
a main PCB having a component side for receiving components, a back side opposing said component side, a cutout area substantially the shape of said common PCB and an edge for connection to a second of the plurality of expansion buses, said second expansion main PCB component side being on the opposite face of said second expansion board main PCB with respect to said second expansion board main PCB edge as compared to said component side of said first expansion board main PCB with respect to said first expansion board main PCB edge;
only one PCB to PCB connector adapted to mate with said PCB to PCB connector of said common PCB, said PCB to PCB connector of said second expansion board being mounted on said component side of said second expansion board main PCB; and

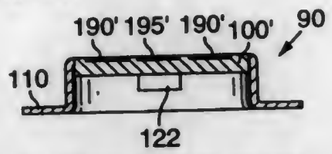
means located at said edge of said second expansion board main PCB for connecting said second expansion board main PCB to said second expansion bus.

5,576,936

COMPACT ELECTRONIC DATA MODULE WITH NONVOLATILE MEMORY

Michael J. Brorby, Redmond, Oreg., assignor to MacSema, Inc., Bend, Oreg.

Continuation of Ser. No. 76,236, Jun. 14, 1993, Pat. No. 5,506,757. This application Dec. 20, 1995, Ser. No. 575,649
Int. Cl.[6] H05K *7/14*
U.S. Cl. 361—796 **13 Claims**



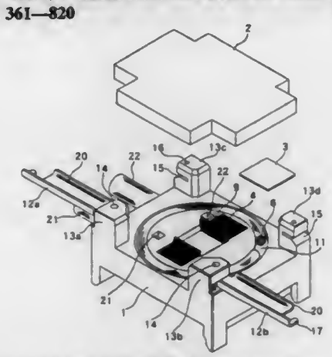
1. A compact electronic data module comprising:
a conductive tubular casing which defines a channel extending between opposite casing ends;
a nonvolatile memory device electrically connected to said casing to define a common ground; and
a generally planar circuit board having a first side with a pair of electrically conductive contact surfaces, and a second side which mounts said nonvolatile memory device in a determined electrical relation with said contact surfaces;
said circuit board being installed within said casing such that said contact surfaces are substantially exposed for periodic electrical access of said nonvolatile memory device.

5,576,937

CONNECTOR INCLUDING A CONNECTOR BODY, AN ANNULAR AIR-TIGHT MATERIAL AND A CLOSURE PLATE TO SEAL AN IC

Masaaki Kubo, Tokyo, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan

Filed Apr. 19, 1994, Ser. No. 229,766
Claims priority, application Japan, Apr. 19, 1993, 5-116554
Int. Cl.[6] H05K *5/06;7/12;* **B65D** *88/46;88/50*
U.S. Cl. 361—820 **23 Claims**



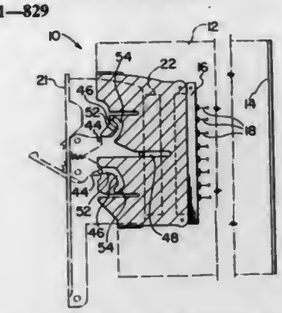
1. A connector for use with an IC, comprising:
a connector body having an upper surface;
a closure plate removably positioned on said connector body, said closure plate having a lower surface confronting said upper surface of said connector body when said closure plate is positioned thereon;
an annular air-tight sealing material mounted on said upper surface of said connector body so as to be interposed between said upper surface of said connector body and said lower surface of said closure plate when said closure plate is positioned on said upper surface of said connector body;
wherein an air-tight IC-receiving chamber is formed centrally of said annular air-tight sealing material and between said connector body and said closure plate when said closure plate is positioned on and pressed towards said upper surface of said connector body; and
wherein at least one latch lever is pivotally mounted to said connector body for horizontally pivotal movement about a vertical pivot axis between a pressing position in which said at least one latch lever presses downwardly against said closure plate when said closure plate is positioned on said upper surface of said connector body, and a release position in which said at least one latch lever is free from engagement with said closure plate.

5,576,938

ELECTRONIC CIRCUIT PACK AND MOUNTING FRAME COMBINATION

Roger A. Beun, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Aug. 14, 1995, Ser. No. 514,881
Int. Cl.[6] H02B *1/01*
U.S. Cl. 361—829 **4 Claims**



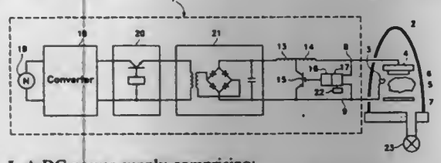
1. An electronic circuit pack and mounting frame combination comprising:
a circuit pack having a front end with at least one telecommunications connector located at the front end;
a mounting frame having a receiving station with an opening at a front of the frame for receiving the circuit pack into the front of the frame with the front end of the circuit pack at the front of the frame;
a mounting connector for mating with the circuit pack connector, and a connector holder carrying the mating connector;
and means for drawing the connector holder into the mounting frame while connecting the mating connector with the circuit pack connector, the drawing means comprising two planar members synchronizably pivotable upon the holder and having two guide pins secured, one to each of the planar members, in locations maintained symmetrically one on each side of a center line of movement of the mating connector as it is being drawn into the frame, the two guide pins movable along guide channels defined by the frame upon synchronous pivoting of the planar members so as to draw the connector holder into the frame and hold the mating connector, during its movement, with its terminals axially aligned with the terminals of the circuit pack connector.

5,576,939

ENHANCED THIN FILM DC PLASMA POWER SUPPLY

Geoffrey N. Drummond, 1000 Wagonwheel Dr., Fort Collins, Colo. 80526

Filed May 5, 1995, Ser. No. 435,211
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—16 **14 Claims**



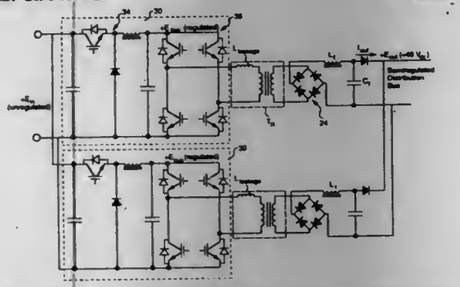
1. A DC power supply comprising:
a. an alternating power input wherein said alternating power is at a predominant frequency;
b. a converter which converts said alternating power to a direct current;
c. a first switch to switch said direct current to create an alternating signal at a higher frequency;
d. a rectifier which rectifies said alternating signal to direct current power output through a first and second lead;
e. an inductor means connected in series along said first lead after said direct current power output and having first and second inductor portions wherein said first and second portions are magnetically coupled; and
f. a second switch directly connected from said second lead to said first lead at a point in between said first and second inductor portions.

5,576,940

FRONT-END POWER CONVERTER FOR DISTRIBUTED POWER SYSTEMS

Robert L. Steigerwald, Burnt Hills, and Ljubisa D. Stevanovic, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 9, 1995, Ser. No. 370,283
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—17 **19 Claims**



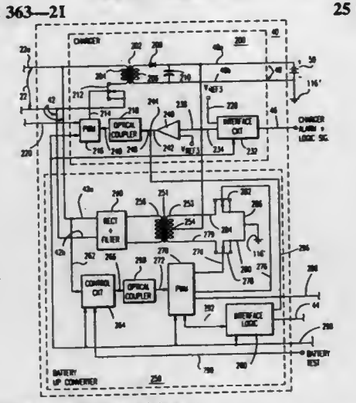
1. A power converter for interfacing prime power with a lower voltage distribution bus, comprising:
a front-end converter for providing a regulated dc voltage on a dc voltage bus from a source of said prime power and for providing an ac voltage at a pair of output terminals of said front-end converter;
a transformer having a predetermined leakage inductance, a primary winding of said transformer being coupled across said output terminals of said front-end converter; and
a rectifier coupled to a secondary winding of said transformer, said rectifier providing a rectified output voltage on said distribution bus;
said leakage inductance of said transformer being selected to provide a damping effect and a droop characteristic for said converter in a substantially lossless and passive manner such that said output voltage sags as an output current in said distribution bus increases.

5,576,941

MODULAR POWER SUPPLY SYSTEM

Chien Nguyen, Loxahatchee, and Douglas A. Johns, Atlantis, both of Fla., assignors to York Technologies, Inc., Riviera Beach, Fla.

Filed Aug. 10, 1994, Ser. No. 286,838
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—21 **25 Claims**



1. A power supply, comprising:
a. switching means for generating an oscillation signal responsive to a switching control signal;
b. inverter means coupled to said switching means for converting a direct current voltage of a first magnitude to an output voltage of a second magnitude responsive to said oscillation signal, said inverter means including an inverter transformer having a winding structure adapted to provide a controlled leakage reactance for maintaining stable circuit conditions, said inverter transformer having a primary winding coupled to said switching means for coupling said oscillation signal thereto;
c. pulse width modulator means coupled to said switching means for generating said switching control signal responsive to at least one feedback signal and an absence of an inhibit signal; and,
d. control means coupled to said pulse width modulator means for generating an inhibit signal for terminating said switching control signal responsive to said direct current voltage first magnitude being less than a predetermined value, said predetermined value being greater than zero.

5,576,942

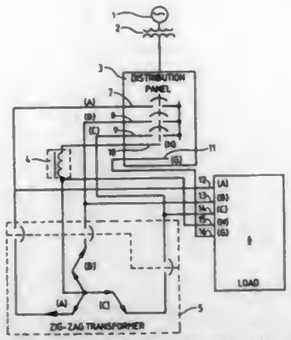
METHOD AND APPARATUS FOR REDUCING THE HARMONIC CURRENTS IN ALTERNATING-CURRENT DISTRIBUTION NETWORKS

Leon H. Beverly, Lockport; Richard D. Hance, Elburn; Alexandr L. Kristalinski, Naperville, and Age T. Visser, Geneva, all of Ill., assignors to Universities Research Association, Inc., Washington, D.C.

Filed Sep. 30, 1994, Ser. No. 316,634
Int. Cl.[6] H02J *1/02*
U.S. Cl. 363—39 **4 Claims**

1. An apparatus for reducing the harmonic content of AC phase and neutral line currents between a load and a polyphase AC source distribution network, said apparatus comprising:
a polyphase Zig-Zag autotransformer having input and output current lines, an input neutral line and an output neutral line, said input current lines and input neutral line being connected

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to said AC source distribution network, said output current lines and output neutral line being connected to said load; and

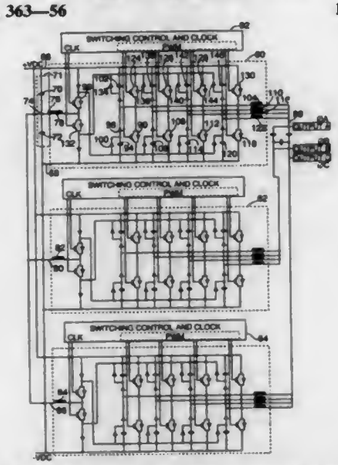
a choke connected within said input neutral line between said AC source distribution network and said Zig-Zag autotransformer.

5,576,943

SOFT SWITCHED THREE PHASE INVERTER WITH STAGGERED RESONANT RECOVERY SYSTEM

Alexander S. Keir, Chelmsford, Mass., assignor to Kaman Electromagnetics Corporation, Hudson, Mass., and Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

Filed May 22, 1995, Ser. No. 445,690
Int. Cl.[6] H02H *7/122*
U.S. Cl. 363—56 **10 Claims**



1. A resonant recovery circuit for returning semiconductor switching device loss energy from a snubber circuit of a DC to AC inverter to a DC voltage supply potential powering the semiconductor switching device, said recovery circuit comprising:

a recovery circuit per phase signal output of a DC to AC inverter including:

a first controllable semiconductor recovery switch means having a conductive state and non-conductive state;

a second controllable semiconductor recovery switch means having a conductive state and non-conductive state;

a split DC voltage supply means for supplying a positive DC voltage bus and a negative DC voltage bus relative to the positive DC voltage bus;

said first and second recovery switch means being connected in a series circuit arrangement between said positive and negative DC voltage buses, respectively and defining a junction at the connection between said first and second recovery switches;

a capacitor divider circuit means connected between said positive and negative DC voltage buses, respectively, said capacitor divider circuit means further comprising a first and second capacitor in a series circuit arrangement and defining a junction at the connection between said first and second capacitor;

a recovery inductor connected between said recovery switches junction and said capacitors junction;

first and second sets of diode means where each set of diode means is configured to return energy to the DC bus line from a power pole of a DC to AC inverter, the actuation of the power poles being staggered from one another to efficiently recover energy generated by switching losses within each power pole;

each set of diode means per power pole comprising a first recovery diode means coupled between a first snubber capacitor of a first snubber circuit associated with a first semiconductor power pole switching device and said first recovery switch means for discharging said first snubber capacitor through said recovery inductor when said first recovery switch means is made conductive by switch control circuitry which is timed so that a first pulse of current is delivered to the junction of said first and second switching capacitors to be returned to the DC voltage buses during a positive half cycle of the AC output of the inverter;

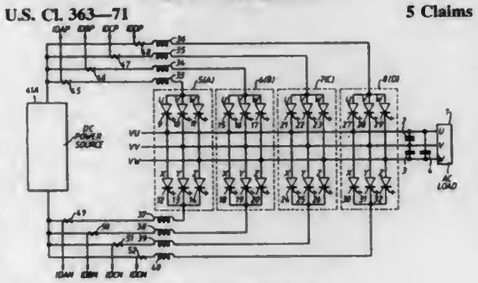
a second recovery diode means coupled between a second snubber capacitor of a second snubber circuit associated with a second semiconductor power pole switching device and said second recovery switch means for discharging said second snubber capacitor through said recovery inductor when said second recovery switch means is made conductive by switch control circuitry which is timed so that a second pulse of current is delivered to the junction of said first and second capacitors to be returned to the DC voltage buses during a negative half cycle of the AC output of the inverter, said first recovery switch means being conductive when said secondary recovery switch means is non-conductive and said first recovery switch means being non-conductive when said second recovery switch means is conductive.

5,576,944

PLURAL PARALLEL BRIDGE INVERTER POWER CONVERSION SYSTEM WITH BALANCED DC INPUT CURRENTS

Hiroshi Uchino, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 2, 1995, Ser. No. 382,585
Claims priority, application Japan, Feb. 28, 1994, 6-030290
Int. Cl.[6] H02M *7/521*
U.S. Cl. 363—71 **5 Claims**



1. A power conversion system, comprising:

a DC power source;

a plurality of unit converters; each being composed of a bridge connected switching devices for converting a DC power to an AC power;

a plurality of DC reactors; each being provided between said DC power source and one of said unit converters, respectively;

each of said unit converters having DC terminals connected to said DC power source through one of said DC reactors, respectively, and having AC terminals of each phase;

said AC terminals of each phase of said unit converters being connected in common and being adapted for connecting to an AC load; and

control means including,

current instruction value generating means for generating current instruction values of each phase for AC output currents of each phase of said power conversion system,

AC voltage detection means for detecting AC output voltages of each phase of said power conversion system,

DC current detection means for detecting a plurality of DC currents, each flowing between said DC power source and one of said unit converters, respectively,

conduction arm number calculating means for determining conduction arm numbers of said unit converters of each phase, each being determined based on a ratio of said current instruction value of respective phase and a mean value of said DC currents, and

current balance control means connected to receive said conduction arm numbers from said conduction arm number calculating means, said AC output voltages from said AC voltage detection means, and said DC currents from said DC current detection means, for generating a plurality of conduction instructions for said switching devices at a time of change of one of said conduction arm numbers based on a first order of magnitude of said AC voltages, a second order of magnitude of said DC currents and said conduction arm numbers of each phase at that point;

said conduction instructions being applied to said unit converters for switching ON or OFF said switching devices;

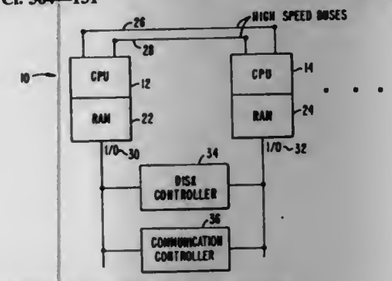
thereby balance control of said DC currents of said unit converters being exercised.

5,576,945

TRANSACTION MONITOR PROCESS WITH PRE-ARRANGED MODULES FOR A MULTIPROCESSOR SYSTEM

Matthew C. McCline, Bellevue, Wash., and James M. Lyon, San Jose, Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Jan. 23, 1995, Ser. No. 377,573
Int. Cl.[6] G05B *15/00;* **G06F** *9/00*
U.S. Cl. 364—131 **11 Claims**



1. A multiple processor system, comprising:

At least one process pair; and

a plurality of modules located within at least one of said process pair, said modules performing functions related to multiple independent threads, said modules arranged in a predetermined order, said predetermined order causing higher modules to be dependent on lower modules and lower modules to be independent from higher modules;

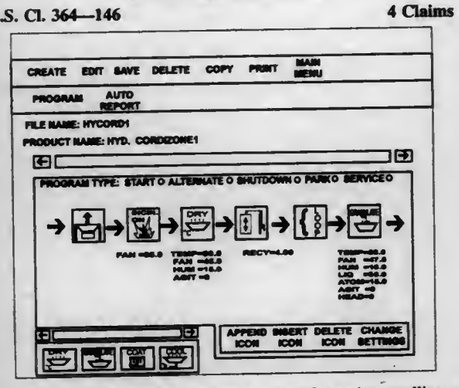
whereby said process pair is initially unaware of the number and order of said modules.

5,576,946

ICON BASED PROCESS DESIGN AND CONTROL SYSTEM

Martin P. Bender, Naperville, and James P. McAndrew, Aurora, both of Ill., assignors to Fluid Air, Inc., Aurora, Ill.

Continuation of Ser. No. 129,656, Sep. 30, 1993, abandoned.
This application Nov. 7, 1995, Ser. No. 554,871
Int. Cl.[6] G06F *17/00;17/50*
U.S. Cl. 364—146 **4 Claims**



1. A control system for creating a recipe for and controlling a variable manufacturing process comprised of a plurality of discrete process elements performed on manufacturing equipment, comprising:

display means including a digital computer for creating and displaying icons on a video display terminal, wherein each icon depicts with a single graphical representation a plurality of process elements, some of which may have variable process and alarm setpoints;

first selection means for an operator to select, manipulate, and arrange selected icons on the display terminal in an array from a library of icons on the display terminal, said icons being predetermined for a particular physical process equipment to be controlled, thereby allowing the operator the latitude to place the selected icons in any desired order in the array representing the sequential order of the recipe for carrying out the process elements represented by the icons to accomplish the manufacturing process without having to reprogram any underlying programmable controller programs;

second selection means for an operator to adjust the variable process setpoints associated with each selected icon and its associated process elements; and

means for interpreting the information represented by the icon array with its selected process setpoints, and applying it to control the manufacturing equipment for accomplishing the manufacturing process.

5,576,947

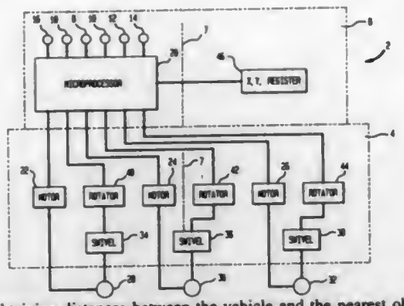
ROBOT HALLWAY TRAVELER

Uwe Wienkop, Munich, Germany, assignor to Siemens Corporate Research, Inc., Princeton, N.J.

Filed Jun. 30, 1994, Ser. No. 269,298
Int. Cl.[6] G05B *19/18*
U.S. Cl. 364—167.01 **7 Claims**

1. A method for guiding a vehicle along a hall having a given width, comprising the steps of:

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obtaining distances between the vehicle and the nearest objects in a plurality of directions from both sides of the vehicle;

identifying the nearest objects that are at distances not greater than the width of the hall;

fitting straight lines through the objects thus identified on each side of the vehicle so as to define the positions of the walls;

determining the distance between the vehicle and each of said straight lines;

finding the average of the distances between the vehicle and each of said straight lines to determine the location of the center of the hall;

deriving the deviation of the vehicle from the center of the hall from the difference between said average and one half the width of the hall;

determining the angle between the heading of the vehicle and each of said straight lines; and

using an average of said angles as the heading of the vehicle with respect to the center line of the hallway; and

controlling the movement of the vehicle in response to said deviation and the average of said angles.

5,576,948

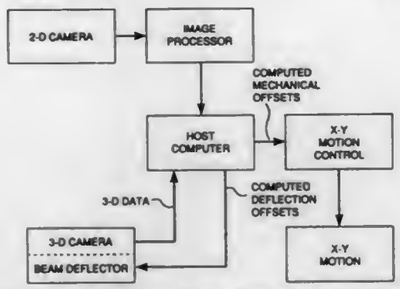
MACHINE VISION FOR ADAPTIVE LASER BEAM STEERING

Howard Stern, Greenlawn; Fereydoun Maali, New York, both of N.Y., and Stanley Elstein, Rehovot, Israel, assignors to Robotic Vision Systems, Inc., Hanppauge, N.Y.

Continuation-in-part of Ser. No. 921,316, Jul. 28, 1992, abandoned. This application Oct. 6, 1994, Ser. No. 319,415

Int. Cl.[6] G05B *19/18*

U.S. Cl. 364—167.01 **8 Claims**



1. A method for steering a laser beam of an active optical triangulation-based three-dimensional sensor by information extracted from an intensity image of a scene previewed by a video camera through laser beam deflection, comprising the steps of:

generating an equation of a nominal laser spot path, at a datum plane;

generating an equation of a desired path;

generating an equation of a laser plane;

generating coordinates of a laser point source;

projecting all said coordinates onto a global three-space coordinate system;

locating intersections of said spot path and said desired path with the said laser plane;

computing a subtended angle of said intersections on said laser plane when viewed from a laser source point; and

deflecting the laser beam through said computed subtended angle.

5,576,949

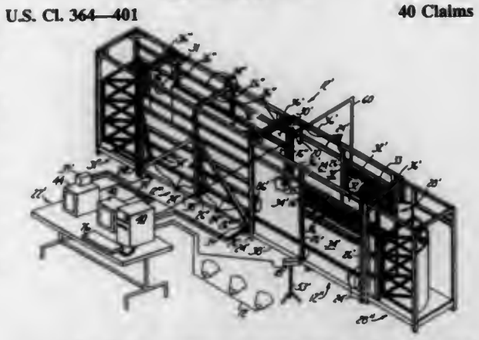
SYSTEM FOR ANIMAL EVALUATION THROUGH IMAGE ACQUISITION

Wayne W. Scofield, Piedmont, and Mark A. Engelstad, Rapid City, both of S. Dak., assignors to C-Scan, LLC, Minneapolis, Minn.

Continuation-in-part of Ser. No. 238,979, May 6, 1994, which is a continuation of Ser. No. 753,428, Aug. 30, 1991, abandoned. This application Jun. 20, 1994, Ser. No. 262,234

Int. Cl.[6] G06F *17/60*

U.S. Cl. 364—401 **40 Claims**



1. A method for evaluating animals with each such animal during its evaluation moving through first and second scenes corresponding to differing first and second fields of view in a manner so as to partially cover first and second background surfaces provided in each of said first and said scenes, respectively, as viewed in said first and second fields of view, respectively, said first and second background surfaces each having a visual appearance which contrast with a visual appearance of that animal, said method comprising:

acquiring a first scene evaluation image representation of an image of said first scene during movement of an animal undergoing evaluation through said first and second scenes, there being an animal image portion corresponding to that animal in said first scene evaluation image representation and a background image portion in said first scene evaluation image representation corresponding to uncovered portions of said first background surface;

acquiring a second scene evaluation image representation of an image of said second scene during said movement of said animal, there being an animal image portion corresponding to that animal in said second scene evaluation image representation and a background image portion in said second scene evaluation image representation corresponding to uncovered portions of said second background surface;

transforming at least in part one of said first and second scene evaluation image representations by decomposing same into at least a partial spectrum based on selected spectral functions;

locating in that scene evaluation image representation so decomposed a separation location between at least a part of said animal image portion thereof and at least a part of said background image portion thereof; and

forming selected animal indicia for said animal undergoing evaluation based on said locating of said separation location.

5,576,950

VIDEO IMAGE SEARCH METHOD AND SYSTEM USING THE SAME

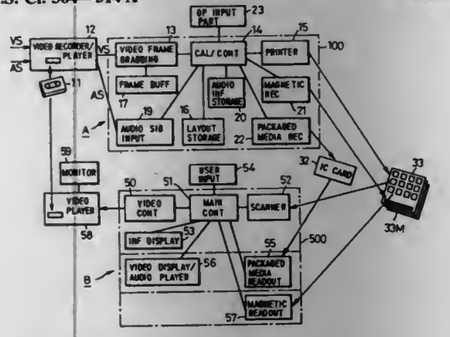
Yoshinobu Tonomura; Akihito Akutsu; Yukinobu Taniguchi, all of Yokohama; Gen Suzuki, Fujisawa, and Tomio Kishimoto, Yokohama, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Jul. 26, 1994, Ser. No. 280,507

Claims priority, application Japan, Jul. 28, 1993, 5-185753; Jun. 8, 1994, 6-125924

Int. Cl.[6] G11B *27/028*

U.S. Cl. 364—514 A **35 Claims**



1. A video image search system comprising:

video signal source means for outputting a video signal in a sequence of frame images;

layout storage means for storing images and additional information in a layout;

calculation control means which repeats processing in which each of said frame images of said video signal is subjected to image processing to obtain, as event items, a quality value of each of said frame images and at least one feature value characterizing contents of said video signal, and when both said quality value and said feature value satisfy predetermined conditions, it is decided that an event is present, said frame image decided to have an event is stored in a predetermined desired layout in a predetermined area in said layout storage means, and at least one part of additional information corresponding to said frame image, obtained at the time of said image processing is arranged in said area of said layout storage means, together with said frame image, in accordance with a predetermined array condition, and which reads out said arranged frame image and additional information; and

event output means for outputting, as an event, at least one of said stored frame images and said additional information both of which are read out from said layout storage means.

5,576,951

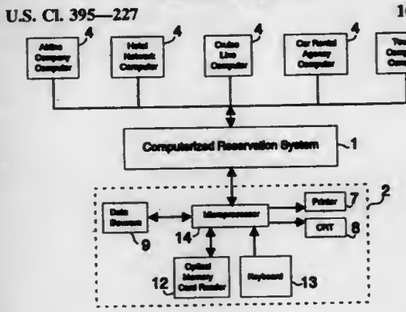
AUTOMATED SALES AND SERVICES SYSTEM

Lawrence B. Lockwood, 5935 Folsom Dr., La Jolla, Calif. 92037

Continuation of Ser. No. 116,654, Sep. 3, 1993, Pat. No. 5,309,355, and Ser. No. 96,610, Jul. 23, 1993, abandoned, and a continuation-in-part of Ser. No. 116,654, and Ser. No. 96,610, which is a continuation of Ser. No. 752,026, Aug. 29, 1991, abandoned, which is a continuation of Ser. No. 168,856, Mar. 16, 1988, abandoned, which is a continuation of Ser. No. 822,115, Jan. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 613,525, May 24, 1984, Pat. No. 4,567,359, said Ser. No. 116,654is a continuation of Ser. No. 396,283, Aug. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 152,973, Feb. 8, 1988, abandoned, which is a continuation-in-part of Ser. No. 822,115. This application Mar. 16, 1994, Ser. No. 210,301

Int. Cl.[6] G06F *19/00*

U.S. Cl. 395—227 **10 Claims**



1. A computer search system for retrieving information, comprising:

means for storing interrelated textual information and graphical information;

means for interrelating said textual and graphical information;

a plurality of entry path means for searching said stored interrelated textual and graphical information, said entry path means comprising:

textual search entry path means for searching said textual information and for retrieving interrelated graphical information to said searched text;

graphics entry path means for searching said graphical information and for retrieving interrelated textual information to said searched graphical information;

selecting means for providing a menu of said plurality of entry path means for selection;

automatic data processing means for executing inquiries provided by a user in order to search said textual and graphical information through said selected entry path means and for fetching data as a function of other data;

indicating means for indicating a pathway that accesses information related in one of said entry path means to information accessible in another one of said entry path means;

accessing means for providing access to said related information in said another entry path means; and

output means for receiving search results from said processing means and said related information from said accessing means and for providing said search results and received information to such user.

5,576,952

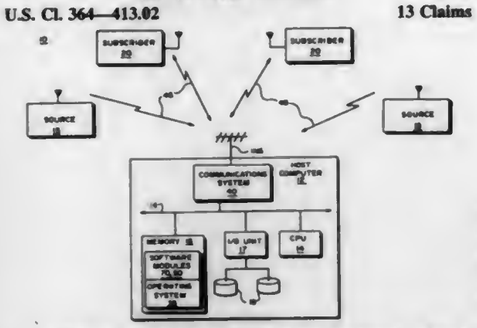
MEDICAL ALERT DISTRIBUTION SYSTEM WITH SELECTIVE FILTERING OF MEDICAL INFORMATION

Peter S. Stutman, Sudbury, and J. Mark Miller, Belmont, both of Mass., assignors to Metriplex, Inc., Mass.

Filed Mar. 9, 1993, Ser. No. 28,333

Int. Cl.[6] G06F *17/30;17/00*

U.S. Cl. 364—413.02 **13 Claims**



1. A medical alert distribution system for distributing information messages to an authorized user, said system comprising:

a source of inbound information records, each information record containing a name and a current value;

a host computer coupled to said source, said host computer including

(A) a first memory for storing selection and limit parameters, provided by the authorized user from a remote location, as a first database, said limit parameters including an initial limit and an incremental limit;

(B) means for selectively filtering the inbound information records in response to said selection and limit parameters, said means for selectively filtering including

first means, for comparing said selection parameter against said information records to determine if a said information record name matches said selection parameter, and for asserting a flag associated with said information record having said name which matches said selection parameter;

second means, coupled to said first means for comparing, for comparing said current value of said information record with said initial limit parameter when said flag associated with said information record is asserted;

means, coupled to said comparing means, for creating a selectively filtered message in response to said matched condition, said selectively filtered message including said current value of the information record; and

(C) means for distributing said selectively filtered message to the authorized user.

5,576,953

ELECTRONIC TRANSLATING DEVICE

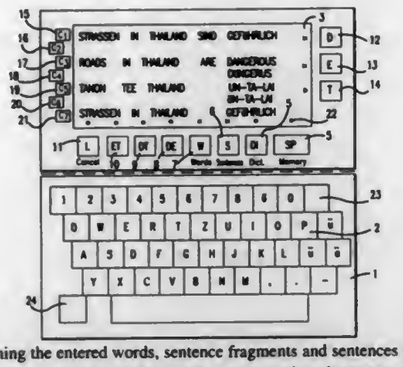
Max Hugentobler, Schweilistrasse 31, CH-8052 Zürich, Switzerland

Filed Sep. 7, 1994, Ser. No. 301,920

Claims priority, application Switzerland, Sep. 7, 1993, 02656/93

Int. Cl.[6] G06F *17/28*

U.S. Cl. 395—752 **9 Claims**



1. In an electronic translating device having an input unit (2), a multi-line display (3) and at least one memory unit, the input unit (2) comprising a memory key (4), said memory key (4) storing at least one of words, sentence fragments and sentences entered by said input unit (2) in said at least one memory unit and a plurality of identification keys (12, 13, 14) positioned in said input unit (2) assigning the entered words, sentence fragments and sentences to a memory space identifiable with a respective language, the improvement comprising: said multi-line display (3) showing said entered words, sentence fragments and sentences simultaneously in three languages whereby an input of said at least one of said words, sentence fragments and sentences in one language causes a display of a corresponding translation in two other languages from said at least one memory unit.

5,576,954

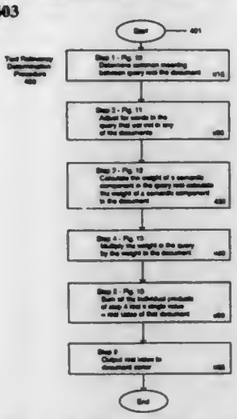
PROCESS FOR DETERMINATION OF TEXT RELEVANCY

Jim Driscoll, Orlando, Fla., assignor to University of Central Florida, Orlando, Fla.

Filed Nov. 5, 1993, Ser. No. 148,688

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—603 **9 Claims**



1. A Computer implemented method for ranking documents being searched in a database by a word query according to text relevancy comprising the steps of:

(a) inputting a word query to a computer database of documents;

(b) selecting each document by the word query;

(c) determining a real value number for each document, comprising the steps of:

(i) calculating a first importance value for each word in the selected document;

(ii) calculating a second importance value for each word in the query that matches a word in the document;

(iii) determining a probability value for each word in the query matching a semantic category;

(iv) determining a probability value for each word in the document matching a semantic category;

(v) adjusting for each word in .the query that does not exist in the database of the document;

(vi) repeating steps (i) to (iv) for each adjusted word;

(vii) calculating weights of a semantic component in the query based on the importance value, the probability value and frequency of the word in the document;

(viii) calculating weights of a semantic component in the document based on the importance value, the probability value and frequency of word in the query;

(ix) multiplying query component weights by document component weights into products; and

(x) adding the products together to represent the real-value number for the selected document; and

(d) repeating step (c) for each additional document selected by the query; and

(e) sorting the documents of the database according to their respective real value numbers.

5,576,955

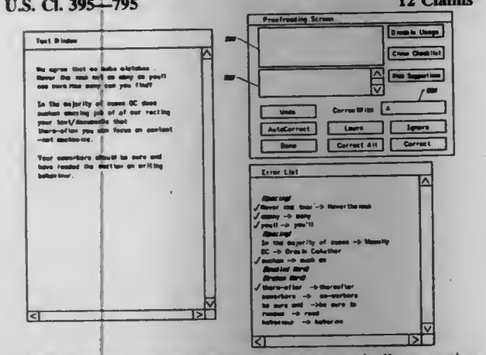
METHOD AND APPARATUS FOR PROOFREADING IN A COMPUTER SYSTEM

Brett Newbold, Redwood Shores; Paul Dixon, San Francisco, and Larry Stevens, Los Altos, all of Calif., assignors to Oracle Corporation, Redwood Shores, Calif.

Continuation of Ser. No. 44,821, Apr. 8, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 480,933

Int. Cl.[6] G06F *3/14;17/21;17/24;* **G09B** *5/00*

U.S. Cl. 395—795 **12 Claims**



8. A computer implemented method of automatically correcting errors in a scanned document in a computer system comprising the steps of:

generating a list of errors detected in said scanned document;

selecting in said computer system an error from said list of errors;

identifying in said computer system an automatic correction replacement for said error;

storing in said computer system said automatic correction replacement with respect to said errors

displaying said list of errors and displaying a portion of said scanned document, the display of said list of errors being separate from the display of said portion of said scanned document, the display of said list of errors including the display of said error in correspondence with said automatic correction replacement; and

providing for the unordered selection of a group of one or more errors, including said error, from said list of errors for automatic correction, wherein said error is corrected using said automatic correction replacement.

5,576,956

AUXILIARY STEERING ANGLE CONTROL SYSTEM FOR VEHICLE

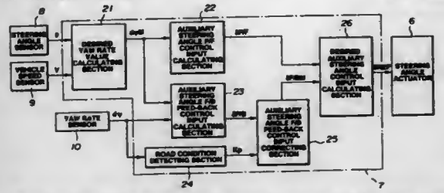
Hiroyuki Ashizawa, and Kazutaka Adachi, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama City, Japan

Filed Nov. 15, 1994, Ser. No. 340,403

Claims priority, application Japan, Nov. 16, 1993, 5-286873

Int. Cl.[6] B62D *6/00*

U.S. Cl. 364—424.05 **10 Claims**



10. An auxiliary steering angle control system for steering a pair of rear wheels for a four wheel steered vehicle, said auxiliary steering angle control system comprising:

vehicle condition detecting means for detecting a vehicle condition and generating a vehicle motion variable;

desired vehicle motion variable calculating means for calculating a desired value of the vehicle motion variable actually generated to the vehicle from the detected vehicle condition;

actual vehicle motion variable detecting means for detecting an actual vehicle motion variable actually generated in the vehicle;

auxiliary steering angle feedback control-input determining means for determining an auxiliary steering angle feedback control-input according to a difference between the desired value of the vehicle motion variable and the detected actual vehicle motion variable;

road condition detecting means for detecting a road variable indicative of a condition of a road on which the vehicle is traveling, said road condition detecting means including:

a yaw rate sensor for detecting a yaw rate generated in the vehicle during traveling and outputting a signal indicative of the yaw rate,

a filter for extracting a high-frequency component from the signal outputted from the yaw rate sensor, and

a processor which calculates a road variable indicative of a road condition by using a predetermined equation and a value indicative of the high-frequency component extracted by said filter; and

auxiliary steering feedback control-input correcting means for reducing the auxiliary steering angle feed back control-input when said road condition detecting means outputs a signal indicative that the vehicle is traveling on a bad-conditioned road.

5,576,957

CONTROL SYSTEM FOR A FRONT AND REAR WHEEL STEERING VEHICLE

Nobuyoshi Asanuma; Kiyoshi Wakamatsu, and Manabu Ikegaya, all of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

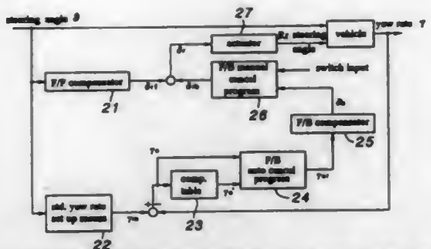
Filed Mar. 1, 1995, Ser. No. 396,543

Claims priority, application Japan, Mar. 2, 1994, 6-058160

Int. Cl.[6] B62D *5/04;7/14*

U.S. Cl. 364—424.05 **19 Claims**

1. A control system for a front and rear wheel steering vehicle, comprising:



steerable front road wheels steerable by a steering wheel via a front wheel steering device;

steerable rear road wheels steerable by a rear wheel steering actuator;

standard yaw rate computing means for determining a standard yaw rate according to operating conditions of said vehicle including a steering angle of said steering wheel;

yaw rate detecting means for detecting an actual yaw rate of said vehicle;

feedback control means for controlling said rear wheel steering actuator according to a deviation of said actual yaw rate from said standard yaw rate; and

cancelling means for cancelling operation of said feedback control means.

5,576,958

FUNCTION TRANSFORM APPARATUS

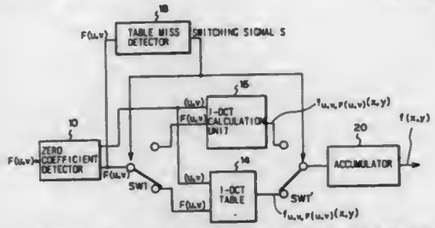
Yasuhiro Kawakatsu; Akihiro Yamori; Kiichi Matsuda, and Akira Nakagawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 13, 1995, Ser. No. 403,057

Claims priority, application Japan, Mar. 18, 1994, 6-049606

Int. Cl.[6] G06F *17/14*

U.S. Cl. 364—725 **10 Claims**



1. A function transform apparatus for transforming a first function in the domain of first variables into a second function in the domain of second variables, comprising:

a memory for storing a plurality of intermediate values corresponding to combinations of non-zero values of the first function, values of the first variables, and values of the second variables;

means for determining whether or not a given value of the first function is zero;

means for reading, out of the memory, intermediate values corresponding to combinations including the value of the first function that has been determined to be not zero and corresponding values of the first variables; and

an accumulator for accumulating the read intermediate values with respect to each of values of the second variables, to provide values of the second function for the values of the second variables, respectively.

5,576,959

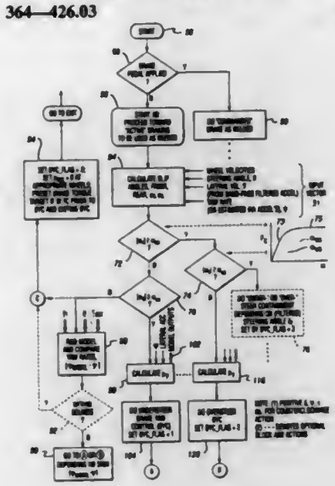
METHOD FOR CONTROLLING YAW OF A WHEELED VEHICLE BASED ON UNDER-STEER AND OVER-STEER CONTAINMENT ROUTINES

Davorin D. Hrovat, and Minh N. Tran, both of Dearborn, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 3, 1995, Ser. No. 398,279

Int. Cl.[6] G06F *7/70*

U.S. Cl. 364—426.03 **6 Claims**



1. A method for automatically controlling yaw for a road vehicle having front steerable wheels and rear wheels, each of said wheels having a wheel brake and a wheel speed sensor, said vehicle having lateral acceleration sensors at front and rear locations on said vehicle and a steering wheel angle sensor, said method comprising the steps of:

calculating lateral velocity of said vehicle as an integral of lateral acceleration sensor data;

calculating actual yaw rate based upon lateral acceleration sensor data;

calculating slip angle at least at said front wheels based upon wheel velocity sensed by said wheel speed sensors for said front wheels, steering angle, lateral velocity and said actual yaw rate;

comparing the calculated slip angle with a stored, empirical, limiting value of slip angle for under-steer conditions;

calculating estimated friction coefficient at the road surface engageable by said front wheels if said calculated slip angle is greater than said limiting value for under-steer conditions;

calculating desired yaw torque on said vehicle;

calculating wheel brake torque at said front wheels;

limiting wheel brake torque to a predetermined maximum value for a given road surface coefficient of friction whereby an under-steer yaw containment routine for said vehicle is effected;

controlling torque at said rear wheels following said step of comparing said slip angle with said stored value; and

calculating target yaw rate based upon said road surface coefficient of friction, and exiting said under-steer yaw containment routine if the difference between said target yaw rate based upon said road surface coefficient of friction and said actual yaw rate is less than a predetermined value.

5,576,960

DRIVING FORCE CONTROLLING APPARATUS FOR VEHICLE

Shinichi Maeda, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

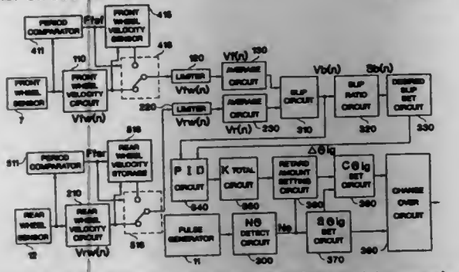
Division of Ser. No. 962,510, Oct. 16, 1992, Pat. No. 5,519,616.

This application Apr. 21, 1995, Ser. No. 426,945

Claims priority, application Japan, Oct. 25, 1991, 3-306498; Oct. 25, 1991, 3-306501

Int. Cl.[6] G06F *7/70*

U.S. Cl. 364—426.01 **20 Claims**



13. A driving force controlling apparatus for a vehicle, comprising:

wheel velocity calculating means for calculating a velocity of a driven wheel and a velocity of a driving wheel of the vehicle;

average wheel velocity calculating means for calculating an average driven wheel velocity and an average driving wheel velocity from the driven wheel velocity and the driving wheel velocity;

slip level detecting means for detecting a slip level of the vehicle from the average driven wheel velocity and the average driving wheel velocity;

retard amount setting means for setting a retard amount of an ignition time in response to the slip level;

driving force controlling ignition time setting means for setting an ignition time for driving force control using said retard amount;

period comparing means for determining whether a period of pulses outputted from at least one of the wheel velocity detecting sensors is equal to or lower than a predetermined period; and

velocity means for supplying, when the period of the pulses is not equal to or lower than the predetermined period, a wheel velocity for a present control cycle which corresponds to a velocity calculated a predetermined number of control cycles before.

5,576,961

PROCEDURE FOR CONTROLLING A MOTOR VEHICLE DRIVE UNIT

Michael Genzel, Rosstal; Rodolfo Möller, Nürnberg; Armin Tonn, Roth; Willem Kuster, Ingolstadt, and Andreas Leicht, Gaimersheim, all of Germany, assignors to Temic Telefunken microelectronic GmbH, Heilbroun, Germany

Filed Dec. 8, 1994, Ser. No. 354,825

Claims priority, application Germany, Dec. 10, 1993, 43 42 204.7

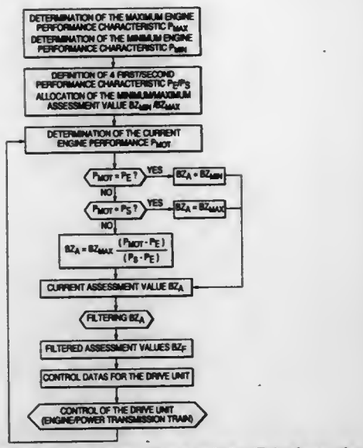
Int. Cl.[6] G06G *7/70*

U.S. Cl. 364—431.03 **8 Claims**

1. A method for controlling a drive unit, comprised of an engine and a transmission, of a motor vehicle including the following steps:

a) determining the speed-independent maximum engine performance characteristic (P_{max});

b) determining a reference performance characteristic (P_{ref}) as a minimum engine performance characteristic by the dependence of the drive resistance from the vehicle speed at a medium payload of the motor vehicle;



c) defining a first performance characteristic (P_E) above the reference performance characteristic (P_{ref}), which first performance characteristic (P_E) is dependent on the actual driving speed and is allocated a minimum assessment value (BZ_{min});

d) defining a second performance characteristic (P_S) between the first performance characteristic (P_E) and the maximum engine performance characteristic (P_{max}), which second performance characteristic is dependent on the actual driving speed and is allocated a maximum assessment value (BZ_{max});

e) determining the current engine performance (P_{Mot});

f) continuously comparing the current engine performance (P_{Mot}) to the first performance characteristic (P_E) and to the second performance characteristic (P_S) to determine current assessment values (BZ_a);

g) filtering the current assessment values (BZ_a), as continuously determined, over time to obtain filtered assessment values (BZ_f);

h) using the filtered assessment values (BZ_f) to determine drive unit control parameters or parameter sets; and,

i) using the determined drive unit control parameters or parameter sets to control the drive unit.

5,576,962

CONTROL SYSTEM AND METHOD FOR A HYDROSTATIC DRIVE SYSTEM

Alan L. Ferguson; Conrad G. Grembowicz, and Larry E. Kendrick, all of Peroria, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 405,339, Mar. 16, 1995, abandoned.

This application Mar. 18, 1996, Ser. No. 619,270

Int. Cl.[6] B60K *41/16*; F04B *49/00*

U.S. Cl. 364—431.03 **4 Claims**

1. An apparatus for controlling a load of an engine associated with an hydrostatic drive system, comprising:

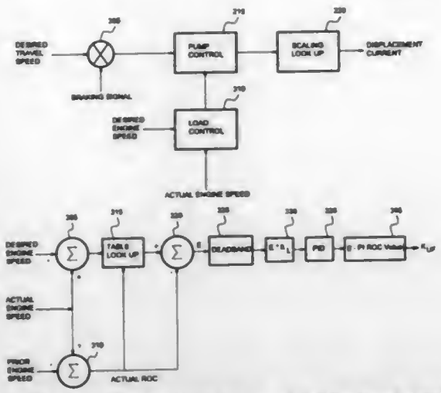
a variable displacement pump rotatably driven by the engine;

means for sensing the rotational speed of the engine and producing an actual engine speed signal indicative of the rotational engine speed;

means for producing a desired engine speed signal indicative of a desired rotational speed of the engine;

means for producing a pump command signal indicative of a desired pump displacement;

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means for receiving the actual and desired engine speed signals, determining a load control coefficient responsive to the difference between the actual and desired engine speed signals, and responsively modifying the pump command signal, said means for receiving the actual and desired engine speed signals comprising means for determining the acceleration of the engine speed, and producing an actual rate of change signal indicative of the engine speed acceleration; means for comparing the desired and actual engine speed signals, and producing a speed error signal indicative of the difference between the desired and actual engine speed signal magnitudes; means for receiving the actual rate of change and speed error signals, determining a desired rate of change of the engine speed, and responsively producing a desired rate of change signal; means for receiving and comparing the desired and actual rate of change signals, and producing a rate of change error signal indicative of the difference between the desired and actual rate of change signal magnitudes; means for receiving the rate of change error signal, and multiplying the rate of change error signal by a preselected coefficient value: and means for receiving the multiplied rate of change error signal, modifying the rate of change error signal, and responsively determining the load control coefficient value; and

means for receiving the modified pump command signal and responsively controlling the variable pump displacement to regulate the engine load.

5,576,963

METHOD AND SYSTEM FOR DETECTING THE MISFIRE OF A RECIPROCATING INTERNAL COMBUSTION ENGINE UTILIZING A MISFIRE INDEX MODEL

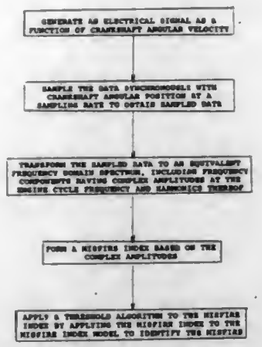
William B. Ribbens, Ann Arbor, Mich., and Jaehong Park, Seoul, Rep. of Korea, assignors to Regents of the University of Michigan, Ann Arbor, Mich.

Filed Oct. 18, 1994, Ser. No. 324,596
Int. Cl.[6] G01M *15/00*
U.S. Cl. 364—431.08 **26 Claims**

1. A method for detecting the misfire of a reciprocating internal combustion engine with a misfire index model which is a function of engine operating condition, the engine including a plurality of reciprocating components having an engine cycle frequency, at least one cylinder and a crankshaft, the method comprising the steps of:

generating an electrical signal as a function of crankshaft angular velocity, the electrical signal containing data;

sampling the data synchronously with crankshaft angular position at a sampling rate to obtain sampled data;



transforming the sampled data to an equivalent frequency domain spectrum, including frequency components having complex amplitudes at the engine cycle frequency and harmonics thereof;

forming a misfire index based on the complex amplitudes; and

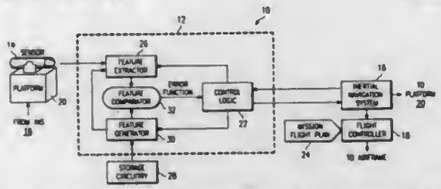
applying a threshold algorithm to the misfire index, which threshold algorithm distinguishes between a true misfire and normal cyclic variability which characterizes the combustion process in each cylinder of the engine to thereby obtain a misfire signal, the step of applying including the step of applying the misfire index to the misfire index model to identify the misfire.

5,576,964

SYSTEM AND METHOD FOR RELATING A PASSIVE SENSOR TO A GEOGRAPHIC ENVIRONMENT

William C. Choate, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 982,810, Nov. 30, 1992. This application Jun. 7, 1995, Ser. No. 475,693
Int. Cl.[6] G01C *11/04;* **G06F** *165/00*
U.S. Cl. 364—456 **12 Claims**



1. A system for relating a passive sensor to a geographic environment, the passive sensor being operable to sense an image of the geographic environment, comprising:

storage circuitry for storing map data having predetermined levels of complexity to relate with the image and representative of the geographic environment; and

process circuitry coupled to said storage circuitry and to the passive sensor and operable to:

extract at least one image range discontinuity from the image;

generate at least one map range discontinuity from said map data; and

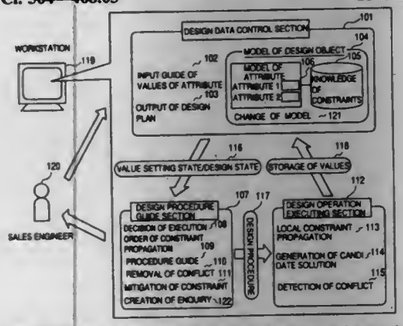
relate said at least one said extracted image range discontinuity to said at least one said generated map range discontinuity with said predetermined levels of complexity, such that the passive sensor is related to the geographic environment.

5,576,965

METHOD AND APPARATUS FOR AIDING OF DESIGNING PROCESS

Shingo Akasaka, Zushi; Yoshinao Arai, Yokohama; Atsuhiro Ishida, Fujisawa; Noriyuki Haga, Yokohama; Katsuyoshi Katsuta, Katsuta; Shoji Arino, Hitachiota; Yoko Tonosaki, Yokohama, and Tomoko Ogawa, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 12, 1993, Ser. No. 45,129
Claims priority, application Japan, Apr. 16, 1992, 4-096271; Jul. 20, 1992, 4-191880; Mar. 4, 1993, 5-043527
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—468.03 **22 Claims**



1. An apparatus for aiding a process for producing a design solution, wherein, on the basis of design knowledge including an attribute model representing a design specification of a product expressed by a group of a plurality of attributes and values of said attributes and constraints declaratively expressing relational rules among said attributes, attribute value is inferred from an input of a required specification from a user to satisfy the constraint, said apparatus comprising:

means for changing over between a group of a plurality of attributes and constraints necessary for an inference in accordance with a change of structure of a product;

means for obtaining a design solution by tracing a constraint network defined by said group of attributes and constraints, for producing a process for determining unknown attribute values in response to various requests from a customer, and for inferring attribute values successively in accordance with said process; and

means for repeatedly starting said changing-over means in accordance with a selection by the user, such that, when a conflict arises in said inferring of attribute values, an advice about a change of the indicated product structure, an input attribute value and a relieving of the constraints is provided as a countermeasure for resolving the conflict;

wherein said means for changing over includes:

(a) design object model storage means for storing therein an attribute model in which a design specification of a product is represented in the form of a set of attributes and values thereof and constraints representing relational rules between respective attributes,

(b) input guide means for guiding an input of attribute values when the user inputs a request specification and setting the input values to the attribute model, and

(c) design plan display means for displaying a design plan according to attribute values set to the attribute model as a result of an input operation, an inference operation or a computation;

wherein said means for obtaining a design solution includes:

(a) constraint propagation executing order decision means for detecting, based on attributes for which values are already set in said attribute model and said constraints, executable constraints according to values set to said attribute values, and

b) local constraint propagation means for accessing said design object model storage means to obtain therefrom constraints determined for execution by said design procedure guiding section, for executing the obtained constraints, and for setting calculated attribute values to the attribute model;

wherein said means for repeatedly starting includes:

(a) input guide means, operative when a conflict occurs between attributes during designing of a method of changing attribute values or mitigating constraints according to a setting state of attribute values in said attribute model, thereby creating a substitutional design plan, and

(b) conflict detecting means for detecting a conflict between the attribute values according to the constraints;

said apparatus further comprising:

control panel display means for displaying, for the user to select an inference execution processing pattern, an inference mode selection menu capable of selecting a first inference mode for sequential selection or a second inference mode for candidate retaining, wherein:

the first mode is operative, when a plurality of combinations of attributes which can be selected appear during the inference, for sequentially displaying attribute value selecting combinations, thereby requesting the user to select a desired one of the combinations, and

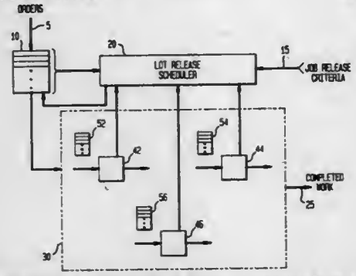
the second mode is operative, when the inference is continued while the combinations are retained as candidate values in values ranges of the respective attribute values of the attribute model, for displaying after the inference is finished the candidate values in difference colors in the attribute value menu of the attribute value input and display screen.

5,576,966

METHOD AND APPARATUS FOR CONTROL AND EVALUATION OF PENDING JOBS IN A FACTORY

Maryam S. Shahraray, Freehold, N.J., assignor to Siemens Corporate Research, Inc., Princeton, N.J.

Division of Ser. No. 563,911, Nov. 22, 1995, which is a continuation of Ser. No. 22,250, Feb. 25, 1993, abandoned. This application Apr. 28, 1995, Ser. No. 431,350
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—468.08 **10 Claims**



1. A method for controlling the release of jobs from a pool of pending jobs into a factory including a plurality of machines processing jobs-in-process, said method comprising the steps of:

storing data from inputs connected to the machines and other components of the factory relating to an amount of time required to process a job in the factory and an amount of time anticipated to complete the job within the factory including waiting time at the machines;

defining a Continuity Index (CI) for one of said jobs in said pool of pending jobs as the ratio of the processing time required for said job to the total time from release of said job into the factory;

establishing a Factory Profile curve of optimum CI value over time;

determining a curve of actual CI for said one of said jobs from a trial start date through the expected completion of said job;

comparing said actual CI curve for said one of said jobs with said Factory Profile optimum CI curve; and

releasing said one of said jobs into said factory for processing by at least one of said machines on said trial start date if said actual CI curve closely follows said Factory Profile curve, within predefined bounds, throughout the processing time for said job, and otherwise determining a new curve of actual CI for said job from a new trial start date and repeating said comparison step.

5,576,967

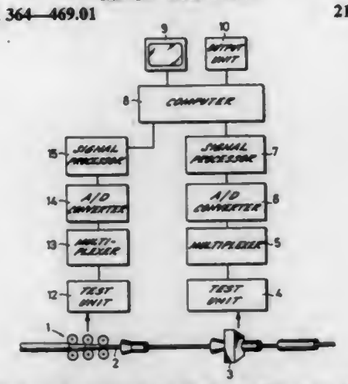
METHOD AND APPARATUS FOR MONITORING AND ENSURING PRODUCT QUALITY

Alexander Grabner, Reutlingen, Germany, assignor to Institut Dr. Friedrich Forster Prufgeratebau GmbH & Co. KG, Reutlingen, Germany

Filed Dec. 29, 1993, Ser. No. 175,110

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—469.01 **21 Claims**



1. A method of monitoring the product quality of a continuously produced product and comprising the steps of

generating a continuous test signal which is representative of a quality parameter of the product,

digitizing the test signal,

determining a frequency distribution from the digitized test signal, which indicates how often a specific value of the test signal occurs, and

integrating the frequency distribution in segments of the frequency distribution to derive a statistically relevant feature which describes the product quality.

5,576,968

EMBROIDERY DATA CREATING SYSTEM FOR EMBROIDERY MACHINE

Masahiro Mizuno; Masao Futamura, and Yukiyoshi Muto, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 27, 1995, Ser. No. 394,633

Claims priority, application Japan, May 31, 1994, 6-117919

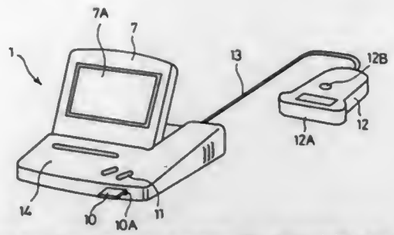
Int. Cl.[6] C06F *19/00*

U.S. Cl. 364—470.09 **20 Claims**

1. An embroidery data creating system for creating embroidery data necessary for controlling an embroidery machine for embroidering in one of two opposing embroidering directions during embroidering operations, said embroidery data creating system comprising:

embroidering region defining means for defining an embroidering region;

end point specifying means for specifying an end point where stitching is to be terminated in the embroidering region defined by said embroidering region defining means;



boundary line determining means for determining an initial boundary line passing through said end point specified by the end point specifying means and perpendicular to the embroidering direction;

partial embroidering region selecting means for selecting one of two partial embroidering regions, a partial embroidering region of the two partial embroidering regions respectively on each side of the boundary line determined by said boundary line determining means, the partial embroidering region selected having a point remotest from the boundary line at a distance from the boundary line greater than the distance between the boundary line and a remotest point of the other partial embroidering region;

stitching direction determining means for determining a stitching direction along which stitches are to be formed in the whole embroidering region, the stitching direction being suitable for the partial embroidering region selected by said embroidering region selecting means to form stitches in the embroidering direction; and

embroidery data creating means for creating embroidery data for the whole embroidering region according to the stitching direction determined by said stitching direction determining means.

5,576,969

IC COMPRISING FUNCTIONAL BLOCKS FOR WHICH A MASK PATTERN IS PATTERNED ACCORDING TO CONNECTION AND PLACEMENT DATA

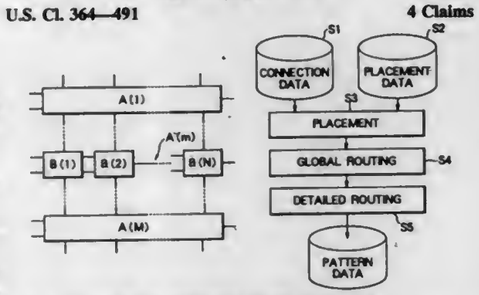
Yasushi Aoki; Minoru Kayano, and Kousuke Uno, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 9, 1994, Ser. No. 207,663

Claims priority, application Japan, Mar. 9, 1993, 5-047630

Int. Cl.[6] G06F *17/10*

U.S. Cl. 364—491 **4 Claims**



1. A semiconductor integrated circuit, comprising:

polycell functional blocks for which a mask pattern is patterned by an automatic placement and routing digital computer in accordance with a layout design,

each polycell functional block comprising a plurality of macroblocks,

each macroblock comprising a plurality of basic cells having a substantially common height,

said mask pattern being determined based on connection data of said macroblocks in each of said functional blocks and based on placement data of said basic cells in each of said functional blocks corresponding to said connection data,

wherein said placement data includes a physical arrangement of each of said basic cells relative to other of said basic cells and a physical arrangement of said macroblocks relative to each other,

wherein each of said basic cells is rectangular in shape,

wherein at least one of said functional blocks has a bit-sliced structure in which at least a predetermined number of said macroblocks comprise a plurality of basic cells, each of said basic cells having a common bit width of a plurality of bits and each being placed throughout said macroblocks of said at least one of said functional blocks, in accordance with common placement data, and

wherein said common placement data is used to configure said at least one of said functional blocks to achieve a narrowest allowable connection distance among said basic cells and a narrowest allowable layout area of said at least one of said functional blocks.

5,576,970

NITROGEN OXIDE REMOVAL CONTROL METHOD

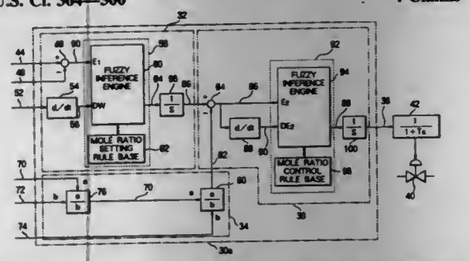
Yasuo Goto, Saitama-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Division of Ser. No. 171,454, Dec. 22, 1993, Pat. No. 5,449,495. This application Jun. 1, 1995, Ser. No. 456,922

Claims priority, application Japan, Dec. 25, 1992, 4-346911

Int. Cl.[6] B01D *53/56*

U.S. Cl. 364—500 **4 Claims**



1. A nitrogen oxide removal control method for controlling an amount of ammonia to be injected in a nitrogen oxide removal device where ammonia is injected into an exhaust gas flow of a gas turbine to remove NO_x by chemical reaction, the method comprising the steps of:

obtaining a deviation of a measured NO_x concentration value at an outlet of the nitrogen oxide removal device and a set NO_x concentration value;

obtaining a set mole ratio value of ammonia to NO_x based on said deviation and a representing state value of NO_x reducing means in a combustor of the gas turbine;

predicting a mole ratio of ammonia to NO_x in the exhaust gas based on an ammonia flow amount value, an exhaust gas flow amount value and a predicted NO_x concentration value at an inlet of the nitrogen oxide removal device calculated from a state amount of the gas turbine; and

controlling an amount of ammonia to be injected to the exhaust gas flow based on a deviation of the predicted mole ratio and the set mole ratio value.

5,576,971

APPARATUS FOR DISPLAYING DAMPING EFFECT OR BASE ISOLATION EFFECT

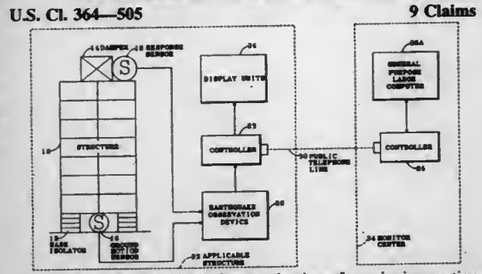
Koji Ishii, Kanagawa-ken, and Norihiko Adachi, Sagamihara, both of Japan, assignors to Kajima Corporation, Tokyo, Japan

Continuation of Ser. No. 185,418, Jan. 24, 1994, abandoned. This application Sep. 5, 1995, Ser. No. 522,529

Claims priority, application Japan, Jan. 26, 1993, 5-010731

Int. Cl.[6] E04B *1/98;* **F16H** *7/10;* **G01H** *13/00*

U.S. Cl. 364—505 **9 Claims**



1. An apparatus for displaying a reduction of a swinging motion effect in a structure with a damper or a base isolator, as compared to swinging motion effect in the structure without the damper or the base isolator, comprising:

a response wave calculating means for responding to an output signal of a ground motion sensor which measures ground motion directly in close proximity to the structure, said response wave calculating means calculating a response of the structure to the ground motion under an assumption that the structure is not provided with a damper or a base isolator, thereby outputting a calculated response wave signal;

a measured response wave sensor mounted to the structure for measuring and outputting a measured response wave signal produced when the structure moves in a swinging fashion in response to the ground motion applied to said structure;

computing means for receiving said calculated response wave signal output from said response wave calculating means and said measured response wave signal output from said measured response wave sensor and computing a first maximum amplitude for said calculated response wave signal and a second maximum amplitude for said measured response wave signal; and

display means provided at a predetermined position in the structure for displaying a comparison output signal from said computing means which includes a comparison of said first maximum amplitude of said calculated response wave signal and said second maximum amplitude of said measured response wave signal.

5,576,972

INTELLIGENT AREA MONITORING SYSTEM

Dana C. Harrison, 11 Birchtree La., Sandy, Utah 84092

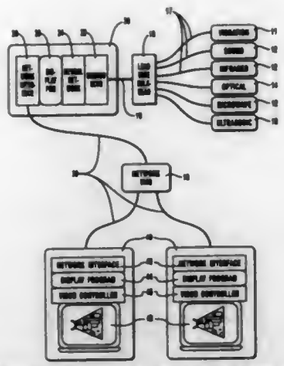
Continuation-in-part of Ser. No. 880,754, May 8, 1992, Pat. No. 5,517,429. This application Mar. 28, 1995, Ser. No. 413,720

Int. Cl.[6] G06T *1/40*

U.S. Cl. 364—516 **18 Claims**

1. A system for monitoring a space comprising:

a sensor;



a neural network responsive to the output from said sensor to create a model of the space and objects in the space within the field of view of said sensor, said neural network providing an output corresponding to changes within the space; and

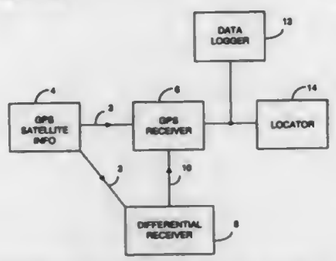
apparatus which uses said neural network output to indicate changes within the space to a user of the system.

5,576,973

APPARATUS AND METHOD FOR OBTAINING GEOGRAPHICAL POSITIONAL DATA FOR AN OBJECT LOCATED UNDERGROUND

Alan Haddy, Oakland, N.J., assignor to Radiodetection Limited, Bristol, United Kingdom

Filed Apr. 18, 1994, Ser. No. 228,686
Int. Cl.[6] G01S *13/00*
U.S. Cl. 364—516 **14 Claims**



1. An underground cable locating device including:

underground cable locating means for locating an underground object, the means including two detection coils for detecting a magnetic field produced by a current passing through the underground cable;

positional data receiving means for receiving data from a Global Positioning System (GPS) relating to the geographical position of the locating device, including means for receiving data from both at least one overhead GPS satellite and a second stationary receiver;

data storage means (12) for storing data relating to the position of the underground object as determined by the geographical position of the locating device; and

means for receiving data from the stationary receiver that has been modulated on to a signal that is transmitted along the underground cable detected by the locating device, said means including two detection coils for detecting the magnetic field produced by a current passing through the underground cable.

5,576,974

METHOD AND APPARATUS FOR DETERMINING WATERCUT FRACTION AND GAS FRACTION IN THREE PHASE MIXTURES OF OIL, WATER AND GAS

John D. Marrelli, Houston, and Farhan Siddiqui, Katy, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 15, 1994, Ser. No. 228,614
Int. Cl.[6] G01N *22/00*
U.S. Cl. 364—554 **5 Claims**

1. In conjunction with a fluid fraction of oil and water measuring means, a method to determine water fraction comprising the steps of:

performing a statistically significant number of measurements of phase shift and attenuation of a microwave signal passing through or reflected from a petroleum stream;

determining statistical measures on each of these data such as the means, the average, the standard deviation, the kurtosis, the maximum value and the minimum value;

forming a separate table of values of each of the data which correlate each statistical measure on each datum with an estimate of gas fraction in the petroleum stream;

forming a separate table of values of each of these data which correlate algebraic combinations of statistical measures on each datum with an estimate of gas fraction in the petroleum stream;

determining, as a function of the average water fraction and the average estimate of gas fraction, by using the equation:

$$Water\ Fraction = Xw/(1-Xg)$$

where Xw is the previous estimate of water fraction and Xg is the gas fraction, an improved value of water fraction estimate; and

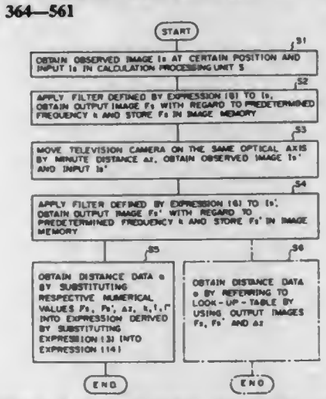
providing a means for reporting said improved value of water fraction estimate on a record medium.

5,576,975

DISTANCE MEASURING METHOD AND A DISTANCE MEASURING APPARATUS

Shigeru Sasaki; Takashi Toriu; Yoshiyuki Ohta, and Masaki Watanabe, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 947,839, Sep. 21, 1992, abandoned.
This application Mar. 7, 1995, Ser. No. 400,526
Claims priority, application Japan, Sep. 20, 1991, 3-241289
Int. Cl.[6] G01C *3/00*; G06G *7/78*
U.S. Cl. 364—561 **12 Claims**



1. A method of obtaining distance data from an object to a lens based on an image of the object obtained by an image input unit which forms an image of the object through the lens on an image receiving plane, comprising the steps of:

providing a single image input unit, including a lens and an image receiving plane, obtaining two images Is and Is' of an object by forming the two images Is and Is' through the lens on the image receiving plane;

obtaining the two images Is and Is' having two different first and second blurs, respectively, using said single image input unit, by setting at least one of a position of the lens and a position of the image receiving plane in relation to the object different for each of said two images Is and Is' by a minute distance Δz on an optical axis common to said two images Is and Is';

performing filtering processes by applying a filter to each of said two images Is and Is', thereby generating two output images Fs and Fs'; and

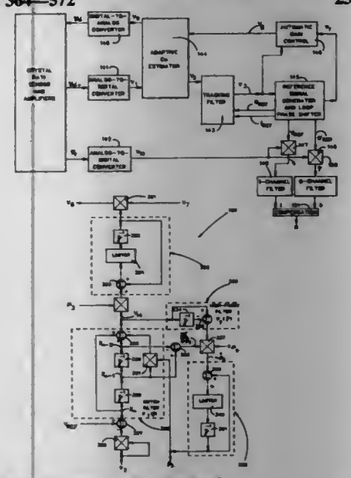
calculating a distance a from the lens to the object based on said generated two output images Fs and Fs' according to a relation between said generated two output images Fs and Fs' and a radius s of the first blur and a radius s' of the second blur on the image receiving plane for the object at the distance a from the lens and a relation between the radius s of the first blur and a radius s' of the second blur and the distance a from the lens to the object.

5,576,976

AMPLITUDE DETECTION AND AUTOMATIC GAIN CONTROL OF A SPARSELY SAMPLED SINUSOID BY ADJUSTMENT OF A NOTCH FILTER

Stanley A. White, San Clemente, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 7, 1993, Ser. No. 116,860
Int. Cl.[6] H03H *17/00*
U.S. Cl. 364—572 **25 Claims**



1. A method comprising the steps of:

a) providing an analog signal from a resonator, said analog signal including a sinusoidal component;

b) digitizing said analog signal to produce a digital input signal (x);

c) scaling said digital input signal (x) in an AGC amplifier by an AGC-control signal (w) to produce an amplitude-controlled input signal, (y)= (w)(x);

d) subtracting from a reference constant, REF, the square of said amplitude-controlled signal, (y), to produce a raw error signal, (u)= REF–(y)^2;

e) passing said raw error signal (u) through an adjustable notch filter automatically controlled by a frequency control signal (β) setting a signal rejection frequency of said notch filter, thereby producing a filtered error signal (v) from said notch filter;

f) producing said frequency control signal (β) as a predetermined function of said raw error signal (u) and said filtered error signal (v) by producing a product of a derivative of said raw error signal (u) and a derivative of said output signal (v), and low-pass filtering said product to produce said frequency control signal (β);

g) adjusting said notch filter with said frequency control signal (β) to substantially remove said sinusoidal component from said filtered error signal (v); and

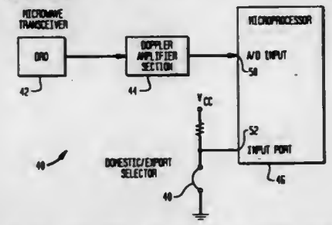
h) providing the filtered error signal (v) from said notch filter to an additional device for further use.

5,576,977

FILTER FOR ELIMINATING THE EFFECTS OF FLUORESCENT LIGHTS ON MICROWAVE TRANSCEIVERS

Kenneth Eskildsen, Oakland Gardens, N.Y., assignor to Alarm Device Manufacturing Company, Syosset, N.Y.

Filed Apr. 27, 1995, Ser. No. 429,631
Int. Cl.[6] G08B *13/00*
U.S. Cl. 364—572 **24 Claims**



1. A digital comb filter for filtering a signal output from a microwave transceiver, comprising:

a sampler connected to receive the signal output from the microwave transceiver and configured to sample the signal at a predetermined frequency;

a processor connected to receive the sampled signal and configured to filter the sampled signal by performing a recursion equation on the sampled signal; and

an output connected to output the filtered signal.

5,576,978

HIGH RESOLUTION FREQUENCY ANALYZER AND VECTOR SPECTRUM ANALYZER

Hitoshi Kitayoshi, Tokyo, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed May 18, 1994, Ser. No. 246,252
Int. Cl.[6] G01R *23/00;23/16*; G06F *17/10*; G06G *7/30*
U.S. Cl. 364—576 **10 Claims**

1. A high resolution frequency analyzer for obtaining frequency spectrum of an incoming signal and displaying the frequency on a display, comprising:

a subtractor for subtracting input digital data from the other input digital data and generating resulted digital data at its output;

a fast Fourier transformer receiving said resulted digital data from said subtractor for transforming discrete digital data to a frequency spectrum;

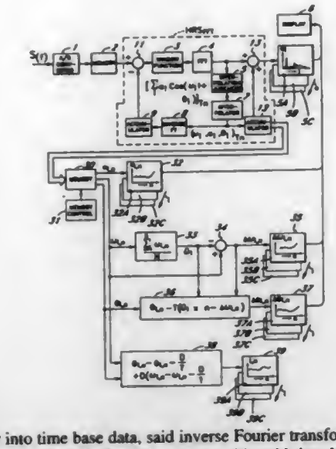
an interpolation judgment circuit which distinguishes a line spectrum from a dispersed spectrum in each frequency spectrum obtained by said fast Fourier transformer and determines that said frequency spectrum be interpolated when a true line spectrum is found;

a spectrum interpolator which produces frequency domain data by estimating a true frequency, amplitude and phase of said frequency spectrum that has been determined by said interpolation judgment circuit to be interpolated;

an inverse Fourier transformer which inversely converts said frequency domain data produced by said spectrum interpola-

171–488 O.G.–96–22: QL3

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tor into time base data, said inverse Fourier transformer being provided in a feedback loop to provide said time base data to said subtractor;

a first accumulator for accumulating said frequency domain data produced by said spectrum interpolator; and

an adder for vector-summing said frequency domain data accumulated by said accumulator to said frequency spectrum from said fast Fourier transformer and providing the resulted frequency spectrum to said display.

5,576,979

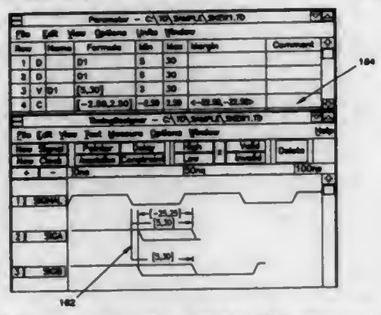
AUTOMATED DEVELOPMENT OF TIMING DIAGRAMS FOR ELECTRICAL CIRCUITS

Lawrence E. Lewis, Kirkland, and Michael S. Meredith, Redmond, both of Wash., assignors to Chronology Corp., Redmond, Wash.

Continuation of Ser. No. 791,794, Nov. 12, 1991, Pat. No. 5,381,524. This application Dec. 8, 1994, Ser. No. 351,606

Int. Cl.[6] G06F *3/00*

U.S. Cl. 364—578 **3 Claims**



1. A computer-implemented apparatus for constructing timing diagrams to model electrical circuits, comprising:

a computer having a monitor attached thereto;

data entry means for accepting one or more parameters defining a timing diagram into the computer;

means for displaying the timing diagram on the monitor of the computer in response to the parameter accepted into the data entry means, wherein the timing diagram comprises at least one waveform and the waveform comprises one or more edges;

wherein one of the parameters comprises a delay that defines a cause and effect relationship between first and second edges and a time between the first and second edges, the time comprises minimum and maximum delay values, and the minimum and maximum delay values define an uncertainty region representing a range of possible time values for an occurrence of the second edge;

means for propagating and accumulating uncertainty regions through a plurality of edges connected by delays;

means for calculating an uncertainty region for an edge that is a target of one or more delays;

wherein one of the parameters comprises a constraint that defines an allowable time between the edges in the waveform, and the constraint comprises minimum an maximum allowable time values, and another one of the parameters comprises a skew between two of the waveforms;

means for calculating a timing margin by determining a difference between the minimum and maximum allowable time values between two edges as defined by the constraint and the minimum and maximum delay values between the two edges as calculated by the means for propagating and accumulating uncertainty regions as defined by the delays; and

means for adjusting the calculated timing margin based on the skew.

5,576,980

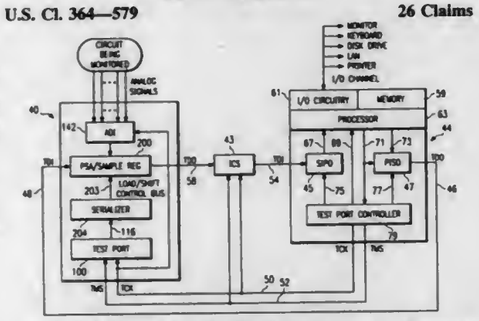
SERIALIZER CIRCUIT FOR LOADING AND SHIFTING OUT DIGITIZED ANALOG SIGNALS

Lee D. Whetsel, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 723,349, Jun. 28, 1991, abandoned. This application Feb. 8, 1994, Ser. No. 193,616

Int. Cl.[6] G05B *23/00*

U.S. Cl. 364—579 **26 Claims**



1. A serializer circuit for loading and shifting out multiple packets of digitized analog signals, comprising:

translation circuitry for translating an analog signal into a digital representation of said analog signal, said digital representation comprising a plurality of binary bit positions;

a register for receiving, shifting and loading said digital representations;

load/shift control circuitry for loading said digital representations into said register and for serially shifting said digital representations out of said register;

a receiver circuit for serially receiving multiple packets of said digital representations of said digitized analog signals from said register;

said translation circuitry comprising circuitry for translating said analog signal into said digital representation while said load/shift control circuitry continuously loads and shifts said register to output a plurality of digital representations of said translated analog signals;

said receiver circuit comprising a receive register for receiving and storing a predetermined number of serial data bit positions and a parallel memory for storing the contents of said register; and

further comprising control circuitry for storing the contents of said receive register into said parallel memory without interrupting the operation of said receiver circuit.

5,576,981

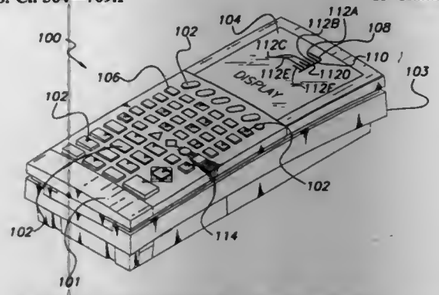
PORTABLE COMPUTER WITH INTERCHANGEABLE KEYPAD AND METHOD FOR OPERATING SAME

Wm. B. Parker, Mukilteo; Robert Y. Chen, Everett, and Charles E. McCall, Bothell, all of Wash., assignors to Intermec Corporation, Everett, Wash.

Filed Nov. 17, 1993, Ser. No. 153,461

Int. Cl.[6] G06F *3/02*

U.S. Cl. 364—709.1 **15 Claims**



1. A data processing assembly for a user comprising:

a system computer constructed for operation in accordance with a standard operating system;

a keyboard housing;

a keypad mounted to said keyboard housing, said keypad having a plurality of keys for depression by a user, said keypad being constructed to provide a plurality of X-Y position signals in response to depression of said plurality of keys wherein each of said plurality of X-Y position signals is associated with a respective one of said plurality of keys, said keypad further including a meaning key and being constructed to provide a change meaning signal in response to depression of said meaning key by the user;

a token memory mounted in said keyboard housing, said token memory having a plurality of first memory locations and a plurality of second memory locations wherein each of said plurality of first memory locations is associated with a corresponding one of said plurality of second memory locations, said plurality of first and second memory locations of said token memory being constructed for storing a plurality of token data units, said token memory further including a plurality of third memory locations wherein each of said plurality of third memory locations is associated with respective ones of said plurality of first and second memory locations, said plurality of third memory locations being constructed for storing a plurality of control data units;

a pointer memory mounted in said keyboard housing, said pointer memory being constructed for storing a plurality of pointer data units;

a string memory mounted in said keyboard housing, said string memory being constructed for storing a plurality of string data units;

a keyboard processor mounted in said keyboard housing and being electrically coupled to said keypad, said token memory, said pointer memory and said string memory, said keyboard processor being responsive to said plurality of X-Y position signals to access corresponding ones of said plurality of first memory locations and said plurality of second memory locations of said token memory, said keyboard processor being responsive to said change meaning signal for determining whether to access said plurality of first memory locations and whether to access said plurality of second memory locations, said keyboard processor retrieving a desired token data unit from said token memory, said keyboard processor being responsive to said desired token data unit for retrieving a desired pointer data unit from said pointer memory and being responsive to said desired pointer data unit for retrieving a desired string data unit from said string memory, wherein said desired string data unit identifies a meaning that will be attributed to a particular one of said plurality of keys, the meaning being a function of said change meaning signal, said keyboard processor being further responsive to said X-Y position signals to access a corresponding one of said plurality of third memory locations to access a desired control data unit and being responsive to said change meaning signal for obtaining a desired control signal wherein said control signal is portion of said desired control data unit;

a standard keyboard port mounted in said keyboard housing, said standard keyboard port being coupled to said keyboard processor for receiving said desired string data unit, said standard keyboard port being coupled to said system computer for transmitting said desired string data unit to said system computer;

an additional keyboard port mounted in said keyboard housing and electrically coupled to said keyboard processor, said additional keyboard port further being coupled to said system computer constructed for interfacing said keyboard processor with said system computer in co-existence with said standard operating system in a manner such that the standard operating system is not interfered with and is furthermore unaware of the additional port, thereby to transmit and receive additional data to and from said system computer wherein said additional data includes token data units and desired data strings; and

a display mounted in said keyboard housing and electrically coupled to said keyboard processor, said display including a meaning indicator having a elongated indicator and first and second meaning indicators wherein said first and second meaning indicators are light responsive devices that are selectively actuatable, said first and second meaning indicators being positioned in orthogonal relationship with respect to said elongated indicator, said keyboard processor being responsive to said change meaning signal for selectively actuating said first and second meaning indicators thereby to indicate to the user the meaning that will be attributed to said plurality of keys of said keypad.

5,576,982

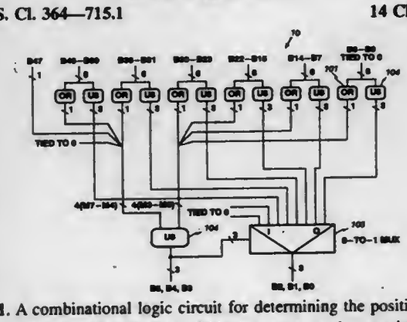
FAST SIGNIFICANT BIT CALCULATOR AND ITS APPLICATION TO INTEGER MULTIPLICATION AND DIVISION

Gary C. Wu, Wayne; Steven H. Leibowitz, Norristown, and Chandra S. Pawar, Harleysville, all of Pa., assignors to UNISYS Corporation, Blue Bell, Pa.

Filed Oct. 17, 1994, Ser. No. 323,780

Int. Cl.[6] G06F *7/00;7/52*

U.S. Cl. 364—715.1 **14 Claims**



1. A combinational logic circuit for determining the position of the most significant bit or nibble in an operand comprising a plurality of bytes, each byte, comprising eight bits and two nibbles, said combinational logic circuit providing a plurality of combinational logic circuit output bits that indicate the position of the most significant bit or nibble, wherein said combinational logic circuit

comprises selecting circuitry and a plurality of eight-bit units, each eight-bit unit being operatively coupled to said selecting circuitry and comprising eight input terminals for receiving eight input bite (IN0–IN7) derived from said operand, first logic circuit means, and three output terminals for providing three logic circuit output bits (B2–B4), wherein said logic circuit output bits (B2–B4) are provided to said output terminals by said first logic circuit means, said first logic circuit means setting said logic circuit output bits in accordance with the following logic equations:

$B4=IN7+IN6+IN5+IN4$;

$B3=IN7+IN6+B4'\cdot(IN3+IN2)$;

$B2=IN7+IN6'\cdot IN5+B4'\cdot(IN3+IN2'\cdot IN1)$;

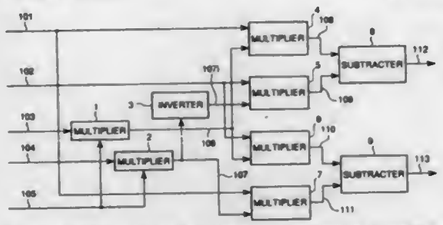
where the apostrophe (') refers to a "NOT" function; and wherein said selecting circuitry is constructed and arranged in relation to said eight-bit units so that said logic circuit output bits produced by said plurality of eight-bit units form at least part of a set of bits forming a binary number indicative of the number of significant bits or nibbles of said operand, said binary number being utilized as said combinational logic circuit output bits.

5,576,983

ARITHMETIC CIRCUIT FOR ADAPTIVE EQUALIZER OF LMS ALGORITHM OF REDUCED AMOUNT OF OPERATION

Toshimichi Shiokawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 361,283
Claims priority, application Japan, Dec. 27, 1993, 5-333638
Int. Cl.[6] G06F *7/52*
U.S. Cl. 364—754 **6 Claims**



1. An arithmetic circuit for adaptive equalizer of Least Mean Square (LMS) algorithm comprising:

real operation means for computing a first product between a real part signal of a data sequence and a product of a real part signal of an error sequence and a step coefficient, and for computing a second product between an imaginary part signal of said data sequence and a product of an imaginary part signal of said error sequence and a step coefficient,

wherein when either of said first and second products is negative, said real operation means obtains a real part of an adaptation coefficient from said first and second products; and

imaginary operation means for computing a third product between said imaginary part signal of said data sequence and a product of said real part signal of said error sequence and said step coefficient, and for computing a fourth product between said real part signal of said data sequence and a product of said imaginary part signal of said error sequence and said step coefficient,

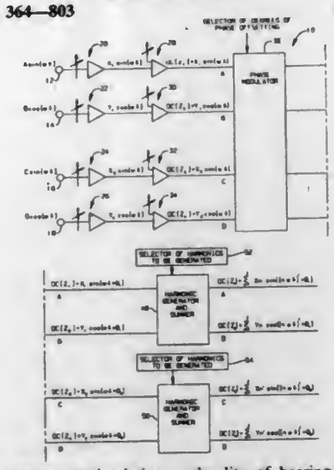
wherein said imaginary operation means obtains an imaginary part of an adaptation coefficient from said third and fourth products.

5,576,984

HYDRODYNAMIC BEARING ROTOR ORBIT SIMULATOR

Guillermo A. Cornejo, San Diego, Calif., assignor to Solar Turbines Incorporated, San Diego, Calif.

Filed Nov. 30, 1994, Ser. No. 346,703
Int. Cl.[6] G06G *7/57*
U.S. Cl. 364—803 **16 Claims**



1. An apparatus simulating a plurality of bearing orbits, the simulated bearing orbits including rotor journal position and amplitude, comprising:

first simulation means for producing signals indicative of a first simulated bearing orbit;

second simulation means for producing signals indicative of a second simulated bearing orbit;

means for varying the rotor journal position for each of the first and second simulated bearing orbits;

means for varying the orbit amplitude for each of the first and second simulated bearing orbits; and

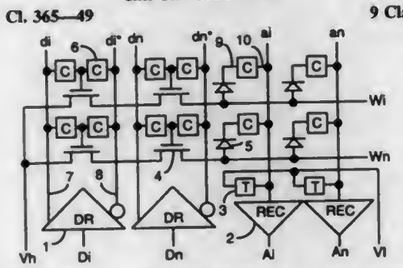
means for controlling the rotor mode shape of the first and second simulated bearing orbits.

5,576,985

INTEGRATED CONTENT ADDRESSABLE READ ONLY MEMORY

Klaus Holtz, 631 O'Farrell #710, San Francisco, Calif. 94109

Filed Mar. 25, 1996, Ser. No. 620,908
Int. Cl.[6] G11C *15/00*
U.S. Cl. 365—49 **9 Claims**



1. In a data processing system an integrated content or random addressable read only memory device in which a plurality of binary input data patterns, received by an input station, are converted into binary output address codes, on an output station, where each unique binary input data pattern results in a binary output address code, comprising:

means including at least two driver circuits for accepting the binary input data pattern from the input station and generating a true output signal and a false output signal for each binary bit, respectively, in the binary input data pattern through each driver circuit each generating an inverting or false and a non inverting or true output signal;

means defining a multiple line selection grid using rows and columns;

means for applying the true and the false output signals from each of the driver circuits to the columns of said multiple line selection grid;

means defining an array of logical and gates by serial rows of field effect transistors, each field effect transistor representing an input to the logical and gate;

means defining connection cells programmable for either connection or non connection;

means for connecting either the true or the false output signal from each driver output on the grid to said array of logical and gates via said connection cells so that each logical and gate is connected to a unique binary input data pattern;

means defining a diode function;

means for generating said binary output address code, when the unique binary input data pattern is applied, from the output of each logical and gate in the array via said diode function and said connection cells;

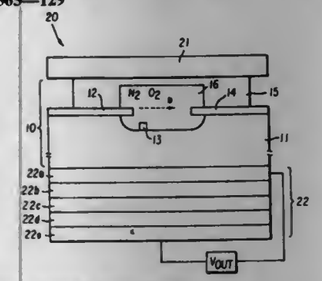
means for directing the resulting binary output address code to an output station.

5,576,986

MEMORY DEVICE USING MICRO VACUUM TUBE

Kazuo Matsuzaki; Yoshiyuki Sakai; Yuichi Urano, all of Nagano; Hidekatsu Kuroda, Mie, and Akira Amano, Nagano, all of Japan, assignors to Fuji Electric Co. Ltd., Kawasaki, Japan

Filed Oct. 14, 1994, Ser. No. 322,491
Claims priority, application Japan, Oct. 14, 1993, 5-256592
Int. Cl.[6] G11C *11/00*
U.S. Cl. 365—129 **8 Claims**



7. A micro memory device comprising:

a micro storage chamber;

a field effect electron emitter portion for controlling emission of electrons from a cold cathode located in said micro storage chamber with a voltage applied to a control electrode;

an anode located in said micro storage chamber for capturing electrons emitted from said cold cathode through a space of said micro storage chamber;

a reversibly reactive gas mixture enclosed in said micro storage chamber, wherein a bonding energy of said gas mixture is different from a dissociation energy of said gas mixture;

wherein said micro storage chamber comprises a quartz substrate including a recess portion formed on an upper face of said quartz substrate and a sealing member located over the recess portion; and

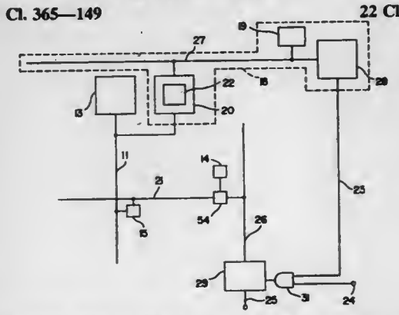
wherein said cold cathode is located on the upper face of the quartz substrate and includes comb-like tips extending over a first side of the recess portion, said control electrode is disposed on a bottom surface of the recess portion, and said anode is located on the upper face of the quartz substrate and extends over a second side of the recess portion that is opposite said first side.

5,576,987

SEMICONDUCTOR MEMORY DEVICE

Makoto Ihara, Sakurai, and Toshio Mimoto, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 3,991, Jan. 15, 1993, Pat. No. 5,406,516.
This application Sep. 30, 1994, Ser. No. 315,583
Claims priority, application Japan, Jan. 17, 1992, 4-6808; Mar. 31, 1992, 4-77713; Jun. 17, 1992, 4-158323
Int. Cl.[6] G11C *11/24*
U.S. Cl. 365—149 **22 Claims**



1. A semiconductor memory device having a plurality of bit lines and a plurality of word lines, said device comprising:

at least one first memory cell including a first capacitor having a first terminal as a data memory node and a second terminal provided with a first standard potential, and a first switching transistor having a gate connected to one of said word lines, a source, and a drain, one of said source and said drain being connected to one of said bit lines and the other being connected to said first terminal of said first capacitor; and

at least one second memory cell including a second capacitor having a first terminal, kept in a floating condition in which no substantial electrical connection is established with each of said bit lines, and a second terminal provided with the first standard potential.

5,576,988

SECURE NON-VOLATILE MEMORY ARRAY

Max C. Kuo, San Leandro, and James M. Jaffe, Santa Clara, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

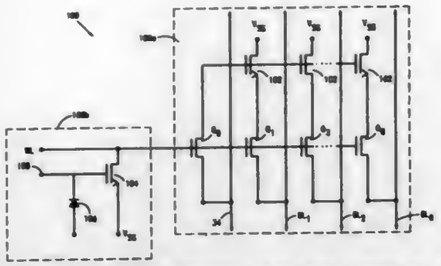
Filed Apr. 27, 1995, Ser. No. 430,017
Int. Cl.[6] G11C *16/02*; H01L *29/788*
U.S. Cl. 365—185.04 **24 Claims**

1. A non-volatile memory structure comprising:

an array of memory cells arranged in a plurality of rows and a plurality of columns, each of said memory cells comprising an MOS transistor;

a plurality of word lines, each being associated with one of said rows of said memory cells;

a plurality of bit lines, each being associated with one of said columns of said memory cells; and



a plurality of security structures, each being coupled to an associated word line, wherein the security structure comprises:

an EEPROM cell having a drain connected to said associated word line, a source coupled to a voltage supply, and a control gate coupled to a security node; and

a diode having a cathode connected to said control gate of said EEPROM cell and having an anode connected to said voltage supply.

5,576,989

METHOD FOR THE COUNTING DOWN OF UNITS IN A MEMORY CARD

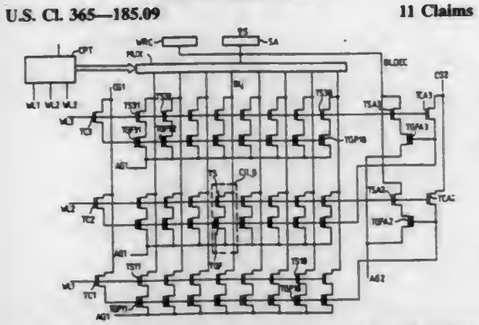
Jacek Kowalski, Trets, France, assignor to Gemplus Card International, Gemenos, France

Division of Ser. No. 221,166, Mar. 31, 1994, Pat. No. 5,473,564. This application Sep. 11, 1995, Ser. No. 526,513

Claims priority, application France, Apr. 1, 1993, 93 03836

Int. Cl.[6] G11C *16/06*

U.S. Cl. 365—185.09 **11 Claims**



1. A method for the counting down of units of account from a memory card containing a non-volatile memory organized in a network of N zones of P cells, each zone having a weight that is P times the weight of the immediately lower ranking zone wherein, to make a countdown by one unit, the method consists in carrying out the following recurrent procedure: the carrying out of a search for the first erased cell by going through the memory according to the rising order of rank of the zones, the programming of the erased cell that is found and, if the cell is no longer located in the lowest ranking zone, the erasing of the zone having a rank immediately below that of the cell found and a return to the start of the recurrent program, wherein this method comprises the steps of carrying out the programming, at the same time as the programming of the erased cell, of a non-volatile auxiliary memory cell associated with the zone in which the erased cell is located, and in subsequently erasing this auxiliary cell at the same time as the immediately lower ranking zone is erased.

5,576,990

VOLTAGE REGULATOR FOR NON-VOLATILE SEMICONDUCTOR MEMORY DEVICES

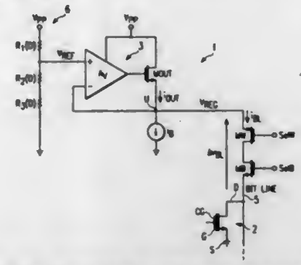
Emilio Camerlenghi, Bergamo, and Giulio Casagrande, Agrate Brianza, both of Italy, assignors to SGS-Thomson Microelectronics, S.r.L., Milan, Italy

Filed Jan. 3, 1995, Ser. No. 367,538

Claims priority, application European Pat. Off., Dec. 31, 1993, 93830543

Int. Cl.[6] G11C *11/34;16/06*

U.S. Cl. 365—185.23 **39 Claims**



1. A circuit for regulating the voltage applied to a bit line of a floating-gate memory, comprising:

a voltage divider network connected between a programming voltage connection and chip ground;

an array of floating-gate field effect transistor memory cells organized in bit lines;

said voltage divider network comprising gate elements of said transistors of said array interconnected as resistive voltage divider elements; and

a voltage regulator circuit, connected to drive at least a selected one of said bit lines of said array with a voltage which is determined by that of an intermediate point in said voltage divider.

5,576,991

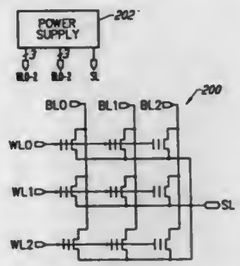
MULTISTEPPED THRESHOLD CONVERGENCE FOR A FLASH MEMORY ARRAY

Nader Radjy, Palo Alto; Lee E. Cleveland, Santa Clara; Jian Chen, San Jose, and Shane C. Hollmer, Santa Clara, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jul. 1, 1994, Ser. No. 269,540

Int. Cl.[6] G11C *11/40*

U.S. Cl. 365—185.24 **16 Claims**



1. A method of converging threshold voltages of memory cells in a flash memory array after the memory cells have been erased, the method comprising successive steps of:

setting a gate voltage to an initial value;

applying a drain voltage greater than the gate voltage to drains of the memory cells for a time period while applying the gate voltage to gates of the memory cells; and

increasing the gate voltage in a positive direction and repeating the previous step if the gate voltage is below a predetermined value above the initial value.

5,576,992

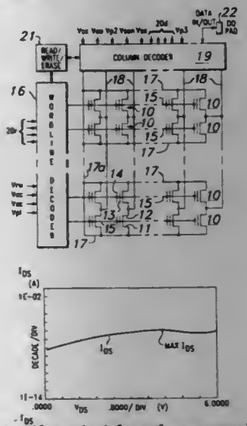
EXTENDED-LIFE METHOD FOR SOFT-PROGRAMMING FLOATING-GATE MEMORY CELLS

Freidoon Mehrad, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 30, 1995, Ser. No. 521,555

Int. Cl.[6] G11C *16/00*

U.S. Cl. 365—185.24 **12 Claims**



11. An extended-life method for soft-programming at least one floating gate memory cell, said memory cull having a control gate, a source, a drain and a substrate, said being cell being hard-programmable with a hard-programmable voltage applied between said control gate and said substrate, said method comprising:

applying,to said drain a first voltage measured from the voltage at said substrate, said first voltage less than the sum of about one volt plus a second voltage plus a specific drain voltage;

said specific drain voltage determined by connecting said source and said substrate to a reference voltage and applying to said control gate a soft-programming voltage being between thirty and sixty percent of said hard-programmable voltage, then applying to said drain a voltage increasing from said reference voltage while measuring the current flow into said drain, said specific drain voltage equal to or less than that value of said increasing voltage at which said current flow into said drain reaches a first peak;

applying to said source a non-negative said second voltage measured from the voltage at said substrate, said second voltage less than said specific drain voltage; and

applying to said control gate a third voltage measured from the voltage at said substrate said third voltage no greater than said soft-programmable voltage.

5,576,993

FLASH MEMORY ARRAY WITH SELF-LIMITING ERASE

Gary Hong, Hsinchu, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Division of Ser. No. 435,326, May 5, 1995. This application Apr. 22, 1996, Ser. No. 636,145

Int. Cl.[6] G11C *7/00;16/00*

U.S. Cl. 365—185.29 **8 Claims**

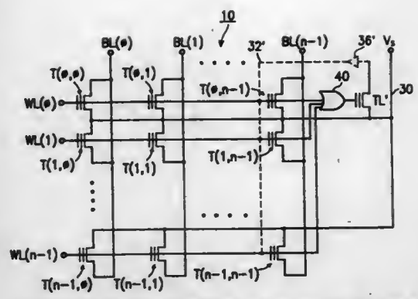
1. A non-volatile memory array comprising:

a plurality of memory cells arranged in rows and columns, each memory cell having a source, a drain, a floating gate and a control gate, the control gates of all memory cells in each row being interconnected by a word line, the drains of all memory cells in each column being interconnected by a bit line, and the sources of said memory cells being interconnected by a source line;

a switching element;

a self-limiting-erase floating gate transistor disposed in said memory array, having a control gate coupled to said word lines via said switching element, and a source coupled to said source line; and

feedback means for connected the drain of said self-limiting-erase floating gate transistor to said word lines in order to limit the erase operation when said memory cells are erased.



5,576,994

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE

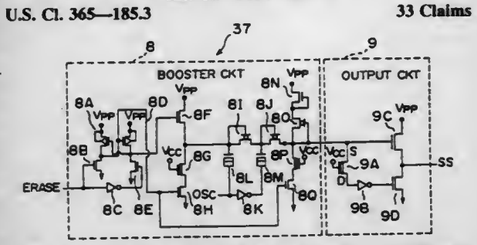
Hideo Kato, Kawasaki; Nobutake Sugiura; Kiyotaka Uchigane, both of Yokohama, and Masamichi Asano, Ota-ku, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 218,629, Mar. 28, 1994, Pat. No. 5,420,822, which is a continuation of Ser. No. 41,240, Mar. 31, 1993, abandoned. This application Apr. 25, 1995, Ser. No. 428,060

Claims priority, application Japan, Mar. 31, 1992, 4-77523; Mar. 31, 1992, 4-77775; Nov. 5, 1992, 4-295469

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—185.3 **33 Claims**



27. A non-volatile semiconductor memory device, comprising:

a memory cell array arranged with a plurality of electrically data writable and erasable memory cells each having a floating gate;

a decoder for selecting any specific memory cells from said memory cell array; and

an erase voltage applying circuit for applying an erase voltage to sources of the memory cells when data are erased from the memory cells, a rise time of the erase voltage being controlled from a low voltage to a high voltage,

wherein said erase voltage applying circuit includes a booster circuit and an output circuit, and

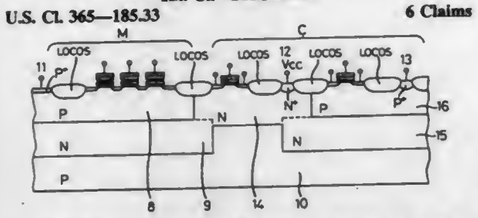
wherein said output circuit includes a first transistor and a second transistor connected in series between a terminal of the high voltage and a terminal of the low voltage, the erase voltage being outputted from an intermediate junction point between said first and second transistors.

5,576,995

METHOD FOR REWRITING A FLASH MEMORY

Shinichi Sato, and Katsuji Iguchi, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 24, 1995, Ser. No. 547,158
Claims priority, application Japan, May 30, 1995, 7-131951
Int. Cl.[6] G11C *16/02*
U.S. Cl. 365—185.33 6 Claims



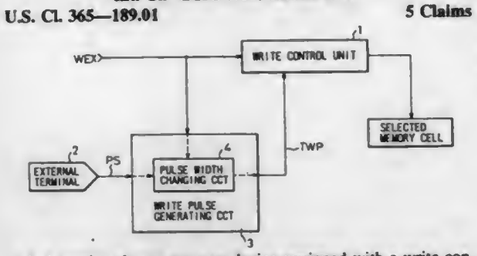
1. A method for rewriting a flash memory wherein a plurality of memory cells each of which comprises a pair of source and drain, a floating gate and a control gate are arranged in matrix in a first conductivity-type well formed in a second conductivity-type deep well formed in the first conductivity-type semiconductor substrate; and in which the floating gate is charged with electrons when the flash memory is written and the floating gate is discharged of the electrons when the flash memory is erased; and in which the erasure of the flash memory is operated by applying to the first conductivity-type well a first positive voltage different from the potential of the substrate, applying to the source or the drain a second positive voltage higher than the first positive voltage and applying to the control gate a first negative voltage.

5,576,996

SEMICONDUCTOR MEMORY DEVICE HAVING A VARIABLY WRITE PULSE WIDTH CAPABILITY

Tomoharu Awaya, and Masaya Sugimoto, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 31, 1995, Ser. No. 454,862
Claims priority, application Japan, Sep. 12, 1994, 6-217243
Int. Cl.[6] G11C *7/00*; H03M *13/00*
U.S. Cl. 365—189.01 5 Claims



1. A semiconductor memory device equipped with a write control system for controlling data write to a selected memory cell on the basis of a write control signal, comprising:

an external terminal for test; and

a write-pulse generating circuit for generating a test write pulse on the basis of a set signal applied thereto from said external terminal and said write control signal, and supplying said test write pulse to said write control system;

said write pulse generating circuit including a pulse-width changing circuit for variably setting the pulse width of said test write pulse on the basis of said set signal,

wherein said pulse-width changing circuit includes a delay circuit which comprises a plurality of gates each having a delay time and connected in multiple stages, and the gate of the initial stage of which responds to said write control signal, and a shift register having a multiple-bit structure wherein the output terminal of each bit is connected to the input terminals of specific gates of a plurality of said gates, and wherein a total delay time in said delay circuit is variably set to a quantity corresponding to a desired write pulse width by inputting said set signal to said shift register in a specific manner,

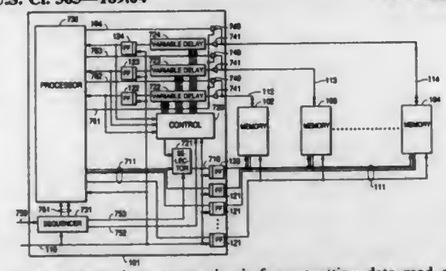
wherein said shift register includes an inverter and a plurality of cascaded RS flip-flops in a number corresponding to the plurality of said bits, said flip-flop of the initial stage being reset by said set signal and set by the output of said inverter, and the output terminal of each of said flip-flops is connected to the corresponding input terminal of each of said specific gates.

5,576,997

DATA PROCESSING SYSTEM AND SEMICONDUCTOR MEMORY SUITED FOR THE SAME

Noboru Masuda, Tokorozawa; Kazunori Nakajima, Kokubunji, and Hideo Maejima, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 20, 1994, Ser. No. 309,418
Claims priority, application Japan, Sep. 20, 1993, 5-232831
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—189.04 46 Claims



1. A memory data output circuit for outputting data read out from a plurality of memories at substantially the same time in a data processing system which includes a processor, a plurality of memories, an address bus for transmitting an address fed from said processor to said plurality of memories, and a plurality of data buses provided individually for said plurality of memories for transmitting a plurality of data fed from said processor in parallel to said plurality of memories and for transmitting a plurality of data read out of said plurality of memories in parallel to said processor, said memory data output circuit comprising:

a plurality of transmission circuits provided individually for said plurality of memories for transmitting from said plurality of memories via said plurality of data buses to said processor a plurality of data read out of said plurality of memories with adjustable delay times; and

a control circuit which adjusts delay times of said plurality of transmission circuits in response to data output timings of said plurality of transmission circuits at which the plurality of data read out of said plurality of memories are provided by said plurality of transmission circuits.

5,576,998

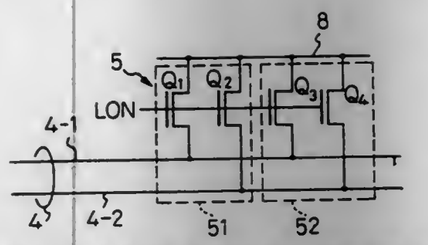
SEMICONDUCTOR MEMORY DEVICE

Yoshinori Kasuta, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 11, 1995, Ser. No. 439,110
Claims priority, application Japan, Jul. 18, 1994, 6-165363
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—189.06 9 Claims

1. A semiconductor memory device for transferring cell data, amplified by a sense amplifier, to an input/output line (I/O line) through a transfer gate, comprising:

an amplitude limiting means for limiting the amplitude of a voltage on said input/output line (I/0 line) pair which are actuated; wherein said amplitude limiting means includes a



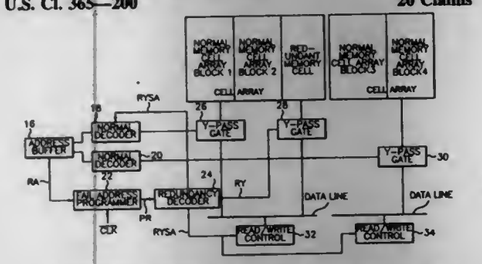
first amplitude limiting circuit having a predetermined operating range and a second amplitude limiting circuit having an operating range different from the operating range of said first amplitude limiting circuit.

5,576,999

REDUNDANCY CIRCUIT OF A SEMICONDUCTOR MEMORY DEVICE

Jae-Chul Kim, and Choong-Keun Kwak, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 30, 1995, Ser. No. 491,348
Claims priority, application Rep. of Korea, Jun. 30, 1994, 15542/1994
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—200 20 Claims



1. A redundancy circuit of a semiconductor memory device having a normal memory cell array for storing data, redundant memory cells for repairing fail cells in said normal memory cell array, a normal decoder for receiving addresses, each said address including a plurality of bits, each bit having an input state being one of a first state and a second state opposite said first state, said normal decoder designating corresponding normal memory cells in said normal memory cell array, and a redundancy decoder for selecting said redundant memory cells, said redundancy circuit comprising:

a control circuit which is operative to receive said addresses and to detect addresses which have fail addresses corresponding to said fail cells, said control circuits cutting fuses which correspond to bits of each fail address having said first state, and, upon subsequent input of one of said fail addresses, outputting a control signal corresponding thereto; and

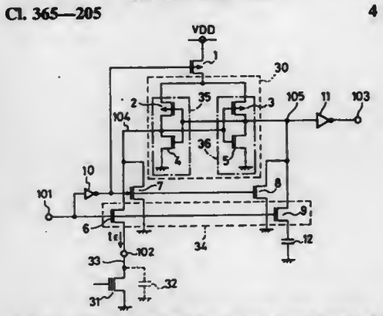
a transmission circuit which receives said addresses and has a first path for outputting certain of said bits of each said address and a second path for outputting remaining bits of each said address with a state opposite said input state, one of said first path and said second path being selected for each bit in accordance with each said control signal of said control circuit.

5,577,000

SENSE AMPLIFIER CIRCUIT

Kazuo Asami, Hyogo, Japan, assignor to Mitsubishi Electric Semiconductor Software Co., Ltd., Tokyo, and Mitsubishi Denki Kabushiki Kaisha, Itami, both of Japan

Filed Jun. 2, 1995, Ser. No. 458,482
Claims priority, application Japan, Jan. 9, 1995, 7-001304
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—205 4 Claims



1. A sense amplifier circuit for reading data from a selected memory cell connected to a selected bit line, comprising:

a capacitor having an end connected to ground and having a capacity larger than a parasitic capacity of said selected bit line;

a current supplying part for supplying, substantially simultaneously, a current to said selected bit line and to another end of said capacitor, to raise potentials of said selected bit line and said another end of said capacitor; and

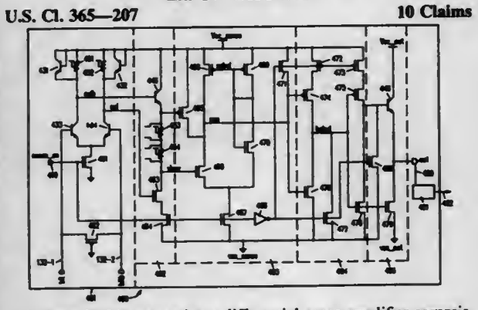
a differential amplifier for determining data read from said memory cell by comparing said potentials raised by said current supplying part, and for fixing, after the determination of the read data, the voltage level of said selected bit line to a level at which a read current does not flow through said selected bit line.

5,577,001

HIGH SPEED DIFFERENTIAL TO SINGLE ENDED SENSE AMPLIFIER

Bal S. Sandhu, Fremont, Calif., assignor to Sun Microsystems Division of Ser. No. 357,859, Dec. 14, 1994, Pat. No. 5,521,874. This application Jan. 24, 1996, Ser. No. 590,489

Int. Cl.[6] G11C *7/02*
U.S. Cl. 365—207 10 Claims



1. A method for operating a differential sense amplifier comprising the steps of:

providing an input lead;

providing a complementary input lead;

providing a differential input stage comprising:

an output lead;

a complementary output lead;

an input stage current source;

an input transistor having a first current handling lead coupled to said input stage current source, a second current handling

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lead coupled to said output lead of said input stage, and a control lead coupled to said input lead; and

a complementary input transistor having a first current handling lead coupled to said input stage current source, a second current handling lead coupled to said complementary output lead of said input stage, and a control lead coupled to said complementary input lead;

providing a differential to single ended stage, comprising:

a first current source; and

a first and second transistor coupled in series between a first supply voltage and said first current source, said first transistor being coupled to receive a control signal from said output lead of said input stage and provide in response thereto a first intermediate signal, and said second transistor being coupled to receive a control signal from said complementary output lead of said input stage and provide in response thereto a second intermediate signal, said first and second intermediate signals both swinging in the same direction in response to said complementary input signal;

providing a translation stage comprising a pair of input transistors, operating differentially, a first being coupled to receive said first intermediate signal and a second being coupled to receive said second intermediate signal, and providing a single ended intermediate signal; and

providing an output stage coupled to said translation stage to provide a single ended output signal in response to said differential input signal.

5,577,002

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE IMPLEMENTED BY BIPOLAR AND FIELD EFFECT TRANSISTORS AND HAVING STABLE SENSE AMPLIFIER

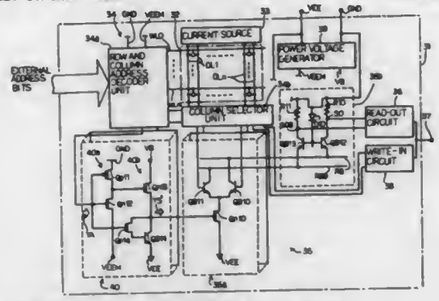
Hiroyuki Takahashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 311,869, Sep. 26, 1994. This application Sep. 15, 1995, Ser. No. 528,556

Claims priority, application Japan, Sep. 29, 1993, 5-268198

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—226 **3 Claims**



1. A semiconductor memory device comprising:

a cell array;

a sense amplifier receiving data from said cell array and responsive to an activation signal for amplification;

a voltage supplying section supplied with a first power voltage and a second power voltage for producing a first internal voltage and a second internal voltage each of which is different from said first power voltage and said second power voltage;

an address decoder supplied with said first power voltage and said first internal voltage, and responsive to an address signal for producing a selecting signal having a voltage level which changes in a first voltage range determined by said first power voltage and said first internal voltage; and

an activation control section supplied with said second power voltage and said second internal voltage, and responsive to said selecting signal for producing said activation signal having a voltage level which changes in a second voltage range determined by said second power voltage and said second internal voltage.

5,577,003

DECODING CIRCUIT FOR USE IN SEMICONDUCTOR READ ONLY MEMORY

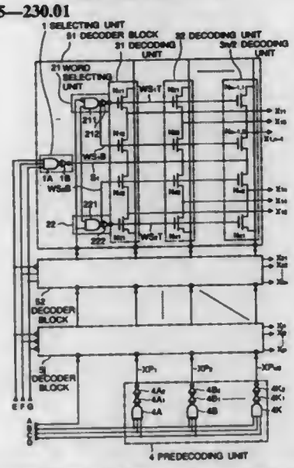
Yukio Fuji, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 24, 1995, Ser. No. 448,857

Claims priority, application Japan, May 24, 1994, 6-109858

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.01 **6 Claims**



1. A decoding circuit for use in a semiconductor read only memory comprising:

a predecoding unit receiving a first address signal group of a given address, for selectively activating only one of a plurality of word selection driving signals; and

a plurality of decoder blocks each including:

a selecting means receiving a second address signal group of said given address different from said first address signal group, and having an output for outputting an active first word selection control signal when a corresponding decoder block is designated by said second address signal group;

a word selecting means receiving said first word selection control signal and a third address signal group of said given address different from said first and second address signal groups, for generating second, third, fourth and fifth word selection control signals, said second and third word selection control signals being complementary to each other, said fourth and fifth word selection control signals being complementary to each other, said second and fifth word selection control signals being complementary to each other when said first word selection control signal is active but having the same logical condition when said first word selection control signal is inactive; and

a plurality of decoding means each including a first series-circuit constituted of series-connected first, second, third and fourth transistors, which have their control electrode connected to receive said second, third, fourth and fifth word selection control signals, respectively, opposite ends of said first series-circuit being connected to receive a corresponding one of said word selection driving signals as a power supply source, a connection node between said second and third transistors being connected to a selected one of said output of said selecting means, a connection node between said first and second transistors generating a first word selecting signal, and a connection node between said third and fourth transistors generating a second word selecting signal, whereby only one of said word selecting signals is activated at a time.

5,577,004

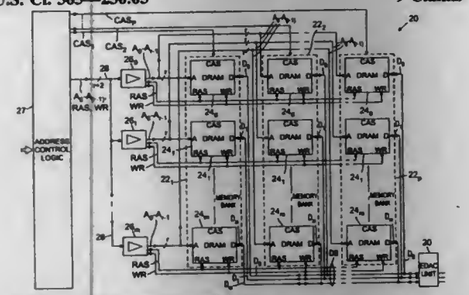
MEMORY SYSTEM AND METHOD

Eli Leshem, Brookline, Mass., assignor to EMC Corporation, Hopkinton, Mass.

Filed Dec. 1, 1995, Ser. No. 566,066

Int. Cl.[6] G11C *7/00;8/00;29/00*

U.S. Cl. 365—230.03 **9 Claims**



1. A memory system, comprising:

a plurality of memory banks, each having a plurality of addressable memory units;

a plurality of address drivers, each one of the drivers being coupled to a corresponding one of the memory units in each one of the memory banks; and,

each bit of data being coupled to a data terminal of a corresponding one of the memory units in each one of the memory banks.

5,577,005

CIRCUIT FOR USING CHIP INFORMATION

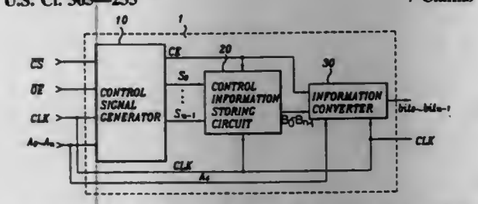
Jong Kon Bae, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Choongchungbook, Rep. of Korea

Filed May 16, 1995, Ser. No. 442,039

Claims priority, application Rep. of Korea, May 17, 1994, 10842/1994

Int. Cl.[6] G11C *7/00;8/00*

U.S. Cl. 365—233 **7 Claims**



1. A circuit in a target chip for using chip information, comprising:

a control signal generator for outputting a control signal in accordance with a chip selection signal, a read signal, a clock signal and an address signal, which are inputted from an externally connected element;

a control information storing circuit for outputting a previously stored control information, which is needed to control said target chip, in accordance with a control outputted from said control signal generator; and

an information converter for converting the control information outputted from the control information storing circuit and for outputting the converted control information to outside of the target chip.

5,577,006

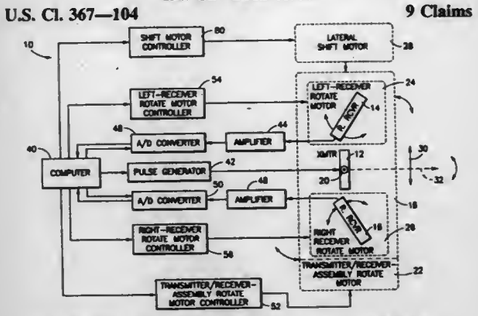
ADAPTIVE ACOUSTIC SIGNAL TARGET DETECTION SYSTEM

Roman B. Kuc, New Haven, Conn., assignor to Yale University, New Haven, Conn.

Continuation of Ser. No. 350,278, Dec. 5, 1994, abandoned. This application Mar. 21, 1996, Ser. No. 624,652

Int. Cl.[6] G01S *15/00*

U.S. Cl. 367—104 **9 Claims**



1. An acoustic ranging and detection system, comprising:

acoustic transmitter means for transmitting an acoustic ranging signal along a transmitter azimuth;

first acoustic receiving means positioned to a first side of said acoustic transmitter means and having a receiving beam pattern with a first central azimuthal axis;

second acoustic receiving means positioned to a second side of said acoustic transmitter means and having a receiving beam pattern with a second central azimuthal axis;

rotative means for mounting said acoustic transmitter means, first acoustic receiving means and second acoustic receiving means for concurrent rotation about an axis passing through said acoustic transmitter means;

first means for imparting independent rotative movement to said first acoustic receiving means;

second means for imparting independent rotative movement to said second acoustic receiving means; and

a control system responsive to target reflection signals received at said first and second acoustic receiving means, for moving said rotative means so as to point said transmitter azimuth at said target and to operate said first and second means to counter-rotate said first acoustic receiving means and second acoustic receiving means so as to point both said first azimuthal axis and second azimuthal axis towards said target and to cause said first azimuthal axis and second azimuthal axis to intersect in a region of said target, to thereby reduce an echo producing region about said target.

5,577,007

LUGS FOR A WRIST-CARRIED INSTRUMENT

John T. Houlihan, Southbury, Conn., assignor to Timex Corporation, Middlebury, Conn.

Filed Feb. 28, 1996, Ser. No. 608,350

Int. Cl.[6] G04B *37/00;* **A44C** *5/00*

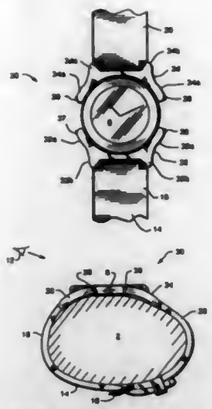
U.S. Cl. 368—282 **18 Claims**

1. An improved wrist-carried instrument of the type having a case with a "6 o'clock" end and a "12 o'clock" end and a band with a first attachment end and a second attachment end, wherein the improvement comprises:

a first pivoting lug member comprising a first pair of arms encircling a predetermined portion of the case at the "6 o'clock" end and a second pair of arms connecting the first attachment end of the band therebetween;

a second pivoting lug member comprising a first pair of arms encircling a predetermined portion of the case at the "12 o'clock" end and a second pair of arms connecting the second attachment end of the band therebetween;

first attaching means for pivotably attaching the first pair of arms of the first pivoting lug member to the case so that the first pivoting lug member is adapted to freely pivot about the case



to permit the wrist-carried instrument to conform to the contours of a wrist about which it is worn; and

second attaching means for pivotably attaching the first pair of arms of the second pivoting lug member to the case so that the second pivoting lug member is adapted to freely pivot about the case to permit the wrist-carried instrument to conform to the contours of the wrist about which it is worn.

5,577,008

MAGNETO-OPTICAL DISK DRIVE SYSTEM

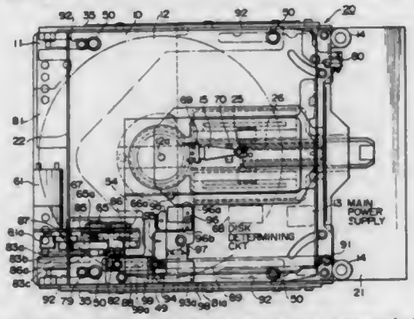
Hiroshi Kanazawa; Isao Okuda; Shimpei Shinozaki, and Suguru Takishima, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 86,432, Jul. 6, 1993, abandoned. This application Mar. 23, 1995, Ser. No. 409,948

Claims priority, application Japan, Jul. 7, 1992, 4-179922; Nov. 16, 1992, 4-078734

Int. Cl.[6] G11B *11/00;33/02*

U.S. Cl. 369—13 **19 Claims**



1. A magneto-optical disk drive system utilizing a magnetic field modulation recording method, said disk drive system comprising:

a housing;

a disk cartridge for housing a magneto-optical disk therein, said disk cartridge being inserted into a cartridge holder in said housing, and said cartridge holder moving between a cartridge unloading position and a cartridge loading position when inserted in said housing;

a magnetic head for writing information on the magneto-optical disk held in said disk cartridge when said cartridge holder is in said cartridge loading position;

a magnetic head carriage for supporting said magnetic head for movement in a tracking direction, said magnetic head carriage moving between a head loading position where said magnetic head is moved towards the magneto-optical disk and a head standby position where said magnetic head is moved away the magneto-optical disk;

power supply means for supplying electric energy to said disk drive system;

resilient means disposed in said housing continuously urging said magnetic head carriage in a direction normal to said head loading position, away from said head loading position and toward said head standby position, said resilient means moving said magnetic head carriage from said head loading position toward said head standby position; and

locking means, disposed in said housing, for locking said magnetic head carriage in said head loading position, said locking means being responsive to said supply of electric energy to said disk drive system, and said locking means releasing said magnetic head carriage to move from said head loading position in response to a stopping of said supply of electric energy to said disk drive system;

wherein said resilient means moves said magnetic head carriage from said head loading position to said head standby position (a) after said locking means releases said magnetic head carriage from said head loading position, and (b) after said supply of electric energy is stopped.

5,577,009

TRACKING CONTROL SYSTEM FOR GENERATING A VARIABLE STILL JUMP SIGNAL

Kouichi Takamine, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 23, 1995, Ser. No. 376,741

Claims priority, application Japan, Jan. 25, 1994, 6-006086; Jun. 28, 1994, 6-145890

Int. Cl.[6] G11B *7/085*

U.S. Cl. 369—32 **27 Claims**

1. A tracking control system which generates a still jump signal based on a driving value of a wide-area tracking just before a still jump, said tracking control system comprising:

light focusing means for focusing a light beam from a light source on a recording medium;

first tracking means, which has a special preference for high frequency signals, for moving a focused spot of the light beam focused by the light focusing means across tracks on the recording medium;

second tracking means, used for the wide-area tracking, which has a special preference for signals of a lower frequency than the first tracking means, for moving the focused spot across a wider area of the tracks on the recording medium than the first tracking means;

tracking error signal generation means for detecting that the focused spot has deviated from the track based on a reflected light when the light beam is reflected back from the recording medium, and for generating a tracking error signal which shows that the detected focused beam has deviated from the track;

first driving control means for applying a first driving signal to the first tracking means according to the tracking error signal and controlling a driving of the first tracking means so that the focused spot follows the track;

second driving control means for applying a second driving signal to the second tracking means according to a low frequency part of the tracking error signal and controlling a driving of the second tracking means so that the focused spot follows the track;

driving control halting means for temporarily stopping driving control by the second driving control means;

driving value holding means for holding a value of the second driving signal just before the driving control by the second driving control means is temporarily stopped;

still jump signal generation means for generating a still jump signal, which is based on the value of the second driving signal held by the driving value holding means and which consists of a jump pulse and a brake pulse, which has the first tracking means perform a still jump; and

still jump signal addition means for adding, just after the control of the second driving control means has been temporarily stopped, the still jump signal generated by the still jump signal generation means to the first driving signal.

5,577,010

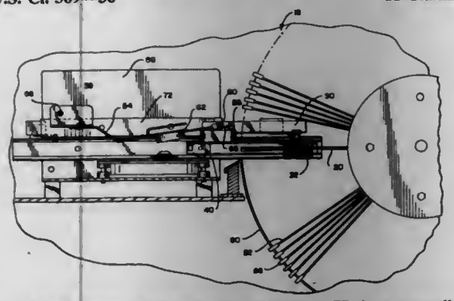
APPARATUS FOR RETRIEVING AND PLAYING A PLURALITY OF DISCS

Shuja Haque, 2104 Shermer Rd., Northbrook, Ill. 60062

Continuation of Ser. No. 27,184, Mar. 5, 1993, abandoned. This application Mar. 3, 1995, Ser. No. 398,407

Int. Cl.[6] G11B *17/28*

U.S. Cl. 369—36 **11 Claims**



1. An apparatus for selectively retrieving a CD in a generally horizontal plane at a loading station of a storage unit which holds a plurality of CDs for movement one at a time to said loading station, delivering the same to a loading station of a CD player and then returning the CD to said loading station of said storage unit, the apparatus comprising:

transfer means and first and second spaced CD gripping portions on said transfer means, said gripping portions being in spaced confronting relation and movable relative to the transfer means between relative outer and inner positions, in said relative inner position said gripping portions gripping diametrically opposite points of a CD in said horizontal plane at said loading station of said storage unit and in said relative outer position being unable to grip the CD, said transfer means being movable with said gripping portions carried thereon, a pair of guide means, positioned to generally straddle said CD player and said loading station of the storage unit guide said transfer means and said gripping portions carried thereby for movement between spaced extended and retracted positions in a first direction generally transverse to the direction said gripping portions are spaced apart, said gripping portions being generally aligned with diametrically opposite points of a horizontally oriented CD at said loading station of the storage unit when said transfer means and gripping portions thereon are in said extended position and being above and generally aligned with said loading station of said CD player where the CD is generally in a horizontal plane when said transfer means and gripping portions thereon are in said retracted position;

means for moving said transfer means and spaced gripping portions back and forth in said first direction between said extended and retracted positions and,

positioning cam means associated with said guide means, for moving said gripping portions to said inner position to grip said CD at said loading station of said storage unit when said transfer means and gripping portions thereon are in said extended position and in intermediate positions between said extended and retracted positions and for moving said gripping portions to said relative outer position to release said gripping portions from engagement with a CD so that it is dropped upon said loading station of the CD player when said transfer means and gripping portions thereon are in said retracted position, and so that said CD is dropped upon the loading station of the storage unit when said transfer means and gripping portions are in said extended position.

5,577,011

METHOD FOR PREVENTING ERRONEOUS RECORDING IN COMPACT DISC PLAYER

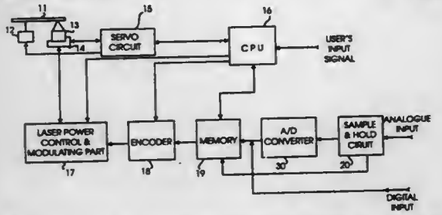
Jung J. Jung, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Division of Ser. No. 832,916, Feb. 10, 1992, Pat. No. 5,359,583. This application Oct. 24, 1994, Ser. No. 327,550

Claims priority, application Rep. of Korea, Feb. 13, 1991, 91-2395

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—47 **15 Claims**



10. A method for preventing erroneous recording in a compact disc player provided with a memory, comprising the steps of:

designating an address in a memory upon providing an audio signal in order to store said audio signal into said memory as stored music data, and setting a defective music number to said stored music data upon finding a defect flag set in a case of a partly recorded disc;

determining whether a user inputs an erroneous recording input signal indicative of an error detected by said user during said designating step;

recording information concerning said audio signal into a program memory area of the compact disc, and setting said defect flag upon finding said erroneous recording input signal after a predetermined period of time has elapsed;

reading said music data from said memory and recording said music data into said program memory area of the compact disc upon not finding said erroneous recording input signal and upon finding said memory full, and determining whether the user inputs a recording termination demanding signal indicating a termination of said recording said music data;

determining whether an intermediate stop occurs upon not finding said recording termination demanding signal, to return the operation to said step of determining whether a user inputs an erroneous recording input signal in the absence of said intermediate stop, and to record said information concerning said audio signal into said program memory area in the presence of said intermediate stop; and

recording end of disc information into a lead-out area of the compact disc when the user inputs said recording termination

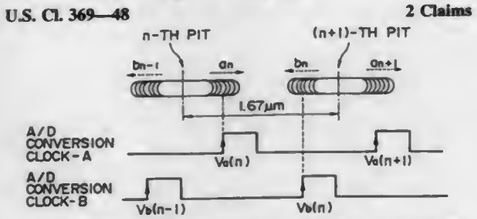
demanding signal, and recording table of contents information into a lead-in area of the compact disc if the user inputs said recording termination demanding signal and said defect flag is not set.

5,577,012

DATA RECORDING METHOD, DATA RECORDING APPARATUS, AND DATA RECORDING MEDIUM

Seiji Kobayashi, Kanagawa, and Joost D. Kock, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 136,311, Oct. 13, 1993, abandoned. This application May 23, 1995, Ser. No. 447,366
Claims priority, application Japan, Oct. 13, 1992, 4-300470
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—48 **2 Claims**



1. A data recording apparatus for displacing a position of an edge of each pit on a recording medium stepwise with a first width for recording data on said recording medium, comprising:

a converting means for converting a first data to be recorded into a second data corresponding to a number of steps displaced with said first width;

a calculating means for calculating the position of said edge of each pit displaced with said first width corresponding to the second data converted by said converting means, and displacing the position of said edge specified by said first width stepwise with a second width smaller than said first width, wherein the second width is determined on the basis of positions of edges of other pits so that an interference caused by the edges of the other pits is reduced; and

a signal generating means for outputting a signal with a timing corresponding to the position of the edge of said pit according to an output of said calculating means.

5,577,013

OPTICAL INFORMATION CONTROL DEVICE AND SYNCHRONIZING METHOD THEREOF

Hideki Kobunaya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 275,105, Jul. 14, 1994. This application Feb. 2, 1996, Ser. No. 597,580
Claims priority, application Japan, Jul. 14, 1993, 5-195620
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—48 **4 Claims**

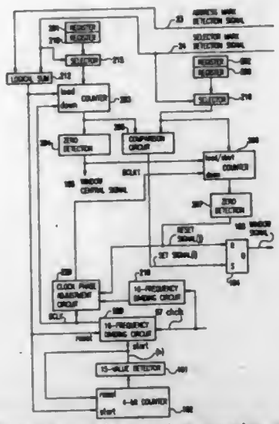
1. An optical information control device comprising:

a mark detection means for detecting a mark recorded at even intervals in a track on an optical disk and generating a mark detection signal;

a reference clock generation means for generating a reference clock from a pit clock;

a multi-phase clock generation means for generating a plurality of multi-phase clocks having a different phase from others, in synchronizing to said pit clock;

a synchronous clock generation means for generating a synchronous clock synchronizing to said reference clock;



a resumption means for stopping operation of said reference clock generation means and said multi-phase clock generation means when having received said mark detection signal, simultaneously starting to count said pit clock and resuming said reference clock generation means and said, multi-phase clock generation means when the counted number of said pit clock has reached a preset number;

a first counting means for counting said reference clock and outputting a first signal when the counted number of said reference clock has reached a preset number;

a selection means for selecting a first multi-phase clock and a second multi-phase clock from said plurality of multi-phase clocks;

a means for outputting a second signal, in synchronization with said first multi-phase clock;

a means for outputting a set signal when having received said second signal, by latching said first signal;

a second counting means for counting said second reference clock when the counted number of said first counting means has reached a preset number and outputting a third signal when the counted number of said second counting means has reached a preset number;

a means for outputting a fourth signal, in synchronization with said second multi-phase clock;

a means for latching said third signal and outputting a reset signal when having received said fourth signal; and

a window signal generation means for activating a signal by input of said set signal, inactivating said signal by input of said reset signal, then generating a window signal to make said mark detection signal enabled.

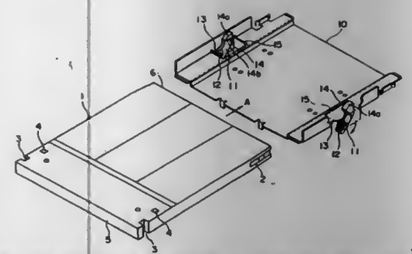
5,577,014

DISK CARTRIDGE OPPOSITE-INSERTION PREVENTING MECHANISM

Shigeo Kawamura, Tokyo, Japan, assignor to NKK Corporation, Tokyo, Japan

Filed Jan. 26, 1995, Ser. No. 378,674
Claims priority, application Japan, Jan. 27, 1994, 6-007784
Int. Cl.[6] G11B *33/02*
U.S. Cl. 369—77.2 **4 Claims**

1. A disk cartridge opposite-insertion preventing mechanism provided in an apparatus adapted to receive a disk cartridge, said disk cartridge having front, rear and side surfaces, said rear surface being flat and facing said mechanism for correct disk cartridge insertion, at least one of said side surfaces being formed with at least one groove extending in said side surface from a front edge of said front surface to a terrace portion which forms a rear end portion of said groove, said mechanism comprising at least one lever pivotally mounted on said apparatus, said lever having a projection portion provided at one end thereof; and a spring mounted on said apparatus for urging said projection portion of said lever into said groove when said disk cartridge is inserted incorrectly, whereby said projection portion of said lever contacts



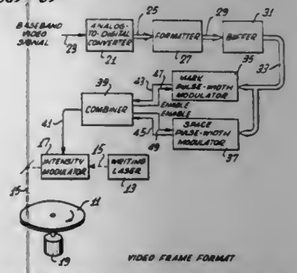
said rear end portion of said groove to prevent further insertion of said disk cartridge into said apparatus and whereby said rear surface of said cartridge contacts said lever and rotates said lever against said spring during correct disk cartridge insertion so that said lever does not prevent insertion of said disk cartridge.

5,577,015

SYSTEM FOR RECORDING DIGITAL INFORMATION IN A PULSE-LENGTH MODULATION

Jack H. Bailey, Villa Park, Calif., assignor to DiscoVision Associates, Irvine, Calif.

Continuation of Ser. No. 96,260, Jul. 26, 1993, abandoned, which is a continuation of Ser. No. 75,275, Jun. 11, 1993, Pat. No. 5,321,680, which is a continuation of Ser. No. 948,267, Sep. 21, 1992, Pat. No. 5,253,244, which is a continuation of Ser. No. 825,640, Jan. 24, 1992, abandoned, which is a continuation of Ser. No. 645,638, Jan. 25, 1991, Pat. No. 5,084,852, which is a continuation of Ser. No. 499,217, Mar. 16, 1990, Pat. No. 5,003,526, which is a continuation of Ser. No. 782,156, Oct. 2, 1985, abandoned, which is a continuation of Ser. No. 169,238, Jul. 16, 1980, abandoned. This application Aug. 23, 1994, Ser. No. 294,612
Int. Cl.[6] H04N *5/76;5/78*
U.S. Cl. 369—59 **25 Claims**



1. Playback apparatus for recovering digital information stored on a record medium, the information being stored in a succession of spaced marks, both marks and spaces between successive marks having discretely-variable lengths, and a succession of said discretely-variable lengths being representative of a succession of separate multi-bit binary code blocks, the apparatus comprising:

means for scanning the record medium to produce a playback signal that varies in accordance with the stored pattern of spaced marks;

detection means responsive to the playback signal for detecting the lengths of the successive marks and spaces and for providing an output signal representative of the succession of separate multi bit binary code blocks; and

storing and timing means, for temporarily storing the output signal in a storage buffer and for coupling clocking information to the storage buffer to output the information stored in the storage buffer at a time-corrected rate.

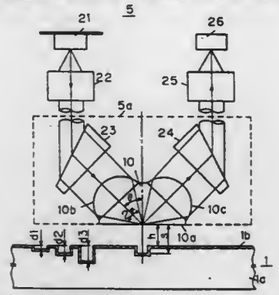
5,577,016

RECORDING MEDIUM HAVING CONCAVO-CONVEX PITS WITH A MAXIMUM AND A MINIMUM PIT DEPTH DEPENDING ON THE WAVELENGTH OF A LASER LIGHT

Tatsuhiko Inagaki, Takatsuki; Hiroshi Kohso, Fujiidera, and Makoto Kuwamoto, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 139,573, Oct. 20, 1993, Pat. No. 5,463,609. This application Jul. 18, 1995, Ser. No. 503,481
Claims priority, application Japan, Oct. 23, 1992, 4-285756
Int. Cl.[6] G11B *7/24;5/68*
U.S. Cl. 369—110 **6 Claims**

1. A recording medium comprising a plurality of concavo-



convex pits, to which laser light is emitted,

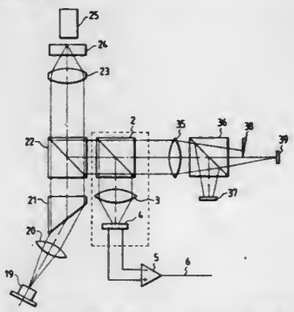
wherein a minimum value of the dimension of said concavo-convex pits measured along the direction normal to said recording medium is less than one eighth of the wavelength of said laser light, and wherein a recorded data is reproduced by an evanescent wave in accordance with how much said concavo-convex pits influence said evanescent wave.

5,577,017

MAGNETOOPTICAL INFORMATION RECORDING/REPRODUCING APPARATUS

Masakuni Yamamoto, Yamato; Susumu Matsumura, Kawaguchi; Hiroaki Hoshi, Yokohama, and Eiji Yamaguchi, Zama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 12,453, Feb. 2, 1993, abandoned. This application Aug. 11, 1995, Ser. No. 514,477
Claims priority, application Japan, Feb. 5, 1992, 4-047789; Feb. 5, 1992, 4-047790; Jun. 2, 1992, 4-165533; Sep. 14, 1992, 4-269096
Int. Cl.[6] G11B *7/013*
U.S. Cl. 369—110 **17 Claims**



1. An optical information recording and/or reproducing apparatus comprising:

irradiating means for irradiating light polarized in a predetermined direction onto a magnetooptical recording medium having a plurality of tracks, said irradiating means comprising lens means, having a curved surface;

applying means for applying a predetermined magnetic field to the recording medium;

means for separating light having a polarization component perpendicular to that of the irradiated light, from light reflected from the magnetooptical recording medium;

detecting means for detecting interference light caused by interference of light produced by a magnetooptic effect of the recording medium and light produced by diffraction at the curved surface of said lens means, said detecting means comprising a two-divided photodetector, the division line of which is parallel to the recording medium tracks, for detecting the separated light; and

means for calculating a difference of detection signals from the respective detection surfaces of said two-divided photodetector, and for reproducing recording information.

5,577,018

PI' 'SE CHANGING APPARATUS AND OPTICAL PICKUP APPARATUS FOR MAGNETO-OPTIC STORAGE DEVICE USING SAME

Hideyoshi Horimai, Kawasaki; Katsuhiro Seo, Sagamihara; Kimihiro Saito, Bunkyo-ku, and Kiyoshi Toyota, Oota-ku, all of Japan, assignors to Sony Corporation, Japan

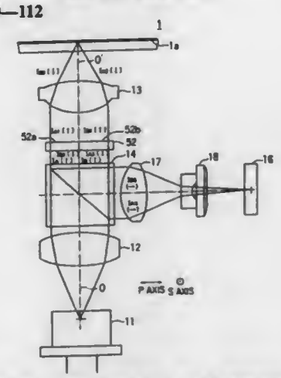
PCT No. PCT/JP93/00158, § 371 Date Sep. 21, 1993, § 102(e) Date Sep. 21, 1993, PCT Pub. No. WO93/16469, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 8, 1993, Ser. No. 122,411

Claims priority, application Japan, Feb. 7, 1992, 4-56945; Apr. 30, 1992, 4-137769

Int. Cl.[6] G11B *11/10*

U.S. Cl. 369—112 **46 Claims**



1. An optical pickup apparatus for a magneto-optic storage device having a laser beam source (**11**), a polarization beam splitter (**14**), an objective lens (**13**), and a light detection element (**16**) which are arranged along a light axis (**0-0'**), wherein emitted light from said laser beam source is emitted as converted light to a recording surface (**1***a*) of a magneto-optic recording medium (**1**) and a predetermined polarized beam component in the reflection light from the recording surface of said magneto-optic recording medium is split by said polarization beam splitter and taken out at said light detection element, characterized in that the apparatus includes:

phase change means (**15**, **39**, **52**:**62**:**72**) which change the phase of light passing through one side of said light axis and the phase of the light passing through the other side of said light axis at exactly a predetermined angle between said polarization beam splitter (**14**) and said objective lens (**13**), wherein said phase change means comprises a ½-wavelength plate (**15**),

said plate including two division regions (**15***a*, **15***b*) on a flat plane orthogonal to said light axis (**0-0'**) facing across said light axis as a boundary and having planes of vibration at predetermined angles relative to said light axis, having C axes with respect to said light axis defined as a C_1 axis and a C_2 axis, and

said plate being arranged so that the emitted light from said laser beam source (**11**) passes through one division region and the reflection light reflected at the recording surface (**1***a*) of said magneto-optic recording medium (**1**) passes through another division region; and

wherein the light changed by said phase change means is detected via said polarization beam splatters (**14**, **14A**) and said light detection elements (**16**, **16A**:**19**), wherein said light detection element is divided into at least two regions with said light axis (**0-0'**) as a center corresponding to the division of said ½-wavelength plate (**15**).

5,577,019

PREPULSE CONDITION/HEAT SHUT OFF CONDITION DETERMINATION METHOD AND APPARATUS FOR OPTICAL RECORDING, AND OPTICAL RECORDING METHOD AND APPARATUS

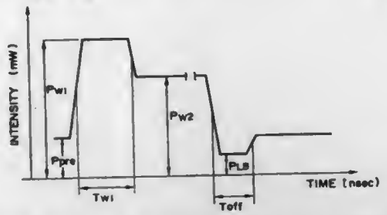
Jun Saito, Tokyo, and Shinichi Kurita, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 141,619, Oct. 27, 1993, abandoned. This application May 3, 1995, Ser. No. 434,059

Claims priority, application Japan, Oct. 28, 1992, 4-289166; Feb. 16, 1993, 5-025901; Sep. 20, 1993, 5-232633

Int. Cl.[6] G11B *7/125*

U.S. Cl. 369—116 **11 Claims**



1. In an optical recording method in which an intensity of a laser beam to be radiated onto an optical recording medium is raised from an intensity P_{pre} for maintaining a pre-heat state, in which a temperature of the medium surface becomes a predetermined temperature, to an intensity P_{W1} higher than P_{pre}, after P_{W1} is maintained for a time T_{W1}, the intensity is reduced to an intensity P_{W2} lower than P_{W1} to form a mark on said optical recording medium, thereafter, the intensity is reduced to an intensity P_{LB} lower than P_{pre}, and after an lapse of a time T_{off}, the intensity is raised to P_{pre}, the improvement characterized in that

P_{W2} is controlled so that the medium temperature at a peak temperature position or a spot center position of the laser beam radiated onto the medium surface after an elapse of the time T_{W1} remains constant even after the intensity is reduced to P_{W2}, and at least one of P_{pre}, T_{off}, and P_{LB} is controlled to establish the pre-heat conditioo within a time period until the intensity is raised to P_{W1} again so as to form the next mark.

5,577,020

MAGNETO-OPTICAL DISC WITH INTERMEDIATE FILM LAYER BETWEEN A RECORDING FILM AND A DIELECTRIC FILM

Hajime Utsunomiya; Kenji Uchiyama; Masanori Kosuda, and Hiroyasu Inoue, all of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan

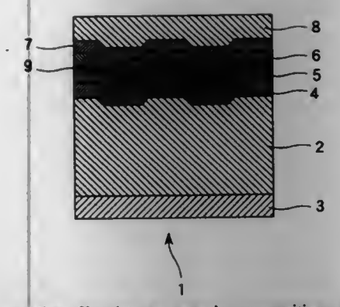
Filed Oct. 6, 1994, Ser. No. 319,108

Claims priority, application Japan, Oct. 8, 1993, 5-277666

Int. Cl.[6] G11B *7/26;11/00*

U.S. Cl. 369—275.2 **13 Claims**

1. A magneto-optical disc comprising a first dielectric film, a recording film of a rare earth element-transition element alloy, and a second dielectric film on a transparent substrate in the described order, said disc further comprising an intermediate film between said recording film and said second dielectric film and a reflective film on said second dielectric film, wherein:



said recording film has an atomic composition: $R_aFe_bCo_c$ wherein R is at least one rare earth element, a+b+c=100, 10≦a≦35, 55≦b≦75, and 3≦c≦15,

said second dielectric film contains at least one metal element and nitrogen, and

said intermediate film is formed of Ti, Cr, or Nb and has a thickness of 1 to 28 A.

5,577,021

OPTICAL AND MAGNETOOPTICAL RECORDING MEDIUM HAVING A LOW THERMAL CONDUCTIVITY DIELECTRIC LAYER

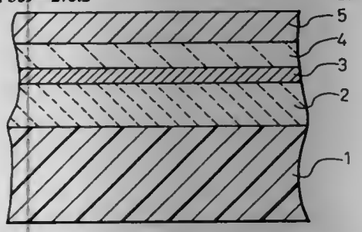
Kenji Nakatani; Toru Horiguchi; Junichi Ishimaru, and Hiroshi Hara, all of Hino, Japan, assignors to Teijin Limited, Osaka, Japan

Filed May 26, 1995, Ser. No. 451,156

Claims priority, application Japan, May 26, 1994, 6-112574; Jun. 24, 1994, 6-143042; Jun. 24, 1994, 6-143043

Int. Cl.[6] G11B *7/24*

U.S. Cl. 369—275.2 **27 Claims**



1. An optical recording medium comprising a transparent substrate, a first dielectric layer, a recording layer, a second dielectric layer and a reflecting layer stacked in this order, wherein said first dielectric layer is 40 to 140 nm thick and has a thermal conduction coefficient of 0.03 to 0.1 μW/K, said second dielectric layer is 10 to 60 nm thick and has a thermal conduction coefficient of 0.01 to 0.03 μW/K and said reflecting layer has a thermal conduction coefficient of 4 to 12 μW/K, where the thermal conduction coefficient is defined as a product of multiplying the thermal conductivity by the layer thickness, and wherein said reflecting layer comprises an alloy layer containing at least one element selected from the group consisting of Al, Au, Ag and Cu combined with up to 10 atom % of at least one element selected from the group consisting of Ti, Cr, Ta, Co, Ni, Mg and Si and said reflecting layer has a thermal conductivity of not less than 80 W/mK.

5,577,022

PILOT SIGNAL SEARCHING TECHNIQUE FOR A CELLULAR COMMUNICATIONS SYSTEM

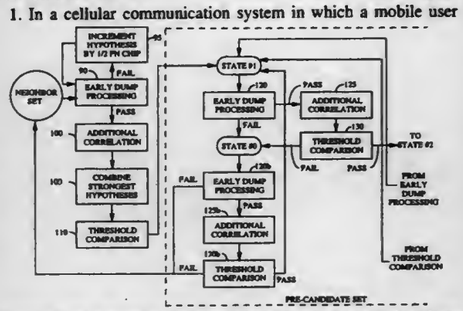
Roberto Padovani, and Walid M. Hamdy, both of San Diego, Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Filed Nov. 22, 1994, Ser. No. 344,321

Int. Cl.[6] H04B *7/216;* H04J *13/02;* H04L *27/30*

U.S. Cl. 370—13 **36 Claims**

1. In a cellular communication system in which a mobile user



communicates through a mobile station with other users via at least one base station included in an active list of one or more base station entries, wherein each of a plurality of base stations within said system transmit a unique pilot signal, a method for identifying ones of said base stations from which received signal strength is sufficient to establish communication with said mobile station, said method comprising the steps of:

maintaining in said mobile station a candidate list of base station entries, wherein each entry in said candidate list corresponds to a base station capable of providing sufficient signal strength to establish communication with said mobile station wherein said active list of one or more base station entries is maintained within said mobile station and is derived from said candidate list of base station entries;

maintaining in said mobile station a neighbor list of base station entries, wherein each entry in said neighbor list corresponds to a base station in a predetermined proximity of said mobile station;

measuring at said mobile station signal strength of each said pilot signal transmitted by each of said base stations in said neighbor list;

comparing at said mobile station said base station signal strength measurements of each of said neighbor list entries to a first predetermined level; and

removing by said mobile station a particular entry from said neighbor list having said base station signal strength measurement greater than said first predetermined level and placing said particular entry in a pre-candidate list maintained in said mobile station, wherein said entries in said pre-candidate list correspond to a set of base stations from which are derived said candidate list of base station entries.

5,577,023

METHOD AND APPARATUS FOR AUTOMATIC CONFIGURATION OF A NETWORK CONNECTION

John Marum, Oakland, and Harold H. Webber, Berkeley, both of Calif., assignors to Farallon Computing, Inc., Alameda, Calif.

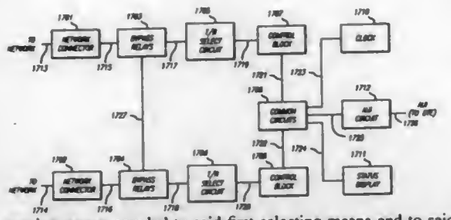
Continuation-in-part of Ser. No. 985,169, Dec. 1, 1992, Pat. No. 5,414,708. This application Aug. 6, 1993, Ser. No. 103,395

Int. Cl.[6] H04L *1/22*

U.S. Cl. 370—16 **15 Claims**

1. Connecting means for connecting a first device to signal lines in a network, wherein said signal lines comprise a first signal line and a second signal line, said connecting means comprising:

first selecting means coupled to said signal lines for alternately selecting said second signal line and said first signal line as a receive path;



sensing means coupled to said first selecting means and to said first device for sensing link integrity pulses on said first signal line from a second device coupled to said signal lines in said network;

second selecting means coupled to said signal lines for alternately selecting said first signal line and said second signal line as a transmit path, said first signal line being selected as a transmit path when said second signal line is selected as a receive path and said second signal line being selected as a transmit path when said first signal line is selected as a receive path;

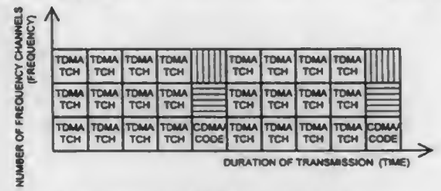
generating means coupled to said second selecting means and to said first device for generating link integrity pulses on said transmit path for transmission to said second device.

5,577,024

MULTIPLE ACCESS RADIO SYSTEM

Esa Malkamaki, Espoo, and Harri Jokinen, Hiisi, both of Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Continuation of Ser. No. 247,355, May 23, 1994, abandoned.
This application Oct. 16, 1995, Ser. No. 543,690
Claims priority, application Finland, Jul. 8, 1993, 933129
Int. Cl.[6] H04B *7/26;* **H04J** *4/00*
U.S. Cl. 370—18 **25 Claims**



1. A radio communications system, comprising:

at least one central transceiver comprising means for transmitting information over a radio channel and for receiving information over the radio channel; and

a plurality of user transceivers each comprising means for transmitting information over the radio channel and for receiving information over the radio channel, the information being transmitted by each of said plurality of user transceivers in a bit serial digital format;

wherein said transmitting means of at least said plurality of user transceivers utilize the radio channel for transmission as a time division, multiple access radio channel characterized by a plurality of recurring frames, each of said frames comprising a plurality of equal length slots having a duration that is selected for enabling up to n bits of data to be transmitted to the central transceiver from a user transceiver;

wherein each user transceiver further comprises means for receiving a pre-assignment of an individual one of a plurality of first slots for conveying communications traffic information;

wherein said transmitting means of said plurality of user transceivers transmit a message to said central transceiver during at least one second slot, the transmitted message comprising up to m bits of data, where m<n;

wherein said transmitting means of multiple ones of said user transceivers transmit the message during said at least one second slot, a

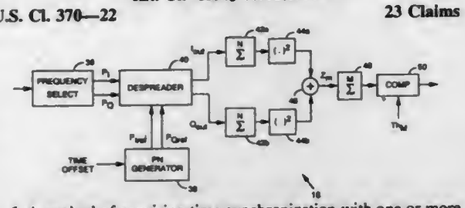
and wherein said at least one second slot is comprised of a plurality of mutually orthogonal sub-slots.

5,577,025

SIGNAL ACQUISITION IN A MULTI-USER COMMUNICATION SYSTEM USING MULTIPLE WALSH CHANNELS

Gordon Skinner, deceased, late of Boulder, Colo., and Brian Harms, Superior, Colo., assignors to Qualcomm Incorporated, San Diego, Calif.

Filed Jun. 30, 1995, Ser. No. 497,240
Int. Cl.[6] H04J *13/02;3/06*
U.S. Cl. 370—22 **23 Claims**



1. A method of acquiring time synchronization with one or more orthogonal channel signals in a spread spectrum communication system in which one or more communication signals are received and demodulated by system subscribers, comprising the steps of:

receiving one or more communication signals each comprising multiple channel signals which are orthogonally encoded using one of a preselected set of Walsh functions which are spread using at least one common pseudorandom noise (PN code) sequence applied at one of a plurality of timing offsets relative to each other within said system;

selecting a PN code sequence time offset value to use in a receiving subscriber unit;

despreading said communication signals by applying said PN code sequence at said selected time offset to produce encoded symbols;

coherently accumulating amplitudes of encoded symbols over a predetermined time interval equivalent to a length of said Walsh functions divided by a factor of 2^n, where n is a positive integer;

squaring the results of said coherent accumulation;

combining square products over an interval commencing and ending at Walsh function boundaries as selected by the receiving subscriber unit;

comparing results of said combining to at least one threshold value;

selecting said time offset chosen by said receiving subscriber unit as a time offset for a desired orthogonal channel signal when the combining results exceed said threshold; and

altering said time offset value selection and repeating said despreading, accumulating, squaring, combining, and comparing steps in order until said threshold is exceeded.

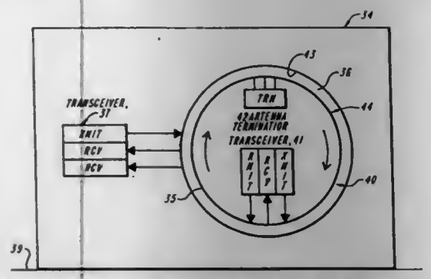
5,577,026

APPARATUS FOR TRANSFERRING DATA TO AND FROM A MOVING DEVICE

Bernard M. Gordon, Magnolia; Richard B. Johnson, Beverly; Iosef Izrailit, Newton; Hans Weedon, Salem, all of Mass., and Douglas Abraham, New Market, N.H., assignors to Analogic Corporation, Peabody, Mass.

Filed Dec. 28, 1993, Ser. No. 174,664
Int. Cl.[6] H04B *1/56*
U.S. Cl. 370—24 **75 Claims**

1. An apparatus for simultaneously bidirectionally transferring data between a first device and a second device mounted for rotation with respect to the first device, the apparatus comprising:



a first antenna assembly fixed relative to the first device;

a second antenna assembly sufficiently disposed around the periphery of and fixed relative to said second device such that said first antenna assembly and said second antenna assembly are in communicating relationship substantially throughout an entire revolution of said second device, and so that a spatial gap is provided between said first and second antenna assemblies; and

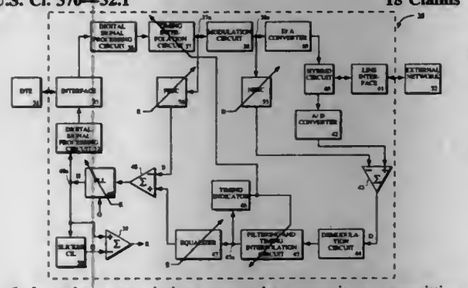
data transfer means for simultaneously bidirectionally transferring data between said first and second antenna assemblies as said second device rotates relative to said first device, said data transfer means comprising means for transmitting data from said first device to said second device through at least one data transmission channel, means for transmitting data from said second device to said first device through at least one additional transmission channel, and means for isolating said data transmission channels so as to minimize cross talk between said data transmission channels.

5,577,027

APPARATUS AND METHOD FOR EFFECTIVELY ELIMINATING THE ECHO SIGNAL OF TRANSMITTING SIGNAL IN A MODEM

King Y. Cheng, Nevada City, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Apr. 18, 1995, Ser. No. 423,083
Int. Cl.[6] H04B *3/23*
U.S. Cl. 370—32.1 **18 Claims**



1. In a data transmission system that transmits a transmitting signal to an external network and receives a receiving signal plus an echo signal of the transmitting signal from the network, a method of eliminating the echo signal from the receiving signal, comprising the steps of:

(A) sampling the receiving signal;

(B) time interpolating samples of the transmitting signal at a sampling rate of the receiving signal before the time interpolated transmitting signal is sent to the network; and

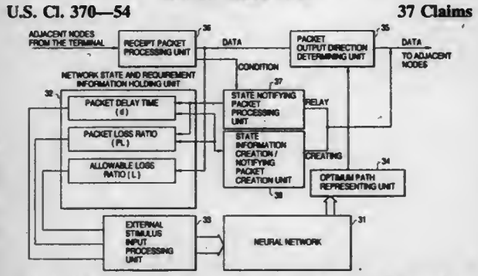
(C) generating a replica signal of the echo signal using the interpolated samples of the transmitting signal to cancel the echo signal from the receiving signal after the receiving and echo signals are also time interpolated at the sampling rate of the receiving signal.

5,577,028

ROUTING SYSTEM USING A NEURAL NETWORK

Akira Chugo; Ichiro Iida, both of Yokohama, and Toshihiko Kurita, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 754,445, Sep. 3, 1991, abandoned.
This application Dec. 14, 1993, Ser. No. 166,152
Claims priority, application Japan, Aug. 31, 1990, 2-228428
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—54 **37 Claims**



16. A routing system for use in a multimedia integrated network providing at least one type of communication requiring at least one condition, the communication provided using links between nodes of a virtual call system, said routing system comprising in each node:

a neural network of an interconnection type, formed of neurons, for determining a packet output direction of each packet from the node by at least one of the neurons having a stabilized output of 1; and

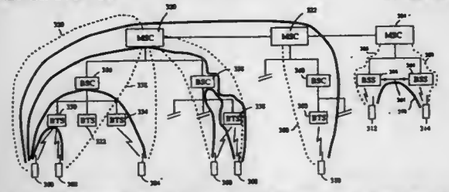
an external stimulus input means, operatively connected to said neural network, for applying an external stimulus to each neuron forming said neural network in accordance with a present state of the multimedia integrated network and the at least one condition required by the communication provided by the multimedia integrated network, to enable the node to determine the packet output direction by the node detecting the at least one of the neurons having the stabilized output of 1 in accordance with the present state of the multimedia integrated network and the at least one condition required by the communication.

5,577,029

CELLULAR COMMUNICATION NETWORK HAVING INTELLIGENT SWITCHING NODES

Priscilla M. Lu, San Carlos, and Timothy R. White, Palo Alto, both of Calif., assignors to Interwave Communications, Redwood City, Calif.

Filed May 4, 1995, Ser. No. 435,838
Int. Cl.[6] H04Q *7/22*
U.S. Cl. 370—54 **17 Claims**



1. In a system having a plurality of cross-connect nodes for facilitating cellular communication among a plurality of mobile stations, a method of cross-connecting an end-to-end connection between an origination mobile station and a destination mobile station, comprising:

receiving call control information from said origination mobile station;

receiving call control information from said destination mobile station;

computing, responsive to said call control information received from said origination mobile station and said call control

information received from said destination mobile station, an optimum end-to-end connection for cross-connecting said end-to-end connection, said optimum end-to-end connection having a first optimum cross connect point and representing a computed shortest communication route between said origination mobile station and said destination mobile station that satisfies resource requirements for cross-connecting said end-to-end connection; and

cross-connecting said end-to-end connection through said first optimum cross-connect point, including:

determining whether said first optimum cross-connect point has on node resources to satisfy said resource requirements for cross-connecting said end-to-end connection; and

if said first optimum cross-connect point has on node said resources to satisfy said resource requirements for cross-connecting said end-to-end connection, cross-connecting said end-to-end connection along said optimum end-to-end connection using said first optimum cross connect point as a connection cross-connect point.

5,577,030

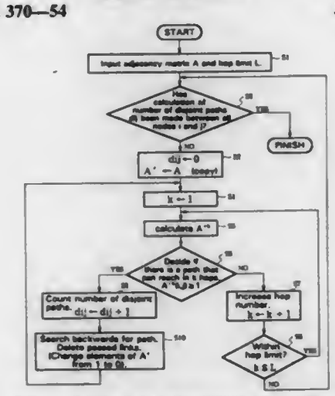
DATA COMMUNICATION ROUTING METHOD AND DEVICE

Eiji Oki, and Naoaki Yamanaka, both of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Aug. 31, 1995, Ser. No. 521,986

Int. Cl.[6] H04L *12/44*

U.S. Cl. 370—54 **30 Claims**



1. A routing method for determining communication paths between nodes in a communication network having a plural number of nodes connected by links, wherein a number from 1 to N is assigned to each node in said communication network, and wherein an upper hop limit is set for a number of links that are to be passed by transmitted data, said routing method comprising the steps of:

establishing an N×N adjacency matrix, wherein for each element in said adjacency matrix there exists a row number i and a column number j, each of which corresponds to one of said nodes in said communication network, wherein each element in said adjacency matrix is set to a first value if one of said links connects said node corresponding to said row number i and said node corresponding to said column number j associated with that element;

copying said adjacency matrix to a temporary adjacency matrix;

determining, based on said temporary adjacency matrix, whether there is at least one path between desired nodes in said communication network in which a number of nodes in said path does not exceed said upper hop limit;

calculating higher powers of said temporary adjacency matrices if said at least one path does not exist, so long as a number of higher powers of said temporary adjacency matrices does not exceed said upper hop limit, and determining whether there is at least one path between said desired nodes in said communication network in which said number of nodes in said path does not exceed said upper hop limit based said higher powers of said temporary adjacency matrix;

selecting elements in said temporary adjacency matrix corresponding to links in said communication network that are included in said at least one path, if is it established that said at least one path exists;

deleting said selected elements from said temporary adjacency matrix by altering a value of said selected elements from said first value; and

repeating said determining, establishing, selecting and deleting steps using a matrix resulting from a preceding deleting step as a new temporary adjacency matrix until there are no paths between said desired nodes in which a number of nodes traversed by said path is within said upper limit.

5,577,031

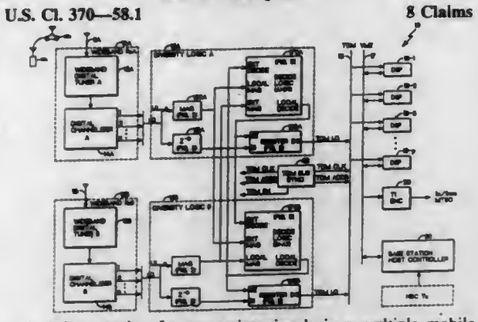
WIDEBAND CHANNELIZER INCORPORATING DIVERSITY SWITCH

Jeffrey W. Smith, 868 Gillen Ave., NW., Palm Bay, Fla. 32907

Filed Mar. 22, 1995, Ser. No. 408,665

Int. Cl.[6] H04Q *11/04*

U.S. Cl. 370—58.1 **8 Claims**



1. A base station for processing signals in a multiple mobile subscriber unit wireless communication system comprising:

a first antenna for receiving signals from a plurality of the mobile subscriber units as first composite radio frequency, RF, signal;

first wideband digital tuner means, connected to the first antenna, for downconverting a selected bandwidth of the first composite RF signal to a first intermediate frequency, IF, signal and for performing an analog to digital conversion on the first IF signal, to provide a first wideband tuner output signal;

first digital channelization means, being connected to receive the first wideband tuner output signal, and providing a first set of digital channel signal outputs in a predetermined sequential order, each digital channel signal output in the first set of digital channel signal outputs having a predetermined channel bandwidth, and each one of the first set of digital channel signal outputs corresponding to one of the signals received from one of the mobile units;

a second antenna for receiving signals from the plurality of mobile units as second composite RF signal;

second wideband digital tuner means, connected to the second antenna, for downconverting the selected bandwidth of the second composite RF signal to a second IF signal and for performing an analog to digital conversion on the second IF signal, to provide a second wideband tuner output signal;

second digital channelization means, being connected to receive the second wideband tuner output signal, and providing a second set of digital channel signal outputs in the same predetermined sequential order as the first set of digital channel signal outputs, each one of the second set of digital channel signal outputs having the same predetermined channel bandwidth as the first set of digital channel signal outputs, and each one of the second set of digital channel signal outputs corresponding to one of the signals received from one of the mobile units; and

sequential diversity processing means, being connected to receive the first set of digital channel signal outputs and the second set of digital channel signal outputs, for comparing a magnitude of respective ones of the first set of digital channel signal outputs to a magnitude of corresponding ones of the second set of digital channel signal outputs, to provide a set of diversity processed digital channel signals.

5,577,032

BROADCAST SERVICE SYSTEM

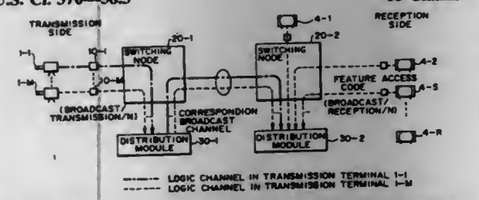
Yukio Sone, Kawasaki; Takashi Nagashima, Yokohama, and Takashi Kato, Fukuoka, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 10, 1993, Ser. No. 120,376

Claims priority, application Japan, Sep. 11, 1992, 4-242985; Oct. 19, 1992, 4-280204

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—58.3 **18 Claims**



1. A broadcast service system comprising a plurality of switching nodes; a broadcast transmission terminal and a broadcast reception terminal connected to each other through said plurality of switching nodes, each switching node comprising an exchange switch, and a distribution module for controlling distributively input information and being arranged as an external circuit to the exchange switch of a respective switching node,

said switching nodes and distribution modules thereof being connected such that when broadcasting begins, information is transmitted from said broadcast transmission terminal to a distribution module of the switching node on said transmission side via said switching node on said transmission side accommodating said broadcast transmission terminal, the distribution module of the switching node on said transmission side copying said information, the copied information being transmitted from said distribution module of the switching node on said transmission side to the distribution module of said switching node on said reception side via said switching node on said reception side accommodating said broadcast reception terminal, said information being accessed from said broadcast reception terminal to said distribution module on said reception side via said switching node on said reception side.

5,577,033

LOCAL AREA NETWORK TRANSMISSION EMULATOR

Eugene Y. Chang, Cambridge; David B. Richardson, Bellingham, and Bennett C. Baker, Dedham, all of Mass., assignors to Microcom Systems, Inc., Granada Hills, Calif.

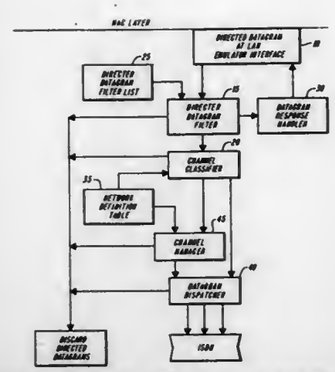
Continuation of Ser. No. 97,851, Jul. 27, 1993, Pat. No. 5,323,388, which is a continuation of Ser. No. 763,340, Sep. 20, 1991, Pat. No. 5,280,481. This application Jun. 3, 1994, Ser. No. 253,753

Int. Cl.[6] H04L *12/18;12/28*

U.S. Cl. 370—60 **20 Claims**

1. Apparatus for allowing communication between a source and a destination via a switched transmission media, comprising:

an interface for receiving, from a protocol layer which is above a logical link control (LLC) layer and a media access control (MAC) layer, a datagram which is intended for receipt by the LLC or MAC layer and which has a source address identifying the source and a destination address identifying the destination;



a classifier for retrieving from a storage location an address on the switched transmission media which corresponds to the destination address;

a channel manager for using the switched transmission media address to initiate connection to a channel of the switched transmission media; and

a dispatcher for providing the datagram to the channel of the switched transmission media for transmission to the destination.

5,577,034

SHAPING ARRANGEMENT

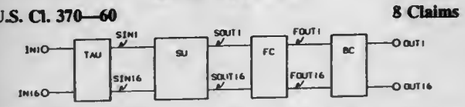
Guido H. M. Petit, Antwerpen, Belgium, assignor to Alcatel N.V., Rijswijk, Netherlands

Filed Feb. 16, 1995, Ser. No. 389,919

Claims priority, application European Pat. Off., Feb. 17, 1994, 94200400

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—60 **8 Claims**



1. A shaping arrangement for an information packet switching system with input terminals (IN1/IN16) and output terminals (OUT1/OUT16), having a switching unit (SU) for transferring an information packet applied to said input terminals (IN1/IN16) to said output terminals (OUT1/OUT16), characterized in that said shaping arrangement comprises:

a time parameter assignment unit (TAU) coupled between said input terminals (IN1/IN16) and inputs (SIN1/SIN16) of said switching unit (SU), for calculating according to a predetermined time parameter algorithm a time parameter for said information packet as a function of a first instant in time that said information packet is applied to said input terminals (IN1/IN16), and for inserting the time parameter in said information packet;

a filter circuit (FC) coupled to outputs (SOUT1, . . . , SOUT16) of said switching unit (SU), for applying a filtering algorithm to said information packet, and for discarding said information packet based on the time parameter; and

a buffer circuit (BC) coupled to said filter circuit (FC), for buffering said information packet for a buffer time interval so that there is a predetermined constant time difference between the time parameter and a second instant in time at which said information packet will be supplied to said output terminals (OUT1/OUT16).

VOL 1192 ISS 3 NO 19 1996 UMI

5,577,035
APPARATUS AND METHOD OF PROCESSING BANDWIDTH REQUIREMENTS IN AN ATM SWITCH

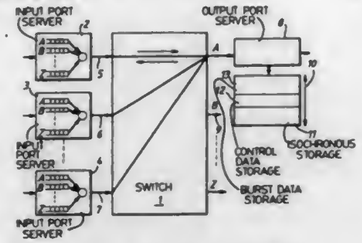
Andrew T. Hayter, Bitterne Park, and Simon P. Davis, Romsey, both of England, assignors to Roke Manor Research Limited, Hampshire, Great Britain

Filed Mar. 22, 1995, Ser. No. 408,344

Claims priority, application United Kingdom, Mar. 23, 1994, 9405704

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—60 **4 Claims**



1. An ATM communication system comprising:

an ATM switch having a plurality of input ports and a plurality of output ports, each of the input ports being fed from an input port server and each of the output ports being arranged to feed an output port server, the input port servers having a plurality of buffer stores, one for each of the output ports, to which said output ports data is transmitted through the switch, each of said plurality of buffer stores in the input port servers arranged to interrogate the output ports server with which it communicates before the transmission of data to determine whether output port server data handling capacity is available; and

means for causing unicast traffic and multicast traffic to be transmitted through the switch in an appropriate time slot.

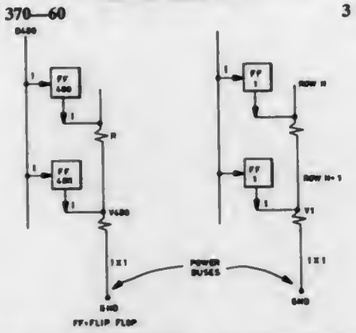
5,577,036
ATM MEMORY WITH REDUCED NOISE TRANSIENT

Michael Cooperman, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 22, 1995, Ser. No. 447,144

Int. Cl.[6] G11C *5/02*

U.S. Cl. 370—60 **3 Claims**



1. An asynchronous transmission mode (ATM) memory array capable of storing one ATM packet of data, having reduced noise transients, comprising:

an n×m array of memory locations, each memory location capable of storing one bit;

said array having n columns, where n is the number of bits in an ATM cell of data;

said array having m rows, where m is the number of cells in an ATM packet;

said memory array having a plurality of input lines, one for each of said n columns, which receive n bits simultaneously;

n ground lines, one for each of said n columns in said array, each ground line connected to one memory location in each of said m rows in its column; such that

each ground line carries the current of only one bit.

5,577,037
METHOD OF PROCESSING INCLUSIVELY STM SIGNALS AND ATM SIGNALS AND SWITCHING SYSTEM EMPLOYING THE SAME

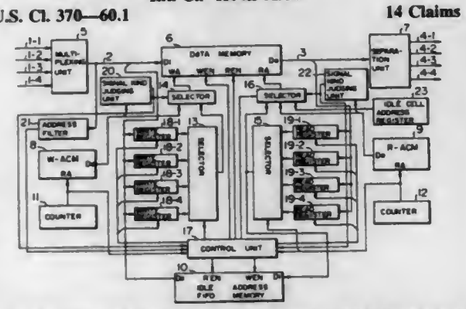
Masahiro Takatori, Hachioji; Yukio Nakano, Zama, and Yoshihiro Ashi, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 16, 1994, Ser. No. 213,761

Claims priority, application Japan, Mar. 18, 1993, 5-058942

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—60.1 **14 Claims**



1. In a switch for writing signals input from input highways to a first memory and reading out the signals from said first memory to output highways, a method of processing inclusively synchronous transfer mode signals (hereinafter, referred to as "STM signals", when applicable) and asynchronous transfer mode signals (hereinafter, referred to as "ATM signals", when applicable), comprising the steps of:

in the case where an input signal is an STM signal, the STM signal of interest is written to said first memory in accordance with an address generated by an address generating means, and the STM signal of interest is read out from said first memory in accordance with an address value stored in a second memory; and

in the case where an input signal is an ATM signal, an address value is obtained from a third memory which stores address value of an empty area in said first memory, and the ATM signal of interest is written to said first memory in accordance with the address value of interest, and in the case where the ATM signal of interest is read out from said first memory; the address valves of an empty area in said first memory in which the ATM signal of interest was stored is written into said third memory.

5,577,038
DIGITAL COMMUNICATION PATH NETWORK HAVING TIME DIVISION SWITCHES AND A CELL SWITCH

Kelichi Miyahara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 7, 1994, Ser. No. 351,513

Claims priority, application Japan, Dec. 14, 1993, 5-313364

Int. Cl.[6] H04L *12/56*

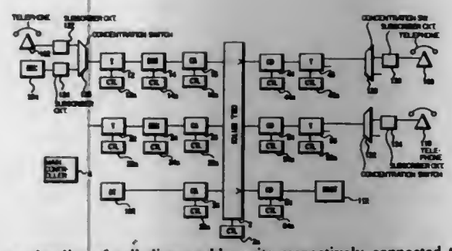
U.S. Cl. 370—60.1 **12 Claims**

1. A digital communication path network comprising:

a first time division switch for producing a first time division multiplexed transmission signal:

cell assembly means for generating a broadcasting cell address, and for forming a cell from said transmission signal and the broadcasting cell address;

a cell switch for transferring the cell from said cell assembly means to a plurality of output ports in accordance with the broadcasting cell address;



a plurality of cell disassembly units respectively connected to said plurality of output ports, each for disassembling the cell;

a plurality of second time division switches respectively connected to said plurality of cell disassembly units, each for producing a second time division multiplexed transmission signal from the disassembled cell in response to a time slot control instruction; and

control means for selectively issuing the time slot control instruction to each of said plurality of second time division switches based on a communication path connection information for each of said plurality of second time division switches.

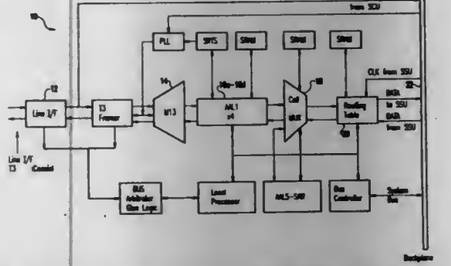
5,577,039
SYSTEM AND METHOD OF SIGNAL TRANSMISSION WITHIN A PLESIOCHRONOUS DIGITAL HIERARCHY UNIT USING ATM ADAPTATION LAYERS

Chan Y. Won; Young I. Kim; Gyu S. Lee, and Myung G. Park, all of Gaithersburg, Md., assignors to Samsung Electronics, Inc., Ridgefield Park, N.J.

Filed Jun. 7, 1995, Ser. No. 482,393

Int. Cl.[6] H04L *12/66*

U.S. Cl. 370—60.1 **12 Claims**



1. A system for cross conversion of plesiochronous digital hierarchy (PDH) and asynchronous transfer mode (ATM) data, comprising:

in a PDH to ATM conversion,

a link interface unit for receiving a first digital signal from a network link;

a multiplexer/demultiplexer coupled to receive said first digital signal and converting said first digital signal into multiple second digital signals;

a plurality of ATM adaptation layer modules for receiving respective sets of said second digital signals and generating a respective plurality of ATM adaptation layer module cell streams;

a first stage cell multiplexer/demultiplexer for converting said plurality of adaptation layer module cell streams to a first multiplexed cell stream;

a second stage cell multiplexer/demultiplexer for combining said first multiplexed cell stream with a second cell stream; and

a router coupled to receive said combined cell stream and converting said combined cell stream to an ATM cell for transmission to a bus.

5,577,040
TELECOMMUNICATIONS TERMINAL PARTICULARLY FOR ELECTRONIC MASS MAIL AND MESSAGE DISTRIBUTION NETWORK

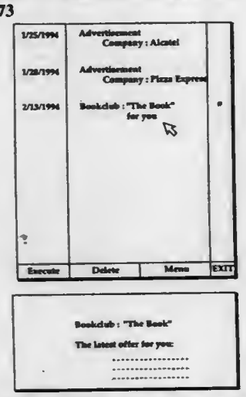
Dieter Klumpp, Schwabstrasse, Germany, assignor to Alcatel N.V., Rijswijk, Netherlands

Filed Mar. 17, 1995, Ser. No. 406,117

Claims priority, application Germany, Mar. 18, 1994, 44 09 458.2

Int. Cl.[6] H04L *12/16;* **H04N** *7/025*

U.S. Cl. 370—73 **17 Claims**



1. Telecommunications terminal for receiving messages, particularly electronic mass mail, with comprising:

a control unit (PC);

a display unit (D) connected to said control unit to indicate whether at least one new received message is present;

input means (T) connected to said control unit for activating a display of captions on said display unit, each caption displayed on said display unit characterizing a respective received message and being contained in the respective received message, for selecting and presenting on the display unit respective received messages characterized by the captions, and/or for erasing the captions, and/or for erasing the respective received messages characterized by the captions; and

means for sending a user message to a service central which receives data and transmits messages, and wherein in response to said user message, the service central transmits further messages or places an order for merchandise.

5,577,041
METHOD OF CONTROLLING A PERSONAL COMMUNICATION SYSTEM

Raghu Sharma, North Oaks; Jeffrey P. Davis, Ham Lake; Timothy D. Gunn, Mounds View; Ping Li, New Brighton, all of Minn.; Sidhartha Maitra, Saratoga, Calif.; Ashish Thanawala, and Steve Young, both of Saratoga, Calif., assignors to Multi-Tech Systems, Inc., Mounds View, Minn.

Division of Ser. No. 289,294, Aug. 11, 1994, Pat. No. 5,471,470, which is a continuation of Ser. No. 2,467, Jan. 8, 1993, Pat. No. 5,452,289. This application Jun. 7, 1995, Ser. No. 488,183

Int. Cl.[6] H04M *11/00*

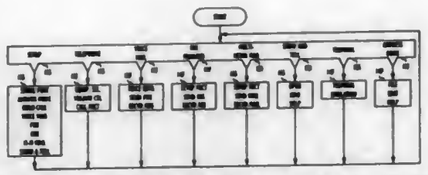
U.S. Cl. 370—79 **7 Claims**

1. A method of controlling a personal communication system comprising the steps of:

(a) initializing a communication port to send or receive a telephone call, fax, or computer data over a communications line;

(b) configuring a personal computer to send and receive telephone calls over the communication line to communicate voice, computer data, compressed voice or fax data;

(c) editing, sending, and receiving voice mail messages in the form of compressed speech signals;



(d) configuring a fax function for sending and receiving fax transmissions;

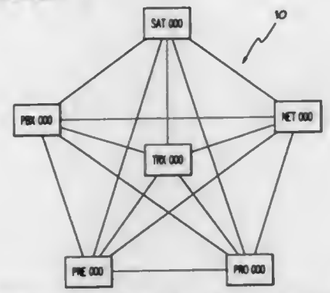
(e) providing a terminal emulation when connecting the personal computer to a remote computing device over the communication line.

5,577,042

BROADCAST AND PRESENTATION SYSTEM AND METHOD

Michael B. McGraw, Sr., Ft. Thomas, Ky., and Phillip A. Coombs, Cincinnati, Ohio, assignors to McGraw Broadcast, Cincinnati, Ohio

Filed Jan. 18, 1994, Ser. No. 183,689
Int. Cl.[6] H04J *3/16*
U.S. Cl. 370—85.7 **1 Claim**



1. A method of controlling a multi-node variable bandwidth digital network, comprising the steps of:

(a) accessing a first communication node in a multi-node communication network from a second communication node that is remote from the first communication node and requesting a communication service, the second communication node having a plurality of different subsystems and being selectively configurable with selected combinations of the subsystems,

(b) requesting communication service between the first and second communication nodes by transmitting from the first communication node to a controller in the second communication node information indicative of equipment and operational requirements of the requested service;

(c) determining the required connection capacity between the first and second communication nodes for the requested service;

(d) determining the transmission capacity of the connection between the first and second communication nodes;

(e) modifying the connection transmission capacity by rerouting the connection between the first and second communication nodes through at least one additional communication node if the required connection capacity for the requested service differs from the transmission capacity; and

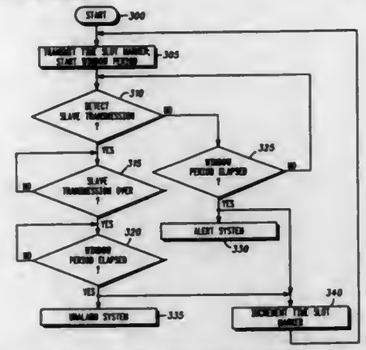
(f) using the controller to configure the second communication node in response to the requested service by selecting one or more of the plurality of subsystems in the second node to meet the equipment and operational requirements of the requested service.

5,577,043

METHOD AND APPARATUS FOR CONTROLLING INFORMATION TRANSMISSION ON A MULTIPOINT LINK

Eileen J. Guo, Bedford, and Jeffrey W. Klingberg, Ft. Worth, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 21, 1994, Ser. No. 309,708
Int. Cl.[6] H04L *12/403;12/40*
U.S. Cl. 370—85.8 **8 Claims**



1. A method for controlling information transmission on a multipoint link by a first communication unit, comprising:

(a) transmitting at least a portion of a group of signals, wherein the portion includes a first signal and each of a group of signals includes a base station identifier corresponding to a respective base station, at a first periodic rate, and, in response to a predetermined number of transmissions of the first signal followed by an acknowledgment response signal, cyclically transmitting the first signal at a second periodic rate, the second periodic rate being slower than the first periodic rate;

(b) detecting a response signal on the multipoint link being transmitted in response to the first signal;

(c) detecting one of a group consisting of an acknowledgment response signal and an information response signal; and

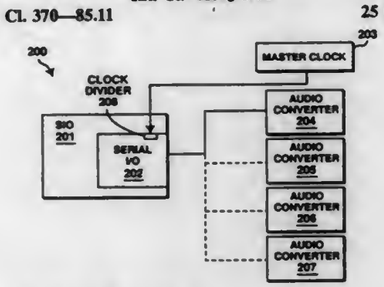
(d) detecting when the response signal is no longer being transmitted, and transmitting a next signal including a next identifier on the multipoint link.

5,577,044

ENHANCED SERIAL DATA BUS PROTOCOL FOR AUDIO DATA TRANSMISSION AND RECEPTION

William V. Oxford, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation-in-part of Ser. No. 314,538, Sep. 28, 1994, which is a continuation of Ser. No. 881,842, May 12, 1992, abandoned. This application Mar. 11, 1994, Ser. No. 212,504
Int. Cl.[6] H04J *3/06*
U.S. Cl. 370—85.11 **25 Claims**



19. An audio system comprising:

a first audio functional unit;

a second audio functional unit; and

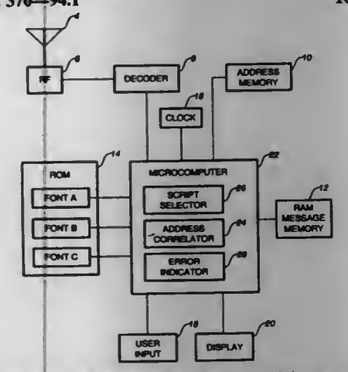
an interface coupled between the first audio functional unit and the second audio functional unit, wherein the interface comprises a first conductor and a second conductor, wherein the first conductor transfers combined audio and auxiliary data from the first audio functional unit to the second audio functional unit and the second conductor transfers combined audio and auxiliary data from the second audio functional unit to the first audio functional unit, wherein the auxiliary data specifies an address and data associated with the address when one of the bits of the auxiliary data is set.

5,577,045

SELECTIVE CALL RECEIVER FOR RECOVERING GARBLED MESSAGE FRAGMENTS

Randi W. Faris, Boca Raton, Fla.; Anselm I. Sequeira, Keller, Tex., and Billy J. Cassily, Boca Raton, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 16, 1995, Ser. No. 516,074
Int. Cl.[6] H04J *3/24*
U.S. Cl. 370—94.1 **10 Claims**



1. A selective call receiver capable of receiving a transmitted fragmented message and displaying the fragmented message in at least first and second scripts, the fragmented message including a plurality of message packets each comprising an address and message data, at least one of said message packets including a script select character within said message data, the selective call receiver comprising:

a receiver for receiving the fragmented message;

an address memory for storing one or more predetermined addresses;

a message memory for storing the message data of the message packets;

a font memory for storing first and second fonts corresponding to the first and second scripts, respectively;

an address correlator coupled to said receiver and the address memory for correlating the address of each of the message packets to the one or more predetermined addresses;

decoder means coupled to the receiver, the address correlator and the message memory for decoding the message data of each of the message packets, including recognizing the script select character, and coupling the message data to the message memory, the message data of each of the message packets being stored in the message memory for reconstructing the fragmented message;

a user input including means to input a script switch signal;

control means coupled to the decoding means and the font memory for selecting one of the fonts in response to the script select character or the script switch signal, and for providing an error signal indicative of one of the message packets being missing; and

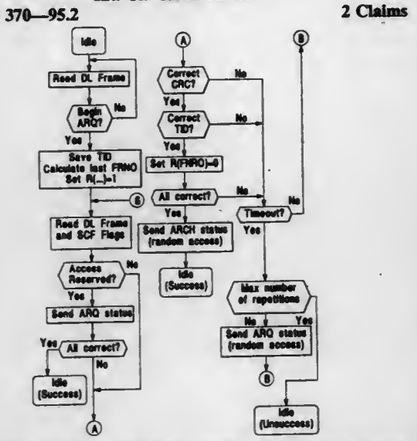
display means coupled to the control means and the message memory for displaying the fragmented message in the fonts.

5,577,046

AUTOMATIC RETRANSMISSION REQUEST

John W. Diachina, Garner, N.C.; Håkan C. Andersson, Ekerö, and Bengt Persson, Djursholm, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Division of Ser. No. 332,114, Oct. 31, 1994, which is a continuation-in-part of Ser. No. 147,254, Nov. 1, 1993. This application Jun. 7, 1995, Ser. No. 478,652
Int. Cl.[6] H04L *12/403*
U.S. Cl. 370—95.2 **2 Claims**



1. A base station for use in a cellular communication system, comprising:

means for transmitting a polling request to a mobile station, wherein said polling request uses a partial echo portion of shared channel feedback to indicate which mobile station is being sent said polling request;

means for receiving a bit map from said mobile station in a response to said polling request;

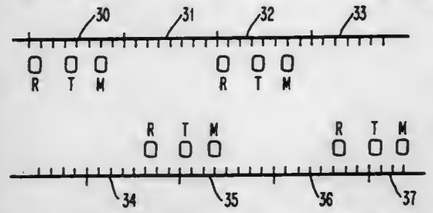
means for interpreting said bit map to determine which of a plurality of frames have been correctly received by said mobile station when the polling request was received.

5,577,047

SYSTEM AND METHOD FOR PROVIDING MACRODIVERSITY TDMA RADIO COMMUNICATIONS

Bengt Persson, Djursholm; HÅkan Eriksson, Vallentuna, and Roland Bodin, SpÅnga, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Continuation of Ser. No. 149,764, Nov. 10, 1993, abandoned. This application Jun. 26, 1995, Ser. No. 494,952
Int. Cl.[6] H04J *3/16*
U.S. Cl. 370—95.3 **25 Claims**



1. In a TDMA radiocommunications system including at least one remote station and at lease two base stations, a method of communicating with said at least one remote station from a first and a second of said at least two base stations comprising the steps of:

transmitting a first signal on a first TDMA channel from said first base station to said remote station;

measuring, by the remote station, a time offset between signals received from said first and second base station and determining an appropriate timeslot for a second TDMA channel based on said measured time offset;

transmitting a second signal on said second TDMA channel from said second base station to said remote station, where said second signal includes substantially the same information as said first signal; and

receiving, at said remote station, said first and second signals transmitted from said first and second base stations.

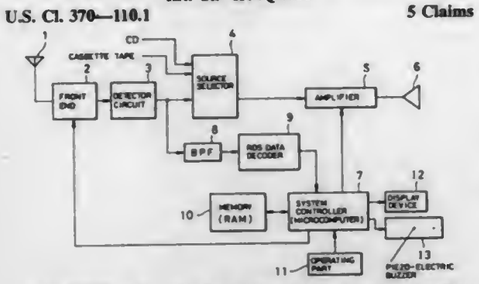
5,577,048

METHOD OF DETECTING PTY BURST SIGNAL

Koichi Kasa, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 479,183
Claims priority, application Japan, Jun. 8, 1994, 6-126092
Int. Cl.[6] H04Q *7/06*

U.S. Cl. 370—110.1 **5 Claims**



1. A Program Type code (PTY) burst signal detection method for use in a Radio Data System (RDS) receiver, said RDS receiver for receiving same enhanced other networks (EON) information that is transmitted from an RDS broadcast station within a short period of time, said same EON information transmitted within a short period of time defining a PTY burst signal indicative of a beginning of an information program broadcast from another network, said EON information being of a group type 14A comprising a plurality of blocks of data, wherein a second one of the blocks of data comprises an information classification code (Usage Code) =(13), said method comprising the steps of:

respectively comparing data blocks in the 14A group with data blocks in an earlier received 14A group, the compared data blocks including at least three of the data blocks in each of the compared 14A groups, wherein the three compared data blocks from each 14A group do not include a first data block of the 14A groups; and

detecting a presence of the PTY burst signal when the compared data blocks match by a predetermined number of times.

5,577,049

MULTIPLEXED SIGNAL TRANSMISSION SYSTEM

Kenji Ito, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

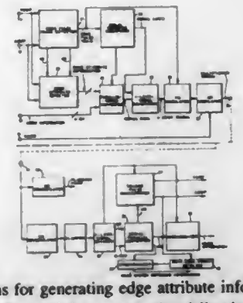
Continuation of Ser. No. 118,585, Sep. 10, 1993, abandoned. This application Jnn. 7, 1995, Ser. No. 480,294
Claims priority, application Japan, Sep. 11, 1992, 4-243741; Aug. 13, 1993, 5-201551
Int. Cl.[6] H04L *25/34*

U.S. Cl. 370—112 **37 Claims**

1. A multiplexed signal transmission system comprising:

means for receiving a first group of square pulses having a fixed phase relation to each other, the first group of square pulses including a first edge and a second edge following the first edge;

means for generating an edge pulse train containing in sequence all edges extracted from the first group of square pulses;



means for generating edge attribute information representing an attribute of the second edge following the first edge;

means for converting a plurality of parallel data including the edge attribute information and mode information that controls a system status into serial data;

means for aligning the serial data in the edge pulse train such that the serial data is located after the edge pulses corresponding to the serial data;

means for generating a four-level signal having a reference signal level, a first level associated with a clock level for the serial data, a second level associated with the serial data superposed on the clock level and a third level associated with the edge pulses; and

means for generating a transmission multiplexed signal by frequency modulating the four-level signal.

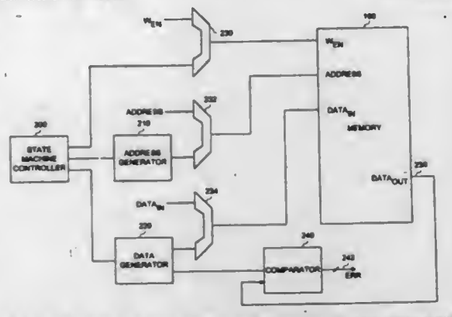
5,577,050

METHOD AND APPARATUS FOR CONFIGURABLE BUILD-IN SELF-REPAIRING OF ASIC MEMORIES DESIGN

Owen S. Bair, Saratoga; Adam Kablanian; Charles Li, both of San Jose, and Farzad Zarrinfar, Pleasanton, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Dec. 28, 1994, Ser. No. 365,286
Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—10.2 **17 Claims**



1. A method for on-chip testing and repairing configurable ASIC memories in a system that contains a test circuit, a repair circuit, a memory array, and a plurality of redundant lines within the memory array, the method comprising the steps of:

testing the memory array;

determining an original address of a line in the memory array that includes a fault; and

repairing the faulty line with a redundant line by using the repair circuit to redirect the original address to an address of the redundant line.

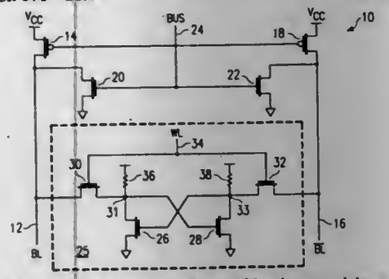
5,577,051

STATIC MEMORY LONG WRITE TEST

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Dec. 22, 1993, Ser. No. 173,197
Int. Cl.[6] G11C *29/00*

U.S. Cl. 371—21.4 **34 Claims**



18. A memory structure which provides improved long write testing of a static memory, comprising:

at least one wordline of a memory cell;

a bitline true of the memory cell which is connected to a true bitline load element and a first pull-down transistor;

a bitline complement of the memory cell which is connected to a complement bitline load element and a second pull-down transistor;

a bus connected to the bitline true load element, the first pull-down transistor, the bitline complement load element, and the second pull-down transistor, wherein after data of a test data pattern has been written to the memory cell, the wordline is turned off during a long write test, and the bitline true and bitline complement are pulled down to a low logic level by forcing the bus to a predetermined logic level such that the bitline true load and the bitline complement load are turned off during the long write test.

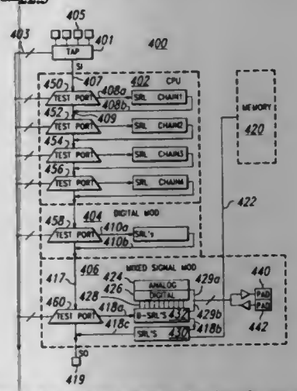
5,577,052

SCAN BASED TESTING FOR ANALOGUE CIRCUITRY

John O. Morris, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 405,740, Mar. 17, 1995, which is a continuation of Ser. No. 961,743, Oct. 16, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 476,834
Int. Cl.[6] G06F *15/20*

U.S. Cl. 371—22.5 **3 Claims**



1. A method for designing analog circuitry for testability, comprising:

organizing said analog circuitry into a functional block;

adding other circuitry to change the topology of said circuitry in response to at least one test signal;

adding scan cells to provide said test signal;

creating test vectors that are shifted into said scan cells to produce said test signal, wherein said test vectors comprise analog test signals which are shifted into said scan cells concurrently with digital data; and

re-using said functional block and test vectors on a plurality of integrated circuit types.

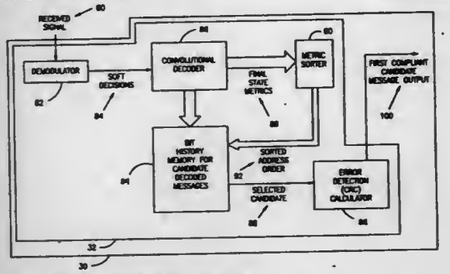
5,577,053

METHOD AND APPARATUS FOR DECODER OPTIMIZATION

Paul W. Dent, Stehags, Sweden, assignor to Ericsson Inc., Research Triangle Park, N.C.

Filed Sep. 14, 1994, Ser. No. 305,730
Int. Cl.[6] H03M *13/00;13/12*

U.S. Cl. 371—37.4 **25 Claims**



25. A decoder apparatus comprising:

logic circuitry for receiving a transmitted data message with an appended error check code;

logic circuitry for generating a plurality of candidate data messages and an associated plurality of appended candidate error check codes, each of said plurality of candidate data messages having associated therewith a confidence measure indicative of a likelihood that said candidate data message matches said transmitted data message;

logic circuitry for identifying, using said candidate error check codes, an error-free candidate data message having a highest confidence measure, and in absence thereof, for correcting a least-erroneous data message having a highest confidence measure;

output circuitry for outputting said identified error-free candidate data message having a highest confidence measure, or in absence thereof, said corrected data message.

5,577,054

DEVICE AND METHOD FOR PERFORMING ERROR DETECTION ON AN INTERLEAVED SIGNAL PORTION, AND A RECEIVER AND DECODING METHOD EMPLOYING SUCH ERROR DETECTION

Kenton J. Pharris, Elbert, Colo., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Sep. 13, 1994, Ser. No. 305,114
Int. Cl.[6] H03M *13/00;* **H04N** *5/78*

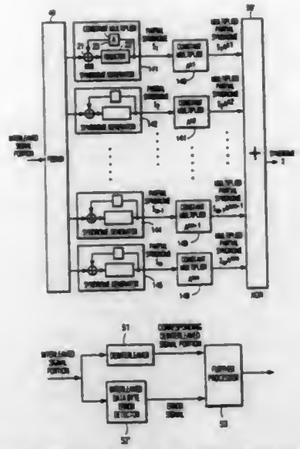
U.S. Cl. 371—39.1 **30 Claims**

1. A device for performing error detection on an interleaved signal portion including n successive data bytes in an interleaved order in which the interleaved signal portion was produced by interleaving a coded signal portion including the n data bytes in a non-interleaved order with m-byte interleaving, the n data bytes being made up of information data bytes of a digital information signal portion and at least one error detection data byte, the detector comprising:

m syndrome generators adapted to produce, on the basis of the n data bytes, m partial syndromes;

feeder means for (a) receiving the n data bytes in the interleaved order in successive groups of m or less data bytes each, and

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(b) sequentially supplying the n data bytes to said m syndrome generators so that (i) each of said m syndrome generators is supplied with different ones of the n data bytes and (ii) a jth syndrome generator of the m syndrome generators receives a jth data byte from each of the groups, where j is an integer such that $0 \leq j \leq m$; and

generator means for producing, on the basis of the m partial syndromes, a final syndrome indicating whether an error is detected in the interleaved signal portion.

5,577,055

METHOD AND CIRCUIT DEVICE TO CONTROL A MEMORY

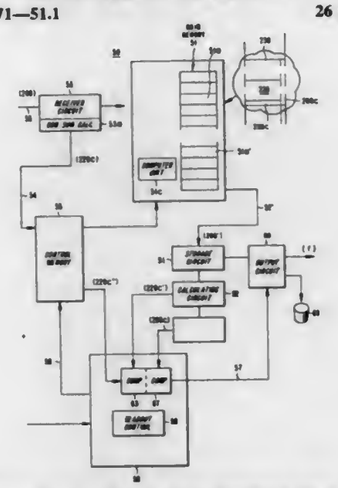
Ewa C. Westerlund, Gustafsberg, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Apr. 14, 1995, Ser. No. 421,972

Claims priority, application Sweden, Apr. 19, 1994, 9401318

Int. Cl.[6] G06F *11/10*; H03H *13/00*

U.S. Cl. 371—51.1 **26 Claims**



14. A device for ensuring that digital information that is inserted into and stored within a memory is correctly readable out of the memory, the device comprising:

a main memory for storing digital information and the bit positions of the digital information in an address;

means, belonging to or preceding the main memory, arranged to give received information, intended to be inserted into the main memory, an address belonging to the memory;

a first calculating circuit for calculating first control-sum-carrying bit positions and corresponding values from the bit positions and corresponding values of the digital information according to a selected evaluation;

a control memory in which the calculated first control-sum-carrying bit positions and the selected address in the main memory are stored in a selected address;

a second calculating circuit for calculating second control-sum-carrying bit positions according to the selected evaluation, when the bit positions of the digital information, stored in the address in the main memory, have been read out; and

a comparing circuit for comparing the calculated first and second control-sum-carrying bit positions, and accepting the bit positions of the read information, and their values, as correct if the comparison shows that the calculated first and second control-sum-carrying bit positions are identical.

5,577,056

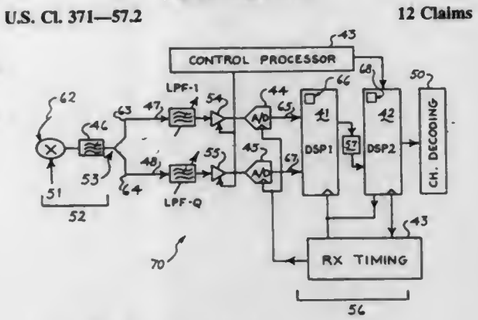
METHOD AND APPARATUS FOR ADJUSTING THE POSTAMBLE FALSE DETECTION PROBABILITY THRESHOLD FOR A BURST TRANSMISSION

Malik Imran, Germantown, and D. Ray Lowe, Gaithersburg, both of Md., assignors to Hughes Aircraft Co., Los Angeles, Calif.

Filed Feb. 24, 1995, Ser. No. 394,120

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—57.2 **12 Claims**



5. A satellite receiver comprising:

a demodulator for demodulating a burst transmission, said demodulator having at least one processor for detecting a set of symbols;

a memory linked to said demodulator for storing a predetermined length of time value and a unique word error detection threshold;

said processor including logic for determining whether said burst transmission equals or exceeds said pre-determined length of time value, and modifying the unique word error detection threshold for said burst transmission if said burst transmission equals or exceeds said pre-determined length of time value.

5,577,057

MODELOCKED LASERS

Steven J. Frisken, Coogee, Australia, assignor to Telstra Corporation Limited, Sydney, Australia

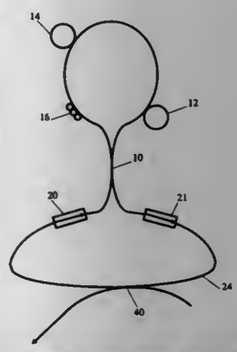
PCT No. PCT/AU92/00093, § 371 Date Sep. 20, 1993, § 102(e) Date Sep. 20, 1993, PCT Pub. No. WO92/16037, PCT Pub. Date Sep. 17, 1992

PCT Filed Mar. 2, 1992, Ser. No. 108,660

Claims priority, application Australia, Mar. 1, 1991, PK4902; Aug. 23, 1991, PK7999

Int. Cl.[6] H01S *3/30*

U.S. Cl. 372—18 **21 Claims**



1. A mode-locked laser device comprising a first optical fiber path forming a loop, a second optical fiber path forming a loop, and coupling means for connecting said first and second optical paths to form a figure eight topography whereby a light waveform propagating in said second optical path is coupled into said first optical path in the form of two counter-propagating light waveforms; at least one of said first and second optical paths including means for coupling pump light into said device, at least one of said first and second optical paths including means for coupling output pulses from said device, at least one of said first and second optical paths including means for providing optical gain, and at least one of said first and second optical paths including means having a refractive index dependent on light intensity wherein said first and second optical paths operatively propagate light having different polarization modes.

5,577,058

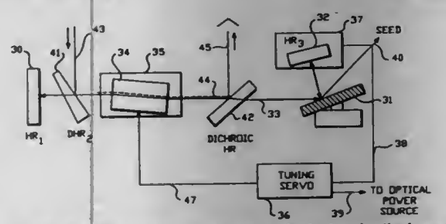
BROADLY TUNABLE SINGLE LONGITUDINAL MODE OUTPUT PRODUCED FROM MULTI LONGITUDINAL MODE SEED SOURCE

James Kafka, Mountain View; Vincent J. Newell, Pleasanton, and Michael Watts, Union City, all of Calif., assignors to Spectra-Physics Lasers, Inc., Mountain View, Calif.

Filed Sep. 13, 1994, Ser. No. 305,032

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—20 **26 Claims**



1. An oscillator system producing a single longitudinal mode output, comprising:

a seed source for producing a multimode seed beam; and

an optical power source coupled to the seed source and injection seeded by the multimode seed beam to generate an output, the optical power source having a cavity whose optical length is sufficiently short such that the output produced by the optical power source is a single mode output.

5,577,059

SECOND HARMONIC GENERATION METHOD AND APPARATUS

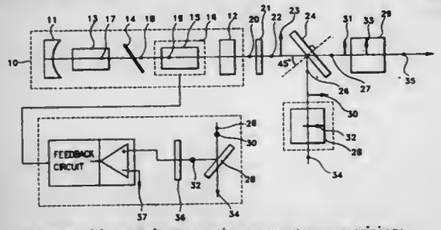
Hang-woo Lee, Kunpo; Sang-hak Lee, Seocho-gu; Joseph K. Chee, Songtan; Young-mo Hwang, Songpa-gu, all of Rep. of Korea; Yurij V. Tsvetkov, Moscow, Russian Federation; Alexander V. Semenenko, Moscow, Russian Federation, and Ivan I. Kuratev, Moscow, Russian Federation, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Aug. 29, 1995, Ser. No. 520,391

Claims priority, application Rep. of Korea, May 9, 1995, 95-11291

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—22 **3 Claims**



1. A second harmonic generation apparatus comprising:

a resonator providing an input mirror and an output mirror;

a non-linear birefringent crystalline element and a gain medium provided on an optical axis placed inside the resonator;

a temperature control device controlling the temperature of said non-linear birefringent crystalline element;

a first beam splitter provided on the proceeding path of the second harmonic passed through said output mirror;

an optical detector provided on the proceeding path of a reflecting beam of the second harmonic reflected by said first beam splitter;

a second beam splitter provided in between said optical detector and said first beam splitter;

a third beam splitter provided on the proceeding path of a transmitted beam passed through said first beam splitter; and

a control circuit controlling said temperature control device by a signal emitted from said optical detector.

5,577,060

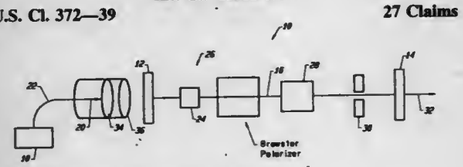
DIODE PUMPED LASER USING CRYSTALS WITH STRONG THERMAL FOCUSSING

William L. Nighan, Jr., Menlo Park, and Mark S. Keirstead, San Jose, both of Calif., assignors to Spectra Physics Lasers, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 191,655, Feb. 4, 1994, Pat. No. 5,410,559. This application Apr. 24, 1995, Ser. No. 427,055

Int. Cl.[6] H01S *3/14*

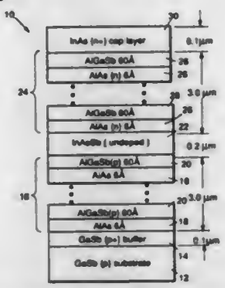
U.S. Cl. 372—39 **27 Claims**



1. A diode pumped laser, comprising:

a resonator mirror and an output coupler defining a laser resonator with a resonator optical axis;
a strong thermal lens laser crystal positioned in the resonator along the resonator optical axis, the combination of the resonator and the strong thermal lens laser crystal having a TEM_{00} mode diameter in the strong thermal lens laser crystal;
a polarizing element positioned in the resonator;
a diode pump source supplying a pump beam to the laser crystal in the laser resonator, the pump beam having a diameter larger than the TEM_{00} mode diameter in the strong thermal lens laser crystal to reduce thermal birefringence and producing a polarized output beam; and
a power source supplying power to the diode pump source.

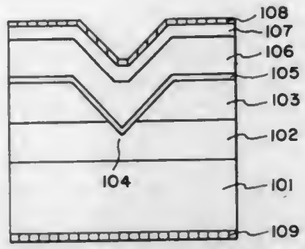
5,577,061
SUPERLATTICE CLADDING LAYERS FOR MID-INFRARED LASERS
Thomas C. Hasenberg, Agoura Hills, and David H. Chow, Newbury Park, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Dec. 16, 1994, Ser. No. 359,751
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—45 **18 Claims**



1. A laser diode for use at mid-infrared frequencies, said laser diode including an active layer having a top surface and a bottom surface and a first p-type cladding region contacting said bottom surface and a second n-type cladding region contacting said top surface, wherein said first cladding region comprises a plurality of alternating layers of either AlAs or InAs and p-$Al_xGa_{1-x}Sb$ and wherein said second cladding region comprises a plurality of alternating layers of either n-AlAs or n-InAs and $Al_xGa_{1-x}Sb$ wherein said $Al_xGa_{1-x}Sb$ layers in said second n-type cladding regions are intentionally undoped.

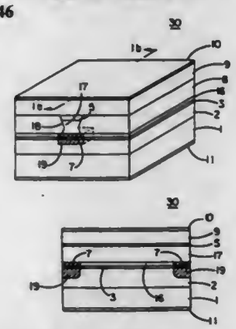
5,577,062
SEMICONDUCTOR LASER DIODE APPARATUS AND METHOD OF PRODUCING THE SAME
Takashi Takahashi, Sendai, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Dec. 21, 1994, Ser. No. 361,102
Claims priority, application Japan, Dec. 22, 1993, 5-324037
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—46 **13 Claims**

1. A semiconductor laser diode apparatus comprising:
a substrate of a first conduction type;
a first clad layer of the first conduction type which is formed on the substrate;
a current block layer which is formed on the first clad layer;
a V groove stripe which is formed in a vertical direction so that a stripe of the V groove can arrive at the first clad layer in depth;
an active layer which is formed on the first clad layer and the current block layer along the V groove stripe without a low resistrance layer;



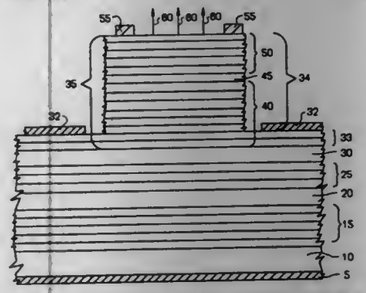
a second clad layer of a second conduction type which is formed on the active layer;
a contact layer of the second conduction type which is formed on the second clad layer;
a first electrode which is formed on a surface of the substrate which is reverse side of a surface on which the first clad layer is formed;
a second electrode which is formed on a surface of the contact layer.

5,577,063
SEMICONDUCTOR LASER WITH IMPROVED WINDOW STRUCTURE
Yutaka Nagai, and Akihiro Shima, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 6, 1995, Ser. No. 469,820
Claims priority, application Japan, Oct. 11, 1994, 6-245615
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—46 **9 Claims**



1. A semiconductor laser comprising:
a compound semiconductor substrate of a first conductivity type;
successively disposed on said semiconductor substrate, a first conductivity type lower cladding layer, an active layer including a multiple quantum well structure, first and second upper cladding layers of a second conductivity type opposite the first conductivity type, and a first contacting layer of the second conductivity type in electrical contact with the second upper cladding layer;
first and second electrodes in electrical contact with the semiconductor substrate and the first contacting layer, respectively, the semiconductor laser including opposed facets transverse to the lower cladding and the first and second upper cladding layers, the second upper cladding layer having a ridge shape that extends between the facets of the semiconductor laser and is centrally disposed on the first upper cladding layer;
a first conductivity type current blocking layer disposed on and between the first upper cladding layer and the first contacting layer, contacting opposite sides of the ridge, and extending between the facets; and
a window structure contiguous with each of the facets, each window structure comprising a region including a dopant impurity and disposed within parts of the lower cladding layer, the active layer, and the first upper cladding layer opposite the ridge but not extending substantially into the second upper cladding layer, the multiple quantum well structure of the active layer being disordered in each window region.

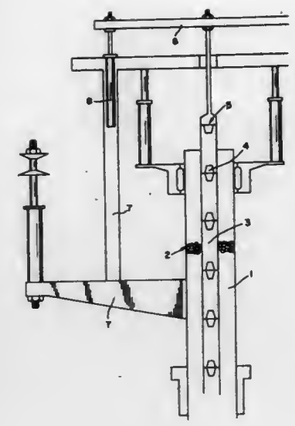
5,577,064
INTEGRATION OF LASER WITH PHOTODIODE FOR FEEDBACK CONTROL
Stanley E. Swirhun, and William E. Quinn, both of Boulder, Colo., assignors to Vixel Corporation, Broomfield, Colo.
Division of Ser. No. 217,531, Mar. 24, 1994. This application Oct. 18, 1995, Ser. No. 544,926
Int. Cl.[6] H01S *3/18*; H01L *31/12*
U.S. Cl. 372—96 **7 Claims**



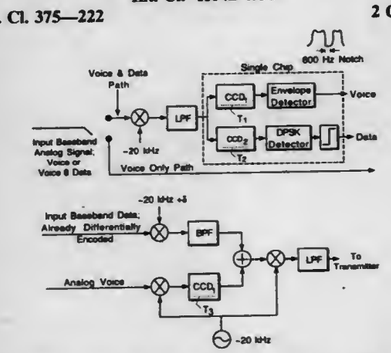
1. An integrated optoelectronic device emitting optical radiation at a wavelength, λ, comprising:
first and second mirrors forming therebetween an optical cavity, the second mirror being an epitaxially formed distributed Bragg reflector comprising a plurality of alternating semiconductor layers of high and low indices of refraction, each layer having a thickness of $\lambda/(4n)$ where n is the index of refraction of the layer;
an active region disposed between the mirrors; and
a photodiode formed within the second mirror, the photodiode comprising at least two of the layers that form the second mirror, said layers having bandgaps equal or smaller than the effective bandgap of the active region, the photodiode detecting the intensity of the optical radiation.

5,577,065
DEVICE FOR MOUNTING A SELF-BAKING ELECTRODE FOR AN ELECTRIC ARC FURNACE
Maurice Sales, Annecy le Vieux, France, assignor to Pechiney Electrometallurgie, France
Filed Aug. 14, 1995, Ser. No. 514,735
Claims priority, application France, Sep. 5, 1994, 94 10774
Int. Cl.[6] H05B *7/09*
U.S. Cl. 373—89 **8 Claims**

1. An apparatus for mounting a self-baking composite electrode for an electric arc furnace, comprising a generally cylindrical hollow metallic shell having a generally vertical central axis, a central column of a member selected from the group consisting of graphite and pre-baked carbon disposed along said axis and comprising a plurality of individual members selected from the group consisting of carbon and graphite elements of predetermined length secured together by nipples, said central column and said hollow metallic shell defining therebetween a space for carbonaceous paste, a support means from which the column is suspended, and means for moving said support means in a vertical direction with respect to the hollow metallic shell along a length which is greater than the length of each of the elements.



5,577,066
CHARGE-COUPLED-DEVICE BASED DATA-IN-VOICE MODEM
Leonard Schuchman, and Aaron Weinberg, both of Potomac, Md., assignors to Stanford Telecommunications, Inc., Reston, Va.
Filed May 13, 1994, Ser. No. 242,103
Int. Cl.[6] H04B *1/38*
U.S. Cl. 375—222 **2 Claims**



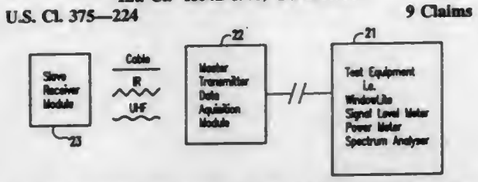
1. A data-in-voice modem having a transmitter modulator portion and a receiver portion for coupling voice and data signals to and from a communication circuit, comprising:
the receiver portion for separating voice from data,
frequency converter means for receiving input baseband signals including voice and data signals and, converting said baseband signals to an intermediate frequency (IF) signal,
a single integrated circuit chip having:
a first charge coupled device (CCD) channel connected to receive converted baseband signals from said frequency converter means and having a first CCD filter device having a passband and intermediate taps for IF sampling with a fixed sampling rate and predetermined tap weights, and an envelope detector coupled to receive the output of said first CCD filter device, said first CCD filter device having a predetermined frequency notch in the passband thereof and outputting a voice signal from said first CCD channel,
a second CCD channel connected to receive converted baseband signals from said frequency converter means and having a second CCD filter device coupled to receive said IF signal and adapted to perform as a bandpass filter for said predetermined frequency notch, IF sampling with predetermined sampling and tap weights and detector means for outputing a data signal from said second CCD channel.

5,577,067

DATA ACQUISITION AND STORAGE SYSTEM FOR TELECOMMUNICATION EQUIPMENT TO FACILITATE ALIGNMENT AND REALIGNMENT OF THE TELECOMMUNICATIONS EQUIPMENT

Dennis A. Zimmerman, Bridgewater, Va., assignor to ComSonics, Inc., Harrisonburg, Va.

Filed Feb. 22, 1994, Ser. No. 199,874
Int. Cl.[6] H04B 3/46; G06F 11/00
U.S. Cl. 375—224 9 Claims



1. An electronic data acquisition and storage system for facilitating alignment and realignment of a component of a telecommunications system comprising:

a storage device attachable to the component;

a transceiver and data acquisition module connectable via a communications link to said storage device; and

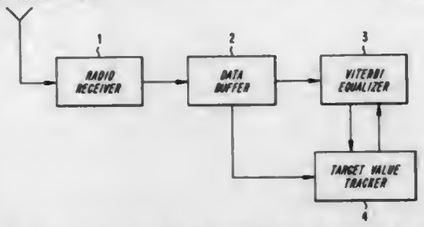
test equipment connectable to said transceiver and data acquisition module, said test equipment including a source of data defining operating parameters for said component, said data being accessed and transferred to said storage device for archival storage of said data defining operating parameters, said data being later accessible for purposes of facilitating alignment and realignment of the component, said transceiver being connectable to said storage device only for the purposes of storage and retrieval of said data, said storage device remaining attached to said component for future access for realignment of said component, and said transceiver and data acquisition module accessing the data defining operating parameters stored in said storage device and supplying the data to said test equipment.

5,577,068

GENERALIZED DIRECT UPDATE VITERBI EQUALIZER

Gregory E. Bottomley, Cary, N.C.; Sandeep Chennakeshu, Schenectady, N.Y.; Paul W. Dent, Stehag, Sweden, and R. David Koilpillai, Cary, N.C., assignors to Ericsson GE Mobile Communications Inc., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 894,933, Jun. 8, 1992, Pat. No. 5,331,666. This application Jul. 18, 1994, Ser. No. 274,727
Int. Cl.[6] H04B 1/10; H04L 27/01
U.S. Cl. 375—232 14 Claims



1. A radio receiver for demodulating digital information comprising:

means for receiving radio signals and processing them to produce data samples;

means for storing reference values that model what the receiver should receive for various transmitted symbol sequence hypotheses;

means for equalizing said data samples using said stored reference values to produce symbol detection information; and

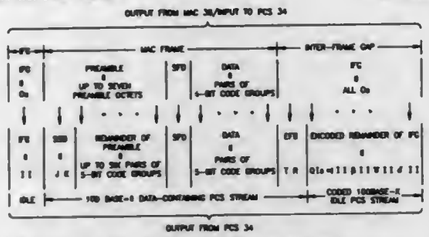
means for updating said reference values based on said symbol detection information.

5,577,069

SIGNALLING METHOD AND STRUCTURE SUITABLE FOR OUT-OF-BAND INFORMATION TRANSFER IN COMMUNICATION NETWORK

Hung-Wah A. Lau, Los Altos; Ching Huang, Sunnyvale; Ramin Shirani, Morgan Hill, and Michael J. Woodring, Concord, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 9, 1994, Ser. No. 353,464
Int. Cl.[6] H04B 14/04
U.S. Cl. 375—242 42 Claims



1. A signalling method comprising the steps of:

sequentially generating n-bit sequence segments where n is at least 3, each bit in each sequence segment selectively being a first binary value or a second binary value opposite to the first binary value, each sequence segment being coded with a selected one of a plurality of different n-bit code groups allocated into a first code group and a set of second code groups, the n bits in the first code group all being the first binary value, no pair of non-contiguous bits of the second binary value occurring in any of the second code groups; and

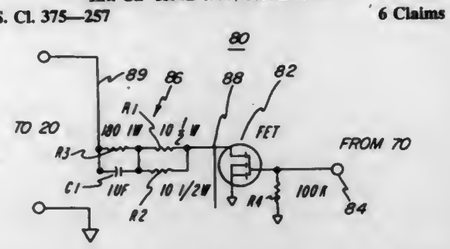
outputting the sequence segments according to the order in which they are generated to produce a special bit sequence.

5,577,070

APPARATUS FOR GENERATING HIGH POWER, LOW ENERGY PULSES ACROSS THE TERMINALS OF A LARGE CAPACITY, LOW IMPEDANCE BATTERY

Stephen R. King, Dayton, and Thomas M. Bolka, Xenia, both of Ohio, assignors to Hobart Brothers Company, Troy, Ohio

Division of Ser. No. 431,630, May 1, 1995, which is a continuation of Ser. No. 869,647, Apr. 16, 1992, abandoned. This application Jul. 1, 1994, Ser. No. 270,161
Int. Cl.[6] H04B 3/00; H04L 25/00
U.S. Cl. 375—257 6 Claims



1. An apparatus for generating high power, low energy pulses across the terminals of a large capacity battery, said apparatus comprising

a fast acting switch,

a capacitor, and

a current limiting resistor, and

a switch actuator for causing said switch to close under external control,

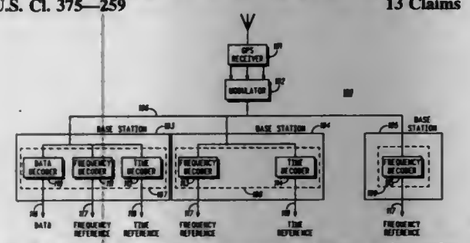
wherein said switch, capacitor and resistor are connected in series across the terminals of the battery to impose a momentary short circuit at the battery's terminals to cause a high power, low energy pulse to be generated each time said switch is closed, which pulse may be detected on cables connected directly to the battery terminals.

5,577,071

METHOD FOR AND APPARATUS TO EXTRACT A FREQUENCY REFERENCE, A TIME REFERENCE AND DATA FROM A SINGLE INFORMATION SYSTEM

James K. Gehrke, Lake in the Hills, and Mark G. Spiotta, Wheaton, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 25, 1994, Ser. No. 201,586
Int. Cl.[6] H04L 27/00;7/00; H03K 7/08;9/08
U.S. Cl. 375—259 13 Claims



1. A method for extracting a frequency reference, a time reference, and data from a single information stream, the method comprising the steps of:

a) receiving the single information stream;

b) extracting, by a frequency decoder, the frequency reference from the single information stream independent from the time reference and the data;

c) extracting, by a time decoder, the time reference from the single information stream independent from the frequency reference and the data; and

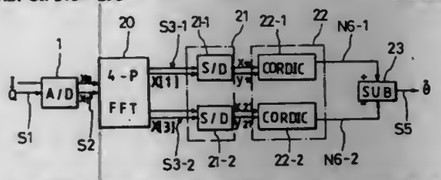
d) extracting, by a data decoder, the data from the single information stream independent from the frequency reference and the time reference.

5,577,072

TIMING PHASE DETECTOR AND TIMING RECOVERY USING THE SAME

Hee C. Moon, Kyoungki-do, and Kyoung H. Chun, Kyoungsangbuk-do, both of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 7, 1995, Ser. No. 399,652
Claims priority, application Rep. of Korea, Mar. 7, 1994, 94-4372; Mar. 16, 1994, 94-5230
Int. Cl.[6] H04L 27/36
U.S. Cl. 375—298 5 Claims



1. A timing phase detector using quadrature amplitude modulation comprising:

a 4-point fast Fourier transforming portion for Fourier-transforming a digital output signal from an analog-to-digital converter to provide. an output signal;

a sum-dump portion for adding and outputting the output signal of said 4-point fast Fourier transforming portion; and

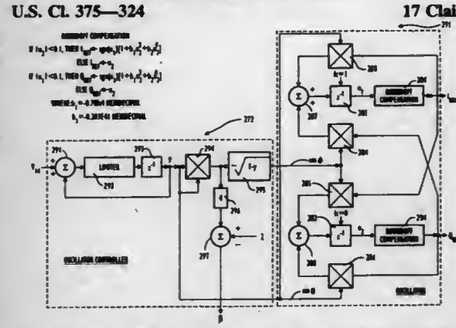
a cordic portion for calculating the phase of a complex number so as to indicate the output of said sum/dump portion on an X-Y coordinate.

5,577,073

FREQUENCY AND PHASE-LOCKED TWO-PHASE DIGITAL SYNTHESIZER

Stanley A. White, San Clemente, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Division of Ser. No. 117,461, Sep. 7, 1993, Pat. No. 5,444,639. This application Dec. 15, 1994, Ser. No. 356,934
Int. Cl.[6] H04L 27/14;27/16
U.S. Cl. 375—324 17 Claims



1. A digital oscillator including an in-phase delay unit and a quadrature delay unit connected in a feedback circuit, said digital oscillator including a roundoff compensation system for computing a corrected value for an output of each delay unit based on a value of a filtered output of the other delay unit when the value of the filtered output of said other delay unit is within predetermined limits, the digital oscillator being of the two phase, that is, in-phase and quadrature phase, state variable type, with at least four multipliers, the roundoff compensation system comprising:

(a) means for eliminating the accumulation of roundoff error, such means comprising means for causing, when a magnitude of an output value of either phase is below a predetermined threshold, the output value of the other phase to be computed by a Chebyshev approximation;

(b) means for driving two of the four multipliers directly by a control input, x, and the other two multipliers by a Chebyshev approximation to $(1-x^2)^{1/2}$; and

(c) a pair of filters for reducing any noise generated by element (a), namely, an in-phase filter placed between the in-phase delay unit output and an in-phase roundoff compensation unit output, and a quadrature filter placed between the quadrature delay unit output and an quadrature roundoff compensation unit output, the coefficients for the filters being supplied under the direction of the control input x.

5,577,074

COMBINED CLOCK RECOVERY/FREQUENCY STABILIZATION LOOP

David A. Roos, Boyds, and Robert W. Davis, III, Woodbine, both of Md., assignors to Hughes Electronics, Los Angeles, Calif.

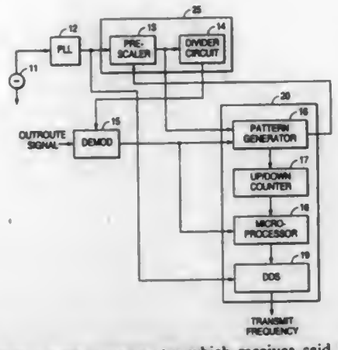
Filed Oct. 20, 1995, Ser. No. 546,028
Int. Cl.[6] H03D 3/18
U.S. Cl. 375—327 21 Claims

1. A frequency stabilization loop for a communication device, comprising:

a local reference oscillator which generates a local reference frequency signal;

a frequency divider which divides said local reference frequency signal to produce an intermediate frequency signal and a local symbol clock;

a demodulator which compares a symbol rate of an externally applied signal which said local symbol clock, said demodulator performing bit timing recovery to measure said local symbol clock against said symbol rate and producing a bit timing recovery control signal indicative of said measurement; and



a frequency error compensator which receives said bit timing control signal, intermediate frequency signal, and said local reference frequency signal and adjusts said local reference frequency signal based on said timing control and intermediate frequency signals to the proper transmission frequency.

5,577,075

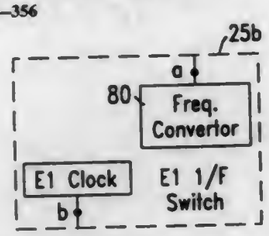
DISTRIBUTED CLOCKING SYSTEM

John M. Cotton, East Norwalk, Conn.; Nicholas Necula, Mt. Vernon, N.Y.; Bidyut Parruck, Stratford, Conn.; Fryderyk Tyra, Stamford, Conn.; Alex T. Wissink, Woodbridge, Conn., and Enrique Abreu, Huntington, Conn., assignors to IPC Information Systems, Inc., Stamford, Conn.

Filed Sep. 26, 1991, Ser. No. 766,647

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—356 **34 Claims**



1. A distributed clocking system for a network of computing elements, comprising:

a plurality of computing elements, each of said computing elements having a local clock and each of said local clocks being assigned a rank;

communication paths established between said plurality of computing elements capable of carrying clock information including the rank of said local clock;

means for transmitting said clock information from each of said computing elements to other computing elements in the network on said communications paths;

means in each computing element for receiving said clock information transmitted on said communication paths arriving at each computing element; and

means in each computing element for selecting the clock information containing the highest ranked clock for synchronization of said local clock therein;

wherein said local clock ranks are assigned by a central processor connected to the network of computing elements and are stored in each computing element.

5,577,076

SCANNING RECEIVER FOR RECEIVING A SIGNAL BY SCANNING FREQUENCY OF RECEIVED SIGNAL

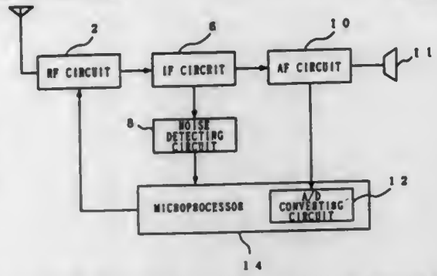
Kazunori Sato; Hironori Warabi; Yasuyoshi Nakano, and Kenji Yamazaki, all of Ichikawa, Japan, assignors to Uniden Corporation, Chiba, Japan

Continuation-in-part of Ser. No. 180,225, Jan. 11, 1994, abandoned. This application Mar. 20, 1995, Ser. No. 407,215

Claims priority, application Japan, Jul. 27, 1993, 5-184641

Int. Cl.[6] H04B *1/00;* **H03D** *1/04;* **H03K** *5/01*

U.S. Cl. 375—346 **5 Claims**



1. A scanning receiver for receiving a signal by scanning the frequency of a received signal, comprising:

a sampling and A/D (analog to digital) converting circuit which samples and converts an audio frequency (AF) signal detected by the scanning receiver to produce A/D converted values;

first forming apparatus which forms, from the A/D-converted values, a first amplitude distribution of a predetermined number of samples representing evey one cycle, the first amplitude distribution consisting of accumulated values of the number of the A/D converted values included in each of a plurality of consecutive amplitude distribution levels for judging a non-modulated signal, each level having a predetermined voltage range;

second fonning apparatus which forms, from the A/D-converted values, a second amplitude distribution of the samples representing the every one cycle, the second amplitude distribution consisting of accumulated values of the number of the A/D converted values included in each of a plurality of consecutive amplitude distribution levels for judging a digital signal, each level having a further predetermined voltage range;

first judging apparatus which judges whether or not the part of the AF signal corresponding to one cycle of samples is a non-modulated signal based on the first amplitude distribution, and generates a first judged result for the every one cycle of samples;

second judging apparatus which judges whether or not the part of the AF signal corresponding to one cycle of samples is a digital signal based on the second amplitude distribution, and generates a second judged result for the every one cycle of samples;

first discriminating apparatus which discriminates whether or not the received signal is a non-modulated signal based on first amplitude distribution data consisting of the first judged results for the predetermined plurality of cycles of samples:

second discriminating apparatus which discriminates whether or not the received signal is a digital signal based on second amplitude distribution data consisting of the second judged results for the predetermined plurality of the cycles of samples; and

signaling apparatus which indicates that non-modulated signals and/or digital signals are to be skipped in a scanning operation of the receiver, when the received signal is discriminated as a non-modulated signal and/or a digital signal, wherein each voltage range for the amplitude distribution levels for judging a digital signal is selected so as to be included in the region higher or lower than the offset value of the digital signal.

5,577,077

Patent Not Issued For This Number

5,577,078

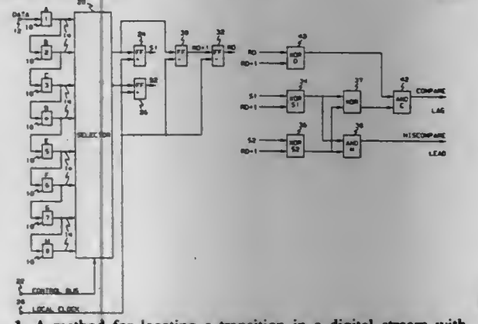
EDGE DETECTOR

Richard C. Jordan, Lake Katrine; Robert S. Capowski, Verbank; Daniel F. Casper, Poughkeepsie; Frank D. Ferraiolo, New Windsor, all of N.Y.; William C. Laviola, Round Rock, Tex., and Peter R. Tomaszewski, Wake Forest, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 262,087, Jun. 17, 1994. This application May 26, 1995, Ser. No. 452,446

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—371 **1 Claim**



1. A method for locating a transition in a digital stream with respect to a transition in a clock signal, comprising the steps of:

generating a plurality of phase shifted versions of said digital data stream;

selecting a first pair of said plurality of phase shifted versions of said digital data stream;

comparing said first pair of said plurality of phase shifted versions of said digital data stream with said clock signal;

generating a lead signal or a lag signal or a do nothing signal as a result of said comparing step; and

selecting a second pair of said plurality of said phase shifted versions of said digital data stream in response to a lead signal or a lag signal generated in said generating step.

5,577,079

PHASE COMPARING CIRCUIT AND PLL CIRCUIT

Yoiti Zenno, and Seiji Higurashi, both of Tokyo, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jul. 20, 1995, Ser. No. 504,470

Claims priority, application Japan, Jul. 28, 1994, 6-196106; Jul. 29, 1994, 6-197260

Int. Cl.[6] H03D *3/24*

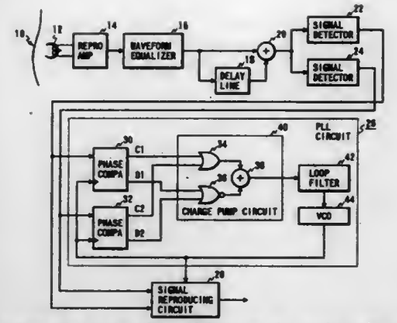
U.S. Cl. 375—373 **20 Claims**

1. A phase comparing circuit comprising:

first means for generating a detection signal in response to a multi-level signal, the detection signal representing whether or not the multi-level signal is in a given level;

second means connected to the first means for generating a first control signal in response to the detection signal generated by the first means and a clock signal, the first control signal representing a time interval between a leading edge of a pulse in the detection signal and a strobe point of the clock signal which immediately follows the leading edge of the pulse in the detection signal;

third means connected to the first means for generating a second control signal in response to the detection signal generated by the first means and the clock signal, the second control signal



representing a time interval between the strobe point of the clock signal and a trailing edge of the pulse in the detection signal; and

fourth means connected to the second means and the third means for generating a phase error signal in response to the first control signal generated by the second means and the second control signal generated by the third means, the phase error signal representing a difference between a phase of the detection signal generated by the first means and a phase of the clock signal.

5,577,080

DIGITAL PHASE-LOCKED LOOP CIRCUIT WITH FILTER COEFFICIENT GENERATOR

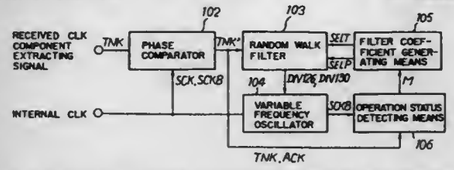
Kenji Sakaue, Yokohama, and Koji Ogura, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Feb. 25, 1994, Ser. No. 201,644

Claims priority, application Japan, Feb. 26, 1993, 5-038022

Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—370 **11 Claims**



1. A digital phase-locked loop circuit, operable with an oscillator signal, for generating an output clock and for synchronizing the output clock with an input clock by shifting phase of the output clock, the digital phase-locked loop circuit comprising:

phase comparing means for sequentially comparing the input clock with the output clock in phase and outputting comparison result signals;

a random walk filter having:

an accumulation section for sequentially adding and accumulating the comparison result signals supplied from said phase comparing means and outputting the added and accumulated data as addition data;

a discrimination section, responsive to a threshold value information signal, for discriminating a relative magnitude between the addition data supplied from said accumulation section and outputting a discriminated result; and

a frequency change signal generating section, responsive to a phase shift amount information signal, for outputting a frequency change signal based on the phase shift amount information signal and the discriminated result inputted by said discrimination section;

oscillating means for generating the output clock and an internal clock signal and for changing frequency of the output clock according to the frequency change signal supplied from said random walk filter, wherein the internal clock signal represents a subdivision of the oscillator signal;

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filter coefficient generating means, responsive to an operation mode signal, for outputting the threshold value information signal to the discrimination section and for outputting the phase shift amount information signal to the frequency change signal generating section, so that at least one of the outputted threshold value information signal and the phase shift amount information signal is changed according to the operation mode signal, wherein the threshold value information signal and the phase shift amount information signal are prestored in the filter coefficient generating means and are selected in response to the operator mode signal; and

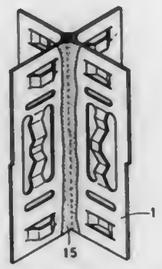
operation status detecting means, responsive to a change in amplitude of the input clock and the internal clock signal from the oscillating means, for outputting the operation mode signal to the filter coefficient generating means.

5,577,081

METHOD OF FORMING GRIDS FOR NUCLEAR FUEL ASSEMBLY AND GRIDS FORMED BY SAME METHOD

Yoshitaka Yaginuma, Naka-gun, Japan, assignor to Mitsubishi Nuclear Fuel Co., Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 473,207
Claims priority, application Japan, Jul. 21, 1994, 6-169851
Int. Cl.[6] G21C *19/00*
U.S. Cl. 376—260 **8 Claims**



1. A method of forming a nuclear fuel assembly grid, which includes the steps of (a) preparing a plurality of formed alloy straps each having slits, (b) arranging the straps into a grid form by intersecting the straps with each other through the slits, and (c) brazing intersections of the associated straps, wherein said method further comprises the step of:

(d) subjecting those portions to be brazed to a pretreatment prior to said arranging step (b), said pretreatment including applying a paste comprising a mixture of a filler metal and a vehicle, to the portions to be brazed to form a thin film thereon.

5,577,082

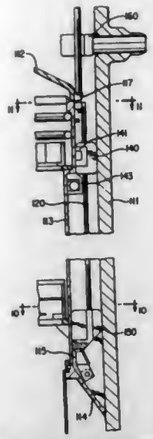
REPAIRED SHROUD ASSEMBLY FOR A BOILING WATER REACTOR

Sterling J. Weems, Chevy Chase, Md., and Noman Cole, Mason Neck, Va., assignors to MPR Associates, Inc., Alexandria, Va.

Continuation of Ser. No. 334,361, Nov. 3, 1994, abandoned, which is a continuation of Ser. No. 190,796, Feb. 2, 1994, Pat. No. 5,402,570. This application Aug. 18, 1995, Ser. No. 516,716
Int. Cl.[6] G21C *15/00*
U.S. Cl. 376—302 **6 Claims**

1. A repaired shroud assembly for a nuclear boiling water reactor comprising

a shroud having a substantially cylindrical configuration formed of multiple levels of arcuate plates joined by circumferentially continuous horizontal welds, said shroud having top and bottom structures; and



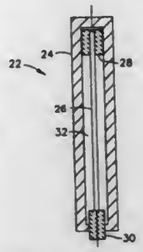
a plurality of tie rods connected between said top and bottom structures at a respective plurality of angularly spaced locations about an exterior of said shroud, each of said tie rods being connected with said top and bottom structures of said shroud in tension to repair said shroud by compressing said plate levels along said horizontal welds to prevent relative lateral movement of said plate levels adjacent cracks along said horizontal welds.

5,577,083

METHOD AND APPARATUS FOR ELECTRO-PROTECTION OF PIPING SYSTEMS AND REACTOR-INTERNALS FROM STRESS CORROSION CRACKING

James H. Terhune, San Jose, and Barry M. Gordon, Monte Sereno, both of Calif., assignors to General Electric Company, San Jose, Calif.

Continuation-in-part of Ser. No. 239,773, May 9, 1994, Pat. No. 5,444,747. This application Feb. 7, 1995, Ser. No. 384,997
Int. Cl.[6] G21C *19/28*
U.S. Cl. 376—372 **19 Claims**



15. A method for locally reducing electrochemical potential in the vicinity of a metal surface immersed in the water coolant of a light water reactor high-temperature, comprising the steps of:

immersing a reference electrode in the water coolant in the vicinity of said metal surface;

connecting an electrical conductor to said metal surface;

detecting a difference in potential between the metal surface and the water coolant surrounding said reference electrode; and

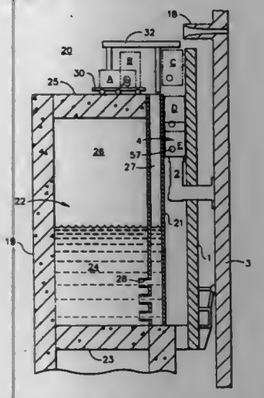
supplying a current of electrons to said metal surface via said electrical conductor whenever the difference in potential between the metal surface and the water coolant surrounding said reference electrode is above a threshold level corresponding to a predetermined electrochemical potential above which the metal is susceptible to stress corrosion cracking.

5,577,084

APPARATUS FOR REMOVING AND INSTALLING A RECIRCULATION PUMP IN A PRESSURE HOUSING

Charles W. Dillmann, Morgan Hill, Calif., assignor to General Electric Company, San Jose, Calif.

Filed May 8, 1995, Ser. No. 437,193
Int. Cl.[6] G21C *19/28*
U.S. Cl. 376—406 **16 Claims**



1. A system for transporting an object having trunnions, comprising:

a carriage having a set of rollers;

a curved rail having a surface which supports said carriage via contact with said rollers, said surface lying in a horizontal plane;

means for driving said carriage to roll along said rail;

a yoke assembly carried by said carriage and adapted to vertically and laterally support the trunnions of an object; and

means for driving said yoke assembly to displace vertically relative to said carriage.

5,577,085

BOILING WATER REACTOR WITH COMPACT CONTAINMENT AND SIMPLIFIED SAFETY SYSTEMS

Perng-Fei Gou; Larry E. Fennern; Charles W. Dillmann; Craig D. Sawyer; Momtaz M. Aburomia; Charles W. Relf; Mark W. Siewert, and John C. Walther, all of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Apr. 24, 1995, Ser. No. 428,810
Int. Cl.[6] G21C *9/00*
U.S. Cl. 376—293 **16 Claims**

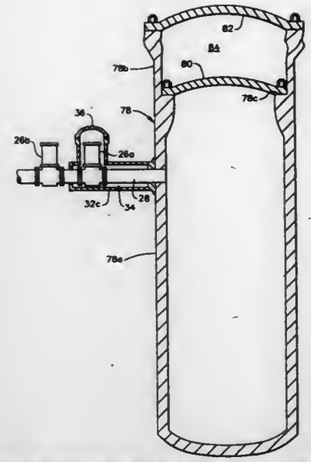
1. A nuclear reactor comprising:

a vessel having an internal volume which is open at the top;

a first vessel closure fastened to said vessel at a first elevation, said first vessel closure closing a lowermost portion of said internal volume to form a first chamber;

a nuclear fuel core arranged inside said first chamber; and

a second vessel closure fastened to said vessel at a second elevation higher than said first elevation, said second vessel closure closing an uppermost portion of said internal volume to form a second chamber between said first vessel closure and said second vessel closure, wherein said first vessel



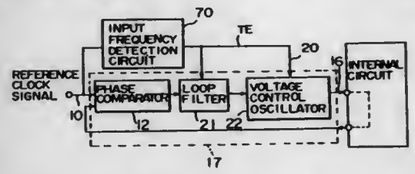
closure is designed to leak at a predetermined pressure inside said first chamber while said vessel will not leak at said predetermined pressure inside said first chamber.

5,577,086

CLOCK SIGNAL GENERATION CIRCUIT CAPABLE OF OPERATING AT HIGH SPEED WITH HIGH FREQUENCY

Yukihiro Fujimoto, and Kazutaka Nogami, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 28, 1994, Ser. No. 365,479
Claims priority, application Japan, Dec. 28, 1993, 5-336394
Int. Cl.[6] H03D *3/24*; H03L *7/00*
U.S. Cl. 375—376 **5 Claims**



1. A clock signal generation circuit capable of operating at a high speed with a high frequency comprising:

a phase comparator for generating a phase difference output corresponding to a phase difference between an internal clock signal and a reference clock signal externally supplied;

a frequency distinction circuit for generating a frequency change-over signal when a frequency of the reference clock signal is lower than a preset frequency;

a loop filter, connected to the phase comparator and to the frequency distinction circuit, for generating an output voltage corresponding to the phase difference output and for changing over a filter constant to that for a low frequency corresponding to the frequency change-over signal; and

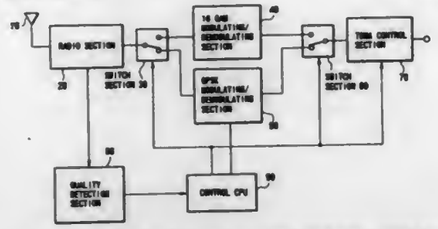
a voltage control oscillator, connected to the loop filter, for setting a frequency of the internal clock signal to a frequency corresponding to the output voltage of the loop filter and for decreasing a gain of an oscillating frequency with respect to an input signal corresponding to the frequency change-over signal.

5,577,087

VARIABLE MODULATION COMMUNICATION METHOD AND SYSTEM

Yukitsuna Furuya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 27, 1992, Ser. No. 967,278
Claims priority, application Japan, Oct. 31, 1991, 3-286064
Int. Cl.[6] H04J 3/00
U.S. Cl. 375—377 10 Claims



5. A variable modulation communication apparatus comprising:
first modulation means for performing multilevel modulation of digital data;
second modulation means for performing modulation of digital data with fewer levels than said first modulation means;
monitor means for monitoring transmission quality of a transmission path in order to determine a modulation scheme, said modulation scheme being carried out by one of said first and said second modulation means;
TDMA control means for performing time slot allocation differently depending on whether said first or second modulation means is used to carry out said modulation scheme, and performing time-division multiplexing communication control by using predetermined time slots which are allocated more in number when said second modulation means is used to carry out said modulation scheme than when said first modulation means is used to carry out said modulation scheme, thereby obtaining an identical information communication rate regardless of whether said first or said second modulation means is used;
switch means for selectively switching time-division output data from said TDMA control means to output the data to said first and said second modulation means; and
control means for controlling said switch means and said TDMA control means on the basis of said modulation scheme determined by said transmission quality monitored by said monitor means to selectively enable said first or said second modulation means.

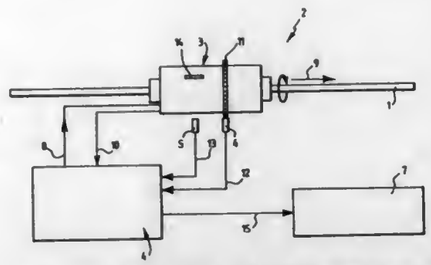
5,577,088

METHOD AND DEVICE FOR ULTRASONIC EXAMINATION OF FACES OF THE INTERNAL SURFACE OF THE WALL OF CLADDING

Jean Senevat, Saint Brevin les Pins; Christian Roy, Grand Champ des Fontaines, and Eric Lucas, Nantes, all of France, assignors to Zircotube, Courbevoie, France

Filed Feb. 24, 1995, Ser. No. 393,739
Claims priority, application France, Feb. 25, 1994, 94 02214
Int. Cl.[6] G21C 17/00
U.S. Cl. 376—252 11 Claims

1. Method for ultrasonic examination of faces on an internal surface of a wall of tubular cladding comprising an internal surface of substantially prismatic shape, having successive faces, said method comprising the steps of:
(a) emitting ultrasound waves in the form of pulses from outside said cladding so that said ultrasound waves directed towards an inside of said cladding pass through said wall of said cladding and scan said wall over its entire periphery;
(b) adjusting an emission frequency of said pulses as a function of a circumferential scanning speed of said cladding, so that



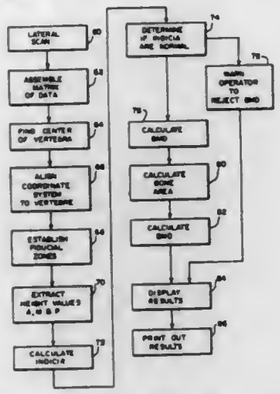
said emission frequency is equal to an integer multiple of a scanning frequency of said faces of said cladding;
(c) recording an ultrasound signal reflected by said internal surface of said wall of said cladding; and
(d) analyzing the reflected signal in order to examine said faces.

5,577,089

DEVICE AND METHOD FOR ANALYSIS OF BONE MORPHOLOGY

Richard B. Mazess, Madison, Wis., assignor to Lunar Corporation, Madison, Wis.

Continuation-in-part of Ser. No. 344,328, Nov. 23, 1994, Ser. No. 241,270, May 10, 1994, Pat. No. 5,509,042, and Ser. No. 73,264, Jun. 7, 1992, Pat. No. 5,306,306, which is a continuation of Ser. No. 862,096, Apr. 2, 1992, abandoned, which is a continuation of Ser. No. 655,011, Feb. 13, 1991, abandoned, said Ser. No. 241,270is a continuation-in-part of Ser. No. 67,651, May 26, 1993, Pat. No. 5,291,537, which is a division of Ser. No. 944,626, Sep. 14, 1992, Pat. No. 5,228,068. This application Jun. 7, 1995, Ser. No. 477,053
Int. Cl.[6] G01B 15/02
U.S. Cl. 378—54 23 Claims



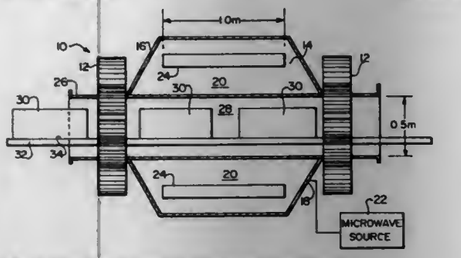
1. A method of evaluating a human spine comprising the steps of:
(a) measuring the height of at least two vertebrae;
(b) combining the measured heights to produce a measured index;
(c) measuring the height of at least one vertebra not measured in step (a); and
(d) comparing the measured height from step (c) to a reference height of a corresponding vertebra of a healthy individual as normalized by the measured index.

5,577,090

METHOD AND APPARATUS FOR PRODUCT X-RADIATION

Kenneth G. Moses, 2727 Val Miguel, Palos Verdes Estates, Calif. 90274

Filed Jan. 12, 1995, Ser. No. 371,799
Int. Cl.[6] G21K 5/00
U.S. Cl. 378—64 32 Claims



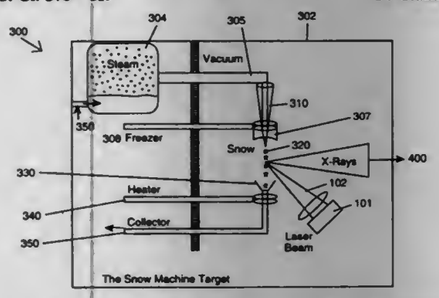
20. A method for product irradiation comprising:
confining a gas within a chamber;
heating said gas to create a hot electron plasma and generate x-rays;
magnetically confining said hot electron plasma in an annular configuration;
supporting and locating said product proximately to said chamber for receiving x-rays radiated therefrom; and
including the steps of forming an interior opening within said chamber and placing the product within said interior opening during irradiation.

5,577,091

WATER LASER PLASMA X-RAY POINT SOURCES

Martin Richardson, Oviedo; Masataka Kado, Orlando; Kai Gabel, Orlando, and Feng Jin, Orlando, all of Fla., assignors to University of Central Florida, Orlando, Fla.

Continuation-in-part of Ser. No. 222,608, Apr. 1, 1994, Pat. No. 5,459,771. This application Jan. 13, 1995, Ser. No. 372,297
Int. Cl.[6] H05G 2/00
U.S. Cl. 378—119 14 Claims



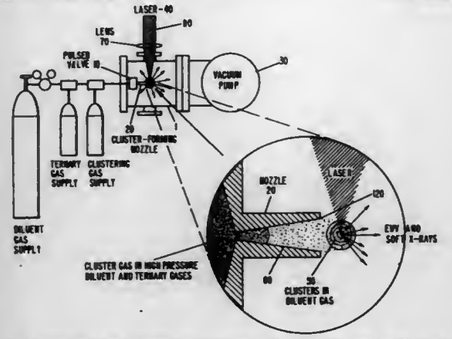
1. A method of producing 11.7 nm x-rays from a target source comprising the steps of:
freezing water particles into ice crystals;
continuously feeding the frozen water particles into a target source;
irradiating the target source with a laser; producing x-rays of approximately 11.7 nm from the laser erradiated target source; and
collecting residual ice water particles in a vacuum.

5,577,092

CLUSTER BEAM TARGETS FOR LASER PLASMA EXTREME ULTRAVIOLET AND SOFT X-RAY SOURCES

Glenn D. Kublak, 124 Turquoise Way, Livermore, Alameda County, Calif. 94550, and Martin C. Richardson, CREOL; University Central Florida, 12424 Research Pkwy., Orlando, Orande County, Fla. 32826

Filed Jan. 25, 1995, Ser. No. 378,426
Int. Cl.[6] H01J 35/26
U.S. Cl. 378—119 37 Claims



1. A method for producing extreme ultra-violet and soft x-ray radiation, comprising the steps of:
flowing a gas mixture, said gas mixture comprising a cluster forming gas, a diluent gas and a ternary gas, into a pressurizable valve, said valve comprising;
a housing that defines a chamber,
an input channel that communicates with said chamber, said gas flowing through said input channel into said chamber,
an output channel communicating with said chamber, and
a temperature controlled nozzle, said nozzle having a gas entrance end, said gas entrance end being fixedly attached to said output channel and an opposite gas exit end, said nozzle having an orifice disposed within,
said valve being contained within a vacuum chamber;
pressurizing said gas mixture contained in said valve;
reducing the pressure in said vacuum chamber;
adjusting the temperature of said temperature controlled nozzle to a temperature appropriate for forming molecular gas clusters from the selected cluster forming gas;
forming molecular gas clusters by expanding said high pressure gas contained within said valve through said orifice into said vacuum chamber; and
irradiating said molecular clusters with a laser beam brought to a focus onto said clusters to produce radiation of a selected wavelength.

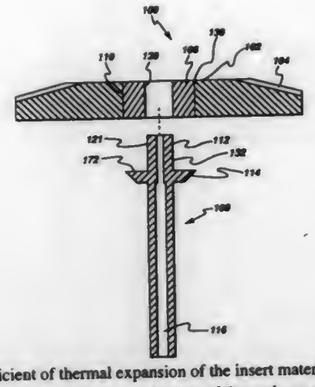
5,577,093

TARGET/STEM CONNECTION FOR X-RAY TUBE ANODE ASSEMBLIES

Mark G. Benz, Burnt Hills, and Melvin R. Jackson, Niskayuna, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 8, 1994, Ser. No. 272,063
Int. Cl.[6] H01J 35/10
U.S. Cl. 378—125 23 Claims

1. An x-ray tube comprising:
an envelope;
a cathode, operatively positioned in the envelope;
an anode assembly including a rotor and a stator, operatively positioned relative to the rotor; and
a target, operatively positioned relative to the cathode and operatively connected to the rotor by metal to metal diffusion bonding between the target and a metal insert and metal to metal bonding of the insert to a stem, wherein the coefficient of thermal expansion of the stem material is greater than the



coefficient of thermal expansion of the insert material which is in turn greater than the coefficient of thermal expansion of the target material.

5,577,094

IRRIDIATION APPARATUS WITH MOVABLE IRRIDIATION HEAD

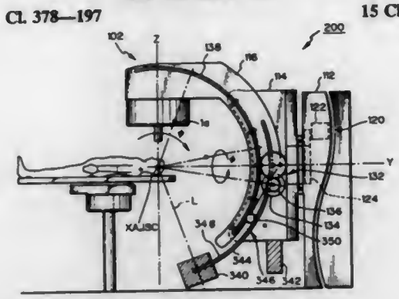
Hiroaki Fudamoto, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1995, Ser. No. 423,050

Claims priority, application Japan, Jun. 30, 1994, 6-149774

Int. Cl.[6] H05G *1/02*

U.S. Cl. 378—197 **15 Claims**



1. An irradiation apparatus comprising:

a) a fixed base;

b) an irradiation head for projecting a beam of radiation;

c) support means for supporting said irradiation head, said support means including a first support carried by said fixed base and adapted for rotation about a horizontal first axis, and a second support carried by said first support and adapted for rotation about a second axis which extends perpendicular to said first axis and intersects with said first axis to define an isocenter thereat, said irradiation head being secured to said second support to collectively form a head section;

d) balance means including a balance weight supported by said first support for rotation about said second axis; and

e) an interlocking mechanism for operatively interlocking said second support and said balance weight, said interlocking mechanism allowing for curvilinear motion of said balance weight such that said head section and said balance weight have a common center of gravity lying substantially on said first axis.

5,577,095

MEDICAL EXAMINATION APPARATUS

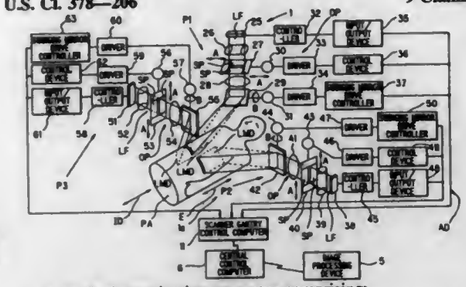
Shigeo Kobayashi, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 15, 1994, Ser. No. 340,858

Claims priority, application Japan, Nov. 25, 1993, 5-319023

Int. Cl.[6] A61B *6/08*

U.S. Cl. 378—206 **9 Claims**



1. A medical examination apparatus comprising:

a medical examination unit for performing medical examination of an examination body; and

medical examination area display means for indicating, with light, a medical examination area on the examination body placed in the medical examination unit;

wherein the medical examination area display means comprises:

a light source for emitting a beam of light; and

an optical system for shaping the beam of light emitted from the light source into a beam which can be scanned in a single direction to produce a two-dimensional light illumination area on the examination body in accordance with the medical examination area;

wherein the optical system comprises:

light beam width setting means for selectively varying a width of the beam of light from said light source in a first direction to produce a beam of light having a length and a predetermined narrow width; and

light scanning means for forming the two-dimensional light illumination area by scanning the examination body in a second direction with the beam of light having the predetermined narrow width;

wherein the light beam width setting means is a slit which is selectively variable in width; and

wherein the light scanning means is a swinging mirror which is located between said slit and the examination body, and which is driven to scan the beam of light which has passed through said slit over the examination body.

5,577,096

TRANSMISSION SYSTEM HAVING STAND-BY LINE SWITCHING FACILITY

Kouichi Kitano, Fukuoka, and Atsuhiko Utsumi, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Feb. 17, 1993, Ser. No. 18,750

Claims priority, application Japan, Feb. 17, 1992, 4-029777

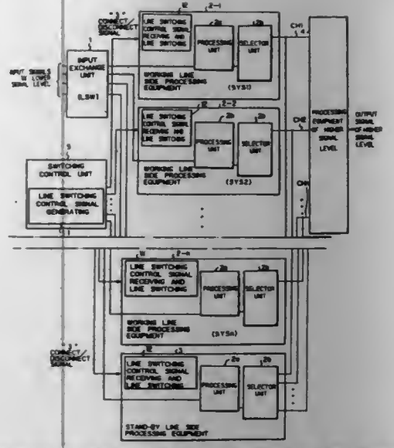
Int. Cl.[6] H04M *1/24;3/08;3/22*

U.S. Cl. 379—2 **10 Claims**

1. A transmission system having a stand-by line switching facility, the transmission system including a plurality of working lines for transferring respective information signals, a stand-by line for replacing a faulty working line, and a stand-by line switching apparatus for carrying out switching between the faulty working line and the stand-by line, comprising:

first means for issuing, upon receipt of a line switching command, a single line switching control signal; and

a plurality of second means, disposed for each of said working lines and for said stand-by line, for commonly receiving said single line switching control signal and performing respective



line switching between the faulty working line and the stand-by line simultaneously, each of said second means including a switching control signal receiving unit for receiving said single line switching control signal issued from said first means and for selecting, at a selector unit, one of output ports through which one of said information signals is transmitted, said plurality of second means being mounted in respective working line side processing equipments and in a stand-by line side processing equipment, each of the working line side processing equipments outputting said line switching command when it is detected that a fault occurs therein and when restoration from the fault is confirmed,

said working line side processing equipments and said stand-by side processing equipment having substantially the same construction as each other, working/stand-by discrimination signals being given to the working line side processing equipments and to said stand-by side processing equipment separately, and chip selection signals being given to the working line side processing equipments independently, said chip selection signals being used for specifying respective working line side processing equipments.

5,577,097

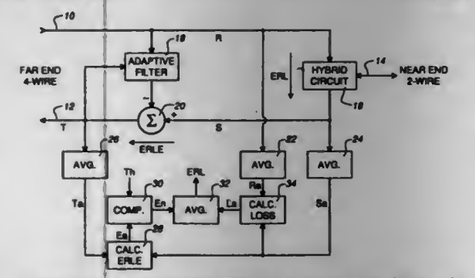
DETERMINING ECHO RETURN LOSS IN ECHO CANCELLING ARRANGEMENTS

Quentin J. Meek, Gloucester, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 14, 1994, Ser. No. 227,819

Int. Cl.[6] H04M *1/24;9/00;* H04J *15/00;1/00*

U.S. Cl. 379—3 **17 Claims**



1. A method of determining ERL (echo return loss) in an echo cancelling arrangement in which an estimated echo signal is produced from a receive path signal and is subtracted from an incoming transmit path signal to produce an outgoing transmit path signal, comprising the steps of:

determining, from signal levels on the incoming and outgoing transmit paths, times when an ERLE (echo return loss enhancement) between signal levels on the incoming and outgoing transmit paths exceeds a threshold value; and

determining ERL from a ratio, of signal levels on the receive path to signal levels on the incoming transmit path, only when it is determined that the ERLE exceeds the threshold value.

5,577,098

DATA TANSMISSION SYSTEM AND METHOD HAVING IMPROVED ALARM INHIBITING FUNCTION

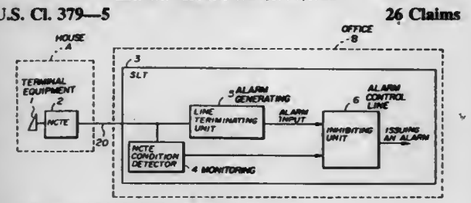
Kazuo Wani, Kanagawa, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 29, 1994, Ser. No. 297,613

Claims priority, application Japan, Mar. 15, 1994, 6-043614

Int. Cl.[6] H04M *1/24;3/08;3/22*

U.S. Cl. 379—5 **26 Claims**



1. A data transmission system comprising:

a subscriber line;

a first terminating unit for terminating said subscriber line at a first end of said subscriber line, said first terminating unit being connected to a public telecommunication network;

a second terminating unit for terminating said subscriber line at a second end of said subscriber line, a terminal equipment being connected to said second terminating unit;

alarm generating means at said first end of said subscriber line for generating an alarm input indicative of a trouble condition of said subscriber line and said second terminating unit;

monitoring means for monitoring said subscriber line and said second terminating unit; and

alarm controlling means, coupled to said alarm generating means and said monitoring means, for examining a result of monitoring by said monitoring means and for controlling whether or not said alarm input generated by said alarm generating means is canceled, according to a result of said examining.

5,577,099

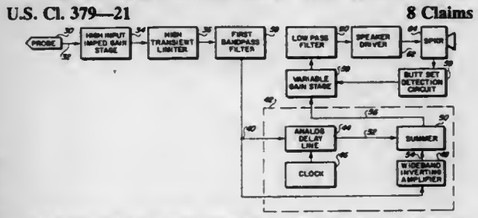
INDUCTIVE AMPLIFIER HAVING COMB FILTER

Douglas S. Clement, Phoenix, and Brian D. Clark, Mesa, both of Ariz., assignors to Progressive Electronics, Inc., Mesa, Ariz.

Filed Nov. 9, 1995, Ser. No. 556,197

Int. Cl.[6] H04M *1/24;3/08;* G01R *19/14;* H01H *31/02*

U.S. Cl. 379—21 **8 Claims**



1. An inductive amplifier for detecting and amplifying an elec-

trical tone conducted by one of a group of wires in order to identify and trace a particular wire, the inductive amplifier suppressing noise signals having a predetermined fundamental noise frequency and suppressing noise signals having frequencies that are harmonics of said predetermined fundamental noise frequency, said inductive amplifier comprising in combination:

a. an electrically conductive probe for being placed adjacent a wire under test;

b. an input terminal coupled to the conductive probe for receiving an input signal therefrom;

c. a delay circuit coupled to the input terminal for receiving the input signal and providing a time-delayed output signal, the time-delayed output signal being delayed by a delay period substantially equal to the inverse of the predetermined fundamental noise frequency;

d. an inverting circuit coupled to the input terminal for receiving the input signal and providing an inverted output signal that is not time-delayed relative to the input signal, but which is out of phase relative to the input signal;

e. a summing circuit coupled to the delay circuit for receiving the time-delayed output signal, the summing circuit also being coupled to the inverting circuit for receiving the inverted output signal, the summing circuit adding the time-delayed output signal with the inverted output signal to provide a noiseless output signal; and

f. an amplifier to amplify the noiseless output signal.

5,577,100

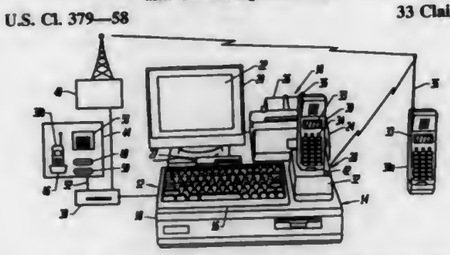
MOBILE PHONE WITH INTERNAL ACCOUNTING

Donald S. McGregor, and Gregory M. McGregor, both of Danville, Calif., assignors to Telemac Cellular Corporation, Danville, Calif.

Filed Jan. 30, 1995, Ser. No. 381,704

Int. Cl.[6] H04Q *7/32;7/34*

U.S. Cl. 379—58 **33 Claims**



1. A mobile phone system comprising a system provider having a host processor unit and a plurality of system users each having at least one mobile phone unit wherein:

the host processor unit has communication means for selectively establishing a communication link with each mobile phone unit; and,

each phone unit includes a processor, a clock chip, memory associated with the processor, program means including a complex billing algorithm and rate data for internally calculating call charges as calls are made, wherein the phone unit includes internal accounting means for generating a debit account with an account amount in the phone unit and decrementing the account amount in the debit account in real time, and wherein the system provider has payment verification means under system provider control for setting a phone use account amount and communicating the account amount to the phone unit, wherein the internal accounting means adds the account amount to the debit account.

5,577,101

TELEPOINT SYSTEM WHICH CHARGES AN ACCOUNT OF THE SUBSCRIBER RATHER CHARGING AN ACCOUNT OF THE PRIVATE BASE STATION THROUGH A CALL IS ESTABLISHED

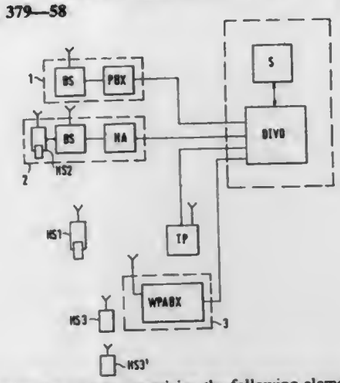
Manfred Böhm , Stuttgart, Germany, assignor to Alcatel SEL Aktiengesellschaft, Stuttgart, Germany

Continuation of Ser. No. 303,473, Sep. 9, 1994. This application Apr. 10, 1996, Ser. No. 629,910

Claims priority, application Germany, Sep. 10, 1993, 4330704.3

Int. Cl.[6] H04Q *7/20;7/24;7/26*

U.S. Cl. 379—58 **5 Claims**



1. A telepoint system comprising the following elements, which are interconnected via a telephone network: a digital exchange (DIV0) with a server (S) for checking subscriber identities, public telepoint base stations (TP), and private base stations (1, 2, 3), each having a cordless handset (HS1, HS2, HS3, HS3') and a subscriber permanently associated therewith, and wherein a call can be established from any first cordless handset (HS1) by a first subscriber to a second subscriber in the telephone network via every public telepoint base station (TP) and via every private base station (2, 3) not permanently associated with said first handset (HS1), the first subscriber known as a nonassociated subscriber with respect to said every private base station not permanently associated with said first handset, wherein said call establishment is by the first subscriber transmitting a subscriber identity from said first cordless handset (HS1) and checking in the server (S) whether the identity of the first subscriber is that of a subscriber authorized to access the telepoint system, and if said first subscriber is authorized to access the telepoint system, sharing any public telepoint base station (TP) and any private base station (2, 3) with said authorized first subscriber; and further wherein the server (S) bills the charge for a call established from said first cordless handset (HS1) by the first subscriber via the private base station (2) with which said first cordless handset (HS1) is not permanently associated, by charging an account of the first subscriber rather than charging an account of the subscriber associated with the private base station (2) through which said call is established.

5,577,102

METHOD AND ARRANGEMENT FOR PROCESSING SHORT MESSAGES IN A CELLULAR NETWORK

Seppo Koivunen, Hyvinkää, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

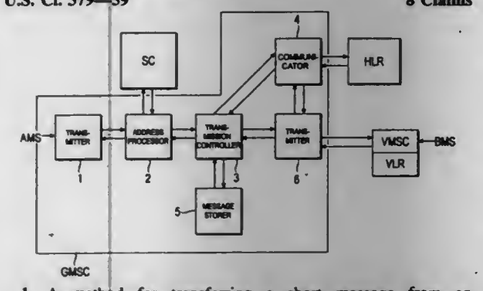
PCT No. PCT/FI93/00235, § 371 Date Jan. 20, 1995, § 102(e) Date Jan. 20, 1995, PCT Pub. No. WO93/26131, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 1, 1993, Ser. No. 351,430

Claims priority, application Finland, Jun. 12, 1992, 922751

Int. Cl.[6] H04Q *7/22*

U.S. Cl. 379—59 **8 Claims**



1. A method for transferring a short message from an A-subscriber to a B-subscriber in a cellular network that has a mobile services switching centre and a home location register, comprising:

(a) storing and updating in said home location register information as to whether said B-subscriber is reachable by said mobile services switching centre, and, if so, storing in said home location register routing information for said B-subscriber;

(b) sending, by an A-subscriber, a short message containing a routing address of a B-subscriber, to the mobile services switching centre;

(c) checking, by the mobile services switching centre of said routing address, whether said routing address is of said B-subscriber, and, if so, requesting by the mobile services switching centre from the home location register, of routing information for said B-subscriber;

(d) if said B-subscriber is reachable by said mobile services switching centre according to said information stored in said home location register, sending in response to said requesting, routing information for said B-subscriber by said home location register to said mobile services switching centre; and

(e) based on receipt of said routing information by said mobile services switching centre, routing, by said mobile services switching centre, of said short message to said B-subscriber.

5,577,103

METHOD OF PROVIDING SERVICE INFORMATION TO SUBSCRIBERS IN A CELLULAR TELECOMMUNICATIONS NETWORK USING THE SHORT MESSAGE SERVICE (SMS)

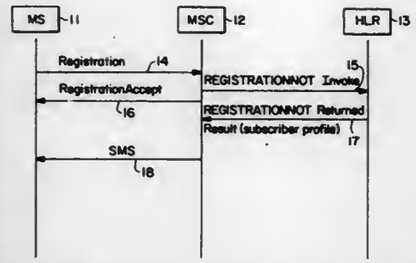
George Foti, Dollard des Ormeaux, Canada, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Mar. 10, 1995, Ser. No. 401,884

Int. Cl.[6] H04Q *7/00*

U.S. Cl. 379—59 **6 Claims**

1. A method of providing a subscriber in a cellular telephone network with information from a subscriber service profile, said network including a mobile station, a mobile switching center, and a home location register for storing said subscriber service profile, said method comprising the steps of:



automatically transmitting a request for said service profile information from said mobile station to said mobile switching center and said home location register upon initial power-on registration of said subscriber's mobile station;

retrieving said service profile information from said home location register;

appending said service profile information to a short message service (SMS) message;

transmitting said short message service message from said mobile switching center to said mobile station; and

relaying said service profile information to said subscriber.

5,577,104

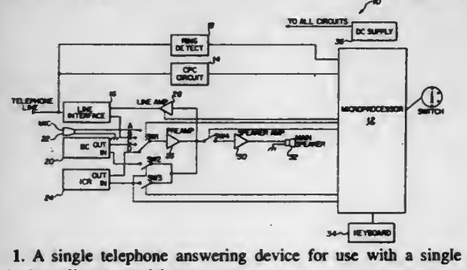
METHOD FOR SYSTEM AND MESSAGE ACTIVATION BASED ON DISTINCTIVE RINGING

Stephen B. Knuth, Mission Viejo; Mark J. Karnowski, Garden Grove; James W. Mazzolini, Hawthorne, and Sanford M. Brown, III, Torrance, all of Calif., assignors to Casio Phone-Mate, Inc., Torrance, Calif.

Continuation of Ser. No. 831,422, Feb. 5, 1992, abandoned. This application May 6, 1994, Ser. No. 238,984

Int. Cl.[6] H04M *3/42*

U.S. Cl. 379—67 **9 Claims**



1. A single telephone answering device for use with a single telephone line, comprising:

means in said single telephone answering device for recording a plurality of outgoing messages, each outgoing message being associated with a particular different type of ring received on the single telephone line;

a single ring type identification means in said single telephone answering device, coupled to the single telephone line, for identifying a ring type received on said single telephone line; and

a playback unit in said single telephone answering device, coupled to said ring type identification means and to said single telephone line, and being responsive to said ring type identification means for automatically playing back on said single telephone line a selected one of said plurality of recorded outgoing messages which corresponds to said received ring type identified by said ring type identification means; and

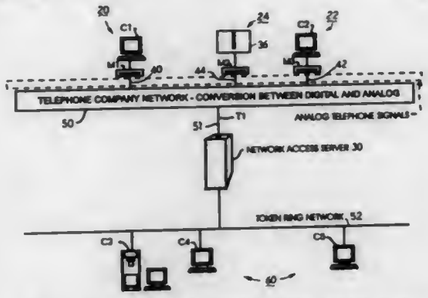
an incoming message recording/playback unit in said single telephone answering device for recording all incoming messages associated with all ring types identified by said ring type identification means and which are received on said single telephone line, and said incoming message recording/playback unit being responsive to a single interrogation for playing back all recorded incoming messages received on said single telephone line regardless of the ring type associated with the respective recorded incoming messages and regardless of which outgoing message a caller listened to.

5,577,105

TELEPHONE CALL ROUTING AND SWITCHING TECHNIQUES FOR DATA COMMUNICATIONS

Marc S. Baum; Robert C. Suffern, both of Chicago; Donald Balton, Skokie; Daniel L. Schoo, Island Lake; Peter P. Jankus, Chicago; Lih-Shyng Tzeng, Arlington Heights, and Terrel Jones, Des Plaines, all of Ill., assignors to U.S. Robotics, Inc., Skokie, Ill.

Filed Mar. 11, 1994, Ser. No. 212,515
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—93 **5 Claims**



1. In a communication processing system having a network access server and a memory storing a communication protocol parameter associated with control signals identified with incoming communications generated by remotely located call originators, said network access server comprising a modem, a method for processing said incoming communications between said call originators and a computer network comprising the steps of:

(a) initiating a connection between a remotely located call originator and said network access server;

(b) extracting one or more control signals from an incoming communication generated by said call originator, said control signals comprising multifrequency tones, said step of extracting said control signals comprising the steps of transmitting said multifrequency tones to said modem and decoding said multifrequency tones,

wherein said step of decoding said multifrequency tones comprises the steps of

detecting a multifrequency tone initiation signal;

detecting a multifrequency tone;

looking up in a table a digit assigned to said multifrequency tone and assigning said digit to said multifrequency tone; and

detecting a multifrequency tone stop signal;

(c) correlating said control signals to said protocol parameter assigned to said control signals; and

(d) configuring said network access server according to said protocol parameter;

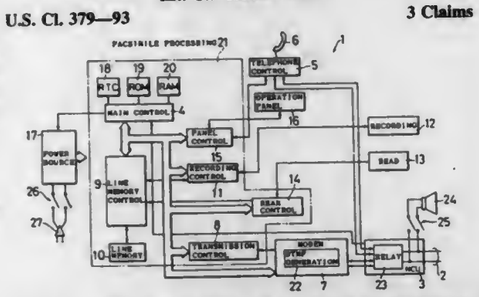
whereby said incoming communication is routed through said network access server to said network according to said protocol parameter, reducing the overall communication connection and processing time.

5,577,106

COMMUNICATION APPARATUS FOR USE WITH PUBLIC TELEPHONE NETWORK

Masahiro Tanaka, and Masaharu Itado, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 7, 1995, Ser. No. 399,472
Claims priority, application Japan, Mar. 11, 1994, 6-041509
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—93 **3 Claims**



1. A communication apparatus for use with a public telephone network, capable of calling an information supplying terminal device which transmits a voice signal in response to the call of a calling party side terminal device, recognizes the data transmitted from the calling party side terminal device in response to the voice signal, and transmits the information specified by the recognized data in accordance with predetermined transmission procedures to the calling party side terminal device, the apparatus comprising:

data storing means for storing a plurality of data to be transmitted to the information supplying terminal device, a standby time from the end of transmission of the data to the beginning of transmissioo of the subsequent data, and judgment data representing whether a voice signal from the information supplying terminal device exists after transmission of the data;

data transmission means for transmitting the data stored in the data storing means to the public telepbone line;

timing means for timing the standby time, whose operation is activated immediately after transmission of the data;

detecting means for detecting the termination of transmission of a voice signal from the information supplying terminal device; and

control means for reading out the data stored in the data storing means and feeding the data to the data transmission means,

the control means providing the data transmission means

with data to be subsequently transmitted, after the standby time stored in the data storing means has been timed by the timing means and the termination of transmission of a voice signal has been detected by the detecting means, in the case where it is judged on the basis of the judgment data that a voice signal from the information supplying terminal device exists after the termination of data transmission by the data transmission means; and

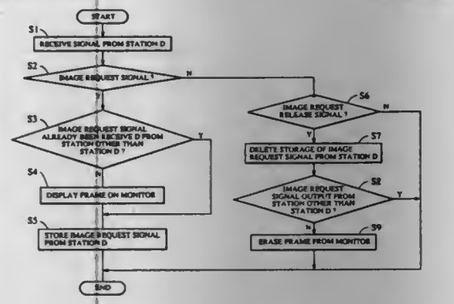
with data to be subsequently transmitted, after the standby time stored in the data storing means has been timed by the timing means, in the case where it is judged that no voice signal from the information supplying terminal device exists after the termination of data transmission by the data transmission means.

5,577,107

COMMUNICATION TERMINAL APPARATUS FOR DISPLAYING WHETHER ANY OF A PLURALITY OF OTHER COMMUNICATION TERMINAL APPARATUSES IS RECEIVING AN IMAGE

Atsushi Inagaki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1994, Ser. No. 281,158
Claims priority, application Japan, Jul. 29, 1993, 5-188294
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—96 **40 Claims**



1. A communication terminal apparatus for communicating communication data including at least image data to a plurality of other communication terminal apparatuses, said apparatus comprising:

image pickup means for picking up an image of an operator at said apparatus;

receiving means for receiving an image request signal from a communicating one of the plurality of other communication terminal apparatuses indicating that the communicating communication terminal apparatus is receiving the image of the operator; and

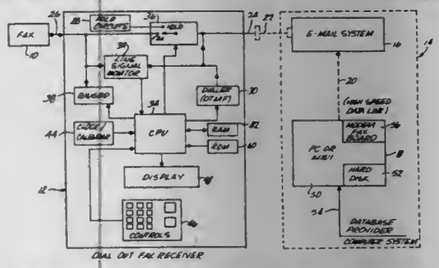
informing means for informing the operator at said apparatus whether or not at least one of the plurality of other communication apparatuses is receiving the image of the operator in accordance with reception of the image request signal by said receiving means.

5,577,108

INFORMATION DISTRIBUTION SYSTEM WITH SELF-CONTAINED PROGRAMMABLE AUTOMATIC INTERFACE UNIT

Roy J. Mankovitz, 18057 Medley Dr., Encino, Calif. 91316

Filed Aug. 3, 1993, Ser. No. 101,612
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—97 **11 Claims**



1. An automatic self contained interface unit for unattended control and connection of an information and retrieval system to an information receiver comprising:

means for connecting a telephone line to the information receiver;

means for receiving telephonic signals from the connected telephone line;

means for transmitting telephonic signaling tones on the connected telephone line;

means for placing the connected telephone line on bold;

a controller connected to the connecting means, receiving means,

transmitting means and bold means, said controller including:

means for activating the controller at a predetermined time;

means for transferring a predetermined set of commands to the transmitting means for transmission as signaling tones for dialing the information and retrieval means on the telephone line and, upon answer, an information data string to the information and retrieval system for defining selective collection and transmission of specific information;

means for interactively interpreting signals received by the receiving means;

means responsive to a first signal from the interpreting means for activating the bold means;

means for transferring a command to the transmitting means for transmission to the information receiver; and

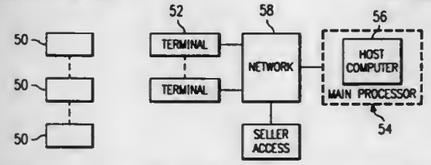
means responsive to a second signal from the interpreting means for deactivating the bold means thereby interconnecting the information receiver with the information and retrieval system.

5,577,109

PRE-PAID CARD SYSTEM AND METHOD

Charles J. Stimson, and Brady S. Beshear, both of Garland, Tex., assignors to Call Processing, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 254,237, Jun. 6, 1994, Pat. No. 5,511,114. This application Mar. 20, 1995, Ser. No. 407,094
Int. Cl.[6] H04M *17/00*
U.S. Cl. 379—112 **10 Claims**



9. A method, using one or more remote communications devices connectable to a host computer having a database, to enable customers to acquire credit to be used to purchase good or services, comprising the steps of:

in response to one or more requests, transferring information from a communications device to the host computer, the information including data identifying a card to be activated or recharged, the card having an identifying number;

associating, at the host computer, an amount of purchase authorization to the identifying number of the card using the information transferred from the communications device;

maintaining in the database a record for each card identifying number having an purchase authorization amount associated therewith, the record including a credit balance; and

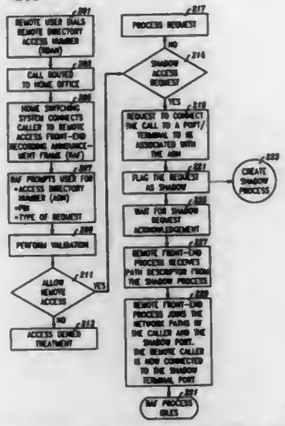
adjusting the credit balance in the record associated with the identifying number as goods or services are purchased.

5,577,110

ACCESS TO CAPABILITIES OF OTHER TELEPHONE STATIONS

Marino K. Aquino, Aurora, Ill., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 53,031, Apr. 26, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 420,613
Int. Cl.[6] H04M 3/42
U.S. Cl. 379—201 2 Claims



1. In a telecommunications network having a first switching system in communication with a second switching system, a method for providing service features, comprising the steps of:

a) defining said features in a block of data and assigning said block of data to a customer at a first station served from a first terminal port on said first switching system;

b) using said features to process signals from said first station such that said features are available to process signals from the first station in accordance with said block of data;

c) connecting a first user at a second station being served on said second switching system to said first switching system via a second terminal port on said first switching system;

d) upon receipt of signals at said first switching system from said second station, allocating said block of data to said second terminal port such that said features are available to the first user to process signals from the second station;

e) using said features to process signals from said second station over the second port such that the same features available to the first station are available to the second station; and

f) wherein said first user while being served by said second switching system has two call appearances on said second station and wherein granting said features to said first user comprises granting said features to one of said two call appearances.

5,577,111

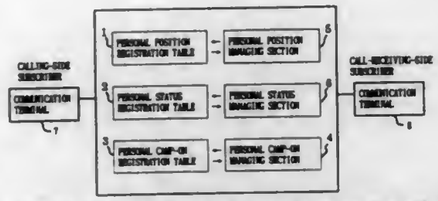
CAMP-ON COMMUNICATION MANAGING METHOD AND APPARATUS

Ichiro Iida, Kawasaki; Fumiharu Etoh, Fukuoka; Soichi Kawahara, and Takashi Nishigaya, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 294,261, Aug. 23, 1994, abandoned. This application Jan. 29, 1996, Ser. No. 593,540
Claims priority, application Japan, Nov. 19, 1993, 5-290449
Int. Cl.[6] H04M 3/48;1/64
U.S. Cl. 379—209 37 Claims

11. A camp-on communication managing apparatus comprising:

a personal position registration table in which terminal identification information for identifying a communication terminal used by each subscriber is registered for each personal identification information for identifying a subscriber;



a personal status registration table in which information indicating whether each subscriber is in a communication-possible state is registered for each said personal identification information;

a personal camp-on registration table in which personal identification information of a calling-side subscriber who requests a camp-on operation and personal identification information of a call-receiving-side subscriber are to be registered;

personal position managing means for referring, when receiving the personal identification information of the calling-side subscriber and the personal identification information of the call-receiving-side subscriber from the calling-side subscriber, to the personal position registration table based on the calling-side personal identification information and the call-receiving-side personal identification information, and for detecting calling-side terminal identification information and call-receiving-side terminal identification information;

personal camp-on managing means for registering the calling-side personal identification information and terminal identification information and the call-receiving-side personal identification information and terminal identification information in the personal camp-on registration table;

personal status managing means for monitoring a communication status of the call-receiving-side subscriber, and for rewriting communication status identification information of the personal status registration table when the communication state of the call-receiving-side subscriber has been made a status transition; and

calling means for searching, when detecting that the call-receiving-side subscriber has made a status transition to a communication-possible state by referring to the personal status registration table, for information in the personal camp-on registration table based on the personal identification information of the call-receiving-side subscriber, reading out the terminal identification information of the call-receiving-side subscriber and the terminal identification information of the calling-side subscriber from the personal camp-on registration table, and calling the calling-side subscriber and the call-receiving-side subscriber based on the terminal identification information of the call-receiving-side subscriber and the calling-side subscriber.

5,577,112

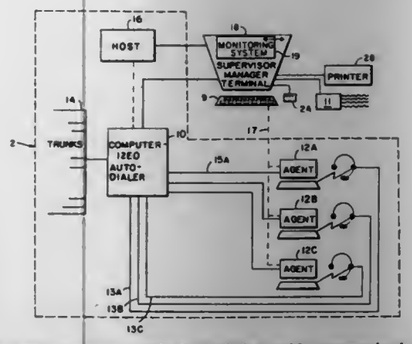
TELEPHONY SYSTEM WITH SUPERVISORY MANAGEMENT CENTER AND PARAMETER TESTING WITH ALERTS

John E. Cambray, Pelham, N.H., and Andrew J. Scharmer, Tewksbury, Mass., assignors to Davox Corporation, Westford, Mass.

Continuation of Ser. No. 706,251, May 28, 1991, Pat. No. 5,381,470. This application Jan. 10, 1995, Ser. No. 370,990
The portion of the term of this patent subsequent to May 28, 2011, has been disclaimed.
Int. Cl.[6] H04M 1/26;3/22;3/46
U.S. Cl. 379—216 9 Claims

1. A telecommunications system comprising:

a computerized telephony system generating a plurality of parameter event signals indicative of various parameters of said computerized telephony system as said various parameters occur;



at least one agent terminal coupled to said computerized telephony system, for causing said telephony system to generate said plurality of parameter event signals indicative of various parameters of said telephony system and calls processed as said various parameters occur; and

at least one supervisory terminal responsive to at least said computerized telephony system, said at least one supervisory terminal comprising:

a processor naming an operating system;

a mass storage device, responsive to said processor, said mass storage device receiving and storing at least some of said plurality of parameter event signals;

an input device, for inputting a plurality of data signals including at least one parameter event alert signal identifying an action to be initiated by said at least one supervisory terminal upon the comparison of a selectable telecommunication system parameter event with an established parameter event alert condition and for inputting at least one selectable parameter event alert relationship signal and at least one parameter event alert value signal, said at least one parameter event alert relationship and at least one parameter event alert value establishing at least one parameter event alert condition to which at least one corresponding parameter event is to be compared;

a parameter event and parameter event alert associator, for associating at least one parameter event alert with a selectable telecommunication parameter event signal; and

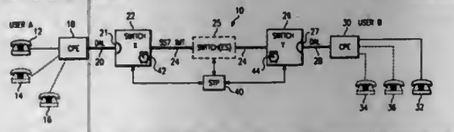
a parameter event alert monitor, for performing a comparison of said plurality of parameter event signals with said established at least one parameter event alert condition, and for generating a signal indicative of a result of said comparison, said signal for initiating said action identified by said at least one parameter event alert signal.

5,577,113

APPARATUS AND METHOD FOR VIRTUAL PRIVATE TELEPHONE LINE WITH AUTOMATIC RING DOWN

Paul M. Bray, Garland; Douglas R. Cardy, Plano, and Charles P. Shelton, McKinney, all of Tex., assignors to DSC Communications Corporation, Plano, Tex.

Continuation of Ser. No. 189,904, Feb. 1, 1994, Pat. No. 5,487,110. This application Sep. 8, 1995, Ser. No. 525,964
Int. Cl.[6] H04M 7/10
U.S. Cl. 379—220 37 Claims



1. Apparatus for a virtual private telephone connection between a User A telephone equipment and a User B telephone equipment, comprising:

a first telephone switch coupled to said User A telephone equipment, said first telephone switch capable for switching a plurality of trunk groups including at least one virtual private line trunk group;

a second telephone switch coupled to said first telephone switch and further coupled to said User B telephone equipment, said second telephone switch capable for switching a plurality of trunk groups including at least one virtual private line trunk group at least one optional telephone switch coupled between said first and second telephone switches;

a database residing in both said first and second telephone switches, being capable of associating said virtual private line trunk group of said first switch with said virtual private line trunk group of said second switch;

means for detecting a substantially simultaneous requests for service from both said User A and B telephone equipment;

means for selecting one of said User A telephone equipment and said User B telephone equipment as an originator of call setup and the other as a terminator of call setup and transmitting a Release Message to only said selected call terminator; and

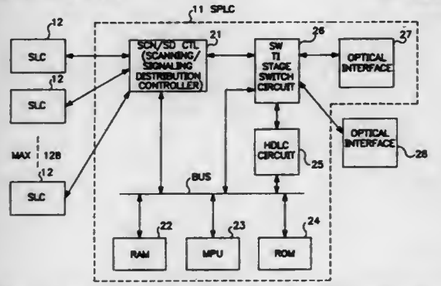
means for accepting said request for service from said originator user telephone equipment and continuing to establish said virtual private line connection.

5,577,114

SUBSCRIBER LINE CONTROL APPARATUS TO CONCURRENTLY DETECT CHANGE IN LINE STATE FOR SUBSCRIBER LINES AND DETERMINE VALIDITY OF TIMER DEVICE

Sumie Morita; Ryouzi Takano, and Takashi Hatano, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Continuation of Ser. No. 910,778, Jul. 8, 1992, abandoned. This application May 2, 1995, Ser. No. 434,122
Claims priority, application Japan, Jul. 9, 1991, 3-168426
Int. Cl.[6] H04M 3/22
U.S. Cl. 379—385 11 Claims



8. A switching system including a subscriber line control device and a call processing device for accommodating a plurality of analog subscriber lines, said subscriber line control device comprising:

memory means: a) for storing present on-hook and off-hook information indicating present line states for a plurality of subscriber lines, b) for storing previous on-hook and off-hook information indicating previous line states for said plurality of subscriber lines obtained in a previous scanning period, and c) for storing present timer information of a plurality of bits each respectively corresponding to the present on-hook and off hook information for each of said plurality of subscriber lines and previous timer information of a plurality of bits each respectively corresponding to the previous on-hook and off-hook information for each of said plurality of subscriber lines, each of said plurality of bits of said present and previous timer information indicating a validity of a timer device for monitoring one of a) on-hook time for a monitoring process of each of said plurality of subscriber lines, b) off-hook time for a monitoring process of each of said plurality of subscriber lines and c) on and off time of dial pulses for a monitoring

process of each of said plurality of subscriber lines, said validity of the timer device indicating a state wherein the timer device counts time when one of said monitoring processes is required;

detecting means for simultaneously detecting a change in each of the present and previous line states of each of said plurality of subscriber lines and for determining a validity of said timer device by comparing the present on-hook and off-hook information with the previous on-hook and off-hook information at predetermined intervals the previous and present timer information included in the previous and present on-hook and off-hook information, respectively;

control means for a) validating said timer device using the present and previous timer information from said memory means corresponding to each of the plurality of subscriber lines if an instruction is issued via a subscriber line to require monitoring any of off-hook states, on-hook states, and dial pulses, and for b) counting one of the on-hook and off-hook time and the on and off time of dial pulses of the subscriber line through which the instruction is sent using said validated timer device if said detecting means detects a change in one of the states of the subscriber line through which the instruction is sent; and

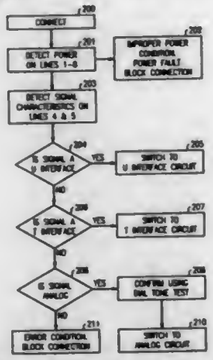
congestion control means for setting a maximum first number of events associated with call processes in the subscriber line control device, a maximum second number of events associated with call processes between the subscriber control device and the call processing device, and a maximum number of subscriber lines for monitoring dial pulses, and for managing a first number of events, a second number of events, and a number of subscriber lines requesting monitoring to be equal to or smaller than the set maximum numbers, respectively, by executing selected call processes if the first number of events, the second number of events and the number of subscriber lines for monitoring dial pulses reach the maximum first number of events, the maximum second number of events and the maximum number of subscriber lines, respectively.

5,577,115

CUSTOMER PREMISE EQUIPMENT INTERFACE

Douglas A. Deutsch, Carol Stream, Ill.; Norman W. Petty, Boulder, Colo., and Douglas J. Rippe, Naperville, Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 31, 1995, Ser. No. 414,561
Int. Cl.[6] H04M *1/00;1/24;* **H04J** *3/12;3/14*
U.S. Cl. 379—399 **9 Claims**



3. A method of operating customer premise equipment (CPE) enabling connection to any one of a plurality of different types of network interfaces where each of said types of network interfaces includes a plurality of conductors for transmitting power and signals to the CPE, comprising the steps of:

connecting a CPE interface to one of said plurality of network interfaces to create an electrical pathway between said plurality of conductors and conductors in the CPE interface to deliver power and signals between the network interface and the CPE interface where all of said plurality of network interfaces are connectable to the same CPE interface;

switching said signals to a first connection as if said one of said plurality of network interfaces was a first type of interface, said first connection delivering the signals and power to circuitry for controlling the CPE for the first type of network interface;

determining if the CPE is operating;

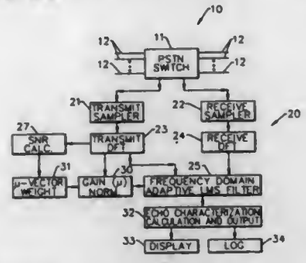
if the CPE is not operating, switching the signals to a second connection as if said one of said plurality of network interfaces was a second type of interface, said second connection delivering the convened signals and power to circuitry for controlling the CPE for the second type of interface.

5,577,116

APPARATUS AND METHOD FOR ECHO CHARACTERIZATION OF A COMMUNICATION CHANNEL

Keith Townsend, Cary, N.C.; Harish Punjabi, Falls Church, Va.; Alexandra Duel-Hallen, Cary, and Samuel T. Alexander, Raleigh, both of N.C., assignors to North Carolina State University, Raleigh, N.C.

Filed Sep. 16, 1994, Ser. No. 307,257
Int. Cl.[6] H04M *9/08*
U.S. Cl. 379—410 **39 Claims**



1. An apparatus for echo characterization of a communications channel, said apparatus comprising:

transmit sampling means for generating a series of sampled transmit values of a signal transmitted on the communications channel;

transmit frequency domain transform means operatively connected to said transmit sampling means for generating respective transmit frequency domain transforms of the sampled transmit values;

receive sampling means for generating a series of sampled receive values of a signal received on the communications channel based upon the signal transmitted on the communications channel;

receive frequency domain transform means operatively connected to said receive sampling means for generating respective receive frequency domain transforms of the sampled receive values;

frequency domain adaptive filter means operatively connected to said transmit and receive frequency domain transform means for converging a plurality of filter coefficients based upon the transmit and receive frequency domain transforms;

echo characterization output means operatively connected to said frequency domain adaptive filter means for generating an echo characterization value for the communications channel;

gain normalization means operatively connected to said frequency domain adaptive filter means for generating normalized gains of respective filter coefficients based upon spectral power of the respective transmit frequency domain transforms; and

gain normalization weighting means operatively connected to said gain normalization means for weighting the normalized gains based upon frequency;

wherein said gain normalization weighting means further comprises means for weighting the normalized gains as a predetermined function of frequency; and

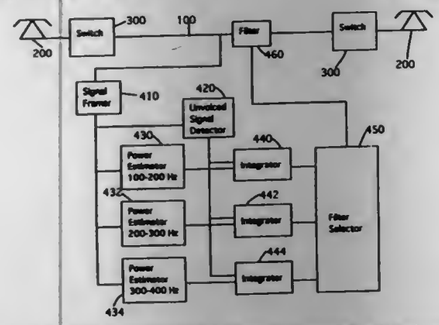
wherein said gain weighting means further comprises means for determining an estimated average echo to return noise ratio based upon the signal received from the communications channel and for selecting a predetermined gain normalization weighting function based upon the ratio.

5,577,117

METHODS AND APPARATUS FOR ESTIMATING AND ADJUSTING THE FREQUENCY RESPONSE OF TELECOMMUNICATIONS CHANNELS

Rafi Rabipour, Cote St. Luc, Canada, and Vasu Iyengar, Whitehall, Pa., assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 9, 1994, Ser. No. 257,129
Int. Cl.[6] H04R *29/00*
U.S. Cl. 379—414 **22 Claims**



1. A method for estimating a frequency response of a telecommunications channel, comprising:

dividing a signal carried on the channel into a plurality of signal segments of limited duration;

identifying unvoiced signal segments; and

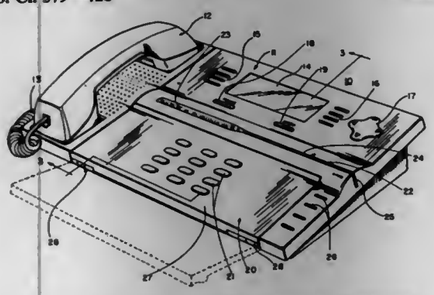
measuring spectral components of the unvoiced signal segments.

5,577,118

TELEPHONE-TERMINAL COMBINATION WITH PLURAL KEYBOARDS

Jeffrey K. Sasaki, San Francisco, and James S. Arakaki, Auburn, both of Calif., assignors to Verifone, Inc., Redwood City, Calif.

Continuation of Ser. No. 289,882, Aug. 12, 1994, abandoned.
This application Dec. 18, 1995, Ser. No. 573,720
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—428 **15 Claims**



1. A microprocessor-based telephone apparatus comprising:

a housing, a display screen mounted in said housing, a lower key panel carried in a fixed position within a top portion of said housing separated from said display screen, and an upper key panel overlying said lower key panel while in a first position thereof and being hingedly mounted to said housing in a manner so as to swing away from said first position to a second position thereof and thereby to provide access to said lower key panel without obscuring said display screen;

said lower key panel carrying an alphanumeric keyboard on a top surface thereof to enable a user to perform alphanumeric data entry after swinging away said upper key panel to said second position thereof; and

said upper key panel carrying a telephone keypad to enable a user to dial telephone numbers when said upper key panel is in said first position overlying said lower key panel,

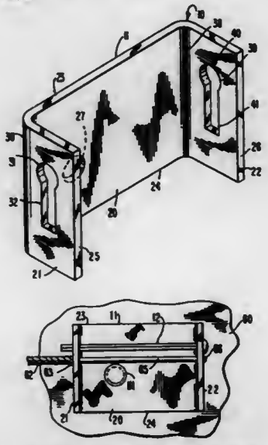
whereby only said telephone keypad carried on said upper key panel is accessible for operation by a user when said upper key panel is in said first position thereof and only said alphanumeric keyboard is accessible for operation by a user when said upper key panel is in said second position thereof.

5,577,119

TENSION RESISTING BRACKET FOR TELEPHONE HANDSETS

Anthony Giammanco, Staten Island, N.Y., assignor to I.D. Tel Corp., Staten Island, N.Y.

Filed May 8, 1995, Ser. No. 436,884
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—438 **2 Claims**



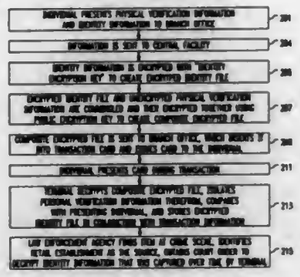
1. A tension resisting bracket for the detachable retention of an end of an armored length of telephone cable interconnecting a handset to a telephone box, said bracket being installed upon an inner surface of said telephone box, and comprising: a generally U-shaped body including a base wall and first and second side walls; said base wall having an opening therethrough adapted to be penetrated by a mounting bolt to secure said base wall to the interior of said telephone box; said first side wall having a first keyhole-shaped opening therein for reception of an end of a non-conductive lanyard forming a part of said cable, said second side wall having a second keyhole-shaped opening therethrough including a larger circular portion and a smaller slotted portion extending therefrom for the reception of a free end of the outer sheath of said cable, and the frictional retention of an end segment of the cable upon engagement within said slotted portion.

5,577,120

METHOD AND APPARATUS FOR RESTROSPECTIVELY IDENTIFYING AN INDIVIDUAL WHO HAD ENGAGED IN A COMMERCIAL OR RETAIL TRANSACTION OR THE LIKE

Arno A. Penzias, Chatham, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 1, 1995, Ser. No. 431,732
Int. Cl.[6] H04K *1/00*; H04L *9/00*
U.S. Cl. 380—23 **9 Claims**



1. A transaction device which has stored thereon electronically readable data, said data comprising

a composite encrypted file comprised of a) physical verification information about an individual and b) an encrypted identity file, said composite encrypted file having been created by encrypting, together, said physical verification information and said encrypted identity file using a public key encryption key whose matching decryption key is publicly known,

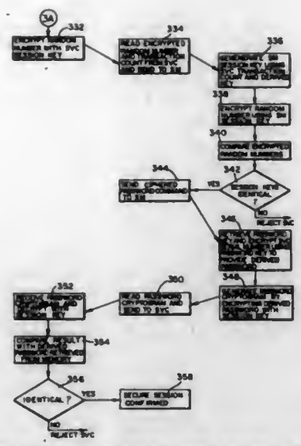
said encrypted identity file including identity information relative to said individual, said encrypted identity file having been created by encrypting said identity information with an encryption key whose matching decryption key is not publicly known.

5,577,121

TRANSACTION SYSTEM FOR INTEGRATED CIRCUIT CARDS

Terry L. Davis, Scottsdale, Ariz.; James A. Hart, Radnor, Pa.; Vincent A. Imperia, Tempe, Ariz.; Michael Love, Wilmington, Del.; Michael F. O'Malley, Glenside, Pa.; James F. Russell, Hockessin, Del.; John W. Sears, Peoria, and Philip H. Trice, Phoenix, both of Ariz., assignors to Electronic Payment Services Inc., Wilmington, Del.

Filed Jun. 9, 1994, Ser. No. 255,612
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—24 **37 Claims**



26. In a transaction system which includes at least one integrated circuit (IC) card for cooperating with a transaction terminal to perform transactions, the IC card including a processor, memory, data stored in the memory and a program stored in the memory, and the terminal including an IC card reader/writer device having a processor, memory and a program stored in the memory, and a security module communicating with the reader/writer device, the security module including a processor, memory, data stored in the memory and a program stored in the memory, a method of verifying the validity of the IC card and the terminal at the initiation of and under the control of the terminal for establishing a secure session between the IC card and the terminal to enable the performance of a transaction, the method comprising:

(a) inserting the IC card into the terminal to establish communication between the reader/writer device and the IC card;

(b) reading, by the reader/writer device from the IC card, an IC card identification number and sending the identification number to the security module;

(c) generating, by the security module, a derived verification key by encrypting the identification number of the IC card with a verification control key stored in the memory of the security module using an encryption algorithm;

(d) generating, by the IC card, a transaction number;

(e) reading, by the reader/writer device from the IC card, the transaction number and sending the transaction number to the security module;

(f) generating, by the IC card, a session key by encrypting the IC card transaction number with a derived verification key stored in the memory of the IC card using the encryption algorithm;

(g) generating, by the IC card, a response certificate by encrypting a random number with the session key generated by the IC card using the encryption algorithm;

(h) reading, by the reader/writer device, the response certificate generated by the IC card and sending the IC card response certificate to the security module;

(i) generating, by the security module, a session key by encrypting the IC card transaction number with the derived verification key using the encryption algorithm;

(j) generating, by the security module, a response certificate by encrypting the random number with the session key generated by the security module using the encryption algorithm;

(k) comparing, by the security module, the received IC card response certificate with the response certificate generated by the security module and verifying that (1) the session keys are identical and (2) that the IC card is valid, if the response certificates are identical;

(l) generating, by the security module, a derived password by encrypting the serial number of the IC card with a password key stored in the memory of the security module utilizing the encryption algorithm;

(m) generating, by the security module, a password cryptogram by encrypting the derived password with the session key using the encryption algorithm;

(n) reading, by the reader/writer device, the password cryptogram from the security module and sending the password cryptogram to the IC card;

(o) generating, by the IC card, a password by decrypting the password cryptogram with the session key using the encryption algorithm; and

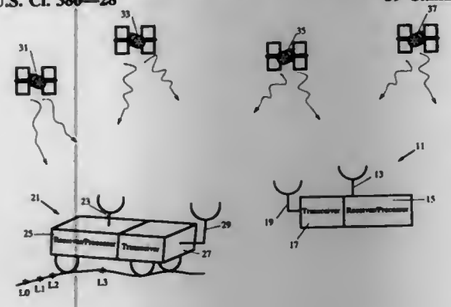
(p) comparing, by the IC card, the generated password with a derived password stored in the memory of the IC card and verifying (1) the validity of the security module and the terminal and (2) the establishment of a secure session between the IC card, the security module, and the terminal, if the generated password and the retrieved derived password are identical.

5,577,122

SECURE COMMUNICATION OF INFORMATION

John F. Schipper, Palo Alto, and Walter C. Melton, Los Gatos, both of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Dec. 29, 1994, Ser. No. 367,440
Int. Cl.[6] H04K *1/00*; H09B *7/185*; G01C *21/00*
U.S. Cl. 380—28 **39 Claims**



1. A method for secure electromagnetic communication of location correction information between two Location Determination System stations, or "LDS stations", the method comprising the steps of:

providing an LDS reference station, having location coordinates that are known with high accuracy, the reference station having an LDS signal antenna and associated LDS signal receiver/processor for receiving and processing location determination signals, or "LD signals", from a plurality of LD signal sources to determine spatial location and clock coordinates for that station;

providing an LDS mobile station, having an LDS signal antenna and associated LDS signal receiver/processor for receiving and processing LD signals from a plurality of LD signal sources to determine spatial location and clock coordinates for that station;

causing each of the reference station and the mobile station to receive LD signals from a plurality of LD signal sources, numbered j=1, 2, . . . M[(M≧2)], with M≧2, in common view with each other, and to determine the LD signal values LD(t;i;j) as a function of time t for that station, numbered i=reference and i=mobile, from the signals received from the M common view LD signal sources;

causing the reference station to determine location determination adjustment signal values, or "LDA signal values", LDA(t;ref;j) at one or more times t that, when added to the LD signal values LD(t;ref;j) available at the reference station for the time t, produce spatial location coordinates that approximately agree with the known spatial location coordinates for the reference station for the time t; and

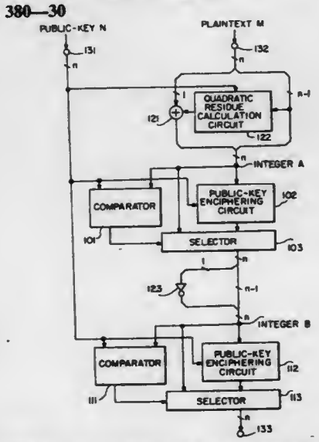
providing the LDA signal values LDA(t;ref;j) in an encrypted form for the mobile station for a sequence of at least two consecutive times $t=t_1, t_2, \ldots, t_n, t_{n+1}, \ldots$ so that the mobile station can correct its mobile station measured LD signal values, LD(t;mob;j), where this encrypted form of an LDA signal $LDA(t_n;ref;j)$ for at least one of this sequence of times t_n ($n \geq 1$) uses an encryption key K_n that has at least one parameter that depends non-trivially upon at least one of the preceding LDA signal values, $LDA(t_1;ref;j) \ldots$, and $LDA(t_{n-1};ref;j)$, provided by the reference station, and where at least two encryption keys, K_{n1} and K_{n2}, for different times $t_n=t_{n1}$ and $t_n=t_{n2}$ differ from each other.

5,577,123

PUBLIC-KEY CRYPTOGRAPHIC APPARATUS HANDLING CIPHERTEXT BY PUBLIC-KEY

Michio Shimada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 14, 1995, Ser. No. 388,484
Claims priority, application Japan, Feb. 14, 1994, 6-039122
Int. Cl.[6] H04L *9/30*
U.S. Cl. 380—30 **5 Claims**



1. A public-key cryptographic apparatus which includes a first comparator for comparing in magnitude a public-key of n bits inputted thereto with a given first integer, a first public-key enciphering circuit for enciphering the first integer using the public-key to output a first ciphertext, a first selector for selectively outputting the first ciphertext or the first integer in accordance with a result of the comparison by said first comparator, a NOT circuit for inverting the logic level of the most significant bit of the output of said first selector, second integer transmission means for transmitting a second integer whose most significant bit is the output of said NOT circuit and whose lower bits following the most significant bit are the lower bits following the most significant bit of the output of said first selector, a second comparator for comparing in magnitude the public-key with the second integer, a second public-key enciphering circuit for enciphering the second integer using the public-key to output a second ciphertext, and a second selector for selectively outputting the second ciphertext or the second integer in accordance with a result of the comparison by said second comparator, said public-key cryptographic apparatus comprising:

a quadratic residue calculation circuit for calculating a residue when the square of the lower n-1 bits of the inputted plaintext of n bits is divided by the public-key;

an exclusive OR circuit for calculating an exclusive OR of the most significant bit of the plaintext and the least significant bit of the residue; and

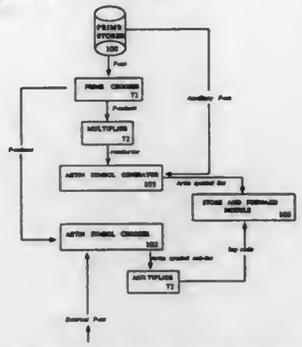
first integer transmission means for transmitting the first integer whose most significant bit is the output of said exclusive OR circuit and whose lower bits following the most significant bit are the lower n-1 bits of the plaintext to said first comparator, said first public-key enciphering apparatus and said first selector.

5,577,124

MULTI-PURPOSE HIGH SPEED CRYPTOGRAPHICALLY SECURE SEQUENCE GENERATOR BASED ON ZETA-ONE-WAY FUNCTIONS

Michael M. Anshel, New York, N.Y., and Dorian Goldfeld, Tenafly, N.J., assignors to Arithmetica, Inc., Wilmington, Del.

Filed Mar. 9, 1995, Ser. No. 400,928
Int. Cl.[6] H04L 9/00
U.S. Cl. 380—46 55 Claims



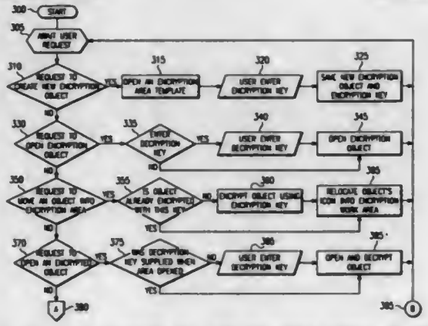
1. A zeta one-way pseudorandom number generator comprising:
an abelian variety classifier responsive to a modular encoder indicator and a probability distribution factor;
a fast abelian variety generator responsive to an input key and said abelian variety classifier;
a zeta function coefficient generator responsive to a prime sequence input and said fast abelian variety generator;
a modular encoder acting under the influence of said modular encoder indicator responsive to said zeta function coefficient generator.

5,577,125

GRAPHICAL MANIPULATION OF ENCRYPTION

Abdolreza Salahshour, Keller, and Marvin L. Williams, Lewisville, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1993, Ser. No. 77,172
Int. Cl.[6] H04L 9/00
U.S. Cl. 380—54 12 Claims



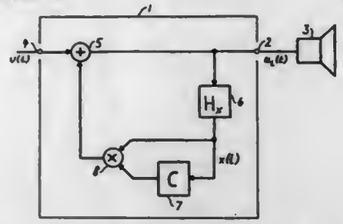
1. A method, performed in a data processing system, said data processing system including an encryption work area, said encryption work area having an encryption key and a decryption key associated therewith, the method comprising the computer implemented steps of:
encrypting an unencrypted object with the encryption key, said unencrypted object being associated with an icon located outside the encryption work area, and displaying the icon in the encryption work area, whenever the icon associated with the unencrypted object is dragged from outside the encryption work area and dropped on the encryption work area;
decrypting an encrypted object with the decryption key, said encrypted object being associated with an icon located within the encryption work area, whenever the encrypted object is opened;
encrypting, with the encryption key, an open unencrypted object associated with the encryption work area whenever the open unencrypted object is closed;
decrypting an encrypted object with the decryption key, said encrypted object being associated with an icon located within the encryption work area, and displaying the icon associated with the encrypted object outside the encryption work area, whenever the icon associated with the encrypted object is dragged from the encryption work area and dropped outside the encryption work area and decryption is selected and the decryption key is provided;
maintaining the encryption of an encrypted object, said encrypted object being associated with an icon located within the encryption work area, and displaying the icon associated with the encrypted object outside the encryption work area, whenever the icon associated with the encrypted object is dragged from the encryption work area and dropped outside the encryption work area and maintaining encryption is selected; and
decrypting an encrypted object with the decryption key, said encrypted object being associated with an icon located outside the encryption work area, whenever the encrypted object is opened and the decryption key is provided.

5,577,126

OVERLOAD PROTECTION CIRCUIT FOR TRANSDUCERS

Wolfgang Klippel, Altenberger Str. 11, 01277 Dresden, Germany

Filed Sep. 26, 1994, Ser. No. 311,196
Claims priority, application Germany, Oct. 27, 1993, 43 36 608.2
Int. Cl.[6] H04R 29/00
U.S. Cl. 381—59 6 Claims



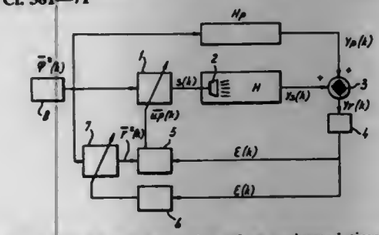
1. A protection arrangement coupled to the electric terminals of a transducer, which converts an electric signal into an acoustic or a mechanic signal, for protecting said transducer against destruction at high signal amplitude while producing a minimum of signal distortions, comprising
a reference filter having a filter input connected to the electric input of said transducer, a filter output for providing a monitored signal indicating the load of said transducer;
a controller having a controller input and a controller output for providing a control signal if the amplitude of said monitored signal exceeds a prescribed threshold value;
a multiplier having a first input, a second input provided with said controller output and a multiplier output for controlling said monitored signal, said filter output being connected directly or via a correction filter with said first input of said multiplier;
a summer having a first input provided with the signal input of said arrangement, a second input provided with said multiplier output and a output connected to the electric input of said transducer for realizing a controlled feed-back system having the inverse transfer response of the reference filter approximately.

5,577,127

SYSTEM FOR RAPID CONVERGENCE OF AN ADAPTIVE FILTER IN THE GENERATION OF A TIME VARIANT SIGNAL FOR CANCELLATION OF A PRIMARY SIGNAL

Michiel W. R. M. Van Overbeek, Dordrecht, Netherlands, assignor to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Tno, Delft, Netherlands

Filed Nov. 18, 1994, Ser. No. 344,588
Claims priority, application Netherlands, Nov. 19, 1993, 9302013
Int. Cl.[6] H03B 29/00; A61F 11/06; H04B 15/00
U.S. Cl. 381—71 11 Claims



1. A system for the generation of an estimated time variant signal for suppression of a primary signal, comprising:
means for generating at least one reference signal;
a control unit at least provided with a digital filter, a first input for receiving the reference signal, a second input for receiving an update signal for updating coefficients of the digital filter and an output for providing a cancellation control signal;
cancellation-generating means which are connected to the output of the control unit for the generation of a cancellation signal, which is intended, after propagation along a secondary transfer path having a secondary path transfer function, to be added as the estimated time variant signal at an addition point to the primary signal in order to provide a residual signal,
sensor means for measuring the residual signal at the addition point and for providing an error signal;
update means provided with an input which is connected to the sensor means and an output for providing the update signal,
wherein
the system also comprises an adaptation unit which has an input for receiving the at least one reference signal and an output for providing a filtered-x signal, which output is connected to a further input of the update means;
the adaptation unit has a transfer function which is the same as the transfer function of the secondary path;
means are provided for updating the filter coefficients with the aid of the so-called "projection algorithm" and
the means for generating the reference signal generate the reference signal in such way that an input correlation matrix defined as follows

$$\sum_{k=1}^{n} \frac{\bar{r}(k)\bar{r}^H(k)}{\bar{r}^H(k)\bar{r}(k)}$$

has an eigenvalue distribution which has a value which is substantially equal to 1 after as few steps as possible, where k=1, 2, . . . , n, n having a predetermined value;
$\bar{r}(k)$ is a vector either having components $r_i(k)$ (i=1, 2, . . . , I) defined as

$$r_i(k) = \sum_{j=0}^{J-1} h_j^* \phi_i(k-j-i)$$

when said control unit is a time delay control unit or components $r_v(k)$(v=1, 2, . . . , I) defined as

$$r_v(k) = \sum_{j=0}^{J-1} h_j^* \phi_v(k-j)$$

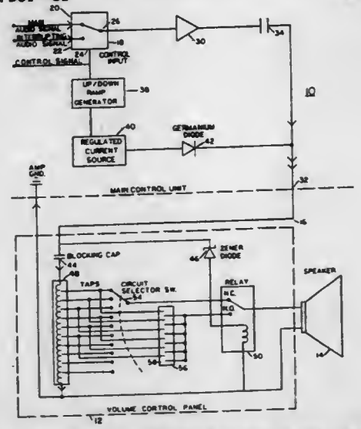
when said control unit is a fourier control unit;
$\bar{r}^H(k)$ is the transposition of the conjugate of $\bar{r}(k)$;
$h_j(k)$ is complex conjugate of h_n(j=1, 2, . . .) being the FIR coefficients of said secondary path transfer function;
$\phi(k-j-i)$ is series of input reference vectors in time domain forming said reference signal; and
$\phi_v(k-j)$ is series of input reference vectors in frequency domain forming said reference signal.

5,577,128

AUDIO DISTRIBUTION SYSTEM WITH CONTROLLABLE VOLUME OVERRIDE

Robert P. Farinelli, Jr., Lexington, Ky., assignor to Elan Home Systems, L.L.C., Lexington, Ky.

Filed Oct. 8, 1993, Ser. No. 134,139
Int. Cl.[6] H04B 3/00
U.S. Cl. 381—81 6 Claims

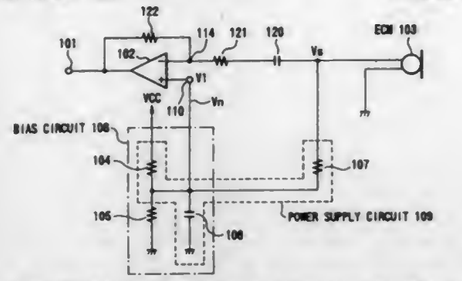


5. For use in an audio distribution system, a main control unit for providing sending audio signals to a volume control panel for play through a speaker, the main control unit comprising:
a selection circuit having an output responsive to a control signal for selecting a substantially continuous audio signal or an interrupting audio signal to provide a selected audio signal at the output; and
an information-signal generation circuit, also responsive to the control signal, for generating an information signal, wherein the selected audio signal and the information signal are combined into a sending audio signal having an audio component and an information component designating one of a plurality of different broadcast levels;
the main control unit providing the information component as part of the sending audio signal to enable the volume control panel to respond remotely to provide one of a first and second audio signals to the speaker at a designated one of the plurality of different broadcast levels.

5,577,129
AMPLIFIER CIRCUIT FOR ELECTRET CONDENSER MICROPHONE

Tatsuji Ehara, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Continuation of Ser. No. 989,824, Dec. 14, 1992. This application Jan. 13, 1995, Ser. No. 372,884
Claims priority, application Japan, Dec. 12, 1991, 3-350656
Int. Cl.[6] H04R *3/00*
U.S. Cl. 381—113 **5 Claims**



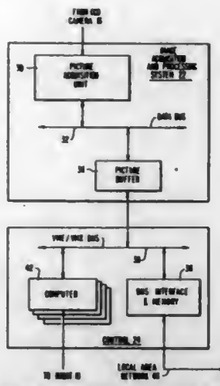
1. An amplifier circuit for an electret condenser microphone, comprising:
- an operational amplifier having an inverting input terminal for receiving an output of a two-wire lead electret condenser microphone and a noninverting input terminal for receiving a bias voltage;
- a bias circuit for dividing a power supply voltage from a power supply to generate the bias voltage; and
- a power supply circuit for applying the power supply voltage to said electret condenser microphone through said bias circuit and a first resistor, wherein
- said bias circuit comprises voltage dividing second and third resistors connected in series between said power supply and ground, and a capacitor connected between ground and a connection point between said second and third resistors;
- said power supply circuit comprises said second resistor connected to said power supply, said capacitor, and said first resistor connected between said electret condenser microphone and said connection point between said second and third resistors; and
- the amplifier circuit has the following characteristics:
  - the first resistor has a value of 2.2 kΩ
  - the second resistor has a value of 4.7 kΩ,
  - the third resistor has a value of 6.8 kΩ, and
  - the capacitor has a value of 2.2 μF.

5,577,130
METHOD AND APPARATUS FOR DETERMINING THE DISTANCE BETWEEN AN IMAGE AND AN OBJECT

Hsiang-Lung Wu, Yorktown Heights, N.Y., assignor to Philips Electronics North America, New York, N.Y.

Filed Aug. 5, 1991, Ser. No. 740,279
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—106 **17 Claims**

1. An apparatus for estimating the distance of an object from a video image comprising an array of pixels, said apparatus comprising:
- imaging means having an image plane for acquiring in said image plane at a plurality of successive imaging positions, greater than two, a respective plurality of video images of a region of the object having a distance component in a given direction from said image plane, which distance component is to be determined, each image of said plurality of images having at least one pixel corresponding to a point on said object within said region;
- means for automatically, without any action by an operator, predicting the location of a pixel window of a predetermined

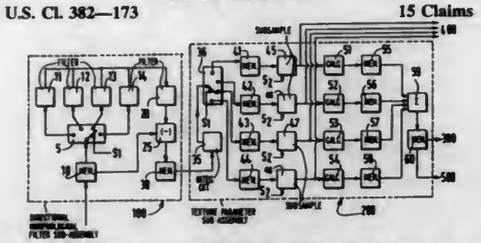


size in which said at least one pixel will be located in a next succeeding one of said plurality of video images;
- means for estimating the value of the disparity of said at least one pixel in each pixel window, said disparity corresponding to the difference in position of said at least one pixel in a current image as compared to the position of said at least one pixel in an immediately preceding one of said plurality of images; and
- means for determining the value of said distance component from the value of a last estimated disparity.

5,577,131
DEVICE FOR SEGMENTING TEXTURED IMAGES AND IMAGE SEGMENTATION SYSTEM COMPRISING SUCH A DEVICE

Christophe Oddou, Ablon-Sur-Seine, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 3, 1994, Ser. No. 237,489
Claims priority, application France, May 5, 1993, 93 05365; Sep. 15, 1993, 93 10998
Int. Cl.[6] G06K *9/34*
U.S. Cl. 382—173 **15 Claims**

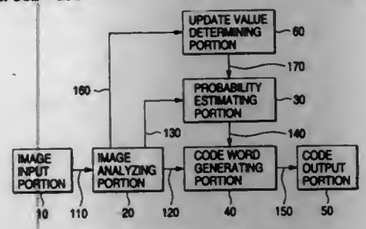


1. A device for segmenting, under the control of a sequencing stage for furnishing corresponding control signals, a received textured image on the basis of digital signals which are representative thereof, the segmenting including characterizing each texture by representative parameters and image decomposition into regions having different textures; said device comprising:
- for characterization of texture, a first sub-assembly following by a second sub-assembly; the first sub-assembly including means for generating a directionally morphologically filtered signal and a difference between said received image and said directionally morphologically filtered signal; the second sub-assembly including means for determining texture parameters of said filtered image by computing a morphological gradient from said difference; and
- for regional decomposition of the filtered image, a third sub-assembly at the output of said second sub-assembly; said third sub-assembly including means for image segmentation of the morphological gradient by the technique of extracting watershed lines.

5,577,132
IMAGE CODING/DECODING DEVICE

Taro Yokose; Kazuhiro Suzuki; Yutaka Koshi, and Koh Kamizawa, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1994, Ser. No. 363,324
Claims priority, application Japan, Dec. 27, 1993, 5-331119
Int. Cl.[6] H03M *7/00*
U.S. Cl. 382—238 **24 Claims**



1. An image coding device comprising:
- image analyzing means for analyzing an input multi-level image;
- update value generating means for generating update information to be used when a probability estimation value is generated on the basis of adjoining pixel information as a result of the analysis by said image analyzing means;
- probability estimating means for generating a probability estimation value on the basis of the update information generated by said update value generating means and the result of the analysis by said image analyzing means; and
- code word generating means for arithmetically coding the input multi-level image on the basis of the probability estimation value generated by said probability estimating means.

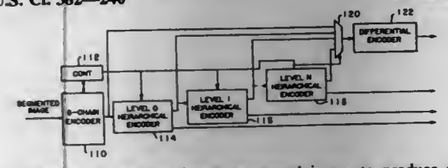
5,577,133

Patent Not Issued For This Number

5,577,134
METHOD AND APPARATUS FOR ENCODING A SEGMENTED IMAGE WITHOUT LOSS OF INFORMATION

Peter Westerink, Mount Laurel, N.J., assignor to Panasonic Technologies, Inc., Secaucus, N.J.

Continuation-in-part of Ser. No. 178,948, Jan. 7, 1994. This application Mar. 22, 1994, Ser. No. 215,684
Int. Cl.[6] G06K *9/36*
U.S. Cl. 382—240 **9 Claims**

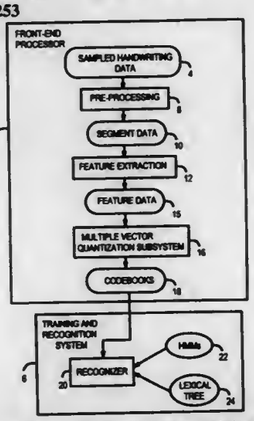


1. Apparatus for encoding a segmented image to produce an output encoded image which may be decoded to reproduce an image which substantially matches the segmented image, said apparatus comprising:
- means for processing the segmented image data to produce processed segmented image data which represents the image as a sequence of encoded segment borders, each border being represented by a sequence of displacements between respective border pixels that define a path around the border;
- means for encoding the processed segmented image data to produce encoded segmented image data, in which each group of N values, where N is an integer, in each sequence of the processed segmented image is encoded into a single sequence value of the encoded segmented image data and a code value complementary to the encoded sequence value; and
- variable length encoding means for processing encoded segmented image data using a predetermined set of variable length codes to produce variable-length encoded data representing the segmented image, as the output encoded image.

5,577,135
HANDWRITING SIGNAL PROCESSING FRONT-END FOR HANDWRITING RECOGNIZERS

Kamil A. Grajski, San Jose; Yen-Lu Chow, and Kai-Fu Lee, both of Saratoga, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Mar. 1, 1994, Ser. No. 204,031
Int. Cl.[6] G06K *9/36;9/00*
U.S. Cl. 382—253 **14 Claims**



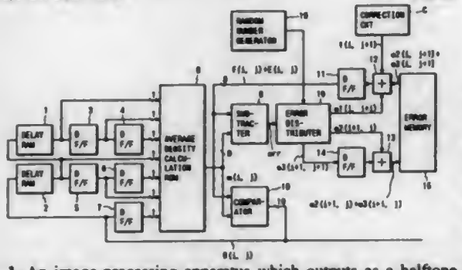
10. A front-end processing method for training a handwriting recognizer from a training set of sampled handwriting data comprising a time series of sample points in the form of (x,y) coordinates, said method including the steps of:
- performing non-uniform segmentation on said series of sample points to partition said sample points into a first segment;
- extracting a first feature value and a second feature value from said first segment;
- creating a first word-independent vector from said first and second feature values;
- creating a first feature-specific vector from said first feature value in said first word-independent vector;
- creating a second feature-specific vector from said second feature value in said first word-independent vector;
- performing multiple vector quantization on said first word-independent vector by vector quantizing said first feature-specific vector to form a first cluster, and by vector quantizing said second feature-specific vector to form a second cluster, wherein each of said first and second clusters include a respective mean value and a distribution about said mean value; and
- storing said first cluster in a first codebook and storing said second cluster in a second codebook.

5,577,136

IMAGE PROCESSING APPARATUS

Hiroshi Tanioka, and Yasuhiro Yamada, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 7,815, Jan. 22, 1993, abandoned, which is a continuation of Ser. No. 587,217, Sep. 24, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 460,821
Claims priority, application Japan, Sep. 27, 1989, 1-249201; Oct. 23, 1989, 1-273840; Oct. 26, 1989, 1-277256
Int. Cl.[6] G06K *9/38*
U.S. Cl. 382—270 17 Claims



1. An image processing apparatus which outputs as a halftone image an image obtained by converting input multi-level image data into data having a gradation level which is less than that of the input multi-level image data, said apparatus comprising:

input means for entering image data of a contemplated pixel within an input image;

memory means for storing already-binarized data generated from the input image;

calculation means for determining average density of a predetermined area with the already-binarized data by using the already-binarized data without using a binarization prediction value of the contemplated pixel;

binarizing means for binarizing the image data of the contemplated pixel, based on the average density obtained by said calculation means, and feeding back the binarized data to said calculation means;

correction means for distributing a difference between the entered image data and the average density, to the input image data of plural other pixels within the input image with distribution factors based on a predetermined signal, thereby compensating for the difference between the entered image data and the average density; and

output means for outputting a reproduction image on the basis of the binarization data from said binarizing means.

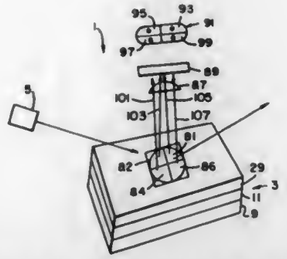
5,577,137

OPTICAL CHEMICAL SENSOR AND METHOD USING SAME EMPLOYING A MULTIPLICITY OF FLUOROPHORES CONTAINED IN THE FREE VOLUME OF A POLYMERIC OPTICAL WAVEGUIDE OR IN PORES OF A CERAMIC WAVEGUIDE

Howard P. Groger, Gainesville, Fla.; Peter Lo, Blacksburg, Va.; Russell J. Churchill, Radford, Va.; Martin Weiss, New Port Richey, Fla., and Shufang Luo, Blacksburg, Va., assignors to American Research Corporation of Virginia, Radford, Va.

Filed Feb. 22, 1995, Ser. No. 392,152
Int. Cl.[6] G02B *6/00;* G01N *15/06*
U.S. Cl. 385—12 30 Claims

1. A chemical sensor apparatus comprising an optical waveguide, fluorophores positioned in the waveguide, a light source for exciting the fluorophores and generating fluorescence signals, and a detector positioned near the waveguide for sensing the fluorescence signals, wherein the optical waveguide further comprises a substrate layer and a porous overlying layer, the porous overlying layer containing the fluorophores, and wherein the substrate layer has a lower refractive index than the overlying layer.



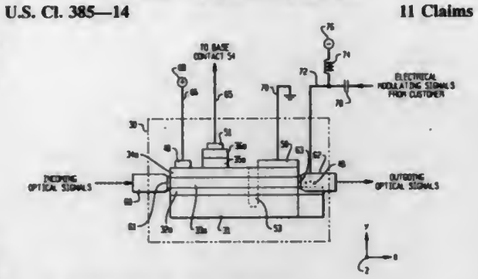
30. A method for identifying and measuring concentration of a chemical analyte in either gaseous or liquid phase comprising exciting fluorophores associated with an optical waveguide by using a modulated light source and creating fluorescence signals; trapping the fluorescence signals in the waveguide; transmitting the fluorescence signals from the optical waveguide; detecting the fluorescence signals; collecting the fluorescence signals; determining lifetime of the fluorescence signals; and converting the fluorescence signals to electronic signals, further comprising propagating the fluorescence signals from the waveguide through an internal grating structure, further comprising propagating a collimated beam from the light source, converting the beam to multiple beams, and directing the multiple beams on multiple fluorophore/host regions in the optical waveguide.

5,577,138

INTEGRATED-CIRCUIT OPTICAL NETWORK UNIT

S. Chandrasekhar, Matawan, and Andrew G. Dentai, Atlantic Highlands, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 17, 1995, Ser. No. 516,472
Int. Cl.[6] G02B *6/12;* H04B *10/00*
U.S. Cl. 385—14 11 Claims



1. An optical network unit comprising

a multi-layered integrated-circuit structure including a portion having a longitudinally extending thin-film waveguiding layer having input and output faces,

photodetecting and optical-signal-splitting means including a first set of layers of said structure disposed adjacent to an input section of said waveguiding layer for absorbing a portion of any optical signal propagating in said waveguiding layer and generating an electrical signal in response thereto while allowing the remaining portion of any optical signal to continue to propagate in said waveguiding layer,

modulator means including a second set of layers of said structure disposed adjacent to an output section of said waveguiding layer for applying a transverse electric field to said waveguiding layer,

means extending transversely through the layers of said structure for providing electrical isolation between said photodetecting and optical-signal-splitting means and said modulator means,

input means for applying an input optical signal to the input face of said waveguiding layer,

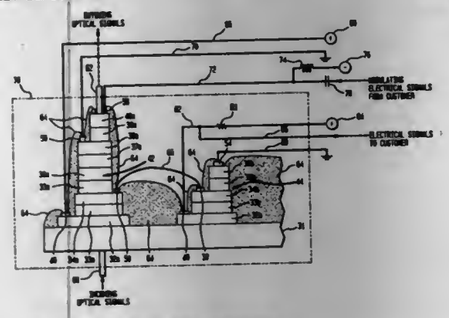
and output means for abstracting output optical signals from the output face of said waveguiding layer.

5,577,139

INTEGRATED-CIRCUIT OPTICAL NETWORK UNIT

S. Chandrasekhar, Matawan, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 17, 1995, Ser. No. 516,418
Int. Cl.[6] G02B *6/12;* H04B *10/00*
U.S. Cl. 385—14 12 Claims



1. An optical network unit comprising

an optically transparent substrate having planar top and bottom surfaces,

a first multi-layered integrated-circuit structure on one portion of the top surface of said substrate, said multi-layered structure including, from bottom to top, first and second sets of layers,

a second multi-layered integrated-circuit structure on another portion of the top surface of said substrate, said second multi-layered structure constituting an amplifier and comprising a set of layers that correspond to the layers in said first set of layers,

said first multi-layered structure comprising a first photodetecting and optical-signal-splitting section responsive to any incoming optical signal directed into said first structure via a portion of the bottom planar surface of said substrate underlying said first structure for absorbing a portion of the directed signal and generating an electrical signal in response thereto while allowing the remaining unabsorbed portion of any directed signal to propagate through said first structure,

said first multi-layered structure also comprising a second modulating section responsive to applied electrical signals for modulating said remaining unabsorbed portion of any optical signal propagated through said first structure, any optical signal that propagates through the entirety of said first multi-layered structure being designed to be emitted from the top surface of the top-most layer of said first multi-layered structure,

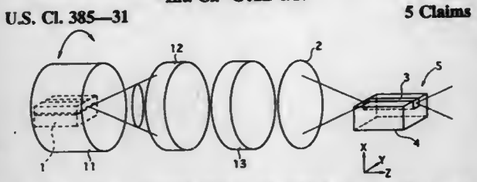
means electrically connecting said first section to said amplifier, and means for applying electrical signals to said second section.

5,577,140

OPTICAL COUPLING WITH ELECTRIC FIELD ROTATION

Tetsuro Endo, and Kiichiro Shinokura, both of Tendo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, and Tohoku Pioneer Electronic Corporation, Yamagata-ken, both of Japan

Filed Feb. 16, 1995, Ser. No. 391,411
Claims priority, application Japan, Feb. 22, 1994, 6-023891
Int. Cl.[6] G02B *6/27*
U.S. Cl. 385—31 5 Claims



3. An optical coupling device for optically coupling a light source to a rectangular receiving aperture, the light source emitting a polarized light beam which diverges in different angles from one another in magnetic and electric field directions, said coupling device comprising:

rotating means for rotating said light source in a first direction by a predetermined angle about an optical axis of the light source;

a collimator disposed on said optical axis for converting the diverging light beam to a parallel beam along said optical axis; and

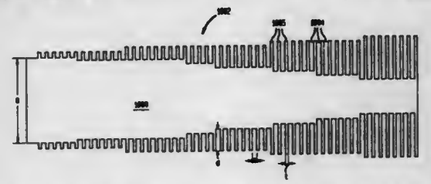
polarization rotating means for rotating a plane of the electric field vibration of said parallel beam in a second direction opposite said first direction by said predetermined angle about said optical axis, wherein the rotating of the light source is operative to rotationally offset an elliptic cross section of the parallel beam relative to said rectangular receiving aperture while said rotating of said electric field vibration retains an original orientation of the electric field polarization.

5,577,141

TWO-DIMENSIONAL SEGMENTATION MODE TAPERING FOR INTEGRATED OPTIC WAVEGUIDES

Renen Adar, Haifa, Israel; Edward J. Laskowski, Scotch Plains, and Weyl-kuo Wang, Westfield, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 10, 1995, Ser. No. 402,266
Int. Cl.[6] G02B *6/00;6/36*
U.S. Cl. 385—43 11 Claims



1. A segmented waveguide taper, having a first end and a second end suitable for coupling to an optical fiber, the taper comprising a plurality of successive segments extending from the first end to the second end, each segment comprising:

a core portion; and

a gap portion coupled to said core portion and comprising material having a refractive index less than that of said core portion,

wherein the length of said gap portion is substantially the same for each successive segment and the length of the core portion of one or more of each successive segments is less than the length of the core portion of a previous segment from the first end to the second end of the taper.

5,577,142

OPTICAL FIBER TRANSMITTING AND RECEIVING COMMUNICATIONS DEVICE

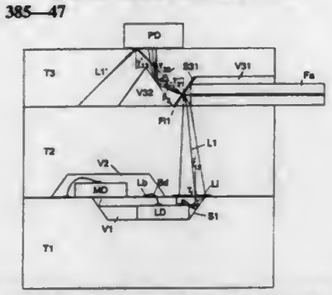
Roland Mueller-Fiedler, Leonberg; Klaus-Michael Mayer, Gerlingen; Wolf-Henning Rech, Griesheim; Heiner Hauer, Fellbach; Albrecht Kuke, Auenwald; Thomas Schwander, Backnang, and Bernhard Schwaderer, Weissach im Tal, all of Germany, assignors to ANT Nachrichtentechnik G.m.b.H., Backnang, Germany

Filed Nov. 16, 1995, Ser. No. 559,373

Claims priority, application Germany, Nov. 17, 1994, 44 40 935.4

Int. Cl.[6] G02B *6/26*; H04B *10/00*

U.S. Cl. 385—47 **7 Claims**



1. An optical transmitting and receiving device comprising a first carrier (T1), a third carrier (T3), a second carrier (T2) located between the first carrier (T1) and the third carrier (T3), said first carrier (T1) and said third carrier (T3) being provided with anisotropically etched depressions (V1, V31, V32); a transmitting element (LD) fixed on the first carrier (T1) and including means for emitting light of a wavelength such that said third carrier (T3) is transparent to said light; at least one mirror surface element (S1,S31) provided on each of the first carrier (T1) and the third carrier (T3); a transmission fiber (Fa) arranged on the third carrier (Fa); a monitor diode (MD) mounted on a top surface of the first carrier (T1) in a recess of the second carrier (T2) and a receiving element (PD) fixed to the third carrier (T3).

5,577,143

MULTI CHANNEL CONNECTOR

Ingvar Nodfelt, Målaregården 8, S-240 21 Löddeköpinge, Sweden, and Bernd Stanitz, Rosenstrasse 2, D-6622 Wadgassen, Germany

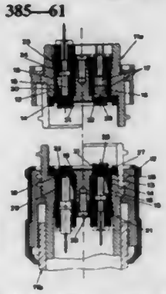
PCT No. PCT/SE92/00054, § 371 Date Nov. 22, 1993, § 102(e) Date Nov. 22, 1993, PCT Pub. No. WO92/14178, PCT Pub. Date Aug. 20, 1992

PCT Filed Jan. 29, 1992, Ser. No. 90,094

Claims priority, application Sweden, Jan. 30, 1991, 9100281

Int. Cl.[6] G02B *6/38*

U.S. Cl. 385—61 **4 Claims**



4. A multi-channel connector for coupling first and second transmission means comprising:

a pair of mating connecting parts, each including a body;

each body having a front and a back end defining a longitudinal axis therebetween and having a channel extending longitudinally therethrough parallel to said axis, each body further including:

a tubular holder mounted within said channel having a lens seat adjacent said front end of said body, the holder having an inner conical surface tapering towards said front end of said body;

a first and a second spring, said second spring being operatively arranged between said body and said holder to urge said holder towards said front end of said body;

a lens positioned within said lens seat;

a transmission means, having a front end, mounted within said holder with said front end thereof adjacent said lens, said first spring being operatively arranged within said holder to urge said front end of said transmission means towards said lens;

a centering cone substantially complementary with said tapered surface of said holder positioned within said holder, said transmission means being positioned within said centering cone in axial alignment with said holder;

and a guide sleeve on one of said connecting parts and a guide on the other of said connecting parts adapted to engage and to maintain said front ends of said connecting parts in close proximity with the respective channels thereof in axial alignment and thereby said transmission means in axial alignment.

5,577,144

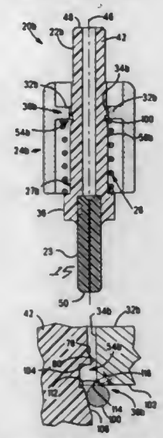
FIBER OPTIC CONNECTOR

Michael D. Rossana, Harrisburg, and David D. Erdman, Hummelstown, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed May 30, 1995, Ser. No. 453,432

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—78 **19 Claims**



1. An optical fiber connector comprising:

an axially elongated ferrule connected to and communicating with a tubular body, said tubular body defining a central elongated lumen and a central axis extending therethrough, said tubular body having an optical fiber entry end and said ferrule having an optical fiber connecting end;

a coupling nut operatively associated with said tubular body, said coupling nut having an aperture formed therein for receiving said tubular body extending therethrough, said coupling nut being moveable along said central axis relative to said tubular body;

biasing means positioned between said tubular body and said coupling nut;

a retainer attached to said tubular body and abutting said coupling nut for retaining said biasing means between said coupling nut and said tubular body; and

a retainer attachment zone located on an outside surface of said tubular body between said optical fiber entry end and said optical fiber connecting end said retainer attachment zone further including a first and second wall formed in said outside surface of tubular body defining an annular groove, said first wall being spaced from said optical fiber entry end and said second wall being positioned between said first wall and said optical fiber connecting end and spaced in close proximity to and generally facing said first wall, said second wall being sloped relative to said central axis.

5,577,145

OPTICAL CONNECTOR INCLUDING SPLIT SLEEVE SECURED IN EXPANDED STATE

Robert Musk, Suffolk, United Kingdom, assignor to Hewlett-Packard Company, Palo Alto, Calif.

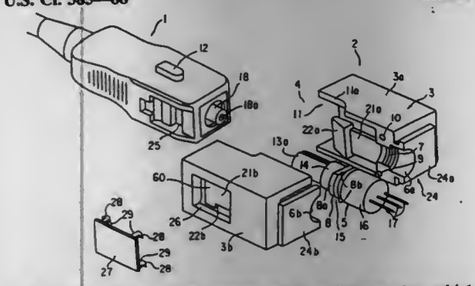
PCT No. PCT/GB93/02455, § 371 Date May 1, 1995, § 102(e) Date May 1, 1995, PCT Pub. No. WO94/12901, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 30, 1993, Ser. No. 428,230

Claims priority, application Japan, Nov. 30, 1992, 4-320772

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—88 **12 Claims**



1. An optical connector comprising a socket member which includes a split sleeve having an inner surface arranged to grip a plug member associated with an optical medium and an outer surface, characterised in that an end of the split sleeve is secured by its outer surface to the socket member in its expanded state, the other, free end being free to contract to its original size.

5,577,146

OPTICAL CONNECTORS

Robert W. Mush, Ashbocking, United Kingdom, assignor to Hewlett-Packard Company, Palo Alto, Calif.

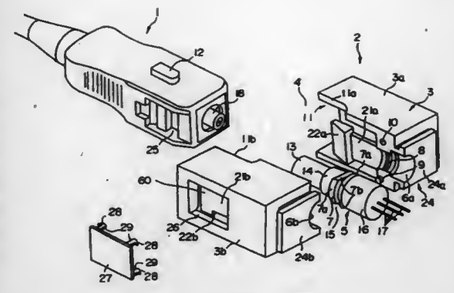
Filed Jan. 13, 1995, Ser. No. 374,511

Claims priority, application Japan, Jul. 14, 1992, 4-186779

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—92 **15 Claims**

1. A receptacle for an optical connector for connecting an active optical element to an optical fiber unit via an alignment sleeve capable of receiving the optical fiber unit, the receptacle including a housing having at least two halves and an optical component in which the active optical element is mounted in alignment with the alignment sleeve, wherein, upon assembling of the housing halves into the housing, the housing holds the optical component between opposing sides of the housing halves.



5,577,147

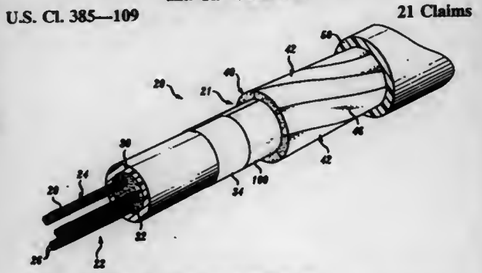
MAGNETICALLY LOCATABLE OPTICAL FIBER CABLES CONTAINING INTEGRATED MAGNETIC MARKER MATERIALS

Candido J. Arroyo, Lithonia, Ga.; Sungho Jin, Millington, and Thomas T. M. Palstra, New Providence, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 31, 1994, Ser. No. 221,130

Int. Cl.[6] G02B *6/44*

U.S. Cl. 385—109 **21 Claims**



1. An optical fiber cable, which includes:

a core comprising at least one optical fiber transmission medium;

a tubular member in which is disposed said core; and

a sheath system which is disposed about said tubular member and comprises non-metallic magnetic material embedded in a cured epoxy matrix and which enables the cable to be magnetically locatable.

5,577,148

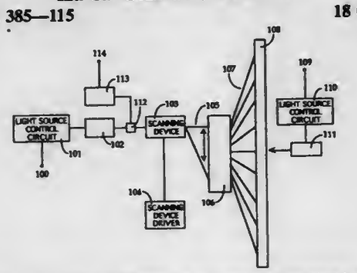
SCANNING APPARATUS WITH INTERACTIVE OPTICAL SIGNAL TRANSMITTING UNIT

Yasuo Kamatani, 2-12-2 Yokoyama, Sagamihara-shi, Kanagawa 229, Japan

Filed Feb. 7, 1995, Ser. No. 384,746

Int. Cl.[6] G02B *6/04*; H04N *7/14*

U.S. Cl. 385—115 **18 Claims**



1. A laser scanning apparatus comprising in combination:

a light source;

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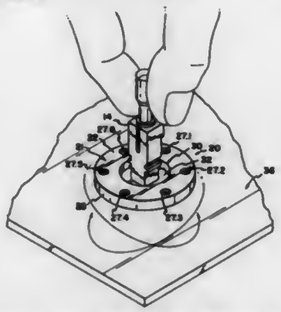
a light source control circuit which modulates the light source according to a digital or analog video signal;
a light scanning means which scans a light emitted from the light source;
a light scanning means driver which controls the light scanning means according to a digital or analog sweep signal;
a waveguide bundle whereof one end of a waveguide is aligned to receive a scanned light and to transmit the scanned light to the other end of the waveguide;
a first infrared light source;
a first photo-detector;
a first interface which modulates the first infrared light source according to an input signal, and converts an output signal from the first photo-detector to a central processing unit;
a second infrared light source which transmits an optical signal to the first photo-detector;
a second photo-detector which receives the light emitted from the first infrared light source, or a reflected infrared light which enters into the other end of the waveguide;
a second interface which modulates the second infrared light source according to an input signal, and converts an output signal from the second photo-detector to a central processing unit; and
an optical coupler which taps the infrared light entering into the other end of the waveguide or the reflected infrared light entering into the other end of the waveguide, and transmits the infrared light emitted from the second infrared light source into said waveguide bundle.

5,577,149

FIBER OPTIC POLISHING FIXTURE

Bruno B. Averbeck, Minneapolis; Robert J. Ziebol, Blaine, and David J. Emmons, Plymouth, all of Minn., assignors to ADC Telecommunications, Inc., Minneapolis, Minn.

Filed Nov. 29, 1994, Ser. No. 346,003
Int. Cl.[6] G02B *6/00*
U.S. Cl. 385—134 **10 Claims**



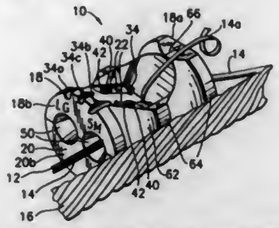
1. A polishing fixture configured and arranged for removeably holding an optical fiber in relative fixed relation wherein an optical fiber end is movable across a medium of sufficient abrasiveness to produce a desired polish on the optical fiber end, said polishing fixture comprising:
a. a body having a lower surface;
b. a plurality of projected members fixed in said body, and each having an exposed area extending outwardly from said lower surface of said body, each exposed area of said plurality of projected members having a lowest point, wherein the lowest points of said plurality of exposed areas define a polishing plane spaced from said lower surface of said planar body;
c. optical fiber holding means for removeably holding the optical fiber wherein the optical fiber end is exposed through said lower surface and axially movable toward said polishing plane;
d. said plurality of exposed areas are made of am abrasion resistant material; and
e. the abrasion resistant material is synthetic ruby.

5,577,150

METHOD AND TOOL FOR ACCESSING OPTICAL FIBERS WITHIN A BUFFER TUBE

James D. Holder, and Jeffrey S. Barker, both of Hickory, N.C., assignors to Alcatel NA Cable Systems, Inc., Claremont, N.C.

Filed Oct. 11, 1995, Ser. No. 540,889
Int. Cl.[6] G02B *6/00;6/36*
U.S. Cl. 385—134 **20 Claims**



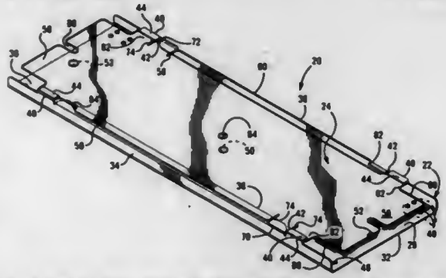
1. A tool for accessing optical fibers within a buffer tube comprising:
a first member having an inlet end, an outlet end and at least one groove extending from said inlet end to said outlet end;
a second member releasably mounted on said first member, said second member having an inlet end, an outlet end and at least one groove extending from said inlet end to said outlet end, said at least one groove of said second member being substantially aligned to cooperate with said at least one groove of said first member to form at least one substantially hourglass shaped through bore for slidably receiving the buffer tube;
at least one cutting blade mounted in said first member and protruding into said at least one groove in said first member for removing a chord of the buffer tube; and
alignment means disposed on said first member and said second member for aligning and joining said first member with said second member.

5,577,151

OPTICAL FIBER SPLICE TRAY AND COVER

John C. Hoffer, Harrisburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 15, 1995, Ser. No. 515,443
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—135 **11 Claims**



1. A splice tray assembly for optical fiber interconnections, comprising:
a tray member having a bottom wall and side walls between opposed tray ends and coextending from said bottom wall to upper edges, and a planar cover member having end portions associated with said tray ends and side edge portions associated with said tray side walls;
said tray member including along each said side wall at least one tray tab proximate a respective said tray end extending from said bottom wall beyond said upper edge of a respective said side wall to an inwardly directed retainer section spaced a selected distance beyond said upper side wall edge; and

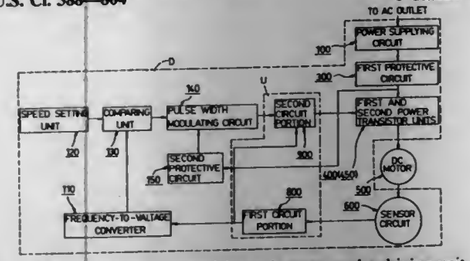
said cover member including cooperating retainer portions proximate respective said cover end portions and associated with respective said retainer sections to be disposed therebeneath for retention of said cover member to said tray member; and
said cover member further including at least one deflectable portion adjacent a said side edge thereof and adjacent said at least one tray tab, protruding at least as far as an outer surface of said tray tab upon assembly to define a stop surface adjacent a tray tab side edge inwardly from a respective said tray end to define cooperating stops at said tray end preventing said cover member to be slid along said tray member toward said tray end, with at least one of said cover member and said tray member adapted to permit manual engagement of said cover side edge adjacent said at least one tray tab to urge a portion of said cover member to an elevation higher than that of said tray tab thus offsetting said cooperating stops,
whereby said deflectable cover portion is manually deflectable upwardly to an elevation higher than a respective said retainer section to pass thereover during cover assembly and removal.

5,577,152

MOTOR ASSEMBLY

Ruey-Zon Chen, No. 261, Jen-Hua Rd., 412 Tai-Li City, Tai-chung Hsien, Taiwan

Filed Apr. 12, 1995, Ser. No. 421,426
Int. Cl.[6] H02P *7/29*
U.S. Cl. 388—804 **6 Claims**



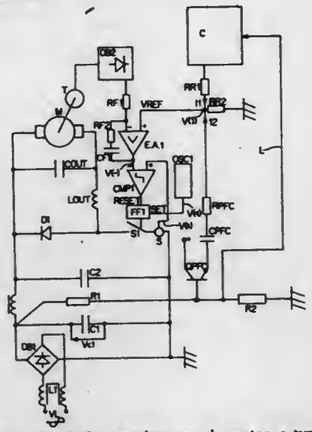
1. A motor assembly comprising a dc motor and a driving unit for driving said dc motor at different speeds, said motor including a stator and a rotor, said stator including a housing and a three-phase coil unit installed in said housing and provided with three windings, said rotor extending through said housing of said stator, wherein said driving unit includes:
a power supplying circuit for generating a dc output;
a first power transistor unit including three first power transistors, each of said first power transistors being activable to connect electrically a respective one of said windings of said coil unit and said power supplying circuit;
a driving circuit connected electrically to said power transistors of said first power transistor unit for activating said first power transistor unit when said power supplying circuit is activated;
a sensor circuit for sensing rotating speed of said rotor and for generating three speed pulses which represent said rotating speed of said rotor and which are out of phase;
a frequency-to-voltage converter connected electrically to said sensor circuit for generating an analog voltage signal corresponding to said rotating speed of said rotor;
a speed setting unit activable to generate a reference voltage signal equal to a desired motor speed;
a comparing unit connected electrically to said speed setting unit and said frequency-to-voltage converter for comparing said reference voltage signal with said analog voltage signal and for generating an analog error voltage signal having a magnitude corresponding to a difference between said analog voltage signal and said reference voltage signal;
a pulse width modulating circuit connected electrically to said comparing unit for generating a variable-width modulated pulse signal with said analog error voltage signal as a modulating signal; and
a second power transistor unit including three second power transistors, each of said second power transistors corresponding to one of said first power transistors and being activable to connect electrically said power supplying circuit and a respective one of said windings of said coil unit;
said driving circuit receiving said three speed pulses from said sensor circuit and processing said speed pulses so as to activate intermittently said first power transistors such that two of said first power transistors are activated and one of said first power transistors is deactivated at any time;
said driving circuit being further connected electrically to said pulse width modulating circuit and said second power transistors for activating one of said second power transistors corresponding to deactivated one of said first power transistors upon receiving said modulated pulse signal from said pulse width modulating circuit.

5,577,153

HIGH FREQUENCY CONTROL CIRCUIT FOR DC MOTORS, PARTICULARLY FOR WASHING MACHINES

Cesare A. Bocchiola, Settimo Milanese, Italy, assignor to Whirlpool Europe B.V., Veldhoven, Netherlands

Filed Jan. 24, 1995, Ser. No. 378,034
Claims priority, application Italy, Jan. 25, 1994, MI94A0115
Int. Cl.[6] H02P *5/17*
U.S. Cl. 388—811 **5 Claims**



1. A control circuit for a series type dc motor, a type of motor used in washing machines to drive a drum via a mechanical transmission, comprising:
a rectifier circuit with an input and an output, said input is connected to a power feed line;
a switching cell for controlling motor speed;
a tachometer generator for measuring said motor speed and producing a speed voltage proportional to said speed;
an error amplifier means with proportional-integral regulator for comparing said speed voltage with a reference signal to produce an error signal;
a second comparator means for comparing said error signal with a current signal to produce an output signal;
a current sensor connected in series with said motor and generating said current signal;
said output signal of said second comparator means drives said switching cell, wherein said switching cell comprises:
a switching means in series with said motor;
an inductance connected between said switching means and said motor;

VOL 1192 ISS 3 NO 19 1996 UMI

and a capacitor connected in parallel with said motor;

said switching cell is controlled by a double-drive bistable circuit;

a first drive of the bistable circuit is controlled by said output signal of said second comparator means for resetting purposes;

an oscillator for controlling a second drive of said bistable circuit for setting purposes;

said second comparator means compares said output signal of said error amplifier with said current signal that is proportional to the current through said switch means;

a capacitive-inductive πfilter is connected at said output of said rectifier in parallel with the motor;

a voltage divider circuit is connected at said output of said rectifier, said voltage divider comprising a first and second resistor connected in series;

an ac coupling means coupling a signal from a common connection of said first and second voltage divider resistors with said reference voltage input of said error amplifier; and

a flywheel diode is included within the switching cell to feed said motor with energy stored in said inductance when said switching means is switched to an open position during operation of said motor.

5,577,154

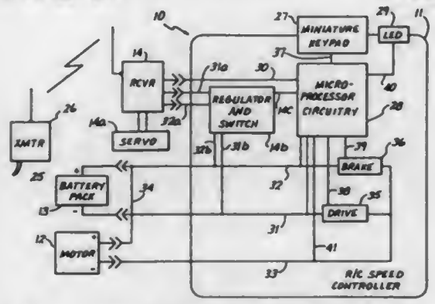
RADIO CONTROLLED MODEL CONTROL SYSTEM WITH NONLINEAR TRIGGER-TO-CONTROLLER-OUTPUT RESPONSE

Kevin R. Orton, 940 Calle Negocio, San Clemente, Calif. 92673

Filed Feb. 17, 1995, Ser. No. 390,494

Int. Cl.[6] H02P *7/00*

U.S. Cl. 388—811 **11 Claims**



1. A control system for a radio controlled model, comprising:

means in the form of a speed controller for changing the speed and braking of a drive motor of the model according to speed and braking information sent to the speed controller, the speed controller having means in the form of a drive circuit operable at a variable drive circuit duty ratio for changing the speed of a drive motor of the model, means in the form of a brake circuit operable at a variable brake circuit duty ratio for changing the braking of the model, and means in the form of a control circuit for changing the drive circuit duty ratio and the brake circuit duty ratio according to the speed and braking information;

means in the form of a receiver unit operationally interconnected with the speed controller for sending the speed and braking information to the speed controller according to speed and braking information received by the receiver; and

means in the form of a transmitter unit for transmitting the speed and braking information to the receiver according to speed and braking setpoint information inputted to the transmitter unit by an operator;

the transmitter unit including means in the form of a moveable member for enabling an operator to input the speed and braking setpoint information to the transmitter unit;

the moveable member being moveable from a neutral position through a range of speed setpoint positions beginning at an INITIAL speed setpoint position near the neutral position, to a SECOND speed setpoint position just beyond the INITIAL speed setpoint position, and continuing to a MAXIMUM speed setpoint position further from the neutral position;

the moveable member being moveable from the neutral position through a range of braking setpoint positions beginning at an INITIAL braking setpoint position near the neutral position, to a SECOND braking setpoint position just beyond the INITIAL braking setpoint position, and continuing to a MAXIMUM braking setpoint position further from the neutral position; and

at least one of the speed controller, the receiver, and the transmitter unit being arranged to provide decreased sensitivity of the control system to changes in speed setpoint position of the moveable member near the neutral position and increased sensitivity of the control system to changes in braking setpoint position near the neutral position in the sense that at least one of the speed controller, the receiver, and the transmitter unit is arranged to produce a nonlinear speed controller response to changes in the position of the moveable member such that (i) the speed controller responds to an incremental increase in speed setpoint position of the moveable member over a lower 10% of the range of speed setpoint positions with a smaller incremental increase in drive circuit duty ratio than when the speed controller responds to such an incremental increase in speed setpoint position over an upper 10% of the range of speed setpoint positions, and (ii) the speed controller responds to an incremental increase in braking setpoint position of the moveable member over a lower 10% portion of the range of braking setpoint positions with a greater incremental increase in brake circuit duty ratio than when the speed controller responds to such an incremental increase in braking setpoint position over an upper 10% portion of the range of braking setpoint positions.

5,577,155

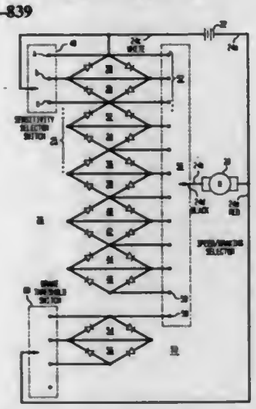
RECTIFIER BASED MOTOR SPEED/BRAKE CONTROL

Carl Buchbinder, 49 Overhill Rd., East Brunswick, N.J. 08816

Filed Dec. 3, 1993, Ser. No. 162,665

Int. Cl.[6] H02P *7/08*

U.S. Cl. 388—839 **10 Claims**



1. A motor speed controller for controllably coupling a source of electrical power to a motor, comprising:

a power input terminal adapted to be coupled to one polarity of a source of electrical power;

a series connection of a plurality of pairs of oppositely-poled semiconductor diodes, one end of said series connection being coupled to said power input terminal; and

a first user controllable switching arrangement for selectively connecting one of a plurality of inputs to a single output; wherein

respective sequential ones of said plurality of inputs are coupled to respective sequential points along said series connection of diode pairs corresponding to said one end and sequential junctions between said diode pairs which follow said one end, and said single output is adapted to be coupled to a speed control input terminal of a motor to be speed controlled.

5,577,156

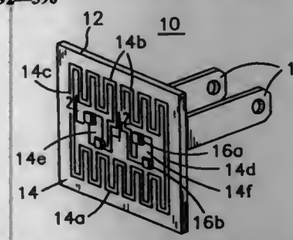
DEVICE FOR HEATING AND VAPORIZING A VAPORIZABLE MODULE

Bernard J. Costello, 68 Lover's La., Princeton, N.J. 08540

Division of Ser. No. 213,958, Mar. 16, 1994. This application Apr. 24, 1995, Ser. No. 427,241

Int. Cl.[6] F24F *3/14;* **H05B** *3/16;* **H01C** *17/28*

U.S. Cl. 392—390 **10 Claims**



1. A method for producing an electrical heater, comprising the steps of:

(a) forming an electrically resistive layer on one major surface of an electrically insulating substrate material, said resistive layer being a material serving as a resistive-type electrical heating element;

(b) forming at least two openings in said substrate adjacent to portions of said resistive layer;

(c) providing at least two electrical terminals for releasable coupling with an electrical outlet, each having an insertion end shaped to be engaged in an associated one of said openings in said substrate and a plug-in end for removable insertion into an electrical outlet;

(d) inserting first and second electrical terminals into said openings such that the insertion ends of said terminals each protrude beyond the surface carrying said resistive layer;

(e) bending or crushing the protruding portions of said terminals such that they come in contact with said resistor material and form an electrically conductive path between said terminals and said resistive layer without the need for soldering;

(f) coating said one major surface and the protrusions of said terminals with a liquid insulation material applied in sufficient quantity to cover the resistive layer and wick into the interstitial spaces between said terminals and said substrate material;

(g) drying or otherwise curing said liquid insulation material to form a solid coating of dielectric insulation over said resistive layer, providing gas-tight sealing for said electrical contact and imparting structural support for said terminals and providing corrosion resistance for the insertion portions of said terminals.

5,577,157

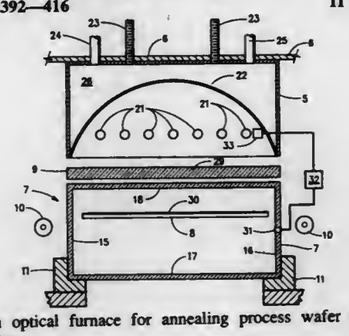
OPTICAL PROCESSING FURNACE WITH QUARTZ MUFFLE AND DIFFUSER PLATE

Bhushan L. Sopori, Denver, Colo., assignor to Midwest Research Institute, Kansas City, Mo.

Continuation of Ser. No. 192,383, Feb. 7, 1994, Pat. No. 5,452,396. This application Jun. 5, 1995, Ser. No. 462,752

Int. Cl.[6] H05B *1/02;* **H01L** *21/205*

U.S. Cl. 392—416 **11 Claims**



1. An optical furnace for annealing process wafer material comprising:

a transmissive muffle comprising a top, bottom, and a plurality of walls defining sides,

a source of optical energy,

said source positioned relative to said muffle to direct light energy through the top of said muffle

a water carrier located in said muffle for supporting the process wafer material to be annealed,

and a diffuser located between said source of optical energy and the top of said muffle to diffuse optical energy from said source of optical energy before said light energy enters the top of said muffle to disperse the optical energy through the walls of the muffle, and

means for sensing optical energy received by the muffle wherein said sensing means is located in one of said walls for sensing optical energy dispensed through said one wall.

5,577,158

CAPACITIVE LEAKAGE CURRENT CANCELLATION FOR HEATING PANEL

Johan Källgren, Columbus; Donald A. Coates, W. Worthington; Sanjay Shukla, Westerville, and Steven M. Dishop, Huntsville, all of Ohio, assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jul. 17, 1995, Ser. No. 503,039

Int. Cl.[6] H05B *3/00*

U.S. Cl. 392—433 **32 Claims**

1. A heating panel comprising:

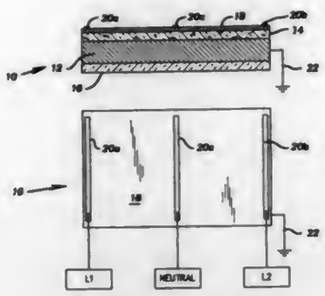
a heating layer of electrically resistive sheet material;

a substrate of electrically conductive sheet material;

an insulating layer disposed between the heating layer and the substrate;

first and second electrodes attached to the heating layer and adapted for being electrically connected to different phases of a multiphase power source; and

a third electrode attached to the heating layer and adapted for being electrically connected to a neutral of the power source.



5,577,159

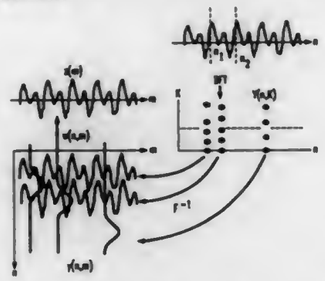
TIME-FREQUENCY INTERPOLATION WITH APPLICATION TO LOW RATE SPEECH CODING

Yair Shoham, Berkeley Heights, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 959,305, Oct. 9, 1992, abandoned. This application May 24, 1995, Ser. No. 449,184

Int. Cl.[6] G10L *3/02;9/00*

U.S. Cl. 395—2.15 **19 Claims**



18. A system for encoding a speech signal comprising:

means for forming a plurality of spectra in a time-frequency domain, wherein each spectrum in said plurality of spectra is associated with a sample in said sequence of samples and wherein each spectrum is generated from a contiguous plurality of samples;

means for decimating said plurality of spectra in said time frequency domain to form a decimated set of spectra.

5,577,160

SPEECH ANALYSIS APPARATUS FOR EXTRACTING GLOTTAL SOURCE PARAMETERS AND FORMANT PARAMETERS

John-Paul Hosom, and Mikio Yamaguchi, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Inc., Osaka, Japan

Filed Jun. 23, 1993, Ser. No. 81,674

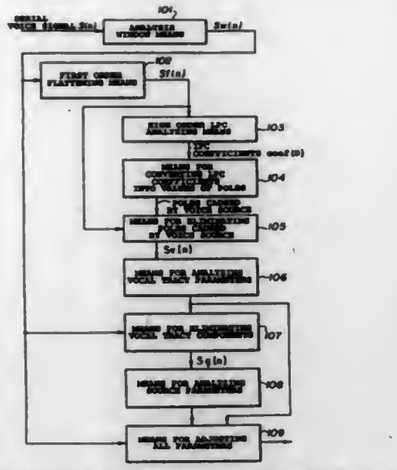
Claims priority, application Japan, Jun. 24, 1992, 4-166394; Jun. 4, 1993, 5-134562

Int. Cl.[6] G01L *3/02;9/00*

U.S. Cl. 395—218 **2 Claims**

1. A speech analysis apparatus for extracting glottal source parameters and formant parameters wherein components of a vocal tract parameter and source parameters are extracted from a voice waveform, said apparatus comprising:

an eliminating circuit for eliminating formant components except a first formant component from a plurality of formant components which form the components of said vocal tract parameter; and



a separating circuit for separating said source parameters and said first formant component using voice signal after said eliminating processing;

wherein said separating circuit comprises:

a circuit for extracting directly said first formant component from said voice waveform;

a circuit for making a plurality of candidates of the first formant by using said extracted first formant component, each of the candidates having different values;

a circuit for eliminating each of the candidates of said first formant from the voice signal after said eliminating processing;

a generator for generating a plurality of candidates of the source waveform whose source parameters are apparent;

a detector for detecting from the source waveforms candidates generated a candidate of the waveform most similar to the waveform of the voice signal from which said candidate of the first formant is eliminated; and

a circuit for determining as a result of said circuit for separating the candidates of the first formant and the source parameter corresponding to said detected candidate of the source waveform.

5,577,161

NOISE REDUCTION METHOD AND FILTER FOR IMPLEMENTING THE METHOD PARTICULARLY USEFUL IN TELEPHONE COMMUNICATIONS SYSTEMS

Clara S. Pelaez Ferrigno, Cava Del Tirreni, Italy, assignor to Alcatel N.V., Rijswijk, Netherlands

Filed Sep. 20, 1994, Ser. No. 309,015

Claims priority, application Italy, Sep. 20, 1993, MI93A2018

Int. Cl.[6] G10L *3/02*

U.S. Cl. 395—2.35 **17 Claims**

1. A noise reduction method using a digital signal processor, the method comprising:

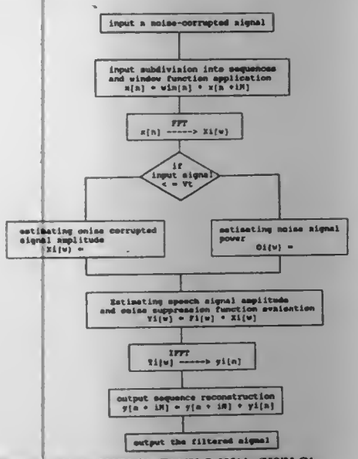
(a) receiving an input signal which could include a noise-corrupted information signal and/or a noise signal;

(b) filtering the noise-corrupted information signal to reduce noise content; and

(c) outputting a filtered information signal having the noise content reduced;

wherein the noise-corrupted information signal has an amplitude and the noise signal has a noise signal amplitude and a noise signal power;

wherein the filtering step includes estimating a spectral envelope of the noise-corrupted information signal amplitude using the formula:



$$E(A|X,O;H1)*p(H1|X,O)+E(A|X,O;H0)*p(H0|H,O),$$

where X is the spectral envelope of the amplitude of the noise-corrupted information signal, O is the spectral envelope of the noise signal power, HO denotes the statistical event corresponding to a non-information interval, and H1 denotes the statistical event corresponding to an information interval; and wherein E(A|X,O; HO) is calculated according to the formula Rmax*X, where Rmax is given by:

$$KK*\frac{1}{2}\left\{1-erf\left(\sqrt{\ln\frac{1}{p_{fa}}}-\sqrt{\frac{S}{N}}\right)\right\}$$

where p_{fa} is the probability of false alarm in time interval i and S/N is the signal-to-noise power ratio in time interval i.

5,577,162

DYNAMIC PROGRAMMING MATCHING SYSTEM FOR SPEECH RECOGNITION

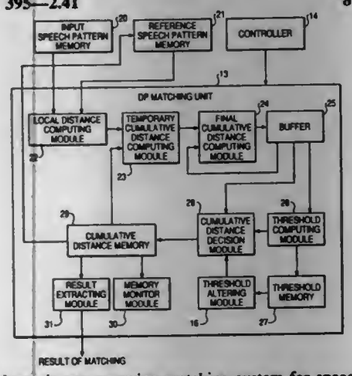
Yasushi Yamazaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 916,263, Jul. 21, 1992, abandoned. This application Oct. 11, 1994, Ser. No. 320,380

Claims priority, application Japan, Jul. 26, 1991, 3-187157

Int. Cl.[6] G10L *5/00*

U.S. Cl. 395—2.41 **8 Claims**



1. A dynamic programming matching system for speech recognition, comprising:

means for extracting time-serial input speech patterns from an utterance;

a first memory for storing said time-serial input speech patterns;

a second memory for storing time-serial reference speech patterns;

dynamic programming matching means for computing cumulative values corresponding to inter-pattern distances between said time-serial input speech patterns and said time-serial reference speech patterns, respectively;

control means for controlling said dynamic programming matching means by comparing said cumulative values for said input speech patterns with a threshold value for subsequent matching processes, said control means also producing a number corresponding to the quantity of dynamic programming paths remaining at every time point a speech pattern is inputted; and

threshold value altering means for altering said threshold value to produce an altered threshold value that is dependent on said number corresponding to the quantity of dynamic programming paths remaining at every time point a speech pattern is inputted,

wherein at the same time that said threshold value is altered by said threshold value altering means, said dynamic programming matching means repeats computation of said cumulative values.

5,577,163

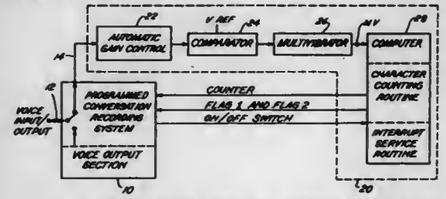
SYSTEM FOR RECOGNIZING OR COUNTING SPOKEN ITEMIZED EXPRESSIONS

Peter F. Theis, 3203 Bay View La., McHenry, Ill. 60050

Continuation of Ser. No. 643,047, Jan. 18, 1991, Pat. No. 5,315,688, which is a continuation-in-part of Ser. No. 586,089, Sep. 21, 1990, Pat. No. 5,201,028. This application Dec. 29, 1993, Ser. No. 174,790

Int. Cl.[6] G10L *5/06*

U.S. Cl. 395—2.42 **17 Claims**



1. A speech categorization system for counting spoken itemized expressions including a voice processor for processing speech and producing in response a waveform representing information relating to said speech, with the waveform defining a high amplitude segment above a predetermined reference level and a low amplitude segment below the predetermined reference level, said system comprising:

a sensor that senses said waveform;

a timer, connected to said sensor, for generating a first measured duration that varies proportionally with the duration of the high amplitude segments and a second measured duration that varies proportionally with the duration of the low amplitude segments;

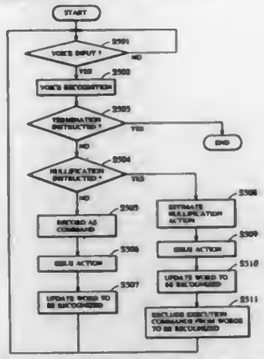
means for classifying a high amplitude segment into a first category when said first and second measured durations, corresponding to said high amplitude segment and a subsequent adjacent low amplitude segment, satisfy a classification test; and

a counter to count said high amplitude segments classified into said first category, wherein said high amplitude segments classified into said first category correspond to said spoken itemized expressions.

5,577,164
INCORRECT VOICE COMMAND RECOGNITION PREVENTION AND RECOVERY PROCESSING METHOD AND APPARATUS

Kazue Kaneko, and Keiichi Sakai, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1995, Ser. No. 376,913
Claims priority, application Japan, Jan. 28, 1994, 6-008495; Jan. 28, 1994, 6-008498
Int. Cl.[6] G10L *9/00;7/08*
U.S. Cl. 395—2.84 **18 Claims**



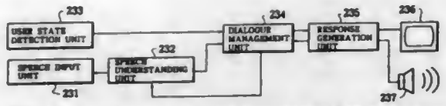
1. An input information processing apparatus, comprising:
input means for inputting vocal information;
storing means for storing words to be recognized for voice recognition and for storing first identification information indicating whether each stored word should be made a candidate for a current voice recognition operation;
recognition means for selecting words to be determined to be a candidate for voice recognition on the basis of the first identification information by referring to said storing means and for recognizing vocal information input by said input means by selecting a candidate word determined to match the input vocal information as a recognition result;
output means for outputting the recognition result of the recognition operation performed by said recognition means;
indicating means for indicating and inputting into said apparatus an indication that the selected candidate word recognized as the recognition result outputted by said recognition means is an incorrect recognition; and
updating means for updating the first identification information on the selected candidate word indicated to be an incorrect recognition by changing the first identification information on the selected candidate word stored in said storing means to indicate that the selected candidate word will not be selected again in the recognition operation in accordance with an indication input from said indicating means.

5,577,165
SPEECH DIALOGUE SYSTEM FOR FACILITATING IMPROVED HUMAN-COMPUTER INTERACTION

Yoichi Takebayashi, Kanagawa-ken; Hiroyuki Tsuboi, Hyogo-ken; Yoichi Sadamoto, Chiba-ken; Yasuki Yamashita, Hyogo-ken; Yoshifumi Nagata, Kanagawa-ken; Shigenobu Seto, Kanagawa-ken; Hideaki Shinchi, Kanagawa-ken, and Hideki Hashimoto, Kanagawa-ken, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, and Toshiba Software Engineering Corp., Tokyo, both of Japan

Continuation of Ser. No. 978,521, Nov. 18, 1992, Pat. No. 5,357,596. This application Sep. 26, 1994, Ser. No. 312,541
Claims priority, application Japan, Nov. 18, 1991, 3-329475
Int. Cl.[6] G01L *9/00*
U.S. Cl. 395—2.84 **42 Claims**

1. A speech dialogue system, comprising:

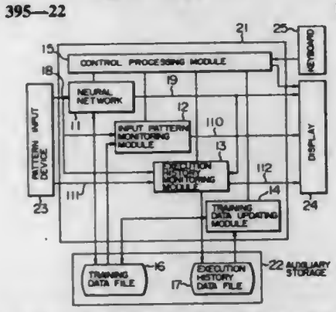


speech understanding means for understanding an input speech from a user;
dialogue management means for determining a response output content according to the input speech understood by the speech understanding means;
response generation means for generating a speech response and a visual response according to the response output determined by the dialogue management means; and
output means for outputting the speech response and the visual response generated by the response generation means to the user.

5,577,166
METHOD AND APPARATUS FOR CLASSIFYING PATTERNS BY USE OF NEURAL NETWORK

Hirotaka Mizuno, Ikeda, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 20, 1992, Ser. No. 916,541
Claims priority, application Japan, Jul. 25, 1991, 3-186089
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—22 **14 Claims**

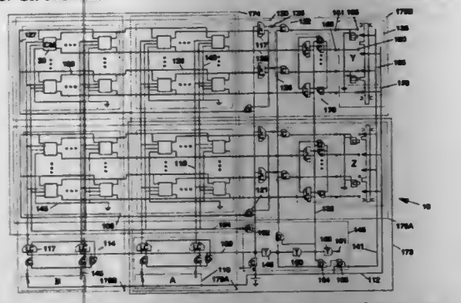


1. A pattern classification method using a neural network, the method comprising steps of:
I) training the neural network including:
a) applying known training data to the neural network, the known training data each including a training input pattern which is applied to the neural network to produce a network output pattern and a corresponding reference output pattern;
b) adjusting the neural network until the network output pattern matches the reference output pattern;
c) repeating steps (a)–(b) for a plurality of training data to train the neural network;
II) classifying input patterns with the trained neural network including:
d) applying an input pattern to be classified to the trained neural network;
e) obtaining a corresponding network output pattern corresponding to the input pattern;
f) storing the input pattern and the corresponding network output pattern in a memory;
III) determining a trained neural network abnormality including:
g) comparing the stored network output pattern with a correct output pattern when the correct output pattern is subsequently obtained to determine a deviation therebetween;
h) repeating steps (d)–(g) for a plurality of input patterns to determine a plurality of the deviations;
i) storing a cumulative deviation in the memory; and
j) monitoring the cumulative deviation to detect a cumulative abnormality of the trained neural network.

5,577,167
METHOD OF A MACHINE THAT LEARNS

Robert A. Brown, 8 Foster St., Mattapoisett, Mass. 02739

Division of Ser. No. 155,587, Nov. 22, 1993. This application Apr. 3, 1995, Ser. No. 415,296
Int. Cl.[6] G06F *15/46*
U.S. Cl. 395—23 **6 Claims**



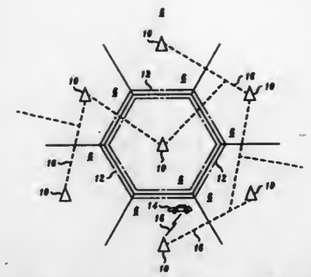
1. A method of selecting a value of at least one of an actuator means in response to an extant value of at least one of a sensor means in a sensing and action period, said selected value being determined by a record of a historical probability of each of an actual value of said actuator means occurring with each of said extant value of said sensor means in each of said sensing and action period, said method comprising:
a. determining a beginning and an end of said sensing and action period, and
b. identifying said extant value of each said sensor means near a beginning of said sensing and action period, and
c. examining said record of said historical probability belonging to each said extant value of said sensor means in said sensing and action period, and
d. selecting said selected value of each said actuator means, said selected value having a highest of said historical probability of occurring with said extant value of each said sensor means in said sensing and action period, and
e. making an attempt to produce said selected value of each said actuator means within said sensing and action period, and
f. restraining said actuator means except when said attempt to produce said selected value is made, and
g. making a measurement of an actual value of each said actuator means after a predetermined delay from said attempt to produce said selected value of said actuator means, said measurement being made within said sensing and action period, and
h. establishing said record of said historical probability, said record being made according to each said actual value of said actuator means occurring with each said extant value of said sensor means during each of said sensing and action period, whereby
i. said method of selecting a value of said actuator means in response to said value of said sensor means and said record of said historical probability provides a simple self-learning machine.

5,577,168
BEACON BASED PACKETIZED CELLULAR SYSTEM WITH REAL-TIME PROCESSING

Zygmunt Haas, Holmdel, and Chih-Lin I, Manalapan, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 130,965, Oct. 4, 1993, abandoned. This application Jan. 23, 1995, Ser. No. 377,291
Int. Cl.[6] H04Q *7/22*
U.S. Cl. 455—33.2 **19 Claims**

1. A packetized, cellular communication system having a plurality of cells with a partial overlapping coverage area with adjacent cells, each cell having a single base station therein, comprising:



a plurality of first database lists, each associated with the base station in a respective one of said plurality of cells, each of said first database lists containing information identifying active mobiles travelling in a coverage region associated with the base station in said respective one of said plurality of cells;
a plurality of second database lists, each associated with the base station in said respective one of the plurality of cells, said second database lists containing information identifying active mobiles in cells adjacent to said respective one of the plurality of cells;
means for transmitting a beacon signal containing ID information from active mobiles in a first base station coverage region to a first base station, in the first database list therein; and
means for periodically transmitting copies of the list of the ID information of active mobiles in the first station coverage region from the first database list of the first base station to each said second database lists of base stations in cells adjacent to the first base station.

5,577,169
FUZZY LOGIC ENTITY BEHAVIOR PROFILER

Robert T. Prezioso, Long Valley, N.J., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1994, Ser. No. 236,731
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—61 **32 Claims**



30. A method of using an entity behavior profiler comprising the steps of:
a. identifying a peer group having a plurality of entities, each entity exhibiting one or more behavioral characteristics;
b. determining a behavioral characteristic set of one or more behavioral characteristics that contribute to an entity profile that indicates a target behavior;

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c. grouping the behavioral characteristics in the behavioral characteristic set into a hierarchy of one or more high level characteristics and one or more lower level characteristics, a lower level characteristic set being logically associated with a higher level characteristic and determining how much the associated higher level characteristic contributes to the profile;

d. determining the amount of each behavior characteristic each entity exhibits for the behavior characteristics in one or more lower level behavior characteristics;

e. defining a behavior characteristic fuzzy set for each behavior characteristic in the lower level behavior characteristic sets that represents the amount of membership an entity has in the respective behavior characteristic, each behavior characteristic fuzzy set defined using statistics of the respective amount of behavior characteristic exhibited by the entities in the peer group and each behavior characteristic fuzzy set being a function that represents an amount of membership that one or more individual entities has in the respective behavior characteristic for an amount of behavior characteristic the individual entity exhibits;

f. using the behavior characteristic fuzzy sets to determine the amount of membership the individual entity has in each respective behavior characteristic in the lower level characteristic set;

g. using a scoring fuzzy set to determine a score that an entity has for each respective behavior characteristic in the lower level characteristic set based on the respective amount of membership of the entity has in the behavior characteristic, the scoring fuzzy set having a scoring surface that maps the amount of membership of the behavior characteristic to the score;

h. developing, from the scores of the lower level characteristics in the hierarchy, a group score for each associated high level characteristic;

i. establishing a profile of an entity's behavior using a composite score of the group scores in the hierarchy by using fuzzy reasoning and defuzzification; and

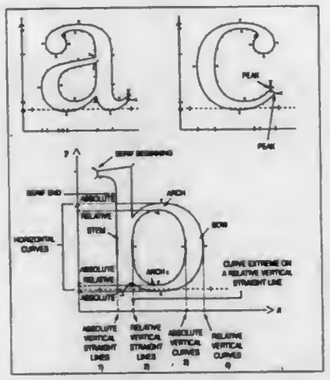
j. selecting a subset of entities in the peer group that exhibit a level of target behavior indicated by the profile.

5,577,170

GENERATION OF TYPEFACES ON HIGH RESOLUTION OUTPUT DEVICES

Peter Karow, Hamburg, Germany, assignor to Adobe Systems, Incorporated, Mountain View, Calif.

Filed Dec. 23, 1993, Ser. No. 172,387
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—110 **27 Claims**



1. A method for generating the output of character fonts on high resolution output devices which include a separate processor unit, an interim storage for font data to be output and an output unit which transfers data received from interim storage directly onto a multiplication medium, wherein the separate processor unit optically scales a digitally stored font before sending it further to the interim storage, said method comprising the steps of:

selecting a single master font in a digitized outline coding, in which the contours for each letter are provided with delimiting discrete control points and additionally with font scaling instructions, and re-scaling the master font with a factor to the desired point size, and

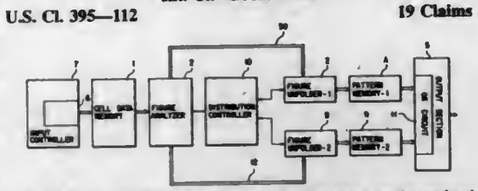
utilizing the instructions so as to steadily vary the stroke thickness of the letters linearly re-scaled with said factor in a primary pre-set factor dependency, wherein the stroke thickness is increased for factors less than one and is decreased for factors larger than one.

5,577,171

FIGURE PATTERN GENERATING APPARATUS FOR DETECTING PATTERN DEFECTS

Tooru Arai; Toshiyuki Watanabe, and Hideo Tsuchiya, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 2, 1993, Ser. No. 25,317
Claims priority, application Japan, Mar. 2, 1992, 4-044209
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—112 **19 Claims**



1. A figure pattern generating apparatus having a predetermined input and output and controlled by a central controller for monitoring and controlling the input and output of a pattern defect inspection apparatus including the central controller, comprising:

figure analyzer for analyzing unit figure information represented by input basic figures corresponding to typical geographical figures in a predetermined form;

a plurality of figure unfolders for unfolding each of the basic figures supplied from said figure analyzer into a plurality of figure patterns;

distribution controller connected to said plurality of figure unfolders in a parallel form, for effecting the distribution control process to assign unfolding process for a basic figure unit or a divided unit obtained by dividing an excessively large figure which exceeds a preset threshold value into predetermined areas to said plurality of figure unfolders; and

figure combiner for combining pattern information items which have been subjected to the unfolding process into a single figure pattern.

5,577,172

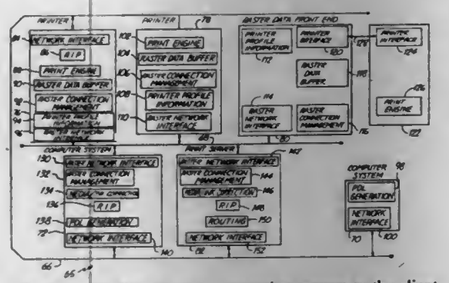
HIGH-CAPACITY PROTOCOL FOR PACKET-BASED NETWORKS

Danny J. Vatland, Chanhassen, and Jeff D. Pagel, Inver Grove Heights, both of Minn., assignors to LaserMaster Corporation, Eden Prairie, Minn.

Continuation-in-part of Ser. No. 270,046, Jul. 1, 1994. This application Aug. 31, 1994, Ser. No. 299,010
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—114 **19 Claims**

1. A protocol for governing a transfer of a large block of data from a server to a client over a packet-based network arranged to connect at least three network-based devices, the protocol comprising:

the server and client negotiating a parameter of the transfer using a first sub-protocol comprising:



the server sending an open connection request to the client,

the client sending an open connection response to the server, and

the server sending a begin transmission command to the client; and

the server transferring the large block of a data to the client using a second sub-protocol distinct from the first sub-protocol and based on the parameter, the second sub-protocol comprising:

the client sending an acknowledge/request command to the server, wherein the acknowledge/request command includes a starting sequence number and an ending sequence number,

the server dividing the large block of data into packets and assigning sequence numbers between the starting sequence number and the ending sequence number to packets, and sending a burst of packets to the client the burst including all packets between the starting and ending sequence numbers,

the client detecting missing packets and corrupted packets received from the server, and repeating sending an acknowledge/request command to the server to request retransmission of missing and corrupted packets, and

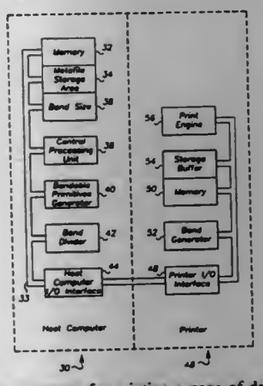
the client determining whether transmission of the large block of data has completed, and repeating sending an acknowledge/request command to the server to request more packets if transmission of the large block of data has not completed.

5,577,173

SYSTEM AND METHOD OF PRINTER BANDING

Stephen V. Dennis, Bothell, and Gabe L. Newell, Seattle, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jul. 10, 1992, Ser. No. 911,523
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—116 **18 Claims**



14. A computer system for printing a page of data on a printer with unidirectional page movement, using an unprocessed data file that describes a plurality of objects to be printed on the page and a user specified appearance of the plurality of objects to be printed on the page, by defining a plurality of bands, for the page, each of the band having a selected band size, the printer containing a band generator to convert data into a bit-map data file, a buffer for temporarily storing bit-map data files until printed and a print engine for sequentially printing bit-map data files on the page, the system comprising:

a central processor;

a memory connected to said central processor and storing the unprocessed data file;

a bandable primitives generator receiving the unprocessed data file and transforming the unprocessed data file into bandable primitives for each band, said bandable primitives corresponding to the plurality of objects and portions of the plurality of objects within that band and stored in a manner indicative of a data processing sequence determined by the user specified appearance of the plurality of objects to be printed on the page; and

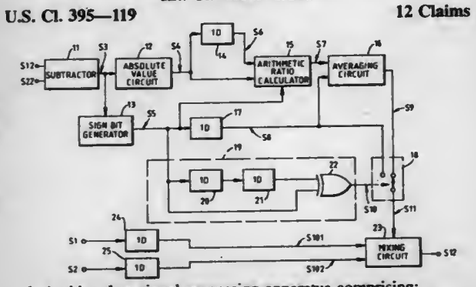
a band divider for dividing said bandable primitives into sets of banded primitives corresponding to the bands to generate a set of banded primitives for each of the bands with each of said set of banded primitives describing only the plurality of objects and portions of the plurality of objects within the respective one of the corresponding bands, said set of banded primitives for each band maintaining said data processing sequence determined by the user specified appearance of the plurality of objects to be printed on the page, whereby the computer does not process said unprocessed data file one time for each of the bands in order to generate said bit-map data files.

5,577,174

VIDEO DATA PROCESSING APPARATUS AND METHOD FOR SMOOTHLY INTERSECTING IMAGES

Katsuakira Moriwake, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 19, 1992, Ser. No. 854,387
Claims priority, application Japan, Mar. 29, 1991, 3-066734
Int. Cl.[6] H04N *5/262*
U.S. Cl. 395—119 **12 Claims**



1. A video data signal processing apparatus comprising:

video signal supplying means for supplying first and second three-dimensional image data signals, said first three-dimensional image data signal representing a plurality of pixels and comprised of a first video data signal and a first depth data signal, and said second three-dimensional image data signal representing a plurality of pixels and comprised of a second video data signal and a second depth data signal;

synthesizing means for combining said first three-dimensional image data signal and said second three-dimensional image data signal with respective weightings in accordance with a key data signal to produce a composite three-dimensional video image data signal; and

key data signal generating means including subtracting means for calculating a difference between said first depth data signal and said second depth data signal and for supplying an output signal therefrom which represents said difference and a sign of said difference, sign generating means for generating a sign signal representing said sign of said difference in the

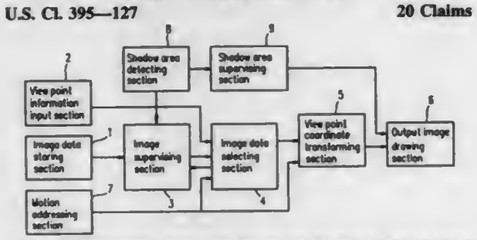
output signal from said subtracting means, arithmetic ratio means for generating a ratio signal representing a rate of change in said difference between said first depth data signal and said second depth data signal when the sign signal from said sign generating means changes in value, averaging means for averaging said ratio signal and said sign signal from said sign generating means at a rate corresponding to a pixel processing rate to produce an output signal, and means for selecting said key data signal from one of said output signal from said averaging means and said sign signal from said sign generating means.

5,577,175

3-DIMENSIONAL ANIMATION GENERATING APPARATUS AND A METHOD FOR GENERATING A 3-DIMENSIONAL ANIMATION

Toshiya Naka, Osaka, and Yoshimori Nakase, Kawachinagano, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 4, 1994, Ser. No. 285,967
Claims priority, application Japan, Aug. 6, 1993, 5-195867
Int. Cl.[6] G06T *15/20;15/70*
U.S. Cl. 395—127 **20 Claims**



1. A 3-dimensional animation generating apparatus which draws a scene including an object having a 3-dimensional shape, the apparatus comprising:

an image data storing means for representing the object in approximation with one or more parts and storing image data relating to the respective parts, each respective part consisting of a plurality of polygons, the polygons representing a surface of the object,

wherein the image data stored in the image data storing means are background image data and 2-dimensional part image data representing the respective parts as a plurality of projected images that are respectively obtained by projecting the object onto a plurality of projection surfaces from a plurality of reference view points, so that the object is expressed using the 2-dimensional part image data, and the image data storing means stores the image data in association with 3-dimensional coordinates in a world coordinate system of respective vertexes of a figure existing in the respective projected images;

an image supervising means for supervising and searching the image data while treating each of the parts as a minimum unit for supervising and searching;

a view point information input means for providing information on an observing view point from which the object is observed;

an image data selecting means for selecting a visible image data which is visible from the observing view point among the stored image data by using the information on the observing view point provided from the view point information input means;

a view point coordinate transforming means for performing a coordinate transformation of the selected visible image data with respect to coordinates of the observing view point by using the information on the observing view point; and

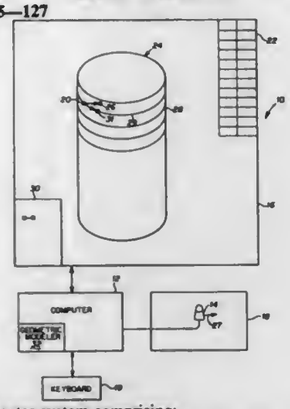
an output image drawing means for drawing the transformed image data on a drawing area.

5,577,176

METHOD AND APPARATUS FOR DISPLAYING A CURSOR ALONG A TWO DIMENSIONAL REPRESENTATION OF A COMPUTER GENERATED THREE DIMENSIONAL SURFACE

Timothy Friedman, Lexington; Elena Gersht, Brookline, and Constantin Sevici, Chelmsford, all of Mass., assignors to Computervision Corporation, Bedford, Mass.

Filed Nov. 23, 1994, Ser. No. 321,202
Int. Cl.[6] G06T *3/60*
U.S. Cl. 395—127 **51 Claims**



1. A computer system comprising:

a display, having a set of display coordinates, that displays a cursor and a two dimensional representation of a surface of a three dimensional object;

a user-operable input device by which a user provides input signals that indicate a position of the cursor on the display in input coordinates;

a processing system, coupled to the display and to the input device, that receives the input signals indicating the cursor position and causes the cursor to be positioned on the display in response to the input signals, the processing system including:

a modeler for receiving input commands and for generating a surface definition representation of the surface of the three dimensional object in a surface definition space having a set of surface definition coordinates,

means for mapping the input device coordinates of the cursor into surface definition coordinates that represent the position of the cursor in the surface definition space, and

means for mapping the surface definition coordinates of the cursor and the surface definition representation of the surface into display coordinates that represent the surface and the position of the cursor on the display, so that the cursor is dynamically attached to the two dimensional representation of the surface of the three dimensional object.

5,577,177

APPARATUS AND METHODS FOR CREATING AND USING PORTABLE FONTS

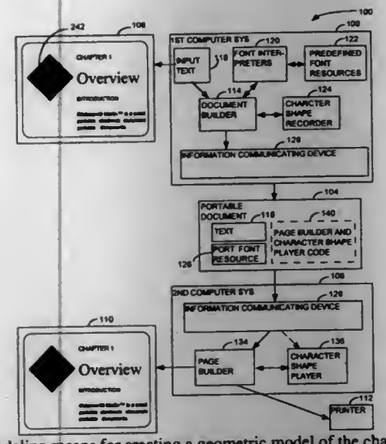
John S. Collins, Boston, and Mark H. Goldwater, Norfolk, both of Mass., assignors to Bitstream, Inc., Cambridge, Mass.

Division of Ser. No. 250,372, May 27, 1994. This application May 24, 1995, Ser. No. 448,792
Int. Cl.[6] G06T *5/00*
U.S. Cl. 395—169 **29 Claims**

1. A computer system comprising:

means for receiving an input text representing a sequence of characters, each of which has an associated shape defined by an associated pre-defined font;

means for receiving a pre-defined font description which defines the shape for each unique combination of a character and associated pre-deformed font in the input text;



modeling means for creating a geometric model of the character-font shape defined by each received pre-defined font description, which model models the one or more outlines of the character-font shape and explicitly indicates features in the character-font shape which are not explicitly indicated in the model's associated pre-defined font description;

means for generating a new font description from the model created for each received pre-defined font description, which new font description describes the shape represented by said model as a sequence of outline segments, said means for generating including means for using said explicitly indicated features to determine where to divide the modeled outlines of the character-font shape into outline segments of the new font description;

means for creating an output including:

a sequence of characters corresponding to those of the input text;

the new font descriptions created for the character-font shapes of the input text; and

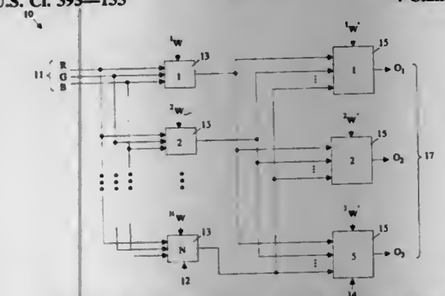
an indication of which of the new font descriptions represents the shape of each character in the output text.

5,577,178

NEURAL NETWORK FOR COLOR TRANSLATIONS

Bo U. Curry, 2671 Washington Ave., Redwood City, Calif. 94061, and David R. Smith, 5454 Milligan Dr., San Jose, Calif. 95124

Continuation of Ser. No. 80,025, Jun. 18, 1993, abandoned. This application Dec. 4, 1995, Ser. No. 566,602
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—133 **4 Claims**



1. A processor for converting pixels of an image in a first color representation in which colors are represented by a first set of signal values $(i_1, i_2, \ldots i_M)$ to a second color representation in which colors are represented by a second set of signal values $(O_1, O_2, \ldots O_M)$, said processor comprising:

means for receiving signals indicative of said first set of signal values;

an ordered array of layers including an input layer, an output layer and, one or more intermediate layers, each said layer comprising a plurality of nodes, each said node having a plurality of inputs, an output, and means for storing a plurality of weights, there being one said weight corresponding to each said input, each said node generating an output signal on said output that depends on the inputs to said node and said weights stored in said node, wherein

said input layer comprises a plurality of M-input nodes, said inputs of each said node in said input layer being connected to said signal receiving means such that the first input to each said node receives i_1, the second input of each said node receives i_2, and the Mth input of each said node receives i_M,

said output layer comprises M' nodes, said second set of signals, $(O_1, O_2, \ldots O_M)$, corresponding to said outputs of said output layer;

wherein each said input of said nodes in said intermediate layers and output layer is connected either to an output of a node in a previous layer or to said signal receiving means, and

the relationship between the output signal generated by at least one of said nodes in said input layer and said inputs to said one of said nodes is given by

$$O = F\left(\prod_{i=1}^{3} I_i^{w_i}\right)$$

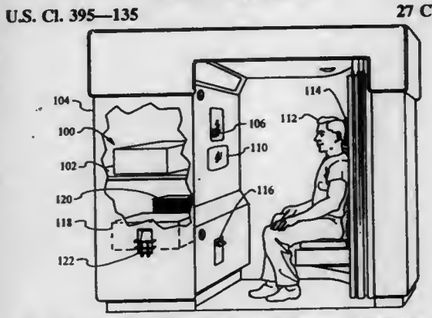
where O is said output signal generated by one of said nodes, I_i is the ith input to said one of said nodes, and w_i is the weight corresponding to the ith said input of said one of said nodes.

5,577,179

IMAGE EDITING SYSTEM

Arthur M. Blank, San Diego, Calif., assignor to ImageWare Software, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 844,299, Feb. 25, 1992, Pat. No. 5,345,313. This application Jul. 23, 1992, Ser. No. 919,584
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—135 **27 Claims**



1. A method for combining images in three dimensions, comprising the steps of:

providing a plurality of independent components wherein each said component is assigned to one of a plurality of X-Y planes, said X-Y planes being on different levels from each other in the Z direction, and said X-Y planes being overlayed on each other in a direction so as to define relative positions of said components with respect to three dimensions, and so as to define an image of a background;

providing an image of an independent object to be positioned with respect to the image of the background, wherein the

position of said image of said object is defined in the X, Y and Z directions with respect to said plurality of said X-Y planes; and

positioning the image of the object with respect to the image of the background to form a first composite image, while maintaining the independence of the components and the object, wherein a portion of a component which is closer than the object to a viewing location in the Z direction and which corresponds to the position of a first portion of the object in the X-Y plane will obscure said first portion of the object from view and wherein a portion of a component which is further than the object from the viewing location in the Z direction, and which corresponds to the position of a second portion of the object in the X-Y plane will be obscured from view;

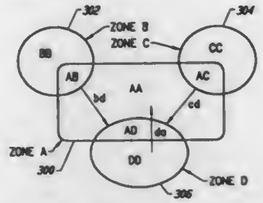
wherein the objects and the components are comprised of at least one pixel and wherein each pixel has a plurality of attributes, a one of said attributes indicative of substantial transparency by the pixel to pixels on underlyinq X-Y planes.

5,577,180

ZONE DATA STREAMING FOR 3-DIMENSIONAL VIDEO ENVIRONMENT

Lawrence P. Reed, Palo Alto, Calif., assignor to The 3DO Company, Redwood City, Calif.

Filed Jan. 5, 1995, Ser. No. 369,526
Int. Cl.[6] G06T *1/00*
U.S. Cl. 395—135 **22 Claims**



1. A method for using data during an video presentation, said presentation including an environment divided into zones, the method comprising the steps of:

storing in a storage device first data for a first zone;

presenting at least a first portion of said first data while a user interacts with a first zone, said first zone including a transition subzone;

presenting at least a second portion of said first data, while said user interacts with said transition subzone;

loading into said storage device second data for a second zone while said user interacts with said transition subzone, said second zone includes said transition subzone, said second data replacing at least a subset of said first data, said subset of said first data not including said second portion of said first data; and

presenting at least a first portion of said second data while said user interacts with said second zone.

5,577,181

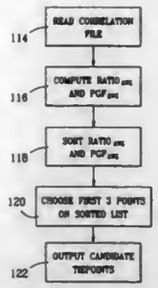
METHOD FOR AUTONOMOUS DETERMINATION OF TIE POINTS IN IMAGERY

Fenton L. Givens, Dallas, and Ronald L. Bowden, Parker, both of Tex., assignors to E-Systems, Inc., Dallas, Tex.

Filed Jun. 7, 1995, Ser. No. 478,972
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—135 **17 Claims**

1. A method for selecting tie point locations within a series of overlapping images, comprising the steps of:

(a) ordering the series of overlapping images to maximize successful phase correlations between adjacent image pairs;



(b) phase correlating the adjacent image pairs according to the ordering of the series of overlapping images to determine an offset between overlapping areas in the adjacent image pairs;

(c) selecting initial candidate tie point locations within the overlapping areas of the adjacent image pairs valid for each at a reduced resolution;

(d) determining the candidate tie point location likely valid for phase correlation between each of the adjacent image pairs in the plurality of overlapping areas at full resolution;

(e) phase correlating at full resolution the candidate tie point locations determined in step (d) through all adjacent images in the plurality of images to determine surviving tie point locations; and

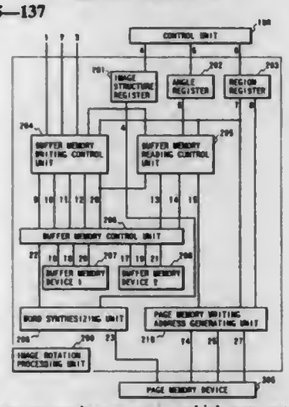
(g) refining the surviving tie point locations to sub-pixel accuracy.

5,577,182

IMAGE PROCESSING APPARATUS

Kazuo Hayashi, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1994, Ser. No. 326,041
Claims priority, application Japan, Oct. 26, 1993, 5-267650
Int. Cl.[6] G06T *3/00*
U.S. Cl. 395—137 **4 Claims**



1. An image processing apparatus which puts out image information having data in N bits for one pixel (where N is an integral number not less than one) to a page memory device capable of making access to the image information by M bits (where M is an integral number larger than N) as a unit while performing a rotating process on the image information, said image processing apparatus comprising:

a buffer memory device, which is capable of making access by W bits as a unit (where W is an integral number satisfying the following condition, $N<W \leqq M$);

writing control means, which works for sequentially entering image information for (M/N) lines as a unit, also for sequentially generating addresses in a prescribed order on the basis of image size information, and for sequentially writing the image information for each unit thus entered to said buffer memory device for every (W/N) pixels;

reading control means, which works for sequentially generating addresses in accordance with an angle of rotation and for sequentially reading the image information for the (M/N) lines out of the image information stored in said buffer memory device;

an image data synthesizing unit, which generates (W/N) pieces of data in M bits from the M pieces of data as sequentially read out by said reading control means on the basis of the angle of rotation and the number N of bits per one pixel; and

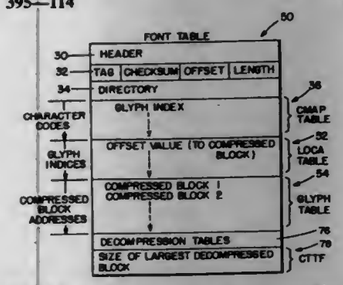
image output means, which sequentially generates addresses in accordance with the angle of rotation and puts out the (W/N) pieces of data generated by said image data synthesizing unit to individual corresponding addresses in the page memory device.

5,577,183

PRINTER SYSTEM STORES COMPRESSED FONT GLYPHS IN DATA BLOCKS AND DECOMPRESSED GLYPHS IN EACH DATA BLOCK TOGETHER USING SAME DECOMPRESSION PROCEDURE

Chris Weyand, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 210,210, Mar. 18, 1994. This application Dec. 1, 1995, Ser. No. 565,934
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—114 **9 Claims**



1. An apparatus for providing pixel data representative of glyphs included in a font, said apparatus comprising:

memory means for storing font data and including plural groups of entries, a first group of entries comprising a series of data blocks, each data block including data-compressed forms of plural glyphs, plural glyphs from a data block exhibiting a common attribute such that each data-compressed form glyph is to be decompressed using a same decompression procedure, different data blocks exhibiting different common attributes, said memory means further including a second group of entries for enabling a character code to identify a data block containing a data-compressed form of a glyph and a third group of entries that enable an address to be identified of any data-decompressed form glyph from said data block; and

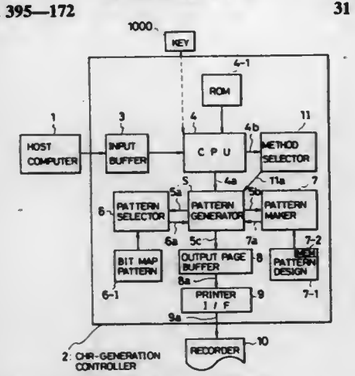
processor means responsive to a signal stream including a character code, to use said second group of entries to access from said memory means a data block including a glyph corresponding to said character code, and for subjecting all data compressed form glyphs from said data block, including the glyphs which do not correspond to said character code, to said same decompression procedure so that all decompressed pixel data representations of said glyphs are available for use by said processor means, and using said third group of entries to identify a decompressed-data form glyph corresponding to said character code.

5,577,184

CHARACTER PATTERN OUTPUT APPARATUS

Toru Matoba, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 489,233, Mar. 6, 1990. This application Sep. 22, 1993, Ser. No. 124,466
Claims priority, application Japan, Mar. 8, 1989, 1-57313
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—172 **31 Claims**



1. A character output apparatus comprising:

memory means for storing a first type of character pattern definition having a bit map form and a second type of character pattern definition which can be output in bit map form by an arithmetic operating process;

means for determining whether an additional memory has a sufficient available capacity for storing a character pattern in accordance with either a first output process using the first type of character pattern definition or a second output process using the second type of character pattern definition; and

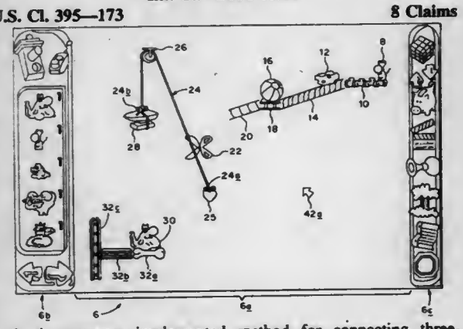
means for selecting the first or second output process in response to a determination by said determining means.

5,577,185

COMPUTERIZED PUZZLE GAMING METHOD AND APPARATUS

Jeffrey A. Tunnell, and Christopher M. Cole, both of Eugene, Oreg., assignors to Dynamix, Inc., Eugene, Oreg.

Filed Nov. 10, 1994, Ser. No. 337,946
Int. Cl.[6] G06T *13/00*
U.S. Cl. 395—173 **8 Claims**



1. A computer implemented method for connecting three-dimensionally appearing structural members represented on a display screen, the method comprising the steps of:

displaying within a region of a display screen a menu containing one or more types of structural members having a first and second end and a middle therebetween;

displaying a background region for placement by a user of selected ones of such structural members on the screen;

placing a first selected structural member in a desired location within such background region;

positioning a second selected structural member in a desired location within such background region;

determining whether an end of the second selected structural member is proximal to such first selected structural member within a predefined proximity; and, if so, then

applying a graphical object joinder on the background region between such proximal end of the second selected structural member and such first selected structural member; and

wherein such background region is divided into a grid of cells and the structural members span a line of adjacent cells.

5,577,186

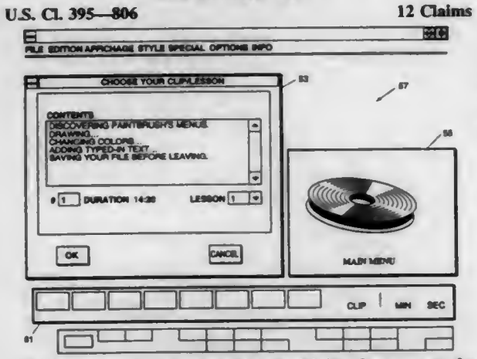
APPARATUS AND METHOD FOR PROVIDING A GENERIC COMPUTERIZED MULTIMEDIA TUTORIAL INTERFACE FOR TRAINING A USER ON MULTIPLE APPLICATIONS

S. Edward Mann, II, 11020 Huebner Oak #1136, San Antonio, Tex. 78230, and Frederic Milliot, 5 Rue Boulle 75011, Paris, France

Continuation of Ser. No. 283,618, Aug. 1, 1994. This application Oct. 12, 1995, Ser. No. 541,221

Int. Cl.[6] G06F *9/455*

U.S. Cl. 395—806 **12 Claims**



1. A computerized, multimedia tutorial interface system for training a user to use any of a plurality of independently executable computer application software programs, the system comprising:

(a) computer application program selector, wherein the computer application software program selector receives an instruction from a user and causes the computerized, multimedia tutorial interface system to select a computer application software program from the plurality of independently executable computer application software programs;

(b) control display means for displaying a control window on a computer screen, the control window providing a plurality of instructions to a user that may be selected by the user, wherein the instructions include instructions for displaying audiovisual images describing operations of the selected computer application software program;

(c) instruction input means for receiving a user instruction from a user;

(d) instruction interpretation means for receiving the user instruction from the instruction input means, for interpreting the user instruction based upon the selected computer application software program to generate an execution instruction, and for selectively issuing the execution instruction to element (e), (f) or (g) based upon the user instruction;

(e) audiovisual enablement means for receiving an execution instruction from the instruction interpretation means, for selectively retrieving audiovisual information responsive to the execution instruction, and for displaying the audiovisual information on at least a portion of a computer screen, wherein the audiovisual information includes audiovisual images describing operations of the selected computer application software program;

(f) computer application software interface means for receiving an execution instruction from the instruction interpretation means, for interfacing with the selected computer application software program, and for issuing simulated user input to the selected computer application program to execute a function of the selected computer application software program that is described in the audiovisual image; and

(g) computer application software control means for receiving an execution instruction from the instruction interpretation means, for causing the computerized, multimedia tutorial interface system to completely relinquish control to the computer application software program to allow a user to execute functions within the computer application software program, and for causing the computerized, multimedia tutorial interface system to gain control from the computer application software program based upon user input.

5,577,187

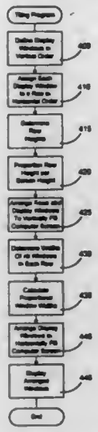
METHOD AND SYSTEM FOR TILING WINDOWS BASED ON PREVIOUS POSITION AND SIZE

Rico Mariani, King County, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed May 20, 1994, Ser. No. 247,043

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—342 **47 Claims**



46. A method in a computer system for arranging windows on a display device, each window having a position and size that is relative to the positions and sizes of the other windows, the method comprising the steps of:

determining an old position and an old size of each of a plurality of windows that are arranged in a non-tiled manner on the display device; and

rearranging the windows into a tiled manner by assigning a new position and size to each window within one of a plurality of linear sections of the display device so that each new position and new size of a window is assigned based on the old positions and old sizes.

5,577,188

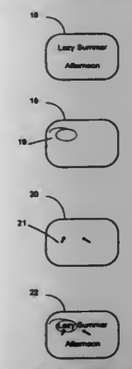
METHOD TO PROVIDE FOR VIRTUAL SCREEN OVERLAY

Min Zhu, Los Altos, Calif., assignor to Future Labs, Inc., Los Altos, Calif.

Filed May 31, 1994, Ser. No. 252,791

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—326 **24 Claims**



1. In a computer system, a method for displaying user-created objects over images on a computer screen to simulate annotations and pointers over said images by one or more users, wherein said images are generated, controlled, and manipulated by one or more active application programs and the user-created objects include annotation objects and pointer objects where the annotation objects and pointer object for a particular user is of a particular color wherein an annotation object highlights a part of said images and a pointer objects directs to an area of said images, comprising the steps of:

a) creating a transparent window appearing to be displayed over said images, said transparent window providing an environment for creation, manipulation, and deletion of user-created objects;

b) creating and displaying one or more of said user-created objects at user specified locations in said transparent window and storing data representing said user-created objects;

c) determining any overlapping portion of said user-created objects and displaying said overlapping portion of said user-created objects according to a predetermined hierarchy;

d) repeating step b and c until a first user command to close said transparent window is received; and

e) responding to said first user command by closing said transparent window and returning to said application programs.

5,577,189

METHOD OF ESTABLISHING CONSTRAINTS BETWEEN GRAPHICAL ELEMENTS

Jonathan L. Gay, San Diego, and Robert B. Tatsumi, Poway, both of Calif., assignors to Adobe Systems Incorporated, Mountain View, Calif.

Continuation of Ser. No. 904,059, Jun. 23, 1992, Pat. No. 5,437,008. This application May 11, 1995, Ser. No. 438,977

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—326 **10 Claims**

1. A method of establishing spatial relationships between two graphical elements displayed on a page in response to a user's input, each graphical element having a size and a position on the page, comprising:

(a) selecting a first, master, graphical element in response to user input;

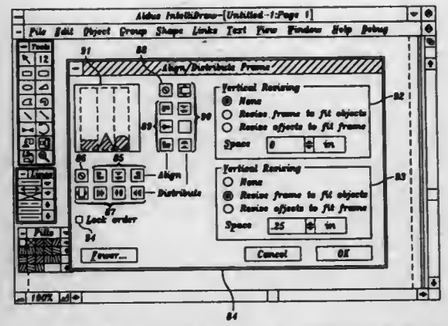
(b) selecting a second, slave, graphical element in response to user input;

(c) establishing, in response to user input, a constraint relationship between the master and slave graphical elements that links the size of the master element to the size of the slave element wherein the constraint relationship between the master and slave elements is maintained throughout editing of the elements by the user; and

(d) automatically monitoring any user-initiated attempts to edit the size of either the master or slave elements which affect the constraint relationship therebetween; and

(i) if an edit to the size of the master element affecting the constraint relationship is attempted, then modifying the size of both the master and the slave elements in accordance with the constraint relationship; or

(ii) if an edit to the size of the slave element affecting the constraint relationship is attempted, then inhibiting the attempt to edit the size of the slave element.



5,577,190

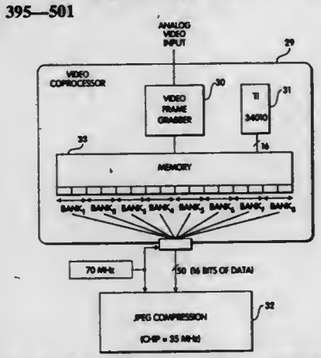
MEDIA EDITING SYSTEM WITH ADJUSTABLE SOURCE MATERIAL COMPRESSION

Eric C. Peters, Carlisle, Mass., assignor to Avid Technology, Inc., Tewksbury, Mass.

Continuation of Ser. No. 866,829, Apr. 10, 1992, Pat. No. 5,355,450, and a continuation-in-part of Ser. No. 807,117, Dec. 13, 1991, and a continuation-in-part of Ser. No. 807,269, Dec. 13, 1991. This application Jul. 5, 1994, Ser. No. 270,442

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—501 **19 Claims**



1. Media editing system for editing source material comprising:

digitizing apparatus for receiving and digitizing video and audio source material, the video source material including a sequence of images, each spanning both the horizontal and vertical display axes of the video source material;

computing apparatus including compression apparatus responsive to the digitizing apparatus, the compression apparatus being for compressing the images from the video source material, wherein the computing apparatus is for determining if at least one of the compressed images occupies more than a target amount of storage and providing an indication if the at least one of the compressed images does occupy more than the target amount of storage, wherein the compression appa-

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ratus is responsive to the indication to adjust its level of compression, the computing apparatus further being for manipulating the stored source material;

mass storage responsive to the computing apparatus to receive the compressed video source material and the audio source material; and

output apparatus communicating with the computing apparatus for displaying the manipulated source material.

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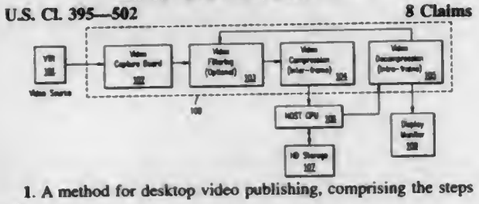
SYSTEM AND METHOD FOR DIGITAL VIDEO EDITING AND PUBLISHING, USING INTRAFRAME-ONLY VIDEO DATA IN INTERMEDIATE STEPS

Mauro Bonomi, Palo Alto, Calif., assignor to Minerva Systems, Inc., Santa Clara, Calif.

Filed Feb. 17, 1994, Ser. No. 197,914

Int. Cl.[6] G06K *9/36;* **H04N** *11/04*

U.S. Cl. 395—502 **8 Claims**



1. A method for desktop video publishing, comprising the steps of:

providing digital video data representing a video sequence;

compressing, intraframe-only, said digital video data, and storing said compressed digital video data in a storage medium;

retrieving said intraframe-only compressed digital video data from said storage medium;

decompressing selected frames of said intraframe-only compressed digital video data;

performing video editing functions of said decompressed selected frames to create an edited video sequence;

recompressing said decompressed selected frames, intraframe-only, and storing said recompressed selected frames back into said storage medium;

retrieving from said storage medium frames of said edited video sequence;

decompressing said frames of said edited video sequence; and

compressing, using both intraframe and interframe compression operations, said decompressed frames of said edited video sequence.

5,577,192

FRAME REGISTER SWITCHING FOR A VIDEO PROCESSOR

Theron P. Niederer, Raleigh; William R. Lee, Apex, both of N.C., and David C. Frank, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 332,686, Nov. 1, 1994. This application Mar. 13, 1996, Ser. No. 616,243

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—507 **9 Claims**

9. A computer system comprising:

a processor;

a storage means;

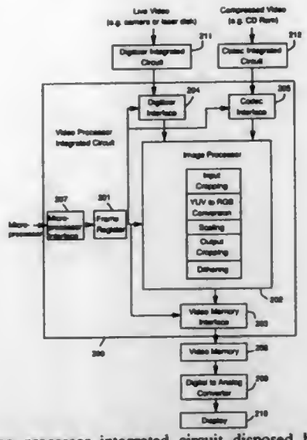
a system bus coupling the processor and the storage means to one or more adapter card connectors; and

at least one adapter card connected to the computer system through an adapter card connector, the adapter card including:

a video memory;

means for connection to a video display, the means connected to the video memory;

means for connection to a computer system bus; and



a video processor integrated circuit disposed between the video bus and the means for connection to the computer system bus, the video processor integrated circuit including:

microprocessor interface circuitry for connection to the system bus;

video processing circuitry having means for receiving a video signal and means for outputting data to the video memory; and

a video register interface disposed between the microprocessor interface circuitry and the video processing circuitry, the video register interface including:

at least two buffers, each having first and second storage elements, the first storage element of a given buffer disposed to receive data from the microprocessor interface circuitry and to transfer that data to the second storage element of the given buffer, the second storage element of the given buffer disposed to receive data only from the first storage element of the given buffer;

logic for controlling timing of the transfer of data from the first storage element to the second storage element of the given buffer and for controlling outputting of data from the second storage element of the given buffer to the video processing circuitry, the logic for controlling timing being connected to transfer mode control lines which allow the selection of one of a plurality of transfer modes, a selected transfer mode specifying the timing of the transfer from the first storage element to the second storage element of the given buffer; and

logic for selectively outputting data stored in the second storage element of a selected buffer to the video processing circuitry while allowing data in the first storage element of the selected buffer to be overwritten.

5,577,193

MULTIPLE DATA REGISTERS AND ADDRESSING TECINIQUE THEREFORE FOR BLOCK/FLASH WRITING MAIN MEMORY OF A DRAM/VRAM

Edward Butler, Jonesville, Vt., and Ronald A. Sasaki, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 28, 1994, Ser. No. 314,112

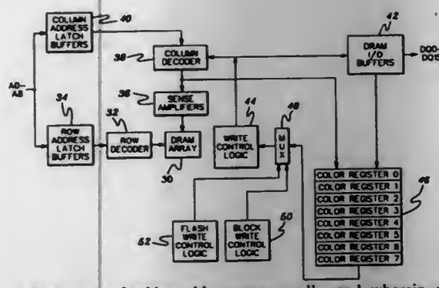
Int. Cl.[6] G06F *12/06*

U.S. Cl. 395—515 **31 Claims**

1. A memory system comprising:

a first memory means having a first array of addressable memory cells for storing data;

a second memory means having a second array of addressable memory cells for storing data, said second array of addressable memory cells being independently addressable from said



first array of addressable memory cells, and wherein said second array of addressable memory cells is coupled to said first array of addressable memory cells for transfer of data from said second array of addressable memory cells directly to said first array of addressable memory cells;

first address means for column addressing in a single column address strobe (CAS) cycle a plurality of addressable memory cells of said first array of addressable memory cells using Y address bits of an X address bit signal, wherein X>Y such that unused address bits in said X address bit signal exist; and

second address means for employing said unused address bits of said X address bit signal in said single CAS cycle to address one addressable memory cell of said second array of addressable memory cells for transfer of data from said one addressable memory cell of said second array of addressable memory cells directly to said plurality of addressable memory cells of said first array of addressable memory cells.

5,577,194

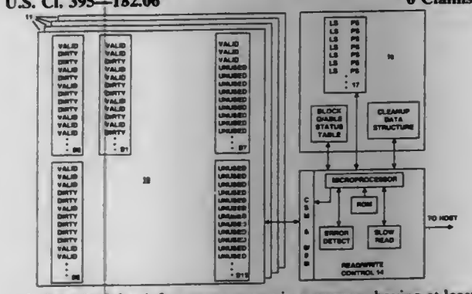
METHOD OF MANAGING DEFECTS IN FLASH DISK MEMORIES

Steven E. Wells, Citrus Heights; Eric J. Magnusson, Orangevale, and Robert N. Hasbun, Shingle Springs, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 969,749, Oct. 30, 1992. This application Aug. 7, 1995, Ser. No. 511,990

Int. Cl.[6] G01R *31/28;* **G06F** *11/00*

U.S. Cl. 395—182.06 **6 Claims**



1. A method for defect management in a memory having at least one memory array divided into individually erasable blocks of memory, comprising the steps of:

executing a program operation with write data to a first block of memory in a first memory array, the block including a plurality of groups of data, each group identified as one of an invalid group and a valid group of data;

determining whether an error occurred in said program operation to said first block;

marking said first block to indicate said first block is questionable if an error occurred in said program operation to said first block;

executing a second program operation with said data to a second block of memory in said first memory array;

determining whether an error occurred in said second program operation to said second block;

marking said first block to schedule moving of each valid group of data in said first block to another block if no error occurred in said second program operation to said second block; and

disabling said first memory array if an error occurred in said second program operation to said second block.

5,577,195

SEMICONDUCTOR DATA STORAGE DEVICE WITH MEANS FOR PROTECTING DATA UPON EXTERNAL POWER SUPPLY CONNECTION AND DISCONNECTION

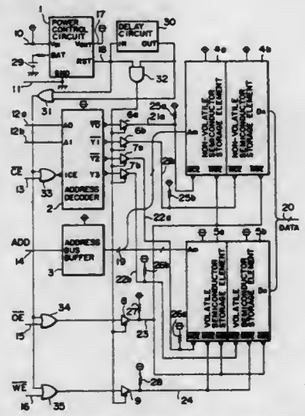
Hidenobu Gochi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1993, Ser. No. 115,704

Claims priority, application Japan, Sep. 7, 1992, 4-238421

Int. Cl.[6] G06F *11/30*

U.S. Cl. 395—182.20 **8 Claims**



6. A semiconductor data storage device detachably connectable to an external device and supplied with power by the external device, the external device supplying control signals to said semiconductor data storage device to store data, said semiconductor data storage device comprising:

data storage means including non-volatile semiconductor data storage elements and volatile semiconductor data storage elements for storing data and for supplying the stored data;

an internal power source for maintaining storage of data stored in the volatile semiconductor data storage elements when no power is supplied to said data storage means by the external device;

power control means for detecting whether power is supplied to said semiconductor data storage device by the external device and for switching between power supplied to said semiconductor data storage device from the external device and said internal power source so that when the external device is connected to said semiconductor data storage device, power is supplied from the external device to said semiconductor data storage device and when the external device is disconnected from said semiconductor data storage device, power is supplied from said internal power source, and for generating a first reset signal upon disconnection of the external device and said semiconductor data storage device; and

forced control means connected to said power control means and receiving the reset signal for forcibly deactivating all of the control signals for a predetermined period of time responsive to the reset signal of said power control means, said forced control means including a timing circuit having an output signal wherein the predetermined time period includes a

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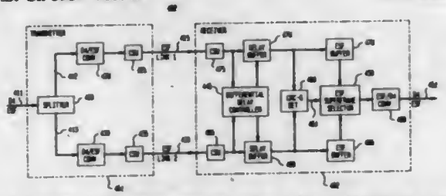
period measured from a time that the external device is disconnected to a time when the output signal reaches a predetermined level.

5,577,196

INTELLIGENT DIGITAL SIGNAL HITLESS PROTECTION SWITCH

Daniel D. Peer, Overland Park, Kans., assignor to Sprint Communications Co. L.P., Kansas City, Mo.

Continuation of Ser. No. 44,348, Apr. 7, 1993, abandoned.
This application Nov. 30, 1995, Ser. No. 565,223
Int. Cl.[6] H04J *3/14*; H04L *1/00*
U.S. Cl. 395—783.19 **37 Claims**



1. Circuitry for interconnecting either a first autonomous communication link or a second autonomous communication link to an output port, wherein each link propagates the same data stream in the Extended Superframe Format (ESF), each ESF data stream including check data for each ESF superframe, and wherein the first link propagates first ESF superframes and the second link propagates second ESF superframes, the circuitry comprising:

first means for buffering consecutive first ESF superframes and second means for buffering consecutive second ESF superframes;

means, coupled to said first and second buffering means, for aligning the first ESF superframes and the second ESF superframes to compensate for a difference in propagation delay between the first and second links so as to produce first and second aligned ESF superframes;

means, responsive to the first and second aligned ESF superframes, for sequentially detecting presence or absence of one or more first logic errors in each of the first aligned ESF superframes or of one or more second logic errors in each of the second aligned ESF superframes using the check data in the next consecutive first and second ESF superframes, respectively; and

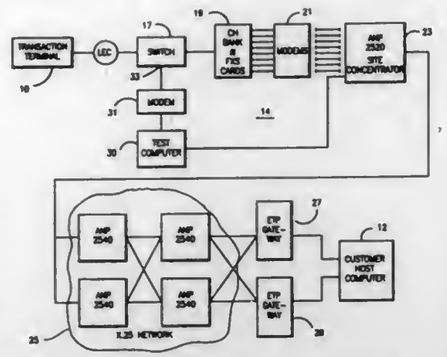
means for initially connecting the output port to said first buffering means and for switching, on a superframe basis, the output port to said second buffering means upon the presence of said first logic errors in the first aligned ESF superframe and the absence of said second logic errors in the second aligned ESF superframe to select an error-free ESF superframe and thereby provide an error-free ESF superframe to the output port.

5,577,197

TEST SYSTEM FOR TESTING ELECTRONIC TRANSACTION PROCESSING SERVICES AT A COMMON CARRIER NETWORK SWITCH

Lonnie P. Beck, Allen, Tex., assignor to MCI Communications Corporation, Washington, D.C.

Filed Oct. 29, 1992, Ser. No. 968,524
Int. Cl.[6] G06F *11/00*; H04M *3/08*; G07G *1/12*; H04Q *9/00*
U.S. Cl. 395—183.04 **9 Claims**



1. A point of sale test system for testing point of sale/electronic transaction processing services made over a common carrier network having a plurality of switches to a computer containing financial records of a plurality of customers comprising:

a modem connected to a switch port of a network switch of said common carrier network; and

a test computer located at said network switch and connected to said modem, said test computer programmed to:

initiate at periodic intervals a transaction between said test computer and said computer containing financial records, via said common carrier network, said transaction simulating said point of sale/electronic transaction processing services, said transaction comprising an exchange of information packets between said computers, said transaction beginning with a command by said test computer to said modem to go off hook and dial a destination number of a gateway connecting said computer containing financial records with said common carrier network;

monitor the transaction time required for the exchange of said information packets, including a series of consecutive sub-intervals of said transaction time, a first sub-interval representing a connect time for said modem, a second sub-interval representing an interval following said modem connect time and receipt of an acknowledgement frown said gateway, a third sub-interval representing a transit time between transmission of a packet from said test computer and receipt of a response packet from said computer containing financial records, and a fourth sub-interval representing the time between transmission of an acknowledgement from said test computer and an end of transmission packet from said computer containing financial records; and,

display an indication of the quality of said services as a function of said monitored time.

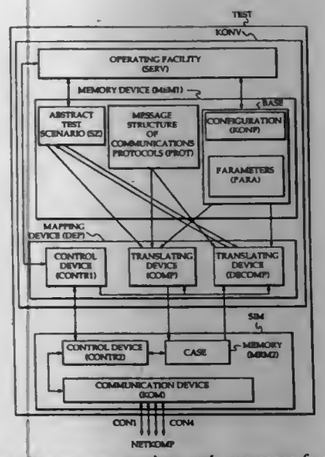
5,577,198

TEST METHOD AS WELL AS A CONVERTER, A TEST SET, AND A TEST-PROGRAM MODULE THEREFOR

Ursel Willrett, Ditzingen, and Konrad Schaupp, Gäufelden, both of Germany, assignors to Alcatel SEL A.G., Stuttgart, Germany

Filed Jul. 26, 1995, Ser. No. 507,111
Claims priority, application Germany, Jul. 28, 1994, 44 26 740.1
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—183.09 **14 Claims**

1. A method of testing at least one first device (NETKOMP) wherein the first device (NETKOMP) is connected to a simulator (SIM) which simulates at least one second device according to a test case stored in a second data set (CASE), and wherein the simulator (SIM) sends messages to the first device (NETKOMP) according to the test case, receives reply messages from the first device (NETKOMP), and stores them in the second data set, characterized in that a test is stored in advance as an abstract test scenario in a first data set (SZ), that to generate the test case, the first data set (SZ) is mapped to the second data set (CASE) by means of message-structure data and by insertion of basic-setting data, and that for evaluation, the second data set (CASE) is mapped back to the first data set (SZ) by data reduction.

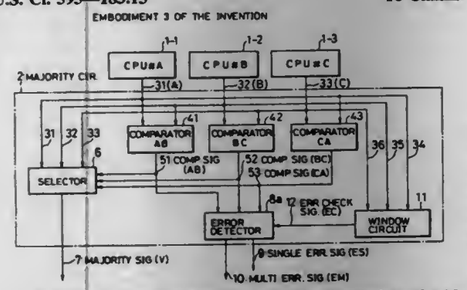


5,577,199

MAJORITY CIRCUIT, A CONTROLLER AND A MAJORITY LSI

Takashi Tanabe; Toshihisa Kamemaru; Mamoru Katoh; Tsugihiko Ohno; Toyohito Hatashita, and Kaoru Abe, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1994, Ser. No. 243,362
Claims priority, appilcation Japan, Jun. 1, 1993, 5-130724
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—183.13 **16 Claims**



1. A majority circuit for receiving X (X>=3) number of n-bit (n>=2) signals from X number of systems and for outputting one of the n-bit signals as a majority signal, the majority circuit comprising:

(a) compare means for receiving the X number of n-bit signals as input signals, the compare means including means for making a plurality of unique signal combinations, each combination being of Y (X>Y>=2) number of the input signals and being a comparison between Y number distinct input signals;

(b) select means for receiving the X number of input signals and for selecting one input signal as the majority signal based on a comparison result of the compare means;

(c) error recognition means connected to receive the comparison result from the compare means, for recognizing an existence of a faulty system among X number of systems based on the comparison result of the compare means, wherein each of the n-bit signals includes a binary strobe signal which indicates the validity of the n-bit signal; and

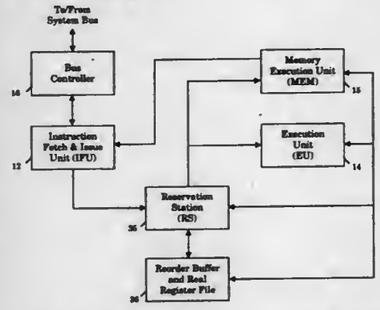
(d) window means for receiving the binary strobe signals and generating an error check signal which prohibits error recognition in the error recognition means.

5,577,200

METHOD AND APPARATUS FOR LOADING AND STORING MISALIGNED DATA ON AN OUT-OF-ORDER EXECUTION COMPUTER SYSTEM

Jeffrey M. Abramson, Aloha; Haitham Akkary, Portland; Andrew F. Glew, Hillsboro; Glenn J. Hinton; Kris G. Konigsfeld, both of Portland, and Paul D. Madland, Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 202,445, Feb. 28, 1994, abandoned.
This application Oct. 31, 1995, Ser. No. 550,573
Int. Cl.[6] G06F *11/00;9/30;9/00;* H01J *1/00*
U.S. Cl. 395—185.03 **52 Claims**



1. In an out-of-order (OOO) computer system comprising an instruction fetch and issue unit for fetching and issuing instructions, an OOO execution unit (EU) for executing instructions, a memory subsystem (MEM) for storing data, and at least one memory ordering interface (MOI) component coupled to said EU and said MEM for interfacing between said EU and MEM, an apparatus for performing a data load operation of misaligned data from said memory subsystem into said execution unit, said apparatus comprising:

(a) first misalignment detection circuitry disposed in either said EU or said at least one MOI component for detecting data chunk split misalignment for said load operation when said load operation is dispatched from said EU to said MEM; and

(b) buffering circuitry disposed in said at least one MOI component and coupled to said first misalignment detection circuitry for buffering said load operation, and dispatching said load operation to said MEM non-speculatively if data chunk split misalignment is detected for said load operation.

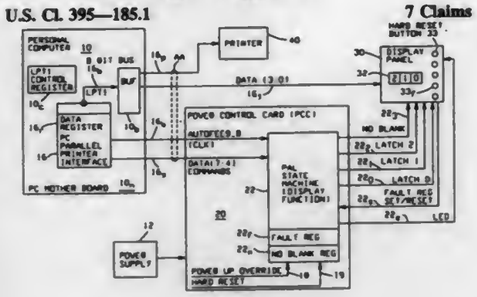
VOL 1192 ISS 3 NO 19 1996 UMI

5,577,201

DIAGNOSTIC PROTOCOL AND DISPLAY SYSTEM

Patrick C. S. Chan, Coto De Caza, and Gary C. Whitlock, Mission Viejo, both of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 217,572, Mar. 24, 1994, abandoned.
This application Sep. 20, 1995, Ser. No. 531,020
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—185.1 7 Claims



1. In a computer system having a port terminal connector and servicing a peripheral printer means, apparatus for enabling the display of system status data codes and diagnostic error codes without inhibiting printer information data transfer to said peripheral printer means said apparatus comprising:

(a) means for transferring said printer information data to said peripheral printer means including;

(a1) processor means for processing said printer information data and generating coded data for said diagnostic error codes and said system status data codes;

(a2) said first branch including bus means for transferring said printer information data to said printer means;

(a3) said printer means for printing said printer information data;

(b) means for transferring said system status data codes and diagnostic error codes to a peripheral control unit for visual display under regular operating conditions and also during initialization of said computer system said means including:

(b1) a control register for holding commands for transmission of said codes to a state machine means, said register holding an SEQ1 and SEQ2 command for indicating the transmission of code data for a display means:

(b2) a data register for holding said codes for transmission to said display means;

(b3) said state machine means for enabling said display means to visually display said codes in a display window unit, only after receiving said SEQ1 and SEQ2 commands in a two clock sequence;

(b4) said second branch including bus means in said cable means for connecting said control register and said data register to said state machine means;

(b5) said display means having said display window unit holding a plurality of display windows to display said codes;

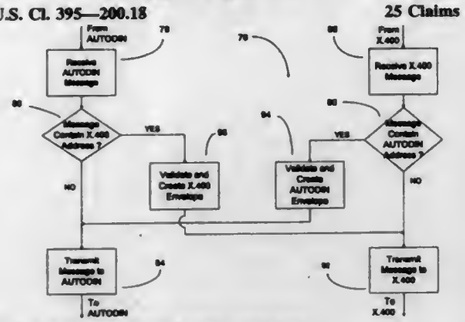
(c) dual path Y cable means connected to said port terminal connector having a first branch for conveying printer information data to said peripheral printer means and a second branch for conveying said system status data codes and diagnostic error codes to a display means.

5,577,202

MESSAGE HANDLING SYSTEM FOR AUTOMATED GATEWAY BETWEEN FIRST AND SECOND HANDLING SYSTEMS WHEREIN FIRST ENVELOPE IS ADDED TO A SECOND ENVELOPE RESPECTIVELY WITHOUT CHANGING TEXT

Robert D. Padgett, Burke, Va., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 24, 1992, Ser. No. 934,602
Int. Cl.[6] H01J *13/00*
U.S. Cl. 395—200.18 25 Claims



1. A message handling system comprising:

a first preexisting message handling system including a plurality of user addresses connected to a first communication pathway;

a second preexisting message handling system including a plurality of user addresses connected to a second communication pathway wherein said first message handling system requires messages to contain specified message handling attribute information, such that messages from the second message handling system are incompatible with the first message handling system; and

automated gateway means for providing an interface between the first and second message handling systems, said gateway means being coupled to said first and second communication pathways means and including:

message routing means for receiving messages from one of said plurality of user addresses in said first and second message handling systems, said routing means including means for storing a table of said user addresses existing in the first message handling system;

means for determining if the text of said message received from one of said plurality of user addresses in said second message handling system contains one of said first message handling system addresses in said table;

means for creating a first message handling system envelope and adding it to said second message handling system message if it contains a first message handling system address, wherein said envelope contains said first message handling system message handling attribute information thereby making the second message handling system message compatible with the first message handling system while leaving the format of the text of said second message handling system message substantially unaltered, said first message handling system envelope being incompatible with said second message handling system;

means for transferring said second message handling system message containing said envelope to one of said plurality of user addresses in said first message handling system; and

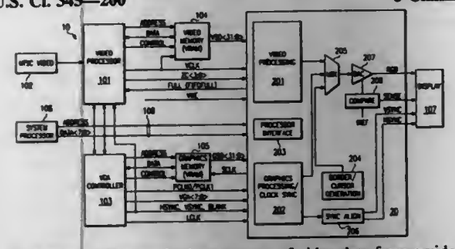
means for transmitting said received second message handling system messages containing only second message handling system addresses back to said second message handling system communication pathway unchanged without said envelope.

5,577,203

VIDEO PROCESSING METHODS

Christopher L. Reinert; Sudhir Sharma; Robert M. Nally, all of Plano, and John C. Schafer, Wylie, all of Tex., assignors to Cirrus Logic, Inc., Fremont, Calif.

Continuation of Ser. No. 99,194, Jul. 29, 1993, abandoned.
This application Mar. 13, 1995, Ser. No. 402,934
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—200 3 Claims



1. A method for transferring a stream of video data from a video data source including a video processor and a video frame buffer to a display interface unit, comprising the steps of:

writing each video data word of the stream of video data from the video frame buffer to an input of a first-in-first-out memory with a first clock signal received from the video processor;

adding an address used for writing the video data into the first-in-first-out memory with the inverse of an address used for reading the video data out of memory;

decoding a sum produced during said step of adding and in response transmitting a signal signaling that the first-in-first-out memory is becoming full when the sum exceeds a preselected value; and

reading each video data word of the stream of video data from an output of the first-in-first-out memory with a second clock signal derived from a clock signal received from an associated graphic controller, the first and second clock signals maintaining the stream of video data at the output of the first-in-first, out memory without interruption independent of interruptions in the video data stream occurring at the input of the first-in-first-out memory.

5,577,204

PARALLEL PROCESSING COMPUTER SYSTEM INTERCONNECTIONS UTILIZING UNIDIRECTIONAL COMMUNICATION LINKS WITH SEPARATE REQUEST AND RESPONSE LINES FOR DIRECT COMMUNICATION OR USING A CROSSBAR SWITCHING DEVICE

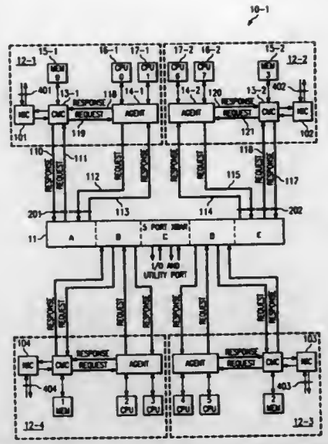
Tony M. Brewer; Thomas L. Watson, both of Dallas, and David M. Chastain, Plano, all of Tex., assignors to Convex Computer Corporation, Richardson, Tex.

Filed Dec. 15, 1993, Ser. No. 168,531
Int. Cl.[6] G06F *13/00;13/14*
U.S. Cl. 395—200.01 5 Claims

1. A communication system for interconnecting a plurality of individual computing units, each unit including a processor and a memory, said system comprising

means, including a first crossbar, for interconnecting a first group of said computing units for the interchange of data packets, each said unit of said first group connected to an individual port of said crossbar link, and each said data packet including an address portion and a working data portion, said crossbar including

means at each port for delivering a data packet from said processor to a first unidirectional request portion of said crossbar;



means at each said port of said crossbar for delivering a data packet from said request portion of said unidirectional link to said memory;

means at each said port for delivering a data packet from said memory to a first unidirectional response portion of said crossbar; and

means at each said port of said crossbar for delivering a data packet from said unidirectional response portion of said unidirectional link to said processor; and

a unidirectional ring separate from said crossbar for connecting each said computing unit to other computing units not connected to said crossbar, said ring including

a communication controller associated with each said unit and a transmission network connectable to a plurality of said other units; and

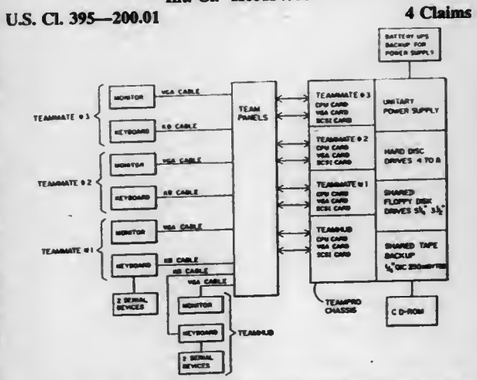
said communication controller having a dual unidirectional communication connection with a coherent memory controller in each said unit.

5,577,205

CHASSIS FOR A MULTIPLE COMPUTER SYSTEM

Ivan C. Hwang, and Masahiro Taguchi, both of Santa Ana, Calif., assignors to HT Research, Inc., Tustin, Calif.

Continuation of Ser. No. 33,161, Mar. 16, 1993, abandoned.
This application Apr. 21, 1995, Ser. No. 426,637
Int. Cl.[6] H05K *7/00*
U.S. Cl. 395—200.01 4 Claims



1. A unitary chassis having a multiple computer system contained therein and comprising:

a plurality of CPU circuits, each such CPU circuit corresponding to a distinct computer;

a plurality of bus intercommunication circuits for data communications between said computers, each said bus intercommunication circuit corresponding to a distinct computer;

a plurality of display monitor control circuits for controlling display monitors, each such display monitor control circuit corresponding to a distinct computer;

said pluralities of CPU circuits, bus intercommunication circuits and display monitor control circuits being contained and electrically interconnected within said unitary chassis; and

at least one power supply within said chassis for powering all of said circuits; and

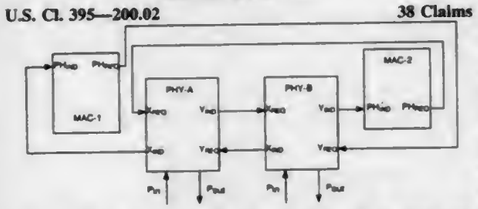
wherein said chassis comprises a six-sided housing having a pair of rectangular side panels, each such panel having a plurality of slots for providing access to said circuits of said chassis, one such rectangular side panel being a duplicate of one-half of the other such rectangular side panel and leaving an opening in said housing for removal and replacement of said circuits.

5,577,206

SYSTEM FOR PHYSICAL LAYER CONTROLLERS FOR PERFORMING AUTOMATIC HARDWARE BASED SCRUBBING OF INPUT AND OUTPUT DIRTY FLAGS FOR UPDATING SYSTEM CONFIGURATION CHANGES

Walter R. Friedrich, Pleasanton, Calif.; James R. Hamstra, Shorewood, and James F. Torgerson, Andover, both of Minn., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 9, 1993, Ser. No. 28,342
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.02 **38 Claims**



1. A physical layer controller for controlling the physical layer of a node that is capable of insertion into a data transmission network, the physical layer controller including:

a receiver having a receiver input that is suitable for connecting the node to the data transmission network;

a transmitter having a transmitter output that is suitable for connecting the node to the data transmission network;

a channel having a channel input and a channel output;

a transmitter output dirty flag associated with the transmitter output and a channel output dirty flag associated with the channel output, wherein each output dirty flag is arranged to be set to a first level by the physical layer controller when its associated output has a potential to transmit a data frame; and

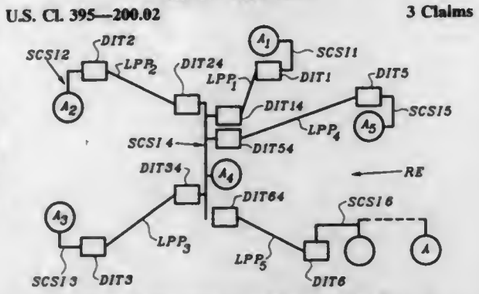
a receiver input dirty flag associated with the receiver input and arranged to be set to the first level by the physical layer controller when it sources signals to an output whose associated output dirty flag is set.

5,577,207

SYSTEM AND METHOD FOR CONNECTING SCSI UNITS SPACED AT DISTANCE WHICH IS GREATER THAN THE STANDARD MAXIMUM LENGTH VALUE OF THE SCSI PROTOCOL

Edouard Pauget, Clayes Sous Bois, and Christian Mollard, La Celle Saint Cloud, both of France, assignors to Bull S.A., Paris, France

Continuation of Ser. No. 24,443, Mar. 1, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 460,629
Claims priority, application France, Nov. 24, 1992, 92 14110
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.02 **3 Claims**



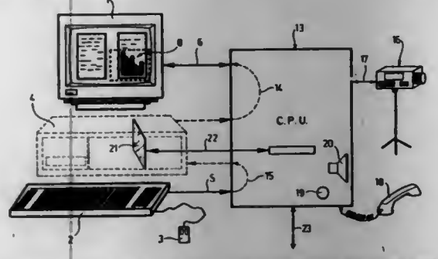
1. A system of a maximum of N SCSI units (A, B, C, D, . . .) distributed in a network (RE) operating by a SCSI PROTOCOL in which a length of a bus, ($SCSI_1$, $SCSI_2$, $SCSI_3$) used to interconnect a plurality of SCSI units is limited to a standard maximum value, and the SCSI units are spaced at a distance which is greater than said standard maximum value, said system comprising a plurality of local partial buses ($SCSI_1$–$SCSI_3$) connected to one another via bidirectional point-to-point links (LPP_1, LPP_2), intermediate transmission devices (DIT_1, DIT_{21}, DIT_{23}, DIT_3) for managing said links, each of said devices being connected both to a partial bus and to a point-to-point link, wherein said point to point links operate in accordance with a modified SCSI protocol which takes into account lengthening of propagation time of signals on the network, wherein each transmission device (DIT_1, DIT_{21}, etc.) includes a first interface (IL) for connection with an associated partial bus, a second interface (ID) for connection with an associated bidirectional link (LPP), a central portion (ME) managing transfers of data from the partial bus to the link and vice versa, each partial bus ($SCSI_1$, $SCSI_2$, etc.) functioning in accordance with a predetermined SCSI standard, wherein the central portion is a state machine that assures management of gaining control of a network (RE_1) on a part of any unit (A, B, C, D, . . .) belonging to the network as a function of signals appearing at the first and second interfaces (IL, ID), said transmission devices being spaced at a distance which is greater than said standard maximum value, and further wherein an arbitration phase is defined by the SCSI standard and is used locally by each state machine (ME) at a level of the partial bus ($SCSI_1$, $SCSI_2$, . . .) associated with the corresponding intermediate transmission device (DIT_1, DIT_{21}, DIR_{23}, DIR_3), the latter being a virtual SCSI unit assigned a highest priority for its own associated partial bus during phases of arbitration and selection defined by the SCSI standard, the state machine (ME) including means for detecting the beginning of an arbitration phase and means for neutralization acting upon the first interface to prevent any SCSI unit connected to the associated partial bus from gaining control of the network, as soon as the detecting means have detected the beginning of an arbitration phase, and further wherein each unit assigned the highest priority includes means for outputting a selection signal as soon, while participating in the arbitration phase, as it has gained control of the bus to which it is connected, the state machine including means for detecting the selection signal for releasing the first interface and transmitting the selection signal to the second interface, and further wherein the state machine includes means for memorizing, during a predetermined delay, a degree of priority of the SCSI units seeking to gain control of the network.

5,577,208

"MULTIMEDIA" INTERCOMMUNICATION BETWEEN WORKSTATIONS HAVING AUXILIARY UNIT DIRECTLY CONNECTED TO OUTPUT OF WORKSTATION AND INPUT TO DISPLAY WHEREIN LOCAL AND REMOTE IMAGE DATA ARE COMBINED

Patrice Couturier, Eaubonne, France, assignor to Alcatel NV, Netherlands

Filed Jun. 23, 1992, Ser. No. 902,905
Claims priority, application France, Jun. 25, 1991, 91 07791
Int. Cl.[6] H01J *13/00*
U.S. Cl. 395—200.04 **4 Claims**



1. A multimedia intercommunication installation between a plurality of users, said installation including for each of said users:

a workstation having a screen, a main processing unit providing a source of local image data, data input means including at least a keyboard for providing a source of control data, and an auxiliary processing unit directly connected between an output of the main processing unit and an input of the screen for supplying said screen with a video image derived at least in part from said local image data, said auxiliary processing unit comprising

data input means for selectively receiving said control data from said keyboard to thereby define a desired multimedia intercommunication,

auxiliary image input means for connection to a source of remote image data,

pixel output means responsive to said local image data, to said remote image data and to said control data, for supplying said screen with said processed video image in the form of pixel data incorporating at least portions of both said local image data and said remote image data for simultaneous display of the screen in accordance with said desired multimedia intercommunication, and

interconnection means including an interconnection for selectively transmitting the local image data to another said workstation and for receiving the remote image data from that other workstation.

5,577,209

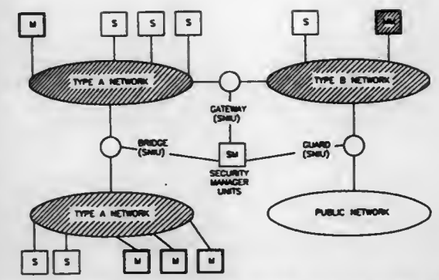
APPARATUS AND METHOD FOR PROVIDING MULTI-LEVEL SECURITY FOR COMMUNICATION AMONG COMPUTERS AND TERMINALS ON A NETWORK

John M. Boyle, Cranford, N.J.; Eric S. Maiwald, Southfields, N.Y., and David W. Snow, Convent Station, N.J., assignors to ITT Corporation, New York, N.Y.

Continuation of Ser. No. 728,633, Jul. 11, 1991, abandoned. This application Jul. 5, 1994, Ser. No. 270,398
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.06 **20 Claims**

1. A multi-level network security apparatus for a computer network having at least one user coupled thereto, the at least one user selected from a group consisting of a host computer and at least a second network, comprising:

a secure network interface unit (SINU) coupled between said at least one user and the computer network which operates at a user layer communications protocol, said SINU comprising:



a user interface for providing an interface between the user and SNIU, said user interface being operative for translating data received from the user into a format used by said SNIU,

a session manager for identifying a user requesting access to the network at the session level and verifying if the identified user is authorized for access to the network, managing functions of communications sessions permitted by said network security apparatus and maintaining a session audit,

a dialogue manager for controlling a data path established in the SNIU,

and an association manager which operates to establish and control a user session at a session layer of interconnection between the user and the network through said SNIU if said identified user is verified for access,

whereby the SNIU is implemented to create a global security perimeter for end-to-end communications and wherein the network may be individually secure or non-secure without compromising security of communications within said global security perimeter; and

a security management architecture, including a security manager (SM) connected to said SNIU for causing said SNIU to be operated and configured for protecting the security communications transmitted through said SNIU between the at least one user and the network, said SM capable of implementing a security policy selected from the group consisting of discretionary access control, mandatory access control, object reuse, labeling, denial of service detection, data type integrity, cascading control and covert channel use detection, said SM further providing inter-network administration.

5,577,210

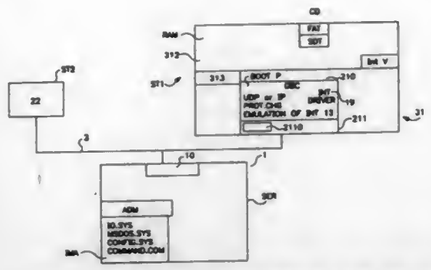
REMOTE BOOTING OF AN OPERATING SYSTEM BY A NETWORK

Arave Abdous, Massy; Stéphane Demortain, Palaiseau, and Didier Dalongville, Gometz Le Chatel, all of France, assignors to Bull S.A., Paris, France

PCT No. PCT/FR92/00977, § 371 Date Jun. 16, 1993, § 102(e) Date Jun. 16, 1993, PCT Pub. No. WO93/08527, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 15, 1992, Ser. No. 75,578
Claims priority, application France, Oct. 17, 1991, 91 12837
Int. Cl.[6] G06F *9/445*
U.S. Cl. 395—200.1 **13 Claims**

1. A method for remote booting by a server of at least one terminal, wherein said terminal includes a volatile memory, at least one processor, a telecommunications card enabling connection to the server by a network, said server being provided with telecommunication means and memory means of sufficient capacity to store a communications protocol, an operating system for the terminal stored in an image file, a server operating system, and applications programs, wherein said method comprises the steps of remote loading said terminal with a startup program, and transforming a first interruption produced by the terminal when the terminal is powered up into a request for reading the image file stored in the server;

wherein said step of remote loading said terminal with a startup program includes loading a file allocation table (FAT) into the



volatile memory to define a diskette number, a head number, a track number, a track sector number, and a file name for said terminal files, and loading a sector description table (SDT) into the volatile memory to establish a correspondence between said terminal files and a diskette number, a track number, a track sector number, and chapter numbers of the image file of the server;

and further wherein the step of remote loading of the startup program comprises the steps of loading a startup (BOOT) sector into the volatile memory, starting the execution of said startup program, wherein the execution of said startup program includes file request interruptions for requesting access to nonexistent terminal files of nonexistent magnetic peripherals of the terminal, and transforming said file request interruptions into requests for reading a corresponding image file in the server; and

said method further including the step of providing an emulation program for transformation of the file request interruptions, and storing said emulation program in a nonvolatile memory of the telecommunications card.

5,577,211

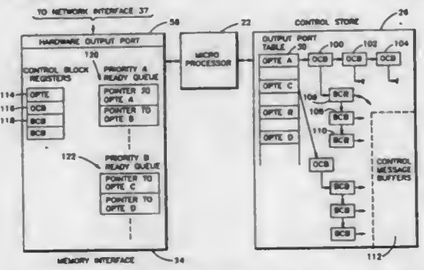
SYSTEM AND METHOD USING CHAINED STRUCTURE QUEUES FOR ORDERING OF MESSAGE DELIVERY BETWEEN CONNECTED NODES WHEREIN UNSUCCESSFUL MESSAGE PORTION IS SKIPPED AND RETRIED

Narasimhareddy L. Annapareddy; James T. Brady; Damon W. Finney, all of San Jose; Richard F. Freitas, Morgan Hill, all of Calif.; Michael H. Hartung, Tucson, Ariz.; Michael A. Ko, San Jose, Calif.; Noah R. Mendelsohn, Arlington, Mass.; Jaishankar M. Menon, San Jose, Calif.; David R. Nowlen, Morgan Hill, Calif., and Shin-Yuan Tzou, San Jose, Calif., assignors to IBM Corporation, Armonk, N.Y.

Filed May 11, 1994, Ser. No. 241,920

Int. Cl.[6] G06F *13/00;13/38;15/16*

U.S. Cl. 395—200.13 **8 Claims**



1. A computing system comprising plural nodes connected by a communications network, each node comprising:

communication interface means for exchanging messages with other nodes;

message queue means for arranging plural message entries in a queue, each message entry comprising a pointer to an output message control structure;

memory for storing plural output message control structures, each output message control structure indicating one or more chained further message control structures that define message portions which together comprise a message, each output message control structure further enabled to be chained to other message output control structures, plural message control structures that are chained exhibiting a sequence dependency; and

processor means controlled by message entries in said message queue means for dispatching at least a first message portion and a second message portion under control of first and second chained output message control structures, respectively, said processor means enabling dispatch of said second message portion only after successful transmission of said first message portion upon which said second message portion is sequence dependent; and

wherein, each message entry in said message queue means defines a message transmission, all message portions designated by an output message control structure that is pointed to by a message entry exhibiting sequence dependency, said message queue means arranging said message entries in plural queues of different priority orders;

said processor means responsive to an unsuccessful dispatch of a first message portion to discontinue a transmission that includes further message portions of a message transmission that includes said first message portion and to commence a transmission of a second message transmission in accordance with a further message entry queued in a like priority message queue means, said processor means thereafter again attempting to retransmit said message transmission that was interrupted by starting with said first message portion so as to assure dispatch thereof strictly in accordance with said sequence dependency.

5,577,212

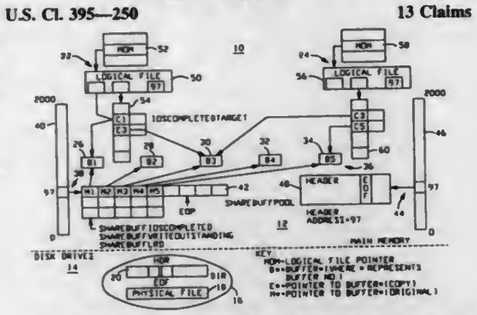
METHOD FOR REPORTING FILE WRITE STATUS IN A SHARED FILE SYSTEM

Craig F. Russ, Berwyn, Pa., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 9, 1994, Ser. No. 353,487

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—250 **13 Claims**



1. In a data processing system in which access to a physical file is shared among a plurality of users, a method of minimizing physical write operations, comprising the steps of:

(a) initializing one of a plurality of buffers that comprise a shared buffer pool with data from the physical file;

(b) controlling users' write requests to the physical file from said one of said plurality of buffers that comprise said shared buffer pool, such that the plurality of users share substantially simultaneous write access to the physical file copied in said one of said plurality of buffers, and wherein a single write operation from said one of said plurality of buffers to the physical file is performed after writes by at least one of the plurality of users to said one of said plurality of buffers;

(c) reporting status information to the users who had written to said one of said plurality of buffers when a write operation of the contents of said one of said plurality of buffers to the physical file fails.

5,577,213

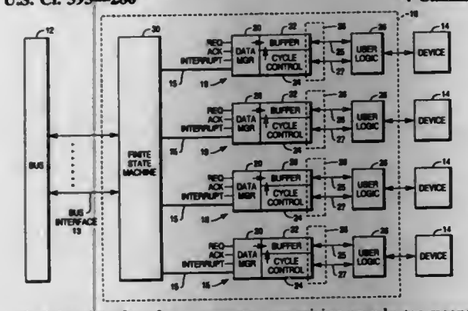
MULTI-DEVICE ADAPTER CARD FOR COMPUTER

James M. Avery, and William D. Isenberg, both of Fort Collins, Colo., assignors to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios Logic Inc., Fort Collins, Colo.

Filed Jun. 3, 1994, Ser. No. 253,530

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—280 **4 Claims**



1. A bus interface for a computer comprising an adapter means for adapting a plurality of devices to a computer bus, said adapter means comprising:

a dedicated buffer means for each device, for storing data;

a separate data manager for each dedicated buffer means, for controlling data transfers between said dedicated buffer means and said computer bus; and

a separate control means for each dedicated buffer means, for controlling data transfers between said dedicated buffer means and a respective device;

wherein said adapter means transfers data free of any controller that may be used in controlling both data transfers between said dedicated buffer means and said computer bus and data transfers between said dedicated buffer means and a respective device.

5,577,214

PROGRAMMABLE HOLD DELAY

Dipankar Bhattacharya, Santa Clara, Calif., assignor to OPTi, Inc., Milpitas, Calif.

Continuation of Ser. No. 973,251, Nov. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 885,430, May 18, 1992, Pat. No. 5,448,742. This application May 23, 1995, Ser. No. 448,050

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—287 **14 Claims**

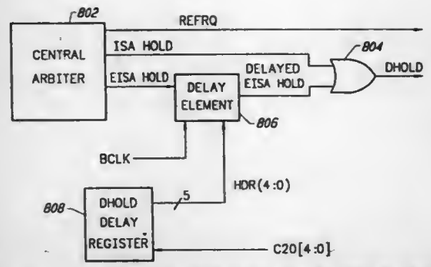
1. A computer system, comprising:

a requesting device providing a first bus request signal;

a host bus;

a CPU coupled to said host bus, said CPU relinquishing control of said bost bus in response to a received hold request;

a bus interface device coupled to said host bus, and coupled to receive said first bus request signal, said bus interface device providing said hold request to said CPU and said bus interface device taking control of said bus only at a time subsequent to providing said hold request, said bus interface device including hold delay means, coupled to receive said first bus request signal, for delaying provision of said hold request by said bus interface device for a programmable time period following receipt of said first bus request signal.



5,577,215

DATA TRANSMISSION CIRCUIT FOR DIGITAL SIGNAL PROCESSOR CHIP AND METHOD THEREFOR

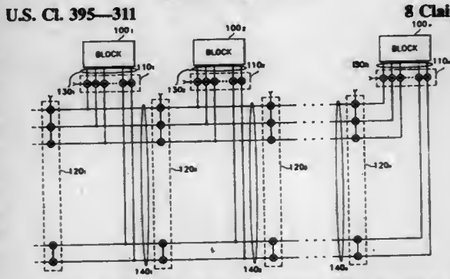
Bang-won Lee, Kwangmyeong, and Dong-hoi Kim, Suwon, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 25, 1994, Ser. No. 217,896

Claims priority, application Rep. of Korea, Mar. 25, 1993, 93-4669

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—311 **8 Claims**



1. A data transmission circuit for a digital signal processor chip having a plurality of function blocks, said data transmission circuit comprising:

a plurality of local buses each connected to a respective one of said plurality of function blocks;

a global bus including a plurality of global bus sections, each of said plurality of global bus sections being selectively electrically connectable to only a corresponding one of said plurality of local buses so that each of said plurality of local buses can transfer data between said respective one of said plurality of function blocks and a corresponding one of said plurality of global bus sections; and

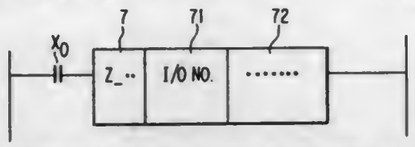
a plurality of first isolation switches each selectively electrically connecting and isolating two adjacent ones of said plurality of global bus sections, each of said plurality of first isolation switches being able to be operated simultaneously with at least one of the other of said plurality of said first isolation switches to permit data transmission through said two adjacent ones of said plurality of global bus sections.

5,577,216

CONTROLLING PROCESS FOR A CONTROLLING APPARATUS HAVING A CPU AND SPECIAL FUNCTION UNITS

Shinichi Amasaki, and Teruyo Asai, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 785,069, Oct. 30, 1991, abandoned. This application Mar. 30, 1994, Ser. No. 219,874
Claims priority, application Japan, Oct. 31, 1990, 2-294504
Int. Cl.[6] G06F 9/445
U.S. Cl. 395—376 8 Claims



1. A process for controlling a control unit including a CPU unit for conducting program sequence control and special function units for performing special function control in accordance with commands from said CPU unit, comprising steps of:

creating a program having at least one instruction step which includes a function-symbol indicating a special function unit-corresponding instruction and a type-symbol denoting a special function type, said function-symbol and said type-symbol being independent of an address of said at least one instruction step;

storing said program into a program memory; and

executing each instruction in said program, said executing step comprising:

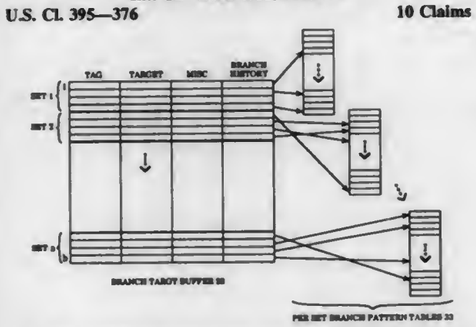
determining whether a current instruction from said program corresponds to one of said special function units, based on said function symbol and said type symbol of said current instruction.

5,577,217

METHOD AND APPARATUS FOR A BRANCH TARGET BUFFER WITH SHARED BRANCH PATTERN TABLES FOR ASSOCIATED BRANCH PREDICTIONS

Bradley D. Hoyt, and Subramanian Natarajan, both of Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 314,936, Sep. 29, 1994, abandoned, which is a continuation of Ser. No. 62,057, May 14, 1993, abandoned. This application May 7, 1996, Ser. No. 646,058
Int. Cl.[6] G06F 9/22;9/26;9/38
U.S. Cl. 395—376 10 Claims



1. In a computer processor, said computer processor coupled to a memory, a branch prediction apparatus for predicting a stream of processor instructions to fetch, said branch prediction apparatus comprising the elements of:

a branch target buffer comprising M branch prediction entries, each of said branch prediction entries comprising

a target address tag, said target address tag specifying a target address for said branch prediction entry, and

a K bit branch history, said K bit branch history comprising a series of K bits used as an index into a branch pattern table,

a precalculated prediction bit, said precalculated prediction bit based upon said K bit branch history;

said M branch prediction entries divided into N sets of branch prediction entries wherein N is less than M; and

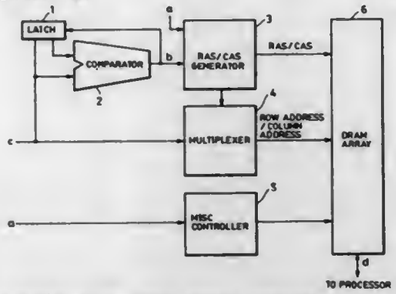
N branch pattern tables, each of said N branch pattern tables associated with one of said N sets of branch prediction entries such that each branch prediction entry shares one of said N branch pattern tables with other branch prediction entries in the same set.

5,577,218

MEMORY ACCESS CONTROL METHOD WHEREIN BLOCK ACCESS IS PERFORMED AS A SEQUENTIAL ACCESS TO AN ADDRESS UPDATED BY INCREMENTATION

Kazumasa Hamaguchi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 851,920, Mar. 16, 1992, abandoned. This application Apr. 24, 1995, Ser. No. 428,799
Claims priority, application Japan, Mar. 20, 1991, 3-081445
Int. Cl.[6] G06F 12/06
U.S. Cl. 395—405 6 Claims



1. A memory access control method comprising the steps of:

receiving address data of an access request;

discriminating whether a row address of the received address data accords with a row address of preceding access address data held in a latch;

discriminating whether a column address of the received address data is greater than a column address of the preceding access address data held in the latch;

successively incrementing a column address of an access address to a memory in a predetermined cycle, from the column address of the preceding address up to the column address of the received address data, and fixing a row address of the access address as the row address of the preceding access address if the row address of the received address data is determined to accord with the row address of the preceding access address data and if the column address of the received address data is determined to be greater than the column address of the preceding access address data, as results obtained in said discriminating steps;

successively performing access to the memory with the access address each time the column address of the access address is incremented in said incrementing step; and

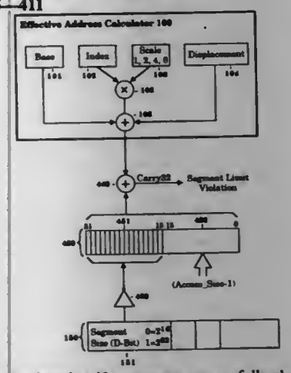
updating the access address data held in the latch by the access address each time the column address of the access address is incremented in said incrementing step.

5,577,219

METHOD AND APPARATUS FOR PREFORMING MEMORY SEGMENT LIMIT VIOLATION CHECKS

Mark Timko, Portland, and Scott D. Rodgers, Hillsboro, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed May 2, 1994, Ser. No. 236,587
Int. Cl.[6] G06F 9/355;12/06
U.S. Cl. 395—411 11 Claims



1. A method of testing if a memory access falls above a defined memory segment, said memory access having a memory access size, said method comprising the steps of:

generating an effective address for said memory access;

concatenating a set of high order bits onto said memory access size minus one to create an access_size, said set of high order bits for propagating a carry bit from said access_size if said effective address of said memory access reaches above said defined memory segment;

adding said access_size to said effective address; and signaling a segment limit violation if said carry bit is generated from said step of adding.

5,577,220

METHOD FOR SAVING AND RESTORING THE STATE OF A CPU EXECUTING CODE IN PROTECTED MODE INCLUDING ESTIMATING THE VALUE OF THE PAGE TABLE BASE REGISTER

James L. Combs; Dwayne T. Crump, and Steven T. Pancoast, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 97,246, Jul. 23, 1993, Pat. No. 5,497,494, and a continuation of Ser. No. 457,768, Jun. 1, 1995. This application Oct. 3, 1995, Ser. No. 538,532
Int. Cl.[6] G06F 12/08
U.S. Cl. 395—416 5 Claims

1. In a computer system having:

(a) a processing unit;

(b) a memory circuit having addressable memory locations in circuit communication with the processing unit; and

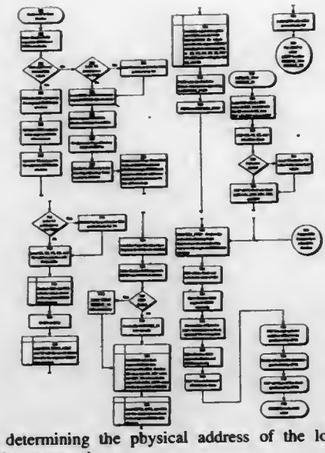
(c) a memory manager in circuit communication with the processing unit and the memory circuit, the memory manager having a page directory base register associated therewith for affecting accesses by the processing unit to the memory circuit and associating a linear address to a physical address of the memory locations in the memory circuit;

a method of estimating the value of the page directory base register, comprising the steps of:

(1) locating a page translation table by searching at least a subset of all physical memory for a page translation table;

(2) determining the physical address of the located page translation table;

(3) locating a page directory by searching at least a subset of all physical memory for a page directory whose first entry corresponds to the physical address of the located page translation table;



(4) determining the physical address of the located page directory; and

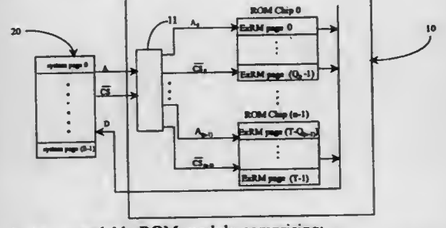
(5) using the physical address of the located page directory as the value of the page directory base register.

5,577,221

METHOD AND DEVICE FOR EXPANDING ROM CAPACITY

Chih-Yuan Liu, Chupei, and Po-Chuan Kang, Pan-Chiao, both of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Apr. 14, 1994, Ser. No. 227,721
Int. Cl.[6] G06F 12/00
U.S. Cl. 395—427 18 Claims



1. An expandable ROM module comprising:

(a) a ROM interface having a predetermined number of address lines;

(b) a memory array of variable size, said memory array can be divided into T pages of equal-sized subarrays, wherein T is a positive integer;

(c) a temporary storage means for storing page information, which will be used to direct address inputs from said address lines to a predetermined page of said memory array, said temporary, storage means comprising T mapping arrays;

(d) a convert-read-to-write means for writing said page information to said temporary storage means; and

(e) a selection circuit connected to said ROM interface for decoding an input address data into said page information, said selection circuit containing a comparator to compare a first portion of said input address data against a predetermined string of bits, and when said predetermined string of bits is detected at predetermined locations in said input address data, said selection circuit will trigger said convert-read-to-write means and cause a second portion of said input address data to be stored in said temporary storage means as said page information;

(f) wherein said convert-read-write means is selected from the group consisting of direct segmented convert-read-to-write means, indirect segmented convert-read-to-write means, and multiple indirect segmented convert-read-to-write means;

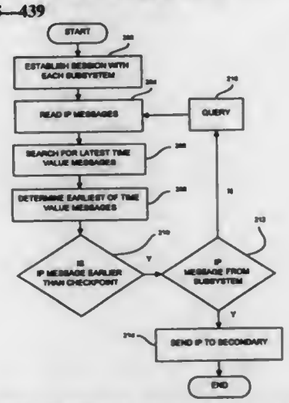
(g) further wherein with said direct segmented convert-read-to-write means, page addresses to said T mapping arrays are written in a plurality of steps; with said indirect segmented convert-read-to-write means, page addresses to said T mapping arrays are first written to an index register and then decoded before being written to said T mapping arrays; and with said multiple indirect segmented convert-read-to-write means, page addresses to said T mapping arrays are first written to a first index register, decoded, then written to at least one more index register and decoded again before being written to said T mapping arrays.

5,577,222

SYSTEM FOR ASYNCHRONOUSLY DUPLEXING REMOTE DATA BY SENDING DASD DATA GROUPED AS A UNIT PERIODICALLY ESTABLISHED BY CHECKPOINT BASED UPON THE LATEST TIME VALUE

William F. Micka, Tucson, Ariz.; Claus W. Mikkelsen, and Robert W. Shomler, both of Morgan Hill, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1992, Ser. No. 992,219
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—439 **13 Claims**



1. In a system for duplexing remote data, the system including a plurality of direct access storage device (DASD) subsystems, each subsystem including a plurality of information packet messages associated with DASD data write operation, each of the information packet messages having a time value associated therewith, each of the information packet messages having a sequence number, a method for asynchronously duplexing DASD data content from the DASD subsystems comprising the steps of:

(a) establishing a session with each of the plurality of subsystems;

(b) reading the information packet messages from each of the DASD subsystems after a write operation to the subsystem;

(c) establishing a periodic sequence checkpoint based on a latest time value associated with one of the plurality of information packet messages to group a plurality of information packet messages together as a single sequence unit;

(d) sending the sequence unit to a secondary location for processing;

(e) obtaining DASD data associated with the information packet messages from each of the subsystems; and

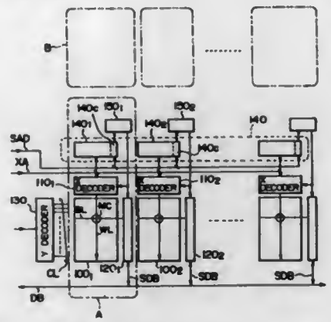
(f) sending the DASD data to a secondary location.

5,577,223

DYNAMIC RANDOM ACCESS MEMORY (DRAM) WITH CACHE AND TAG

Satoru Tanoi; Yasuhiro Tanaka, and Tetsuya Tanabe, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Aug. 29, 1994, Ser. No. 297,450
Claims priority, application Japan, Aug. 31, 1993, 5-216027
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—445 **16 Claims**



1. A dynamic RAM comprising:

(a) an array of memory cells including a sub-array having a memory cell located at a cross point of a word line and a bit line;

(b) an X decoder for decoding an X address of the sub-array and for selecting the word line;

(c) a column sense amplifier for detecting and amplifying data on the bit line read out from the memory cell;

(d) a sub-array control circuit for controlling the column sense amplifier as a cache; and

(e) a TAG block corresponding to the sub-array for storing a TAG address only for the sub-array and for receiving and storing the X address.

5,577,224

METHOD AND SYSTEM FOR CACHING DATA

Frederick J. DeWitt, Kirkland, and Ronald O. Radko, Bellevue, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Dec. 13, 1994, Ser. No. 356,077
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—445 **6 Claims**

2. A method in a computer system for determining priority of data in a cache memory, the data being of a type that is path table data, directory data, or file data, comprising:

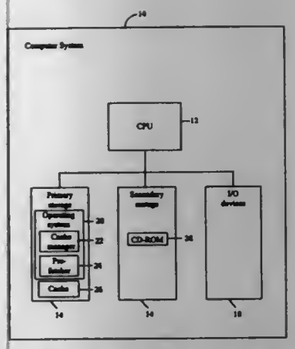
receiving data to store in the cache memory;

determining the type of the received data;

when the type of the data is path table data, storing the data in the cache memory with a priority that is a high priority;

when the type of the data is directory data, storing the data in the cache memory with a priority that is a medium priority;

when the type of the data is file data, storing the data in the cache memory with a priority that is a low priority; and



when receiving additional data to store in the cache memory, lowering the priority of the data currently in cache memory that has a priority that is less than or equal the priority of the new data

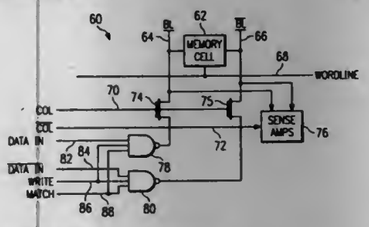
wherein data in cache memory with a lowest priority is allocated for storing newly received data.

5,577,225

DATA CACHE MEMORY INTERNAL CIRCUITRY FOR REDUCING WAIT STATES

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Division of Ser. No. 923,856, Jul. 31, 1992, Pat. No. 5,513,143.
This application Mar. 21, 1995, Ser. No. 407,757
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—445 **6 Claims**



1. A cache subsystem, comprising

a processor, with address and data inputs/outputs, which provides control signals used to coordinate read cycles and write cycles;

a main memory;

a data cache residing between said processor and said main memory, said data cache stores a copy of a subsection of said main memory;

a tag RAM residing between said processor and said main memory, said tag RAM generates a match output signal indicative of whether the contents of a selected main memory cell requested during a processor read or write cycle is resident in said data cache; and

control circuitry which resides within said data cache for preventing completion of said write cycle of said data cache until the match output signal generated by the tag RAM is indicative of a hit condition;

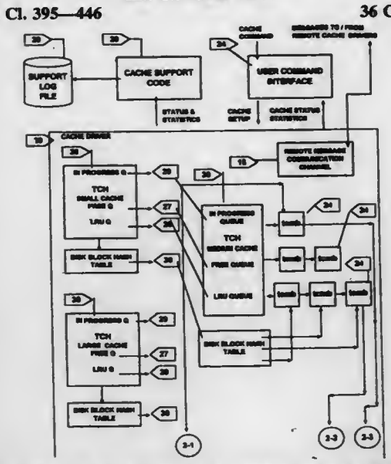
wherein a write signal and the associated write data to be written into a memory cell within said data cache, corresponding to said write cycle, are allowed to propagate up to said control circuitry until said match output signal indicative of a high condition is received by said control circuitry; when said match output signal indicative of a hit condition is received by said control circuitry, said associated data are allowed to finish propagating to said memory cell.

5,577,226

METHOD AND SYSTEM FOR COHERENTLY CACHING I/O DEVICES ACROSS A NETWORK

James L. Percival, Somerset, United Kingdom, assignor to EEC Systems, Inc., Sudbury, Mass.

Filed May 6, 1994, Ser. No. 238,815
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—446 **36 Claims**



1. A cache driver operating in a computer having a RAM and connected to a network of remote computers, said cache driver comprising:

means for creating a plurality of caches, each of said caches including data structures for identifying a plurality of data buckets located in the RAM of said computer; remote message means for communicating with cache drivers on any of said remote computers;

means for creating a data structure for each of a plurality of I/O devices connected to said network for which data may be cached by said computer, each said data structure including a list of all computers on said network that permit caching with respect to the I/O device corresponding to said data structure;

means for receiving a write instruction to one of said plurality of I/O devices from said computer and for writing data responsive to said instruction into a data bucket in one of the caches;

means for invalidating all data buckets in the plurality of caches that have data blocks corresponding to addresses in said one of said plurality of I/O devices that overlap with the addresses in said one of said plurality of I/O devices for the data written in response to the write instruction; and

means for using said remote message means to communicate with all computers in the list of computers in the data structure corresponding to said one of said I/O devices to invalidate all data buckets in any of said remote computers that have data blocks corresponding to addresses in said one of said plurality of I/O devices that overlap with the addresses in said one of said plurality of I/O devices for the data written in response to the write instruction.

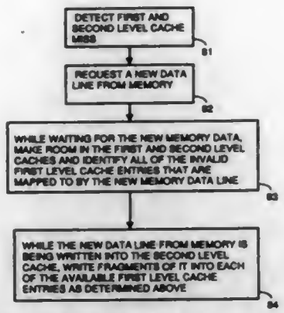
5,577,227

METHOD FOR DECREASING PENALTY RESULTING FROM A CACHE MISS IN MULTI-LEVEL CACHE SYSTEM

James S. Finnell, 4920 Englewood Dr., San Jose, Calif. 95129, and Dean A. Mulla, 985 Hibiscus La., San Jose, Calif. 95117

Filed Aug. 4, 1994, Ser. No. 286,121
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—449 **12 Claims**

1. In a computing system which includes a processor, a main memory, a first level cache and a second level cache, the second



level cache containing data lines, and each valid entry within the first level cache containing a data line fragment of a data line within the second level cache, each data line fragment contained within the first level cache including a fragment, but not all, of a data line contained within the second level cache, a method which is performed when a first level cache miss and a second level cache miss results from a cache reference of a data word made by the processor, the method comprising the steps of:

(a) fetching a new data line from the main memory;

(b) while waiting for the new data line fetched in step (a) to arrive from the main memory, determining which entries of rile first level cache are invalid; and,

(c) when the new data line arrives from the main memory, placing into the first level cache a data line fragment which includes the data word, end in addition placing into the first level cache at least one additional data line fragment which replaces an entry determined in step (b) to be invalid;

wherein concurrent with step (c) the new data line is placed in the second level cache, replacing a second level victim cache line within the second level cache.

5,577,228

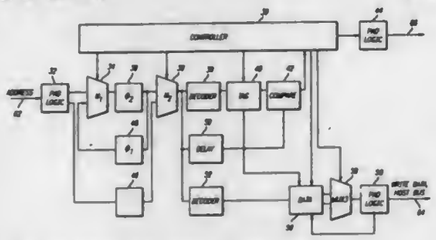
DIGITAL CIRCUIT FOR PREFORMING MULTICYCLE ADDRESSING IN A DIGITAL MEMORY

Pradip Banerjee; Atul V. Ghia, both of San Jose; Simon Lau, Fremont, and Patrick Chuang, Cupertino, all of Calif., assignors to Sony Corporation of Japan, and Sony Electronics, Inc., both of Park Ridge, N.J.

Filed Dec. 8, 1994, Ser. No. 351,900

Int. Cl.[6] G06F *9/34*

U.S. Cl. 395—467 **4 Claims**



1. An integrated cache memory comprising:

a multi-way set associative TAG RAM on a chip;

a controller on said chip coupled to the TAG RAM;

pad logic on said chip coupled to the TAG RAM and the controller;

a first multiplexer coupled to the pad logic for receiving an address;

a decoder coupled to the TAG RAM for decoding an address;

a first latch with an input and an output, the input of the first latch coupled to the output of the first multiplexer and the output of the first latch coupled to the input of the second multiplexer, the first latch storing addresses during a first phase of a digital clock cycle and for providing addresses to the decoder during a second phase of a digital clock cycle; and

a second latch with an input and an output, the input of the second latch coupled to the output of the first latch and the output of the second latch coupled to an input of the first multiplexer, the second latch storing addresses during the second phase of a digital clock cycle and for providing addresses to the first multiplexer during the second phase of a digital clock cycle, the first and second phases together comprising a single digital clock cycle; and

wherein the first multiplexer is coupled to receive selection inputs from the controller to select between an address from the pad logic and an address from the second latch and wherein said controller is configured to select the address provided by the second latch when a multiple cycle address operation is occurring, the address provided by the second latch being identical to an address previously provided to the decoder.

5,577,229

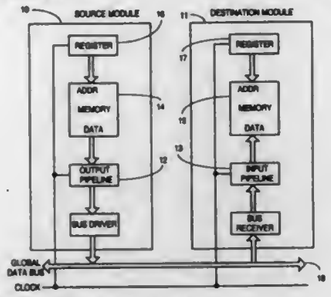
COMPUTER SYSTEM AND METHOD FOR PIPELINED TRANSFER OF DATA BETWEEN MODULES UTILIZING A SHARED MEMORY AND A PIPELINE HAVING A PLURALITY OF REGISTERS

John F. Wakerly, Mountain View, Calif., assignor to Alantec Corporation, San Jose, Calif.

Division of Ser. No. 276,877, Jul. 18, 1994, Pat. No. 5,444,858, which is a continuation of Ser. No. 964,180, Oct. 19, 1992, abandoned, which is a division of Ser. No. 304,053, Jan. 30, 1989, Pat. No. 5,237,670. This application Dec. 19, 1994, Ser. No. 359,112

Int. Cl.[6] G06F *12/00;13/00;13/38*

U.S. Cl. 395—474 **40 Claims**



1. A computer system comprising:

a first module;

a second module; and

a bus for transferring data between the first and second modules,

wherein the first module comprises:

a memory M1; and

a pipeline PL1 for transferring data from a port PRT1 of the memory M1 to the bus, the pipeline PL1 having an input for receiving data from the memory M1 and an output for providing data to the bus,

wherein the second module comprises:

a memory M2; and

a pipeline PL2 for transferring data from the bus to a port PRT2 of the memory M2, the pipeline PL2 having an input for receiving data from the bus and an output for providing data to the memory M2,

wherein at least one pipeline PLi (i=1 or 2) of the pipelines PL1 and PL2 comprises a plurality of registers connected to each other in series, a first one of the registers being connected to the input of the pipeline PLi and wherein the pipeline PLi allows shifting data in the registers by one register and loading data from the input of the pipeline PLi into the first one of the registers, and

wherein at least one memory Mj (j=1 or 2) of the memories M1 and M2 is a shared memory having a plurality of ports including port PRTj, wherein an access to the memory Mj through a port other than PRTj is allowed to proceed without a data transfer through the pipeline PLj and is allowed to proceed simultaneously with a portion of a data transfer from the memory M1 to the memory M2, the data transfer from M1 to M2 including a data transfer through the port PRTj and the pipeline PLj.

5,577,230

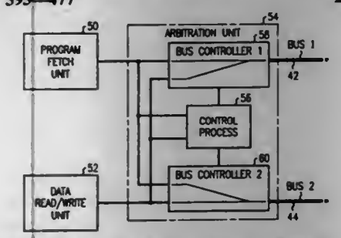
APPARATUS AND METHOD FOR COMPUTER PROCESSING USING AN ENHANCED HARVARD ARCHITECTURE UTILIZING DUAL MEMORY BUSES AND THE ARBITRATION FOR DATA/INSTRUCTION FETCH

Pramod V. Argade, Allentown, and Michael R. Betker, Sanatoga, both of Pa., assignors to AT&T Corp., Murray Hill, N.J.

Filed Aug. 10, 1994, Ser. No. 288,420

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—477 **20 Claims**



1. Apparatus for interfacing computer memory using an enhanced Harvard architecture, which comprises:

a) first memory means for storing program instructions and data;

b) second memory means, for storing program instructions and data, such that program instructions and data may be simultaneously stored in at least one of said first or said second memory means; and

c) a processor coupled to the first and second memory means by respective first and second interface buses, the processor including:

means for requesting fetches of program instructions from the first and second memory means;

means for requesting transfers of data between the processor and the first memory means and the processor and the second memory means; and

means for arbitrating which of the first and second memory bus interfaces a particular program instruction fetch or data transfer is to take place.

5,577,231

STORAGE ACCESS AUTHORIZATION CONTROLS IN A COMPUTER SYSTEM USING DYNAMIC TRANSLATION OF LARGE ADDRESSES

Casper A. Scalzi, Poughkeepsie, N.Y., and William J. Starke, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

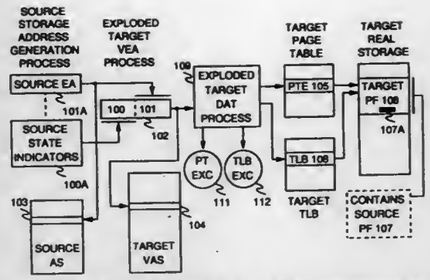
Filed Dec. 6, 1994, Ser. No. 349,771

Int. Cl.[6] G06F *9/455*

U.S. Cl. 395—500 **20 Claims**

1. A method of extending access authority controls in a processor having dynamic address translation (DAT), comprising the following steps for:

generating a source effective address (EA) for accessing data in a source page in a source storage of an executing source program on the processor, the source EA having fewer bits



than a target VEA provided to a DAT mechanism in the processor for dynamic address translation,

also generating access authority codes (AAC) for identifying particular access authority constraints for an access by a source EA to a source page frame in source real storage, the source page frame being located in a target page frame in a target real storage of the processor,

writing the AACs in bits of the target VEA not written into by the source EA for generating the target VEA as a combination of the source EA and the AACs, the bits containing the AACs forming AAC fields respectively containing the access authority codes, the target VEA addressing a target virtual page in target virtual storage,

transferring the target VEA to the DAT mechanism, and locating by the DAT mechanism of any valid target page table entry (target PTE) containing an address to a target page frame assigned to the target VEA by a previous translation of the target VEA, and accessing the target page frame to obtain data required by the source VEA, but

signalling a target page fault by the DAT mechanism if no valid target PTE is found for the target VEA, then

decoding the AACs in the target VEA to determine if any AAC prevents completion of the storage access for the source VEA if no valid target PTE is found for the target VEA, and terminating the access if any AAC prevents completion of the storage access, but if no AAC prevents completion of the storage access, then

address translating the target VEA by assigning a page table entry and a target page frame in the target real storage to the target VEA, writing a page frame real address to the target page frame in the target PTE and writing a validation indication in the target PTE to enable it to represent an access with particular access authority constraints for the source page frame in the source virtual storage.

5,577,232

METHOD & APPARATUS FOR ALLOWING COMPUTER CIRCUITRY TO FUNCTION WITH UPDATED VERSIONS OF COMPUTER SOFTWARE

Curtis Priem, Fremont; Chris Malachowsky, Santa Clara; Bruce McIntyre, Cupertino, and Guy Moffat, Palo Alto, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

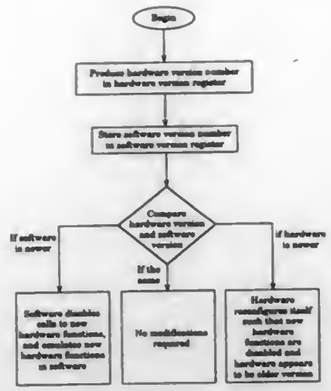
Continuation of Ser. No. 176,881, Jan. 3, 1994, abandoned, which is a continuation of Ser. No. 716,672, Jun. 17, 1991, abandoned. This application Dec. 22, 1994, Ser. No. 363,305

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—500 **4 Claims**

1. An arrangement for assuring the compatibility of versions of software produced for a particular computer hardware architecture of a computer system comprising:

a hardware version register in said computer system, said hardware version register providing an indication of a hardware version for said computer hardware architecture being utilized to execute a software program being a particular software version;



a software version register in said computer system, said software version register for storing an indication of an optimal hardware version for said software program being run, said software program storing said indication of an optimal hardware version in said software version register, said indication of an optimal hardware version indicating a hardware version that said particular software version was designed for;

a comparator unit in said computer system, said comparator unit for comparing the indication of the hardware version in the hardware version register and the indication of an optimal hardware version in the software version register after said software program stores said optimal hardware version in said software version register;

an adaptive circuit in said computer system coupled to said comparator unit, said adaptive circuit eliminating features of said computer system not present in said optimal hardware version of said computer hardware if the hardware version in the hardware version register is newer than the optimal hardware version in the software version register; and

a software program, said software program comparing said indication of said hardware version with said indication of an optimal bardware version, if said the hardware version in the hardware version register is older than the optimal hardware version in the software version register then said software program causing the software to refer to said computer hardware for only those functions that said computer hardware is capable of implementing by

emulating a first subset of functions not available in the computer hardware architecture with said indication of said hardware version; and

eliminating any references to a second subset of functions not available in the computer hardware architecture with said indication of said hardware version;

such that the software program runs correctly on the computer hardware architecture.

5,577,233

METHOD AND APPARATUS FOR DIRECT CONVERSION OF PROGRAMS IN OBJECT CODE FROM BETWEEN DIFFERENT HARDWARE ARCHITECTURE COMPUTER SYSTEMS

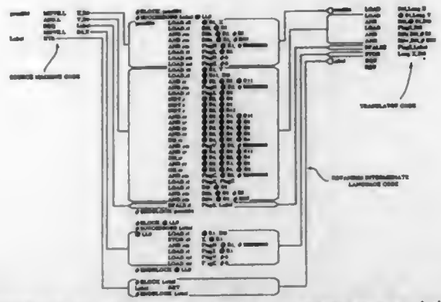
John C. Goettelmann, Point Pleasant, and Christopher J. Macey, Red Bank, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 616,507, Nov. 21, 1990, abandoned, which is a continuation of Ser. No. 280,774, Dec. 6, 1988, Pat. No. 5,313,614. This application Sep. 25, 1995, Ser. No. 533,243

Int. Cl.[6] G06F *15/38*

U.S. Cl. 395—500 **10 Claims**

1. A method for translating off-line a first non-source code version of a computer program expressed in terms of a first



instruction set, the first version of the computer program being executable on a source computer, to a second non-source code version of the computer program expressed in terms of a second instruction set different from the first instruction set, the second version being executable on a target computer different from the source computer, at least one instruction in the first version of the computer program having primary and side effects, the method comprising the computer implemented steps of:

producing a complete intermediate language representation of the entire first non-source code version of the computer program by expanding instructions of the first non-source code version into a plurality of intermediate language instructions which explicitly replicate primary and side effects of all the instructions of the first version;

processing the entire intermediate language representation to eliminate individual instructions whose elimination does not affect any substantial functionality of the program; and

creating from the intermediate language representation a second non-source code version of the entire program having a functionality substantially the same as the first version, the second non-source code version being executable on the target computer without further translation.

5,577,234

SYSTEM FOR CONTROLLING STORAGE DEVICE FOR STORING DATA AT SECOND DENSITY THAT IS NOT INTEGRAL MULTIPLE OF FIRST DENSITY BY VARYING THE DEVICE MOTOR SPEED

Hiroshi Hanabusa, Sagamihara; Yasuhiro Kotani, Yamato; Nobuaki Satoh, Tokyo, and Osamu Yamamoto, Sagamihara, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 947,001, Sep. 17, 1992, abandoned. This application Dec. 6, 1995, Ser. No. 567,865

Claims priority, application Japan, Sep. 26, 1991, 3-273460

Int. Cl.[6] G06F *15/40*

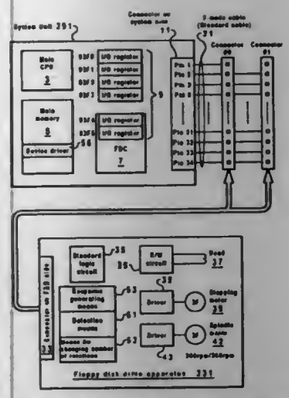
U.S. Cl. 395—500 **7 Claims**

1. A method for controlling a peripheral storage device of a data processing system, wherein said peripheral storage device includes a motor and is designed to store data at a first density and integral multiples thereof in response to receiving a plurality of control signals while said motor operates at a predetermined rotation speed, said method comprising:

transmitting a particular control signal among said plurality of control signals from said data processing system to said peripheral storage device to initiate an operation other than storing data;

in response to receiving said particular control signal, transmitting a status signal to said data processing system to indicate that said peripheral storage device is performing said operation other than storing data;

varying said particular control signal; and



in response to varying said particular control signal, varying said rotation speed of said motor and storing data within said peripheral storage device at a second density that is not an integral multiple of said first density.

5,577,235

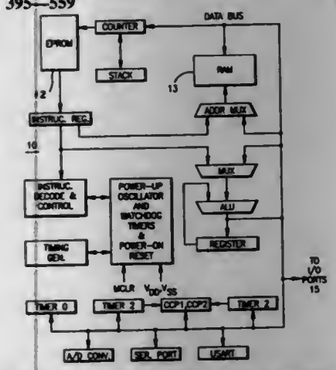
MICROCONTROLLER WITH MULTIPLE TIMING FUNCTIONS AVAILABLE IN A SINGLE PERIPHERAL MODULE

Sumit K. Mitra, Tempe, Ariz., assignor to Microchip Technologies, Inc., Chandler, Ariz.

Filed Aug. 31, 1994, Ser. No. 298,775

Int. Cl.[6] G06F *9/22;19/00*

U.S. Cl. 395—559 **10 Claims**



1. A microcontroller device fabricated in a semiconductor chip for controlling an external system with which the device is to be installed in electrical circuit, comprising:

an on-chip program memory for storing a program to be implemented by the microcontroller device,

on-chip module means for temporary storage of an event as a timing function of the microcontroller device, and

means for selectively designating said module means to temporarily store any event of any of a plurality of timing functions of the microcontroller device,

said module means including register means selectively configurable and reconfigurable for designating any one of said plurality of timing functions as the timing function mode of the module means.

5,577,236

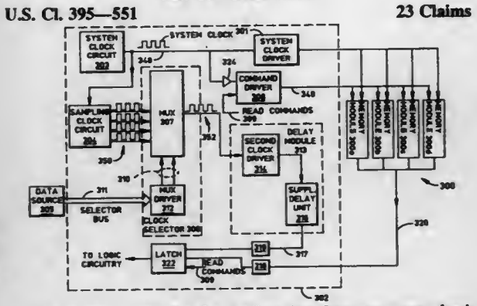
MEMORY CONTROLLER FOR READING DATA FROM SYNCHRONOUS RAM

Mark C. Johnson, San Jose; Donald J. Lang, Cupertino, both of Calif.; Sudha Sarma; Forrest L. Wade, both of Tucson, Ariz., and Adalberto G. Yanes, Sunnyvale, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1994, Ser. No. 367,514

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—551 **23 Claims**



1. A memory controller for reading data from a memory bank containing an amount of synchronous random access memory including at least one memory module, the memory controller comprising:

a system clock driver connected to the memory bank to receive a system clock signal and provide a clock reference signal to the memory bank in response thereto, said clock reference signal having a frequency matching the system clock signal;

a command driver connected to the memory bank to receive Read command signals and initiate a Read operation in the memory bank by providing the Read command signals to the memory bank in accordance with timing provided by the system clock signal;

a sampling clock circuit to receive the system clock signal and duplicate the system clock signal to generate multiple sampling clock signals, each of said sampling clock signals exhibiting a different phase characteristic;

a clock selector having an output line, the clock selector connected to the sampling clock circuit to select one of the sampling clock signals in response to a signal indicating an amount of memory present in the memory bank, and to provide the selected sampling clock signal to the output line;

a delay module connected to the output line to provide a delayed clock signal comprising the selected clock signal delayed by a predetermined period of time; and

a clocked latch electrically connected to the memory bank and the delay module, said clocked latch receiving the Read command signals, receiving Read data signals from the memory bank, and also receiving the delayed clock signal from the delay module, said clocked latch operating to latch said Read data signals in response to receipt of the Read command signals in accordance with timing provided by the delayed clock signal.

5,577,237

PROTOCOL TIMER AND METHOD OF USING SAME

William Lin, Sunnyvale, Calif., assignor to Tandem Computers, Incorporated, Cupertino, Calif.

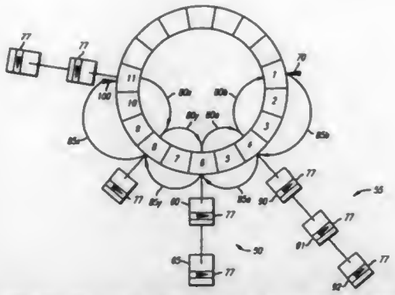
Filed Jan. 23, 1995, Ser. No. 377,301

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—555 **9 Claims**

1. A method of implementing a timer stored in a memory comprising the steps, performed by a processor of a computer data processing system, comprising:

(a) creating at least one time storage entry in the memory of said computer system, said time storage entry associated with a



function, said time storage entry set to expire in a predetermined number of arbitrary units of elapsed time;

(b) creating a circular array in said memory having a plurality of cells, and setting a first cell of said array as a reference cell, where each cell represents said predetermined arbitrary unit of elapsed time, and said cells are consecutively ordered from said first reference cell and correspond to elapsed time in a one-to-one manner, with said first reference cell representing the initial reference time, and each consecutively ordered cell representing a unit increase of elapsed time;

(c) associating said time storage entry with one of said plurality of cells that corresponds to said predetermined number of arbitrary units of elapsed time said time storage entry is set to expire in; said associated cell defined as a non-empty cell when at least one time storage entry is associated with it, and an empty cell when no time storage entry is associated with said cell;

(d) associating said first reference cell with said non-empty cell; whereby said timer is executed by traversing the non-empty cell said time storage entry is associated with and executing said function associated with said time storage entry.

5,577,238

MULTISTAGE TIMING CIRCUIT HAVING MULTIPLE COUNTERS IN EACH TIMER FOR GENERATING PROGRAMMABLE DURATION OUTPUT SIGNALS WITHOUT ANY DELAY

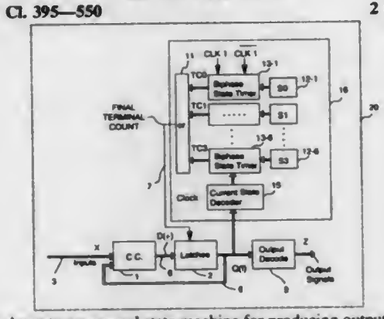
Philippe Cuny, La Gaude; Philippe Klein, Cagnes-Sur-Mer, and Olivier Maurel, Le Cannet, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 117,902, Sep. 7, 1993, abandoned. This application Mar. 22, 1996, Ser. No. 621,267

Claims priority, application European Pat. Off., Jun. 15, 1993, 93480072

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—550 **2 Claims**



1. An auto-sequenced state machine for producing output signals having programmable durations, said state machine comprising:

a terminal count clock generator comprising a plurality of state timers, each producing a clock signal having a different programmable duration, a selection control circuit for enabling one and only one of said plurality of state timers at a given time, and a logical OR circuit connected to the outputs from said state timers to provide a terminal count clock signal corresponding to the output of the currently enabled state timer;

a combinational logic circuit for receiving input signals and for producing data signals in accordance with the value of the input signals, at least some of said input signals being produced externally of the auto-sequenced state machine;

a latch circuit for receiving the data signals produced by said combinational logic circuit and the terminal count clock signal produced by said terminal count clock generator, said latch circuit producing current state signals;

feedback circuits for providing the current state signals back to inputs to said combinational logic circuit and to the terminal count clock generator;

an output decoder circuit for decoding the current state signals to provide programmable duration output signals;

wherein each of said plurality of state timers comprises a plurality of counters, a logical OR circuit for receiving inputs from the counters in said plurality of counters and a cascade control circuit for enabling said counters in sequence upon successive selections of the state timer including said counters, thereby avoiding any delay in state timer operation when the same state timer is selected twice or more in a row.

5,577,239

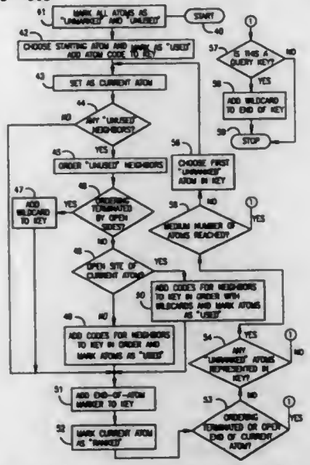
CHEMICAL STRUCTURE STORAGE, SEARCHING AND RETRIEVAL SYSTEM

Jeffrey Moore, 12 Breezy Tree Ct., Timonimun, Md. 21093; Joanne Brazil, 4500 Jolly Acres Rd., White Hall, Md. 21161, and Jeffrey R. Hoover, 8639 Willow Oak Rd., Baltimore, Md. 21234

Filed Aug. 10, 1994, Ser. No. 288,503

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—603 **12 Claims**



1. A method of generating computer search keys for every atom in a chemical structure for searching chemical structures stored in a relational database, the method comprising the following steps:

choosing a starting atom in an input chemical structure;

adding a code for said starting atom to a key string;

ordering bonds that are adjacent to said starting atom; and

adding codes for said ordered bonds to said key string whereby a search key is generated based upon said codes for said ordered bonds and atoms.

5,577,240

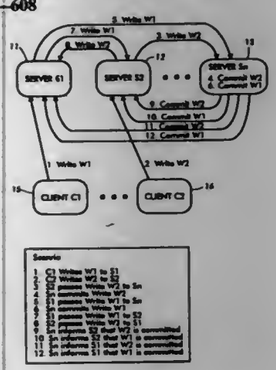
IDENTIFICATION OF STABLE WRITES IN WEAKLY CONSISTENT REPLICATED DATABASES WHILE PROVIDING ACCESS TO ALL WRITES IN SUCH A DATABASE

Alan J. Demers, Boulder Creek; Karin Petersen, Menlo Park; Michael J. Spreitzer, Tracy; Douglas B. Terry, San Carlos; Marvin M. Theimer, and Brent B. Welch, both of Mountain View, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 7, 1994, Ser. No. 352,013

Int. Cl.[6] G06F *7/20;17/30*

U.S. Cl. 395—608 **3 Claims**



1. A process for explicitly identifying stable data and potentially unstable data in each instance of a weakly consistent, replicated database and for bringing data in said database into a stable state by committing it; said process comprising

maintaining a respective write log for each instance of said database, said log comprising a committed portion and a tentative portion;

entering write operations that have become known to have a firm execution order in the committed portion of the write log for any given instance of said database, and removing such write operations from the tentative portion of said write log if they are present therein, when the firm order for the respective write operations is first communicated to said given instance of said database;

entering all other write operations in the tentative portion of the write log for the given instance of said database as each of said other write operations is first communicated to the given instance of said database;

using a commit protocol for deciding on the firm execution order of a group of write operations, where said firm order for said group eventually becomes known to all instances of said database;

ordering write operations in the committed portion of said write log in accordance with the firm execution order established by said commit protocol;

ordering write operations in the tentative portion of said write log in accordance with a sort key that is agreed upon by all instances of said database and that produces a consistent ordering of said writes;

enabling applications to determine whether a given write operation is in the committed portion or the tentative portion of the write log for an instance of the database; and

enabling applications to access either just stable data or stable and potentially unstable data within an instance of said database.

5,577,241

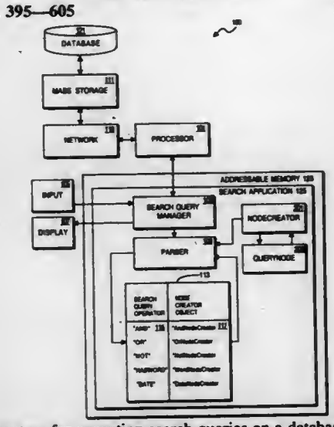
INFORMATION RETRIEVAL SYSTEM AND METHOD WITH IMPLEMENTATION EXTENSIBLE QUERY ARCHITECTURE

Graham Spencer, Cupertino, Calif., assignor to Excite, Inc., Mountain View, Calif.

Filed Dec. 7, 1994, Ser. No. 350,967

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—605 **14 Claims**



1. A system for executing search queries on a database comprising a plurality of documents, each search query having a search query operator and at least one search data element, the system comprising:

a search query manager that receives a search query including at least one search query operator and at least one search data element associated therewith to be operated on by the search query operator;

a storage structure that stores associations between search query operators and query node creators, each query node creator for creating a query node that executes a search query for a search query operator upon at least one search data element associated therewith, to identify a next document therein as a function of the search query operator and the at least one search data element of the search query, and returning an identifier of the document, and a score for the document;

a parser, coupled to the storage structure and further coupled to the search query manager for receiving therefrom the search query, the parser identifying each search query operator and search data element in the search query, and for each search query operator in the search query, identifying the query node creator associated with the search query operator and calling the associated query node creator to create a query node for the search query operator and the search data element associated therewith; and

a processor, coupled to the parser, and receiving therefrom a first query node, and executing the first query node.

5,577,242

SYSTEM FOR BATCH TRANSFER FILE MANAGEMENT USING A LIST TO ORGANIZE A BATCH OF BLOCKS INTO BUFFERS

Satoru Yamaguchi; Yutaka Ito; Naoya Matsumoto; Yoshihiro Morita, and Katsumi Yagita, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 1, 1993, Ser. No. 115,137

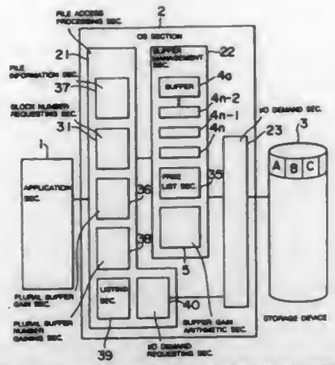
Claims priority, application Japan, Nov. 25, 1992, 4-315365

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—621 **18 Claims**

1. A file management method comprising the steps of:

generating a batch transfer demand for demanding a storage device storing one or more files, each file comprising a plurality of data blocks, each data block comprising data



having a constant length, said batch transfer demand transferring and processing the data in a batch manner;

gaining a plurality of buffers needed for transferring the plurality of data blocks; and

transferring and processing the data between said storage device and a plurality of buffers, each buffer corresponding to one of the plurality of data blocks and temporarily storing the data being transferred, listing the plurality of data blocks into the plurality of buffers if a number of the plurality of data blocks exceeds a number of the plurality of buffers gained for transferring the plurality of data blocks, and concurrently transferring and processing the data between a batch transfer demand section demanding the batch transfer and said plurality of buffers in the batch manner, said data being transferred and processed based on said batch block transfer demand generated in said generating step.

5,577,243

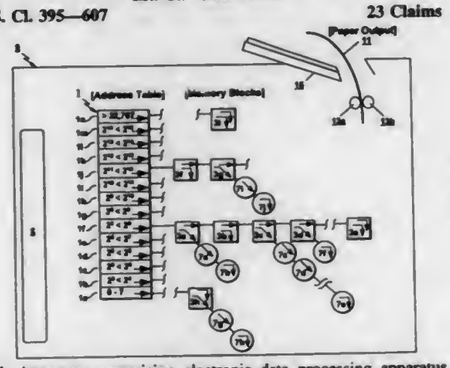
RELOCATION OF RETURNED MEMORY BLOCKS SORTED IN PREDETERMINED SIZED AND ADDRESSED BY POINTER ADDRESSES IN A FREE MEMORY LIST

Gregory J. Sherwood, and David W. Murphy, both of Lexington, Ky., assignors to Lexmark International, Inc., Greenwich, Conn.

Filed Mar. 31, 1994, Ser. No. 221,420

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—607 **23 Claims**



1. Apparatus comprising electronic data processing apparatus having reusable electronic memory blocks addressable by address codes, said data processing apparatus comprising: a list of different pointer addresses, a routine to determine the size of returned memory blocks as within predetermined size ranges, said memory blocks having sizes varying within the size of said predetermined size ranges, a routine to change the pointer address of or reached from said list, to reach each said returned memory block from an address in said list which reaches memory blocks within said predetermined size range determined for each said returned memory block, said predetermined size ranges reached from each pointer address of said list being a substantial continuum of sizes from small to large, a routine to address free memory by addressing one of said pointer addresses of said list which reaches memory of the size required and less than the size reached by other pointer addresses in said list, and a routine to compare the size of each said returned memory block to previous returned memory blocks and to eliminate more than one returned memory block of a predetermined close similarity of size from being reached by said pointer addresses when each said returned memory block is a predetermined close similarity of size to the size of an existing returned memory block and to apply a pointer address to said existing memory block reaching said returned memory block of said predetermined close similarity of size or to apply a pointer address to said returned memory block of said predetermined close similarity of size reaching said existing memory block.

5,577,244

METHODS OF APPLYING SOFTWARE MODIFICATIONS

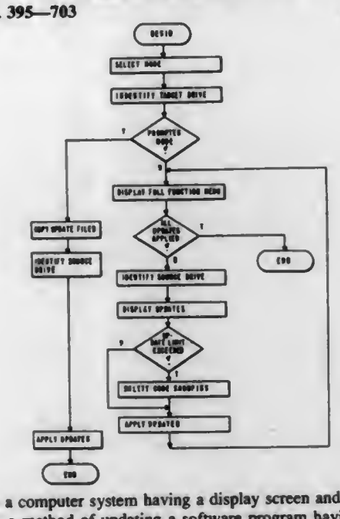
Alice J. Killebrew, Buchanan Dam, and Charles F. Mann, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 75,794, Jul. 20, 1987, abandoned.

This application Jan. 26, 1990, Ser. No. 471,044

Int. Cl.[6] G06F *15/177*

U.S. Cl. 395—703 **6 Claims**



1. In a computer system having a display screen and a memory system, a method of updating a software program having at least one of a plurality of features associated therewith installed on said computer system, said method comprising the steps of:

storing information which identifies a plurality of update files in the memory of said computer, said plurality of update files including updates to features installed in said system;

user selecting a mode allowing a user of said system to modify update values associated with said installed features prior to the update of said installed features;

displaying a list of all features of said software program which are installed on said system and update values representing the highest numbered update that can be applied to each of said respective installed features;

displaying identifiers for a first target drive and directory on a display screen of said system to identify where said software program is installed in said system;

displaying identifiers for a first source drive and directory on said display screen to identify where said update files are stored;

displaying identifiers for a second target drive and directory in response to said step of displaying said first target drive and directory when a software program is stored on the second target drive and directory;

displaying identifiers for a second source drive and directory in response to said step of displaying said first source drive and directory when update files are stored on the second source drive and directory; and

using the displayed identifiers to selectively update in said computer system those features of said software program determined to be installed on said system, including their related numbered update values, in response to said selected operating mode and said plurality of update files, wherein said at least one of said plurality of features within said software program is updated.

5,577,245

Patent Not Issued For This Number

5,577,246

DATABASE MEMORY COMPACTION AND RECLAMATION METHOD

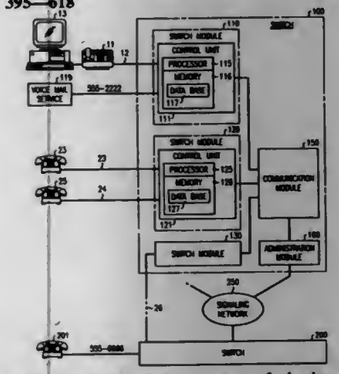
Charles A. Priddy, and Eric D. Scott, both of Naperville, Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 951,079, Sep. 25, 1992, abandoned.

This application Feb. 22, 1995, Ser. No. 394,662

Int. Cl.[6] G06F *12/00;13/00*

U.S. Cl. 395—618 **6 Claims**



1. A method for effecting recovery of database memory resources when necessary for use by a digital data processing system for performing real-time operations, said digital data processing system including a limited amount of memory, said memory having a plurality sequentially numbered memory pages, said database comprising a plurality of child tuples and one or more parent tuples, each of said parent tuples having at least one reference to one or more child tuples, said child tuples being stored in sequentially numbered memory locations on said memory pages and each child tuple having the capability of referencing another child tuple, said method comprising:

copying child tuples from higher numbered memory locations to lower numbered memory locations by repetitively copying a child tuple from the highest numbered occupied memory location into the lowest unused memory location until the next lowest unused memory location has a higher number than the highest memory location in which a child tuple is located;

resetting references to said copied child tuples in all tuples referencing said copied child tuples;

marking all child tuples that are referenced from any of said tuples;

collecting all unmarked child tuples, and

collecting all copied child tuples from said higher numbered memory locations thereby creating unused higher numbered memory pages.

5,577,247

USER INFORMATION MANAGEMENT DEVICE TREATING COMMUNICATIONS FROM USER AS INFORMATION TO ALLOW SYSTEM TO ACCESS AND UPDATE INFORMATION ABOUT USER WITHOUT MODIFYING THE OVERALL SYSTEM

Masashi Uyama, and Yutaka Hidai, both of Tokyo, Japan, assignors to New Media Development Association, Tokyo, Japan

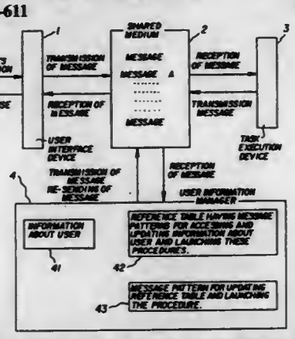
Continuation of Ser. No. 911,079, Jul. 9, 1992, abandoned.

This application May 19, 1995, Ser. No. 445,095

Claims priority, application Japan, Jul. 12, 1991, 3-172822

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—611 **2 Claims**



1. A system including a user information management device for managing information about a user to process user operations by using stored information concerning user attributes,

comprising:

a shared medium having a memory, for reading and writing messages in response to external commands;

a task execution device connected for communication with said shared medium, for performing information processing;

a user interface device connected for communication with said shared medium, for interacting with the user by receiving input from the user and providing responses to the user;

a user information management device connected for communication with said shared medium

for storing and updating information concerning the user as user information,

for managing said user information, and

for updating a reference table having procedures for accessing or updating said user information, and message patterns for the initiation of said access procedures and update procedures,

said user information management device comprising

said user information, said reference table, and an updating table,

having procedures for

updating message patterns and procedures in said reference table and

message patterns for performing the initiation of updating said reference table;

said user information management device

monitoring messages sent to said shared medium either by said task execution device or by said user interface device,

performs the initiating of access or update procedures when matching occurs between

said message sent to said shared medium and

said message patterns in said reference table,

whereby information about the user is dynamically acquired.

said user information management device

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monitoring messages sent to said shared medium either by said task execution device or by said user interface device,

updates message patterns and procedures in said reference table when matching occurs between said message sent to said shared medium, and said message patterns in said updating table for matching against new messages sent for matching against new messages sent to said shared medium, whereby further information about the user is dynamically acquired and both said task execution device and said user interface device dynamically obtain further user information.

5,577,248

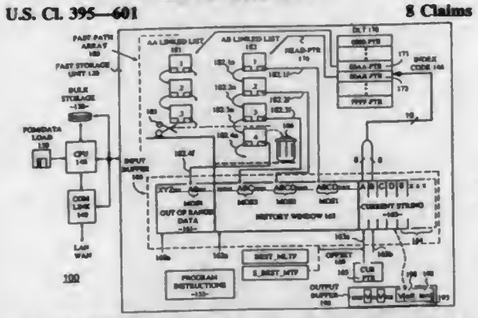
METHOD AND APPARATUS FOR FINDING LONGEST AND CLOSEST MATCHING STRING IN HISTORY BUFFER PRIOR TO CURRENT STRING

Lloyd L. Chambers, IV, Menlo Park, Calif., assignor to Salient Software, Inc., Palo Alto, Calif.

Division of Ser. No. 958,008, Oct. 8, 1992, Pat. No. 5,455,943, which is a continuation-in-part of Ser. No. 840,869, Feb. 25, 1992, Pat. No. 5,481,701, which is a continuation-in-part of Ser. No. 839,958, Feb. 21, 1992, Pat. No. 5,426,779, which is a continuation-in-part of Ser. No. 759,226, Sep. 13, 1991, Pat. No. 5,155,484. This application Jun. 6, 1995, Ser. No. 468,923

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—601 **8 Claims**



1. An apparatus, operatively couplable to a pre-specified, responsive data processing machine, for defining and conveying instructions to the data processing machine upon coupling therewith, where said machine includes memory means for storing data in identifiable locations thereof; said couplable instruction defining and conveyance apparatus comprising:

a plurality of instruction means for instructing the data processing machine to perform operations, the plurality of instruction means including:

(a) first means for instructing said machine to specify as current, a particular location within the memory means;

(b) second means for instructing said machine to allocate space within the memory means for storing one or more historical data strings; and

(c) third means for instructing said machine to create within the memory means, a fast-path portion storing groups of one or more history pointers, where each group is dedicated to a respective one of a prespecified plurality of unique code sequences and the one or more history pointers of that group respectively point to and identify a corresponding one or more locations within the memory means that store one or more of the historical data strings, if any, which contain the respective one of the prespecified plurality of unique code sequences to which the corresponding group is dedicated and, in cases where more than one of the identified historical data strings has the same prespecified sequence of code, for arranging the history pointers of the corresponding group to indicate the positional order of the more than one identified historical data strings relative to the current location so that it can be quickly determined from said arrangement of the history pointers whether a first history location that stores a corresponding first of the identified historical data strings is address-wise closer to or further from the current location than is a second history location that stores a corresponding second of the identified historical data strings.

5,577,249

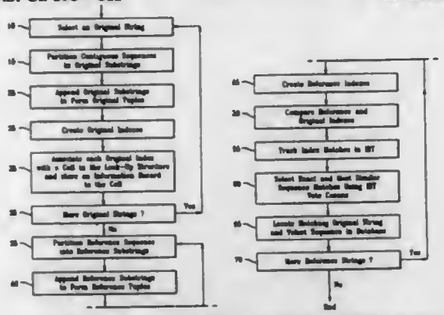
METHOD FOR FINDING A REFERENCE TOKEN SEQUENCE IN AN ORIGINAL TOKEN STRING WITHIN A DATABASE OF TOKEN STRINGS USING APPENDED NON-CONTIGUOUS SUBSTRINGS

Andrea Califano, New York, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 923,203, Jul. 31, 1992, abandoned. This application Aug. 8, 1995, Ser. No. 512,794

Int. Cl.[6] G06F *17/30;7/20*

U.S. Cl. 395—611 **28 Claims**



1. A method for finding a reference string of tokens in one or more original token strings within a database comprising the steps of:

creating one or more original tuples for each of the original token strings in the database by:

a. partitioning each original token string into three or more original substrings of contiguous tokens;

b. appending together two or more original substrings of the original token string to form one or more original tuples associated with the original token string, at least one of the original tuples being formed by appending together two or more non-contiguous original substrings of the original token string;

creating a unique original index for each original tuple created from the original token string by using an index algorithm, the original index being associated with the original token string from which the original tuple was created, each original index associated with information that is used to locate the original token string in the database containing the tuple from which the original index was derived and to determine the position of the matched reference sequence in the original token string;

creating one or more reference tuples from the reference string of tokens by:

c. partitioning the reference string of tokens into three or more reference substrings of contiguous tokens;

d. appending together two or more reference substrings to form one or more reference tuples, at least one of the reference tuples being formed by appending together two or more non-contiguous reference substrings;

creating a unique reference index for each reference tuple using the index algorithm;

comparing at least one reference index to at least one original index;

tracking the matches between the reference index and original index;

selecting an original token string in the database based on the number of matches between one or more original indexes and one or more reference indexes.

5,577,250

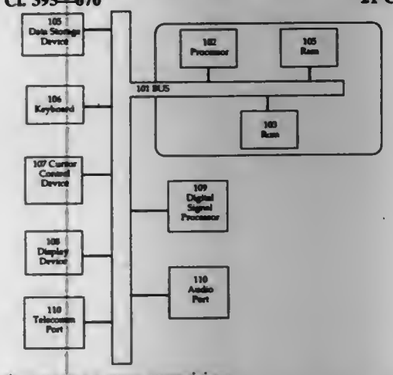
PROGRAMMING MODEL FOR A COPROCESSOR ON A COMPUTER SYSTEM

Eric C. Anderson, San Jose, Calif.; Hugh B. Svendsen, Atlanta, Ga., and A. Phillip Sohn, Campbell, Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 837,326, Feb. 18, 1992. This application Dec. 20, 1994, Ser. No. 361,842

Int. Cl.[6] G06F *9/44;15/00*

U.S. Cl. 395—670 **21 Claims**



1. A computer system comprising:

a) a memory containing an application program and a coprocessor operating system, wherein the coprocessor operating system includes a host portion and a coprocessor portion, wherein said host portion provides a plurality of macros for constructing coprocessor tasks;

b) a storage device containing a plurality of coprocessor task units;

c) a processor coupled to said memory and said storage device, wherein said processor is configured to execute said application program and said host portion, wherein execution of said application program causes said processor to execute said plurality of macros, wherein execution of said plurality of macros causes said processor to construct a plurality of coprocessor tasks, wherein each coprocessor task of said plurality of coprocessor tasks includes information inserted from at least one coprocessor task unit of said plurality of coprocessor task units, wherein execution of said macros further causes said processor to insert said plurality of coprocessor tasks into a run list; and

d) a coprocessor coupled to said memory and said storage device, said coprocessor being configured to execute said coprocessor portion, wherein execution of said coprocessor portion causes said coprocessor to sequentially execute said plurality of coprocessor tasks in said run list.

5,577,251

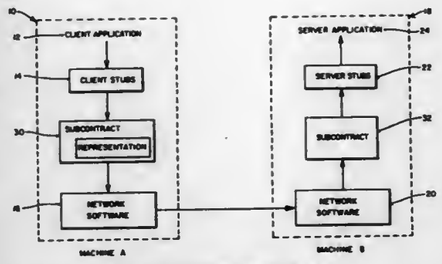
OBJECT ORIENTED SYSTEM FOR EXECUTING APPLICATION CALL BY USING PLURALITY OF CLIENT-SIDE SUBCONTRACT MECHANISM ASSOCIATED WITH CORRESPONDING PLURALITY OF SERVER-SIDE SUBCONTRACT MECHANISM

Graham Hamilton; Michael L. Powell, both of Palo Alto; James G. Mitchell, Los Altos, and Jonathan J. Gibbons, Mountain View, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 995,863, Dec. 21, 1992, abandoned. This application Nov. 7, 1995, Ser. No. 554,794

Int. Cl.[6] G06F *9/42*

U.S. Cl. 395—671 **9 Claims**



1. In an object oriented system wherein there exists client applications, objects, object type definitions, object implementations and servers, an object invocation and communications system comprising:

a local node;

a first spring object located on said local node for executing a call from an application procedure to a first object, said first object being an object implementation of said first spring object, without said application knowing a location of said first object or a location of said first object's implementation and without said application knowing details of how arguments must be marshaled for calling said first object, and said first object comprising a data structure;

a stub located on said local node which assists in executing calls on said first object by marshalling arguments for said first object into a communications buffer;

a plurality of client-side subcontract mechanisms said subcontract mechanisms being distinct from object managers, which can perform remote invocation of operation calls in different ways, wherein different spring objects within a single application can be associated with a different one of said plurality of client-side subcontract mechanisms; and wherein a client-side portion of one of said plurality of client-side subcontract mechanisms is coupled to a_spring object, said client-side portion of a subcontract mechanism not being required to have knowledge of types of said arguments being sent to said first object and said client-side portion of a subcontract mechanism configured to receive from said stub a method identifier and a pointer to a communications buffer which contains arguments to be sent in a call to said first object, wherein said client-side portion of a subcontract mechanism has an option to add additional data to said communications buffer to provide additional information to said first object, and can transmit selectively one of a parameter representing a pointer to said communications buffer and said communications buffer's contents to said first object and wherein the client-side portion of said one of said plurality of subcontract mechanisms can execute operation calls to generate a new object which is related to an existing object;

a server node; and

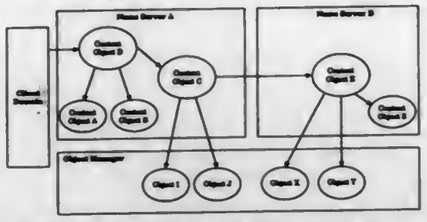
a plurality of server-side subcontract mechanisms each of which is associated with a corresponding one of said plurality of client-side subcontract mechanisms, wherein a server-side portion of said_plurality of server-side subcontract mechanisms located on said server node and associated with said client-side portion of said subcontract mechanism for exchanging messages with and for processing operation calls initiated by, said client-side portion of said subcontract mechanism, said server-side portion of said subcontract mechanism configured to unmarshal said arguments in said communications buffer, deliver said arguments to a called object, receive results from said called object, marshall said results into a results buffer, and communicate selectively one of a parameter representing a pointer to said results buffer and said results buffer's contents to said client-side portion of said subcontract.

5,577,252

METHODS AND APPARATUS FOR IMPLEMENTING SECURE NAME SERVERS IN AN OBJECT-ORIENTED SYSTEM

Michael N. Nelson, San Carlos; Sanjay R. Radia, Fremont, and Graham Hamilton, Palo Alto, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 28, 1993, Ser. No. 99,150
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—670 12 Claims



1. A computer implemented method for providing a secure naming system for a set of objects in an object-oriented system having a plurality of name servers, said method comprising the steps of:

implementing a first context object in a first name server, said first context object comprising a first encapsulated principal identifier and at least one name binding, each of said name bindings comprising a name and an object;

implementing a second context object in a second name server, said second context object comprising a second encapsulated principal identifier and at least one name binding, each of said name bindings comprising a name and an object;

binding said second context object to a second context name within said first context object;

binding a desired first object to a first object name within said second context object;

requesting said desired first object for a client using a path name comprised of said second context name and said first object name and a desired set of access rights; and

resolving said request for said desired first object by performing the steps of

resolving said second context name to receive a representation of said second context object located in said second name server;

assuring said second name server that a name resolution from said first name server to said second name server is secure;

resolving said first object name within said second context object to receive a duplicate of said desired object that encapsulates the first encapsulated principal identifier and the desired access rights.

5,577,253

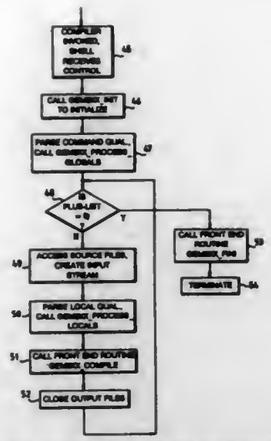
ANALYZING INDUCTIVE EXPRESSIONS IN A MULTILANGUAGE OPTIMIZING COMPILER

David S. Blickstein, Hudson, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 662,483, Feb. 27, 1991, abandoned. This application Mar. 6, 1995, Ser. No. 400,172
Int. Cl.[6] G06F *9/45*
U.S. Cl. 395—705 9 Claims

1. A method executed in a computer system, the method comprising the steps of:

generating a flow graph for a source program that is being compiled using a compiler front end which performs syntactic and semantic processing of a programming language, said flow graph comprising tuples, each tuple representing a single expression in said source program, said flow graph being a representation of said source program in an intermediate language;



determining, by said compiler front end for each tuple which can have an effect on another tuple and which is included in said flow graph, an effect indicator that represents an effect said each tuple has on said another tuple, said effect indicator being associated with said each tuple;

determining, by said compiler front end for each tuple which can have a dependency on another tuple and which is included in said flow graph, a dependency indicator that represents a dependency said each tuple has on said another tuple, said dependency indicator being associated with said each tuple;

detecting a programming loop construct in said flow graph, said programming loop construct comprising one or more blocks in said flow graph, each of said blocks corresponding to a portion of said source program and including a sequence of tuples with no entry or exit between a first tuple add a last tuple of said sequence;

determining for each of said blocks comprising said programming loop construct, a set of effects by examining effect indicators that are associated with tuples in the sequence included in a corresponding block, each of said set of effects being associated with the corresponding block representing memory locations that may be modified by one of said tuples in said each corresponding block;

determining for said programming loop construct a set of induction variable candidates by examining said sets of effect and dependency indicators, said dependency indicators being associated with tuples that are included in said programing loop construct, said Set of induction variable candidates including variables whose dependencies are included in said set of candidates and representing memory locations that may be modified by one of said tuples in said programming loop construct; and

optimizing said flow graph using a compiler back end and said set of induction variable candidates.

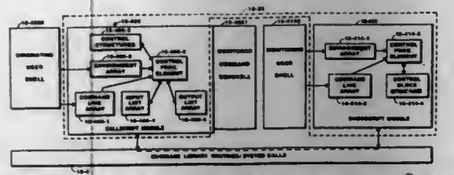
5,577,254

METHOD AND APPARATUS FOR CAPTURING THE PRESENTATION OF AN INTERACTIVE USER SESSION, MONITORING, REPLAYING AND JOINING SESSIONS

Jeremy H. Gilbert, Billerica, Mass., assignor to Bull HN Information Systems Inc., Billerica, Mass.

Continuation-in-part of Ser. No. 85,272, Jun. 29, 1993. This application Mar. 15, 1994, Ser. No. 213,324
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—615 21 Claims

1. A session mirroring software facility for monitoring for subsequent playing back, sessions being run in a host system, said host system including a number of terminal devices and files, said host system further including memory for storing an operating system



layer having service facilities for allocating and managing host system resources including terminal driver interfaces used for establishing communications with processes being run in said host system, said mirroring software facility being operatively coupled to said operating system layer for communicating with said service facilities and comprising:

an addressable command line array in said memory having a plurality of locations for storing said number of arguments of each received command line specifying said session mirroring facility, said each command line specifying said facility having one of said number of arguments allocated for designating a command specifying a process which is to be monitored during a session of said host system;

an addressable input list array in said memory having a plurality of locations for maintaining a list of input source entries;

an addressable output list array in said memory having a plurality of locations for maintaining a list of output location entries; and,

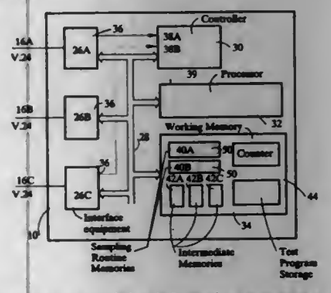
a control procedures element coupled to said command line array, said input list array and said output list array, said element accessing said command line array and in response to different ones of said arguments, storing entries in said input list array and output list array designating which input sources are providing data for routing by said control procedures element during the session in which said process is being monitored and which ones of any number of output locations up to a predefined maximum number is to receive said data during said session.

5,577,255

METHOD FOR TRANSMITTING INFORMATION PRESENT AT A PLURALITY OF DATA INTERFACES OF A PROCESSOR-CONTROLLED EQUIPMENT TO THE PROCESSING DEVICE THEREOF

Wilfried Roemer, and Hans-Juergen Riemann, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 273,163, Jul. 25, 1994, abandoned, which is a continuation of Ser. No. 795,007, Nov. 18, 1991, abandoned. This application Sep. 5, 1995, Ser. No. 523,590
Claims priority, application Germany, Nov. 27, 1990, 40 37 723.7
Int. Cl.[6] G06F *13/26*
U.S. Cl. 395—737 3 Claims



1. A method for transmitting information present at a plurality of serial data interfaces of processor-controlled equipment, in which the data interfaces are constructed in conjunction with interface equipment, each data interface connected to a processor bus which includes control, data and address lines and each data interface comprising an interrupt output which indicates the presence of the information at a data interface, the method comprising the steps of:

assigning each interrupt output to one of interrupt levels by connecting the interrupt output to an input or inputs of an interrupt controlling equipment, wherein each input of the interrupt controlling equipment represents an interrupt level with a defined priority in a defined hierarchy of priorities;

controlling the interrupt requests detected at the inputs of the interrupt controlling equipment successively to a processor in accordance with the interrupt level having the highest priority;

assigning an interface sampling routine in a memory for each interrupt level wherein the interface sampling routine is implemented by an interface list with assistance of a user test program;

defining in the interface list for each interrupt level a ringshaped-chained sampling sequence of the assigned data interfaces;

successively sampling the data interfaces for presence of serial data information in accordance with the interrupt level and with assistance of the interface list and transferring the serial data information to a respective interface memory;

setting at each sampling of a data interface a count of a counter to an initial value in response to the presence of the interrupt request;

changing at each sampling of a data interface the count of the counter for a predetermined value in response to the absence of the serial data information; and

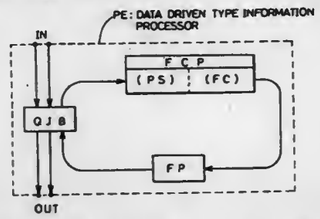
finishing the sampling of the data interfaces assigned to the interface sampling routine if a predetermined count is reached.

5,577,256

DATA DRIVEN TYPE INFORMATION PROCESSOR INCLUDING A COMBINED PROGRAM MEMORY AND MEMORY FOR QUEUING OPERAND DATA

Tsuyoshi Muramatsu, Chiba; Shinichi Yoshida, Kashihara, and Souichi Miyata, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 28, 1993, Ser. No. 53,442
Claims priority, application Japan, Apr. 28, 1992, 4-109694; Jul. 27, 1992, 4-199855
Int. Cl.[6] G06F *15/82*
U.S. Cl. 395—800 25 Claims



1. A data driven type information processor, comprising:

single storage means formed of a plurality of regions for storing at least one program data including instruction information and destination information constituting a data flow program, and at least one queuing data including operand data corresponding to each program data in a single memory data;

control means having an input and being operatively connected to said single storage means, for receiving at the input a data packet including a destination field storing said destination information, an instruction field storing said instruction information, and a data field, and for, based on information read out from a region of said storage means addressed by the destination information of the destination field of the received data packet, writing information from the data field of the received data packet into said addressed region as said queuing data so as to correspond to the program data previously

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stored at the addressed region, or producing a data packet corresponding to each program data stored in said addressed region,

said control means, if a data packet is produced, storing destination information and instruction information of each program data stored in said addressed region into a corresponding destination field and instruction field in said produced data packet, respectively; storing contents of the data field of said received data packet into the data field of each produced data packet; also storing said queuing data into the data field of each produced data packet in which corresponding program data is stored, in response to said queuing data being stored in said addressed region; and outputting each produced data packet; and

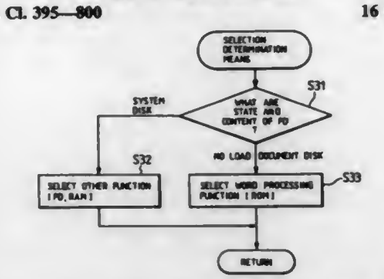
operation means having an output and being operatively connected to said control means to receive each produced data packet from said control means, for performing an operation processing on the contents of the data field of said received data packet according to the information stored in the instruction field of said received data packet, for storing data resulting from the performed operation processing into the data field of said received data packet, and for outputting at the output the received data packet.

5,577,257

INFORMATION PROCESSING APPARATUS

Kazuhiro Nakamura, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 236,160, Aug. 25, 1988, abandoned.
This application Jan. 22, 1993, Ser. No. 7,810
Claims priority, application Japan, Aug. 27, 1987, 62-214030; Aug. 31, 1987, 62-218251; Aug. 31, 1987, 62-218252
Int. Cl.[6] G06F 9/00;13/00
U.S. Cl. 395—800 16 Claims



1. An information processing apparatus equipped with an external device for detachably installing a memory medium, said apparatus comprising:

a control memory storing a first system program;

medium discriminating means for discriminating whether contents of a memory medium installed in the external device are a second system program or a document;

memory means for storing a discrimination result provided by said medium discriminating means; and

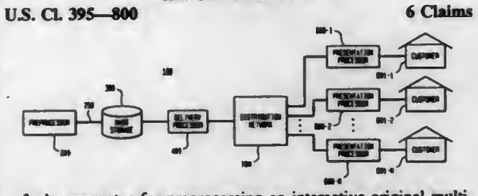
a processor device connected to said control memory device via a bus, said processor device continuing to execute the first system program when the discrimination result stored in said memory means indicates that the installed memory medium contains a document, and said processor device loading and executing the second system program from the installed memory medium when the discrimination result stored in said memory means indicates that the installed memory medium contains the second system program.

5,577,258

APPARATUS AND METHOD FOR PREPROCESSING MULTIMEDIA PRESENTATIONS TO GENERATE A DELIVERY SCHEDULE

Gil C. Cruz, Annandale; Ralph D. Hill, Randolph; Thomas H. Judd, Madison; Darren H. New, Highland Park, and Jonathan Rosenberg, Annandale, all of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

Filed Jul. 13, 1994, Ser. No. 274,503
Int. Cl.[6] G06F 15/00
U.S. Cl. 395—800 6 Claims



1. An apparatus for preprocessing an interactive original multimedia presentation to generate a preprocessed multimedia presentation, which is to be delivered by a delivery processor via a distribution network to a presentation processor and presented by the presentation processor to a customer, the distribution network having a network bit rate and the presentation processor having a memory capacity, wherein the original multimedia presentation includes presentation commands and associated multimedia objects and offers to the customer at least one interactive feature having enabled and disabled states and wherein each object has an associated presentation time, said apparatus comprising:

means for receiving and storing inputs to said apparatus, said inputs including the interactive original multimedia presentation to be preprocessed and presentation technology parameters including a round trip latency between the delivery processor and the presentation processor and the network bit rate of the distribution network; and

means for generating, based upon said inputs, the preprocessed multimedia presentation including a delivery schedule containing delivery commands which instruct said delivery processor to deliver presentation commands and associated objects to said presentation processor, said generating means operating under the constraint that each presentation command and its associated object are received at the presentation processor no later than the presentation time associated with the presentation command, wherein said generating means of said preprocessor generates said delivery commands of said delivery schedule such that, prior to the customer's selection of the interactive feature, presentation commands and associated objects to be executed in response to the customer's selection are delivered to said presentation processor to preclude delays and gaps in playing out the preprocessed multimedia presentation to the customer.

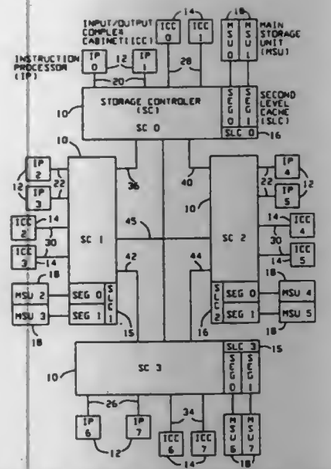
5,577,259

INSTRUCTION PROCESSOR CONTROL SYSTEM USING SEPARATE HARDWARE AND MICROCODE CONTROL SIGNALS TO CONTROL THE PIPELINED EXECUTION OF MULTIPLE CLASSES OF MACHINE INSTRUCTIONS

Merwin H. Alferness, New Brighton; John S. Kusiak, Blaine; Mark A. Vasquez, Circle Pines; Joseph P. Kerzman, Spring Lake Park, all of Minn., and Eric S. Collins, Naperville, Ill., assignors to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 762,282, Sep. 19, 1991, abandoned.
This application Aug. 9, 1994, Ser. No. 288,651
Int. Cl.[6] G06F 9/72
U.S. Cl. 395—800 30 Claims

1. For use in a data processing system having an instruction processor capable of executing a first class of machine instructions in a predetermined number of execution cycles, and a second class of machine instructions in variable numbers of execution cycles in excess of the predetermined number of cycles, an instruction execution control system comprising:



decode means for receiving and decoding each machine instruction for providing operation control signals for each machine instruction and for determining whether the machine instruction is in the first class of machine instructions or second class of machine instructions, and including selection means for alternatively providing signals for selecting between said operation control signals indicative of the first class of machine instructions and said operation control signals indicative of the second class of machine instructions;

first controller means coupled to said decode means for controlling execution of each machine instruction in the first class of machine instructions in the predetermined number of execution cycles, and for controlling execution of a predetermined portion of the execution cycles for each machine instruction in the second class of machine instructions; and

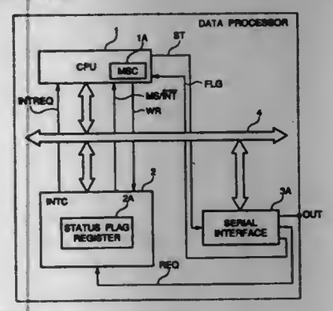
second controller means coupled to said decode means and independently operable from said decode means for controlling execution of the remaining execution cycles not controlled by said first controller means of each machine instruction in the second class of machine instructions.

5,577,260

DATA PROCESSING SYSTEM HAVING A SERIAL INTERFACE COMPRISING AN END-OF-TRANSMISSION FLAG

Hajime Sakuma, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 23, 1994, Ser. No. 294,010
Claims priority, application Japan, Aug. 23, 1993, 5-229451
Int. Cl.[6] G06F 9/00
U.S. Cl. 395—800 2 Claims



1. A data processor comprising:

a bus;

a central processing unit coupled to said bus;

an interrupt controller coupled to said bus and asynchronously generating a processing request to said central processing unit; and

a serial interface coupled to said bus for serially outputting data to an external device,

said serial interface for receiving a data byte to be transmitted from said central processing unit through said bus and serially transmitting the received data to the external device, said serial interface including a transmission end flag which is brought into a first condition in response to starting data transmission and brought into a second condition in response to completion of transmission of one byte of said data,

said interrupt controller for receiving a request signal from said serial interface and for outputting an interrupt request signal to said central processing unit, said interrupt controller including a status flag indicative of whether an operation is a macroservice processing or a vector interrupt processing,

said central processing unit for responding to said interrupt request signal to execute one of said macroservice processing and said vector interrupt processing designated by said status flag, said central processing unit further changing said status flag to a value indicative of said vector interrupt processing after completion of said macroservice processing,

said central processing unit discriminating a condition of said transmission end flag in the course of said vector interrupt processing so as to transfer new data to said serial interface in accordance with a condition of said transmission end flag,

wherein said serial interface comprises:

a transmission shift register receiving data through said bus from said central processing unit in response to a transmission start signal from said central processing unit, said transmission shift register operating to serially output said data in response to a serial clock; and

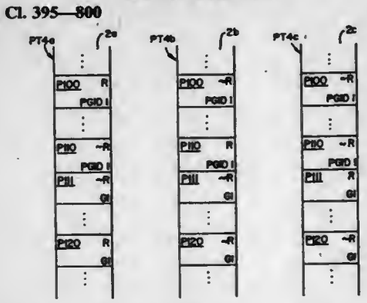
a transmission end detection circuit connected to all bits of said transmission shift register to detect an empty condition for said transmission shift register so as to generate said request signal, said transmission end flag being put into said first condition in response to said transmission start signal and put into said second condition in response to said request signal.

5,577,261

ORDERED AND RELIABLE MAINTENANCE OF INTER-PROCESS RELATIONSHIPS IN A DISTRIBUTED MULTIPROCESSOR

Venkatesh Harinarayan, Menlo Park; Srinivasa D. Murthy, and Alan L. Rowe, both of San Jose, all of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Jan. 23, 1995, Ser. No. 377,386
Int. Cl.[6] G06F 13/14
U.S. Cl. 395—800 1 Claim



1. A method for maintaining inter-process relationships in a multiprocessor system, the system having a plurality of distributed, interconnected processors, each of said processors having a memory, said method comprising:

ordering said plurality of processors;
establishing one of said plurality of processors as a control processor, said control processor maintaining an inter-process relationship lock;
creating a process set having at least one process as a member, the process members of said process set having an inter-process relationship, said inter-process relationship represented in said memory of said each of said processors;
generating on a modifying processor among said plurality of processors a modification to said inter-process relationship;
requesting the inter-process relationship lock of said control processor and, when no processor has the inter-process relationship lock, acknowledging to said modifying processor that said modifying processor has the inter-process relationship lock;
if said modifying processor has the inter-process relationship lock, said modifying processor sending an inter-process relationship modification message to each of said processors in order and then relinquishing said inter-process relationship lock to said control processor;
if said modifying processor does not have the inter-process relationship lock, continuing from said requesting step;
receiving said inter-process relationship modification message; and
processing said inter-process relationship modification message.

5,577,262

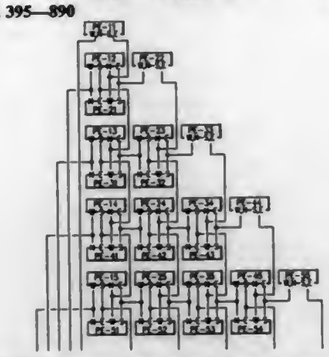
PARALLEL ARRAY PROCESSOR INTERCONNECTIONS

Gerald G. Pechanek, Endwell; Stamatis Vassiliadis, Vestal, and Jose G. Delgado-Frias, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 194,653, Feb. 9, 1994, abandoned, which is a division of Ser. No. 864,112, Apr. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 526,866, May 22, 1990, Pat. No. 5,065,339, Ser. No. 740,355, Aug. 5, 1991, Pat. No. 5,146,543, Ser. No. 740,556, Aug. 5, 1991, Pat. No. 5,146,420, Ser. No. 740,568, Aug. 5, 1991, abandoned, Ser. No. 740,266, Aug. 5, 1991, Pat. No. 5,148,515, and Ser. No. 682,786, Apr. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 526,866, said Ser. No. 740,355Ser. No. 740,556, Ser. No. 740,568, and Ser. No. 740,266, , each is a division of Ser. No. 526,866. This application Jul. 13, 1995, Ser. No. 522,163

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—890 **9 Claims**



1. An interconnection system for a plurality of processing elements (PEs) each having a plurality of I/O ports for transmitting and receiving data and instructions, the interconnection system comprising:
coupling means for interconnecting the plurality of PEs, the 6 coupling means including all of the inter-PE couplings present in a square torus configuration having an equal number of PEs as in said plurality of PEs, the coupling means implementing half the number of inter-PE couplings required in the torus configuration by sharing each non-diagonal PE's (PE_{ij}) I/O ports with its associated symmetrical PE (PE_{μ}), thereby forming a symmetric PE including PE_{ij} and PE_{μ}, where i and j are column and row designators, respectively, of corresponding PEs in the torus configuration, and where i and j are non-equal non-zero positive integers, and
wherein the coupling means further includes means for transmitting and receiving data and instructions in one of four selectable modes:
a) transmit east/receive west mode for transmitting data to an east PE over a portion of the I/O ports while receiving data from a west PE over a remaining portion of the I/O ports;
b) transmit north/receive south mode for transmitting data to a north PE over a portion of the I/O ports while receiving data from a south PE over a remaining portion of the I/O ports;
c) transmit south/receive north mode for transmitting data to the south PE over a portion of the I/O ports while receiving data from the north PE over a remaining portion of the I/O ports; and
d) transmit west/receive east mode for transmitting data to the west PE over a portion of the I/O ports while receiving data from the east PE over a remaining portion of the I/O ports.

5,577,263

CHEMICAL VAPOR DEPOSITION OF FINE GRAINED RHENIUM ON CARBON BASED SUBSTRATES

Gary A. West, Budd Lake, N.J., assignor to AlliedSignal Inc., Morris Township, N.J.

Filed Mar. 22, 1995, Ser. No. 408,234

Int. Cl.[6] B22F *3/00*

U.S. Cl. 428—552 **23 Claims**

1. A method for producing a composite element which comprises causing a stream of gaseous rhenium hexafluoride to flow onto a plurality of carbon substrates in the presence of a stream of sufficient hydrogen gas to cause a reduction of the rhenium hexafluoride to rhenium metal, for a time and under conditions sufficient to deposit a substantially uniform layer of rhenium metal onto the surface of the substrates and then bonding together a plurality of the thusly produced rhenium coated substrates.

5,577,264

UPDATING MOBILE STATION LOCATION IN A MOBILE RADIO NETWORK HAVING A MOBILE SUBSYSTEM ON BOARD A VEHICLE TRANSPORTING USERS OF MOBILE STATIONS

Markku Tuohino, Espoo, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

PCT No. PCT/FI93/00399, § 371 Date Jun. 6, 1994, § 102(e) Date Jun. 6, 1994, PCT Pub. No. WO94/08406, PCT Pub. Date Apr. 14, 1994

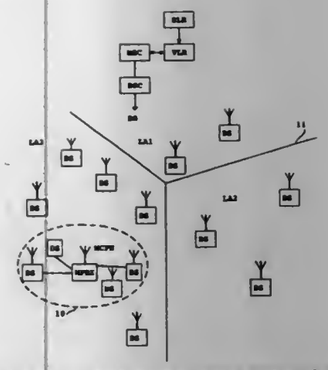
PCT Filed Oct. 6, 1993, Ser. No. 244,638

Claims priority, application Finland, Oct. 6, 1992, 924506

Int. Cl.[6] H04M *11/00*

U.S. Cl. 455—33.2 **5 Claims**

4. A method for updating location in a cellular radio network comprising a plurality of mobile stations roaming within a coverage area served by the cellular radio network in such a manner that the locations of the respective mobile stations, as to location area, are known within an accuracy of one location area, each location area consisting of at least one cell and at least one mobile subsystem roaming within said coverage area of the cellular radio network and serving the mobile stations, said method comprising the steps of:



updating of the location of each mobile station of said mobile stations in a storage system of the cellular radio network whenever said mobile station enters a the location area within the cellular radio network,
updating in said system the location of each said mobile station entering a said mobile subsystem, whereby the cellular network stores identification data in regard to said mobile subsystem as being location data in regard to said mobile station, and
updating only the location of each said mobile subsystem when that the mobile subsystem and the mobile stations registered in it enters a location area within the cellular radio network.

5,577,265

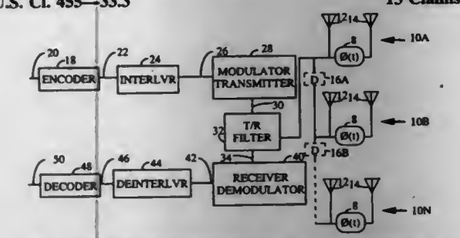
ANTENNA SYSTEM FOR MULTIPATH DIVERSITY IN AN INDOOR MICROCELLULAR COMMUNICATION SYSTEM

Charles E. Wheatley, III, Del Mar, Calif., assignor to QUALCOMM Incorporated, San Diego, Calif.

Continuation of Ser. No. 72,640, Jun. 3, 1993, Pat. No. 5,437,055. This application Dec. 7, 1994, Ser. No. 351,853

Int. Cl.[6] H04B *7/04*

U.S. Cl. 455—33.3 **13 Claims**



1. In a code division multiple access (CDMA) communication system in which system users communicate information signals with other system users through a base station using CDMA communication signals spread upon a carrier signal, said base station having an antenna system comprising:
a set of antenna elements each having two antennas spaced apart by less than a wavelength of said carrier signal;
a time variant phase shifting means, disposed between each of said two antennas of each of said antenna elements, for varying phase at a selected rate between said two antennas of each of said antenna elements; and
signal distribution means for coupling CDMA communication signals between said base station and said set of antenna elements.

5,577,266

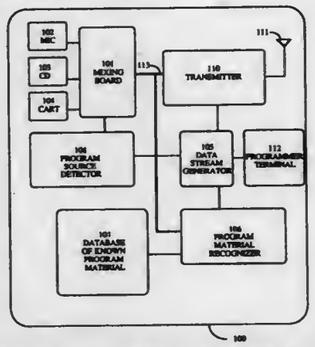
BROADCAST SYSTEM WITH ASSOCIATED DATA CAPABILITIES

Tsutumo Takahisa, Santa Clara, Calif., and Koyo Hasegawa, Tokyo, Japan, assignors to Digital D.J. Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 425,993, Apr. 20, 1995, which is a continuation-in-part of Ser. No. 45,352, Apr. 8, 1993, Pat. No. 5,491,838. This application Oct. 27, 1995, Ser. No. 549,655

Int. Cl.[6] H04B *7/00*

U.S. Cl. 455—66 **10 Claims**



1. A system for transmitting and receiving program material and data corresponding to the program material, comprising:
a plurality of program sources;
a transmitter;
a mixing board for routing said program material from a selected one of said program sources to said transmitter by selectively switching among said program sources and providing as an output signal said program material from said selected program source;
program source detection means coupled to said mixing board for providing a program source signal corresponding to said selected program source;
program material recognition means, coupled to said mixing board output signal, for comparing said program material with a database of known program material data and generating a program material identifying signal in response to the results of said comparison;
a data stream generator, coupled to said program recognition means, to said program source detection means and to said transmitter, for applying a data stream to said transmitter for transmission commencing before transmission of the program material, responsive to said program material identifying signal and said program source signal; and
a receiver for receiving the program material and data stream, the receiver displaying information corresponding to the data stream and providing audio output corresponding to the program material.

5,577,267

ASSEMBLY FOR VISUALLY INDICATING SIGNALS GENERATED BY AN ELECTRICAL CIRCUIT AND LIGHT-DIFFUSING INTERFACE APPARATUS THEREFOR

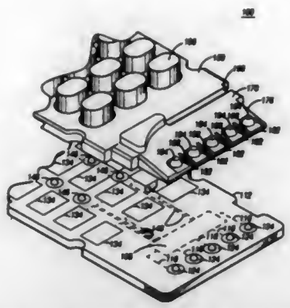
Polly Jungles-Butler, Gilberts, and Daniel J. Repplinger, Lake Zurich, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 26, 1992, Ser. No. 966,659

Int. Cl.[6] H04B *1/38*

U.S. Cl. 455—90 **20 Claims**

1. An assembly for visually indicating signals generated by an electrical circuit, said assembly comprising:
at least two light-generative devices wherein a first light-generative device of the at least two light-generative devices is operative to turn-on when a first of the signals is generated



by the electrical circuit and wherein a second light-generative device of the light-generative devices is spaced-apart from the first of the light-generative devices and is operative to turn-on when a second of the signals is generated by the electrical circuit;

a sheet of translucent material positioned above both the first and second light-generative devices, respectively, of the at least two light-generative devices; and

at least two spaced-apart light diffusers formed of the translucent material comprising said sheet of translucent material and positioned to extend beyond a top surface of said sheet, wherein a gap is formed in the translucent sheet of material between adjacent ones of said at least two spaced-apart light diffusers, wherein a first light diffuser and a second light diffuser of said at least two light diffusers are spaced-apart by distances corresponding to distances at which the first and second light-generative devices, respectively, are spaced-apart, thereby to permit alignment of the first light diffuser with the first light-generative device and alignment of the second light diffuser with the second light-generative device such that light emitted by the first and second light-generative devices, respectively, are diffused by corresponding ones of the first and second light diffusers.

5,577,268

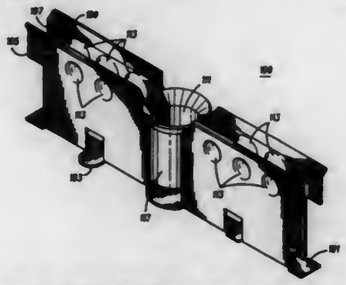
RADIO FREQUENCY SHIELD CLIP SUITABLE FOR USE IN A COMMUNICATION DEVICE

Norman Ho, Chicago; Mark Schwartz, Wauconda, and Michael L. Charlier, Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 23,995, Feb. 26, 1993, abandoned. This application Jun. 9, 1995, Ser. No. 489,205

Int. Cl.[6] H04B *1/38*

U.S. Cl. 455—90 **14 Claims**



1. A radio frequency (RF) shield clip comprising:

a base plate having a hub and at least a first arm and a second arm planarly extending therefrom, the second arm extending in a direction opposite the first arm, the hub having a width greater than each of the widths of the first and the second arms;

a first stabilizing leg coupled to the base plate and extending in a direction substantially perpendicular to the first arm and the second arm and in a plane shared with the base plate, the first stabilizing leg providing vertical stability for the RF shield clip when the base plate of the RF shield clip is rested upon a horizontal surface;

a first wall extending upward from a first side of the base plate, the first wall having a flanged portion flanged outward for accepting a RF shield, the first wall having multiple inwardly protruding domes for providing point contact to the RF shield, the first wall having an outward extending portion defining an opening, the opening providing access to the hub of the base plate; and

a second wall extending upward from a second side of the base plate, the second wall having a flanged portion flanged outward in a direction opposite the first wall for accepting the RF shield, the second wall having multiple inwardly protruding domes for providing point contact to the RF shield.

5,577,269

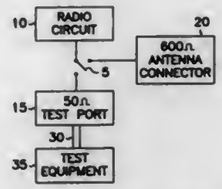
ANTENNA CONNECTOR FOR A PORTABLE RADIO

Christopher J. Ludewig, Northfield, Minn., assignor to E. F. Johnson Company, Burnsville, Minn.

Filed Apr. 21, 1995, Ser. No. 426,097

Int. Cl.[6] H04B *1/38*

U.S. Cl. 455—90 **20 Claims**



1. A dispatch radio for providing radio communication to a central control station, the dispatch radio comprising:

a metallic chassis, the chassis forming a ground plane of the dispatch radio;

an antenna connector supported by the chassis, the antenna connector having an impedance of less than 200 ohms;

an extendable antenna supported by the antenna connector and electrically connected to the antenna connector, the extendable antenna being movable back and forth between an position extended from the chassis and a position retracted relative to the chassis; and

a matching circuit electrically connected between the extendable antenna and the antenna connector, the matching circuit substantially matching the impedance of the extendable antenna with the impedance of the antenna connector.

5,577,270

RECEIVER FOR ELIMINATING A CROSSTALK OF AN ADJACENT BROADCAST

Yuji Sakai, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 240,963, May 10, 1994, abandoned, which is a continuation of Ser. No. 897,848, Jun. 12, 1992, abandoned. This application Aug. 16, 1995, Ser. No. 515,575

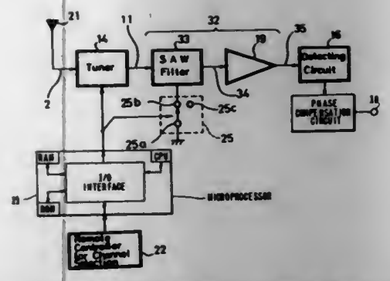
Claims priority, application Japan, Jun. 21, 1991, 3-150522

Int. Cl.[6] H04N *5/44;* **H04B** *1/16*

U.S. Cl. 455—180.1 **2 Claims**

1. A receiver comprising:

a microprocessor including a central processing unit (CPU), a read only memory (ROM), a random access memory (RAM), and an input/output (I/O) interface;



a tuner, having a bandpass filter for very high frequency (VHF) signals, a low quality-factor (Q) frequency modulation (FM) trapping circuit having an attenuation of about 10 to 15 dB at a central band of an FM frequency spectrum and an attenuation of about 2 to 3 dB near the ends of the FM frequency spectrum, and a mixer operatively connected to a local oscillator, for converting a radio frequency (RF) television broadcast signal, including a US-6ch signal corresponding to a 83.25 MHz video signal and an 87.75 MHz audio signal, and a FM broadcast signal, including a 88.1 MHz signal adjacent to the US- 6ch signal, supplied thereto into an intermediate frequency (IF) signal including a 45.75 MHz signal, a 41.25 MHz signal, and a 40.9 MHz interfering signal;

a surface acoustic wave (SAW) filter for effectively trapping or removing the 40.9 MHz interfering signal from the IF signal and outputting a filtered IF signal;

an amplifier for amplifying the filtered IF signal output from the SAW filter to produce an amplified IF signal; and

a detecting circuit for detecting the amplified IF signal, wherein

the SAW filter operates with a wide pass band when in an "off" mode and includes a switch for activating a trapping circuit for trapping the 40.9 MHz interfering signal by narrowing the pass band of the SAW filter when in an "on" mode,

the tuner is responsive to a control signal from the microprocessor such that the trapping circuit of the SAW filter is activated to the "on" mode only when US-6ch is selected by a channel selector in communication with the microprocessor and when a channel other than US-6ch is selected the SAW filter operates with the "off" mode, and

the RF and FM signals supplied to the tuner encounter the bandpass filter for VHF signals, the low-Q FM trapping circuit having an attenuation of about 10 to 15 dB at a central band of the FM frequency spectrum and an attenuation of about 2 to 3 dB near the ends of the FM frequency spectrum for preventing interference of the RF signal by the FM signal, and the mixer operatively connected to the local oscillator to convert the RF and FM signals to the IF signal.

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DESIGNS

NOVEMBER 19, 1996

375,609

ICE CONFECTION

Rossella Rossi, Milan, Italy, assignor to Good Humor Corporation, Green Bay, Wis.

Filed Jul. 14, 1994, Ser. No. 25,867

Claims priority, application Hague Agreement, Jan. 19, 1994, DM/028420

Term of patent 14 years

U.S. Cl. D1—102



375,610

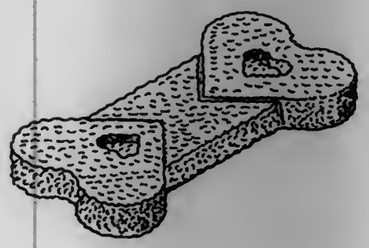
ORNAMENTAL DESIGN FOR AN ANIMAL TREAT

Johanna Loring, P.O. Box 815, Woodstock, Vt. 05091

Filed Dec. 18, 1995, Ser. No. 47,970

Term of patent 14 years

U.S. Cl. D1—112



375,611

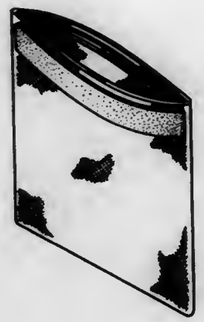
UNDERWEAR POCKET

Tony D. Cannon, 20175 Steel, Detroit, Mich. 48235

Filed Feb. 27, 1995, Ser. No. 36,426

Term of patent 14 years

U.S. Cl. D2—857



375,612

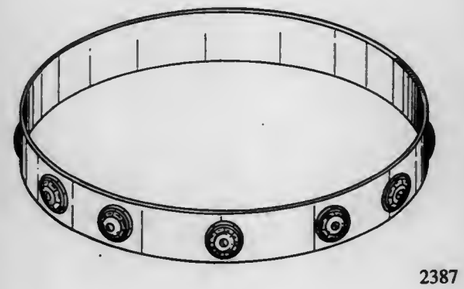
ILLUMINATED HAT BAND

Roger L. Elder, 114 Dorothy Dr., Shrewsbury, W. Va. 25015-1904

Filed Jun. 8, 1995, Ser. No. 39,990

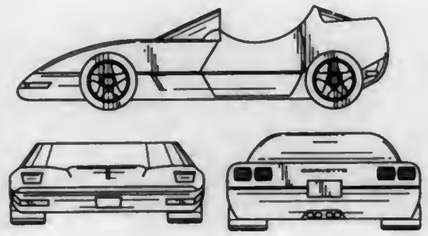
Term of patent 14 years

U.S. Cl. D2—894



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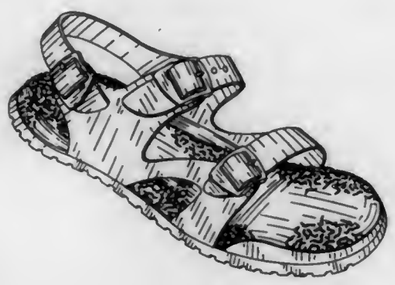
375,613
SLIPPER
Kevin Humphrey, 115 Hunt Ave., Evanston, Wyo. 82930
Filed Aug. 25, 1995, Ser. No. 43,096
Term of patent 14 years
U.S. Cl. D2—897



375,614
BABY BOOTIE
Alan Haddad, 345 E. 86th St., Apt. 9B, New York, N.Y. 10028
Filed Jul. 18, 1995, Ser. No. 41,626
Term of patent 14 years
U.S. Cl. D2—900



375,615
SANDAL
Steve McDonald, Portland, Oreg., assignor to Patagonia, Inc.
Filed Oct. 4, 1995, Ser. No. 44,976
Term of patent 14 years
U.S. Cl. D2—916



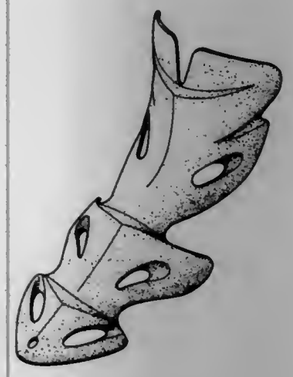
375,616
FOOTWEAR TREAD
Douglas W. Baker, Cincinnati; Freddie J. James, Loveland, and Donna J. Nordeman, Cincinnati, all of Ohio, assignors to 'totes', incorporated, Loveland, Ohio
Filed Jan. 29, 1996, Ser. No. 50,573
Term of patent 14 years
U.S. Cl. D2—960



375,617
SHOE UPPER
Toren P. B. Orzeck, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Continuation-in-part of Ser. No. 32,083, Dec. 6, 1994, Pat. No. Des. 364,266. This application Sep. 29, 1995, Ser. No. 44,698
Term of patent 14 years
U.S. Cl. D2—969



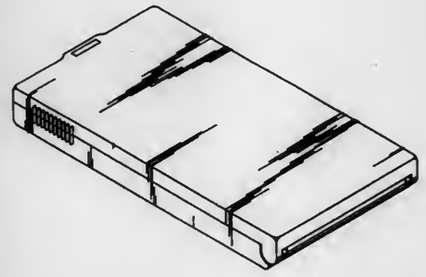
375,618
SHOE TONGUE FOR A SKATE BOOT
Ting-Hsing Chen, Tainan, Taiwan, assignor to Far Great Plastics Industrial Co., Ltd., Tainan, Taiwan
Filed Feb. 14, 1996, Ser. No. 50,323
Term of patent 14 years
U.S. Cl. D2—975



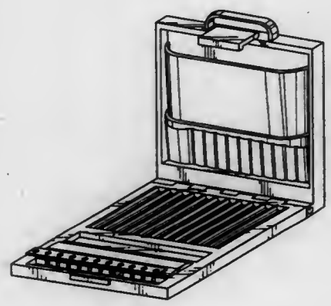
375,619
ELEMENT OF A SHOE SOLE
Peter P. Backus, Newberg, and Matthew N. Rask, Boring, both of Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Filed Dec. 7, 1995, Ser. No. 47,583
Term of patent 14 years
U.S. Cl. D2—977



375,620
SEWING KIT
Chiksum Chan, 37-39 Au Pui Wan Street, Fotan - Shatin - Kowloon, Hong Kong, Hong Kong
Continuation-in-part of Ser. No. 19,541, Mar. 4, 1994, abandoned. This application May 18, 1995, Ser. No. 39,473
Term of patent 14 years
U.S. Cl. D3—20

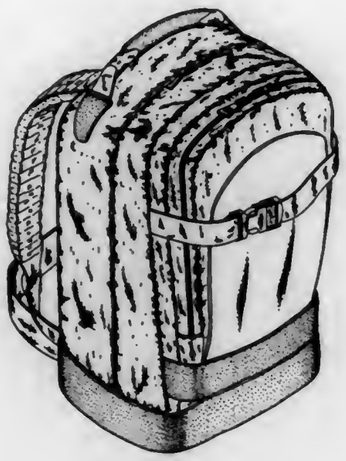


375,621
SEWING CASE
Linda M. Sudbrock, 634 Perkins St., Dexter, Iowa 50070
Filed Oct. 23, 1995, Ser. No. 45,535
Term of patent 14 years
U.S. Cl. D3—20



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375,622
BACKPACK WITH STRAPPING SYSTEM
Joseph J. Croft, Temecula, Calif., assignor to Bianchi International, Temecula, Calif.
Filed Aug. 11, 1995, Ser. No. 42,521
Term of patent 14 years
U.S. Cl. D3—217



375,623
CASINO UTILITY BAG
Jody M. Pearl-Lee, 736 Sunset Trail, Omaha, Nebr. 68132
Filed Dec. 14, 1995, Ser. No. 47,912
Term of patent 14 years
U.S. Cl. D3—226



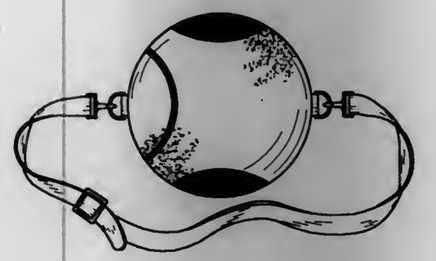
375,624
HOLDER FOR SPRAY CONTAINER
Eric Jensen, 7770 Anadale Cir., Lake Worth, Fla. 33467-7710
Filed May 12, 1995, Ser. No. 38,866
Term of patent 14 years
U.S. Cl. D3—229



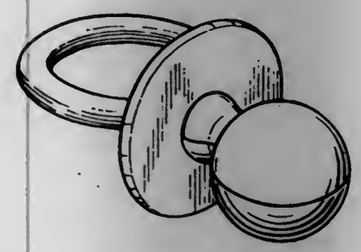
375,625
COMBINED WATCH AND HANDBAG
Barry Kieselstein-Cord, 67 Park Ave., New York, N.Y. 10016
Filed Sep. 21, 1995, Ser. No. 44,251
Term of patent 14 years
U.S. Cl. D3—233



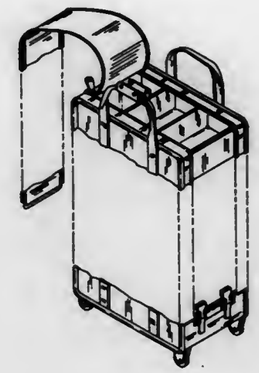
375,626
BALL CARRIER
Christopher Eaton, Salem, and James P. Reddy, Lynn, both of Mass., assignors to DAG Products, Inc., Hampton, N.H.
Filed Aug. 15, 1995, Ser. No. 42,631
The portion of the term of this patent subsequent to Sep. 10, 2013, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—257



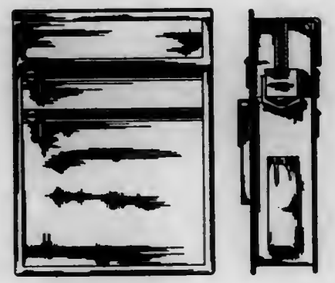
375,627
BOX FOR JEWELLERY AND SHAMS
Jorge Perez Jane, Sant Antoni 48, Sant Feliu De Llobregat, Spain
Filed Apr. 14, 1995, Ser. No. 37,504
Claims priority, application Spain, Oct. 18, 1994, 133614
Term of patent 14 years
U.S. Cl. D3—271



375,628
SAMPLE CASE
Edward W. Williamson, Barnesville, Ga., assignor to Herkert & Meisel Trunk Co., St. Louis, Mich.
Filed Nov. 30, 1994, Ser. No. 31,527
Term of patent 14 years
U.S. Cl. D3—279

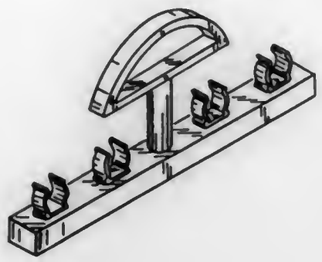


375,629
MULTI-POCKET CARRIER
Juliet Chen, 2235 E. 7th St., Los Angeles, Calif. 90035
Filed Dec. 21, 1995, Ser. No. 48,135
Term of patent 14 years
U.S. Cl. D3—283

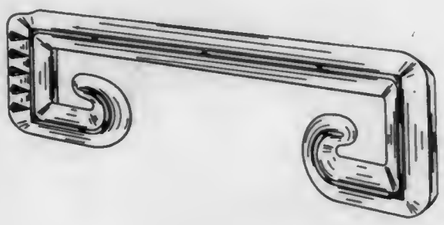


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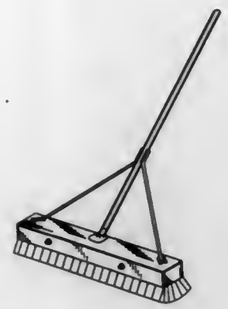
375,630
CADDY FOR OBJECTS WITH TUBULAR ELEMENTS
Thomas E. Oliver, 455 E. Thelma St., Lake Alfred, Fla. 33850
Filed Dec. 18, 1995, Ser. No. 48,002
Term of patent 14 years
U.S. Cl. D3—315



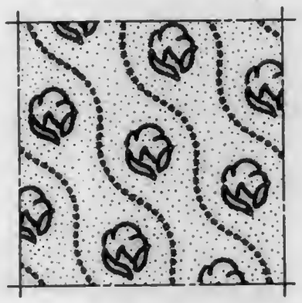
375,631
CARRYING HANDLE
Roger A. Strom, 3100 S. Federal #208, Denver, Colo. 80236
Filed Dec. 19, 1994, Ser. No. 32,441
Term of patent 14 years
U.S. Cl. D3—328



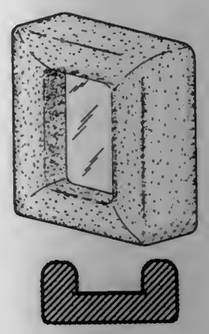
375,632
BROOM
Edward Uranga, and Ruben Uranga, Jr., both of 4342 Glenmuir Ave., Los Angeles, Calif. 90065
Filed Aug. 9, 1994, Ser. No. 26,916
Term of patent 14 years
U.S. Cl. D4—132



375,633
EMBOSSED TISSUE
Ellen G. Spanagel, Appleton; Sandra A. Enderby, New Franken; Walter W. Gary, Fremont, and Sharon A. Massing, Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Dec. 5, 1995, Ser. No. 47,496
Term of patent 14 years
U.S. Cl. D5—37



375,634
PICTURE FRAME
Bryan A. Werelemann, 228 Ledroit St., Laguna Beach, Calif. 92651-1347
Continuation-in-part of Ser. No. 22,806, May 12, 1994, abandoned. This application May 10, 1995, Ser. No. 38,677
Term of patent 14 years
U.S. Cl. D6—300



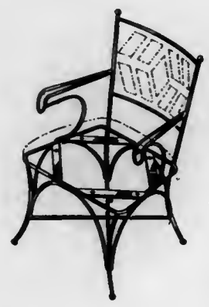
375,635
ARMCHAIR
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex Sarl, Oyonnax, France
Filed Sep. 12, 1995, Ser. No. 43,804
Claims priority, application Hague Agreement, Mar. 16, 1995, DMA/002818
Term of patent 14 years
U.S. Cl. D6—369



375,636
CHAIR
Guiseppe Arcese, and Amedeo Arcese, both of Brampton, Canada, assignors to Arcese Brothers Furniture Ltd., Ontario, Canada
Filed Aug. 10, 1995, Ser. No. 42,413
Claims priority, application Canada, Feb. 10, 1995, 1995-0343
The portion of the term of this patent subsequent to Jul. 23, 2013, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—370



375,637
CHAIR FRAME DESIGN
Glibert E. Gustavsen, 1025 W. Mingus Rd., Phoenix, Ariz. 85027
Filed Dec. 18, 1995, Ser. No. 47,991
Term of patent 14 years
U.S. Cl. D6—376



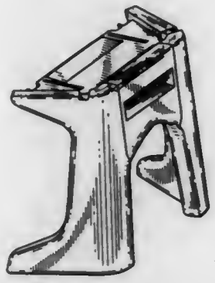
375,638
TRANSFER BENCH FOR BATHTUB
Shivaprasad Dhanapal, Statesville, N.C., and John Ledingham, Chicago, Ill., assignors to Rubbermaid Health Care Products Inc., Statesville, N.C.
Filed Nov. 14, 1995, Ser. No. 46,406
Term of patent 14 years
U.S. Cl. D6—377



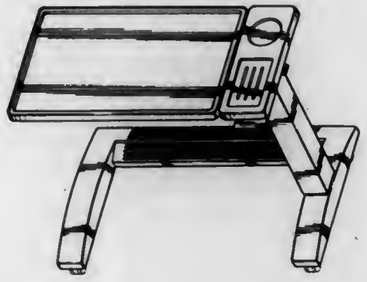
375,640
TABLE
Edward F. Marx, 16903 Gorsuch Mill Rd., Upperco, Md. 21155
Filed Dec. 6, 1995, Ser. No. 47,541
Term of patent 14 years
U.S. Cl. D6—482



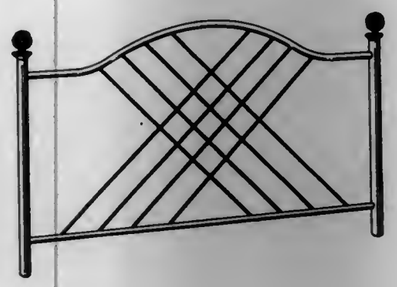
375,639
STAND
Kenneth W. House; Darrell A. Schoenig, and Donald H. Eason, all of Fort Collins, Colo., assignors to Ultimate Support Systems, Inc., Fort Collins, Colo.
Filed Sep. 8, 1994, Ser. No. 28,144
Term of patent 14 years
U.S. Cl. D6—449



375,641
PORTABLE TABLE
Shivaprasad Dhanapal, Statesville, N.C.; Robert W. Jones, Hinsdale, Mass., and Charles F. T. Merritt, Southport, Conn., assignors to Rubbermaid Health Care Products Inc., Statesville, N.C.
Filed Nov. 14, 1995, Ser. No. 46,407
Term of patent 14 years
U.S. Cl. D6—486



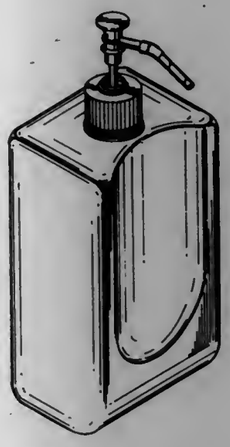
375,642
HEADBOARD FOR BEDS
John Yeh, 660 S. Aberdeen, Anaheim Hills, Calif. 92807
Filed Nov. 24, 1995, Ser. No. 47,002
Term of patent 14 years
U.S. Cl. D6—508



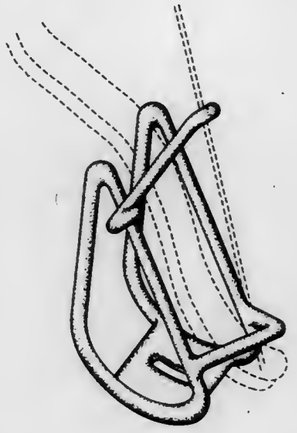
375,644
RIFLE HOLDER
Gary D. Foster, 5806 Monassas Run Dr., Milford, Ohio 45150, and Curtis C. Foster, 2623 Nola Dr., Bethel, Ohio 45106
Filed Oct. 25, 1995, Ser. No. 45,651
Term of patent 14 years
U.S. Cl. D6—552



375,643
LIQUID HAND SOAP CONTAINER
James L. Copeland, Apple Valley, Minn.; Jeff W. Peterson, Hudson, Wis., and Paul A. Pilosi, Minneapolis, Minn., assignors to Ecolab Inc., St. Paul, Minn.
Filed Aug. 7, 1995, Ser. No. 42,305
Term of patent 14 years
U.S. Cl. D6—542

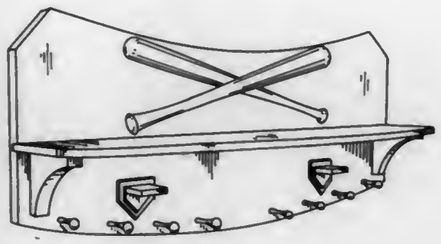


375,645
ARCHERY BOW HOLDER
Gary D. Foster, 5806 Monassas Run Dr., Milford, Ohio 45150, and Curtis C. Foster, 2623 Nola Dr., Bethel, Ohio 45106
Filed Oct. 25, 1995, Ser. No. 45,656
Term of patent 14 years
U.S. Cl. D6—552



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375,646
TROPHY SHELF
Mark L. Stewart, 608 Fife St., Chesapeake, Va. 23321
Filed Mar. 13, 1995, Ser. No. 36,101
Term of patent 14 years
U.S. Cl. D6—574



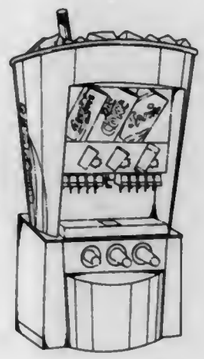
375,647
SIMULATED POLAR BEAR RUG
Linda B. Delaney, Arlington, Va., assignor to Trillium, Inc., Falls Church, Va.
Filed Nov. 13, 1995, Ser. No. 46,303
Term of patent 14 years
U.S. Cl. D6—589



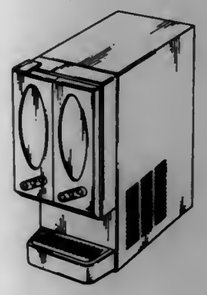
375,648
STORAGE CAROUSEL FOR COMPACT DISKS
Benjamin Geffen, San Francisco, Calif., assignor to Full Circle Company, San Francisco, Calif.
Filed Aug. 11, 1994, Ser. No. 27,020
Term of patent 14 years
U.S. Cl. D6—630



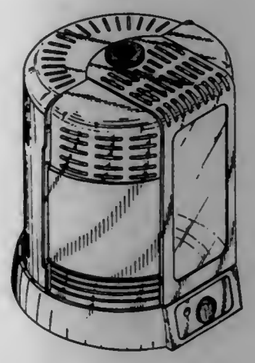
375,649
BEVERAGE DISPENSER
David B. Henninger, Marrietta, Ga.; Jeffrey A. Rutchik, North Easton, Mass.; Robert A. Crosby, Jr., Scituate, Mass.; Michael E. Goodell, North Easton, Mass., and Charles W. Pasewark, Framingham, Mass., assignors to The Coca-Cola Company, Atlanta, Ga.
Filed Mar. 24, 1995, Ser. No. 36,701
Term of patent 14 years
U.S. Cl. D7—301



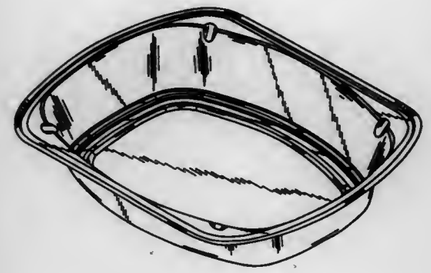
375,650
BEVERAGE FEEDING MACHINE
Yoshikazu Saito, Higashimatsuyama, and Toshiro Fujii, Saitama-ken, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka-fu, Japan
Filed Oct. 10, 1995, Ser. No. 45,114
Claims priority, application Japan, Apr. 11, 1995, 7-10204
Term of patent 14 years
U.S. Cl. D7—307



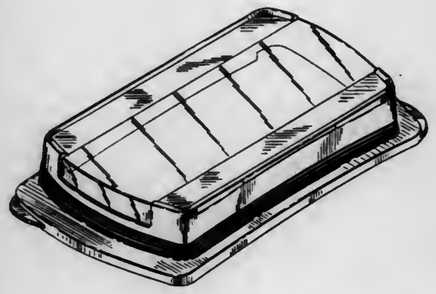
375,651
ELECTRIC OVEN
Johnson Su, 170, Chung Lun, Chung Sha Tsun, An-Ting Hsiang, Tainan, Taiwan
Filed Aug. 28, 1995, Ser. No. 43,382
Term of patent 14 years
U.S. Cl. D7—350



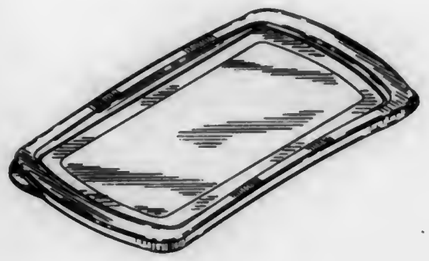
375,652
DISPOSABLE COOKING PAN
Thomas J. Hayes, Wauconda, Ill., assignor to Packaging Corporation of America, Evanston, Ill.
Filed Jun. 7, 1995, Ser. No. 39,976
Term of patent 14 years
U.S. Cl. D7—354



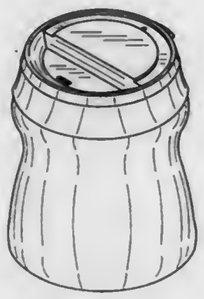
375,653
COVER FOR FOOD CONTAINER
Ian Ferris, Finchampstead, England, assignor to Dart Industries Inc., Deerfield, Ill.
Filed Sep. 28, 1995, Ser. No. 43,924
Term of patent 14 years
U.S. Cl. D7—392.1



375,654
SEAL FOR FOOD CONTAINER
Ian Ferris, Finchampstead, England, assignor to Dart Industries Inc., Deerfield, Ill.
Filed Sep. 28, 1995, Ser. No. 43,925
Term of patent 14 years
U.S. Cl. D7—392.1



375,655
INSULATED BEVERAGE HOLDER
Jon E. King, St. Louis, Mo., assignor to Sinclair & Rush, Inc., St. Louis, Mo.
Filed Jan. 26, 1996, Ser. No. 49,546
Term of patent 14 years
U.S. Cl. D7—511



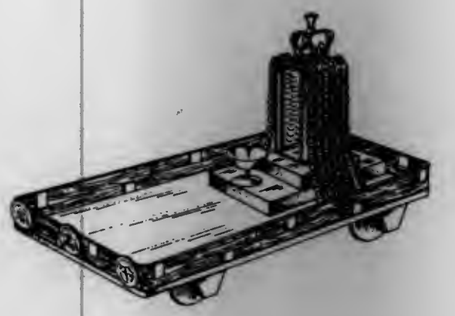
375,656
MUG
Loreiei K. Wilson, Toledo, Ohio, assignor to Libbey Glass Inc., Toledo, Ohio
Filed Feb. 8, 1996, Ser. No. 50,086
Term of patent 14 years
U.S. Cl. D7—515



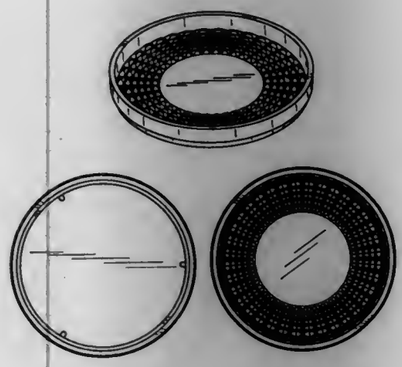
375,657
COCKTAIL GLASS
Charles W. Jarvis, Irvine, Calif., assignor to Cambro Manufacturing Company, Huntingon Beach, Calif.
Filed Oct. 20, 1995, Ser. No. 46,657
Term of patent 14 years
U.S. Cl. D7—583



375,658
FLOAT BASKET FOR EDIBLE GOODS
Robert M. Reichert, Mardi Gras Candies, Inc. P.O. Box 50277, New Orleans, La. 70150
Filed Dec. 29, 1994, Ser. No. 32,843
Term of patent 14 years
U.S. Cl. D7—551



375,659
COASTER
Joseph G. Lipic, St. Louis, Mo., assignor to Alexander Manufacturing Company, St. Louis, Mo.
Filed Jan. 30, 1996, Ser. No. 49,770
Term of patent 14 years
U.S. Cl. D7—624



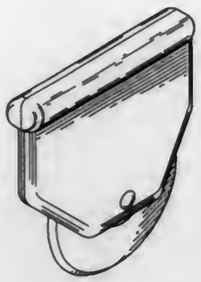
375,660
WINE BOTTLE CARRIER
Steve B. Parris, P.O. Box 5104, Santa Monica, Calif. 90405
Filed Nov. 6, 1995, Ser. No. 46,071
Term of patent 14 years
U.S. Cl. D7—628



375,661
WATERMELON SLICER
Gregory J. Ross, and Amy M. Ross, both of 99 Latimer Ave., Strabane, Pa. 15363
Filed Dec. 8, 1995, Ser. No. 47,644
Term of patent 14 years
U.S. Cl. D7—673



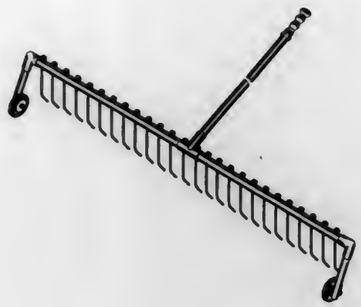
375,662
PIZZA CUTTER
Robert A. Noga, 13404 Calais Dr., Del Mar, Calif. 92014
Filed Dec. 13, 1995, Ser. No. 47,861
Term of patent 14 years
U.S. Cl. D7—694



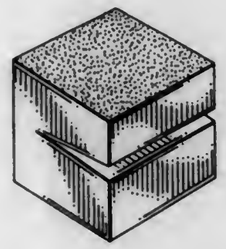
375,663
IRRIGATION SPRINKLER STAKE
James R. Arnold, 15230 Frank Jerrell Rd., Clermont, Fla. 34711
Filed Oct. 30, 1995, Ser. No. 45,760
Term of patent 14 years
U.S. Cl. D8—1



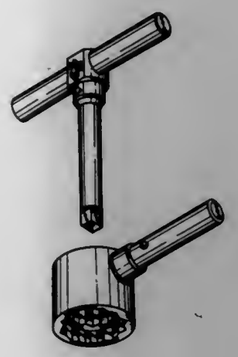
375,664
WHEELED LEAF RAKE
John S. Zimmer, 413 S. Ellison La., Waynesboro, Va. 22890
Filed Aug. 15, 1995, Ser. No. 42,637
Term of patent 14 years
U.S. Cl. D8—13



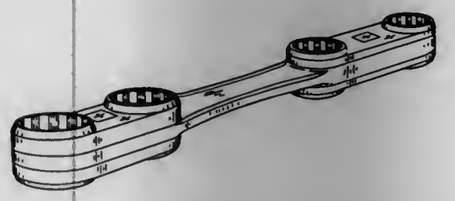
375,665
CARPENTERS' TAPE RETAINER
Kenneth P. Martinez, 282 Aimee La., Florien, La. 71429
Filed Feb. 13, 1995, Ser. No. 34,896
Term of patent 14 years
U.S. Cl. D8—14



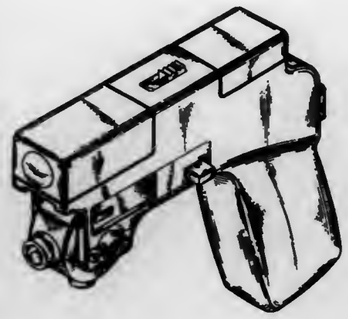
375,666
WRENCH
Wallace S. Mountain, 732 Musick Ave., Modesto, Calif. 95351-4730
Filed Jul. 25, 1994, Ser. No. 26,331
Term of patent 14 years
U.S. Cl. D8—25



375,667
MULTI-SOCKET, BOX WRENCH
Richard J. Macor, Greenwich Township, Warren County, N.J., assignor to Proprietary Technologies, Inc., Stewartsville, N.J.
Filed May 4, 1995, Ser. No. 42,033
The portion of the term of this patent subsequent to Dec. 28, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—28



375,668
MULTIPLE SOCKET TOOL
James Kalousis, 1101 Lowden Ave., Union, N.J. 07083-7706
Filed Nov. 13, 1995, Ser. No. 46,322
Term of patent 14 years
U.S. Cl. D8—68

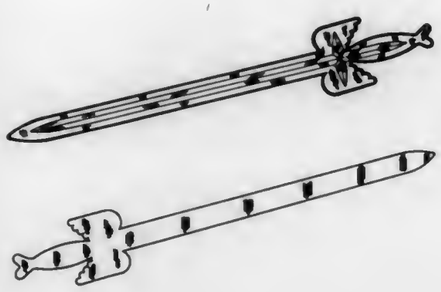


375,669
TOOL HANDLE
Hsuan-Sen Shiao, No. 15-1, Lane 369, Min-Chuan Rd., Pei Dist., Taichung City, Taiwan
Filed Nov. 13, 1995, Ser. No. 46,307
Term of patent 14 years
U.S. Cl. D8—83

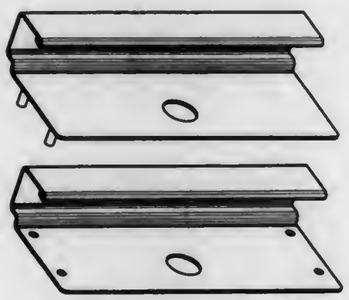


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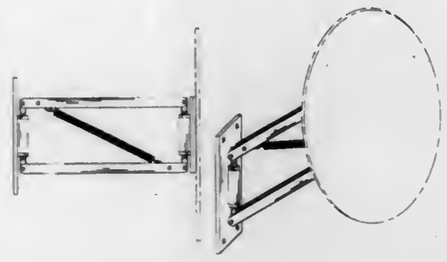
375,670
LETTER OPENER
Donald L. Cox, Rte. 10, Box 225-49, Asheboro, N.C. 27203
Filed Oct. 31, 1994, Ser. No. 30,467
Term of patent 14 years
U.S. Cl. D8—103



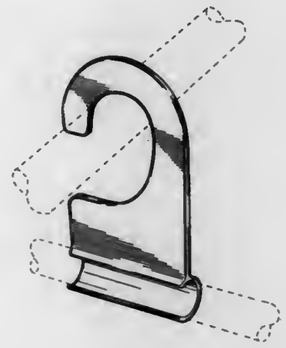
375,671
PULL AND LATCH GUARD
Michael E. Heithe, Duarte, Calif., assignor to NT Quality Hardware, Brea, Calif.
Filed Sep. 20, 1995, Ser. No. 44,181
Term of patent 14 years
U.S. Cl. D8—346



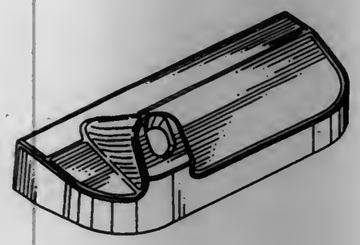
375,672
MIRROR SUPPORT
Glendon R. Good, 2000 Second St., Berkeley, Calif. 94710
Filed Apr. 28, 1995, Ser. No. 38,160
Term of patent 14 years
U.S. Cl. D8—354



375,673
COMBINED CHAIR HOOK AND HANGER
David Schowalter, 129 Houston St., Savanah, Ga. 31401
Filed Dec. 7, 1995, Ser. No. 47,585
Term of patent 14 years
U.S. Cl. D8—367



375,674
OUTER SURFACE OF AN OPERATOR HOUSING
Todd A. Anderson, Albert Lea, and Douglas G. Johnson, Blooming Prairie, both of Minn., assignors to Truth Hardware Corporation, Owatonna, Minn.
Filed Dec. 19, 1995, Ser. No. 48,061
Term of patent 14 years
U.S. Cl. D8—400



375,675
COMBINED BOTTLE AND CAP
Robert Luzzi; Dena Seigel, both of New York, N.Y., and Pierre Dinand, Paris, France, assignors to Estee Lauder Inc., New York, N.Y.
Filed Aug. 17, 1995, Ser. No. 43,242
Term of patent 14 years
U.S. Cl. D9—300



375,676
DISPENSER POUCH
Steven D. Davis, Yucaipa, Calif., and Daniel A. Rubino, Carol Stream, Ill., assignors to Winpak Lane, Inc., San Bernandino, Calif.
Filed Nov. 3, 1995, Ser. No. 45,963
Term of patent 14 years
U.S. Cl. D9—305



375,677
BOTTLE
Jean-Paul Gaultier, Paris, France, assignor to Beaute Presitqe International, Paris, France
Filed Aug. 31, 1995, Ser. No. 43,285
Term of patent 14 years
U.S. Cl. D9—311



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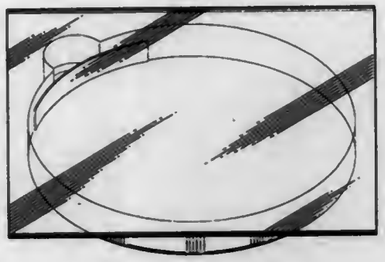
375,678
SURFACE FOR A BOTTLE
Janusz Owsiany, Lip, Poland, assignor to Euro-Agro Warszawa, Sp. z.o.o., Warszawa, Poland
Filed Aug. 2, 1994, Ser. No. 26,624
Claims priority, application Poland, Feb. 2, 1994, W-9945 U
Term of patent 14 years
U.S. Cl. D9—335



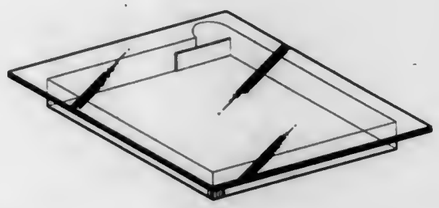
375,679
CANDY-DISPENSING DEVICE
Douglas R. Russell, Louisville, Ky., assignor to Cap Toys Inc., Bedford Heights, Ohio
Filed Sep. 7, 1995, Ser. No. 43,752
Term of patent 14 years
U.S. Cl. D9—339



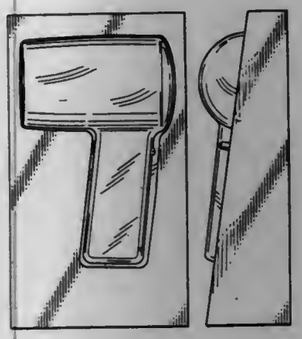
375,680
HERMETICALLY SEALED PLASTIC FOOD CONTAINER
Benno E. Liebermann, 2805 Lime Kiln La., Louisville, Ky. 40222
Filed Aug. 25, 1995, Ser. No. 43,374
Term of patent 14 years
U.S. Cl. D9—347



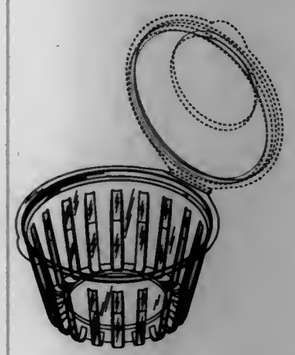
375,681
HERMETICALLY SEALED PLASTIC FOOD CONTAINER
Benno E. Liebermann, 2805 Lime Kiln La., Louisville, Ky. 40222
Filed Aug. 25, 1995, Ser. No. 43,375
Term of patent 14 years
U.S. Cl. D9—347



375,682
CONTAINER
David A. Ruben, 7 Oceanside Way, Redwood Shores, Calif. 94065
Filed Dec. 22, 1995, Ser. No. 48,292
Term of patent 14 years
U.S. Cl. D9—415



375,683
RIBBED CONTAINER
David C. Schoff, Ripon, Wis., assignor to Packaging Corporation of America, Evanston, Ill.
Filed May 26, 1995, Ser. No. 39,482
Term of patent 14 years
U.S. Cl. D9—429



375,684
CONTAINER
John Hope, Leeds, United Kingdom, assignor to Chesebrough-Pond's USA Co., Greenwich, Conn.
Filed Oct. 13, 1994, Ser. No. 29,741
Claims priority, application United Kingdom, Apr. 14, 1994, 203816
Term of patent 14 years
U.S. Cl. D9—502

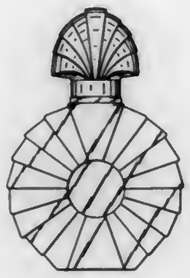


375,685
COMBINED BOTTLE AND CAP
Jung-Hwan Kang, No.122-2, Euijungbu 1-Dong, Euijungbu-Si, Kyungki-Do, Rep. of Korea, and So-Ja Kim, No.213-12, Jamsil, Bon-Dong, Songpa-Gu, Seoul, Rep. of Korea
Filed Oct. 24, 1994, Ser. No. 30,243
Claims priority, application Japan, May 2, 1994, 6-12348
Term of patent 14 years
U.S. Cl. D9—520



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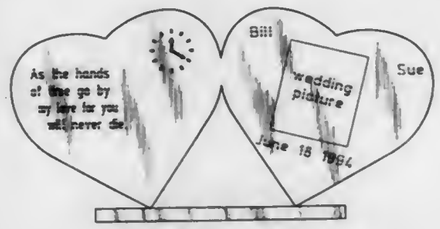
375,686
COMBINED BOTTLE AND CAP
Marie Gray, Irvine, Calif., assignor to St. John Knits, Inc., Irvine, Calif.
Filed Aug. 23, 1994, Ser. No. 27,516
Term of patent 14 years
U.S. Cl. D9—562



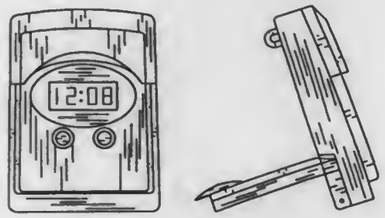
375,688
LIQUID CRYSTAL DISPLAY CLOCK
Hubert Hagadorn, 9 Light Way, Menlo Park, Calif. 94025
Filed Sep. 6, 1995, Ser. No. 43,576
Term of patent 14 years
U.S. Cl. D10—15



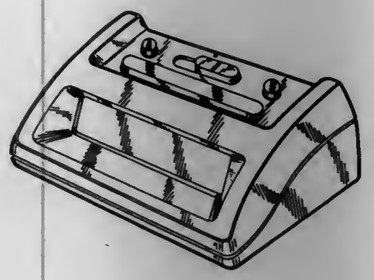
375,687
PERSONALIZED BATTERY-OPERATED CLOCK
Druann B. Carman, P.O. Box 502, Fredonia, Ariz. 86022
Filed Sep. 18, 1995, Ser. No. 44,110
Term of patent 14 years
U.S. Cl. D10—6



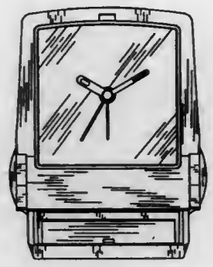
375,689
LCD ALARM CLOCK
Shu K. Wong, Yuen Long, Hong Kong, assignor to Herald Electronics Limited, New Territories, Hong Koug
Filed Jan. 4, 1996, Ser. No. 48,566
Term of patent 14 years
U.S. Cl. D10—15



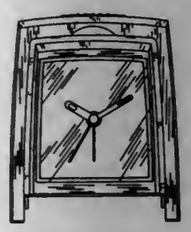
375,690
CLOCK
David Plogman, Decatur, Ga., assignor to GTC Properties, Inc., Wilmington, Del.
Filed Feb. 8, 1996, Ser. No. 50,137
Term of patent 14 years
U.S. Cl. D10—15



375,692
TRAVELLING ANALOG ALARM CLOCK
Shu K. Wong, Yuen Long, Hong Kong, assignor to Herald Electronics Limited, New Territories, Hong Kong
Filed Jan. 4, 1996, Ser. No. 48,567
Term of patent 14 years
U.S. Cl. D10—18



375,691
TRAVELLING ANALOG ALARM CLOCK
Shu K. Wong, Yuen Long, Hong Kong, assignor to Herald Electronics Limited, New Territories, Hong Kong
Filed Dec. 21, 1995, Ser. No. 48,155
Term of patent 14 years
U.S. Cl. D10—18

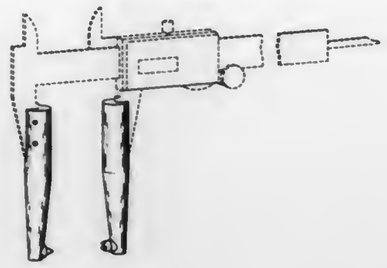


375,693
COMBINED COMPASS AND THERMOMETER
Gin-Sung Chang, No. 6-13, Shu-1 Lane 6, Shu-I Ll, Nan Dist., Taichung City, Taiwan
Filed Sep. 18, 1995, Ser. No. 44,116
Term of patent 14 years
U.S. Cl. D10—62

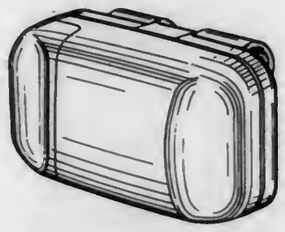


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375,694
THREAD GAUGE ATTACHMENT FOR CALIPERS
Joseph Schlotterer, 233 Goldleaf La., Carson City, Nev. 89706
Filed Dec. 15, 1995, Ser. No. 47,934
Term of patent 14 years
U.S. Cl. D10—74



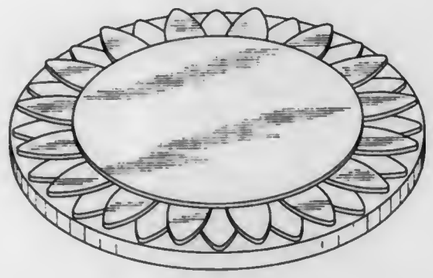
375,695
PEDOMETER
Akihisa Narai, Mie, Japan, assignor to Omron Corporation, Kyoto, Japan
Filed Oct. 18, 1995, Ser. No. 45,393
Claims priority, application Japan, Apr. 18, 1995, 7-10978
Term of patent 14 years
U.S. Cl. D10—97



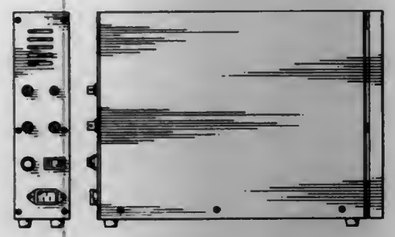
375,696
REMOTE CONTROLLER FOR AUTOMOBILE
Noboru Seki, and Shigenori Abe, both of Miyagi-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed Dec. 8, 1995, Ser. No. 47,634
Claims priority, application Japan, Jun. 9, 1995, 7-16538
Term of patent 14 years
U.S. Cl. D10—104



375,697
PLASTIC HEADLIGHT SENSOR COVER FOR USE ON THE DASHBOARD OF VEHICLES EQUIPPED WITH AUTOLAMP SYSTEMS
Edmond R. Villa, Sr., 24 S. Sewalls Point Rd., Stuart, Fla. 34996
Filed Jan. 4, 1996, Ser. No. 48,580
Term of patent 14 years
U.S. Cl. D10—104



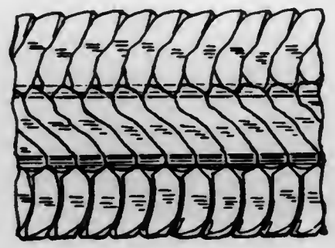
375,698
SIGNALLING UNIT FOR THE DETECTION OF MOTION
Takahiro Yamamoto, and Tatsuto Tokuyasu, both of Fukuoka, Japan, assignors to Anima Electronics Co., Ltd., Fukuoka, Japan
Filed Oct. 13, 1993, Ser. No. 14,135
Claims priority, application Japan, Apr. 15, 1993, 5-11315
Term of patent 14 years
U.S. Cl. D10—106



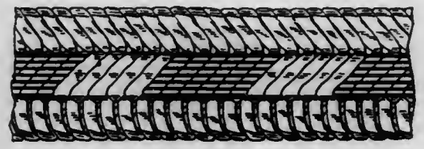
375,699
BELL
Chung-Shyan Huang, No. 1-1; Chang Mar Street, Hsio Shui Hsiang, Chang Hua Hsien, Taiwan
Filed Dec. 6, 1995, Ser. No. 47,501
Term of patent 14 years
U.S. Cl. D10—116



375,700
CHAIN
Elio Bonarini, and Domenico Fornaini, both of Arezzo, Italy, assignors to Uno A Erre Italia S.p.A., Arezzo, Italy
Filed Jul. 7, 1995, Ser. No. 41,165
Claims priority, application Italy, Jan. 11, 1995, FI9500002
Term of patent 14 years
U.S. Cl. D11—13



375,701
CHAIN
Elio Bonarini, and Domenico Fornaini, both of Arezzo, Italy, assignors to Uno A Erre Italia S.p.A., Arezzo, Italy
Filed Jul. 7, 1995, Ser. No. 41,175
Term of patent 14 years
U.S. Cl. D11—13

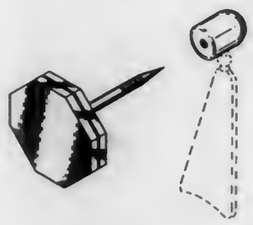


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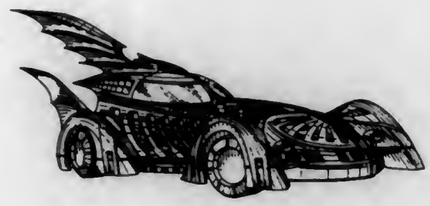
375,702
LOCKET
Daniel L. Regan, Essex, England, assignor to The Gold Connection Limited, Birmingham, England
Filed Mar. 30, 1995, Ser. No. 38,751
Term of patent 14 years
U.S. Cl. D11—81



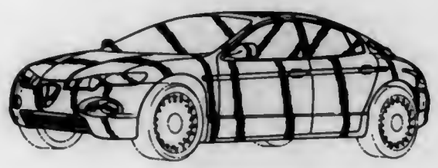
375,703
EARRING SCREW
Burma C. Lowe, and Jerry Lowe, both of 4677 Pueblo Dr. SW., Atlanta, Ga. 30331
Filed Sep. 26, 1995, Ser. No. 44,546
Term of patent 14 years
U.S. Cl. D11—88



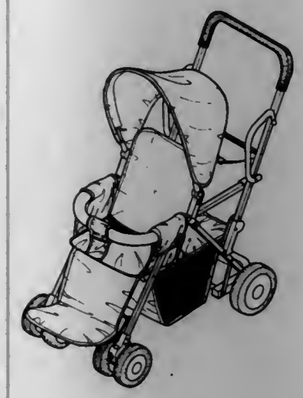
375,704
VEHICLE
Tim Flattery, Newbury Park; Barbara Ling, Echo Park, and Joel Schumacher, Burbank, all of Calif., assignors to DC Comics, New York, N.Y.
Continuation of Ser. No. 39,258, Jun. 1, 1995, abandoned.
This application Dec. 8, 1995, Ser. No. 47,605
Term of patent 14 years
U.S. Cl. D12—86



375,705
VEHICLE BODY
Kevin R. Verduyn, Oceanside, Calif., assignor to Chrysler Corporation, Auburn Hills, Mich.
Continuation-in-part of Ser. No. 32,634, Dec. 22, 1994, Pat. No. Des. 370,646. This application Apr. 28, 1995, Ser. No. 38,104
The portion of the term of this patent subsequent to Oct. 11, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—91



375,706
STROLLER WITH DOUBLE SEATS
Mark Haung, 58, Ma Yuan West St., Taichung, Taiwan
Filed Jun. 26, 1995, Ser. No. 40,736
Term of patent 14 years
U.S. Cl. D12—129



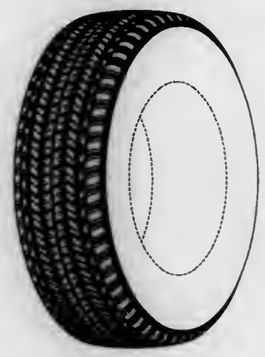
375,707
STROLLER
Chih-Huang Yang, No. 1-3, Lane 38, Jui-Feng St., Nan Dist., Taichung City, Taiwan
Filed Mar. 1, 1996, Ser. No. 51,057
Term of patent 14 years
U.S. Cl. D12—129



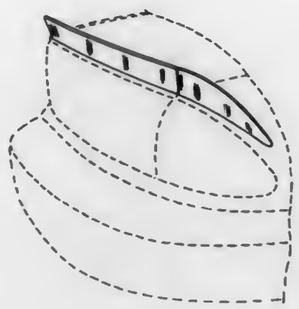
375,708
ROLLER WALKER
Anders Ahlbertz, Gothenburg, Sweden, assignor to Dolomite Svenska AB, Anderstorp, Sweden
Filed Apr. 25, 1995, Ser. No. 37,943
Claims priority, application Sweden, Nov. 3, 1994, 94 2236
Term of patent 14 years
U.S. Cl. D12—130



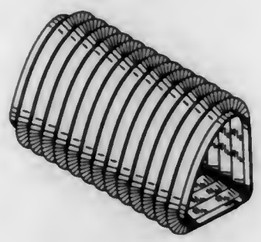
375,709
TIRE TREAD
James G. Guspodin, Akron, and William C. Hanlon, Medina, both of Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio
Filed Jan. 27, 1995, Ser. No. 34,090
The portion of the term of this patent subsequent to Jun. 4, 2013, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—147



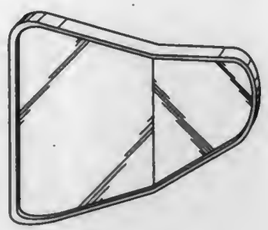
375,710
SPOILER
Jimmy G. Brown, 131 Gregory St., Martinsville, Va. 24112; Kenneth E. Schultz, Rte. 1, Box 50D, Axton, Va. 24054, and George T. Martin, 1624 Rivermont Heights, Martinsville, Va. 24112, assignors to Jimmy G. Brown, Martinsville; Kenneth E. Schultz, Axton, and George T. Martin, Martinsville, all of Va.
Filed Mar. 30, 1995, Ser. No. 37,320
Term of patent 14 years
U.S. Cl. D12—181



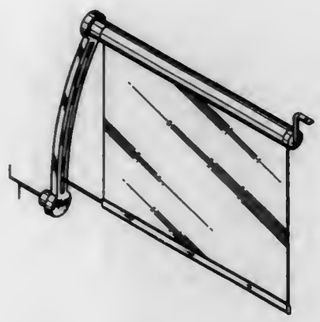
375,711
COVER FOR A MIRROR MOUNT
David B. Thompson, P.O. Box 1474; David C. Moore, 22 SE. 10th; Dusty R. Pace, 4424 NW. B Pl., and Michael E. Gannon, P.O. Box 1582, all of Pendleton, Oreg. 97801
Filed Sep. 12, 1995, Ser. No. 43,945
Term of patent 14 years
U.S. Cl. D12—187



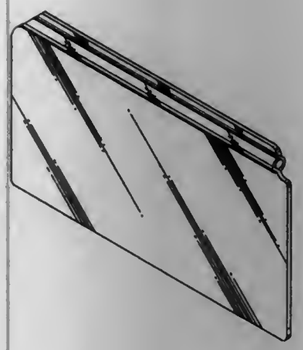
375,712
SIDE MIRROR
Raymond Bialowas, and Neva Bialowas, both of 2067 Envoy Ct., Clearwater, Fla. 34624
Filed Nov. 27, 1995, Ser. No. 47,026
Term of patent 14 years
U.S. Cl. D12—187



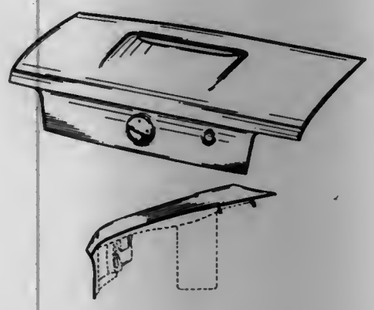
375,713
ELECTRIC VISOR SHADE
Sarkis Alamian, 2238 Barton La., Apt. # 6, Montrose, Calif. 91020
Filed Aug. 11, 1995, Ser. No. 42,546
Term of patent 14 years
U.S. Cl. D12—191



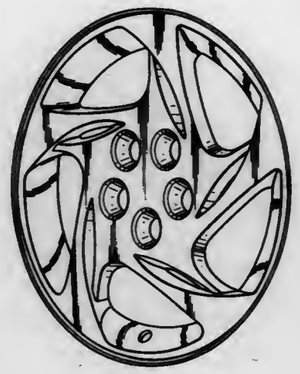
375,714
SUN SENSITIVE AUTOMOBILE VISOR
Victoria M. Laidley, 31 St. Paul Street, Lindsay, Ontario, Canada
Filed Sep. 26, 1995, Ser. No. 44,554
Term of patent 14 years
U.S. Cl. D12—191



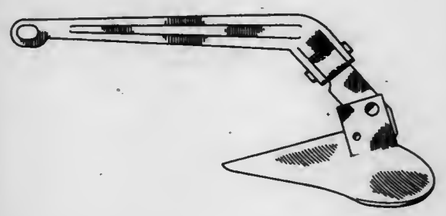
375,715
EXTERIOR SURFACE OF A TRUNK LID FOR AN AUTOMOBILE
Joji Nagashima, Munich, Germany, assignor to Bayerische Motoren Werke AG, Munich, Germany
Filed Sep. 27, 1994, Ser. No. 28,970
Claims priority, application Germany, Apr. 2, 1994, M9402969.5
Term of patent 14 years
U.S. Cl. D12—196



375,716
VEHICLE WHEEL FRONT FACE SEGMENT
Joseph S. Dehner, Farmington Hills, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.
Filed Aug. 24, 1995, Ser. No. 43,050
Term of patent 14 years
U.S. Cl. D12—209



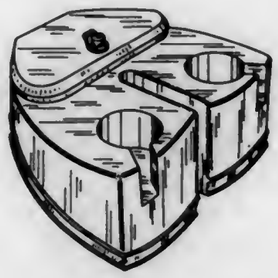
375,717
ANCHOR
Ian G. Dick, P.O. Box 290, Whangarei, New Zealand
Filed Feb. 10, 1995, Ser. No. 34,805
Claims priority, application New Zealand, Aug. 10, 1994, 26089
Term of patent 14 years
U.S. Cl. D12—215



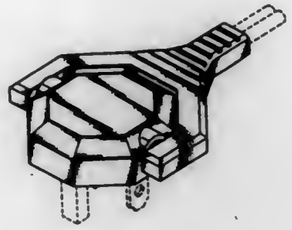
375,718
MOTORCYCLE HANDLEBAR SPEAKER ENCLOSURE BRACKET
John J. Lazzeroni, and Melinda K. Carevich, both of 1415 S. Cherry, Tucson, Ariz. 85713-1997
Filed Dec. 5, 1995, Ser. No. 47,493
Term of patent 14 years
U.S. Cl. D12—223



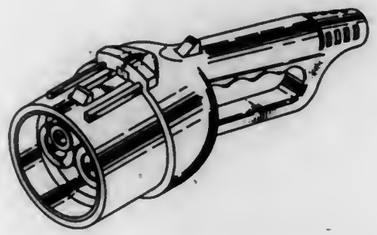
375,719
CONSOLE
Phillip E. Schlangen, and Raymond J. Buresch, both of 9921 13th Ave. North, Minneapolis, Minn. 55441
Filed Apr. 17, 1995, Ser. No. 37,541
Term of patent 14 years
U.S. Cl. D12—419



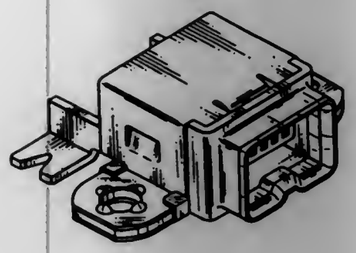
375,720
HOUSING FOR A PIVOTING ELECTRICAL PLUG
Tat Kwong Cheung, Kowloon, Hong Kong, assignor to Koontat Development Company Ltd., Hong Kong
Filed Feb. 27, 1996, Ser. No. 50,832
Term of patent 14 years
U.S. Cl. D13—141



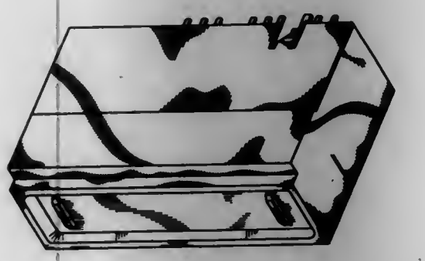
375,721
CONNECTOR FOR ELECTRIC SUPPLIER FOR ELECTRIC CAR
Takayoshi Endo, and Toshiaki Hasegawa, both of Shizuoka-ken, Japan, assignors to Yazaki Corporation, Japan
Division of Ser. No. 31,252, Nov. 22, 1994, Pat. No. Des. 370,659. This application Mar. 25, 1996, Ser. No. 52,182
Claims priority, application Japan, Jul. 19, 1994, 6-21408
Term of patent 14 years
U.S. Cl. D13—146



375,722
JACK FOR CABLE CONNECTOR
Seiichi Morikawa, and Naoyuki Ono, both of Tokyo, Japan, assignors to Sony Corporation, and SMK Corporation, both of Tokyo, Japan
Filed Sep. 22, 1995, Ser. No. 44,315
Claims priority, application Japan, Mar. 29, 1995, 7-8314
Term of patent 14 years
U.S. Cl. D13—147



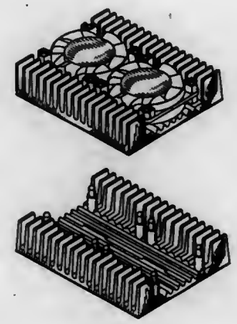
375,723
CONNECTOR
Keiji Aramaki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jun. 8, 1995, Ser. No. 40,000
Claims priority, application Japan, Dec. 8, 1994, 6-37335
Term of patent 14 years
U.S. Cl. D13—147



375,724
FLEXIBLE JUMPER
Dana W. Kammersgard, Vista; Angus R. Colson, Jr., Jamul, and Cory Echito, San Diego, all of Calif., assignors to Artecon, Carlsbad, Calif.
Division of Ser. No. 28,436, Sep. 15, 1994. This application Jun. 12, 1995, Ser. No. 40,142
Term of patent 14 years
U.S. Cl. D13—147

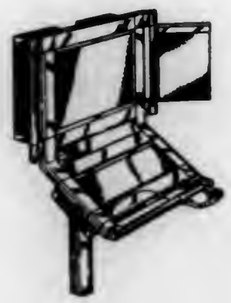


375,725
COOLING DEVICE
Douglas A. Dodson, 5995 Avenida Encinas, Carlsbad, Calif. 92008
Filed Feb. 28, 1996, Ser. No. 50,880
Term of patent 14 years
U.S. Cl. D13—179



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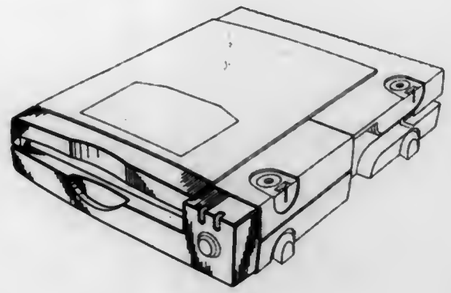
375,726
HOUSING FOR OPERATING OF CONTROL SYSTEMS
Kai U. Witte, Offenbach, Germany, assignor to Rittal-Werk Rudolf Loh GmbH & Co. KG, Germany
Filed May 1, 1995, Ser. No. 38,282
Claims priority, application Germany, Nov. 1, 1994, 94 08 533.1
Term of patent 14 years
U.S. Cl. D14—103



375,727
ELECTRONIC COMPUTER
Teruhide Kohara, Tokyo; Masashi Odagiri, Yamagata, and Makoto Nemoto, Tokyo, all of Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Dec. 5, 1995, Ser. No. 47,467
Claims priority, application Japan, Jun. 5, 1995, 7-15961
Term of patent 14 years
U.S. Cl. D14—106



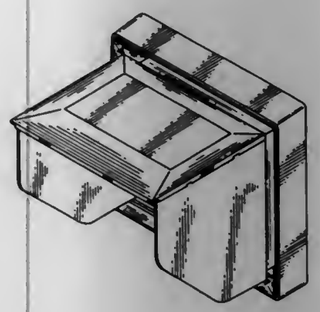
375,728
FRONT PANEL OF A COMPUTER DATA STORAGE DEVICE
Carl F. Nicklos, Ogden, Utah, and Nicholas Brawne, Columbus, Ohio, assignors to Iomega Corporation, Roy, Utah
Filed Aug. 25, 1995, Ser. No. 43,144
Term of patent 14 years
U.S. Cl. D14—114



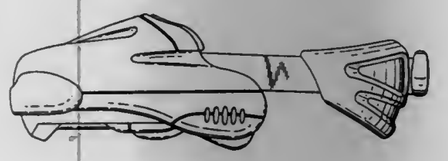
375,729
COMPUTER MOUSE
Daniel Aeschbacher, Montreux, and Wolfgang Jönsson, La Tour-de-Peilz, both of Switzerland, assignors to Logitech SA, s/Morges, Switzerland
Division of Ser. No. 23,693, May 31, 1994, Pat. No. Des. 368,080. This application Aug. 21, 1995, Ser. No. 42,933
Claims priority, application Hague Agreement, Nov. 30, 1993, DM/028570
Term of patent 14 years
U.S. Cl. D14—114



375,730
SCREEN SHIELD
Shu-Ying Chen, Tainan Hsien, Taiwan, assignor to Horng Technical Enterprise Co., Ltd., Tainan Hsien, Taiwan
Filed Oct. 4, 1995, Ser. No. 44,945
Term of patent 14 years
U.S. Cl. D14—114



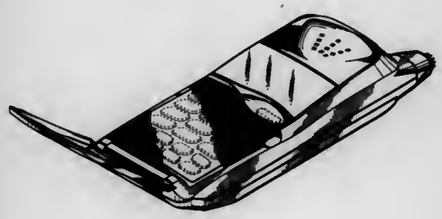
375,731
HEADSET
Richard Holmes, Harts Hill, and Bruce Renfrew, Anstey, both of United Kingdom, assignors to Virtuality (IP) Limited, Leicester, United Kingdom
Filed Nov. 6, 1995, Ser. No. 46,057
Claims priority, application United Kingdom, May 9, 1995, 2047316
Term of patent 14 years
U.S. Cl. D14—124



375,732
PORTABLE RADIOTELEPHONE
Phillip E. Lindeman, Gurnee, and Albert L. Nagele, Wilmette, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 16, 1995, Ser. No. 46,507
Term of patent 14 years
U.S. Cl. D14—138



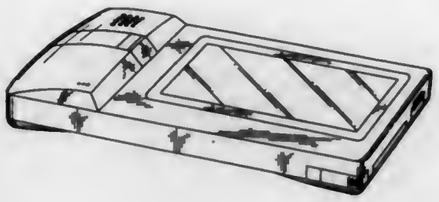
375,733
PORTABLE RADIOTELEPHONE
Albert L. Nagele, Wilmette, and Phillip E. Lindeman, Gurnee, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 8, 1995, Ser. No. 43,622
Term of patent 14 years
U.S. Cl. D14—138



375,734
PORTABLE RADIOTELEPHONE
Albert L. Nagele, Wilmette, and Phillip E. Lindeman, Gurnee, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 8, 1995, Ser. No. 43,632
Term of patent 14 years
U.S. Cl. D14—138



375,735
COMPUTER WITH TELEPHONE AND FACSIMILE
Masaru Tochishita, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 10, 1995, Ser. No. 46,660
Claims priority, application Japan, May 10, 1995, 7-13142
Term of patent 14 years
U.S. Cl. D14—144



375,736
PORTABLE TELEPHONE HANDSET
Michael J. Nuttall, Portola Valley; Matthew D. Rohrbach, San Francisco, both of Calif.; John H. Schaffeld, New Vernon, N.J.; Lee W. Tan, Singapore, Singapore, and Steven M. Wheatley, Morristown, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Jan. 4, 1995, Ser. No. 33,026
Term of patent 14 years
U.S. Cl. D14—147



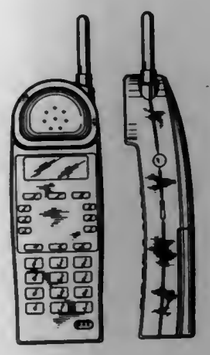
375,737
PORTABLE TELEPHONE HANDSET
Michael J. Nuttall, Portola Valley; Matthew D. Rohrbach, San Francisco, both of Calif.; John H. Schaffeld, New Vernon, and Steven M. Wheatley, Morristown, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Jan. 4, 1995, Ser. No. 33,035
Term of patent 14 years
U.S. Cl. D14—147



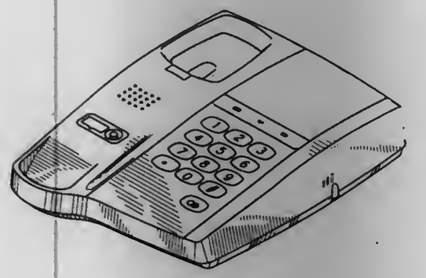
375,738
PORTABLE TELEPHONE HANDSET
Michael J. Nuttall, Portola Valley; Matthew D. Rohrbach, San Francisco, both of Calif.; John H. Schaffeld, New Vernon, and Steven M. Wheatley, Morristown, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Jan. 4, 1995, Ser. No. 33,040
Term of patent 14 years
U.S. Cl. D14—147



375,739
HANDHELD TELEPHONE
Alan P. Boykiw, Calgary, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Nov. 17, 1995, Ser. No. 46,850
Term of patent 14 years
U.S. Cl. D14—147



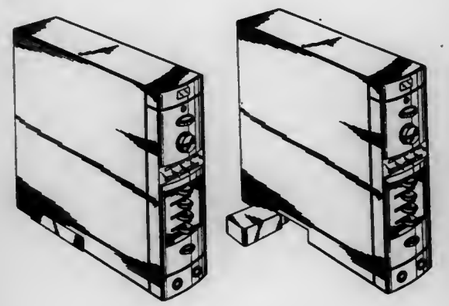
375,740
WIRELESS LOCAL LOOP TELEPHONE
Steven A. Mergenthaler, Boulder, Colo.; Dawn E. Beattie, Carlsbad, Calif.; Paul E. Jacobs; Daniel Waldburger, both of La Jolla, Calif.; Thomas J. Chintala, San Diego, Calif.; Stephen G. Miggels, Wyckoff, and David C. Stowers, Nutley, both of N.J., assignors to Qualcomm Incorporated, San Diego, Calif.
Filed Dec. 1, 1995, Ser. No. 47,357
Term of patent 14 years
U.S. Cl. D14—151



375,741
TELEPHONE
Michael Mo, Taipei Hsien, Taiwan, assignor to Dialer Business Electronic Co., Ltd., Taipei Hsien, Taiwan
Filed Sep. 8, 1995, Ser. No. 46,781
Term of patent 14 years
U.S. Cl. D14—151

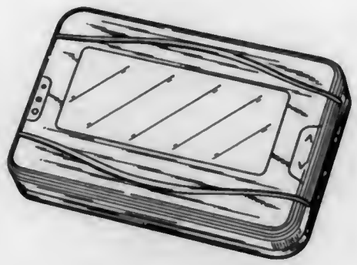


375,742
VERTICAL AMPLIFIER ENCLOSURE
Gary S. Weissberg, Owings Mills, Md., and Milton Halstead, San Juan Capistrano, Calif., assignors to Micro Multimedia Labs Inc., Reisterstown, Md.
Filed Feb. 23, 1996, Ser. No. 51,033
Term of patent 14 years
U.S. Cl. D14—188



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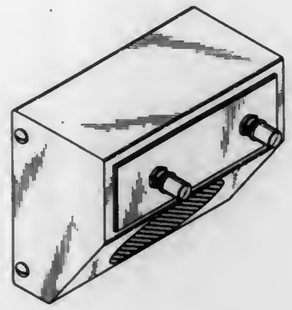
375,743
PAGER
Hiroki Nishii; Katsumi Nagano, and Yuko Komamiya, all of Kanagawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 18, 1995, Ser. No. 47,997
Claims priority, application Japan, Aug. 2, 1995, 7-22824
Term of patent 14 years
U.S. Cl. D14—191



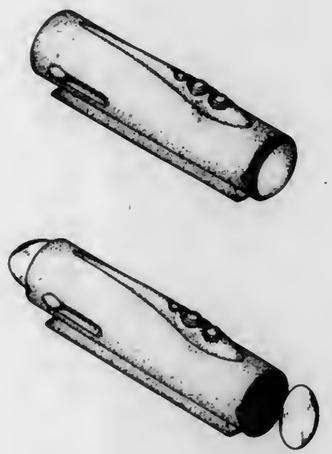
375,744
SPEAKER ENCLOSURE
Frankie J. Asencio, Columbus, Ohio, assignor to Network Entertainment Systems, Inc., Columbus, Ohio
Filed Aug. 29, 1995, Ser. No. 43,206
Term of patent 14 years
U.S. Cl. D14—213



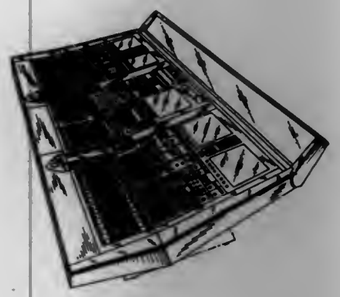
375,745
SPEAKER ENCLOSURE
Frankie J. Asencio, Columbus, Ohio, assignor to Network Entertainment Systems, Inc., Columbus, Ohio
Filed Aug. 29, 1995, Ser. No. 43,207
Term of patent 14 years
U.S. Cl. D14—213



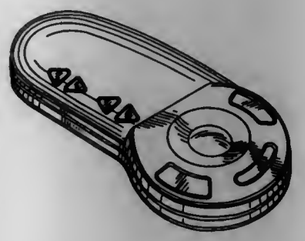
375,746
LOUDSPEAKER
Chi-Kun Wu, c/o Hung Hsing Patent Service Center P.O. Box 55-1670, Taipei 10477, Taiwan
Filed Jun. 20, 1995, Ser. No. 40,504
Term of patent 14 years
U.S. Cl. D14—216



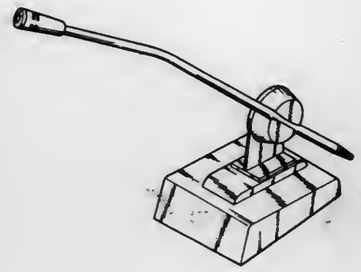
375,747
AUDIO MIXING CONSOLE
John W. East, Witney, United Kingdom, assignor to Sony Corporation, Tokyo, Japan
Division of Ser. No. 15,286, Nov. 12, 1993, abandoned. This application Mar. 13, 1995, Ser. No. 36,132
Term of patent 14 years
U.S. Cl. D14—217



375,748
HAND HELD REMOTE
William M. Hartman, 76 Longwood Rd., Quincy, Mass. 02169
Filed Nov. 3, 1995, Ser. No. 45,950
Term of patent 14 years
U.S. Cl. D14—218



375,749
COMBINED MICROPHONE AND STAND
Chun-Lung Chiang, P.O. Box 82-144, Taipei, Taiwan
Filed May 11, 1995, Ser. No. 38,701
Term of patent 14 years
U.S. Cl. D14—227

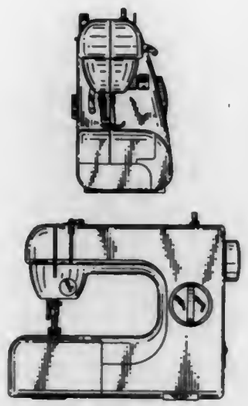


375,750
PORTABLE TELEPHONE HANDSET
Michael J. Nuttall, Portola Valley; Matthew D. Rohrbach, San Francisco, both of Calif.; John H. Schaffeld, New Vernon, N.J., and Lee W. Tan, Singapore, Singapore, assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Jan. 4, 1995, Ser. No. 33,036
Term of patent 14 years
U.S. Cl. D14—248

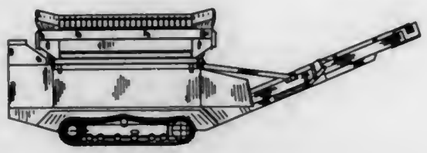


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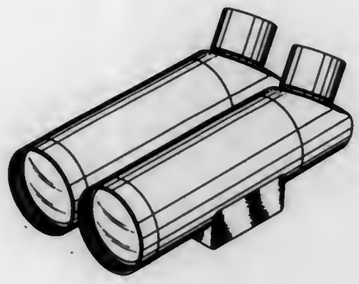
375,751
SEWING MACHINE
Yui-Ming Chan, Kwai Chung, Hong Kong, assignor to Lucky Collection Limited, Hong Kong
Filed May 16, 1995, Ser. No. 38,844
Term of patent 14 years
U.S. Cl. D15—69



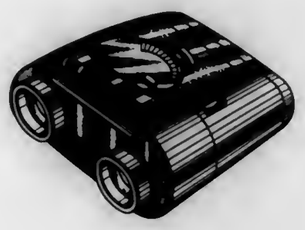
375,752
MOBILE SCREENING AND DISTRIBUTION PLANT
Paul Douglas, Wincobank, Great Britain, assignor to Extec Screens and Crushers Limited, Sheffield, England
Filed Apr. 11, 1995, Ser. No. 37,367
Claims priority, application United Kingdom, Oct. 12, 1994, 2042545
Term of patent 14 years
U.S. Cl. D15—147



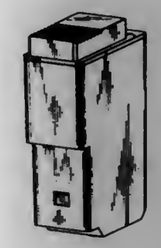
375,753
BINOCULARS
Shuji Katsuma, Tokyo, Japan, assignor to Katsuma Kougakukikai Kabushikiaisha, Tokyo, Japan
Filed Jan. 5, 1996, Ser. No. 48,597
Claims priority, application Japan, Jul. 5, 1995, 7-19333
Term of patent 14 years
U.S. Cl. D16—133



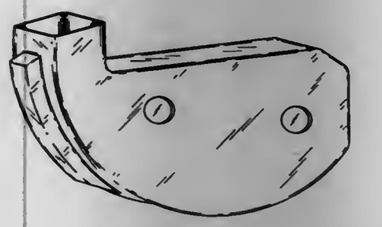
375,754
BINOCULARS WITH RADIO RECEIVER
Akihiro Miyahara, Kunitachi, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Oct. 20, 1994, Ser. No. 29,972
Term of patent 14 years
U.S. Cl. D16—133



375,755
INK TANK FOR PRINTER
Hiroyuki Tokuda; Masanori Takenouchi, both of Yokohama; Yasuo Kotaki, Machida, and Yuji Hamasaki, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 22, 1995, Ser. No. 35,185
Claims priority, application Japan, Aug. 23, 1994, 6-25180
The portion of the term of this patent subsequent to Jun. 25, 2013, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—56



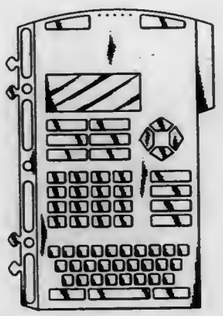
375,756
LARGE VOLUME INK RESEROIR FOR INK JET PRINTERS
Richard A. Murray, and William M. Fries, both of San Diego, Calif., assignors to Encad, Inc, San Diego, Calif.
Filed May 3, 1995, Ser. No. 38,320
Term of patent 14 years
U.S. Cl. D18—56



375,757
RAISED FLORAL GREETING CARD
Marcela U. Johnson, 10 Willis Rd., Scotts Valley, Calif. 95066
Filed Jul. 17, 1995, Ser. No. 41,525
Term of patent 14 years
U.S. Cl. D19—6



375,758
ATTACHMENT FOR A BINDER OR BOOK
Scott W. Osiecki, Skaneateles; Brad D. Hall, Unadilla, and David A. Furth, Skaneateles, all of N.Y., assignors to Cullman Ventures, Inc., New York, N.Y.
Filed Jul. 12, 1995, Ser. No. 41,355
Term of patent 14 years
U.S. Cl. D19—32

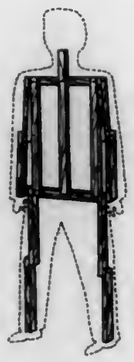


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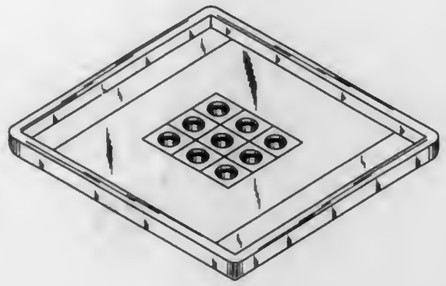
375,759
WRITING INSTRUMENT HAVING DUAL DISTANCE-MEASURING RULINGS
Susan F. Piscatelli, 95 Soundview Ter., New Haven, Conn. 06512-3121
Filed Nov. 7, 1995, Ser. No. 46,077
Term of patent 14 years
U.S. Cl. D19—36



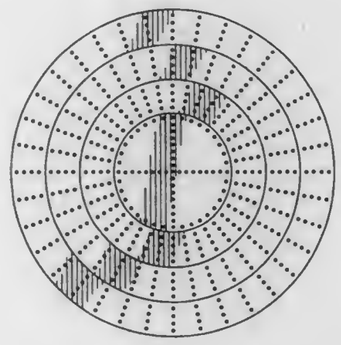
375,760
FRAME FOR A SCARECROW
Richard C. Hayden, 1576 Heatherwood Dr., Decatur, Ga. 30033
Continuation-in-part of Ser. No. 27,979, Sep. 2, 1994, Pat. No. Des. 361,793. This application Jun. 22, 1995, Ser. No. 40,610
Term of patent 14 years
U.S. Cl. D20—31



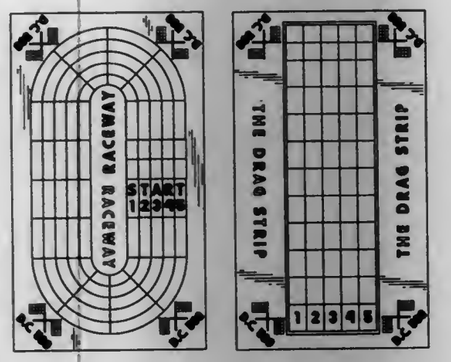
375,761
GAME TABLE
Alan W. Cone, Jr., 12221 Samfurr Rd., Huntersville, N.C. 28078
Filed Mar. 4, 1995, Ser. No. 51,136
Term of patent 14 years
U.S. Cl. D21—17



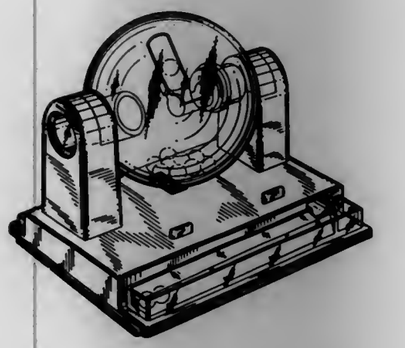
375,762
GAME BOARD
Peter N. Meunier, 50 Bruce Avenue, P.O. Box 1734, South Porcupine, Ontario, Canada
Filed Oct. 23, 1995, Ser. No. 46,681
Term of patent 14 years
U.S. Cl. D21—23



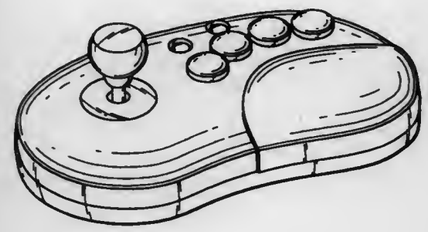
375,763
GAMEBOARD
Danny L. Carl, 349 Catherine St., Bloomsburg, Pa. 17815
Filed Jun. 15, 1995, Ser. No. 40,321
Term of patent 14 years
U.S. Cl. D21—27



375,764
RANDOM NUMBER SELECTOR GAME
Fred Hollinger, Kings Park, N.Y., assignor to E & B Giftware, Inc., Mt. Vernon, N.Y.
Filed Sep. 7, 1995, Ser. No. 43,590
Term of patent 14 years
U.S. Cl. D21—37



375,765
JOYSTICK ATTACHMENT FOR A CD ROM VIDEO GAME PLAYER
Eikichi Kawasaki, Suita, Japan, assignor to SNK Corporation, Suita, Japan
Filed Dec. 8, 1994, Ser. No. 31,880
Term of patent 14 years
U.S. Cl. D21—48



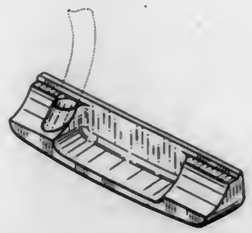
375,766
STUFFED ANIMAL
Peggy A. Holladay, 400 Dru Cir., Shreveport, La. 71106
Filed Nov. 7, 1994, Ser. No. 30,741
Term of patent 14 years
U.S. Cl. D21—163



375,767
SKI EXERCISE MACHINE
David K. Camfield, Olney, and Jeffrey D. Metcalf, Albion, both of Ill., assignors to Roadmaster Corporation, Olney, Ill.
Continuation of Ser. No. 9,717, Jan. 27, 1993, Pat. No. 5,338,273. This application Jun. 22, 1994, Ser. No. 24,843
Term of patent 14 years
U.S. Cl. D21—191



375,768
GOLF PUTTER HEAD
John A. Solheim, Phoenix, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.
Filed Ang. 14, 1995, Ser. No. 42,660
Term of patent 14 years
U.S. Cl. D21—217



375,769
IRON-TYPE GOLF CLUB HEAD
Patrice Hutin; Roger Cleveland, both of Los Angeles; Daniel J. Stone, and Joseph Lemus, III, both of Long Beach, all of Calif., assignors to Roger Cleveland Golf Company, Inc., Cypress, Calif.
Filed Jul. 17, 1995, Ser. No. 41,500
Term of patent 14 years
U.S. Cl. D21—220



375,770
SKATER SUPPORT DEVICE
Paul Sicard, 3534 Côte des Neiges, Montreal, Quebec, Canada
Filed Oct. 30, 1995, Ser. No. 46,725
Term of patent 14 years
U.S. Cl. D21—224



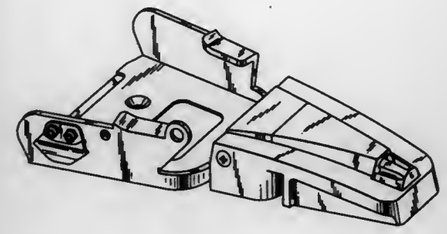
375,771
IN-LINE SKATE
Shih-Ching Liu, P.O. Box 82-144, Taipei, Taiwan
Filed Jun. 9, 1995, Ser. No. 40,084
Term of patent 14 years
U.S. Cl. D21—226



375,772
SNOW SKATE
Michael Riggs, Minnetonka Beach, and Scott Portzline, Minneapolis, both of Minn., assignors to The Sled Dogs Company, Minneapolis, Minn.
Filed Jul. 18, 1995, Ser. No. 41,557
Term of patent 14 years
U.S. Cl. D21—224



375,773
FRONT PART OF A TELEMARK-BINDING
Bernt-Otto Haughlin, Royken, Norway, assignor to Rottefella A/S, Norway
Filed Mar. 9, 1995, Ser. No. 35,926
Term of patent 14 years
U.S. Cl. D21—230

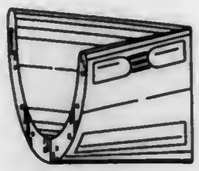


375,774
GOLF SWING TRAINING DEVICE
Peter Harrold, 6955 Hanging Moss Rd., #103, Orlando, Fla. 32807
Filed Oct. 16, 1995, Ser. No. 45,307
Term of patent 14 years
U.S. Cl. D21—234



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375,775
COMPONENT OF A PLAYGROUND SLIDE
Steven G. King, Long Lake, Minn., assignor to Landscape Structures Inc., Delano, Minn.
Division of Ser. No. 23,883, Jun. 2, 1994, Pat. No. Des. 371,414. This application Jun. 13, 1995, Ser. No. 40,212
Term of patent 14 years
U.S. Cl. D21—244



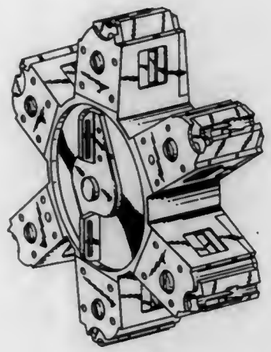
375,776
COMPONENT OF A PLAYGROUND SLIDE
Steven G. King, Long Lake, Minn., assignor to Landscape Structures Inc., Delano, Minn.
Division of Ser. No. 23,883, Jun. 2, 1994, Pat. No. Des. 371,414. This application Jun. 13, 1995, Ser. No. 40,213
Term of patent 14 years
U.S. Cl. D21—244



375,777
GUN STOCK
Dennis Whittlesey, 1180 Elton Rd., Yakima, Wash. 98901
Filed Nov. 1, 1995, Ser. No. 45,895
Term of patent 14 years
U.S. Cl. D22—108



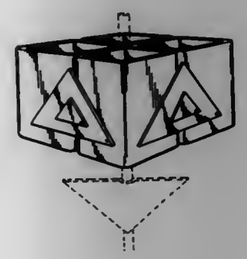
375,778
FIREARM CARTRIDGE AND STORAGE MAGAZINE
Harold Hasselbusch, 144-21 68th Dr., Flushing, N.Y. 11367
Filed Dec. 18, 1995, Ser. No. 48,041
Term of patent 14 years
U.S. Cl. D22—116



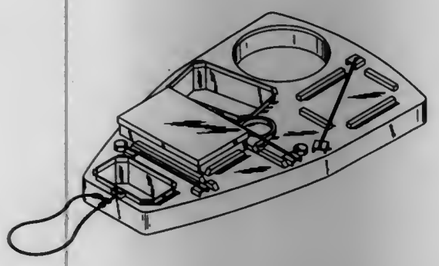
375,779
KNIFE
Gil Hibben, LaGrange, Ky., assignor to United Cutlery Corporation, Sevierville, Tenn.
Filed Nov. 28, 1995, Ser. No. 47,297
Term of patent 14 years
U.S. Cl. D22—118



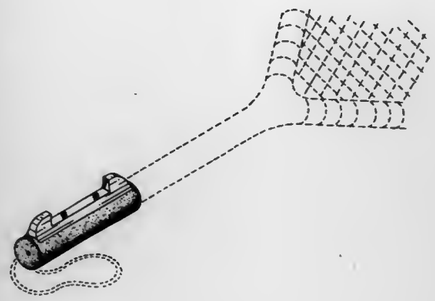
375,780
INSECT REPELLER
George M. Dewberry, 404 Baldwin St., Greenville, Mich. 48838
Filed Sep. 1, 1995, Ser. No. 43,394
Term of patent 14 years
U.S. Cl. D22—122



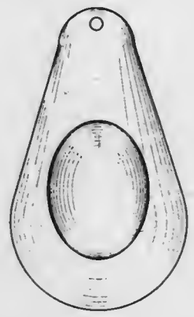
375,781
FLOATING FISHING TACKLE CARRIER
Claude A. Caldwell, 9900 Ulmerton Rd., Largo, Fla. 33771
Filed Nov. 6, 1995, Ser. No. 46,047
Term of patent 14 years
U.S. Cl. D22—134



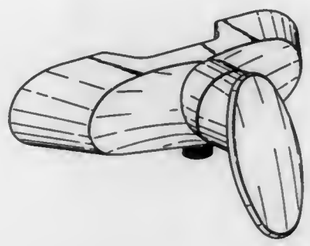
375,782
LOBSTER NET HANDLE
Christopher S. Rackley, P.O. Box 431490, Big Pine Key, Fla. 33043
Filed Dec. 14, 1995, Ser. No. 47,927
Term of patent 14 years
U.S. Cl. D22—135



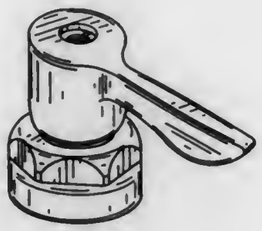
375,783
FISHING WEIGHT
Bartholomew Galligan, III, 167 E. Oak St., Willits, Calif. 95490
Filed Dec. 22, 1995, Ser. No. 48,275
Term of patent 14 years
U.S. Cl. D22—145



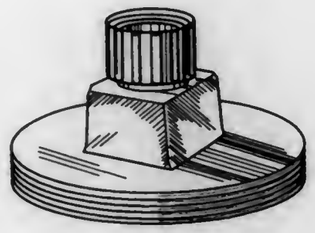
375,784
SHOWER FAUCET
Adolf Gottwald, Iserlohn, Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Germany
Filed Aug. 25, 1995, Ser. No. 43,373
Claims priority, application Germany, Feb. 27, 1995, M9501629.5
Term of patent 14 years
U.S. Cl. D23—238



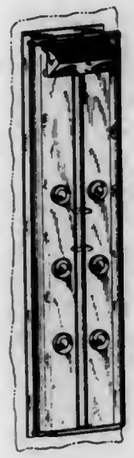
375,785
FAUCET HANDLE
Donna A. Spano, Chatham, N.J., and Rudolf Steffes, Mueckeln, Germany, assignors to American Standard Inc., Piscataway, N.J.
Filed Apr. 26, 1995, Ser. No. 38,035
Term of patent 14 years
U.S. Cl. D23—252



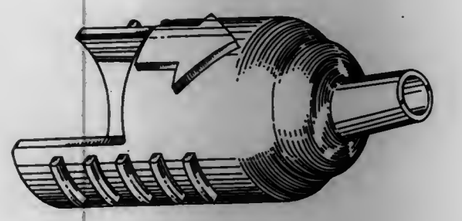
375,786
DRAIN PIPE ADAPTER
Julius W. Morris, 511 Park Ct., Nashville, N.C. 27856
Filed Sep. 15, 1994, Ser. No. 28,460
Term of patent 14 years
U.S. Cl. D23—260



375,787
WALL MOUNTABLE SHOWER FIXTURE
Thomas A. Bonnell, and Robert C. Giese, both of Sheboygan, Wis., assignors to Kohler Co., Kohler, Wis.
Filed Jan. 25, 1995, Ser. No. 33,975
Term of patent 14 years
U.S. Cl. D23—304



375,788
AMPULE ADAPTER
Robert S. Potts, and David L. Adriaansen, both of Boston, Mass., assignors to Ciba Corning Diagnostics Corp., Medfield, Mass.
Filed Jun. 19, 1995, Ser. No. 40,474
Term of patent 14 years
U.S. Cl. D24—108



375,789
VARIABLE DOSE, RELOADABLE AUTO-INJECTOR
Ted Bryant, San Francisco, and Shawn G. Hanna, Cupertino, both of Calif., assignors to Survival Technology, Inc., Rockville, Md.
Filed Aug. 12, 1994, Ser. No. 27,095
Term of patent 14 years
U.S. Cl. D24—112

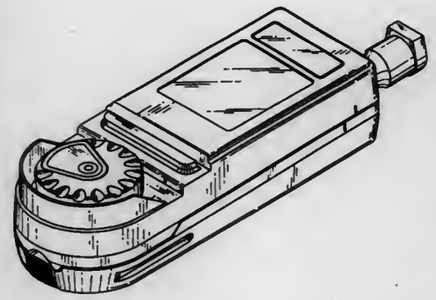


375,790
Patent Not Issued For This Number

375,791
ORTHOPAEDIC WASHER
E. Marlowe Goble; David P. Luman, both of Logan, Utah, and S. Kyle Hayes, Warsaw, Ind., assignors to Zimmer, Inc., Warsaw, Ind.
Division of Ser. No. 14,648, Sep. 15, 1993, Pat. No. Des. 368,777. This application Dec. 12, 1995, Ser. No. 47,775
Term of patent 14 years
U.S. Cl. D24—145

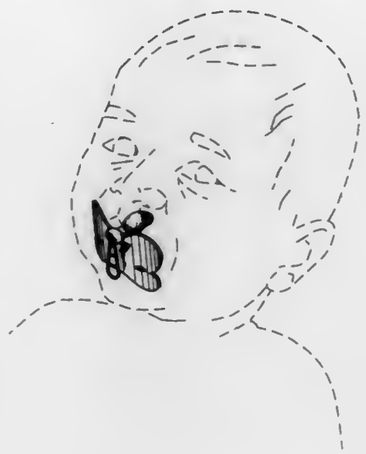


375,792
HAND-HELD MEDICAL MONITORING INSTRUMENT
Jack L. Hillman, Castle Rock; William C. Hunt, Boulder; Julie A. Reichert, Aurora, and Rodney E. Ward, Longmont, all of Colo., assignors to Ohmeda Inc., Liberty Corner, N.J.
Filed Sep. 26, 1994, Ser. No. 28,956
Term of patent 14 years
U.S. Cl. D24—186



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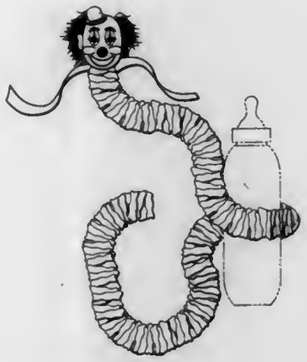
375,793
LUMINESCENT PACIFIER
Peggy L. Owen, HCR 62 Box 770, Chatom, Ala. 36518
Filed Oct. 16, 1995, Ser. No. 45,317
Term of patent 14 years
U.S. Cl. D24—194



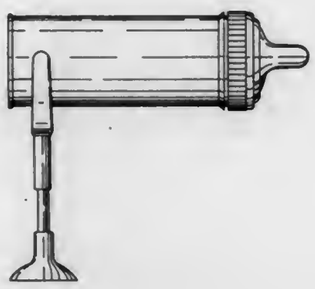
375,795
GRADUATED FEEDING BOTTLE
Robin Agile, 907 Gentry Crescent, Oshawa, Ontario, Canada
Filed Dec. 18, 1995, Ser. No. 48,006
Term of patent 14 years
U.S. Cl. D24—197



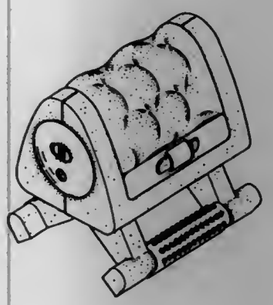
375,796
FLEXIBLE BABY BOTTLE HOLDER
Michael D. Beaver, 1710 S. 1st St., Lufkin, Tex. 75901
Filed Jan. 16, 1996, Ser. No. 49,051
Term of patent 14 years
U.S. Cl. D24—199



375,794
COMBINED BABY BOTTLE AND SUPPORT
Gregory D. Bender, 2110 Gallia St., Portsmouth, Ohio 45662
Filed Oct. 13, 1995, Ser. No. 46,607
Term of patent 14 years
U.S. Cl. D24—197



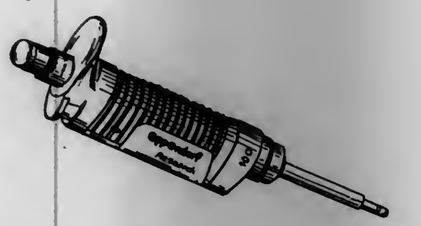
375,797
MASSAGING TOOL
Kenny Lin, 7F, No.11, Lane 93, Tai-Lin Rd., Sec. 2, Tai-Shan Hsiang, Taipei Hsien, Taiwan
Filed Jan. 31, 1996, Ser. No. 49,810
Term of patent 14 years
U.S. Cl. D24—213



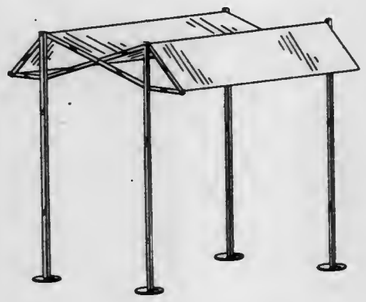
375,799
TRANSPARENT ASSAY TESTER FOR BIOLOGICAL FLUIDS WITH A FRESNEL LENS
William A. Leiva, 307 Valdez Ave., Half Moon Bay, Calif. 94109, and Ian D. Wells, 2830 Sunset Hills, Escondido, Calif. 92025
Continuation-in-part of Ser. No. 15,399, Nov. 15, 1993, abandoned, which is a continuation of Ser. No. 918,340, Jul. 21, 1992, abandoned. This application Dec. 12, 1994, Ser. No. 34,801
Term of patent 14 years
U.S. Cl. D24—224



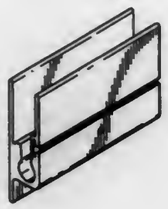
375,798
PIPETTE
Alfons T. Boothby, Wilhelmshaven, Germany, assignor to Eppendorf-Netheler-Hinz GmbH, Hamburg, Germany
Filed May 1, 1995, Ser. No. 38,245
Term of patent 14 years
U.S. Cl. D24—222



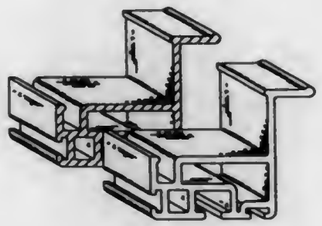
375,800
SHELTER
David K. Wagner, 800 Bromley Rd., Charlotte, N.C. 28207
Filed May 31, 1995, Ser. No. 39,571
Term of patent 14 years
U.S. Cl. D25—56



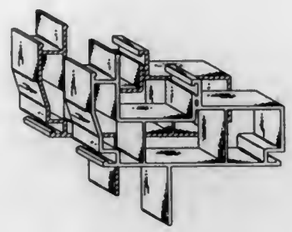
375,801
FRAME MEMBER FOR WOOD STORM DOOR GLASS INSERT
Michael Braudaway, P.O. Box 472, Talco, Tex. 75487
Filed Sep. 27, 1995, Ser. No. 44,632
Term of patent 14 years
U.S. Cl. D25—60



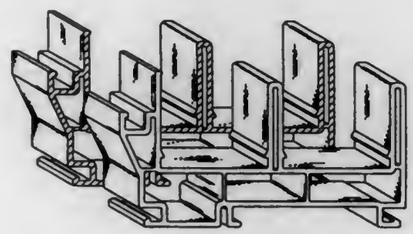
375,802
WINDOW COMPONENT EXTRUSION
Jeffrey R. Franson, Kent, Wash., assignor to Mikron Industries, Inc., Kent, Wash.
Filed Dec. 1, 1995, Ser. No. 47,383
Term of patent 14 years
U.S. Cl. D25—124



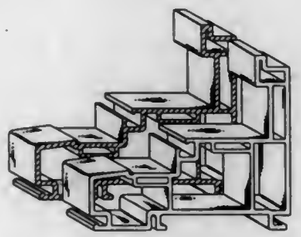
375,803
WINDOW COMPONENT EXTRUSION
Teresa A. Oliver, Kent, Wash., assignor to Mikron Industries, Inc., Kent, Wash.
Filed Dec. 1, 1995, Ser. No. 47,384
Term of patent 14 years
U.S. Cl. D25—124



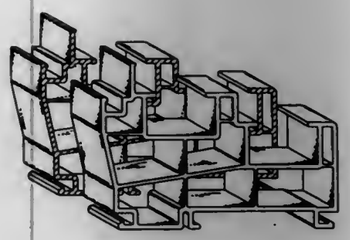
375,804
WINDOW COMPONENT EXTRUSION 7137
Lorane Goss, Slippery Rock, Pa., assignor to Mikron Industries, Inc., Kent, Wash.
Filed Nov. 14, 1995, Ser. No. 46,403
Term of patent 14 years
U.S. Cl. D25—124



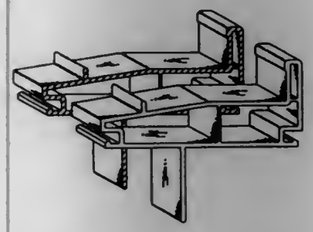
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WINDOW COMPONENT EXTRUSION 7136
Lorane Goss, Slippery Rock, Pa., assignor to Mikron Industries, Inc., Kent, Wash.
Filed Nov. 14, 1995, Ser. No. 46,411
Term of patent 14 years
U.S. Cl. D25—124



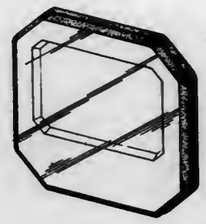
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WINDOW COMPONENT EXTRUSION 7134
Lorane Goss, Slippery Rock, Pa., assignor to Mikron Industries, Inc., Kent, Wash.
Filed Nov. 14, 1995, Ser. No. 46,413
Term of patent 14 years
U.S. Cl. D25—124



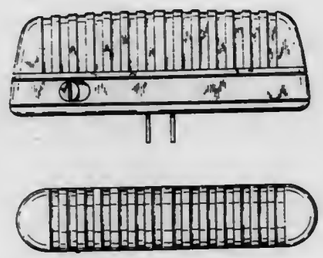
375,807
WINDOW COMPONENT EXTRUSION 7132
Lorane Goss, Slippery Rock, Pa., assignor to Mikron Industries, Inc., Kent, Wash.
Filed Nov. 14, 1995, Ser. No. 46,771
Term of patent 14 years
U.S. Cl. D25—124



375,808
ELECTRO LUMINESCENT NIGHT LIGHT
Chung-Ho Fang, No. 41, Shin Le Road, Tainan City, Taiwan
Filed Dec. 14, 1995, Ser. No. 47,891
Term of patent 14 years
U.S. Cl. D26—26



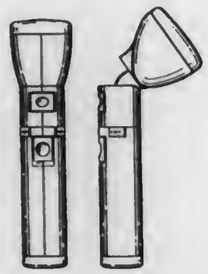
375,809
NIGHT LIGHT
Se K. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Jan. 16, 1996, Ser. No. 49,092
Claims priority, application United Kingdom, Oct. 5, 1995, 2050970
Term of patent 14 years
U.S. Cl. D26—26



375,810
NIGHT LIGHT
Byung L. Ham, 601 Burning Tree Rd., Fullerton, Calif. 92633
Filed Jan. 31, 1996, Ser. No. 49,823
Term of patent 14 years
U.S. Cl. D26—26



375,811
FLASHLIGHT WITH PIVOTING HEAD
Ellis Hon, Kowloon, Hong Kong, assignor to GSL Rechargeable Products, Ltd., Hong Kong
Filed Apr. 11, 1995, Ser. No. 37,403
Term of patent 14 years
U.S. Cl. D26—44



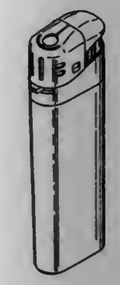
375,812
LAMPSHADE
Barry Kramer, 6180 S St. Andrews Pl., Los Angeles, Calif. 90047
Filed Apr. 7, 1995, Ser. No. 37,247
Term of patent 14 years
U.S. Cl. D26—130



375,813
LIGHT SHADE
Jan Jaspers-Fayer, Idyllwild, Calif., assignor to Minka Lighting Inc., Corona, Calif.
Division of Ser. No. 24,411, Jun. 14, 1994, Pat. No. Des. 369,880. This application Jul. 11, 1995, Ser. No. 41,300
Term of patent 14 years
U.S. Cl. D26—134



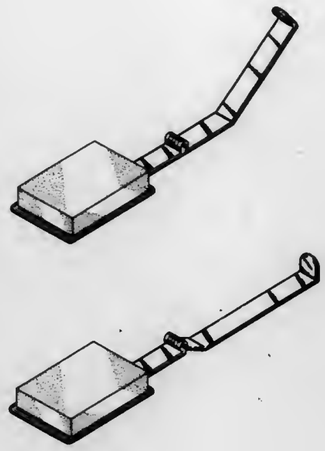
375,814
GAS LIGHTER
Isao Inoue, Tokyo, and Minoru Kanno, Shizuoka-ken, both of Japan, assignors to Tokai Corporation, Shizuoka-ken, Japan
Filed May 26, 1995, Ser. No. 39,350
Claims priority, application Japan, Jan. 26, 1995, 7-1423
Term of patent 14 years
U.S. Cl. D27—141



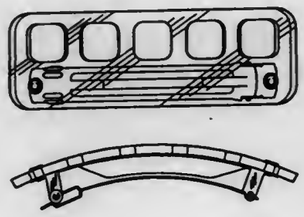
375,815
COMBINED CIGAR/CIGARETTE HOLDER AND DIVOT TOOL
Barry Kagasoff, 607 South Hill St., Suite 318, Los Angeles, Calif. 90014
Filed Jan. 16, 1996, Ser. No. 48,887
Term of patent 14 years
U.S. Cl. D27—183



375,816
LOTION APPLICATOR
RoseMarie Long-Langworthy, 2648 Red Coat Dr. - 2B, Alexandria, Va. 22303
Filed Oct. 12, 1995, Ser. No. 45,187
Term of patent 14 years
U.S. Cl. D28—7

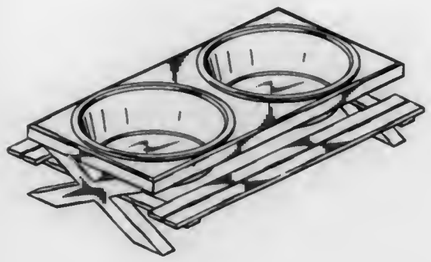


375,817
HAIR CLIP FOR HOLDING A SCARF IN A DECORATIVE MANNER
Jacqueline S. Nicholson, 1491 Wood Thursh Way, Marietta, Ga. 30062
Division of Ser. No. 30,600, Nov. 3, 1994. This application Oct. 12, 1995, Ser. No. 45,207
Term of patent 14 years
U.S. Cl. D28—42

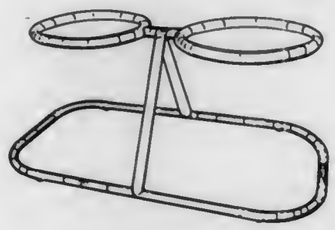


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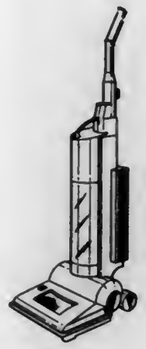
375,818
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William R. Fischer, 2364 Forestmont Ct., Marietta, Ga. 30062
Filed Jan. 29, 1996, Ser. No. 49,712
Term of patent 14 years
U.S. Cl. D30—130



375,819
DOG DISH STAND
Phillip D. Benson, P.O. Box 330520, Kahului, Hi. 96733
Filed Dec. 13, 1995, Ser. No. 47,854
Term of patent 14 years
U.S. Cl. D30—133



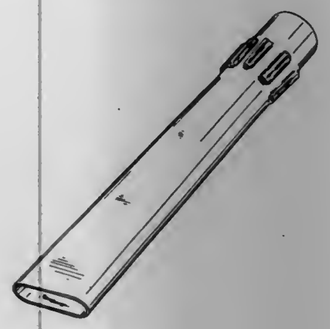
375,820
VACUUM CLEANER
Francesco Piccaluga; Aldo Piccaluga, both of Toronto, and William Ng, Markham, all of Canada, assignors to Iona Appliances Inc., Welland, Canada
Filed Jun. 27, 1995, Ser. No. 40,788
Term of patent 14 years
U.S. Cl. D32—22



375,821
VACUUM CLEANER BASE
Kenneth L. Roberts, Walker; Steven R. Umbach, East Grand Rapids, and Michael D. Luyckx, Bloomfield Hills, all of Mich., assignors to Bissell Inc., Grand Rapids, Mich.
Filed Sep. 18, 1995, Ser. No. 44,092
Term of patent 14 years
U.S. Cl. D32—31



375,822
TUBE FOR LEAF BLOWER
William R. Lessig, III, Hunt Valley; Anthony M. Demore, Cockeysville, and Robert P. Wagster, Baltimore, all of Md., assignors to Black & Decker Inc., Newark, Del.
Filed Jul. 28, 1995, Ser. No. 41,992
Term of patent 14 years
U.S. Cl. D32—32



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Mukerji, Pradip; Prieto, Pedro A.; Seo, Amanda E.-Y.; Baxter, Jeffrey H.; and Cummings, Richard D., 5,576,300, Cl. 514-21.000.
Wang, Xiu C.; Kalaritis, Panos; and Chang, Michelle L., 5,576,455, Cl. 558-406.000.
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Abe, Hideshi: *See—*
Ohsawa, Nobuhiko; Ito, Shinichi; and Abe, Hideshi, 5,576,570, Cl. 257-369.000.

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Abe, Nobuo; Kinnou, Nobuyuki; Ohara, Toshihide; Kuga, Kazunori; Komizo, Yoshiharu; Kibe, Takara; and Fujikawa, Hideyuki, to Amada Company, Limited. V-shaped groove forming machine and its control method. 5,575,598, Cl. 409-304.000.

Abe, Takashi: *See—*
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Abe, Teruo: *See—*
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Ackland, Bryan D.; Dickinson, Alexander G.; Eid, El-Sayed I.; and Inglis, David A., to Lucent Technologies Inc. Single-polysilicon CMOS active pixel. 5,576,763, Cl. 348-308.000.

Actel Corporation: *See—*
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Adachi, Katsumi: *See—*
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Butler, William O.; Konno, Yoshihiro; Dickinson, Craig D.; Fitzmaurice, Leona C.; Mirkov, Theodore E.; and Elliott, Kathryn J., to Salk Institute Biotechnology/Industrial Associates, Inc., The. Invertase gene(s) and uses thereof. 5,576,428, Cl. 536-24.100.

Buzzetti, Franco; Longo, Antonio; Brasca, Maria G.; Orzi, Fabrizio; Crugnola, Angelo; Ballinari, Dario; and Mariani, Mariangela, to Farmitalia Carlo Erba S.r.l. Biologically active 3-substituted oxindole derivatives useful as anti-angiogenic agents. 5,576,330, Cl. 514-307.000.

Byrne, Brian T., to Garlock Equipment Company. Roofing kettle with automatic fuel ignition and control system. 5,575,272, Cl. 126-343.50A.

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Caburet, Laurent; Asfardjani, Kamyar; Dessaux, Odile; Goudmand, Pierre; and Jama, Charaffedine, to Societe De Transformation Des Elastomers A Usages Medicaux Et Industriels. Method of treating a packaging element, especially for medical or pharmaceutical use; packaging element thus treated. 5,576,068, Cl. 427-452.000.

Cafaro, Fred. Device for blocking stairs. 5,575,353, Cl. 182-106.000.

Cage, Donald R.; Campbell, Steven W.; and Hahn, David T., to Direct Measurement Corporation. Coriolis mass flow rate meter having means for modifying angular velocity gradient positioned within a conduit. 5,576,500, Cl. 73-861.357.

Cain, Frederick W.; Hughes, Adrian D.; and Pierce, John H. Anti-bloom triglyceride compositions. 5,576,045, Cl. 426-607.000.

Cain Research Pty. Ltd.: *See—*
Yancey, Don R., 5,576,780, Cl. 351-211.000.

Caldwell, Lynn. Gas compressor. 5,575,628, Cl. 47-364.000.

Caldwell, Shirley Y.; and Varley, Jerry M., to Texas Instruments Incorporated. De-reeler for tape and reel machine. 5,575,136, Cl. 53-492.000.

Calero, Fernando, to ABB Power T&D Company, Inc. Process and apparatus for comparing in real time phase differences between phasors. 5,576,618, Cl. 324-76.150.

Calgene, Inc.: *See—*
McBride, Kevin E.; and Stalker, David M., 5,576,198, Cl. 435-91.300.

Caliboso, Amado A.; and Dabney, S. Fred, Jr., to Telcom Semiconductor, Inc. Method and apparatus to measure capacitance. 5,576,628, Cl. 324-678.000.

Califano, Andrea, to International Business Machines Corporation. Method for finding a reference token sequence in an original token string within a database of token strings using appended non-contiguous substrings. 5,577,249, Cl. 395-611.000.

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Cambray, John E.; and Scharmer, Andrew J., to Davox Corporation. Telephony system with supervisory management center and parameter testing with alerts. 5,577,112, Cl. 379-216.000.

Camerlenghi, Emilio; and Casagrande, Giulio, to SGS-Thomson Microelectronics, S.r.L. Voltage regulator for non-volatile semiconductor memory devices. 5,576,990, Cl. 365-185.230.

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Candotti, Riccardo. Button for clothing. 5,575,043, Cl. 24-114.400.

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Julian, Randall K., to Sunbeam Plastics Corporation. Method of forming a tamper indicating closure. 5,575,967, Cl. 264-296.000.

Jung, Jung J., to SamSung Electronics Co., Ltd. Method for preventing erroneous recording in compact disc player. 5,577,011, Cl. 369-47.000.

Junger, Dieter; and Zweigle, Peter, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 5,575,261, Cl. 123-449.000.

Jungles-Butler, Polly; and Repplinger, Daniel J., to Motorola, Inc. Assembly for visually indicating signals generated by an electrical circuit and light-diffusing interface apparatus therefor. 5,577,267, Cl. 455-90.000.

Jung Tae, Oum. Extendable tape measure. 5,575,077, Cl. 33-767.000.

Jurgens, Christian. Resorbable biocompatible copolymers and their use. 5,576,418, Cl. 528-361.000.

Jurica, Joseph J.: *See—*
Walworth, Tom M., Jr.; Jurica, Joseph J.; Weilemann, Donald E.; and Turner, Joseph, 5,575,525, Cl. 296-183.000.

K I International Co., Ltd.: *See—*
Ohsawa, Tsuguyoshi, 5,575,164, Cl. 70-303.00A.

Kablanian, Adam: *See—*
Bair, Owen S.; Kablanian, Adam; Li, Charles; and Zarrinfar, Farzad, 5,577,050, Cl. 371-10.200.

Kabushiki Kaisha Aichi Ceramic Kogyosho: *See—*
Suzuki, Akira, 5,575,904, Cl. 210-186.000.

Kabushiki Kaisha FRC: *See—*
Suenaga, Tatsuo; Nakagawa, Hiroaki; Terauchi, Shin; Kikuchi, Takeo; Aiba, Shinnosuke; Kobayashi, Mikio; Katsuta, Yutaka; Ago, Kenji; Kosuge, Katsumi; Matsubara, Yasuyuki; Tanaami, Masato; Sugishita, Shunichi; Ikeda, Hideki; Furuya, Toshio; Akihama, Shigeyuki; and Arai, Takahiro, 5,575,870, Cl. 156-71.000.

Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See—*
Shibuya, Takashi; Sugimoto, Toshiyuki; and Miyake, Toshio, 5,576,303, Cl. 514-53.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*
Saito, Tsutomu, 5,576,685, Cl. 340-384.100.

Kabushiki Kaisha Keihinseiki Seisakusho: *See—*
Hirano, Kenichi; Namari, Takashi; and Nemoto, Shinichi, 5,575,268, Cl. 123-701.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Izuchi, Shuhei; and Matsumoto, Tsuyoshi, 5,576,112, Cl. 428-654.000.
Minamida, Takaaki; Katsube, Kozo; Mizutani, Katsuji; Murahashi, Mamoru; Ochiai, Kenji; Oki, Yasuhiro; Ibaraki, Nobuhiko; Shohzaki, Tamotsu; and Mitani, Yoshihiro, 5,575,866, Cl. 148-332.000.

Kabushiki Kaisha Saginomiya Seisakusho: *See—*
Jinnouchi, Shimpei; Kuno, Hiroshi; and Otsuki, Hiroshi, 5,575,854, Cl. 118-715.000.

Kabushiki Kaisha Shikoku Sogo Kenkyusho: *See—*
Ikeda, Satoshi; Inoue, Yoshiki; and Yamamoto, Naoaki, 5,576,007, Cl. 424-408.000.

Kabushiki Kaisha Shinkawa: *See—*
Tomiyama, Hiromi; and Nagai, Satoru, 5,576,828, Cl. 356-372.000.

Kabushiki Kaisha Toshiba: *See—*
Akiyama, Junichi; Yoda, Hiroaki; Ohsawa, Yuichi; and Iwasaki, Hitoshi, 5,576,915, Cl. 360-113.000.
Arai, Tooru; Watanabe, Toshiyuki; and Tsuchiya, Hideo, 5,577,171, Cl. 395-112.000.
Fujimoto, Yukihiro; and Nogami, Kazutaka, 5,577,086, Cl. 375-376.000.
Gomikawa, Takao, 5,576,768, Cl. 348-468.000.
Goto, Yasuo, 5,576,970, Cl. 364-500.000.
Hirabayashi, Hideaki; and Higuchi, Masatoshi, 5,575,885, Cl. 156-626.100.
Ito, Kenji, 5,577,049, Cl. 370-112.000.
Kaga, Yasuhiro, 5,576,542, Cl. 250-310.000.
Kato, Hideo; Sugiura, Nobutake; Uchigane, Kiyotaka; and Asano, Masamichi, 5,576,994, Cl. 365-185.300.
Kurisu, Shunji; Kubo, Osamu; Maeda, Tatsumi; and Ogawa, Etsuji, 5,576,114, Cl. 428-694.00B.
Maeda, Takeo; and Gojohbori, Hiroshi, 5,576,572, Cl. 257-378.000.
Miyoshi, Motosuke; and Yamazaki, Yuichiro, 5,576,833, Cl. 356-394.000.
Sakaue, Kenji; and Ogura, Koji, 5,577,080, Cl. 375-376.000.
Shinohara, Tsuyoshi, 5,575,569, Cl. 384-470.000.
Sukegawa, Yukio; and Matsushima, Tetsuo, 5,576,625, Cl. 324-424.000.
Takebayashi, Yoichi; Tsuboi, Hiroyuki; Sadamoto, Yoichi; Yamashita, Yasuki; Nagata, Yoshifumi; Seto, Shigenobu; Shinchi, Hideaki; and Hashimoto, Hideki, 5,577,165, Cl. 395-2.840.
Uchino, Hiroshi, 5,576,944, Cl. 363-71.000.
Yoneya, Kazuhide; and Koinuma, Hiroyuki, 5,576,641, Cl. 326-83.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Yamamoto, Yuuji; Watanabe, Shinichi; Takemoto, Tsuyoshi; Hisanaga, Shigeru; Hukanuma, Tetsuhiko; and Yamamoto, Shinya, 5,575,635, Cl. 418-55.500.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Suzuki, Hiromasa; Yokota, Koji; Iijima, Tomoko; Suzuki, Tadashi; Kasahara, Koichi; and Tateishi, Syuji, 5,575,983, Cl. 423-213.500.

Kabushiki Kaisha Wakomu: *See—*
Kikuchi, Akio; and Oda, Yasuo, 5,576,735, Cl. 345-173.000.

Kabushiki Kaisya Advance: *See—*
Sasaki, Minoru, 5,575,809, Cl. 607-62.000.

Kace, Frank P., Jr.: *See—*
Coushaine, Charles M.; Schmitt, Robert J., Jr.; and Kace, Frank P., Jr., 5,575,558, Cl. 362-396.000.

Kado, Masataka: *See—*
Richardson, Martin; Kado, Masataka; Gabel, Kai; and Jin, Feng, 5,577,091, Cl. 378-119.000.

Kaedei, Keiko. Connection device. 5,575,697, Cl. 439-883.000.

Kaempf, Rudolf: *See—*
Wilhelm, Fritz; Kaempf, Rudolf; Wenzel, Walter; and Mackensen, Klaus, 5,576,414, Cl. 528-199.000.

Kafka, James; Newell, Vincent J.; and Watts, Michael, to Spectra-Physics Lasers, Inc. Broadly tunable single longitudinal mode output produced from multi longitudinal mode seed source. 5,577,058, Cl. 372-20.000.

Kaga, Yasuhiro, to Kabushiki Kaisha Toshiba. Substrate cross-section observing apparatus. 5,576,542, Cl. 250-310.000.

Kageyama, Naohiro: *See—*
Katoh, Takehiro; Azuma, Yoshihiko; Hirano, Masayasu; Kageyama, Naohiro; Ishimura, Toshihiko; Tsuji, Kenji; and Ootsuka, Hiroshi, 5,576,786, Cl. 354-195.100.

Kai, Tadao; Katayama, Akira; and Tanaka, Etsuo, to Nikon Corporation. Camera having an image blur suppression device. 5,576,787, Cl. 396-55.000.

Kajima Corporation: *See—*
Ishii, Koji; and Adachi, Norihiko, 5,576,971, Cl. 364-505.000.
Suenaga, Tatsuo; Nakagawa, Hiroaki; Terauchi, Shin; Kikuchi, Takeo; Aiba, Shinnosuke; Kobayashi, Mikio; Katsuta, Yutaka; Ago, Kenji; Kosuge, Katsumi; Matsubara, Yasuyuki; Tanaami, Masato; Sugishita, Shunichi; Ikeda, Hideki; Furuya, Toshio; Akihama, Shigeyuki; and Arai, Takahiro, 5,575,870, Cl. 156-71.000.

Kakkar, Vijay V.; and Scully, Michael F., to Thrombosis Research Institute. Antithrombotic composition. 5,576,304, Cl. 514-56.000.

Kakuta, Masayuki; and Shigemitsu, Ikuo, to Mita Industrial Co., Ltd. Automatic document feeder having document separating mechanism. 5,576,823, Cl. 355-308.000.

Kalaritis, Panos: *See—*
Wang, Xiu C.; Kalaritis, Panos; and Chang, Michelle L., 5,576,455, Cl. 558-406.000.

Kalbach, Edward V. L. Eyeglass retainer. 5,575,042, Cl. 24-3.300.

Kali-Chemie Pharma GmbH: *See—*
Schoen, Uwe; Farjam, Arman; Brueckner, Reinhard; and Ziegler, Dieter, 5,576,327, Cl. 514-300.000.

Kallergi, Maria: *See—*
Clarke, Laurence P.; Qian, Wei; and Kallergi, Maria, 5,576,548, Cl. 250-369.000.

Källgren, Johan; Coates, Donald A.; Shukla, Sanjay; and Dishop, Steven M., to White Consolidated Industries, Inc. Capacitive leakage current cancellation for heating panel. 5,577,158, Cl. 392-433.000.

Kaman Electromagnetics Corporation: *See—*
Keir, Alexander S., 5,576,943, Cl. 363-56.000.

Kamatani, Yasuo. Laser scanning apparatus with interactive optical signal transmitting unit. 5,577,148, Cl. 385-115.000.

Kamboj, Rajender; Nutt, Stephen L.; Shekter, Lee; and Wosnick, Michael A., to Allelix Biopharmaceuticals, Inc. Kainate-binding human CNS receptors of the EAA1 family. 5,576,205, Cl. 435-240.200.

Kamei, Shigeru; Yamada, Minoru; and Ogawa, Yasuaki, to Takeda Chemical Industries, Ltd. Method of producing sustained-release microcapsulea. 5,575,987, Cl. 424-451.000.

Kamemaru, Toshihisa: *See—*
Tanabe, Takashi; Kamemaru, Toshihisa; Katoh, Mamoru; Ohno, Tsugihiko; Hatashita, Toyohito; and Abe, Kaoru, 5,577,199, Cl. 395-183.130.

Kamen, Dean L.; Seale, Joseph B.; Briggs, Joseph; and Arnold, Finn, to DEKA Products Limited Partnership. Flow control system with volume-measuriog system using a resonatable mass. 5,575,310, Cl. 137-614.110.

Kameoka, Ryo: *See—*
Nakajima, Yasushi; and Kameoka, Ryo, 5,575,062, Cl. 29-874.000.

Kameyama, Isao: *See—*
Endo, Takayoshi; and Kameyama, Isao, 5,575,696, Cl. 439-852.000.

Kameyama, Masaomi: *See—*
Ushida, Kazuo; and Kameyama, Masaomi, 5,576,801, Cl. 355-53.000.

Kameyama, Nobuyuki, to Fuji Photo Film Co., Ltd. Lens-fitted photo film unit for use with taking lenses of different focal length. 5,576,782, Cl. 396-6.000.

Kameyama, Yasushi; and Ono, Jun, to Yazaki Corporation. Cover of battery connecting terminal. 5,576,516, Cl. 174-138.00F.

Kaminski, Victor V.: *See—*
Craun, Gary P.; and Kaminski, Victor V., 5,576,360, Cl. 523-407.000.

Kamiya, Hiroshi, to NEC Corporation. Bus driver for high-speed data transmission with waveform adjusting means. 5,576,634, Cl. 326-26.000.

Kamizawa, Koh: *See—*
Yokose, Taro; Suzuki, Kazuhiro; Koshi, Yutaka; and Kamizawa, Koh, 5,577,132, Cl. 382-238.000.

Kämmler, Georg; and Müller, Stefan, to U.S. Philips Corporation. Technical device, particularly electromechanical deck for moving information carriers and method of producing a movable functional part on a metal plate (flexure film). 5,575,433, Cl. 242-358.000.

Kamura, Hitoshi: *See—*
Matsumoto, Takuya; Hashimoto, Toru; Miyake, Mitsuhiro; Kamura, Hitoshi; Yoshida, Yasuhisa; Kanao, Hidetsugu; and Nomura, Toshiro, 5,575,267, Cl. 123-698.000.

Kamyr, Inc.: *See—*
Prough, J. Robert; Marcoccia, Bruno S.; Laakso, Richard O.; and Luhrmann, Carl L., 5,575,890, Cl. 162-34.000.

Kan, Fumitaka; Nakamura, Kenji; Takenouchi, Masanori; Hayakawa, Naoji; Shimoda, Isamu; and Okunuki, Masahiko, to Canon Kabushiki Kaisha. Method and apparatus for transferring information by utilizing electron beam. 5,576,699, Cl. 340-825.970.

Kanai, Masahiro; Fujioka, Yasushi; Yoshino, Takehito; and Hori, Tadashi, to Canon Kabushiki Kaisha. Apparatus for forming a deposited film. 5,575,855, Cl. 118-718.000.

Kanamori, Iwao, to Olympus Optical Co., Ltd. Endoscope. 5,576,882, Cl. 359-434.000.

Kanao, Hidetsugu: *See—*
Matsumoto, Takuya; Hashimoto, Toru; Miyake, Mitsuhiro; Kamura, Hitoshi; Yoshida, Yasuhisa; Kanao, Hidetsugu; and Nomura, Toshiro, 5,575,267, Cl. 123-698.000.

Kanaya, Munehide: *See—*
Momose, Kaoru; Kanaya, Munehide; Yoshida, Masahiko; and Uwai, Hikonosuke, 5,576,743, Cl. 347-11.000.

Kanaya, Naoaki: *See—*
Nagahara, Takayasu; Kanaya, Naoaki; Inamura, Kazue; and Yokoyama, Yukio, 5,576,343, Cl. 514-422.000.

Kanazawa, Hiroshi; Okuda, Isao; Shinozaki, Shimpei; and Takishima, Suguru, to Asahi Kogaku Kogyo Kabushiki Kaisha. Magneto-optical disk drive system. 5,577,008, Cl. 369-13.000.

Kanda, Katsunobu: *See—*
Mita, Hideo; Kanda, Katsunobu; Misawa, Hideo; Herai, Toshiki; and Nagashima, Ken, 5,575,155, Cl. 62-6.000.

Kane, Adam S.: *See—*
Baggett, William C.; Baines, Elliot A., Jr.; Filus, Wayne S.; Gilland, Dianne W.; Kane, Adam S.; Spaulding, Mark G.; and Starace, Jeremia P., 5,575,689, Cl. 439-709.000.

Kane, George K.; and Hodapp, Gerald C. Fastening device for protective veterinary garments. 5,575,014, Cl. 2-239.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Iritani, Koji; Kawasaki, Tetsuya; Tani, Nobutaka; Masuda, Shigeki; and Yano, Yoshiaki, 5,576,020, Cl. 424-465.000.

Kaneko, Katsuyoshi: *See—*
Hirotani, Takayuki; Orimoto, Takashi; Moriya, Kouji; Kaneko, Katsuyoshi; and Watanabe, Kazuyoshi, 5,576,650, Cl. 327-142.000.

Kaneko, Kazue; and Sakai, Keiichi, to Canon Kabushiki Kaisha. Incorrect voice command recognition prevention and recovery processing method and apparatus. 5,577,164, Cl. 395-2.840.

Kaneko, Kiyotaka: *See—*
Arai, Minoru; and Kaneko, Kiyotaka, 5,576,758, Cl. 348-220.000.

Kaneko, Manabu: *See—*
Sugita, Shuichi; Tanaka, Shinri; Suzuki, Takatugu; and Kaneko, Manabu, 5,576,166, Cl. 430-555.000.

Kaneko, Tetsuya: *See—*
Takeda, Toshihiko; Nomura, Ichiro; Kaneko, Tetsuya; and Banno, Yoshikazu, 5,576,051, Cl. 427-77.000.

Kanematsu, Hideki; and Suzuki, Masaichi, to Tsuda Kogyo Kabushiki Kaisha. Shift lever assembly for power transmission of automotive vehicle. 5,575,174, Cl. 74-475.000.

Kaneski, Donald E.; and Good, Ross G., to Chrysler Corporation. Paint tote with colapsible liner and tote agitator. 5,575,560, Cl. 366-219.000.

Kaneto, Masayuki: *See—*
Yamamoto, Yasuhiko; Ohki, Isao; Yoshida, Junji; Yamashita, Hideo; Ouchi, Kazuo; and Kaneto, Masayuki, 5,575,662, Cl. 439-67.000.

Kanewske, William J., III: *See—*
Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,575,978, Cl. 422-104.000.

Kanezaki, Hidenori: *See—*
Nagata, Hiroto; Komaba, Shoichi; Nagano, Toru; and Kanezaki, Hidenori, 5,575,763, Cl. 602-18.000.

Kang, Jing X.: *See—*
Leaf, Alexander; and Kang, Jing X., 5,576,349, Cl. 514-559.000.

Kang, Po-Chuan: *See—*
Liu, Chih-Yuan; and Kang, Po-Chuan, 5,577,221, Cl. 395-427.000.

Kansai Paint Co., Ltd.: *See—*
Imai, Genji; Takeda, Yukari; Kogure, Hideo; and Iwasawa, Naozumi, 5,576,148, Cl. 430-314.000.

Kanto Kagaku Kabushiki Kaisha: *See—*
Kurihara, Makoto; Ishihara, Kazuhiko; Hotta, Kyoko; Tanaka, Hiromi; and Shimauchi, Shiro, 5,576,182, Cl. 435-7.900.

KAO Corporation: *See—*
Sawada, Hiroki; and Togashi, Hiroyasu, 5,575,944, Cl. 252-68.000.

Karasawa, Hitoshi; Kobayashi, Norio; Yamaguchi, Tatsuya; Kubota, Tetsumaru; Kawase, Yukio; Okada, Mitsumasa; and Yamaguchi, Takao, to Olympus Optical Co., Ltd. Endoscope apparatus. 5,575,756, Cl. 600-157.000.

Karbachsch, Massoud; Konstantin, Peter; Pradel, Günter; and Schmidt, Dieter, to Sartorius AG. Membrane adsorber filter module. 5,575,910, Cl. 210-321.750.

Kardorff, Uwe: *See—*
Maywald, Volker; Kuekenhoehner, Thomas; Muenster, Peter; von Deyn, Wolfgang; Walter, Helmut; Gerber, Matthias; Westphalen, Karl-Otto; and Kardorff, Uwe, 5,576,270, Cl. 504-271.000.

Kariya, Akinori: *See—*
Henmi, Shinya; Fujii, Hideyo; and Kariya, Akinori, 5,576,308, Cl. 514-112.000.

Karnowski, Mark J.: *See—*
Knuth, Stephen B.; Karnowski, Mark J.; Mazzolini, James W.; and Brown, Sanford M., III, 5,577,104, Cl. 379-67.000.

Karol, Thomas J.; Donnelly, Steveo G.; and Hiza, Ronald J., to R.T. Vanderbilt Company, Inc. Lubricating compositions containing bismuth compounds. 5,576,273, Cl. 508-364.000.

Karow, Peter, to Adobe Systems, Incorporated. Generation of typefaces on high resolution output devices. 5,577,170, Cl. 395-110.000.

Karp, Randy Y.; Tresser, Merle; Pascale, John V.; Bennett, Gregory S.; and Bennett, Bruce, to Scentex, Inc. Liquid potpourri and method of manufacture. 5,576,286, Cl. 512-2.000.

Karpisek, Ladislav S. Bulk product handling method and apparatus. 5,575,427, Cl. 241-30.000.

Karttunen, Pekka J.: *See—*
Gupte, Arun R.; Kladders, Heinrich; Ruthemann, Hans D.; Zierenberg, Bernd; Auvinen, Raimo K. A.; Karttunen, Pekka J.; and Vidgren, Mika T., 5,575,280, Cl. 128-203.150.

Kasa, Koichi, to Pioneer Electronic Corporation. Method of detecting PTY burst signal. 5,577,048, Cl. 370-110.100.

Kasa, Yasushi: *See—*
Akaogi, Takao; Kawashima, Hiromi; Takeguchi, Tetsuji; Hagiwara, Ryoji; Kasa, Yasushi; Itano, Kiyoshi; Ogawa, Yasushige; and Kawamura, Shouichi, 5,576,637, Cl. 326-55.000.

Kasahara, Koichi: *See—*
Suzuki, Hiromasa; Yokota, Koji; Iijima, Tomoko; Suzuki, Tadashi; Kasahara, Koichi; and Tateishi, Syuji, 5,575,983, Cl. 423-213.500.

Kashiwagi, Yoshiitirou: *See—*
Miwa, Katsuhiko; Tsuga, Kazuhiro; Mori, Yoshihiro; and Kashiwagi, Yoshiitirou, 5,576,736, Cl. 345-189.000.

Kasuta, Yoshinori, to Fujitsu Limited. Semiconductor memory device. 5,576,998, Cl. 365-189.060.

Kataoka, Tatsuhito; Takahashi, Hiroyuki; and Tahara, Motoaki, to Canon Kabushiki Kaisha. Image forming apparatus which performs registration correction for plural image. 5,576,753, Cl. 347-248.000.

Katasuyama, Koichi: *See—*.
Sueda, Noriyoshi; Yamada, Kazuhiko; Yanai, Makoto; Miura, Katsutoshi; Horigome, Masato; Oshida, Norio; Hiramoto, Shigeru; Katasuyama, Koichi; Nakata, Fumihisa; Kinoshita, Nobuhiro; and Tsukada, Yoko, 5,576,335, Cl. 514-317.000.

Kataumi, Yoshimasa; and Ikegami, Yasuyuki, to Fuji Kiko Co., Ltd. Shift lever assembly. 5,575,175, Cl. 74-475.000.

Katayama, Akira: *See—*
Kai, Tadao; Katayama, Akira; and Tanaka, Etsuo, 5,576,787, Cl. 396-55.000.

Katayama, Hiroki: *See—*
Kusumoto, Katsuhiko; Katayama, Hiroki; and Adachi, Katsumi, 5,576,584, Cl. 310-45.000.

Katayama, Kenichi: *See—*
Ishida, Yoshiki; Samekawa, Keiichi; Katayama, Kenichi; Matsumoto, Yoshifumi; Ishida, Hideo; and Kimura, Koichi, 5,575,053, Cl. 29-430.000.

Katayama Special Industries, Ltd.: *See—*

Hirofumi, Sugikawa; Sachio, Michibata; and Keiichi, Hayashi, 5,576,113, Cl. 428-679.000.
Kato, Eiji: *See*—
Suzuki, Takashi; and Kato, Eiji, 5,575,352, Cl. 180-311.000.
Kato, Heiji, to Ishikawajima-Harima Heavy Industries Co., Ltd.; and BHP Steel (JLA) Pty Ltd. Strip casting apparatus. 5,575,327, Cl. 164-158.000.
Kato, Hideo; Sugiura, Nobutake; Uchigane, Kiyotaka; and Asano, Masamichi, to Kabushiki Kaisha Toshiba. Non-volatile semiconductor memory device. 5,576,994, Cl. 365-185.300.
Kato, Hiroharu; and Takahashi, Yoshiaki, to Kato, Hiroharu; and Ishikawajima-Harima Heavy Industries Co., Ltd. Method and device for reducing friction on a navigating vehicle. 5,575,232, Cl. 114-67.00A.
Kato, Hiroyuki: *See*—
Hotta, Keiichi; Ogawa, Ryota; and Kato, Hiroyuki, 5,576,892, Cl. 359-696.000.
Kato, Hisato: *See*—
Kawasaki, Kaoru; Saitoh, Akira; Seki, Akihiko; Shimazaki, Kazuyuki; Mori, Takahiro; and Kato, Hisato, 5,576,075, Cl. 427-565.000.
Kato, Kazuhiro: *See*—
Tanaka, Hirohisa; Kato, Kazuhiro; and Miyawaki, Youichi, 5,575,542, Cl. 303-125.000.
Kato, Kazuo: *See*—
Watanabe, Chiharu; Nakano, Tatsuo; and Kato, Kazuo, 5,576,362, Cl. 523-440.000.
Kato, Setsuo, to Alueck Co., Ltd. Drain water-intake cover. 5,575,903, Cl. 210-164.000.
Kato, Susumu: *See*—
Hirabayashi, Yoshinori; Fujita, Shigeki; Nakamura, Kanji; and Kato, Susumu, 5,576,269, Cl. 504-236.000.
Kato, Takahiro: *See*—
Wada, Satoshi; Yoshida, Takehiro; Ono, Takeshi; Takeda, Tomoyuki; Kondo, Masaya; Kobayashi, Makoto; Kato, Takahiro; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Yamada, Masakatsu, 5,576,751, Cl. 347-217.000.
Kato, Takashi: *See*—
Sone, Yukio; Nagashima, Takashi; and Kato, Takashi, 5,577,032, Cl. 370-58.300.
Kato, Toshiyuki: *See*—
Ise, Yoshiaki; Miyazawa, Hiroyuki; Kimura, Hiroyuki; Okoshi, Shinichi; Nakamura, Tatsumasa; and Kato, Toshiyuki, 5,576,884, Cl. 359-514.000.
Katoh, Mamoru: *See*—
Tanabe, Takashi; Kamemaru, Toshihisa; Katoh, Mamoru; Ohno, Tsugihiko; Hatashita, Toyohito; and Abe, Kaoru, 5,577,199, Cl. 395-183.130.
Katoh, Takehiro; Azuma, Yoshihiko; Hirano, Masayasu; Kageyama, Naohiro; Ishimura, Toshihiko; Tsuji, Kenji; and Ootsuka, Hiroshi, to Minolta Camera Kabushiki Kaisha. Camera system. 5,576,786, Cl. 354-195.100.
Katsube, Kozo: *See*—
Minamida, Takaaki; Katsube, Kozo; Mizutani, Katsuji; Murahashi, Mamoru; Ochiai, Kenji; Oki, Yasuhiro; Ibaraki, Nobuhiko; Shohzaki, Tamotsu; and Mitani, Yoshihiro, 5,575,866, Cl. 148-332.000.
Katsuma, Takatoshi, to Sumitomo Wiring Systems, Ltd. Lever-type connector. 5,575,671, Cl. 439-157.000.
Katsuma, Takatoshi, to Sumitomo Wiring Systems, Ltd. Lever connector with concave-convex engagement mechanism for holding a locking lever at a lock position. 5,575,672, Cl. 439-157.000.
Katsuta, Katsuyoshi: *See*—
Akasaka, Shingo; Arai, Yoshinao; Ishida, Atsuhiro; Haga, Noriyuki; Katsuta, Katsuyoshi; Arino, Shoji; Tonosaki, Yoko; and Ogawa, Tomoko, 5,576,965, Cl. 364-468.030.
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Kowshik, Vikram, to Actel Corporation. Single-transistor electrically-alterable switch employing fowler nordheim tunneling for program and erase. 5,576,568, Cl. 257-318.000.

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Krähenbühl, Alfred: *See*—
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Kresge, Edward N.; and Lohse, David J., to Exxon Chemical Patents Inc. Composite tire innerliners and inner tubes. 5,576,373, Cl. 524-445.000.

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Krishnan, Ramasamy; Yamat, Marilyn C.; Gregorio, Manuel Z.; and Schwartz, Russell J., to Sun Chemical Corporation. Process for improving color value of a pigment. 5,575,843, Cl. 106-402.000.

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Kublak, Glenn D.; and Richardson, Martin C. Cluster beam targets for laser plasma extreme ultraviolet and soft x-ray sources. 5,577,092, Cl. 378-119.000.

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Kudo, Takashi; and Nakajima, Osamu, to Akebono Brake Industry Co., Ltd. Friction material. 5,576,369, Cl. 524-413.000.

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Kuo, Ming C.; Kirsten, Staer S.; and Marshall, Gary W., to A. O. Smith Corporation. Corrosion-resistant coating composition having high solids content. 5,576,371, Cl. 524-413.000.

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Saito, Atsushi; Sinagawa, Hideo; and Nakata, Atsuo, 5,576,421, Cl. 530-350.000.

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Choi, Hae C.; Nam, Won J.; Choi, Jong K.; Bark, Soo D.; Choi, Jong H.; and Kim, Jang G., 5,575,973, Cl. 420-112.000.
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Rezzi, Francesco; Baschirotto, Andrea; and Castello, Rinaldo, to SGS-Thomson Microelectronics, S.r.l. Transconductor circuit with high-linearity double input and active filter thereof. 5,576,646, Cl. 327-103.000.

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Riemann, Hans-Juergen: *See—*
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Rijs, Johannes C. M., to Binair Groep B.V. Method and apparatus to pour fluid around fresh produce. 5,575,714, Cl. 454-174.000.

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Kawai, Muneaki; and Watanabe, Hiroshi, 5,575,204, Cl. 101-116.000.
Kawai, Muneaki; and Nakao, Terutoshi, 5,575,213, Cl. 101-477.000.
Okuda, Sadanao, 5,575,839, Cl. 106-20.00C.

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Lange, Joerg; Stutzenberger, Heinz; Lehmann, Thomas; and Koehler, Christian, 5,575,257, Cl. 123-337.110.
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Roethlingshoefer, Walter; and Goebels, Ulrich, 5,576,934, Cl. 361-761.000.
Rohde, Siegfried, 5,575,262, Cl. 123-467.000.

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Robinson, Emmett W. Automobile sun shield. 5,575,522, Cl. 296-97.600.

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Rockland, Inc.: *See—*
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Roemer, Wilfried; and Riemann, Hans-Juergen, to Siemens Aktiengesellschaft. Method for transmitting information present at a plurality of data interfaces of a processor-controlled equipment to the processing device thereof. 5,577,255, Cl. 395-737.000.
Roethlingshoefer, Walter; and Goebels, Ulrich, to Robert Bosch GmbH. Mounting unit for a multilayer hybrid circuit having power components including a copper coated ceramic center board. 5,576,934, Cl. 361-761.000.
Rogers, Ramon B. Injection tip for liquid distribution in a turf rootzone. 5,575,224, Cl. 111-118.000.
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Rosenberg, Louis B.; and Jackson, Bernard G., to Immersion Human Interface Corporation. Electromechanical human-computer interface with force feedback. 5,576,727, Cl. 345-179.000.
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Rosenblad, Axel E. Rotating falling film evaporator. 5,575,889, Cl. 159-49.000.
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Rosene, Ronald G.; and Timp, Richard L., to Wilson Tool International, Inc. Workpiece-deforming tool and die for use in a punch press. 5,575,168, Cl. 72-179.000.
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Shono, Masayoshi: *See—*
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Sun Microsystems: *See*—
Sandhu, Bal S., 5,577,001, Cl. 365-207.000.
Sun Microsystems, Inc.: *See*—
Hamilton, Graham; Powell, Michael L.; Mitchell, James G.; and Gibbons, Jonathan J., 5,577,251, Cl. 395-671.000.
Nelson, Michael N.; Radia, Sanjay R.; and Hamilton, Graham, 5,577,252, Cl. 395-670.000.
Priem, Curtis; Malachowsky, Chris; McIntyre, Bruce; and Moffat, Guy, 5,577,232, Cl. 395-500.000.
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Aoki, Shigeo; Ukai, Yasuhiro; Sunata, Tomihisa; Nakagawa, Takanobu; and Shibazaki, Minoru, 5,576,863, Cl. 359-76.000.
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Sunbeam Oster: *See*—
Goettel-Schwartz, Jeanette C., 5,575,098, Cl. 40-550.000.
Sunbeam Plastics Corporation: *See*—
Julian, Randall K., 5,575,967, Cl. 264-296.000.
Sundholm, Göran. Valve for fire fighting installation. 5,575,338, Cl. 169-5.000.
Sundowner Offshore Services, Inc.: *See*—
Wasterval, Philip W., Jr., 5,575,332, Cl. 166-77.100.
Sundquist, Bo: *See*—
Morein, Bror; Lövgren, Karin; Dalsgaard, Kristian; Thurin, Jan; and Sundquist, Bo, 5,576,004, Cl. 424-278.100.
Super Disc Filters Ltd.: *See*—
Rosenberg, Peretz, 5,575,911, Cl. 210-333.010.
Superior Modular Products Incorporated: *See*—
Shramawick, John G.; and Smith, R. Bruce, 5,575,665, Cl. 439-49.000.
Susnjara, Kenneth J., to Thermwood Corporation. Slide assembly for machine tools and method of making same. 5,575,318, Cl. 144-2.100.
Sutardja, Pantas; and Sutardja, Sehat, to Marvell Technology Group, Ltd. Charge pump for phase lock loop. 5,576,647, Cl. 327-108.000.
Sutardja, Sehat: *See*—
Sutardja, Pantas; and Sutardja, Sehat, 5,576,647, Cl. 327-108.000.
Sutherland, Joseph E.: *See*—
Czerwiec, Richard M.; Sutherland, Joseph E.; Simmering, Marlin V.; Withers, Andrew L.; and Kroninger, Robert S., 5,576,874, Cl. 359-123.000.
Suthersan, Suthan S., to Geraghty & Miller, Inc. Apparatus and method for removing volatile contaminants from phreatic water. 5,575,589, Cl. 405-128.000.
Suyama, Kouichi; and Honda, Kiyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Method for developing air bag for vehicle. 5,575,497, Cl. 280-730.100.
Suzuki, Akio; Miura, Yasushi; and Izumizaki, Masami, to Canon Kabushiki Kaisha. Apparatus and method for maintaining image quality when image recording is interrupted. 5,576,746, Cl. 347-14.000.
Suzuki, Akira, to Kabushiki Kaisha Aichi Ceramic Kogyosho. Fluid processing device with filter in helical channel tube. 5,575,904, Cl. 210-186.000.
Suzuki, Akira: *See*—
Yabe, Hisao; Suzuki, Akira; Yamazaki, Minoru; Ito, Hideo; Iida, Yoshihiro; Tashiro, Yoshio; Tamada, Osamu; and Ishii, Hiroshi, 5,575,752, Cl. 600-121.000.
Yabe, Hisao; Iida, Yoshihiro; Suzuki, Akira; Itoh, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; and Tamada, Osamu, 5,575,753, Cl. 600-123.000.
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Tonomura, Yoshinobu; Akutsu, Akihito; Taniguchi, Yukinobu; Suzuki, Gen; and Kishimoto, Tomio, 5,576,950, Cl. 364-514.00A.
Suzuki, Hiromasa; Yokota, Koji; Iijima, Tomoko; Suzuki, Tadashi; Kasahara, Koichi; and Tateishi, Syuji, to Toyota Jidosha Kabushiki Kaisha; Kabushiki Kaisha Toyota Chuo Kenkyusho; and Cataler Industrial Co., Ltd. Catalyst for purifying exhaust gases and process for purifying exhaust gases. 5,575,983, Cl. 423-213.500.
Suzuki, Hiroshi; and Shono, Masayoshi, to Fujitsu Limited; and Fujitsu Ten Limited. Compensation circuit for improving modulation characteristic, and modulator and radar equipment using the same. 5,576,713, Cl. 342-174.000.
Suzuki, Hiroyuki: *See*—
Hibino, Masaru; Nagase, Yukio; Waki, Kenichiro; and Suzuki, Hiroyuki, 5,576,812, Cl. 355-251.000.
Suzuki, Kazuhiro: *See*—
Yokose, Taro; Suzuki, Kazuhiro; Koshi, Yutaka; and Kamizawa, Koh, 5,577,132, Cl. 382-238.000.
Suzuki, Koichi: *See*—
Takai, Hideyuki; Suzuki, Koichi; Sugiyama, Satomi; and Kunieda, Mitsuhiro, 5,576,131, Cl. 430-59.000.
Suzuki, Masaaki: *See*—
Watanabe, Yasuyuki; Ishiwata, Kazuya; Suzuki, Masaaki; Nakai, Noriyuki; Enomoto, Takashi; Nishida, Naoya; Murata, Tatsuo; Mitsui, Mutsuo; and Shimamune, Masayuki, 5,576,865, Cl. 359-80.000.
Suzuki, Masahiro: *See*—
Kawamura, Koichiro; and Suzuki, Masahiro, 5,576,759, Cl. 348-231.000.
Suzuki, Masaichi: *See*—
Kanematsu, Hideki; and Suzuki, Masaichi, 5,575,174, Cl. 74-475.000.
Suzuki, Michio: *See*—
Uchiyama, Yoshiharu; Nakamura, Fusanobu; Suzuki, Michio; and Ohtani, Tetsuya, 5,576,929, Cl. 361-680.000.
Suzuki, Migaku. Sheet elastic complex used in sanitary products its manufacturing process, and its usages. 5,576,090, Cl. 428-152.000.
Suzuki, Shinichi: *See*—
Kuwana, Minoru; Miyano, Masaaki; Miyazawa, Masayuki; Ueyama, Masayuki; and Suzuki, Shinichi, 5,576,894, Cl. 359-701.000.
Suzuki, Tadashi: *See*—
Suzuki, Hiromasa; Yokota, Koji; Iijima, Tomoko; Suzuki, Tadashi; Kasahara, Koichi; and Tateishi, Syuji, 5,575,983, Cl. 423-213.500.
Suzuki, Takashi; and Kato, Eiji, to Yamaha Hatsudoki Kabushiki Kaisha. Four-wheeled vehicle. 5,575,352, Cl. 180-311.000.
Suzuki, Takatugu: *See*—
Sugita, Shuichi; Tanaka, Shinri; Suzuki, Takatugu; and Kaneko, Manabu, 5,576,166, Cl. 430-555.000.
Suzuki, Takuya; and Minowa, Yoshio, to NEC Corporation. Branching filter for transmitter-receiver. 5,576,670, Cl. 333-126.000.
Suzuki, Toshimitsu: *See*—
Minakuchi, Yu; Okuyama, Satoshi; Suzuki, Toshimitsu; and Yano, Katsutoshi, 5,576,732, Cl. 345-127.000.
Svendsen, Hugh B.: *See*—
Anderson, Eric C.; Svendsen, Hugh B.; and Sohn, A. Phillip, 5,577,250, Cl. 395-670.000.
Svensson, Par J.: *See*—
Annehed, Stefan; Mitsuishi, Hisami; Schott, Erik; Skonieczny, Dean C.; and Svensson, Par J., 5,575,884, Cl. 156-580.100.
Swamy, Deepak N., to Dell U.S.A., L.P. Anisotropic interconnect methodology for cost effective manufacture of high density printed wiring boards. 5,576,519, Cl. 174-265.000.
Swanson, David K.; Fleischman, Sidney D.; Kordis, Thomas F.; and McGee, David L., to EP Technologies, Inc. Composite structures and methods for ablating tissue to form complex lesion patterns in the treatment of cardiac conditions and the like. 5,575,810, Cl. 607-99.000.
Swartz, Eric S.: *See*—
Allen, Bernie; Edington, Christopher J.; Parracho, Rui; Clark, Douglas E.; and Swartz, Eric S., 5,575,088, Cl. 36-28.000.
Swartz, John F.; and Ockuly, John, to Daig Corporation. Process for the nonsurgical mapping and treatment of atrial arrhythmia using catheters guided by shaped guiding introducers. 5,575,766, Cl. 604-53.000.
Sweet, David E., to Cytec Technology Corp. Aqueous, essentially VOC-free adhesive epoxy primer. 5,576,061, Cl. 427-379.000.
Swenson, Barbara; and Beckham, D. Scott, to Swenson, Barbara. Clamping device for securing christmas tree light wires and/or decorations to christmas trees. 5,575,446, Cl. 248-304.000.
Swirbel, Thomas J.; and Dunn, Patrick M., to Motorola, Inc. Liquid crystal display having embossed appearing characters. 5,576,855, Cl. 359-40.000.
Swirbel, Thomas J.: *See*—
Arledge, John K.; Swirbel, Thomas J.; and Barreto, Joaquin, 5,576,052, Cl. 427-98.000.
Swirhun, Stanley E.; and Quinn, William E., to Vixel Corporation. Integration of laser with photodiode for feedback control. 5,577,064, Cl. 372-96.000.
Swyers, John R.: *See*—
Turner, Terry R.; Spain, James D.; and Swyers, John R., 5,576,629, Cl. 324-709.000.
Sybrig, Inc.: *See*—
Hubrig, Sylvan E.; and Fischer, Roy K., 5,575,020, Cl. 4-342.000.
Syfal S.r.l.: *See*—
Stefani, Franco, 5,575,931, Cl. 219-121.680.
Symbios Logic Inc.: *See*—
Avery, James M.; and Isenberg, William D., 5,577,213, Cl. 395-280.000.
Emnett, Raymond F.; Freeman, Eugene E.; Jander, Mark J.; Petty, William K.; Reise, Brian G.; and Rishavy, Kevin M., 5,576,640, Cl. 326-83.000.
Yakura, James P.; Cole, Richard K.; Von Thun, Matthew S.; Hass, Crystal J.; and Allman, Derryl D. J., 5,576,224, Cl. 437-8.000.
Symbol Technologies, Inc.: *See*—
Chew, Steven M.; Kumar, Sundeep; and O'Haire, Michael, 5,576,528, Cl. 235-469.000.
Szentes, John F.: *See*—
Baker, Thomas M.; Furlong, Michael; Szentes, John F.; and Tschetter, Jay, 5,576,704, Cl. 341-20.000.
Szyszko, Alexander, to Elexon Ltd. Screen printing apparatus with pallet registration. 5,575,206, Cl. 101-126.000.
T.O.W. Inc.: *See*—
Jordan, Frank W., 5,576,257, Cl. 502-62.000.
Taalikka, Reijo: *See*—
Anttila, Seppo; and Taalikka, Reijo, 5,575,614, Cl. 414-797.600.
Tabei, Shoji: *See*—
Sawai, Hiroyuki; Fujiwara, Yasuhisa; and Tabei, Shoji, 5,575,171, Cl. 72-352.000.
Tachi-S Co., Ltd.: *See*—
Shinbori, Hideo; Takayama, Takuro; and Akiyama, Masami, 5,575,449, Cl. 248-429.000.
Tachibana, Shinichi: *See*—
Watanabe, Yukio; and Tachibana, Shinichi, 5,576,087, Cl. 428-141.000.
Tachizono, Shinichi; and Chiyoda, Hironobu, to Hitachi Powdered Metals Co., Ltd. Coating compositions for the inner wall of cathode-ray tube. 5,575,953, Cl. 252-504.000.
Tada, Atsushi, to Yamaha Hatsudoki Kabushiki Kaisha. Induction system and method of operating an engine. 5,575,248, Cl. 123-184.560.
Tadiran Ltd.: *See*—
Yamin, Herzel; and Carmely, Yacov C., 5,576,119, Cl. 429-218.000.
Tadokoro, Masahiro: *See*—
Hiramoto, Kazuo; Tadokoro, Masahiro; Hirota, Junichi; Nishi, Masatsugu; Noda, Akira; and Inoue, Makoto, 5,576,602, Cl. 315-507.000.
Tagaya, Hideyuki; and Kuwahara, Tsuneo, to TDK Corporation. Photochromic material, photochromic thin film, clay thin film, and their preparation. 5,576,055, Cl. 427-162.000.
Taguchi, Masahiro: *See*—
Hwang, Ivan C.; and Taguchi, Masahiro, 5,577,205, Cl. 395-200.010.
Tah Hsin Industry Co., Ltd.: *See*—
Hu, Chiang-Ho, 5,575,188, Cl. 83-167.000.
Tahara, Motoaki: *See*—
Kataoka, Tatsuhito; Takahashi, Hiroyuki; and Tahara, Motoaki, 5,576,753, Cl. 347-248.000.
Tai, Tsze C., to United States of America, Navy. Guided wing for aircraft flying at high angles of attack. 5,575,442, Cl. 244-198.000.
Taiwan Semiconductor Manufacturing Company Ltd.: *See*—
Tsai, Chia S.; and Tseng, Pin-Nan, 5,575,706, Cl. 451-41.000.
Wuu, Shou-Gwo; Liang, Mong-Song; Su, Chung-Hui; and Wang, Chen-Jong, 5,576,243, Cl. 437-195.000.
Takada, Takeo: *See*—
Ohashi, Ken; Takada, Takeo; and Kikunaga, Toshiyuki, 5,576,679, Cl. 335-306.000.
Takafuji, Yutaka: *See*—
Shimada, Takayuki; Yamashita, Toshihiro; and Takafuji, Yutaka, 5,576,730, Cl. 345-98.000.
Takagi, Tadao, to Nikon Corporation. Automatic flash amount control apparatus of camera. 5,576,798, Cl. 396-159.000.
Takagi, Tadao; and Iwasaki, Hiroyuki, to Nikon Corporation. Camera having an auxiliary photographing function. 5,576,800, Cl. 396-238.000.
Takahashi, Hideo: *See*—
Okuda, Haruo; Futamata, Hideo; Takahashi, Hideo; and Sanefuji, Norihiko, 5,575,957, Cl. 252-521.000.
Takahashi, Hiroyuki, to NEC Corporation. Semiconductor integrated circuit device implemented by bipolar and field effect transistors and having stable sense amplifier. 5,577,002, Cl. 365-226.000.
Takahashi, Hiroyuki: *See*—
Kataoka, Tatsuhito; Takahashi, Hiroyuki; and Tahara, Motoaki, 5,576,753, Cl. 347-248.000.
Takahashi, Kazuhiko: *See*—
Kosuga, Tadashi; Takahashi, Kazuhiko; and Tsuboi, Yoshimi, 5,576,920, Cl. 361-56.000.
Takahashi, Ken M., to Lucent Technologies Inc. Method for fabricating optical quality molds with precision microfeatures. 5,575,962, Cl. 264-2.500.
Takahashi, Kentaro: *See*—
Takahashi, Masakatsu, 5,575,503, Cl. 281-21.100.
Takahashi, Koji: *See*—
Hieda, Teruo; and Takahashi, Koji, 5,576,841, Cl. 386-46.000.
Takahashi, Kyoko; Shibagaki, Makoto; and Matsushita, Hajime, to Japan Tobacco Inc. Method of preparing an alcohol. 5,576,467, Cl. 568-885.000.
Takahashi, Masaharu: *See*—
Igarashi, Minoru; and Takahashi, Masaharu, 5,576,408, Cl. 528-12.000.
Takahashi, Masakatsu, to Takahashi, Masakatsu; Takahashi, Toki; Takahashi, Ryutaro; Hashimoto, Megumi; Yamada, Chizuko; and Takahashi, Kentaro. Filing tool. 5,575,503, Cl. 281-21.100.
Takahashi, Masayuki; Komatsu, Hiromi; Kawaguchi, Kazuo; and Fujiwara, Shuetsu, to Japan Synthetic Rubber Co., Ltd. Thermosetting resin composition. 5,576,398, Cl. 525-528.000.
Takahashi, Naohiko; Hiroshima, Minoru; and Fukushima, Yasuo, to Hitachi, Ltd. High-speed rotor and controller for controlling magnetic bearings used therefor. 5,576,587, Cl. 310-90.500.
Takahashi, Norimasa: *See*—
Morita, Yoshinobu; Daio, Fumio; Takahashi, Norimasa; Nakatsu, Kenichi; and Souma, Naoko, 5,576,117, Cl. 429-162.000.
Takahashi, Ryutaro: *See*—
Takahashi, Masakatsu, 5,575,503, Cl. 281-21.100.
Takahashi, Takashi, to Ricoh Company, Ltd. Semiconductor laser diode apparatus and method of producing the same. 5,577,062, Cl. 372-46.000.
Takahashi, Toki: *See*—
Takahashi, Masakatsu, 5,575,503, Cl. 281-21.100.
Takahashi, Yoshiaki: *See*—
Kato, Hiroharu; and Takahashi, Yoshiaki, 5,575,232, Cl. 114-67.00A.
Takahisa, Tsutumo; and Hasegawa, Koyo, to Digital D.J. Inc. Broadcast system with associated data capabilities. 5,577,266, Cl. 455-66.000.
Takai, Hideyuki; Suzuki, Koichi; Sugiyama, Satomi; and Kunieda, Mitsuhiro, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member, electrophotographic apparatus including same and electrophotographic apparatus unit. 5,576,131, Cl. 430-59.000.
Takajo, Toshimi: *See*—
Uchiyama, Takahiko; Sugimori, Youichiro; Takajo, Toshimi; Naka, Michiharu; Yamamoto, Masao; Shiraishi, Emiko; and Yokouchi, Atushi, 5,575,570, Cl. 384-470.000.
Takaku, Yutaka: *See*—
Kurihara, Nobuo; Kimura, Hiroshi; Takaku, Yutaka; and Ishii, Toshio, 5,575,265, Cl. 123-520.000.
Takakuwa, Sadayuki; and Goto, Yasuhiro, to Matsushita Electric Industrial Co., Ltd. Welder monitor. 5,575,934, Cl. 219-109.000.
Takamatsu, Osamu: *See*—
Kuwabara, Tetsuo; and Takamatsu, Osamu, 5,575,961, Cl. 264-1.330.
Takami, Yoshiyuki: *See*—
Nakazawa, Tadashi; Takami, Yoshiyuki; Makinouchi, Kenzo; and Nosé, Yukihiko, 5,575,630, Cl. 417-420.000.
Takamine, Kouichi, to Matsushita Electric Industrial Co., Ltd. Tracking control system for generating a variable still jump signal. 5,577,009, Cl. 369-32.000.
Takanashi, Satohiko; Yamamoto, Tetsuya; Watanabe, Tsuyoshi; and Ishikawa, Muneharu, to Kowa Company Limited. Apparatus for measuring oxygen saturation. 5,575,285, Cl. 128-633.000.
Takano, Ryouzi: *See*—
Morita, Sumie; Takano, Ryouzi; and Hatano, Takashi, 5,577,114, Cl. 379-385.000.
Takano, Yoshihiko: *See*—
Senda, Atsuo; Takano, Yoshihiko; and Morita, Kazuhiro, 5,576,053, Cl. 427-123.000.
Takao, Hideaki; Asaoka, Masanobu; and Kojima, Makoto, to Canon Kabushiki Kaisha. Chiral smectic liquid crystal device having fluorine-containing polymeric alignment film with predetermined refractive index anisotropy after rubbing. 5,576,864, Cl. 359-76.000.
Takase, Yasutaka; Watanabe, Nobuhisa; Matsui, Makoto; Ikuta, Hironori; Kimura, Teiji; Saeki, Takao; Adachi, Hideyuki; Tokumura, Tadakazu; Mochida, Hisatoshi; Akita, Yasunori; and Souda, Shigeru, to Eisai Co., Ltd. Anti-ischemic 2,4-diaminoquinazolines. 5,576,322, Cl. 514-260.000.
Takata Corporation: *See*—
Kohno, Kaname, 5,575,499, Cl. 280-741.000.
Takatori, Masahiro; Nakano, Yukio; and Ashi, Yoshihiro, to Hitachi, Ltd. Method of processing inclusively STM signals and ATM signals and switching system employing the same. 5,577,037, Cl. 370-60.100.
Takayama, Ichirou: *See*—
Arai, Michio; Ikeda, Masaaki; Sugiura, Kazushi; Furukawa, Nobuo; Kodama, Mitsufumi; Yamauchi, Yukio; Sakamoto, Naoya; Fukada, Takeshi; Hiroki, Masaaki; and Takayama, Ichirou, 5,576,222, Cl. 437-4.000.
Takayama, Takuro: *See*—
Shinbori, Hideo; Takayama, Takuro; and Akiyama, Masami, 5,575,449, Cl. 248-429.000.
Take, Shigeki; and Dekura, Shoichi, to Daiwa Seiko, Inc. Golf club with cushion material between shaft and head. 5,575,723, Cl. 473-305.000.
Takebayashi, Hiroaki; Hayashida, Kazunori; Yabe, Hisao; and Ikeda, Isao, to Koyo Seiko Co., Ltd. Rolling bearing. 5,575,571, Cl. 384-492.000.
Takebayashi, Yoichi; Tsuboi, Hiroyuki; Sadamoto, Yoichi; Yamashita, Yasuki; Nagata, Yoshifumi; Seto, Shigenobu; Shinchi, Hideaki; and Hashimoto, Hideki; to Kabushiki Kaisha Toshiba; and Toshiba Software Engineering Corp. Speech dialogue system for facilitating improved human-computer interaction. 5,577,165, Cl. 395-2.840.
Takeda Chemical Industries, Ltd.: *See*—
Akiyama, Yohko; Nagahara, Naoki; and Hirai, Shin-ichiro, 5,576,025, Cl. 424-501.000.
Hirata, Fumiaki; Nakashima, Tatsuya; and Minato, Ichiro, 5,576,412, Cl. 528-85.000.
Ichikawa, Atsushi; and Narumiya, Sbuh, 5,576,192, Cl. 435-69.100.
Kamei, Shigeru; Yamada, Minoru; and Ogawa, Yasuaki, 5,575,987, Cl. 424-451.000.
Ryoshi, Hiroto; and Okamura, Masanori, 5,575,871, Cl. 156-78.000.
Takeda, Takashi: *See*—
Ide, Takehiko; Kokubu, Hiroki; Shiramizu, Takahisa; Tanaka, Yuji; Hayama, Tetsuo; Takeda, Takashi; Fukusako, Hiroyuki; Shiba, Keisuke; Nishiyama, Akihiro; Amamoto, Norio; Nakamura, Hidehito; Egashira, Tsutomu; and Okada, Kouji, 5,575,575, Cl. 400-185.000.
Takeda, Tomoyuki: *See*—
Wada, Satoshi; Yoshida, Takehiro; Ono, Takeshi; Takeda, Tomoyuki; Kondo, Masaya; Kobayashi, Makoto; Kato, Takahiro; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Yamada, Masakatsu, 5,576,751, Cl. 347-217.000.
Takeda, Toshihiko; Nomura, Ichiro; Kaneko, Tetsuya; and Banno, Yoshikazu, to Canon Kabushiki Kaisha. Multiple electron emission device. 5,576,051, Cl. 427-77.000.
Takeda, Yukari: *See*—
Imai, Genji; Takeda, Yukari; Kogure, Hideo; and Iwasawa, Naozumi, 5,576,148, Cl. 430-314.000.
Takeguchi, Tetsuji: *See*—
Akaogi, Takao; Kawashima, Hiromi; Takeguchi, Tetsuji; Hagiwara, Ryoji; Kasa, Yasushi; Itano, Kiyoshi; Ogawa, Yasushige; and Kawamura, Shouichi, 5,576,637, Cl. 326-55.000.
Takei, Seiji; and Hara, Takehiko, to Nippon Thompson Co., Ltd. Rolling guide unit. 5,575,565, Cl. 384-45.000.

Takemoto, Tsuyoshi: *See*—
Yamamoto, Yuuji; Watanabe, Shinichi; Takemoto, Tsuyoshi; Hisanaga, Shigeru; Hukanuma, Tetsuhiko; and Yamamoto, Shinya, 5,575,635, Cl. 418-55.500.
Takemura, Hiromichi, to NSK, Ltd. Toroidal-type continuously variable transmission. 5,575,736, Cl. 476-46.000.
Takemura, Hisashi; and Tashiro, Tsutomu, to NEC Corporation. Manufacturing method of semiconductor device. 5,576,221, Cl. 437-2.000.
Takemura, Yasuhiko; Zhang, Hongyong; and Konuma, Toshimitsu, to Semiconductor Energy Laboratory Co., Ltd. Thin film semiconductor device with gate metal oxide and sidewall spacer. 5,576,556, Cl. 257-69.000.
Takemura, Yasuhiko, to Semiconductor Energy Laboratory Co., Ltd. Electro-optical device with transistors and capacitors method of driving the same. 5,576,857, Cl. 359-59.000.
Takenouchi, Masanori: *See*—
Kan, Fumitaka; Nakamura, Kenji; Takenouchi, Masanori; Hayakawa, Naoji; Shimoda, Isamu; and Okunuki, Masahiko, 5,576,699, Cl. 340-825.970.
Takenouchi, Toshikazu; Hori, Kuniyuki; and Shimizu, Mitsuharu, to Shinko Electric Industries Co., Ltd. Multi-layer lead-frame for a semiconductor device. 5,576,577, Cl. 257-672.000.
Takeuchi, Kazuhiko; Kubota, Yoshihiro; Hanaoka, Takaaki; Matsuzaki, Takehiko; Sugi, Yoshihiro; Eto, Tatsuya; Hagiwara, Tokio; and Narita, Tadashi, to Director-General of Agency of Industrial Science and Technology. Method for synthesizing aromatic polymers. 5,576,417, Cl. 528-343.000.
Takeuchi, Kunie: *See*—
Fujie, Ryuto; Fujie, Hiroyuki; and Takeuchi, Kunie, 5,576,778, Cl. 351-177.000.
Takeuchi, Yoshiyasu; Hatano, Kozi; Kiyono, Masaki; Yasukohchi, Ryuji; Ito, Hayashi; and Ito, Hiroyuki, to Matsushita Electric Industrial Co., Ltd. Image memory editing apparatus. 5,576,850, Cl. 358-452.000.
Takeyari, Ryoji; Funada, Takashi; Wakai, Yukihiko; and Hagimoto, Kazuo, to Hitachi, Ltd.; and Nippon Telegraph and Telephone Corporation. Optical regenerator and an optical transmission system. 5,576,876, Cl. 359-176.000.
Takiguchi, Ryohei: *See*—
Ueno, Takeshi; Nakano, Yoshinori; and Takiguchi, Ryohei, 5,576,264, Cl. 503-227.000.
Takishima, Suguru: *See*—
Kanazawa, Hiroshi; Okuda, Isao; Shinozaki, Shimpei; and Takishima, Suguru, 5,577,008, Cl. 369-13.000.
Takubo, Seiji: *See*—
Ueda, Akihiko; Takubo, Seiji; and Amimoto, Yoshio, 5,576,095, Cl. 428-224.000.
Takusagawa, Yutaka: *See*—
Nakamura, Hitoshi; Mikami, Yorihito; Takusagawa, Yutaka; and Wakasa, Tsutomu, 5,576,254, Cl. 501-100.000.
Talieh, Homayoun; and Weldon, David E., to Ontrak Systems, Inc. Polishing pad cluster for polishing a semiconductor wafer. 5,575,707, Cl. 451-173.000.
Tam, Man C.: *See*—
Zwartz, Edward G.; Jennings, Carol A.; Tam, Man C.; Soden, Philip H.; Jones, Arthur Y.; Pundsack, Arnold L.; Levy, Enrique; Hor, Ah-Mee; Limburg, William W.; Yanus, John F.; Pai, Damodar M.; and Renfer, Dale S., 5,576,129, Cl. 430-41.000.
Tamada, Osamu: *See*—
Yabe, Hisao; Suzuki, Akira; Yamazaki, Minoru; Ito, Hideo; Iida, Yoshihiro; Tashiro, Yoshio; Tamada, Osamu; and Ishii, Hiroshi, 5,575,752, Cl. 600-121.000.
Yabe, Hisao; Iida, Yoshihiro; Suzuki, Akira; Itoh, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; and Tamada, Osamu, 5,575,753, Cl. 600-123.000.
Tamarack Telecom, Inc.: *See*—
Kuo, Shih-Hung, 5,576,897, Cl. 359-822.000.
Tamura, Fumio; Saito, Tsuyoshi; Mitsuhashi, Satoshi; Matsudaira, Tadahiro; and Asano, Kiro, to Kureha Chemical Industry Co., Ltd. Estradiol derivative-chlorambucil conjugate, process for preparing the same, and pharmaceutical composition. 5,576,309, Cl. 514-178.000.
Tamura, Hidehiko: *See*—
Tanaka, Tadashi; Tamura, Hidehiko; Hiramatsu, Nobutaka; Egami, Toshio; and Abe, Teruo, 5,575,634, Cl. 418-55.400.
Tamura, Hideo, to Canon Kabushiki Kaisha. Recording head with through-hole wiring connection which is disposed within the liquid chamber. 5,576,748, Cl. 347-58.000.
Tan, Shiro: *See*—
Uenishi, Kazuya; Tan, Shiro; Kawabe, Yasumasa; and Kokubo, Tadayoshi, 5,576,139, Cl. 430-192.000.
Tanaami, Masato: *See*—
Suenaga, Tatsuo; Nakagawa, Hiroaki; Terauchi, Shin; Kikuchi, Takeo; Aiba, Shinnosuke; Kobayashi, Mikio; Katsuta, Yutaka; Ago, Kenji; Kosuge, Katsumi; Matsubara, Yasuyuki; Tanaami, Masato; Sugishita, Shunichi; Ikeda, Hideki; Furuya, Toshio; Akihama, Shigeyuki; and Arai, Takahiro, 5,575,870, Cl. 156-71.000.
Tanabe, Takashi; Kamemaru, Toshihisa; Katoh, Mamoru; Ohno, Tsugihiko; Hatashita, Toyohito; and Abe, Kaoru, to Mitsubishi Denki Kabushiki Kaisha. Majority circuit, a controller and a majority LSI. 5,577,199, Cl. 395-183.130.
Tanabe, Tetsuya: *See*—
Tanoi, Satoru; Tanaka, Yasuhiro; and Tanabe, Tetsuya, 5,577,223, Cl. 395-445.000.
Tanaka, Chiaki; Sasaki, Masaomi; Aruga, Tamotsu; Shimada, Tomoyuki; and Adachi, Hiroshi, to Ricoh Company, Ltd. Electrophotographic photoconductor comprising pyrenylamine derivative. 5,576,132, Cl. 430-59.000.
Tanaka, Etsuo: *See*—
Kai, Tadao; Katayama, Akira; and Tanaka, Etsuo, 5,576,787, Cl. 396-55.000.
Tanaka, Hirohisa; Kato, Kazuhiro; and Miyawaki, Youichi, to Sumitomo Electric Industries, Ltd. Vehicle braking force controller. 5,575,542, Cl. 303-125.000.
Tanaka, Hirokazu: *See*—
Kobayashi, Masakazu; Ohtsuka, Kazuyuki; Tanaka, Hirokazu; and Niwa, Mineo, 5,576,183, Cl. 435-721.000.
Tanaka, Hiromi: *See*—
Kurihara, Makoto; Ishihara, Kazuhiko; Hotta, Kyoko; Tanaka, Hiromi; and Shimauchi, Shiro, 5,576,182, Cl. 435-7.900.
Tanaka, Hiroshi: *See*—
Yokomizo, Kenji; Tanaka, Hiroshi; Mokuo, Shori; and Minami, Teruomi, 5,575,079, Cl. 34-78.000.
Tanaka, Kazumi, to Mitsubishi Gas Chemical Company, Inc. Method for drying polyamide and method for solid-phase polymerization of polyamide. 5,576,415, Cl. 528-310.000.
Tanaka, Masahiro; and Itado, Masaharu, to Sharp Kabushiki Kaisha. Communication apparatus for use with public telephone network. 5,577,106, Cl. 379-93.000.
Tanaka, Shinri: *See*—
Sugita, Shuichi; Tanaka, Shinri; Suzuki, Takatugu; and Kaneko, Manabu, 5,576,166, Cl. 430-555.000.
Tanaka, Shinya: *See*—
Fukuda, Kanako; Yamaguchi, Tetsuo; Tanaka, Shinya; and Sasaki, Manji, 5,576,365, Cl. 524-117.000.
Tanaka, Sigeya: *See*—
Itagaki, Tsuguo; Tomita, Hideo; and Tanaka, Sigeya, 5,576,773, Cl. 348-734.000.
Tanaka, Tadashi; Tamura, Hidehiko; Hiramatsu, Nobutaka; Egami, Toshio; and Abe, Teruo, to Daido Metal Company Ltd. Sealing material for scroll-type compressor. 5,575,634, Cl. 418-55.400.
Tanaka, Tetsuya: *See*—
Yoshimura, Hironori; Tanaka, Tetsuya; Osada, Akira; and Sudo, Toshikatsu, 5,576,093, Cl. 428-216.000.
Tanaka, Toshiaki: *See*—
Ikeda, Takatoshi; Tanaka, Toshiaki; and Sato, Sanpei, 5,575,349, Cl. 180-68.100.
Tanaka, Tsunefumi; Ogawa, Hideki; and Endo, Hiroshi, to Canon Kabushiki Kaisha. Zoom lens. 5,576,890, Cl. 359-686.000.
Tanaka, Yasuhiro: *See*—
Tanoi, Satoru; Tanaka, Yasuhiro; and Tanabe, Tetsuya, 5,577,223, Cl. 395-445.000.
Tanaka, Yuji: *See*—
Ide, Takehiko; Kokubu, Hiroki; Shiramizu, Takahisa; Tanaka, Yuji; Hayama, Tetsuo; Takeda, Takashi; Fukusako, Hiroyuki; Shiba, Keisuke; Nishiyama, Akihiro; Amamoto, Norio; Nakamura, Hidehito; Egashira, Tsutomu; and Okada, Kouji, 5,575,575, Cl. 400-185.000.
Tanca, Michael C.: *See*—
Hartman, Ernest L.; and Tanca, Michael C., 5,575,086, Cl. 34-585.000.
Tandem Computers Incorporated: *See*—
Harinarayan, Venkatesh; Murthy, Srinivasa D.; and Rowe, Alan L., 5,577,261, Cl. 395-800.000.
Lin, William, 5,577,237, Cl. 395-555.000.
McCline, Matthew C.; and Lyon, James M., 5,576,945, Cl. 364-131.000.
Tang, Jian Q.: *See*—
Melançon, Serge B.; Labuda, Damian; Tang, Jian Q.; and Vanasse, Michel, 5,576,180, Cl. 435-6.000.
Tang, Ping W.; Cowan, Stanley W.; Decker, David J.; and Corcoran, Daniel E., to Eastman Kodak Company. Photographic dye-forming coupler, emulsion layer, element, and process. 5,576,150, Cl. 430-386.000.
Tani, Nobutaka: *See*—
Iritani, Koji; Kawasaki, Tetsuya; Tani, Nobutaka; Masuda, Shigeki; and Yano, Yoshiaki, 5,576,020, Cl. 424-465.000.
Taniguchi, Kazuko: *See*—
Osawa, Izumi; Taniguchi, Kazuko; and Yamamoto, Masashi, 5,576,807, Cl. 355-219.000.
Taniguchi, Kenichi: *See*—
Nakamura, Tokuji; Taniguchi, Kenichi; Shuto, Hiroki; and Ohta, Yoshinobu, 5,575,058, Cl. 29-748.000.
Ohta, Yoshinobu; Taniguchi, Kenichi; and Ohnishi, Hideo, 5,575,060, Cl. 29-749.000.
Taniguchi, Yukinobu: *See*—
Tonomura, Yoshinobu; Akutsu, Akihito; Taniguchi, Yukinobu; Suzuki, Gen; and Kishimoto, Tomio, 5,576,950, Cl. 364-514.00A.
Tanii Industries Co., Ltd.: *See*—
Tanii, Kiyoshi, 5,575,426, Cl. 241-3.000.
Tanii, Kiyoshi, to Tanii Industries Co., Ltd. Process for disposing raw concrete sludge, apparatus for disposing the same, and aggregate forming apparatus using the same sludge. 5,575,426, Cl. 241-3.000.
Tanioka, Hiroshi; and Yamada, Yasuhiro, to Canon Kabushiki Kaisha. Image processing apparatus. 5,577,136, Cl. 382-270.000.
Tanoi, Satoru; Tanaka, Yasuhiro; and Tanabe, Tetsuya, to Oki Electric Industry Co., Ltd. Dynamic random access memory (DRAM) with cache and tag. 5,577,223, Cl. 395-445.000.
Tantraporn, Wirojana, to Premier Global Corporation Ltd. Circuit for converting solar energy into AC power. 5,576,533, Cl. 250-214.00R.

Tao, Robert C.: *See*—
Yoshimura, Norman N.; Barbul, Adrian; Tao, Robert C.; Storm, Michael C.; Kelley, Robert E.; and Reis, Brenda L., 5,576,351, Cl. 514-565.000.
Targos, Tom S.: *See*—
Bunch, Henry S.; Groom, Theodore; Grosser, Frank R.; Scardera, Michael; Targos, Tom S.; and Vanover, Arthur R., 5,576,281, Cl. 510-220.000.
Tarmac Minerals, Inc.: *See*—
Kurtz, Steven C.; and Tuculescu, Michael S., 5,575,594, Cl. 405-303.000.
Tashiro, Tsutomu: *See*—
Takemura, Hisashi; and Tashiro, Tsutomu, 5,576,221, Cl. 437-2.000.
Tashiro, Yoshio: *See*—
Yabe, Hisao; Suzuki, Akira; Yamazaki, Minoru; Ito, Hideo; Iida, Yoshihiro; Tashiro, Yoshio; Tamada, Osamu; and Ishii, Hiroshi, 5,575,752, Cl. 600-121.000.
Yabe, Hisao; Iida, Yoshihiro; Suzuki, Akira; Itoh, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; and Tamada, Osamu, 5,575,753, Cl. 600-123.000.
Taso, Ye M. Tube-annexed speaker cabinet. 5,576,522, Cl. 181-199.000.
Tastemaker, Inc.: *See*—
Ellis, Larry D., 5,576,046, Cl. 426-615.000.
Tateishi, Fumikazu: *See*—
Kayashima, Kazuhiro; Tateishi, Fumikazu; Ohshima, Kiyoko; and Ikedo, Masaru, 5,575,960, Cl. 264-1.230.
Tateishi, Syuji: *See*—
Suzuki, Hiromasa; Yokota, Koji; Iijima, Tomoko; Suzuki, Tadashi; Kasahara, Koichi; and Tateishi, Syuji, 5,575,983, Cl. 423-213.500.
Tatsumi, Masayuki: *See*—
Sugimoto, Hiroyuki; Igarashi, Toshio; Nakatsuji, Yoshihiro; Tatsumi, Masayuki; Chikanari, Kenzou; and Funakoshi, Satoru, 5,576,080, Cl. 428-36.500.
Tatsumi, Robert B.: *See*—
Gay, Jonathan L.; and Tatsumi, Robert B., 5,577,189, Cl. 395-326.000.
Tayi, Apparao: *See*—
Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleiksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,575,978, Cl. 422-104.000.
Taylor, David A.: *See*—
Irving, Edward; Lunn, Robert J.; Taylor, David A.; Haines, Alan H.; and Innocenzi, John P., 5,576,461, Cl. 568-27.000.
Taylor, Donald S., to Taylor Mechanicals, Incorporated. Calibrated engine lubricant dispenser. 5,575,354, Cl. 184-7.400.
Taylor, Julian S. Relief valve trigger for relatively large diameter fluid pressure containers. 5,575,306, Cl. 137-70.000.
Taylor, Kenneth D.: *See*—
Bell, Gregory J.; Eggleston, Jeffrey L.; Grasso, Kamala J.; Kennedy, Jenifer S.; Schmaltz, Dale; and Taylor, Kenneth D., 5,575,789, Cl. 606-42.000.
Taylor Mechanicals, Incorporated: *See*—
Taylor, Donald S., 5,575,354, Cl. 184-7.400.
Taylor, Nigel H.: *See*—
Morkel, Paul R.; Desbruslais, Stephen R.; and Taylor, Nigel H., 5,576,883, Cl. 359-494.000.
Taylor, Ronald K.: *See*—
Sandusky, Donald; Taylor, Ronald K.; and Anderson, Donald L., 5,575,375, Cl. 198-358.000.
Tazartes, Daniel A.: *See*—
Flamm, Juergen K. P.; and Tazartes, Daniel A., 5,576,534, Cl. 250-227.190.
TC Manufacturing Co., Inc.: *See*—
Gebhardt, Terry D., 5,575,393, Cl. 206-554.000.
TDK Corp.: *See*—
Arai, Michio; Ikeda, Masaaki; Sugiura, Kazushi; Furukawa, Nobuo; Kodama, Mitsufumi; Yamauchi, Yukio; Sakamoto, Naoya; Fukada, Takeshi; Hiroki, Masaaki; and Takayama, Ichirou, 5,576,222, Cl. 437-4.000.
Kawasaki, Kaoru; Saitoh, Akira; Seki, Akihiko; Shimazaki, Kazuyuki; Mori, Takahiro; and Kato, Hisato, 5,576,075, Cl. 427-565.000.
Tagaya, Hideyuki; and Kuwahara, Tsuneo, 5,576,055, Cl. 427-162.000.
Utsunomiya, Hajime; Uchiyama, Kenji; Kosuda, Masanori; and Inoue, Hiroyasu, 5,577,020, Cl. 369-275.200.
Tebelskis, James A.: *See*—
Nikoonahad, Mehrdad; and Tebelskis, James A., 5,576,831, Cl. 356-375.000.
Technion Research and Development Foundation, Ltd.: *See*—
Youdim, Moussa B. H.; Finberg, John P. M.; Levy, Ruth; and Yellin, Haim, 5,576,353, Cl. 514-647.000.
Teich, Kristine M.: *See*—
Cooper, Joel; Winegar-Hentges, Sally L.; Nelson, Robert P.; Schankereli, Kemal; and Teich, Kristine M., 5,575,803, Cl. 606-151.000.
Teijin Limited: *See*—
Nakatani, Kenji; Horiguchi, Toru; Ishimaru, Junichi; and Hara, Hiroshi, 5,577,021, Cl. 369-275.200.
Sumi, Yoshihiko; Ichikawa, Yataro; Aoki, Nobuo; and Muramatsu, Masami, 5,576,193, Cl. 435-69.200.
Tektronix, Inc.: *See*—
Boehlke, Kenneth A., 5,576,652, Cl. 327-254.000.
Frisch, Arnold M.; and Almy, Thomas A., 5,576,657, Cl. 327-543.000.
Telcom Semiconductor, Inc.: *See*—
Caliboso, Amado A.; and Dabney, S. Fred, Jr., 5,576,628, Cl. 324-678.000.
Telectro-Mek, Inc.: *See*—
Russ, Daniel G., deceased; and Haddad, Karl I., 5,576,482, Cl. 73-61.430.
Teledyne Princeton, Inc.: *See*—
Dubosh, William R.; Mauck, John R.; Neagle, Paul W.; and Wilson, Lonnie A., 5,575,604, Cl. 414-462.000.
Teleflex Incorporated: *See*—
Simon, Edward C., 5,575,180, Cl. 74-502.400.
Telefonaktiebolaget L M Ericsson: *See*—
Westerlund, Ewa C., 5,577,055, Cl. 371-51.100.
Telefonaktiebolaget LM Ericsson: *See*—
Diachina, John W.; Andersson, Håkan C.; and Persson, Bengt, 5,577,046, Cl. 370-95.200.
Erhage, Lars, 5,576,665, Cl. 331-14.000.
Foti, George, 5,577,103, Cl. 379-59.000.
Persson, Bengt; Eriksson, Håkan; and Bodin, Roland, 5,577,047, Cl. 370-95.300.
Telemac Cellular Corporation: *See*—
McGregor, Donald S.; and McGregor, Gregory M., 5,577,100, Cl. 379-58.000.
Teles, Joaquim H.: *See*—
Rieber, Norbert; and Teles, Joaquim H., 5,576,462, Cl. 568-341.000.
Telstra Corporation Limited: *See*—
Frisken, Steven J., 5,577,057, Cl. 372-18.000.
Temic Telefunken microelectronic GmbH: *See*—
Genzel, Michael; Möller, Rodolfo; Tonn, Armin; Kuster, Willem; and Leicht, Andreas, 5,576,961, Cl. 364-431.030.
Tencor Instruments: *See*—
Nikoonahad, Mehrdad; and Tebelskis, James A., 5,576,831, Cl. 356-375.000.
Teo, Tat-Jin; and Klepper, John R., to Siemens Medical Systems, Inc. Coarse-fine ultrasound transducer array for medical imaging. 5,575,290, Cl. 128-661.100.
Teplow, David B.: *See*—
Strobel, Gary A.; Harrison, Leslie A.; and Teplow, David B., 5,576,298, Cl. 514-15.000.
Terai, Yuka: *See*—
Yano, Kousaku; Endo, Masayuki; Terai, Yuka; Nomura, Noboru; Murakami, Tomoyasu; Ueda, Tetsuya; and Ueda, Satoshi, 5,576,247, Cl. 437-225.000.
Teramura, Nobuo: *See*—
Sugiura, Sakao; Kawabata, Osamu; and Teramura, Nobuo, 5,575,836, Cl. 96-82.000.
Terasawa, Noriho, to Fuji Electric Co., Ltd. Semiconductor conversion device. 5,576,575, Cl. 257-503.000.
Terashima, Hiroshima: *See*—
Garfunkel, Glen A.; Salo, Mike P.; Aoyagi, Akihiko; Yanagisawa, Hiroshi; Terashima, Hiroshima; and Kuroki, Kenji, 5,576,908, Cl. 360-66.000.
Terauchi, Shin: *See*—
Suenaga, Tatsuo; Nakagawa, Hiroaki; Terauchi, Shin; Kikuchi, Takeo; Aiba, Shinnosuke; Kobayashi, Mikio; Katsuta, Yutaka; Ago, Kenji; Kosuge, Katsumi; Matsubara, Yasuyuki; Tanaami, Masato; Sugishita, Shunichi; Ikeda, Hideki; Furuya, Toshio; Akihama, Shigeyuki; and Arai, Takahiro, 5,575,870, Cl. 156-71.000.
Terhune, James H.; and Gordon, Barry M., to General Electric Company. Method and apparatus for electro-protection of piping systems and reactor-internals from stress corrosion cracking. 5,577,083, Cl. 376-372.000.
Terrell, Jamie B., to Halliburton Company. Chemical cutter. 5,575,331, Cl. 166-55.000.
Terry, Douglas B.: *See*—
Demers, Alan J.; Petersen, Karin; Spreitzer, Michael J.; Terry, Douglas B.; Theimer, Marvin M.; and Welch, Brent B., 5,577,240, Cl. 395-608.000.
Teschendorf, Brian P.; Kellie, Truman F.; Moe, Edward J.; Kolb, W. Blake; Brophy, Joseph T.; Milbourn, Thomas M.; Lang, Arthur V.; Larson, Donald H.; Goenaga, Alberto; Jensen, Steven C.; and Watson, John D., to Minnesota Mining and Manufacturing Company. Development apparatus for a liquid electrographic imaging system. 5,576,815, Cl. 355-256.000.
Tesma International, Inc.: *See*—
Cerny, Zdenek, 5,575,728, Cl. 474-170.000.
Tessier, Noel J.: *See*—
Broderick, John F.; Tessier, Noel J.; Heafey, Michael S.; and Kocsik, Michael T., 5,576,710, Cl. 342-1.000.
Testa, Vincent J.: *See*—
Hawkins, H. Gene; Testa, Vincent J.; and Hacker, Randall L., 5,575,694, Cl. 439-825.000.
Tether, Dave: *See*—
Edwards, Jonathan; and Tether, Dave, 5,575,730, Cl. 475-5.000.
Tetra Laval Holdings & Finance S.A.: *See*—

Annehed, Stefan; Mitsuishi, Hisami; Schott, Erik; Skonieczny, Dean C.; and Svensson, Par J., 5,575,884, Cl. 156-580.100.

Teva Pharmaceutical Industries Ltd.: *See—*
Youdim, Moussa B. H.; Finberg, John P. M.; Levy, Ruth; and Yellin, Haim, 5,576,353, Cl. 514-647.000.

Texaco Chemical Inc.: *See—*
Preston, Kyle L., 5,576,464, Cl. 568-697.000.

Texaco Inc.: *See—* .
Marrelli, John D.; and Siddiqui, Farhan, 5,576,974, Cl. 364-554.000.
Sudhaker, Chakka; Dolfinger, Frank, Jr.; and Cesar, Max R., 5,576,261, Cl. 502-185.000.

Texas Fluorescence Laboratories, Inc.: *See—*
Poenie, Martin F.; and Minta, Akwasi, 5,576,433, Cl. 544-369.000.

Texas Instruments Incorporated: *See—*
Caldwell, Shirley Y.; and Varley, Jerry M., 5,575,136, Cl. 53-492.000.
Choate, William C., 5,576,964, Cl. 364-456.000.
De Wit, Michiel, 5,576,708, Cl. 341-118.000.
Guldi, Richard L., 5,576,230, Cl. 437-41.000.
Henck, Steven A., 5,576,878, Cl. 359-224.000.
Hutter, Louis N.; and Erdeljac, John P., 5,576,233, Cl. 437-43.000.
Marshall, Andrew; and Kwan, Stephen C., 5,576,615, Cl. 323-284.000.
Mehrad, Freidoon, 5,576,992, Cl. 365-185.240.
Mori, Kiyoshi, 5,576,567, Cl. 257-316.000.
Morris, John O., 5,577,052, Cl. 371-22.500.
Rountree, Robert N.; Cline, Dan; Walker, Darryl G.; Hii, Francis; and Bergman, David W., 5,576,633, Cl. 326-10.000.
Summerfelt, Scott R.; Beratan, Howard R.; Kirlin, Peter S.; and Gnade, Bruce E., 5,576,928, Cl. 361-321.100.
Whetsel, Lee D., 5,576,980, Cl. 364-579.000.

Texel Inc.: *See—*
Scheubel, Gerard, 5,575,112, Cl. 47-78.000.

TexSEM Laboratories, Inc.: *See—*
Dingley, David J., 5,576,543, Cl. 250-311.000.

Thanawala, Ashish: *See—*
Sharma, Raghu; Davis, Jeffrey P.; Gunn, Timothy D.; Li, Ping; Maitra, Sidhartha; Thanawala, Ashish; and Young, Steve, 5,577,041, Cl. 370-79.000.

Theard, Leslie P.: *See—*
Wang, James H.; Rosendale, David; Kurkov, Victor P.; Theard, Leslie P.; Ching, Ta Y.; Compton, Lewis R.; Palmgren, Tor H. G.; and Eichelberger, Mitchell P., 5,576,396, Cl. 525-367.000.

Theimer, Marvin M.: *See—*
Demers, Alan J.; Petersen, Karin; Spreitzer, Michael J.; Terry, Douglas B.; Theimer, Marvin M.; and Welch, Brent B., 5,577,240, Cl. 395-608.000.

Theis, Peter F. System for recognizing or counting spoken itemized expressions. 5,577,163, Cl. 395-2.420.

Therex Corporation: *See—*
Melsky, Gerald S.; and Enegren, Bradley J., 5,575,770, Cl. 604-93.000.

Therm-O-Disc, Incorporated: *See—*
Rose, Derek J., 5,576,683, Cl. 337-333.000.

Thermador Corporation: *See—*
Witham, David L.; and Barbato, Michael W., 5,575,638, Cl. 431-73.000.

Thermwood Corporation: *See—*
Susnjara, Kenneth J., 5,575,318, Cl. 144-2.100.

Thian-Chye Ho: *See—*
Chung, Chih-Yin, 5,575,731, Cl. 475-307.000.

Thiele, Heino: *See—*
Kempter, Fritz E.; Niessner, Manfred; Diener, Ralph; Thiele, Heino; Weiss, Wolfram; and Renz, Hans, 5,576,386, Cl. 526-88.000.

Thoen, Christiaan A. J. K.: *See—*
Johnston, James P.; Labeque, Regine; Lenoir, Pierre M. A.; Thoen, Christiaan A. J. K.; and McIver, John M., 5,576,283, Cl. 510-321.000.

Tholey, Valérie: *See—*
Chawki, Mouhammad J.; Tholey, Valérie; and Le Gac, Ivan, 5,576,875, Cl. 359-125.000.

Thomas, Bruce A. Portable, hand-operated hoist. 5,575,517, Cl. 294-1.100.

Thompson, Dennis C.: *See—*
Krushinski, Joseph H., Jr.; Rasmussen, Kurt; Rocco, Vincent P.; Schaus, John M.; and Thompson, Dennis C., 5,576,321, Cl. 514-255.000.

Thompson, Steven R.; and LaBere, Rikki S., to Semitool, Inc. Wafer transfer apparatus. 5,575,611, Cl. 414-786.000.

Thomson Consumer Electronics, Inc.: *See—*
Lendaro, Jeffery B., 5,576,769, Cl. 348-511.000.
Rumreich, Mark F., 5,576,770, Cl. 348-525.000.

Thomson-CSF: *See—*
Bian, Gilbert; Garrec, Patrick; Lemonnier, Herve; and Louedec, Patrick, 5,576,712, Cl. 342-160.000.

Thomson-LCD: *See—*
Castleberry, Donald, 5,576,859, Cl. 359-67.000.

Thoresen, John S. Light retrieving tool for use with miniature village buildings. 5,575,052, Cl. 29-426.600.

Thrall Car Manufacturing Company: *See—*
Biegel, Robert A.; and Manyek, Peter R., 5,575,221, Cl. 105-226.000.

Thrombosis Research Institute: *See—*
Kakkar, Vijay V.; and Scully, Michael F., 5,576,304, Cl. 514-56.000.

Thurin, Jan: *See—*
Morein, Bror; Lövgren, Karin; Dalsgaard, Kristian; Thurin, Jan; and Sundquist, Bo, 5,576,004, Cl. 424-278.100.

Tiefenbacher, Karl: *See—*
Haas, Franz; Haas, Johann; and Tiefenbacher, Karl, 5,576,049, Cl. 427-389.900.

Tiefensee, Kristin; Güntherberg, Norbert; Neumann, Rainer; and Jahns, Ekkehard, to BASF Aktiengesellschaft. Transparent, impact-resistant molding materials having high stress cracking resistance and a dull surface. 5,576,385, Cl. 525-77.000.

Tien-Wang, Lin: *See—*
Wu, Jun-Da; Ting-Yen, Chen; and Tien-Wang, Lin, 5,576,688, Cl. 340-463.000.

Tietje-Girault, Jordis; Seddon, Brian J.; and McAleer, Jerome F. Method of making gas permeable membranes for amperometric gas electrodes. 5,575,930, Cl. 216-65.000.

Time Warner Entertainment Co., L.P.: *See—*
Cookson, Christopher J.; Ostrover, Lewis S.; and Lieberfarb, Warren N., 5,576,843, Cl. 386-97.000.

Timex Corporation: *See—*
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Timko, Mark; and Rodgers, Scott D., to Intel Corporation. Method and apparatus for preforming memory segment limit violation checks. 5,577,219, Cl. 395-411.000.

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Toyama, Toshimasa; and Uematsu, Akihiko, 5,576,813, Cl. 355-251.000.

Uenaka, Akimitsu: *See*—
Ueno, Tasaburo; Uenaka, Akimitsu; Gohji, Harunori; Toyoda, Yuji; and Tsutsui, Kouichi, 5,576,389, Cl. 525-119.000.

Uenishi, Kazuya; Tan, Shiro; Kawabe, Yasumasa; and Kokubo, Tadayoshi, to Fuji Photo Film Co., Ltd. Positive type photoresist composition comprising a novolak resin made with a silica-magnesia solid catalyst. 5,576,139, Cl. 430-192.000.

Ueno, Takeshi; Nakano, Yoshinori; and Takiguchi, Ryohei, to Dai Nippon Printing Co., Ltd. Receiving-layer transfer sheet. 5,576,264, Cl. 503-227.000.

Ueno, Tasaburo; Uenaka, Akimitsu; Gohji, Harunori; Toyoda, Yuji; and Tsutsui, Kouichi, to Nippon Paint Co., Ltd. Powder coating composition. 5,576,389, Cl. 525-119.000.

Uesugi, Ryuji: *See*—
Kurimoto, Tetsuya; Uesugi, Ryuji; and Haraguchi, Tsuyoshi, 5,576,795, Cl. 396-626.000.

Ueyama, Masayuki: *See*—
Kuwana, Minoru; Miyano, Masaaki; Miyazawa, Masayuki; Ueyama, Masayuki; and Suzuki, Shinichi, 5,576,894, Cl. 359-701.000.

Ukai, Yasuhiro; Sunata, Tomihisa; and Inada, Toshiya, to Hosiden Corporation. Gray scale LCD control capacitors formed between a control capacitor electrode on one side of an insulating layer and two subpixel electrodes on the other side. 5,576,858, Cl. 359-59.000.

Ukai, Yasuhiro: *See*—

Aoki, Shigeo; Ukai, Yasuhiro; Sunata, Tomihisa; Nakagawa, Takanobu; and Shibazaki, Minoru, 5,576,863, Cl. 359-76.000.

Ukaji, Ryoji: *See*—
Narazaki, Norio; Kayano, Yoshihiro; Itagaki, Yuko; and Ukaji, Ryoji, 5,576,086, Cl. 428-131.000.

Umehara, Teruo, to Hitachi Metals, Ltd. Swing-type actuator. 5,576,583, Cl. 310-13.000.

Umemura, Heihachiro, to Shinkoh Electric Co., Ltd. Push button detent or retaining mechanism for push button switch. 5,576,525, Cl. 200-539.000.

Umezaki, Hiroshi; Oki, Yasuyuki; and Shimada, Ken, to Sumitomo Chemical Company, Limited. Method for producing silica-alumina fiber. 5,575,964, Cl. 264-60.000.

Umezawa, Katsushi, to Usui Kokusai Sangyo Kaisha Ltd. Pipe joint. 5,575,512, Cl. 285-319.000.

Uniden Corporation: *See*—
Sato, Kazunori; Warabi, Hironori; Nakano, Yasuyoshi; and Yamazaki, Kenji, 5,577,076, Cl. 375-346.000.

Uniglo Canada Inc.: *See*—
Anderson, Robert A., 5,575,459, Cl. 362-240.000.

Unilearn, Inc.: *See*—
Anderson, Ronald K.; Benson, Duane F.; Crock, Michael K.; Hack, Bruinc R.; Howard, James E.; McKaig, Ray S.; and Peers, John, 5,576,844, Cl. 386-52.000.

Union Carbide Chemicals & Plastics Technology Corporation: *See*—
Caronia, Paul J.; and Shurott, Salvatore F., 5,575,965, Cl. 264-171.170.
Keogh, Michael J.; and Brown, Geoffrey D., 5,575,952, Cl. 252-404.000.

Unisys Corporation: *See*—
Alferness, Merwin H.; Kuslak, John S.; Vasquez, Mark A.; Kerzman, Joseph P.; and Collins, Eric S., 5,577,259, Cl. 395-800.000.
Card, Daniel C.; and Dickson, Kevin A., 5,576,698, Cl. 340-825.520.
Chan, Patrick C. S.; and Whitlock, Gary C., 5,577,201, Cl. 395-185.100.
Russ, Craig F., 5,577,212, Cl. 395-250.000.
Tranquilla, Michael N., 5,575,466, Cl. 271-10.030.
Wu, Gary C.; Leibowitz, Steven H.; and Pawar, Chandra S., 5,576,982, Cl. 364-715.100.

United Biscuits (UK) Limited: *See*—
Clow, Andrew E. C.; and Hill, Brian D., 5,576,041, Cl. 426-439.000.

United Microelectronics Corporation: *See*—
Chang, Tsun-Tsai; Liu, Vicent; and Liu, Ming-Tsung, 5,576,236, Cl. 437-48.000.
Chen, Ancheor; and Hong, Gary, 5,576,228, Cl. 437-35.000.
Fu, Chien-Chih, 5,576,238, Cl. 437-52.000.
Hong, Gary, 5,576,232, Cl. 437-43.000.
Hong, Gary; Hsue, Chen-Chiu; and Chung, Chen-Hui, 5,576,235, Cl. 437-48.000.
Hong, Gary, 5,576,574, Cl. 257-408.000.
Hong, Gary, 5,576,993, Cl. 365-185.290.
Hsu, Chen-Chung, 5,576,227, Cl. 437-35.000.
Ker, Ming-Dou; Wu, Chung-Yu; Chang, Hun-Hsien; Lee, Chung-Yuan; and Ko, Joe, 5,576,557, Cl. 257-173.000.
Liu, Ming-Hua, 5,576,242, Cl. 437-191.000.
Su, Kuan-Cheng; and Sheu, Shing-Ren, 5,576,573, Cl. 257-391.000.
Yang, Sheng-Hsing; and Lin, Jyn-Kuang, 5,576,569, Cl. 257-321.000.

United Solar Systems Corporation: *See*—
Younan, Kais; and Glatfelter, Troy, 5,575,861, Cl. 136-251.000.

United States Department of Energy: *See*—
Colella, Nicholas J.; and Kimbrough, Joseph R., 5,576,561, Cl. 257-217.000.

United States of America
Agriculture: *See*—
Soltis, Lawrence A.; Ross, Robert J.; and von Segen, William W., 5,575,117, Cl. 49-460.000.
Air Force: *See*—
Gervais, James R.; and Lambert, Walter S., 5,575,441, Cl. 244-135.00R.
Army: *See*—
Bustillos, Manuel D., 5,576,722, Cl. 343-882.000.
Dykas, Glen D.; and Lam, Daniel G., 5,575,693, Cl. 439-773.000.
Korpi, John G., 5,576,508, Cl. 89-36.010.
Health and Human Services: *See*—
Reitz, Marvin S., Jr.; Franchini, Genoveffa; Markham, Phillip D.; Gallo, Robert C.; Lori, Franco C.; Popovic, Mikulas; and Gartner, Suzanne, 5,576,000, Cl. 424-188.100.
Walther, McClellan M.; DeLaney, Thomas F.; Harrington, Frank; Smith, Paul D.; and Friauf, Walter S., 5,575,751, Cl. 600-104.000.
National Aeronautics and Space Administration: *See*—
Bozeman, Richard J., Jr., 5,576,491, Cl. 73-491.000.
Caplan, Maggie L.; Stoakley, Diane M.; and St. Clair, Anne K., 5,575,955, Cl. 252-514.000.
Kleinberg, Leonard L., 5,576,663, Cl. 330-306.000.
Sheplak, Mark; McGinley, Catherine B.; Spina, Eric F.; Stephens, Ralph M.; Hopson, Purnell, Jr.; and Cruz, Vincent B., 5,576,488, Cl. 73-204.260.
Navy: *See*—
Kosakowski, John; Chu, William; Foster, Kelly W.; Marrian, Christie R. K.; and Peckerar, Martin C., 5,575,888, Cl. 156-651.100.
Tai, Tsze C., 5,575,442, Cl. 244-198.000.

U.S. Philips Corporation: *See*—
Hansen, Peter; Mergel, Dieter; and Raasch, Detlef, 5,576,100, Cl. 428-332.000.
Köhl, Peter; Lünter, Heinz; Rinneburger, Klaus; and Rückert, Manfred, 5,575,163, Cl. 70-58.000.
Kämmler, Georg; and Müller, Stefan, 5,575,433, Cl. 242-358.000.
Oddou, Christophe, 5,577,131, Cl. 382-173.000.
Ridgers, Timothy J., 5,576,616, Cl. 323-314.000.
Van Houwelingen, Dirk; Damsteegt, Johannes A. G. P.; and Compen, Johannes M. A. A., 5,576,050, Cl. 427-64.000.
Wilkens, Bernardus F. R. I., 5,576,919, Cl. 61-13.000.

U.S. Robotics, Inc.: *See*—
Baum, Marc S.; Suffern, Robert C.; Balton, Donald; Schoo, Daniel L.; Jankus, Peter P.; Tzeng, Lih-Shyng; and Jones, Terrel, 5,577,105, Cl. 379-93.000.

United States Surgical Corporation: *See*—
Bolanos, Henry; and Viola, Frank J., 5,575,799, Cl. 606-139.000.

United Technologies Automotive, Inc.: *See*—
Poleschuk, LeRoy A.; Wright, James B.; and Jesselson, Dale R., 5,575,177, Cl. 74-484.00R.

United Technologies Automotive Systems, Inc.: *See*—
Faloon, Michael D.; Hess, Arthur W.; and Jackson, Carmen P., 5,575,552, Cl. 362-83.100.

United Technologies Corporation: *See*—
Chen, Otis Y.; Seow, Kim C.; and Lim, Choo B., 5,575,858, Cl. 134-3.000.
Grout, Dennis L.; Brochu, Francis P.; and Burke, James J., Jr., 5,575,607, Cl. 414-589.000.
McGonigle, Kevin P.; Ferraro, John; and Cycon, James P., 5,575,438, Cl. 244-13.000.
Nikkanen, John P., 5,575,147, Cl. 60-226.200.
Phalin, Mark C., 5,576,492, Cl. 73-634.000.

Universal Data Incorporated: *See*—
Hagerty, Joseph J., 5,576,530, Cl. 235-472.000.

Universidad Nacional Autonoma de Mexico (UNAM): *See*—
Azuara, Lena R., 5,576,326, Cl. 514-292.000.

Universities Research Association, Inc.: *See*—
Beverly, Leon H.; Hance, Richard D.; Kristalinski, Alexandr L.; and Visser, Age T., 5,576,942, Cl. 363-39.000.

University of British Columbia, The: *See*—
Wu, Chiu H.; Oikarinen, Juhani I.; Matstoms, Bo; and Powrie, William D., 5,575,418, Cl. 229-3.50R.

University of California, Office of Technology Transfer, The Regents of the: *See*—
Benicewicz, Brian C.; Douglas, Elliot P.; and Hjelm, Rex P., Jr., 5,575,949, Cl. 252-299.010.

University of California, The Regents of the: *See*—
Adams, Melanie; Romeo, Joseph; Peterlin, Boris M.; and Busch, Michael P., 5,576,176, Cl. 435-5.000.
Bredesen, Dale E., 5,576,209, Cl. 435-240.200.
McEwan, Thomas E., 5,576,627, Cl. 324-639.000.
Yu, Conrad M.; and Hui, Wing C., 5,575,929, Cl. 216-10.000.

University of Central Florida: *See*—
Driscoll, Jim, 5,576,954, Cl. 395-603.000.
Richardson, Martin; Kado, Masataka; Gabel, Kai; and Jin, Feng, 5,577,091, Cl. 378-119.000.

University of Florida: *See*—
Abela, George S.; Friedl, Stephan E.; and Mathews, Eric D., 5,575,787, Cl. 606-15.000.
Butler, Jerry F.; Marin, Anna B.; Warren, Craig B.; Wilson, Richard A.; and Mookherjee, Braja D., 5,576,011, Cl. 424-411.000.
Warren, Craig B.; Marin, Anna B.; Butler, Jerry F.; and Narula, Anubhav P. S., 5,576,010, Cl. 424-408.000.

University of Kansas, The: *See*—
Stetler, Dean A., 5,576,186, Cl. 435-7.920.

University of Maryland: *See*—
Hansen, J. Norman, 5,576,420, Cl. 530-324.000.

University of Michigan, Board of Regents Acting for and on Behalf of the: *See*—
Dressman, Jennifer B.; Reppas, Christos; Tobey, Stephen W.; and Sowle, Cynthia W., 5,576,306, Cl. 514-57.000.

University of Michigan, Regents of the: *See*—
Ribbens, William B.; and Park, Jaehong, 5,576,963, Cl. 364-431.080.

University of Minnesota, Regents of the: *See*—
Fields, Gregg B., 5,576,419, Cl. 530-322.000.

University of Pennsylvania: *See*—
Cohn, Mildred, 5,576,316, Cl. 514-218.000.

University of Pennsylvania, The Trustees of the: *See*—
Emanuel, Beverly S.; Budarf, Marcia L.; and Driscoll, Deborah, 5,576,178, Cl. 435-6.000.

University of South Florida: *See*—
Athan, Stephan P.; and Scharf, John E., 5,575,284, Cl. 128-633.000.
Clarke, Laurence P.; Qian, Wei; and Kallergi, Maria, 5,576,548, Cl. 250-369.000.

University of Utah: *See*—
Vogelstein, Bert; Kinzler, Kenneth W.; White, Raymond; and Nakamura, Yusuke, 5,576,422, Cl. 530-350.000.

Uniweld Products, Inc.: *See*—
Pearl, David S., II, 5,575,639, Cl. 431-123.000.

Uno, Kousuke: *See*—
Aoki, Yasushi; Kayano, Minoru; and Uno, Kousuke, 5,576,969, Cl. 364-491.000.

Uno, Tadao. Apparatus for stacking bundles of sheets. 5,575,612, Cl. 414-788.900.

Unsworth, Robert G.: *See—*
Haller, Brian R.; Unsworth, Robert G.; and Parker, Geoffrey L. M., 5,575,620, Cl. 415-192.000.

Unverferth Manufacturing Company, Inc.: *See—*
Smith, David R.; Kepple, Robert; and McWilliams, Dennis, 5,575,225, Cl. 111-174.000.

Uochi, Hideki: *See—*
Zhang, Hongyong; Uochi, Hideki; Adachi, Hiroki; Koyama, Itaru; and Yamazaki, Shunpei, 5,576,225, Cl. 437-21.000.

Urano, Fumiyoshi; Oono, Keiji; Matsuda, Hiroshi; Endo, Masayuki; and Kobayashi, Satoshi, to Wako Pure Chemical Industries, Ltd.; and Matsushita Electric Industrial Co., Ltd. Deep ultraviolet absorbent composition. 5,576,359, Cl. 523-400.000.

Urano, Yuichi: *See—*
Matsuzaki, Kazuo; Sakai, Yoshiyuki; Urano, Yuichi; Kuroda, Hidekatsu; and Amano, Akira, 5,576,986, Cl. 365-129.000.

Urgel, Jean-Claude: *See—*
Bonhomme, Jean-Phillipe; Farin, Eric; Urgel, Jean-Claude; and Fevrier, Claude, 5,575,278, Cl. 128-201.290.

Urologix, Inc.: *See—*
Reid, John M.; Kauphusman, James V.; Porter, Christopher H.; and Neilson, Bruce H., 5,575,811, Cl. 607-101.000.

Ushida, Kazuo; and Kameyama, Masaomi, to Nikon Corporation. Projection exposure apparatus. 5,576,801, Cl. 355-53.000.

Ushitora, Akihiro; and Shimizu, Osamu, to Ebara Corporation. Vacuum valve. 5,575,454, Cl. 251-61.500.

Usui Kokusai Sangyo Kaisha Ltd.: *See—*
Kikuchi, Yasuhei; Hatori, Mitsuaki; and Tsuyuki, Satoshi, 5,575,368, Cl. 192-58.300.
Umezawa, Katsushi, 5,575,512, Cl. 285-319.000.

Utagawa, Ken: *See—*
Kusaka, Yosuke; and Utagawa, Ken, 5,576,797, Cl. 396-121.000.

Utah Medical Products, Inc.: *See—*
King, Eric M.; and Shirley, Ben D., 5,575,796, Cl. 606-120.000.

Utsumi, Atsuhiko: *See—*
Kitano, Kouichi; and Utsumi, Atsuhiko, 5,577,096, Cl. 379-2.000.

Utsunomiya, Hajime; Uchiyama, Kenji; Kosuda, Masanori; and Inoue, Hiroyasu, to TDK Corporation. Magneto-optical disc with intermediate film layer between a recording film and a dielectric film. 5,577,020, Cl. 369-275.200.

Uttecht, Ronald R.: *See—*
Conru, Harold W.; Froebel, Francis E.; Gregoritsch, Albert J., Jr.; Rieley, Sheldon C.; Starr, Stephen G.; Uttecht, Ronald R.; White, Eric J.; and Pohl, Jens G., 5,576,246, Cl. 437-216.000.

Uwai, Hikonosuke: *See—*
Momose, Kaoru; Kanaya, Munehide; Yoshida, Masahiko; and Uwai, Hikonosuke, 5,576,743, Cl. 347-11.000.

Uyama, Masashi; and Hidai, Yutaka, to New Media Development Association. User information management device treating communications from user as information to allow system to access and update information about user without modifying the overall system. 5,577,247, Cl. 395-611.000.

V. Kann Rasmussen Industri A/S: *See—*
Lindgren, Claes; Petersen, Flemming O.; and Vigenberg, Stig F., 5,575,115, Cl. 49-381.000.

Vacuumschmelze GmbH: *See—*
Brunner, Markus, 5,576,921, Cl. 361-93.000.

Vahldieck, Wayne. Eaves trough assembly. 5,575,118, Cl. 52-11.000.

Vaillancourt, Vincent L. Cannula for a slit septum and a lock arrangement therefore. 5,575,769, Cl. 604-86.000.

Vairin, Ken: *See—*
Vairin, Scott; and Vairin, Ken, 5,575,627, Cl. 417-252.000.

Vairin, Scott; and Vairin, Ken, to HyVair Corporation. High and low pressure two stage pump and pumping method. 5,575,627, Cl. 417-252.000.

Valdshtein, George: *See—*
Masel, Reuben; and Valdshtein, George, 5,575,196, Cl. 99-421.00V.

Valkonen, Jari: *See—*
Pehu, Eija; Pehu, Tuula; Maki-Valkama, Tuula; Valkonen, Jari; Koivu, Kimmo; and Lehto, Kirsi, 5,576,202, Cl. 435-172.300.

Valleylab Inc.: *See—*
Bell, Gregory J.; Eggleston, Jeffrey L.; Grasso, Kamala J.; Kennedy, Jenifer S.; Schmaltz, Dale; and Taylor, Kenneth D., 5,575,789, Cl. 606-42.000.

Vallier, Paul A.: *See—*
Forman, Thomas P.; Fox, Rance B.; Sabak, George E.; Sands, Timothy A.; and Vallier, Paul A., 5,576,079, Cl. 428-34.100.

Valmet Corporation: *See—*
Vuorinen, Vesa, 5,575,084, Cl. 34-460.000.

Van Reenen Steel (Proprietary) Limited: *See—*
Smit, Aadries J., 5,575,092, Cl. 37-398.000.

Vanasse, Michel: *See—*
Melançon, Serge B.; Labuda, Damian; Tang, Jian Q.; and Vanasse, Michel, 5,576,180, Cl. 435-6.000.

Van Auken, Charles L.: *See—*
Sauer, Robert J.; Van Auken, Charles L.; and Rudibaugh, John W., 5,575,222, Cl. 105-458.000.

van Biesen, Alfons J. S.: *See—*
Calleas, Julien N. R.; van Biesen, Alfons J. S.; Wolff, Bernardo; Alicke, Gerhard; Weber, Reinhold; Dietzen, Franz-Josef; and Hahn, Klaus, 5,576,094, Cl. 428-220.000.

van Buskirk, Gregory; Disch, Karl-Heinz; Friese, Carsten; Kiewert, Eva; and Middelhauve, Birgit, to Henkel Kommanditgesellschaft auf Aktien. Disinfecting cleanser for hard surfaces. 5,576,284, Cl. 510-384.000.

Vance Products Incorporated: *See—*
Jeyendran, Rajasingam S., 5,575,914, Cl. 210-445.000.

Van Daele, Georges H. P.; and Van den Keybus, Frans M. A., to Janssen Pharmaceutica N.V. N-(3-hydroxy-4-piperidinyl) (dihydrobenzofuran, dihydro-2H-benzopyran or dihydrobenzodioxin)carboxamide derivatives. 5,576,448, Cl. 549-366.000.

van de Grampel, Hendrik T.: *See—*
Bussink, Jan; Denissen, Henricus G. C.; Gijzen, Erwin M. A.; van de Grampel, Hendrik T.; Hoeks, Theodorus L.; and van Hout, Henricus H. M., 5,576,413, Cl. 528-196.000.

Vandenberg, Douglas: *See—*
Carlini, Sean M.; Smith, Lynn R.; Zangerle, Arthur J.; and Vandenberg, Douglas, 5,576,496, Cl. 73-460.000.

Van den Keybus, Frans M. A.: *See—*
Van Daele, Georges H. P.; and Van den Keybus, Frans M. A., 5,576,448, Cl. 549-366.000.

Vanderklaauw, Peter M. Apparatus and method for a modular support and lifting system. 5,575,591, Cl. 405-230.000.

Van Duzee, Barry F.; and Stone, Ralph P., to Alcon Laboratories, Inc. Stable liquid enzyme compositions and methods of use. 5,576,278, Cl. 510-114.000.

Van Dyne, G. L., II, to PROK Performance Enterprises, Inc. Quick disconnect coupling for fluid flow connections. 5,575,250, Cl. 123-184.460.

Van Dyne, Leonard A. Prosthetic joint with dynamic torque compensator. 5,575,764, Cl. 602-26.000.

van Empel, Paul C. M.: *See—*
Storm, Paul K.; and van Empel, Paul C. M., 5,576,003, Cl. 424-234.100.

Van Hoeck, Jean-Pierre: *See—*
Hallinan, E. Ann; Hagen, Timothy J.; Husa, Robert K.; Tsymbalov, Sofya; Van Hoeck, Jean-Pierre; and Lee, Albert C., 5,576,315, Cl. 514-211.000.

van Hout, Henricus H. M.: *See—*
Bussink, Jan; Denissen, Henricus G. C.; Gijzen, Erwin M. A.; van de Grampel, Hendrik T.; Hoeks, Theodorus L.; and van Hout, Henricus H. M., 5,576,413, Cl. 528-196.000.

Van Houwelingen, Dirk; Damsteegt, Johannes A. G. P.; and Compen, Johannes M. A. A., to U.S. Philips Corporation. Method of curing a film. 5,576,050, Cl. 427-64.000.

Vanover, Arthur R.: *See—*
Bunch, Henry S.; Groom, Theodore; Grosser, Frank R.; Scardera, Michael; Targos, Tom S.; and Vanover, Arthur R., 5,576,281, Cl. 510-220.000.

Van Overbeek, Michiel W. R. M., to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Tno. System for rapid convergence of an adaptive filter in the generation of a time variant signal for cancellation of a primary signal. 5,577,127, Cl. 381-71.000.

Van Phan, Dean: *See—*
Trokhan, Paul D.; and Van Phan, Dean, 5,575,891, Cl. 102-111.000.

van Soest, Cornelis J. M.; and Gingrasso, Robert R., to Kone Wood Inc. Side roller assembly for gantry crane bridge wheels. 5,575,220, Cl. 105-163.100.

Van Tol, Willem C., to Philips Electronics North America Corporation. Horizontal picture compression in widescreen television receivers. 5,576,771, Cl. 348-556.000.

Varco Shaffer, Inc.: *See—*
Whitby, Melvya F.; Sklenka, Frank L.; and O'Donnell, David L., 5,575,452, Cl. 251-1.300.

Varga, Andre; and Cripps, Harry, to Carding Specialists (Canada) Limited. Method of carding. 5,575,038, Cl. 19-98.000.

Varian Associates, Inc.: *See—*
Wells, Gregory J., 5,576,539, Cl. 250-282.000.

Varley, Jerry M.: *See—*
Caldwell, Shirley Y.; and Varley, Jerry M., 5,575,136, Cl. 53-492.000.

Varon, Kenneth S.: *See—*
Allison, Robert C.; Chan, Jonathan W.; Kurogi, Garrett I.; Semmelroth, Brian C.; Tonder, James C.; and Varon, Kenneth S., 5,575,417, Cl. 228-119.000.

Vasconcelos, Osvaldo M.: *See—*
Campanella, Vincent; and Vasconcelos, Osvaldo M., 5,576,933, Cl. 361-704.000.

Vasquez, Mark A.: *See—*
Alferness, Merwin H.; Kuslak, John S.; Vasquez, Mark A.; Kerzman, Joseph P.; and Collins, Eric S., 5,577,259, Cl. 395-800.000.

Vassiliadis, Stamatis: *See—*
Pechanek, Gerald G.; Vassiliadis, Stamatis; and Delgado-Frias, Jose G., 5,577,262, Cl. 395-890.000.

Vatland, Danny J.; and Pagel, Jeff D., to LaserMaster Corporation. High-capacity protocol for packet-based networks. 5,577,172, Cl. 395-114.000.

Vaught, James A.: *See—*

Clark, Frederick L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,575,978, Cl. 422-104.000.

Venema, Jan W.: *See—*
Bosma, Martin; Venema, Jan W.; Picken, Stephen J.; and Möhlmann, Gustaaf R., 5,576,077, Cl. 428-1.000.

Venkatesan, Mahalingam: *See—*
Beinglass, Israel; Venkatesan, Mahalingam; and Gronet, Christian M., 5,576,059, Cl. 427-255.000.

Venturello, Carlo; and Cavalotti, Claudio, to Ausimont S.r.l. Imide-aromatic peroxyacids. 5,575,947, Cl. 252-186.260.

Verifone, Inc.: *See—*
Sasaki, Jeffrey K.; and Arakaki, James S., 5,577,118, Cl. 379-428.000.

Vermeersch, Joan; Verschueren, Eric; and Hauquier, Guido, to Agfa-Gevaert, N.V. Diazo based imaging element having improved storage stability. 5,576,136, Cl. 430-159.000.

Vermilion, Donn R.: *See—*
Gallagher, Kevin P.; and Vermilion, Donn R., 5,576,363, Cl. 524-64.000.

Verschueren, Eric: *See—*
Vermeersch, Joan; Verschueren, Eric; and Hauquier, Guido, 5,576,136, Cl. 430-159.000.

Vertebrex Golf L.L.C.: *See—*
Saia, Carman R.; and Foster, Greg, 5,575,722, Cl. 473-300.000.

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Hibben, Gil, 375,779, Cl. D22-118.000.
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Bonarini, Elio; and Fornaini, Domenico, 375,700, Cl. D11-13.000.
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Uranga, Ruben, Jr.: *See*—
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Verduyn, Kevin R., to Chrysler Corporation. Vehicle body. 375,705, Cl. D12-91.000.
Villa, Edmond R., Sr. Plastic headlight sensor cover for use on the dashboard of vehicles equipped with autolamp systems. 375,697, Cl. D10-104.000.
Virtuality (IP) Limited: *See*—
Holmes, Richard; and Renfrew, Bruce, 375,731, Cl. D14-124.000.
Wagner, David K. Shelter. 375,800, Cl. D25-56.000.
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Weissberg, Gary S.; and Halstead, Milton, to Micro Multimedia Labs Inc. Vertical amplifier enclosure. 375,742, Cl. D14-188.000.
Wells, Ian D.: *See*—
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Whittlesey, Dennis. Gun stock. 375,777, Cl. D22-108.000.
Williamson, Edward W., to Herkert & Meisel Trunk Co. Sample case. 375,628, Cl. D3-279.000.
Wilson, Lorelei K., to Libbey Glass Inc. Mug. 375,656, Cl. D7-515.000.
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Davis, Steven D.; and Rubino, Daniel A., 375,676, Cl. D9-305.000.
Witte, Kai U., to Rittal-Werk Rudolf Loh GmbH & Co. KG. Housing for operating of control systems. 375,726, Cl. D14-103.000.
Wong, Shu K., to Herald Electronics Limited. LCD alarm clock. 375,689, Cl. D10-15.000.
Wong, Shu K., to Herald Electronics Limited. Travelling analog alarm clock. 375,691, Cl. D10-18.000.
Wong, Shu K., to Herald Electronics Limited. Travelling analog alarm clock. 375,692, Cl. D10-18.000.
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Yazaki Corporation: *See*—
Endo, Takayoshi; and Hasegawa, Toshiaki, 375,721, Cl. D13-146.000.
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Yuen, Se K., to John Manufacturing Limited. Night light. 375,809, Cl. D26-26.000.
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Fear, Carlos D., to Sweetbriar Development, Inc. Raspberry plant cv. 'Godiva'. 9,696, Cl. Plt.-46.200.
Gardner, Leith M.: *See*—
Zaiger, Chris F.; Zaiger, Gary N.; Gardner, Leith M.; and Zaiger, Grant G., 9,695, Cl. Plt.-43.100.
Johnston, Harold. *Acer palmatum* named 'Beni Shi En'. 9,697, Cl. Plt.-53.600.
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Taylor's Nursery, Inc.: *See*—
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Van Rijn Plants: *See*—
Van Rijn, Magdalena J. M., 9,704, Cl. Plt.-88.100.
VandenBerg, Cornelis P., to Yoder Brothers, Inc. Chrysanthemum plant named 'Sarasota'. 9,699, Cl. Plt.-74.100.
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Polys, Susan M., 9,702, Cl. Plt.-82.300.
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NOTE—First number, class; second number, subclass; third number, patent number

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412 5,575,408
459 5,575,409

CLASS 223

84 5,575,410

CLASS 224

149 5,575,411
257 5,575,412
274 5,575,413

CLASS 226

18 5,575,414

CLASS 227

109 5,575,415

CLASS 228

49.1 5,575,416
119 5,575,417
147 Re.35,378

CLASS 229

3.5 R 5,575,418
23 R 5,575,419
104 5,575,420
117.16 5,575,421

CLASS 232

38 5,575,422

CLASS 235

382 5,576,526
455 5,576,527
469 5,576,528
472 5,576,529
5,576,530
5,576,531
494 5,576,532

CLASS 239

397.5 5,575,423
436 5,575,424
533.8 5,575,425

CLASS 241

3 5,575,426
30 5,575,427
5,575,428
36 5,575,429

CLASS 242

241 5,575,430
5,575,431
302 5,575,432
358 5,575,433
364.1 5,575,434
421.4 5,575,435
542.4 5,575,436
608.6 5,575,437

CLASS 244

13 5,575,438
131 5,575,439
134 F 5,575,440
135 R 5,575,441
198 5,575,442

CLASS 248

231.9 5,575,443
242 5,575,444
287.1 5,575,445
304 5,575,446
318 5,575,447
410 5,575,448
429 5,575,449
688 5,575,450

CLASS 249

119 5,575,937
189 5,575,938

CLASS 250

214 R 5,576,533
227.19 5,576,534
231.18 5,576,535
236 5,576,536
237 G 5,576,537
251 5,576,538
282 5,576,539
292 5,576,540
308 5,576,541
310 5,576,542
311 5,576,543
341.1 5,576,544
363.04 5,576,545
369 5,576,546
5,576,547
5,576,548
423 R 5,576,549
459.1 5,576,550
472.1 5,576,551
484.4 5,576,552
495.1 5,576,553

CLASS 251

1.3 5,575,451
5,575,452
61.1 5,575,453
61.5 5,575,454

CLASS 252

8.57 5,575,939
62.2 5,576,115
62.63 5,575,940
68 5,575,944
176 5,575,945
181 5,575,946
182.2 5,576,558
186.26 5,575,947
186.28 5,575,948
299.01 5,575,949
321 5,575,950
400.1 5,575,951
404 5,575,952
504 5,575,953
511 5,575,954
514 5,575,955
5,575,956
521 5,575,957
589 5,575,958

CLASS 254

134.4 5,575,455
345 5,575,456
368 5,575,457

CLASS 256

45 5,575,458

CLASS 257

48 5,576,554
53 5,576,555
69 5,576,556
173 5,576,557
191 5,576,559
208 5,576,560
217 5,576,561
232 5,576,562
253 5,576,563
295 5,576,564
296 5,576,565
301 5,576,566
316 5,576,567
318 5,576,568
321 5,576,569
369 5,576,570
378 5,576,571
5,576,572
391 5,576,573
408 5,576,574
503 5,576,575
530 5,576,576
672 5,576,577
706 5,576,578
751 5,576,579

CLASS 264

1.21 5,575,959
1.23 5,575,960
1.33 5,575,961
2.5 5,575,962
36 5,575,963
60 5,575,964
171.17 5,575,965
177.1 5,575,966
296 5,575,967
481 5,575,968
516 5,575,969

CLASS 266

44 5,575,970
66 5,575,971

CLASS 267

91 5,575,460
153 5,575,461

CLASS 269

32 5,575,462

CLASS 270

52.02 5,575,463

CLASS 271

2 5,575,464
9.13 5,575,465
10.03 5,575,466
122 5,575,467
225 5,575,468
270 5,575,469

CLASS 273

1.5 R 5,575,470
30 5,575,471
149 R 5,575,475
153 S 5,575,476
372 5,575,478
378 5,575,479
402 5,575,480
411 5,575,481
5,575,482
5,575,483

CLASS 277

27 5,575,484
80 5,575,485
96 5,575,486
169 5,575,487

CLASS 279

4.08 5,575,488

CLASS 280

11.22 5,575,489
28.12 5,575,490
417.1 5,575,491
475 5,575,492
5,575,493
5,575,494
507 5,575,495
602 5,575,496
618 5,575,502
689 5,575,497
730.1 5,575,498
731 5,575,499
741 5,575,500
751 5,575,501
777

CLASS 281

21.1 5,575,503
29 5,575,504
36 5,575,505
39 5,575,506

CLASS 283

86 5,575,507
93 5,575,508

CLASS 285

7 5,575,509
35 5,575,510
61 5,575,511
319 5,575,512

CLASS 292

339 5,575,513
340 5,575,514
341.17 5,575,515
353 5,575,516

CLASS 294

1.1 5,575,517
16 5,575,518
19.2 5,575,519
55 5,575,520

CLASS 296

57.1 5,575,521
97.6 5,575,522
97.7 5,575,523
142 5,575,524
183 5,575,525
205 5,575,526
213 5,575,527

CLASS 297

219.11 5,575,528
260.2 5,575,530
300.4 5,575,095
362.11 5,575,531
452.2 5,575,532
5,575,533
452.21 5,575,534
464 5,575,535

CLASS 298

23 R 5,575,536

CLASS 299

31 5,575,537
39.2 5,575,538

CLASS 301

65 5,575,539
110.5 5,575,540

CLASS 303

1 5,575,541
125 5,575,542
155 5,575,543

CLASS 307

42 5,576,580
117 5,576,581
118 5,576,582

CLASS 310

13 5,576,583
45 5,576,584
51 5,576,585
88 5,576,586
90.5 5,576,587
154 5,576,588
313 A 5,576,589
359 5,576,590

CLASS 312

7.1 5,575,544
7.2 5,575,545
183 5,575,546
223.2 5,575,529
326 5,575,547

CLASS 313

25 5,576,591
5,576,592
231.31 5,576,593
309 5,576,594
402 5,576,595
422 5,576,596
582 5,576,597
623 5,576,598

CLASS 315

85 5,576,599
111.81 5,576,600
169.3 5,576,601
507 5,576,602

CLASS 318

3 5,576,603
135 5,576,604
568.12 5,576,605
801 5,576,606

CLASS 320

22 5,576,608
30 5,576,609
31 5,576,610
5,576,611
54 5,576,612

CLASS 322

16 5,576,613

CLASS 323

239 5,576,614
284 5,576,615
314 5,576,616

CLASS 324

71.4 5,576,617
76.15 5,576,618

76.79 5,576,619
174 5,576,620
239 5,576,621
318 5,576,622
5,576,623
329 5,576,624
424 5,576,625
464 5,576,626
639 5,576,627
678 5,576,628
709 5,576,629
760 5,576,630
761 5,576,631
772 5,576,632

CLASS 326

10 5,576,633
26 5,576,634
27 5,576,635
39 5,576,636
55 5,576,637
62 5,576,638
66 5,576,639
83 5,576,640
5,576,641
86 5,576,642
94 5,576,643

CLASS 327

51 5,576,644
94 5,576,645
103 5,576,646
108 5,576,647
110 5,576,648
111 5,576,649
142 5,576,650
202 5,576,651
254 5,576,652
356 5,576,653
433 5,576,654
537 5,576,655
538 5,576,656
543 5,576,657
552 5,576,658

CLASS 330

52 5,576,659
107 Re.35,379
149 5,576,660
277 5,576,661
5,576,662
306 5,576,663

CLASS 331

1 A 5,576,664
14 5,576,665
25 5,576,666
117 D 5,576,667

CLASS 333

21 A 5,576,668
116 5,576,669
126 5,576,670
128 5,576,671
204 5,576,672
206 5,576,673
212 5,576,674
260 5,576,675

CLASS 335

132 5,576,676
172 5,576,677
205 5,576,678
306 5,576,679

CLASS 336

200 5,576,680
208 5,576,681

CLASS 337

186 5,576,682
333 5,576,683

CLASS 338

50 5,576,684

CLASS 340

384.1 5,576,685
426 5,576,686
438 5,576,687
463 5,576,688
514 5,576,689
539 5,576,690
568 5,576,691
571 5,576,692
572 5,576,693
573 5,576,694
600 5,576,696
630 5,576,697
649 5,576,695
825.06 5,576,739
825.16 5,576,700
825.310 5,576,701
825.5 5,576,702
825.52 5,576,698
825.97 5,576,699
854.4 5,576,703

CLASS 341

20 5,576,704
5,576,705
22 5,576,706
58 5,576,707
110 5,576,709
118 5,576,708

CLASS 342

1 5,576,710
152 5,576,711
160 5,576,712
174 5,576,713
357 5,576,715
5,576,716
373 5,576,717

CLASS 343

700 MS 5,576,718
702 5,576,719
5,576,720
753 5,576,721
882 5,576,722

CLASS 345

2 5,576,723
7 5,576,724
32 5,576,725
76 5,576,726
91 5,576,728
94 5,576,729
98 5,576,730
100 5,576,731
127 5,576,732
163 5,576,733
168 5,576,734
173 5,576,735
179 5,576,727
189 5,576,736
200 5,577,203
211 5,576,737
212 5,576,738

CLASS 346

136 5,576,740
145 5,576,741
150.1 5,576,742

CLASS 347

11 5,576,743
14 5,576,744
5,576,745
5,576,746
48 5,576,747
58 5,576,748
86 5,576,749
87 5,576,750
217 5,576,751
238 5,576,752
248 5,576,753
262 5,576,754

CLASS 348

13 5,576,755
192 5,576,756
207 5,576,757
220 5,576,758
231 5,576,759
5,576,760
257 5,576,761
296 5,576,762
308 5,576,763
356 5,576,764
407 5,576,765
5,576,766
413 5,576,767
468 5,576,768
511 5,576,769
525 5,576,770
556 5,576,771
699 5,576,772
734 5,576,773
745 5,576,774

CLASS 351

62 5,576,775
63 5,576,776
86 5,576,777
177 5,576,778
211 5,576,780

CLASS 353

31 5,575,548

CLASS 354

195.1 5,576,786

CLASS 355

53 5,576,801
211 5,576,803
215 5,576,804
219 5,576,805
5,576,806
5,576,807
5,576,808
225 5,576,809
228 5,576,810
246 5,576,811
251 5,576,812
5,576,813
253 5,576,814
256 5,576,815
260 5,576,816
262 5,576,817
271 5,576,818
5,576,819
274 5,576,820
284 5,576,821
301 5,576,822
308 5,576,823
327 5,576,824

CLASS 356

71 5,576,825
138 5,576,826
336 5,576,827
346 5,576,834
354 5,576,829
372 5,576,828
373 5,576,830
375 5,576,831
391 5,576,832
394 5,576,833

CLASS 358

261.1 5,576,835
302 5,576,836
433 5,576,845
444 5,576,846
448 5,576,847
449 5,576,848
450 5,576,849
452 5,576,850
470 5,576,851
475 5,576,852

CLASS 359

12 5,576,853
40 5,576,854
5,576,855
51 5,576,856
59 5,576,857
5,576,858
67 5,576,859
70 5,576,860
73 5,576,861
75 5,576,862
76 5,576,863
5,576,864
80 5,576,865
81 5,576,866
87 5,576,867
88 5,576,868
5,576,869
95 5,576,870
110 5,576,871
117 5,576,872
5,576,873
123 5,576,874
125 5,576,875
176 5,576,876
189 5,576,877
224 5,576,878
248 5,576,879
305 5,576,880
333 5,576,881
434 5,576,882
494 5,576,883
514 5,576,884
585 5,576,885
630 5,576,886
631 5,576,887
676 5,576,888
686 5,576,889
5,576,890
692 5,576,891
696 5,576,892
701 5,576,893
5,576,894
811 5,576,895
813 5,576,896
822 5,576,897
841 5,576,898
871 5,576,899
872 5,576,900
877 5,576,901

CLASS 360

48 5,576,903
51 5,576,904
64 5,576,907
66 5,576,908
73.14 5,576,905
77.08 5,576,906
5,576,910
78.09 5,576,909
98.06 5,576,911
103 5,576,912
5,576,913
113 5,576,914
5,576,915
130.31 5,576,916
132 5,576,917
135 5,576,918

CLASS 361

56 5,576,920
93 5,576,921
120 5,576,922
213 5,576,923
223 5,576,924
301.2 5,576,925
303 5,576,926
306.1 5,576,927
321.1 5,576,928
680 5,576,929
683 5,576,930
687 5,576,931
697 5,576,932
704 5,576,933
761 5,576,934
785 5,576,935
796 5,576,936
820 5,576,937
829 5,576,938

CLASS 362

31 5,575,549
32 5,575,550
5,575,551
83.1 5,575,552
101 5,575,553
103 5,575,554
109 5,575,555
5,575,556
240 5,575,459
276 5,575,557
396 5,575,558

CLASS 363

16 5,576,939
17 5,576,940
21 5,576,941
39 5,576,942
56 5,576,943
71 5,576,944

CLASS 364

131 5,576,945
146 5,576,946
167.01 5,576,947
5,576,948
401 5,576,949
413.02 5,576,952
424.05 5,576,956
5,576,957
426.01 5,576,960
426.03 5,576,959
431.03 5,576,961
5,576,962
431.08 5,576,963
456 5,576,964
468.03 5,576,965
468.08 5,576,966
469.01 5,576,967
470.09 5,576,968
491 5,576,969
500 5,576,970
505 5,576,971
514 A 5,576,950
516 5,576,972
5,576,973
554 5,576,974
561 5,576,975
572 5,576,976
5,576,977
5,576,978
579 5,576,979
5,576,980
709.1 5,576,981
715.1 5,576,982
725 5,576,958
754 5,576,983
803 5,576,984

CLASS 365

49 5,576,985
129 5,576,986
149 5,576,987
185.04 5,576,988
185.09 5,576,989
185.23 5,576,990
185.24 5,576,991
5,576,992
185.29 5,576,993
185.3 5,576,994
185.33 5,576,995
189.01 5,576,996
189.04 5,576,997
189.06 5,576,998
200 5,576,999
205 5,577,000
207 5,577,001
226 5,577,002
230.01 5,577,003
230.03 5,577,004
233 5,577,005

CLASS 366

171.1 5,575,559
219 5,575,560
336 5,575,561
347 5,575,562

CLASS 367

104 5,577,006

CLASS 368

282 5,577,007

CLASS 369

13 5,577,008
32 5,577,009
36 5,577,010
47 5,577,011
48 5,577,012
5,577,013
59 5,577,015
77.2 5,577,014
110 5,577,016
5,577,017
112 5,577,018
116 5,577,019
275.2 5,577,020
5,577,021

CLASS 370

13 5,577,022
16 5,577,023
18 5,577,024
22 5,577,025
24 5,577,026
32.1 5,577,027
54 5,577,028
5,577,029
5,577,030
58.1 5,577,031
58.3 5,577,032
60 5,577,033
5,577,034
5,577,035
24 5,577,036
60.1 5,577,037
5,577,038
5,577,039
73 5,577,040
79 5,577,041
85.11 5,577,044
85.7 5,577,042
85.8 5,577,043
94.1 5,577,045
95.2 5,577,046
95.3 5,577,047
110.1 5,577,048
112 5,577,049

CLASS 371

10.2 5,577,050
21.4 5,577,051
22.5 5,577,052
37.4 5,577,053
39.1 5,577,054
51.1 5,577,055
57.2 5,577,056

CLASS 372

18 5,577,057
20 5,577,058
22 5,577,059
39 5,577,060
45 5,577,061
46 5,577,062
5,577,063
96 5,577,064

CLASS 373

89 5,577,065

CLASS 374

141 5,575,563

CLASS 375

222 5,577,066
224 5,577,067
232 5,577,068
242 5,577,069
257 5,577,070
259 5,577,071
298 5,577,072
324 5,577,073
327 5,577,074
346 5,577,076
356 5,577,075
371 5,577,078
373 5,577,079
376 5,577,080
5,577,086
377 5,577,087

CLASS 376

252 5,577,088
260 5,577,081
293 5,577,085
302 5,577,082
372 5,577,083
406 5,577,084

CLASS 378

54 5,577,089
64 5,577,090
119 5,577,091
5,577,092
125 5,577,093
197 5,577,094
206 5,577,095

CLASS 379

2 5,577,096
3 5,577,097
5 5,577,098
21 5,577,099
58 5,577,100
5,577,101
59 5,577,102
5,577,103
67 5,577,104
93 5,577,105
5,577,106
96 5,577,107
97 5,577,108
112 5,577,109
201 5,577,110
209 5,577,111
216 5,577,112
220 5,577,113
385 5,577,114
399 5,577,115
410 5,577,116
414 5,577,117
428 5,577,118
438 5,577,119

CLASS 380

23 5,577,120
24 5,577,121
28 5,577,122
30 5,577,123
46 5,577,124
54 5,577,125

CLASS 381

59 5,577,126
71 5,577,127
81 5,577,128
113 5,577,129

CLASS 382

106 5,577,130
173 5,577,131
238 5,577,132
240 5,577,134
253 5,577,135
270 5,577,136

CLASS 384

34 5,575,564
45 5,575,565
5,575,566
132 5,575,567
448 5,575,568
470 5,575,569
5,575,570
492 5,575,571
585 5,575,572

CLASS 385

12 5,577,137
14 5,577,138
5,577,139
31 5,577,140
43 5,577,141
47 5,577,142
61 5,577,143
78 5,577,144
88 5,577,145
92 5,577,146
109 5,577,147
115 5,577,148
134 5,577,149

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CLASS 386
33 5,576,837
46 5,576,840
5,576,841
5,576,842
52 5,576,844
68 5,576,902
97 5,576,843
113 5,576,839
117 5,576,838

CLASS 388
804 5,577,152
811 5,577,153
5,577,154
839 5,577,155

CLASS 392
390 5,577,156
416 5,577,157
433 5,577,158

CLASS 395
2.15 5,577,159
2.35 5,577,161
2.41 5,577,162
2.42 5,577,163
2.84 5,577,164
5,577,165
22 5,577,166
23 5,577,167
61 5,577,169
110 5,577,170
112 5,577,171
114 5,577,172
5,577,183
116 5,577,173
119 5,577,174
127 5,577,175
5,577,176
133 5,577,178
135 5,577,179
5,577,180
5,577,181
137 5,577,182
169 5,577,177
172 5,577,184
173 5,577,185
182.06 5,577,194
182.20 5,577,195
183.04 5,577,197
183.09 5,577,198
183.13 5,577,199
185.03 5,577,200
185.1 5,577,201
200.01 5,577,204
5,577,205
200.02 5,577,206
5,577,207
200.04 5,577,208
200.06 5,577,209
200.1 5,577,210
200.13 5,577,211
200.18 5,577,202
218 5,577,160
227 5,576,951
250 5,577,212
280 5,577,213
287 5,577,214
311 5,577,215
326 5,577,188
5,577,189
342 5,577,187
376 5,577,216
5,577,217
405 5,577,218
411 5,577,219
416 5,577,220
427 5,577,221
439 5,577,222
445 5,577,223
5,577,224
5,577,225
446 5,577,226
449 5,577,227
467 5,577,228
474 5,577,229
477 5,577,230
500 5,577,231
5,577,232
5,577,233
5,577,234
501 5,577,190
502 5,577,191
507 5,577,192
515 5,577,193
550 5,577,238
551 5,577,236
555 5,577,237
559 5,577,235

601 5,577,248
603 5,576,954
5,577,239
605 5,577,241
607 5,577,243
608 5,577,240
611 5,577,247
5,577,249
615 5,577,254
618 5,577,246
621 5,577,242
670 5,577,250
5,577,252
5,577,251
671 5,577,244
703 5,577,253
705 5,577,255
737 5,576,953
752 5,577,196
783.19 5,576,955
795 5,577,256
800 5,577,257
5,577,258
5,577,259
5,577,260
5,577,261
806 5,577,186
890 5,577,262

CLASS 396
6 5,576,781
5,576,782
5,576,793
51 5,576,796
52 5,576,788
55 5,576,787
79 5,576,779
121 5,576,797
159 5,576,798
233 5,576,799
238 5,576,800
322 5,576,783
379 5,576,791
396 5,576,790
397 5,576,785
418 5,576,784
5,576,789
510 5,576,792
564 5,576,794
626 5,576,795

CLASS 400
76 5,575,573
118.2 5,575,574
185 5,575,575
472 5,575,576
705.1 5,575,577
717 5,575,578

CLASS 401
119 5,575,579

CLASS 403
49 5,575,580
157 5,575,581
320 5,575,582

CLASS 404
72 5,575,583

CLASS 405
18 5,575,588
24 5,575,584
52 5,575,585
66 5,575,586
76 5,575,587
128 5,575,589
166 5,575,590
223.1 5,575,592
230 5,575,591
237 5,575,593
303 5,575,594

CLASS 406
39 5,575,595
168 5,575,596

CLASS 409
201 5,575,597
304 5,575,598

CLASS 410
69 5,575,599

CLASS 411
48 5,575,600
339 5,575,601
405 5,575,602

CLASS 414
137.9 5,575,603
462 5,575,604
490 5,575,605

563 5,575,606
589 5,575,607
607 5,575,608
743 5,575,609
750 5,575,610
786 5,575,611
788.9 5,575,612
797.4 5,575,613
797.6 5,575,614

CLASS 415
74 5,575,615
115 5,575,616
5,575,617
121.2 5,575,618
175 5,575,619
192 5,575,620
209.2 5,575,621
213.1 5,575,622

CLASS 416
215 5,575,623
242 5,575,624

CLASS 417
178 5,575,625
251 5,575,626
252 5,575,627
405 5,575,629
420 5,575,630
474 5,575,631
477.2 5,575,632
506 5,575,633

CLASS 418
55.4 5,575,634
55.5 5,575,635

CLASS 420
34 5,575,972
112 5,575,973

CLASS 422
22 5,575,974
64 5,575,976
73 5,575,977
104 5,575,978
132 5,575,979
181 5,575,980

CLASS 423
132 5,575,981
213.5 5,575,983
244.08 5,575,984
448 5,575,985

CLASS 424
9.364 5,575,986
59 5,575,988
62 5,575,989
65 5,575,990
70.2 5,575,991
76.4 5,575,992
78.03 5,575,994
78.06 5,575,995
78.1 5,575,993
78.35 5,575,997
84 5,575,996
93.3 5,575,998
94.6 5,575,999
188.1 5,576,000
195.1 5,576,001
197.11 5,576,002
234.1 5,576,003
278.1 5,576,004
401 5,576,005
5,576,064
5,576,006
408 5,576,007
5,576,008
5,576,009
5,576,010
411 5,576,011
422 5,576,012
423 5,576,013
435 5,576,014
442 5,576,015
450 5,576,016
5,576,017
5,576,018
451 5,575,987
453 5,576,019
465 5,576,020
468 5,576,021
472 5,576,022
488 5,576,024
501 5,576,025
520 5,576,026
535 5,576,027
613 5,576,028

CLASS 425
72.1 5,576,029

112 5,576,030
130 5,576,031
186 5,576,032
217 5,576,033
532 5,576,034

CLASS 426
8 5,576,035
94 5,576,036
110 5,576,037
127 5,576,038
250 5,576,039
271 5,576,040
439 5,576,041
548 5,576,042
578 5,576,043
5,576,048
594 5,576,044
607 5,576,045
615 5,576,046
646 5,576,047

CLASS 427
64 5,576,050
77 5,576,051
98 5,576,052
123 5,576,053
160 5,576,054
162 5,576,055
221 5,576,056
245 5,576,057
248.1 5,576,058
255 5,576,059
255.2 5,576,060
379 5,576,061
385.5 5,576,062
386 5,576,063
389.9 5,576,049
407.1 5,576,065
435 5,576,066
443.2 5,576,067
452 5,576,068
454 5,576,069
510 5,576,070
532 5,576,072
534 5,576,071
555 5,576,073
559 5,576,074
565 5,576,075
579 5,576,076

CLASS 428
1 5,576,077
13 5,576,078
34.1 5,576,079
36.5 5,576,080
36.9 5,576,081
36.91 5,576,082
36.92 5,576,083
64.1 5,576,084
65.3 5,576,085
131 5,576,086
141 5,576,087
142 5,576,089
152 5,576,090
192 5,576,091
195 5,576,092
210 5,575,982
216 5,576,093
220 5,576,094
224 5,576,095
290 5,576,096
325 5,576,097
327 5,576,088
332 5,576,098
5,576,099
5,576,100
5,576,101
336 5,576,102
382 5,576,104
395 5,576,105
403 5,576,106
408 5,576,107
413 5,576,108
447 5,576,109
5,576,110
552 5,577,263
612 5,576,111
654 5,576,112
679 5,576,113
694 B 5,576,114

CLASS 429
59 5,576,116
162 5,576,117
218 5,576,118
5,576,119
5,576,120
220 5,576,121

CLASS 430
5 5,576,122
5,576,123
5,576,124
5,576,125
5,576,126
5,576,127
7 5,576,128
21 5,576,129
41 5,576,130
58 5,576,131
59 5,576,132
106.6 5,576,133
122 5,576,134
126 5,576,135
159 5,576,136
166 5,576,137
191 5,576,138
192 5,576,139
201 5,576,140
269 5,576,141
5,576,142
270.1 5,576,143
270.15 5,576,144
281.1 5,576,145
286.1 5,576,146
313 5,576,147
314 5,576,148
321 5,576,149
386 5,576,150
429 5,576,151
440 5,576,152
501 5,576,153
502 5,576,154
5,576,155
5,576,156
503 5,576,157
504 5,576,158
5,576,159
509 5,576,160
512 5,576,161
527 5,576,162
529 5,576,163
537 5,576,164
545 5,576,165
555 5,576,166
5,576,167
567 5,576,168
5,576,169
5,576,170
5,576,171
5,576,172
584 5,576,173

CLASS 431
8 5,575,636
5,575,637
73 5,575,638
123 5,575,639
354 5,575,640

CLASS 432
9 5,575,641
78 5,575,642

CLASS 433
3 5,575,643
8 5,575,644
9 5,575,645
76 5,575,646
114 5,575,647
127 5,575,648
141 5,575,649
165 5,575,650
173 5,575,651
5,575,652
202.1 5,575,653
215 5,575,654
216 5,575,655
219 5,575,636
224 5,575,657

CLASS 434
160 5,575,658
374 5,575,660
467 5,575,659

CLASS 435
4 5,576,174
5 5,576,175
5,576,176
5,576,177
6 5,576,178
5,576,179
5,576,180
7.23 5,576,184
5,576,185
7.4 5,576,181
7.9 5,576,182
7.92 5,576,186
7.93 5,576,187
5,576,188
5,576,189
69.1 5,576,190
5,576,191
5,576,192
69.2 5,576,193
69.6 5,576,194
69.8 5,576,195
91.1 5,576,196
91.2 5,576,197
91.3 5,576,198
119 5,576,199
5,576,200
172.1 5,576,201
172.3 5,576,202
5,576,203
193 5,576,204
240.2 5,576,205
5,576,206
5,576,207
5,576,208
5,576,209
254.21 5,576,210
297.1 5,576,211
721 5,576,183

CLASS 436
8 5,576,212
18 5,576,213
43 5,576,214
50 5,576,215
86 5,576,216
126 5,576,217
174 5,576,218
300 5,576,219
518 5,576,220

CLASS 437
2 5,576,221
4 5,576,222
8 5,576,223
5,576,224
21 5,576,225
24 5,576,226
35 5,576,227
5,576,228
40 5,576,229
41 5,576,230
5,576,231
43 5,576,232
5,576,233
5,576,234
48 5,576,235
5,576,236
50 5,576,237
52 5,576,238
53 5,576,239
60 5,576,240
63 5,576,241
191 5,576,242
195 5,576,243
200 5,576,244
203 5,576,245
216 5,576,246
225 5,576,247
5,576,248
228 5,576,249
5,576,250
5,576,251

CLASS 439
17 5,575,664
49 5,575,665
62 5,575,661
67 5,575,662
79 5,575,663
82 5,575,666
98 5,575,667
131 5,575,668
138 5,575,670
157 5,575,669
5,575,671
5,575,672
248 5,575,673
284 5,575,674
310 5,575,675
347 5,575,676
372 5,575,678
373 5,575,677
396 5,575,679
404 5,575,680
459 5,575,681
500 5,575,682
595 5,575,683
5,575,684
620 5,575,686
637 5,575,687
660 5,575,688
709 5,575,689
717 5,575,690
744 5,575,691
752 5,575,692
773 5,575,693
825 5,575,694
838 5,575,695
852 5,575,696
883 5,575,697

CLASS 440
75 5,575,698
89 5,575,699

CLASS 446
34 5,575,700
104 5,575,701
431 5,575,702

CLASS 449
13 5,575,703

CLASS 451
36 5,575,704
39 5,575,705
41 5,575,706
173 5,575,707
305 5,575,708
347 5,575,709
350 5,575,710
367 5,575,711

CLASS 452
177 5,575,712
198 5,575,713

CLASS 454
174 5,575,714
286 5,575,715

CLASS 455
33.2 5,577,168
5,577,264
33.3 5,577,265
66 5,577,266
90 5,577,267
5,577,268
5,577,269
180.1 5,577,270

CLASS 460
116 5,575,716

CLASS 463
1 5,575,717
26 5,575,474

CLASS 473
78 5,575,718
223 5,575,719
282 5,575,720
5,575,721
298 5,575,473
300 5,575,722
305 5,575,723
315 5,575,724
317 5,575,725
379 5,575,477

CLASS 474
135 5,575,726
5,575,727
170 5,575,728
260 5,575,729

CLASS 475
5 5,575,730
72 5,575,735
307 5,575,731

CLASS 476
10 5,575,732
40 5,575,733
46 5,575,736
55 5,575,734

CLASS 477
43 5,575,737

CLASS 482
35 5,575,738
51 5,575,739
70 5,575,740
72 5,575,741
92 5,575,742
97 5,575,743
5,575,744
144 5,575,745

CLASS 493
154 5,575,746
213 5,575,747
477 5,575,748

CLASS 501
35 5,576,252
56 5,576,253
100 5,576,254
122 5,576,255

CLASS 502
61 5,576,256
62 5,576,257
73 5,576,258
117 5,576,259
5,576,260
185 5,576,261
233 5,576,262
237 5,576,263

CLASS 503
227 5,576,264
5,576,265
5,576,266
5,576,267
5,576,268

CLASS 504
236 5,576,269
271 5,576,270

CLASS 507
110 5,576,271

CLASS 508
159 5,576,272
364 5,576,273
560 5,576,274
562 5,576,275

CLASS 510
112 5,576,276
113 5,576,277
114 5,576,278
122 5,576,279
155 5,576,280
220 5,576,281
276 5,576,282
321 5,576,283
384 5,576,284
444 5,576,285

CLASS 512
2 5,576,286

CLASS 514
2 5,576,287
5,576,288
5,576,289
11 5,576,290
12 5,576,291
5,576,292
5,576,294
5,576,295
13 5,576,296
14 5,576,297
15 5,576,298
19 5,576,293
21 5,576,299
5,576,300
5,576,301
25 5,576,305
44 5,576,302
53 5,576,303
56 5,576,304
57 5,576,306
59 5,576,307
112 5,576,308
178 5,576,309
179 5,576,310
5,576,311
210 5,576,312
211 5,576,313
5,576,314
5,576,315
218 5,576,316
231.2 5,576,317
253 5,576,318
5,576,319
255 5,576,320
5,576,321
260 5,576,322
277 5,576,323
291 5,576,324
5,576,325
292 5,576,326
300 5,576,327
301 5,576,328
307 5,576,329
5,576,330
312 5,576,331
5,576,332
316 5,576,333
317 5,576,334
5,576,335
323 5,576,336
324 5,576,337
337 5,576,338
345 5,576,339
369 5,576,340
395 5,576,341
399 5,576,342
422 5,576,343
427 5,576,344
449 5,576,345
456 5,576,346
467 5,576,347
547 5,576,348
559 5,576,349
565 5,576,350
5,576,351
647 5,576,352
5,576,353
685 5,576,354
729 5,576,355

CLASS 522
31 5,576,356
170 5,576,357

CLASS 523
153 5,576,358
400 5,576,359
407 5,576,360
423 5,576,361
440 5,576,362

CLASS 524
64 5,576,363
80 5,576,364
117 5,576,365
140 5,576,366
291 5,576,367
297 5,576,368
413 5,576,369
5,576,370
5,576,371
442 5,576,372
445 5,576,373
451 5,576,374
481 5,576,375
495 5,576,376
5,576,377
523 5,576,378
544 5,576,381
591 5,576,382
765 5,576,383
806 5,576,384

CLASS 525
77 5,576,385
92 B 5,576,387
99 5,576,388
119 5,576,389
146 5,576,390
150 5,576,391
289 5,576,392
293 5,576,393
310 5,576,394
314 5,576,395
367 5,576,396
444 5,576,397
528 5,576,398
531 5,576,399

CLASS 526
65 5,576,400
5,576,401
88 5,576,386
212 5,576,403
229 5,576,402
317.1 5,576,404
318.4 5,576,405
320 5,576,406
332 5,576,407

CLASS 528
12 5,576,408
49 5,576,409
64 5,576,410
70 5,576,411
85 5,576,412
196 5,576,413
199 5,576,414
310 5,576,415
340 5,576,416
343 5,576,417
361 5,576,418

CLASS 530
322 5,576,419
324 5,576,420
350 5,576,421
5,576,422
388.75 5,576,423

CLASS 536
17.9 5,576,424
18.6 5,576,425
18.7 5,576,426
23.1 5,576,427
24.1 5,576,428
26.8 5,576,429

CLASS 540
523 5,576,430

CLASS 544
98 5,576,431
250 5,576,432
369 5,576,433

CLASS 546
133 5,576,434
150 5,576,435
156 5,576,436
171 5,576,437
263 5,576,439
294 5,576,440
476 5,576,438

CLASS 548
143 5,576,441
203 5,576,442
237 5,576,443
413 5,576,444
477 5,576,445
517 5,576,446
550 5,576,447

CLASS 549
366 5,576,448
375 5,576,449
510 5,576,450

CLASS 554
227 5,576,451

CLASS 556
130 5,576,452
400 5,576,453

CLASS 558
319 5,576,469
386 5,576,454
406 5,576,455

CLASS 560
78 5,576,456
154 5,576,470
245 5,576,457

CLASS 562
519 5,576,458
589 5,576,459

CLASS 564
386 5,576,460

CLASS 568
27 5,576,461
341 5,576,462
431 5,576,463
691 5,576,465
697 5,576,464
862 5,576,471
885 5,576,467

CLASS 585
735 5,576,466

CLASS 588
8 5,576,468

CLASS 600
3 5,575,749
104 5,575,751
117 5,575,754
121 5,575,752
123 5,575,753
148 5,575,755
157 5,575,756
167 5,575,757
193 5,575,758
207 5,575,759

CLASS 601
19 5,575,760
48 5,575,761
152 5,575,762

CLASS 602
18 5,575,763
26 5,575,764
32 5,575,765

CLASS 604
53 5,575,766
5,575,767
74 5,575,768
86 5,575,769
93 5,575,770
96 5,575,771
5,575,772
110 5,575,773
5,575,774
164 B1 5,125,904
187 5,575,776
198 5,575,777
200 5,575,778
246 5,575,779
272 5,575,780
362 5,575,781
385.1 5,575,782
5,575,783
5,575,784
385.2 5,575,785
387 5,575,786

CLASS 606
15 5,575,787
41 5,575,788
42 5,575,789
60 5,575,790
61 5,575,791
5,575,792
80 5,575,793
116 5,575,794
120 5,575,795
5,575,796
129 5,575,797
130 5,575,798
139 5,575,799
144 5,575,800
148 5,575,801
151 5,575,802
5,575,803
185 5,575,804
206 5,575,805
207 5,575,806

CLASS 607
5 5,575,807
62 5,575,809
99 5,575,810
101 5,575,811
114 5,575,812
116 5,575,813
127 5,575,814

CLASS 623
1 5,575,815
5,575,816
5,575,817
5,575,818
13 5,575,819

CLASS 800
200 5,576,472
5,576,473
5,576,474
5,576,475
5,576,476
5,576,477

CLASSIFICATION OF DESIGNS

D1— 102 375,609
112 375,610
D2— 857 375,611
894 375,612
897 375,613
900 375,614
916 375,615
960 375,616
969 375,617
975 375,618
977 375,619
D3— 20 375,620
375,621
217 375,622
226 375,623
229 375,624
233 375,625
257 375,626
271 375,627
279 375,628
283 375,629
315 375,630
328 375,631
D4— 132 375,632
D5— 37 375,633
D6— 300 375,634
369 375,635
370 375,636
376 375,637
377 375,638
449 375,639
482 375,640
486 375,641
508 375,642
542 375,643
552 375,644

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		375,645		305	375,676			375,707			375,738		220	375,769		60	375,801
	574	375,646		311	375,677		130	375,708			375,739		224	375,770		124	375,802
	589	375,647		335	375,678		147	375,709		151	375,740			375,772			375,803
	630	375,648		339	375,679		181	375,710			375,741		226	375,771			375,804
D7—	301	375,649		347	375,680		187	375,711		188	375,742		230	375,773			375,805
	307	375,650			375,681			375,712		191	375,743		234	375,774			375,806
	330	375,651		415	375,682		191	375,713		213	375,744		244	375,775			375,807
	354	375,652		429	375,683			375,714			375,745			375,776	D26—	26	375,808
	392.1	375,653		502	375,684		196	375,715		216	375,746	D22—	108	375,777			375,809
		375,654		520	375,685		209	375,716		217	375,747		116	375,778			375,810
	511	375,655		562	375,686		215	375,717		218	375,748		118	375,779		44	375,811
	515	375,656	D10—	6	375,687		223	375,718		227	375,749		122	375,780		130	375,812
	551	375,658		15	375,688		419	375,719		248	375,750		134	375,781		134	375,813
	583	375,657			375,689	D13—	141	375,720	D15—	69	375,751		135	375,782		141	375,814
	624	375,659			375,690		146	375,721		147	375,752		145	375,783	D27—	183	375,815
	628	375,660		18	375,691		147	375,722	D16—	133	375,753	D23—	238	375,784	D28—	7	375,816
	673	375,661			375,692			375,723			375,754		252	375,785		42	375,817
	694	375,662		62	375,693			375,724	D18—	56	375,755		260	375,786	D30—	130	375,818
D8—	1	375,663		74	375,694		179	375,725			375,756		304	375,787		133	375,819
	13	375,664		97	375,695	D14—	103	375,726	D19—	6	375,757	D24—	108	375,788	D32—	22	375,820
	14	375,665		104	375,696		106	375,727		32	375,758		112	375,789		31	375,821
	25	375,666			375,697		114	375,728		36	375,759		145	375,791		32	375,822
	28	375,667		106	375,698			375,729	D20—	31	375,760		186	375,792			
	68	375,668		116	375,699			375,730	D21—	17	375,761		194	375,793			
	83	375,669	D11—	13	375,700		124	375,731		23	375,762		197	375,794			
	103	375,670			375,701		138	375,732		27	375,763			375,795			
	346	375,671		81	375,702			375,733		37	375,764		199	375,796			
	354	375,672		88	375,703			375,734		48	375,765		213	375,797			
	367	375,673	D12—	86	375,704		144	375,735		163	375,766		222	375,798			
	400	375,674		91	375,705		147	375,736		191	375,767		224	375,799			
D9—	300	375,675		129	375,706			375,737		217	375,768	D25—	56	375,800			

CLASSIFICATION OF PLANTS

P.—	43.1	9,695	53.6	9,697	74.1	9,699	80	9,701	88.1	9,703
	46.2	9,696	54.1	9,698	78	9,700	82.3	9,702		9,704

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	5,575,398	5,575,311	5,576,033	5,576,599	5,577,058	5,575,355
	5,575,492	5,575,312	5,576,047	5,576,626	5,577,060	5,575,362
	5,575,643	5,575,324	5,576,059	5,576,627	5,577,061	5,575,397
	5,575,655	5,575,334	5,576,085	5,576,628	5,577,069	5,575,475
	5,575,984	5,575,390	5,576,120	5,576,635	5,577,073	5,575,530
	5,576,723	5,575,412	5,576,125	5,576,636	5,577,083	5,575,765
04 :	5,575,011	5,575,415	5,576,145	5,576,642	5,577,084	5,575,789
	5,575,020	5,575,417	5,576,174	5,576,645	5,577,085	5,576,224
	5,575,158	5,575,423	5,576,176	5,576,647	5,577,090	5,576,494
	5,575,195	5,575,447	5,576,184	5,576,662	5,577,092	5,576,500
	5,575,281	5,575,469	5,576,194	5,576,666	5,577,100	5,576,621
	5,575,458	5,575,472	5,576,195	5,576,668	5,577,104	5,576,640
	5,575,514	5,575,478	5,576,196	5,576,675	5,577,108	5,576,707
	5,575,576	5,575,480	5,576,197	5,576,680	5,577,118	5,576,755
	5,575,815	5,575,487	5,576,198	5,576,691	5,577,122	5,576,903
	5,575,856	5,575,536	5,576,208	5,576,703	5,577,135	5,576,904
	5,575,955	5,575,557	5,576,209	5,576,706	5,577,154	5,576,910
	5,576,290	5,575,592	5,576,220	5,576,715	5,577,178	5,576,911
	5,576,498	5,575,608	5,576,237	5,576,721	5,577,179	5,576,939
	5,576,563	5,575,626	5,576,245	5,576,727	5,577,180	5,577,025
	5,576,671	5,575,632	5,576,249	5,576,733	5,577,188	5,577,054
	5,576,726	5,575,638	5,576,251	5,576,752	5,577,189	5,577,064
	5,576,905	5,575,648	5,576,284	5,576,767	5,577,191	5,577,157
	5,577,099	5,575,649	5,576,288	5,576,831	5,577,194	5,577,213
	5,577,121	5,575,664	5,576,291	5,576,843	5,577,201	09 : 5,575,005
	5,577,222	5,575,677	5,576,302	5,576,854	5,577,205	5,575,030
	5,577,235	5,575,681	5,576,305	5,576,880	5,577,206	5,575,086
05 :	5,575,710	5,575,690	5,576,351	5,576,898	5,577,211	5,575,099
06 :	5,575,006	5,575,691	5,576,375	5,576,901	5,577,214	5,575,147
	5,575,018	5,575,707	5,576,423	5,576,906	5,577,227	5,575,194
	5,575,024	5,575,724	5,576,426	5,576,908	5,577,228	5,575,381
	5,575,034	5,575,725	5,576,427	5,576,909	5,577,229	5,575,438
	5,575,035	5,575,759	5,576,428	5,576,914	5,577,232	5,575,464
	5,575,067	5,575,777	5,576,434	5,576,918	5,577,236	5,575,465
	5,575,072	5,575,788	5,576,468	5,576,951	5,577,237	5,575,581
	5,575,076	5,575,791	5,576,485	5,576,955	5,577,240	5,575,600
	5,575,094	5,575,800	5,576,493	5,576,976	5,577,241	5,575,607
	5,575,097	5,575,810	5,576,532	5,576,984	5,577,248	5,575,686
	5,575,106	5,575,868	5,576,534	5,576,985	5,577,250	5,575,799
	5,575,128	5,575,902	5,576,539	5,576,988	5,577,251	5,575,805
	5,575,139	5,575,918	5,576,551	5,576,991	5,577,252	5,575,992
	5,575,145	5,575,919	5,576,553	5,577,001	5,577,261	5,576,079
	5,575,165	5,575,929	5,576,554	5,577,015	5,577,265	5,576,099
	5,575,169	5,575,956	5,576,559	5,577,022	5,577,266	5,576,199
	5,575,236	5,575,959	5,576,560	5,577,023	5,125,904	5,576,200
	5,575,267	5,575,974	5,576,561	5,577,027	08 : 5,575,089	5,576,201
	5,575,271	5,576,017	5,576,568	5,577,029	5,575,226	5,576,273
	5,575,288	5,576,018	5,576,576	5,577,044	5,575,238	5,576,281
	5,575,308	5,576,030	5,576,596	5,577,050	5,575,250	5,576,317

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15 : 5,576,674 5,575,595 5,575,026 5,575,593 5,575,078 5,577,124
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16 : 5,575,123 5,577,196 5,575,167 5,575,803 5,575,121 5,577,231
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5,575,206 5,575,654 5,574,517 5,576,515 5,575,559 5,575,762
5,575,221 5,575,749 5,575,525 32 : 5,575,218 5,575,636 5,575,812
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5,575,658 5,575,442 5,575,726 5,575,772 5,575,860 5,576,589
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5,575,241 5,575,925 5,575,276 5,576,629 5,576,013
5,575,306 5,575,932 5,575,298 5,576,633 5,576,042

DESIGN PATENTS

01 : 375,793 375,725 375,774 24 : 375,640 375,675 375,805
04 : 375,637 375,736 375,781 375,742 375,758 375,806
375,687 375,737 375,782 375,822 375,764 375,807
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375,705 375,663 22 : 375,658 375,785 42 : 375,661
375,713 375,697 375,665 36 : 375,614 375,763
375,724 375,712 375,766 375,625 375,804

PLANT PATENTS

01 : 9,697 9,696 9,700 12 : 9,702 37 : 9,698
06 : 9,695 9,699 9,701 9,703

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Michael Kantor, *Secretary*
PATENT AND TRADEMARK OFFICE
Bruce Lehman, *Commissioner*

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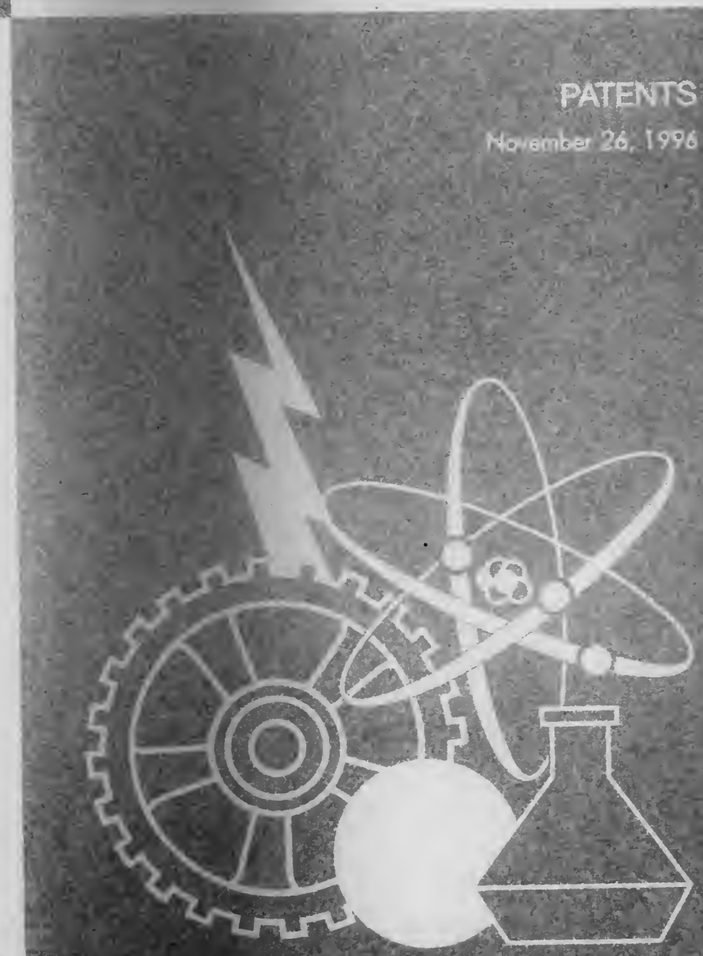
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

November 26, 1996



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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1190 O.G. 3, on September 3, 1996.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective July 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1187 O.G. 73, on June 25, 1996.

International fees were changed, effective on January 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1181 O.G. 49, on December 19, 1995.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective October 1, 1996, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1585.00
International fees	
Basic fee	677.00
Basic supplemental fee (for each page over 30)	13.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	164.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	164.00
— Confirmation fee	82.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	207.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

Sept. 10, 1996

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on November 23, 1993 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,263,200 through 5,265,275
Reissue Patents based on the above identified patents.

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Attention is drawn to the patents which were issued on November 21, 1989 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,881,275 through 4,882,784
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on November 19, 1985 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,553,269 through 4,554,680
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED September 18, 1996
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,417	06/825,367	05/12/87
(4,472,371)	(06/337,314)	(09/18/84)
Re. 32,580	06/909,319	01/19/88
(4,472,832)	(06/326,371)	(09/18/84)
Re. 32,680	06/724,291	05/31/88
(4,471,770)	(06/404,431)	(09/18/84)
Re. 34,020	07/322,882	08/04/92
(4,472,478)	(06/545,104)	(09/18/84)
Re. 34,145	07/581,545	12/15/92
(4,771,086)	(06/899,207)	(09/13/88)
4,471,496	06/507,984	09/18/84
4,471,504	06/457,642	09/18/84
4,471,505	06/293,749	09/18/84
4,471,507	06/498,899	09/18/84
4,471,510	06/443,851	09/18/84
4,471,514	06/282,330	09/18/84
4,471,515	06/277,107	09/18/84
4,471,519	06/416,105	09/18/84
4,471,524	06/564,368	09/18/84
4,471,532	06/497,996	09/18/84
4,471,538	06/388,549	09/18/84
4,471,543	06/429,537	09/18/84
4,471,547	06/341,548	09/18/84
4,471,552	06/352,306	09/18/84
4,471,556	06/488,566	09/18/84
4,471,564	06/318,826	09/18/84
4,471,578	06/380,103	09/18/84
4,471,584	06/351,774	09/18/84
4,471,606	06/493,388	09/18/84
4,471,615	06/400,694	09/18/84
4,471,618	06/389,902	09/18/84
4,471,622	06/397,780	09/18/84
4,471,630	06/461,567	09/18/84
4,471,631	06/505,734	09/18/84
4,471,634	06/461,030	09/18/84
4,471,637	06/440,378	09/18/84
4,471,639	06/438,152	09/18/84
4,471,642	06/342,795	09/18/84
4,471,643	06/347,717	09/18/84
4,471,648	06/386,356	09/18/84
4,471,656	06/465,777	09/18/84
4,471,658	06/415,906	09/18/84
4,471,662	06/452,778	09/18/84
4,471,663	06/367,449	09/18/84
4,471,674	06/432,126	09/18/84
4,471,677	06/465,019	09/18/84
4,471,681	06/422,518	09/18/84
4,471,682	06/356,391	09/18/84
4,471,684	06/301,847	09/18/84
4,471,685	06/419,086	09/18/84
4,471,697	06/343,613	09/18/84
4,471,702	06/512,303	09/18/84
4,471,705	06/360,891	09/18/84
4,471,714	06/400,720	09/18/84
4,471,715	06/388,013	09/18/84
4,471,721	06/474,485	09/18/84
4,471,728	06/492,557	09/18/84
4,471,738	06/417,693	09/18/84
4,471,741	06/450,931	09/18/84

Patent Number	Serial Number	Issue Date	4,472,173	06/440,394	09/18/84
			4,472,174	06/488,416	09/18/84
4,471,767	06/558,335	09/18/84	4,472,176	06/519,084	09/18/84
4,471,769	06/338,181	09/18/84	4,472,177	06/416,433	09/18/84
4,471,773	06/467,784	09/18/84	4,472,178	06/511,119	09/18/84
4,471,790	06/366,434	09/18/84	4,472,181	06/368,411	09/18/84
4,471,797	06/359,957	09/18/84	4,472,185	06/461,671	09/18/84
4,471,813	06/303,443	09/18/84	4,472,197	06/362,866	09/18/84
4,471,816	06/420,844	09/18/84	4,472,200	06/528,831	09/18/84
4,471,828	06/390,945	09/18/84	4,472,201	06/407,343	09/18/84
4,471,831	06/474,735	09/18/84	4,472,203	06/399,280	09/18/84
4,471,840	06/507,828	09/18/84	4,472,204	06/384,893	09/18/84
4,471,846	06/377,939	09/18/84	4,472,209	06/309,477	09/18/84
4,471,847	06/488,550	09/18/84	4,472,214	06/530,325	09/18/84
4,471,853	06/505,587	09/18/84	4,472,223	06/432,984	09/18/84
4,471,856	06/407,725	09/18/84	4,472,238	06/558,309	09/18/84
4,471,858	06/377,095	09/18/84	4,472,247	06/562,863	09/18/84
4,471,860	06/371,423	09/18/84	4,472,256	06/513,674	09/18/84
4,471,862	06/373,256	09/18/84	4,472,261	06/482,556	09/18/84
4,471,871	06/444,635	09/18/84	4,472,263	06/399,671	09/18/84
4,471,876	06/216,931	09/18/84	4,472,275	06/426,476	09/18/84
4,471,884	06/377,158	09/18/84	4,472,276	06/257,507	09/18/84
4,471,888	06/398,317	09/18/84	4,472,277	06/407,155	09/18/84
4,471,898	06/372,678	09/18/84	4,472,285	06/408,035	09/18/84
4,471,901	06/524,221	09/18/84	4,472,287	06/449,260	09/18/84
4,471,904	06/436,125	09/18/84	4,472,289	06/414,281	09/18/84
4,471,905	06/434,605	09/18/84	4,472,295	06/533,043	09/18/84
4,471,908	06/469,027	09/18/84	4,472,297	06/532,246	09/18/84
4,471,913	06/357,991	09/18/84	4,472,298	06/263,704	09/18/84
4,471,915	06/408,755	09/18/84	4,472,301	06/383,340	09/18/84
4,471,916	06/413,025	09/18/84	4,472,303	06/524,931	09/18/84
4,471,919	06/417,706	09/18/84	4,472,311	06/400,783	09/18/84
4,471,922	06/439,203	09/18/84	4,472,312	06/519,092	09/18/84
4,471,923	06/410,700	09/18/84	4,472,317	06/430,109	09/18/84
4,471,930	06/278,975	09/18/84	4,472,318	06/461,045	09/18/84
4,471,938	06/438,114	09/18/84	4,472,320	06/378,815	09/18/84
4,471,940	06/366,370	09/18/84	4,472,324	06/457,570	09/18/84
4,471,942	06/421,830	09/18/84	4,472,326	06/397,697	09/18/84
4,471,943	06/343,203	09/18/84	4,472,327	06/462,413	09/18/84
4,471,953	06/325,905	09/18/84	4,472,333	06/307,062	09/18/84
4,471,959	06/375,269	09/18/84	4,472,335	06/463,571	09/18/84
4,471,960	06/417,039	09/18/84	4,472,336	06/369,107	09/18/84
4,471,964	06/523,428	09/18/84	4,472,348	06/223,975	09/18/84
4,471,977	06/378,025	09/18/84	4,472,349	06/322,387	09/18/84
4,471,989	06/324,386	09/18/84	4,472,350	06/502,804	09/18/84
4,471,994	06/378,407	09/18/84	4,472,354	06/385,814	09/18/84
4,472,000	06/415,943	09/18/84	4,472,355	06/411,736	09/18/84
4,472,004	06/237,601	09/18/84	4,472,358	06/382,615	09/18/84
4,472,015	06/446,805	09/18/84	4,472,359	06/351,507	09/18/84
4,472,017	06/481,513	09/18/84	4,472,364	06/391,196	09/18/84
4,472,024	06/337,780	09/18/84	4,472,368	06/453,213	09/18/84
4,472,028	06/308,615	09/18/84	4,472,369	06/463,298	09/18/84
4,472,037	06/295,401	09/18/84	4,472,377	06/288,261	09/18/84
4,472,047	06/493,868	09/18/84	4,472,379	06/313,597	09/18/84
4,472,048	06/425,333	09/18/84	4,472,381	06/458,844	09/18/84
4,472,051	06/407,341	09/18/84	4,472,383	06/485,824	09/18/84
4,472,053	06/354,244	09/18/84	4,472,384	06/504,639	09/18/84
4,472,055	06/298,329	09/18/84	4,472,388	06/458,824	09/18/84
4,472,071	06/572,633	09/18/84	4,472,389	06/485,779	09/18/84
4,472,072	06/403,878	09/18/84	4,472,390	06/355,185	09/18/84
4,472,080	06/326,328	09/18/84	4,472,394	06/533,700	09/18/84
4,472,081	06/326,333	09/18/84	4,472,397	06/467,691	09/18/84
4,472,085	06/497,002	09/18/84	4,472,402	06/568,314	09/18/84
4,472,086	06/238,660	09/18/84	4,472,411	06/486,508	09/18/84
4,472,092	06/406,337	09/18/84	4,472,412	06/410,877	09/18/84
4,472,094	06/346,902	09/18/84	4,472,414	06/495,907	09/18/84
4,472,104	06/463,984	09/18/84	4,472,416	06/403,988	09/18/84
4,472,105	06/469,641	09/18/84	4,472,419	06/572,790	09/18/84
4,472,107	06/404,761	09/18/84	4,472,422	06/506,605	09/18/84
4,472,122	06/367,605	09/18/84	4,472,426	06/452,176	09/18/84
4,472,124	06/299,580	09/18/84	4,472,428	06/327,741	09/18/84
4,472,127	06/488,781	09/18/84	4,472,430	06/392,837	09/18/84
4,472,132	06/379,946	09/18/84	4,472,441	06/332,798	09/18/84
4,472,133	06/545,490	09/18/84	4,472,448	06/455,417	09/18/84
4,472,135	06/351,676	09/18/84	4,472,449	06/353,292	09/18/84
4,472,141	06/314,768	09/18/84	4,472,463	06/446,897	09/18/84
4,472,145	06/450,484	09/18/84	4,472,477	06/390,739	09/18/84
4,472,154	06/457,839	09/18/84	4,472,484	06/566,995	09/18/84
4,472,167	06/526,752	09/18/84	4,472,488	06/556,720	09/18/84

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4,472,514	06/375,229	09/18/84
4,472,515	06/375,230	09/18/84
4,472,531	06/279,872	09/18/84
4,472,536	06/573,270	09/18/84
4,472,539	06/380,271	09/18/84
4,472,542	06/521,469	09/18/84
4,472,543	06/382,461	09/18/84
4,472,548	06/509,567	09/18/84
4,472,550	06/456,191	09/18/84
4,472,551	06/481,524	09/18/84
4,472,555	06/493,797	09/18/84
4,472,560	06/480,187	09/18/84
4,472,566	06/561,404	09/18/84
4,472,568	06/437,398	09/18/84
4,472,570	06/516,046	09/18/84
4,472,580	06/516,832	09/18/84
4,472,583	06/447,908	09/18/84
4,472,590	06/349,600	09/18/84
4,472,593	06/448,128	09/18/84
4,472,594	06/413,065	09/18/84
4,472,604	06/240,134	09/18/84
4,472,605	06/354,305	09/18/84
4,472,617	06/390,121	09/18/84
4,472,624	06/386,986	09/18/84
4,472,629	06/347,214	09/18/84
4,472,645	06/333,435	09/18/84
4,472,653	06/510,913	09/18/84
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4,472,779	06/327,497	09/18/84
4,472,781	06/306,805	09/18/84
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4,472,808	06/392,017	09/18/84
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4,472,814	06/413,953	09/18/84
4,472,815	06/423,751	09/18/84
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4,472,830	06/463,740	09/18/84
4,472,834	06/311,355	09/18/84
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4,769,883	06/472,529	09/13/88
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4,769,887	07/047,205	09/13/88
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4,770,014	07/118,147	09/13/88
4,770,031	06/920,578	09/13/88
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4,770,042	07/139,178	09/13/88
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4,770,072	07/109,502	09/13/88
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4,770,146	07/098,562	09/13/88
4,770,151	07/103,110	09/13/88
4,770,152	07/114,025	09/13/88
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4,770,778	07/120,175	09/13/88
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5,147,910	07/764,262	09/15/92
5,147,911	07/764,022	09/15/92
5,147,914	07/678,939	09/15/92
5,147,915	07/759,253	09/15/92
5,147,919	07/365,340	09/15/92
5,147,923	07/830,141	09/15/92
5,147,925	07/654,976	09/15/92
5,147,929	07/574,456	09/15/92
5,147,931	07/715,872	09/15/92
5,147,936	07/681,249	09/15/92
5,147,938	07/679,431	09/15/92
5,147,940	07/682,740	09/15/92
5,147,943	07/467,549	09/15/92
5,147,946	07/667,140	09/15/92
5,147,955	07/729,995	09/15/92
5,147,960	07/561,612	09/15/92
5,147,963	07/422,322	09/15/92
5,147,972	07/780,920	09/15/92
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5,147,977	07/569,185	09/15/92
5,147,985	07/819,482	09/15/92
5,147,988	07/760,811	09/15/92
5,147,989	07/509,994	09/15/92
5,147,992	07/708,083	09/15/92
5,147,997	07/718,725	09/15/92
5,148,006	07/428,873	09/15/92
5,148,012	07/776,577	09/15/92
5,148,015	07/633,724	09/15/92
5,148,017	07/708,980	09/15/92
5,148,031	07/717,076	09/15/92
5,148,058	07/620,682	09/15/92
5,148,070	07/752,734	09/15/92
5,148,074	07/650,840	09/15/92
5,148,080	07/465,415	09/15/92
5,148,085	07/649,086	09/15/92
5,148,086	07/620,360	09/15/92
5,148,090	07/476,446	09/15/92
5,148,091	07/689,791	09/15/92
5,148,116	07/754,714	09/15/92
5,148,135	07/754,865	09/15/92
5,148,142	07/688,157	09/15/92
5,148,145	07/698,698	09/15/92
5,148,147	07/623,183	09/15/92
5,148,150	07/637,672	09/15/92
5,148,152	07/640,160	09/15/92
5,148,174	07/654,498	09/15/92
5,148,180	07/729,741	09/15/92
5,148,199	07/651,555	09/15/92
5,148,218	07/720,683	09/15/92
5,148,228	07/689,110	09/15/92
5,148,237	07/545,391	09/15/92
5,148,247	07/755,596	09/15/92
5,148,273	07/461,009	09/15/92
5,148,283	07/501,860	09/15/92
5,148,285	07/452,614	09/15/92
5,148,295	07/733,964	09/15/92
5,148,311	07/717,491	09/15/92
5,148,325	07/805,530	09/15/92
5,148,330	07/686,329	09/15/92
5,148,341	07/276,056	09/15/92
5,148,345	07/488,677	09/15/92
5,148,355	07/585,070	09/15/92
5,148,356	07/753,094	09/15/92
5,148,361	07/742,026	09/15/92
5,148,362	07/742,293	09/15/92
5,148,364	07/604,826	09/15/92
5,148,370	07/725,224	09/15/92
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5,148,405	07/833,572	09/15/92
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5,148,438	07/735,173	09/15/92
5,148,439	07/571,994	09/15/92
5,148,440	06/554,869	09/15/92
5,148,442	07/363,310	09/15/92
5,148,445	07/588,999	09/15/92
5,148,456	07/649,835	09/15/92
5,148,463	07/787,459	09/15/92
5,148,465	07/682,807	09/15/92
5,148,474	07/748,178	09/15/92
5,148,478	07/628,701	09/15/92
5,148,490	07/590,782	09/15/92
5,148,500	07/645,194	09/15/92
5,148,545	07/384,128	09/15/92
5,148,547	07/704,688	09/15/92

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,109,736, Re. S.N. 08/702,980, Aug. 26, 1996, Cl. 175/297, DOUBLE ACTING JAR, Denrell D. Webb, et. al., Owner of Record: *Houston Engineers Inc., Houston, Tex.*, Attorney or Agent: Kenneth L. Nash, Ex. Gp.: 3506

4,877,805, Re. S.N. 08/630,872, Apr. 2, 1996, Cl. 514/381, METHODS FOR TREATMENT OF SUNDAMAGED HUMAN SKIN WITH RETINOIDS, Albert M. Kligman, Owner of Record: *Inventor*, Attorney or Agent: J. Frank Osha, Ex. Gp.: 1205

4,984,005, Re. S.N. 08/666,090, May 22, 1996, Cl. 354, PHOTOGRAPHING MODE SWITCHING DEVICE OF A CAMERA, Kazuyuki Kazami, et. al., Owner of Record: *Nikon Corp., Tokyo, Japan*, Attorney or Agent: Nelson H. Shapiro, Ex. Gp.: 2101

4,994,319, Re. S.N. 08/705,054, Aug. 29, 1996, Cl. 428, MEMBER FOR DEVELOPING ELECTROSTATIC LATENT IMAGES, Kazuo Nojima, Owner of Record: *Ricoh Co., Tokyo, Japan*, Attorney or Agent: Steven B. Kelber, Ex. Gp.: 1314

5,113,240, Re. S.N. 08/674,661, July 2, 1996, Cl. 257, LEADFRAME WITH HEAT DISSIPATOR CONNECTED TO S-SHAPED FINGERS, Pieramedeo Bozzini, et. al., Owner of Record: *SGS-Thompson Microelectronics SRL, Milano, Italy*, Attorney or Agent: David M. Driscoll, Ex. Gp.: 2503

5,121,370, Re. S.N. 08/698,761, Aug. 16, 1996, Cl. 369, APPARATUS AND METHOD FOR ACCURATELY SCANNING A LIGHT BEAM ACROSS TRACKS OF A RECORDING MEDIUM, Shigenori Yanagi, Owner of Record: *Fujitsu Limited, Kawasaki-Shi, Japan*, Attorney or Agent: Richard A. Gollhofer, Ex. Gp.: 2513

5,155,516, Re. S.N. 08/703,935, Aug. 28, 1996, Cl. 354, VIEW FINDER OPTICAL SYSTEM WITH EYE DIRECTION DETECTION DEVICE, Osamu Shindo, Owner of Record: *Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Bruce H. Bernstein, Ex. Gp.: 2101

5,238,938, Re. S.N. 08/518,180, Aug. 23, 1995, Cl. 514/253, INDOLE DERIVATIVES, Hitoshi Tone, et. al., Owner of Record: *Otsuka Pharmaceutical Co., Tokyo, Japan*, Attorney or Agent: Arthur S. Garrett, Ex. Gp.: 1202

5,239,910, Re. S.N. 08/506,458, Aug. 1, 1995, Cl. 507/138, USE OF SELECTED ESTER OILS IN DRILLING FLUIDS AND MUDS, Heinz Mueller, et. al., Owner of Record: *Henkel Kommanditgesellschaft Auf Aktien, Duesseldorf, Federal Republic of Germany*, Attorney or Agent: C. James Bushman, Ex. Gp.: 2203

5,244,239, Re. S.N. 08/695,858, Aug. 9, 1996, Cl. 292/201, LATCH ASSEMBLY, William S. Wang, Owner of Record: *Eaton Corp., Cleveland, Ohio*, Attorney or Agent: Calvin G. Covell, Ex. Gp.: 3508

5,249,951, Re. S.N. 08/706,466, Aug. 30, 1996, Cl. 425, INJECTION MOLDING MACHINE HAVING TILTABLE MOUNTING PLATES, Heinz Leonhartsberger, et. al., Owner of Record: *Engel Maschinenbau Gesellschaft MBH, Schwertberg, Austria*, Attorney or Agent: Peter C. Michalos, Ex. Gp.: 1305

5,275,849, Re. S.N. 08/576,464, Dec. 21, 1995, Cl. 427/33, CLEANING METHOD USING BOTH WET AND DRY STEAM, AND APPARATUS ADAPTED THEREFOR, Daniel Castelli, et. al., Owner of Record: *Electro-Static Technology Inc., Branford, Conn.*, Attorney or Agent: Ira S. Dorman, Ex. Gp.: 1112

5,286,976, Re. S.N. 08/601,411, Feb. 14, 1996, Cl. 250/349, MICROSTRUCTURE DESIGN FOR HIGH IR SENSITIVITY, Barrett E. Cole, Owner of Record: *Honeywell Inc., Minneapolis, Minn.*, Attorney or Agent: Roger W. Jensen, Ex. Gp.: 2202

5,293,057, Re. S.N. 08/612,678, Mar. 8, 1996, Cl. 257/356, ELECTROSTATIC DISCHARGE PROTECTION CIRCUIT

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FOR SEMICONDUCTOR DEVICE, Fan Ho, et. al., Owner of Record: *Micron Technology, Inc., Boise, Id.,* Attorney or Agent: Joseph A. Walkowski, Ex. Gp.:2503

5,300,915, Re. S.N. 08/627,598, Apr. 4, 1996, Cl. 338/22, THERMAL SENSOR, Robert E. Higashi, et. al., Owner of Record: *Honeywell Inc., Minneapolis, Minn.,* Attorney or Agent: Roger W. Jensen, Ex. Gp.: 2202

5,305,335, Re. S.N. 08/693,689, Aug. 5, 1996, Cl. 372/6, SINGLE LONGITUDINAL MODE PUMPED OPTICAL WAVEGUIDE LASER ARRANGEMENT, Gary A. Ball, et. al., Owner of Record: *United Technologies Corp., Hartford, Conn.,* Attorney or Agent: Gerald L. DePardo, Ex. Gp.: 2501

5,305,368, Re. S.N. 08/703,250, Aug. 26, 1996, Cl. 378/146, METHOD AND APPARATUS FOR PIECE-WISE RADIOGRAPHIC SCANNING, Joseph P. Bisek, et. al., Owner of Record: *Lunar Corp., Madison, Wis.,* Attorney or Agent: Keith M. Baxter, Ex. Gp.: 2506

5,318,152, Re. S.N. 08/643,477, May 6, 1996, Cl. 184/626, LUBRICATING SYSTEM, Charles W. Ehlert, Owner of Record: *Lubrication System Co. of Texas Inc., Houston, Tex.,* Attorney or Agent: Bill B. Berryhill, Ex. Gp.: 3401

5,321,657, Re. S.N. 08/664,081, June 13, 1996, Cl. 365/203, RANDOM ACCESS MEMORY OF A CSL SYSTEM WITH A BIT LINE PAIR AND AN I/O LINE PAIR INDEPENDENTLY SET TO DIFFERENT PRECHARGE VOLTAGES, Kazutami Aritomo, et. al., Owner of Record: *Inventors,* Attorney or Agent: Edward J. Wise, Ex. Gp.: 2511

5,330,334, Re. S.N. 08/683,832, July 18, 1996, Cl. 418/55, COMPACT OLDHAM COUPLING, James W. Bush, et. al., Owner of Record: *Carrier Corp./Steven Revis, Syracuse, N.Y.,* Attorney or Agent: David J. Zobkiw, Ex. Gp.: 3403

5,330,978, Re. S.N. 08/680,295, July 12, 1996, Cl. 514/80, PHOSPHONIC ACID DERIVATIVES AND USE THEREOF, Mitsuhiro Wakimasu, et. al., Owner of Record: *Takeda Chemical Industries Limited, Osaka, Japan,* Attorney or Agent: George W. Neuner, Ex. Gp.: 1201

5,335,515,, Re. S.N. 08/692,047, Aug. 2, 1996, Cl. 62/476, TRIPLE EFFECT ABSORPTION CYCLE APPARATUS, Uwe Rockenfeller, et. al., Owner of Record: *Rocky Research Corp., Boulder City, Nev.,* Attorney or Agent: Jerry R. Seiler, Ex. Gp.: 3404

5,335,677, Re. S.N. 08/683,126, June 22, 1996, Cl. 128/852, DRAPE FOR USE BY ANESTHESIA PROVIDER, Lyndon J. Busch, Owner of Record: *Inventor,* Attorney or Agent: Gregory F. Cotterell, Ex. Gp.: 3301

5,336,056, Re. S.N. 08/693,483, Aug. 8, 1996, Cl. 417/222.1, VARIABLE CAPACITY SWASH PLATE TYPE REFRIGERANT COMPRESSOR HAVING A DOUBLE FULCRUM HINGE MECHANISM, Kazuya Kimura, et. al., Owner of Record: *Kabushiki Kaisha Toyoda Jidoshokki Seisakush, Kariya-Shi, Japan,* Attorney or Agent: Alfred L. Haffner, Jr., Ex. Gp.: 3403

5,341,069, Re. S.N. 08/688,528, July 30, 1996, Cl. 315/241S, MICROPROCESSOR-CONTROLLED STROBE LIGHT, Joseph Kosich, et. al., Owner of Record: *Wheelock Inc., Long Branch, N.J.,* Attorney or Agent: Richard G. Berkley, Ex. Gp.: 2502

5,346,380, Re. S.N. 08/684,880, July 25, 1996, Cl. 425/87, CAULKING TUBE EXTENSION NOZZLE, James T. Ables, Owner of Record: *Inventor,* Attorney or Agent: John R. Duncan, Ex. Gp.: 3104

5,347,762, Re. S.N. 08/700,021, Aug. 20, 1996, Cl. 51/165.71, LENS PERIPHERY PROCESSING APPARATUS METHOD FOR OBTAINING PROCESSING DATA AND LENS PERIPHERY PROCESSING METHOD, Ryoji Shibata, Owner of Record: *Nidek Co. Limited, Aichi-Ken, Japan,* Attorney or Agent: Ellen Marcie Emas, Ex. Gp.: 3203

5,350,358, Re. S.N. 08/723,842, Sept. 27, 1996, Cl. 604/43, BENT CO-AXIAL CATHETER, Geoffrey S. Martin, Owner of Record: *Med-Pro Design, Inc., Mississauga, Canada,* Attorney or Agent: Kent S. Burningham, Ex. Gp.: 3306

5,363,982, Re. S.N. 08/689,928, Aug. 16, 1996, Cl. 220/441, MULTI-LAYERED INSULATED CUP FORMED OF ONE CONTINUOUS SHEET, Claus E. Sadlier, Owner of Record: *Insul-Air Holdings, Inc., San Francisco, Calif.,* Attorney or Agent: None, Ex. Gp.: 3207

5,367,469, Re. S.N. 08/683,618, July 17, 1996, Cl. 364/491, PREDICTIVE CAPACITANCE LAYOUT METHOD FOR INTEGRATED CIRCUITS, Mark R. Hartoog, Owner of Record: *VLSI Technology Inc., San Jose, Calif.,* Attorney or Agent: James D. Shaurette, Ex. Gp.: 2304

5,368,157, Re. S.N. 08/697,611, Aug. 28, 1996, Cl. 206, PRE-PACKAGED, PRE-SOAKED CLEANING SYSTEM AND METHOD FOR MAKING THE SAME, Charles R. Gasparrini, et. al., Owner of Record: *Baldwin Graphic Systems, Inc., Stamford, Conn.,* Attorney or Agent: Thomas M. Hammond, Ex. Gp.: 3208

5,388,900, Re. S.N. 08/690,878, Aug. 25, 1996, Cl. 305/54, CRAWLER PAD, Tatsuo Suzuki, Owner of Record: *Kabushiki Kaisha Suzuki Shoji, Kanagawa-Ken, Japan,* Attorney or Agent: Ronald P. Kananen, Ex. Gp.: 3102

5,396,450, Re. S.N. 08/612,433, Mar. 7, 1996, Cl. 365/51, DYNAMIC RANDOM ACCESS MEMORY DEVICE WITH THE COMBINED OPEN/FOLDED BITLINE PAIR ARRANGEMENT, Dalsaburo Takashima, et. al., Owner of Record: *Kabushiki Kaisha Toshiba, Kawasaki, Japan,* Attorney or Agent: Gregory J. Maier, Ex. Gp.: 2508

5,396,729, Re. S.N. 08/688,364, July 30, 1996, Cl. 43/114, INFESTATION MONITORING SYSTEM, Charles Vejvoda, Owner of Record: *Inventor,* Attorney or Agent: Arlen L. Olsen, Ex. Gp.: 3205

5,405,296, Re. S.N. 08/687,983, July 29, 1996, Cl. 474/135, TORSIONAL VIBRATION DAMPER, Zdenek Cerny, et. al., Owner of Record: *Tesma International Inc., Concord, Canada,* Attorney or Agent: Jack S. Barufka, Ex. Gp.: 3506

5,408,832, Re. S.N. 08/675,969, July 5, 1996, Cl. 62/451, THERMALLY INSULATING JACKET AND RELATED PROCESS, Claudio Boffito, et. al., Owner of Record: *SAES Gelters S.P.A., Milano, Italy,* Attorney or Agent: D. Lee Antton, Ex. Gp.: 3404

5,411,403, Re. S.N. 08/703,971, Aug. 28, 1996, Cl. 439/106, BRIDGED ELECTRICAL PLUG, Stephen A. Blanche, Owner of Record: *ETCO Inc., Warwick, R.I.,* Attorney or Agent: Wm. W. Rymer, Ex. Gp.: 3202

5,417,998, Re. S.N. 08/680,801, July 16, 1996, Cl. 426/615, PROCESS FOR THE MANUFACTURE OF A WHOLESOME, NONPERISHABLE FRUIT PRESERVE, Andrea Scheibner, et. al., Owner of Record: *Inventor,* Attorney or Agent: Walter D. Ames, Ex. Gp.: 1302

5,419,603, Re. S.N. 08/701,104, Aug. 21, 1996, Cl. 296/39.2, CARGO BED LINER TIE-DOWN FASTENER ENCLOSURE, Richard J. Kremer, et. al., Owner of Record: *Futurex Industries Inc., Marshall, Ind.,* Attorney or Agent: Paul B. Overhauser, Ex. Gp.: 3102

5,477,455, Re. S.N. 08/684,857, July 25, 1996, Cl. 364/424, TURNING CONTROL SYSTEM FOR USE IN A TRACK-LAYING VEHICLE, Tsutomu Ishino, et. al., Owner of Record: *Kabushiki Kaisha Komatsu Seisakush, Tokyo, Japan,* Attorney or Agent: Mel R. Quintos, Ex. Gp.: 2304

5,491,922, Re. S.N. 08/703,054, Aug. 26, 1996, Cl. 43/6.5, REMOTE CONTROL FLOATATION BOOM, Bruce C. Sanders, Owner of Record: *Michael D. Swenson, Salt Lake City, Utah,* Attorney or Agent: Evan R. Witt, Ex. Gp.: 3209

5,510,129, Re. S.N. 08/666,736, May 14, 1996, Cl. POTASSIUM BROMATE REPLACER COMPOSITION, Yoon J. Kim, Owner of Record: *Research Resources, Inc., Park Ridge, Ill.,* Attorney or Agent: Charles T. Riggs, Jr., Ex. Gp.: 1302

5,520,235, Re. S.N. 08/697,110, Aug. 26, 1996, Cl. 160/178.1, MINI BLIND SLIDE-ON ATTACHMENT, Edward A. Coleman, Owner of Record: *Inventor,* Attorney or Agent: Kenneth J. Lukacher, Ex. Gp.: 3509

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,574,049, Reexam. No. 90/004,422, Oct. 18, 1996, Cl. 210/639, REVERSE OSMOSIS SYSTEM, Gregory A. Pittner, Owner of Record: *US Filter/Ionpure Inc., Lowell, Mass.,* Attorney or Agent: Peter C. Lando, Wolf, Greenfield & Sacks, Boston, Mass., Ex. Gp.: 1306, Requester: Owner

4,915,675, Reexam. No. 90/004,428, Oct. 28, 1996, Cl. 474/213, PITCH EQUALIZED CHAIN WITH FREQUENCY MODULATED ENGAGEMENT, Stellios A. Avramidis, Owner of Record: *Borg-Warner Automotive Transmission & Engine Components Corp., Sterling Heights, Mich.,* Attorney or Agent: Robert A. Brown, Northbrook, Ill., Ex. Gp.: 3506, Requester: Mel R. Quintos, Armstrong, Westerman, Hattori, McLeland & Naughton, Washington, D.C.

4,991,049, Reexam. No. 90/004,424, Oct. 21, 1996, Cl. 361/028, ANTI-SHORT CYCLE CIRCUIT, Andrew S. Kadah, Owner of Record: *Inventor,* Attorney or Agent: Thomas J. Wall, Harris, Beach & Wilcox, Syracuse, N.Y., Ex. Gp.: 2104, Requester: Brenda Pomerance, Morgan & Finnegan, New York, N.Y.

5,008,725, Reexam. No. 90/004,429, Oct. 28, 1996, Cl. 257/341, PLURAL POLYGON SOURCE PATTERN FOR MOSFET, Alexander Lidow, et. al., Owner of Record: *International Rectifier Corp., El Segundo, Calif.,* Attorney or Agent: Ostrolenk Faber Gerb & Soffen, New York, N.Y., Ex. Gp.: 2503, Requester: Peter J. Thoma, Thompson & Knight, Dallas, Tex.; McDermott, Will & Emery, Washington, D.C.

5,110,021, Reexam. No. 90/004,421, Oct. 9, 1996, Cl. 254/126, SCISSORS JACK WHICH HAS IMPROVED FORMED GEAR TEETH, Darryl L. Engel, et. al., Owner of Record: *Universal Tool & Stamping Co., Butler, Ind.,* Attorney or Agent: Hill Steadman & Simpson, Brett A. Valiquet, Chicago, Ill., Ex. Gp.: 3203, Requester: Michelle N. Lester, Cushman Darby & Cushman, Intellectual Prop. Group, Pillsbury, Madison & Sutro, Washington, D.C.

5,125,777, Reexam. No. 90/004,423, Oct. 18, 1996, Cl. 409/234, ROTARY TOOL, Eiichi Osawa, Owner of Record: *Inventor,* Attorney or Agent: Patrick J. Burns, Greer, Burns & Crain, Chicago, Ill., Ex. Gp.: 3209, Requester: Richmill USA, Inc., Industry, Calif., c/o Loeb & Loeb, Los Angeles, Calif.

5,147,354, Reexam. No. 90/004,426, Oct. 25, 1996, Cl. 606/015, MID-INFRARED LASER ENDOSCOPE, Theodore A. Boutacoff, et. al., Owner of Record: *Coherent, Inc., Palo Alto, Calif.,* Attorney or Agent: Michael A. Stallman, Limbach & Limbach, San Francisco, Calif., Ex. Gp.: 3309, Requester: Olson & Hierl, Chicago, Ill.

5,252,149, Reexam. No. 90/004,427, Oct. 25, 1996, Cl. 148/605, FERROCHROMIUM ALLOY AND METHOD THEREOF, Kevin F. Dolman, Owner of Record: *Warman International, Ltd., Artarmon, Australia,* Attorney or Agent: Kerkam Stowell, Kondracki & Clarke, Falls Church, Va., Ex. Gp.: 1308, Requester: GIW Industries, Inc., Grovetown, Ga., c/o George M. Thomas, Thomas, Kayden, Horstemeyer & Risley, Atlanta, Ga.

5,434,057, Reexam. No. 90/004,425, Oct. 21, 1996, Cl. 435/018, SPERM MOTILITY ASSAY AND DEVICES, Randel Dorian, Owner of Record: *Quidel Corp., San Diego, Calif.,* Attorney or Agent: Townsend and Townsend and Crew, San Francisco, Calif., Ex. Gp.: 1211, Requester: Owner

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JULY 29, 1996
DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
106,567	71/079,355	10/26/1915
106,587	71/086,315	10/26/1915
106,602	71/083,324	10/26/1915
106,644	71/087,478	10/26/1915
106,662	71/086,914	10/26/1915
106,706	71/084,719	10/26/1915
106,820	71/086,465	10/26/1915
314,687	71/344,236	07/03/1934
329,189	71/343,607	10/22/1935
329,193	71/364,820	10/22/1935
329,201	71/365,685	10/22/1935
329,234	71/366,219	10/22/1935
329,243	71/364,125	10/22/1935
329,266	71/367,057	10/22/1935
329,321	71/365,150	10/22/1935
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614,600	71/660,310	10/25/1955
614,603	71/665,413	10/25/1955
614,608	71/671,900	10/25/1955
614,615	71/676,924	10/25/1955
614,617	71/677,131	10/25/1955
614,618	71/677,301	10/25/1955
614,627	71/671,585	10/25/1955
614,633	71/674,660	10/25/1955
614,643	71/682,613	10/25/1955
614,646	71/683,310	10/25/1955
614,648	71/683,729	10/25/1955
614,651	71/660,704	10/25/1955
614,654	71/661,513	10/25/1955
614,665	71/662,724	10/25/1955
614,672	71/669,220	10/25/1955
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614,688	71/676,962	10/25/1955
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614,707	71/663,919	10/25/1955
614,715	71/677,606	10/25/1955
614,718	71/678,283	10/25/1955
614,722	71/680,734	10/25/1955
614,725	71/681,452	10/25/1955
614,737	71/676,510	10/25/1955
614,747	71/673,698	10/25/1955
614,748	71/673,699	10/25/1955
614,749	71/673,700	10/25/1955
614,754	71/673,705	10/25/1955
614,769	71/679,914	10/25/1955
614,797	71/665,825	10/25/1955
614,801	71/673,194	10/25/1955
614,810	71/677,481	10/25/1955
614,812	71/677,568	10/25/1955
614,813	71/677,979	10/25/1955
614,817	71/679,781	10/25/1955
614,843	71/677,913	10/25/1955
614,844	71/679,047	10/25/1955
614,845	71/636,712	10/25/1955
614,846	71/650,207	10/25/1955
614,856	71/676,069	10/25/1955
614,872	71/678,164	10/25/1955
614,874	71/678,796	10/25/1955
614,898	71/675,623	10/25/1955
614,904	71/629,941	10/25/1955
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614,922	71/664,065	10/25/1955
614,923	71/665,441	10/25/1955
614,933	71/672,083	10/25/1955
614,936	71/675,679	10/25/1955
614,944	71/677,805	10/25/1955
614,948	71/678,673	10/25/1955
614,949	71/678,842	10/25/1955
614,954	71/682,068	10/25/1955
614,959	71/674,256	10/25/1955
614,961	71/642,650	10/25/1955
614,970	71/670,709	10/25/1955
614,977	71/675,561	10/25/1955
614,985	71/662,191	10/25/1955
614,991	71/676,701	10/25/1955
614,995	71/678,545	10/25/1955
614,998	71/642,682	10/25/1955
615,001	71/660,816	10/25/1955
615,007	71/645,220	10/25/1955
615,009	71/676,581	10/25/1955
615,010	71/642,661	10/25/1955
615,013	71/630,305	10/25/1955
615,014	71/675,567	10/25/1955
615,022	71/674,542	10/25/1955
615,023	71/684,493	10/25/1955
615,034	71/682,095	10/25/1955
615,037	71/655,289	10/25/1955
615,038	71/656,140	10/25/1955
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1,016,076	72/461,857	07/15/1975
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1,022,999	73/034,402	10/21/1975
1,023,000	73/034,499	10/21/1975
1,023,001	73/034,576	10/21/1975
1,023,009	73/042,964	10/21/1975
1,023,010	73/044,153	10/21/1975
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1,023,023	73/036,013	10/21/1975
1,023,024	73/586,780	10/21/1975
1,023,028	73/012,400	10/21/1975
1,023,030	73/028,244	10/21/1975
1,023,033	73/031,162	10/21/1975
1,023,037	73/037,382	10/21/1975
1,023,038	73/037,392	10/21/1975
1,023,041	73/040,491	10/21/1975
1,023,043	73/043,160	10/21/1975
1,023,044	73/043,201	10/21/1975
1,023,045	73/043,240	10/21/1975
1,023,046	73/043,241	10/21/1975
1,023,047	73/044,702	10/21/1975
1,023,048	73/045,320	10/21/1975
1,023,051	73/045,679	10/21/1975
1,023,052	73/046,059	10/21/1975
1,023,053	73/046,088	10/21/1975
1,023,054	73/046,639	10/21/1975
1,023,063	73/042,271	10/21/1975
1,023,064	73/007,457	10/21/1975
1,023,070	73/031,689	10/21/1975
1,023,075	73/034,040	10/21/1975
1,023,079	73/035,527	10/21/1975
1,023,082	73/037,065	10/21/1975
1,023,084	73/042,352	10/21/1975
1,023,086	73/042,587	10/21/1975
1,023,088	73/042,690	10/21/1975
1,023,089	73/042,691	10/21/1975
1,023,090	73/042,693	10/21/1975
1,023,092	73/042,697	10/21/1975
1,023,093	73/042,698	10/21/1975
1,023,096	73/043,018	10/21/1975
1,023,097	73/043,019	10/21/1975
1,023,098	73/043,165	10/21/1975
1,023,100	73/043,316	10/21/1975
1,023,101	73/044,220	10/21/1975
1,023,102	73/044,406	10/21/1975
1,023,103	73/044,962	10/21/1975
1,023,104	73/045,039	10/21/1975
1,023,109	73/045,385	10/21/1975
1,023,110	73/045,386	10/21/1975
1,023,111	73/045,390	10/21/1975
1,023,112	73/045,391	10/21/1975
1,023,114	73/045,662	10/21/1975
1,023,115	73/002,530	10/21/1975
1,023,116	73/006,423	10/21/1975
1,023,117	73/007,767	10/21/1975
1,023,122	73/030,900	10/21/1975
1,023,123	73/034,848	10/21/1975
1,023,129	73/039,641	10/21/1975
1,023,130	73/040,161	10/21/1975
1,023,133	73/046,932	10/21/1975
1,023,134	73/014,486	10/21/1975
1,023,140	73/012,459	10/21/1975
1,023,148	73/023,646	10/21/1975
1,023,152	73/027,297	10/21/1975
1,023,153	73/028,469	10/21/1975
1,023,155	73/034,882	10/21/1975
1,023,157	73/038,181	10/21/1975
1,023,159	73/038,538	10/21/1975
1,023,160	73/039,542	10/21/1975
1,023,163	73/042,941	10/21/1975
1,023,164	73/044,106	10/21/1975
1,023,165	73/044,230	10/21/1975
1,023,168	73/045,070	10/21/1975
1,023,171	73/046,756	10/21/1975
1,023,173	73/047,251	10/21/1975
1,023,174	73/021,057	10/21/1975
1,023,179	73/037,489	10/21/1975
1,023,180	73/045,139	10/21/1975
1,023,183	73/024,481	10/21/1975
1,023,184	73/040,264	10/21/1975
1,023,185	73/041,660	10/21/1975
1,023,186	73/041,763	10/21/1975
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1,023,212	73/006,915	10/21/1975
1,023,218	73/020,451	10/21/1975
1,023,219	73/021,018	10/21/1975
1,023,220	73/021,624	10/21/1975
1,023,223	73/023,064	10/21/1975
1,023,225	73/023,106	10/21/1975
1,023,226	73/023,107	10/21/1975
1,023,229	73/024,018	10/21/1975
1,023,232	73/024,509	10/21/1975
1,023,234	73/027,291	10/21/1975
1,023,235	73/029,181	10/21/1975
1,023,238	73/030,975	10/21/1975
1,023,241	73/035,237	10/21/1975
1,023,246	73/041,973	10/21/1975
1,023,249	73/046,090	10/21/1975
1,023,250	73/046,320	10/21/1975
1,023,251	73/046,462	10/21/1975
1,023,257	73/027,379	10/21/1975
1,023,260	73/008,192	10/21/1975
1,023,262	73/036,602	10/21/1975
1,023,265	73/038,387	10/21/1975
1,023,266	73/038,753	10/21/1975
1,023,268	73/038,634	10/21/1975
1,023,273	73/022,214	10/21/1975
1,023,275	73/029,142	10/21/1975
1,023,285	73/008,580	10/21/1975
1,023,286	73/009,128	10/21/1975
1,023,290	73/022,156	10/21/1975
1,023,291	73/022,157	10/21/1975
1,023,296	73/027,295	10/21/1975
1,023,298	73/027,880	10/21/1975
1,023,299	73/028,135	10/21/1975
1,023,302	73/031,726	10/21/1975
1,023,304	73/035,111	10/21/1975
1,023,306	73/036,390	10/21/1975
1,023,319	73/012,671	10/21/1975
1,023,321	73/028,897	10/21/1975
1,023,323	73/035,755	10/21/1975
1,023,325	73/037,101	10/21/1975
1,023,326	73/039,811	10/21/1975
1,023,327	73/039,840	10/21/1975
1,023,337	73/044,471	10/21/1975
1,023,343	73/028,961	10/21/1975
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1,023,348	73/045,623	10/21/1975
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1,023,353	73/047,205	10/21/1975
1,023,354	73/000,780	10/21/1975
1,023,356	73/030,117	10/21/1975
1,023,357	73/030,994	10/21/1975
1,023,365	73/046,271	10/21/1975
1,023,367	73/046,921	10/21/1975
1,023,370	73/030,132	10/21/1975
1,023,371	73/030,134	10/21/1975
1,023,374	73/048,024	10/21/1975
1,023,381	73/024,455	10/21/1975
1,023,383	73/036,722	10/21/1975
1,023,385	73/046,260	10/21/1975
1,023,387	73/024,751	10/21/1975
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1,023,389	73/024,753	10/21/1975
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1,023,393	73/026,991	10/21/1975
1,023,397	73/008,801	10/21/1975
1,023,398	73/010,876	10/21/1975
1,023,402	73/036,603	10/21/1975
1,023,403	73/039,056	10/21/1975
1,023,404	73/041,902	10/21/1975
1,023,409	73/021,220	10/21/1975
1,023,410	73/028,892	10/21/1975
1,023,411	73/033,928	10/21/1975
1,023,414	73/049,195	10/21/1975
1,023,418	73/037,214	10/21/1975
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1,023,420	73/042,495	10/21/1975
1,023,425	73/042,413	10/21/1975
1,023,426	73/048,568	10/21/1975
1,023,429	73/012,470	10/21/1975
1,023,430	73/012,624	10/21/1975
1,023,438	73/049,251	10/21/1975
1,023,440	73/010,163	10/21/1975
1,023,441	73/010,753	10/21/1975
1,023,443	73/014,265	10/21/1975
1,023,446	73/022,369	10/21/1975
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1,023,450	73/026,947	10/21/1975
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1,023,452	73/029,314	10/21/1975
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1,023,461	73/042,059	10/21/1975
1,023,465	73/045,586	10/21/1975
1,023,468	72/461,597	10/21/1975
1,023,473	72/404,446	10/21/1975
1,023,479	72/459,712	10/21/1975
1,023,484	72/449,147	10/21/1975
1,023,488	72/458,100	10/21/1975
1,023,490	72/454,970	10/21/1975
1,023,496	72/453,255	10/21/1975
1,023,501	72/433,416	10/21/1975
1,023,505	72/436,862	10/21/1975
1,023,508	72/434,287	10/21/1975
1,023,510	72/454,109	10/21/1975
1,023,516	72/465,448	10/21/1975
1,023,517	73/008,730	10/21/1975
1,023,520	72/461,809	10/21/1975
1,023,523	73/035,638	10/21/1975
1,023,524	73/029,295	10/21/1975

37 CFR § 1.47 Notice by Publication

Notice is hereby given of the filing of the following applications with a petition under 37 CFR § 1.47 requesting the acceptance of the application without the signature of all inventors or, if the inventor is deceased, the legal representative of the deceased inventor. The petition in each application has been granted. A notice has been sent to the last known address of the non-signing inventor or the legal representative. The inventors or legal representatives whose signatures are missing may join in the application by promptly filing an oath or declaration complying with 37 CFR § 1.63.

Application No.	Filing Date	Non-Signing Inventor(s)	Title of Invention
08/225,212	April 8, 1994	Richard H. Fox	Method for Translating Internet Prototocol Addresses to Other Distributed Network Addressing Schemes
08/296,735	Aug. 26, 1994	Gunter Weyermanns	Process and Device for Pellet-Freezing Pourable and Flowable Materials

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Application No.	Filing Date	Non-Signing Inventor(s)	Title of Invention
08/324,060	Oct. 17, 1994	Hugh P. Craig	Electrically Conductive Compositions and Methods for the Preparation and Use Thereof
08/341,015	Nov. 17, 1994	Ariel Mark Hunt Virgil M. Rochester, Jr. Charles S. Jonson	Adaptive Time-Division Multiplexing Communications Protocol Method & System
08/363,694	Dec. 23, 1994	Kenneth H. Durm Warren Vanderpool	Air Conditioning Support Pads
08/375,723	Jan. 20, 1995	Ralph P. Leigh	Method & Apparatus For Forming Pads
08/414,524	March 31, 1995	David W. Lambeth	Gas Pressure Regulator
08/418,698	April 7, 1995	Hollis O'Neal Hall II	Method and Apparatus for Aligning An Objective Lens
08/425,911	April 20, 1995	Bruce D. Stambugh	Tear Resistant Multilayer Films And Articles Incorporating Such Films
08/434,084	May 3, 1995	John L. Zipprich II	Ethylene/Alpha-Olefin/Diene Interpolymer-Substituted Carboxylic Acid Dispersant Additives
08/439,577	May 11, 1995	Paul Furth	Combinatorial Synthesis and High-Troughput Screening of A Rev-Inhibiting Arylidenediamide Array
08/446,148	May 22, 1995	Thomas R. Tice	Chemotherapeutic Treatment of Bacterial Infections with an Antibotic Encapsulated within a Biodegradable Polymeric Matix
08/472,873	June 7, 1995	Hugh P. Craig	Electrically Conductive Compositions and Methods for the Preparation and Use Thereof
08/474,831	June 7, 1995	Hollis O'Neal Hall II	Method and Apparatus for Aligning An Objective Lens
08/475,240	June 7, 1995	Hollis O'Neal Hall II	Method and Apparatus for Aligning An Objective Lens
08/510,870	Aug. 2, 1995	Dennis Skvarce	Apparatus for Mounting A Shearing Blade
08/524,294	Sept. 5, 1995	Michael Shebanow	Methods for Updating Fetch Program Computer
08/549,472	Oct. 27, 1995	Christopher R. Miller	Multiple Cone Transducer
08/555,732	Nov. 9, 1995	Alan Mandler	System and Method for Managing Insurance Claim Processing
08/559,516	Nov. 15, 1995	Alessandro S. Subrizi Elizabeth Bauer-Nilsen Sanders David M. Gresham	Menu Level Indicator for A Telephone Terminal
08/575,792	Dec. 22, 1995	Richard B. Kash	Microprocessor Controlled Sensor Signal Conditioning Circuit
08/585,425	Jan. 11, 1996	Gary T. Mackey	Electronic Trigger Lock
08/587,785	Dec. 26, 1995	Billy P. Cannon	Easy Opening Carton for Shipping and Storing Cut Paper
08/612,044	March 7, 1996	Darryl G. Walker	Staggered Pipeline Access Scheme for Synchronous Random Access Memory
08/617,028	March 18, 1996	Andrian F. Ionescu	Power Regulator

Application No.	Filing Date	Non-Signing Inventor(s)	Title of Invention
08/661,741	June 11, 1996	William Barrie Hart	Atomising Nozzle and Filter And Spray Generating Device
08/684,408	July 19, 1996	Frank A. Stevens Frank M. Stevens, Jr.	Iron Carbide Process

Department of Commerce
Patent and Trademark Office

37 CFR Parts 1, 2, 5 and 10
[Docket No. 951006247-6255-02]
RIN 0651-AA70

Communications with the Patent and Trademark Office

Agency: Patent and Trademark Office, Commerce.
Action: Final Rule.
Summary: The Patent and Trademark Office (Office) is amending its rules of practice to (1) specify addresses for agency mail to expedite mail delivery, (2) define "Federal holiday within the District of Columbia," (3) clarify and simplify procedures for filing papers and fees by "Express Mail," and (4) remove certain exclusions from § 1.8(a)(2)(ii) to permit additional trademark documents to be considered timely filed if they are mailed or transmitted by the due date and in compliance with § 1.8(a)(1).
Effective Date: December 2, 1996.
For Further Information Contact: Lawrence E. Anderson (for patent-related matters) by telephone at (703) 305-9285, by electronic mail at landerso@uspto.gov, or by mail to his attention addressed to the Assistant Commissioner for Patents, Box DAC, Washington, D.C. 20231; or Nancy L. Omelko (for trademark-related matters) by telephone at (703) 308-8910, extension 39, or by mail marked to her attention and addressed to the Assistant Commissioner for Trademarks, 2900 Crystal Drive, Arlington, Virginia 22202-3513.
Supplementary Information: In a Notice of Proposed Rulemaking published in the Federal Register at 57 FR 55691 (November 2, 1995) and in the Patent and Trademark Office *Official Gazette* at 1180 *Off. Gaz. Pat. Office* 122 (November 28, 1995), the Office proposed to change addresses for correspondence with the Office to reflect the creation of a mailroom site at the South Tower Building for processing most trademark-related mail; to distinguish correspondence intended for organizations reporting to the Assistant Commissioner for Patents from other correspondence; to add a separate mailing address in the Office of the Solicitor for disciplinary matters; and to delete the requirement for a certificate of mailing by Express Mail from § 1.10(b).

The following includes a discussion of the rules being changed, the reasons for those changes, and an analysis of the comments received in response to the Notice of Proposed Rulemaking.

General Mailing Addresses

The Office will now have three separate general mailing addresses: (1) Assistant Commissioner for Patents for correspondence processed by organizations reporting to the Assistant Commissioner for Patents, except for patent documents sent to the Assignment Division for recordation and requests for certified and uncertified copies of patent documents, which should be addressed to the Commissioner of Patents and Trademarks; (2) Assistant Commissioner for Trademarks for all trademark-related mail, except for trademark documents sent to the Assignment Division for recordation and requests for certified and uncertified copies of trademark documents, which should be addressed to the Commissioner of Patents and Trademarks; and (3) Commissioner of Patents and Trademarks for all other correspondence. In addition, there will be separate mailing addresses in the Office of the Solicitor for certain disciplinary matters and cases involving pending litigation. These addresses are set forth and discussed below.

Those who correspond with the Office are requested to use separate envelopes directed to the different areas.

Patent-Related Mail

Section 1.1 is amended to provide for correspondence which is processed by organizations reporting to the Assistant Commissioner for Patents to be addressed to the "Assistant Commissioner for Patents, Washington, D.C. 20231." The Office first announced the new address for patent-related mail in a notice entitled "Change of Address for Patent Applications and Patent Related Papers," published in the Patents *Official Gazette* at 1173 *Off. Gaz. Pat. Office* 13 (April 4, 1995).

This change will affect correspondence such as: patent applications, responses to notices of informality, requests for extension of time, notices of appeal to the Board of Patent Appeals and Interferences (the Board), briefs in support of an appeal to the Board, requests for oral hearing before the Board, extensions of term of patent, requests for reexamination, statutory disclaimers, certificates of correction, petitions to the Commissioner, submission of information disclosure statements, petitions to institute a public use proceeding, petitions to revive abandoned patent applications, and other correspondence related to patent applications and patents which is processed by organizations reporting to the Assistant Commissioner for Patents. When patent-related documents are filed with a certificate of mailing, pursuant to § 1.8, the certificate of mailing should be completed with the new address: Assistant Commissioner for Patents, Washington, D.C. 20231.

Unless otherwise specified, correspondence not processed by organizations reporting to the Assistant Commissioner for Patents, such as communications with the Board (excluding Notices of Appeal and appeal briefs), patent services including patent copy sales, assignments, requests for lists of patents and SIRs in a subclass, requests for the status of maintenance fee payments, as well as patent practitioner enrollment matters including admission to examination, registration to practice, certificates of good standing, and financial service matters including establishing a deposit account should continue to be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231. Documents to be recorded with the Assignment Division, except those filed with new applications, should be addressed to: Box Assignment, Commissioner of Patents and Trademarks, Washington, D.C. 20231. Orders for certified and uncertified copies of Office documents should be addressed to: Box 10, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Special Office mail boxes as currently listed in each issue of the Patents *Official Gazette* should continue to be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Use of special box designations will facilitate the Office's timely and accurate identification and processing of the designated correspondence.

Checks should continue to be made payable to the Commissioner of Patents and Trademarks.

Trademark-Related Mail

Most trademark-related mail should be sent directly to the Trademark Operation at: Assistant Commissioner for Trademarks, 2900 Crystal Drive, Arlington, Virginia 22202-3513. When trademark-related documents are filed with a certificate of mailing, pursuant to § 1.8, the certificate of mailing should be completed with the new address: Assistant Commissioner for Trademarks, 2900 Crystal Drive, Arlington, Virginia 22202-3513. Use of the correct address will avoid processing delays. Trademark documents to be recorded with the Assignment Division, except those filed with new applications, should be addressed to: Box Assignment, Commissioner of Patents and Trademarks, Washington, D.C. 20231. Orders for certified and

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uncertified copies of trademark documents should be addressed to: Box 10, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

The Office announced the new address for trademark-related mail in a notice entitled "Change of Address for Trademark Applications and Trademark Related Papers," published in the *Federal Register* at 59 FR 29275 (June 6, 1994) and in the Trademarks *Official Gazette* at 1163 *Off. Gaz. Trademark Office* 80 (June 28, 1994) (republished at 1170 *Off. Gaz. Pat. Office* 303 (January 3, 1995)).

The Office will continue to maintain the special box designations and FEE/NO FEE indicators for trademark mail as currently listed in each issue of the Trademarks *Official Gazette*. Use of the boxes is encouraged, to expedite processing of incoming mail.

Checks should continue to be made payable to the Commissioner of Patents and Trademarks.

Mail intended for the Trademark Trial and Appeal Board should be addressed to: Assistant Commissioner for Trademarks, 2900 Crystal Drive, Arlington, Virginia 22202-3513, including BOX TTAB/FEE or BOX TTAB/NO FEE, whichever is applicable.

Hand-Carried Correspondence

All correspondence with the Office, except for communications relating to pending litigation as specified in amended § 1.1(a)(3)(i), may continue to be filed directly at the Attorney's Window located in Room 1B03 of Crystal Plaza Building 2, 2011 South Clark Place, Arlington, Virginia. Trademark-related papers may also be filed at the "walk-up" window located on the third floor of the South Tower Building, 2900 Crystal Drive, Arlington, Virginia. Hand delivery of trademark papers and fees directly to the South Tower Building is recommended, to expedite processing.

Trademark Documents Filed With Certificates of Mailing or Transmission Under § 1.8

The Office is amending § 1.8(a)(2) to remove the exclusions listed in § 1.8(a)(2)(ii)(B) through (F). This will permit the following trademark documents to be considered timely filed if they are mailed or transmitted by the due date and in compliance with § 1.8(a)(1): (1) affidavits of continued use or excusable non-use, under 15 U.S.C. 1058; (2) renewal applications, under 15 U.S.C. 1059; (3) amendments to allege use, under 15 U.S.C. 1051(c); (4) statements of use, under 15 U.S.C. 1051(d)(1); (5) requests for extensions of time to file a statement of use, under 15 U.S.C. 1051(d)(2); and (6) petitions to cancel registered marks, under 15 U.S.C. 1064. This change is intended to make filing easier and less expensive because a significantly larger number of documents will be considered timely filed using the simpler, less expensive first class mailing provisions of § 1.8.

Section 2.165(a)(1), dealing with affidavits of use or excusable non-use filed under Section 8 of the Trademark Act, is amended by deleting the last sentence referencing the inapplicability of certificates of mailing provided by § 1.8.

It should be noted that § 1.6(d)(8), which provides that correspondence other than notices of ex parte appeal may not be transmitted by facsimile to the Trademark Trial and Appeal Board, will not change. Thus, while a cancellation petitioner may now ensure timely filing with the certificate of mailing procedure set forth in § 1.8(a)(1), the petitioner may not transmit the above-mentioned documents directed to the Trademark Trial and Appeal Board by fax or ensure timely filing with the certificate of facsimile transmission.

Section 1.8(a)(2)(ii)(A), which states that the Certificate of Mailing or Transmission Procedure does not apply to the filing of applications for registration of marks, will not change. The filing date of an application is considered to be much more critical than the filing dates of the papers accepted under § 1.8. For example, in Trademark applications, the granting of a filing date to an application potentially establishes a date of constructive use of the mark, and is also critical for determining whether foreign priority can be claimed under 15 U.S.C. 1126(d); therefore, entry of the date of deposit by a disinterested USPS employee is required.

Express Mail

Section 1.10 is being amended to simplify and clarify the procedures for filing correspondence by the "Express Mail Post Office to Addressee" (Express Mail) service of the United States Postal Service (USPS), by deleting the requirement for a Certificate of Mailing by Express Mail.

Section 1.10 was promulgated to implement 35 U.S.C. 21, under which the Commissioner may "by rule prescribe that any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service."

Under the prior rule, the filer was required to include a Certificate of Mailing by Express Mail, certifying the date of deposit as Express Mail. Papers which did not include this certificate, or which included a certificate that did not meet the requirements of the rule, were given a filing date as of the date received in the Office rather than the date of deposit as Express Mail. The lost filing date for a significant number of these papers resulted in the loss of substantive rights. In light of the problematic nature of the requirement for a Certificate of Mailing by Express Mail and its apparent redundancy in purpose, inasmuch as the date of deposit has already been entered by a disinterested third party, the Office has deleted this requirement from § 1.10(b).

Under the new rule, Office personnel will routinely look to the Express Mail mailing label, and stamp the "date-in" or other official USPS notation as the filing date of the correspondence. If the USPS deposit date cannot be determined, the correspondence will be accorded the date of receipt in the Office as the filing date.

Section 1.10(b), as amended, provides that the Express Mail mailing label number should be placed on correspondence filed by Express Mail under § 1.10 prior to the original mailing. Correspondence *actually received* by the Office will not be denied a filing date as of the date of deposit with the USPS because the Express Mail mailing label number was not placed thereon prior to its original mailing. However, the absence of the number of the Express Mail mailing label will preclude a party from obtaining relief on petition, under §§ 1.10(c) through (e).

Section 1.10(b) also provides that correspondence should be deposited directly with an employee of the USPS to ensure that the person depositing the correspondence receives a legible copy of the Express Mail mailing label with the "date-in" clearly marked, and that persons dealing indirectly with the employees of the USPS (such as by deposit in an Express Mail drop box) do so at the risk of not receiving a copy of the Express Mail mailing label with the desired "date-in" clearly marked.

Sections 1.10(c) through 1.10(e) set forth procedures for petitioning the Commissioner to accord a filing date as of the date of deposit as Express Mail. Section 1.10(c) applies where there is a discrepancy between the filing date accorded by the Office and the "date-in" or other official notation entered by the USPS on the Express Mail mailing label; § 1.10(d) applies where the "date-in" is incorrectly entered by the USPS; and § 1.10(e) applies where correspondence deposited with the USPS as Express Mail is not received by the Office.

Miscellaneous Changes

Sections 1.3 and 5.33 are also being amended to change "communications" to "correspondence," and for consistency with §§ 1.1, 1.6, and 1.8.

Section 1.6(a)(2) is amended to provide that correspondence deposited as Express Mail in accordance with § 1.10 will be considered filed on the date of its deposit, regardless of whether that date is a Saturday, Sunday or Federal holiday within the District of Columbia.

Section 1.9 is amended to add a definition of a "Federal holiday within the District of Columbia" to include an official closing of the Office.

Since the certificate of mailing by Express Mail is no longer a requirement of § 1.10, the provisions of Part 10 relating to misconduct have been amended to delete reference to this requirement.

Discussion of Specific Rules

The heading of § 1.1 is amended to state that the section contains the addresses for correspondence to the Patent and Trademark Office.

Section 1.1 is amended to set out all pertinent Office mailing addresses in paragraph (a) and in added paragraphs (a)(1), (a)(2), and (a)(3). The remaining paragraphs of § 1.1 contain directions for using box designations rather than addresses. Paragraph (a)(1) sets forth the new mailing address to which most patent-related documents should be sent. Paragraph (a)(2) sets forth the new mailing address to which most trademark-related documents should be sent. It is noted that correspondence not addressed according to (a)(1) and (a)(2), but sent instead to the Commissioner of Patents and Trademarks, will not be refused consideration but may be delayed in processing. The Solicitor's mailing address, formerly set out in paragraph (g) of the section, is moved to a new paragraph (a)(3). Paragraph 1.1(g) is removed and reserved.

Sections 1.1 and 1.3 are amended so that the word "communications" is changed to "correspondence."

Section 1.5(a) is amended by removing the requirement that the words "PATENT APPLICATION" appear on letters concerning patent applications. The remainder of the section remains unchanged.

Section 1.6(a)(1) is amended to add the sentence "[t]he Patent and Trademark Office is not open for the filing of correspondence on any day that is a Saturday, Sunday or Federal holiday within the District of Columbia." In addition, § 1.6(a)(1) is further amended to add the phrase "[e]xcept for correspondence transmitted by facsimile as provided for in paragraph (a)(3) of this section" to the beginning of the sentence "[n]o correspondence is received in the Patent and Trademark Office on Saturdays, Sundays or Federal holidays within the District of Columbia." Since the Office may "receive" a facsimile transmission under § 1.6(a)(3) on a Saturday, Sunday or Federal holiday within the District of Columbia, § 1.6(a)(1) is amended to add the phrase "[e]xcept for correspondence transmitted by facsimile as provided for in paragraph (a)(3) of this section" for clarity and consistency with § 1.6(a)(3). In addition, § 1.6(a)(1) is amended to begin with the sentence "[t]he Patent and Trademark Office is not open for the filing of correspondence on any day that is a Saturday, Sunday or Federal holiday within the District of Columbia" to clarify that any day that is a Saturday, Sunday or Federal holiday within the District of Columbia is a day that the Patent and Trademark Office is not open for the filing of applications within the meaning of Article 4(C)(3) of the Paris Convention.

Section 1.6(a)(2) is amended to delete the phrase "unless the date of deposit is a Saturday, Sunday or Federal holiday within the District of Columbia in which case the date stamped will be the succeeding day which is not a Saturday, Sunday or Federal holiday within the District of Columbia." Thus, § 1.6(a)(1) will provide that the Office is not open for the filing of correspondence on any day that is a Saturday, Sunday or Federal holiday within the District of Columbia, but that correspondence deposited as Express Mail with the USPS in accordance with § 1.10 will be considered filed on the date of its deposit, regardless of whether that date is a Saturday, Sunday or Federal holiday within the District of Columbia (under 35 U.S.C. 21(b) or § 1.7).

Section 1.8(a)(1)(i)(A) is revised to state that papers and fees must be addressed as set out in § 1.1(a). For the purposes of 1.8(a)(1)(i)(A), first class mail is interpreted as including "Express Mail" and "Priority Mail" deposited with the USPS.

Section 1.8(a)(2)(ii) is revised to remove and reserve paragraphs (a)(2)(ii)(B) through (a)(2)(ii)(F). This will permit the following items to be filed in accordance with the procedures set forth in § 1.8(a): (1) an affidavit of continued use or excusable nonuse under section 8(a) or (b) or section 12(c) of the Trademark Act, 15 U.S.C. 1058(a), 1058(b), 1062(c); (2) an application for renewal of a registration under section 9 of the Trademark Act, 15 U.S.C. 1059; (3) a petition to cancel a registration of a mark under section 14, subsection (1) or (2) of the Trademark Act, 15 U.S.C. 1064; (4) in an application under section 1(b) of the Trademark Act, 15 U.S.C. 1051(b), an amendment to allege use in commerce under section 1(c) of the Trademark Act, 15 U.S.C. 1051(c), or a statement of use under section 1(d)(1) of the Trademark Act, 15 U.S.C. 1051(d)(1); and (5) in an application under section 1(b) of the Trademark Act, 15 U.S.C. 1051(b), a request under section 1(d)(2) of the Trademark Act, 15 U.S.C. 1051(d)(2), for an extension of time to file a statement of use under section 1(d)(1) of the Trademark Act, 15 U.S.C. 1051(d)(1).

Section 1.9 is amended to add a definition of "Federal holiday within the District of Columbia" to include an official closing of the Office. When the entire Patent and Trademark Office is officially closed for business for an entire day, for reasons due to adverse weather or other causes, the Office will consider each such day a "Federal holiday within the District of Columbia" under 35 U.S.C. 21. Any action or fee due on such a day may be taken, or fee paid, on the next succeeding business day the Office is open.

This provision implements existing policy. In the past, the Office has published notices concerning unscheduled closings, stating that correspondence due on the date of the unscheduled closing would be deemed timely if filed on the next succeeding business day that the Office is open. See, *e.g.*, "Closing of Patent and Trademark Office on Thursday, January 20, 1994 and Friday, February 11, 1994" published in the Patent *Official Gazette* at 1161 *Off. Gaz. Pat. Office* 12 (April 5, 1994) (republished at 1170 *Off. Gaz. Pat. Office* 8 (January 3, 1995)) and "Filing of Papers During Unscheduled Closings of the Patent and Trademark Office" published in the Patent *Official Gazette* at 1097 *Off. Gaz. Pat. Office* 53 (December 20, 1988) (republished at 1170 *Off. Gaz. Pat. Office* 8 (January 3, 1995)).

Other legal holidays within the District of Columbia are New Year's Day (January 1), Martin Luther King, Jr.'s Birthday (third Monday in January), Presidential Inauguration Day, Washington's Birthday (third Monday in February), Memorial Day (last Monday in May), Independence Day (July 4), Labor Day (first Monday in September), Columbus Day (second Monday in October), Veterans Day (November 11), Thanksgiving Day (fourth Thursday in November) and Christmas Day (December 25).

The title of § 1.10 is revised to: (1) change "papers and fees" to "correspondence" and (2) remove the reference to a "certificate." These changes are for consistency with the amendment to § 1.10 in this final rulemaking.

Section 1.10(a) is amended to provide that: (1) any correspondence received by the Office that was delivered by the "Express Mail Post Office to Addressee" (Express Mail) service of the USPS will be considered filed in the Office on the date of deposit with the USPS, (2) the date of deposit with the USPS is the "date-in" or other official USPS notation on the Express Mail mailing label, and (3) if the USPS deposit date cannot be determined, the correspondence will be accorded a filing date as of the date of receipt in the Office.

The date of deposit or mailing with the USPS is defined by the USPS as: (1) For correspondence that is paid for at the time of deposit—the date the correspondence is presented and accepted for Express Mail delivery at designated post offices, branches, or stations, and (2) For correspondence that is prepaid (*i.e.*, with a completed mailing label and postage affixed)—the date the prepaid correspondence is accepted by the USPS collection employees or the USPS pickup service. USPS Domestic Mail Manual (DMM) 49, at D-38 (Sept. 1, 1995).

Section 1.10(b) is amended by deleting the requirement for a certificate of mailing by Express Mail. As amended, § 1.10(b) provides that the number of the Express Mail mailing label should be placed on each piece of correspondence prior to the original mailing. Correspondence that is *actually received* by the Office will not be denied a filing date as of the date of deposit because the number of the Express Mail mailing label was not placed thereon prior to the original mailing. However, if the number of the mailing label did not appear on the correspondence as originally filed, relief will not be granted on petition under §§ 1.10(c) through (e), even if the party who filed the correspondence satisfies the other requirements of § 1.10(c), § 1.10(d) or § 1.10(e).

Since the filing of correspondence under § 1.10 without the number of the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will not be granted on petition. A party's inadvertent failure to comply with the requirements

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of a rule is not deemed to be an extraordinary situation that would warrant waiver of a rule under §§ 1.183, 2.146(a)(5) or 2.148, nor is such an inadvertent omission considered to be an "unavoidable delay," within the meaning of 15 U.S.C. 1062(b), 35 U.S.C. 133, § 1.137(a) or § 2.66(a). See *Honigsbaum v. Lehman*, 903 F. Supp. 8, 37 USPQ2d 1799 (D.D.C. 1995) (Commissioner did not abuse his discretion in refusing to waive requirements of § 1.10(c) in order to grant filing date to patent application, where applicant failed to produce Express Mail customer receipt or any other evidence that application was actually deposited with USPS as Express Mail); *Nitto Chemical Industry. Co., Ltd. v. Comer*, No. 93-1378, 1994 U.S. Dist. LEXIS 19211, at *13-14 (D.D.C. Mar. 7, 1994) (Commissioner's refusal to waive requirements of § 1.10 in order to grant priority filing date to patent application not arbitrary and capricious, because failure to comply with the requirements of § 1.10 is an "avoidable" oversight that could have been prevented by the exercise of ordinary care or diligence, and thus not an extraordinary situation under § 1.183); *Vincent v. Mossinghoff*, 230 USPQ 621 (D.D.C. 1985) (Misunderstanding of § 1.8 not unavoidable delay in responding to Office Action); *Gustafson v. Strange*, 227 USPQ 174 (Comm'r Pats. 1985) (Counsel's unawareness of § 1.8 not extraordinary situation warranting waiver of a rule); *In re Chicago Historical Antique Automobile Museum, Inc.*, 197 USPQ 289 (Comm'r Pats. 1978) (Since certificate of mailing procedure under § 1.8 was available to petitioner, lateness due to mail delay not deemed to be extraordinary situation).

Section 1.10(b) further provides that correspondence should be deposited directly with an employee of the USPS to ensure that the person depositing the correspondence receives a legible copy of the Express Mail mailing label with the "date-in" clearly marked, and that persons dealing indirectly with the employees of the USPS (such as by depositing correspondence in an Express Mail drop box) do so at the risk of not receiving a copy of the Express Mail mailing label with the desired "date-in" clearly marked. On petition, the failure to obtain an Express Mail mailing label with the "date-in" clearly marked will be considered an omission that could have been avoided by the exercise of due care, as discussed above.

Sections 1.10(c) through 1.10(e) set forth procedures for petitioning the Commissioner to accord a filing date as of the date of deposit as Express Mail. Such petitions are filed under § 1.181 for patent correspondence and § 2.146 for trademark correspondence. Section 1.10(c) sets forth procedures for filing a petition to the Commissioner for a filing date as of the date of deposit with the USPS, where there is a discrepancy between the filing date initially accorded by the Office and the "date-in" entered by the USPS. Such a petition should: (1) be filed promptly after the person becomes aware that the Office has accorded, or will accord, a filing date other than the USPS deposit date, (2) include a showing that the number of the Express Mail mailing label was placed on each piece of correspondence prior to the original mailing, and (3) include a true copy of the Express Mail mailing label showing the "date-in" or other official notation by the USPS.

Section 1.10(d) sets forth procedures for filing a petition to the Commissioner to accord a filing date as of the actual date of deposit with the USPS, where the "date-in" or other official notation is incorrectly entered by the USPS. Such a petition should: (1) be filed promptly after the person becomes aware that the Office has accorded, or will accord, a filing date based upon an incorrect entry by the USPS, (2) include a showing that the number of the Express Mail mailing label was placed on each piece of correspondence prior to the original mailing, and (3) include a showing that the correspondence was deposited as Express Mail prior to the last scheduled pickup on the requested filing date. The showing under Section 1.10(d) must be corroborated by (1) evidence from the USPS, or (2) evidence that came into being after deposit and within one business day of the deposit of the correspondence as Express Mail. Evidence that came into being within one day after the deposit of the correspondence as Express Mail may be in the form of a log book which contains information such as the Express Mail number; the application number, attorney docket number or other such file identification number; the place, date and time of deposit; the time of the last scheduled pick-up for that date and place of deposit; the depositor's initials or signature; and the date and time of entry in the log. Any statement submitted in support of such a showing must be verified if made by a person other than an employee of the USPS or a practitioner as defined in § 10.1(r) of this chapter.

The reason the Office considers correspondence to have been filed as of the date of deposit as Express Mail is that this date has been verified by a disinterested USPS employee, through the insertion of a "date-in," or other official USPS notation, on the Express Mail mailing label. Due to the questionable reliability of evidence from a party other than the USPS that did not come into being contemporaneously with the deposit of the correspondence with the USPS, § 1.10(d) specifically requires that any petition under § 1.10(d) be corroborated either by evidence from the USPS, or by evidence that came into being *after* deposit and within one business day after the deposit of the correspondence as Express Mail. A petition alleging that the USPS erred in entering the "date-in" will be denied if it is supported only by evidence (other than from the USPS) which was: (1) created prior to the deposit of the correspondence as Express Mail with the USPS (*e.g.*, an application transmittal cover letter, or a client letter prepared prior to the deposit of the correspondence), or (2) created more than one business day after the deposit of the correspondence as Express Mail (*e.g.*, an affidavit or declaration prepared more than one business day after the correspondence was deposited with the USPS as Express Mail). On the other hand, a notation in a log book, entered by the person who deposited the correspondence as Express Mail within one business day after such deposit, setting forth the items indicated above would be deemed on petition to be an adequate showing of the date of deposit under § 1.10(d)(3).

Section 1.10(d)(3) further provides that a party must show that correspondence was deposited as Express Mail before the last scheduled pickup on the requested filing date in order to obtain a filing date as of that date. This incorporates existing practice, as set forth in the *Manual of Patent Examining Procedure* (6th ed., January, 1995) § 513, and *Trademark Manual of Examining Procedure* (2nd ed., May, 1993) § 702.02(e) into the rule.

Section 1.10(e) sets forth procedures for filing a petition to the Commissioner to accord a filing date as of the date of deposit with the USPS, where correspondence deposited as Express Mail is never received by the Office. Such a petition should: (1) be filed promptly after the person becomes aware that the Office has no evidence of receipt of the correspondence, (2) include a showing that the number of the Express Mail mailing label was placed on each piece of correspondence prior to the original mailing, (3) include a true copy of the originally deposited correspondence showing the number of the Express Mail mailing label thereon, a copy of any returned postcard receipt, a copy of the Express Mail mailing label showing the "date-in" or other official notation entered by the USPS, and (4) include a statement, signed by the person who deposited the documents as Express Mail with the USPS, setting forth the date and time of deposit, and declaring that the copies of the correspondence, Express Mail mailing label, and returned postcard receipt accompanying the petition are true copies of the correspondence, mailing label and returned postcard receipt originally mailed or received. Any statement in support of a petition under § 1.10(e) must be verified if made by a person other than a practitioner as defined in § 10.1(r) of this chapter.

Section 1.10(e) provides for the filing of a petition to accord correspondence a filing date as of the date of deposit with the USPS as Express Mail only where the correspondence was mailed with sufficient postage and addressed as set out in § 1.1(a). There is no corresponding provision that correspondence be properly addressed and mailed with sufficient postage in §§ 1.10(a), (c) and (d), because these sections apply only to correspondence that is actually received by the Office. Correspondence mailed by Express Mail that is *actually received* by the Office will not be denied a filing date as of the date of deposit as Express Mail simply because the correspondence was not mailed with sufficient postage or not addressed as set out in § 1.1(a).

Section 1.10(e)(3) provides that if the requested filing date is a date other than the "date-in" on the Express Mail mailing label, the petition should include a showing under § 1.10(d)(3), as discussed above, that the correspondence was deposited as Express Mail before the last scheduled pickup on the requested filing date in order to obtain a filing date as of that date.

Section 1.10(f) provides that the Office may require additional evidence to determine whether the correspondence was deposited as Express Mail with the USPS on the date in question.

Section 2.165(a)(1), dealing with affidavits of use or excusable non-use filed under Section 8 of the Trademark Act, is amended by deleting the last sentence referencing the inapplicability of certificates of mailing provided by § 1.8.

Section 5.33 (entitled "Correspondence") is amended to change the correspondence address to "Assistant Commissioner for Patents (Attention: Licensing and Review), Washington, D.C. 20231."

Section 10.23(c)(9) is revised to reflect the fact that the certificate of mailing by Express Mail is no longer a requirement of § 1.10.

Response to Comments on the Rules

The comments received in response to the notice of proposed rulemaking have been given careful consideration and a number of the suggested modifications have been adopted. The comments and responses are discussed below.

Comment 1: One comment suggested that the Office return to a single mailing address.
Response: Addressing correspondence to specific areas within the agency, in accordance with § 1.1, reduces the amount of sorting required. Except as set out in § 1.1(a)(3)(iv), mail will be delivered within the Office regardless of how it is addressed. Nevertheless, use of a specific address should produce faster results for correspondents and savings to the Office in terms of reduced time and cost. The suggestion to address mail to a single mailing address will not be adopted.
Comment 2: Three comments requested a clarification of the reference to "organizations reporting to the Assistant Commissioner for Patents" in § 1.1(a)(1), suggested that each organization be identified, and noted that the change of address from "Commissioner of Patents and Trademarks" to "Assistant Commissioner for Patents" is confusing.
Response: Section 1.1(a)(1) has not been amended to list "organizations reporting to the Assistant Commissioner for Patents." The vast majority of mail to be addressed to the Assistant Commissioner is intended for the Examining Groups. Furthermore, once a list of organizations is established in the rule, amendment to such a list would require implementation of a rule change. However, a list of papers that should be addressed to the Assistant Commissioner for Patents appears under the heading "Patent-Related Mail" in the Supplementary Information section.
Comment 3: Two comments requested clarification concerning how a new application incorrectly addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, will be treated. Two comments opposed the address change in § 1.1, if the benefit of obtaining a filing date is conditioned upon the correspondence address being addressed correctly.
Response: Except for certain mail addressed incorrectly to the Office of the Solicitor, there will be no penalty for addressing a document to the wrong area within the Office, as long as one of the approved addresses is used. Use of the specific addresses listed within § 1.1 is strongly encouraged because it will facilitate the process both for the Office and the filer. Accordingly, a new application incorrectly addressed to the Commissioner will be treated the same as if the application was addressed to the specific Assistant Commissioner.
Comment 4: One comment supported the separate mailing addresses for mail directed to the Assistant Commissioner for Patents, Assistant Commissioner for Trademarks, Solicitor and the Commissioner, but viewed the practice under § 1.1(a)(3) with respect to correspondence to the Office of the Solicitor as a penalty for correspondents who misaddress mail.
Response: While the language in the proposed rule was based on the existing rule, 37 CFR 1.1(g) (1996), which has been in effect since 1988, § 1(a)(3)(iv) has been reworded in the final rule to state that improperly addressed correspondence "may be returned." This language better represents the intent of the rule. The Post Office boxes are located off-site and mail to these boxes is handled directly by the Office of the Solicitor. The Office of the Solicitor cannot handle large volumes of mail from users who choose not to follow Office mailing rules.
Comment 5: One comment requested clarification on the distinction between § 1.1(a) which states that mail "must" be addressed to the Assistant Commissioner for Patents and § 1.1(a)(1) which states that mail "should" be addressed to the Assistant Commissioner for Patents, if any.
Response: The language of 1.1(a) has been amended to indicate that all correspondence must be addressed either to the "Commissioner of Patents and Trademarks, Washington, D.C. 20231" or to specific areas within the Office as set out in paragraphs (a)(1), (2) and (3) of § 1.1.
Comment 6: One comment questioned why it is now merely permissible to identify a patent application by its serial number and filing date whereas such information was previously mandatory.
Response: The only change to § 1.5 is the elimination of the requirement to include the words "PATENT APPLICATION" on letters concerning patent applications. Section 1.5 both before and after the proposed amendment provides that "[w]hen a letter...concerns a previously filed application for a patent, it must identify on the top page in a conspicuous location, the application number (consisting of the series code and the serial number; *e.g.*, 07/123,456) or the serial number and filing date assigned to that application...." Accordingly, correspondence must continue to identify a previously filed patent application by either (1) the application number, or (2) the serial number and filing date. The combination of the serial number and filing date is unique by itself.
Comment 7: One comment objected to the return of correspondence pertaining to an application that had not yet been accorded an application number because some correspondence may require immediate action. This person suggested that the Office search the computerized records given sufficient other identifying information, instead of returning the correspondence.
Response: If the correspondence is returned for failure to identify the correspondence with the appropriate information, the applicant has the option to return the correspondence with the appropriate information within two weeks of the date of the cover letter from the Office by utilizing the Certificate of Mailing or Transmission procedure under § 1.8 or the Express Mail procedure under § 1.10 to obtain the benefit of the date of deposit with the USPS. There does not appear to be any situation where a file would require immediate action in applications where the application number had not been assigned. If an application number has already been assigned, it is within the filer's control to supply that information and avoid delays.
Comment 8: Seven comments opposed the addition of unscheduled closings of the Office to the definition of "Federal holidays within the District of Columbia." The comments noted that substantive rights would be at risk for persons filing provisional patent applications and applications asserting priority claims based on foreign applications should the date on which an application must be filed fall on a day that the Office is closed for unforeseen reasons. One comment noted that the substantive rights of applicants seeking to secure a filing date prior to divulging an invention may lose rights if a later filing date, resulting from an unscheduled closing of the Office, is subsequent to the date of divulgence. Some of the comments suggested amending § 1.9 to make an exception for provisional patent applications and applications asserting a claim of priority based on a foreign application so that the filing date would not be affected by an unscheduled closing of the Office. One comment also suggested that § 1.9 be amended to distinguish between the filing of applications and the filing of responses. One comment suggested that the Commissioner allow for filing of a non-provisional patent application on Federal holidays where the one year anniversary of the provisional application falls on a Federal holiday.
Response: Section 1.6(a)(2) is being amended to delete the phrase "unless the date of deposit is a Saturday, Sunday or Federal holiday within the District of Columbia in which case the date stamped will be the succeeding day which is not a Saturday, Sunday or Federal holiday in the District of Columbia." Section 1.6(a)(2) now provides that even if the Office is closed because it is a Saturday, Sunday or Federal holiday in the District of Columbia, correspondence deposited in the "Express Mail Post Office to Addressee" service of the USPS in accordance with § 1.10 will be considered filed on the date of deposit regardless of whether that date is Saturday, Sunday or a Federal holiday within the District of Columbia.

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Therefore, in light of the option to file an application under § 1.10 on any day and the amendment to § 1.6(a)(2), no substantive rights would be at risk, and the suggestions, set forth in the comments and noted above, have not been adopted.

Comment 9: Several comments objected to the requirement set forth in proposed § 1.10(b) which required deposit of Express Mail correspondence directly with the United States Postal Service (USPS) to ensure that a copy of the Express Mail label marked with the "date in" is received at the time of deposit. The reasons generally expressed by commenters were: (1) practitioners and applicants feel compelled to oversee the work of the USPS employee to make certain that the "date in" is marked accurately, legibly and in a timely fashion and perceive a loss of control over the filing of the document under § 1.10 as a result; (2) inefficiency and burden are imposed upon persons filing who must actually go to the post office, stand in line and generally be confined to fewer hours during the day to deposit the Express Mail correspondence directly with the USPS than the hours available for deposit in the Express Mail drop box; and (3) inequality of opportunity to deposit directly with the USPS for individual practitioners and small firms which employ fewer people than larger firms to handle. Two comments questioned the Office's use of the term "deposit" and whether the Office exceeded any authority in the perceived understanding that the proposed rule was requiring the applicants or practitioners to do something beyond "depositing" the correspondence with the USPS, namely, overseeing the act of acceptance of the Express Mail correspondence by the USPS.

Response: Section 1.10(b) has been amended so that direct deposit of correspondence with the USPS is a recommendation, rather than a requirement. While the Office strongly urges direct deposit of Express Mail correspondence in order to obtain a legible copy of the Express Mail mailing label, parties are not precluded from using Express Mail drop boxes. Parties who do use drop boxes can protect themselves from uncertainty due to illegible mailing labels by routinely maintaining a log of Express Mail deposits in which notations are entered by the person who deposited the correspondence as Express Mail within one business day after deposit with the USPS in a petition filed under § 1.10(c), (d) or (e). Evidence that came into being within one day after the deposit of the correspondence as Express Mail may be in the form of a log book which contains information such as the Express Mail number; the application number, attorney docket number or other such file identification number; the place, date and time of deposit; the time of the last scheduled pick-up for that date and place of deposit; the depositor's initials or signature; and the date and time of entry in the log. Any statement submitted in support of such a showing must be verified if made by a person other than an employee of the USPS or a practitioner as defined in § 10.1(r) of this chapter.

Comment 10: Several comments opposed the elimination of the certificate of mailing by "Express Mail" because it would eliminate a reliable mode of proving the date of deposit with the USPS.

Response: The elimination of the requirement for the certificate of mailing is adopted primarily to streamline the Office's processing of Express Mail correspondence. Under the old rule, the Office was required to scrutinize the certificate as well as the Express Mail label. Under the new rule, the "date in" on the Express Mail label would be the only date that the Office would look for to determine the filing date. Under the prior rule, the certificate of mailing by Express Mail only served as proof of a date of deposit when the certificate date was the same as the "date in" on the Express Mail label. The certificate did not afford protection to an applicant in the event that the certificate date differed from the Express Mail label date. Therefore, the elimination of the certificate of mailing requirement would not eliminate a reliable mode of proving the date of deposit.

Comment 11: Four comments suggested allowing Express Mail Corporate Account Mailing Statement of the USPS to serve as additional proof of the date of deposit.

Response: This suggestion has been adopted. Such records would be acceptable as additional proof of the date of deposit.

Comment 12: One comment requested clarification concerning whether deposit of correspondence as Express Mail in the Express Mail drop box must be done prior to the last scheduled pickup of the day in order to be entitled to the deposit date as the filing date of the correspondence.

Response: Correspondence sent by the "Express Mail Post Office to Addressee" service is considered filed in the Office on the "date-in" entered by the USPS. Accordingly, if the USPS enters the deposit date as its "date-in," the correspondence will receive the deposit date as its filing date. However, if the USPS enters a date later than the deposit date as its "date-in," the correspondence will receive the later date as its filing date. Section 1.10(d) permits the Office to correct a USPS "date-in" error when the correspondence is deposited in an Express Mail drop box prior to last scheduled pick up of the day, that is, the time clearly marked on the Express Mail drop box indicating when the box will be cleared for the last time on the date of deposit. Section 1.10(d) sets forth the procedures to be followed to be entitled to such a correction.

Other Considerations

The rule changes are in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), Executive Order 12612, and the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). This rule has been determined to not be significant for the purposes of Executive Order 12866.

The Office has determined that this rule change has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

The Assistant General Counsel for Legislation and Regulation of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the rule changes would not have a significant impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)). The rule change has no effect on patent fees.

Notwithstanding any other provision of law, no person is required to respond to nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB Control Number.

This rule change contains a collection of information subject to the requirements of the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*), which is currently approved by the Office of Management and Budget under Control No. 0651-0031. The public reporting burden for the certificate of mailing is estimated to average six minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to the Office of System Quality and Enhancement Division, Patent and Trademark Office, Washington, D.C. 20231, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503. (ATTN: Paperwork Reduction Act Project 0651-0031).

List of Subjects

37 CFR PART 1

Administrative practice and procedure, Freedom of information, Inventions and patents, Reporting and record keeping requirements.

37 CFR PART 2

Administrative practice and procedure, Courts, Lawyers, Trademarks

37 CFR PART 5

Classified information, Foreign relations, Inventions and patents.

37 CFR PART 10

Administrative practice and procedure, Conflicts of interest, Courts, Inventions and patents, Lawyers.

For the reasons set forth in the preamble and under the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6 and 15 U.S.C. 1123, 37 CFR Parts 1, 2, 5 and 10 are amended as follows:

PART 1—RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.1 is amended by removing and reserving paragraph (g) and by revising the heading and paragraph (a) to read as follows:

§ 1.1 Addresses for correspondence with the Patent and Trademark Office.

(a) Except for §§ 1.1(a)(3)(i) and (ii), all correspondence intended for the Patent and Trademark Office must be addressed to either "Commissioner of Patents and Trademarks, Washington, D.C. 20231" or to specific areas within the Office as set out in paragraphs (a)(1), (2) and (3)(iii) of this section. When appropriate, correspondence should also be marked for the attention of a particular office or individual.

(1) *Patent correspondence.* All correspondence concerning patent matters processed by organizations reporting to the Assistant Commissioner for Patents should be addressed to "Assistant Commissioner for Patents, Washington, D.C. 20231."

(2) *Trademark correspondence.* All correspondence concerning trademark matters, except for trademark-related documents sent to the Assignment Division for recordation and requests for certified and uncertified copies of trademark application and registration documents, should be addressed to "Assistant Commissioner for Trademarks, 2900 Crystal Drive, Arlington, Virginia 22202-3513." This includes correspondence intended for the Trademark Trial and Appeal Board.

(3) *Office of Solicitor correspondence.*

(i) Correspondence relating to pending litigation required by court rule or order to be served on the Solicitor shall be hand-delivered to the Office of the Solicitor or shall be mailed to: Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215; or such other address as may be designated in writing in the litigation. See §§ 1.302(c) and 2.145(b)(3) for filing a notice of appeal to the U.S. Court of Appeals for the Federal Circuit.

(ii) Correspondence relating to disciplinary proceedings pending before an Administrative Law Judge or the Commissioner shall be mailed to: Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.

(iii) All other correspondence to the Office of the Solicitor shall be addressed to: Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

(iv) Correspondence improperly addressed to a Post Office Box specified in paragraphs (a)(3)(i) and (ii) of this section will not be filed elsewhere in the Patent and Trademark Office, and may be returned.

* * * * *

(g) [Reserved]

* * * * *

3. Section 1.3 is revised to read as follows:

§ 1.3 Business to be conducted with decorum and courtesy.

Applicants and their attorneys or agents are required to conduct their business with the Patent and Trademark Office with decorum and courtesy. Papers presented in violation of this requirement will be submitted to the Commissioner and will be returned by the Commissioner's direct order. Complaints against examiners and other employees must be made in correspondence separate from other papers.

4. Section 1.5 is amended by revising paragraph (a) to read as follows:

§ 1.5 Identification of application, patent, or registration.

(a) No correspondence relating to an application should be filed prior to receipt of the application number from the Patent and Trademark Office. When a letter directed to the Patent and Trademark Office concerns a previously filed application for a patent, it must identify on the top page in a conspicuous location, the application number (consisting of the series code and the serial number; *e.g.*, 07/123,456), or the serial number and filing date assigned to that application by the Patent and Trademark Office, or the international application number of the international application. Any correspondence not containing such identification will be returned to the sender where a return address is available. The returned correspondence will be accompanied by a cover letter which will indicate to the sender that if the returned correspondence is resubmitted to the Patent and Trademark Office within two weeks of the mailing date on the cover letter, the original date of receipt of the correspondence will be considered by the Patent and Trademark Office as the date of receipt of the correspondence. Applicants may use either the Certificate of Mailing or Transmission procedure under § 1.8 or the Express Mail procedure under § 1.10 for resubmissions of returned correspondence if they desire to have the benefit of the date of deposit with the United States Postal Service. If the returned correspondence is not resubmitted within the two-week period, the date of receipt of the resubmission will be considered to be the date of receipt of the correspondence. The two-week period to resubmit the returned correspondence will not be extended. In addition to the application number, all letters directed to the Patent and Trademark Office concerning applications for patents should also state the name of the applicant, the title of the invention, the date of filing the same, and, if known, the group art unit or other unit within the Patent and Trademark Office responsible for considering the letter and the name of the examiner or other person to which it has been assigned.

* * * * *

5. Section 1.6 is amended by revising paragraph (a) to read as follows:

§ 1.6 Receipt of correspondence.

(a) *Date of receipt and Express Mail date of deposit.* Correspondence received in the Patent and Trademark Office is stamped with the date of receipt except as follows:

(1) The Patent and Trademark Office is not open for the filing of correspondence on any day that is a Saturday, Sunday or Federal holiday within the District of Columbia. Except for correspondence transmitted by facsimile as provided for in paragraph (a)(3) of this section, no correspondence is received in the Patent and Trademark Office on Saturdays, Sundays or Federal holidays within the District of Columbia.

(2) Correspondence filed in accordance with § 1.10 will be stamped with the date of deposit as "Express Mail" with the United States Postal Service.

(3) Correspondence transmitted by facsimile to the Patent and Trademark Office will be stamped with the date on which the complete transmission is received in the Patent and Trademark Office unless that date is a Saturday, Sunday, or Federal holiday within the District of Columbia, in which case the date stamped will be the next succeeding day which is not a Saturday, Sunday, or Federal holiday within the District of Columbia.

* * * * *

6. Section 1.8 is amended by revising paragraphs (a)(1)(i)(A) and (a)(2)(ii) to read as follows:

§ 1.8 Certificate of mailing or transmission.

(a) * * *
(1) * * *
(i) * * *

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(A) Addressed as set out in § 1.1(a) and deposited with the U.S. Postal Service with sufficient postage as first class mail; or

* * * * *

(2) * * *
(i) * * *
(ii) Relative to Trademark Registrations and Trademark Applications
(A) The filing of a trademark application.
(B) [Reserved]
(C) [Reserved]
(D) [Reserved]
(E) [Reserved]
(F) [Reserved]

* * * * *

7. Section 1.9 is amended by adding a new paragraph (h) to read as follows:

§ 1.9 Definitions.

* * * * *

(h) A "Federal holiday within the District of Columbia" as used in this chapter means any day, except Saturdays and Sundays, when the Patent and Trademark Office is officially closed for business for the entire day.

8. Section 1.10 is revised to read as follows:

§ 1.10 Filing of correspondence by "Express Mail."

(a) Any correspondence received by the Patent and Trademark Office (Office) that was delivered by the "Express Mail Post Office to Addressee" service of the United States Postal Service (USPS) will be considered filed in the Office on the date of deposit with the USPS. The date of deposit with the USPS is shown by the "date-in" on the "Express Mail" mailing label or other official USPS notation. If the USPS deposit date cannot be determined, the correspondence will be accorded the Office receipt date as the filing date. See § 1.6(a).

(b) Correspondence should be deposited directly with an employee of the USPS to ensure that the person depositing the correspondence receives a legible copy of the "Express Mail" mailing label with the "date-in" clearly marked. Persons dealing indirectly with the employees of the USPS (such as by deposit in an "Express Mail" drop box) do so at the risk of not receiving a copy of the "Express Mail" mailing label with the desired "date-in" clearly marked. The paper(s) or fee(s) that constitute the correspondence should also include the "Express Mail" mailing label number thereon. See paragraphs (c), (d) and (e) of this section.

(c) Any person filing correspondence under this section that was received by the Office and delivered by the "Express Mail Post Office to Addressee" service of the USPS, who can show that there is a discrepancy between the filing date accorded by the Office to the correspondence and the date of deposit as shown by the "date-in" on the "Express Mail" mailing label or other official USPS notation, may petition the Commissioner to accord the correspondence a filing date as of the "date-in" on the "Express Mail" mailing label or other official USPS notation, provided that:

(1) The petition is filed promptly after the person becomes aware that the Office has accorded, or will accord, a filing date other than the USPS deposit date;

(2) The number of the "Express Mail" mailing label was placed on the paper(s) or fee(s) that constitute the correspondence prior to the original mailing by "Express Mail;" and

(3) The petition includes a true copy of the "Express Mail" mailing label showing the "date-in," and of any other official notation by the USPS relied upon to show the date of deposit.

(d) Any person filing correspondence under this section that was received by the Office and delivered by the "Express Mail Post Office to Addressee" service of the USPS, who can show that the "date-in" on the "Express Mail" mailing label or other official notation entered by the USPS was incorrectly entered or omitted by the USPS, may petition the Commissioner to accord the correspondence a filing date as of the date the correspondence is shown to have been deposited with the USPS, provided that:

(1) The petition is filed promptly after the person becomes aware that the Office has accorded, or will accord, a filing date based upon an incorrect entry by the USPS;

(2) The number of the "Express Mail" mailing label was placed on the paper(s) or fee(s) that constitute the correspondence prior to the original mailing by "Express Mail"; and

(3) The petition includes a showing which establishes, to the satisfaction of the Commissioner, that the requested filing date was the date the correspondence was deposited in "Express Mail Post Office to Addressee" service prior to the last scheduled pickup for that day. Any showing pursuant to this paragraph must be corroborated by evidence from the USPS or that came into being after deposit and within one business day of the deposit of the correspondence in the "Express Mail Post Office to Addressee" service of the USPS. Any statement submitted in support of such a showing pursuant to this paragraph must be a verified statement if made by a person other than an employee of the USPS or a practitioner as defined in § 10.1(r) of this chapter.

(e) Any person mailing correspondence addressed as set out in § 1.1(a) to the Office with sufficient postage utilizing the "Express Mail Post Office to Addressee" service of the USPS but not received by the Office, may petition the Commissioner to consider such correspondence filed in the Office on the USPS deposit date, provided that:

(1) The petition is filed promptly after the person becomes aware that the Office has no evidence of receipt of the correspondence;

(2) The number of the "Express Mail" mailing label was placed on the paper(s) or fee(s) that constitute the correspondence prior to the original mailing by "Express Mail;"

(3) The petition includes a copy of the originally deposited paper(s) or fee(s) that constitute the correspondence showing the number of the "Express Mail" mailing label thereon, a copy of any returned postcard receipt, a copy of the "Express Mail" mailing label showing the "date-in," a copy of any other official notation by the USPS relied upon to show the date of deposit, and, if the requested filing date is a date other than the "date-in" on the "Express Mail" mailing label or other official notation entered by the USPS, a showing pursuant to paragraph (d)(3) of this section that the requested filing date was the date the correspondence was deposited in "Express Mail Post Office to Addressee" service prior to the last scheduled pickup for that day; and

(4) The petition includes a statement which establishes, to the satisfaction of the Commissioner, the original deposit of the correspondence, and that the copies of the correspondence, the copy of the "Express Mail" mailing label, the copy of any returned postcard receipt, and any official notation entered by the USPS are true copies of the originally mailed correspondence and original "Express Mail" mailing label, returned postcard receipt, and official notation entered by the USPS. Such statement must be a verified statement if made by a person other than a practitioner as defined in § 10.1(r) of this chapter.

(f) The Office may require additional evidence to determine if the correspondence was deposited as "Express Mail" with the USPS on the date in question.

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

9. The authority citation for 37 CFR Part 2 continues to read as follows: Authority: 15 U.S.C. 1123; 35 U.S.C. 6, unless otherwise noted.

10. Section 2.165(a)(1) is revised to read as follows:

§ 2.165 Reconsideration of affidavit or declaration.

(a)(1) If the affidavit or declaration filed pursuant to § 2.162 is insufficient or defective, the affidavit or declaration will be refused and the registrant will be notified of the reason. Reconsideration of the refusal may be requested within six months from the date of the mailing of the action. The request for reconsideration must state the grounds for the request. A supplemental or substitute affidavit or declaration required by

section 8 of the Act of 1946 cannot be considered unless it is filed before the expiration of six years from the date of the registration or from the date of publication under section 12(c) of the Act.

* * * * *

PART 5 - SECRECY OF CERTAIN INVENTIONS AND LICENSES TO EXPORT AND FILE APPLICATIONS IN FOREIGN COUNTRIES

11. The authority citation for 37 CFR Part 5 continues to read as follows:

Authority: 35 U.S.C. 6, 41, 181-188, as amended by the Patent Law Foreign Filing Amendments Act of 1988, Pub. L. 100-418, 102 Stat. 1567; the Arms Export Control Act, as amended, 22 U.S.C. 2751 et seq., the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq., and the Nuclear Non-Proliferation Act of 1978, 22 U.S.C. 3201 et seq., and the delegations in the regulations under these acts to the Commissioner (15 CFR 370.10(j), 22 CFR 125.04, and 10 CFR 810.7).

12. Section 5.33 is revised to read as follows:

§ 5.33 Correspondence.

All correspondence in connection with this part, including petitions, should be addressed to "Assistant Commissioner for Patents (Attention: Licensing and Review), Washington, D.C. 20231."

PART 10 - REPRESENTATION OF OTHERS BEFORE THE PATENT AND TRADEMARK OFFICE

13. The authority citation for 37 CFR Part 10 continues to read as follows: Authority: 5 U.S.C. 500; 15 U.S.C. 1123; 35 U.S.C. 6, 31, 32, 41.

14. Section 10.23 is amended by revising paragraph (c)(9) to read as follows:

§ 10.23 Misconduct.

* * * * *

(c) * * *

(9) Knowingly misusing a "Certificate of Mailing or Transmission" under § 1.8 of this chapter.

* * * * *

October 24, 1996 BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office who have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before January 10, 1997.

Anderson, David R., Jr., 2504 James Monroe Cir., Herndon, Va. 22071

Aschenbrenner, Peter A., Route 1, Box 303A, Laona, Wis. 54541

Cardillo, Raymond F., Jr., 1022 S. 22nd St., Arlington, Va. 22202

Envall, Roy N., Jr., 12223 Folkstone Dr., Herndon, Va. 22071

Gray, Bobby R., 5447 Braddock Ridge Dr., Centreville, Va. 22020

Larson, James A., 4500 Custer Ln., Sioux Falls, S. Dak. 57106

Miner, James R., 401 12th St. South, #2017, Arlington, Va. 22202

Shepperd, John W., 1716 N. Greenbrier St., Arlington, Va. 22205

Whang, Young S., 37 Pidgeon Hill Dr., #211, Sterling, Va. 20165

Wigmore, Steven P., 7525 Spring Lake Dr., #C-1, Bethesda, Md. 20817

Wright, Alan A., 7905 Steadman St., Alexandria, Va. 22309

October 23, 1996 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

37 CFR 1.47 Notice by Publication

Notice is hereby given of the filing of an application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (Martin Wiesmann) may join in the application by promptly filing an appropriate oath or Declaration complying with 37 CFR 1.63. The international application number is PCT/CH95/00110 and was filed on 17 May 1995 in the names of Rudolph Aeschbach and Martin Wiesmann for the invention entitled Apparatus and Method for Producing Bags. The national stage application number is 08/581,587 and has a 35 U.S.C. 371 date of 28 May 1996.

37 CFR 1.47 Notice by Publication

Notice is hereby given of the filing of a national stage application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (Ian McMillan) may join in the application by promptly filing an appropriate oath or Declaration complying with 37 CFR 1.63. The international application number is PCT/NO91/00071 and was filed on 16 May 1991 in the names of Richard Bale and Ian McMillan for the invention entitled Method for Acquisition of Seismic Data at Sea. The national stage application number is 07/952,827 and has a 35 U.S.C. 371 date of 30 June 1993.

Errata

The following notice should be placed in the *O.G.* to correct the erroneous patenting of an application (07/866,295) wherein the *Notice of Allowance* had been withdrawn.

"All references to Patent No. 5,206,741 to Akihiro Shimura, Tokyo and Shigeru Ueda, Wako-Shi, both of Japan for IMAGE PROCESSING APPARATUS appearing in the *Official Gazette* of April 27, 1993 should be deleted since no patent was granted."

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Notice of Public Repremand

Reuben Friedman, of Silver Spring, Maryland, whose registration number is 29,741, has been subjected to public repremand, as of September 18, 1996, for conduct in violation of a rule in the U.S. Patent and Trademark Office Code of Professional Conduct. This action is taken pursuant to 35 U.S.C. § 32, and 37 CFR §§ 10.155(d), and 10.159(b).

October 31, 1996 — KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Certificate of Correction
For Week of November 26, 1996

Re. 33,620	5,466,611	5,508,397	5,528,332
Re. 35,095	5,468,513	5,508,407	5,528,333
Re. 35,191	5,470,558	5,508,534	5,528,525
D. 342,220	5,470,857	5,508,752	5,528,583
D. 367,886	5,473,454	5,509,128	5,528,638
D. 370,872	5,474,082	5,509,408	5,528,752
4,839,275	5,475,188	5,509,413	5,529,040
5,025,397	5,475,565	5,509,566	5,529,104
5,055,110	5,477,165	5,510,387	5,529,331
5,080,975	5,477,389	5,510,631	5,529,382
5,144,585	5,480,129	5,510,833	5,529,761
5,155,669	5,480,772	5,511,093	5,530,264
5,170,200	5,481,087	5,511,668	5,530,419
5,209,167	5,481,095	5,511,930	5,530,815
5,227,880	5,482,556	5,512,456	5,530,819
5,236,752	5,482,858	5,513,324	5,530,863
5,246,984	5,483,212	5,513,756	5,530,904
5,248,815	5,483,232	5,513,783	5,531,007
5,270,326	5,485,206	5,514,063	5,531,024
5,275,271	5,486,626	5,514,297	5,531,064
5,278,286	5,487,895	5,514,484	5,531,383
5,279,713	5,488,277	5,514,678	5,531,721
5,279,767	5,489,119	5,515,709	5,531,894
5,281,724	5,489,186	5,515,771	5,531,936
5,294,014	5,489,274	5,515,857	5,531,973
5,298,939	5,489,474	5,515,959	5,532,714
5,303,412	5,489,495	5,516,016	5,532,855
5,309,562	5,489,513	5,516,046	5,532,969
5,322,953	5,490,505	5,516,511	5,533,113
5,329,975	5,490,592	5,516,551	5,533,399
5,334,146	5,491,253	5,516,695	5,533,503
5,337,901	5,492,051	5,517,485	5,533,972
5,341,331	5,492,284	5,518,107	5,534,049
5,344,414	5,492,922	5,518,108	5,534,325
5,370,491	5,493,639	5,518,597	5,534,981
5,383,957	5,494,653	5,520,093	5,534,982
5,388,766	5,495,410	5,520,096	5,535,055
5,399,562	5,496,500	5,520,735	5,535,116
5,399,918	5,497,109	5,521,566	5,535,345
5,406,275	5,497,829	5,522,295	5,535,548
5,414,628	5,497,847	5,522,367	5,535,998
5,420,639	5,497,938	5,522,393	5,536,093
5,424,413	5,498,195	5,522,435	5,536,134
5,426,479	5,499,272	5,522,870	5,536,410
5,427,429	5,499,515	5,523,860	5,536,832
5,429,397	5,500,244	5,523,905	5,537,061
5,430,151	5,500,275	5,523,920	5,537,201
5,430,797	5,503,256	5,523,974	5,537,760
5,433,706	5,503,666	5,524,888	5,537,787
5,434,989	5,504,500	5,525,129	5,537,799
5,436,619	5,504,512	5,525,216	5,538,045
5,437,716	5,504,855	5,525,588	5,538,408
5,440,755	5,504,898	5,525,646	5,538,910
5,444,842	5,504,901	5,525,706	5,539,192
5,450,887	5,506,281	5,525,752	5,539,397
5,455,823	5,506,291	5,526,014	5,539,737
5,459,983	5,506,933	5,526,367	5,539,825
5,460,964	5,507,659	5,526,588	5,539,826
5,462,843	5,507,728	5,526,971	5,539,877
5,462,929	5,508,231	5,527,458	5,540,119
5,463,031	5,508,275	5,527,653	5,540,310
5,464,649	5,508,377	5,527,912	5,540,384
5,540,427	5,543,700	5,550,256	5,555,831
5,540,700	5,544,177	5,550,345	5,555,978
5,540,962	5,544,515	5,550,464	5,556,006
5,541,300	5,545,192	5,551,044	5,556,485
5,541,418	5,545,606	5,551,213	5,556,525
5,541,489	5,545,985	5,551,508	5,556,536
5,541,686	5,546,057	5,551,850	5,556,589
5,541,693	5,546,214	5,552,356	5,556,695
5,541,844	5,546,223	5,552,391	5,557,235
5,542,094	5,546,699	5,552,491	5,557,325
5,542,503	5,546,768	5,552,586	5,557,391
5,542,891	5,547,368	5,553,278	5,557,484
5,542,938	5,547,472	5,554,261	5,558,171
5,543,026	5,547,707	5,554,449	5,558,655
5,543,125	5,547,807	5,554,593	5,558,761
5,543,136	5,547,986	5,554,718	5,558,903
5,543,252	5,548,053	5,554,756	5,558,911
5,543,322	5,548,107	5,554,891	5,559,969
5,543,413	5,548,157	5,554,918	5,560,014
5,543,446	5,548,541	5,555,544	5,560,179
5,543,556	5,549,219	5,555,596	5,560,505
5,543,583	5,549,413	5,555,814	5,560,554
5,543,639	5,550,021		

Summary of Final Decisions of the Trademark Trial and Appeal Board
Issued by the
Trademark Trial and Appeal Board
September 30-October 4, 1996

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
9-30	EX	74/376,544	L'Nard Restorative Concepts, Inc.	whether the configuration sought to be registered is de jure functional and, if not, whether it has acquired secondary meaning and is, therefore, registrable under Sec.2 (f)	Refusal Affirmed (only on ground that configuration has not acquired secondary meaning)		configuration of foot splint [foot orthosis device]		No
9-30	EX	74/517,872	Finlay Fine Jewelry Corp.	whether proposed amendment of mark to conform to specimens constitutes material alteration of mark	Refusal Reversed		"NY JEWELRY OUTLET" (sought to be amended to "NEW YORK JEWELRY OUTLET") [retail jewelry store services]		Yes
10-2	EX	74/287,220	Darren Rittenhouse	2(a) (falsely suggests a connection with the Baltimore Orioles baseball team and its owners); 2(d)	Refusal Affirmed (on both grounds)		"O's" (and design) [clothing namely, t-shirts and caps]	"ORIOLES BALTIMORE" (and design) [shirts and caps]; "ORIOLES" (and design) [t-shirts and caps]; "WHY NOT" (and design) [t-shirts]; etc.	No
10-2	EX	74/326,998	Burke Marketing Research	2(e)(1)	Refusal Reversed		"FISCAL" [marketing research services and conducting market research studies]		No
10-3	EX	74/429,188	Gayman Manufacturing, Inc.	whether mark in drawing is mutilation of mark in specimens	Refusal Reversed		"SHURLOCK FOR HOMES" (and design) [metal adjustable bar for securing doors in a closed, locked position]		No
10-3	EX	74/467,527	Clean-Pro U.S.A., Inc.	2(d)	Refusal Reversed		"CLEAN-PRO U.S.A." (stylized) [janitorial services for commercial and industrial premises]	"PRO-KLEEN" [cleaning of residential and commercial buildings]	No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SJ) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION

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Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	Applicant's/ Respondent's Mark and Goods/Services	Opposer's/ Petitioner's Mark and Goods/Services	TTAB Decision	Mark and Goods Cited by Examining Attorney	Recommended for Publication
10-3	EX	74/498,215	Graphix Zone, Inc.	2(e)(1)	"IMCD" [interactive compact disc read only memory featuring music]		Refusal Affirmed		No
10-3	OPP	78,510; 79,243	Block Drug Company, Inc. v. Molnlycke AB	2(d)	"PROMISE" [perineal wash cream and conditioner; disposable pre-moistened washcloths]	"PROMISE" [desensitizing toothpaste]	Oppositions Sustained		No
10-4	EX	74/321,532	Tuboscope Vetco International Inc.	whether term sought to be registered is used as trademark, or rather, only to identify process	"THRU-KOTE" [connecting and joining of tubular goods of others by welding]		Refusal Reversed		No
10-4	EX	74/346,870	Rugged Sportswear, Inc.	2(e)(1)	"RUGGED SWEATS" [sportswear, namely, sweatshirts, sweatpants, t-shirts, jogging suits, and athletic shorts]		Refusal Affirmed		No
10-4	EX	74/393,257	Telesource, Inc.	2(d)	"ELECTRONIC RESOURCE THE LAST WORD IN ELECTRONIC SERVICES" (and design) [maintenance and repair of electronic equipment; remanufacture of electronic equipment to the order and/or specification of others]		Refusal Reversed	"RESOURCE-ELECTRONICS" and "RESOURCE-ELECTRONICS" (and design) [distributorship services in the field of electronic parts, components and supplies]	No
10-4	EX	74/437,008	Investors Trust	2(e)(1)	"INVESTORS TRUST" [financial services, namely, mutual fund services]	"INVESTORS TRUST" [financial services, namely, mutual fund services]	Refusal Reversed		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR PATENT MAIL

Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL-85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Arlington, Virginia 22202-3513

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Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

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Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
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Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6500 Ext. 257
New Hampshire	Concord: New Hampshire State Library	(603) 271-2239
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
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	New York Public Library (The Research Libraries)	(212) 592-7000
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(303) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 3459
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	Not Yet Operational
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	11/24/94
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	08/02/94
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—BARRY S. RICHMAN, Director	308-0651	09/24/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	02/16/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	09/02/94
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	11/22/94
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	03/28/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	11/25/93
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	09/13/94
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	03/31/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	02/17/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	03/27/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	06/09/94
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	12/15/94
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	07/31/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	06/30/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	11/21/94

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

171-489 O.G.-96-2: QL3

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TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of October 1, 1996

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/27/96	08/05/96
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/27/96	05/07/96
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/04/96	07/15/96
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/10/96	07/17/96
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/06/96	06/04/96
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/10/96	07/23/96
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/04/96	07/22/96
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions— Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/15/96	04/19/96
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/10/96	08/06/96
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100		
Trademark Assistance Center—(703) 308-9000		
Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188		
Intent-To-Use—(ITU)—(703) 308-9500		
Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	07/01/96	—0—
Renewals (All Classes)	07/10/96	—0—
Section 12(c) Publications (All Classes)	04/20/96	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

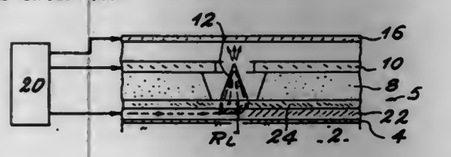
3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

NOVEMBER 26, 1996

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,940,916 (3060th)
ELECTRON SOURCE WITH MICROPOINT EMISSIVE CATHODES AND DISPLAY MEANS BY CATHODOLUMINESCENCE EXCITED BY FIELD EMISSION USING SAID SOURCE
Michel Borel, Le Touvet; Jean-Francois Boronat, Grenoble; Robert Meyer, St Nazaire les Eymes;, and Philippe Rambaud, Claix, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France
Reexamination Request No. 90/003,764, Mar. 22, 1995.
Reexamination Certificate for Patent 4,940,916, issued Jul. 10, 1990, Ser. No. 266,681, Nov. 3, 1988.
Claims priority, application France, Nov. 6, 1987, 87 15432
Int. Cl.[6] H01J *1/30;1/90;29/04*
U.S. Cl. 315—306



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

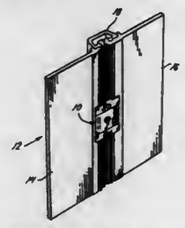
Claims **1** and **8** are determined to be patentable as amended.

Claims **2–6** and **7** dependent on an amended claim are determined to be patentable.

New claims **9–23** and **24** are added and determined to be patentable.

1. Electron source comprising first parallel electrodes **(5)** serving as cathode conductors, each cathode conductor having an electrically conductive layer **(22)**, whereof one face carries a plurality of micropoints **(12)** made from an electron emitting material and second parallel electrodes **(10)** serving as grids and which are electrically insulated from the cathode conductors **(5)** and form an angle therewith, which defines intersection zones of the cathode conductors and grids, the micropoints **(12)** being located **[**at least**]** *on said cathode conductor* in said intersection zones, the grids **(10)** also being positioned facing said faces and have holes **(14)** respectively facing the micropoints, the apex of each micropoint being substantially level with the hole corresponding thereto, the micropoints of each intersection zone being able to emit electrons when the corresponding grid is positively polarized with respect to the corresponding cathode conductor, an electrical current then flowing in each micropoint of the zone, characterized in that each cathode conductor **(5)** also has means for limiting the intensity of the electrical current flowing in each micropoint of said cathode conductor, said means **[**having**]** *comprising* a continuous resistive layer **(24, 25)** located on the conductive layer **(22)** of the corresponding cathode conductor **(5)**, *such that the cathode conductor is completely and continuousl coated with the resistive layer,* between said conductive layer and the corresponding micropoints **(12)**, said corresponding micropoints resting on the resistive layer **(24, 25)**, *and wherein said continuous resistive layer provides for dissipation of thermal energy generated at said intersection zones.*

B1 4,976,008 (3061st)
MULTI-PIECE BEARING ASSEMBLY FOR A HINGE STRUCTURE
Austin R. Baer, Villa Park, Ill., assignor to Roton Barrier, Inc., St. Louis, Mo.
Reexamination Request No. 90/003,754, Mar. 20, 1995.
Reexamination Certificate for Patent 4,976,008, issued Dec. 11, 1990, Ser. No. 432,575, Nov. 6, 1989.
Int. Cl.[6] E05D *7/00*
U.S. Cl. 16—354



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–12** is confirmed.

1. A multi-piece thrust bearing assembly for a pinless hinge structure including two intermeshed geared hinge members which are longitudinally movable relative to each other and clamp members for maintaining the geared hinge members in mesh as they rotate, each geared hinge member including a gear segment extending along a longitudinal edge thereof, and an outwardly extending leg portiion, said bearing assembly comprising:

bearing means disposed in adjacent longitudinal co-extensive lateral recesses defined along adjacent longitudinal edges of each hinge member and extending laterally across each gear segment of said hinge members to inhibit longitudinal movement of the hinge members relative to each other; and

bearing insert means arranged beneath the gear segment of each hinge member and an upper bearing surface of said bearing means and secured to said hinge members for enhancing hinge performance by reducing frictional sliding contact between the hinge members and said bearing means.

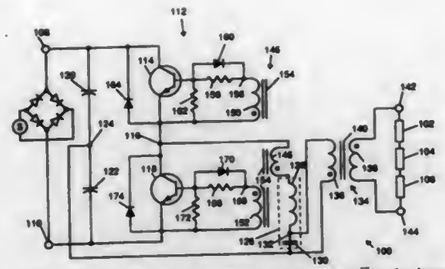
B1 5,138,236 (3062nd)
CIRCUIT FOR DRIVING A GAS DISCHARGE LAMP LOAD
Andrew Bobel, Des Plaines, and Mihail S. Moisin, Lake Forest, both of Ill., assignors to Motorola Lighting, Inc., Buffalo Grove, Ill.
Reexamination Request No. 90/003,275, Dec. 15, 1993.
Reexamination Certificate for Patent 5,138,236, issued Aug. 11, 1992, Ser. No. 705,857, May 28, 1991.
Int. Cl.[6] H05B *37/00*
U.S. Cl. 315—209 R

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–10** are cancelled.

1. A circuit for driving a gas discharge lamp load, the circuit comprising:

inverter means having an input for receiving a unidirectional voltage and an output for producing an alternating voltage, the inverter means including a first transistor switch means and a



second transistor switch means coupled in series to the input, the first transistor switch mean shaving a first control input for controlling the switching of the first transistor switch means, and the second transitor switch means having a second control input for controlling the switching of the second transistor switch means;

resonant oscillator means coupled to the output of the inverter means, and including an inductance and a capacitance coupled for producing an alternating signal;

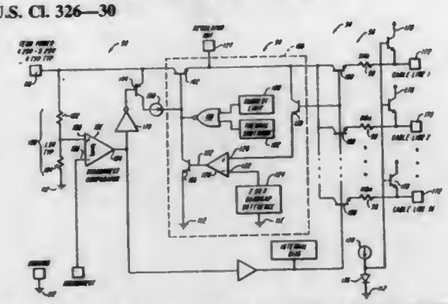
feedback transformer means coupled to the resonant oscillator means and to the first and second control inputs;

first resistance means coupled serially between the feedback transformer means and the first control input and second resistance means coupled serially between the feedback transformer means and the second control input, the feedback transformer means providing to the first and second control inputs via the first and second resistance means signals which vary linearly with the alternating signal of the resonant oscillator means in operation of the circuit.

B2 5,272,396 (3063rd)
CONTROLLABLE BUS TERMINATOR WITH VOLTAGE REGULATION

Robert A. Mammano, Costa Mesa, Calif., and Mark Jordan, Manchester, N.H., assignors to Unitrode Corporation, Billerica, Mass.

Reexamination Request Nos. 90/003,671, Dec. 23, 1994 and 90/004,074, Dec. 20, 1995.
Reexamination Certificate for Patent 5,272,396, issued Dec. 21, 1993, Ser. No. 755,072, Sep. 5, 1991.
Int. Cl.[6] H03K *17/16;3/01*
U.S. Cl. 326—30



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1** and **3–11** is confirmed.

Claims **2** and **12–14** were previously cancelled.

1. A controllable bus terminator, for providing a switchable termination on a bus having a plurality of conductors, said controllable bus terminator comprising:

a voltage regulator;

a plurality of resistive networks each of said resistive networks having a first terminal and a second terminal wherein the second terminal of each of said resistive networks provides an output terminal of said bus terminator;

a plurality of electrically controllable switches each of which has a first port, a second port, and a control port, each of said switches having said first port thereof coupled to said voltage regulator and said second port thereof coupled to the first terminal of a corresponding one of said resistive networks wherein each of said switches couple the corresponding resistive network to said voltage regulator when the corresponding switch is in a first state and wherein each of said switches disconnect the corresponding resistive network from said voltage regulator when the corresponding switch is in a second state;

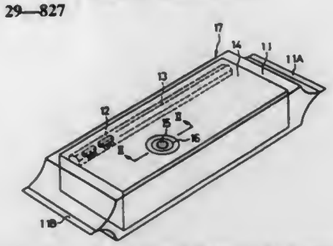
a control circuit having an output terminal coupled to the control port of each of said plurality of electrically controllable switches, said control circuit for providing a first control signal to said control ports which causes each of said electrically controllable switches to switch from said first state to said second state and for providing a second control signal to said control ports which causes each of said electrically controllable switches from said second state to said first state; and

wherein the output terminal of said control circuit is coupled to said voltage regulator and wherein a first one of said first and second control signals turns on said voltage regulator and a second one of said first and second control signals turns off said voltage regulator.

B1 5,295,297 (3064th)
METHOD OF PRODUCING SEMICONDUCTOR MEMORY

Wahei Kitamura, Kodaira; Gen Murakami, Machida, and Kunibiko Nishi, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Reexamination Request No. 90/004,063, Dec. 22, 1995.
Reexamination Certificate for Patent 5,295,297, issued Mar. 22, 1994, Ser. No. 915,496, Jul. 20, 1992.
Division of Ser. No. 791,539, Nov. 14, 1991, which is a continuation of Ser. No. 392,029, Aug. 10, 1989, Pat. No. 5,095,626, which is a division of Ser. No. 124,925, Nov. 23, 1987, abandoned.
Claims priority, application Japan, Nov. 25, 1986, 61-278610; Aug. 21, 1988, 62-206290
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—827



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–27** is confirmed.

1. A method of mounting at least one surface-mount resin molded semiconductor device, having leads, on a mounting substrate, comprising the steps of:

taking out a surface-mount resin molded semiconductor device from a sealed moisture-proofing bag member, said moisture-proofing bag member having said semiconductor device and a desiccant therein, said moisture-proofing bag member being made of a multi-layered film; and

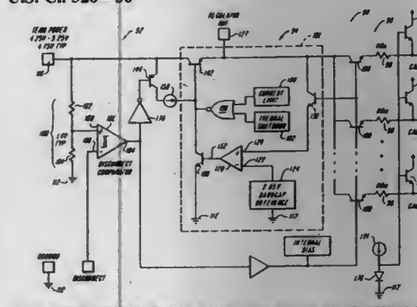
mounting said semiconductor device to said mounting substrate by soldering leads to said mounting substrate under such a condition where the semiconductor device has heat applied thereto,

wherein said mounting said semiconductor device to said mounting substrate is performed sufficiently rapidly after taking out said semiconductor device from the moisture-proofing bag member such that cracking of the semiconductor device after said mounting, due to moisture absorbed in the resin molded semiconductor device after taking out the semiconductor device from the sealed moisture-proofing bag member, is avoided.

B2 5,338,979 (3065th)
CONTROLLABLE BUS TERMINATOR

Robert A. Mammano, Costa Mesa, Calif., and Mark Jordan, Manchester, N.H., assignors to Unitrode Corporation, Billerica, Mass.

Reexamination Request No. 90/004,080, Dec. 20, 1995.
Reexamination Certificate for Patent 5,338,979, issued Aug. 16, 1994, Ser. No. 88,911, Jul. 7, 1993.
Continuation of Ser. No. 990,133, Dec. 14, 1992, abandoned, which is a continuation of Ser. No. 755,072, Sep. 5, 1991, Pat. No. 5,272,396.
Int. Cl.[6] H03K *17/16;3/01*
U.S. Cl. 326—30



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1**, **2**, **7–10** and **18–20** is confirmed.

Claims **3–6** and **11–17** were previously cancelled.

1. A controllable bus terminator, for providing a switchable termination on a bus having a plurality of conductors, said controllable bus terminator comprising:

a voltage regulator;

a plurality of termination networks;

a plurality of electrically controllable switches each of which has an input terminal, and output terminal, and a control terminal,

each of said switches, said voltage regulator, and a coresponding one of said termination networks being coupled in series with the input terminal of each said switch being connected to said voltage regulator and the output terminal of each said switch being coupled to the corresponding one of said termination networks, wherein each of said switches couples the voltage regulator to a corresponding conductor through said termination network when the corresponding switch is in a first state and wherein each of said switches disconnects the voltage regulator from said corresponding conductor when the corresponding switch is in a second state;

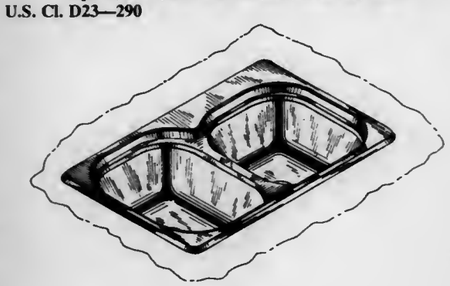
a control cicuit comprising an output terminal coupled to the control terminal of each of said plurality of electrically controllable switches, said control circuit for providing a first control signal to said control terminals which causes each of said electrically controllable switches to switch from said first state to said second state and for providing a second control signal to said control terminals which causes each of said electrically controllable switches to switch from said second state to said first state; and

wherein the output terminal of said control circuit is coupled to said voltage regulator and wherein a first one of said first and second control signals turns on said voltage regulator and a second one of said first and second control signals turns off said voltage regulator.

B1 Des. 325,246 (3066th)
SINK

Bruce M. Sauter, Schaumburg, Ill., and Raymond A. Dickson, Jr., Searcy, Ark., assignors to Kohler Co., Wis.

Reexamination Request No. 90/004,041, Nov. 29, 1995.
Reexamination Certificate for Patent Des. 325,246, issued Apr. 7, 1992, Ser. No. 332,663, Mar. 30, 1989.
U.S. Cl. D23—290



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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,380

TILE MOUNTING SYSTEM

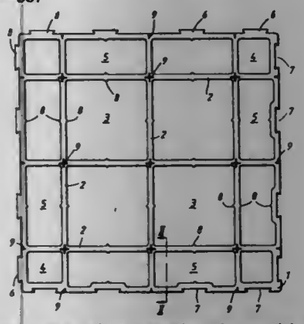
Philip L. Rea, "Melleray", 7a Hillcrest Road, Ealing, London W5 2JL, and Stanley R. Bagshaw, 6 Marks Tey Road, stubbington, Fareham, Hampshire, both of England

Original No. 4,888,928, dated Dec. 26, 1989, Ser. No. 165,917, Mar. 9, 1988. Continuation of Ser. No. 873,346, Jun. 12, 1986, Pat. No. 4,761,926. Application for reissue Dec. 24, 1991, Ser. No. 813,343

Claims priority, application United Kingdom, Jun. 21, 1985, 8515769

Int. Cl.[6] E04F *13/08*

U.S. Cl. 52—387 **2 Claims**



[1. A tiling system which comprises the provision of a first matrix for use in tiling, the first matrix defining an apertured portion for adhesive attachment to a surface to be tiled, the apertures constituting a major portion of the area of the first matrix, the apertured portion being provided with a pattern of projections, the sizes and positions of the projections enabling tiles to be fit between the projections, the projections of the patterns being detachably secured to the apertured portion, the configuration of the apertured portion being symmetrical, the configuration having at least one central aperture, a plurality of lateral apertures, and a plurality of corner apertures, the lateral apertures and the corner apertures surrounding the central aperture, a combined matrix being formed when the first matrix is attached and aligned along a common edge to a second matrix, the second matrix being identical to the first matrix, the configuration of the combined matrix being similar to the configuration of the first matrix, a lateral aperture of the first matrix combining with a lateral aperture of the second matrix along the common edge to form a central aperture, and a corner aperture of the first matrix combining with a corner aperture of the second matrix along the common edge to form a lateral aperture.**]**

Re. 35,381

BALLISTIC OPTIMIZING SYSTEM FOR RIFLES

Clyde E. Rose, South Weber, Utah, assignor to Browning, Morgan, Utah

Original No. 5,279,200, dated Jan. 18, 1994, Ser. No. 912,796, Jul. 13, 1992. Application for reissue Oct. 19, 1995, Ser. No. 545,132

Int. Cl.[6] F41A *21/36*

U.S. Cl. 89—14.3 **66 Claims**

12. A ballistic optimizing system **[**as in claim 11, wherein**]** *comprising:*

a weight element of predetermined mass;

continuously infinitely adjustable means mounting said weight element on a barrel of a rifle to allow said weight to be positioned toward and away from a distal end of said barrel, the range of adjustability and mass of said weight being sufficient to compensate for inherent ballistic variances between at least two different brands of rifle ammunitions, whereby to effect minimum travel deviation for the projectiles of each of said ammunitions when fired through a barrel;

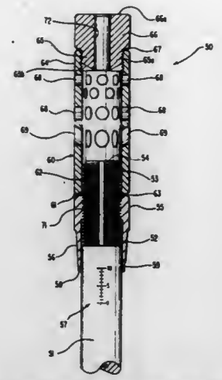
means releasably locking said weight element against further movement toward and away from said distal end of said barrel, at a selected position on said barrel;

indicator means to indicate the position of said weight element relative to said distal end when said weight element is locked against further movement toward and away from said distal end of said barrel;

wherein said weight element is tubular and said means mounting said weight element on said rifle barrel for movement toward and away from said distal end of said barrel comprises exterior threads on said barrel and cooperating interior threads formed in one end of said weight element;

wherein said means releasably locking said weight element against further movement toward and away from said distal end of said barrel at a selected position on said barrel comprises a lock nut threaded onto said barrel and engaged by said weight element;

said indicator means to indicate said position of said weight element relative to said distal end when said weight element is locked against further movement toward and away from said distal end of said barrel includes a linear scale having equally spaced indices formed on said barrel and means carried by said lock nut and forming an indicator cooperating with said indices.



Re. 35,382

LUBRICATION ARRANGEMENT FOR ENGINE

Tetsushi Saito, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka-ken, Japan

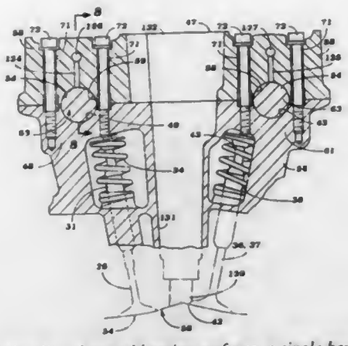
Original No. 5,161,495, dated Nov. 10, 1992, Ser. No. 833,640, Feb. 10, 1992. Continuation of Ser. No. 550,384, Jul. 10, 1990, abandoned. Application for reissue Aug. 29, 1994, Ser. No. 297,630

Claims priority, application Japan, Jul. 14, 1989, 1-181893

Int. Cl.[6] F01M *1/06;9/10*

U.S. Cl. 123—90.27 **38 Claims**

26. In combination, a cylinder head assembly for an enginede-



fining a plurality of spaced bearing surfaces, a single bearing cap connected to said cylinder head assembly and having a plurality of spaced bearing surfaces which cooperate with said bearing surfaces of said cylinder head assembly, a first camshaft journaled for rotation about a first axis by a first plurality of bearings spaced apart from one another along said first axis, each bearing of said first plurality of bearings being formed by said cooperating bearing surfaces on said cylinder head assembly and said single bearing cap, and a second camshaft journaled for rotation about a second axis by a second plurality of bearings spaced apart from one another along said second axis, each bearing of said second plurality of bearings being formed by said cooperating bearing surfaces on said cylinder head assembly and said single bearing cap.

Re. 35,383

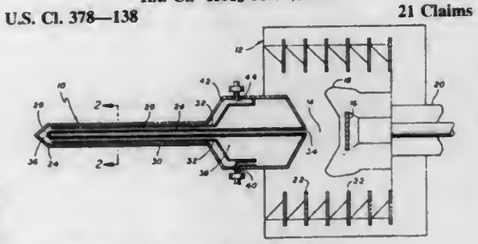
INTERSTITIAL X-RAY NEEDLE

Robert B. Miller; John R. Smith, both of Albuquerque, and Carl A. Muehlenweg, Moriarty, all of N.M., assignors to The Titan Corporation, San Diego, Calif.

Original No. 5,165,093, dated Nov. 17, 1992, Ser. No. 855,664, Mar. 23, 1992. Application for reissue Jul. 5, 1994, Ser. No. 270,261

Int. Cl.[6] H01J *35/14;35/12*

U.S. Cl. 378—138 **21 Claims**



7. An interstitial X-ray needle, including,

first means for producing a plurality of electrons,

second means for including a tube for directing the electrons from the first means in a particular path,

third means disposed at the end of the particular path for converting the electrons to X-rays,

fourth means including a casing disposed in enveloping relationship to the tube for cooling the third means, and

fifth means disposed on the tube for confining the electrons to a beam during the direction of the electrons in the particular path to the third means.

PLANT PATENTS

GRANTED NOVEMBER 26, 1996

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,705

SHRUB ROSE PLANT NAMED 'AUSMOON'

David C. H. Austin, Albrighton, England, assignor to David Austin Roses Limited, England

Filed Dec. 15, 1995, Ser. No. 573,456

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of rose plant of the shrub class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its flower petals having a pale yellow, rich apricot color; flat, full old-fashioned shaped flowers; bushy habit; and very good scent.

9,706

HYBRID TEA ROSE PLANT NAMED 'INTERZENA'

G. P. Ilsink, Doorn, Netherlands, assignor to DeVor Nurseries, Inc., Watsonville, Calif.

Filed Feb. 5, 1996, Ser. No. 596,709

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea rose class, substantially as shown and described.

9,707

'LUCKY ROSE GOLDEN' APPLE TREE

Melvin Obrazda, Orondo, and David Mathison, Wenatchee, both of Wash., assignors to Lucky Stemilt, Wenatchee, Wash.

Filed May 12, 1995, Ser. No. 457,287

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—34.1 **1 Claim**

1. The new and distinct variety of apple tree as illustrated and described, characterized by the light skin, an intense blush on exposed areas, a short stem, and a darker leaf than the Golden Delicious.

9,708

APPLE TREE 'FLA. 90-3'

Wayne B. Sherman, Horticultural Sciences Dept.-Fifield Hall-Univ. Florida, Gainesville, Fla. 32611

Filed Sep. 5, 1995, Ser. No. 522,983

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—34.1 **1 Claim**

1. A new and distinct apple tree cultivar as illustrated and described, characterized by a low-chilling requirement and early-ripening fruit having sweet, low acid flesh and good dessert quality based on flavor and crisp flesh. In comparison to Anna, Fla. 90-3 tastes sweeter with much less acid and ripens about 1 week earlier with less red skin color.

9,709

AVOCADO TREE CALLED 'SIR-PRIZE'

Gray E. Martin, Moreno Valley, and Berthold O. Bergh, Riverside, both of Calif., assignors to The Regents of the University of California, Alameda, Calif.

Filed Jun. 7, 1995, Ser. No. 481,572

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—44 **1 Claim**

1. The new and distinct variety of Avocado Tree herein described and illustrated and identified by the characteristics enumerated above.

9,710

HEATHER 'ALEXANDRA'

Kurt Kramer, Edanmer Strase 26, 26188 Edewecht, Germany

Filed Jun. 2, 1995, Ser. No. 459,510

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—54.1 **1 Claim**

1. A new and distinct variety of Heather plant named *Calluna vulgaris* 'Alexandra', substantially as herein shown and described, characterized particularly by its purple flowers which remain as an unopened bud from fall through early spring.

9,711

***GYPSOPHILA PANICULATA* NAMED 'DANGHAPPY'**

Gabriel Danziger, Nir Tzvi, Israel, assignor to Danziger "Dan" Flower Farm, Post Beit Dagan, Israel

Filed Aug. 10, 1995, Ser. No. 513,525

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of Gypsophila named Danghappy, as illustrated and described.

9,712

CHRYSANTHEMUM PLANT NAMED 'BRIGHT TRACY'

Leon Glicenstein, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 18, 1995, Ser. No. 516,920

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—82.2 **1 Claim**

1. A new and distinct Chrysanthemum plant named Bright Tracy, as described and illustrated.

9,713

CHRYSANTHEMUM PLANT NAMED 'YELLOW CHERIE'

Susan M. Polys, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Sep. 5, 1995, Ser. No. 523,290

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—82.2 **1 Claim**

1. A new and distinct Chrysanthemum plant named Yellow Cherie, as described and illustrated.

9,714

ANTHURIUM PLANT NAMED 'TOSCANE'

N. A. M. van Rosmalen, The Hague, Netherlands, assignor to Nic Van Der Knaap Anthuriumselecties B.V., Bleiswijk, Netherlands

Filed Aug. 18, 1995, Ser. No. 516,558

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct Anthurium plan named 'Toscane', as herein described and illustrated.

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PATENTS

GRANTED November 26, 1996

ERRATA

For CLASS	See PATENT NO.
068–012	5,577,399
068–133	5,577,407
070–376	5,577,408
070–379	5,577,409
463–040	5,577,735
180–220	5,577,747
297–452	5,577,811
362–405	5,577,838
414–735	5,577,902
604–249	5,578,059
604–080	5,578,070
501–124	5,578,538
501–134	5,578,539
502–327	5,578,546
502–507	5,578,547
504–285	5,578,552
324–207	5,578,904
396–022	5,579,065
396–279	5,579,066
396–311	5,579,067
396–173	5,579,068
396–072	5,579,069
396–538	5,579,070
396–428	5,579,071
396–579	5,579,072
396–598	5,579,073
396–622	5,579,074
396–626	5,579,075
396–627	5,579,076
396–051	5,579,077
396–051	5,579,078
396–051	5,579,079
396–051	5,579,080
396–161	5,579,081
396–158	5,579,082
386–008	5,579,118
386–009	5,579,119
386–094	5,579,120
386–109	5,579,121

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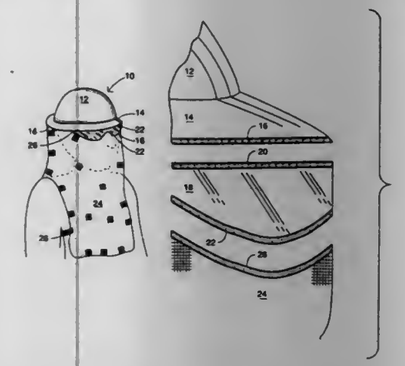
For CLASS	See PATENT NO.
386–046	5,579,122
386–096	5,579,123
386–096	5,579,124
386–001	5,579,125
386–046	5,579,181
395–712	5,579,222
395–751	5,579,223
395–752	5,579,224
371–022	5,579,322
455–089	5,579,443
375–222	5,579,497

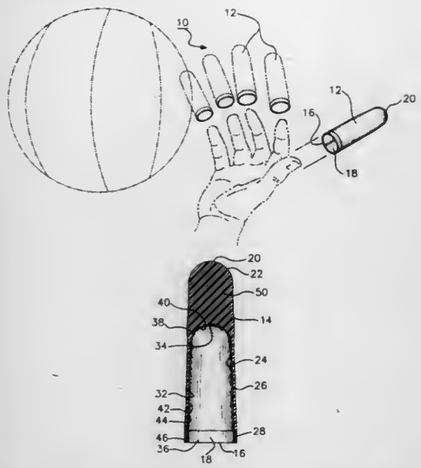
PATENTS

GRANTED NOVEMBER 26, 1996

GENERAL AND MECHANICAL

5,577,271
INSECT BARRIER HEADGEAR
Michael D. Davis, 256 Culler Rd., Swansea, S.C. 29160
Filed Aug. 23, 1994, Ser. No. 294,329
Int. Cl.[6] A42B *3/00*; A01K *55/00*
U.S. Cl. 2—4 **8 Claims**



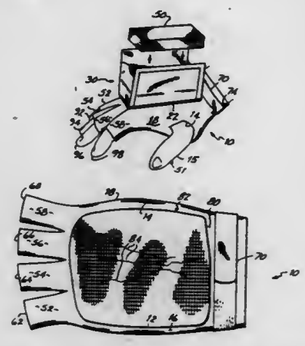


1. Insect protective headgear comprising
(a) a headpiece having a crown and a brim extending around the periphery of said crown, said brim having an outer edge with a front section and a rear section;
(b) a transparent eyepiece having an upper edge attached to the front section of the outer edge of said brim and a lower edge;
(c) a tubular veil having an upper edge attached to the lower edge of said eyepiece and to the rear section of said outer edge; and
(d) hook and loop fastener strips for attaching the upper edge of said eyepiece to the front section of the outer edge of said brim, and the upper edge of said veil to the lower edge of said eyepiece and to the rear section of said outer edge.

5,577,272
FINGER SLEEVES
Odis C. Fisher, 373 Henry Ave., Stratford, Conn. 06497
Filed May 30, 1995, Ser. No. 453,520
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—21 **1 Claim**

1. Finger sleeves for extending length of a basketball player's fingers to facilitate one-handed dunks comprising, in combination:
five separate finger sleeves of varying lengths as a function to correspond to the length of a user's fingers and positionable upon the user's fingers;
each of the finger sleeves having external surfaces with a proximal end having a finger-receiving opening, a distal end having a closed spherical extent and a long intermediate extent therebetween with a conical extent and a short cylindrical extent constituting between about five and ten percent of the length of each finger sleeve;
each of the finger sleeves having a hollow internal surface with a proximal end having a finger-receiving opening, a distal end with a closed spherical extent and a long intermediate extent therebetween with a conical surface, and a short cylindrical extent at the proximal end constituting between about five and ten percent of the length of each finger sleeve;
each of the finger sleeves having a solid region between the conical surfaces and between the exterior and interior spherical surfaces, the solid region between the exterior and interior spherical surfaces constituting between about thirty and forty percent of the length of the finger sleeve in which it is located, the solid region between the conical surfaces extends substantially the length of each finger and
each of the finger sleeves being fabricated of an elastomeric material selected from the classes of elastomeric materials consisting of plastic and rubber, natural and synthetic and blends thereof.

5,577,273
PET THERAPEUTIC MASSAGER GLOVE
James C. Newkirk, and Donna M. Newkirk, both of 506 E. Fourth St., Apt. 200, Cincinnati, Ohio 45202
Filed Nov. 29, 1994, Ser. No. 346,013
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—160 **6 Claims**

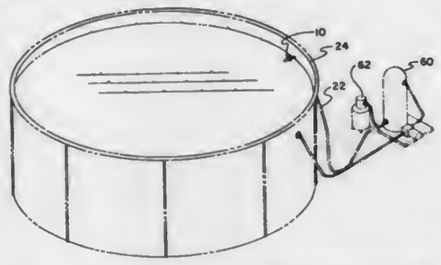


1. A device for massaging and/or grooming an animal comprising: a thumbless glove for fitting onto either hand of a user, said glove having a palm side, a back side, finger extensions of said sides, and an opening for receiving a thumb, said palm side having a surface comprising bundles of bristles for therapeutically massaging and/or grooming an animal, said back side having a pocket, said finger extensions each having opened ends for receiving finger ends of a user therethrough whereby said finger ends are in direct contact with said animal to facilitate massaging and/or grooming, and

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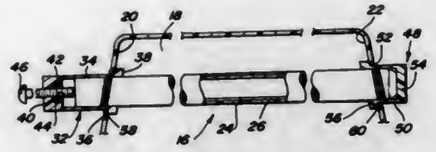
a self-contained power-operated massager received in said pocket of said glove.

5,577,274
WINTERIZING CHECK VALVE SYSTEM
David E. Plotsky, 19 A Vasser Pl., and James W. Glander, 103 Croft La., both of Smithtown, N.Y. 11787
Filed May 17, 1995, Ser. No. 443,584
Int. Cl.[6] E04H 4/14
U.S. Cl. 4—507 2 Claims



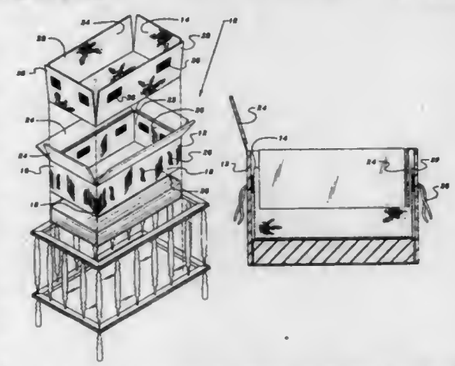
1. A winterizing check valve system for allowing pool owners to purge lines in a swimming pool for winterizing comprising, in combination:
a cylindrical check valve having a hollow securement portion and a housing portion, the hollow securement portion having an open first end with securement means thereon adapted for coupling with an end of a return line for a swimming pool, the hollow securement portion having an externally threaded open second end, the open second end tapering inwardly, the hollow securement portion having a radially extending retaining wall spaced apart from the externally threaded open second end toward said open first end, the housing portion having an internally threaded open first end, a closed second end, and an intermediate extent therebetween, the internally threaded open first end adapted for securement to the externally threaded open second end of the hollow securement portion, the housing portion having a spring therein, the spring having a first end and a second end, the first end secured to the closed second end of the housing portion, the housing portion having a ball coupled therein adjacent to the first end of the spring, the intermediate extent having a plurality of openings therein;
a clamp for securing the hollow securement portion of the cylindrical check valve to the return line of the swimming pool;
an adapter plug having a first end and a second end, the adapter plug having an opening formed therethrough, the first end being adapted to couple with an opposing end of the return line for the swimming pool, the second end being adapted to couple with a compressor.

5,577,275
TUB/SHOWER GRAB BAR
Torbett B. Guenther, 8992 Tamarack Ct., Plymouth, Mich. 48170, assignor to Torbett B. Guenther, and Dolores Guenther, both of Plymouth, Mich.
Filed May 17, 1995, Ser. No. 442,688
Int. Cl.[6] A47K 3/12
U.S. Cl. 4—576.1 12 Claims



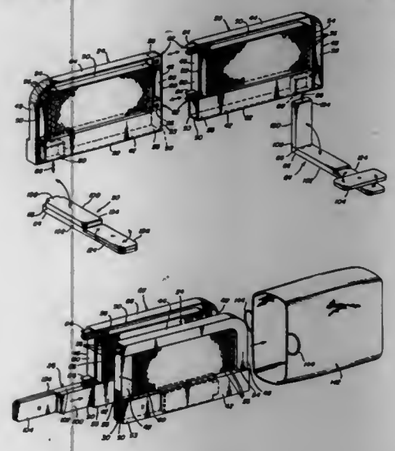
1. A grab bar arrangement for installation into openings in opposed wall sections of a tub/shower wall, said grab bar arrangement comprising:
a first cup-shaped pocket having a first end for receipt into a first of the openings and a second open end with a first radially outwardly projecting flange for engaging an opposing surface of the wall section surrounding the first opening,
means for adjustably extending through said first end of said first pocket,
a grab bar having first and second ends, said first end being closed and adapted to be received into said first pocket for abutting said adjustably extending means, and
means at the second end of said grab bar for receipt into the second wall opening, including a second radially outwardly projecting flange for abutment with an opposing surface of said wall section surrounding said second opening.

5,577,276
CRIB BUMPER PAD WITH RELEASABLE SHEET
Beverley A. Nicholson, and Kevin J. Nicholson, both of 8 Goldpine Ave., Courtice, Ontario, Canada
Filed Feb. 7, 1996, Ser. No. 598,124
Int. Cl.[6] A47D 15/00; A47G 9/04
U.S. Cl. 5—424 4 Claims



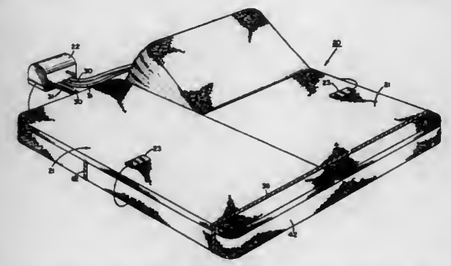
1. A bedding system for the interior of an infant's crib, the bedding system comprising in combination:
a box shaped bumper pad having a first, second, third, and a fourth sidewall, a bottom, the bumper pad being defined by an exterior surface and an interior surface, each of the sidewalls having an upper edge and a lower edge, a plurality of rough side hook and pile fasteners secured to the interior surface of the bumper pad approximate the upper edge of the sidewalls, a first, second, third and a fourth flap, the first flap being secured to the upper edge of the first sidewall, the second flap being secured to the upper edge of the second sidewall, the third flap being secured to the upper edge of the third sidewall, and the fourth flap being secured to the upper edge of the fourth sidewall, each of the flaps having a first orientation wherein the flap is positioned over the interior surface of its corresponding side wall and a second orientation wherein the flap is positioned over the exterior surface of its corresponding side wall, a plurality of tie fasteners positioned upon the exterior surface of the sidewalls intermediate the upper and lower edges, the tie fasteners tied to the interior of an infants crib;
a box shaped sheet having a first, second, third and a fourth side wall, and a bottom surface, each of the side walls having an upper edge and a lower edge, the sheet being defined by an exterior surface and an interior surface, a plurality of smooth side hook and pile fasteners secured to the exterior surface of the sheet approximate the upper edge of the sidewalls, the sheet dimensioned to be received within the bumper pad, the sheet positioned such that the exterior surface of the sheet meets the interior surface of the bumper pad and the rough side hook and pile fasteners of the bumper pad come into positive engagement with the smooth side hook and pile fasteners of the sheet, the sheet being positively secured by positioning each of the flaps of the bumper pad in the first orientation.

5,577,277
COLLAPSABLE BED SIDE RAIL
Brian C. Sundberg, Franklin, Mass.; Brian H. Ordung, Woonsocket, R.I., and Michael S. Bernstein, Natick, Mass., assignors to Safety 1st, Inc., Chestnut Hill, Mass.
Filed Mar. 30, 1995, Ser. No. 413,684
Int. Cl.[6] A47C 21/08
U.S. Cl. 5—426 10 Claims



1. A collapsible bed rail comprising:
a pair of panel sections each having a rigid frame including top and bottom generally horizontal rails and inside and outside generally vertical side rails,
mating connectors on the inside side rails of the panel sections for releasably connecting the sections in operative relationship wherein they are coplanar to form a continuous side panel, said connectors when separated enabling the two sections to be collapsed in face to face relationship with one another,
a pair of supports for mounting the continuous side panel to a bed, each support having an upper leg, a lower leg and a foot, a hinge in each support pivotally connecting one end of the upper leg to one end of the lower leg enabling the upper leg in each support to move between an operative position wherein it is generally perpendicular to the lower leg and a collapsed position wherein it is lies parallel to and in face to face relationship with the lower leg, a connector joining the foot of each support to the other end of its respective lower leg, said connector enabling the foot to move between an operative position wherein the foot extends to the sides of the lower leg and a collapsed position wherein the foot is aligned with and in face to face relationship with its lower leg,
a mounting socket in the bottom rail of each section for releasably receiving the other end of the upper leg of a support with said supports in operative position wherein the lower legs are horizontal when the continuous panel is vertical so as to be capable of being positioned beneath a mattress and support the panel in position,
and storage cavities provided in the bottom rail of each section for receiving the supports when the top leg and foot of each is in the collapsed position.

5,577,278
PORTABLE, INTEGRATED, UNIVERSALLY ADJUSTABLE POSITION CONTROL SYSTEM
Donald Barker, Sandy Hook; John Hamma, Milford, both of Conn., and Bruce A. Brown, Tupelo, Miss., assignors to Princeton Products Inc., Bel Air, Fla.
Continuation-in-part of Ser. No. 916,636, Jul. 22, 1992, Pat. No. 5,311,625. This application May 11, 1994, Ser. No. 241,290
Int. Cl.[6] A61G 7/00; A47C 27/08
U.S. Cl. 5—615 20 Claims



4. A portable, integrated, universally adjustable position controlling system for enabling users to position a back-supporting portion thereof into any one of a plurality of alternate positions, said position controlling system comprising:
A. a portable, self-contained, unitary, easily assembled movably adjustable support assembly comprising
a. a support pad for comfortably supporting the user;
b. cover means peripherally surrounding and enveloping substantially the entire support pad;
c. position control means
1. securely mounted between the support pad and the cover means in movement controlling relationship with a portion of the support pad;
2. constructed for moving the support pad through an arcuate distance of about 80° and securely supportingly maintaining the support pad in any position between 0° and 80°; and
3. responsive to a control signal to arcuately move the support pad away from a portion of the cover means until the desired raised position is reached and maintain the support pad in the raised position;
d. a shroud securely affixed to the cover means in peripherally surrounding, enclosing, visually obscuring relationship with the support pad and at least a portion of the position controlling means maintaining the position control means in contact with the support pad throughout the entire arcuate movement thereof; and
e. first fastening means
1. interposed between the shroud and the cover means adjacent the pad
2. peripherally surrounding the position control means, and
3. providing ease of accessibility to the shroud interior for assembly and repair of the position control means; and
B. an air flow control assembly
a. constructed for drawing air from the ambient surroundings and delivering a continuous air flow to the position control means of the support assembly for causing said position control means to arcuately pivot, and
b. incorporating valve means responsive to an activation signal for selectively opening and closing air flow passage ways incorporated therein for assuring the delivery of the air flow to the desired location;

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whereby a completely integrated, portable, position-controlling system is attained which is capable of being easily transported to any desired location and placed on any desired support surface for providing the user with complete adjustable movement of the support assembly by employing the air flow controlled assembly connected therewith, while also being easily assembled and repaired.

5,577,279

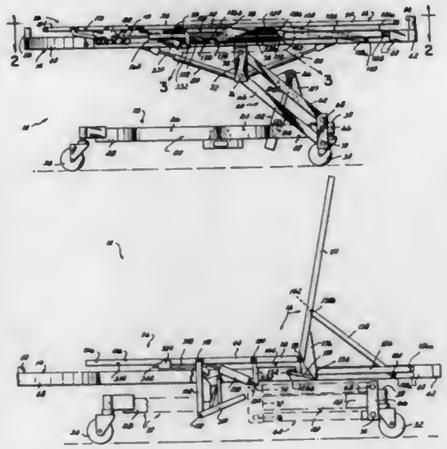
HOSPITAL BED

L. Dale Foster; Ryan A. Reeder, both of Brookville, and John D. Vogel, Columbus, all of Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Continuation-in-part of Ser. No. 234,403, Apr. 28, 1994, Pat. No. 5,454,126, which is a continuation-in-part of Ser. No. 186,657, Jan. 25, 1994, Pat. No. 5,479,666, and a continuation-in-part of Ser. No. 230,061, Apr. 21, 1994, Pat. No. 5,513,406, which is a continuation-in-part of Ser. No. 186,657, Jan. 25, 1994, Pat. No. 5,479,666, and a continuation-in-part of Ser. No. 221,748, Mar. 31, 1994, and a continuation-in-part of Ser. No. 221,633, Apr. 1, 1994, Pat. No. 5,483,709, and a continuation-in-part of Ser. No. 7,122, Jan. 21, 1993, Pat. No. 5,337,845, which is a continuation-in-part of Ser. No. 912,826, Jul. 13, 1992, Pat. No. 5,335,651, which is a continuation-in-part of Ser. No. 874,586, Apr. 24, 1992, Pat. No. 5,370,111, which is a continuation-in-part of Ser. No. 524,038, May 16, 1990, Pat. No. 5,116,521. This application Jul. 19, 1994, Ser. No. 277,243

Int. Cl.[6] A61G *7/00*

U.S. Cl. 5—618 12 Claims



1. A hospital bed comprising:

a base with casters;

a main frame mounted above said base;

a patient support platform longitudinally movably mounted on said main frame and including a leg panel; and

a toilet module disposed beneath said patient support platform and normally concealed by said leg panel;

said patient support platform and toilet module being configured such that when said patient support platform is moved toward a head end of said bed said leg panel retracts from over said toilet module to expose said toilet module for use.

5,577,280

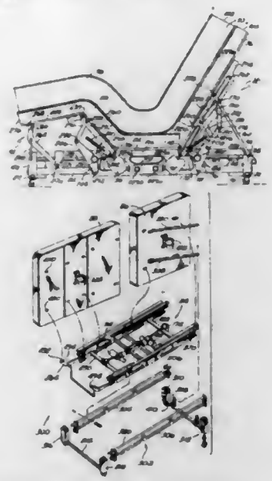
SNAP-TOGETHER ADJUSTABLE, ARTICULATED BED

Franklin E. Elliott, Culver City, Calif., assignor to Maxwell Products, Inc., Cerritos, Calif.

Continuation-in-part of Ser. No. 213,675, Mar. 15, 1994, Pat. No. 5,537,701. This application Mar. 15, 1995, Ser. No. 404,326

Int. Cl.[6] A61G *7/00*

U.S. Cl. 5—618 82 Claims



1. An adjustable articulated bed, comprising:

a support frame including longitudinal support members, cross support members, and means for releasably snap-fit coupling said cross support members relative to said longitudinal support members;

a power module including a module body portion, a module head portion, and motor means for pivoting said module head portion relative to said module body portion;

means for releasably snap-fit coupling said power module to said frame for support thereby:

a mattress foundation including a foundation body section and a foundation head section;

means for releasably snap-fit coupling said foundation body section to said module body portion; and

means for releasably snap-fit coupling said foundation head section to said module head portion.

5,577,281

STRETCHER

Marc-Henri Mital, Saint Maurice, and Yves Vidal, Chanteau, both of France, assignors to E.I.F., Montreuil, France

PCT No. PCT/FR93/01231, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO94/13240, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 10, 1993, Ser. No. 454,163

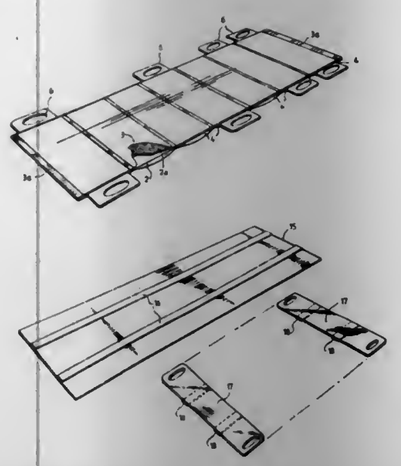
Claims priority, application France, Dec. 11, 1992, 92 14963

Int. Cl.[6] A61G *1/00;1/013;1/048*

U.S. Cl. 5—625 16 Claims

1. A stretcher comprising an upper sheet and a lower sheet selectively joined together to form a plurality of transverse sleeves, in combination with a plurality of slats having a length greater than the transverse dimension of the sleeves, and removably retainable within said transverse sleeves, said slats provided at their end portions located outside said sleeves with means for holding thereby to permit transporting of the stretcher.

11. A stretcher comprising a sheet having on one of its surfaces strips (16) of hook and loop type fastening elements, in combination with a plurality of slats that are longer than the width of the sheet, said slats having hook and loop type fastener means adapted to cooperate to removably attach the slats to the hook and loop type fastener strips on the sheet, said slats having means for holding at their end portions, spaced from the edges of the sheet, to permit transporting of the stretcher.



5,577,282

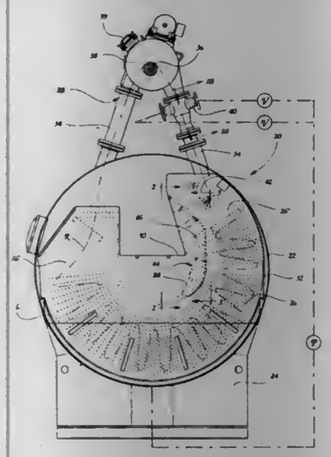
TEXTILE WET PROCESSING MACHINE AND METHOD

James K. Turner; William C. Sturkey, and Thomas W. Van Scyoc, all of Stanley, N.C., assignors to Gaston County Dyeing Machine Company, Stanley, N.C.

Filed May 22, 1995, Ser. No. 447,192

Int. Cl.[6] D06B *3/28*

U.S. Cl. 8—152 32 Claims



7. In a machine for wet processing of textile fabric in continuous cloth rope form, said machine having a vessel for containing processing liquid and means for circulating the cloth rope through said vessel, the improvement wherein said circulating means includes means for creating first and second continuous streams of the processing liquid, each spanning a generally distinct area annularly about the cloth rope, and for impinging the first and second liquid streams onto the cloth rope at respectively different locations annularly thereabout.

19. In a method of wet processing of textile fabric in continuous cloth rope form, said method comprising the steps of circulating the cloth rope in plug form through a bath of processing liquid by progressively withdrawing the cloth rope from an exit end of said liquid bath and returning the cloth rope to an entrance end of said liquid bath, the improvement comprising the steps of creating first and second continuous streams of the processing liquid, each stream spanning a generally distinct area annularly about the cloth rope, and impinging said cloth rope with first and second continuous streams of said processing liquid at respectively different locations annularly about said cloth rope.

5,577,283

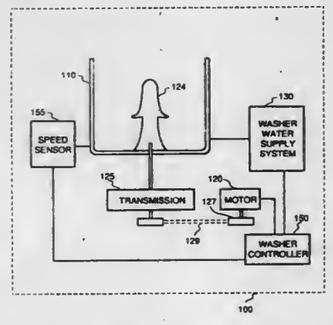
ENERGY EFFICIENT WASHER WITH INERTIA BASED METHOD FOR DETERMINING LOAD

Vivek V. Badami, Schenectady; Mark E. Dausch, Latham; Walter Whipple, III, Amsterdam, all of N.Y.; Richard E. Hornung, Fisherville, and Donald R. Dickerson, Jr., Louisville, both of Ky., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 20, 1995, Ser. No. 406,424

Int. Cl.[6] D06F *33/02*

U.S. Cl. 8—158 18 Claims



1. An energy-saving method of operating a washing machine having an electric induction motor without direct torque command or torque measurement controls by adding an amount of water to a washer basket so that the amount of water added is proportionate to the weight of the articles to be washed, the method comprising the steps of:

prior to completing addition of water preparatory to commencing a wash cycle, applying at least a first torque to cause movement of said washer basket filled with a load of articles to be washed, the magnitude of said first torque being unknown;

generating a first loaded-basket acceleration value signal for said washer basket in response to the application of said first torque;

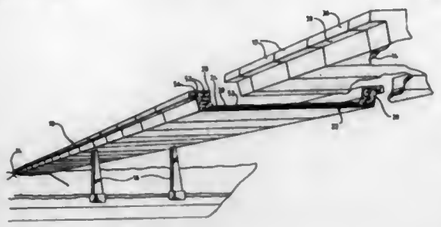
determining a normalized inertia value of said washer basket as a function of said first loaded-basket acceleration value;

determining an estimated weight value for said load of articles to be washed as a function of said normalized inertia value; and

controlling a washer water supply system to add a load-specific volume of water to said washer basket, the magnitude of said load-specific volume of water corresponding to said estimated weight value of said load of articles to be washed.

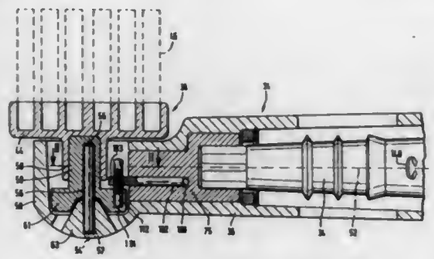
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5,577,284
CHANNEL BRIDGE
Jean Muller, 13 rue Victor Hugo, 92150 Suresnes, France
Filed Feb. 22, 1994, Ser. No. 199,767
Int. Cl.[6] E01D *19/02*
U.S. Cl. 14—73 16 Claims



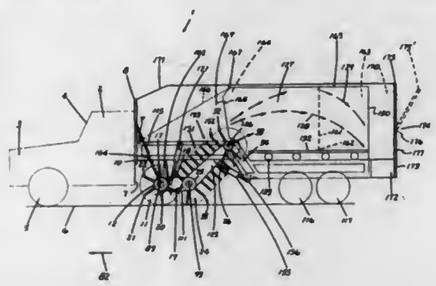
1. An overpass bridge comprising:
two abutments;
an aligned series of monolithic precast concrete superstructure segments extending between the abutments, each superstructure segment comprising longitudinal portions of two opposed edge beams; a longitudinal portion of a deck slab extending between lower parts of the longitudinal portions of the edge beams; and two opposed parapet walls formed on the longitudinal portions of the edge beams, above the deck slab portion;
at least one set of longitudinal post-tensioned tendons extending through an edge beam and being anchored at each end of the bridge in proximity to the abutments; and
a road surface over the aligned deck slab portions.

5,577,285
ELECTRIC TOOTHBRUSH WITH ROTARY BRISTLE SUPPORTING STRUCTURE
Michael Drössler, Oberursel, Germany, assignor to Braun Aktiengesellschaft, Kronberg, Germany
PCT No. PCT/EP93/03024, § 371 Date Jul. 15, 1994, § 102(e) Date Jul. 15, 1994, PCT Pub. No. WO94/12121, PCT Pub. Date Jun. 9, 1994
PCT Filed Oct. 29, 1993, Ser. No. 256,520
Claims priority, application Germany, Nov. 21, 1992, 42 39 251.9
Int. Cl.[6] A61C *17/34*
U.S. Cl. 15—22.1 39 Claims



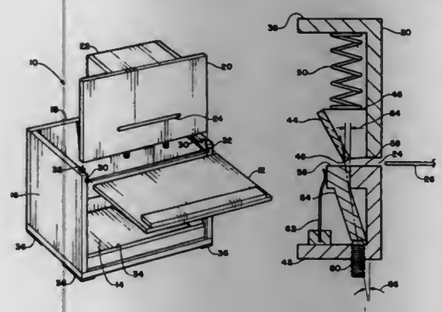
1. A brush section for an electric toothbrush having
a rotary shaft, said brush section receiving said rotary shaft when assembled onto the electric toothbrush and comprising:
a rotary bristle supporting structure operatively coupled to the shaft and having an axis of rotation that is at about a right angle to an axis of rotation of the shaft, and
a drive mechanism coupled to the shaft to drive the bristle supporting structure, said drive mechanism comprising
a first driving member driven by the shaft and disposed eccentrically to the axis of rotation of the shaft, and
a first driven member, operatively connected to said bristle supporting structure and disposed eccentrically to the axis of rotation of the bristle supporting structure, the first driving member and the first driven member being coupled to each other so as to prevent the driving member and the driven member from moving relative to each other in either direction that is parallel to the axis of the rotary shaft.

5,577,286
HIGHWAY DEBRIS ENTRAINMENT AND STORAGE DEVICE
Owen Smith, Scottsdale, Ariz.; Charles C. Holley, Bloomington, Minn., and William E. Daniels, Jr., Paola, Kans., assignors to The Toro Company, Bloomington, Minn.
Filed Aug. 19, 1994, Ser. No. 293,366
Int. Cl.[6] E01H *1/04*
U.S. Cl. 15—84 13 Claims



1. A refuse collection apparatus, comprising;
(a) a prime mover;
(b) a collector, the collector being pivotably mounted to frame, the collector being driven by the prime mover;
(c) a conveyor, the conveyor being pivotably mounted to the frame and being driven by the prime mover, the conveyor being positioned to receive refuse from the collector, the conveyor further comprising:
(i) a first axle, the first axle having a first diameter;
(ii) a second axle, the second axle having a second diameter, the second diameter being smaller than the first diameter; and
(iii) a belt, the belt extending as an endless loop between the first and second axle;
(d) a hopper, the hopper being slidably mounted to the frame, the hopper being positioned to receive refuse from the conveyor;
(e) a plurality of resilient fingers, each resilient finger comprising:
(i) a tapering four sided shaft, the shaft having a substantially rectangular cross section; and
(ii) a radiused tip region, the resilient fingers being mounted on the collector and the conveyor, the resilient fingers mounted on the collector extending radially from the collector and tending to entrain debris encountered on a road surface and to deposit the debris onto the conveyor, the resilient fingers on the conveyor extending substantially perpendicularly from the conveyor and having a maximum tip velocity in a region adjacent to the second axle of the conveyor and tending to urge debris received from the collector toward the hopper, the resilient fingers mounted on the collector being laterally offset from the resilient fingers mounted on the conveyor; and
(f) at least one conveyor end plate, the conveyor end plate extending between the first conveyor axle and the second conveyor axle;
(g) at least one collector end plate, the collector end plate having a first end and a second end, the first end being pivotally mounted to the conveyor end plate, and the second end being pivotally secured to the collector; and
(h) a rake, the rake being rigidly affixed to the collector end plate, the rake being formed so as to include a plurality of tines, at least some of the tines residing between a majority of the resilient fingers mounted on the collector.

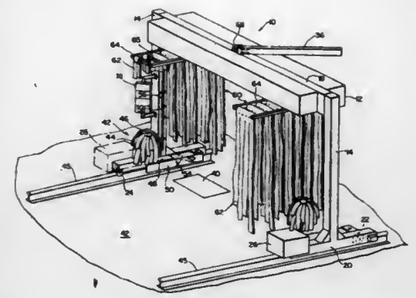
5,577,287
LOTTERY TICKET SCRAPER
Thomas C. Olson, 11153 Saunders Ct., San Diego, Calif. 92131-1927
Filed Mar. 18, 1996, Ser. No. 618,038
Int. Cl.[6] B08B *11/00*
U.S. Cl. 15—93.1 18 Claims

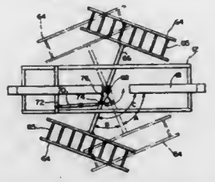


1. A device for scraping a coating from a ticket which comprises:
a housing having at least a front wall;
an elongated slot defined by two closely spaced opposed slot edges in said front wall of said housing, said slot having a predetermined length for receiving an end of a coated ticket;
a table in said housing, said table having a table surface positioned generally contiguous with one of said slot edges;
a scraper blade having a scraping edge adjacent to said table;
mounting means engaging said housing for supporting said scraper blade;
blade biasing means engaging said mounting means for biasing said mounting means and scraping edge toward said table;
stop means on said housing for limiting approach of said scraping edge to said table to a predetermined distance; and
means on said housing for biasing said table toward said contiguous position and for permitting a ticket entering said slot to move said table from said contiguous position.

5,577,288
VEHICLE WASHING SYSTEM
Michael D. Stinnett; William T. Daugherty, both of Bristol, Tenn., and William W. Rambo, Abingdon, Va., assignors to Magic Wand, Inc., Bristol, Va.
Filed Aug. 27, 1993, Ser. No. 113,201
Int. Cl.[6] B60S *3/04*
U.S. Cl. 15—97.3 17 Claims

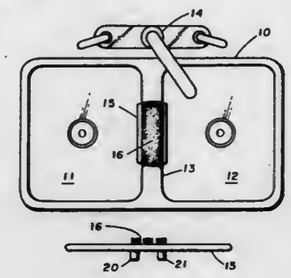
1. A vehicle washing system comprising:
a frame including a pair of opposite vertical support members and a horizontal cross member connected between said vertical support members;
a pivot shaft journaled in said horizontal cross member;
a rack support arm mounted to said pivot shaft;
at least one rack mounted on at least one end of said support arm;
a plurality of cleaning strips secured to and depending from said at least one rack;
a drive arm mounted on said pivot shaft;





a drive means connected to said drive arm to rotate said pivot shaft and said connected rack support arm;
said drive means comprising a cylinder with first and second cylinder rods, a first means for extending and retracting said first cylinder rod, and a second means for extending and retracting said second cylinder rod independently of said first cylinder rod.

5,577,289
SCRUBBER MAT DEVICE WITH DUAL ABRASIVE SURFACE FOR SINK DIVIDER WALL
Margaret R. Russell, 6209 Pernod, St. Louis, Mo. 63139
Filed Jul. 31, 1995, Ser. No. 509,511
Int. Cl.[6] A47L *23/24*; B32B *3/06*
U.S. Cl. 15—114 1 Claim

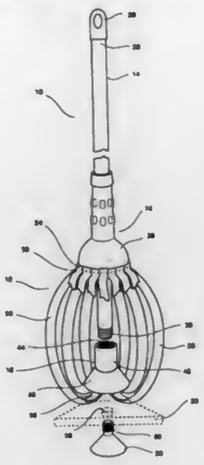


1. A scrubber mat device for cleaning utensils, said device adapted for positioning over a divider wall of a double bowl sink, said device comprising:
a flexible, thermoplastic sheet having a top surface, a bottom surface and first and second ends, said sheet is adapted to conform to said divider wall of said sink when placed thereover such that said first and second ends lie on opposite sides of said divider wall;
means for engaging said divider wall of said sink, said means comprising a pair of elongated, laterally spaced ribs extending from the bottom surface of said sheet;
an elongated abrasive pad having first and second ends and a width, said pad having steel wool at said first end to define a first abrasiveness and bristles at said second end to define a second different abrasiveness, said pad is attached to said top surface of said sheet opposite the spacing between said ribs

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and substantially parallel to said ribs, said width of said pad is approximately equal to the spacing between said ribs.

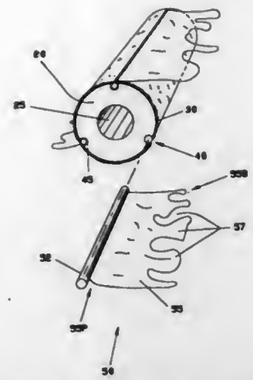
5,577,290
WET MOP WITH SELF-CONTAINED WRINGER
Patrick H. Monahan, 239 S. Pine St., Arcola, Ill. 61910
Filed Dec. 13, 1995, Ser. No. 571,707
Int. Cl.[6] A47L *13/12;13/142*
U.S. Cl. 15—120.1 **17 Claims**



1. A mop having a self-contained wringer; comprising:
a handle;
a sleeve frictionally movably disposed on said handle such that said sleeve is self supporting along a number of positions of the mop handle;
a retainer member connected to an end of said handle and having a receiving surface;
a mop head material having one end connected to said sleeve and another end of said mop head material positionable adjacent said receiving surface of said retainer member;
a resilient scrub pad material having an open surface defined therein disposed adjacent said another end of said mop head material and said receiving surface; and
an insert having an end and a stem portion connected thereto, said stem portion configured to fit through said open surface of said scrub pad material and be connectably received into said receiving surface in a manner such that said end of said insert and said scrub pad material bind and lock said another end of said mop head material against said receiving surface.

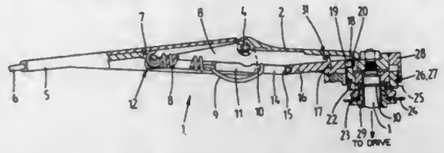
5,577,291
DECORATIVE PAINT ROLLER DEVICE
Micheal J. Myers, and Caroline W. Myers, both of 2891 Pua Nani St., Linue, Hi. 96766
Filed Jan. 2, 1996, Ser. No. 581,773
Int. Cl.[6] B05C *17/02*
U.S. Cl. 15—230.11 **6 Claims**

1. A paint roller device to be used in conjunction with a paint roller frame having a handle and an axle, the handle positioned substantially perpendicular to the axle, for enabling decorative patterns to be painted on a flat surface, the roller device comprising:
a roller having a hollow inner core, a length, and an outer surface, the roller rotatably mounted to the axle of the paint roller frame;



at least one cartridge retaining means comprising an elongated channel extending along the length of the roller and formed integrally within the roller near the outer surface; and
a plurality of cartridges, the cartridges being removably, slidably engaged with the cartridge retaining means of the roller wherein each of the cartridges comprises an elongated rod and a flap, the flap having a proximal end secured to the rod and a distal end extending outwardly from the rod such that with the rod slidably engaged within the elongated channel in the roller, the flap extends substantially radially outwardly from the roller.

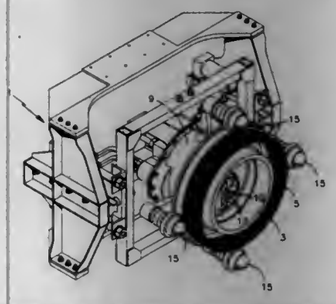
5,577,292
WINDSCREEN WIPER WITH PRESSURE ADJUSTING MEANS
Thomas Blachetta, Heilbronn-Bockingen; Bruno Egner-Walter, Heilbronn, and Klaus Jaisle, Leingarten, all of Germany, assignors to ITT Automotive Europe GmbH, Germany
PCT No. PCT/EP93/02547, § 371 Date Jul. 7, 1995, § 102(e) Date Jul. 7, 1995, PCT Pub. No. WO94/07712, PCT Pub. Date Apr. 14, 1994
PCT Filed Sep. 20, 1993, Ser. No. 406,912
Claims priority, application Germany, Sep. 26, 1992, 42 32 333.9
Int. Cl.[6] B60S *1/32;1/34*
U.S. Cl. 15—250.202 **6 Claims**



1. A windscreen wiper system for wiping a windscreen of an automotive vehicle, said system comprising:
a wiper rod supporting a wiper blade, said wiper rod fixedly supported by a wiper arm, said wiper arm being pivotally connected to a mounting portion, said mounting portion being fixed on a wiper shaft for oscillation therewith,
an elongated wiper arm spring, said arm spring having an end proximal to said wiper shaft and an end distal to said wiper shaft, said distal end pivotally coupled with said wiper rod, said wiper arm spring applying a bias force to said wiper blade against a windscreen, with a force of said wiper arm spring forcing said wiper blade onto said windscreen being variable by an adjusting mechanism,
wherein said adjusting mechanism includes an elongated support lever, an elongated set lever and an insert,

said support lever having an end proximal to said wiper shaft and an end distal to said wiper shaft, said support lever is swivably coupled by said distal end within a bearing on said mounting portion,
said proximal end of said wiper arm spring being pivotally attached on said support lever at a point thereof adjacent to said proximal end of said support lever,
said set lever having a first end pivotally and slidably engaging said support lever at said proximal end thereof, said set lever having a second end in abutting engagement with a surface of said insert, said set lever is pivotally coupled, intermediate its ends thereof, to said mounting portion, said set lever is swiveled upon actuation of the windscreen wiper system by movement over said insert surface so as to vary a line of operation of said wiper arm spring relative to an axis of said wiper arm such that the bias force the spring applies to the wiper blade is adjusted.

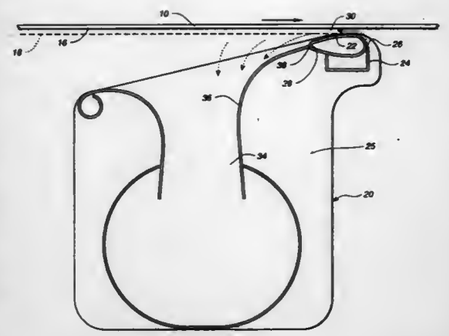
5,577,293
FULL RECOVERY STRIPPING SYSTEM
Oliver D. Meredith, Decatur, and Robert M. Rice, Huntsville, both of Ala., assignors to WaterJet Systems, Inc., East Hartford, Conn.
Filed Oct. 24, 1994, Ser. No. 328,637
Int. Cl.[6] A47L *3/02;5/04*
U.S. Cl. 15—302 **8 Claims**



1. A stripping system for removing substances from a surface comprising: an end-effector having a nozzle, a first brush circumferentially disposed around said nozzle at a sufficient distance from said nozzle to allow the formation of a vacuum therebetween, an additional brush spaced from said first brush, wherein each of said brushes has bristles arranged in tufts of at least one bristle and has sufficient tuft density to prevent the escape of effluent from the end-effector, a liquid supply connected to said nozzle; and a vacuum chamber disposed about said nozzle, said vacuum chamber enclosing a vacuum created by a vacuum device connected to said vacuum chamber, said vacuum being sufficient to recover effluent, wherein said first brush assists in directing the effluent into the vacuum chamber and said additional brush acts to capture any effluent which may escape through the first brush, said brush arrangement and the vacuum formed between said nozzle and said brush being sufficient to substantially completely remove the effluent from the surface.

5,577,294
WEB CLEANER APPARATUS AND METHOD
Rodney E. Pollock, Camas, Wash., assignor to James River Paper Company, Inc., Richmond, Va.
Division of Ser. No. 130,460, Oct. 1, 1993, Pat. No. 5,466,298. This application Jul. 25, 1995, Ser. No. 506,581
Int. Cl.[6] B08B *5/02*
U.S. Cl. 15—345 **4 Claims**

1. Apparatus for use in combination with a web of sheet material moving in a predetermined direction along a predetermined path of movement, said web of sheet material having spaced edges and a substantially planar surface bordering a layer of air entrained by said web of sheet material and moving in said predetermined direction, said apparatus for cleaning said substantially planar surface and comprising, in combination:

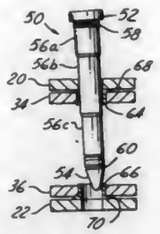


a Coanda nozzle including an elongated, curved foil and slit defining means defining an elongated, narrow slit with said elongated, curved foil, said elongated, narrow slit for receiving a compressed gas and directing said gas at a high rate of speed along said elongated, curved foil from an upstream location on said elongated, curved foil and past an intermediate location on said elongated, curved foil to a downstream location at an end of said elongated, curved foil, said Coanda nozzle for positioning closely adjacent to the substantially planar surface of a moving web of sheet material with the downstream location on said elongated, curved foil being further from the substantially planar surface than is the elongated, curved foil intermediate location whereby said elongated, curved foil forms a gap with said moving web substantially planar surface which becomes increasingly restricted in the predetermined direction and within which a layer of air entrained by said moving web of sheet material is impacted by gas flowing at a high rate of speed along said curved foil in a direction generally opposed to said predetermined direction, mixed with said gas under turbulent conditions, and caused to substantially reverse direction away from said curved foil; and
an air discharge chute and means for applying a vacuum to said air discharge chute to direct the mixture of gas and entrained air layer to a location away from said Coanda nozzle, said discharge chute including a curved discharge plate adjacent to said elongated, curved foil and curving away from said Coanda nozzle.

5,577,295
THREE DIAMETER HINGE PIN
Ronald D. Papke, Shelby Township, Mich.; Chean W. Ng, Richmond Hill, and Raymond B. Hawkins, Newmarket, both of Canada, assignors to Chrysler Corporation, Auburn Hills, Mich.
Filed Sep. 27, 1994, Ser. No. 313,623
Int. Cl.[6] E05D *7/10;5/10*
U.S. Cl. 16—254 **2 Claims**

1. In a vehicle door hinge assembly including a hinge bracket mounted on each of a door and a vehicle pillar, with each bracket having a pair of upper and lower legs with a space therebetween adjacent the upper and lower spaced-apart legs of the other bracket, and aligned holes formed through the two pairs of legs, the improvement comprising a hinge pin extending downwardly through the aligned holes, the pin including a flanged head, three successive circular body portions of different diameters, and a tapered end, with the largest diameter body portion adjacent the flanged head and mounted in the upper legs with a close tolerance, the smallest diameter body portion adjacent the tapered end and

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mounted in the holes of the lower legs, and the intermediate diameter body portion located in said space.

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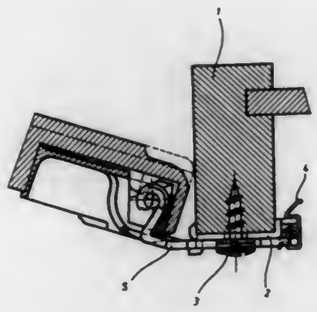
DOOR HINGE WITH SNAP-IN LOCKING DEVICE FOR QUICK ASSEMBLY

Alfred Grass, Höchst/Vlbg, Austria, assignor to Grass AG, Hochst/Vlgb, Austria

Continuation of Ser. No. 139,207, Oct. 19, 1993, abandoned. This application Jun. 15, 1995, Ser. No. 482,960

Int. Cl.[6] E05D *7/12*

U.S. Cl. 16—258 **8 Claims**



1. A single-articulation door hinge for supporting a door wing on a cabinet frame comprising: a base plate fastenable to the cabinet frame and having a top surface; a hinge arm fastenable to the door wing and having a bottom surface, the hinge arm having portions defining a catch opening; means for detachably connecting the hinge arm to the base plate with the hinge arm bottom surface and the base plate top surface in direct surface-to-surface contact, the connecting means comprising a catch spring having first and second depending and substantially parallel sides releasably engageable with the base plate and the hinge arm between the first and second depending and substantially parallel sides, the catch spring first side including a catch shank and the catch spring second side having a nose, the catch shank and nose disposed toward each other, the catch shank engaging a support shank of the base plate, and the nose engaging the catch opening of the hinge arm, and the catch shank and the nose of the catch shank exerting a resilient clamping pressure on the hinge arm and the base plate directly between the catch shank and the nose, the catch shank and nose of the catch spring being resiliently deflectable away from each other to release the clamping pressure therebetween and detach the hinge arm from the base plate, the catch spring also including a scroll spring disposed between the catch shank and the nose of the catch spring, the scroll spring biased toward the nose of the catch spring to engage and secure the catch spring against the hinge arm bottom surface.

5,577,297

DOOR FASTENING MEMBER CONSTRUCTED AS A HINGE CUP FOR FURNITURE HINGES

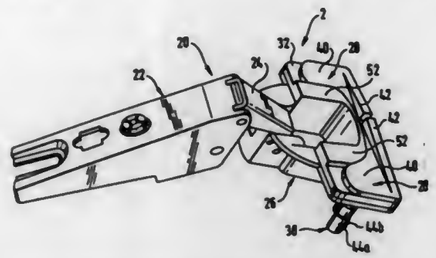
Horst Lautenschläger, Reinheim, and Gerhard Lautenschläger, Brensbach-Wersau, both of Germany, assignors to MEPLA-Werke Lautenschläger GmbH & Co. KG, Germany

Filed Sep. 23, 1994, Ser. No. 311,542

Claims priority, application Germany, Oct. 25, 1993, 43 36 326.1; Apr. 26, 1994, 44 14 460.1

Int. Cl.[6] E05D *5/00;7/10*

U.S. Cl. 16—332 **42 Claims**



1. Door fastening member of a furniture hinge constructed as a hinge cup for installation sunk in a recess in a rear surface of a door leaf, which door fastening member comprises a cup member having a fastening flange extending from an upper edge of the cup member which fastening flange engages an inner surface of the door leaf when in the properly installed position, the fastening flange having projecting from its underside, at a lateral spacing from the cup member, offset fastening pegs which engage in associated bores in the door leaf when in the properly installed position and which fastening pegs may each be fixed in the associated bore by means of a fastening element which is rotatable relative to the fastening flange, the fastening pegs each being provided with a through opening which opens out to an upper surface of the fastening flange and in which a respective shaft of the fastening element is rotatably mounted, the through openings in the fastening pegs being eccentrically arranged so that the fastening pegs have a greater wall thickness over a region in a peripheral direction than in a diametrically opposed region, a lower region of the shafts of the fastening elements projecting out of open undersides of the through openings remote from the fastening flange, and each fastening element having, in the projecting region, at least one anchoring rib which is sharpened in the manner of a knife edge and extends substantially in the peripheral direction and which, in a rotary position of the fastening element (**28**;**128**) aligned with the region of greatest wall thickness, the at least one anchoring rib does not project radially beyond the radial projection of the respective fastening peg while in a position of the fastening element rotated to the diametrically opposed wall region, the at least one anchoring rib projects radially beyond the fastening peg radial projection, and attached to an upper region of the fastening shaft adjacent the fastening flange there is located a handle comprising a lever arm with respect to the rotary axis of the fastening element.

5,577,298

CONDENSER AND METHOD OF THREAD-UP

Ricardo Morell, Barcelona, Spain, assignor to Hollingsworth Saco Lowell, Inc., Greenville, S.C.

Continuation-in-part of Ser. No. 214,868, Mar. 17, 1994. This application Nov. 23, 1994, Ser. No. 344,270

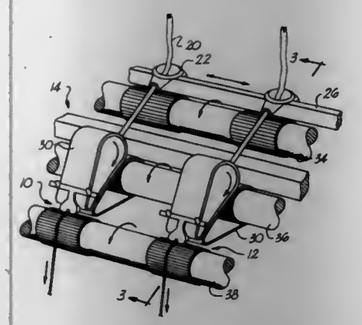
Int. Cl.[6] D01H *5/72;5/74*

U.S. Cl. 19—288 **32 Claims**

1. A condenser for a fiber strand in a textile fiber processing machine, the condenser comprising:

condensing means for condensing the fiber strand; said condensing means defining an elongated fiber passage for receiving the fiber strand, said fiber strand in passage defining a fiber strand centerline, and said condensing means defining at least one peripheral surface; said fiber passage having an open end adjoining said peripheral surface; said condensing means including a first portion extending substantially perpendicular to said fiber passage positioned away from the fiber passage and having a first width; a second portion extending substantially perpendicular to said fiber strand centerline and having a second width; said first width being less than and expanding to said second width; said second portion narrowing to said open end of fiber passage; and said peripheral surface extending substantially continuously through said first portion and said second portion and terminating at said open end of said fiber passage; said peripheral surface being of a continuously diminishing radii curvature with respect to said fiber strand centerline, and wherein said peripheral surface directs the fiber strand into said fiber passage upon contact of the fiber strand with said peripheral surface; and

support means connected to said condensing means for supporting said condensing means in the textile fiber processing machine.



5,577,299

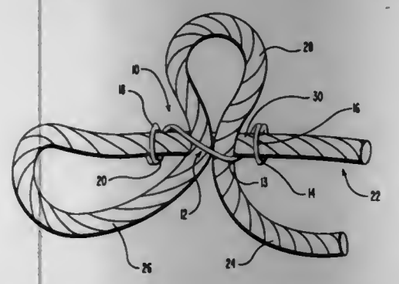
QUICK-RELEASE MECHANICAL KNOT APPARATUS

Carl W. Thompson, 299 E. 100 North, and Carl R. Foster, 175 S. 1150 West, both of Hurricane, Utah 84737

Filed Aug. 26, 1994, Ser. No. 296,664

Int. Cl.[6] A44B *21/00;* **F16G** *11/00*

U.S. Cl. 24—131 C **8 Claims**



1. A combination for securing a tethering material to a support member or other structure, comprising:

a mechanical knot device, comprised of:

a stock member having a first end and a second opposing end;

a first orifice disposed at said first end of said stock member and having an opening formed therein;

a second orifice disposed at said second end of said stock member and having an opening formed therein, said opening of said second orifice being substantially aligned axially with said opening of said first orifice; and

an intermediate portion extending between said first end and said second end, said intermediate portion having a uniform curvilinear configuration; and

a tethering material including a leading end, a second opposing end and two loop portions, said leading end being introduced through said first and second orifices of said stock member, said first loop portion passing outwardly from said orifices and extending substantially around said support member, said second loop portion being received between said intermediate portion of the stock member and said leading end of said tethering material.

5,577,300

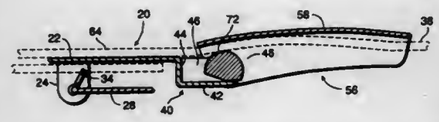
STRAP BUCKLE

Mike Gutrgianios, 603 Junanita Ave., Millbrae, Calif. 94030

Continuation-in-part of Ser. No. 194,257, Feb. 10, 1994, abandoned. This application Jan. 23, 1995, Ser. No. 377,368

Int. Cl.[6] A44B *11/00*

U.S. Cl. 24—170 **18 Claims**



1. A strap buckle permitting slidable movement of a strap therethrough in a first direction with selective locking by moving the strap in a second direction, said strap buckle comprising:

a) a frame;

b) a cover member associated with said frame and together with said frame forming a slot for receipt of said strap and permitting slidable movement of said strap through said slot; and

c) roller means operatively associated with said frame and having an arcuately shaped surface section with an irregular surface for engagement with said strap to lock said strap with respect to the frame and the cover member, said roller means being rotatable and having a a first flat surface section and which roller means can be rotated in one direction to allow slidable movement of the strap through the slot and where said first flat surface section engages said frame to stop movement in that one direction and a second flat surface section which engages the frame and stops movement of the roller means in the opposite direction.

5,577,301

RETAINER AND LOCKING CLIP FOR ATTACHING AN ACCESSORY TO A VEHICLE

Donald N. De Maagd, Grandville, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Jun. 5, 1995, Ser. No. 461,882

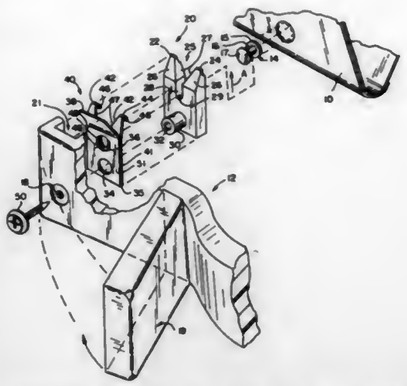
Int. Cl.[6] A44B *21/00*

U.S. Cl. 24—295 **17 Claims**

8. A clip fastener for attaching accessories to a vehicle comprising:

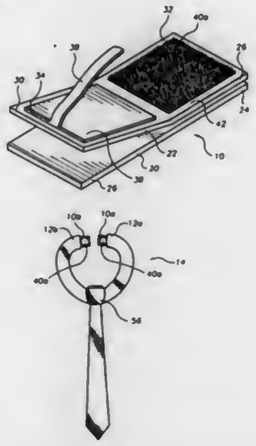
a retainer including a tapered slot terminating in a notch, said retainer also including a projection having an aperture for receiving a threaded fastener; and

a deflectable locking member having an aperture therein aligned with said slot of said retainer such that said retainer and locking member can be slid over a mounting post deflecting said locking member until said aperture in said locking member aligns with the post and snaps over the post to captively hold the post in said notch, wherein said locking member comprises a spring clip having a pair of legs, wherein one of said legs has a bifurcated end conforming to said slot of said retainer, said bifurcated end including hooks which fit over said retainer, and wherein said clip includes an aperture



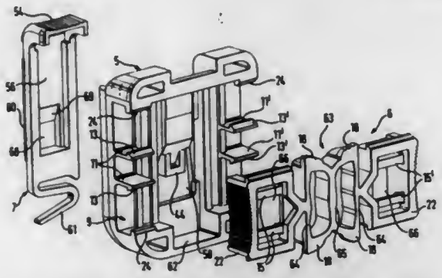
extending through said pair of legs and aligned with said aperture of said retainer for receiving said projection and threaded fastener for attaching an accessory to said retainer.

5,577,302
NECKTIE FASTENING DEVICE
Wesley A. Bortle, 77 Catamaran La., Shalimar, Fla. 32579-1307
Filed Jul. 28, 1995, Ser. No. 508,583
Int. Cl.[6] A41D *25/00;* **A44B** *18/00*
U.S. Cl. 24—49.1 **8 Claims**



1. A necktie fastening device comprising:
a first securing member including a first flap member, a second flap member, and a third flap member; said first flap member having a first quantity of adhesive deposited on a first area thereof covered with a first removable section of cover material, said second flap member having a second quantity of adhesive deposited on a second area thereof covered with a second removable section of cover material, said third flap member having a section of hook material from a hook and pile type fastener attached thereto; and
a second securing member including a fourth flap member, a fifth flap member, and a sixth flap member; said fourth flap member having a third quantity of adhesive deposited on a third area thereof covered with a third removable section of cover material, said fifth flap member having a fourth quantity of adhesive deposited on a fourth area thereof covered with a fourth removable section of cover material, said sixth flap member having a section of pile material from a hook and pile type fastener attached thereto;
said section of hook material and said section of pile material forming an attachment when pressed into contact with one another,
a first elongated flexible pull tab being secured to said first removable section of cover material;
a second elongated flexible pull tab being secured to said second removable section of cover material;
a third elongated flexible pull tab being secured to said third removable section of cover material; and
a fourth elongated flexible pull tab being secured to said fourth removable section of cover material.

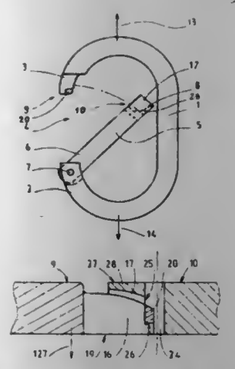
5,577,303
CONNECTOR
Michael Sacks, PO Box 456, Manchester, M60 2LL; Islah Z. Ali, Shrewsbury, and David F. Clark, Madeley, all of United Kingdom, assignors to Michael Sacks, Manchester, United Kingdom
Filed Jun. 9, 1995, Ser. No. 488,501
Claims priority, application United Kingdom, Jun. 9, 1994, 9411597; Jan. 18, 1995, 9500960; Apr. 19, 1995, 9507955
Int. Cl.[6] A44B *11/00;* **A45F** *5/00*
U.S. Cl. 24—573.1 **37 Claims**



1. A connector for supporting an object and which is connectable to an elongate track which comprises a pair of channels extending longitudinally, by engagement with said pair of channels so as to be retained laterally thereon, the connector having a locking device cooperating with the track and locking the connector in position, said locking device being located between the connector and the track and having a press portion, said press portion being moveable relative to the connector in a direction parallel to the longitudinal direction of the track to effect a locking and unlocking action between the locking device and the track.

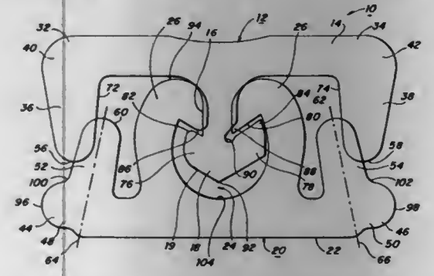
5,577,304
KARABINER WITH DYNAMIC LOCKING FEATURE
Ludger Simond, Chamonix Mont Blanc, France, assignor to Etablissements Ludger Simond Société Anonyme, Chamonix Mont Blanc, France
Filed Jul. 28, 1995, Ser. No. 508,965
Claims priority, application France, Aug. 12, 1994, 94 10127
Int. Cl.[6] A44B *13/00*
U.S. Cl. 24—573.5 **9 Claims**

1. Karabiner for climbing, potholing and like activities, comprising:
a generally C-shaped body the two ends of which are curved towards each other and separated by an opening,
a finger having a first end articulated to a first end of said body about a transverse axis to pivot in a pivoting plane between an open position and a closed position in which a second end of said finger engages with a second end of said body to close said opening,



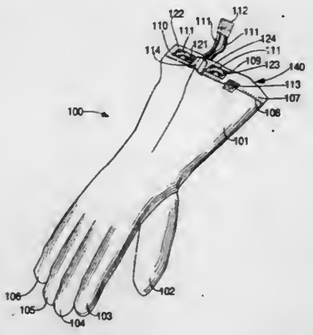
the respective second ends of said body and said finger being shaped complementarily, respectively with a male end shape and a female end shape, adapted to fit one within the other at the end of closing movement in the pivoting plane,
a first of said end shapes having at least one lateral protuberance in a direction substantially perpendicular to said pivoting plane of said finger and engaging in a lateral housing of the second of said end shapes,
said lateral housing being shaped to allow unrestricted radial relative displacement of the corresponding lateral protuberance on pivoting relative movement of said finger with no axial load applied to said karabiner and to restrict to below a predetermined maximal value axial relative displacement of the corresponding lateral protuberance on deformation of said karabiner body under axial traction load, wherein:
said lateral housing is shaped to allow slight axial relative displacement of the corresponding lateral protuberance upon deformation of said karabiner body under axial traction load and to prevent radial relative displacement of the corresponding lateral protuberance in the direction of opening of said finger if the corresponding lateral protuberance has moved to the extent of said slight axial relative displacement due to said axial traction load applied to said karabiner body.

5,577,305
FASTENER ASSEMBLY
James R. Johnson, 3819 Greenhill Dr., Chamblee, Ga. 30341
Filed May 8, 1995, Ser. No. 436,573
Int. Cl.[6] A44B *19/00;* **B65D** *33/00*
U.S. Cl. 24—587 **24 Claims**



1. A fastener assembly for a reclosable, plastic container, said assembly comprising:
a male closure element having a male base member and a stem and a barb element externally substantially perpendicularly therefrom, said male base member being elastically deformable and resilient and having at least two male base member engaging portions thereof; and
a female closure element comprising a female base member and a substantially C-shaped track disposed thereon, said C shaped track having a pair of curved legs extending from said female base member, said female closure element being formed such that said male closure element and said female closure element are selectively engaged in an interlocking relationship or disengaged, said female base member further being elastically deformable and resilient and having at least two female base member portions thereof projecting angularly inward, in which said elastically deformable male base member engaging portions inwardly deform said female base member portions thereby facilitating sealing of said fastener assembly upon engagement thereof and assembly of said fastener assembly to said reclosable plastic container.

5,577,306
FRICTION BASED ONE-HANDED CLOSURE AND RELEASE MECHANISM
Danny Gold, 27 Barker Road, Apt. E-2, Hong Kong, Hong Kong
Filed Feb. 6, 1995, Ser. No. 384,101
Int. Cl.[6] A41F *1/00*
U.S. Cl. 24—715.3 **25 Claims**



1. A one-handed closure mechanism for selectively shortening a dimension of an item, comprising:
a stretchable elastic cord means for encircling at least a portion of an object along the dimension, having a first, outer contact surface perimeter in an unstretched state and a second outer contact surface perimeter in a stretched state, and said stretchable elastic cord means having two free ends;
base surface means for resting against the elastic cord means and providing frictional resistance to the movement of the elastic cord means;
restrictive guide means having at least two openings, each free end of the elastic cord means extending through at least two openings in the restrictive guide means, the elastic cord means having a first portion of its length which is formed by the two free ends and a second portion, making up the remainder of the length of the elastic cord means which is between the free ends and also encircles at least a portion of the object; the stretching of the elastic cord means by pulling on the free ends resulting in: the lengthening of the elastic cord means, the elastic cord means taking on the second outer contact surface perimeter at least proximate the openings in the restrictive guide means, the relative proportion of the length of the elastic cord means making up the second portion is reduced while the actual length of the second portion remains generally unchanged, the friction between the contact surface of the elastic cord means and the base surface means and the restrictive guide means being insufficient to prevent the increase in the actual length of the free ends; and the release of tension on the elastic cord means when the pulling is stopped, resulting in: the increase of the perimeter to the first

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outer surface perimeter; the increase in the relative friction between the elastic cord means and the base surface means and the restrictive guide means; the decrease in the length of the elastic cord means to a length greater than the original length of the elastic cord means, but the length of the elastic cord means between the free ends is substantially unchanged although in a stretched state, while the proportion of the elastic cord means which is between the free ends is reduced; and the stretched portion of the elastic cord means between the free ends biases the at least a portion of the object so that the at least a portion of the object's perimeter along the dimension between the free ends is reduced.

5,577,307

METHOD FOR PRODUCING MULTI-PLY FABRIC WITH WATER SOLUBLE THREAD

Toru Itoi, 861-11 Komatsuri-cho, Kishiwada-shi Osaka-fu 569, Japan

Continuation of Ser. No. 500,312, Jul. 6, 1995, abandoned, which is a continuation of Ser. No. 264,379, Jun. 23, 1994, abandoned. This application Feb. 29, 1996, Ser. No. 608,933

Claims priority, application Japan, Jun. 30, 1993, 5-186636; Feb. 14, 1994, 6-017052

Int. Cl.[6] D03D *11/00*

U.S. Cl. 28—168 **4 Claims**

1. A method of producing a multiple ply fabric, comprising the steps of:

providing a soluble thread along an insoluble thread which has been twisted in a first direction;

twisting said soluble thread and said insoluble thread together in a second direction opposite to said first direction to provide a binding yarn in which said soluble thread is twisted around said insoluble thread which is now untwisted;

binding a plurality of unit fabrics one upon another with said binding yarn to provide a multiple ply fabric base; and

dipping said multiple ply fabric base in a solution to dissolve said soluble thread thereby providing a multiple ply fabric which is bound with only said untwisted insoluble thread so that said multiple ply fabric has excellent heat retention and is easy to separate by hand.

5,577,308

METHOD OF ROTATING A BECHMANN CURVE OF A QUARTZ STRIP RESONATOR

Aristotelis Arvanitis, Addison; Weiping Zhang, Arlington Heights, and Kevin Haas, Hoffman Estates, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 28, 1995, Ser. No. 396,397

Int. Cl.[6] H01L *41/22*; **G01R** *29/22*

U.S. Cl. 29—25.35 **16 Claims**

1. A method of rotating a non-temperature compensated Bechmann curve of a quartz strip resonator, comprising the steps of:

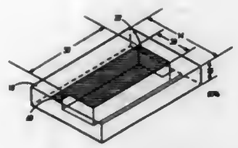
determining whether an AT cut quartz strip has an out-of-specification crystallographic orientation;

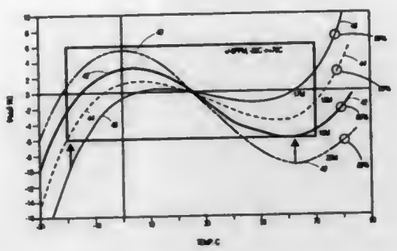
selecting a predetermined nominal electrode coverage having a nominal electrode width for an in-specification AT cut quartz strip; and

tuning the out-of-specification crystallographic orientation, by:

adjusting the electrode width with respect to the nominal electrode width, to bring the out-of-specification crystallographic orientation of an out-of-specification AT cut crystal quartz to within a predetermined specification having a desired in-specification Bechmann curve with an inflection point; and

rotating an out-of-specification Bechmann curve about the inflection point to substantially approacb the desired in-specification Bechmann curve.





5,577,309

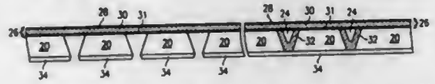
METHOD FOR FORMING ELECTRICAL CONTACT TO THE OPTICAL COATING OF AN INFRARED DETECTOR

Steven N. Frank, McKinney; James F. Belcher; Charles E. Stanford, both of Plano; Robert A. Owen, and Robert J. S. Kyle, both of Rowlett, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 1, 1995, Ser. No. 397,512

Int. Cl.[6] H01L *31/18*

U.S. Cl. 29—25.42 **16 Claims**



1. A method of forming an electrical contact to a common electrode of an infrared detector, said method comprising:

forming thermal isolation trenches in a substrate;

depositing a first trench filler in said thermal isolation trenches;

forming bias contact areas around a periphery of said substrate;

depositing a common electrode layer over said substrate, said thermal isolation trenches and said bias contact areas;

thinning a backside of said substrate to expose said bias contact areas and said trench filler;

depositing a contact metal on said backside of said substrate, said exposed trench filler and said exposed bias contact area; and

etching said contact metal and said trench filler to form pixel mesas of said contact metal and said substrate.

5,577,310

SUPPORT FOR FITTING A SHRINKABLE SLEEVE

Annie Cheenne-Astorino, Bruxelles, and Christophe Brackeniers, Aalst, both of Belgium, assignors to Alcatel Cable, Clichy Cedex, France

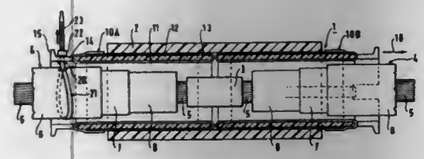
Filed Sep. 8, 1995, Ser. No. 525,177

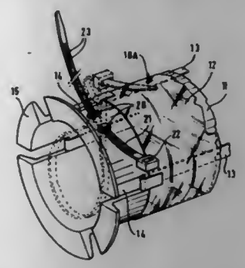
Claims priority, application France, Sep. 14, 1994, 94 10971

Int. Cl.[6] B23P *19/02*

U.S. Cl. 29—235 **8 Claims**

1. Support for fitting a shrinkable prestretched sleeve, adapted to carry the prestretched sleeve, for locating the sleeve over an object and fitting and clamping the sleeve to said object by removal of the support from under said sleeve, said support including substantially contiguous tubular parts removed in turn from under said sleeve, and means for temporarily immobilizing a last of said tubular parts to be removed from under said sleeve comprising means for fixing said last tubular part relative to said object during removal of each of said other tubular parts and prior to removing said last tubular part.





5,577,311

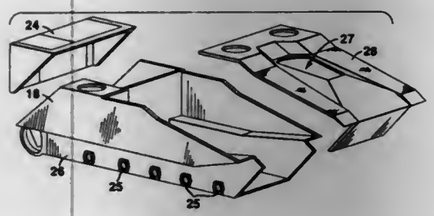
REAR DRIVE M113 CONVERSION METHOD

Matthew G. Riddle, San Jose, Calif., assignor to FMC Corp., Chicago, Ill.

Filed Dec. 5, 1994, Ser. No. 349,338

Int. Cl.[6] B21K *21/16*

U.S. Cl. 29—401.1 **7 Claims**



1. An overhaul and rear-drive conversion method for an armored vehicle of the M113 vehicle family comprising the steps of:

providing an armored vehicle of the M113 type, said vehicle including a front end, a rear end, a rear portion, an upper hull, and a lower hull with a rear sponson area;

stripping said vehicle to a base aluminum hull including said front end, said rear end, said rear portion, said upper hull, and said lower hull;

removing said rear portion from said base aluminum hull;

modifying the configuration of said lower hull;

adding suspension mounting pads to each side of said modified lower hull in said rear sponson area;

adding a new rear stowage area to said upper hull at said front end of said base aluminum hull;

adding a new front plate to said modified lower hull at said rear end of said base aluminum hull; and

welding together said upper hull, said modified lower hull, said top plate, said new rear stowage area, and said new front plate.

5,577,312

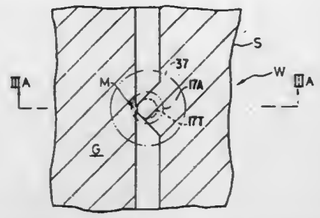
METHOD OF SEPARATING MICRO-JOINT PROCESSED PRODUCTS

Yoshiharu Seto, La Mirada, Calif., assignor to Amada Mfg America Inc., La Mirada, Calif.

Continuation of Ser. No. 184,445, Jan. 21, 1994, abandoned. This application Mar. 7, 1995, Ser. No. 400,527

Int. Cl.[6] B23P *17/00*

U.S. Cl. 29—418 **3 Claims**



1. A method of separating a product connected to a skeleton portion of a workpiece at a micro-joint, said micro-joint being a narrow connecting portion which is located between the product and said skeleton portion and which is directly adjacent to said product, the product being separable from the skeleton portion at the narrow connecting portion, wherein the method comprises pushing only said skeleton portion adjacent to said micro-joint without contacting said micro-joint or said product to separate the product from said skeleton portion at said micro-joint.

5,577,313

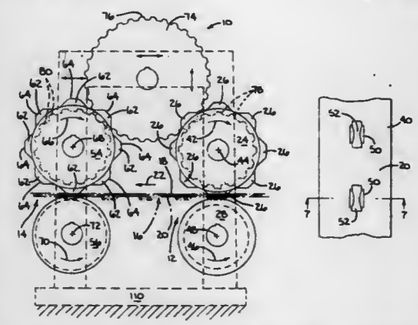
METHOD AND APPARATUS FOR JOINING DEFORMABLE SHEET STOCK

Anthony Guido, 102 Forest View Rd., Bensenville, Ill. 60106, and William Jette, 1330 Saunders Rd., Riverwoods, Ill. 60015

Filed Jan. 17, 1995, Ser. No. 374,036

Int. Cl.[6] B23P *11/00*

U.S. Cl. 29—432.2 **23 Claims**



1. A method of joining first and second sheets of deform able material, said method comprising the steps of:

providing a first sheet having oppositely facing first and second surfaces;

providing a second sheet having oppositely facing third and fourth surfaces;

placing the second surface on the first sheet facially against the third surface on the second sheet;

directing a first discrete element against the first sheet at a first location to cause a part of the first sheet contacted by the first discrete element to be deformed to project through and beyond the fourth surface on the second sheet;

moving the first discrete element relatively away from the first sheet at the first location; and

directing a second discrete element to compress against at least one of the first and second sheets at the first location to at least one of a) cause the part of the first sheet to deform so as to define a first shoulder facing oppositely to the fourth surface that abuts to the fourth surface and b) cause the second sheet to deform so as to define a second shoulder that faces and abuts to the part of the first sheet.

5,577,314

METHOD OF FITTING A RUBBER-LIKE MOLDED PRODUCT TO A FITTED MEMBER

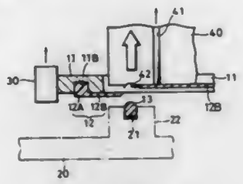
Nobuhiro Katsuno, Hachioji; Ikuzo Usami, Kanagawa-ken, and Noriko Mizutani, Hachioji, all of Japan, assignors to Three Bond Co., Ltd., Tokyo, Japan

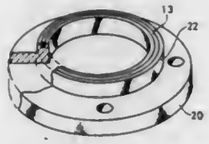
Division of Ser. No. 155,310, Nov. 19, 1993. This application Apr. 19, 1995, Ser. No. 424,937

Claims priority, application Japan, Feb. 23, 1993, 5-57928; Apr. 21, 1993, 5-117706

Int. Cl.[6] B23P *11/02*

U.S. Cl. 29—451 **2 Claims**





1. A method of fitting an elastomer molded product to a fitted member comprising the steps of:

transporting a support frame having a predetermined shape in which the elastomer molded product is integrally molded in an inner region of the support frame via a connecting member by transporting means and positioning said support frame at a predetermined corresponding position of said fitted member;

fitting said elastomer molded product into a predetermined portion of said fitted member, the predetermined portion including a groove structure for receiving said molded product, and simultaneously cutting off said elastomer molded product from said connecting member by means of a pushing jig disposed in face-to-face relation with said fitting member; and

removing said connecting member and said support frame from said fitted member.

5,577,315

METHOD OF UPSETTING RIVETS

Gregory C. Givler, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 819,210, Jan. 9, 1992, abandoned, which is a division of Ser. No. 632,445, Dec. 21, 1990, Pat. No. 5,231,747. This application Jun. 6, 1995, Ser. No. 468,214

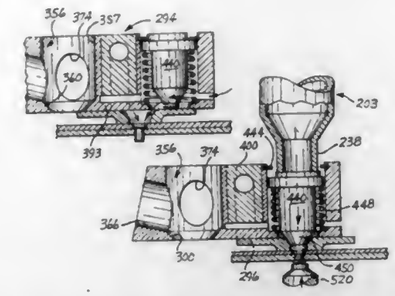
Int. Cl.[6] B23P *11/00;19/04*

U.S. Cl. 29—243.54 **2 Claims**

1. A method of upsetting rivets, comprising:

pressing a die against one end of a rivet;

positioning a flat first side of a high amperage capacity coil adjacent a side of a thick transducer along an operational axis,



and establishing firm face contact between said flat first side of said high amperage capacity coil and said thick transducer, which is made of high electrical conductivity material;

positioning a recoil mass adjacent said transducer along said operation axis, and establishing firm face contact between a side of said transducer that is opposite the side in contact with said coil and a side of said recoil mass;

positioning a side of a driver adjacent a flat second side of said coil that is opposite the flat first side of said coil, along said operational axis;

positioning an end of said die that is opposite the end against the rivet adjacent a side of the driver that is opposite the side adjacent said coil, along said operational axis;

establishing hard mechanical contact between said coil, said driver, and said die;

delivering a pulse of high amperage current to said flat coil through a power lead to generate a repulsive force between said coil and said transducer;

transmitting said force from said coil, through said driver to said die to deliver a single, high power, short stroke impulse against said rivet to upset said rivet;

reacting the repelling force from said coil in said transducer and said recoil mass; and

absorbing the energy in said transducer and recoil mass in a relatively long stroke of a recoil air cylinder;

whereby said power lead will experience a short excursion.

5,577,316

METHOD FOR PRODUCING A MINI-TRANSFORMER WITH MOLDED COVER AND RETENTION STRUCTURE

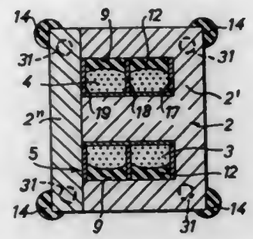
Ruedi Kaelin, Seon, Switzerland, assignor to Aspro Technology AG, Wildegg, Switzerland

Division of Ser. No. 310,034, Sep. 21, 1994, Pat. No. 5,483,405, which is a continuation of Ser. No. 787,006, Nov. 4, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 465,008

Claims priority, application Switzerland, Nov. 7, 1990, 3536/90; Sep. 26, 1991, 2853/91

Int. Cl.[6] H01F *41/02*

U.S. Cl. 29—606 **7 Claims**



1. A method for producing a small or a mini transformer (1) comprising

providing a unitary coil body (5) having a central aperture (20) with two lateral support walls (17, 19) and external core support ribs (10);

providing primary and secondary windings (3, 4) located on said unitary coil body (5), electrically and physically separated from each other; and

providing a core (2) of ferromagnetic material, including a core element (2') which is generally E-shaped and having a central leg, and a further core element (2") positioned to complete the magnetic circuit of the core (2),

said coil body being placed on the core with the central leg of the E-shaped core element (2') extending through the central aperture (20) of the coil body, said coil body, with the windings thereon, leaving hollow spaces (9) between the core (2) and the coil body (5),

wherein the core (2) defines two broad end faces (52) and four side faces (54, 54') said four side faces defining two parallel longer sides (54') and two parallel shorter sides (54), at right angles to the longer sides,

said method comprising the steps of

injection-molding thermoplastic material over the coil body (5) with said windings (3, 4) thereon and over part of both broad end faces (52) of the core (2) to thereby form covers (6, 7) over the coil body and at least part of the broad end faces of the coil body;

said injection molding step further including

injecting said thermoplastic material to fill said hollow spaces (9) between the windings (3, 4) and the core (2), completely filling said spaces, securing the windings (3, 4) in place on the core and insulating them against each other and against the core, while being unitary with said covers and forming first bars or connectors (12) arranged between and connecting said covers (6, 7) interiorly of the core (2);

injection-molding said thermoplastic material to overlap the end edges of said end faces (52) of said core (2), to form lateral connectors (8, 8') while leaving the side faces, free from said covers (6, 7), uncovered from injected material; and

injection-molding said thermoplastic material in strip or bar form over the outside of said core to form strip or bar connectors (14, 14') arranged between and connecting said covers (6, 7) outside of the core (2), connecting said lateral connectors (8, 8') while overlapping portions of at least two of said side faces (54, 54') of the core and extending around the outside of the core,

said lateral connectors (8, 8') and said strip or bar connectors (14, 14') forming with said covers (6, 7) a unitary plastic single structure of injected plastic material, while leaving the side faces (54) of the core between the strip or bar connectors (14, 14') essentially devoid of plastic material, said covers (6, 7) being clamped together by said first bars and connectors, (12) said lateral connectors (8, 8') and said strip or bar connectors (14, 14') to clamp the core (2) and the windings (3, 4) thereon therebetween.

5,577,317

CRIMPING APPARATUS EMPLOYING A BRAKING WINDING

Jürgen F. C. Bender, Angelbachtal, Germany, assignor to Bernhard Schäfer Werkzeug-und Sondermaschinen GmbH, Germany

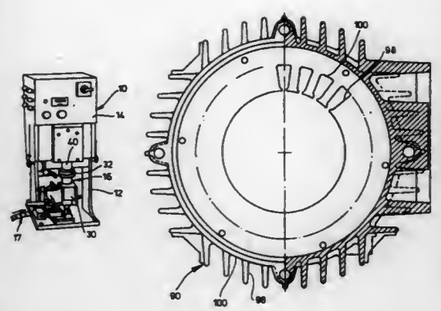
Filed Dec. 29, 1994, Ser. No. 366,266

Claims priority, application Germany, Dec. 31, 1993, 43 45 039.3

Int. Cl.[6] B23P *19/00*

U.S. Cl. 29—753 **9 Claims**

1. Apparatus for connecting a wire to a contact element by deformation of clamping means by means of pressing members of a crimping tool, which comprises, a drive motor including a stator with a plurality of grooves having groove bottoms and an additional independent braking winding which can be supplied with a braking voltage, wherein said braking winding is formed in a groove bottom of said grooves of said stator.



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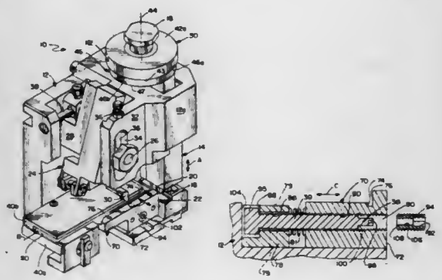
ELECTRICAL TERMINAL APPLICATOR WITH IMPROVED TRACK ADJUSTMENT MEANS

Vernon A. Smith, Naperville, and Kevin J. Urness, St. Charles, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Jul. 27, 1995, Ser. No. 508,022

Int. Cl.[6] H01R *43/048*

U.S. Cl. 29—753 **16 Claims**



1. An electrical terminal applicator for crimping terminals onto wires, with the terminals being secured on a strip in a side-by-side relationship, comprising:

an applicator ram drivable in a first path through a working stroke towards, and a return stroke away from, a crimping anvil;

a crimping die for cooperation with the anvil to crimp a portion of a terminal onto a wire during each working stroke of the ram;

track means for guiding the strip in a second path which intersects the first path of the ram and including a track portion mounted for adjustable movement in a direction transverse to the second path;

an adjusting screw threaded into a transverse hole in the movable track portion for adjusting the position of the track portion in said direction transverse to the second path;

a locking set screw threaded into said transverse hole for jamming against an end of the adjusting screw to lock the adjusting screw and, thus, the track portion in a predetermined position of adjustment; and

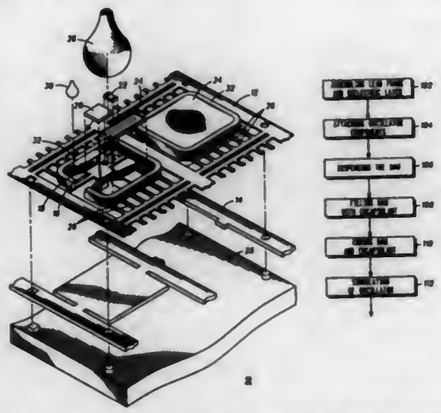
said end of the adjusting screw includes a tool-engaging means for engagement by an appropriate tool to adjustably rotate the adjusting screw and said locking set screw is generally hollow for insertion therethrough of the tool for engaging the tool-engaging means on the end of the adjusting screw.

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5,577,319
METHOD OF ENCAPSULATING A CRYSTAL OSCILLATOR

Thomas A. Knecht, Algonquin, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 31, 1995, Ser. No. 414,249
Int. Cl.[6] H01R *43/00;* H01L *23/24*
U.S. Cl. 29—827 12 Claims



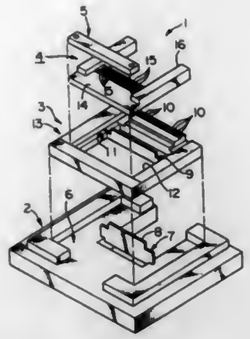
1. A method of making a surface mountable-lead frame crystal oscillator, comprising:
assembling a lead frame with a dielectric layer, the lead frame includes a plurality of cells having top and bottom surfaces;
attaching oscillator components to the top of the lead frame;
dispensing a predetermined first viscous material to form a dam substantially around a periphery of each cell;
substantially filling the dam with a second viscous material;
curing the first and second viscous materials; and
singulating each cell to form a surface-mountable lead frame crystal oscillator.

5,577,320
CABLE TERMINATION ASSEMBLY AND METHOD

Tomoyuki Shinohara, Chiba-ken; Ken Yasuoka, Tokyo; Shigeru Ashida, Chiba-ken; Tsuyoshi Hirahara, Chiba-ken; Koji Ueda, Chiba-ken, and Hideki Zako, Chiba-ken, all of Japan, assignors to Fujikura Ltd., Tokyo, Japan

Division of Ser. No. 50,961, Apr. 22, 1993, Pat. No. 5,387,124.
This application Oct. 4, 1994, Ser. No. 317,749
Claims priority, application Japan, Apr. 24, 1992, 4-106969; Jun. 1, 1992, 4-140739
Int. Cl.[6] H01R *43/02;* B23P *19/00*
U.S. Cl. 29—860 9 Claims

1. A method of assembling terminal ends of a plurality of cables having at least one first wire and at least one second wire, said method comprising the steps of:
(a) disposing a plurality of cables laterally on a cable guiding frame;
(b) separating said at least one first wire from said at least one second wire;
(c) inserting a plurality of said second wires individually into a wire guiding block;
(d) clamping said plurality of cables between said cable guiding frame and a cable clamp means;
(e) bonding the plurality of said second wires to a ground section with a bonding means;
(f) disposing an insulation plate between a plurality of said first wires and the plurality of said second wires; and
(g) bonding said first wires to any of a plurality of contact strips of a coupling section according to a predetermined wiring pattern and bonding said ground section to any of said plurality of contact strips of the coupling section according to the predetermined wiring pattern.

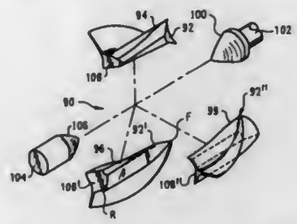


7. An assembling apparatus for assembling terminal ends of a cable having at least one first wire and a second wire, the assembly apparatus comprising:
(a) a cable guiding frame which laterally arranges said cable;
(b) a cable clamp means which is adapted to be positioned on said cable guiding frame for holding said cable and said cable guiding frame as a unit;
(c) a wire guiding block adapted to be positioned adjacent to said cable guiding frame for receiving the first wire and the second wire extending from said cable;
(d) a coupling section adapted to be positioned adjacent to said cable guiding frame for providing electrical connection to an external electrical device;
(e) a ground section connected electrically in said coupling section; and
(f) bonding means adapted to be positioned adjacent to said wire guiding block for electrically connecting said second wire to said ground section and said first wire to said coupling section.

5,577,321
METHOD OF PROPELLER FABRICATION

Rodney L. Brown, and Lance P. Morris, both of Redmond, Wash., assignors to Hydroplanes, Inc., Tukwila, Wash.

Filed Jun. 2, 1994, Ser. No. 252,672
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—889.6 9 Claims



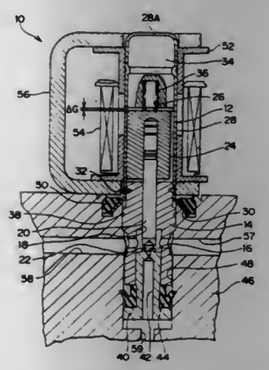
1. A method for fabrication of a propeller suitable for being driven by a shaft, said propeller of a selected shape and with N individual propeller blades, said propeller having a front and a rear and a longitudinal axis therebetween, and said propeller being comprised of N hub segment portions, said method comprising the steps of:
(a) press forging blanks of each of said N blades within a press forging mold to a shape at least roughly corresponding to the desired final size and shape of said blades, each of said blanks having a bub portion with integral blade portion;

(b) machining said hub portion of each blank into a hub segment, said hub segments
(i) each comprising a spiraling, angular segmented shape having a first face and a second face located at a preselected segment angle alpha (α) from said first face at any location along the longitudinal axis of said propeller, and
(ii wherein said first face of said angular segmented shape of said hub section rotates about said longitudinal axis X of said propeller by an angle beta (β) from said rear to said front of said propeller,
(c) securing each of said N hub sections in a closely spaced relationship for welding each of N hub segments to the hub sections adjacent thereto; and
(d) welding adjacent hub sections each to the other to form a total hub section.

5,577,322
PROCESS OF ASSEMBLING ELECTROMAGNETIC VALVE

Kouji Ohshita, Toyota, and Akifumi Tamaoki, Nishikamo-gun, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jan. 23, 1995, Ser. No. 376,833
Claims priority, application Japan, Feb. 15, 1994, 6-018131; Nov. 22, 1994, 6-288146
Int. Cl.[6] B21K *1/24;* B60T *8/36;* F16K *31/06*
U.S. Cl. 29—890.13 20 Claims

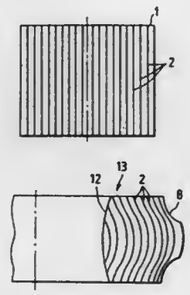


1. A process of assembling an electromagnetic valve which has: a shaft, a valve element, which opens and closes a channel, being provided at an end portion of said shaft; a plunger fixed to the other end portion of said shaft at the opposite side of said valve element; a valve seat forming body which is positioned further toward said valve element than said plunger, said valve seat forming body forming a valve seat at which said valve element is set; and a sleeve which is provided at a periphery of said plunger, a core which opposes said plunger being fixed to said sleeve, said sleeve being fixed to a housing by caulking, said process comprising the steps of:
fixing said core to said sleeve;
inserting said plunger, to which said shaft is fixed, into said sleeve;
integrally forming a valve unit by inserting said valve seat forming body into said sleeve and fixing said valve seat forming body to said sleeve; and
inserting said sleeve of said valve unit into said housing and fixing said sleeve to said housing.

5,577,323
METHOD OF MANUFACTORING A RACE RING FOR A ROLLING BEARING

Hiroyuki Sawai, and Takashi Yoshikai, both of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

Divisiom of Ser. No. 162,765, Dec. 8, 1993, abandoned. This application Feb. 23, 1995, Ser. No. 393,392
Claims priority, application Japan, Dec. 8, 1992, 4-351827; Dec. 8, 1992, 4-351828
Int. Cl.[6] F16C *33/64*
U.S. Cl. 29—898.066 7 Claims



1. A method of manufacturing a race ring for a rolling bearing, comprising the steps of:
(a) upsetting a cylindrical steel billet including a plurality of metal flows extending axially in a cross-section from above the billet to form an upset workpiece having an inner portion;
(b) pressing the upset workpiece equally from above and below thereof to form a pressed workpiece having central recesses in an inner portion thereof, the central recesses being formed by reducing a thickness of the inner portion of the upset workpiece, having the same depth in upper and lower surfaces of the pressed workpiece, and being symmetrical in configuration with respect to a cross-sectional plane along a longitudinal axis of the pressed workpiece;
(c) removing the inner portion of the pressed workpiece to form a ring-shaped workpiece having a through hole; and
(d) rolling the ring-shaped workpiece and outwardly pressing an inner peripheral surface thereof by a mandrel roll while holding an outer peripbery of the ring-shaped workpiece by a forming roll so as to expend a diameter of the through hole until the diameter reaches a required value.

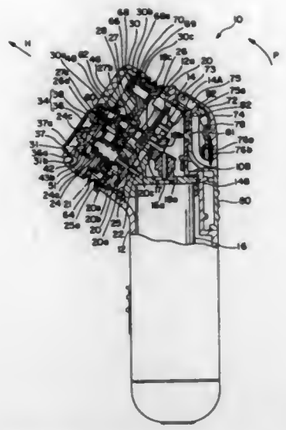
5,577,324
ELECTRIC SHAVER

Masanori Tanaka, Matsumoto, Japan, assignor to Izumi Products Company, Nagano, Japan

Filed Jun. 7, 1995, Ser. No. 484,636
Claims priority, application Japan, Jan. 11, 1995, 7-002537
Int. Cl.[6] B26B *19/16*
U.S. Cl. 30—43.6 12 Claims

1. An electric shaver comprising:
a shaver housing containing a power source therein;
a shaver head provided at one end of said shaver housing, said shaver head including shaving units each comprising an outer blade and an inner blade which is rotated by said power source and in close contact with an inner surface of said outer blade;
a blade holding plate which is provided at one end of said shaver housing;
a shaver head supporting member which pivotally supports said shaver head on said blade holding plate;
a plurality of driving means which are rotated by receiving a transmitted rotation of said power source;
rotation transmission shafts which pass through through-holes formed in said blade holding plate and thus protrude from said

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blade holding plate, said transmission shafts being connected, at one end thereof, to said driving means in such a manner that said rotation transmission shafts may pivot, may advance and withdraw a prescribed distance in an axial direction of said transmission shafts, and may be rotated about axes of said transmission shafts by said driving means, and, at other ends thereof, to said inner blades so as to rotate said inner blades; and

pressing means which press said rotation transmission shafts toward said shaving units.

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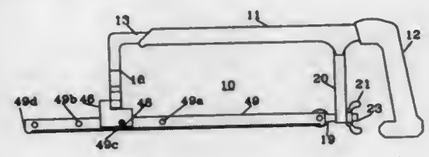
WOOD CUTTING BLADE ATTACHMENT DEVICE

Daniel D. Bentley, 624 S. Hyde Park, Denison, Tex. 75020

Filed Oct. 23, 1995, Ser. No. 546,693

Int. Cl.[6] B27B *21/02*

U.S. Cl. 30—507 **10 Claims**



1. The combination of an attachment device and a saw blade for a hack saw frame having a frame and a first and a second saw blade support devices, comprising:

said attachment device having a first and a second arm, wherein one of said arms is insertable into the back saw frame in replacement of one of the saw blade support devices; and

a saw blade attaching channel in said attachment device;

said saw blade having at least one hole in a first end and a plurality of holes spaced apart in a second end thereof, attached between the attachment device and the other of the saw blade support devices.

5,577,326

OPTICAL SIGHT ARRANGEMENT FOR A FIREARM

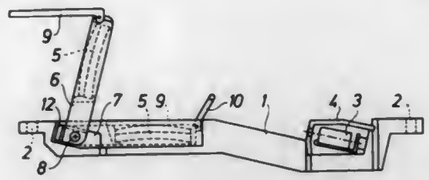
Per Montelin, Genarp, Sweden, assignor to Aimpoint AB, Sweden

Filed Apr. 27, 1995, Ser. No. 325,180

Claims priority, application Sweden, Sep. 9, 1993, 9302923

Int. Cl.[6] F41G *1/32*

U.S. Cl. 33—241 **6 Claims**



1. An optical sight apparatus for a firearm, comprising a support structure attachable to such firearm, an optical element contained within a holding means which is pivotally attached to said support structure, said optical element having a first side disposable towards a user of such firearm, said first side having a concave, parabolic configuration with a predetermined focal point, and a light emitting means attached to said support structure disposed at said predetermined focal point, said holding means including a U-shaped portion having a first pair of legs members pivotally attached to said support structure and adapted to permit said optical element to be pivotal between a lowered, inoperative position and a raised, operative position, a first spring means adapted to cooperate with said holding means to bias and move said optical element to said raised, operative position, a U-shaped second spring means having a second pair of leg members disposed between said support structure and said holding means adapted to provide stability to said holding means when said optical element is in said raised, operative position, said holding means having at least one first oblique surface adapted to engage and cooperate with at least one second oblique surface on said U-shaped second spring means to assure said optical element is repeatably and precisely positioned when moved to said raised, operative position.

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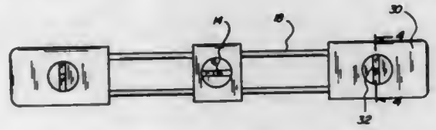
ADJUSTABLE LENGTH LEVEL DEVICE WITH INTERNAL LOCKING MECHANISM

Roland A. Archambault, 625 Iron Mine Hill Rd., North Smithfield, R.I. 02896

Filed Nov. 14, 1995, Ser. No. 555,880

Int. Cl.[6] G01C *9/24;9/28*

U.S. Cl. 33—374 **1 Claim**



1. An adjustable length level device with internal locking mechanism for articulating along rod members to form variable lengths comprising, in combination:

a central housing having a horizontally oriented tubular spirit vial disposed within a front wall thereof, the central housing having a pair of horizontal chambers formed within a central portion thereof, each of the horizontal chambers having an extension rod slidably extending outwardly of opposing end portions thereof, each proximal end of the extension rods having a stop mechanism secured thereto precluding disengagement of the extension rods from the horizontal chambers, each distal end of the extension rods having an angularly declining recess formed therein;

a pair of outer housings each having a vertically oriented tubular spirit vial disposed within a front wall thereof, each of the outer housings having a pair of horizontal chambers formed within a central portion thereof, each of the horizontal chambers of the outer housings slidably receiving the distal end of one of the extension rods therein, each of the outer housings having an internally disposed spring biased stop mechanism secured inwardly of an inner edge thereof, each spring biased stop mechanism being disposed between the extension rods, each spring biased stop mechanism cooperating with the angularly declining recess formed in the distal ends of the extension rods to preclude disengagement of the extension rods from the horizontal chambers of the outer housings.

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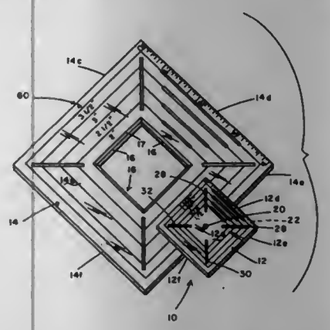
ELECTRICAL CONDUIT ENTRY TEMPLATE

James E. Kerry, Sr., 1536 Ballard, St. Louis, Mo. 63137

Filed Apr. 13, 1995, Ser. No. 422,071

Int. Cl.[6] G01B *3/00*

U.S. Cl. 33—563 **20 Claims**



1. A template for facilitating marking of entry holes in a surface for passage therethrough of conduit, the template comprising:

at least one flat portion formed of semi-rigid material and having a first side and a second side opposed to the first side, the first side and the second side being limited in their extent by a perimeter,

the at least one flat portion having a central opening formed therethrough from the first side to the second side,

the at least one flat portion further having a plurality of markings on the first side, the plurality of markings being parallel to at least a section of the perimeter and spaced inwardly at graduated distances therefrom, the plurality of markings corresponding to outside diameter sizes of conduit, and

a plurality of slots formed through the at least one flat portion from the first side to the second side, spaced apart and parallel to one another, substantially coextensively with each corresponding one of the plurality of markings spaced inwardly from at least a section of the perimeter of the at least one flat portion, to thereby permit a user of the template to make a mark through one of the slots to indicate an outer edge of a hole of a preselected size to be formed using the template, and

further comprising indicia on the first side thereof in positions closely associated with and corresponding to each of the plurality of markings to thereby indicate the internal diameter of a conduit for which a hole being marked with the template is to be formed.

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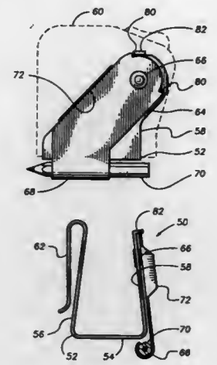
TAPE MEASURE PENCIL HOLDER

Eric States, 3146 Calle Mariposa, Santa Barbara, Calif. 93105

Continuation-in-part of Ser. No. 197,806, Feb. 17, 1994, abandoned. This application Mar. 20, 1995, Ser. No. 406,684

Int. Cl.[6] G01B *3/10*

U.S. Cl. 33—768 **13 Claims**



1. An Attaching device for releaseably attaching a marking device to a tape measure housing containing a measuring tape, said attaching device comprising:

a marker retaining arm pivotally mounted on said attaching device and movable between a marking position engageable with a surface to be marked adjacent said measuring tape and storage position, said arm being formed with means for releaseably retaining a marking device and at least one recess being formed in said arm; and

a stud projecting outwardly from said attaching device cooperating with said recess to limit movement of said arm.

5,577,330

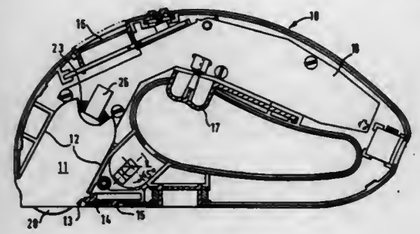
MEASURING DEVICE

Sidney Cheng, Kowloon, Hong Kong, assignor to Advanced Technologies Limited, Hong Kong

Filed May 5, 1995, Ser. No. 435,548

Int. Cl.[6] G01B *3/12*

U.S. Cl. 33—772 **8 Claims**



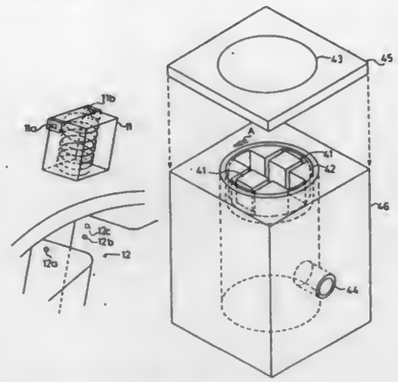
1. An electronic hand holdable measuring device for measuring dimensions of an article by rolling the device across surfaces of the article comprising: a housing and a sub-assembly releasably mounted to the housing, the sub-assembly comprising a roller and a circular disc having an optically varying array so as to provide an optical signal for each unit of rotation of the disc, in which the sub-assembly is arranged to generate dimension signals corresponding to rotational movement of the roller and a reader is permanently mounted inside the housing to respond to the dimension signals.

171–489 O.G.–96–3: QL3

5,577,331
DOWNFLOW SPIN DRYER

Hiromi Suzuki, Tochigi-ken, Japan, assignor to Nippon Precision Circuits Inc., Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 476,240
Claims priority, application Japan, Jun. 30, 1994, 6-149319
Int. Cl.[6] F26B 17/24
U.S. Cl. 34—58 13 Claims



1. A downflow spin dryer, comprising:
a housing;
a rotor rotating within said housing in a direction of rotation;
a cradle fitted within said rotor for accommodating items to be dried, the cradle having a rear portion and a front portion as viewed with respect to said direction of rotation of said rotor, the cradle being fitted to the rotor such that said rear portion of the cradle is at a lower position than said front portion of the cradle;
an air inlet in said housing through which air is sucked along with the rotation of the rotor; and
an air outlet in said housing through which air sucked through the air inlet is discharged.

5,577,332

Patent Not Issued For This Number

5,577,333
SOLID MEDIA PARTS DRYING USING FLUIDIZED BEDS

Reed A. Shick, Midland, and Norman G. Moll, Sanford, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

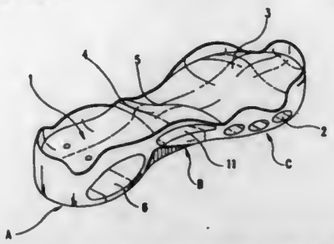
Filed Dec. 21, 1994, Ser. No. 360,533
Int. Cl.[6] F26B 3/08
U.S. Cl. 34—360 16 Claims

1. A method of removing liquid and materials dissolved or suspended in the liquid from a surface of an article comprising:
(a) fluidizing a bed of solid absorbent media;
(b) contacting the article with the fluidized media for a sufficient amount of time to allow liquid and at least a portion of any materials dissolved or suspended in the liquid to be transferred from the surface of the article to the solid media.

5,577,334
CUSHIONING OUTSOLE

Youngsoul Park, Sangil Usong Town 6-301, 174, Sangil-tong, Kangdong-ku, Seoul, Rep. of Korea

Filed Jul. 27, 1995, Ser. No. 507,830
Claims priority, application Rep. of Korea, Aug. 3, 1994, 94-19738
Int. Cl.[6] A43B 13/18;21/26
U.S. Cl. 36—28 9 Claims

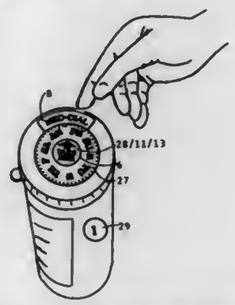


1. An outsole of a shoe, comprising cushion means comprised of a large throughout hole provided at a heel portion of the outsole, and a plurality of laterally extending small throughout holes provided at a toe portion of the outsole, the outsole further comprising:
a curved portion provided at a middle portion of the outsole and shaped to conform to a concave portion of a wearer's foot;
a pressing protrusion formed along the curved portion;
a throughout hole extending laterally through the pressing protrusion and having a cross-section gradually increased as it extends laterally from an outer side face of the outsole to an inner side face of the outsole;
an inclined surface provided at the toe portion of the outsole and downwardly inclined as it extends from the outer side face of the outsole to the inner side face of the outsole.

5,577,335
MEDICATION COMPLIANCE SYSTEM WITH MED-DIAL, MED-PROFILE, EASEL AND OPIONAL VISUAL HANDICAP AIDS

Annabelle D. Tucker, 4480 Sherman Oaks Cir., Sherman Oaks, Calif. 91403

Continuation-in-part of Ser. No. 754,045, Sep. 3, 1991, Pat. No. 5,149,047, and Ser. No. 11,453, Aug. 5, 1993, Pat. No. Des. 370,628. This application Dec. 2, 1994, Ser. No. 348,479
Int. Cl.[6] G09F 3/08
U.S. Cl. 40—311 10 Claims

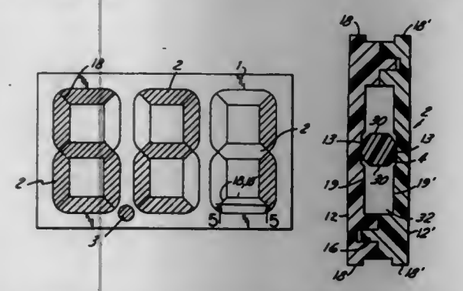


1. A compliance system for medication treatment and procedure schedules comprising:
adhesive backed time or day imprinted small dials for attachment to containers providing a first anchor means on which at least one perforated disc rotates to form a dial assembly, the first anchor means and perforated disc being digitally rotatable relative to each other by means of a peripheral reset tab on the disc to show the next medication or treatment time;
a medication profile providing a visible record of consultation and prescribed treatments;
first large master dials, each comprising a face disc with time or day indicia imprinted thereon and each having a second adhesive anchor means attached thereto and receiving a central opening of a pointer disc on the second anchor means for rotation relative to each other wherein each said large dial may be attached to a support surface by magnet or adhesive applied to the back surface thereof;
an easel, imprinted with second large master dials and a numbered medication schedule whose numbers coordinate with a number label on a medication container when used therewith; such container may be kept on a shelf in the easel, said shelf being formed by pushing down on a partially perforated, central back section, thereby forming the shelf within the easel base, a front lower seam of the easel providing a pocket which receives page clips which hold printed matter; the second master dials each having an attached, elevated third anchor means on which a further pointer disc rotates to designate the time of next procedure, and a magnification means to enhance reading matter that is seated onto a vertical arm of one of the page clips at a base opening thereof in two telescoping support posts on which the magnification means is slidable.

5,577,336
DISPLAY WITH REARRANGEABLE CHARACTERS

Palle L. Jensen, Backersvej 142, DK-2300 Copenhagen S., Denmark

Continuation of Ser. No. 7,517, Jan. 22, 1993, abandoned. This application Sep. 13, 1994, Ser. No. 305,022
Int. Cl.[6] G09F 3/04
U.S. Cl. 40—450 4 Claims

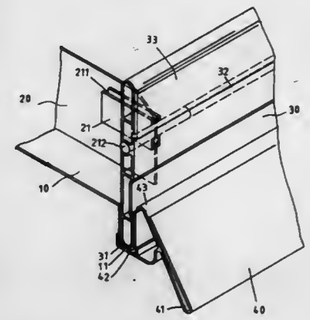


1. A display device with rearrangeable characters adapted for displaying digital figures and letters, said display device comprising:
a substantially planar front plate member with a plurality of openings and a corresponding plurality of pivotable character elements rotatable positioned in said openings, each of said character elements having a first and a second display surface with different colors and being adapted to be rotatable by manual manipulation between a first display position wherein the element is clearly distinct from the front plate member by the color of said first display surface and a second display position wherein the element is integrated into the front plate member by the color of said second display surface,
a rear plate member releasably secured onto the front plate member and positioned immediately adjacent said character elements to physically lock said character elements in their selected display positions,
said openings in said front plate member being arranged on said front plate member to form a plurality of center portions, each of said center portions being connected to a remaining part of the front plate member or to an adjacent center portion by shaft members extending completely across said openings and serving as pivots for said character elements,
each of said character elements having a pair of complementary members which are assembled by means of projections in one complementary member and corresponding holes in the other complementary member so as to form between opposing inner surfaces of the complementary members of the pair a cavity adapted to receive said shaft members on said front plate member,
said character elements being formed at their respective ends wherein they substantially abut against each other, thereby providing an integral displaying of a digital-type figure or letter on said display device,
each of said shaft members in said openings having forwardly and rearwardly facing flat portions in relation to the plane of the display device,
said shaft members having plane side portions parallel with the plane of the front plate member, and
each of said character elements being made of a resilient material capable of providing a spring tension and each of said character elements having front and rear surfaces which are planar aligned with the plane side portions of the shaft members when the character elements are in either of their display positions, and to abut on other portions of the shaft when the character elements are in any other position, whereby the resilient material of said character elements can be deformed against the action of the spring tension.

5,577,337
POSITIONING ASSEMBLY FOR SHELF PLACARDS AND SEPARATORS

Hsu K. Lin, No. 37, Lane 58, Kuangfu South Rd., Taipei, Taiwan

Filed Jun. 29, 1995, Ser. No. 496,298
Int. Cl.[6] A47F 5/00
U.S. Cl. 40—642 2 Claims



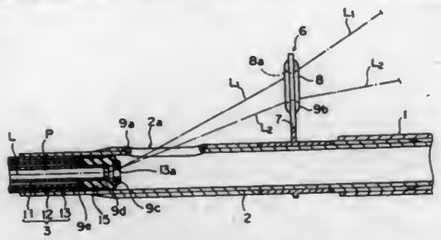
1. A positioning assembly comprising:
a transverse plate with a longitudinal flap end;
a longitudinal blocking frame with a transverse groove at a middle portion of said blocking frame;
at least a positioning panel which has two parallel laminae connecting to a transverse rod being inserted into said transverse groove of said blocking frame via said rod;
a separator being received between said parallel laminae;
an upper placard being integral with an upper portion of said blocking frame;
a lower placard holder having a hook-shaped edge;
a longitudinal slot being formed in said flap end; said blocking frame being inserted into said longitudinal slot; and
said hook-shaped edge of said placard holder being positioned between said blocking frame and said flap end.

5,577,338

HOLLOW COLLAPSIBLE FISHING ROD WITH FISHLINE GUIDE

Kiyohiko Matsumoto, and Toshihiko Yasui, both of Osaka, Japan, assignors to Shimano, Inc., Osaka, Japan

Filed Dec. 23, 1994, Ser. No. 363,078
Claims priority, application Japan, Apr. 19, 1994, 6-080102
Int. Cl.[6] A01K *87/04*
U.S. Cl. 43—18.1 10 Claims



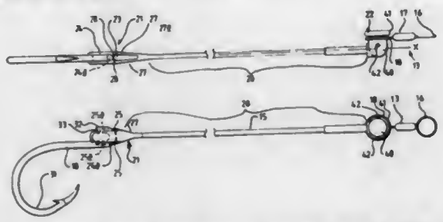
1. A hollow collapsible fishing rod comprising:
a butt portion having a hind butt section which is at least partially hollow and includes a reel mount for retaining a reel, and a fore butt section which is at least partially hollow and is telescopically extendable from and collapsible into said hind butt section, and a fishline guide aperture formed in said fore butt section;
a telescopic hollow tip portion which includes a fore end and a hind end, said hind end mounted to said fore butt section, said telescopic hollow tip portion defining a fishline inner passage terminating at an opening in said hind end of said hollow tip portion;
a fishline guide provided between said reel mount portion and said fishline guide aperture, said fishline guide being attached to an exterior surface of said hind butt section;
wherein a fish line is extendable from said reel mounted portion, through said fishline guide and said fishline guide aperture, into the hollow extent of said fore butt section, and through the inner passage of said telescopic hollow tip portion; and
a guide fitting provided in said fishline guide, a guide fitting provided in said fishline guide aperture, and a guide fitting provided in the hind end opening of said telescopic hollow tip portion.

5,577,339

FISHING TACKLE

Leonard Haigh, Evesham, United Kingdom, assignor to Entaco Limited, Studley, United Kingdom

Filed Nov. 15, 1994, Ser. No. 340,111
Claims priority, application United Kingdom, Nov. 17, 1993, 9323697
Int. Cl.[6] A01K *91/00;91/18*
U.S. Cl. 43—42.74 19 Claims



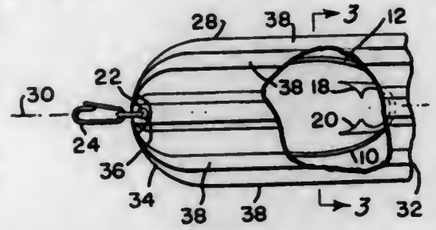
1. A fishing tackle comprising an elongate snood having an elongate small diameter body part and at one end of the body part and integral therewith, an attachment means comprising a passageway in which is retained a part of a member whereby the meter is attached to the snood, said body part comprising a drawn synthetic plastics material and wherein a first portion of the attachment means, in which is provided a part of said passageway in which said part of the meter is retained, comprises a pre-formed, undrawn, synthetic plastics material portion and a second portion of the attachment means, in which is provided a part of said passageway through which said part of the member may pass to permit assembly of said part of the member with said attachment means, comprises a drawn synthetic plastics material; and wherein the drawn portion comprises at least a majority of the longitudinal extent of two opposed side walls of the passageway, while the pre-formed, undrawn portion provides a transverse abutment part which provides an end wall of the passageway at the end of the passageway distant from the body part of the snood.

5,577,340

FISHING HOOK ASSEMBLY

John J. Murphy, 705 W. Pine St., Lancaster, Wis. 53813

Filed Jun. 9, 1995, Ser. No. 489,154
Int. Cl.[6] A01K *83/00*
U.S. Cl. 43—43.2 1 Claim



1. A fishing hook assembly, comprising:
a pair of fishing hooks, each having first and second, opposite ends, and having only (a) a U-turned, barbed hook at said first end thereof, and (b) a substantially straight shank extending from said barbed hook thereof to said second end thereof; and
a coil spring having a pair of free ends; wherein
said second ends of said pair of fishing hooks are integral with said free ends of said spring, one of said second ends being integrated with one of said free ends, and the other of said second ends being integrated with the other of said free ends;
said U-turned, barbed hooks are mutually interfacing, with one thereof facing a given direction, and the other thereof facing an opposite direction;
said U-turned, barbed hooks are substantially juxtapositionally disposed to define a loop theretogether and therewithin;
said spring has a coil; and
means sheathingly enclosing said shanks, U-turned, barbed hooks, and said free ends of said spring; wherein
said enclosing means comprises a compliant tube having two, opposite ends;
one end of said tube is fully open, and the opposite end of said tube has an aperture formed therein; and
only said coil protrudes outwardly from said tube via said aperture.

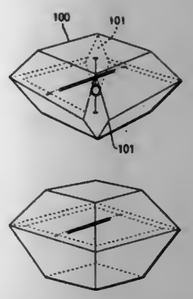
5,577,341

ANIMAL TRAP

Michael J. Mollo, Monmouth Junction, N.J., assignor to Rodentia, Inc., Jamesburg, N.J.

Filed Mar. 20, 1995, Ser. No. 406,580
Int. Cl.[6] A01M *23/18*
U.S. Cl. 43—61 8 Claims

1. An improved animal trap in the shape of a collapsible, expandable, prismoidal box folded from a blank of stiff sheet material, said trap having an inside and an outside, adapted to be collapsed into a first partially-closed position by pressure on its top and to be expanded into a second fully-closed position by internal contracting means upon release of said pressure, said trap comprising:
a top and a bottom of identical square configuration in parallel alignment each being provided with at least one perforation;
four trapisoidal side walls hingedly attached to the edges of said top and said bottom, each said side wall being adapted to fold outwardly about a central folding line parallel to said edge of said top and bottom, by pressure applied onto said top urging it toward said bottom;
four tabs each of a width of said side walls, one tab each being hingedly attached to the inside of one of said side walls along said central folding line, and two of said tabs being provided with at least one perforation;
at least one elastic contracting means attached to said tabs on opposite side walls by means of said perforations, and adapted to pull said opposite walls into bent planes oblique to the planes of said top and said bottom upon release of pressure on said top; and
trigger means attached to said top and bottom by means of said perforations said trigger causing said trap to be held in said first partially-closed position and upon triggering to permit said trap to fully close.

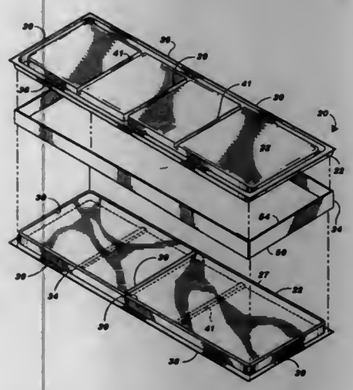


5,577,342

RODENT CONTROL GLUE BOARD

Daniel C. Johnson, Madison, and Richard L. Leyerle, Burlington, both of Wis., assignors to Bell Laboratories, Inc., Madison, Wis.

Filed May 12, 1995, Ser. No. 440,006
Int. Cl.[6] A01M *1/14*
U.S. Cl. 43—114 10 Claims



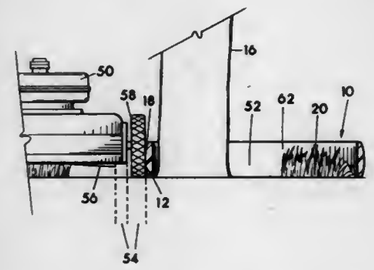
1. A multiple rodent glue board assembly, comprising:
a) a first board having a glue reservoir defined by dam inner walls which extend upwardly from a reservoir base wall, and having dam outer walls which extend downwardly from the dam inner walls, and a peripheral rim extends sidewardly from the dam outer walls;
b) a first quantity of glue contained within the first board glue reservoir;
c) a sleeve which surrounds the first board glue reservoir and which has a lower edge which engages the first board peripheral rim, the sleeve extending upwardly above the first board to define an upper edge;
d) a second board having a glue reservoir defined by dam second inner walls which extend from a second reservoir base wall, and having second dam outer walls which extend from the second inner walls, and a second peripheral rim extends sidewardly from the second outer walls;
e) a second quantity of glue contained within the second board glue reservoir, and the second board is positioned in opposed relationship to the first board such that the second board second peripheral rim engages the sleeve upper edge, and the glue within the second board faces the glue within the first board and the first and second quantities of glue are spaced from one another and prevented from contacting one another by the sleeve.

5,577,343

TREE PROTECTIVE MOWING TEMPLATE

Robert J. Flasch, Jr., 6310 Co Rd 18, Orland, Calif. 95963

Filed Feb. 2, 1996, Ser. No. 596,004
Int. Cl.[6] A01G *13/00*
U.S. Cl. 47—33 4 Claims



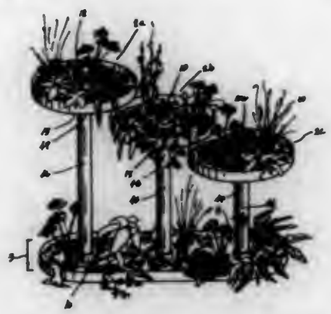
4. A tree having a trunk of a particular diameter growing in the earth and a protective mowing template placed about said tree and resting loosely on the earth about said tree trunk unattached and capable of sliding on the earth toward and away from the tree trunk while being pushed by a wheeled lawn mower, said tree protective mowing template comprising: a generally rigid ring made of plastics material and defining a vertical outside wall having a height adapted to engage the blade protecting housing of a lawn mower; said plastics material being of a type which is shatter resistant and having sufficient strength and thickness whereby the entire ring may pushed about on the earth surface by a lawn mower without breaking;
at least one break in the vertical outside wall of the ring for allowing said ring to be opened sufficiently to pass about a tree trunk through the open break and into an open interior of the ring and a locking means for securing said at least one break in a closed position;
said ring having an open interior diameter at least equal to the total of the diameter of the tree trunk adjacent the ground plus two times a lawn mower set-back added to the thickness of the vertical wall of said ring;
said ring having a smooth bottom edge for allowing the bottom edge to slide over obstacles.

VOL 1192 ISS 4 NO 26 1996 UMI

5,577,344
PARTY RISER

George J. Zaremba, 6630 N. Kostner, Lincolnwood, Ill. 60646, and James M. Blankfield, 6325 N. Sheridan Rd., Unit 1304, Chicago, Ill. 60660

Continuation-in-part of Ser. No. 14,267, Feb. 5, 1993, abandoned. This application Apr. 22, 1994, Ser. No. 233,614
Int. Cl.[6] A47G 7/00
U.S. Cl. 47—39 22 Claims



1. A kit adapted to form a floral display arrangement comprising in combination,

at least two container-base elements each having a hub with predetermined height, and a top and a bottom surface and defining upper socket and lower sockets, each container-base element also having a flange extending from said bottom of said lower socket to a peripheral rim, said rim extending upward from said flange to a height equal to that of said hub whereby said hub, said flange and said rim define a basin adapted to hold water and a floral display,

said kit further including at least one cylindrical stem having an upper and lower end adapted to form a friction fit with either of said upper and lower sockets.

5,577,345
APPARATUS FOR PROVIDING A DECORATIVE COVER FOR A FLOWER POT USING A COLLAR

Donald E. Weder, Highland, Ill.; Franklin J. Craig, Valley Park, Mo.; William F. Straeter, and Joseph G. Straeter, Highland, both of Ill., assignors to Southpac Trust International, Inc., Highland, Ill.

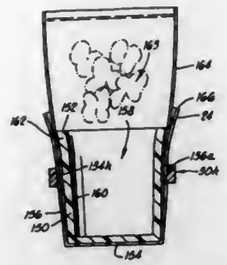
Division of Ser. No. 343,696, Nov. 22, 1994, which is a division of Ser. No. 43,506, Apr. 6, 1993, Pat. No. 5,414,959, which is a division of Ser. No. 773,474, Oct. 9, 1991, Pat. No. 5,231,794, which is a division of Ser. No. 404,955, Sep. 8, 1989, Pat. No. 5,077,937, which is a continuation-in-part of Ser. No. 365,767, Jun. 1, 1989, abandoned, and a continuation-in-part of Ser. No. 372,996, Mar. 21, 1989, Pat. No. 4,901,423, which is a continuation of Ser. No. 232,541, Aug. 11, 1988, Pat. No. 4,835,834, which is a continuation of Ser. No. 876,405, Jun. 20, 1986, abandoned. This application May 31, 1995, Ser. No. 454,904
Int. Cl.[6] A01G 9/02
U.S. Cl. 47—72 2 Claims

1. A decorative flower pot assembly, comprising:

a flower pot having an upper end, an outer peripheral surface and an object opening sized and shaped to accommodate a floral grouping and forming an inner peripheral surface, snap means being formed on a portion of the flower pot spaced a distance below the upper end of the flower pot, the snap means comprising a ridge formed on the outer peripheral surface of the flower pot and extending a distance outwardly therefrom;

a sheet of material; and

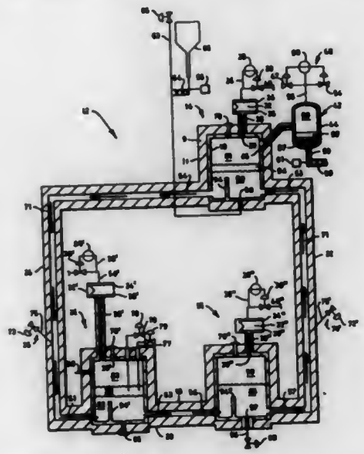
a collar having an outer peripheral surface and an inner peripheral surface defining an opening through a portion of the collar, the collar having a groove formed in the inner peripheral surface thereof, the collar being resiliently movable to an open position increasing the size of the opening in the collar and resiliently movable to a closed position decreasing the size of the opening in the collar, the sheet of material being disposed about the outer peripheral surface of the flower pot and the collar being moved to the open position, the flower pot and sheet of material being disposed through the opening in the collar and the collar being positioned over the snap means and moved to the closed position such that the groove of the collar matingly engages the ridge of the flower pot so that the collar remains in engagement with the flower pot and so that the inner peripheral surface of the collar engages the sheet of material and secures the sheet of material to the outer peripheral surface of the flower pot.



5,577,346
MULTI-ZONE MOLTEN-METAL HYDROGEN AND FUEL GAS GENERATION PROCESS

Donald P. Malone, Grayson, Ky., assignor to Ashland Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 51,753, Apr. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 939,533, Sep. 1, 1992, abandoned, which is a continuation of Ser. No. 763,097, Sep. 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 542,234, Jun. 21, 1990, abandoned. This application Apr. 13, 1995, Ser. No. 421,102
Int. Cl.[6] C10J 3/06
U.S. Cl. 48—197 R 6 Claims



1. A process for generating both a substantially pure hydrogen stream at a pressure in the range of 1 to 200 atmospheres and a fuel gas stream, said process comprising;

(a) introducing into a first molten metal bath at 1200° to 2550° C. (2192°–4532° F.) in a first zone a carbonaceous first feed to maintain 1–5 wt % dissolved carbon in said first molten metal bath;

(b) transferring at least a portion of said first molten metal bath to a second molten metal bath in a second zone; maintaining the temperature in said second metal bath at least 150° C. (270° F.) higher than said first molten metal bath, and maintaining both the temperature and reducing the carbon content of said second molten metal bath by adding a controlled amount of molecular oxygen to oxidize carbon in said second molten metal bath and to produce said fuel gas stream;

(c) transferring at least a portion of molten material from said second molten metal bath to a third molten metal bath in a third zone, maintaining said third molten metal bath to have about 1–5 wt % carbon content and a temperature at least 50° C. (90° F.) higher than said first molten metal bath by adding a pure hydrocarbon second feed to said third zone whereby substantially pure hydrogen gas is generated within said third zone; and

(d) recycling in a closed loop at least a portion of said third molten metal bath back to said first molten metal bath;

(e) maintaining the total amount of molten material transferred from said first zone to said second zone and back to said first zone at 25 to 5000 kg molten metal per kg of total feed comprising said carbonaceous first feed and said pure hydrocarbon second feed;

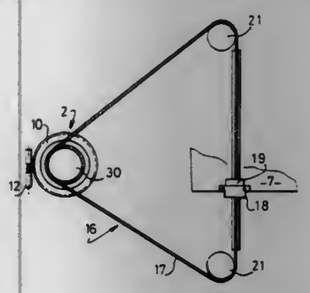
(f) adding about 1–2 mols oxygen to said second zone per mol of carbon in the first feed; and

(g) maintaining the carbon content above about 1% by weight in all of said molten metal baths.

5,577,347
SAFETY DEVICE FOR ELECTRIC WINDOW OPENERS

Robert J. Heckel, Cormeilles; Enrico Fin, Paris; Achim R. Gier, Garches, and Pascal Bonduel, Sully S/Loire, all of France, assignors to Rockwell Body and Chassis System, France en abrege, France

Filed Jul. 2, 1993, Ser. No. 87,836
Claims priority, application France, Jul. 10, 1992, 92 08619
Int. Cl.[6] E05F 15/02
U.S. Cl. 49—28 12 Claims



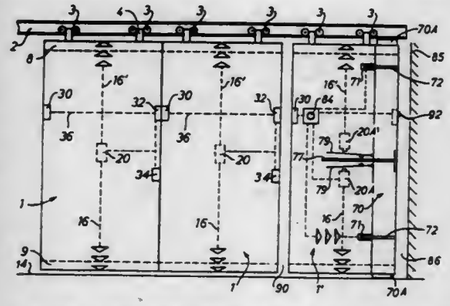
1. In a safety device for a vehicular electric opener having a movable member, a motorized reduction gear having an output gear, a kinematic chain for coupling said movable member to said output gear, and exclusively mechanical means for automatically interrupting said kinematic drive chain from said movable member when said movable member encounters an inhibiting force which opposes travel of said movable member, thereby causing said movable member to cease travelling the improvement comprising:

coupling means coupling a driving member of said kinematic chain and a driven member of said kinematic chain, said coupling means providing a rigid drive link between said driving member and said driven member so long as said inhibiting force is not present.

5,577,348
PARTITION WALL WITH SLIDING TERMINATION PANEL

Otto Keller, Meisterschwanden, Switzerland, assignor to Rosconi AG, Villmergen, Switzerland

Continuation-in-part of Ser. No. 246,821, May 20, 1994, Pat. No. 5,471,791. This application Jul. 20, 1995, Ser. No. 504,429
Claims priority, application Switzerland, May 25, 1993, 1570/93; Feb. 3, 1995, 308/95
Int. Cl.[6] E06B 7/28
U.S. Cl. 49—317 21 Claims

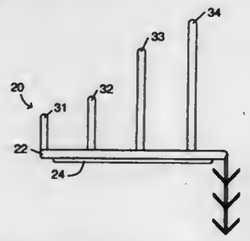


1. A wall element for a mobile partition wall adapted to be arranged in a room having a wall, said wall element comprising a wall element body having first and second side edges and top and bottom edges, a pneumatic coupling arranged at said first side edge, a termination panel arranged at said second side edge and movably connected to said wall element body to be laterally slidable relative thereto, a manually actuatable pneumatic control valve, at least one horizontally effective pneumatic stroke device mechanically connected between said wall element body and said termination panel and pneumatically connected through said control valve to said pneumatic coupling, and an extension limit valve arranged at a laterally outer side edge of said termination panel so as to be actuated by contact with the room wall, wherein said control valve has a pneumatic switching characteristic so that a compressed air flow can pass from said pneumatic coupling to said pneumatic stroke device only when said control valve is actuated.

5,577,349
APPARATUS FOR FORMING SEALING AROUND A DOOR

Robert D. Rissone, 134 Norcrest Dr., Rochester, N.Y. 14617

Filed Jun. 10, 1994, Ser. No. 258,528
Int. Cl.[6] E06B 7/16
U.S. Cl. 49—495.1 8 Claims



1. A multi-finger smoke and fire seal system sealing between a door and surrounding frame, the frame including a stop and a rabbet surrounding strike and hinge sides of the door, the seal system comprising:

a first multi-finger seal portion at least a portion of which is disposed on a lock jamb adjacent the strike side of the door, said first seal portion including a base affixed upon the rabbet

on the lock jamb and a plurality of flexible fingers extending therefrom, said fingers including first, second, and third fingers extending from said base, said first finger having a length less than said second and third fingers, and said third finger having a length greater than said first and second fingers, wherein said third finger is located closest to the stop on the lock jamb and said first finger is disposed farthest from the stop so that said first finger is first contacted and bent by the door toward said second finger when the door is being closed; and

a second multi-finger seal portion disposed on a hinge jamb adjacent the hinge side of the door, said second seal portion including a base attached upon the stop of the hinge jamb so that the base of the second seal portion is arranged substantially perpendicular to the base of the first seal portion, said second seal portion further including first, second, and third flexible fingers extending from said second seal portion base with the first finger of the second seal portion being the shortest of the three and located farthest from the rabbet of the hinge jamb and the third finger of the second seal portion being the longest of the three and located on the stop closest to the rabbet of the hinge jamb so that the hinge side of the door first contacts and bends the first finger of the second seal portion toward the second finger of the second seal portion when the door is being closed.

5,577,350

AUDITORIUM

Brian Brisbin; Felim McCaffrey, and Peter Sheffield, all of Toronto, Canada, assignors to Musicdome Ventures, Inc., Encino, Calif.

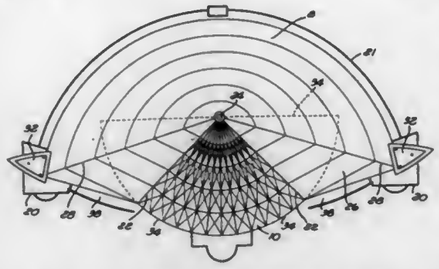
PCT No. PCT/CA93/00237, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO93/25777, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 10, 1993, Ser. No. 351,368

Claims priority, application United Kingdom, Jun. 10, 1992, 921281

Int. Cl.[6] E04B *7/16*; E04H *3/12*

U.S. Cl. 52—6 **2 Claims**



1. An auditorium, comprising an amphitheatre having a seating area only partially surrounding a stage, a first fixed roof structure covering a majority of the amphitheatre except for a segmental area above the stage, and second movable roof structure of segmental form movable between a first position in which it closes said segmental area, and a second position lapping the first roof structure and leaving said segmental area open, said movable roof structure comprising segmental leaves rotatable in opposite directions about a common pivotal axis between said first closed position in which the leaves abut and said second open position in which they underlay the fixed room structure, the first and second roof structures both being part-spherical shells, characterized in that the fixed roof structure is supported only at its periphery, and the movable roof structure is supported at its periphery and by a connection to the fixed roof structure on said common pivotal axis, in that a vertical axis of a first virtual sphere containing the shell forming the fixed roof structure passes through the stage, and in that a vertical axis of a second virtual sphere containing the shell forming the movable roof structure coincides with said common pivotal axis and is located horizontally spaced from the stage and passes through the seating area of the amphitheatre, intermediate between the axis of the first virtual sphere and the periphery of the fixed roof structure.

5,577,351

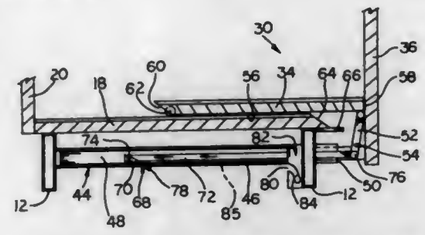
SLIDE OUT ROOM WITH FLUSH FLOOR

James E. Dewald, Jr.; Martin P. McManus, and Patrick W. McManus, all of 1023 W. Eighth St., P.O. Box 703, Mishawaka, Ind. 46544

Filed Feb. 28, 1995, Ser. No. 396,113

Int. Cl.[6] E04B *1/344*

U.S. Cl. 52—67 **15 Claims**



1. Mobile living quarters comprising a frame, a main floor supported by said frame, means extending from said main floor to define with said main floor a main living area, a retractable room mounted for movement from a retracted position retracted into the main living area to an extended position extended from said main living area to provide an auxiliary living area, said retractable room having walls and a movable floor unattached to the walls of the retractable room and movable along said main floor with the walls of the retractable room and then movable relative to said walls of the retractable room from a sliding position sliding upon said main floor to a flush position substantially flush with said main floor when the retractable room is in the extended position, and linkage means mounted on said frame and engaging said movable floor for moving the latter relative to said walls of the retractable room from said sliding position to said flush position as said retractable room is moved into the extended position and from said flush position to said sliding position as the retractable room is moved away from the extended position.

5,577,352

COMPOSITE FRAME MEMBER

Larry M. Fisher, 2316 Piedmont Ridge Ct., Marietta, Ga. 30062

Filed May 17, 1995, Ser. No. 443,209

Int. Cl.[6] E04B *1/34*

U.S. Cl. 52—74 **10 Claims**

1. A composite frame member to which a cover sheet is attached by a plurality of piercing members, the composite frame member comprising:

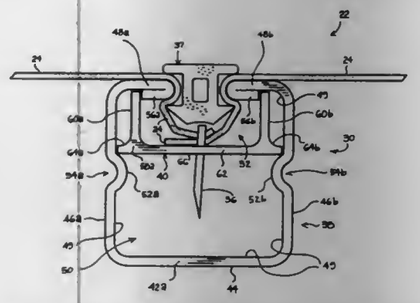
a longitudinal extending external member,

wherein said external member includes an internal surface that at least partially bounds and defines a longitudinally extending internal cavity,

wherein said external member further defines a longitudinally extending opening that is configured to receive at least a portion of the cover sheet and the plurality of piercing members, and

wherein said external member is constructed of a first material having a first hardness; and

a longitudinally extending internal member disposed within said internal cavity and structurally reinforcing said external member,



wherein said internal member is readily accessible through said opening and is constructed and arranged to engage the plurality of piercing members in a manner that attaches the cover sheet to said internal member,

wherein said internal member is constructed of a second material that is distinct from said first material and has a second hardness that is less than said first hardness, whereby said external member is distinct from said internal member,

wherein said internal member includes

a longitudinally extending first member,

a longitudinally extending second member extending away from said first member, and

a longitudinally extending third member also extending away from said first member, and

wherein a longitudinally extending channel that is readily accessible through said opening is defined between said first member, said second member, and said third member.

5,577,353

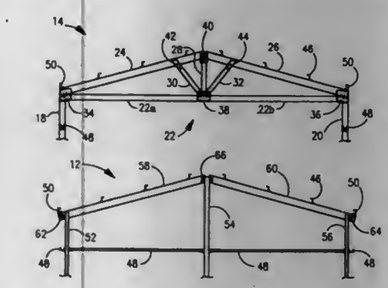
STEEL FRAME BUILDING SYSTEM AND TRUSS ASSEMBLY FOR USE THEREIN

William G. Simpson, P.O. Box 87, Columbus, Kans. 66725

Filed Jan. 27, 1995, Ser. No. 379,135

Int. Cl.[6] E04C *3/04*; E04B *7/02*

U.S. Cl. 52—92.2 **19 Claims**



1. A steel frame building system, for use in a building, of the type having multiple steel frames spaced along the length of the building and constructed from a plurality of elongated steel members, the improvement wherein each steel member has a longitudinal axis, opposing ends lying in respective planes substantially perpendicular to said longitudinal axis, and a hole pattern near each end comprising at least a pair of holes with each hole of each hole pair lying on an opposite side of said longitudinal axis and lying along a line substantially perpendicular to said longitudinal axis, and further wherein at least one of the frames is a truss frame comprising:

a substantially vertically oriented first column comprising a steel member which has a lower end and an upper end;

a substantially vertically oriented second column comprising a steel member which has a lower end and an upper end;

a substantially horizontally oriented bottom chord having a center and comprising at least one steel member which has a first end closely adjacent to the upper end of the first column steel member and a second end closely adjacent to the upper end of the second column steel member;

a first top chord comprising a steel member which has a lower end closely adjacent to the upper end of the first column steel member and the first end of said at least one bottom chord steel member, and which further has an upper end positioned substantially vertically above the center of the bottom chord;

a second top chord comprising a steel member which has a lower end closely adjacent to the upper end of the second column steel member and the second end of said at least one bottom chord steel member, and which further has an upper end closely adjacent to the upper end of the first top chord steel member;

at least one brace comprising at least one steel member fixedly connected between the top chords and the bottom chord;

a first haunch connecting plate having a first haunch hole pattern and positioned such that holes of the hole pattern near the lower end of the first top chord steel member, holes of the hole pattern near the first end of said at least one bottom chord steel member, and holes of the hole pattern near the upper end of the first column steel member are juxtaposed with corresponding holes of the first haunch hole pattern, such juxtaposed holes being hereafter referred to as first haunch juxtaposed holes;

a plurality of first haunch fasteners received through respective first haunch juxtaposed holes so as to fixedly connect the first haunch connecting plate to the first top chord steel member near its lower end, said at least one bottom chord steel member near its first end, and the first column steel member near its upper end;

a second haunch connecting plate having a second haunch hole pattern and positioned such that holes of the hole pattern near the lower end of the second top chord steel member, holes of the hole pattern near the second end of said at least one bottom chord steel member, and holes of the hole pattern near the upper end of the second column steel member are juxtaposed with corresponding holes of the second haunch hole pattern, such juxtaposed holes being hereafter referred to as second haunch juxtaposed holes;

a plurality of second haunch fasteners received through respective second haunch juxtaposed holes so as to fixedly connect the second haunch connecting plate to the second top chord steel member near its lower end, said at least one bottom chord steel member near its second end, and the second column steel member near its upper end;

a peak connecting plate having a peak hole pattern and positioned such that holes of the hole pattern near the upper end of the first top chord steel member and holes of the hole pattern near the upper end of the second top chord steel member are juxtaposed with holes of the peak hole pattern, such juxtaposed holes being hereafter referred to peak juxtaposed holes;

a plurality of peak fasteners received through respective peak juxtaposed holes so as to fixedly connect the peak connecting plate to the first top chord steel member near its upper end and the second top chord steel member near its upper end; and

wherein each of the connecting plates provides the only structural connection between steel members connected thereby.

5,577,354

EAVE TRIM SYSTEM

David A. Van Doren, Hays, Kans., assignor to Waffle-Crete International, Inc., Hays, Kans.

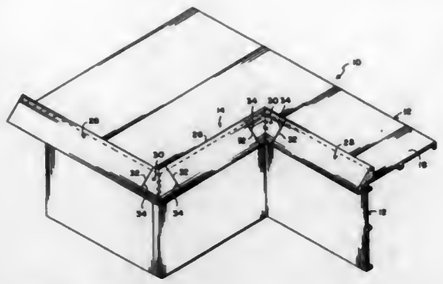
Filed Aug. 30, 1994, Ser. No. 298,057

Int. Cl.[6] E04C *1/39*; E04D *13/15*

U.S. Cl. 52—94 **7 Claims**

1. A precast roof trim system, comprising:

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a plurality of linear edge segments adapted to be installed on the side edges of a roof; and

a plurality of L-shaped corner segments, each said corner segment adapted to be installed on a corner of the roof between a spaced pair of said edge segments,

each said corner segment having a first and second free end engaging a free end of one of said spaced pair of edge segments,

said segments having a first installation position and a second installation position, and each including a roof-engaging portion and an extension integrally joined to said roof-engaging portion,

said roof-engaging portion of each segment having a first surface and a second surface, said first surface engageable with the roof when said segment is in said first position, said second surface being transverse to said first surface and engageable with the roof when said segment is in said second position,

said extension overhanging the roof when its associated segment is in said first position and extending upwardly from the roof when its associated segment is in said second position.

5,577,355

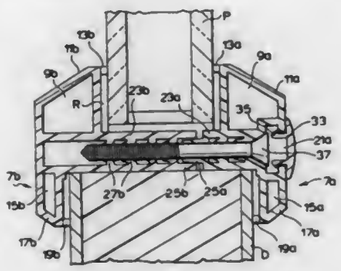
TWO PIECE WINDOW FRAME GENERATING FROM A SINGLE EXTRUSION

Louie Leonelli, Woodbridge, Canada, assignor to Pillar Plastics Limited, Woodbridge, Canada

Filed Mar. 20, 1995, Ser. No. 406,581

Int. Cl.[6] E06B *3/964*

U.S. Cl. 52—204.62 **5 Claims**



1. A window frame comprising first and second frame pieces having first and second bridge parts generated from a single extrusion and then separated from one another between said bridge parts and said first frame piece having a side recess aligned with said first bridge part to receive a fastener for mechanically securing said frame pieces to one another from opposite sides of a window pane through said bridge parts and said bridge parts having male and female end surfaces which fit with one another in forming said window frame.

5,577,356

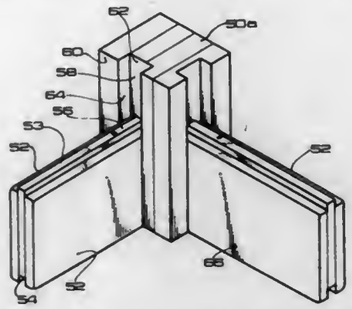
PRE-CUT BUILDING METHOD AND STRUCTURE

John L. Hubbard, Mercer Island, and Russell T. Barney, Redmond, both of Wash., assignors to Panabode Cedar Homes, Inc., Renton, Wash.

Filed Mar. 25, 1994, Ser. No. 218,123

Int. Cl.[6] E04B *1/10*

U.S. Cl. 52—233 **20 Claims**



19. A building structure made from pre-cut wood building components assembled at a building site, said structure comprising:

a. a base structure having column locations and wall locations, said wall locations comprising at least first and second wall locations, each of which has first and second ends, the first ends of each of said first and second wall locations being adjacent to one another and angled at an acute wall angle relative to one another at a corner location, said base structure having a first column location at said corner location, and two second column locations at, respectively, the two second ends of the wall locations;

b. a plurality of wood columns, each having in cross section at least one vertical slot of a predetermined width and depth extending along the length of that column, and some of said columns having at least two of said slots, said columns comprising at least one corner column member which has two vertical slots, each facing outwardly from the first column at an acute slot angle equal to said acute angle, and two second column members at said two second column locations, respectively, said columns being vertically positioned at related column locations and secured to said base structure, with at least some of said columns comprising pairs of columns defining end location portions of related wall locations and with the columns of each of said pair having aligned slots facing each other at said end locations;

c. a plurality of wood wall timbers, each having side, upper, lower and end surfaces, each of said timbers having at least one end portion with a width dimension matching the width of a related slot of a related column so as to fit within said related slot, and some of said timbers having two such end portions, fitting within related slots of two related columns, each of said timbers having a predetermined lengthwise dimension, a plurality of groups of said timbers, being sized and designated each for a related wall location, the timbers of each group being positioned in said slots of their related pair of columns with the timbers in each group being stacked one on top of the other to form the related wall section of said structure, said timbers comprising first and second sets of timbers sized and configured to be placed at said first and second wall locations, respectively;

d. the timbers of each group being fixedly connected to the related columns and fixedly connected to one another at lengthwise locations along the length of each timber in a manner to resist vertical and angular relative movement between the timbers in each set and the columns attached thereto, and so that relative movement of adjacent timbers in a direction parallel to the length of the timbers is resisted,

whereby lateral forces on said structure that are directed perpendicularly against said first wall section are transmitted at least partially into said first corner column, into said second wall section and into the second column of the second wall section, with angular movement of said corner column tending to move the timbers of the second wall section relative to one another along a line parallel to lengthwise axes of the timbers of the second wall section is resisted by:

i) connections between the corner column and the timber end portions adjacent thereto;

ii) connections between the timbers of the second wall section;

iii) connections between the second column of the second wall section and the end portions of the timbers connected thereto.

5,577,357

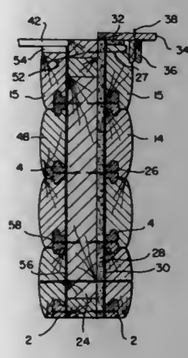
HALF LOG SIDING MOUNTING SYSTEM

Ken Civelli, 56 Underhill Ave. 2A, White Plains, N.Y. 10604

Filed Jul. 10, 1995, Ser. No. 499,818

Int. Cl.[6] E04B *1/10*

U.S. Cl. 52—233 **10 Claims**



1. In a building wall structure, a siding system covering an expanse of a wall of said structure, said siding system comprising vertical rows of horizontally disposed elongated siding pieces, a siding piece in any given row being fixed against said wall with a mounting strip extending longitudinally coextensive with the siding piece and having a top locking tongue received loosely in a lower face groove of said siding piece, said mounting strip having a bottom locking tongue received loosely in an upper face groove of a siding piece in a row next below said given row and said mounting strip fixing said next below row siding piece against said wall, said given row siding piece having a front facing side provided with generally straight lowermost edge that lies in abutment with a generally straight uppermost edge of a front facing side of said next below row siding piece, the lower face groove of said given row siding piece and the upper face groove of said next below row siding piece being located rearwardly of the respective front facing sides of said given row siding piece and next below row siding piece whereby said mounting strip is fully concealed from view behind the said respective front facing sides.

5,577,358

SEPARATION WALL FOR DIVIDING A CABIN IN A PASSENGER AIRCRAFT

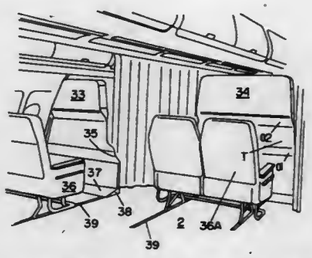
Lutz Franke, Hamburg, Germany, assignor to Daimler-Benz Aerospace Airbus GmbH, Hamburg, Germany

Filed Oct. 18, 1995, Ser. No. 544,711

Claims priority, application Germany, Oct. 18, 1994, 44 37 133.0

Int. Cl.[6] B64D *11/00*

U.S. Cl. 52—238.1 **15 Claims**



1. A separation wall for a cabin in a passenger aircraft, comprising a first wall element having at least one horizontally extending first off-set positioned approximately midway between upper and lower horizontal edges of said first wall element, a second wall element having at least one horizontally extending second off-set positioned approximately midway between upper and lower horizontal edges of said second wall element, each of said first and second wall elements comprising an overlap area, and means connecting said overlap areas to each other so that said first and second off-sets extend above and below said overlap area, said first and second wall elements having lateral edges each with a set back, said set-back increasing upwardly.

5,577,359

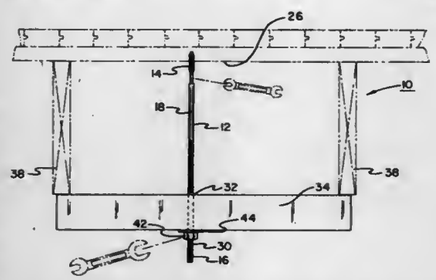
FLOOR SQUEAK ELIMINATOR

John D. McClanahan, 6536 Williamsburg Blvd., Arlington, Va. 22213

Filed Jun. 26, 1995, Ser. No. 494,400

Int. Cl.[6] E04G *23/00*

U.S. Cl. 52—291 **1 Claim**



1. A new and improved floor squeak eliminator system, comprising, in combination:

a cylindrical rod having an upper end and a lower end and an intermediate extent therebetween;

a threaded exterior surface formed into the upper end of the rod, with an extreme upper end being formed with a point for penetrating into an existing subflooring from a lowermost surface thereof;

a square section formed into the rod adjacent to its upper end, the square section being of reduced area and adjacent to an upper edge of the rod immediately beneath an upper threaded

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section, the square section capable of being engaged by a wrench for allowing penetration of the extreme upper end of the rod into the lowermost surface of the squeaking floor;

the lower end of the cylindrical rod having a threaded exterior surface beginning where the lower end and intermediate extent interconnect, the threaded exterior surface of the lower end being positionable through an aperture in a support plate, the support plate being mounted beneath the area of the floor for having its squeak removed, the support plate being capable of being in contact with an existing floor joist of the subflooring when the rod is secured to the subflooring;

the existing floor joist of the subflooring allow coupling of upper edges of the support plate with the lower surface of the floor to be fixed; and

a nut threadably received on a lower exterior surface of the rod with a washer thereabove for contacting the lower surface of the support plate, the nut being rotatable for axial movement upwardly and downwardly, the nut being rotated and capable of pulling the squeaking floor downwardly for elimination of a squeak.

5,577,360

SLATE MOUNTING SYSTEM

Alden T. Gibbs, 158 Conduit St., Annapolis, Md. 21401

Continuation-in-part of Ser. No. 4,962, Jan. 15, 1993. This application Sep. 7, 1994, Ser. No. 301,789

Int. Cl.[6] E04D *1/00*

U.S. Cl. 52—518 **26 Claims**



1. A mounting system comprising a plurality of spaced parallel mounting tracks, each of said mounting tracks having a base portion for being mounted against a framework of a structure, each of said tracks having fastener accommodating structure, a plurality of rows of mounting panels, each of said rows of said mounting panels being associated with a respective one of said tracks, each of said panels having two spaced side edges interconnected by an upper edge and a lower edge, a slot formed inwardly at each of said side edges, a fastener mounted in each of said slots, each of said fasteners being a spring clip having a first leg mounted over a respective one of said panels and a second leg mounted to a respective one of said tracks, said second leg extending downwardly in a direction from said slot toward said lower edge of said panel, and said second leg being disposed between said base portion and said fastener accommodating structure of said track.

5,577,361

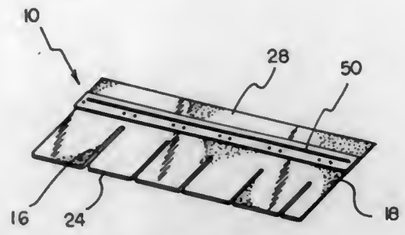
ROOFING SHINGLE

Joseph F. Grabek, Jr., Road 1 Box 472, Jeffersonville, N.Y. 12748

Filed Jan. 16, 1996, Ser. No. 585,942

Int. Cl.[6] E04D *1/34*

U.S. Cl. 52—543 **4 Claims**



1. A roofing shingle comprising:

a weather resistant strip having an exterior side and an interior side, the weather resistant strip having a top portion and a plurality of tabs being divided by a plurality of slots,

each tab extending longitudinally between at least two slots,

each tab having substantially equal length and widths, one tab of said plurality of tabs having a width half the width of the other tabs,

each slot extending from an edge of each tab for terminating a predetermined distance from the edge;

an elongated metallic strip having a face side and an underside;

said underside being attached to the exterior side of said weather resistant strip,

said metallic strip being attached between the top portion and above each slot,

said metallic strip having a length equal to the length of said weather resistant strip, said metallic strip being 20 gauge and having a width between about 1¼ to 1½ inches,

said face side of said metallic strip having a plurality of circular indentations longitudinally aligned thereon and proportionately spaced along the length thereof,

said indentations being capable of allowing a nail to pierce said metallic strip for fastening the elongated strip to a roof surface when the strip being in an installed condition; and

an elongated tar strip being attached to the face side of the metallic strip.

5,577,362

MODULE CONSTRUCTION METHOD IN A STEEL STRUCTURE BUILDING ZONE

Kazukuni Yamashita; Shigetoshi Hikizi; Tamotsu Takano; Naomichi Ohama; Yoshiyuki Tanaka; Tominari Tsukiyama; Tsukasa Takahashi; Mitsumasa Hori, and Hideyuki Yoshioka, all of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP94/00777, § 371 Date Jan. 12, 1995, § 102(e) Date Jan. 12, 1995, PCT Pub. No. WO94/27003, PCT Pub. Date Nov. 24, 1994

PCT Filed May 13, 1994, Ser. No. 367,249

Claims priority, application Japan, May 14, 1993, 5-113072; Jan. 12, 1994, 6-001603

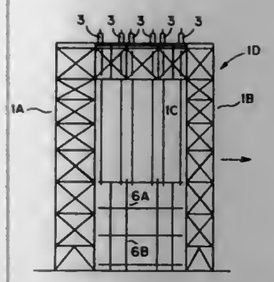
Int. Cl.[6] E04B *1/34*

U.S. Cl. 52—745.03 **5 Claims**

2. In a construction method for building a steel structure, a module construction method in a steel structure building zone, comprising the steps of:

erecting two truss column assemblies formed by arranging and joining a plurality of pillars;

installing a truss beam assembly between the tops of said two truss column assemblies erected in parallel to construct a gate-shaped truss assembly;



installing said gate-shaped truss assemblies in opposition to fit in with the shape of said steel structure by installing an upper surface of said two truss column assemblies at a same height as an upper surface of said truss beam assembly;

lifting a permanent support beam by using a first elevating device installed at the upper part at the side of said gate-shaped truss assembly installed in opposition and joining both sides of said permanent support beam to the upper part at the side of said gate-shaped truss assembly; and

installing modules in the construction zone formed between said gate-shaped truss assemblies by repeating a process in which, among modules to be installed in the construction zone formed between said gate-shaped truss assemblies installed in opposition, a first module to be located at a high place is lifted to a required height by using a second elevating device installed at the upper part at the side of said gate-shaped truss assembly, and a second module is carried in just under said first module to integrate both modules.

5,577,363

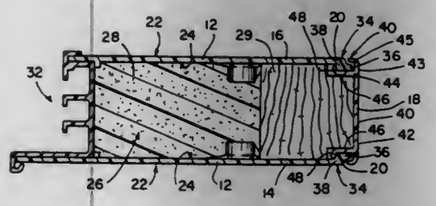
STRUCTURAL PANEL

James R. Tate, Watertown, Wis.; Allen E. Lee, Brookings, S. Dak.; Bryan P. Zacher, Brookings, S. Dak., and Vernon D. Olson, Brookings, S. Dak., assignors to Menasha Corporation, Neenah, Wis.

Filed Feb. 23, 1995, Ser. No. 392,574

Int. Cl.[6] E04C *2/34;* **E06B** *7/16*

U.S. Cl. 52—784.15 **7 Claims**



1. A structural panel comprising:

(a) a pair of opposed, congruent sheets spaced apart by a frame which includes a beam located longitudinally along an edge of each of the sheets, each sheet having an outer side and an inner side facing the inner side of the other sheet, the sheets defining a separation space between them;

(b) wherein the edge of each of the sheets has an inwardly projecting zig-zag defining a ledge on the outer side of the sheet and a ridge on the inner side of the sheet;

(c) wherein along a longitudinal edge of the beam a flange extends from the beam, the flange having a connected leg which is an extension of said beam and is outward of said ledge and having a free leg overlying said ledge and, spaced apart from the flange, a hook projects from the beam into the separation space, the hook including a post projecting inwardly from the beam inward of said ledge and a cross member projecting outwardly from the post inward of said ridge toward the inner side of the sheet; and

(d) wherein the sheet and the beam are adapted so that the ledge fits closely between the flange and the hook thereby establishing a mechanical engagement which restrains movement between the edge and the beam in two mutually orthogonal directions.

5,577,364

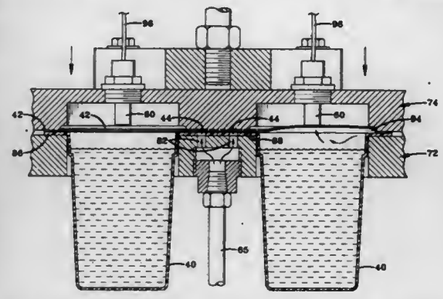
ON-LINE CONTAINER AND SEAL INTEGRITY TEST SYSTEM

Jianjun Wang, Columbus; Billy D. Cornelius, Powell, and Ralph A. Gygax, Westerville, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Nov. 27, 1995, Ser. No. 562,670

Int. Cl.[6] B65B *57/04*

U.S. Cl. 53—53 **15 Claims**



6. A method for testing the integrity of a plurality of packages, each said package comprising a container having an opening and a lid stock material covering said opening and sealed to said container, said method comprising the steps of: providing an apparatus in which to hold said packages to conduct said testing, said apparatus comprising: a fixture having a first floor and a second floor; an actuator in association with at least one of said floors to move one of said floors into contact with the other of said floors; means in association with said first floor for receiving said packages in such a manner that a rim of the container of each package rests on an upper surface of said first floor; said second floor having an air track in a bottom surface thereof to create a void pattern for air distribution under said lid stock material at a seal between the container and lid stock material of each said package; an air source for providing air to said lid stock material; and a sensor positioned in the fixture to detect movement of the lid stock material; arranging said packages into said first floor of said apparatus, such that said packages rest in said means for receiving in said first floor; moving said second floor of said apparatus into contact with the lid stock material of said package as said package rests in said first floor; injecting air into said air track under said lid stock material to cause said lid stock material to rise at corresponding locations into said air tracks; detecting movement of lid stock material with said sensors; and employing a computer to monitor movement of the lid stock material detected by said sensors, and to control said actuator, air source and the testing process.

5,577,365

CARTON ENGAGING ASSEMBLY AND METHOD

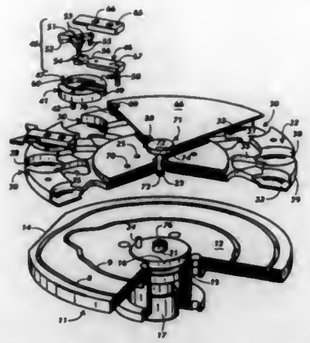
Urs Reuteler, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Jul. 17, 1995, Ser. No. 503,293

Int. Cl.[6] B65B *21/00*

U.S. Cl. 53—398 **20 Claims**

1. In an article packaging machine of the type comprising a conveyor for moving an article group along a path of travel and for



packaging said article group into a carton as said article group is moved along the path of travel, a carton flap engaging assembly comprising:

(a) a stationary cam disk having a cam surface, and defining in said cam surface a first cam track and a second cam track spaced from said first cam track;

(b) a rotatable drive plate having an outer edge and disposed adjacent said cam disk, said drive plate defining a recess adjacent said outer edge;

(c) an actuating mechanism carried by said drive plate, said actuating mechanism comprising a planetary disk received in said recess of said drive plate, and carton flap engaging means carried by said planetary disk for engaging said carton flap said planetary disk being rotatable within said recess of said drive plate in response to the rotation of said drive plate for tracking movement of the carton along its path of travel so as to maintain said carton flap engaging means substantially perpendicular to the carton as said carton flap engaging means engages the carton; and

(d) drive means operatively connected to said drive plate for selectively rotating said drive plate.

5,577,366

METHOD OF WRAPPING ELONGATE ARTICLES AND PRODUCT MADE

Peter Higgins, Warwickshire, United Kingdom, assignor to Carrs Paper Limited, West Midlands, United Kingdom

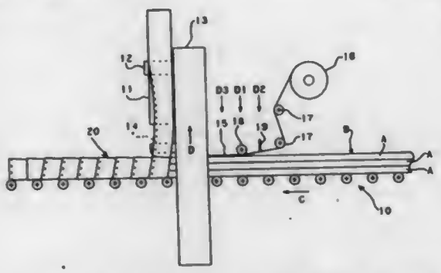
PCT No. PCT/GB93/02229, § 371 Date May 1, 1995, § 102(e) Date May 1, 1995, PCT Pub. No. WO94/10042, PCT Pub. Date May 11, 1994

PCT Filed Oct. 29, 1993, Ser. No. 428,226

Claims priority, application United Kingdom, Oct. 29, 1992, 9222744

Int. Cl.[6] B65B *13/02;61/18;* **B65D** *65/34*

U.S. Cl. 53—399 **8 Claims**



1. A method of wrapping an elongate article by forming a winding thereon of at least one strip of flexible wrapping material which has a transverse width that is narrow compared with the length of said article and is wound helically around said article so that successive turns of the wrapping material overlap one another along the length of the article wherein the tear member is applied to the article simultaneously with the wrapping process by passing the article successively through a station at which the tear member is applied and a station at which the wrapping is applied, thereby forming a package comprising said elongate article and said wrapping material, including the step of laying between the wrapping material and the elongate article a longitudinally extending tear member which extends over substantially the entire length of the article and in contact with successive turns of the wrapping material with an end portion of the tear member exposed externally of the package and thereby available to be pulled in a direction away from the elongate article so as thereby to tear through the successive turns of the wrapping material and along substantially the entire length of the elongate article, wherein the tear member comprises a narrow strip of appropriate material having two opposed faces and an adhesive substance on at least one of said faces thereof whereby the tear member becomes attached relative to said elongate article so as to restrain it against lengthwise withdrawal from the package when opening is attempted and wherein said adhesive-coated tear member is applied by means of a pressure roller so that as the article is advanced towards the wrapping station, the tear strip is drawn off from a supply thereof by virtue of advancement of the article during the wrapping process.

5,577,367

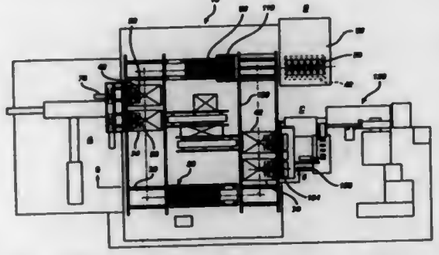
APPARATUS AND METHOD FOR STERILIZATION AND SECONDARY PACKAGING

Richard W. Abrams, Jacksonville, Fla.; Hiroshi Matsumoto, Saitama-Pref., Japan; Daniel T. Wang, Jacksonville, and Kenneth K. Pricer, Switzerland, both of Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Continuation-in-part of Ser. No. 257,788, Jun. 10, 1994, Pat. No. 5,488,815. This application May 1, 1995, Ser. No. 431,553

Int. Cl.[6] A61L *2/00;* **B65B** *35/30;35/56;55/12*

U.S. Cl. 53—425 **42 Claims**



22. A method for the sterilization of arrays of interconnected blister packages each containing a contact lens in a sterile environment; said method comprising:

(a) transporting a plurality of racks between a series of workstations;

(b) a plurality of trays for receiving said arrays of blister packages being selectively loaded into and unloaded from said racks;

(c) positioning first and second of said racks at a first said workstation, said first rack being empty and said second rack containing a plurality of said trays in an empty condition;

(d) unloading at said first workstation individual of said empty trays in predetermined sequence from said second rack;

(e) filling at said first workstation each said unloaded empty tray with a plurality of said arrays advancing the array-filled tray into alignment with said empty first rack and loading each said tray into said first rack in predetermined sequence;

(f) advancing said tray-filled first rack towards a second said workstation comprising a sterilizing chamber;

(g) engaging said first rack at said second workstation for conveying said first rack into said sterilizing chamber, and withdrawing said rack from said sterilizing chamber subsequent to sterilizing of the arrays in said trays; and

(h) further advancing said first rack from said sterilizing workstation to a third workstation for unloading said trays from said first rack and removing the sterilized arrays of blister packages therefrom.

5,577,368

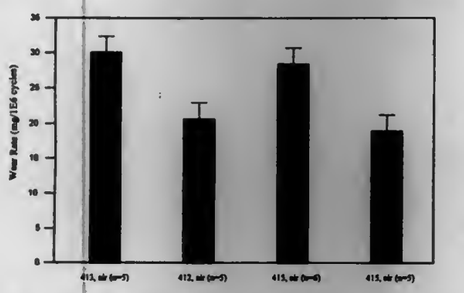
METHOD FOR IMPROVING WEAR RESISTANCE OF POLYMERIC BIOIMPLANTABLE COMPONENTS

John V. Hamilton, Foxborough; Mark A. Manasas, South Easton, and Timothy M. Flynn, Norton, all of Mass., assignors to Johnson & Johnson Professional, Inc., Raynham, Mass.

Filed Apr. 3, 1995, Ser. No. 415,733

Int. Cl.[6] B65B *31/02*

U.S. Cl. 53—432 **35 Claims**



26. A method for improving the wear resistance of a polymeric manufactured part, comprising the steps of:

providing one or more manufactured polymeric parts;

placing the parts in one or more sealable, gas impermeable packaging containers;

removing all or substantially all of the oxygen from within the packaging container;

pressurizing the packaging containers with a mixture of hydrogen gas and an inert gas at a pressure greater than about 1.5 atmospheres;

irradiating the pressurized containers and the polymeric parts for a period of time sufficient to sterilize the parts and to promote crosslinking within the polymer that forms the part;

aging the part within the atmosphere of the irradiated packaging container for a period of time sufficient for hydrogen atoms to recombine with free radicals within the part;

the part being characterized by improved resistance to wear and oxidation.

5,577,369

METHOD OF MAKING AND FILLING A MULTI-CHAMBER CONTAINER

Michael Becker, Palatine; Jim Chase, Grayslake; Christopher Papa, Naperville, and Jeff Jones, Antioch, all of Ill., assignors to Clintec Nutrition Company, Deerfield, Ill.

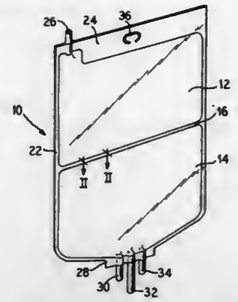
Division of Ser. No. 33,233, Mar. 16, 1993. This application Apr. 28, 1995, Ser. No. 430,476

Int. Cl.[6] B65B *29/10*

U.S. Cl. 53—474 **8 Claims**

1. A method for making a multi-chamber container, the method comprising the steps of:

providing a web of plastic film having a first continuously formed non-RF-responsive layer and a second continuously formed non-RF-responsive layer wherein the first layer and the second layer are continuously bonded to each other;



sealing opposing edges of the web of film to create an interior defined, at least in part, by an inner layer of the film; and

creating an inner seal defining at least two chambers by applying RF energy and causing a portion of opposing inner layers of the film to seal themselves.

5,577,370

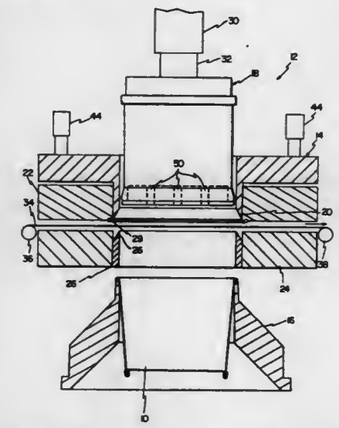
APPARATUS FOR SEALING A CONTAINER

Bernard W. Pajak, Princeton; Richard A. Kennedy, Basking Ridge, and Paul K. Bowers, Ledgewood, all of N.J., assignors to The Pillsbury Company, Minneapolis, Minn.

Continuation of Ser. No. 206,732, Mar. 7, 1994. This application Jul. 17, 1995, Ser. No. 503,193

Int. Cl.[6] B65B *51/10;7/28*

U.S. Cl. 53—478 **8 Claims**



1. An apparatus for applying a seal to a container comprising:

means for holding the container wherein an opening of the container is exposed;

a sealing head moveable in a linear direction between a withdrawn position and a sealing position in which the sealing head is positioned inside the container, the head aligned with the means for holding the container and of size to fit into the open end of the container in the sealing position, the sealing head including a first circumferential rim and a second circumferential rim;

means for moving a film membrane in a direction substantially perpendicular to the linear direction of the sealing head along a path positioned between the opening of the container and the withdrawn position of the sealing head;

a membrane holder positioned between the opening of the container and the withdrawn position of the sealing head, the membrane holder providing a cutting surface and having an opening defined therein substantially aligned with the sealing

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head along the linear direction and of size to allow passage of the sealing head therethrough;

a knife positioned between the opening of the container and the withdrawn position of the sealing head, the knife moveable in the linear direction between an open position and a cutting position in which the knife engages the cutting surface of the membrane holder thereby cutting the film membrane, the knife having an opening defined therein substantially aligned with the sealing head and the opening of the membrane holder along the linear direction and of size to allow passage of the sealing head therethrough;

means for moving the sealing head from the withdrawn position, through the membrane holder and the knife to the sealing position where the first rim seals the film membrane to the container along a first circumferential seal located inside the container and the second rim seals the film membrane to the container along a second circumferential seal located inside the container, the shape of the first and second rims allowing movement of air past the sealing head as the sealing head enters the container; and

means for moving the knife to the cutting position prior to the sealing head moving to the sealing position, the knife thereby abutting the engaging surface of the membrane holder and cutting the film membrane.

5,577,371

APPARATUS FOR HOOPING A PACKAGE

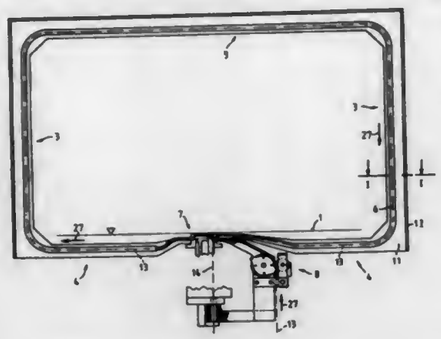
Georg Lang, Marktheidenfelder Strasse 2, 97855, Triefenstein, Germany; Berthold Buehrle, Ringstrasse 25, 89143, Blaubeuren, Germany, and Gerd Mosca, Im Muehlengrund 1, 74864, Fahrenbach, Germany

Filed Apr. 25, 1995, Ser. No. 428,727

Claims priority, application Germany, May 6, 1994, 44 16 013.5

Int. Cl.[6] B65B *13/04*

U.S. Cl. 53—589 **18 Claims**



1. Apparatus for hooping a package, comprising:

a conveyor which conveys the package in a conveying direction into a hooping position;

a band positionable into an end position in which the band is applied against the package and tensioned and forms a band loop defining a hooping plane extending in the conveying direction;

a band guide channel which forms a substantially rectangular frame surrounding the package when the package is in the hooping position, said band guide channel receiving the band and forming the band into a loop shape, the rectangular frame defining a frame plane intersecting the hooping plane at an acute angle along an intersection line located at a right angle to the conveying direction; and

a band binding head positioned adjacent to the rectangular frame, having a stationary device for holding fast and joining the ends of the band to form the band loop from the loop shape and for separating a portion of the band that forms the band loop from the oncoming band, and having a pivotable device, separate from and adjacent to said stationary device, for inserting the band into the band guide channel and for pulling back the band to place the band in the end position, and being mounted for pivoting about a pivot axis substantially coinciding with the intersection line, the pivotable device being located in the frame plane during the insertion of the band into the band guide channel and being pivotal into the hooping plane before or during the pulling-back of the band.

5,577,372

METHOD FOR FITTING A SADDLE ON THE BACK OF A HORSE

Pauli Grönberg, Koskitie 11, Fin-04300 Tuusula, Finland

PCT No. PCT/FI93/00357, § 371 Date Sep. 13, 1994, § 102(e) Date Sep. 13, 1994, PCT Pub. No. WO94/18115, PCT Pub. Date Aug. 18, 1994

PCT Filed Mar. 7, 1993, Ser. No. 302,812

Claims priority, application Finland, Feb. 1, 1993, 930437

Int. Cl.[6] B68C *1/12*

U.S. Cl. 54—66 **6 Claims**

1. A method for adapting a saddle (2) onto the back of a horse (1), in which method paddings (5') are adapted to fit between the saddle frame and the horse's back, characterized in that, in conjunction with the positioning of the saddle (2), said paddings (5') comprise substantially undeformable cushion paddings (5') conformant to the shape of the back of the horse (1) which are formed by a process of filling casting moulds (5) placed between the saddle frame and the back of the horse.

5,577,373

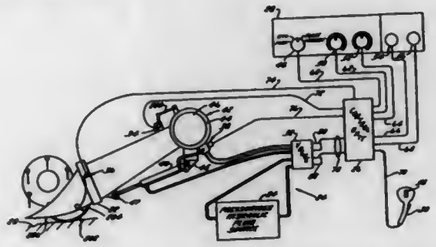
AGRICULTURAL VEHICLE INCLUDING A SYSTEM FOR AUTOMATICALLY MOVING AN IMPLEMENT AND IMPROVED GROUND HEIGHT SENSING TO A PREDETERMINED OPERATING POSITION

Dale W. Panousheck, Orion, and James M. Gessel, Geneseo, both of Ill., assignors to Case Corporation, Racine, Wis.

Continuation-in-part of Ser. No. 265,238, Jun. 24, 1994, Pat. No. 5,471,823. This application Jun. 14, 1995, Ser. No. 490,291

Int. Cl.[6] A01D *47/00;75/18*

U.S. Cl. 56—10.2 E **20 Claims**



1. A control system for controlling a positioner assembly for positioning an implement carried by an agricultural vehicle relative to a ground surface, the control system comprising:

at least three position transducers being supported by the implement at spaced apart locations, each position transducer being adapted to generate a distance signal representative of the distance to the ground surface; and

a control circuit configured to control the positioner assembly, the control circuit including a comparison circuit coupled to the transducers to select one of the plurality of distance signals generated by the position transducers which corresponds to the shortest sensed distance to the ground surface, wherein the control circuit controls the positioner assembly based upon the selected distance signal.

5,577,374

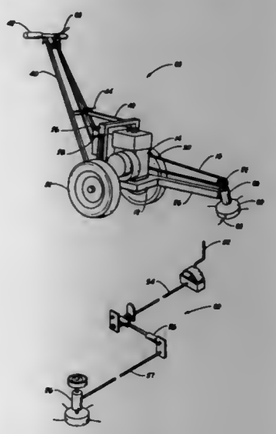
WHEEL MOUNTED STRING TRIMMER

Thomas G. Huston, 2420 Robin Rd., Ponca City, Okla. 74604

Filed Aug. 4, 1995, Ser. No. 511,534

Int. Cl.[6] A01D *34/67;34/84*

U.S. Cl. 56—12.1 **4 Claims**



1. A rotary string trimmer comprising:

(a) an engine mounted on a frame;

(b) a pair of wheels attached to said frame, each of said wheels being independently adjustable in height relative to said frame;

(c) a cutter head positioned forwardly of the left side of said frame and supported by a forwardly extending frame extension which is rigidly affixed to said frame, said cutter head being adjustable from a flat position to an angled position by virtue of a linkage including a rotatable shaft extending through said frame extension, said cutter head being adapted, when in a flat position, to rotate in a clockwise direction as viewed from above;

(d) drive means extending from an output shaft of said engine to said cutter head, said drive means including a centrifugal clutch adapted to engage said cutter head at a predetermined engine speed; and

(e) handle means extending rearwardly from said frame, the angle of said handle means relative to said frame being adjustable by selective fixed positioning of said handle relative to said frame.

5,577,375

LAWN DE-THATCHER

Andrew T. Tillison, Sr., Rte. 1, Box 36, Wellston, Okla. 74881

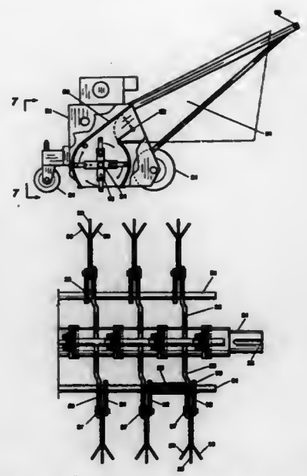
Filed Mar. 30, 1995, Ser. No. 413,596

Int. Cl.[6] A01D *34/47*

U.S. Cl. 56—17.5 **6 Claims**

1. A combination lawn mowing, de-thatching, mulching and gathering apparatus, designed to be moved by propulsion means mounted on said apparatus, comprising:

a housing having means to be movable over the lawn or field of grass, the housing extending transverse to the direction of travel and having a front end, a rear end, opposed right and left sides and opposed top and bottom;



a handle means attached to said housing for controlling said apparatus with control means mounted to said handle means;

a powering means mounted on said housing with control means to move said apparatus across the lawn or field of grass;

an elongated cylindrical horizontally positioned cutting assembly supported by said housing and rotatable about an axis, said cutting assembly comprising a rotatable shaft, a plurality of blade supports affixed to said shaft, disposable blade means mounted on said blade supports, said blade supports and said blade means being spaced longitudinally radially along said rotatable shaft in a predetermined pattern such as to cut a continuous swath as the rotatable shaft is rotated, said blade means including both mowing and de-thatching blades;

said plurality of blade support affixed to said rotatable shaft comprising four rows of longitudinally spaced blade supports along the length of said shaft and extending outward radially from said shaft, each of said four sets of longitudinally spaced blade supports being spaced equidistant radially about said axis of said rotatable shaft, and each of said longitudinally spaced individual blade supports being spaced equidistant from each other, and said blade supports on each of four sets of longitudinally spaced blade supports being offset such that they divide the space between said longitudinally positioned blade supports, each of said blade supports having a cylindrical pin at the radially outward end of said blade support, said pin axis being perpendicular to the blade support and parallel to said rotatable shaft axis, said pins providing the mounting means for said disposable blade means;

said disposable blade means comprising individual blades of rectangular shape with circular holes at one end for mounting on said blade support pins, and about which said blades may rotate, a cluster of said blades being mounted on each of said blade supports, said blade clusters comprising a center blade and inner blade, and an outer blade, said center blade extending radially outward from said blade support mounting pins of a length such that when rotating within the assembly its outer edge would reach and cut the thatch below the level of the grass, while said inner and outer blades are bent midway in their length outwardly from said straight center blade at opposing angles to said center blade, the edge of the bent portion of said blades cutting the grass as said cutting assembly rotates said disposable blade clusters forming an upside down Y shaped cutting blades and straight dethatching blades;

fastening means to maintain said disposable blade means on each of said blade support during operation, said fastening means allowing removal and replacement of said blade means from an entire row at one time;

an enclosure means in a generally cylindrical shape coaxial with and around the outer periphery of the cutting assembly and in close proximity to the outer cylindrical edge of the cutting

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assembly, with openings at the bottom and top of said enclosure means together with a means for controlling the top opening of said enclosure means, said enclosure means extending between and being supported by said housing sides; an elongated rearward shield member supported by said housing and extending between said housing sides, said rearward shield member extending tangentially from the top of the cylindrically shaped cutting assembly enclosure means to form the top of the lawn cuttings discharge opening;

a removable containment means supported by said handle means and said housing to receive and store the grass cuttings and lawn mulch; and means for rotating the cutting assembly.

5,577,376

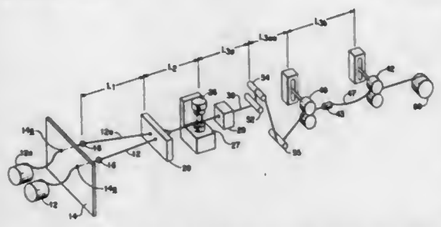
PROCESS AND APPARATUS FOR MAKING UNIFORM ALTERNATE PLY-TWISTED YARN AND PRODUCT

Robert W. McAllister, Wilmington, Del., and Steven K. Shibata, Salisbury, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 213,899, Mar. 16, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 460,771

Int. Cl.[6] D01H *5/00;7/46*

U.S. Cl. 57—293 **8 Claims**



1. A method for making an alternate twist plied yarn formed from a plurality of strands by advancing the strands at a predetermined rate under tension in a path adjacent to each other that includes the steps of twisting the strands with a twisting means in a predetermined manner as they advance along the path; ply twisting the twisted strands to form a first half-cycle length of ply-twisted strands; stopping the forward motion of the strands; bonding the ply-twisted strands to form a bond; stopping the twisting of the strands; then repeating the steps while twisting the strands in a different manner to form a second half-cycle length of ply twist, the improvement comprising; snubbing the ply-twisted strands at a distance from the twisting means of less than a half-cycle length of the ply-twisted strands to restrain the ply twisting over said half-cycle lengths so that the twist in the singles strands is able to redistribute over the strand lengths.

5,577,377

COMBINED CYCLE WITH STEAM COOLED GAS TURBINE

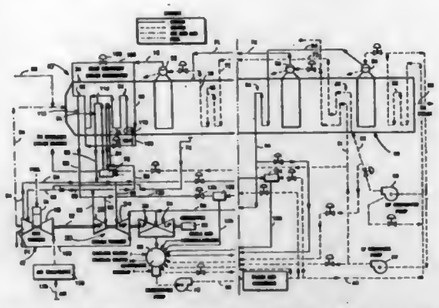
Leroy O. Tomlinson, Scheoectady, N.Y., assignor to General Electric Co., Schenectady, N.Y.

Continuation-in-part of Ser. No. 417,426, Apr. 5, 1995, which is a continuation-in-part of Ser. No. 161,070, Dec. 3, 1993, Pat. No. 5,428,950, which is a continuation-in-part of Ser. No. 145,633, Nov. 4, 1993, Pat. No. 5,412,937. This application May 16, 1995, Ser. No. 442,583

Int. Cl.[6] F02C *6/18*

U.S. Cl. 60—39.02 **12 Claims**

1. In a method of operating a combined cycle system including a gas turbine, a steam turbine and a multi-pressure heat recovery steam generator, wherein gas turbine exhaust is used in the heat recovery steam generator for reheating steam from the steam turbine, the improvement comprising supplying gas turbine cooling duty steam from a high pressure section of the steam turbine and



from an intermediate pressure evaporator in the multi-pressure heat recovery steam generator, conducting the gas turbine cooling duty steam to the gas turbine for cooling hot gas turbine parts, and then returning the gas turbine cooling duty steam to an intermediate pressure section of the steam turbine.

5,577,378

GAS TURBINE GROUP WITH REHEAT COMBUSTOR

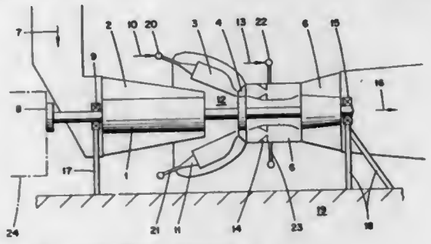
Rolf Althaus, Flawil; Franz Farkas, Zürich, both of Switzerland; Peter Graf, Waldshut-Tiengen, Germany; Fredy Häusermann, Rieden bei Nussbaumen, both of Switzerland, and Erhard Kreis, Oteifingen, all of Switzerland, assignors to ABB Management AG, Baden, Switzerland

Division of Ser. No. 212,850, Mar. 15, 1994, Pat. No. 5,454,220. This application Sep. 8, 1995, Ser. No. 525,040

Claims priority, application Switzerland, Apr. 8, 1993, 1079/93

Int. Cl.[6] F02C *3/14*

U.S. Cl. 60—39.17 **7 Claims**



1. A gas turbine group, comprising:

at least one compressor unit;

a first combustion chamber for generating working gas, the first combustion chamber connected to receive compressed air from the compressor unit, the first combustion chamber being an annular combustion chamber having a plurality of premixing burners;

a first turbine connected to received working gas from the first combustion chamber;

a second turbine;

a second combustion chamber connected to receive exhausted working gas from the first turbine and deliver working gas to the second turbine, the second combustion chamber comprising an annular duct forming a combustion space extending in a flow direction from an outlet of the first turbine to an inlet of the second turbine;

means for introducing fuel into the second combustion chamber for self-ignition of the fuel;

a plurality of vortex generating elements mounted in the second combustion chamber upstream of the means for introducing fuel; and,

a single rotor shaft supported by not more than two bearings, the at least one compressor unit, first turbine and second turbine being connected on the rotor shaft.

5,577,379

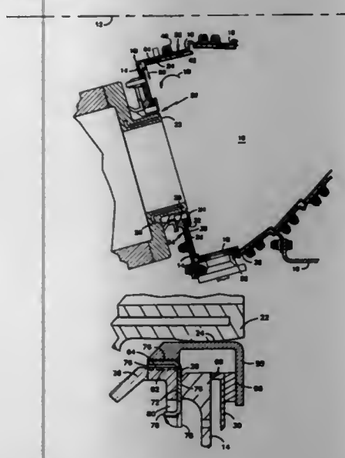
FUEL NOZZLE GUIDE RETAINER ASSEMBLY

Thomas E. Johnson, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 15, 1994, Ser. No. 356,093

Int. Cl.[6] F02C *7/20*

U.S. Cl. 60—39.31 **4 Claims**



1. The fuel nozzle guide retainer assembly for a gas turbine engine comprising:

a bulkhead defining the upstream end of a combustor;

at least one opening in said bulkhead for the insertion of a fuel nozzle;

a fuel nozzle guide, extending through said opening from the combustor side, and having external threads on the portion passing through said opening, and having an outside diameter flange on the combustor side for limiting axial movement through said opening;

a nozzle guide retainer having internal threads mated with said fuel nozzle guide external threads and cooperating with said nozzle guide retainer to hold said nozzle guide retainer firmly within said bulkhead;

a key washer for locking and located between said nozzle guide retainer and said fuel nozzle guide, said key washer having external tabs and internal tabs;

said internal tabs fitting within slots in said nozzle guide;

said external tabs fitting within slots in said nozzle guide retainer after tightening of said nozzle guide retainer on said fuel nozzle guide;

said fuel nozzle guide having axially extending slots through said external thread; and

said internal tabs located within said axially extending slots.

5,577,380

COMPACT GAS TURBINE ENGINE

Jack R. Shekleton, and Melvin K. Lafferty, both of San Diego, Calif., assignors to Sundstrand Corporation, Rockford, Ill.

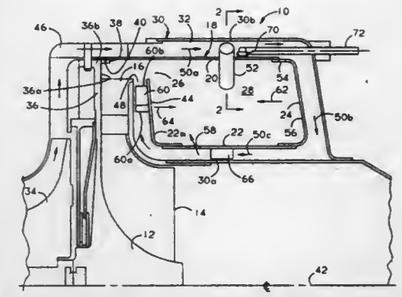
Continuation of Ser. No. 885,915, May 18, 1992, Pat. No. 5,254,354, which is a continuation of Ser. No. 686,038, Apr. 16, 1991, Pat. No. 5,140,808, which is a continuation of Ser. No. 324,688, Mar. 17, 1989, Pat. No. 5,033,263. This application Feb. 6, 1995, Ser. No. 383,911

Int. Cl.[6] F02C *3/05*

U.S. Cl. 60—39.36 **3 Claims**

1. A gas turbine engine, comprising:

a rotor including turbine blades and a nozzle adjacent said turbine blades for directing hot gases of combustion at said turbine blades;



an annular combustor about said rotor defined by spaced inner and outer walls connected by a radially extending wall, said combustor having an outlet leading to said nozzle, said combustor including an annular combustion space upstream of said outlet defined by said inner, outer and radially extending walls;

an annular combustor housing substantially surrounding said combustor in generally concentric spaced relation to said inner, outer and radially extending walls thereof to define an air flow path therebetween;

fuel injection means operatively associated with said combustor for injecting fuel from a primary fuel source into said combustion space;

said air flow path being in fluid communication with a compressor and with said combustor to permit air from said compressor to be injected into said combustion space;

said combustor being adapted to combust fuel from said primary fuel source and air from said compressor to generate said hot gases of combustion; and

a turbine shroud extending radially outward from said rotor and connected to said outer wall of said combustor on the side of said nozzle opposite said combustion space;

a plurality of circumferentially spaced orifices positioned to direct a film of air onto said turbine shroud at a location not upstream from said outlet.

5,577,381

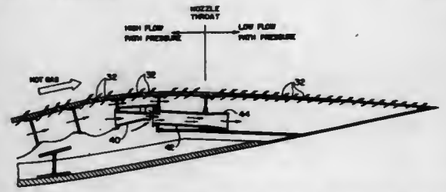
EXHAUST NOZZLE COOLING SCHEME FOR GAS TURBINE ENGINE

Daniel E. Eigenbrode, Hobe Sound, and Erik A. Lindstrom, Palm Beach Gardens, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 6, 1994, Ser. No. 349,846

Int. Cl.[6] F02K *1/82;3/04*

U.S. Cl. 60—226.1 **3 Claims**



1. For aircraft having a nacelle and being powered by a gas turbine engine disposed in said nacelle, said engine having a fan and an exhaust nozzle, said aircraft having liner means having hot surfaces defining a boundary for the gas path of the exhaust nozzle, passage means in said engine for conduction fan air to various components in said engine, means for cooling said liner means including at least one ejector pump mounted in one of said hot surfaces, said ejector pump for pumping nacelle air located in a cavity formed adjacent to said ejector pump, a mixing chamber in said exhaust nozzle in fluid flow relationship with said ejector

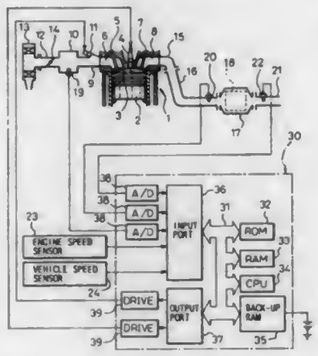
VOL 1192 ISS 4 NO 26 1996 UMI

pump for mixing the fan air and the nacelle air, and a cooling plenum defined by said liner means for accepting the mixed fan air and nacelle air so that said mixed fan air and nacelle air flows through film cooling holes formed in said hot surfaces exposed to said gas path, and said ejector pump in fluid communication with said passage means for utilizing the fan air that is local to said ejector pump, and a diffuser in fluid flow relationship with said mixing means.

5,577,382
EXHAUST PURIFICATION DEVICE OF INTERNAL COMBUSTION ENGINE

Tetsuro Kihara, Susono; Kenji Katoh, Sunto-gun; Takamitsu Asanuma, Susono, and Satoshi Iguchi, Mishima, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jun. 22, 1995, Ser. No. 493,657
Claims priority, application Japan, Jun. 30, 1994, 6-149446
Int. Cl.[6] F01N *3/28*
U.S. Cl. 60—276 **16 Claims**



1. An exhaust purification device of an engine having an exhaust passage, comprising:

an exhaust purification element arranged in the exhaust passage to remove harmful components contained in an exhaust gas, said exhaust purification element having the property that, when an air-fuel ratio of the exhaust gas flowing into said exhaust purification element is changed from lean to rich, an air-fuel ratio of the exhaust gas flowing out from the exhaust purification element is temporarily maintained substantially at the stoichiometric air-fuel ratio and then changed to rich and, at this time, the time during which the air-fuel ratio of the exhaust gas flowing out from the exhaust purification element is maintained substantially at the stoichiometric air-fuel ratio becoming shorter as the exhaust purification element deteriorates;

an oxygen concentration sensor arranged in the exhaust passage downstream of said exhaust purification element and producing an output having a level which is proportional to the oxygen concentration in the exhaust gas;

air-fuel ratio change-over means for temporarily changing the air-fuel ratio of the exhaust gas, which flows into said exhaust purification element, from lean to rich for a predetermined fixed time;

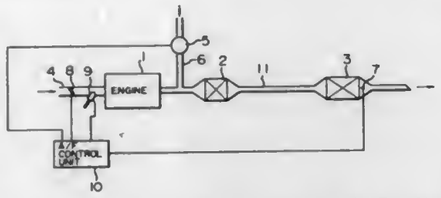
peak value detecting means for finding a peak value of the level of the output of said oxygen concentration sensor within said predetermined fixed time during which the air-fuel ratio of the exhaust gas flowing into said exhaust purification element is temporarily maintained at a rich air-fuel ratio by said air-fuel ratio change-over means; and

judgement means for judging a degree of deterioration of said exhaust purification element on the basis of said peak value of the level of the output.

5,577,383
APPARATUS FOR CONTROLLING INTERNAL COMBUSTION ENGINE

Osamu Kuroda; Hisao Yamashita; Akio Honji, all of Hitachi; Noriko Watanabe, Mito; Toshio Ogawa, Takahagi; Hiroshi Miyadera, Hitachi, and Takeshi Atago, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 948,264, Sep. 21, 1992, abandoned. This application Nov. 30, 1994, Ser. No. 351,167
Claims priority, application Japan, Sep. 20, 1991, 3-241671
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—284 **18 Claims**



8. An apparatus for controlling an internal combustion engine including a fuel injection valve and an air amount adjusting valve which are disposed in an air intake system of the engine to control the supply of an air-fuel mixture to the engine and an exhaust system having a combustion catalyst for oxidizing CO and HC which is disposed in an upstream portion of the exhaust system and a three-way catalyst for simultaneously purifying CO, HC and NOx which is provided in a downstream portion of the exhaust system of the engine, comprising:

detecting means for detecting whether the temperature of said three-way catalyst is at a preset value representing the activation temperature thereof by detecting the temperature of one of said three-way catalyst and exhaust gas exiting said three-way catalyst;

inputting means for inputting the temperature of one of said three-way catalyst and exhaust gas exiting the three-way catalyst;

means for storing a preset value;

means for comparing the temperature input from said inputting means with the preset value stored in said storing means;

means, responsive to said temperature being lower than said preset value, for generating a first signal to maintain the air-fuel mixture supplied to said engine richer than the mixture determined by the stoichiometric air/fuel ratio until the temperature of said exhaust gas purifying catalyst is raised to said preset value, and, responsive to said temperature being equal to or higher than said preset value, for generating a second signal to make the air/fuel ratio equal or approximate to the stoichiometric air/fuel ratio; and

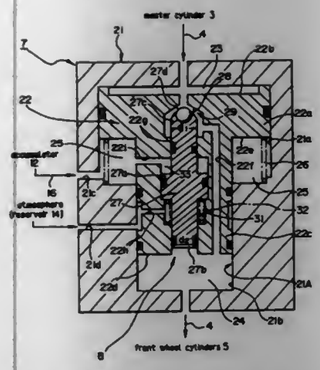
control means for opening or closing said fuel injection valve and said air amount adjusting valve in said air intake system in response to said first and second signals.

5,577,384
BACK-UP PRESSURE INTENSIFIER FOR MASTER CYLINDER FAILURE

Satoru Watanabe; Masaki Machida, and Masahiro Shimada, all of Saitama-ken, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1995, Ser. No. 493,495
Claims priority, application Japan, Jul. 15, 1994, 6-186681; Nov. 16, 1994, 6-306965
Int. Cl.[6] B60T *15/00*
U.S. Cl. 60—550 **20 Claims**

1. An intensifier assembly for a vehicle braking unit, the braking unit including a booster connected to a brake pedal to boost a braking liquid when the brake pedal is depressed, a master cylinder connected to the booster to receive the boosted braking liquid from



the booster and to generate a pressurized braking liquid for application to a wheel cylinder in response to receiving the boosted braking liquid, said intensifier assembly including:

an intensifier unit including:

a casing, said casing being shaped to have an inlet through which pressurized braking liquid from the master cylinder is received and an outlet opposite said inlet through which braking liquid is discharged to the wheel cylinder;

a movable piston disposed in said casing, said piston having a front end located adjacent said casing inlet and a rear end located adjacent said casing outlet; and

a biasing mechanism extending between said casing and said piston for urging said piston towards said casing inlet; and

a control valve disposed in said piston for controlling actuation of said piston, said control valve including:

a fluid passageway formed in said piston so as to extend between said piston front end and said piston rear end so as to allow braking liquid flow through said piston;

a valve member slidably movable in said piston, said valve member having a valve seat disposed in said fluid passageway and movable between a open position for allowing braking liquid fluid flow through said fluid passageway and a closed position that blocks braking liquid flow through said fluid passageway;

a pressure chamber formed in said piston around said valve member by at least one surface of said valve member and connected to receive boosted braking liquid from the booster, said pressure chamber being positioned so that when the boosted braking liquid is applied thereto, said valve member is urged towards said valve seat open position; and

a spring disposed in said piston and positioned against said valve member for urging said valve member towards said valve seat closed position, said spring being configured to operate in opposition to said force imposed by the boosted braking liquid in said control valve pressure chamber so that when the force of the boosted braking liquid falls, said spring urges said valve member to said valve seat closed position.

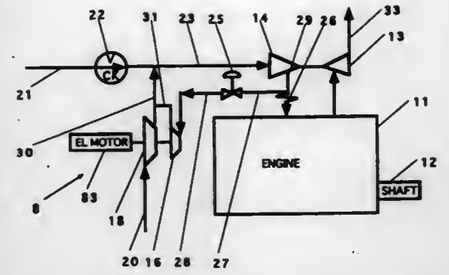
5,577,385
ELECTROPNEUMATIC ENGINE SUPERCHARGER SYSTEM

Davorin D. Kapich, 3111 Serrano Dr., Carlsbad, Calif. 92009

Filed Sep. 11, 1995, Ser. No. 526,593
Int. Cl.[6] F02B *37/00*
U.S. Cl. 60—612 **7 Claims**

1. An electro pneumatic supercharger system for charging air into an internal combustion engine, said system comprising:

A) an electro pneumatic supercharger comprising a first air compressor on a single shaft, said single shaft being driven by an electric motor and an air turbine,

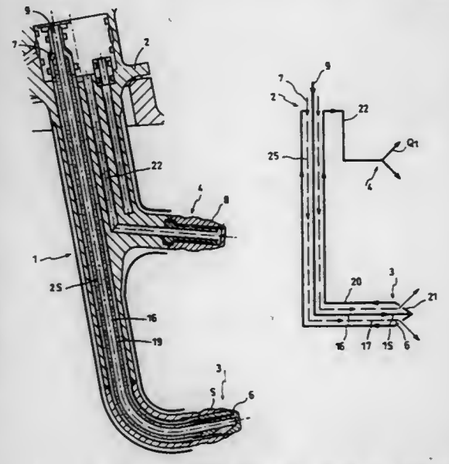


B) a turbocharger comprising an exhaust gas turbine driven by exhaust gasses from said engine and a second air compressor defining a second air compressor air inlet and providing compressed air to said engine and to said air turbine; wherein air compressed by said first air compressor is directed to said second air compressor air inlet.

5,577,386
SYSTEM FOR COOLING A HIGH POWER FUEL INJECTOR OF A DUAL INJECTOR

Jean-Paul D. Alary, Saint Maur des Fosses; Guy D'Agostino, Vitry sur Seine; Henry R. Leclerc, Juvisy sur Orge; Denis Sandelis, Nangis, and Pierre M. V. E. Schroer, Brunoy, all of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation S.N.E.C.M.A., Paris Cedex, France

Filed Jun. 20, 1995, Ser. No. 493,206
Claims priority, application France, Jun. 20, 1994, 94 07624
Int. Cl.[6] B05B *15/00;* **F02C** *3/14*
U.S. Cl. 60—742 **6 Claims**



1. A system for cooling a high power fuel injector of a dual fuel injector also having a low power fuel injector, the dual fuel injector being connected to a fuel feed supply and the high power fuel injector having a plurality of fuel injection orifices, the system comprising:

a) a first fuel supply circuit comprising: a first conduit connecting the fuel feed supply and the high power fuel injector, the first conduit having a terminal end adjacent to a distal end of the high power fuel injector; and a second conduit connecting the terminal end of the first conduit to the low power fuel injector such that all fuel supplied to the low power injector must pass through the first and second conduits; and

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b) a second fuel supply circuit separate from the first fuel supply circuit comprising a third conduit connecting the fuel feed supply and the fuel injection orifices so as to supply fuel to the fuel injection orifices.

5,577,387

CONTROLLED CRYOGENIC CONTACT SYSTEM

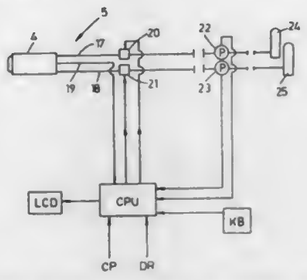
Ben-Zion Maytal, Atlit, Israel, assignor to State of Israel, Ministry of Defence, Rafael-Armaments Development Authority, Israel

Division of Ser. No. 195,555, Feb. 14, 1994. This application Feb. 13, 1996, Ser. No. 600,462

Claims priority, application Israel, Nov. 1, 1993, 107460

Int. Cl.[6] F25B *19/00*

U.S. Cl. 62—51.2 **2 Claims**



1. A method of creating controlled temperature changes on a contact surface, comprising:

a) providing a probe having a contact surface, which probe is suitable for creating fast temperature changes at the said contact, surface;

b) providing temperature generation means, coupled to the said probe, the said temperature generation means being capable of creating positive and negative temperatures at the said contact surface of the said probe;

c) connecting processing means to the said probe and to the stud temperature generating means;

d) providing to the said processing means desired temperature values and/or profiles; and

e) controlling the temperature of the contact surface of the probe to obtain the said desired temperature values and/or profiles by controlling, by means of the said processing means, the activity of the said negative and of the said positive temperatures generating means.

5,577,388

AQUEOUS ABSORPTION FLUIDS

Travis Chandler, and Uwe Rockenfeller, both of Boulder City, Nebr., assignors to Rocky Research, Boulder City, Nebr.

Continuation-in-part of Ser. No. 180,712, Jan. 13, 1994, Pat. No. 5,419,145. This application May 18, 1995, Ser. No. 443,707

Int. Cl.[6] F25B *15/00;* **C09K** *5/00*

U.S. Cl. 62—112 **89 Claims**

1. A water vapor absorption cycle cooling and/or heating system containing an aqueous working fluid consisting essentially of water as the solvent and comprising between about 30% and about 85%, by weight, of a metal compound selected from the group consisting of lithium bromide, lithium chloride, lithium iodide and mixtures of two or more thereof, sodium hydroxide, potassium hydroxide and mixtures of said hydroxides, and an effective additive amount of at least 2 parts per million, by weight, of an aliphatic, cycloaliphatic, heterocyclic, or aromatic amine having between 4 and 20 carbon atoms, capable of increasing the rate of water vapor sorption of said working fluid.

5,577,389

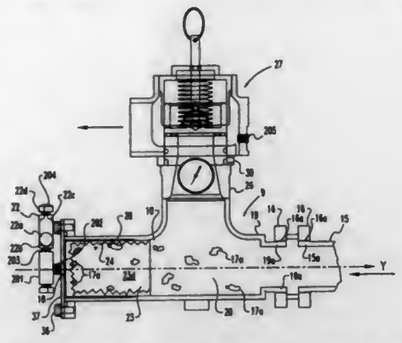
RUPTURE DISK FRAGMENT COLLECTION TRAP FOR REFRIGERATION SYSTEMS

Luther D. Albertson, 3935 Carver St., New Albany, Ind. 47150; Walter R. Key, 6362 Minlo Dr., Indianapolis, Ind. 46227, and Mark B. Key, 526A Paradise Way, West, Greenwood, Ind. 46143

Filed Aug. 11, 1994, Ser. No. 288,814

Int. Cl.[6] F16K *17/14;* **F25B** *43/04*

U.S. Cl. 62—115 **21 Claims**



1. An apparatus for minimizing the loss of refrigerant from a pressurized vessel in a mechanical refrigeration system, comprising:

a rupture disk;

a pressure relief valve;

a passageway connecting between said rupture disk and said pressure relief valve; and

a trap not extending substantially into said passageway for preventing interference with the operation of said pressure relief valve by debris passing through said passageway following rupture of said rupture disk.

5,577,390

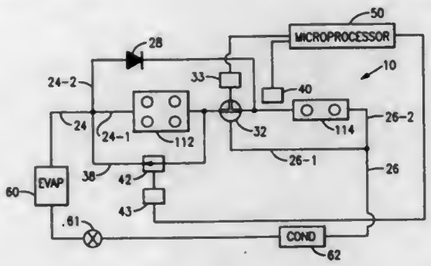
COMPRESSOR FOR SINGLE OR MULTI-STAGE OPERATION

Peter F. Kaido, Verona, and Michael J. Dormer, Fabius, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 14, 1994, Ser. No. 338,076

Int. Cl.[6] F25B *41/04;* **F04C** *23/00*

U.S. Cl. 62—228.5 **16 Claims**



9. Refrigeration means for cooling a zone including a closed circuit serially including compressor means, condenser means, expansion means and evaporator means:

said compressor having three banks, a crankcase, a suction inlet connected to said evaporator and a discharge connected to said condenser;

a first and a second one of said three banks being normally connected to said suction inlet;

a third one of said three banks being normally connected to said crankcase and said discharge;

means for selectively connecting said first and second banks to either said crankcase or said discharge;

means for fluidly connecting said crankcase to said suction inlet when said first and second banks are connected to discharge;

whereby when said first and second banks are connected to said crankcase they act as a first stage and said third bank acts as a second stage and when said first and second banks are connected to discharge they act as a single stage and said third bank acts as a single stage in parallel with said first and second banks.

5,577,391

REFRIGERATION SYSTEM

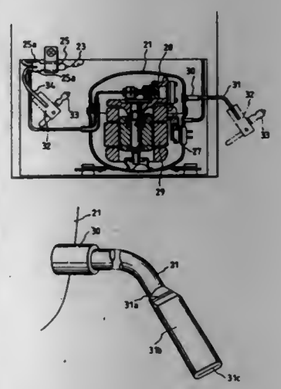
Masao Mangyo, Fujisawa; Takao Kawashima, Kawasaki, and Yuji Mori, Chigasaki, all of Japan, assignors to Matsushita Refrigeration Company, Osaka, Japan

Filed Aug. 25, 1994, Ser. No. 295,585

Claims priority, application Japan, Aug. 26, 1993, 5-211650; Aug. 26, 1993, 5-211651

Int. Cl.[6] F25D *19/00*

U.S. Cl. 62—298 **7 Claims**



1. A refrigeration system comprising:

a series of a refrigerant flow passage including therein a compressor, a condenser, an expansion mechanism and an evaporator;

a refrigerant containing, as a main component, one of hydrocarbon and HFC-152a; and

a lubricating oil having solubility with said refrigerant;

said refrigerant and said lubricating oil contained in said refrigerant flow passage;

said refrigeration system further comprising:

a fluid tube having a base end hermetically connected to said refrigerant flow passage, a distal end and an intermediate portion extending from said base end to said distal end, said intermediate portion having a first portion which is pinched to be closed and a second portion extending from said first portion to said distal end, said second portion being squashed into a flat-plate shape so as to be closed.

5,577,392

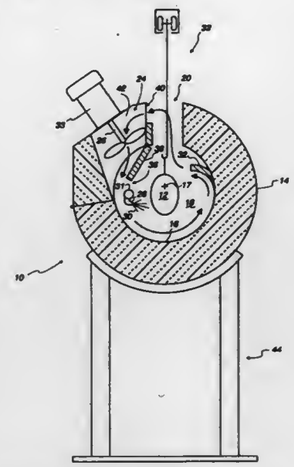
CRYOGENIC CHILLER WITH VORTICAL FLOW

Sidney V. Engler, Holland Landing; Clay Palbiski, Corbeil, both of Canada, and Gary D. Lang, Naperville, Ill., assignors to Liquid Carbonic Corporation, Oak Brook, Ill.

Continuation-in-part of Ser. No. 373,352, Jan. 17, 1995, abandoned. This application May 5, 1995, Ser. No. 435,333

Int. Cl.[6] F25D *25/04*

U.S. Cl. 62—380 **33 Claims**



1. Refrigeration apparatus comprising:

an insulated tunnel having a longitudinal axis, an inlet and an outlet disposed at opposite ends of said longitudinal axis, and a nonplanar bottom surface;

means for injecting a cryogen into the tunnel to effect cooling of material within the tunnel; and

means for effecting vortical flow within the tunnel about the axis of the tunnel to continuously sweep the bottom surface of the tunnel and recirculate cryogen from the bottom surface of the tunnel.

5,577,393

LIQUID DISPENSING DEVICE WITH SEPARABLE WATERWAY

Edward H. Donselman; Lowell C. Burnham; Scott E. Sloan, all of Freeport, Ill., and Steve Suchanek, Madison, Wis., assignors to Elkay Manufacturing Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 139,414, Oct. 20, 1993, Pat. No. 5,493,873. This application Jun. 7, 1995, Ser. No. 472,118

Int. Cl.[6] B67D *5/62*

U.S. Cl. 62—390 **11 Claims**

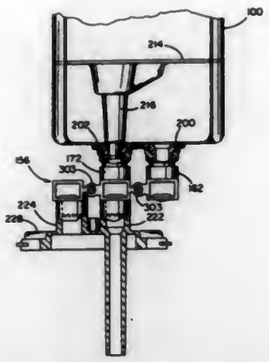
1. A liquid dispensing device including a cabinet housing a generally cylindrical liquid reservoir normally open at its upper end, valve means for dispensing liquid from the reservoir and refrigeration means for cooling the reservoir and liquid therein, said refrigeration means including an evaporator coil having a plurality of coil turns adapted to surround and engage at least a substantial circumferential portion of said reservoir in heat transmitting relation thereto, comprising, in combination,

means within said cabinet for removably supporting said reservoir,

means for selectively urging said reservoir and said coil turns into tight engagement with one another and for selectively releasing said reservoir from engagement with said coil turns to permit the removal of said reservoir from said cabinet,

said reservoir including a plurality of outlet fittings on the bottom thereof and said valve means including a plurality of

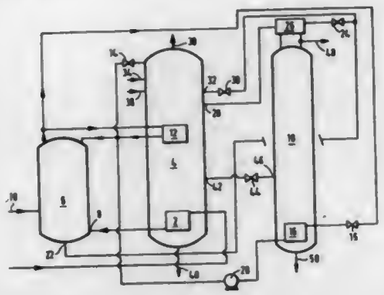
VOL 1192 ISS 4 NO 26 1996 UMI



inlet coupling portions for slidably receiving and sealingly engaging said outlet fittings in press-fit connecting relation, and

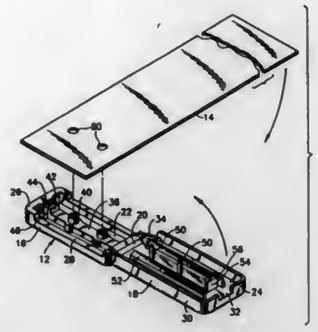
said valve means including a body having a plurality of inlet coupling portions and outlet nozzles interconnected by respective fluid flow passageways with a spring biased valve interposed in at least selected ones of said passageways upstream of said outlet nozzles, said body being formed of mating portions, and fastening means for detachably connecting said mating portions together in closed sealed relation.

5,577,394
AIR SEPARATION
Thomas Rathbone, Surrey, England, assignor to The BOC Group plc, Surrey, England
Filed Jul. 20, 1995, Ser. No. 504,871
Claims priority, application United Kingdom, Jul. 25, 1994, 9414939
Int. Cl.[6] F25J *3/00*
U.S. Cl. 62—653 **18 Claims**



1. A method of separating argon from air comprising: introducing a flow of compressed and cooled feed air in at least partly vapor state into a higher pressure rectifier and separating the flow into oxygen-enriched liquid air and nitrogen; condensing the nitrogen so separated and employing one part of the condensate as reflux in the higher pressure rectifier and another part of it as reflux in a lower pressure rectifier; separating in the lower pressure rectifier a stream of oxygen-enriched liquid air derived directly or indirectly from the higher pressure rectifier; reboiling the lower pressure rectifier with a vapor stream of the feed air; withdrawing a stream of argon-enriched liquid oxygen from the lower pressure rectifier and separating it by rectification in a further rectifier to produce an argon product; at least part of the said nitrogen being condensed by being employed to reboil the further rectifier.

5,577,395
CLIP FOR AN IDENTIFICATION BRACELET
Dennis C. Kuykendall, Clarkesville, Ga., assignor to Scovill Fasteners Inc., Clarkesville, Ga.
Filed May 4, 1995, Ser. No. 433,750
Int. Cl.[6] A44C *5/00*
U.S. Cl. 63—3 **3 Claims**



1. For an identification bracelet a molded plastic clip comprising rectangular base and cover plates of mutually similar length and width and unitarily formed with a living hinge connecting them endwise, an axis defined along said length of said respective plates, the hinge having an axis perpendicular to said plate axis, the plates each having an inside surface, the inside surfaces confronting each other when the cover plate is pivoted over onto the base plate, one of the plates being formed with openings spaced longitudinally thereof and having bushings on its inside surface about each opening, the other of the plates having pointed projections on its inside surface so spaced as when the cover plate is pivoted over onto the base plate, the projections are capable of piercing a thickness of plastic strap and received respectively by the openings in said one plate, and one of the plates is formed with a bolt extending from its inside surface and having a hook at its distal end, the bolt being remote from the hinge, and the other plate having a cooperant latch opening therein, the latch opening also being remote from the hinge, and at least one strut unitary with the two plates and extending on either side of the hinge and being at an angle to said plate axis and adapted to hold the plates in flat open condition prior to assembly, the strut being readily frangible.

5,577,396
CONVERTIBLE STUD JEWELRY
Derendar R. Cannon, 2335 Massey, Memphis, Tenn. 38119
Filed May 31, 1995, Ser. No. 455,836
Int. Cl.[6] A44C *7/00*
U.S. Cl. 63—13 **1 Claim**

1. An earring comprising:

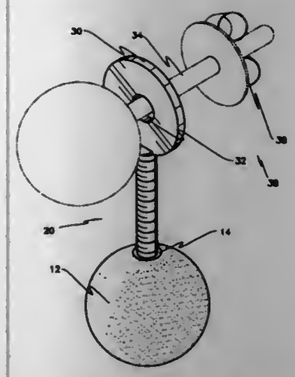
a decoration having an anchor secured to and within said decoration, said anchor having a threaded socket;

a continuously threaded stud for penetrating and being supported by an earlobe of a wearer, said continuously threaded stud having one end insertable into and engageable with said socket of said anchor within said decoration;

an internally threaded clasp;

said clasp having a threaded aperture engageable with the other end of said continuously threaded stud so as to entrap the earlobe between said decoration and said clasp; and wherein

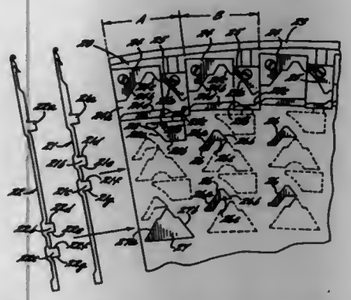
said continuously threaded stud serves as a primary earring, a stand alone earring, and as a support for said decoration, said continuously threaded stud allows the wearer to mix and match any style of decoration the wearer prefers; an ornament having means defining an ornament anchor secured to and within said ornament, said ornament anchor having a socket;



an eyepole having a threaded end inserted and engaged in said socket;

an enlarged head having means defining a central closed loop attached to the other end of said eyepole wherein said eyepole serves as a pendent accessory to said continuously threaded stud, with said central closed loop surrounding said continuously threaded stud and being supported by said continuously threaded stud at one end.

5,577,397
NEEDLE CONTROL SYSTEM FOR CIRCULAR KNITTING MACHINE
Yukiari Iida, Akashi, Japan, assignor to Precision Fukuhara Works, Ltd., Akashi, Japan
Division of Ser. No. 447,688, May 23, 1995. This application Dec. 22, 1995, Ser. No. 577,198
Claims priority, application Japan, Jun. 2, 1994, 6-145604; Dec. 6, 1994, 6-330682
Int. Cl.[6] D04B *9/06;35/02*
U.S. Cl. 66—20 **4 Claims**



1. A needle control system for a circular knitting machine, comprising:

first and second needles;

a master butt on each said needle, said master butts being located at a common butt position;

spaced apart first and second selector butts on each said needle, said selector butts on said first needle and said selector butts on said second needle being located at different butt positions;

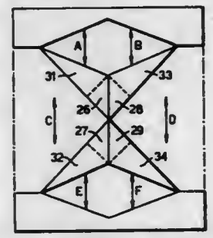
both said first and second selector butts on said first needle are closer to said master butt than either of said first and second selector butts on said second needle;

inner and outer edges on said master and selector butts for engaging cam means in a knitting machine; and

cam means;

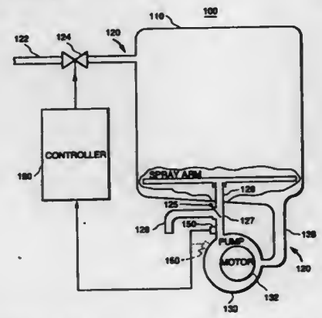
wherein said inner edges of said first selector butts and said outer edges of said second selector butts engage said cam means to selectively orient said needles in a tuck position, wherein said inner edges of said master butts and said outer edges of said first selector butts engage said cam means to selectively orient said needles in a welt position, and wherein said outer edges of said master butts and said inner edges of said second selector butts engage said cam means to selectively orient said needles in a knit position.

5,577,398
KNITTING METHOD
Keith Jeffcoat, Nuneaton, United Kingdom, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 20, 1995, Ser. No. 546,262
Claims priority, application United Kingdom, Nov. 10, 1994, 9422650
Int. Cl.[6] D04B *1/22*
U.S. Cl. 66—64 **6 Claims**



1. A knitting pattern for continuously knitting a three-dimensional fabric cover having a wale-wise orientated pouch, said knitting pattern comprising a two-dimensional blank having a central pouch-forming portion which is based on a weft-knittable, geometrically rearranged development of the pouch, and further weft-knittable portions separated from each other by the central portion and linked thereto by pairs of arms of geometrically rearranged, cover-forming portions, said arms having edges which form suture lines in the fabric cover and which intersect at a point connecting said arms to said further portions.

5,577,399
PRESSURE SENSOR FOR APPLIANCE PRODUCTS
Walter Whipple, III, Amsterdam, and Mark E. Dausch, Latham, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Apr. 3, 1995, Ser. No. 415,970
Int. Cl.[6] D06F *33/02*; A47L *15/46*
U.S. Cl. 68—12.02 **8 Claims**



1. A household appliance for washing articles with a cleansing liquid, comprising:

a cleansing chamber adapted to receive the articles to be washed;

a working fluid distribution system coupled to said cleansing chamber for transferring said cleansing liquid to and from said chamber, said distribution system comprising a pump;

a pressure signature sensor disposed in said appliance so as to detect output pressure oscillations of said pump; and

an appliance controller responsive to said pressure signature sensor so as to control operation of said working fluid distribution system in correspondence with a pressure oscillation signature generated by said pressure signature sensor;

said pressure signature sensor comprising a resistive elastomer material disposed between a first and a second electrical contact, the resistance of said resistive elastomer material corresponding to the spatial deflection of said elastomer material, said pressure signature sensor further being disposed in said appliance in a spaced relation to said pump such that liquid subject to the discharge pressure of said pump impinges on said sensor so that pump discharge pressure oscillations impart spatial deflections of said resistive elastomer material in correspondence with the magnitude of the pressure oscillations.

5,577,400

KNITTING APPARATUS AND METHOD

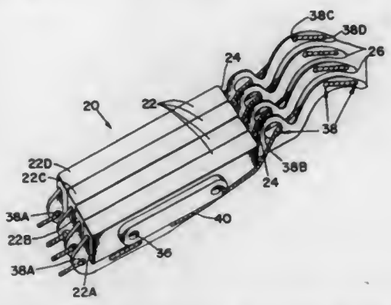
Walter Palange, Via Cuostile 5-7, Gaeta (LT), Italy

Continuation of Ser. No. 303,997, Sep. 9, 1994. This application Dec. 8, 1995, Ser. No. 569,586

Claims priority, application Italy, Sep. 9, 1993, LT93A0008

Int. Cl.[6] D04B *3/00*

U.S. Cl. 66—4 **19 Claims**



1. A needle hook apparatus for use with a needle assembly for a knitting assembly for producing patterned knitted fabric, said needle hook comprising:

a handle having a distal edge;

and said needle hook terminating in a hook tip that extends from said distal edge, said hook tip having a generally planar and serpentine shape for retaining yarn material for stitching and facilitating easy release of the yarn material as desired and a free end for facilitating catching and release of yarn material.

5,577,401

KNITTING MACHINE CYLINDER HAVING A HARDENED TOP INSERT RING AND METHOD OF MAKING SAME

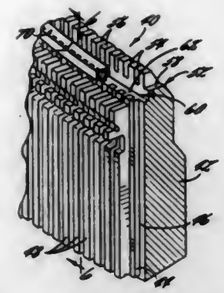
David Pernick, Kings Point, N.Y., assignor to Monarch Knitting Machinery Corp., Glendale, N.Y.

Filed Nov. 15, 1995, Ser. No. 558,803

Int. Cl.[6] D04B *9/00;* **B23P** *19/02*

U.S. Cl. 66—8 **35 Claims**

1. A cylinder assembly for a circular knitting machine, comprising:



a cylinder body having an outer cylindrical face and an upper face, said upper face including a plurality of spaced-apart, substantially radial channels and a shaped circumferential indentation circumscribing an upper end of said outer cylindrical face, and

a hardened circular band matingly engaged with said circumferential indentation to define a durable bearing surface for reciprocating elements of the knitting machine.

5,577,402

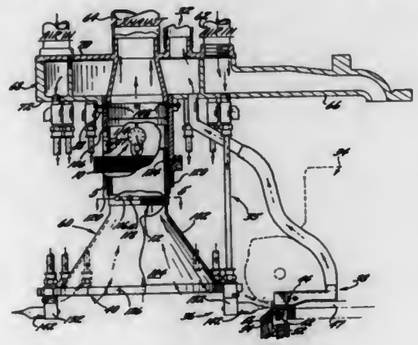
POSITIONING GAUGES FOR A CIRCULAR SLIVER KNITTING MACHINE

Michael K. Kuhrau, and Donald C. Fosselman, both of Orangeburg, S.C., assignors to Mayer Industries, Inc., Orangeburg, S.C.

Filed Oct. 6, 1995, Ser. No. 540,057

Int. Cl.[6] D04B *9/14;9/06*

U.S. Cl. 66—9 B **24 Claims**



1. A circular sliver knitting machine comprising:

a frame;

a needle cylinder rotatably supported on said frame;

a plurality of needles supported in said needle cylinder for rotational movement therewith and for vertical movement parallel to the axis thereof;

a plurality of card units at radially spaced locations along the rotational path of said needle cylinder, to deliver sliver fibers to said needles during the movement thereof;

a yarn feeding station adjacent each of said card units for feeding yarn to said needles;

a plurality of sinkers cooperating with said needles for forming the yarn and the sliver fibers into knitted fabric;

an air blowing unit cooperating with each of said card units for blowing air along a path generally radially outward toward said needles;

adjustment means cooperating with said air blowing unit to allow for said air blowing unit to be adjustably positioned relative to said plurality of needles; and

indexing means cooperating with said adjustment means for indexing the position of said air blowing unit relative to said plurality of needles for purposes of readily locating a desired position for said air blowing unit relative to said plurality of needles corresponding to one of a predetermined number of knit patterns prior to knitting.

5,577,403

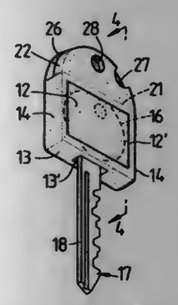
KEY IDENTIFICATION SYSTEM

Larry J. Steeley, 6004 Brookhill Cir., Birmingham, Ala. 35242

Continuation-in-part of Ser. No. 6,161, Mar. 22, 1993, Pat. No. Des. 352,600. This application Nov. 14, 1994, Ser. No. 337,730

Int. Cl.[6] A44B *15/00;* **E05B** *19/24*

U.S. Cl. 70—456 R **3 Claims**



1. An identification system comprising: a plastic housing having sufficient interior volume to contain at least one US quarter, in close confronting relationship; a closure comprising at least one panel independently hingededly connected to said housing and movable from a contacting closed position sealing said interior volume to a disengaged open position and means for detachably connecting said panel in said closed position wherein said housing comprises side walls extending between an endwall and said closure and longitudinal walls connecting said side walls and an endwall in orthogonal relationship therewith and further comprising an internal wall extending from said endwall and said longitudinal walls dividing said internal volume into two longitudinal compartments; and, a length of foldable material having a length and width commensurate with said interior volume such that when folded said material is coextensive with the dimensions of said volume, said material having at least one face on which indicia may be applied.

5,577,404

Patent Not Issued For This Number

5,577,405

SINGLE STRAND BLOCK-TYPE ROLLING MILL

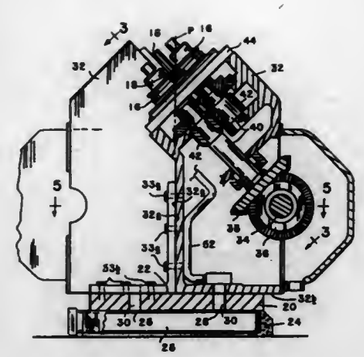
Terence M. Shore, Princeton, and Harold E. Woodrow, Northboro, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Continuation of Ser. No. 171,649, Dec. 22, 1993, abandoned. This application Dec. 28, 1995, Ser. No. 579,915

Int. Cl.[6] B21B *31/06*

U.S. Cl. 72—235 **6 Claims**

1. A single strand block-type rolling mill having pairs of oppositely inclined work rolls arranged successively along a pass line to roll product in a twist-free manner, comprising: a planar base structure extending in parallel relationship to the pass line; a group



of housings arranged seriatim along the pass line, successive housings of said group having mutually overlapping portions which contact each other at interfaces extending in the direction of said pass line, means for interconnecting the successive housings of said group at the interfaces of their mutually overlapping portions, wherein said mutually overlapping portions are secured to one another at interfaces lying on a common reference plane containing said pass line and means for connecting said housings to said base structure, each of said housings including intermediate drive means for driving a pair of roll shafts carrying one of said pairs of work rolls, said intermediate drive means being mechanically coupled to each other and to a common mill drive.

5,577,406

FORMING TOOL

Jens Grønbæk, Varnæsvej, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

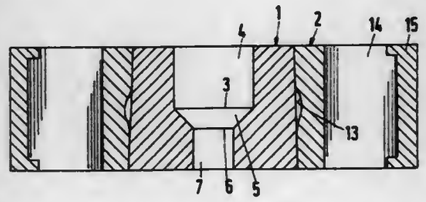
PCT No. PCT/DK94/00130, § 371 Date Sep. 20, 1995, § 102(e) Date Sep. 20, 1995, PCT Pub. No. WO94/22607, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 28, 1994, Ser. No. 525,773

Claims priority, application Germany, Apr. 6, 1993, 43 11 249.8

Int. Cl.[6] B21C *3/12*

U.S. Cl. 72—467 **13 Claims**



1. A forming tool having a die and a prestressing ring surrounding the die and exerting radial prestress on the die, in which the prestressing ring is constructed so that the radial prestress exerted by it on the die, in at least one of a region of a transition from one to another of two converging inner faces of the die, which together form an internal angle of less than 180° and a region of a sudden transition from a low to a high value of pressure exerted by a workpiece during its deformation radially on the die, is less than in regions adjacent to the transition.

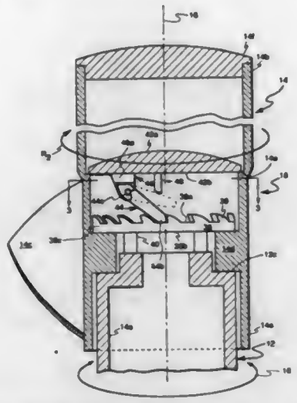
VOL 1192 ISS 4 NO 26 1996 UMI

5,577,407

WASHER AUGER WITH GRAVITY ASSISTED RATCHET DRIVE

Sudhir D. Savkar, Schenectady; Roger N. Johnson, Hagaman, both of N.Y., and Brian D. Lisek, Louisville, Ky., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 7, 1995, Ser. No. 511,940
Int. Cl.[6] D06F 17/08
U.S. Cl. 68—133 10 Claims



1. A drive mechanism for converting rotary oscillation of a washing machine clothes agitator to unidirectional rotation of a coaxially adjoining clothes auger comprising:

a ratchet wheel having a perimeter and axially oppositely facing top and bottom sides, said bottom side being flat and configured for being fixedly joined to said agitator, and said top side having a plurality of circumferentially spaced apart ratchet teeth extending perpendicularly outwardly therefrom;

an annular support disk configured for being fixedly joined to said auger generally parallel to said wheel and coaxially therewith, said support disk having axially oppositely facing top and bottom sides, with said disk bottom side facing said ratchet teeth and being spaced therefrom; and

a plurality of circumferentially spaced apart ratchet pawls, each having a proximal end pivotally joined to said support disk, and a distal end being complementary to said ratchet teeth for intermittent ratcheting engagement therewith, and said pawls being vertically suspended from said support disk for allowing gravity to engage said pawls with corresponding ones of said ratchet teeth as said ratchet wheel oscillates to rotate said support disk in a single direction.

5,577,408

SECURITY DEVICE FOR A CYLINDER LOCK

Åge Roos, Nordre Elvegate 10, N-1537 Moss, Norway

Filed Nov. 10, 1994, Ser. No. 337,725
Claims priority, application Norway, Dec. 29, 1993, 934885
Int. Cl.[6] E05B 9/04
U.S. Cl. 70—370 17 Claims

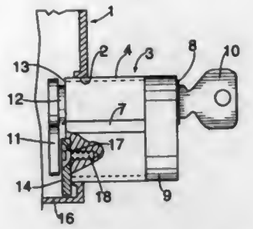
1. A lock cylinder comprising:

(a) a cylinder body which attaches to a lock case by means of external threads which correspond to threads in a hole in said lock case, said cylinder body having an inner face;

(b) a cylinder plug which fits inside and is rotatable inside said cylinder body by means of a key, said cylinder plug having an inner face;

(c) a securing element attached by means of a screw to said inner face of said cylinder body; and

(d) a cam for operating mechanisms in said lock case, said cam attached to said inner face of said cylinder plug, said cam rotatable by means of said cylinder plug and said key between



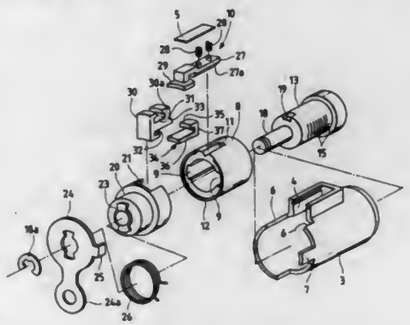
a locked and an unlocked position, said cam covering said screw when said cam is in said locked position to prevent removal of said screw.

5,577,409

CYLINDER LOCK

Yoshinobu Oyabu, and Shozo Kito, both of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Nov. 29, 1994, Ser. No. 348,830
Claims priority, application Japan, Nov. 30, 1993, 5-299965; Apr. 22, 1994, 6-084524; Oct. 25, 1994, 6-260252
Int. Cl.[6] E05B 9/10
U.S. Cl. 70—379 R 4 Claims



1. A cylinder lock comprising:

a rotor case cylindrical in shade and fixedly arranged;

a sleeve rotatably arranged inside the rotor case and having tumbler engagement grooves therein;

a key rotor rotatably arranged inside the sleeve and having an axially extending keyhole and radially extending tumbler setting grooves thereon;

tumblers movably arranged in the tumbler setting grooves of the key rotor, the tumblers having ends engageable with the sleeve, the tumblers being held in the tumbler engagement grooves by spring members before a key is inserted, and being released from the tumbler engagement groves by insertion of a regular key;

a lock lever selectively rotatable with the key rotor; and

a main coupling member for coupling the rotor case, the key rotor and the lock lever,

wherein the key rotor includes a rear rotor rotatably arranged coaxially with the key rotor so as to confront the key rotor in an axial direction; and

wherein the main coupling member includes:

a key rotor side coupling portion formed at a portion confronting the rear rotor in the key rotor;

a rear rotor side coupling portion formed at a portion confronting the key rotor in the rear rotor;

a coupling member movable in radial directions to bridge the key rotor side coupling portion and the rear rotor side coupling portion, being selectively set in an engagement

position and in a disengagement position, and allowing the key rotor and the rear rotor to be rotatable integrally with each other in the engagement position before the key is inserted, the engagement position being a position at which the coupling member is engaged with the key rotor side coupling portion and the rear rotor side coupling portion in a rotational direction by movement thereof, the disengagement position corresponding to a position at which the engagement of the coupling member is released thereby making the rotor freely rotatable independent of the rear rotor; and

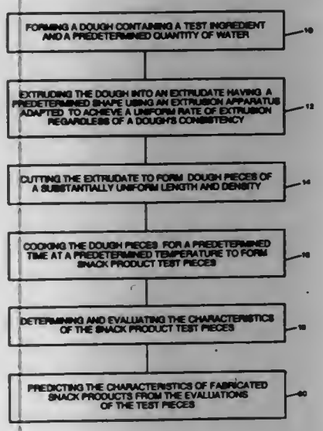
an uncoupling mechanism having a moving element arranged in the rotor case so as to be movable in the radial directions by rotation of the sleeve to cause the coupling member to move to the disengagement position by movement of the moving element.

5,577,410

METHOD AND APPARATUS FOR TESTING SNACK PRODUCT INGREDIENTS

Miles J. Willard, 154 E. 49th South, Idaho Falls, Id. 83404; Kyle E. Dayley; LaRue Remer, both of Rigby, and Jane Arnold, Idaho Falls, all of Id., assignors to Miles J. Willard, Idaho Falls, Id.

Filed Feb. 22, 1994, Ser. No. 199,825
Int. Cl.[6] G01N 33/10
U.S. Cl. 73—169 21 Claims



1. A method for testing an ingredient for a fabricated snack product, comprising the steps of:

forming a dough containing a test ingredient and a predetermined quantity of water under predetermined mixing conditions;

extruding the dough into a predetermined shape at a uniform rate by using an extruding apparatus having a ball screw actuator and motor means for driving the ball screw actuator to provide an extrudate having a uniform density;

cutting the extrudate to form dough pieces each having a same length;

cooking the dough pieces at a predetermined temperature for a predetermined time to form snack product test pieces;

determining and evaluating at least one characteristic of the test pieces; and

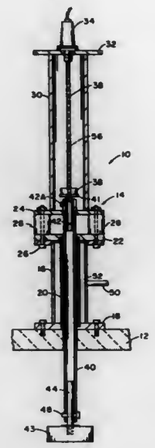
predicting for a fabricated snack product containing the test ingredient a characteristic similar to one evaluated in the test pieces.

5,577,411

MOLTEN METAL SENSING IN A CLOSED OPAQUE VESSEL

Mark T. Kruzynski, Derry; Mark B. Abate, Connellsville; Robert H. Keenan, Pittsburgh, and Gregg E. Kruzynski, Greensburg, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 3, 1994, Ser. No. 253,948
Int. Cl.[6] G01F 23/60;23/76; B22D 11/18
U.S. Cl. 73—313 8 Claims



4. Apparatus for sensing the level of molten metal in a container, comprising:

an electrical, strain sensing, pulse producing and output signal producing transducer located above the molten metal and external of the container,

a structure for supporting said transducer above the molten metal and container,

a first tube connected to and extending downwardly from the transducer toward the molten metal,

a magnet located adjacent said first tube and at a location spaced from both the transducer and molten metal, said magnet providing a magnetic field,

a second, vertically moveable tube located beneath said first tube and attached to said magnet,

float means connected to a lower end of said second tube for floating on the surface of the molten metal and for vertically moving the magnet, said float means being made from a heat resistant material, and

a wire located in said first tube and electrically connected to the transducer, the wire, in addition, extending to a location adjacent the magnet,

said transducer being capable of sending a pulse of current down the wire, which pulse creates a magnetic field that travels with the current pulse and interacts with the field of the magnet in a manner that strains the first tube, and

said transducer sensing said strain and producing said output signal proportional to the time between the sending of the pulse and the sensing of the strain, said output signal varying with the level of molten metal in the container.

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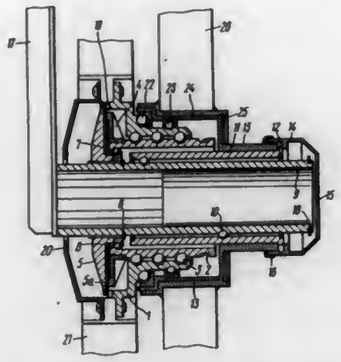
5,577,412

APPARATUS FOR CONVERTING A RECIPROCATING MOTION INTO UNIDIRECTIONAL ROTATION

Gennady V. Vasiliev, ul.40 let Oktyabrya, d.24, kv.30, 656023, Barnaul, Russian Federation

PCT No. PCT/RU92/00188, § 371 Date Aug. 26, 1994, § 102(e) Date Aug. 26, 1994, PCT Pub. No. WO94/09290, PCT Pub. Date Apr. 28, 1994
PCT Filed Oct. 16, 1992, Ser. No. 295,716
Int. Cl.[6] F16H 25/08
U.S. Cl. 74—127 16 Claims

1. An apparatus for converting reciprocating motion into unidirectional rotation, comprising:



a nonself-locking screw drive mechanism accomodated in said casing;

a first driving member of said nonself-locking screw drive mechanism; sliding and locking surfaces of said first driving member, a flange of said first driving member, an external cylindrical surface provided with a first-sense thread;

a first plurality of rolling bodies of said nonself-locking screw drive mechanism;

a first driven member of said nonself-locking screw drive mechanism, having an axis of rotation and being associated with said first driving member through the rolling bodies of said first plurality, said first driving member being rotatable about said axis of rotation;

a first axial force generating mechanism adapted also for developing a torque intended for changing the angle of turn of said first driven member;

a first axial force application unit of said nonself-locking screw drive mechanism, associated with said first axial force generating mechanism; sliding and locking surfaces of said first axial force application unit; end face of said first force application unit, facing towards said flange of said first driving member;

clearances between said locking surfaces of said first driving member and said first axial force application unit;

said first driving member associated with said first axial force application unit and capable of free axial motion, free rotation and locking, as well as of cooperating, through said locking and said sliding surfaces thereof, with said locking and said sliding surfaces of said first axial force application unit;

a first axial force changing mechanism of said nonself-locking screw drive mechanism, associated with said first axial force application unit, a first lever of said first axial force changing mechanism;

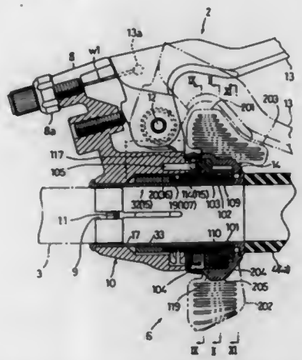
a first screw drive of said first axial force generating mechanism, a first drive member of said first screw drive arranged coaxially with said first driven member and rigidly coupled to said first axial force application unit and said axial force changing mechanism for interaction with said first driving and said first driven member, a second plurality of rolling bodies of said first screw drive, a first stationary fixed driven member associated with said first drive member through the rolling bodies of said second plurality, an interior space of the first drive member.

5,577,413

BICYCLE SPEED CHANGE OPERATION ASSEMBLY THAT PERMITS SPEED CHANGE OPERATION DURING BRAKING

Koichi Tagawa; Akira Nakatani, and Toshimasa Yamazaki, all of Kawachinagano, Japan, assignors to Mory Suntour Inc., Osaka, Japan

PCT No. PCT/JP94/00207, § 371 Date Oct. 7, 1994, § 102(e) Date Oct. 7, 1994, PCT Pub. No. WO94/18061, PCT Pub. Date Aug. 14, 1994
PCT Filed Feb. 10, 1994, Ser. No. 307,781
Claims priority, application Japan, Feb. 12, 1993, 5-024546
Int. Cl.[6] B62M 25/04
U.S. Cl. 74—475 6 Claims



3. A combination of a brake lever assembly and a speed change operations assembly for a bicycle, the brake lever assembly comprising a fixing member attached to the handlebar, the brake lever assembly further comprising a brake lever pivotally connected to the fixing member for pivotal movement between a non-braking position and a braking position, the speed change operation assembly comprising a speed change operation member supported on the handlebar between the fixing member and a handlebar grip portion for rotation about an axis of the handlebar,

wherein the speed change operation member is formed externally with a press operation portion projecting radially outward, and

wherein the press operation portion is movable to a position between the speed change operation member and the brake lever without interfering with the brake lever even when the brake lever is pivoted to the braking position.

5,577,414

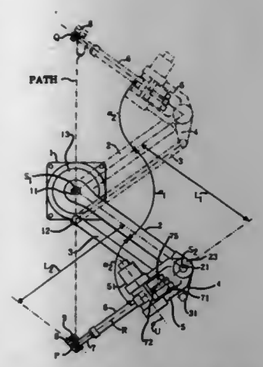
ARTICULATED ROBOT

Masahiro Ogawa; Shuichi Tohnai; Masanori Nishi, and Atsushi Ichibangase, all of Kitakyushu, Japan, assignors to Kabushiki Kaisha Yaskawa Denki, Fukuoka, Japan

PCT No. PCT/JP93/01345, § 371 Date Apr. 28, 1994, § 102(e) Date Apr. 28, 1994, PCT Pub. No. WO95/06546, PCT Pub. Date Mar. 9, 1995
PCT Filed Sep. 20, 1993, Ser. No. 232,056
Claims priority, application Japan, Sep. 1, 1993, 5-52591 U
Int. Cl.[6] B25T 9/06;17/00
U.S. Cl. 74—490.03 22 Claims

1. An articulated robot comprising:

a fixed base having an upper horizontal surface;



a parallelogrammic linkage pivotally mounted on the fixed base and comprising a first arm pivotally supported on said fixed base for turning about a first axis perpendicular to the upper surface of the fixed base, a first auxiliary link pivotally supported on said fixed base and disposed parallel to the first arm, and a second auxiliary link pivotally joined to the respective extremities of the first arm and the first auxiliary link;

a second arm pivotally supported on the parallelogrammatic linkage for turning about a second axis parallel to said first axis;

a third arm pivotally supported on the extremity of the second arm; and

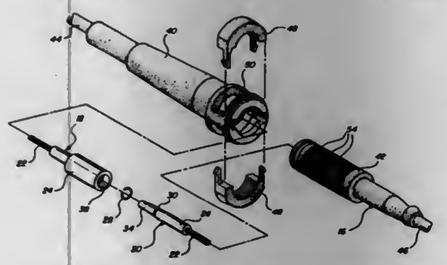
a wrist unit supported on the extremity of the third arm, a first wrist link extending along the longitudinal extent of the third arm and fixed to the wrist unit, a second wrist link pivotally supported on the wrist unit, a third wrist link pivotally supported on the extremity of the first wrist link with a pin, a fourth wrist link pivotally supported on the respective extremities of the first wrist link and the second wrist link with pins, said fourth wrist link being parallel to the first wrist link; a wrist link drive motor disposed to rotate the second wrist link through a rotary member, and a gripper fixed to the third wrist link.

5,577,415

NON-BUCKLING CORE ELEMENT CONNECTOR WITH SNAP-RING

Michael Reasoner, Ortonville, Mich., assignor to Teleflex Incorporated, Plymouth Meeting, Pa.

Filed Aug. 29, 1995, Ser. No. 521,125
Int. Cl.[6] F16C 1/14
U.S. Cl. 74—502.4 6 Claims



1. A motion transmitting remote control assembly (12) for transmitting motion in a curved path, said assembly (12) comprising:

a first guide length (14) and a second guide length (16);

a first core element section (18) movably supported in said first guide length (14);

a second core element section (20) movably supported in said second guide length (16); and

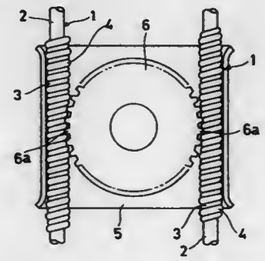
characterized by connection means for locking said first (18) and second (20) core element sections together in a locked position mechanically prevented from moving relative to one another axially in either direction, said connection means including a female member (24) attached to an end of said first core element section (18) and a male member (26) attached to an end of said second core element section (20), said male member (26) presenting a male groove (30) and said female member (24) presenting a female groove (32), a lock ring (28) disposed in one of said grooves (30,32), said lock ring (28) radially overlapping said male (30) and female (32) grooves in said locked position, said lock ring (28) being radially expandable and contractible from a steady state condition, and said male member presenting a male taper (34) of gentle slope for radially expanding said lock ring (28) as said core element sections (18 and 20) are moved together, said female member (24) presenting an end with a bore (36) extending thereinto for receiving said male member (26), said female groove (32) being disposed in said bore (36) and including a female taper (38) having a slope extending from said end to said female groove (32), said slope of said male taper being more gentle than said slope of said female taper (38).

5,577,416

SLIDING CABLE AND ITS MANUFACTURING METHOD

Kenichi Fukura; Hiroki Kondoh; Katsumi Suzuki; Takayoshi Ito; Yasuyuki Kozawa, and Kenji Hori, all of Aichi Pref., Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 200,682, Feb. 23, 1994, abandoned.
This application Jan. 18, 1996, Ser. No. 588,095
Claims priority, application Japan, Feb. 26, 1993, 5-038916; Apr. 27, 1993, 5-101444
Int. Cl.[6] F16C 1/20
U.S. Cl. 74—502.5 1 Claim



1. A sliding cable in combination with a gear and a guide member, the sliding cable being adapted to be positioned between the gear and the guide member so that the sliding cable is in meshing engagement with the gear and a movement of the sliding cable is guided by the guide member, the sliding cable comprising:

a core member;

a tooth member wound around the core member; and

a foam covering member which is formed by extrusion molding of a foaming material and which covers the core member so as to project out from the tooth member, the foam covering member completely filling a space between adjacent windings of the tooth member and completely covering an outer circumference of the tooth member, the tooth member being in meshing engagement with the gear member via the foam covering member, and the foam covering member being in sliding contact with the guide member.

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5,577,417

TACTILE AND/OR KINESTHETIC MANUAL INFORMATION RETURN CONTROL MEMBER

Raymond Fournier, Gometz-Le-Chatel, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 26, 1994, Ser. No. 329,476
Claims priority, application France, Nov. 8, 1993, 93 13248
Int. Cl.[6] B25J *1/00;3/00*
U.S. Cl. 74—523 18 Claims



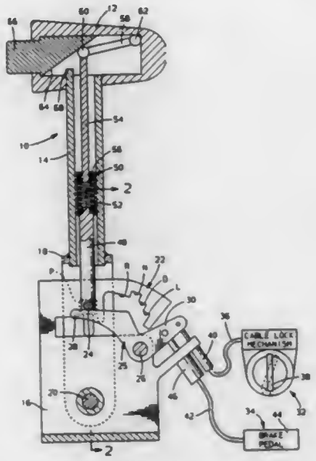
1. A manual control member of a slave system, wherein the member comprises:
a handle having an outer surface mainly formed of an active part and of at least one information return part, the information return part being separate from and movable with respect to the active part and having at least two degrees of freedom;
means for controlling movements of the slave system in response to an action on the active part of the handle; and
means for controlling movements of each information return part with respect to the active part, in response to information return signals from the slave system.

5,577,418

TRANSMISSION MANUAL SHIFT LEVER ASSEMBLY

Mark T. Traxler; Richard A. White, both of Franklin; John K. Quinlan, Brentwood, all of Tenn., and John J. Berndtson, St. Clair Shores, Mich., assignors to Saturn Corporation, Troy, Mich.

Filed Apr. 4, 1995, Ser. No. 416,557
Int. Cl.[6] G05G *5/06*
U.S. Cl. 74—528 4 Claims



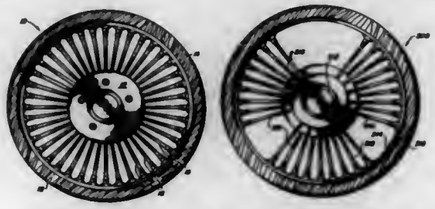
1. A transmission park actuator and control comprising in combination:
a manually operated shift lever having a manually controlled rod;
a transmission ratio position control assembly having a detent gate, an actuator pin and retaining means separate from and movable relative to said detent gate and said actuator pin for retaining the actuator pin in a predetermined slot in the detent gate when the shift lever has been manipulated to a predetermined position; and
lost motion means disposed in the manually controlled rod effective to prevent transfer of a manual input motion to move the retaining means prior to actuation of an operator selected condition being performed.

5,577,419

METHOD FOR MAKING A NOVEL STEERING WHEEL AND THE STEERING WHEEL PRODUCED THEREBY

Stephen A. Harding, 1830 W. Mission Dr., Chandler, Ariz. 85224

Filed Oct. 28, 1994, Ser. No. 331,185
Int. Cl.[6] B42D *1/04;* B21D *53/26*
U.S. Cl. 74—552 19 Claims



1. A method for making a steering wheel mountable to a steering shaft, the method comprising the steps of:
providing a hooped channel;
providing a central hub suitably configured for placement in the center of said hooped channel, said hub having means for connecting said hub to said steering shaft and means for receiving a horn button therein;
forming a plurality of holes in said hooped channel;
forming a corresponding plurality of holes in said hub;
providing a plurality of spokes for interconnecting said hooped channel and said hub, said spokes having a first and second end, said first end terminating in a head and said second end including a threaded portion, said head of said first end engageable with said holes in said hub and second threaded end engageable with said holes in said hooped channel; interconnecting said hub and said hooped channel with said spokes; providing a grip suitably configured to be disposed on the hooped channel; attaching said hub to the steering shaft through use of said attaching means; and affixing a horn button to said hub.

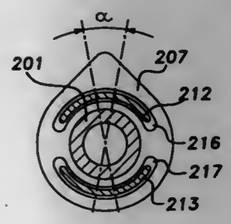
13. A steering wheel mountable to a steering shaft comprising:
a channel felly having a plurality of holes formed therein, said felly providing a grip interface;
a hub assembly suitably configured for attachment to the steering shaft of a vehicle and having a plurality of holes formed therein;
a plurality of spokes having first and second ends, said first ends of said spokes terminating in a head and said seconds ends of said spokes having at least a portion thereof which includes a threaded portion;
a plurality of nipples having a thread receiving portion therein;
wherein said first ends of said spokes are engageable with said holes in said hub assembly, said second ends of said spokes are engageable with said holes in said channel felly, and said nipple thread receiving portions are engageable with said spoke second ends such that said spokes interconnect said hub and said channel felly;
a grip disposed on said grip interface; and
a horn button assembly affixable to said hub assembly.

5,577,420

CAM SHAFT FOR INTERNAL COMBUSTION ENGINE

Helmut Riemscheid, Heiligenstock 53, 5204 Lohmar 21; Karl Weiss, Kastanienweg 24, 5205 St. Augustin; Herbert Frielingsdorf, Südstrasse 50 a, 5204 Lohmar 1; Peter Amborn, In den Gärten 2, 5206 Neunkirchen-Seelscheid 1; Stefan Magirius, Holzgasse 27, 5300 Bonn; Klaus Greulich, Höhenring 61, 5357 Helmerzheim; Gretel Schmidt, Zur Wende 32, 5206 Neunkirchen, and Peter Urban, Hospeltstrase 42, 5000 Köln, all of Germany

Continuation of Ser. No. 922,438, Jul. 29, 1992, abandoned, which is a division of Ser. No. 548,144, Jul. 3, 1990, Pat. No. 5,165,303. This application Dec. 28, 1993, Ser. No. 174,470
Claims priority, application Germany, Jul. 4, 1989, 39 21 923.2; Dec. 22, 1989, 39 42 529.0
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.
Int. Cl.[6] F16H *53/00*
U.S. Cl. 74—567 22 Claims



1. A cam shaft for valve operation in an internal combustion engine, comprising
a first shaft element;
a second shaft element;
said first shaft element being disposed within said second shaft element and being movable relative thereto;
first cam elements provided on said first shaft element, said first cam elements including lobe portions;
slots provided in said second shaft element, through which at least said lobe portions of said first cam elements extend;
and second cam elements provided on said second shaft element.

5,577,421

OIL SUPPLYING STRUCTURE FOR GEAR SHAFT BEARING OF TRANSMISSION FOR VEHICLE

Sunghoon Kim, Kyungki-do, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Dec. 14, 1994, Ser. No. 358,543
Claims priority, application Rep. of Korea, Dec. 14, 1993, 93-27575
Int. Cl.[6] F16H *57/02*
U.S. Cl. 74—606 R 12 Claims

1. An oil supplying structure for a gear shaft bearing, comprising:
a housing in which a gear shaft is disposed;
a gear shaft supporting boss integrally projecting from an inner surface of said housing and having an outer peripheral surface formed transverse to the inner surface of said housing;
a fixing hole through which a gear shaft bearing is disposed to rotatably support the gear shaft, said fixing hole being formed within said supporting boss;
an oil guide channel defined within the outer peripheral surface of said supporting boss and the inner surface of said housing for guiding oil scattered by a differential gear; and
an oil passage radially extending from said fixing hole to said oil guide channel for supplying oil from said oil guide channel to the bearing.

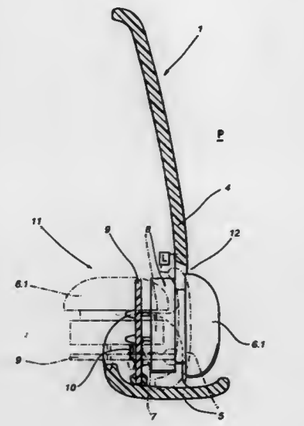
171-489 O.G.-96-4: QL3

5,577,422

CONTROL PANEL ASSEMBLY FOR A MOTOR VEHICLE

Oliver Beck, Filderstadt; Martin Spengler; Manfred Ohlhausen, both of Boeblingen, and Dieter Heinle, Pluederhausen, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Continuation-in-part of Ser. No. 53,704, Apr. 29, 1993, abandoned. This application Oct. 5, 1994, Ser. No. 318,334
Claims priority, application Germany, Apr. 30, 1992, 42 14 178.8
Int. Cl.[6] F16P *1/00*
U.S. Cl. 74—612 8 Claims



1. Control panel assembly for a motor vehicle comprising:
a primary control panel containing a plurality of primary actuation elements which are facing in use in a first direction toward a vehicle passenger space,
an installation opening in the primary control panel which faces in said first direction,
a cover element supported at the primary control panel for pivotal movement about a pivot axis between a closed position with a cover surface of the cover element covering said installation opening, and an open position exposing said installation opening and with at least portions of said cover surface moved inwardly of said installation opening,

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and a secondary control panel containing a plurality of secondary actuation elements, said secondary actuation elements being mounted on a circuit board which is attached to the cover element with the second actuation elements disposed substantially in a plane extending at a right angle with respect to the cover element cover surface,

whereby movement of said cover element from the closed position to the open position simultaneously places the secondary actuation elements in the installation opening and facing in the same first direction as the primary actuation elements,

wherein said cover surface and said secondary control panel are similar in size and fill said installation opening in each of said respective closed and open positions of the cover element.

5,577,423

DIFFERENTIAL GEAR

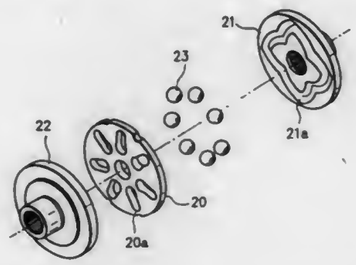
Kenji Mimura, 29-1105, Wakabadai 4-chome, Asahi-ku, Yokohama, Kanagawa-ken, 241, Japan

Filed Feb. 28, 1995, Ser. No. 396,210

Claims priority, application Japan, Mar. 4, 1994, 6-034783; Jun. 17, 1994, 6-135978; Jul. 29, 1994, 6-178801

Int. Cl.[6] F16H *13/04;13/08*

U.S. Cl. 74—650 11 Claims



1. A differential gear characterized by a structure comprising,

a pair of coaxially positioned rotary members facing each other in the axial direction,

a casing to house said rotary members, multiple number of rolling elements inserted between two surfaces facing each other in the axial direction of said pair of rotary members

and a retainer which works to retain said rolling elements in position between said two rotary members,

said retainer being provided with multiple number of guide slots with their longitudes being directed radially, forming through openings, in the axial direction of said rotary members, through all the thickness of said retainer for free rolling of said rolling elements,

said rotary members being provided with grooves, which engage with said rolling elements on their surfaces facing each other in the axial direction in continuation in the peripheral direction and said grooves being so designed that, when revolution difference occurs between said two rotary members, said rolling elements make reciprocal movement along said guide slots.

5,577,424

NITROGEN-CONTAINING SINTERED HARD ALLOY

Kazutaka Isobe; Keiichi Tsuda; Nobuyuki Kitagawa, and Toshio Nomura, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

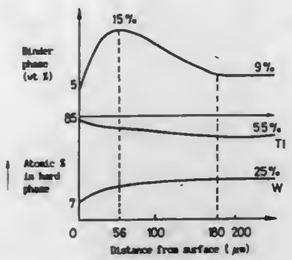
PCT No. PCT/JP94/00158, § 371 Date Mar. 28, 1995, § 102(e) Date Mar. 28, 1995, PCT Pub. No. WO94/18351, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 3, 1994, Ser. No. 313,222

Claims priority, application Japan, Feb. 5, 1993, 5-018283; Dec. 22, 1993, 5-323917

Int. Cl.[6] C22C *19/00*

U.S. Cl. 75—236 19 Claims



1. A nitrogen-containing sintered hard alloy comprising:

a hard phase selected from the group consisting of:

i) a hard phase made up of composite carbonitrides of Ti and at least one transition metal selected from Group IVb, Vb, and VIb metals of the Periodic Table except Ti; and

ii) a hard phase which is a combination of a first hard phase made up of composite carbonitrides of Ti and at least one transition metal selected from Group IVb, Vb, and VIb metals of the Periodic Table except Ti, and a second hard phase made up of at least one of carbides, nitrides and carbonitrides of at least one transition metal selected from Group IVb, Vb and VIb metals of the Periodic Table; and

a binder phase containing Ni, Co and inevitable impurities,

wherein an area where the content of said binder phase becomes maximum exists in the region of depth of 3 μm to 500 μm from the surface; the maximum value of the binder phase content in weight percent is 1.1 to 4 times the average content of said binder phase in the entire alloy; said binder phase content decreases to said average content before the depth reaches 800 μm; the content of binder phase at the surface does not exceed 0.9 time said maximum value;

said hard phase has a composition represented by $(Ti_xW_yM_c)$ (where M is a hard phase-forming transition metal other than Ti and W, and x, y and c are atomic ratios and satisfy the relation $x+y+c=1$ $(0.5<x\leqq 0.95,\ 0.05<y\ 0.5)$);

x at the surface is 1.01 times or more the average x in the entire alloy, and y at the surface is 0.1 to 0.9 time the average y in the entire alloy; the values x and y at the surface return to said average x and y, respectively, before the depth reaches 800 μm; and WC particles do not exist at all or exist in the amount of not more than 0.1% by volume at the surface.

5,577,425

ANGLE TYPE POWER NUTRUNNER

Mats C. Holmin, Stockholm, and Bengt G. Wallerius, Saltsjöbaden, both of Sweden, assignors to Atlas Copco Tools AB, Nacka, Sweden

Filed Jul. 7, 1995, Ser. No. 499,434

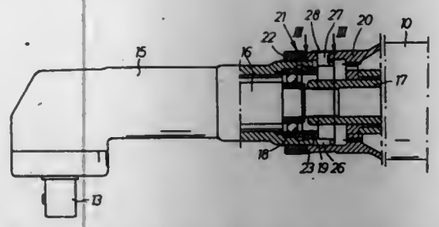
Claims priority, application Sweden, Jul. 8, 1994, 9402416

Int. Cl.[6] B25B *13/46*

U.S. Cl. 81—57.39 20 Claims

1. An angle type power nutrunner, comprising:

a cylindrical housing (**10**) with a rotation motor, and



an angle head (**15**) in which is journalized an output shaft (**13**), said angle head (**15**) being adjustably secured to said housing (**10**) in alternative angular positions by means of a thread connection (**21**) including mating threads on said angle head (**15**) and said housing (**10**), and a lock nut (**22**), wherein:

either one of said housing (**10**) and said angle head (**15**) is provided with a first group of radial holes (**25**) disposed in a circumferentially directed row,

the other one of said housing (**10**) and said angle head (**15**) is provided with a second group of radial holes (**26**) disposed in a circumferentially directed row, and

a radially extending key pin (**27**) is arranged to engage simultaneously one hole each of said first group of holes (**25**) and said second group of holes (**26**) to thereby positively define one of said alternative angular positions between said angle head (**15**) and said housing (**10**).

5,577,426

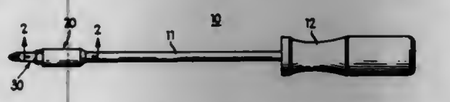
MAGNETIC BIT HOLDER AND HAND TOOL INCORPORATING SAME

Daniel M. Eggert, and Frank Mikic, both of Kenosha, Wis., assignors to Snap-on Technologies, Inc., Crystal Lake, Ill.

Filed Nov. 8, 1994, Ser. No. 335,992

Int. Cl.[6] B25B *23/00*

U.S. Cl. 81—439 14 Claims



1. A bit holder comprising: a cylindrical body having a distal end surface and an axis, said body having formed in said end surface an axial bore terminating at an inner end surface, a permanent magnet received in said bore and having an outer surface, and retaining structure in contact with the outer surface of said magnet and interference fitted in said bore to retain said magnet in said bore, said bore having a portion of non-circular transverse cross section outboard of said retaining structure defining a bit-receiving socket, said retaining structure including a discrete retaining member friction fitted in said bore outboard of said magnet, said retaining member being generally bowl-shaped and convex toward said magnet, said retaining member and said inner end surface cooperating to retain said magnet therebetween.

5,577,427

PLATE POSITIONING AND FEEDING SYSTEM FOR A PUNCH

Thomas Haar, Halstenbek, Germany, assignor to Alfons Haar Maschinenbau GmbH & Co., Hamburg, Germany

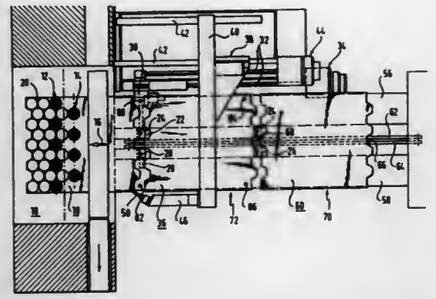
Filed Mar. 22, 1994, Ser. No. 215,520

Claims priority, application Germany, Mar. 26, 1993, 43 09 949.1

Int. Cl.[6] B65G *25/04;* B26F *1/02*

U.S. Cl. 83—206 12 Claims

1. A plate positioning and feeding system for a punch, comprising:



a) a punch (**10**) including a plurality of punching tools (**12, 14**);

b) a positioning station disposed upstream along a feed direction (**16**) of the punch (**10**) and including positioning means for positioning a plate (**36**) with respect to a pair of orthogonal axes (**74, 76; 78**);

c) a first feed device (**22**) including first gripping means (**24, 26**), wherein the first gripping means is displacable in a linear direction along the feed direction (**16**) towards the punch by a first drive means (**34**) between leading and trailing positions so that when in the trailing position the first gripping means grip a plate (**36**) in the positioning station (**72**) and advances the plate to the punch (**10**);

d) a second feed device (**38**) including second gripping means (**50, 52**), wherein the second gripping means is displacable along the feed direction (**16**) by a second drive means between leading and trailing positions so that when in the trailing position the second gripping means grip a plate and advances the plate to the punch (**10**); the improvement of which includes the following features:

e) the punch (**10**) includes a pair of rows of punching tools (**12, 14**), with the rows being spaced along the feed direction of the plates (**18, 36, 60**);

f) said first feed device (**22**) being linearly displacable in the positioning station to advance the plates from the positioning station to a transfer position which is downstream of said positioning station (**72**) and upstream of said punching tools;

g) said second feed device (**38**) being displacable along the feed direction in the transfer position to grip each plate when it has reached said transfer position;

h) said transfer position is located to correspond to the positioning of the plates (**18, 36**) during a punching stroke of the punch (**10**) after the punch (**10**) has performed at least one preceding punching stroke on a plate;

i) said first and second feed devices (**22, 38**) being movably located to cooperate so that the second feed device positions the first plate and that the first feed device positions the second plate so that the leading row of punching tools (**12**) performs the last punching stroke with respect to a first plate (**18**) at the same time when the trailing row of punching tools (**14**) performs the first punching stroke with respect to the following plate (**36**).

5,577,428

PORTABLE SAW GUIDE APPARATUS

Jacob Rueb, 107 E. Bowen Ave., #306, Bismarck, N. Dak. 58504

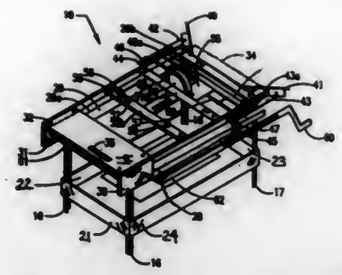
Filed Oct. 21, 1994, Ser. No. 326,868

Int. Cl.[6] B26D *7/01*

U.S. Cl. 83—449 12 Claims

1. A portable saw guide apparatus comprising:

a frame assembly having a plurality of leg members disposed in spaced relationship to one another and having a pair of elongate support means having ends fixedly attached to said leg members, and further having a pair of cantilever arms spaced apart and parallel to one another and disposed generally horizontally above said leg members and said elongate



support means, said cantilever arms also being spaced from said elongate support means, each of said cantilever arms having a first end and a second end, said frame assembly also having at least two arm mounts fixedly attached to said elongate support means, said frame assembly further comprising a pair of adjustable workpiece guide means pivotally attached at said second ends of said cantilever arms for guiding said workpiece at selected angles relative to cutting means of a power saw, a plurality of rail means attached to said frame assembly;

a carriage for supporting said power saw, said carriage slidably and removably mounted upon said rail means; and

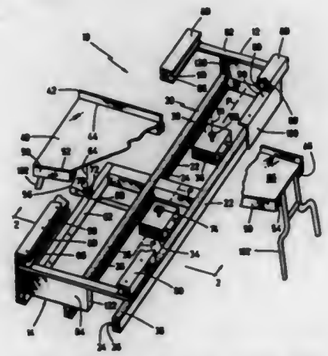
a means to support and vertically adjust a workpiece relative to said power saw and said rail means.

5,577,429

ADJUSTABLE TABLE FOR CUTTING

Walter E. Noble, 69 Prennan Avenue, Islington, Ontario, Canada

Filed Jun. 24, 1994, Ser. No. 265,359
Int. Cl.[6] B27B *5/20;9/04*
U.S. Cl. 83—468.4 **17 Claims**



1. A device for supporting an article for cutting comprising a bed having a first elongated track means having an axis therealong and a fixed support point defining a bed pivot axis;

a cutting table disposed above said bed, said cutting table having a fence line for positioning said article when placed on said table for cutting with a cutting tool supported from said bed for travelling along a cutting path extending parallel to said axis of said first track means above said table, said fence line and cutting path intersecting in a vertical line defining a table pivot axis;

a second track means secured to said cutting table;

a first track runner disposed for relative movement along said first track means;

a second track runner disposed for relative movement along said second track means;

each said first and second track runner having a vertical axis on which said track runners connect respectively to said cutting table at said table pivot axis and said bed at said bed pivot axis to permit relative rotation of said cutting table and said bed about said pivot axes;

said first and second track means and their associated track runners serving to maintain said vertical axis of said first track runner on said cutting path as said bed is rotated relative to said cutting table to change the angle at which said cutting path intersects said fence line;

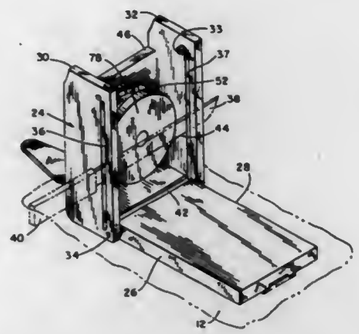
the locus of any point on said cutting table relative to said bed being acircular as said bed and cutting table are relatively rotated.

5,577,430

ADJUSTABLE FOOD PRODUCT SLICER

Glenn K. Gunderson, 950 Westfield La., Neenah, Wis. 54956, and William K. Gunderson, 1221 Van Dyke Rd.; Unit 1-I, Appleton, Wis. 54915

Filed Aug. 8, 1994, Ser. No. 287,627
Int. Cl.[6] B26D *3/30*
U.S. Cl. 83—870 **19 Claims**



1. An indexing assembly for positioning an object on a base board and for facilitating the cutting of the object into slices, comprising:

an indexing disc having a rearward surface, the indexing disc operatively connected to the base board, and rotatable about and movable along a longitudinal axis so as to position the object to be sliced on the base board in order to select a thickness for each slice;

means for rotating the indexing disc to adjust the position of the disc along the longitudinal axis; and

means for engaging the indexing disc to selectively prevent rotation of the indexing disc and to simultaneously selectively prevent movement of the indexing disc along the longitudinal axis so as to selectively fix the position at the indexing disc along the longitudinal axis, the means for engaging the indexing disc including:

a support extending from the base board;

one or more indexing ramps secured to the support, the indexing ramp having a sloped surface which extends away from the support and toward the rearward surface of the indexing disc, the sloped surface including a plurality of indexing notches therein;

means for biasing the indexing disc toward the support; and

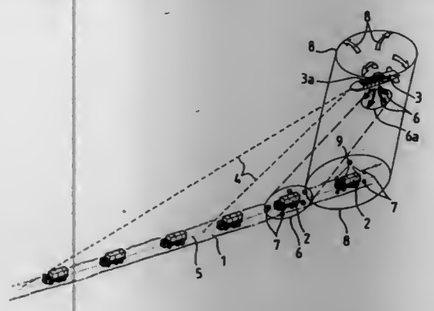
an indexing pin member extending from the rearward surface of the indexed disc toward the support, the indexing pin member including an indexing pin which may be seated within a distinct, preselected notch in the sloped surface of the indexing ramp.

5,577,431

EJECTION AND DISTRIBUTION OF SUBMUNITION

Manfred Küsters, Schliersee, Germany, assignor to Daimler-Benz Aerospace AG, Munich, Germany

Filed Oct. 17, 1990, Ser. No. 605,164
Claims priority, application Germany, Oct. 18, 1989, 39 34 751.6
Int. Cl.[6] F42B *12/58*
U.S. Cl. 89—1.51 **2 Claims**



1. Method of ejecting and distributing submunition bodies to be ejected from a submunition carrier for combatting targets in a line, e.g. vehicle columns, characterized by the following method steps:

aligning the submunition carrier, equipped with sensors for target acquisition, on the line of targets;

identifying the individual objects via road criteria e.g. by means of infrared sensors;

ejecting passive submunition bodies, e.g. mines, from the submunition carrier in a vertical downward direction;

ejecting active submunition bodies, e.g. shaped charge munition bodies, from the submunition carrier in an upward direction; and

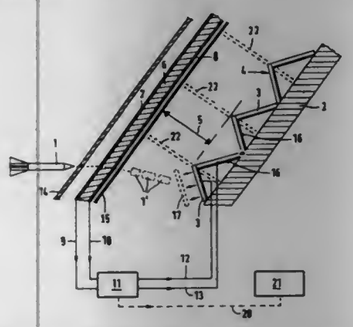
directing the passive and active submunition bodies on the individual objects of the line of targets.

5,577,432

PROTECTIVE DEVICE HAVING A REACTIVE ARMOR

Wilfried Becker, Düsseldorf; Herbert Scholles, Hermannsburg, and Dirk Kilfitt, Velbert, all of Germany, assignors to Rheinmetall Industrie GmbH, Ratingen, Germany

Filed Nov. 6, 1995, Ser. No. 554,167
Claims priority, application Germany, Nov. 10, 1994, 44 40 120.5
Int. Cl.[6] F41H *5/007*
U.S. Cl. 89—36.17 **9 Claims**



1. A target-protecting device for rendering harmless a projectile impacting on the device, comprising

(a) a reactive armor extending over the target; said reactive armor being composed of a plurality of individually electrically ignitable modules; each module having an explosively acceleratable armor plate;

(b) an additional armor extending over and positioned at a distance from, said reactive armor;

(c) sensor means arranged at said additional armor for emitting a signal identifying a location of projectile impact on said additional armor; and

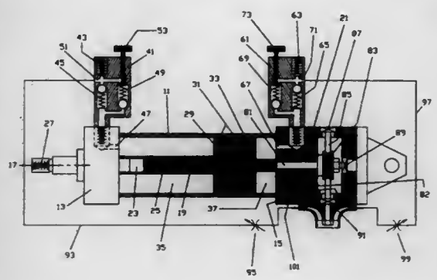
(d) electronic monitoring means receiving signals from said sensor means for determining, from said signals, a position of the projectile upon penetration of said additional armor and for applying an ignition signal to a respective said module to explosively accelerate the armor plate thereof toward the projectile.

5,577,433

REGULATED SPEED LINEAR ACTUATOR

Michael F. Henry, 4504 W. Princeton, Broken Arrow, Okla. 74012

Filed Sep. 6, 1995, Ser. No. 523,874
Int. Cl.[6] F01B *13/00;9/00*
U.S. Cl. 91—61 **21 Claims**



1. A linear actuator for moving a load comprising:

a housing;

a piston separating said housing into forward and reverse chambers;

a lead screw journalled at a forward chamber end of and extending into said housing for rotation about a longitudinal axis thereof and threadedly engaged in said piston;

means fixed to said piston for reciprocal motion therewith and extending through said housing for connection to the load;

means communicating through discrete passages for filling and exhausting said chambers with and of fluid under pressure to selectively provide force to drive said piston and the load in forward and reverse directions; and

means engaged to said lead screw for selectively providing torque to urge said lead screw toward clockwise and counterclockwise rotation thereof in response to said force driving said piston in forward and reverse directions, respectively;

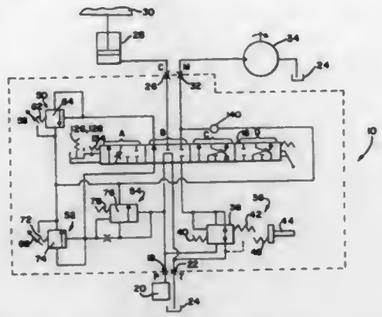
said lead screw having a helix angle tangent so substantially equal to a coefficient of friction between said piston and said lead screw that said torque does not significantly vary said force and said force does not significantly vary the speed of movement of the load.

VOL 1192 ISS 4 NOV 26 1996 UMI

5,577,434
HYDRAULIC VALVE ASSEMBLY

Robert B. Janvrin, Easley, S.C.; Jeffrey J. Karabetsos, Kenosha, Wis., and John L. Bocksnick, Beaver Dam, Wis., assignors to Danfoss Inc., Rockford, Ill.

Filed Sep. 14, 1995, Ser. No. 528,639
Int. Cl.[6] F01L *15/00*; F15B *11/00*
U.S. Cl. 91—178 **16 Claims**



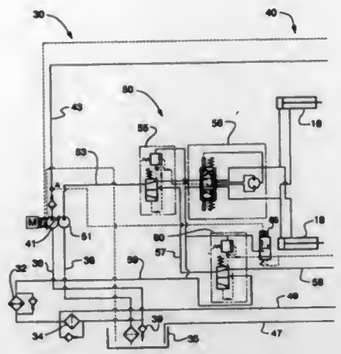
1. A hydraulic valve assembly, comprising
a. a valve housing having an elongated axial bore, and having a pump port for connection to pump pressure, a cylinder port for connection to a first hydraulic device, a motor port for connection to a second hydraulic device and a tank port for connection to a tank reservoir,
b. an elongated valve spool slidable in said axial bore and positionable in four positions comprising,
i. a cylinder activation position,
ii. a neutral position,
iii. a cylinder relief and motor start position, and
iv. a motor run position,
c. said valve spool including means in the cylinder activation position for connecting said pump port to said cylinder port,
d. said valve spool including means in the neutral position for connecting said pump port to said tank port and for preventing connection to said cylinder port and said motor port,
e. said valve spool including means in the cylinder relief and motor start position for connecting said cylinder port to said tank port and connecting said pump port to said motor port with low pressure relief, and
f. said valve spool including means in the motor run position for connecting said cylinder port to said tank port and connecting said pump port to said motor port with high pressure relief.

5,577,435
HIGH FLOW HYDRAULIC CIRCUIT FOR TRACTORS

Vladimir M. Kowalyk, and G. Paul Zanetel, both of Winnipeg, Canada, assignors to New Holland North America, Inc., New Holland, Pa.

Filed Mar. 11, 1996, Ser. No. 613,649
Int. Cl.[6] F15B *11/00*
U.S. Cl. 91—516 **13 Claims**

1. A hydraulic circuit for a tractor having a hydraulically operated steering mechanism and at least one hydraulic remote valve, said hydraulic circuit having a reservoir, comprising:
an implement circuit supplying a flow of hydraulic fluid under pressure to said at least one remote valve, including:
a variable displacement piston pump supplying hydraulic fluid under pressure on demand, said piston pump having a maximum displacement capacity; and
hydraulic lines interconnecting said piston pump, said at least one remote valve, and said reservoir to convey hydraulic fluid therebetween; and
a hydraulic steering circuit including:



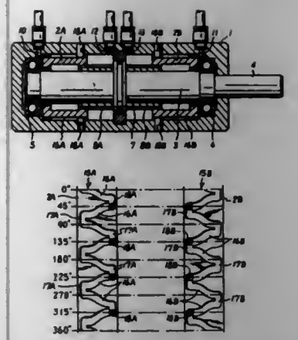
a fixed displacement gear pump supplying a substantially constant flow of hydraulic fluid under pressure;
a first priority valve in flow communication with said gear pump and being operable to direct hydraulic fluid to said steering mechanism upon demand therefrom, said first priority valve being operable to divert excess hydraulic flow not demanded by said steering mechanism through a bypass line;
a second priority valve in flow communication with said bypass line to receive said diverted excess hydraulic flow therefrom; and
a pressure differential sensing valve operably connected to said second priority valve to control the operation thereof, said pressure differential sensing valve being operable to sense an instantaneous displacement of said piston pump in said implement circuit, said second priority valve being operable to direct said diverted hydraulic flow from said first priority valve through a crossover line to said implement circuit when said pressure differential sensing valve detects an instantaneous displacement of said piston pump greater than a predetermined limit, said second priority valve returning said diverted hydraulic flow through a steering circuit return line to said reservoir when said pressure differential sensing valve detects an instantaneous displacement of said piston pump less than said predetermined limit.

5,577,436
STEPPING ACTUATORS

Masahiko Kimbara, Kamakura, Japan, assignor to Three-D Composites Research Corporation, Kamakura, Japan

Filed Dec. 29, 1994, Ser. No. 365,843
Claims priority, application Japan, Dec. 29, 1993, 5-350114
Int. Cl.[6] F16J *1/10*; F01B *9/00*
U.S. Cl. 92—116 **12 Claims**

1. A stepping actuator comprising:
a cylindrical housing having an inner circumferential surface;
plural linearly reciprocating members provided in said housing and having respective outer circumferential surfaces facing said inner circumferential surface, said linearly reciprocating members having a common axis and each being slidable along said common axis;
a rotating member passing through said linearly reciprocating members, an axis of said rotating member being identical to said common axis;
one of said inner circumferential surface of said housing and said outer circumferential surface of each said linearly reciprocating member having an endless zigzag circulating groove formed by tilted grooves interconnected by circularly extending grooves, said tilted grooves being tilted alternatively in opposite directions, said circularly extending grooves connecting end portions of adjoining of said tilted grooves;

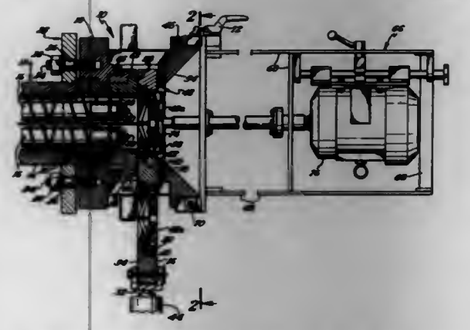


the other of said inner circumferential surface of said housing and said outer circumferential surface of said each linearly reciprocating member having projections being adapted to fit in said circulating groove;
each circularly extending groove corresponding to one of said linearly reciprocating members having a circumferential length equal to a circumferential length of an opposite tilted groove corresponding to another of said slidable reciprocating members when there is only one other slidable reciprocating member, and having a circumferential length equal to a total circumferential length corresponding to a sum of opposite tilted grooves corresponding to others of said slidable reciprocating members when there are more than one other slidable reciprocating members; and
a coupling linking each linearly reciprocating member and said rotating member such that rotation of each linearly reciprocating member is transmitted to said rotating member while each linearly reciprocating member is axially slidable along said rotating member.

5,577,437
COOKER DIE REMOVABLY SECURING MECHANISM

Ronald D. Hurd, Minnetonka, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Nov. 6, 1995, Ser. No. 554,059
Int. Cl.[6] A23L *1/00*; A23P *1/00*; F16L *19/00*;*23/036*
U.S. Cl. 99—353 **20 Claims**

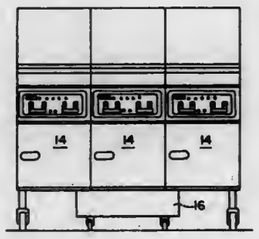


1. Mechanism for removably securing a die to a food cooker/extruder comprising, in combination: a slide plate having an upstream surface, a downstream surface and at least first and second die openings for receiving dies extending from the upstream surface to the downstream surface; a mechanism frame including a first mechanism frame element and a second mechanism frame element; means for securing the first mechanism frame element to the food cooker/extruder; an annular pressure seal having a downstream face and an inner diameter of a size less than the first and second die openings at the upstream surface of the slide plate, with the annular pressure seal held by the first mechanism frame element with the downstream face slideably abutting with the upstream surface of the slide plate and providing a seal generally preventing leakage of food from the die aligned with the inner diameter of the annular pressure seal; an annular pressure plate having an upstream face and a central opening of a size at the upstream face generally equal to the first and second die openings at the downstream surface of the slide plate and increasing with axial spacing from the downstream face of the annular pressure plate, with the annular pressure plate held by the second mechanism frame element with the upstream face slideably abutting with the downstream surface of the slide plate; and means for sliding the slide plate between a first position wherein the first die opening is aligned with the annular pressure seal and annular pressure plate and a second position wherein the second die opening is aligned with the annular pressure seal and annular pressure plate, with the increasing size of the central opening allowing exit of food extrudate from the die without hang-up.

5,577,438
GAS FIRED DEEP FAT FRYER

Roy A. Amitrano, Nashua; Mark E. McCabe, Ctr. Barnstead; George McMahon, Manchester; John T. Pottenger, New London, and Steven J. Savage, Concord, all of N.H., assignors to G. S. Blodgett Corporation, Burlington, Vt.

Filed Apr. 2, 1996, Ser. No. 626,318
Int. Cl.[6] A47J *37/12*
U.S. Cl. 99—403 **12 Claims**



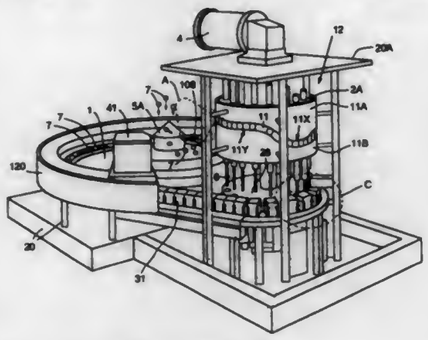
1. A triple-pass gas fired, deep fat fryer comprising:
a fry pot having front, rear and side walls an open top and a bottom;
at least one first immersion tube mounted on the inner surface of the front wall of said fry pot and extending therethrough toward the rear wall;
a burner tube mounted in the upper portion of said first immersion tube and extending the length said tube; an inshot burner is mounted at the end of said burner tube adjacent the front wall, said burner tube having a closed end opposite said burner and a downwardly opening vent adjacent thereto;
a jet impingement baffle tube disposed within said first immersion tube below said burner tube and extending the length thereof having an open outlet end at the front wall of said fry pot;
a second immersion tube extending from the front wall to the rear wall of said fry pot and baffle means disposed within said second tube; header means at the front wall of said fry pot for placing the outlet end of said jet impingement baffle tube in communication with end of said second tube adjacent the front wall of said fry pot; and flue means including fan means in communication with the end of said second immersion tube adjacent said rear wall for exhausting burner gases therefrom.

5,577,439

APPARATUS FOR PITTING PRUNES OR DATES

Frederick J. Cimperman, Dublin, and Klaus Silbermann, Sunol, both of Calif., assignors to Ashlock Company, a Division of Vistan Corporation, San Leandro, Calif.

Filed Mar. 22, 1996, Ser. No. 620,252
Int. Cl.[6] A23N 4/00;4/08
U.S. Cl. 99—549 39 Claims



1. A pitting apparatus, comprising:
a pitting turret including a first chain drive surface, a pitting rubber assembly including pitting rubbers, and a pitting knife assembly;
a feed unit having a second chain drive surface;
a chain looped around the first chain drive surface and the second chain drive surface;
chuck assemblies attached along the chain; and
a drive means coupled to one of the pitting turret and the feed unit for rotating said one of the pitting turret and the feed unit thereby translating the chain and the chuck assemblies along a process path and causing the other one of the pitting turret and the feed unit to rotate, wherein the pitting rubber assembly rotates with the pitting turret thereby translating the pitting rubbers along a closed pitting rubber path, a portion of the pitting rubber path coincides with a pitting portion of the process path, and each of the pitting rubbers translates with one of the chuck assemblies along said pitting portion.

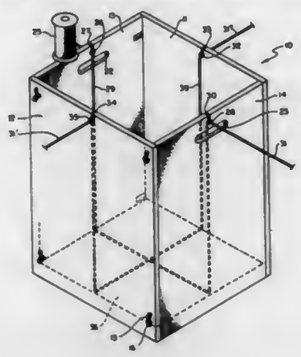
5,577,440

CONTAINER FOR STACKING NEWSPAPERS

Wendy L. Marie, 20071 Carson St., Santa Clarita, Calif. 91350

Filed Jan. 24, 1996, Ser. No. 590,938
Int. Cl.[6] B65B 27/08;13/18
U.S. Cl. 100—34 7 Claims

1. A stacking container for collecting a plurality of newspapers comprising:
a pair of end panels;
a pair of side panels;
said side panels having opposite ends engaging with said end panels to provide a box-like structure;
releasable fastener means cooperatively carried on adjacent engaging side panels and end panels to detachably connect said side panels with said end panels whereby said side panels and said end panels disassemble from said box-like structure into a flat storage inoperative position and assemble into said box-like structure in an operative position;
said side panels and said end panels having a continuous upper edge marginal region defining an open entrance leading into the interior of said box-like structure;
each of said side panels and said end panels having a slotted opening communicating with said open entrance;
a first length of binding string trained longitudinally across said box-like structure through said slotted opening in each of said end panels;
a second length of binding string trained laterally across said box-like structure through said slotted opening in each of side side panels;
said first and said second lengths of binding string having a segment extending exteriorly of said box-like structure preparatory for binding newspapers collected within said box-like structure; and
a spool carried on a selected one of said end panels at said upper edge marginal region for releasably holding a quantity of said binding string.

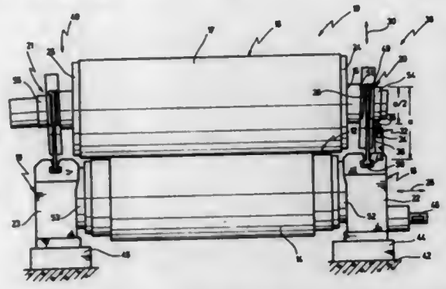


5,577,441

PRESSING DEVICE FOR EXTRACTING LIQUID FROM A PULP WEB

Joachim Grabscheid, Heuchlingen, Germany, assignor to Voith Sulzer Paperiermaschinen Gesellschaft MBH, Heidenheim, Germany

Filed Apr. 18, 1995, Ser. No. 423,888
Claims priority, application Germany, Apr. 19, 1994, 44 13 544.0
Int. Cl.[6] B30B 3/04
U.S. Cl. 100—168 8 Claims



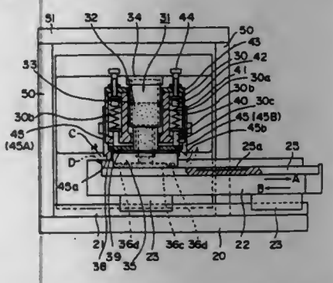
1. Pressing device for extracting liquid from a pulp web passing through a press nip, said device comprising:
first and second press rolls each having a roll axis and arranged in parallel to one another and forming said nip;
a support;
first bearing blocks for supporting two ends of said first press roll, both of said first bearing blocks being supported by said support and at least one of said first bearing blocks being stationarily fixed relative to said support, while a second one of said first bearing blocks allows axial movement of one of said two ends of said first press roll relative to said support;
second bearing blocks for supporting two ends of said second press roll;
longitudinally extending tension elements for supporting said second bearing blocks on said first bearing blocks and adapted for bracing said second bearing blocks against said first bearing blocks, said tension elements allowing axial movement of said press rolls relative to one another under load; and
means for securing one of said second bearing blocks on one of said first bearing blocks against axial movement relative to said one of said first bearing blocks.

5,577,442

DEVICE FOR SUPPLYING INK IN A FILMY FASHION

Yuji Tanaka, Oume, and Kouichi Orita, Fuchuu, both of Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Apr. 5, 1995, Ser. No. 416,996
Claims priority, application Japan, Apr. 7, 1994, 6-093791
Int. Cl.[6] B41F 9/10;31/04
U.S. Cl. 101—163 7 Claims



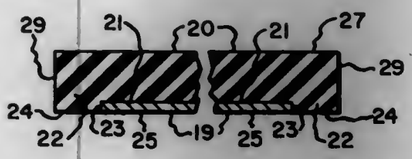
1. A device for supplying a thin-film of ink comprising: a printing plate which has a recessed area formed in its upper surface, a table which holds said printing plate, a pot which accommodates ink and has a blade that has an ink reservoir formed in a lower end of said blade, a pot holder which holds said pot, and a horizontal driving means which moves said printing plate and said pot horizontally relative to each other with an undersurface of said blade of said pot pressed against an upper surface of said priming plate, wherein rotation-stop members are provided on both side surfaces of said pot holder in a direction relative to movement between said pot and printing plate and engaged with an upper edge of said blade when said blade is moved relative to said printing plate for preventing rotation of said blade upwardly from said printing plate.

5,577,443

PRINTING SLEEVE CONSTRUCTION

Richard F. Songer, Ellicottville, N.Y., assignor to Luminite Products Corporation, Salamanca, N.Y.

Filed Feb. 8, 1995, Ser. No. 386,353
Int. Cl.[6] B41F 27/00
U.S. Cl. 101—375 22 Claims



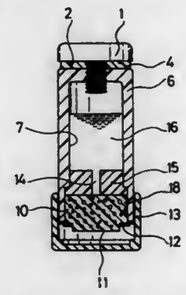
1. A printing sleeve comprising a nickel sleeve having an inner surface and an outer surface and opposite sharp ends, and hard rubber layer means bonded to said outer surface and having end portions extending beyond said opposite ends of said nickel sleeve and having inner surfaces on said end portions which are substantially in line with said inner surface of said nickel sleeve for limiting the possibility of the nickel sleeve of cracking at said sharp ends and for covering said sharp ends to protect the hands of workmen from being cut.

5,577,444

HAND STAMP

Tetsuyuki Toyama, Kanizawa, Japan, assignor to Yamahachi Chemical Co., Ltd., Gamagori, Japan

Continuation-in-part of Ser. No. 81,423, Jun. 22, 1993, abandoned. This application Dec. 16, 1993, Ser. No. 168,641
Claims priority, application Japan, Nov. 2, 1993, 5-274457
Int. Cl.[6] B41F 27/00
U.S. Cl. 101—379 13 Claims



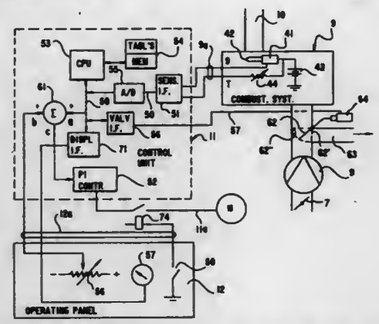
1. A hand stamp comprising a holder means which includes an ink storing space and a stamping member connected to said holder means, said stamping member being made of an open-cell foam material partially heat sealed to form an ink impermeable area with a remainder area for ink permeation to effect a stamping, said ink impermeable area defining intaglio portions formed by press in the heat sealing and said ink permeable portions defining relief portions, and wherein said relief portions collectively define an image that is transferred to a surface when the hand stamp is pressed against such surface.

5,577,445

CONTROL SYSTEM FOR WEB-FED ROTARY PRINTING MACHINES

Ralf Haller, Offersheim, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Mar. 8, 1993, Ser. No. 27,697
Claims priority, application Germany, Mar. 6, 1992, 42 07 071.6
Int. Cl.[6] B41F 23/04
U.S. Cl. 101—424.1 12 Claims



1. Method of controlling a rotary printing machine having a thermal dryer to which a combustion system is post-connected,

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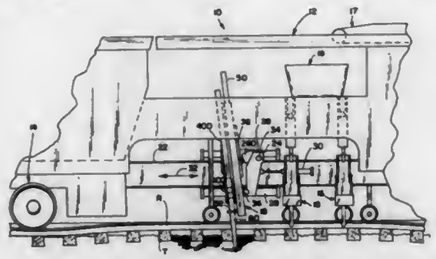
which comprises determining changes in temperature of exhaust gas in the combustion system and, in accordance therewith, varying the speed of operation of the rotary printing machine.

5,577,446

STONEBLOWER HAVING ADJUSTABLE WORKHEADS AND IMPROVED BLOWING TUBES

William E. Perry, Ludington, and Mark S. Krusniak, Manistee, both of Mich., assignors to Pandrol Jackson, Inc., Ludington, Mich.

Filed Feb. 14, 1995, Ser. No. 388,593
Int. Cl.[6] E01B 27/02
U.S. Cl. 104—2 22 Claims



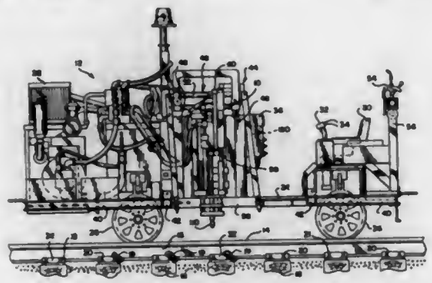
1. A maintenance machine for railroad track, said machine comprising:
a superstructure;
a workhead supported by said superstructure;
an elongated blowing tube supported by said workhead in a generally vertical position;
pivot means for permitting said blowing tube to pivot about an axis generally perpendicular to the longitudinal direction of the track between first and second positions; and
bias means for resiliently biasing said blowing tube toward said first position, whereby said blowing tube is normally in the first position and is pivoted to the second position against the bias means as said blowing tube engages a tie.

5,577,447

AUTOMATIAC RAILWAY FASTENER REMOVER

Robert M. Weber, Ingleside, Ill., and William D. Straub, Milwaukee, Wis., assignors to Oak Industries, Inc., Waltham, Mass.

Filed Jun. 12, 1995, Ser. No. 489,651
Int. Cl.[6] E01B 29/28
U.S. Cl. 104—2 20 Claims



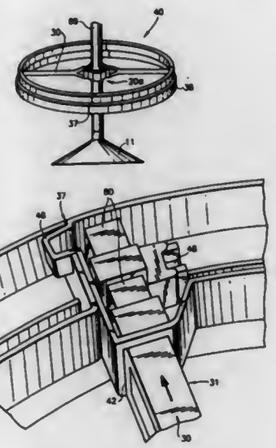
1. An automatic rail fastener remover for use on threaded fasteners used to secure rails to rail ties, said fastener remover constructed and arranged to be mounted on a railway maintenance vehicle having a frame, comprising:
a fastener removal tool configured to releasably engage one of the fasteners for removing the fastener from the tie;
a drive assembly connected to said tool for rotating said tool;
at least one holding means on said fastener remover for maintaining engagement of said tool with the fastener in the removal of the fastener from the tie, said holding means including a latch hook; and
a hook guide assembly for manipulating said latch hook relative to at least one of the tie and a tie plate so that said latch hook engages at least one of the tie and the tie plate independently of the engagement of said fastener removal tool upon the fastener, said engagement of said latch hook with at least one of the tie and the tie plate generating a signal for energizing said drive assembly.

5,577,448

TOY MONORAIL SYSTEM WITH SUPPORT APPARATUS

Yuk T. G. Leung, Kowloon, Hong Kong, assignor to Roxca Industries, Ltd., Kowloon, Hong Kong

Filed Dec. 21, 1994, Ser. No. 360,277
Int. Cl.[6] A63G 31/00
U.S. Cl. 104—53 9 Claims



1. Apparatus comprising:
at least one toy shuttle craft;
a monorail track including at least four segments;
each segment having first and second pegs and first and second slots;
said first peg extending outward from a first end of said segment;
said second peg extending outward from a second end of said segment;
said first slot extending inward from said first end;
said second slot extending inward from said second end;
said first peg being fittable in said first slot of an other segment and said second peg being fittable in said second slot of said other segment thereby forming a joint having an opening;
said at least four segments being interconnected by said first and second pegs and first and second slots end to end to describe a circle;
means on said monorail track for detachably supporting said at least one toy shuttle craft;
a clamp;
said clamp including identical first and second pieces, each of said pieces including first and second flaps;
said first and second flaps being fittable together to draw said first and second pieces together into clamping relationship;

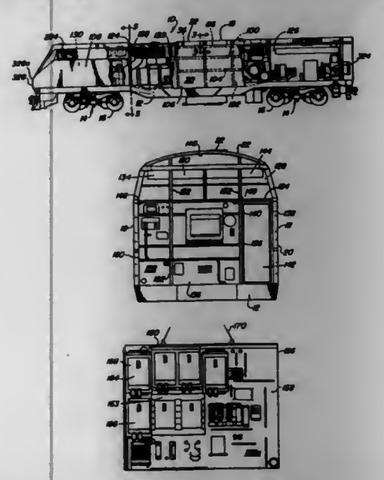
a base, capable of being detachably mounted between said first and second pieces of said clamp, which base is effective for supporting said monorail track at a distance above a surface;.
at least one bracing arm having first and second connectors;
said first connector being connected to said clamp;
said second connector being inserted into said opening;
said second connector retaining said first and second pegs and first and second slots in engagement, whereby secure assembly of said at least four segments is attained;
said monorail track including a vertical rise;
said shuttle craft including a plurality of guide bars;
at least one driven wheel on said shuttle craft;
means on said monorail track for engaging said at least one driven wheel;
said at least one driven wheel being fittable on a first side of said vertical rise;
at least one guide wheel on said shuttle craft; and
said at least one guide wheel engaging a vertical portion of said vertical rise, whereby said shuttle craft is prevented from tilting off said monorail track.

5,577,449

BULKHEAD ASSEMBLY FOR A MONOCOQUE LOCOMOTIVE

John E. Kleiner, Erie; Thomas C. Sonnev, Wattsburg, and Richard H. Holmes, Harborcreek, all of Pa., assignors to General Electric Company, Erie, Pa.

Division of Ser. No. 442,244, May 15, 1995, Pat. No. 5,535,680, which is a continuation of Ser. No. 59,788, May 10, 1993, Pat. No. 5,355,806,. This application Jan. 24, 1996, Ser. No. 590,799
Int. Cl.[6] B61C 17/00
U.S. Cl. 105—26.05 2 Claims



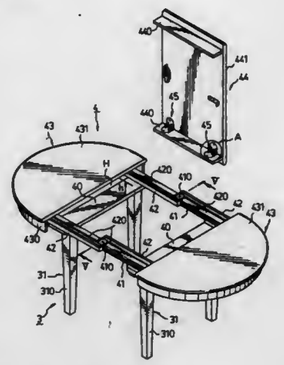
1. A method for installing at least one component in a monocoque locomotive, the locomotive including a longitudinally extending platform and an attached portion of a bulkhead, the attached portion attached to and extending transversely across the platform, the attached portion including a rearward generally vertically extending plate forming at least a first portion of an opening, the locomotive including a sidewall extending along at least a portion of the longitudinal sides of the platform, the platform and sidewall forming a second portion of the opening, the method including the steps of:
attaching the at least one component to a substrate at a location remote from the locomotive to form an insert portion, including rigidly attaching the substrate to the platform and the sidewall forming the second portion;
transporting the insert portion to the locomotive and disposing the insert portion in close proximity to the attached portion;
moving the insert portion into the opening so that the substrate is coplanar with the plate of the attached portion; and
attaching the substrate to the plate so that the insert portion and attached portion form a unitary bulkhead.

5,577,450

VARIABLE-LENGTH TABLE

Chien-Hsiung Huang, No. 25, Lane 141, Chung-Yang St., Ping-Tung City, Taiwan

Filed Apr. 26, 1995, Ser. No. 430,325
Int. Cl.[6] A47B 1/00
U.S. Cl. 108—86 5 Claims



1. A variable-length table comprising:
a leg assembly which includes two upright leg units; and
a tabletop assembly which includes:
two leg mounting boards mounted respectively on said leg units;
two guide beams interconnecting said leg mounting boards, said guide beams being transverse to said leg mounting boards and being parallel to each other;
two connecting beam sets, each including two connecting beams disposed respectively on two sides of a corresponding one of said guide beams and mounted slidably thereto;
two fixed tabletop units, each including an end board member mounted on a respective one of said connecting beams of each of said connecting beam sets, and an end flange that extends downwardly from said end board member for concealing said guide beams and said connecting beam sets when said fixed tabletop units are pushed toward each other to obtain a shorter table length; and
a removable tabletop unit including a central board member that is to be disposed removably between said fixed tabletop units when said fixed tabletop units are pulled apart so as to obtain a longer table length, and an opposite pair of central flanges that are mounted on said central board member and that cooperate with said end flanges of said fixed tabletop units so as to conceal said guide beams and said connecting beam sets when the longer table length is obtained;
a space being formed between said leg mounting boards and said end board member of said fixed tabletop units, said central flanges of said removable tabletop unit having a height, said central board member having a thickness, said space having a depth which is less than a sum of the height of said central flanges of said removable tabletop unit and the thickness of said central board member of said removable tabletop unit;
wherein each of said central flanges of said removable tabletop unit has a thickness, a sum of the thickness of said central flanges of said removable tabletop unit and the thickness of

said central board member of said removable tabletop unit being less than the depth of said space; and

wherein said removable tabletop unit further includes at least two hinge units, each having pivotally connected first and second hinge leaves that are mounted respectively to one of said central flanges of said removable tabletop unit and said central board member of said removable tabletop unit, said hinge units mounting foldably said central flanges of said removable tabletop unit to said central board member of said removable tabletop unit such that said central flanges extend downwardly from said central board member when the longer table length is obtained;

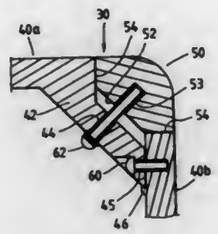
whereby, said removable tabletop unit can be concealed fully within said space when the shorter table length is obtained, wherein each of said hinge units has a spring member for biasing a corresponding one of said central flanges of said removable tabletop unit to a normally perpendicular position relative to said central board member of said removable tabletop unit.

5,577,451

DESK AND THE LIKE HAVING APRONS FASTENED THERETO

Thomas Yeh, No. 66, Goang Huey, Goang An Tsuen, Wann Dan Hsian, Pyng Dong Hsien, Taiwan

Filed Jun. 19, 1995, Ser. No. 492,155
Int. Cl.[6] A47B *47/00*
U.S. Cl. 108—156 **5 Claims**



1. A desk and the like comprising:

a predetermined number of aprons which are fastened with an underside of a desk top such that two of said aprons are adjacent to each other;

a plurality of fastening portions equal in number to said aprons and having respectively a fastening hole and a threaded hole engageable with a fastening means for fastening said two adjoining aprons; and

a plurality of legs equal in number to said aprons and having respectively a fastening side provided with a fastening nut embedded thereinto and engageable with a fastening bolt which is also engageable with said fastening hole of said fastening portion, said legs further having respectively two fastening surfaces located on both sides of said fastening side of said leg, said leg being fastened at a top thereof with said two adjoining aprons such that said two fastening surfaces of said leg are attached respectively to said two adjoining aprons;

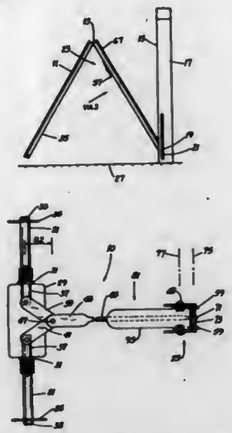
wherein each of said fastening portions is made integrally with one of said adjoining aprons and is provided with a free end engageable with a locating portion of another one of said. two adjoining aprons.

5,577,452

TABLE LOCKING APPARATUS

Leonard J. Yindra, Manitowoc, Wis., assignor to Palmer/Snyder Furniture Co., Connellsville, Pa.

Filed Feb. 23, 1995, Ser. No. 393,412
Int. Cl.[6] A47B *3/08;5/04;5/06*
U.S. Cl. 108—168 **10 Claims**



1. In a locking apparatus having opposed bolts, each connected to a rigid link for axial bolt movement, the improvement wherein:

each link is pivotally pinned to an operating rod; and

the operating rod is coupled to a toggle mechanism for bolt movement;

the bolts are mounted for movement between a lock position and an unlock position;

the toggle mechanism includes a fulcrum pin and a rod operating pin, such operating pin extending along a central longitudinal axis;

the links are pinned to the rod by a link pin;

and wherein:

when the bolts move between the lock position and the unlock position, the distances through which the operating pin and the link pin move are substantially equal to one another; and

the axis is at a substantially constant distance from the fulcrum pin.

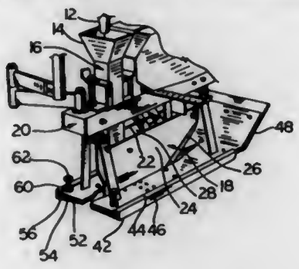
5,577,453

ADJUSTABLE COMPACTING SKID FOR MECHANICAL TRANSPLANTER

Neal F. Lucht, Molalla, Oreg., assignor to Northwest Transplants, Molalla, Oreg.

Filed Jun. 8, 1995, Ser. No. 488,744
Int. Cl.[6] A01C *11/02*
U.S. Cl. 111—109 **18 Claims**

1. A mechanical transplanter device for transplanting seedlings



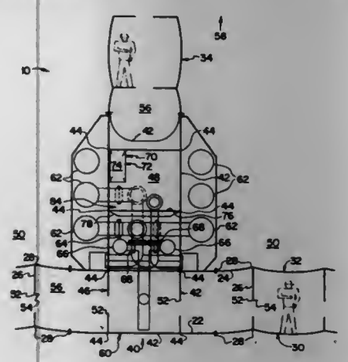
comprising a frame for supporting said transplanter for movement along a path, furrow opening means mounted on said frame and engaging the ground for opening a furrow in the ground along said path, seedling delivery means mounted on said frame for delivering a seedling to said furrow, compacting means for closing said furrow after a seedling has been deposited therein by directing soil displaced from said opening by said furrow opening means back into said furrow and for compacting the soil around the transplanted seedling, said compacting means including a deflecting tab pivotably mounted for movement relative to the compacting means for deflecting soil downwardly and toward the seedling, and adjusting means for pivoting said tab to adjust the degree of soil compaction around the transplanted seedling, mounting means for mounting said compacting means on said frame below said delivery means, and containment means carried by the compacting means for containing soil displaced from said furrow by said furrow opening means under said compacting means so that displaced soil can be redirected into the furrow after deposition of the transplanted seedling.

5,577,454

TANK VESSEL SUBASSEMBLY FOR EQUIPMENT, PIPING AND OTHER NONSTRUCTURAL COMPONENTS

Robert D. Goldbach, Millford, Pa., assignor to Metro Machine Corp., Norfolk, Va., and Marinex International, Inc., Hoboken, N.J.

Filed Jan. 26, 1996, Ser. No. 592,539
Int. Cl.[6] B63B *3/02*
U.S. Cl. 114—65 R **15 Claims**



1. A method for constructing at least one midbody module for a double-hulled tanker having at least one cargo tank and at least one interhull space for receiving liquid ballast, comprising:

(a) providing a shell including a box keel increment which is longitudinally coextensive with and connected along the length thereof to a pipe tunnel increment;

(b) installing outfitting equipment in said pipe tunnel increment, including valved longitudinal piping for serving at least one cargo tank and at least one interhull space, for providing a prefabricated bottom centerline subassembly having a longitudinal direction;

(c) providing a transverse bulkhead having a perimeter including two opposed portions corresponding in location to vessel sidewalls, a first intervening portion corresponding in location to a vessel bottom, and a second intervening portion opposed to said first intervening portion and corresponding in location to a vessel deck, said first intervening portion having a medial site;

(d) providing a plurality of midbody module hull subassemblies, at least some of which are double-hulled, so as to include an outer hull increment having a longitudinal direction, and an inner hull increment having a longitudinal direction and being secured in spaced, facially confronting relation to the respective said inner hull increment, with respective longitudinal directions aligned, by a plurality of longitudinally extending spacer plates, spaced from one another girthwise of said midbody module, and connected along an inner extent thereof to said inner hull increment and along an outer extent thereof to said outer hull increment;

(e) assembling said midbody module hull subassemblies and said prefabricated bottom centerline subassembly about said perimeter of said transverse bulkhead with all of said longitudinal directions parallel to one another, with said prefabricated bottom centerline subassembly centered on said medial site and flanked by double-hulled ones of said midbody module hull subassemblies, with said pipe tunnel increment oriented inwards; and

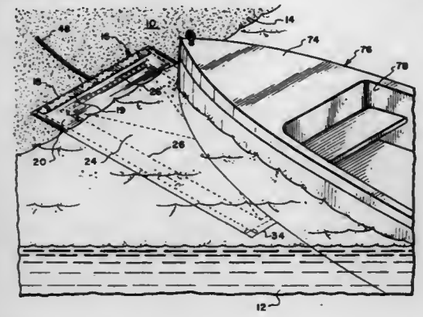
(f) securing respective ones of said subassemblies which adjoin one another girthwise of said midbody module, along corresponding longitudinal extents thereof, to one another, and all of said subassemblies to said transverse bulkhead, thereby uniting said subassemblies and said transverse bulkhead to provide said midbody module.

5,577,455

WATERCRAFT PROTECTION MAT

Ryan T. Dvorak, 31139 Via Colinas - Suite 201, Westlake Village, Calif. 91362

Filed Mar. 19, 1996, Ser. No. 618,167
Int. Cl.[6] B63B *59/02*
U.S. Cl. 114—219 **9 Claims**



1. A watercraft protection mat comprising:

a thin sheet material body having a forward edge and a rearward edge with a left side edge and a right side edge located there between, said body being constructed of a bottom layer and a top layer;

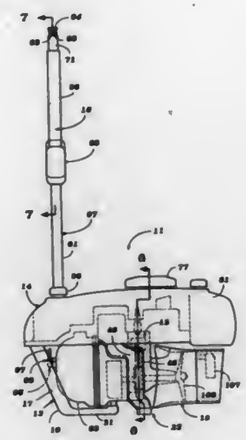
a plurality of eyelets located in said body directly adjacent said forward edge, at least one of said eyelets to receive an elongated fastener, said fastener for penetrating a supporting surface on which said body has been placed;

a flap attached to said body, said flap being movable between a closed position and an open position, said open position exposing said plurality of eyelets permitting access to said elongated fastener, said closed position covering said elongated fastener and said plurality of eyelets;

weight means mounted on said body, a portion of said weight means being located directly adjacent said rearward edge; and

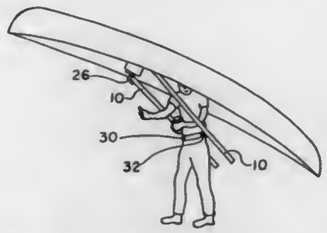
stiffener means mounted on said body, said stiffener means comprising a first elongated rigid member attached to said body and located directly adjacent said left side edge and a second elongated rigid member attached to said body and located directly adjacent said right side edge, whereby said body is to be located at the shoreline and the hull of the watercraft is to be moved onto said body thereby preventing damage to the hull of the watercraft and damage to the watercraft propulsion system from natural material and debris located at the shoreline.

5,577,456
SUBMERSIBLE PROPULSION UNIT
Kiyonobu Kobayashi, and Yasunari Okamoto, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Nov. 18, 1994, Ser. No. 342,346
Claims priority, application Japan, Nov. 24, 1993, 5-315824; Nov. 24, 1993, 5-315825
Int. Cl.[6] B63B 21/56
U.S. Cl. 114—315 7 Claims



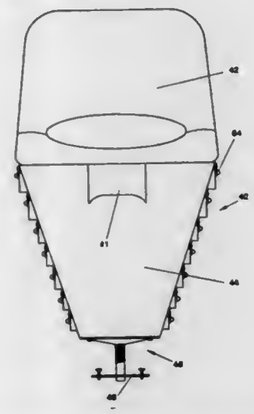
1. A personal submersible propulsion unit comprised of a frame assembly, an internal combustion engine having an induction system carried by said frame assembly for a least partial submersion in a body of water, a propulsion device carried by said frame assembly and drive by said engine for propelling said frame assembly through a body of water, said induction system including an air inlet device for extending above the level of water in which said propulsion unit is operated, an air box supplied with air from said air inlet device, means responsive to the level of submersion of said propulsion unit for controlling said inlet device, said air box supplying air to said engine induction system, a battery sealed within said air box, and an access opening in said air box through which said battery may be accessed.

5,577,457
POSITIONING AND LIFTING DEVICE FOR A WATERCRAFT
John B. Nichols, Jr., 835 Memorial Dr., Winthrop, Me. 04364
Filed Jan. 18, 1995, Ser. No. 374,061
Int. Cl.[6] B63B 35/71;17/00
U.S. Cl. 114—343 2 Claims



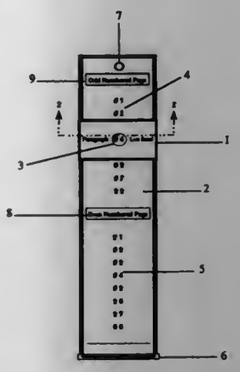
1. A watercraft positioning device comprising at least two support legs for supporting one end of an inverted watercraft above the ground, said support legs being of sufficient length to allow a person to lift a watercraft from a crouched position under a carrying yoke typically located near the center of balance of a watercraft, and self-stabilizing joining means whereby said support legs firmly engage the interior of the watercraft roughly perpendicular to its waterline, said joining means adapted to abut the underside of the gunwales of the watercraft so as to minimize extension of said joining means above the gunwales, said joining means being positioned within arm's reach of the person and further allowing manipulation of each said support leg by one hand of the person while carrying the watercraft in a normal portaging position, said manipulation guiding said support legs to a position within the confines of the watercraft, said joining means being removably fitted into the interior of a watercraft by employment of struts of adjustable length which press said joining means outwardly against opposing interior side-walls of the watercraft and conventional retaining clips which further clamp said joining means to the gunwales.

5,577,458
PEDESTAL MOUNTED SEAT TACKLE BOX ASSEMBLY
Rex L. Kohl, 11152 Jackson Dr., Eden Prairie, Minn. 55347
Filed Jul. 20, 1995, Ser. No. 504,440
Int. Cl.[6] B63B 17/00
U.S. Cl. 114—363 22 Claims



1. A pedestal mounted seat storage base assembly for mounting on a pedestal base plate commonly used for supporting a standard pedestal seat assembly, the seat storage base assembly comprising:
- a storage base defining a storage space and having a top and a bottom;
- a seat mounted on the top of the storage base, whereby the storage space is disposed vertically beneath the seat; and
- a pedestal base plate adaptor mounted on the bottom of the storage base, the pedestal base plate adaptor having a vertically extending post removably and rotatably received by the pedestal base plate such that the storage base may rotate with respect to the pedestal base plate, whereby the seat storage base assembly may be interchanged with a standard pedestal seat assembly.

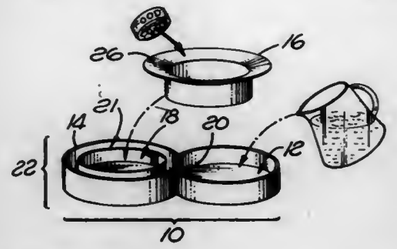
5,577,459
PAGE AND PARAGRAPH INDICATING BOOKMARK
William Alden, 10698 Maplewood Rd., Unit C, Cupertino, Calif. 95014
Filed Apr. 24, 1995, Ser. No. 427,120
Int. Cl.[6] B42D 9/00
U.S. Cl. 116—234 1 Claim



1. A bookmark for use with a book, said bookmark comprising:
- a thin, flat rectangular body;
- a first heading means disposed upon said body for indicating one page selected from the group consisting of an odd page of the book and an even page of the book, said first heading means being alphabetic indicia;
- a first set of numeric indicia disposed upon said body, said first set of numeric indicia being sequential numerals beginning with the number one and incrementing in an ascending order toward a bottom of said body, said first set of numeric indicia being located below said first heading means, said first set of numeric indicia representing paragraphs on the one page;
- a second heading means for indicating the other page selected from the group consisting of an odd page of the book and an even page of the book, said second heading means being alphabetic indicia disposed upon said body at a location below said first set of numeric indicia;
- a second set of numeric indicia disposed upon said body, said second set of numeric indicia being sequential numerals beginning with the number one and incrementing in an ascending order toward said bottom of said body, said second set of numeric indicia positioned below said second heading means, said second set of numeric indicia representing paragraphs on the other page; and
- a collar having an aperture therethrough, said collar being frictionally secured to said body, said collar also being slidable along the length of said body to display, through said aperture, each of said numerals of said first and second sets of numeric indicia, said aperture being configured such that not more than one numeral of said first and second sets of numeric indicia is entirely viewable through said aperture at any position of said collar along the length of said body.

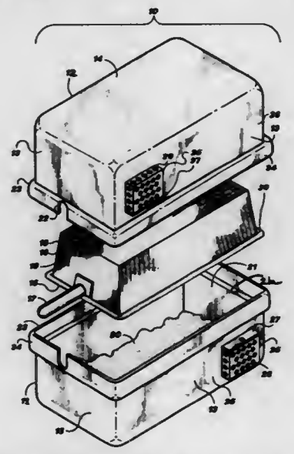
5,577,460
Patent Not Issued For This Number

5,577,461
PET FOOD DISH
Charles R. Sebastian, 224 Via Lorca, Newport Beach, Calif. 92663, and Richard M. Sebastian, 1101 MacArthur Blvd., Santa Ana, Calif. 92707
Filed May 23, 1995, Ser. No. 448,040
Int. Cl.[6] A01K 5/01;7/00
U.S. Cl. 119—51.5 10 Claims



6. A pet dish comprising:
means for holding food, and having an inwardly slanted flange integral ring portion;
means for holding liquid for consumption; and means for creating a moat, said means for holding food capable of being lifted out of said means for creating a moat for easy removal, and said means for creating a moat having a liquid protected by dry chamber with a bottom portion.

5,577,462
ANIMAL LITTER CONTAINER WITH CLEANING SCOOP
Donna J. Korth, 615 S. High St., Fort Atkinson, Wis. 53538
Filed Jun. 6, 1995, Ser. No. 490,444
Int. Cl.[6] A01K 1/035
U.S. Cl. 119—166 16 Claims



1. An animal litter container for separating reusable animal litter from clumps comprising:
- a. first and second shells, wherein each shell includes a perimeter, a plurality of walls depending from the perimeter, and a base attached to the plurality of walls, wherein the perimeter includes a flange adapted to releasably align the perimeter of the first shell to the perimeter of the second shell and thereby form an enclosure, and wherein the perimeter further includes an aligning disposal unit handle aperture; and

b. a disposal unit including a screen which is adapted to be placed between the first and second shells and within the enclosure, the screen including openings large enough to allow reusable animal litter to pass through while retaining the clumps, a surrounding screen perimeter, and at least one handle attached to the screen and extending therefrom in such a fashion that it rests at least partially within both the disposal unit handle aperture of the first shell and the disposal unit handle aperture of the second shell when the disposal unit is located within the enclosure.

5,577,463

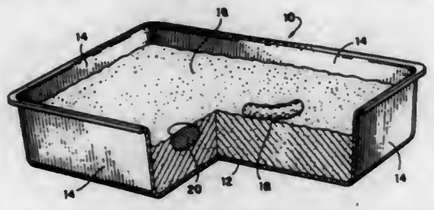
EXTRUDED SMECTITE CLAY CLUMPING ANIMAL LITTER HAVING IMPROVED CLUMP STRENGTH

Carol Elazier-Davis, Oak Park; Gary W. Beall, Island Lake, and John Hughes, Long Grove, all of Ill., assignors to AMCOL International Corporation, Arlington Heights, Ill.

Continuation of Ser. No. 248,304, May 24, 1994, Pat. No. 5,452,684. This application Apr. 3, 1995, Ser. No. 415,665

Int. Cl.[6] A01K *29/00*

U.S. Cl. 119—173 **19 Claims**



1. A litter box comprising a water-impermeable receptacle having disposed therein an absorbent composition capable of agglomerating upon wetting into a mass of sufficient size and of sufficient cohesive strength for physical removal of the agglomerated mass from the litter box without substantial adherence to an animal, said absorbent composition comprising extruded particles of a smectite clay.

5,577,464

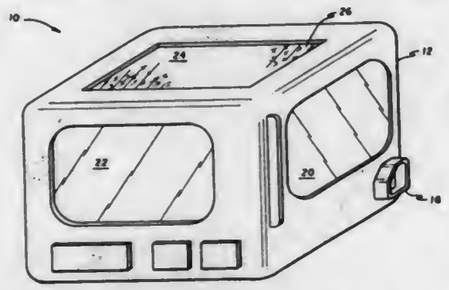
MODULAR ANIMAL HABITAT

Wayne L. Wellington, and Nancy E. Wellington, both of 1516 Rock Island La., Las Vegas, Nev. 89110

Filed May 17, 1995, Ser. No. 442,771

Int. Cl.[6] A01K *1/00*

U.S. Cl. 119—475 **15 Claims**



1. A modular animal habitat mountable to a vertical environmental surface, said animal habitat comprising:

at least one housing defining a chamber for containing an animal, and at least one connector stub formed in said at least one housing; and

at least one tube having means for engaging said at least one connector stub, said at least one tube having a flat rear surface for contacting the vertical environmental surface.

5,577,465

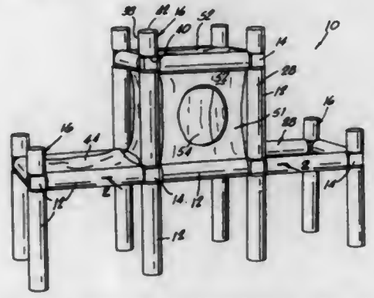
KIT FOR ASSEMBLING AN EXPANDABLE PET ENCLOSURE AND CLIMBING DEVICE

Weldon Cook, 30700 Manzano Dr., Malibu, Calif. 90265

Filed Jun. 23, 1994, Ser. No. 264,701

Int. Cl.[6] A01K *1/02;1/035*

U.S. Cl. 119—498 **20 Claims**



11. A kit for constructing an expandable pet climbing device comprising:

(a) a plurality of beams, each beam having a body with an opening at each end;

(b) a plurality of corner members, each corner member having a center and a plurality of prongs directed outwardly from the center, each prong being sized and dimensioned to press fit into an end opening in at least one of the beams, wherein the corner members are capable of connecting the beams to one another to form a three dimensional framework;

(c) a plurality of end caps, each end cap having a body, an end opening and an end wall disposed opposite the end opening, wherein the end opening in each end cap is sized and dimensioned to press fit over a prong on at least one of the corner members;

(d) a hollow compartment composed of a flexible material, the compartment being sized and dimensioned to fit within the volume enclosed by a plurality of beams connected to one another by corner members to create an enclosed volume; and

(e) a plurality of prong attachment fasteners disposed around the periphery of the hollow chamber, each prong attachment fastener being sized and dimensioned to attach to one of the corner members.

5,577,466

MODULAR PLAY STRUCTURE FOR ANIMALS

Pamela M. Luxford, 3304 W. Aksarben Ave., Littleton, Colo. 80123

Filed Sep. 7, 1994, Ser. No. 301,843

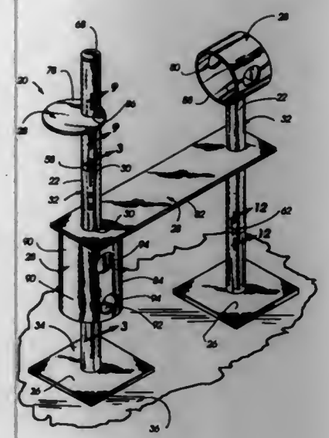
Int. Cl.[6] A01K *29/00;1/035*

U.S. Cl. 119—706 **6 Claims**

1. A modular play structure for animals, said structure being positionable upon a support surface, and comprising:

a. a base engageable with the support surface;

b. a plurality of elongated spacer members, each spacer member having opposite ends, the plurality of spacer members being releasably attached end to end to adjacent spacer members in a linear configuration and forming an elongated pole having two opposite ends, one end of which is releasably attached to the base to support the pole in a vertical orientation relative to the base, the pole and base together forming at least one base unit;



c. a structural piece removably attached between two spacer members;

d. said adjacent ends of connected spacer members form a threaded connector assembly, said connector assembly comprising:

a threaded female receptacle attached to one end of a connected adjacent spacer member; and

a threaded male extension attached to one end of a connected adjacent spacer member, the threaded male extension threadedly receivable in the threaded female receptacle,

e. wherein said structural piece comprises a platform for supporting an animal upon the structure;

f. the threaded male extension having a circumference, the spacer member having a circumference, and the circumference of the threaded male extension being less than the circumference of the spacer member, forming a shoulder, and an opposing shoulder being defined on the female connector of an adjacent connected spacer member;

g. said platform having at least one aperture defining a perimeter with a circumference greater than the circumference of the threaded male extension and less than the circumference of the spacer member to engage the shoulder on the threaded male connector, said opposing shoulder on the threaded female connector engaging the perimeter of at least one aperture of the platform when the male connector and female connector are threaded together to pinch the platform therebetween; and

h. wherein said platform has a circular shape, and wherein said at least one aperture is positioned off-center in said platform.

5,577,467

HEATING METHOD AND HEATING DEVICE

Wilhelm Bormann, Freiburg, Germany, assignor to Fides Gesellschaft für Finanzplanung mbH, Timmendorfer Strand, Germany

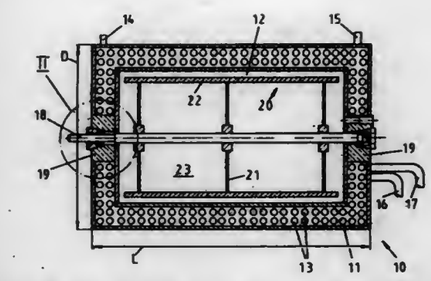
Filed Dec. 21, 1993, Ser. No. 170,704

Claims priority, application Germany, May 18, 1993, 43 16 615.6; Jun. 9, 1993, 43 19 176.2

Int. Cl.[6] F22B *1/02;* **F24C** *9/00*

U.S. Cl. 122—27 **29 Claims**

1. A heating method comprising vortexing with air in a dry mixer one of a pulverulent mixture and a granular mixture comprising a plastic including small plastic particles and a stabilizing agent, conducting water which circulates in a heat circulation system through an interspace of a double wall of a container of the dry mixer for dissipation of heat, further comprising utilizing mercaptide as a stabilizing agent for the small plastic particles, carrying out vortexing in a horizontally extending container via a vortexing path extending over a horizontal area and effecting vortexing by utilizing a wing mixer rotating about a horizontal shaft.



5,577,468

ENGINE VALVE SEATING VELOCITY HYDRAULIC SNUBBER

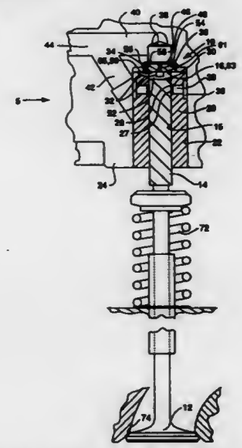
J. Roger Weber, Chillicothe, Ill., assignor to Caterpillar Inc., Peoria, Ill.

PCT No. PCT/US91/08886, § 371 Date Nov. 29, 1991, § 102(e) Date Nov. 29, 1991

PCT Filed Nov. 29, 1991, Ser. No. 244,338

Int. Cl.[6] F01L *9/02*

U.S. Cl. 123—90.12 **7 Claims**



7. A hydraulically actuated engine poppet valve assembly comprising:

(a) an engine valve body (**24**);

(b) a valve insert (**20**) having a first bore (**18**) and being disposed in a second bore (**22**) formed in said engine valve body (**24**);

(b') an engine poppet valve (**12**) movably disposed in said first bore (**18**) for movement between a first position and a second position;

(c) said engine poppet valve (**12**) forming a hydraulic cavity (**22,52**) with said first bore (**18**) and being actuatable toward its second position in response to fluid pressure in the hydraulic cavity (**22,52**); and

(d) means for communicating first and second rates of fluid flow with the hydraulic cavity (**22,52**), the first rate of fluid flow pressurizing the hydraulic cavity (**22,52**) and actuating said engine poppet valve (**12**) toward its second position and the second rate of fluid flow restricting fluid flow from within the hydraulic cavity (**22,52**) and slowing movement of said engine poppet valve (**12**) toward its first position.

(e) wherein said means for communicating first and second rates of fluid flow includes a check valve member (36) movable against a first check valve seat (34) defined by said valve insert (20) and against a second check valve seat (58) defined by said second bore (22), said check valve member (36) including a secondary passage (54) adapted for flowing the second rate of fluid flow thereacross when said check valve member (36) is seated against said second check valve seat (58).

5,577,469

DEVICE FOR CONTROLLING A VALVE OF AN INTERNAL COMBUSTION ENGINE

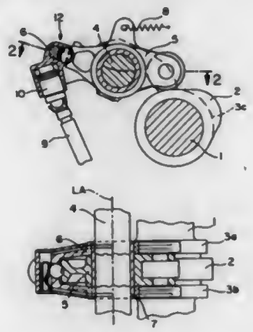
Leopold Müller, Chemnitz, and Frank Schwabe, Rodewisch, both of Germany, assignors to IVA Motor GmbH, Chemnitz, Germany

Filed Mar. 16, 1995, Ser. No. 405,142

Claims priority, application Germany, Mar. 16, 1994, 44 08 808.6

Int. Cl.[6] F01L *1/18;1/20;1/04;13/00*

U.S. Cl. 123—90.16 **8 Claims**



1. A device connected to a valve stem for controlling a valve of an internal combustion engine, the device comprising:

a cam having a first peripheral contour and a disk having a second peripheral contour smaller than said first peripheral contour;

an axle including a bearing, an axial direction and a radial direction;

a first rocker arm pivotable on said bearing based on said second peripheral contour of said disk;

a compensation device positioned between said first rocker arm and the valve stem for maintaining contact therebetween;

a second rocker arm pivotable on said bearing based on said first peripheral contour of said cam, said second rocker arm including a spherical depression; and

drive means for selectively coupling said second rocker arm to the valve stem, said drive means comprising:

a radially-displaceable, spherical driver disposed within said first rocker arm; and

a locking slide hydraulically moveable within said first rocker arm parallel to the axial direction between an unlocked position and a locked position, said locking slide moving when said cam and said disk pass through their base circles, said locking slide including an engagement surface which radially displaces said spherical driver into the spherical depression upon movement into said locked position so that the valve operates based on said first peripheral contour of said cam.

5,577,470

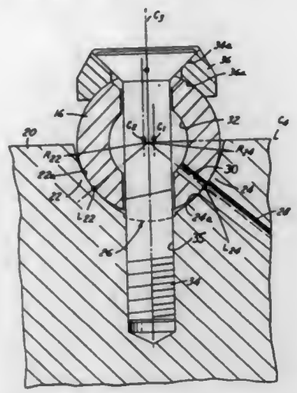
VALVE SYSTEM FOR INTERNAL COMBUSTION ENGINE

George F. Leydorf, Jr., Birmingham, and Michael J. Schrader, Belleville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 6, 1995, Ser. No. 554,019

Int. Cl.[6] F01L *1/18;* **F01M** *9/10*

U.S. Cl. 123—90.36 **11 Claims**



1. A valve system for an internal combustion engine, comprising:

a plurality of intake and exhaust poppet valves;

a plurality of rocker arms for actuating said poppet valves;

a cylinder head having said popper valves mounted therein;

at least one fixed rocker shaft for mounting said rocker arms, with said rocker shaft having a cylindrical outer surface; and

a plurality of saddles formed in an outer surface of said cylinder head for nonrotatably mounting said rocker shaft, with said saddles each having opposing arcuate pads which form a generally semicircular mount for said rocker shaft, with said pads each being concave and having a radius of curvature which is greater than the outside radius of the rocker shaft, and with the center of the radius of curvature of each of the pads being offset in opposite directions from the center line of the shaft such that the shaft and the pads make a straight line contact in a region proximate the arc midpoint of each pad.

5,577,471

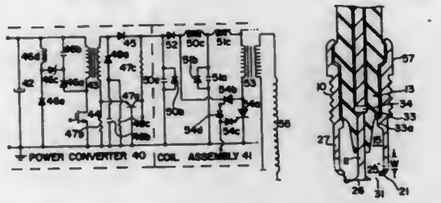
LONG-LIFE, ANTI-FOULING, HIGH CURRENT, EXTENDED GAP, LOW HEAT CAPACITY HALO-DISC SPARK PLUG FIRING END

Michael A. V. Ward, 32 Prentiss Rd., Lexington, Mass. 02174

Filed Jun. 21, 1995, Ser. No. 492,975

Int. Cl.[6] F02P *5/00*

U.S. Cl. 123—169 EL **28 Claims**



1. Spark plug for cyclically fired, large spark gap arc discharge ignition of an air-fuel mixture in a combustion zone with about 100 watts or more of power supplied by the arc with the plug support at or substantially adjacent to a wall defining a portion of such zone and comprising, in combination:

(a) means defining a substantially annular spark plug shell, with an axis, which includes at its end a ground electrode having the form of an electrically conductive ring end;

(b) means defining an axially elongated central high voltage electrode arranged substantially along the axis and terminating within the combustion zone in a thin flanged end defining a spark plug tip, the flanged end plug tip having a low heat capacity and sufficient thermal conductivity to a heat sink formed within the central electrode to limit heating of the flanged end so as to not cause pre-ignition or knocking of the combusting air-fuel mixture in the course of said cyclic arc discharge;

(c) the ground ring electrode and central electrode tip arranged with respect to each other so that they form an annular spark gap in a way that projects at least a portion of the electric field outwardly from the annular gap and includes an at-least-partially axial direction;

(d) means providing a radial gas flow path through the shell at a location adjacent its ground ring electrode end so that:

(i) said end substantially constitutes a suspended ring with at least one axial leg holding it out from the main body of the shell to minimize the ring and leg support areas exposed to the mixture flow and hot combustion gases and to minimize their heat capacity and heat absorption,

(ii) and simultaneously the support leg or legs and shell end have sufficient thermal conductivity to the heat sink that the heating of the ground ring electrode is limited to not cause pre-ignition or knocking of the combusting air-fuel mixture or undue temperature accelerated electrode erosion while maintaining the low heat absorption in the course of said cyclic arc discharge,

(iii) and the gas flow being effected to sweep combustion products out of the spark plug;

(e) means defining an insulator end section surrounding part of said elongated central high voltage electrode and recessed from said high voltage ranged end spark plug tip;

whereby a continuous high power arc discharge cycling, with severe duty cycle requirements, can be accommodated with limited and controlled erosion of the central electrode and ground ring electrode with essentially consistent spark breakdown voltage characteristics within 40% of the initial values during the defined lifetime of the spark plug.

5,577,472

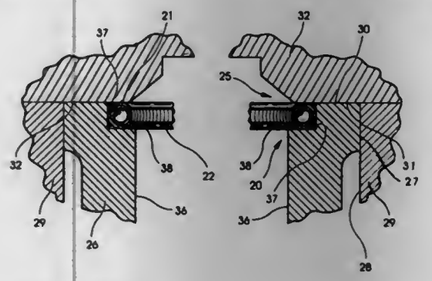
SPRING-ENERGIZED CYLINDER HEAD COMBUSTION SEAL ASSEMBLY

George L. Banta, III; Andrew P. Harman; Bill L. Stamper, all of Columbus, and Steven G. Barnes, Trafalgar, all of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jun. 7, 1995, Ser. No. 482,861

Int. Cl.[6] F16J *15/12*

U.S. Cl. 123—193.3 **3 Claims**



1. In combination:

a cylinder liner having a means defining a radially inwardly opening, annular groove, said cylinder liner having a top surface which defines an upper boundary of said annular groove and a shelf which defines a lower boundary of said annular groove; and

a seal assembly positioned within said annular groove and including a C-shaped annular sheath disposed in contact with said cylinder liner and a helically wound, annular biasing spring disposed within said annular sheath, the unrestrained height of said seal assembly extending beyond said upper boundary top surface when in contact with said lower boundary shelf, wherein said annular biasing spring has a generally circular lateral cross section and said C-shaped annular sheath partially encircles said lateral cross section for less than the complete circumference of said annular biasing spring and wherein said C-shaped annular sheath has means defining an opening, said opening being bounded by a pair of sheath legs, said opening exposing said annular biasing spring to the interior of said cylinder liner.

5,577,473

VALVE FOR THE INTRODUCTION OF FUEL OR A FUEL/AIR MIXTURE INTO AN ENGINE

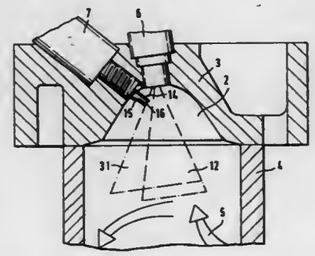
Ernst Linder, Muehlacker, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 17, 1995, Ser. No. 560,141

Claims priority, application Germany, Nov. 18, 1994, 44 41 092.1

Int. Cl.[6] F02B *3/00*

U.S. Cl. 123—298 **12 Claims**



1. A valve for the introduction of fuel or fuel/air mixture into a combustion space (2) of an internal combustion engine, in which the fuel or the fuel/air mixture is injected directly through the valve (6) into the combustion space (2) of the internal combustion engine and is ignited there by a spark plug (7), in order to initiate the combustion, and the valve (6) has an outward-opening valve needle (9), between the valve head (10) and a conical valve seat (20) there is formed an umbrella like injection jet (12) of fuel or fuel/air mixture, the generated surface of which points towards the spark plug (7), and the introduced fuel quantity is metered in such a way that the internal combustion engine is operated with a lean fuel/air mixture, which the air coefficient ▲ is on average >1, wherein adjoining the valve seat (20) in an outlet direction of the injection jet, there is provided an annular guide face (24, 124) which has, in a region oriented towards the spark plug (7), a recess (26) deviating from the annular shape.

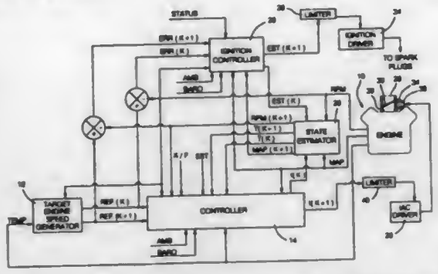
VOL 1192 ISS 4 NO 26 1996 UMI

5,577,474

TORQUE ESTIMATION FOR ENGINE SPEED CONTROL

Mike Livshiz, Southfield, and David J. Sanvido, Novi, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 29, 1995, Ser. No. 563,743
Int. Cl.[6] F02D 31/00
U.S. Cl. 123—352 14 Claims



1. An engine speed control method for controlling engine output torque in accord with an engine torque requirement determined as the torque required to drive engine speed toward a target engine speed, comprising the steps of:

storing a predetermined schedule of estimated steady state torque requirement values as a function of a predetermined engine operating condition;

determining the current engine operating condition;

referencing, from the stored schedule, a current estimated steady state torque requirement as a function of the current engine operating condition;

estimating steady state torque requirement error;

adjusting the current steady state torque requirement in direction to minimize the estimated steady state torque requirement error; and

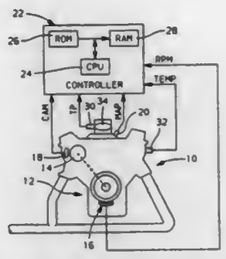
controlling engine output torque in accord with the adjusted current steady state torque requirement.

5,577,475

ENGINE SYNCHRONIZATION

Mark De Backer, Armada; Jeffrey R. Drexel, Rochester Hills, and William J. Bolander, Ortonville, all of Mich., assignors to Saturn Corporation, Troy, Mich.

Filed Dec. 12, 1994, Ser. No. 354,191
Int. Cl.[6] F02P 5/00
U.S. Cl. 123—417 12 Claims



1. An engine synchronization method for synchronizing a periodic input signal with engine cylinder events so the periodic input signal may be interpreted to indicate the occurrence of individual engine cylinder events, comprising the steps of:

inducing a misfire condition in an engine cylinder;

sensing the induced misfire condition;

sensing the periodic input signal;

interpreting the periodic input signal to indicate occurrence of individual engine cylinder events;

identifying the engine cylinder in which the misfire was sensed in accord with the interpreted periodic input signal;

comparing the identified engine cylinder with the cylinder in which the misfire condition was induced;

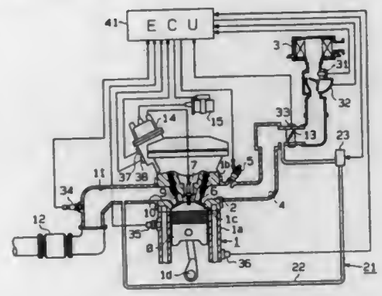
if the identified engine cylinder is not the cylinder in which the misfire was induced, then adjusting the interpretation of the periodic input signal in accord with a predetermined adjustment to correctly indicate occurrence of individual engine cylinder events.

5,577,476

IGNITION TIMING CONTROL APPARATUS FOR ENGINE

Hisao Iyoda, Okazaki, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi-ken, Japan

Filed Nov. 21, 1995, Ser. No. 561,451
Claims priority, application Japan, Nov. 29, 1994, 6-295291
Int. Cl.[6] F02P 5/14
U.S. Cl. 123—425 18 Claims



1. An apparatus for controlling an ignition timing in an internal combustion engine, the apparatus having a first device for igniting a combustible mixture introduced to a combustion chamber through an intake passage at an ignition timing selected in response to operation conditions of the engine and a second device capable of recirculating exhaust gas exhausted from the combustion chamber to an exhaust passage back to the mixture, wherein the apparatus corrects the ignition timing when the exhaust gas is recycled to the mixture, said apparatus comprising:

first detecting means for detecting the operation conditions including at least a rotational speed of the engine and an operation load of the engine;

first computing means for computing the ignition timing based on the detected operation conditions;

first correcting means for correcting the computed ignition timing with an advance value in accordance with an occurrence of the recirculating of the exhaust gas;

second detecting means for detecting an occurrence of a knocking in the combustion chamber;

second correcting means for correcting the ignition timing corrected by the first correcting means with a specific retard value to a timing close to a limit beyond which the knocking starts;

control means for controlling the first device based on the ignition timing corrected by the second correcting means;

second computing means for computing a maximum retard value employed for the correction of the second correcting means based on the detected operation conditions;

confining means for confining the ignition timing corrected by the second correcting means within a limit of the computed maximum retard value; and

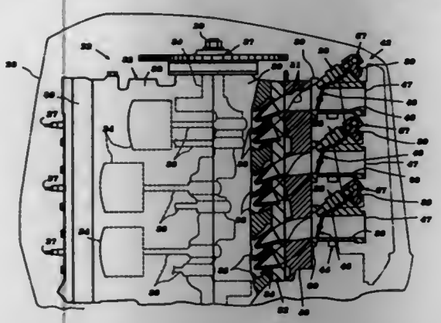
varying means for varying one of the specific retard value employed in the correction of the second correcting means and the maximum retard value computed by the second computing means in accordance with the occurrence of the recirculating of the exhaust gas.

5,577,477

FUEL SUPPLY FOR INJECTED ENGINE

Masahiko Katoh, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jul. 17, 1995, Ser. No. 502,911
Claims priority, application Japan, Jul. 15, 1994, 6-163846; Oct. 26, 1994, 6-262356
Int. Cl.[6] F02M 51/00
U.S. Cl. 123—456 18 Claims



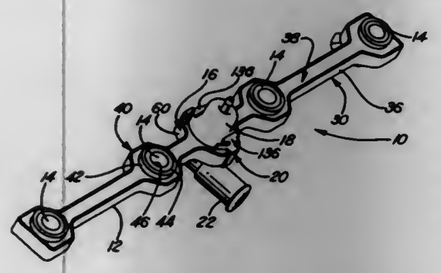
1. A fuel injection system for an internal combustion engine having a throttle body assembly with a plurality of pairs of induction passages, a plurality of pairs of fuel injectors each mounted in said throttle body assembly and disposed to spray fuel into a respective induction passage, and a fuel supply system for supplying fuel to said fuel injectors, said fuel supply system comprising a first manifold section extending along one side of at least some of said induction passages for supplying fuel to the fuel injectors associated with those induction passages, and a second manifold section spaced from said first manifold section and extending along another side of said induction passages for supplying fuel to the fuel injectors associated with the other induction passages.

5,577,478

INTEGRATED FUEL PRESSURE REGULATOR AND RAIL ASSEMBLY

Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Filed Nov. 3, 1995, Ser. No. 552,800
Int. Cl.[6] F02M 55/02
U.S. Cl. 123—456 20 Claims



1. A fuel rail assembly for a no-return fuel delivery system for an internal combustion engine with a plurality of fuel injectors each having an injector fuel inlet, the rail assembly comprising:

a fuel rail constructed of an elongate member having a cross section defining a rail fuel passage therein and having a plurality of fuel injector sockets each for receiving one fuel injector inlet therein and each having a socket aperture communicating with said rail fuel passage and said injector fuel inlet,

a demand fuel pressure regulator for providing fuel at a regulated pressure through said rail fuel passage to all of said fuel injectors through said socket apertures,

said regulator having a fuel inlet communicating with a fuel reservoir, and at least one fuel outlet communicating with said fuel rail passage, and

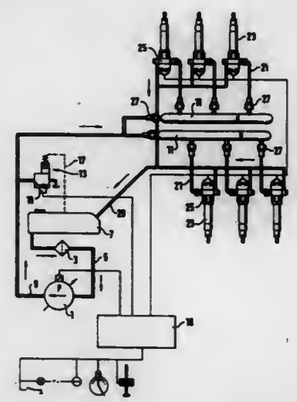
a pressure regulator socket formed integrally with said fuel rail for receiving said regulator therein such that said regulator fuel outlet is disposed upstream of all of said injector sockets for providing fuel at a regulated pressure directly to said injectors through said rail fuel passage and wherein said rail has no return fuel outlet downstream of any of the fuel injectors, and said regulator socket is disposed longitudinally between the fuel injector sockets to substantially minimize and equalize the linear distance fuel must travel from said regulator to the most remote of said injectors on both sides of said regulator socket.

5,577,479

FUEL INJECTION SYSTEM FOR MOTOR VEHICLES

Heinz Popp, Roitham, Austria, assignor to Robert Bosch GmbH, Stuttgart, Germany

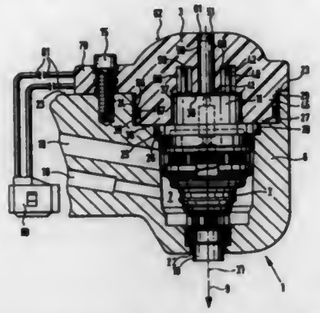
Filed Jan. 30, 1995, Ser. No. 380,788
Claims priority, application Germany, Apr. 23, 1994, 44 14 242.0
Int. Cl.[6] F02M 37/04
U.S. Cl. 123—458 20 Claims



1. A fuel injection system for internal combustion engines having a high-pressure fuel pump (1), which supplies fuel from a low pressure chamber (7) via a supply line (9) into at least one high-pressure accumulation chamber (11), which communicates via high-pressure lines (21) with injection valves (23), said injection valves protrude into the combustion chamber of the engine to be supplied and opening and closing movements of the injection valves are each controlled by an electrically triggered control valve (25) disposed in the high-pressure line (21) at the injection valve (23), a flow limiting valve (27) is inserted in the supply line (9) which limits a maximal fuel flow quantity into said at least one high-pressure accumulation chamber (11) and into each high-pressure line (21).

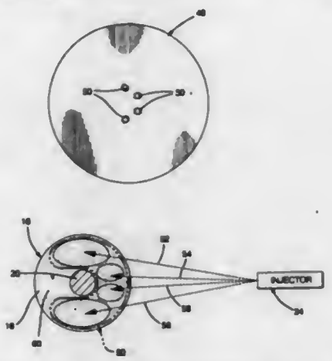
VOL 1192 ISS 4 NO 26 1996 UMI

5,577,480
FUEL INJECTION DEVICE
Karl Gmelin, Flein, and Thomas Bursitzky, Vaihingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Aug. 26, 1994, Ser. No. 296,637
Claims priority, application Germany, Sep. 22, 1993, 43 32 118.6
Int. Cl.[6] F02M *35/00*
U.S. Cl. 123—470 **12 Claims**



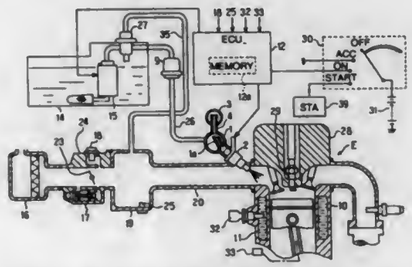
1. A fuel injection device having an electromagnetically actuatable fuel injection valve and a plug housing, wherein for electrical connection of the fuel injection valve, plug elements protruding from an end face of a valve housing end of the fuel injection valve are introduced into corresponding receptacles of the plug housing, the fuel injection valve (2) has a guide bolt (50), that protrudes from the end face (41) of the valve housing end (11), which bolt protrudes with its free end (51) past free ends (42) of the plug elements (40) and when the plug housing (3) and valve housing end (11) are put together is received in a corresponding guide opening (61) of the plug housing (3), before the plug elements (40) enter the receptacles (60), said guide opening (61) extends as far as a surface (62) of the plug housing (3) and the guide bolt protrudes from surface (62) of the plug housing (3).

5,577,481
FUEL INJECTOR
Brent J. Wahba, Honeoye Falls, N.Y., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 26, 1995, Ser. No. 578,312
Int. Cl.[6] F02M *69/04;55/02*
U.S. Cl. 123—470 **4 Claims**



1. A director plate for an electromagnetic fuel injector for discharging fuel into the intake system of an internal combustion engine, said director plate having a plurality of injection orifices at predetermined locations on said director plate and extending through said director plate, each of said injection orifices being inclined at a predetermined angle to said central axis so that said injector orifices will direct streams of fuel towards a target in said engine intake system whereby said streams of fuel will impinge upon said target in a crescent pattern.

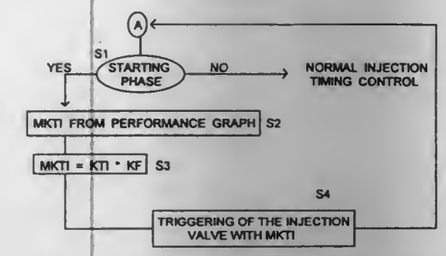
5,577,482
FUEL SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINES
Kazushi Nakashima, and Shinichi Iwamoto, both of Obu, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Continuation-in-part of Ser. No. 135,984, Oct. 14, 1993, Pat. No. 5,359,976. This application Dec. 21, 1993, Ser. No. 170,923
Claims priority, application Japan, Oct. 15, 1992, 4-277095; Dec. 24, 1992, 4-342939
Int. Cl.[6] F02D *41/06*
U.S. Cl. 123—491 **15 Claims**



1. A fuel supply system for supplying fuel from a fuel tank to an engine through fuel injectors comprising:
means for increasing an amount of fuel injected from said injectors when said engine is re-started so that vapor in the fuel is purged through said injectors;
means for detecting an initial explosion in said engine from a time variation in a parameter dependent on engine operation, said time variation being calculated by determining a difference between a current value of said parameter and a previous value of said parameter;
means for terminating increasing the amount of fuel by said increasing means when said initial explosion is detected by said detecting means; and
means for cutting off fuel injection from said injectors when no initial explosion in said engine is detected by said detecting means for a predetermined period from the initiation of cranking said engine.

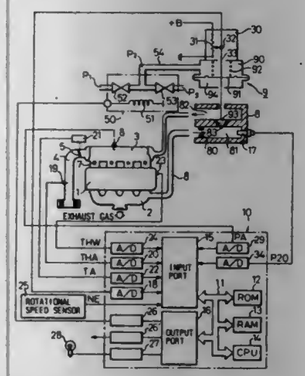
5,577,483
METHOD FOR CORRECTION OF STARTING INJECTION TIMING
Michael Suedholt, Koefering, and Manfred Wier, Wenzenbach, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Sep. 15, 1994, Ser. No. 306,758
Claims priority, application European Pat. Off., Sep. 15, 1993, 93114840
Int. Cl.[6] F02D *41/06*
U.S. Cl. 123—491 **4 Claims**

1. A method for adapting a starting injection timing to a pressure of ambient air, which comprises:
storing in a non-volatile memory a correction factor representing an ambient air pressure when an engine is turned off;
modifying a value for a starting injection timing with the correction factor stored in the storing step, upon a starting



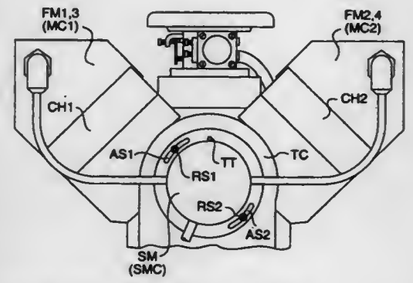
process, using an adaptation factor as the correction factor, using substitute air values in the event of pulsations in an intake air instead of values measured by an air flow rate meter, and adapting the substitute air values to the ambient air pressure with the adaptation factor.

5,577,484
METHOD AND APPARATUS FOR DETECTING TROUBLE IN EXHAUST-GAS RECIRCULATION SYSTEM
Takahide Izutani, and Hidemi Onaka, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Oct. 3, 1995, Ser. No. 538,322
Claims priority, application Japan, Nov. 1, 1994, 6-268914
Int. Cl.[6] F02M *25/07*
U.S. Cl. 123—571 **8 Claims**



1. An apparatus for diagnosing trouble in an EGR system comprising an EGR passage for communicating an exhaust passage to an intake passage of an internal combustion engine and an EGR control valve for controlling a flow rate of exhaust gas recirculating in the EGR passage, comprising;
an orifice provided in the EGR passage,
pressure detection means for detecting a pressure in the EGR passage between the orifice and the EGR control valve,
operation state detection means for detecting an operation state of the internal combustion engine,
operation zone determination means for determining whether the operation state of the internal combustion engine is in a first zone wherein an amount of EGR is larger than a predetermined value or in a second zone wherein an amount of EGR is smaller than the predetermined value,
valve-opening detection means for detecting an open state of the EGR control valve, and
trouble determination means for determining whether or not clogging occurs in the EGR passage and whether the clogging occurs upstream or downstream of the EGR control valve, based on the operation zone and the pressure value detected by the pressure detection means when the EGR control valve is in the open state.

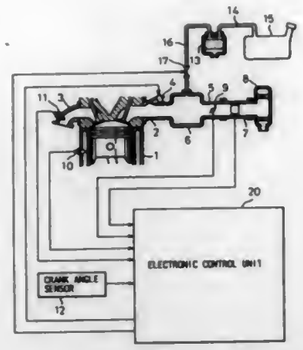
5,577,485
IGNITION SYSTEM
Nathaniel L. Lindsley, Lebanon, Tenn., assignor to International Machinery Corporation, Mount Juliet, Tenn.
Filed Jun. 7, 1995, Ser. No. 487,338
Int. Cl.[6] F02P *3/04;7/07;11/00*
U.S. Cl. 123—617 **16 Claims**



1. An electronic ignition system, comprising:
means for periodically generating magnetic fields of opposite polarity;
means for sensing the presence of first and second polarities of said generated magnetic fields, said sensing means including a plurality of latching Hall effect sensing devices, wherein each of said Hall effect sensing devices has means for building up a stored output signal in response to said first polarity of said generated magnetic fields, and means for outputting said stored output signal in response to a second polarity of said generated magnetic fields; and
means for generating a high voltage ignition signal in response to said outputted output signal.

5,577,486
FUEL-INJECTION CONTROL APPARATUS FOR AN ENGINE
Kenji Harima, Susono; Toshinari Nagai, Shizuoka; Hiroshi Kanai; Akinori Osanai, both of Susono; Kazuhiko Iwano, Aichi; Shuji Yuda, Susono, and Takayuki Demura, Mishima, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Apr. 17, 1995, Ser. No. 422,978
Claims priority, application Japan, Apr. 19, 1994, 6-080493; Feb. 23, 1995, 7-035439
Int. Cl.[6] F02D *41/14*
U.S. Cl. 123—674 **12 Claims**

1. A fuel injection control apparatus for an engine comprising:
an air-fuel ratio controlling means for calculating an air-fuel ratio correction factor in order to control the air-fuel ratio, detected by an air-fuel ratio sensor arranged in an exhaust pipe of an engine for detecting the air-fuel ratio of the exhaust gas, at a predetermined target air-fuel ratio;
a learning means for learning an air-fuel ratio learning factor in accordance with the deviation of the air-fuel ratio correction factor calculated in said air-fuel ratio control means from the reference value; and
a fuel injection valve controlling means for controlling the opening interval of the fuel injection valves based on a basic opening interval in accordance with the driving condition of the engine, the air-fuel ratio correction factor calculated in said air-fuel ratio control means, the air-fuel ratio learning



factor learned in said learning means, a start enrichment and a warm-up enrichment; wherein

said learning means corrects the deviation of the air-fuel ratio correction factor calculated in said air-fuel ratio control means from the reference value in accordance with the start enrichment and the warm-up enrichment, and learns an air-fuel ratio learning factor in accordance with the corrected deviation while the start enrichment and the warm-up enrichment are added.

5,577,487

AIRCRAFT PISTON ENGINE CONTROL SYSTEM

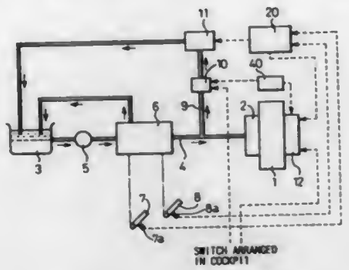
Yukio Ohtake, Susono, and Atsushi Watanabe, Shizuoka, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Oct. 11, 1995, Ser. No. 540,691

Claims priority, application Japan, Oct. 13, 1994, 6-247988; Jun. 22, 1995, 7-156055

Int. Cl.[6] F02B *75/08*

U.S. Cl. 123—679 **36 Claims**



1. An aircraft piston engine control system comprising:

a fuel supply passage for supplying fuel to the engine;

a fuel regulation device, which is arranged in said fuel supply passage, and which is linked to a throttle lever, and which regulates an amount of fuel so as to realize a first air-fuel ratio which is more rich than the stoichiometric air-fuel ratio;

a detection means for detecting a current engine operating condition;

a fuel decreasing passage which is connected to said fuel supply passage between said fuel regulation device and the engine; and

a fuel decreasing means, which is arranged in said fuel decreasing passage, and which decreases an amount of fuel regulated by said fuel regulation device so as to realize an optimum air-fuel ratio according to the current engine operating condition detected by said detection means.

5,577,488

AIR-FUEL RATIO SENSOR DETERIORATION-DETECTING SYSTEM FOR INTERNAL COMBUSTION ENGINES

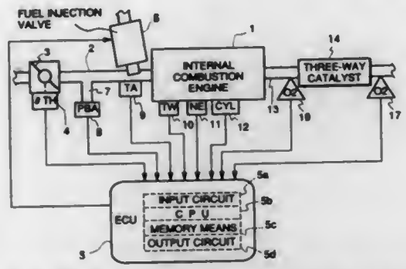
Ryuji Sato; Kojiro Tsutsumi; Toshitaka Hachiro; Hiroshi Kawaguchi, and Sachito Fujimoto, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1995, Ser. No. 549,119

Claims priority, application Japan, Oct. 28, 1994, 6-289161

Int. Cl.[6] F02D *41/14*

U.S. Cl. 123—688 **6 Claims**



1. In an air-fuel ratio sensor deterioration-detecting system for an internal combustion engine having an exhaust system, a catalytic converter arranged in said exhaust system, first and second air-fuel ratio sensors arranged in said exhaust system at respective locations upstream and downstream of said catalytic converter, first air-fuel ratio control parameter-calculating means for calculating a value of a first control parameter, based on an output from said second air-fuel ratio sensor, air-fuel ratio control means for executing air-fuel ratio feedback control such that an air-fuel ratio of an air-fuel mixture to be supplied to said engine is controlled based on the calculated value of said first control parameter, second air-fuel ratio control parameter-calculating means for calculating a value of a second control parameter to be used for calculating a value of said first control parameter, based on said output from said second air-fuel ratio sensor, and deterioration-determining means for determining whether said second air-fuel ratio sensor is deteriorated, based on said output from said second air-fuel ratio sensor, the improvement wherein:

said deterioration-determining means comprises increasing means for increasing a value of at least one of said first and second control parameters when a variation in said output from said second air-fuel ratio sensor is small during execution of said air-fuel ratio feedback control by said air-fuel ratio control means, and determining means for determining that said second air-fuel ratio sensor is deteriorated when said variation in said output from said second air-fuel ratio sensor is continuously small over a predetermined time period after the value of said at least one of said first and second control parameters has been increased.

5,577,489

ARROW SHAFT ALIGNING DEVICE AND ARROW REST INCORPORATING THE SAME

Vincent F. Troncoso, 14090-6100 Road, Montrose, Colo. 81401

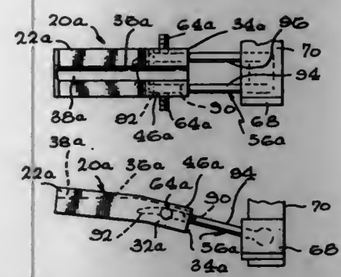
Filed Aug. 21, 1995, Ser. No. 517,425

Int. Cl.[6] F41B *5/22*

U.S. Cl. 124—44.5 **4 Claims**

1. A improved arrow shaft aligning device for an arrow rest launcher arm, said device comprising, in combination:

a) an elongated plate having an upper surface and an opposite lower surface, a front portion and an opposite rear portion, said upper surface defining a longitudinally extending arrow shaft-receiving and aligning track extending to the front end of said plate, said plate being adapted to releasably connect to an arrow rest launcher arm, said rear portion of said plate



containing a recess in the upper surface thereof aligned with said track for releasably receiving the front portion of a launcher arm; and,

b) connector means attached to said rear portion of said plate for connecting said plate to said launcher arm.

5,577,490

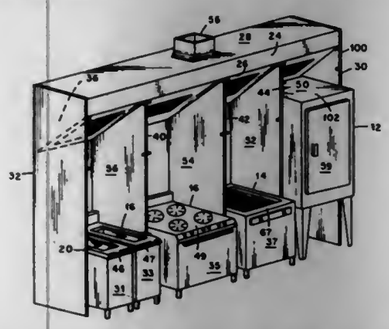
EXHAUST HOOD FOR A PLURALITY OF DIVERSE HEATING OR COOKING DEVICES

Duncan E. Overton, Jr., 1016 Oglewood Ave., Knoxville, Tenn. 37917

Filed Jan. 16, 1996, Ser. No. 587,158

Int. Cl.[6] F24C *15/20*

U.S. Cl. 126—299 D **9 Claims**



1. An exhaust hood for capturing individually each of the plumes emanating from a plurality of diverse heating or cooking devices disposed beneath the hood while minimizing the quantity of air removed from the atmosphere ambient to and outside the hood comprising

housing means defining an elongated hood adapted to be mounted generally horizontally and above and in substantially covering relationship to a plurality of diverse heating or cooking devices, said hood including a substantially vertical rear wall, a substantially vertical forward wall having a substantially horizontal lower front edge, a top wall joining said rear wall to said forward wall, and a bottom wall joining said lower front edge of said front wall to said rear wall, and end walls, each of which includes a front edge, said walls defining a plenum internally of said hood and which extends substantially along the horizontal dimension of said hood and between said end walls,

at least one vertical partition means depending from said bottom wall of said hood and having a lowermost edge and front and rear edges, said rear edges of said partitiion being disposed adjacent said rear wall, said partition projecting forwardly from and substantially perpendicular to said rear wall and disposed between respective ones of said diverse heating or cooking devices, said vertical partition means terminating at its lowermost edge adjacent to or slightly below the horizontal level of the upper surface of adjacent ones of said heating or cooking devices, and dividing the volume between the rear wall, the bottom wall of the hood and the heating surfaces of the heating or cooking devices into individual compartments, each of said compartments containing a heating or cooking device, and having an open front which is bordered by a portion of the lower front edge of said front wall, the front edges of adjacent partitions or of the front edge of one partition and the front edge of an end wall, and the upper surface of a heating or cooking device that is disposed within said compartment and defining an entrance opening into said hood for the flow of air from the atmosphere ambient to said hood into said compartment,

filter means interposed between each of said compartments and said plenum,

panel means for removable mounting in partial covering relationship to said open front of each of said compartments, and

exhaust means adapted to exhaust air from said plenum to a location outside said hood.

5,577,491

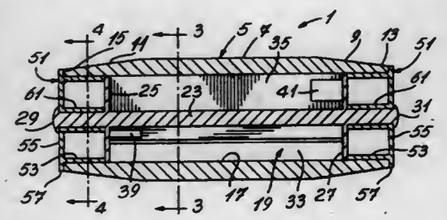
HEAT TRAP FOR USE WITH HOT WATER HEATERS AND STORAGE SYSTEMS

Brian M. Lewis, Hamilton, Canada, assignor to Bemel Inc., Dundas, Canada

Filed Sep. 23, 1994, Ser. No. 311,583

Int. Cl.[6] F24H *1/00*

U.S. Cl. 126—362 **19 Claims**



1. An improved heat trap for hot water storage system, said heat trap comprising an outer tubular casing, said casing having opposed, threaded, tapered, end portions; flow defining means mounted within said casing and defining, with the interior of the casing, a convoluted water flow path; and means for permanently retaining the flow defining means within the casing, said flow defining means having adjacent channels defining, with the interior of said casing, the water flow path, said flow defining means further having a member having two longitudinally spaced apart circular end walls, said end walls joined by three vanes extending radially from the central axis of said end walls, a first vane having a passage therein adjacent one of said end walls, and a second adjacent vane having a passage therein adjacent the other of said end walls.

5,577,492

COLLIMATING TIR LENS WITH FOCUSING FILTER LENS

William A. Parkyn, Jr., Torrance, and David G. Pelka, Los Angeles, both of Calif., assignors to TIR Technologies, Inc., Carson City, Nev.

Continuation-in-part of Ser. No. 869,003, Apr. 16, 1992, Pat. No. 5,404,869. This application Apr. 7, 1995, Ser. No. 415,274

Int. Cl.[6] F24J *2/08*

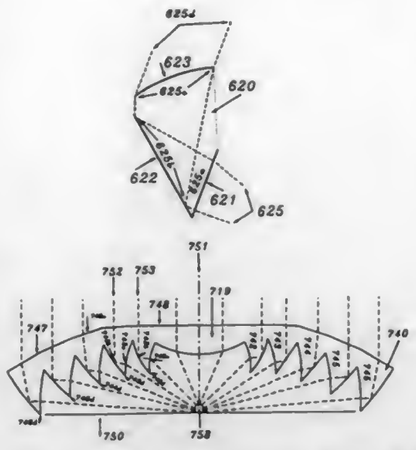
U.S. Cl. 126—698 **23 Claims**

1. A radiant energy redirecting system comprising

a) a radiant energy transmitting body means,

b) said means comprising multiple elements, each of which acts as a radiant energy redirecting module, having on its cross-

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sectional perimeter an entry face to receive incidence of said energy into the interior of said perimeter, an exit face to pass said energy to the exterior of said perimeter in a direction towards the reverse side of the body from the side of said incidence, and a Totally Internally Reflecting face angled relative to said entry and exit faces to redirect towards said exit face the radiant energy incident from said entry face,

c) said body means generally redirecting incident radiant energy towards a predetermined target zone situated apart from and on the reverse side of said body relative to the side of said incidence,

d) first lens means associated with at least one of said faces for redirecting radiant energy passing between said entry and exit faces via said Totally Internally Reflecting face, said redirected radiant energy being collimated,

e) and second lens means spaced from said exit face to receive said collimated radiant energy and to redirect same toward said target zone.

5,577,493

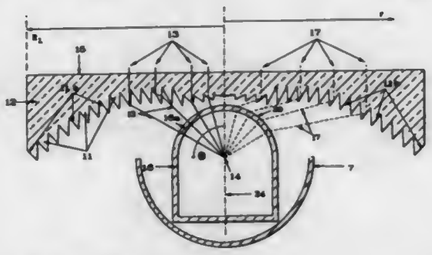
AUXILIARY LENS TO MODIFY THE OUTPUT FLUX DISTRIBUTION OF A TIR LENS

William A. Parkyn, Jr., Costa Mesa, and David G. Pelka, Los Angeles, both of Calif., assignors to TIR Technologies, Inc., Carson City, Nev.

Continuation-in-part of Ser. No. 869,003, Apr. 16, 1992, Pat. No. 5,404,869. This application Aug. 22, 1994, Ser. No. 294,223

Int. Cl.[6] F24J 2/08

U.S. Cl. 126—699 **28 Claims**



1. In combination

a) a TIR lens having a central axis, and toward which light from a light source is to be directed, and

b) a light ray deviator positioned along the path of light travel between said source and the TIR lens, for deviating light rays toward portions of the lens spaced from said axis, thereby to more evenly distribute light flux at the output of said TIR lens,

c) said deviator being a non-imaging optical element for transforming the cumulative angular distribution of intensity of light from said source into a different distribution, which said TIR lens forms into a uniform beam.

5,577,494

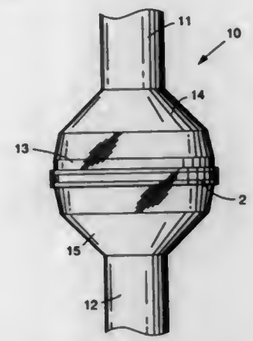
SUPERABSORBENT FIBER COMPOSITIONS DEMONSTRATING EFFICIENT RETENTION OF EXHALED HEAT AND MOISTURE

Maurice H. Kuypers, Oakdale; Corazon C. Brizuela, Woodbury; Lawrence W. Craighead, Mendota Heights, and David P. Swanson, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 944,394, Sep. 14, 1992, abandoned. This application Aug. 10, 1994, Ser. No. 288,874

Int. Cl.[6] A62B 18/08

U.S. Cl. 128—201.13 **12 Claims**



1. A heat and moisture exchange device comprising;

a housing means having a central portion, a first inlet means defining an inlet port, and a second outlet means defining an outlet port, said inlet port means adapted to be connected to a patient via a conduit means, and said outlet port means adapted to be connected to a breathing apparatus means, said control portion adapted to hold a heat and moisture exchange media, and

a heat and moisture exchange media which will function as a heat and moisture exchange media comprising a coherent fiber admixture of structural inter-engaging matrix fibers and from 5 to 50 percent by weight included absorbent fibers, said absorbent fibers capable of absorbing at least 10 times their weight in water, said heat and moisture exchange media held in said central portion of said housing means wherein said absorbent fibers and matrix fiber admixture has a moisture exchange efficiency of at least 16.9 as determined according to ISO/DIS 9360-1988 at 500 cc volume.

5,577,495

HELMET RESPIRATOR APPARATUS

Terence W. D. Murphy, Wilson Gardens, United Kingdom, assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

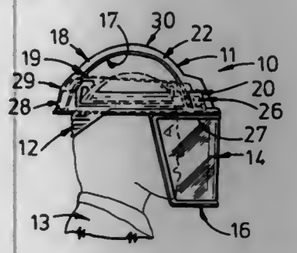
PCT No. PCT/GB93/01616, § 371 Date Mar. 16, 1995, § 102(e) Date Mar. 16, 1995, PCT Pub. No. WO94/03235, PCT Pub. Date Feb. 17, 1994

PCT Filed Jul. 30, 1993, Ser. No. 379,610

Claims priority, application United Kingdom, Jul. 31, 1992, 9216316; Apr. 5, 1993, 9303666

Int. Cl.[6] A62B 18/04; A42B 3/28;3/22

U.S. Cl. 128—201.24 **20 Claims**



11. A helmet respirator apparatus for a user comprising: a helmet formed from an inner shell having a peripheral rim and a smooth dome shape, and an outer shell having a peripheral rim and profiled to define a plurality of ducts extending from the back of the helmet to the front of the helmet, the inner shell and the outer shell bonded together along their peripheral rims and in between the plurality of ducts to form a unitized lightweight monocoque structure;

a face shield pivotally mounted at the front of the helmet and having a flexible face seal along its lateral edges for sealing against a user's face to create a breathing zone and an exhalation outlet from the breathing zone at the lower edge of the face shield;

a fan compartment formed in the front of the helmet and connected to the plurality of ducts;

a centrally-disposed compartment formed in the back of the helmet and connected between the plurality of ducts and an aperture in the outer shell and containing a removable filter;

in the back of the helmet, two laterally disposed and mutually opposed battery compartments, each isolated from the plurality of ducts and containing a removable battery; and

a motor-driven fan located in the fan compartment and powered by the battery which when activated causes air to flow through the aperture in the outer shell and into the removable filter, through the removable filter and into the plurality of ducts, through the plurality of ducts and into the fan compartment, through the fan compartment and into the breathing zone.

5,577,496

RESPIRATORY PROTECTIVE APPARATUS

Thomas Blackwood, Lanarkshire; Kenneth M. Govan, Milnagavie; Jacqueline Wilkie, Pollokshields; Alaistair M. Deacon, Lenzie; Andrew D. Grant, Barassie, and Matthew T. Stickland, Stewarton, all of Great Britain, assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

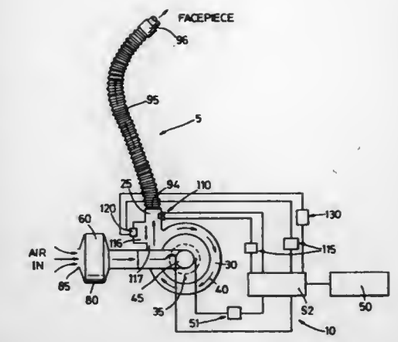
Filed Apr. 14, 1994, Ser. No. 227,603

Claims priority, application United Kingdom, Apr. 14, 1993, 9307733

Int. Cl.[6] A62B 7/10

U.S. Cl. 128—201.25 **17 Claims**

1. A respiratory protective apparatus having a facepiece, a breathing hose, a powered filtering device, and a filter connected together to form an air flow path, the powered filtering device



comprising a housing having at least one inlet and an outlet, a portable power supply, a variable speed pump located between the inlet and the outlet for pumping air therebetween, and a controller connected to the pump including means for storing data regarding a wearer's past breathing pattern, predicting a wearer's likely demand; the controller further including means for controlling the speed of the pump responsive to data which includes a wearer's past breathing pattern.

5,577,497

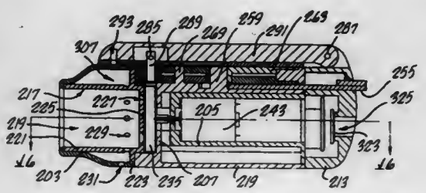
DRY POWDER INHALER

Mark B. Mecikalski, Tucson, Ariz.; David R. Williams, San Diego, and David O. Thueson, Poway, both of Calif., assignors to Dura Pharmaceuticals, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 963,409, Oct. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 702,297, May 20, 1991, Pat. No. 5,327,883. This application Oct. 14, 1993, Ser. No. 137,282

Int. Cl.[6] A61M 15/00

U.S. Cl. 128—203.15 **24 Claims**



1. An inhaler comprising:

a housing;

a mixing chamber within the housing;

an impeller in the mixing chamber;

means for rotating the impeller;

a front cylinder attached to the housing and including a cylinder chamber;

a first plurality of openings extending between the mixing chamber and the cylinder chamber; and

a second plurality of openings extending radially through the front cylinder.

5,577,498

SEMI-CLOSED TYPE BREATHING APPARATUS FOR REMOVING CARBON DIOXIDE FROM BREATHING AIR CIRCUIT HAVING TRIANGULARLY SHAPED BELLOWS

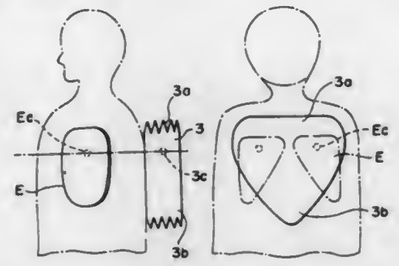
Akihiko Yoshida; Yasushi Yoshida; Junichi Shiobara, all of Saitama-ken; Kyoichi Fujimori; Hitoshi Sugimoto, both of Higashimatsuyama; Akihiko Yatsunami, Higashimatsuyama, and Yoshihisa Fujisawa, Saitama-ken, all of Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Jun. 29, 1994, Ser. No. 267,589

Claims priority, application Japan, Jul. 7, 1993, 5-192859; Jul. 7, 1993, 5-192860; Jul. 7, 1993, 5-192862; Jul. 7, 1993, 5-192863; Oct. 7, 1993, 5-059494 U

Int. Cl.[6] A62B *7/10;23/02;18/10;* B63C *11/02*

U.S. Cl. 128—205.28 13 Claims



1. A semi-closed type of breathing apparatus which removes carbon dioxide from breathing air, comprising:

a mouthpiece which is a breathing circuit adapted to be positioned in a user's mouth for exhalation and inhalation;

a canister filled with carbon dioxide remover to remove carbon dioxide from breathing air;

a breathing bag which is connected to said mouthpiece and said canister, and expands and contracts in accordance with flow in-and-out of breathing air;

a double-duct hose which connects said mouthpiece to said canister and said breathing bag and comprises an inner duct, which is connected to and communicates with said canister, for air inhalation and an outer duct for air exhalation, said outer duct surrounding said inner duct and being connected to and communicating with said breathing bag; and

an air tank for supplementing air in the breathing circuit.

5,577,499

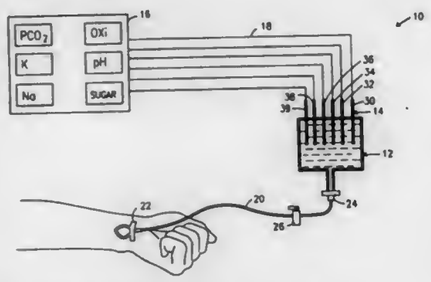
BLOOD ANALYZER

Leonides Y. Teves, 623-39th St. West, Bradenton, Fla. 34205

Filed Oct. 3, 1994, Ser. No. 317,074

Int. Cl.[6] A61B *5/00;* G01N *33/49*

U.S. Cl. 128—632 8 Claims



1. A device for analyzing blood, comprising:

a chamber of hollow construction;

said chamber adapted to hold a predetermined quantity of a patient's blood;

a first sensor means disposed within said chamber;

said first sensor means having a first end immersed within blood in said chamber when said predetermined quantity of said patient's blood is within said chamber;

a display means exterior to said chamber;

means electrically connecting an unimmersed second end of said first sensor means and said display means so that a signal generated by said first sensor means is delivered to said display means;

a tubing means having a leading end adapted for fluid communication with a patient's blood vessel and a trailing end in fluid communication with said chamber;

an open-closed valve means disposed in said tubing means for selectively controlling entry of blood into said chamber;

said trailing end of said tubing means being in fluid communication with said chamber through an opening formed in a bottom wall of said chamber, said chamber filling with blood when said open-closed valve means is in an open configuration, said blood flowing into said chamber under an impulse provided by said patient's blood pressure;

said display means displaying a numerical value representing a parameter of said patient's blood as measured by said first sensor means;

whereby an operating team need not await results of laboratory blood tests during a surgical operation.

5,577,500

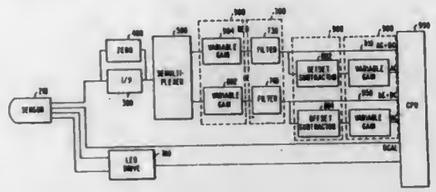
CONDENSED OXIMETER SYSTEM WITH NOISE REDUCTION SOFTWARE

Robert S. Potratz, Lenexa, Kans., assignor to Nellcor Puritan Bennett Incorporated, Pleasanton, Calif.

Continuation of Ser. No. 225,486, Apr. 8, 1994, Pat. No. 5,533,507, which is a continuation of Ser. No. 740,362, Aug. 5, 1991, Pat. No. 5,351,685. This application May 23, 1995, Ser. No. 447,665

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—633 16 Claims



1. A method for determining a parameter of blood, comprising the steps of:

transmitting at least one wavelength of electromagnetic energy through a sample;

detecting the at least one wavelength of electromagnetic energy through the sample;

generating at least one analog signal corresponding to the at least wavelength, the at least one analog signal having an AC and a DC component;

separating the AC component of the at least one analog signal from the at least one analog signal to produce a separated AC component;

computing the derivative of the separated AC component; and

computing the parameter of blood, the parameter of blood corresponding to the derivative of the separated AC component.

5,577,501

COMPUTED TOMOGRAPHY APPARATUS WITH COMPENSATION FOR SMOOTHING WHICH OCCURS IN INTERPOLATION OF DATA

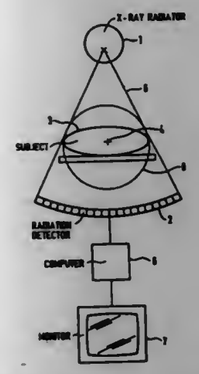
Thomas Flohr, Uehlfeld, and Heinrich Wallschlaeger, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 27, 1994, Ser. No. 313,388

Claims priority, application Germany, Oct. 13, 1993, 43 34 937.4

Int. Cl.[6] A61B *5/05*

U.S. Cl. 128—653.1 3 Claims



1. A method for operating a computed tomography apparatus comprising the steps of:

irradiating an examination subject with an x-ray beam from a plurality of different angular positions for obtaining a measured data set in a first geometry;

reconstructing a tomographic image of said examination subject including interpolation of said measured data set in a second geometry, the interpolation of said measured data producing a smoothing of said measured data; and

compensating for said smoothing of said measured data by dividing said measured data in the frequency space by an average Fourier transform employed in the interpolation of said measured data.

5,577,502

IMAGING OF INTERVENTIONAL DEVICES DURING MEDICAL PROCEDURES

Robert D. Darrow, Scotia; Charles L. Dumoulin, Ballston Lake, both of N.Y., and Steven P. Souza, Williamstown, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 3, 1995, Ser. No. 415,409

Int. Cl.[6] A61B *5/055*

U.S. Cl. 128—653.1 6 Claims

1. A method for providing an image of a subject with a correctly registered image of an invasive device employing the steps of:

(a) obtaining a plurality of reference images each corresponding to a different point of a periodic motion cycle of said subject;

(b) storing each image and its corresponding periodic motion cycle point;

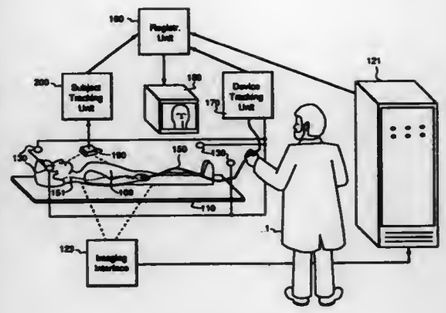
(c) measuring said device location;

(d) performing a measurement of the periodic motion point at essentially the same time as the device location measurement;

(e) selecting a reference image corresponding to the measured periodic motion point;

(f) superimposing an image of the device at the measured device location on the selected reference image; and

(g) repeating steps "c"–"f" to produce a correctly registered real-time motion picture of the device and subject images.



5,577,503

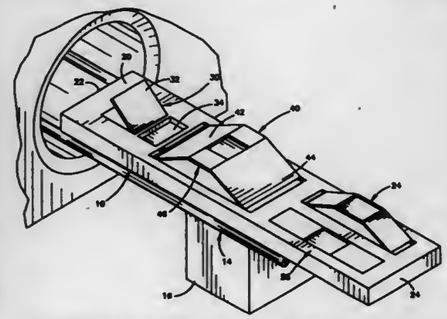
APPARATUS AND METHOD FOR USE IN MEDICAL IMAGING

Peter M. Bonutti, Effingham, Ill., assignor to Apogee Medical Products, Inc., Effingham, Ill.

Division of Ser. No. 802,358, Dec. 4, 1991, Pat. No. 5,349,956. This application Apr. 1, 1994, Ser. No. 221,848

Int. Cl.[6] A61B *5/055*

U.S. Cl. 128—653.2 76 Claims



1. Apparatus for imaging a body part of a patient, said apparatus comprising a primary coil having a chamber for receiving the body part, a secondary coil, means for coupling said secondary coil for movement with the body part, means for moving the coupled body part and secondary coil between a first imaging position and a second imaging position with the body part in the chamber in said primary coil, and means for maintaining said secondary coil in a predetermined orientation relative to said primary coil during movement of the coupled body part and secondary coil between said first and second imaging positions.

5,577,504

MAGNETIC RESONANCE APPARATUS

Anthony J. Salloway, Northampton, and David J. Gilderdale, South Devon, both of United Kingdom, assignors to Gec-Marconi Limited, United Kingdom

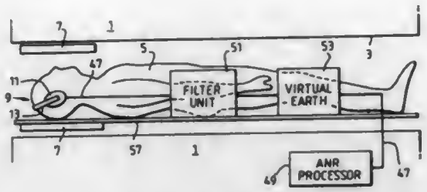
Filed Sep. 19, 1994, Ser. No. 308,651

Claims priority, application United Kingdom, Sep. 21, 1993, 9319498

Int. Cl.[6] A61B *5/055*

U.S. Cl. 128—653.2 12 Claims

1. A magnetic resonance apparatus for examining a patient, comprising: a magnet means for producing a magnetic field in a region in which the patient is positioned during an examination, and for generating noise heard by the patient during the examination as a result of operation of said magnet means; and an active



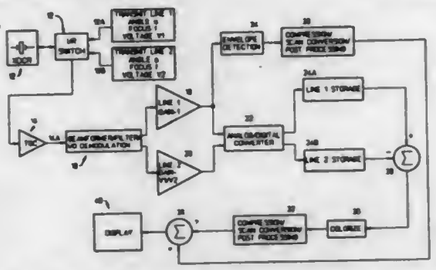
noise reduction means for reducing the noise heard by the patient, including at least one first transducer in said region, and a source of electrical signals including at least one second transducer in said region, for supplying to said at least one first transducer an electrical signal to cause said at least one first transducer to produce in said region sound waves which reduce the noise heard by the patient during the examination as a result of the operation of said magnet means, said transducers being non-magnetic transducers, said at least one first transducer being a piezoelectric loudspeaker including a film of piezoelectric plastics material having two main surfaces, and carrying an electrode on each main surface, and being supported within an enclosure in a domed shape.

5,577,505

MEANS FOR INCREASING SENSITIVITY IN NON-LINEAR ULTRASOUND IMAGING SYSTEMS

George A. Brock-Fisher; Mckee D. Poland, both of Andover, and Patrick G. Rafter, Woburn, all of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 6, 1996, Ser. No. 597,697
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—662.02 **12 Claims**



1. A method for measuring a non-linear response of tissue and bubbles comprising the steps of:
exciting and measuring a first response at a first power setting;
exciting and measuring a second response at a second power setting, wherein the second power setting is different than the first power setting;
scaling the first response for the second power setting to produce a projected response; and
subtracting the projected response from the second response to determine the non-linear response.

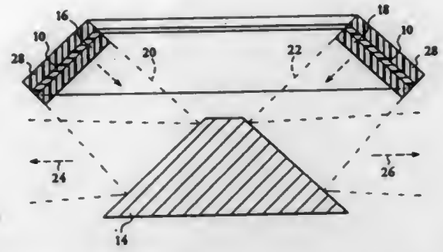
5,577,506

CATHETER PROBE HAVING A FIXED ACOUSTIC REFLECTOR FOR FULL-CIRCLE IMAGING

J. Fleming Dias, Palo Alto, Calif., assignor to Hewlett Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 288,523, Aug. 10, 1994, abandoned. This application Oct. 30, 1995, Ser. No. 550,415
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—662.03 **23 Claims**

1. An ultrasonic probe comprising:



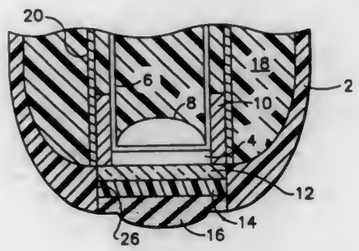
an array of ultrasonic transducer elements arranged axially about a central region having an axis, each transducer element having a forward surface facing the axis to define a first acoustic energy path toward said axis;
an acoustic reflector in spaced-apart relationship with said forward faces of said transducer elements, said acoustic reflector being positioned relative to said forward faces to be within said first acoustic paths and being configured to reflect said acoustic energy away from the axis along a second acoustic energy path different than said first acoustic paths; and
electrode means connected to said transducer elements for sequentially electrically exciting said transducer elements, thereby initiating transmission of an acoustic signal along said first acoustic energy paths to scan radially around the axis.

5,577,507

COMPOUND LENS FOR ULTRASOUND TRANSDUCER PROBE

Jonathan E. Snyder, Whitefish Bay; Leslie J. Keres, Waukesha, both of Wis., and Gregg W. Frey, East Wenatchee, Wash., assignors to General Electric Company, Milwaukee, Wis.

Filed Nov. 21, 1994, Ser. No. 343,078
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—663.01 **7 Claims**



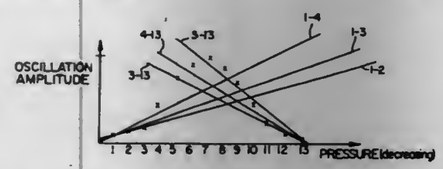
1. An ultrasound probe comprising:
a planar array of piezoelectric transducer elements having a front face;
an inner lens part having a convex cylindrical front face and a planar rear face acoustically coupled to said front face of said planar array; and
an outer lens part having a concave cylindrical rear face acoustically coupled to said convex cylindrical front face of said inner lens part and having a convex cylindrical front face,
wherein said outer lens part is made of a first acoustic medium having a first acoustic velocity greater than the acoustic velocity in human tissue and said inner lens part is made of a second acoustic medium having a second acoustic velocity less than the acoustic velocity in human tissue.

5,577,508

DETERMINATION OF OSCILLOMETRIC BLOOD PRESSURE BY LINEAR APPROXIMATION

Richard Medero, Tampa, Fla., assignor to Johnson & Johnson Medical, Inc., New Brunswick, N.J.

Filed Jan. 13, 1995, Ser. No. 372,573
Int. Cl.[6] A61B *05/00*
U.S. Cl. 128—681 **10 Claims**



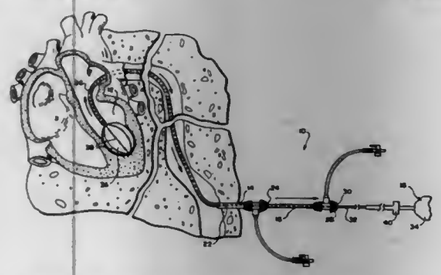
1. An automated sphygmomanometer apparatus, comprising:
an inflatable and deflatable pressure cuff;
inflating means operatively coupled to said cuff for selectively applying a medium under pressure to said cuff for inflating and pressurizing said cuff;
cuff pressure sensing means coupled to said cuff for sensing cuff pressure including any arterial blood pressure oscillations therein;
deflating means operatively coupled to said cuff for selectively relieving pressure from said cuff;
control means for controlling said inflating means to inflate said cuff and said deflating means to deflate said cuff to respective cuff pressure levels for the detection of said arterial blood pressure oscillations at each of said respective cuff pressure levels during a blood pressure determination, and for determining an oscillometric envelope comprising pulse amplitude points corresponding to said arterial blood pressure oscillations at said respective cuff pressure levels during said blood pressure determination; and
processing means for linearly approximating said oscillometric envelope with a pair of best fit lines and for determining a mean arterial pressure of said patient based on a pressure at a point of intersection of said pair of best fit lines.

5,577,509

SYSTEMS AND METHODS FOR EXAMINING THE ELECTRICAL CHARACTERISTICS AND TIMING OF ELECTRICAL EVENTS IN CARDIAC TISSUE

Dorin N. Panescu, Sunnyvale; David K. Swanson, Mountain View, both of Calif.; Mark S. Mirotznik, Silver Spring, Md., and David S. Schwartzman, Philadelphia, Pa., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Filed Jan. 28, 1994, Ser. No. 189,000
Int. Cl.[6] A61B *5/04*
U.S. Cl. 128—696 **52 Claims**



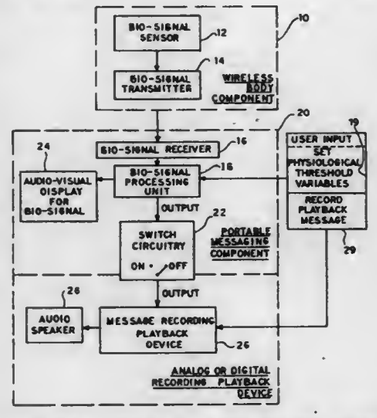
1. A system for examining heart tissue comprising
a pair of electrodes,
means for locating at least one of the electrodes in contact with heart tissue,
means for transmitting electrical current in a path through the contacted heart tissue between the pair of the electrodes,
means for deriving a tissue electrical characteristic based, at least in part, upon sensing the impedance of the tissue lying in the path, and
means for sensing with at least one of the electrodes the timing of local depolarization events in the contacted heart tissue.

5,577,510

PORTABLE AND PROGRAMMABLE BIOFEEDBACK SYSTEM WITH SWITCHING CIRCUIT FOR VOICE-MESSAGE RECORDING AND PLAYBACK

William R. Chittum, 1030 Mowere Rd. MK, Phoenixville, Pa. 19460; Martin J. McMorrow, Rte. 2, Box 763, Cobden, Ill. 62920, and James M. Baker, Jr., 1101 Collier Rd. NW., B5, Atlanta, Ga. 30318

Filed Aug. 18, 1995, Ser. No. 516,743
Int. Cl.[6] A61B *5/04;5/0432*
U.S. Cl. 128—709 **6 Claims**



1. A biofeedback system for recording a message, monitoring a physiological signal and triggering the message upon sensing a predetermined value of the physiological signal, comprising:
a first component including a sensing means for measuring a physiological signal, said sensing means adapted to be worn in contact with the body of a user and portable; and
a second component including
voice-message delivery means for delivering a prerecorded voice-message;
voice-message recording means operably linked with said voice-message delivery means for recording said prerecorded voice-message;
processing means operably linked with said sensing means and said voice-message delivery means;
input means manually operable by the user capable of causing a physiological signal threshold value to be set in said processing means;
wherein said processing means includes
(a) means to process the physiological signal and to produce a first electronic output conveying the physiological signal measured in real time, (b) means to compare a physiological signal value with said threshold value, (c) means to produce a second output when said physiological signal value equals or exceeds said threshold value, (d) means to terminate said second output when said physiological signal value drops below said threshold value; and,
switch circuitry for receiving said second output and automatically activating and deactivating said voice-message delivery means, wherein said switch circuitry includes a battery operably linked to a switch, said switch having an off mode and an on mode, said switch being operably

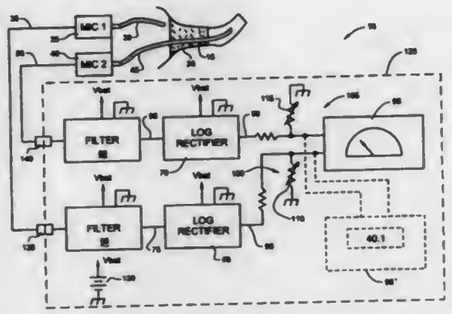
linked to said voice-message delivery means such that when said switch is in said off mode said battery permits voltage to pass through said voice-message delivery means to allow use of said voice-message delivery means independently from said processing means.

5,577,511

OCCLUSION METER AND ASSOCIATED METHOD FOR MEASURING THE OCCLUSION OF AN OCCLUDING OBJECT IN THE EAR CANAL OF A SUBJECT

Mead C. Killion, Elk Grove Village, Ill., assignor to Etymotic Research, Inc., Elk Grove Village, Ill.

Filed Mar. 29, 1995, Ser. No. 412,334
Int. Cl.[6] A61B *5/12*
U.S. Cl. 128—746 **30 Claims**



1. An instrument for use in obtaining measurements of an ear having an ear canal, the instrument comprising:
a) a first microphone for transducing sound waves exterior to the ear canal into electrical signals;
b) a second microphone for transducing sound waves in the ear canal into electrical signals;
c) a first logarithmic amplifier having a DC output signal that is logarithmically related to electrical signals received at an input thereof;
d) a first low pass filter having an input connected to receive the electrical signals from the first microphone and an output connected to the input of the first logarithmic amplifier;
e) a second logarithmic amplifier having a DC output signal that is logarithmically related to electrical signals received at an input thereof;
f) a second low pass filter having an input connected to receive the electrical signals from the second microphone and an output connected to the input of the second logarithmic amplifier; and
g) a DC meter connected to receive the DC output signals from the first and second logarithmic amplifiers.

5,577,512

PH DETECTION AND MEASUREMENT OF BODY FLUID

James C. Caillouette, 685 Oak Knoll Clr., Pasadena, Calif. 91106

Continuation-in-part of Ser. No. 376,830, Jan. 23, 1995, which is a continuation-in-part of Ser. No. 295,399, Aug. 25, 1994, Pat. No. 5,425,377. This application Oct. 27, 1995, Ser. No. 537,379
Int. Cl.[6] A61B *10/00*
U.S. Cl. 128—759 **38 Claims**

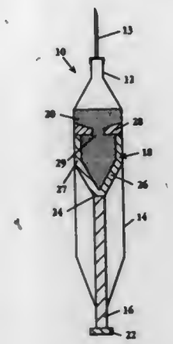
1. In the method of measuring ph of vaginal moisture, the steps that include:
a) providing a ph indication, color comparison measurement, and swabbing means on a carrier stick,
b) manipulating the stick between its opposite ends to obtain pH indication of vaginal moisture at one end of the stick,
c) visually interpreting that indication to also obtain pH measurement of such moisture near that one end of the stick,
d) again manipulating the stick between its opposite ends, including endwise reversing it, to swab the vaginal cavity in the area from which pH indication was obtained,
e) and disposing of the stick, whereby disposition of the pH indication, measurement and swabbing means in the form of a strip on said one end of the stick, and
f) said a) step including providing said pH indication means in the form of a strip on said one end of the stick, and
g) providing a protective porous layer to extend along a portion of at least one of the following:
X_1) said strip
X_2) said color comparison measurement means,
h) and providing a smooth surfaced protective bulbous tip, said protective tip extending transversely of and in interfitting relation with the distal ends of said stick and of said porous layer endwise thereof, to be carried by said stick distal end.

5,577,513

CENTRIFUGATION SYRINGE, SYSTEM AND METHOD

Peter Van Vlasselaer, Sunnyvale, Calif., assignor to Activated Cell Therapy, Inc., Mountain View, Calif.

Filed Aug. 31, 1994, Ser. No. 298,882
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—765 **35 Claims**



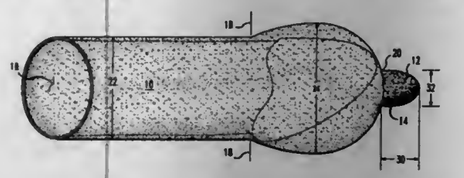
1. A centrifuge syringe, comprising:
a container with a first end and a second end, said first end comprising a central orifice adapted with a fitting to provide a sterile connection for fluid flow therethrough and said second end defining a central orifice;
a plunger slideably positioned within said container, said plunger defining within said plunger a liquid-material receiving chamber having a single opening region defined by an upper constriction member, wherein said constriction member is positioned and constructed to receive liquid and to retain liquid in said liquid-material receiving chamber, when the plunger is inverted; and
an elongated member secured to the lower portion of said plunger and passing through the central orifice of the second end of said container to move the plunger within said container for drawing a fluid sample through said sterile connection.

5,577,514

CONDOM

Arnold S. Zimmerman, 17 Carbury Rd., Wayside, N.J. 07712

Filed Dec. 18, 1995, Ser. No. 574,600
Int. Cl.[6] A61F *6/04*
U.S. Cl. 128—844 **15 Claims**



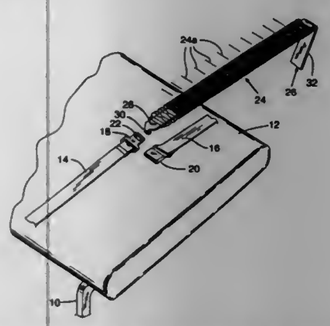
1. A single layered condom of given length from its open end to its closed end, of a first diameter from said open end to a point approximately 4 cm from said closed end to restrict to the shaft of a penis in reducing any tendency for said condom to slip off, and of a second, larger diameter from said point to said closed end to allow for continued flow of blood to the head of the penis to enhance sensation.

5,577,515

APPLICATOR ASSEMBLY FOR APPLYING PROTECTIVE SHEATHS TO MEDICAL PATIENT RESTRAINING BELTS AND METHOD

Richard R. Stout, 27474 SW. Mountain Rd., West Linn, Oreg. 97068, and Gregory E. Skipper, 20600 NE. Kingsgrade Rd., Newberg, Oreg. 97132

Filed Sep. 5, 1995, Ser. No. 523,786
Int. Cl.[6] A61F *5/37*
U.S. Cl. 128—846 **8 Claims**



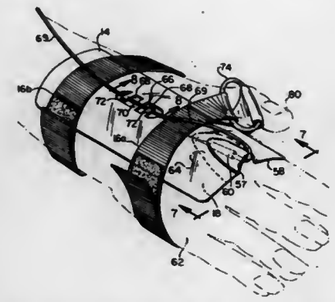
1. For use with a medical patient restraining belt comprising first and second belt components having free ends and interconnecting means on the free end of each component for releasably interconnecting the same during use, a protective sheath applicator assembly comprising in combination:
a) a longitudinally collapsible tubular sheath, and
b) a sheath applicator for mounting the sheath on the first belt component and comprising an elongated bar having a central segment and first and second end segments,
c) the central segment being contoured and dimensioned to support the sheath in a longitudinally collapsed condition,
d) the first bar end segment including attaching means for releasable attachment to one of the belt component interconnecting means to permit releasable coupling of the first bar segment to the said belt component in end to end relation, thereby enabling transferring the sheath from the bar to the belt component.

5,577,516

INTRAVENOUS CATHETER SUPPORT

Rodney D. Schaeffer, Bellefonte, Pa., assignor to Stat Emergency Medical Prodncts, Inc., Bellefonte, Pa.

Filed Mar. 24, 1994, Ser. No. 217,336
Int. Cl.[6] A61F *5/37*
U.S. Cl. 128—877 **6 Claims**



1. A device for securing an intravenous (IV) catheter inserted into a body portion of a patient, the IV catheter being attached to an IV line, the device comprising:
a generally longitudinal pressure plate having in transverse cross-section a first, major curvature, the first curvature being defined by a first radius, the first curvature defining an inner side and an outer side of the pressure plate, the pressure plate also having first and second longitudinal ends and a generally longitudinally oriented raised portion beginning at the first end and extending toward the second end, the raised portion extending outwardly from the outer side of the pressure plate and having in transverse cross-section a second, minor curvature, the second curvature being defined by a second radius smaller than the first radius, the pressure plate for being positioned in engagement with the body portion with the raised portion in engagement with the IV catheter to secure the inserted IV catheter to the body portion;
the pressure plate further having first and second adjacent apertures separated by a bridge and first and second tabs extending into the first and second apertures, respectively, the first and second tabs extending generally in parallel with each other and with the bridge and in generally opposing directions, the first and second tabs and the bridge for securing a portion of the IV line to the pressure plate when the portion of the IV line is positioned to straddle the bridge and pass under the tabs adjacent the body portion; and
a first securing strap attached to the pressure plate, the first strap for being passed around the body portion for securing the pressure plate and the IV catheter.

5,577,517

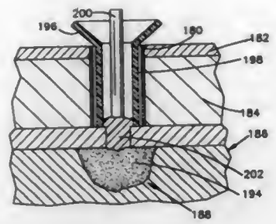
METHOD OF GRAFTING HUMAN TISSUE PARTICLES

Peter M. Bonutti, 1 Lamkin Pl., Watson, Ill. 62473

Division of Ser. No. 134,914, Oct. 12, 1993, Pat. No. 5,403,317, which is a division of Ser. No. 545,908, Jun. 28, 1990, Pat. No. 5,269,785. This application Dec. 9, 1994, Ser. No. 353,494
Int. Cl.[6] A61B *19/00; 17/00*
U.S. Cl. 128—898 **6 Claims**

1. A method of grafting human tissue, said method comprising the steps of inserting human body tissue particles into at least a portion of an opening in a human body, and, thereafter, sealing the portion of the opening in the human body in which the human

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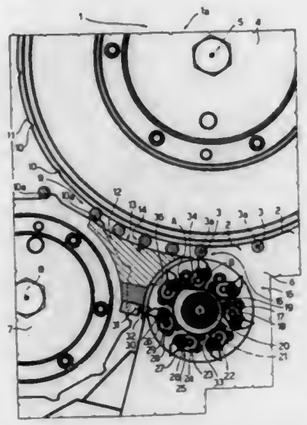
body tissue particles are disposed by conducting a flow of a sealant material into a portion of the opening in the human body which is disposed outward of the portion of the opening in the human body in which the human body tissue particles are disposed.

5,577,518

DEVICE FOR ROLLING ELONGATED ELEMENTS, PARTICULARLY FOR PRODUCING TOBACCO ITEMS

Fiorenzo Draghetti, Medicina, and Salvatore Rizzoli, Bologna, both of Italy, assignors to G. D. Societa' Per Azioni, Bologna, Italy

Filed Jun. 5, 1995, Ser. No. 473,118
Claims priority, application Italy, Jun. 14, 1994, BO94A 0276
Int. Cl.[6] A24C *5/10*
U.S. Cl. 131—32 **9 Claims**



1. A rolling device for elongated elements (3), the device comprising powered conveyor means (4; 7) presenting a transportation surface (11) with a number of seats (10) for receiving respective elongated elements (3); a plate (12) facing a portion of the transportation surface (11), and presenting a rolling bed (13) defining a rolling channel (14) with said transportation surface (11); and rolling initiating means (15) located at the inlet (16) of said rolling channel (16); said initiating means (15) comprising movable braking means (25) which are moveable in relation to said plate (12) for successively engaging and gradually reducing the speed of said elongated elements (3) from a first speed at which said conveyor means (4) travel, to a rolling speed at which the elongated elements (3) travel along said channel (14).

5,577,519

PROCESS FOR THE BLEACHING OF KERATINOUS FIBRES USING WATER VAPOUR

Henri Samain, Bievres, and Jean-Michel Sturla, Saint-Cloud, both of France, assignors to L'Oreal, Paris, France

Filed Dec. 16, 1994, Ser. No. 356,956
Claims priority, application France, Dec. 22, 1993, 93 15484
Int. Cl.[6] A61K *7/13*
U.S. Cl. 132—208 **20 Claims**

1. A process for the bleaching of keratinous fibres, comprising the step of:

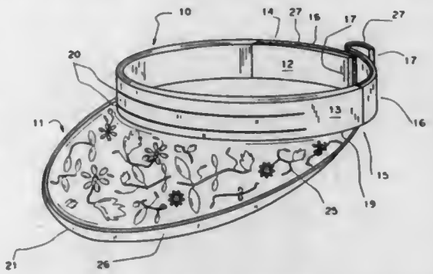
bleaching said fibres, said fibres having previously been contacted with a bleaching composition containing at least one oxidizing agent, by contacting said fibres with a gas containing water vapour, the temperature of the gas being greater than 75° C., for a contact time between said gas and said fibres to be dyed less than ten minutes.

5,577,520

HAIR CUTTING AID

Tanya Sluder, 3524 Bremond, Amarillo, Tex. 79109

Filed Jan. 17, 1995, Ser. No. 373,569
Int. Cl.[6] A45D *24/36*
U.S. Cl. 132—214 **4 Claims**



1. A haircutting assisting device comprising:

a) a headband of flat contour elongated in a circuitous planar path and defined in part by substantially parallel straight upper and lower edges, and opposed interior and exterior surfaces, said headband having: 1) a front portion bearing visibly distinctive indicia on said exterior surface in the form of at least one straight guide line in parallel disposition to said upper and lower edges, 2) two flexible rear portions which terminate in extremities configured to overlap each other within the plane of said circuitous path and thereby define an adjustment region, and 3) quick-acting releasible securing means associated with said rear portions in said adjustment region, said headband being of monolithic construction, fabricated of plastic wherein said front portion is rendered more rigid than said rear portion by virtue of a greater thickness of the plastic material,

b) a substantially rigid brim forwardly and substantially horizontally emergent from said lower edge and bounded by a forward arcuate edge, and

c) a retaining lip upraised from said brim along said arcuate edge as a continuous integral extension of said brim.

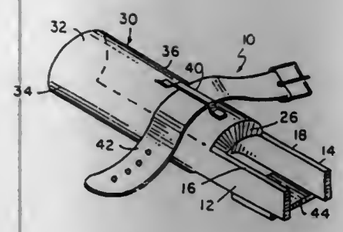
5,577,521

DEVICE TO PROVIDE FOR POLISHING FINGERNAILS

Steven Neitlich, 463 Normandy Dr., Norwood, Mass. 02062

Filed Jul. 19, 1994, Ser. No. 277,240
Int. Cl.[6] A45D *29/00*
U.S. Cl. 132—285 **14 Claims**

1. A device for attaching to a portion of a finger to provide for polishing only the fingernail comprising:



an integral structure having a forward portion for the fingernail section and a rearward portion for a portion of the finger rearwardly from the fingernail;

said forward portion having forwardly extending side walls and a rear end that extends over the finger;

said rearward portion extending about a portion of the finger; and

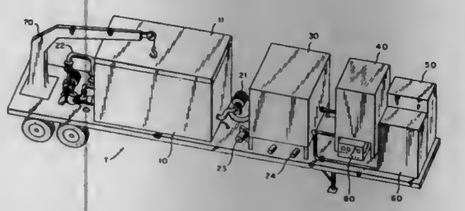
a means for removable securing said integral structure to the finger for polishing, wherein said removable securing means includes a strap attached to an upper portion of said integral structure and a belt, extending under the strap, to secure said integral structure on the finger.

5,577,522

TRANSPORTABLE, ELECTRONICALLY CONTROLLED SYSTEM FOR ON-SITE DECONTAMINATION OF SOLID AND HAZARDOUS WASTE

Naomi P. Barkley; Majid A. Dosani, both of Cincinnati, Ohio; Donald E. Sanning, Villa Hills, Ky., and Michael L. Taylor, Cincinnati, Ohio, assignors to United States of America, Washington, D.C., and IT Corporation, Torrance, Calif.

Filed Dec. 16, 1994, Ser. No. 358,103
Int. Cl.[6] B08B *3/04*
U.S. Cl. 134—111 **11 Claims**



1. A portable washing apparatus comprising:

a first chamber, the chamber including an internal pair of open half-bearings each for accepting thereon a corresponding journal shaft;

a rotatable basket drum having a surface surrounding an interior space for containing objects to be cleaned, the surface including openings to the interior space, the basket drum having drum journal shafts extending from opposing ends of the basket drum;

basket drum rotation means for rotating the basket drum when the basket drum is in the first chamber and the journal shafts are in the bearings;

means for inserting and removing the basket drum from the first chamber;

a detergent system further comprising a storage detergent tank, a pump for supplying pressurized detergent to at least one-detergent eductor disposed within the chamber outside of the basket drum, the eductor having a venturi for entraining detergent from the chamber, a drain opening in the chamber, and detergent piping interconnecting the detergent tank, the pump, the drain opening, and the eductor; and

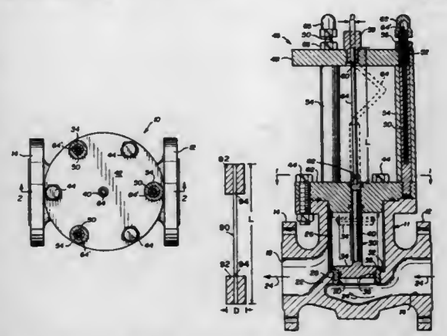
a spray system further comprising orifices disposed on the surface of the drum and rotatable with the basket drum, a rotary fluid connection disposed between the pump and the orifices, spray piping interconnecting the pump and the orifices, and fluid-sealing clutch means for disconnecting the rotary fluid connection.

5,577,523

METHOD OF MAKING RELIEF VALVE INTERCHANGEABLE BUCKLING PINS FOR A SELECTABLE PRESSURE SETTING

Julian S. Taylor, 8300 SW. 8th, Oklahoma City, Okla. 73128

Filed Aug. 18, 1995, Ser. No. 517,025
Int. Cl.[6] F16K *17/14*
U.S. Cl. 137—70 **2 Claims**



1. A method of making interchangeable fluid pressure relief valve buckling pins for selectively changing the fluid pressure relief rating of a given relief valve, comprising the steps of:

a) providing an elongataed slender column having a selected uniform diameter;

b) cutting said column to a preselected length;

c) providing a pair of right circular cylinders, each cylinder of said pair of cylinders having a predetermined diameter and length;

d) axially boring each cylinder of said pair of cylinders from one end to form a pair of adapters with each adapter of said pair of adapters having a socket of predetermined depth and diameter capable of closely receiving a respective end portion of said column; and,

e) bonding the wall forming the socket in each adapter of said pair of adapters on the respective end portion of said column to form a fluid pressure responsive buckling pin having a predetermined dimension between the end surfaces of the pair of adapters opposite the column.

5,577,524

LARGE DIAMETER RESETTABLE RUPTURE PIN RELIEF VALVE

Julian S. Taylor, 8300 SW 8th, Oklahoma City, Okla. 73128

Filed Nov. 15, 1995, Ser. No. 559,683
Int. Cl.[6] F16K *17/14*
U.S. Cl. 137—70 **13 Claims**

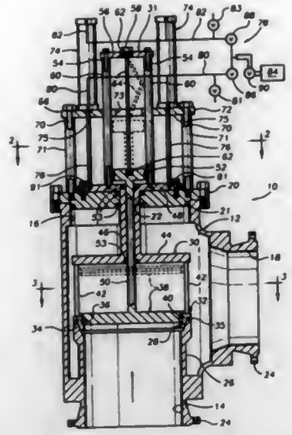
1. A resettable relief valve for connection with a large diameter vessel containing fluid under greater than atmospheric pressure, comprising:

a valve body having an axial inlet port and a lateral outlet port forming a fluid passageway and having an axial opening opposite the inlet port;

a valve seat on the inner limit of the inlet port;

first and second superposed valve means normally closing the inlet port and respectively baving first and second valve stems projecting outwardly through the axial opening;

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collapsible pin means extending axially outward from the body opposite the inlet port including a pin having a predetermined buckling point axially supported by the outwardly projecting second valve stem of said first and second valve stems for normally maintaining said inlet port closed while the fluid pressure in the inlet port is less than the buckling point of the pin and releasing the second valve of said superposed valve means when the fluid pressure in the inlet port exceeds the buckling point of the pin;

platform means connected with the body adjacent the periphery of said tubular valve stem flange;

linear reciprocable means on said platform for moving the first valve stem of said first and second valve stem means;

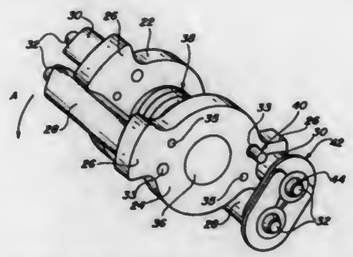
control valve and tubing means connecting a source of fluid under pressure with said reciprocable means for axially moving said first and second valve means relative to each other and the valve body and reclosing the inlet port.

5,577,525

THERMAL RELEASE APPARATUS FOR COUPLING A DAMPER ACTUATOR TO A DAMPER BLADE ASSEMBLY

Kevin L. Wirfel, Versailles; Samuel W. Holmes, Jr., and Ganeson Kandasamy, both of Lexington, all of Ky., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Oct. 11, 1994, Ser. No. 321,340
Int. Cl.[6] F16K *17/38*
U.S. Cl. 137—75 **2 Claims**



1. A thermal release coupler employed in a fire and smoke damper assembly, wherein the fire and smoke damper assembly includes an array of damper blades carried in a damper frame, movable between open and closed positions; a linkage joining the damper blades; and a damper actuator operatively connected to the linkage for driving the damper blade array between the open and closed positions; the thermal release coupler comprising

a drive shaft operatively coupled to the damper actuator;

a hollow connecting shaft operatively connected to the damper blade linkage and rotatably carried on said drive shaft;

a drive coupler and a connecting coupler, formed from identical coupler units, each said coupler unit including

a coupler body, generally circular in form and having two connecting ears projecting radially therefrom at circumferentially opposed locations;

a drive post extending from one said connecting ear, perpendicular to the plane of said coupler body;

a connecting post, extending from the other said connecting ear, perpendicular to the plane of said coupler body in a direction opposite from said direction of said drive post;

mounting pegs carried on the ends of said drive post and said connecting post;

a shaft aperture formed at the central axis of said coupler body; and

a spring aperture formed at the base of each said connecting ear;

wherein said drive coupler is secured to and carried on said drive shaft and said connecting coupler is carried on and secured to said connecting shaft, said coupler units being oriented such that said drive post of each said coupler unit extends toward the other said coupler unit, and said coupler units being positioned such that said mounting pegs on one said coupler unit lie coplanar with said mounting pegs on the other said coupler unit;

a torsion spring carried on said connecting shaft and extending between said drive coupler and said connecting coupler, including two spring legs extending longitudinally from each end of said spring and carried in a said spring aperture of said drive coupler and a said spring aperture of said connecting coupler, such that said spring exerts torque on said coupler units in a direction to drive the damper blades to the closed position, said spring legs being positioned such that the unloaded position of said spring urges the damper array to a fully closed position; and

fusible link means carried on said drive coupler drive post mounting peg and said connecting coupler connecting post mounting peg to maintain said connecting coupler connecting post in close proximity to said drive coupler drive post.

5,577,526

FLOAT VALVE FOR FUEL TANK

Joji Kasugai, Ichinomiya, and Yoshihiro Nagino, Inazawa, both of Japan, assignors to Toyoda Gosei Co., Ltd., Japan

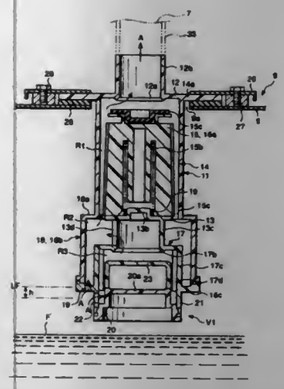
Filed Apr. 21, 1995, Ser. No. 426,140
Claims priority, application Japan, Apr. 28, 1994, 6-091598
Int. Cl.[6] F16K *31/18*
U.S. Cl. 137—202 **2 Claims**

1. A float valve positioned between a fuel tank and an air bleed duct, to vent the tank air during fueling and to stop air flow at a full tank fuel liquid level, said float valve comprising a case including an upper float chamber, a middle chamber, and a lower float chamber, said case being fixed to an upper wall of a fuel tank,

said upper float chamber including a first wall having a first communication hole formed therein in open communication with an air bleed duct, a second wall, located below and spaced from said first wall, having a second communication hole formed therein in open communication with said middle chamber, and an upper side wall connecting said first wall to said second wall, said upper float chamber enclosing an upper float member provided with a seal that can block said first communication hole,

said middle chamber including said second wall, a third wall, located below and spaced from said second wall, having a third communication hole formed therein in open communication with said lower float chamber, and a middle side wall connecting said second wall to said third wall, said middle chamber having a first air hole formed therein located at a full tank fuel liquid level on said middle side wall,

said lower float chamber including said third wall; a fourth wall located below and spaced from said third wall; and a lower side wall connecting said third wall to said fourth wall, said lower float chamber enclosing a lower float member that can block said third communication hole, said lower float chamber further including a second air hole located below and spaced from said lower float.

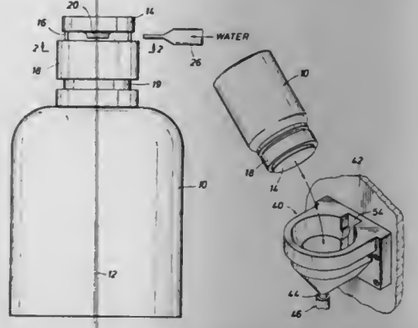


5,577,527

METHOD AND APPARATUS FOR DISPENSING DETERGENT TO A DISHWASHING MACHINE

David P. Jacobs, 6531 Point Clear, Houston, Harris County, Tex. 77069, and Gaston Gaal, 11818 Burlingame Dr., Houston, Harris County, Tex. 77099-4702

Filed Apr. 10, 1995, Ser. No. 419,455
Int. Cl.[6] B01D *11/02;* **B67B** *7/00*
U.S. Cl. 137—268 **14 Claims**



1. A container for dispensing detergent for use with a dishwashing machine having a complementary receptacle, comprising:

a hollow body portion containing dry, granular detergent, said container having a threaded neck portion and a mouth at one end of said threaded neck portion to allow access to the interior of said container;

a cap threadably connected to said threaded neck portion, said cap having a threaded sidewall and a flat surface at one end of said threaded sidewall and at least one orifice in said flat surface through which such granular detergent can easily pass; and

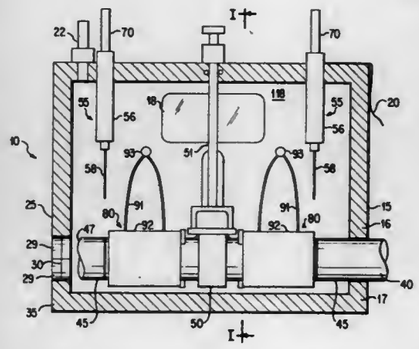
a plate attached to and spaced a predetermined distance from said flat surface of said cap, whereby said dry, granular detergent can fall out of said container through said at least one orifice onto said plate and be flushed off said plate into said washing machine by hot water directed through the spacing between said plate and the flat surface of said cap.

5,577,528

APPARATUS FOR UPGRADE OR REPAIR OF IN-SERVICE PIPELINES

Narayan C. Saha, Lake Villa; Gregory J. Drzewiecki, Oak Lawn, and Chi M. Lei, Chicago, all of Ill., assignors to Southern California Gas Company, Los Angeles, Calif.

Filed Nov. 18, 1994, Ser. No. 342,341
Int. Cl.[6] F15H *43/00;* **H05B** *3/48;3/58*
U.S. Cl. 137—315 **14 Claims**



1. A removable apparatus for upgrade of an in-service pipeline comprising:

enclosure means for temporarily enclosing a pipe section of the in-service pipeline for repairing said pipeline;

said enclosure means comprising at least one enclosure having a top section and a bottom section;

said top and bottom sections sealably disposable around said pipe section and sealably securable to each other; and

at least one of insertion means for inserting a pipeline element between a pair of pipeline sections and having pipeline connection means for connecting said pipeline element to said pipeline sections and repair means for repairing said pipeline sections disposed within said enclosure, said connection means comprising electrofusion means for fusing an electrofusion fitting of said pipeline element to said sections for securing aid pipeline element to said pipeline sections.

5,577,529

TAPPING FITTINGS

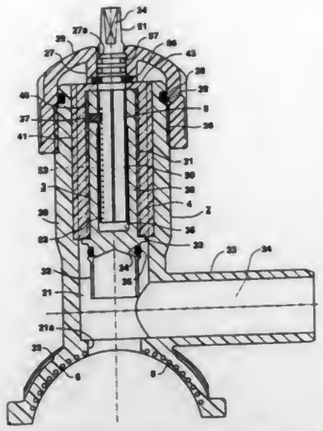
Oded Katz, D.N. Menahse, Israel, assignor to Plasson Maagan Michael Industries Ltd., D. N. Menashe, Israel

Filed Jan. 19, 1995, Ser. No. 375,091
Int. Cl.[6] F16K *43/00;49/00;41/06*
U.S. Cl. 137—318 **20 Claims**

1. A tapping fitting for application to a pipe in order to tap a fluid conducted therethrough to an ancillary device comprising:

a housing including a main section, an attaching section in axial alignment with the housing main section for attaching the fitting to a pipe, and an outlet section for directing the fluid from the pipe to the ancillary device;

a rotatable blade assembly having external threads threadedly received within said housing main section and including a cylindrical cutting blade such that rotation of the blade assembly moves it axially from an initial, retracted position within the housing main section to a projected position through said attaching section to cut a cylindrical slug from the pipe to which the attaching section is attached;



and a sleeve interposed between said rotatable blade assembly and said housing main section, said sleeve being non-rotatable with respect to said housing main section and having internal threads threadedly receiving said external threads of the rotatable blade assembly such that rotation of the rotatable blade assembly moves it to its projected position as it cuts said cylindrical slug from the pipe, the opposite faces of said sleeve being exposed to the fluid pressure within said pipe, after said cylindrical slug has been cut therefrom, to produce a balance of forces on the opposite faces of the sleeve reducing transverse creep in said sleeve.

5,577,530

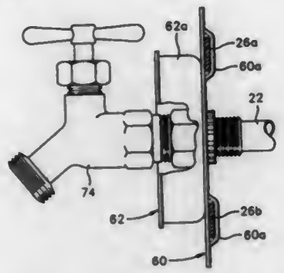
PARTIALLY RECESSED VALVE FIXTURE FOR CONNECTION TO FAUCETS AND COMMODES

Duane R. Condon, 2330 Raymond Ave., Ramona, Calif. 92065

Continuation of Ser. No. 355,555, Dec. 14, 1994, Pat. No. 5,469,882. This application Nov. 28, 1995, Ser. No. 563,774

Int. Cl.[6] F16L *5/00*

U.S. Cl. 137—360 **18 Claims**



1. A valve fixture for connecting a stub-out line to a faucet or commode, comprising:

a mounting plate including means for enabling securement to a stud, the mounting plate having hole in an intermediate region thereof;

an angle stop valve having a male threaded shank extending through the hole in the mounting plate;

a mounting dish overlying a first side of the mounting plate, the mounting dish having a base with a hole through which the shank of the angle stop valve extends, the mounting dish having a peripheral wall spaced from and surrounding the angle stop valve, and the mounting dish being configured to be received in a cut-out region in a layer of drywall overlying the stud;

means for securing the shank of the angle stop valve to the mounting dish and mounting plate; and

means for coupling the shank of the angle stop valve to a stub-out line.

5,577,531

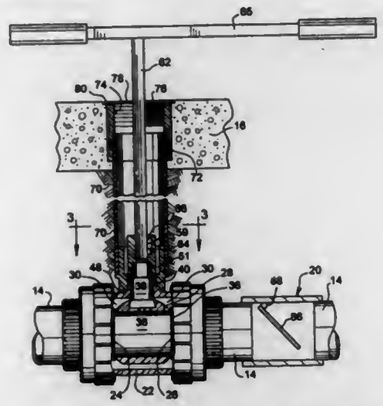
FLOOD PROTECTION SEWER BACKFLOW CONTROL VALVE AND ADAPTER ASSEMBLY

Stuart E. Hayden, Louisville; Douglas A. Kieper, Finchville, and George H. Hunt, Louisville, all of Ky., assignors to Nibco, Inc., Elkhart, Ind.

Filed Dec. 1, 1995, Ser. No. 566,062

Int. Cl.[6] F16L *5/00*

U.S. Cl. 137—369 **1 Claim**



1. We claim a backflow control valve and adapter assembly for providing flood protection for a floor having a drain therein, comprising:

a ball valve having a ball valve stem extending upwardly perpendicular to the main body through a ball valve collar, said ball valve connected to a conduit;

said ball valve collar comprising a circumferential flange and at least one projection sized, shaped and positioned for engaging a least one complementary shaped depression formed in an exterior surface of a support mount for preventing rotation of said support mount with respect to said collar and said valve said collar having a at least one notch formed in an upper edge thereof;

a drive coupling comprising a generally cylindrical tube member having a tab extending from a bottom edge engaging a complementary sized and shaped notch of said collar for preventing a drive coupling from rotating axially upon said collar, said collar having a bottom end defining an aperture complementary sized and shaped for engaging a top portion of said stem, said top end having an aperture complementary sized and shaped for engaging a distal end of a stem rotating rod for turning said valve open and close;

a support mount fitting coaxially around said drive coupling having at least one notch for engaging said projections extending from said collar for holding said support mount stationary with respect to said collar, said support mount including a means of support such as a circumferential ring positioned at a selected distance from the lower end of said support mount;

an extension conduit of a selected length having a larger diameter than said support mount, a portion of said extension conduit sliding coaxially over an upper end of said support mount, said distal end of said extension conduit being supported on said ring of said support mount for preventing obstruction of rotation of said drive coupling and said valve stem;

a female adapter having a larger diameter than said support mount, said female adapter fitting coaxially around the upper portion of said extension conduit, said female adapter including internal threads; and

a plug having external threads, said plug being complementary sized and shaped for cooperablely engaging a plurality of internal threads formed within said female adapter, said plug including a keyway of a corresponding size and shape of the drive coupling for insertion of said rod.

5,577,532

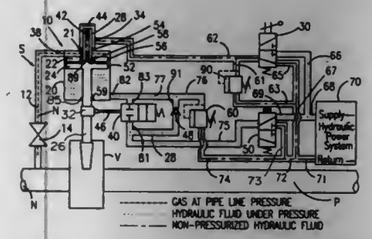
VALVE ACTUATOR

Thomas W. Palmer, 1403 Foster Lake Dr., Richmond, Tex. 77469

Filed Jul. 11, 1994, Ser. No. 273,406

Int. Cl.[6] F16K *17/20;31/124*

U.S. Cl. 137—460 **33 Claims**



24. An actuator for actuating a valve, the valve controlling fluid flow in a conduit, the actuator comprising

a first housing having a first main interior housing space,

a second housing having a second main interior housing space, the second housing spaced apart from the first housing,

a rod with a mid-portion, a top end and a bottom end, the mid-portion movably disposed for movement between the two housings, the top end movably extending into the first housing, the bottom end movably extending into the second housing, and the mid portion of the rod interconnected with the valve,

a first piston member secured to the top end of the rod and movably in the first housing as the rod moves,

a second piston member secured to the bottom end of the rod and movable in the second housing as the rod moves,

first power means for moving the first piston member to move the rod to close the valve, and

second power means for moving the second piston member to move the rod to close the valve.

30. The actuator of claim 24 further comprising

an emergency shut down valve for sensing pressure loss in the housing and for effecting closing of the valve.

5,577,533

FLEXURED SHAFT POPPET

Joseph S. Cook, Jr., 15318 Bratten La., Webster, Tex. 77598

Filed Sep. 13, 1994, Ser. No. 305,240

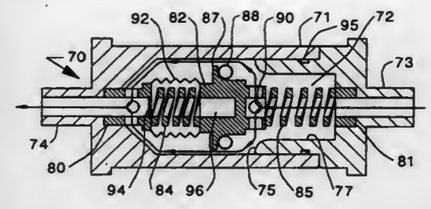
Int. Cl.[6] F16K *21/10*

U.S. Cl. 137—514.3 **2 Claims**

1. In a valve utilizing a reciprocating poppet valve member, a valve housing having a hollow interior and an inlet and an outlet to said hollow interior;

said housing having a valve seat located about a flow opening in said hollow interior;

a poppet valve member disposed in said hollow interior, said poppet valve member being elongated along a longitudinal axis and having a valve head means, said valve head means being compatible with said valve seat for sealing engagement in a first longitudinal position to close said opening and



permitting flow through said flow opening when moved to a second longitudinal position;

said poppet valve member having spiral wall portions located along its longitudinal length in a tubular configuration between base end walls and a valve head means where said base end walls are respectively located long a central axis for said housing and are disposed on either side of the valve head means, each of the spiral wall portions being constructed from a spring material to cause a spiral wall portion to have a spring function, said base end walls being located in the hollow interior of the housing so as to place the spiral wall portions in sufficient compression to maintain the valve head means in sealing engagement with the valve seat and arranged to permit displacement of said valve head means from said sealing engagement in response to a differential pressure across the valve head means;

said spiral wall portions each having a tubular section with ports therein for permitting fluid flow and said spiral wall portions having inner and outer diameters with a specific number of spiral revolutions with a spiral width and a width of material remaining to provide sufficient cantilever strength to support the valve head means when the valve head means is disposed from sealing engagement with the flow opening, and

bellows disposed over one of the spiral wall portions to define a bellows chamber and a flow restrictor disposed in an opening to the bellows to meter flow into and out of the bellows thereby to dampen the longitudinal motion of the valve head means.

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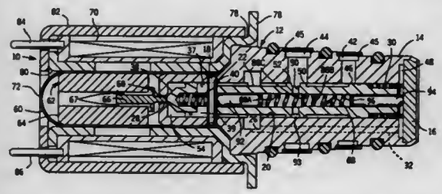
LOAD SENSING PROPORTIONAL PRESSURE CONTROL VALVE

James R. Ward, Milwaukee, Wis., assignor to Applied Power Inc., Butler, Wis.

Filed Jun. 2, 1995, Ser. No. 458,334

Int. Cl.[6] F15B *13/044*

U.S. Cl. 137—596.17 **4 Claims**



1. In a fluid pressure control valve of the type having a housing with a main bore and a valve spool slidable in said main bore to selectively vary the cross-sectional area of a flow passage between an inlet port for communication with a fluid pressure source and an outlet port opening for communication with a fluid pressure load, the improvement wherein:

said spool has an axial through-bore, said through-bore having a first portion at one end which is of a larger diameter and having a second portion at the other end of a smaller diameter;

a first pin of a diameter for close sliding in said first portion is journaled in said first portion to slide axially therein relative

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to said spool, said first pin being slidable to a position in which it abuts said housing;

a second pin of a diameter smaller than said first pin for close sliding in said second portion is journaled in said second portion to slide axially therein relative to said spool, said second pin slidable to a position in which it abuts said housing; and

a passageway is provided in said spool for admitting pressure into said through-bore between said pins so as to act on said pins and urge said pins into abutment with said housing irrespective of the axial position of said spool so as to urge the larger of said two pins against said housing with a greater force than the smaller of said two pins in proportion to the pressure acting on said pins.

5,577,535

METHOD AND EQUIPMENT FOR THE REPAIR OF THE OUTER LAYER OF SUBMARINE FLEXIBLE PIPINGS

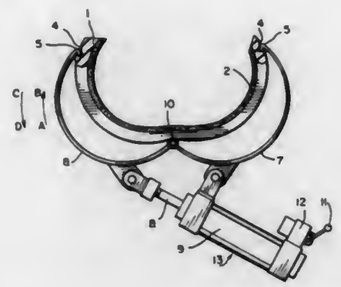
Antonio M. R. Motta, Bloco A-Rio de Janeiro; Ney R. S. Dos Reis, Rio de Janeiro, and Cézar J. M. Del Vecchio, Niterol-Brazil, all of Brazil, assignors to Petroleo Brasileiro S.A. - Petrobras, Rio de Janeiro, Brazil

Filed Aug. 18, 1995, Ser. No. 516,940

Claims priority, application Brazil, Aug. 19, 1994, 9403284

Int. Cl.[6] F16L *55/16*

U.S. Cl. 138—99 **2 Claims**



1. A method for repairing an outer layer of a submarine flexible pipe comprising the steps of providing a sleeve of flexible material having a longitudinal slit and external slots adjacent said slit and a water curable resin mantle on an inner surface of the sleeve, providing a tool having a pair of arms, each arm including a claw at one end thereof for engaging said external slots, operating said arms to open said sleeve and maintain said sleeve in an open position, applying the flexible sleeve in said open position over a damaged region of the outer layer of the flexible pipe with said resin mantle in contact with said damaged region of said flexible pipe, operating said arms to close the sleeve and mantle about said pipe and pressing said flexible sleeve against said resin mantle to compress the resin mantle against the damaged region of the outer layer of the flexible pipe and operating said arms after the resin mantle has reached a gel point to remove said claws from said slots.

5,577,536

WEFT FEEDER FOR ELIMINATING YARN TENSION PEAKS

Bruno Maina, Valdengo, Italy, assignor to Nuova Roj Electrotex S.r.l., Biella, Italy

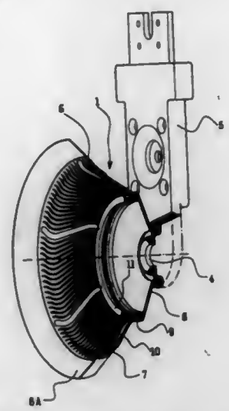
PCT No. PCT/EP93/03086, § 371 Date Jun. 29, 1995, § 102(e) Date Jun. 29, 1995, PCT Pub. No. WO94/10075, PCT Pub. Date May 11, 1994

PCT Filed Nov. 4, 1993, Ser. No. 428,179

Claims priority, application Italy, Nov. 5, 1992, MI92A2544

Int. Cl.[6] D03D *47/34*

U.S. Cl. 139—452 **14 Claims**



1. A weft feeder for gripper or projectile looms comprising:

a drum (3) having a longitudinal axis, a downstream end, and an upstream end;

a yarn guide (4) located at an outlet end for weft yarn (T) being fed therefrom;

a yarn braking device (1) being positioned between the drum (3) and the yarn guide (4) and being centered on the longitudinal axis of the drum (3);

a braking element (6) of the yarn-braking device (1) lying along an inclined surface of a frustocone;

a cup support (8) carrying the braking element (6) and having an inner periphery;

a plurality of tongues (7), placed side-by-side, forming the inclined surface substantially along generating lines of the frustocone and being connected together along a major circumference of said frustocone, said plurality of tongues (7) having free ends along a minor circumference of the frustocone to bear against the inner periphery of the cup support (8); and

means (9, 10, 11) for allowing the braking element (6) to be deformed and/or to perform limited movements in every direction with respect to the cup support (8);

whereby said braking element (6) is connected to the cup support (8) through at least two of the plurality of tongues (7) and also whereby said yarn guide (4) is separated from the braking element (2) while braking takes place.

5,577,537

ADAPTIVE HOLDER, EXTENSION HANDLE AND TOOTHBRUSH GUIDE FOR A TOOTHPASTE DISPENSER

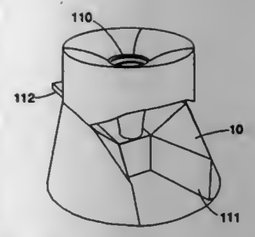
Wesley M. Wells, 214 Enfield Falls Rd., Ithaca, N.Y. 14850

Division of Ser. No. 60,603, May 11, 1993, which is a continuation-in-part of Ser. No. 933,386, Aug. 21, 1992, abandoned. This application May 16, 1995, Ser. No. 441,790

Int. Cl.[6] B65B *1/04;3/04*

U.S. Cl. 141—18 **2 Claims**

1. An adaptive holder for a toothpaste dispenser with a screw-on cap comprising:



a) a holder base having a surface adapted to be placed on a flat horizontal surface;

b) a cylindrical threaded toothpaste dispenser attachment means connected to said holder base such that said attachment means screws onto said dispenser in place of said screw-on cap and when said holder base is placed upon said flat horizontal surface, said dispenser is held upright and perpendicular to said flat surface; and

c) toothbrush guides in said holder base such that said toothbrush is held in proper position to receive toothpaste as it is dispensed from said dispenser when said surface of said bolder base is disposed on said flat horizontal surface, wherein said toothbrush guides are formed by two converging said walls and a sloping bottom plate such that said side walls and said bottom plate present a wide opening for insertion of a toothbrush and narrow to a position such that a toothbrush inserted into said holder rests upon said bottom plate and is positioned to receive toothpaste from said dispenser secured to said attachment means.

5,577,538

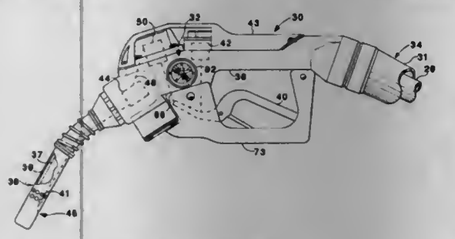
LIQUID DISPENSING NOZZLES HAVING IMPROVED VIEW GLASS/FLOW INDICATORS

Charles A. Sunderhaus, Hamilton; Jonathan P. Young, West Chester; David A. Oberrecht, and Charles J. Moorman, both of Cincinnati, all of Ohio, assignors to Dover Corporation, New York, N.Y.

Filed Dec. 5, 1994, Ser. No. 349,203

Int. Cl.[6] B67D *5/32*

U.S. Cl. 141—94 **43 Claims**



1. A fuel dispensing nozzle comprising

a nozzle body, one end of which is adapted for connection with a fuel hose,

a spout projecting from another end of the nozzle body for the discharge of fuel from the nozzle,

a main fuel passage, extending, through the nozzle body, from the inlet end to and through the spout for discharge of fuel therefrom, said main fuel passage defining the flow path for at least substantially all of the fuel flowing from the inlet end of the nozzle body to the spout,

a main valve for controlling the flow of fuel through the fuel passage,

view glass/flow indicator means for providing visual inspection of said substantially all the fuel flowing through said passage and a visual indication that fuel is being discharged from the nozzle spout and at what rate,

characterized in that

the view glass/flow indicator means define, in part, the fuel passage and are disposed downstream of the main valve.

5,577,539

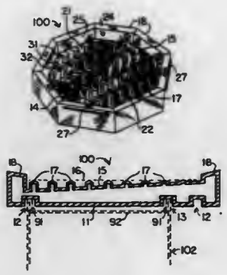
DRUM-TOP DRAINFIELD FUNNEL

Mark D. Shaw, 9820 Preston Trail, Ponte Vedra Beach, Fla. 32082; J. Tad Heyman, 11858 Olde Oaks Ct. N., Jacksonville, Fla. 32223; Laurence M. Bierce, 105 Sandra Rd., Jacksonville, Fla. 32211, and Jesse Ehredt, 1711 Duffton Ln., Painesville, Ohio 44077

Filed Nov. 18, 1994, Ser. No. 342,305

Int. Cl.[6] B67C *11/00*

U.S. Cl. 141—332 **21 Claims**



1. A drainfield funnel comprising:

(A) an off-center spout extending through a generally circular bottom;

(B) a sloping funnel surface located above said bottom and adapted to direct liquids to said spout;

(C) said bottom containing an annular first drum rim receiving channel and an annular second drum rim receiving channel, where said first receiving channel and said second receiving channel have different center points and a single intersection, and where the distance between said spout and said intersection is shorter than the distance between said spout and any other point on said first receiving channel or said second receiving channel.

5,577,540

ABSORBENT ARTICLE HAVING INFLECTED BARRIER CUFFS AND METHOD FOR MAKING THE SAME

David M. Sageser, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

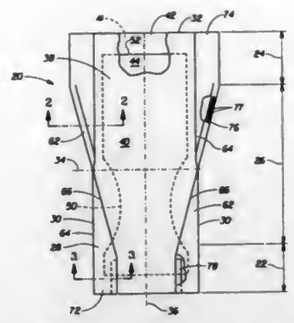
Division of Ser. No. 336,601, Nov. 9, 1994, which is a continuation-in-part of Ser. No. 299,032, Aug. 31, 1994, Pat. No. 5,454,803, which is a continuation of Ser. No. 178,983, Jan. 7, 1994, abandoned. This application Apr. 12, 1995, Ser. No. 420,548

Int. Cl.[6] B31F *1/00*

U.S. Cl. 156—226 **8 Claims**

1. A method for manufacturing an absorbent article having inflected barrier cuffs, said method comprising the steps of:

providing a generally rectangular chassis comprising a liquid pervious topsheet; a liquid impervious backsheet joined with said topsheet; an absporbent core interposed between said topsheet and said backsheet, said absorbent core having a pair of opposed side edges, said chassis having a front waist region; a rear waist region; a crotch region located between said front waist region and said rear waist region; a longitudinal centerline; a lateral centerline; and a pair of laterally opposed side panels extending longitudinally from said front waist region to said rear waist region, said side panels each having a proximal edge disposed adjacent one of said side



edges of said absorbent core, a distal edge spaced apart from said proximal edge and a second end edge located in said rear waist region;

separating said side panels between said front waist region and said crotch region, said separation forming a side panel first end edge in said crotch region;

folding said distal edge juxtaposed said first end edge inwardly over said chassis; and

securing a portion of said first end edge to said chassis in said crotch region to invert said first end edge relative to said distal edge in said rear waist region to provide an inflected barrier cuff that will stand up in the crotch region when the absorbent article is fitted to a wearer.

5,577,541

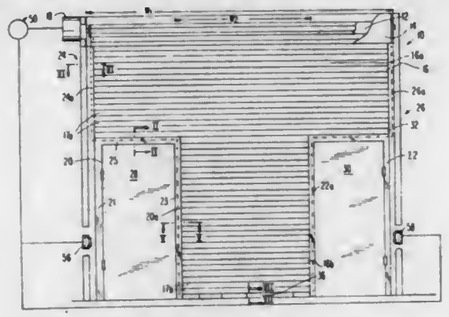
ROLLING DOOR ASSEMBLY HAVING PASS DOOR ARRANGEMENT

James M. McKeon, Brooklyn, N.Y., assignor to Mckeon Rolling Steel Door Co., Inc., Brooklyn, N.Y.

Continuation of Ser. No. 354,208, Dec. 12, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 584,916

Int. Cl.[6] E05F *15/20*

U.S. Cl. 160—7 **19 Claims**



1. A fire door assembly for protecting a building opening defined by at least one lateral sidewall comprising:

a shutter roller rotatable about a substantially horizontal axis;

means for rotating said shutter roller;

a flexible panel windable on and off said roller for movement into retracted and extended conditions, respectively, said flexible panel defining an upper portion having a first width and a lower portion having a second width less than said first width;

a pass door frame hingedly securable proximate a lateral side of the opening for movement between a first position, in which said pass door frame extends in a substantially transverse direction relative to the opening and a second position, in which said pass door frame is substantially aligned with said at least one sidewall, said pass door frame defining a passage therethrough and a substantially vertical channel for guiding an edge region of said lower portion while in said first position;

a pass door movably mounted within the passage defined by said pass door frame to selectively provide ingress and egress therethrough; and

closure means for causing said pass door frame to move frown said second position to said first position prior to extension of said flexible panel.

5,577,542

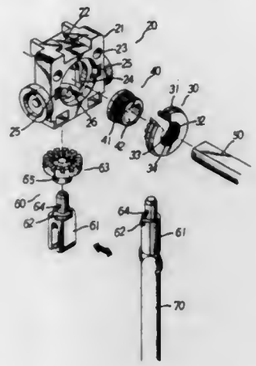
SLAT CARRIER FOR VERTICAL VENETIAN BLIND

Tien-Szu Hung, No. 267, Sec. 4, Chang Shui Road, Chi Fuh Township, Chang Hua Hsien, Taiwan

Continuation-in-part of Ser. No. 314,106, Sep. 28, 1994, abandoned. This application Nov. 30, 1995, Ser. No. 565,473

Int. Cl.[6] E06B *9/38*

U.S. Cl. 160—177 **1 Claim**



1. A slat carrier for vertical Venetian blind, which comprises:

a main body provided with a slot, two through holes, an axial hole having on an outer edge thereof two retaining tenons opposite to each other, and an upright hole having an axis perpendicular to an axis of said axial hole and having at one end thereof a pivoting portion;

a spur gear provided with a flange, a center hole having on an inner wall thereof a plurality of parallel teeth, said center hole further having at one end thereof a locating flange, said spur gear being received in said axial hole of said main body such that said flange of said spur gear is retained by said two retaining tenons of said main body;

an annular gear provided with a receiving hole, and parallel teeth which are located on an outer surface thereof and are engageable with said parallel teeth of said spur gear;

a rotating shaft received at one end thereof in said receiving hole of said annular gear to actuate said spur gear; and

a slat hanging body comprising a slat holding apparatus and a disk gear having parallel teeth, said slat hanging body having a locating projection engageable pivotally with said pivoting portion of said main body such that said disk gear of said slat hanging body is received in said upright hole of said main body, and that said parallel teeth of said disk gear mesh with said spur gear, said slat hanging body further having an arresting body engageable with a retaining slot of said disk gear.

5,577,543

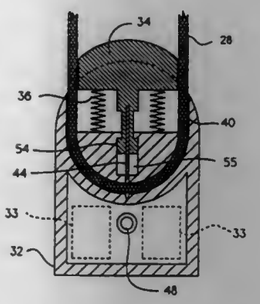
CHILD SAFETY DEVICE FOR LOOPED CORDS

Ralph Jelic, Valencia, Pa., assignor to Verosol USA Inc., Pittsburgh, Pa.

Filed Aug. 19, 1994, Ser. No. 293,021

Int. Cl.[6] E06B *9/38*

U.S. Cl. 160—178.1 **24 Claims**



1. A safety device for use on at least one cord having a loop therein comprising:

a. a body having an anvil and adjacent, U-shaped cord channel, the cord channel sized to permit the at least one cord to pass therethrough, the body being sized and configured to receive a plunger;

b. a pin having an enlarged head attached to the body;

c. a plunger having a blade attached thereto, the plunger being sized and positioned within the body so that the blade is above the anvil and the plunger can be moved relative to the body in a manner to cut any cords which are within the cord channel, the plunger also having a slot through which the pin passes; and

d. spring biased means attached to the plunger and the body to push the blade away from the anvil, such that a force acting on the plunger in a different direction toward the anvil will cause the blade to move toward the anvil cutting any cords within the cord channel.

5,577,544

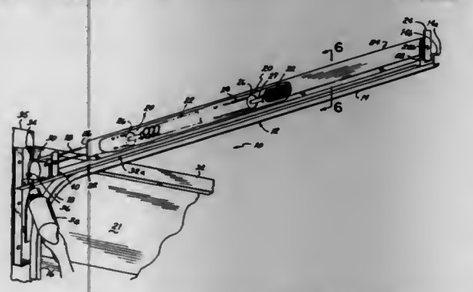
EXTENSION SPRING SYSTEM FOR AN OVERHEAD DOOR

Kenneth E. Carper, Madeira, and Alan R. Leist, Cincinnati, both of Ohio, assignors to Clopay Building Products Co., Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 262,135, Jun. 16, 1994. This application Aug. 10, 1994, Ser. No. 288,328

Int. Cl.[6] E05F *11/00*

U.S. Cl. 160—191 **34 Claims**



1. An extension spring system for an overhead door, said system comprising:

an extension spring;

means for mounting a first end of said extension spring;

a door operating cable for connection between said overhead door and a second end of said extension spring; and,

a spring tensioning device connected to an end of said cable, said spring tensioning device including a cable winding spool, a rotational mount for said spool and a rotation and locking mechanism operatively connected to said spool for allowing said spool to be rotated and then effectively locked after winding said cable and stretching said extension spring to a desired spring tension.

5,577,545

DETERMINATION OF THE CARBON EQUIVALENT IN STRUCTURE-MODIFIED CAST IRON

Stig L. Bäckerud, Katrineholm, Sweden, assignor to SinterCast AB, Stockholm, Sweden

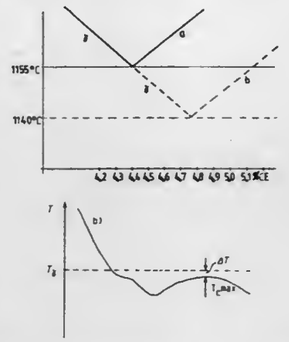
PCT No. PCT/SE93/00296, § 371 Date Oct. 6, 1994, § 102(e) Date Oct. 6, 1994, PCT Pub. No. WO93/20965, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 6, 1993, Ser. No. 307,708

Claims priority, application Sweden, Apr. 9, 1992, 9201141

Int. Cl.[6] B22D *46/00;27/00;2/00*

U.S. Cl. 164—4.1 **2 Claims**



1. A method for determining the carbon equivalent of a structure-modified cast iron melt, comprising:

(a) providing measured and calibrated values of the eutectic temperature for structure-modified cast iron having a closely similar type to that of said melt, and providing from said values a phase diagram applicable to said closely similar type of structure-modified cast iron;

(b) providing a sample container having a defining wall and having a centrally positioned temperature sensor, and causing the sample container to become in thermal equilibrium with the melt;

(c) taking a sample of the melt into the sample container;

(d) providing the sample container with one or more pieces of iron of low carbon content in contact with the iron melt sample in the sample container, said piece or pieces having a size such that said piece or pieces will not melt completely nor substantially affect the average composition of said sample as said sample solidifies in said sample container, while cooling in said sample is delayed at said sample container wall;

(e) allowing the sample in the sample container to solidify, while recording temperature as sensed by said sensor, in relation to time; and

(f) recording the temperature as sensed by said sensor, for the passage of the γ-phase liquidus line as an absolute temperature or as a temperature difference in relation to said measured and calibrated values, and using said absolute temperature or temperature difference to determine the carbon equivalent for the structure-modified cast iron of said melt from said phase diagram.

VOL 1192 ISS 4 NO 26 1996 UMI

5,577,546

PARTICULATE FEEDSTOCK FOR METAL INJECTION MOLDING

Anthony R. Kjar, Victoria, Australia; Ronald G. Iacocca; Randall M. German, both of State College, Pa., and John L. Mihelich, Prospect, Ky., assignors to Comalco Aluminium Limited, Melbourne, Australia

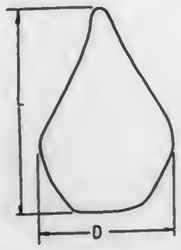
PCT No. PCT/AU93/00454, § 371 Date Apr. 24, 1995, § 102(e) Date Apr. 24, 1995, PCT Pub. No. WO94/06586, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 6, 1993, Ser. No. 397,047

Claims priority, application Australia, Sep. 11, 1992, PL4632; Jun. 29, 1993, PL9680

Int. Cl.[6] B22D *19/14;27/09;* B22C *9/00;* B22F *9/04;1/00*

U.S. Cl. 164—97 16 Claims



1. Particulate material comprising particles of a metal alloy or composite, wherein a substantial proportion of the particles is shaped such that for the substantial portion of the particles the ratio of the length of the largest dimension of any particle to the effective diameter of the particle is in the range of 1.2 to 4.0, the substantial portion of the particles has a particle size wherein the largest dimension of any particle is in the range of 0.5 to 5 mm and the particulate material is substantially free of particles having a particle size of less than 0.5 mm.

5,577,547

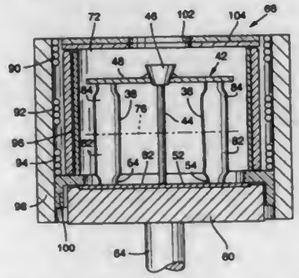
METHOD OF CASTING A METAL ARTICLE

Laxmappa Hosamani, Beaverton, Oreg., assignor to Precision Castparts Corp., Portland, Oreg.

Filed Apr. 28, 1994, Ser. No. 236,216

Int. Cl.[6] B22D *27/04*

U.S. Cl. 164—122 27 Claims



1. A method for casting metal articles, comprising the steps of:

forming a mold having a mold cavity, the mold cavity having a long thin portion which has a length of more than about four inches and which is at least about twenty times its thickness, the long thin portion of the mold cavity being free of gating along its length;

positioning the mold in a furnace so that the furnace substantially surrounds the mold and so that a longitudinal axis of the long thin portion of the mold cavity is in an upright orientation;

heating the mold with the furnace, the step of heating the mold including heating a lower half of the portion of the mold that defines the long thin portion of the mold cavity into a first temperature range, and heating an upper half of the portion of the mold defining the long thin portion of the mold cavity into a second temperature range, the highest temperature of the first temperature range being close to but less than the solidus temperature of the metal, and the highest temperature of the second temperature range being close to the liquidus temperature of the metal;

conducting molten metal into the mold cavity at a location other than along the length of the long thin portion of the mold cavity while the lower half of the portion of the mold defining the long thin portion of the mold cavity is in the first temperature range, and while the upper half of the portion of the mold defining the long thin portion of the article mold cavity is in the second temperature range; and

moving the mold and furnace relative to another at a rate of less than about 30 inches per hour to solidify the molten metal in the article mold cavity with an equiaxed grain structure.

5,577,548

CONTINUOUS CASTING PROCESS AND PLANT

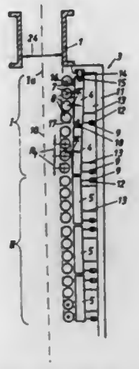
Gerald Hohenbichler, Enns; Kurt Engel, St. Florian, and Andreas Kropf, Puchenau, all of Austria, assignors to Voest-Alpine Industrieanlagenbau GmbH, Austria

Filed Oct. 13, 1994, Ser. No. 322,770

Claims priority, application Austria, Oct. 14, 1993, 2066/93

Int. Cl.[6] B22D *11/12*

U.S. Cl. 164—452 16 Claims



1. A process for continuous casting a strand in a continuous casting plant, having a continuous casting mold (**1**) provided with a discharge opening (**1***a*) and a strand guide with rollers (**8**) supporting the strand (**2**) on opposite sides arranged below the discharge opening (**1***a*), at least those rollers (**8**) associated with one side of the strand being mounted on a series of support segments (**4**, **5**) which are displaceable with respect to the opposite rollers (**8**) said process comprising reducing the strand (**2**) in thickness after emergence from the mold (**1**) in the manner that at least the support segment (**4**) closest to the mold (**1**) is directed to a predetermined wedge-shaped roller gap having a conicity α between the facing rollers (**8**), wherein the strand (**2**) is reduced in thickness exclusively in a region in which it has a liquid core (**20**), and directing the support segments (**4**, **5**) such that the liquid tip (**19**) of the liquid core (**20**) always lies in a region of the strand guide within which the gap formed by the rollers (**8**) is the narrowest parallel gap disregarding any roller adjustment following the shrinkage of the completely solidified strand.

5,577,549

MOLD FLUXES USED IN THE CONTINUOUS CASTING OF STEEL

Royston J. Phillips, Strongsville, and Spencer C. Diehl, North Olmsted, both of Ohio, assignors to Foseco International Limited, Birmingham, England

Continuation-in-part of Ser. No. 411,651, Apr. 5, 1995, Pat. No. 5,538,070. This application Apr. 10, 1995, Ser. No. 421,151

Int. Cl.[6] C21C *7/076*

U.S. Cl. 164—473 16 Claims

1. A mold flux comprising refractory metal oxide, at least one fluxing agent, a binder, and expandable graphite comprising 0.3–1.0% by weight of said mold flux, said flux in the form of spherical granules having a size of 200–500 microns.

5,577,550

GOLF CLUB METALLIC HEAD FORMATION

Glenn H. Schmidt, Malibu, Calif., assignor to Callaway Golf Company, Carlsbad, Calif.

Filed May 5, 1995, Ser. No. 436,020

Int. Cl.[6] B22C *9/04;9/10;* B22D *25/00*

U.S. Cl. 164—516 17 Claims

1. In the method of forming a hollow metallic golf club head having wall structure defining a front wall, a heel, a toe, a rear wall, a sole, and a top wall, the steps that include:

a) providing a wax shell covered pre-formed core body, the thickness of the wax shell corresponding to the desired thickness of said wall structure,

b) forming a ceramic shell about the wax shell.

c) removing the wax shell by melting the wax, thereby to form an opened gap between the ceramic shell and the core body,

d) and casting molten metal into the opened gap, thereby to form said wall structure extending about the core body and at the sole, while forming and maintaining a rearward port structure through said rear wall formed by said wall structure and spaced from the sole, said port structure formed directly rearwardly of the main extent of said core body, and allowing said wall structure to solidify to form the head,

e) removing said ceramic shell from said wall structure, and removing said core body from the interior of said solidified head, and via said rearward port structure.

5,577,551

REGENERATIVE HEAT EXCHANGER AND METHOD OF OPERATING THE SAME

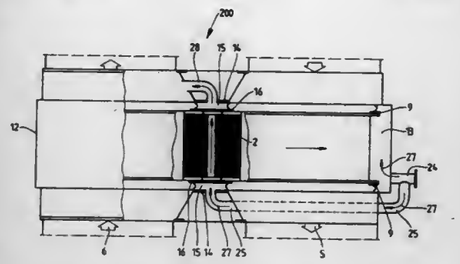
Gerhard Kritzler, Freudenberg, and Siegfried Schlüter, Wenden-Rothemühle, both of Germany, assignors to Apparatebau Rothemuhle Brandt & Kritzler GmbH, Wenden-Rothemuhle, Germany

Continuation-in-part of Ser. No. 118,838, Sep. 8, 1993. This application Aug. 29, 1994, Ser. No. 298,443

Claims priority, application Germany, Sep. 9, 1992, 42 30 133.5

Int. Cl.[6] F28D *19/00*

U.S. Cl. 165—9 9 Claims



1. A method of sealing a regenerative heat exchanger including a housing, a rotor located in the housing and having a plurality of heat storage bank chambers, and a means for separating heat exchange media and further including a plurality of peripheral and radial barrier chambers, said method comprising the steps of:

providing stationary flat arcuate peripheral seals resiliently engaging a perimeter of the rotor at hot and cold sides thereof for delimiting the circumferentially arranged barrier chambers;

providing stationary flat radial seals at the hot and cold sides of the rotor for covering at least one heat-storage bank chamber;

determining localized pressure relationships in the heat exchanger at respective sealing sites; and

effecting appropriate exhaust, blocking, blow-out and venting operations in response to said localized pressure relationships.

5,577,552

TEMPERATURE CONTROLLING DEVICE FOR MASK AND WAFER HOLDERS

Ryuichi Ebinuma, Kawasaki; Takao Kariya, Hino; Nobutoshi Mizusawa, Yamato; Koji Uda, Yokohama; Eiji Sakamoto, Sagamihara, and Shunichi Uzawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 148,541, Nov. 8, 1993, abandoned, which is a continuation of Ser. No. 804,515, Dec. 10, 1991, abandoned, which is a continuation of Ser. No. 415,775, Oct. 2, 1989, abandoned. This application Mar. 28, 1995, Ser. No. 412,101

Claims priority, application Japan, Oct. 3, 1988, 63-247493; Jul. 31, 1989, 1-96952

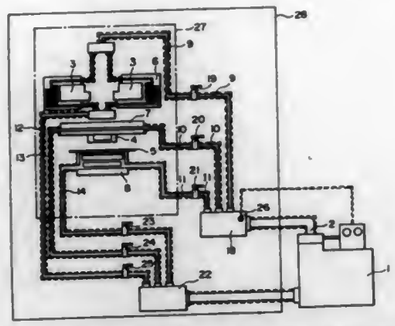
Int. Cl.[6] F28D *15/00*

U.S. Cl. 165—296 4 Claims

1. A method of controlling a temperature of an exposure system having a mask holder for holding a mask with a pattern and a wafer holder for holding a wafer to be exposed to the pattern of the mask, said method comprising the steps of:

providing a first flow passageway having a first heat exchanging portion proximate to the mask holder, the first flow passageway further having first and second adjusting valves disposed upstream and downstream, respectively, of the first heat exchanging portion with respect to a flow path in the first flow passageway;

providing a second flow passageway having a second heat exchanging portion proximate to the wafer holder, the second



flow passageway further having third and fourth adjusting valves disposed upstream and downstream, respectively, of the second heat exchanging portion with respect to a flow path in the second flow passageway;

supplying and distributing a liquid medium to the first and second flow passageways;

regulating opening of the first and second adjusting valves to set a particular pressure loss in the first flow passageway and regulating opening of the third and fourth adjusting valves to set a particular pressure loss in the second flow passageway, with pressures set at the first and second heat exchanging portions being substantially equal such that temperatures of the liquid medium in said first and second heat exchanging portions are substantially equal.

5,577,553

REGENERATOR

Hans-Georg Fassbinder, Sulzbach-Rosenberg, Germany, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

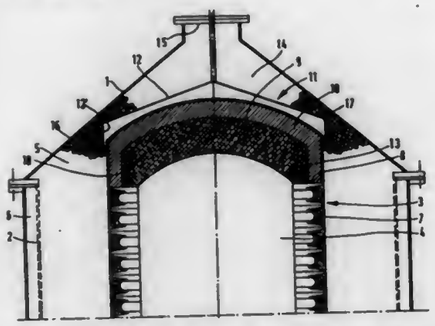
PCT No. PCT/EP93/03169, § 371 Date Sep. 16, 1994, § 102(e) Date Sep. 16, 1994, PCT Pub. No. WO94/11693, PCT Pub. Date May 26, 1994

PCT Filed Nov. 11, 1993, Ser. No. 256,454

Claims priority, application Germany, Nov. 16, 1992, 42 38 652.7

Int. Cl.[6] F28D *17/00*

U.S. Cl. 165—10 **12 Claims**



1. A regenerator having an annular heat-storage chamber composed of bulk material and disposed between two coaxial cylindrical gratings wherein one of the gratings is an inner, hot grating and the other of the gratings is an outer, cold grating, a hot collecting chamber enclosed by the inner, hot grating and a cold collecting chamber enclosed between the outer, cold grating, on the one hand, and a housing wall of the regenerator, on the other, wherein the hot collecting chamber is closed off by a lid resting on an upper rim of the hot grating and wherein at a distance above the lid, a shield attached to the housing wall of the regenerator which is not physically linked to the lid.

5,577,554

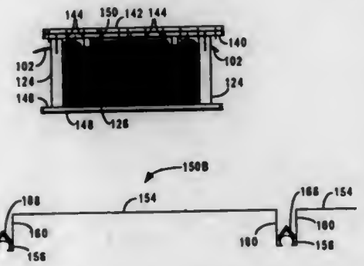
RADIANT HEATING SYSTEMS WHICH ARE MORE EFFICIENT TO BUILD, AND METHODS AND APPARATUSES FOR BUILDING THEM

John T. Umina, 160 Range Rd., Concord, Mass. 01742

Filed Jul. 7, 1994, Ser. No. 271,783

Int. Cl.[6] F24D *3/14*

U.S. Cl. 165—53 **10 Claims**



1. A conductive heat shield for use with a radiant heating system in which tubing for conveying heated fluid is run on an underside of a floor to supply heat to the floor, said heat shield comprising:

a beat-conducting flat portion having a floor-contacting surface designed to be placed in substantial contact with the underside of said floor, said floor-contacting surface having a combined length of at least one foot and a combined width of at least six inches;

an elongated heat-conducting tube-bolding portion positioned to be below the flat portion when the floor-contacting surface is placed against the underside of the floor, said tube-holding portion:

extending in a direction generally parallel to the floor-contacting surface and being shaped to hold a portion of said tubing within a tube-holding space,

having an elongated opening for receiving said tubing when said floor-contacting portion is placed against the underside of a floor, and

having resilient restraining portions positioned along the elongated opening which have to be deflected to insert the tubing in said elongated opening and which hold the tubing in place once the tubing has been inserted into the elongated opening; and

a nail guard positioned to be above the tube-holding portion when said floor-contacting surface is placed against the underside of the floor, said nail guard being sufficiently puncture resistance to prevent nails used to nail down hardwood floors from entering said tube-holding space.

5,577,555

HEAT EXCHANGER

Daisuke Hisajima, Ibaraki-ken; Akira Nishiguchi, Ushiku; Tomihisa Ohuchi, Tsukuba, and Saburo Tsukada, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., and Hitachi Cable, Ltd., both of Tokyo, Japan

Filed Feb. 4, 1994, Ser. No. 192,287

Claims priority, application Japan, Feb. 24, 1993, 5-035170

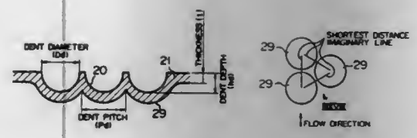
Int. Cl.[6] F28F *13/02;1/42*

U.S. Cl. 165—133 **4 Claims**

1. A heat exchanger for beat exchange between first and second fluids comprising:

a first surface on which the first fluid flows;

a second surface on which the second fluid flows; and wherein



at least one of the first and second surfaces has at least two dents and a partition wall therebetween and a height of a part of the partition wall relative to a bottom of each of the dents on an imaginary line along a shortest distance on the partition wall between adjacent dents is smaller than a height on another part of the partition wall not along the imaginary line.

5,577,556

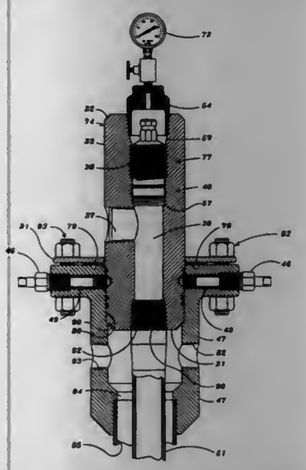
UNITARY DIVERSIONARY-TUBING HANGER AND ENERGIZABLE ROD SEAL

Lehman T. Reed, 3219 Candlewood Dr., Bakersfield, Calif. 93306

Filed Jan. 17, 1995, Ser. No. 373,837

Int. Cl.[6] E21B *33/04*

U.S. Cl. 166—88.1 **41 Claims**



1. An unitary diversionary-tubing hanger for hanging a production tubing string therefrom, and for installation directly in a wellhead having an internal surface of revolution, the unitary diversionary tubing hanger being installable through a blowout protector mounted on the wellhead, the unitary diversionary tubing hanger comprising:

a rigid body having a top surface, a bottom surface, and an external surface of revolution therebetween, the external surface of revolution having a lower portion for positioning adjacent the internal surface of revolution of the wellhead and an upper portion for extending above and outside the wellhead;

a vertically extending first passageway extending through the rigid body from the top surface to the bottom surface;

a laterally extending second passageway from the upper portion of the external surface of revolution to the first passageway, the second passageway having means proximate the upper portion for attaching plug means directly thereto so that the plug means does not interfere with the landing of the unitary diversionary tubing hanger in the wellhead through the blowout protector;

plug securing means within the first passageway for securing a removable plug therewithin;

locking means on the lower portion of the external surface of revolution located between the bottom surface and the second passageway for locking the rigid body in the wellhead;

first sealing means on the lower portion of the external surface of revolution located between the bottom surface and the locking means for sealing the rigid body in the wellhead; and

integral tubing hanger means in the bottom of, and in fluid communication with, the first passageway and axially aligned therewith for hanging tubing therefrom, whereby the unitary diversionary tubing hanger with the production tubing string hanging therefrom, is adapted to be inserted through the blowout protector and to be landed in the wellhead.

5,577,557

Patent Not Issued For This Number

5,577,558

IN-WELL DEVICE FOR IN SITU REMOVAL OF UNDERGROUND CONTAMINANTS

Abdul S. Abdul, Troy, and Thomas L. Gibson, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 16, 1995, Ser. No. 543,582

Int. Cl.[6] B09C *1/10;* E21B *43/12*

U.S. Cl. 166—246 **20 Claims**

1. An apparatus for use in removing a contaminant from a subsurface region of earth, the apparatus comprising:

a well having an upper end exposed to a surface of the earth and a lower end disposed in the subsurface region;

means disposed in the well for permitting entry of a fluid into the well from the subsurface region;

a reactor disposed in the well and comprising a porous mass pervious to the fluid, microbes capable of biodegrading the contaminant to yield a byproduct being dispersed and physically retained within the porous mass so as to inhibit the microbes from exiting the reactor; and

means for routing flow of the fluid from the entry means and through the reactor.

15. A method for removing a contaminant from a subsurface region of earth, the method comprising the steps of:

providing a well having an upper end exposed to a surface of the earth and a lower end disposed in the subsurface region, the well having means for permitting entry of a fluid into the well from the subsurface region;

positioning a reactor in the well, the reactor comprising a porous mass pervious to the fluid, a population of microbes capable of biodegrading the contaminant being dispersed and physically retained within the porous mass so as to inhibit the microbes from exiting the reactor;

causing the fluid to flow from the subsurface region through the entry means into the well, and thereafter through the reactor and the porous mass so as to enable the microbes to biodegrade the contaminant within the fluid to form a byproduct;

removing the byproduct from the reactor; and

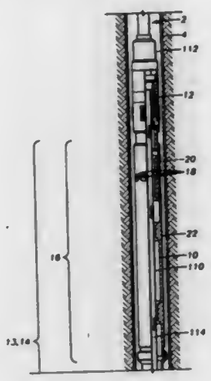
introducing microbes into the reactor from the surface of the earth.

5,577,559

HIGH-RATE MULTIZONE GRAVEL PACK SYSTEM

Benn A. Voll, Houston, Tex., and Wilfred Schexnayder, Jr., Lafayette, La., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Mar. 10, 1995, Ser. No. 402,187
Int. Cl.[6] E21B *43/04*
U.S. Cl. 166—278 **43 Claims**



1. A method of gravel packing a formation comprising the steps of:

inserting a bypass tool having an exterior and comprising an internal bypass subassembly and an external bypass subassembly into a well bore, wherein said internal bypass subassembly comprises an inner fluid pathway;

pumping gravel-bearing fluid into said inner fluid pathway;

diverting said gravel-bearing fluid from said inner fluid pathway to the exterior of said bypass tool through a passage in said external bypass subassembly and toward the formation by deflecting the direction of the entirety of the flow of said gravel-bearing fluid through said passage less than four times;

depositing gravel from said gravel-bearing fluid into a formation; and

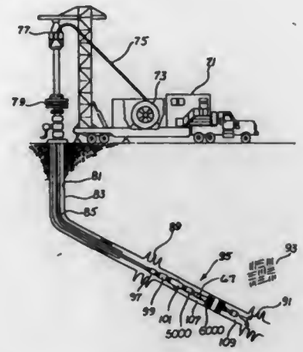
returning said fluid to the surface.

5,577,560

FLUID-ACTUATED WELLBORE TOOL SYSTEM

Martin P. Coronado; Michael J. Loughlin; Luis E. Mendez, and Rustom K. Mody, all of Houston, Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 926,139, Aug. 5, 1992, Pat. No. 5,320,182, which is a continuation of Ser. No. 642,139, Jan. 15, 1991, abandoned, which is a continuation of Ser. No. 345,342, Apr. 28, 1989, abandoned. This application Jul. 12, 1993, Ser. No. 90,379
Int. Cl.[6] E21B *33/127*
U.S. Cl. 166—387 **27 Claims**



1. A wellbore tool for use in a wellbore having a production tubing string disposed therein, comprising:

(a) a source of pressurized fluid which selectively discharges fluid, and which includes:

a housing insertable through said production tubing string in said

wellbore;

(2) at least one electric motor disposed within said housing; and

(3) a pump member driven by said at least one electric motor for receiving and discharging an actuation fluid;

(b) a fluid-pressure actuable wellbore tool which is operable in a plurality of modes of operation, including at least a running in the hole mode of operation with said fluid-pressure actuable wellbore tool in a running condition, and an actuated mode of operation with said fluid-actuable wellbore tool in an actuated condition, wherein during said running in the hole mode of operation said fluid-pressure actuable wellbore tool is insertable through said production tubing string in said wellbore;

(c) a delivery mechanism for selectively raising and lowering said source of pressurized fluid and said fluid-pressure actuable wellbore tool to selected locations within said wellbore through said production tubing string;

(d) means for selectively separating said fluid-pressure actuable wellbore tool from said source of pressurized fluid and allowing removal of said source of pressurized fluid from said wellbore while said fluid-pressure actuable wellbore tool remains in said wellbore; and

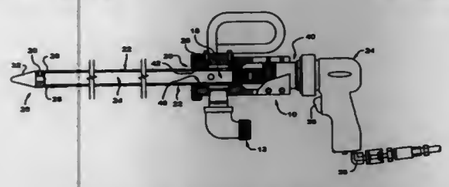
(e) means for providing automatically and without surface intervention a predefined actuation force to said fluid-pressure actuable wellbore tool while switching between said running in the hole mode of operation and said actuated mode of operation.

5,577,561

TITANIUM SKIN-PENETRATING FIRE-FIGHTING TOOL

Kenneth E. Cook, Annapolis, Md., assignor to Oceaneering International, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 155,056, Nov. 19, 1993, abandoned. This application Aug. 15, 1995, Ser. No. 515,293
Int. Cl.[6] A62C *31/22*
U.S. Cl. 169—70 **18 Claims**



1. A penetrating and fire fighting agent dispensing device comprising:

(a) a housing adapted to receive a fire fighting agent and comprising a discharge outlet;

(b) a rotatable outlet barrel having a first end and a second end, the first end of the barrel being attachable to the discharge outlet of the housing, the barrel further comprising passaging extending substantially the length of the barrel, through which the fire fighting agent may flow and be discharged near the second end of the barrel;

(c) a penetrating member affixed to the second end of the barrel such that the penetrating member rotates with the barrel, said member having a sufficiently small diameter to penetrate a titanium aircraft skin when no more than 150 pounds of pressure are applied to said device; and

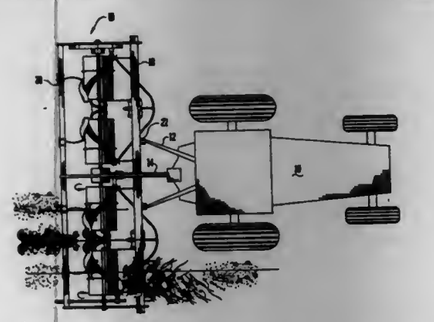
(d) a controllable actuating device mechanically coupled to the barrel and actuatable to rotate the barrel, said device being capable of continuously rotating said barrel for a sufficient period of time to penetrate more than 6 titanium skins without the need to stop the operation of the device.

5,577,562

HARVESTER FOR ROOT CROPS AND METHOD OF USING SAME

Tony R. Gresham, 416 Monticello Pkwy., Portales, N.M. 88130-9273

Filed Oct. 13, 1994, Ser. No. 322,607
Int. Cl.[6] A01D *27/00*
U.S. Cl. 171—27 **11 Claims**



1. The method of harvesting a root crop having a crop portion beneath the surface of the earth and a plant in a drill with a stem and limbs extending above the earth, comprising the following steps:

a) grasping the stem, then

b) moving soil from under the crop away from the drill, then

c) lifting the crop upward by pulling the stem upward,

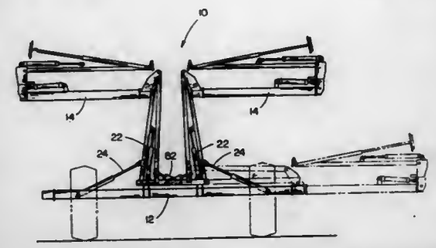
d) wherein said crop is grown upon the bed and further comprising: placing the removed soil into furrows adjacent to the bed.

5,577,563

STACK-FOLDING TOOLBAR WITH FLOATING WINGS

Kurt Holen, Rte. 1, Box 14, Smithfield, Nebr. 68976

Filed Jul. 27, 1995, Ser. No. 507,889
Int. Cl.[6] A01B *73/00*
U.S. Cl. 172—456 **6 Claims**



1. A stack-folding toolbar for drawing agricultural implements behind a tractor, comprising:

(a) a central section, a left wing section and a right wing section;

(b) a crown bar mounted above the central section;

(c) left and right pivot posts pivotally connected to the crown bar at a point near its center;

(d) left and right upper pivot arms, with the inner end of each upper pivot arm pivotally connected to its respective pivot post and the outer end of each upper pivot arm pivotally connected to the inner end of its respective wing section;

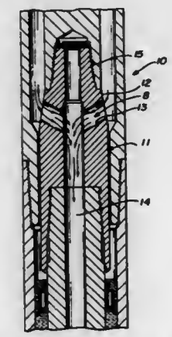
(e) left and right lower pivot arms, with the inner end of each lower pivot arm pivotally connected to the ends of the crown bar, and the outer end of each lower pivot arm pivotally connected to the inner end of its respective wing section.

5,577,564

ROTARY FLUID CONVERTER

Tuong T. Le, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 28, 1995, Ser. No. 396,382
Int. Cl.[6] E21B *4/00*
U.S. Cl. 175—93 **4 Claims**



1. A hollow elongated rotary fluid converter comprising:

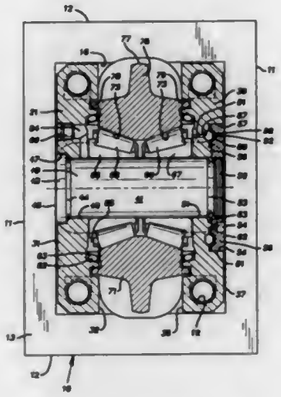
sloping exterior shoulders at one end;

a hollow bore at the center; and

at least one fluid orifice extending from the exterior sloping shoulders to the interior bore at a tangent with respect to said

bore and cooperating with said sloping exterior shoulders to form fluid flow transition angles that reduce the turbulence of the fluid entering said bore through said orifice thereby reducing the erosion and wear of said fluid converter.

5,577,565
COMPACT ROLLER CUTTER
John P. Kocab, Cleveland Heights, and Dennis M. Ofiara, Macedonia, both of Ohio, assignors to Boretec, Inc., Solon, Ohio
Filed Jun. 29, 1995, Ser. No. 496,391
Int. Cl.[6] E21B *10/20;10/22*
U.S. Cl. 175—228 **9 Claims**

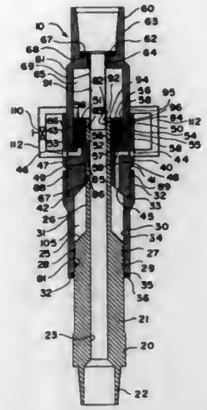


1. A roller cutter assembly comprising a saddle defining a recess having mounting surfaces thereon, first and second support plates each having positioning faces engageable with said mounting surfaces to position said support plates on said saddle, each of said support plates having an inner and an outer side, a shaft having an enlarged head at one end and a threaded portion at the other end, each of said support plates defining a bore adapted to receive said shaft, said shaft extending between said support plates and positioning said support plates a predetermined spaced distance apart with said plate sides parallel, said first plate having a recess on its outer side around said bore to receive said enlarged shaft head, a nut adapted to engage the threaded portion of said shaft, said second plate having a recess on its outer side to receive said nut on said shaft, a pair of tapered roller bearings having cone members on said shaft with the cone surfaces facing each other, a set of tapered rollers on each of said cone members, and a unitary annular cutter wheel having an outer cutting edge and an inner race surface journalled directly on said tapered rollers.

5,577,566
RELEASING TOOL
Stephen L. Albright, Houston, Tex.; Michael W. Hayes, Lafayette, La.; Jimmy L. Hollingsworth, Cypress, and Guy L. McClung, III, Spring, both of Tex., assignors to Weatherford U.S., Inc., Houston, Tex.
Filed Aug. 9, 1995, Ser. No. 513,147
Int. Cl.[6] E21B *17/00*
U.S. Cl. 175—321 **10 Claims**

1. A selectively length adjustable tool for use with a rig system for running a string of tubulars including a circulating head, the tool comprising

a body with a first end, a second end, and a body fluid flow bore therethrough from the first end to the second end,

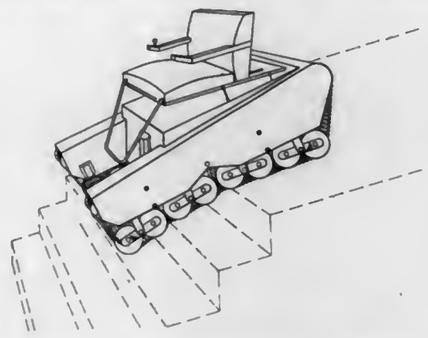


the body having a first fluid chamber and a second fluid chamber,

a piston member with a first piston end and a second piston end, the second piston end initially projecting out from and extending from the second end of the body an initial distance, a first piston portion at the first piston end and a second portion at the second piston end, the second portion interconnected to the second portion by a middle member, a piston flow bore extending from the first piston end, through the middle member, to the second piston end for wellbore fluid flow through the tool,

the first piston portion movably disposed in the first fluid chamber and the second portion movably disposed in the second fluid chamber, so that expulsion of fluid from the second fluid chamber and introduction of fluid into the first fluid chamber effects movement of the piston member with respect to the body moving the first piston end in the first fluid chamber toward the first end of the body and moving a portion of the second piston end into the second end of the body thereby effectively shortening the length of the tool.

5,577,567
STAIR CLIMBING WHEELCHAIR
Robert E. Johnson, and Deborah K. Johnson, both of 1417 Kasten Dr., Dolton, Ill. 60419
Filed Dec. 20, 1994, Ser. No. 360,245
Int. Cl.[6] B62D *55/075*
U.S. Cl. 180—9.23 **24 Claims**



1. A surface climbing and descending vehicle, comprising:

a base for supporting a platform to be maintained in a generally horizontal orientation;

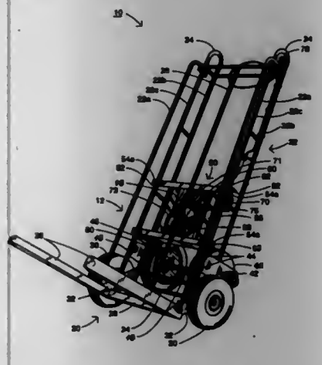
means for causing said platform to be maintained in a generally horizontal orientation;

a pair of endless belts normally to be maintained in driving engagement with said surface; and

means for deforming said endless belts to conform to said surface throughout climbing and descending;

said surface deforming means including at least one truck assembly having a pair of trucks associated with each of said endless belts to conform to irregularities in said surface.

5,577,568
SELF-PROPELLED HANDTRUCK
Henry E. Scott, 2146 Jimmie-Kerr Rd., Haw River, N.C. 27258
Filed Apr. 26, 1995, Ser. No. 429,328
Int. Cl.[6] B62D *51/04*
U.S. Cl. 180—19.1 **27 Claims**



1. A self-propelled handtruck, comprising:

a) a frame including a vertical frame member;

b) at least one first wheel mounted on said frame for free rotation with respect to said frame;

c) a drivetrain mounting structure secured to said vertical frame member;

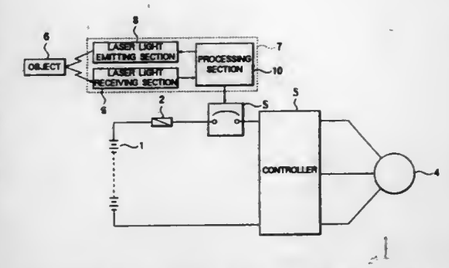
d) at least one second wheel rotatably mounted on said frame; and

e) a drivetrain secured to said drivetrain mounting structure and operable to drive said at least one second wheel.

f) wherein said drivetrain mounting structure is mounted substantially parallel with said vertical frame member and is adjustably mounted on said vertical frame member for selective positioning therealong.

5,577,569
VEHICLE SAFETY DEVICE
Shogo Nakashima, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 20, 1994, Ser. No. 309,154
Claims priority, application Japan, Oct. 8, 1993, 5-253071
Int. Cl.[6] B60K *1/00*
U.S. Cl. 180—169 **3 Claims**

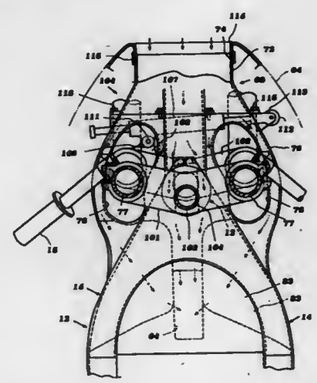
1. A safety device for preventing the uncontrolled travel or runaway of an operator driven electric road vehicle following a collision, said vehicle including an electric motor powered by an electric power source, a drive unit connected with said electric motor for driving road wheels, and a controller for controlling a current supplied from said electric power source to said electric motor to thereby regulate a driving force of said electric motor, said safety device comprising:



a) collision detecting means for detecting a collision of the road vehicle with an object and generating a corresponding output signal; and

b) current path interrupting means operatively connected in a current path between said electric power source and said controller for interrupting said current path in response to the output signal from said collision detecting means.

5,577,570
WIND INTRODUCING SYSTEM FOR MOTORCYCLE
Masakazu Shiohara, and Shoichi Knbo, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Oct. 21, 1992, Ser. No. 964,447
Claims priority, application Japan, Apr. 9, 1992, 4-118044
Int. Cl.[6] B60K *11/04*
U.S. Cl. 180—219 **17 Claims**



1. A motorcycle type of vehicle having a frame assembly, at least one rear wheel carried by said frame assembly, an internal combustion engine supported by said frame assembly and driving said rear wheel, a front wheel, and a front wheel suspension and steering arrangement for journaling said front wheel for rotation and for steering movement, said frame assembly including an integral air delivery portion for delivering ram air to said engine, said air delivery portion being comprised of an atmospheric air inlet disposed in an area to receive high pressure air as said motorcycle is traveling, an air outlet for delivering said air to said engine, and a portion between said air inlet and said air outlet completely encircling a component of said front wheel suspension and steering arrangement for air flow there around without interfering with the steering of said front wheel, said portion being formed by a tubular part through which said component passes and flanges at ends of said tubular part affixed to the remainder of said frame assembly.

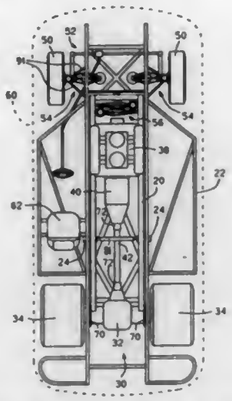
VOL 1192 ISS 4 NOV 26 1996 UMI

5,577,571

AUTOMOBILE CHASSIS WITH PIVOTED INNER AND OUTER FRAMES

Robert L. Rizzoli, 9817 Tiffany Hill Ct., Bethesda, Md. 20814

Filed Feb. 12, 1996, Ser. No. 600,163
Int. Cl.[6] B60K 5/12
U.S. Cl. 180—299 6 Claims



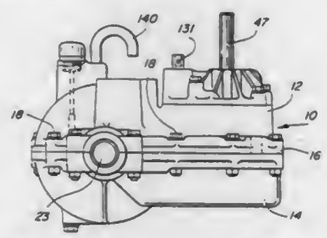
1. A chassis for an automobile having a motor, a rear end including a differential driven by the motor, a pair of rear wheels driven by the differential, front steering wheels and a car body for supporting a driver, the chassis comprising:
an inner frame connected directly to the rear end without resilient suspension,
the motor being mounted on said inner frame,
an outer frame supporting the car body,
pivot means pivotally mounting said outer frame to the inner frame intermediate front and rear ends of the inner and outer frames,
front wheel suspension means for resiliently supporting the front steering wheels on the outer chassis, and
rear suspension means connecting said inner and outer frames spaced from the pivot means for resiliently controlling pivotal motion of said outer frame relative to said inner frame.

5,577,572

HYDROSTATIC TRANSMISSION CENTER SECTION

Alan W. Johnson, Ames, Iowa, assignor to Sauer Inc., Ames, Iowa

Continuation of Ser. No. 706,279, May 28, 1991, Pat. No. 5,505,279, which is a continuation of Ser. No. 482,656, Feb. 21, 1990, abandoned, which is a continuation of Ser. No. 319,164, Mar. 3, 1989, Pat. No. 4,903,545. This application Jan. 14, 1994, Ser. No. 182,769
Int. Cl.[6] B60K 7/00
U.S. Cl. 180—305 1 Claim



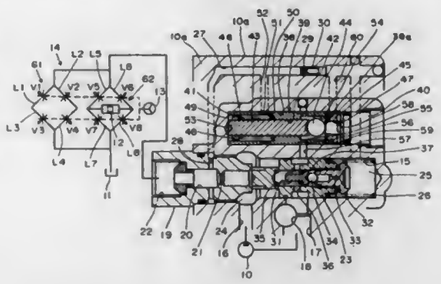
1. A center section for separate mounting within the housing of an integrated hydrostatic transaxle comprising,
a generally L-shaped member having hydrostatic pump and motor mounting surfaces thereon disposed at right angles to each other,
a pair of fluid ports in each of said mounting surfaces,
and internal passageways in said L-shaped member connecting each of said fluid ports on one of said mounting surfaces with one of said fluid ports on the other of said mounting surfaces,
said L-shaped member comprising first and second legs integrally joined and extending at right angles to each other, with said first leg normally extending in a horizontal direction, and said second leg normally extending in a vertical direction,
said first leg having upper and lower surfaces with said pump mounting surface being located on said upper surface,
said second leg having a first surface extending upwardly from the upper surface being located on said upper surface of said first leg, and a second surface opposite and parallel to the first surface of said second leg with said motor mounting surface being on said second surface of said second leg,
said L-shaped member having means for accommodating the mounting thereof within the interior cavity of said housing.

5,577,573

HYDRAULIC POWER STEERING APPARATUS

Kyosuke Ilaga, Anjo; Mikio Suzuki, Hekinan; Yoshiharu Inaguma, Nagoya; Kenichi Fukumura, Aichi-ken, and Hideya Kato, Okazaki, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 16, 1994, Ser. No. 357,757
Claims priority, application Japan, Dec. 16, 1993, 5-316917; Dec. 12, 1994, 6-307943
Int. Cl.[6] B62D 5/06
U.S. Cl. 180—417 6 Claims



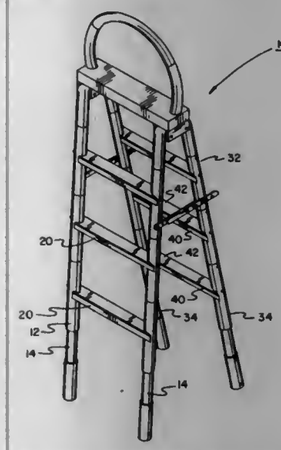
1. A hydraulic power steering apparatus comprising:
a pump for supplying an operating fluid;
a power cylinder;
a reservoir;
a control valve connected to said pump, said power cylinder and said reservoir and responsive to a steering operation for controlling a supply of the operating fluid to said power cylinder;
a metering orifice disposed in a supply passage connecting said pump with said control valve;
a flow control valve disposed in a bypass passage connecting to the supply passage upstream of said metering orifice, and including a valve spool and a spring disposed in a spring chamber formed at a back of said valve spool, said spring chamber being connected to said supply passage downstream of said metering orifice via a control orifice; and
a bypass control valve disposed in a passage connecting said control orifice and said spring chamber to said reservoir so as to bypass the operating fluid from downstream of said metering orifice to said reservoir and to lower the pressure in said spring chamber,
wherein said bypass control valve comprises:
a valve body;
a valve sleeve of a generally cylindrical shape fit in a generally cylindrical bore of said valve body;
a valve spool movable within said valve sleeve;
a valve seat provided bodily with said valve sleeve and having a passage in communication with said spring chamber and said control orifice;
a resilient means received within said valve sleeve for urging said valve spool against said valve seat;
a drain port formed in said sleeve and connected with said reservoir; and
a load pressure inlet port formed in said valve sleeve to apply the pressure upstream of said control orifice to said valve spool, said valve spool is movable responsive to a difference in pressure across said control orifice to control the flow rate of fluid from said passage of said valve seat to said drain port, and
wherein said valve spool said valve seat and said resilient means are held within said valve sleeve to be removable bodily with said valve sleeve from said valve body.

5,577,574

ADJUSTABLE STEPLADDER

Michael E. Joseph, 1025 Tippecanoe, C 205, San Bernardino, Calif. 92410

Filed Nov. 15, 1994, Ser. No. 339,792
Int. Cl.[6] E06C 1/00
U.S. Cl. 182—180 1 Claim



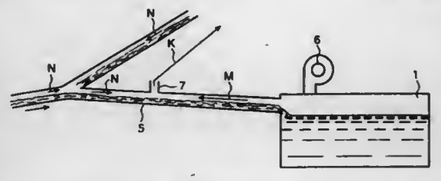
1. A new and improved adjustable stepladder comprising, in combination:
a front leg assembly having a pair of parallel legs with coupling apertures at their upper ends and elastomeric stoppers at their lower ends, the leg assembly being fabricated of tubular steel and having a plurality of steps extending transversely between the legs with ends coupled to the legs at intermediate points along their lengths, each of the steps being fabricated with an elastomeric coating upon their upper surface for greater comfort and safety of a user, each of the legs being fabricated of a plurality of components with apertures and with the components coupled together in telescoping relationship with a locking pin positionable through alignable apertures in the areas of overlap and a spring interior thereof to hold the locking pin in a preset orientation, the areas of separation being provided beneath the lowermost step, above the uppermost step, and at regions between the steps;
a rear leg assembly having a pair of parallel legs with coupling apertures at their upper ends and elastomeric stoppers at their lower ends, the leg assembly being fabricated of tubular steel and having a plurality of steps extending transversely between the legs with ends coupled to the legs at intermediate points along their lengths, each of the steps being fabricated with an elastomeric coating upon their upper surface for greater comfort of a user, each of the legs being fabricated of a plurality of components with apertures and with the components coupled together in telescoping relationship with a locking pin positionable through alignable apertures in the areas of overlap and a spring interior thereof to hold the locking pin in a preset orientation, the areas of separation being provided beneath the lowermost step, above the uppermost step, and at regions there between the steps, each leg of the front and rear leg assemblies being independently adjustable to accommodate uneven terrain;
a coupling plate having a planar upper surface with an elastomeric sheet thereover for improved comfort and safety and with downwardly extending plates with apertures, the apertures adapted to be aligned with the apertures at the upper ends of the legs for effecting the pivotal coupling of the legs with respect to each other and the coupling plate;
a pivotable locking bar coupling the front leg assembly with the rear leg assembly, the locking bar having an aperture at one end pivotally couplable to one of the leg assemblies and having a plurality of apertures at the other end selectively couplable to an aperture of the other leg assembly as a function of the angle to be formed by the front leg assembly and rear leg assembly, the coupling bar also including a central pivot point to allow pivoting between the legs; and
a curved bar with an elastomeric cover secured with respect to the upper surface of the coupling member for being held by a user during operation and use.

5,577,575

METHOD AND APPARATUS FOR SWEEPING MOISTURE AND DIRT FROM RETURNING OIL OF A CIRCULATING LUBRICATION SYSTEM

Ari Mielo, Oulu, Finland, assignor to Safematic Oy, Mnurame, Finland

Filed Jun. 30, 1995, Ser. No. 481,263
Claims priority, application Finland, Jan. 4, 1993, 930007
Int. Cl.[6] F01M 1/10
U.S. Cl. 184—6.24 10 Claims



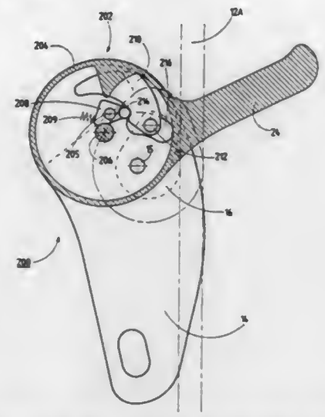
4. A circulating oil-type lubricating system for at least one part in need of lubrication, comprising:
an oil tank;
at least one pressure pipeline extending from the oil tank to said part, and arranged to cause oil to flow from the tank, into lubricating contact with said part;
at least one return line extending from said part back to said tank for permitting the oil to flow from the lubricating contact with said part and back to the tank, under the head space in which moisture and dirt entrained at said part tend to flow back toward the tank;
at least one outlet from said head space between said oil tank and said part; and
a pump for pumping air into a head space of said tank, from externally of said system, for causing an overpressure in said head space of said tank, thereby causing an air flow in said head space of said return line counter to the flow of oil returning to said tank in said return line, and sweeping at least some of said moisture and dirt in said head space of said return line out of said outlet with said air of said air flow.

5,577,576

DISENGAGEABLE DESCENDER WITH SELF-LOCKING OF THE ROPE

Paul Petzel, Barraux, and Jean Marc Hede, La Tronche, both of France, assignors to Zedel, Cralles, France

Filed Jun. 2, 1995, Ser. No. 459,671
Claims priority, application France, Jun. 23, 1994, 94 07974
Int. Cl.[6] A63B *29/00*
U.S. Cl. 188—65.4 **12 Claims**



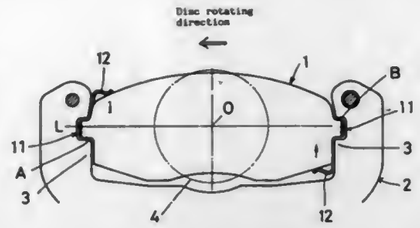
1. A self-locking safety descender for descending along a rope, comprising:
- a first fixed flange supporting a braking pad and a mobile pulley in the form of a cam, said cam being mounted with limited rotation on a first articulation spindle between a locking position and an unlocking position, and separated from the pad by a space for passage of the rope,
- a second retractable flange separated from the first flange by a transverse gap, and able to occupy a withdrawn position for fitting or removal of the rope, and a closed position, in which the rope is held captive in the space,
- an actuating handle of the pulley to perform manual unlocking of the rope,
- and a first spring to return the pulley to the unlocking position when the tension of the rope is lower than a preset threshold, wherein the cam is associated to a drive finger cooperating with a mechanism having a transmission part movable between an active engagement position with the finger to establish a unidirectional mechanical link between the handle and the pulley when the handle is actuated to an intermediate unlocking position in the course of the descending movement, and an inactive escape position to break said mechanical link after said intermediate position of the handle has been passed, causing disengagement of the pulley and automatic return of the cam to the locking position due to the action of the tension of the rope.

5,577,578

ENERGY EFFICIENT MOTOR BRAKE

Edward Lazorchak, Mahwah, N.J., assignor to Electroid, Springfield, N.J.

Filed Jun. 26, 1995, Ser. No. 494,332
Int. Cl.[6] B60T *13/04*
U.S. Cl. 188—171 **7 Claims**



- a torque member having pad guide portions in operative engagement with said pads to allow axial sliding movement and to restrain rotary movement of said pads;
- a caliper;
- a brake cylinder having a center and being integrally connected to said caliper;
- a piston mounted in said brake cylinder;
- a first liner, located at a trailing side of each of said pads and positioned between said backing plate of each of said pads and said guide portion of said torque member, each of said first liners having a resilient arm biasing said trailing sides of said pads radially inwardly relative to a disc; and
- a second liner, located at a leading side of each of said pads and positioned between said backing plate of each of said pads and said guide portion of said torque member, each of said second liners having a resilient arm biasing said leading sides of said pads radially outwardly relative to a disc.

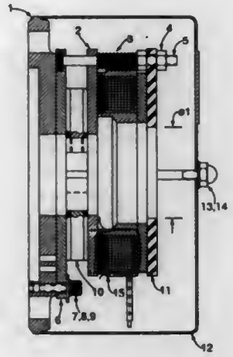
5,577,577

FLOATING CALIPER TYPE DISC BRAKE HAVING NOISE REDUCING TORQUE CARRYING STRUCTURE

Minoru Hirai, and Takashi Shimomiya, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 7, 1995, Ser. No. 551,843
Claims priority, application Japan, Nov. 7, 1994, 6-272291
Int. Cl.[6] F16D *65/40*
U.S. Cl. 188—73.36 **4 Claims**

1. A brake for engaging a disc comprising:
- a pair of brake pads for engaging opposing sides of a disc;
- a backing plate provided on each of said pads;



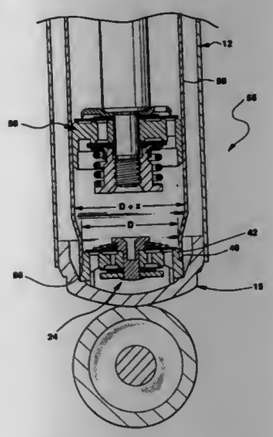
1. A drive for an electro-magnetic brake which includes a permanent magnet which can be pulsed in either an "on" or "off" state comprising:
- (a) a plurality of transformers connected across a plurality of phase input lines in a delta configuration;
- (b) a starter coil of a motor drive;
- (c) means for energizing said starter coil of said motor drive;
- (d) bridge rectifiers connected across secondaries of each of said plurality of transformers wherein a full wave rectified voltage appears across the plus and minus terminals of said bridge rectifiers producing an output;
- (e) first rectifier diodes connected to each said output of said bridge rectifiers;
- (f) a filter capacitor connected to said output of said bridge rectifiers through said rectifier diodes;
- (g) said bridge rectifiers further connected to the input of a voltage regulator;
- (h) a plurality of voltage monitoring circuits connected to the said output of said bridge rectifiers producing a second output;
- (i) the said second output of said voltage monitoring circuits connected to cathodes of second rectifier diodes wherein when the voltage at the said cathodes said second rectifier diodes falls below a predetermined limit contacts open, motor starter contacts open and said electro-magnetic brake is applied;
- (j) a start stop push button switch operatively associated with said motor drive; and
- (k) brake on and brake off push buttons operatively associated with said electro-magnetic brake such that when the brake is in an off position and the brake on button is pressed, a transistor will be driven into conduction and a base drive to a second transistor will fall below drive voltage.

5,577,579

METHOD OF MANUFACTURING A SUSPENSION DAMPER

Randall L. Derr, Bellbrook, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 30, 1995, Ser. No. 550,138
Int. Cl.[6] F16F *9/48*
U.S. Cl. 188—315 **5 Claims**



1. A method of manufacturing suspension dampers that include a cylinder tube having an end, a cylinder end assembly with an annular seat and an adjacent annular wall having an outer diameter D and a piston slidably carried in the cylinder tube, so that a common cylinder tube end assembly is used with cylinder tubes of varying diameters comprising the steps of:
- a. selecting the cylinder tubes with operative diameters greater than D and forming the ends thereof to have an inner diameter substantially equal to D;
- b. selecting the cylinder tubes with operative diameters less than D and forming the ends thereof to have an inner diameter substantially equal to D;
- c. selecting cylinder tubes with operative diameters equal to D with ends having inner diameters substantially equal to D;
- d. selecting the cylinder tube end assembly with an annular seat and an adjacent annular wall having an outer diameter D; and
- e. assembling any one of the cylinder tubes

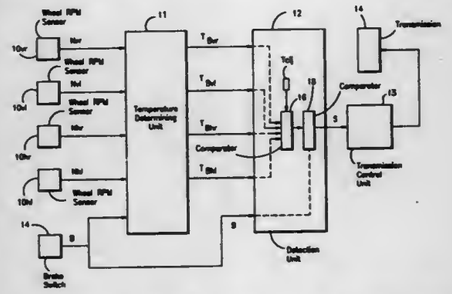
in steps a–c to the cylinder tube end assembly selected in step d so that the cylinder tube end assembly is assembled to any one of the cylinder tubes with operative diameters greater than D, less than D and equal to D.

5,577,580

SAFETY SYSTEM IN A MOTOR VEHICLE EQUIPPED WITH AN AUTOMATIC TRANSMISSION

Norbert Polzin, and Ulrich Gottwick, both of Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 1, 1994, Ser. No. 299,357
Claims priority, application Germany, Sep. 4, 1993, 43 29 918.0
Int. Cl.[6] B60K *41/26*
U.S. Cl. 192—4 A **9 Claims**



1. The combination of a safety system and a motor vehicle equipped with at least one braking system corresponding to a wheel unit and equipped with an automatic transmission which automatically changes the transmission ratio thereof in response to changes in shift criteria, the combination comprising:
- temperature determining means for determining the temperature (T_{Bij}) of said braking system;
- circuit means for generating a safety-relevant signal (S) based upon said temperature (T_{Bij}); and,
- transmission control means for changing said shift criteria in response to said signal (S).

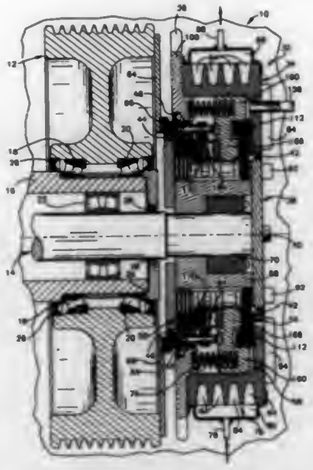
5,577,581

COUPLING ASSEMBLY

Roger J. Eberwein, Cleveland; James P. Hess, North Olmsted; Richard F. Plantan, North Royalton; George F. Shirilla, Parma, and Carol L. Stefano, Bay Village, all of Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 8, 1995, Ser. No. 385,316
Int. Cl.[6] F16D *67/04;13/72*
U.S. Cl. 192—18 A **5 Claims**

1. A coupling assembly operable between a first condition transmitting rotational force from a rotatable input member to a rotatable output member and a second condition retaining the output member against rotation, said coupling assembly comprising a stationary housing section, said stationary housing section including inner surface means for holding a body of liquid coolant, a clutch assembly at least partially enclosed by said stationary housing section and operable between an engaged condition in which said clutch assembly is effective to transmit rotational force conducted between the input member and the output member and a disengaged condition in which said clutch assembly is ineffective to transmit rotational force, said clutch assembly being at least partially disposed in said body of liquid coolant, a brake assembly at least partially enclosed by said stationary housing section and operable between an engaged condition in which said brake assembly is effective retain the output member against rotation relative to said stationary housing section and a disengaged condition in which said brake assembly is ineffective to retain the output



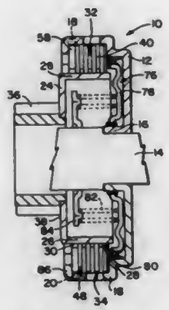
member against rotation relative to said stationary housing section, said brake assembly being at least partially disposed in said body of liquid coolant, and actuator means at least partially enclosed by said stationary housing section for effecting operation of said clutch assembly between the engaged and disengaged conditions and for effecting operation of said brake assembly between the engaged and disengaged conditions, said actuator assembly being at least partially disposed in said body of liquid coolant, and cooling fluid passage means extending around said stationary housing section for conducting a flow of cooling fluid which is maintained separate from the body of liquid coolant disposed in said housing, said stationary housing section including outer side surface means which is exposed to the flow of cooling fluid to facilitate heat transfer from the body of liquid coolant disposed in said housing to the flow of cooling fluid even though the flow of cooling fluid is maintained separate from the body of liquid coolant in said housing.

5,577,582

POLYGONAL CLUTCH ASSEMBLY

Alan R. Lindsay, Scarborough, Canada, assignor to Tesma International Inc., Cocord, Canada

Filed Apr. 20, 1995, Ser. No. 425,625
Int. Cl.[6] F16D *13/68*
U.S. Cl. 192—70.19 **31 Claims**



1. A clutch assembly for selectively engaging a drive assembly having an axis of rotation into operative association with a driven assembly having the axis of rotation for common rotation, comprising:

a first rotational member constructed and arranged to rotate with one of the drive assembly and the driven assembly, the first rotational member having an exterior annular portion;

a second rotational member constructed and arranged to rotate with the other one of the drive assembly and the driven assembly, the second rotational member having an interior annular portion positioned generally coaxially coextensive with the exterior annular portion of said first rotational member providing an annular space between an exterior periphery of the interior annular portion and an interior periphery of the exterior annular portion;

an axial series of first and second annular friction members within said annular space having generally axial facing, opposed, interengagable first and second friction surfaces and having first and second generally outwardly facing outer peripheral surfaces and first and second generally inwardly facing inner peripheral surfaces, said first and second annular friction members being mounted within said annular space for relative axial movement between an inoperative position wherein the first annular friction members having the first friction surfaces are capable of rotation relative to said second annular friction members having the second friction surfaces and an operative position wherein the first friction surfaces are operatively engaged to the second friction surfaces such that the first and second annular friction members are confined to common rotation;

the exterior periphery of the interior annular portion and the first and second generally inwardly facing inner peripheral surfaces being constructed and arranged so that the second generally inwardly facing inner peripheral surfaces are confined to rotate with the exterior periphery of the interior annular portion and the first generally inwardly facing inner peripheral surfaces are free to rotate relative to the exterior periphery of the interior annular portion;

the interior periphery of the exterior annular portion and the first and second generally outwardly facing outer peripheral surfaces being constructed and arranged so that the first generally outwardly facing outer peripheral surfaces are confined to rotate with the interior periphery of the exterior annular portion and the second generally outwardly facing outer peripheral surfaces are free to rotate relative to the interior periphery of the exterior annular portion;

an actuable engaging device constructed and arranged to apply inwardly opposing forces to the axial series of annular friction members axially moving the annular friction members from the inoperative position to the operative position thereby axially moving the first and second friction surfaces into operative engagement allowing the drive assembly to rotate the driven assembly when common rotation is desired; and

the periphery of one of said annular portions and the peripheral surfaces confined to rotate therewith each having polygonal cross-sectional configurations and having respective interengaging polygon sides, wherein each of said interengaging polygon sides has an area of contact and an area of relief so as to provide spaced areas of contact between the periphery of said one of the annular portions and the peripheral surfaces confined to rotate therewith, said spaced areas of contact extending generally tangentially to a circle concentric with the axis of rotation and extending to the confined peripheral surfaces consequently allowing greater torque transmission by increasing clutch efficiency.

29. A clutch assembly for selectively engaging a drive assembly having an axis of rotation into operative association with a driven assembly having the axis of rotation for common rotation, comprising:

a first rotational member constructed and arranged to rotate with one of the drive assembly and the driven assembly, the first rotational member having an exterior annular portion;

a second rotational member constructed and arranged to rotate with the other one of the drive assembly and the driven assembly, the second rotational member having an interior annular portion positioned generally coaxially coextensive with the exterior annular portion of said first rotational member providing an annular space between an exterior periphery

of the interior annular portion and an interior periphery of the exterior annular portion;

an axial series of first and second annular friction members within said annular space having generally axial facing, opposed, interengagable first and second friction surfaces and having first and second generally outwardly facing outer peripheral surfaces and first and second generally inwardly facing inner peripheral surfaces, said first and second annular friction members being mounted within said annular space for relative axial movement between an inoperative position wherein the first annular friction members having the first friction surfaces are capable of rotation relative to said second annular friction members having the second friction surfaces and an operative position wherein the first friction surfaces are operatively engaged to the second friction surfaces such that the first and second annular friction members are confined to common rotation;

the exterior periphery of the interior annular portion and the first and second generally inwardly facing inner peripheral surfaces being constructed and arranged so that the second generally inwardly facing inner peripheral surfaces are confined to rotate with the exterior periphery of the interior annular portion and the first generally inwardly facing inner peripheral surfaces are free to rotate relative to the exterior periphery of the interior annular portion;

the interior periphery of the exterior annular portion and the first and second generally outwardly facing outer peripheral surfaces being constructed and arranged so that the first generally outwardly facing outer peripheral surfaces are confined to rotate with the interior periphery of the exterior annular portion and the second generally outwardly facing outer peripheral surfaces are free to rotate relative to the interior periphery of the exterior annular portion;

an actuable engaging device constructed and arranged to apply inwardly opposing forces to the axial series of annular friction members axially moving the annular friction members from the inoperative position to the operative position thereby axially moving the first and second friction surfaces into operative engagement allowing the drive assembly to rotate the driven assembly when common rotation is desired; and

a retaining mechanism having positionable members connected to an end surface of one of said annular portions, said end surface being within a first plane generally perpendicular to the axis of rotation, said positionable members being bent from said end surface to a position generally parallel to the first plane, said positionable members being constructed and arranged to limit axial movement of the first and second annular friction members within a length of the annular space defined between the first plane and a second plane generally parallel to the first plane at an opposing end of said annular portions and to retain the first and second annular friction members within the annular space when the positionable members are positioned generally parallel to the first plane.

5,577,583

FREE WHEEL DOUBLE LOCK CLUTCH MECHANISM

Patrick H. O'Donnell, Chicago, Ill., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Mar. 16, 1995, Ser. No. 405,477
Int. Cl.[6] F16D *11/06*
U.S. Cl. 192—79 **19 Claims**

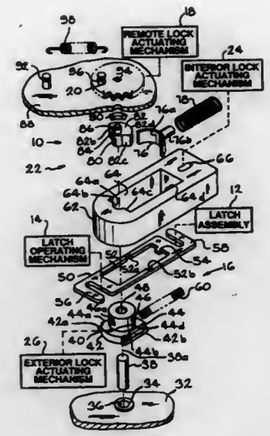
1. A clutch, comprising:

a frame;

a cam member pivotally mounted on said frame for selective rotation about an axis between a first position and a second position, said cam member having a first drive surface and a second drive surface defined thereon;

an output member rotatable about said axis between a third position and a fourth position, said output member having a first drive surface and a second drive surface spaced apart from said first drive surface, said first drive surface of said output member disposed to be engaged by said first drive surface of said cam member when said cam member is rotated to said first position to drive said output member to said third position, said second drive surface of said output member disposed to be engaged by said second drive surface of said cam member when said cam member is rotated to said second position to drive said output member to said fourth position; and

a spring having a first end fixed to said frame and a second end operatively coupled to stud cam member, said spring urging said cam member to rotate about said axis toward a neutral position between said first position and said second position such that said first drive surface of said cam member is spaced apart from said first drive surface of said output member when said output member is in said third position and said second drive surface of said cam member is spaced apart from said second drive surface of said output member when said output member is in said fourth position.

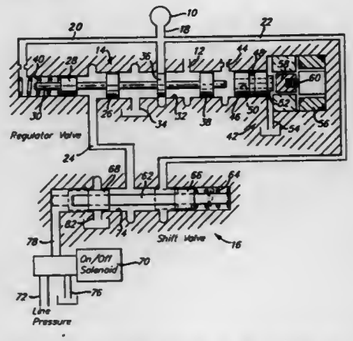


5,577,584

MULTIPLE PRESSURE-TO-CURRENT RELATIONS IN A SYSTEM HAVING A SOLENOID-OPERATED HYDRAULIC VALVE

Walter J. Ortmann, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 3, 1994, Ser. No. 316,964
Int. Cl.[6] F16D *25/00;25/10*
U.S. Cl. 192—85 R **12 Claims**



1. A system for controlling pressure in an hydraulically actuated friction element, comprising:

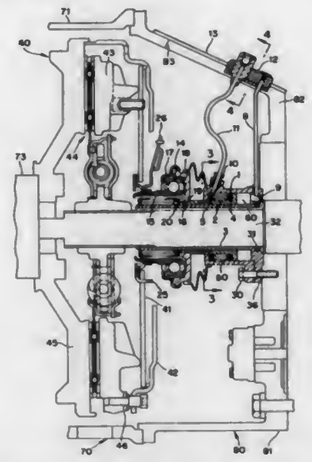
a source of regulated line pressure;
a source of regulated feed pressure;
a low pressure vent;
a solenoid-operated pressure control valve hydraulically connected to the source of feed pressure and vent, responsive to current supplied to the solenoid for producing a first control pressure;
a shift valve hydraulically connected to the friction element, for alternately opening and closing a connection between the friction element and a regulator valve; and
a regulator valve having a first control area continually connected hydraulically to the friction element, and a second control area connected hydraulically to the shift valve, responsive to the first control pressure and pressure forces on the first and second control areas to modulate friction element pressure by opening and closing a first connection between the friction element and line pressure source and a second connection between the friction element and vent.

5,577,585

DECLUTCHING MECHANISM WITH AN HYDRAULIC ACTUATOR, ESPECIALLY FOR WORKING IN TRACTION ON THE CONNECTING PIECE OF A CLUTCH

Cecilio M. Corral, Madrid, Spain, assignor to Valeo, Paris, France

PCT No. PCT/FR93/01220, § 371 Date Sep. 16, 1994, § 102(e) Date Sep. 16, 1994, PCT Pub. No. WO94/13972, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 9, 1993, Ser. No. 284,488
Claims priority, application France, Dec. 9, 1992, 92 14855
Int. Cl.[6] F16D *25/08*
U.S. Cl. 192—91 A **15 Claims**



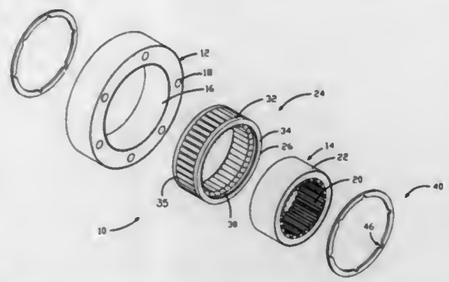
1. A declutching mechanism in combination with a connecting piece of a clutch of a motor vehicle defining an assembly having a central axis, said mechanism comprising;
a hydraulic actuator including at least one fixed member and a moveable member in piston and cylinder relationship so as to define a first control chamber; and
a clutch release bearing attached to said moveable member and manoeuverable by said moveable member in a first axial direction defining a declutching direction, for transmitting a tractive declutching force to said connecting piece;
wherein said hydraulic actuator includes a second control chamber, which is independant of said first control chamber and deliminated at least partly by said fixed member and said moveable member for manoeuvering said moveable member and said clutch release bearing axially in a direction opposite to said declutching direction.

5,577,586

OVERRUNNING CLUTCH WITH LUBRICANT RETAINER

Robert A. Buckendahl, 780 Miller Dr., Fort Dodge, Iowa 50501

Filed Apr. 24, 1995, Ser. No. 427,745
Int. Cl.[6] F16D *41/07*
U.S. Cl. 192—45.1 **4 Claims**



1. An overrunning clutch comprising:
(a) an inner race having an outer annular contact surface and a central axis of rotation;
(b) an outer race having an inner annular contact surface spaced radially from said inner race, said inner annular contact surface and said outer annular contact surface forming an annular space therebetween;
(c) a plurality of sprags provided in said annular space, said plurality of sprags being of a construction and placement capable of allowing said inner race to rotate in a first direction relative to said outer race, while preventing said inner race from rotating in a second direction relative to said outer race;
(d) sprag retainer means provided in said annular space for maintaining said plurality of sprags in said annular space; and
(e) washer means having a circular outer periphery and positioned over said annular space for substantially preventing escape of a lubricant from said annular space between said washer means and said outer race, said washer means being provided with structure which forms an opening to said annular space when said washer means is positioned over said annular space.

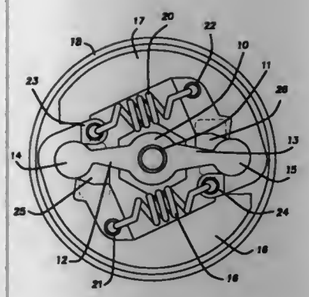
5,577,587

CENTRIFUGAL CLUTCH

Hans G. Jansson, Huskvarna, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Nov. 14, 1994, Ser. No. 337,747
Claims priority, application Sweden, Nov. 26, 1993, 9303935
Int. Cl.[6] F16D *43/24*
U.S. Cl. 192—105 CD **3 Claims**

1. A centrifugal clutch for a power-driven implement, comprising a hub portion (**10**) and a pair of clutch shoes (**16**, **17**) rotatably journalled on said hub portion, each of said clutch shoes having a pivoted end adjacent said hub portion and a free end relatively remote from said hub portion resilient means bias said clutch shoes to a position disengaged from a clutch drum radially surrounding said clutch shoes, said clutch shoes, when actuated by centrifugal forces, overcome said bias and engage said clutch drum (**18**), wherein the resilient means comprises a pair of tension springs (**19**, **20**), one end of each spring being connected to one of said pair of clutch shoes at said pivoted end and the other end of each spring being connected to the other of said pair of clutch shoes relatively between said free end and said hub portion such that a bearing free



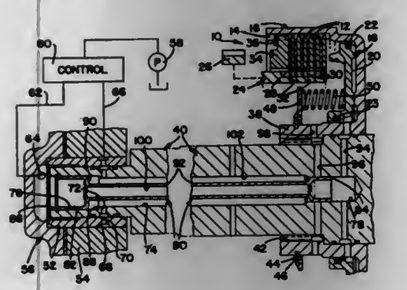
of play is insured between said shoes (**16**, **17**) and said hub portion (**10**) by the resilient force provided by said tension springs.

5,577,588

LUBE ASSEMBLY FOR A TRANSMISSION FRICTION DEVICE

James A. Raszkowski, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 17, 1995, Ser. No. 406,078
Int. Cl.[6] F16D *13/74*
U.S. Cl. 192—113.35 **3 Claims**



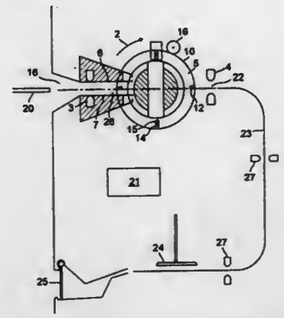
1. A fluid operated torque transmitting assembly comprising:
a housing having a fluid chamber formed therein;
friction discs disposed in said housing;
a shaft member drivingly connected with said housing including a central fluid passage with a first diameter bore portion, a second diameter bore portion being smaller than said first diameter bore portion, and a plurality of radial fluid passages communicating with the central fluid passage and an outer surface of the shaft member;
a fluid control tube slidably disposed in said bore and cooperating therewith to provide a lubrication passage along an outer annular passage and a clutch feed passage, a first end slidably disposed in the first diameter bore portion, and a second end slidably disposed in the second diameter bore portion; and
fluid supply means for providing fluid to said control tube for selectively engaging said torque transmitting assembly and for providing lubrication fluid to said friction discs, said fluid being operable on said control tube to urge said control tube in a direction to permit communication between two of said radial fluid passages to admit lubrication fluid to said friction discs when said torque transmitting assembly is engaged and to urge said control tube in another direction to discontinue fluid communication between said two radial fluid passages when said torque transmitting assembly is disengaged.

5,577,589

DOCUMENT HANDLER

Jaime G. Garcia Tinoco, 14, Chemin Myosotis, 1214 Vernier, Geneva, Switzerland

PCT No. PCT/EP93/03577, § 371 Date Sep. 30, 1994, § 102(e) Date Sep. 30, 1994, PCT Pub. No. WO94/14141, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 16, 1993, Ser. No. 284,643
Claims priority, application European Pat. Off., Dec. 17, 1992, 92121430; Sep. 30, 1993, 93307789
Int. Cl.[6] G07F *1/02;7/00*
U.S. Cl. 194—204 **23 Claims**



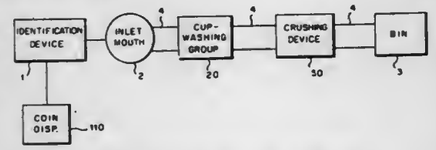
19. A shutter arrangement comprising a shutter member including a passage through which a document can pass, said passage being alignable with a document transport passage of a document handling apparatus by pivoting the shutter assembly about the pivot axis, said shutter being located within a surround, wherein the surround and the shutter carry mutually interengaging features to prevent a flat document from passing between the shutter and the surround.

5,577,590

MACHINE FOR COLLECTING USED DISPOSABLE CUPS

Luciano Salda, Vignola, Italy, assignor to C.M.S. S.p.A., Marano sul Panaro, Italy

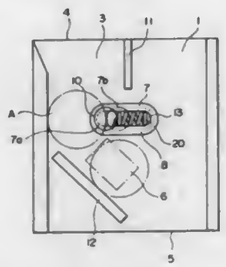
Filed Oct. 11, 1994, Ser. No. 321,264
Claims priority, application Italy, Nov. 8, 1993, MO93A0140
Int. Cl.[6] G07F *7/06;* B08B *9/093*
U.S. Cl. 194—209 **19 Claims**



16. A machine for collecting used cups comprising:
identification means for identifying a type of cup which the machine will accept;
an inlet mouth for the cups, through which a cup is introduced into the machine;
a bin for the cups, in which the cups introduced into the machine are collected;
a conveyor, internal of the machine, connecting the inlet mouth with the bin;
at least two operative groups, arranged along the conveyor and passed through by cups transiting along the conveyor, wherein the first operative group washes the cups before the cups reach the second operative group, and the second operative group crushes and shreds the cups before the cups reach the bin;

a coin dispenser which combines with the identification device and distributes one or more coins each time the identification device identifies and accepts a cup;
a distributor of accepted cups, arranged between the identification device and the inlet mouth, which distributor comprises a magazine wherein the cups are stacked and conveyed towards the inlet mouth one by one.

5,577,591
COIN SELECTING APPARATUS
Hiroshi Abe, Tokyo, Japan, assignor to Asahi Seiko Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 3, 1994, Ser. No. 335,386
Claims priority, application Japan, Nov. 4, 1993, 5-308496
Int. Cl.[6] G07F *1/02*
U.S. Cl. 194—343 **7 Claims**



1. A coin selecting apparatus comprising:
a coin slot for inserting a coin;
a coin passage for passing the coin inserted from said coin slot;
coin selecting means arranged along said coin passage for selecting the inserted coin; and
speed regulating means, arranged along said coin passage on an upstream side of said coin selecting means, for regulating the inserting speed of the inserted coin, the speed regulating means comprising:
a damper ball to contact with the periphery of the inserted coin; and
a ball guide for guiding said damper ball between a first position at which said damper ball contacts with the periphery of the inserted coin and a second position that said damper ball reaches when pushed by the inserted coin, the first position being placed lower than the second position so that said damper ball that had reached the second position falls by its weight to the first position.

5,577,592
METHOD OF DEPLOYING A PLURALITY OF CONVEYOR SECTIONS AND A CONVEYOR SYSTEM
Lawrence L. Stross, P.O. Box 7578, Station M, Edmonton, Alberta, Canada
Filed Jan. 18, 1995, Ser. No. 374,045
Int. Cl.[6] B65G *15/26*
U.S. Cl. 198—303 **3 Claims**



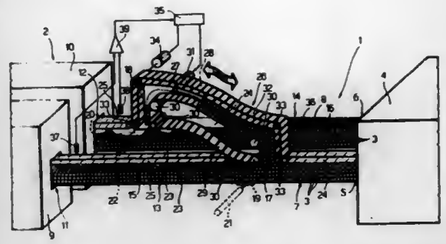
1. A conveyor system, comprising:
a plurality of stackable conveyor sections, each conveyor section including:
a frame having a top, a bottom, opposed sides, a first end and a second end, the first end being downwardly sloped at the first end from the top toward the bottom;
at least one continuous conveyor extending between the first end and the second end of the frame;
conveyor drive means mounted to the frame and coupled with the at least one conveyor whereby motive force is supplied to the at least one conveyor;
rotatably mounted ground engaging wheels along the opposed sides at the bottom of the frame;
wheel drive means mounted to the frame, whereby motive force is supplied to the wheels to propel the frame;
wheel engaging tracks along the opposed sides at the top of the frame; and
a hook extending from the second end of the frame of each conveyor section adjacent the bottom, hook receiving means extending from the first end of the frame of each conveyor section adjacent the bottom, extendible/retractable legs being positioned along the bottom of the frame of each conveyor section, leg actuating means being secured to the frame and coupled with the legs, the hook receiving means being coupled with a switch for the leg actuating means, such that when one conveyor section is stacked upon an underlying conveyor section and the ground engaging wheels are activated to propel the one conveyor section forward, as the second end of the one conveyor section passes the first end of the underlying conveyor section, the hook of the one conveyor section engages the hook receiving means of the underlying conveyor section thereby activating the switch for the leg actuating means, causing the legs on the bottom of the one conveyor section to move from a retracted to an extended position and lifting the frame so that the ground engaging wheels no longer reach a ground surface and terminating the forward motion of the one conveyor section.

5,577,593
CARRIER CONVEYOR SYSTEM
Richard G. Hooper, Southfield, Mich., assignor to FKI Industries, Inc., Fairfield, Conn.
Filed Jan. 27, 1995, Ser. No. 379,370
Int. Cl.[6] B61B *9/00*
U.S. Cl. 198—346.1 **29 Claims**



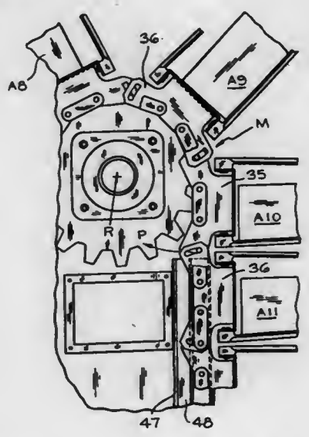
1. A carrier conveyor system comprising a main conveyor,
a plurality of carriers positioned in closely spaced relation on said main conveyor,
said main conveyor having means in closely spaced relation for engaging and moving said carriers along a travel path,
a work station at which a carrier is to be stoped to perform a work function,
said main conveyor having a first portion in advance of the work station and a second portion beyond the work station,
means defining a first track associated with the first portion of the main conveyor along which the carriers are movable along the travel path,
means defining a second track associated with the second portion of the main conveyor along which the carriers are movable along the travel path,
means associated with the first track and first portion of the conveyor for successively disengaging the carriers from the first portion at the end of the first portion and disengaging the carriers relative to the first track,
means associated with the second track and the second portion for successively re-engaging the carriers with the second portion and the second track,

and a transfer conveyor between the end of said first track and said second track for transferring the carriers along the travel path to the work station, removing the carriers from the work station and returning the carriers along the travel path to the second track,
said transfer conveyor comprising a plurality transfer assemblies in a closely spaced tandem array, each of said transfer assemblies comprising a pair of carrier transport modules arranged one on each side of the travel path of the carriers from the first track through the work station to the second track, at least a first one of said transfer assemblies being provided at a first station between the first track and the work station, a second one of said transfer assemblies being provided at the work station, and at least a third one of said transfer assembly being provided at a third station between the work station and the second track,
each of said transfer assembly modules comprising an endless flexible belt trained longitudinally of said assembly module and having an upper run operable to move parallel to the travel path of the carriers and adapted to engage the underside of a carrier adjacent an associated one of the longitudinal sides of the carrier,
said modules being constructed and arranged as mirror-images of one another with said belts running parallel and facing one another therebetween and with the space between said belts of one of said modules on one side of the travel path of a carrier and said belts of said other module of said assembly on the other side of said path of a carrier being substantially unobstructed,
motor means individual to each said transfer assembly module for individually driving each of said belts thereof,
each motor means for driving said belts of each said transfer assembly being operable independently of said motor means of the other of said assemblies and of the main conveyor to accelerate a carrier on the associated transfer assembly to a speed higher than the speed of the main conveyor, and thereafter to decelerate the carrier and to cause braking of the carrier on each transfer assembly,
each of said motor means of said modules of each transfer assembly being operably mechanically coupled in direct driving and driven relationship with the other of said motor means within each said transfer assembly,
said first track being positioned such that the first portion of the conveyor delivers a carrier to said belts of said first transfer assembly adjacent to the first track so that the motor means of said first transfer assembly can be operated to accelerate the carrier and rapidly move the carrier onto said first transfer assembly,
said second track being positioned such that said belts of said third transfer assembly adjacent the second track deliver a carrier to the second track,
the number of said plurality of said transfer assemblies of said transfer conveyor being such that a carrier will be returned to the main conveyor so that there are no vacant spaces between the closely spaced carriers on the main conveyor while providing the necessary work and safety time at the work station.



conveyor means for transferring cigarettes between said two conveyors; said compensating conveyor means including at least one compensating continuous conveyor, arranged at a fixed location in relation to said two conveyors, and defining a fixed U-shaped channel for cigarettes in bulk; said channel being interposed for cigarettes in bulk; said channel being interposed between and communicating with said two conveyors.

5,577,595
ACCUMULATOR FOR CONVEYOR SYSTEM
Daniel A. Pollock, Perrysburg; Stephen L. Cechner, Toledo, and Charles R. Coleman, Oregon, all of Ohio, assignors to Roe Incorporated, Perrysburg, Ohio
Continuation-in-part of Ser. No. 141,775, Oct. 25, 1993, Pat. No. 5,366,063, which is a continuation of Ser. No. 6,614, Jan. 21, 1993, Pat. No. 5,255,773. This application Nov. 22, 1994, Ser. No. 343,189
Int. Cl.[6] B65G *1/00*
U.S. Cl. 198—347.3 **20 Claims**



1. An accumulator for movably supporting an article comprising:
a frame;
a wheel rotatably supported upon said frame, said wheel defining a radius;
means for selectively rotating said wheel;
a member engaged with said wheel for movement when said wheel is rotated;
a link carried on said member for movement therewith, said link having at least one aperture formed therethrough and at least one slot formed therethrough, said aperture and said slot having first edges which define a straight line and having second edges which define a radius which is substantially equal to said radius defined by said wheel, said link further including a pair of tabs extending therefrom; and

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5,577,594
CIGARETTE MANUFACTURING UNIT
Bruno Belvederi, Pietro, Italy, assignor to G.D Societa' Per Azioni, Bologna, Italy
Filed Nov. 8, 1994, Ser. No. 336,267
Claims priority, application Italy, Nov. 9, 1993, B093A0452
Int. Cl.[6] B65G *1/00*
U.S. Cl. 198—347.3 **5 Claims**

1. A cigarette manufacturing unit at least partly defining a cigarette manufacturing and processing line, and comprising a first machine located along the line and presenting two outputs for substantially similar streams of cigarettes; two second machines located along the line and independent of each other; two bulk cigarette conveyors, each connecting a respective said output to the input of a respective said second machine; and compensating

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means secured to each of said tabs of said link for supporting an article thereon for movement with said link and said member when said wheel is rotated.

5,577,596

SORTING DEVICE WITH A FIELD OF TRANSPORT UNITS

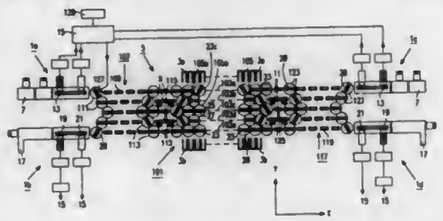
Roelof Van Essen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 28, 1994, Ser. No. 203,155

Claims priority, application European Pat. Off., Mar. 1, 1993, 93200559

Int. Cl.[6] B65G *47/46*

U.S. Cl. 198—349 **13 Claims**



1. A sorting device comprising at least one input position, a plurality of output positions, and a transport device for displacing an object from any of the input positions to any selected one of the output positions; characterized in that the transport device comprises:

a field of individual transport units arranged in parallel tracks linking each of the input positions with each of the output positions, their being at least two transport units in each track;

each transport unit having a transport direction which is adjustable relative to a system of coordinates which is fixed with respect to said field; and

control means by which alternative routes through said field are selectable between an input position and a selected output position by controlling the mutual orientations of the transport directions of the individual transport units along said routes;

an object being displaceable along a track through mutual orientation of the transport directions of the transport units on said track, and being displaceable from one to the other of two adjoining tracks through mutual orientation of the transport directions of the transport units in both of said two tracks.

5,577,597

WORK TRANSPORT SYSTEM INCLUDING PALLET TRANSPORT APPARATUS

Takuya Kakida, and Akitoshi Fujiwara, both of Okayama-ken, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 72,630, Jun. 4, 1993, abandoned.

This application Feb. 6, 1995, Ser. No. 384,637

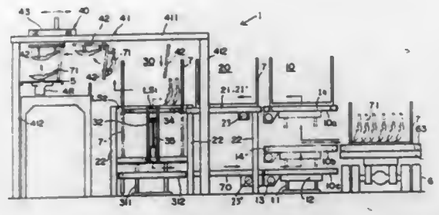
Claims priority, application Japan, Jun. 5, 1992, 4-171933

Int. Cl.[6] B65G *29/00*

U.S. Cl. 198—465.1 **4 Claims**

1. A pallet handling device, providing a pallet delivery route and a pallet return route comprising:

a first lifting device located at a pallet receiving end of the pallet handling device, said first lifting device selectively moving upwardly and downwardly between a low position, a mid-position and a high position, pallets being transferred into the pallet delivery route and out of the pallet return route at said mid-position, said first lifting device receiving a pallet loaded with pieces of work at said mid-position along said pallet delivery route;



an intermediate transport device, which has an upper level transport route and a lower level transport route, positioned adjacent said first lifting device and receiving a pallet loaded with pieces of work, transferred onto said intermediate transport device from said first lifting device when said first lifting device is positioned at its high position, at said upper level transport route along said pallet delivery route, said intermediate transport device being capable of temporarily storing a pallet loaded with pieces of work at said upper transfer level;

a second lifting device positioned adjacent to said intermediate transport device, said second lifting device selectively moving upwardly and downwardly between lower and higher positions, said second lifting device receiving the pallet loaded with pieces of work at said higher position along said pallet delivery route from said intermediate transport device; and

means for removing pieces of work from said pallet while on said second lifting device at said higher position, said second lifting device lowering the pallet after being emptied of said pieces of work along said pallet return route to said lower position, said intermediate transport device transporting the emptied pallet along the pallet return route to said first lifting device when the first lifting device is at said low position.

5,577,598

APPARATUS FOR CONTROLLING THE CONVEYOR SPEED OF MOVING CONVEYOR MEANS

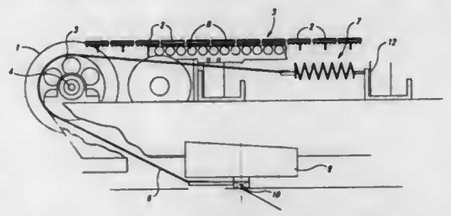
Willi Schoenenberger, Schoenenberg, Switzerland, assignor to Woodway AG, Schoenenberg, Sweden

Filed Sep. 19, 1995, Ser. No. 531,208

Claims priority, application Germany, Sep. 20, 1994, 9415266 U

Int. Cl.[6] B65G *23/04*

U.S. Cl. 198—832.2 **6 Claims**



1. An apparatus for controlling the conveyor speed of an endless moving conveyor guided over at least one driven shaft, in particular a lamellar moving conveyor, with variable inclination adjustment, characterized in that there is provided a brake band which acts on the driven shaft and whose braking effect can be increased with an increasing gradient of the moving conveyor.

5,577,599

SWITCH LOCKOUTS

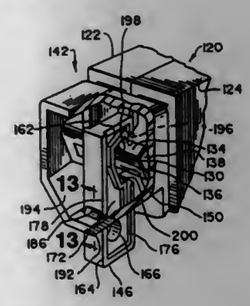
Mark E. Turek, Wheaton, and Michael R. Schag, Hanover Park, both of Ill., assignors to Prinzing Enterprises, Inc., Warrenville, Ill.

Division of Ser. No. 871,388, Apr. 21, 1992, Pat. No. 5,310,969.

This application Feb. 3, 1994, Ser. No. 190,909

Int. Cl.[6] H01H *27/10*

U.S. Cl. 200—43.14 **3 Claims**



1. A lockout adapted for attachment to a ganged switch having a ganged switch body and a handle assembly having plural extremities of travel to maintain the handle assembly at one of its plural extremities of travel, wherein the handle assembly includes plural handles extending from the ganged switch body and joined by a crossbar, and wherein the handle assembly has a surface which faces one of its extremities of travel, said lockout comprising:

A. a lockout body comprising a first abutment for abutting the surface of the handle assembly and a second abutment for abutting the ganged switch body; and

B. a slide which is captured for translating between first and second positions with respect to said lockout body, said slide being releasably retained in said first position and having a projection positioned to disengage the handle assembly when said slide is in said second position and to capture the crossbar against said first abutment and the ganged switch body against said second abutment when said slide is in said first position.

5,577,600

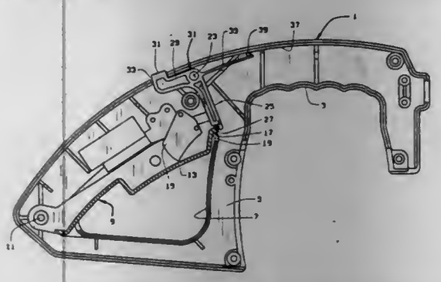
SWITCH LOCK-OUT DEVICE FOR POWER TOOL

Keith R. Schoene, St. Charles, and Daniel A. Terpstra, Kirkwood, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Nov. 21, 1995, Ser. No. 561,380

Int. Cl.[6] H01H *9/28*

U.S. Cl. 200—43.17 **7 Claims**



1. A switch lock-out device to prevent unintended operation of a power tool through inadvertent actuation of a trigger operatively associated with a motor that operates the power tool comprising:

a handle grip including a pivotally mounted trigger which is adapted to energize a power tool when depressed, said trigger including an outer free end which extends within the handle grip; and

a switch lock-out device to prevent inadvertent actuation of the trigger and including an integral multiple-armed element pivotally mounted to a pivotal mount within the handle grip, each arm of the multiple-armed element extending from said pivotal mount within the handle grip and including:

a first arm for engaging the outer free end of the trigger to prevent actuation thereof;

a second arm extending in generally parallel relationship to and along an upper wall of the handle grip, said second arm including a generally transversely extending manually depressible button at an outer free end which extends through an opening in the upper wall so as to extend outside of the handle grip; and

a third arm engaging the upper wall of the handle grip in biased and resilient engagement for causing upward resilient biasing of the button of the second arm and engagement of the first arm with the trigger until the button is depressed;

whereby manual depression of the button pivots the first arm out of engagement with the free end of the trigger for actuation of the trigger to operate the power tool and release of the button enables the third arm that is biased against the upper wall of the handle grip to return the second arm and its associated button to its upward resiliently biased position for subsequent re-engagement of the first arm with the outer free end of the trigger.

5,577,601

ACTUATING DEVICE FOR A MONITOR POWER SWITCH

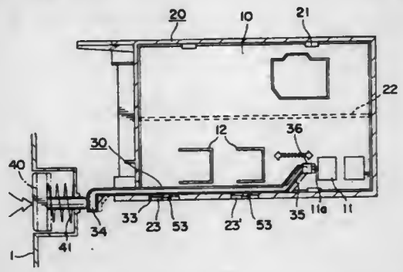
Dae-il Chung, and Sung-gil Cha, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 30, 1995, Ser. No. 453,523

Claims priority, application Rep. of Korea, May 30, 1994, 94-12054; Sep. 6, 1994, 94-22877

Int. Cl.[6] H01H *3/20*

U.S. Cl. 200—331 **20 Claims**



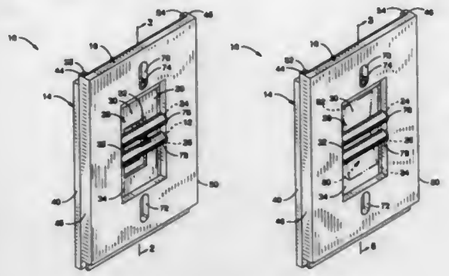
1. An actuating device for activating a power switch provided on a circuit board which is mounted on a frame in a monitor, said actuating device comprising;

a push button installed externally of the frame;

first and second guide openings formed in spaced relation along a supporting plate of said frame; and

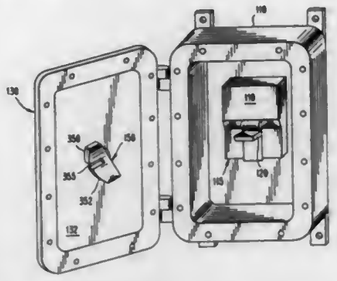
an actuator member slidably disposed on one side of said supporting plate and having a first end disposed adjacent said push button and a second end disposed adjacent said switch for activating the switch in response to pressure applied to said push button, and a pair of alignment projections extending from said actuator member and being movably engaged within said first and second guide openings for holding said actuator member in alignment along said supporting plate of said frame.

5,577,602
SWITCH EXTENDER APPARATUS
Glenn C. Conner, 7501 Saginaw Way, Citrus Heights, Calif. 95610; Martin J. Rapozo, 541 Pico Way, Sacramento, Calif. 95819, and Scott M. Perry, Auburn, Calif., assignors to Glenn C. Conner, Citrus Heights, and Martin J. Rapozo, Sacramento, both of Calif.
Filed Oct. 25, 1995, Ser. No. 548,079
Int. Cl.[6] H01H *3/02*
U.S. Cl. 200—331 18 Claims



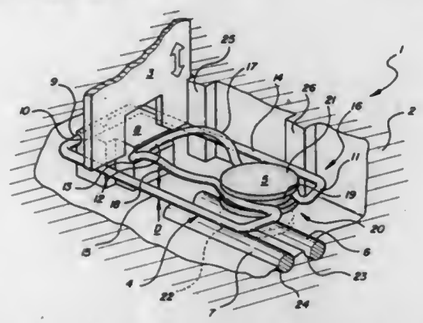
1. A switch extender apparatus, comprising:
(a) a back plate, said back plate including an opening;
(b) a front plate, said front plate slidably mounted on said back plate;
(c) a pair of cylindrical, parallel, spaced apart bars, said bars included on said front plate; and
(d) a knock out portion, said knock-out portion included on said back plate, said opening in said back plate located in said knock-out portion.

5,577,603
REMOTE, SELF-ADJUSTING OPERATOR FOR AN ELECTRICAL ENCLOSURE
Andris Bogdanovs, Liverpool, and Paul J. Bartlett, Camillus, both of N.Y., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Oct. 21, 1994, Ser. No. 326,885
Int. Cl.[6] H02B *1/46*
U.S. Cl. 200—331 14 Claims



1. A self adjusting, door mounted remote circuit breaker operator for an electrical enclosure, said operator comprising:
a shaft having a first end extending outside said enclosure door and a second end extending inside said enclosure door;
a handle attached to the first end of the shaft;
an operating fork attached to the second end of the shaft, said fork having means for manipulating a toggle switch;
means for transmitting rotational movement from the bandle to the fork; and
means for self adjustment of the fork over the toggle switch such that upon pivoting of the enclosure door from an open position to a closed position the fork automatically adjusts to receive the toggle switch.

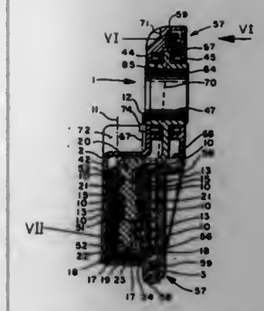
5,577,604
ELECTRICAL SNAP-ACTION SWITCH
Hans P. Dahmen, Wipperfurth, and Ewald Stanitzok, Ennepetal, both of Germany, assignors to Delphi Automotive Systems Deutschland GmbH, Germany
PCT No. PCT/DE94/00491, § 371 Date Mar. 13, 1995, § 102(e) Date Mar. 13, 1995, PCT Pub. No. WO94/27310, PCT Pub. Date Nov. 24, 1994
PCT Filed May 3, 1994, Ser. No. 373,301
Claims priority, application Germany, May 13, 1993, 43 16 068.9
Int. Cl.[6] H01H *5/14*
U.S. Cl. 200—408 13 Claims



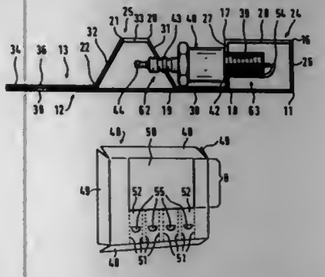
1. An electrical snap-action switch having a housing, a contact element for connecting two contact points adopted to be fixed to the housing wherein said contact element is movable between two switch positions, a snap-action switching element supporting the contact element and an operating element which act on the snap-action switching element to cause the contact element to move from one switch position to the other switch position wherein the snap-action switching element is reset automatically to the one switch position by the snap-action switching element after said snap-action switching element has moved from one switch position to the other switch position, the snap-action switching element being constructed integrally from a wire, and the snap-action switching element including a generally rectangular frame having lateral limbs and two narrow sides with one side being held in a first bearing point on a support on said housing and an upwardly arched U-shaped spring projecting inwardly from the opposite side into the frame, the spring being supported in a slightly prestressed condition in a second bearing point on the support.

5,577,605
ROTARY SWITCH
Günter Dilly, Sarmsheim; Herrmann Mahr, Waldalgesheim, and Gerd Rudolph, Aspisheim, all of Germany, assignors to Eaton Corporation, Cleveland, Ohio
Filed May 15, 1995, Ser. No. 440,583
Int. Cl.[6] H01H *19/14*
U.S. Cl. 200—564 12 Claims

1. A rotary switch comprising:
(a) a casing adapted for attachment to stationary structure;
(b) a rotor disposed for pivotal movement on said casing, said rotor having at least one spring biased bridging contact thereon for movement therewith;
(c) a removable contact carrier disposed and located in said casing, said carrier having at first and second spaced planar arrays of stationary contacts, said carrier having a generally U-shaped configuration in transverse section wherein said at least one contact bridge wipes on at least one of said arrays upon said pivotal movement.

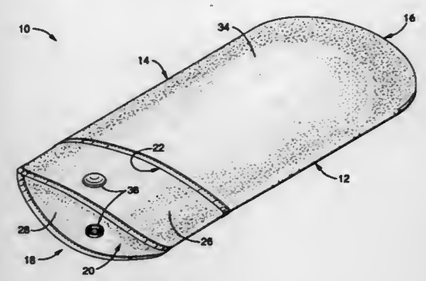


5,577,606
PACKAGING FOR SPARK PLUGS
Werner Schwentuchowski, Pfinztal; Kai Hartmann, Wengen, and Volker Woelfer, deceased, late of Karlsruhe, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
PCT No. PCT/EP94/01073, § 371 Date Dec. 15, 1994, § 102(e) Date Dec. 15, 1994, PCT Pub. No. WO94/24017, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 7, 1994, Ser. No. 351,420
Claims priority, application Germany, Apr. 15, 1993, 4312273.6
Int. Cl.[6] B65D *75/00*
U.S. Cl. 206—327 17 Claims



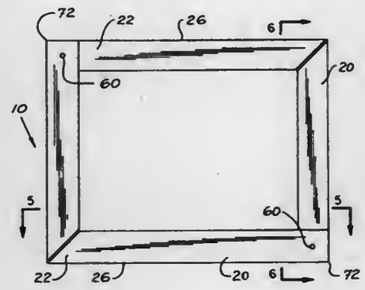
1. A package for at least one spark plug (**40**) formed from a packaging material blank (**10**) which is formed of cardboard and comprises a planar rear wall (**12**), a front wall (**13**), and has first and second hollow portions (**24** and **25**) which are formed by the rear wall (**12**) and the front wall (**13**), said first hollow portion having a first side (**27**), said second hollow portion having a second side (**31**), said first and second sides lying opposite one another along a length of said package, said first side (**27**) having a first opening (**37**) for receiving a first end portion (**63**) of said at least one spark plug (**40**), said second side (**31**) having a second opening (**38**) for receiving a second end portion (**62**) of said at least one spark plug (**40**), the first and second sides (**27**, **31**) of the first and second hollow portions (**24**, **25**) lying opposite one another are connected to one another by means of an intermediate section (**30**) of said front wall which is connected integrally to said first and second hollow portions (**24**, **25**), said front wall (**13**) has a tab (**34**) which projects at one end of said second hollow portion (**25**) and is permanently connected to a protruding part of the rear wall (**12**), a cover (**46**) encloses the first and second hollow portions (**24**, **25**) and the intermediate section (**30**) in a covering fashion, and the cover (**46**) is permanently connected to side tabs of the rear wall (**14**) and does not enclose the front wall tab and the protruding part of the rear wall.

5,577,607
CURLING IRON POUCH
Anthony G. Drake, and David J. Bluestein, both of 8541 Thys Ct., Sacramento, Calif. 95828
Filed Mar. 9, 1995, Ser. No. 401,556
Int. Cl.[6] A45C *11/00*; B65D *81/38*
U.S. Cl. 206—349 12 Claims



1. A curling iron pouch, comprising:
a. a heat-resistant pocket, said pocket having a closed end and an open end;
b. a pair of opposed, mating, point-fastening members disposed on opposed inner surfaces of said pocket, adjacent said open end of said pocket; and,
c. an auxiliary pocket affixed to an outer surface of said heat-resistant pocket.

5,577,608
PROTECTIVE COVER FOR PALLETIZED MATERIALS AND METHOD
Charles R. Hanson, Appleton, and Joseph A. Kromholz, Milwaukee, both of Wis., assignors to Great Northern Corporation, Appleton, Wis.
Filed Aug. 7, 1995, Ser. No. 512,380
Int. Cl.[6] B65D *81/02*
U.S. Cl. 206—386 9 Claims



1. An improved protective cover for palletized material, the protective cover including a first member and a second member; each member having a substantially L-shaped profile; each said member including a notch and having a first and a second end; said members being coupled to each other at said first end and said second end, the improvement comprising:
Said first member having a portion of both said first end and said second end non-symmetrical to the first end and the second end of the second member.

VOL 1192 ISS 4 NO 26 1996 UMI

5,577,609

TWO-PART ARTICLES, INCLUDING HINGED ARTICLES

Peter K. Hexter, Jr., Wilmington, N.C., assignor to CUI, Inc., Wilmington, N.C.

Continuation-in-part of Ser. No. 304,526, Sep. 12, 1994, which is a continuation-in-part of Ser. No. 121,267, Sep. 14, 1993, Pat. No. 5,363,964. This application Jun. 7, 1995, Ser. No. 477,747

Int. Cl.[6] B65D *85/48*; G09F *1/12*

U.S. Cl. 206—449 23 Claims



1. A two-part article comprising:

a polygonal metal substrate having a front side, a rear side, a main portion, a plurality of edge marginal portions terminating in respective substrate edges, a plurality of corner marginal portions, said edge marginal portions and said corner marginal portions surrounding said main portion and sharing respective boundaries with said main portion, and substrate indicia on said front side;

an insert sheet adjacent said rear side, said insert sheet being made of a material selected from the group consisting of metal, glass and plastic, and having an exposed side facing away from said rear side;

said edge marginal portions and said corner marginal portions being rolled towards said rear side such that said substrate edges contact said exposed side of said insert sheet so as to retain said insert sheet in position; and

said rolled edge marginal portions and said rolled corner marginal portions together defining a continuous bead around the periphery of said article without any exposed sharp edges.

16. A boxed set comprising:

a plurality of metallic trading cards, each orientable so as to have a lower edge and two side edges, and each of said metallic trading cards comprising

a generally rectangular metal substrate having a front side, a rear side, a main portion, four edge marginal portions terminating in respective substrate edges, four corner marginal portions, said edge marginal portions and said corner marginal portions surrounding said main portion and sharing respective boundaries with said main portion, and substrate indicia on said front side,

an insert sheet adjacent said rear side, said insert sheet being made of a material selected from the group consisting of metal, glass, and plastic, and having an exposed side facing away from said rear side,

said edge marginal portions and said corner marginal portions being rolled towards said rear side such that said substrate edges contract said exposed side of said insert sheet so as to retain said insert sheet in position, and

said rolled edge marginal portions and said rolled corner marginal portions together defining a continuous bead around the periphery of said card without any exposed sharp edges; and

a storage tin for said trading cards, said storage tin including a generally rectangular receptacle having a bottom and four upright sides; a cover for said receptacle; a lower card support member in said receptacle on the bottom thereof, said lower card support member having a plurality of channels for receiving the lower edges of said trading cards; and a pair of side card support members in said receptacle along two opposite sides thereof, said side card support members having corresponding pluralities of channels for receiving the side edges of said trading cards.

5,577,610

CASING FOR FRAME-SUPPORTED PELLICLES

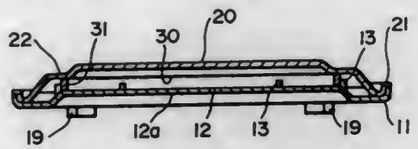
Kazuya Okuda, Itoigawa, and Satoshi Kawakami, Annaka, both of Japan, assignors to Shin-Etsu Polymer Co., Ltd., and Shin-Etsu Chemical Co., Ltd., both of Tokyo, Japan

Filed Sep. 26, 1995, Ser. No. 533,784

Claims priority, application Japan, Oct. 12, 1994, 6-245823

Int. Cl.[6] B65D *81/18*

U.S. Cl. 206—454 3 Claims



1. A casing for a frame-supported pellicle which comprises, as an assembly:

(a) a casing body including central and peripheral areas, and a frame-supported pellicle mounted on said body with the pellicle over said central area; and

(b) a covering mounted on said casing body with said pellicle over said central area; and each of the casing body and the covering being shaped from an anti-static resin composition which is a resin blend consisting of from 80 to 95% by weight of an ABS resin or an acrylic resin as the matrix phase and from 20 to 5% by weight of a hydrophilic resin dispersed in the matrix phase.

5,577,611

ORGANIZER FOR PERSONAL EFFECTS

William C. Greenall, The Bungalow, 9A Penbury Road, Whitley, Wigan Lancashire WN1 2RJ, United Kingdom

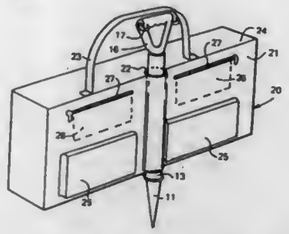
PCT No. PCT/GB94/02210, § 371 Date Jul. 7, 1995, § 102(e) Date Jul. 7, 1995, PCT Pub. No. WO95/10203, PCT Pub. Date Apr. 20, 1995

PCT Filed Oct. 10, 1994, Ser. No. 448,431

Claims priority, application United Kingdom, Oct. 9, 1993, 9320833

Int. Cl.[6] A45C *13/18*

U.S. Cl. 206—459.1 12 Claims



1. An organiser for personal effects, comprising a bag having at least one compartment, at least one opening for access thereto, and means on the bag engageable with a ground engaging member such that the entire bag may be supported thereon at an elevated position above the ground, characterised by an alarm device adapted for connection to the ground engaging member in use such that the alarm device is activated upon an attempt to remove the bag from the ground engaging member.

5,577,612

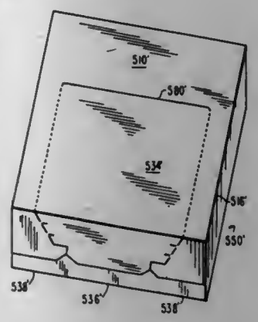
FABRIC SOFTENER SHEET DISPENSER CARTONS

Sharon Chesson, Bradenton, Fla., and James Stone, Grand Rapids, Mich., assignors to Lever Brothers Company, Division of Conopco Inc., New York, N.Y.

Filed Jun. 21, 1994, Ser. No. 263,306

Int. Cl.[6] B65D *85/62*

U.S. Cl. 206—494 29 Claims



1. A carton comprising a top panel and a front panel, said front and top panels including lines of weakness in part defining a recloseable access flap, one of said front and top panels including a first score line defining a hinge by which said access flap is permanently attached to said one panel, a panel-separating score line separating said front and top panels, at least a portion of said panel separating score line traversing said access flap whereby said portion of the panel-separating score line traversing said access flap is positioned to act as a second hinge for opening and reclosure of said access flap, portions of said front panel lateral to said access flap being attached to an underlying panel or flap, so that when said access flap is separated from said front panel to open the carton, said lateral portions remain attached to said underlying flap or panel, said access flap having a reclosure tab, said underlying flap or panel having an aperture dimensioned to receive said reclosure tab, said carton including a panel adjacent said top panel, on a side opposite said front panel, said adjacent panel having two ends, a flap having two free side edges being disposed at each end of said adjacent panel, said underlying flap having two sides and not including a minor flap adjacent both of said sides.

22. A carton blank having a first panel for forming a top of a carton, said top-forming panel being separated by a scoreline from a panel for forming a front of a carton, said front-forming panel having a free edge, said top-forming and front-forming panels including lines of weakness in part defining an access flap extending from said free edge of said front-forming panel to a hinge comprising a scoreline on said top-forming panel, panels for forming sides of the carton on opposite sides of said top-forming panel and separated therefrom by parallel scorelines perpendicular to the scoreline separating said top-forming panel from said front-forming panel, and a bottom panel separated from one of said side panels by a scoreline parallel to the scorelines separating said side panels from said top panel, a flap or panel for underlying said front panel, said underlying flap or panel being separated from said bottom panel by a scoreline perpendicular to the scoreline separating said bottom panel from said side panel, said carton blank including a rear panel adjacent said top panel on a side opposite said front panel, said adjacent panel having two ends, a flap having two free side edges being disposed at each end of said adjacent panel, said underlying flap having two sides and not including a minor flap adjacent both of said sides.

5,577,613

INTEGRATED CARRY HANDLE AND ACCESSORY INTERLOCK SYSTEM

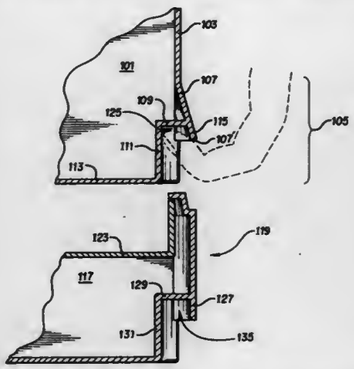
Anthony G. Laidlaw, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 6, 1995, Ser. No. 524,947

Int. Cl.[6] B65D *21/032*

U.S. Cl. 206—510 7 Claims

1. In an equipment system having a primary equipment unit and



at least one accessory equipment unit, an integrated carry handle and accessory interlock system comprising:

said primary equipment unit having a primary unit housing cover including:

at least one first handle member integrally formed with said primary unit housing cover, said first handle member including an outwardly protruding region of said primary unit housing cover such that a descending flange and downwardly directed groove is formed by said outwardly protruding region of said primary unit housing cover and said descending flange; and

each of said accessory equipment units having an accessory unit housing cover including:

at least one second handle member integrally formed with said accessory unit housing cover, having a substantially planar, horizontal, rectangular top member and walls descending peripherally about said top member, said second handle member including an upwardly directed tongue member for at least partial insertion into said downwardly directed groove of said first handle member, said tongue member having a lower descending outer flange, and a recess below said tongue member descending outer flange for lifting said accessory equipment unit thereby, said recess having a shape and dimensions such that a tongue member of a subjacent accessory equipment unit is received into said recess, and said housing cover including a substantially horizontal cross member between said descending outer flange and one of said descending walls of said accessory unit housing cover, forming a downwardly directed groove beneath said tongue member,

whereby stacking said primary equipment unity on at least one accessory equipment unit interlocks said primary equipment unit and said accessory equipment unit using said tongue member and said groove of said first handle member.

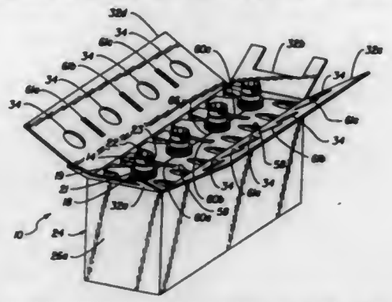
5,577,614

COMBINED SHIPPING AND DISPENSING PACKAGE FOR FLUID CONTAINERS

Fernando Palmeroni, Jr., Rochester, and Clark E. Harris, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 12, 1995, Ser. No. 571,806
Int. Cl.[6] B65D 81/02
U.S. Cl. 206—521 13 Claims

1. A combined shipping and dispensing package for enclosing at



least one fluid container, the fluid container including a dispensing conduit having a retention channel on the outer periphery thereof, said package comprising:

an outer container having a bottom wall, sidewalls, and a top closure, the top closure having an opening for extension therethrough of said dispensing conduit; and

internal packing means for flexibly holding said fluid container in a fixed position within said outer container, said packing means comprising first and second mating support members, each support member having:

(a) a substantially rigid, upstanding rib section having an opening defined therein,

(b) a compliant jacket wall extending outwardly from the rib opening to form a partial cavity for receiving and supporting a fluid container placed in the cavity,

(b) a substantially rigid collar portion formed in the rib section at an upper portion of the cavity and shaped to engage said conduit retention channel of the fluid container when placed in said cavity, and

(c) a plurality of compliant spacer members extending laterally from the rib section,

whereby when said support members are mated together and inserted into said outer container with said fluid container in place, said ribs and collar portions form a centralized internal support wall resisting compressive forces on said dispensing conduit parallel to the support wall, and said compliant spacer members hold said internal support wall in spaced relation from the outer container sidewalls thereby holding said dispensing conduit in lateral alignment with said top closure opening, said compliant spacer members and compliant jacket walls jointly providing shock absorption for said fluid container during shipping.

13. A package according to claim 1 wherein said closure comprises at least a pair of folding flaps, each flap having an opening which align together over the dispenser conduit when the flaps are folded to close the outer container.

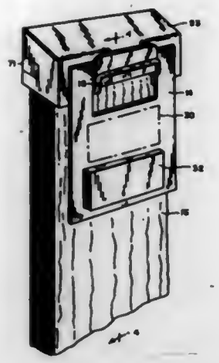
5,577,615

BAG DISPENSING SYSTEM

Richard M. Wile, Medfield; Gregory M. Duval, Taunton, and Leighton H. York, Jr., Essex, all of Mass., assignors to BPI Packaging Technologies, Inc., North Dighton, Mass.

Filed Aug. 1, 1995, Ser. No. 509,971
Int. Cl.[6] B65D 73/00
U.S. Cl. 206—554 4 Claims

1. A bag pack comprising:



a stack of T-shirt type plastic film bags having a mouth and loop handles extending upwards on either side of the mouth, the handles being linked at their upper ends by a tearaway strip extending between them;

a resilient rectangular web member having at its upper end an aperture approximately as wide as said mouths providing, above said aperture, a retaining strip;

a stiff cardboard web member which is folded to provide a cartridge of tube-like cross-section which encloses said tearaway strips and said retaining strip;

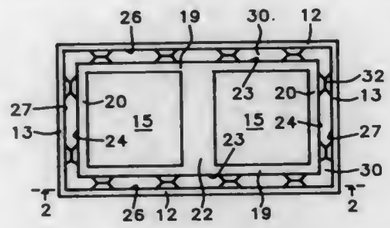
said resilient web carrying advertising and extending downwardly covering the mouths of said bags.

5,577,616

CUSHIONING PACKAGE FOR TRANSPORTING OR STORING SEMICONDUCTOR WAFERS

Wen-Sheng Liang, Hsin-Chu, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed May 23, 1996, Ser. No. 652,211
Int. Cl.[6] B65D 85/30
U.S. Cl. 206—710 11 Claims



1. A stackable cushion formed in layers adapted to be stacked inside a box (14) to enclose a fragile object within a solid rectangular space, one layer (21) being adapted to form a bottom supporting layer and having a substantially unbroken supporting surface, wherein the improvement comprises,

a frame layer (16) having a flat upper and lower surface and forming a rectangular opening (15) for enclosing the fragile object, the frame layer having vertical edges (23, 24) parallel to the edges of the box when the cushion is assembled in the box,

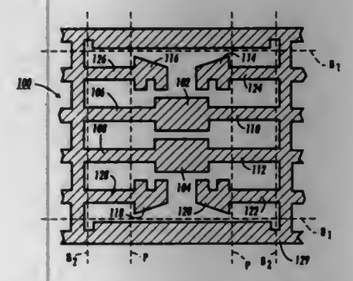
and absorbers (32) extending from selected positions along the vertical edges of the frame to engage the inside wall (26, 27) of the box, each absorber having a mirrored pyramidal frustum shape with the smaller of the two parallel surfaces of each frustum joined and one of the two larger surfaces adjoining a vertical edge of the frame and the other of the two larger surfaces abutting the inside wall of the box in an assembled cushion.

5,577,617

ADVANCED TECHNIQUE FOR PACKAGING MULTIPLE NUMBER OF ELECTRICALLY STACKABLE HIGH VOLTAGE TRANSISTORS IN ONE PACKAGE

Mohammad M. Mojarradi, Pullman, Wash.; Dennis W. Sandstrom, Sylman, Calif.; Tuan A. Vo, Hawthorne, Calif., and Abdul Elhatem, Redondo Beach, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 29, 1995, Ser. No. 581,385
Int. Cl.[6] B65D 73/02
U.S. Cl. 206—724 3 Claims



1. An electrically isolated multi die mount tab lead frame having a lead frame edge which is removed prior to assembly onto a printed wiring board comprising:

a) a lead frame edge defining the perimeter of the lead frame and the space enclosed by said lead frame edge is an interior space,

b) at least two die mount tabs and at least four bonding pads being located in the interior space,

c) at least four bonding pad support arms, each bonding pad support arm having two ends,

d) at least four die mount tab support arms, each die mount tab support arm having two ends, and

e) each die mount tab being attached to said lead frame edge by two die mount tab support arms, where one end of each die mount tab support arm is attached to said lead frame edge and the other end of each die mount tab is attached to said die mount tab, each die mount tab being unattached to each other except through said lead frame edge and

f) each bonding pad being attached to said lead frame edge by one bonding pad support arm, where one end of each bonding pad support arm is attached to said lead frame and the other end of each bonding pad support arm is attached to said bonding pad.

5,577,618

MOBILE AGGREGATE MATERIAL PROCESSING PLANT

Malachy J. Rafferty, Termunbeg, Carrickmore, Omagh, County Tryone, Northern Ireland

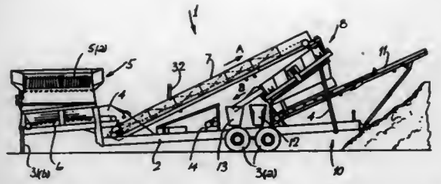
Filed Sep. 7, 1994, Ser. No. 301,578
Claims priority, application Ireland, Sep. 7, 1993, S93 0654
Int. Cl.[6] B07B 1/49
U.S. Cl. 209—421 12 Claims

1. A mobile, road-hauled aggregate material processing plant comprising:

a wheel mounted chassis extending in a longitudinal direction;

a plant support frame mounted on the chassis;

a raw material input hopper mounted on the plant support frame;



a material processing means mounted on the plant support frame and fed from the input hopper and having an outlet;

processed material outfeed delivery means mounted on the plant support frame and fed from the material processing means;

at least one lateral delivery conveyor incorporated in the outfeed delivery means, said conveyor comprising:

a conveyor frame tail section;

a conveyor frame head section;

a tail articulation means connecting the tail section to the support frame in such a way that at least part of the tail section is movable relative to the plant support frame from an operative position extending laterally of the chassis with respect to the longitudinal direction for outfeed of processed material, to a transport position extending substantially upright above the chassis and positioned with respect to the input hopper and material processing means so that it does not project laterally beyond the chassis;

a head articulation means connecting the head section to the tail section in such a way that the head section is movable from an operative position to a transport position with the head section extending longitudinally above the chassis and positioned with respect to the input hopper and material processing means so that it does not project laterally beyond the chassis;

a plurality of rollers mounted on the conveyor frame; and

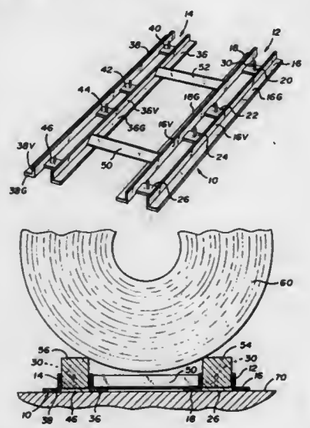
an endless conveyor belt mounted on the rollers to complete the assembly of a lateral delivery conveyor having tail and head sections, said belt defining a conveyor plane.

5,577,619

STEEL COIL STORAGE RACK SYSTEM

Eugene J. Callahan, 9519 Marigold La., Munster, Ind. 46321

Filed Jul. 1, 1994, Ser. No. 270,042
Int. Cl.[6] A47F 7/00
U.S. Cl. 211—13 17 Claims



1. A steel coil-receiving floor or ground rack device for use with at least two rectilinear cross-sectioned timbers, such as 4×4 lum-

ber, for receiving a steel coil of a predetermined range of sizes and for resting on the floor or ground of a storage area, said device comprising, in combination:

first means for receiving and attaching in the received place one of the timbers in a generally horizontal array and such that the timber extends above said first means and presents a portion of the timber for receiving the coil;

second means for receiving and attaching in place a second of the timbers in a generally horizontal array and such that the timber extends above said second means and presents a portion of the timber for receiving the coil;

means affixed to and between said first and said second timber receiving means for defining the spatial relationship of said timbers such that the timbers are parallel to one another and spaced apart by a predetermined distance such that a predetermined sized steel coil can have its curved side surface on and between the timbers without the coil surface touching the floor or ground.

5,577,620

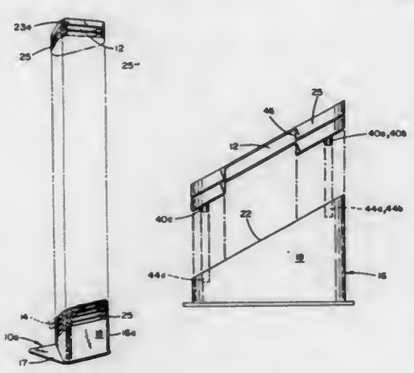
STORAGE RACK MADE FROM MODULAR COMPONENTS

Gary Jacob, Forest Lake, Minn., assignor to Arista Products, Inc., Hauppauge, N.Y.

Filed Dec. 29, 1994, Ser. No. 365,694

Int. Cl.[6] A47F *7/00*

U.S. Cl. 211—40 **13 Claims**



1. A device for storing compact disc cases, audio/video cassette cases, computer storage media or the like in a vertical stack with one side of the cases extending outwardly from the device and angled upwardly for easy viewing, the device comprising:

a base having a raised front portion and a top surface set at an oblique angle; and

a plurality of modular components stacked on top of said base, each modular component having a central plate with a periphery disposed parallel to said top surface; and

vertically-extending support means comprising legs formed at said periphery of each modular component for engaging an adjacent modular component and forming a storage slot, with an open receiving end, between each adjacent pair of central plates for storing the cases at said oblique angle, said legs and portions of said plate periphery remote from the storage slot forming a continuous column along a height of said stacked modular components with said legs bordering the storage slot.

5,577,621

WAFER INSTALLING CASSETTE FOR SEMICONDUCTOR MANUFACTURING APPARATUS

Kyoung-Soo Yi, Daejeon, Rep. of Korea, assignor to Electronics & Telecommunications Research Institute, Daejeon, Rep. of Korea

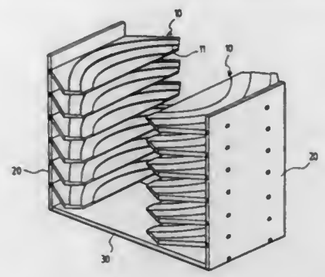
Filed Dec. 2, 1994, Ser. No. 353,255

Claims priority, application Rep. of Korea, May 31, 1994, 94-12215

Int. Cl.[6] A47F *7/00*

U.S. Cl. 211—41 **8 Claims**

1. A wafer installing cassette for a semiconductor manufacturing



apparatus for installing a plurality of wafers comprising:

a shelf means for accommodating wafers of different diameters for use in installing the wafers of different diameters, the shelf means having a plurality of pairs of shelves, each pair of shelves having a plurality of annular steps with each step having a diameter for receiving a particular diameter of the wafers of different diameters;

a shelf securing means for securing the plurality of pairs of shelves with adjacent pairs of shelves being spaced apart by a set distance; and

wherein the shelf means further includes a connecting piece attached to each shelf for connection to the shelf securing means.

5,577,622

MERCHANDISING DISPLAY RACK ASSEMBLY

Bruce B. Kapteyn, Lake Oswego, Oreg., assignor to Van Bloem, Inc., Alpharetta, Ga.

Filed Jul. 14, 1995, Ser. No. 502,429

Int. Cl.[6] A47F *3/14*

U.S. Cl. 211—132 **9 Claims**

1. The merchandise display rack assembly comprising in combination a box having an openable top, side walls and a bottom for containing merchandise to be displayed, and a supporting rack therefor comprising:

a) two pairs of horizontally spaced support posts,

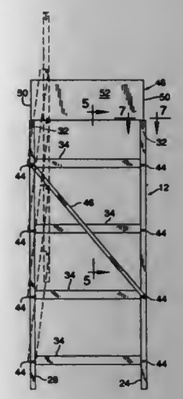
b) a pair of front and back horizontally spaced box-support bars,

c) bar support means for securing the bars to the posts,

d) a pair of post spacers comprising pin and sleeve hinges, permitting folding of the rack during storage, and

e) spacer-securing means engaging the pin components for securing the spacers to the posts,

f) the bars and spacers being arranged to provide a crib dimensioned for nesting reception of the box with its bottom and a side wall in bearing engagement with the bars, and with its openable top canted forwardly for customer viewing of the box contents.



5,577,623

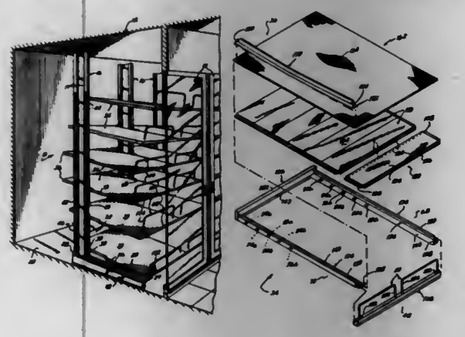
COMPOSITE GRAVITY FEED SHELF

Rafael T. Bustos, Alpharetta, Ga., assignor to L&P Property Management Company, Chicago, Ill.

Continuation-in-part of Ser. No. 234,234, Apr. 28, 1994, Pat. No. 5,490,600, which is a continuation-in-part of Ser. No. 16,783, Feb. 11, 1993, Pat. No. 5,333,746. This application Nov. 22, 1994, Ser. No. 343,222

Int. Cl.[6] A47F *5/00*

U.S. Cl. 211—187 **41 Claims**



1. A gravity feed shelf for a display rack providing access to merchandise supported thereon, said shelf comprising:

a rectangular frame having a pair of spaced side members connecting a front member spaced from a back member, said side, front and back members defining an opening therebetween;

a plurality of channels supported on said frame, said channels spanning said opening and cooperating to form a shelf surface;

a ledge on each end of each said channel, said ledge being inserted into one of said frame members; and

a slip surface layer positioned atop said shelf surface for gravity feed advance of the merchandise thereon.

5,577,624

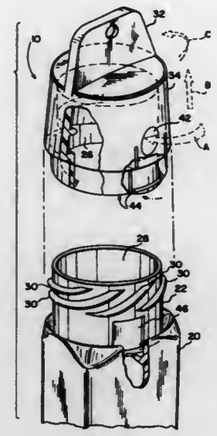
CHILD RESISTANT EASY OPEN CLOSURE MECHANISM

Norbert I. Berta, Devon, and Harry S. Sowden, Southampton, both of Pa., assignors to McNeil-PPC, Inc., Skillman, N.J.

Filed Jun. 3, 1995, Ser. No. 399,394

Int. Cl.[6] B65D *50/10*

U.S. Cl. 215—221 **10 Claims**



1. A child resistant container, comprising:

(1) a bottle having a neck, said bottle also having a containment area to store tablets accessible through an opening in said neck;

(2) a cap having a skirt, said skirt engageable with said neck; and

(3) access means for allowing attachment of said neck to said skirt, said access means comprising:

(i) a push button associated with said cap;

(ii) an irregularity comprising a ball contained on the inside of said skirt; and

(iii) alignment means on said neck, said alignment means engageable with the irregularity on said cap;

wherein when said push button is pushed by the user, said irregularity engages said alignment means such that said cap may be translated parallel to the longitudinal axis of said bottle, so that thereafter said cap may be removed from said bottle.

5,577,625

VENTING AND DISPENSING CAP FOR A CONTAINER

James C. Baird, Uccle; Johan W. Declerk, Ichtegem; Jorgen Hoernaert, Brugge; Nady Bilani, Strombeek-Bever, and Joseph F. Deflander, Wespelaar, all of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US93/06301, § 371 Date Apr. 24, 1995, § 102(e) Date Apr. 24, 1995, PCT Pub. No. WO94/02372, PCT Pub. Date Feb. 3, 1994

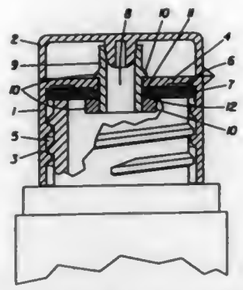
PCT Filed Jul. 2, 1993, Ser. No. 367,288

Claims priority, application European Pat. Off., Jul. 18, 1992, 92202223

Int. Cl.[6] B65D *39/00*

U.S. Cl. 215—235 **3 Claims**

1. A cap for a container, said cap having a body and a closure, said body having a side wall and an adjoining top, said side wall having means to let gasses escape from said container to ambient, said top having an interior and at least one recess on said interior, said body further having an impermeable liner juxtaposed to said interior, said top and said liner being pierced by a hole, said body further having a tubular part extending through said hole, wherein



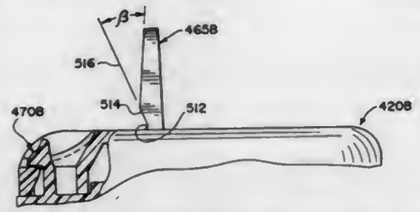
a sealing means maintains said liner pressed against said interior of said top in a leak-tight manner, and wherein said closure is a flip-top closure.

5,577,626

CLOSURE WITH OPENING ASSIST FEATURE

James W. Henkel, Lombard, Ill., and Robert D. Rohr, Eagle, Wis., assignors to AptarGroup, Inc., Crystal Lake, Ill.

Filed Apr. 11, 1995, Ser. No. 420,204
Int. Cl.[6] B65D *55/02*
U.S. Cl. 215—237 **12 Claims**



1. A closure for an opening to a container interior, said closure comprising:
- a base for attachment to said container at said opening and defining a discharge aperture communicating with said opening;
- a lid hingedly connected to said base for movement between a closed position occluding said aperture and an open position away from said aperture;
- a manually releasable latch defined cooperatively by said base and lid to hold said lid closed;
- said lid having an outwardly projecting engaging member whereby the user can release said latch and apply a force to said engaging member to move said lid toward said open position via said engaging member, said engaging member having a notch adjacent said lid.

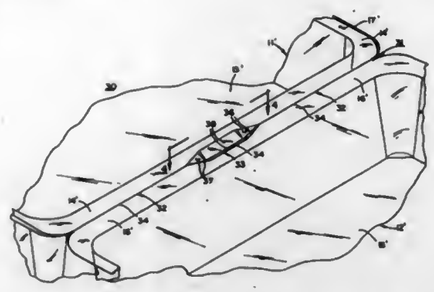
5,577,627

HINGE STRUCTURE FOR THERMOFORMED PLASTIC CONTAINERS

Susan J. Richie-Dubler, Canandaigua, N.Y., assignor to Tenneco Packaging, Evanston, Ill.

Filed Jun. 7, 1995, Ser. No. 478,123
Int. Cl.[6] B65D *43/16*
U.S. Cl. 220—4.23 **13 Claims**

1. A thermoplastic container comprising:
- a base and a lid hinged thereto wherein said hinge comprises a foldable area of plastic extending along adjacent sides of said base and said lid and integral therewith, said foldable area having a fold line extending longitudinally of said foldable area and dividing said lid from said base, said fold line having



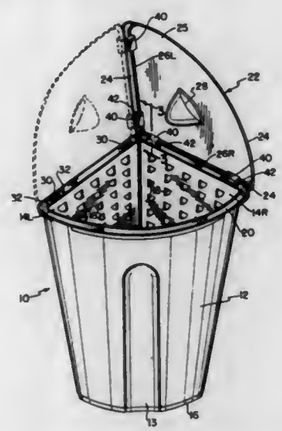
at the extremities thereof creased hinge sections in said foldable area, and said foldable area having at least one intermediate formed hinge, wherein said intermediate formed hinge includes a cavity having tapered ends and a central portion having two generally parallel sections connecting said tapered ends, said cavity having a substantially V-shaped cross-section along a bottom of which extends an intermediate section of said fold line, said cavity having a length greater than the width thereof.

5,577,628

HAMPER WITH BI-DIRECTIONAL OPENING LID

Robert A. O'Neil, Glen Ellyn; Kevin Short, Midlothian, and James Kyroudis, Chicago, all of Ill., assignors to Tucker Housewares, Leominster, Mass.

Filed Sep. 13, 1995, Ser. No. 527,574
Int. Cl.[6] B65D *43/16*
U.S. Cl. 220—343 **13 Claims**



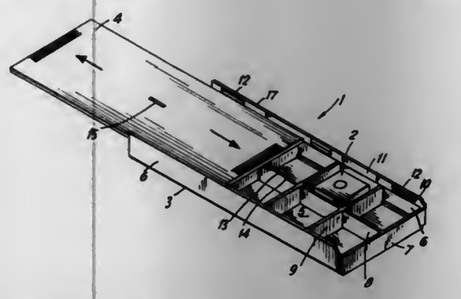
1. A hamper consisting of: three upstanding non-parallel walls, said walls including:
- a front wall, a pair of side walls connected to each other at an angle and a bottom wall connected to form a three-sided base with a three-sided open top;
- a lid to cover the base open top having a front wall and side walls connected to each other at an angle and having a shape corresponding to the three sided open top formed by the base front and side walls; and
- hinge means comprising a respective cooperating separable part on each said base side wall and each said lid side wall for selectively pivoting the lid between open and closed positions of said base three-sided open top relative to either one of the angularly connected base side walls.

5,577,629

PACKAGE BOX

Peter Rösler, Wangen, Germany, assignor to Rose-Plastic GmbH, Hergensweiler, Germany

Filed Aug. 23, 1995, Ser. No. 518,410
Claims priority, application Germany, Aug. 31, 1994, 94 14 118 U
Int. Cl.[6] B65D *43/00*
U.S. Cl. 220—525 **7 Claims**



1. A package box formed of a plastic material for flat objects having relatively small dimensions, said package box comprising:
- a box main part having a shape of a rectangular parallelepiped and including:
  - a bottom,
  - two longitudinally extending sidewalls and two transversely extending end walls projecting upward from the bottom and defining an upper box opening,
  - a longitudinally extending separation wall projecting upward from the bottom and extending in a longitudinal middle plane of the box main part along an entire length of the box, and a plurality of transversely extending separation walls projecting from the bottom and extending between the longitudinally extending separation wall and the longitudinally extending side walls; and
- a cover for closing the box opening displaceable in a longitudinal direction of the box and having an inner surface lying, in a closed condition of the box, on upper edges of the separation and end walls and on guide beads provided on the longitudinally extending side walls, and an outer surface located beneath a plane defined by the upper edges of the longitudinally extending side walls;
- wherein the separation and end walls have a height smaller than a height of the side walls,
- wherein the side walls have steps projecting into the box opening and having surfaces facing the separation walls and spaced from the upper edges of the separation walls and the guide bead by a distance substantially equal to a thickness of the cover,
- wherein the upper edge of the longitudinally extending separation wall has at least one rib equally spaced from both end walls and having a height not exceeding a thickness of the cover, and
- wherein the cover has in a longitudinal middle plane thereof at least one slot corresponding to the rib for receiving the rib in the closed condition of the box.

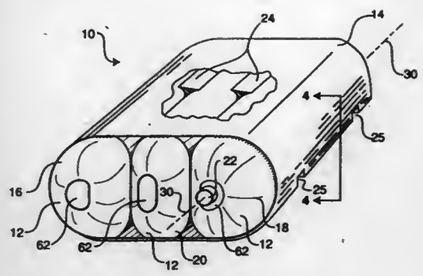
5,577,630

COMPOSITE CONFORMABLE PRESSURE VESSEL

Michael D. Blair; Richard Kunz; Mark J. Warner, all of North Ogden; Kevin Davis, Ogden; Edward Wolcott, Providence; Darrel Turner, and John Bennett, both of Brigham City, all of Utah, assignors to Thiokol Corporation, Ogden, Utah

Filed Feb. 2, 1995, Ser. No. 382,502
Int. Cl.[6] B65D *8/00*
U.S. Cl. 220—581 **27 Claims**

1. A pressure vessel comprising:



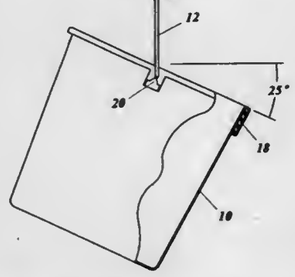
at least two end cells, each end cell having a cross-section comprising:
- an arcuate outer wall defining a substantially constant outer wall radius;
- an arcuate upper wall having an end unitary with said outer wall at an upper-outer junction, said upper wall defining a substantially constant upper wall radius which is less than said outer wall radius; and
- a web secured about said end cells, said web comprising a substantially planar upper sheet which is generally tangent to said upper-outer junction of each of said end cells.

5,577,631

SELF-FILLING PAIL

Kenneth A. Hooson, 40467 NYS Rte. 12, Clayton, N.Y. 13624

Filed Oct. 2, 1995, Ser. No. 537,544
Int. Cl.[6] B67D *5/00*
U.S. Cl. 220—603 **7 Claims**



1. A pail for withdrawing and containing a quantity of an hazardous fluid from a body of said fluid which comprises:
- a body portion having a bottom, sidewalls extending upwardly from said bottom forming an enclosed space, and an open top;
- an integral lip portion formed about the edge of said open top;
- said body and lip portions being formed of a material suitable for containing said hazardous fluid;
- a bail member pivotally mounted on said sidewalls of said body portion;
- a destabilizing member positioned on said sidewalls adjacent the top edge thereof;
- said destabilizing member being completely encapsulated within said lip portion;
- said destabilizing member having sufficient weight relative to the weight of said body portion to cause said pail to tip over when placed vertically upright in (a) an hazardous fluid;

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whereby when said pail is placed on the surface of (a) an hazardous fluid said pail will tip over to a sideways position and fill with hazardous fluid without said fluid contacting said destabilizing member.

5,577,632

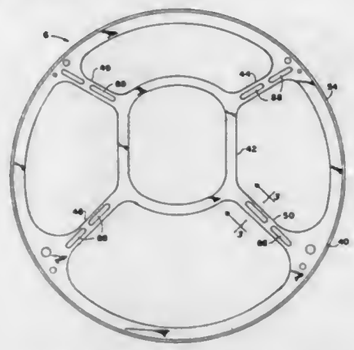
PAIL SAFETY RING

Henry J. Blanchette, Leominster, and Paul Mercadante, Ipswich, both of Mass., assignors to Plastican, Inc., Leominster, Mass.

Continuation of Ser. No. 187,697, Jan. 27, 1994, abandoned. This application Oct. 3, 1995, Ser. No. 538,355

Int. Cl.[6] B65D *1/40*

U.S. Cl. 220—730 **21 Claims**



1. A container lid for use with a pail in combination with a means for preventing ingress by small children into a pail to which the lid is attached, said ingress-preventing means comprising a rim section and an object-intercepting section surrounded and supported by and spaced from said rim section, said rim section having a side wall with means for making a releasable locking connection with a pail to which said lid is attached, said object-intercepting section comprising an inner ring joined to said rim section by a plurality of strut members and at least one opening to enable access to the contents of a pail to which said ingress-preventing means is connected.

5,577,633

FEEDING NUTS TO A NUT RUNNER

Darrell D. Jones, Lynnwood, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 949,177, Sep. 21, 1992. This application Jun. 6, 1995, Ser. No. 468,219

Int. Cl.[6] B65H *3/14*

U.S. Cl. 221—1 **16 Claims**

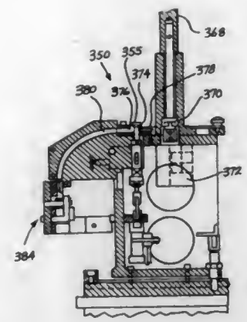
1. A nut feeding device for an automatic assembly machine, comprising:

a carrousel for carrying a multiplicity of nuts, said carrousel having a rotating head from which depend a plurality of rods onto which can be slid a multiplicity of nuts to be fed to a nut runner, said rods each having an upper end fixed in said rotating head, and a free lower end;

a shaft projecting on an axis of rotation from said rotating head, and a drive mechanism for rotating said shaft to rotate said carrousel about said axis of rotation;

a sliding surface adjacent said lower end of said rods around which a lower nut on each rod slides in a circular path as said carrousel rotates;

an opening in said sliding surface at one radial position on said circular path through which a nut on one of said rods can pass for feeding to said nut runner;



a nut channel beneath and communicating with said opening for conveying said nut to a nut loading station;

a nut feed pin for feeding said nut into a socket in a nut driver; and

an actuator for moving said nut feed pin to feed said nut to said nut driver socket.

5,577,634

PAPER TOWEL DISPENSER FOR DISPENSING TOWELLING FROM INSIDE DIAMETER OF ROLL

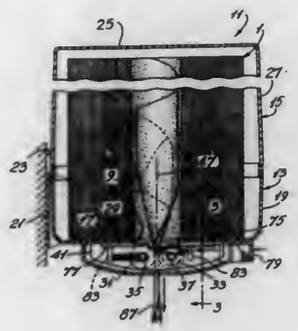
Michel Morand, Montreal, Canada, assignor to G. H. Wood & Wyant, Inc., Quebec, Canada

Filed May 15, 1995, Ser. No. 441,461

Claims priority, application United Kingdom, Jun. 16, 1994, 9412076

Int. Cl.[6] B65H *3/00*

U.S. Cl. 221—43 **11 Claims**



1. A dispenser for dispensing sheets of paper towelling from a tubular roll of paper towelling, the towelling having perforated lines across it at spaced-apart intervals dividing the towelling into joined sheets, the dispenser having:

a base on which one end of the roll of towelling sits;

an opening in the base through which one end of the towelling in the form of a spiral tail, is adapted to be passed from the interior of the roll on the base; and

gripping means on the base, beneath the opening, through which the spiral tail of the towelling is passed, the gripping means for both flattening the spiral tail into a band-like tail and for positively gripping it sufficiently to allow the outermost sheet of towelling to be torn away from the remainder of the towelling along a perforated line, past the gripping means, when the band-like tail is pulled.

5,577,635

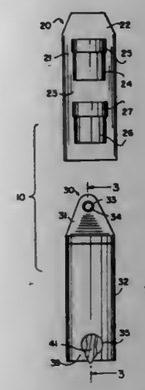
PROTECTIVE SHEET DISPENSER

Alvin Block, Palm Beach Gardens, Fla., assignor to Alvin Block, and John Cimba, both of Palm Beach Gardens, Fla.

Filed Jun. 29, 1995, Ser. No. 498,245

Int. Cl.[6] A47K *10/24*

U.S. Cl. 221—45 **13 Claims**



1. A protective dispenser for dispensing serially arranged sheet materials, comprising:

a) a container bounding an internal chamber for receiving the sheet materials, said chamber having an open end; and

b) supporting means in said internal chamber for supporting the sheet materials, including a partitioning wall spanning said internal chamber of said container and having a substantially centrally arranged opening therein for the successive passage of the sheet materials therethrough, said partitioning wall being disposed at a predetermined distance from said open end of said chamber so that a skirt region of said container that surrounds said open end provides an environment that is sheltered from the elements for the sheet materials to emerge into after passing through said opening.

5,577,636

MULTI-TUBE CONTAINER HAVING BREAKABLE CONNECTIONS AT BOTH ENDS THEREOF

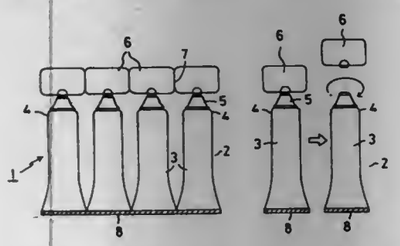
Hiroki Fukuoka; Kenzo Teshima, and Yoshiharu Hatakeyama, all of Tokyo, Japan, assignors to Yoshida Kogyo Co., Ltd., Tokyo, Japan

Filed May 23, 1995, Ser. No. 448,182

Claims priority, application Japan, Jun. 10, 1994, 6-128705

Int. Cl.[6] B65D *47/10*

U.S. Cl. 222—94 **11 Claims**



1. A multi-tube container having multiple tubes in parallel, said container comprising:

a plurality of body portions, each having a hollow portion for containing contents, said body portions being separated from one another without having connections therebetween;

a plurality of twistable head portions formed at one end of each of said body portions;

a plurality of neck portions creating an opening for extruding the contents from said hollow portion when one of said plurality of twistable head portions is broken off from one of said plurality of body portions, said plurality of neck portions being located between said body portion and said head portion; and

a plurality of sealing portions formed at the other end each of said body portions, each of said plurality of sealing portions breakably connected to at least one adjacent sealing portion by heat-pressing the other end of said one of said body portions with the other end of an adjacent body portion,

wherein at least one of said head portions and said neck portions are breakably connected to each other.

5,577,637

CUTTING-OFF DEVICE FOR STOCK MATERIALS PACKED IN CAN-LIKE CONTAINERS, MORE PARTICULARLY FILLER MATERIALS AND PUTTIES AND HARDENER PASTES

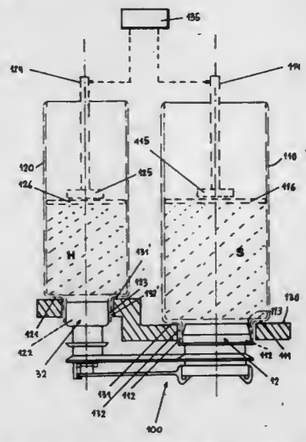
Klaus-Wilhelm Voss, Uetersen, Germany, assignor to Vosschemie GmbH, Uetersen, Germany

Filed Dec. 20, 1994, Ser. No. 360,145

Claims priority, application Germany, Sep. 1, 1994, 9414136 U

Int. Cl.[6] B67D *5/52*

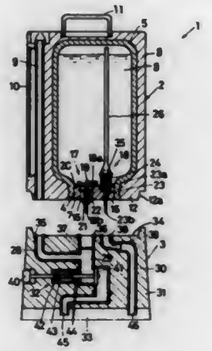
U.S. Cl. 222—137 **18 Claims**



1. A cutting device for simultaneously cutting a first material dispensed from a first can-shaped container and a second material dispensed from a second can-shaped container, each container having an interior and a discharge orifice, the containers being mounted in a support structure comprising centering mounting means for the containers and means for simultaneously pressing out the materials from the containers, the pressing means comprising simultaneously operable piston rods with piston plates attached to ends of the piston rods and displaceable in the interiors of the containers in a direction toward the discharge orifices, the cutting device being mounting one of on and in the discharge orifices of the containers, the cutting device further comprising a mounting plate having a first dispensing aperture for dispensing the first material and a second dispensing aperture for dispensing the second material, the first dispensing aperture being spaced apart from the second dispensing aperture, the mounting plate comprising first and second connection pieces, wherein the first connection piece is in communication with the first discharge orifice and the second connection piece is in communication with the second discharge orifice, and wherein, on a side of the mounting plate facing away from the connection pieces, the mounting plate has first and second

guideways, a slider having two cutters being movably mounted on the guideways, whereby, when the slider is moved relative to the guideways, the cutters cut the first and second materials being dispensed from the first and second containers and subsequently close the first and second dispensing apertures of the mounting plate.

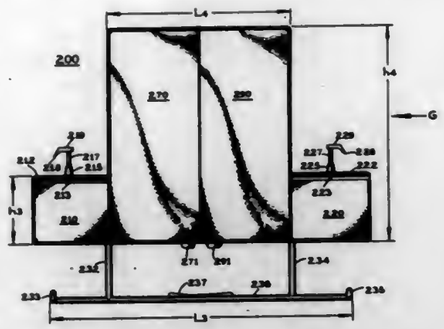
5,577,638
BOTTOM POURING POT
Nobuyuki Takagawa, 5-12-20, Sagisu, Fukushima-ku, Osaka, Japan
Filed Feb. 21, 1995, Ser. No. 391,917
Int. Cl.[6] A47J *31/00*; B65D *37/00*;*5/06*
U.S. Cl. 222—185.1 **4 Claims**



1. A bottom pouring pot comprising:
a cartridge for containing liquid, and a mounting base on which the cartridge is mounted detachably,
wherein the cartridge incorporates an inner container having an opening at the lower end, the opening being stopped with a detachable plug body,
a discharge port is formed in the plug body, and first opening means for closing the discharge port is provided at the discharge port,
a flow path having an upper end opened at a position corresponding to the discharge port is formed in the mounting base,
push-up means is formed for pushing up the first opening means by resisting its thrusting force to open the discharge port when the cartridge is mounted,
a valve for controlling pouring of the liquid is formed in the flow path, and
a pour outlet at the lower end of the flow path is led out to the pouring position.

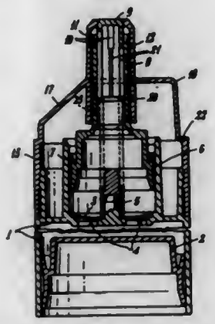
5,577,639
STORAGE AND DISPENSER ORGANIZERS
Horace S. White, 2101 N. Dixie Highway, Fort Lauderdale, Fla. 33305
Filed Jul. 10, 1995, Ser. No. 499,956
Int. Cl.[6] B67D *1/07*
U.S. Cl. 222—192 **6 Claims**

1. An integrated organizational portable storage and dispensing device for use along sinks in kitchens and bathrooms, comprising:
a first liquid pump dispensing container;
a second liquid pump dispensing container; and
a storage container with a door connected to and aligned between the first dispensing container and the second dispensing container;



a rollable means for allowing the door to roll up into the storage container, wherein the first dispensing container, the second dispensing container and the storage container are portable as a single unit.

5,577,640
CREAMY SUBSTANCE DISPENSER, IN PARTICULAR FOR TOOTHPASTE
Giovanni Albini; Tommaso Ruscitti, both of Milan, and Franco Carlappi, Pianello Valtidone, all of Italy, assignors to TER S.r.l., Milan, Italy
Filed Mar. 10, 1995, Ser. No. 401,903
Claims priority, application Italy, Jun. 1, 1994, MI94A1139
Int. Cl.[6] B67D *5/42*
U.S. Cl. 222—378 **3 Claims**



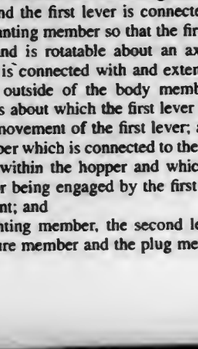
1. A creamy substance dispenser comprising:
a main body defining a chamber fillable with a creamy substance, said chamber housing a movable base which sealingly contacts and is freely slidable along an inner cylindrical surface of the chamber wherein the main body has a hole formed therein and a non-return suction valve closing said hole, the hole communicating with a metering chamber from which said creamy substance can be expelled;
a slidable piston sealingly housed in the metering chamber;
a hollow stem extending from said piston wherein said stem is closed at a free end thereof and is provided laterally with apertures located in proximity with said end;
a substantially rigid skirt coupled to the main body and projecting from said main body, said hollow stem extending into a hollow appendix of said rigid skirt, and wherein said hollow appendix is provided with a discharge hole through which the creamy substance is expellable, discharge hole of said hollow appendix, said discharge hole of said hollow appendix being sealed by said closed free end of said hollow stem, when the dispenser is in a rest state;
a compressed spring which acts against the free end of the stem;

a manually tiltable lever projecting from the skirt and having at least one fin which is engageable with said piston so as to move the piston axially wherein the stem is withdrawn from said discharge hole when said lever is pressed;
wherein said metering chamber is laterally formed by an open-end cylindrical tubular wall forward of, and made in one piece with the main body and extending therefrom, said piston comprises one piece with said hollow stem, and said lever comprises a tongue formed of one piece with said skirt and wherein said tongue extends from said skirt.

5,577,641
DISPENSING ASSEMBLY COMPRISING A CYLINDRICAL CONTAINER INCLUDING A PISTON
Vincent De Laforcade, Rambouillet, and Frank Lacout, Athis-Mons, both of France, assignors to L'Oreal, Paris, France
PCT No. PCT/FR94/00639, § 371 Date Jan. 26, 1995, § 102(e) Date Jan. 26, 1995, PCT Pub. No. WO94/29190, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 1, 1994, Ser. No. 374,718
Claims priority, application France, Jun. 4, 1993, 93 06704
Int. Cl.[6] B67D *5/42*
U.S. Cl. 222—386 **11 Claims**

1. Dispensing assembly, comprising:
a container for a product, said container having a cylindrical portion; and
a dispensing member for dispensing the product,
wherein a piston is movably mounted in the cylindrical portion of the container, has a body made of a rigid material, has a cylindrical part corresponding to the cylindrical portion of the cylinder, and carries a seal extending between the cylindrical portion of the container and the cylindrical part of the piston,
wherein said seal is made of an elastic material overmolded on the body of the piston and has at least one semitoric portion formed as one piece with the seal,
wherein the elastic material of the seal and the rigid material of the piston are chemically compatible and bind the seal to the body of the piston, thereby non-movably fixing the seal relative to the piston, and
wherein the seal has a sealing lip, to provide a seal between the container and the piston, said seal and lip being formed as one piece.

5,577,642
SYSTEM FOR METERING A PRODUCT IN POWDER FORM
Petr Masek, Granges, and Jean-François Tinembart, Yverdon, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland
Filed Apr. 11, 1995, Ser. No. 420,016
Claims priority, application European Pat. Off., May 6, 1994, 94107109
Int. Cl.[6] G01F *11/28*
U.S. Cl. 222—438 **17 Claims**



1. A dispensing device for containing and metering a powder-form product comprising:
a product-containing and delivery body member which has wall portions which define first and second interior portions and two opposing openings wherein the first interior portion has a cross-section smaller than a cross-section of the second interior portion so that the first interior portion forms a tube and extends to a tube opening and so that the second interior portion forms a hopper which extends from a bopper opening for introduction of powder-form product into the bopper and from which the tube extends for delivering powder-form product from the hopper to the tube opening for dispensing powder-form product and wherein the tube comprises first, second, third and fourth successive tube interior wall portions, wherein the first tube portion extends from the hopper and the fourth tube portion contains the tube opening, wherein the second tube portion has a cross-section larger than the first and third tube portions for forming at least one metering chamber and wherein the fourth tube portion has a cross-section smaller than the first and third tube portions for forming a flow chute;
a lid for covering the hopper opening;
a closure member having a cross-section configured for sliding in the tube and for obstructing the first and third tube portions to passage of powder-form product;
a plug member which is connected with the closure member and which has a cross-section configured for movement in the fourth tube portion and for closing the tube opening;
a connecting member which is connected to and extends from the closure member towards the hopper;
a control system comprising a mounting member and first and second levers wherein the mounting member is affixed with the hopper and the first lever is connected with and extends from the mounting member so that the first lever extends into the hopper and is rotatable about an axis and wherein the second lever is connected with and extends from the mounting member outside of the body member and is rotatable about the axis about which the first lever rotates for actuating a rotational movement of the first lever; and
a housing member which is connected to the connecting member and extends within the hopper and which is configured and positioned for being engaged by the first lever for reciprocative movement; and
wherein the mounting member, the second lever, the connecting member, the closure member and the plug member are configured

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and positioned so that upon rotation of the second lever to a first position, the first lever engages the housing member for sliding the closure member and plug member in the tube so that the closure member slides from a position in the third tube portion past the metering chamber so that powder-form product passes from the metering chamber to the flow chute and so that the tube opening is open so that flow of powder-form product from the metering chamber is not obstructed by the plug member and so that upon rotation of the second lever to a second position, the first lever, housing member, closure member and plug member reciprocate so that the plug member closes the tube opening and the closure member slides to the position in the third tube portion to obstruct powder-form product flow.

5,577,643

CLOSURE AND CONTAINER

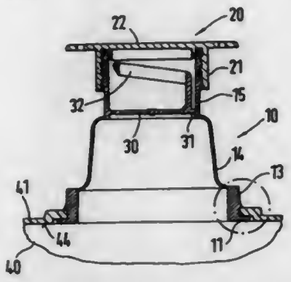
Bernd Stolz, Neunkirchen, Germany, assignor to Heinrich Stolz GmbH & Co. KG, Germany

Filed Nov. 16, 1994, Ser. No. 340,589

Claims priority, application Germany, May 19, 1994, 44 17 492.6

Int. Cl.[6] B65D *25/44*

U.S. Cl. 222—529 **10 Claims**



1. In a container closure of a container having a lower closure element and a closure cap placed on the lower closure element, the lower closure element being connected to an opening of a container by a base element having a contact flange which rests on an interior of the container against a contact face formed in an area of the opening of the container, the improvement comprising: said base element comprising at least one locking projection (**12**) disposed at a distance from the contact flange (**11**) in an axial direction of the container closure, said at least one locking projection (**12**) being embodied as one of a circumferential collar and a plurality of projections (**12**) disposed offset over the circumference of the base element (**13**) extending over a rim of the opening (**43**), holding said lower closure clement axially immovable in the container (**40**), said at least one locking projection (**12**) having a deflection slope (**12.1**) rising in a direction toward the closure cap (**20**) and transitioning towards the contact flange into a locking flank which rests around the rim (**42**) of the opening (**43**) on the outside of the container (**40**), the deflection slope (**12.1**) passing over in a section (**13.1**) extending toward the closure cap and having at its end portion directed toward the closure cap exterior dimensions which are one of the same as and less than the dimension of the opening (**43**).

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TOY DOLL AND HANGER ASSEMBLY

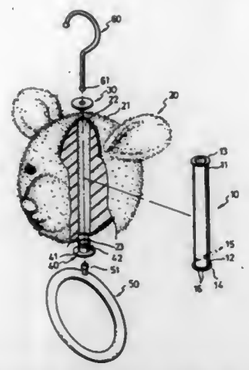
Chao-Yang Chen, 8F-3, No. 321, Fu Hsing S. Road, Sec. 1, Taipei, Taiwan

Filed Feb. 12, 1996, Ser. No. 600,190

Int. Cl.[6] A47G *25/14;25/28*

U.S. Cl. 223—85 **13 Claims**

1. A toy doll and hanger assembly comprising:



a rod member having a first end, a second end, a first outward flange raised around said first end, and a second outward flange raised around said second end;

a toy doll covered on said rod member, having a skin, a first hole and a second hole through said skin corresponding to the first end and second end of said rod member;

a first cap fastened to the first end of said rod member and the first hole of said toy doll to hold down the periphery of the first hole of said toy doll, permitting the periphery of the first hole of said toy doll to be retained between said first cap and the first outward flange of said rod member;

a second cap fastened to the second end of said rod member and the second hole of said toy doll to hold down the periphery of the second hole of said toy doll, permitting the periphery of the second hole of said toy doll to be retained between said second cap and the second outward flange of said rod member; and

hanger means detachably connected to said second cap.

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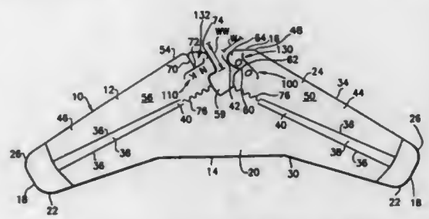
SHOULDER GUARD WITH POSITIVE MECHANICAL LOCK AND VISUAL INDICATORS

Joel N. Seitz, Parsippany, N.J., assignor to P.D.S. Product Development Corp., South Hackensack, N.J.

Filed Nov. 29, 1995, Ser. No. 564,412

Int. Cl.[6] A47G *25/20;25/14*

U.S. Cl. 223—87 **10 Claims**



1. A shoulder guard for a garment hanger, the shoulder guard being of the type erected from an essentially flat sheet of material to include a first panel and a second panel, with at least the first panel following a desired convex contour configuration to complement essentially a garment to be hung on the hanger, the first and second panels each extending longitudinally between opposite ends, the shoulder guard comprising:

a first edge extending longitudinally along the first panel;

a second edge extending longitudinally along the second panel;

an apical portion extending longitudinally between the opposite ends of the panels, laterally intermediate the first edge and the second edge;

a gap located between the opposite ends of the second panel and dividing the second panel into first and second sub-panels each extending between the gap and a corresponding opposite end of the second panel, each sub-panel including a second edge portion, an outer surface and an inner surface;

an opening located between the opposite ends of the first and second panels, intermediate the first and second edges, the opening communicating with the gap;

a first slit in the first sub-panel, the first slit extending generally laterally from the opening toward the corresponding second edge portion and including a terminus spaced laterally away from the corresponding second edge portion, the first slit being spaced longitudinally from the gap toward the corresponding end of the first panel to establish a first tab on the first sub-panel, adjacent the gap, between the gap and the first slit; and

a second slit in the second sub-panel, the second slit extending generally laterally from the corresponding second edge portion toward the apical portion and including a terminus spaced laterally away from the apical portion, the second slit being spaced longitudinally from the gap toward the corresponding end of the second panel to establish a second tab on the second sub-panel, adjacent the gap, between the gap and the second slit;

the relative location and extent of the first and second slits being such that upon interengagement of the first and second slits and juxtaposition of the terminus of the first slit with the terminus of the second slit, the first and second sub-panels are locked together against relative longitudinal movement, with at least the first panel bowed into the desired convex contour configuration.

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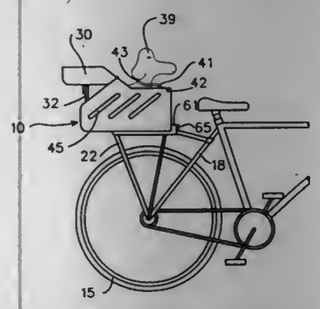
PET CARRIER FOR BICYCLE

Richard D. White, 516 Ginger Sq., NE., Leesburg, Va. 22075

Filed Feb. 6, 1995, Ser. No. 386,519

Int. Cl.[6] B62T *7/04*

U.S. Cl. 224—422 **13 Claims**



1. A pet carrier for use with a bicycle having a rear wheel and a seat, the carrier comprising:

a box-like container having a front end and a rear end, generally vertical sides, a top and a flat bottom, the rear container end being shorter than the front container end;

a hatch forming a front portion of said container top, said hatch connected by hinge means to a rear portion of said container top, and adapted to swing open upwardly and backwardly about said hinge means, the rear portion of said container top sloping upwardly from the rear container end to the hinge means;

post means mounted on the rear portion of said container top to support said hatch when it is in an open position; and

means fixed to said container bottom adapted to detachably couple said container to a rack means, said rack means adapted to be mounted above the rear wheel of the bicycle and behind the seat thereof.

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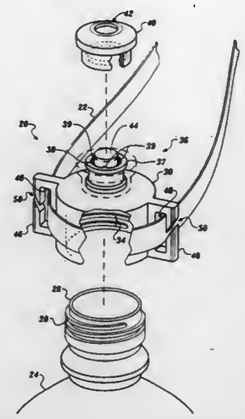
BOTTLE CARRYING DEVICE

Diana Pittarelli, 16406 Briar Patch Pl., Miami Lakes, Fla. 33014, and Michael J. Langieri, Jr., 425 Inverness La., Longmeadow, Mass. 01106

Filed Jun. 7, 1995, Ser. No. 474,066

Int. Cl.[6] A45F *5/00*

U.S. Cl. 224—148.6 **5 Claims**



1. A bottle carrying device for carrying a conventional bottle from a flexible extension member, wherein the bottle includes an externally threaded end, the device comprising:

(a) a main body portion including a first end and a second end, the first end having a substantially cylindrical recess formed therein, the recess including internal threads adapted to threadably receive the externally threaded end of the bottle, the second end having a passage formed therein, the passage connected in fluid communication with the recess;

(b) a spout connected to the second end of the main body portion, and connected in fluid communication with the passage, the spout including a cap slidable from a first position, to a second position, a path of fluid communication being open through the spout when the cap is in the first position, and the path of fluid communication through the spout being closed when the cap is in the second position; and

(c) at least one wing connected to the main body portion, the wing having an aperture formed therethrough for receiving the flexible extension member, the at least one wing includes a channel formed therein, the channel extending from the aperture in the at least one wing to the exterior of the at least one wing, wherein the flexible extension member is slidable through the channel to the aperture.

5,577,648

LOAD CARRIER

Dan Sason, Kochav Yair, and Ziv Orovan, Hinanit, both of Israel, assignors to Modan Industries (1983) Ltd., Tel Aviv, Israel

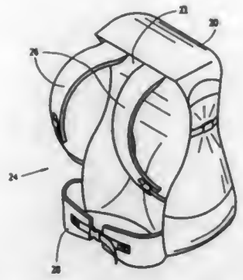
Filed Dec. 7, 1992, Ser. No. 987,016

Claims priority, application Israel, Dec. 13, 1991, 100374; Aug. 13, 1992, 102800; Aug. 21, 1992, 102903

Int. Cl.[6] A45F *3/04*

U.S. Cl. 224—637 **4 Claims**

1. A body engaging load carrier including a load support and at least one of a shoulder strap assembly and a hip engaging belt assembly supporting said load support, wherein at least one of said shoulder strap assembly and said hip engaging belt assembly is at least partially filled with a silicone gel, to conform in a dynamic



manner to the shape of a body part engaged thereby in order to increase the size of the effective force bearing region of the body part.

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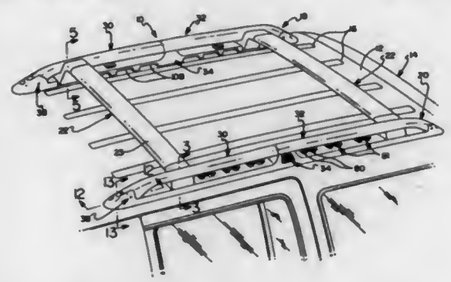
HINGED RAIL ARTICLE CARRIER

James A. Lee, Jr., Warren; Douglas L. Wickham, Troy; Gregory L. Ellers, Royal Oak; William D. Batterson, Grand Blanc, and Craig A. Stapleton, Rochester Hills, all of Mich., assignors to Advanced Accessory Systems L.L.C., Sterling Heights, Mich.

Continuation-in-part of Ser. No. 124,984, Sep. 21, 1993, Pat. No. 5,411,196. This application Aug. 31, 1994, Ser. No. 299,208

Int. Cl.[6] B60R *9/04*

U.S. Cl. 224—321 **16 Claims**



1. A luggage carrier comprising:

a pair of transversely spaced, parallel rails, each rail having an upper arm, a lower arm registering with said upper arm and a support positioning said upper arm at a spaced position above said lower arm;

at least one crossbar extending transversely across said rails, each said crossbar having first and second ends, each end dimensioned to be received between said upper and lower arms of said rails and including a retainer;

wherein at least one rail includes a hinge coupling said upper arm to said lower arm for pivotal movement to and from said spaced position to an open position; and

wherein said lower arm includes a lip vertically overlapping said retainer to retain said crossbar against vertical separation from its position on the lower rail when said crossbar end is received on portions of said lower rail.

5,577,650

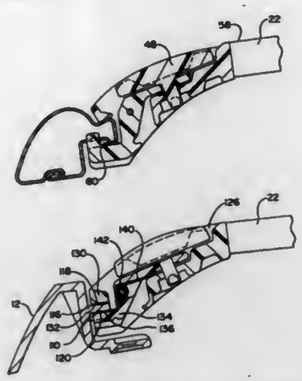
SPLIT STANCHION ARTICLE CARRIER WITH PIVOTING THUMBWHEEL

Craig A. Stapleton, Troy, Mich., assignor to Advanced Accessory Systems L.L.C., Sterling Heights, Mich.

Filed Dec. 6, 1994, Ser. No. 349,792

Int. Cl.[6] B60R *9/00*

U.S. Cl. 224—321 **11 Claims**



7. A vehicle panel mounted article carrier, comprising:

a pair of side rails;

a crossbar;

a pair of stanchions connected to opposite ends of said crossbar and supporting said crossbar with respect to said side rails, at least one of said stanchions having a ramped surface;

a first jaw member fixed to at least one of said stanchions for engagement with one of said side rails;

a second jaw member pivotally coupled to said one of said side rails, said second jaw member having first and second ends thereof, and including a jaw surface at the first end thereof, said pivotal coupling being intermediate said first and second ends;

a clamp operatively connected to said second end of said second jaw member for clamping said first and second jaw members to secure said crossbar with respect to said one of said side rails, said clamp including a thumbwheel and stem carried by said second jaw member, said stem including a cam follower surface thereon for engagement with said ramped surface to selectively secure said second jaw member with respect to said at least one stanchion, and said clamp being positioned at said second end of said second jaw member; and

wherein said second jaw member is spaced sufficiently away from said one of said side rails when said second jaw member is in an unclamped position so as to provide clearance from said one of said side rails for disassembly.

5,577,651

Patent Not Issued For This Number

5,577,652

CONVERTIBLE BACKPACK

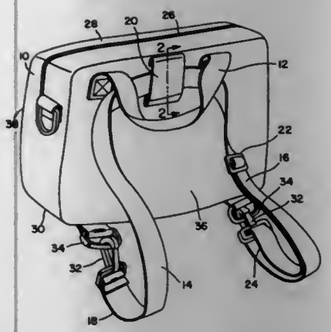
Cheryl G. Cooper, Seaforth, Australia, assignor to Cher (Int'l) Pty. Ltd., Australia

Continuation of Ser. No. 74,715, Jun. 9, 1993, abandoned, which is a continuation of Ser. No. 773,141, Oct. 8, 1991, abandoned. This application Apr. 21, 1994, Ser. No. 230,854

Int. Cl.[6] A45F *4/02*

U.S. Cl. 224—578 **13 Claims**

1. A convertible backpack having a base and a top comprising:



a plurality of sides including a back panel, the plurality of sides defining an enclosure having means for opening and closing the enclosure disposed at the top of the backpack;

an anchoring loop secured to the back panel and arranged substantially vertically near the top of the backpack to provide a gap oriented horizontally;

a flexible handle having two ends disposed proximately to opposite sides of the anchoring loop and the ends secured to the back panel at one of a level of the anchoring loop and a level below the anchoring loop, thereby defining an opening through the handle; and

a single shoulder strap having a first end connected to the back panel, a second end and an adjusting buckle, said second end and said adjusting buckle adapted to pass slidably through the anchoring loop, said second end connected to the back panel such that slack in the shoulder strap and the adjusting buckle may be pulled through the gap of the anchoring loop to provide a single shoulder harness in which the backpack is maintained in a substantially upright position when hung from a shoulder;

wherein the handle hangs below the anchoring loop when the backpack is in a substantially upright position.

a storage pouch on the waist band, the storage pouch having an open interior that is capable of holding supplies used by said blood collection person; and

a plurality of blood collection tube receptacles supported by the storage pouch, the receptacles each being sized and positioned so as to receive and support blood collection tubes respectively in a generally upright position, the blood collection tube receptacles being mounted in respective openings in a top surface of a secondary pouch positioned on a side of the storage pouch, the secondary pouch having a closable opening other than the tube openings in the top surface thereof, the closable opening leading to the interior of the secondary pouch, the tube receptacles having open tops shaped such that blood collection tubes of a selected size fit into the receptacles.

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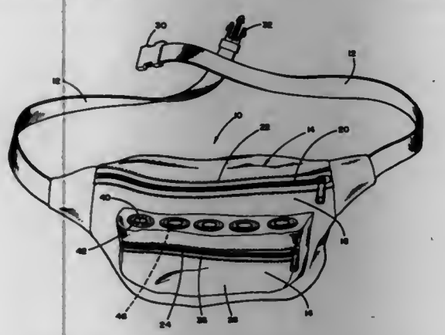
BLOOD COLLECTION TUBE HOLDER

Michael C. Bieker, 6358 Los Altos Dr., Rockford, Mich.

Continuation-in-part of Ser. No. 257,685, Jun. 9, 1994. This application Dec. 30, 1994, Ser. No. 367,838

Int. Cl.[6] A45F *5/00*

U.S. Cl. 224—684 **12 Claims**



1. A blood collection tube holder comprising:

a waist band that fits around the waist of a person collecting blood samples, the waist band including means for holding the waist band on the waist of said person;

5,577,654

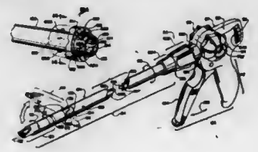
SURGICAL INSTRUMENT

Gregory D. Bishop, Hamilton, Ohio, assignor to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Division of Ser. No. 259,322, Jun. 10, 1994, which is a continuation-in-part of Ser. No. 959,184, Oct. 9, 1992, Pat. No. 5,381,943. This application May 23, 1996, Ser. No. 651,463

Int. Cl.[6] A61B *17/068*

U.S. Cl. 227—175.1 **2 Claims**



1. In a surgical instrument having a shaft carried in a frame and rotatable about a longitudinal axis relative to said frame, a shaft rotation mechanism comprising:

a plurality of circumferentially spaced teeth defined in said frame around said longitudinal axis;

first and second arms extending outwardly from said shaft, each said arm having a deflection surface and an engaging surface, said deflection and engaging surfaces of said first arm being oriented oppositely relative to the deflection and engaging surfaces of said second arm, said engaging surface of said first arm being configured for engaging said teeth to prevent rotation of said shaft relative to said frame in a first direction, said engaging surface of said second arm being configured for engaging said teeth to prevent rotation of said shaft relative to said frame in a second, opposite direction; and

a knob mounted on said frame for rotation relative to said frame about said longitudinal axis, said knob receiving a proximal portion of said shaft and engaged with said shaft to permit a predetermined lost motion angular displacement relative to said shaft in each of said first and second directions of rotation, said knob including first and second circumferentially spaced cam surfaces for engaging and deflecting said first arm away from said teeth with said first cam surface

when said knob is rotated in said first direction to the end of the range of said lost motion and for engaging and deflecting said second arm away from said teeth with said second cam surface when said knob is rotated in said second direction to the end of the range of said lost motion.

5,577,655

FLEXIBLE METAL-CONTAINING TAPES OR FILMS AND ASSOCIATED ADHESIVES

Howard Mizuhara, Hillsborough, Calif., assignor to The Morgan Crucible Company plc, Berkshire, England

Filed Nov. 30, 1994, Ser. No. 346,784
Int. Cl.[6] B23K *35/368*
U.S. Cl. 228—56.3 8 Claims



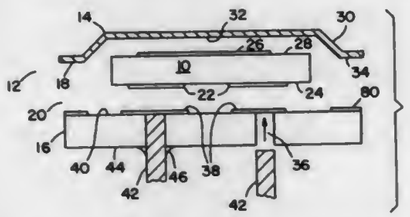
1. A brazing system comprising:
a. an organic bonded, flexible metal tape consisting essentially of, by weight, 95–99% of a brazing alloy and a second alloy having a melting point between approximately 1300°–1600° C. and 5–1% of solids of a casting vehicle containing polytetrafluoroethylene as an inert organic substance; and
b. means, comprising an inorganic composition selected from the group consisting of sodium silicate, boric acid, sodium tetraborate, sodium fluoride, and sodium aluminum fluoride, for adhering the flexible metal tape to a substrate.

5,577,656

METHOD OF PACKAGING A SEMICONDUCTOR DEVICE

Victor A. K. Temple, Clifton, N.Y., and Homer H. Glascock, II, Millis, Mass., assignors to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 217,801, Jan. 6, 1994, Pat. No. 5,446,316.
This application Jun. 5, 1995, Ser. No. 462,856
Int. Cl.[6] H01L *23/10;21/52*
U.S. Cl. 228—123.1 9 Claims



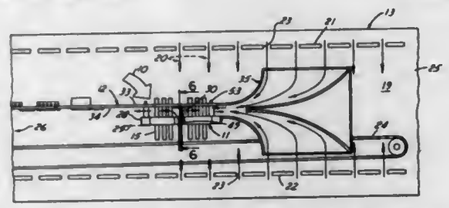
1. A method of hermetically sealing a semiconductor device in a package and improving heat transfer from the device, the device having a first, upward facing flat surface and a second, downward facing surface having plural flat connect areas thereon, the method comprising the steps of:
(a) bonding first flat surfaces of plural foils to a flat interior portion of an electrically insulative and thermally conductive ceramic base, the base having plural openings therethrough that correspond to the plural contact areas and that each are hermetically sealed by one of the foils, the base having an edge that extends beyond an edge of the device;
(b) bonding a flat interior portion of a lid to the first surface of the device in a thermally conductive relationship, the lid having an edge that is congruent with the edge of the base;
(c) bonding each of the opposing flat surfaces of the first to one of the plural contact areas; and
(d) bonding the lid and the base at their congruent edges to hermetically seal the device thereinside.

5,577,657

METHOD OF IMPROVED OVEN REFLOW SOLDERING

Andrew Z. Glovatsky, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 1, 1995, Ser. No. 522,890
Int. Cl.[6] H05K *3/34*
U.S. Cl. 228—180.1 11 Claims



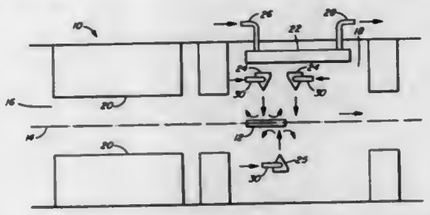
1. A method of efficiently reflow soldering one or more devices to a printed circuited board within a convective heating oven, each device having a plurality of plate supported connecting pins that are to be soldered within respective mating openings of the printed circuit board for electrical connection, the method comprising:
(a) placing a solder paste in each of said openings;
(b) assembling said device to the printed circuit board by positioning the plate of the device along, but in spaced relation to, the printed circuit board to define a planar space therebetween, with the pins extending into said openings and into said solder paste to thereby form as assembly; and
(c) passing said assembly through the convective heating oven for a time period to melt the solder paste and form a solid connection upon removal of the convective heat, said passing being carried out by use of one or more convective heat focusing features that guide convective heat flow between said plate and printed circuit board to enhance convective heating of the solder paste from both sides of the printed circuit board.

5,577,658

GAS KNIFE COOLING SYSTEM

Joel B. Bailey, Arlington; Sabi Avramescu, Colleyville, and Tad Formella, Mansfield, all of Tex., assignors to Electrovert USA Corp., Camdenton, Mo.

Filed Jun. 23, 1995, Ser. No. 493,552
Int. Cl.[6] H05K *3/34*
U.S. Cl. 228—222 18 Claims



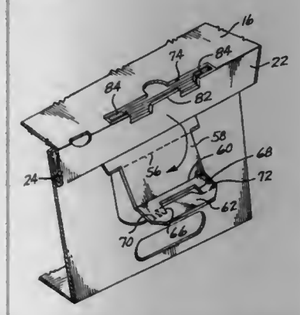
1. A gas knife cooling system for a reflow soldering apparatus having a heating section followed by a cooling section, with a conveyor for carrying products to be soldered through the apparatus, the gas knife cooling system comprising at least one gas knife in the cooling section positioned to direct a gas stream at soldered products on the conveyor to cool the products, and including a heater associated with the gas knife activated for predetermined cleaning cycles to heat the gas knife to a temperature above flux vaporization temperature of flux deposits from the soldered products.

5,577,659

LOCKING FEATURE FOR CONTAINER

Craig A. Ades, Yuma, Ariz., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Jun. 8, 1995, Ser. No. 488,637
Int. Cl.[6] B65D *43/02*
U.S. Cl. 229—125.29 3 Claims



1. A two piece container for packaging product, in which a bottom tray has a bottom wall with an upper surface and upstanding side walls and a telescoping top cover having downwardly depending side walls such that said side walls on the cover slide within and are juxtaposed to the upstanding side walls, having the improvement comprising:
at least one slot with a top edge in at least one of the tray side walls extending along a lower edge thereof and having a width large enough to accept the
at least one slot with a top edge in at least one of the tray side walls extending along a lower edge thereof and having a width large enough to accept the thickness of the paperboard within that portion of the top cover in proximity to the at least one slot,
a hinged foldable locking strap having an outer end cut from a portion of the side wall on the cover in proximity to the at least one slot and having at least two hinge lines therein extending substantially parallel to the slot and adapted to be folded outwardly, downwardly, over a juxtaposed portion of the upstanding side wall, and into the slot where it removably holds the top cover to the bottom tray and
a tab extending downwardly from the top edge of the slot and terminating above the plane of the bottom surface of the bottom tray and a flexible hooking means in the locking strap proximate to its outer end for flexibly engaging the tab and removably locking the strap within the slot in the bottom tray.

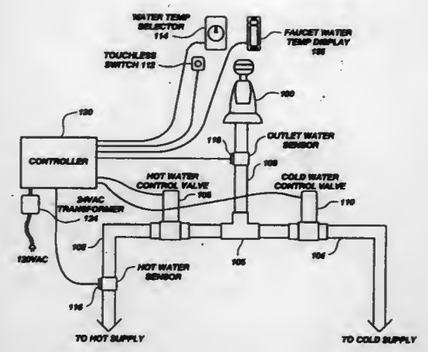
5,577,660

TEMPERATURE SENSING AUTOMATIC FAUCET

K. Gene Hansen, 8935 Kings Hill Dr., Sandy, Utah 84093

Filed Dec. 9, 1994, Ser. No. 352,523
Int. Cl.[6] G05D *23/13*
U.S. Cl. 236—12.12 10 Claims

1. A temperature-regulating automatic faucet apparatus comprising;
a spout for delivering water to a user location;
a hot water supply line having a hot water valve controlling the flow of hot water therefrom;
a cold water supply line having a cold water valve controlling the flow of cold water therefrom;
a mixing region connected to said hot water supply line and to said cold water supply line upstream of said spout and downstream of said cold water valve and said hot water valve;
a first temperature sensor located to sense the temperature of hot water within said hot water supply line upstream of said mixing region, and constructed to output a first temperature signal indicative thereof; and
a proportioning valve downstream of said hot water supply line and said cold water supply line and upstream of said mixing region for providing fixed hot and cold water;
an automatic sensor disposed to detect an object placed in a signal location, and constructed to generate a user presence signal indicative of the presence of an object in the signal location; and
control means for receiving said user presence signal, reading said first temperature signal, controlling said hot water valve and said cold water valve according to said first temperature signal in response to said user presence signal, said control means having an internal memory and being capable of providing a disproportionately higher flow from said hot water valve when said first temperature signal indicates a temperature below a hot water supply temperature specified in said internal memory.

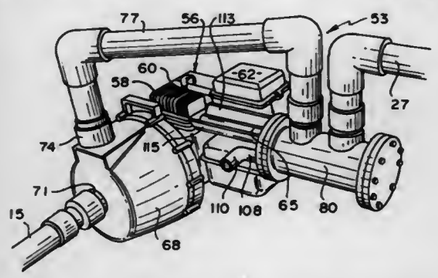


5,577,661

POOL WATER HEATING AND CIRCULATING SYSTEM

Edwin E. Puett, Jr., Stuart, Fla., assignor to Anser, Inc., Stuart, Fla.

Filed Aug. 21, 1995, Ser. No. 517,340
Int. Cl.[6] F24D *3/02*
U.S. Cl. 237—1 R 20 Claims



1. A pool water heating and circulating system comprising:
an internal combustion engine having an output driveshaft and an exhaust pipe;

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a pump drivingly connected to the output driveshaft of said internal combustion engine, said pump including an input port adapted to be connected to a suction conduit for drawing water from a pool and an output port;

a heat exchanger including a housing divided into first and second internal chambers in intimate contact with each other, said housing being provided with first, second, third and fourth ports with said first and second ports opening into said first chamber and said third and fourth ports opening into said second chamber, said first port being connected to said exhaust pipe and said second port being open to atmosphere such that exhaust developed during operation of said internal combustion engine is directed into said first chamber through said exhaust pipe and said first port, flows through said first chamber and exits said first chamber through said second port, said fourth port being adapted to be attached to a return conduit for delivering water to a pool; and

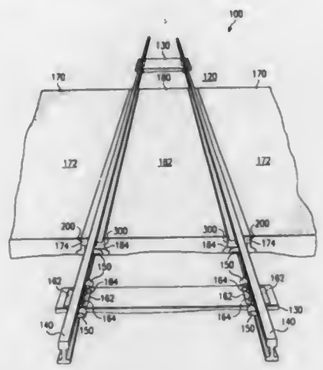
transfer conduit means fluidly interconnecting the output port of said pump and the third port of said heat exchanger such that water drawn into said pump from a pool through said inlet port can be delivered to the third port of said heat exchanger through said transfer conduit means heated by direct contact with said first chamber as the water flows through said second chamber and then can exit the housing of said heat exchanger through said fourth port to be delivered back to the pool.

5,577,662

EMBEDDED RAILWAY TRACK SYSTEM

Thomas A. Hogue, 702 Williamsburg, Ennis, Tex. 75119, and William K. Hull, 645 Chestnut Ave. #204, Long Beach, Calif. 90802

Filed Apr. 20, 1994, Ser. No. 230,393
Int. Cl.[6] E01C *9/04*
U.S. Cl. 238—8 **24 Claims**



1. A rail crossing seal system comprising an elongated insert installed between a panel and a rail, said rail being of the kind having a head, a web, and a base, said elongated insert being formed of resilient material and having a profile comprising:

a main body having a panel side abuttable against said panel;

said main body having a top surface offset downwardly when said main body is installed from the top of said rail a distance sufficient to accommodate the flange of a wheel on said rail;

a cantilevered leg projecting outwardly from said main body toward said rail and abutting the web thereof when installed; and

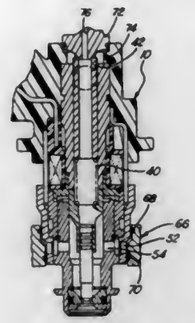
a cantilevered resilient arm projecting upwardly and outwardly from said main body toward said rail and upwardly toward the head of said rail, said resilient arm being positioned above said leg, said resilient arm further having a rail end wedged under and against said rail head when installed.

5,577,663

BOTTOM FEED INJECTOR WITH TOP CALIBRATION FEED

Debora E. Nally, Williamsburg, and David P. Wieczorek, Newport News, both of Va., assignors to Siemens Automotive Corporation, Auburn Hills, Mich.

Filed May 19, 1995, Ser. No. 444,494
Int. Cl.[6] F02M *51/06*
U.S. Cl. 239—1 **20 Claims**



1. A bottom feed fuel injector for spraying fuel into an engine inlet air charge, the injector comprising a body having a nozzle at one axial end and a through bore from the nozzle having a closure at an opposite axial end, first and second axially spaced seals on the body intermediate the axial ends, fuel feed passages between the seals and communicating with the bore for feeding fuel to the nozzle in normal engine operation, electrically controlled valve mechanism for controlling fuel flow through the nozzle, said mechanism including an armature including a valve member biased toward closing against a seat by a spring disposed against the armature, the valve member being openable by electric actuation of the armature, an adjuster in the bore and engaging the spring for adjusting the bias of the valve member, said injector characterized in that said adjuster defines with said bore an auxiliary fuel passage from the closed axial end of said bore to said nozzle, whereby fuel may be delivered to the nozzle during calibration and run-in prior to the application of said closure.

19. A method of making a bottom feed fuel injector characterized by the steps of:

forming the injector with a conventional bottom feed fuel passage;

additionally forming the injector with a top feed fuel passage connecting internally with the bottom feed fuel passage;

calibrating the injector during manufacture by feeding calibration fluid through the top feed fuel passage while blocking the entrance to the bottom feed fuel passage to prevent fuel leakage; and

after calibration, closing the top feed fuel passage to prevent fuel flow therethrough, leaving the bottom feed fuel passage for admission of fuel during normal operation.

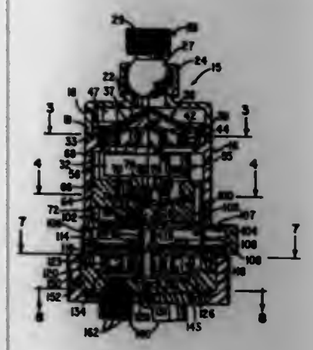
5,577,664

SHOWER HEAD WITH VARIABLE FLOW RATE, PULSATION AND SPRAY PATTERN

Charles J. Heltzman, 4340 Pahoa Ave., Honolulu, Hi. 96816

Continuation of Ser. No. 139,001, Oct. 21, 1993, Pat. No. 5,397,064. This application Mar. 13, 1995, Ser. No. 403,270
Int. Cl.[6] B05B *1/08;15/00*
U.S. Cl. 239—99 **15 Claims**

1. A shower head assembly comprising a housing, means including a plurality of orifices for directing water flowing from said housing in water streams forming spray, means including a rotary turbine wheel cooperating with said orifices for pulsating the water streams, and control means for hydraulically shifting said turbine wheel axially to a non-pulsating position.

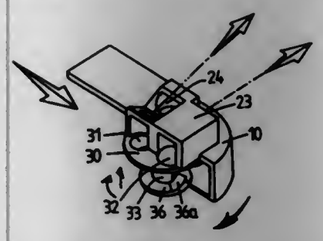


5,577,665

SPRAY ARM OF AUTOMATIC TABLEWARE WASHER

Jae W. Chang, Kyungki-Do, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 346,377, Nov. 29, 1994, abandoned. This application May 16, 1996, Ser. No. 650,067
Claims priority, application Rep. of Korea, Dec. 1, 1993, 26064/1993; Nov. 9, 1994, 29330/1994
Int. Cl.[6] B05B *3/06*
U.S. Cl. 239—256 **6 Claims**



1. A spray arm for an automatic tableware washer comprising:

a plurality of top spray nozzles provided on a top plate of said spray arm, the spray arm being reversibly rotatable and hollow;

a pair of first water jet nozzles provided on an end section of the spray arm;

a pair of second water jet nozzles provided on said end section of the spray arm and spaced apart from the first water jet nozzles by a predetermined distance;

a deflector provided on an end section of the spray arm for guiding water from said first and second water jet nozzles, having opposing side openings above the first water jet nozzles for guiding the water in opposing directions, and having a V-shaped cutout notch formed above the second water jet nozzles so as to form obliquely spaced-apart and opposing openings for appropriately guiding water; and

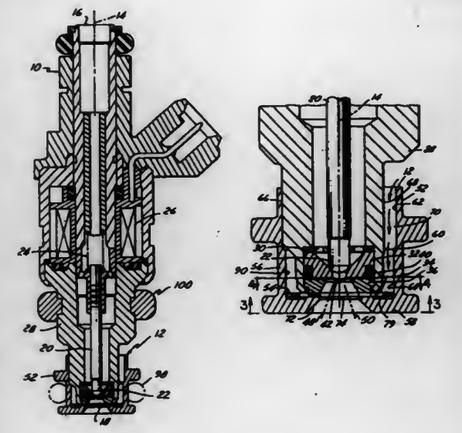
a rotary blade disc control unit placed in the interior of the spray arm under the first and second water jet nozzles, said control unit periodically alternately rotating the spray arm in an opposed direction.

5,577,666

AIR ASSIST ATOMIZER FOR A SPLIT STREAM FUEL INJECTOR

Jingming J. Shen, Newport News, Va., assignor to Siemens Automotive Corporation, Auburn Hills, Mich.

Filed Aug. 15, 1995, Ser. No. 515,475
Int. Cl.[6] F02M *61/00;61/18*
U.S. Cl. 239—290 **9 Claims**



1. An air-assisted fuel injector having a nozzle with a dual split stream thin edge orifice disk for metering fuel from the injector along two divergent axes, a substantially tubular shroud located around the nozzle, said shroud having an axially extending passageway for directing assist air to flow along the outside of said nozzle, an end wall radially extending from side wall for directing the assist air to an aperture in the end wall and a disk means spaced from the orifice disk and located between the end wall and bottom of the nozzle, the disk means comprising:

a central circular aperture located on the axis of said disk means, said aperture bounded by a first annulus that encircles and is spaced from the dual split stream axes as they pass through the plane formed by one of the surfaces of said disk;

six spaced circumferential discontinuities extending through said first annulus and in a direction away from said axis, a first set of two angularly spaced adjacent discontinuities aligned along imaginary lines extending through the axis of one of the fluid flow streams, a second set of two angularly spaced adjacent said discontinuities aligned along imaginary lines extending through the axis of the other of the fluid flow streams and remaining two said discontinuities being diametrically opposed and aligned along a diameter normal to and bisecting a diameter passing through the axes of the fluid flow streams;

a second annulus located around the periphery of the disk;

six openings bounded by the first and second annuli, each of said openings connected to one of said discontinuities and adapted to receive assist air from the passageway;

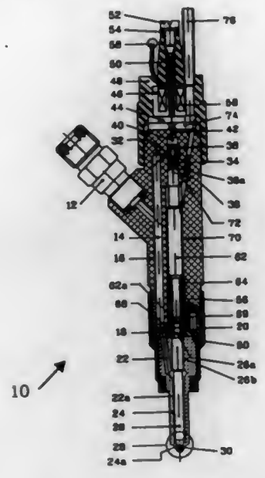
said two diametrically opposed discontinuities for forming an air curtain between the fluid flow streams maintaining substantial separation of the streams and said other four discontinuities for directing assist air into the fluid flow streams.

5,577,667

FUEL INJECTION VALVE

Marco A. Ganser, Zurich, Switzerland, assignor to Ganser-Hydromag, Zurich, Switzerland

Division of Ser. No. 172,298, Dec. 23, 1993, Pat. No. 5,458,293. This application Jul. 27, 1995, Ser. No. 507,961
Claims priority, application Switzerland, Dec. 23, 1992, 914/92
Int. Cl.[6] F02M 51/00
U.S. Cl. 239—533.8 11 Claims



1. Fuel injection valve for intermittent fuel supply into the combustion chamber of an internal combustion engine, comprising:

a housing,

a valve seat provided with at least one injection opening,

an elongated injection valve element arranged within the housing for movement in the direction of the longitudinal axis of the housing and interacting with the valve seat for closing the injection opening, the injection valve element being temporarily movable in axial direction away from the valve seat in order to open the injection opening,

a control chamber arranged within the housing which is connected on one hand to a high pressure region containing pressurized fuel and temporarily connectable on the other hand to a low pressure region via a control opening which is closed by means of an electromagnetically actuated pilot valve, the fuel pressure in the control chamber acting on the injection valve element, and pressing the latter onto the valve seat and the fuel pressure in the control chamber being dropped rapidly and built up again rapidly by actuating the electromagnetically actuated pilot valve to allow for the axial opening and closing motion of the injection valve element,

a hole or bore provided in the injection valve element and extending in the longitudinal axis of the latter and opening into the control chamber, and

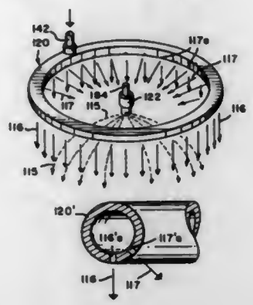
a control or throttle hole also provided in the injection valve element opening into the hole or bore and being in connection with the high pressure region, said control or throttle hole having a smaller diameter than the hole or bore.

5,577,668

TOROIDAL MANIFOLD SPARGER USED IN A FLUIDIZING SPRAY CHILLING SYSTEM

Chwan-Kong King, Edison; Chee-Teck Tan, Middletown; Lewis G. Scharpf, Jr., Fair Haven; David P. O'Chat, Morgan, and Marvin Schulman, Howell, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 103,595, Aug. 9, 1993, Pat. No. 5,417,153. This application Jan. 18, 1995, Ser. No. 374,112
Int. Cl.[6] B05B 1/14; B01J 13/02
U.S. Cl. 239—559 5 Claims



1. A toroidal manifold sparger comprising a hollow toroid member with an upper portion and a lower portion and having a plurality of first openings substantially evenly spaced along said lower portion thereof and all oriented perpendicular to said upper portion in a first and vertically downward direction, a plurality of second openings substantially evenly spaced along said lower portion of said toroid member and all oriented in a second direction, said first openings and said second openings being spaced apart from each other, each of said openings having a trajectory such that the trajectory of all of the first openings is parallel to each other and in a downward direction, and the second openings having a trajectory that radially inwardly converges in a downward direction, said first and second openings being the only openings in said lower portion, said toroid member being suspended from said upper portion.

5,577,669

APPARATUS AND METHOD FOR THE BENEFICIATION OF ORE AND COAL WITH THE AID OF ULTRASOUND

J. Bradley Vujnovic, 67194 Country Club Rd., Saint Clairsville, Ohio 43950

Filed Feb. 15, 1995, Ser. No. 388,744
Int. Cl.[6] B02C 19/18
U.S. Cl. 241—1 16 Claims

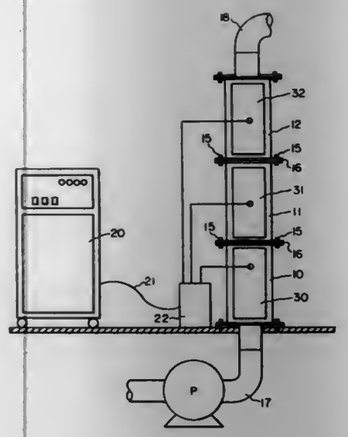
1. An apparatus for treating a slurry with ultrasound to improve separation based upon specific gravity comprising:

a plurality of modular conduit units assembled one above the other having substantially vertical walls defining a conduit having a flow space through which a slurry may be vertically pumped;

each said modular conduit unit having mounted thereon ultrasound transducers for transmitting ultrasound energy into the slurry being pumped through said modular conduit unit wherein the conduit has a section perpendicular to the direction of flow such that no volume of slurry passing through the conduit passes more than about three inches from a transducer;

means for exciting the ultrasound transducers; and

a pump for pumping slurry through the conduit, wherein the pump for pumping slurry through the conduit pumps the slurry vertically and upwardly through the conduit.



an opening plane of an outlet of said accelerating tube, said pulverizing chamber having a side wall against which coarse powder of the pulverized powder that has been pulverized by said impact member collides to further pulverize, with the closest distance, L_1, between said side wall and said impact member being shorter than the closest distance, L_2, between a front wall of said pulverizing chamber opposed to said impact surface and said impact member, wherein

a high-pressure gas ejection nozzle is provided in said back end of said accelerating tube, and a pulverization powder feed port is formed around said high-pressure ejection nozzle, and

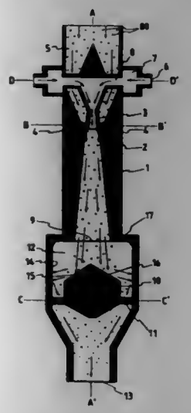
a tip of said high-pressure gas ejection nozzle is located in the vicinity of an accelerating tube throat of said accelerating tube.

5,577,670

PNEUMATIC IMPACT PULVERIZER SYSTEM

Kazuhiko Omata, Satte; Hitoshi Kanda, Yokohama; Momosuke Takaichi, Nagareyama; Satoshi Mitsumura, Yokohama, and Kazuyuki Miyano, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 912,695, Jul. 13, 1992, abandoned. This application Jan. 18, 1995, Ser. No. 375,173
Claims priority, application Japan, Jul. 16, 1991, 3-199901; Jul. 16, 1991, 3-199902; May 8, 1992, 4-116176
Int. Cl.[6] B02C 23/00;23/26
U.S. Cl. 241—5 65 Claims



41. A fine powder production apparatus comprising:

pneumatic classifying means, and

pneumatic impact pulverizing means, with

said pneumatic classifying means having a classifying chamber for classifying powder into at least fine powder and coarse powder;

first communicating means for feeding discharged coarse powder to said pneumatic impact pulverizing means; and

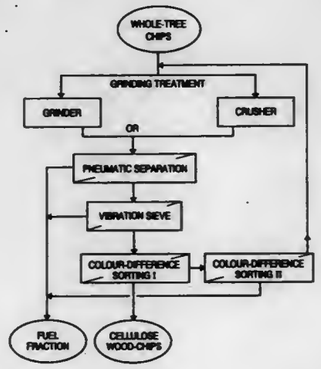
said pneumatic impact pulverizing means having an accelerating tube for carrying and accelerating coarse powder fed with high-pressure gas and a pulverizing chamber for pulverizing coarse powder, a back end of said accelerating tube provided with a coarse powder feed port for feeding coarse powder to said accelerating tube, said pulverizing chamber equipped with an impact member having an impact surface opposed to

5,577,671

METHOD FOR MANUFACTURING LOW BARK CONTENT WOOD CHIPS FROM WHOLE-TREE CHIPS

Veli Seppänen, Jyväskylä, and Kari Edelmann, Palokka, both of Finland, assignors to Valtion teknillinen tutkimuskeskus, Jyvaskyla, Finland

PCT No. PCT/FI93/00247, § 371 Date Dec. 6, 1994, § 102(e) Date Dec. 6, 1994, PCT Pub. No. WO93/25324, PCT Pub. Date Dec. 23, 1993
PCT Filed Jun. 8, 1993, Ser. No. 347,462
Claims priority, application Finland, Jun. 8, 1992, 922636
Int. Cl.[6] B02C 9/04;23/12
U.S. Cl. 241—14 7 Claims



1. A method for manufacturing predetermined low bark content wood chips and high bark content wood material from whole-tree chips having bark attached, the method comprising:

grinding the whole-true chips to loosen the majority of the bark attached to the chips and simultaneously reduce the particle size of the bark;

mechanically screening and pneumatically separating the ground chips;

the steps of grinding, mechanically screening and pneumatically separating resulting in an intermediate mass flow having a bark content of less than 10%; and then

separating the intermediate mass flow by color difference separation so as to separate the low bark content wood chips constituting a first output flow.

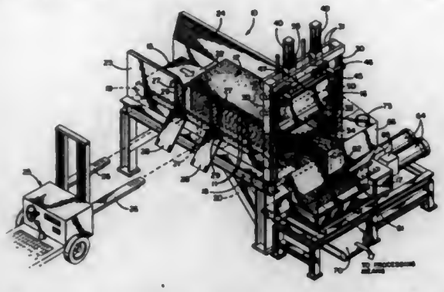
VOL 1192 ISS 4 NO 26 1996 UMI

5,577,672

METHOD AND APPARATUS FOR DISINTEGRATING WALLBOARD

William G. Holmes, LaGrange, Ill., assignor to Continental Tire Recyclers, L.L.C., Geneva, Ill.

Filed Feb. 21, 1995, Ser. No. 390,993
Int. Cl.[6] B02C *19/00;19/12*
U.S. Cl. 241—14 24 Claims



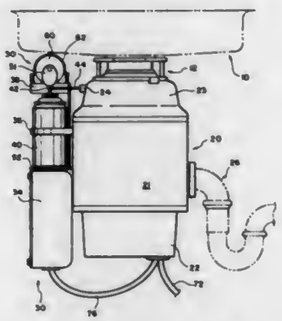
10. A method of disintegrating sheets of elongated flat wallboard comprising a layer of gypsum sandwiched between layers of paper and having a transverse width less than their length, said method comprising the steps of, advancing a stack of said sheets step-by-step along a generally horizontal path toward a shearing station, shearing off a substantially rectangular end section of said stack by vertically passing a shear blade having a transverse dimension at least as wide as said blade for transversely shearing off entire leading end portions of said stack at said shearing station into substantially rectangular cut-off sections when the stack dwells between steps, delivering each cut-off substantially rectangular sections to a shredder, and shredding each cut-off section into small chunks and particles with said shredder.

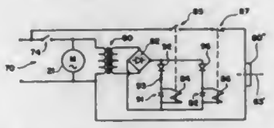
5,577,673

DEODORIZED GARBAGE DISPOSAL SYSTEM

David L. McMurphy, Pensacola, Fla.; J. Bradley Donaghey, Mobile, and Mark B. Reed, Spanish Fort, both of Ala., assignors to Kitchen Fresh, Inc., Spanish Fort, Ala.

Filed May 5, 1995, Ser. No. 435,160
Int. Cl.[6] B02C *18/42*
U.S. Cl. 241—33 13 Claims





1. A water flushed garbage disposer operated by an electric on/off switch, comprising:

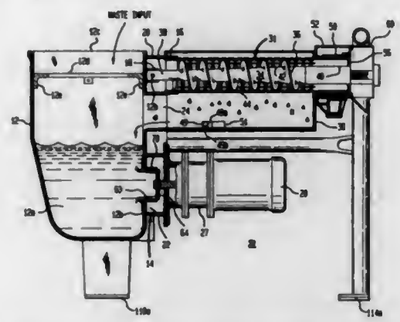
(a) a deodorizer reservoir having an output port connected to a grinder chamber in said garbage disposer;
(b) a valve for controlling a flow of deodorizer through said output port; and
(c) automatic means for opening said valve briefly after said on/off switch is switched from on to off.

5,577,674

WASTE PULPING AND LIQUID EXTRACTION SYSTEM AND METHOD INCLUDING AUTOMATIC BAG FEEDING

Robert W. Altonji, Coatesville; Robert J. Cohn, Dallas; Steven M. Eno, Strasburg, and Albert Kolvites, Mountaintop, all of Pa., assignors to Somat Corporation, Coatesville, Pa.

Continuation of Ser. No. 302,528, Sep. 8, 1994, abandoned, which is a continuation-in-part of Ser. No. 223,526, Apr. 6, 1994, abandoned, which is a continuation-in-part of Ser. No. 118,433, Sep. 8, 1993, Pat. No. 5,451,004. This application Nov. 3, 1994, Ser. No. 335,063
Int. Cl.[6] B02C *23/10;23/16*
U.S. Cl. 241—46.15 19 Claims



1. Waste pulping and liquid extraction apparatus, comprising:
a tank for containing liquid and solids having an input port for receiving liquid, a rotary disc impeller mounted therein for grinding the solids to form a mixture of liquid and solids;
a tray having an opening through which the solids are fed into the tank, the tray including means for moving the solids toward the opening and pushing the solids through the opening into the tank;
a stationary helical screw horizontally mounted directly to the tank and having a receiving end adjacent to the tank and a discharge end, the tank including means for conducting the mixture to the receiving end;
a sieve having a cylindrical sieve surface surrounding the screw through which the liquid drains, the sieve rotatably mounted to the tank;
means for rotating the sieve about the screw to move the solids longitudinally towards the discharge end; and
a housing surrounding the sieve and mounted directly to the tank for communicating liquid that drains from the sieve back to the tank by way of the input port.

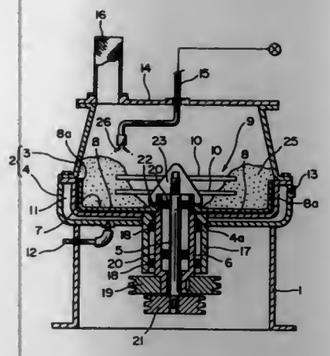
5,577,675

AGITATING PULVERIZER

Tsuyoshi Ishikawa, Tochigi, Japan, assignor to Mitsui Mining Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1995, Ser. No. 378,445
Int. Cl.[6] B02C *19/00*
U.S. Cl. 241—65 12 Claims

1. An agitating pulverizer which agitates an object and a binder charged into a tank and repeatedly granulates and pulverizes the object, thereby forming particulate matter with a desired particle size, said agitating pulverizer comprising:



a tank including a bottom having a central portion and an inner surface for allowing the object and the binder to be charged thereinto;
a low-speed rotating member and a high-speed rotating member provided at the central bottom portion of said tank and arranged to be rotatable in directions opposite to each other;
a lower agitating member placed adjacent to the bottom of said tank and interconnected to said low-speed rotating member so as to push the object and the binder upward and also to draw them toward the center of said tank; and
an upper agitating member interconnected to said high-speed rotating member and placed farther upward of said lower agitating member so as to push the object and the binder downward and upward, thereby applying shearing force and centrifugal force to the object;
said lower and upper agitating members allowing the object to be formed into particulate matter with a desired particle size wherein said lower agitating member is formed of at least two agitating vanes that are each interconnected at one end to said low-speed rotating member, and said one end is placed farther behind in the rotating direction than a line connecting between the center of said low-speed rotating member and an other end of each of said agitating vanes.

5,577,676

METHOD AND APPARATUS FOR CONTROLLING THE TRAVERSING FREQUENCY IN A YARN WINDING SYSTEM

Hans-Peter Berger, and Jorg Spahlinger, both of Wermelskirchen, Germany, assignors to Barmag AG, Remscheid, Germany

Filed Oct. 19, 1994, Ser. No. 326,018
Claims priority, application Germany, Oct. 19, 1993, 43 35 635.4
Int. Cl.[6] B65H *54/28;63/00;54/38*
U.S. Cl. 242—18.1 20 Claims

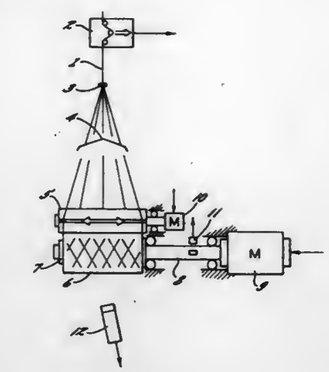
1. In a method of winding an advancing textile yarn into a core supported package in which the yarn is wound about a rotating core at a substantially constant rate while the yarn is guided onto the rotating core by a traversing yarn guide which defines a traversing frequency, the improvement therein comprising the steps of:
detecting a signal which has a frequency and an amplitude and which is generated by the motion of the advancing yarn while it is being wound on the yarn package,
analyzing at least one of the frequency and the amplitude of the signal, and
adjusting the traversing frequency as a function of the result of the analysis and while maintaining the winding speed of the yarn on the package substantially constant.

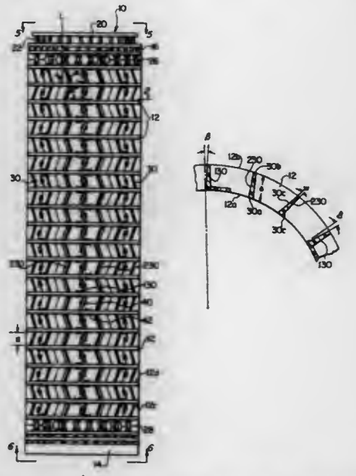
5,577,677

AXIALLY-COMPRESSIBLE COIL CARRIER

Hermann J. Frings, Alsdorf; Franz J. Hallmann, Würselen, and Albert Keusch, Übach-Palenberg, all of Germany, assignors to Technimark, Inc., Asheboro, N.C.

Filed Feb. 28, 1995, Ser. No. 395,563
Int. Cl.[6] B65H *75/20;* D06F *17/00*
U.S. Cl. 242—118.11 21 Claims





13. An axially-compressible coil carrier having a circumference, a longitudinal axis, and inner and outer cylindrical surfaces, and comprising:
first and second parallel, coaxial end rings;
a plurality of carrier rings positioned between said first and second end rings, said carrier rings being parallel to and coaxial with each other and with said first and second end rings, each of said carrier rings having carrier ring inner and outer surfaces and opposed first and second faces, said inner surfaces being co-cylindrical with each other, said outer surfaces being co-cylindrical with each other, and said first faces facing said first end ring and said second faces facing said second end ring, and neighboring carrier rings being separated by an inside distance between facing first and second faces of between about 5 mm and about 12 mm;
a plurality of support struts arranged in rings, said rings of struts alternating with said carrier rings so that said struts of each of said rings of struts are adjacent at least one of said carrier rings, neighboring carrier rings being joined to each other by

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one of said rings of support struts, and there being the same number of struts in each of said rings of struts, said struts in each of said rings being divided into a first group of struts and a second group of struts, said struts in said first group being spaced equidistantly around said circumference, all of said struts having strut inner and outer surfaces and opposed side faces, said strut inner surfaces being co-cylindrical with each other and with said carrier ring inner surfaces to define said inner cylindrical surface, said strut outer surfaces being co-cylindrical with each other and with said carrier ring outer surfaces to define said outer cylindrical surface, the junctions of said outer surfaces and said side faces of said struts of said first group being uniformly inclined at an angle α to a line on said outer cylindrical surface parallel to said longitudinal axis of said coil carrier, said angle α being between about 11° to about 30°, said side faces of said struts of said first group being uniformly inclined at an angle β to respective radii of said coil carrier, said angle β being between about 1 and about 10°, and said struts on opposite sides of a carrier ring having opposite inclinations, each of said struts having in said outer cylindrical surface a width between said side faces of between about 0.7 mm and about 3.0 mm, and each of said struts having an average extent between said inner and outer faces of about 4 mm to about 8 mm;

and fillets formed between each said carrier ring and its adjacent struts, and wherein said fillets have a radius of curvature of greater than zero and up to about 5 mm.

5,577,678

HANDLE OF A FISHING REEL

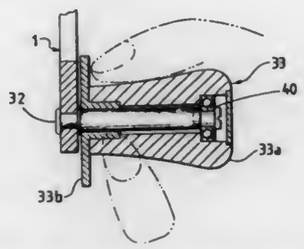
Tomohiro Murayama, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Filed Jun. 23, 1994, Ser. No. 264,646

Claims priority, application Japan, Jun. 25, 1993, 5-039717 U

Int. Cl.[6] A01K *89/00*

U.S. Cl. 242—283 **6 Claims**



1. A handle knob for coupling to an end of a handle arm provided in a fishing reel and adapted to be rotated about a first axis relative to said handle arm, said handle knob comprising:

a knob body extending from said handle arm along said first axis

a gripping means for receiving an angler's fingers during rotation;

a flange extending radially outward from said knob body with respect to said first axis, said flange being positioned between said gripping means and said handle arm for preventing an angler's fingers grasping said gripping means from abutting against said handle arm, wherein said flange is adapted to rotate relative to said knob body.

5,577,679

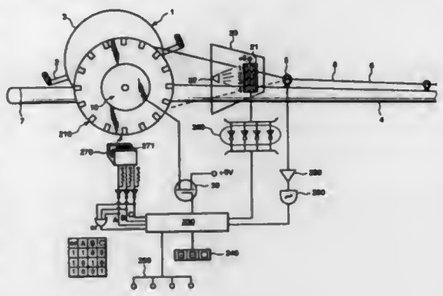
FISHING ROD WHICH REGULATES ROTATIONAL SPEED OF SPOOL DURING CASTING

Nelson A. Thomas, Rte. 4 Box 1227, Marion, S.C. 29571

Filed Oct. 24, 1994, Ser. No. 328,146

Int. Cl.[6] A01K *89/02*

U.S. Cl. 242—286 **3 Claims**



1. A fishing apparatus comprising:

a shaft having an elongated axis;

a reel mounted on said shaft having a spool and a reeling mechanism, said spool for storing line and said reeling mechanism for releasing and collecting said line;

slope determining means for determining a slope of said fishing line between said reel and said shaft; and

braking means for adjusting a rate of release of said reeling mechanism based on said detected slope,

wherein said slope determining means includes a parallel array opto-interrupter.

5,577,680

BAITCASTING REEL HAVING A PIVOTABLE THUMB REST

Takeshi Ikuta, Sakai, Japan, assignor to Shimano Inc., Sakai, Japan

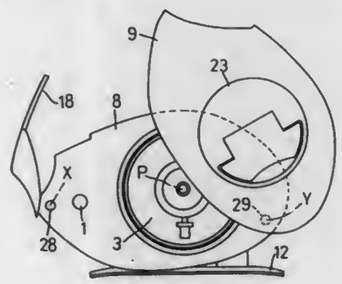
Continuation of Ser. No. 130,455, Oct. 1, 1993, abandoned.

This application Oct. 26, 1995, Ser. No. 542,219

Claims priority, application Japan, Oct. 15, 1992, 4-071764 U

Int. Cl.[6] A01K *89/015*

U.S. Cl. 242—313 **24 Claims**



24. A baitcasting reel comprising:

right and left frame members;

a spool disposed between said right and left frame members, said spool having an axis;

a handle attached to one of said right and left frame members for driving said spool;

a thumb rest mounted on at least one of said right and left frame members, said thumb rest being pivotable about a first axis between a closed position and an open position, said first axis being parallel to said spool axis; and

a case extending over at least one of said right and left frame members, said case being pivotable about a second axis between a closed position and an open position, said second axis being parallel to said spool axis; and

wherein said case is independently pivotable regardless of the position of said thumb rest and said thumb rest is independently pivotable regardless of the position of said case.

5,577,681

BELT-DRIVEN DATA CARTRIDGE WITH PACK BELT

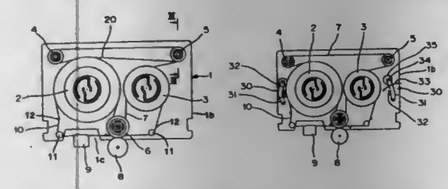
Koichi Sano, Sagamihara, Japan; David P. Smith, Hudson, Wis., and David D. Madsen, Lakeland, Minn., assignors to Imation Corp., St. Paul, Minn.

Filed Jun. 29, 1995, Ser. No. 496,365

Claims priority, application Japan, Jul. 4, 1994, 6-151980

Int. Cl.[6] G11B *23/087*

U.S. Cl. 242—342 **25 Claims**



1. In a belt driven tape cartridge having a base; a supply side tape hub and a winding side tape hub both rotatably mounted on the base; tape wound around the hubs to form a tape pack about each hub and extending along a tape path disposed along a side of the base, the tape wound around the supply side tape hub being fed to the winding side tape hub along the path to be wound around the winding side tape hub; a drive roller rotatably mounted on the base and disposed close to the tape path and between the supply side tape hub and the winding side tape hub; a first corner roller rotatably mounted on the base at a position opposed to the drive roller with respect to the supply side tape hub; a second corner roller rotatably mounted on the base at a position opposed to the drive roller with respect to the winding side tape hub; a drive belt engaged on the drive roller, the tape pack on the supply side tape hub, the first corner roller, the second corner roller, and the tape pack on the winding side tape hub such that the drive belt passes on the surface of the supply side tape pack and the surface of the winding side tape pack opposed to each other, characterized in that a restraining mechanism is located adjacent to the winding side tape hub pack and starts to press against the tape pack wound around the winding side tape hub after approximately half of the tape is wound around the winding side tape hub, thus restraining rotation of the winding side tape hub.

5,577,682

FILM CARTRIDGE HAVING A MOVABLE FLANGE FOR FACILITATING FEEDING OUT AND REWINDING OF FILM

Naohiro Tsuchida, and Shinya Takahashi, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 21, 1994, Ser. No. 184,683

Claims priority, application Japan, Jan. 22, 1993, 5-009282; Jan. 22, 1993, 5-009485

Int. Cl.[6] G03B *23/02*

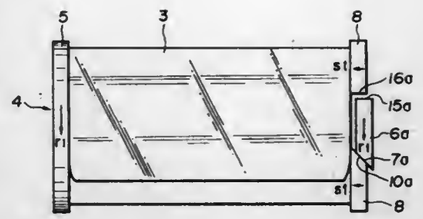
U.S. Cl. 242—348.3 **25 Claims**

9. A film cartridge comprising:

(a) a case body;

(b) a spool shaft rotatably contained in said case body;

(c) a film wound in a roll around said spool shaft;



(d) a pair of fixed flanges integrally provided on a periphery of said spool shaft at respective opposite ends thereof;

(e) a movable flange provided adjacent to one of said fixed flanges and being rotatable relative to said spool shaft; and

(f) said one of said fixed flanges and said movable flange having edges in sliding engagement when said spool shaft is rotated by an amount sufficient to feed film out of the cartridge;

(g) cam means provided on at least one of said edges for moving said movable flange in a direction to engage said film wound around said spool shaft as said edges are in sliding engagement when said spool shaft is rotated in a direction to deliver said film from said case body.

5,577,683

WEBBING TAKE-UP APPARATUS

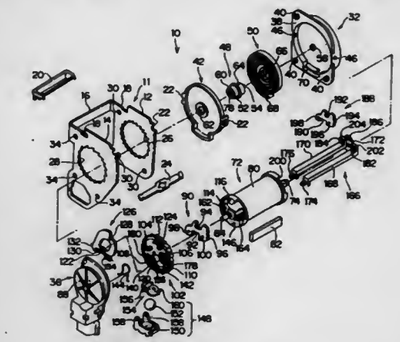
Keisuke Imai, Aichi-ken, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi-ken, Japan

Filed Sep. 28, 1995, Ser. No. 535,832

Claims priority, application Japan, Nov. 7, 1994, 6-272695

Int. Cl.[6] B60R *22/34;* **B65H** *75/48*

U.S. Cl. 242—383.2 **20 Claims**



1. A webbing take-up apparatus comprising:

a take up shaft rotatably supported by a frame having a first and second ratchet openings to stratiformly take up a webbing for restraining a vehicle occupant;

a lock wheel which rotates along with said take-up shaft in an ordinary state but is prevented from rotating in response to an abrupt deceleration of a vehicle so that a relative rotation is produced between said take-up shaft and said lock wheel;

a first lock plate which is held between one end of said take-up shaft and said lock wheel and which has first ratchet teeth, said first lock plate rotating with said take-up shaft and said lock wheel in an ordinary state, but moving radially outward, when a relative rotation is produced between said take-up shaft and said lock wheel in response to the abrupt deceleration of the vehicle, to engage said first ratchet teeth with said first ratchet opening;

a cam which is fixed to said lock wheel at one end thereof and penetrates said take-up shaft to extend to the other end of said

take-up shaft in such a manner as to be movable relative to said take-up shaft, said cam being provided with a holding portion at the other end of thereof; and

a second lock plate which is held between the other end of said take-up shaft and said holding portion of said cam and which has second ratchet teeth, said second lock plate rotating with said take-up shaft and said lock wheel in an ordinary state, but moving radially outward, when a relative rotation is produced between said take-up shaft and said lock wheel in response to the abrupt deceleration of the vehicle, to engage said second ratchet teeth with said second ratchet opening.

5,577,684

WINDING MACHINE WITH SUPPORT CYLINDERS

Hartmut Dropczynski, Dormagen, and Michael Kühnhold, Mönchengladbach, both of Germany, assignors to Jagenberg Papiertechnik GmbH, Neuss, Germany

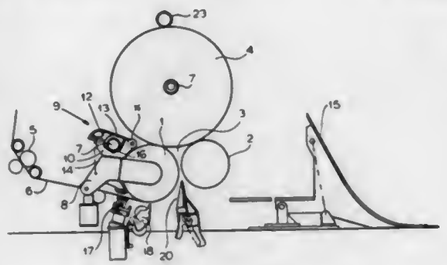
PCT No. PCT/EP94/03288, § 371 Date May 2, 1995, § 102(e) Date May 2, 1995, PCT Pub. No. WO95/09795, PCT Pub. Date Apr. 13, 1995

PCT Filed Oct. 5, 1994, Ser. No. 433,356

Claims priority, application Germany, Oct. 6, 1993, 43 34 029.6

Int. Cl.[6] B65H *19/30*

U.S. Cl. 242—533.2 **4 Claims**



1. A winding machine for winding a web of material comprising:

two driven support cylinders forming a winding bed between them, a material web being deflected by one of the support cylinders and guided from underneath into the winding bed; and

a device for lifting a fully-wound winding roll from said one of said support cylinders for ejection of the fully-wound roll from the winding bed, said device comprising:

a rotatably supported lifting roller,

an ejector beam swingable about said one of said support cylinders in the direction of the winding bed and having an ejection surface extending approximately radially with respect to said one of said support cylinders and which ends at a distance from said one of said support cylinders,

means for supporting said lifting roller for swinging said lifting roller together with the ejector beam, said lifting roller being journaled to rotate in the same direction as said one cylinder in a free space between the ejection surface and said one of said support cylinders, said lifting roller projecting peripherally with respect to the ejection surface; and

a free-wheel lock preventing the lifting roller from rotating in a direction opposite to a direction of rotation of said one of said support cylinders.

5,577,685

APPARATUS FOR WINDING A CONTINUOUSLY INCOMING PAPER WEB

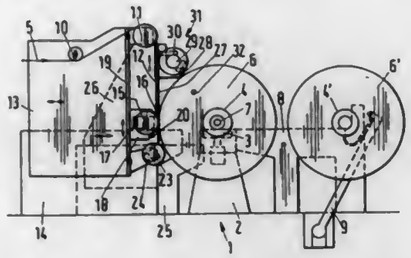
Dieter Junk, Kreuztal, Germany, assignor to Volth Sulzer Finishing GmbH, Krefeld, Germany

Filed Apr. 25, 1995, Ser. No. 428,291

Claims priority, application Germany, May 2, 1994, 44 15 324.4

Int. Cl.[6] B65M *18/16;19/28*

U.S. Cl. 242—547 **10 Claims**



1. An apparatus for winding a continuously incoming paper web on a reel-spool, said apparatus comprising:

a winding station having means for winding a first reel-spool;

a cutting member to cut said incoming paper web into a trailing web section and a leading web section;

a take-up station having means for storing a second, empty reel-spool, on which said trailing web section is wound;

a transfer apparatus having means for transporting said second reel-spool from said take-up station to said winding station; and

a contact pressure roll having means for contacting a circumference of a second reel being wound on said second reel-spool continuously, from the initiation of being wound to being transferred to the winding station, wherein said contact pressure roll together with the circumference of the second reel define an inlet gap, into which the paper web enters substantially continuously without looping, the transfer apparatus has a first guide track for moving said second reel, and wherein said contact pressure roll is movable on a second guide track, which is parallel to said first guide track, from a finished primary reel in said winding station to said second reel in said take-up station, and said contact pressure roll being movable to said winding station together with said the second reel.

5,577,686

SPINDLE ADAPTER APPARATUS FOR PAPER ROLL PRODUCT

John R. Moody, Antioch, Calif., assignor to James River Paper Company, Inc., Richmond, Va.

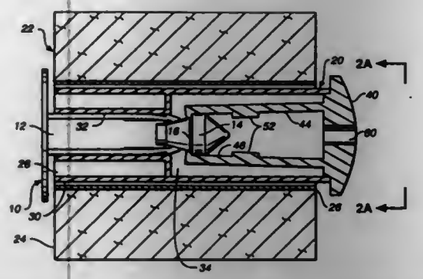
Continuation of Ser. No. 291,404, Aug. 16, 1994, abandoned. This application Apr. 2, 1996, Ser. No. 626,602

Int. Cl.[6] B65H *16/06;18/04*

U.S. Cl. 242—597.4 **3 Claims**

1. Apparatus for releasably mounting a paper roll product comprising a paper web wrapped about a central core having an inner diameter on a coreless paper roll spindle having an elongated spindle body and an enlargement having a shoulder on the spindle body, said enlargement having an outer diameter less than the inner diameter of said central core, and said apparatus comprising, in combination:

an adapter spindle defining an interior for receiving the coreless paper roll spindle, said adapter spindle having an inner surface engaging the coreless paper roll spindle and an outer surface engaging and supporting the core of a paper roll product when the adapter spindle interior receives the coreless paper roll spindle;



lock means within the adapter spindle interior including at least two elongated flexible members connected to said adapter spindle and each said elongated flexible member having a detent thereon substantially simultaneously lockingly engaging the shoulder of said enlargement when the coreless paper roll spindle is received within said adapter spindle interior for locking together against substantial relative axial movement said coreless paper roll spindle and said adapter spindle; and

release means cooperable with the flexible members within the interior of said adapter spindle to disengage the detents thereof from the shoulder of said enlargement and unlock said adapter spindle from said coreless paper roll spindle, said adapter spindle having an axially open end communicating with said adapter spindle interior and an axially opposite substantially closed end, said elongated flexible members extending from and in a direction away from said closed end and said detents being attached to said elongated flexible members at locations spaced from said closed end, each said elongated flexible member including a radially inner cam surface, said release means comprising a key, said key having a cross-sectional dimension greater than the distance between said cam surfaces when said detents are lockingly engaging said shoulder and being insertable within the interior of said adapter spindle and substantially simultaneously engageable with said cam surfaces of said elongated flexible members to move the detents of said elongated flexible members away from each other and away from said shoulder upon rotation of said key and to disengage said detents from said shoulder, said adapter spindle including an end cap defining a key hole positioned in between said flexible members and communicating with said adapter spindle interior for receiving said key, and said adapter spindle interior including adjoining first and second adapter spindle interior portions, an inner surface at said first adapter spindle interior portion being axially spaced from said flexible members and surrounding and engaging said spindle body adjacent to said enlargement and said second adapter spindle interior portion having a cross-sectional size greater than the cross-sectional size of said first adapter spindle interior portion and surrounding and radially spaced from said elongated flexible members whereby outward movement of said detents will not be impeded by said second adapter spindle interior portion.

5,577,687

PORTABLE HELICOPTER LANDING PAD

James R. Downing, 10218 Donna Ave., Northridge, Calif. 91324

Filed Aug. 21, 1995, Ser. No. 517,867

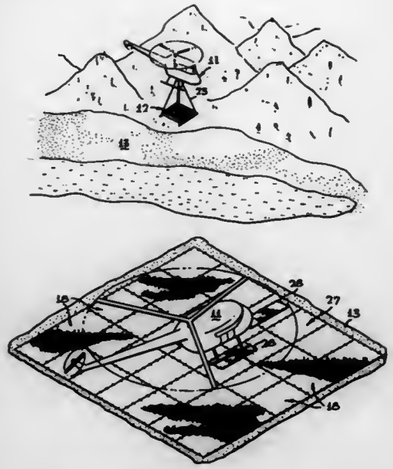
Int. Cl.[6] B64D *1/08;* **B64F** *1/36;1/00*

U.S. Cl. 244—110 E **9 Claims**

1. A portable belicopter landing pad for deployment on a surface, comprising:

a plurality of perforated mats of generally uniform size and shape, said mats on being joined at their edges defining a belicopter landing pad of predetermined size and shape;

a plurality of connectors each adapted for releasably joining adjacent pairs of said mats to one another and releasably anchoring the joined mats to an underlying surface; and



a container for storing and transporting a stack of said mats, said container including a rigid bottom defining a floor for supporting the stacked mats, upstanding walls rigidly mounted to the bottom effectively surrounding the stacked mats and preventing them from shifting during storage and transport, and a removable cover mounted to the walls for retaining the stacked mats in said container during storage and transport.

5,577,688

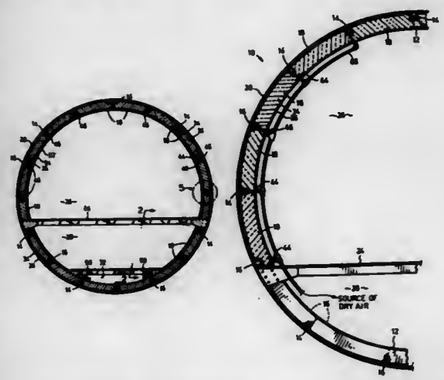
CONTAINMENT SYSTEMS FOR INSULATION, AND INSULATION ELEMENTS EMPLOYING SUCH SYSTEMS

Frank P. Sloan, 1601-19 Lascelles Blvd., Toronto, Ontario M4V 2B7, Canada

Filed Jun. 15, 1994, Ser. No. 261,273

Int. Cl.[6] B64C *1/40*

U.S. Cl. 244—117 R **15 Claims**



1. A system for the containment of acoustic and thermal insulation elements used for the insulation of the interior of an enclosed space constituted by at least one external wall, a plurality of said elements being disposed one above the other in the form of a column on the inside surface of the external wall or wall of the space;

wherein each of the elements comprises a body of thermally insulating material enclosed in a bag of air and moisture impervious material, each bag having at a lowermost point at

which moisture condensed therein will accumulate under gravity an aperture or apertures connecting the bag interior to its exterior;

the system also comprising an air and liquid flow duct connecting each bag aperture, and thereby the bag interior, to the exterior of the enclosed space so that air and condensed liquid at the lowermost point flows therethrough to the enclosed space exterior;

said aperture or apertures and the respective flow duct or ducts comprising the sole means through which air from the enclosed space exterior can enter and leave the bag interior for equalisation of pressure between the bag interior and that of the ambient atmosphere within the enclosed space.

5,577,689

CONTAINER FOR AIR TRANSPORT

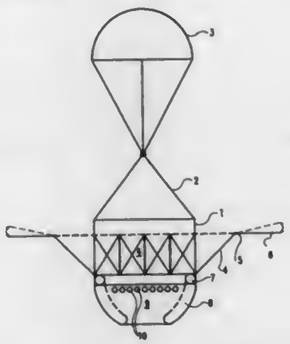
Jurgen Haro, Warteweg 7 + 46, 37627 Stadtoldendorf, Germany

Filed Nov. 15, 1994, Ser. No. 340,871

Claims priority, application Germany, Nov. 16, 1993, 43 39 052.8

Int. Cl.[6] B64D *1/14*

U.S. Cl. 244—138 R **26 Claims**



1. An apparatus for aerial delivery of cargo, comprising:

a container having a top, a bottom, and a plurality of sides;

a combined braking and steering means connected to said container comprised of

(I) a plurality of control flaps projecting laterally from said plurality of sides of said container and defining an area used for braking the descent of said container that is larger than said bottom of said container,

(ii) means for pivoting at least a portion of each of said plurality of control flaps to adjust a size of said area used for braking the descent of said container and steer said container in a selected direction during the descent of said container, and

(iii) flexible fabric positioned between pairs of control flaps of said plurality of control flaps which are on two adjacent sides of said plurality of sides of said container, said flexible fabric serving to brake the descent of said container; and

navigating control means for selectively causing pivoting of said portion of said control flaps by said means for pivoting to achieve directional changes of said container during its braked descent.

5,577,690

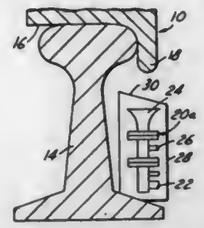
MICROWAVE MEASUREMENT OF TRAIN WHEEL WEAR

Mark L. Haddox, Ann Arbor, Mich., assignor to Jodon Engineering Associates, Inc., Ann Arbor, Mich.

Filed Sep. 15, 1994, Ser. No. 306,640

Int. Cl.[6] B61L *23/00*

U.S. Cl. 246—169 R **28 Claims**



1. A method of measuring a circumferential characteristic of train wheels potentially indicative of train wheel wear comprising the steps of:

(a) providing at least one transceiver adjacent to track section oriented to transmit energy toward and receive energy reflected from a radially oriented surface of a wheel that traverses said track section,

(b) causing a train wheel to traverse said track section so as to develop at said transceiver a signal that exhibits an interference pattern of signal peaks caused by reflections from the radially oriented wheel surface, and

(c) determining a circumferential characteristic of said radially oriented wheel surface as a function of separation between said signal peaks of said interference pattern in units of distance traveled by the wheel along said track section adjacent to said transceiver.

5,577,691

SWITCH BLADE DEVICE IN A TURNOUT ON A TRAM- OR STREETCAR-TYPE LINE

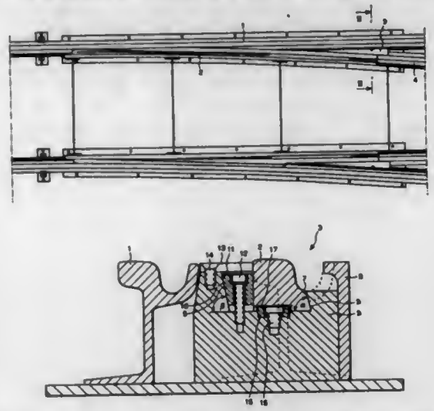
Egger Erich, Wasendorf, and Ossberger Heinz, Zeltweg, both of Austria, assignors to VAE Aktiengesellschaft, Vienna, Austria

Filed Jan. 19, 1995, Ser. No. 374,427

Claims priority, application Austria, Jan. 19, 1994, A91/94

Int. Cl.[6] E01B *7/00*

U.S. Cl. 246—437 **6 Claims**



1. An apparatus in a turnout on a tram or streetcar line employing grooved rails, comprising a switch blade selectively secured to a support;

a recess provided in said support for receiving a portion of the switch blade and a tightening wedge, the recess having a first inclined surface complementary to an inclined surface on one side of the wedge and a second inclined surface complementary to an inclined surface on one side of the portion of the switch blade received in the recess, said first inclined surface being disposed at a substantially larger angle to the horizontal than said second inclined surface, said wedge being removably disposed within the recess wherein a surface of the wedge opposite said one side of the wedge engages a surface of the switch blade opposite said one side of the switch blade; and

means for advancing the wedge within the recess wherein the wedge applies force against the switch blade to clamp the switch blade against the support with the switch blade's inclined surface engaging the recess second inclined surface.

5,577,692

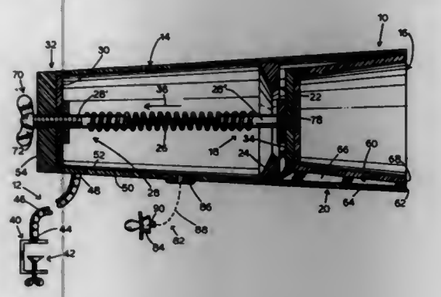
BABY BOTTLE HOLDER

Arthur D. Rollins, 940 Gates Ave., Apt. 6E, Brooklyn, N.Y. 11221

Filed Sep. 25, 1995, Ser. No. 533,327

Int. Cl.[6] A47D *15/00*

U.S. Cl. 248—106 **8 Claims**



1. A baby bottle holder comprising:

A) an anchor means for attachment to a support;

B) a flexible neck section attached at a proximal end thereof to said anchor means and having a distal end;

C) an outer cup which includes

(1) a bottom,

(2) a sidewall,

(3) means for attaching said outer cup to said distal end,

(4) air vents defined in said outer cup,

(5) a stop means on said sidewall, and

(6) a slide panel located on said sidewall;

D) an inner cup located inside said outer cup, said inner cup being sized to snugly and frictionally engage a baby bottle and including

(1) a bottom,

(2) a sidewall, and

(3) a top rim in sliding contact with said slide panel; and

E) connection means for connecting said inner cup to said outer cup and including

(1) a spring mounting means on said inner cup and on said outer cup,

(2) a spring attached at one end thereof to said inner cup and at another end thereof to said outer cup, said spring biasing said inner cup towards said stop means, and

(3) means for adjusting said spring for adjusting the amount of bias applied to said inner cup.

5,577,693

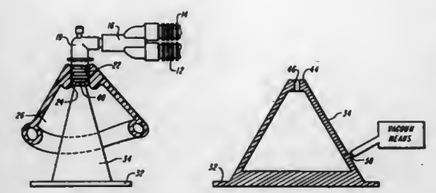
ANESTHESIA CIRCUIT STAND

Stephen B. Corn, Boston, Mass., assignor to Children's Medical Center Corporation, Boston, Mass.

Filed Jan. 11, 1995, Ser. No. 371,019

Int. Cl.[6] F16M *11/00*

U.S. Cl. 248—176.1 **11 Claims**



1. An anesthesia circuit stand device, comprising

a base means for securely mounting the stand to a surface;

a stalk element extending from the base means, the stalk element being substantially conical in shape along substantially all of its length, with a proximal end having a diameter that is greater than the diameter of the distal end and said distal end forming a cylindrical plug portion wherein the cylindrical plug portion is solid and the diameter of the cylindrical plug portion is sufficient to fit within the inside diameter of an inhalatory limb of a standard anesthesia circuit elbow in an interference fit that prevents the escape of gas from the anesthesia circuit fitting.

10. An anesthesia circuit stand device, comprising

a base means for securely mounting the stand to a surface;

a stalk element extending from the base means, the stalk element being substantially conical in shape along substantially all of its length, with a proximal end having a diameter that is greater than the diameter of the distal end and said distal end forming a cylindrical plug portion wherein the diameter of the cylindrical plug portion is sufficient to fit within the inside diameter of an inhalatory limb of a standard anesthesia circuit elbow in an interference fit that prevents the escape of gas from the anesthesia circuit fitting and wherein the cylindrical plug portion has an opening, communicating with an open, interior portion of the stalk element;

a port disposed in a side wall of the stalk element, communicating with the open, interior portion of the stalk element; and

a means for communicating a vacuum force to the interior portion of the stalk element through the port.

5,577,694

LEG BLOCK JOINING SYSTEM FOR TABLE

Yaun Hi Lee, Hyundai Apt. #3/1005 234-2, Chungryangri-dong, Dongdaemun-ku, Seoul, Rep. of Korea

Filed Sep. 27, 1994, Ser. No. 313,354

Claims priority, application Rep. of Korea, Jun. 14, 1994, 1994/13576

Int. Cl.[6] F16M *11/00*; F16B *12/00*

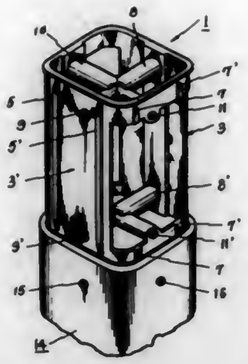
U.S. Cl. 248—188 **20 Claims**

2. A leg joining assembly for tables of the type including at least one leg having a hollow portion and at least one connecting member adapted for connection to said leg, said assembly comprising:

two pair of opposing wall members, said wall members in a first of said pairs being generally parallel to and spaced from one another, said wall members in the second said pairs also being generally parallel to and spaced from one another, each wall member being joined to at least two other wall members such that said wall members define a central opening between said opposed pairs of wall members; and

at least one bolt passage extending across said central opening between each of said first and second pairs of said wall members, each bolt passage including two hollow cylindrical

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sections, one section having a diameter sufficient to receive a head and threaded body of a bolt therein generally parallel to said one section, the other section having a smaller diameter sufficient to receive a tool such as a screwdriver or allen wrench therethrough, said passage being hollow, having opposite end openings opening through said opposed wall members, and adapted to receive a headed bolt therein with its head positioned within said bolt passage and its threaded body directed toward a first of said opposite end openings, the second of said opposite end openings adapted to receive a tool therethrough for engaging the bolt head and fastening the bolt body to a connecting member;

whereby when said assembly is mounted in the hollow portion of the leg with each bolt passage aligned with an aperture through the leg, each bolt is adapted to extend through a leg aperture and engage and secure the connecting member to the leg.

5,577,695

RETAINING ELEMENT

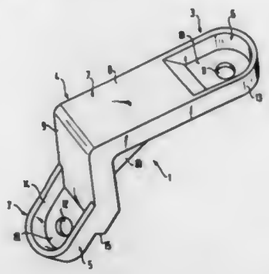
Hans-Werner Ruckwardt, Gollheim/Pfalz, Germany, assignor to TRW United Carr GmbH & Co. KG, Enkenbach-Alsenborn, Germany

Filed Jan. 18, 1994, Ser. No. 182,656

Claims priority, application Germany, Feb. 1, 1993, 43 02 760.1

Int. Cl.[6] F16M *11/00*

U.S. Cl. 248—200 **12 Claims**



1. A retaining element for attaching a part such as a signal horn to a support such as a motor vehicle body, the retaining element comprising a unitary plastic body (1) having a first area (2) for connection to the support and a second area (3) for connection to the part, the first and second areas (2, 3) being joined by a center portion (7) of the body (1) and each of the first and second areas (2, 3) having an encircling fortification flange (5, 6).

5,577,696

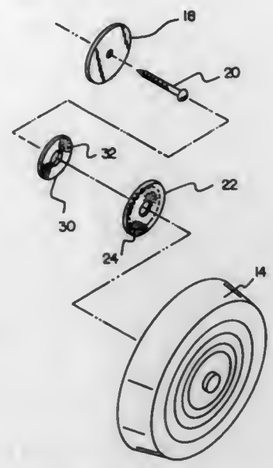
SMOKE ALARM MOUNT

Clarence J. Kramer, Box 141, Eola, Ill. 60519

Filed Jun. 1, 1995, Ser. No. 456,300

Int. Cl.[6] A47G *1/17*

U.S. Cl. 248—206.5 **12 Claims**



1. A smoke alarm mount comprising:

a smoke detector;

a mounting means for releasably coupling the smoke detector to a support surface, the mounting means comprises a base plate securable to the support surface; a magnet receiver secured to the smoke detector; a magnet interposed between the magnet receiver and the base plate so as to magnetically couple the magnet receiver relative to the base plate, the base plate is shaped so as to define a mounting aperture directed therethrough; and further comprising a fastener directed through the mounting aperture and securable to a support surface so as to permit coupling of the base plate to a support surface.

5,577,697

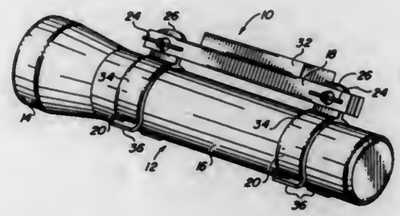
FLASHLIGHT ACCESSORY

Carmine L. Accordino, 15034 N. 53rd St., Scottsdale, Ariz. 85254

Filed Sep. 22, 1995, Ser. No. 532,245

Int. Cl.[6] A47G *1/17*

U.S. Cl. 248—206.5 **7 Claims**



1. An accessory for use in combination with a flashlight having a lamp portion and a battery storage portion, the accessory comprising:

a connector bar having two arms at each end, the arms defining a slot therebetween,

two Y-shaped clamps being independently rotatably mounted at each end of said connector bar, the lower extension of each of the Y-shaped clamps being rotatably mounted in the slot between the arms, the upwardly extending arms of each Y-shaped clamp adapted for firmly and removably securing the battery storage portion of the flashlight therebetween, the two clamps being positioned whereby both clamps can simultaneously engage the battery storage portion;

means for separately fastening each clamp independently at a desired angle extending laterally from opposing ends of said connector bar thereby allowing one of the Y-shaped clamps to extend above said connector bar to direct a flashlight mounted thereon as desired and the other of the Y-shaped clamps to extend below said connector bar to mount the accessory to a surface as desired; and

a magnet mounted on the connector bar between the respective clamps.

5,577,698

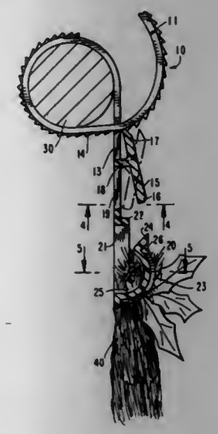
LOCKING STRAP FASTENER FOR SUSPENDING FESTIVE ADORNMENTS

Ivan Liu, Ontario, Canada; Charles W. Fennessy, Lemont, and Frank Lang, Warrenville, both of Ill., assignors to Noma International Inc., Forest Park, Ill.

Filed Feb. 2, 1995, Ser. No. 382,966

Int. Cl.[6] F16L *03/08*

U.S. Cl. 248—214 **8 Claims**



1. An arrangement for mounting decorative items on supports available at the premises to be decorated, comprising:

a mounting member including an elongated strap that is flexible for winding around the respective support and has a series of ratchet-type teeth on one of its major surfaces, and a fixture secured to one end of said strap and including a hook-shaped formation for suspending the respective decorative item therefrom and an opening bounded by a reinforcing rib and underlying said hook-shaped formation, said fixture having an aperture for the passage of said strap therethrough after having been wound around the support, and including a pawl-type holding member mounted thereon for pivoting between an engaging position in which the holding member engages at said aperture behind one of said teeth of said strap, and a releasing position in which the holding member frees said strap for unimpeded passage through said aperture.

5,577,699

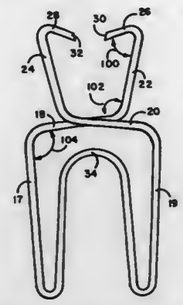
HANGER AND METHOD OF ATTACHMENT

Lawrence C. Gardner, 24 Elliott Rd., Sterling, Mass. 01564, and Philip Nigro, Jr., 1 Cricket La., Worcester, Mass. 01602

Continuation-in-part of Ser. No. 79,986, Jun. 18, 1993, abandoned. This application Sep. 7, 1994, Ser. No. 301,487

Int. Cl.[6] F16B *2/00*

U.S. Cl. 248—218.3 **7 Claims**



1. A hanger to support a load for use on a support member having a front face and first and second parallel sides, comprising:

an unitary structure of bent spring wire having an inherent spring action, said structure including:

a load-bearing portion having first and second exterior sides;

a support member engagement portion having fulcrum means and first and second sharpened ends, said support member engagement portion contiguous with said load-bearing portion, said support member engagement portion engageable on said support member;

said hanger in an original first mode position for engagement on said support member disposed such that inward pressure on said first and second exterior sides of said load-bearing portion causes said support member engagement portion to widen a distance sufficient to encompass said first and second parallel sides of said support member; and said hanger in a second mode disposed such that the subsequent release of such inward pressure urges said hanger by said inherent spring action of said spring wire to return toward its pre-squeezed shape, causing said first and second sharpened ends of said support member engagement portion to engage into said first and second parallel sides of said support member; and said hanger in a third mode disposed such that downward pressure exerted on said load-bearing portion causes said fulcrum means acting against said front face of said support member to aid in forcing said first and second sharpened ends deeper, respectively, into said first and second parallel sides of said support member for the secure engagement of said hanger thereto.

5,577,700

CURTAIN ROD MOUNTING DEVICE FOR PREVENTING WINDOW MOLDING DAMAGE

Royall E. Williams, Jr., Chapel Hill, N.C., assignor to Barry B. Blanchette, Carrboro, N.C.

Filed Dec. 21, 1994, Ser. No. 360,640

Int. Cl.[6] A47H *1/10*

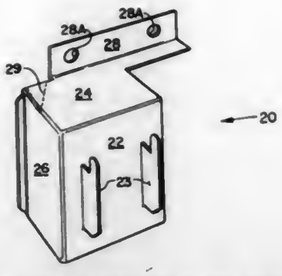
U.S. Cl. 248—261 **16 Claims**

1. A device for mounting a curtain rod to a window without damaging the window molding comprising:

(a) a mounting housing comprising a front mounting surface having a top surface and a side surface depending rearwardly from two adjacent edges thereof, said front mounting surface and said top and side surfaces being in generally orthogonal relationship;

(b) said top surface which depends rearwardly from said front mounting surface including a wall securement flange adjacent

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to and extending upwardly from at least a portion of the rear edge thereof, wherein said wall securement flange is spaced apart and generally parallel to said front mounting surface and defines at least one aperture therein for receiving a wall securement element therein; and

(c) said front mounting surface including means for removably securing one end of a curtain rod thereto.

5,577,701

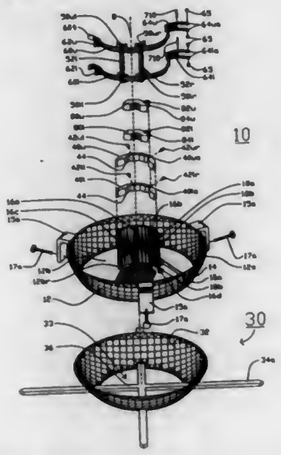
CHRISTMAS TREE STAND

Steve J. Pizak, 660 Williamson Rd., Bryn Mawr, Pa. 19010

Filed Apr. 17, 1995, Ser. No. 423,289

Int. Cl.[6] F16M *13/00*

U.S. Cl. 248—524 **17 Claims**



1. A stand for a cut tree, comprising:

an upward-facing bowl defining a bottom region in a region about a center of said bowl;

a backpost affixed to said bottom region of said bowl at a location spaced away from said center, and projecting vertically upward from said bottom region, said backpost, in a plane orthogonal to an axis passing vertically through said center of said bowl, being generally concave as seen from said axis, said backpost defining at least a lower tree-trunk engaging portion adjacent said bottom region of said bowl, and an upper tree-trunk engaging portion adjacent an upper portion of said backpost, each of said lower and upper tree-trunk engaging portions including a plurality of teeth, as seen in said plane;

a lower strap dimensioned to extend about a tree-trunk;

an upper strap dimensioned to extend about said tree-trunk;

strap engaging means coupled to said upper and lower straps, and to said backpost, for coupling said lower strap to said backpost at a lower location near said lower tree-trunk engaging portion, and for coupling said upper strap to said backpost at an upper location above said lower location;

a lever including an over-center portion, said lever being affixed to said backpost and to at least one of said upper and lower straps, said lever being arranged, when operated, for tensioning at least one of said upper and lower straps, and for assuming a stable over-center tensioned state which tends to hold said tree-trunk against said backpost.

5,577,702

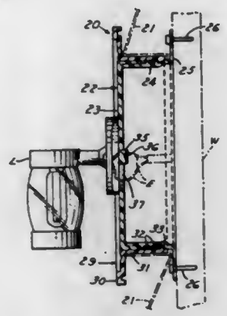
WALL MOUNTING ASSEMBLY

Norman L. Chubb, Carleton; Richard J. MacLeod, Milford, and Charles E. Schiedegger, Metamora, all of Mich., assignors to Mid-America Building Products Corporation, Plymouth, Mich.

Continuation-in-part of Ser. No. 228,956, Apr. 18, 1994, Pat. No. 5,397,093, which is a continuation of Ser. No. 930,981, Aug. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 904,384, Jun. 25, 1992, Pat. No. 5,326,060. This application Dec. 30, 1994, Ser. No. 366,883

Int. Cl.[6] E06B *1/02*

U.S. Cl. 248—544 **4 Claims**



1. A wall mounting bracket comprising

a plastic body including a wall panel with inner and outer surfaces,

means for mounting the wall panel to the wall of a building,

means for facilitating the location of a tip of a hole saw for cutting said wall panel comprising an integral outwardly facing projection on the outer surface and the inner surface of the wall panel, said projection having a centering recess with a configuration therein adapted to receive a tip of a hole saw, and

a plurality of equally spaced openings spaced about said projection,

said wall panel having a plurality of arcuate lines having a center at a center of said centering recess, said arcuate lines being positioned between radially outer edges of said spaced openings such that when it is desired to cut said wall panel along said arcuate lines, the tip of a hole saw is placed in the centering recess to guide the hole saw.

5,577,703

POWER ASSISTED ADJUSTMENT SYSTEM

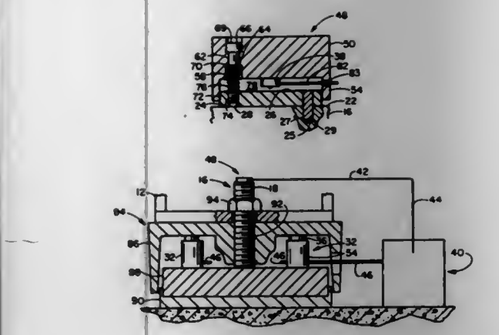
Sheldon E. Young, DuPage County, Ill., assignor to Vibro/Dynamics Corp., Broadview, Ill.

Filed Oct. 31, 1994, Ser. No. 331,919

Int. Cl.[6] F16M *13/00*

U.S. Cl. 248—550 **7 Claims**

1. A power assisted adjustment system, comprising: (a) adjustment means adaptable for assuming a load; (b) actuable load-relieving means for temporarily reducing the load on said adjustment means; (c) force-responsive means operably engagable with said adjustment means and movable relative to said adjustment means; (d) actuating means operably connected with said force-responsive means for actuating said load-relieving means between an activating position and a non-activating position to effect adjustment of said adjustment means in response to input force to said force-responsive means in said activating position, and (e) means to bias said actuating means to said non-activating position.



5,577,704

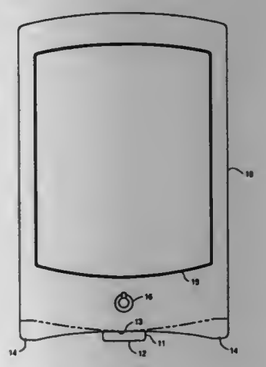
ADJUSTABLE SUPPORT FOR SMALL ENCLOSURE

Susanne M. Pierce, Menlo Park; Andrew T. Liu, San Francisco, and John A. Howard, Palo Alto, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Mar. 14, 1995, Ser. No. 403,317

Int. Cl.[6] A47G *29/00*

U.S. Cl. 248—688 **5 Claims**



1. An enclosure with an adjustable foot comprising:

a main enclosure, including

an edge for contacting a surface upon which the enclosure may be positioned,

a horizontal axis of rotation near said one edge such that said main enclosure can pivot around said one edge, and

a channel to accommodate an adjustable foot,

said adjustable foot passing through said main enclosure, slidable engaging said channel in said main enclosure, said foot offset from said horizontal axis of rotation so said foot and said one edge form a stable support for said enclosure.

5,577,705

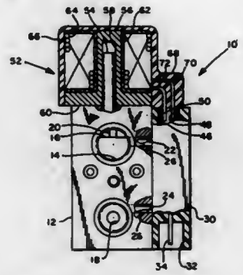
COIL CONNECTION FOR SOLENOID OPERATED VALVE

Robert J. Torrence, Sanford, N.C., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 28, 1994, Ser. No. 218,783

Int. Cl.[6] F16K *31/06*

U.S. Cl. 251—129.15 **9 Claims**



1. An electrically operated valve assembly comprising:

(a) body means defining an inlet port, an outlet port and a valving chamber with a member moveable therein for controlling flow between said inlet and outlet;

(b) armature guide means attached to said body means and having therein an armature operable upon movement for effecting said movement of said valve means;

(c) said body means including electrical receptacle means having means for electrical plug-in connection disposed adjacent said armature guide means;

(d) coil means received over said armature guide means, said coil means including terminal means electrically engaging said plug-in connection means as said coil means is received over said armature guide means;

(e) said receptacle means including other terminal means connected to said receptacle means and adapted for external electrical connection thereto.

5,577,706

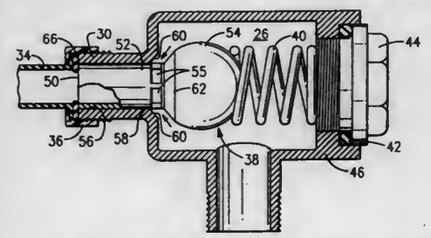
WATER FAUCET WITH AUTOMATIC SHUT-OFF MECHANISM FOR WATER CONSERVATION

Robert J. King, R.D. #2, Cascade Rd., Lafayette, N.Y. 13084

Filed Oct. 25, 1995, Ser. No. 548,251

Int. Cl.[6] F16L *37/28*

U.S. Cl. 251—149.6 **19 Claims**



1. A water faucet with automatic shut-off for stopping water flow when a hose is removed from the faucet, said water faucet comprising:

a housing member including an internal chamber, a water inlet port, and an elongated water discharge port having a threaded distal end being connectable to an end of a water hose;

a slide valve slideably retained within said water discharge port, for movement between an open and closed position, said slide valve extending from beyond said threaded distal end of said water discharge port back into said internal chamber when in

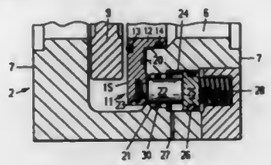
a normally closed position, said slide valve further including a distal end adjacent said threaded distal end of said water discharge port and a proximal end adjacent said internal chamber;

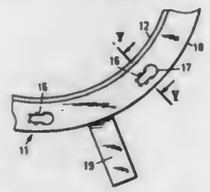
at least one aperture formed in said proximal end of said slide valve to allow water to flow through said internal chamber and said slide valve when said slide valve is moved into an open position;

seating means formed adjacent said at least one aperture, said seating means for preventing water flow from said internal chamber into said slide valve when said slide valve is in said normally closed condition; and

biasing means for urging said slide valve toward said closed position to engage said sealing means while said slide valve is maintained in said normally closed position so that when said end of said respective water hose is connected to said threaded distal end of said water discharge port and tightened thereagainst, said extending portion of said slide valve will be moved into said discharge port thereby unseating said seating means and opening said at least one aperture, and when said end of said respective water hose is disconnected from said threaded distal end of said water discharge port, said biasing means will place said slide valve in said closed position thereby preventing water to flow from said internal chamber through said water discharge port.

5,577,707
SLIDE VALVE
Hubert Brida, Götzis, Austria, assignor to VAT Holding AG, Haag, Switzerland
Filed Dec. 18, 1995, Ser. No. 573,833
Int. Cl.[6] F16K *3/20*
U.S. Cl. 251—159 **11 Claims**





1. A slide valve, comprising:

a housing having a flow channel;

a slide plate located in the housing and displaceable transversely to a flow channel axis between a closed position, in which it blocks flow through the flow channel, and an open position, in which it provides for the flow through the flow channel; and

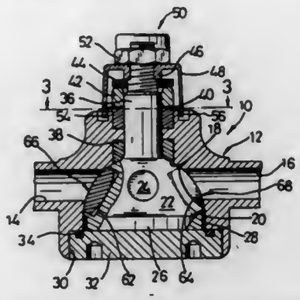
a seal ring surrounding the flow channel and engaging the slide plate in the closed position thereof and disengageable from the slide plate in the open position thereof;

wherein the housing has an annular surface surrounding the flow channel and located adjacent to the seal ring, the annular surface having a plurality of bores having axes extending parallel to the flow channel axis,

wherein the seal ring has, on a side thereof remote from the slide plate, a plurality of circumferentially arranged recesses spaced from each other and extending in a circumferential direction, the recesses being outwardly limited by key hole-shaped openings, respectively, and being aligned, respectively, with the bores formed in the adjacent annular surface of the housing, and

wherein the slide valve further comprises a plurality of bolts displaceably arranged in the plurality of bores and having shaped heads extending into the plurality of recesses, respectively, and engageable from behind by respective key hole-shaped openings.

5,577,708
BALL VALVE
Erhard Pfannenschmidt, Norderstedt, Germany, assignor to James Wang, Taipei, Taiwan
Filed Jul. 25, 1995, Ser. No. 506,820
Int. Cl.[6] F16K *5/06*
U.S. Cl. 251—315.11 **9 Claims**



1. A ball valve comprising a housing with connector holes defined therein, each of said connector holes having an opening to a hollow space at right angles to said connector holes, a rotating hemispherical plug placed into said hollow space above said opening and being actuated by means of a sealed selector shaft running on bearings, a cover disposed to an underside of said housing to close off said hollow space, said plug having recesses defined therein and corresponding to said connector holes, said recesses can be aligned with said holes, each of said recesses having a flat sealing element disposed therein whose external side follows a hemispherical form of said plug and under side is dome-shaped, and said sealing elements are designed to cover said connector holes when aligned accordingly.

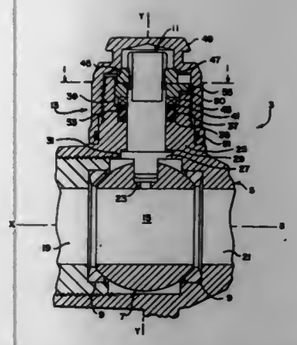
5,577,709
STEM SEAL CONFIGURATION FOR BALL VALVES
Zbigniew H. Gugala, Spring Grove; Lawrence J. Loman, Oak Lawn, and John N. Scapes, Schaumburg, all of Ill., assignors to Henry Valve Company, Melrose Park, Ill.
Filed Oct. 17, 1995, Ser. No. 544,124
Int. Cl.[6] F16K *5/06*
U.S. Cl. 251—315.14 **7 Claims**

1. In a ball valve comprising valve body means having a cavity for housing a ball valve member rotatable on its vertical axis, an inlet port, an outlet port and a valve stem receiving passageway axially aligned with said vertical axis, a ball valve member disposed in said cavity having a passageway providing communication between said inlet and outlet ports, and a valve stem disposed within said valve stem receiving passageway and operatively connected at its bottom end with said ball valve member, the improvement comprising,

said valve stem receiving passageway having a bottom annular recess and spaced thereabove an upper annular recess,

a primary seal washer resistant to fluid passing through said ball valve seated in the upper end of said bottom annular recess and embracing said valve stem,

an O-ring seated within the lowest portion of said upper annular recess under radial compression embracing engagement with said valve stem and free of axial compression,



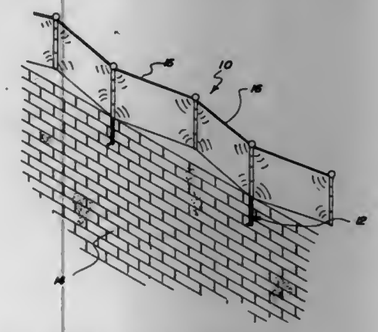
annular spring means and an annular gland surrounding said valve stem and disposed in said upper annular recess above said O-ring, and

a retainer juxtaposed to the upper one of said annular spring means and said annular gland,

said value stem having an annular flange on its lower end which fits into said bottom annular recess with upward engagement with the underside of said primary seal washer and having an upper end protruding above said retainer which can be engaged by tool for rotating said value stem together with said ball value member,

said retainer being held down against the upper one of said annular spring means and said gland so that said spring means is maintained under compression thereby maintaining an upward thrust on said value stem whereby said annular flange maintains upward and radial seal-forming engagement with said primary seal washer.

5,577,710
FENCE EXTENSION ASSEMBLY
George T. Kirby, 7695 Heather Clr., Buena Park, Calif. 90620
Filed Jun. 8, 1995, Ser. No. 488,483
Int. Cl.[6] E04H *17/00*
U.S. Cl. 256—24 **8 Claims**

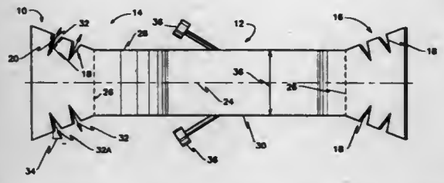


1. A fence extension assembly comprising:

a plurality of mounting post means for securing to opposed sides of an existing fence so as to project vertically above an upper edge of the fence, the amounting post means comprises a mounting receiver securable to an existing fence, the mounting receiver being positionable through an aperture directed through the existing fence, with a securing nut threadably engaging an exterior of the mounting receiver so as to permit coupling of the mounting receiver relative to the existing fence; a support rod threadably received within the mounting receiver; a support stanchion including an aperture through which the support rod projects so as to movably couple the support stanchion to the support rod, the support stanchion extending from the support rod and continuing into a pivot pin having a longitudinal axis colinearly oriented with a longitudinal axis of the support stanchion, the pivot pin terminating in an upper distal end; and an end cap removably coupled to the upper distal end;

a plurality of panels, each of the panels extending between an adjacent pair of the plurality of mounting post means so as to be extendable diagonally across an upper edge of the existing fence.

5,577,711
FLASHING REMOVAL TOOL
William Shine, 10 Emily Ct., Warwick, N.Y. 10990
Filed Apr. 28, 1995, Ser. No. 429,174
Int. Cl.[6] B25C *11/00*
U.S. Cl. 254—25 **18 Claims**



1. A flashing removal tool having a body defining a central section, a first end portion, and a second end portion, said body comprising an elongated strip of material having a width, a length, a first lateral side and a second lateral side, said first end portion having means defining a groove for engaging a nail therein, said groove obliquely oriented towards said second end portion, said tool further comprising

a head, arranged at a non-perpendicular angle to said strip of material, for receiving impacts, said head attached to said elongated strip at said first lateral side thereof, said head located between said first end and said second end of said elongated strip, and

a second head for receiving impacts, said second head attached to said elongated strip at said second lateral side thereof, between said first end and said second end of said elongated strip.

5,577,712
BARBED ROPE OR CORD FOR REPAIR OF BARBED WIRE FENCING
P. H. White, Jr., P.O. Box 155, 804 Sampson Ave., Dyersburg, Tenn. 38025-0155
Filed Jan. 24, 1996, Ser. No. 590,980
Int. Cl.[6] E04H *17/04*
U.S. Cl. 256—7 **21 Claims**



1. A barbed rope or cord, comprising:

(a) a rope or cord formed from a non-metallic material; and

(b) barbs connected to said rope or cord.

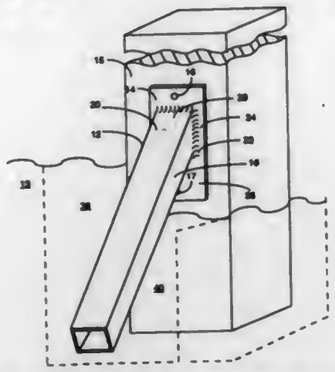
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5,577,713

POST SUPPORT WITH OFFSET SLANTED STAKE AND METHOD FOR USING SAME

Jack Navarez, 210 Kipling Ave., Ben Lomond, Calif. 95005, assignor to Jack Navarez, Ben Lomond, Calif.

Filed Sep. 12, 1994, Ser. No. 304,702
Int. Cl.[6] E04H *17/22*
U.S. Cl. 256—64 20 Claims



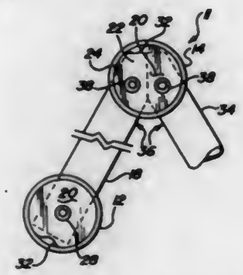
1. A method of repairing an axially extending fence post using a low profile self-supporting anchoring device having an axially extending post attachment member for attaching said anchor device to said fence post and a stake having a first free end and a second end joined to said attachment member such that said stake extends from said attachment member at a fixed acute angle, the method comprising the steps of:
a) forming a hole adjacent to said fence post;
b) inserting said first free end of said stake within said hole, said second end being oriented such that said attachment member is adjacent to said fence post;
c) orienting said attachment member relative to said fence post such that the axis of said attachment member is generally parallel to the axis of said fence post;
d) attaching said attachment member to said fence post; and
e) securing said first free end of said stake within said hole.

5,577,714

KNOCK DOWN GUARD RAIL ASSEMBLY AND METHOD FOR ASSEMBLING SAME

Frank Venegas, Jr., 4165 Homestead, Howell, Mich. 48843

Filed Mar. 27, 1995, Ser. No. 411,422
Int. Cl.[6] E04H *17/14*
U.S. Cl. 256—65 12 Claims



1. A knock down guard rail assembly comprising:
a stanchion;
a first rail extending within said stanchion;
a second rail extending within said stanchion at an angle disparate to said first rail;
means for engaging said first and second rails in said stanchion; and
means for demounting said rail from within said stanchion;
said engaging means comprising a plate receivable within said stanchion and fasteners that correspond in number to the number of rails, said fasteners engageable by said plate.

5,577,715

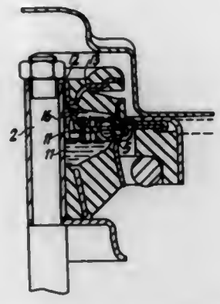
Patent Not Issued For This Number

5,577,716

SINGLE-THRUST BEARING FOR A SHOCK ABSORBER

Arno Hamaekers, Gorxheimer Tal; Arnold Simottis, Bad Kreuznach, and Manfred Stahl, Edingen-Neckarhausen, all of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Division of Ser. No. 213,364, Mar. 14, 1994, Pat. No. 5,474,284, which is a continuation of Ser. No. 871,429, Apr. 21, 1992, abandoned, which is a continuation of Ser. No. 780,147, Oct. 21, 1991, abandoned. This application Nov. 22, 1995, Ser. No. 561,739
Claims priority, application Germany, Oct. 22, 1990, 40 33 519.4
Int. Cl.[6] B60G *13/00*; F16M *5/00*
U.S. Cl. 267—220 14 Claims



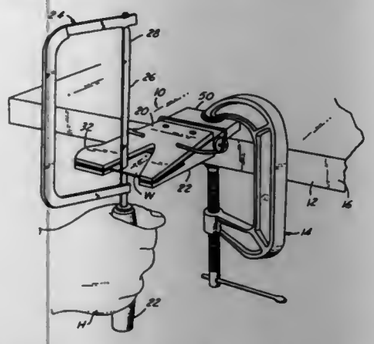
1. A single-thrust bearing for a shock absorber, comprising:
a) a columnar journal projecting in the damping direction of the shock absorber;
b) a supporting bearing;
c) a flexible annular-shaped intermediary membrane sealing and surrounding said columnar journal and having a rim area projecting radially outward, said flexible annular-shaped intermediary membrane being secured in its rim area to said supporting bearing;
d) two liquid-filled working chambers separated by said supporting bearing;
e) a duct-type connecting port in said supporting bearing and located radially outside of said rim area of said annular-shaped intermediary membrane to allow fluid communication between said two liquid-filled working chambers;
f) flexible terminating walls sealing said two liquid-filled working chambers to the outside, and being secured and sealed on a first side to said columnar journal and on a second side to said supporting bearing; and
g) hollow cones forming said flexible terminating walls and having hollow-cone tips secured to said columnar journal, pointing away from each other and braced against one another by means of said columnar journal.

5,577,717

JEWELER'S SAW VISE

Donald M. Benson, 3433 100th St., Grant, Mich. 49327

Filed May 30, 1995, Ser. No. 452,891
Int. Cl.[6] B25B *1/00*
U.S. Cl. 269—87.2 11 Claims



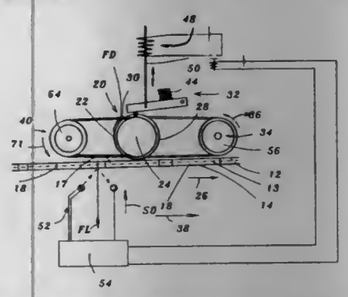
1. A jeweler's saw vise for holding a relatively thin workpiece to permit a jeweler to use a saw to cut the workpiece firmly held by the vise comprising a pair of elongated upper and lower jaws having front and rear end portions, with said front portion having a front surface, with said upper jaw being superimposed over said lower jaw, said jaws at said front end portion having a V-notch therein extending rearwardly from said front surface, and with the widest part of said V-notch being located in said front surface to form an entrance to said vice, said lower jaw being longer than said upper jaw and forming at said rear end portion a mounting tab for attaching the vise to a support, a biasing spring interposed between said jaws to resiliently bias the jaws closed; said biasing spring having a pair of generally parallel spaced apart arms which are connected by a laterally extending bridge member, with the ends of said biasing spring bent inwardly towards one another; and means mounting the arms of said biasing spring to said lower jaw, with said bridge member engaging the upper surface of and extending across said tab and with said ends extending across and being secured to said upper jaw.

5,577,718

COLLATOR APPARATUS WITH ROTARY PRINTER

Terrence Hatch, South Beloit, Ill., assignor to R. T. Blackhawk Machine Products, Inc., S. Beloit, Ill.

Filed Apr. 10, 1995, Ser. No. 419,186
Int. Cl.[6] B41F *13/54;13/24*
U.S. Cl. 270—1.01 11 Claims



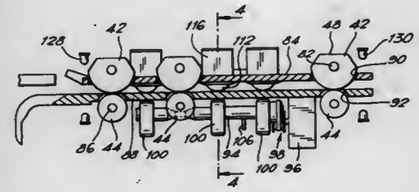
1. A collator apparatus for assembling a plurality of continuous forms into a sequence of multi-layer forms, said apparatus comprising:
a numbering means disposed adjacent to the sequence of forms for applying a number to a first form of the sequence;
said numbering means including:
a numbering wheel having an axis of rotation disposed normal to a direction of movement of the sequence of forms past said wheel, said wheel defining a peripheral surface;
printing means secured to said surface for printing said number on the first form when said printing means contacts the first form during mntual movement of said printing means and the first form;
locking means operably connected to said wheel for selectively locking said wheel against rotation thereof, said locking means locking said wheel in a first rotational disposition of said printing means until the first form reaches a first location relative to said first disposition;
driving means drivingly connected to said wheel for rotating said wheel from said first disposition when the first form reaches said first location, the arrangement being such that said wheel is rotated by said driving means at a peripheral speed which is substantially the same as a linear velocity of the first form past said numbering means so that said printing means prints said number on the first form when said printing means reaches a second rotational disposition thereof; and
a further driving means drivingly connected to said wheel for accelerating rotation of said wheel to complete one revolution of said wheel, the arrangement being such that when said revolution of said wheel is completed, said locking means again locks said wheel against further rotation thereof so that said printing means is in said first disposition thereof until a second multi-layer form of the sequence reaches said first location.

5,577,719

DOCUMENT ALIGNMENT SYSTEM

Kenneth A. Nicoll, Birkhill, Scotland, assignor to NCR Corporation, Dayton, Ohio

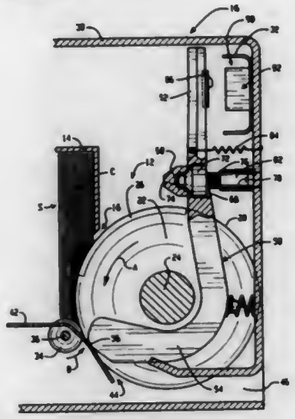
Filed Sep. 23, 1994, Ser. No. 311,245
Claims priority, application United Kingdom, Nov. 15, 1993, 9323710
Int. Cl.[6] B65H *7/02*
U.S. Cl. 271—227 10 Claims



1. A document alignment system comprising:
a feed path:
drive means having operative and non-operative modes of operation and when in said operative mode of operation, being effective to drive documents one by one along said feed path; and
alignment means having a reference surface parallel to said feed path, and also having operative and non-operative modes of operation, and when in said operative mode of operation, being effective to move an edge of said document into parallel abutting contact with said reference surface;
said alignment means including:
a plurality of alignment rolls spaced apart in a direction parallel to said feed path and being mounted with their axes substantially parallel to said feed path; and
a plurality of spring biased, rotatably mounted balls respectively arranged to cooperate with said alignment rolls;
said alignment rolls being effective to drive a document towards said reference surface with the document gripped resiliently between said alignment rolls and said balls when said alignment means is in said operative mode of operation; and

said alignment means being in said operative mode of operation when said drive means is in said non-operative mode of operation, and said alignment means being in said non-operative mode of operation when said drive means is in said operative mode of operation.

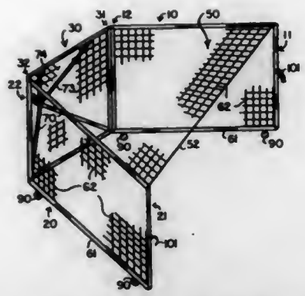
5,577,720
SELF-ADJUSTING SENSOR
Edward L. Laskowski, Seven Hills, Ohio, assignor to Inter-Bold, N. Canton, Ohio
Filed Apr. 4, 1995, Ser. No. 416,262
Int. Cl.[6] B65H 7/12
U.S. Cl. 271—265.04 7 Claims



1. An apparatus for indicating the thickness of one or more sheets moving along a sheet path comprising:
- a first surface positioned to engage sheets moving along said sheet path, said first surface having a first position corresponding to the absence of a sheet, and being movable from said first position upon engagement with a sheet;
- a second surface responsive to movement of said first surface, said second surface movable from a rest position, corresponding to the first position, to a sensing position, said second surface exhibiting a displacement from said rest position indicative of movement of said first surface from said first position;
- signal generating means generating electrical signals related to the displacement of said second surface from said rest position, said signal generating means providing a reference signal output when said second surface is at said rest position; and
- a control circuit connected to said signal generating means to electrically modify said generating means to maintain said reference signal output, as the rest position of said second surface changes as a result of mechanical wear of said first surface.

5,577,721
PORTABLE BATTING CAGE WITH EXTENDED HINGED WINGS
David B. Hardee, Fernandina Beach, and William H. Burbank, III, Oneal, both of Fla., assignors to Standard Marine Supply Corp., Fernandina Beach, Fla.
Filed May 3, 1995, Ser. No. 434,414
Int. Cl.[6] A63B 69/00
U.S. Cl. 273—26 A 9 Claims

1. A portable batting cage comprising a backstop having a first end and a second end, a first lateral wing having a free end and an



attached end, said first lateral wing attached end being pivotally attached by wing attachment means to said first end of said backstop, a second lateral wing having a free end and an attached end, said second lateral wing attached end being pivotally attached by wing attachment means to said second end of said backstop, and a non-rigid top connected to said backstop, said first lateral wing and said second lateral wing;

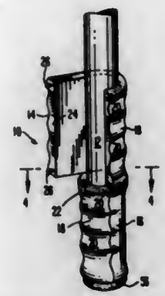
said backstop, said first lateral wing and said second lateral wing comprising a rigid, lightweight frame and netting attached to said frame by netting attachment means; the length of said first lateral wing being greater than the length of said backstop and the length of said second lateral wing being greater than the length of said backstop;

an extended tongue comprising a fixed end connected to said backstop and a free end, said tongue extending from said backstop in the direction opposite the direction in which the first and second lateral wings extend from said backstop; and

wheels pivotally attached beneath said first lateral wing, said second lateral wing, and said extended tongue, where one of said wheels is attached adjacent said free end of said first lateral wing, another of said wheels is attached adjacent said free end of said second lateral wheel, another of said wheels is attached adjacent said attached end of said first lateral wing, another of said wheels is attached adjacent said attached end of said second lateral wing, and another of said wheels is attached adjacent said free end of said extended tongue, and

dual wing attachment means adapted to connect one lateral wing of one device adjacent a lateral wing of a second device.

5,577,722
BAT GRIP DEVICE
Corey Glassberg, 5 Winmere Pl., Dix Hills, N.Y. 11746
Filed Jul. 7, 1995, Ser. No. 499,307
Int. Cl.[6] A63B 59/06
U.S. Cl. 273—26 B 8 Claims



1. A bat grip, comprising a first grip element having an outer surface conforming to a first hand of the user to be gripped thereby and a second grip element having an outer surface conforming to a second hand of the user to be gripped thereby, said first and second

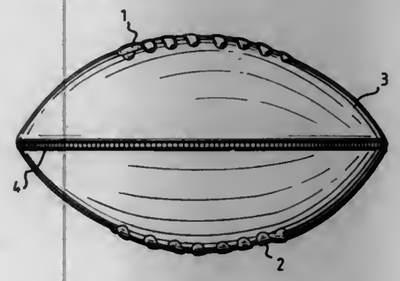
grip elements adapted to be independently positionable upon a bat handle in their relative rotational and axial orientations, each of said grip elements being of a generally cylindrical construction and having an inner surface for releasably rigidly engaging the bat handle when firmly gripped by the user.

5,577,723
SQUEEZABLE TOY BALL
Joseph G. DiResta; James DiResta, both of 1078 W. Broadway, and Perry Gargano, 995 E. Broadway, all of Woodmere, N.Y. 11598
Filed Oct. 16, 1995, Ser. No. 543,615
Int. Cl.[6] A63B 41/00; A63H 3/26
U.S. Cl. 273—58 H 7 Claims



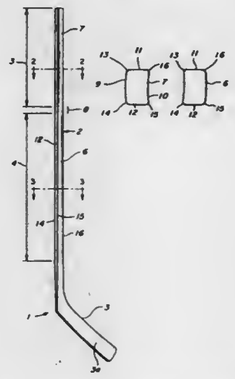
1. A "gross" toy in the form of a squeezable play ball comprising:
- A. generally spherical liquid-impermeable outer shell formed of transparent flexible plastic film material;
- B. a collapsible hollow core encased within the shell molded of resilient plastic material and shaped to simulate a human organ, or body part, said core being provided with an orifice to render it collapsible whereby when the playball is squeezed to deform the core, air within the hollow core is discharged through the orifice into a space between the core and the shell encasing the core and when the deformed core resumes its normal shape, the air in the space is sucked back into the core; and
- C. a charge of viscous liquid injected into the core through the orifice whereby when the ball is squeezed to deform it and then released so that it resumes its normal shape, air and said liquid are then discharged through the orifice into the space between the core and shell to produce a gurgling sound.

5,577,724
FOOTBALL
Paul J. Gandolfo, 1405 E. 98th St., Brooklyn, N.Y. 11236
Filed Feb. 8, 1995, Ser. No. 385,467
Int. Cl.[6] A63B 41/08
U.S. Cl. 273—65 A 1 Claim



1. A football comprising:
- a. an elongated football having four equally spaced seams extending the length of said football;
- b. lacings mounted on two of said seams located on opposite sides of said football to provide additional gripping surfaces on said football while maintaining perfect balance in said football, said lacings extending only along the central portion of said football.

5,577,725
HOCKEY STICK HANDLE
John Pagotto, Ville Mont-Royal, and Alain Bellefleur, St-Luc, both of Canada, assignors to Tropsport Acquisitions Inc., Lachine, Canada
Filed Dec. 4, 1995, Ser. No. 566,803
Claims priority, application Canada, Sep. 22, 1995, 2158898
Int. Cl.[6] A63B 59/14
U.S. Cl. 273—67 A 29 Claims



1. A hockey stick handle of rectangular configuration having a rear end and a forward end, said forward end being configured for engaging a blade having a first broad blade face and an opposed second broad blade face,

said handle having,
- a pair of opposed narrow sides comprising a top narrow side and a lower narrow side,
- a pair of opposed broad sides comprising a first broad side and a second broad side,
- the first and second broad sides being configured to merge respectively with the first and second broad blade faces of a said blade for forming a hockey stick comprising said handle and said blade

the improvement wherein said handle comprises
- a forward gripping zone for being gripped by one hand of a user
- a rear gripping zone for being gripped by the user's other hand
- and an intermediate transition zone connecting the forward and rear gripping zones together,
- said forward gripping zone comprising a first forward elongated face and a second forward elongated face, each of said forward faces extending forwardly from said transition zone, each of said forward faces being independently selected from the group of configurations comprising a forward elongated concave face, a forward elongated convex face and a forward elongated planar face,
- said rear gripping zone comprising a first rear elongated face and a second rear elongated face, each of said rear faces extending rearwardly from said transition zone, each of said rear faces being independently selected from the group of configurations comprising a rear elongated concave face, a rear elongated convex face and a rear elongated planar face,

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said first broad side comprising the first forward elongated face and the second rear elongated face, said second broad side comprising the second forward elongated face and the first rear elongated face,

the first forward elongated face of the forward gripping zone having a configuration different from that of the second forward elongated face of the forward gripping zone, the first rear elongated face of the rear gripping zone having a configuration different from that of the second rear elongated face of the rear gripping zone, the forward elongated face of the first broad side having a configuration different from that of the rear elongated face of the first broad side,

and

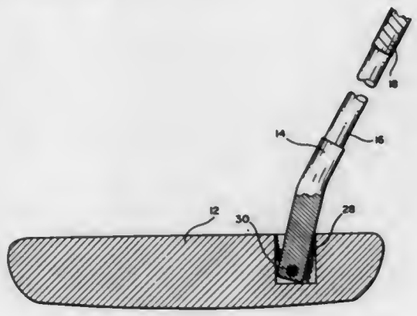
the forward elongated face of the second broad side having a configuration different from that of the rear elongated face of the second broad side.

5,577,726

ADJUSTABLE LIE PUTTER

Frank Fenton, 5358 Dominica Cir., Sarasota, Fla. 34233

Filed Mar. 15, 1995, Ser. No. 404,760
Int. Cl.[6] A63B *53/02*
U.S. Cl. 473—305 **3 Claims**



1. A putter type golf club including a shaft with a handle, a hosel and a club head body wherein the improvement comprises means for altering the lie angle between said shaft and said club head body:

said means including a slot formed in said club head body and a flange member on a lower portion of said hosel, structured and sized to fit within said slot;

said flange member including a bore opening;

said club head body including a pin member passing through said club head body into said bore opening in said flange member, fixing said flange relative to said club head body within said slot and allowing pivotal movement of said flange relative to said club head body around said pin; and,

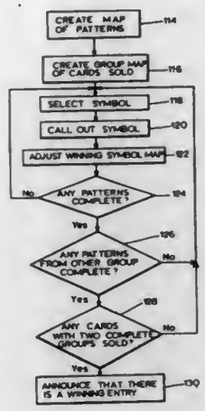
a locking means connected to said club head body and cooperating with said flange member, permitting said flange member to be locked in a preselected position, creating a preselected lie angle between said shaft and said club head body; said locking means including an opening formed in said club head body and a single locking member positioned within said opening in said club head body; said single locking member having an end cooperating with one of a series of depressions formed in said flange member above said pin.

5,577,727

INSTANTANEOUS BINGO TRACKING METHOD AND APPARATUS

Ian G. Brame, Lancashire, and Raymond K. Latham, Farnworth Bolton, both of England, assignors to Europrint Holding, Ltd., Blackburn, England

Filed Sep. 23, 1994, Ser. No. 310,948
Int. Cl.[6] A63F *3/06*
U.S. Cl. 273—139 **19 Claims**



12. A method for determining if a winning entry exists on entry cards comprising a plurality of spaces wherein each space contains one of a variety of symbols, the spaces are arranged in a first group and a second group, the symbols in the spaces of the first group on the cards form a plurality of patterns and at least one of the patterns in the first plurality appears on more than one card, the symbols in the spaces of the second group on the cards form a second plurality of patterns, and a winning card comprises a first group with a winning pattern and a second group with a winning pattern, comprising the steps of:

creating a first map of all patterns in the first group and a second map of all patterns in the second group wherein there are fewer patterns in the first map than there are entry cards;

selecting a series of winning symbols;

creating a third map of winning symbols;

comparing the first map to the third map to determine whether any patterns in the first group are winning patterns; and

comparing the second may to the third map to determine whether any patterns in the second group are winning patterns.

5,577,728

JIGSAW PUZZLE

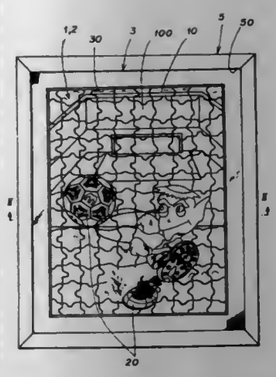
Hiroshi Kondo, Tokyo, Japan, assignor to Tenyo Co., Ltd., Tokyo, Japan

Filed May 19, 1995, Ser. No. 445,348
Claims priority, application Japan, Aug. 9, 1994, 6-187142; Oct. 7, 1994, 6-244032
Int. Cl.[6] A63F *9/12*
U.S. Cl. 273—157 A **16 Claims**

1. A jigsaw puzzle, comprising:

a substrate having first and second sides, and having a painting provided on the first side thereof, and cut into a multiple of irregular and interlocking pieces defined by cutting lines; and

a transparent member provided thereon another painting having close relationship with said painting of the substrate, and adapted to be laid on the first side of said substrate in such a manner that a part of said painting of the substrate is concealed by said another painting, thereby said another painting



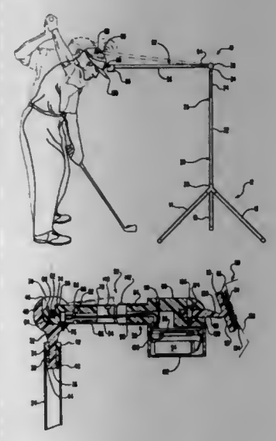
of the transparent member can be seen emphatically in relation to said painting of the substrate with the cutting lines concealed.

5,577,729

HEAD MOVEMENT DETECTOR

Max T. Sabour, 175 S. Main St., Ste 1600, Salt Lake City, Utah 84111

Filed Apr. 24, 1995, Ser. No. 390,077
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—274 **18 Claims**



1. A head movement detector comprising

an upright mast including a support base;

a projection arm extending from and movable with respect to an upper end of said mast;

a headgear attachment assembly secured to the end of said projection arm remote from said mast;

means for detecting and indicating selected movement of said headgear attachment assembly relative to said mast; and

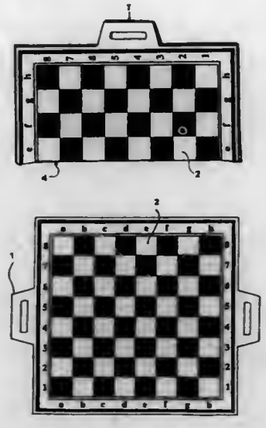
means for permitting an allowable movement of said headgear attachment assembly with respect to said projection arm before said means for detecting and indicating selected movement of said headgear attachment assembly detects and indicates said selected movement of said headgear attachment.

5,577,730

FLEXIBLE VINYL CHESS MAT THAT CONVERTS INTO A CARRYING CASE

Michael A. Vannozzi, Sr., 3522 Rawhide St., Las Vegas, Nev. 89120

Filed Jul. 7, 1995, Ser. No. 499,185
Int. Cl.[6] A63F *3/02*
U.S. Cl. 273—260 **13 Claims**



4. A game mat movable between a flat playing position and a folded position forming an enclosure for storing gaming paraphernalia comprising:

a flexible gaming mat having no creases, fold lines or score lines, said mat having a first edge, a second edge opposing said first edge, a third edge, and a fourth edge opposing said third edge, said first, second, third, and fourth edges forming a perimeter of said mat, said mat having a first side and a second side;

a first handle connected to said first edge and a second handle connected to said second edge, said handles arranged so that when said mat is folded and said first and second edges are placed proximate one another, said handles are in substantial alignment; and

fastening means located about at least a portion of said perimeter of said mat for joining said first and second edges to one another, and for joining a portion of said third edge to itself and a portion of said fourth edge to itself, whereby when said mat is folded as described above and said fastening means are fastened, an enclosure is formed.

5,577,731

METHOD OF PROGRESSIVE JACKPOT TWENTY-ONE WHEREIN THE PREDETERMINED WINNING ARRANGEMENT OF CARDS INCLUDE TWO ACES, THREE ACES AND FOUR ACES

Daniel A. Jones, Las Vegas, Nev., assignor to Progressive Games, Inc., Ft. Lauderdale, Fla.

Filed Jul. 24, 1995, Ser. No. 506,222
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—292 **33 Claims**

20. The method of including a jackpot component in a Twenty-One game comprising the steps of:

a. a player making a first wager to participate in the Twenty-One game;

b. a player making a second wager to participate in the jackpot component;

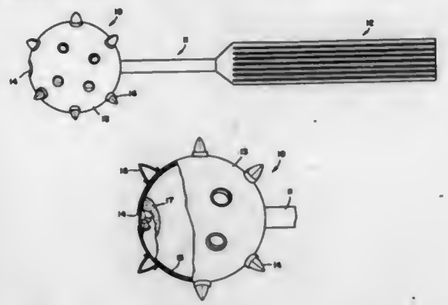
c. dealing a hand of playing cards to the player;

d. if the player's hand comprises a predetermined arrangement of cards, the player wins a preselected amount of the jackpot; and

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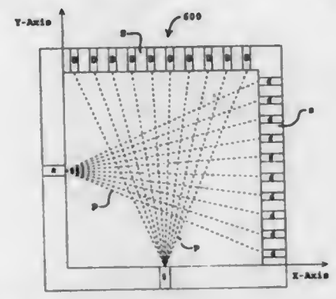
e. the predetermined arrangement of cards comprises at least two different predetermined arrangements of cards which win two different corresponding preselected amounts of the jackpot, said two different predetermined arrangements of cards each comprising at least two Aces.

5,577,732
TOY MISSILE
Donald Spector, 380 Mountain Rd., Union City, N.J. 07087
Filed Feb. 5, 1996, Ser. No. 596,652
Int. Cl.[6] A63B 65/00
U.S. Cl. 273—317 8 Claims



1. A toy missile comprising:
A. a globular head formed by a collapsible spherical casing of flexible material and a balloon inflated within the casing and conforming thereto to maintain the head in a spherical form, said head having a leading pole and a trailing pole;
B. an elongated, generally rectangular flat streamer of flexible material joined to the trailing pole of the head and extending therefrom, whereby when the streamer is grasped by a player to whirl the missile and then release it to let it fly, the streamer then acts as a tail fin to stabilize the flight; and
C. a charge of liquid deposited in the balloon which when the missile is whirled the resultant centrifugal force causes the liquid to form a concentrated mass adjacent the leading pole of the head to lengthen the flight path of the missile.

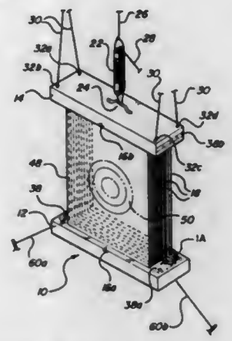
5,577,733
TARGETING SYSTEM
Dennis L. Downing, 403 David, Friendswood, Tex. 77546
Continuation-in-part of Ser. No. 225,257, Apr. 8, 1994. This application Oct. 6, 1994, Ser. No. 319,279
Int. Cl.[6] F41J 5/02
U.S. Cl. 273—348 40 Claims



1. A light panel comprising

a frame with a top, a bottom spaced apart from the top, a first side between the top and the bottom, and a second side spaced apart from the first side, the second side between the top and the bottom, the frame defining a frame space between its top, bottom, and two sides,
at least one light emitter on the first side, the at least one light emitter for continuously emitting a fan-shaped light beam, across the frame through which and beyond which an object may pass, and
at least one light detector on the second side of the frame for continuously detecting the fan-shaped light beam from the at least one light emitter.

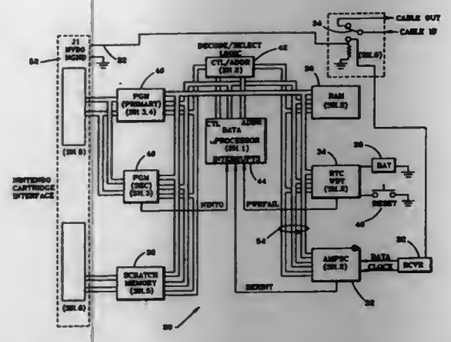
5,577,734
SUSPENDED TARGET SYSTEM
Patrick J. Conroy, 311 S. Huron Ave., Harbor Beach, Mich. 48441
Filed Sep. 7, 1994, Ser. No. 302,612
Int. Cl.[6] F41J 3/00
U.S. Cl. 273—407 26 Claims



1. A target system, comprising:
a plurality of sheets of flexible material connected to upper and lower frame members holding the sheets in spaced apart fashion to form a set of parallel, co-extensive layers;
means for suspending the upper frame member from above such that the target system is freely hanging, the lower frame member being flexibly suspended from the sheets, such that the layers slow or halt the projectile at least in part by the transfer of kinetic energy from the projectile to flexible motion of the sheets and corresponding motion of the frame members.

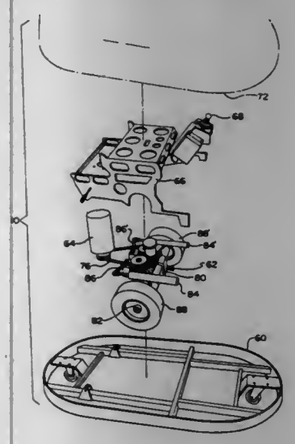
5,577,735
COMPUTER SOFTWARE DELIVERY SYSTEM
Michael J. Reed, and Michael F. Lavery, both of Austin, Tex., assignors to TCI Technology, Inc., Englewood, Colo.
Continuation of Ser. No. 706,222, May 28, 1991, Pat. No. 5,251,909. This application Oct. 6, 1993, Ser. No. 132,464
Int. Cl.[6] A63F 9/22
U.S. Cl. 273—439 16 Claims

1. A system for the delivery of computer software through a cable television network comprising:
transmitting means for transmitting said computer software over said cable television network said transmitting means further transmitting a menu associated with said computer software;
receiving means in communication with said transmitting means through said cable television network for receiving said computer software and said menu, said receiving means further including a first memory means for storing said computer software transmitted through said cable television network;
a computer having access to a second memory means;



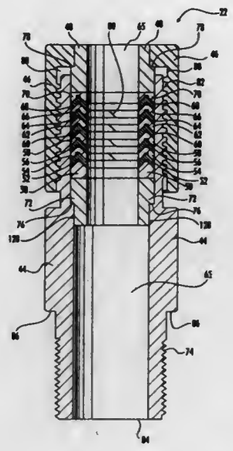
bus means connecting said first memory means to said second memory means;
said receiving means having a control processor for controlling said bus means.

5,577,736
ENTERTAINMENT GAME UTILIZING ELECTRICALLY POWERED CARS
Emile D. Arabo, 21845 Tuller Ct., Southfield, Mich. 48076
Filed Mar. 4, 1994, Ser. No. 206,117
Int. Cl.[6] A63B 67/00; B60L 9/00
U.S. Cl. 273—442 9 Claims



1. A bumper car for use in an amusement game played upon an electrified floor, the floor comprising a plurality of panels, each panel being of either a positive polarity or a negative polarity, the panels being deployed in alternating polarity, the car comprising:
(a) a chassis;
(b) means for drawing current from the floor;
(c) an electric motor receiving the current drawn from the floor to provide power for the car;
(d) a drive to translate the power received from the motor to wheels to drive and direct the car;
(e) a frame mounted upon the chassis;
(f) a joystick mounted upon the frame;
(g) a control unit in electrical communication with the joystick, the control unit being mounted upon the frame;
(h) a pair of actuators, the actuators being mounted upon the frame, the actuators being in communication with the control unit, the actuators being in communication with the drive, the control unit governing the drive through the actuators.

5,577,737
METHOD AND APPARATUS FOR ESTABLISHING AND MAINTAINING A FLUID SEAL AROUND A POLISHING ROD
C. Dean Lacy, College Station, Tex., assignor to Universal Stuffing Box, Inc., College Station, Tex.
Continuation of Ser. No. 116,061, Sep. 2, 1993, abandoned. This application Feb. 29, 1996, Ser. No. 608,953
Int. Cl.[6] F16J 9/00
U.S. Cl. 277—1 14 Claims



1. A sealing apparatus for a reciprocating polished rod, comprising:
a unitary housing body having a lower end and an upper end, the lower end being adapted for engagement into a well and the upper end comprising a first mating surface comprising a lip formed on an inner surface thereof;
a cap having an aperture for receiving the polished rod, the cap being removably engaged with the upper end of the unitized housing body and comprising a second mating surface formed on an inner surface thereof; and
a fluid responsive gland held in a compressed state by said first mating surface and said second mating surface for circumferentially engaging the polished rod and effecting a sliding seal upon the rod, said fluid responsive seal comprising:
a first self-alignment bushing having an L-shaped cross-section, said first self-alignment bushing communicating with said first mating surface to axially compress the fluid responsive gland and communicating with the inner surface of the upper end of the housing body to radially align the polished rod,
a second self-alignment bushing having an L-shaped cross-section, said second self-alignment bushing communicating with said second mating surface of said cap to axially compress the fluid responsive gland and communicating with both an inner edge of the aperture of said cap and the inner surface of the upper end of the housing body to radially align the polished rod, and
a plurality of V-shaped packing rings stacked in one continuous and uninterrupted zone between said first self-alignment bushing and said second self-alignment bushing.

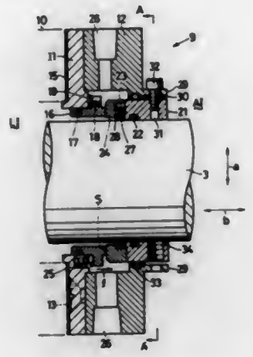
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5,577,738

OUTSIDE TYPE MECHANICAL SEAL DEVICE

Michihito Fukuda, 2-2-63, Matsuta Omiya, Tsurumi-ku, Osaka, Japan

Continuation of Ser. No. 235,281, Apr. 29, 1994, abandoned.
This application Jan. 19, 1996, Ser. No. 588,757
Int. Cl.[6] F16J 15/34
U.S. Cl. 277—9.5 2 Claims



1. An outside type mechanical seal device for preventing fluid or gas from entering into an atmospheric environment through leakage on the surface of a rotary shaft (3) connected between said atmospheric environment and a fluid or gas environment; said device comprising:

an annular first flange (11) surrounding said shaft (3);

means (15) for connecting said first flange (11) to a structure (10) holding said shaft (3);

an annular seat ring (16) fixed to said first flange (11) with a first seal means (17) disposed therebetween;

an annular second flange (17) connected to said first flange (11);

an annular stopper ring (21) fixed on said shaft (3) by a set bolt (20);

second seal means (22) disposed between said stopper ring (21) and said shaft (3);

an annular rotary ring (24) connected to said stopper ring (21) and disposed between said stopper ring (21) and said seat ring (16);

spring means (25) for pressing said seat ring (16) against said rotary ring

third seal means (33) disposed between said second flange (12) and said stopper ring (21);

said second flange (12) comprising a plurality of protrusions (29) extending axially of said shaft (3) and located at positions confronting an outer circumference of said stopper ring (21) and at specified intervals around said outer circumference of said stopper ring;

a plurality of spacers (30) interposed between an inside surface of said protrusions (29) and said outer circumference of said stopper ring (21);

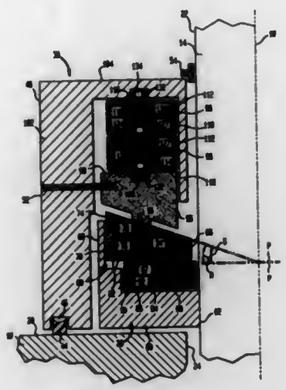
a plurality of cap bolts (32) connecting and aligning said protrusions, said spacers and said stopper ring, and being removed together with said spacers (30) after installation of the device on said shaft (3) and said structure (10), so that said stopper ring (21) and said rotary ring (24) rotate with the shaft (3), and the first flange (11), second flange (12) and seat ring (16) remain stationary with said structure (10) with said first, second and third seal means providing sealing function against leakage of fluid or gas.

5,577,739

MECHANICAL SEAL WITH ANGULAR SEALING SURFACE

Alfredo A. Ciotola, 6 Trinity Pl., Warren, N.J. 07059

Filed Sep. 2, 1993, Ser. No. 115,240
Int. Cl.[6] F16J 15/34
U.S. Cl. 277—39 17 Claims



1. A mechanical seal for forming a seal between a stationary housing and a rotatable shaft extending therefrom, the shaft having a shaft axis, the mechanical seal comprising:

stationary components further comprising a stationary seal comprising a stationary seal surface extending circumferentially around the shaft axis, the stationary seal surface being at a stationary seal surface angle to a plane perpendicular to the shaft axis, the stationary seal being sealingly interconnected to the stationary housing; and

rotatable components further comprising a sleeve sealingly connected to the shaft, a rotatable seal comprising a rotatable seal surface extending circumferentially around the shaft axis, the rotatable seal surface being at a rotatable seal surface angle to the plane perpendicular to the shaft axis, and a rotatable seal element radially projecting surface, the rotatable seal being sealingly interconnected to the rotatable shaft,

the stationary seal surface angle being oblique, the rotatable seal surface being oblique and substantially equal to the stationary seal surface angle, and the stationary seal surface and rotatable seal surface located to be opposed to each other and in contact; and

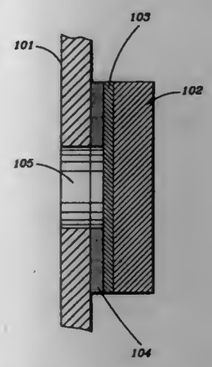
an elastic means to force the rotatable seal surface against the stationary seal surface under sufficient pressure to form a mechanical seal comprising at least one rotatable seal disc axially located between the sleeve and the rotatable seal element radially projecting surface to force the rotatable seal surface into contact with the opposing stationary seal surface, the elastic means to force being located to assert an axial force on at least one seal element selected from the stationary seal element and the rotatable seal element, there being a sleeve disc groove defined by a sleeve disc groove radially projecting surface and sleeve disc groove circumferentially projecting surface in the sleeve, whereby the rotatable seal disc is located axially between the sleeve disc groove radially projecting surface and the rotatable seal element radially projecting surface and the disc has an outer circumferential surface adjacent to the sleeve disc groove circumferentially projecting surface to radially restrain the rotatable seal disc.

5,577,740

THERMAL ACTIVATED SELF-RELEASING SEAL FOR BOILER

Gregory W. Purdom, Sarasota, Fla., assignor to Loral Fairchild Corp.

Filed Oct. 19, 1994, Ser. No. 325,676
Int. Cl.[6] F16J 9/00; B65D 90/36
U.S. Cl. 277—26 26 Claims



1. Apparatus for sealing an aperture in a thermal mass container containing a thermal mass, comprising:

(a) a seal support located on the exterior of, separate and detached from, said container;

(b) a fusible seal, attached to said seal support, to form a one piece seal when combined with said seal support, wherein the fusible portion of said one piece seal is operative to release said one piece seal when said thermal mass is heated to a predetermined temperature; and

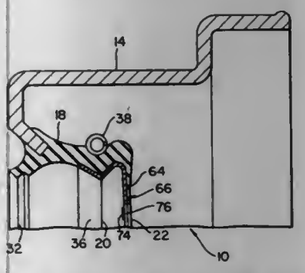
(c) means for attaching the fusible seal portion of said one piece seal to said container to cover said aperture, wherein the means for attaching is located on the exterior of and is separate from said container.

5,577,741

COMBINATION LIP AND SLEEVE SEAL AND ITS METHOD OF MANUFACTURE

Danny R. Sink, Chester, Va., assignor to Brenco Incorporated, Petersburg, Va.

Filed Jul. 17, 1995, Ser. No. 503,212
Int. Cl.[6] F16J 9/06
U.S. Cl. 277—153 12 Claims



1. A combination radial lip and sleeve seal assembly for a relatively rotating shaft surface comprising, the seal assembly having an oil side and an atmosphere side,

a rigid metal seal case,

a seal body of elastomeric material mounted on and permanently bonded to said seal case, said seal body comprising a radial lip seal and a sleeve seal, said sleeve seal being spaced axially from the radial lip seal on the oil side of the seal assembly,

said sleeve seal being in the form of an inwardly directed generally radially extending annular flange having a generally radially extending face on the side thereof closest said radial lip seal, said annular flange having an inner diameter substantially less than the diameter of said radial lip seal,

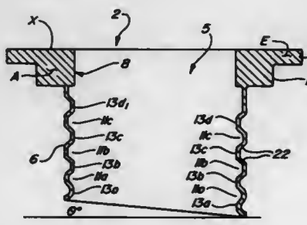
said flange being sufficiently resilient to be axially telescoped onto the shaft surface and deflected in the direction away from said lip seal when the seal assembly is mounted on the shaft whereby the radially inner portion of said flange assumes a substantially cylindrical configuration with said generally radially extending face in contact with the relatively rotating shaft for a finite distance along the axis of the shaft.

5,577,742

METALLIC STEM SEAL WITH INCLINED CHANNEL AND INTEGRAL SUPPORT MEMBER

Terence P. Nicholson, Hexham, United Kingdom, and Michael J. C. Tozer, Stocskfield, Netherlands, assignors to Specialist Sealing Limited, Jersey, Channel Islands

Filed Jun. 6, 1995, Ser. No. 483,066
Claims priority, application United Kingdom, Mar. 21, 1995, 9505717
Int. Cl.[6] F16J 15/56
U.S. Cl. 277—203 13 Claims



1. A stem seal comprising a cylindrical sealing membrane and membrane supporting means for supporting the sealing membrane, in use, in position about and in contact with a respective stem, wherein the sealing membrane has a radially inner face and a longitudinal axis, and comprises at least one loop-shaped channel arranged and adapted to encircle said stem when in use, and contact surfaces which bound said channel on said radially inner face of said membrane, said channel extending along a path that is inclined with respect to a plane perpendicular to the longitudinal axis of the membrane.

5,577,743

QUICK RELEASE CHUCK DEVICE

Roger J. Kanaan, Easley, and Edward H. Martin, Anderson, both of S.C., assignors to Power Tool Holders, Inc., Wilmington, Del.

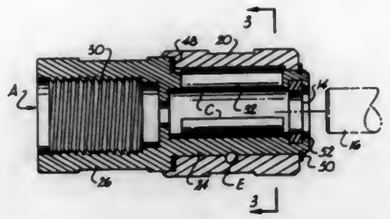
Filed May 10, 1995, Ser. No. 438,880
Int. Cl.[6] B23B 31/22
U.S. Cl. 279—72 14 Claims

1. A quick release chuck device, comprising:

a body member having an internal bore defined therein for receipt of a tool shank, said body member further comprising a mechanism for mounting said body member onto a drive spindle;

a plurality of circumferentially spaced passages defined in said body member, each said passage defining an opening into said internal bore;

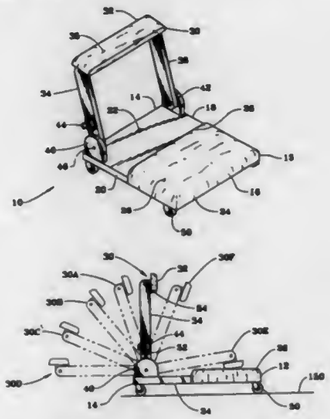
bearing members disposed in said passages, said bearing members being radially movable within said passages so that at



least a portion of each said bearing member extends into said internal bore through said openings in a gripping mode of said chuck device; and

an outer sleeve disposed concentric about said body member around said bearing members, said sleeve being rotatably limited and rotatably non-biased relative to said body member, said outer sleeve having an inner diameter surface with spaced apart ramping bearing member engaging surfaces defined therein and circumferentially spaced to correspond to the circumferential spacing of said bearing members within said passages, said bearing members contacting said inner diameter surface along said engaging surfaces, said outer sleeve being rotatable between a gripping position and a released position of said chuck device defined by the circumferential length of said engaging surfaces wherein rotational movement of said outer sleeve to said gripping position causes said engaging surfaces to force said bearing members radially inward to positively grip a tool shank disposed in said internal bore at any position on the circumference of the tool shank, and rotational movement of said outer sleeve to said released position allows said bearing members to move radially outward thereby releasing a tool shank disposed in said internal bore.

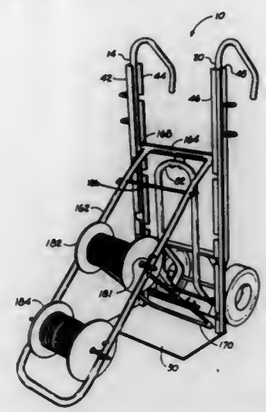
5,577,744
UTILITY CART
James E. Parks, 220-C Foxtail Dr., West Palm Beach, Fla. 33415
Filed May 9, 1995, Ser. No. 438,264
Int. Cl.[6] B62B *3/02*
U.S. Cl. 280—32.6 **7 Claims**



1. A utility cart comprising:

a rigid planar platform defined by a front edge, a rear edge, a first and second side edge, an upper surface and a lower surface; first pivot member means secured to said upper surface adjacent said front edge and said first side edge; second pivot member means secured to said upper surface adjacent said front edge and said second side edge; a support bracket having a first leg coupled with a pivoting means to said first pivot member at a proximal end of said first leg and a second leg coupled with a pivoting means to said second pivot member at a proximal end of said second leg with a cross brace coupled to a distal end of each said first and second leg, said first and second leg pivotally movable between a storage position defined by the juxtapositioning of said cross brace to said upper surface of said platform, and an open position defined by placement of each said leg in a horizontal plane parallel to said upper surface extending outwardly from said front edge, said first and second legs having parallel longitudinal axes; latch means extending above said upper surface for locking said first and second legs to said pivot member means in a position between said open and closed position; and a plurality of wheels removably secured to said lower surface of said platform.

5,577,745
PERSONAL MATERIAL HANDLING SYSTEM
James R. Birk, 7100 SW. 139th, Oklahoma City, Okla. 73173
Continuation of Ser. No. 142,254, Oct. 22, 1993, abandoned. This application Jan. 5, 1996, Ser. No. 583,265
Int. Cl.[6] B62B *1/00*
U.S. Cl. 280—47.19 **10 Claims**



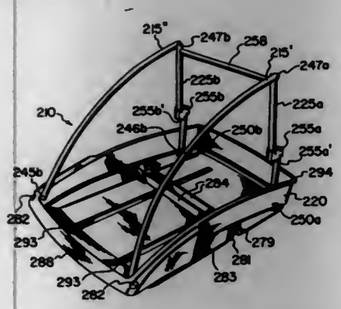
1. A personal material handling system, comprising:

a frame comprising a first vertical member having a first end and a second end, and a second vertical member having a first end and a second end and at least one cross-member connected to the first and second vertical members, and a support plate connected to the second ends of the first and second vertical members;

wheel means connected to the frame for rollingly supporting the frame; and

a reel holder removably connected to the frame, the reel holder comprising a first U-shaped member removably connected to the first and second vertical members of the frame, a second U-shaped member movably connected to the first U-shaped member, and axle means for holding reels of wire, the reel holder having an extended position wherein the first and second U-shaped members of the reel holder cooperate with the first and second vertical members and the support plate of the frame to promote the stability of the personal material handling system when the personal material handling system is in an upright position, the reel holder also having a retracted position wherein the first and second U-shaped members of the reel holder are disposed substantially adjacent the first and second vertical members of the frame such that the reel holder is positioned within the frame of the personal material handling system.

5,577,746
FOLDING TRANSPORT VEHICLE
Daniel W. Britton, Alberta, Canada, assignor to 634182 Alberta Ltd., Alberta, Canada
Continuation-in-part of Ser. No. 107,877, Aug. 18, 1993, Pat. No. 5,474,316. This application May 9, 1995, Ser. No. 437,660
Int. Cl.[6] B62K *27/12*
U.S. Cl. 280—204 **10 Claims**



1. A folding transport vehicle comprising:

a lower chassis defining substantially a lower limit of a cargo compartment and having a first end;

an upper frame, formed of at least one elongate member and defining substantially an upper limit of the cargo compartment, the upper frame being pivotally connected to the chassis adjacent the first end;

at least one folding frame unit, each folding frame unit having a first end and an opposite end, the first end of each folding frame unit being pivotally connected to the chassis and the opposite end of each folding frame unit being pivotally connected to the upper frame,

each folding frame unit having a pivot point such that the folding frame unit is foldable from an extended position to a collapsed position allowing the upper frame to rotate towards the chassis and thereby fold the vehicle into a compact position; and,

a displacement means.

5,577,747
BATTERY UNIT COOLING SYSTEM FOR AN ELECTRIC VEHICLE
Masao Ogawa, and Toru Iwadate, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 19, 1994, Ser. No. 325,943
Claims priority, application Japan, Oct. 19, 1993, 5-261336
Int. Cl.[6] B60K *11/06*
U.S. Cl. 180—220 **8 Claims**

1. An electric vehicle having a battery unit cooling system, comprising:

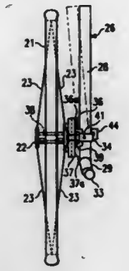
a longitudinal, hollow frame included in the electric vehicle;

a plurality of branch ducts branching from the frame and connected respectively to a plurality of battery units arranged along the frame; and

a cooling fan connected to one end of the frame to cool the plurality of battery units in a forced-draft mode;

wherein a flow passage area of a branch duct furthest from said one end of the frame is smaller than those of the other branch ducts.

5,577,748
WHEELCHAIR HAVING FREEWHEEL HANDLE AND BRAKE ASSEMBLY
Gregory J. Dombrowski, 805 NE. Green Oaks Blvd., #370, Arlington, Tex. 76006-2217, and Jay H. Song, 901 Dawson St., Cedar Hill, Tex. 75102
Continuation of Ser. No. 998,004, Dec. 28, 1992, abandoned. This application Jun. 29, 1994, Ser. No. 268,921
Int. Cl.[6] B62M *1/16*
U.S. Cl. 280—244 **8 Claims**



1. A wheelchair, comprising:

a structural frame, including a chassis, a seat and a back rest;

a pair of front wheels attached to the chassis and positioned below the seat;

a pair of drive wheel assemblies mounted on the chassis on each side of the seat for independent rotation about a horizontal axis, each drive wheel assembly including a wheel rim and a hub having an axle;

a drum having a diameter smaller than the wheel rim attached to the hub of at least one drive wheel assembly and fixed statically thereto, the drum defining a first laterally facing contact surface;

an arm including a pad having a second laterally facing contact surface for frictionally engaging the first contact surface of the drum; and

means for rotatably supporting the arm on the axle of the drive wheel assembly and including pivot means for enabling the arm to be moved between first and second lateral positions;

wherein when the arm pivots from the first to the second lateral position, the second contact surface of the pad frictionally engages the first contact surface of the drum to enable a person seated in the wheelchair (i) to propel the drive wheel assemblies forward using the frictional forces between the first and second contact surfaces by rotating the arm in a first direction, (ii) to propel the drive wheel assemblies backwards using the frictional forces between the first and second contact surfaces by rotating the arm in a second direction or (iii) to brake the wheelchair using the frictional forces between the first and second contact surfaces.

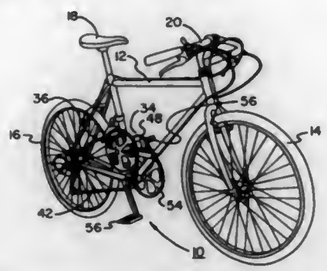
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5,577,749

TWIN GEAR DRIVE ASSEMBLY FOR A BICYCLE

Thomas Ross, 6657 S. Drexel, Chicago, Ill. 60637

Filed Jul. 11, 1994, Ser. No. 273,192
Int. Cl.[6] B62M 1/02
U.S. Cl. 280—261 1 Claim



1. A new and improved twin gear drive assembly for a bicycle comprising, in combination:

a bicycle having a frame, front and rear wheels, a seat, handle bars, and controls, a rear gear assembly including a plurality of gears on the frame adapted to drive the rear wheel with an associated rear derailleur for shifting and retaining the chain on a proper gear;

a front gear assembly with a plurality of gears adapted to drive the plurality of rear gears, the front gear assembly being coupled to the frame driving the rear wheel, the front gear assembly having an associated front derailleur;

a first chain coupling the front and rear gear assemblies, a first and second chain retainer coupled thereto, the first and second chain retainers each formed as a disc with a plurality of teeth;

an intermediate gear with a shaft coupled to the front gear assembly for concurrent rotation;

a drive gear coupled to the frame beneath the intermediate gear, the drive gear including pedals for the rotation thereof, the drive gear being coupled to and coaxial with the second chain retainer;

a second chain coupling the drive gear and the intermediate gear; and

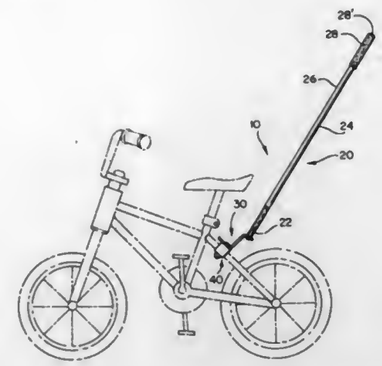
a first gear shifter on the handle bars for controlling the front derailleur.

5,577,750

BICYCLE STABILIZING FLEXPOLE TRAINER

Lyle W. Sklar, 4210 NW 26th Ct., Boca Raton, Fla. 33434

Continuation of Ser. No. 43,896, Apr. 7, 1993, abandoned. This application Jul. 11, 1994, Ser. No. 272,663
Int. Cl.[6] B62H 7/00
U.S. Cl. 280—293 1 Claim



1. A bicycle stabilizing training apparatus, for use on a bicycle having a front end and a rear end and having a frame including a front wheel having an axle and a rear wheel having an axle, and further including a seat and a seat supporting member and a rear wheel mounting fork extending from said seat supporting member to said axle of said rear wheel, and having a combined center of gravity when mounted by a bicycle rider, comprising an elongate balancing pole member comprising a pole member first end for mounting to said bicycle frame and a pole member second end adapted to be gripped as a handle, said pole member being adapted to function as a lever for a trainer behind said bicycle to grasp and hold and thereby to support, propel, balance and stop said bicycle, and to release and re-grab said handle and recover balance for allowing the rider to test his or her riding ability without falling,

pole member mounting means adapted to secure said pole member to said rear wheel mounting fork adjacent said seat supporting member, such that said pole member mounting means is located near said combined center of gravity for creating a maximum moment at said pole member second end about said combined center of gravity,

wherein said pole member is tilted toward said rear end of said bicycle and extends to a point behind said axle of said rear wheel to permit said trainer improved access to said pole member,

wherein said pole member mounting means comprises an adjustable anchor clamp engaging said rear wheel mounting fork to support said pole member, said anchor clamp comprising opposed upper and lower anchor plates having fastening means urging them into compression contact with said rear wheel mounting fork,

a connector plate joining said anchor clamp and said first end of said pole member, said connector plate having connector plate fastening means securing said connector plate to said pole member,

wherein said connector plate defines a topmost rearwardly inclined ledge segment, an elevating segment extending below said ledge segment and a forwardly extending lowermost segment, wherein said inclined ledge segment provides a perpendicular contact for said pole member, said elevating segment spacing said pole member apart from said bicycle frame, said lowermost segment providing means for positioning of said connector plate on the anchor clamp,

wherein said upper anchor plate exceeds said lower anchor plate in lateral dimension and has leg portions depending therefrom, said leg portions providing a retaining structure for said lower plate, whereby to confine said lower plate against displacement relative to said upper anchor plate and to confine said mounting fork to prevent lateral displacement of said anchor plate relative to said frame.

5,577,751

REMOVABLE TRUCK BED TRAILER HITCH

Mark L. Matthews, Rt. 5, Box 398, 2744 Rockford Rd., Yadkinville, N.C. 27055

Filed Dec. 12, 1994, Ser. No. 354,468
Int. Cl.[6] B60D 1/06
U.S. Cl. 280—415.1 6 Claims

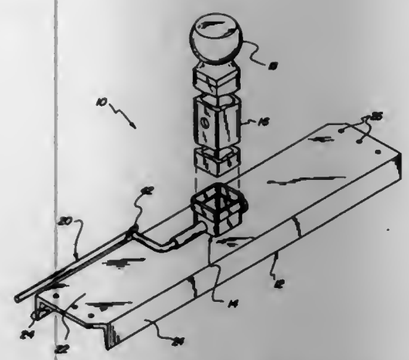
1. A removable truck bed trailer hitch comprising:

a vertical stanchion;

a ball hitch coupled to an upper end of the vertical stanchion;.

a mounting means comprises an elongated plate of substantially rectangular configuration having depending side walls extending from longitudinally opposed edges of the plate into a substantially spaced and parallel orientation for securing to the frame of a vehicle;

a receiving means comprising a receiving tube extending through an aperture in the elongated plate of the mounting means and secured to and projecting from the mounting means for receiving the vertical stanchion;



a coupling means extending through both the receiving means and the vertical stanchion for removably coupling the ball hitch relative to the mounting means;

the receiving tube is shaped so as to define a pair of diametrically opposed apertures extending through the receiving tube, with the vertical stanchion being shaped so as to define a pair of diametrically opposed apertures extending therethrough, and further wherein the coupling means comprises a guide tube secured to an exterior surface of the receiving tube of the receiving means and positioned in contiguous communication with the pair of diametrically opposed apertures extending through the receiving tube; and

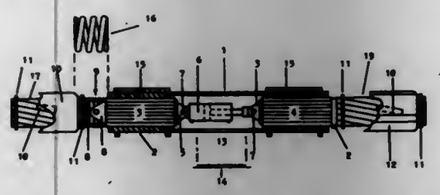
a securing pin projecting through the guide tube and the apertures in both the receiving tube and the vertical stanchion to couple the ball hitch relative to the mounting means.

5,577,752

LINEAR TORQUE ACTUATOR

Jerome A. Johnson, 1509 W. 2nd Ave., Gary, Ind. 46402-1019

Continuation-in-part of Ser. No. 31,650, Mar. 16, 1993, abandoned. This application Aug. 9, 1995, Ser. No. 467,096
Int. Cl.[6] B62D 53/06
U.S. Cl. 280—432 3 Claims



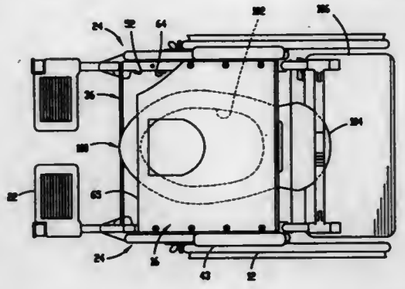
1. A linear torque actuator for use in a steering stabilizer device comprising in combination: a hollow tube member having a first end and a second end and having incorporated at each of the ends thereof, a first and a second spline guide member for piloting, reciprocatively, a first and a second combination spline shaft member, each comprising a conjoint rectilinear spline end member and a helicoidal spline end member, a first and a second clevis member fixedly attached at the inward spline ends thereof for pivotally connecting said conjoint spline shaft members within said hollow tube member with a first and a second connecting pin member to a reciprocative engine member positioned within said hollow tube member and adapted to be connected to a flow control device linked to the towing vehicle steering mechanism with synchronization thereof, a first and a second mount bracket member fixedly attached to and surrounding the ends of the hollow tube member at the spline guide members for mounting the invention longitudinally to the underside hatchable end of a trailer with the vertical center line of the universal member disposed in positive vertical pivotal alignment with the pivotal member of the accompanying trailer, an access aperture member and an aperture cover member disposed alone the length of the hollow tube member and between said first and said second mount bracket members and fissionable thereat with bolts for facilitating assembly of the invention and enabling of said reciprocative engine member, a first and a second effectual connection member being keyed internally and meshed torsionally and reciprocatively on the outward spline ends of said first and said second conjoint spline shaft members and is restricted thereto with, a first and a second retaining member disposed in each of the ends of said outward spline ends before and after each effectual connection member mounted thereon for constraining said effectual connection members thereon with said first effectual connection member being indistinct on the surface circumference thereof for easy engagement of a truck mountable seizing coupling and said second or rearward trailer effectual connection member having levers extending symmetrically outward from the rearward outward spline end for mounting and traversing longitudinal structural frame members of a trailer for, reciprocative helical operative leverage resistance against trailer lateral momentum, a first and a second yoke member and a universal member joining one of the rectilinear spline end members to the first helicoidal spline shaft member thereby creating a joint in the invention and effecting manifold angular torsional performance therein, and a coil spring aligning member positioned firmly between said first effectual connection member and the forward end of said hollow tube member.

5,577,753

WHEELCHAIR AND COMMODE SEAT THEREFOR

Edward M. Pociask, 408 W. Walnut, Mt. Prospect, Ill. 60056

Filed Sep. 14, 1995, Ser. No. 527,927
Int. Cl.[6] B62M 1/14
U.S. Cl. 280—250.1 20 Claims



1. A wheelchair for universal use, including long term sitting and for toilet needs without assistance and/or leaving the wheelchair, comprising

spaced side structures, wheels rotatably mounted on the side structures for rolling along a surface, and seat frame structures movably connected to the side structures;

means interconnecting the side structures and the seat frame structures for moving between opened and collapsed wheelchair positions respectively with the side structures spaced apart and closely adjacent one another;

a flexible durable seat panel secured along panel side edges to the seat frame structures and extended to spaced front and rear edges, said seat panel having an opening therein spaced from the front, rear and side panel edges, and defining side and rear support regions between the opening and the corresponding panel edges;

said seat panel in the wheelchair opened position being drawn to stretched although not tight or flat configurations, allowing a wheelchair occupant to be carried on the seat panel with the rear and side support regions underlying the occupant's buttock and legs and allowing also the wheelchair occupant to

shift the buttock along the seat panel to overlie the seat opening for toilet needs;

the seat frame structures and seat panel in the wheelchair opened position being spaced sufficiently above the surface to provide vertical clearance over the top of a toilet bowl; and

said interconnecting means being at front edges of the side structures and seat frame structures and comprising X-cross braces having elongated members pivoted together near their centers and means pivoting lower ends thereof respectively to the side structures and means pivoting upper ends thereof to the seat frame structures of the other respective side structure, so that rearwardly of the X-cross braces and under the seat frame structures and between the side structures no wheelchair structure exist that would prevent the wheelchair from being rolled backwards to have the wheels straddle the toilet bowl and to align the seat panel opening vertically over the toilet bowl.

5,577,754

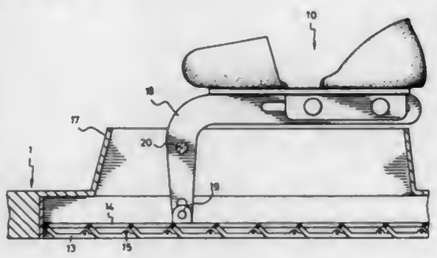
ANTI-REVERSE SLIDING MOTION MECHANISM

Chyn-Herng Hwu, 1 Fl., No. 14, Alley 65, Lane 134, Sec. 3, Shin-Yi Road, Taipei, Taiwan

Filed Apr. 26, 1994, Ser. No. 233,239

Int. Cl.[6] A63C 7/10

U.S. Cl. 280—605 6 Claims



1. An anti-reverse sliding device for use in a sliding carrier having a sliding surface on a bottom side of the sliding carrier, the anti-reverse sliding device comprising:

a frame defined in a bottom of the sliding carrier;

a plurality of anti-reverse sliding plates disposed within the frame and having a first pivot point on a first end of the sliding plates pivotally connecting the sliding plates to one another and a second pivot point on a second end of the sliding plates pivotally connecting the sliding plates to the sliding carrier, a poriton of the sliding plates extending beyond the second pivot point;

wherein the sliding plates have a range of motion between a first position and a second position, the sliding plates form a smooth surface flush with the sliding surface of the sliding carrier in the first position and the sliding plates form an anti-reverse sliding surface having the portion of the sliding plates extending beyond the second pivot point extending beneath the sliding surface of the sliding carrier in the second position; and

wherein the second pivot point pivotally connects the sliding plates to the sliding carrier at a position near the bottom side of the siding carrier.

5,577,755

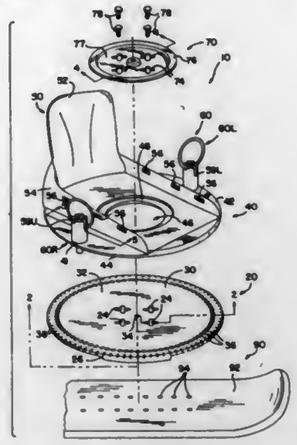
ROTATABLE BINDING FOR SNOWBOARD

Fritz Metzger, Fallbrook; Ted F. Metzger, and Michael E. Metzger, both of Quail Valley, all of Calif., assignors to Knusport Manufacturing Limited, Ontario, Canada

Filed Jul. 11, 1994, Ser. No. 273,427

Int. Cl.[6] A63C 9/00

U.S. Cl. 280—607 10 Claims



1. A binding for a snowboard; said binding comprising:

a base plate to be fixedly attached to a top surface of the snowboard;

said base plate having:

a top including an indexing platform including a multiplicity of bores arranged in circular fashion along a circular arc about a central axis;

a binding plate rotatably mounted on said base plate, so as to rotate unobstructedly 360° about an axis of rotation coincident with the central axis of the circular arc of the bores, including:

a bottom;

a top;

a foot binding on said binding plate top;

a locking assembly including:

a pin mounted on the top of said binding plate selectively moveable from a raised position clear of the bottom of the binding plate and not restricting rotation of said binding plate relative to said base plate, to a lowered position extending below the bottom of said binding plate engaging a said bore such that said binding plate may not rotate relative to said base plate; said pin positioned on said base plate such that said pin is registrable in any one of said multiplicity of bores; and

mounting means for mounting said binding plate to said base plate so as to permit it to rotate relative thereto.

5,577,756

SNOWBOARD BINDING SYSTEM

Jeffrey E. Caron, 170 Nanaquaket Rd., Tiverton, R.I. 02878

Filed Jul. 19, 1993, Ser. No. 94,474

Int. Cl.[6] A63C 9/084

U.S. Cl. 280—617 9 Claims

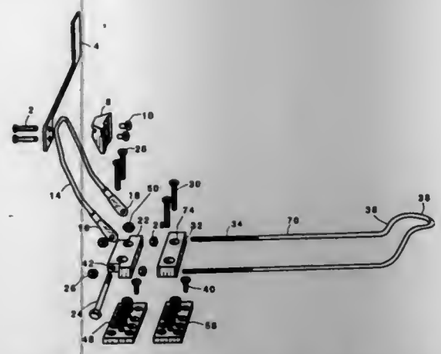
1. A binding comprising:

means for engaging a first end of a boot;

means for engaging a second end of said boot; and

means for slideably connecting said first end engaging means and said second end engaging means, wherein said first end engagement means further comprises:

a U-shaped member; and



said slidable connection further comprises: a block having a bore, and wherein said U-shaped member is angled to engage the edge of a boot bottom, wherein said second end engagement means further comprises:

a lock down means;

a bail for actuating said lock down means;

and

a second block having a bore, such that, when said boot is engaged, said U-shaped member forms a spring further comprising:

first and second mounting plates for connecting said first and second end engagement means to said board said binding further comprising:

canting means located between said engagement means and said mounting plates.

5,577,757

BINDING SYSTEM FOR SLIDE BOARDS, PARTICULARLY SNOW BOARDS, AS WELL AS BOOTS FOR USE WITH SUCH A BINDING SYSTEM

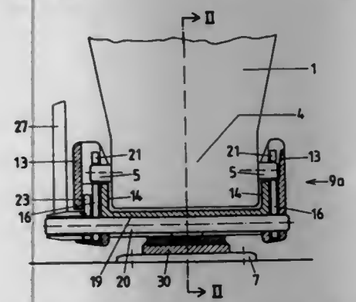
Gunther Riepl, Hirtenstrasse 5, 93059 Regensburg, and Reiner Roith, Alte Dinauer Strasse 15, 93183 Kallmunz, both of Germany

Filed Feb. 15, 1994, Ser. No. 196,391

Claims priority, application Germany, Feb. 17, 1993, 43 04 876.5; Apr. 8, 1993, 43 11 630.2

Int. Cl.[6] A63C 9/08

U.S. Cl. 280—624 15 Claims



1. A system for binding a boot on a snow board, with said boot having projections laterally extending from a heel thereof, wherein said system comprises:

a) a front binding element having a holding element for engaging behind one of a surface and a step on the front end of the boot;

b) a rear binding element comprising two support jaws and locking means, with the region of the heel of the boot being adapted to be fastened between the support jaws and wherein the locking means is adapted to engage the projections, thereby fixing the boot in said rear binding element;

wherein each of said support jaws comprises at least one recess having an open end facing away from the snow board, with each of said recesses being sized and positioned for introduction therewithin of one of said projections, such that, after said introduction, the projections respectively extend transversely into the respective recesses; and

wherein the locking means comprises book-shaped elements adapted to respectively engage the transversely extending projections whereby the projections are prevented from being removed from the respective recesses, said book-shaped elements being pivotally mounted on respective support jaws about an axis extending parallel to the projections, for a movement between a locking position, in which a hook shaped locking section of the locking element extends over the recess and closes the opening of the recess, and a non-locking position, in which the locking section lies outside the recess, wherein said rear binding element further comprises means for biasing the hook shaped elements in a locking position to engage and hold the projections of the boot, said binding system further comprising means for permitting the manual moving of the locking elements into an unlocking position; wherein each support jaw comprises a housing containing one of the locking elements; and wherein the two support jaws, which receive the boot therebetween in the region of the heel, form support surfaces for said heel, with said boot being fixed thereby in the rear binding element, said support surfaces lying:

i) in a first axial direction extending perpendicular to a lengthwise axis of the boot and substantially parallel to a bottom of the boot,

ii) in a second axial direction extending perpendicular to the bottom of the boot and perpendicular to the first axial direction, and

iii) in a third axial direction extending perpendicular to the first and the second axial direction and parallel to a lengthwise axis of the boot.

5,577,758

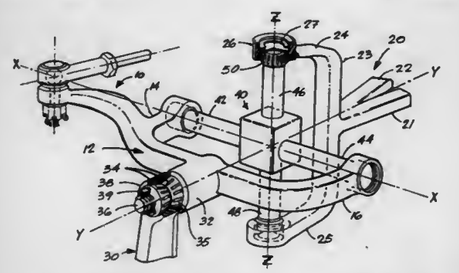
CASTOR INDEPENDENT STEERING ARM MOUNTING

Frank V. Csik, 3465 Redpath St. Apr. 1006, Montreal, Quebec, Canada

Continuation-in-part of Ser. No. 302,334, Sep. 8, 1994, abandoned. This application Oct. 5, 1995, Ser. No. 539,429

Int. Cl.[6] B60G 3/00

U.S. Cl. 280—673 11 Claims



1. An interconnecting arrangement for a vehicle having an upright for mounting a wheel, a control linkage and a steering arm, wherein there is a first plane having mutually perpendicular X and Y axes in said plane and a Z axis perpendicular to said plane, the arrangement comprising a connecting member, said connecting member being connected to said steering arm, upright interconnecting means connecting said upright and at least one of said steering arm and said connecting member to permit pivotable movement of said upright with respect to said interconnecting means about said Y axis, and control linkage interconnecting

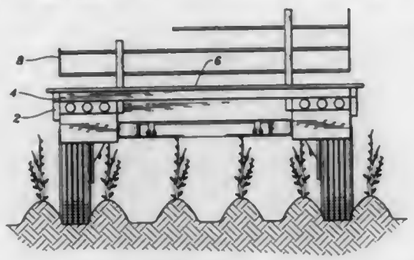
means connecting said control linkage and said connecting member, said control linkage interconnecting means permitting movement of said control linkage interconnecting means about said Z axis.

5,577,759

HIGH-CLEARANCE TRAILERS FOR USE IN AGRICULTURAL HARVESTING OF MULTI-HARVEST CROPS

Martin W. Harris, and William R. Harris, both of Manteca, Calif., assignors to Tuff Boy, Inc., Manteca, Calif.

Filed Mar. 2, 1995, Ser. No. 396,469
Int. Cl.[6] B60G *1/00*
U.S. Cl. 280—688 **48 Claims**



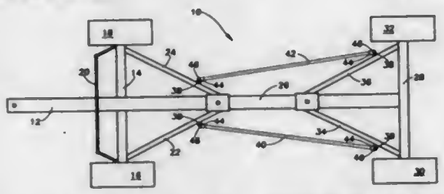
1. A high-draft land vehicle for use in agricultural environments requiring enhanced clearance between a wheel support of the vehicle and plants upwardly projecting from the earth, comprising in combination:
a pair of wheels oriented to have a substantially common axis of rotation,
a support bed having a portion which overlies said pair of wheels,
a pair of wheel supports depending downwardly from said bed, each said support configured as a flat wheel plate and each oriented in a vertical plane transverse to said axis of rotation, and
said wheel plates having bearing means coupled to said wheels,
a brake actuating lever pivotably supported on said flat wheel plate,
an actuator rod communicating a brake actuator with said actuating lever,
said actuator rod disposed in a substantially vertical plane wherein said brake actuating lever and said actuator rod occupy a relatively small exposed area and a minimum profile to prevent engagement with plants upwardly projecting.

5,577,760

FARM WAGON STABILIZING BAR SYSTEM

Hallis R. Pressler, 2783 E. Old 24, Wabash, Ind. 46992

Filed Aug. 28, 1995, Ser. No. 519,796
Int. Cl.[6] B60D *1/12*
U.S. Cl. 280—689 **4 Claims**



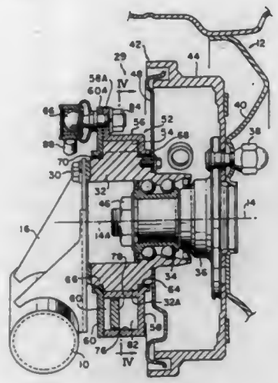
1. A stabilizing bar apparatus, in combination with a four wheel trailer having a main support member and a front axle and a rear axle connected to the main support member and front struts and rear struts connected between each axle and the main support member, comprising:
a front aperture tab attached to projecting from each front strut and a rear aperture tab attached to and projecting from each rear strut;
a tab aperture in each front aperture tab and in each rear aperture tab;
a pair of adjustable length stabilizer bars;
the stabilizing bars having two ends;
a clevis threadingly attached to each of the ends of the stabilizing bars;
the clevis having a pair of parallel ears;
cooperating apertures in the parallel ears;
a removable connecting pin, removably inserted through the cooperating apertures and the tab aperture, for joining the clevis and the aperture tab; and
one of the stabilizing bars connecting the front struts and the rear struts on one side of the main support member and another one of the stabilizing bars connecting the front struts and the rear struts on another side of the main support member to eliminate a dynamic weave caused by a wheel misalignment.

5,577,761

SUSPENSION SYSTEM OF VEHICLE HAVING DAMPING MEANS BY ROTARY DAMPER

Mitsuhiro Tabata, Nishikamo, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 14, 1995, Ser. No. 404,154
Claims priority, application Japan, Mar. 15, 1994, 6-70056; Feb. 17, 1995, 6-70056
Int. Cl.[6] B60G *11/26*
U.S. Cl. 280—705 **10 Claims**



1. A suspension system of a vehicle having a vehicle body and at least one vehicle wheel, comprising:
a carrier for supporting said vehicle wheel to be rotatable about an axis of rotation thereof;
a means resiliently supporting said carrier against said vehicle body for a bounding and rebounding movement of said vehicle wheel relative to said vehicle body; and
a damping means for damping said bounding and rebounding movement of said vehicle wheel relative to said vehicle body, said damping means comprising:
a rotary damper having a first damper member firmly connected with said carrier, a second damper member rotatable relative to said first damper member about an axis of rotation thereof, and a means for damping a relative rotation movement of said first and second damper members about said damper rotation axis, and

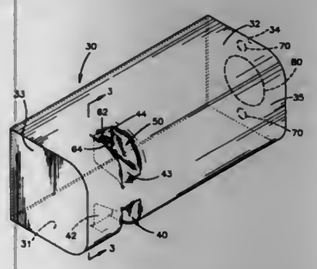
a reaction member supporting a portion of said second damper member substantially remote from said damper rotation axis against a portion of said vehicle body such that said bounding and rebounding movement of said carrier relative to said vehicle body causes a corresponding rotation movement of said second damper member relative to said first damper member about said damper rotation axis,
wherein said first damper member of said rotary damper is incorporated in said carrier such that said damper rotation axis is in alignment with said wheel rotation axis.

5,577,762

ATTACHMENT STRUCTURE FOR USE IN AN INFLATABLE VEHICLE OCCUPANT RESTRAINT SYSTEM

George T. Hagen, Troy; Scott A. Kelley, Algonac, and Andrew J. Smydra, Rochester, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Feb. 28, 1995, Ser. No. 395,924
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 **12 Claims**



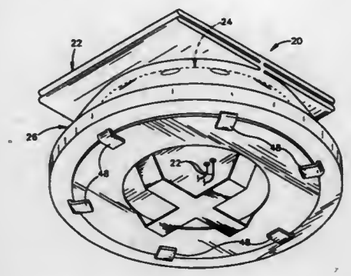
1. An apparatus comprising:
an inflatable vehicle occupant restraint;
a one-piece structure including (i) substantially parallel first and second walls, (ii) substantially parallel third and fourth walls connected to said first and second walls and (iii) a base wall connected substantially perpendicular to said first, second, third, and fourth walls, said walls defining a chamber;
an inflator located in said chamber, said inflator including a source of inflation fluid for inflating said vehicle occupant restraint, said inflator having nozzles at one end adjacent to one of said third and fourth walls for directing inflation fluid from said inflator to said vehicle occupant restraint;
said one-piece structure having a first recessed portion and a second recessed portion for engaging and supporting said inflator in said chamber, said first and Second recessed portions being circumferentially spaced apart at substantially the same axial location between said third and fourth walls;
said first recessed portion being defined by (i) a first wall portion which extends from said base wall and (ii) a second wall portion which extends substantially perpendicularly from said first wall and connects with said first wall portion, said first wall portion having a surface which engages said inflator;
said second recessed portion being defined by (i) a third wall portion which extends from said base wall and (ii) a fourth wall portion which extends substantially perpendicularly from said second wall and connects with said third wall portion, said third wall portion having a surface which faces said surface of said first wall portion and which engages said inflator; and
means including a member secured to said first and second recessed portions for securing said inflator in said chamber, said nozzles being located in said chamber between said recessed portions and said one of said third and fourth walls when said inflator is secured in said chamber.

5,577,763

AIR BAG MOUNTING STRUCTURE AND METHOD

Jess A. Cuevas, Scottsdale, Ariz., assignor to TRW Inc., Lyndhurst, Ohio

Filed Mar. 29, 1995, Ser. No. 412,764
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 **19 Claims**



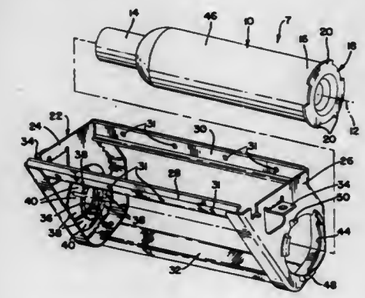
1. An apparatus comprising:
an inflatable air bag having an inlet opening and a mounting portion surrounding the inlet opening;
an inflator for providing inflation fluid for inflating said air bag;
electrical wires extending from said inflator;
a wire protector for protecting said wires;
a support plate having a portion engaging said inflator; and
means for attaching said support plate, inflator, wire protector and air bag together, said attaching means comprising a retainer having a first portion for engaging said mounting portion of said air bag and clamping said mounting portion of said air bag against a first surface of said support plate and a second portion for clamping said wire protector against a second surface of said support plate opposite said first surface, said second portion of said retainer comprising tabs which extend through respective openings in said support plate without extending through a material surface of said air bag and clamp against said wire protector.

5,577,764

FASTENERLESS SUPPLEMENTAL INFLATION RESTRAINT MOUNTING

James L. Webber, Centerville; Francis J. Holmes, Beavercreek, and Troy A. Augustine, Kettering, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 24, 1995, Ser. No. 506,059
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 **7 Claims**



1. An arrangement of a supplemental inflation restraint for an automotive vehicle comprising:

an elongated inflator having a main axis, the inflator having a first end and a second end; and

a housing for mounting within the vehicle, the housing having a first end fixably joined to and spaced from a second end, the housing first end having spring fingers for compliantly spheroidically mounting the first end of the inflator in compression, the housing having a second end with an opening large enough for passage of the inflator first end, the housing also having a twist lock connection with the second end of the inflator for preventing the inflator from exiting the housing when the inflator is activated.

5,577,765

AIR BAG DEVICE

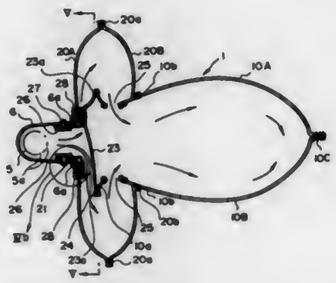
Hideo Takeda, Tokyo; Hiroaki Fujii, Hikone; Takahiro Yamanishi, Hikone, and Rika Tokoro, Hikone, all of Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Aug. 31, 1995, Ser. No. 521,734

Claims priority, application Japan, Sep. 6, 1994, 6-238563

Int. Cl.[6] B60R *21/08*

U.S. Cl. 280—729 **6 Claims**



1. An air bag device comprising:

a container having a first opening;

an inflator fixed to the container for providing gas; and

an air bag including a first air bag having a base portion and a front portion located at a side opposite to the base portion, said base portion having a second opening and attached to the container to communicate the first and second openings together, said front portion having a third opening; a partition panel disposed inside the first air bag to cover the second opening and partly connected to the base portion at connecting portions to form a plurality of first paths, each first path being sandwiched between the base portion and the partition panel and located between the connecting portions situated adjacent to each other; and a second air bag projecting outwardly from the first air bag through the third opening of the front portion and having a base end connected to the partition panel, a side portion connected to the front portion of the first air bag around the third opening, a front portion projecting in a direction away from the first air bag, and second paths formed at the side portion inside the first air bag so that when the inflator is actuated, the gas from the inflator enters into the second air bag through the first paths, first air bag and the second paths.

5,577,766

PAD FOR STEERING WHEEL INCLUDING MEMBRANE SWITCH

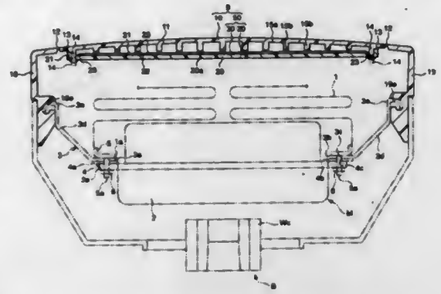
Minoru Niwa; Kimio Muramatsu; Makoto Kanai; Michio Inoue; Junichi Mizutani; Takanori Kanich, and Tadashi Yamamoto, all of Nakashima-gun, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai-gun, Japan

Filed Mar. 23, 1994, Ser. No. 216,824

Claims priority, application Japan, Apr. 27, 1993, 5-101499

Int. Cl.[6] B60R *21/16*

U.S. Cl. 280—731 **5 Claims**



1. A pad constructed and arranged to be mounted on a steering wheel having an air bag device, the pad comprising:

a membrane switch including a plurality of conductive metal sheets and a plurality of insulating spacers interposed between said metal sheets;

a support plate made of a rigid synthetic resin for supporting said switch on an upper face thereof, said support plate being formed with outer peripheral edges and a plurality of spaced apart mounting holes extending generally vertically therethrough;

a cover member for the air bag device and membrane switch, said cover member including a rupture portion constructed and arranged to be ruptured when said air bag is inflated; and

a plurality of spaced apart mounting ribs formed on a back face of said cover member engaged with said plurality of mounting holes,

wherein at least one of the outer peripheral edges of said support plate and the back face of said cover member is formed with gap regulating projections constructed and arranged to set a predetermined gap between said membrane switch and the back face of said cover member.

5,577,767

HOUSING ASSEMBLY FOR AN AIR BAG AND VEHICLE HORN SWITCH

Hiroshi Nemoto, Mesa, Ariz., assignor to TRW Inc., Lyndhurst, Ohio

Filed Mar. 8, 1995, Ser. No. 400,260

Int. Cl.[6] B60R *21/16*

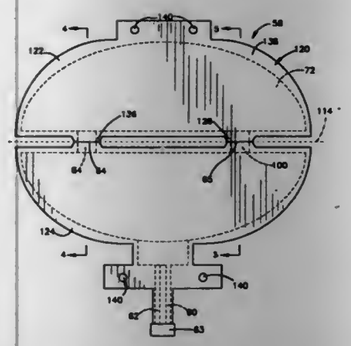
U.S. Cl. 280—731 **10 Claims**

1. An apparatus for enclosing an air bag on a steering wheel of a vehicle having a horn, said apparatus comprising:

an inner cover having a first wall at least partially enclosing the air bag and including means for defining a first tear seam which extends across said first wall and along which said inner cover ruptures upon inflation of the air bag to enable deployment of the air bag;

an outer cover having a second wall at least partially enclosing said inner cover and the air bag and including means for defining a second tear seam which extends across said second wall and along which said outer cover ruptures upon inflation of the air bag to enable deployment of the air bag; and

a horn switch disposed between said inner and outer covers for effecting operation of the horn, said horn switch including first and second overlying layers of electrically conductive material and first and second tear seams in said horn switch along which said horn switch ruptures upon inflation of the air bag to enable deployment of the air bag, said first and second tear seams in said horn switch being aligned with said first and second tear seams in said inner and outer covers and having a combined length less than the length of each of said first and second tear seams in said inner and outer covers.



a cover-like pad disposed on the housing such that the pad covers the inflater and the bag, the cover-like pad being disposed onto the mounting portion.

5,577,768

AIR BAG DEVICE HAVING A MINIMIZED CONE DEPTH

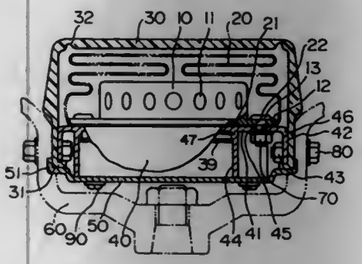
Masahiro Taguchi, Aichi-ken; Kazutaka Katoh, Okazaki; Shigenori Kobayashi, Aichi-ken; Naoki Nakane, Toyota; Kazuo Sakakibara, Okazaki, and Masayuki Ohashi, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 26, 1994, Ser. No. 233,882

Claims priority, application Japan, Apr. 28, 1993, 5-102201; Apr. 28, 1993, 5-102874; Jul. 19, 1993, 5-178069

Int. Cl.[6] B06R *21/16*

U.S. Cl. 280—735 **18 Claims**



1. An air bag device comprising:

a housing having an electronic control unit control circuit mounting surface monolithically formed with the housing, an inflater mounting surface, and a mounting portion monolithically formed with the outer periphery of the housing;

an inflater for generating gas for expanding a bag, said inflater being disposed directly on the inflater mounting surface of the housing, the inflater having a squib for igniting the inflater;

an acceleration sensor for detecting an acceleration of a vehicle during a collision of the vehicle;

an electronic control unit control circuit for making a collision judgment in response to a signal from the acceleration sensor, said electronic control unit control circuit being mounted on the electronic control unit control circuit mounting surface of the housing, the squib being electrically connected to the electronic control unit control circuit; and

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5,577,769

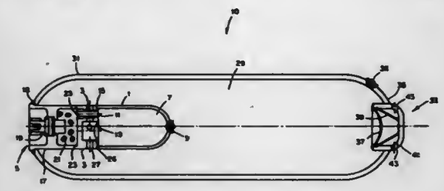
HYBRID INFLATOR FOR INFLATING AIR BAGS

Michael Di Giacomo, Warrenton; Robert S. Scheffee, Lorton; Charles D. Woods, Manassas, and Stephen Gold, Warrenton, all of Va., assignors to Atlantic Research Corporation, Gainesville, Va.

Filed Jun. 13, 1995, Ser. No. 489,876

Int. Cl.[6] B60R *21/26*

U.S. Cl. 280—736 **13 Claims**



1. A hybrid inflator comprising

a first pressure vessel having an inlet, and an outlet, each of said inlet and outlet having a burst disk to seal an interior of said first pressure vessel containing a combustible fuel;

an igniter assembly having a propellant charge, said propellant charge in communication with the burst disk of said inlet;

a second pressure vessel containing a compressed gas, an interior thereof in communication with said burst disk of said outlet of said first pressure vessel, said second pressure vessel including a discharge assembly for releasing gases from said first and second pressure vessels for air bag inflation.

5,577,770

DEFORMATION BAR FOR ENERGY-ABSORBING SUPPORT

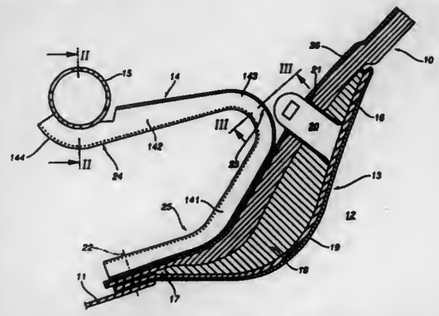
Michael Sinner, Rottenburg, and Bernhard Holzapfel, Remshalden, both of Germany, assignors to Mercedes-Benz AG, Germany

Filed Aug. 28, 1995, Ser. No. 520,336

Claims priority, application Germany, Aug. 26, 1994, 44 30 281.9; Mar. 29, 1995, 195 11 512.0

Int. Cl.[6] B60R *21/02*

U.S. Cl. 280—752 **11 Claims**



1. A profiled deformation bar for energy-absorbing support of a knee restraint attachable to an instrument panel, said knee restraint having a load-distributing panel and an impact-absorption member arranged in front of said instrument panel, the profiled deformation bar being approximately V-shaped, in which one leg thereof sup-

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ports the knee restraint and another leg thereof is supported on a transverse carrier running in a transverse direction of a vehicle and fixed to vehicle bodywork, with the legs oriented obliquely downwardly in a forward direction in relation to the instrument panel and the deformation bar being provided with at least two deformation zones, of which a first deformation zone is arranged in a region of the section connecting the legs and a second deformation zone is arranged at a bending location in a region of the load-distributing panel, which is arranged in front and encloses two deformation members between the knee restraint and the load distributing panel, wherein a V-opening of the V-shaped deformation bar, in an installed position of the deformation bar, is oriented forwardly and obliquely downwardly, away from the instrument panel, and a third deformation zone is provided at an end of the deformation bar remote from the instrument panel so as to come into action, by way of a bending-off movement in the counter-clockwise direction, when energy-absorption capacity of the first deformation zone has been utilized, and the legs of the deformation bar come to rest against one another, and, only when energy-absorption capacity of the third deformation zone has been utilized, the second deformation zone, together with the load-distributing panel which bounds the instrument panel rearwardly at least in a knee-supporting region and is supported directly on the one leg of the deformation bar up to the first deformation zone of the latter, is transferred into a position approximating an extended position.

5,577,771

SUSPENSION SYSTEM FOR VEHICLE

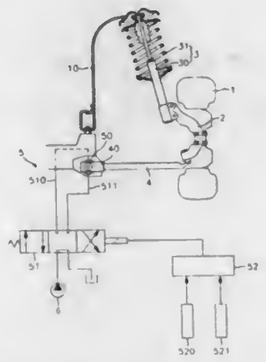
Unkoo Lee, Kyungki-do, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Dec. 14, 1994, Ser. No. 358,544

Claims priority, application Rep. of Korea, Dec. 14, 1993, 93-27571

Int. Cl.[6] B60G *3/00*

U.S. Cl. 280—772 4 Claims



1. A suspension system for a vehicle, comprising:
a wheel carrier rotatable supporting a wheel;
a strut assembly connecting an upper end of the wheel carrier to a vehicle body;
a lower arm connecting a lower end of the wheel carrier to the vehicle body; and
roll center control means for controlling a height of a roll center of the vehicle, said roll center control means being disposed between a vehicle body-side connecting portion of the lower arm and the vehicle body, said roll center control means including,
an elastic member for controlling a height of the vehicle body-side connecting portion of the lower arm with hydraulic pressure,
a direction control valve for controlling a flowing direction of the hydraulic pressure generated form a hydraulic pump which is to be supplied to the elastic member, and
means for controlling the operation of said direction control valve.

5,577,772

TANK TRUCK

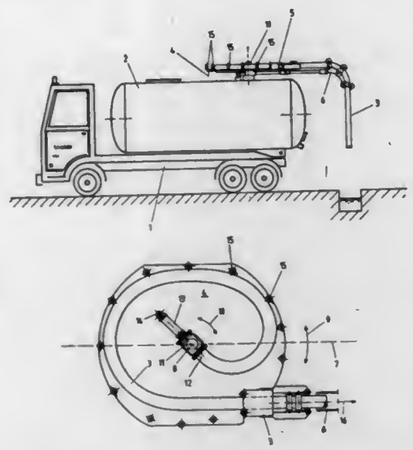
Dietmar Kaiser, Schaanwald, Austria, assignor to Kaiser Aktiengesellschaft, Schaanwald, Liechtenstein

Filed Dec. 29, 1994, Ser. No. 366,191

Claims priority, application Austria, Jan. 13, 1994, 37/94

Int. Cl.[6] B60P *3/22*

U.S. Cl. 280—838 2 Claims



1. A tank truck for transporting fluid materials, comprising:
a tank for storing a fluid material;
a suction hose connected to said tank;
a substantially horizontal disc-shaped support platform secured on said tank for supporting said suction hose;
a reeling device fixedly supported on said support platform for drawing-out and reeling-in said suction hose;
a boom for supporting a free end of said suction hose and fixely supported on said platform; and
a lead-in rotatably supported on said support platform for operatively connecting said suction hose with said tank and for supporting said suction hose on said support platform, said lead-in being located in a center region of said support platform,
wherein said support platform is rotatable about an axis of rotation of said lead-in independently of rotation of said lead-in, and
wherein said disc-shaped support platform has a circumferential edge and a plurality of rollers arranged along said circumferential edge and freely rotatable about respective vertical axes.

5,577,773

Patent Not Issued For This Number

5,577,774

METHOD OF RECORDING/REPRODUCING DATA OF MESH PATTERN, AND APPARATUS THEREFOR

Shigenori Morikawa, Tokyo; Takeshi Matsuoka, Kawasaki, and Hiroshi Chikakiyo, Tokyo, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Division of Ser. No. 113,957, Aug. 30, 1993, Pat. No. 5,327,510, which is a continuation of Ser. No. 957,634, Oct. 6, 1992, abandoned, which is a continuation of Ser. No. 680,164, Apr. 3, 1991, abandoned, which is a division of Ser. No. 389,287, Aug. 3, 1989, Pat. No. 5,042,079. This application Feb. 10, 1994, Ser. No. 196,008

Claims priority, application Japan, Aug. 12, 1988, 63-200225; Aug. 12, 1988, 63-200226; Aug. 12, 1988, 63-200227; Dec. 19, 1988, 63-163430 U

Int. Cl.[6] B42D *15/00*

U.S. Cl. 283—93 6 Claims



1. A data recording medium in which an image is recorded, which includes a mesh pattern formed of a plurality of one-bit images arranged in a checkerboard pattern, each of said one-bit images having a plurality of dark and light patterns therein, and wherein each of the one-bit images corresponds to a respective one bit of a binary data signal to be recorded and an arrangement of said dark and light patterns in a one-bit image depends on a value of the respective one bit.

5,577,775

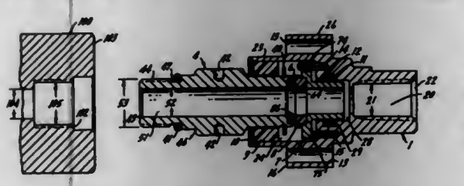
BEARINGLESS COOLANT UNION

Dennis G. Pearson, Lake Zurich, and Dean E. Wanders, Spring Grove, both of Ill., assignors to Barco, A Division of Marison Industries, Cary, Ill.

Filed Feb. 7, 1995, Ser. No. 384,984

Int. Cl.[6] F16L *35/00*

U.S. Cl. 285—24 12 Claims



1. A unitary, fully-assembled rotary fluid union adapted to be coupled with, and transfer fluid to, a rotating member of a stationary machine, comprising:
(a) a bearingless rotor assembly having a rotating seal located on a proximate end and means for being connected to said rotating member, for rotation therewith, located on a distal end;
(b) a stator assembly having a non-rotating seal;
(c) a housing assembly having a first end receiving said rotor assembly and means for positioning both said stator assembly and said proximate end of said rotor assembly such that said rotating seal and said non-rotating seal are maintained in permanently-abutting relation to each other, said means for positioning allowing for the rotation of said rotor assembly and said rotating seal in conjunction with said rotating member while also retaining said proximate end of said rotor assembly within said housing assembly, the rotation of said rotor assembly and said rotating seal occurring within said housing assembly without the use of any bearings as said housing assembly is mounted and supported by said stationary machine and said rotor assembly is supported by said rotating member in a substantially concentric manner with said housing assembly, said housing assembly further including a second end having means for receiving an axial fluid shaft;
(d) means for biasing said rotating seal and said non-rotating seal against each other in fluid tight contacting relation for relative rotation therebetween; and
(e) means for mounting said housing assembly to said stationary machine.

5,577,776

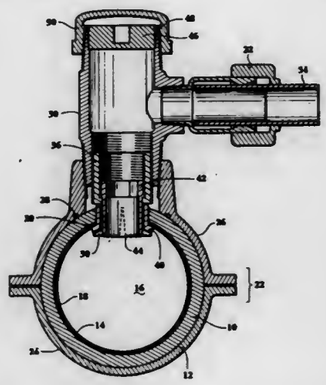
TEE FITTING FOR LINED PIPE

Joseph L. Welch, Jenks, Okla., assignor to TDW Deleware, Inc., Wilmington, Del.

Filed May 3, 1995, Ser. No. 434,180

Int. Cl.[6] F16L *9/14*

U.S. Cl. 285—55 10 Claims



1. An apparatus for connecting a main pipe with a service line, the main pipe having an outer wall, an inner wall, an interior, and a liner engaging the inner wall creating an interface between the inner wall and the liner, the apparatus serving to simultaneously seal the interface, the apparatus comprising:
(a) an outer hollow housing coupled to a service saddle that is affixed to the main pipe outer wall, the outer housing having a first aperture for placement adjacent to the outer wall of the main pipe and a second aperture adapted for connection to the service line; and
(b) an inner sealing assembly adjustably mountable inside of the housing such that the assembly may be axially extended through the first aperture and into the interior of the main pipe, a lower, outer portion of the sealing assembly bearing a seal for secure engagement against the liner and the main pipe, including means for radially expanding the sealing assembly and for forcing the liner into sealing engagement with the inner surface of the main pipe to thereby close the interface, and the inner sealing assembly having a terminal orifice for fluid communication with the main pipe.

5,577,777
GROUND JOINT COUPLING HAVING A POLYMERIC SEAT

Paramjit Singh, Chestertown, Md.; Madhu K. Shenoy, Dover, Del., and Charles H. Schappert, West Chester, Pa., assignors to Dixon Valve & Coupling Co., Chestertown, Md.

Continuation of Ser. No. 854,317, Mar. 19, 1992, abandoned. This application Nov. 7, 1994, Ser. No. 335,558
Int. Cl.[6] F16L *25/00;19/00*
U.S. Cl. 285—354 19 Claims



1. A ground joint coupling (11) for steam hoses comprising

a stem (15),

a head (17) formed at a first end portion 19 of the stem (15) and having a head sealing surface comprising an exterior bevel flaring outwardly and rearwardly from the end of the end portion (19),

a spud (21) having a first end portion facing the first end portion (19) of the stem (15), the spud (21) being coaxial with the stem (15),

seat receiving means formed in the first end portion of the spud (21) for receiving a seat (23) having a seat outer surface profile,

said seat receiving means comprising an interior recess (35) having a surface profile conforming to said seat outer surface profile for preventing distortion of the outer surface profile of said polymeric seat and having a flange (36) at the end of the spud (21) with the flange extending inwardly for removably holding said seat in said interior recess,

a molded polymeric annular seat positioned in said interior recess (35) of the spud (21), said seat having a radially inwardly angular inner seat sealing surface which complements and forms a sealing line of contact with said head sealing surface,

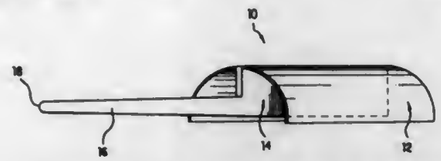
connection and compression means (39) for connecting the stem (15) to the spud (21) by forcing said outside bevel of the stem against the inner seat sealing surface and providing a seal between the stem (15) and the spud (21), and

means for preventing direct contact between the stem (15) and the spud (21).

5,577,778
NECK TIE TYING TOOL

Michael I. Parietti, 8449 Oakton La. Apt. 3A, Ellicott City, Md. 21043, and Frank K. Parietti, 6 Spook Rock Rd., Suffern, N.Y. 10901

Filed May 26, 1995, Ser. No. 452,105
Int. Cl.[6] B65H *69/04*
U.S. Cl. 289—17 1 Claim

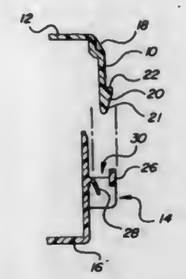


1. A tool for creating an indentation, dimple or furrow in a portion of a necktie that flows down and out of a knot in the necktie when the necktie is tied around a wearer's neck, said tool comprising a sheet of flexible, resilient material of sufficient size to be grasped by a human hand, said sheet being curved in the general shape of a half hollow cylinder without ends so as to have a concave surface and a convex surface, said sheet having a keel-like fin attached to and running along the entire length of the concave surface, said keel-like fin bisects a cavity formed by said concave surface of said sheet thereby forming two smaller cavities of equal size, said tool further comprises a semi-rigid cylindrical probe which narrows to a point at a first end and is attached to said keel-like fin by a second end, said probe forming a longitudinal extension of said keel-like fin outside said cavity formed by said concave surface.

5,577,779
SNAP FIT LOCK WITH RELEASE FEATURE

Tim M. Dangel, Commerce Township, Mich., assignor to Yazaki Corporation, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 361,974
Int. Cl.[6] E05C *19/06*
U.S. Cl. 292—80 8 Claims



1. First and second components in combination with a lock mechanism which releasably secures said first and second components together, said lock mechanism comprising:

a resilient locking arm integrally formed on said first component and extending therefrom, said locking arm having a first side and an opposite second side and a projection extending outwardly from the first side and defining a step portion and a cam surface;

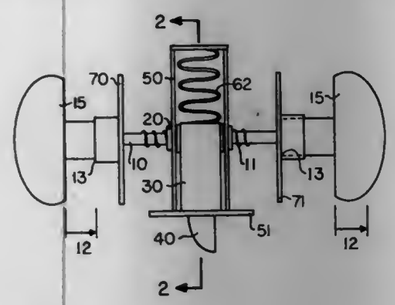
a rigid locking frame integrally formed on and extending outwardly from said second component, said locking frame having a generally rectangular shape and defining a generally rectangular aperture adapted to receive said locking arm in a releasable, securing engagement; and

an integral resilient tab extending outwardly from said second component and into said locking frame aperture, said resilient tab contacting said second side of said locking arm and urging said projection toward securing engagement with said locking frame when said locking arm is inserted into said locking frame.

5,577,780
PUSH/PULL LATCH ASSEMBLY

Terry Justice, 318 Tulip Oak Ct., Linthicum, Md. 21090

Filed Jul. 25, 1995, Ser. No. 507,645
Int. Cl.[6] E05C *1/12*
U.S. Cl. 292—170 20 Claims



1. A push/pull latch assembly, intended for use in conjunction with associated hardware as a closure fastener, said push pull latch assembly comprising:

a spindle having a longitudinal axis and two opposed ends, a cam possessing at least one lobe and a through aperture, a rollback, a latch and a frame possessing a front face;

said spindle possessing a helix projecting radially from a uniform cross-sectioned portion and constituted by a helically formed portion medial to said ends comprised of arcuate surfaces;

said cam through aperture possessing a central axis and comprised of surfaces congruent said arcuate surfaces of said spindle helix;

said cam being held by said frame positioned along said spindle helix and in a rotatable disposition with respect to said central axis further being held substantially stationary with respect to linear displacement along said central axis;

said latch being held in a slidable disposition by and along a length of said frame substantially perpendicular said central axis of said cam through aperture;

said rollback being held in said frame such that rotation of said cam causes one said cam lobe to contact a surface of said rollback which, in reaction to said contact with said cam lobe and in tensile connection with said latch, translates said cam rotation into a linear displacement of said latch;

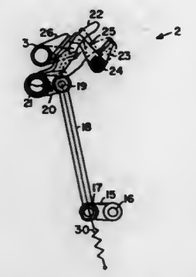
said spindle being disposed such that said longitudinal axis is substantially co-linear said central axis of said cam through aperture and said helix is in engagement with said congruent surfaces comprising said cam aperture, said spindle further being capable of linear displacement along a given distance of said longitudinal axis, hereinafter known as spindle travel;

the engagement of said spindle helix and said cam aperture translating said spindle travel into rotation of said cam which causes through said contact with said rollback said linear displacement of said latch sufficient to retract said latch from an extended position with respect to said front face of the frame to a position substantially flush with said front face.

5,577,781
APPARATUS FOR LOCKING AN AIRCRAFT DOOR

Guenter Kallies; Wolfgang Lessat-Kaupat, both of Hamburg, and Thomas Luebbe, Schenefeld, all of Germany, assignors to Daimler-Benz Aerospace Airbus GmbH, Hamburg, Germany

Filed Jan. 24, 1995, Ser. No. 377,415
Claims priority, application Germany, Jan. 24, 1994, 44 01 899.1
Int. Cl.[6] E05C *3/06*
U.S. Cl. 292—195 16 Claims

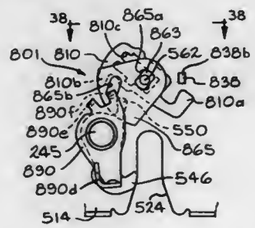


1. An apparatus for locking an aircraft door provided in an outer wall of an aircraft having a pressurizable cabin, said apparatus comprising a locking shaft pin arranged to be movable between a locked position in which said door is fixed relative to said outer wall and an unlocked position in which said door is released, a control element, and a positioning arrangement coupled between said control element and said locking shaft pin, wherein said control element comprises a control rod and a membrane connected to said control rod, and wherein said membrane is arranged to have an interior air pressure existing inside said cabin impinge on a first side of said membrane and an exterior air pressure existing outside said cabin impinge on a second side of said membrane, wherein said positioning arrangement comprises a locking linkage coupled to said control rod, and wherein said locking linkage comprises a rotationally rockable positioning lever rigidly connected to said locking shaft pin and a blocking lever driven by motions of said control rod to alternatively block and unblock a rotational rocking motion of said positioning lever.

5,577,782
DOOR LATCH WITH DOUBLE LOCKING ANTITHEFT FEATURE

James B. Johnson, Gregory; Andrew J. Barta, Westland, and Michael A. Petik, Brighton, all of Mich., assignors to Stoneridge, Inc., Warren, Ohio

Continuation-in-part of Ser. No. 137,448, Oct. 15, 1993, Pat. No. 5,474,339. This application Dec. 11, 1995, Ser. No. 570,537
Int. Cl.[6] E05C *3/16*
U.S. Cl. 292—216 13 Claims

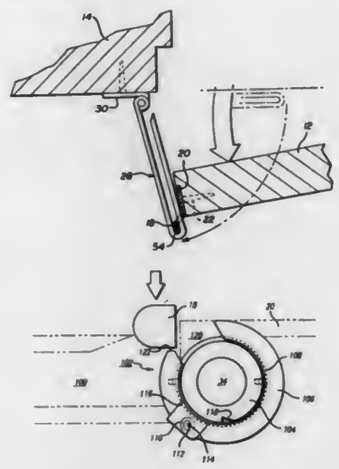


1. A vehicle door latch assembly adapted to be mounted to a vehicle structure to engage a striker bolt, comprising:

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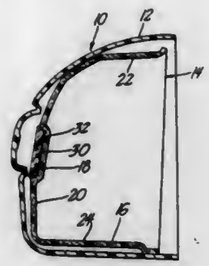
a pivotal rotor adapted in a first position to engage the striker bolt;
a pawl operatively coupled to said rotor and moveable between a blocking position retaining said rotor in said first position, and a release position permitting said rotor to move from said first position;
a link operatively coupled to said pawl and engaging said pawl in a coupled position, said link being selectively moveable between said coupled position and an uncoupled position in which said link is disengaged from said pawl;
a lever operatively coupled to said link to selectively move said link between said uncoupled position and said coupled position, said lever being further operatively coupled to said link such that, when said link is in said coupled position, said lever can be selectively operated to cause said link to move said pawl to said release position; and
an actuator member operatively coupled to said link and engaging said link when said link is in said coupled position, said actuator member being disengaged from said link when said link is in said uncoupled position, said actuator member being selectively moveable between an unactuated position and an actuated position in which said actuator member causes, when said link is in said coupled position, said link to move said pawl to said release position.

5,577,783
DOOR LOCK DESIGN
Michael Kaminski, 11744 Bellagio Rd., Los Angeles, Calif. 90049
Filed Apr. 13, 1995, Ser. No. 422,132
Int. Cl.[6] E05C *17/16*
U.S. Cl. 292—268 **5 Claims**



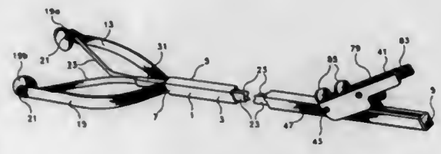
1. A door lock assembly that locks a door to a wall, comprising:
a locking member that is attached to the door;
a U-shaped plate that has a slot which receives said locking member and a base portion that limits a travel of said locking member and the door;
a hinge that attaches said U-shaped plate to the wall, said hinge including;
a hinge pin;
an outer sleeve that is rotated to a locked position by said locking member when the door is moved to a closed position, said outer sleeve having a slot which captures said locking member when said outer sleeve is in the locked position;
a locking element that locks said outer sleeve when the door moves to the closed position and said locking member rotates said outer sleeve.

5,577,784
VEHICLE BUMPER
Gullmar V. Nelson, Durham, N.H., assignor to Davidson Textron Inc., Dover, N.H.
Filed Sep. 1, 1994, Ser. No. 299,274
Int. Cl.[6] B60R *19/18*
U.S. Cl. 293—120 **6 Claims**



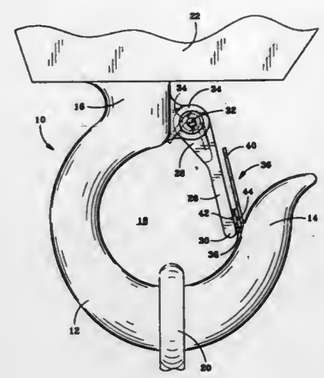
1. A reinforced energy absorbing bumper beam of molded high strength plastic construction for use in a vehicle bumper comprising:
a hollow body of generally C-shaped cross section having a front wall that is integrally joined to a top wall and a bottom wall,
the front wall having a lateral offset that forms a lateral groove,
a reinforcement leaf that is disposed in the groove and attached to the front wall of the hollow body by a resilient adhesive to increase the thickness of the front wall and the damage free impact resistance of the beam,
the hollow body being of substantially uniform thickness and the reinforcement leaf being centrally located in the groove and extending for at least about 50% of the width of the body in the lateral direction.

5,577,785
SINGLE-HAND ACTUATED PICK-UP TOOL
Arthur Traber, San Diego, and Robert S. Traber, Escondido, both of Calif., assignors to Arcoa Industries, Escondido, Calif.
Filed Sep. 11, 1995, Ser. No. 526,665
Int. Cl.[6] B25J *1/00*
U.S. Cl. 294—19.1 **19 Claims**

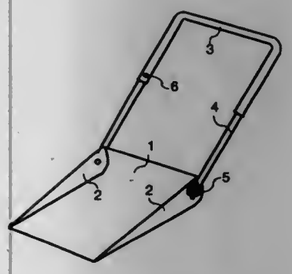


1. A single-hand actuated pick-up tool, comprising:
a) an elongated hollow stalk terminating at spaced-apart distal and proximal ends;
b) first and second short, flexible, spring pick-up fingers extending divergently outward from said distal end of said stalk and including flexible elements terminating the outer ends of said fingers for grasping an object when brought toward one another;

c) a center strap extending from said first pick-up finger interiorly along said stalk and then back interiorly to said second pick-up finger;
d) a handle formed in cooperation with said stalk including a handle member pivotally mounted to said stalk and further including means for drawing said center strap rearward said fingers when said handle member is pivoted toward said stalk; and,
e) a first hollow stalk plug for slidable insertion in said distal end of said stalk for retaining said fingers by friction in mounted position in said stalk.



5,577,786
COLLAPSIBLE SNOW SCOOP
Leo Laine, Rauma, Finland, assignor to Leo Laine Oy, Rauma, Finland
Filed Nov. 28, 1995, Ser. No. 563,700
Claims priority, application Finland, Nov. 28, 1994, 945604
Int. Cl.[6] A01B *1/22;* **E01H** *5/02*
U.S. Cl. 294—54.5 **4 Claims**

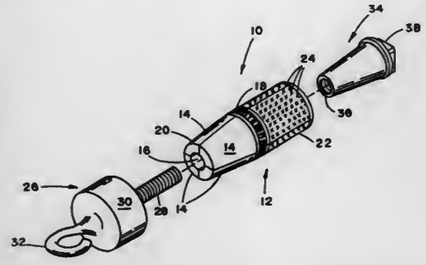


1. A collapsible snow scoop, comprising
a scoop body with two side panels, and
a handle portion pivotally connected to the side panels of the scoop body, whereby
the handle portion is releasably connected to the side panels of the scoop body at a desired angle by means of a locking mechanism,
the handle portion comprises two first tubular portions extending from both side panels, and a second, U-shaped tubular portion telescopically connected to said first tubular portions, and
the handle portion is foldable on the scoop body.

5,577,787
SAFETY HOOK AND METHOD
Robert K. Klope, West Paducah, Ky., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Nov. 14, 1995, Ser. No. 557,894
Int. Cl.[6] B66C *1/36*
U.S. Cl. 294—82.19 **12 Claims**

1. A safety hook, comprising: a hook having a hook end; a latch member having a first end pivotably connected to the book and a second free end, the latch member pivotable about the first end between a first position where the second end is located away from the hook end and a second position where the second end is located near the hook end; biasing means for biasing the latch member to the second position; and retainer means mounted on the latch member, the retainer means for maintaining the latch member in the first position and wherein the retainer means includes a hinge having a first plate fixed to the latch member and a second plate movable relative to the first plate about an axis, and a retainer member attached to the second plate to be movable with the second plate.

5,577,788
PIPE PULLING DEVICE
David J. Smith, 506 Smithdale St., Winston-Salem, N.C. 27107
Filed Dec. 14, 1995, Ser. No. 572,870
Int. Cl.[6] B66C *1/56*
U.S. Cl. 294—96 **11 Claims**



1. A pipe pulling device for pulling a pipe with pulling means, the pipe having an open interior, the device comprising: a body portion for placement within the pipe interior having a plurality of discrete sections forming a substantially frusto conical circular outer surface and a hollow interior with a substantially frusto conical circular interior surface; means releasably retaining the discrete body portion sections in a configuration to form the substantially frusto conical circular outer surface and the hollow interior with a substantially frusto conical circular interior surface; a cap having a threaded member extending into the body portion hollow interior; and a securing plug positionable within the pipe interior and having a threaded front, a larger rear portion, and a frusto conical circular exterior surface, the plug threaded front cooperatively receiving and securing the cap threaded member, the discrete body portion section separating each from the other and expanding as the plug threaded front continues to receive the cap threaded member and the plug frusto conical circular exterior surface mates with the hollow interior substantially frusto conical circular interior surface to engage and secure the pipe interior so that the pipe can be pulled at the cap by the pulling means.

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5,577,789

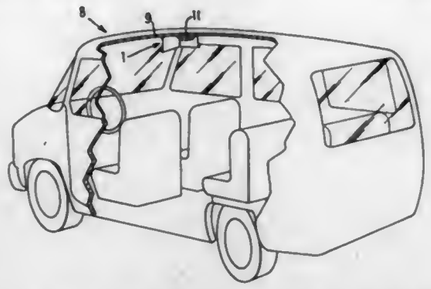
INTERIOR LIGHT DEFLECTOR

Mark F. Alexander, 8315 W. Long Lake Dr., Portage, Mich. 49002

Continuation-in-part of Ser. No. 356,728, Dec. 15, 1994, abandoned. This application Feb. 14, 1996, Ser. No. 599,980

Int. Cl.[6] B60Q *3/02*

U.S. Cl. 296—24.1 **1 Claim**



1. An interior light deflector for a vehicle for substantially preventing light rays from an interior light of the vehicle from becoming an annoyance by disturbing the vision of one or more occupants of the vehicle that are not using the interior light for illumination, comprising:
- an opaque sheet of flexible or rigid material having an upper region and a lower region;
- fastening means connected to said upper region of said sheet of material for hanging said material from a support in the vehicle interior adjacent the interior light to block light rays of the interior light from directly disturbing the vision of the one or more occupants that are not using the interior light; and
- fastening means connected to said lower region of said sheet of material for maintaining said sheet of material in a stowed position lying adjacent said support when not in use;
- said sheet of material being of sufficient size so as to block the light rays from the vision of the one or more occupants that are not using the interior light without interfering with the interior air flow of the vehicle for either heating or cooling the region of the vehicle in which the one or more occupants are located.

5,577,790

SHOCK ABSORBING SEAT MOUNT

William S. Buell, 27703 Ortega #15, San Juan Capistrano, Calif. 92675

Filed Sep. 14, 1994, Ser. No. 305,779

Int. Cl.[6] B60N *2/50*

U.S. Cl. 296—63 **2 Claims**



1. A suspended, gravity centering, shock absorbing seat mount comprising:
- a pair of elongated mounting brackets (2) for attaching the seat mount to a vehicle;
- an upper pivot shaft (5) extending laterally between and being pivotally mounted to said mounting brackets;
- first and second shackles (3) mounted at an upper end thereof to respective opposite ends of said upper pivot shaft (5);
- first and second lower pivot shafts (7) mounted to lower ends of said first and second shackles, respectively, and extending laterally outwardly therefrom;
- first and second casings (14) mounted at a bottom end thereof to said first and second lower pivot shafts, respectively; and
- a seat mounting member (15) for supporting a seat, said seat mounting member extending laterally between and being mounted to upper ends of said first and second casings, wherein said seat mounting member is spaced from and above said upper pivot shaft,
- whereby said first and second shackles are free to move in an arc about said upper pivot shaft, and said first and second casings are free to move in an arc about said first and second lower pivot shafts, respectively, thus allowing said seat mounting member to move forwardly and rearwardly in response to forward and rearward motion of the vehicle, and returning said seat mounting member to a central position by gravity.

5,577,791

MIRROR ASSEMBLY WITH COVER FOR MOTOR VEHICLE SUN VISOR

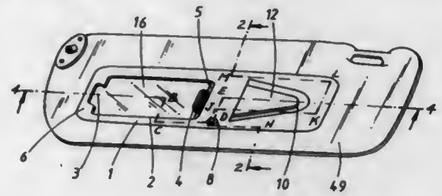
Lothar Viertel, Altforweiler, Germany, and Patrick Welter, La Chambre, France, assignors to Gebr. Happich GmbH, Germany

Filed Oct. 26, 1994, Ser. No. 329,543

Claims priority, application Germany, Nov. 30, 1993, 43 40 685.8

Int. Cl.[6] B60J *3/00*

U.S. Cl. 296—97.5 **15 Claims**



1. A sun visor for a motor vehicle, the sun visor comprising
- a sun visor body with a wide side, the wide side having an opening; and
- a mirror assembly comprising a mirror housing installed in the sun visor body opening, a mirror supported in the mirror housing, and a sliding cover mounted on the mirror housing over the mirror, the cover being slidable between a position covering the mirror and a position freeing the mirror to view;
- the mirror assembly including a spring connected with the sliding cover and operable for sliding the sliding cover to the position freeing the mirror for view.

14. A sun visor for a motor vehicle, the sun visor comprising:
- a sun visor body with a wide side and the wide side having an opening;
- a mirror assembly comprising a mirror housing installed in the sun visor body opening, a mirror supported in the mirror housing, and a sliding cover mounted on the mirror housing over the mirror, the cover being slidable between a position covering the mirror and a position freeing the mirror to view;
- the mirror assembly including an automatic opening mechanism connected with the sliding cover and operable for moving the sliding cover to the position freeing the mirror for view; and
- a ticket clamp supported on the mirror housing for receiving objects held to the mirror housing.

5,577,792

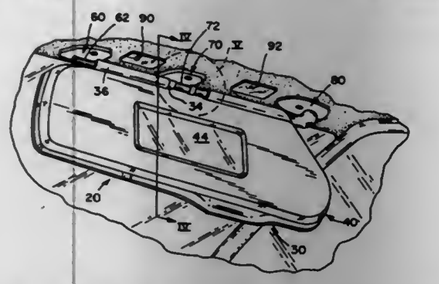
MULTIPLE VISOR SYSTEM WITH ALIGNED PIVOT AXES

David A. Muyres, Hamilton, Mich., and Brian J. Smith, Cincinnati, Ohio, assignors to Prince Corporation, Holland, Mich.

Filed Feb. 21, 1995, Ser. No. 391,044

Int. Cl.[6] B60J *3/02*

U.S. Cl. 296—97.9 **26 Claims**



1. A visor system for a vehicle comprising:
- first and second visors for mounting to one of the driver's and passenger's side of a vehicle, each of said visors including a pivot rod for allowing movement of said visors between a position in which said first and second visors are proximate one another with their planes generally parallel and extending on only one side of the vehicle to selected spaced-apart use positions, wherein said first visor includes a first pivot rod which extends only partially along one edge of said first visor, and said second visor includes a second pivot rod which extends only partially along one edge of said second visor; and
- a plurality of spaced mounting brackets for mounting said pivot rods to a vehicle such that said pivot rods are coaxially aligned in end-to-end relationship when said first and second visors are proximate one another, wherein said mounting brackets include a base for securing said first and second pivot rods thereon and wherein said base includes a second bracket which receives a second end of said first pivot rod.

5,577,793

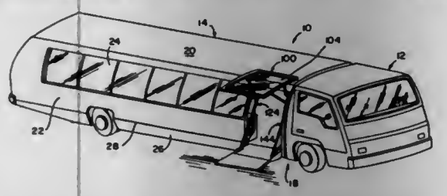
MULTIPURPOSE HIGHWAY VEHICLE

Richard A. Kobasic, 103 First Avenue South, Escanaba, Mich. 49829

Filed Apr. 21, 1993, Ser. No. 51,074

Int. Cl.[6] B60J *5/06*; **B62D** *21/02*

U.S. Cl. 296—146.4 **7 Claims**



1. A segmented door assembly for enclosing a door opening in a multipurpose vehicle including a frame defining an interior, comprising:
- an upper door panel pivotably interconnected with the frame for movement between an open position and a closed position;
- a lower door member pivotably interconnected with the frame for movement between an open position and a closed position, and including an upper tread surface defining a ramp leading into the interior of the vehicle when the lower door member is in its open position and an outer end which engages the ground when the lower door member is in its open position, wherein the lower door member includes a first, inner portion connected to the vehicle and a second, outer portion hingedly connected to the first, inner portion, wherein the second, outer portion defines the outer end of the lower door member; and
- wherein, when in their closed positions, the upper door panel is located within an upper portion of the door opening and the lower door member is located within a lower portion of the door opening and the upper door panel and the lower door member together cooperate to enclose the door opening, wherein the upper door panel and the lower door member define lower and upper edges, respectively, which are engageable with each other when the upper door panel and the lower door member are in their closed positions;
- a linkage interconnected between the frame and the upper door panel and the lower door member;
- an actuator for moving one of the upper door panel and the lower door member between its open and closed positions, wherein the linkage functions to move the other of the upper door panel and the lower door member between its open and closed positions in response thereto, wherein the actuator comprises an extendible and retractable member interconnected with the vehicle for selective movement between an extended position and a retracted position, and a cable interconnected between the extendible and retractable member and the lower door member for moving the lower door member between its open and closed positions, wherein the linkage functions to move the upper door panel between its open and closed positions in response to movement of the lower door member between its open and closed positions.

5,577,794

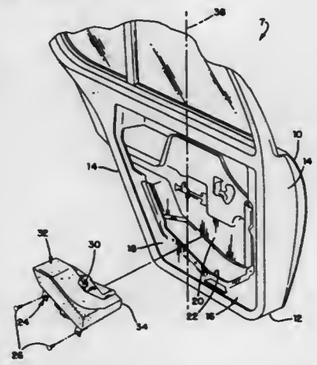
PUSH-OUT TARGET VEHICLE SIDE DOOR

Umesh N. Gandhi, Grand Blanc; Mark E. Farmer, Waterford; Patricia L. Harmon, Rochester Hills; Douglas J. Osmak, Clarkston; Linda M. Kajma, Troy, and Thomas J. Hansz, Rochester Hills, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 12, 1994, Ser. No. 353,761

Int. Cl.[6] B60J *5/04*

U.S. Cl. 296—146.6 **3 Claims**



1. An automotive vehicle door structure comprising:
- a first generally rigid outer structure;
- a second generally rigid inner structure spaced from the outer structure, the inner structure having an opening located laterally of a pelvic region of a seated vehicle occupant;
- an impact beam generally spanning lengthwise of the door structure;
- a compliant target spaced generally adjacent the inner structure opening and located between the inner and outer structures horizontally aligned with the impact beam, the target being sized to have unobstructed passage through the opening in the

second rigid inner structure, whereupon an impact on the outer door panel door causes the target to protrude inwardly through the inner structure opening; and

a bracket which holds the target in the opening in the second right inner structure.

5,577,795

OPERATOR CAB DOOR OF CONSTRUCTION MACHINE

Mitsuhisa Shinsen, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

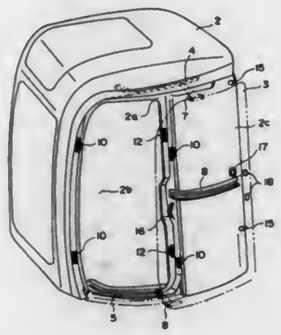
PCT No. PCT/JP93/00989, § 371 Date Apr. 28, 1995, § 102(e) Date Apr. 28, 1995, PCT Pub. No. WO94/02689, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 16, 1993, Ser. No. 374,673

Claims priority, application Japan, Jul. 21, 1992, 4-056852

Int. Cl.[6] B60J *5/06*

U.S. Cl. 296—190 **23 Claims**



1. An operator cab suitable for use on a construction machine, said cab comprising:

an outer side wall having a doorway formed therein,

a door,

a plurality of rails provided in said outer side wall,

a plurality of rollers mounted to said door, each of said plurality of rollers always being in engagement with a respective one of said plurality of rails to support said door as said door is slid between a closed position, in which said doorway is closed, and a fully opened position, in which said doorway is open,

a plurality of pairs of strikers, each of said pairs of strikers comprising a male striker and a female striker, one of the strikers of each pair being mounted to said door and the other striker of the respective pair being mounted to said outer side wall such that at least one pair of strikers are engaged with each other when said door is in its closed position and at least one pair of strikers are engaged with each other when said door is in its fully opened position,

wherein at least one of said plurality of pairs of strikers is mounted for engaging each other at a front edge portion of the door when the door is fully opened, and at least one other pair of said plurality of pairs of strikers is mounted for engaging each other at a rear edge portion of the door when the door is fully opened.

5,577,796

STRUCTURAL BEAM AND METHOD OF MANUFACTURE THEREOF

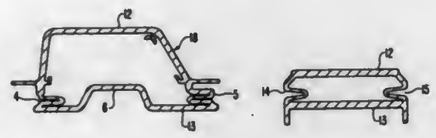
Edvin L. Clausen, Tønder, Denmark, assignor to Norsk Hydro a.s., Oslo, Norway

Continuation of Ser. No. 204,212, Mar. 7, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 480,503

Claims priority, application Norway, Sep. 6, 1991, 913528

Int. Cl.[6] B62D *25/04;* **B60R** *19/02*

U.S. Cl. 296—202 **40 Claims**



1. A structural beam for use as a structural part of a motor vehicle, said structural beam comprising:

a one-piece elongated extruded member formed of an aluminum alloy;

said member having therethrough an elongated, laterally enclosed cavity defined by elongated side walls of said member including at least one pair of opposed, laterally spaced said side walls;

said member having a transverse cross-sectional configuration that is continuous and seamless annularly; and

said member having at least one length portion whereat said cavity has a transverse cross-sectional area that is reduced compared to the cross-sectional area of at least one other portion of the length of said member, whereat at least portions of said one pair of side walls are of a wall thickness that is reduced compared to other of said side walls, and whereat said portions of said two side walls of reduced wall thickness have formed therein folds that extend parallel to a direction of elongation of said member, thereby defining a reduced dimension of said member in a direction transverse to said direction of elongation.

15. A door pillar to be used in a space frame of a motor vehicle, said door pillar having upper and lower ends to be connected to the space frame, said door pillar comprising:

a one-piece elongated extruded member formed of an aluminum alloy;

said member having therethrough an elongated, laterally enclosed cavity defined by elongated side walls of said member including first and second pairs of opposed, laterally spaced said side walls, said first pair of side walls extending transversely of said second pair of side walls;

said member having a transverse cross-sectional configuration that is continuous and seamless annularly;

said member having an upper length portion whereat said cavity has a transverse cross-sectional area that is reduced compared to the cross-sectional area of the remainder of the length of said member and whereat said first pair of side walls have formed therein folds that extend parallel to a direction of elongation of said member, thereby defining a reduced dimension of said upper length portion of said member in a direction transverse to said direction of elongation; and

said reduced dimension of said upper length portion of said member reducing gradually from said remainder of the length of said member to said upper end of said door pillar.

5,577,797

FLOOR SIDE STRUCTURE OF AUTOMOBILE WITH CLOSED CROSS-SECTIONAL PORTION

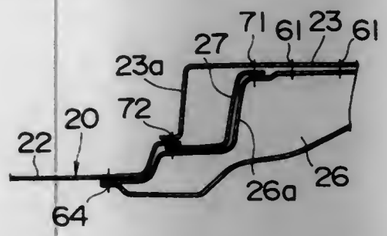
Toshiaki Takanishi, Hamamatsu, Japan, assignor to Suzuki Motor Corporation, Japan

Filed Dec. 6, 1994, Ser. No. 349,958

Claims priority, application Japan, Dec. 14, 1993, 5-312905

Int. Cl.[6] B62D *23/00*

U.S. Cl. 296—203 **3 Claims**



1. A side structure of a floor of an automobile having a length direction and a width direction extending from side to side of the automobile, said automobile including a floor panel having sides, a rear floor panel including a front end having a depending wall, and a main floor panel having a rear end, said floor panel formed by connecting said depending wall provided at said front end of said rear floor panel to said rear end of said main floor panel, right and left sills fixed to both sides of said floor panel, said sills having inner panels, rear floor side members disposed along said inner panels of said sills, each of said rear floor side members being formed with concave portions, and a rear floor cross member having ends, said cross member disposed along said depending wall of said rear floor panel in the direction of width of the automobile, said rear floor cross member assuming an almost L-shape in cross section, said side structure of a floor also comprising: said rear floor cross member being mounted on and welded to said concave portions of said rear floor side members and each of said ends of said rear floor cross member being fixed to one of said inner panels of said sills, with said rear floor cross member traversing said rear floor side members and forming a closed cross-sectional portion with said depending wall by enclosing an open space between the depending wall of the rear floor panel and the upstanding leg of the L-shaped rear floor cross member, said closed cross-sectional portion extending across the width of the automobile from said inner panel on one side of the automobile to the inner panel on the other side of the automobile.

5,577,798

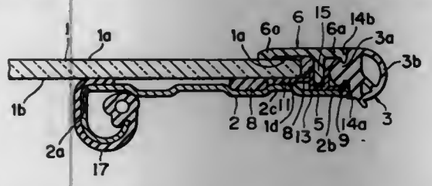
SUN-ROOF ASSEMBLY FOR AUTOMOBILES

Kazuhiro Ichinohe, and Isao Kurihashi, both of Atsugi, Japan, assignors to Hori Glass Co., Ltd., Japan

Filed Jan. 18, 1995, Ser. No. 373,986

Int. Cl.[6] B60J *10/12*

U.S. Cl. 296—216 **20 Claims**



14. A sun-roof assembly comprising: a transparent member having first and second peripheral edge portions; a first supporting member connected to the first peripheral edge portion of the transparent member, the first supporting member having a first supporting edge disposed on the first peripheral edge portion of the transparent member and having a second supporting edge and a protrusion extending from the first and second supporting edges; a second supporting member connected to the second peripheral edge portion of the transparent member, the second supporting member having first and second supporting edges and a raised portion disposed between the first and second supporting edges; a connecting member locating the first and second supporting members relative to each other, the connecting member having a holding portion connected to the protrusion of the first supporting member, a spacer portion extending from the holding portion and disposed between the raised portion of the second supporting member and the second peripheral edge portion of the transparent member, and an abutting portion extending from the holding portion and abutting the second supporting member.

5,577,799

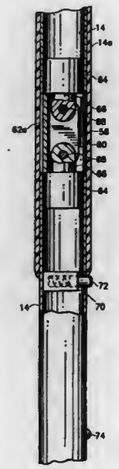
COLLAPSIBLE TUBULAR ROCKING CHAIR FRAME

Robert J. St. Germain, 44 Gorman St., Naugatuck, Conn. 06770

Continuation-in-part of Ser. No. 443,340, Mar. 17, 1995, Pat. No. 5,476,308. This application Nov. 16, 1995, Ser. No. 558,471

Int. Cl.[6] A47C *4/28*

U.S. Cl. 297—35 **3 Claims**



1. A collapsible tubular rocking-chair frame comprising:

a. an elongate generally open rectangular back unit having parallel long side elements and parallel upper and lower end elements, the long side elements each being in two tubular sections, the sections of each side element being connected by a selectively foldable hinge comprising a channel-shaped knuckle element having a web and side flanges inbetween the tubular sections, the flanges being apertured in alignment at each end a flat eye element on the ends of each section adjacent the knuckle element and extending into the channel-shaped knuckle element from opposite directions, pins respectively extending through the eyes and flange apertures, the web of the channel being contiguous with the adjacent ends of the tubular sections of the side element when the hinge is in linear condition and the corners of the flanges more remote from the web being rounded to facilitate pivoting, and a sleeve closely surrounding the side element and adapted to selectively slide over the knuckle and the ends of the tubular sections adjacent the knuckle to hold the hinge in linear condition,

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b. a generally U-shaped arm unit having a forward bight and rearward legs, the arm unit legs pivotally attached at their distal ends to the respective long sides of the back unit above the hinges,

c. a generally U-shaped rear unit having a rearward and downward bight and upward legs, the distal ends of the rear unit upward legs pivotally attached to the respective arm unit legs adjacent the bight of the arm unit, and

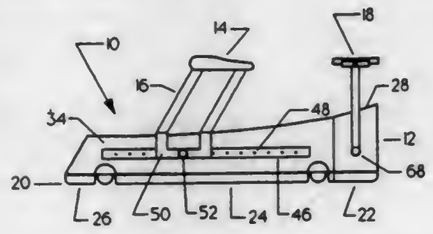
d. a pair of linear parallel stabilizing elements, one on each side of the frame, having opposite ends pivotally connected respectively to a long side element of the back unit adjacent the lower end element and a rear unit leg adjacent the rear unit bight.

5,577,800

ADJUSTABLE WORK SEAT TO PROVIDE SUPPORT WHEN IN A KNEELING POSITION

Lionel F. Earl, Jr., 361 Prutt Cir., Gunter Air Force Base, Ala. 36115

Filed Jan. 21, 1994, Ser. No. 184,372
Int. Cl.[6] B60N *2/38*
U.S. Cl. 297—195.11 **8 Claims**



1. A kneeling device comprising:

a) a generally rectangular-shaped base having a front portion, a back portion, a top surface, a bottom surface, a first side, a second side, a third side, and a fourth side;

b) a brace extending from the front portion to the back portion and from the first side to the third side;

c) a seat;

d) an elbow or arm rest;

e) a first support means to support the elbow or arm rest to the base at the front portion;

f) a first channel, having a plurality of spaced apart holes, located in the first side and formed in the brace and a second channel, having a plurality of spaced apart holes, located in the third side and formed in the base;

g) a first bar slidably located within the first channel and a second bar slidably located within the second channel;

h) a first spring-loaded knob attached to the first bar and a second spring-loaded knob attached to the second bar;

i) a second support means, having a first support, a second support, a third support, and a fourth support, to support the seat to the base such that one end of the first support is attached to the first bar and the opposite end is attached to the seat, one end of the second support is attached to the first bar and the opposite end is attached to the seat, one end of the third support is attached to the second bar and the opposite end is attached to the seat, one end of the fourth support is attached to the second bar and the opposite end is attached to the seat; and

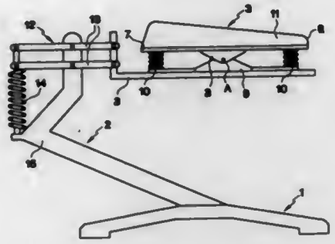
wherein the seat is displaced by pulling on the first spring-loaded knob and the second spring-loaded knob, moving the seat back or forth and thereafter releasing each spring-loaded knob such that the first spring-loaded knob is inserted into one of the spaced part holes of the first channel and the second spring-loaded knob is inserted into one of the spaced apart holes of the second channel.

5,577,801

ACTIVE DYNAMIC SEAT

Josef Glöckl, Ammerseestrasse 6, D-8011 Kirchheim, Germany

PCT No. PCT/EP93/00759, § 371 Date Feb. 10, 1994, § 102(e) Date Feb. 10, 1994, PCT Pub. No. WO93/19648, PCT Pub. Date Oct. 14, 1993
PCT Filed Mar. 29, 1993, Ser. No. 150,106
Claims priority, application Germany, Mar. 27, 1992, 42 10 134.4
Int. Cl.[6] A47C *1/02*
U.S. Cl. 297—201 **12 Claims**



1. An active dynamic seat comprising:

a base;

an intermediate piece having an upper end and a lower end, the lower end being connected to the base;

a seat part; and

connection means for connecting the intermediate piece to the seat part; wherein

the seat part includes two seat halves, the seat halves being connected separately by the connection means, substantially vertically resiliently to the intermediate piece, each seat half including a plate and a supporting part, the plate being pivotably supported on the supporting part to be tiltable in forward and rearward directions, wherein the connection means include a pair of parallel double rocker arms, one of the pair of parallel double rocker arms connecting each supporting part to the intermediate piece, and a first spring means for biasing each parallel double rocker arm.

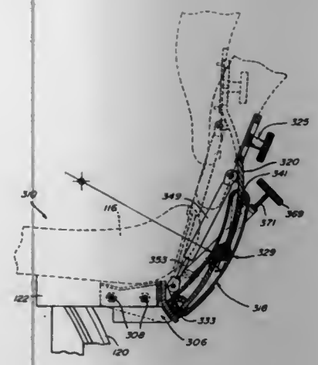
5,577,802

ADJUSTABLE CHAIR

Benjamin Cowan, and Marek Kmiclkiewicz, both of Montreal, Canada, assignors to CKE Technologies, Inc., St. Laurent, Canada

Continuation-in-part of Ser. No. 189,549, Feb. 1, 1994, abandoned, which is a continuation-in-part of Ser. No. 20,540, Feb. 22, 1993, abandoned. This application Mar. 20, 1995, Ser. No. 406,315
Int. Cl.[6] A47C *1/024*
U.S. Cl. 297—301.2 **37 Claims**

1. A chair comprising a base, at least a fixed stem extending vertically from the base, a track member mounted to the top portion of the stem and a carriage slidable on a first track member, the first track member extending at an acute angle to the axis of the stem, and the carriage slides on the first track member within a vertical plane with the sliding movement of the carriage including a vertical component having a value greater than a respective value of a horizontal component of the sliding movement; a seat mounted on the carriage, resilient means extending between the carriage and the track member such that the seat is maintained in an uppermost equilibrium position with a person sitting erect on the chair in a work position but the carriage will slide downwardly on the track in response to a rearward shift in the weight by the person when the person moves from a work position to a rest position on the chair, and the seat and carriage will return to the uppermost equilibrium position as the person leans forward to the work position from the rest position.

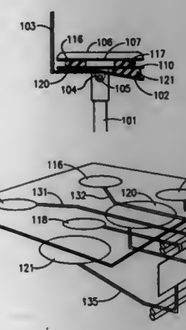


5,577,803

ADJUSTABLE SEAT

Jean-Pierre Guilbaud, Roanne, France, assignor to Tritube & Jean-Pierre Guilbaud Sarl, France

Division of Ser. No. 146,701, Nov. 2, 1993, abandoned. This application Jul. 6, 1995, Ser. No. 498,853
Claims priority, application France, Nov. 4, 1992, 9213508
Int. Cl.[6] A47C *1/022*
U.S. Cl. 297—314 **3 Claims**



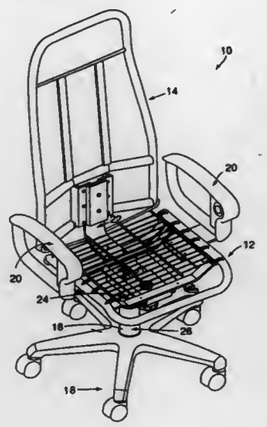
1. An adjustable seat formed of a seat cushion having an underside rigid plate and of an underframe having a bearing rigid plate arranged on the top of the underframe, comprising at least three actuators arranged between the underside plate of the seat cushion and the bearing plate, said actuators being formed by individual flexible pockets, each of said actuators connected in a hydraulic closed circuit by pipe to a distribution chamber, said hydraulic closed circuit comprising a shut-off member arranged between the distribution chamber and the actuators, said shut-off member adapted for actuation by a user such that the seat can be fixed in selected positions with respect to a horizontal surface, said shut-off member including a pair of parallel tubes forming a clamp, said tubes allowing the fluid to move within the circuit when in an open condition and preventing fluid movement when in a closed condition.

5,577,804

SEAT HEIGHT ADJUSTMENT MECHANISM FOR A CHAIR

Romeo Tedesco, Weston, Canada, assignor to Global Upholstery Company, Downsview, Canada

Filed Jun. 30, 1995, Ser. No. 497,657
Int. Cl.[6] A47C *1/02*
U.S. Cl. 297—344.19 **26 Claims**



24. A chair comprising:

(a) a seat portion;

(b) a support leg, said leg including a fluid pressure cylinder connected to said seat portion, said cylinder having vertically extending telescopic upper and lower sections and a valve release member, said valve release member movable between a closed position in which said upper and lower sections are fixed in position relative to each other and an open position in which said upper and lower sections are moveable relative to each other;

(c) flexible cable means having a first end and a second end;

(d) an actuator operatively connected to said valve release member and movable between a first position, in which said valve release member is in said closed position, and a second position, in which said valve release member is in said open position, said actuator having a member having a first portion which is pivotally mounted for rotation with respect to said valve release member, a second portion which is connected to said second end of said cable means and a third portion for contacting and moving said valve release member;

(e) actuating button means positioned proximate said seat portion and movable between a first position and a second position, said button means is positioned in a housing means and travels inwardly into said housing means as said button means passes from its first position to its second position, said first end of cable means operatively connected to said button means; and,

whereby, when said button means is moved from said first position to said second position, said valve release member is moved to said open position so that the height of the chair may be adjusted and when said button means is moved from said second position to said first position, said valve release member is moved to said closed position so that the height of the chair is then fixed.

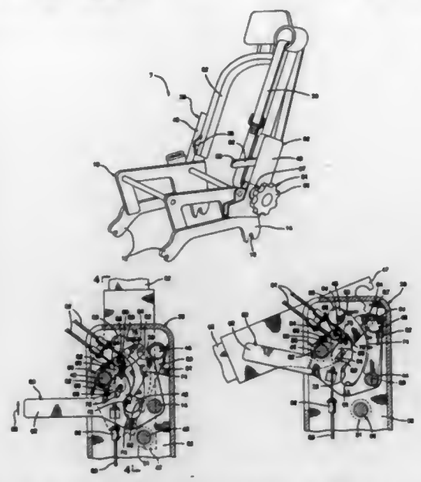
VOL 1192 ISS 4 NO 26 1996 UMI

5,577,805

VAN-TYPE VEHICLE SEAT

Jeffrey A. Glinter, Waterford, and Gary A. Wize, Shelby Township, Macomb County, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 10, 1995, Ser. No. 541,649
Int. Cl.[6] B60N *2/02;2/04*
U.S. Cl. 297—378.12 **10 Claims**



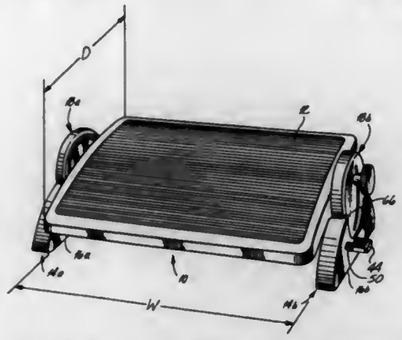
1. A vehicle seat which may be releasably mounted to a vehicle floor comprising:
a riser assembly having front and rear legs;
a floor latch assembly for joining the rear leg to a vehicle floor, the floor latch assembly being released by a pull on a leg latch release cable;
a seat back bracket assembly joined to the riser assembly, the seat back bracket assembly having first, second and third pins connected thereto, the seat back bracket assembly having a first arcuate slot with a radial center generally coterminous with the first pin;
a seat back foldable from an upright position to a fold position placing the seat back more adjacent to the riser assembly, the seat back being pivotally connected to the seat back bracket assembly via the first pin, and the seat back having a fourth pin connected thereto captured within the first arcuate slot of the seat back bracket assembly;
a locking pawl pivotally connected to the third pin and angularly biased toward contact with the fourth pin when the seat back is in an upright position to lock the seat back in an upright position;
a release lever pivotally connected to the seat back bracket assembly via the second pin, the release lever having a handle and first and second fingers bifurcated by a first slot which accepts the fourth pin, one of the fingers having a tab to remove the lock pawl from engagement with the fourth pin when the seat back is moved to the folded position from the upright position when the release hand is moved in a first angular direction;
a first link with first and second ends, the first link second end being pivotally connected to the seat back bracket assembly and the first link first end being angularly biased to place the first link first end in a position adjacent the second finger of the release lever to prevent the release lever from being moved in the first angular direction when the rear leg floor latch assembly is not joined to the vehicle floor, the first link first end being operatively associated with the leg latch release cable; and
a second link pivotally joined to the release lever and to the first link whereby movement of the release lever in a second angular direction opposite the first angular direction causes the second end of the first link to pull the cable to release the rear leg latch assembly, thereby releasing the rear legs from the vehicle floor.

5,577,806

ADJUSTABLE FOOTREST

Carlos V. Ugalde, Pomona, Calif., assignor to Continental Engineering Group, Inc., Irwindale, Calif.

Filed Oct. 13, 1994, Ser. No. 322,320
Int. Cl.[6] A47C *16/00*
U.S. Cl. 297—423.46 **20 Claims**



1. A footrest for supporting the feet of a user above a support surface comprising:
a base for supporting the footrest on the support surface; and
at least one intermediate member having a peripheral outer edge surface, the peripheral outer edge surface rotatably supported by a base surface and slidably interfitted with a portion of the base allowing for relative rotation about a first axis; and
a platform having an upper surface for accommodating the feet of the user, the platform rotatably coupled to the intermediate member for relative rotation about a second axis offset from the first axis so that selective rotations about the first and second axes provide for height and orientation adjustment of the upper surface of the platform relative to the support surface.

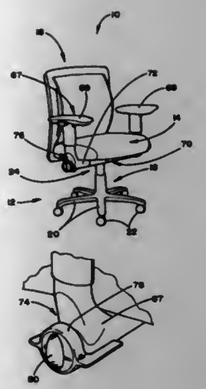
5,577,807

ADJUSTABLE CHAIR ACTUATOR

David N. Hodge, The Sea Ranch, Calif.; David C. Jenkins, Grand Rapids, Mich.; Michael L. Mercier, Grandville, Mich.; David S. Teppo, East Grand Rapids, Mich.; Larry G. Lindgren, Rockford, Mich.; Jeffery L. Halliwill, Gowen, Mich., and James M. Mancewicz, Wyoming, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Jun. 9, 1994, Ser. No. 257,648
Int. Cl.[6] A47C *1/024*
U.S. Cl. 297—463.1 **31 Claims**

1. An adjustable chair subassembly, comprising:
a base;
a back support;
a control on the base connecting the back support to the base;
a seat positioned on said control;
an elongated, tubular actuator housing supported on said base, said actuator housing extending transversely of the seat and wherein said housing defines ends;
a first actuator mounted at one end of said housing; and
a second actuator mounted at said one end of said housing, said first actuator being generally concentric with said second actuator, said actuator housing being dimensioned so that said first and second actuators are positioned to be conveniently viewed and used by a seated user of the chair subassembly,



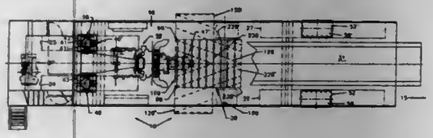
said second actuator including a push button slidably mounted in said one end of said actuator housing.

5,577,808

QUARRY MINER

Jerry F. Gilbert, Southlake, Tex., assignor to Trencor, Inc., Grapevine, Tex.

Filed Apr. 3, 1995, Ser. No. 414,680
Int. Cl.[6] E01C *23/12*
U.S. Cl. 299—39.2 **18 Claims**



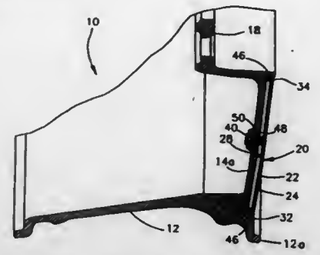
1. A quarry miner comprising:
a vehicle having a ground engaging support by which said vehicle is supported while being propelled along the ground, said vehicle having a longitudinally extending main frame and opposed sides, opposed ends, a top opposed to a bottom, and a mid-section between said opposed ends;
a digging apparatus attached to said vehicle mid-section in underlying relationship thereto, said digging apparatus including a mining drum having opposed sides and having a shaft, said shaft being anchored to said main frame; power means connected to said shaft and disposed between said opposed sides of said vehicle and connected to said mining drum centrally between said opposed sides thereof for rotating said mining drum; said support moves said main frame respective to the ground and thereby moves said mining drum of said digging apparatus into digging contact with the ground;
a conveyor system having a feed end opposed to a discharge end, said feed end of said conveyor system being mounted within said vehicle mid-section at a location to receive excavated material from said digging apparatus, and the discharge end thereof being positioned to deliver excavated material away from said vehicle;
power means for operating the said conveyor system and for propelling said vehicle along the ground.

5,577,809

CHROMIUM-PLATED COMPOSITE WHEEL

Lee A. Chase, Ada, Mich., assignor to Lacks Industries, Inc., Grand Rapids, Mich.

Division of Ser. No. 412,619, Mar. 29, 1995, which is a continuation of Ser. No. 904,180, Jun. 25, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 479,683
Int. Cl.[6] B60B *7/06*
U.S. Cl. 301—37.43 **3 Claims**



1. A method for providing a decorative surface on a composite vehicle wheel having a web portion and a peripheral rim portion for mounting a vehicle tire, said peripheral rim portion defining an axial peripheral lip circumscribing said peripheral rim portion and structural means interconnecting said web portion and said peripheral rim portion, said web portion and said peripheral rim portion defining a wheel face outer surface, said method comprising the steps of:
forming a thin solid ornamental panel of uniform thickness having an interior and exterior surface, said thin solid formed ornamental panel being shaped to cover said entire wheel face outer surface and not cover said axial peripheral lip so as to mate to said wheel and to substantially conform said exterior surface of said thin solid formed ornamental panel to adjacent contours of said wheel face outer surface of said wheel;
applying a decorative layer on said exterior surface of said thin solid formed ornamental panel;
applying an adhesive to one of said wheel face outer surface of said wheel and said interior surface of said thin solid formed ornamental panel; and
positioning said interior surface of said thin solid formed ornamental panel against said adhesive so as to adhere said thin solid formed ornamental panel to said wheel face outer surface;
whereby said positioning step locates said thin solid formed ornamental panel so as to be substantially flush with adjacent portions of said wheel face outer surface of said wheel such that said decorative layer readily blends with said axial peripheral lip circumscribing said peripheral rim portion so as to provide a visual impression that said decorative layer is substantially flush with said adjacent portions of said wheel face outer surface and thereby appears to constitute an integral portion of said wheel.

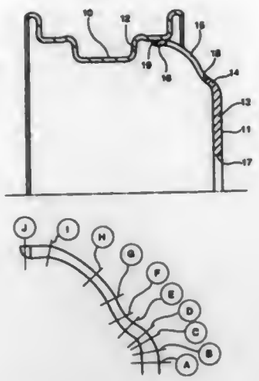
5,577,810

WHEEL DISK HAVING A NON-UNIFORM THICKNESS

Kishiro Abe, and Mitsuru Itoh, both of Ayase, Japan, assignors to Topy Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 13, 1995, Ser. No. 527,428
Claims priority, application Japan, Mar. 18, 1994, 6-48725
Int. Cl.[6] B60B *3/04*
U.S. Cl. 301—63.1 **8 Claims**

1. A disk for an automotive wheel comprising:
a hub coupling portion extending perpendicularly to an axis of the disk;
a curved portion integrally connected with the hub coupling portion and curving radially outwardly and axially inwardly at a first radius;



a hat portion integrally connected with the curved portion and curving radially outwardly and axially inwardly at a second radius greater than the first radius; and

an end portion integrally connected with the hat portion and extending axially inwardly;

wherein a thickness of the end portion is smaller than a thickness of the hub coupling portion, and a thickness of the hat portion is smaller than the thickness of the end portion, and

wherein a first ratio of the thickness of the end portion to the thickness of the hub coupling portion is in a range of from 0.65 to 0.8, and a second ratio of the thickness of the hat portion to the thickness of the hub coupling portion is in a range of from 0.5 to 0.7.

5,577,811

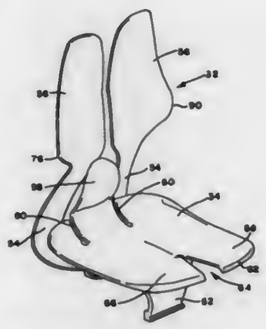
ERGONOMIC CHAIR

Richard K. Ogg, Littlestown, Pa., assignor to Hon Industries Inc., Muscatine, Iowa

Filed Jun. 7, 1995, Ser. No. 482,068

Int. Cl.[6] A47C 7/16

U.S. Cl. 297—452.15 **18 Claims**



1. A chair comprising:

an integrally-formed one piece shell having a generally horizontally disposed portion and a generally vertically disposed portion;

a seat member formed separately from said shell;

means formed on said horizontally disposed portion of said shell for operably connecting said seat member to said shell wherein said seat member is connected to said shell in a generally horizontal disposition; and,

a sacral support member formed integrally with said seat member and extending vertically upwardly from a rear portion of said seat member, said support member being spaced forwardly of said shell;

said vertically disposed portion of said shell including a pair of independent flexible first resilient arm portions each connected to a respective shoulder support portion for independently supporting the shoulder blades of a person seated in said chair.

5,577,812

BRAKING FORCE CONTROL SYSTEM FOR MOTOR VEHICLE

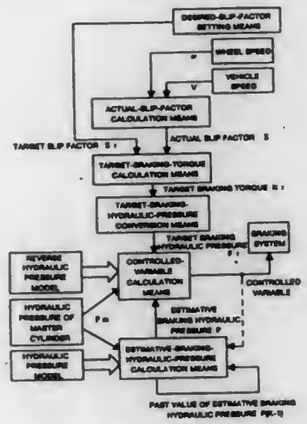
Yutaka Hirano; Akira Eiraku, both of Susono; Shin'ichi Soejima, and Yoshinori Kadowaki, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 28, 1996, Ser. No. 608,461

Claims priority, application Japan, Mar. 14, 1995, 7-054474

Int. Cl.[6] B60T 8/58;8/66

U.S. Cl. 303—112 **10 Claims**



1. A braking force control system for a motor vehicle, having a hydraulic pressure control device which controls a hydraulic pressure generated by a master cylinder or a pump in a braking system, so as to increase or decrease in accordance with a drive state of the motor vehicle, comprising:

actual-slip-factor calculation means for calculating an actual slip factor of a wheel;

target-braking-torque calculation means for calculating a target braking torque from a preset target slip factor and said calculated actual slip factor so that a wheel speed may come to afford the target slip factor;

target-braking-hydraulic-pressure conversion means for converting said target braking torque into a target braking hydraulic pressure;

detection means for detecting said hydraulic pressure generated by the master cylinder or the pump;

estimative-braking-hydraulic-pressure calculation means for calculating an estimative braking hydraulic pressure which is estimated to be currently acting in the braking system, from said detected hydraulic pressure and a past value of said estimative braking hydraulic pressure by the use of a hydraulic pressure model; and

controlled-variable calculation means for calculating a controlled variable of the hydraulic pressure control device from said calculated estimative braking hydraulic pressure and the target braking hydraulic pressure by the use of a reverse hydraulic pressure model.

5,577,813

HYDRAULIC UNIT FOR SLIP-CONTROLLED BRAKE SYSTEMS

Dalibor Zaviska, Eschborn, Germany, assignor to ITT Automotive Europe GmbH, Frankfort, Germany

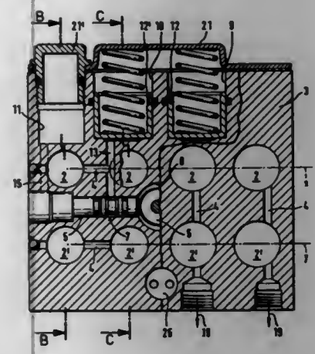
PCT No. PCT/EP93/02543, § 371 Date Apr. 10, 1995, § 102(e) Date Apr. 10, 1995, PCT Pub. No. WO94/08830, PCT Pub. Date Apr. 28, 1994

PCT Filed Sep. 20, 1993, Ser. No. 416,689

Claims priority, application Germany, Oct. 9, 1992, 42 34 013.6; Feb. 27, 1993, 43 06 222.9

Int. Cl.[6] B60T 15/00;8/38; F16B 13/08

U.S. Cl. 303—116.4 **15 Claims**



1. A hydraulic unit for slip-controlled brake systems comprising:

means for supplying control signals;

means for supplying pressure fluid from a pressure fluid supply source;

means for delivering pressure fluid to a pressure fluid consumer;

eight valve elements;

a pressure generating element having a delivery side;

a driving element for driving said pressure generating element in response to said control signals;

a plurality of pressure accumulator pistons; a noise damper; and

a valve accommodating member having:

(a) a channel leading to said pressure fluid supply means,

(b) eight valve accommodating bores in which said eight valve elements are individually positioned and arranged in first and second rows of four each with individual valve accommodating bores and valve elements in said first row associated with individual valve accommodating bores and valve elements in said second row,

(c) a first plurality of location bores in which said pressure generating element and said driving element are individually positioned,

(d) a second plurality of location bores disposed outward of said valve accommodating bores and in which said pressure accumulator pistons and said noise damper are individually positioned, said location bore containing said noise damper being hermetically sealed and providing a hydraulic connection between said delivery side of said pressure generating element and said channel leading to the pressure fluid supply means,

(e) a plurality of pressure fluid channels extending between said valve elements, said pressure generating element, and said driving element to form hydraulically operable connections between said pressure fluid supply means and said pressure fluid consumer,

(f) a first plurality of pressure fluid bores individually extending between associated valve elements in said first and second rows,

(g) a second plurality of pressure fluid bores extending between said second plurality of location bores containing said pressure accumulator pistons and said location bores containing said pressure generating element, and

(h) a pressure fluid bore extending between said location bore containing said noise damper and said location bore containing said pressure generating element.

5,577,814

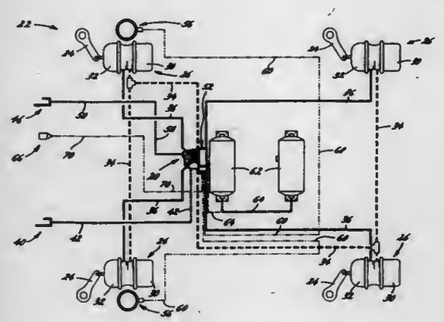
FULL FUNCTION SKID CONTROL BRAKING SYSTEM FOR VEHICLES

David G. Engelbert; Robert S. Taylor, and Steven D. Wallestad, all of Kansas City, Mo., assignors to Midland Brake, Inc., Kansas City, Mo.

Continuation of Ser. No. 252,931, Jun. 2, 1994, Pat. No. 5,409,303, which is a continuation-in-part of Ser. No. 78,139, Jun. 15, 1993, Pat. No. 5,425,572. This application Apr. 24, 1995, Ser. No. 427,371

Int. Cl.[6] B60T 8/32;13/00

U.S. Cl. 303—118.1 **16 Claims**



1. A braking control assembly for actuating the brakes of a vehicle including a source of pressurized air fluidly coupled to said assembly for providing air pressure therein, means operable by the vehicle operator for providing brake actuation pressure when the operator actuates the means and relieving air pressure when the operator deactuates the means, skid sensing means for providing skid condition signals, and brake cylinders having service brake chambers and spring brake chambers in association with each of the brakes, said braking control assembly enclosed within a single housing and comprising:

a release valve fluidly coupled to the source of pressurized air for receiving air pressure, said release valve permitting air to flow into the spring brake chambers of the brake cylinders from said braking control assembly when the air pressure in the spring brake chambers is less than the air pressure in said assembly and permitting air to flow out of the spring brake chambers of the brake cylinders when the air pressure in said assembly is a predetermined amount less than the pressure in the spring brake chambers;

a relay valve fluidly coupled to the service brake chambers of the brake cylinders for permitting air to flow into the service brake chambers from said assembly and out of the service brake chambers, said relay valve being responsive to air pressure present in a control chamber of said relay valve governing whether said valve permits air to flow into or out of the service brake chambers, the control chamber being fluidly coupled to the means operable by the vehicle operator for receiving the brake actuation pressure; and

control valves fluidly interposed between said relay valve and the means operable by the vehicle operator which operate partially to control the air pressure within the control chamber of said relay valve, said control valves acting to prevent an increase in pressure or to exhaust the pressure within the control chamber of said rely valve in response to skid condition signals from the skid sensing means.

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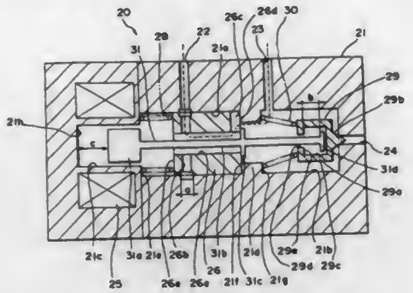
VOL 1192 ISS 4 NO 26 1996 UMI

5,577,815

THREE POSITION SOLENOID CONTROLLED VALVE

Koichi Hashida, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 305,655, Sep. 14, 1994. This application Apr. 4, 1995, Ser. No. 416,320
Claims priority, application Japan, Sep. 27, 1993, 5-240187
Int. Cl.[6] B60T 8/36; F15B 13/044
U.S. Cl. 303—119.2 3 Claims



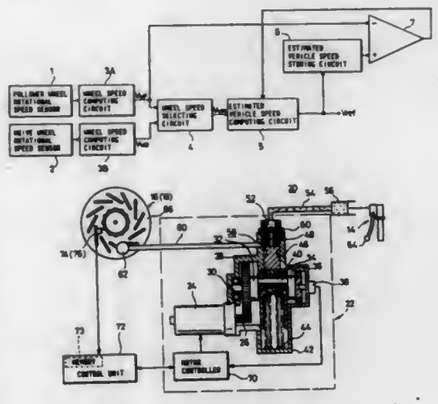
1. A three position solenoid controlled valve comprising:
a housing which has first, second and third ports;
a first valve body which is slid in the housing so as to bring the first and second ports into and out of communication with each other;
a first urging means for urging the first valve body in a direction for bringing the first and second ports into communication with each other;
a second valve body for bringing the second and third ports into and out of communication with each ocher;
a second urging means for urging the second valve body in a direction for bringing the second and third ports out of communication with each other;
an electromagnetic urging means; and
a movable member which is displaced, in engagement with the first and second valve bodies, in the housing in a sliding direction of the first valve body by an electromagnetic force of the electromagnetic urging means so as to cause the first and second valve bodies to bring the first and second ports out of communication with each other against an urging force of the first urging means and the second and third ports into communication with each other against an urging force of the second urging means, respectively;
wherein when the electromagnetic force of the electromagnetic urging means is set at zero, the urging force of the first urging means causes the first valve body to bring the first and second ports into communication with each other and the urging force of the second urging means causes the second valve body to bring the second and third ports out of communication with each other;
wherein when the electromagnetic force of the electromagnetic urging means is set at a first predetermined value, the movable member causes the first valve body to bring the first and second ports out of communication with each other against the urging force of the first urging means and the urging force of the second urging means causes the second valve body to bring the second and third ports out of communication with each other;
wherein when the electromagnetic force of the electromagnetic urging means is set at a second predetermined value larger than the first predetermined value, the movable member causes the first and second valve bodies to bring the first and second ports out of communication with each other against the urging force of the first urging means and the second and third ports into communication with each other against the urging force of the second urging means, respectively;
one of the first valve body and the movable member being formed with a detour for allowing communication of working fluid between opposite ends of the first valve body in the sliding direction of the first valve body regardless of position of the movable member in the housing such that a force based on a liquid pressure applied to one of the opposite ends of the first valve body in the sliding direction of the first valve body from the first and second ports and a force based on a liquid pressure applied to the other of the opposite ends of the first valve body in the sliding direction of the first valve body from the first and second ports eliminate each other;
wherein the first valve body is formed by a spool slid in the housing substantially in liquid-tight state and brings the first and second ports out of communication with each other through relative displacement between the housing and a land portion of the first valve body.

5,577,816

METHOD OF AND SYSTEM FOR CONTROLLING BRAKES

Osamu Suzuki; Keishin Tanaka; Tatsuo Hayashi; Takushi Matsuto; Chiaki Kumagai; Takeshi Sakurai, and Atsuo Ota, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 958,166, Oct. 8, 1992, Pat. No. 5,365,444.
This application Jul. 28, 1994, Ser. No. 281,559
Claims priority, application Japan, Oct. 8, 1991, 3-260853; Oct. 16, 1991, 3-267939; Oct. 24, 1991, 3-278062
Int. Cl.[6] G06G 7/00
U.S. Cl. 303—174 34 Claims



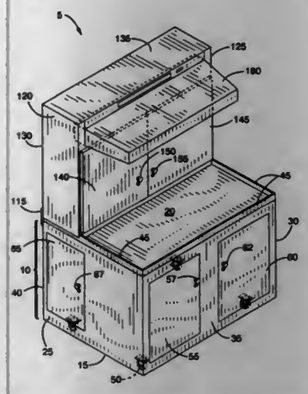
1. A method of controlling brakes, wherein the running stability of a vehicle and the degree of braking are controlled by adjusting caliper pressure, said method comprising the steps of:
determining a slip ratio of a wheel;
determining an acceleration of the wheel; and
estimating caliper pressure from a table having a plurality of pre-stored brake caliper adjustment values therein, in which said determined slip ratio and said determined acceleration are used as inputs to the table, each of said pre-stored adjustment values corresponding in said table to respective values of said slip ratio and said acceleration, whereby at least one of values said adjustment is determined as a function of said determined acceleration and said slip ratio.

5,577,817

PORTABLE PAINTS AND SUPPLIES STORAGE AND WORK ENCLOSURE

Cory Reynolds, 120 Rodeo Ave., Apt. 1, Rodeo, Calif. 94572

Filed Jul. 31, 1995, Ser. No. 509,240
Int. Cl.[6] A47B 77/02
U.S. Cl. 312—107 6 Claims



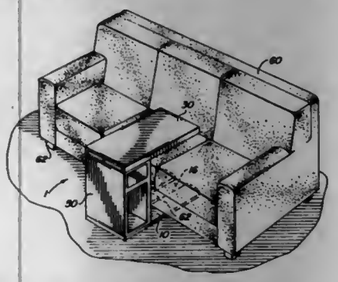
1. A portable paint and paint related items storage enclosure utilized by a painter, comprising:
a) a lower housing having a bottom surface, an upper working surface, two opposing side panels, a front panel, and a back panel, wherein said lower housing contains a plurality of first compartments between said bottom surface and said upper working surface and means associated with said front panel and each of said two opposing side panels for accessing each of said plurality of first compartments;
b) a continuous perimeter lip raised above and surrounding said working surface for containing liquid spills;
c) an upper housing having two opposing side panels, a back panel, a top panel, and a front facing area holding at least one access door positioned above said lower housing, wherein said upper housing contains a plurality of second compartments; and
d) means associated with said lower housing for permitting movement by the user of the storage enclosure over a supporting surface.

5,577,818

PULL-UP TABLE

Elmer Sayre, 11022 Zephyr, Fountain Hills, Ariz. 86268

Filed Mar. 29, 1995, Ser. No. 412,917
Int. Cl.[6] A47B 83/02
U.S. Cl. 312—235.8 14 Claims



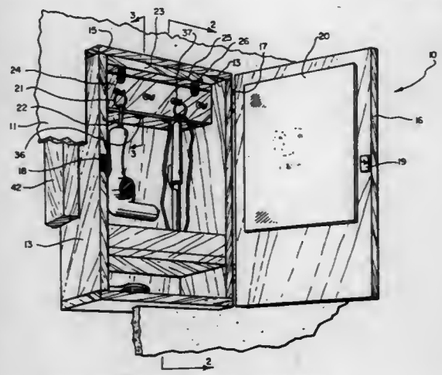
1. A pull-up table device comprising:
(A) a substantially planar quadrilateral shaped base member having a top surface and a bottom surface thereof and a laterally extending cut out recess in a first short side thereof, said substantially planar base member residing co-planar with a floor surface such that said bottom surface is adapted to be adjacent to a floor surface;
(B) a substantially planar top member positioned substantially parallel to said base member and in spaced apart relationship thereto, the top member being substantially superimposed above the base member; and
(C) an upright support member projecting perpendicularly upward from the top surface of the bottom member and formed of substantially quadrilaterally shaped box construction, the upright support member comprising a pair of substantially parallel vertically planar surface members in spaced apart relationship to one another, a pair of upper and lower surface members each connected to upper and lower portions, respectively, of the pair of substantially parallel vertically planar surface members and maintaining the planar surface member in spaced apart relationship, said upright support member being coupled to both said base member and said top member and positioned parallel to and adjacent a short end of both said base member and said top member and opposite the cut out recess of the base member such that each of said base member and said top member extend perpendicularly outward from said upright support member forming a generally C-shaped configuration of the pull-up table with the top member defining an upper laterally extending section of the C-shape, the upright support member forming a vertically extending section of the C-shape and the base member forming a lower laterally extending section of the C-shape.

5,577,819

BATHROOM APPLIANCE CABINET

Danny H. Olsen, 575 E. 1950 N., North Ogden, Utah 84414

Filed May 2, 1994, Ser. No. 236,185
Int. Cl.[6] A47B 67/00
U.S. Cl. 312—242 2 Claims



1. A bathroom appliance cabinet, comprising:
rear, side, top and bottom walls defining a cavity;
an electrical power bar assembly installed within the cavity, including at least one electrical receptacle for the male end of an elongate appliance electrical cord, said power bar being connected to an electrical power supply cord;
means permitting the power bar electrical cord to extend from the cabinet;
means removably retaining at least one electrical appliance and its associated electrical cord within the cavity; wherein
the appliance is retained in separated relationship from any other appliance retained with the cavity; said cabinet further comprising
means retaining any excess length of the appliance electrical cord within the cavity, during and between uses of said appliance; wherein

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the cabinet includes a separate compartment contained within the cavity; and

the power bar is mounted within the separate compartment, said compartment being shaped and sized to permit plugging in of an appliance cord into the receptacle and to retain any unneeded length of the appliance electrical cord therein, wherein;

the compartment is formed between the top wall, uppermost portions of the sidewalls, and a horizontal member downwardly spaced from the top wall, spanning between the sidewalls, the power bar being secured to the top wall with the receptacle opening downwardly, the foremost extension of the downwardly spaced horizontal member defining a front of the compartment; and

a horizontally hinged door closing the front of said compartment.

5,577,820

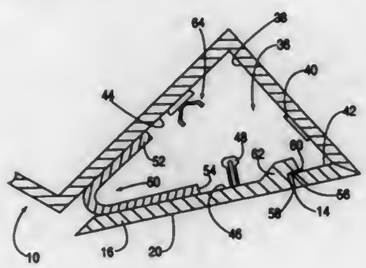
FOLD IN ACCESS DOOR

Brian J. Kim, and Satoshi Miyajima, both of San Diego, Calif., assignors to Sony Corporation, Tokyo, Japan, and Sony Electronics Inc., Park Ridge, N.J.

Filed Jan. 6, 1995, Ser. No. 369,618

Int. Cl.[6] A47B *81/06*

U.S. Cl. 312—319.2 **8 Claims**



1. A fold in door structure, comprising:

an enclosure for an electronic device, said enclosure having an aperture providing access to an internal cavity within said enclosure;

a planar element rotatably attached adjacent an edge of said aperture allowing outward rotation of said planar element away from said internal cavity to a first position wherein said aperture is closed by said planer element and inward rotation of said planar element to a second position wherein said planar element is oriented in a sloped position relative to said enclosure and wherein a first portion including more than half of said planer element is positioned within said internal cavity to open said aperture and wherein a second portion of said planar element, which is smaller than said first portion, projects from said enclosure to form a single projecting door section which is in said sloped position relative to said enclosure;

rotation stopping means for stopping said outward rotation at said first position; and

a spring element for biasing said planar element to urge said planar element to provide said outward rotation.

5,577,821

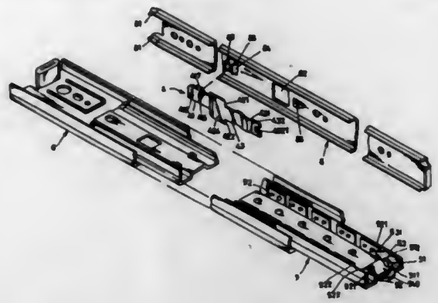
SLIDING TRACK ASSEMBLY FOR DRAWERS

Leo Chu, 5F., No. 38, Lane 239, Chin Ping Rd., Chungho City, Taipei Hsien, Taiwan

Filed Mar. 24, 1995, Ser. No. 409,454

Int. Cl.[6] A47B *88/00*

U.S. Cl. 312—334.11 **7 Claims**



1. A sliding track assembly arranged between a cabinet and a drawer, said sliding track assembly comprising an outer rail securely fixed to an inside wall of said cabinet, an intermediate rail, an inner rail fixedly secured to a lateral side of said drawer, a first sliding ball rack slidably connected between said outer rail and said intermediate rail, and a second sliding ball rack slidably connected between said intermediate rail and said inner rail, a first stop plate fixed to said intermediate rail at an outer end and having two projecting blocks having a distance therebetween for engagement with a second stop plate on said inner rail and two stop rods for stopping said second sliding ball rack in place, a second stop plate fixed to said inner rail at an outer side, said second stop plate being engaged with the projecting blocks of said first stop plate to stop said drawer in place when said drawer is pulled out of said cabinet,

said second stop plate comprising a locating portion of a width slightly smaller than the distance between the two projecting blocks of said first stop plate and of a thickness slightly longer than the thickness of the projecting blocks of said first stop plate, the locating portion of said second stop plate being fixed to said inner rail, a retaining portion longitudinally extended from one end of the locating portion of said second stop plate and made of a width slightly longer than the distance between the two projecting blocks of said first stop plate and deeming two opposite projecting portions at two opposite lateral sides, a press portion longitudinally extended from the retaining portion of said second stop plate opposite to the locating portion of said second stop plate and made of a width slightly shorter than the distance between the two projecting blocks of said first stop plate, a forked retaining tail defining a retaining notch and fastened to said inner rail, and a bend connected between said press portion and said forked retaining tail, the retaining portion and press portion of said second stop plate being spaced from said inner tail by a space, the retaining portion of said second stop plate being forced to curved toward said inner rail and to disengage from said first stop plate when said press portion is depressed, for allowing said drawer to be disconnected from said cabinet, the retaining portion of said second stop plate having a sloping surface portion connected to the locating portion of said second stop plate and two projecting portions remote from the sloping surface portion thereof, the sloping surface portion surface portion of the retaining portion of said second stop plate being to guide said second stop plate through the projecting blocks of said first stop plate into said intermediate rail when said drawer is inserted into said cabinet, the projecting blocks of said first stop plate having a respective top side, which is guided by the sloping surface portion of the retaining portion of said second stop plate to pass over the retaining portion of said second stop plate into engagement with two projecting portions of the retaining portion of said second stop plate when said drawer is inserted into the inside wall of said cabinet, the projecting portions of the retaining portion of said second stop plate being engaged with the projecting blocks of said first stop plate to stop said drawer in place when said drawer is pulled out of said cabinet, said drawer being disconnected from said cabinet when said press portions of said second stop plate is depressed to curve the retaining portion of said second stop plate and to disengage the projecting portions of the retaining portion of said second stop plate from the projecting blocks of said first stop plate.

5,577,822

REFRIGERATOR HAVING VARIABLE VOLUME FOOD STORAGE COMPARTMENT

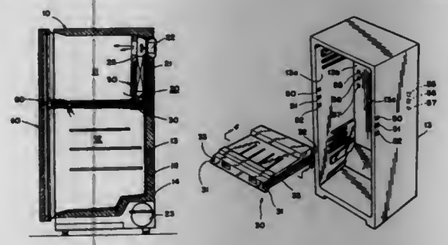
Jin K. Seon, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 1, 1994, Ser. No. 352,813

Claims priority, application Rep. of Korea, Dec. 8, 1993, 1993-26911

Int. Cl.[6] A47B *96/04*

U.S. Cl. 312—404 **16 Claims**



1. A refrigerator, comprising:

a cabinet forming a food storage space;

a door for opening and closing said space;

a horizontal intermediate partition wall for dividing said storage space into separate freezing and cooling compartments, said partition wall being vertically adjustable for increasing a volume of one of said compartments while reducing a volume of the other of said compartments;

an evaporator mounted in one of said freezing and cooling compartments; and

a vertical isolating wall in said one compartment for isolating said evaporator from a remainder of said one compartment, at least a portion of said isolating wall being vertically adjustable for making contact with said partition wall in various positions of adjustment of said partition wall.

5,577,823

LAZY SUSAN TYPE PAN/CARRIAGE ASSEMBLY

Frank W. Maglinger, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jul. 21, 1995, Ser. No. 505,432

Int. Cl.[6] F25D *11/00*; A47B *88/00*

U.S. Cl. 312—404 **17 Claims**

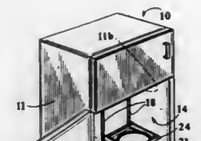
1. A storage container apparatus capable of translational and rotational motion, comprising:

first and second support brackets;

a cover mounted to the first and second support brackets;

a carriage slidably mounted to the first and second support brackets for translational movement between a first and second position, the carriage having a circular aperture and being suspended beneath the cover;

a circular pan having a rim and the pan being disposed within the circular aperture such that the rim is rotatably supported by the carriage for rotation of the pan relative to the carriage;



wherein when the carriage is in the first position, the pan is fully covered by the cover, and when the carriage is in the second position, the pan is at least partially uncovered where it can be rotated to obtain access to the entire pan.

5,577,824

TRAFFIC CONE-MOUNTED WARNING LIGHTS

Barry T. Wright, Merseyside, Great Britain, assignor to Molex Incorporated, Lisle, Ill.

Filed Mar. 8, 1995, Ser. No. 400,246

Claims priority, application United Kingdom, Mar. 9, 1994, 9404601

Int. Cl.[6] B60Q *7/00*

U.S. Cl. 340—908.1 **17 Claims**

1. An apparatus for mounting at least one light-emitting device on a traffic cone, comprising:

at least one head portion for housing said at least one light-emitting device;

at least one power source-receiving portion in connectable or connected electrical contact with said head portion; and

a traffic cone-receiving portion;

wherein said at least one head portion and said at least one power source-receiving portion are disposed laterally with respect to the traffic cone-receiving portion such that upon reception of a traffic cone in the cone-receiving portion, said at least one head portion and said at least one power source-receiving portion lie laterally adjacent the section of said cone received in said cone-receiving portion, and when a respective power source is received in a respective power source-

receiving portion and the apparatus is mounted on the traffic cone, the center of gravity of the apparatus is substantially proximate to the longitudinal axis of the cone.

5,577,825

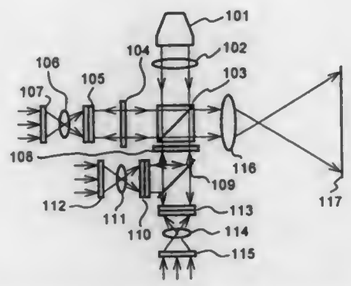
Patent Not Issued For This Number

5,577,826

REFLECTING TYPE COLOR IMAGE PROJECTING APPARATUS

Nobuyuki Kasama; Tadao Iwaki; Yasuyuki Mitsuoka, and Yukiya Funanami, all of Chiba, Japan, assignors to Seiko Instruments Inc., Japan

Filed Oct. 26, 1995, Ser. No. 548,456
Claims priority, application Japan, Oct. 28, 1994, 6-265818
Int. Cl.[6] G03B *21/28*
U.S. Cl. 353—31 **3 Claims**



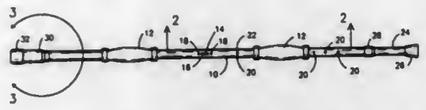
1. A reflecting type color image projection apparatus comprising: three reflecting type optical writing liquid crystal light valves;
writing means for writing an image of a color component to each of the three reflecting type optical writing liquid crystal light valves by illuminating a writing light to a writing face of each reflecting type optical writing liquid crystal light valve;
a light emitting source and an illuminating lens for illuminating a light source luminous flux;
a polarized light separating and synthesizing optical system for illuminating polarized light luminous fluxes corresponding to the respective color components on reading faces of the respective reflecting type optical writing liquid crystal light valves, reflectively reading the written images of the respective color components and synthesizing the images of the respective color components;
a projecting lens for magnifying and projecting a read color image; and
wherein the polarized light separating and synthesizing optical system comprises a polarized beam splitter for splitting the light source luminous flux into two polarized light illuminating luminous fluxes, a green color separating means for separating only a green component of one of the polarized light illuminating fluxes and a red and blue color separating means for separating the other one of the polarized illuminating luminous fluxes into a red component and a blue component.

5,577,827

EXERCISER LIGHT ALARM STICK

Gordon H. Leffingwell, Safety Harbor, and James D. O'Donnell, St. Petersburg, both of Fla., assignors to ELA Systems, Inc., Safety Harbor, Fla.

Filed Mar. 20, 1995, Ser. No. 407,135
Int. Cl.[6] A45B *3/04*; A63B *15/02*
U.S. Cl. 362—102 **2 Claims**



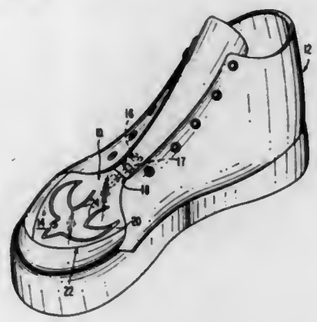
1. A flashlight primarily intended for use as a cane, said flashlight comprising:
a tube having an exterior and interior, said tube having a first and a second end, said first end defining an alarm light housing;
means for extension engaging said tube and extending from said second end of said tube;
grip means disposed about said exterior of said tube;
a circuit board positioned within said housing;
a light disposed within said alarm light housing, said light comprising
a reflector attached to said circuit board; and
a bulb positioned adjacent said reflector;
switch means positioned proximal said grip means electrically connected to said bulb;
a battery means disposed in the interior of said tube electrically connected to said switch means; and
alarm means for projecting sound disposed in said interior of said alarm light bousing, said alarm means including a buzzer, with said buzzer attached to said circuit board and being electrically connected to said switch.

5,577,828

LIGHT ILLUMINATING ASSEMBLIES FOR WEARING APPAREL

Craig P. Nadel, 201 Wingate Rd., Parsippany, N.J. 07054, and Dietmar Nagel, 11 South Rd., Chester, N.J. 07930

Filed Oct. 31, 1994, Ser. No. 331,726
Int. Cl.[6] F21L *15/08*
U.S. Cl. 362—103 **16 Claims**



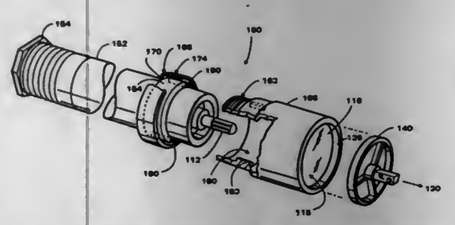
1. A decorative, illuminatable assembly securable to an article of wearing apparel having a curved mounting surface at least when the article is worn by a user, said assembly comprising:
a flexible panel member having an upper surface, a lower surface, and a peripheral edge surface between the upper and lower surfaces, said flexible member being sufficiently flexible to substantially conform to the curvature of the mounting surface by hand pressure alone and being substantially comprised of one of a transparent and translucent material through which illumination is passable;
said panel member defining a cavity in communication with and at least partly bounded by said peripheral edge surface and dimensioned and arranged to receive at least one light emitting element operable for emitting illumination into the panel member through said peripheral edge surface; and
a decorative pattern of refractive grooves defined in the lower surface of said panel member and dimensioned and arranged to reflect illumination emitted from the light emitting element in said cavity and propagating through said panel member between said upper and lower surfaces.

5,577,829

FLASHLIGHT WITH TOOL BIT ATTACHMENT

Timothy E. Hall, 18178 Bonnie La., Fontana, Calif. 92335

Filed Jan. 9, 1995, Ser. No. 370,298
Int. Cl.[6] B25B *23/18*
U.S. Cl. 362—119 **38 Claims**



1. An apparatus for illuminating and manipulating fasteners, comprising:
a body containing a light source;
a lens assembly mounted on said body so that said lens assembly produces a beam of light which emanates from the light source so as to project in a first direction; and
a tool mounting stud assembly, which includes a stud configured to receive one of a plurality of tools wherein said one of said plurality of tools has an opening which mates with said stud to retain said tool on said stud, said assembly also including a plurality of spokes extending outward from said stud which are connected to said lens assembly so that said stud is positioned within said beam of light that passes between the spokes of said stud assembly.

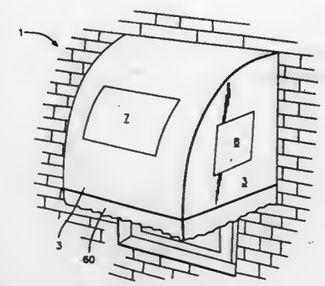
5,577,830

ILLUMINATED AWNING

Martin Barry, Dublin, and David McKeown, Celbridge, both of Ireland, assignors to Illuminated Awning Systems Limited, Dublin, Ireland

PCT No. PCT/IE93/00028, § 371 Date Nov. 9, 1994, § 102(e) Date Nov. 9, 1994, PCT Pub. No. WO93/23634, PCT Pub. Date Nov. 25, 1993
PCT Filed May 18, 1993, Ser. No. 335,853
Claims priority, application Ireland, May 18, 1992, 1582/92
Int. Cl.[6] F21S *3/02*
U.S. Cl. 362—152 **13 Claims**

1. An awning having opposite side portions and a main continuous convex portion defining a top and front surface of the awning with a back top edge and a front bottom edge, said edges being spaced apart in each of two mutually perpendicular planes wherein the awning comprises, a framework, a rigid support mounted to the framework, the rigid support including a continuous convex sheet of translucent material defining at least a part of said convex portion of the awning, a translucent flexible sheet positioned over said continuous convex sheet, and mounting means within the awning for illumination means adapted to illuminate the flexible sheet through the rigid support.

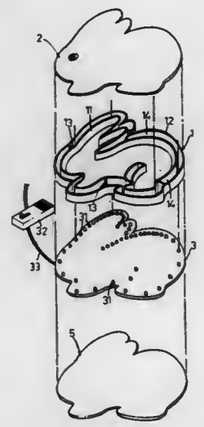


5,577,831

LIGHT-EMITTING STRUCTURE OF A DECORATIVE TOY

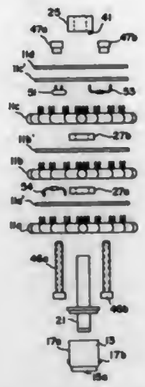
Max Chang, Taipei Hsien, Taiwan, assignor to More Talents International Development Co., Ltd., Taipei Hsien, Taiwan

Filed Jan. 16, 1996, Ser. No. 585,461
Int. Cl.[6] F21P *1/02*
U.S. Cl. 362—240 **5 Claims**



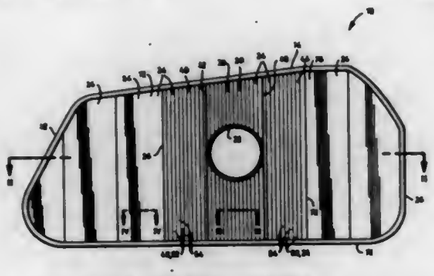
1. A light-emitting structure of a decorative toy comprising:
a frame including an inner side wall and an outer side wall between which there is a groove provided with a plurality of partitions;
a transparent upper cover arranged on a top of said frame;
a printed circuit board mounted on a lower side of said frame, said printed circuit board being provided with a plurality of light emitting members at a circumference thereof adapted to be located within said groove of said frame;
controlling means electrically connected to said light emitting members via an electrical cord and provided with a loudspeaker and a switch;
a translucent gem filled into said groove of said frame to form a translucent region around a circumferential portion of said frame and fix said printed circuit board within said frame; and
a bottom cover fixedly mounted on a bottom side of said frame.

5,577,832
MULTILAYER LED ASSEMBLY
Pervaiz Lodhie, 14 San Clemente, Ranchos Palos Verdes, Calif. 90275
Continuation of Ser. No. 378,735, Jan. 26, 1995, abandoned. This application Nov. 16, 1995, Ser. No. 558,463
Int. Cl.[6] F21V *21/00*
U.S. Cl. 362—249 19 Claims



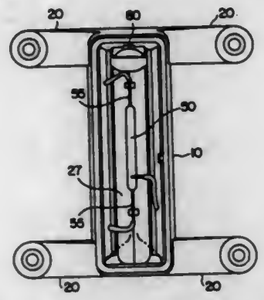
1. An assembly for insertion into a socket, said assembly having at least one layer of LEDs mounted on at least one board, said assembly comprising:
a) a base adapted to be installed in the socket by rotation of the base;
b) an axle coupled to said base which passes through said at least one board onto which is mounted a layer of LEDs;
c) an insulating layer including a hole through which said axle passes and a slot;
d) a knob coupled to said axle at an end opposite said base and adjacent to said insulating layer, said knob having a pin adapted to engage said slot and move back and forth within said slot as said knob is rotated clockwise and counter clockwise.

5,577,833
VEHICLE HEADLAMP REFLECTOR
George J. English, Reading, Mass., and Robert L. King, Seymour, Ind., assignors to Osram Sylvania Inc., Danvers, Mass.
Filed Jan. 13, 1995, Ser. No. 489,913
Int. Cl.[6] F21V *7/04*
U.S. Cl. 362—297 5 Claims



1. A vehicle headlamp reflector comprising:
a concave shell having a reflective surface; said shell comprising multiple vertical panels defining said reflective surface; said panels including a central panel having therein on said reflective surface multiple vertical ribs defining alternating ridges and grooves; said ridges and grooves being of a rounded configuration, of substantially equal width throughout their lengths, and extending substantially from top to bottom of said panel, and including a second panel adjacent said central panel on a first side edge of said central panel and a third panel adjacent said central panel on a second side edge of said central panel, said second and third panels having on said reflective surface multiple vertical ribs defining alternating ridges and grooves of a rounded configuration, of substantially equal width throughout their lengths, and extending substantially from top to bottom of said second and third panels,
wherein said second and third panels are stepped rearwardly relative to said central panel and extended forwardly of said central panel.

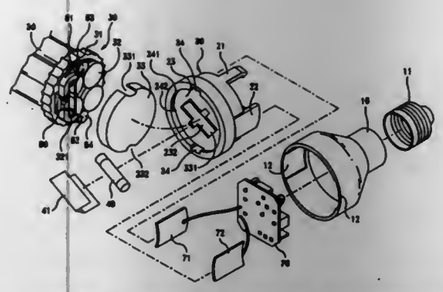
5,577,834
LIGHT EMITTING DEVICE
Timothy J. Mazies, Oak Forest, and Arthur Cox, Park Ridge, both of Ill., assignors to Federal Signal Corporation, University Park, Ill.
Filed May 23, 1994, Ser. No. 247,547
Int. Cl.[6] F21V *7/00*
U.S. Cl. 362—302 29 Claims

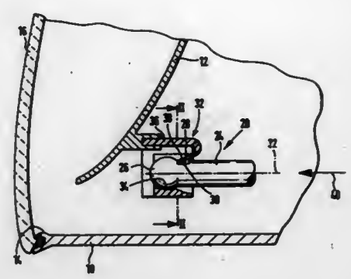


1. A light emitting device for generating a light beam and efficiently distributing its candela power through a 180° arc centered at the device, the device comprising in combination, a chassis for mounting to a surface; a light source and a reflector assembly for reflecting light radiated by the light source to form the light beam, the light source being disposed along the arc at a 90° point a transparent cover for mating with the chassis and enclosing the light source and the reflector, the reflector assembly having a reflective surface forming first and second reflections of the light source visible at the 90° point along the arc, and a standoff for providing a spatial relationship between the reflector assembly and the light source that distributes a sum of the reflections and the light source visible at any angle of the arc in a manner approximately proportional to a desired distribution of candela levels of the beam along the arc.

5,577,835
PL LAMP HOLDER
Peter Huang, 3F, No. 570, Sec. 7, Chung Hsiao E. Rd., Taipei, Taiwan
Filed Jan. 24, 1995, Ser. No. 379,196
Int. Cl.[6] F21V *11/00*
U.S. Cl. 362—353 4 Claims

1. A PL lamp holder comprising:
a holder shell made of conical shape having a base at one end for connection to a lamp socket, a top open end, and a plurality of mounting grooves inside said top open end;
a holder mount fastened to said top open end of said holder shell to hold down an electric starter circuit, said holder mount



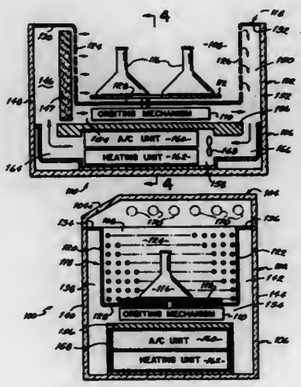


comprising a plurality of downward blocks respectively inserted into said mounting grooves on said top open end of said holder shell, a plurality of downward blocks inserted into said top open end of said holder shell and hooked on an inside wall of said holder shell, a top recess, a crossed slot on said top recess, a partition plate suspended from said crossed slot, a fuse mounted on said partition plate, two opposite longitudinal grooves and two rectangular holes alternatively spaced around said top recess, two curved grooves extended from said longitudinal grooves and terminating in said rectangular holes respectively, said electronic starter circuit having two input terminals respectively connected to said base of said holder shell and two output terminals respectively connected to two contact metal plates disposed in said rectangular holes;
a holder body fastened to said holder mount, said holder body comprising a threaded portion around the periphery, two sets of circular holes, which receive two parallel fluorescent lamp tubes, an elongated slot through one circular hole, two opposite metal contacts disposed in contact with said contact metal plates of said electronic starter circuit, a capacitor having two conductors at two opposite ends respectively inserted through the elongated slot on said holder body and welded to said metal contacts of said holder body; and
wherein by inserting said opposite metal contacts of said holder body into said longitudinal grooves on said holder mount and then turning said holder body relative to said holder mount to move said metal contacts of said holder body into said rectangular holes on said holder body, said holder body and said holder mount are firmly connected together, and said metal contacts of said holder body are respectively electrically connected to said contact metal plates of said electronic starter circuit.

5,577,836
HEADLAMP FOR VEHICLES
Albert Vent, Eningen, and Wolfgang Lehmann, Bempflingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Jun. 7, 1995, Ser. No. 476,274
Claims priority, application Germany, Jul. 15, 1994, 44 25 028.2
Int. Cl.[6] F21M *3/22*
U.S. Cl. 362—61 6 Claims

1. A headlamp for vehicles, comprising a mounting base; a reflector mounted adjustably on said mounting base; at least one adjusting element provided for adjusting said reflector and connected at least indirectly to said reflector, said adjusting element having a ball head and a ball socket in which said ball head is arranged; a shoulder provided at a transition from said adjusting element to said ball head, said ball socket having at least one resilient locking member which is engageable on said shoulder to secure said ball head against being pulled out of said ball socket, said shoulder being formed only over one part of a circumference of said adjusting element relative to a longitudinal axis of said adjusting element, said adjusting element being rotatable about said longitudinal axis, said ball head and said ball socket being formed so that for removal of said adjusting element, said ball head is pulled out of said ball socket in a position in which said locking member engages on said adjusting element in a circumferential region in which said shoulder is not formed.

5,577,837
TEMPERATURE CONTROLLED HEPA-FILTERED CONSOLE SHAKER
Paul M. Martin, Cutler; Gregory J. Graham, Marietta; David S. Farrar, Marietta, and Stephen R. Faigley, Marietta, all of Ohio, assignors to Forma Scientific, Inc., Marietta, Ohio
Filed May 19, 1995, Ser. No. 445,013
Int. Cl.[6] B01F *11/00;15/06*
U.S. Cl. 366—145 62 Claims



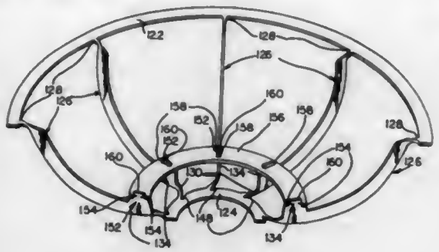
1. A console shaker comprising:
a chamber surrounded by insulated outside walls including front and rear outside walls and a pair of outside end walls and an upper lid;
an air jacket disposed between said chamber and said insulated outside walls, said air jacket formed by air jacket side walls spaced inwardly from said insulated outside walls and creating front and rear air plenums between said front and rear outside walls and said chamber and supply and return air plenums between said outside end walls and said chamber, wherein said supply and return air plenums are connected to said front and rear air plenums and the air jacket side walls which are spaced from said end walls further include apertures;
a fan disposed within an air circulation path of said air jacket for circulating air from said supply plenum to said return plenum through both said front and rear air plenums and said chamber; and,
a shaker device disposed within said chamber.

5,577,838

PRECISION CHANDELIER FRAME AND METHOD FOR CONSTRUCTING THE SAME

John M. Lucas, Cadyville, N.Y., assignor to Schonbek Worldwide Lighting, Inc., W. Plattsburgh, N.Y.

Filed Jul. 7, 1993, Ser. No. 88,670
Int. Cl.[6] F21S 1/06
U.S. Cl. 362—405 79 Claims



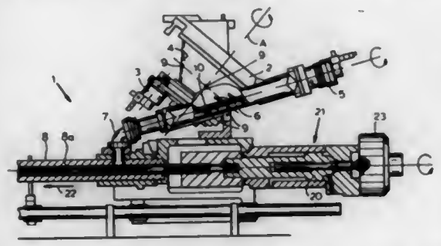
1. A chandelier frame comprising:
a first frame member;
a second frame member remote from the first frame member; and
a plurality of arms connecting the first and second frame members, wherein the first frame member is connected to each arm at a respective first joint that is plastically and asymmetrically deformed and that is free of breaks, and wherein the second frame member is connected to each arm at a respective second joint that is free of breaks.

5,577,839

DEVICE FOR CHARGING INJECTION MOLDING AND EXTRUDING MACHINES AND HAVING A FUNNEL PROVIDED WITH PINS PASSING THROUGH CLEARANCES IN A FEED WORM

Peter Brams, München; Franz Ell, Schwabhausen, and Werner Mandl, Unterzeitlbach, all of Germany, assignors to Krauss Maffei Aktiengesellschaft, Munich, Germany

Filed Jun. 14, 1995, Ser. No. 490,240
Claims priority, application Germany, Jun. 16, 1994, 44 21 117.1
Int. Cl.[6] B29B 7/60
U.S. Cl. 366—76.3 8 Claims



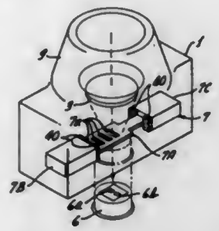
1. A feeder for a shaping machine for a viscous plastic mass, said shaping machine having a chamber receiving said mass, said feeder comprising:
a frustoconical filling funnel rotatable about an axis and having a wide mouth at one end and a narrow outlet at an opposite end communicating with said chamber;
a rotatable conveyor screw extending along an inner wall of said funnel parallel to a generatrix thereof and formed with a screw flight for displacing said viscous plastic mass toward said outlet; and
a plurality of inwardly projecting pins on said inner wall forming discontinuities in rectilinear paths therealong between said mouth and said outlet and in a region of said flight, said screw being provided with an interruption in said flight to clear said pins upon rotation of said pins with said funnel past said screw.

5,577,840

METHOD OF MEASURING TEMPERATURE BY USE OF AN INFRARED SENSOR

Katsuhiko Tomita, Miyanohigashi-machi, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed May 13, 1994, Ser. No. 242,320
Claims priority, application Japan, May 15, 1993, 5-030514 U; May 29, 1993, 5-151570
Int. Cl.[6] G01J 5/08
U.S. Cl. 374—130 8 Claims



3. A method of measuring the temperature of an object on the basis of infrared rays incident upon an infrared sensor, said method comprising the steps of:
providing a normally closed, linearly reciprocating shutter including at least one opening in front of said infrared sensor to prevent infrared rays from said object to be measured from reaching said infrared sensor;
reciprocating said shutter to position said at least one opening in front of said infrared sensor to allow said infrared rays to be incident upon said infrared sensor to generate a plurality of output signals from said infrared sensor; and
calculating the temperature of said object as an average value based upon said plurality of output signals by excluding the influence of the first signal of said plurality of output signals.

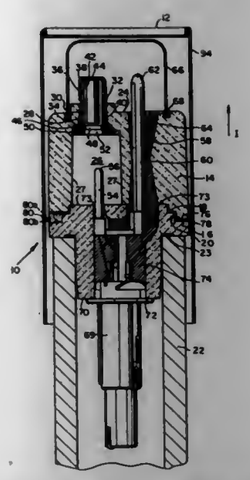
5,577,841

MOLTEN METAL IMMERSION PROBE

Christopher Wall, Bridgewater, N.J., assignor to Heraeus Electro-Nite International N.V., Antwerpen, Belgium

Filed Feb. 6, 1995, Ser. No. 384,985
Int. Cl.[6] G01N 1/12
U.S. Cl. 374—140 19 Claims

1. An immersion probe for collecting a sample of a molten metal and for determining a liquidus temperature of the molten metal during solidification, the probe being generally longitudinally shaped and being immersed in the molten metal in an immersion direction, the probe initially contacting the molten metal at a first longitudinal end, the probe comprising:
a first refractory body having an immersion face facing generally toward the first end of the probe, an interior sample chamber defined by a plurality of interior walls including a first end wall proximate the immersion face, and a passageway extending between an opening in the immersion face and a portion in the first end wall, the interior walls sinking thermal energy from within the sample chamber at a first rate R_1;
a heat sink positioned within the sample chamber adjacent the first end wall, the heat sink having an aperture therethrough corresponding to the portion in the first end wall;



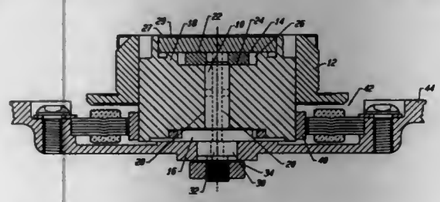
an insulating shield within the sample chamber adjacent the heat sink, the insulating shield having an aperture therethrough corresponding to the aperture in the heat sink and the portal in the first end wall, the insulating shield sinking thermal energy from within the sample chamber at a second rate R_2 slower than the first rate R_1; and
a liquidus temperature sensor positioned within the sample chamber away from the insulating shield, wherein when the probe is immersed in the molten metal, molten metal flows into the sample chamber through the passageway until the sample chamber is substantially filled, the heat sink sinks thermal energy from and solidifies a portion of the molten metal proximate thereto when the flow ceases, the solidified portion seals the sample within the sample chamber, the sealed sample solidifies along a solidification front that progresses toward the insulating shield, gaseous voids are prevented from being formed adjacent the liquidus temperature sensor, and the liquidus temperature of the molten metal during solidification is determined from the solidifying sample with the liquidus temperature sensor.

5,577,842

ABSORBENT OIL BARRIER FOR HYDRODYNAMIC BEARING

Norbert S. Parsoneault, Watsonville, and Hans Leuthold, Santa Cruz, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Aug. 30, 1995, Ser. No. 521,611
Int. Cl.[6] F16C 17/10
U.S. Cl. 384—114 16 Claims



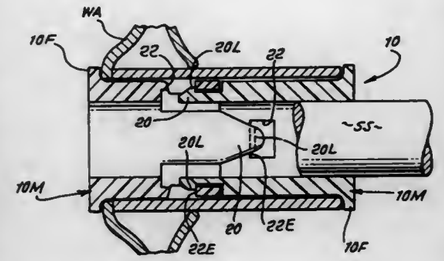
1. A hydrodynamic bearing comprising
a shaft and surrounding sleeve relatively rotatable to one another, the shaft and sleeve having lubricating fluid covering their facing surfaces, the surfaces of the shaft and sleeve terminating at one end in an opening, and one of said shaft or sleeve surfaces having an absorbent paper washer thereon for absorbing any excess lubricating fluid, and held in place by a retainer ring which covers the exposed surface of the washer except for an edge of the washer presented to the lubricating fluid, so that the fluid is moved away from the exposed edge of the paper by capillary action and is not exposed to the surrounding environment for evaporation.

5,577,843

SELF-ALIGNING, SELF-LOCKING PLASTIC BUSHING INCLUDING A METHOD FOR MOUNTING THE BUSHING TO A WHEEL ASSEMBLY

Mary M. Leininger, Brown Deer, Wis., and Danny C. Young, Hayti, Mo., assignors to Gleason Corporation, Milwaukee, Wis.

Filed Oct. 11, 1994, Ser. No. 320,682
Int. Cl.[6] F16C 17/02
U.S. Cl. 384—275 3 Claims



1. A self-aligning, self-locking plastic support bushing adapted for mounting into a wheel opening comprising
a pair of substantially identical tubular bushing members each having a mounting flange at one end for holding the bushing members in a wheel opening in an axially aligned relationship,
each of the bushing members having male locking elements extending outwardly of the opposite ends of the bushing members from the flanged ends and female locking elements defined in the tubular walls of the bushing members to lockably receive the male locking element of the coacting bushing member when the female and male elements are axially aligned,
said female elements are openings in the tubular walls spaced to be rotatably aligned with the male locking elements for receiving said ends of the male locking elements in a snap-lock relationship,
said male locking elements comprise a plurality of male locking elements and the tubular wall is reduced in thickness in the areas adjacent said opposite ends and female openings are arranged within said areas of reduced thickness for receiving and locking to an end of the female opening when the bushing members are axially aligned in abutting relationship.

5,577,844

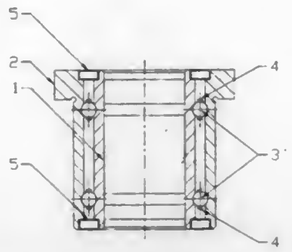
STANDARD ROTATING BUSHING

Petrisor D. Stancescu, 1796 De Champlain, Montreal, Quebec, Canada

Filed Jun. 3, 1994, Ser. No. 253,292
Int. Cl.[6] F16C 19/04
U.S. Cl. 384—484 2 Claims

1. A process of using a ball bearing for drill and tapping, said process comprising the steps of:
(a) employing a bearing with at least one row of balls, an inner ring with inner diameter larger than that of a drill or tap tool or combination of drill and tap tool, to be used with the

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bearing, and an outer ring with a head of diameter larger than the rest of the outside diameter of the outer ring, and

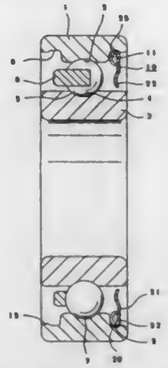
(b) using the ball bearing to guide a drilling or tapping tool, or combination drilling and tapping tool, wherein the inner ring guides the tool and will rotate and will not be shaved if the tool touches the inner wall of said inner ring during the drilling, tapping, or drilling and tapping process, to allow guidance of said drill or tap or combination drill and tap tool, without shaving the inner ring, to permit increased wear life of the bearing.

5,577,845

SEAL DEVICE FOR ROLLING BEARING

Yasutaka Ishida; Hironori Suzuki, and Shuji Sudo, all of Fujisawa, Japan, assignors to NSK Ltd., Kanagawa, Japan

Filed Nov. 14, 1995, Ser. No. 557,315
Claims priority, application Japan, Nov. 14, 1994, 6-279218
Int. Cl.[6] F16C *33/76*
U.S. Cl. 384—484 **15 Claims**



1. A sealing device for use in a rolling bearing comprising an outer race having an opening end and an inner peripheral surface formed with an outer raceway, an inner race having an outer peripheral surface formed with an inner raceway, and a plurality of rolling elements rotatably provided between the outer raceway and the inner raceway, comprising a shield groove formed generally circumferentially adjacent to the outer raceway on the inner peripheral surface of the outer race, and a shield plate having an outer peripheral edge attached to the shield groove and an inner peripheral edge provided near the outer peripheral surface of the inner race,

the inner peripheral surface of the outer race having a stepped section having a relatively large step between the outer raceway and the shield groove, and a protruding section having a relatively small step near the opening end of the outer race, so that the shield groove is defined by the stepped section and the protruding section,

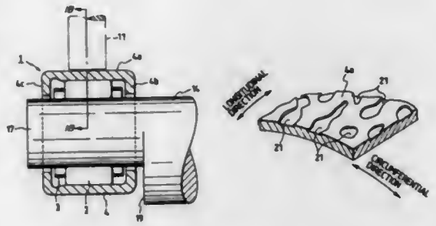
the shield plate shaped into a circular ring and having a radially inner disc portion to form the inner peripheral edge and a plurality of circumferentially arrayed edge portions and notches located between the adjacent edge portions to form the outer peripheral edge, the edge portions shaped in an elastically deformable bent structure, such that part of the edge portions of the shield plate is larger in bulging than the remaining part, whereby the shield plate is attached to the shield groove with the edge portions in contact with the stepped section in the condition that only part of the edge portions functions as a prop between the stepped section and the protruding section, while the remaining bent sections is substantially engaged with the stepped section and with the protruding section.

5,577,846

ECCENTRIC ROLLING BEARING DEVICE

Kenji Takahashi, Osaka, Japan, assignor to Koyo Seiko, Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 38,935, Mar. 29, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 461,378
Claims priority, application Japan, Mar. 30, 1992, 4-017625 U
Int. Cl.[6] F16C *33/58;19/50*
U.S. Cl. 384—492 **11 Claims**



1. A rolling bearing device comprising:

an eccentric rotary shaft;

a plurality of rolling elements arranged around said eccentric rotary shaft, said rolling elements comprising a cage and needle rollers held by said cage; and

an outer race ring made of chrome-molybdenum steel material and having a diameter "D" and a radial thickness "t", said outer race ring being formed by pressing and having an inner surface in which a roller track is formed for said rolling elements and an outer surface which is formed into a cylindrical cam surface, in which:

said cylindrical cam surface has a plurality of fine recesses, and the outermost surface thereof is smooth; and

said diameter "D" and said radial thickness "t" satisfy a formula t/D ≧0.07.

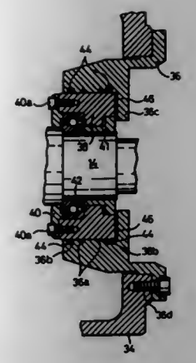
5,577,847

SUPPORTING ARRANGEMENT FOR A BEARING IN AN ELECTRIC MOTOR

Kosei Nakamura; Yukio Katsuzawa, and Michi Masuya, all of Yamanashi, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

Filed Aug. 30, 1995, Ser. No. 521,446
Claims priority, application Japan, Sep. 1, 1994, 6-208737
Int. Cl.[6] F16C *23/00;19/52;33/78*
U.S. Cl. 384—517 **24 Claims**

1. An improved supporting arrangement for a bearing in an electric motor which comprises a housing, the housing including a longitudinal axis, and bores at either end thereof so that the bores are aligned to the longitudinal axis;



a rotating shaft extending along the longitudinal axis through the bores; and

bearings for rotationally supporting the rotating shaft at either end thereof, the bearings being provided within the respective bores;

in which the supporting arrangement comprises:

a support in the form of a ring for supporting the one of the bearings, into which the bearing is fitted, the support being fitted into one of the bores and slidable along the longitudinal axis;

a pair of sealing members provided between the outer surface of the support and the inner surface of the bore into which the support is fitted, the sealing members being separated from each other by an interval along the longitudinal axis;

a lubricant receiving receptacle provided between the pair of sealing members; and

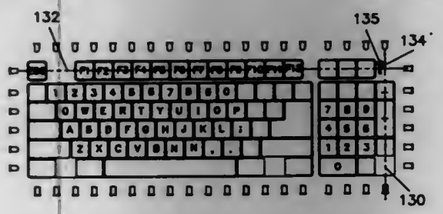
lubricant material applied on the outer surface of the support, on the inner surface of the bore, and into the lubricant receiving receptacle.

5,577,848

LIGHT CONTROLLED TOUCH PAD FOR CURSOR AND SELECTION CONTROL ON A COMPUTER DISPLAY

James H. Bowen, 12190 Richland Dr., Catharpin, Va. 22018

Continuation-in-part of Ser. No. 166,906, Dec. 15, 1993, Pat. No. 5,378,069, which is a continuation of Ser. No. 933,749, Aug. 24, 1992, abandoned. This application Sep. 23, 1994, Ser. No. 311,256
Int. Cl.[6] B41J *5/00;* **G09G** *5/00*
U.S. Cl. 400—472 **6 Claims**



1. A touch pad for cursor movement and selection control on a computer display, comprising:

a base connectable to a computer terminal for inputting commands to said computer terminal, said base including a unilocular area on a surface accessable by a finger of a computer operator;

a plurality of light transmitters and light sensors positioned about the periphery of said unilocular area for sensing the presence, absence, and position and movement of a finger of a computer operator in said unilocular area;

means, connected to said plurality of light transmitters and light sensors, for determining

i) a position of a finger of a computer operator within said unilocular area,

ii) a speed and direction of movement of said finger of said computer operator within said unilocular area,

iii) a selection made with respect to a time of insertion of said finger of said computer operator within said unilocular area and a time of withdrawal of said finger of said computer operator from said unilocular area; and

means for sending data signals from said base to a computer terminal which direct movement of a cursor on said computer terminal and control selections made on said computer terminal, said data signals are indicative of

i) a position of a finger of a computer operator within said unilocular area,

ii) a speed and direction of movement of said finger of said computer operator within said unilocular area, said speed and direction of movement directing movement of a cursor on said computer terminal, and

iii) a selection made with respect to a time of insertion of said finger of said computer operator within said unilocular area and a time of withdrawal of said finger of said computer operator from said unilocular area; and a security key positioned inside said unilocular area on said base, said security key being pivotable to between a first position where said security key blocks light transmission between a first light transmitter and light sensor pair of said plurality of light transmitters and light sensors and a second position where said security key blocks light transmission between a second transmitter and light sensor pair of said plurality of light transmitters and light sensors.

5,577,849

PRINTING LIGHT INDICIA ON KEYBOARD KEYS

William C. Durbin; George N. Powers, and Peter E. Wallin, all of Lexington, Ky., assignors to Lexmark International, Inc., Lexington, Ky.

Filed Mar. 13, 1995, Ser. No. 403,023
Int. Cl.[6] B41J *5/12*
U.S. Cl. 400—490 **4 Claims**

1. A keyboard comprising a plurality of molded plastic keybuttons, said keybuttons being dark in color and having light in color characters or symbols as an outer layer of polyester urethane which is the reaction product of a polyol polyester and hexamethylene diisocyanate holding metal oxide pigment dispersed through said layer and forming said characters or symbols.

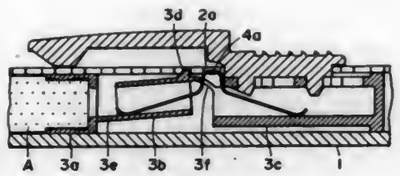
5,577,850

RODLIKE BODY FEEDING DEVICE

Shingo Mishima, Ishioka, Japan, assignor to Pentel Kabushiki Kaisha, Japan

PCT No. PCT/JP93/01054, § 371 Date Mar. 30, 1994, § 102(e) Date Mar. 30, 1994
PCT Filed Jul. 27, 1993, Ser. No. 211,464
Claims priority, application Japan, Jul. 31, 1992, 4-059571 U; Feb. 26, 1993, 5-013183 U; Jun. 30, 1993, 5-041265 U
Int. Cl.[6] B43K *21/06;24/04*
U.S. Cl. 401—83 **19 Claims**

1. A feeding device for feeding a rodlike body, comprising: a tubular member having a slit extending in the axial direction of the tubular member, and a plurality of locking portions arranged in the axial direction of the tubular member; and a slider disposed in the tubular member for sliding movement in the axial direction of the tubular member, the slider having a fastening portion for holding the rodlike body, a tubular slider body portion and a retraction preventing portion, the fastening portion and the retraction preventing portion being connected together by a first elastic portion, and the retraction preventing portion and the tubular slider body portion being connected together by a second elastic portion.

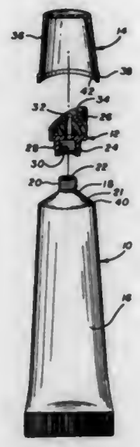


5,577,851

TUBE DISPENSER WITH SPONGE APPLICATOR

Kurt Koptis, Yucca Valley, Calif., assignor to Painter's Products Inc., Palm Desert, Calif.

Filed Feb. 24, 1993, Ser. No. 22,077
Int. Cl.[6] B43K *1/00*
U.S. Cl. 401—202 6 Claims



1. A tube dispenser, sponge applicator and cover assembly wherein the tube dispenser is designed to contain a substance for application to an exterior surface including,

a tube dispenser having a main tubular body portion, an upper neck portion extending inwardly from the upper end of the main tubular body portion for dispensing any substance within the main tubular body portion and a non-threaded upper circumferential portion at the upper end of the main tubular body portion and adjacent to the neck portion,

said upper circumferential portion at the upper end of said main tubular body portion being a smooth continuation of said main tubular body portion,

a sponge applicator for attachment around the neck portion of the tube dispenser for applying to the exterior surface the substance contained in the tube dispenser which has been dispensed through the upper neck portion and through the sponge applicator,

a cover member having an upper portion for covering the sponge applicator and the neck portion of the tube dispenser and a non-threaded lower circumferential portion to provide a friction fit to mate with and seal, to the upper circumferential portion of the main body portion of the tube dispenser,

wherein the cover member is formed of a relatively stiff material and the tube dispenser, and including said tubular main body portion and said upper circumferential portion is formed of a relatively pliable material and wherein said cover member is so dimensioned that the lower circumferential portion of the cover member forms a substantially rigid ring to provide the friction fit to mate with and seal to the outer surface of said relatively pliable upper circumferential portion of the main tubular body portion of the tube dispenser, and

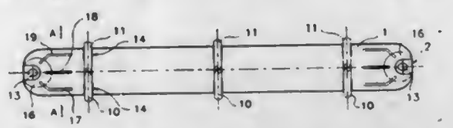
wherein the lower circumferential portion of the cover member has an inner step dimensioned to seat on the upper neck portion adjacent said upper circumferential portion at the upper end of the main tubular body portion and has a lower end forming said rigid ring engagable on the upper circumferential portion of the main tubular body portion to mate and seal with said outer surface of said upper circumferential portion, said inner step providing a stop to limit the insertion of the cover member on the upper circumferential portion of the main tubular body portion of the tube dispenser.

5,577,852

RING BINDER MECHANISM

Chun Y. To, Kowloon, Hong Kong, assignor to World Wide Stationery Manufacturing Co. Ltd., Hong Kong

Filed Oct. 26, 1994, Ser. No. 329,464
Int. Cl.[6] B42F *3/04*
U.S. Cl. 402—31 6 Claims



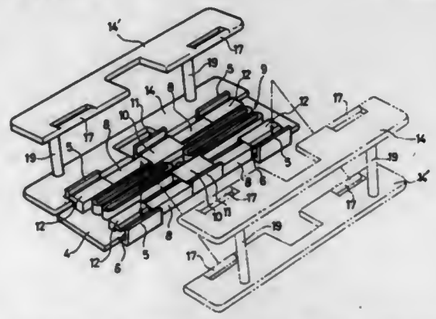
1. A ring binder mechanism having two carrier rails which are arranged in a resilient casing member and which bear against each other, the angle formed between said carrier rails changing from an obtuse to an acute angle and vice versa during opening and closing of pairs of half rings associated with said carrier rails, wherein the casing member has a connection point in at least one end of the casing for connecting the casing to a support and the casing member is strengthened by at least one channel or ridge extending from within a recess about the connection point and ending at a point between the recess and the pair of half rings closest to the recess.

5,577,853

OPENING/CLOSING DEVICE FOR PIPE FILE BINDER

Kenji Ushirooka, Tokyo, Japan, assignor to Lion Office Products Corporation, Osaka hu, Japan

Filed Mar. 30, 1995, Ser. No. 413,278
Claims priority, application Japan, Mar. 30, 1994, 6-083894
Int. Cl.[6] B42F *3/02*
U.S. Cl. 402—46 19 Claims



1. An opening/closing device for a pipe file binder comprising:

a base;

a pair of cover plates pivotally mounted on opposite longitudinal side portions of said base such that said cover plates can be opened and closed about pivot axes, said cover plates each being provided with an opening portion formed in a generally central portion thereof;

a pair of levers provided on generally central portions of outer sides of said cover plates and inserted in said opening portions, respectively, each of the levers having a different one of the pivot axes for the cover plates passing therethrough; and

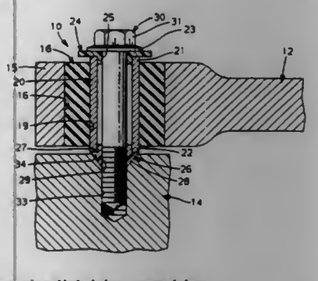
by pressing said levers, a part of an outer side portion of said resilient member being disengaged from a part of an outer side portion of said base so that said cover plates are opened and disengaged.

5,577,854

SINGLE SHEAR JOINT

William V. Jacob, Pittsburgh, Pa.; Jerry L. Newton, Richmond, Ind.; Harold G. Brilmyer, Grosse Pointe, and James L. Luttinen, Brighton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 15, 1995, Ser. No. 441,508
Int. Cl.[6] F16D *1/00;* B25G *3/10*
U.S. Cl. 403—2 4 Claims



1. A suspension link joint comprising:

a suspension link having a first opening;

a mating suspension component joined with the suspension link at the suspension link joint and including a threaded opening with a countersink portion;

a conical ferrule positioned between the suspension link and the mating suspension component and seated in the countersink portion;

a metal sleeve extending completely through the first opening and engaging the conical ferrule; and

a fastener having a head and extending through the metal sleeve and the conical ferrule wherein the fastener is threadedly engaged in the threaded opening so that the head forces the metal sleeve against the conical ferrule providing a tunable preload between the conical ferrule and the mating suspension component.

5,577,855

ANCHORING SYSTEM FOR SECURITY CABLE

Roger J. Leyden, Willow Springs, and Terrance Surma, Bloomingdale, both of Ill., assignors to Se-Kure Controls, Inc., Franklin Park, Ill.

Filed Jun. 23, 1995, Ser. No. 494,362
Int. Cl.[6] E05B *73/00*
U.S. Cl. 403—291 20 Claims

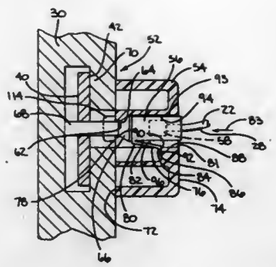
1. A system for anchoring a cable to a support, said anchoring system comprising:

a fitting for attachment to a cable to be anchored;

a receiver for the fitting;

means for connecting the receiver to a support; and

means cooperating between the fitting and receiver for releasably maintaining the fitting in an anchored state on the receiver as an incident of which a cable to which the fitting is attached is releasably anchored to the receiver,



said connecting means including an anchor element having an operating portion that is manipulatable to selectively a) effect connection of the receiver to a support in an operative position thereon and b) release the receiver from the operative position,

said means cooperating between the fitting and receiver comprising means for blocking access to the operating portion of the anchor element with the fitting in the anchored state on the receiver to thereby prevent access to the operating portion as would allow manipulation thereof to thereby release the receiver from the operative position,

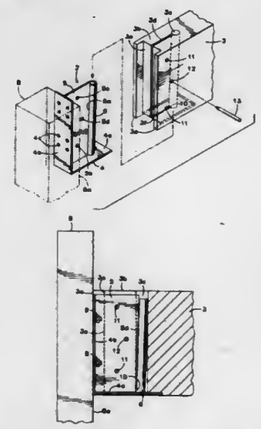
said means for blocking access being defined at least in part by the fitting.

5,577,856

BEAM SUPPORT SYSTEM FOR FORMING PRECOMPRESSED WOOD JOINTS

Junichi Tezuka, 7-20, 2 Chome Kawazoe - 1J0 Minami-ku, Sapporo, Japan

Filed Apr. 26, 1994, Ser. No. 233,518
Claims priority, application Japan, Aug. 10, 1993, 5-24602 U; Sep. 10, 1993, 5-054166 U
Int. Cl.[6] F16B *17/00*
U.S. Cl. 403—294 9 Claims



1. A beam support system in combination with an elongate beam and an elongate beam anchoring member, said beam anchoring member having elongate parallel sides and a generally upright surface substantially parallel to said sides, said system comprising:

(a) a fastening member including at least one elongate cam surface and means for holding said elongate cam surface longitudinally at a substantially upright inclination relative to said upright surface, said elongate cam surface facing said upright surface and being spaced therefrom so that an upper portion of said elongate cam surface is spaced from said

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upright surface by a first distance and a lower portion of said elongate cam surface is spaced from said upright surface by a second distance less than said first distance, said elongate cam surface converging gradually toward said upright surface in a direction of convergence extending longitudinally along said elongate cam surface from said upper portion toward said lower portion of said elongate cam surface;

(b) said beam having an end portion including an end surface for engaging said upright surface and a cam follower surface interior of said end surface and facing away from said end surface for slidably engaging said elongate cam surface, said cam follower surface being spaced from said end surface by a distance less than said first distance but greater than said second distance, said cam follower surface comprising cam follower means for slidably moving along said elongate cam surface in said direction of convergence and thereby forcing said end surface compressively against said upright surface in a direction substantially perpendicular thereto automatically in response to movement of said cam follower means along said elongate cam surface in said direction of convergence.

5,577,857

JOINT STRUCTURE FOR PILLARS AND ITS JOINING METHOD

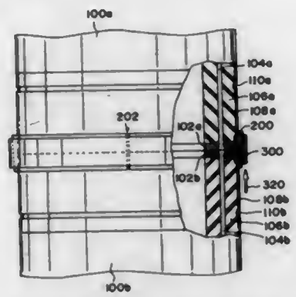
Takaaki Miyasaka, Tokyo; Yoshitaka Ito, Ebina; Hiromichi Toshigami; Takashi Matumoto, both of Tokyo; Satoshi Yamada, Omiya; Masaaki Tada, Yamagata, and Hiroshi Kasahara, Omiya, all of Japan, assignors to Daido Concrete Co., Ltd.; Shintoku Kogyo Co., Ltd., both of Tokyo; Nippon High Strength Concrete Co., Ltd., Hokkaido, and Maeta Concrete Industry Ltd., Yamagata-ken, all of Japan

Filed Apr. 7, 1994, Ser. No. 224,573

Claims priority, application Japan, Dec. 27, 1993, 5-333702; Dec. 27, 1993, 5-333703; Dec. 27, 1993, 5-333704

Int. Cl.[6] E04C *3/30;* **F16B** *2/14*

U.S. Cl. 403—316 **7 Claims**



1. A joint structure for concrete foundation piles, comprising:

disk-like or ring-like end plates which are forcibly fixed on the end surfaces of said concrete foundation piles to be joined to each other, said end plates are provided with truncated conical seats around outer peripheral corner portions of said end plates on a counter-butted surface side;

a cylindrical inside ring divided in a plurality of parts along the circumference, which includes an inner surface having a circumferential recessed groove with an interval between side walls of said circumferential recessed groove being larger than the sum of the thicknesses of said end plates, and an outside diameter surface having a conical taper tilted in the axial direction of said concrete foundation piles, said inside ring being intended to be fitted around the outer periphery of said butted portion between said end plates;

an outside ring including an inner surface having a conical taper to be externally fitted around an outside diameter surface of said inside ring for fastening said inside ring;

a chloroprene rubber with attenuation interposed in clearances formed between said end plates and said side walls of said circumferential recessed groove; and

the maximum outside diameter D_2 of the inside ring being a specified value plus 1.2 mm when $D_2=D_1+(T+C)\times 2$ and a minimum inside diameter of specified value minus 0.45 mm when $D_2=D_1-T\times 2$, where D_1 is the outside diameter of the end plate, T is the plate thickness of the inside ring and C is the clearance of a meshing portion.

5,577,858

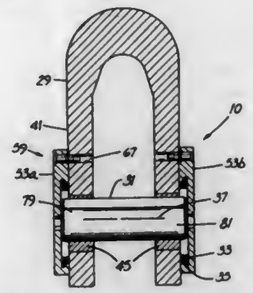
PIN-RETAINING STRUCTURE AND METHOD FOR RETAINING A PIN

Rikos A. Kasim, Mukwonaga, and Darryl R. Immel, Waterford, both of Wis., assignors to Harnischfeger Corporation, Brookfield, Wis.

Filed Apr. 27, 1995, Ser. No. 429,597

Int. Cl.[6] B25G *3/00;* **F16D** *1/12;3/00;* **F16C** *11/00*

U.S. Cl. 403—316 **16 Claims**



1. In an apparatus having a device pivotably connected thereto by a pin and the apparatus includes a pin-retaining structure, the improvement wherein:

the pin has a cylindrical side wall and first and second opposing ends;

the device includes a plurality of separate arcuate first retention members which are circumferentially spaced from one another;

the structure includes a cap portion having a cover portion over the first end, thereby interfering with free axial travel of the pin, such cap portion having a plurality of second circumferentially spaced retention members,

and wherein:

each second retention member engages a separate first retention member,

whereby the pin is retained in engagement with the device and is weld-free.

5,577,859

ARRANGEMENT FOR CONNECTING A ROTATABLE SHAFT HAVING AN END PORTION WITH CHANNEL TOOTHING FORMED THEREON AND A STRUCTURAL COMPONENT

Markus Nau, Igis, Switzerland, assignor to Etablissement Supervis, Liechtenstein

Filed Sep. 23, 1994, Ser. No. 311,304

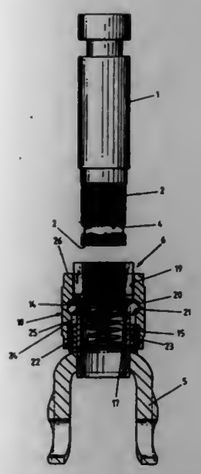
Claims priority, application Germany, Sep. 24, 1993, 43 32 485.1

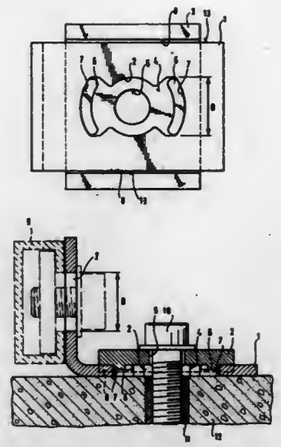
Int. Cl.[6] F16D *1/10*

U.S. Cl. 403—325 **11 Claims**

1. An arrangement for connecting a rotatable shaft, having an end portion with channel toothing formed thereon and a circumferential groove formed adjacent to an end surface of the end portion, and a structural component for transmitting a torque therebetween, said arrangement comprising:

a sleeve to be fixedly secured to the structural component and having inner channel toothing for cooperation with the channel toothing formed on the end portion of the shaft, said





sleeve having a first portion for receiving the end portion of the shaft and having a plurality of axially extending longitudinal splines formed on an inner surface of said first portion and defining said inner channel toothing, and a second portion connected with said first portion by a divergent taper transition portion and having, in a circumferential region thereof adjacent to said transition portion at least one hole;

a closure member for closing said at least one hole and displaceable within said second portion;

a spring located inside said second portion for biasing said closure member to a closing position thereof, said spring being supported, at an end thereof remote from the closure member, on a support fixedly connected with the sleeve; said closure member being displaceable against a biasing force of said spring upon being acted on by the end portion of the shaft;

a locking ball extendable into said at least one hole formed in said second portion of said sleeve and into the groove formed in the end portion of the shaft for retaining said shaft in said sleeve, said locking ball having a diameter substantially equal to a diameter of said at least one hole and selected to exceed more than twice a depth of the groove formed in the end portion of the shaft;

a bushing enveloping said sleeve and axially displaceable therealong, said bushing having a bore for receiving said sleeve and having a first bore portion for receiving said first portion of said sleeve and having an inner end coinciding with said transition portion of said sleeve when said sleeve is disconnected from the shaft, and a groove formed in an inner surface of the bushing bore adjacent to said inner end of said first bore portion for receiving said locking ball; and

spring means for biasing said bushing to a position in which said locking ball is displaced from said groove formed in said inner surface, upon insertion of the end portion of the shaft into said sleeve.

5,577,860

ATTACHMENT DEVICE FOR SECURING STRUCTURAL COMPONENTS TO SHAPED RAILS

Wolfgang Plank, Brand, Austria, assignor to Hilti Aktiengesellschaft, Liechtenstein

Filed Oct. 18, 1995, Ser. No. 544,516

Claims priority, application Germany, Oct. 21, 1994, 44 37 648.0

Int. Cl.[6] F16B *2/20*

U.S. Cl. 403—403 **6 Claims**

1. Attachment device comprising a fastening element (**10**) and a cover plate (**3, 23**) for securing a structural component (**1, 21**) having an opening with a center axis extending therethrough and an out-of-round cross section extending transversely of the center axis and formed of a circular bore and two widening sections (**7, 27**) located diametrically opposite one another relative to the center axis and extending radially outwardly from said circular bore, said widening section (**7, 27**) having an axis of symmetry extending through said center axis and each having a width (B) measured parallel to the axis of symmetry increasing in the radially outward direction, said cover plate (**3, 23**) at last partially covers said opening (**2, 22**), said cover plate (**3, 23**) has a circular through passage (**5, 25**) extending therethrough from a first side to an oppositely facing planar second side directed toward said opening (**2, 22**), said cover plate having two projections (**6, 26**) located diametrically opposite one another on the opposite sides of said axis of symmetry and extending from the second side of said cover plate in the direction of the center axis of said opening (**2, 22**) into the widening sections (**7, 27**), said projections (**6**) having an outside contour, said cover plate (**3, 23**) extending transversely of the center axis beyond the outside contour of said projections (**6**) in a plane of the said second side.

5,577,861

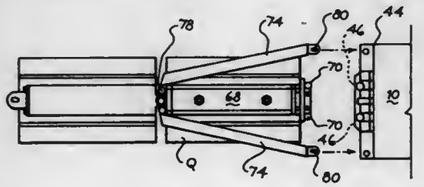
CRASH ATTENUATOR WITH VEHICLE-DEFLECTING MEMBER

Michael H. Oberth, Folsom, and John V. Machado, Antelope, both of Calif., assignors to Energy Absorption Systems, Inc., Chicago, Ill.

Division of Ser. No. 339,137, Nov. 14, 1994, Pat. No. 5,494,371. This application Nov. 27, 1995, Ser. No. 562,907

Int. Cl.[6] E01F *15/00*

U.S. Cl. 404—6 **2 Claims**



1. In a highway barrier comprising a crash attenuator secured to one end of the barrier, said crash attenuator being wider than the barrier so as to extend laterally beyond a profile defined by the barrier, the improvement comprising:

at least one vehicle-deflecting member hinged to the barrier to pivot between an extended position, in which the vehicle-

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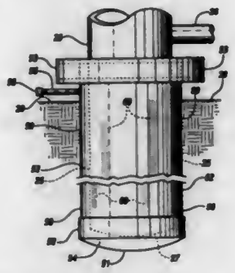
deflecting member is secured between the barrier and the crash attenuator to provide a transition between the profile defined by the barrier and the crash attenuator, and a retracted position, in which the vehicle-deflecting member is stored alongside the barrier when the crash attenuator is removed from the barrier.

5,577,862

UNDERGROUND CONTAINMENT FOR FLUID SYSTEMS

Jack V. Christensen, Castle Rock, and Ronald T. Bloomstran, Arvada, both of Colo., assignors to C.M.F. Corporation, Denver, Colo.

Filed Jan. 31, 1995, Ser. No. 381,593
Int. Cl.[6] B65G *5/00*; G01M *3/26*
U.S. Cl. 405—53 **4 Claims**



4. An apparatus serving as an integument for a fluid system installed underground comprising:

a flexible enclosure containing structural supports made of material resistant to underground corrosion encompassing the part of said system that resides underground while leaving a gas space between said material and outer walls of said system;

means for sealing said flexible enclosure to said outer walls at edges of said material thereby containing up to about 100 psi gas pressure; and means for changing the pressure of said gas space.

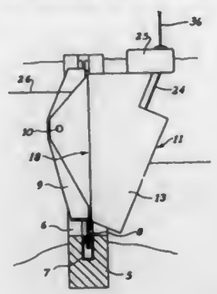
5,577,863

SELF-ACUATING SLUICE GATE

Murray K. Nottle, 1294 Toorak Road, Burwood, Victoria 3125, Australia

PCT No. PCT/AU93/00426, § 371 Date Feb. 14, 1995, § 102(e) Date Feb. 14, 1995, PCT Pub. No. WO94/00426, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 20, 1993, Ser. No. 397,041
Claims priority, application Australia, Aug. 24, 1992, PL4236
Int. Cl.[6] E02B *3/00*; *7/00*; *8/00*; *7/40*
U.S. Cl. 405—87 **5 Claims**

1. A sluice gate for controlling the discharge of liquid through a gateway, comprising mounting means defining a fixed substantially horizontal hinge axis upstream of the gateway, and substantially above a base of the gateway, a closure element mounted for swing movement about that axis and able to swing from a lower position wherein it blocks said gateway to an upper position wherein it allows liquid to flow through the gateway, a chamber fixedly associated with the closure element, a filler opening through which liquid from the upstream side of said gateway may enter said chamber, a drain opening through which liquid may drain from said chamber to the downstream side of said gateway, valve means controlling the flow of liquid through at least one of said openings, and valve actuator means responsive to a signal from a remote control means.

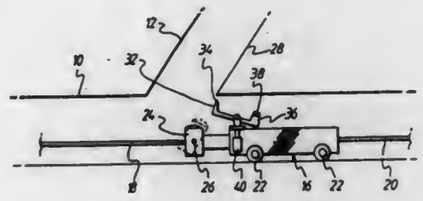


5,577,864

APPARATUS RELATING TO THE LININGS OF PIPELINES AND PASSAGEWAYS

Eric Wood, deceased, late of Castletown, and Miranda J. Bull, executrix, Peel, both of Isle of Man, assignors to Insituform B.V., Netherlands

PCT No. PCT/GB92/02287, § 371 Date Jun. 23, 1994, § 102(e) Date Jun. 23, 1994, PCT Pub. No. WO93/13350, PCT Pub. Date Aug. 5, 1993
PCT Filed Dec. 10, 1992, Ser. No. 256,165
Claims priority, application United Kingdom, Dec. 23, 1991, 9127315
Int. Cl.[6] E03F *3/06*
U.S. Cl. 405—154 **13 Claims**



1. A method of locating a lateral pipe which forms a connection with a main pipeline or passageway, wherein said main pipeline or passageway has been lined with a lining tube which extends over the connection of the lateral pipe and main pipeline or passageway, comprising

depositing a radiation sensitive means on the main pipeline or passageway at a pre-determined distance from the edge of the lateral pipe prior to the lining operation,

locating the edge of the lateral pipe and the main pipeline or passageway connection using a mechanical feeler to establish a datum, and positioning the radiation sensitive means at a pre-determined distance from the datum by a positioning member,

inserting a locating means into the lined main pipeline or passageway after the main pipeline or passageway has been lined, said locating means having a sensor for sensing the location of the radiation sensitive means, and

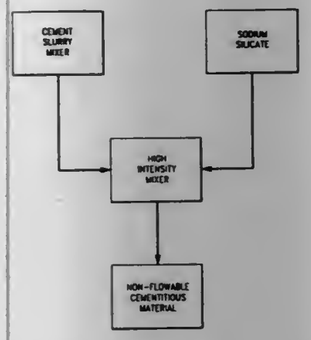
determining the location of the lateral pipe and the main pipeline or passageway connection from the location of the deposited radiation sensitive means.

5,577,865

PLACEMENT OF A SUBSTANTIALLY NON-FLOWABLE CEMENTITIOUS MATERIAL IN AN UNDERGROUND SPACE

Jorge E. Manrique, The Woodlands, Tex.; Rodney L. Paugh, Lost Creek, and Richard L. Moody, Weston, both of W. Va., assignors to Halliburton Company, Duncan, Okla.

Filed Jul. 28, 1995, Ser. No. 508,356
Int. Cl.[6] E02D *15/00*; *29/00*
U.S. Cl. 405—266 **20 Claims**



1. A method of admixing and placing substantially non-flowable cementitious material into an underground space, comprising the steps of:

mixing a cement slurry;

transferring said cement slurry to a high intensity mixer;

introducing an activator to said high intensity mixer;

using said high intensity mixer to admix said cement slurry and said activator into a substantially non-flowable cementitious material; and

pumping the substantially non-flowable cementitious material into the underground space.

5,577,866

EARTHEN WORK WITH WIRE MESH FACING

Peter L. Anderson, North Reading, Mass.; Michael J. Cowell, Leesburg, and Dan J. Hotek, Reston, both of Va., assignors to Societe Civile Des Brevets Henri Vidal, Paris, France

Continuation of Ser. No. 114,098, Aug. 30, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,633
Int. Cl.[6] E02D *5/00*
U.S. Cl. 405—284 **51 Claims**

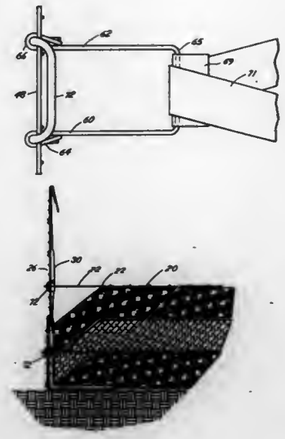
1. A wall construction having a wire mesh facing, said construction comprising, in combination:

a granular, compactable fill defining a three dimensional earthen work bulk form having a bottom surface and a generally planar front face extending upwardly from a datum plane,

said earthen work bulk form including a plurality of earth stabilizing members dispersed throughout the bulk form, said stabilizing members extending generally horizontally from the front face into the bulk form, at least some of said stabilizing members comprising first and second tensile members extending from the front face into the bulk form;

a plurality of generally vertical, planar wire mesh panels on the front face, said panels defining vertical courses of connected panels, having generally horizontal top and bottom side edges and vertical side edges, the vertical side edges being generally aligned and the horizontal side edges of adjacent panels being offset; and

means connecting a stabilizing member to each of said panels.

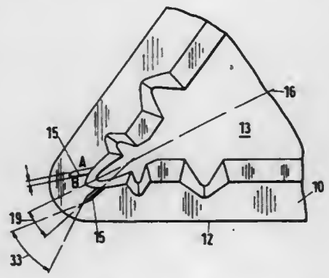


5,577,867

CUTTER INSERT

José A. Paya, Mühlheim, Germany, assignor to Widia GmbH, Essen, Germany

PCT No. PCT/DE92/00006, § 371 Date Aug. 1, 1994, § 102(e) Date Aug. 1, 1994, PCT Pub. No. WO93/08944, PCT Pub. Date May 13, 1993
PCT Filed Oct. 1, 1992, Ser. No. 232,209
Claims priority, application Germany, Nov. 5, 1991, 41 36 417.1
Int. Cl.[6] B23P *15/28*
U.S. Cl. 407—114 **20 Claims**



1. A polygonal cutter insert for chip-forming machining comprising:

a cutter body;

a side cutting edge periphery on said cutter body formed with a cutting edge lying in an edge plane;

a recessed rake surface running downwardly inwardly from said edge;

a unitary chip breaker segment spaced inwardly from said rake surface all around said edge periphery and having a continuous top breaker surface lying in a breaker plane above said edge plane;

a groove located between said rake surface and said chip breaker segment and defining a boundary of said chip breaker segment; and

at least one longitudinal wedge-shaped upwardly convex rib extending outwardly from said breaker segment into said rake surface and terminating at a distance from said edge periphery, said rib having an apex lying in a rib plane lower than said cheap breaker plane.

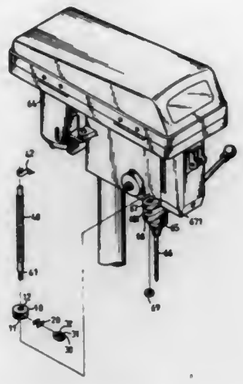
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5,577,868

DEPTH STOP FOR A DRILL PRESS

Ruey Z. Chen, No. 261, Jen Hwa Rd., Tali City, Taichung, Taiwan

Filed Jun. 29, 1995, Ser. No. 496,410
Int. Cl.[6] B23B 49/00
U.S. Cl. 408—14 4 Claims



1. A depth stop for a drill press, said drill press comprising a base, a column disposed vertically to said base, a table movably mounted to said column, a drill mechanism including a motor disposed thereto, said drill mechanism having a chuck movably disposed thereto and a drill securely disposed to an under side of said chuck, said drill mechanism having a connecting element extending laterally therefrom, a threaded rod having a first end and a second end, said first end of said threaded rod securely connected to said connecting element and said second end of said threaded rod being a distal end;

said depth stop including a block, an oblong element and a resilient element, said block having a passage defined centrally therein and a cut-away defined laterally therein which communicates with said passage, said passage having a diameter larger than that of said threaded rod, a recess defined in an inner periphery of said passage of said block and diametrically corresponding to said cut-away;

said oblong element having a first end and a second end, said first end thereof having a protrusion extending outwardly therefrom, an oblong hole defined in said oblong element and a threaded portion defined in an inner periphery of said oblong hole and near said protrusion, said oblong element received in said block from said cut-away by inserting said first end of said oblong element therein;

said threaded rod inserted through said passage of said block and said oblong hole which has a diameter larger than that of said threaded rod, said resilient element disposed between said protrusion and said recess of said block, said oblong element being biased by said resilient element to engage said threaded portion with said threaded rod and said threaded portion disengaged from said threaded rod by pushing said oblong element toward said resilient element.

5,577,869

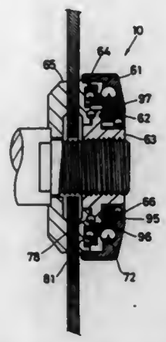
Patent Not Issued For This Number

5,577,870

TIGHTENING SCREW

Daijiro Nakamura, 662-2, Shimogishicho, Ono-shi, Hyogo, Japan

Filed Mar. 15, 1993, Ser. No. 31,311
Claims priority, application Japan, Aug. 31, 1992, 4-257419
Int. Cl.[6] F16B 31/00;37/08
U.S. Cl. 411—7 4 Claims



1. A tightening screw for holding an object on a drive means, said screw comprising:

a screw member comprising a core part with a plurality of threads for engaging said drive means, a circular outer surface portion, and a circular ring portion having a plurality of inwardly directed inner gears, said inner gears being of a first number;

a flange ring comprising an engaging surface and a contacting surface, and being disposed to be next to said screw member and having said contacting surface in contact with said object;

a rotating ring comprising an inner core part disposed to surround said circular outer surface portion of said screw member, and further comprising an intermediate ring portion having a plurality of outwardly directed outer gears non-continuously engaged with said inner gears of said screw member, said inner gears being of a second number different from said first number; and

operating ring comprising an inner surface and disposed to cover said rotating ring and rotatably hold eccentrically said rotating ring with said inner surface so that upon rotation of said operating ring, said rotating ring is turned to controllably rotate said screw means through engagement of said inner and outer gears, said operating ring further comprising an end surface which is engaged with said engaging surface of said flange member while defining a revolution and allowing rotation of said rotating ring;

wherein said rotating ring comprises a unidirectional torque limiter for cutting off transmission of torque in a tightening direction as supplied from said operating ring to said object being tightened.

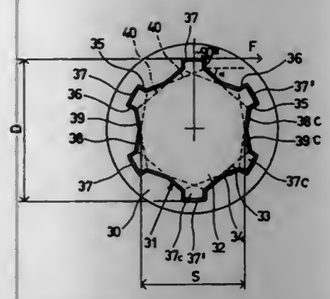
5,577,871

SCREW AND WRENCH FOR SNUGLY-FITTED TIGHTENINGS

Giannantonio Brugola, Muggio', Italy, assignor to A.S. TEC. Assistenza Tecnica s.r.l., Italy

Filed Feb. 7, 1995, Ser. No. 384,915
Claims priority, application Italy, Mar. 4, 1994, MI94A0392
Int. Cl.[6] F16B 23/00;35/06
U.S. Cl. 411—404 7 Claims

1. In a screw of the type having a head portion and an integral shank portion, and wherein said head portion comprises a lobate head for a lobate-socket head having six angularly spaced lobes each of which is formed with a first face directed in a substantially circumferential manner with respect to the axis of the screw, and



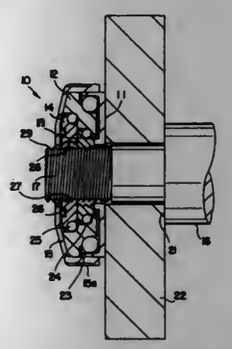
with two other substantially parallel faces directed inwardly with respect to the axis of the screw, and characterized in that said head portion of the screw is further provided with a plurality of reaction surfaces for a tightening wrench, said reaction surfaces including between each pair of adjacent lobes a pair of intersecting faces inclined to each other to form an angle concave towards the outside of the head portion of the screw so that one face of each intersecting pair thereof forms part of the side of a first hexagon, and the other face of each intersecting pair thereof forms part of the side of a second hexagon, said hexagons being angularly rotated with respect to each other about the axis of the screw and being operative to constitute two different sets of reaction surfaces for a wrench of a hexagonal profile.

5,577,872

TORQUE ENHANCING TIGHTENING SCREW

Daijiro Nakamura, Ono, Japan, assignor to Power Tool Holders Incorporated, Wilmington, Del.

Division of Ser. No. 31,311, Mar. 15, 1993. This application Feb. 9, 1994, Ser. No. 194,089
Int. Cl.[6] F16B 23/00;37/08
U.S. Cl. 411—432 5 Claims



1. A torque enhancing tightening device for tightening a tool to a drive spindle, said device comprising:

at least one screw member having threads defined thereon for engagement with complimenting threads of a drive spindle;

a flange member axially aligned with said at least one screw member and defining a tool contacting surface, said flange member disposed so as to be pressed against a tool to be held relative to said drive spindle by threaded advancement of said screw member;

an operating ring disposed concentric about said screw member and configured for receiving an applied rotational force to operate said device; and

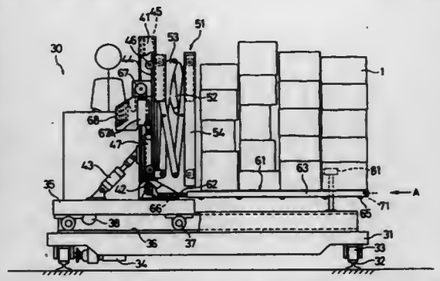
an eccentric transmission mechanism between said operating ring and said at least one screw member, said eccentric transmission mechanism transferring rotational movement of said operating ring to said at least one screw member by an eccentric movement.

5,577,873

METHOD AND APPARATUS FOR STOWING A LOAD

Nobuhiro Tanaka, and Eiji Hirata, both of Saitama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Nov. 29, 1994, Ser. No. 346,872
Claims priority, application Japan, Nov. 30, 1993, 5-323402; Sep. 29, 1994, 6-259006
Int. Cl.[6] B65G 67/04
U.S. Cl. 414—400 3 Claims



1. A method for stowing a load in a load stacking position on a rear deck having a front wall, the method comprising the steps of:

stacking said load on a slide plate having a leading edge side nearer said front wall, said load positioned on said leading edge side of said slide plate;

moving said slide plate over said rear deck whereby said leading edge of said slide plate is positioned away from said front wall by the length of said load, thereby establishing a push-in position; then

linking said pusher to said slide plate after said pusher reaches a position which contacts the load in order to push said slide plate with said pusher along said deck until said load on said slide plate reach said load stacking position, said stacking position defined as a position on said deck wherein said slide plate leading edge is closed to and facing said front wall of said rear deck; and

pushing said slide plate along said deck until said load on said slide plate reaches said load stacking position by said pusher; then

releasing the link between said pusher and said slide plate, and then transferring said load to said load stacking position by pulling said slide plate away from said front wall and said load stacking position while said pusher is kept in said load stacking position.

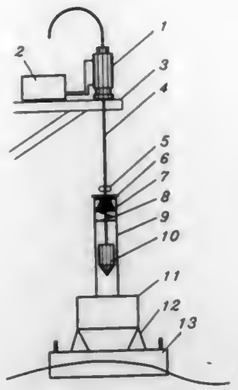
5,577,874

METHOD AND APPARATUS FOR THE TRANSFER OF LOADS FROM A FLOATING VESSEL TO ANOTHER OR TO A FIXED INSTALLATION

Torodd E. Olsen, Joh.Falbergetsgate 10, N-5500 Haugesund, Norway

PCT No. PCT/NO93/00043, § 371 Date Sep. 12, 1994, § 102(e) Date Sep. 12, 1994, PCT Pub. No. WO93/18999, PCT Pub. Date Sep. 30, 1993
PCT Filed Mar. 16, 1993, Ser. No. 302,783
Claims priority, application Norway, Mar. 16, 1992, 921013
Int. Cl.[6] B63B 27/16
U.S. Cl. 414—138.3 14 Claims

1. Apparatus for transferring a load movable in a substantially vertical direction to a temporarily stationary suspending means at an instant when the load has no significant kinetic energy, the

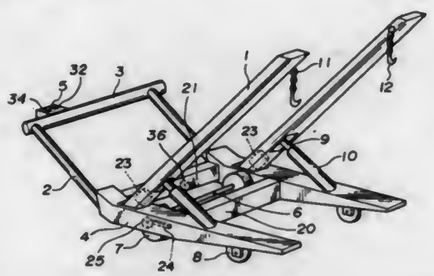


apparatus comprising at least one gripping means, a recording or sensing device which registers when the movement of the load reverses at said instant, said sensing device, after a prior command, emitting a signal that controllably activates the gripping means for locking the load to the suspending means at the same instant, the gripping means including a housing which encloses the suspending means, said gripping means further comprising a gripper mechanism including keys which are held at a starting position in spaced relationship to the suspending means, while nearly enclosing the suspending means, and which on activation releases a press plate enabling the keys to lock the load to the suspending means on a specific direction of movement of the load or the suspending means.

5,577,875
TRANSPORTER WITH FUNCTION OF MAINTAINING AND MOVING CENTER OF GRAVITY

Takashi Nanzai, Fujisawa, Japan, assignor to Tani Electronics Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 890,273, May 29, 1992, abandoned. This application Aug. 16, 1993, Ser. No. 106,760
Claims priority, application Japan, May 29, 1991, 3-71299
Int. Cl.[6] B66F *5/04*
U.S. Cl. 414—680 **13 Claims**

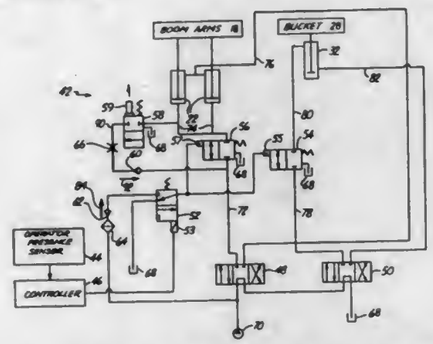


1. A transporter for carrying relative to a horizontal ground surface an object having a center of gravity, comprising:
first arm means for lifting the object, said first arm means having a longitudinal center line;
second arm means, operatively connected to said first arm means at one end thereof, for supporting said first arm means;
wheel means, rotatably mounted to said second arm means, for enabling movement of the transporter, said wheel means having an axis of rotation, said first arm means being disposed relative to said wheel means so that said longitudinal center line of said first arm means extends through said axis of said wheel means and a pivot point between said first and second arm means;
a sensor means, connected to said second arm means, for sensing a variation of an inclination angle of said second arm means relative to the horizontal ground surface, said sensor means comprising an initializing switch which is turned off when the transporter is in an initial default position wherein said longitudinal center line of said first arm means forms a predetermined angle with respect to the horizontal ground surface;
drive means, interposed between said first and second arm means, for driving said first arm means; and
a computer based control unit connected to said sensor means and said drive means, said computer based control unit controlling said drive means such that said drive means move said first arm means relative to said second arm means in response to said sensed variation of said inclination angle of said second arm means relative to the horizontal ground surface so as to maintain the center of gravity of the object in a position consistent with said initial default position.

5,577,876
HYDRAULIC INTERBLOCK SYSTEM

Thomas Q. Haeder, Lisbon; Larry E. Albright, Gwinner; Orlan J. Loraas, Lisbon; William C. Shelbourn, Bismark; Gerald M. Berg; Lyle L. Johnson, both of Lisbon; Thomas M. Saqaser, and Knute K. Brock, both of Bismark, all of N. Dak., assignors to Clark Equipment Company, South Bend, Ind.

Filed Feb. 22, 1994, Ser. No. 199,120
Int. Cl.[6] E02F *3/00*
U.S. Cl. 414—699 **22 Claims**

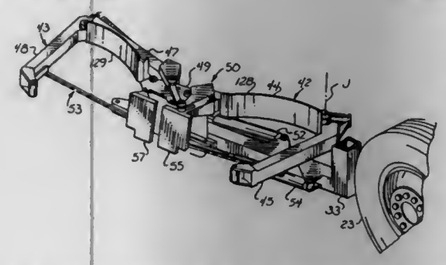


1. In a skid steer loader of the type having a control apparatus for controlling movement of a lift arm on the skid steer loader, the improvement comprising:
power actuator means, coupled to the lift arm, for moving the lift arm along a path;
a hydraulic power circuit coupled to the power actuator means, providing hydraulic power to the power actuator means, along a first power path, to move the lift arm in a first direction;
a sensor, coupled to the skid steer loader, for sensing a desired parameter and providing a sensor signal indicative of the desired parameter;
power interruption means, including a first hydraulic valve coupled in the first power path to the power actuator means and the sensor, for interrupting power to the power actuator means based on the sensor signal; and
manually operable bypass means, including a second hydraulic valve coupled to the hydraulic power circuit and the power actuator means, for providing a second power path between the hydraulic power circuit and the power actuator means, bypassing the power interruption means to allow movement of the lift arm.

5,577,877
GRIPPING APPARATUS FOR OMNIFARIOUS CONTAINERS

Fred P. Smith, Alpine, Utah; Marcel G. Stragier, Scottsdale, Ariz.; Fred T. Smith, Alpine, and Kevin L. McAllister, Orem, both of Utah, assignors to The Heil Company, Chattanooga, Tenn.

Division of Ser. No. 158,960, Jan. 19, 1994, Pat. No. 5,482,180, which is a continuation-in-part of Ser. No. 13,774, Feb. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 728,186, Jul. 10, 1991, Pat. No. 5,209,537. This application Jun. 7, 1995, Ser. No. 477,233
Int. Cl.[6] B65F *3/04*
U.S. Cl. 414—408 **17 Claims**



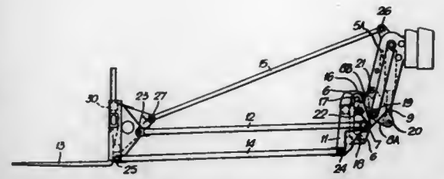
1. A gripping apparatus for use in combination with a refuse collection vehicle having a lifting member and for engaging a container, said gripping apparatus comprising:
a) a first segmented gripping member including
i) an inner arm having an inner end and an outer end, moveably affixed to said lifting member, and
ii) an outer arm having an inner end and an outer end, moveably extending from said inner arm;
b) a second segmented gripping member including
i) an inner arm having an inner end and an outer end, moveably affixed to said lifting member, and
ii) an outer arm having an inner end and an outer end, moveably extending from said inner arm;
c) actuating means carried by said lifting member for moving said first and said second gripping members between
i) a retracted position in which said inner arms extend in substantially opposed directions, and
ii) an extended position in which said inner arms extend in substantially the same direction;
d) tensioning means engaging each of said outer arms intermediate said inner end and said outer end for moving said outer arm of said first segmented gripping member and said second segmented gripping member inwardly relative to said inner arm of said first segmented gripping member, and said second segmented gripping member, respectively; and
e) extension means for moving said outer arm of said first segmented gripping member and said second segmented gripping member outwardly relative to said inner arm of said first segmented gripping member and said second segmented gripping member, respectively.

5,577,878
WORK MACHINE

David J. B. Brown, North Yorkshire, United Kingdom, assignor to Caterpillar Inc., Peoria, Ill.

Filed May 1, 1995, Ser. No. 432,275
Claims priority, application United Kingdom, May 4, 1994, 9408781
Int. Cl.[6] B66C *23/04*
U.S. Cl. 414—708 **1 Claim**

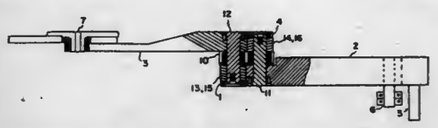
1. A work machine comprising a boom which is pivotally connected at one end of the machine body and is provided at the other end with a tool carriage attached to the boom at a pivot which is fixed with respect to the boom, the carriage being associated with a mechanism for keeping it at a constant attitude when the boom is raised and lowered, and an elongate boom extension including a parallelogram linkage having a pair of parallel links each pivotally connected at one end to a tool, a first one of the links being connected at its other end at or adjacent to the pivot of the tool carriage with the boom, the second one of the links being pivotally connected to the tool carriage such that the tool follows the attitude of the tool carriage when the boom is raised and lowered, and an additional link being pivotally attached at one end to the tool and at the other end to the boom at a location spaced from the carriage.



5,577,879
ARTICULATED ARM TRANSFER DEVICE

Richard H. Eastman, Needham, and James C. Davis, Jr., Carlisle, both of Mass., assignors to Brooks Automation, Inc., Chelmsford, Mass.

Continuation of Ser. No. 997,773, Dec. 28, 1992, Pat. No. 5,431,529. This application Apr. 13, 1995, Ser. No. 421,533
Int. Cl.[6] B25T *18/00*
U.S. Cl. 414—744.5 **25 Claims**



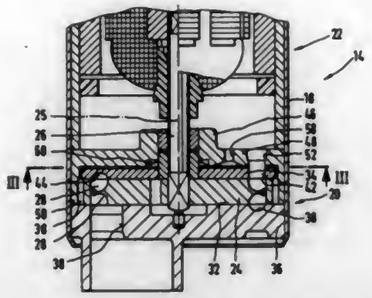
1. A transport apparatus movable arm assembly comprising:
a link;
four elongate arm members pivotably connected to the link; and
two rotation transfer members connected between a first one of the arm members and a second one of the arm members, each rotation transfer member having a band, the bands being generally reversely orientated to each other,
a first band of a first one of the rotation transfer members being fixedly connected directly on an end of the first arm member and, a second band of a second one of the rotation transfer members being fixedly connected directly on an end of the second arm member.

5,577,880
ASSEMBLY FOR FEEDING FUEL OUT OF A SUPPLY TANK TO THE INTERNAL COMBUSTION ENGINE OF A MOTOR VEHICLE

Lothar Krauter, Bietigheim-Bissingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 5, 1995, Ser. No. 523,478
Claims priority, application Germany, Oct. 7, 1994, 44 35 883.0
Int. Cl.[6] F01D *1/12*
U.S. Cl. 415—55.1 **9 Claims**

1. An assembly for feeding fuel out of a supply tank to an internal combustion engine of a motor vehicle, the assembly comprising a feed pump including means forming a pump chamber, a feed member rotatable in said pump chamber about an axis of rotation and also movable in said pump chamber in direction of said axis of rotation, said means including two walls spaced from one another in the direction of said axis of rotation and including



one stationary wall which is arranged in a stationary manner and another movable wall which is movable in the direction of said axis of rotation of said feed member but is not rotatable about said axis of rotation, said feed pump being formed so that said movable wall on its end face facing away from said feed member is loaded at least in regions by a feed pressure prevailing on a delivery side of said feed pump, so that when the feed assembly is in operation, said movable wall comes to bear on said feed member and exerts on said feed member a force directed toward said stationary wall.

5,577,881

HIGH PERFORMANCE TURBOMOLECULAR VACUUM PUMPS

Marsbed Hablanian, Wellesley, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Division of Ser. No. 875,891, Apr. 29, 1992, Pat. No. 5,358,373. This application Jun. 6, 1995, Ser. No. 470,904

Int. Cl.[6] F04D *5/00;* **F03B** *5/00*

U.S. Cl. 415—55.6 **3 Claims**



1. A turbomolecular vacuum pump comprising:
a housing having an inlet port and an exhaust port;
a plurality of vacuum pumping stages located within said housing and disposed between said inlet port and said exhaust port, each of said vacuum pumping stages including a rotor and a stator;
means for rotating said rotors such that gas is pumped from said inlet port to said exhaust port; and
one or more of said vacuum pumping stages comprising a regenerative stage including a rotor comprising a disk having first and second, spaced-apart rotor ribs formed in an upper surface, said first ribs formed near the outer peripheral edge of said disk, said second ribs spaced inwardly from said first ribs and third, spaced-apart rotor ribs formed in a lower surface, said disk constituting a regenerative impeller, said regenerative stage further including a stator that defines a first annular channel in opposed relationship to said first rotor ribs, a second annular channel in opposed relationship to said third rotor ribs, and a third annular channel in opposed relationship to said second rotor ribs, said first and second channels spaced inwardly from an outer peripheral edge of said disk so that the outer peripheral edge of said disk extends into said stator and leakage between said first and second channels is limited, a conduit between said first and second annular channels, a conduit between said first and third annular channels, the stator of said regenerative stage further including a blockage in each of said first, second and third annular channels so that gas flows in series through said first annular channel and said second annular channel and through said first and third annular channels.

5,577,882

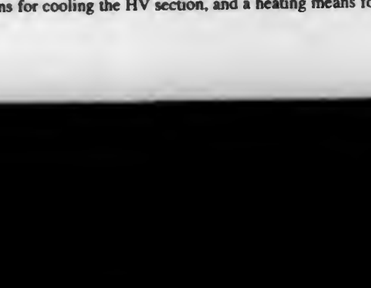
UNIDIRECTIONAL REACTION TURBINE OPERABLE UNDER REVERSIBLE FLUID FLOW

Boris L. Istorik; Ioull B. Chpolianski, both of Moscow, Russian Federation, and Alexander M. Goriov, Brookline, Mass., assignors to Northeastern University, Boston, Mass.

Continuation of Ser. No. 179,965, Jan. 11, 1994, Pat. No. 5,451,138. This application Apr. 11, 1995, Ser. No. 420,137

Int. Cl.[6] F03B *3/00;* **F03D** *3/00*

U.S. Cl. 415—53.1 **19 Claims**



1. A reaction turbine capable of unidirectional rotation under reversible fluid flow comprising:
a fluid flow channel having a flow path section defining a fluid flow path;
a rotatable shaft transversely mounted within said flow path section;
at least one turbine blade support member fixedly mounted to said rotatable shaft for rotation therewith in a plane perpendicular to said shaft; and
a plurality of turbine blades, each blade having an airfoil shape oriented transversely to said flow path and having a leading edge and a trailing edge, said leading edge including a forwardmost nose and sides extending from said forwardmost nose transversely backwardly at an angle with respect to said rotatable shaft, said nose presenting a lesser width transversely to said flow path than a width extending across said blade from ends of said sides transversely to said flow path, each of said blades fixedly mounted to said blade support member to be radially spaced from said rotatable shaft for rotation in the plane parallel to said flow path.

5,577,883

GAS FRICTION VACUUM PUMP HAVING A COOLING SYSTEM

Günter Schütz, Köln; Markus Szirmay, and Peter Reimer, both of Hürth, all of Germany, assignors to Leybold Aktiengesellschaft, Germany

PCT No. PCT/EP93/01368, § 371 Date Feb. 10, 1995, § 102(e) Date Feb. 10, 1995, PCT Pub. No. WO94/00694, PCT Pub. Date Jan. 6, 1994

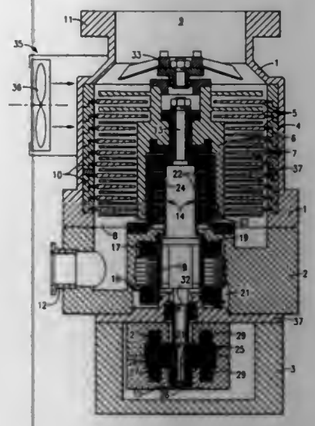
PCT Filed Jun. 1, 1993, Ser. No. 356,294

Claims priority, application Germany, Jun. 19, 1992, 42 20 015.6; Nov. 11, 1992, 42 37 972.5

Int. Cl.[6] F04D *19/04*

U.S. Cl. 415—90 **11 Claims**

1. A gas friction pump that includes a high vacuum section and a forevacuum (FV) section contained within a housing, a cooling means for cooling the HV section, and a heating means for heating



the FV system whereby the temperature of the HV section is maintained at a lower level than that of the FV section during operation of said pump.

5,577,884

STRUCTURE FOR A STATIONARY COOLED TURBINE VANE

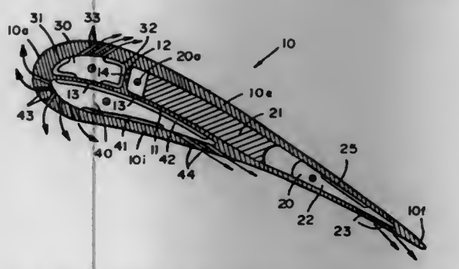
Christian Mari, Vaux le Penil, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A., Paris, France

Filed Mar. 13, 1985, Ser. No. 738,442

Claims priority, application France, Mar. 14, 1984, 8403896

Int. Cl.[6] F01D *9/02*

U.S. Cl. 415—115 **18 Claims**



1. In a turbine having at least one row of stationary vanes, the improved vane structure comprising:
a) a stationary vane having an airfoil cross-section with convex and concave faces, a leading edge portion and a trailing edge portion, the vane defining a hollow interior;
b) a first partition wall in the hollow interior of the vane extending generally from the leading edge portion to the concave face;
c) a second partition wall in the hollow interior of the vane extending from the first partition wall to the convex face so as to divide the hollow interior into a first upstream cavity, a second upstream cavity and a downstream cavity;
d) an internal mounting platform attached to and covering an interior end of the vane, the internal platform defining a first orifice to allow cooling air to enter the first upstream cavity and a second orifice to allow cooling air to enter the downstream cavity near the trailing edge portion of the vane;
e) an external mounting platform attached to and covering an exterior end of the vane, the external platform defining a third orifice to allow cooling air to enter the second upstream cavity and a fourth orifice communicating with the downstream cavity adjacent the second partition wall to allow cooling air to exit from the downstream cavity;
f) a first plurality of cooling holes defined by the vane and communicating with the first upstream cavity to allow cooling air to exit therefrom and cool a portion of the exterior surface of the vane;
g) a second plurality of cooling holes defined by the vane and communicating with the second upstream cavity to allow cooling air to exit therefrom so as to cool a portion of the exterior surface of the vane; and
h) a body of porous material located in the downstream cavity between the second orifice and the fourth orifice, and extending between the convex face and the first partition wall.

5,577,885

CONDENSING TURBINE HAVING AT LEAST TWO SEALS FOR SEALING OFF THE TURBINE CASING

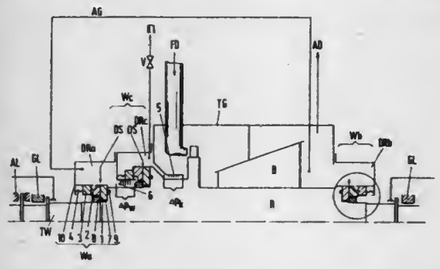
Karl Urlichs, Nürnberg, Germany, assignor to ABB Patent GmbH, Mannheim, Germany

Filed Jun. 28, 1995, Ser. No. 495,860

Claims priority, application Germany, Jun. 28, 1994, 44 22 594.6

Int. Cl.[6] F01D *3/02;3/04*

U.S. Cl. 415—105 **20 Claims**



4. A condensing turbine, comprising:
a turbine casing having a live-steam side with a live-steam inlet and an exhaust-steam side with an exhaust-steam outlet;
a turbine shaft passing through said turbine casing;
a turbine rotor being carried by said turbine shaft;
at least two seals for sealing off said turbine casing in the region of said turbine shaft, at least one of said seals being a gas-lubricated mechanical surface seal disposed on said live-steam side and at least one of said seals being a gas-lubricated mechanical surface seal disposed on said exhaust-steam side;
said at least one mechanical surface seal on said live-steam side acting as a balancing-piston seal for sealing off the passage of said turbine shaft through said turbine casing; and
an axial bearing of said turbine shaft for absorbing uncompensated thrusts acting on said turbine shaft.

5,577,886

SEALING DEVICE FOR PUMP IMPELLER

Ulf Arbeus, Lidingo, Sweden, assignor to ITT Flygt AB, Solna, Sweden

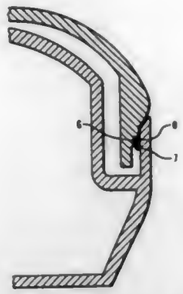
Continuation of Ser. No. 388,874, Feb. 15, 1995, abandoned. This application Apr. 1, 1996, Ser. No. 625,272

Int. Cl.[6] F04D *29/16*

U.S. Cl. 415—172.1 **1 Claim**

1. A device to decrease the back flow through a slot between a pump housing inlet and an impeller, comprising in combination:
said pump housing inlet having an axially directed collar housing part;

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said impeller having an axially directed collar impeller part that coaxially surrounds said collar housing part and said collar impeller part having a stepped inner surface;

a flat wear resistant ring being mounted on said stepped inner surface of said collar impeller part and surrounding a portion of said collar housing part, said ring having an inner diameter forming with said portion of said collar housing part, said slot therebetween; and

an O-ring being mounted on the outer surface of said collar housing part and being positioned to contact the flat surface of said ring and seal off said slot, thereby leakage flow between said collar housing part and said collar impeller part is minimized.

5,577,887

METALLIC LIP SEAL AND TURBO JET ENGINE EQUIPPED WITH SAID SEAL

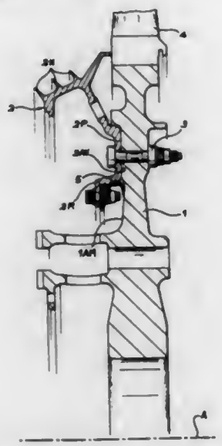
Philipe A. C. Gouyon, Montreuil; Jérome E. R. Join, Pringy; Gilles C. Meunier, Le Mee sur Seine; Jacques A. A. Rauner, Vulaines sur Seine, and Patrice J. M. Rosset, Le Mee sur Seine, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "Snecma", Paris, France

Filed Jun. 26, 1995, Ser. No. 494,694

Claims priority, application France, Jul. 6, 1994, 94 08329

Int. Cl.[6] F01D *11/00;25/24*

U.S. Cl. 415—174.2 **8 Claims**



1. A metallic lip seal comprising:

a lip secured to a body and extending from a side of the body, said lip having an extremity which includes an external sealing contact surface which contacts a radial surface of an object, the lip extending toward an axis of the object, the lip being flexible so as to permit the seal to adjust to various positions with respect to the object, wherein the body is a toric body with a specific axis and an external diameter, the body being sufficiently solid so that a center of gravity of a cross section of the seal is located substantially in the body.

5,577,888

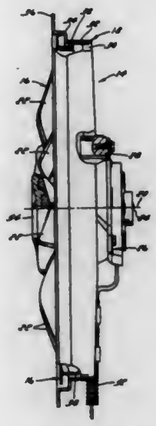
HIGH EFFICIENCY, LOW-NOISE, AXIAL FAN ASSEMBLY

Hugo Capdevila, London; Eric Bartlett, St. Thomas; John Pharoah, Victoria, and William Gallivan, London, all of Canada, assignors to Siemens Electric Limited, London, Canada

Filed Jun. 23, 1995, Ser. No. 493,872

Int. Cl.[6] F04D *29/38;29/54*

U.S. Cl. 415—210.1 **36 Claims**



1. An airflow generator for producing an airflow across a heat exchanger comprising:

a fan rotatable about a rotational axis, the fan including a plurality of radially-extending fan blades configured to produce an airflow when the fan is rotated abut the rotational axis, wherein a component of the airflow occurs at a first angle to the rotational axis; and

a fan support including a shroud assembly adapted to provide a substantially closed airflow channel between the fan and the heat exchanger, a central support at which the fan is rotatably supported and a plurality of elongated airfoils extending radially outward from the central support, each airfoil including a curved, airflow guiding surface having a leading edge and a trailing edge downstream from the leading edge, wherein a tangent to the guiding surface at the leading edge is substantially at the first angle to the rotational axis, and a tangent to the trailing edge is at a second angle to the rotational axis less than the first angle.

5,577,889

GAS TURBINE COOLING BLADE

Masao Terazaki, and Keizo Tsukagoshi, both of Takasago, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1995, Ser. No. 420,784

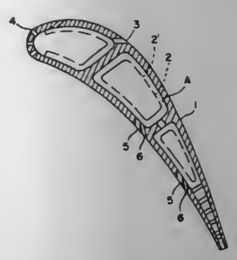
Claims priority, application Japan, Apr. 14, 1994, 6-75729

Int. Cl.[6] F01D *5/18*

U.S. Cl. 416—97 R **9 Claims**

1. A gas turbine blade, comprising:

a blade having a blade surface, a hollow interior, an upstream side, a downstream side and a belly part;



a first cooling hole in said hollow blade located at said belly part communicating said hollow interior with said blade surface and extending at a first acute angle with said blade surface for blowing cooling air out of said hollow interior; and

a second cooling hole in said hollow blade that is smaller than said first cooling hole, located at said belly part downstream of said first cooling hole, communicates said hollow interior with said blade surface and extends at a second acute angle with said blade surface, said second acute angle being more acute than said first acute angle, for blowing cooling air out of said hollow interior along said blade surface;

wherein only said belly part of said blade is provided with both said first cooling hole and said second cooling and; and

wherein said first cooling hole and said second cooling hole communicate with said hollow interior through respective first and second inlets that are spaced from each other along an interior surface of said blade that defines said hollow interior.

5,577,890

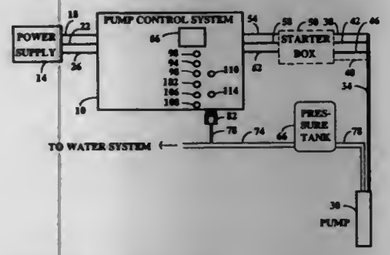
SOLID STATE PUMP CONTROL AND PROTECTION SYSTEM

Carl J. Nielsen, Saratoga, Calif., and Joseph E. Troccoli, Madison, Tenn., assignors to Trilogy Controls, Inc., Mountain View, Calif.

Filed Mar. 1, 1994, Ser. No. 205,038

Int. Cl.[6] F04B *49/06*

U.S. Cl. 417—44.2 **25 Claims**



1. A pump control system comprising:

a synchronous phase detector for generating a first output signal related to a phase shift between an AC current signal supplied to a pump and a voltage signal supplied to the pump, the first output signal comprising a full cycle of the voltage signal as modified by the polarity of the amplitude of the AC current signal, the synchronous phase detector comprising a first operational amplifier for generating the first output signal; and

a switch means for receiving polarity information about the AC current signal and for adjusting the gain of the first operational amplifier in response to the polarity information;

a filter means for generating a filtered signal derived from the first output signal;

a comparator means for generating a second output signal based on a comparison of the filtered signal to a reference value;

a logic means for receiving the second output signal and generating a control signal; and

a relay means for turning power to the pump on or off in response to the control signal.

5,577,891

LOW POWER PORTABLE RESUSCITATION PUMP

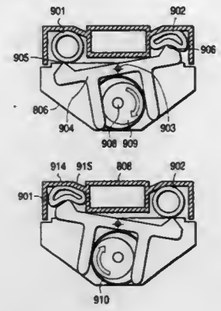
Michael H. Loughnane, Lafayette Hill, and Kenneth P. Cook, Blue Bell, both of Pa., assignors to Instech Laboratories, Inc., Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 159,906, Nov. 30, 1993, Pat. No. 5,415,532. This application Oct. 14, 1994, Ser. No. 322,483

Int. Cl.[6] F04B *43/08*

U.S. Cl. 417—53 **14 Claims**

1. A method for pumping a fluid through a first resilient tube and



a second resilient tube each having original shapes and held in a substantially parallel relationship, said method comprising the steps of:

(a) arranging a pushing mechanism having first and second pushing surfaces adjacent said first and second resilient tubes and with respect to a pivot point such that said first and second pushing surfaces contact said first and second resilient tubes, respectively, and rock in opposite directions;

(b) rocking said pushing mechanism such that the first pushing surface partially compresses said first resilient tube;

(c) discharging a first portion of said fluid from an output end of said first resilient tube as said rocking step (b) partially compresses said first resilient tube;

(d) rocking said pushing mechanism such that said second pushing surface partially compresses said second resilient tube while simultaneously allowing said first resilient tube to resume its said original shape;

(e) discharging a second portion of said fluid from an output end of said second resilient tube as said rocking step (d) partially compresses said second resilient tube; and

(f) introducing a third portion of said fluid into said first resilient tube as said first resilient tube resumes its said original shape.

5,577,892

METHOD OF INJECTING FUEL INCLUDING DELAYED MAGNETIC SPILL VALVE ACTUATION

Michael Schittler, Sindelfingen; Ulrich Augustin, Kernen; Volker Schwarz, Weinstadt, and Hermann Hiereth, Esslingen, all of Germany, assignors to Mercedes Benz AG, Stuttgart, Germany

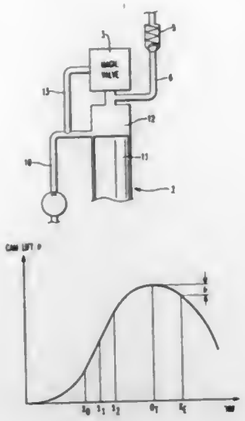
Continuation-in-part of Ser. No. 344,884, Nov. 25, 1994, abandoned. This application Mar. 22, 1996, Ser. No. 621,829

Claims priority, application Germany, Nov. 26, 1993, 43 40 311.5

Int. Cl.[6] F04B *53/10;* **F02D** *1/00*

U.S. Cl. 417—53 **2 Claims**

1. In a method of injecting fuel for an internal combustion engine with high pressure fuel injection, comprising a high pressure pump with a pump cylinder and a pump piston disposed in the cylinder and defining therewith a pump operating chamber, a high pressure line including a check valve for supplying fuel under pressure from the high pressure pump to fuel injection nozzles for injection into the engine and a control line extending from the pump operating chamber to a low pressure fuel supply line for discharging excess fuel thereto, said fuel control line including a



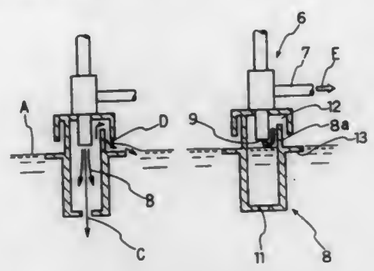
magnetic valve which, while open, permits the discharge of excess fuel from the pump operating chamber but which is closed to initiated pumping of fuel, the improvement wherein the magnetic valve is opened at the end of fuel pumping at a point corresponding to a piston stroke length b after the upper dead center of the piston and the length h is determined by the expansion characteristics of the third volume between the check valve and the pump piston.

5,577,893

APPARATUS FOR VACUUM ABSORPTION HAVING REVERSE FLOW PROTECTION MECHANISM

Hidetoshi Nishikawa; Keigo Arimoto, both of Wakayama; Kunio Kanai, and Masayuki Kurematsu, both of Hino, all of Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Feb. 6, 1995, Ser. No. 386,806
Claims priority, application Japan, Feb. 16, 1994, 6-019470
Int. Cl.[6] F04F *5/48*
U.S. Cl. 417—151 **2 Claims**



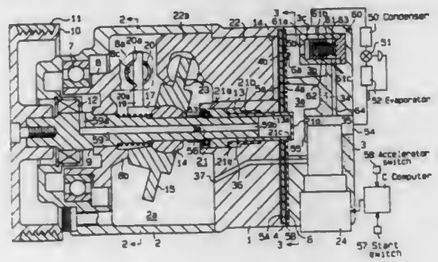
1. An apparatus for vacuum absorption, comprising:
a tank for accumulating water;
a waterway for circulating the water in the tank;
a pump disposed at an absorption inlet side of the waterway;
an aspirator disposed on the waterway;
a reverse flow prevention mechanism for preventing the circulating water from flowing reversely into a vacuum vessel connected to the aspirator during the stoppage of the pump and for introducing air from the aspirator into the vacuum vessel; wherein the reverse flow prevention mechanism is disposed proximate an outlet of the waterway and includes means to drain the circulating water directly into the water at a level below the water surface during the operation of the pump and to absorb air into the waterway in a reverse direction to the flow of water at a level above the water surface into the vacuum vessel during the stoppage of the pump;
wherein the outlet of the waterway is disposed over the water surface of the circulating water in the tank, and the reverse flow prevention mechanism is disposed at the outlet of the waterway; and
wherein the reverse flow prevention mechanism includes a hollow body having drain windows positioned above the water surface and having a small hole sized to drain a lesser volume of water than the volume flowing out of the outlet of the waterway, said small hole being positioned sunk under the water surface.

5,577,894

PISTON TYPE VARIABLE DISPLACEMENT COMPRESSOR

Masahiro Kawaguchi; Masanori Sonobe; Tomohiko Yokono, and Ken Suitou, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation-in-part of Ser. No. 255,043, Jun. 7, 1994. This application Nov. 4, 1994, Ser. No. 334,814
Claims priority, application Japan, Nov. 5, 1993, 5-277176
Int. Cl.[6] F04B *1/29*
U.S. Cl. 417—222.2 **28 Claims**



1. A compressor having a refrigerant gas passage selectively connected to and disconnected from a refrigerant circuit separately provided from the compressor, said compressor having a plurality of pistons reciprocable in a housing for compressing refrigerant gas, said compressor comprising:
a drive shaft rotatably supported by the housing;
a swash plate supported on the drive shaft for integral rotation with inclining motion with respect to the drive shaft to drive the pistons, said swash plate being movable between a maximum inclined angle and a minimum inclined angle;
disconnecting means for disconnecting said refrigerant circuit from the refrigerant gas passage when the swash plate is at the minimum inclined angle; and
bleeding means for bleeding the refrigerant gas from the refrigerant gas passage to the refrigerant circuit to suppress rapid increase of the inclined angle when the disconnecting means operates.

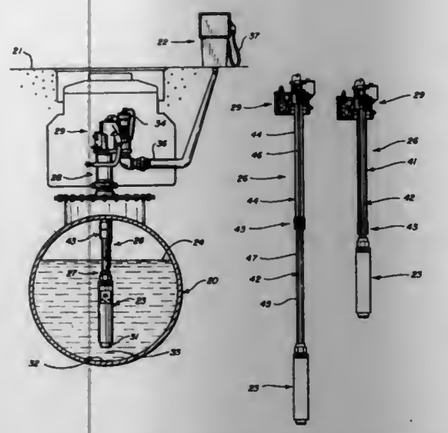
5,577,895

SUBMERGED PUMP UNIT HAVING A VARIABLE LENGTH PIPE ASSEMBLY

Charles C. Franklin; Donald P. Kenney, both of McFarland, and Brian C. Green, Sun Prairie, all of Wis., assignors to FE Petro Inc., McFarland, Wis.

Filed Feb. 24, 1995, Ser. No. 396,180
Int. Cl.[6] F04B *53/16;* **F16L** *21/00*
U.S. Cl. 417—238 **23 Claims**

1. A variable length pipe assembly for connection between a pump-motor unit and a manifold unit, said assembly comprising:
a) an inner pair of first and second pipes and an outer pair of third and fourth pipes;



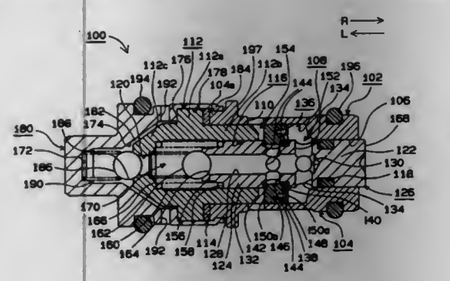
b) said first and second pipes having telescoped portions and outer ends;
c) said third and fourth pipes having telescoped portions and outer ends;
d) said inner pair being mounted within and spaced from said outer pair to form a first conduit between said inner pair and said outer pair, said inner pair forming a second conduit therein;
e) said outer ends of said first and third pipes being connectable to said pump-motor unit and said outer ends of said second and fourth pipes being connectable to said manifold unit; and
f) a locking and sealing mechanism comprising means for sealing said first conduit from said second conduit, and means for clamping together said telescoped portions of said pipes of one of said inner pair and said outer pair.

5,577,896

PUMP

Tomoo Harada, Anjo, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 24, 1994, Ser. No. 265,110
Claims priority, application Japan, Jun. 25, 1993, 5-155368; Apr. 6, 1994, 6-068640
Int. Cl.[6] F04B *3/00*
U.S. Cl. 417—259 **15 Claims**



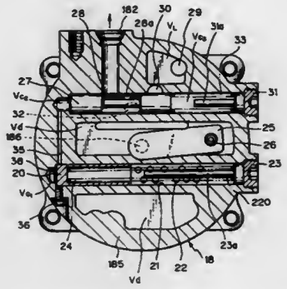
1. A pump provided with a first pump mechanism and a second pump mechanism, the pump comprising:
a housing having therein a first pump chamber, a second pump chamber, an intake port communicated with said first pump chamber, and a discharge port communicated with said second pump chamber;
first valve means disposed in a communicating passage between said first pump chamber and said second pump chamber, which opens said communicating passage when said second pump chamber is expanded and closes said communicating passage when said second pump chamber is compressed;
a piston reciprocatingly disposed in said housing, which expands said second pump chamber when said first pump chamber is compressed and compresses said second pump chamber when said first pump chamber is expanded in accordance with movement thereof;
second valve means disposed near said intake port in said housing, which opens so as to permit fluid to flow into said first pump chamber when said first pump chamber is expanded and closes so as to prevent fluid in said first pump chamber from flowing out of said first pump chamber when said first pump chamber is compressed; and
third valve means disposed near said discharge port in said housing, which opens so as to discharge pressurized fluid in said second pump chamber when said second pump chamber is compressed and closes when said second pump chamber is expanded,
wherein said second valve means is slidably disposed in said housing and engagable with said piston, said second valve means slides in accordance with the reciprocating movement of said piston, and thereby opens and closes said first pump chamber.

5,577,897

SCROLL-TYPE VARIABLE-CAPACITY COMPRESSOR HAVING TWO CONTROL VALVES

Mitsuo Inagaki; Mikio Matsuda, both of Okazaki; Kazuhide Uchida, Hamamatsu, and Hideaki Sasaya, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, and Nippon Soken, Inc., Nishio, both of Japan

Division of Ser. No. 38,106, Mar. 30, 1993, Pat. No. 5,451,146.
This application Jun. 1, 1995, Ser. No. 457,410
Claims priority, application Japan, Apr. 1, 1992, 4-79886; May 27, 1992, 4-134882
Int. Cl.[6] F04B *49/00*
U.S. Cl. 417—310 **5 Claims**



1. A scroll-type variable-capacity compressor comprised of the following:
(a) a stationary scroll member having a spiral vane formed on a stationary end plate;
(b) a moving scroll member which has a spiral vane formed on an end plate supported so as to enable a revolution in a state with a rotation inhibited and able to oppositely engage with said spiral vane of said stationary scroll member and form a plurality of operating spaces between said spiral vanes;
(c) a suction pressure chamber introducing a low pressure fluid to an outer circumference of said plurality of operating spaces;
(d) a discharge pressure chamber in which high pressure fluid is discharged from a center of said plurality of said operating spaces passing through a discharge valve;
(e) a first cylinder which is formed along said end plate of said stationary scroll member from part of an outer circumference side of said end plate to a center side thereof;
(f) a group of bypass holes comprised of a plurality of bypass holes which open in said end plate of said stationary scroll

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member and thereby communicate a space in said first cylinder and said operating spaces;

(g) a communicating path which communicates said space in said first cylinder with said suction pressure chamber;

(h) a first plunger which is inserted in said first cylinder in a reciprocating moving manner and successively opens or closes said group of bypass holes to change a capacity of said compressor between a maximum capacity and a predetermined capacity;

(i) a second cylinder which communicates with said discharge pressure chamber at all times;

(j) a discharge port which opens to said second cylinder and discharges fluid to the outside;

(k) a suction bypass port which opens to said second cylinder and can cause fluid to bypass from said second cylinder to said suction pressure chamber side;

(l) a second plunger which is inserted in a reciprocating moving manner in said second cylinder, which opens and closes said discharge port and said suction bypass port, and which closes one of said ports when the other is opened and vice versa, to change the capacity of said compressor between said predetermined capacity and 0 percent;

(m) a control means for controlling the reciprocating movement positions of said first plunger and said second plunger; whereby

(n) when the discharge capacity is changed between 100 percent capacity and said predetermined capacity, said first plunger opens and closes said group of bypass holes and said second plunger opens said discharge port in said second cylinder and closes said suction bypass port, while when said discharge capacity is changed between said predetermined capacity and 0 percent, said second plunger closes said discharge port and opens said suction bypass port in said second cylinder.

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SUCTION MUFFLER ARRANGEMENT FOR A HERMETIC RECIPROCATING COMPRESSOR

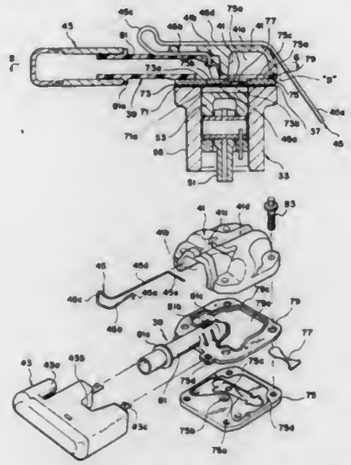
Sung-Tae Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 20, 1996, Ser. No. 620,847

Claims priority, application Rep. of Korea, Jul. 27, 1995, 95-22579

Int. Cl.[6] F04B *39/00*

U.S. Cl. 417—312 **5 Claims**



1. A reciprocating compressor comprising a closed and sealed compressor casing, drive means with stator and rotor, and a cylinder block defining a refrigerant compressing chamber and adapted for guiding the reciprocating motion of a piston movably received in the cylinder block, further comprising:

a valve plate with suction and exhaust ports;

a base muffler mounted to said valve plate, said base muffler having:

a gasket part tightly contacting with said valve plate and adapted not only for preventing heat generated during a compressing operation of the cylinder block from being transferred but also for preventing leakage of refrigerant; and

a refrigerant suction pipe part integrated with said gasket part into a single body base muffler, said suction pipe part being adapted for guiding the refrigerant to the suction port of said valve plate;

a cylinder head mounted to said base muffler, said cylinder head having:

a partition for dividing the interior of said cylinder head into a refrigerant exhaust chamber and fitting chamber;

a fitting groove formed on a top surface of said cylinder head and adapted for fitting a capillary tube; and

a ditch formed on a bottom surface of the cylinder head and adapted for engaging with a dam of said gasket part of the base muffler in order to prevent leakage of the refrigerant;

a suction muffler coupled to said base muffler, said suction muffler having:

a suction part adapted for sucking the refrigerant into said suction muffler;

a pipe fitting part tightly receiving the suction pipe part of the base muffler and adapted for guiding the refrigerant to said suction pipe part of the base muffler; and

a snap hook snapped into a snap hole of said base muffler thereby coupling the suction muffler to the base muffler;

a capillary tube communicating with the interior of said base muffler through the fitting chamber of the cylinder head thereby sucking oil into the base muffler.

5,577,899

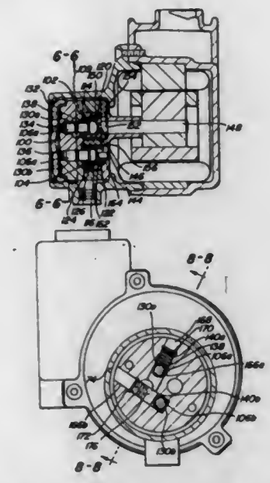
HYDROSTATICALLY BALANCED GEAR PUMP

Edward H. Phillips, Troy, Mich., assignor to Techco Corp., Southfield, Mich.

Filed Jun. 2, 1994, Ser. No. 252,739

Int. Cl.[6] F04B *39/06*

U.S. Cl. 417—371 **2 Claims**



1. A gear pump for producing a pressurized flow of fluid, said pump comprising:

a housing having an inlet passage and an outlet passage;

a pair of gears rotatably mounted within said housing, said pair of gears forming a mesh having an inlet side and an outlet side, said inlet side of said mesh being in fluid communication with said inlet passage and said outlet side being in fluid communication with said outlet passage;

means for hydrostatically balancing radial forces acting on said pairs of gears and having a pair of pistons mounted in said housing, each of said pistons operable for providing a balancing force to the respective one of said gears; and

means for rotatably driving one of said pair of gears.

5,577,900

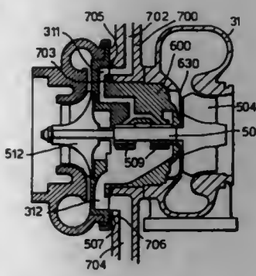
TURBOCHARGED INTERNAL COMBUSTION ENGINE

John N. Ramsden, Suffolk, and Ian W. Drake, Essex, both of England, assignors to GEC- Alsthom Diesels Ltd., Newton Le Willows

Division of Ser. No. 248,876, May 25, 1994. This application Jun. 7, 1995, Ser. No. 481,165

Int. Cl.[6] F02B *37/00*

U.S. Cl. 417—407 **6 Claims**



1. A supercharged internal combustion engine comprising a turbocharger,

said turbocharger comprising a turbine housing having a face,

a compressor housing, and

a removable cartridge comprising a bearing housing, a shaft and bearings for said shaft, said shaft carrying a turbine rotor and a compressor impeller,

a wall attached to said engine, aid wall having a first side and a second side opposite said first side and an aperture for said cartridge extending through said wall between said first and second sides, said turbine housing being secured to said first side about said aperture,

a portion of said cartridge extending through said aperture to align said turbine rotor with said turbine housing,

said compressor housing being secured to said cartridge and the radial dimensions of said turbine rotor being smaller than the radial dimensions of the aperture so that said cartridge is removable from said engine from the second side of said wall without disturbing said turbine housing.

5,577,901

COMPRESSOR WITH VALVE UNIT FOR CONTROLLING SUCTION AND DISCHARGE OF FLUID

Deokyoung Yoon, Seoul, Rep. of Korea, assignor to Samsung Electronics, Co., Ltd., Kyungki-do, Rep. of Korea

Filed Sep. 20, 1995, Ser. No. 531,089

Claims priority, application Rep. of Korea, Feb. 14, 1995, 95-2683

Int. Cl.[6] F04B *39/10*

U.S. Cl. 417—571 **6 Claims**

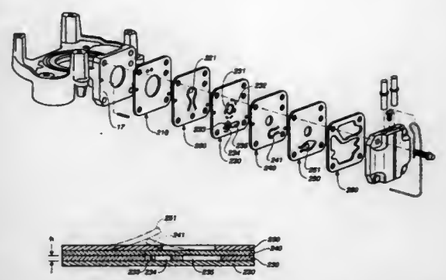
1. A compressor comprising:

a cylinder and a cylinder block having a compression chamber in which fluid is compressed by reciprocation of a piston;

a cylinder head coupled to said cylinder block; and

a valve unit disposed between said cylinder block and said cylinder head, for controlling suction and discharge of the fluid,

wherein the valve unit includes:



a valve plate in which a suction hole, a discharge hole, a plurality of first holes formed around the edge of the suction hole and a plurality of second holes formed around the edge of the discharge hole are formed;

a suction valve plate disposed between said valve plate and the cylinder block, and formed with a first opening and closing piece for opening and closing the suction hole and the plurality of first holes; and

a discharge valve plate disposed between said valve plate and said cylinder head, and formed with a second opening and closing piece for opening and closing the discharge hole and the plurality of second holes.

5,577,902

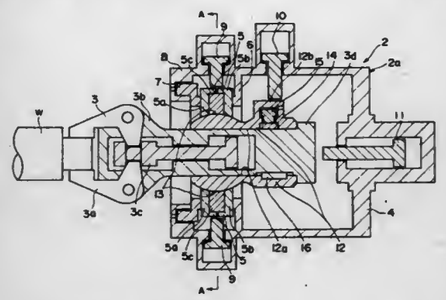
ROBOT HAND FOR FORGING WORKING

Yoshinori Todo; Masami Sakamoto; Noriaki Ushijima; Akira Sonoda; Yukio Miura; Kyousuke Araki, and Kenichi Yoshida, all of Nagasaki, Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed May 16, 1994, Ser. No. 243,324

Int. Cl.[6] G25J *17/02*

U.S. Cl. 414—735 **16 Claims**



1. A robot hand for gripping a workpiece to be forged, comprising:

a grip hand for gripping the workpiece; and

a grip hand support for supporting said grip hand;

said grip hand including a plurality of fingers for gripping the workpiece, and a grip body having two end portions, one end portion having said fingers movably mounted thereon; and

said grip hand support having a longitudinal axis and including a casing into which the other end portion of said grip body is inserted; support means disposed in said casing for supporting said other end portion of said grip body so that said grip hand is movable relative to said casing in any desired direction in an imaginary plane passing through said casing and perpendicular to said longitudinal axis, inclinable relative to said casing in a desired direction in a three-dimensional space around a point on the imaginary plane and midway through said casing, and slidable relative to said casing in the direction of the longitudinal axis of said grip hand support; and supporting state changing means for changing the state of said

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grip hand support between a displacement changing state, in which said grip hand is movable, inclinable, and slidable relative to said casing when an external force is applied to said grip hand as said grip hand is gripping the workpiece, a constraining state in which said grip hand is constrained to inhibit the movement, inclination, and sliding thereof unless an external force greater than a predetermined force is applied to said grip hand, and an initial neutral position constraining state in which said grip hand is positioned at a predetermined initial neutral position and is constrained to inhibit the movement, inclination, and sliding thereof to make movement, inclination, and sliding, of said grip hand impossible.

5,577,903

ROTARY COMPRESSOR

Yasushi Yamamoto, Kusatsu, Japan, assignor to Daikin Industries, Ltd., Osaka, Japan

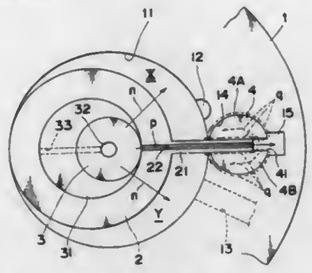
PCT No. PCT/JP94/02020, § 371 Date Aug. 4, 1995, § 102(e) Date Aug. 4, 1995, PCT Pub. No. WO95/16136, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 1, 1994, Ser. No. 500,847

Claims priority, application Japan, Dec. 8, 1993, 5-307924; Dec. 28, 1993, 5-334502

Int. Cl.[6] F01C *1/04*

U.S. Cl. 418—66 **10 Claims**



1. A rotary compressor comprising:
a cylinder having a cylinder chamber formed therein;
a roller rotatably installed within the cylinder chamber, said roller having an inner peripheral surface in sliding contact with an outer peripheral surface of an eccentric portion of a drive shaft;
a blade integrally provided on the roller so as to protrude therefrom and dividing the cylinder chamber into a compression chamber and a suction chamber;
a support body swingably provided in the cylinder and having a receiving groove for receiving a tip portion of the blade in such a manner that the tip portion can move back and forth within the receiving groove; and
an oil groove provided on axial end faces of the blade and of a blade protrusion base portion of the roller from which the blade protrudes, said oil groove having a first end opened to the inner peripheral surface of the roller and a second end opened to the tip portion of the blade, said first end of said oil groove contacting said outer peripheral surface of said eccentric portion.

5,577,904

METHOD OF OPERATING A PREMIXING BURNER

Klaus Döbbeling, Nussbaumen, Switzerland, assignor to ABB Research Ltd., Zurich, Switzerland

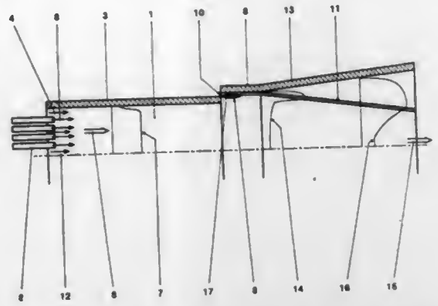
Filed Mar. 31, 1995, Ser. No. 414,319

Claims priority, application Germany, May 20, 1994, 44 17 769.0

Int. Cl.[6] F23C *5/00*

U.S. Cl. 431—8 **8 Claims**

1. A method of operating a premixing burner which comprises a mixing section with an upstream head side and a downstream



combustion section, and an ignition zone having a heated wall section to initiate self-ignition of a fuel being located intermediately between the two sections, the method comprising the steps of:
introducing a fuel and combustion air at the head side of the mixing section to form a mixture, and,
allowing the mixture to flow to the ignition zone for self-ignition of the mixture,
wherein the mixture is given a flow velocity inside the mixing section sufficiently high so that both self-ignition of the mixture and flashback from the ignition zone are prevented, and
wherein ignition of the fuel initiated by the heated wall section forms in the flow a hot wall boundary layer and a colder core flow inside the combustion section wherein a conical shaped reaction zone forms which converges in the direction of flow toward a central flow axis of the premixing burner.

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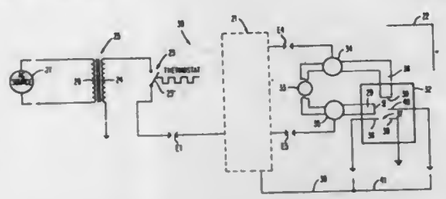
FUEL CONTROL SYSTEM, PARTS THEREFOR AND METHODS OF MAKING AND OPERATING THE SAME

Gregory J. Momber, Grand Rapids, and Dwain F. Moore, Holland, both of Mich., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 16, 1994, Ser. No. 340,527

Int. Cl.[6] F23N *5/00*

U.S. Cl. 431—66 **22 Claims**



1. In a fuel control system for a burner means and comprising ignition means for igniting fuel issuing from said burner means, and flame detecting means for detecting flame at said burner means, said flame detecting means comprising a sensing means for receiving an electrical signal means caused by flame rectification at said burner means, and an output means for cycling said signal means to said sensing means in an on and off manner in each cycle of operation of said output means, the improvement wherein said control system has modulating means for modulating the on time and the off time of said output means in each cycle of operation thereof.

5,577,906

CATALYST FOR COMBUSTION

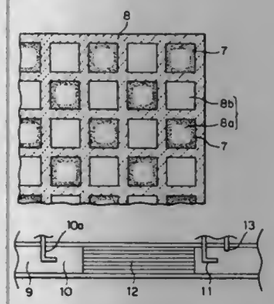
Yoshio Hanakata, Ichikawa, and Tomiaki Furuya, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Dec. 21, 1994, Ser. No. 360,883

Claims priority, application Japan, Dec. 22, 1993, 5-324374

Int. Cl.[6] F23Q *11/00*

U.S. Cl. 431—268 **11 Claims**



1. A combustion catalyst, comprising:
a honeycomb shaped durable support containing a plurality of mutually partitioned and independent combustion gas flow paths; and
an active catalyst comprised mainly of palladium and/or palladium oxide and deposited on inner wall surfaces of a portion of said combustion gas flow paths;
wherein said deposition of said active catalyst is omitted from all the inner wall surfaces of another portion of said combustion gas flow paths so that inner wall surfaces of some of said combustion gas flow paths contain the active catalyst and inner wall surfaces of other gas flow paths are free of the active catalyst.

4. A combustion catalyst according to claim 1, wherein said flow paths are partitioned in a lattice fashion and include openings of square cross-section.

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HOT GAS HEATING DEVICE

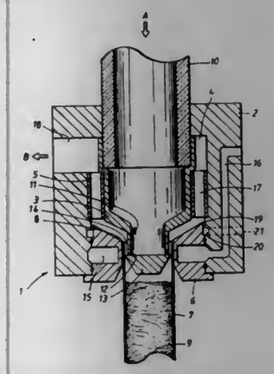
Hans Linnér, Kalmar, Sweden, assignor to Norden Pac Development AB, Sweden

Continuation of Ser. No. 204,177, Mar. 3, 1994, abandoned. This application Nov. 9, 1994, Ser. No. 336,791

Claims priority, application Sweden, Sep. 4, 1991, 9102528

Int. Cl.[6] F27B *9/00*

U.S. Cl. 432—159 **20 Claims**



1. Apparatus for heating an end portion of a tubular body having a longitudinal axis comprising a nozzle casing having a longitudinal axis and including a nozzle cavity, a heating nozzle disposed within said nozzle cavity, whereby said heating nozzle can be mounted at a predetermined location within said end portion of said tubular body, said heating nozzle including hot gas outlet means for directing a hot gas to a predetermined region of said upper end portion of said tubular body, hot gas exhaust means for exhausting said hot gas from said end portion of said tubular body, said hot gas exhaust means including pressure drop means for creating a substantially uniform pressure drop at said predetermined region of said end portion of said tubular body so as to create a uniform distribution of said hot gas on said predetermined region of said end portion of said tubular body, said pressure drop means comprising ejector means located downstream of said upper portion of said tubular body in the direction of flow of said hot gas and extending circumferentially around said longitudinal axis of said nozzle casing, said longitudinal axis of said nozzle casing being coaxial with said longitudinal axis of said tubular body, and cooling and centering means disposed exteriorly of said end portion of said tubular body for cooling and centering the outer surface of said end portion of said tubular body.

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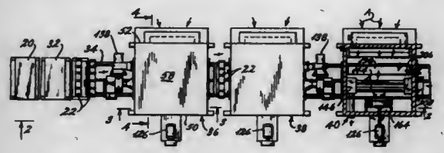
APPARATUS FOR PROCESS FOR CONTINUOUS CURING

Battle Glascock, Signal Mountain, Tenn., assignor to General Thermal, Inc., Chattanooga, Tenn.

Filed Apr. 24, 1995, Ser. No. 426,863

Int. Cl.[6] F27D *3/00*

U.S. Cl. 432—239 **29 Claims**



1. A method of treating pasted battery plates, comprising the steps of:
introducing pasted battery plates into a hydroset oven having a hydroset chamber;
transporting the pasted battery plates through the hydroset chamber along a first continuous path comprising at least one substantially vertical upward run and at least one substantially vertical downward run;
supplying treated air of an effective temperature and humidity to hydroset the battery plates into the hydroset chamber;
directing the treated air over the pasted battery plates to affect hydrosetting; and
discharging the hydroset battery plates from the hydroset oven.

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CONVEYOR BELT SYSTEM AND HEATER UTILIZING SAID SYSTEM

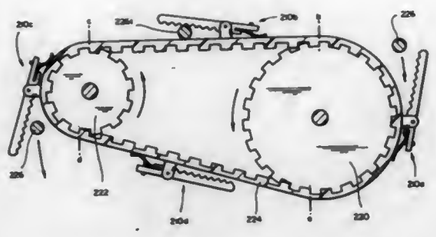
George R. Langland, Diamond Springs, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 294,769, May 23, 1994, which is a continuation of Ser. No. 66,047, May 25, 1993, which is a continuation-in-part of Ser. No. 641,416, Jan. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 641,374, Jan. 15, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 462,463

Int. Cl.[6] B27D *3/00*

U.S. Cl. 432—239 **4 Claims**

1. A method for heating a workpiece comprising:
a) conveying a gripping member in a path which describes a first arc having a predetermined radius, said gripping member being open as it traverses the art;
b) loading a workpiece into the opening present as the gripping member traverses the first arc;



c) conveying the gripping member and workpiece in a path which is substantially straight, said gripping member being closed and firmly holding the workpiece as it traverses the substantially straight path;

d) heating the workpiece as it traverses a substantially straight path; and

e) conveying the gripping member in a path which describes a second arc having a predetermined radius, said gripping member being open as it traverses the second arc to permit the exit of the workpiece.

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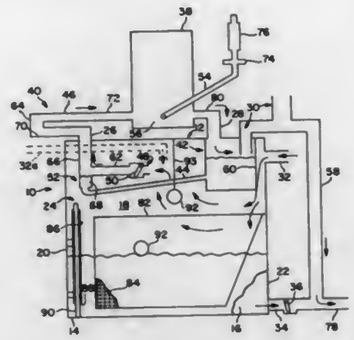
VACUUM PUMP SEAL-WATER RECYCLING AND WASTE DISPOSAL SYSTEM FOR DENTAL OPERATORIES

Robert S. Holland, 31 High Ridge Rd., Redding, Conn. 06896

Continuation-in-part of Ser. No. 61,184, May 13, 1994, abandoned. This application May 27, 1994, Ser. No. 250,025

Int. Cl.[6] A61C *17/06;17/14*

U.S. Cl. 433—92 **36 Claims**



1. A water seal recirculating system used for evacuating oral cavity effluent from dental operatories comprising a collection tank, a vacuum pump having a seal water inlet and a seal water outlet, at least one tube extending from the tank to an operatory for conveying effluent to the tank, the vacuum pump having means communicating with the tank for drawing air from the tank thereby creating a partial vacuum in the tank and establishing a vacuum pull for effluent from the operatory through the at least one conveying tube, a recirculating line which receives seal water from the seal water outlet of the vacuum pump and returning the seal water to the seal water inlet to the vacuum pump, means for directing the air drawn by the vacuum pump from the tank in heat transfer relationship with seal water in the inlet to the vacuum pump, means for augmenting the volume of recirculating seal water with tap water, and means for periodically emptying effluent collected in the tank.

5,577,911

ULTRASONICALLY DRIVEN CURETTE FOR PERIODONTAL CURETTAGE

Leonard M. Garfinkel, 3050 N. 35th St., Hollywood, Fla. 33021

Continuation of Ser. No. 608,671, Oct. 18, 1990, abandoned, which is a continuation of Ser. No. 825,883, Feb. 4, 1986, abandoned. This application Nov. 9, 1993, Ser. No. 150,263

Int. Cl.[6] A61C *1/07;3/03;3/08*

U.S. Cl. 433—119 **5 Claims**



1. An instrument for separating and voiding a diseased periodontal cavity of granulation tissue in a patient, comprising:

a periodontal curette, said curette comprising an elongated, partially curved rigid member having first and second ends, said first end having an exterior surface that is semicircular in cross section, a rounded end tip, and a unitarily formed spoon-shaped blade, said spoon-shaped blade having a continuous, sharp cutting edge forming said rounded tip, said spoon-shaped blade having a semicircular cross section, and said spoon-shaped blade having a face and lateral sides that meet to form the sharp cutting edge for cutting away said granulation tissue and sized for insertion into a patient's mouth;

means for oscillating said curette at an ultrasonic frequency rigidly connected to said curette at said second end thereof; and

means for manually grasping said oscillating means rigidly connected to and integral with said oscillating means whereby said spoon shaped blade associated with said curette may be oscillated at said ultrasonic frequency and contemporaneously inserted into a patient's mouth in the proximity of said diseased cavity so that said granulation tissue may be easily separated and removed.

5,577,912

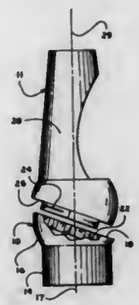
ADJUSTABLE IMPLANT FIXTURE

Steven P. Prins, 1250 Peach St., Suite M, San Luis Obispo, Calif. 93401

Filed Sep. 19, 1994, Ser. No. 308,275

Int. Cl.[6] A61C *13/12;13/225;8/00*

U.S. Cl. 433—172 **4 Claims**



1. An implant fixture for fixing a dental prosthesis to a dental implant, said fixture comprising a base receivable on the implant and a head selectively receivable on said base, said base including a body having a centerline, said body defining a cavity concentric with said centerline of said body for receiving the implant, said base further including an upper surface in a plane that is angularly related to said centerline of said body said head including a body having a centerline, said body of said head being adapted to receive a dental prosthesis thereon, said head further including a lower surface in a plane that is obliquely angularly related to said centerline of said body of said head, and means for fixing said head to said base and for fixing said fixture to the implant, said body of said head defining a hole therein, said hole extending perpendicularly to said lower surface of said body of said bead, and including a screw receivable in said hole, said hole including a spherical constriction adjacent to said lower surface, said screw including a spherical head receivable within said constriction so that said head and said screw can move relative to each other.

5,577,913

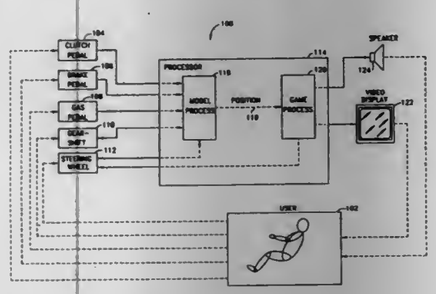
SYSTEM AND METHOD FOR DRIVER TRAINING WITH MULTIPLE DRIVER COMPETITION

Rick L. Moncrief; Stephanie J. Mott, both of San Jose; Max L. Behensky, Hayward, and Jed Margolin, San Jose, all of Calif., assignors to Atari Games Corporation, Milpitas, Calif.

Continuation of Ser. No. 80,582, Jun. 18, 1993, Pat. No. 5,354,202, which is a continuation of Ser. No. 739,906, Aug. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 561,087, Aug. 1, 1990, abandoned. This application Oct. 7, 1994, Ser. No. 319,602

Int. Cl.[6] G09B *9/04*

U.S. Cl. 434—69 **21 Claims**



1. A computerized system, comprising:

a plurality of simulated input devices for controlling a simulated vehicle;

a visual display for presenting a view of a simulated environment;

a model process responsive to said input devices for determining position information of said simulated vehicle in said simulated environment;

a first driver responsive software having a buffer, wherein the first driver responsive software is representative of a first user and responsive to said position information provided by the first user, and wherein the first driver responsive software stores in the buffer a first route of said simulated vehicle taken by the first user through said simulated environment, replays the first route on said video display, and stores at least one parameter indicative of a performance characteristic of the first route in the buffer; and

a second driver responsive software representative of a second user, wherein the second driver responsive software is responsive to said position information provided by the second user for a first time, and wherein the second driver responsive software displays a second route of said simulated vehicle taken by the second user through said simulated environment and determines at least one parameter indicative of a performance characteristic of the second route;

wherein said first route is replayed simultaneously with said display of said second route on said video display; and

wherein a best route through the simulated environment is selected by comparing route parameters indicative of the first and second routes.

5,577,914

DEVICE FOR REPRESENTING BRAILLE ON INFORMATION SIGNAL RECORDING MEDIUM AND DISC CARTRIDGE

Kenji Takahashi, Miyagi, and Hirotoshi Fujisawa, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

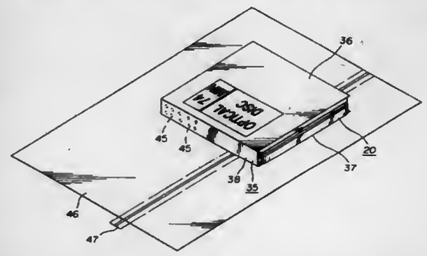
Filed Nov. 2, 1994, Ser. No. 333,336

Claims priority, application Japan, Nov. 8, 1993, 5-278463; Dec. 29, 1993, 5-355386

Int. Cl.[6] G09B *21/00*

U.S. Cl. 434—113 **9 Claims**

1. A device for representing braille points on an information



recording medium comprising:

a cartridge main body, in the form of a rectangular casing for containing the information recording medium, having a pair of rectangular-shaped planar portions and plural lateral side sections provided along sides of said planar portions interconnecting said planar portions;

sheathing means including a sheet having a free perimeter and which sheathes an outer surface of said cartridge main body, and

a braille point representing means provided on said sheathing means at a position thereof readily touched by the hand or finger which indicates the type of the information recording medium contained in the cartridge main body,

wherein said sheathing means comprises a lateral connecting web portion between first and second planar portions of said sheathing means which faces at least one of the lateral side sections of the cartridge main body; and

wherein said braille point representing means is provided on said lateral connecting web portion which is narrower than said planar portions of the sheathing means.

5,577,915

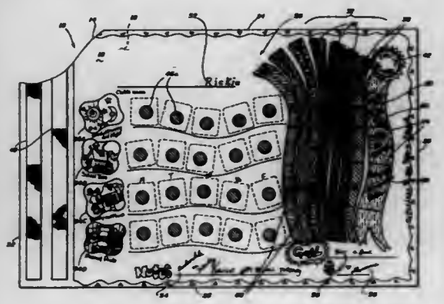
MOTIVATIONAL TASK TRACKING DEVICE

Dana H. Feldman, 12364 Oak Hollow Dr., St. Louis, Mo. 63141

Filed Oct. 18, 1995, Ser. No. 544,882

Int. Cl.[6] G09B *1/02;19/00*

U.S. Cl. 434—238 **8 Claims**



1. A motivational task tracking device comprising a plurality of cards and a sheet of material having right and left sides and top and

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bottom sides, said sheet having a chart on one surface with a plurality of ranks and files,

said ranks being on the left side of the sheet for assigning a plurality of items or activities in at least two different categories, said ranks separated by white space, each of said ranks having attachment means for attaching one or more of the cards in a selected left to right order;

said files being on the right side of the sheet, said files being divided into segments aligned with the ranks, one file for each time unit in a period with titles of the time units at the top of each file, said files separated by white space; and,

each of said cards representing an item in one or more of the categories.

5,577,916

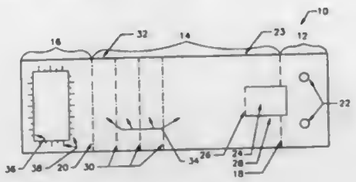
GOLF SWING WEIGHT SHIFT WINDOW TRAINING APPARATUS AND METHOD

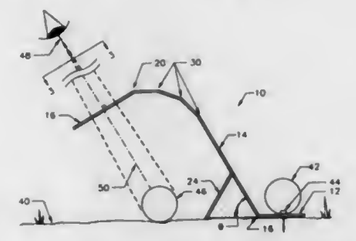
John D. Gordon, 42 Gold Star Rd., Cambridge, Mass. 02140

Filed Feb. 9, 1995, Ser. No. 385,855

Int. Cl.[6] A63B *69/36*

U.S. Cl. 434—252 **13 Claims**





13. A method for correlating visual shift of a golf ball disposed between a scale member and a substantially planar surface as line-of-sight of a user shifts relative thereto in order to improve consistency of a golf swing, the method comprising the steps of:

providing the golf swing training apparatus, the apparatus comprising:

a unitary sheet of material, the unitary sheet comprising:

a base portion including means to stabilize the base portion on the substantially planar surface;

a cantilever member including at least one fold line, the at least one fold line dividing the cantilever member into a plurality of cantilever sections which are angularly adjustable relative to each other;

a scale member including a viewing aperture defined therein and visual indicia for use in correlating visual shift of the golf ball disposed between the scale member and the substantially planar surface as line-of-sight of a user shifts relative thereto; and

a tab formed from cuts through the sheet for adjustably supporting the cantilever member within a predetermined angular range relative to the base portion;

wherein the base portion angularly adjustably adjoins the cantilever member at a fold junction between the base portion and the cantilever member, the cantilever member angularly adjustably adjoins the scale member at a fold junction between the cantilever member and the scale member, and the tab angularly adjustably adjoins a remainder of the sheet at a fold junction between the tab and the remainder of the sheet;

positioning the training apparatus, in a dimensional state, on the substantially planar surface such that the scale member is disposed along a line-of-sight between the user and the golf ball;

addressing the golf ball with a golf club;

visually aligning at least a portion of the golf ball with the scale member; and

retracting the golf club from an address position; and

impacting the golf ball with the golf club while ensuring a predetermined geometric relationship between the golf ball and the scale member at substantially the time of impact.

5,577,917

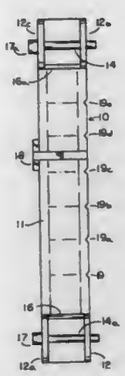
METHOD OF A MEANS FOR GENERATING A CHILDREN'S WEEKLY INTERACTIVE SCROLLING CALENDAR APPARATUS

Susan E. Mock, R.R. #3, Box 1135, Middlebury, Vt. 05753

Filed May 11, 1995, Ser. No. 439,433

Int. Cl.[6] G09B *19/00*

U.S. Cl. 434—304 **10 Claims**



1. A children's weekly interactive scrolling calendar apparatus, for use by teachers and individuals to allow children to develop their sense of time using visual and tangible means for marking its passage, comprising:

a frame;

said frame having a flat horizontal panel for viewing and marking of a calendar;

said frame further having a solid back section of said flat horizontal panel for providing a support surface for the calendar;

said frame further having extended sections at each end of said frame;

said extended sections having apertures located therein;

said frame further having rods inserted in said apertures for permitting the rolling and unrolling of said calendar as desired by the operator;

rolled parchment means for being inserted onto said rods to allow for scrolling of said rolled parchment means from the rod on one end of said frame to the opposite end thereof;

said frame further having retaining means for said rolled parchment means to maintain said rolled parchment means on said flat horizontal panel of said frame;

said frame further having a marking guide slideably attached to said flat horizontal panel of said frame for allowing the user to section off said rolled parchment means into lines for the days of the week; and

said frame further having wall attaching means on said solid back section for positioning said children's weekly interactive scrolling calendar apparatus.

5,577,918

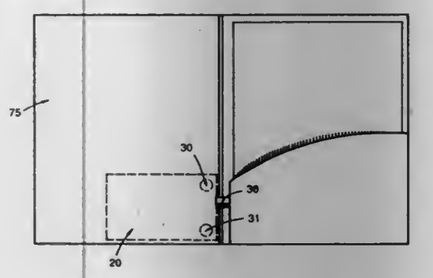
MULTI-PURPOSE, UNIVERSALLY APPLICABLE RE-RECORDABLE, AUDIBLE, MESSAGE DELIVERY SYSTEM

Christopher S. Crowell, 80 Plains Rd., Essex, Conn. 06426

Continuation of Ser. No. 14,369, Feb. 5, 1993, Pat. No. 5,387,108. This application Sep. 27, 1994, Ser. No. 312,811

Int. Cl.[6] G09B *5/04*

U.S. Cl. 434—319 **5 Claims**



1. A multi-purpose, re-recordable, audible message delivery system for enabling individuals to specialize or personalize a message for delivery to another, said system comprising

A. circuit means

a. constructed for repeatedly recording and retaining an audio signal and delivering said recorded signal,

b. responsive to a play activation signal for activating said circuit means to deliver a previously recorded audio signal, and

c. responsive to a record activation signal for enabling said circuit means to receive and record an audible message;

B. first switch means

a. movable between an off position and an on position, and

b. connected to said circuit means for transmitting thereto said play activation signal whenever said switch means is in its on position;

C. second switch means

a. movable between an off position and an on position, and

b. connected to the circuit means for transmitting thereto said record activation signal whenever the second switch means is in its on position;

D. a housing constructed for

a. supportingly retaining and protecting the circuit means, and

b. providing easy access to said first and second switch means; and

E. a foldable portfolio incorporating

a. a first portion comprising a retaining zone for supportingly holding or retaining papers or documents,

b. a second portion

1. pivotally mounted along one edge thereof to an edge of the first portion for cooperating therewith,

2. movable between a first, folded, closed position and a second unfolded open position, and

3. comprising a cavity formed therein for securely retaining the housing of the audible message delivery system enabling said housing to be easily positioned and securely retained therein for cooperating, associated use with said product; and

c. activation means cooperatively associated with the first switch means for automatically moving the first switch means from its off position to its on position in response to the pivotal movement of the second portion relative to the first portion from its closed position to its open position;

whereby a multi-purpose, re-recordable audible message delivery system is attained which is capable of being easily employed by any individual for recording any desired audible message as well as delivering the audible message upon demand whenever desired.

5,577,919

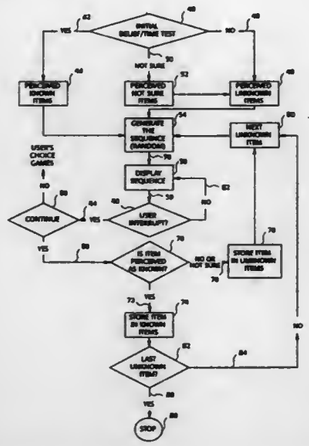
METHOD AND APPARATUS FOR AUTOMATED LEARNING AND PERFORMANCE EVALUATION

Deborah L. Collins, P.O. Box 667, Woodland Park, Colo. 80866, and Anne S. Blocker, 1422 Harbor View, Galveston, Galveston County, Tex. 77550

Continuation-in-part of Ser. No. 682,428, Apr. 8, 1991, Pat. No. 5,437,553. This application Jul. 25, 1995, Ser. No. 507,642

Int. Cl.[6] G09B *5/00*

U.S. Cl. 434—322 **12 Claims**



1. An apparatus for teaching items to a user comprising:

memory means for storing a file of said items;

visual display means for presenting each item to said user in such a way that the user's eyes do not have to track across the display;

input means for receiving a response from said user for each item; and

processor means, responsive to said user's response, for sorting said items into groups of subjectively known items and subjectively unknown items and for generating a sequence of one subjectively unknown item and a plurality of subjectively known items.

5,577,920

CHARGE COUPLING FOR ELECTRIC VEHICLE

Hikaru Itou; Sho Miyazaki; Tsutomu Tanaka; Masashi Saito; Shinichi Yamada; Shigekazu Wakata, and Eiji Saijo, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Division of Ser. No. 273,211, Jul. 11, 1994, Pat. No. 5,458,496. This application May 22, 1995, Ser. No. 446,454

Claims priority, application Japan, Jul. 12, 1993, 5-195443; Jul. 14, 1993, 5-197862; Jul. 15, 1993, 5-198957; Aug. 18, 1993, 5-226472; Aug. 20, 1993, 5-228038; Aug. 31, 1993, 5-240447; Sep. 20, 1993, 5-257650

The portion of the term of this patent subsequent to Jul. 11, 2014, has been disclaimed.

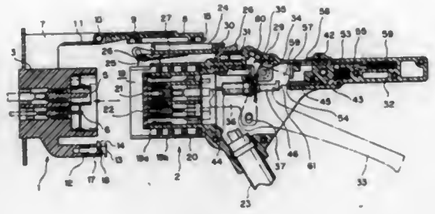
Int. Cl.[6] H01R *13/635;13/627*

U.S. Cl. 439—34 **2 Claims**

1. A charge coupling for conducting current from a charger to a battery of an electric vehicle when a supply connector connected to said charger is fully fitted to a vehicle inlet provided on said electric vehicle, said coupling comprising:

a locking device for temporarily locking said supply connector to said vehicle inlet at a half fitted position and; an end of said supply connector, adapted to connect to said vehicle inlet, being covered with a protective member.

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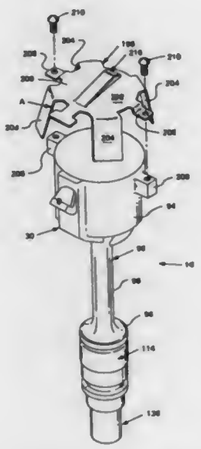


5,577,921

ELECTRICAL CONNECTOR SYSTEM FOR ELECTRICALLY CONNECTING A VOLTAGE SOURCE TO A SPARK PLUG TERMINAL

Dale A. Philyaw, West Point, and W. Peter Siems, W. Lafayette, both of Ind., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jun. 16, 1995, Ser. No. 491,207
Int. Cl.[6] H01R *11/11*
U.S. Cl. 439—125 1 Claim



1. An electrical connector system for electrically connecting a voltage source to a spark plug having a terminal end and a terminal portion, said spark plug terminal portion having an axis and sidewalls, comprising:

an electrical conductor having first and second ends portions, an axis, an opening extending into the second end portion and said opening having opening sidewalls, said first end portion being adapted to receive a voltage source, said second end portion being adapted to receive the spark plug terminal therein, said second end portion opening being of a relative size sufficient that said opening sidewalls are free from contact with the spark plug terminal portion and said spark plug terminal portion being shielded by said electrical conductor second end portion and free from all contact in the installed position of the spark plug in the electrical conductor;

a spring positioned within the conductor second end portion, said spring being in electrical conducting contact with the conductor and the spark plug terminal end, and biasing the electrical conductor in a direction away from the spark plug in the installed position; and

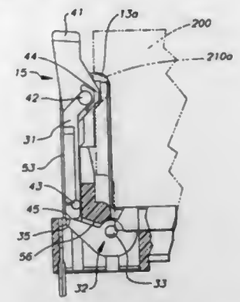
positioning means for axially biasing the electrical conductor in a direction toward the spring and the spark plug terminal end, said positioning means including a second spring.

5,577,922

CARD-EDGE CONNECTOR WITH EJECTION MECHANISM

Ikuo Enomoto, Machida, and Toshitaka Kusuhara, Yokohama, both of Japan, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 8, 1995, Ser. No. 401,544
Claims priority, application Japan, Apr. 28, 1994, 6-113549
Int. Cl.[6] H01R *13/633;23/68*
U.S. Cl. 439—157 11 Claims



1. A card-edge connector comprising:

a insulative housing having guide posts at each end that can receive a card;

a plurality of electrical contacts secured in said housing; and

an ejection mechanism comprising a push bar movable inside one of said guide posts and a cam member mounted in said housing engagable by said push bar transforming movement of said push bar into a force to a corner edge of said card to eject said card upwardly,

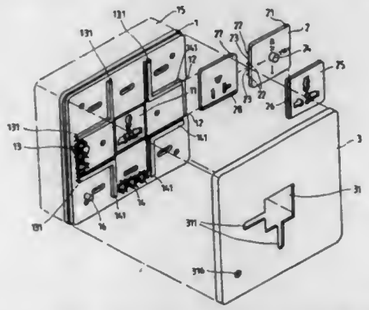
said push bar including a lever for applying force to the push bar, a pair of primary lugs and a pair of secondary lugs that engage a groove in said guide post, and a retaining device that engages a cutout notch in the card and retains the card in place.

5,577,923

125V/250V SAFETY ELECTRIC SOCKET DEVICES

Chiu-Shan Lee, No. 4, Alley 14, Lane 53, Hung-Tao St., Hsi-Chih Town, Taipei County, Taiwan

Filed Dec. 12, 1994, Ser. No. 354,254
Int. Cl.[6] H01R *29/00*
U.S. Cl. 439—170 6 Claims



1. A 125 V/250 V safety electric socket device, comprising:

a socket body having a set of L pole contact metal plates and a set of N pole contact metal plates respectively connected to 125 V and 250 V power sources, a non-fuse circuit breaker contact metal rod, L-shaped rails defining a crossed sliding way;

a cover panel covered on said socket body, having a rectangular center opening, a leftward guide slot extended from said rectangular center opening, a downward guide slot extended from said rectangular center opening, and a circuit breaker slot, which receives said non-fuse circuit breaker contact metal rod;

a slide disposed between said socket body and said cover panel and moved in said crossed sliding way, said slide being marked with a 125 V directional arrow corresponding to said downward guide slot and a 250 V directional arrow corresponding to said leftward guide slot, and having two sets of bottom contacts for connection to 125 V and 250 V power sources respectively;

a first plug panel connected to said slide at one side corresponding to said 125 V directional arrow and disposed between said socket body and said cover panel, said first plug panel having plug holes for mounting a 125 V electric plug; and

a second plug panel connected to said slide at one side corresponding to said 250 V directional arrow and disposed between said socket body and said cover panel, said second plug panel having plug holes for mounting a 250 V electric plug;

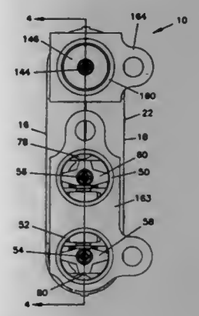
wherein when said slide is moved in the direction of said 250 V directional arrow, one set of bottom contacts of said slide are respectively electrically connected to said 250 V contact metal plates, permitting 250 V power source to be electrically connected to said socket body, and at the same time said first plug panel is moved into the operative position aligned with said rectangular center opening on said cover panel for receiving a 250 V electric plug; when said slide is moved to an OFF position with an OFF mark thereon shown through said rectangular opening on said cover panel, said first plug panel is moved out of said rectangular center opening on said cover panel, and when said slide is continuously moved in the direction of said 125 V directional arrow to carry said second plug panel into the operative position aimed at said rectangular center opening on said cover panel for receiving a 125 V electric plug, one set of bottom contacts of said slide are electrically connected to said 125 V contact metal plates, permitting 125 V power source to be electrically connected to said socket body.

5,577,924

JACK MODULE WITH INDUCTIVE MONITOR

Dominic J. Louwagie, Eden Prairie, Minn., assignor to ADC Telecommunications, Inc., Minneapolis, Minn.

Filed Jan. 9, 1995, Ser. No. 370,162
Int. Cl.[6] H01P *1/10*
U.S. Cl. 439—188 4 Claims



1. A digital signal jack comprising:

a housing;

a signal port formed in said housing and sized to receive a jack plug of predetermined dimensions;

a first signal conductor disposed within said housing and aligned with said signal port for said first signal conductor to electrically engage a jack plug upon insertion within said signal port;

a second signal conductor disposed within said housing and terminating at means for electrically connecting said second signal conductor to a coax cable;

a monitor port formed in said housing and sized to receive a jack plug;

a monitor conductor disposed within said housing and aligned with said monitor port to electrically engage a jack plug upon insertion into said monitor port;

a monitor circuit including first and second electrically conductive windings each having first and second ends electrically connected to said first and second signal conductors, respectively;

at least a third electrically conductive winding connected to said monitor conductor; and

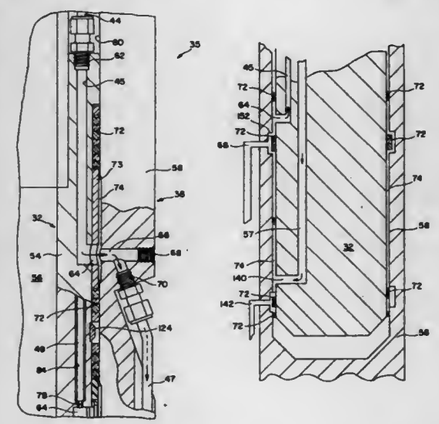
said first and second windings inductively coupled with said third winding.

5,577,925

CONCENTRIC WET CONNECTOR SYSTEM

Mark A. Schnatzmeyer, Lewisville, and Pat M. White, Carrollton, both of Tex., assignors to Halliburton Company, Dallas, Tex.

Continuation of Ser. No. 231,533, Apr. 22, 1994, abandoned, which is a continuation of Ser. No. 964,509, Oct. 21, 1992, abandoned. This application Jun. 22, 1995, Ser. No. 493,512
Int. Cl.[6] E21B *7/12*; F16L *41/02*
U.S. Cl. 439—191 18 Claims



1. A connector system for auxiliary conduits attached to well tubulars disposed downhole in oil and gas wells, said system comprising:

first and second slidably engageable well tubulars defining a coaxially longitudinal bore,

each well tubular having a circumferentially extending wall section, each well tubular containing at least a first and second connector port, spaced longitudinally apart, said ports being positioned in said first and second well tubulars so that when said well tubulars are engaged to a predetermined extent, said first port of said first well tubular is operably connected to said first port of said second well tubular, and said second port of said first well tubular is operably connected to said second port of said second well tubular; said first port of said first well tubular and said first port of said second well tubular constituting a first pair of connector ports, and said second port of said first well tubular and said second port of said second well tubular constituting a second pair of connector

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ports, said first pair of connector ports and said second pair of connector ports being spaced longitudinally apart;

means of operably connecting said first connector port of said first well tubular and said first connector port of said second well tubular whenever said first and said second well tubulars are slidably engaged to a predetermined extent, said means for operably connecting said first pair of connector ports, functioning without regard to the rotational alignment between said first and second slidably engageable well tubulars;

means of operably connecting said second connector port of said first well tubular and said second connector port of said second well tubular whenever said first and said second well tubulars are slidably engaged to a predetermined extent, said means of operably connecting said second pair of connector ports functioning without regard to the rotational alignment between said first and second slidably engageable well tubulars;

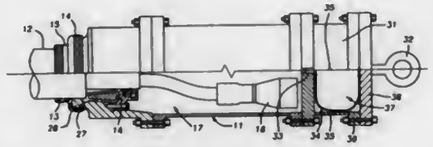
a channel formed by the walls of said first and second well tubular, said channel extending between said first and said second connector ports of said first well tubular, said channel allowing fluid communication between said first and second connector ports of said first well tubular, said channel being open only when said first and second slidably engageable well tubulars are not fully engaged, said channel thereby permitting flushing of contaminants from said connector ports prior to said well tubulars being fully engaged by transmission of a flushing fluid through said first connector port of said first well tubular, through said channel, and then through said second connector port of said first well tubular, and further wherein when said tubular members are completely engaged, said channel no longer allows fluid communication between said first connector port of said first well tubular and said second connector port of said first well tubular.

5,577,926

PRESSURE EQUALIZATION ADAPTER FOR SUBSEA CABLE TERMINATION OR JUNCTION BOX

Steven C. Cox, Shenzhen, China, assignor to Texaco, Inc., White Plains, N.Y.

Filed Dec. 5, 1994, Ser. No. 349,579
Int. Cl.[6] H01R *4/64*
U.S. Cl. 439—204 **8 Claims**



1. A pressure balanced adaptor for a cable termination box or a cable junction box for subsea use, comprising:

a fluid tight rigid hollow adaptor body member;

a means for attaching said adaptor body member, in a sealed fashion, to an armored multi-conductor cable connector having a hollow interior to communicate fluid pressure from said connector to the interior of said hollow adaptor body member;

an insulating fluid substantially filling the interior of said hollow adaptor body member and said connector interior; and

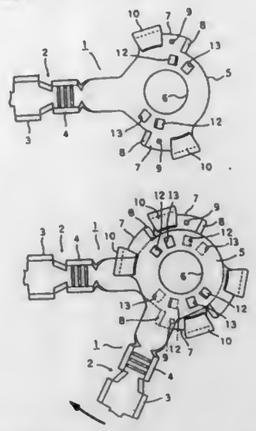
a compressible fluid reservoir carried interiorly to said adaptor hollow body member in intimate contact with external water pressure on one or more of its exterior surfaces and with said insulating fluid filling the interior of said hollow interior of said connector on another of its surfaces and being capable of transmitting said external water pressure to said insulating fluid, thereby equalizing the pressure interior of said hollow interior of said connector and said adaptor body member when the two are attached to each other.

5,577,927

ELECTRICAL TERMINAL

Naohisa Okada, and Hitoshi Okumura, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Dec. 2, 1994, Ser. No. 353,363
Claims priority, application Japan, Dec. 10, 1993, 5-071845 U
Int. Cl.[6] H01R *13/28*
U.S. Cl. 439—287 **16 Claims**



1. An electrical terminal provided with a connection region which is generally aligned with a plane and has an aperture therein, and an arm to which an end of an electrical wire is connected in use, wherein the terminal is provided with angularly spaced male and female latching members formed in the connection region, the female latching member having a portion which is offset from the plane to define a gap therewith which is open on at least one radially extending side, the male latching member being receivable into the gap via the open radial side of the female latching member of an overlying second of said terminals on relative angular movement therebetween to hold the overlying connection regions together, one of said male and female latching members having a projection which engages the other of said male and female latching members of the overlying terminal to tighten the interconnection of the terminals, said connection region further including a lock projection having a generally radial locking edge extending out of the plane thereof and an angularly spaced and corresponding lock aperture having a generally radial locking side, the locking edge of the lock projection being engageable with a locking side of a lock aperture of the overlying second of said terminals to prevent a reverse relative angular movement therebetween on engagement of said latching members.

5,577,928

HERMAPHRODITIC ELECTRICAL CONTACT MEMBER

Jean-Louis Duclos, Elancourt, France, assignor to Connecteurs Cinch, Montigny Le Bretonneux, France

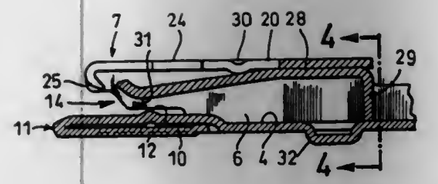
Filed Apr. 5, 1995, Ser. No. 416,628
Claims priority, application France, May 3, 1994, 94 05384
Int. Cl.[6] H01R *13/11*
U.S. Cl. 439—290 **6 Claims**

1. A hermaphroditic electrical contact member, comprising a body having a rectangular section to form a channel therein, said body comprising:

means for fixing an electrical conductor;

a floor wall extended at an end opposite said electrical conductor fixing means, said floor wall being extended at a free end by a strip bent against an outside face of said floor wall to form a male tongue;

two lateral walls formed by extensions of said floor wall, each of said two lateral walls being formed in a plane generally perpendicular to said floor wall;



a ceiling wall formed from extensions of said two lateral walls being bent to extend parallel to said floor wall in a common plane; and

a resilient contact arm bent along a lug in at least one of said extensions of said two lateral walls forming said ceiling wall to lie inside said channel, said resilient contact arm being curved so that a free end of said resilient contact arm is directed towards said male tongue extending inside said channel,

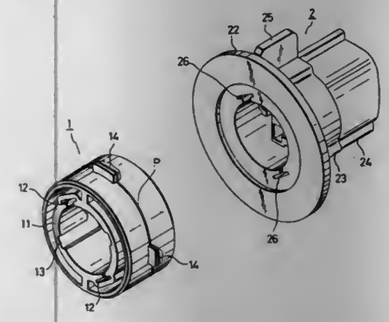
wherein said at least one of said extensions of each of said two lateral walls is joined to said resilient contact arm by said lug at a point partway along said resilient contact arm.

5,577,929

BULB SOCKET

Hisashi Sawada, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Oct. 19, 1994, Ser. No. 325,584
Claims priority, application Japan, Oct. 26, 1993, 5-291291
Int. Cl.[6] H01R *4/50*
U.S. Cl. 439—336 **9 Claims**



1. A bulb socket mounted on a partition wall of a lamp house through an elastic gasket, for receiving a bulb and electrical terminals, said bulb socket comprising:

a front casing for receiving a proximal end portion of the bulb, said front casing having engagement projections on an outer periphery of said front casing; and

a rear casing having a mounting flange on an outer periphery of said rear casing, said rear casing being molded separately from said front casing whereby said front casing is shaped to permit removal from a mold in an axial direction, and being integrally joined with said front casing at open end surfaces, said mounting flange shaped to hold the partition wall of the lamp house with said engagement projections of said front casing.

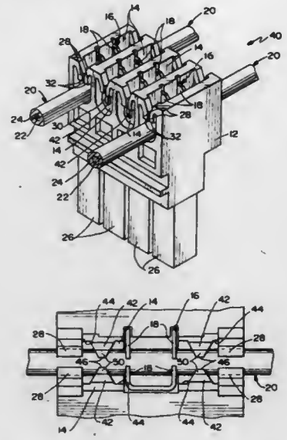
5,577,930

ELECTRICAL CONNECTOR WITH IMPROVED CONDUCTOR RETENTION MEANS

Charles Dahlem, Carol Stream; Paul Murphy, Naperville; Joseph W. Nellington, Jr., LaGrange Park; Paul A. Reisdorf, LaGrange, and Stephen A. Sampson, Downers Grove, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Jun. 28, 1995, Ser. No. 496,261
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—399 **14 Claims**

1. An electrical connector, comprising:



a dielectric housing having a conductor-receiving groove defined at least in part by a pair of side walls between which an elongated insulated conductor is receivable essentially normally of its length;

an electrical contact having an insulation displacement termination section disposed in said groove;

a pair of inwardly-directed flexible wings in the groove and spaced from and facing one another thereby providing a slot therebetween through which the conductor is movable past free ends of the wings into insulation-displacement termination with the termination section of the contact; and

a pair of retention ribs facing inwardly of the side walls of said groove essentially below the wings for embracing and thereby retaining the conductor terminated by the contact wherein said ribs include inwardly facing, conductor-engaging edges located below the free ends of the wings.

5,577,931

TWO-CHANNEL SCSI-COMPATIBLE INTERCONNECT SYSTEM AND METHOD

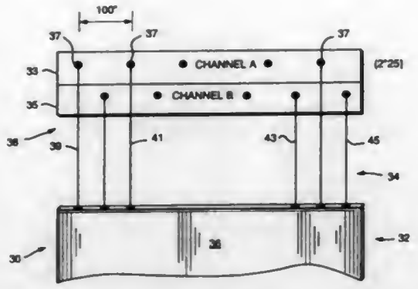
Eli Leshem, Brookline, Mass., assignor to EMC Corporation, Hopkinton, Mass.

Filed Jul. 25, 1994, Ser. No. 279,785
Int. Cl.[6] H01R *11/00*
U.S. Cl. 439—497 **12 Claims**

1. A computer data communication channel cable interconnection system, for at least doubling the channel carrying capacity of a given area on an interconnection board to which a plurality of data communication devices are connected, comprising:

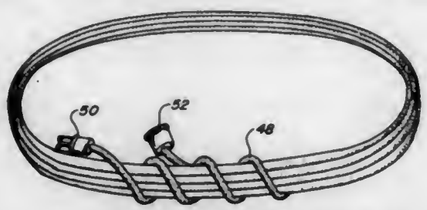
at least one data communication cable having a plurality of signal carrying wires, each of said plurality of wires separated from adjacent wires by a dielectric material, said plurality of wires for providing signal carrying capability for at least two data communication channels; and

at least one dual channel data communication connector, coupled to at least a first end of said at least one data communication cable, for connecting said at least one data



communication cable carrying said at least two data communication channels to said interconnection board in an area generally occupied by a connector coupled to one data communication channel.

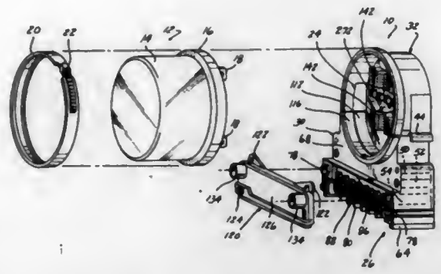
5,577,932
COILED ELECTRICAL CORD RETAINER
James W. Palmer, P.O. Box 354, Beaumont, Calif. 92223
Filed May 18, 1995, Ser. No. 443,723
Int. Cl.[6] H01B 7/06
U.S. Cl. 439—501 26 Claims



1. A coiled electrical cord retainer and stranded flexible cord assembly comprising:
(a) the retainer comprising a helical expanded compression spring segment having a first end and a second end,
(b) said spring segment having an inside diameter less than that of the stranded flexible cord,
(c) the stranded flexible cord having a plug on one end with the cord contiguous with the spring segment and the spring segment first end butted against the plug, and
(d) attaching means to affix the cord to the spring segment; wherein a combination of the cord and the spring segment forms a retainer such that wrapping the retainer around a coil of the cord secures the cord for storage.

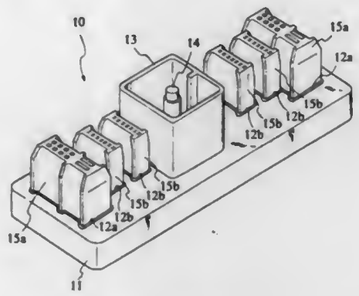
5,577,933
WATTHOUR METER MOUNTING APPARATUS WITH SAFETY SHIELD
Darrell Robinson, Highland Township; Robert O. Learmont, Walled Lake; Karl R. Loehr, Novi; Robert Goozen, St. Clair, and Michael E. Lewis, Ann Arbor, all of Mich., assignors to Ekstrom Industries, Inc., Farmington Hills, Mich.
Continuation of Ser. No. 215,915, Mar. 22, 1994, abandoned.
This application Aug. 30, 1995, Ser. No. 521,009
Int. Cl.[6] H01R 33/945
U.S. Cl. 439—517 90 Claims

1. A watthour meter socket adapter for use with a watthour meter having a plurality of blade terminals, the socket adapter comprising:
a housing, the housing including:
a watthour meter receiving portion; and



a terminal portion spaced from the watthour meter receiving portion;
a plurality of electrical terminals mounted in the terminal portion of the housing;
a plurality of electrical contacts mounted in the watthour meter receiving portion of the housings each contact receiving one blade terminal of a watthour meter in a snap-in connection;
a plurality of electrical terminals disposed in the terminal portion of the housing and receiving one of an external electrical power line conductor and an electrical load conductor connected to an external load;
electrical conductors connected to and extending between one contact and one terminal in the housing; and
means, formed in the housing, for covering substantially all of the electrical conductors and the electrical contacts in the housing, the covering means including the watthour meter receiving portion formed of first and second plates and an annular sidewall extending between the first and second plates, the first and second plates being spaced apart to define a cavity therebetween, the electrical conductors and the electrical contacts being disposed in the cavity and substantially enclosed by the first and second plates and the annular sidewall.

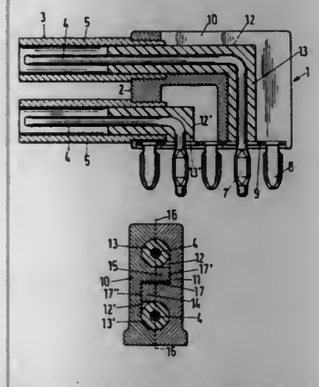
5,577,934
CONNECTOR ASSEMBLY
Sakai Yagi, and Toru Nagano, both of Shizuoka-ken, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Dec. 28, 1994, Ser. No. 365,074
Claims priority, application Japan, Dec. 29, 1993, 5-352650
Int. Cl.[6] H01R 13/46
U.S. Cl. 439—540.1 12 Claims



1. A connector assembly, comprising:
a frame having a plurality of connector accommodating holes extending in the same direction therethrough; and
at least two types of connectors classified by size inserted into said plurality of connector accommodating holes and secured therein;

wherein larger connectors are disposed at positions adjacent to a circumference of said frame, and smaller connectors are disposed at an interior position on said frame relative to said larger connectors;
wherein each said larger connector has a height, measured from a surface of said frame, which is greater than a height of each said smaller connector.

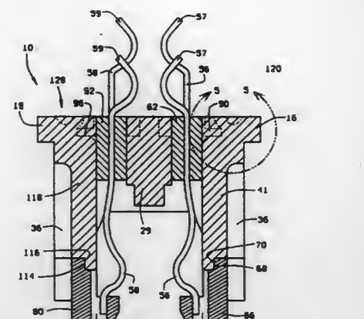
5,577,935
COAXIAL, ANGULAR CONNECTOR FOR INSTALLATION ON A PRINTED CIRCUIT BOARD
Dietmar Harting, Espelkamp; Guenter Pape, Bielefeld, and Gerd Weking, Loehne, all of Germany, assignors to Harting Elektronik GmbH, Espelkamp, Germany
Filed Jun. 13, 1995, Ser. No. 490,033
Claims priority, application Germany, Nov. 3, 1994, 44 38 872.1
Int. Cl.[6] H01R 9/05
U.S. Cl. 439—581 16 Claims



1. A coaxial connector adapted to be installed on a printed circuit board comprising two subshells which together form an electrically conductive housing means, at least two coaxial contacts in said housing means, each of said two coaxial contacts having one end formed as a plug connection and the other end formed as a terminal end for attachment to a printed circuit board, each of said coaxial contacts comprising a central wire and insulation means disposed about said central wire, each of said subshells having interior recesses in which said coaxial contacts are received, each of said two coaxial contacts being spaced from one another such that the insulation means of each coaxial contacts are separated from one another by a separation space, each of said central wires of each coaxial contacts having a central axis with the central axis of each central wire being disposed in a common plane with said common plane passing through said separation space, each of said subshells having partitions which extend into said separation space and which extend through said common plane such that the partition of each subshell overlaps one another in said separation space.

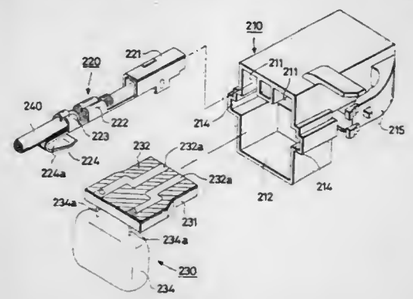
5,577,936
WAFER RETENTION IN AN ELECTRICAL RECEPTACLE
Marlyn E. Hahn, York, Pa., assignor to Berg Technology, Inc., Reno, Nev.
Filed Sep. 28, 1995, Ser. No. 535,354
Int. Cl.[6] H01R 13/648
U.S. Cl. 439—607 11 Claims

1. An electrical receptacle comprising:
a frame defining a front end and a rear end, and having an opening extending from said front end to said rear end;



a ledge formed in said opening adjacent said rear end;
a substratum adapted to be received in said opening;
a flange formed at one end of said substratum and adapted to abut said ledge;
a plurality of terminals embedded in and extending from said substratum; and
a radiused lip formed at said rear end adjacent said ledge, whereby said substratum is retained by said radiused lip engaging said flange and holding said flange against said ledge.

5,577,937
METHOD AND APPARATUS FOR CONNECTING ELECTRONIC PARTS AND TERMINALS
Katsuya Itoh; Hisashi Sawada; Masaki Okamoto, and Yoshiaki Furuta, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan
Filed Dec. 21, 1994, Ser. No. 360,450
Claims priority, application Japan, Dec. 27, 1993, 5-350073; Feb. 23, 1994, 6-051348; Feb. 24, 1994, 6-052839
Int. Cl.[6] H01R 13/66
U.S. Cl. 439—620 21 Claims



1. An electronic part-containing connector comprising:
a housing having terminal receiving holes for receiving terminals capable of electrically communicating with mating terminals, the housing further including an equipment chamber provided adjacent and separate from said terminal receiving holes, said equipment chamber having an electronic part mounted therein; and
connection members having first end portions connected to leads of said electronic part and second end portions received in said terminal receiving holes; wherein each of said connection members has a contact portion for electrical contact with at least a respective one of said terminals slidably received within each connection member.

5,577,938

Patent Not Issued For This Number

5,577,939

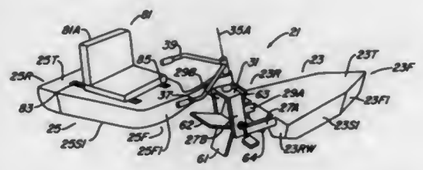
Patent Not Issued For This Number

5,577,940
WATER CYCLE APPARATUS

Constance Adler, 1297 Woodland West, Waco, Tex. 76712

Filed Feb. 23, 1996, Ser. No. 604,827
Int. Cl.[6] B63H *16/20*
U.S. Cl. 440—27 **4 Claims**

1. A water cycle, comprising:



from and rear floatable members constructed to float in water, each of said members having a front end, a rear end and a top wall,

a main shaft fixedly coupled to said rear end of said front member and extending upward above said top wall of said front member and having an upper portion defining a pivot axis,

a connecting member fixedly coupled to said front end of said rear member and extending forward and upward,

said connecting member having a forward connecting portion comprising an aperture through which said upper portion of said main shaft extends such that said front and rear members may turn relative to each other,

handle bars connected to said main shaft above said forward connecting portion for use for turning said front member relative to said rear member,

a paddle shaft,

paddles having inner ends coupled to said paddle shaft and outer ends extending outward from said paddle shaft,

support means coupled to said rear end of said front member for supporting said paddle shaft and said paddles for rotation about a paddle axis transverse to said main pivot axis,

said support means supports said paddle shaft in a position such that as said paddles rotate, said outer ends of said paddles pass below said paddle shaft and enter and then leave the water as they are rotated,

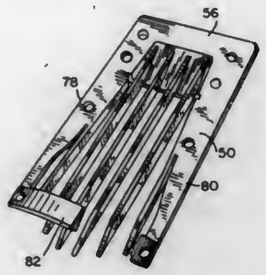
a seat coupled to said top wall of said rear member for supporting a person, and

pedals coupled to said paddle shaft for operation by a person's feet for rotating said paddle shaft and said paddles for moving said front member and hence said rear member in the water.

5,577,941
MARINE JET DRIVE WEED GRATE

Brian J. Chartier, Fond du Lac, Wis., assignor to Brunswick Corporation, Lake Forest, Ill.

Filed Aug. 17, 1995, Ser. No. 516,436
Int. Cl.[6] B63H *11/01*
U.S. Cl. 440—46 **16 Claims**



1. A marine jet drive weed grate for the water intake of a jet drive, said water intake having forward and aft ends and admitting water upwardly and rearwardly therein, said grate comprising:

a plate adapted to be mounted to said water intake and having a plurality of cantilever tines extending rearwardly toward said aft end of said water intake;

said cantilever tines having suspended aft end tips spaced from said aft end of said water intake such that weeds and debris may slide rearwardly along and then off of said cantilever tines at said aft end tips without clogging at said aft end of said water intake;

said cantilever tines having aft undersurfaces tapered upwardly and rearwardly to said aft end tips; and

said tapered aft undersurfaces of said cantilever tines are spaced above said aft end of said water intake by a gap which extends upwardly and rearwardly.

5,577,942
STATION KEEPING BUOY SYSTEM

Gregory J. Juselis, Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 28, 1995, Ser. No. 508,873
Int. Cl.[6] B63B *22/18*
U.S. Cl. 441—21 **17 Claims**

1. A station keeping buoy system comprising:

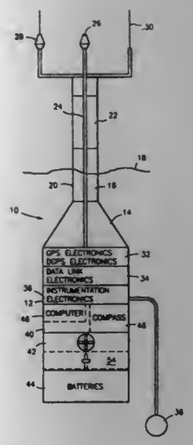
a buoy having a housing which is at least partially submerged in a body of water;

a real time position determining means having a first antenna disposed on said buoy and joined to a receiver for receiving a global positioning signal;

said real time position determining means further having a differential global positioning system antenna joined to said receiver to correct global positioning signal error;

a navigation system disposed in said buoy and joined to said real time position determining means, said navigation system including a computer programmed with information about a preselected position for said buoy and capable of determining a positional difference between the real-time position of said buoy and a preselected position for said buoy, said navigation system generating a control signal representative of said positional difference; and

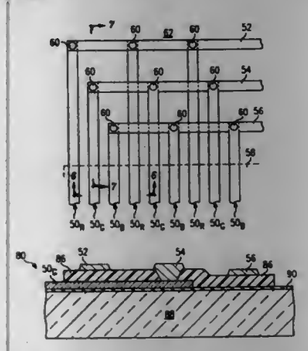
a propulsor joined to said buoy and responsive to said navigation system control signal for maneuvering said buoy to said preselected position and maintaining said buoy at said preselected position.



5,577,943
METHOD FOR FABRICATING A FIELD EMISSION DEVICE HAVING BLACK MATRIX SOG AS AN INTERLEVEL DIELECTRIC

Kenneth G. Vickers, Whitesboro; Chi-Cheong Shea, Richardson; Bruce E. Gnade, and Jules D. Levine, both of Dallas, all of Tex., assignors to Texas Instruments Inc., Dallas, Tex.

Filed May 25, 1995, Ser. No. 450,610
Int. Cl.[6] H01J *9/227;9/20*
U.S. Cl. 445—24 **15 Claims**



1. A method of fabricating an anode plate for use in a field emission device, said method comprising the steps of:

providing a transparent substrate;

depositing a layer of a transparent, electrically conductive material on a surface of said substrate;

removing portions of said layer of conductive material to leave substantially parallel stripes of said conductive material; said electrically conductive regions having an image-forming portion and an interconnect portion;

providing a solution of an opaque, electrically insulating material;

coating said surface with said opaque solution;

removing said opaque material from said image-forming portion of said conductive regions and from selected areas of said interconnect portion of said conductive regions;

providing a first bus electrically connected to a first series of said conductive regions in said interconnect portion of said conductive regions;

providing a second bus electrically connected to a second series of said conductive regions in said interconnect portion of said conductive regions;

providing a third bus electrically connected to a third series of said conductive regions in said interconnect portion of said conductive regions;

applying luminescent material of a first color on said first series of conductive regions in said image-forming portion;

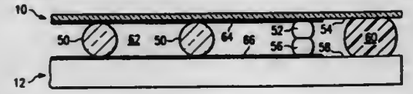
applying luminescent material of a second color on said second series of conductive regions in said image-forming portion; and

applying luminescent material of a third color on said third series of conductive regions in said image-forming portion.

5,577,944
INTERCONNECT FOR USE IN FLAT PANEL DISPLAY

Robert H. Taylor, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 235,037, Apr. 29, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 486,121
Int. Cl.[6] H01J *9/00*
U.S. Cl. 445—25 **5 Claims**



1. A method for fabricating an electronic display apparatus comprising the steps of:

providing an emitter plate having a first generally spherical protuberance attached to a conductive region on a substantially planar emitting surface;

providing an anode plate having a second generally spherical protuberance attached to a conductive region on a substantially planar display face;

placing a seal on one of said emitting surface and said display face, said seal enclosing said protuberance;

positioning the other of said emitting surface and said display face over said one of said emitting surface and said display face in parallel facing relationship and situated so as to provide alignment of said first and second protuberances;

applying a force on said anode plate against said emitter plate at an elevated temperature to deform said seal and to provide contact between said first and second protuberances, said force being sufficient to deform said protuberances; and

evacuating the space between said emitter plate and said anode plate.

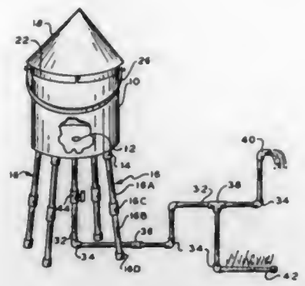
5,577,945
CHILD-TRANSPORTABLE PORTABLE TOY-ASSEMBLY SET

Michael LaBelle, 10 Longview Ave., Madison, N.J. 07940

Continuation-in-part of Ser. No. 19,891, Feb. 19, 1993, abandoned. This application Oct. 20, 1994, Ser. No. 326,392
Int. Cl.[6] A63H *33/04;29/10;3/52*
U.S. Cl. 446—75 **7 Claims**

1. A child-transportable portable toy-assembly set consisting essentially of:

a) a child-transportable portable water container toy means for intermittently containing water and for draining water from a lower portion thereof, the child-transportable portable water container means (i) including a water-containable vessel having an inner linear dimension and said lower portion, transportable portably by a child, (ii) defining hollow water-containable space within said lower portion of a sufficiently large volume adequate to produce a predetermined minor



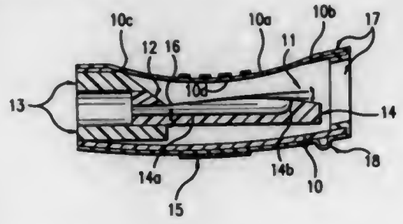
water-head pressure sufficient to assure adequate drainage flow, and concurrently sufficiently of a predetermined smallness as to be within the strength and safety capabilities of a child using such water container toy means as a part of a children's toy composite set; and (iii) a downwardly-directed aperture for drainage on a bottom-most portion of said water-containable vessel; and said child-transportable portable water container toy means further comprises an open top-forming structure;

b) a detachably mountable water-flow toy means for intermittent alternate attachment to and detachment from said bottom-most portion of said water-containable vessel at said downwardly directed aperture for channeling water from said water-containable space through said downwardly directed aperture to an exterior space located beneath said water containable vessel; and

c) detachably mounted support legs ranging in length up to said linear dimension mounted on and supporting said water-containable vessel, and downwardly-directed support-structure means on said lower portion for detachably mounting said detachably mounted support legs on said water containable vessel and for maintaining said water-containable vessel container at a predetermined elevation sufficient to provide space for the detachably mountable water-flow toy means; and

d) all water-flow toy means and support legs being sized to be contained within said water-containable vessel for ease of transport by a child.

5,577,946
GAME CALLING DEVICE HAVING ADJUSTABLE PITCH, INTENSITY, TONE AND INFLECTION
David E. Oathout, Caroga Lake, N.Y., assignor to Legend Lures, Caroga Lake, N.Y.
Filed Sep. 27, 1995, Ser. No. 534,321
Int. Cl.[6] A63H *5/00*
U.S. Cl. 446—208 **18 Claims**



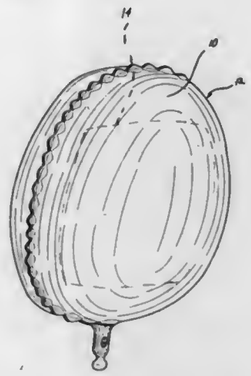
1. A grunt tube comprising:

a tubular member defining an axial direction and having a mouthpiece end that allows air to enter said tubular member, an outlet end that emits sounds and an opening in a wall of said tubular member between said mouthpiece end and said outlet end;

a reed that vibrates in response to passing air, said reed being disposed within said tubular member adjacent said mouthpiece end and said opening and having portions along the axial direction simultaneously accessible through said opening;

an elastic skin extending over said wall of said tubular member to at least partially cover said opening, the elastic skin being resilient to allow selective application of pressure through the elastic skin to at least one of the simultaneously accessible portions on said reed, wherein a user can modify sounds emanating from said outlet end produced by air passing through said mouthpiece end and past said reed by selectively applying pressure to said elastic skin.

5,577,947
SCENTED INK AND METHOD OF USE ON NOVELTY ITEMS
Gene Malloy, Kenosha, Wis.; Maureen Day, Florrisant, Mo.; Frank Fundaro, Staten Island, N.Y., and Lance Cvancara, Milwaukee, Wis., assignors to Betallic, Inc., St. Louis, Mo.
Filed Aug. 30, 1995, Ser. No. 520,958
Int. Cl.[6] A63H *3/06;33/00*
U.S. Cl. 446—220 **4 Claims**

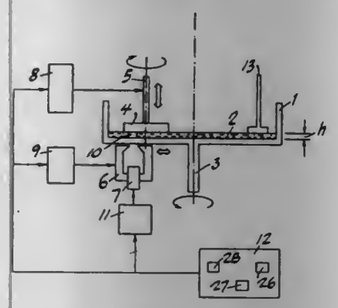


1. A fragrant scented balloon displaying a printed image thereon, the balloon comprising:

a sheeting surrounding an interior volume of the balloon, the sheeting having an interior surface within the balloon interior volume and an opposite exterior surface; and

a fragrant scented ink comprised of a mixture of at least one fragrant oil and a printing ink applied to the exterior surface of the balloon, the fragrant scented ink permeating a fragrance, wherein the mixture comprises a range of four (4) percent by weight to seven (7) percent by weight of the fragrant oil to a total weight of the mixture.

5,577,948
MAGNETORHEOLOGICAL POLISHING DEVICES AND METHODS
William I. Kordonsky; Igor V. Prokhorov; Sergei R. Gorodkin; Gennadii R. Gorodkin; Leonid K. Gleb, and Bronislav E. Kashevsky, all of Minsk, Belarus, assignors to Byelocorp Scientific, Inc., Rochester, N.Y.
Continuation of Ser. No. 71,813, Jun. 4, 1993, Pat. No. 5,449,313, which is a continuation-in-part of Ser. No. 966,919, Oct. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 930,116, Aug. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 868,466, Apr. 14, 1992, abandoned, and a continuation-in-part of Ser. No. 966,929, Oct. 27, 1992, abandoned. This application Sep. 8, 1995, Ser. No. 525,453
Int. Cl.[6] B24B *31/112*
U.S. Cl. 451—35 **22 Claims**



1. A method of finishing a workpiece surface using magnetorheological fluid, comprising:

positioning the workpiece at a clearance from a surface adapted to carry magnetorheological fluid;

introducing a flow of magnetorheological fluid through said clearance;

applying a magnetic field substantially at said clearance to create a polishing or work zone in the magnetorheological fluid, said zone forming a transient tool for engaging and causing material removal at a portion of the workpiece surface, said zone engaging said workpiece surface at an area smaller than the area of the workpiece surface to be finished; and

moving the workpiece or the zone relative to the other to expose different portions of the workpiece surface to the zone for predetermined dwell times to selectively finish said portions of said workpiece surface to predetermined degrees.

5,577,949
BUFFING METHOD
Hiroshi Matsumoto, Hirakata, Japan, assignor to C. Uyemura & Co., Ltd., Osaka, Japan
Continuation of Ser. No. 93,877, Jul. 20, 1993, abandoned. This application Aug. 21, 1995, Ser. No. 517,114
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—36 **8 Claims**

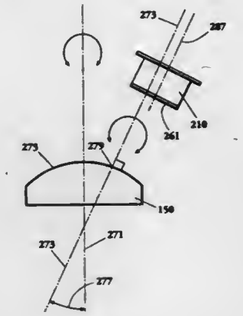
1. A method for buffing a nonferrous metal workpiece to a scratch-free mirror finish comprising the steps of:

forcing the workpiece against a buffing compound-bearing buff while rotating the buff from 100 to 1,000 rpm at a circumferential speed of up to 1,000 m/min, and

abrading the workpiece until a surface of the workpiece has a maximum surface roughness, Rmax, of less than 0.1 μm,

wherein said buffing compound is a slurry of abrasive grains in a concentration of 3 to 20% by weight and having a mean grain size of 0.3 to 2 μm dispersed in an aqueous fatty acid soap solution which has a concentration of 1 to 20% by weight fatty acid soap.

5,577,950
CONFORMAL TOOL OPERATING APPARATUS AND PROCESS FOR AN OPHTHALMIC LENS FINER/POLISHER
Kenneth L. Smith, Porum, and Stephen Kulan, Muskogee, both of Okla., assignors to Coburn Optical Industries, Inc., Tulsa, Okla.
Filed Nov. 29, 1993, Ser. No. 158,918
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—42 **22 Claims**



1. An apparatus for fining/polishing an ophthalmic lens comprising:

a spindle;

a pliant casing containing a conformable filler therein and having a flange about a rim thereof;

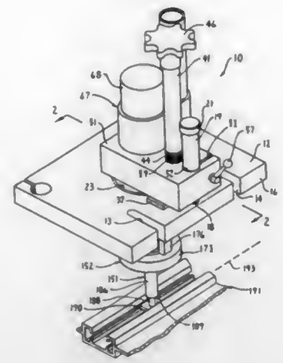
disc means eccentrically connected to said spindle for rotation therewith; and

ring means clamping said casing flange to said disc means for rotation therewith; a fining/polishing surface applied to said casing for rotation therewith, said filler contouring said fining/polishing surface to a surface of the lens to be fined/polished.

5,577,951
PROCESS AND APPARATUS FOR ABRADING EXTRUSIONS
Leonard J. Jabcon, Jr., Charleston Township, Kalamazoo County, Mich., assignor to Azon USA, Inc., Kalamazoo, Mich.
Filed Jul. 23, 1993, Ser. No. 96,695
Int. Cl.[6] B24B *7/19*
U.S. Cl. 451—51 **23 Claims**

1. A method of mechanically roughening a surface on an elongate extrusion having a central axis extending lengthwise thereof with a tool, including the steps of: effecting a continuous lengthwise movement of said elongate extrusion; orientating a tool so that a centerline thereof extends approximately perpendicular to said central axis; effecting a sequential movement of said tool into and out of engagement with said surface, and causing said tool having first means thereon for engaging and physically roughening said surface on said extrusion to both engage said surface on said continuously moving extrusion and halt any movement of said first means of said tool in a direction parallel to a direction of said lengthwise movement of said extrusion to effect the physically roughening of said surface in response to and as said extrusion moves past said tool.

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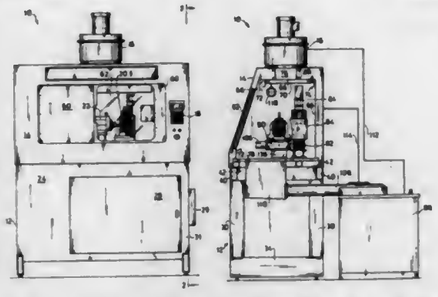


5,577,952

MULTIPLE CAGE GRINDING DEVICE

John O. Naumann, Watervliet, and David R. Glass, Scotia, both of N.Y., assignors to Constant Velocity Systems, Inc., Ballston Spa, N.Y.

Filed Jan. 29, 1996, Ser. No. 593,072
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—51 19 Claims



1. A grinding machine for regrinding a first ball cage and a second ball cage, comprising:

(a) a grinding bit comprised of a grinding tip, wherein said grinding tip comprises boron nitride and consists essentially of a steel blank coated with cubic boron nitride;

(b) a multiple cage holder wherein said first ball cage and said second ball cage are removably connected to said multiple cage holder, and wherein:

(b) 1 said first ball cage is comprised of a first substantially rectangular window, a second substantially rectangular window, a third substantially rectangular window a fourth substantially rectangular window, a fifth substantially rectangular window, and a sixth substantially rectangular window,

(b) 2 said second ball cage is comprised of a seventh substantially rectangular window, an eighth substantially rectangular window, a ninth substantially rectangular window a tenth substantially rectangular window, an eleventh substantially rectangular window, and a twelfth substantially rectangular window,

(b) 3 said first ball cage and said second ball cage are so attached to said multiple cage holder that they are vertically aligned with each other, wherein said seventh substantially rectangular window is disposed above and aligned with said first substantially rectangular window, said eighth substantially rectangular window is disposed above and aligned with said second substantially rectangular window, said ninth substantially rectangular window is disposed above and aligned with said third substantially rectangular window, said tenth substantially rectangular window is disposed above and aligned with said fourth substantially rectangular window, said eleventh substantially rectangular window is disposed above and aligned with said fifth substantially rectangular window, said twelfth substantially rectangular window is disposed above and aligned with said sixth substantially rectangular window;

(c) means for adjusting the position of said multiple cage holder in the Z axis to move said multiple cage holder up and down;

(d) means for adjusting the position of said multiple cage holder in the X axis to move said multiple cage holder left and right;

(e) means for rotating said multiple cage holder in a clockwise direction;

(f) means for rotating said multiple cage holder in a counter-clockwise direction;

(g) a lubricating fluid injection system for lubricating said first ball cage and said second ball cage; and

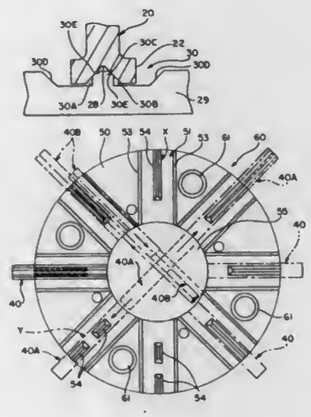
(i) spindle means for rotating said grinding bit at a speed of at least about 30,000 revolutions per minute.

5,577,953

ABRASIVE THROWING WHEEL ASSEMBLIES

William R. MacMillan, Bowdon, United Kingdom, assignor to Tilghman Wheelabrator Limited, Altrincham, United Kingdom

Filed Dec. 6, 1994, Ser. No. 350,519
Claims priority, application United Kingdom, Jul. 6, 1990, 9014994
Int. Cl.[6] B24C *5/06*
U.S. Cl. 451—95 29 Claims



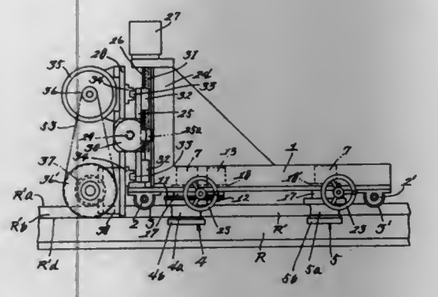
1. An abrasive throwing wheel assembly comprising a throwing wheel consisting of a pair of parallel annular side plates having an inner diameter joined by angularly-spaced spacers, a plurality of throwing blades having a tip and a radial inner end and lateral edges located between the side plates, cooperating securing formations located at or adjacent the inner diameter of the side plates and the radially inner ends of each throwing blade lateral edges which resist or prevent radially outward movement of the throwing blade relative to the side plates, each of said side plates comprises a plurality of angularly-spaced, radially-extending throwing blade locating projections, and each of said throwing blade lateral edges are provided with a longitudinal groove extending inwardly from said tip but terminating short of said radial inner end, wherein said projections engaged said grooves to provide axial spacing therebetween and defining a radial clearance passage therebetween.

5,577,954

GRINDING APPARATUS OF WELDED RESIDUE ON SEAM OF RAIL HEAD

Yosiaki Okumura, and Shinichi Okumura, both of Iwaki, Japan, assignors to Tobokugiken Industries Co., Ltd., Fukusima-ken, Japan

Filed Apr. 28, 1995, Ser. No. 430,396
Claims priority, application Japan, Mar. 10, 1995, 7-050821; Apr. 11, 1995, 7-085227
Int. Cl.[6] B24B *9/00;23/02;27/08*
U.S. Cl. 451—179 13 Claims



1. A grinding apparatus for rails for grinding a welded residue on a seam of a head portion of a rail, comprising:

a machine table capable of moving forward and backward along a rail, said machine table having a distal end portion;

an apparatus base provided on the distal end portion of said machine table;

a first support disk board mounted on said apparatus base for vertical movement;

a second support disk board having a front surface and being mounted on said first support disk board for vertical movement;

a grinding drive motor mounted on the front surface of said second support disk to provide rotation about a horizontal axis;

a cutter unit mounted on the front surface of said second support disk to provide rotation about the horizontal axis, said cutter unit being operatively connected to said grinding drive motor;

an engaging portion formed on said cutter unit and adapted to engage a head portion of said rail wherein the head portion of the rail, in cross-section, includes an upper surface, opposite arcuate surfaces, opposite side surfaces, and opposite lower surfaces; and

a plurality of grinding edges disposed on said engaging portion to grind the upper surface, one of said arcuate surfaces and one of said side surfaces of the head portion of the rail;

at least one pair of front carrier rollers and one pair of rear carrier rollers on said machine table for rolling contact on the upper surface of the head portion of the rail;

a pair of right and left pinch rollers depending from a machine table proximate each pair of said front and rear carrier rollers, said pinch rollers being constituted of an upper member formed to make rolling contact with the upper surface and the opposite side surfaces of the head portion of said rail and a lower member formed to make rolling contact with the lower surfaces of the head portion of the rail; and,

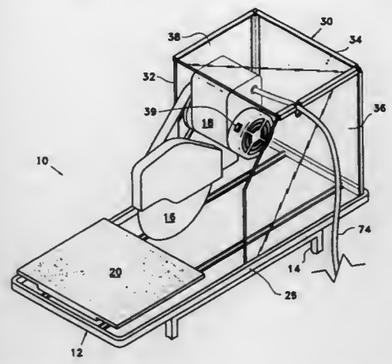
a hydraulic cylinder unit corresponding to each of said pinch rollers being mounted on said machine table and adapted to cause said upper and lower members of said pinch rollers to intimately contact the head portion of said rail.

5,577,955

PORTABLE TILE SAW SHIELD

Richard E. Voege, 2560 Jacob St., Hayward, Calif. 94541

Continuation-in-part of Ser. No. 6,368, Jan. 19, 1993, Pat. No. 5,457,915. This application Oct. 16, 1995, Ser. No. 543,384
Int. Cl.[6] B23Q *11/08;* B23D *47/00*
U.S. Cl. 451—455 16 Claims



1. In combination with a tile saw having a tray with upwardly extending peripheral walls or lips, the tray carrying a liquid bath and the tile saw including a motor driven cutting blade over which the liquid passes and a movable stage on rollers facilitating movement of the stage by an operator toward and under the cutting blade to cut a tile carried on the stage, a tile saw shield positioned to substantially prevent liquid from spraying or splashing out from the tile saw and beyond the tray, comprising:

a single, integral piece of generally rigid sheet material defining a back panel, left and rigbt side panels and a top panel,

fold lines on the single piece of material forming division lines between the back panel and the side panels and between the back panel and the top panel, said fold lines being positioned to allow folding of the single piece into an erected configuration forming a rectangular partial enclosure with the side and back panels generally vertical and the top panel generally horizontal,

panel securing means for retaining the tile saw shield in erected configuration, the panel securing means including means for quickly dismantling the rectangular partial enclosure for folding to a flattened configuration, and

means for retaining the side and back panels in the tray at generally peripheral locations in the tray.

5,577,956

HOT METAL GRINDING

Dhiraj H. Darjee, Ballston Lake, N.Y., assignor to Norton Company, Worcester, Mass.

Filed Apr. 27, 1995, Ser. No. 430,044
Int. Cl.[6] B24D *11/00*
U.S. Cl. 451—539 6 Claims

1. A coated abrasive belt having machine and transverse directions and adapted for use at elevated temperatures which belt comprises a backing material having a tensile strength in the machine direction of at least 134 kg/cm and a cyclic elongation of less than 3% at 17.9 kg/cm load at a temperature of 150° C. and, deposited on said backing material, an abrasive containing layer comprising abrasive grain and maker and size coats.

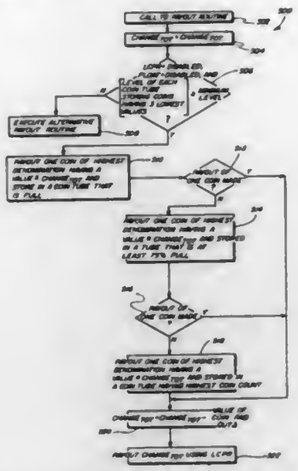
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5,577,957

COIN PAYOUT METHOD AND CONTROL APPARATUS

Ronald A. Hoormann, St. Charles County, and Joseph L. Levasseur, St. Louis County, both of Mo., assignors to Coin Acceptors, Inc., St. Louis, Mo.

Filed Mar. 13, 1995, Ser. No. 404,177
Int. Cl.[6] G07D *1/06*
U.S. Cl. 453—17 **26 Claims**



1. Apparatus for controlling change payout in a vending machine comprising a plurality of coin tubes, each coin tube having one coin denomination type stored therein, at least one counter associated with each coin tube for establishing and maintaining a count of coins stored in each coin tube, said apparatus further comprising a processor for processing data and controlling vend operations, said apparatus configured to:

(a) determine the mount of change ($CHANGE_{TOT}$) desired to be paid out during a vend operation; and

(b) determine whether predetermined conditions are satisfied for a particular vend, and if said predetermined conditions are satisfied, and before paying out any other coins in the vend operation,

(i) attempt to payout one coin having a value less than or equal to $CHANGE_{TOT}$ and from a coin tube that is full;

(ii) if one coin is not paid out at step (b) (i), attempt to payout one coin having a value less than or equal to $CHANGE_{TOT}$ and from a coin tube that is not full but has at least a predetermined quantity of coins stored therein;

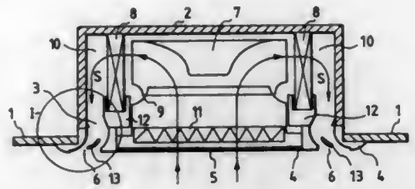
(iii) if one coin is not paid out at step (b) (i) or step (b) (ii), payout one coin having a value less than or equal to $CHANGE_{TOT}$ from a coin tube having the highest coin count.

5,577,958

WIND DIRECTION ADJUSTING DEVICE

Eriko Kumekawa, Kanagawa; Satoru Kotoh; Hiroaki Ishikawa, both of Hyogo; Takayuki Yoshida, Kanagawa; Yasuo Sone, and Katsutoshi Nishikawa, both of Shizuoka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1995, Ser. No. 531,005
Claims priority, application Japan, Sep. 26, 1994, 6-229742
Int. Cl.[6] F24F *13/072*
U.S. Cl. 454—233 **12 Claims**



1. A wind direction adjusting device comprising:

a wind speed uniforming means provided upstream of a wind direction deflecting plate located in a wind path having a nonuniform wind speed distribution from the side of high wind speed to the side of low wind speed, said wind speed uniforming means including:

a deflecting guide provided on a wind path wall on the side of the high wind speed for deflecting blown-off wind toward a wind path center portion, said deflecting guide terminating abruptly in a downstream side end portion at a location upstream of said wind direction deflecting plate;

a wind path wall portion on the side opposite to the deflecting guide, the shape of which is changed in accordance with the shape of said deflecting guide so that the sectional area of the wind path is substantially uniform; and

an enlarged wind path portion provided immediately after the downstream side end portion of said deflecting guide, said enlarged wind path portion serving to return the blown-off wind from the wind path center portion to the wind path wall downstream said deflecting guide on the side of said deflecting guide; and

a blow-off opening provided downstream of the wind path, said wind direction deflecting plate positioned adjacent said blow-off opening for deflecting the blow-off direction of the blown-off wind.

5,577,959

GAME APPARATUS AND GAME SYSTEM

Takatoshi Takemoto, and Kazunari Kawashima, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ace Denken, Japan

PCT No. PCT/JP92/01704, § 371 Date Jun. 23, 1994, § 102(e) Date Jun. 23, 1994, PCT Pub. No. WO93/12851, PCT Pub. Date Jul. 8, 1993
PCT Filed Dec. 25, 1992, Ser. No. 256,163
Claims priority, application Japan, Dec. 25, 1991, 3-343692
Int. Cl.[6] G07F *17/32*; A63F *7/02*
U.S. Cl. 463—25 **20 Claims**

1. A game apparatus having a game machine main unit for executing games with game play media comprising:

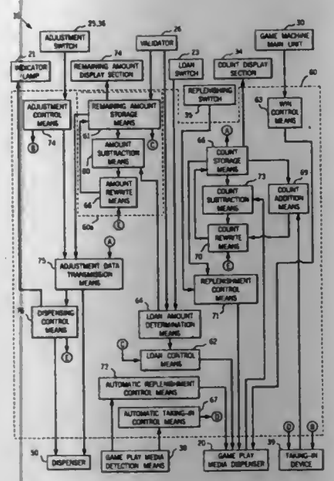
a game play media dispenser responsive to a dispensing instruction for dispensing a specified number of game play media outside said game apparatus;

a validator having a slot for receiving a currency denominated bill and determining the amount of the denomination of the bill received through the slot;

a loan switch to specify a loan amount to be spent to borrow game play media;

means for determining that all of said received amount is a loan amount if said validator does not determine that the denomination of a received bill is greater than a predetermined amount while determining that an amount specified with said loan switch is a loan amount if said validator determines that the denomination of a received bill is greater than a predetermined amount; and

loan control means for instructing said game play media dispenser to dispense game play media in a number corresponding to the loan amount determined by said loan amount determination means.

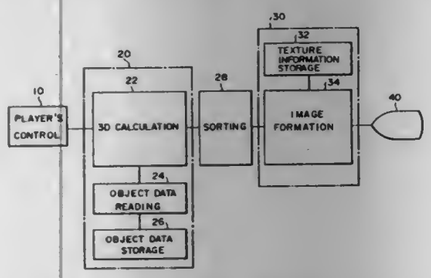


5,577,960

IMAGE SYNTHESIZING SYSTEM AND GAME PLAYING APPARATUS USING THE SAME

Kenji Sasaki, Tokyo, Japan, assignor to Namco, Ltd., Tokyo, Japan

PCT No. PCT/JP94/00943, § 371 Date Jun. 26, 1995, § 102(e) Date Jun. 26, 1995, PCT Pub. No. WO94/29813, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 10, 1994, Ser. No. 379,679
Claims priority, application Japan, Jun. 10, 1993, 5-166495
Int. Cl.[6] A63F *9/24*
U.S. Cl. 463—32 **18 Claims**



1. An image synthesizing system comprising:

3-D space processing means for perspectively projecting a 3-D object onto a projection plane of a view point coordinate system from a view point, the 3-D object representing a shape model of a plurality of shape models, the shape model being formed by a combination of polygons in a virtual 3-D space;

texture information storage means for previously storing texture information relating to images on the polygons of said 3-D object; and

image forming means coupled to the 3-D space processing means and the texture information storage means for reading said texture information corresponding to the polygons of said perspectively projected 3-D object from said texture information storage means by mapping said texture information onto the polygons for forming and displaying an image on a display,

said 3-D space processing means comprising:

an object data storage unit for storing object data of said 3-D object, said object data being represented by the plurality of shape models having different degrees of precision;

an object data reading unit coupled to said object data storage unit for selecting a series of said object data of increasing degrees of precision as said 3-D object and said view point draw closer to each other, and for reading said object data from said object data storage unit; and

a 3-D calculation unit coupled to said object data reading unit for positioning in the virtual 3-D space the object data read from the object data storage unit and corresponding to said 3-D object, and for perspectively projecting said 3-D object onto the projection plane of the view-point coordinate system,

said texture information storage means storing the texture information of each of the polygons, the polygons forming respective members of the plurality of shape models based on different degrees of precision of said 3-D object, and

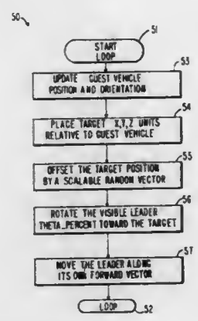
said image forming means for reading from said texture information storage means the texture information of the polygons forming the shape model of the plurality of shape models, the shape model having a precision corresponding to the polygons of said perspectively projected 3-D object, said image forming means synthesizing the image to be displayed by mapping said texture information onto the polygons.

5,577,961

METHOD AND SYSTEM FOR RESTRAINING A LEADER OBJECT IN A VIRTUAL REALITY PRESENTATION

John W. Adamczyk, Pasadena, and Scott F. Watson, Glendale, both of Calif., assignors to The Walt Disney Company, Burbank, Calif.

Filed Jun. 28, 1994, Ser. No. 267,786
Int. Cl.[6] G06F *15/00*
U.S. Cl. 463—33 **22 Claims**



1. A method of presenting a user with a virtual reality experience in a virtual world, wherein said user follows a virtual object to a goal in said virtual world, said user having a field of view, said method comprising:

projecting said virtual world in the field of view of said user;

projecting said virtual object in said virtual world;

allowing said user to select a path along which to travel through said virtual world toward said goal; and

restraining said virtual object to remain within a defined distance of said user as said user travels through said virtual world; whereby:

said virtual object appears to said user to be leading said user toward said goal.

5,577,962

VIRTUAL BULLET CHARGING DEVICE FOR GUN GAME MACHINE

Yutaka Kounoe; Yasushi Omori, and Hideyuki Kikuchi, all of Tokyo, Japan, assignors to Namco Limited, Tokyo, Japan

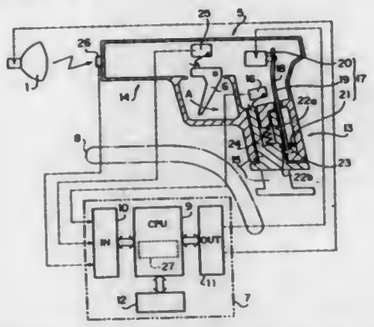
PCT No. PCT/JP94/01895, § 371 Date Jun. 20, 1995, § 102(e) Date Jun. 20, 1995, PCT Pub. No. WO95/13850, PCT Pub. Date May 26, 1995

PCT Filed Nov. 10, 1994, Ser. No. 464,640

Claims priority, application Japan, Nov. 13, 1993, 5-065464 U

Int. Cl.[6] A63F *9/02; F41J 5/02*

U.S. Cl. 463—49 **4 Claims**



1. A virtual bullet loading device used in a gun game machine wherein a player takes out and holds a model gun away from a game machine casing, comprising:

an advance and retreat member which is disposed at the bottom of the model gun and moves back and forth between a forward position where said member is advanced into the model gun and a backward position where said member is remote from the model gun and

a loading detection sensor for detecting shift of said advance and retreat member between said forward position and said backward position.

5,577,963

TORSION ISOLATOR SPRING WITH PIVOTAL ENDS

Dale A. Stretch, Novi, Mich., assignor to Eaton Corporation, Cleveland, Ohio

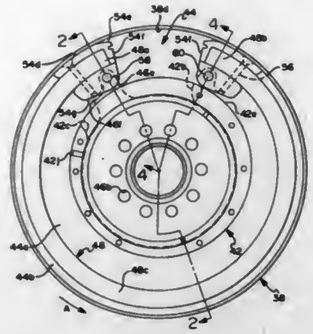
Filed May 2, 1994, Ser. No. 236,069

Int. Cl.[6] B60K *41/16*

U.S. Cl. 464—77 **8 Claims**

1. A torsion isolator including first and second drives mounted for relative rotation about a common axis; a c-shaped spring having a flexible major arc portion thereof circumscribing the axis and having first and second circumferentially spaced apart ends; attachment means for connection the first and second ends respectively to the first and second drives a radial distance from the axis; the spring for transmitting torque between the drives and for attenuating torsionals; the spring ends circumferentially movable relative to each other in response to changing values of the torque; and means for limiting maximum relative circumferential movement of the spring ends toward each other; characterized by;

the spring first and second ends respectively including first and second brackets rigidly affixed thereto;



pivot means pivotally connecting the first and second brackets respectively to the first and second drives; and

stop means operative in response to a predetermined amount of pivotal movement of the brackets effected by less than the maximum circumferential movement of the spring ends toward each other to stop further pivotal movement.

5,577,964

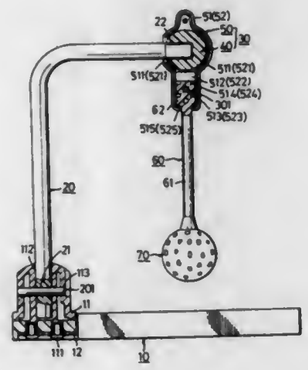
GOLF BALL TEE DEVICE

Ping Chen, No. 29, Nan-Mei St., Nan-Tun Dist., Taichung, Taiwan

Filed Dec. 12, 1995, Ser. No. 571,162

Int. Cl.[6] A63B *69/36*

U.S. Cl. 473—145 **3 Claims**



1. A golf ball tee device including a base unit, an inverted L-shaped support rod which has a vertical lower end portion fixed on said base unit and a horizontal upper end portion, and a rotatable device mounted on the upper end portion of said support rod and capable of being rotated about the upper end portion, wherein the improvement comprises:

said rotatable device including a ball body which is secured on the upper end portion of said support rod and a casing which encloses rotatably said ball body, and a ball unit which includes a golf ball and a connecting rod that interconnects securely said ball body and said golf ball in such a manner that said golf ball is located at a level above said base unit in a spaced-apart relationship;

whereby, said casing and said ball unit rotate about said ball body when said golf ball is struck.

5,577,965

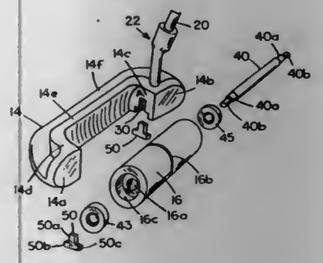
GOLF CLUB

Dennis A. Burgess, 7205 E. Stone Canyon Dr., Tucson, Ariz. 85715

Filed Feb. 12, 1996, Ser. No. 600,292

Int. Cl.[6] A63B *69/36*

U.S. Cl. 473—230 **16 Claims**



1. A golf club comprising,

a clubhead,

a rotary member supported on the clubhead and including a movable surface,

said rotary member is mounted with the movable surface thereof exposed at a front portion of said club to engage a golf ball,

said rotary member is free to rotate upon an axis at the center of the rotary member while in contact with the ball to facilitate rotation of the ball as the club moves the ball across the ground,

the clubhead has a lower portion that extends below the rotary member to hold the rotary member out of contact with the ground when the ball is struck,

the lower portion of the clubhead is positioned to prevent the ground from causing the rotary member to rotate during use so that the ball and rotary member are able to roll freely in opposite directions as the ball is moved across the ground by the rotary member even if the clubhead strikes the ground, and

rotation of the rotary member reduces frictional engagement between the roller and the ball.

5,577,966

SPORT SWING TRAINING AID

Anthony P. Duran, 135 Main St., Depew, N.Y. 14043

Continuation-in-part of Ser. No. 95,070, Jul. 20, 1993, Pat. No. 5,405,138. This application Dec. 19, 1994, Ser. No. 358,804

Int. Cl.[6] A63B *69/36*

U.S. Cl. 473—234 **8 Claims**

6. A golf swing training aid for practicing a golf club swing comprising an elongated flexible hollow rod-like member having first and second ends, a grip on said first end, a stop on said second end, a slidable sleeve on said elongated flexible hollow rod-like member for travel between said first and second ends when said elongated rod-like member is swung, said sleeve and said stop being of sufficient hardness to produce the feel and sound of the striking of a ball upon impact between said sleeve and said stop, and tone-producing means on said elongated flexible hollow rod-like member for producing a tone which varies in length and pitch in direct proportion to the velocity and duration of movement of said second end as it is swung through a ball-striking zone, said tone-producing means being located in said elongated flexible hollow rod-like member and comprising internal ribbing within said elongated flexible hollow rod-like member.



5,577,967

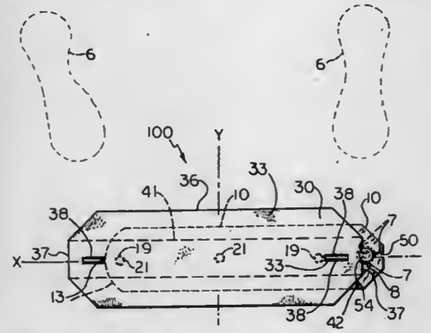
GOLF SWING PRACTICE DEVICE

Joseph M. Durso, Reston, Va., assignor to IBEX Golf L.C., Reston, Va.

Filed Oct. 10, 1995, Ser. No. 541,490

Int. Cl.[6] A63B *69/36*

U.S. Cl. 473—279 **8 Claims**



1. A golf swing practice pad comprising a flat, generally elongate base having a length and a width; means for securing the base to a practice surface; a generally elongate hitting surface having a length, and having a width wider than the width of the base; means for adjustably attaching the hitting surface to the base, said means for securing the base to a practice surface comprising a hook and loop combination material, and wherein the hitting surface is an artificial turf material.

5,577,968

GOLF CLUBS

Ronnie S. Pritchett, 2047 Domador, San Clemente, Calif. 92672

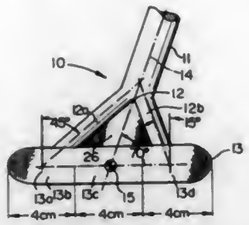
Continuation-in-part of Ser. No. 277,990, Jul. 20, 1994, abandoned. This application Oct. 24, 1995, Ser. No. 547,757

Int. Cl.[6] A63B *53/02*

U.S. Cl. 473—305 **12 Claims**

1. A golf club comprising:

a) a shaft having at one end two prongs forming an inverted V-shaped member;



b) a wall between said prongs; and

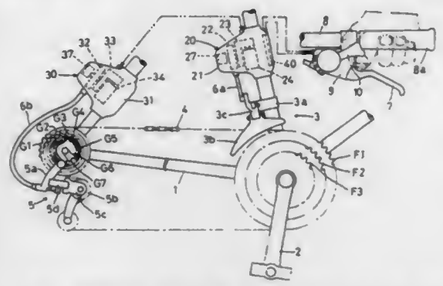
c) a head having a striking face, said shaft being affixed to said head through said V-shaped member so that the center of the shaft is longitudinally in line with the longitudinal center of the striking face and the prongs are behind a plane containing said striking face, said clubhead having a toe portion, a center portion and a heel portion, one of said prongs being connected to the clubhead along the longitudinal center of the toe portion, the other of said prongs being connected along the longitudinal center of said heel portion and the shaft having its longitudinal center aligned with the center of the center portion whereby the weight of the clubhead is toward the striking face and the clubhead is balanced.

5,577,969

SHIFTING APPARATUS FOR OPERATING FRONT AND REAR DERAILLEURS WITH A SINGLE MANUAL LEVEL

Etsuyoshi Watarai, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed Oct. 4, 1994, Ser. No. 318,282
Claims priority, application Japan, Oct. 6, 1993, 5-250268
Int. Cl.[6] F16H *59/00*
U.S. Cl. 474—78 **16 Claims**



1. In a multispeed bicycle having a plurality of front chainwheels, a plurality of rear gears, front and rear derailleur mechanisms and a shifting apparatus operable by a single manual lever to actuate the front and rear derailleur mechanisms, said shifting apparatus comprising:

a first actuating mechanism for actuating said front derailleur mechanism;

a second actuating mechanism for actuating said rear derailleur mechanism;

a shift controller responsive to operation of said manual lever to drive one of said first actuating mechanism and said second actuating mechanism to produce a speed stage, and responsive to repeated operation of said manual lever to produce all speed stages corresponding to all combinations of said front chainwheels and said rear gears; and

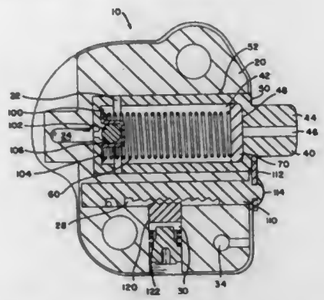
wherein only said second actuating mechanism is operated when accelerating operations are effected successively from a speed stage (minimum speed) provided by a combination of the smallest front chainwheel and the largest rear gear to a speed stage provided by a combination of the smallest front chainwheel and the smallest rear gear, and only said first actuating mechanism is operated when further accelerating operations are effected from the latter speed stage to a speed stage (maximum speed) provided by a combination of the largest front chainwheel and the smallest rear gear.

5,577,970

HYDRAULIC TENSIONER WITH A PRESSURE RELIEF VALVE

Franklin R. Smith, Cortland, and Kevin B. Todd, Freeville, both of N.Y., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Apr. 11, 1995, Ser. No. 421,366
Int. Cl.[6] F16H *7/12*
U.S. Cl. 474—110 **14 Claims**



1. A hydraulic tensioner for a wrapped power transmission device between two rotating members, comprising:

a housing with a fluid chamber, said chamber communicating with an external source of pressurized fluid,

a plunger positioned within said chamber and capable of extending therefrom for bearing against a power transmission device to regulate tension between said rotating members,

a spring member biasing said plunger in a direction extending from said chamber,

a check valve positioned to allow the transfer of pressurized fluid from said source of pressurized fluid to said chamber and to block the transfer of fluid from said chamber to said source of pressurized fluid,

a pressure relief valve having a conduit in fluid communication with said chamber to permit release of fluid from said chamber under specified pressure conditions, said pressure relief valve having a reed valve member and a flat spring member, said flat spring member being held against said reed valve member, said flat spring member being moveable away from said reed valve member to permit fluid communication through said pressure relief valve under said specified pressure conditions.

5,577,971

METHOD OF PLAYING A COMBINATION GAME OF BOWLING AND RANDOM NUMBER MATCHING

Jonathan P. File, 210 S. Washington Ave., Louisville, Colo. 80027

Continuation-in-part of Ser. No. 922,721, Jul. 31, 1992, Pat. No. 5,449,326, which is a continuation-in-part of Ser. No. 242,309, May 13, 1994. This application Jun. 7, 1995, Ser. No. 477,196
Int. Cl.[6] A63D *3/00*
U.S. Cl. 473—54 **5 Claims**

1. A game method of play comprising the steps of:

randomly arranging a group of different numbers into a call order;

displaying said call ordered arrangement of different numbers to all participants in said game;

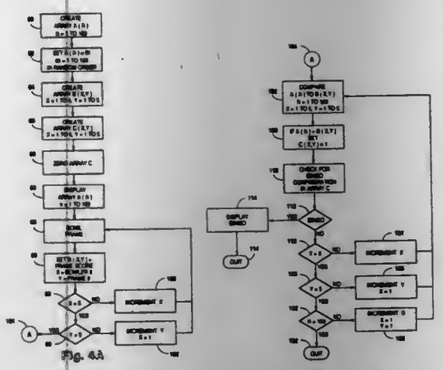


Fig. 6A

selecting a number of participants to bowl together as a team and an order in which said participants are to bowl on said team;

selecting a number of bowling frames to be bowled by each of said participants on each of said teams, said number of frames equal to said number of participants on said team;

each of said participants in turn bowling a bowling frame and accumulating a score according to standard rules of bowling on a standard bowling scoring grid made up of cumulative frame scores for each of said participants on said team;

repeating said step of each of said participants in turn bowling a bowling frame until said selected number of frames have been bowled by each of said participants on said team;

comparing one at a time, in order of arrangement, each of said call ordered numbers with individual cumulative frame scores in each of said bowling frames for each of said game participants;

matching each of said individual cumulative frame scores with said call ordered numbers, a match occurring when an individual cumulative frame score in a specific frame, for a specific participant, equals a sequentially selected one of said call ordered numbers; and

determining when a first one of a pre-identified pattern of matches occurs, said pattern of matches being an orderly grouping of matched frames on said scoring grid;

wherein said first one of a pre-identified pattern of matches constitutes a winning arrangement for a particular game of said game method of play.

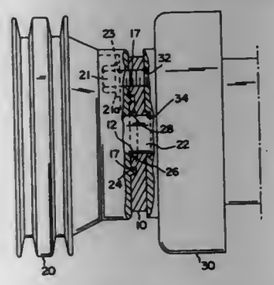
5,577,972

PULLEY SPACER FOR RACING ENGINES

Roger C. Herr, 106 Baynard Blvd., Wilmington, Del. 19803

Filed Apr. 19, 1995, Ser. No. 424,206
Int. Cl.[6] F16H *7/24*
U.S. Cl. 474—150 **12 Claims**

1. For use in combination with internal combustion racing engines having a pulley spacer and a balancer, a pulley spacer comprising:



a disc of a predetermined thickness having an obverse face and a reverse face, said disc including a centrally located aperture through said disc;

said obverse face including a groove of a predetermined width concentric with said aperture to receive a pulley flange with an interference fit; and

said reverse face including a circular flange of a predetermined width concentric with said aperture to engage in a balancer groove to provide an interference fit.

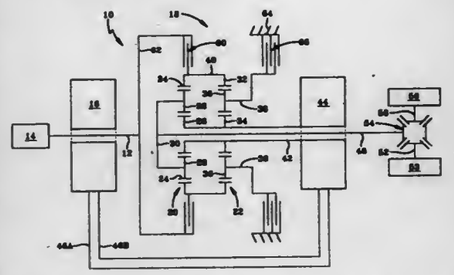
5,577,973

TWO-MODE, SPLIT POWER, ELECTRO-MECHANICAL TRANSMISSION

Michael R. Schmidt, Carmel, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 20, 1995, Ser. No. 504,979
Int. Cl.[6] F16H *3/72*
U.S. Cl. 475—5 **14 Claims**

1. A transmission comprising:



a compound planetary gear set having two planetary gear sub-sets;

each said planetary gear sub-sets having an inner gear member and an outer gear member, each of which meshingly engage a plurality of planet gear members;

an input shaft;

means selectively to connect said input shaft to one gear member of each said planetary gear sub-set;

a motor;

means selectively to connect said motor to a second gear member of each said planetary gear sub-set;

an output shaft;

said output shaft being connected to the third gear member of said first planetary gear sub-set; and,

means selectively to connect the third gear member of said second planetary gear sub-set to ground.

5,577,974

CONTROL FOR A MOTOR VEHICLE CHANGE-SPEED GEARBOX AUTOMATIC SELECTOR DEVICE

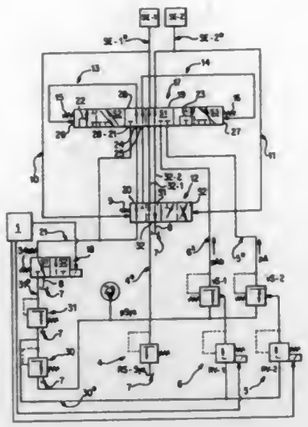
Bernd Bertsche, Tuttlingen, and Ludger Kortenjann, Fellbach, both of Germany, assignors to Mercedes-Benz AG, Germany

Filed Sep. 8, 1995, Ser. No. 525,094
Claims priority, application Germany, Sep. 15, 1994, 44 32 850.8
Int. Cl.[6] F16H *61/28;61/06*
U.S. Cl. 475—120 **8 Claims**

1. An arrangement for controlling an automatic selector device of a change-speed gearbox of a motor vehicle, comprising

two selecting elements, each comprising a selecting actuator operatable by pressure medium and usable for engagement and an associated frictional selecting connection (clutch or brake) disengageable again by spring force,

a first pressure system configured to be subjected to a system pressure,



a second pressure system configured to be subjected to a controllable working pressure for an engaging one of the selecting elements,

a third pressure system configured to be subjected to a controllable outlet pressure for a disengaging one of the selecting elements, a return line leading to a pressure-relieved collecting tank,

a first multi-way valve arrangement configured to be switchable between two positions by control pressure in interaction with a spring return and to which both the first pressure system subjectable to system pressure and the return line are connected,

a second multi-way valve arrangement configured to be actuatable into at least two positions by control pressure in interaction with a spring return and which is connectable to the first multi-way valve arrangement, to the selecting elements and to the second and third pressure systems and is arranged to assign the pressure systems to the selecting elements such that, in dependence on an electronic control unit for determining the action of the control pressures with respect to time and the respective pressure level of the pressure systems,

(i) in a first non-transient selector condition, one selecting element is connected to the first pressure system subjectable to system pressure and the other selecting element is connected to the return line,

(ii) in a second transient selector condition, the selecting element connected in the first selector condition to the first pressure system subjectable to system pressure is connected to the third pressure system for the outlet pressure and the other selecting element is connected to the second pressure system for the working pressure,

(iii) in a third non-transient selector condition, the selecting element connected in the first selector condition to the first pressure system subjectable to system pressure is connected to the return line and the other selector element is connected to, the first pressure system subjectable to system pressure,

(iv) in a fourth transient selector condition, the selecting element connected in the first selector condition to the first pressure system subjectable to system pressure is connected to the second pressure system for the working pressure and the other selecting element is connected to the third pressure system for the outlet pressure, the second multi-way valve arrangement, which is operatively connected to the selecting elements, being in a position maintained by spring returns in the first selector condition, and a connected electromagnetically actuatable control valve being held in the deenergized condition by the control unit, and the second multi-way valve arrangement is configured to be switchable to a position thereof associated with the fourth selector condition by the control unit by outputting of an electrical control signal for the connected electromagnetic control valve,

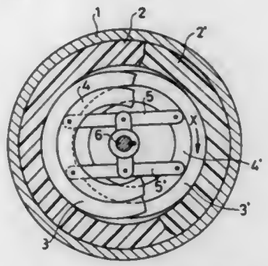
wherein the control pressure for the first multi-way valve arrangement, which is operatively associated with first the pressure system subjectable to system pressure and to the return line, is one of equal to and proportional to a difference between pressures in the selecting elements, in the second and fourth transient selector conditions, the working pressure is controllable with a rising characteristic from a low initial value and the outlet pressure is controllable with a falling characteristic from a high initial value, the working pressures intersecting with variations thereof with respect to time, the first multi-way valve arrangement is subjected to control pressure in a direction of the pressure difference that, at the end of the transient selector condition, the first multi-way valve arrangement is in a position in which the selecting element connected to the second pressure system for the working pressure during the transient selector condition is connected in a subsequent non-transient selector condition to the first pressure system subjectable to system pressure, and, in a deenergized and unpressurized condition, the multi-way valve arrangements are held continually by respective spring returns in that position in which a predetermined one of selecting elements is connected to the first pressure system subjectable to system pressure, and the second multi-way valve arrangement which is associated with the selecting elements is actuatable by the control pressure of the connected electromagnetic control valve into a position thereof corresponding to the second transient selector condition and, by the spring returns into a position thereof corresponding to the third non-transient selector condition.

5,577,975

VARIABLE SPEED CHANGING GEAR

Mituo Kitugawa, 1-10-302, Tajima 6-chome, Urawa-shi, Saitama-ken, Japan

Filed Sep. 12, 1994, Ser. No. 305,215
Claims priority, application Japan, Sep. 28, 1993, 5-241404
Int. Cl.[6] F16H *15/00;17/00*
U.S. Cl. 475—166 **2 Claims**



1. A variable speed changing gear, comprising:

a cylindrical shell frame (**1**);

an internal friction ring (**2**) made of elastic material and fixedly mounted on the interior surface of the cylindrical shell frame (**1**);

a cycloid wheel (**3**) disposed interiorly of the friction ring (**2**) and rotatable by contact therewith, thereby to circulate along the interior surface of friction ring (**2**) with a variable circulating radius;

an input shaft (**7**) disposed on the centerline defined by the friction ring (**2**) and adapted to rotate the cycloid wheel (**3**);

an offset coupling (**8**) mounted on the cycloid wheel (**3**), the input shaft (**7**) being attached to the offset coupling (**8**) to rotate the cycloid wheel (**3**);

a retainer (**4**) for rotatably supporting the cycloid wheel (**3**); and

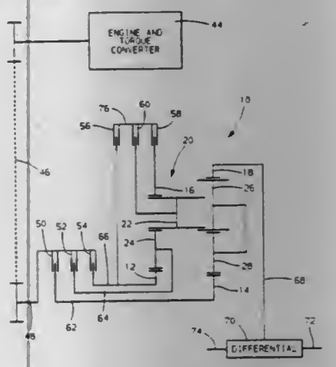
an output shaft (**6**) provided on the centerline, the output shaft (**6**) being linked with the retainer (**4**) by a pair of parallel links (**5**, **5'**) for rotating the output shaft (**6**) by the circulation of the cycloid wheel (**3**), whereby the circulating radius of the cycloid wheel (**3**) is changeable when the parallel links (**5**, **5'**) are moved relative to the output shaft (**6**).

5,577,976

POWER TRANSMISSION

Raymond J. Haka, Brighton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1995, Ser. No. 522,006
Int. Cl.[6] F16H *3/58*
U.S. Cl. 475—280 **9 Claims**



1. A planetary power transmission comprising:

a planetary gear set having a first sun gear;

a first ring gear axially aligned with said first sun gear;

a second sun gear;

a second ring axially aligned with said second sun gear;

a planet carrier having a central radially extending web, said first sun gear and ring gear being axially disposed on one of said web and said second sun gear and ring being axially disposed on another side of said web;

a plurality of pinion gear sets each comprising a first pinion gear rotatably mounted on said one side of said web in meshing relation with said first sun gear;

a second pinion gear rotatably mounted on said other side of said web in meshing relation with said second ring gear;

a third pinion gear rotatably mounted on said other side of said web in meshing relationship with said second pinion gear and said second sun gear;

a fourth pinion gear rotatably mounted on said carrier extending to both sides of said web and meshing with said first ring gear and said first pinion gear and said third pinion gear; and

a plurality of selectively engageable torque transmitting means for selectively controlling the planetary gear set to establish a plurality of gear ratios between said input shaft and an output shaft of the power transmission.

5,577,977

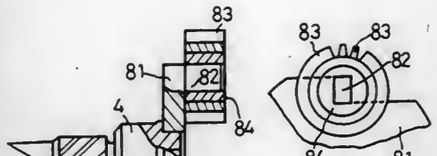
STARTER EQUIPPED WITH PLANETARY GEAR REDUCTION MECHANISM

Yasuhiro Nagao, Okazaki; Sadayoshi Kajino, Nagoya, and Tsutomu Shiga, Nukata-gun, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 6, 1994, Ser. No. 353,984
Claims priority, application Japan, Dec. 22, 1993, 5-323903
Int. Cl.[6] F02N *15/02;* **F16H** *57/08*
U.S. Cl. 475—331 **4 Claims**

1. A starter equipped with a planetary gear reduction mechanism comprising:

a housing;



a sun gear provided around an external periphery of one end of an armature shaft of a starter motor;

a drive shaft supported rotatably in said housing along the same axial center as said armature shaft, one end of said drive shaft being disposed proximate to said one end of said armature shaft;

a pinion gear installed rotatably and axially slidably on said drive shaft;

a planetary gear shaft support member having planetary gear shafts protruding in parallel with said armature shaft, said planetary gear support member being inserted and secured on said one end of said drive shaft;

planetary gears supported rotatably by said planetary gear shafts in engagement with said sun gear; and

an internal gear fixed to said housing and engaged with said planetary gears,

wherein said planetary gear shafts have a generally square cross section and are formed integrally with said planetary gear shaft support member,

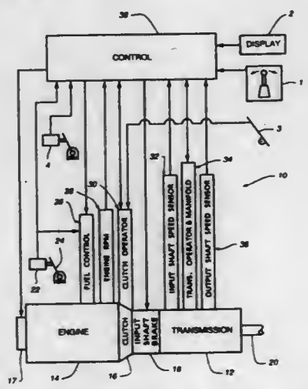
wherein bushings are interposed between the planetary gear shafts and the planetary gears and each of the bushings has a generally rectangular hole fixedly inserted onto the corresponding one of the planetary gear shafts and a circular outer circumference supporting a corresponding one of the planetary gears slidably thereon for sliding rotation of the planetary gear around the bushing.

5,577,978

START RATIO SELECTION SYSTEM AND METHOD

Anthony Stasik, Coppull, and John E. Stainton, Chorley, both of England, assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 28, 1995, Ser. No. 506,988
Claims priority, application United Kingdom, Aug. 5, 1994, 9415861
Int. Cl.[6] B60K *41/24*
U.S. Cl. 477—78 **6 Claims**



1. A method of controlling a semi-automatic mechanical change gear transmission system (**10**) comprising a fuel throttle control (**24**), a fuel throttle controlled engine (**14**), a multi-speed change

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gear mechanical transmission (12) having a lowest grouping of gear ratios (first–fifth) suitable for start from stop operation and having a specific ratio within said lowest grouping of ratios determined to be the predetermined start ratio, a friction master clutch (16) interposed the engine and transmission, a master clutch control (3), a manually operated shift selection lever (1) movable in a first direction from a centered position to select upshifts and in a second direction from said centered position to select downshifts, a central processing unit (38) for receiving input signals indicative of transmission input shaft rotational speed, of vehicle speed and of operation of said shift selection lever and for processing same according to predetermined logic rules to issue command output signals to non-manually controlled operators including a clutch operator (30), a fuel throttle control operator (26), and a transmission operator (34), said processing unit sensing operation of said manual shift selection lever including the direction of movement thereof and the number of displacements of said lever within a predetermined period of time from said centered position, and, in a first mode of operation, determining the transmission gear ratio selected by the operator to be shifted directly into from the currently engaged ratio by assuming each repetition of displacement from the centered position of said shift selection lever in a given direction indicates operator selection of a change of one additional consecutive ratio in said direction; said method comprising:

providing said central processing unit with a signal indicative of disengagement of the friction master clutch; and

automatically selecting operation in a second mode of operation if (i) vehicle ground speed is less than a reference value after exceeding said reference value, (ii) the master clutch is disengaged and (iii) said selection lever has not been displaced from the centered position thereof after said vehicle ground speed became less than said reference value;

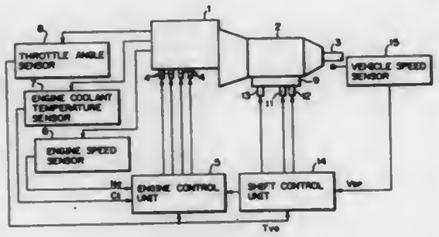
in said second mode of operation, interpreting a single displacement of said shift selection lever from the centered position thereof in said first direction as a request for a direct shift from an engaged gear ratio into said predetermined start ratio, and interpreting a single displacement of said shift selection lever from the centered position thereof in said second direction as a request for a direct shift from an engaged gear ratio into neutral.

5,577,979

SHIFT SHOCK SUPPRESSING SYSTEM FOR AUTOMOTIVE POWER TRAIN

Naonori Iizuka, Fuji, Japan, assignor to Jatco Corporation, Fuji, Japan

Filed Feb. 13, 1995, Ser. No. 387,122
Claims priority, application Japan, Feb. 15, 1994, 6-018334
Int. Cl.[6] B60K *41/04*
U.S. Cl. 477—109 **9 Claims**



1. A shift shock suppressing system for an automotive power train including an engine and an automatic transmission mounted on a vehicle, comprising:

shifting control means for performing shift control for said automatic transmission depending upon an operating condition of the engine and a traveling condition of the vehicle;

torque varying means for varying an output torque of the engine;

shifting state detecting means for detecting on-going shifting state of the automatic transmission controlled by said shift control means;

shift shock suppression control means for outputting a command lowering of the output torque of said engine to said torque varying means when initiating of down-shifting is detected by said shifting state detecting means, and when a first predetermined period is elapsed from detection of initiation of down-shifting, and maintaining the command for a second predetermined period;

arithmetic means for deriving a variation rate of an engine speed after initiation of down-shifting;

judgement means for judging whether a down-shifting is completed on the basis of an input from said arithmetic means;

measuring means for measuring a shifting period as a period from initiation of down-shifting to completion of down-shifting as judged by said judgement means; and

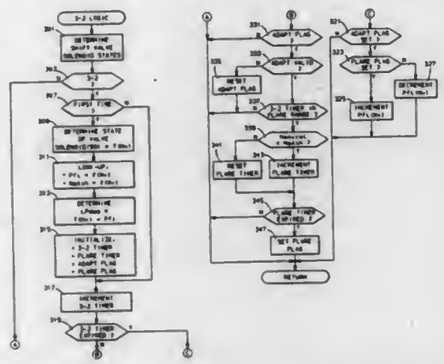
learning control means for modifying said first predetermined period with a value derived by subtracting a preliminarily set third predetermined period from said shifting period derived by said measuring means.

5,577,980

SHIFT FLARE CONTROL

William J. Vukovich, Ypsilanti, and Melissa M. Koenig, Ann Arbor, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 30, 1995, Ser. No. 497,689
Int. Cl.[6] F16H *61/06*
U.S. Cl. 477—144 **4 Claims**



1. A method for controlling flare in a vehicular drivetrain during a downshift from a first ratio to a second ratio, said drivetrain including an engine having an output member drivingly coupled to an input member of a multi-ratio transmission for providing an input speed thereto, said downshift including releasing a friction element associated with the first ratio and increasing an on-coming fluid pressure to engage a second friction element associated with the second ratio, the method comprising the steps of:

releasing the first friction element to thereby allow the engine to increase the input speed toward a synchronous speed corresponding to the second friction element;

increasing the on-coming fluid pressure at a predetermined rate to progressively engage the on-coming friction element;

monitoring acceleration of the engine to detect a negative acceleration indicative of a flare condition; and

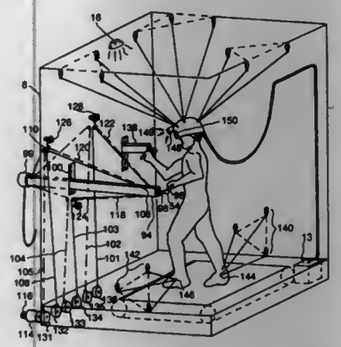
when a flare condition is indicated, incrementing the predetermined rate of on-coming fluid pressure increase for use in subsequent downshifts.

5,577,981

VIRTUAL REALITY EXERCISE MACHINE AND COMPUTER CONTROLLED VIDEO SYSTEM

Robert M. D. Jarvik, 124 W. 60th St., New York, N.Y. 10023

Continuation-in-part of Ser. No. 183,522, Jan. 19, 1994, abandoned. This application Aug. 4, 1995, Ser. No. 513,671
Int. Cl.[6] A63B *24/00*
U.S. Cl. 482—4 **6 Claims**



1. An interactive computer controlled exercise system adapted to apply multiple forces with motion to the body of the user corresponding with the computer generated visual images of an environment presented on a display, said system comprising:

a movable powered structure means having movable components connected to a fixed support frame means adapted to apply forces to the body of the user in conjunction with forces applied by the user to the movable components of said movable powered structure means, so as to provide health benefit to the user during exercise with said movable components of said movable powered structure means;

means for sensing the force and position of said movable components of said movable powered structure means and forces applied thereto by the user and to provide the sensed signals to a computer means;

means for detecting and measuring the position and orientation of the user's head and to provide the detected signals to said computer means;

powered actuator means for altering the three dimensional configuration and motion of said movable powered structure means and for applying forces of variable magnitude and direction to the body of the user in conjunction with corresponding forces applied by the user to said movable components of said movable powered structure means;

visual display means for presenting virtual images superimposed over the position of said movable powered strucnure means in real time maintained in visual perspective from the vantage point of the user when the user moves, said virtual images comprise a pictorial representation of a virtual environment with virtual objects oriented and movable relative to the user such that if real objects existed in place of said virtual environment, contract between said virtual objects and the user would apply forces to the user's body similar to the forces applied to the user's body by said movable components of said movable powered structure means; and

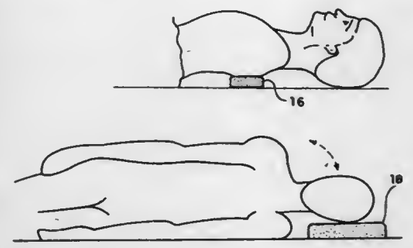
said computer means, responsive to the sensed signals from said sensing means and the detected signals from said detecting means, for calculating said three dimensional configuration and motion of said movable powered structure means and forces applied thereto by the user and the position of the user's head in relation to said fixed support frame means, thereby to control said powered actuator means and said visual display means.

5,577,982

METHOD OF PERFORMING INCREMENTAL CONTROLLED MUSCULAR MOVEMENTS OF THE HEAD AND NECK MUSCLES FOR THE RESTORATION OF LOSS OF FUNCTION

David D. Wells, and Virginia M. Wells, both of 1061 NW. 78 Ave., Plantation, Fla. 33322

Filed Oct. 3, 1995, Ser. No. 535,591
Int. Cl.[6] A63B *23/025*
U.S. Cl. 482—10 **5 Claims**



1. A method of treating the loss of function of the head and neck muscles including multiple graduated levels of a series of exercises comprising:

supplying a planar surface;

supplying a plurality of firm support elements, each element with a different thickness;

for each graduated level of exercise,

performing a first series of head and neck lifts while the patient is in the supine position on the planar surface and controlling the degree of movement of the head and neck lifts by inserting a firm support element of the desired thickness under the patient's shoulder area if necessary;

performing a second series of head and neck lifts while the patient is on their left side in a lateral position on the planar surface and controlling the degree of movement of the head and neck lifts by inserting a firm support element of the desired thickness under the patient's head if necessary;

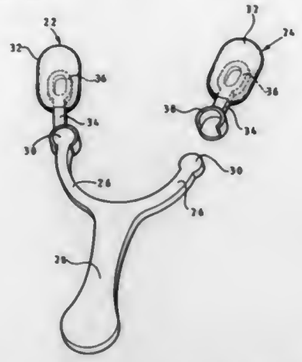
performing a third series of head and neck lifts while the patient is in the prone position on the planar surface and controlling the degree of movement of the head and neck lifts by inserting a firm support element of the desired thickness under the patient's shoulder area if necessary;

performing a fourth series of head and neck lifts while the patient is on their right side in a lateral position on the planar surface and controlling the degree of movement of the head and neck lifts by inserting a firm support element of the desired thickness under the patient's head if necessary;

repeating the above sequence of exercises for each level of increasing difficulty wherein after completion of each level the patient's head and neck muscles have been incrementally exercised; and

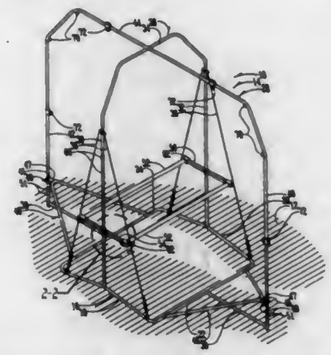
wherein a beginning level of exercise for the supine and prone positions does not use any support elements and for the right and left lateral position uses the thickest of the support elements, and the increasing levels of difficulty for the supine and prone positions uses increasingly thicker support elements while for the right and left lateral positions uses decreasingly thicker support elements.

5,577,983
MUSCLE EXERCISER
Rosa A. Fraser, 109 Albion Street, Swindon, Wiltshire, SN1 5LP, England
PCT No. PCT/GB93/00700, § 371 Date Oct. 6, 1994, § 102(e) Date Oct. 6, 1994, PCT Pub. No. WO93/20900, PCT Pub. Date Oct. 28, 1993
PCT Filed Apr. 2, 1993, Ser. No. 307,709
Claims priority, application United Kingdom, Apr. 10, 1992, 9207912
Int. Cl.[6] A63B *23/00*; A61C *5/14*
U.S. Cl. 482—11 1 Claim



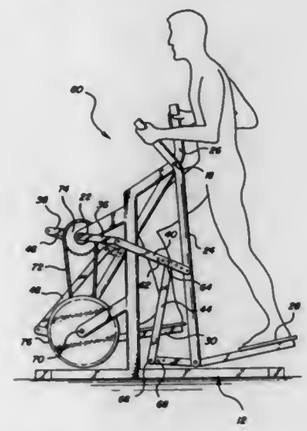
1. A muscle exerciser for exercising facial muscles, comprising an elongated handle having a pair of arms diverging from the handle, said handle and arms comprising a rigid assembly that lies in one plane, and a body of highly compressible resilient material mounted on the end of each arm remote from the handle, pivot means on the end of each arm, each body of highly compressible resilient material being mounted on said pivot means for swinging movement on the end of its associated said arm relative to the handle about an axis perpendicular to said plane.

5,577,984
FRAME FOR A VARIABLE IMPACT THERAPY SYSTEM
Frank L. Bare, II, 6320 S. 2141 East, Salt Lake City, Utah 84121
Filed May 16, 1994, Ser. No. 243,195
Int. Cl.[6] A63B *1/00*
U.S. Cl. 482—43 8 Claims



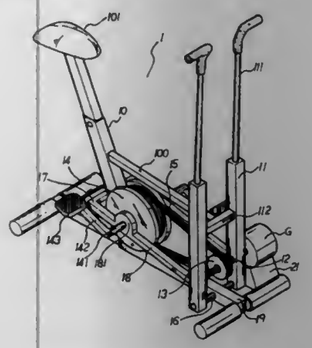
1. A frame for hanging exercise equipment, comprising:
a base having a front side and a rear side and opposite ends for resting on a floor;
a first overhead support connecting said sides of said base and having a pair or generally vertical legs attached to and extending upward respectively from said base sides and generally horizontal bar connecting said legs;
a second overhead support connecting said ends of said base and having a pair of spaced apart generally vertical legs operatively attached to and extending upward respectively from said opposite ends and a generally horizontal bar connecting said legs of said second overhead support and crossing said horizontal bar of said first support;
anchor means disposed on said supports for pivotally hanging exercise equipment therefrom; and
at least one end extension having a lower end pivotally mounted to one of said ends of said base and an upper end secured by height adjustable means to said second overhead support leg adjacent said end of said base so as to make said end extension inclineable with respect to said base.

5,577,985
STATIONARY EXERCISE DEVICE
Larry Miller, 1628 Treeside, Rochester, Mich. 48307
Filed Feb. 8, 1996, Ser. No. 598,548
Int. Cl.[6] A63B *69/16;22/00*
U.S. Cl. 482—52 11 Claims



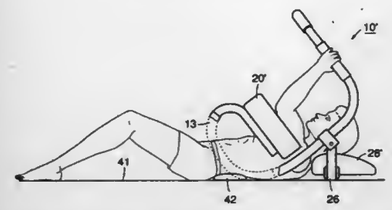
1. An exercise device comprising:
a frame configured to be supported on a floor, said frame having a first and a second pivot axis defined thereupon;
a first and a second guide link, each guide link having a first and a second attachment point defined thereupon, each guide link being pivotally attached, through its first attachment point, to said frame at the first pivot axis thereof;
a first and a second foot link, each foot link being pivotally attached to a respective one of said first and second guide links through the second attachment point thereof;
a first and a second crank arm, each being pivotally attached to said frame at said second pivot axis so as to be rotatable thereabout;
a first and a second intermediate link, each having a first end mechanically coupled to a respective one of said guide links, and a second end mechanically coupled to a respective one of said crank arms, so that rotation of said first and second crank arms about said second pivot axis causes said respective first and second guide links to pivot about said first pivot axis; and
a first and a second control link, each having a first end mechanically coupled to a respective one of said foot links, and a second end mechanically coupled to a respective one of said intermediate links, each of said control links being operative to vary an angle defined between its respective foot link and its associated guide link, as said guide link pivots about said first pivot axis.

5,577,986
POWER GENERATING EXERCISER
Yen-Shou Chen, No. 164, Sec. 2, Chung Shan Road, Hua Tan Hsiang, Chang Hua Hsien, Taiwan
Filed May 10, 1996, Ser. No. 644,184
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—63 1 Claim



1. A power generating exerciser comprising:
an exerciser having a first and second longitudinal posts, a crossbar connecting an upper portion of said first longitudinal post and an upper portion of said second longitudinal post, a shaft connecting a lower end of said first longitudinal post and a lower end of said second longitudinal post, a transverse bar connecting a seat post and said crossbar, a lower end of said seat post connecting a transverse post, a seat disposed on an upper end of said seat post.
a generally U-shaped plate having a first and second parallel arm plates, said first and second longitudinal posts being in parallel, an end of said first arm plate connecting said first longitudinal post, an end of said second arm plate connecting said second longitudinal post;
said first arm plate having a first lobe thereon;
said second arm plate having a second lobe thereon;
a first handle bar extending upward from an upper end of said first longitudinal post;
a second handle bar extending upward from an upper end of said second longitudinal post;
an power generating device having a generator disposed on a mount, a follower wheel disposed between said first and second longitudinal posts, a shaft passing through said generator, said first longitudinal post, said follower wheel and said second longitudinal post pivotally, a driven wheel disposed between said first and second lobes, a crank axle passing through said first lobe, said driven wheel and said second lobe, and a belt surrounding said follower wheel and said driven wheel;
said crank axle having a first leg and an opposite second leg;
a first pedal disposed on said first leg;
a second pedal disposed on said second leg;
said mount disposed beside said first longitudinal post;
wherein said first and second pedals are driven to rotate said driven wheel, said driven wheel drives said follower wheel to rotate, and said follower wheel drives said shaft to rotate.

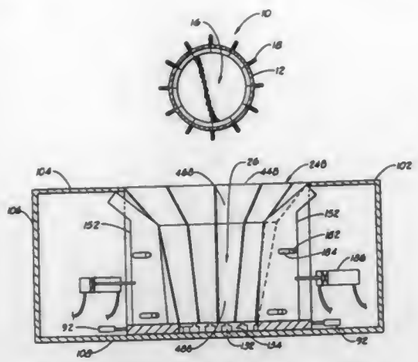
5,577,987
ABDOMINAL EXERCISER DEVICE
Donald Brown, Stanhope, N.J., assignor to Precise Exercise Equipment Co., Chester, N.J.
Continuation-in-part of Ser. No. 271,525, Jul. 7, 1994, Pat. No. 5,492,520. This application Jan. 6, 1995, Ser. No. 369,357
Int. Cl.[6] A63B *23/02*
U.S. Cl. 482—140 33 Claims



1. In an abdominal exerciser device, the combination comprising
a pair of laterally spaced support rails for resting on a support surface;
a pair of laterally spaced arcuate rocker portions for rocking of the device back and forth on the support surface, each rocker portion extending forwardly from a respective one of said support rails;
a pair of arm rest portions, each arm rest portion extending rearwardly from a respective rocker portion to receive an elbow of a person disposed between said rails in a supine position; and
a connecting portion connected to and between said support rails whereby a person disposed supinely on said support surface and between said rocker portions and with one of the hands or arms of the person engaging said connecting portion is able to conduct a curling exercise to exercise the abdominal muscles of the person while rocking said device.

5,577,988
FLOWER POT OR FLOWER POT COVER WITH FINS
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.
Continuation of Ser. No. 44,997, Apr. 7, 1993, Pat. No. 5,286,247, which is a division of Ser. No. 805,419, Dec. 10, 1991, Pat. No. 5,221,248, which is a continuation-in-part of Ser. No. 736,348, Jul. 26, 1991, Pat. No. 5,127,817, which is a continuation-in-part of Ser. No. 422,653, Oct. 17, 1989, Pat. No. 5,073,161, which is a continuation-in-part of Ser. No. 397,114, Aug. 22, 1989, Pat. No. 5,029,412, which is a continuation-in-part of Ser. No. 366,588, Jun. 15, 1989, Pat. No. 5,111,613, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation-in-part of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned, said Ser. No. 422,653is a continuation-in-part of Ser. No. 367,098, Jun. 15, 1989, Pat. No. Des. 318,030, which is a continuation-in-part of Ser. No. 283,014, Dec. 8, 1988, abandoned, which is a continuation of Ser. No. 652,903, Sep. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 613,053, May 22, 1984, Pat. No. Des. 293,224, said Ser. No. 422,653is a continuation-in-part of Ser. No. 366,588, and Ser. No. 219,083, said Ser. No. 736,348is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned.
This application Feb. 15, 1994, Ser. No. 196,687
Int. Cl.[6] B31B *1/44*
U.S. Cl. 493—154 4 Claims

1. A method for forming a pot or pot cover, the steps of the method comprising:



providing a male mold having a male molding surface and a female mold having an opening defining a female molding surface;

providing a sheet of material;

disposing the sheet of material between the male molding surface of the male mold and the opening of the female mold;

moving the male mold and the female mold into a forming position wherein the male mold is disposed in the opening of the female mold such that portions of the sheet of material are formed into a plurality of outward extensions, each outward extension comprising a pair of sides connected along an outer edge with a pair of inside surfaces and a pair of outside surfaces; and

applying lateral pressure against the outside surfaces of each outward extension to move the inside surfaces of each outward extension into face-to-face engagement such that each outward extension of the sheet of material is formed into an outwardly extending fin as the male mold and female mold are moved into the forming position to form the sheet of material into a pot or pot cover.

5,577,989

METHOD FOR FORMING CORRUGATED PAPER CONTAINER AND CONTAINER MADE THEREFROM

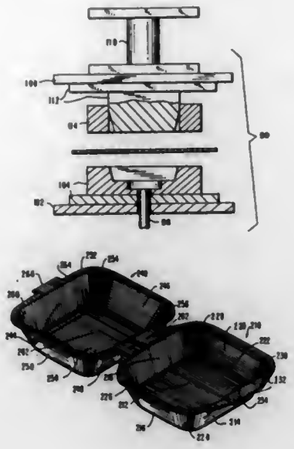
Robin P. Neary, Warren, N.J., assignor to Newark Group Industries, Inc., Cranford, N.J.

Filed Jun. 20, 1994, Ser. No. 262,165

Int. Cl.[6] B31B *1/44*

U.S. Cl. 493—169 **11 Claims**

1. A method for molding a corrugated paperboard container having a first layer of flat paperboard to which is attached a second layer of contoured paperboard, said contoured layer having a plurality of flutes, each said flute including a first flute tip and a second flute tip, each flute having a flute rise, the flute rise being substantially vertical at the midpoint between said flute tips, said forming method comprising, providing moisture to said paperboard, placing said corrugated paperboard into a stamping die, said stamping die having a male die and a female cavity shaped in the shape in which the paperboard is to be formed; pressing said paperboard between said die and said cavity to apply a pressure to said paperboard; applying heat to said paperboard simultaneously with said application of pressure; and removing said die from said cavity; said paperboard having folds therein and said beat applied to said paperboard creating steam within said cavity to steam iron set folds to form a container and provide structural integrity.



5,577,990

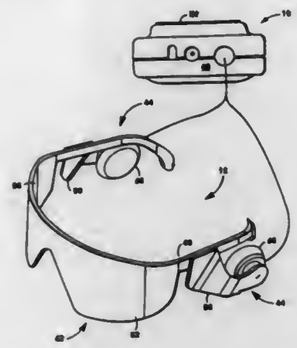
TROPHOTROPIC RESPONSE METHOD

Nusa Widjaja, Brookline, Mass.; William B. Lee, Salt Lake City, Utah; Robert W. Fish, Lowell, and Clive Bolton, Andover, both of Mass., assignors to Nusa Widjaja, Brookline, Mass.

Division of Ser. No. 174,274, Dec. 28, 1993, Pat. No. 5,518,497. This application Oct. 17, 1994, Ser. No. 324,336

Int. Cl.[6] A61M *21/00*

U.S. Cl. 600—27 **11 Claims**



1. A method for generating a signal in a relaxation response system, the method comprising the steps of:

generating a noise signal;

computing a first digital value of a first periodic signal having a first predetermined wave shape, a first predetermined period and having a predetermined minimum value and a predetermined maximum value wherein the first digital value is designated E;

computing a second digital value of a second periodic signal having a second predetermined wave shape, a second predetermined period and having a predetermined minimum value and a predetermined maximum value wherein the second digital value is designated D;

providing a modulated digital value by modulating the noise signal by a combined signal provided by combining the values D and E according to the equation $D^*(E-\frac{1}{2})+\frac{1}{2}$; and

converting the modulated digital value to an analog signal in a digital to analog converter.

5,577,991

THREE-DIMENSIONAL VISION ENDOSCOPE WITH POSITION ADJUSTMENT MEANS FOR IMAGING DEVICE AND VISUAL FIELD MASK

Nobuaki Akui, Hino; Satoshi Honma, Hachioji; Iwao Kanamori, Yokohama; Susumu Takahashi, Iruma; Toyoharu Hanzawa, Fuchu; Takashi Fukaya, Hachioji; Hitoshi Karasawa, Hachioji; Tetsumaru Kubota, Hachioji; Toshihiko Hashiguchi, Sagamihara; Akihiko Mochida, Hachioji; Akihiro Taguchi, Hachioji; Akio Nakada, Hachioji; Kenji Yoshino, Hachioji, and Atsushi Kidawara, Tachikawa, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

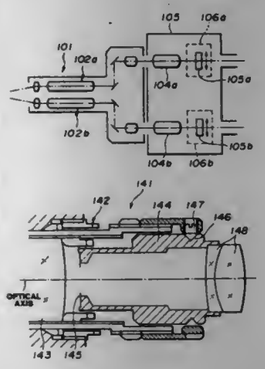
Continuation of Ser. No. 73,321, Jun. 8, 1993, abandoned.

This application Jul. 7, 1995, Ser. No. 499,648

Claims priority, application Japan, Jun. 9, 1992, 4-149703; Nov. 18, 1992, 4-309074

Int. Cl.[6] A61B *1/04*

U.S. Cl. 600—111 **2 Claims**



1. A three-dimension vision endoscope apparatus comprising:

a pair of optical systems for transmitting an image of a subject as two subject images having a parallax between them;

a pair of imaging means for picking up said subject images transmitted by said optical systems;

a display means including a screen for displaying said two subject images either alternately or concurrently;

an adjusting means for adjusting said subject images to be displayed, said subject images being displayed at specified distances from positions at which subject images enter said optical systems, said subject images being positionally aligned on said screen of said display means by said adjusting means, wherein said adjusting means is a mechanical adjustment means for adjusting the position of at least one of said imaging means along a direction perpendicular to an optical axis of one of said pair of optical systems for transmitting said corresponding subject images; and

a visual field mask position adjustment mechanism including adjusting screws and a mask tube, wherein said adjusting screws are used to change the relative position of said mask tube, said mask tube including a visual field mask lying in a lens barrel including one of said pair of optical systems.

5,577,992

BENDABLE PORTION OF ENDOSCOPE

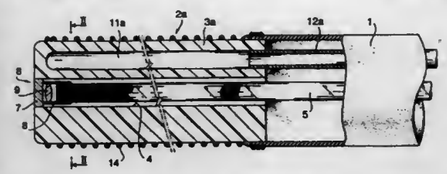
Toru Chiba; Kazuhiro Naganuma; Rensuke Adachi, and Tetsuya Utsui, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1994, Ser. No. 317,547

Claims priority, application Japan, Oct. 5, 1993, 5-249131; Nov. 16, 1993, 5-286348; Nov. 26, 1993, 5-296529; Nov. 30, 1993, 5-299497; Jul. 14, 1994, 6-161941; Aug. 24, 1994, 6-199197

Int. Cl.[6] A61B *1/00*

U.S. Cl. 600—152 **35 Claims**



1. A bendable portion of an endoscope, said bendable portion attached to an insertion tube of an endoscope, said bendable portion comprising:

an elastic body, connected to an insertion tube and formed substantially as an elongated cylinder, said elastic body being elongated in an axial direction;

a channel for inserting an internal member therethrough, said channel being formed through said elastic body along said axial direction of said elastic body;

a pressure chamber formed in a peripheral portion of said elastic body, displaced from a central axis of said elastic body and parallel to said central axis;

a fluid applying tube connected to said pressure chamber for pressurizing and depressurizing said pressure chamber with a fluid so that said pressure chamber expands and contracts and said elastic body bends; and

an expansion restraining member encircling said elastic body, said expansion restraining member preventing expansion of said elastic body in a radial direction and allowing expansion and contraction only along said axial direction when said pressure chamber is pressurized and depressurized..

5,577,993

TROCAR FACILITATOR FOR ENDOSCOPIC SURGERY AND METHOD OF USING THE SAME

Yong H. Zhu, Loma Linda, and Wolff M. Kirsch, Redlands, both of Calif., assignors to Loma Linda University Medical Center, Loma Linda, Calif.

Continuation of Ser. No. 29,116, Mar. 10, 1993, Pat. No. 5,407,427, which is a continuation-in-part of Ser. No. 899,605, Jun. 16, 1992, abandoned. This application Jan. 13, 1995, Ser. No. 372,505

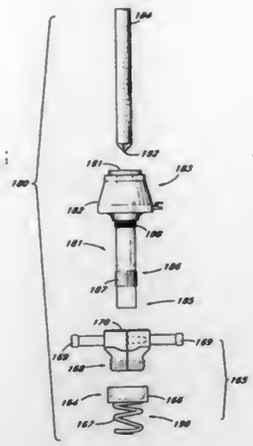
Int. Cl.[6] A61B *17/34*

U.S. Cl. 600—204 **11 Claims**

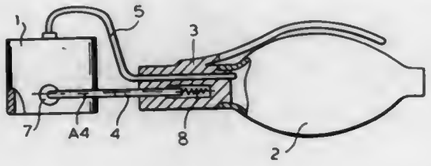
1. A trocar facilitator adapted for use with a trocar and a cannula for assisting in the establishment of a port for endoscopic surgery through the superficial tissue and peritoneum of a patient's body in said body, said facilitator comprising:

a guide portion comprising first and second releasably engageable halves which form a hollow channel for slidably receiving said trocar and said cannula such that said trocar, said cannula, and said guide portion remain slidable relative to one another; and

a corkscrew-like blade portion extending distally past said guide portion and removably connected to said guide portion for rotatably engaging said tissue to allow said tissue to be lifted away from vital organs of said patient and for penetrating said peritoneum of said patient, wherein said corkscrew-like blade portion forms a passageway axially aligned with said channel to allow said trocar and said cannula to pass therethrough.

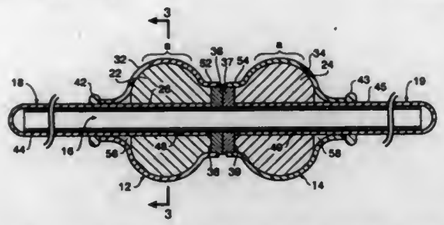


5,577,994
VACUUM MASSAGE APPLIANCE
Ursula Celik, Florenzer Str. 60, D-5000 Köln 71, Germany
PCT No. PCT/EP92/01029, § 371 Date Oct. 5, 1993, § 102(e) Date Oct. 5, 1993, PCT Pub. No. WO92/20315, PCT Pub. Date Nov. 26, 1992
PCT Filed May 11, 1992, Ser. No. 133,001
Claims priority, application Germany, May 21, 1991, 41 16 466; Jun. 28, 1991, 41 21 416.1; Sep. 30, 1991, 41 32 464.1; Feb. 15, 1992, 42 04 547.9
Int. Cl.[6] A61H *9/00*
U.S. Cl. 601—6 2 Claims



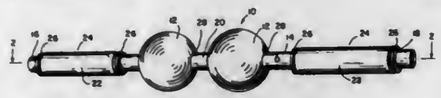
1. A massage appliance, comprising;
a massage container configured and constructed to be moved in contact with body portions of a person to be massaged;
an elongated handle carrying said massage container;
means for connecting a suction pump to said massage container;
means for articulating by connecting said massage container to said handle for movement of said container relative to said handle about two different axes, including a rotational movement about one of said axes add a swinging movement about the other of said axes, said means for articulatingly connecting said massage container to said handle including:
a rod rotatably supported in said handle and rotatable relative to said handle about said one of said axes,
a fork formed on an end of said rod turned away from said handle,
pivot bearings between said fork and said container for swinging movement of said container about said other axis relative to said fork, said fork straddling said container, said means for connecting said suction pump to said massage container including a flexible hose connected to said massage container, said axes lying in the same plane, and
a torsion spring between said rod and said handle for restoring said rod to an initial position upon rotation of said rod relative to said handle from said initial position.

5,577,995
SPINAL AND SOFT TISSUE MOBILIZER
Grace L. Walker, 2531 Crestview Dr., Newport Beach, Calif. 92663, and Rex O. Bare, Lake Forest, Calif., assignors to Grace L. Walker, Orange, Calif.
Continuation of Ser. No. 714,516, Jun. 13, 1991, abandoned.
This application Jun. 14, 1993, Ser. No. 77,323
Int. Cl.[6] A61H *15/00*
U.S. Cl. 601—120 4 Claims



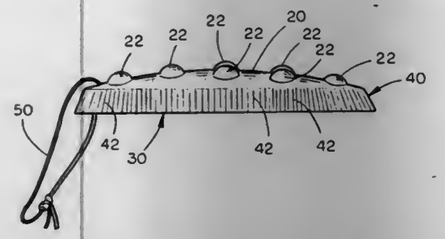
2. A self-usable device for mobilizing soft tissue, intervertebral joints, and facet joints of a human spine comprising
a pair of substantially spherical independently rotatable rollers mounted on a shaft, the rollers being spaced apart by a fixed distance sufficient to straddle a human spine area and sized to mobilize the soft tissue, intervertebral joints, and facet joints of the human spine,
each roller having a core and a resilient cover,
the core comprising closed cell microcellular polyethylene foam for providing firmness and resistance for enabling forces to be applied to the transverse processes of the spine while clearing the midline spinous processes,
the resilient cover comprising vinyl foam substantially covering the entire core so as to provide elastic contact surfaces and sufficient padding to enable the device to mobilize the soft tissue, intervertebral joints, and facet joints of the spine while preventing bruising and producing a spreading force, and
the shaft having two end portions extending beyond the rollers thereby forming a pair of handles for facilitating the user placing the device adjacent the user's spine area.

5,577,996
BACK MASSAGER
Gary R. Gardner, Rte. 1, Box 206, West, Tex. 76691, and James N. Kontaratos, 1737 E. Frankfurt #2602, Carrollton, Tex. 75007
Filed Mar. 15, 1995, Ser. No. 404,640
Int. Cl.[6] A61H *15/00*
U.S. Cl. 601—120 7 Claims



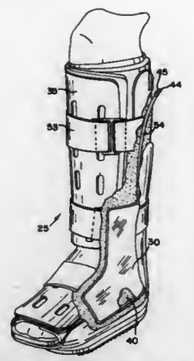
1. A hand held massage device comprising:
a. a rod having a central axis, an outer diameter, opposite outer ends and a middle section;
b. a plurality of resilient spheres adjustably mounted on the middle section of the rod, each sphere having a center, a hole through the center and said rod extending through the hole in each sphere, said hole having a diameter slightly smaller than the outer diameter of the rod to create a snug-fit between the spheres and the rod, wherein said spheres are non-rotatable about the rod;
c. wherein each sphere is axially movable and positionable along the middle section of the rod; and
d. a sleeve rotatably mounted in an axially fixed position on each outer end of the rod, said sleeves defining enlarged handles for gripping the rod and rolling the device across a part of a person's body.

5,577,997
FOOT AND BODY MAINTENANCE MASSAGE AND SCRUBBING TOOL
Kumail Thariani, and Ann Thariani, both of 920 S. 58th St., Omaha, Nebr. 68106
Filed Apr. 27, 1995, Ser. No. 429,673
Int. Cl.[6] A61H *7/00*
U.S. Cl. 601—135 10 Claims



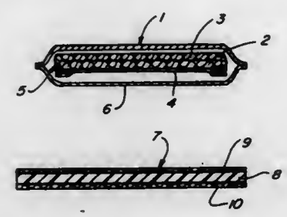
1. A dual purpose massage and foot and body maintenance device for imparting a massaging action to the body of a person and for removing dry skin and calluses from the feet and body comprising:
a scrubber body having generally convex top and generally concave bottom surfaces and a peripheral wall extending circumferentially therearound, said peripheral wall being inclined downwardly and outwardly from said top surface to said bottom surface, said wall providing a gripping surface by which said scrubber body may be held for manually moving said top and bottom scrubber body surfaces across said body of a person, said top surface being adapted for said massaging action and said bottom surface adapted for foot and body maintenance, said scrubber body being comprised of a solid, vitrified, terra cotta material and further having,
a plurality of generally hemispherically shaped protrusions on said top surface, said hemispherically shaped protrusions being adapted to contact and massage the body of a person when placed in rubbing contact therewith, and
a plurality of depressions and riser portions comprising a series of grooves formed in said bottom surface and adapted to remove dry skin and calluses from the feet and body upon rubbing of said depressions and riser portions against said dry skin and calluses.

5,577,998
WALKING BRACE
Glenn W. Johnson, Jr., Summit, and Henry J. McVicker, Chatham, both of N.J., assignors to Aircast, Incorporated, Summit, N.J.
Filed Feb. 3, 1995, Ser. No. 383,469
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—5 7 Claims



1. A walking brace for providing therapeutic pressure to the lower leg of a patient, said brace comprising:
an exterior shell adapted to fit substantially around the lower leg of a patient;
an interior resilient liner to cushion the leg;
at least one inflatable air cell located in said interior liner for providing an adjustable desired therapeutic pressure to said leg;
connection means movable between a closed condition and an open condition which links the interior of said air cell with the atmosphere;
passive reinflation means within said air cell for cooperating with said connection means when a user opens said connection means to facilitate reinflation of said air cell without an additional active reinflation means and deflation of said air cell when the user applies pressure to said air cell to deflate said air cell to a desired lower pressure; said passive reinflation means maintaining said air cell at a desired pressure when the user closes said connection means; and
means for securing said walking brace about the lower leg such that said air cell puts pressure on the lower leg.

5,577,999
ORTHOPAEDIC SUPPORTER KIT
Takayuki Sekine, Kawaguchi, and Hiroshi Yamaguchi, Tokyo, both of Japan, assignors to Alcare, Co. Ltd., Tokyo, Japan
Filed Apr. 19, 1995, Ser. No. 425,956
Claims priority, application Japan, Apr. 20, 1994, 6-106095
Int. Cl.[6] A61F *5/04*
U.S. Cl. 602—8 20 Claims



1. An orthopaedic supporter kit comprising:
(a) a fixing member including a main fixing body hermetically enclosed within a moisture-impermeable container, said main fixing body being comprised of a support body made of a flexible base material impregnated with a curable resin which cures upon contact with water, a covering member which covers the outer surface of said support body and is bondable to the curable resin, and a separable surface protective member which covers the inner surface of said support body,
(b) a cushioning member formed of a relatively elastic and bulky material in which slits can be formed,
(c) hook-and-loop fasteners which can fasten to an outer surface of said cushioning member,
wherein said cushioning member has an inner surface which can be directly applied to the diseased part of a patient's body, and the outer surface of said cushioning member includes opposite side end portions that can be coupled together by means of said hook-and-loop fasteners, and
wherein said main fixing body can be taken out from within the moisture-impermeable container and contacted with water, then, the separable protective member is removed from the inner surface of the support body and the support body brought into contact with the outer surface of the cushioning member and, in this state, left to cure, whereby the support body, the covering member of the main fixing body and the cushioning member can be rendered into one integral struc-

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ture that can be detachably fixed to the diseased part by means of said hook-and-loop fasteners.

5,578,000

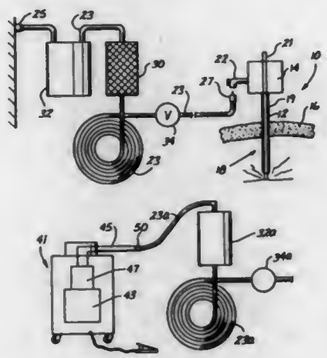
LAPAROSCOPIC SMOKE EVACUATION SYSTEM

Richard J. Greff, Yorba Linda, and Bruce McLucas, Pacific Palisades, both of Calif., assignors to Stackhouse, Inc., Riverside, Calif.

Continuation of Ser. No. 6,644, Jan. 21, 1993, abandoned. This application Jan. 23, 1995, Ser. No. 376,681

Int. Cl.[6] H61M *31/00*

U.S. Cl. 604—22 **30 Claims**



1. A laparoscopic smoke evacuation system for removing from an operative site, smoke containing undesirable contaminants, the evacuator comprising:

a trocar having a working channel and being adapted for operative disposition across a body wall with the working channel of the trocar providing access to the operative site;

a valve coupled to the trocar and communicating with the working channel;

a source of wall vacuum disposed in a wall of an operating room proving a high suction at a flow rate of about forty to about eighty liters per minute,

a fluid conduit connected between the valve of the trocar and the source of the wall vacuum;

a filter disposed along the fluid conduit for applying a first predetermined reduction in suction, and for separating the smoke into the undesirable components and a residual gas, the conduit, the filter, and the working channel forming a passage for conducting the smoke from the operative site to the source of wall vacuum;

means defining a flow restriction along the passage to thereby generate a second predetermined reduction in suction, the restriction being of a size sufficiently small to produce a reduction in the flow rate to a range between about ten and about fifty-five liters per minute; and

means included in the fluid conduit for exhausting the residual gas into the source of wall vacuum.

5,578,001

INFUSION APPARATUS FOR IV BAGS

Pranav N. Shah, 16 Stowe Ct., Freehold, N.J. 07728

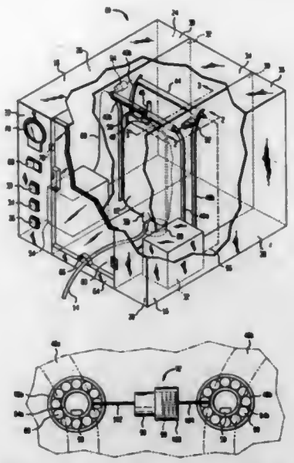
Filed Sep. 13, 1994, Ser. No. 305,261

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—31 **25 Claims**

1. An apparatus for feeding parenteral fluid under pressure from an IV bag to a patient, the apparatus comprising:

a support member adapted to support the IV bag;



a roller assembly comprising a pair of spaced apart rollers adapted to be placed at opposed sides of the IV bag, each one of the rollers adapted to contact a corresponding side of the IV bag to exert pressure;

a drive assembly to drive the roller assembly so that the rollers are adapted to exert pressure on the IV bag;

a control assembly interconnecting the roller assembly and the drive assembly, the control assembly constructed to control the drive assembly to move the roller assembly in response to the pressure adapted to be exerted on the IV bag; and

a sensing member mounted to the roller assembly to generate a signal to the control assembly of the pressure adapted to be exerted on the IV bag.

5,578,002

METHOD AND DEVICE FOR INTERNAL CLEANING OF AN IMPLANTED INFUSION SYSTEM

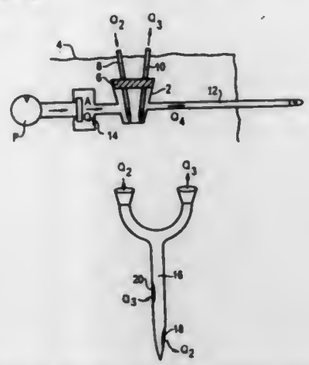
Bruno Slettenmark, Jaerfaella, Sweden, assignor to Siemens-Elema AB, Solna, Sweden

Filed Jul. 6, 1994, Ser. No. 268,123

Claims priority, application Sweden, Jul. 16, 1993, 9302434

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—65 **8 Claims**



1. A method for internally cleaning an implanted infusion system having an infusion pump with an outlet connected to a catheter via a nonreturn valve and with a flushing port disposed downstream of the nonreturn valve and upstream of the catheter, comprising the steps of:

generating a first flow of cleaning fluid through said infusion pump and said nonreturn valve and into said flushing port;

injecting a second flow of a secondary fluid into said flushing port from an extracorporeal location;

discharging a third flow of mixed secondary fluid and cleaning fluid from said flushing port to an extracorporeal location; and

maintaining said third flow substantially equal to a sum of said first flow and said second flow.

5,578,003

SAFETY DEVICE FOR A BLOOD-, WOUND SECRETION- OR INFUSION SUPPLYING CONDUIT, AND BLOOD-WOUND SECRETION- OR INFUSION SUPPLY SYSTEM PROVIDED THEREWITH

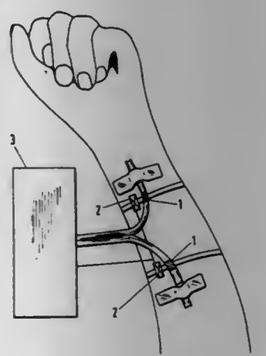
Ludwig Borger, Kruppstrasse 6b, 45711 Datteln, Germany

Filed Sep. 5, 1995, Ser. No. 523,475

Claims priority, application Germany, Sep. 12, 1994, 44 32 348.4

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—65 **8 Claims**



1. A safety device for blood-, wound secretion and infusion supplying conduit which leads to a vessel inlet, the safety device comprising a magnet mountable on a conduit; a Reed-relay fixable substantially close to said magnet on a skin of a patient so that when a distance between said Reed-relay and said magnet increases as a result of moving away of the vessel inlet said Reed-relay is switched; and means for triggering alarm in response to the switching of said Reed-relay.

5,578,004

FEED DRUG INJECTOR

Kun-Shan Liang, No. 135, Lane 530, Sec. 1, Chung Shan Road, Chang Hua City, Taiwan

Filed Feb. 20, 1996, Ser. No. 603,347

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—77 **1 Claim**

1. A feed drug injector comprising:

a nipple device having a hollow circular base and a generally duckbilled nipple head extending forward from said base;

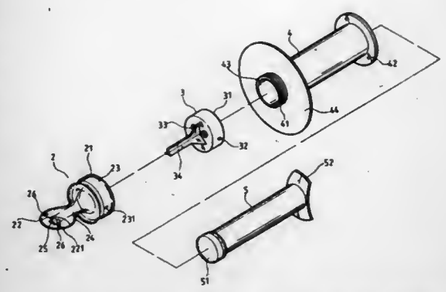
at least two inner recesses formed on an inner periphery of said base;

a truncated-cone shaped passage formed in said nipple head;

a Y-shaped hole formed in a front of said truncated-cone shaped passage;

a bevel formed on a front surface of said nipple head;

three apertures which are formed on said bevel and two front sides of said nipple head, respectively, communicating with said Y-shaped hole;



a nipple plug having a hollow disk with an inner thread, a Y-shaped bar extending forward from said disk, and three circular holes formed on a top surface of said disk spacedly and separated by said Y-shaped bar;

at least two protrusions disposed on an outer periphery of said disk;

each of said protrusions engaging with each of said corresponding inner recesses;

said Y-shaped bar inserted in said nipple head;

said disk inserted in said base;

a cylinder having a round plate on a front portion, an outer thread and an orifice at a front end, and a round flange at a rear end of said cylinder;

said outer thread of said cylinder engaging with said inner thread of said disk;

a push rod having a pad plunger at a front end and a handle bar at a rear end of said push rod; and

said push rod inserted in said cylinder.

5,578,005

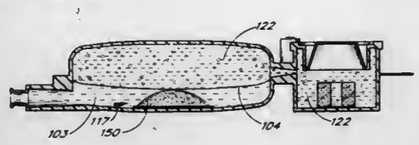
APPARATUS AND METHODS FOR MULTIPLE FLUID INFUSION

Gregory E. Sancoff, Windham, N.H.; Mark C. Doyle, San Diego, and Frederic P. Field, Solana Beach, both of Calif., assignors to River Medical, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 105,284, Aug. 6, 1993, Pat. No. 5,397,303, and Ser. No. 105,327, Aug. 6, 1993, Pat. No. 5,398,851. This application Sep. 16, 1994, Ser. No. 307,504

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—82 **23 Claims**



1. An apparatus for delivering two or more fluids, said apparatus comprising:

a fluid delivery compartment, containing a first fluid;

a fluid displacement system, which exerts a force on said fluid delivery compartment and displaces said first fluid from said fluid delivery compartment; and

a fluid container containing a second fluid, located within said fluid delivery compartment and responsive to said force exerted by said fluid displacement system, which discharges said second fluid when said fluid displacement system has displaced a predetermined amount of said first fluid from said fluid deliver compartment.

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5,578,006

SUCTION CATHETER

Rudolf Schön, Am Kümpel 18, D 53127 Bonn, Germany, assignor to Rudolf Schön, Bonn, Germany

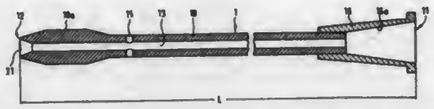
PCT No. PCT/EP93/00672, § 371 Date Nov. 14, 1994, § 102(e) Date Nov. 14, 1994, PCT Pub. No. WO93/18801, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 19, 1993, Ser. No. 307,627

Claims priority, application Germany, Mar. 20, 1992, 42 08 912.3

Int. Cl.[6] A61M *11/00*

U.S. Cl. 604—93 21 Claims



1. A suction catheter for sucking mucus and other fluids out of a tracheobronchial area of a patient which comprises a flexible catheter tube having at least one through lumen extending from a proximal end to a distal end of said tube, the proximal end of the tube being connectable with a connector, ventilation openings formed in the catheter tube in a vicinity of the distal end, said ventilation openings extending radially into the lumen, a distal outlet opening being formed at the distal end and being enlarged with respect to the cross section of the lumen, and a thickened area in the shape of a cylindrical piston being formed in a wall portion of the catheter tube that extends in a zone between the ventilation openings and the distal end; said lumen being expanded in the manner of a funnel towards the distal end of the catheter tube and two transition zones adjoining ends of a thickened area, one transition zone tapering towards the distal end and the other transition zone tapering towards the proximal end wherein in order to establish sizes of the suction catheter, measured in CH (Charr) according to the ISO standard, outside diameter (DK) of the cylindrical piston formed by the thickened area of the catheter tube is used to determine the standard size and the diameter DI of the through lumen used for suction is then determined from the standard size.

5,578,007

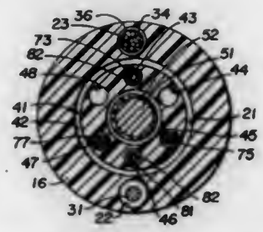
ENDOCARDIAL MAPPING AND ABLATION SYSTEM UTILIZING A SEPARATELY CONTROLLED ABLATION CATHETER AND METHOD

Mir A. Imran, Palo Alto, Calif., assignor to Cardiac Pathways Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 206,463, Mar. 4, 1994, abandoned, which is a division of Ser. No. 894,529, Jun. 5, 1992, Pat. No. 5,324,284. This application May 11, 1995, Ser. No. 439,663

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—95 4 Claims



1. An ablation catheter for introduction into a chamber of the heart comprising a flexible elongate member having a distal extremity, said flexible elongate member having a centrally disposed lumen extending therethrough and having a longitudinal axis, said flexible elongate element having at least four additional lumens extending therethrough and generally surrounding the centrally disposed lumen, at least three of said additional lumens being spaced approximately 120° apart, a flexible elongate element having a negative coefficient of expansion disposed in each of said three additional lumens and having a distal extremity, a ground return conductor disposed in another of said additional lumens, means connecting the distal extremities of the flexible elongate elements formed of a material having a negative coefficient of expansion to the ground return conductor and means including conductors connected to said flexible elongate elements of a material having a negative coefficient of expansion for supplying electrical energy to the same to cause bending of the distal extremity of the flexible elongate member with respect to the longitudinal axis.

5,578,008

HEATED BALLOON CATHETER

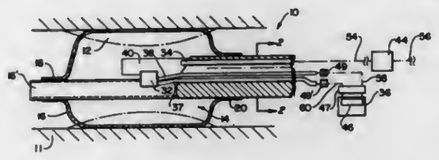
Shinji Hara, Tokyo, Japan, assignor to Japan Crescent, Inc., Japan

Continuation-in-part of Ser. No. 984,490, Dec. 2, 1992, abandoned. This application Oct. 14, 1993, Ser. No. 136,644

Claims priority, application Japan, Apr. 22, 1992, 4-103230; Apr. 22, 1992, 4-103231

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—96 17 Claims



1. A heated balloon catheter for treatment of constricted zones of body fluid passages by applying heat and pressure to the constricted zones comprising;

a catheter body having a proximal end, a distal end and a plurality of longitudinal passages therethrough;

a balloon secured to the distal end of the catheter, communicating with at least one of said longitudinal passages;

a means for directing pressurized fluid to and from the balloon through said at least one longitudinal passage;

a thermocouple mounted within the balloon;

an external temperature meter;

paired electrical conductors for connecting said thermocouple with said external temperature meter;

an internal heating electrode provided within the catheter;

an external electrode provided outside the catheter;

an R.F. generator for generating a radio frequency in the order of 2 MHz to 20 MHz, said R.F. generator being located outside said catheter as a power source for the capacitive heating of tissues around the balloon;

a first heating electrical conductor electrically connecting said R.F. generator to said internal heating electrode;

a second heating electrical conductor electrically connecting said R.F. generator to said external electrode;

a noise filtering means for rejecting said 2 MHz to 20 MHz R.F. noise in said paired electrical conductors connected with said thermocouple;

and an impedance matching network to fine tune the impedance between said R.F. generator and said internal and external electrodes, said impedance matching network being interposed between said R.F. generator and said internal and external electrodes.

5,578,009

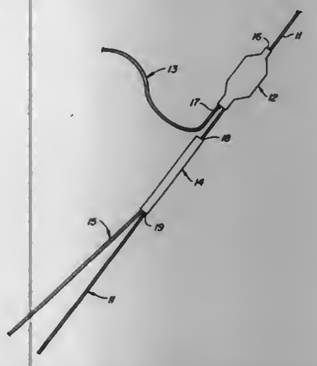
CATHETER SYSTEM WITH PUSH ROD FOR ADVANCEMENT OF BALLOON ALONG GUIDEWIRE

Jeff L. Kraus, and Michael J. Horzewski, both of San Jose, Calif., assignors to Danforth Biomedical Incorporated, Santa Clara, Calif.

Filed Jul. 20, 1994, Ser. No. 277,878

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—96 19 Claims



1. A balloon-tipped catheter and guidewire system, comprising:

a guidewire;

a balloon having proximal and distal ends and a longitudinal axis and defining an inflatable cavity;

a first tubular member mounted in said balloon and providing a through-passage to receive said guidewire, said first tubular member opening at said proximal end of said balloon;

a second tubular member external to said balloon and containing an inflation lumen in communication with said inflatable cavity, said inflation tureen being independent of said through-passage;

a cylinder adapted to slide along said guidewire and to abut said proximal end of said balloon when said guidewire is inserted through said first tubular member; and

an elongate rod affixed to said cylinder and having sufficient axial rigidity to permit pushing said cylinder and thereby said balloon along said guidewire through a bodily passage;

said cylinder containing a first lumen sized to receive said guidewire and extending through both said cylinder and said elongate rod, and a second lumen sized to receive said second tubular member and extending only through said cylinder.

5,578,010

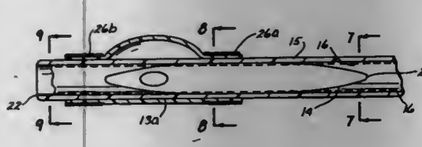
MULTIPLE LUMEN CATHETER AND METHOD OF CONSTRUCTION

Mark P. Ashby, Laguna Niguel, Calif., assignor to Applied Medical Resources Corporation, Laguna Hills, Calif.

Filed Mar. 31, 1995, Ser. No. 414,299

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—96 19 Claims



1. A multiple lumen catheter comprising

a) a tubular member having a flexible cylindrical wall, said tubular member comprising an outer tubular body and an inner tubular body coaxially disposed within said outer tubular body, said tubular member having a proximal end portion and a distal end portion, said distal end portion terminating in a distal tip,

b) multiple lumens extending longitudinally within the length of said tubular member, at least one inner lumen and at least one outer lumen being formed within said tubular member by said inner tubular body disposed within said outer tubular body, both tubular bodies extending along and forming at least a portion of said tubular member,

c) an opening in the wall of said outer tubular body,

d) an inflatable member attached to said distal end portion of said tubular member at multiple points distal and proximal to one other along the longitudinal axis of said tubular member, and operatively associated with said outer lumen by said opening in said outer tubular body, said opening disposed within the length of outer tubular body covered by said inflatable member, and

e) a bushing disposed between said outer and inner tubular bodies in the outer lumen formed by said bodies, said bushing having an aperture extending from a point distal to at least a portion of said opening in the outer tubular body to the proximal end of said bushing, said aperture being operatively associated with said opening in said outer tubular body to create a channel from the outer lumen through the bushing, through the outer tubular body, and to the interior surface of the inflatable member.

5,578,011

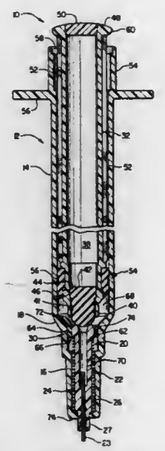
TAMPERPROOF RETRACTABLE SYRINGE

Thomas J. Shaw, 1510 Hillcrest, Little Elm, Tex. 75068

Filed May 11, 1995, Ser. No. 438,954

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—110 34 Claims



1. A tamperproof retractable syringe for injecting fluid wherein the syringe has a one piece body and a frictionally held retraction mechanism assembleable from the rear which is retractable with low plunger force and resists high blowout pressure during an injection, comprising:

a one piece hollow outer body having a longitudinally extending wall, comprising an elongated barrel and nose, with a transition zone connecting the barrel and nose, the nose having a reduced cross sectional area relative to the barrel and an inwardly facing surface in the wall at the most constricted part of the transition zone where the nose begins;

a plunger assembly disposed partially within the elongated barrel, the plunger having a head in slidable sealed contact with the interior of the outer body and a retraction cavity therein for receiving parts of a retraction mechanism;

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a retraction mechanism comprising an elongated needle holder and spring combination wherein the needle holder is released by depression of the plunger to a retraction position, the needle holder having an elongated body with a needle holding portion in front and a head in back, having a cooperating outwardly facing surface configured to cooperate with said inwardly facing surface to produce a bolding force on the needle holder when the retraction mechanism is installed in the nose;

the needle holder and spring being installable from the rear of the barrel toward the nose and releaseably held by sliding engagement of said inwardly and outwardly facing surfaces while compressing said spring, said sliding engagement producing said holding force in opposition to a retraction force applied to the needle holder by said spring;

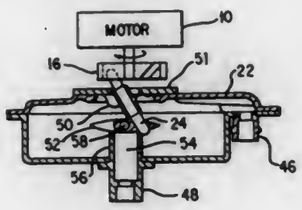
retraction occurring in response to thumb force on the plunger when a portion of said plunger passing into said transition zone causes the cooperating outwardly facing surface to slide relative to said inwardly facing surface and thereby reduces the holding force on the needle holder to an amount less than the retraction force whereby the needle holder is retracted into said cavity a distance sufficient to withdraw an injection needle into the outer body.

5,578,012

MEDICAL FLUID PUMP

Dean L. Kamen, Bedford; Kevin L. Grant, Dover; Valentine Faust, Bow, and Richard J. Lanigan, Concord, all of N.H., assignors to Deka Products Limited Partnership, Manchester, N.H.

Filed Apr. 24, 1995, Ser. No. 427,142
Int. Cl.[6] F04D 29/00
U.S. Cl. 604—151 **18 Claims**



1. A pumping unit comprising:

an internally sterile pumping chamber having an inlet and an outlet;

a vane mounted for rotation about a hollow shaft, the hollow shaft being in fluid communication with the inlet of said pumping chamber and said vane having a fluid conduit extending therethrough in fluid communication with the hollow shaft;

a flexible diaphragm forming a wall portion of said pumping chamber; and

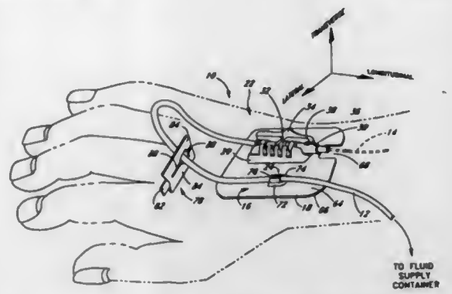
a drive rod extending through said diaphragm so that one end of said rod engages said vane within said pumping chamber at a position on said vane radially offset from the axis of rotation of the hollow shaft and an other end extends out of said pumping chamber, said drive rod being in a fixed fluidtight attachment with said diaphragm.

5,578,013

CATHETER ANCHORING SYSTEM

Steven F. Bierman, Del Mar, Calif., assignor to Venetec International, Inc., Mission Viejo, Calif.

Continuation-in-part of Ser. No. 121,942, Sep. 15, 1993, Pat. No. 5,456,671, which is a continuation-in-part of Ser. No. 34,340, Mar. 19, 1993, Pat. No. 5,354,282, which is a continuation-in-part of Ser. No. 695,549, May 3, 1991, Pat. No. 5,314,411, which is a continuation-in-part of Ser. No. 518,964, May 4, 1990, Pat. No. 5,192,273, which is a continuation-in-part of Ser. No. 384,326, Jul. 24, 1989, abandoned. This application Apr. 6, 1994, Ser. No. 223,948
Int. Cl.[6] A61M 5/32
U.S. Cl. 604—180 **10 Claims**



1. An anchoring system for securing an indwelling catheter within a body lumen of a patient and for securely interconnecting the indwelling catheter with a tube, said catheter of the type having a proximal end including a lure-lock connector, said anchoring system comprising:

an adaptor having a generally tubular body with a distal end which is configured to engage the proximal end of the catheter, said distal end including a lure-lock connector which is adapted to engage the corresponding lure-lock connector of the catheter proximal end, said adaptor additionally comprising a radially extending member which projects from an exterior surface of said tubular body in a radial direction at a point distanced from said lure-lock connector of said adaptor distal end; and

a retainer comprising a channel configured to receive said tubular body of said adaptor, said retainer additionally comprising a series of lateral slots sized to receive and to capture said radially extending member of said adaptor with said adaptor positioned within said channel of said retainer so as to prevent said adaptor from sliding within said channel, whereby said series of slots provide multiple positions along said channel where said retainer can receive said radially extending member of said adaptor.

5,578,014

SKIN PIERCING DEVICES FOR MEDICAL USE

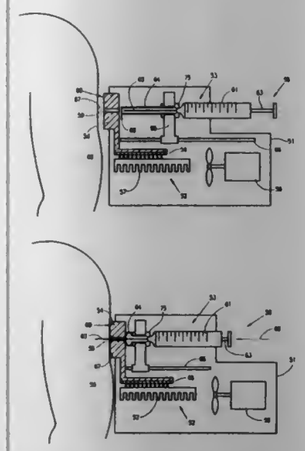
Uri Erez, 23 Aharon Street, Kiryat Motzkin 26322, and Yuval Singer, 86 Hatishbee Street, Haifa 34522, both of Israel

PCT No. PCT/US93/03992, § 371 Date Dec. 30, 1994, § 102(e) Date Dec. 30, 1994, PCT Pub. No. WO93/21974, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 28, 1993, Ser. No. 325,412
Claims priority, application Israel, Apr. 29, 1992, 101720; Jan. 8, 1993, 104350
Int. Cl.[6] A61M 5/00
U.S. Cl. 604—192 **22 Claims**

1. Apparatus for piercing skin comprising:

a skin contact surface arranged to be in thermal contact with a region of skin to be pierced;

a skin piercing needle arranged to pierce said skin within said region; and



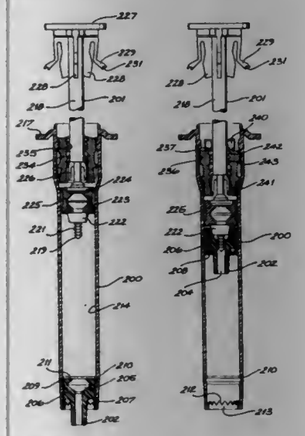
a cooling assembly providing cooling of said skin contact surface thereby cooling said portion of skin prior to and during piercing thereof by said skin piercing needle.

5,578,015

SAFETY SYRINGE INCORPORATING AUTOMATIC NEEDLE HOLDER RELEASE

Darryl G. Robb, Gymple, Australia, assignor to Robb Pascal Patent Limited, Alderley, Australia

Continuation-in-part of Ser. No. 720,499, Jul. 18, 1991, Pat. No. 5,215,533. This application Jan. 14, 1993, Ser. No. 4,275
Claims priority, application Australia, Sep. 18, 1989, PJ 6435; WIPO, Sep. 17, 1990, PCT/AU90/00426
Int. Cl.[6] A61M 5/32
U.S. Cl. 604—195 **4 Claims**



1. A syringe comprising:

a body having a forward end, a rearward end, and a bore extending from the forward end to the rearward end;

a needle holder slidably disposed within said bore proximate said forward end, said needle holder having an inner end;

a forwardly facing abutment in said bore facing said forward end;

a radially outwardly extending flange on said needle holder having a radially inner portion and a radially outer portion, said radially outer portion engaging said forwardly facing abutment in said bore;

a plunger reciprocally movable in said bore and having an inner end;

sealing means for slidably supporting said plunger and for holding fluid within said bore and comprising a sealing member mounted on said inner end of said plunger and extending radially into sliding sealing engagement with said bore, said plunger extending out of said rearward end of said body; and

connecting means for connecting said plunger to said needle holder on completion of an injection stroke of said plunger by injection pressure on said plunger so that subsequent retraction of said plunger withdraws said needle holder and any needle mounted thereon into a shielded position within said bore of said body;

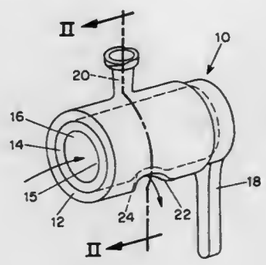
said connecting means comprising an undercut recess in said inner end of said needle holder, said recess being surrounded and partially overlaid by said flange, and a protuberance on said inner end of said plunger adapted to engage with said radially inner portion of said flange and move said radially inner portion into said undercut recess and to thereby distort said needle holder so that said radially outer portion of said flange is displaced radially inwardly for disengaging said flange from said abutment in said bore of said body.

5,578,016

STOPCOCK

Freddi Zinger, Raanana, Israel, assignor to Elcam Plastic Kibbutz Bar-Am, Hagalil, Israel

Filed Jul. 25, 1995, Ser. No. 507,043
Claims priority, application Israel, Jul. 29, 1994, 110508
Int. Cl.[6] A61B 5/00
U.S. Cl. 604—248 **4 Claims**



1. A stopcock comprising

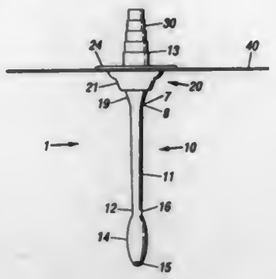
a tubular body having a first radial opening and a second radial opening, the radial openings being spaced apart circumferentially and being located in a common plane orthogonal to an axis of the tubular body, and the second radial opening having a diameter larger than the first radial opening;

a hollow core member snugly received within the tubular body for rotation about the axis of the tubular body, the core member defining a lumen having an open end and a closed end, the core member having at least one radial bore located in the common plane of the radial openings in the tubular body and in communication with the lumen, and the lumen and a first bore of the at least one radial bore of the core member having diameters not less than the diameter of the second radial opening of the body; and

handle means affixed to the core member adjacent the closed end of the lumen for rotating the core member between a first position in which a radial bore is in register with the first radial opening and a second position in which said first bore of the at least one radial bore is in register with the second radial opening.

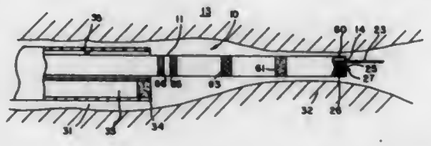
VOL 1192 ISS 4 NO 26 1996 UMI

5,578,017
ENEMA NOZZLE WITH SELF-ADHESIVE SECURING MEANS
John M. Aguilar, Rte. 1, Box 161, Sweeny, Tex. 77480, and Daniel S. Goodin, 431 Lamar, #56, West Columbia, Tex. 77486
Filed May 1, 1995, Ser. No. 432,567
Int. Cl.[6] A61B 5/00
U.S. Cl. 604—275 17 Claims



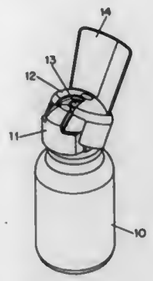
1. A disposable enema nozzle comprising:
a flexible plastic tube having a first bulbous end and a second end separated by a shaft, said first end and shaft being adapted to fit into a patient's rectum;
a fluid path through said tube;
a conduit connector attached to and in fluid communication with said second end;
a flexible positioning collar annularly attached to said tube and extending radially outward from said tube, said positioning collar comprising self-adhesive means adapted for securing said positioning collar to a patient's buttocks, said nozzle being adapted to compress the buttocks against said tube when said tube is positioned in the rectum.

5,578,018
APPARATUS FOR IN SITU MEASUREMENT OF STRICTURE LENGTH FOR STENT
Christopher A. Rowland, Marlborough; M. Joshua Tolkoff, Brookline, and Ella Zaslavsky, Marblehead, all of Mass., assignors to Boston Scientific Corporation, Natick, Mass.
Division of Ser. No. 120,475, Sep. 13, 1993, Pat. No. 5,427,115.
This application May 24, 1995, Ser. No. 448,733
Int. Cl.[6] A61M 25/00
U.S. Cl. 604—280 4 Claims



1. A catheter for being introduced in a living body over a guidewire and through a working channel of an endoscope, additionally including a viewing channel, to obtain a measurement for determining the length of a stent to be located in a stricture, said catheter comprising:
A. a first lumen for allowing said catheter to slide over the guidewire and through the stricture,
B. a radiopaque marker at one end of said catheter for enabling the indication that the one end of said catheter has passed the stricture, and
C. visual markers formed on said catheter at a plurality of spaced positions extending from the one end thereof, said visual marker at each position having a unique appearance whereby a direct visualization through the endoscope viewing channel of the pattern proximate the stricture provides a stent length measurement.

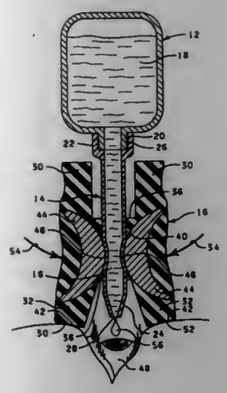
5,578,019
EYE DROPER APPLICATOR
Edward L. Feldman, 232 Cedar Park Clr., Sarasota, Fla. 34242
Filed Jun. 7, 1995, Ser. No. 478,724
Int. Cl.[6] A61M 35/00; B65D 47/18
U.S. Cl. 604—295 18 Claims



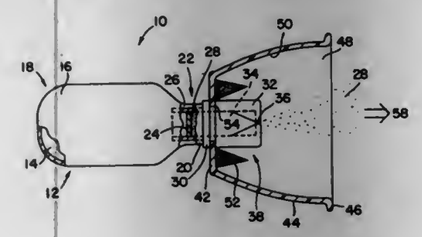
1. A bottle for administering liquid eye drops, comprising:
(a) a container for holding the liquid eye drops;
(b) a dispensing assembly, said dispensing assembly being coupled to the container and having a passage therethrough for dispensing of the liquid eye drops from the container;
(c) a closure assembly comprising a base portion having means for sealing the passage in the dispensing assembly disposed on an interior surface thereof and means for retracting the lower eye lid of an individual to whom the eye drops are being administered disposed on an exterior surface thereof, wherein said closure assembly is pivotally mounted on the dispensing assembly to permit movement of the closure assembly between a first position in which the passage in the dispensing assembly is sealed by the means for sealing the passage in the dispensing assembly and a second position in which the passage in the dispensing assembly is open to permit dispensing of the liquid eye drops; and
(d) means for fixing the closure assembly in the second position.

5,578,020
DROP DISPENSING APPARATUS
Manuel L. Mosley, 2607 Belknap, Norman, Okla. 73071
Filed Sep. 1, 1995, Ser. No. 522,715
Int. Cl.[6] A61M 35/00
U.S. Cl. 604—295 20 Claims

1. A dispenser for administering a metered amount of liquid into a target, the dispenser comprising:
a dropper tube having a first end and a dispensing end, at least a portion of the dropper tube being deformable by finger pressure; and
a flexible dispensing sleeve disposed about the dropper tube, the dispensing sleeve having a support end extending past the dispensing end of the dropper tube for supporting the dropper tube over the target, the dispensing sleeve being engaged with the deformable portion of the dropper tube such that the application of a squeeze pressure to the dispenser sleeve causes the dropper tube to be deformed inwardly so as to cause the release of the metered amount of a liquid disposed in the dropper tube from the dispensing end of the dropper tube and into the target.

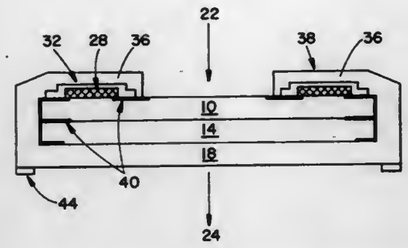


5,578,021
EYE MEDICAMENT DISPENSING DEVICE
Brian K. Cornish, P.O. Box 2010, Palm Harbor, Fla. 34682-2010
Filed Oct. 5, 1995, Ser. No. 539,794
Int. Cl.[6] A61M 35/00; A61H 33/04
U.S. Cl. 604—300 6 Claims



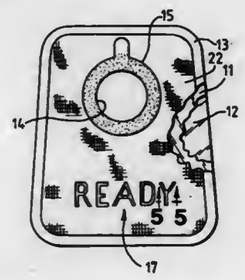
1. An eye solid medicament dispensing device, comprising:
a. a container, said container including a chamber for storing air and further including an outlet for passing the air from said container;
b. a cup structure linked to the container and fitting over the eye, said cup structure having an open cavity formed by a base, a wall portion extending from said base, and a terminal continuous edge portion, said terminal continuous edge portion intended for contacting the upper and lower eye lids, said cup structure further included an outer surface, an inner surface and an opening therebetween, said opening positioned at said base of said eye cup;
c. storing means for holding the medicament in the path of air exiting said container;
d. conducting means for guiding the air from said container outlet and the medicament through said opening in said base of said eye cup, said conducting means including an orifice for directing the medicament to the eye; and
e. positioning means for centering said orifice on the eye, said positioning means comprising said cup structure inner surface possessing indicia thereupon, said indicia being of a selected configuration and having a portion thereof lying a selected distance from said orifice, said indicia portion further being positioned in essentially surrounding relationship relative to said opening through said base of said cup structure.

5,578,022
OXYGEN PRODUCING BANDAGE AND METHOD
Daniel A. Scherson, 2568 Saybrook Rd., University Hts., Ohio 44118, and Melvyn I. Burk, 21001 Halburton Rd., Beachwood, Ohio 44122
Filed Apr. 12, 1995, Ser. No. 421,679
Int. Cl.[6] A61F 13/00
U.S. Cl. 604—304 46 Claims



1. A device for supplying oxygen for topical treatment of skin wounds, comprising:
a wound dressing patch adapted for receipt over a skin wound treatable with oxygen; and
an oxygen generating device incorporated within the wound dressing patch for supplying oxygen to the skin wound.

5,578,023
FLUSH-INTERVAL INDICATOR FOR SOLUBLE POUCHES
Barry L. Schneider, McHenry, Ill., assignor to Hollister Incorporated, Libertyville, Ill.
Division of Ser. No. 184,220, Jan. 18, 1994, Pat. No. 5,403,299.
This application Jan. 12, 1995, Ser. No. 372,043
Int. Cl.[6] A61M 1/00
U.S. Cl. 604—332 4 Claims



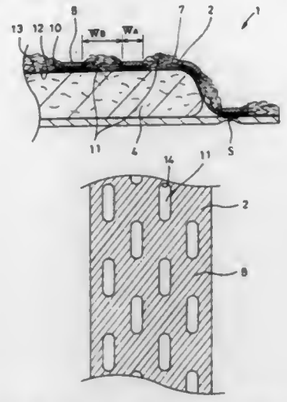
1. The combination of a pouch and a flush indicator comprising:
a flushable, soluble pouch having a pair of side walls joined together along their outer margins and having a display surface on at least one of said side walls;
a water-soluble external cover formed of fibers and secured to said pouch over said display surface; and
a flush indicator formed of fibers of said external cover which are embedded into said display surface of said pouch, said flush indictor being relatively undistinguishable from said external cover when said cover is dry, said external cover, when exposed to water in a toilet bowl, being capable of quickly dissolving or dispersing, after a sufficient flush-interval has elapsed, to reveal the fibers of said indicator which remain embedded in said display surface when said cover dissolves or disperses, thereby visibly signaling to a user that said pouch is ready to be flushed.

5,578,024

DISPOSABLE BODY FLUIDS ABSORBENT PADDING

Satoshi Mizutani, Kawanoe, and Hideaki Kitaoka, Funabashi, both of Japan, assignors to Uni-Charm Corporation, Ehime-ken, Japan

Filed Jun. 5, 1995, Ser. No. 461,906
Claims priority, application Japan, Jul. 6, 1994, 6-124975
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—380 **16 Claims**



1. A disposable body fluids absorbent padding comprising a liquid-permeable topsheet, a liquid-impermeable backsheet and a liquid-absorbent core disposed between said topsheet and backsheet, wherein said topsheet comprises a liquid-permeable nonwoven fabric and liquid-impermeable thermoplastic film integrally bonded to the upper surface of said nonwoven fabric so as to partially expose the upper surface of said nonwoven fabric, and wherein each zone of said nonwoven fabric covered with said plastic film is of high density while each zone of said nonwoven fabric not covered with said plastic film is of low density;

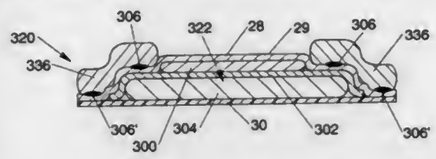
wherein the top surface of said low density zones are higher than that of said film.

5,578,025

SANITARY NAPKIN HAVING STIFFENING SIDE STABILIZERS

Melisse N. May, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Jul. 6, 1994, Ser. No. 271,392
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.1 **15 Claims**



1. An absorbent catamenial or incontinent pad comprising:

(a) a liquid pervious topsheet having a wearer-facing side;

(b) a liquid impervious backsheet joined with said topsheet;

(c) an absorbent core positioned between said topsheet and said backsheet, said absorbent core having side edges;

(d) a side flap extending laterally outwardly from and along each said side edge of said absorbent core, said side flap having a distal edge; and

(e) a stabilizer member joined to at least each of said side flaps, each said stabilizer member having a first edge and a second edge laterally outwardly from said first edge, said first edge being disposed at or laterally inward from said side edge of said absorbent core, said stabilizer member being joined to said wearer-surface of said topsheet at at least two points of attachment, wherein the laterally inward most one of said points of attachment is positioned laterally outward from said first edge of said stabilizer member such that said first edge is not joined to said topsheet;

wherein the absorbent pad has

a central absorbent panel having a flexure-resistance, said central absorbent panel having side borders defined by said first edge of each said stabilizer member;

a side wall panel extending outwardly from and along each said side border of said central absorbent panel, each said side wall panel being flexurally joined with said central absorbent panel, each said side wall panel having a flexure-resistance, each said side wall panel comprising said stabilizer member, said stabilizer member increasing the flexure-resistance of said side wall panel such that the flexure-resistance of each said side wall panel is greater than the flexure-resistance of said central absorbent panel; and

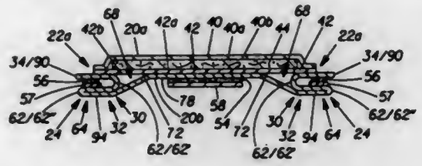
an axis of flexural bending joining each said side wall panel to said central absorbent panel, each said axis of flexural bending being formed by the structural discontinuity formed by said stabilizer member.

5,578,026

ABSORBENT ARTICLE HAVING A UNITARY RELEASE MATERIAL

Bruce W. Lavash, West Chester; Thomas W. Osborn, III, Cincinnati, both of Ohio, and Kaoru Niihara, Ashiya, Japan, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 283,925, Aug. 1, 1994, abandoned, which is a continuation of Ser. No. 906,593, Jun. 19, 1992, abandoned, which is a division of Ser. No. 915,202, Jul. 13, 1992, Pat. No. 5,366,504, which is a continuation-in-part of Ser. No. 886,518, May 20, 1992, Pat. No. 5,405,378. This application Mar. 13, 1995, Ser. No. 402,769
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—390 **17 Claims**



1. An absorbent article for wearing in a wearer's undergarment, said absorbent article having a garment side, a body-facing side, a principal longitudinal centerline that is oriented in a longitudinal direction, and a principal transverse centerline that is oriented in a transverse direction, said absorbent article comprising:

a main body portion comprising an absorbent assembly and having a length, a first longitudinal half on one side of said principal longitudinal centerline, a second longitudinal half on the other side of said principal longitudinal centerline, two spaced apart longitudinal edges, two spaced apart transverse edges, a first end region, a second end region, and a central region disposed between said first end region and said second end region, said first end region and said second end region each extending outward along said principal longitudinal centerline from said central region a distance of about ⅛ to about ⅓ the length of said main body portion, said main body portion comprising a liquid pervious topsheet, a liquid impervious backsheet joined to said topsheet, an absorbent core positioned between said topsheet and said backsheet, and a pad securement member joined to said backsheet for securing said main body portion to the wearer's undergarment; and

a pair of flaps for folding under the wearer's undergarment, said flaps comprising a first flap joined to the first longitudinal half and a second flap joined to the second longitudinal half, each of said flaps being joined to said central region of said main body portion along a line of juncture outboard of said pad securement member and having a proximal edge adjacent the line of juncture, and a distal edge disposed away from the line of juncture; wherein

each of said flaps has a garment side and a flap transverse centerline that passes through the central region of said main body portion and intersects the principal longitudinal centerline of the absorbent article and divides the absorbent article into four quarters, each of said quarters comprising a first portion adjacent said principal longitudinal centerline and said flap transverse centerline, and a second portion outboard of said first portion; and

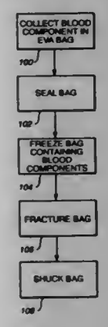
said second portion of at least one of said quarters of said absorbent article comprises a zone of differential extensibility, said zone of differential extensibility being capable of greater extension outward in a generally transverse direction than said first portion of said quarter, and each of said flaps comprises a flap adhesive joined to the garment side thereof and a unitary release member comprising a first surface and a second surface, said first surface being joined to the garment side of said flaps, wherein said unitary release member and said flap adhesive of each of said flaps are arranged on each of said flaps so that at least a portion of said second surface of said unitary release member superposes said flap adhesive and is removably secured thereto when each of said flaps is folded along a fold line located between said flap adhesive and said unitary release member.

5,578,027

METHOD AND SYSTEM FOR COLLECTING, PROCESSING, AND STORING BLOOD COMPONENTS

James A. Drago, El Sobrante; Bruce Kuhlemann, Hayward, and Richard Spielberg, Yerba Linda, all of Calif., assignors to Pall Corporation, East Hills, N.Y.

Division of Ser. No. 123,521, Sep. 17, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 466,614
Int. Cl.[6] A61B *19/00*
U.S. Cl. 604—408 **19 Claims**



13. A method of processing blood products, comprising:

collecting a blood product in a flexible bag manufactured from ethylene vinyl acetate (EVA), wherein vinyl acetate is present in an amount of between about 9 and about 18 percent by weight of total EVA;

sealing the bag;

freezing the blood product to form a substantially solid frozen blood product;

opening the bag; and

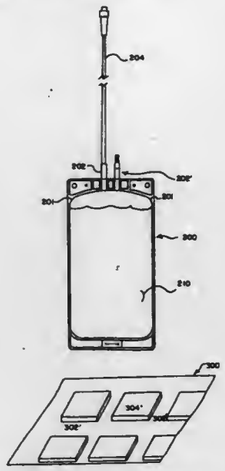
removing the solid product, in frozen form, from the bag.

5,578,028

METHOD AND SYSTEM FOR COLLECTING, PROCESSING, AND STORING BLOOD COMPONENTS

James A. Drago, El Sobrante; Bruce Kuhlemann, Hayward, and Richard Spielberg, Yerba Linda, all of Calif., assignors to Pall Corporation, East Hills, N.Y.

Division of Ser. No. 123,521, Sep. 17, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 467,474
Int. Cl.[6] A61B *19/00*
U.S. Cl. 604—408 **11 Claims**



1. In a plasmapheresis system, including a blood collection system and a separation system, the improvement comprising:

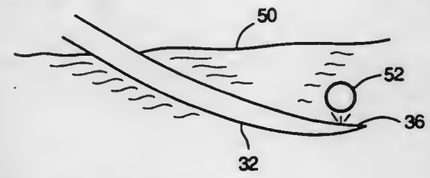
a plasma storage bag, in communication with the separation system, for containing an amount of plasma and manufactured from ethylene vinyl acetate (EVA), wherein vinyl acetate is present in an amount of between about 9 and about 18 percent by weight of total EVA, said bag including an inner surface for communicating with plasma contained in the bag, said surface including a predetermined pattern that permits the removal of plasma in a frozen state from the plasma storage bag.

5,578,029

METHOD OF TREATING VEINS

Mario A. Trelles, Cambrils, Spain, and Dale F. Koop, Sunnyvale, Calif., assignors to Coherent, Inc., Santa Clara, Calif.

Division of Ser. No. 311,509, Sep. 23, 1994, Pat. No. 5,531,739. This application Feb. 8, 1996, Ser. No. 598,657
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—25 **2 Claims**



1. A fiber optic probe for use in treating blood vessels under the skin comprising:

a hollow tubular member having a sharpened needle-shaped tip configured for piercing the skin thereby permitting the tubular member to be advanced along side of a blood vessel located under the skin; and

VOL 1192 ISS 4 NOV 26 1996 UMI

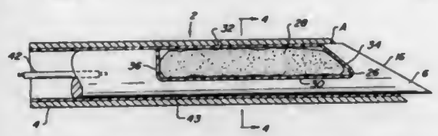
an optical fiber supported within the tubular member, said optical fiber for transmitting laser radiation from an input end to a delivery end and wherein the delivery end terminates within the tubular member, said delivery end being configured to direct most of the laser radiation emitted therefrom along an axis transverse to said tubular member and towards said vessel.

5,578,030

BIOPSY NEEDLE WITH CAUTERIZATION FEATURE

John M. Levin, 412 Fairview Rd., Narberth, Pa. 19072

Filed Nov. 4, 1994, Ser. No. 334,836
Int. Cl.[6] A61B *10/00*
U.S. Cl. 606—39 **13 Claims**



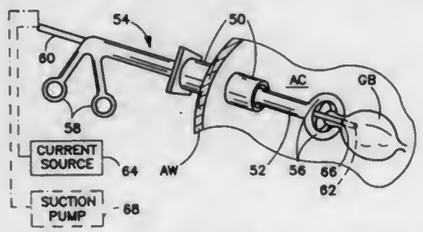
1. A biopsy needle for obtaining tissue specimens from a person's tissues comprising: a cannula; a stylet having a sidewall slidingly held in said cannula; means for inserting said needle into said person; means for excising tissue specimens from said person and thereby forming a wound in the tissues, said excising means comprising a cutting edge in said sidewall; means for removing said needle from said person; and cauterization means for cauterizing the wound caused by said means for excising tissue and for cauterizing the tissues in contact with said biopsy needle wherein said cauterization means generates heat durng cauterization, said biopsy needle further comprising means for insulating said excised tissue specimen from the heat.

5,578,031

LAPAROSCOPIC INSTRUMENT ASSEMBLY AND ASSOCIATED METHOD

Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023, and Leon Pirak, 500 Mountain Ave., Springfield, N.J. 07081

Filed May 10, 1993, Ser. No. 59,702
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—49 **5 Claims**



1. A method for use in laparoscopic surgery, comprising the steps of:

providing a trocar sleeve and an instrument assembly including an elongate shaft and grasping means disposed in part at a distal end of said shaft, said instrument assembly further including coagulating means with a perforating and coagulating tip disposed at a distal end of said shaft for forming an aperture in the tissues held by said grasping means and for sealing blood vessels in said tissues at said aperture;

positioning said trocar sleeve in an abdominal wall of a patient;

inserting said elongate shaft through said trocar sleeve so that a distal end of said instrument assembly projects into an abdominal cavity of the patient;

manipulating said instrument assembly from outside the patient to operate said grasping means to grasp tissues of an organ within the abdominal cavity of the patient;

actuating said instrument assembly from outside the patient to operate said coagulating means to form an aperture in the tissues of the organ held by said grasping means and to seal edges of said aperture;

aspirating fluidic material from said organ through said aperture; and

maintaining a grasp on said tissues of said organ by said grasping means during said step of aspirating,

said shaft being provided with a longitudinally extending channel and said coagulating means including an elongate rod, further comprising the steps of:

inserting said rod through said channel prior to said step of actuating,

removing said rod from said channel prior to said step of aspirating;

providing an elongate aspirating instrument; and

inserting said elongate aspirating instrument through said channel upon removal of said rod therefrom,

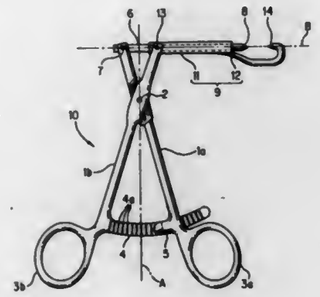
said step of aspirating including the step of using said aspirating instrument to aspirate fluid from said organ.

5,578,032

BONE CLAMP

Donald H. Lalonde, Saint John, Canada, assignor to Accurate Surgical & Scientific Instruments Corporation, Westbury, N.Y.

Filed Dec. 20, 1994, Ser. No. 359,972
Int. Cl.[6] A61B *17/60*
U.S. Cl. 606—54 **14 Claims**



8. A bone clamp comprising:

first and second bone gripping members each having a bone engagement portion at first ends thereof;

means for slidably coupling said first and second bone gripping members to allow axial alignment of said bone engagement portions along a longitudinal axis of said first and second bone gripping members in an opposing relationship to clamp bone between said bone engagement portions:

first and second lever members, pivotally coupled together between first and second ends thereof;

means for coupling first ends of said first and second lever members with second ends of said first and second bone gripping members permitting relative longitudinal movement of said bone gripping members to be effected by a scissor action of said first and second lever members;

second ends of said first and second lever members having means for accepting fingers; and

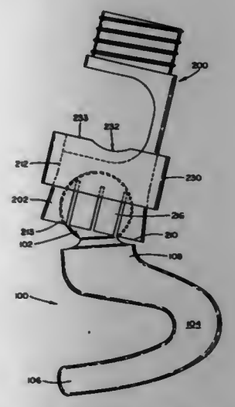
means for ratchetably coupling said first and second lever members.

5,578,033

ADVANCED POLYAXIAL LOCKING HOOK AND COUPLING ELEMENT DEVICE FOR USE WITH SIDE LOADING ROD FIXATION DEVICES

Joseph P. Errico, Far Hills, N.J.; Thomas J. Errico, Summit, N.J., and James D. Ralph, Oakland, N.J., assignors to Fastenetix, L.L.C., Summit, N.J.

Continuation-in-part of Ser. No. 502,285, Jul. 13, 1995. This application Oct. 13, 1995, Ser. No. 542,542
Int. Cl.[6] A61B *17/70*
U.S. Cl. 606—61 **13 Claims**



1. A polyaxial hook assembly for use with orthopedic rod implantation apparatus, comprising:

a blade portion, having a curved shape for cupping the lamina, a lower extending member for disposition beneath the lamina, and a semi-spherical head which is disposed above the lower extending member;

a coupling element including

an expandable and contractable interior chamber for receiving therein said semi-spherical head, said interior chamber further having an expandable and contractable opening for receiving therethrough said semi-spherical head,

a rod receiving channel formed in a side thereof for receiving therein a support rod of said orthopedic rod implantation apparatus, and

a surface threading disposed on an upper exterior portion thereof;

a locking ring mounted around said coupling element, the downward translation of said ring providing a force which causes said interior chamber and said opening thereof to contract, therein locking the blade portion to the coupling element;

a rod securing sleeve, positionable around, and in rod securing relationship with, said rod receiving channel for securing said rod therein;

a top locking nut, mateable with said surface threading.

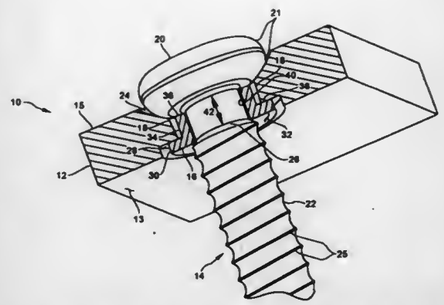
5,578,034

APPARATUS FOR PREVENTING SCREW BACKOUT IN A BONE PLATE FIXATION SYSTEM

Bradley T. Estes, Memphis, Tenn., assignor to Danek Medical, Inc., Memphis, Tenn.

Filed Jun. 7, 1995, Ser. No. 477,296
Int. Cl.[6] A61B *17/80*
U.S. Cl. 606—61 **25 Claims**

15. A fixation system for use with a fixation member having a top surface, a bottom surface and a bore defined therethrough, said fixation system comprising: a fastener having an elongated shaft, a headed portion engagable with the bore at the top surface of the fixation member when the shaft extends therethrough, a first diameter non-threaded portion adjacent said headed portion, and a second larger diameter threaded portion remote from said headed portion; and an apparatus for preventing the fastener from backing out of said bore when said shaft extends therethrough including an annular collar having an initial inner diameter deformably sizable to slidingly receive the elongated shaft therethrough and an outer diameter sized to engage said bottom surface of said fixation member, said collar being formed of a material such that said inner diameter shrinks to a final diameter less than the second diameter threaded portion of the fastener in response to a change in temperature thereof to thereby trap said fixation member between said collar and the headed portion of the fastener.

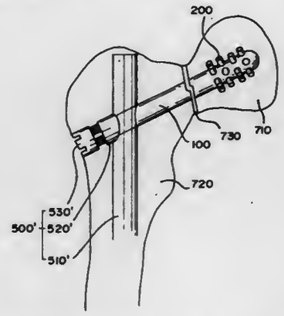


5,578,035

EXPANDABLE BONE MARROW CAVITY FIXATION DEVICE

Chih-1 Lin, 14292 Spring Vista La., Chino Hills, Calif. 91709

Filed May 16, 1995, Ser. No. 442,110
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—68 **5 Claims**



1. An expandable bone marrow cavity fixation device comprising:

a tubular body having a hollow interior provided with an open top, said tubular body provided peripherally with a plurality of through holes communicating said hollow interior with the outside of said tubular body;

a plurality of diameter-adjusting elements received movably in said through holes of said tubular body and provided respectively with a holding element;

at least one adjustment element received adjustably in said hollow interior of said tubular body such that an inner end of each of said diameter-adjusting elements is urged by said at least one adjustment element;

an urging element inserted into said hollow interior of said tubular body via said open top of said hollow interior such that an upper end of said at least one adjustment element is urged by a bottom end of said urging element, and that said at least one adjustment element can be actuated by a rotational motion of said urging element so as to cause an outer end of

each of said diameter-adjusting elements to jut out of said through hole of said tubular body to bring about an increase in outer diameter of said tubular body; and

a pulling back fixation means fastened to said open top of said tubular body for connecting said tubular body to a bone marrow inner nail and pulling said tubular body in the direction toward said bone marrow inner nail;

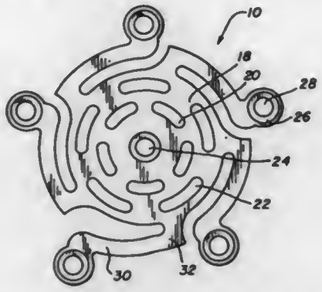
wherein one of said tubular body and said at least one adjustment element is provided with a retaining means engageable securely with said holding element of each of said diameter-adjusting elements for preventing said diameter-adjusting elements from becoming disengaged with said through holes of said tubular body.

5,578,036

METHOD AND APPARATUS FOR FIXATION OF BONE DURING SURGICAL PROCEDURES

Kevin T. Stone, 2940 E. Patterson Rd., Warsaw, Ind. 46580, and Stephen J. Foss, 10841 Brooks La., Plymouth, Mich. 48170

Filed Dec. 6, 1993, Ser. No. 163,334
Int. Cl.[6] A61B *17/56*; A61F *2/30*
U.S. Cl. 606—69 **24 Claims**



1. An apparatus for fixation of bone during surgical procedures using at least one bone screw, said apparatus comprising:

a body member defining a plane which is operable to cover at least a portion of the bone;

at least one attachment member which is operable to be secured to the bone, said at least one attachment member including means for receiving the at least one bone screw and securing said at least one attachment member to the bone upon receipt of the at least one bone screw; and

at least one extension member mechanically communicating with said body member and a respective one of said at least one attachment member, a distal end of said at least one extension member being operable to be displaced generally radially with respect to said body member within the plane of the body member

whereby by varying the displacement of said extension member with respect to said body member, said at least one attachment member may be secured to the bone by the at least one bone screw at a plurality of different positions with respect to said body member.

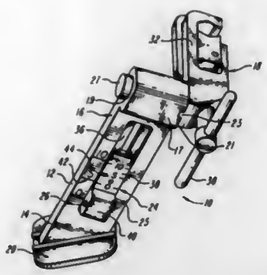
5,578,037

SURGICAL GUIDE FOR FEMORAL RESECTION

Anthony Sanders, Lakeville, and Ann M. Corbo, Braintree, both of Mass., assignors to Johnson & Johnson Professional, Inc., Raynham, Mass.

Filed Nov. 14, 1994, Ser. No. 338,901
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—80 **8 Claims**

1. A femoral neck resection guide, comprising



a rigid frame formed of an elongate member, the frame having distal and proximal ends disposed along a longitudinal frame axis;

a gauge movable relative to the frame and means disposed on the frame between the distal and proximal ends of the frame for referencing the resection guide to anatomical features of a patient's femur;

a surgical reamer having a longitudinal axis for insertion into the intramedullary canal of the fermur:

clamp means disposed on the proximal end of the frame for securing the resection guide in a fixed position relative to the surgical reamer so that the longitudinal axis of the surgical reamer is substantially parallel to the longitudinal frame axis; and

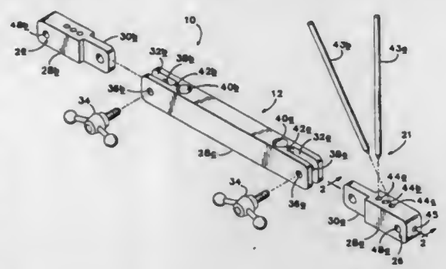
a resection guide surface on the distal end of the frame for defining a resection line for a femoral neck, and said gauge being movable relative to said guide surface.

5,578,038

JIG FOR USE IN OSTEOTOMIES

D. Barclay Slocum, 241 Spy Glass Dr., Eugene, Oreg. 97401

Continuation of Ser. No. 900,726, Jun. 18, 1992, abandoned. This application Jun. 6, 1994, Ser. No. 254,478
Int. Cl.[6] A61F *5/00*
U.S. Cl. 606—87 **17 Claims**



1. An osteotomy jig comprising:

a positioner structure through which parallel first and second holes are formed, with each hole defining a longitudinal axis;

a first rod extending outwardly from the positioner structure adjacent the first hole, extending outwardly from the positioner structure in a jig plane which is normal to the longitudinal axis of the first hole; and

a second rod extending outwardly from the positioner structure in a predetermined fixed angular relationship relative to the first rod adjacent the first hole, diverging from the first rod and extending outwardly from the positioner structure in the jig plane;

a third hole formed in and extending into the positioner structure and lying in the jig plane, wherein the first rod is inserted into the third hole;

a fourth hole formed in and extending into the positioner structure and lying in the jig plane at the acute angle relative to the third hole, wherein the second rod is inserted into the fourth hole; and

a fifth hole formed in and extending into the positioner structure and lying in the jig plane at approximately a 30 and 15 degree angle relative to the third and fourth holes, respectively;

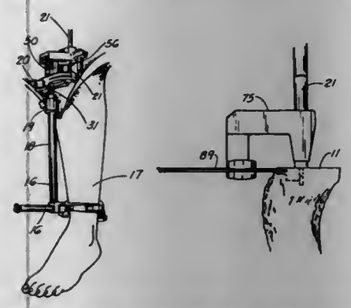
wherein the first and second rods define an acute angle of approximately 15 degrees and thereby define the jig plane normal to the longitudinal axis of the first hole.

5,578,039

TIBIAL RESECTION INSTRUMENTATION AND SURGICAL METHOD

Tim Vendrely, Memphis, Tenn.; Leo A. Whiteside, Bridgeton, Mo.; Thomas A. T. Caris, Memphis, Tenn.; John Steele, Aurora, Colo., and Chris E. Johnson, Memphis, Tenn., assignors to Smith & Nephew Richards Inc., Memphis, Tenn.

Filed Feb. 15, 1995, Ser. No. 388,983
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—88 **9 Claims**



1. A method of preparing a patient's proximal tibia with a surgical saw and cutting instrumentation to receive a tibial implant comprising the steps of:

a) reaming the patient's tibial intramedullary canal;

b) placing a referencing member in the intramedullary canal;

c) attaching a primary cutting instrument on the referencing member near the patient's proximal tibia, the primary cutting instrument having transverse cutting guide surfaces for guiding the saw during a cutting of the proximal tibia and a stylus with an adjustable stylus member that can reference the proximal tibia before cutting begins;

d) setting a depth of cut with the stylus;

e) engaging the proximal tibial surface with the stylus;

f) cutting the proximal tibia transversely with the saw by tracking the cutting guide surfaces with the saw;

g) removing the first cutting instrument and its stylus;

h) attaching a secondary cutting guide on the referencing member, said secondary cutting guide having a structural support member for cutting longitudinally into the proximal tibia; and

i) making a secondary transverse cut on the proximal tibia using the secondary cutting instrument, to more precisely prepare the proximal tibia to receive the tibial implant.

5,578,040

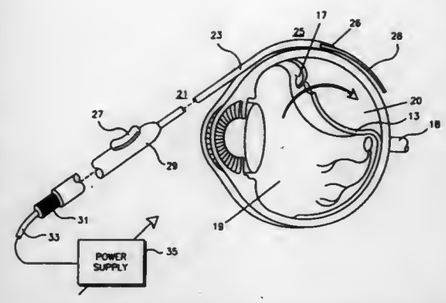
OCULAR REPAIR SYSTEM AND APPARATUS

Albert C. Smith, P.O. Box 782, Los Altos, Calif. 94022

Filed Jun. 14, 1994, Ser. No. 259,482
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—41 **12 Claims**

1. Surgical apparatus comprising:

a plurality of electrodes disposed to be positioned in spaced array over a selected area of an eye and including conductors



coupled to the electrodes for supplying electrical signals thereto from a source of electrical signals remote from the plurality of electrodes;

insulation disposed on each of the plurality of electrodes to preclude electrical connection between the electrodes and the eye; and

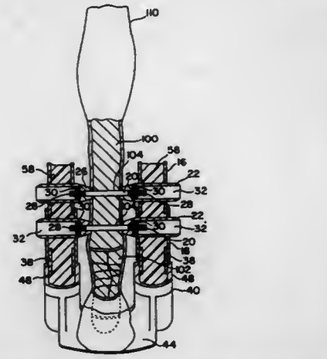
a support member for the electrodes disposed to position the electrodes over the selected area of the eye, with the conductors for the electrodes positioned along the support member to provide connections for the electrodes at a location away from the selected area of the eye.

5,578,041

EXTERNAL FIXATION DEVICE

Ronald A. Nash, Silver Springs, N.Y., and David M. Nunamaker, West Grove, Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Oct. 14, 1994, Ser. No. 323,135
Int. Cl.[6] A61B *17/64;17/10*
U.S. Cl. 606—54 **20 Claims**



1. An external skeletal fixator for treating an injured animal limb having a proximal end and a distal end, the fixator comprises:

a plurality of transfixation pins adapted to transfix bone at separated sites along the limb proximal the injury and pass completely through and protrude from the limb;

elongated pin supports, each having a longitudinal axis, for supporting said transfixation pins proximate said bone, on both sides of said bone, each said pin support having a bore therethrough along said longitudinal axis for accepting one said transfixation pin; and

a base for attachment distal to the distal end of the limb in order to bear at least a portion of the weight of the animal;

means for rigidly connecting said pin supports to said base and for transferring said portion of the weight of the animal to said base.

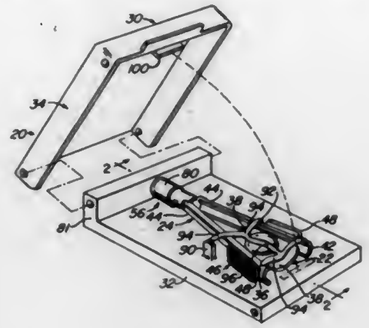
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5,578,042

OPHTHALMIC KIT AND METHOD FOR LENS INSERTION

Stuart J. Cumming, 1211 W. LaPalma Ave., #201, Anaheim, Calif. 92801

Filed Mar. 14, 1994, Ser. No. 213,235
Int. Cl.[6] A61B 19/00; A61F 9/00
U.S. Cl. 606—107 54 Claims



1. An ophthalmic kit for intraocular lens implantation, comprising:

a foldable intraocular lens having a normally unfolded configuration and foldable to a relatively compact folded configuration wherein the lens is conditioned for insertion into a patient's eye through a small corneal incision in the eye and the folded lens stores elastic strain energy for unfolding the lens within the eye,

a lens insertion device having an anterior end insertable into the patient's eye through said incision and an opposite posterior end having a pair of lens gripping jaws having confronting inner concave sides and movable away from one another to open positions wherein the jaws are spaced to receive said lens in its unfolded configuration between said inner concave sides and toward one another to closed positions wherein said inner concave sides form a passage extending longitudinally through and opening through said anterior end of said device, and jaw closing means mounted directly on said jaws to be gripped between a user's fingers for squeezing said jaws together from their open positions to their closed positions,

a handling case for holding said insertion device and lens until needed for lens implantation comprising a tray, and supporting means on the tray removably supporting said insertion device and said foldable lens in storage positions on the tray wherein (a) said jaws occupy their open positions, (b) said lens is positioned between the jaws with the lens in its normal unfolded configuration, and (c) said jaw closing means are located at one side of the tray to be gripped between the user's fingers for initially squeezing said jaws closed about the lens in a manner to fold the lens to its compact folded configuration within said passage while said insertion device and lens remain on the tray and thereafter removing the insertion device and folded lens from the tray, and wherein

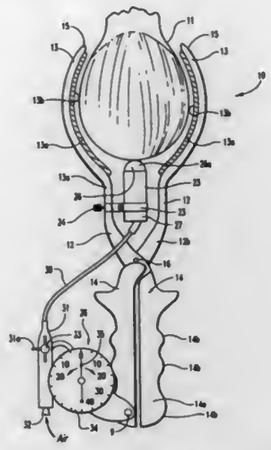
the folded lens is ejectable from the insertion device by passing it anteriorly from said passage through said anterior end of the device into a patient's eye following removal of said device from said tray.

5,578,043

DELIVERY HELMET FOR LOW BIRTH WEIGHT INFANTS

Arthur Galstian, 201 Pennsylvania Pkwy., Suite 300, Indianapolis, Ind. 46280

Filed Oct. 11, 1994, Ser. No. 321,177
Int. Cl.[6] A61B 17/41;17/02
U.S. Cl. 606—119 29 Claims



1. An apparatus for assisting in the delivery of a baby, comprising:

a pair of first members for insertion into operative association with a fetal head, each said first member having a first end defining a fetal head engaging portion and an opposite second end;

a second member connecting said pair of first members; and

a movement indicator mounted to the apparatus for detecting and communicating the longitudinal movement of the fetal head relative to the apparatus.

5,578,044

ENDOSCOPIC SUTURE SYSTEM

Norman S. Gordon, Irvine, and Robert P. Cooper, Yorba Linda, both of Calif., assignors to Laurus Medical Corporation, Irvine, Calif.

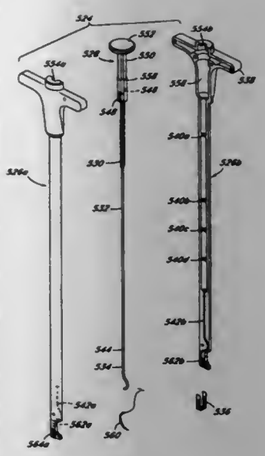
Continuation-in-part of Ser. No. 205,042, Mar. 2, 1994, Pat. No. 5,540,704, which is a continuation-in-part of Ser. No. 57,699, May 4, 1993, Pat. No. 5,458,609, which is a continuation-in-part of Ser. No. 941,382, Sep. 4, 1992, Pat. No. 5,364,408. This application Sep. 26, 1994, Ser. No. 311,967
Int. Cl.[6] A61B 17/00
U.S. Cl. 606—144 15 Claims

1. A suturing instrument comprising:

an elongate body member, said elongate body member having a substantially straight distal end portion;

a concave curved driver pathway coupled to a convex curved needle channel located within said substantially straight distal end portion of said elongate body member; and

a flexible driver member slidably disposed in said concave curved driver pathway.

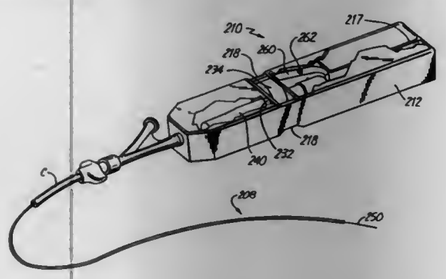


5,578,045

SEPTAL DEFECT CLOSURE DEVICE

Gladwin S. Das, Lauderdale, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Division of Ser. No. 62,095, May 14, 1993, Pat. No. 5,334,217, which is a division of Ser. No. 822,951, Jan. 21, 1992, abandoned. This application Aug. 2, 1994, Ser. No. 284,766
Int. Cl.[6] A61B 17/00
U.S. Cl. 606—151 21 Claims



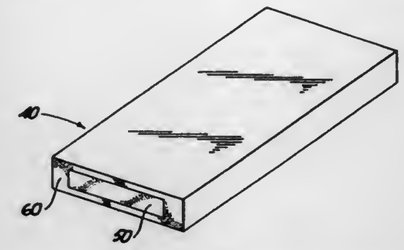
1. A delivery system for delivering and deploying a closure device through a vascular system, comprising an elongate, flexible urging member for urging the closure device through a catheter, a remotely located control means for selectively, accurately advancing the urging member, and a control wire extending along a length of the urging member for selectively releasing the closure device, the control means comprising a threaded, generally tubular shaft connected to said urging member and a manually rotatable rotor mounted on the shaft, the rotor being threaded to mate with the threads on the shaft such that by rotating the rotor through a known angle the shaft may be advanced a known distance, advancing the urging member substantially the same distance.

5,578,046

COMPOSITE BIOABSORBABLE MATERIALS AND SURGICAL ARTICLES MADE THEREFORM

Cheng-Kung Liu, Norwalk; Ying Jiang, North Haven; Mark S. Roby, Killingworth; Steven L. Bennett, New Haven; Richard P. Stevenson, Colchester, and Jeffrey P. Pietrangeli, Bridgeport, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 194,766, Feb. 10, 1994. This application May 12, 1995, Ser. No. 439,830
Int. Cl.[6] A61B 17/00
U.S. Cl. 606—151 4 Claims



1. A composite bioabsorbable sheet implantable within a living organism comprising:

a core portion formed from a first bioabsorbable material;

a shell portion substantially coextensive with and substantially surrounding said core portion to form a composite sheet, said shell portion formed from a second bioabsorbable material;

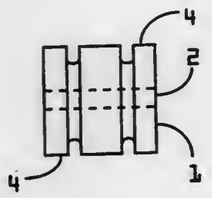
said first and second bioabsorbable materials having different rates of bioabsorption.

5,578,047

HEMORRHOID REMOVING DEVICE

Jerry W. Taylor, 1825 King Rd., Mechanicsville, Md. 20659

Filed Aug. 16, 1994, Ser. No. 291,536
Int. Cl.[6] A61B 17/08
U.S. Cl. 606—157 1 Claim



1. A hemorrhoid ligature element comprising: an elongated, cylindrical elastic body having a central bore extending therethrough; the length of said body being substantially longer than a radius of said body measured from a periphery of said bore to an outer peripheral surface of said body, whereby said ligature element is roll-resistant; said outer peripheral surface including at least one circumferential groove for making the outer peripheral surface slide-resistant; said central bore including at least one circumferential groove extending radially into the body for receiving tissue therein, thereby increasing a coefficient of friction between the ligature element and the tissue.

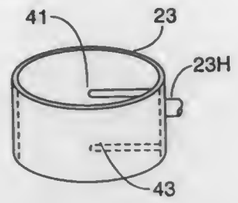
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5,578,048
MANIPULATOR APPARATUS
Joseph Pasqualucci, North Haven, and David A. Nicholas, Trumbull, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Continuation of Ser. No. 122,079, Sep. 15, 1993, abandoned. This application Jan. 4, 1995, Ser. No. 368,727
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—192 **27 Claims**



1. A surgical apparatus for manipulating body tissue, which comprises:
a handle member;
a generally elongated member connected to said handle member and extending distally therefrom, said elongated member having a longitudinal axis and including proximal and distal end portions, said distal end portion pivotally connected to said proximal end portion about a pivot pin and being pivotal about said pivot pin relative to said longitudinal axis;
an expandable member mounted to said distal end portion of said elongated member and movable upon pivotal movement of said distal end portion; and
a fluid dispenser at least partially disposed within said handle member and being in fluid communication with said expandable member for selectively incrementally dispensing fluid into said expandable member to selectively incrementally inflate said expandable member.

5,578,049
OPTICAL ZONE MARKER FOR REFRACTIVE SURGERY
Fred T. Feaster, 4417 Overton Crest, Fort Worth, Tex. 76109
Filed Sep. 30, 1994, Ser. No. 315,535
Int. Cl.[6] A61F *9/00*
U.S. Cl. 606—166 **3 Claims**



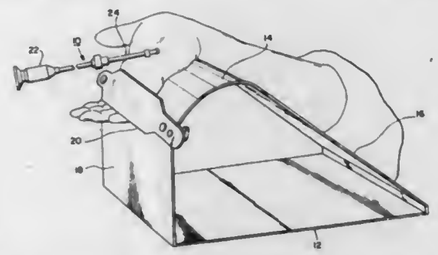
1. An optical zone marker for refractive surgery, comprising:
a hollow cylindrical member having first and second opposite ends, a given height between said first and second ends, an opening extending therethrough between said first and second ends with said opening having a given radius, and a central axis extending through said opening, said first end being an engaging end for engaging the cornea of the eye and said second end being a viewing end,
a pointing plate extending radially inward to said central axis of said opening from one side of said cylindrical member,
said pointing plate having an inner edge coinciding with said central axis and a transverse edge located closer to said viewing end than to said engaging end, with said transverse edge being perpendicular to said inner edge,
said pointing plate having a dimension along said height of said cylindrical member which is greater than at least one half of said height of said cylindrical member,
said pointing plate has substantially the same thickness over its entire area,
said pointing plate has an edge spaced from said transverse edge with said transverse edge and said edge spaced from said transverse edge being spaced from said first and second ends.

5,578,050
ERGONOMIC SURGICAL SCALPEL SLEEVE
Nicholas J. Webb, 5370 Basel Dr., Wrightwood, Calif. 92397
Filed Apr. 4, 1994, Ser. No. 222,601
Int. Cl.[6] A61D *17/00*
U.S. Cl. 606—167 **16 Claims**



1. A sleeve for a hand held surgical instrument comprising:
an elongated elastomeric tube including a low durometer thermoplastic material capable of deforming under fingertip pressure applied by the hand, said tube having an inner surface and an outer surface, and having openings on both ends thereof sized to receive the instrument into said tube so that said inner surface of said tube frictionally engages the instrument; and
a raised pattern disposed on said outer surface of said tube.

5,578,051
ENDOSCOPIC SURGICAL PROCEDURE AND INSTRUMENT FOR IMPLEMENTATION THEREOF
M. Ather Mirza, St. James, N.Y., assignor to Theodor Esser and Eugene T. King, East Northport, N.Y.
Continuation-in-part of Ser. No. 16,048, Feb. 10, 1993, Pat. No. 5,366,465, which is a continuation of Ser. No. 986,523, Dec. 7, 1992, abandoned. This application Sep. 28, 1994, Ser. No. 314,330
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—170 **16 Claims**



1. A method of implementing a uniportal endoscopic surgical procedure to effectuate a plantar fascia release on the foot of a patient; comprising the steps of:
drawing a line distal to the medial malleous in an area which corresponds to a point which is anterior and distal to the plantar fascial insertion;

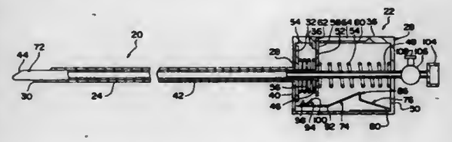
making an incision into the soft tissue on said patient at a locale proximate said operative site to establish an entry portal;
identifying a portion of the medial band of the plantar fascia and channeling the inferior surface of the plantar fascia across the plantar fat to the lateral aspect of the foot;
inserting an elongate insertion member into a longitudinal bore of an elongate cannular guide member having open proximal and distal ends and an open slot extending along the length thereof communicating with said open ends, said elongate insertion member being slidably receivable within said cannular guide member and being configured so that at least portions thereof conform with said open distal end and said open slot of the guide member to form a smooth exterior surface in combination therewith;
introducing a leading end of the combination of said cannular guide member and the therein inserted insertion member into said entry portal and advancing said combination a predetermined distance relative to said operative site;
withdrawing said insertion member while permitting said cannular guide member to remain in place at said operative site with the slot facing the plantar fascia;
inserting endoscopic viewing means into said cannular guide member for direct visualization of the medial, central and lateral bands of the plantar fascia and the positioning of said guide member relative to said site;
withdrawing said endoscopic viewing means from said cannular guide member;
mounting a surgical instrument on further endoscopic viewing means proximate the leading end of said further viewing means;
inserting said composite further endoscopic viewing means and surgical instrument into said cannular guide member such that the surgical instrument protrudes into the open slot in said cannular guide member, and advancing said composite endoscopic viewing means and surgical instrument so as to contact tissue at said operative site with said surgical instrument;
operatively engaging said tissue with said surgical instrument while advancing the latter under direct visualization through said further endoscopic viewing means so as to release at least the medial band of the plantar fascia;
withdrawing said composite further endoscopic viewing means and surgical instrument from said cannular guide member; and
withdrawing said cannular guide member through said entry portal and suturing said incision.

5,578,052
INSULATED LAPAROSCOPIC GRASPER WITH REMOVABLE SHAFT
Tibor Koros, and Gabriel Koros, both of 610 Flinn Ave., Moorpark, Calif. 93021
Continuation-in-part of Ser. No. 967,086, Oct. 27, 1992, Pat. No. 5,352,235. This application Oct. 3, 1994, Ser. No. 317,307
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—174 **7 Claims**



1. A monopolar laparoscopic electrocautery laparoscope surgical instrument having an insulated removable shaft, which comprises:
a rotatable combination shaft having a proximal end and a distal end;
said rotatable shaft combination comprising:
an outer hollow shaft having at least one slotted opening in its wall for allowing said shaft to be cleaned thoroughly after use;
an inner shaft slidably positioned axially in said outer hollow shaft;
grasping means at said distal end of said inner shaft;
anchor means at said proximal end of said inner shaft;
a removable and disposable shaft cover covering and insulating the body of said shaft combination other than said grasping means for preventing electrical arcing when the instrument is used as a cauterizer during use;
release means on said instrument for allowing said shaft combination and said removable and disposable shaft cover to be removed from said instrument for cleaning said shaft combination and for replacing said removable and disposable shaft cover with a new shaft cover;
a pair of distal and proximal squeeze handles pivotally secured together;
means on said handles and said instrument for receiving an electric cord and transmitting electric current to said grasping means on said distal end of said inner shaft;
means on said proximal handle for releasably securing said anchor means at said proximal end of said inner shaft;
said pair of squeeze handles, said shaft release means, and said housing being fabricated from non-electrically conductive material for protection against electric shock whenever electric current is passed through said instrument.

5,578,053
SAFETY NEEDLE INSTRUMENT HAVING A TRIGGERED SAFETY MEMBER
InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131
Continuation-in-part of Ser. No. 83,220, Jun. 24, 1993, Pat. No. 5,431,635, and Ser. No. 83,728, Jun. 29, 1993, Pat. No. 6,466,224. This application Sep. 2, 1993, Ser. No. 115,152
Int. Cl.[6] A61M *5/00*
U.S. Cl. 606—185 **25 Claims**



1. A safety needle instrument for penetrating anatomical tissue to gain access to an anatomical cavity comprising
a hub;
a needle mounted by said hub and having a sharp distal end for penetrating anatomical tissue;
a safety member having a blunt distal end and being movable relative to said hub between an extended position where said safety member distal end protrudes distally from said sharp needle distal end and a retracted position where said safety member distal end is disposed proximally of said sharp needle distal end to expose said sharp needle distal end;
bias means for biasing said safety member to move distally relative to said hub toward said extended position and for permitting said safety member to move proximally relative to said hub toward said retracted position;
a handle coupled with said safety member to manually move said safety member proximally relative to said hub from said extended position to said retracted position;
a locking mechanism engageable with said safety member to lock said safety member in said retracted position; and
a releasing mechanism responsive to entry of said safety needle instrument into the anatomical cavity to trigger release of said locking mechanism to permit said bias means to move said safety member distally relative to said hub from said retracted position to said extended position.

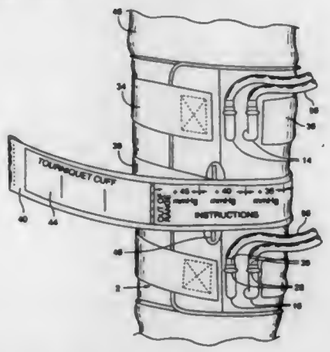
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5,578,054
METHOD FOR HAIR TRANSPLANTATION
James E. Arnold, 24142 Big Basin Way, Saratoga, Calif. 95070
Filed Aug. 31, 1994, Ser. No. 298,823
Int. Cl.[6] A61F 2/10; A61B 17/322
U.S. Cl. 606—185 **24 Claims**



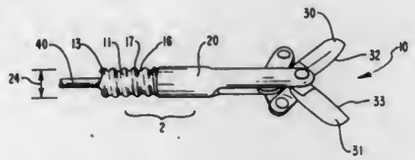
1. A method for transplanting hair, comprising:
inserting an instrument having a shaft with a proximal end, a sharpened distal end forming a blade thereon, and a longitudinal axis extending between the proximal end and the distal end into the skin to a preselected depth as determined by a stop disposed along the shaft to form an incision, wherein the blade is normal to the longitudinal axis of the shaft, wherein the stop prevents the blade from extending beyond about 5 mm into the scalp, and wherein the distance between the blade and the stop is adjusted before inserting the blade;
removing the instrument from the skin; and
placing a graft of skin having at least one hair into the incision.

5,578,055
OCCLUSIVE CUFF
James A. McEwen, 10551 Bamberton Drive, Richmond, British Columbia, Canada
PCT No. PCT/IE92/00005, § 371 Date Jul. 25, 1994, § 102(e) Date Jul. 25, 1994, PCT Pub. No. WO93/06782, PCT Pub. Date Apr. 15, 1993
Continuation of Ser. No. 767,812, Sep. 30, 1991, Pat. No. 5,312,431. This PCT application Aug. 25, 1992, Ser. No. 211,389
Int. Cl.[6] A61B 17/00
U.S. Cl. 606—202 **5 Claims**



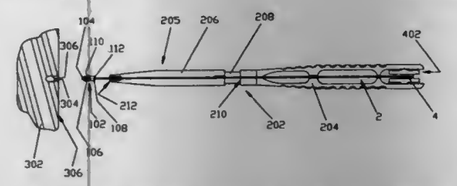
1. An overlapping occlusive cuff adapted to be applied circumferentially around a limb and having secondary securing means for improved safety, comprising:
an inflatable bladder having a length selected to be greater than the circumference of a limb at a desired location;
a sheath containing the bladder and having an inner side adapted to face the limb, an outer side adapted to face away from the limb and a length greater than the length of the bladder, thereby establishing an inflating portion and a non-inflating portion of the sheath along the length of the sheath, and
first sheath securing means having a first element on the outer side of the sheath, and a second element attached to the inner side of the sheath at a selected location on the non-inflating portion so that the second dement engages the first element to secure the sheath when the sheath is applied around the limb; and
second sheath securing means for securing the overlapping sheath in a substantially circumferential direction around the limb such that the sheath remains overlapped and secured if the second element of the first sheath securing means does not engage the first element of the first sheath securing means or becomes ineffective while the bladder is inflated to a pressure sufficient to occlude flow in blood vessels in the limb encircled by the sheath; wherein the length of the sheath is sufficient for the inflating portion to overlap upon itself and for the non-inflating portion of the sheath to overlap the inflating portion when the sheath is applied circumferentially around the limb at the desired location with the first and second sheath securing means securing the sheath around the limb.

5,578,056
SEPARABLE ECONOMICALLY PARTIALLY DISPOSABLE FLEXIBLE BIOPSY FORCEPS
Georg Pauldrach, Garbsen, Germany, assignor to Ballard Medical Products, Draper, Utah
Filed Dec. 21, 1994, Ser. No. 360,887
Int. Cl.[6] A61B 10/00
U.S. Cl. 606—205 **3 Claims**



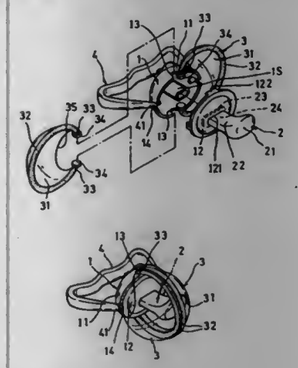
1. A biopsy forceps comprising:
disposable cable means for providing bendable steering and support for a reusable forceps instrument assembly, said cable means comprising a helically wound wire having distal and proximal ends and forming a continuous passage therethrough from the distal to the proximal end; and
a reusable forceps instrument assembly comprising:
a control wire passing through said passage and having proximal and distal ends;
forceps instrument means at the distal end of said contrul wire and operative in response to movement of said control wire to effect a surgical procedure; and
unitary mounting means to which said forceps instrument means is operatively mounted at one end thereof, said mounting means comprising a socket means at an opposite end thereof for selective coupling and uncoupling to the distal end of said helically wound wire by rotating the distal end of said helical wire into or out of said socket means such that said cable means can be uncoupled from said mounting means and discarded, and said reusable forceps assembly, including said control wire, said forceps instrument means and mounting means can be resterilized and reused with another cable means.

5,578,057
ANCHORING DEVICE INSTALLATION TOOL ASSEMBLY AND METHOD
Richard F. Wenstrom, Jr., Attleboro, Mass., assignor to Mitek Surgical Products, Inc., Westwood, Mass.
Filed Jul. 28, 1993, Ser. No. 98,599
Int. Cl.[6] A61B 17/04
U.S. Cl. 606—232 **16 Claims**



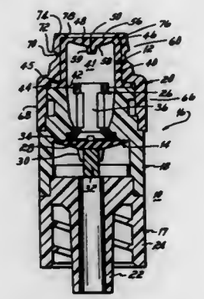
1. A system for attaching an object to a workpiece comprising:
an anchoring device and an installation tool for deploying said anchoring device within a preformed hole in said workpiece;
said anchoring device having a portion of a length of cord-like material attached thereto, said cord-like material having at least one free end;
said installation tool comprising:
positioning means for locating said anchoring device at a predetermined depth within said bole, said positioning means including a handle;
retention means for releasably holding a portion of said length of cord-like material extending from said anchoring device and also releasably holding said free end of said cord-like material, said retention means being releasably attachable to said handle of said positioning means; and
said cord-like material having a curved needle-like member attached to another one of its free ends, and wherein said retention means includes means for releasably holding said needle-like member.

5,578,058
HYGIENIC PACIFIER SHIELDED WITH BIVALVE SHELL
Chean-Shui Chen, c/o Hung Hsing Patent Service Center P.O. Box 55-1670, Taipei, Taiwan
Filed Dec. 15, 1995, Ser. No. 573,126
Int. Cl.[6] A61J 17/00
U.S. Cl. 606—236 **8 Claims**



1. A hygienic pacifier comprising:
a base member;
a nipple member having a nipple portion protruding from a first side of the base member;
a handle secured to the base member on a second side of the base member; and
a bivalve shell hingedly secured to the base member and having a pair of half-shell pieces operatively separable and openable beyond a baby's mouth to reveal the nipple portion to be soothed by the baby, and the pair of half-shell pieces foldably closable for shielding the nipple portion within the pair of half-shell pieces for preventing contamination of the nipple portion.

5,578,059
ANTI-REFLUX VALVE WITH ENVIRONMENTAL BARRIER
Charles R. Patzer, Ashville, Ohio, assignor to Medex, Inc., Hilliard, Ohio
Continuation of Ser. No. 216,640, Mar. 23, 1994, abandoned, which is a continuation-in-part of Ser. No. 160,047, Nov. 30, 1993, abandoned. This application Aug. 10, 1995, Ser. No. 513,575
Int. Cl.[6] A61M 5/00
U.S. Cl. 604—249 **3 Claims**

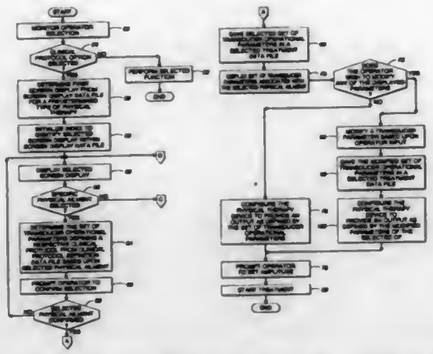


1. A medical valve including a housing having an inlet and an outlet and a normally closed disc valve, valve actuator, and valve seat situated therebetween, the disc valve being openable by a blunt cannula inserted through the inlet and acting upon the valve actuator, the disc valve being mounted for movement by the valve actuator away from the valve seat within the housing to create an uninterrupted annular through opening between the valve seat and the disc valve, and an environmental barrier separate from the disc valve and extending completely across the housing inlet, the environmental barrier including an elastomeric slit septum, the slit being normally biased closed and being openable under pressure of the blunt cannula to allow the blunt cannula to pass through the slit to the disc valve.

5,578,060
PHYSICAL THERAPY APPARATUS HAVING AN INTERACTIVE INTERFACE, AND METHOD OF CONFIGURING SAME
Jeff K. Pohl, Chattanooga; David A. Johnson, Signal Mountain, and Edward R. Dunlay, Harrison, all of Tenn., assignors to Chattanooga Group, Inc., Hixson, Tenn.
Filed Jun. 23, 1995, Ser. No. 494,095
Int. Cl.[6] A61N 1/08; A61H 1/00
U.S. Cl. 607—3 **37 Claims**

19. A method of responsively configuring a physical therapy apparatus including a transducer, the method comprising:
displaying identification data representative of at least one predetermined physical ailment for at least one predetermined human body part and a corresponding set of predetermined transducer operational parameters for the physical therapy apparatus associated with each predetermined physical ailment for each predetermined body part so as to define a respective clinical protocol;

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selecting a displayed physical ailment having a corresponding set of transducer operational parameters for the physical therapy apparatus which defines the predetermined output of the transducer of the physical therapy apparatus; and

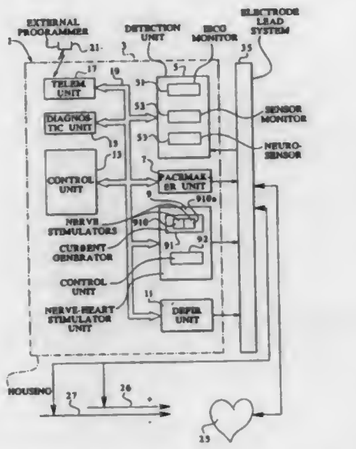
automatically reconfiguring the transducer operational parameters for the physical therapy apparatus based upon the set of transducer operational parameters corresponding to the selected physical ailment such that the physical therapy apparatus is configured to thereby treat the selected physical ailment.

5,578,061

METHOD AND APPARATUS FOR CARDIAC THERAPY BY STIMULATION OF A PHYSIOLOGICAL REPRESENTATIVE OF THE PARASYMPATHETIC NERVOUS SYSTEM

Brigitte Stroetmann, Uttenreuth, Germany; Nils Holmström, Jarfalla, Sweden; Siegfried Kallert, Erlangen, Germany, and Staffan Bowald, Almunge, Sweden, assignors to Pacesetter AB, Solna, Sweden

Filed Oct. 3, 1995, Ser. No. 538,570
Int. Cl.[6] A61N *1/362*
U.S. Cl. 607—4 **27 Claims**



1. An apparatus for providing therapy to the heart of a subject, comprising:

a tachyarrhythmia detector means for detecting tachyarrhythmia of said heart;

a current generator;

an electrode system means connectable for delivering current from said current generator in vivo to the parasympathetic nervous system of said subject and for delivering current from said current generator in vivo to the sympathetic nervous system of said subject; and

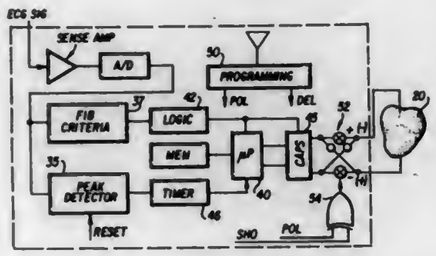
control means for causing said current generator, upon detection of tachyarrhythmia by said tachyarrhythmia detector, to emit a first, pulsed current via said electrode system to the parasympathetic nervous system in order to activate said parasympathetic nervous system and to emit a second current via said electrode system to the sympathetic nervous system for blocking said sympathetic nervous system.

5,578,062

DEFIBRILLATOR SHOCK TIMING IN FIBRILLATORY CYCLE INTERVAL

Eckhard Alt, Ottobrunn, Germany, and Lawrence J. Stotts, Lake Jackson, Tex., assignors to Intermedics, Inc., Angleton, Tex.

Filed Apr. 19, 1995, Ser. No. 425,052
Int. Cl.[6] A61N *1/362*
U.S. Cl. 607—5 **20 Claims**



1. A defibrillator comprising:

a signal generator including internal circuitry implemented to deliver output shock waveforms and housed in a case adapted to be implanted in the left pectoral region of a cardiac patient, wherein the case is implemented to interact with the internal circuitry of the generator to maintain the case active as an electrode,

an electrical transvenous lead having a proximal electrode for electrical connection to the internal circuitry of the signal generator and a distal end adapted to be positioned in the right ventricle (RV) of the patient's heart and including a sensing tip for contacting the RV to sense the patient's ECG signal and a shocking coil arranged to be located in the RV when said transvenous lead is implanted in the patient,

the internal circuitry of said signal generator including

triggerable output means for developing an output shock waveform when said output means is triggered in response to detection of ventricular fibrillation of the patient's heart from the sensed ECG signal, and

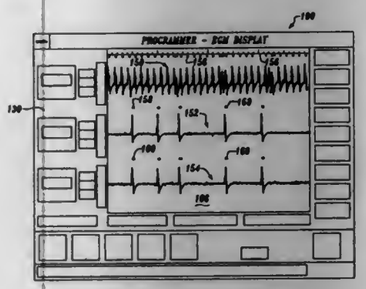
timing means further responsive to the sensed ECG signal for timing the application of the shock waveform developed by said output means across said transvenous lead and said active case with a predetermined delay relative to the occurrence of an R-wave of said sensed ECG signal next following said detection of fibrillation until at least about 50% of the R-R cycle length of the ECG signal has elapsed, to optimize the timing of delivery of an electric field vector derived from the shock waveform across a myocardial mass of the patient's heart between the shocking coil and the active case.

5,578,063

IMPLANTABLE ATRIAL DEFIBRILLATOR AND SYSTEM HAVING MULTIPLE CHANNEL ELECTROGRAM TELEMETRY AND METHOD

Joseph M. Bocek, Seattle, and Craig S. Siegman, Redmond, both of Wash., assignors to InControl, Inc., Redmond, Wash.

Filed Oct. 19, 1995, Ser. No. 545,397
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **26 Claims**



9. A defibrillator system for applying cardioverting electrical energy to a human heart, said system comprising:

an implantable defibrillator including

first sensing means for sensing electrical activity of the heart and generating a first electrogram,

second sensing means for sensing electrical activity of the heart and generating a second electrogram,

cardioverting means responsive to at least one of the first and second sensing means for applying the cardioverting electrical energy to the heart,

a first event detector for detecting cardiac events in the first electrogram,

a second event detector for detecting cardiac events in the second electrogram,

detection marker generating means for generating first and second cardiac event detection markers when the first and second event detectors respectively detect said cardiac events in the first and second electrograms, and

transmitting means for transmitting the first and second electrograms and at least one of the first and second cardiac event detection markers with a corresponding one of the first and second electrograms; and

nonimplantable receiving means for receiving the first and second electrograms and including display means for simultaneously displaying the first and second electrograms and the at least one of the first and second cardiac event detection markers with the corresponding one of the first and second electrograms display means simultaneously displaying the first and second electrograms.

5,578,064

RATE RESPONSIVE CARDIAC PACEMAKER WITH IMPEDANCE SENSING

David Prutchi, Lake Jackson, Tex., assignor to Intermedics, Inc., Angleton, Tex.

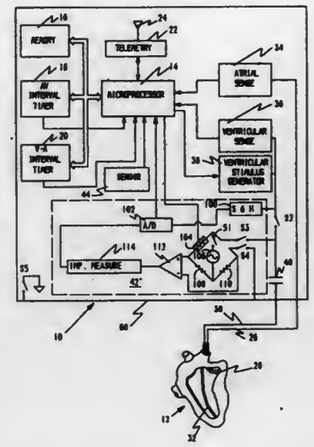
Filed Aug. 11, 1994, Ser. No. 289,237
Int. Cl.[6] A61N *1/368*
U.S. Cl. 607—19 **46 Claims**

1. A rate responsive cardiac pacemaker comprising

pulse generator means for stimulating the heart of a patient to contract;

means for controlling the rate of pulse generation by said pulse generator means;

means for producing an electrical signal proportional to a changing impedance within the body of the patient, at least part of said changing impedance being caused by action of the heart;



means for adaptively selecting a portion of said signal, said adaptively selected portion being related to non-cardiac factors in the body of the patient;

means for attenuating said adaptively selected portion to produce an adaptively filtered signal;

means for amplifying said adaptively filtered signal to produce an amplified adaptively filtered signal; and

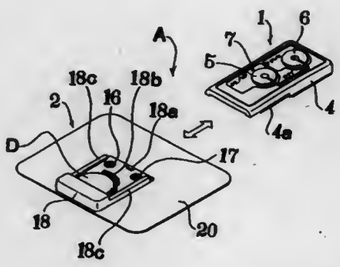
means for adjusting said rate controlling means as a function of said amplified adaptively filtered signal.

5,578,065

LOW-FREQUENCY THERAPEUTIC DEVICE HAVING A FLEXIBLE ADHESIVE SHEET ELECTRODE

Hidenori Hattori; Naoto Takizawa; Hidenori Hadate, and Tomoko Kondou, all of Tosu, Japan, assignors to Hisamitsu Pharmaceutical Co., Inc., Saga, Japan

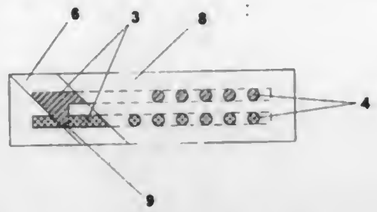
PCT No. PCT/JP92/01590, § 371 Date May 31, 1994, § 102(e) Date May 31, 1994, PCT Pub. No. WO93/10855, PCT Pub. Date Jun. 10, 1993
PCT Filed Dec. 4, 1992, Ser. No. 244,512
Claims priority, application Japan, Dec. 6, 1991, 3-100812 U
Int. Cl.[6] A61N *1/32*
U.S. Cl. 607—46 **15 Claims**



1. A low-frequency therapeutic device comprising a therapeutic device main body including means for generating a low-frequency pulse output disposed therein, a sheet electrode having a flexible sheet body and a battery case fixed thereto, said battery case being replaceably mounted on the therapeutic device main body, and means for attaching the sheet electrode to a surface.

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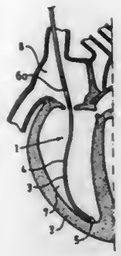
5,578,066
DEVICE TO DISCHARGE HABITUAL FINGER SUCKING
Giles D. Gober, 127 Sunset La., DeRidder, La. 70634
Filed Aug. 29, 1995, Ser. No. 520,743
Int. Cl.[6] A61N *1/18*
U.S. Cl. 607—58 **5 Claims**



1. An apparatus for discouraging finger sucking by delivering a small electrical current through an individual's tongue tissues, said individual's tongue being coated with saliva, said electrical current having the effect of producing an unpleasant sensation and taste, said apparatus comprising a multi-layered adhesive band, said band further comprising a backing layer, an electrode membrane layer, and an electrode mask layer, said electrode membrane layer further comprising two strips of dissimilar metals, said strips comprising electrodes, and a section of permeable material separating said strips of dissimilar metals, said permeable material being saturated with electrolyte and separating said electrodes, said electrode membrane being sandwiched between said backing layer and said electrode mask layer, said electrode membrane further comprising two electrode strips, said electrode strips being comprised of two dis-similar metals having different electrode potentials, said electrode strips being sandwiched between said electrode mask layer and said electrode membrane layer, said electrode strips being positioned parallel to each other with a degree of space between said electrode strips, said permeable membrane layer being saturated with an electrolyte so as to produce a small voltage between said electrode strips, said electrode mask layer further comprising a plurality of perforations, said perforations being arranged in two rows, one of said rows being located over one of said electrode strips, and the remaining said row being located over the other said electrode strip, so that portions of each said electrode strip are exposed through said electrode mask layer in order to come in contact with said individual's tongue, said backing layer having an inner and outer side, said inner side being faced toward said electrode membrane layer, and said outer side further comprising an adhesive coating so that said adhesive band may be affixed to said individual's finger by wrapping said band around said finger, said adhesive layer contacting said finger so as to expose portions of said electrode strips, through said electrode mask layer, toward said individual's tongue.

5,578,067
MEDICAL ELECTRODE SYSTEM HAVING A SLEEVE BODY AND CONTROL ELEMENT THEREFOR FOR SELECTIVELY POSITIONING AN EXPOSED CONDUCTOR AREA
Christer Ekwall, Spånga, and Kurt Högnelid, Västerhaninge, both of Sweden, assignors to Pacesetter AB, Solna, Sweden
Filed Apr. 4, 1995, Ser. No. 416,221
Claims priority, application Sweden, Apr. 14, 1994, 9401267
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—122 **36 Claims**

1. A medical electrode system comprising:
a flexible, longitudinally extending cable adapted for implantation in a medical subject and having an exterior insulating jacket containing first and second flexible electrical conductors;
an exposed, first electrode carried on said cable and electrically connected to said first electrical conductor;

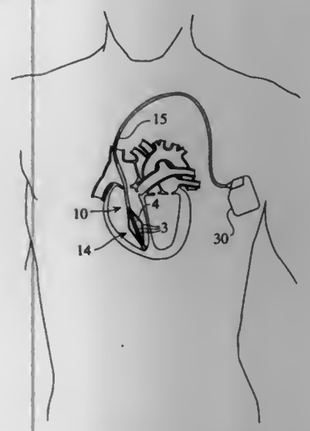


said cable having an electrically conductive surface electrically connected to said second electrical conductor and disposed a distance from said first electrode and exposed to the exterior of said cable;
a sleeve body surrounding said cable and extending over a longitudinal portion of said cable, said sleeve body being selectively positionable on said cable to partially cover said electrically conductive surface and to leave a remainder of said electrically conductive surface exposed at a selected position relative to said first electrode, said remainder of said conductive surface forming a second electrode; and
a control element temporarily engage able with said sleeve body for selectively positioning said sleeve body on said cable to select the position of said exposed surface relative to said first electrode.

5,578,068
MEDICAL ELECTRICAL LEAD WITH RADIALLY ASYMMETRIC TIP
Timothy G. Laske, Shoreview, and Glol T. Tran, Eden Prairie, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed May 8, 1995, Ser. No. 437,460
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—126 **7 Claims**

1. A medical electrical lead, comprising: an elongated lead body having a distal tip and containing an elongated conductor; and a tip electrode mounted to and extending from the distal tip of said lead body, coupled to the conductor, wherein the distal tip of said lead body includes a first portion defining a flange extending radially outward from a point immediately adjacent to said tip electrode and a second portion extending longitudinally and proximally from a point immediately adjacent said tip electrode and having a radial dimension no greater than said tip electrode, and wherein said second portion comprises multiple, generally planar surfaces extending proximally from said tip electrode.

5,578,069
ELECTRODE DEPLOYMENT MECHANISM AND METHOD USING ARTIFICIAL MUSCLE
William D. Miner, II, Santa Clara, Calif., assignor to Vnetritex, Inc., Sunnyvale, Calif.
Filed Dec. 6, 1995, Ser. No. 568,046
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—126 **26 Claims**

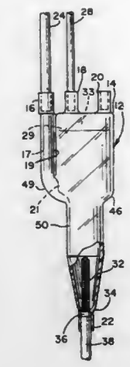


16. A stimulation system, comprising:
a pulse generator for generating electrical energy;
a lead having a deployable electrode electrically connected to said pulse generator and at least one artificial muscle element for expanding said deployable electrode from a nondeployed state to a deployed state; and
control means for sensing an episode requiring therapeutic electrical pulses and for supplying a voltage across said artificial muscle element to deploy said deployable electrode during said episode and for causing said pulse generator to generate said therapeutic electrical pulses through said deployable electrode.

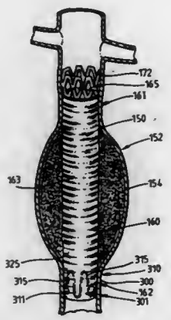
5,578,070
BLOW MOLDED VENOUS DRIP CHAMBER FOR HEMODIALYSIS
David S. Utterberg, Seattle, Wash., assignor to Medisystems Technology Corporation, Las Vegas, Nev.
Continuation of Ser. No. 272,101, Jul. 7, 1994, abandoned, which is a continuation-in-part of Ser. No. 876,041, Apr. 30, 1992, Pat. No. 5,328,461. This application Jan. 31, 1996, Ser. No. 594,775
Int. Cl.[6] A61M *5/14*
U.S. Cl. 604—80 **36 Claims**

1. A blow-molded, flexible plastic blood chamber for hemodialysis, said chamber defining an inlet blood port adjacent an end of the chamber, an outlet blood port adjacent an opposed end of the chamber, and a tubular plastic filter positioned in close-fitting relation adjacent said outlet port to project into said chamber, in which an inward projection is defined within said outlet port, said tubular plastic filter defining an outer end portion that carries a radially outwardly projecting, annular flange proportioned to slidingly pass through said outlet port and engaging said inward projection to limit inward travel of said filter to a predetermined, innermost position, plus means for retaining said filter in said position.

171-489 O.G.-96-12: QL3



5,578,071
AORTIC GRAFT
Juan C. Parodi, Mercedes 4255, Buenos Aires, Argentina
Continuation-in-part of Ser. No. 535,745, Jun. 11, 1990, Pat. No. 5,360,443. This application Oct. 1, 1993, Ser. No. 130,352
Int. Cl.[6] A61F *2/06*; A61M *29/00*
U.S. Cl. 623—1 **9 Claims**



1. An aortic graft for intraluminal delivery to repair an abdominal aortic aneurysm in an aorta having two iliac arteries associated therewith at an aortic bifurcation having an interior surface, comprising:
a tube having a longitudinal axis, first and second ends, and a wall surface disposed between the two ends, at least a portion of the tube adapted to be disposed within the abdominal aortic aneurysm;
means for securing the first end of the tube to the aorta, the securing means having a first diameter which permits intraluminal delivery of the securing means into the aorta and the securing means having a second, expanded diameter, to secure the first end of the tube to the aorta; and
a means for sealing the second end of the tube within the aortic bifurcation, the sealing means being at least one deformable, malleable wire associated with the second end of the tube by the at least one wire being woven into the wall surface of the second end of the tube and being disposed substantially coplanar with the wall surface of the tube, the at least one wire in the second end of the tube having a first cross-sectional configuration which permits intraluminal delivery of the tube and the means for sealing within the aortic bifurcation, and a second enlarged cross-sectional configuration, wherein the at least one wire and the second end of the tube conform to, and sealingly engage, the interior surface of the aortic bifurcation.

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5,578,072

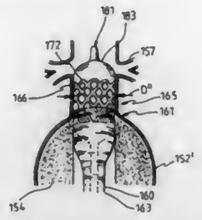
AORTIC GRAFT AND APPARATUS FOR REPAIRING AN ABDOMINAL AORTIC ANEURYSM

Hector D. Barone, Maza 1869/73, Buenos Aires, Argentina; Juan C. Parodi, Mercedes 4255, Buenos Aires, Argentina, and Julio C. Palmaz, 636 Ivy La., San Antonio, Tex. 78209

Continuation of Ser. No. 535,745, Jun. 11, 1990, Pat. No. 5,360,443. This application Aug. 1, 1994, Ser. No. 283,590

Int. Cl.[6] A61F *2/06;* **A61M** *29/00*

U.S. Cl. 623—1 **16 Claims**



1. An aortic graft for intraluminal delivery to repair an abdominal aortic aneurysm in an aorta having two iliac arteries associated therewith, comprising:

(a) a tube having first and second ends and a wall surface disposed between the two ends, at least a portion of the tube adapted to be disposed within the abdominal aortic aneurysm;

(b) means for securing the first end of the tube to the aorta, the securing means including a generally tubular shaped, thin-walled member having an interior and first and second ends and a smooth outer wall surface disposed between the first and second ends of the thin-walled member, the first end of the tube being connected to the second end of the thin-walled member, the thin-walled member having a first diameter which permits intraluminal delivery of the thin-walled member into the aorta, the thin-walled member having a second, expanded and deformed diameter, upon application from the interior of the thin-walled member of a radially, outwardly extending force, which force is in excess of the elastic limit of the thin-wall member, which second diameter is variable and dependent upon the force applied to the thin-walled member, whereby the thin-walled member may be expanded and deformed to secure the first end of the thin-walled member and the first end of the tube to the aorta.

5,578,073

THROMBORESISTANT SURFACE TREATMENT FOR BIOMATERIALS

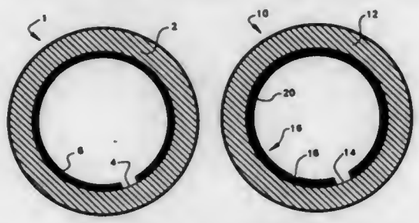
Beatrice Haimovich, North Brunswick, N.J.; Amihay Freeman, Ben Shemen Youth Village, Israel, and Ralph Greco, Warren, N.J., assignors to Ramot of Tel Aviv University, Tel Aviv, Israel, and University of Medicine and Dentistry of New Jersey, Newark, N.J.

Filed Sep. 16, 1994, Ser. No. 37,335

Int. Cl.[6] A61F *2/06;2/16;* **C08L** *5/08*

U.S. Cl. 623—1 **17 Claims**

1. A biomedical device or prosthesis having a blood contacting surface which has improved antithrombogenic properties and improved strength, which device or prosthesis has a coating which comprises a blend of chitosan and polyvinyl alcohol wherein the biomedical is a homopolymer or a copolymer selected from the group consisting of polytetrafluoroethylenes, polyamides, polyesters, polyurethanes, polysiloxanes, polyolefins, silicone rubber, polyvinyl chlorides, and metals.



7. A biomaterial which has improved antithrombogenic properties and which has a coating which comprises chitosan and as a biologically active material which active material is attached to the chitosan at glutaraldehyde-activated free amino sites, human serum albumin.

11. A process for treating a biomaterial for use in a biomedical device or prosthesis which has a blood contacting surface and improved antithrombotic properties, comprising contacting the surface of the biomaterial with a chitosan solution, and activating free amino groups on the chitosan by treating the chitosan on the surface of the biomaterial with a solution of glutaraldehyde, wherein the biomaterial is a homopolymer or a copolymer selected from the group consisting of polyamides, polyesters, polyurethanes, polysiloxanes, polyolefins, silicone rubber, polyvinyl chlorides, and metals and treating the activated chitosan with a biologically active material selected from the group consisting of surfactants, antithrombotic agents, antibiotics, and antibodies.

5,578,074

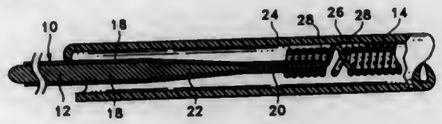
IMPLANT DELIVERY METHOD AND ASSEMBLY

Gregory E. Mirigian, Fremont, Calif., assignor to Target Therapeutics, Inc., Fremont, Calif.

Filed Dec. 22, 1994, Ser. No. 363,232

Int. Cl.[6] A61F *2/06*

U.S. Cl. 623—1 **23 Claims**



1. An occlusive implant delivery assembly for occluding a site in a mammal, said assembly comprising an implant and a pusher, said pusher having a distal section and a proximal section, said distal section having a coupling portion comprising thermal memory material and exhibiting different configurations depending on the temperature of said portion, said coupling portion interlockingly engaging said implant when said coupling portion is in a first one of said configurations and disengaging from said implant when in second one of said configurations.

10. A method of placing an implant in a mammal comprising the steps of:

(a) introducing in a mammal, a pusher having a heat activated decoupling mechanism; an occlusive implant detachably coupled to the decoupling mechanism; and

(b) applying energy to the decoupling mechanism to effect decoupling the pusher from the implant.

5,578,075

MINIMALLY INVASIVE BIOACTIVATED ENDOPROSTHESIS FOR VESSEL REPAIR

Michael P. Dayton, 14802 Hadleigh Way, Tampa, Fla. 33624, assignor to Michael Peck Dayton, Tampa, Fla., and Kenneth Granke, Morgantown, W. Va.

Continuation-in-part of Ser. No. 204,947, Mar. 2, 1994, Pat. No. 5,449,382, which is a continuation of Ser. No. 971,217, Nov. 4, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 457,850

Int. Cl.[6] A61F *2/06*

U.S. Cl. 623—1 **11 Claims**

1. A minimally invasive bioactivated endoprosthesis device for vessel repair in contact with surrounding body tissues, comprising:

a stent formed from a solid non-biodegradable material presenting a substantial surface to said tissues for use with a blood vessel or other body conduit to form an internally unrestricted stent having a diameter of a selected size for said blood vessel or other body conduit; said stent including a plurality of holes sufficiently large to permit rapid endothelialization; and

a polymer forming at least the exterior surface of said stent for direct polymer to tissue contact with said tissue, said polymer having a porous structure with a predetermined pore size and further including a bioactive substance within said pores for elution from said pores, said pore size being selected in response to the concentration and molecular weight of said substance to achieve equilibrium between said polymer and said tissue to provide a controlled and prolonged release of said bioactive substance to said surrounding body tissue in an amount sufficient to substantially prevent hyperplasia or therapeutically treat said tissue, said stent having sufficient amount of said substantial surface to support a quantity of said polymer capable of prolonged release of said amount.

2. A method of making a minimally invasive bioactivated endoprosthesis device for vessel repair in contact with surrounding body tissues, comprising the steps of:

forming a stent from a non-biodegradable material sized to present a substantial surface to said tissues for use with a blood vessel or other body conduit and having a diameter of a selected size for said blood vessel or other body conduit; said material including a plurality of holes sufficiently large to permit rapid endothelialization; and

forming a polymer on at least the exterior surface of said stent for direct polymer to tissue contact with said tissues, said polymer having a porous structure with a predetermined pore size and further including a bioactive substance within said pores for elution from said pores, said pore size being selected in response to the concentration and molecular weight of said substance to achieve equilibrium between said polymer and said tissues to provide a controlled and prolonged release of said bioactive substance to said surrounding body tissues in an amount sufficient to substantially prevent hyperplasia or therapeutically treat said tissues, said stent having a sufficient amount of said substantial surface to support a quantity of said polymer capable of prolonged release of said amount.

5,578,076

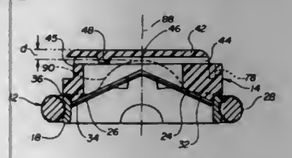
LOW PROFILE HOLDER FOR HEART VALVE PROSTHESIS

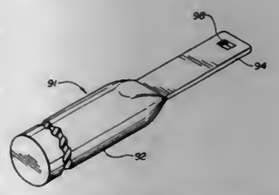
Kurt D. Krueger, Stacy, and Guy Vanney, Blaine, both of Minn., assignors to St. Jude Medical, Inc., St. Paul, Minn.

Filed May 24, 1995, Ser. No. 449,145

Int. Cl.[6] A61F *2/24;* **A61M** *1/10*

U.S. Cl. 623—2 **27 Claims**





1. A device for engaging during implantation a heart valve prosthesis having an annulus defining a plane with a substantially annular aperture therein and at least one leaflet movable between an open position and a closed position, the device comprising:

a handle having a proximal end and a distal end; and

a low profile holder coupled to the distal end of the handle and having a proximal surface and a distal engaging surface adapted for engaging the heart valve prosthesis and shaped for maintaining the at least one leaflet in a closed position during implantation wherein the proximal surface and the handle are substantially parallel to the plane of the annulus and the distal end of the handle is adjacent the heart valve prosthesis.

5,578,077

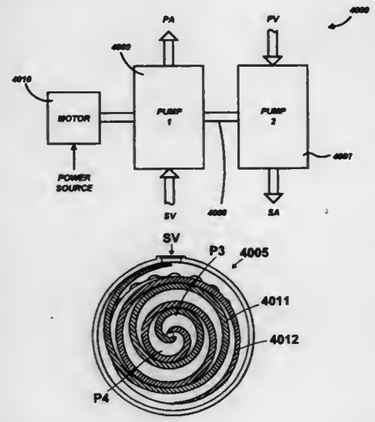
MECHANICAL HEART, BODY FLUID AND DRUG INFUSION PUMP

Samuel A. Kassatly, 4150 Middlefield Rd., Palo Alto, Calif. 94303

Continuation-in-part of Ser. No. 144,745, Oct. 28, 1993, which is a continuation-in-part of Ser. No. 17,030, Feb. 12, 1993, which is a continuation-in-part of Ser. No. 826,372, Jan. 27, 1992, which is a continuation-in-part of Ser. No. 573,539, Aug. 27, 1990, Pat. No. 5,157,491, which is a continuation-in-part of Ser. No. 457,403, Dec. 18, 1989, Pat. No. 4,975,771, which is a continuation-in-part of Ser. No. 308,826, Feb. 10, 1989, Pat. No. 4,903,126, which is a continuation-in-part of Ser. No. 258,722, Oct. 17, 1988, abandoned. This application Aug. 19, 1994, Ser. No. 292,877

Int. Cl.[6] A61M *1/10;* **A61K** *9/22*

U.S. Cl. 623—3 **20 Claims**



1. A body organ replacement for replacing a body organ having at least one inlet fluid vessel and at least one outlet fluid vessel, the body organ replacement comprising:

a motor-driven scroll type pump including:

a) a biocompatible housing sized to fit within a body cavity including at least one inlet port and one outlet port, said ports to be connected to a vascular system of the body;

b) a first and a second scroll involute elements interfitting to make a plurality of line contacts therebetween, for defining at least one pair of fluid pockets; and

c) at least said first element moving in an orbital motion relative to said second element, such that said line contacts shift and cause said at least one pair of fluid pockets to change in volume while shifting toward said at least one outlet port, with the volume of each fluid pocket being gradually changed.

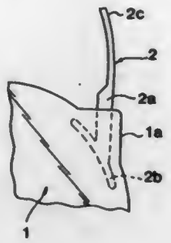
VOL 1192 ISS 4 NO 26 1996 UMI

5,578,078

DEFORMABLE INTRAOCULAR LENS

Toshiyuki Nakajima, Tokyo, and Toshikazu Kikuchi, Hachioji, both of Japan, assignors to Canon Staar Co., Inc., Tokyo, Japan

Filed Jul. 7, 1994, Ser. No. 271,834
Claims priority, application Japan, Jul. 15, 1993, 5-175330
Int. Cl.[6] A61F 2/16
U.S. Cl. 623—6 4 Claims



1. A deformable intraocular lens having predetermined memory characteristics, the lens comprising:

(a) an optical part, the optical part having a central portion and a peripheral portion; and

(b) a plurality of supports, each support comprising a tail, a rigid base, and an anchor, the base being thicker than the tail, the base having a proximal end and a distal end, the distal end being farther than the proximal end from the central portion of the optical part, the distal end being integrally connected to the tail at a connection part, the proximal end being connected to the anchor, the anchor being integrally connected to the optical part, the distal end of the base protruding from the peripheral portion of the optical part, the connection part being disposed outside of the peripheral portion of the optical part, each support being associated with a corresponding reinforcing section, each reinforcing section protruding from the peripheral portion of the optical part, and the distal end of the base protruding from the reinforcing section.

5,578,079

BIOCOMPATIBLE, SURFACE MODIFIED MATERIALS

Ihab Kamel, Drexel Hill, and David B. Soll, Rydal, both of Pa., assignors to Drexel University, and Ophthalmic Research Corporation, both of Philadelphia, Pa.

Division of Ser. No. 820,169, Jan. 13, 1992, Pat. No. 5,260,093, which is a continuation-in-part of Ser. No. 342,270, Apr. 24, 1989, Pat. No. 5,080,924. This application Apr. 14, 1993, Ser. No. 48,036
Int. Cl.[6] A61F 2/16
U.S. Cl. 623—6 6 Claims

1. A prosthesis for use in mammals comprising a polymeric substrate material having a permanently modified microscopically smooth, biocompatible surface thereon, produced by covalently grafting a polymeric biocompatible material to the surface of the substrate material by radio frequency plasma induction, the biocompatible polymeric material comprising substantially the same material as the polymeric substrate and being physically grafted by covalent bonds to the substrate material, and the modified microscopically smooth, biocompatible surface being substantially free of surface irregularities at a magnification of at least 3,000×.

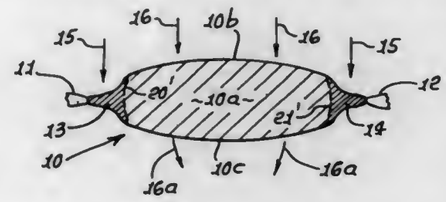
5,578,080

PLASTIC OPTICAL LENS WITH REDUCED THICKNESS LIGHT BLOCKING SEGMENTS, AND ANCHORING MEANS

Henry H. McDonald, 800 E. Colorado Blvd., Suite 450, Pasadena, Calif. 91101, assignor to Henry H. McDonald, and William W. Haefliger, both of Pasadena, Calif.

Continuation of Ser. No. 103,573, Aug. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 43,009, Apr. 5, 1993, Pat. No. 5,425,759, which is a continuation of Ser. No. 807,204, Dec. 16, 1991, Pat. No. 5,203,790, which is a continuation-in-part of Ser. No. 791,002, Nov. 12, 1991, Pat. No. 5,203,789. This application Apr. 17, 1995, Ser. No. 423,216
Int. Cl.[6] A61F 2/16
U.S. Cl. 623—6 11 Claims

1. A plastic lens insertible into the eye lens zone from which a



natural lens has been removed, comprising

a) the plastic lens having a light passing intermediate optical portion,

b) the lens also having a peripheral portion or portions bounding said intermediate optical portion and characterized as substantially light blocking, and including haptic means extending integrally with said peripheral portion or portions,

c) said lens having overall length and overall width, said length substantially exceeding said width,

d) said optical portion and said peripheral portion or portions having one-piece molded construction,

e) and wherein said peripheral portion or portions extend completely about said intermediate optical portion, and have reduced thickness relative to an outermost extent of said intermediate optical portion, and at locations directly bounding said intermediate optical portion outermost extent, said reduced thickness being tapered away from an outermost extent of said intermediate optical portion of the lens,

f) and wherein said intermediate optical portion is substantially rectangular in outline.

5,578,081

EYE MUSCLE RESPONSIVE ARTIFICIAL LENS UNIT

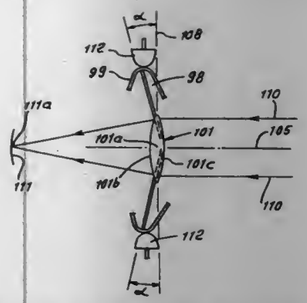
Henry H. McDonald, 65 N. Madison, Suite 305, Pasadena, Calif. 91101, assignor to Henry H. McDonald, and William W. Haefliger, both of Pasadena, Calif.

Continuation-in-part of Ser. No. 423,216, Apr. 17, 1995, which is a continuation of Ser. No. 103,573, Aug. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 43,009, Apr. 5, 1993, Pat. No. 5,425,759, which is a continuation of Ser. No. 807,204, Dec. 16, 1991, Pat. No. 5,203,790, which is a continuation-in-part of Ser. No. 791,002, Nov. 12, 1991, Pat. No. 5,203,789. This application Oct. 30, 1995, Ser. No. 544,976
Int. Cl.[6] A61F 2/16
U.S. Cl. 623—6 15 Claims

1. An artificial lens unit including a lens insertible into a capsular eye lens zone from which a natural lens has been removed, comprising, in combination,

a) the lens having a light refracting optical portion defining an axis, and consisting of plastic,

b) said unit including substantially C-shaped, filamentary haptics for positioning said lens in said capsular zone, said haptics extending at angles relative to a plane normal to said axis and



passing through said lens, and said haptics' angles characterized in that said lens is displaced in the direction of said axis by said haptics in response to eye muscle constriction of the periphery of said capsular zone toward said axis,

c) said haptics having outwardly convex arcuate outermost extents that define free terminals, and extend inwardly, said haptics having hinge connection to the lens and tangentially merging with the lens, and said haptics extend at angles between 15° and 50° relative to said plane.

5,578,082

IOL FOR OPTIMAL CAPSULAR BAG FIT

Glenn R. Sussman, Lake Forest, Calif., assignor to Allergan, Waco, Tex.

Filed May 27, 1994, Ser. No. 250,726
Int. Cl.[6] A61F 2/16
U.S. Cl. 623—6 19 Claims

1. An intraocular lens comprising:

an optic having a width and a length perpendicular to the width;

at least one elongated, resilient fixation member extending from the optic such that the at least one fixation member does not extend beyond the width of the optic, said at least one fixation member terminating in a free distal end, a substantial length of said at least one fixation member including the free distal end having a radial outer surface which has a radius of curvature no greater than about 5.5 millimeters;

a proximal segment of said at least one fixation member joined to said optic and an intermediate segment of said fixation member joining the proximal segment to said substantial length, a majority of the length of said at least one fixation member being of substantially uniform cross sectional area;

the optic having an optical axis and the distance from the optical axis to said distal end being no more than about 6.75 millimeters; and

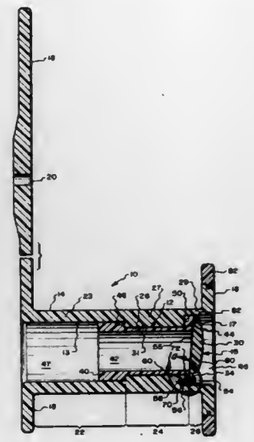
said at least one fixation member being resiliently deformable radially inwardly to an implanted shape to provide an arc in which said radial outer surface has a radius of curvature of between about 4.75 and 5.25 millimeters.

5,578,083

VOICE PROSTHESIS-CARTRIDGE ASSEMBLY

Stephen W. Laguette, and Edmund V. Seder, both of Santa Barbara, Calif., assignors to Helix Medical, Inc., Carpinteria, Calif.

Filed Nov. 13, 1995, Ser. No. 559,210
Int. Cl.[6] A61F 2/20
U.S. Cl. 623—9 16 Claims



1. A voice prosthesis for insertion into a fistula in a tracheoesophageal wall of a patient comprising in combination:

a hollow, annular, flexible body to be disposed in and to maintain said fistula open, said body having a first tracheal end and a second esophageal end;

a first flange connected to the first end of the body;

a second flange attached to the second end of the body;

an elongated, hollow, rigid, cartridge received in said body between said ends having an annular wall terminating in a tracheal face and an esophageal face;

means for retaining said cartridge in said body; and

means on said esophageal face for mounting a flapper valve.

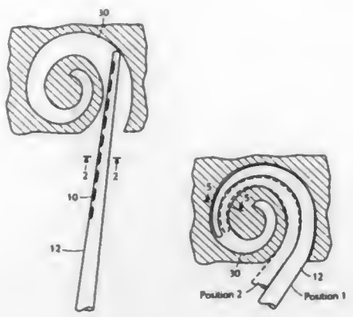
5,578,084

SELF-CURVING COCHLEAR ELECTRODE ARRAY

Janusz Kuzma, Lane Cove; Henry L. Seldon, Gleno Waverley, and Gordon G. Brown, Parkville, all of Australia, assignors to Cochlear Ltd., Lane Cove, and University of Melbourne, Parkville, both of Australia

PCT No. PCT/AU92/00517, § 371 Date May 4, 1994, § 102(e) Date May 4, 1994, PCT Pub. No. WO93/06698, PCT Pub. Date Apr. 1, 1993
PCT Filed Sep. 25, 1992, Ser. No. 211,269
Claims priority, application Australia, Sep. 27, 1991, PK 8653
Int. Cl.[6] A61F 2/18
U.S. Cl. 623—10 16 Claims

1. An electrode array for an implantable device, said array having a longitudinal axis and comprising a first portion bearing a plurality of electrodes at predetermined spacings from each other, and a second portion which is longitudinally interconnected and at least partly coextensive with said first portion, said first and second portions having respective initial volumes, and said second portion to undergo a change of volume relative to that of said first portion in a direction along said longitudinal axis, said first and second



portions being disposed relatively to each other so that when the volume of said second portion changes longitudinally, at least that part of said array which includes the coextensive parts of said first and second portions inherently curves while the spacings between said electrodes borne by said first portion remain substantially constant.

5,578,085

BALLOON PROSTHESIS FOR THE LUNG AND METHODS OF MAKING AND USING SAME

Robert L. Johnson, Jr., and Connie C. W. Hsia, both of Dallas, Tex., assignors to Board of Regents The University of Texas System, Austin, Tex.

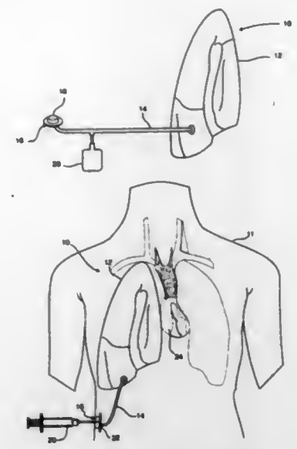
Continuation-in-part of Ser. No. 109,695, Aug. 19, 1993, abandoned, which is a continuation of Ser. No. 800,509, Nov. 27, 1991, abandoned. This application Mar. 4, 1994, Ser. No. 206,532

Int. Cl.[6] A61F *2/02*

U.S. Cl. 623—11 **25 Claims**

1. A prothesis having a predetermined shape and size to occupy a chest cavity left vacant after excision of a lung or portion of a lung, comprising:

a hollow balloon forming an enclosed volume adapted to occupy the chest, and formed in substantially the shape and size of the chest cavity, the balloon having a first surface corresponding in shape to the contour chest cavity adjacent to the rib cage a second surface corresponding in shape to the contour of the chest cavity adjacent to the diaphragm, and a third surface corresponding in shape the contour of cardiac and mediastinal surface of the chest wall, the balloon being made of a biocompatible material.



5,578,086

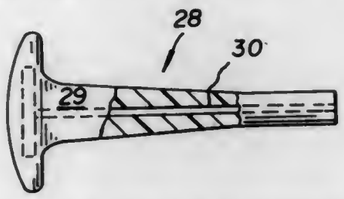
PROSTHESIS USING BIOCOMPATIBLE COMPOSITE MATERIAL

Anthony D. Prescott, Arlington, Tenn., assignor to Xomed, Inc., Jacksonville, Fla.

Continuation of Ser. No. 81,090, Jun. 21, 1993, abandoned, which is a continuation of Ser. No. 9,339, Jan. 26, 1993, abandoned, which is a continuation of Ser. No. 662,361, Feb. 28, 1991, abandoned, which is a continuation of Ser. No. 310,646, Feb. 15, 1989, abandoned. This application Apr. 10, 1995, Ser. No. 420,436

Int. Cl.[6] A61F *2/02;2/18;2/28*

U.S. Cl. 623—11 **18 Claims**



1. A non-resorbable prosthesis of a predetermined shape for implantation into a living tissue of a body, the prosthesis comprising:

a matrix, consisting essentially of a non-resorbable elastomeric material;

a bio-active particulate material dispersed throughout said matrix for forming a chemical attachment with the living tissue surrounding the prosthesis; (and)

(Wherein) said matrix (is) being cured such that an applied force can distort said prosthesis from (said) a first shape and said prosthesis will substantially return to said shape after said force is removed; and

a malleable metal strip disposed within said matrix for maintaining the prosthesis in a desired shape.

5,578,087

DYEING COMPOSITIONS FOR KERATINOUS FIBRES BASED ON PARA-PHENYLENE-DIAMINES, META-PHENYLENEDIAMINE AND BENZIMIDAZOLE DERIVATIVES, AND DYEING PROCESS EMPLOYING THEM

Marie P. Audousset, Levallois-Perret, and Jean Cotteret, Verneuil-sur-Seine, both of France, assignors to L'Oreal, Paris, France

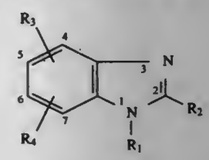
Continuation of Ser. No. 174,009, Dec. 28, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 461,844

Claims priority, application France, Dec. 30, 1992, 92 15945

Int. Cl.[6] A61K *7/13*

U.S. Cl. 8—409 **20 Claims**

1. Dyeing composition for keratinous fibres, comprising, in a medium suitable for the dyeing of keratinous fibres, an effective amount of at least one para or ortho oxidation dye precursor or mixture thereof, an effective amount at least one meta-phenylenediamine and an effective amount of, as coupler, at least one benzimidazole derivative corresponding to the formula (I):


(I)

in which:

R_1 represents a hydrogen atom of a C_1–C_4 alkyl radical;

R_2 represents a hydrogen atom or a C_1–C_4 alkyl radical or a phenyl radical;

R_3 represents a hydroxyl, amino or methoxy radical;

R_4 represents a hydrogen atom or a hydroxyl or methoxy or C_1–C_4 alkyl radical;

with the proviso that:

when R_3 denotes NH_2, it occupies position 4;

when R_3 is at position 4, R_4 is at position 7; and

when R_3 is at position 5, then R_4 is at position 6.

5,578,088

PROCESS FOR DYEING AMINATED CELLULOSE/POLYESTER BLEND FABRIC WITH FIBER-REACTIVE DISPERSE DYESTUFFS

Andreas Schrell, Frankfurt am Main, and Werner H. Russ, Flörsheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

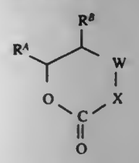
Filed Jun. 29, 1995, Ser. No. 496,597

Claims priority, application Germany, Jun. 29, 1994, 44 22 707.8

Int. Cl.[6] D06P *3/66;3/854;1/38*

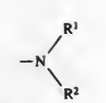
U.S. Cl. 8—475 **16 Claims**

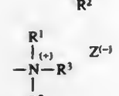
1. A process for dyeing fiber materials comprising cellulose fibers or a mixture of cellulose fibers and polyester fibers, which comprises first modifying the fiber material with one or more compounds containing amino groups and then dyeing the modified fiber material with a fiber-reactive disperse dyestuff in supercritical CO_2 at a temperature of 70–210 degrees centigrade and a CO_2 pressure of 30–400 bar, wherein the compound containing amino groups corresponds to the formula (I)


(1)

in which

R^A is hydrogen or alkyl having 1 to 3 carbon atoms, which optionally is substituted by hydroxyl or a group of the formula (2) or (3)


(2)


(3)

in which

R^1 is hydrogen, methyl or ethyl,

R^2 is hydrogen, methyl or ethyl and

R^3 is hydrogen, methyl or ethyl or

R^1 and R^2 together with the N atom are a saturated heterocyclic radical formed from an alkylene radical having 5 to 8 carbon atoms or two alkylene radicals having 1 to 4 carbon atoms and an oxygen atom or an amino group of the formula —NH—,

$Z^{(-)}$ is an anion,

R^B has one of the meanings given for R^A;

W is a direct bond or a group of the formula —CHR^c—, in which R^c has one of the meanings given for R^A; and

X is a group —O— or —NH— except when X=O, a group (2) or (3) must be present.

5,578,089

CLEAR CANDLE

Mohamed Elsamaloty, Wilmington, Ohio, assignor to Lancaster Colony Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 429,606, Apr. 27, 1995, abandoned. This application Sep. 1, 1995, Ser. No. 522,837

Int. Cl.[6] C11C *5/00*

U.S. Cl. 44—275 **20 Claims**

1. A candle comprising:

at least one wick;

a clear body;

said wick located in said body; and

wherein said body is a clear gel comprising about 80 to 99 wt. % of a hydrocarbon oil, and about 1 to 20 wt. % of a blend of at least two different polymer members selected from the group consisting of diblock copolymers, triblock copolymers, radial block copolymers and multiblock copolymers, said composition including at least one diblock copolymer and at least one triblock copolymer, with said diblock and triblock polymers comprising segments of styrene monomer units and rubber monomer units.

5,578,090

BIODIESEL FUEL

David S. Bradin, Atlanta, Ga., assignor to BRI, Macon, Ga.

Filed Jun. 7, 1995, Ser. No. 477,261

Int. Cl.[6] C10L *1/18*

U.S. Cl. 44—308 **7 Claims**

1. A fuel additive composition comprising between approximately 10 and 75% fatty acid alkyl esters, 1 and 25% glyceryl ethers, and 0 and 10% triglycerides, wherein the alkyl group on the ethers and the esters is selected from the group consisting of C_{1-10} straight, branched or cyclic alkanes.

5,578,091
CHEMICAL COMPOSITIONS AND THEIR USE AS FUEL ADDITIVES

Graham Jackson, Reading, and Rodger F. Andrews, Didcot, both of United Kingdom, assignors to Exxon Chemical Patents Inc., Linden, N.J.

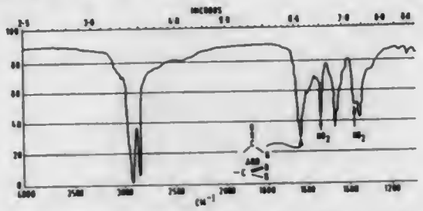
PCT No. PCT/GB91/00623, § 371 Date Oct. 13, 1992, § 102(e) Date Oct. 13, 1992, PCT Pub. No. W091/16297, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 19, 1991, Ser. No. 937,906

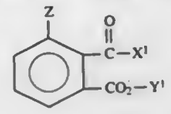
Claims priority, application United Kingdom, Apr. 19, 1990, 9008811

Int. Cl.[6] C10L *1/22*

U.S. Cl. 44—399 **5 Claims**



1. A distillate fuel composition having a boiling point in the range of 120° C. to 500° C. which contains from 0.0001 to 0.5 wt. % of a flow improving additive of the formula



where Z is nitro and X^1 and Y^1 are the same or different and are selected from the group consisting of $N^{(+)}R^3R^2$, $HN^{(+)}R^3R^2$, $H_2N^{(+)}R^3R^2$, $H_3N^{(+)}R^2$, $N^{(+)}R\ ^3R^1$, $N^{(+)}HR^3R^1$, $H_2N^{(+)}R^3R^1$, $H_3N^{(+)}R^1$, NR^3R^2, $—R^2$, $—NR^3R^1$ and R^1, R^1 and R^2 being C_{10}–C40 alkyl, alkoxy alkyl or polyalkoxyalkyl groups and R^3 being a C_1–C_{30} alkyl, said additive being effective to reduce the size of wax crystals present in the fuel.

5,578,092
METHOD AND A DEVICE FOR PRODUCING FUELS

Per Collin, Orrspelsvagen 4, Stocksund S-182 75, Sweden

PCT No. PCT/SE93/00249, § 371 Date Nov. 15, 1994, § 102(e) Date Nov. 15, 1994, PCT Pub. No. WO93/20169, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 24, 1993, Ser. No. 313,105

Claims priority, application Sweden, Mar. 30, 1992, 9200989

Int. Cl.[6] C10L *5/00*

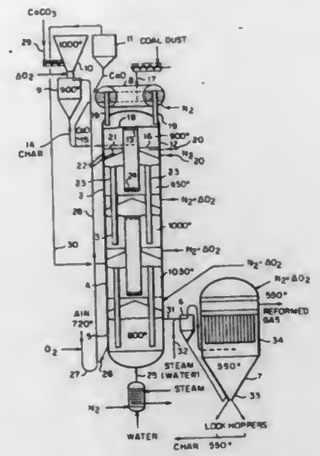
U.S. Cl. 44—620 **19 Claims**

1. A method of producing fuels for environmentally friendly thermal power generation with gas and steam turbines in combined cycle from solid carbonaceous natural fuels, comprising the steps of:

introducing a flow of finely-divided solid carbonaceous natural fuel and a separate flow of char formed from pyrolysis of solid carbonaceous fuel and mixed with a flow of burnt lime, dolomite, or a mixture of burnt lime and dolomite to a first reactor in a cascade of at least three reactors at superatmospheric pressure and at a temperature above 700° C., wherein the flow of char is at least five times greater than the flow of the solid carbonaceous natural fuel;

fluidizing the char in the first reactor to form a fluidized bed of char;

contacting the finely-divided solid carbonaceous natural fuel with the fluidized bed of char in the first reactor at a temperature above 700° C. to pyrolyze the solid carbonaceous natural fuel and form a pyro gas;



reforming the pyro gas by fluidized contact with fluidized char as the reforming pyro gas and fluidized char progress through the cascade of at least three reactors to form a reformed gas and net char, wherein the fluidized char forms a fluidized bed of char in each of the reactors in the cascade, wherein the temperature in the last reactor in the cascade of at least three reactors is maintained at a level lower than the temperature in the first reactor, and wherein, with the exception of the last reactor, the temperature in each of the least three reactors in the cascade is maintained at a level higher than the previous reactor in the cascade;

recirculating char from the last reactor to the first reactor in the cascade of at least three reactors with the addition of oxygen-containing transport gas and raising the temperature of the recirculating char by partial combustion;

discharging the resulting reformed gas and net char in suspension from the last reactor; and

separating the reformed gas and net char, wherein the separated reformed gas and net char are suitable for use as fuels in a gas and steam turbine combined cycle thermal power generation.

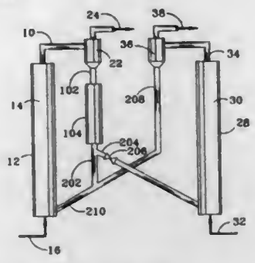
5,578,093
FLUID BED DESULFURIZATION

William M. Campbell, Houston, and Gunnar B. Henningsen, Sugar Land, both of Tex., assignors to The M. W. Kellogg Company, Houston, Tex.

Division of Ser. No. 206,569, Mar. 4, 1994, Pat. No. 5,447,702, which is a continuation-in-part of Ser. No. 90,420, Jul. 12, 1993, abandoned, and Ser. No. 90,601, Sep. 12, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 463,442

Int. Cl.[6] C10K *1/26*; B01D *53/52*

U.S. Cl. 48—128 **17 Claims**



1. A desulfurization unit, comprising:

a desulfurization transport riser means for mixing and contacting a feed gas containing sulfide with a particulated metallic oxide sorbent and producing an effluent gas of reduced sulfide content and entrained partially sulfided sorbent having a sulfur pick-up of less than 5 percent sulfur by weight of the sorbent;

a first separation means for recovering the partially sulfided sorbent from the effluent gas and forming a product gas stream essentially free of sorbent particles;

a regeneration vessel means for contacting partially sulfided sorbent with an oxygen-containing gas at sorbent regeneration conditions less than about 700° C. to regenerate the partially sulfided sorbent and form a sulfur dioxide-containing offgas;

a second separation means for recovering regenerated sorbent from the offgas to form a regeneration offgas stream essentially free of sorbent particles;

a line for transferring regenerated sorbent recovered from the second separation means to the desulfurization transport riser means; and

a charge of metallic oxide sorbent for substantially continuous operation of the desulfurization transport riser, regeneration vessel and separation means.

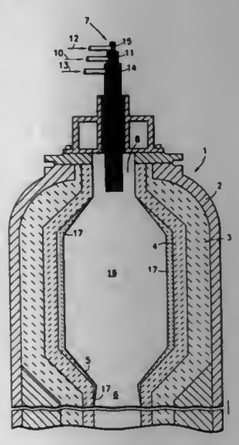
5,578,094
VANADIUM ADDITION TO PETROLEUM COKE SLURRIES TO FACILITATE DESLAGGING FOR CONTROLLED OXIDATION

D. Duane Brooker, Hopewell Junction, N.Y., and James S. Falsetti, New Fairfield, Conn., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 8, 1994, Ser. No. 365,219

Int. Cl.[6] C10J *3/46*

U.S. Cl. 48—197 R **21 Claims**



1. A method for facilitating the removal of slag from a partial oxidation reactor wherein a petroleum-based feedstock containing a slag-depositing material is partially oxidized with an oxidant gas to produce syngas, and a slag byproduct which comprises vanadium primarily in the form of V_2O_3 and a siliceous glass material, and wherein deslagging of the reactor is conducted under controlled oxidation conditions to convert the higher melting V_2O_3 component of the slag to lower melting V_2O_5, comprising:

(a) controlling the V_2O_3: glass weight ratio of the slag in the reactor during partial oxidation to an amount greater than 3:2; and

(b) replacing the partial oxidation conditions with controlled oxidation conditions and increasing the partial pressure of the oxidant gas to an amount sufficient to convert the V_2O_3 to V_2O_5.

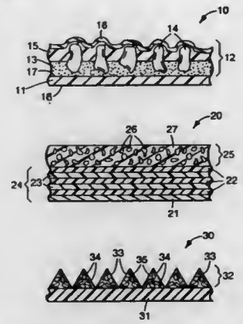
5,578,095
COATED ABRASIVE ARTICLE

Ralph H. Bland, St. Paul; Joseph A. Fohrman, Cottage Grove, and Raymond L. Lucking, Hastings, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 21, 1994, Ser. No. 342,577

Int. Cl.[6] B24D *11/00*

U.S. Cl. 51—295 **20 Claims**



1. A coated abrasive article comprising: (a) a backing having an outermost layer of microvoided polymeric film having an average surface roughness of at least 0.2 μm Ra, wherein said microvoided polymeric film is an extrudable thermoplastic composition comprising a thermoplastic polyester continuous phase and a thermoplastic polyolefin discrete phase; and (b) an abrasive coating comprising a plurality of abrasive particles and a binder.

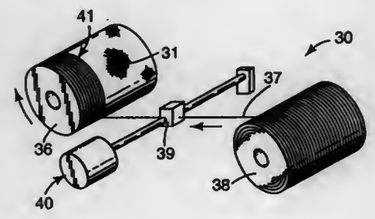
5,578,096
METHOD FOR MAKING A SPLICELESS COATED ABRASIVE BELT AND THE PRODUCT THEREOF

Todd J. Christianson, Oakdale, and Harold W. Benedict, Cottage Grove, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 10, 1995, Ser. No. 513,325

Int. Cl.[6] B24D *11/06*

U.S. Cl. 51—295 **19 Claims**



1. A method of making a flexible coated abrasive belt comprising the steps of:

(a) mounting an endless, spliceless backing loop substrate having an exposed front surface and a back surface tautly on a peripheral surface of a temporary support structure;

(b) applying a continuous fibrous reinforcing material onto said front surface in a plurality of revolutions;

(c) applying a coating of a first binder precursor onto said front surface;

(d) exposing said coating to conditions effective to solidify said first binder precursor and bond said fibrous reinforcing material to said front surface to form an endless spliceless reinforced backing; and

(e) applying an abrasive coating comprising abrasive particles and adhesive over said back surface or said front surface of said endless spliceless reinforced backing.

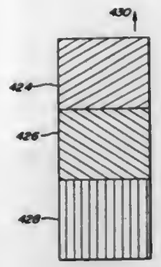
VOL 1192 ISS 4 NO 26 1996 UMI

5,578,097

WASHABLE COATED ABRASIVES

Anthony C. Gaeta, Lockport, and Gwo S. Swei, East Amherst, both of N.Y., assignors to Norton Company, Worcester, Mass.

Filed Aug. 28, 1995, Ser. No. 520,216
Int. Cl.[6] B24D 3/34
U.S. Cl. 51—295 13 Claims



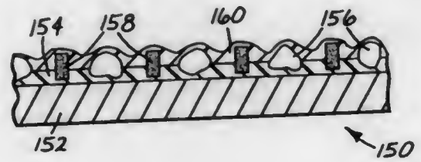
I. A coated abrasive comprising a substrate, a maker coat, a layer of abrasive particles adhered to the substrate by the maker coat, a size coat applied over the layer of abrasive particles and optionally a supersize coat appied over the size coat, wherein the coat applied last comprises a resin binder and a polysiloxane additive bonded to the resin binder.

5,578,098

COATED ABRASIVE CONTAINING ERODIBLE AGGLOMERATES

John J. Gagliardi; Jason A. Chesley, both of Hudson, Wis.; Charles H. Houck, Oakdale; Richard J. Cosmano, St. Paul, both of Minn., and Ernest J. Duwell, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 188,302, Jan. 28, 1994, abandoned, which is a continuation-in-part of Ser. No. 831,083, Feb. 5, 1992, Pat. No. 5,454,750, which is a continuation of Ser. No. 594,104, Oct. 9, 1990, abandoned. This application Dec. 6, 1995, Ser. No. 567,811
Int. Cl.[6] B24D 3/34
U.S. Cl. 51—295 15 Claims



1. A coated abrasive article comprising a backing, said backing having at least one major surface, and erodible agglomerates and abrasive grains,

wherein said erodible agglomerates and abrasive grains bear on and adhere to said at least one major surface of said backing,

wherein said erodible agglomerates consist essentially of a grinding aid, do not contain abrasive particles having a Moh's hardness in excess of 7, and have a rod shape, said erodible rod-shaped agglomerates having an aspect ratio ranging from 0.5:1.0 to 10.0:1.0,

wherein said grinding aid has a Moh's hardness of less than 7 and is selected from the group consisting of thermoplastic materials.

5,578,099

ARTICLE AND METHOD FOR PRODUCING AN ARTICLE HAVING A HIGH FRICTION SURFACE

Charles E. Neff, 384 McKinely, Grosse Pointe Farms, Mich. 48236

Division of Ser. No. 937,238, Aug. 28, 1992, Pat. No. 5,213,590, which is a continuation-in-part of Ser. No. 453,684, Dec. 20, 1989, Pat. No. 5,181,939. This application May 24, 1993, Ser. No. 66,491
Int. Cl.[6] B24D 11/00
U.S. Cl. 51—297 1 Claim

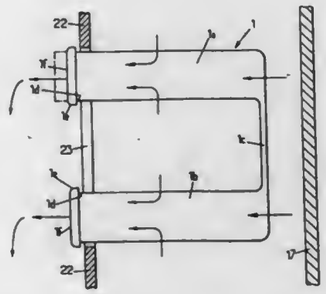
1. An abrasive tool comprising a tool base having a supporting surface and an abrasive surface layer on said supporting surface, said abrasive layer for removing material from a workpiece surface by contact therewith and relative movement thereof along a tool axis, said abrasive surface layer comprising a plurality of abrasive surface layer portions aligned in adjacent relationship along a tool axis, each of said portions comprising a plurality of peaked abrasive elements extending from said supporting surface in a pattern of rows defining longitudinal spaces, said rows of said abrasive elements on at least one of said portions being disposed at an acute angle to said tool axis, and said angle being different on each of the adjacent abrasive portions.

5,578,100

BAG FILTERS FOR DUST-LADEN GAS FILTRATION

Jean-Paul Montaclair, Poissy, and Serge Carre, Houilles, both of France, assignors to Hamon Industrie Thermique, Levallois-Perret, France

PCT No. PCT/FR94/01041, § 371 Date Jun. 27, 1995, § 102(e) Date Jun. 27, 1995, PCT Pub. No. WO95/07130, PCT Pub. Date Mar. 16, 1995
PCT Filed Sep. 5, 1994, Ser. No. 433,350
Claims priority, application France, Sep. 6, 1993, 93 10570; Sep. 6, 1993, 93 10571
Int. Cl.[6] B01D 29/15
U.S. Cl. 55—341.1 16 Claims



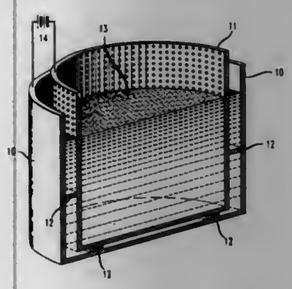
1. In bag filter apparatus comprising a plurality of tubular filter bags for filtering dust-laden gas and extending inside an enclosure between a perforated plate having holes, and a remote region of the enclosure, the bags being disposed substantially transversely to a flow of dust-laden gas that, in use of the apparatus, penetrates into the enclosure, each tubular bag having an end opening which opens into a respective hole of said perforated plate and having a flexible filtering wall that is permeable to the dust-laden gas but that retains the dust transported by the gas which penetrates into the bag and flows in a filtered state therealong to said end opening the improvement wherein at least one of said filter bags comprises a U-shaped tube mounted in the enclosure in such a manner as to present two tubular filtering lengths that are substantially parallel and that are connected to each other via a base disposed towards said remote region of the enclosure, the end opening of each of the two tubular filtering lengths of said U-shaped bag opening out side by side in the same hole of said perforated plate.

5,578,101

METHOD OF MAKING A SOL-GEL GLASS BODY AND REMOVING SAME FROM MOLD

Greg E. Blonder; Robert P. Frankenthal, both of Summit; David W. Johnson, Jr., Bedminster, and Ellezer M. Rabinovich, Berkeley Heights, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 1, 1995, Ser. No. 522,808
Int. Cl.[6] C03B 37/016
U.S. Cl. 65—17.2 7 Claims



1. Method of making a glass body, the method comprising

a) causing a quantity of a sol to gel in a mold such that a gel body results;

b) removing the gel body from the mold; and

c) processing the gel body such that the glass body results; characterized in that

d) the mold comprises a first conductor member, with said first and a second conductor member being in contact with the gel; and the method further comprises

e) causing a current to flow between said first and second conductor members such that, during at least a part of step b), a substantially liquid layer exists at an interface between the gel body and the first electrode, whereby removal of the gel body from the mold is facilitated.

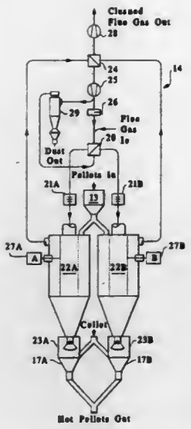
5,578,102

METHOD FOR BATCH PREHEATING AND POLLUTION ABATEMENT IN GLASS MANUFACTURE

Jeffery C. Alexander, Newbury, Mass., assignor to Edmeston AB, Västra Frölunda, Sweden

Division of Ser. No. 945,722, Sep. 21, 1992, Pat. No. 5,290,334. This application Dec. 3, 1993, Ser. No. 160,852
Int. Cl.[6] C03B 3/02; B03C 3/00; B01D 46/32
U.S. Cl. 65—27 10 Claims

1. A method for glass manufacture having improved energy efficiency and reduced pollution emissions, comprising the steps of:



(a) providing a moving first bed of pelletized glass batch;

(b) passing a stream of particulate-containing hot exhaust gases from a melting furnace over said first bed, thereby heating the pelletized glass batch of said first bed;

(c) feeding said heated pelletized glass batch to the melting furnace and manufacturing glass thereby;

(d) electrostatically ionizing the exhaust gases after said passing step (b);

(e) providing a static second bed of pelletized glass batch;

(f) electrically polarizing the pelletized glass in the static bed; and

(g) passing the ionized exhaust gases from step (d) over said static second bed, thereby substantially reducing the amount of said particulates in said ionized exhaust gas;

wherein said moving first bed is operable as a static bed, and said static second bed is operable as a moving bed, and wherein the method includes the step of periodically rendering said first bed static and said second bed moving, thereby reversing the functions of said first and second beds in said method, said step of periodically rendering said first bed static and said second bed moving comprises providing and utilizing a means for periodically converting said moving first bed of pelletized glass batch to a static bed and converting said static second bed of pelletized glass batch to a moving bed to thereby reverse the functions of said first and second beds.

5,578,103

ALKALI METAL ION MIGRATION CONTROL

Roger J. Araujo, Horseheads; Norbert J. Binkowski, Bath, and Francis P. Fehlner, Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Aug. 17, 1994, Ser. No. 292,068
Int. Cl.[6] C03C 17/00
U.S. Cl. 65—60.5 18 Claims

1. A materials system comprising a barrier layer oxide film selected from the group consisting of silica, alumina and tantala films deposited on a glass surface, the glass having a content of mobile alkali metal ions and a composition containing a sufficient

amount of high field strength ions that can change coordination so that the following expressions, in cation percent values,

$P^1=[Na^+ + Li^+ + K^+ + Cs^+ + Rb^+] + 2[Sr^{2+} + Ba^{2+} + Ca^{2+}/2] - [Al^{3+}]$, in conjunction with an alumina or tantala film, and

$P=P^1 - 0.6[B^{3+}] - [Zn^{2+} + Be^{2+} + Mg^{2+} + Ca^{2+}/2]$ in conjunction with a silica film, are negative, whereby the direction of any flow of a migrating alkali metal ion is toward the glass.

5,578,104

METHOD OF AND APPARATUS FOR BENDING GLASS SHEETS

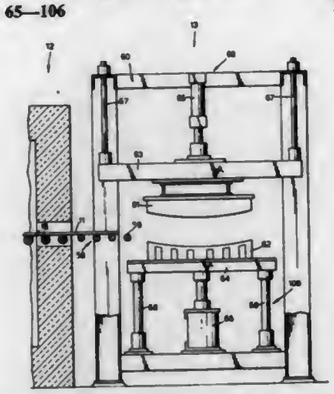
Alan C. Woodward, Wigan, and Geoffrey Greenhalgh, Orrell, both of United Kingdom, assignors to Pilkington Glass Limited, St. Helens, United Kingdom

Filed Apr. 12, 1995, Ser. No. 420,800

Claims priority, application United Kingdom, Apr. 15, 1994, 9407594

Int. Cl.[6] C03B *23/03*

U.S. Cl. 65—106 **16 Claims**



1. A method of bending a glass sheet, in a bending apparatus including a furnace for heating the sheet, substantially horizontal conveyor means for transport of the sheet, and a ring mould having an upper shaping surface, the method comprising the steps of:

heating the sheet to a heat-softened condition in said furnace,

conveying the sheet on said conveyor means to a prescribed position above the upper shaping surface of said ring mould,

transferring the sheet from the conveyor means onto the ring mould,

bending the sheet to a predetermined shape, and

cooling the bent sheet,

wherein transferring the sheet is effected by lowering part of the conveyor means from an upper position, in which the conveyor means conveys the sheet to said prescribed position, to a lower position below the upper shaping surface of the ring mould, the parts of the conveyor means remaining substantially horizontal, and

wherein bending the sheet comprises the step of raising both the ring mould and the conveyor means.

5,578,105

MOULD MECHANISM

Willi Meyer, Effretikon, Switzerland, assignor to Emhart Glass Machinery Investments, Inc., Wilmington, Del.

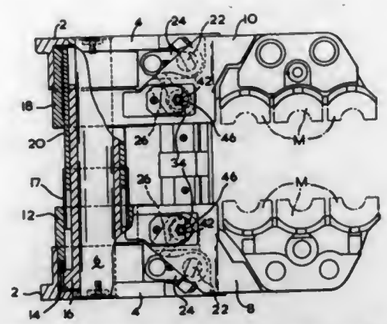
Filed Mar. 9, 1995, Ser. No. 401,569

Claims priority, application United Kingdom, Mar. 9, 1994, 9404487

Int. Cl.[6] C03B *9/353*

U.S. Cl. 65—359 **3 Claims**

1. A mold mechanism for an I.S. machine comprising a pair of mold assemblies,



means for supporting said pair of mold assemblies for linear displacement between a retracted open position and an advanced closed position including

a first mold arm connected at one end to one of said mold assemblies and having a first cylindrical hole in the other end extending in the direction of displacement,

first cylindrical rod means for insertion into said first cylindrical hole for pivotally supporting said first mold arm,

a second mold arm connected at one end to the other one of said mold assemblies and having a second cylindrical hole in the other end extending in the direction of displacement,

second cylindrical rod means for insertion into said second cylindrical hole for pivotally supporting said second mold arm,

rail means,

said first mold arm including first slide means for displacement along said rail means, said first slide means including means for changing the pivotal position of said first mold arm relative to said rail means,

said second mold arm including second slide means for displacement along said rail means, said second slide means including means for changing the pivotal position of said second mold arm relative to said rail means, whereby the pivotal position of said first and said second mold arms can be independently changed.

5,578,106

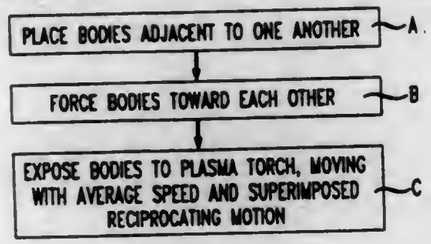
METHOD FOR MAKING OPTICAL FIBER PREFORMS BY COLLAPSING A HOLLOW GLASS TUBE UPON A GLASS ROD

James W. Fleming, Jr., Westfield, and Adolph H. Moesle, Jr., Murray Hill, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 159,026, Nov. 29, 1993, abandoned. This application Aug. 17, 1995, Ser. No. 516,111

Int. Cl.[6] C03B *37/012*

U.S. Cl. 65—391 **3 Claims**



1. A method of collapsing a hollow glass tube upon a glass rod comprising the steps of:

placing said rod within said hollow tube;

applying a force for biasing said tube inwardly toward said rod; and

exposing said tube to a plasma torch heat source moving longitudinally in relation to said tube and rod at a non-zero average rate which includes a reciprocating component of longitudinal motion, wherein the combination of said force and heat from said source collapsing said tube upon said rod.

5,578,107

WATER SOLUBLE CAKING INHIBITORS FOR AMMONIUM PHOSPHATES

Robert V. Brill, St. Louis, and Louis A. Highfill, Washington, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 6, 1995, Ser. No. 468,697

Int. Cl.[6] C05B *7/00*

U.S. Cl. 71—34 **8 Claims**

1. A composition comprising at least about 90% by weight of a phosphate selected from the group consisting of monoammonium phosphate and diammonium phosphate and a caking inhibiting amount of anhydrous sodium sulfate powder.

5,578,108

ULTRAFINE PARTICLES OF AMORPHOUS METAL AND METHOD FOR PRODUCTION THEREOF

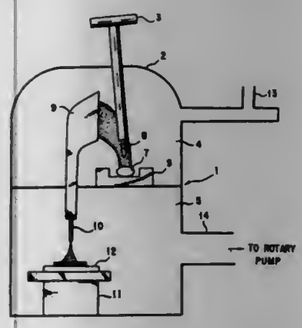
Tadashi Yamaguchi, Sendai; Katsutoshi Nosaki, Wako; Akihisa Inoue, 11-806, Kawauchijutaku, Mubanchi, Kawauchi, Aoba-ku, and Tsuyoshi Masumoto, 3-8-22, Kamisugi, Aoba-ku, both of Sendai-shi, Miyagi-ken, all of Japan, assignors to YKK Corporation, Tokyo; Tsuyoshi Masumoto; Akihisa Inoue, both of Miyagi-ken, and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, all of Japan

Filed Sep. 28, 1994, Ser. No. 313,827

Claims priority, application Japan, Sep. 29, 1993, 5-264105

Int. Cl.[6] B22F *9/14*

U.S. Cl. 75—336 **7 Claims**



1. A method for production of ultrafine amorphous metal particles, comprising the steps of:

discharging a plasma arc against a raw metal, capable of forming a carbide, in a reaction gas having an inert gas as a main component thereof and containing a hydrocarbon gas, and

allowing the metal, which has been vaporized, to contact said reaction gas, which has been converted into a plasma, thereby inducing formation of a solid solution of carbon atoms in said vaporized metal; and

quenching said solid solution in said reaction gas to form an amorphous structure;

wherein said raw metal is at least one metal selected from the group consisting of Fe, Mo, Nb, Ta, Ti, Zr, Al, Si, and Cr, and wherein a total pressure of said reaction gas is less than 760 torr and a partial pressure of said hydrocarbon gas contained in said reaction gas is in the range of from 1 to 50 torr.

5,578,109

TREATMENT OF TITANIFEROUS MATERIALS

Harold R. Harris, Leeman; Halil Aral, Elwood; Warren J. Bruckard, North Balwyn; David E. Freeman, North Dandenong; Martin R. Houchin, Pascoe Vale; Kenneth J. McDonald, Glen Waverley; Graham J. Sparrow, Vermont South, and Ian E. Grey, Black Rock, all of Australia, assignors to RGC Mineral Sands, Ltd.

PCT No. PCT/AU93/00381, § 371 Date Apr. 6, 1995, § 102(e) Date Apr. 6, 1995, PCT Pub. No. WO94/03160, PCT Pub. Date Feb. 17, 1994

PCT Filed Jul. 28, 1993, Ser. No. 379,554

Claims priority, application Australia, Jul. 31, 1992, PL3876/92; Dec. 16, 1992, PL6401/92

Int. Cl.[6] C22B *60/02*

U.S. Cl. 75—399 **68 Claims**

1. A process for facilitating the removal of radionuclides, and/or one or more of their radionuclide daughters from titaniferous material which comprises contacting the titaniferous material with one or more reagents at an elevated temperature selected to enhance the accessibility of at least one of the radionuclide daughters in the titaniferous material, the reagent(s) being selected to form a phase at said elevated temperature which disperses onto the surfaces of the titaniferous material and incorporates the radionuclides and said one or more radionuclide daughters.

5,578,110

ENVIRONMENTALLY ACCEPTABLE METHOD OF DISPOSING OF AN INFLATOR FROM AN AIR BAG SYSTEM LOADED IN A SCRAPPED AUTOMOBILE

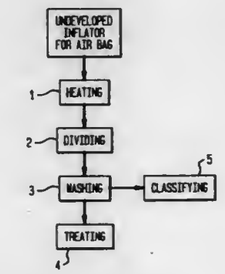
Yuzaburo Nakasato, Gunma; Mitsuhiko Fukabori, Hyogo; Takaaki Iwasaki, Hokkaido; Humio Ayuta, Chiba; Sumio Otsuka, and Yoshitaka Miyawaki, both of Kagawa, all of Japan, assignors to Daicel Chemical Industries, Ltd., and Nomura Kohsan Co., Ltd., both of Japan

Filed Apr. 6, 1995, Ser. No. 417,600

Claims priority, application Japan, Apr. 11, 1994, 6-071912

Int. Cl.[6] C22B *7/00*

U.S. Cl. 75—403 **14 Claims**



1. An environmentally acceptable method for disposing of a metallic gas generator from an unused air bag, comprising:

a) heating the gas generator to actuate the gas generator to produce combustion gases and water soluble contaminants;

b) washing the gas generator with a water composition to remove the contaminants therefrom to produce a contaminated water composition containing the contaminants;

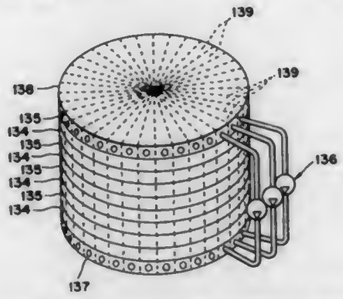
c) dividing the gas generator;

d) chemically treating the contaminated water composition to produce a purified water composition; and

e) classifying the divided gas generator parts into classified generator parts;

whereby the classified generator parts and purified water can be disposed of in an environmentally acceptable manner.

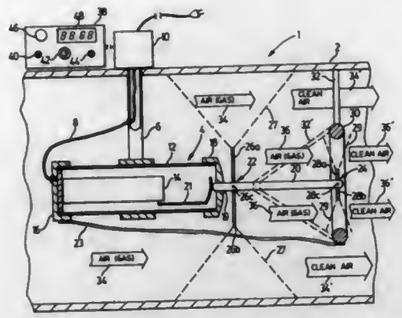
5,578,111
PROCESS AND A DEVICE FOR CONTINUOUS CHROMATOGRAPHY
Karl A. Reuter, Freiburg, Germany, assignor to Reuter Chemischer Aparatebau GmbH, Switzerland
PCT No. PCT/EP93/02583, § 371 Date Mar. 17, 1995, § 102(e) Date Mar. 17, 1995, PCT Pub. No. WO94/06532, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 17, 1993, Ser. No. 403,757
Claims priority, application Germany, Sep. 18, 1992, 42 31 327.9
Int. Cl.[6] B01D *15/08;53/04;53/06*
U.S. Cl. 95—86 25 Claims



1. A process for the separation of a mixture of substances by sorption of the components of the mixture on two different sorption agents, which can be adjusted individually and separately from each other in their sorption properties and by passing through a separation section of the sorption agents with the ab- or adsorbed components of the mixture, according to which process the mixture to be separated is introduced into a separation chamber between surfaces of the sorption agents, and a gap medium flows between the sorption agents in which the components of the mixture can be dissolved and/or dispersed and/or evaporated, and whereby phases containing the sorption agents move in directions opposite to each other, and in which the separated components of the mixture held on the sorption agents are recovered after they pass through the separation section, whereby the separation chamber is formed by two or more hollow cylindrical disks Z_A and Z_B, which are filled with structural elements and are concentrically superimposed and contain separation media Ph_A and Ph_B, consisting of or containing the sorption agents, and whereby the cylindrical disks Z_A and Z_B are alternately arranged and turn in opposite directions on a common axis.

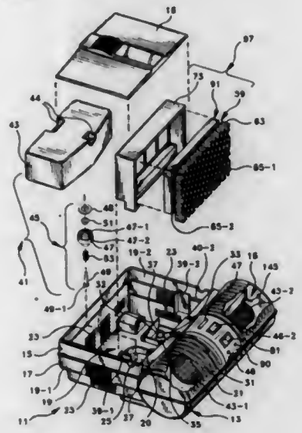
5,578,112
MODULAR AND LOW POWER IONIZER
Hans W. Krause, Oakville, Canada, assignor to Ontario Limited, Toronto, Canada
Filed Jun. 1, 1995, Ser. No. 457,680
Int. Cl.[6] B03C *3/41;3/68*
U.S. Cl. 96—24 13 Claims

1. An apparatus for purifying gas flowing in a duct by establishing a radially directed ionic wind within the duct to sweep particulate solids directly onto one or more collector electrodes, said apparatus comprising:
(a) an ionizing unit;
(b) means for supporting said ionizing unit within the duct, said ionizing unit comprising,
(i) a water-tight housing,
(ii) a high voltage generator within the housing for generating a high voltage output,
(iii) an electrode support rod coupled to said high voltage output and extending from said housing coaxially within said duct,
(iv) at least one group of ionizing electrodes mounted on said support rod and extending radially therefrom; and



(c) means for connecting said high voltage generator to an external low voltage power supply.

5,578,113
AIR TREATMENT SYSTEM
Neville R. Glenn, Milford, Mass., assignor to Holmes Product Corp., Milford, Mass.
Filed Jul. 19, 1994, Ser. No. 277,441
Int. Cl.[6] B03C *3/014*
U.S. Cl. 96—52 12 Claims

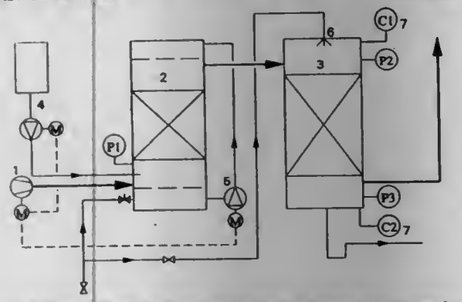


1. An air treatment system comprising:
a) a housing, said housing including a reservoir, air inlet means and air outlet means;
b) a fan mounted within said housing for drawing air into said housing through said air inlet means and for exhausting air from said housing through said air outlet means;
c) a water supply mounted within said housing and in fluid communication with said reservoir for supplying water to said reservoir;
d) a first filter assembly, said first assembly including a first air filter and a wicking filter, said first air filter and said wicking filter being independent of one another; and
e) a second filter assembly, said second filter assembly comprising a second air filter, said first filter assembly and said second filter assembly being alternatively removably positionable in said reservoir.

12. An air treatment system comprising:
a) a housing, said housing including a reservoir, air inlet means and air outlet means;
b) a fan mounted within said housing for drawing air into said housing through said air inlet means and for exhausting air from said housing through said air outlet means;

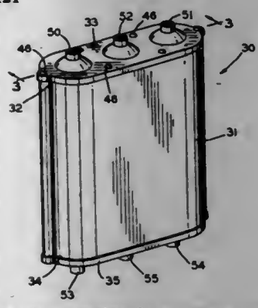
c) a water supply mounted within said housing and in fluid communication with said reservoir for supplying water to said reservoir;
d) a first filter assembly, said first assembly including an electric filter, an activated charcoal filter and a wicking filter;
e) a second filter assembly, said second filter assembly comprising a second air filter, said first filter assembly and said second filter assembly being alternatively removably positionable in said reservoir; and
f) means for ionizing air drawn into said housing.

5,578,114
BIOLOGICAL FILTER PROVIDED WITH A PELLETIZED BIOLOGICALLY ACTIVE COMPOST CARRIER MATERIAL AND METHOD FOR THE PRODUCTION OF A PELLETIZED BIOLOGICALLY ACTIVE COMPOST CARRIER MATERIAL
Hermanus H. F. Oude Luttighuis, Rhenen, Netherlands, assignor to Grontmij Advies & Techniek BV, De Bilt, Netherlands
Filed Feb. 28, 1995, Ser. No. 395,457
Claims priority, application Netherlands, Mar. 4, 1994, 9400328
Int. Cl.[6] B01D *46/30;53/04*
U.S. Cl. 96—108 8 Claims



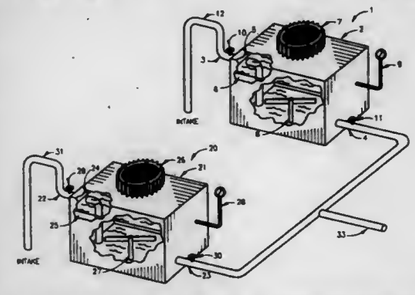
1. A biological filter for the purification of waste gases, comprising a bed of pelletized biologically active compost carrier material consisting of compost, in the form of stable spherical pellets.

5,578,115
MOLECULAR SIEVE CONTAINER FOR OXYGEN CONCENTRATOR
Mark A. Cole, Somerset, Pa., assignor to DeVilbiss Health Care, Inc., Somerset, Pa.
Filed Jul. 24, 1995, Ser. No. 505,876
Int. Cl.[6] B01D *53/053*
U.S. Cl. 96—121 17 Claims



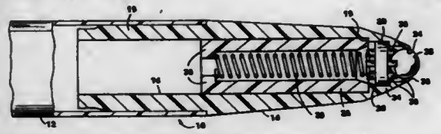
1. A molecular sieve container for an oxygen concentrator comprising an elongated extrusion having first and second open ends and at least two cavities extending between said ends, said cavities each having an open first end at said first extrusion end and an open second end at said second extrusion end, a first end cap secured to said first extrusion end to close said first ends of said cavities, a second end cap secured to said second extrusion end to close said second ends of said cavities, wherein at least two of said cavities define first and second containers for separate molecular sieves, and means in said end caps forming inlet and outlet ports for each molecular sieve container.

5,578,116
METHOD AND APPARATUS FOR CONTROLLING ZEBRA MUSSELS IN WATER CONDUITS
Tiao J. Chang, Athens, Ohio, assignor to Ohio University, Athens, Ohio
Division of Ser. No. 80,047, Jun. 18, 1993, Pat. No. 5,376,282.
This application Oct. 11, 1994, Ser. No. 282,346
Int. Cl.[6] C02F *1/20*
U.S. Cl. 96—194 4 Claims



1. An apparatus for controlling the macrofouling of zebra mussels, said apparatus comprising:
a water conduit adapted to conduct a flow of water containing zebra mussels said flow of water, said water containing dissolved oxygen at an original concentration, said conduit adapted to maintain an air space in contact with said flow of water; and
vacuum producing means adapted to subject said air space to a vacuum of a vacuum pressure in the range of from about 10 p.s.i. to about 15 p.s.i. so as to reduce the concentration of said dissolved oxygen in said flow of water to below a level sufficient to support the survival respiration concentration of said zebra mussels.

5,578,117
CORRECTION FLUID
Gary F. Matz, Rosslyn Farms, Pa., and Kimberly B. Sanborn, South Weymouth, Mass., assignors to The Gillette Company, Boston, Mass.
Division of Ser. No. 191,313, Feb. 1, 1994, Pat. No. 5,516,223, which is a division of Ser. No. 885,514, May 19, 1992, Pat. No. 5,338,775. This application May 25, 1995, Ser. No. 450,519
Int. Cl.[6] C09D *10/00;105/00;7/02;* A47L *1/08*
U.S. Cl. 106—19 A 14 Claims



1. A correction fluid dispensing system, comprising
a chamber for holding a correction fluid, said chamber being defined by a wall including an opening; and

a shear-thinning correction fluid within said chamber, said correction fluid comprising a binding resin, an opacifying pigment, a sufficient quantity Of a suspending agent to impart to the correction fluid shear-thinning properties, and water.

5,578,118

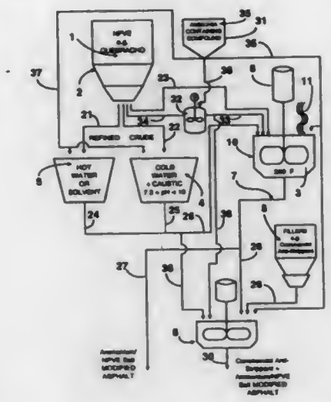
NATURAL POLYPHENOLIC-CONTAINING VEGETABLE EXTRACT MODIFIED BITUMEN AND ANTI-STRIPPER COMPOSITIONS, METHOD OF MANUFACTURE AND USE

Mark W. Shuey, San Jose, and Robert S. Custer, Whittier, both of Calif., assignors to Saramco, Inc., Whitier, Calif.

Continuation-in-part of Ser. No. 255,323, Jun. 7, 1994, Pat. No. 5,401,308. This application Mar. 28, 1995, Ser. No. 412,483

Int. Cl.[6] C09D *193/00;195/00*

U.S. Cl. 106—217.6 **25 Claims**



1. An ammonium/polyphenolic anti-stripping agent for bitumens, comprising:

a) an acidic natural polyphenolic-containing vegetable extract, said natural polyphenolic-containing vegetable extract is at least one of the polyphenolic vegetable extracts selected from the group consisting essentially of: quebracho, wattle, chestnut A, chestnut N, and sumac;

b) an ammonia-containing compound which, upon at least stoichiometric addition to said natural polyphenolic-containing vegetable extract, reacts with said acidic polyphenolic vegetable extract to produce an ammonium/natural polyphenolic-containing vegetable extract salt anti-stripping agent, said anti-stripping agent being thermally stable and soluble in water.

5,578,119

MOLDABLE SCULPTING MEDIUM

Robert E. Short, and E. Glenn Tickner, both of Los Gatos, Calif., assignors to Microsome, Sunnyvale, Calif.

Filed Jun. 6, 1995, Ser. No. 465,967

Int. Cl.[6] C09K *3/00;* **C08L** *101/00;5/04;1/28*

U.S. Cl. 106—287.35 **22 Claims**

1. A colored water-based moldable sculpting medium comprising:

a filler comprising permanently colored polymeric microspheres,

a thixotropic hydrogel binder; and

blended in a proportion that the color of said medium is primarily due to colors of the polymeric microspheres.

5,578,120

LASER BEAM ABSORBING RESIN COMPOSITION, COLORING MATERIAL THEREFOR AND LASER BEAN MARKING METHOD

Jun Takahashi, Soka; Masaaki Toyoda, Kitakatsushika-gun; Akira Yasuda, Soka, and Hideo Ochi, Misato, all of Japan, assignors to Somar Corporation, Japan

Continuation of Ser. No. 381,069, Jan. 31, 1995, abandoned, which is a division of Ser. No. 231,406, Apr. 22, 1994, Pat. No. 5,422,383. This application Feb. 15, 1996, Ser. No. 601,833

Claims priority, application Japan, Apr. 22, 1993, 5-118953

Int. Cl.[6] C09C *1/36;1/02;* **C04B** *14/02;* **C08K** *3/00*

U.S. Cl. 106—438 **3 Claims**

1. A particulate coloring material comprising composite particles which have an average particle diameter of 0.1–50 μm and each of which is composed of (a) a particulate, laser beam absorbing inorganic substance selected from the group consisting of cordierite, zeolite, zirconium silicate and calcium silicate and (b) a colorant physically bonded directly to said inorganic substance and capable of discoloring upon being heated at a temperature of 250° C. or more, the weight ratio of said colorant to said inorganic substance being in the range of 1:99 to 50:50.

5,578,121

SOIL CONDITIONER AND A PROCESS FOR ITS PREPARATION

Gerhard Eder, Wiesbaden, and Hans-Joachim Paul, Wertheim, both of Germany, assignors to Otavi Minen AG, Eschborn, Germany

Filed Apr. 7, 1994, Ser. No. 224,321

Claims priority, application Germany, Apr. 8, 1993, 43 11 636.1

Int. Cl.[6] C04B *14/04*

U.S. Cl. 106—486 **21 Claims**

1. A freely flowable soil conditioner consisting essentially of an unfired clay coating on the external surface of granular perlite.

5,578,122

METHODS OF PRODUCING CONCRETES CONTAINING CLASS C FLY ASH THAT ARE STABLE IN SULPHATE ENVIRONMENTS

Ramon L. Carrasquillo, Marble Falls, Tex., assignor to The University of Texas System, Austin, Tex.

Filed Feb. 14, 1994, Ser. No. 195,268

Int. Cl.[6] C04B *7/12;14/04;11/00*

U.S. Cl. 106—709 **18 Claims**

1. A method for producing a cementitious mixture for use in producing a sulfate resistant hardened concrete, the method comprising the step of:

dry milling from 25 wt % to 75 wt % Class C fly ash, said Class C fly ash containing compounds selected from the group consisting of calcium aluminate, calcium hydroxide and iron oxides, with from 25 wt % to 75 wt % portland cement clinker and from 5 wt % to 10 wt % gypsum, such that at least an amount of sulfate is provided to convert the calcium aluminate to ettringite;

wherein the cementitious mixture when admixed with an aggregate and water, forms a hardened concrete substantially free of any calcium aluminate, calcium hydroxide and iron oxide compounds that react with sulfate ions from sulfate containing environments to form volume expanding compositions that lead to stress failure of the hardened concrete.

5,578,123

APPARATUS AND METHOD FOR PREPARING A SINGLE CRYSTAL

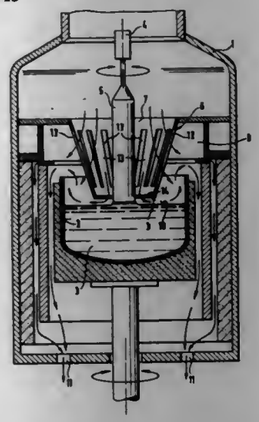
Peter Vilzmann, Burghausen, and Helmut Pinzhoffer, Tann, both of Germany, assignors to Wacker Siltronic Gesellschaft für Halbleitermaterialien AG, Munich, Germany

Filed Oct. 10, 1995, Ser. No. 541,341

Claims priority, application Germany, Dec. 1, 1994, 44 42 829.4

Int. Cl.[6] C30B *15/20*

U.S. Cl. 117—13 **4 Claims**



1. Method for preparing a single crystal made of silicon in accordance with the Czochralski method, which method comprises:

pulling of a single crystal in a receiver from a melt having a surface provided in a crucible in the receiver, the single crystal being surrounded by a tubular to conical body, having a lower end which shields the crystal and divides the receiver chamber above the melt into an inner portion and an outer portion;

conducting an inert gas stream through the inner portion of the receiver chamber toward the surface of the melt and between the lower end of the body and the surface of the melt into the outer portion of the receiver chamber; and

conducting a portion of the inert gas stream through at least one orifice in the body from the inner portion directly into the outer portion of the receiver chamber.

5,578,124

LIQUID SATURATION PROCESS, APPARATUS AND ARTICLE THEREOF

Terry R. Cleveland, Woodstock; Cherie H. Everhart, Alpharetta; Fred R. Radwanski, and Henry Skoog, both of Roswell, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 231,608, Apr. 22, 1994, Pat. No. 5,486,381. This application Jun. 6, 1995, Ser. No. 470,314

Int. Cl.[6] B05D *1/30*

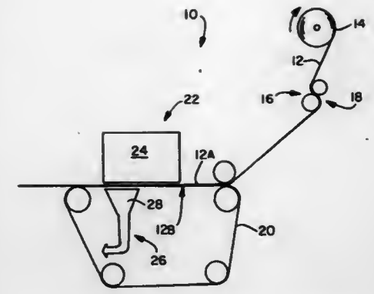
U.S. Cl. 118—50 **10 Claims**

1. An apparatus for continuously, non-compressively and uniformly applying a liquid saturant treatment throughout a permeable sheet, the apparatus comprising:

means for continuously advancing a permeable sheet having a first surface and a second surface;

means for depositing a substantially laminar flowing curtain of liquid saturant generally across and onto the first surface of the continuously advancing permeable sheet; and

vacuum means substantially contacting the second surface of the continuously advancing permeable sheet to draw a substantial portion of the liquid saturant through the permeable sheet in less than about 1 second to generate a substantially uniform distribution of liquid saturant throughout the permeable sheet.



5,578,125

COATING SYSTEM FOR RUNNING WEBS OF PAPER OR CARDBOARD

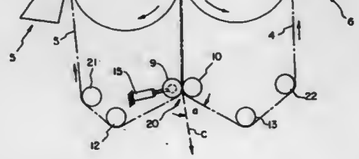
Ralf Sieberth, Appleton, Wis., assignor to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany

Filed Nov. 23, 1994, Ser. No. 344,134

Claims priority, application Germany, Nov. 24, 1993, 43 40 039.6

Int. Cl.[6] B05C *1/00*

U.S. Cl. 118—257 **15 Claims**



1. A system for coating running webs of paper or cardboard comprising:

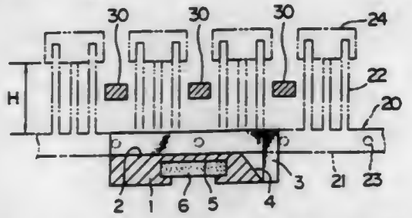
at least two continuous belts that move in unison through a first press gap and a second press gap, each said gap being formed by two rolls that are moveable relative to each other, each of said rolls having a diameter, said at least two belts carrying the web through said press gaps; and

means for applying a coating substance to one of said at least two belts, said applying means being in fluid communication with said one belt, the coating substance being transferred by said one belt to at least one side of the web in the first press gap;

each of said second press gap rolls including a roll body that is backed against flexure by means of a stationary element;

wherein the diameter of each of said second press gap rolls is maximally one-half of the diameter of each of said first press gap rolls.

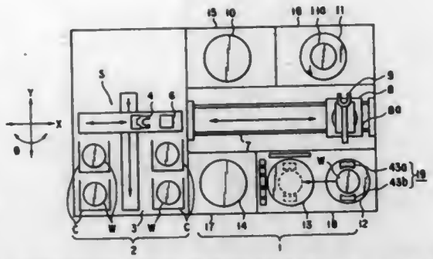
5,578,126
LEAD FRAME HOLDER
Hitoshi Taga, and Shizuo Okuhara, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan
Continuation of Ser. No. 154,754, Nov. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 875,377, Apr. 29, 1992, abandoned. This application Mar. 28, 1995, Ser. No. 411,866
Claims priority, application Japan, Apr. 30, 1991, 3-126597
Int. Cl.[6] B25B *11/00*
U.S. Cl. 118—500 **20 Claims**



16. A lead frame holder for holding a plurality of lead frames, each of said lead frames being provided with a strip portion on one side and with a plurality of lead terminals protruding substantially in parallel from said strip portion and adapted for having electronic component elements mounted at end portions of said terminals, said holder comprising:
a substrate;
a plurality of substantially parallel receiving grooves provided on an upper surface of said substrate for holding said lead frames so that said lead frames are substantially parallel to each other, each of said receiving grooves being capable of receiving slidably therein said strip portion of each of said lead frames, each of said receiving grooves including a first pair of substantially parallel walls and a second pair of walls being inclined relative to each other, each of said receiving grooves having an opening at least at one end thereof and each said opening being formed by said second pair of walls, each of said receiving grooves including a bottom surface having an inclined surface portion for guiding said strip portion of said lead frame into said receiving groove, said inclined surface portion of each of said receiving grooves being located adjacent to a respective one of said second pair of walls being inclined relative to each other; and
a permanent magnet fixed close to bottoms of said receiving grooves for attracting said strip portion of each of said lead frames into contact with said bottoms of said receiving grooves by magnetic force.

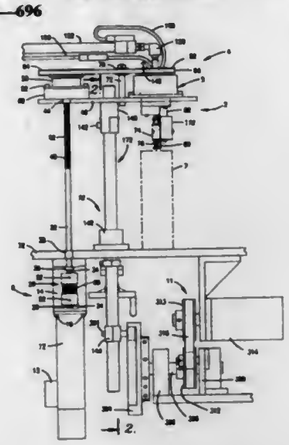
5,578,127
SYSTEM FOR APPLYING PROCESS LIQUID
Yoshio Kimura, Kumamoto-ken, Japan, assignor to Tokyo Electron LTD, and Tokyo Electron Kyushu Ltd., both of Japan
Continuation of Ser. No. 192,260, Feb. 7, 1994, abandoned. This application Dec. 19, 1995, Ser. No. 574,732
Claims priority, application Japan, Feb. 8, 1993, 4-043277
Int. Cl.[6] B05B *13/02;* **B05C** *5/00;13/00*
U.S. Cl. 118—695 **18 Claims**

1. A system for applying a process liquid on a target substrate, comprising:
a loading section where a container for storing a plurality of target substrates is placed;
an unloading section where a container for storing a plurality of target substrates is placed;
a convey path, connected to said loading and unloading sections, for conveying the substrate;
a first process chamber arranged along said convey path and having therein a first process section for processing the substrate at a first temperature;



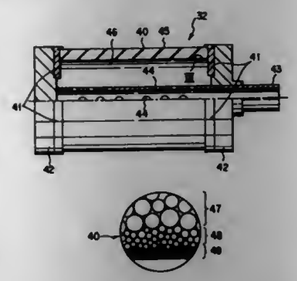
a second process chamber arranged along said convey path and having therein a second process section for applying a process liquid on the substrate at a second temperature, which is lower than said first temperature;
a support means for supporting the substrate in said second process section;
an applying means for applying said process liquid on the substrate in said second process section;
a cooling plate, on which the substrate is placed, arranged separately from and adjacent to said support means and disposed in said second process chamber for adjusting a temperature of the substrate substantially to said second temperature before the substrate is conveyed to said support means;
first conveying means for conveying the substrate among said loading section, said unloading section, said first process chamber, and said second process chamber along said convey path;
second conveying means formed independent of said first conveying means, disposed in and dedicated to said second process chamber for conveying only the substrate cooled down to the second temperature from said cooling plate to said second process section;
a partition means disposed in said second process chamber for isolating said second process section from said cooling plate; and
a driving means for moving said support means relative to said partition means in a vertical direction.

5,578,128
APPARATUS FOR APPLYING HOT MELT GLUE TO ROUND AND NON-ROUND CONTAINERS
Wayne F. Schneider, Kansas, Mo., assignor to Sealright, Co., Inc., Desoto, Kans.
Filed Feb. 8, 1995, Ser. No. 385,557
Int. Cl.[6] B05C *5/00*
U.S. Cl. 118—696 **16 Claims**



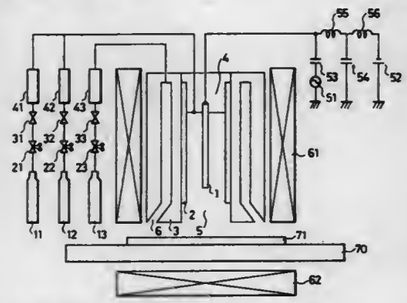
1. An apparatus for applying a bead of glue to an interior of a container along a glue path, said container having walls formed about a central longitudinal axis extending between opposite ends of the container, said container including at least one open end, wherein the apparatus comprises:
a gun assembly for applying at least one glue bead to a glue receiving region about an interior surface of said walls, said gun assembly being located along, and rotated about, said longitudinal axis of said container while spraying said glue outward therefrom along at least one glue trajectory in order to apply said at least one glue bead; and
drive means operably connected to said gun assembly for rotating said gun assembly about said longitudinal axis, said drive means connected to drive control means, said drive control means varying a rotational velocity of said gun assembly while applying said glue bead about said glue path based upon variations in a radial distance between said gun assembly and a point at which said glue contacts said interior surface of said container to compensate for variations in said radial distance and provide a generally uniform glue bead.

5,578,129
GAS SUPPLYING HEAD AND LOAD LOCK CHAMBER OF SEMICONDUCTOR PROCESSING SYSTEM
Shuji Moriya, Yamanashi-ken, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan
Continuation-in-part of Ser. No. 214,282, Mar. 17, 1994, Pat. No. 5,494,522. This application Aug. 17, 1995, Ser. No. 516,361
Claims priority, application Japan, Mar. 17, 1993, 5-56939; Aug. 17, 1994, 6-215299
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—719 **21 Claims**



1. A gas supplying head for supplying a gas for use in pressure adjustment into an airtight casing of a semiconductor processing system while a substrate to be processed is supported within an inside of said casing, the gas supplying head comprising:
a gas storing section which communicates with a gas introduction pipe for introducing the gas into said casing; and
an outlet filter comprising a porous filtering layer having a number of pores through which said gas storing section communicates with said inside of the casing, said pores having a average diameter of from 0.8 μm to 0.1 μm, said filtering layer having porosity of from 10% to 50%.

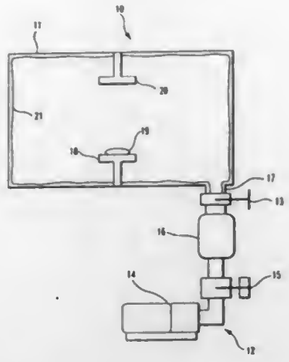
5,578,130
APPARATUS AND METHOD FOR DEPOSITING A FILM
Shigenori Hayashi, Kanagawa, and Shunpei Yamazaki, Tokyo, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan
Continuation-in-part of Ser. No. 22,759, Feb. 22, 1993, Pat. No. 5,304,407, which is a continuation of Ser. No. 803,217, Dec. 6, 1991, abandoned. This application Jan. 31, 1994, Ser. No. 190,331
Claims priority, application Japan, Dec. 12, 1990, 2-418075
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 E **18 Claims**



1. An apparatus for depositing a film comprising:
a purge gas nozzle;
a reaction space which is substantially kept airtight during operation thereof by forming a purge gas flow intervening between said reaction space and atmosphere outside of said reaction space from said purge gas nozzle;
a central electrode provided in said reaction space;
a peripheral electrode provided around said central electrode;
an insulator provided between said central electrode and said peripheral electrode;
as first power source for supplying to said reaction space an electromagnetic energy required to maintain discharge in said reaction space; and
a second power source for applying an electric field between said central electrode and a substrate to be coated in order to make a plasma ion in said reaction space attracted by said substrate.

5,578,131
REDUCTION OF CONTAMINANT BUILDUP IN SEMICONDUCTOR PROCESSING APPARATUS
Yan Ye, 3862 Via Salice, Campbell, Calif. 95008; Anand Gupta, 1270 Briarcreek Ct., San Jose, Calif. 95131, and Shamouil Shamouliam, 1256 Washoe Dr., San Jose, Calif. 95120
Division of Ser. No. 138,528, Oct. 15, 1993. This application Jun. 2, 1995, Ser. No. 459,197
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 R **6 Claims**

1. A method of controlling by-product buildup on the interior surfaces of a semiconductor plasma processing apparatus during processing of a workpiece, comprising:
a) providing a semiconductor plasma processing apparatus comprised of a reactor chamber and an exhaust system through which reactor chamber gases are removed from said reaction chamber; and
b) applying a layer of polyfluoroethylene polymer selected from the group consisting of polytetrafluoroethylene ($—CF_2CF_2—)_n$, polychlorotrifluoroethylene ($—CF_2CFCl—)_n$ and copolymers of tetrafluoroethylene and chlorotrifluoroethylene, said polyfluoroethylene polymer being in the form of an oil, grease or wax, to at least a portion of the interior surfaces of said reactor chamber and said exhaust system, wherein said layer of polymeric material exhibits a sticking coefficient of 10^{-4} or less and contributes a partial pressure which is 1% or less of



the total vapor pressure over the entire operational pressure range for said chamber.

5,578,132

APPARATUS FOR HEAT TREATING SEMICONDUCTORS AT NORMAL PRESSURE AND LOW PRESSURE

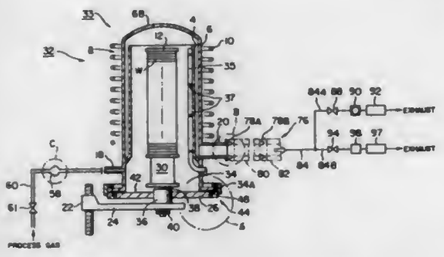
Kenichi Yamaga, Sagamihara, and Toshiki Kobayashi, Zama, both of Japan, assignors to Tokyo Electron Kabushiki Kaisha, Tokyo, and Tokyo Electron Tohoku Kabushiki Kaisha, Iwate-Ken, both of Japan

Filed Jul. 5, 1994, Ser. No. 269,608

Claims priority, application Japan, Jul. 7, 1993, 5-192771; Aug. 19, 1993, 5-225071; Aug. 30, 1993, 5-235854

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—724 **5 Claims**



1. A thermal processing apparatus comprising a processing chamber including an inner tube having an opened bottom for accommodating objects to be processed on an object-to-be-processed boat, and an outer tube concentrically disposed outside the inner tube, a gas feed port connected to the processing chamber for introducing a processing gas into the processing chamber, a cylindrical manifold having an exhaust gas port for discharging gas in the processing chamber, and a cap for tightly closing the opened bottom of the manifold openably; wherein the inner tube, the outer tube, and the manifold are separately preformed pieces of quartz, said apparatus having glass-melted connections which join said pieces of quartz to provide an integral structure which includes the inner tube, the outer tube, and the manifold; an inner surface of the cap on the side of the processing chamber being coated with a protecting layer of a heat resistant and corrosion resistant material, and a high temperature heat resistant seal being provided on an abutting portion between the cap and the manifold, wherein the high temperature heat resistant seal means includes O-rings, and a cooling means for cooling the O-rings.

5,578,133

DRY CLEANING PROCESS FOR CLEANING A SURFACE

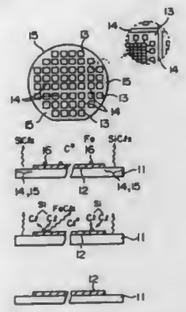
Rinji Sugino; Masaki Okuno, and Yasuhisa Sato, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 12, 1993, Ser. No. 3,384

Claims priority, application Japan, Jan. 13, 1992, 4-004162; Jul. 22, 1992, 4-195041

Int. Cl.[6] B08B *5/00;* **C23F** *1/00;* **C03C** *23/00*

U.S. Cl. 134—2 **16 Claims**



1. A dry cleaning process for removing metal contaminants from a surface of a silicon oxide film such that no substantial etching of said oxide film occurs, said oxide film covering a surface of a substrate for protecting said substrate from a reaction with species that are contained in an environmental atmosphere in which said substrate is held, said process comprising the steps of:

forming a reaction area on said silicon oxide film such that a silicon surface is formed on said substrate in correspondence to said reaction area;

supplying a dry cleaning gas selected from a group consisting essentially of chlorine, bromine, hydrogen chloride, hydrogen bromide and a mixture thereof, to said oxide film including said reaction area, to produce silicon halide molecules as a result of a reaction between said dry cleaning gas and said silicon surface;

supplying said silicon halide molecules to a surface of said oxide film; and

removing metal contaminants existing on said surface of said oxide film as a result of a reaction between said metal contaminants and said dry cleaning gas under a presence of silicon halide molecules,

said removing metal contaminants being conducted such that no substantial etching of said oxide film occurs.

5,578,134

METHOD OF SANITIZING AND DESTAINING TABLEWARE

Steven E. Lentsch, St. Paul; Dale W. Groth, Edina; Thomas R. Oakes, Lake Elmo, and Burton M. Baum, Mendota Heights, all of Minn., assignors to Ecolab Inc., St. Paul, Minn.

Filed Apr. 19, 1994, Ser. No. 229,982

Int. Cl.[6] B08B *3/04;3/08;* **C23G** *1/02*

U.S. Cl. 134—3 **31 Claims**

1. A method of sanitizing and destaining tableware, said method comprising the step of applying during a rinse step at least about 100 ppm of a sanitizing and destaining concentrate composition comprising:

(a) from about 0.5 wt-% to 25 wt-% of peroxycarboxylic acid;

(b) from about 5 wt-% to 75 wt-% of carboxylic acid wherein said carboxylic acid comprises a mixture of octanoic acid and acetic acid;

(c) from about 1 wt-% to 40 wt-% of hydrogen peroxide; and

(d) a balance of carrier;

wherein said sanitizing and destaining concentrate composition is non-corrosive and non-filmforming with said tableware.

5,578,135

CHEMO-MECHANICAL STRIPPING OF PAINT FROM PLASTIC PARTS

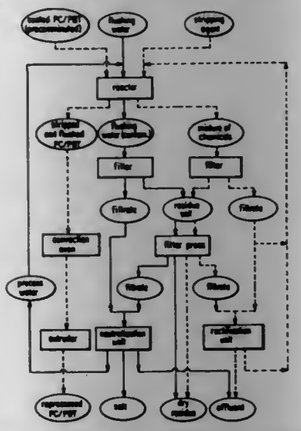
Karsten Löhr, Ulm; Bernd-Uwe Kettemann, Elchingen; Jörg Zürn, Ulm, and Michele Melchiorre, Blaustein, all of Germany, assignors to Daimler-Benz, Stuttgart, Germany

Filed Dec. 27, 1994, Ser. No. 364,778

Claims priority, application Germany, Dec. 24, 1993, 43 44 582.9

Int. Cl.[6] B08B *3/10;7/02;* **C23D** *17/00*

U.S. Cl. 134—7 **24 Claims**



1. A process for stripping a coating from coated plastics parts to obtain recycled stripped plastic, comprising the steps of:

first mechanically comminuting the coated plastics parts into plastic chips of a pourable size;

mixing the plastic chips with a stripping agent of anhydrous alkalified glycol, selected from the group consisting of diethylene glycol or propylene glycol, wherein the stripping agent is added in an amount of from 1 to 10% of the volume of plastic chips to be recycled, so that the plastic chips are only wetted by the stripping agent;

circulating the plastic chips with the stripping agent at a temperature of at least 50° C. for a predetermined time to strip the coating from the plastic chips by mutual abrasion to obtain stripped plastic chips without damaging the plastic chips;

separating the stripped plastic chips from the stripping agent; and

flushing and drying the striped plastic chips.

5,578,136

AUTOMATIC DISHWASHING COMPOSITIONS COMPRISING QUATERNARY SUBSTITUTED BLEACH ACTIVATORS

Lucille F. Taylor, Middletown; Mark R. Sivik, Fairfield; Alan D. Willey, Cincinnati; James C. T. Burckett-St. Laurent, Cincinnati, and Frederick A. Hartman, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 31, 1994, Ser. No. 298,904

Int. Cl.[6] C11D *3/28;3/39;3/395;7/18*

U.S. Cl. 139—25.2 **19 Claims**

1. An automatic dishwashing detergent compositions comprising:

a) from about 0.1% to about 10% of a quaternary substituted bleach activator wherein said activator is selected from the group consisting of monocationic compounds having the formula: $(E—Z—C(O)—L)(Y^{o-})_{1/a}$ wherein E has the formula $R^1R^2R^3N^+$ wherein any R is independently selected from methyl, ethyl, propyl, butyl, phenyl, benzyl, 1-napthylmethylene and 2-naphthylmethylene, Z is substituted or unsubstituted polyalkylene, arylalkylene, arylpolyalkylene, polyalkylenearylalkylene or polyalkylenearylpolyalkylene, L is a leaving group having a pKa above 13 and selected from the group consisting of caprolactam and valerolactam provided that from 2 to about 16 atoms separate the nitrogen in said moiety E and said moiety C(O); a is 1 or higher; and $(Y^{o-})_{1/a}$ are said charge-balancing compatible anions; and

b) from about 1% to about 33.3% of a source of hydrogen peroxide.

5,578,137

AZEOTROPIC OR AZEOTROPE-LIKE COMPOSITIONS INCLUDING 1,1,1,2,3,4,4,5,5,5-DECAFLUOROPENTANE

Barbara H. Minor, Elkton, Md.; Donald B. Bivens, Kennett Square, Pa.; Abid N. Merchant, Wilmington, Del., and Glenn S. Shealy, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 112,482, Aug. 31, 1993, abandoned. This application May 19, 1994, Ser. No. 246,198

Int. Cl.[6] C09K *5/04;* **C11D** *7/30;7/26;7/50*

U.S. Cl. 134—42 **5 Claims**

1. An azeotropic or azeotrope-like composition consisting essentially of about 1–99 weight percent 1,1,1,2,3,4,4,5,5,5-decafluoropentane and about 99–1 weight percent methyl tert-butyl ether wherein at about 25 C, the vapor pressure of the composition changes by less than 10% after 50% of the composition has evaporated.

5,578,138

COMPOSITIONS COMPRISING 1,1–DICHLORO–1–FLUOROETHANE AND PROCESS FOR THE REMOVAL OF WATER FROM A SOLID SURFACE

Mireille Paulus, Bruxelles; Robert Putteman, Lebbeke, and Pierre Barthelemy, Pietrebais, all of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

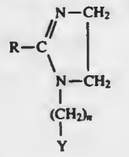
Filed May 10, 1995, Ser. No. 437,978

Claims priority, application France, May 18, 1994, 94 06237

Int. Cl.[6] B01D *12/00;17/02;* **C11D** *1/58;3/24*

U.S. Cl. 134—42 **14 Claims**

1. A composition comprising 1,1-dichloro-1-fluoroethane and at least 0.001% by weight relative to said 1,1-dichloro-1-fluoroethane of an imidazoline of the formula



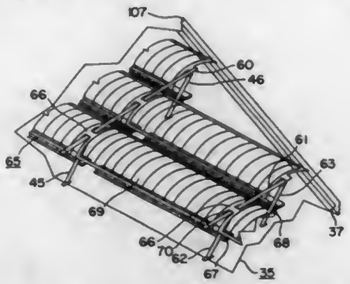
in which R represents an alkyl or alkenyl chain comprising 6 to 25 carbon atoms, Y represents a hydroxyl or amino group and n is an integer from 1 to 20, adapted to avoid formation of stable water-in-oil emulsions.

5,578,139

STOWABLE AND DEPLOYABLE SOLAR ENERGY CONCENTRATOR WITH FRESNEL LENSES

P. Alan Jones, Santa Barbara; T. Jeffrey Harvey, Lompoc; Allister F. Fraser, and David M. Murphy, both of Santa Barbara, all of Calif., assignors to AEC-Able Engineering Co., Inc., Goleta, Calif.

Filed Jan. 3, 1995, Ser. No. 368,774
Int. Cl.[6] H01L 31/045;31/052
U.S. Cl. 136—245 7 Claims



1. A stowable and deployable concentrator for solar cells comprising:

a substrate having a substantially planar area;

a row of solar cells mounted to said planar area;

a row of Fresnel lens elements;

deflectable support means supporting said Fresnel lenses above said area when in the deployed condition of the concentrator, and deflecting to enable the support means to be brought toward the substrate in the stowed condition of the concentrator, said support means defining a geometrically defined parallelism of the row of Fresnel lenses with the row of solar cells and with geometrically defined lateral and vertical positioning alignment of them, when in the deployed condition;

said support means comprising a pair of diagonal struts, both mounted to the substrate by respective hinges, and a cross beam mounted to both of said diagonal struts by respective hinges, the spacing between the hinges on the substrate being equal to the spacing between the hinges on the cross beam, whereby to form a parallelogram construction, said row of Fresnel lens elements being supported by said cross beam;

said Fresnel lens elements being flexible, said row of Fresnel lens elements being trough-like; and

a frame holding said lenses, said frame comprising a springily flexible shaper having an undistorted curvature respective to the desired curvature of the Fresnel elements, and defining the curvature of said Fresnel lens elements, and a pair of parallel runners attached to said shaper receiving and supporting edges of said Fresnel elements, said shaper being distortable to cause the Fresnel lens elements at least partially to flatten in the stowed configuration.

5,578,140

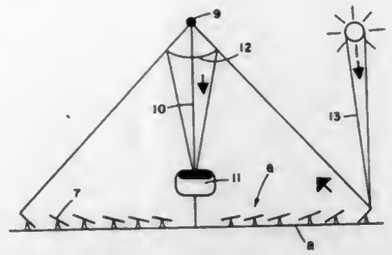
SOLAR ENERGY PLANT

Amnon Yogev, Rehovot; Vladimir Krupkin, and Michael Epstein, both of Rishon LeZion, all of Israel, assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel

Filed Feb. 1, 1995, Ser. No. 384,338
Claims priority, application Israel, Feb. 1, 1994, 108506
Int. Cl.[6] H01L 31/052;31/058; F24J 2/00
U.S. Cl. 136—246 52 Claims

1. A solar energy plant for the conversion of solar radiation into utilizable energy, comprising:

a Fresnel reflector including a plurality of radiation concentrating mirrors installed on a base plane, said Fresnel reflector being in the form of a heliostats field in which said concentrating minors track the sun and having a focal point removed from the heliostats field by a focal length;



at least one solar receiver placed close to said base plane; and

an additional reflector mounted above said heliostats field close to said focal point so that concentrated solar radiation reflected by the heliostats field is redirected onto said at least one solar receiver; and

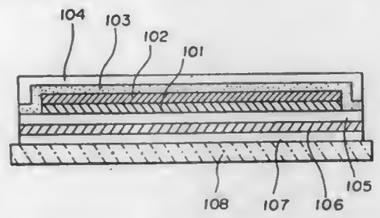
wherein said additional reflector is in the form of a dielectric mirror, whereby an overheating of the additional reflector is avoided.

5,578,141

SOLAR CELL MODULE HAVING EXCELLENT WEATHER RESISTANCE

Takahiro Mori, Ikoma; Ichiro Kataoka; Satoru Yamada, both of Tsuzuki-gun, and Shigenori Itoyama, Nara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP94/01081, § 371 Date Apr. 7, 1995, § 102(e) Date Apr. 7, 1995, PCT Pub. No. WO95/01655, PCT Pub. Date Jan. 12, 1995
PCT Filed Jul. 1, 1994, Ser. No. 392,789
Claims priority, application Japan, Jul. 1, 1993, 5-163488
Int. Cl.[6] H01L 31/048
U.S. Cl. 136—251 66 Claims



1. A solar cell module in which at least the light incident surface side of a photovoltaic element is coated with a filler, characterized in that said filler is formed of a composition containing a vinylidene fluoride copolymer and an acrylic resin.

5,578,142

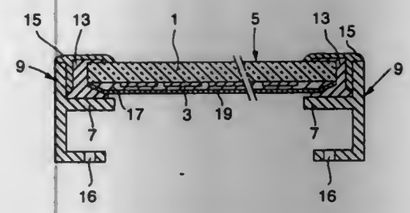
SOLAR-CELL MODULE AND PROCESS FOR PRODUCING THE SAME

Yoshiya Hattori; Shinji Okuda, both of Kyoto, and Masao Shizuki, Osaka, all of Japan, assignors to Sunstar Engineering Inc., Osaka, Japan

Filed Jul. 7, 1995, Ser. No. 499,397
Claims priority, application Japan, Jul. 7, 1994, 6-155623
Int. Cl.[6] H01L 31/048
U.S. Cl. 136—251 8 Claims

1. A solar-cell module comprising:

a solar-cell panel comprising a light-transmitting plate having a first surface and a second surface opposite to the first surface, and solar-cell elements disposed on the second surface,



a frame disposed around the entire periphery of the solar-cell panel and having a flange on which the solar-cell panel is supported on the second surface while the first surface is free, and

an adhesive layer disposed between the second surface of the solar-cell panel and the flange of the frame,

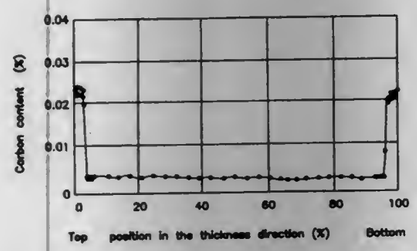
wherein said adhesive layer comprises a reactive hot-melt adhesive comprising as a major component a urethane prepolymer obtained by reacting a polyhydroxy compound with an excess amount of a polyisocyanate compound.

5,578,143

CONTINUOUSLY CAST SLAB OF EXTREMELY LOW CARBON STEEL WITH LESS SURFACE DEFECTS IN STEEL SHEET-PRODUCING STEP; EXTREMELY LOW CARBON SHEET STEEL; AND PROCESS FOR PRODUCING THE SAME

Kazuo Koyama; Eiichi Takeuchi, and Masayoshi Suehiro, all of Futtsu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

PCT No. PCT/JP94/01964, § 371 Date Jul. 21, 1995, § 102(e) Date Jul. 21, 1995, PCT Pub. No. WO95/14794, PCT Pub. Date Jun. 1, 1995
PCT Filed Nov. 21, 1994, Ser. No. 500,883
Claims priority, application Japan, Nov. 22, 1993, 5-314005; Dec. 22, 1993, 5-325396; Oct. 18, 1994, 6-277228
Int. Cl.[6] B22D 27/02; B32B 15/18; C21D 1/04
U.S. Cl. 148—319 38 Claims



1. A continuously cast slab of extremely low carbon steel with less surface defects in a hot rolling, cold rolling, annealing or surface treatment step, which comprises

a cast slab containing not more than 1.5% by mass of Si, not more than 2.0% by mass of Mn, not more than 0.15% by mass of P, 0.01–0.15% by mass of Al and not more than 0.005% by mass of N, and

a surface layer of said cast slab further containing 0.01– 0.08% by mass of C existing as a cementite, and

an inner layer of said cast slab further containing not more than 0.0050% by mass of C and at least one of 0.02–0.10% by mass of Ti, 0.01–0.10% by mass of Nb, 0.02–0.10% by mass of V and 0.03–0.10% by mass of Zr, the carbon being present substantially as carbides of the said elements, and

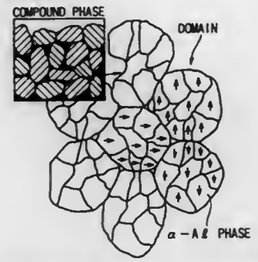
the balance being Fe and inevitable impurities.

5,578,144

HIGH-STRENGTH, HIGH-DUCTILITY CAST ALUMINUM ALLOY AND PROCESS FOR PRODUCING THE SAME

Kazuaki Satou, Brookline, Mass., and Yukio Okochi, Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 14, 1995, Ser. No. 490,450
Claims priority, application Japan, Jul. 19, 1994, 6-166800
Int. Cl.[6] C22C 21/00
U.S. Cl. 148—415 4 Claims



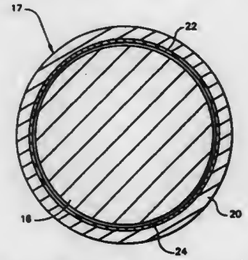
1. A high-strength, high-ductility cast aluminum alloy, having a structure comprising fine grains of α-Al, having an average grain diameter of not more than 10 μm, surrounded by a network of a compound of Al-lanthanide-base metal, said α-Al grains forming a domain.

5,578,145

PROCESS FOR IMPROVING CORROSION RESISTANCE OF ZIRCONIUM OR ZIRCONIUM ALLOY BARRIER CLADDING

Ronald B. Adamson, Fremont, and Daniel R. Lutz, San Jose, both of Calif., assignors to General Electric Company, San Jose, Calif.

Division of Ser. No. 142,034, Oct. 28, 1993, Pat. No. 5,417,780.
This application Dec. 14, 1994, Ser. No. 368,832
Int. Cl.[6] C22C 14/00; G21C 3/00
U.S. Cl. 148—421 4 Claims



1. Barrier fuel cladding made by a process comprising the following steps:

tube reduction of a tube shell consisting essentially of a zirconium liner metallurgically bonded to a zirconium alloy tube interior surface, said step of tube reduction being accomplished by a step of cold working followed by recrystallization annealing to produce a first intermediate tube;

heat treatment of said first intermediate tube;

one or more steps of tube reduction of said heat-treated first intermediate tube by cold working followed by recrystallization annealing or stress relief annealing to produce said barrier fuel cladding,

wherein said heat treatment comprises vacuum heat treating said first intermediate tube at a temperature of about 900° to 1020° C. and for a duration sufficient to cause the diffusion of Fe and/or Ni atoms from said zirconium alloy tube to the inner surface of said liner without causing appreciable diffusion of

the elements oxygen and tin into said liner, and wherein said Fe and Ni atoms are present at said inner surface of said liner at concentrations of between about 100 and 200 ppm by weight.

5,578,146

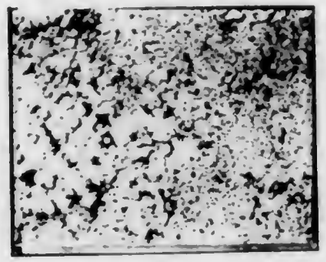
ALUMINUM-BERYLLIUM ALLOYS HAVING HIGH STIFFNESS AND LOW THERMAL EXPANSION FOR MEMORY DEVICES

Larry A. Grant, Saratoga, Calif.; James M. Marder, Shaker Heights, Ohio, and Wayne L. Wright, San Jose, Calif., assignors to Brush Wellman, Inc., Cleveland, Ohio

Continuation of Ser. No. 333,942, Nov. 3, 1994, abandoned, which is a continuation of Ser. No. 156,356, Nov. 23, 1993, abandoned, which is a continuation of Ser. No. 770,187, Oct. 2, 1991, abandoned. This application Jan. 16, 1996, Ser. No. 587,135

Int. Cl.[6] C22C *21/00*

U.S. Cl. 148—437 **14 Claims**



1. An article of manufacture having isotropic mechanical properties of high stiffness and low coefficient of thermal expansion made of an alloy consisting essentially of about 40% to about 95% beryllium and the balance essentially aluminum, the alloy having a microstructure of randomly distributed crystals of aluminum-rich and beryllium-rich phases.

5,578,147

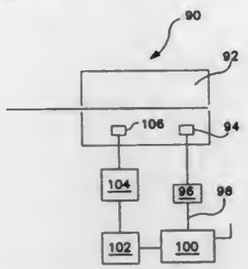
CONTROLLED PROCESS FOR THE HEAT TREATING OF DELUBED MATERIAL

Harbhajan S. Nayar, New Providence, and George R. White, III, North Plainfield, both of N.J., assignors to The BOC Group, Inc., Murray Hill, N.J.

Filed May 12, 1995, Ser. No. 440,431

Int. Cl.[6] C04B *35/64*

U.S. Cl. 148—508 **30 Claims**



1. A process for the heat treating of a part comprising a metal, metal alloy, ceramic or a combination thereof containing a lubricant comprising:

a) transporting the part into a furnace;

b) preheating the part to at least a temperature at which the lubricant vaporizes to form a preheating atmosphere containing a vaporized lubricant;

c) converting the vaporized lubricant into at least one smaller gaseous compound during the preheating step;

d) obtaining a sample of the preheating atmosphere;

e) measuring a concentration of at least one smaller gaseous compound contained within the sample; and

f) heat treating the part when the concentration of the at least one measured smaller gaseous compound reaches a predetermined value.

5,578,148

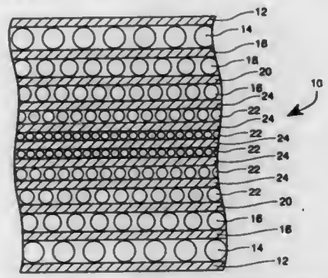
METHOD TO PRODUCE HIGH TEMPERATURE OXIDATION RESISTANT METAL MATRIX COMPOSITES BY FIBER DIAMETER GRADING

Daniel Eylon, Dayton, and Stephen W. Schwenker, Kettering, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 24, 1995, Ser. No. 506,226

Int. Cl.[6] B23K *31/02*

U.S. Cl. 148—527 **8 Claims**



5. A method to produce high temperature oxidation resistant metal matrix composites which comprises the steps of (a) laying up an alloy/fiber preform consisting of a plurality of layers of metal alloy and fibers and (b) heating the preform to a temperature below the beta-transus temperature of the alloy while applying a pressure sufficient to effect consolidation of the preform, thereby producing a metal matrix composite consolidations; wherein fibers of at least two diameters are employed; and wherein the layers of fibers in the preform are graduated so that larger diameter fibers are located nearer the surface of the composite and smaller diameter fibers are located toward the interior of the composite; and wherein said layers of metal alloy and fibers are fabricated by depositing a layer of metal alloy on a plurality of fibers laid in parallel relation to provide a sheet-like material.

5,578,149

RADIALLY EXPANDABLE STENT

Ivan De Scheerder, St. Martens Latem, Belgium, and Joseph B. Horn, Niwot, Colo., assignors to Global Therapeutics, Inc., Broomfield, Colo.

Filed May 31, 1995, Ser. No. 456,087

Int. Cl.[6] C21D *1/26*; C22K *1/00*

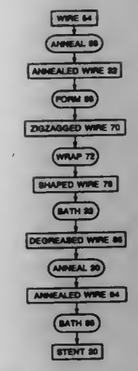
U.S. Cl. 148—563 **7 Claims**

1. A method for manufacturing a stent and for deploying said stent having a length in a vessel in a body, comprising:

providing a wire that is to be subject to annealing at two different times after said providing step;

first annealing said wire at a temperature ranging from about 900° to about 1200° C., wherein said first annealing step substantially eliminates any shape memory of said wire;

changing the shape of said wire into that of a stent having concentric loops;



second annealing, after said changing step, said stent at a temperature ranging from about 900° to about 1200° C., wherein said second annealing step substantially eliminates any shape memory of said stent and renders said stent able to adapt readily to the shape of said vessel;

placing said stent within an interior of the body vessel;

permitting said stent to conform to the shape of the interior of the body vessel.

5,578,150

HEAT TREATMENT PROCESS FOR WIRE RODS

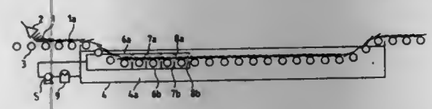
Takefumi Suzuki, and Shigekatsu Ozaki, both of Futtsu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 95,207, Jul. 23, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 466,964

Claims priority, application Japan, Jul. 28, 1992, 4-201123

Int. Cl.[6] E21D *1/00*; C21D *1/607*

U.S. Cl. 148—595 **8 Claims**



1. A heat treatment process for steel wire rod comprising the steps of:

forming an unconcentrically spiralled loose coil of steel wire rod just rolled and having a temperature not lower than Ar_3 on a conveyor by means of a take-up reel;

spraying the wire rod being conveyed forward in the unconcentrically spiralled loose coil with a solution of molten salt at a temperature between 400° and 600° C. and not higher than a temperature of a bath of molten salt for retention either from above and below or from only above, to quench the wire rod to a temperature between 400° and 600° C.; and

subsequently introducing and retaining the quenched wire rod, in the unconcentrically spiralled loose coil, in said retention bath of molten salt kept at a temperature between 400° and 600° C., thereby producing a fine pearlite structure in the wire rod through pearlite transformation.

5,578,151

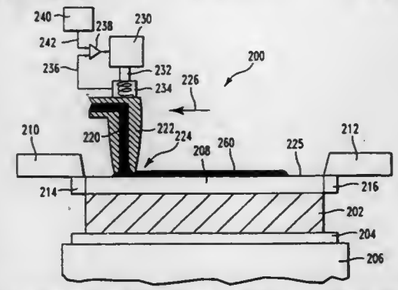
MANUFACTURE OF A MULTI-LAYER INTERCONNECT STRUCTURE

Gerald S. Andris, Poughkeepsie, and John P. Gauci, Putnam Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 865,604, Apr. 9, 1992, abandoned. This application Mar. 1, 1995, Ser. No. 397,018

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—64 **8 Claims**



1. A process for maintaining a clearance between a screening nozzle and a screening mask, comprising the steps of:

applying a force to the screening nozzle in a first direction perpendicular to a confronting surface said screening mask;

applying a pressure to a paste introduced through the nozzle into the mask; and

levitating a discharge end of the nozzle to an approximately constant clearance above a surface of the screening mask by regulating said force applied to said screening nozzle to be in substantial equilibrium with a force applied to said nozzle by said paste in a direction opposite to said first direction.

5,578,152

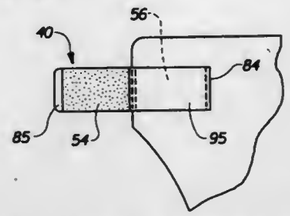
METHOD FOR MANUFACTURING TAPE TAB FASTENERS

David J. K. Goulait, and David W. Cabell, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 263,322, Jun. 21, 1994, Pat. No. 5,482,588, and a continuation-in-part of Ser. No. 263,115, Jun. 21, 1994, Pat. No. 5,487,809. This application May 24, 1995, Ser. No. 450,773

Int. Cl.[6] B32B *31/18*;*31/08*

U.S. Cl. 156—66 **18 Claims**



1. A method for manufacturing tape tab stock that may be used to form tape tabs for use with a disposable absorbent article, the method comprising the steps of:

providing a backing substrate having a longitudinal centerline, a transverse centerline perpendicular to said longitudinal centerline, a first surface, and a pair of longitudinal edges;

applying a pressure-sensitive adhesive to said first surface of said backing substrate, said adhesive being applied in at least a first zone and a second zone, said first and second zones being transversely spaced apart and running continuously in a direction parallel to said longitudinal centerline of said back-

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ing substrate, said first and second zones being located on opposite sides of said longitudinal centerline and between said longitudinal centerline and said longitudinal edges wherein said first and second zones are spaced transversely inwardly toward said longitudinal centerline from said longitudinal edges at least about 0.5 mm such that an area formed adjacent to each of said longitudinal edges is free of said pressure-sensitive adhesive;

slitting said backing substrate between said first zone and said second zone, parallel to said longitudinal centerline to form at least two segments, each said segment having an inner longitudinal edge;

separating said segments in a direction parallel to said transverse centerline;

contacting a release substrate, having a release surface, an adhesive surface and a pair of side edges, with said pressure-sensitive adhesive, such that said release surface at least partially covers said pressure-sensitive adhesive located in both said first zone and said second zone forming a unitary laminate comprising said segments and said release substrate;

applying a construction adhesive to at least a portion of said adhesive surface of said release substrate;

slitting said laminate between said segments in a direction parallel to said longitudinal centerline; and

separating said laminate into a tape tab stock.

5,578,153

METHOD OF ASSEMBLING A WINDSHIELD

Robert A. Hill, Melvindale, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 277,921, Jul. 5, 1994. This application May 2, 1995, Ser. No. 432,734

Int. Cl.[6] B32B *31/04;* **B65H** *3/32;5/08;5/22*

U.S. Cl. 156—106 **9 Claims**

1. A method for assembling windshield assemblies for vehicles using a windshield assembly system, said method comprising the steps of:

delivering at least two plys of glass to an assembly station with a conveyor;

lifting one of the at least two plys from the conveyor with a first robot;

moving a knife along an edge of a top adhesive sheet to separate the edge of the top adhesive sheet from a lower adhesive sheet in a stack of adhesive sheets;

gripping and separating the top adhesive sheet from the lower adhesive sheet and removing the separated top adhesive sheet with a handler of a second robot and placing the top adhesive sheet adjacent the other one of the at least two plys with the handler of the second robot; and

placing the one of the at least two plys adjacent the top adhesive sheet with the first robot to assemble the windshield assembly.

5,578,154

METHOD OF MANUFACTURING A SPOKED WHEEL

John K. Britten, 48 Matai Street, Christchurch 8001, New Zealand

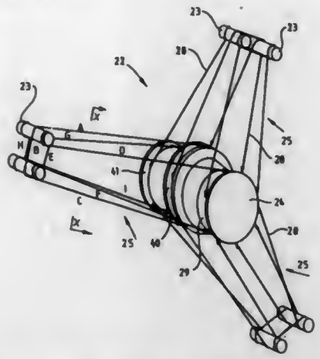
PCT No. PCT/NZ93/00085, § 371 Date Jun. 20, 1994, § 102(e) Date Jun. 20, 1994, PCT Pub. No. WO94/06619, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 13, 1994, Ser. No. 256,002

Claims priority, application New Zealand, Sep. 14, 1992, 244317

Int. Cl.[6] B29C *53/56*

U.S. Cl. 156—172 **5 Claims**



1. A method of manufacture of a spoked wheel with a center and a longitudinal axis along each spoke and operating under compressive stress or extensive stress or successive repetition of compressive or extensive successive stress, the method including:

placing a spool at the center of the wheel;

for each spoke, arranging and securing a series of spaced outer spools about the longitudinal axis of that spoke, such that the outer spools are spaced a distance from the center spool greater than the final length of the spoke;

predetermining the thickness of material required between any two spools depending on the purpose to which the wheel is to be put, for all spools;

wetting yarn in a preselected resin;

the yarn being of carbon fibre as a major component and as a minor component material filaments selected from the group consisting of: boron, glass, aramid resins in the form of synthetic fibers, steel and any combination thereof;

the yarn being made from filaments formed into a bundle which is coherent under tension and impregnated with a resin selected from the group consisting of:

a polyester resin, an epoxy resin and a vinyl resin;

winding sufficient wetted yarn between the center spool and each of the outer spools to form a set of rods about the longitudinal axis of the spoke and under a predetermined tensioo which is maintained throughout the winding of the yarn, the winding building up the thickness of material to form unsupported rods of wetted yarn between spools and winding the yarn on the predetermined path;

adding pre-moulded half-wheel coverings to cover part or all of the rods in a two stage process, one part of the pre-moulded coverings being adapted to be positioned on the arrangement and securement means for the spools prior to the winding on of any yarn, the second part of the pre-moulded coverings being added immediately after the yarn is wound on and before the curing;

using further yarn to provide a bond between the rods of yarn and the coverings;

inserting a cup, with a base, of the same material as the wetted yarn as a press-fit between the outer ends of the rods, such that an outer surface of the cup bonds to the rods and the base of the cup forms an enlarged surface area at the distance from the center end of the spoke;

pressing the wheel cover halves together;

rotating the arrangement while winding wetted yarn or cloth made of such yarn over the joint between the wheel cover halves, to form a rim of the wheel;

curing the wheel such that every rod of material is under tension during the curing, the temperature of the curing being determined by the material of the yarn and the coverings;

removing the wheel once curing is completed and each rod is rigid; and

cutting the rods forming each wheel spoke to a desired spoke length.

5,578,155

METHOD AND APPARATUS FOR MANUFACTURING A SOLID OBJECT THROUGH SHEET LAMINATING

Noboru Kawaguchi, Komaki, Japan, assignor to Sanyo Machine Works, Ltd., Japan

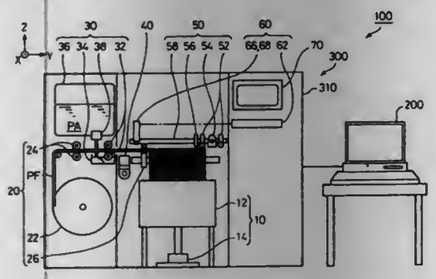
PCT No. PCT/JP93/01567, § 371 Date Jun. 27, 1994, § 102(e) Date Jun. 27, 1994, PCT Pub. No. WO94/09971, PCT Pub. Date May 11, 1994

PCT Filed Oct. 28, 1993, Ser. No. 256,107

Claims priority, application Japan, Oct. 28, 1992, 4-314111; Jan. 21, 1993, 5-27397

Int. Cl.[6] B44C *3/02*

U.S. Cl. 156—267 **10 Claims**



1. A method of forming a three-dimensional object by laminating sheet members within a solid model forming apparatus that includes a data processing unit, said method comprising the steps of:

(A) preparing a first sheet member, which is cut into a first usable area constituting said three-dimensional object and a first excess area not constituting said three-dimensional object;

(B) feeding a second sheet member above said first sheet member while selectively interposing a powdery adhesive layer between said first and second sheet members using a xerography unit that receives cross-sectional data of said three-dimensional object from said, data processing unit, said powdery adhesive layer being formed in at least part of an area which is included in both of said first usable area of said first sheet member and a second usable area of said second sheet member;

(C) attaching said first and second sheet members with each other by said powdery adhesive layer;

(D) cutting said second sheet member into said second usable area and a second excess area; and

(E) successively laminating sheet members through repetition of said steps (B) through (D) to form said three-dimensional object.

5,578,156

METHOD OF MOUNTING A LENS ON A LIGHT EMITTING DIODE

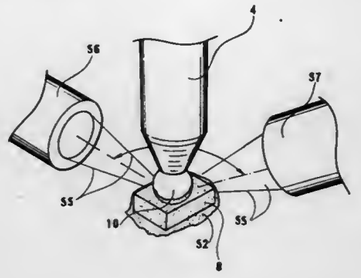
Mitsutoshi Kamakura; Hiroichi Murakami, both of Osaka; Hiroyuki Ishii, and Masayuki Nishikawa, both of Hyogo, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 27, 1994, Ser. No. 250,625

Claims priority, application Japan, Jan. 7, 1994, 6-012121

Int. Cl.[6] B32B *31/28*

U.S. Cl. 156—275.5 **11 Claims**



1. A lens mounting method for mounting a lens on a light emitting diode chip having a substrate, epitaxial layers grown on the substrate, a pn-junction made in the epitaxial layers, a confined emanating region formed by the pn-junction, a front surface of the epitaxial layers and a main flat surface of the substrate, and being bonded with the front surface down on a package comprising the steps of:

placing the package on an XY-stage which can move in a horizontal XY-plane;

replenishing a driving current to the device chip;

letting the device chip emit light beams from the emanating region out of the main surface;

observing the emanating region by a camera which can displace in a vertical Z-direction;

finding out the center of the emanating region by an intensity projection method and a gravity measurement method;

harmonizing the center of the emanating region with the center of the camera by moving the XY-stage in the XY-plane;

displacing the XY-stage by a predetermined distance in a predetermined direction to a spot just below a dispenser which can move in Z-direction;

sinking the dispenser till a bottom tip of the dispenser comes into contact with the device chip;

supplying a dose of ultraviolet hardening resin to the chip from the dispenser by contacting the dispenser with the chip;

lifting the dispenser up;

displacing the XY-stage by a predetermined distance in a predetermined direction to a spot Just beneath a vacuum collet holding a lens which can move in Z-direction;

lowering the vacuum collet till the lens comes into contact with the resin and the main surface of the light emitting device chip;

pushing the lens against the chip by the vacuum collet;

irradiating the ultraviolet hardening resin with ultraviolet rays;

fixing the lens on the main surface of the chip by stiffening the resin; and

lifting up the vacuum collet from the lens.

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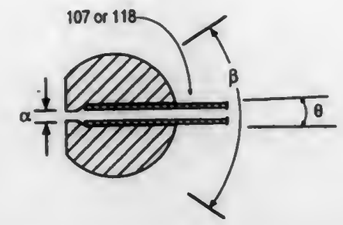
METHOD OF FABRICATING CONNECTOR

William R. Higdon, Pleasanton, Calif., assignor to Microsensor Technology, Inc., Fremont, Calif.

Division of Ser. No. 218,605, Mar. 28, 1994, which is a continuation-in-part of Ser. No. 100,022, Jul. 30, 1993, Pat. No. 5,298,225, which is a continuation-in-part of Ser. No. 812,532, Dec. 23, 1991, Pat. No. 5,236,668. This application Sep. 28, 1994, Ser. No. 314,479

Int. Cl.[6] B29C 65/02;65/54

U.S. Cl. 156—278 5 Claims



1. A method of fabricating a connector, said method comprising the steps of:

providing a fitting having a bore, said bore including a tapered section which terminates at an aperture formed in a flat exterior surface of said fitting, said bore and said aperture sharing a common central axis and said flat exterior surface being perpendicular to said central axis, said tapered section including a first portion tapered at an angle β and a second portion tapered at an angle θ wherein said first portion is between said aperture and said second portion, wherein, in a cross section of said first portion which includes said common central axis, opposing sides of the first portion define said angle β, wherein, in a cross section of said second portion which includes said common central axis, opposing sides of said second portion define said angle θ and wherein said angle β is greater than said angle θ;

providing a capillary tube having an exterior coating;

inserting said capillary tube into said tapered section of said bore until an end of said capillary tube abuts an interior wall of said tapered section;

heating said fitting and said capillary tube, thereby causing said exterior coating to melt; and

allowing said fitting and capillary tube to cool, thereby causing said exterior coating to solidify and bonding said capillary tube to said fitting.

5,578,158

METHOD AND SYSTEM FOR FORMING A COMPOSITE PRODUCT FROM A THERMOFORMABLE MATERIAL

Timothy G. Gutowski, Newton; Gregory P. Dillon, Somerville; Haorong Li, and Sukyoung Chey, both of Cambridge, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 1, 1994, Ser. No. 203,797

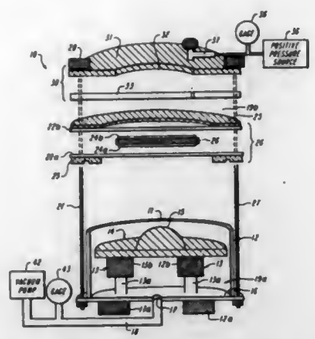
Int. Cl.[6] B32B 31/04;31/20

U.S. Cl. 156—285 37 Claims

1. A method of reducing the occurrence of undesirable deformations in a reinforced thermoformable workpiece formed during shaping of said workpiece into a composite product, comprising

forming said thermoformable workpiece from a plurality of layers of a thermoformable material;

applying an external reinforcing material for increasing the buckling resistance of said workpiece by adding additional mechanical support to at least one side of said thermoformable material workpiece to form a reinforced workpiece having a top side and a bottom side;



placing at least one of the top and bottom sides of said reinforced workpiece in contact with a diaphragm to form a shaping assembly;

urging said shaping assembly into contact with a shaping surface of a shaping tool to form a composite product, said product being complementary in shape to said shaping tool;

separating said external reinforcing material and said diaphragm from said composite product; and

removing said composite product from said shaping tool,

wherein said reinforcing material increases the buckling resistance of said workpiece, thereby reducing the occurrence of undesirable deformations in said thermoformable material during shaping thereof into a composite product.

5,578,159

HOT PRESS FOR PRODUCING MULTILAYER CIRCUIT BOARD

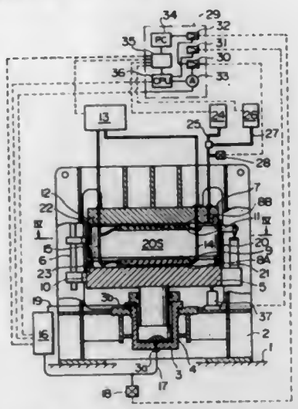
Akimi Miyashita, Toride; Mutsumasa Fujii, Ibaraki-ken; Kenichi Takahashi, Nagareyama; Masami Iwakura, Shimodate, and Makoto Kato, Shimodate, all of Japan, assignors to Hitachi Techno Engineering Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1994, Ser. No. 257,519

Claims priority, application Japan, Jun. 29, 1993, 5-159130; Oct. 8, 1993, 5-253084

Int. Cl.[6] B32B 31/00

U.S. Cl. 156—358 11 Claims



1. A hot press for producing a multilayer circuit board comprising:

upper and lower bolsters disposed opposite to each other in the vertical direction;

upper and lower hot plates attached to said bolsters respectively so as to be opposed to each other between said both bolsters;

sealing means for defining a space with said bolsters and for sealing said space;

pressing means for pressing multilayer circuit board materials including circuit boards and bonding resin stacked in layers alternately and set between said hot plates by moving at least one of said bolsters with respect to the other;

heating and cooling means for heating and cooling said hot plates;

heat insulating boards respectively provided between said bolsters and said hot plates;

vacuum/high pressure means for providing the inside of said space formed by said sealing means with a vacuum or a high pressure;

controlling means for controlling said pressure means, said heating and cooling means and said vacuum/high pressure means so as to provide said space with a vacuum in a state that said multilayer circuit board materials are set between said hot plates and, then, provide said space with a high pressure as well as heat and press said multilayer circuit board materials; and

detecting means for detecting a minimum viscosity of the bonding resin of said multilayer circuit board materials during the heating and pressing of said multilayer circuit board materials, wherein said detecting means is at least one of those which detects a minimum relief amount of a pressure control valve of said pressing means and a maximum control current of said pressure control valve;

said controlling means comprising means for changing-over an atmosphere in said space from a vacuum condition to a high pressure condition substantially simultaneously with the time at which the pressure applied to said multilayer circuit board materials by said pressing means is changed over from a pre-pressure to a bonding pressure larger than said pre-pressure in accordance with a detection result of said detecting means.

5,578,160

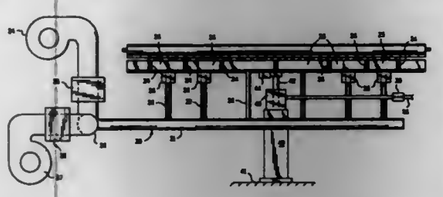
HEAT TRANSFER CONTROL SYSTEM FOR A DOUBLE BACKER

Larry M. Krznarich, Park Falls, and Paul T. Melby, Phillips, both of Wis., assignors to Marquip, Inc., Phillips, Wis.

Filed Apr. 6, 1995, Ser. No. 418,250

Int. Cl.[6] B31F 1/28

U.S. Cl. 156—462 4 Claims



1. In a double backer apparatus for curing the adhesive in a double face corrugated paper web, said apparatus including a series of heating units comprising closed metal chambers supplied with a heated fluid medium and having heated upper surfaces disposed in a common plane and over which the corrugated paper web is moved with its lower face in direct contact, said heating units disposed in closely spaced relation to define, between adjacent units, chambers in open communication with the underside of the web, a system for controlling the rate of heat transfer between the heated surfaces and the lower web face comprising:

a vertically disposed column directly supporting each heating unit at the center thereof above a base surface;

each column including a metal portion having a known coefficient of thermal expansion and a heater for providing controlled thermal expansion of said metal portion;

a sensor for detecting downward bowing of the center of each heating unit as a result of temperature differentials in the unit from heat loss through the upper surface; and,

a heater control responsive to a signal from said sensor to operate the heater and provide vertical thermal expansion of said metal portion sufficient to control said bowing.

5,578,161

METHOD AND APPARATUS FOR IN-SITU AND ON-LINE MONITORING OF TRENCH FORMATION PROCESS

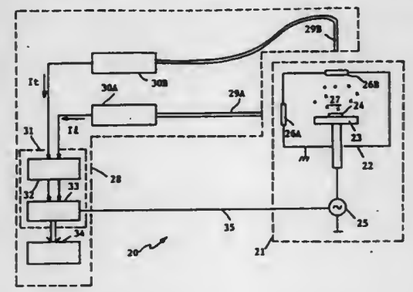
Bernard Auda, Montlhery, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 16, 1992, Ser. No. 869,575

Claims priority, application European Pat. Off., Apr. 30, 1991, 91480070

Int. Cl.[6] H01L 21/302

U.S. Cl. 156—626.1 15 Claims



1. A system for monitoring the formation of a trench in a semiconductor wafer using a dry etching apparatus having (a) an etch-treatment chamber in which the semiconductor wafer to be processed is received, (b) trench formation means for forming a trench in a wafer positioned in the etch-treatment chamber and for redepositing a layer of SiO_2 on the surface of the wafer, the trench formation means including a plasma source for generating a plasma that is directed to etch away the wafer so as to form the trench, with a glow discharge being created as a consequence of the plasma etching of the wafer, and (c) first and second windows for use in viewing the plasma in the etch-treatment chamber, the first window being positioned to permit viewing of the plasma from a plane extending parallel to the surface of the wafer and the second window being positioned to permit viewing of the plasma from a plane extending normal to the surface of the wafer, the monitoring system comprising:

spectrometer means coupled with said first and second windows for providing first and second output signals, said first output signal containing information that varies with time based on changes in intensity of a selected wavelength of radiation in the glow discharge and said second output signal containing information that varies with time based on (1) changes in intensity of said selected wavelength of radiation and (2) changes in reflectivity of the redeposited SiO_2 layer; and

processing and decision means., coupled with said spectrometer means so as to receive said first and second output signals, for determining the depth of the trench and the thickness of the redeposited SiO_2 layer based on said information contained in said first and second output signals.

VOL 1192 ISS 4 NO 26 1996 UMI

5,578,162

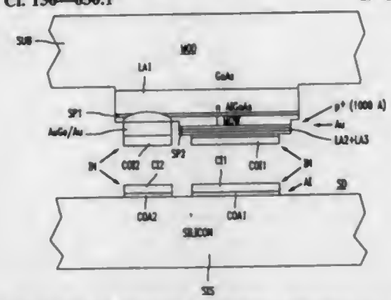
INTEGRATED COMPOSITE SEMICONDUCTOR DEVICES AND METHOD FOR MANUFACTURE THEREOF

Lucian A. D'Asaro, Madison; Donald W. Dahringer, Glen Ridge; Keith W. Goossen, Aberdeen, and James A. Walker, Howell, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 83,742, Jun. 25, 1993, Pat. No. 5,385,632,. This application Dec. 30, 1994, Ser. No. 366,864

Int. Cl.[6] H01L *21/00*; B44C *1/22*

U.S. Cl. 156—630.1 19 Claims



1. The method of forming an integrated semiconductor device, comprising the steps of:

bonding conductors of a first semiconductor device having a substrate to conductors on a second semiconductor device (MOD) having a substrate (SUB);

flowing an etch-resist in the form of an uncured cement to fill a space between the first semiconductor device and the second semiconductor device;

allowing the cement to cure; and

removing the substrate from the second semiconductor device.

5,578,163

METHOD OF MAKING AN ALUMINUM CONTAINING INTERCONNECT WITHOUT HARDENING OF A SIDEWALL PROTECTION LAYER

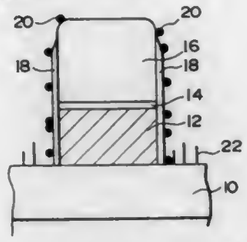
Masaharu Yachi, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Oct. 19, 1992, Ser. No. 962,818

Claims priority, application Japan, Oct. 21, 1991, 3-272760; Oct. 25, 1991, 3-279114; Oct. 6, 1992, 4-293892

Int. Cl.[6] H01L *21/306*

U.S. Cl. 156—643.1 21 Claims



1. A method for manufacturing a semiconductor device, comprising the steps of:

(a) dry-etching an aluminum-containing interconnecting layer, which is formed on a wafer, using reactive gas containing at least one of chlorine and chloride, wherein said dry-etching forms a sidewall protection layer;

(b) converting a second reactive gas, which contains a compound or hydrogen element having at least a hydrogen atom, into a plasma thereby activating the hydrogen and then removing chlorine from the wafer and the interconnecting layer by activated hydrogen at a temperature of 20° to 150° C.;

(c) converting a third reactive gas, which comprises oxygen into a plasma and removing a resist layer which has been formed over the interconnecting layer by ashing at a temperature of 20° to 150° C.; wherein said steps (b) and (c) are conducted without substantially hardening said sidewall protection layer of said interconnecting layer, and

(d) removing said sidewall protection layer.

5,578,164

PLASMA PROCESSING APPARATUS AND METHOD

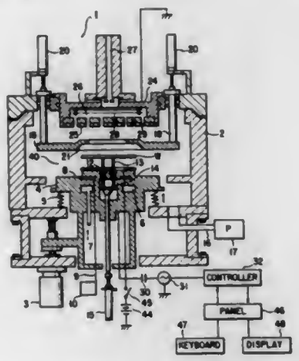
Yoichi Kurono, Yamanashi-ken; Shigeki Tozawa, Nirasaki, and Shozo Hosoda, Yamanashi-ken, all of Japan, assignors to Tokyo Electron Limited, Tokyo, and Tokyo Electron Yamanashi Limited, Nirasaki, both of Japan

Filed Dec. 23, 1994, Ser. No. 363,270

Claims priority, application Japan, Dec. 24, 1993, 5-347386; Dec. 28, 1993, 5-352895

Int. Cl.[6] B44C *1/22*

U.S. Cl. 156—643.1 10 Claims



1. A method of subjecting a substrate to a plasma process, comprising:

(a) a preparatory step of forming a photoresist film on the substrate substantially entirely and exposing and developing the photoresist film, so as to form a patterned resist mask film, the substrate having a marginal portion which is not covered by the resist mask film; and

(b) a main step, subsequent to the preparatory step, for subjecting the substrate to the plasma process by means of a plasma processing apparatus,

said apparatus comprising:

a process chamber;

a supply for supplying a process gas to the process chamber;

an exhaust for exhausting and setting the process chamber to a vacuum;

a work table, arranged in the process chamber, having a supporting surface on which the substrate is mounted and an electrostatic chuck for attracting and holding the substrate on the supporting surface;

a plasma generator for making the process gas into a plasma at a position opposite to the supporting surface and in the process chamber, the plasma having a plasma sheath opposite to the supporting surface; and

a hood arranged between the substrate mounted on the supporting surface and the plasma sheath, the hood covering but being out of contact with the marginal portion of the substrate so as to prevent the marginal portion from being subjected to the plasma process,

said main step comprising the steps of:

(i) introducing the substrate into the process chamber, mounting it on the supporting surface and attracting and holding it with the electrostatic chuck;

(ii) covering the marginal portion of the substrate by the hood so as to be out of contact with each other;

(iii) supplying the process gas to the process chamber, making the process gas into the plasma, and subjecting the substrate to the plasma process, using the plasma, wherein the hood prevents the marginal portion from being subjected to the plasma process.

5,578,165

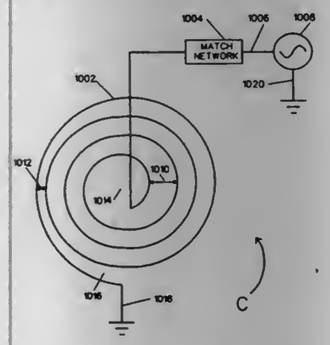
COIL CONFIGURATIONS FOR IMPROVED UNIFORMITY IN INDUCTIVELY COUPLED PLASMA SYSTEMS

Roger Patrick, Santa Clara, Calif.; Frank Bose, Wettingen, Switzerland; Philippe Schoenborn, San Jose, and Harry Toda, Santo Clara, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 27,995, Mar. 8, 1993, Pat. No. 5,401,350. This application Mar. 27, 1995, Ser. No. 412,088

Int. Cl.[6] H05H *1/00*

U.S. Cl. 156—643.1 8 Claims



1. A method for producing a uniformly planar plasma in an inductively coupled plasma system comprised of an enclosure having side walls and a radio frequency transparent face substantially perpendicular to the side walls, means for supplying process gas to be ionized into plasma in the interior of the enclosure, and an interior surface of the enclosure adapted to hold a work piece substantially parallel to the ion plasma flow, said method comprising the steps of:

providing a coil having a variable pitch spiral winding wherein the spacing between the turns of the winding is widest near the center of said coil and the spacing between the turns of the winding progressively decrease away from the center of said coil such that the spacing between the turns of the variable pitch spiral winding is narrower toward the outside radius of said coil than toward its center;

placing said coil proximate to the transparent face of the enclosure; and

connecting said coil adapted to a radio frequency power source.

5,578,166

METHOD OF REACTIVE ION ETCHING OF A THIN COPPER FILM

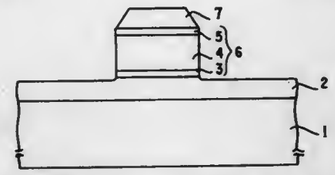
Takatoshi Hirota, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 187,725, Jan. 28, 1994, abandoned. This application May 24, 1995, Ser. No. 449,340

Claims priority, application Japan, May 17, 1993, 5-113542

Int. Cl.[6] H01L *21/28*

U.S. Cl. 156—643.1 16 Claims



1. A method to etch an electrically conductive film, comprising the steps of:

forming a metal conductor film comprising a layer consisting essentially of copper upon a substrate; and

forming a mask pattern, covering a part of said metal conductor film and exposing another part of said metal conductor film upon said metal conductor film; and

etching said exposed part of said metal conductor film by the use of said mask pattern and a reactive ion-etching (RIE) gas mixture plasma comprising silicon tetra-chloride ($SiCl_4$) gas, nitrogen (N_2) gas, and a hydrocarbon compound containing gas, whereby said exposed part of said metal conductor film is removed so as to leave a flat etched side of said metal conductor film.

5,578,167

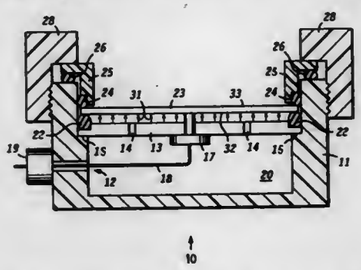
SUBSTRATE HOLDER AND METHOD OF USE

Kathirgamasundaram Sooriakumar, Scottsdale; Steven A. Switzer, Tempe; Kenneth E. Stegall, Gilbert; Thomas J. Dunlap, Scottsdale, and Colleen M. Albrecht, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 31, 1995, Ser. No. 594,537

Int. Cl.[6] B23Q *3/00*

U.S. Cl. 156—654.1 19 Claims



8. A holder for processing a semiconductor substrate, the holder comprising:

a base having a recessed area and a cavity below the recessed area, the base further comprising an opening into the cavity;

a base plate resting on the recessed area of the base and overlying the cavity, the base plate further comprising an edge having a notch and at least one hole extending from a bottom surface of the base plate to a top surface of the base plate;

an electrical contact extending from the top surface of the base plate;

a first seal along the notch of the base plate;

a top ring that is supported by a second seal that is mounted between the top ring and the base;

a third seal overlying the first seal and in contact with the top ring; and

a cover ring that screws onto the base so that the cover ring applies pressure to the top ring and the second seal.

11. A method for processing a semiconductor substrate, the method comprising the steps of:

providing a base having an electrical contact, a cavity, and an opening to the cavity;

placing a first o-ring into the base;

placing a semiconductor substrate into the base so that it contacts the first o-ring, the semiconductor substrate having a top surface and a bottom surface;

placing a second o-ring overlying the top surface of the semiconductor substrate;

placing a third o-ring onto the base;

placing a top ring overlying the base such that it contacts the second o-ring and the third o-ring;

placing a cover ring on the base such that the cover ring contacts the top ring so that pressure is applied to the second o-ring, which in turn applies pressure to the semiconductor substrate; and

wherein the electrical contact is in contact with the semiconductor substrate.

5,578,168

AQUEOUS SUSPENSIONS OF POLY(ETHYLENE OXIDE) USEFUL AS RETENTION AIDS IN PAPER MANUFACTURE

Charles L. Burdick, Ladenberg, Pa., and Elliott Echt, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 55,653, Apr. 30, 1993. This application Jun. 6, 1995, Ser. No. 471,936

Int. Cl.[6] D21H *17/33*

U.S. Cl. 162—164.3 **2 Claims**

1. A method for using an aqueous suspension of at least 15% of poly(ethylene oxide) as a retention aid in the manufacturing of paper, comprising:

a) dispersing poly(ethylene oxide) in an aqueous solution of at least one salt selected from the group consisting of sodium formate, potassium formate, sodium hydroxide, potassium hydroxide, sodium citrate, potassium citrate, sodium acetate, potassium acetate, sodium chloride and mixtures thereof, to form a poly(ethylene oxide) suspension having at least 15% of poly(ethylene oxide) by total weight;

b) dissolving said dispersion in an aqueous system containing ferric ions or free chlorine; and

c) adding said dissolved aqueous system to a pulp slurry for making paper just prior to forming the pulp into a wet web; whereby said aqueous suspension prevents the loss of fiber fines during the paper formation stage and resists viscosity loss due to ferric or free chloride in the aqueous system.

5,578,169

REDUCING LEVEL OF INTERFERENCE CHEMICALS IN WATER CIRCULATION OF WOOD-BASED FIBRE SUSPENSION PROCESSES

Tapio Vihervaara, Turku, Finland, assignor to Raision Tehtaat OY AB, Finland

PCT No. PCT/FI92/00303, § 371 Date May 5, 1994, § 102(e) Date May 5, 1994, PCT Pub. No. WO93/10305, PCT Pub. Date May 27, 1993

PCT Filed Nov. 9, 1992, Ser. No. 232,248

Claims priority, application Finland, Nov. 11, 1991, 915310

Int. Cl.[6] D21H *21/06*

U.S. Cl. 162—175 **6 Claims**

1. A method for reducing the amount of anionic colloidal interference substances in the water circulation in web formation processes involving dewatering of wood-based fibre suspensions that contain added filling and sizing agents, which comprises adding cationized ammonium starch having a charge density of 1.5–3.5 meqv of N/g to the fibre suspension in an amount of approximately 0.04–0.5% of the fibre dry matter in order to fix said anionic colloidal interference substances from the circulation water to the fibres to be subjected to the web formation, and wherein said cationized ammonium starch is added at a stage preceding adding any filling and sizing agent to said fibre suspension.

5,578,170

METHOD OF FORMING A TISSUE PAPER WEB

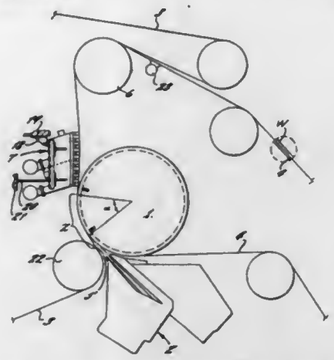
Jan A. Erikson; Ingvar B. E. Klerelid, and Jan L. Larsson, all of Karlstad, Sweden, assignors to Valmet-Karlstad AB, Karlstad, Sweden

Filed May 13, 1994, Ser. No. 242,254

Claims priority, application Sweden, May 27, 1993, 9301824

Int. Cl.[6] D21F *9/02;1/36*

U.S. Cl. 162—203 **11 Claims**



1. A method of forming a tissue paper web in a twin wire former having a rotatable forming roll, said method comprising the steps of:

a) injecting a jet consisting essentially of an aqueous slurry of papermaking fibers into a converging forming throat formed between two looped forming fabrics as they first converge to meet on a periphery of the rotatable forming roll and then partially wrap the forming roll periphery;

b) sandwiching the aqueous slurry between the two forming fabrics and draining a first portion of the drainable water from the slurry through at least one of the forming fabrics while in a first zone wherein the fabrics partially wrap the forming roll periphery up to a point where the fabrics run off from the forming roll periphery;

c) draining a second portion of the drainable water while the forming fabrics are in a second zone downstream of the first zone so as to cause the papermaking fibers to form a fibrous web;

d) running the two forming fabrics with the papermaking fibers sandwiched between them up to and around a section of a second roll; and

e) separating one of the two forming fabrics from the formed fibrous web and the other forming fabric no earlier than on said second roll, whereafter the fibrous web is dried to form a tissue paper web;

f) wherein said step b) of draining a first portion of the drainable water from the slurry while in a first zone comprises draining most of the drainable water and leaving a sufficient proportion of drainable water to have papermaking fibers free to move in the slurry during an initial phase of step c); and

g) wherein said draining step c) comprises draining the second portion of drainable water from the slurry while vibrating the slurry in the second zone sufficiently to create a microturbulence causing a small scale agitation of the fibers to prevent them from forming any appreciable fibrous web until the water remaining in the slurry is insufficient for allowing the fibers to change their position relative to one another.

5,578,171

METHOD AND DEVICE FOR SUPPLYING PULP TO A HEADBOX OF A PAPER MACHINE

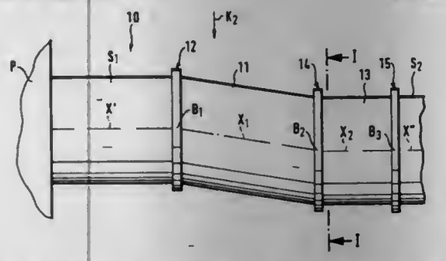
Kari Pitkäjärvi, Jyväskylä, Finland, assignor to Valmet Corporation, Helsinki, Finland

Filed Feb. 16, 1994, Ser. No. 197,292

Claims priority, application Finland, Feb. 18, 1993, 930735

Int. Cl.[6] D21F *1/00*

U.S. Cl. 162—216 **10 Claims**



7. A method for compensating for movements taking place during tilting of a headbox of a paper machine and preventing transfer of strains from a pulp supply pipe in the headbox to a stationary pulp supply pipe, comprising the steps of:

connecting a first end of a first straight pipe having first and second opposed ends and a straight central axis extending therebetween to the pulp supply pipe in the headbox via a first connecting flange such that the straight central axis of the first pipe is at an oblique angle with respect to a central axis of the pulp supply pipe in the headbox, the first connecting flange enabling rotation of the first pipe and the pulp supply pipe in the headbox relative to each other such that the second end of the first pipe is moved to different positions relative to the first end of the first pipe upon rotation of the first pipe relative to the pulp supply pipe in the headbox,

connecting the second end of the first pipe to a first end of a second straight pipe having first and second opposed ends and a straight central axis extending therebetween via a second connecting flange such that the straight central axis of the second pipe is at an oblique angle with respect to the central axis of the first pipe, the second connecting flange enabling rotation of the first pipe and the second pipe relative to each other such that the second end of the second pipe is moved to different positions relative to the first end of the second pipe upon rotation of the first pipe relative to the second pipe, and

connecting the second end of the second pipe to the stationary pulp supply pipe via a third connecting flange which permits rotation of the second pipe and the stationary supply pipe relative to each other such that the first end of the second pipe is moved to different positions relative to the second end of the second pipe upon rotation of the second pipe relative to the stationary supply pipe.

5,578,172

SLICE BEAM SUPPORT PLATE

Edwin X. Graf, Menasha, Wis., assignor to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany

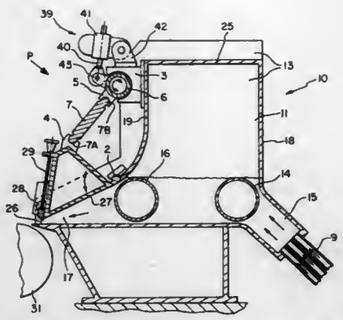
Filed Dec. 20, 1994, Ser. No. 359,878

Int. Cl.[6] D21F *1/02*

U.S. Cl. 162—344 **10 Claims**

1. A headbox for a machine used in the production of a fiber material web from a fiber suspension, said headbox comprising:

a bottom and a plurality of walls defining a main chamber, said plurality of walls including a front wall;



a slice beam pivotably connected to at least one of said walls and disposed adjacent to said front wall, said slice beam having a slice blade, said slice blade and said bottom defining an adjustable discharge gap therebetween, said slice beam defining a width of said outlet channel; and

a support plate separate from said walls defining said main chamber and disposed in front of said front wall and extending substantially across said width and pivotably connected at opposing first and second edges thereof to each of said front wall and said slice beam an adjustment mechanism connected to said support plate, said support plate being moveable whereby movement of said support plate via said adjustment mechanism provides adjustment of said discharge gap, and wherein said support plate inhibits deflections of said slice beam along said width.

5,578,173

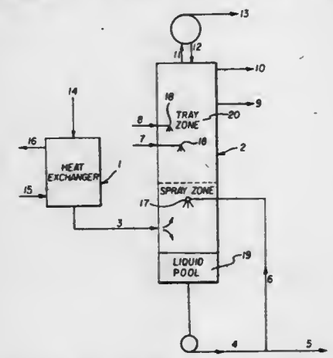
REMOVAL OF DIMETHYLTEREPHTHALATE FROM A METHANOLYSIS VAPOR STREAM

Walter E. Toot, Jr., Rochester; Brian L. Simpson, Hamlin; Bruce R. Debruin, Kingsport; Andrius A. Naujokas, Webster, and William J. Gamble, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 3, 1995, Ser. No. 415,861

Int. Cl.[6] C07C *67/54;27/28;29/80*

U.S. Cl. 203—6 **8 Claims**



1. A method of removing dimethyl terephthalate (DMT) from a vapor stream containing a mixture of dimethyl terephthalate (DMT), methylhydroxyethyl terephthalate (MHET), glycols and methanol comprising the steps of:

(a) providing a distillation column that i) is held under an elevated pressure of 100 to 500 kPag and a temperature of at least 85° C. ii) has a plurality of distillation trays iii) has methanol liquid spray between the trays iv) has a main spray zone below the trays and v) has a liquid pool comprising methanol at the bottom of the column;

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(b) directing the vapor stream through an inlet nozzle into the distillation column above the liquid pool and below the main spray zone thereby partially liquifying the vapor stream containing DMT;
(c) directing the liquid solution away from the distillation column and into the liquid pool at the bottom of the column thereby forming a DMT saturated condensate; and
(d) concurrently recycling a portion of the liquid solution from the bottom of the column back into the distillation column as a spray in the column above the vapor stream inlet, thereby preventing build up of solid DMT on column surfaces; and
(e) pumping a portion of the liquid pool containing DMT away from the bottom of the condenser for further purification.

5,578,174

CONDITIONING OF CELL COMPONENTS FOR ALUMINUM PRODUCTION

Jainagesh A. Sekhar, Cincinnati, Ohio, assignor to Moltech Invent S.A., Luxembourg, Luxembourg

PCT No. PCT/IB94/00071, § 371 Date Apr. 28, 1994, § 102(e) Date Apr. 28, 1994, PCT Pub. No. WO94/24069, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 15, 1994, Ser. No. 232,852
Int. Cl.[6] C25C *3/08*
U.S. Cl. 204—243 R **52 Claims**

43. An electrolytic cell to produce aluminium, by electrolyzing alumina in a molten fluoride electrolyte, comprising a component made of a microporous material which remains stable or may be consumed in the cell and which has open porosity extending to its surface exposed to conditions in the cell, wherein the component is impregnated with a dried colloid selected from the group consisting of dried colloidal ceria, cerium acetate, silica, alumina, lithia, yttria, thoria, zirconia, magnesia or monoaluminium phosphate and mixtures thereof, stabilized with species of at least one of sodium, lithium, potassium, aluminium, calcium and ammonium, said colloid not containing refractory hard materials.

5,578,175

PROCESS FOR MANUFACTURING IRIDIUM AND PALLADIUM OXIDES-COATED TITANIUM ELECTRODE AND THE ELECTRODE PRODUCED THEREBY

Kwang-Lung Lin; Ju-Tung Lee, and Yuan-Po Lee, all of Tainan, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Aug. 16, 1994, Ser. No. 291,452
Int. Cl.[6] C25B *11/10*; C25D *5/00*; *5/18*
U.S. Cl. 204—290 F **35 Claims**

1. A process for manufacturing iridium and palladium oxides-coated titanium electrode comprising the steps of:
(a) preparing a titanium substrate having a surface;
(b) applying iridium and palladium compounds to said titanium substrate to form an iridium and palladium containing layer by a cyclic voltametric deposition process; and
(c) heat-treating said iridium and palladium-applied titanium substrate to obtain an iridium and palladium oxides-coated titanium electrode.

35. An iridium and palladium oxides-applied titanium electrode manufactured by a process as claimed in claim 1, comprising:
(1) a titanium substrate; and
(2) an iridium and palladium oxides layer deposited to said titanium substrate.

5,578,176

METHOD OF PREPARING ELECTRODES OF IMPROVED SERVICE LIFE

Kenneth L. Hardee, Middlefield; Lynne M. Ernes, Willoughby, and Richard C. Carlson, Euclid, all of Ohio, assignors to Eltech Systems Corporation, Chardon, Ohio

Division of Ser. No. 217,830, Mar. 25, 1994, Pat. No. 5,435,896, which is a division of Ser. No. 904,314, Jun. 25, 1992, Pat. No. 5,314,601, which is a continuation-in-part of Ser. No. 633,914, Dec. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 374,429, Jun. 30, 1989, abandoned. This application May 15, 1995, Ser. No. 441,578
Int. Cl.[6] C25B *11/06*
U.S. Cl. 204—290 R **8 Claims**

1. A method of preparing an electrode from a substrate metal, which method initially comprises providing a roughened surface by one or more steps of:
(b) melt spray application of a layer of valve metal particles where the particles have a size within the range from 0.1 to 500 microns; or
(c) melt spraying of ceramic oxide particles having a size within the range from 10 to 400 microns onto said metal substrate
with the resulting roughened surface having a profilometer-measured average surface roughness of at least about 250 microinches and an average surface peaks per inch of at least about 40, with said peaks per inch being basis an upper threshold limit of 400 microinches and a lower thresbold limit of 300 microinches; there being established in step (c) a ceramic oxide barrier layer of said roughened surface on said metal substrate, there thus being subsequently established after step (b) a ceramic oxide barrier layer on said roughened surface, which barrier layer is provided by:
(1) heating said roughened surface in an oxygen-containing atmosphere to an elevated temperature in excess of about 450° C. for a time of at least about 15 minutes
with there being maintained for said barrier-layer-containing surface said profilometer-measured average surface roughness of at lest about 250 microinches and an average surface peaks per inch of at least about 40, the resulting barrier-layer-containing surface being subsequently treated by:
applying to said barrier-layer-containing surface an electrocatalytic coating, with said method preparing said electrode.

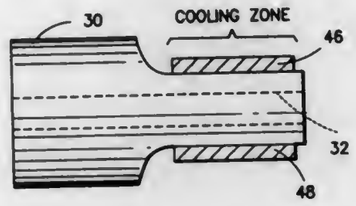
7. An electrode prepared by the method of claim 1.

5,578,177

METHOD OF MANUFACTURING FULLY ANNEALED METAL ANODES

Gary A. Wolf, Long Valley, N.J., assignor to RFE Industries, Inc., Keasbey, N.J.

Continuation of Ser. No. 190,782, Feb. 1, 1994, abandoned. This application Oct. 23, 1995, Ser. No. 546,621
Int. Cl.[6] C25B *11/04*
U.S. Cl. 204—292 **26 Claims**



1. A method of manufacturing metal anodes having a fully annealed state, said method comprising the steps of:
supplying metal for forming an anode therefrom;
heating said metal to a molten state;

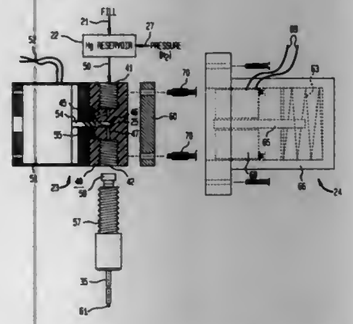
flowing said molten metal at a selected flow rate through a die having a channel of selected length extending between an inlet and an outlet;
cooling said molten metal flowing through said channel at a selected cooling rate to a solid state therein; and
annealing the metal within the die, as the metal proceeds through said channel, by controlling said selected flow rate and said selected cooling rate of said molten metal such that a metal anode having a fully annealed state is delivered at said outlet.

5,578,178

MERCURY DROP ELECTRODE SYSTEM

Donald B. Nuzzio, Ringoes, N.J., assignor to Analytical Instrument Systems, Inc., Ringoes, N.J.

Filed Mar. 6, 1995, Ser. No. 399,979
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—413 **20 Claims**



1. A mercury drop electrode arrangement comprising:
a reservoir for providing a source of liquid mercury;
a mercury capillary tube having an inlet, an outlet, and a mercury channel interconnecting the inlet and outlet, for receiving at said inlet liquid mercury from said reservoir and providing at said outlet a mercury drop;
a dispense valve coupled at a reservoir inlet thereof to said reservoir and at a reservoir outlet thereof to said mercury capillary tube for controlling a flow of the liquid mercury from said reservoir and said mercury capillary tube via a flow path therein; and
actuator means coupled to said dispense valve, said actuator means having first and second states, whereby when said actuator means is in said first state, said dispense valve is in a closed state the flow of the liquid mercury from said reservoir and said mercury capillary tube is discontinued and the liquid mercury in said reservoir is isolated electrically from the mercury drop at said outlet of said mercury capillary tube, and whereby when said actuator means is in said second state, said dispense valve is in an open state and the flow of the liquid mercury from said reservoir and said mercury capillary tube is facilitated.

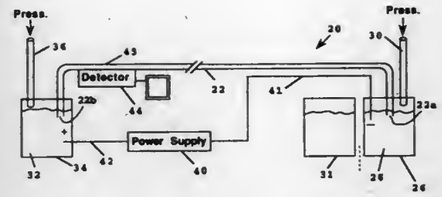
5,578,179

METHOD AND SILICATE COMPOSITION FOR CONDITIONING SILICA SURFACES

David M. Demorest, Scotts Valley; Stephen E. Moring, Moss Beach, and Claudia Chlesa, Palo Alto, all of Calif., assignors to The Perkin-Elmer Corporation, Foster City, Calif.

Filed Jul. 12, 1995, Ser. No. 501,674
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—451 **18 Claims**

1. A method for increasing electroosmotic flow of a silica surface, comprising:
providing one or more silica surfaces defining an electrophoretic channel,



contacting said surface(s) with an alkaline aqueous solution containing a soluble silicate-monovalent metal complex in an amount effective to increase the acidity of the silica surface(s), as evidenced by a reduction in the average bulk pKa of said surface(s),
wherein the achieved increase in acidity is greater than would be obtained using an otherwise identical solution lacking said silicate.

5,578,180

SYSTEM FOR PH-NEUTRAL LONGLIFE PRECAST ELECTROPHORESIS GEL

Sheldon Engelhorn, Encinitas, and Timothy V. Updyke, Temecula, both of Calif., assignors to Novel Experimental Technology, San Diego, Calif.

Filed Mar. 31, 1994, Ser. No. 221,939
Int. Cl.[6] G01N *27/26*
U.S. Cl. 204—468 **17 Claims**

1. An apparatus for gel electrophoresis comprising:
a precast polyacrylamide electrophoresis gel uniformly saturated prior to electrophoresis with a gel buffer solution comprising a monovalent organic amine or substituted amine with a pK near neutrality, titrated with HCl to a pH of between about pH 5.5 and about pH 7.5;
wherein said gel is adapted to be stored without degradation of said gel due to polyacrylamide hydrolysis;
and wherein said gel has two ends;
one end of the gel being in contact with an anode buffer solution;
the other end the gel being in contact with a cathode buffer solution;
said cathode buffer comprising a solution of a zwitterionic buffer selected from the group consisting of 3-[N-Morpholino]propanesulfonic acid, 2-(N-Morpholino)ethanesulfonic acid, [N-(2-Acetomido)]-2-aminoethanesulfonic acid, 2-[N-Morpholino]-2-hydroxypropanesulfonic acid, N-Tris-(hydroxymethyl)-2-ethanesulfonic acid, N-2 -Hydroxyethyl-piperazine-n-2-ethanesulfonic acid and 3-(N-tris-(Hydroxymethyl)methylamino)-2-hydroxypropanesulfonic acid, titrated to between about pH 5.5 and about pH 5.5 with sodium hydroxide or an organic base; and
said anode buffer comprising tris(hydroxy methyl)amino-methane.

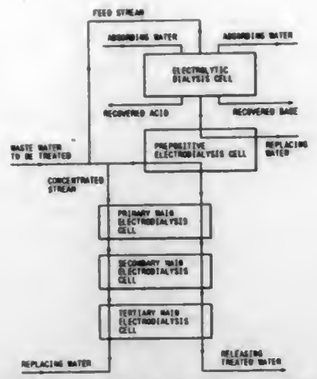
5,578,181

METHOD FOR TREATING WASTE WATER CONTAINING NEUTRAL SALTS COMPRISING MONOVALENT IONS

Yasuo Hirose, Hitachi, and Yoshinori Ishii, Yokosuka, both of Japan, assignors to Hitachi, Ltd., and Japan Nuclear Fuel Co., Ltd., both of Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 470,484
Claims priority, application Japan, Jun. 17, 1994, 6-135320
Int. Cl.[6] B01D *61/44*; C02F *1/469*
U.S. Cl. 204—523 **20 Claims**

1. A method for treating waste water containing neutral salts containing monovalent ions, comprising the steps of
supplying a feed stream to a prepositive electrodialysis cell;



separating the neutral salts from the waste water by electrodialysis in the prepositive electrodialysis cell to obtain a concentrated stream and a diluted stream;

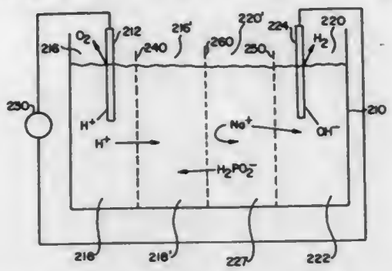
supplying the concentrated stream from the prepositive cell to an electrolytic dialysis cell for separating the neutral salts into acids and bases; and

supplying the diluted stream from the prepositive cell to at least two main electrodialysis cells, comprising a first stage and a final stage, combined in series for reducing the concentration of the neutral salts in the diluted stream.

5,578,182
ELECTROLYTIC PRODUCTION OF HYPOPHOSPHOROUS ACID

Fred I. Nobel, Sands Point, N.Y., and Daniel J. Vaughan, Wilmington, Del., assignors to LeaRonal Inc., Freeport, N.Y.

Continuation-in-part of Ser. No. 307,923, Sep. 16, 1994, Pat. No. 5,480,517. This application Sep. 1, 1995, Ser. No. 522,674
Int. Cl.[6] C25B *1/22*
U.S. Cl. 204—531 **16 Claims**



1. A method for preparing hypophosphorous acid comprising the steps of:

providing an insoluble anode in an electrically conductive anolyte and a cathode in an electrically conductive catholyte,

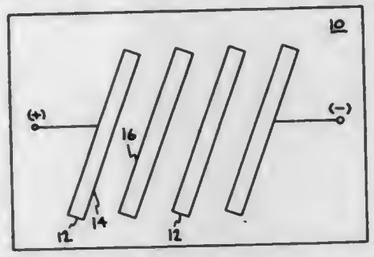
providing a hypophosphite salt solution separated from said catholyte by a first cationic exchange membrane resistant to anionic diffusion and from said anolyte by an anionic exchange membrane resistant to cationic diffusion and a second cationic exchange membrane resistant to anionic diffusion, to provide a product collection chamber defined by said second cationic exchange membrane and said anionic membrane, and

applying a direct current through said insoluble anode to said cathode to transfer hypophosphite anions through said anionic exchange membrane into said product collection chamber and to generate hydrogen ions in said anolyte and transfer said hydrogen ions generated in said anolyte through said second cationic exchange membrane into said product collection chamber, thereby forming hypophosphorous acid in said product collection chamber from said hydrogen ions generated in said anolyte and said hypophosphite anions.

5,578,183
PRODUCTION OF ZINC PELLETS

John F. Cooper, Oakland, Calif., assignor to Regents of the University of California, Oakland, Calif.

Filed May 11, 1995, Ser. No. 439,388
Int. Cl.[6] C25D *1/20;7/00*
U.S. Cl. 205—64 **11 Claims**



1. An electrochemical process for producing porous zinc pellets for use in a zinc-air battery, comprising:

depositing zinc particles by cathodic deposition onto a substrate, wherein the particles do not permanently adhere to the substrate;

removing the zinc particles from the substrate;

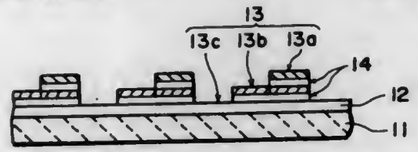
mechanically compressing the particles; and

forming zinc pellets.

5,578,184
PATTERNING PROCESS, PROCESS FOR PRODUCING OPTICAL RECORDING MEDIUM, AND PROCESS FOR PRODUCING COLOR FILTER

Hiroyuki Imataki, Yokohama; Mizuho Hiraoka, Kawasaki; Kazumi Nagano; Takaya Yano, both of Fujisawa, and Hiroshi Tanabe, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 197,311, Feb. 16, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 484,913
Claims priority, application Japan, Feb. 17, 1993, 5-049917
Int. Cl.[6] C25D *5/02*
U.S. Cl. 205—118 **28 Claims**



1. A process for patterning a substrate by forming electrodeposited layers on the substrate to provide two or more patterns, wherein said process comprises the steps of;

preparing an electrodeposition original plate having conductive areas corresponding to said patterns, at least a part of the conductive areas being exposed, said conductive areas being separated from each other by an insulating layer and at least adjacent conductive areas provided on different planes so that the electrodeposited layers are respectively independently formed on the conductive areas;

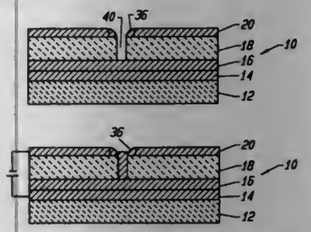
successively forming the electrodeposited layers on the respective conductive areas; and

transferring the resulting electrodeposited layers to a substrate.

5,578,185
METHOD FOR CREATING GATED FILAMENT STRUCTURES FOR FIELD EMISION DISPLAYS

David L. Bergeron, San Jose; John M. Macaulay; Roger W. Barton, both of Palo Alto, and Jeffrey D. Morse, Martinez, all of Calif., assignors to Silicon Video Corporation, Cupertino, Calif.

Continuation-in-part of Ser. No. 260,150, Jun. 29, 1994, Pat. No. 5,541,957, which is a continuation-in-part of Ser. No. 158,102, Nov. 24, 1993, which is a continuation-in-part of Ser. No. 118,490, Sep. 8, 1993, Pat. No. 5,462,467. This application Jan. 31, 1995, Ser. No. 383,408
Int. Cl.[6] C25D *5/02*
U.S. Cl. 205—123 **36 Claims**



1. A method of creating gated filament structures for a field emission display, comprising:

providing a multi-layer structure including a substrate, an insulating layer, a metal gate layer positioned on a top surface of the insulating layer and a gate encapsulation layer positioned on a top surface of the metal gate layer;

providing a plurality of gates defining a plurality of apertures on the top of the insulating layer, with corresponding apertures in the encapsulating layer;

forming a plurality of spacers in the apertures at their edges on the top surface of the insulating layer;

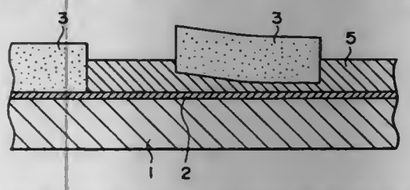
using the spacers as masks for etching the insulating layer and forming a plurality of pores in the insulating layer; and

electrochemically plating the pores with a filament material and creating a plurality of filaments each having a substantially cylindrical body section.

5,578,186
METHOD FOR FORMING AN ACRYLIC RESIST ON A SUBSTRATE AND A FABRICATION PROCESS OF AN ELECTRONIC APPARATUS

Norikazu Ozaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 8, 1995, Ser. No. 400,563
Claims priority, application Japan, Mar. 16, 1994, 6-045359
Int. Cl.[6] C25D *5/02*
U.S. Cl. 205—125 **7 Claims**



4. A method for fabricating an electronic apparatus that includes a substrate carrying thereon a conductor pattern, comprising the steps of:

depositing a first copper layer on a substrate;

processing a surface of said first copper layer by an ammonia water comprising ethanol;

depositing a layer of acrylic resist on said surface of said first copper layer after said step for processing by said ammonia water;

exposing said layer of acrylic resist according to a desired conductor pattern to form a resist pattern of acrylic resist on said first copper layer;

depositing a second copper layer upon said first copper layer carrying thereon said pattern of acrylic resist by an electroplating process, while using said resist pattern as a mark;

removing said resist pattern after said step of depositing said second copper layer to expose said first copper pattern located underneath said resist pattern; and

removing said first copper layer exposed after said step of removing said resist pattern.

5,578,187
PLATING PROCESS FOR ELECTROLESS NICKEL ON ZINC DIE CASTINGS

Mark W. Zitko, Meriden; John H. Commander, Old Saybrook, and Victor J. Waldman, Milford, all of Conn., assignors to Enthone-Omi, Inc., West Haven, Conn.

Filed Oct. 19, 1995, Ser. No. 545,354
Int. Cl.[6] C25D *5/00*
U.S. Cl. 205—191 **7 Claims**

1. A process for plating a zinc die casting with an electroless nickel coating comprising:

mechanically cleaning the zinc die casting;

depositing a zinc or zinc alloy layer on the casting using a zinc electroplating bath having a pH greater than about 13;

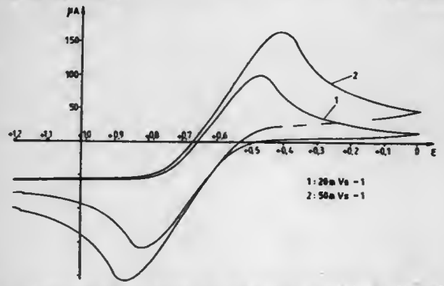
depositing a first electroless nickel layer on the zinc electroplated layer using a first alkaline electroless nickel bath containing antimony ions in an effective amount to provide enhanced bath stability and metal adhesion properties; and

depositing a finish electroless nickel layer on the electroless nickel layer thereof using an acid electroless nickel bath.

5,578,188
PROCESS OF DEPOSITING BY ELECTROPOLYMERIZATION A FILM OF A COMPOSITE MATERIAL ONTO AN ELECTRICALLY CONDUCTIVE SURFACE

Marc Mertens, Spa; Lucien Martinot, Olne; Cederic Calberg, Liege; Robert Jerome, Tilff, and Jean Schrijnemackers, Embourg, all of Belgium, assignors to "Recherche et Developpment du Groupe Cockerill Sambre" en abrege RD-CS, Ougrée, Belgium

Filed Mar. 31, 1994, Ser. No. 221,378
Claims priority, application Belgium, Apr. 1, 1993, 09300322
Int. Cl.[6] C25B *3/00*; C25D *11/00*
U.S. Cl. 205—334 **24 Claims**



1. A process of depositing by electropolymerization a film of a composite material onto an electrically conductive surface, according to which process a mixture comprising:

(a) a monomer which is a precursor of a non-conductive polymer,

(b) a substance forming a dopant to be incorporated into this polymer,

(c) a supporting electrolyte, and

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(d) an aprotic solvent

is subjected to electrolysis wherein said conductive surface to be coated is used as cathode or as anode and wherein said cathode or anode is polarized to a potential in the range of electron transfer between the electrically conductive surface and the monomer but respectively less negative or less positive than the reaction of the aprotic solvent, to where the aprotic solvent is different from said monomer, or of the supporting electrolyte in case said surface is used as cathode or as anode, said process further comprising the step of making, prior to said electrolysis, a solution starting from said mixture;

wherein said dopant is a substance having an electron transfer potential between two valence states in the range of electron transfer between the monomer and the electrode but respectively less negative or less positive than the reaction of the solvent, where the solvent is different from said monomer or the supporting electrolyte in the event said surface is used as cathode or as anode.

5,578,189

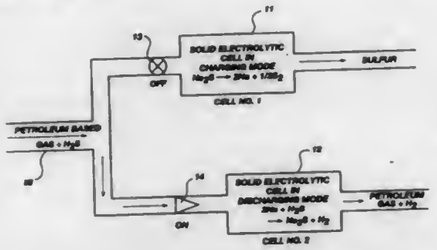
DECOMPOSITION AND REMOVAL OF H_2S INTO HYDROGEN AND SULFUR

Ashok V. Joshi, Salt Lake City, Utah, assignor to Ceramatec, Inc., Salt Lake City, Utah

Filed Jan. 11, 1995, Ser. No. 371,160

Int. Cl.[6] C25B *1/02;1/00*

U.S. Cl. 205—341 **17 Claims**



1. A method of removing and decomposing H_2S as a contaminant in a carrier gas stream comprising contacting said carrier gas with a solid metal ion conducting electrolyte wherein said metal is a sulfide forming metal under metal ion conducting conditions to react said metal with H_2S from said carrier gas under metal sulfiding conditions, recovering H_2S free carrier gas containing H_2, electrolytically converting said metal sulfide to reform said metal and recovering sulfur.

13. The method of claim 1, wherein said reaction of H_2S with metal and said electrolytically converting of metal sulfide to metal is done concurrently, by means of alternating current power supply, decomposing H_2S into H_2 and sulfur simultaneously.

5,578,190

PROCESS FOR THE PREPARATION OF GLYPHOSATE AND GLYPHOSATE DERIVATIVES

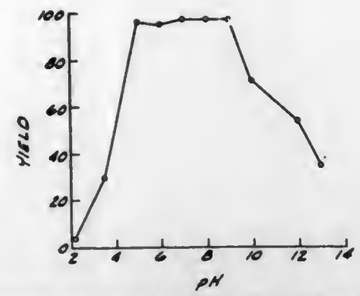
Thomas E. Rogers, Manchester, and Lowell R. Smith, Kirkwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 474,309, Feb. 5, 1990, which is a continuation of Ser. No. 158,816, Feb. 22, 1988, abandoned, which is a continuation-in-part of Ser. No. 687,305, Dec. 28, 1984, abandoned. This application Apr. 7, 1995, Ser. No. 418,717

Int. Cl.[6] C07F *9/38;9/40;* C25B *3/00*

U.S. Cl. 205—436 **13 Claims**

1. A process for preparing N-phosphonomethylglycine or an agronomically acceptable salt thereof comprising the steps of:



condensing aminomethylphosphonic acid in an aqueous reaction medium with a pH between 5 and 11 with glyoxylic acid or a hemiacetal, acetal or hydrate thereof, and

reducing without isolation the condensation product to produce N-phosphonomethylglycine, wherein said reduction is carried out electrochemically at a temperature between 0° C. and 100° C.

7. A process for preparing N-phosphonomethylglycine or an agronomically acceptable salt thereof comprising the steps of:

condensing aminomethylphosphonic acid in an aqueous reaction medium with a pH≧5 with glyoxylic acid or a hemiacetal, acetal or hydrate thereof, and

reducing without isolation the condensation product to produce N-phosphonomethylglycine, wherein said reduction reaction is carried out by catalytic hydrogenation at a temperature≦100° C.

5,578,191

PROCESS FOR EXTRACTING TIN FROM ORGANIC SOLUTIONS BY ELECTROLYSIS

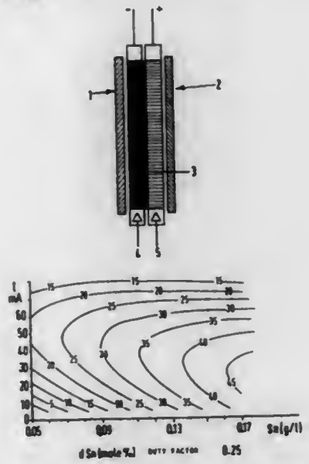
Philippe G. Robert, Poncey, France, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 28, 1995, Ser. No. 508,876

Claims priority, application France, Aug. 11, 1994, 94 10093

Int. Cl.[6] C25D *5/02*

U.S. Cl. 205—614 **6 Claims**



1. Electrolytic process for recovering tin contained in an aqueous organic solution having a highly reducing nature and a pH of more than 10, where the tin is in a quantity of less than 1 g/l, principally in a chelated form, in which an electrolysis unit comprising an anode compartment and a cathode compartment separated by a physical barrier is used, the organic solution is introduced into the cathode compartment and the electrolysis is carried out in galvanostatic mode with a pulsed electrolysis current with a duty factor R_C of between 25% and 85%, R_C being defined by the formula: $R_C=t_{work}/(t_{idle}+t_{work})$ where t_{work} represents the time during which a operating current with a current density of between 4 and 50 mA/dm^2 is passed through the cathode and t_{idle} represents the time during which a steady state current is passed, the intensity of which represents approximately 10 to 20% of the operating current.

5,578,192

Patent Not Issued For This Number

5,578,193

METHOD AND APPARATUS FOR WET TREATMENT OF SOLID SURFACES

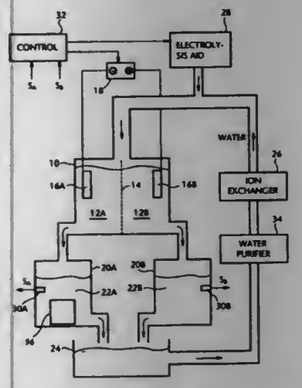
Hidemitsu Aoki, and Tsutomu Nakajima, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 179,339, Jan. 10, 1994, abandoned. This application Jul. 12, 1995, Ser. No. 501,431

Claims priority, application Japan, Jan. 8, 1993, 5-017954; Apr. 9, 1993, 5-105991; Aug. 10, 1993, 5-218211

Int. Cl.[6] C02F *1/461*

U.S. Cl. 205—746 **33 Claims**



1. A method for wet treatment of a surface or surfaces of an inorganic material part for producing a semiconductor device, wherein said part is located outside of an electrolysis tank, comprising the steps of:

(a) electrolyzing purified water in the electrolysis tank to prepare a fresh anodic water which contains hydrogen ion (H^+) and a fresh cathodic water which contains hydroxide ion (OH^-);

(b) separating the anodic water and the cathodic water from each other; and

(c) separately drawing the fresh anodic water and the fresh cathodic water out of said electrolysis tank to continuously and selectively bring said fresh anodic water and said fresh cathodic water into contact with the surface or surfaces of the inorganic material part subject to wet treatment, wherein said drawing step is performed immediately after said separating step.

5,578,194

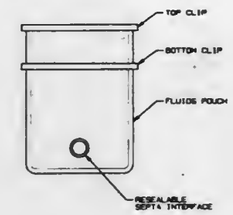
CALIBRATION OF ELECTRODES

Chung C. Young, Weston; Jeffrey Chien, Ashland; David Ferragamo, Revere, and Robin A. Welch, Peabody, all of Mass., assignors to Nova Biomedical Corporation, Waltham, Mass.

Filed Mar. 10, 1995, Ser. No. 402,130

Int. Cl.[6] G01N *27/26*

U.S. Cl. 205—782 **6 Claims**



FLUID REAGENT POUCH

1. A method of calibrating a CO_2 electrode in a blood gas analyzer, comprising

(a) providing a first CO_2 calibration solution comprising water and a predetermined concentration of a bicarbonate ion source;

(b) measuring the pH of said first CO_2 calibration solution in said blood gas analyzer;

(c) determining the PCO_2 of said first CO_2 calibration solution from said predetermined concentration of bicarbonate ion source in said first CO_2 calibration solution and said pH of said first CO_2 calibration solution;

(d) providing a second CO_2 calibration solution comprising water and a predetermined concentration of a bicarbonate ion source;

(e) measuring the pH of said second CO_2 calibration solution in said blood as analyzer;

(f) determining the PCO_2 of said second CO_2 calibration solution from said predetermined concentration of bicarbonate ion source in said second CO_2 calibration solution and said pH of said second CO_2 calibration solution;

(g) contacting said CO_2 electrode with said first CO_2 calibration solution to generate a first electrical response;

(h) contacting said CO_2 electrode with said second CO_2 calibration solution to generate a second electrical response; and

(i) generating a calibration slope for said CO_2 electrode using said first electrical response and said second electrical response.

5,578,195

SYNTHETIC CRYSTALLINE ALUMINOSILICATE FOR THE CATALYTIC CONVERSION OF HYDROCARBONS IN PETROCHEMICAL PROCESSES

Arno Tissler; Roland Thome, both of Bonn; Karl Becker, Bad Koesen; Hans-Dieter Neubauer, Merseburg, and Hans-Heino John, Halle, all of Germany, assignors to Ecolith - Zeolithe GmbH, Schwandorf, Germany

Division of Ser. No. 725,809, Jul. 8, 1991, Pat. No. 5,407,654, which is a continuation-in-part of Ser. No. 549,185, Jul. 6, 1990, abandoned. This application Apr. 13, 1995, Ser. No. 422,513

Claims priority, application Germany, Jul. 11, 1990, 40 22 140.7

Int. Cl.[6] C10G *11/05;* C07C *4/06;5/22*

U.S. Cl. 208—46 **22 Claims**

1. A process for the conversion of hydrocarbons into valuable

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intermediates comprising contacting said hydrocarbons with a catalyst comprising a synthetic crystalline aluminosilicate having the following chemical composition in terms of molar ratio:

$$(0\text{–}3)M_2O{:}Al_2O_3\ (15\text{–}40)\ SiO_2\ (0\text{–}40)\ H_2O$$

wherein M represents a metal cation, a proton, or an ammonium compound, said aluminosilicate having

(I) a SiO_2/Al_2O_3 molar ratio at the surface of the crystalline structure that is equal to or greater than the SiO_2/Al_2O_3 molar ratio in the interior of the crystalline structure,

(ii) said crystalline aluminosilicate has an X-ray diffraction diagram with X-ray reflections belonging to the following d values:

d Values/Interplanar Spacing	Relative Intensity
11.2 ± 0.3	strong
10.2 ± 0.3	strong
9.8 ± 0.2	weak
3.85 ± 0.1	very strong
3.83 ± 0.1	strong
3.75 ± 0.1	strong
3.73 ± 0.1	strong
3.60 ± 0.1	weak
3.06 ± 0.05	weak
3.00 ± 0.05	weak
2.01 ± 0.02	weak
1.99 ± 0.02	weak.

5,578,196

PROCESS FOR REDUCING THE BENZENE CONTENT OF PETROLS

Christine Travers, Rueil Malmaison; Philippe Courty, Houilles, and Patrick Sarrazin, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Dec. 29, 1994, Ser. No. 365,927

Claims priority, application France, Dec. 29, 1993, 93 15954

Int. Cl.[6] C10G *45/00*; C07C *5/13*

U.S. Cl. 208—57 **10 Claims**

1. A process for reducing the benzene content in petrol fractions comprising hydrogenating in a hydrogenation zone at least one hydrogenation feed having a composition, by weight, of 40% to 80% of paraffins, 0.5% to 7% of non-aromatic cyclic hydrocarbons and 6% to 45% of aromatics, and having a maximum distillation temperature of 70° C. to 90° C. to obtain a hydrogenation effluent, mixing said hydrogenation effluent with a C_5–C_6 cut having a paraffin content of more than 90% by weight, a non-aromatic cyclic hydrocarbon content of less than 10% by weight and a benzene content of less than 1.5% by weight, to form an isomerization feed, and isomerizing said isomerization feed in an isomerization zone, the process being characterized in that an isomerization catalyst is used during the isomerization reaction which contains at least one halogen and at least one metal from group VIII on a support, said support consisting essentially of a mixture of eta alumina and gamma alumina, the eta alumina content being between 85% and 95% by weight with respect to the support, and the complement to 100% of the support being gamma alumina.

5,578,197

HYDROCRACKING PROCESS INVOLVING COLLOIDAL CATALYST FORMED IN SITU

Theodore Cyr; Leszek Lewkowicz; Baki Ozum; Roger K. Lott, all of Edmonton, Canada, and Lap-Keung Lee, West Windsor, N.J., assignors to Alberta Oil Sands Technology & Research Authority, Edmonton, Canada

Continuation-in-part of Ser. No. 349,527, May 9, 1989, abandoned, Ser. No. 375,373, Jul. 3, 1989, abandoned, Ser. No. 448,220, Dec. 11, 1989, abandoned, Ser. No. 577,170, Sep. 4, 1990, abandoned, Ser. No. 580,673, Sep. 11, 1990, abandoned, Ser. No. 617,815, Nov. 26, 1990, abandoned, and Ser. No. 9,000, Jan. 26, 1993, abandoned. This application Apr. 11, 1994, Ser. No. 226,212

Int. Cl.[6] C10G *47/02*

U.S. Cl. 208—112 **43 Claims**

12. A process for hydrocracking a heavy hydrocarbon feedstock containing asphaltenes and sulfur moieties, comprising:

combining the feedstock and an oil-soluble metal compound additive and temporarily retaining the product in a mixer and mixing it at a temperature that is in the range 50° C. to 300° C. and which is less than the decomposition temperature of the additive, to produce a product mixture;

said additive being selected from the group consisting of molybdenum, iron, nickel and cobalt compound additives, said additives being operative, when heated to hydrocracking temperature, to decompose and react with sulfur moieties in the feedstock to form metal sulfide particles that are catalytic for hydrocracking;

said mixing being conducted for sufficient time to cause the additive to be sufficiently dispersed so that the metal sulfide particles formed upon hydrocracking are colloidal in size;

then further heating the product mixture to hydrocracking temperature;

introducing the heated product mixture into the chamber of a hydrocracking reactor;

temporarily retaining the heated product mixture in the chamber, continuously passing sufficient hydrogen through substantially the breadth and length of the chamber contents to maintain mixing of the chamber contents and stripping of light ends, and removing unreacted hydrogen and entrained light ends from the chamber and producing a pitch containing product comprising colloidal metal sulfide.

5,578,198

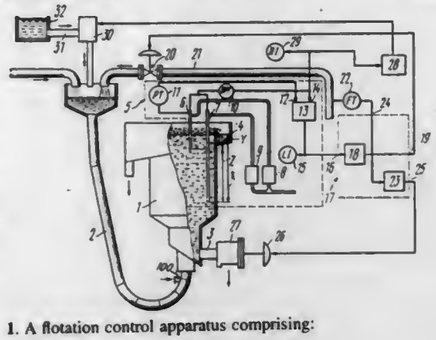
DEVICE FOR AUTOMATIC REGULATION OF THE PROCESS OF SEPARATING FROTH CONCENTRATE FROM GANGUE IN A FLOATATION MACHINE

Fedor A. Chumak, Udachny; Vladimir N. Cherednik, and Mikhail N. Zlobin, both of Mirny, all of U.S.S.R., assignors to Yakutsky Nauchno-Issledovatelsky I Proektny Institut Almazodbyvajuschei Promyshlennosti, Mirny, U.S.S.R.

Filed Sep. 21, 1990, Ser. No. 586,259

Int. Cl.[6] B03D *1/00*; *1/02*

U.S. Cl. 209—168 **3 Claims**



1. A flotation control apparatus comprising:

a flotation machine comprising a pulp filled chamber, said machine being provided with a gangue discharge branch pipe, a source feed pipe line, a frother meter means for feeding a frother and pipeline means for feeding water-and-frother;

said means for measuring the level and density of the pulp comprising first and second bubbling pipes installed at different levels in said chamber with respect to the level of the pulp;

said means for measuring the level and density of the pulp further comprises first and second regulator means for regulating the air flow rate fed to the bubbling pipes, said first and second regulator means being connected to the first and second bubbling pipes respectively;

said means for measuring the level and density of the pulp further comprising a differential transducer means connected with the first and second bubbling pipes and having an output serving as the first output of said means for measuring the level and density of the pulp, and said first outlet develops a signal corresponding to the density of the pulp;

said means for measuring the level and density of the pulp further comprising a pressure detection means connected with the first bubbling pipe and having an output;

said means for measuring the level and density of the pulp further comprising correction means having first and second data inputs and an output, said correcting means is connected via said first and second data inputs to the output of said pressure detection means and said differential transducer means, respectively, said output of said correction means serving as the second output of said means for measuring the level and density of the pulp, said correction means develops an output signal which corresponds to the increase in the level of pulp corrected for density;

control means for regulating the flow rate of frother fed to said chamber of the flotation machine, having an input and an output and connected via said input to the first output of said means for measuring the level and density of pulp and via said output to said frother meter means; stabilization means for stabilizing the level of pulp in the chamber of the flotation machine, having first and second input and first and second output; said stabilization means comprises a first curcuit means for controlling the flow rate of the water-and-frother being supplied to the chamber, said first curcuit means for controlling the flow rate of the water-and-frother having an input serving as the first input of said pulp level stabilization means, said stabilization means being connected via its first input to the second output of said means for measuring the level and density of the pulp, said first curcuit means having a first output serving as the first output of the pulp level stabilization means; a second curcuit means for regulating the rate of gangue discharged from the chamber of the flotation machine, having an input and an output serving, respectively, as the second input of said means for stabilizing the level of the pulp and the second output thereof;

a water-and-frother control valve means installed on said pipeline feeding water-and-frother to said chamber of the flotation machine and having an input connected to the first output of said pulp level stabilization means, which furnishes the first control signal in response to an increase in the pulp level deviation from a preset value;

a gangue-discharge control valve means installed on said branch pipe used for discharging gangue from said chamber of the flotation machine;

said gangue-discharge valve control means having drive means which has an input connected to the second output of the pulp level stabilization means;

a water-and-frother flow transducer means installed on said pipeline feeding water-and-frother, having an output connected to the second input of said pulp level stabilization means, which develops at the second output of the stabilization means the second control signal fed to said drive means of the gangue-discharge control valve means in response to a deviation of the flow rate of water-and-frother from a preset value.

5,578,199

APPARATUS FOR MAINTAINING A STABLE BATH FOR AN AUTODEPOSITION COMPOSITION BY PERIODICALLY SEPARATING PARTICULAR METAL IONS FROM THE COMPOSITION

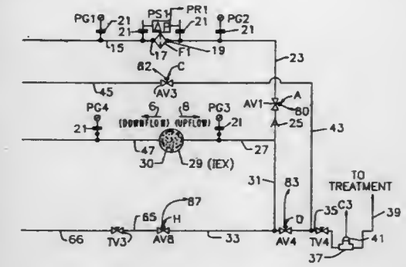
William G. Kozak, Hatfield, and Joseph C. Topping, North Wales, both of Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Division of Ser. No. 8,956, Jan. 26, 1993, Pat. No. 5,393,416. This application Nov. 7, 1994, Ser. No. 231,075

The portion of the term of this patent subsequent to Jan. 26, 2013, has been disclaimed.

Int. Cl.[6] B01J *47/02*; B05D *1/18*; *7/14*

U.S. Cl. 210—96.1 **11 Claims**



1. A system automated for providing at least periodic removal of metal ions from a metal complex and contaminants from a chemical bath including charged latex coating particles which coagulate when subjected to high shear circulation, said system comprising:

a first tank containing said chemical bath;

an ion exchange (IEX) column containing ion exchange material comprising an iminodiacetate ion exchange resin for removing metal ion contaminants from said metal complex formed in said chemical bath;

a low shear first pump;

first circulation means responsive to first control signals for drawing chemical bath from said first tank, passing it through said IEX column, and returning treated chemical bath from said IEX column back to said first tank, said first circulation means including said low shear first pump for low shear circulation of said chemical bath to substantially prevent coagulation of said coating particles;

first conductivity measurement means positioned in said chemical bath in said first tank, for providing a first conductivity signal indicative of the conductivity of said chemical bath;

second conductivity measurement means immersed in said chemical bath being returned from treatment in said IEX column to said first tank, for providing a second conductivity signal indicative of the conductivity of treated chemical bath;

controller means programmed in a first state of operation for automatically initiating the production of said first control signals in a cyclic manner, and during the resultant circulation of said chemical bath, sensing the differential between said first and second conductivity signals reducing to a predetermined minimum value, for terminating said first control signals to turn off said first circulation means;

a second pump;

a second tank containing deionized water (DI water);

second circulation means responsive to second control signals for pumping via said second pump a predetermined quantity of DI water into said IEX column, for displacing residual chemical bath, and returning the displaced chemical bath to said first tank said second circulation means including said low shear pump; and

said controller means being programmed in a second state of operation following said first state, for producing said second control signals for a requisite period of time.

5,578,200
SEWAGE TREATMENT SYSTEM

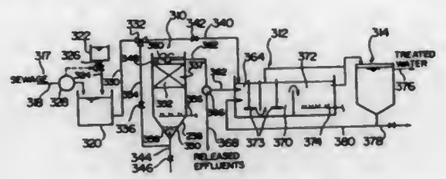
Yasushi Funakoshi, c/o Bureau of Sewerage, Tokyo Metropolitan Government, 8-1, Nishi-Shinjuku 2-chome, Shinjuku-ku, Tokyo, Japan; Khoji Ogata, Nishi-Shinjuku, Japan; Masayuki Kojima, Chiyoda-ku, Japan; Hitoshi Kawaziri, Chiyoda-ku, Japan; Hirofumi Yamamoto, Chiyoda-ku, Japan; Kazuhiko Noto, Chiyoda-ku, Japan, and Naomichi Mori, Chiyoda-ku, Japan, assignors to Hitachi Plant Engineering & Construction Co., Ltd., and Yasushi Funakoshi, both of Tokyo, Japan

Division of Ser. No. 263,200, Jun. 21, 1994. This application Jul. 12, 1995, Ser. No. 501,661

Claims priority, application Japan, Jun. 24, 1993, 5-153590; Apr. 21, 1994, 6-83472; Apr. 21, 1994, 6-83473

Int. Cl.[6] B01D *17/12;35/05;* C02F *3/30*

U.S. Cl. 210—134 3 Claims



1. A sewage treatment system for applying filtration treatment and biological treatment to sewage, and cleaning the sewage, the sewage treatment system comprising:

a filtration plant for filtering the sewage which flows upwardly in the filtration tank, with a floating filter medium layer formed with numerous floating filter media which have a smaller specific gravity than the sewage, said filtration plant producing filtered water, the floating filter media being cylindrical mesh objects with open ends;

a biological treatment plant arranged for biologically treating with microbes by contacting said microbes with the filtered water filtered through the filtration plant;

a bypass line arranged for allowing the sewage to directly flow into an entrance of the biological treatment plant by bypassing the filtration plant, said bypass line operating to maintain organic concentration in the biological treatment plant at a value which is sufficient to provide a source of nutrition for the microbes;

a releasing line arranged for directly releasing the filtered water, which is filtered by the filtration plant, to public waters without processing through the biological treatment plant;

a coagulant adding means arranged for adding a coagulant to the sewage flowing into the filtration plant when a volume of the sewage flowing into the filtration plant is more than a capacity of the biological treatment plant; and

a distributing means for distributing the filtered water from the filtration plant into a first part to be sent to the biological treatment plant and a second part to be directly discharged via the releasing line to the public waters, the distributing means operable for sending all of the filtered water from the filtration plant to the biological treatment plant when the volume of the sewage flowing into the filtration plant is less than the capacity of the biological treatment plant, the distributing means operable for sending the first part of the filtered water from the filtration plant to the biological treatment plant, said first part corresponding to the capacity of the biological treatment plant, and sending the rest of the filtered water to the releasing line when the volume of the sewage flowing into the filtration plant is more than the capacity of the biological treatment plant.

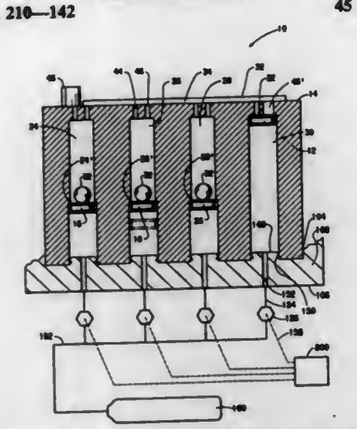
5,578,201
APPARATUS FOR MIXING LIQUIDS USED IN COUNTERCURRENT MULTIPHASE LIQUID SEPARATION

Charles F. Collier; Brian A. Deane, both of Wilmington, Del.; William E. Feathers, Cochranville, Pa.; Robert A. King, Hockessin; Alexander D. Kopatsis, Wilmington, both of Del.; Thomas P. Ladisch, Alburtis, Pa.; Peter M. Mrozinski, Hockessin, and Norman P. Pih, Newark, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 99,891, Jul. 30, 1993, abandoned. This application May 26, 1995, Ser. No. 451,353

Int. Cl.[6] B01D *11/04*

U.S. Cl. 210—142 45 Claims



44. Apparatus for performing multi-phase liquid separation comprising:

a separation chamber which has an open end and a closed end, said closed chamber end having an inlet passage and an outlet passage;

a sliding bottom inserted into the open end of said separation chamber for sliding motion therein while providing a liquid seal thereto;

means for mixing liquid within said separation chamber;

removable inlet closing means;

removable outlet closing means; and

means for moving in a selected stroke said sliding bottom toward said closed end and means for selectively preventing said sliding bottom from being moved toward said open end along said stroke at any selected location between said open end and said closed end, wherein said means for selectively moving and preventing said sliding bottom from being moved comprises:

sealing means to seal said open end of said chamber;

a source of fluid power;

a valve for said chamber in fluid communication with said source and said chamber through said sealing means; and

means to selectively open and close said valve in selected sequence.

5,578,202
WATER PROCESSING SYSTEM FOR HIGHLY CONTAMINATED WATER

Ken Hirane, Saitama-ken, Japan, assignor to Daiwa Kogyo Kabushiki Kaisha, Tokyo, Japan

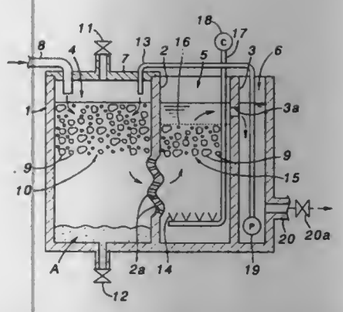
Filed Jul. 28, 1995, Ser. No. 508,610

Claims priority, application Japan, Feb. 17, 1995, 7-053460

Int. Cl.[6] C02F *3/06;3/30*

U.S. Cl. 210—150 7 Claims

1. A water processing system for processing highly contaminated water, comprising:



a processing vessel having a plurality of processing chambers defined by partition walls;

said processing chamber comprising:

an anaerobic chamber having an inlet port and a buoyant filter layer consisting of a plurality of blocks of buoyant filter material which are unconstrained in a manner which allows said blocks of buoyant filter material to float to the level of the surface of the water in said anaerobic chamber;

an aerobic chamber having a first communication passage communicating a lower part thereof with said anaerobic chamber, a buoyant filter layer consisting of a plurality of blocks of buoyant filter material which are constrained in an intermediate part of said aerobic chamber by first screen means extending across said aerobic chamber, and aeration means, said communication passage being provided with second screen means for preventing said filter material in said anaerobic chamber from flowing into said aerobic chamber;

a buffering chamber having an outlet port and a second communication passage communicating an upper part of said aerobic chamber with said buffering chamber; and

recycle means including a recycle passage communicating said buffering chamber with said anaerobic chamber, and pump means for supplying a part of water obtained from said aerobic chamber and stored in said buffering chamber to said anaerobic chamber.

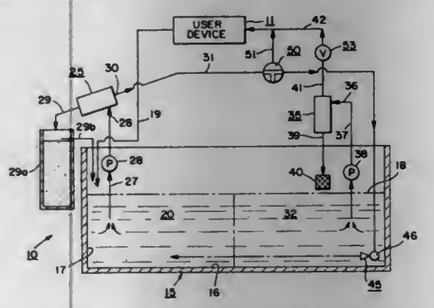
5,578,203
SYSTEM TO CLARIFY SOLIDS BURDENED LIQUID AND RECIRCULATE IT TO USE IN CONTINUOUS FLOW

Steven D. Ford, Clovis; Eddie Fox, Fresno, both of Calif.; Lee Haslup, Dunwoody, Ga., and Phil Pelletier, Bel Air, Md., assignors to Claude Laval Corporation, Fresno, Calif.

Filed Jan. 11, 1995, Ser. No. 372,199

Int. Cl.[6] B01D *21/26;21/24*

U.S. Cl. 210—168 4 Claims



1. A system for clarifying a solids-burdened liquid stream, received from a user device and returning it clarified to said user device, comprising:

a tank having a bottom, a peripheral side wall, a first region and a second region, said regions being contiguous to and continuous with one another, without obstruction to flow between them;

a first centrifugal separator;

a second centrifugal separator; each said separator having an inlet port, a solids exit port, and a liquids exit port;

a feed conduit for discharging solids-burdened liquid from said user device into said first region;

an inlet port conduit from said first region to the inlet port of said first separator;

first pump means in said inlet port conduit;

a discharge conduit from the liquids exit port of said first separator to said second region;

collector means receiving solids from the solids exit port of said first separator;

a feed conduit from said second region to said inlet port of said second separator;

second pump means in said feed conduit;

a discharge conduit from said liquids exit port of said second separator to said user device;

collector means receiving solids from the solids exit port of said second separator; and

eductor means receiving liquid from the discharge from said first separator, said eductor means discharging said liquid into said second region along the bottom of the tank in a sweeping flow from the second region into the first region, whereby to sweep settled solids from said second region into said first region for the purpose of their being removed from the liquid by said first separator.

5,578,204
APPARATUS FOR RECOVERY AND BUFFER EXCHANGE AND/OR CONCENTRATION OF DISSOLVED MACROMOLECULES FROM A MIXTURE OF MACROMOLECULES

Peter Bartholmes, Meesmannstrasse 82, D-58456 Witten; Michael Kaufmann, Flaspoete 69, D-44388 Dortmund, and Thomas R. Schwarz, Ginsterweg 6, D-42799 Leichlingen, all of Germany

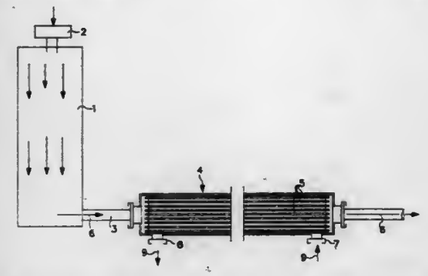
PCT No. PCT/EP93/02827, § 371 Date Jun. 6, 1995, § 102(e) Date Jun. 6, 1995, PCT Pub. No. WO94/08684, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 13, 1993, Ser. No. 416,902

Claims priority, application Germany, Oct. 15, 1992, 42 34 728.9

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—198.2 3 Claims



1. An apparatus for recovery and buffer exchange and/or concentration of dissolved macromolecules from a mixture of macromolecules, comprising a liquid chromatography unit and at least one hollow fibre membrane cartridge provided in the outlet tubing of the liquid chromatography unit, characterised in that the hollow fibre membrane cartridge contains hollow fibres manufactured from semipermeable membranes, which are impermeable to macromolecules but allow the passage of small molecules, and in that the ratio of the number of these hollow fibres to the effective length

of the hollow fibres does not exceed a value of 0.5 mm^{-1} and that the internal diameter of a hollow fibre does not exceed a value of 0.25 mm.

5,578,205

PLANT FOR REMOVING MICROPOLLUTANTS FROM UNTREATED WATER BY THE COMBINED ACTION OF OZONE AND HYDROGEN PEROXIDE

Nathalie Martin, Paris, France, assignor to Trailigaz, Garges-lg4-Gonesses, France

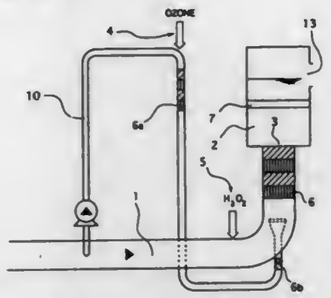
PCT No. PCT/FR93/01155, § 371 Date May 23, 1995, § 102(e) Date May 23, 1995, PCT Pub. No. WO94/12437, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 24, 1993, Ser. No. 448,495

Claims priority, application France, Nov. 24, 1992, 92 14427

Int. Cl.[6] B01D *21/34*

U.S. Cl. 210—199 **22 Claims**



1. A plant for the treatment of untreated water enabling the removal, at least partially, of micropollutants contained in the untreated water, said plant comprising:

a reactor having a lower part and an upper part;

at least one main feed pipe with an end that extends into at least the lower part of the reactor for feeding the untreated water into the reactor, the end of the feed pipe that extends into the reactor forming a submerged outlet;

means for injecting ozone into the untreated water within the main feed pipe or upstream of the main feed pipe;

means for injecting hydrogen peroxide into the untreated water within the main feed pipe or upstream of the main feed pipe;

at least one gas-liquid transfer system comprising at least one static mixer, said static mixer being located downstream from said ozone-injection means and said hydrogen peroxide injection means and upstream from said reactor; and

means enabling the equal distribution of the flow of water that exits the feed pipe at the submerged outlet, the means of equal distribution permitting a reduction of the kinetic energy of the exiting water as the exiting water enters the reactor.

5,578,206

SCREEN PACK REPLACING APPARATUS

Shunji Ogoshi; Minoru Yoshida; Nobuo Mukuda; Yasuhiko Ishida, and Yukio Imamura, all of Hiroshima, Japan, assignors to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Jun. 26, 1995, Ser. No. 494,783

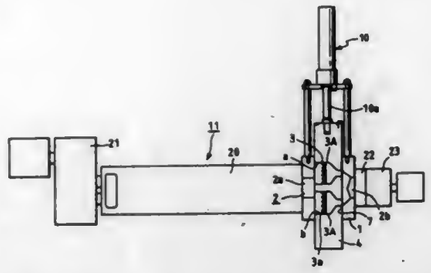
Int. Cl.[6] B01D *27/00*; **B29C** *47/68*

U.S. Cl. 210—236 **3 Claims**

1. A screen pack replacing apparatus comprising:

a main body provided with a resin channel for a molten resin and a through groove for crossing said resin channel;

a slide bar provided with a pair of through holes for communicating with said resin channel and fitted with screen packs, said slide bar being movably inserted in said through groove in said main body;



said pair of through holes being provided adjacent to each other in said slide bar, and each of said through holes having an efflux port throttled concentrically with an influx port thereof as compared with the influx port, the efflux port being formed with a small diameter which is one half of a difference between a channel width of an inlet of said resin channel and a shortest distance between said pair of through holes;

wherein said main body is arranged such that an outlet of said resin channel is formed concentrically with said inlet and is provided with a width equivalent to a distance between mutually farthest outer peripheral portions of the efflux ports of said through holes, and said through groove having a length greater than an opening width of the influx port of said through hole, the influx port being formed in such a manner as to be able to extend across both sides of said inlet of said resin channel.

5,578,207

FILTER DEVICE FOR EXTRUDERS HAVING A SCREEN PLUNGER WITH LONGITUDINALLY ARRANGED CANDLE FILTERS

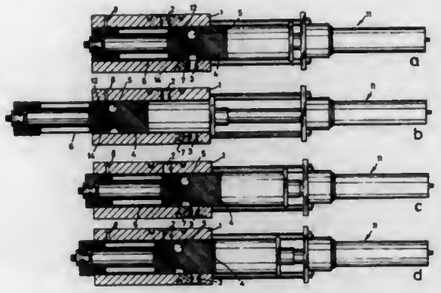
Jan U. Kreyenborg, Munster, Germany, assignor to Firma Kreyenborg Verwaltungen und Beteiligungen KG, Germany

Filed Apr. 27, 1995, Ser. No. 430,753

Claims priority, application Germany, May 3, 1994, 44 15 477.1; Jun. 9, 1994, 44 20 119.2

Int. Cl.[6] B01D *29/52*; *29/66*

U.S. Cl. 210—323.2 **6 Claims**



1. A filter device for extruders and injection-molding machines for the continuous processing of thermoplastics, with at least one screen plunger, which is arranged displaceably between an inlet passage and an outlet passage of a housing and has replaceable screen elements with an inlet flow side and an outlet flow side, wherein the screen elements are formed by a multiplicity of candle filters, said candle filters being arranged one above another in a circumferential direction on the screen plunger and extending parallel to the longitudinal axis of the screen plunger.

5,578,208

FILTER FOR FILTERING MOLTEN RESIN AND A FILTERING DEVICE FOR MULTI-LAYER RESIN FORMING

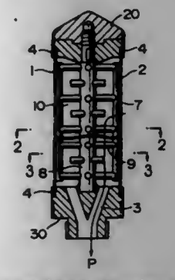
Toshio Miki; Hideo Kometani; Hiroshi Fujimura; Yukio Goto; Hiroyuki Takagawa, and Akira Nishikawa, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1994, Ser. No. 218,950

Claims priority, application Japan, Apr. 2, 1993, 5-098434; Dec. 8, 1993, 5-307926; Dec. 9, 1993, 5-309340

Int. Cl.[6] B01D *29/21*

U.S. Cl. 210—487 **10 Claims**



1. A filter assembly for filtering a molten resin comprising:

a cylindrical filtering member formed with a large number of projections and arc-shaped recesses;

a supporter which is disposed inside the cylindrical filtering member, said supporter having a central shaft with arc shaped projections extending outwardly therefrom a recessed portions formed between the projections, wherein said cylindrical filtering member is supported at arc-shaped projected portions of said supporter and wherein said recessed portions of the supporter are formed closer toward a cylindrical center than the recesses of the filtering member thereby forming a space which provides a passage along which the molten resin, having passed through the recesses of the filtering member from outside to inside, flows in a length-wise direction to the filtering member; said supporter being impermeable to said molten resin;

an upper lid member disposed at one end of the supporter and attached to one end of the filtering member;

a lower lid member disposed at the other end of the supporter, attached to the other end of the filtering member and having an orifice for discharging molten resin.

5,578,209

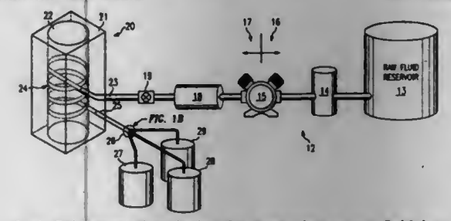
CENTRIFUGAL FLUID SEPARATION DEVICE

Brian D. Weiss, Kailua-Kona, Hi., assignor to Weiss Enterprises, Inc., Kailua-Kona, Hi.

Filed Sep. 21, 1994, Ser. No. 310,143

Int. Cl.[6] B01D *21/26*

U.S. Cl. 210—512.1 **27 Claims**



1. A fluid separation device for separating a raw fluid into a plurality of components, comprising:

a body having a generally cylindrical bore with an inside diameter and an inner wall defined in part by the inside diameter of the cylindrical bore of the body;

a generally cylindrical core having an outside diameter which defines in part a periphery of the generally cylindrical core;

the inside diameter of the generally cylindrical bore approximately equal to the outside diameter of the generally cylindrical core;

a helical channel formed in the periphery of the cylindrical core;

the cylindrical core disposed in the cylindrical bore such that the inner wall of the body and the helical channel cooperate with each other to form a helical coil;

the helical coil having an inlet and an outlet and a generally rectangular cross-section;

a feeder assembly disposed in the body and in fluid communication with the inlet of the helical coil, such that the feeder assembly is operable to transport the raw fluid to the inlet of the helical coil; and

a splitter assembly disposed in the body and in fluid communication with the outlet of the helical coil, wherein the splitter assembly comprises at least one separator vane defining, in part, a plurality of conduits, such that the splitter assembly is operable to separate a radially stratified fluid flowing from the outlet of the helical coil into a plurality of components by directing each component into one of the plurality of conduits, respectively.

5,578,210

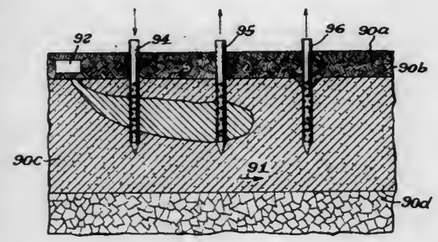
METHOD FOR STIMULATING ANAEROBIC BIOTRANSFORMATION OF HALOGENATED HYDROCARBONS

Gary M. Klecka, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 15, 1994, Ser. No. 340,501

Int. Cl.[6] C02F *3/28*

U.S. Cl. 210—610 **9 Claims**



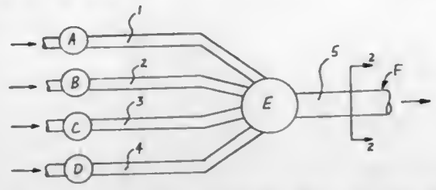
1. A method for enhancing the anaerobic biotransformation of at least one halogenated organic compound in an aqueous soil environment through stimulation of naturally occurring anaerobic bacteria in the environment, comprising the step of: adding an agent selected from the group consisting of (a) propylene glycol, (b) glycerol, (c) glutamate, (d) an aqueous mixture containing two percent proteose peptone, three tenth percent beef extract, three tenths percent yeast extract, three tenths percent malt extract, five tenths percent dextrose and two hundredths percent ascorbic acid and (e) mixtures of (a)–(d) in any combination thereof to at least a portion of the environment to produce an environment treated with the agent effective in this step to enhance the anaerobic biotransformation of the at least one halogenated organic compound to homologs of the at least one halogenated organic compound selected from the group consisting of mono halogenated homologs and nonhalogenated homologs.

5,578,211

WASTEWATER GAS REDUCTION METHOD

J. Rodney Dickerson, P.O. Box 827, Scott, La. 70583

Filed Jan. 17, 1996, Ser. No. 587,554
Int. Cl.[6] C02F *3/30;3/34*
U.S. Cl. 210—610 **7 Claims**



1. A method of reducing undesirable gases in a wastewater collection piping system having an interior surface, wherein said piping system includes a plurality of pumping stations for periodically moving said wastewater progressively toward a wastewater treatment facility, and wherein said wastewater includes a predominant waste material, said method comprising:

introducing select microbes into said piping system at a frequency corresponding to the pumping activity of said pumping stations, and in an amount proportional to the surface area of said interior surface of said piping system;

wherein said select microbes are capable of completely consuming said predominant waste material in said wastewater; and

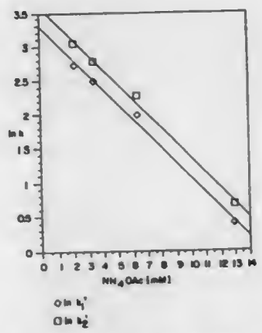
wherein an anaerobic biomass comprising almost entirely said select microbes is formed along said interior surface of said piping system.

5,578,212

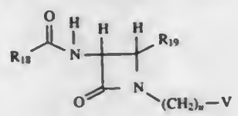
CHIRAL SELECTOR USEFUL FOR SEPARATION OF ENANTIOMERS OF β-AMINO ALCOHOL COMPOUNDS

William H. Pirkle, Champaign, and Won-jae Lee, Urbana, both of Ill., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 761,212, Sep. 17, 1991, Pat. No. 5,254,258. This application Nov. 25, 1992, Ser. No. 981,637
Int. Cl.[6] B01D *61/38*
U.S. Cl. 210—638 **29 Claims**

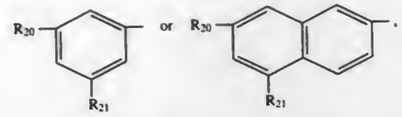


1. A chemical compound having the formula:



wherein

R_{18} is



or

R_{19} is lower alkyl or aryl,

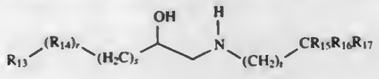
R_{20} and R_{21} are each independently NO_2, $N(R_{22})_3^+$, CN, $COOR_{23}$, SO_3H or COR_{24},

R_{22}, R_{23} and R_{24} are each independently hydrogen or lower alkyl,

V is H or $CH{=}Ch_2$, and

U is 1 to 20, said compound being an R or an S enantiomer or a mixture of R and S enantiomers.

11. A process of separating enantiomers which comprises contacting a mixture of enantiomers of a first compound having a first and a second optical configuration and having the formula:



wherein

R_{13} is aryl or a nitrogen, sulfur or oxygen containing heterocyclic ring, either of which may be unsubstituted or substituted with lower alkyl, lower alkoxyalkyl or lower alkenyloxy,

R_{14} is O, S or NH,

R_{15}, R_{16} and R_{17} are each independently hydrogen or lower alkyl, and

r, s and t are independently 0 or 1,

with a chiral selector, said selector being an R or S enantiomer of the compound of claim 1, under conditions effective to form a complex between an enantiomer of said first compound having said first optical configuration and an enantiomer of said compound of claim 1 and recovering the non-complexed enantiomer of said first compound having said second optical configuration.

5,578,213

FLUID TREATMENT PROCESS

John D. Miller, Ithaca; Dana E. Gingrich, and Donald H. White, Jr., both of Homer, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.

Continuation of Ser. No. 295,611, Aug. 25, 1994, abandoned, which is a continuation-in-part of Ser. No. 920,973, Jul. 28, 1992, Pat. No. 5,374,356. This application Mar. 16, 1995, Ser. No. 405,762
Int. Cl.[6] B01D *61/58*
U.S. Cl. 210—641 **54 Claims**

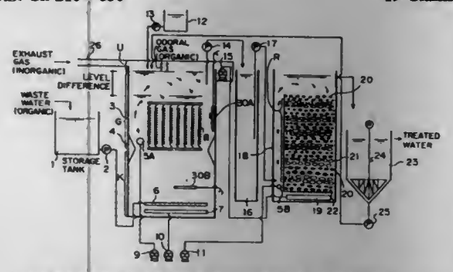
1. A method of treating wastewater containing particulate matter and free oil, which method comprises removing free oil from said wastewater, passing said wastewater through a first filtration medium having an effective pore rating of about 200 μm or less, subjecting said wastewater to dynamic filtration utilizing a second filtration medium having an effective pore rating of about 5 μm or less, and contacting said wastewater with an adsorbent bed to form a purified water stream, wherein said wastewater is not subjected to ultrafiltration after being subjected to said dynamic filtration.

5,578,214

APPARATUS AND METHOD FOR WASTE WATER TREATMENT UTILIZING AEROBIC AND ANAEROBIC MICROORGANISMS AND CAPABLE OF EXHAUST GAS TREATMENT

Kazuyuki Yamasaki, Hiroshima; Masaki Katsoka, Fukuyama; Shirou Imazu, Fukuyama, and Kenji Matuura, Fukuyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 20, 1995, Ser. No. 504,585
Claims priority, application Japan, Aug. 3, 1994, 6-182324; Jun. 19, 1995, 7-151453
Int. Cl.[6] B01D *61/00*
U.S. Cl. 210—650 **19 Claims**



1. An apparatus for waste water treatment comprising:

a first bioreactor including a lower portion having an inflow pipe for admission of a water to be treated and an aeration means, and an upper portion packed with vinylidene chloride fillers and having an air supply agitation means for supplying air to the upper portion;

an aeration control means for controlling operation and stopping of the aeration means in the lower portion of the first bioreactor to periodically separate microorganisms deposited on the vinylidene chloride fillers therefrom; and

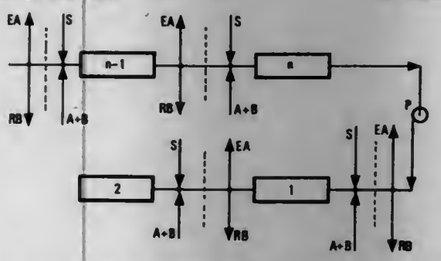
a second bioreactor including a contact circulation portion into which the water under treatment is to be introduced from the first bioreactor, the contact circulation portion being packed with charcoal and calcium carbonate fillers, and an aeration diffuser for aerating the contact circulation portion.

5,578,215

CHROMATOGRAPHIC SIMULATED MOBILE BED SEPARATION PROCESS WITH DEAD VOLUME CORRECTION USING PERIOD DESYNCHRONIZATION

Géard Hotier, Rueil Malmaison, and Roger-Marc Nicoud, Richardmesnil, both of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, and Separex, Champigneulles, both of France

Filed Jun. 22, 1995, Ser. No. 494,559
Claims priority, application France, Jun. 22, 1994, 94 07763
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—659 **13 Claims**



1. A process for the simulated mobile bed separation of a feed (A+B) containing at least two constituents in the presence of at least one eluent (S) into at least two fractions, comprising n, advantageously 4 to 24, chromatographic columns or column sections mounted in series and in a closed circuit, in which a liquid, supercritical or gaseous mixture circulates under pressure, the circuit having at least one feed injection stream, at least one eluent injection stream, at least one extract extraction stream (EA) and at least one raffinate extraction stream (RB), at least four zones each comprising at least two sections being determined in said columns, each zone being separated from the following zone by an injection or extraction stream, the injection and extraction streams being independently shifted at programmed time intervals such that after n shifts, each stream has traversed the whole circuit, the closed circuit comprising a recycling pump for said mixture, which is flow rate regulated and located between two successive columns or column sections, optionally at least one measuring or sampling means and optionally at least one recycling pump which is pressure regulated, said measuring or sampling means and/or the pressure regulated recycling pump each being located between two consecutive columns or column sections, said pumps and/or measuring or sampling means each having a dead volume in the recycling circuit which causes perturbations in the extract and in the raffinate composition, the circuit optionally containing one or more sections whose separation properties are degraded compared with those of other sections, thus causing perturbations in the composition of the extract and of the raffinate, the process comprising, each time that an injection or extraction stream passes from an immediately anterior position to an immediately posterior position to each of the dead volumes in the circuit or each of the sections with degraded separation properties, the connection period for said stream to the circuit is first increased by an appropriate value, and then when the stream passes from the immediately posterior position to the dead volume or degraded section to the following position, said connection period is reduced so that said period regains the value which would have been applied if the dead volume had not occurred or the degradation in the separation properties had not occurred.

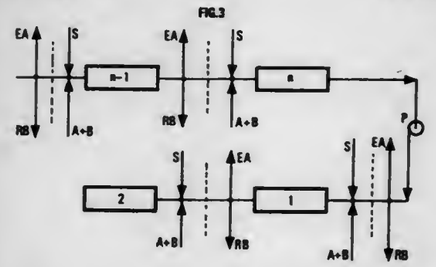
5,578,216

CHROMATOGRAPHIC SIMULATED MOBILE BED SEPARATION PROCESS WITH DEAD VOLUME CORRECTION USING LENGTH REDUCTION

Gérard Hotier, Rueil Malmaison; Choua Cohen; Nicolas Couenne, both of Lyons, and Roger-Marc Nicoud, Richardmesnil, all of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, and Separex, Champigneulles, both of France

Filed Jun. 22, 1995, Ser. No. 494,568
Claims priority, application France, Jun. 22, 1994, 94 07764
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—659 **8 Claims**

FIG.3



1. A process for the simulated mobile bed separation of a feed (A+B) containing at least two constituents in the presence of at least one eluent (S) into at least two fractions, comprising n, advantageously 4 to 24, chromatographic columns or column sections mounted in series and in a closed circuit, in which a liquid, supercritical or gaseous mixture circulates under pressure, the circuit having at least one feed injection stream, at least one eluent injection stream, at least one extract extraction stream (EA) and at least one raffinate extraction stream (RB), at least four zones being

VOL 1192 ISS 4 NO 26 1996 UMI

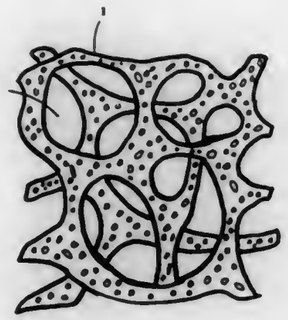
determined in said columns, each zone being separated from the following zone by an injection or extraction stream, the injection and extraction streams being periodically shifted, the closed circuit comprising a recycling pump (P) for said mixture, which is flow rate regulated and located between two successive columns or column sections, optionally at least one measuring or sampling means and optionally at least one recycling pump which is pressure regulated, said measuring or sampling means and/or the pressure regulated recycling pump each being located between two consecutive columns or column sections, said pumps and/or measuring or sampling means each having a dead volume in the recycling circuit which causes perturbations in the extract and in the raffinate composition, the process comprising the volume of the section immediately upstream of said dead volume is reduced by a compensating value when the dead volume is located downstream of said section and upstream of the extraction streams of said section, or the volume of the section immediately downstream of said dead volume is reduced by a compensating value when said dead volume is located downstream of the injection streams into said section and upstream of said section.

5,578,217

USE A SOLVENT IMPREGNATED CROSSLINKED MATRIX FOR METAL RECOVERY

Peter D. Unger, Morristown, and Ronald P. Rohrbach, Flemington, both of N.J., assignors to AlliedSignal Inc., Morris Township, N.J.

Filed Nov. 30, 1994, Ser. No. 346,809
Int. Cl.[6] C02F *1/28*
U.S. Cl. 210—670 **9 Claims**



1. A process for recovery of metal ions from an aqueous solution containing metal ions comprising:

a) impregnating a metal extractant within a crosslinked, highly porous body derived from a water-soluble hydrogel polymer, said porous body being characterized in that it has an open-celled three-dimensional lattice structure, a density of less than about 1 g/cm^3, a surface area of equal to or greater than about 30 m^2/g, a compression strength of equal to or less than about 10 percent yield at 300 psi, and an average pore diameter of less than about 500 Angstroms wherein said hydrogel polymer is selected from the group consisting of alginates, gums, starch, dextrins, agar, gelatins, casein, collagen, polyvinyl alcohol, polyethylenimine, acrylate polymers, starch/acrylate copolymers, and mixtures and copolymers thereof to form a porous body impregnated with a metal extractant;

b) contacting said aqueous solution with said porous body impregnated with said metal extractant to remove metal ions from said aqueous solution; and

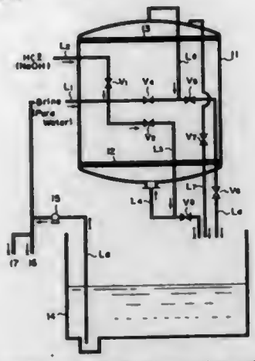
c) separating said metal ions from said porous body impregnated with said metal extractant.

5,578,218

BRINE TREATMENT METHOD

Terumi Matsuoka; Masahiro Ohara, both of Okayama, and Izumi Kawamura, Tamano, all of Japan, assignors to Chlorine Engineers Corp., Ltd., Japan

Filed Aug. 14, 1995, Ser. No. 514,624
Claims priority, application Japan, Aug. 30, 1994, 6-228935
Int. Cl.[6] C02F *1/42*
U.S. Cl. 210—672 **17 Claims**



1. A brine treatment method of removing sulfate ions from sulfate-ion containing brine comprising the steps of:

(1) bringing sulfate-ion containing brine into dispersive contact with granular ion exchange resin carrying zirconium hydrous oxide thereon in a fluid state under an acidic condition, whereby the sulfate ions are adsorbed by the ion exchange resin and removed from the brine;

(2) washing the granular ion exchange resin with an aqueous solution whose pH value is equal to or lower than a pH value in said step (1) after said step (1), thereby removing chloride ions from the granular ion exchange resin;

(3) bringing, in a fluid state, the granular ion exchange resin adsorbing the sulfate ions in said chloride ion removing step into dispersive contact with an aqueous solution of pH value higher than the pH value in said step (1), thereby desorbing the adsorbed sulfate ions from the granular ion exchange resin; and

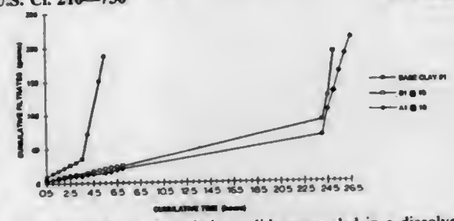
(4) washing the granular ion exchange resin with water after said step (3).

5,578,219

METHOD OF IMPROVING THE CONTAMINANT RESISTANCE OF A SMECTITE CLAY BY REWETTING AND IMPREGNATING THE CLAY WITH A WATER-SOLUBLE POLYMER, AND REDRYING THE POLYMER-IMPREGNATED CLAY

Laura Kajita, St. Charles, Ill., assignor to AMCOL International Corporation, Arlington Heights, Ill.

Division of Ser. No. 128,598, Sep. 29, 1993, Pat. No. 5,407,879.
This application Apr. 7, 1995, Ser. No. 418,751
Int. Cl.[6] C02F *1/56*
U.S. Cl. 210—730 **11 Claims**



1. In a method of flocculating solids suspended in a dissolved contaminant-containing aqueous solution, including the step of adding a treated water-swellable clay to the solution to flocculate the suspended solids to a size sufficient to cause the solids to settle from the solution, said clay being treated after recovery and drying to a moisture content of about 12% by weight or less, based on the dry weight of the clay,

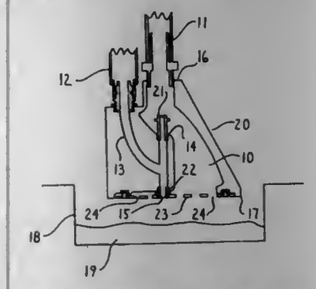
the improvement comprising treating the recovered and dried water-swellable clay by impregnating the clay with an aqueous solution containing a dissolved, water-soluble polymer selected from the group consisting of nonionic polymers and anionic polymers, in an amount of at least about 0.5% by weight, based on the dry weight of the clay, and rewetting the clay to a moisture content of more than about 12% by weight, based on the dry weight of the clay, and then redrying the clay to a moisture content of about 12% by weight or less, based on the dry weight of the clay.

5,578,220

METHOD OF EXTRACTING AND COLLECTING PARTICULATES FROM A PIT

Bryon E. Becktold, Mattawan, Mich., assignor to Becktold Enterprises Inc., Kalamazoo, Mich.

Filed Jul. 25, 1995, Ser. No. 506,171
Int. Cl.[6] B01D *37/00*
U.S. Cl. 210—747 **6 Claims**



1. A process for extracting and collecting particulate materials from a pit comprising

directing a stream of water under pressure into the pit to loosen the particulate materials collected in the pit and simultaneously vacuuming the loosened particulate materials and water out of the pit with means comprising,

a hollow truncated cone shaped intake having an open truncated end and an open base end,

a hose connected to the opening at said truncated end of said cone,

a first passage into said cone between said truncated and base ends of said cone into which the said stream of water is directed,

a second passage located along the axis of said cone and connected to said first passage between a first end of said second passage terminating in a nozzle pointed toward said truncated end of said cone and a second end of said second passage terminating in a nozzle pointing out of said base end of said cone whereby

the water passing out of said second end of said second passage loosens the particulate solids collected in the said pit, and

the water passing out of said first end of said second passage creates a vacuum by a venturi effect as the water passes through said truncated end of said cone into said hose

directing said hose to filter means for filtering the particulate materials out of the water by passing said vacuumed mixture of particulate materials and water over one or more filter means, and

collecting and disposing of the particulate materials deposited on said filter means and

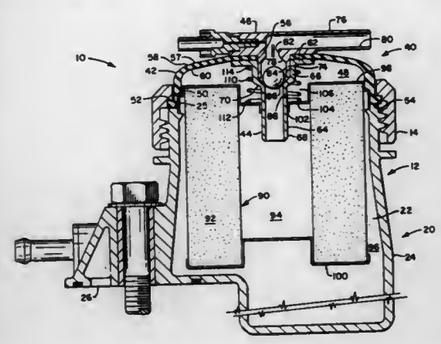
directing the water to recycling or disposal facilities.

5,578,221

FUEL FILTER WITH IMPROVED HAND PRIMER

Leon P. Janik, Suffield, Conn., assignor to Stanadyne Automotive Corp., Windsor, Conn.

Filed Dec. 23, 1994, Ser. No. 363,417
Int. Cl.[6] B01D *35/26*
U.S. Cl. 210—767 **24 Claims**



24. A method for indicating that a filter cartridge requires replacement, the filter cartridge defining an axial chamber, the axial chamber containing fluid which is at a partial vacuum when there is flow through the filter cartridge, the method comprising the steps of:

mounting a flexible member having opposite first and second sides to a container structure for said cartridge;

biasing said flexible member by means of a biasing force;

exposing said flexible member first side to an atmospheric pressure wherein said pressure exerts a force on said flexible member first side;

exposing said flexible member second side to the fluid partial vacuum wherein said vacuum exerts a force on said flexible member second side, whereby said flexible member collapses to a deformed condition, said deformed condition providing a visual and tactile indication when said pressure force exceeds said vacuum force and said biasing force.

5,578,222

RECLAMATION OF ABRASIVE GRAIN

Ronald W. Trischuk; Ajay K. Garg, and Arup K. Khaund, all of Northborough, Mass., assignors to Saint-Gobain/Norton Industrial Ceramics Corp., Worcester, Mass.

Filed Dec. 20, 1995, Ser. No. 575,655
Int. Cl.[6] B01D *11/02*
U.S. Cl. 210—773 **6 Claims**

1. A process for the recovery of abrasive grains from vitreous bonded grinding wheels and fragments thereof, said process comprising the steps of:

a) placing vitreous bonded grinding wheels and/or fragments thereof in an aqueous solution of an alkali metal base, thereby forming an aqueous mixture;

b) allowing at least part of said vitreous bond to dissolve; and

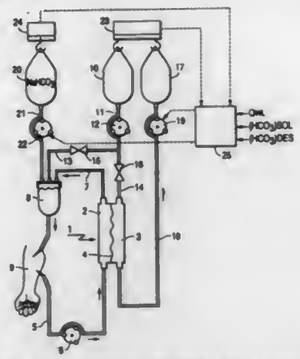
c) separating the abrasive grains from the aqueous mixture.

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5,578,223
ARTIFICIAL KIDNEY AND METHOD FOR ADJUSTING A CONCENTRATION OF SUBSTANCE IN BLOOD USING THEREOF

Bernard Bene, Irigny, and Jacques Chevallet, Serezin du Rhone, both of France, assignors to Hospal Industrie, France

Division of Ser. No. 942,466, Sep. 9, 1992, abandoned. This application Feb. 3, 1995, Ser. No. 383,208
Claims priority, application France, Sep. 10, 1991, 91 11351
Int. Cl.[6] B01D *61/00;61/22;61/32;61/34*
U.S. Cl. 210—85 **19 Claims**

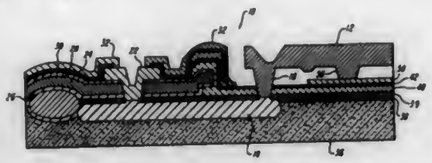


14. A method for adjusting a concentration of a substance (A) to a desired concentration $[A]_{DES}$ in blood of a patient undergoing an extracorporeal blood treatment using an exchanger having an outlet for a waste liquid, the method comprising the steps of:
- circulating the blood of the patient through the exchanger;
- draining waste liquid from the exchanger;
- perfusing to the patient a liquid containing a substance (A) having a concentration $[A]_{SOL}$;
- determining a flow rate (Q_{OUT}) of the waste liquid drained from the exchanger;
- calculating a flow rate (Q_A) of the perfusion liquid as a function of the flow rate (Q_{OUT}) of the waste liquid; and
- regulating the concentration of substance (A) in the patent's blood by controlling a flow rate of the perfusion liquid so that an actual flow rate of the perfusion liquid is substantially equal to the calculated flow rate (Q_A).

5,578,224
METHOD OF MAKING MICROMACHINED DEVICE WITH GROUND PLANE UNDER SENSOR

Theresa A. Core, North Andover, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Jun. 7, 1995, Ser. No. 486,894
Int. Cl.[6] H02P *6/16;* **H01G** *5/16*
U.S. Cl. 216—2 **13 Claims**

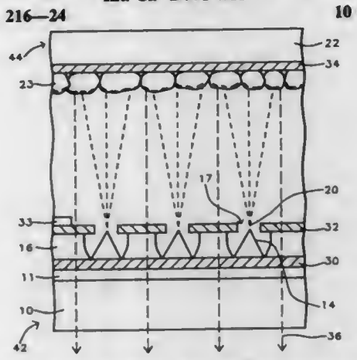


1. A process for making a micromachined device in a substrate comprising the steps of:
- (a) forming a diffused region in the substrate;
- (b) forming a dielectric layer over the substrate and over at least a portion of the diffused region;
- (c) forming a conductive layer over a portion of the dielectric layer;
- (d) forming at least one opening in the dielectric layer over the diffused region; and
- (e) forming a body including a mass suspended over at least part of the conductive layer, a first anchor extending from the mass through the opening and to the diffused region, and a second anchor extending from the mass to the conductive layer.

5,578,225
INVERSION-TYPE FED METHOD

Ho-Ching Chien, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jan. 19, 1995, Ser. No. 374,900
Int. Cl.[6] B44C *1/22*
U.S. Cl. 216—24 **10 Claims**



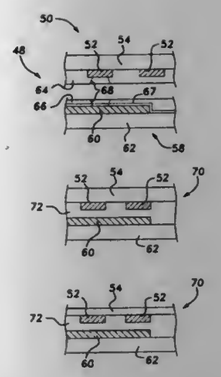
1. A method for making a field emission display having a baseplate and a faceplate, comprising the steps of:
- providing a glass substrate to act as the base for said faceplate;
- forming a reflective, conductive layer over said glass substrate;
- forming a phosphor layer over said first conductive layer;
- mounting said faceplate opposite to and parallel to said baseplate on which is formed a first transparent insulating layer;
- forming a first transparent conductive layer over said first transparent insulating layer;
- patterning said first transparent conductive layer to form parallel, spaced cathode lines;
- forming first metal lines over said parallel, spaced cathode lines, to a width less than said parallel, spaced cathode lines;
- forming a second transparent insulating layer over said parallel, spaced/cathode lines and over said first insulating layer;
- forming a second transparent conductive layer over said second transparent insulating layer;
- patterning said secood transparent conductive layer to form parallel, spaced gate lines orthogonally to said parallel, spaced cathode lines;
- forming second metal lines over said parallel, spaced gate lines, to a width less than said parallel, spaced gate lines;
- forming first openings in said parallel, spaced gate lines;
- forming second openings in said second transparent insulating layer under said first openings; and
- forming electron emitting tips in said second openings, over said parallel, spaced cathode lines.

5,578,226
MULTI-LAYERED SUPERCONDUCTIVE INTERCONNECTS

Hugo W. Chan, and Arnold H. Silver, both of Rancho Palos Verdes, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jul. 18, 1995, Ser. No. 503,682
Int. Cl.[6] B44C *1/22*
U.S. Cl. 216—33 **26 Claims**

1. A method of fabricating a multi-layer superconductive interconnect structure comprising the steps of:

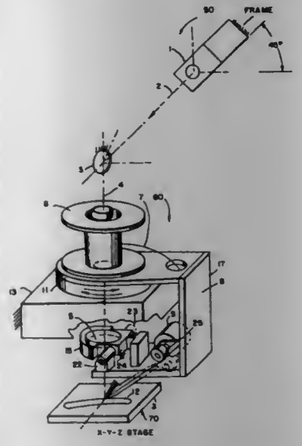


- fabricating a first multi-layer substrate by depositing a first superconducting layer (SL) on a first epitaxial substrate and applying a first glue dielectric layer (GDL) on said first SL;
- fabricating a second multi-layer substrate by depositing a second SL on a second epitaxial substrate and applying a second GDL on said second SL;
- clamping said first and second multi-layer substrates together with said first GDL and said second GDL in contact; and
- curing said first and second GDL layers to connect first and second multi-layer substrates together to create a first composite substrate.

5,578,227
RAPID PROTOTYPING SYSTEM

Joshua E. Rabinovich, 15 Voss Ter., Newton, Mass. 02159

Filed Aug. 30, 1993, Ser. No. 113,241
Int. Cl.[6] B23K *26/00;* **B21F** *45/00;* **B29C** *41/02;71/04*
U.S. Cl. 219—121.63 **29 Claims**

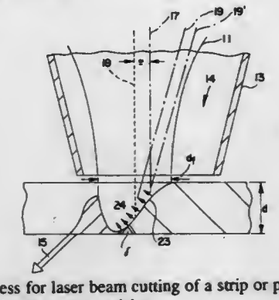


1. A model building method comprising delivering thin, continuous feedstock of materials which have various profiles with opposite flat sides and fusing the feedstock by adhesion or welding a flat side with an energy source to a flat side of a previous layer, while keeping the feedstock cross-section in substantially original shape.

5,578,228
PROCESS FOR THE LASER BEAM CUTTING OF STRIP OR PLATE WORKPIECES, ESPECIALLY MAGNETIC STEEL SHEETS

Eckhard Beyer, Roetgen-Rott; Kai-Uwe Preissig, Dortmund, both of Germany; Dirk Petring, Kerkrade, Netherlands; Dieter Bingener, Kreuztal, and Hans-Dieter Riehn, Gladbeck, both of Germany, assignors to Thyssen Stahl AG, Duisburg, Germany

PCT No. PCT/EP93/02123, § 371 Date Apr. 3, 1995, § 102(e) Date Apr. 3, 1995, PCT Pub. No. WO94/04304, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 10, 1993, Ser. No. 379,665
Claims priority, application Germany, Aug. 12, 1992, 42 26 620.3
Int. Cl.[6] B23K *26/12;26/14*
U.S. Cl. 219—121.72 **11 Claims**



1. A process for laser beam cutting of a strip or plate workpiece along a cutting seam, comprising
- focusing a laser beam at a cutting point in said cutting seam of said workpiece, thereby forming a vapor capillary at said cutting point and a melt of said workpiece in said cutting seam, and
- directing a cutting gas at said melt in said cutting seam to drive off said melt,
- wherein said cutting gas comprises a mixture of an inert gas and hydrogen gas,
- wherein the hydrogen gas component of said cutting gas is sufficiently high and the cutting gas is directed to the surface of said melt at said cutting point at a pressure and with a pressure distribution so that said vapor capillary remains closed along its bottom,
- wherein the temperature at the surface of said melt is at the vaporization temperature of said melt, and
- wherein said melt is continuously driven out of said cutting seam in a direction away from a cutting direction of said vapor capillary.

5,578,229
METHOD AND APPARATUS FOR CUTTING BOARDS USING OPPOSING CONVERGENT LASER BEAMS

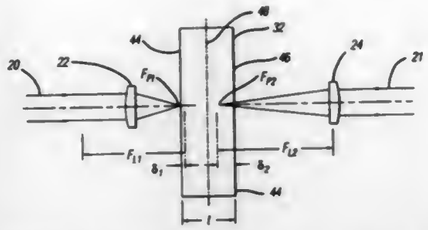
Vladmir Barnekov, East Lansing; Henry A. Huber, DeWitt, and Kalinath Mukherjee, Okemos, all of Mich., assignors to Michigan State University, Lansing, Mich.

Filed Oct. 18, 1994, Ser. No. 325,671
Int. Cl.[6] B23B *26/08*
U.S. Cl. 219—121.72 **20 Claims**

1. A method for laser cutting a workpiece having generally opposing first and second surfaces, the method comprising:
- providing a first lens having a first focal length;
- providing a second lens having a second focal length which approximately differs from the first focal length by at least 10%;
- applying a first laser beam to the first lens to converge the first laser beam at a first focal point proximate the first surface and to diverge the first laser beam thereafter so that the first laser beam cuts the workpiece from the first surface toward the second surface to provide a first cut;

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applying a second laser beam to the second lens to converge the second laser beam at a second focal point proximate the second surface and to diverge the second laser beam thereafter so that the second laser beam cuts the workpiece from the second surface toward the first surface to provide a second cut, the first and second cuts joining each other to cut the workpiece substantially through; and

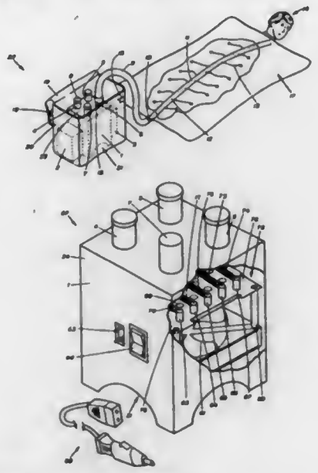
moving the workpiece relative to the first and second laser beams.

5,578,230

HEATER SYSTEM HAVING HOUSING WITH CHAMBER FOR CREATING A TURBULENT SPINNING A1R VORTEX

Richard Eldon, P.O. Box 129, 334 Berwick, Firestone, Colo. 80520

Filed Jun. 9, 1994, Ser. No. 257,269
Int. Cl.[6] A45D *20/10*; H05B *1/00*
U.S. Cl. 219—211 **19 Claims**



1. A heating system, comprising:

a source of electrical power;

a housing having an air inlet means, an air outlet means spaced from said air inlet means, and a vortex chamber formed between said air inlet means and said air outlet means;

a heating element disposed in said vortex chamber of said housing adjacent to said air outlet means and being operable upon connection to said source of electrical power to produce heating of air in said vortex chamber of said housing;

a fan disposed adjacent to said vortex chamber of said housing and adjacent to said air inlet means and being operable upon connection to said source of electrical power to produce a flow of air through said vortex chamber of said housing past said heating element from said air inlet means to said air outlet means of said housing; and

vortex generating means defined in said vortex chamber of said housing adjacent to said heating element for forcing said flow of air produced by said fan into a turbulent spinning air vortex in said vortex chamber in contact with said heating element so as to increase air temperature and speed of air flow exiting said housing with said vortex generating means present in said vortex chamber over the temperature and speed of a laminar air flow which would exit said housing without said vortex generating means present in said vortex chamber; and

said vortex generating means comprises a frame disposed in said housing and extending across said vortex chamber, said frame having a plurality of holes therein;

said heating element being attached to said frame and disposed between said frame and said air outlet means; and

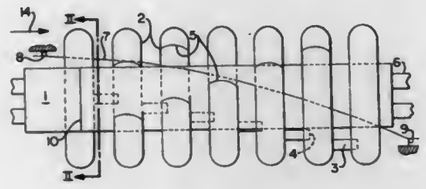
said fan being disposed between said frame and said air inlet means and being operable to push said airflow through said holes in said frame and into close proximity to said heating element.

5,578,231

HEATER FOR AN ADVANCING YARN

Heinz Schippers; Karl Bauer; Johannes Bruske, all of Remscheid; Martin Fischer, Solingen; Benno Frank, Wuppertal; Siegfried Morhenne, Breckerfeld; Ralf Dedeken, Witten, and Herbert Streppel, Remscheid, all of Germany, assignors to Barmag AG, Remscheid, Germany

PCT No. PCT/DE93/00118, § 371 Date Apr. 4, 1994, § 102(e) Date Apr. 4, 1994, PCT Pub. No. WO93/25738, PCT Pub. Date Dec. 23, 1993
PCT Filed Feb. 11, 1993, Ser. No. 190,155
Claims priority, application Germany, Jun. 6, 1992, 42 18 809.1; Jul. 10, 1992, 42 22 631.7; Sep. 24, 1992, 42 32 066.6
Int. Cl.[6] F27B *9/28*; D01H *13/26*
U.S. Cl. 219—388 **30 Claims**



1. A heater for heating an advancing thermoplastic yarn comprising

a heating tube having opposite ends and comprising an outer surface having a curvilinear cross-section normal to the longitudinal axis of said tube, the outer surface of said tube defining a heating surface;

means for heating the outer surface of said tube;

a plurality of ring segments mounted on said outer surface and extending at least partially around the circumference of said tube, the ring segments defining outer ridge portions with outer diameters;

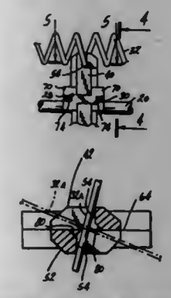
a yarn guide mounted at each of said ends of said tube, said yarn guides being offset in relation to each other in the direction of the circumference of said tube, said yarn guides cooperating with each other to guide the advancing thermoplastic yarn helically along said tube such that the thermoplastic yarn contacts the outer ridge portions of said ring segments at the outer diameter without contacting the outer surface of said tube.

5,578,232

OPEN-COIL HEATER ASSEMBLY AND INSULATOR THEREFOR

Roger P. Engelke, Huntsville, Ala., assignor to Hart & Cooley, Inc., Holland, Mich.

Filed May 4, 1995, Ser. No. 434,951
Int. Cl.[6] H05B *3/06*
U.S. Cl. 219—532 **14 Claims**



8. An insulator member for use in an open-coil heater assembly having a helically coiled resistance wire joined to a support member through the insulator member, the insulator member comprising:

a molded refractory material having a portion defining generally flat parallel opposed side surfaces;

the insulator portion having a slot defined by a pair of slot defining walls and extending inwardly from an end thereof and from one to the other of the opposed surfaces thereto and at an acute angle, said slot being sized and arranged to freely pass and receive a portion of the resistance wire between adjoining convolutions without hindrance from the defining walls of the slot when said wire portion is in alignment with said slot;

a transverse indentation extending laterally of said slot, spaced inwardly of said end of said insulator portion and transversely of said opposed surfaces, said transverse indentation formed by a retaining lip extending between one of the defining walls of said slot and one of said opposed surfaces;

whereby said resistance wire portion can rest in said transverse indentation and be retained therein by the retaining lip in a generally transverse orientation to the opposed surfaces.

5,578,233

INDUCTION FURNACE WITH LINEAR FLUX CONCENTRATOR

Arvedi Giovanni, Via Mercatello 26, Cremona, Italy, and Gosio Giovanni, Cremona, Italy, assignors to Giovanni Arvedi, Cremona, Italy

PCT No. PCT/IT92/00164, § 371 Date May 23, 1994, § 102(e) Date May 23, 1994, PCT Pub. No. WO93/12628, PCT Pub. Date Jun. 24, 1993
PCT Filed Dec. 17, 1992, Ser. No. 244,290
Claims priority, application Italy, Dec. 18, 1991, FI91A0301
Int. Cl.[6] H05B *6/10*
U.S. Cl. 219—645 **4 Claims**

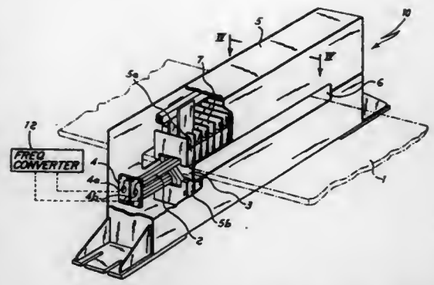
1. An induction furnace for heating, at a homogenous temperature, flat steel products fed into the furnace in a continuous line in a predetermined feeding direction, the furnace comprising:

(a) a succession of heating assemblies, each assembly comprising refractory material and having:

(i) a narrow inductor coil fed by a separate frequency converter, the coil having a longitudinal orientation, the size of the coil in the feeding direction of the flat products having a finite size and being 350 mm or less, and

(ii) a linear flux concentrator in proximity of the coil and extending along the longitudinal orientation of the coil, the flux concentrator having ends, an upper portion and a lower portion, the upper and lower portions being joined at each of the ends and establishing a central gap therebetween for the flat products to pass therethrough, the upper and lower portions each being formed as a packet of generally C-shaped magnetic sheet irons arranged side by side and directed at right angles to both the longitudinal orientation of the coil and a plane defined by the flat products to be heated, the upper and lower portions facing each other and housing the inductor coil in the gap; and

(b) pairs of rollers placed between the heating assemblies for supporting and moving the flat products in the feeding direction.



5,578,234

DRYER-ACTIVATED FABRIC CONDITIONING COMPOSITIONS CONTAINING UNSATURATED FATTY ACID

Alessandro Corona, III, Maineville; Clyde D. Palmer, Cincinnati; John R. Rusche, Cincinnati, and Stephanie Lin-Lin Sung, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 309,339, Sep. 20, 1994, Pat. No. 5,503,756. This application Oct. 10, 1995, Ser. No. 541,448
Int. Cl.[6] D06M *13/46*
U.S. Cl. 510—519 **3 Claims**

1. In a quaternization process for preparing a quaternary ammonium compound having Formula I, Formula II, Formula III, or mixtures thereof, said process comprising the step of forming a quaternization reaction mixture having a viscosity, wherein: said Formula I comprises:

$$(R)_{4-m}—N^+—[(CH_2)_n—Y—R^2]_m\ X^-$$

wherein

each Y=—O—C(O)—, or —C(O)—O—; m=1 to 3; each n=is an integer from 1 to 4, and mixtures thereof;

each R substituent is a short chain C_1–C_6 alkyl group; a short chain C_1–C_4 hydroxy alkyl group; benzyl; or mixtures thereof;

each R^2 is a long chain, saturated or unsaturated, with an Iodine Value of from about 3 to about 60, C_8–C_{30} hydrocarbyl, or substituted hydrocarbyl substituent; and the counterion, X^-, can be any softener-compatible anion;

said Formula II comprises:

$$(R^1)_3—^+N—(CH_2)_n—C(YR^2)H—C(YR^2)H_2\ X^-$$

wherein, for any molecule:each Y is —O—C(O)— or —C(O)—O—;

each R^1 is C_1–C_4 alkyl or hydroxy alkyl; and

R^2, X^-, and n are as defined herein before for Formula I; and

said Formula III comprises:

$$(R)_{4-m}—N^+—[(CH_2)_n—Y—R^2]_m\ X^-$$

wherein R, R^2, m, n, and X^- are as previously defined in Formula I; and each Y=—NH— C(O)—; —C(O)—NH—;

—C(O)—O—; and —O—C(O)—; wherein at least one Y group is —NH—C(O)— or —C(O)—NH—:

the improvement in which unsaturated fatty acid having an Iodine Value of from about 3 to about 60 is added at a level of from about 5% to about 30% to the quaternization reaction mixture to reduce, maintain, or reduce and maintain the viscosity at less than about 1000 cps at 70° C., the viscosity in the absence of the unsaturated fatty acid being more than about 1500 cps at 70° C.

5,578,235

OVERBASED CALCIUM SULFONATE

Tze-Chi Jao; Jayne M. Vaccaro, both of Fishkill, N.Y., and William J. Powers, III, Port Arthur, Tex., assignors to Ethyl Additives Corporation, Richmond, Va.

Continuation of Ser. No. 636,475, Dec. 31, 1990, abandoned. This application Oct. 5, 1994, Ser. No. 320,418

Int. Cl.[6] C10M *159/24*

U.S. Cl. 508—391 **8 Claims**

1. A process for producing an overbased oil soluble calcium sulfonate having a TBN of at least 500 and a viscosity of less than 200 cSt at 100° C., said process consisting essentially of

(a) diluting a synthetic mono (C_{16}–C_{26}) alkylbenzene sulfonate and a synthetic di (C_{10}–C_{18}) alkylbenzene sulfonate with a hydrocarbon solvent in a molar ratio of synthetic monoalkyl benzene sulfonate to synthetic dialkylbenzene sulfonate of about 40:60 to about 55:45;

(b) adding to the diluted synthetic monoalkylbenzene sulfonate/synthetic dialkylbenzene sulfonate solution, CaO and $Ca(OH)_2$ and H_2O in molar ratios of CaO: $Ca(OH)_2$ of about 90:10 to about 20:80 and a charge molar ratios of total lime: sulfonate of about 22:1 to about 27:1;

(c) heating the mixture of step (b) to a temperature of about 100° F. to about 170° F. under a pressure ranging from about 0 to about 50 psig;

(d) adding water to said heated mixture of step (c) in a molar ratio of CaO:H_2O of about 0.15:1 to about 0.30:1;

(e) passing CO_2 into and through said heated mixture of step (d) for a period of about 60 to about 240 minutes;

(f) separating the solid from the liquid product of the mixture of step (e);

(g) adding a pale oil diluent to the liquid product of step (f); and

(h) stripping the hydrocarbon solvent from the resulting overbased oil soluble sulfonate product having at least a TBN of 500 wherein the product contains from 25–55% of the synthetic monoalkyl benzenesulfonate.

5,578,236

POWER TRANSMISSION FLUIDS HAVING ENHANCED PERFORMANCE CAPABILITIES

Sanjay Srinivasan, Midlothian, and David W. Smith, Richmond, both of Va., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 22, 1994, Ser. No. 343,289

Int. Cl.[6] C10M *141/06;137/00;111/02*

U.S. Cl. 508—188 **25 Claims**

1. A power transmission fluid composition wherein said composition has on a weight basis an oil-soluble boron content of about 0.001 to about 0.1%, an oil-soluble phosphorus content of about 0.005 to about 0.2%, and either no metal additive content or an oil-soluble metal content as one or more metal-containing additives of no more than about 100 ppm; wherein said composition comprises:

a) at least about 50 wt % based on the total weight of said composition of one or more hydrotreated mineral oils in the range of about 55N to about 125N;

b) about 5 to about 40 wt % based on the total weight of said composition of hydrogenated poly-α-olefin oligomer fluid having a viscosity in the range of about 2 to about 6 cSt at 100° C.;

c) on an active ingredient basis, about 5 to about 20 wt % based on the total weight of said composition of an acrylic viscosity index improver having a permanent shear stability index of 30 or less in the form of a solution in an inert solvent;

d) an effective seal-swelling amount of at least one seal swell agent selected from oil-soluble dialkyl esters, oil-soluble sulfones, and mixtures thereof;

e) a dispersant amount of at least one oil-soluble ashless dispersant;

f) a friction modifying amount of at least one oil-soluble friction modifier; and

g) oil-soluble inhibitors selected from the group consisting of foam inhibitors, copper corrosion inhibitors, rust inhibitors, and oxidation inhibitors;

with the proviso that said composition has (i) a Brookfield viscosity of 13,000 cP or less at −40° C., (ii) a viscosity of at least 2.6 mPa·s at 150° C. in the ASTM D-4683 method, and (iii) a viscosity of at least 6.8 cSt at 100° C. after 40 cycles in the FISST of ASTM D-5275.

5,578,237

GEL-FREE α-OLEFIN DISPERSANT ADDITIVES USEFUL IN OLEAGINOUS COMPOSITIONS

Jacob Emert, Brooklyn, N.Y.; Robert D. Lundberg, Williamsburg, Va., and David J. Lohse, Bridgewater, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 991,837, Dec. 17, 1992, abandoned. This application Nov. 10, 1994, Ser. No. 338,287

The portion of the term of this patent subsequent to Dec. 17, 2012, has been disclaimed.

Int. Cl.[6] C10M *145/22;145/20*

U.S. Cl. 508—454 **36 Claims**

1. An oil soluble, gel-free dispersant additive for oleaginous compositions comprising the reaction product of:

(A) a grafted α-olefin polymer prepared by free radically grafting oil soluble α-olefin polymer with carboxylic acid producing moieties having 1 to 2 carboxylic acid producing groups per moiety, said α-olefin polymer selected from the group consisting of α-olefin homopolymers and α-olefin interpolymers, said α-olefin polymer having a number average molecular weight of from about 700 to about 10,000 and a polydispersity of from about 1 to 5 prior to grafting, and wherein at least about 30% of the polymer chains of said α-olefin polymer possess terminal ethenylidene unsaturation prior to grafting, and wherein said carboxylic acid producing moieties are randomly attached along the polymer chains of the grafted α-olefin polymer such that the grafted α-olefin polymer contains an average of from 1 to 3 carboxylic acid producing moieties per polymer chain; and wherein the grafted α-olefin polymer has a concentration of unreacted polymer of less than about 25 wt. %; and

(B) at least one non-aromatic nucleophilic post-treating reactant selected from the group consisting of:

(i) amine compounds containing only a single reactive amino group per molecule,

(ii) alcohol compounds containing only a single hydroxy group per molecule,

(iii) polyamine compounds containing at least two reactive amino groups per molecule,

(iv) polyol compounds containing at least two reactive hydroxy groups per molecule,

(v) aminoalcobol compounds containing at least one reactive amino group and at least one reactive hydroxy group per molecule, and

(vi) mixtures thereof;

provided that when said post-treating reactant includes one or more of (iii), (iv) or (v), the reaction between (A) and (B) is conducted in the presence of sufficient chain-stopping or end-capping co-reactant (C) to ensure that the reaction product is gel-free.

5,578,238

MAGNETORHEOLOGICAL MATERIALS UTILIZING SURFACE-MODIFIED PARTICLES

Keith D. Weiss, Eden Prairie, Minn.; J. David Carlson, Cary, and Donald A. Nixon, Wilson, both of N.C., assignors to Lord Corporation, Cary, N.C.

Continuation-in-part of Ser. No. 969,687, Oct. 30, 1992, abandoned. This application Apr. 13, 1994, Ser. No. 227,297

Int. Cl.[6] H01F *1/44*

U.S. Cl. 252—62.52 **24 Claims**

1. A magnetorheological material comprising a carrier fluid and magnetically active particles wherein the particles are encapsulated with a protective coating and have diameters ranging from about 0.1 to 500 μm, said protective coating covering from about 95 to 100 percent of the surface of said particles and comprising at least one material selected from the group consisting of thermoplastics, nonmagnetic metals and ceramics.

5,578,239

METHODS FOR TREATING COKE AND COAL AND PRODUCTS PRODUCED THEREBY

Robert P. Bennett, Houston, Tex., assignor to Benetech, Inc., Aurora, Ill.

Continuation-in-part of Ser. No. 875,341, Apr. 29, 1992, Pat. No. 5,310,494. This application Mar. 10, 1994, Ser. No. 209,162

Int. Cl.[6] C09K *3/22*

U.S. Cl. 252—88.1 **35 Claims**

1. A method for suppressing loss of coal or coke material during transport or storage comprising applying a solution containing an additive to said material in an amount sufficient to suppress loss of said material, said additive comprising

a dispersant comprising a water-miscible polymer selected from the group consisting of a polyacrylate and a polyacrylamide, and

an amount of lignosulfonate that exceeds the amount of said polymer.

5,578,240

COMPOSITIONS AND METHODS FOR IDENTIFYING A SOLUTION

John Y. Park, Santa Ana; James N. Cook, Mission Viejo, and Anthony J. Dziabo, Jr., El Toro, all of Calif., assignors to Allergan, Inc., Irvine, Calif.

Continuation of Ser. No. 752,320, Aug. 30, 1991, abandoned. This application Apr. 14, 1994, Ser. No. 227,707

Int. Cl.[6] C11D *17/00*

U.S. Cl. 510—513 **25 Claims**

1. An ophthalmically acceptable single tablet composition for neutralizing residual peroxide in a solution and facilitating a visual indication of the absence of such peroxide in the solution after neutralization of peroxide, the composition comprising:

an amount from about 1 to 30 weight percent of a peroxide neutralizing compound sufficient to neutralize all of the residual peroxide; and

an effective amount from about 0.005 to 1.0 weight percent of vitamin B-12, wherein the vitamin B-12 is released from the tablet such that the solution changes color from clear to rose as residual peroxide is neutralized.

5,578,241

LIQUID CRYSTAL DISPLAY

Herbert Plach, Darmstadt; Bernhard Rieger, Münster-Altheim; Volker Reiffenrath, Rossdorf, and Eike Poetsch, Mühltal, all of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

Filed May 18, 1993, Ser. No. 63,093

Int. Cl.[6] C09K *19/52;* **G02F** *1/13*

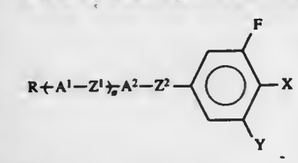
U.S. Cl. 252—299.01 **26 Claims**

1. A liquid crystal display comprising

an electrically switchable, dielectrically positive twisted nematic liquid crystal mixture layer between two substrates which together with a frame form a cell, said liquid crystal mixture is essentially based on superfluorinated liquid crystal compounds,

two electrode layers, with alignment layers thereon, applied to said substrates, one of said electrode layers forms an active matrix of non-linear switching elements integrated with each picture element, and the other electrode layer is the counter electrode,

said alignment layers are each an organic polymer layer which are essentially uniformly alignable by rubbing, said alignment layers resulting in an essential homogeneous surface alignment of the liquid crystal layer with a surface tilt angle, wherein said liquid crystal mixture comprises at least 30 wt. % of one or more compounds according to formula I



I

wherein

R is alkyl with up to 12 C atoms or alkyl with up to 12 C atoms wherein one or two non-adjacent CH_2-groups are each replaced by —O—, —CO—, —COO—, —OCO— or —HC=CH—,

Z^1 and Z^2 in each case are, independently from each other, a single bond, $—CH_2CH_2—$, —COO—, —OCO—, —C≡C—, $—CH_2O—$ or $—OCH_2—$,

A^1 and A^2 in each case are, independently from each other, trans-1,4-cyclohexylene, 1,4-phenylene, 2-fluoro-1,4-phenylene, 3-fluoro-1,4-phenylene, 2,3-difluoro-1,4-phenylene, or 3,5-difluoro-1,4-phenylene,

X is —Q—P,

P is —F, —Cl or —NCS,

Q is $—(O)_m—C_sF_pH_{2s-p}$ or a single bond,

Y is —H, —F or —Cl,

m is 0 or 1,

s is 1, 2, 3 or 4,

p is an integer from 0 up to 2s, and

n is 0, 1 or 2; and

said alignment layers are each based on at least partially fluorinated polyimides.

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5,578,242

THIO-ESTER COMPOUNDS AND MIXTURES AND DEVICES CONTAINING SUCH COMPOUNDS

John W. Goodby; Michael Hird; Kenneth J. Toyne; Alexander J. Seed; Damien G. McDonnell, and Amarjit K. Samra, all of Hull, United Kingdom, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland of Defence Research Agency, England

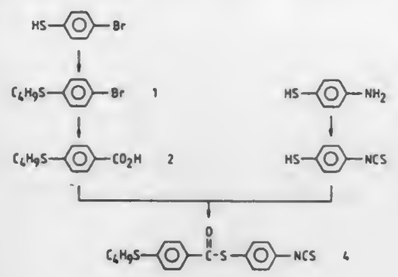
PCT No. PCT/GB93/02084, § 371 Date Apr. 12, 1995, § 102(e) Date Apr. 12, 1995, PCT Pub. No. WO94/09085, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 8, 1993, Ser. No. 416,737

Claims priority, application United Kingdom, Oct. 16, 1992, 9221820

Int. Cl.[6] C09K *19/52;19/34;19/32;* G02F *1/13*

U.S. Cl. 252—299.01 9 Claims



1. A liquid crystal compound of the formula

$$R^1+Z^1)_m+Z^2+X+Z^3+Z^4)_n R^2$$

wherein each of R^1 and R^2 is independently selected from the group consisting of CN, NCS, SCN, C_{1-16} alkyl, C_{1-16} alkoxy and C_{1-16} thioalkyl;

X is selected from the group consisting of COS, CSS and CSO;

Z^1 and Z^4 are independently selected from the group consisting of phenyl and substituted phenyl, where substitution is lateral substitution selected from F and Cl;

m and n are independently 0 or 1;

Z^2 and Z^3 are independently selected from the group consisting of naphthalene, substituted naphthalene wherein substitution is lateral substitution selected from F and Cl; phenyl, substituted phenyl wherein substitution is lateral substitution selected from F and Cl and thiophene;

provided that when m=n=0, Z^2=Z^3=phenyl, X=COS and one of R^1 or R^2 is thioalkyl then the other of R^1 or R^2 does not equal alkyl or alkoxy;

provided that when X=COS, Z^2=Z^3=phenyl, Z^1 and Z^4 if present are phenyl, then R^1 and R^2 are the same or different and at least one of R^1 and R^2 is selected from NCS; provided that when X=COS, m=0, n=0, R^1 and R^2 are chosen from alkyl, alkoxy or CN then Z^2 and Z^3 are not chosen from a combination of phenyl and substituted phenyl, phenyl and phenyl, substituted phenyl and substituted phenyl; and provided that if X is CSS then at least one of R^1 and R^2 is C_{1-16} thioalkyl.

5,578,243

LIQUID CRYSTALLINE POLYMER FILM, PROCESS FOR PRODUCING SAME, AND UTILIZATION THEREOF

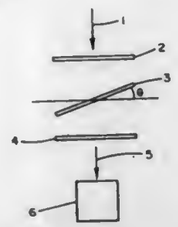
Hitoshi Mazaki, Kawasaki; Takuya Matsumoto, Yokohama; Iwane Shiozaki, Yokohama, and Shigeki Takikawa, Yokohama, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Continuation of Ser. No. 252,922, Jun. 2, 1994, Pat. No. 5,460,748. This application Jun. 7, 1995, Ser. No. 488,262

Claims priority, application Japan, Jun. 2, 1993, 5-168298; Jun. 30, 1993, 5-209844; Aug. 30, 1993, 5-248417; Nov. 17, 1993, 5-323048

Int. Cl.[6] C09K *19/52;* G02F *1/13*

U.S. Cl. 252—299.01 7 Claims



1. A liquid crystalline polymer film comprising a film of a liquid crystalline polymer formed on a substrate having fixed tilt orientation, said tilt orientation being such that the average angle between a director of said liquid crystalline polymer and a plane of said substrate is in the range of 5 to 85 degrees.

5,578,244

SILACYCLOHEXANE COMPOUND, A METHOD OF PREPARING IT AND A LIQUID CRYSTAL COMPOSITION CONTAINING IT

Takaaki Shimizu; Takeshi Kinsho; Tsutomu Ogihara; Tatsushi Kaneko; Mutsuo Nakashima, all of Niigata-ken, and Hideshi Kurihara, Kawasaki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

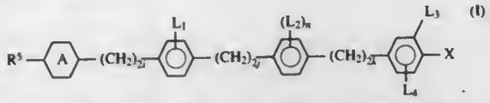
Filed Apr. 3, 1995, Ser. No. 415,858

Claims priority, application Japan, Apr. 5, 1994, 6-090495; May 2, 1994, 6-115872; Jun. 13, 1994, 6-154220; Jul. 29, 1994, 6-197895

Int. Cl.[6] C09K *19/34;19/12;* C07F *7/08;* G02F *1/13*

U.S. Cl. 252—299.61 12 Claims

1. A silacyclohexane compound represented by the following general formula (I)



wherein, R denotes a linear-chain alkyl group with 1–10 carbon atoms, a fluoralkyl group with 1–10 carbon atoms in which a fluorine atom(s) is substituted for one or two hydrogen atoms, a branched-chain alkyl group with 3–8 carbon atoms, an alkoxyalkyl group with 2–7 carbon atoms, or an alkenyl group with 2–8 carbon atoms;



denotes a trans-1-sila-1,4-cyclohexylene or trans-4-sila-1,4-cyclohexylene group whose silicon at position 1 or position 4 has a substitutional group(s) of H, F, Cl or CH_3;

L_1 and L_2 independently denote H or F;

L_3 and L_4 independently denote H, F or Cl;

X denotes a H, CN, F, Cl, CF_3, CF_2Cl, CHFCl, OCF_3, OCF_2 Cl, OCHFCl, $OCHF_2$, or a linear-chain alkyl or alkoxy group with 1–10 carbon atoms; and

i, j and k respectively denote 0 or 1, where (i+j+k) is 0 or 1, n denotes 0, 1 or 2.

5,578,245

METHOD OF PREPARING A STABLE COLLOID OF SUBMICRON PARTICLES

Ronald F. Ziolo, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 910,803, Jul. 9, 1992, Pat. No. 5,362,417. This application Sep. 9, 1994, Ser. No. 303,644

Int. Cl.[6] B01F *3/12;3/20;* B01J *13/00*

U.S. Cl. 252—314 46 Claims

1. A method of forming a colloid dispersion of submicron particles comprising:

providing an ion exchange resin matrix;

loading said resin matrix with an ion; and

treating the resin to cause in-situ formation of submicron particles; and

fluidizing said ion exchange resin and particles by micronization of the polymeric matrix in an aqueous medium to form a stable colloid of said particles.

5,578,246

CORROSION INHIBITING COMPOSITIONS FOR AQUEOUS SYSTEMS

Edward S. Beardwood, Ontario, Canada, assignor to Ashland Inc., Columbus, Ohio

Filed Oct. 3, 1994, Ser. No. 317,133

Int. Cl.[6] C23F *5/10;* C02F *5/14*

U.S. Cl. 252—389.23 10 Claims

1. A silicate-based metal corrosion inhibiting composition for open cooling systems comprising in admixture:

(a) an anodic silicate in the amount of 5 parts to 30 parts by weight based upon 100 parts of corrosion inhibiting composition;

(b) a silicate salt stabilizer having a weight average molecular weight from about 1000 to about 25,000, wherein said silicate salt stabilizer is a terpolymer comprising monomeric units selected from the group consisting of (i) (meth) acrylic acid, (ii) maleic acid, (iii) salts thereof, and (iv) mixtures of (i), (ii), or (iii); and where the silicate salt stabilizer is used in an amount of 1.0 parts to 5.0 parts by weight, based upon 100 parts of corrosion inhibiting composition;

(c) a cathodic corrosion inhibitor which is an anodic hydroxy phosphonic acetic acid salt in an amount of 0.5 parts to 4.0 parts, based upon 100 parts of corrosion inhibiting composition;

(d) a polymeric scale inhibitor selected from the group consisting of copolymers of (1)(meth)acrylic acid and 2-acrylamido-2-methyl propane sulfonic acid, (2) terpolymers where two of the three monomers used to form said terpolymer are (meth) acrylic and 2-acrylamido-2-methyl propane sulfonic acid, and (3) mixtures thereof, where the amount of said polymeric scale inhibitor is from 0.5 part to 3.0 parts based upon 100 parts of corrosion inhibiting composition;

(e) water in an amount of 60 parts to 90 parts by weight bases upon the weight of the corrosion inhibiting composition.

5,578,247

ELECTRICALLY-CONDUCTIVE AND IONICALLY-CONDUCTIVE POLYMERIC NETWORKS AND THEIR PREPARATION

Vincent D. McGinniss, Sunbury; James L. White, Columbus, both of Ohio, and Hiroyuki Mikuni, Sagamihara, Japan, assignors to Three Bond Co., Ltd., Japan

Continuation of Ser. No. 179,811, Jan. 10, 1994, Pat. No. 5,462,696. This application Aug. 21, 1995, Ser. No. 517,295

Int. Cl.[6] H01B *1/00;1/06;1/12;1/20*

U.S. Cl. 252—500 9 Claims

1. A method of making an ultraviolet radiation (UV) cured, electrically-conductive polymeric network comprising the steps of:

(a) providing a mixture which contains a UV-curable monomer, prepolymer, or polymer, at least about 0.5% by weight of a UV sensitizer, and an oxidizable additive comprising 1 to 20% by weight of one or more of an oxidizable aniline, thiophene, or pyrrole additive;

(b) exposing said mixture to UV radiation to cure said monomer, prepolymer, or polymer and form a thermosetting polymeric network;

(c) applying an oxidizing agent to a surface of said thermosetting polymeric network to polymerize said oxidizable additives; and

(d) applying a laminating film over said oxidizing agent to effect the in situ oxidization of said oxidizable additive forming said UV cured, electrically-conductive polymeric network.

5,578,248

COMPOSITION FOR USE IN A TRANSPARENT AND ELECTRICALLY CONDUCTIVE FILM AND A METHOD FOR MAKING THE FILM

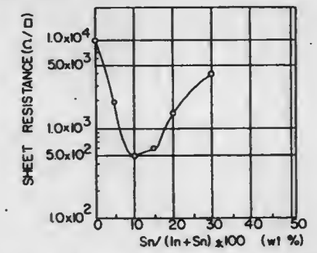
Akiyoshi Hattori; Akihiko Yoshida, and Atsushi Nishino, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 252,389, Jun. 1, 1994, abandoned, which is a continuation of Ser. No. 916,722, Jul. 22, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 478,342

Claims priority, application Japan, Jul. 24, 1991, 3-184422; Oct. 21, 1991, 3-272292; Oct. 30, 1991, 3-284456; Oct. 30, 1991, 3-284457; Dec. 11, 1991, 3-327309

Int. Cl.[6] H01B *1/00;1/08*

U.S. Cl. 252—518 8 Claims



1. A composition for use in a formation of a transparent and electrically conductive film, which comprises a compound represented by the formula:

$$InX_{p-r}SnY_{q-s}Z_{r+s}$$

wherein:

InX_p is an inorganic indium salt; SnY_q is an organic tin salt of a dicarboxylic acid or formic acid; Z is an organic compound capable of coordinating with indium and tin, which is selected from the group consisting of β-diketone group, α- or β-ketone acid group, ester group of α- or β-ketone acid group and α- or β-amino alcohol group; and, p, q, r and s are coordination numbers.

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5,578,249

PROCESS FOR PRODUCING ELECTRICALLY CONDUCTIVE ORGANIC POLYMER COMPOSITION

Akira Ohtani; Yoshihiro Uetani; Masao Abe; Yasuhito Funada, and Keisuke Kii, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed May 16, 1995, Ser. No. 442,225

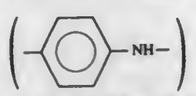
Claims priority, application Japan, Jun. 30, 1992, 4-173406; Feb. 25, 1993, 5-037085

Int. Cl.[6] H01B *1/12;* **B05B** *5/12*

U.S. Cl. 252—519 **7 Claims**

1. A process for producing an electrically conductive organic polymer, which comprises the steps of:

applying on a substrate an organic polymer solution composition comprising an organic polymer having an imino-p-phenylene structural unit represented by formula (I):



(I)

as the main repeating unit, a protonic acid salt, and an organic solvent, wherein said organic polymer and said protonic acid salt are dissolved in Said organic solvent,

drying the applied composition, and then

subjecting the dry polymer to an oxidation and doping treatment with a solution containing dissolved or dispersed therein both a protonic acid and an oxidizing agent, wherein the protonic acid is at least one protonic acid selected from the group consisting of 1,5-naphthalenedisulfonic acid, m-benzenedisulfonic acid, and poly(styrenesulfonic acid), wherein the protonic acid in the protonic acid salt is the same as or different from the protonic acid in the oxidation and doping treatment, and wherein the oxidizing agent is at least one oxidizing agent selected from the group consisting of a quinone oxidizing agent, a hydroperoxide oxidizing agent, hydrogen peroxide, an oxime oxidizing agent, a thiuram oxidizing agent, a sulfenamide oxidizing agent, a permanganate, a dichromate, iron (III) acetate, iron (III) hydroxide, and manganese dioxide.

5,578,250

MICROEMULSION LIQUID CLEANING COMPOSITIONS WITH INSECT REPELLENT

Barbara J. Thomas, Princeton, N.J.; Myriam Loth, Saint-Nicolas, Belgium, and Thomas F. Connors, Piscataway, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 228,314, Apr. 15, 1994, abandoned. This application Feb. 6, 1996, Ser. No. 597,326

Int. Cl.[6] C11D *3/32; 1/83*

U.S. Cl. 510—365 **13 Claims**

1. A stable oil-in-water microemulsion cleaning composition which is especially effective for the removal of oily and greasy soil from a hard surface and for repelling insects therefrom, the aqueous phase of said microemulsion comprising by weight of the total composition:

(A) from about 0.1% to about 25% of a surfactant mixture of

(i) an anionic surfactant;

(ii) a nonionic surfactant; the weight ratio of (i) to (ii) being from about 1:1 to about 5:1; and

(iii) a salt of a multivalent metal cation in an amount sufficient to provide from 0.1 to 1.5 equivalents of cation per equivalent of (i); the anionic surfactant, the nonionic surfactant and amount of multivalent metal cation being selected so as to provide a cloud point of at least about 45° C. in the finished microemulsion composition comprising components (A)–(D);

(B) from about 0 to 5% of a fatty acid;

(C) from about 0.1% to about 30% of a water-soluble cosurfactant selected from the group consisting of (a) water-soluble C_3–C_4 alkanols, polypropylene glycol and C_1–C_9 alkyl ethers and C_1–C_4 alkyl esters of ethylene glycol or propylene glycol, (b) aliphatic mono- and di- carboxylic acids containing 3 to 6 carbons in the molecule, (c) C_9–C_{15} alkyl ether polyethenoxy carboxylic acids of the structural formula $R(OC_2H_4)_nOXCOOH$ wherein R is C_9–C_{15} alkyl, n is a number from 4 to 12 and X is selected from the group consisting of CH_2, $C(O)R_1$ and C(O), wherein R_1 is a C_1–C_3 alkylene group and (d) mono-, di- and triethyl phosphate, and

(D) the balance water; the oil phase of said microemulsion being comprised of an effective amount of an N-lower alkyl neoalkanamide compound, and optionally a perfume or water insoluble hydrocarbon, said microemulsion composition being effective for removing oily and greasy soils from a hard surface and repelling insects therefrom by solubilizing such soils in the microemulsion while concomitantly depositing the N-lower alkyl neoalkanamide upon hard surface to be cleaned to provide insect repelling properties thereto.

5,578,251

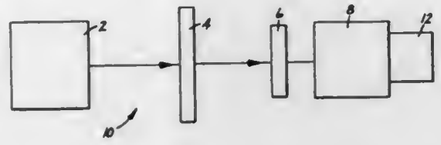
METHOD OF PREPARING POLAR DISULFONE-FUNCTIONALIZED MOLECULES

Gary T. Boyd, Woodbury; George V. Tiers, St. Paul; Cecil V. Francis, Woodbury; Eugene P. Janulis, Mahtomedi, all of Minn.; Robert J. Koshar, Sun City West, Ariz., and Louis M. Leichter, Mendota Heights, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 730,225, Jul. 15, 1991, Pat. No. 5,360,582. This application Aug. 5, 1994, Ser. No. 286,813

Int. Cl.[6] F21V *9/00;* **C07C** *315/00*

U.S. Cl. 252—582 **7 Claims**



1. A process for preparing polar disulfone-functionalized molecules, which process comprises performing one or more of the following reactions:

(i) reacting a vinyl ether disulfone molecule with an activated aromatic molecule, an activated heterocyclic molecule, a dye base, or a dye olefin;

(ii) reacting an enamine disulfone molecule with a dye base or a dye olefin; and

(iii) reacting an alkenyl disulfone molecule having a vinylogous methyl or methylene group conjugatively located relative to the disulfone group with an aldehyde or an acetal derived from an aldehyde.

5,578,252

PHOTOCHROMIC SUBSTITUTED NAPHTHOPYRAN COMPOUNDS

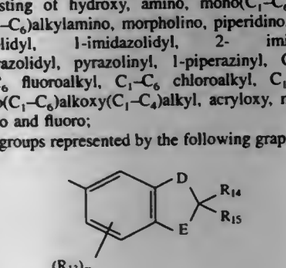
Barry Van Gemert, Murrysville, and Anil Kumar, Pittsburgh, both of Pa., assignors to Transitions Optical, Inc., Pinellas Park, Fla.

Continuation-in-part of Ser. No. 454,784, May 31, 1995, which is a division of Ser. No. 80,246, Jun. 21, 1993, Pat. No. 5,466,398. This application Nov. 29, 1995, Ser. No. 564,547

Int. Cl.[6] G02B *5/23;* **C07D** *311/92*

U.S. Cl. 252—586 **20 Claims**

1. A naphthopyran compound represented by the following graphic formula:



wherein:

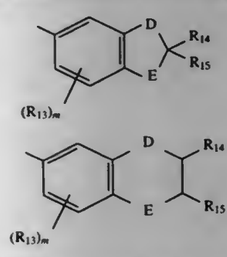
(a) R^1 is hydrogen or a C_1–C_6 alkyl; R_2 is hydrogen or the group, —C(O)W, W being —OR_4 or —$N(R_5)R_6$, wherein R_4 is hydrogen, allyl, C_1–C_6 alkyl, phenyl, C_1–C_6 monoalkyl substituted phenyl, C_1–C_6 monoalkoxy substituted phenyl, phenyl(C_1–C_3)alkyl, C_1–C_6 monoalkyl substituted phenyl(C_1–C_3)alkyl, C_1–C_6 monoalkoxy substituted phenyl(C_1–C_3)alkyl, C_1–C_6 alkoxy(C_2–C_4)alkyl, C_1–C_6 monofluoroalkyl, or C_1–C_6 monochloroalkyl, and wherein R_5 and R_6 each are selected from the group consisting of hydrogen, C_1–C_6 alkyl, C_5–C_7 cycloalkyl, phenyl and mono- or di-substituted phenyl, or R_5 and R_6 together with the attached nitrogen atom form a mono- or di-substituted or unsubstituted heterocyclic ring selected from the group consisting of indolinyl, morpholino, piperidino, 1-pyrrolidyl, 1-pyrrolinyl, 1-imidazolidyl, 2-imidazolin-1-yl, 2-pyrazolidyl and 1-piperazinyl, said phenyl and heterocyclic ring substituents being selected from C_1–C_6 alkyl and C_1–C_6 alkoxy; R_3 is hydrogen, C_1–C_6 alkyl, phenyl(C_1–C_3)alkyl, C_1–C_6 monoalkyl substituted phenyl(C_1–C_3)alkyl, C_1–C_6 monoalkoxy substituted phenyl(C_1–C_3)alkyl, C_1–C_6 alkoxy(C_1–C_4)alkyl, C_5–C_7 cycloalkyl, C_1–C_4 monoalkyl substituted C_5–C_7 cycloalkyl, C_1–C_6 monofluoroalkyl, C_1–C_6 monobromoalkyl, C_1–C_6 monochloroalkyl, allyl or the group, —C(O)X, wherein X is C_1–C_6 alkyl, phenyl, C_1–C_6 mono- or C_1–C_6 di-alkyl substituted phenyl, C_1–C_6 mono- or C_1–C_6 di-alkoxy substituted phenyl, C_1–C_6 alkoxy, phenoxy, C_1–C_6 mono- or C_1–C_6 di-alkyl substituted phenoxy, C_1–C_6 mono- or C_1–C_6 di-alkoxy substituted phenoxy, C_1–C_6 alkylamino, phenylamino, C_1–C_6 mono- or C_1–C_6 di-alkyl substituted phenylamino, or C_1–C_6 mono- or C_1–C_6 di-alkoxy substituted phenylamino, provided that one of R_1 and R_2 is hydrogen; and

(b) B is selected from the group consisting of the unsubstituted, mono-, di- and tri-substituted aryl groups, phenyl and naphthyl; and

(c) B' is selected from the group consisting of:

(i) the unsubstituted, mono- and di-substituted aromatic heterocyclic groups dibenzothienyl, dibenzofuranyl, and carbazolyl, said aryl and aromatic heterocyclic substituents described in (b) and (c) being selected from the group consisting of hydroxy, amino, mono(C_1–C_6)alkylamino, di(C_1–C_6)alkylamino, morpholino, piperidino, 1-indolinyl, pyrrolidyl, 1-imidazolidyl, 2-imidazolin-1-yl, 2-pyrazolidyl, pyrazolinyl, 1-piperazinyl, C_1–C_6 alkyl, C_1–C_6 fluoroalkyl, C_1–C_6 chloroalkyl, C_1–C_6 alkoxy, mono(C_1–C_6)alkoxy(C_1–C_4)alkyl, acryloxy, methacryloxy, chloro and fluoro;

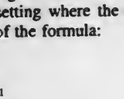
(ii) the groups represented by the following graphic formulae:



wherein D is carbon or oxygen and E is oxygen or substituted nitrogen, provided that when E is substituted nitrogen, D is carbon, said nitrogen substituent being selected from the group consisting of hydrogen, C_1–C_6 alkyl, and C_2–C_6 acyl, each R_{13} is C_1–C_6 alkyl, C_1–C_6 alkoxy, hydroxy, chloro or fluoro, R_{14} and R_{15} are each hydrogen or C_1–C_6 alkyl, and m is the integer 0, 1 or 2;

(iii) C_1–C_6 alkyl, C_1–C_6 fluoroalkyl, C_1–C_6 chloroalkyl, C_1–C_6 alkoxy(C_1–C_4)alkyl, C_3–C_6 cycloalkyl, mono(C_1–C_6)alkoxy(C_3–C_6)cycloalkyl, mono(C_1–C_6)alkyl(C_3–C_6) cycloalkyl, fluoro(C_3–C_6)cycloalkyl and chloro(C_3–C_6) cycloalkyl; and

(iv) the group represented by the following graphic formula:



wherein U is hydrogen or C_1–C_4 alkyl, and V is selected from the unsubstituted, mono- and di-substituted members of the group consisting of naphthyl, phenyl, furanyl and thienyl, wherein the substituents for each member of said group are C_1–C_4 alkyl, C_1–C_4 alkoxy, fluoro or chloro; or

(d) B and B' taken together form fluoren-9-ylidene, mono- or di-substituted fluoren-9-ylidene or a member selected from the group consisting of saturated C_3–C_{12} spiro-monocyclic hydrocarbon rings, saturated C_7–C_{12} spiro-bicyclic hydrocarbon rings, and saturated C_7–C_{12} spiro-tricyclic hydrocarbon rings, provided that B and B' do not form spiro-tricyclic adamantylidene, each of said fluoren-9-ylidene substituents being selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, fluoro and chloro.

5,578,253

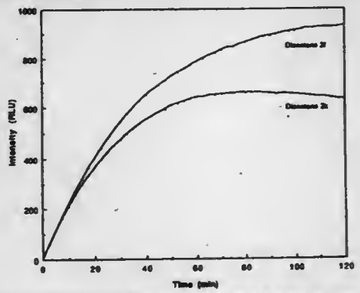
CHEMILUMINESCENT DIALKYL-SUBSTITUTED 1,2-DIOXETANE COMPOUNDS, METHODS OF SYNTHESIS AND USE

Arthur P. Schaap, Grosse Pointe Park, and Hashem Akhavan-Tafti, Sterling Heights, both of Mich., assignors to Lumigen, Inc., Southfield, Mich.

Filed Nov. 23, 1994, Ser. No. 344,124

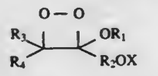
Int. Cl.[6] C09K *3/00*

U.S. Cl. 252—700 **35 Claims**



1. In a method for generating light from a stable dioxetane, the improvement comprising:

(a) providing in a setting where the light is to be produced a stable dioxetane of the formula:



wherein R_1 is selected from alkyl, cycloalkyl and aryl groups containing 1 to 12 carbon atoms which can additionally contain heteroatoms, wherein R_2 is selected from aryl, biaryl, heteroaryl, fused ring polycyclic aryl and fused ring polylcyclic heteroaryl groups which can contain additional substituents which permit the

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light to be produced, wherein R_3 and R_4 are selected independently from branched alkyl and cycloalkyl groups containing 3 to 8 carbon atoms which can additionally contain heteroatoms and which provide thermol stability, and wherein X is a chemically labile group which can be removed by a reagent selected from the group consisting of enzymes, electron donors, organic and inorganic bases, nucleophilic reagents and reducing agents; and

(b) triggering the stable 1,2-dioxetane by removing the X group with the reagent to produce light.

5,578,254

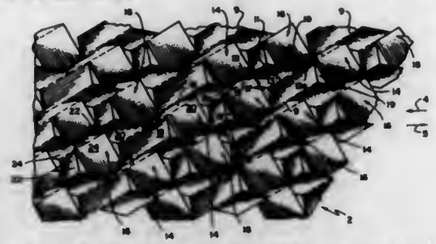
STRUCTURED PACKING ELEMENTS

Thomas W. Mix, 28 Atwood St., Wellesley, Mass. 02181

Continuation-in-part of Ser. No. 149,082, Nov. 9, 1993, Pat. No. 5,407,607. This application Apr. 14, 1995, Ser. No. 422,047

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—112.2 **28 Claims**



1. A packing element for enhancing contact between a first fluid having a predominant direction of flow and a second fluid, comprising:

a plurality of adjacently disposed layers of material, each of which is disposed generally in a plane aligned with said direction of flow;

each one of said layers having a plurality of rows of corrugations projecting out of said plane for deflecting said first fluid and said second fluid, each one of said corrugations including a pair of surfaces that are oppositely inclined with respect to said plane and that define an elongated vertex oriented in a diagonal direction with respect to said predominant direction of flow;

each one of said corrugations being configured so that said pair of surfaces are at least partially offset from each other along said diagonal direction;

said pair of surfaces being in alignment with each other along said diagonal direction at a shared region of said elongated vertex, said shared region being a selected portion of a length of said pair of surfaces.

5,578,255

METHOD OF MAKING CARBON FIBER REINFORCED CARBON COMPOSITES

Koubei Okuyama; Kazuo Niwa, and Toshihiro Fukagawa, all of Sakaide, Japan, assignors to Mitsubishi Chemical Corporation, Japan

Continuation of Ser. No. 896,009, Jun. 9, 1992, abandoned. This application Mar. 20, 1995, Ser. No. 406,786

Int. Cl.[6] C01B *31/00;* **D01F** *9/12;* **B32B** *31/04;* **B27N** *3/10*

U.S. Cl. 264—29.5 **12 Claims**

1. A method for preparing carbon fiber-reinforced carbon composites comprising the steps of:

(a) subjecting carbon fibers of 0.3 to 100 mm in length, composed of bundles of single fibers, to dry or wet fibrillation;

(b) preparing a carbon fiber sheet by orienting said carbon fibers in the planar direction while the carbon fibers remain randomly oriented in the other two directions, wherein the sheet has a carbon fiber weight per area of 10 to 500 g/m^2;

(c) impregnating the prepared sheet with a matrix of resins or pitches;

(d) laminating the impregnated sheet to produce a laminate;

(e) molding the laminate to obtain a molded product;

(f) baking the molded product to obtain a composite material; and

(g) subjecting the baked composite material to a densification treatment.

5,578,256

CONTROL OF INJECTION MOULDING MACHINE

Colin Austin, Kilsyth, Australia, assignor to Moldflow Pty, Ltd, Victoria, Australia

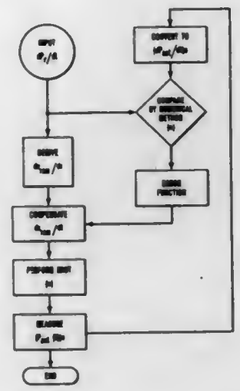
PCT No. PCT/AU91/00117, § 371 Date Sep. 20, 1993, § 102(e) Date Sep. 20, 1993, PCT Pub. No. WO91/14562, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 23, 1991, Ser. No. 927,317

Claims priority, application Australia, Mar. 28, 1990, PJ9350

Int. Cl.[6] B29C *45/77*

U.S. Cl. 264—40.1 **10 Claims**



1. A method for optimizing operation of an injection moulding machine having a ram for the production of moulded plastic articles, the machine having data processing means for providing said optimization, the method comprising the steps of:

inputting to the data processing means a reference plastic flow characteristic, including a gradient thereof, expressed as a function of time or ram displacement for the article or articles to be moulded, the reference plastic flow characteristic being on the basis of pressure or displacement of the plastic flow;

analyzing by the processor means a profile of a measured plastic flow characteristic obtained from an immediately preceding shot of the injection moulding machine to determine key changes in gradient of the profile of the measured plastic flow characteristic as compared to the profile of the gradient of the reference plastic flow characteristic, the measured plastic flow characteristic being on the basis of pressure or displacement of plastic flow expressed as a function of time or ram displacement;

comparing by the data processing means changes in the gradients between the reference plastic flow characteristic and the measured plastic flow characteristic to obtain an adjustment value;

adjusting the injection moulding machine in accordance with the adjustment value so obtained; and

performing a next shot based on the adjustment value to more accurately control operation of the injection moulding machine.

5,578,257

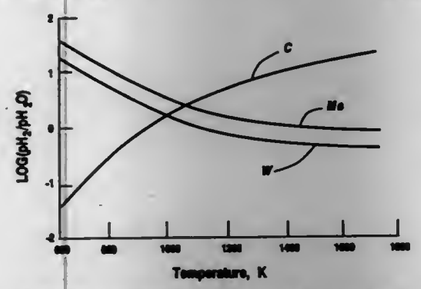
BINDER REMOVAL FROM MULTILAYER CERAMIC STRUCTURES

Jaak S. Van den Sype, Scarsdale, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Continuation of Ser. No. 169,533, Dec. 20, 1993, abandoned, which is a continuation of Ser. No. 930,937, Aug. 17, 1992, abandoned. This application Jan. 23, 1995, Ser. No. 376,790

Int. Cl.[6] C04B *35/10*

U.S. Cl. 264—40.1 **18 Claims**



1. A process of debinding to a low carbonaceous residue content of less than 500 ppm a green structure comprising tungsten or molybdenum metal circuitry deposited on a plurality of layers of ceramic powder containing alumina, and binder containing poly-(vinylbutyral), said process comprising:

(a) providing an initial dry atmosphere comprising inert gas and up to 20% hydrogen by volume and which is reducing or neutral with respect to the metal circuitry;

(b) initially heating the green structure in said initial dry atmosphere to a temperature between about 670° K. and 970° K. when the metal circuitry is predominantly tungsten and between about 670° K. and about 1070° K. when the metal circuitry is predominantly molybdenum, where the atmosphere can be both oxidizing with respect to carbon and neutral or reducing with respect to the metal circuitry;

(c) providing at said temperature a subsequent atmosphere comprising inert gas, water vapor and up to 20% hydrogen, said subsequent atmosphere being oxidizing with respect to carbon and neutral or reducing with respect to the metal circuitry; and

(d) subsequently heating the structure in said subsequent atmosphere to a temperature at which the evolution of binder and carbonaceous matter from the structure substantially ceases.

5,578,258

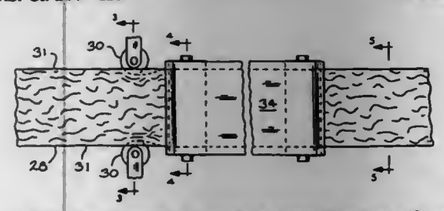
METHOD OF MAKING AN INSULATION ASSEMBLY

Larry J. Grant, Westerville; Raymond V. Monnin, Perrysburg, and James W. Scott, Newark, all of Ohio, assignors to Owens Corning Fiberglas Technology, Inc., Summit, Ill.

Division of Ser. No. 239,820, May 9, 1994, Pat. No. 5,486,401. This application Jun. 5, 1995, Ser. No. 465,477

Int. Cl.[6] B32B *31/20*

U.S. Cl. 264—118 **12 Claims**



1. A method of making an insulation assembly having a fibrous body with opposed side edges comprising the steps of:

placing a plurality of fibers on a path to form a pack,

moving said fibers along the path,

engaging the side edges to tuck the fibers inwardly and to establish the desired pack width, thereby forming concave surfaces on the side edges, and

cutting the formed pack to a predetermined length.

5,578,259

Patent Not Issued For This Number

5,578,260

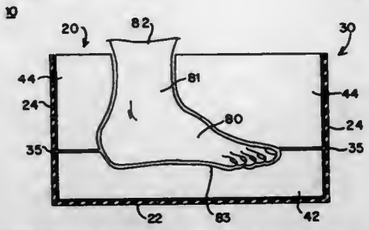
APPARATUS AND PROCESS FOR MAKING A MOLD OF THE FOOT, ANKLE, AND LOWER LEG

Danforth Desena, 4 Ivie Rd., Cape Elizabeth, Me. 04107

Filed Oct. 6, 1994, Ser. No. 319,151

Int. Cl.[6] B29C *33/40*

U.S. Cl. 264—223 **18 Claims**



1. An apparatus for making a mold of a foot, an ankle, and a lower leg of a person comprising a molding component means having a first section contactable with a lower portion of said foot and a second section contactable with an upper portion of said foot and with said ankle and said lower leg, wherein said first section and said second section are fabricated of one or more compressible materials that when formed into a shape retains that shape for an extended period of time, and wherein said compressible material of said first section is of higher density than said compressible material of said second section.

5,578,261

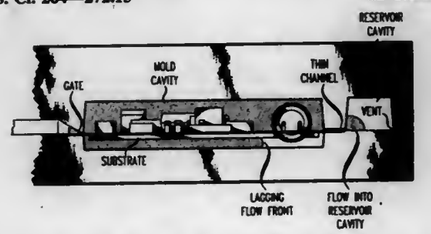
METHOD OF ENCAPSULATING LARGE SUBSTRATE DEVICES USING RESERVOIR CAVITIES FOR BALANCED MOLD FILLING

Louis T. Manzione, Summit, and John D. Weld, Succasunna, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 62,870, May 17, 1993, abandoned. This application Aug. 11, 1994, Ser. No. 289,327

Int. Cl.[6] B29C *45/14;70/70;33/10*

U.S. Cl. 264—272.15 **22 Claims**



1. A method for packaging an electronic device substrate in a plastic encapsulant, said substrate having a top surface and a bottom surface, said surfaces separated by a plurality of edges including first and second edges disposed on opposite sides of said substrate, the method comprising the steps of:

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placing the substrate to be encapsulated into a mold cavity of a mold, leaving an upper void space between the top surface of the substrate and a top surface of the mold cavity, a lower void space between the bottom surface of the substrate and a bottom surface of the mold cavity, and spaces along the edges of the substrate which connect the upper void space and the lower void space,

introducing plastic molding material into the mold cavity at a first region in the mold cavity adjacent to the first edge of the substrate,

flowing said molding material into the upper void space and into the lower void space so that the molding material flows with a first flow front through the upper void space and simultaneously with a second flow front through the lower void space with both of said flow fronts flowing toward a second region of the mold cavity located opposite to the first region and adjacent to the second edge of the substrate, with one of said flow fronts leading the other, thereby creating a leading flow front and a lagging flow front,

flowing said molding material in the leading flow front through an opening in said second region into an overflow reservoir outside the mold cavity, thereby causing the molding material to flow into the overflow reservoir prior to complete filling of the mold cavity with the molding material and preventing said leading flow front from entering the void space occupied by the lagging flow front, and

evacuating all air in the mold cavity through the opening into the overflow reservoir.

5,578,262

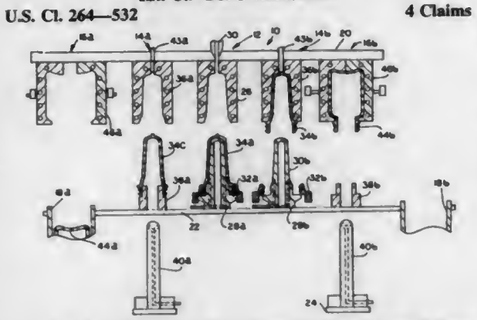
INJECTION BLOW MOLDING HAVING REDUCED MOLDING CYCLE TIMES

Paul Marcus, 6 Bayberry Dr., Saddle River, N.J. 07458

Division of Ser. No. 309,103, Sep. 20, 1994, Pat. No. 5,501,589, which is a continuation-in-part of Ser. No. 224,042, Apr. 7, 1994, and a continuation-in-part of Ser. No. 282,530, Jul. 28, 1994. This application Jun. 28, 1995, Ser. No. 495,855

Int. Cl.[6] B29C *49/06;49/64*

U.S. Cl. 264—532 **4 Claims**



1. A method of injection blow molding oriented finished blown bottles with minimum injection molding times with selectively increased parison cooling times for optimum production of selected oriented finished bottles, comprising:

a) injection molding a first parison at an injection molding station around a first core rod assembly;

b) providing cooling stations located on opposite sides of the injection molding station;

c) moving the first parison from the injection molding station to one of the cooling stations at which the first parison is cooled and supporting it along its entire length on and cooling the first parison by the first core rod assembly during this movement and while at the first cooling station;

d) injection molding a second parison at the injection molding station around a second core rod assembly while the first parison is being cooled at the one of the cooling stations;

e) moving the second parison to the other cooling station at which the second parison is cooled and supporting it along its entire length on and cooling the second parison by the second core rod assembly during this movement and while at the other cooling station;

f) injection molding a third parison at the injection molding station while the first parison is still being cooled at the one of the cooling stations and the second parison is being cooled at the other of the cooling stations;

g) providing at least two orient-stretch blow molding stations, one on one side and the other on an opposite side of the injection molding station with a cooling station interposed between the injection molding station and each orient-stretch blow molding station;

h) moving the first parison to the one of the orient-stretch blow molding stations; and moving the third parison to said one of the cooling stations and supporting it along its entire length on and cooling the third parison by said first core rod assembly during this movement and while at the one of the cooling stations;

i) injection molding a fourth parison at the injection molding station while the first parison is stretched and blown into a finished blown bottle and the second and third parisons are at the respective other and one of the cooling stations; and

repeating steps a) through i) to form other parisons and finished bottles.

5,578,263

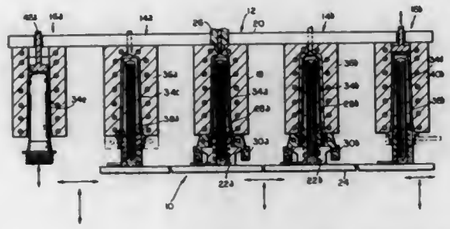
PARISON MOLDING METHOD WITH REDUCED MOLDING CYCLE TIMES

Paul Marcus, 6 Bayberry Dr., Saddle River, N.J. 07458

Division of Ser. No. 282,530, Jul. 28, 1994, Pat. No. 5,501,593, which is a continuation-in-part of Ser. No. 224,042, Apr. 7, 1994, abandoned. This application Jun. 29, 1995, Ser. No. 496,438

Int. Cl.[6] B29C *45/72*

U.S. Cl. 264—537 **5 Claims**



1. A method of injection molding and cooling a parison sufficiently to prevent distortion and deformation thereof within a minimum injection molding cycle time for optimum parison production, comprising;

injection molding a first parison at an injection molding station;

transferring the first parison to a first parison cooling station at which the first parison is cooled, the first cooling station having a cooling mold having a cavity substantially conforming to the shape of the first parison;

supporting the first parison throughout its length on and cooling the first parison by a first core rod assembly while at the injection molding station, during transfer to the first parison cooling station and while at the first parison cooling station;

injection molding a second parison at the injection molding station after the first parison is transferred to the first parison cooling station;

transferring the second parison to a second parison cooling station at which the second parison is cooled while the first parison remains at the first parison cooling station, the second cooling station having a cooling mold having a cavity substantially conforming to the shape of the second parison;

supporting the second parison throughout its length on and cooling the second parison by a second core rod assembly while at the injection molding station, during transfer to the second parison cooling station and while at the second parison cooling station;

disassociating the first core rod assembly from the first parison at the first parison cooling station while the first parison continues to be cooled and moving the first core rod assembly back to the injection molding station in synchronism with the movement of the second core rod assembly with the second parison supported thereon from the injection molding station to the second parison cooling station;

associating a third core rod assembly with the first parison at the first parison cooling station while the first parison continues to be cooled in synchronism with the return of the first core rod assembly to the injection molding station;

transferring the first parison to a first ejection station in synchronism with the movement of the first core rod assembly to the first parison cooling station;

supporting the first parison throughout its length on and cooling the first parison by the third core assembly while at the first parison cooling station, during transfer to the first ejection station and while at the first ejection station;

disassociating the third core rod assembly from the first parison at the first ejection station and moving the third core rod assembly back to the first parison cooling station in synchronism with the movement of the first core rod assembly from the first parison cooling station back to the injection molding station;

injection molding a third parison at the injection molding station;

transferring the third parison to the first parison cooling station while being supported by the first core rod assembly in synchronism with the transfer of the first parison from the first parison cooling station to the first ejection station;

disassociating the second core rod assembly from the second parison at the second parison cooling station while the second parison continues to be cooled and moving the second core rod assembly back to the injection molding station in synchronism with the movement of the first core rod assembly with the third parison supported thereon from the injection molding station to the first parison cooling station;

associating a fourth core rod assembly with the second parison at the second parison cooling station while the second parison continues to be cooled in synchronism with the return of the second core rod assembly to the injection molding station;

transferring the second parison to a second ejection station in synchronism with the movement of the second core rod assembly to the second parison cooling station;

supporting the second parison throughout its length on and cooling the second parison by the fourth core rod assembly while at the second parison cooling station, during transfer to the second ejection station and while at the second ejection station;

disassociating the fourth core rod assembly from the second parison at the second ejection station and moving the fourth core rod assembly back to the second parison cooling station in synchronism with the movement of the second core rod assembly from the second parison cooling station to the injection molding station;

prior to the transfer of the third parison to the first ejection station, ejecting the first parison from the first ejection station;

injection molding a fourth parison at the injection molding station;

repeating the recited synchronized cycle of steps of molding, transferring, cooling and ejecting parisons.

5,578,264

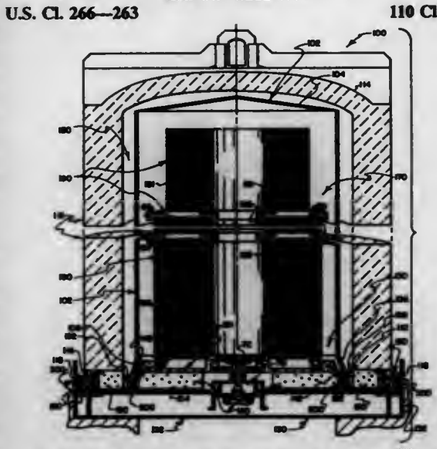
CAST REFRACTORY BASE SEGMENTS AND MODULAR FIBER SEAL SYSTEM FOR PLURAL-STACK ANNEALING FURNACE

Gary L. Coble, R.D. #2, Box 214, DuBois, Pa. 15801

Continuation-in-part of Ser. No. 32,593, Dec. 21, 1994, Ser. No. 32,592, Dec. 21, 1994, Ser. No. 32,591, Dec. 21, 1994, Ser. No. 32,587, Dec. 21, 1994, Ser. No. 32,589, Dec. 21, 1994, Ser. No. 32,590, Dec. 21, 1994, and Ser. No. 32,588, Dec. 21, 1994. This application Apr. 14, 1995, Ser. No. 423,010

Int. Cl.[6] C21B *7/04*

U.S. Cl. 266—263 **110 Claims**



1. A set of components that are assemblable atop a base support structure of a plural-stack annealing furnace to provide a rigid ceramic refractory base for extending in substantially concentric, annular relationship about each of a plurality of centrally located blower mounts of the furnace, for underlying and extending perimetrically about each of a plurality of charge support structures of the furnace that are of generally circular shape and that are configured to overlie the blower mounts to centrally support a plurality of charges of metal that are to be annealed, and for defining a concentrically extending, relatively resilient annular inner seals that extend perimetrically about the charge support structures, atop which inner enclosures of the furnace can be removably supported for defining a plurality of controlled environment treatment chambers within which charges of metal that are positioned atop the charge support structures can be confined for treatment during an annealing process, comprising:

a) inner cast ceramic refractory segment means for defining annular inner portions of the rigid ceramic refractory base, including a plurality of separate sets of cast refractory inner segments, with each of said sets being configured 1) to define a separate associated annular-shaped inner portion of the rigid ceramic refractory base for extending substantially concentrically about a separate associated one of a plurality of blower mounts of a plural-stack annealing furnace, 2) to underlie and support a separate associated one of a plurality of generally circular charge support structures of the furnace, and 3) to define a separate associated one of a plurality of substantially continuous, radially outwardly facing surfaces that each extends substantially concentrically about a separate associated one of the circular charge support structures at a location near the periphery thereof;

b) outer cast ceramic refractory segment means for defining outer portions of the rigid ceramic refractory base, including a plurality of cast refractory outer segments that, taken together, comprise a set of outer segments that can be arranged side by side to cooperatively define a generally rectangular outer region of the rigid ceramic refractory base atop which a generally rectangular outer enclosure of the furnace can be removably seated, and that, taken in smaller groups, comprise a plurality of outer segment sub-sets, with the segments of each sub-set being co-operable to extend about an associated

separate one of said annular-shaped inner portions to define arcuate portions of a separate associated, radially inwardly facing surface that extend concentrically about a separate associated one of said radially outwardly facing surfaces so as to cooperate therewith to define opposite, radially spaced sides of an associated inner seal positioning trough for extending circumferentially about a separate associated one of the circular charge support structures of the furnace;

c) inner seal means for being positioned in said troughs atop the base support structure of the furnace for defining a plurality of inner seals that each extend in an endless, substantially uninterrupted manner about the periphery of a separate associated one of the circular charge support structures, that each is capable of supporting the weight of a separate associated open-bottom inner enclosure of the furnace when bottom rim portions of the associated inner enclosure are seated thereatop, and that each is sufficiently resilient to cooperate with the seated bottom rim portions of the associated inner enclosure to form a gas impervious seal for isolating the environment of an associated treatment chamber;

d) with each of the inner seals including a separate set of ceramic fiber blocks for being arranged serially in a circumferentially extending, endless array within the confines of an associated one of said troughs, with each of said arrays also including a plurality of relatively thin, perforated metal members for being interspersed among the ceramic fiber blocks of the array to extend substantially radially at circumferentially spaced intervals within the confines of the associated trough, with said blocks having radially extending widths that are sufficient to extend substantially the full radially-measured distance between said radially outwardly facing surface and said radially outwardly facing surface of the associated trough at such locations therein as are to be occupied by said blocks, and with the blocks that are included in each array being sufficient in number and in size to require that said blocks be compressed in directions extending circumferentially with respect to the associated trough in order for all of said blocks to be inserted serially into the associated trough to form said array.

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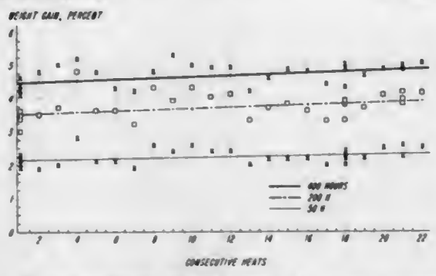
FERRITIC STAINLESS STEEL ALLOY FOR USE AS CATALYTIC CONVERTER MATERIAL

Lars Ericson, and Jan Kutka, both of Sandviken, Sweden, assignors to Sandvik AB, Sandviken, Sweden

Continuation-in-part of Ser. No. 200,362, Feb. 23, 1994, abandoned, which is a continuation of Ser. No. 941,783, Sep. 8, 1992, abandoned. This application Aug. 17, 1995, Ser. No. 516,508

Int. Cl.[6] C22C *38/18*

U.S. Cl. 420—40 **18 Claims**



1. A ferritic stainless steel alloy useful as catalytic converter material consisting essentially, by weight, of:

≦0.02% C
19–21% Cr
4.5–6% Al
0.01–0.03% Ce
0.02–0.05% total of rare earth elements
≦0.015% Ti
≦0.005% Zr
≧0.015% Mg+Ca
≦0.05% Mo
≦0.007% N

balance Fe plus impurities, a total amount of Mg and Ca being less than an amount which adversely affects surface rolling and oxidation properties of the alloy.

5,578,266

ALLOYS SUITABLE FOR HYDROGEN STORAGE, METHOD OF PRODUCING THE SAME AND ELECTRODE USING THE SAME

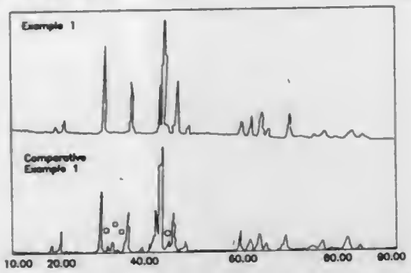
Yasushi Takai, Matsudo; Kazuhiro Yamada, Tokorozawa; Takashi Toide, Takefu, and Shigenobu Tajima, Kiyose, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 19, 1994, Ser. No. 308,327

Claims priority, application Japan, Sep. 20, 1993, 5-257846

Int. Cl.[6] C22C *1/02*

U.S. Cl. 420—83 **2 Claims**



1. A method of producing a hydrogen storage alloy: which comprises weighing out and mixing metallic elements A and B in such amounts that the resulting mixture can have a composition $A_xB_{5.0}$, adding carbon to the metal mixture in an amount ranging from 30 to 500 ppm, fusing the admixture homogeneously, and then cooling the homogeneously fused metallic mixture at a speed of from 4° C./sec to less than 100° C./sec to deposit only the intermetallic compound consisting of AB_5 phase and represented by the stoichiometric formula $A_xB_{5.0}$; wherein A is La or a mixture of La with at least one rare earth metal other than La, B is at least one metal selected from a group consisting of Al, Co, Cu, Cr, Fe, Mn, Ni, Ti, V, Zn and Zr, and x is a rational number in the range $0.95 \leqq x \leqq 1.00$.

5,578,267

CYLINDRICAL BLOOD HEATER/OXYGENATOR

Louis C. Cosentino; Jeffrey A. Lee, both of Plymouth, and Daniel A. Baker, Minnetonka, all of Minn., assignors to Minntech Corporation, Minneapolis, Minn.

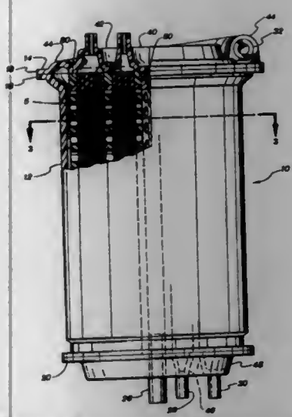
Continuation of Ser. No. 263,817, Jun. 22, 1994, abandoned, which is a division of Ser. No. 115,996, Sep. 2, 1993, abandoned, which is a continuation of Ser. No. 844,620, May 11, 1992, Pat. No. 5,270,004. This application Aug. 4, 1995, Ser. No. 511,287

Int. Cl.[6] A61M *1/14*

U.S. Cl. 422—46 **15 Claims**

1. A combination heat exchanger and oxygenator device comprising:

a housing including structure defining first and second compartments, a blood inlet, a blood outlet, a heat exchange medium inlet, a heat exchange medium outlet, an oxygenating fluid inlet and an oxygenating fluid outlet, said housing having a central axis, said second compartment being concentric to said axis;



structure defining a flow passage for blood through said housing from said blood inlet to said blood outlet;

structure defining a flow passage for heat exchange medium from said heat exchange medium inlet to said heat exchange medium outlet;

structure defining a flow passage for oxygenating fluid from said oxygenating fluid inlet to said oxygenating fluid outlet;

a plurality of hollow gas exchange tubes disposed in said second compartment;

said blood flow passage comprising a heat exchange path through said first compartment, said blood flow passage further comprising a central path extending along at least a portion of said central axis of said housing, said blood flow passage further comprising an oxygenating path extending generally radially through said second compartment, around said gas exchange tubes, said central path being upstream of said oxygenating path, whereby blood flows axially along at least a portion of the central axis of said housing and then generally radially through said second compartment.

5,578,268

DEVICE FOR THE TRANSFER, AGITATION AND SAMPLING OF BLOOD PRODUCTS IN TUBES GROUPED IN CASSETTES

Henri Champseix, Montferrier/lez, and Serge Champseix, Teyran, both of France, assignors to ABX, Montpellier, France

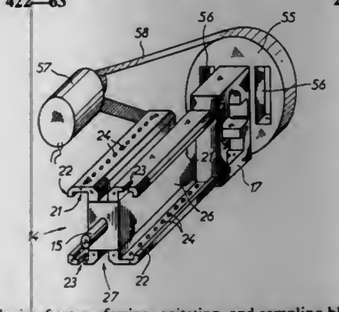
PCT No. PCT/FR93/00553, § 371 Date Dec. 9, 1994, § 102(e) Date Dec. 9, 1994, PCT Pub. No. WO93/25885, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 10, 1993, Ser. No. 351,298

Claims priority, application France, Jun. 11, 1992, 92 07036

Int. Cl.[6] G01N *35/10*

U.S. Cl. 422—63 **29 Claims**



1. A device for transferring, agitating, and sampling blood products sealed in tubes by pierceable bungs, wherein said tubes are grouped together in cassettes, comprising:

storage means for holding one or more cassettes of tubes sealed by pierceable bungs;

means for extracting a cassette from said storage means and transferring said cassette to, and positioning said cassette in a rotary carriage means;

rotary carriage means for rotating said tubes and thereby mixing their contents and for temporarily immobilizing said tubes in an inverted vertical position for sampling, comprising two U-shaped cradles for receiving and holding said cassettes, wherein said U-shaped cradles are symmetrical to, disposed on, and opening outward from, a rotatable shaft;

sampling means for removing one or more samples of said blood products from said tubes;

means for ejecting said cassette from said cradles; and

a reception bin for receiving cassettes ejected from said cradles.

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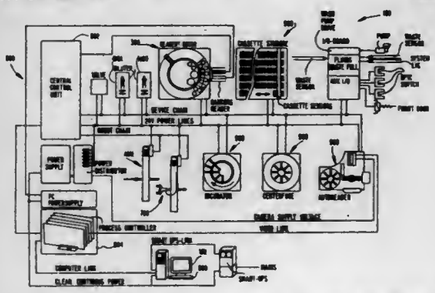
AUTOMATED BLOOD ANALYSIS SYSTEM WITH AN INTEGRAL CENTRIFUGE

Mykola Yaremko, Livingston; Rosemary Chachowski, Manville, both of N.J.; Marcel Frischknecht, Oberduernten, Switzerland; Gregor Batliner, Hombrechtikon, Switzerland; Linus Flueler, Bubikon, Switzerland; Marco Forster, Grueningen, Switzerland; Martin Gander, Landquart, Switzerland; Beat Gretener, Meilen, Switzerland; Walter Imfeld, Hombrechtikon, Switzerland; Hansjoerg Kunz, Zuerich, Switzerland; Martin Kuster, Eschenbach, Switzerland, and Karl Puchegger, Salzburg, Austria, assignors to Ortho Diagnostic Systems Inc., Raritan, N.J.

Continuation of Ser. No. 75,303, Jun. 11, 1993, abandoned. This application Dec. 8, 1993, Ser. No. 163,997

Int. Cl.[6] G01N *9/30*

U.S. Cl. 422—64 **3 Claims**



1. An automated analysis system for analyzing aqueous solutions, comprising:

an incubator station for holding and incubating a plurality of containers;

a sample station for holding a plurality of samples of aqueous solutions;

a reagent station for holding a plurality of reagents;

a pipette assembly for drawing aqueous solutions from the sample station, for drawing reagents from the reagent stations and for dispensing aqueous solutions and reagents into the containers at the incubator station;

a centrifuge for centrifuging the containers;

an analysis station for analyzing the containers to identify reactions therein; and

a transport assembly for transporting the containers between the incubator station, the centrifuge, and the analysis station; wherein the centrifuge includes:

a rotor including a rotatable body and a plurality of arms connected to and radially extending outward from the body;

motor means connected to the rotor to rotate the rotor; and

a plurality of container mounting brackets connected to the arms of the rotor, and forming container receiving means to hold the container on the rotor for rotary movement therewith and for pivotal movement relative to the arms of the rotor,

wherein each of the mounting brackets is mounted on a respective one of the rotor arms and includes

i) a left side member,

ii) a right side member,

iii) means pivotally mounting the left and right side members on opposite lateral sides of the respective one of the rotor arms, and

iv) means connecting the left and right side members together for pivotal movement together, wherein said container receiving means are formed by adjacent left and right side members of each pair of adjacent mounting brackets.

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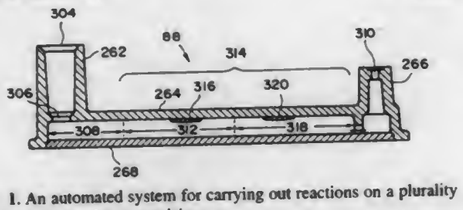
SYSTEM FOR NUCLEIC ACID BASED DIAGNOSTIC ASSAY

Allen S. Reichler, Owing Mills; David J. Antol, Baldwin; Michael L. Lamos, Westminster, all of Md.; Peter A. Bourdelle, Glen Rock, and Scott D. Hildebrand, Red Lion, both of Pa., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Mar. 24, 1995, Ser. No. 409,821

Int. Cl.[6] G01N *21/05*

U.S. Cl. 422—67 **21 Claims**



1. An automated system for carrying out reactions on a plurality of liquid samples, comprising:

a plurality of reaction devices in which said liquid samples are receivable, each of said reaction devices including a sample area for receiving a liquid sample, a reaction area separate from said sample area into which said liquid sample is movable from said sample area to carry out a reaction on said sample, and a pneumatic port for allowing air to be aspirated from and dispensed into said reaction device to move said liquid sample between said sample area and said reaction area;

a reaction station adapted to hold said plurality of reaction devices;

a robotically controlled aspiration and dispensing head adapted to move into contact with said pneumatic ports of said reaction devices, and to aspirate air from and dispense air into said pneumatic ports in order to move the liquid samples in said reaction devices between said sample areas and said reaction areas; and

a programmable control device for causing said robotically controlled aspiration and dispensing head to move into contact with said pneumatic ports of said reaction devices, and to withdraw air from and dispense air into said reaction devices in order to move said liquid samples between said sample areas and said reaction areas.

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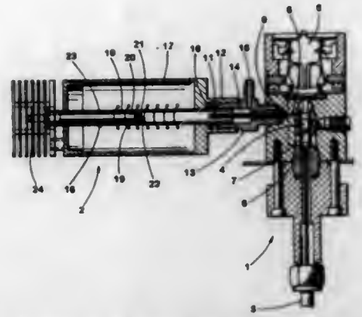
TANDEM PHOTOIONIZATION DETECTOR AND HALOGEN SPECIFIC DETECTOR

Richard K. Simon; Michael L. Duffy; Michael J. Tanner, all of College Station; Mathias N. Barringer, and Nathan C. Rawls, both of Bryan, all of Tex., assignors to O.I. Corporation, College Station, Tex.

Filed Mar. 1, 1995, Ser. No. 397,437

Int. Cl.[6] G01N *27/00;21/00*

U.S. Cl. 422—98 **1 Claim**



1. A system for detecting gaseous compounds comprising:

(a) a photoionization detector having an ionization chamber, means for introducing a sample into the ionization chamber, a light source, at least two electrodes, and at least one exit port, and means for measuring the current between the electrodes;

(b) a halogen specific detector having a reactor core, the reactor core housing a probe assembly comprising an anode, a cathode and support rod, the support rod consisting at least partially of an alkali material, a connection channel between the photoionization detector and the reactor core for introducing the sample from the photoionization detector into the reactor core, a wire around the reactor core for heating the reactor core sufficiently to oxidatively pyrolyze at least a portion of the sample, and sensing means for measuring charges being transferred between the anode and cathode; and

(c) means for detecting gaseous compounds in the sample from the measured current and the measured charges.

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REAGENT KIT AND ANALYZER

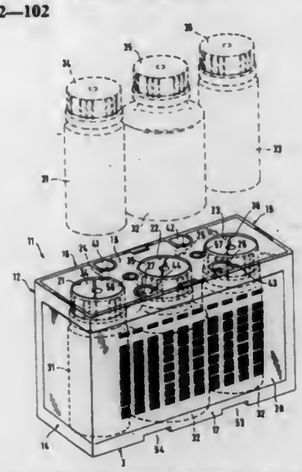
Bruno Koch, Cham, and Gottlieb Schacher, Ebikon, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 40,044, Mar. 30, 1993, abandoned. This application Jun. 24, 1994, Ser. No. 265,608

Claims priority, application Switzerland, Apr. 9, 1992, 1165/92

Int. Cl.[6] B01L *3/00*

U.S. Cl. 422—102 **5 Claims**



1. A reagent kit adapted for use in an analyzer having a pipetting device, the reagent kit comprising (i) a casing having a bottom, side walls and a removable lid and (ii) at least one individually removable reagent container, wherein:

(a) the bottom, side walls, and lid are configured and dimensioned to enclose and keep therewithin the at least one reagent container;

(b) the lid defines at least one opening which is positioned such that the at least one reagent container is accessible for automatic pipetting operations by a pipetting device; and

(c) the lid defines at least one other opening which is of sufficient dimension for circulating air through the interior of the casing and around the at least one reagent container, within which opening is positioned a protruding surface configured and dimensioned to be gripped by a gripper means of the analyzer for automatic transport of the reagent kit from a first position to a second position.

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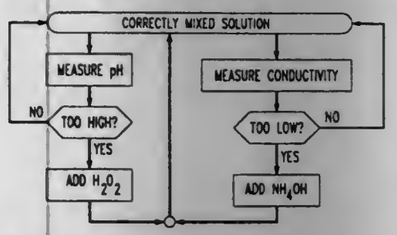
APPARATUS FOR CONTINUOUSLY CONTROLLING THE PEROXIDE AND AMMONIA CONCENTRATION IN A BATH

Karrie J. Hanson, Westfield; Gregg S. Higashi, and Joseph M. Rosamilia, both of Berkeley Heights, all of N.J., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Division of Ser. No. 228,336, Apr. 15, 1994, Pat. No. 5,472,516. This application Aug. 18, 1995, Ser. No. 516,712

Int. Cl.[6] G05D *7/00*

U.S. Cl. 422—110 **3 Claims**



1. An apparatus for cleaning substrates using an aqueous solution of hydrogen peroxide and ammonium hydroxide comprising:

a bath comprising an aqueous solution of hydrogen peroxide and ammonium hydroxide;

a first controller means for adding hydrogen peroxide to the aqueous solution which measures the pH of the solution, wherein the pH is relatable to the concentration of hydrogen peroxide in the aqueous solution, and which adds hydrogen peroxide to the solution if the pH is not within a desired range, said first controller means comprising a pH meter and a flow regulator responsive to the pH meter measurement and a second controller means for adding ammonia to the aqueous solution which measures the conductivity of the aqueous solution, wherein the conductivity measurement is relatable to the concentration of ammonium hydroxide in the aqueous solution, and which adds ammonia to the solution if the concentration of ammonium hydroxide in the bath is determined to be below a certain level, said second controller means comprising a conductivity meter and a flow regulator responsive to the conductivity meter.

5,578,274

SHIPBOARD APPARATUS FOR HEAT-TREATING WOOD AND WOOD PRODUCTS

Marc A. Seidner, 234 Conway Ave., Los Angeles, Calif. 90024

Continuation of Ser. No. 261,715, Jun. 17, 1994, Pat. No. 5,447,686. This application Jun. 7, 1995, Ser. No. 485,435

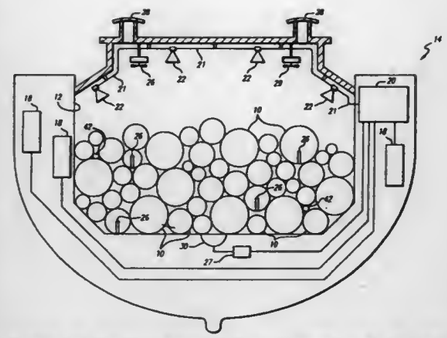
Int. Cl.[6] A61L *2/06*

U.S. Cl. 422—111 **64 Claims**

33. Shipboard apparatus for treating green wood comprising:

a ship having at least one hold configured to accept green wood;

a boiler configured to convert water into steam;



at least one nozzle configured to direct steam from the boiler into the hold.

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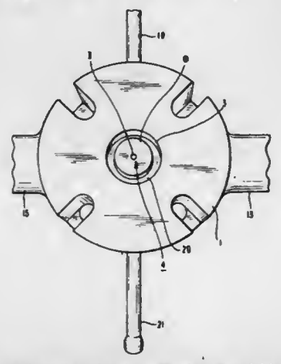
IN-LINE SAMPLING WITH CONTINUOUS FLUSHING FOR FRICTION SENSITIVE LIQUID NITRATE ESTER COMPOSITIONS

Steven J. Rosenberg, Flanders; Shpend Ismaili, Hasbrouck Hts., both of N.J.; Eldon K. Hurley, Wilmington, Del., and Thomas H. Langford, Salisburg, N.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 16, 1995, Ser. No. 390,458

Int. Cl.[6] B01F *7/08*

U.S. Cl. 422—163 **11 Claims**



1. In a production plant for the manufacture of friction sensitive liquid nitrate esters that are used as energetic liquids, said esters being selected from the group consisting of nitroglycerine and diethylene glycol dinitrate, said plant having a reaction unit to produce compositions of the liquid nitrate esters, a storage unit for storage of said compositions, the improvement comprising having a transfer line connected to the reaction unit, a transfer line connected to the storage unit, and a sampler connected to at least one of the transfer lines, and wherein the sampler is a remotely operable, inline sampler for taking samples of the liquid nitrate ester composition while said composition flows through said transfer line and sampler, the sampler having a flow-through chamber with an offtake line, a moveable membrane and a continuous flush chamber, the membrane being the only moving part in the sampler and the surfaces of the sampler in contact with the liquid nitrate composition being formed from a single piece of stainless steel, and where (a) the flow-through chamber is in line with the transfer line, (b) the offtake line is of very small volume and diameter relative to the flow-through chamber, (c) the membrane is moveable from a closed position at which it closes the bottom of the offtake line and an open position at which a predetermined amount

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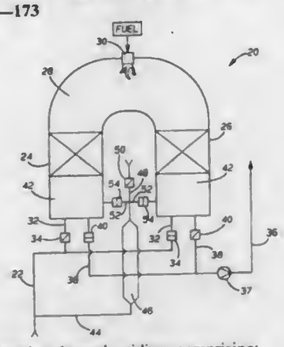
of sample is released from the offtake line, (d) the flush chamber has a continuous water supply and is positioned to flush sample released from the offtake line when the membrane is open and to flush over the membrane when the membrane is closed, and (e) a collector is connected to the sampler for collection of the flush effluent.

5,578,276

REGENERATIVE THERMAL OXIDIZER WITH TWO HEAT EXCHANGERS

Joseph M. Klobucar, Plymouth, Mich., assignor to Durr Industries, Inc., Plymouth, Mich.

Filed Feb. 22, 1995, Ser. No. 392,187
Int. Cl.[6] F01N *3/10*
U.S. Cl. 422—173 **9 Claims**



1. A regenerative thermal oxidizer comprising:

a first and a second heat exchanger communicating with a common combustion area;

an inlet manifold communicating with a source of gas to be cleaned, said inlet manifold communicating with an inlet passage leading to each of said first and second heat exchangers, each of said inlet passages including a selectively open inlet valve;

an outlet manifold communicating with an outlet passage leading to each of said first and second heat exchangers, and an outlet valve received in each of said outlet passages; and

a purge chamber, said purge chamber communicating with said inlet manifold such that a portion of the gas to be cleaned is allowed to enter said purge chamber, said purge chamber communicating with purge passages leading to each of said first and second heat exchangers, and a purge valve received in each of said purge passages to allow flow of a clean purge gas from said purge chamber and into said heat exchangers.

5,578,277

MODULAR CATALYTIC CONVERTER AND MUFFLER FOR INTERNAL COMBUSTION ENGINE

Scott T. White, East Peoria; Aaron L. Smith, East Peoria; Daniel J. Learned, Peoria; Randy N. Peterson, Peoria, and William H. Lane, Chillicothe, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

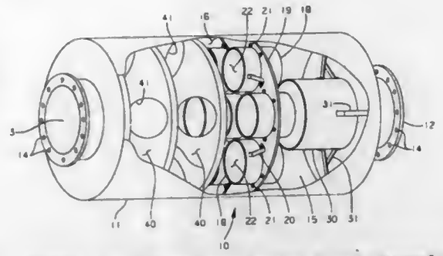
Continuation of Ser. No. 265,284, Jun. 24, 1994, abandoned. This application Oct. 17, 1995, Ser. No. 544,365
Int. Cl.[6] F01N *3/10*
U.S. Cl. 422—180 **19 Claims**

1. A modular catalytic converter and muffler for treating combustion exhaust comprising:

a housing having an inlet, an outlet and an exhaust flow path from said inlet to said outlet;

a flow distributor mounted to said housing in said flow path downstream of said inlet;

a plurality of tubular sub-cans with walls substantially impervious to combustion exhaust, mounted in said housing and



arranged axially parallel to one another in said exhaust flow path downstream of said flow distributor;

at least one catalytic converter substrate mounted in each of said tubular sub-cans;

wherein said flow distributor includes a plurality of channels dividing said exhaust flow path into a plurality of sub paths that reconverge downstream of said catalytic converter substrates, said channels being sized to divide said combustion exhaust into substantially equal portions, and said channels being positioned so that each of said substantially equal portions are directed to a different one of said tubular sub-cans; and

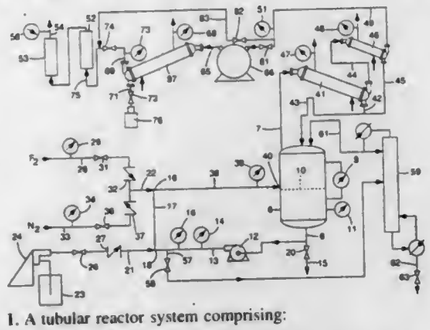
means, mounted within said housing in said exhaust flow path upstream from said outlet, for muffling sound in said combustion exhaust.

5,578,278

TUBULAR REACTOR SYSTEM FOR DIRECT FLUORINATION

David J. Fall, Hudson, Wis., and Miguel A. Guerra, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 130,764, Oct. 4, 1993, Pat. No. 5,488,142. This application May 31, 1995, Ser. No. 455,096
Int. Cl.[6] B01J *10/00*
U.S. Cl. 422—234 **2 Claims**



I. A tubular reactor system comprising:

A. a tubular reactor;

B. means to introduce fluorine gas into the tubular reactor;

C. a gas-liquid phase separator connected to the tubular reactor to receive the reactor product stream therefrom and separate gaseous and liquid phases of such stream;

D. a first conduit attached to the gas-liquid separator by which the liquid phase may exit the separator;

E. a pumping means, operating under turbulent flow conditions, to convey the liquid phase by means of the first conduit from said separator to be recycled to the tubular reactor by means of a second conduit connected to the discharge of the pumping means such that turbulent flow conditions, characterized by a Reynolds number of at least about 3,000, are present in the tubular reactor; and

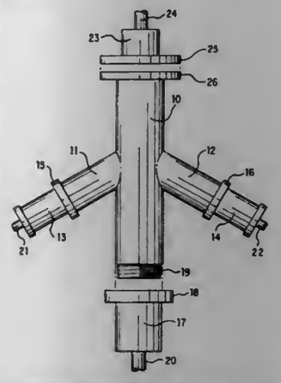
F. means to introduce organic feed which can be fluorinated into the recycle stream.

5,578,279

DUAL JET CRYSTALLIZER APPARATUS

Richard Dauer, Longmont, Colo.; Jonathan E. Mokrauer, Westfield, and Walter J. McKeel, Cliffwood Beach, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

PCT No. PCT/US93/09268, § 371 Date Jun. 5, 1995, § 102(e) Date Jun. 5, 1995, PCT Pub. No. WO94/07582, PCT Pub. Date Apr. 14, 1994
PCT Filed Sep. 29, 1993, Ser. No. 411,614
Int. Cl.[6] B01D *9/00*
U.S. Cl. 422—245.1 **5 Claims**



1. A dual jet crystallizer apparatus comprising:

(a) a tubular crystallization and mixing chamber having a first end and a second end and being open at each end, and having a pair of opposed tubular arms intermediate its ends, each of said arms being angularly disposed such that the angle included by the longitudinal axis of each of said arms and the longitudinal axis of said chamber is from about 60° to about 80°, the open ends of each of said arms having means to removably receive a jet nozzle therein;

(b) means at the first end of said chamber to adjust the crystallization volume within said chamber;

(c) means at the second end of said chamber to discharge crystallized product formed in said chamber;

(d) a pair of jet nozzles adapted to be removably secured to said arms, that end of each of said jet nozzles secured to said arms having a jet nozzle tip formed therein defining a nozzle tip orifice, having a diameter being from about 1/16" to about 3/8" and having an elongated bore, the length of said bore being no greater than about 10 times said diameter, the opposite end of one of said jet nozzles having means to receive and deliver compound to said chamber to be crystallized and the opposite end of the other jet nozzle having means to receive and deliver to said chamber a crystallizing agent for said compound; and,

(e) means intermediate the ends of said jet nozzles to adjust the distance between said jet nozzle tips and the longitudinal axis of said chamber.

5,578,280

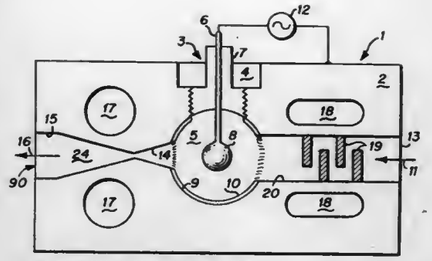
OZONE GENERATOR WITH A GENERALLY SPHERICAL CORONA CHAMBER

Abdullah Kazi; Roy Hays, and James Buckley, all of San Jose, Calif., assignors to Americal Environmental Technologies, Inc., Santa Clara, Calif.

Filed Apr. 28, 1995, Ser. No. 431,153
Int. Cl.[6] B01J *19/12*
U.S. Cl. 422—186.07 **12 Claims**

1. An ozone generator apparatus for conversion of an oxygen-containing feed gas to an ozone-containing product gas, comprising:

a) a generally spherical corona chamber having:



i) at least one interior wall surface,

ii) a feed gas inlet and a product gas outlet port in said interior wall surface, and

iii) an electrode port in said interior wall surface;

b) an electrode assembly comprising:

i) an electrode member disposed in said corona chamber, and

ii) an electrically conductive stem member disposed to pass through said electrode port while insulated from said corona chamber and terminating in said chamber and connected to said electrode member;

c) said electrode member is shaped to be spatially concentric with and spaced inwardly of said interior wall surface of said corona chamber to provide an annular space therebetween configured to provide a substantially uniform electric field upon application of an electric potential between said electrode member and said corona chamber wall;

d) means for cooling at least one of:

i) oxygen-containing feed gas entering said corona chamber via said inlet port,

ii) said corona chamber, and

iii) ozone-containing product gas withdrawn from said corona chamber via said outlet port;

e) said cooling is of a capacity sufficient to suppress ozone to oxygen reverse reaction; and

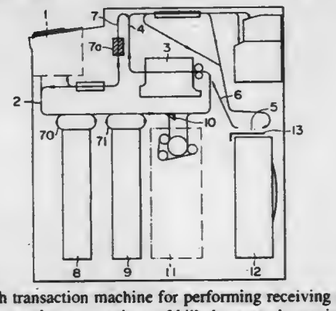
f) said corona chamber has a volume selected to provide feed gas retention time sufficient to thermodynamically maximize the production of ozone.

5,578,281

CASH TRANSACTION MACHINE

Minoru Kadowaki, Toyota; Atsuko Mizoguchi, Owariasahi; Ryozo Nakamura, Aichi-ken; Riichi Kato, Owariasahi; Kousuke Noda, Tsuchiura, and Hiroyuki Kashiwada, Nagoya, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 26, 1994, Ser. No. 297,093
Claims priority, application Japan, Aug. 27, 1993, 5-212487; Dec. 16, 1993, 5-316267
Int. Cl.[6] D21H *21/36;* **A61L** *2/04;* **G06F** *15/30*
U.S. Cl. 422—307 **49 Claims**



1. A cash transaction machine for performing receiving transactions and/or paying transactions of bills by a user's manipulation, comprising:

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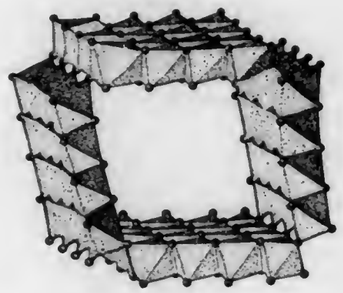
a receptacle for depositing and withdrawing said bills;
a first storage means for storing said bills;
transport means for transferring said bills between said receptacle and said first storage means, said transport means including transport paths for said bills;
heating means for heating said bills; and
transfer means for transferring said bills between one of said transport paths and said heating means,
wherein said heating means and said first storage means are arranged in said cash transaction machine such that said storing of said bills and said heating of said bills take place in respective positions along one side of one of said transport paths.

5,578,282

OCTAHEDRAL MOLECULAR SIEVE POSSESSING (4×4) TUNNEL STRUCTURE AND METHOD OF ITS PRODUCTION

Chi-Lin O'Young, Poughkeepsie, N.Y., and Steven L. Suib, Storrs, Conn., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 7, 1994, Ser. No. 335,498
Int. Cl.[6] C01G *45/00;45/12*
U.S. Cl. 423—50 **17 Claims**



1. A manganese oxide octahedral molecular sieve possessing the composition:

$$A_aM_bMn_{16-b}O_{32}\cdot nH_2O$$

wherein A is a +1 or +2 tunnel cation or combination thereof, $0<a\leq 8$, M is a +1, +2, +3 or +4 framework-substituting metal cation or combination thereof, $0<b<16$ and $n\geq 0$.

5,578,283

CATALYTIC OXIDATION CATALYST AND METHOD FOR CONTROLLING VOC, CO AND HALOGENATED ORGANIC EMISSIONS

James M. Chen, Edison, and Pascaline H. Nguyen, Morganville, both of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Dec. 30, 1994, Ser. No. 366,537
Int. Cl.[6] C01B *7/00*
U.S. Cl. 423—240 R **28 Claims**

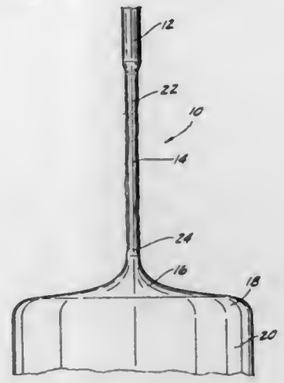
1. A catalyst for treating a gas stream which contains compounds selected from the group consisting of halogenated organic compounds, non-halogenated organic compounds, carbon monoxide and mixtures thereof, said catalyst comprising at least one platinum group metal, zirconium oxide and manganese oxide in an amount of at least about 10 weight percent (as Mn_2O_3, and wherein the catalyst is substantially free of vanadium.

5,578,284

SILICON SINGLE CRYSTAL HAVING ELIMINATED DISLOCATION IN ITS NECK

Sadasivam Chandrasekhar, St. Peters, and Kyong-Min Kim, St. Charles, both of Mo., assignors to MEMC Electronic Materials, Inc., St. Peters, Mo.

Filed Jun. 7, 1995, Ser. No. 483,304
Int. Cl.[6] C01B *33/02*
U.S. Cl. 423—348 **17 Claims**



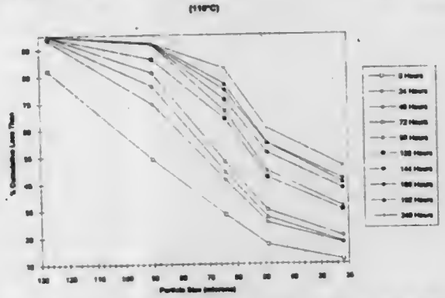
1. A silicon single crystal prepared by the Czochralski method comprising:
a neck having an upper portion, an intermediate portion, and a lower portion, the upper portion containing dislocations, the intermediate portion being between the upper and lower portions, a majority of the intermediate and lower portions having a diameter greater than 10 millimeters, and the lower portion being free of dislocations;
an outwardly flaring segment adjacent the lower portion of the neck; and
a body adjacent the outwardly flaring segment.

5,578,285

PROCESS FOR REDUCING THE AVERAGE PARTICLE SIZE OF AMMONIUM PARATUNGSTATE POWDERS

Thomas A. Wolfe, Wyalusing, Pa., assignor to Osram Sylvania Inc., Danvers, Mass.

Filed Dec. 20, 1994, Ser. No. 359,803
Int. Cl.[6] C01G *41/02*
U.S. Cl. 423—593 **19 Claims**



1. A process for reducing the average particle size of an ammonium paratungstate powder comprising the steps of heating the ammonium paratungstate powder at a temperature of between about 110° C. to about 205° C. for a time sufficient to reduce the average particle size of the ammonium paratungstate powder by at least 20 percent.

5,578,286

TWO POWDER SYNTHESIS OF HYDROTALCITE-LIKE COMPOUNDS WITH DIVALENT OR POLYVALENT ORGANIC ANIONS

Edwards S. Martin, New Kensington; John M. Stinson, Murrysville; Vito Cedro, III, Export, and William E. Horn, Jr., Gibsonia, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 290,220, Aug. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 235,504, Apr. 29, 1994, Pat. No. 5,514,361. This application Jun. 7, 1995, Ser. No. 482,390
Int. Cl.[6] C07F *11/00;13/00*
U.S. Cl. 423—593 **47 Claims**

1. A method for making a layered double hydroxide with at least one dicarboxylate or polycarboxylate anion intercalated therein, said layered double hydroxide having the formula: $A_{1-x}B_x(OH)_2C_z\cdot mH_2O$, where A represents a divalent metal cation, B represents a trivalent metal cation, C represents a mono- to polyvalent anion, and x, z and m satisfy the following conditions: $0.09<x<0.67$; $z=x/n$, where n= the charge on the anion; and $2>m>0.5$, said method comprising:
(a) reacting at least one divalent metal compound and at least one trivalent metal oxide powder in an aqueous suspension to form a double hydroxide intermediate containing said divalent metal and said trivalent metal;
(b) contacting the double hydroxide intermediate with a divalent or polyvalent organic anion to make an intercalated layered double hydroxide; and
(c) separating said intercalated layered double hydroxide from the suspension.

36. A method for making a layered double hydroxide with at least one dicarboxylate or polycarboxylate anion intercalated therein, said method comprising:
(a) reacting meixnerite with a divalent or polyvalent organic anion to make an intercalated layered double hydroxide; and
(b) separating said intercalated layered double hydroxide from the suspension.

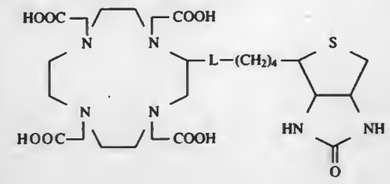
5,578,287

THREE-STEP PRETARGETING METHODS USING IMPROVED BIOTIN-ACTIVE AGENT

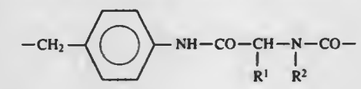
Louis J. Theodore, Lynnwood; John M. Reno, Brier, and Linda M. Gustavson, Seattle, all of Wash., assignors to Neorx Corporation, Seattle, Wash.

Continuation-in-part of Ser. No. 995,383, Dec. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 895,588, Jun. 9, 1992, Pat. No. 5,283,342. This application Nov. 23, 1993, Ser. No. 156,614
Int. Cl.[6] A61K *51/10;31/415;* **C07K** *16/30;* **C07D** *257/02*
U.S. Cl. 424—1.49 **18 Claims**

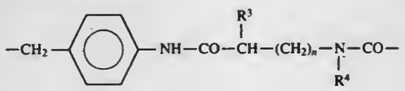
1. An improved method of enhancing active agent localization at a target site in a mammalian recipient, which method comprises:
administering to the recipient a first conjugate comprising an antibody or antigen-binding antibody fragment and a biotin, whereupon the first conjugate localizes to the target site;
administering to the recipient avidin or streptavidin; and thereupon administering to the recipient a second conjugate comprising biotin, a linker resistant to biotinidase cleavage and an active agent, wherein second agent localization at the target site is enhanced as a result of prior localization of the first conjugate and wherein the improvement is that the second conjugate comprises a biotinidase-resistant biotin-DOTA compound of the following formula:



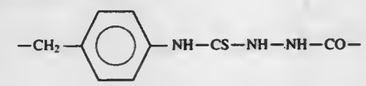
wherein a linker L is selected from the group consisting of:
1) a D-amino acid-containing linker of the formula



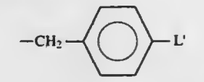
2) a linker of the formula



3) a linker of the formula



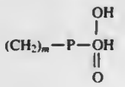
4) a linker of the formula



wherein L' is selected from the group consisting of:
a) —NH—CO—$(CH_2)_n$—O;
b) —NH—;

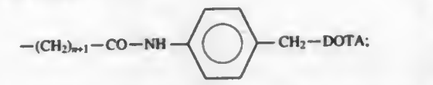
c) —NH—CO—CH_2—N—R*—;
R'

d) —NH—CS—NH—; and
e) —NH—CO—$(CH_2)_n$—NH—,
wherein R^1 is hydrogen, lower alkyl; lower alkyl substituted with one or more hydrophilic groups selected from the group consisting of $(CH_2)_m$—OH, $(CH_2)_m$—OSO_3, $(CH_2)_m$—SO_3,

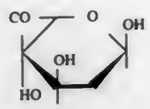


where m is 1 or 2;
glucuronide-substituted amino acids; and other glucuronide derivatives;
R^2 is hydrogen; lower alkyl; substituted lower alkyl having one or more substituents selected from the group consisting of hydroxy, sulfate, and phosphonate; or a hydrophilic moiety;
R^3 is hydrogen; an amine; a lower alkyl; a hydroxy-, sulfate- or phosphonate-substituted lower alkyl; a glucuronide; or a glucuronide-derivatized amino acid;

R^4 is hydrogen, lower alkyl or



R' is hydrogen; $-(CH_2)_2-OH$ or a sulfate or phosphonate derivative thereof; or



R" is a bond or $-(CH_2)_n-CO-NH-$; and

n ranges from 0–5, wherein R^3 and R^4 cannot both be hydrogen and wherein the active agent is a radionuclide.

5,578,288

METAL-BINDING TARGETED POLYPEPTIDE CONSTRUCTS

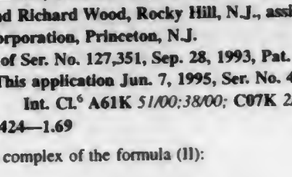
Benjamin A. Belinka, Jr., Kendall Park; Daniel J. Coughlin, Robbinsville, both of N.J.; Vernon L. Alvarez, Morrisville, Pa., and Richard Wood, Rocky Hill, N.J., assignors to Cytogen Corporation, Princeton, N.J.

Division of Ser. No. 127,351, Sep. 28, 1993, Pat. No. 5,449,761. This application Jun. 7, 1995, Ser. No. 480,367

Int. Cl.[6] A61K *51/00;38/00;* **C07K** *2/00*

U.S. Cl. 424—1.69 **28 Claims**

1. The complex of the formula (II):



(II)

in which,

"B" is a saturated or unsaturated aliphatic or aromatic hydrocarbon backbone comprising 1–20 carbon atoms and, optionally, one or more heteroatoms selected from the group consisting of nitrogen, oxygen, phosphorus and sulfur;

"P" is a polypeptide comprising 2–100 amino acids, said polypeptide capable of targeting particular cells, tissues or organs of the body;

"A" may be the group —NR'—NR"— or the group —NR'—NR"—L— in which L may be an aliphatic or aromatic linker group comprising 1–12 carbon atoms and, optionally, one or more heteroatoms selected from the group consisting of nitrogen, oxygen, phosphorus and sulfur;

R, R', and R" may be the same or different and may be hydrogen or an aliphatic group comprising 1–6 carbon atoms and, optionally, one or more heteroatoms selected from the group consisting of nitrogen, oxygen, phosphorus and sulfur;

m is an integer≧2, provided that the groups R, R', R", L and "P" of a given chain may be the same or different from the groups R, R', R", L and "P" of another chain;

n is an integer≧0,≦2;

o is an integer≧1,≦m;

"M" is a metallic moietyp;

or a pharmaceutically acceptable salt thereof.

5,578,289

IN VIVO BINDING PAIR PRETARGETING

Nicholas Pomato, Frederick, Md.; Richard P. McCabe, West Chester, Pa.; Gregory A. Hawkins, Hastings, Nebr.; Reinhard Bredehorst, Hamburg, Germany; Chong-Ho Kim, Rockville, Md., and Carl-Wilhelm E. Vogel, Hamburg, Germany, assignors to Akzo N.V., Arnhem, Netherlands

PCT No. PCT/US93/01858, § 371 Date Nov. 4, 1993, § 102(e) Date Nov. 4, 1993, PCT Pub. No. WO93/17707, PCT Pub. Date Sep. 16, 1993

Continuation-in-part of Ser. No. 846,453, Mar. 4, 1992, abandoned. This PCT application Mar. 3, 1993, Ser. No. 140,186

Int. Cl.[6] A61K *39/395;51/00;51/10*

U.S. Cl. 424—1.53 **11 Claims**

1. A method for the in vivo targeting of an effector molecule in a patient comprising:

first administering a targeting moiety coupled to an enzyme to form a targeting moiety-enzyme conjugate, wherein said targeting moiety is selected from the group consisting of an antibody, an antibody fragment, an antibody variable region, a complimentarity determining region of an antibody, a bivalent antibody, a hybrid antibody and a chimeric antibody, and thereafter administering a binding partner for the enzyme, wherein the binding partner is an enzyme inhibitor, coupled to an effector molecule forming an effector complex, whereby said effector complex through the binding partner binds to the enzyme to localize said effector molecule in the target area.

5,578,290

CALIXARENE CONJUGATE CT DIAGNOSTIC AGENTS FOR COMPUTED TOPOGRAPHY

Ashwin M. Krishnan, San Diego, and Rolf Lohrmann, La Jolla, both of Calif., assignors to Molecular Biosystems, Inc., San Diego, Calif.

Continuation of Ser. No. 340,206, Nov. 15, 1994. This application May 30, 1995, Ser. No. 453,747

Int. Cl.[6] A61K *49/04*

U.S. Cl. 424—9.4 **19 Claims**

1. A method of CT imaging comprising the steps:

(a) administering an imaging agent formulation to a patient, said formulation comprising an effective amount of a calixarene conjugate, said calixarene conjugate having a calixarene backbone and at least one CT imaging moiety, and a pharmaceutically acceptable carrier; and

(b) acquiring a CT image of at least a portion of the patient while the calixarene conjugate is present in the patient.

5,578,291

METHOD AND COMPOSITION FOR OPTIMIZING LEFT VENTRICULAR VIDEOINTENSITY IN ECHOCARDIOGRAPHY

Thomas R. Porter, Omaha, Nebr., assignor to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Continuation of Ser. No. 113,415, Aug. 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 57,298, May 14, 1993, abandoned. This application Sep. 6, 1994, Ser. No. 301,146

Int. Cl.[6] A61K *49/00*

U.S. Cl. 424—9.5 **12 Claims**

1. A method of determining left ventricular videointensity by Echocardiography comprising the following steps:

mixing human serum albumin with a 5% to 50% solution of at least one aqueous monosaccharide in a ratio of 1:3 to 1:7 respectively to form a solution;

sonicating said solution to form microbubbles approximately 3 to 5 microns in diameter, thereby forming an echo contrast agent;

intravenously injecting said echo contrast agent to an animal subject; and

detecting the image produced by ultrasound imaging.

5,578,292

LONG-LASTING AQUEOUS DISPERSIONS OR SUSPENSIONS OF PRESSURE-RESISTANT GAS-FILLED MICROVESICLES AND METHODS FOR THE PREPARATION THEREOF

Michel Schneider, Troinex; Feng Yan, Genéve, both of Switzerland; Pascal Grenier, deceased, late of Amilly; Jérome Puginier, Le Chache-Beumont, both of France, and Marie-Bernadette Barrau, Geneva, Switzerland, assignors to Bracco International B.V., Amsterdam, Netherlands

Continuation-in-part of Ser. No. 128,540, Sep. 29, 1993, Pat. No. 5,380,519, which is a division of Ser. No. 755,989, Nov. 20, 1991, Pat. No. 5,271,928,. This application Jan. 30, 1995, Ser. No. 380,588

Claims priority, application European Pat. Off., Jan. 23, 1992, 92810046

Int. Cl.[6] A61K *49/00*

U.S. Cl. 424—9.51 **20 Claims**

1. A contrast agent for ultrasonic echography comprising, as a suspension in an aqueous liquid carrier phase, microvesicles filled with a gas or a gas mixture, wherein the gas mixture comprises at least one physiologically acceptable halogenated gas whose ratio of solubility in water, expressed in liters of gas by liter of water under standard conditions, to square root of the molecular weight, in daltons, is below 0.0027.

5,578,293

ORAL COMPOSITIONS CONTAINING STABILIZED STANNOUS COMPOUNDS HAVING ANTIPLAQUE AND ANTITARTAR EFFICACY

Michael Prencipe, Princeton; Michael Burke, Somerset; Suryakant Patel, Bridgewater, and Julie A. Miller, Somerset, all of N.J., assignors to Colgate Palmolive Company, New York, N.Y.

Filed Dec. 6, 1994, Ser. No. 350,309

Int. Cl.[6] A61K *7/16;7/18;7/24*

U.S. Cl. 424—49 **20 Claims**

1. An aqueous oral care composition consisting essentially of a vehicle having incorporated therein about 0.05 to about 2% by weight of a water soluble stannous ion releasing compound, about 10 to abut 40% by weight of an untreated precipitated silica abrasive and a combination of about 0.05 to abut 2.0% by weight of a water soluble alkali metal pyrophosphate salt and an amount of about 0.01 to about 10% by weight of a polycarboxylic food grade organic acid such amount being sufficient to effectively stabilize the stannous ion, the stabilized stannous ion being present in the composition in an amount effective for therapeutic antiplaque efficacy and the pyrophosphate salt being present in the composition in an amount effective for antitartar efficacy.

5,578,294

ORAL COMPOSITIONS

Michael F. Lukacovic, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 13, 1994, Ser. No. 242,228

Int. Cl.[6] A61K *7/16;7/18;7/22*

U.S. Cl. 424—52 **9 Claims**

1. A toothpaste composition providing improved oral cleansing with reduced desquamation comprising:

a. from about 0.1% to about 2.5% of a sarcosinate surfactant;

b. from about 0.1% to about 2.5% of a chelating agent selected from the group consisting of tartaric acid and pharmaceutically-acceptable salts thereof, and mixtures thereof;

c. cocoamidopropyl-betaine; and

d. sodium fluoride;

wherein the level of a. and b. does not exceed 4.0% by weight of the total composition and wherein the composition has a pH of from about 6.5 to about 9.5 and wherein said composition is free of enzymes.

5,578,295

ORAL CARE COMPOSITIONS COMPRISING CERTAIN SUBSTITUTED DIPHENYL ETHERS

Marion D. Francis, Cincinnati, and Dennis G. A. Nelson, West Chester, both of Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

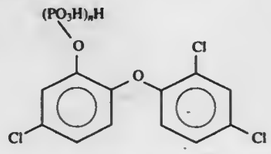
Filed Apr. 28, 1995, Ser. No. 431,381

Int. Cl.[6] A61K *7/16*

U.S. Cl. 424—57 **22 Claims**

1. A composition for treating or preventing dental plaque, gingivitis or periodontal disease, of the oral cavity in humans or animals, comprising:

(a) from about 0.001% to about 10% by weight of an active agent having the structure:



wherein n is an integer from 1 to about 3, or a pharmaceutically-acceptable salt thereof; and

(b) a pharmaceutically-acceptable topical oral carrier comprising a flavoring agent or sweetening agent.

5,578,296

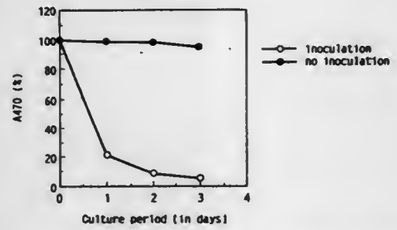
DECOMPOSITION OF MELANIN USING A CULTURE OF BASIDIOMYCETES FUNGUS

Yoshinori Kashino; Tomoaki Nishida, and Yoshimasa Takahara, all of Ibaraki, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Feb. 8, 1993, Ser. No. 14,876

Int. Cl.[6] A61K *7/135;7/48;35/70*

U.S. Cl. 424—62 **14 Claims**



1. A method for decomposing melanin comprising contacting the melanin with the species of *Basidiomycetes* fungus having melanin decomposing potency, said species being a wood-rotting fungus, and said species being obtained by culturing in a nitrogen limited medium.

5,578,297

COSMETIC COMPOSITIONS CONTAINING AN EXPOXIDIZED OIL AS PLASTICIZER

Myriam Meilul, L'Hay Les Roses, and Valérie de la Poterie, Le Chatelet en Brie, both of France, assignors to L'Oreal, France

Filed Sep. 28, 1994, Ser. No. 313,784

Claims priority, application France, Sep. 28, 1993, 93 11501

Int. Cl.[6] A61K *7/032;7/043;7/06*

U.S. Cl. 424—70.7 **13 Claims**

1. A composition comprising from:

(a) 0.5 to 25% of a plasticizer comprising an epoxidized oil,

(b) 5 to 35% of a film-forming material comprising nitrocellulose, and

(c) 40–90% of a solvent or mixture of solvents.

5,578,298

MICROEMULSIONS FOR HIGH VISCOSITY AMINO SILICONE FLUIDS AND GUMS AND THEIR PREPARATION

Marianne D. Berthiaume, Latham, and James H. Merrifield, Ballston Spa, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Continuation-in-part of Ser. No. 250,124, May 27, 1994. This application Oct. 11, 1994, Ser. No. 321,640

Int. Cl.[6] A61K *7/075;7/11;* **B01J** *13/00*

U.S. Cl. 424—70.122 **17 Claims**

1. A translucent oil-in-water microemulsion comprising:

(a) a low amino content microemulsifiable amino silicone having an amino content of 0.10 to 3.0 milliequivalents per gram and a viscosity ranging from 100,000 to 10,000,000 centistokes at 25° C.,

(b) a surfactant having a phase inversion temperature varying from about 45° C. to about 95° C., and

(c) water wherein said microemulsion has a mean particle size ranging from about 0.001 to about 0.050 microns and whereby said microemulsion has an ASTM D871 haze below about 150.

14. A personal care product comprising the microemulsion of claim 1 whereby said microemulsion has an ASTM D871 haze below about 100.

5,578,299

RINSE-OFF SKIN CONDITIONER

Mike Starch, Cincinnati, Ohio, assignor to The Andrew Jergens Company, Cincinnati, Ohio, and KAO Corporation, Tokyo, Japan

Filed Oct. 20, 1994, Ser. No. 326,218

Int. Cl.[6] A61K *31/74;7/50*

U.S. Cl. 424—78.03 **5 Claims**

1. A rinse-off skin-conditioning composition for application to human skin while showering, comprising:

a) 49–87 percent by weight of the total composition of a mineral oil,

b) 0.5–5 percent by weight of the total composition of a mixture of di-block copolymers and tri-block copolymers, wherein said copolymers are comprised of (A) styrene and (B) at least one monomer selected from the group consisting of isoprene and butadiene,

c) 0–40 percent by weight of the total composition of a fatty acid ester emollient, and

d) 3–4 percent by weight of a non-ionic surfactant soluble in the combination of a, b and c and effective in dispersing the composition into water such that upon rinsing said composition from said skin, approximately 3–25 percent by weight of the composition remains on the skin as residue wherein said non-ionic surfactant is selected from the group consisting of Laureth-3, Laureth-4, Oleth-3, Isostearеth-2, Trideceth-3, C9-11 Pareth-3, C9-11 Pareth-6, C11-15 Pareth-3, C11-15 pareth-5 and mixtures thereof.

5,578,300

TREATMENT OF ALLERGIC CONTACT DERMATITIS

Richard J. Schmidt, Penarth, and Lip Y. Chung, Cardiff, both of United Kingdom, assignors to University College Cardiff Consultants Limited, Cardiff, United Kingdom

Filed Jun. 1, 1993, Ser. No. 69,630

Claims priority, application United Kingdom, Jun. 3, 1992, 9211736

Int. Cl.[6] A61K *33/40;38/39;31/725;9/70*

U.S. Cl. 424—78.08 **2 Claims**

1. A method of treatment of allergic contact dermatitis which comprises treating the skin of a patient with a hydrogen peroxide generating polymeric material comprising gelatin and pectin so as to induce an oxidative stress and a heat shock response in the skin of the patient whereby the allergic reaction of the allergic contact dermatitis is converted to an irritant reaction.

5,578,301

METHOD FOR USING GM-CSF TO REDUCE THE ACUTE PHASE RESPONSE IN A PATIENT BEING ADMINISTERED IL-6 THERAPY

Laurie A. Myers, Morris Plains, N.J., assignor to Sandoz Ltd., Basel, Switzerland

Filed Dec. 14, 1993, Ser. No. 167,253

Int. Cl.[6] A61K *45/05*

U.S. Cl. 424—85.1 **17 Claims**

1. A method for treating the acute phase response in a patient receiving human IL-6 protein, which method comprises co-administering to the patient a platelet count increasing effective amount of human IL-6 protein and an acute phase response-suppressing effective amount of human GM-CSF protein, the weight ratio of such GM-CSF to such IL-6 being at least 1 to 1 expressed as non-glycosylated proteins, whereby the acute phase response is suppressed.

5,578,302

TREATMENT OF STOMACH ULCERS

Dominique Brassart, Bussigny; Pierre Michetti, and Jean-Richard Neeser, both of Lausanne, all of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Continuation of Ser. No. 84,528, Jun. 29, 1993, abandoned. This application Apr. 28, 1995, Ser. No. 430,297

Claims priority, application European Pat. Off., Jul. 6, 1992, 92810515

Int. Cl.[6] A01N *63/00;* **C12N** *1/20;* **A23L** *1/28*

U.S. Cl. 424—93.45 **3 Claims**

1. A method for treating stomach ulcers comprising administering orally to a human in need thereof an anti-*Helicobacter pylori* effective amount of a composition containing, in combination with an ingestible support, a culture of *Lactobacillus johnsonii* strain CNCM I-1225 or a supernatant phase isolated from a culture of *Lactobacillus johnsonii* strain CNCM I-1225.

5,578,303

DIAGNOSIS AND TREATMENT OF INSULIN DEPENDENT DIABETES MELLITUS

Irun R. Cohen; Dana Elias, and Doron Markovits, all of Rehovot, Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

Continuation of Ser. No. 751,448, Aug. 29, 1991, abandoned, which is a continuation-in-part of Ser. No. 493,127, Mar. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 371,249, Jun. 26, 1989, Pat. No. 5,114,844, which is a continuation-in-part of Ser. No. 322,864, Mar. 14, 1989, abandoned. This application Nov. 12, 1993, Ser. No. 151,052

Int. Cl.[6] A61K *39/04;45/05;* **C12N** *5/06*

U.S. Cl. 424—93.71 **16 Claims**

1. A preparation for preventing or treating insulin dependant diabetes mellitus (IDDM), comprising:

a T cell product selected from the group consisting of

(a) human T cells which manifest specificity for the p277 sequence of hHSP65, and which cells have been activated by incubating in the presence of intact hHSP65, the p277 fragment of hHSP65, or a protein sufficiently immunologically cross-reactive with the p277 sequence of hHSP65 to permit activation of T cells which manifest specificity to the p277 sequence of hHSP65;

(b) said human T cells of (a) which have been attenuated;

(c) said human T cells of (a) which have been subjected to pressure treatment by means of hydrostatic pressure, treatment with chemical cross-linking agent and/or treatment with a cytoskeletal cross-linking agent;

(d) fragments of, or surface proteins shed from, the T cells of (a), (b), or (c); and

(e) a peptide comprising the variable region of the T cell receptor of the T cells of (a).

5,578,304

COMPOSITIONS OF DIGESTIVE ENZYMES AND SALTS OF BILE ACIDS AND PROCESS FOR PREPARATION THEREOF

Tibor Sipos, Lebanon, N.J., assignor to Digestive Care Inc., Lebanon, N.J.

Continuation-in-part of Ser. No. 129,250, Sep. 29, 1993, Pat. No. 5,460,812, which is a continuation-in-part of Ser. No. 104,655, Aug. 11, 1993, Pat. No. 5,324,514, which is a division of Ser. No. 901,734, Jun. 22, 1992, Pat. No. 5,260,074. This application May 4, 1995, Ser. No. 434,953

Int. Cl.[6] A61K *37/48;37/62;37/54;37/547*

U.S. Cl. 424—94.1 **14 Claims**

1. A buffered digestive enzyme/bile salt composition for the treatment of digestive enzyme/bile salt deficiency of mammals comprising, by weight per weight percentages based on the total weight of the composition:

a) from about 10 to about 90.0% of a concentrate of an enzyme selected from the group consisting of pancreatic proteases, pancreatic lipases, pancreatic nucleases and pancreatic amylases;

b) from about 0.3 to about 75% of a bile salt in powder form;

c) from about 7.35 to about 40.50% of a buffering agent selected from the group consisting of anhydrous sodium carbonate, sodium bicarbonate, potassium carbonate, ammonium carbonate, tromethamine, di(tris(hydoxymethyl)aminomethane) carbonate, tris-glycine, di-arginine in the molecular weight range of 350 to 50,000 daltons, tri-arginine in the molecular weight range of 350 to 50,000 daltons, poly-arginine in the molecular weight range of 350 to 50,000 daltons, di-lysine in the molecular weight range of 290 to 15,000 daltons, tri-lysine in the molecular weight range of 290 to 15,000 daltons, poly-lysine in the molecular weight range of 290 to 15,000 daltons, diethylamine and triethanolamine;

d) from about 0.9 to about 16% of a disintegrant selected from the group consisting of starch, modified starches, microcrystalline cellulose and propylene glycol alginate;

e) from about 0.3 to about 15.0% of an adhesive polymer selected from the group consisting of hydroxypropyl cellulose, polyvinylpyrrolidone, cellulose acetate phthalate, methyl cellulose and propylene glycol alginate; and

f) from about 7.0 to about 15% of an non-porous, gastric acid-resistant and pharmaceutically acceptable polymer-coating which contains from about 0.2 to about 2% talc and which is insoluble in the pH range of from about 1.5 to about 5 but is soluble in the pH range of from about 5.5 to about 9.

5,578,305

METHODS AND PREPARATIONS FOR PREVENTING ADHESIONS TO ORGANS AND PARTS OF ORGANS

Helmut Franz; Thomas Muller, and Wolfgang Fisert, all of Biberach 1, Germany, assignors to Karl Thomae GmbH, Germany

Continuation of Ser. No. 89,505, Jul. 21, 1993, abandoned, which is a continuation of Ser. No. 967,567, Oct. 28, 1992, abandoned, which is a continuation of Ser. No. 785,876, Nov. 4, 1991, abandoned, which is a continuation of Ser. No. 278,995, Dec. 2, 1988, abandoned. This application Nov. 14, 1994, Ser. No. 340,459

Claims priority, application Germany, Dec. 4, 1987, 37 41 149.7

Int. Cl.[6] A61K *38/48;38/54;9/14;* **C12N** *9/50*

U.S. Cl. 424—94.64 **32 Claims**

1. A method of preventing adhesions to body organs or parts of body organs within a body cavity at a site of inflammation comprising applying to a subject a pharmaceutical composition consisting essentially of

natural or recombinant t-PA, and

an aqueous hydroxyethylcellulose hydrogel wherein said pharmaceutical composition is applied at the site of said inflammation in an amount effective to prevent said adhesions.

5,578,306

METHOD FOR PREVENTING EMBRYO IMPLANTATION

Bruce Lessey, Havertown, Pa., assignor to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 126,063, Nov. 1, 1993, abandoned, which is a division of Ser. No. 897,706, Jun. 12, 1992, Pat. No. 5,279,941. This application Mar. 3, 1995, Ser. No. 400,270

Int. Cl.[6] A61K *39/395;38/00;* **C07K** *14/78;16/28*

U.S. Cl. 424—143.1 **7 Claims**

1. A method of blocking embryo implantation in a mammal comprising contacting the endometrium of said mammal with a neutralizing Fab fragment specific for the β_3 subunit of integrin.

7. The method of blocking embryo implantation in a mammal comprising a contacting the endometrium of said mammal with a peptide containing the sequence arginine—glycine—aspartic acid.

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5,578,307

SHAPED ARTICLES CONTAINING PLANT EXTRACT(S), IN PARTICULAR PELLETS, AND THEIR PHARMACEUTICAL OR COSMETIC USE

Jens-Christian Wunderlich, Heidelberg; Ursula Schick, Schriesheim; Jürgen Werry, Ludwigshafen, and Jürgen Freidenreich, Schriesheim, all of Germany, assignors to Alfatec-Pharma GmbH, Heidelberg, Germany

PCT No. PCT/DE93/00037, § 371 Date Oct. 18, 1994, § 102(e) Date Oct. 18, 1994, PCT Pub. No. WO93/13754, PCT Pub. Date Jul. 22, 1993

PCT Filed Jan. 18, 1993, Ser. No. 256,651

Claims priority, application Germany, Jan. 17, 1992, 42 01 172.8; Jan. 17, 1992, 42 01 179.5

Int. Cl.[6] A61K *35/78;9/127;9/64;9/14*

U.S. Cl. 424—195.1 37 Claims

1. A shaped article containing plant extract, which comprises a dispersion of the plant extract in a matrix composed predominantly of a skeleton builder of hydrophilic macromolecules selected from the group consisting of: collagen, gelatin, fractionated gelatin, collagen hydrolysates, gelatin derivatives, elastin hydrolysates, plant proteins, plant protein hydrolysates and mixtures thereof, wherein the shaped article contains 0.1 to 98% by weight of said plant extract.

5,578,308

GLUTARALDEHYDE AND FORMALIN DETOXIFIED BORDETELLA TOXIN VACCINE

Carine Capiau, 5 rue Astrid, B-7022 Harveng (Mons), and Jean Petre, Avenue Ch. Lemaire 26, B-1160 Brussels, both of Belgium

Division of Ser. No. 910,038, Aug. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 479,098, Feb. 12, 1990, abandoned. This application Nov. 14, 1994, Ser. No. 338,361

Int. Cl.[6] A61K *39/10;39/385;* C07K *14/235;17/00*

U.S. Cl. 424—240.1 8 Claims

1. A method for the detoxification of Bordetella toxin from a partially or extensively purified preparation containing said toxin comprising treating said preparation with glutaraldehyde to partially detoxify said toxin, and reacting the partially detoxified toxin with formalin in the presence of amino acids selected from the group consisting of tryptophan, glycine, lysine and N-acetyl-tryptophan.

5,578,309

CANDIDA ALBICANS PHOSPHOMANNOPROTEIN ADHESION AS A VACCINE

Jim E. Cutler, and Yongmoon Han, both of Bozeman, Mont., assignors to The Research and Development Institute, Inc., Bozeman, Mont.

Continuation-in-part of Ser. No. 247,972, May 23, 1994. This application Jun. 7, 1995, Ser. No. 483,558

Int. Cl.[6] A61K *39/00*

U.S. Cl. 424—274.1 5 Claims

1. A vaccine for the treatment of candidiasis comprising a composition of a pharmaceutically effective amount of adhesion molecules of *Candidia albicans* and a pharmaceutically acceptable carrier to elicit an immune response, wherein the adhesion molecules are isolated phosphomannoprotein cell wall complexes and the pharmaceutically acceptable carrier comprises a liposome.

5,578,310

TOPICAL BIOADHESIVE OINTMENT COMPOSITIONS AND THEIR USE IN WOUND HEALING

Thabiso M'Timkulu, El Sobrante; Ze'ev Shaked, Berkeley, and Richard Hsu, Union City, all of Calif., assignors to Berlex Laboratories Inc.

Continuation-in-part of Ser. No. 872,755, Apr. 23, 1992, abandoned. This application Jun. 3, 1994, Ser. No. 253,472

Int. Cl.[6] A61K *9/107;47/44;47/38;47/34*

U.S. Cl. 424—401 39 Claims

1. A topical bioadhesive ointment composition consisting of an aqueous mineral oil emulsion comprising about 20–45% w/w mineral oil, an amount from about 5% to about 45% w/w of particulate hydroxypropyl methylcellulose effective to render the ointment composition bioadhesive, an amount from about 27% to about 45% w/w of polyalkylene glycol (35% w/v in water) effective to stabilize the emulsion by preventing its separation upon storage and to inhibit the hydration of the hydroxypropyl methylcellulose by the water present in the emulsion, and from 0–3% w/w non-ionic surfactant; wherein the ointment composition, upon application to moist skin or a mucosal surface, forms a stable coherent film thereon which resists removal by water or a body fluid associated with the skin or the mucosal surface to which it is applied.

5,578,311

COSMETIC

Noboru Nagatani, Chiba; Makoto Torizuka, Tokyo, and Takashi Komori, Chiba, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 131,574, Oct. 4, 1993, abandoned, which is a continuation of Ser. No. 10,450, Jan. 25, 1993, abandoned, which is a continuation of Ser. No. 739,372, Aug. 2, 1991, abandoned. This application Sep. 2, 1994, Ser. No. 300,075

Claims priority, application Japan, Aug. 3, 1990, 2-205136; Nov. 21, 1990, 2-316888; Dec. 26, 1990, 2-414563

Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—401 12 Claims

1. A cosmetic comprising the following components (A) and (B):

(A) from 5 to 95% by weight of a fluorine compound-treated powder,

wherein said fluorine compound is selected from the group consisting of polyfluoroalkylphosphate represented by the following formula (I):

$$[C_sF_{2s+1}C_tH_{2t}O]_lPO(OM)_{3-l} \quad (I)$$

wherein s represents an integer of from 4 to 14; t represents an integer of from 1 to 16; l represents a number of from 1 to 2.5 on the average; and M, which may be the same or different from each other when l represents a number less than 2, each independently represents a hydrogen atom, an alkali metal, an ammonium group or a substituted ammonium group; provided that the total of s and t is at least 8; perfluoroalcohol; perfluoroepoxy compound; sulfoamide fluorophosphoric acid or a salt thereof; perfluoro-sulfuric acid or a salt thereof; perfluorocarboxylic acid or a salt thereof; and perfluoroalkylsilane, and

said powder is selected from the group consisting of titanium oxide, iron oxide, ultramarine blue, zinc white, magnesium oxide, zirconium oxide, mica, sericite, talc, silica, kaolin, chromium hydroxide, carbon black, nylon powder, polymethyl methacrylate powder, styrene/divinylbenzene copolymer powder, polyethylene powder, UV-absorbing ultra-fine titanium dioxide powder, UV-absorbing ultra-fine zinc oxide powder and UV-absorbing fine zinc oxide flakes; and

(B) from 5 to 95% by weight of a liquid perfluoro organic compound selected from the group consisting of perfluorodecalin, perfluorobutyltetrahydrofuran, perfluorooctane, perfluorononane, perfluoropentane, perfluorodecane, perfluorododecane and perfluoro polyether represented by formula II:

$$R^1\text{-}(CF_2CFCF_2O)_p\text{-}(CFCF_2O)_q\text{-}(CFO)_r\text{-}R^2 \quad (II)$$

wherein R^1, R^3, R^4 and R^5 may be either the same or different and each represents a fluorine atom, a perfluoroalkyl group containing 1 to 5 carbon atoms or a perfluoroalkyloxy group containing 1 to 5 carbon atoms; R^2 represents a fluorine atom or a perfluoroalkyl group containing 1 to 5 carbon atoms; and p, q and r represent each a number of 0 or above; provided that the molecular weight of the compound of formula (II) is from 500 to 100,00 and that all of p, q and r do not represent 0 at the same time.

4. A cosmetic comprising the following components (A), (B) and (C):

(A) a fluorine compound-treated powder,

wherein said fluorine compound is selected from the group consisting of polyfluoroalkylphosphate represented by the following formula (I):

$$[C_sF_{2s+1}C_tH_{2t}O]_lPO(OM)_{3-l} \quad (I)$$

wherein s represents an integer of from 4 to 14; t represents an integer of from 1 to 16; l represents a number of from 1 to 2.5 on the average; and M, which may be the same or different from each other when l represents a number less than 2, each independently represents a hydrogen atom, an alkali metal, an ammonium group or a substituted ammonium group; provided that the total of s and t is at least 8; perfluoroalcohol; perfluoroepoxy compound; sulfoamide fluorophosphoric acid or a salt thereof; perfluoro-sulfuric acid or a salt thereof; perfluorocarboxylic acid or a salt thereof; and perfluoroalkylsilane, and

said powder is selected from the group consisting of titanium oxide, iron oxide, ultramarine blue, zinc white, magnesium oxide, zirconium oxide, mica, sericite, talc, silica, kaolin, chromium hydroxide, carbon black, nylon powder, polymethyl methacrylate powder, styrene/divinylbenzene copolymer powder, polyethylene powder, UV-absorbing ultra-fine titanium dioxide powder, UV-absorbing ultra-fine zinc oxide powder and UV-absorbing fine zinc oxide flakes; and

(B) a liquid perfluoro organic compound selected from the group consisting of perfluorodecalin, perfluorobutyltetrahydrofuran, perfluorooctane, perfluorononane, perfluoropentane, perfluorodecane, perfluorododecane and perfluoro polyether represented by formula II:

$$R^1\text{-}(CF_2CFCF_2O)_p\text{-}(CFCF_2O)_q\text{-}(CFO)_r\text{-}R^2 \quad (II)$$

wherein R^1, R^3, R^4 and R^5 may be either the same or different and each represents a fluorine atom, a perfluoroalkyl group containing 1 to 5 carbon atoms or a perfluoroalkyloxy group containing 1 to 5 carbon atoms; R^2 represents a fluorine atom or a perfluoroalkyl group containing 1 to 5 carbon atoms; and p, q and r represent each a number of 0 or above; provided that the molecular weight of the compound of formula (II) is from 500 to 100,00 and that all of p, q and r do not represent 0 at the same time; and

(C) a silicone oil.

8. An emulsified cosmetic comprising the following components:

(A) a fluorine compound-treated powder,

wherein said fluorine compound is selected from the group consisting of polyfluoroalkylphosphate represented by the following formula (I):

$$[C_sF_{2s+1}C_tH_{2t}O]_lPO(OM)_{3-l} \quad (I)$$

wherein s represents an integer of from 4 to 14; t represents an integer of from 1 to 16; l represents a number of from 1 to 2.5 on the average; and M, which may be the same or different from each other when l represents a number less than 2, each independently represents a hydrogen atom, an alkali metal, an ammonium group or a substituted ammonium group; provided that the total of s and t is at least 8; perfluoroalcohol; perfluoroepoxy compound; sulfoamide fluorophosphoric acid or a salt thereof; perfluorosulfuric acid or a salt thereof; perfluorocarboxylic acid or a salt thereof; and perfluoroalkylsilane, and

said powder is selected from the group consisting of titanium oxide, iron oxide, ultramarine blue, zinc white, magnesium oxide, zirconium oxide, mica, sericite, talc, silica, kaolin, chromium hydroxide, carbon black, nylon powder, polymethyl methacrylate powder, styrene/divinylbenzene copolymer powder, polyethylene powder, UV-absorbing ultra-fine titanium dioxide powders, UV-absorbing ultra-fine zinc oxide powders and UV-absorbing fine zinc oxide flakes;

(B) a liquid perfluoro organic compound selected from the group consisting of perfluorodecalin, perfluorobutyltetrahydrofuran, perfluorooctane, perfluorononane, perfluoropentane, perfluorodecane, perfluorododecane and perfluoro polyether represented by formula II:

$$R^1\text{-}(CF_2CFCF_2O)_p\text{-}(CFCF_2O)_q\text{-}(CFO)_r\text{-}R^2 \quad (II)$$

wherein R^1, R^3, R^4 and R^5 may be either the same or different and each represents a fluorine atom, a perfluoroalkyl group containing 1 to 5 carbon atoms or a perfluoroalkyloxy group containing 1 to 5 carbon atoms; R^2 represents a fluorine atom or a perfluoroalkyl group containing 1 to 5 carbon atoms; and p, q and r represent each a number of 0 or above; provided that the molecular weight of the compound of formula (II) is from 500 to 100,00 and that all of p, q and r do not represent 0 at the same time; and

(D) an aqueous medium; and

(E) a surfactant.

5,578,312

SKIN CARE SYSTEM AND METHOD FOR IMPROVING MOISTURE RETENTION IN SKIN

Vincene M. Parrinello, 1423 Amor Pl., Escondido, Calif. 92027

Continuation-in-part of Ser. No. 57,309, May 5, 1993, abandoned. This application Dec. 15, 1994, Ser. No. 357,104

Int. Cl.[6] A61K *7/00;7/48*

U.S. Cl. 424—401 6 Claims

1. A method for improving moisture-absorption and retention in a person's skin, the method which comprises:

creating a tea solution comprising the steps of:

heating a container of spring mineral water to a boil over a heat source;

combining a plurality of plant components comprising flowers, petals, plant stems, plant leaves, plant roots and plant seeds in the respective quantity in tablespoons per one gallon of said spring mineral water of lavender flower—12, valerian root—2, thyme leaf—2.5, fenugreek seed—4, rose petal—6, comfrey leaf—2, soapwort root—1, primrose flower—3, elderflower flower—2.5, birch leaf—1, parsley leaf 1, sunflower petal—3, chamomile flower—4, calendula petal—3.5, marshmallow leaf—2, bugle flower—1 and yarrow flower—2 to form a tea composition, wherein each plant from which said plurality of plant components is obtained is grown in a soil enriched by adding water containing vitamins and minerals;

placing a strainer containing said tea composition in said container of boiling water and boiling said tea composition;

removing said container from said heat source and steeping said tea composition in said spring mineral water to create a tea solution;

removing said tea composition from said tea solution; and

applying said tea solution to said person's skin.

5,578,313

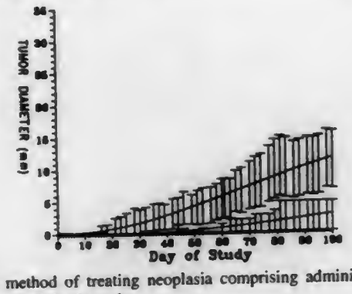
THERAPEUTIC USE OF VITALETHEINE MODULATORS IN NEOPLASIA

Galen D. Knight, and Terence J. Scallen, both of Albuquerque, N.M., assignors to The University of New Mexico, Albuquerque, N.M.

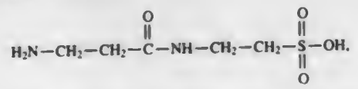
Division of Ser. No. 928,725, Aug. 13, 1992, Pat. No. 5,370,868, which is a continuation-in-part of Ser. No. 549,440, Jul. 6, 1990, abandoned. This application Oct. 4, 1994, Ser. No. 317,548

Int. Cl.[6] A61K *31/185*

U.S. Cl. 424—423 5 Claims



1. A method of treating neoplasia comprising administering a compound of the formula:



or biologically compatible salt thereof, to an afflicted mammal in an amount sufficient to treat said neoplasia.

5,578,314

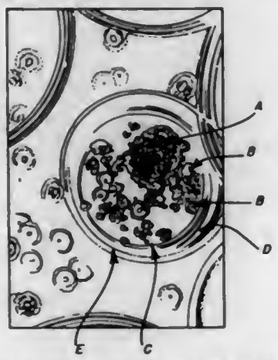
MULTIPLE LAYER ALGINATE COATINGS OF BIOLOGICAL TISSUE FOR TRANSPLANTATION

Kent C. Cochrum, Davis; Randel E. Dorian, Orinda, and Susan A. Jemtrud, San Francisco, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 891,564, May 29, 1992, Pat. No. 5,429,821. This application Jan. 24, 1994, Ser. No. 186,327

Int. Cl.[6] A61F *2/02;* A01N *1/02;* C12N *5/08*

U.S. Cl. 424—424 25 Claims



1. A method for multiple layer coating of a biological material core with an alginate polymer, said coating having a thickness between about 20 and 200 μm, said method comprising the steps:

(a) suspending the core in a first solution of a soluble alginate to form a first suspension solution;

(b) mechanically generating droplets of the suspension;

(c) gelling the first alginate to form capsules containing the core coated with a first initial coating by collecting the generated droplets of step (b) in a first solution containing a divalent cation;

(d) reducing concentration of a soluble divalent cation;

(e) forming an intermediate halo layer by:

(i) soaking the capsules of step (d) in a solution containing a different divalent cation than that of step (c) and effecting exchange of said different divalent cation with a divalent cation bound to the gelled first alginate layer of step (c); or

(ii) effecting exchange of the divalent cation present in the first solution of step (c) with a cation present in a second soluble alginate solution; and

(iii) dispersing the alginate coated capsules in the second alginate solution to form a second suspension solution;

(f) mechanically generating droplets of the second suspension; and

(g) gelling the second alginate to form the capsules containing the core coated with the first initial coating layer with the intermediate halo layer and with a second outer coating by collecting the generated droplets of step (f) in the second divalent cation solution.

5,578,315

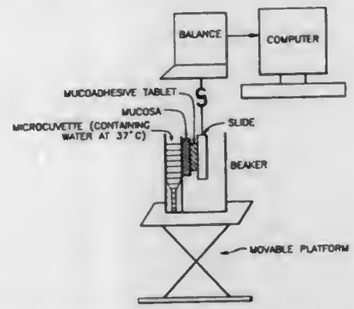
MUCOSAL ADHESIVE DEVICE FOR LONG-ACTING DELIVERY OF PHARMACEUTICAL COMBINATIONS IN ORAL CAVITY

Yie W. Chien, North Brunswick, and Mona Nair, Highland Park, both of N.J., assignors to Rutgers, The State University of New Jersey, New Brunswick, N.J.

Filed Dec. 1, 1993, Ser. No. 160,474

Int. Cl.[6] A61K *9/20*

U.S. Cl. 424—435 8 Claims



1. A mucosal adhesive dosage unit adapted to use for treatment of oral cavity infection selected from a) the forms consisting of a dosage unit wherein mucoadhesive polymer layer having intermixed pharmaceuticals is adhered to a protective backing layer, and b) a tablet comprising a mucosal adhesive polymer mixture having intermixed pharmaceuticals;

said mucosal adhesive dosage unit adhering to the oral mucosal tissue for at least about 12 hours,

said mucosal adhesive dosage unit having a therapeutic dosage amount of one or more antimicrobial agents and one or more anti-inflammatory agents,

said dosage unit releasing the antimicrobial agent and anti-inflammatory agent at a substantially constant rate for at least 12 bours to treat infection in the oral mucosa.

5,578,316

PALATABLE PHARMACEUTICAL COMPOSITIONS

Sanjay Bhardwaj, Randolph, N.J., and Marshall Hayward, Weybridge, United Kingdom, assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation of Ser. No. 893,288, Jun. 4, 1992, abandoned. This application Feb. 15, 1995, Ser. No. 347,325

Int. Cl.[6] A61K *9/22;9/32;9/58*

U.S. Cl. 424—441 30 Claims

1. A taste masked pharmaceutical granule composition for oral administration comprising a core material containing an unpleasant tasting drug said core having an inner polymeric coating of high permeability comprising poly(ethyl acrylate-methyl methacrylate) trimethylammonio ethyl methacrylate chloride in a 1:2:0.2 ratio and a outer polymeric coating of low permeability comprising poly(ethyl acrylate-methyl methacrylate) trimethylammonio ethyl methacrylate chloride in a 1:2:0.1 ratio said coating providing an immediate release of the drug in the stomach wherein said core material has an initial particle size of from about 180 to about 420 microns, and said coated granules of the granule composition have a final particle size of from about 200 to about 400 microns.

5,578,317

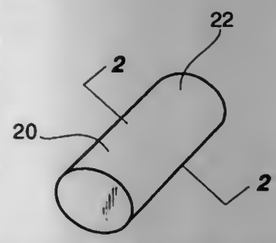
WOUND FILLER AND METHOD OF MANUFACTURE

Gerit D. Mulder, 4850 S. Lafayette La., Englewood, Colo. 80110

Filed Mar. 31, 1995, Ser. No. 415,177

Int. Cl.[6] A61F *13/00*

U.S. Cl. 424—443 10 Claims



1. A wound dressing for use in treating penetrating wounds to skin tissue, comprising:

a flexible foam member having a matrix defining a plurality of interconnected cell openings therein,

said foam member having a cylindrical shape and sufficient flexion to permit substantial filling of a wound as said foam member is compressed over said wound, said cell openings being capable of absorbing wound exudate; and

an effective amount of 8-hydroxyqinoline received within said cell openings for inhibiting production of microbial odors from wound exudate absorbed in said cell openings.

5,578,318

CONSUMABLE PRODUCT CONTAINING ABSORBENT COMPOSITION

Travis W. Honeycutt, Gainesville, Ga., assignor to Isolyser Co., Inc., Norcross, Ga.

Division of Ser. No. 72,724, Jun. 7, 1993, Pat. No. 5,417,977, which is a division of Ser. No. 875,237, Apr. 28, 1992, Pat. No. 5,252,340, which is a continuation-in-part of Ser. No. 669,363, Mar. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 450,579, Dec. 14, 1989, abandoned. This application May 23, 1995, Ser. No. 447,658

Int. Cl.[6] A61K *9/70;9/14;* A01N *25/34;* A61F *13/15*

U.S. Cl. 424—443 2 Claims

1. A consumable product wherein a granular absorbent composition is placed upon or within a suitable support, said granular absorbent composition comprising a dry particulate polymeric material characterized as having surface anionic reactive sites, having ionic bridges between various ionic group polymer chains substantially within each polymer particle formed by ionic bonding between said surface anionic reactive sites and a multivalent metal ion, and having a hydrophobic coating on said particular polymeric material,. and further comprising a wetting agent, wherein said polymeric material comprises a member selected from the group consisting of glucosidics, acrylics, acrylic acid copolymers and polyacrylamide/acrylic acid copolymers, and said surface anionic reactive sites comprise carboxylic groups.

5,578,319

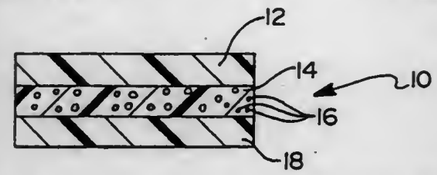
SILICONE PRESSURE SENSITIVE ADHESIVE CONTAINING ORGANIC WAX

Ross A. Noel, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 733,567, Jul. 22, 1991, Pat. No. 5,328,696. This application Mar. 18, 1994, Ser. No. 210,323

Int. Cl.[6] A61F *13/00*

U.S. Cl. 424—448 16 Claims



1. A non-flammable hot-melt, silicone pressure sensitive adhesive composition having tackiness and adhesiveness, comprising a mixture of (i) between about 30 and about 70 percent by weight of a benzene-soluble resinous copolymer containing silicon-bonded hydroxyl radicals and consisting essentially of triorganosiloxy units of the formula $R_3SiO_{1/2}$ and tetra functional siloxy units of the formula $SiO_{4/2}$ in a ratio of about 0.6 to 0.9 triorganosiloxy units for each tetra functional siloxy unit present in the copolymer, wherein each R is a monovalent organic radical independently selected from the group consisting of hydrocarbon radicals of from 1 to 6 inclusive carbon atoms, (ii) between about 22 and about 60 percent by weight of a silicone fluid, and (iii) between about 1.0 and about 25 percent by weight of an organic wax, all weight percents being based on total composition weight, the wax having a melting point between about 30° C. and about 150° C. and the wax decreasing the dynamic viscosity of the adhesive at temperatures up to about 200° C., wherein the silicone pressure sensitive adhesive composition has a tack value between about 50 and 800 g/cm^2 measured using a probe tack tester at a speed of 0.5 cm/second with a 0.5 second dwell time.

5,578,320

METHOD OF DEHYDRATING LIPOSOMES USING PROTECTIVE SUGARS

Andrew S. Janoff, Yardley, Pa.; Pieter R. Cullis; Marcel B. Bally, both of Vancouver, Canada; Michael W. Fountain, Griggstown; Richard S. Ginsberg, Monroe, both of N.J.; Michael J. Hope; Thomas D. Madden, both of Vancouver, Canada; Hugh P. Schieren, Yardley, Pa., and Regina L. Jablonski, Trenton, N.J., assignors to The Liposome Company, Inc., Princeton, N.J.

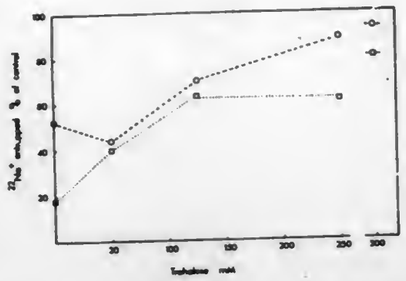
Continuation of Ser. No. 360,964, Jun. 2, 1989, abandoned, which is a division of Ser. No. 759,419, Jul. 26, 1985, Pat. No. 4,880,635, and a continuation-in-part of Ser. No. 638,809, Aug. 8, 1984, abandoned, and Ser. No. 749,161, Jun. 26, 1985, abandoned. This application Feb. 24, 1993, Ser. No. 22,819

Int. Cl.[6] A61K *9/127;* B01J *13/02;13/04*

U.S. Cl. 424—450 7 Claims

1. A method of dehydrating liposomes which comprises:

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(i) preparing a preparation of unilamellar liposomes with a protective sugar such that a protective concentration of the sugar is present at the inside and outside surfaces of the liposomes; and

(ii) removing water from the preparation;

wherein:

the unilamellar liposomes have average diameters of greater than about 50 nm; the protective sugars are monosaccharides, disaccharides or aminoglycosides; and

the liposomes retain at least about 66% of their nonaqueous internal contents during dehydration and subsequent rehydration.

5,578,321

CONTROLLED RELEASE FORMULATION OF DILTIAZEM HYDROCHLORIDE

Bernard C. Sherman, 50 Old Colony Rd., North York, Ontario, Canada

Filed May 11, 1995, Ser. No. 439,383

Claims priority, application Canada, May 11, 1994, 2123332

Int. Cl.[6] A61K *9/48*

U.S. Cl. 424—453 **8 Claims**

1. A pharmaceutical composition suitable for once daily oral administration in the form of a two-piece hard gelatin capsule containing a plurality of tablets wherein each tablet has a diameter of less than 7.1 mm and comprises by weight from about 30 percent to about 50 percent diltiazem hydrochloride and from about 30 percent to 70 percent hydroxpypropyl methylcellulose having a number average molecular weight of at least 50,000.

5,578,322

QUICK RELEASE COATED PREPARATION

Hiroyoshi Shiozawa; Hiroya Sugao; Shigeru Yamazaki, all of Fujieda, and Katsuhiko Yano, Yaizu, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 70,324, Jun. 1, 1993, abandoned.

This application Jun. 2, 1995, Ser. No. 458,793

Claims priority, application Japan, Nov. 30, 1990, 2-336057

Int. Cl.[6] A61K *9/16;9/50*

U.S. Cl. 424—490 **18 Claims**

1. A quick release coated preparation in which a disagreeable drug taste is suppressed, which comprises drug particles having a disagreeable taste coated with a mixture comprising a hydrophobic substance having a melting point of from 45° to 90° C. and a surfactant having a melting point of from 40° to 85° C., which is lower than that of the hydrophobic substance, wherein the surfactant in the coating layer is present in a redistributed state.

5,578,323

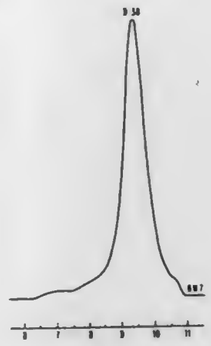
PROTEINOID CARRIERS AND METHODS FOR PREPARATION AND USE THEREOF

Sam J. Milstein, Larchmont, and Martin L. Kantor, Mamaroneck, both of N.Y., assignors to Emisphere Technologies, Inc., Hawthorne, N.Y.

Continuation-in-part of Ser. No. 920,346, Jul. 27, 1992, Pat. No. 5,443,841, which is a continuation-in-part of Ser. No. 898,909, Jun. 15, 1992, abandoned. This application Jun. 14, 1993, Ser. No. 76,803

Int. Cl.[6] A61K *9/16;9/26;9/50*

U.S. Cl. 424—499 **7 Claims**



1. A proteinoid comprising:

(i) at least one monomer selected from the group consisting of tyrosine and phenylalanine,

(ii) at least one monomer selected from the group consisting of glutamic acid, pyroglutamic acid, glutamine, and aspartic acid; and

(iii) optionally at least one monomer selected from the group consisting of lysine, arginine, and ornithine,

said proteinoid being a microsphere or microcapsule-forming proteinoid and being soluble within a selected pH range.

5,578,324

PEPTIDE PROTEINACEOUS DRUG NASAL POWDER COMPOSITION

Masahiko Dohi, Hino; Yoshihisa Nishibe, Fuchu; Yuji Makino, and Yoshiki Suzuki, both of Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

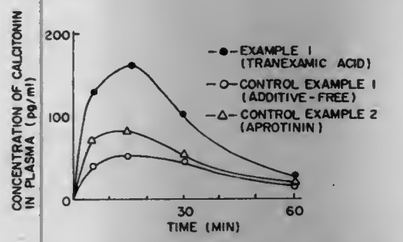
PCT No. PCT/JP94/01257, § 371 Date Mar. 29, 1995, § 102(e) Date Mar. 29, 1995, PCT Pub. No. WO95/03818, PCT Pub. Date Feb. 9, 1995

PCT Filed Jul. 29, 1994, Ser. No. 407,000

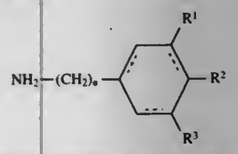
Claims priority, application Japan, Jul. 30, 1993, 5-206922; Aug. 30, 1993, 5-235841; Jan. 12, 1994, 6-001644

Int. Cl.[6] A61K *9/50*

U.S. Cl. 424—499 **18 Claims**



1. A peptide proteinaceous drug nasal powder composition comprising (i) an absorption accelerant comprising a compound, or its salt, having in the compound molecule a group expressed by the formula (II):



(II)

wherein, represents a cyclohexane ring or a benzene ring; n is an integer of 1 or 2; R^1, R^2 and R^3 are, independently, a member selected from the group consisting of a hydrogen atom -COOR, -COR, -OR', and $-SO_2NH_2$, which may be substituted; provided that at least one of R^1, R^2 or R^3 is a hydrogen atom; R represents a hydrogen atom, a C_1–C_6 lower alkyl group which may be substituted, or CH_2CH_2COOR'; R' represents a hydrogen atom, a C_1–C_6 lower alkyl group which may be substituted, a phenyl group which may be substituted, or a C_7–C_8 aralkyl group which may be substituted, and (ii) a therapeutically effective amount of a peptide proteinaceous drug.

5,578,325

NANOPARTICLES AND MICROPARTICLES OF NON-LINEAR HYDROPHILIC-HYDROPHOBIC MULTIBLOCK COPOLYMERS

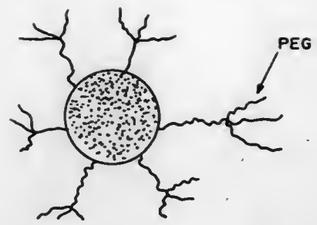
Abraham J. Domb, Efrat, Israel; Ruxandra Gref, Nancy, France; Yoshiharu Minamitake, Ota, Japan; Maria T. Peracchia, Parma, Italy, and Robert S. Langer, Newton, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 210,677, Mar. 18, 1994, which is a continuation-in-part of Ser. No. 96,370, Jul. 23, 1993. This application Jun. 24, 1994, Ser. No. 265,440

Int. Cl.[6] A61K *9/50;9/48;31/74;47/30*

U.S. Cl. 424—501 **32 Claims**

1. Multiblock copolymers consisting essentially of a multifunctional compound selected from the group consisting of gluconic acid, tartaric acid, mucic acid, citric acid, benzene dicarboxylic acid, benzene tricarboxylic acid, benzene dicarcoxylic acid and butane diglycidyl ether covalently linked with one or more hydrophillic polymers and one or more hydrophic bioerodible polymers and including at least three polymer blocks.



5,578,326

METHOD AND AN APPARATUS FOR PREPARING TISSUE REPAIR PROMOTING SUBSTANCES

Ulla S. Weis-Fogh, Hørsholm, Denmark, assignor to E. R. Squibb & Sons, Inc., Skillman, N.J.

Division of Ser. No. 998,128, Dec. 29, 1992, which is a continuation of Ser. No. 704,911, May 21, 1991, abandoned, which is a continuation of Ser. No. 465,530, Jan. 17, 1990, abandoned, which is a continuation of Ser. No. 216,712, Jul. 5, 1988, abandoned. This application May 12, 1995, Ser. No. 440,538

Claims priority, application Denmark, Oct. 3, 1986, 4753/86

Int. Cl.[6] A61K *35/14;35/16*

U.S. Cl. 424—529 **17 Claims**

1. A method of isolating tissue repair promoting substances from human or animal blood comprising:

(a) aseptically collecting a blood sample from a single human or animal into a sealable sterilized container system;

(b) sealing the container system so that contaminants in the environment are excluded;

(c) preparing tissue repair promoting substances from the blood sample by processing the sample within the sealed container system, the processing comprising:

(i) separating the blood sample into a plurality of fractions including a plasma fraction;

(ii) precipitating tissue repair promoting substances from the plasma fraction in a portion of the container system which comprises a rigid cylinder having a displaceable piston disposed therein by subjecting the plasma fraction to precipitation-promoting conditions, the precipitation-promoting conditions comprising incubation of the plasma fraction with a lower alkanol at a temperature at which precipitation occurs; and

(iii) separating the precipitate which contains the tissue repair promoting substances from unprecipitated materials.

5,578,327

PLASTERING MACHINE

Tah H. Tan, 65, Leboh Tamarind, Off Teluk Gadung Road, Southern Park, Kelang, 41200 Selangor, Malaysia

Filed Aug. 12, 1994, Ser. No. 289,393

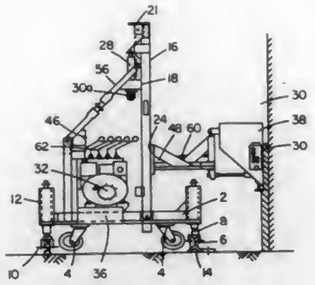
Claims priority, application Malaysia, Aug. 16, 1993, PI 930 1619

Int. Cl.[6] E04F *21/06*

U.S. Cl. 425—62 **12 Claims**

1. A plastering machine to apply cement-sand mortar plaster onto a planar vertical surface, comprising:

i) a container secured to a frame assembly means capable of vertical movement to hold and to apply cement-sand mortar plaster onto the planar surface; and



ii) a vibration means to compact the cement-sand mortar plaster onto the planar vertical surface.

5,578,328

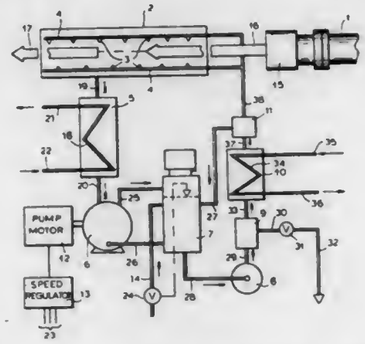
APPARATUS FOR THE COOLING OF EXTRUDED PLASTIC PROFILES OR SECTIONS

Hans Groeblacher, Feasterville, Pa., assignor to Mikron Industries, Inc., Kent, Wash.

Continuation of Ser. No. 131,714, Oct. 5, 1993, Pat. No. 5,484,557. This application Oct. 18, 1995, Ser. No. 544,787

Int. Cl.[6] B29C *47/90*

U.S. Cl. 425—71 **32 Claims**



1. An apparatus for producing an extrusion, comprising, in combination, an extruder for producing a hot extruded thermoplastic section, and means for cooling the hot extruded thermoplastic section, said means for cooling comprising:

a vacuum tank downstream of said extruder for receiving and enclosing the hot extruded thermoplastic section to be cooled and produced in said extruder;

means for generating a selected subatmospheric isobaric pressure in said tank at which liquid water sprayed onto the extruded section will vaporize;

spray means in said tank for spraying a sufficient amount of liquid water into said tank and onto the extruded section to vaporize the liquid water to produce water vapor within said tank and cool the extruded section to a rigid state while within said tank and at said selected pressure;

means for withdrawing from said tank said water vapor produced in said tank and condensing said withdrawn water vapor in sufficient amounts to maintain said selected pressure in said tank during the cooling of the extruded section, thereby producing condensed water; and

means for supplying said condensed water to said spray means as at least part of said liquid water sprayed onto the extruded section.

5,578,329

INJECTION MOLDING MACHINE FOR PROCESSING SYNTHETIC MATERIALS

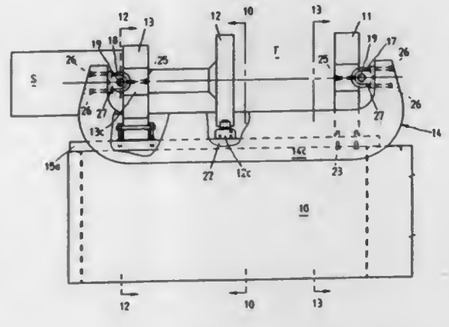
Karl Hehl, Arthur-Hehl-Str. 32, D-72290 Lossburg, Germany

Filed Mar. 21, 1994, Ser. No. 215,471

Claims priority, application Germany, Mar. 20, 1993, 43 08 962.3; Apr. 24, 1993, 43 13 473.4

Int. Cl.[6] B29C *45/64*

U.S. Cl. 425—192 R **9 Claims**



1. An injection molding machine for processing synthetic materials, comprising:

a machine base;

a stationary mold carrier fixedly connected with said machine base;

a movable mold carrier connected with said machine base and being displaceable along a motion path, said movable mold carrier and said stationary mold carrier defining therebetween a mold clamping space;

a closing mechanism operatively connected to said movable mold carrier for moving said movable mold carrier along the motion path in a closing direction, and into and out of a closed position with said stationary mold carrier;

at least one force transmitting element deformable to compensate for forces generated when said mold carriers are in the closed position, said force transmitting element being separably connected to said closing mechanism;

a supporting element supported on said machine base, and being movable in the closing direction, said supporting element being arranged at said closing mechanism for supporting said closing mechanism, and being hinged to said stationary mold carrier by said force transmitting element; and

a plurality of linking elements detachably connecting said force transmitting element to said supporting element and said stationary mold carrier, respectively, each said linking element comprising a plurality of exchangeable components movable relative to one another and located between said force transmitting element and said supporting element, and said force transmitting element and said stationary mold carrier, respectively, whereby the forces generated are transmitted to said force transmitting element through the respective exchangeable components, so that essentially only the exchangeable components are subjected to wear.

5,578,330

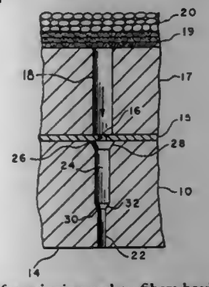
PITCH CARBON FIBER SPINNING APPARATUS

Roger A. Ross, Chattanooga, and Uel D. Jennings, Signal Mountain, both of Tenn., assignors to Conoco Inc., Ponca City, Okla.

Division of Ser. No. 245,345, May 18, 1994, Pat. No. 5,437,927, which is a continuation of Ser. No. 987,900, Dec. 8, 1992, abandoned, which is a division of Ser. No. 606,675, Oct. 31, 1990, Pat. No. 5,202,072, which is a continuation-in-part of Ser. No. 311,511, Feb. 16, 1989, abandoned. This application Mar. 23, 1995, Ser. No. 409,223

Int. Cl.[6] D01D *4/06;* **D01F** *9/12*

U.S. Cl. 425—198 **7 Claims**



1. An apparatus for spinning carbon fibers having random microstructure comprising:

a distribution plate having at least one coaxial hole passing therethrough;

said distribution plate being in contact with a shim;

said shim having at least one opening having a aspect ratio of at least 3:1 in fluid communication with said coaxial hole, said opening having an area less than the area of said coaxial hole;

said shim being in contact with a spinneret;

said spinneret having at least one capillary in fluid communication with said opening in said shim.

5,578,331

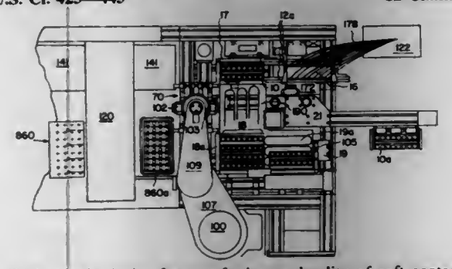
AUTOMATED APPARATUS FOR PREPARING CONTACT LENSES FOR INSPECTION AND PACKAGING

Wallace A. Martin, Orange Park; Russell J. Edwards, Jacksonville, both of Fla.; Borge P. Gundersen, Tikob, Denmark; Darren S. Keene, Jacksonville, Fla.; Ture Kindt-Larsen, Holte, Denmark; John M. Lepper, Jacksonville, Fla.; Niels J. Madsen, Allerød; Thomas C. Ravn, Helsignor, both of Denmark; Daniel T. Wang, Jacksonville, and William E. Holley, Ponte Vedra Beach, both of Fla., assignors to Vision Products, Inc., Jacksonville, Fla.

Filed Jun. 10, 1994, Ser. No. 258,557

Int. Cl.[6] C08J *7/00*

U.S. Cl. 425—445 **12 Claims**



1. A robotic device for transferring a plurality of soft contact lenses from a first processing station to a second processing station, said device comprising:

(a) a first frame, said frame having a plurality of first contact lens carriers arranged thereon, each of said carriers having a concave lens holding surface and a contact lens to be transferred, said concave lens holding surface also defining a first fluid means for introducing a fluid between said surface and said lens;

(b) a robotic transfer head, said head facilitating transfer of said lens from said first processing station to said second processing station, said transfer head also having;

(i) a plurality of second contact lens carriers, each of said second carriers defining a convex lens attachment surface to receive a contact lens and a second fluid means for introducing a fluid between said contact lens surface and said convex surface;

(ii) a robotic transport for moving said transfer head from said first processing station to said second processing station;

(c) fluid supply means for supplying at least one fluid to said first and second fluid means;

(d) a second frame, said second frame having a plurality of third contact lens carriers arranged thereon for receiving contact lenses transferred thereto;

(e) a controller for actuating said articulated transport and said fluid supply means to effect transfer of said lenses from said first carrier and from said second carrier.

5,578,332

CONTACT LENS MOULD

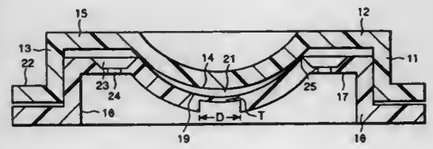
Ronald S. Hamilton, Winchester, and William E. Seden, Fareham, both of England, assignors to British Technology Group Ltd., London, England

Division of Ser. No. 233,722, Apr. 26, 1994, which is a continuation of Ser. No. 889,471, Jun. 16, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 467,982

Claims priority, application United Kingdom, Nov. 2, 1988, 8825650; Mar. 2, 1989, 8904720

Int. Cl.[6] B29C *43/54*

U.S. Cl. 425—555 **9 Claims**



1. A mould usable only once in a cast molding operation for cast moulding a contact lens, comprising:

i) a first mould part comprising

a first base portion including a male mould surface surrounded by an annular surface defining a trough region on one side of the first base portion,

an annular wall extending away from said annular surface defining the trough region on said one side of the first base portion,

a flange extending from an end of said annular wall and adapted for receiving a sealing cover to sealingly cover the contact lens within said first mould part to form a commercial package for said contact lens after said cast moulding operation; and

ii) a second mould part comprising

a second base having a female mould surface formed on one side thereof, said female mould surface being cooperable with said male mould surface to define a mould cavity therebetween, and

an annular wall extending perpendicularly from the second base,

the annular walls of the first and second mould parts being engageable in sliding relation to enable the two mould parts to function as a piston and cylinder to open and close the mould.

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5,578,333

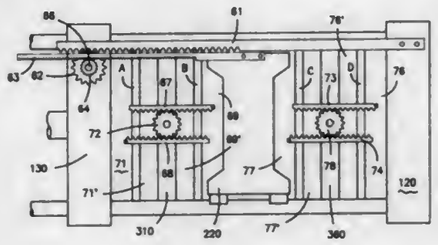
COMBINED MOLD CARRIER AND LINKAGE APPARATUS

Robert D. Schad, Toronto, and John Di Simone, Woodbridge, both of Canada, assignors to Husky Injection Molding Systems Ltd., Canada

Continuation of Ser. No. 231,661, Apr. 25, 1994, abandoned. This application Jun. 7, 1994, Ser. No. 255,004

Int. Cl.[6] B29C *45/64*

U.S. Cl. 425—588 6 Claims



1. In an injection molding machine including fixed pairs of upper and lower tie bars, a first fixed platen from which said tie bars extend and a second platen movable along said tie bars, a mold arrangement comprising a plurality of sets of movable plates defining a plurality of mold cavities between cooperating sets of plates wherein said sets of plates are disposed axially to define a plurality of axially arranged mold stations operable to open and close simultaneously during cyclic molding machine operation,

the improvement comprising:

a first set of plates,

primary motion means connected to said first set of plates,

said primary motion means being further connected to said fixed and movable platens, respectively,

a second set of plates,

a first secondary motion means connected to said second set of plates,

said secondary motion means being further connected to said movable platen and to said first set of plates, respectively, whereby motion of said movable platen is operable to activate said primary motion means relative to said first set of plates to move said first set of plates along said tie bars while maintaining said first set of plates equidistant from said platens, motion of said first set of plates in combination with motion of said movable platen being operable to drive said secondary motion means effective to move said second set of plates along said tie bars so that the combined action of both motion means is operable to open and close at least two mold stations simultaneously, wherein the primary motion means comprises:

rack means and cooperating pinion means,

a support member for supporting said first set of plates,

a first portion of the rack means being secured to the fixed platen,

a second portion of the rack means being secured to said support member,

said pinion means defining a plurality of pinions fixed to said movable platen, and

each rack portion having a cooperating pinion individual thereto whereby motion of the movable platen is effective to move said first set of plates via motion of said support member.

5,578,334

INCREASING THE HDL LEVEL AND THE HDL/LDL RATIO IN HUMAN SERUM WITH FAT BLENDS

Kalyana Sundram, DE, Malaysia; Daniel Perlman, Arlington, and Kenneth C. Hayes, Wellesley, both of Mass., assignors to Brandeis University, Waltham, Mass.

Filed Apr. 7, 1995, Ser. No. 418,641

Int. Cl.[6] A23D *9/00*

U.S. Cl. 426—2 29 Claims

1. A method of increasing the HDL concentration and the HDL/LDL concentration ratio in human serum by providing a balance between a sufficient and required proportion of cholesterol-free saturated fatty acids in the daily dietary fat of said human and a sufficient and required, but not excessive proportion of polyunsaturated fatty acids comprising linoleic acid in said dietary fat, while the remaining proportion of fatty acids and energy from said dietary fat is provided by monounsaturated fatty acids comprising oleic acid, said method comprising the step of: ingesting said dietary fat, wherein said saturated fatty acids are selected from the group consisting of palmitic acid, myristic acid, lauric acid and combinations thereof, and constitute between 20% and 40% by weight of the daily dietary fat based upon said, dietary fat accounting for 30% of the total dietary energy consumption, and wherein said linoleic acid must constitute between 15% and 40% by weight of said dietary fat, whereby the required proportional intake of said polyunsaturated fatty acids enhances the formation of HDL from VLDL and/or decreases the clearance of HDL, while an excessive proportional intake of said polyunsaturated fatty acids and said monounsaturated fatty acids is avoided to assure a sufficient dietary availability of said saturated fatty acids which are required for sufficient VLDL synthesis and HDL production.

5,578,335

PROCESS FOR THE PRODUCTION OF JUICES FROM FRUITS AND VEGETABLES

Catherine M. T. Grassin, and Pierre C. L. Fauquembergue, both of Seclin, France, assignors to Gist-brocades, B.V., Delft, Netherlands

PCT No. PCT/EP92/02576, § 371 Date Aug. 12, 1993, § 102(e) Date Aug. 12, 1993, PCT Pub. No. WO93/09683, PCT Pub. Date May 27, 1993

PCT Filed Nov. 6, 1992, Ser. No. 78,261

Claims priority, application European Pat. Off., Nov. 14, 1991, 91202971

Int. Cl.[6] A23L *2/02*

U.S. Cl. 426—51 11 Claims

1. A process for the production of juices and pectin-containing pomace from a fruit or a vegetable which process comprises

contacting the pulp of said fruit or vegetable in the presence of calcium ions with a pectin-attacking enzyme composition consisting essentially of pectin esterase under conditions wherein said pectin esterase effects enzymatic demethylation without depolymerization of pectin; and

separating the resulting juices from the resulting pectin-containing pomace.

5,578,336

CONFECTION CARRIER FOR VITAMINS, ENZYMES, PHYTOCHEMICALS AND AILMENTARY VEGETABLE COMPOSITIONS AND METHOD OF MAKING

Woodrow C. Monte, 6511 South River Rd. #65, Tempe, Ariz. 85283

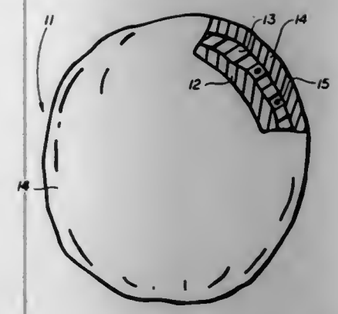
Filed Jun. 7, 1995, Ser. No. 475,551

Int. Cl.[6] A23L *1/30*

U.S. Cl. 426—72 26 Claims

1. A coated confection product including

(a) a soft candy composition including 5% to 40% by weight moisture;



(b) a first outer coating on said soft candy composition and containing at least one vitamin selected from the group consisting of vitamin A, vitamin B, vitamin C, vitamin D, vitamin E, vitamin K, and vitamin P; and

(c) a second outer coating intermediate said soft candy composition and said first outer coating to sealingly separate said vitamin from the moisture in said soft candy composition.

5,578,337

PROCESS FOR EXTRUDING GELLED PRODUCT

Hamsa A. P. Thota, St. Simons Island, Ga., and Chandrakant S. Shah, Troy, Mich., assignors to Rich Sea-Pak Corporation, St. Simons Island, Ga.

Filed Feb. 2, 1995, Ser. No. 382,767

Int. Cl.[6] A23L *1/05*

U.S. Cl. 426—573 31 Claims

1. A process for extruding gel comprising:

mixing at least two components that chemically react to form a gelling mixture in a mixing chamber;

providing flow of the gelling mixture from the mixing chamber into an extrusion die;

substantially stopping flow of the gelling mixture from the mixing chamber into the extrusion die for a rest period at least long enough to allow the gelling mixture in the extrusion die to form a gelled mixture; and

providing renewed flow of gelling mixture from the mixing chamber into the extrusion die so as to cause the gelled mixture to be extruded from the extrusion die as an edible gelled extrudate having a preselected shape.

5,578,338

PROCESS FOR PRODUCTION OF EUCALYPTUS TEA

Kenji Shimabukuro, Nago, Japan, assignor to Yugen Kaisha Okinawa Yukali Farm, Okinana, Japan

Continuation-in-part of Ser. No. 396,690, Mar. 1, 1995, and a continuation-in-part of Ser. No. 104,826, Aug. 10, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 470,067

Int. Cl.[6] A23F *3/12*

U.S. Cl. 426—597 7 Claims

1. A process for producing a ground Eucalyptus tea product in dried form, made solely from Eucalyptus material selected from the group consisting of Robsta Eucalyptus (Eucalyptus Robsta Smith) and Lemon Eucalyptus (Eucalyptus Citriodora Hook) the process comprising the steps in sequence of:

steaming raw Eucalyptus material, selected from said Robsta Eucalyptus and said Lemon Eucalyptus, alone by contact thereof with water vapor sufficiently to cause loss of activity of attendant oxidizing enzymes therein and also to cause an increase in softness thereof and thereby forming a steamed Eucalyptus material alone, the steaming being effected at about 100° C. for about 30 seconds,

cooling the steamed Eucalyptus material sufficiently rapidly to prevent color and gloss degradation thereof,

drying the cooled Eucalyptus material,

rumple-twisting the dried Eucalyptus material,

further drying the rumple-twisted Eucalyptus material to a moisture content of at most about 5% for increasing long term storage stability, and

finely grinding the further dried Eucalyptus material sufficiently to provide a finely ground tea in dried form,

said finely ground tea in dried form being rich in fats, soluble polysaccharides and tannins, and in potassium, sodium and calcium, and comprising about the following component content:

crude proteins	about 8	7%
crude fats	about 8	7%
ash content	about 4.5	5.5%
crude fibers	about 16	17.5%
glucides	about 49	50.5%
tannins	about 14	13%
potassium	about 1700	1750 mg %
sodium	about 800	850 mg %
calcium	about 550	600 mg %
magnesium	about 350	400 mg %
phosphorus	about 175	200 mg %
iron	about 9	15 mg %
copper	about 0.4	0.8 mg %
zinc	about 2.5	3 mg %
selenium	about 0.8	1 mg %.

5,578,339

SWEETENER, PROCESS FOR ITS PREPARATION AND THE USE THEREOF

Markwart Kunz, Braunschweig; Hanspeter Degelmann, Worms; Wolfgang Wach, Braunschweig; Mohammad Munir, Kindenheim; Jörg Kowalczyk, Grünstadt, and Manfred Vogel, Neuleiningen, all of Germany, assignors to Südzucker Aktiengesellschaft Mannheim/Ochsenfurt, Mannheim, Germany

Filed May 5, 1994, Ser. No. 238,692

Claims priority, application Germany, May 6, 1993, 43 14 961.8; European Pat. Off., Dec. 27, 1993, 93120934

Int. Cl.[6] A23L *1/236;* C12P *19/12;19/18;41/00*

U.S. Cl. 426—658 23 Claims

1. A process for the preparation of a sweetener comprising 6-O-α-D-glucopyranosyl-D-sorbitol (1,6-GPS), 1-O-α-D-glucopyranosyl-D-sorbitol (1,1-GPS), and 1-O-α-D-glucopyranosyl-D-mannitol (1,1-GPM),

comprising the steps of

a) converting sucrose enzymatically into isomerized sucrose having a disaccharide content by weight of more than 85% of disaccharides of the group consisting of isomaltulose, trehalulose, and isomaltose and less than 15% by weight of monosaccharides of the group consisting of glucose and fructose and of non-converted sucrose and oligomers;

b) removing non-isomerized remaining sucrose from the isomerized sucrose by enzymatic or H^+-catalyzed cleavage;

c) catalytically hydrogenating the isomerized sucrose; and

d) either before or after the catalytic hydrogenation subjecting the resulting mixture to chromatographic separation to prepare said sweetner.

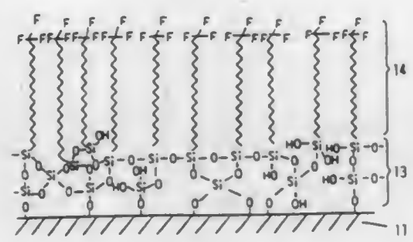
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5,578,340

MEDICAL MEMBER AND METHOD OF MANUFACTURING THE SAME

Kazufumi Ogawa; Norihisa Mino, and Mamoru Soga, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 89,629, Jul. 12, 1993, Pat. No. 5,443,511, which is a continuation of Ser. No. 824,314, Jan. 23, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 485,787
Claims priority, application Japan, Jan. 28, 1991, 3-008323; Feb. 6, 1991, 3-038134; Mar. 14, 1991, 3-049841
Int. Cl.[6] B05D *3/06;3/10;1/36*
U.S. Cl. 427—2.1 **6 Claims**



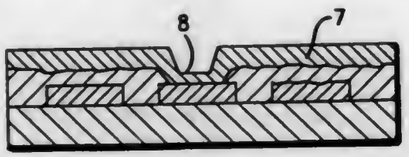
1. A method of manufacturing a medical member comprising the steps of contacting a medical member containing active hydrogen groups at the surface in a nonaqueous organic solution of a silane-based surface active material having a chlorosilane group at one end and a fluorocarbon group at the other end, thereby adsorbing said silane-based surface active material to said medical member, washing away non-reacted matter by using a non-aqueous solution, and reacting with water to obtain a medical member having a chemically adsorbed monomolecular film.

5,578,341

METHOD OF MANUFACTURING PRINTED CIRCUIT BOARD BY A BUILD-UP TECHNIQUE

Kouichi Hirosawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,452
Claims priority, application Japan, Dec. 28, 1993, 5-337159
Int. Cl.[6] B05D *5/12*
U.S. Cl. 427—97 **4 Claims**



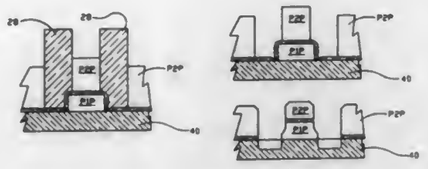
1. A method of manufacturing a printed circuit board comprising the steps of:
- forming a circuit layer on a board;
- roughening a surface of said circuit layer;
- forming an insulating layer on said circuit layer having an opening exposing a viahole area of the first circuit layer;
- roughening a surface of said insulating layer;
- subjecting only said exposed viahole area of said circuit layer to a reduction process after said roughening of the surface of said insulating layer; and
- applying an additional plating to said printed circuit board following said reduction processing without using a soft etching process prior to applying said additional plating.

5,578,342

ALIGNMENT OF MAGNETIC POLES OF THIN FILM TRANSDUCER

Ut Tran, San Jose; Tai Lee, Saratoga, and Tran Son, Milpitas, all of Calif., assignors to Read-Rite Corporation, Milpitas, Calif.

Filed Jul. 5, 1995, Ser. No. 498,169
Int. Cl.[6] B05D *5/12;1/18;* **C25D** *5/02;* **C23C** *14/32*
U.S. Cl. 427—131 **4 Claims**



1. A split yoke process of making a thin film magnetic head comprising the steps of:
- providing a nonmagnetic substrate;
- depositing an insulating alumina undercoat layer on said substrate;
- forming a first magnetic pole layer including a pole tip region and a back yoke region by (a) forming a seed layer of magnetic nickel/iron material over said insulating alumina undercoat layer, (b) spin coating photoresist and masking to form a frame for defining said first magnetic pole layer, and (c) plating a layer of nickel/iron material to produce said first magnetic pole layer;
- depositing an insulating layer over said first magnetic pole layer for providing a transducing gap;
- depositing at least one layer of electrically conductive coil material and encompassing said coil material with insulating hard baked photoresist;
- forming a second magnetic pole layer including a pole tip region and a back yoke region by (a) forming a seed layer of magnetic nickel/iron material over said insulating hard baked photoresist; (b) providing a partial mask for framing only a part of the second magnetic pole layer which forms a partial frame which leaves the pole tip region exposed while framing the back region of the second magnetic pole layer; (c) spin coating a thin layer of low viscosity photoresist and (d) using masking and photolithography, plating a layer of magnetic nickel/iron material to produce the second magnetic pole layer;
- stripping said low viscosity photoresist in said pole tip region;
- trimming said pole tip regions by ion milling and using said second magnetic pole layer as a mask;
- so that the widths of the pole tips of said second pole and said first pole adjacent to said transducing gap are equal and said pole tips are in precise alignment.

5,578,343

MESH-BACKED ABRASIVE PRODUCTS

Anthony C. Gaeta, Rockport; Gwo S. Swei, East Amherst, and Neil W. Durkee, Clifton Park, all of N.Y., assignors to Norton Company, Worcester, Mass.

Filed Jun. 7, 1995, Ser. No. 476,161
Int. Cl.[6] B05D *1/36;5/02;* **C08J** *5/14*
U.S. Cl. 427—202 **11 Claims**

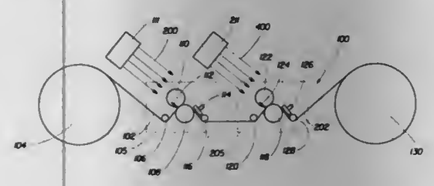
1. A process for the production of a mesh-backed abrasive material which comprises:
- a) directly coating an unfinished greige mesh fabric in which at least 20% of the surface area is voids with a solvent-free liquid maker coat comprising a binder component consisting essentially of a bi-functional radiation-curable adhesive;
- b) applying a coating of abrasive grain to the maker coat;
- c) radiation-curing the maker coat at least to the point at which it becomes solidified; and
- d) applying a liquid size coat comprising a thermally curable resin over the abrasive grain; and
- e) completing the cure of both maker and size coats.

5,578,344

PROCESS FOR PRODUCING A LIQUID IMPERMEABLE AND FLUSHABLE WEB

Nichholas A. Ahr, Cincinnati, and Raymond J. Dirk, Cleves, both of Ohio, assignors to The Procter & Gable Company, Cincinnati, Ohio

Filed Nov. 22, 1995, Ser. No. 561,720
Int. Cl.[6] B05D *1/00*
U.S. Cl. 427—211 **20 Claims**



1. A process for producing a liquid impermeable and flushable web, said process comprising the steps of:
- providing a water dispersible substrate having a first side and a second side, said sides being mutually opposed;
- providing a first resinous material;
- heating said first resinous material so that said first resinous material is flowable;
- providing a first printing roll having a first longitudinal axis, said first printing roll being rotatable about said first longitudinal axis;
- providing a first anvil, said first anvil being juxtaposed with said first printing roll to form a first nip therebetween;
- transporting said substrate relative to said first printing roll and said first anvil at a transport velocity;
- depositing said first resinous material to said first printing roll;
- rotating said first printing roll about said first longitudinal axis at a first peripheral velocity, said first peripheral velocity is at least about 100% greater than said transport velocity, thereby creating a first velocity differential, and applying said first resinous material from said first printing roll to said first side of said substrate, said first resinous material having sheer forces imparted thereto by said velocity differential to impregnate said substrate with said first resinous material, whereby said first resinous material is impregnated into said substrate; and
- wherein a web is formed from said substrate, said web having a first side, impregnated with said first resinous material.

5,578,345

MULTI-LAYER COATING COMPOSITION INCORPORATING MIGRATORY CATALYST

Wynn Moy, Orland Park, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Division of Ser. No. 157,865, Nov. 24, 1993. This application Jun. 7, 1995, Ser. No. 475,310
Int. Cl.[6] B05D *1/36*
U.S. Cl. 427—333 **10 Claims**

1. A process for coating a substrate with a multi-layer decorative and/or protective coating which process comprises:
- (a) applying to the substrate at least one waterborne first coat which comprises:
  - (i) a film-forming composition capable of curing or drying; and
  - (ii) a catalyst for the reaction is isocyanate groups and active hydrogen groups; and
- (b) applying to the first coat, prior to the complete cure of said first coat a second coat which second coat comprises:
  - (i) an active hydrogen functional compound; and
  - (ii) a polyisocyanate;

whereby upon application of said second coat onto the first coat, a reaction between the polyisocyanate and the active hydrogen functional compound of the second coat is catalyzed.

5,578,346

MULTI-LAYER COATING COMPOSITION INCORPORATING MIGRATORY CATALYST

Wynn Moy, Orland Park, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Division of Ser. No. 157,584, Nov. 24, 1993. This application Jun. 7, 1995, Ser. No. 481,553
The portion of the term of this patent subsequent to Nov. 24, 2013, has been disclaimed.
Int. Cl.[6] B05D *7/14*
U.S. Cl. 427—333 **7 Claims**

1. A process for coating a substrate with a multi-layer decorative and/or protective coating which process comprises:
- (a) applying to the substrate at least one first coat which is substantially free of isocyanate functionality and which comprises:
  - (i) a film-forming composition capable of curing or drying; and
  - (ii) a catalyst for the reaction of isocyanate groups and active hydrogen groups; and
- (b) applying to the first coat, prior to the complete cure of said first coat a second coat which is substantially free of any catalyst for the reaction of isocyanate groups and active hydrogen groups, and which second coat comprises:
  - (i) an active hydrogen functional compound; and
  - (ii) a polyisocyanate;

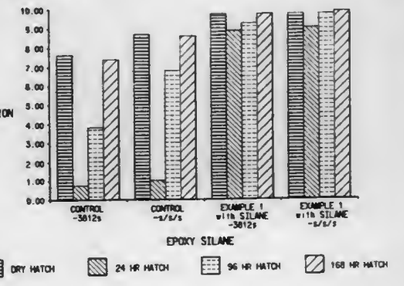
whereby upon application of said second coat onto the catalyst containing first coat, a reaction between the polyisocyanate and the active hydrogen functional compound of the second coat is catalyzed.

5,578,347

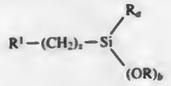
PROCESS FOR APPLYING A FINISH TO A METAL SUBSTRATE

Christina Chan, Catonsville, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

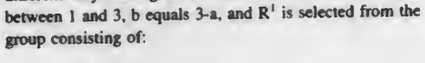
Continuation-in-part of Ser. No. 362,354, Dec. 22, 1994, abandoned, which is a continuation-in-part of Ser. No. 248,033, May 24, 1994, abandoned. This application Nov. 13, 1995, Ser. No. 556,348
Int. Cl.[6] B05D *3/12*
U.S. Cl. 427—336 **18 Claims**



1. A process for coating a metal substrate, comprising the steps:
(i) applying to a clean substrate, one that has not been subject to an acid etch or acid anodization treatment, an aqueous solution of one or more uncopolymerized silanes at least one of which is selected from the group consisting of



wherein x is an integer between 1 and 3, R is the same or different alkyl having 1 to 3 carbons, a is 0 or an integer between 1 and 3, b equals 3-a, and R^1 is selected from the group consisting of:



where z is 0 or an integer of 1 to 3;
said silane being present in a concentration of 0.001 to 10.0 percent by weight of the solution and being present on the substrate in a dry thickness of less than about 0.1 mil;
(ii) removing excess silane by finishing with water or aqueous organic solvent, wiping with a water-wet material or blowing with air; and
(iii) modifying the substrate surface by virture of steps (i) and (ii) to accept adherence of a subsequent coating without intermediate thermal decomposition of the silane.

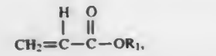
5,578,348

TREATING FLEXIBLE SURFACES

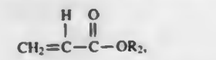
Harald Bauer, Rossdorf; Juergen Christner, Seeheim-Jugenheim; Maria L. Weber, Roedermark, all of Germany, and Wolfgang Hoehne, Sao Leopoldo, Brazil, assignors to Röhm GmbH, Darmstadt, Germany

Division of Ser. No. 232,836, Apr. 25, 1994, Pat. No. 5,442,013. This application May 22, 1995, Ser. No. 445,588
Claims priority, application Germany, Apr. 27, 1993, 43 13 714
Int. Cl.[6] C14C *11/00*; C08F *265/06*
U.S. Cl. 427—389 **2 Claims**

1. A method for treating a flexible surface which comprises applying to the surface an aqueous emulsion of an acrylate graft copolymer consisting essentially of at least one graft monomer of the formula



wherein R_1 is an alkyl group having 2–24 carbon atoms, graft polymerized on a backbone polymer comprising 55–100 percent by weight of at least one monomer of the formula



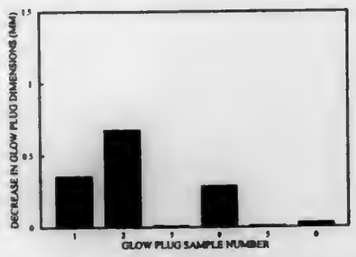
wherein R_2 is an alkyl group having 2–24 carbon atoms, the ratio of graft monomers to monomers of the backbone polymer being from 1:9 to 1:1 in parts by weight.

5,578,349

PROCESS FOR COATING A CERAMIC GLOW PLUG PORTION WITH A CORROSION INHIBITING MATERIAL

Kent A. Koshkarian; Chuong Q. Dam, both of Peoria, and M. Brad Beardsley, Laura, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Nov. 30, 1995, Ser. No. 565,372
Int. Cl.[6] C23C *4/10*
U.S. Cl. 427—453 **23 Claims**



1. A process for coating at least a portion of a ceramic glow plug with a corrosion inhibiting material, comprising the steps of:
cleaning and etching a portion of the glow plug;
placing the glow plug on a rotatable device;
positioning the glow plug portion to be coated and a plasma spray gun at relative positions adjacent one another;
providing a primary gas to said plasma spray gun at a pressure sufficient to deliver said primary gas at a flow rate in the range of about 60 ft^3/hr to about 120 ft^3/hr;
providing a secondary gas to said plasma spray gun at a pressure sufficient to deliver said secondary gas at a flow rate in the range of about 5 ft^3/hr to about 30 ft^3/hr;
adjusting a power source to deliver current in the range of about 400 amps to about 600 amps;
energizing said power source and resultingly generating a non-transferable plasma arc capable of sustaining a plasma flame formed by the ignition of said primary and secondary gases;
providing a carrier gas to said plasma spray gun at a pressure and flow rate sufficient for fluidizing and injecting tantalum oxide powder at a feed rate in the range of about 20 gms/min to about 40 gms/min into said plasma flame;
plasma spraying said tantalum oxide onto the ceramic glow plug portion, and forming and depositing resultant tantalum oxide coating on said glow plug portion.

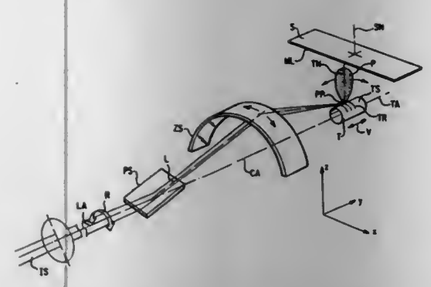
5,578,350

METHOD FOR DEPOSITING A THIN LAYER ON A SUBSTRATE BY LASER PULSE VAPOR DEPOSITION

Hermann Mai; Reiner Dietsch, both of Dresden, and Klaus Schubert, Possendorf, all of Germany, assignors to Fraunhofer-Gesellschaft, Munich, Germany

Continuation of Ser. No. 230,792, Apr. 21, 1994, abandoned, and a continuation-in-part of Ser. No. 838,816, Mar. 25, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 478,861
Claims priority, application Germany, Jul. 3, 1990, HO1L/342 456 2; Jul. 3, 1990, HO1L/342 455 4
Int. Cl.[6] C23C *14/30*; H05B *7/00*
U.S. Cl. 427—596 **23 Claims**

1. Method for depositing a layer on a substrate by laser pulse vapor deposition, comprising the steps of
a) providing a target which has a longitudinally extending target axis and a curved target surface extending at least partially around the target axis,
b) projecting a pulsed laser beam from a laser beam source,
c) deflecting said laser beam using first and second mirrors disposed in series between the laser beam source and the curved target surface, said first and second mirrors being



arranged to deflect the laser beam from the first mirror to the second mirror to the curved target surface where a plasma plume of target material is produced in response to the laser beam impinging on the curved target surface, and
d) positioning a substrate adjacent the target such that a coating surface of the substrate is substantially parallel to said target axis and such that the plasma plume applies a coating layer of target material to the coating surface,
wherein said first mirror has a planar reflective surface which is rotatable about a first mirror axis, which said first mirror axis is in the planar reflective surface and obliquely inclined with respect to the target axis,
wherein said second mirror has a reflective second mirror surface means which is either movable along an arc or configured as the arc, said arc extending at least partially circumferentially around the target axis,
and wherein said deflecting said laser beam includes rotating the first mirror in successive angular steps about the first mirror axis so as to move the laser beam along successive points on said arc, said laser beam being deflected from said successive points by said second mirror surface means to impinge upon respective corresponding successive points on said curved target surface, said corresponding successive points being located on a target surface arc which extends through a central point of said curved target surface located nearest said coating surface, said target surface arc being disposed in a plane which is perpendicular to said target axis and which contains said central point, said laser beam impinging upon each of said corresponding successive points to produce a respective plasma plume of target material which propagates in a substantially radial direction from said target to said coating surface in order to produce a constant thickness of plasma plume coating over the coating surface of the substrate.

5,578,351

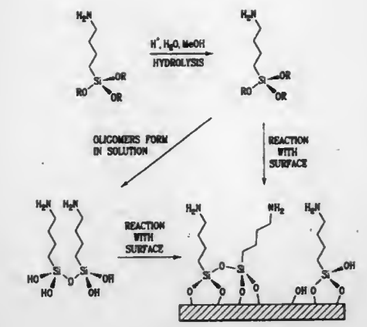
LIQUID CRYSTAL COMPOSITION AND ALIGNMENT LAYER

Ranganathan Shashidhar, Springfield; Brian Peek, Annandale; Banahalli R. Ratna, Springfield; Jeffrey M. Calvert, Alexandria; Joel M. Schnur, Burke, all of Va.; Mu-San Chen, Ellicott City, Md., and Renate J. Crawford, Alexandria, Va., assignors to Geo-Centers, Inc., Newton Centre, Mass., and The United States of America as represented by the secretary of the Navy, Washington, D.C.

Filed Jan. 20, 1995, Ser. No. 375,997
Int. Cl.[6] G02F *1/1337*; B32B *27/00*
U.S. Cl. 428—1 **30 Claims**

1. A substrate having on at least a portion of a surface thereof a chemisorbed anisotropic directionally linked layer comprising a compound of the formula:

wherein X is a chemical functional group capable of chemisorption to said substrate, S is a spacer group separating X and P, and P is a directionally linkable group, and n, m and o are all integers greater than or equal to 1, wherein m≧n and o≧n.

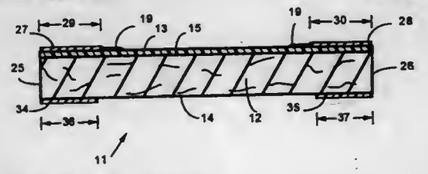


5,578,352

STRIP COATED ADHESIVE PRODUCTS

Douglas M. Smith, Buffalo, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Apr. 4, 1995, Ser. No. 416,287
Int. Cl.[6] B32B *7/12*; B41M *5/20*
U.S. Cl. 428—40.1 **20 Claims**



1. A linerless label, comprising:
a substrate of label material having first and second faces, each face having first and second substantially parallel side edges;
a coating of thermal transfer material substantially completely covering said first face;
first and second adhesive release material patterns disposed substantially along said first and second edges of said first face, said first and second adhesive release material patterns having first and second width dimensions in a direction perpendicular to said first and second edges, said first face having a substantially continuous exposed surface area of said thermal transfer coating between said first and second release patterns; and
first add second adhesive patterns disposed substantially along said first and second edges of said second face in alignment with said first and second adhesive release material patterns, respectively, said first and second adhesive patterns having third and fourth width dimensions, respectively, in a direction perpendicular to said first and second edges, said third and fourth widths substantially equal to or less than said first and second widths, respectively.

5,578,353

TATTOO ADMISSION TICKET

James H. Drew, III, 3531 Walton Way Ste. B, Augusta, Ga.

Filed Jun. 7, 1995, Ser. No. 477,803
Int. Cl.[6] B65D *65/28*; G09F *3/00*
U.S. Cl. 428—43 **9 Claims**



1. A set of admission tickets numbered in numerical sequence and interconnected with rows of perforations serving to separate

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and define separate tickets, each of said tickets comprising a substrate element and an indicia coating on said substrate element, said indicia coating being formed of an ink transferrable to human skin by wetting with a transfer solution to form a water-washable marking thereon and said substrate element comprising a transfer solution-absorbing paper.

5,578,354

Patent Not Issued For This Number

5,578,355

MAGNETO-OPTICAL DISK HAVING A MICROPOROUS PROTECTIVE COATING CONTAINING A LUBRICANT

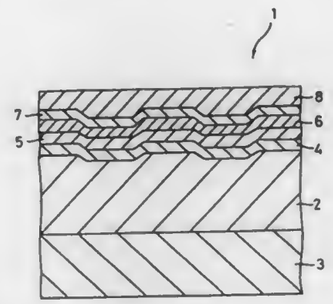
Hideki Hirata; Hiroyuki Endo; Isamu Kuribayashi, and Tsuyoshi Komaki, all of Nagano, Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation of Ser. No. 75,956, Jun. 14, 1993, abandoned. This application Mar. 3, 1995, Ser. No. 400,192

Claims priority, application Japan, Jun. 19, 1992, 4-185813; Mar. 4, 1993, 5-069361; Apr. 15, 1993, 5-112186

Int. Cl.[6] G11B *5/71;5/72*

U.S. Cl. 428—64.3 **9 Claims**



1. A magneto-optical disk comprising a substrate, a recording layer thereon, and a protective coating on the recording layer containing a lubricant and a resin, said lubricant being a fatty acid ester of 0.1–20% by weight of the protective coating and liquid at ambient temperature, the disc being operated for magneto-optical recording in a magnetic field modulation mode such that the protective coating is in sliding contact with a magnetic head, said protective coating is formed by curing with radiation a composition containing a lubricant and a radiation-curable compound such that micropores are locally formed in or near the outer surface of said protective coating remote from the substrate to a depth of up to 2 μm from the surface of the protective coating, the lubricant being distributed in the micropores and the micropores have a population on the protective coating surface or in a region from the surface to a depth of 2 μm ranging from 50 to 500 pores/10 μm^2 and is up to 10 pores/μm^3 in the inside region of the protective coating extending from the lower surface to the half thickness level and the micropores have an average diameter of approximately 0.01 μm to 1 μm and an average depth of about 0.1 μm to 1 μm.

5,578,356

Patent Not Issued For This Number

5,578,357

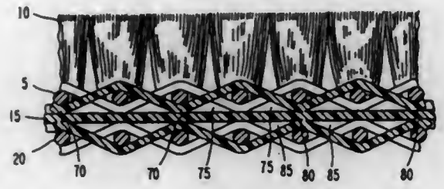
CARPET AND TECHNIQUES FOR MAKING AND RECYCLING SAME

Wilbert E. Fink, Villanova, Pa., assignor to Polyloom Corporation of America, Dayton, Tenn.

Division of Ser. No. 64,380, May 21, 1993, Pat. No. 5,288,349, which is a division of Ser. No. 833,093, Feb. 10, 1992, Pat. No. 5,240,530. This application Jan. 10, 1994, Ser. No. 179,321

Int. Cl.[6] B29C *65/18;* **B32B** *3/02*

U.S. Cl. 428—95 **27 Claims**



1. A carpet including at least a tufted primary backing, said tufted primary backing having primary backing and tufts of carpet fibers penetrating a bottom surface of the primary backing and protruding from a top surface of the primary backing; a secondary backing; and an extruded sheet between a bottom surface of said tufted primary backing and an upper surface of said secondary backing, said extruded sheet being integrally fused to said tufted primary backing, and said primary backing, secondary backing and extruded sheet comprising an isotactic polyolefin polymer.

5,578,358

PENETRATION-RESISTANT ARAMID ARTICLE

Brian E. Foy, Bear, Del., and Louis H. Miner, Kennett Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 12, 1995, Ser. No. 421,350

Int. Cl.[6] B32B *3/06;* **D03D** *3/00;* **F41H** *1/02*

U.S. Cl. 428—104 **5 Claims**

1. A flexible, penetration resistant, article consisting essentially of fabric woven to a fabric tightness factor of at least 0.75 from aramid yarn having a linear density of less than 500 dtex and a toughness of at least 30 Joules/gram, wherein the relationship between the fabric tightness factor and the linear density of the yarn is

$$Y = \text{or} > X\ 6.25\times10^{-4} \rightarrow +0.69$$

wherein

Y=fabric tightness factor and

X=linear yarn density.

5,578,359

MAGNETIC SHIELDING GARMENT FOR ELECTRO-BIOLOGIC MEASUREMENTS

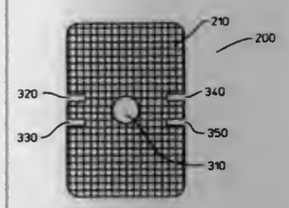
A. Dean Forbes, and Robert A. Piety, both of Palo Alto, Calif., assignors to Hewlett Packard Company, Palo Alto, Calif.

Filed Nov. 29, 1994, Ser. No. 346,054

Int. Cl.[6] A61B *19/08;* **D06H** *7/00*

U.S. Cl. 428—131 **8 Claims**

1. A garment functioning to magnetically shield the wearer thereof and minimizing electromagnetic interference while maintaining accessibility to the torso of said wearer during sensitive electronic measurement thereof comprising a sheet of at least one layer of a flexible, high magnetic permeability amorphous alloy fabric.



5,578,360

THIN FILM REINFORCING STRUCTURE AND METHOD FOR MANUFACTURING THE SAME

Veli-Pekka Viitanen, Espoo, Finland, assignor to Outokumpu Instruments Oy, Espoo, Finland

Continuation of Ser. No. 57,120, May 3, 1993, abandoned. This application May 23, 1995, Ser. No. 447,737

Claims priority, application Finland, May 7, 1992, 922060

Int. Cl.[6] B32B *3/10*

U.S. Cl. 428—138 **10 Claims**

1. A radiation entrance window material that is permeable to X-ray and ultraviolet radiation and comprises a film having a thickness less than about 5 μm and having first and second opposite surfaces, and an open mesh reinforcing structure adhering to the first surface of the film, the reinforcing structure being polymerized from a photosensitive material and defining a pattern of apertures, and wherein the material of the reinforcing structure comprises polyimide.

5,578,361

WATER-REPELLENT COMPOSITE GRAINS, METHOD FOR PRODUCING SAME, AND WATER-REPELLENT ARTICLE USING SAME

Shoichi Tsujioka; Hiromi Sugimoto; Yasushi Kita, and Naoki Okada, all of Yamaguchi Prefecture, Japan, assignors to Central Glass Company, Limited, Yamaguchi Prefecture, Japan

Filed Jan. 24, 1995, Ser. No. 377,562

Claims priority, application Japan, Jan. 26, 1994, 6-007216

Int. Cl.[6] B05D *1/36;5/08;* **B32B** *5/16;* **C23C** *16/00;* **C08K** *9/04*

U.S. Cl. 428—144 **15 Claims**

1. A water-repellent composite grain comprising:

a first grain which is selected from the group consisting of silica, zeolite and activated carbon; and

a low molecular weight polytetrafluoroethylene covering said first grain, said first grain being higher than said low molecular weight polytetrafluoroethylene in mechanical strength.

5,578,362

POLYMERIC POLISHING PAD CONTAINING HOLLOW POLYMERIC MICROELEMENTS

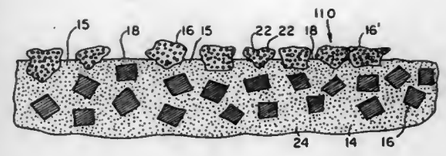
Heinz F. Reinhardt, Chadds Ford, Pa.; John V. H. Roberts, Newark, Del.; Harry G. McClain, Middletown, Del.; William D. Budinger, Newark, Del., and Elmer W. Jensen, New Castle, Del., assignors to Rodel, Inc., Newark, Del.

Continuation of Ser. No. 932,161, Aug. 19, 1992, abandoned. This application Jul. 12, 1994, Ser. No. 274,134

Int. Cl.[6] B24B *37/02;7/22*

U.S. Cl. 428—147 **21 Claims**

1. A polishing pad for polishing or planarizing a surface of an electronic substrate, said pad comprising a polymeric matrix impregnated with a plurality of hollow, flexible, organic polymeric microelements, said pad having a work surface and a subsurface proximate to said work surface, one portion of said polymeric microelements being at said work surface and exposed to a working environment including a polishing slurry, another portion of said polymeric microelements being embedded within said subsurface of said pad that is not exposed to said working environment, said work surface of said pad is relatively softer than said subsurface as a result of said exposure of said one portion of said polymeric microelements at said work surface to said working environment, and said subsurface becomes said relatively softer work surface during wear of said pad when said polymeric microelements are exposed to said working environment.



5,578,363

FLOOR COVERING UNDERLAYMENT

Brenda L. Finley, and Ralph W. Wright, Jr., both of Lancaster, Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 917,845, Jul. 23, 1992, Pat. No. 5,501,895. This application Jun. 7, 1995, Ser. No. 476,737

Int. Cl.[6] B32B *23/02;3/06;5/14*

U.S. Cl. 428—194 **15 Claims**

1. A floor covering underlayment comprising a fiber layer of about 10 mils to about 40 mils in thickness, a first layer of unfoamed polymeric material and a second polymeric layer, said fiber layer having at least a 5 pound per lineal inch hot tensile strength, said fiber layer being interposed between said first and second polymeric layers, a portion of said first and said second polymeric layers interpenetrating a portion of said fiber layer, said first layer being cured and having an exposed surface opposite the fiber layer.

5,578,364

GRAVURE PLATE ASSEMBLY

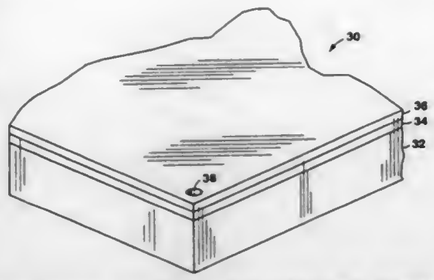
L. Edward Drew, II, Keene, and Robert B. Scheuhing, Rindge, both of N.H., assignors to Markem Corporation, Keene, N.H.

Filed May 3, 1995, Ser. No. 433,068

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—195 **13 Claims**

1. A gravure plate assembly comprising an elastomer pad sand-



wiched between a base plate and a metal top plate bearing an engraving surface, wherein said metal top plate is less rigid than said base plate.

5,578,365

LABEL SUBSTRATE INK AND LABEL

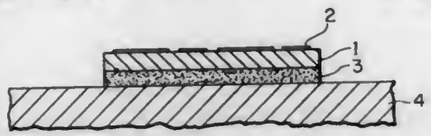
Katsuya Kume; Yozo Oishi; Mitsuo Kuramoto, and Itsuroh Takenoshita, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Continuation of Ser. No. 153,169, Nov. 17, 1993, abandoned. This application Nov. 7, 1995, Ser. No. 553,191

Claims priority, application Japan, Dec. 4, 1992, 4-350736

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—195 **10 Claims**



1. A label sheet comprising an inorganic powder shaped in a sheet form with a silicone resin, wherein a surface of the label sheet has a reflectivity determined by light having a wavelength of from 400 to 800 nm of at least 60% when heat-treated in air at a temperature of 350° C. for 30 minutes.

5,578,366

METAL BASE BOARD AND ELECTRONIC EQUIPMENT USING THE SAME

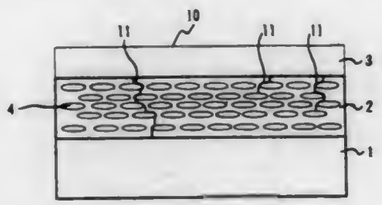
Satoru Hayashi, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 285,699, Aug. 4, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 482,854

Claims priority, application Japan, Aug. 6, 1993, 5-196398

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—209 **3 Claims**



1. A metal baseboard, comprising:
a metallic base section;
a circuit conductor section; and
an insulating section provided between said circuit conductor section and said base section;
said insulating section comprising a plurality of insulating layers, at least two of said insulating layers comprising an organic insulating material with respective flaky inorganic filler material made of a different raw material respectively added therein, said flaky inorganic fillers being disposed in said insulating section in a substantially parallel relation to each other, wherein said flaky inorganic material is stacked in a plurality of layers having a total thickness of approximately 0.12 mm.

5,578,367

METAL BASE BOARD AND ELECTRONIC EQUIPMENT USING THE SAME

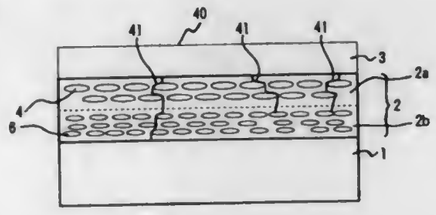
Satoru Hayashi, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 285,699, Aug. 4, 1994, abandoned. This application Feb. 8, 1996, Ser. No. 598,527

Claims priority, application Japan, Aug. 6, 1993, 5-196398

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—209 **4 Claims**



1. A metal base board comprising:
a metallic base layer;
a circuit conductor layer; and
an insulating layer provided between said circuit conductor layer and said base layer;
said insulating layer comprising an organic insulating material with flaky inorganic filler material added therein, said flaky inorganic filler material being disposed in said insulating layer in a plurality of stacked strata.

5,578,368

FIRE-RESISTANT MATERIAL COMPRISING A FIBERFILL BATT AND AT LEAST ONE FIRE-RESISTANT LAYER OF ARAMID FIBERS

Herman H. Forsten; Michael S. Frankosky, and Wo K. Kwok, all of Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 927,453, Aug. 17, 1992, abandoned. This application Jul. 29, 1994, Ser. No. 283,088

Int. Cl.[6] D03D *3/00;* **B32B** *5/02;5/06*

U.S. Cl. 428—229 **15 Claims**



1. A fire-resistant material, comprising:

(a) a batt consisting essentially of fiberfill, wherein the fiberfill batt is slickened; and
(b) a layer consisting essentially of a fire-resistant aramid fiber contracting at least one side of the fiberfill batt.

5,578,369

LAMINATING METHOD AND PRODUCTS MADE THEREBY

Ronald S. Nohr, Roswell, and John G. MacDonald, Decatur, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 997,799, Dec. 29, 1992, Pat. No. 5,455,074. This application May 25, 1995, Ser. No. 450,044

Int. Cl.[6] B32B *5/28;31/00;* **C08G** *59/24;* **D04H** *11/00*

U.S. Cl. 428—247 **13 Claims**

1. A laminate composed of at least two layers of sheet materials and prepared by a method which comprises:
applying an adhesive composition to a surface of a first sheet material;
exposing the adhesive composition on the surface of said first sheet material to incoherent, pulsed ultraviolet radiation from a dielectric barrier discharge excimer lamp;
bringing a surface of a second sheet material in contact with the adhesive composition-bearing surface of said first sheet material; and
allowing said adhesive composition to cure; in which:
(1) said incoherent, pulsed ultraviolet radiation has a single narrow wavelength band within the range of from about 260 to about 360 nanometers;
(2) said adhesive composition comprises from about 94 to about 60 percent by weight of a cycloaliphatic diepoxide, from about 1 to about 10 percent by weight of a cationic photoinitiator, and from about 5 to about 30 percent by weight of a vinyl chloride-vinyl acetate-vinyl alcohol terpolymer, all based on the weight of adhesive composition; and
(3) each of said first and second sheet materials independently is a film or fibrous sheet material.

5,578,370

MOLECULARLY INTERSPERSED THERMOPLASTIC COMPOSITE MAT

Andrew N. Ferrar, and David D. Phin, both of Dundee, Scotland, assignors to Don & Low (Holdings) Limited, Angus, Scotland

Continuation of Ser. No. 915,705, Jul. 23, 1992, abandoned. This application Sep. 27, 1994, Ser. No. 312,684

Claims priority, application United Kingdom, Feb. 2, 1990, 9002374

Int. Cl.[6] D02G *3/00;* **D04H** *1/04;3/08;* **B29D** *31/00*

U.S. Cl. 428—288 **32 Claims**

1. A thermoplastic composite material comprising at least one mat of mutually intersecting tapes fused together at least at their intersections.
each of said tapes comprising a molecularly-oriented thermoplastic polymer base having two sides, at least one of which is coated with a thermoplastic surface polymeric layer having a softening temperature lower than that of the polymer base and being bonded to said polymer base by molecular interspersion between the contiguous surfaces of the adjoining base and surface layers.
wherein each of said tapes is subjected to elongation at a draw ratio of about 20:1.

5,578,371

PHENOL/FORMALDEHYDE FIBERGLASS BINDER COMPOSITIONS EXHIBITING REDUCED EMISSIONS

Thomas J. Taylor, Englewood, and Ronald D. Shannon, Morrison, both of Colo., assignors to Schuller International, Inc., Denver, Colo.

Filed Aug. 25, 1995, Ser. No. 519,376

Int. Cl.[6] D04H *1/58*

U.S. Cl. 428—288 **20 Claims**

1. A method of decreasing formaldehyde emissions during the preparation of binder-coated fiberglass employing an aqueous phenol/formaldehyde-based binder, comprising:
adding to said aqueous phenol/formaldehyde-based binder prior to applying said binder to a fiberglass product, an effective formaldehyde reducing amount of a water-soluble bisulfite formaldehyde scavenger.

5,578,372

HEAT-WELDABLE COMPOSITE FILMS AND METHOD OF PRODUCTION THEREOF

Tadashi Murakami, Amagasaki, Japan, assignor to Daicel Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 852,238, Jun. 5, 1992, abandoned. This application Mar. 22, 1994, Ser. No. 218,040

Claims priority, application Japan, Oct. 9, 1990, 2-271877; Oct. 9, 1990, 2-271878

Int. Cl.[6] B32B *7/12;27/30;* **C08F** *14/08;* **C08J** *5/18*

U.S. Cl. 428—336 **11 Claims**

1. A composite film having a layer structure comprising, in order, a uniaxially or biaxially oriented base film, covered on at least one side with a coating layer formed by a coating composition containing a vinylidene chloride copolymer having a vinylidene chloride content of about 91% to 94% by weight, a weight average molecular weight of about 7.5×10^4 to 20×10^4 and a melting point of not lower than 125° C. as determined on a differential scanning calorimeter, and an organic solvent; a protective layer made of a member selected from the group consisting of a polyvinyl alcohol and an ethylene-vinyl alcohol copolymer; a laminating layer on said protective layer composed of a two component urethane adhesive containing an organic solvent soluble polyisocyanate component and a polyol component, and the mole ratio of isocyanate groups of said polyisocyanate component to hydroxyl groups of said polyol component being about 1.2 to 4.0; and an olefin polymer film having heat weldability as laminated on said laminating layer, wherein said protective layer lies between said coating layer and said laminating agent layer for inhibiting the permeation of the components of the laminating agent layer into the coating layer.

5,578,373

SPLIT POLYETHYLENE STRETCHED MATERIAL AND PROCESS FOR PRODUCING THE SAME

Seizo Kobayashi; Takashi Mizoe; Yoshimu Iwanami; Osamu Otsu; Shigeki Yokoyama, all of Yokohama; Kazuhiko Kurihara, Tokyo, and Hiroshi Yazawa, Kunitachi, all of Japan, assignors to Nippon Oil Co., Ltd.; Nippon Petrochemicals Co., Ltd., and Polymer Processing Research Institute Ltd., all of Tokyo, Japan

Continuation of Ser. No. 22,840, Feb. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 784,707, Oct. 30, 1991, abandoned. This application Dec. 15, 1994, Ser. No. 357,089

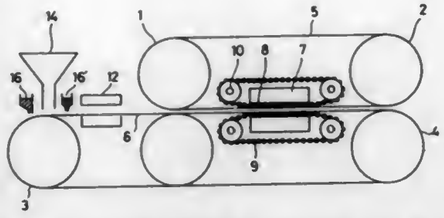
Claims priority, application Japan, Nov. 1, 1990, 2-293625; May 22, 1991, 3-117656

Int. Cl.[6] D02G *1/02;3/00;* **B29K** *43/48*

U.S. Cl. 428—364 **14 Claims**

1. A split polyethylene stretched material having a tensile strength of 0.7 to 5 GPa when twisted in the range of 50–500 times/m, which material is produced by subjecting a polyethylene having an intrinsic viscosity of 5– 50 dl/g as measured at 135° C in

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decalin, to compression-molding at a temperature lower than the melting point of the polyethylene to obtain a sheet, subjecting the sheet to rolling and stretching and then subjecting the stretched polyethylene to splitting, wherein the splitting is carried out using a tapping screw-like splitter or a file-like splitter.

5,578,374

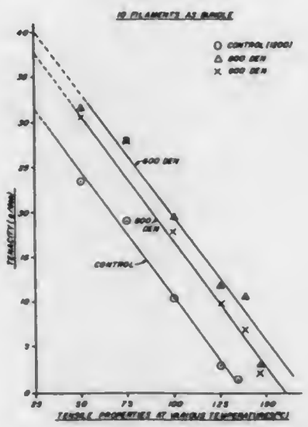
VERY LOW CREEP, ULTRA HIGH MODULUS, LOW SHRINK, HIGH TENACITY POLYOLEFIN FIBER HAVING GOOD STRENGTH RETENTION AT HIGH TEMPERATURES AND METHOD TO PRODUCE SUCH FIBER

James J. Dunbar, Mechanicsville, Va.; Sheldon Kavesh, Whippany; Dusan C. Prevorsek, Morristown, both of N.J.; Thomas Y. Tam, Richmond, Va.; Gene C. Weedon, Richmond, Va., and Robert C. Winckhofer, Richmond, Va., assignors to AlliedSignal Inc., Morristown, N.J.

Continuation of Ser. No. 32,774, Mar. 15, 1993, abandoned, which is a continuation of Ser. No. 758,913, Sep. 11, 1991, abandoned, which is a continuation of Ser. No. 358,471, May 30, 1989, abandoned, which is a continuation of Ser. No. 745,164, Jun. 17, 1985, abandoned. This application Feb. 8, 1995, Ser. No. 385,238

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—364 **6 Claims**



1. A polyolefin fiber having a weight average molecular weight of at least 250,000, a tenacity of at least 20 g/d if the weight average molecular weight of the fiber is in the range of about 250,000 to less than 800,000 and a tenacity of at least 32 g/d if the weight average molecular weight of the fiber is at least 800,000 and a creep rate, measured at 160° F. (71.1° C.) and 39, 150 psi load, less than one-half that value given by the following equation:

$$\text{percent/hr} = 1.11\times10^{10}\,(IV)^{-2.78}(\text{Modulus})^{-2.11}$$

where IV is the intrinsic viscosity of the fiber measured in decalin at 135° C., dl/g, and Modulus is the tensile modulus in grams per denier of the article measured by ASTM 885-81 at 110%/minute strain rate, zero strain.

5,578,375

GRANULAR MAGNETITE PARTICLES AND PROCESS FOR PRODUCING THE SAME

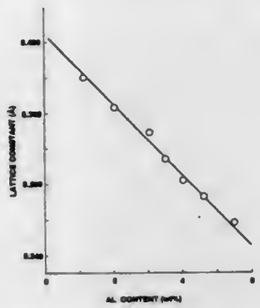
Yoji Okano; Kazuo Fujioka; Koso Aoki, all of Hiroshima; Hiromitsu Misawa, Hatsukaichi; Minoru Kozawa, Higashihiroshima, and Naoki Uchida, Otake, all of Japan, assignors to Toda Kogyo Corporation, Japan

Filed Sep. 27, 1994, Ser. No. 313,580

Claims priority, application Japan, Sep. 30, 1993, 5-267980; Mar. 31, 1994, 6-087637

Int. Cl.[6] B32B *5/16*; G11B *5/66*; C01G *49/08*

U.S. Cl. 428—402 **9 Claims**



1. Granular magnetite particles assuming a black color, having a magnetization of not more than 50 emu/g in a magnetic field of 1 kOe containing 3 to 6 wt % of elemental aluminum in a crystal lattice of magnetite having a spinel structure with a lattice constant of 8.340 to 8.375 Å.

5,578,376

MAGNETIC RECORDING MEDIUM HAVING A MAGNETIC LAYER COMPRISING A SPECIFIED FERROMAGNETIC METAL POWDER AND A SPECIFIED POLYURETHANE BINDER

Hiroshi Hashimoto; Masatoshi Takahashi; Yuuichirou Murayama, and Tsutomu Okita, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 6, 1995, Ser. No. 417,959

Claims priority, application Japan, Apr. 7, 1994, 6-069713

Int. Cl.[6] G11B *5/702*

U.S. Cl. 428—425.9 **4 Claims**

1. A magnetic recording medium comprising a non-magnetic support having thereon a magnetic layer comprising ferromagnetic powder and a binder, said ferromagnetic powder comprising a ferromagnetic metal powder comprising Fe and having a crystal size of from 120 Å to 250 Å and a Co content of from 5 to 40 atom %, and said binder comprises a polyurethane comprising a diol component and a polyisocyanate component, said diol component comprising a polyetherpolyol and a polyesterpolyol wherein said polyetherpolyol has a glass transition point in the range of −250° to 0° C. and said polyesterpolyol has a glass transition point in the range of 40° C. to 130° C.

5,578,377

COLORED THIN FILM-FORMING COATING SOLUTION AND COLORED THIN FILM OBTAINED BY SUCH COATING SOLUTION

Takeshi Morimoto; Kazuya Hiratsuka; Yasuhiro Sanada; Keiko Ohashi; Keisuke Abe, and Takeshi Kawasato, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Apr. 21, 1994, Ser. No. 230,860

Claims priority, application Japan, Apr. 21, 1993, 5-117931; Aug. 27, 1993, 5-235668

Int. Cl.[6] B32B *15/04*

U.S. Cl. 428—426 **34 Claims**

1. A colored anti-reflective film, which is formed on a glass substrate by coating the glass substrate with a solution comprising a superfine particle sol of nitrogen-containing metal oxide particles in an amount such that the particles constitute from 1 to 80 wt. % of the coated film prepared, wherein said particles have a size of from 5 to 200 nanometers and the oxygen is stoichiometrically deficient, a compound of the formula $Si(OR)_mR_n$ (m+n=4, m=1 to 4, n=0 to 3, R=C_1–C_4 alkyl group) or its hydrolyzate, and NH_3, and then followed by subjecting the coating on the glass substrate to at least one treatment selected from the group consisting of heating and irradiating the coating with ultraviolet rays to produce the anti-reflective film, the transmittance of the film being substantially uniformly reduced within a visible light wavelength range of from 380 nm to 780 nm by absorption of light by the film itself.

5,578,378

ANTI-FOGGING COATING COMPOSITION, PRODUCT COATED WITH SAID COMPOSITION AND METHOD FOR PREPARATION OF SAID PRODUCT

Albert A. Kruger, Richland, Wash., and Pascal Chartier, Paris, France, assignors to Saint-Gobain Vitrage, Courbevoie, France

Division of Ser. No. 366,016, Dec. 29, 1994, Pat. No. 5,480,917, which is a continuation of Ser. No. 964,559, Oct. 21, 1992, abandoned, which is a continuation of Ser. No. 272,462, Nov. 17, 1988, abandoned. This application Jul. 20, 1995, Ser. No. 504,838

Claims priority, application France, Nov. 19, 1987, 87 15986

Int. Cl.[6] B32B *17/10*; C08J *7/18*

U.S. Cl. 428—441 **10 Claims**

1. A product having anti-fogging and scratch-resistance characteristics, comprising a support and at least one anti-fogging layer, wherein the layer is formed from a composition consisting essentially of components (A), (B), (C) and (D), on the basis of components (A) and (B) totaling 100%, by weight:

(A) from 40 to 60by weight of at least one acrylic or methacrylic acid monomer,

(B) from 60 to 40% by weight of at least one acrylic or methacrylic acid ester monomer of the formula

$$CH_2{=}C(R){-}COOR'$$

wherein R is H or CH_3 and R' is a C_{1-4} alkyl,

(C) from 1 to 15% by weight, based on the total weight of monomers (A) and (B), of a crosslinking agent, and

(D) from 0.1 to 5% by weight, based on the total weight of monomers (A) and (B), of a polymerization initiator using the action of ultraviolet radiation, said layer being crosslinked by exposure to ultraviolet radiation.

5,578,379

DEVICE COMPRISING A LUMINESCENT MATERIAL

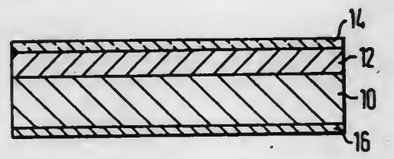
Martin Stutzmann, Stuttgart; Martin S. Brandt, Leonberg; Alf Breitschwerdt, Stuttgart; Heinz D. Fuchs, Boeblingen, and Joerg Weber, Gerlingen, all of Germany, assignors to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Goettingen, Germany

Filed Dec. 2, 1992, Ser. No. 985,181

Claims priority, application Germany, Dec. 3, 1991, 41 39 852.1

Int. Cl.[6] B32B *9/00*; C09K *11/59*

U.S. Cl. 428—446 **26 Claims**



1. A device comprising (a) a crystalline luminescent material, the luminescent material being selected from the group consisting of (i) unsubstituted siloxene, (ii) substituted siloxene in which hydrogen atoms are substituted by another monovalent group and (iii) allotropic modifications of said unsubstituted and substituted siloxene and (b) two electrodes, the luminescent material being disposed between the electrodes, at least one of the electrodes comprising a transparent layer.

5,578,380

CROSSLINKABLE SILARYLENE-SILOXANE COPOLYMERS

Gaddam N. Babu, P.O. Box 33427, St. Paul, Minn. 55133-3427

Division of Ser. No. 10,656, Jan. 28, 1993, Pat. No. 5,346,980, which is a continuation-in-part of Ser. No. 868,534, Apr. 14, 1992, abandoned. This application May 27, 1994, Ser. No. 250,586

Int. Cl.[6] C08G *77/20*; B32B *9/04*; C08F *283/12*

U.S. Cl. 428—447 **25 Claims**

1. A crosslinkable silarylene-siloxane pressure sensitive adhesive copolymer composition comprises a copolymer comprising a backbone having a randomly arranged silarylene units and siloxane units, of which siloxane units at least 55 mol percent are arylsiloxane units, there being an average of no more than two consecutive units of either siloxane or silarylene in the backbone of the copolymer, said copolymer comprising at least 0.05 mol percent crosslinking functionality wherein said silarylene group of said copolymer in said composition has the formula

$$-\mathrm{Si}(R^3)_2-\mathrm{Ar}-\mathrm{Si}(R^3)_2-\mathrm{O}-$$

wherein

R^3 is independently a lower alkyl group having 1 to 4 carbon atoms;

Ar is an arylene or alkylenearylene group having 6 to 20 carbon atoms, and said siloxane group has the formula

$$-\mathrm{Si}(R^4)_2-\mathrm{O}$$

wherein

each R^4 is an organic group independently selected from the group consisting of aryl groups having 6 to 12 carbon atoms, linear and branched alkyl groups having 1 to 6

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carbon atoms and R^3 groups, of which R^4 groups 55 to 95 mol % are aryl groups, 5 to 45 mol % are alkyl groups, and 0.05 to 5 mol % are R^5 groups; and

R^5 is a functional crosslinking group selected from the organic group consisting of

a) an ethylenically-unsaturated group selected from the group consisting of 1) groups crosslinkable under the influence of free radicals, and 2) groups crosslinkable in a hydrosilation reaction with polyhydrosiloxane

b) an oxirane group, and

c) a group that is a photoinitiator of crosslinking with the proviso:

(1) that when R^5 is an acrylic group there is present in the composition a sufficient amount of an initiator of free radicals to effect crosslinking,

(2) that when R^5 is a vinyl group attached directly to a Si atom there is present in the composition a sufficient amount of polyhydrosiloxane and a sufficient amount of catalyst for a hydrosilation reaction, and

(3) that when R^5 is an oxirane-containing group there is present in the composition a sufficient amount of epoxy resin curative to effect crosslinking and

(4) that when R^5 is a photocrosslinker there is sufficient amount of photocrosslinking group present in the composition to crosslink the copolymer.

5,578,381

RELEASE COATING COMPOSITIONS

Yuji Hamada; Hideki Kobayashi, and Wataru Nishiumi, all of Chiba Prefecture, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1995, Ser. No. 521,159

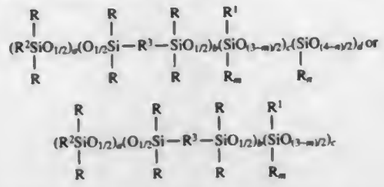
Claims priority, application Japan, Aug. 31, 1994, 6-230790

Int. Cl.[6] B32B *9/04*

U.S. Cl. 428—447 **25 Claims**

1. A curable silicone release coating composition comprising:

(A) 100 parts by weight of an organosilicon compound having its unit formula selected from:



wherein R is a monovalent hydrocarbon group having from 1 to 10 carbon atoms and free of aliphatic unsaturation or a haloalkyl group, R^1 is a fluorine-containing monovalent organic group having from 6 to 16 carbon atoms and having at least 4 —CF_2— groups, R^2 is selected from R or an alkenyl group having from 2 to 10 carbon atoms, $R^3$is an alkylene group having from 2 to 10 carbon atoms, a, b, c, and d are positive numbers, m has a value of 0 or 1, n is an integer having a value of 0 to 2, and wherein the organosilicon compound has a weight average molecular weight of at least 1,000, with the proviso that there is at least two silicon-bonded alkenyl groups per molecule;

(B) 0.3 to 40 parts by weight of an organohydrogenpolysiloxane having at least 3 silicon-bonded hydrogen atoms per molecule; and

(C) 0.1 to 1,000 parts by weight of a platinum-containing catalyst, said weight being based on the parts by weight of platinum per one million parts by weight of the total of (A) and (B).

5,578,382

POLYHYDROXYALKANOATES AND FILM FORMATION THEREFROM

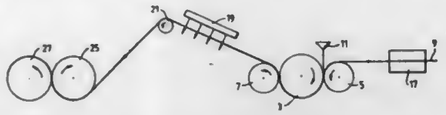
Simon D. Waddington, Cambridge, Mass., assignor to Zeneca Limited, London, England

Division of Ser. No. 491,929, Jul. 13, 1995, Pat. No. 5,534,616.

This application Feb. 1, 1996, Ser. No. 595,213

Int. Cl.[6] B32B *27/06*

U.S. Cl. 428—480 **3 Claims**



1. A polymer of one or more hydroxyalkanoic acids of which at least one is hydroxybutyric acid of which 40 to 70% is crystalline (as judged by X-ray diffraction) and of which at least 80% of the crystallites of diameter greater than 3 μm are smaller than 7 μm in diameter (the diameter being calculated as that of a sphere of volume equal to the crystallite).

5,578,383

PRECIOUS-METAL MATERIAL FOR ARTICLES OF JEWELRY AND A METHOD OF MANUFACTURING THEM

Hans-Hermann Beyer, Kahl, and Karl-Anton Starz, Rodenbach, both of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Filed Apr. 10, 1995, Ser. No. 421,157

Claims priority, application Germany, Apr. 13, 1994, 44 12 715.4

Int. Cl.[6] B22F *3/00*

U.S. Cl. 428—551 **10 Claims**

1. A precious-metal material for articles of jewelry, said precious-metal material comprising 33 to 99 wt. % precious-metal powder or alloy powder containing more than 60 wt % precious metal, 1 to 67 wt. % of a crosslinkable polymer and 0 to 10 wt % of a finely-divided inorganic filler.

5,578,384

BETA TITANIUM-FIBER REINFORCED COMPOSITE LAMINATES

William R. Kingston, Chino Hills, Calif., assignor to Ticomp, Inc., Chino, Calif.

Continuation-in-part of Ser. No. 568,530, Dec. 7, 1995. This application Jan. 19, 1996, Ser. No. 588,868

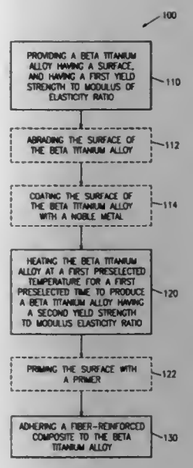
Int. Cl.[6] B32B *15/08*

U.S. Cl. 428—608 **20 Claims**

1. A beta titanium-fiber reinforced composite laminate produced according to a method comprising the steps of:

(a) providing a beta titanium alloy having a surface with an area and having a first yield strength to modulus of elasticity ratio;

(b) heating the beta titanium alloy at a first temperature for a first time to produce a beta titanium alloy having a second yield strength to modulus of elasticity ratio; and



(c) adhering a fiber reinforced composite having a strength to modulus of elasticity ratio to the beta titanium alloy to produce a beta titanium-fiber reinforced composite laminate;

wherein the first temperature and the first time are such that the second yield strength to modulus of elasticity ratio of the beta titanium alloy is substantially similar to the strength to modulus of elasticity ratio of the fiber reinforced composite.

5,578,385

MAGNETORESISTANCE EFFECT ELEMENT

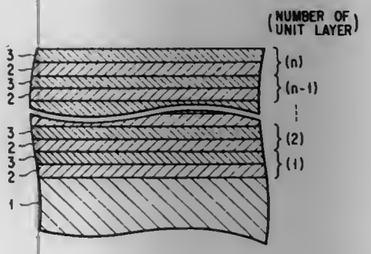
Yoshiaki Saito, Yokohama; Shiho Okuno, Kawasaki, and Koichiro Inomata, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 858,413, Mar. 27, 1992, abandoned. This application Dec. 27, 1994, Ser. No. 364,524

Claims priority, application Japan, Mar. 29, 1991, 3-065788

Int. Cl.[6] G11B *5/00*

U.S. Cl. 428—611 **13 Claims**



1. A magnetoresistance effect element comprising multilayer formed by stacking magnetic and non-magnetic layers in a manner to produce a magnetoresistance effect, said magnetic layers containing an alloy represented by $Fe_{1-x}Co_x$ where $0.5 \leqq x < 1$ and having a thickness of 2 to 50 Å, and said non-magnetic layers containing Cu or an alloy containing Cu, and having a thickness of 2 to 100 Å, any two magnetic layers adjacent to each other with one of said non-magnetic layers interposed therebetween being antiferromagnetically coupled under a condition that a magnetic field is not substantially applied thereto.

171-489 O.G.-96-14: QL3

5,578,386

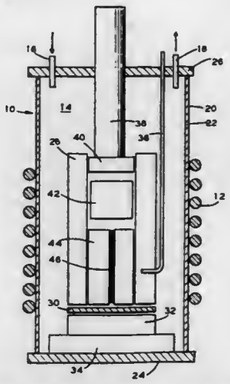
NICKEL COATED CARBON PREFORMS

James A. E. Bell, Oakville, and Thomas F. Stephenson, Toronto, both of Canada, assignors to Inco Limited, Toronto, Canada

Continuation of Ser. No. 122,784, Sep. 16, 1993, which is a division of Ser. No. 896,207, Jun. 10, 1992, which is a continuation-in-part of Ser. No. 781,758, Oct. 19, 1991, each , abandoned. This application Nov. 10, 1994, Ser. No. 338,262

Int. Cl.[6] C22C *32/00;21/02*

U.S. Cl. 428—614 **13 Claims**



11. A cast composite article consisting of a light metal matrix and a composite region within a portion of said light metal matrix, wherein said light metal matrix is selected from the group consisting of aluminum, aluminum-base alloys, zinc and zinc-base alloys and said composite region consisting of aluminum-base or zinc-base matrix, carbon phase fiber for providing lubrication and nickel-containing intermetallic phase precipitate for wear resistance, said composite region being formed by infiltrating said light metal matrix into a preform of said carbon phase fiber which was coated with 0.065 to 0.85 μm of nickel, thereby causing the reaction between the nickel and the light metal matrix to form said nickel-containing intermetallic phase precipitate, said preform is selected from the group consisting of nickel coated carbon felt and nickel coated carbon paper and said nickel being 15 to 60 weight percent of total nickel and carbon phase fiber, said nickel-containing intermetallic phase precipitate being within 1 millimeter of said carbon phase fiber provided by said preform.

5,578,387

FLUORINE-CONTAINING ALKYLSUCCINIC ACID DIESTER, PROCESS FOR PREPARING THE SAME AND USE THEREOF

Yoshiaki Kai, Neyagawa, and Naoko Mizuno, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

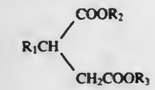
Division of Ser. No. 38,263, Mar. 29, 1993, Pat. No. 5,391,814. This application Nov. 1, 1994, Ser. No. 333,296

Claims priority, application Japan, Mar. 31, 1992, 4-76692

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—694 T **3 Claims**

1. A magnetic recording medium comprising a non-magnetic substrate, a ferromagnetic metal layer formed thereon and a lubricating layer comprising a fluorine-containing alkylsuccinic acid diester of the formula



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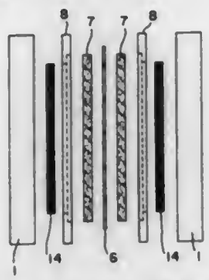
wherein R_1 is an aliphatic alkyl or alkenyl group each of said groups having 6 to 30 carbon atoms, one of R_2 and R_3 is a fluoroalkylether group having 5 to 50 carbon atoms and the other is a fluoroalkyl group, a fluoroalkenyl group, a fluorophenyl group, an aliphatic alkyl group or an aliphatic alkenyl group, each of said groups having 30 or less carbon atoms.

5,578,388

ELECTROCHEMICAL CELL PROVIDED WITH ION EXCHANGE MEMBRANES AND BIPOLAR METAL PLATES

Giuseppe Faita, Novara, and Claudio Mantegazza, Saronno, both of Italy, assignors to De Nora Permelec S.p.A., Italy

Continuation of Ser. No. 227,006, Apr. 13, 1994, Pat. No. 5,482,792. This application Jun. 1, 1995, Ser. No. 457,987
Claims priority, application Italy, Apr. 30, 1993, MI93A0857
Int. Cl.[6] H01M *8/10*
U.S. Cl. 429—30 **23 Claims**



1. A fuel cell comprising pressure plates (17), bipolar plates (1) or end plates (18) made of metals, or metal alloys, provided with holes (2) for feeding the gaseous reactants and removing the products and the residual reactants,

current collectors (14) permeable to gas flow, electrocatalytic porous electrodes (7) bonded to ion exchange membranes (6) before assembling of the fuel cell and gasket-frames (8) characterized in that said collectors (14) consist of a porous eletroconductive material having residual deformability and resiliency under compression and are provided with a multiplicity of limited area contact points

said bipolar plates and the end plates are made of metals or metal alloys capable of forming a protective oxide.

5,578,389

PROCESS FOR DISPOSING OF SODIUM SULFUR CELLS

Tomonori Tsuchimoto, Hashima-gun; Katsuichi Iwata, Ichinomiya, and Yoshihiko Kurashima, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 206,609, Mar. 7, 1994. This application Nov. 30, 1995, Ser. No. 565,164
Claims priority, application Japan, Mar. 24, 1993, 5-065122; Nov. 19, 1993, 5-290560
Int. Cl.[6] H01M *10/54*
U.S. Cl. 429—49 **2 Claims**

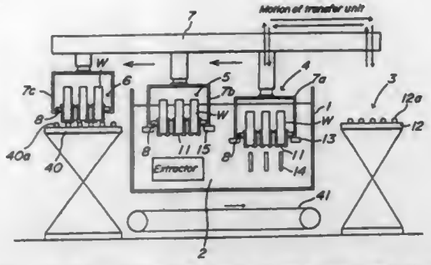
1. A process for disposing of sodium sulfur cells, said process comprising the steps of:

(A) cross-cutting each of said sodium sulfur cells to form an opening;

(B) setting a plurality of said sodium sulfur cells, as one set, into a work-setting pipe unit such that said opening of each of said sodium sulfur cells is downwardly directed;

(C) flowing down sodium from each of the sodium sulfur cells inside a heating oil through said opening by heating;

(D) inserting pawls of a chuck into an inner tube of each of a plurality of said sodium sulfur cells through said opening and a bottom of said work-setting pipe unit; and



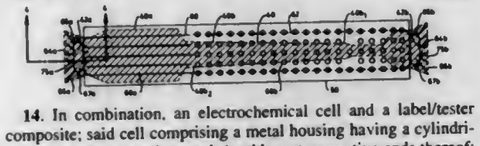
(E) extracting said inner tube from an outer tube in each of said sodium sulfur cells.

5,578,390

ELECTROCHEMICAL CELL LABEL WITH INTEGRATED TESTER

John F. Hughen, Rancho Cucamonga, Calif., assignor to Duracell Inc., Bethel, Conn.

Filed Sep. 29, 1994, Ser. No. 315,317
Int. Cl.[6] H01M *10/48*
U.S. Cl. 429—93 **22 Claims**



14. In combination, an electrochemical cell and a label/tester composite; said cell comprising a metal housing having a cylindrical wall with first and second shoulders at respective ends thereof; said label/tester composite being attached to the cell housing; said composite including a heat shrinkable base film, a thermochromic coating, a heat cured electrically conductive coating in thermal contact with the thermochromic coating, and means for maintaining said conductive coating spaced from the cell housing, said means comprising a coating of electrically insulating material having a plurality of cavities extending through the thickness thereof, wherein a portion of the conductive coating is positioned over at least one of said cavities; the tester being activatable by applying manual pressure over the conductive portion over said at least one cavity thereby causing it to be pushed through said cavity and electrically contact a cell terminal, said means electrically and thermally insulating said conductive coating from the cell housing, wherein at least the majority of the remaining cavities in the coating of electrically insulating material form thermally insulating air pockets between the label/tester composite and the cell housing, wherein at least a portion of the coating of electrically insulating material comprises a plurality of spaced apart ribs wherein the spaces between said ribs form at least a portion of the thermally insulating air pockets.

5,578,391

BATTERY PACK HAVING A DISCONNECT SWITCH CIRCUIT

David M. Meyers, Dacula; Jose' M. Fernandez, Lawrenceville, both of Ga., and James R. Brunette, Wheeling, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

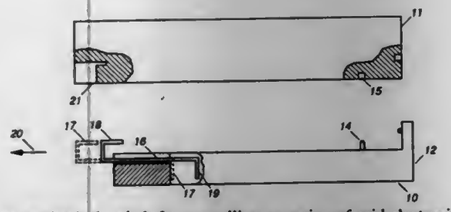
Filed Sep. 25, 1995, Ser. No. 533,428
Int. Cl.[6] H01M *10/46*
U.S. Cl. 429—97 **11 Claims**

1. A battery pack having a disconnect switch circuit, comprising:

at least one battery cell;

a battery contact protruding from said battery pack;

an electronic switch circuit disposed in said battery pack and electrically coupled in series between said battery contact and said at least one battery cell;



a mechanical switch for controlling operation of said electronic switch circuit, said electronic switch closing upon said mechanical switch is opening;

a latch member disposed in said battery pack, for controlling operation of said mechanical switch, said latch member moveable between a first position and a second position;

spring means for biasing said latch member to said first position; and

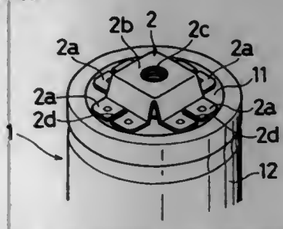
wherein said electronic switch circuit disconnects said at least one battery cell from said battery contact when said latch member is in said first position, and connects said at least one battery cell to said battery contact when said latch member is in said second position.

5,578,392

CYLINDRICAL CELL, A CELL PACK, AND A CELL HOLDER

Hiroshi Kawamura, Kyoto, Japan, assignor to Japan Storage Battery Co., Ltd., Kyoto, Japan

Filed Feb. 12, 1996, Ser. No. 600,294
Claims priority, application Japan, Feb. 17, 1995, 7-053595; Apr. 18, 1995, 7-117884
Int. Cl.[6] H01M *2/30*
U.S. Cl. 429—99 **20 Claims**



1. A cylindrical cell comprising positive and negative terminals which are disposed at both ends, wherein terminals made of an electrically conductive material and having a face portion where a female threaded hole is opened or a male threaded portion is erected are respectively fixedly connected to a cover and a bottom face of a case via legs which support said face portion.

5,578,393

THERMAL CONTACT SHEET FOR HIGH TEMPERATURE BATTERIES

Harold J. Haskins, Ann Arbor, Mich., assignor to United States Advanced Battery Consortium, Dearborn, Mich.

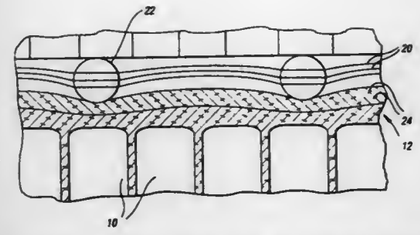
Filed Mar. 10, 1995, Ser. No. 401,718
Int. Cl.[6] H01M *10/50;10/42*
U.S. Cl. 429—120 **12 Claims**

1. A high temperature battery comprising:

a core of battery cells designed to generate electricity electrochemically at a temperature greater than room temperature;

a housing containing said core; and

positioned between said core and the housing, an electrically insulating thermal contact member comprising a glass which is solid at ambient temperature and pressure, has a melting point of about 100° C. to 400° C., and is capable of flow at the operating temperature of the cells, said electrically insulating thermal contact member facilitating transfer of heat out of said core.

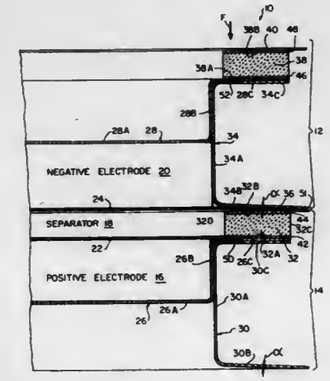


5,578,394

SEAL ASSEMBLY FOR HIGH TEMPERATURE BIPOLAR LI ALLOY METAL SULFIDE BATTERY

Salah M. Oweis, Ellicott City, Md.; James G. Snyder, Hanover, Pa., and Louis A. D'Ussel, Towson, Md., assignors to Saft America, Inc., Valdosta, Ga.

Filed Feb. 15, 1996, Ser. No. 602,005
Int. Cl.[6] H01M *6/48*
U.S. Cl. 429—155 **8 Claims**



5. A bipolar battery cell comprising:

a negative electrode;

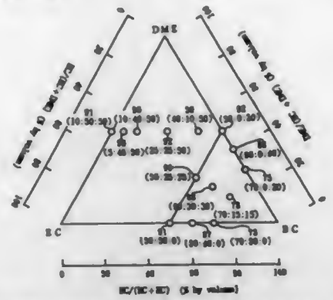
a positive electrode;

a separator element disposed between said negative electrode and said positive electrode, said separator element electrically insulating said electrodes from one another;

an electrolyte disposed within at least one of said negative electrode, said positive electrode and said separator element with said electrolyte in contact with both said electrodes; and

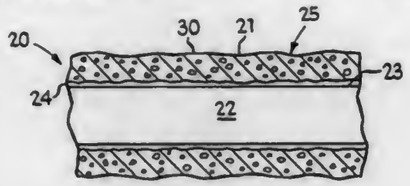
an electrode containment structure comprising back-to-back flanged cup-like members encompassing respectively said positive and negative electrodes and including radially outwardly directed flanges defining high strength C-shaped spacer ring structures radially exterior of the electrodes for support and bonding to ceramic insulator rings carried by the flanges of the respective back-to-back cup-like members and peripheral ceramic seal rings electrically isolating said positive and negative electrodes.

5,578,395
LITHIUM SECONDARY BATTERY
Seiji Yoshimura, Hirakata; Yuji Yamamoto, Hyogo; Yoshihiro Shoji; Koji Nishio, both of Hirakata; Toshihiko Saito, Tsuzuki-gun; Nobuhiro Nishiguchi; Keiichi Tsujioku, both of Hyogo, and Minoru Fujimoto, Mihara-gun, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Mar. 7, 1995, Ser. No. 399,622
Claims priority, application Japan, Mar. 8, 1994, 6-037020
Int. Cl.[6] H01M 4/36;4/50;10/40
U.S. Cl. 429—197 7 Claims



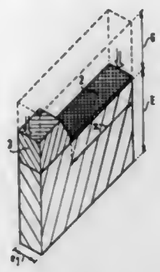
1. A lithium secondary battery comprising a negative electrode having lithium as an active material, a positive electrode comprising a boron-containing lithium-manganese composite oxide as an active material and a nonaqueous electrolyte comprising a solute and a solvent, said boron-containing lithium-manganese composite oxide having an atomic ratio between B and Mn (B/Mn) of 0.01 to 0.20 and an average valence of manganese before charge-discharge of at least 3.80, and said solvent being a mixed solvent containing 5 to 50% by volume of a butylene carbonate selected from the group consisting of 1,2-butylene carbonate, 2,3-butylene carbonate and isobutylene carbonate.

5,578,396
CURRENT COLLECTOR DEVICE
Denis G. Fauteux, Acton, and Arthur A. Massucco, Natick, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.
Continuation-in-part of Ser. No. 325,994, Oct. 19, 1994. This application Mar. 1, 1995, Ser. No. 396,626
Int. Cl.[6] H01M 4/64
U.S. Cl. 429—209 9 Claims



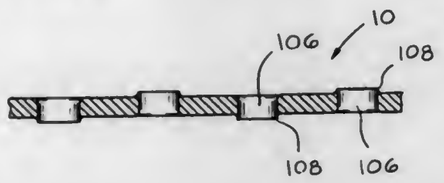
1. A current collector device for use in a lithium electrolytic cell comprising:
a current collector constructed from aluminum, wherein the aluminum current collector has an interfacial resistance relative to current collection;
means for lowering the interfacial resistance of the aluminum current collector; and
a coating of material applied to the aluminum current collector which initially comprises an etching agent and at least one of a primer material or an electrode material within an anhydrous wherein the electrode material enables electrochemical activity with particular ions in an electrolyte within the electrolytic cell.

5,578,397
ELECTRODE PLATE FOR AN ELECTROCHEMICAL CELL AND HAVING A METAL FOAM TYPE SUPPORT, AND A METHOD OF MANUFACTURING SUCH AN ELECTRODE PLATE
Roelof Verhoog, and Donald Stewart, both of Bordeaux, France, assignors to SAFT, Romainville, France
Filed Jun. 29, 1994, Ser. No. 267,236
Claims priority, application France, Dec. 17, 1993, 93 15253
Int. Cl.[6] H01M 4/02;4/26
U.S. Cl. 429—211 15 Claims



1. A method of forming a connection tab on an electrode plate for an electrochemical cell, the plate comprising a metal foam support, an active portion pasted with active material and a plate head that includes the connection tab, the plate head comprising the same metal foam as the support, without adding any additional parts or additional strips of metal foam, the density of the metal foam in the plate head being at least 2.5 times the density of the metal foam in the remainder of the plate, said method comprising:
first, compressing the support in the height direction of the plate; and
second, compressing the support in the thickness direction of the plate to form said connection tab.

5,578,398
PERFORATED SUBSTRATE AND METHOD OF MANUFACTURE
Carlton G. Jenkins, Sugar Grove, Pa., and David R. Hurst, Manalapan, Fla., assignors to Precious Plate Florida, West Palm Beach, Fla.
Filed Dec. 13, 1995, Ser. No. 572,184
Int. Cl.[6] H01M 4/74
U.S. Cl. 429—233 27 Claims



1. A perforated and substantially planar substrate comprising coplanar first and second major surfaces, each major surface having a similar pattern of stress regions provided by each perforation formed having a portion of the substrate surrounded by the stress region removed therefrom, the perforations having an alternating configuration from one surface to the other between immediately adjacent stress regions along any direction of either of the surfaces to introduce equal and opposite stress forces into the substrate that essentially cancel each other to provide the planar characteristic to the perforated substrate.

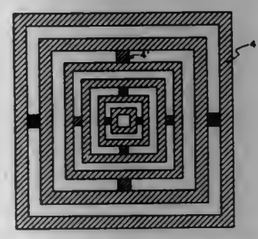
5,578,399
POLYMERIC CURRENT COLLECTOR FOR SOLID STATE ELECTROCHEMICAL DEVICE
Ib I. Olsen, 1800 Green Valley Park Way, #223, Henderson, Nev. 89014
Filed Sep. 15, 1995, Ser. No. 528,970
Int. Cl.[6] H01H 4/66
U.S. Cl. 429—245 20 Claims

1. A solid state electrochemical device comprising:
(i) an anode;
(ii) a cathode;
(iii) interposed between the anode and cathode, a polymeric electrolyte; and
(iv) adjacent to either the anode or the cathode, on a side opposite to the polymeric electrolyte, a current collector comprising (a) a metal layer comprising aluminum or copper and (b) on a side of the metal layer facing the cathode or the anode, a polymeric coating comprising a cured polymer, in an amount effective to prevent corrosion between the cathode or anode and the metal layer, which (1) is conductive, (2) is pin-hole free and (3) adheres to said metal layer, wherein the polymeric coating comprises a sufficient amount of conductive material so that the polymeric coating has an electrical conductivity of 1 Scm^{-1} or higher.

5,578,400
GRAFTED MICROPOROUS SEPARATOR FOR ELECTROCHEMICAL GENERATOR AND A PROCESS FOR ITS PRODUCTION
Jean-Luc Gineste; Gérald Pourcelly, both of Montpellier; John-Brunea, Avon; Francoise Perton, Beruges, and Michel Broussely, Liguge, all of France, assignors to Saft, Romain Ville, France
Continuation of Ser. No. 103,702, Aug. 10, 1993, abandoned. This application Feb. 12, 1996, Ser. No. 600,281
Claims priority, application France, Aug. 11, 1992, 92 09900
Int. Cl.[6] H01M 2/16
U.S. Cl. 429—249 5 Claims

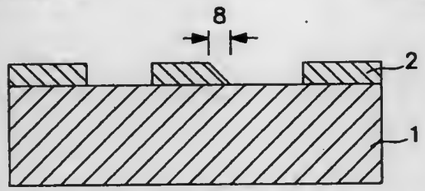
1. An electrochemical generator containing a non-aqueous electrolyte, and a separator, said separator comprising a microporous polyolefin film grafted with at least one monomer, selected from the group consisting of diethyleneglycol dimethacrylate, furfuryl acrylate and a diethyleneglycol dimethacrylate/acrylic acid mixture.

5,578,401
PHOTOMASK FOR THE MEASUREMENT OF RESOLUTION OF EXPOSURE EQUIPMENT
Joon Hwang, Bubaleub, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea
Filed Apr. 3, 1995, Ser. No. 415,608
Claims priority, application Rep. of Korea, Apr. 1, 1994, 1994-6952; Apr. 7, 1994, 1994-7284
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 10 Claims



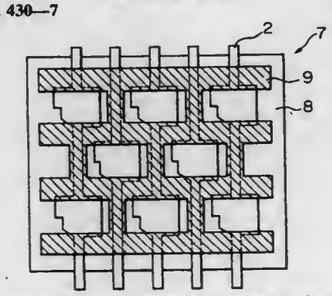
1. A photomask for the measurement of resolution of exposure equipment, comprising;
superimposed patterns, having a common central axis, each of the patterns having a plurality of identical and corresponding sub-patterns and being symmetric on the central axis, the patterns being aligned so that spaces separating pairs of the corresponding sub-patterns become wider or narrower for pairs increasingly spaced from the central axis in sequence, wherein resolution measurement may be made using the spacings between the pairs of sub-patterns.

5,578,402
PHOTOMASK USED BY PHOTOLITHOGRAPHY AND A PROCESS OF PRODUCING SAME
Hisashi Watanabe, Kyoto, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan
Division of Ser. No. 81,835, Jun. 24, 1993, which is a continuation of Ser. No. 718,337, Jun. 19, 1991, abandoned. This application May 19, 1995, Ser. No. 446,109
Claims priority, application Japan, Jun. 21, 1990, 2-163343
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 1 Claim



1. A process for forming a photomask, the process comprising the steps of depositing a transparent layer on a transparent substrate to a sufficient thickness to give a phase difference of 180° multiplied by an odd number to incident light, coating the transparent layer with a resist, and effecting the exposure of part of the periphery of the resist by a light whose focus is deviated to form a phase-shifter whose one side diminishes in thickness step by step.

5,578,403
METHOD FOR MANUFACTURE OF A SUBSTRATE HAVING WINDOW-SHAPED AND FRAME-SHAPED COATING FILMS ON THE SURFACE THEREOF
Tsutomu Watanabe, Itami; Yasuhiko Teshima, Yachiyo; Miki Matsumura, Tokyo; Susumu Miyazaki, Ibaraki-ken, and Yoshikatsu Okada, Chiba, all of Japan, assignors to Shinto Paint Co., Ltd., Amagasaki, Japan
Filed Jul. 12, 1994, Ser. No. 273,755
Claims priority, application Japan, Jul. 26, 1993, 5-183794; Jul. 26, 1993, 5-183795; Jul. 27, 1993, 5-184754; Jul. 27, 1993, 5-184755
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—7 17 Claims



1. A method for manufacturing a substrate having electrically conductive circuits on the surface of a transparent substrate, window-shaped colored coating films on the electrically conduc-

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tive circuits and a frame-shaped, light screening coating film at the regions not occupied with the window-shaped colored coating films, which comprises the steps of:

(a) coating a transparent substrate having electrically conductive circuits on the surface thereof with a negative or positive photoresist composition to cover the whole circuits-carrying surface of the substrate, followed by forming a photoresist film,

(b) superposing, on the surface of the photoresist film formed through step (a), a photomask and exposing the photoresist film to light through the photomask, the photomask having a pattern designed so as to give the photoresist film a shape prescribed by the following step (c),

(c) subjecting the resulting substrate formed through steps (a) and (b) to development, eliminating the photoresist film in the window-shaped parts on the electrically conductive circuits or both the photoresist film in the window-shaped parts on the electrically conductive circuits and that in the parts adjacent to one or both of the left and right sides of the window-shaped parts and leaving the photoresist film in the other parts, and

(d) subjecting the photoresist film left in step (c) to heat-treatment, second exposure to light or no treatment,

(e) subjecting the substrate formed through steps (a) to (d) in this order to electro-deposition using the circuits on the substrate as one electrode, forming electro-deposition colored coating films at the window-shaped parts on the circuits, the electro-deposition colored coating films being capable of screening light emitted in the following step (h),

(f) eliminating the photoresist film having been subjected to heat-treatment, second exposure to light or no treatment in step (d) and leaving the electro-deposition colored coating films formed in step (e),

(g) coating the substrate formed through steps (a) to (f) in this order with a negative photoresist composition capable of giving a light screening coating film to cover the whole circuits-carrying surface of the substrate, followed by forming a light screening coating film,

(h) exposing the substrate formed through steps (a) to (g) in this order to light emitted from the opposite side of the circuits-carrying surface of the substrate, and

(i) eliminating the uncured light screening coating film having not been exposed to light in step (h),

provided that when the photoresist film left in step (c) has a shape of lattice, the treatment of step (d) is heat treatment or second exposure to light.

5,578,404

PROCESS FOR THE PRODUCTION OF LIQUID CRYSTAL DISPLAY

Peter O. Kliem, Wellesley, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

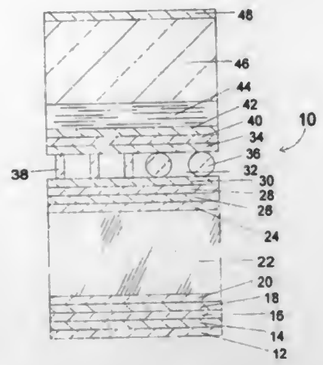
Filed Mar. 27, 1995, Ser. No. 411,577

Int. Cl.[6] G03F 9/00

U.S. Cl. 430—7 **20 Claims**

1. A process for the production of a liquid crystal display device having a color filter, the process comprising:

providing an assembly comprising, in order, a first support member, a plurality of first electrodes secured to the first support member, a liquid crystal layer, at least one second electrode and a second, substantially transparent support member, the assembly further comprising an imageable layer which, upon exposure to actinic radiation, can form three different colors, this imageable layer being disposed between the first and second support members; and



exposing the assembly to actinic radiation so as to produce in the imageable layer a plurality of filter elements of first, second and third colors, said filter elements being aligned with the first electrodes, thereby forming a color filter lying between the first and second support members.

5,578,405

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR CONTAINING DISAZO AND TRISAZO PIGMENTS

Takaaki Ikegami; Eiji Karimoto; Takashi Rokutanzono, all of Numazu; Katsuichi Obta, Mishima; Masaomi Sasaki, Susono; Yasuo Suzuki, Fuji; Kaoru Tadokoro, Yamato; Megumi Kawahara, Yokohama, and Masayuki Koyano, Sagamihara, all of Japan, assignors to Ricoh Company, Tokyo, Japan

Filed Oct. 14, 1994, Ser. No. 323,347

Claims priority, application Japan, Oct. 14, 1993, 5-280543; Dec. 11, 1993, 5-341779; Dec. 30, 1993, 5-354295; Dec. 30, 1993, 5-354296; Jul. 26, 1994, 6-193563

Int. Cl.[6] G03G 5/06

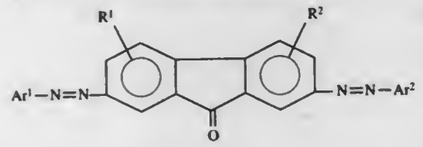
U.S. Cl. 430—59 **55 Claims**

1. An electrophotographic photoconductor comprising an electroconductive support and a single-layered photoconductive layer formed thereon, comprising:

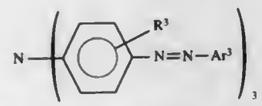
(a) a charge transporting material,

(b) a binder resin, and

(c) a simultaneously pulverized mixture comprising at least one disazo pigment of formula (1) and at least one trisazo pigment of formula (2), which is obtained by simultaneously pulverizing said disazo pigment and said trisazo pigment:



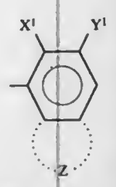
(1)



(2)

wherein

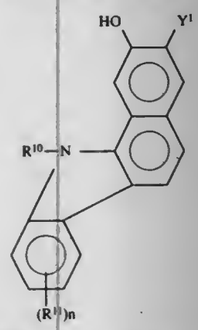
R^1 and R^2 each is hydrogen, a halogen atom, trifluoromethyl group, nitro group or cyano group; R^3 is hydrogen, chlorine, fluorine, iodine, bromine, nitro group or cyano group; and Ar^1, Ar^2 and Ar^3 each is a coupler radical, which may be the same or different, and is selected from the group consisting of coupler radicals of formulas (3) to (10):



(3)

wherein

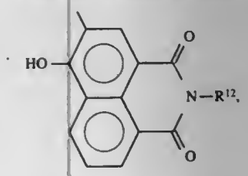
X^1 is —OH, —$N(R^4)(R^5)$, or —$NHSO_2R^6$, in which R^4 and R^5 each is hydrogen, an acyl group or an alkyl group which may have a substituent, and R^6 is an aryl group which may have a substituent; Y^1 is hydrogen, a halogen atom, an alkyl group which may have a substituent, an alkoxyl group, a carboxyl group, a sulfone group, a benzimidazolyl group, a sulfamoyl group which may have a substituent, or —$CON(R^7)(Y^2)$, in which R^7 is hydrogen, an alkyl group which may have a substituent, or a phenyl group which may have a substituent, and Y^2 is a cyclic hydrocarbon group which may have a substituent, a heterocyclic group which may have a substituent, or —$N{=}C(R^8)(R^9)$, in which R^8 is a cyclic hydrocarbon group which may have a substituent, a heterocyclic group which may have a substituent, or a styryl group which may have a substituent, R^9 is hydrogen, an alkyl group which may have a substituent, or a phenyl group which may have a substituent, and R^8 and R^9 may form a ring in combination with a carbon atom to which R^8 and R^9 are bonded; and Z is a cyclic hydrocarbon group which may have a substituent, or a heterocyclic group which may have a substituent;



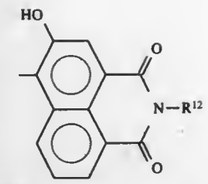
(4)

wherein

n is an integer of 1 to 4; R^{10} is hydrogen, an alkyl group which may have a substituent, or an aryl group which may have a substituent; R^{11} is hydrogen, an alkyl group which may have a substituent, an alkoxyl group which may have a substituent, an alkylsulfonyl group which may have a substituent, an alkylmercapto group which may have a substituent, a halogen atom, an aryl group which may have a substituent, an acyl group which may have a substituent, cyano group, nitro group, or an amino group which may have a substituent, and when n is 2, 3 or 4, R^{11} may be the same or different; and Y^1 is the same as defined in formula (3);



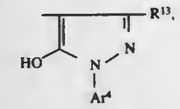
(5)



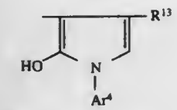
(6)

wherein

R^{12} in formulas (5) and (6) is a hydrocarbon group which may have a substituent;



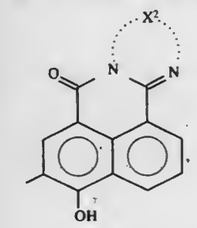
(7)



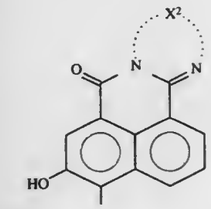
(8)

wherein

R^{13} in formulas (7) and (8) is an alkyl group, a carbamoyl group, a carboxyl group or an ester group thereof; and Ar^4 is an aromatic hydrocarbon group which may have a substituent;



(9)



(10)

wherein

X^2 in formulas (9) and (10) is a bivalent aromatic hydrocarbon group or a bivalent heterocyclic group.

5,578,406

ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Fumio Ojima; Tomoo Kobayashi; Toru Ishii; Kiyokazu Mashimo, and Tomozumi Uesaka, all of Minami Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

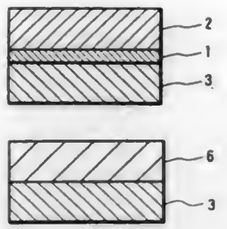
Filed Aug. 21, 1995, Ser. No. 517,348

Claims priority, application Japan, Aug. 23, 1994, 6-219598; Dec. 2, 1994, 6-324033

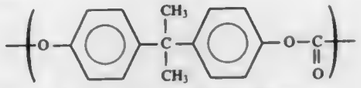
Int. Cl.[6] G03G 5/09

U.S. Cl. 430—83 **8 Claims**

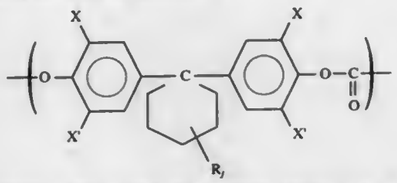
1. An electrophotographic photoreceptor which comprises an electroconductive substrate and a photosensitive layer formed thereon, said photosensitive layer containing as a binder resin a copolycarbonate resin comprising a structural unit represented by



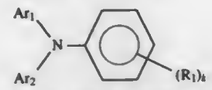
formula (I)



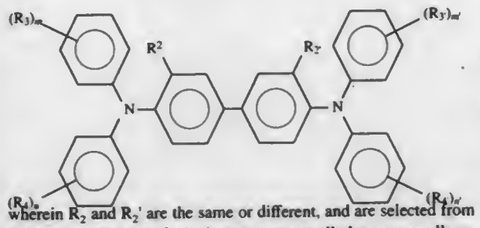
and a structural unit represented by formula (II)



wherein X and X' each are a member selected from the group consisting of a hydrogen atom, a halogen atom and a methyl group; R is a member selected from the group consisting of a hydroxyl group, a carboxyl group, an acetyl group and an alkyl group having from 1 to 4 carbon atoms; and j means an integer of from 0 to 3, and further containing as a charge transport material a triarylamine compound represented by formula (III)



wherein R_1 is selected from the group consisting of a hydrogen atom and a methyl group; k is an integer of from 1 to 2; and Ar_1 and Ar_2 each are selected from the group consisting of an unsubstituted aryl group, and an aryl group substituted with a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group or an amino group substituted by an alkyl group having 1 to 4 carbon atoms and at least one benzidine compound represented by formula (IV)



wherein R_2 and R_2' are the same or different, and are selected from the group consisting of a hydrogen atom, an alkyl group, an alkoxy group, and a halogen atom; R_3, R_3', R_4, and R_4' are the same or different, and are selected from the group consisting of a hydrogen atom, an alkyl group, an alkoxy group, a halogen-substituted alkoxy group, a halogen atom and an amino group substituted by an alkyl group having 1 to 4 carbon atoms; and m, m'; n and n' are integers of from 1 to 2.

5,578,407

COLOR TONER FOR DEVELOPING ELECTROSTATIC IMAGES, PROCESS FOR ITS PRODUCTION, AND COLOR IMAGE FORMING METHOD

Takashige Kasuya, Soka; Tatsuya Nakamura, Tokyo; Makoto Kanbayashi, Kawasaki; Tatsuhiko Chiba, Kamakura; Kazuyuki Miyano, Tokyo, and Koji Inaba, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1994, Ser. No. 330,542

Claims priority, application Japan, Oct. 29, 1993, 5-292432; Oct. 14, 1994, 6-274317

Int. Cl.[6] G03G *9/09*

U.S. Cl. 430—106 **30 Claims**

1. A color toner for developing an electrostatic image, comprising color toner particles containing a binder resin and a colorant;

said color toner particles having been obtained by mixing a mixture containing at least a polymerizable monomer, the colorant and a polymerization initiator to prepare a polymerizable monomer composition, dispersing the polymerizable monomer composition in an aqueous medium to carry out granulation, and polymerizing polymerizable monomers in the aqueous medium;

wherein the colorant comprises fine organic pigment particles or fine organic dye particles having an acetic acid adsorption heat in n-heptane from 0.1 mJ/m^2 to 80 mJ/m^2 and a BET specific surface area from 20 m^2/g to 150 m^2/g.

5,578,408

TONER FOR DEVELOPING ELECTROSTATIC IMAGE

Takaaki Kohtaki, Yokohama; Masaaki Taya, Kawasaki; Makoto Unno, Tokyo, and Tadashi Doujo, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1994, Ser. No. 365,735

Claims priority, application Japan, Dec. 29, 1993, 5-354163

Int. Cl.[6] G03G *9/083;9/087*

U.S. Cl. 430—106.6 **27 Claims**

1. A toner for developing an electrostatic image, comprising: a binder resin and a colorant; wherein the toner has

a percentage change γ_G of at most 50% as calculated by the following formula (1):

$$\gamma_G=(1-G'_{50}$$

$$/G'_1)\times 100 \quad (1),$$

wherein

γ_G denotes a percentage change of storage modulus, G'_{50} denotes a storage modulus at 50% strain at 150° C., and G'_1 denotes a storage modulus at 1% strain at 150° C.,

a percentage change $\gamma_{G''}$ of at most 50% as calculated by the following formula (2):

$$\gamma_{G''}=(1-G''_{50}$$

$$/G''_1)\times 100 \quad (2),$$

wherein

$\gamma_{G''}$ denotes a percentage change of loss modulus, G''_{50} denotes a loss modulus at 50% strain, and G''_1 denotes a loss modulus at 1% strain, and

a storage modulus G' of 3×10^3–7×10^4 dyn/cm^2 in a range of 1–50% strain at 150° C.

9. The toner according to claim 1, wherein the binder resin comprises a polyester resin; the polyester resin having a glass transition point of 40°–90° C., a number-average molecular weight of 1,000–50,000, and a weight-average molecular weight of 3,000–100,000.

11. The toner according to claim 1, wherein the binder resin comprises a vinyl resin; the vinyl resin having a glass transition point of 45°–80° C., a number-average molecular weight of 2,500–50,000, and a weight-average molecular weight of 10,000–1,000,000.

5,578,409

TONER FOR DEVELOPING ELECTROSTATIC IMAGE, ONE COMPONENT-TYPE DEVELOPER AND TWO-COMPONENT TYPE DEVELOPER

Takaaki Kotaki, Yokohama; Masaaki Taya, Kawasaki; Makoto Unno, Tokyo; Yushi Mikuriya, Kawasaki, and Tadashi Dojyo, Ebina, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 176,229, Jan. 3, 1994, abandoned. This application Nov. 15, 1995, Ser. No. 543,871

Claims priority, application Japan, Jan. 11, 1993, 5-017886; Oct. 15, 1993, 5-280639; Nov. 1, 1993, 5-293837; Nov. 1, 1993, 5-293838

Int. Cl.[6] G03G *9/087*

U.S. Cl. 430—109 **167 Claims**

1. A toner for developing an electrostatic image, comprising a binder resin and a colorant, wherein said binder resin contains a polyester resin at least part of which has been modified with (i) a monohydroxylic compound which has a long-chain alkyl group having 22 to 102 carbon atoms and has a hydroxyl group at its terminal, or (ii) a monocarboxylic compound which has a long-chain alkyl group having 22 to 102 carbon atoms and has a carboxyl group at its terminal, wherein said modified polyester resin has an acid value from 1 to 60.

5,578,410

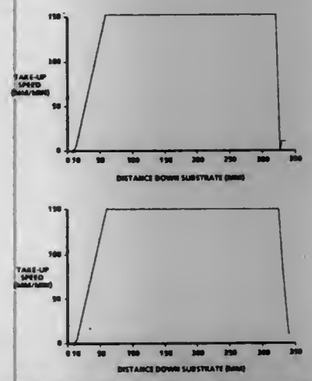
DIP COATING METHOD

Mark C. Petropoulos, Ontario; Geoffrey M. T. Foley, Fairport, and Eugene A. Swain, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 6, 1995, Ser. No. 467,129

Int. Cl.[6] G03G *5/02*

U.S. Cl. 430—133 **10 Claims**



1. A dip coating method for fabricating a photosensitive member employing a substrate which defines a top non-imaging portion, a middle imaging portion, and a bottom non-imaging portion, wherein the method comprises:

(a) immersing the bottom non-imaging portion, the middle imaging portion, and optionally a part of the top non-imaging portion of the substrate in a coating solution, wherein the coating solution comprises a charge transport material, a charge generating material, or both the charge transport material and the charge generating material;

(b) raising the middle imaging portion out of the coating solution to produce a coating having a substantially uniform thickness on the middle imaging portion; and

(c) raising the bottom non-imaging portion out of the coating solution at a take-up speed which is continuously decreasing from the take-up speed of the substrate at the junction between the middle imaging portion and the bottom non-imaging portion to a final take-up speed.

6. A dip coating method for fabricating a photosensitive member employing a substrate which defines a top non-imaging portion, a middle imaging-portion, and a bottom non-imaging portion, wherein the method comprises:

(a) immersing the bottom non-imaging portion, the middle imaging portion, and optionally a part of the top non-imaging portion of the substrate in a coating solution, wherein, the coating solution comprises a charge transport material, a charge generating material, or both the charge transport material and the charge generating material

(b) raising the middle imaging portion out of the coating solution to produce a coating having a substantially uniform thickness on the middle imaging portion; end

(c) decreasing the take-up speed to 0, pausing for a period of time to promote drying of the coated middle portion, end increasing the take-up speed to a final speed slower than the take-up speed of the substrate at the junction between the middle imaging portion and the bottom non-imaging portion.

5,578,411

RAPID-ACCESS MEDICAL X-RAY FILM AND PROCESS

Sean D. Slater, Hitchin, and Julian M. Wallis, Harlow, both of Great Britain, assignors to Imation Corp., Woodbury, Minn.

Filed Feb. 10, 1994, Ser. No. 194,249

Claims priority, application United Kingdom, Mar. 16, 1993, 9305315

Int. Cl.[6] G03C *5/29*

U.S. Cl. 430—139 **10 Claims**

1. A method of forming an image comprising the steps of:

providing an X-ray film comprising a transparent base coated on at least one side with (a) a laminar grain silver halide emulsion and (b) separate hydrophilic colloid layer containing a developing agent for silver halide in an amount corresponding to at least 0.75 moles of developing agent per mole of silver halide in said laminar grain silver halide emulsion,

positioning a light-emitting phosphor screen in intimate contact with each emulsion-coated side of said film,

imagewise exposing said phosphor screen to X-rays, and

contacting the exposed film with an aqueous alkaline activator solution to develop an image.

5,578,412

PHOTOSENSITIVE FILMS HAVING A THERMALLY SENSITIVE MATERIAL CONTAINING LAYER AND PROCESS FOR USING THE SAME

Robert P. Held, Newark, Del.; Massimo Pizzocri, Schwalbach-TS, Germany, and Harvey W. Taylor, Sayre, Pa., assignors to E. I. DuPont de Nemours and Company, Wilmington, Del.

Filed Dec. 20, 1994, Ser. No. 359,667

Int. Cl.[6] G03C *11/12*

U.S. Cl. 430—257 **4 Claims**

1. A process for preparing a colored image on a receptor surface comprising the steps of:

(i) laminating to a receptor surface a photopolymerizable element, comprising, in order:

(a) a support;

(b) an uncolored photosensitive layer comprising a photosensitive composition; and

(c) a layer comprising a thermally sensitive material; wherein the thermally sensitive material is (i) incompatible with the photosensitive composition, (ii) non-tacky and non-blocking at room temperature, and (iii) tackifiable at 70° C. to 120° C.;

wherein layer (c) is in intimate contact with the receptor such that layer (c) adheres to said receptor;

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(ii) imagewise exposing the photopolymerizable element through a transparency and through the support, to actinic radiation to form exposed, non-tacky areas and unexposed, tacky areas on the photosensitive layer;
(iii) removing the support;
(iv) developing the photosensitive layer using a dry developer to form a colored image on the receptor surface.

5,578,413

IMAGE FORMATION METHOD USING A PHOTOSENSITIVE TRANSFER MATERIAL

Sadao Fujikura, and Minoru Wada, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 271,952, Jul. 8, 1994, Pat. No. 5,525,454. This application Mar. 15, 1996, Ser. No. 616,586
Claims priority, application Japan, Jul. 8, 1993, 5-169218
Int. Cl.[6] G03C *1/12*
U.S. Cl. 430—258 **2 Claims**

1. A method for forming an image using a photosensitive transfer material comprising a temporary substrate having provided thereon an alkali-soluble thermoplastic resin layer, an intermediate layer, and a photosensitive resin layer in this order,

said method comprising the steps of: adhering the photosensitive resin layer to a permanent substrate at least under heat; stripping the temporary substrate off the thermoplastic resin layer; imagewise exposing the photosensitive resin layer through the thermoplastic resin layer and the intermediate layer; and developing the photosensitive resin layer to form an image on the permanent substrate,

wherein said transfer material has an interlaminar adhesion which is lowest between said thermoplastic resin layer and said temporary substrate, and said alkali-soluble thermoplastic resin layer contains at least (A) an alkali-soluble thermoplastic resin having a weight average molecular weight of from 50,000 to 500,000 and a glass transition temperature of from 0° to 140° C. and (B) an alkali-soluble thermoplastic resin layer having a weight average molecular weight of from 3,000 to 30,000 and a glass transition temperature of from 30° to 170° C. at an (A)/(B) weight ratio of from 5/95 to 95/5.

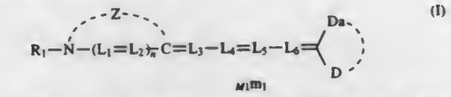
5,578,414

SILVER HALIDE PHOTOGRAPHIC MATERIAL AND METHOD FOR PROCESSING THE SAME

Seiichi Yamamoto; Tetsuo Yoshida, and Takanori Hioki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 18, 1995, Ser. No. 423,708
Claims priority, application Japan, Apr. 19, 1994, 6-103272
Int. Cl.[6] G03C *1/06;1/20*
U.S. Cl. 430—264 **6 Claims**

1. A silver halide photographic material, which comprises a support having thereon at least one silver halide emulsion layer, wherein the silver halide emulsion layer or other hydrophilic colloid layer contains at least one hydrazine compound and an onium salt compound as a nucleation accelerator, and wherein the silver halide emulsion is spectrally sensitized with at least one compound represented by the following formula (I):



(I)

wherein R_1 represents an alkyl group; Z represents an atomic group necessary for forming a 5- or 6-membered nitrogen-containing heterocyclic ring; D and D_a represent an atomic group necessary for forming a non-cyclic or cyclic acid nucleus; L_1, L_2, L_3, L_4, L_5 and L_6 each represents a methine group; M_1 represents a charge neutralizing counter ion; m_1 represents a number of 0 or more necessary for neutralizing a charge in the molecule; and n represents 0 or 1.

5,578,415

OPTICAL RECORDING MATERIALS, METHOD FOR PREPARING THE SAME AND OPTICAL CARDS HAVING THE SAME

Yoshio Hayashi; Shuichiro Ogawa, and Junichi Iwata, all of Shizuoka-ken, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 726,739, Jul. 2, 1991, abandoned, which is a continuation of Ser. No. 404,586, Sep. 8, 1989, abandoned. This application Jan. 31, 1994, Ser. No. 188,743
Claims priority, application Japan, Sep. 12, 1988, 63-226448; Nov. 24, 1988, 63-294656; Dec. 9, 1988, 63-310059; Dec. 14, 1988, 63-313681; Dec. 14, 1988, 63-313682; Dec. 14, 1988, 63-313683; Dec. 15, 1988, 63-314984; Feb. 16, 1989, 1-35038; Feb. 16, 1989, 1-35039; Feb. 17, 1989, 1-36312; Feb. 17, 1989, 1-36313; Feb. 22, 1989, 1-40315; Feb. 22, 1989, 1-40316; Feb. 23, 1989, 1-41821; Feb. 23, 1989, 1-41823; Jun. 2, 1989, 1-139252; Jun. 5, 1989, 1-141172; Jun. 12, 1989, 1-146794; Aug. 15, 1989, 1-209536
Int. Cl.[6] G03C *8/28;* **G11B** *7/24*
U.S. Cl. 430—270.11 **40 Claims**



1. An optical recording material comprising:

(1) a thin film having a luster layer that is continuous and uniform in the plane of the thin film near a surface of said thin film and a layer contiguous to said luster layer, wherein said thin film comprises

(A) a hydrophobic binding agent selected from the group consisting of polyvinyl butyral, polymethyl methacrylate, polycarbonate, vinyl chloride-vinyl acetate copolymer, and polyisobutylene, and

(B) metallic particles having a diameter of 0.003 μm to 3 μm dispersed in thin said film wherein the density of said metallic particles is higher near at least one surface of said thin film, thereby forming said luster layer that is continuous and uniform in the plane of the thin film near said thin film surface, wherein said luster layer that is continuous and uniform in the plane of the thin film has a reflectivity which is 10 to 90%, and is higher than the reflectivity of the layer contiguous to said luster layer, and wherein each metallic particle has a nucleus and an outer coating, wherein the metal of said outer coating is silver and wherein said nucleus comprises a metal more precious than silver or an alloy, sulfide, or oxide of said metal more precious than silver, and

(2) a transparent protective film, sheet, or plate laminated on the luster layer surface of the thin film.

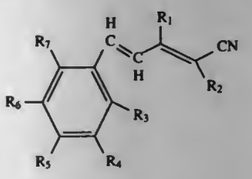
5,578,416

CINNAMAL-NITRILE DYES FOR LASER RECORDING ELEMENT

Lee W. Tutt, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 20, 1995, Ser. No. 561,491
Int. Cl.[6] G03C *5/16*
U.S. Cl. 430—270.18 **6 Claims**

1. A laser recording element comprising a support having thereon a dye layer comprising an image dye dispersed in a polymeric binder, said dye layer having an infrared-absorbing material associated therewith, and wherein said image dye is a cinnamal-nitrile UV-absorbing dye, with a λ-max in the UV of 300–400 nm, wherein said cinnamal-nitrile UV-absorbing dye has the following structure:



wherein

R_2 represents hydrogen or an alkyl group having from 1 to about 6 carbon atoms;

R_2 represents cyano or a carboxylic ester group; and

R_3–R_7 each independently represents hydrogen, cyano, alkoxy, an alkyl group having from 1 to about 6 carbon atoms, nitro, a carboxylic ester group or an electron-withdrawing moiety.

5,578,417

LIQUID JET RECORDING HEAD AND RECORDING APPARATUS HAVING SAME

Hiromichi Noguchi, Atsugi; Tadayoshi Inamoto, Machida, and Megumi Saito, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 267,311, Jun. 29, 1994, abandoned, which is a continuation of Ser. No. 22,404, Feb. 24, 1993, abandoned, which is a continuation of Ser. No. 494,096, Mar. 21, 1990, abandoned. This application Mar. 20, 1995, Ser. No. 406,798
Claims priority, application Japan, Jan. 10, 1989, 1-3395
Int. Cl.[6] B41J *2/16;* **C08F** *2/50;* **C08L** *51/00;* **G03F** *7/004*
U.S. Cl. 430—280.1 **27 Claims**

1. A process for producing a liquid jet recording head comprising a discharge opening for discharging a recording liquid, a liquid path communicating with the discharge opening and a discharge energy generating element aligned with the liquid path for generating an energy to discharge the recording liquid from the discharge opening, said process comprising the steps of:

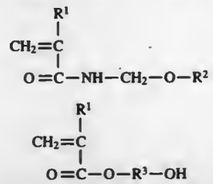
applying an active energy-curing resin composition onto at least a part of a surface of a first member for forming a wall of the liquid path;

exposing the applied active energy-ray-curing resin composition to an active energy ray selected from the group consisting of an ultraviolet ray having an intensity of 1 mW/cm^2 to 100 mW/cm^2 and an electron beam with an intensity of 0.5M Rad to 20M Rad; and

providing a second member on the exposed active energy-ray-curing resin composition;

wherein said first member or said second member has a discharge energy generating element provided thereon and the active energy-ray-curing resin composition comprises

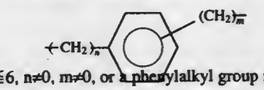
(a) a graft copolymerized polymer having a number average molecular weight of 5,000 or more and a weight average molecular weight of 50,000 or less, which comprises a trunk chain composed mainly of structural units derived from at least one monomer selected from the group consisting of alkyl methacrylates, acrylonitrile and styrene and has graft chains having structural units derived from at least one monomer selected from the group consisting of monomers represented by the following formulae (x) and (y):



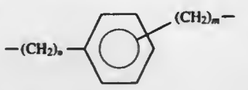
(x)

(y)

wherein R^1 is a hydrogen atom or an alkyl or hydroxyalkyl group having 1 to 3 carbon atoms, R^2 is a hydrogen atom or an alkyl or acyl group having 1 to 4 carbon atoms which may have hydroxy groups, R^3 is an alkyl group having 2 to 6 carbon atoms, a halogen-substituted alkyl group having 2 to 6 carbon atoms, an alkylether group represented by the formula:



wherein $2 \leqq m+n \leqq 6$, $n \neq 0$, $m \neq 0$, or a phenylalkyl group represented by the formula:



wherein $2 \leqq m+n \leqq 4$, or the case where n=0 or m=0 is contained;

(B) a linear polymer having a number average molecular weight of 50,000 or more and a weight average molecular weight of 350,000 or less and having a glass transition temperature of 60° C. or higher, which comprises (i) structural units derived from at least one monomer selected from the group consisting of methyl methacrylate, ethyl methacrylate, isobutyl methacrylate, t-butyl methacrylate, benzyl methacrylate, acrylonitrile, isobornyl methacrylate, isobornyl acrylate, tricyclodecane acrylate, tricyclodecane methacrylate, tricyclodecaneoxyethyl methacrylate, styrene, dimethylaminoethyl methacrylate and cyclohexyl methacrylate, and (ii) from 5 to 30 mol % of structural units derived from at least one monomer selected from the group consisting of said monomers represented by the formula (x) and the monomers represented by the formula (y);

(C) an epoxy resin which contains at least one compound having one or more epoxy groups in one molecule;

(D) a monomer having an ethylenically unsaturated bond; and

(E) a photopolymerization initiator capable of generating a Lewis acid by irradiation with an active energy ray.

5,578,418

LIQUID JET RECORDING HEAD AND RECORDING APPARATUS HAVING SAME

Hiromichi Noguchi, Atsugi; Tadayoshi Inamoto, Machida, and Megumi Saito, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 267,310, Jun. 29, 1994, abandoned, which is a continuation of Ser. No. 22,403, Feb. 24, 1993, abandoned, which is a continuation of Ser. No. 497,095, Mar. 21, 1990, abandoned. This application Mar. 20, 1995, Ser. No. 406,800
Claims priority, application Japan, Jan. 10, 1989, 1-3392
Int. Cl.[6] B41J *2/16;* **C08L** *51/00;63/00;* **G03F** *7/004*
U.S. Cl. 430—280.1 **31 Claims**

1. A process for producing a liquid jet recording head comprising a discharge opening for discharging a recording liquid, a liquid path communicating with the discharge opening and a discharge energy generating element aligned with the liquid path for gener-

VOL 1192 ISS 4 NO 26

ating an energy to discharge the recording liquid from the discharge opening, said process comprising the steps of:

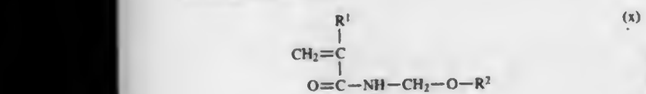
applying an active energy-curing resin composition onto at least a part of a surface of a first member for forming a wall of the liquid path;

exposing the applied active energy-ray-curing resin composition to an active energy ray selected from the group consisting of an ultraviolet ray having an intensity of 1 mW/cm^2 to 100 mW/cm^2 and an electron beam with an intensity of 0.5M Rad to 20M Rad; and

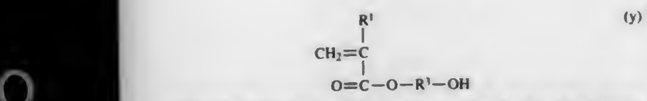
providing a second member on the exposed active energy-ray-curing resin composition;

wherein said first member or said second member has a discharge energy generating element provided thereon and the active energy-ray-curing resin composition comprises

(a) a graft Copolymerized polymer having a number average molecular weight of 5,000 or more and a weight average molecular weight of 50,000 or less, which comprises a trunk chain composed mainly of structural units derived from at least one monomer selected from the group consisting of alkyl methacrylates, acrylonitrile and styrene and has graft chains having structural units derived from at least one monomer selected from the group consisting of monomers represented by the following formulae (x) and (y):



(x)

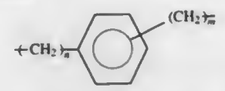


(y)

wherein R^1 is a hydrogen atom or an alkyl or hydroxyalkyl group having 1 to 3 carbon atoms, R^2 is a hydrogen atom or an alkyl or acyl group having 1 to 4 carbon atoms which may have hydroxy groups, R^3 is an alkyl group having 2 to 6 carbon atoms, a halogen-substituted alkyl group having 2 to 6 carbon atoms, an alkylether group represented by the formula:

$$+CH_2\rightarrow_m O+CH_2\rightarrow_m$$

wherein $2 \leqq m+n \leqq 6$, $n \neq 0$, $n \neq 0$, or a phenylalkyl group represented by the formula:



wherein $2 \leqq m+n \leqq 4$, or the case where $n \neq 0$ or $m \neq 0$ is contained;

(B) a linear polymer having a number average molecular weight of 50,000 or more and a weight average molecular weight of 350,000 or less and having a glass transition temperature of 60° C. or higher, which comprises (i) structural units derived from at least one monomer selected from the group consisting of methyl methacrylate, ethyl methacrylate, isobutyl methacrylate, t-butyl methacrylate, benzyl methacrylate, acrylonitrile, isobornyl methacrylate, isobornyl acrylate, tricyclodecane acrylate, tricyclodecane methacrylate, tricyclodecaneoxyethyl methacrylate, styrene, dimethylaminoethyl methacrylate and cyclohexyl methacrylate, and (ii) from 5 to 30 mol % of structural units derived from at least one monomer selected from the group consisting of the monomers represented by the formula (x) and the monomers represented by the formula (y);

(C) a resin comprising repeating units having at least one epoxy group in one molecule; and

(D) a photopolymerization initiator capable of generating a Lewis acid by irradiation with an active energy ray.

5,578,419

DYES FOR COLOR FILTERS, AND PHOTOSENSITIVE RESIST RESIN COMPOSITION CONTAINING THE SAME

Hisato Itoh, Yokohama; Akio Karasawa, Zushi, and Kenichi Sugimoto, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation-in-part of Ser. No. 987,960, Dec. 11, 1992, abandoned. This application Apr. 6, 1994, Ser. No. 223,605

Claims priority, application Japan, Dec. 12, 1991, 3-328474

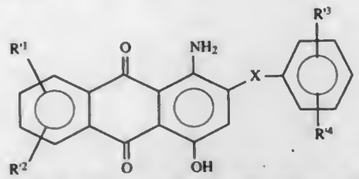
Int. Cl.^{6} C09B *1/16;62/004*

U.S. Cl. 430—281.1 **15 Claims**

1. A dye represented by formula (1):

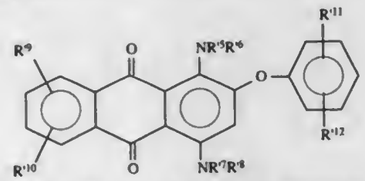
$$D\text{-}(A\text{-}Yn^1)n^2 \quad (1)$$

wherein D is an anthraquinone nucleus represented by any one of formulae (i) to (iii):



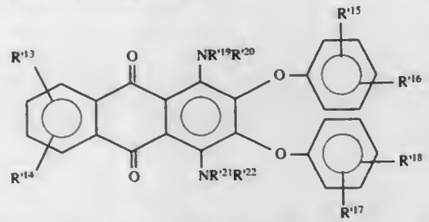
(i)

wherein X is an oxygen or sulfur atom, R'^1 to R'^4 each are independently a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkoxy group or a halogen atom;



(ii)

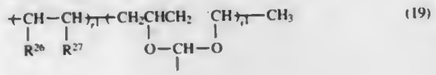
wherein R'^5 to R'^8 each are independently a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted aryl group or a hydrogen atom, R'^9 to R'^{12} each are independently a hydrogen atom, substituted or unsubstituted alkyl group, a substituted or unsubstituted alkoxy group or a halogen atom;



(iii)

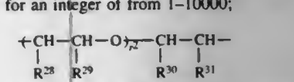
wherein R'^{13} to R'^{18} each are independently a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkoxy group or a halogen atom, R'^{19} to R'^{22} each are independently a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted aryl group or a hydrogen atom;

A is a connecting group of one of the following formulae (19) to (22), in which parenthesized recurring units may be combined together at random:



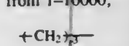
(19)

wherein one of R^{26} and R^{27} represents a hydrogen atom and the other denotes a hydroxyl group; and r^1 and s^1 each stands for an integer of from 1–10000;



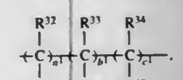
(20)

wherein R^{28} to R^{31} independently represent a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted aryl group, or a halogen atom, and r^2 stands for an integer of from 1–10000;



(21)

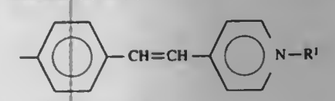
wherein r^3 stands for an integer of 1–10000;



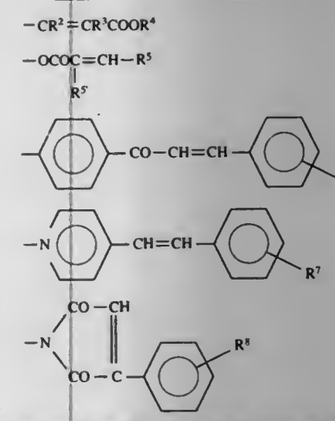
(22)

wherein R^{32} to R^{37} independently represent a hydrogen atom, a halogen atom, a hydroxyl group, —SH, an amino group, a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxyl group, a substituted or unsubstituted aryloxyl group, a substituted or unsubstituted alkylamino group, or a substituted or unsubstituted arylamino group; and a^1, b^1 and c^1 each stands for an integer of from 0–10000.

Y is a photopolymerizable group represented by any one of formulae (2) to (7)



(2)



(3)

(4)

(5)

(6)

(7)

wherein R^1 to R^4 independently represent a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted aralkyl group or a hydrogen atom, R^5 denotes a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted aralkyl group or a hydrogen atom, R^5' is a hydrogen atom or methyl group, provided that if R^5' is a methyl group, then R^5 is a hydrogen atom, and R^6 to R^8 independently mean a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted alkoxyl group, a halogen atom or a hydrogen atom,

n^1 is 1–10,000, and n^2 is an integer from 1 to 10,

wherein, a substituted alkyl means alkyl substituted by alkoxy, halogen or hydroxyl groups; substituted cycloalkyl means cycloalkyl substituted by alkyl,alkoxy, halogen, cyano, nitro and/or hydroxyl groups; substituted alkoxyl means alkoxyl substituted by alkoxy, halogen or hydroxy groups; substituted aryl means aryl substituted by alkyl, alkoxy or halogen groups; substituted aralkyl means aralkyl substituted by alkyl, alkoxy or halogen groups; substituted alkylamino means alkylamino substituted by alkoxy, halogen or hydroxyl groups; and substituted arylamino means arylamino substituted by alkyl, alkoxy or halogen groups.

5,578,420

PROCESS FOR PRODUCING A FLEXOGRAPHIC PRINTING PLATE

Toshiya Takagi, and Hiroshi Komano, both of Kanagawa, Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa, Japan

Division of Ser. No. 265,338, Jun. 24, 1994, Pat. No. 5,521,054. This application May 31, 1995, Ser. No. 456,053

Claims priority, application Japan, Jun. 25, 1993, 5-177636

Int. Cl.^{6} G03F *7/00;7/26;* **G03C** *5/00*

U.S. Cl. 430—306 **5 Claims**

1. A process for producing a flexographic printing plate comprising the steps of image-wise exposing a photosensitive resin composition on a substrate and then selectively washing away unexposed areas of the photosensitive resin composition with a developing solution to form a relief pattern of the photosensitive resin composition on the substrate, wherein the developing solution consists essentially of:

(A) at least one aromatic hydrocarbon having a boiling point of from 150° to 300° C.;

(B) at least one alcohol represented by the following formula (I):

$$R^1OH \quad (I)$$

wherein R^1 represents an aliphatic or alicyclic alkyl group having from 5 to 12 carbon atoms, $—C_nH_{2n}Ar$, $—(C_mH_{2m}O)_pC_qH_{2q+1}$, a furfuryl group or a hydrogenated furfuryl group, an alkyl group substituted by an acyl group or an epoxy group, or "$—CH_2CH_2(OCH_2CH_2)_rOR^2$"; in which Ar represents an aromatic group; n represents an integer of from 1 to 3; m represents an integer of from 2 to 6; p represents 1 or 2; q represents 0 or an integer of from 1 to 4; R^2 represents a hydrogen atom or an alkyl group; and r represents 0, 1 or 2; and

(C) isobutyl isobutyrate; the proportions of components (A), (B), and (C) being from 25 to 70% by weight, from 20 to 50% by weight, and from 0.001 to 40% by weight, respectively, each based on the sum of components (A), (B), and (C).

5,578,421

PHOTOMASK AND PATTERN FORMING METHOD EMPLOYING THE SAME

Norio Hasegawa; Fumio Murai, both of Tokyo, and Katsuya Hayano, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 162,319, Dec. 7, 1993, Pat. No. 5,429,896. This application Apr. 7, 1995, Ser. No. 418,402

Claims priority, application Japan, Dec. 7, 1992, 4-326433

Int. Cl.^{6} G03C *5/00*

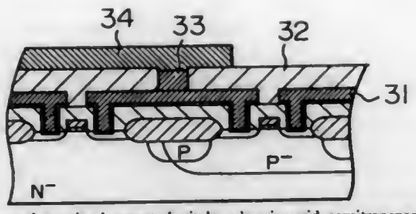
U.S. Cl. 430—313 **29 Claims**

1. A pattern forming method, comprising the steps of:

forming a photoresist film on a substrate;

placing said substrate having said photoresist film on a sample stage of an aligner;

exposing, with a projection exposure optical system, a predetermined first area of said substrate by using a photomask including first and second portions, said first portion being an element pattern portion including a semitransparent phase shifting region, and said second portion including a semitransparent phase shifting pattern and a transparent pattern which are arranged in an alternating and periodic pattern with a



predetermined repeated pitch; wherein said semitransparent phase shifting region and said semitransparent phase shifting pattern are semitransparent with respect to exposure light, said transparent pattern is transparent with respect to exposure light, light that has passed through said semitransparent phase shifting region and said semitransparent phase shifting pattern is substantially 180 degrees out of phase with respect to light that has passed through said transparent pattern, and wherein said second portion is disposed outside a periphery of the first portion;

moving said substrate horizontally; and

exposing a second area of said substrate which is adjacent to said predetermined first area by using said photomask.

5,578,422

MANUFACTURING METHOD OR AN EXPOSING METHOD FOR A SEMICONDUCTOR DEVICE OR A SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND A MASK USED THEREFOR

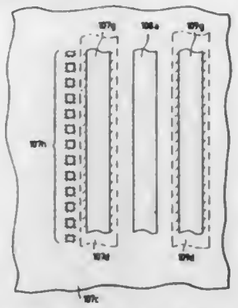
Fumio Mizuno, Tokorozawa; Noboru Moriuchi, Ohme; Seiichiro Shirai, Hamura, and Massayuki Morita, Fussa, all of Japan, assignors to Hitachi, Ltd., and Hitachi VLSI Engineering Corp., both of Tokyo, Japan

Continuation of Ser. No. 912,511, Jul. 13, 1992, Pat. No. 5,436,095. This application May 18, 1995, Ser. No. 443,431

Claims priority, application Japan, Jul. 11, 1991, 3-170946

Int. Cl.[6] G03C *5/00*

U.S. Cl. 430—313 **41 Claims**



1. A method of making semiconductor devices, comprising the steps of:

(1) irradiating an exposure light flux, having a substantially constant wavelength and being coherent or partially coherent in ultraviolet or deep ultraviolet domain, on a phase shift mask on which enlarged patterns are formed, and

(2) reducing and projecting the exposure light flux passing through the mask, by a reducing optical projection system having a predetermined numerical aperture, so that desired reduced patterns corresponding to the enlarged patterns on the mask can be focused onto a photosensitive resist film on a major surface of a wafer, whereby the reduced patterns corresponding to the enlarged patterns on the mask are transferred onto the wafer, said mask comprising:

(a) a plurality of rectangular principal opening patterns, corresponding to hole patterns disposed adjacent to each other on the wafer, alternately inverted in phase and arranged substantially in line with each other, the plurality of rectangular principal opening patterns in line with each other being of substantially a same shape and same dimensions, the sizes of each of said rectangular principal opening patterns being such that said hole patterns on the wafer have sizes comparable with the wavelength of the exposure light flux; and

(b) a plurality of auxiliary rectangular opening patterns, disposed and oriented along sides of the principal openings which are not adjacent to sides of other rectangular principal opening patterns in line therewith, the auxiliary rectangular opening patterns being inverted in phase with respect to their adjacent principal opening patterns so as to form clear images on the wafer corresponding to the principal opening patterns, sizes of the plurality of auxiliary rectangular opening patterns being so minute that no independent patterns thereof are formed on the wafer.

5,578,423

METHOD FOR THE PREPARATION OF A PATTERN OVERLAY ACCURACY-MEASURING MARK

Sang M. Bae, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Oct. 12, 1994, Ser. No. 321,448

Claims priority, application Rep. of Korea, Oct. 15, 1993, 93-21405

Int. Cl.[6] G03C *5/00;* **G03F** *7/36*

U.S. Cl. 430—314 **7 Claims**

1. A method for preparing a pattern overlay accuracy-measuring mark on a semiconductor wafer, comprising the steps of:

applying photoetch to a first layer formed over a scribe line on said wafer, to form a tetragonal groove along the inside boundary line of a predetermined area;

forming a second layer entirely over said first layer and removing a tetragonal area formed by use of a light-exposure mask of the second layer through photo etching, to form an outer box with said groove being exposed therethrough;

forming a metal layer entirely over said second layer; and then forming an inner box at the central portion of the outer box by use of a tetragonal pattern of photosensitive film located over the metal layer.

5,578,424

PROCESS FOR GENERATION OF UNBUFFERED SUPERACID AND FOR IMAGING

Jurgen M. Grasshoff, Hudson; John L. Marshall, Somerville; Richard A. Minns; Anthony J. Puttick, both of Arlington; Lloyd D. Taylor, Lexington, and Stephen J. Telfer, Arlington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 141,852, Oct. 22, 1993, Pat. No. 5,453,345, which is a continuation-in-part of Ser. No. 965,161, Oct. 22, 1992, Pat. No. 5,286,612. This application Jan. 20, 1995, Ser. No. 376,037

Int. Cl.[6] G03C *1/725;1/73;1/735;5/00*

U.S. Cl. 430—333 **22 Claims**

1. A process for generation of unbuffered superacid, which process comprises:

providing a medium containing a mixture of a superacid precursor and a dye capable of absorbing actinic radiation of a first wavelength, the superacid precursor being capable of being decomposed by actinic radiation of a second wavelength shorter than the first wavelength in the absence of the dye, but not being decomposed by actinic radiation of the first wavelength in the absence of the dye, the superacid precursor being decomposed by actinic radiation of the first wavelength in the presence of the dye;

irradiating the medium with actinic radiation of the first wavelength, thereby causing absorption of the actinic radiation, and decomposition of part, but not all, of the superacid precursor, without formation of unbuffered superacid but with formation of a protonated product derived from the dye; and

thereafter irradiating the medium with actinic radiation of the second wavelength, thereby causing decomposition of additional superacid precursor, with formation of unbuffered superacid.

9. An imaging process comprising:

providing an imaging medium having an acid-generating layer comprising a superacid precursor and an infra-red dye capable of absorbing infra-red radiation having a wavelength within the range of about 700 to about 1200 nm, the superacid precursor being capable of being decomposed by ultraviolet radiation having a wavelength in the range of about 180 to about 400 nm in the absence of the infra-red dye to form a superacid, the superacid precursor not being decomposed by infra-red radiation having a wavelength within the range of about 700 to about 1200 nm in the absence of the infra-red dye but being decomposed by infra-red radiation having a wavelength within the range of about 700 to about 1200 nm in the presence of the infra-red dye, the acid-generating layer further comprising a secondary acid generator capable of acid-catalyzed decomposition by unbuffered superacid to form a secondary acid, and the imaging medium further comprising a color-forming layer comprising an acid-sensitive material which changes color in the presence of the secondary acid;

imagewise exposing the imaging medium to infra-red radiation of a frequency absorbed by the infra-red dye, with absorption of the infra-red radiation and decomposition of part but not all, of the superacid precursor without formation of unbuffered superacid but with formation of a protonated product derived from infra-red dye;

thereafter exposing the medium to ultraviolet radiation having a wavelength in the range of about 180 to about 400 nm, the ultra-violet exposure causing decomposition of additional superacid precursor and being continued for a time such that in areas of the medium exposed to both the infra-red and ultra-violet radiation, unbuffered superacid is present, but in areas of the medium exposed only to the ultra-violet radiation, no unbuffered superacid is present;

thereafter heating the medium and thereby, in areas of the medium exposed to both the infra-red and ultra-violet radiation, causing the unbuffered superacid present to cause decomposition of the secondary acid generator, with formation of the secondary acid, the areas of the medium exposed only to the ultra-violet radiation remaining essentially free from the secondary acid; and

mixing the acid-generating and color-forming layers so that, in areas of the medium exposed to both the infra-red and ultra-violet radiation, the secondary acid causes the color change of the acid-sensitive material, while in areas of the medium exposed only to the ultra-violet radiation, essentially no color change of the acid-sensitive material occurs.

5,578,425

DISPOSABLE ELEMENT FOR CLEANING RADIOGRAPHIC FILM PROCESSING SOLUTIONS

Robert E. Dickerson, Hamlin, and Kevin W. Williams, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 20, 1995, Ser. No. 561,503

Int. Cl.[6] G03C *5/00;5/44*

U.S. Cl. 430—347 **8 Claims**

1. An element for cleaning processing solutions contained in a radiographic film processor comprising

a transparent film support and

hydrophilic colloid layers which are free of silver halide coated on opposite sides of the film support,

wherein

a processing solution soluble colorant is contained in one or both of the hydrophilic colloid layers and

an infrared opacifying dye is contained within the element capable of reducing specular transmission through the element before, during and after processing to less than 50 percent, measured at a wavelength within the spectral region of from 850 to 1100 nm.

5,578,426

METHOD FOR PROCESSING A SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Koichi Nakamura, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 87,874, Jul. 9, 1993, abandoned. This application Dec. 14, 1994, Ser. No. 358,574

Claims priority, application Japan, Jul. 15, 1992, 4-209460

Int. Cl.[6] G03C *7/392*

U.S. Cl. 430—383 **19 Claims**

1. A method for processing a silver halide color photographic material having, on a support, at least three photosensitive silver halide emulsion layers, which comprises:

processing, after exposure to light, said silver halide color photographic material with a color developer containing chloride ions in an amount of 0.04 to 0.25 mol/l at a temperature in a range from 30° to 45° C.,

wherein the silver halide in said emulsion layers contains 90 mol % or more of silver chloride,

wherein said support is composed of a paper support having surfaces covered with a water-resistant resin layer,

wherein at least the surface of the side upon which the photosensitive silver halide emulsion layers are coated is covered with a water-resistant resin layer containing white pigment fine particles;

wherein said photographic material has a white pigment-containing hydrophilic colloid layer coating on the surface of the water-resistant resin layer that is located on the side of the support upon which the photosensitive silver halide emulsion layers are coated,

wherein the coating amount of the white pigment is from 2 to 15 g/m^2.

5,578,427

CONTAINER HAVING PHOTOGRAPHIC CONDITIONING SOLUTION CONCENTRATE

Ann M. Cullinan, Rochester; Charles M. Darmon; Rosa P. Sauter, both of Spencerport, and Charles F. Leith, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 417,416, Apr. 5, 1995. This application Apr. 2, 1996, Ser. No. 626,595

Int. Cl.[6] G03C *11/00*

U.S. Cl. 430—393 **14 Claims**

1. A container containing a conditioning solution concentrate comprising a formaldehyde precursor in an amount of from about 200 to about 450 g/l, a sulfite in an amount of from about 40 to about 100 g/l, a bleach accelerating agent in an amount of from about 1.5 to about 13.5 g/l, and a metal ion chelating agent in an amount of from about 5 to about 45 g/l.

5,578,428

PROCESS AND APPARATUS FOR THE PEROXIDE BLEACHING OF PHOTOGRAPHIC MATERIALS

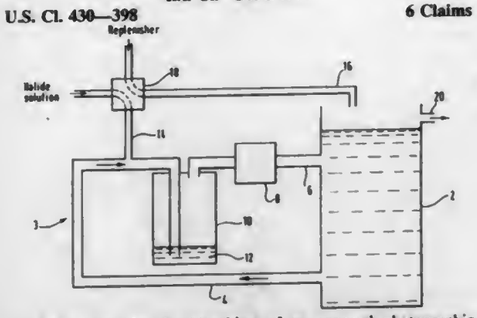
John R. Fyson, Hackney, United Kingdom, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 14, 1995, Ser. No. 572,375

Claims priority, application United Kingdom, Dec. 17, 1994, 9425508

Int. Cl.[6] G03C 7/44

U.S. Cl. 430—398 6 Claims



1. A process for the bleaching of an exposed photographic material comprises using a peroxide bleach solution to remove metallic silver from the exposed photographic material and in which process the silver from the photographic material passes into the bleach solution, wherein at least part of the excess silver over that required to catalyze the bleaching action is removed from the bleach solution by forming an insoluble silver compound the concentration of the silver in said peroxide bleach solution be at least equivalent to 0.25 g/l of silver nitrate.

5,578,429

METHOD OF PROCESSING PHOTOGRAPHIC SILVER HALIDE MATERIALS

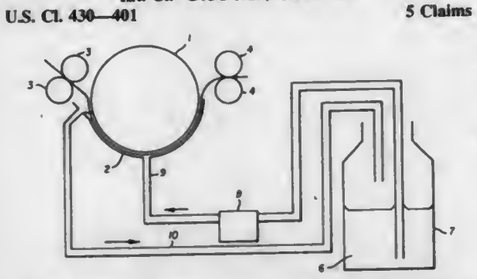
John R. Fyson, Hackney, United Kingdom, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 8, 1995, Ser. No. 436,509

Claims priority, application United Kingdom, Jul. 30, 1994, 9415430

Int. Cl.[6] G03C 5/29; G03D 3/00

U.S. Cl. 430—401 5 Claims



1. In a method of imagewise exposing and thereafter processing a photographic silver halide color material having a silver halide emulsion comprising at least 85 mol % silver chloride, in a machine containing a number of either non-replenished processing tanks or processing tanks that are supplied from a non-replenished source,

the method comprising increasing the imagewise exposure time of said material automatically by a factor directly related to the area of photographic material already processed, and inversely related to the volume of a processing solution in one of said processing tanks,

said processing solution being contained in a replaceable solution supply unit comprising separate holder compartments for each processing solution, and wherein said processing solution is circulated between said solution supply unit and one of said processing tanks continuously or intermittently.

5,578,430

METHOD OF PROCESSING PHOTOGRAPHIC SILVER HALIDE MATERIALS WITHOUT REPLENISHMENT

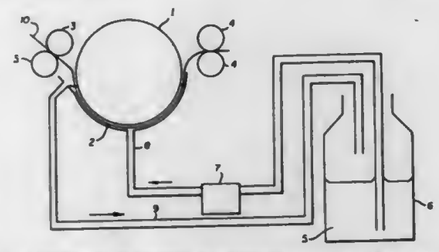
John R. Fyson, Hackney, United Kingdom, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 8, 1995, Ser. No. 436,510

Claims priority, application United Kingdom, Jul. 30, 1994, 9415429; Jul. 30, 1994, 9415430; Dec. 1, 1994, 9424288

Int. Cl.[6] G03C 5/29; G03D 3/04

U.S. Cl. 430—401 11 Claims



1. A method of processing an imagewise exposed photographic silver halide material in a machine containing a number of non-replenished processing tanks or processing tanks which are supplied from a non-replenished source wherein said photographic silver halide material comprises a silver halide emulsion comprising at least 95% by weight silver chloride, and processing in each processing tank is carried out with agitation of a processing solution in said processing tank,

each of said processing solutions having a fixed volume and being circulated continuously or intermittently through respective processing tanks and sources of said processing solutions, but none of said processing solutions being replenished during said processing method.

5,578,431

METHOD OF PROCESSING PHOTOGRAPHIC SILVER HALIDE MATERIALS WITHOUT REPLENISHMENT

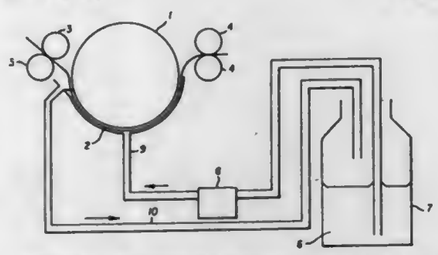
John R. Fyson, Hackney, United Kingdom, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 8, 1995, Ser. No. 436,511

Claims priority, application United Kingdom, Jul. 30, 1994, 9415429

Int. Cl.[6] G03C 5/29; G03D 3/04;3/00

U.S. Cl. 430—401 8 Claims



1. A method of processing an imagewise exposed photographic silver halide material having a silver halide emulsion comprising at least 85 mol % silver chloride, in a machine containing a number of either non-replenished processing tanks or processing tanks which are supplied from a non-replenished source,

the method comprising contacting said silver halide material with a processing solution in each processing tank, and increasing the temperature of at least one of the processing tanks automatically by an amount directly related to the area of photographic material already processed, and optionally, increasing the time of treatment in said at least one processing tank by a factor directly related to the area of photographic material already processed and the volume of the processing solution in said at least one processing tank,

said processing solution being contained in a replaceable solution supply unit comprising separate holder compartments for each processing solution, and wherein one or more of said processing solutions are circulated between said solution supply unit and said at least one processing tank continuously or intermittently.

5,578,432

ADDENDA FOR AN AQUEOUS PHOTOGRAPHIC STABILIZING SOLUTION

Hugh G. McGuckin; John S. Badger, and Michael W. Orem, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 300,117, Sep. 2, 1994, abandoned, which is a continuation of Ser. No. 46,340, Apr. 13, 1993, abandoned, which is a continuation-in-part of Ser. No. 881,916, May 12, 1992, abandoned. This application Mar. 21, 1996, Ser. No. 619,146

Int. Cl.[6] G03C 11/06

U.S. Cl. 430—429 15 Claims

1. An aqueous photographic stabilizing solution for use in the color processing of photographic elements, comprising:

hexamethylenetetramine;

approximately 0.1 to 0.5 g/l of a nonionic polyethoxylated surfactant having the chemical formula

$$R_1—(B)_x—(E)_m—D,$$

wherein

R_1 is an alkyl group with 8 to 20 carbons,

B is a phenyl group and x is 0 or 1,

E is $—(OCH_2CH_2)—$ and m is 6 to 20, and

D is —OH or $—OCH_3$; and

approximately 0.05 to 1.0 g/l of an anionic surfactant having the chemical formula

$$R_2—(A)—C,$$

wherein

R_2 is an alkyl group having 8 to 20 carbon atoms,

A is selected from the group including a phenyl group and an hydroxyethylene group, and

C is selected from the group including $SO_3—M^+$ and $SO_4—M^+$, and

M^+ is selected from the group including $NH4^+$, and the alkali metals Na^+, K^+, and Li^+.

5,578,433

PROCESSING COMPOSITION AND PROCESSING METHOD FOR SILVER HALIDE PHOTOGRAPHIC MATERIALS

Shinnichi Morishima, and Kazumi Nii, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 17, 1995, Ser. No. 544,021

Claims priority, application Japan, Oct. 17, 1994, 6-275530

Int. Cl.[6] G03C 5/305

U.S. Cl. 430—436 10 Claims

1. A method of developing a silver halide photographic material to form an image, which comprises processing the silver halide photographic material with a developer which does not substantially contain a dihydroxybenzene developing agent, wherein the developer contains:

1) at least one compound represented by formula (B) or (C):

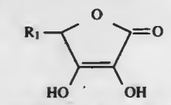
$$R_2—N(—OH)—R_3 \quad (B)$$

wherein R_2 and R_3 are the same or different, and each represents a hydrogen atom, an alkyl group, an aryl group or a heterocyclic group, excluding the case in which R_2 and R_3 are both a hydrogen atom; or R_2 and R_3 are linked to each other to form a heterocyclic ring together with the nitrogen atom;

$$A—X—N(—R_4)—O—Y \quad (C)$$

wherein A represents a hydrogen atom, an alkyl group, an aryl group, a heterocyclic group, an alkoxy group, an aryloxy group, an amino group, an alkylamino group, an acyl group, a carbamoyl group, a sulfamoyl group, a carboxyl group, a hydroxyamino group or a hydroxyaminocarbonyl group; X represents —C(=O)—, —C(=S)—, $—SO_2—$ or —SO—; R_4 represents a hydrogen atom, an alkyl group or an aryl group; and Y represents a hydrogen atom or a group capable of being converted into a hydrogen atom by hydrolysis;

2) a developing agent represented by formula (A)



(A)

wherein R_1 represents a hydrogen atom, an alkyl group, an aryl group or a heterocyclic group;

3) a p-aminophenol developing agent and/or a 3-pyrazolidone developing agent; and

4) sulfite in an amount of at least 0.1 mole/l.

5,578,434

PHOTOGRAPHIC SILVER HALIDE DEVELOPER COMPOSITION AND PROCESS FOR FORMING PHOTOGRAPHIC SILVER IMAGES

Elda Moizo, Carcare; Carlo Marchesano, Savona, both of Italy; Andrew Mott, Bishop's Stortford, Great Britain, and Dian E. Stevenson, Saffron Walden, England, assignors to Imation Corp., Woodbury, Minn.

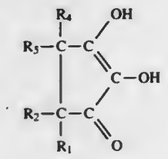
Filed May 15, 1995, Ser. No. 440,832

Claims priority, application European Pat. Off., Jun. 27, 1994, 94109868

Int. Cl.[6] G03C 5/30

U.S. Cl. 430—480 13 Claims

1. A black-and-white aqueous alkaline photographic developer composition, free of dihydroxybenzene developing agent, comprising a reductic acid developing agent and an auxiliary superadditive developing wherein the reductic acid developing agent is represented by the formula:



wherein,

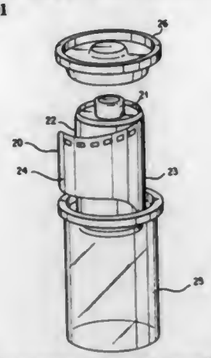
R_1, R_2, R_3 and R_4 each are selected from the group consisting of hydrogen and CH_2R_5, wherein R_5 is hydrogen or a monovalent group wherein said auxiliary superadditive developing agent is a 3-pyrazolidone developing agent.

VOL 1192 ISS 4 NO 26

5,578,435
ENCASED PHOTOGRAPHIC MATERIAL

Mikio Ihama, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 68,187, May 28, 1993. This application May 15, 1995, Ser. No. 441,497
Claims priority, application Japan, May 28, 1992, 4-160065
Int. Cl.[6] G03C *3/00;1/34;1/825;1/76*
U.S. Cl. 430—501 **15 Claims**



1. An encased photographic material comprising:
a silver halide light-sensitive material including at least one silver halide emulsion layer on a support, said emulsion layer containing gold-, sulfur- and selenium-sensitized silver halide grains and a thiocyanate salt therein, at least 60% of a total projected area of said silver halide grains being occupied by tabular grains having an aspect ratio of 3 or more, said tabular grains having on an average 10 or more dislocation lines per grain;
a lightproof container containing said light-sensitive material such that an end portion of said light-sensitive material is positioned outside said lightproof container, and that a gas can pass between an inside and an outside of said lightproof container;
a light-transmitting case encasing and sealing said lightproof container, wherein a relative humidity inside said light-transmitting case is 55% or more at 25° C.; and
a hydrogen cyanide gas scavenger comprising an organic or an inorganic palladium compound present inside said case in an amount of 1/10 mole or more per mole of thiocyanate salt contained in said end portion of said light-sensitive material, said hydrogen cyanide gas scavenger being present in a surface protective layer, an interlayer or an antihalation layer of said light-sensitive material.

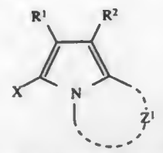
5,578,436
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Takefumi Hara; Kazuyoshi Yamakawa; Sadanobu Shuto; Mitsuru Yamamoto; Makoto Suzuki; Yasuhiro Shimada; Katsuro Nagaoka; Satoshi Nagaoka; Yoshihiko Shibahara, and Hideo Ikeda, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 43,027, Apr. 5, 1993, abandoned. This application May 30, 1995, Ser. No. 453,398
Claims priority, application Japan, Apr. 30, 1992, 4-109131
Int. Cl.[6] G03C *1/46*
U.S. Cl. 430—503 **3 Claims**

1. A silver halide color photographic material having at least one red-sensitive silver halide emulsion layer, at least one green-sensitive silver halide emulsion layer, and at least one blue-sensitive silver halide emulsion layer on a support, which comprises at least one cyan dye-forming coupler represented by the following formula (I) in at least one red-sensitive silver halide emulsion layer, and in at least one of said silver halide emulsion layers and/or in at lease one intermediate layer adjacent to one of said silver halide emulsion layers, a non-photosensitive silver halide emulsion wherein the inside or the surface of the grains is fogged:

(I)



wherein R^1 represents a hydrogen atom or a substituent, R^2 represents a substituent, X represents a hydrogen atom or a group capable of being released upon a coupling reaction of the coupler represented by formula (I) with an oxidized product of a color-developing agent, and Z^1 represents a group of nonmetallic atoms required for forming a nitrogen-containing 6-membered heterocyclic ring, which contains at least one group capable of being dissociated.

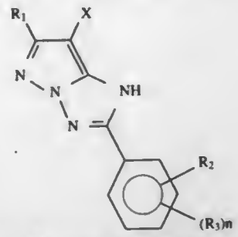
5,578,437
COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Masahiro Asami, and Hiroyuki Yoneyama, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara, Japan

Filed May 9, 1995, Ser. No. 437,370
Claims priority, application Japan, May 11, 1994, 6-120763; Oct. 3, 1994, 6-260925
Int. Cl.[6] G03C *1/08;7/26;7/32*
U.S. Cl. 430—558 **10 Claims**

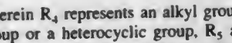
1. A silver halide color photographic light-sensitive material comprising a support having provided thereon photographic constituent layers comprising at least a yellow dye-forming silver halide emulsion layer, a magenta dye-forming silver halide emulsion layer and a cyan dye-forming silver halide emulsion layer, wherein the total silver coverage in said silver halide emulsion layers is 0.6 g/m^2 or less, said magenta dye-forming silver halide emulsion layer contains silver halide emulsion grains comprising silver chloride or silver chlorobromide substantially free of silver iodide having a silver chloride content of 90 mol % or more and at least one magenta dye-forming coupler represented by formula (M-I), and the total coating amount of oil-soluble components contained in photographic constituent layers above the silver halide emulsion layer nearest to the support is 3.5 g/m^2 or less:

(M-I)



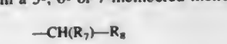
wherein R_1 represents a group represented by formula (Q-1), (Q-2) or (Q-3), R_2 and R_3 each represents a substituent, n represents from 0 to 4 and when n is 2 or greater, a plurality of R_3 groups may be the same or different, and X represents a group capable of being released on coupling reaction with an oxidation product of a developing agent;

(Q-1)



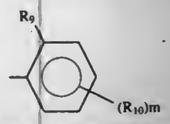
wherein R_4 represents an alkyl group, a cycloalkyl group, an aryl group or a heterocyclic group, R_5 and R_6 each represents a substituent, and R_4, R_5 and R_6 may be combined with each other to form a 5-, 6- or 7-membered monocyclic or condensed ring;

(Q-2)



wherein R_7 represents an alkyl group, a cycloalkyl group, an aryl group or a heterocyclic group, R8 represents a substituent, and R_7 and R_8 may be combined with each other to form a 5-, 6- or 7-membered monocyclic or condensed ring;

(Q-3)



wherein R_9 and R_{10} each represents a substituent and m represents from 0 to 4 and when m is 2 or greater, a plurality of R_{10} groups may be the same or different.

5,578,438
SILVER HALIDE PHOTOGRAPHIC EMULSION AND SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hiroshi Takada, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,507
Claims priority, application Japan, Mar. 17, 1994, 6-047241
Int. Cl.[6] G03C *1/035*
U.S. Cl. 430—567 **10 Claims**

10. A silver halide photographic light sensitive material comprising a support having thereon a silver halide emulsion layer, wherein said silver halide emulsion layer comprises a silver halide emulsion containing tabular silver halide grains having an aspect ratio of grain diameter to grain thickness of not less than 1.4, said tabular grains having a grain structure meeting the following requirement regarding an average silver iodide content in the vicinity of the grain surface,

$$I_1 - I_2 \geqq 1 \text{ (mol \%)}$$

wherein I_1 represents an average silver iodide content in mol % of a silver halide phase in a region from the grain surface to a depth of D_1 in Å and I_2 represents an average silver iodide content in mol % of a silver halide phase in a region from the grain surface to a depth of D_2 in Å, in which D_1 and D_2 are represented by the following relations,

$$D_1 = 1.1 \times [d_0^2 \pi (1/AR + 1/2)] + 13.4$$

$$D_2 \times D_1 \times 2$$

wherein d_O is an average diameter of said tabular grains and AR represents an average aspect ratio of said tabular grains and said tabular grains consist essentially of silver iodobromide having an average silver iodide content of not less than 3 mol % or a silver chloroiodobromide having an average silver iodide content of not less than 3 mol % and an average silver chloride content of not more than 10 mol %.

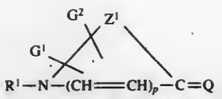
5,578,439
SILVER HALIDE PHOTOGRAPHIC MATERIAL

Yoshio Inagaki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 26, 1995, Ser. No. 506,732
Claims priority, application Japan, Jul. 29, 1994, 6-196254
Int. Cl.[6] G03C *1/12*
U.S. Cl. 430—576 **4 Claims**

1. A silver halide photographic material which comprises a light sensitive silver halide emulsion and a methine compound represented by the following formula (I):

(I)



wherein Z^1 represents a nonmetal atomic group necessary for completing a 5- or 6-membered heterocyclic ring which may be condensed; R^1 represents an aliphatic or aromatic group which may be substituted; G^1 represents a hydroxyl group, an amino group, an aliphatic or aromatic primary amino group, a hydroxyamino group, an alkoxyamino group, an acylamino group or an aliphatic or aromatic sulfonamido group; G^2 is a group substituted at the position adjacent to G^1 and is a group represented by $T^2—C(=T^1)—$; $=T^1$ represents =O, =NH, =NOH, an alkoxyimino group, an aliphatic or aromatic imino group, an acylimino group, or an aliphatic or aromatic sulfonylimino group; T^2 represents a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an amino group, a primary or secondary amino group, a carbonamido group, an aliphatic or aromatic sulfonamido group or a ureido group; p represents 0 or 1; and Q represents a residue for forming a methine dye.

5,578,440
SILVER HALIDE PHOTOGRAPHIC MATERIAL

Takanori Hioki, and Tadashi Ikeda, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 14, 1995, Ser. No. 557,493
Claims priority, application Japan, Nov. 15, 1994, 6-305628; Dec. 27, 1994, 6-337014
Int. Cl.[6] G03C *1/12;1/34*
U.S. Cl. 430—581 **8 Claims**

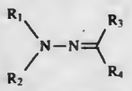
1. A silver halide photographic material comprising a support having thereon at least one silver halide emulsion layer, said silver halide photographic material containing at least one hydrazone compound having a methine dye residue or an adsorbing group to silver halide linked through a covalent bond,
wherein said hydrazone compound is represented by formula (I) or (II):

$$(MET)_{k_{1a}}\text{—}\{(Q_1)_{k_{2a}}\text{—}(Hyd_1)\}_{k_{3a}} \quad \text{(I)}$$

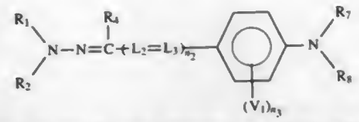
$$(MET)_{k_{1b}}\text{—}\{(Q_2)_{k_{2b}}\text{—}(Hyd_2)\}_{k_{3b}} \quad \text{(II)}$$

wherein MET represents a methine dye residue;
Het is an adsorbing group to silver halide which contains a 5-, 6- or 7-membered heterocyclic ring which has at least one nitrogen atom and may have a hetero atom other than nitrogen;
Q_1 and Q_2 each represents a sulfur or oxygen atom or a linking group comprising an atomic group containing at least one of a carbon atom, nitrogen atom, sulfur atom and oxygen atom;
k_{1a}, k_{3a}, k_{1b} and k_{3b} each represents an integer of from 1 to 4;
k_{2a} and k_{2b} each represents 0 or 1;
Hyd_1 represents a group having a hydrazone structure represented by formula (III):

(III)



wherein R_1, R_2 and R_3 each represents an aliphatic group, an aryl group or a heterocyclic group; and
R_4 represents a hydrogen atom or has the same meaning as R_3; and
Hyd_2 represents a group having a hydrazone structure represented by formula (IIIb):



(IIIb)

wherein R_1 and R_2 each represents an aliphatic group, an aryl group or a heterocyclic group;

R_4 represents a hydrogen atom, an aliphatic group, an aryl group or a heterocyclic group;

R_7 and R_8 each represents a hydrogen atom, an aliphatic group, an aryl group or a heterocyclic group;

V_1 represents a hydrogen atom or a monovalent substituent;

n_2 represents 0 or 1;

n_3 represents an integer of from 1 to 4; and

L_2 and L_3 each represents a methine group.

may be a divalent group to form a homopolymer or a copolymer by bonding with a dimer or higher polymer or polymer chain.

5,578,441

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Satoshi Nagaoka; Kazuyoshi Yamakawa; Mitsuru Yamamoto; Makoto Suzuki; Yasuhiro Shimada; Katsuro Nagaoka; Hideo Ikeda; Takefumi Hara, and Sadanobu Shuto, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 45,776, Apr. 14, 1993, Pat. No. 5,460,929. This application Sep. 30, 1994, Ser. No. 315,573

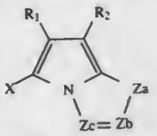
Claims priority, application Japan, Apr. 15, 1992, 4-119862

Int. Cl.[6] G03C *1/06*

U.S. Cl. 430—599 **4 Claims**

1. A silver halide color photographic material having one or more silver halide emulsion layers on a support, comprising at least one cyan dye-forming coupler represented by the following formula (Ia) in at least one silver halide emulsion layer, and, in at least one of said silver halide emulsion layers, negative internal latent image silver halide grains that are chemically sensitized to a depth of less than 0.02 μm from the grain surface:

formula (Ia)



wherein Za represents —NH—, Zb represents —C(R_4)=, Z_c represents —N=, R_1 and R_2 each represent an electron-attracting group wherein the Hammett substituent constant σ_p value is 0.20 or more, provided that the sum of the σ_p value of R_1 and the σ_p value of R_2 is 0.65 or more, R_4 represents a hydrogen atom, a halogen atom, an aliphatic group, an aryl group, a heterocyclic group, an alkoxy group, an aryloxy group, a heterocyclic oxy group, an alkylthio group, an arylthio group, a heterocyclic thio group, an acyloxy group, a carbamoyloxy group, a silyloxy group, a sulfonyloxy group, an acylamino group, an alkylamino group, an arylamino group, a ureido group, a sulfamoylamino group, an alkenyloxy group, a formyl group, an alkylacyl group, an arylacyl group, a heterocyclic-acyl group, an alkylsulfonyl group, an arylsulfonyl group, a heterocyclic-sulfonyl group, an alkylsulfinyl group, an arylsulfinyl group, a heterocyclic-sulfinyl group, an alkyloxycarbonyl group, an aryloxycarbonyl group, a heterocyclic oxycarbonyl group, an alkyloxycarbonylamino group, an aryloxycarbonylamino group, a heterocyclic oxycarbonylamino group, a sulfonamido group, a carbamoyl group, a sulfamoyl group, a phosphonyl group, a sulfamido group, an imido group, an azolyl group, a hydroxyl group, a cyano group, a carboxyl group, a nitro group, a sulfo group, or an unsubstituted amino group, and X represents a hydrogen atom or a group capable of being released upon a coupling reaction with the oxidized product of an aromatic primary amine color-developing agent, provided that R_1, R_2, R_4, or X

5,578,442

GRAFT COPLOYMERS OF POLYCATIONIC SPECIES AND WATER-SOLUBLE POLYMERS, AND USE THEREFOR

Neil P. Desai; Patrick Soon-Shiong; Paul A. Sandford, and Roswitha E. Heintz, all of Los Angeles, Calif., assignors to VivoRx, Inc., Santa Monica, Calif.

Filed Mar. 23, 1992, Ser. No. 856,137

Int. Cl.[6] A01N *1/02*; C12N *11/10;5/00*

U.S. Cl. 435—1.1 **18 Claims**

1. A method to render cells non-adhesive, said method comprising directly contacting a surface of said cells with an effective amount of a composition comprising a polycationic species having water-soluble polymer chains grafted thereon.

5,578,443

DNA SEQUENCE-BASED HLA TYPING METHOD

Pedro Santamaria, Minneapolis; Michael T. Boyce-Jacino, Saint Paul; Jose J. Barbosa, Roseville; Stephen S. Rich, Saint Paul, and Anthony J. Faras, Long Lake, all of Minn., assignors to Regents of the University of Minnesota, Minn.

Filed Mar. 6, 1991, Ser. No. 665,960

Int. Cl.[6] C12Q *1/48;1/68*; C12P *19/34*; C12N *15/11*

U.S. Cl. 435—6 **39 Claims**

1. A method for determining a nucleotide sequence of a Class II HLA-DRB gene locus of a subject in a sample containing subject RNA, said method comprising:

(a) synthesizing, from RNA isolated from said sample, a cDNA molecule for each allele of said gene locus using in a synthesis reaction an oligonucleotide antisense primer depicted in SEQ. ID. NO:2 to produce a cDNA molecule;

(b) amplifying in four separate amplification reactions said cDNA molecule to generate sufficient first and second double stranded amplification reaction products respectively for sequencing each allele of said gene locus using in the first amplifying reaction an oligonucleotide primer depicted in SEQ. ID. NO:2 and an oligonucleotide primer depicted in SEQ. ID NO:6 using an amplification temperature of 37° C. and in the second amplifying reaction an oligonucleotide primer depicted in SEQ. ID NO: 2 and an oligonucleotide primer depicted in SEQ. ID NO: 42 and in the third amplifying reaction an oligonucleotide primer depicted in SEQ. ID NO: 2 and an oligonucleotide primer depicted in SEQ. ID NO: 43 and in the fourth amplifying reaction an oligonucleotide primer depicted in SEQ. ID NO: 2 and an oligonucleotide primer depicted in SEQ. ID NO: 44;

(c) sequencing directly each first and second amplifying reaction product to produce at least one sequencing ladder for each amplifying reaction product using in a sequencing reaction oligonucleotide primer depicted in SEQ. ID. NO:11 or an oligonucleotide primer depicted in SEQ. ID. NO:13 or SEQ ID NO:5 and;

(d) analyzing each sequencing ladder to determine the nucleotide sequence of said HLA-DRB gene locus.

5,578,444

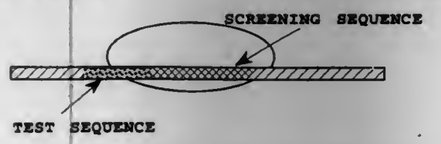
SEQUENCE-DIRECTED DNA-BINDING MOLECULES COMPOSITIONS AND METHODS

Cynthia A. Edwards, Menlo Park, Calif.; Charles R. Cantor, Boston; Beth M. Andrews, Maynard, both of Mass.; Lisa M. Turin, Redwood City, and Kirk E. Fry, Palo Alto, both of Calif., assignors to Genelabs Technologies, Inc., Redwood City, Calif.

Continuation-in-part of Ser. No. 123,936, Sep. 17, 1993, which is a continuation-in-part of Ser. No. 996,783, Dec. 23, 1992, which is a continuation-in-part of Ser. No. 723,618, Jun. 27, 1991, abandoned. This application Dec. 20, 1993, Ser. No. 171,389

Int. Cl.[6] C12Q *1/68*; C12N *15/00*; G01N *33/574*; C07H *21/02*

U.S. Cl. 435—6 **15 Claims**



1. A method for altering the binding characteristics of a DNA-binding protein to a duplex DNA, comprising

contacting the duplex DNA with a small molecule characterized by sequence-preferential binding to a target region where, when the small molecule is bound to the target region, the small molecule is adjacent to a binding site for the DNA-binding protein and not overlapping the binding site for the DNA-binding protein by more than four basepairs, at a concentration of small molecule effective to alter the binding of the DNA-binding protein to its binding site of the duplex DNA.

5,578,445

IN VITRO METHOD OF EVALUATING THE EFFECTS OF A SUBSTANCE

Stefan Nilsson, Ronninge; MÅrten Osterlund, Stockholm, and Karin Heeroma, Huddinge, all of Sweden, assignors to Karo Bio Aktiebolag, Huddinge, Sweden

PCT No. PCT/SE92/00698, § 371 Date Apr. 6, 1994, § 102(e) Date Apr. 6, 1994, PCT Pub. No. WO93/07290, PCT Pub. Date Apr. 15, 1993

PCT Filed Oct. 6, 1992, Ser. No. 211,487

Claims priority, application Sweden, Oct. 7, 1991, 9102901

Int. Cl.[6] C12Q *1/68*; G01N *33/567*

U.S. Cl. 435—6 **14 Claims**

1. An in vitro method of evaluating the pattern of antagonistic versus agonistic effects of a receptor-binding test substance on at least two selected types of cells which contain endogenous intracellular hormone receptors and which derive from different kinds of tissues, characterized in that steps a)–h) are performed separately for each selected type of cells:

a) that a sample of said cells, in a defined hormone-depleted first medium, is distributed into several separate culture containers,

b) that the containers of step a) are incubated in a temperature and humidity controlled chamber for an appropriate time to establish stable cell growth,

c) that following step b), spent first medium in the containers is replaced by a defined hormone-depleted second medium,

d) that the containers of step e) are divided into four groups, d_1 to d_4, each comprising at least one container, d^1 to d^4, respectively, and each container being treated in subsequent steps,

e) that to the container:

d^1 is added said test substance, dissolved in a first solvent, at a known concentration,

d^2 is added a reference substance, known to be either an antagonist or an agonist, dissolved in a second solvent, at a concentration known to result in a distinct cellular response selected to be analyzed,

d^3 is added said first solvent and said second solvent,

d^4 is added said test substance, dissolved in said first solvent, at the same concentration as used for d^1, and said reference substance, dissolved in said second solvent, at the same concentration as used for d^2,

the first solvent and the second solvent being the same or different, and the amount of the first solvent and the amount of the second solvent not exceeding a level known to be harmful to the cells,

f) that all the containers d^1 to d^4 are incubated in a temperature and humidity controlled chamber for a period of time sufficient for the substances to affect the cells to such a degree that a distinct cellular response selected to be analyzed is reached,

g) that the incubated containers of step f) are all analyzed with regard to the magnitude of the selected cellular response resulting from hormone/receptor interaction, and

h) that the antagonistic versus agonistic effects of said test substance on said selected type of cells are evaluated from a comparison of the analyzed magnitudes of the selected cellular response obtained for said groups d_1 and d_4,

and the results obtained for each selected type of cells form together the pattern of antagonistic versus agonistic effects of said receptor-binding test substance on said selected different kinds of tissues.

5,578,446

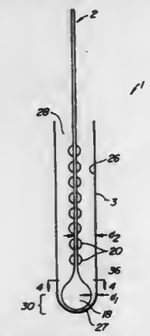
ANALYTICAL DIPSTICK FOR IMPROVED MIXING AND REDUCED REAGENT VOLUME

Paul C. Harris, Edmonds, and Jack R. U'Ren, Kirkland, both of Wash., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Jul. 8, 1994, Ser. No. 272,202

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **23 Claims**



1. An analytical dipstick comprising:

an elongated member having a first end portion, a second end portion and an intermediate portion positioned between said first and second end portions, the thickness of said elongated member, measured in one direction, substantially increasing from a location on said intermediate portion to said second end portion, said second end portion having a thickness, measured along a line passing through a maximum lateral dimension of said second end portion, at least twice that of a

VOL 1192 ISS 4 NOV 26 1996 UMI

thickness, measured along said one direction, of said intermediate portion at said location; and

a ligand coupled to said intermediate portion between said location on said intermediate portion and said first end portion.

5,578,447

Patent Not Issued For This Number

5,578,448

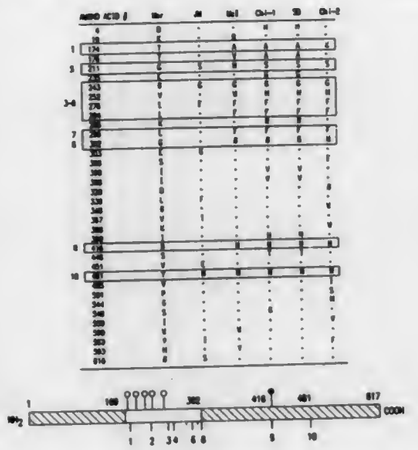
NUCLEIC ACIDS ENCODING WILD-TYPE MEASLES VIRUS CONSENSUS HEMAGGLUTININ AND FUSION POLYPEPTIDES AND METHODS OF DETECTION

Jennifer S. Rota, Decatur, and William J. Bellini, Lilburn, both of Ga., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 866,033, Apr. 8, 1992, abandoned. This application Jul. 25, 1994, Ser. No. 279,700

Int. Cl.[6] C07H *21/04;* **C12P** *19/34;* **C12Q** *1/68;1/70*

U.S. Cl. 435—5 **12 Claims**



1. A method for detecting the presence of wild-type measles infection, comprising the steps of:

(a) preparing for polymerase chain reaction a biological sample suspected of containing a measle virus;

(b) reverse transcribing mRNA isolated from said sample to cDNA;

(c) contacting said cDNA with polymerase chain reaction oligonucleotide primers that specifically hybridize to said cDNA at two sites in a nucleic acid encoding a measles hemagglutinin or fusion protein nucleic acid that flank a restriction nuclease site present in a wild-type nucleic acid encoding a polypeptide set forth in SEQ ID NOS:21 or 22, but not present in a vaccine strain nucleic acid, or vice versa;

(d) performing the polymerase chain reaction to obtain products;

(e) digesting said products of the polymerase chain reaction such that non-vaccine strain products are produced if a non-vaccine restriction site is present in said wild-type nucleic acid; and

(f) determining the presence or absence of digested products, thereby identifying the presence or absence of wild-type measles virus in said sample thereby detecting the presence of the infection.

5,578,449

PROCEDURE FOR THE SEX DETERMINATION OF EMBRYOS IN MAMMALS ESPECIALLY APPLIED TO BOVINE EMBRYOS

Alberto C. Frásch, and Rodolfo A. Ugalde, both of Buenos Aires, Argentina, assignors to Hilding Ohlsson, S.A., Buenos Aires, Argentina

Continuation of Ser. No. 868,995, Apr. 15, 1992. This application Apr. 20, 1995, Ser. No. 425,711

Claims priority, application Argentina, Oct. 3, 1991, 320.843

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—6 **2 Claims**

1. A process for sex determination of embryos in bovines which comprises:

a) isolating a bovine embryo at the blastula stage;

b) cutting a zone of cells away from the pellucidae membrane of said embryo by microsurgery and extracting a sample of about 8 to about 19 cells from said zone of cells;

c) separating said about 8 to about 19 cells from remaining traces of the embryo's pellucidae membrane;

d) isolating DNA from said about 8 to about 19 cells by placing the sample in a tube with water, heating the contents of the tube to 95° C. to form an aqueous denatured DNA solution, immediately chilling the contents of said tube by placing the tube in ice, and centrifuging the contents of said tube to recover any condensed liquid containing the aqueous denatured DNA solution;

e) performing a first round of a polymerage chain reaction (PCR) on said aqueous denatured DNA solution to amplify a first fragment of DNA wherein said first fragment of DNA is a subsequence of a sequence in a homologous genome region of the X and Y chromosome, using a first pair of oligonucleotide primers with the sequence 5'-ATAATCACATGGAGAGCCACAAGCT-3' (SEQ. ID. NO:3) and 5'-CGACTTCTTTGGTATCTGAGAAAGT-3' (SEQ. ID. NO:4), in the presence of a DNA polymerage enzyme and nucleotides until a solution of a first amplified DNA fragment is obtained;

f) obtaining an aliquot of said solution and subjecting said aliquot to a second round of PCR to amplify a second DNA fragment whose sequence is a subsequence of said first amplified DNA fragment using a second pair of oligonucleotide primers with the sequence: 5'-TTGAATGTGATGAGTGTGGG-3' (SEQ. ID. NO: 5) and 5'-AAGTCAGAAGACAAATGTCA-3' (SEQ. ID. NO: 6) until a solution of a second amplified DNA fragment is obtained;

g) digesting said second amplified DNA fragment with PstI, wherein the presence of a PstI cut site in said second amplified DNA fragment indicates the presence of a Y chromosome and wherein the absence of a PstI cut site in said second amplified DNA fragment indicates the presence of an X chromosome, thereby forming a mixture of cut and/or uncut second amplified DNA fragments;

h) size separating said mixture of cut and/or uncut second amplified DNA fragments by electrophoresis on a 2% agarose gel and determining the size of digested fragments by a comparison of bands obtained on said gel with a standard molecular weight marker wherein the presence of a 378 base pair band is indicative of the presence of an X chromosome and the presence of two bands which are 293 base pairs and 85 base pairs each is indicative of the presence of a Y chromosome;

i) determining the sex of the embryo based on results obtained in step (h).

5,578,450

TUMOR-SPECIFIC GENOMIC INSTABILITY AS A PROGNOSTIC INDICATOR

Steven N. Thibodeau, Rochester, and Gary D. Bren, Chatfield, both of Minn., assignors to Mayo Foundation for Medical Education and Research, Rochester, Minn.

Continuation of Ser. No. 21,960, Feb. 24, 1993, abandoned. This application May 31, 1995, Ser. No. 455,637

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34*

U.S. Cl. 435—6 **14 Claims**

1. A method for classifying a malignant colorectal tumor as having disseminated genomic instability as a prognostic indicator for a patient having said malignant colorectal tumor, comprising:

(a) providing genomic DNA obtained from a sample of said malignant colorectal tumor, said sample having an operable fraction of tumor cells;

(b) providing genomic DNA obtained from a tissue sample of said patient, said tissue sample being operably free of tumor cells;

(c) comparing the size of at least one microsatellite sequence locus in said malignant colorectal tumor sample DNA with the size of the corresponding at least one microsatellite sequence locus in said tissue sample DNA; and

(d) classifying said malignant colorectal tumor as having disseminated genomic instability if the size of said at least one microsatellite sequence locus in said malignant colorectal tumor sample DNA differs from the size of the corresponding at least one microsatellite sequence locus in said tissue sample DNA.

5,578,451

METHODS AND SYSTEMS FOR SCREENING POTENTIAL ALZHEIMER'S DISEASE THERAPEUTICS

Ikuo Nishimoto, Brookline, Mass., assignor to The General Hospital Corporation, Boston, Mass.

Continuation of Ser. No. 19,208, Feb. 18, 1993, abandoned. This application Jan. 12, 1995, Ser. No. 371,930

Int. Cl.[6] G01N *33/53;33/567*

U.S. Cl. 435—7.1 **20 Claims**

1. A method of screening for compounds potentially useful for treating Alzheimer's disease, said method comprising:

(a) contacting a first molecule comprising the couplone portion comprising SEQ ID NO: 1 of amyloid precursor protein (APP) with a second molecule comprising one or more of the APP-associating regions of G_o selected from the group consisting of SEQ ID NOs: 3, 4, and 5, in the presence of a candidate compound; and

(b) detecting whether a complex forms between said first and second molecules to determine whether said candidate compound inhibits the formation of said complex, said inhibition being an indication that said candidate compound is potentially useful for treating Alzheimer's disease.

5,578,452

ENHANCEMENT OF IMMUNOCHEMICAL STAINING IN ALDEHYDE-FIXED TISSUES

Shan-Rong Shi, Los Angeles; Atul K. Tandon, Fremont; Krishan L. Kalra, Danville; Nagesh Malhotra, Los Angeles; Sheng-Hui Su, San Ramon, and Cheng-Zhi Yu, Pleasant Hill, all of Calif., assignors to Biogenex Laboratories, San Ramon, Calif.

PCT No. PCT/US93/07550, § 371 Date Apr. 7, 1994, § 102(e) Date Apr. 7, 1994, PCT Pub. No. WO94/04906, PCT Pub. Date Mar. 3, 1994

Continuation-in-part of Ser. No. 928,962, Aug. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 821,931, Jan. 16, 1992, abandoned. This PCT application Aug. 12, 1993, Ser. No. 211,595

Int. Cl.[6] G01N *33/567*

U.S. Cl. 435—7.21 **15 Claims**

8. A kit for use in immunostaining of a tissue fixed with an aldehyde fixing agent and embedded in an embedding medium, said kit comprising:

a) a first container containing an aldehyde releasing reagent solution comprising an aldehyde releasing reagent selected from the group consisting of nucleophilic bases, oxidizing agents and organic acid/base pairs and a solvent for the aldehyde releasing reagent which is also capable of solubilizing the embedding medium; and

b) a second container containing (1) an immunostaining reagent or (2) a wash solution for removing excess aldehyde releasing reagent.

5,578,453

CLONING AND EXPRESSION OF TOXOPLASMA ANTIGENS AND USE OF RECOMBINANT ANTIGENS

Peter J. McDonald, Belair, and Alan M. Johnson, East Roseville, both of Australia, assignors to The Flinders University of South Australia, South Australia, Australia

PCT No. PCT/AU91/00347, § 371 Date Apr. 12, 1993, § 102(e) Date Apr. 12, 1993, PCT Pub. No. WO92/02624, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 9, 1991, Ser. No. 972,481

Claims priority, application Australia, Aug. 10, 1990, 1679/90

Int. Cl.[6] G01N *33/569;33/53*

U.S. Cl. 435—7.22 **12 Claims**

6. A method for the detection of antibodies to *T. gondii* in a sample, wherein said sample is contacted with an antigen and binding of antibodies in said sample to said antigen is detected in a diagnostic immunoassay, wherein said antigen comprises a synthetic or recombinant polypeptide which specifically binds antibody which specifically binds 25 kDa H4 or 41 kDa H11 polypeptides of *T. gondii.*

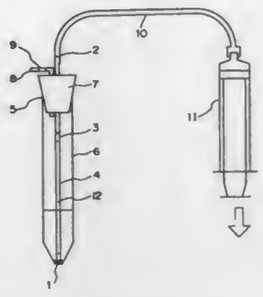
5,578,454

Patent Not Issued For This Number

5,578,455
METHOD FOR DETERMINING ENDOTOXIN AND APPARATUS THEREFOR

Tetsuya Tosa, Kyoto; Takeji Shibatani, Kobe; Taizo Watanabe, Nagaokakyo; Satoshi Minobe, Otsu, and Makoto Masuda, Takarazuka, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Mar. 14, 1994, Ser. No. 209,247
Claims priority, application Japan, Mar. 19, 1993, 5-060569
Int. Cl.[6] G01N *33/569;33/579*
U.S. Cl. 435—7.32 **13 Claims**



1. A method for determining an endotoxin by reacting the endotoxin adsorbed on an adsorbent having specific endotoxin adsorbability with an endotoxin detecting reagent, which comprises the steps of:

(a) preparing a column having a tip opening, a rear end opening and an adsorbent-filling and holding means provided in the column through which a sample solution can pass,

(b) introducing the endotoxin adsorbent into the column through the tip opening to fill and hold the adsorbent therein,

(c) introducing the sample solution into the column through the tip opening and discharging the introduced sample solution through the rear end opening to contact the sample and the adsorbent and thereby adsorbing the endotoxin on the adsorbent,

(d) reacting the detecting reagent with the endotoxin adsorbed on the adsorbent, and

(e) detecting and determining the endotoxin wherein steps (b) and (c) are carried out by imposing a negative pressure at the rear end of the column.

5,578,456
ANTI-TREPONEMA PALLIDUM ANTIBODY IMMUNOASSAY

Katsuya Fujimura; Eiichi Ueno; Nobuyuki Fujii, and Masahisa Okada, all of Tokyo, Japan, assignors to Fujirebio Inc., Japan

Filed Feb. 27, 1995, Ser. No. 395,507
Int. Cl.[6] G01N *33/571*
U.S. Cl. 435—7.36 **12 Claims**

1. A method for quantitative assay of anti-*Treponema pallidum* antibody which comprises assaying anti-*Treponema pallidum* antibody in a sample by immunoanalysis utilizing the antigen-antibody reaction between G15 antigen, which is a protein from the fusion of glutathione-S-transferase to the N-terminal of a *Treponema pallidum* membrane antigen having a molecular weight of 15 kDa , or G17 antigen, which is a protein from the fusion of glutathione-S-transferase to the N-terminal of a *Treponema pallidum* membrane antigen having a molecular weight of 17 kDa or both antigens, and anti-*Treponema pallidum* antibody in the sample, wherein said antigen is present in a limiting amount in said quantitative assay.

5,578,457
IMMUNOASSAYS WITH NOVEL LABELED CARBAMAZEPINE HAPTEN ANALOGUES

Barbara A. Brummond, Rochester; Mohan S. Saini, and Ignazio S. Ponticello, both of Pittsford, all of N.Y., assignors to Johnson & Johnson Clinical Diagnostics, Inc., Rochester, N.Y.

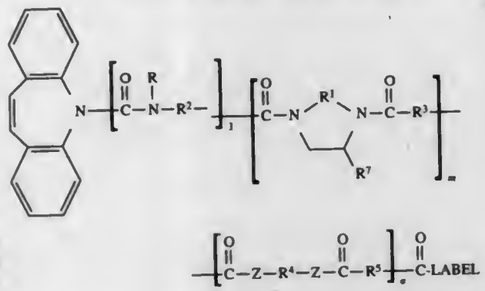
Filed Aug. 7, 1992, Ser. No. 926,202
Int. Cl.[6] G01N *33/545;* **C12N** *9/96*
U.S. Cl. 435—7.93 **13 Claims**

1. An immunoassay method for carbamazepine comprising:

A. contacting a liquid sample, containing carbamazepine, with a labeled carbamazepine analogue in the presence of antibodies for carbamazepine under conditions that promote the formation of carbamazepine/antibody immunocomplexes; and

B. determining the quantity of the drug in the liquid by measuring bound or unbound labeled drug analogue; wherein the labeled carbamazepine analogue 1 has the structure (J):

Structure



R represents hydrogen or lower alkyl of 1 to 6 carbon atoms

R^1 is alkylene of 1 to 3 carbon atoms sufficient to form a heterocyclic group selected from 1,4-piperazinylene; 2,5-dimethyl-1,4-piperazinylene; 1,3-imidazolidinylene, and 1,4-hexahydrodiazepinylene;

R^2, R^3, R^4, and R^5 each independently represent alkylene groups of 2 to 10 carbon atoms, or phenylene;

R^7 is hydrogen or methyl;

each Z independently represents —O—, —S—, or —NR— wherein R represents hydrogen or lower alkyl of 1 to 6 carbon atoms:

LABEL is an enzyme;

l is 0, 1 or 2;

m is 1 or 2;

n is 0, 1, or 2; and

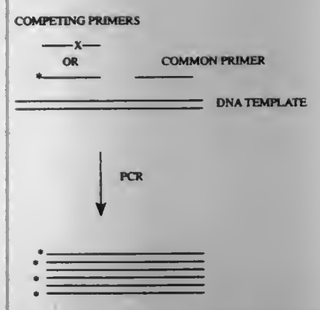
(i) the sum of carbon and betero atoms in the linking chain, comprising the atoms included in R^2, R^3, R^4, and R^5, excluding the amide group of carbamazepine and the carbonyl group joining the label to the linking chain, is 5 to 40, (ii) provided that the bracketed components l, m and n of structure I can appear therein in any order, and (iii) only one R^2, R^3, R^4, or R^5 group can be phenylene.

5,578,458
MUTATION DETECTION BY COMPETITIVE OLIGONUCLEOTIDE PRIMING

Charles T. Caskey, and Richard A. L. Gibbs, both of Houston, Tex., assignors to Baylor College of Medicine, Houston, Tex.

Continuation of Ser. No. 170,214, Mar. 18, 1988, abandoned. This application Oct. 1, 1991, Ser. No. 769,743
Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/04*
U.S. Cl. 435—6 **21 Claims**

1. A method for detecting the presence or absence of an oligonucleotide having a specific known nucleic acid sequence, or distinguishing between oligonucleotides having different sequences, comprising the steps of:



adding oligonucleotide primers to a sample of nucleic acid or mixture of nucleic acids, wherein said oligonucleotide primers include at least two competitive primers, a first primer being substantially complementary to a portion of the specific known sequence oligonucleotide and at least one second primer also being substantially complementary to said portion but having at least one additional base mismatch with said portion of the specific known sequence oligonucleotide, relative to the first primer, whereby said first and second primers compete for said portion of the specific known sequence, and wherein the oligonucleotide primers are in molar excess to said sample of nucleic acid;

preferentially hybridizing the first primer to the specific known sequence oligonucleotide under competitive conditions, wherein each competitive primer will hybridize to the known sequence oligonucleotide in the absence of other competitive primers, but wherein the more complementary first primer preferentially hybridizes to the exclusion of other less complementary second primers present;

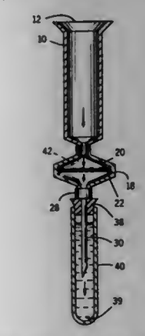
extending the preferentially hybridized first primer from its 3' terminus to synthesize an extension product complementary to the specific known sequence oligonucleotide to which the preferentially hybridized primer is hybridized; and

detecting the presence or absence of said extension product as a measure of the presence or absence of said specific known sequence oligonucleotide.

5,578,459
METHOD AND APPARATUS FOR COLLECTING A CELL SAMPLE FROM A LIQUID SPECIMEN

Julian Gordon, Lake Bluff; Donald L Stimpson, Gurnee, both of Ill., and Wang-Ting Hsieh, Rockville, Md., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Nov. 24, 1993, Ser. No. 158,233
Int. Cl.[6] C12Q *1/02;* **C12M** *1/12;* **B01D** *29/05;39/18*
U.S. Cl. 135—29 **24 Claims**



1. A method for collecting on a filter media cells from a liquid specimen having a cellular component, the method comprising the steps of:

depositing a liquid specimen suspected of having a cellular component into an open end of a collection receptacle having a discharge port;

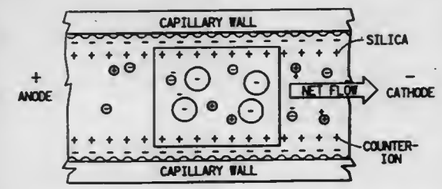
placing the discharge port in fluid communication with a filter media by means of a sealed passage therebetween, the filter media having a pore size sufficiently small to retain desired suspected cells from the liquid specimen,. wherein the filter media is housed between an inlet port and an outlet port of a filter container, the inlet port being adapted for sealably engaging the discharge port; and

applying a pressure differential across the filter media and extending to the liquid specimen by means of the sealed passage to force the liquid specimen through the discharge port of the collection receptacle and through the filter media, wherein said differential pressure is applied by puncturing a penetrable closure element of a closed hypobaric chamber with said outlet port in order to put said outlet port and closed hypobaric chamber in sealed fluid communication, thereby placing the filter container under a relative vacuum and capturing on the filter media a sample of any cellular component of the liquid specimen.

5,578,460
ELECTROPHORETIC METHOD FOR THE ISOLATION AND SEPARATION OF MICROORGANISMS AND CELL POPULATIONS

Richard C. Ebersole, Wilmington; John G. DeCarolis, Newark, both of Del., and Randy M. McCormick, Santa Clara, Calif., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 125,956, Sep. 23, 1993, abandoned. This application Apr. 18, 1995, Ser. No. 424,753
Int. Cl.[6] C12Q *1/02;1/24;* **C12N** *13/00*
U.S. Cl. 435—29 **10 Claims**



1. A method of sorting and detecting viable microorganisms and cell populations, while maintaining viability of said microorganisms and cell populations, comprising:

(a) introducing a mixture of viable microorganisms or cell populations or microorganisms and cell populations into one end of a cell separator being comprised of:

(i) a small capillary separation tube having a chargeable inner surface which will develop and hold a net negative or positive charge under the influence of an electric field;

(ii) an anodic electrode positioned at a first end of said tube;

(iii) a cathodic electrode positioned at a second end of said tube;

(iv) an electrolyte solution filling said tube and contacting both said anodic and said cathodic electrodes wherein said electrodes are maintained in electrical communication with each other and said tube;

(b) applying an electrical potential of between about 1 and 40 Kv across said electrodes whereby both an electrophoretic force and an electroosmotic force is produced within said electrolyte solution;

(c) allowing migration of the viable microorganisms or cell populations to occur wherein the microorganisms or cell populations are sorted; and

(d) detecting said migrated viable microorganisms or cell populations.

5,578,461

GENE MANIPULATION AND EXPRESSION USING GENOMIC ELEMENTS

Stephen Sherwin, San Francisco; Sue Klapholz, Stanford, both of Calif., and Arthur Skoultchi, Larchmont, N.Y., assignors to Cell Genesys, Inc., Foster City, Calif.

Continuation of Ser. No. 1,898, Jan. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 432,069, Nov. 6, 1989, abandoned. This application Aug. 5, 1993, Ser. No. 102,567

Int. Cl.[6] C12N *15/00;5/00;1/38;* **C07H** *21/04*

U.S. Cl. 435—69.1 **10 Claims**

1. A method for production of a mammalian gene product in cell culture, comprising culturing a mammalian continuous cell line which expresses an exogenous mammalian target gene controlled by a nucleotide regulatory sequence heterologous to said mammalian target gene, and recovering the mammalian target gene product from said cell culture, in which said mammalian continuous cell line was prepared by:

(a) integrating, via targeted homologous recombination, said nucleotide heterologous to said mammalian target gene said target gene contained in a yeast artificial chromosome maintained in a yeast host cell, so that said integrated nucleotide regulatory sequence is operably associated with said mammalian target gene contained in said yeast artificial chromosome to form a recombined mammalian target gene; in said yeast host cell and

(b) transferring said recombined mammalian target gene to a mammalian continuous cell line capable of expressing said target gene product under the control of said integrated nucleotide regulatory sequence so that the mammalian target gene product is expressed by the mammalian continuous cell line in culture.

5,578,462

NF2 ISOFORMS

Bernd R. Seizinger, Stockton; Nikolai A. Kley, and Albert B. Bianchi, both of Princeton, all of N.J., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Jan. 10, 1994, Ser. No. 179,738

Int. Cl.[6] C12P *21/06;* **C12N** *5/00;* **C07K** *1/00;* **C07H** *19/00*

U.S. Cl. 435—69.1 **16 Claims**

1. An isolated NF2 transcript isoform, wherein the isoform is mouse NF2 transcript isoform I encoding a protein comprising the mouse amino acid sequence depicted in FIGS. 1A-1C (SEQ ID NO:2).

5,578,463

HETEROLOGOUS POLYPEPTIDES EXPRESSED IN FILAMENTOUS FUNGI, PROCESSES FOR MAKING SAME, AND VECTORS FOR MAKING SAME

Randy M. Berka, San Mateo, Calif.; Daniel Cullen, Madison, Wis.; Gregory L. Gray, South San Francisco, Calif.; Kirk J. Hayenga, Burlingame, Calif., and Virgil B. Lawlis, San Mateo, Calif., assignors to Genencor International, Inc., South San Francisco, Calif.

Continuation of Ser. No. 413,010, Sep. 25, 1989, Pat. No. 5,364,770, which is a continuation of Ser. No. 163,219, Feb. 26, 1988, abandoned, which is a continuation of Ser. No. 882,224, Jul. 7, 1986, abandoned, which is a continuation-in-part of Ser. No. 771,374, Aug. 29, 1985, abandoned. This application Aug. 2, 1994, Ser. No. 284,942

Int. Cl.[6] C12N *1/15;15/09;15/56;15/80*

U.S. Cl. 435—69.1 **81 Claims**

38. A process for producing a polypeptide comprising:

transforming an Aspergillus host, with a vector comprising a DNA construct comprising promoter DNA from a fungal gene operably linked to coding DNA, said coding DNA comprising DNA coding for a signal peptide and a heterologous polypeptide, and

culturing said transformed filamentous fungus under conditions which permit the expression of said coding DNA and secretion of said heterologous polypeptide.

5,578,464

E. COLI SECRETORY STRAINS

Charles A. Lunn, Bloomfield; Satwant K. Narula, Caldwell, and Richard L. Reim, Edison, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 818,737, Jan. 7, 1992, abandoned, which is a continuation of Ser. No. 429,588, Oct. 31, 1989, abandoned. This application May 11, 1995, Ser. No. 438,803

Int. Cl.[6] C12N *1/21;15/72*

U.S. Cl. 435—69.1 **28 Claims**

1. An *Escherichia coli* bacterium capable of secreting a heterologous gene product into the culture medium, comprising:

(a) a mutant *E. coli* bacterium characterized by resistance to infection by bacteriophage T7 and an ability to survive transformation with a DNA comprising a sequence encoding for a heterologous protein, and

(b) a recombinant vector comprising a first DNA sequence coding for a signal peptide capable of mediating transport of a protein to the periplasmic space operatively linked to a second DNA sequence coding for a desired heterologous protein,

which bacterium is capable of expressing both DNA sequences.

5,578,465

METHOD OF USING EUKARYOTIC EXPRESSION VECTORS COMPRISING THE BK VIRUS ENHANCER

Brian W. Grinnell, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 208,930, Mar. 9, 1994, Pat. No. 5,550,036, which is a continuation of Ser. No. 368,700, Jun. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 250,001, Sep. 27, 1988, abandoned, which is a continuation-in-part of Ser. No. 129,028, Dec. 4, 1987, abandoned, which is a continuation-in-part of Ser. No. 849,999, Apr. 9, 1986, abandoned. This application Jun. 2, 1995, Ser. No. 460,412

Int. Cl.[6] C12P *21/00;21/02*

U.S. Cl. 435—69.1 **2 Claims**

1. A method of producing a protein in a eukaryotic host cell that comprises:

a) transforming said host cell with a recombinant DNA vector selected from the group consisting of plasmids pSBLcat, pLPC, pLPChyg1, pLPCdhfr1, and pLPChd1, each said plasmid comprising an SV40 enhancer and a BK enhancer, a eukaryotic promoter, and a DNA sequence that encodes said protein and that is positioned for expression from said promotor;

b) culturing said host cell transformed in step a) under conditions that allow expression of said DNA sequence and production of said protein.

5,578,466

RECOMBINANT CO-EXPRESSION SYSTEM OF PROTEIN DISULFIDE ISOMERASE GENE, YEAST RECEPTOR PROTEIN ERD2 GENE AND A FOREIGN PRODUCT POLYPEPTIDE GENE, AND A PROCESS FOR PRODUCING THE FOREIGN POLYPEPTIDE USING SUCH SYSTEM

Toshiya Hayano; Setsuko Katoh; Nobuhiro Takahashi; Masanori Suzuki, and Kelichi Honma, all of Iruma-gun, Japan, assignors to Tonen Corporation, Tokyo, Japan

Filed Apr. 17, 1992, Ser. No. 872,673

Claims priority, application Japan, Apr. 18, 1991, 3-114074; Oct. 30, 1991, 3-311601

Int. Cl.[6] C12N *1/19;15/14;15/62*

U.S. Cl. 435—69.7 **15 Claims**

7. A transformed yeast cell comprising the following expression units integrated on a yeast chromosome in a co-expressible state:

a first expression unit containing a gene coding for a receptor for an endoplasmic reticulum retention signal, wherein the receptor is either the yeast receptor protein ERD2 or a protein which is obtainable from a yeast or a mammal and which is capable of binding to a retention signal selected from the group consisting of KDEL (SEQ ID NO: 5), HDEL (SEQ ID NO: 6), DDEL (SEQ ID NO: 7), ADEL (SEQ ID NO: 8), SDEL (SEQ ID NO: 9), RDEL (SEQ ID NO: 10), KEEL (SEQ ID NO: 11), QEDL (SEQ ID NO: 12), HIEL (SEQ ID NO: 13), HTEL (SEQ ID NO: 14), and KQDL (SEQ ID NO: 15); and

a second expression unit containing a gene encoding a protein disulfide isomerase, wherein said isomerase comprises an endoplasmic reticulum retention signal, or a gene encoding a fusion protein comprising the amino acid sequence of said isomerase and a human serum albumin prepro-sequence; and

a third expression unit containing a foreign gene encoding a polypeptide which is a substrate of said protein disulfide isomerase.

5,578,467

USE OF DEOXYINOSINE CONTAINING PRIMERS TO BALANCE PRIMER EFFICIENCY IN THE AMPLIFICATION OF NUCLEIC ACID MOLECULES

David M. Schuster, Poolesville, and Ayoub Rashtchian, Gaithersburg, both of Md., assignors to Life Technologies, Inc., Gaithersburg, Md.

Continuation of Ser. No. 819,132, Jan. 10, 1992, abandoned. This application May 20, 1994, Ser. No. 246,921

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34*

U.S. Cl. 435—91.2 **16 Claims**

1. An improved method for amplifying the concentration of a target nucleic acid molecule by using a first and second primer to form a double-stranded nucleic acid molecule, wherein said first primer hybridizes to a first strand of said double-stranded nucleic acid molecule, and said second primer hybridizes to a second strand of said double-stranded nucleic acid molecule, and wherein said primers exhibit different T_ms with respect to one another, when hybridized to said double-stranded nucleic acid molecule, said improved method comprising the steps:

(a) replacing at least one residue in at least one of said primers with at least one deoxyinosine, wherein said replacement equalizes the T_ms of the first and second primers with respect to one another, when hybridized to said double-stranded nucleic acid molecule;

(b) performing the template-dependent extension of said first primer, said first primer being hybridized to a first strand of said double-stranded molecule, wherein said extension forms a second strand of nucleic acid complementary to said first strand of said double-stranded nucleic acid molecule;

(c) performing the template-dependent extension of said second strand, by extending said second primer, said second primer being hybridized to said second strand of said double-stranded molecule, wherein said extension forms a copy of said first strand of said double-stranded nucleic acid molecule;

(d) performing the template-dependent extension of said copy of said first strand, to thereby form a copy of said second strand of said double-stranded nucleic acid molecule;

(e) repeating steps (b), (c) and (d), to thereby achieve said amplification of said target nucleic acid molecule.

5,578,468

SITE-SPECIFIC RNA CLEAVAGE

David J. Pickup, Cary; Dhavalkumar Patel, and James B. Antczak, both of Durham, all of N.C., assignors to Duke University, Durham, N.C.

Continuation-in-part of Ser. No. 84,406, Aug. 10, 1987, Pat. No. 5,443,964. This application Aug. 31, 1993, Ser. No. 113,646

Int. Cl.[6] C12N *15/10;15/11;5/10;1/21*

U.S. Cl. 435—91.32 **9 Claims**

1. An isolated RNA fragment having the sequence of SEQ ID NO:8 about 20 bases 5' to the sequence of SEQ ID NO:9.

2. A nucleic acid construct comprising a non-A-type inclusion protein-encoding sequence operably linked to a promoter and directly linked to a sequence that directs 3' end formation of an RNA transcript of said non-A-type inclusion protein-encoding sequence, wherein said 3' end formation directing sequence consists of a sequence:

i) defined by position 100 to position 347 of SEO ID NO:18 or

ii) position 1 to position 223 of SEQ ID. NO:18, or portions of sequence (i) or (ii) encoding the sequence of SEQ ID NO: 8 and the sequence of SEQ ID NO:9, wherein said sequences of SEO ID NO:8 and SEQ ID NO:9 are separated by about 20 bases, wherein said sequence of SEQ ID NO:8 is 5' to said sequence of SEQ ID NO:9 in said RNA transcript.

5,578,469

PROCESS FOR PREPARING NEOTREHALOSE, AND ITS USES

Takashi Shibuya; Hiroto Chaen; Shuzo Sakai, and Toshio Miyake, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Feb. 24, 1993, Ser. No. 22,340

Claims priority, application Japan, Feb. 25, 1992, 4-093936

Int. Cl.[6] C12P *1/04;19/12;* **A61K** *38/43;38/46*

U.S. Cl. 435—100 **12 Claims**

1. A process for preparing neotrehalose, consisting essentially of:

(a) hydrolyzing an amylaceous substance with a saccharogenic α-amylase to form a neotrehalose solution, wherein said α-amylase is obtained from *Bacillus subtilis* and has a higher saccharification power than dextrinogenic power, and wherein the amylaceous substance is crude starch or its partial hydrolysate having a dextrose equivalent of 70 or less; and

(b) recovering neotrehalose from the neotrehalose solution.

5,578,470

METHOD FOR PREPARING THIOL COMPOUNDS WITH BACTERIAL β-LYASE

Antonius Kerkenaar, Blaricum; Diederik J. M. Schmedding, Driebergen, and Jan Berg, Nieuwegein, all of Netherlands, assignors to Nederlandse Organisatie Voor Toegepast, Netherlands

Continuation of Ser. No. 863,978, Apr. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 148,418, Jan. 26, 1988, Pat. No. 5,182,194. This application Apr. 22, 1994, Ser. No. 232,357

Claims priority, application Netherlands, Jan. 30, 1987, 8700240

Int. Cl.[6] C12P *11/00;7/26;* **C12N** *9/88*

U.S. Cl. 435—130 **12 Claims**

1. A method for preparing thiol compounds, comprising:

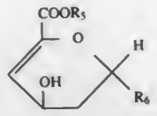
VOL 1192 ISS 4 NOV 26 1996 UMI

(1) reacting cysteine by a non-enzymatical addition reaction with a compound having the formula $(R_1)(R_2)C{=}C(R_3)$—CO—R_4 via an —S— bridge to form a cysteine conjugate,

wherein R_1, R_2 and R_3 are each selected from the group consisting of: hydrogen; an alkyl group containing 1–5 carbon atoms; an alkylene group containing 2–6 carbon atoms; a cycloalkyl or cycloalkenyl group containing 5–10 carbon atoms and an aryl group containing 6–10 carbon atoms; and R_4 is selected from the group consisting of: hydrogen; an alkyl group containing 1–5 carbon atoms; an alkylene group containing 2–6 carbon atoms; a cycloalkyl or cycloalkenyl group containing 5–10 carbon atoms; an aryl group containing 6–10 carbon atoms; —OH and —OCH_3, or

wherein a combination of two groups selected from the group consisting of R_1, R_3 and R_4, together with the carbon atoms to which the groups are bonded, form a ring system of five or six members, wherein said ring has 0–3 ethenically unsaturated bonds and wherein said ring has 0–2 heterogeneous atoms selected from the group consisting of N and O, or

wherein said compound having the formula $(R_1)(R_2)C{=}C(R_3)$—CO—R_4 is a compound having the formula:



in which the R_5 is selected from the group consisting of hydrogen, an alkyl containing 1–24 carbon atoms and an alkaline ion, and R_6 is 1–7 monosaccharides and wherein said monosaccharides are selected from the group consisting of glucose, mannose, galactose, arabinose, fucose, xylose, rhamnose, uronic acid, and acetate, pyruvate, amine and sulfate derivatives thereof, and

(2) reacting said cysteine conjugate in a concentration of >1 mM conjugate with a cysteine conjugate β-lyase produced by bacteria selected from the group consisting of *Eubacterium limosum, Escherichia coli, Fusobacterium varium, Fusobacterium nucleatum, Salmonella typhimurium, Enterobacter cloacae, Bacillus brevis, Pseudomonas taetrolens, Pseudomonas aromatica* and *Pseudomonas fluorescens* to form a thiol compound and recovering said thiol compound.

5,578,471

PROCESS FOR THE PREPARATION OF ASCORBIC ACID-2-PHOSPHATE

Tatsuro Fujio, and Akihiko Maruyama, both of Kanagawaken, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 871,263, May 3, 1991, abandoned, which is a continuation of Ser. No. 132,299, Dec. 15, 1987, abandoned. This application Sep. 28, 1993, Ser. No. 129,017

Claims priority, application Japan, Dec. 18, 1986, 61-302409

Int. Cl.[6] C12P *9/00*

U.S. Cl. 435—131 **7 Claims**

1. A process for the preparation of ascorbic acid-2-phosphate, which comprises the steps of:

reacting ascorbic acid with ATP in an aqueous medium in with a microorganism selected from the group consisting of

Aeromonas cavias	ATCC 13137
Bacillus subtilis	ATCC 19221
Baneckea hyperoptica	ATCC 15803
Flavobacterium devorans	ATCC 10829
Klebsiella oxytoca	ATCC 8724
Pseudomonas azotocolligans	ATCC 12417 and
Pseudomonas chloroaphis	ATCC 9446.

said microorganism being capable of catalyzing the enzymatic reaction of ascorbic acid with ATP to produce ascorbic acid-2-phosphate; and recovering the resultant ascorbic acid-2-phosphate from the reaction solution.

5,578,472

PROCESS FOR THE PRODUCTION OF ETHANOL FROM MICROALGAE

Ryohei Ueda; Shin Hirayama; Kiyoshi Sugata, and Hiroshi Nakayama, all of Yokohama, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1994, Ser. No. 310,769

Claims priority, application Japan, Sep. 27, 1993, 5-239845; Sep. 27, 1993, 5-239846

Int. Cl.[6] C12P *7/14;7/08;7/12;* **C12N** *1/12*

U.S. Cl. 435—161 **4 Claims**

2. A process for the production of ethanol from microalgae wherein a starch-containing microalga is cultured, harvested, concentrated and then maintained in a dark and anaerobic atmosphere to form ethanol, the process comprising the steps of:

(a) culturing a microalga capable of accumulating starch in the cells thereof in a culture solution;

(b) concentrating the culture solution containing the algal cells to obtain a concentrated microalgae slurry;

(c) maintaining the concentrated microalgae slurry in a dark and anaerobic atmosphere to form ethanol, while keeping its pH in the range of 6.0 to 9.0;

(d) separating the ethanol so formed from the microalgae slurry and concentrating the separated ethanol;

(e) subjecting the microalgae slurry from which ethanol has been separated to methane fermentation in methane fermentation means;

(f) burning the methane-containing fermentation gas generated by the methane fermentation;

(g) drying and burning the residue resulting from the methane fermentation; and

(h) recycling the carbon dioxide generated in steps (c), (f) and (g) to the microalga culturing step.

5,578,473

RECOMBINANT NEGATIVE STRAND RNA VIRUS

Peter Palese, Leonia, N.J.; Jeffrey D. Parvin, Belmont, Mass., and Mark Krystal, Leonia, N.J., assignors to Aviron, Inc., Mountain View, Calif.

Division of Ser. No. 190,698, Feb. 1, 1994, abandoned, which is a continuation of Ser. No. 925,061, Aug. 4, 1992, abandoned, which is a division of Ser. No. 527,237, May 22, 1990, Pat. No. 5,166,057, which is a continuation-in-part of Ser. No. 440,053, Nov. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 399,728, Aug. 28, 1989, abandoned. This application Mar. 10, 1994, Ser. No. 209,178

The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.

Int. Cl.[6] C12N *15/09;7/01;7/02;7/04*

U.S. Cl. 435—172.3 **11 Claims**

1. A method for engineering a recombinant negative-strand RNA virus, comprising:

(a) transcribing a DNA molecule encoding a mutagenized gene of the negative-strand RNA virus operatively linked to the complement of the viral RNA-directed RNA polymerase binding site, to form a recombinant RNA molecule comprising the mutated viral gene operatively linked to the viral polymerase binding site, and combining the recombinant RNA molecule with the viral RNA-directed RNA polymerase to form a recombinant RNP;

(b) culturing a host cell transfected with the recombinant RNP and infected with a parental strain of the negative strand virus; and

(c) recovering chimeric viruses containing the mutated viral gene from the culture.

5,578,474

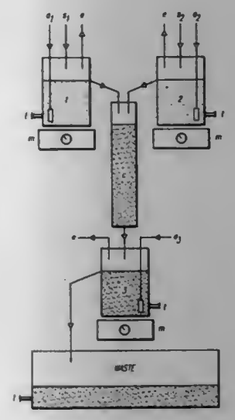
PROCESS FOR CULTURING RECOMBINANT MICROORGANISMS

Dennis D. Focht, Riverside, Calif., and Lothar P. Kröckel, Thurnau, Germany, assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 927,793, Aug. 10, 1992, abandoned, which is a continuation of Ser. No. 581,247, Sep. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 74,847, Jul. 17, 1987, abandoned. This application Jun. 13, 1994, Ser. No. 259,283

Int. Cl.[6] C12N *1/21;1/00;15/00*

U.S. Cl. 435—172.3 **7 Claims**



1. In a process for recovery of a recombinant bacterium having a total genetic capability for carrying out a given metabolic function, said recombinant bacterium being derived from two parent bacteria between which genetic exchange can occur and which in combination contain said total genetic capability but which do not individually contain said total genetic capability, said metabolic function comprising a sequence of metabolic steps necessary for catabolism of an organic compound substrate, wherein each said metabolic step of said metabolic function is catalyzed by an enzyme encoded by a gene and said total genetic capability comprises a complete set of said genes corresponding to all enzymes necessary for catabolism of said organic compound substrate, the improvement comprising:

culturing said two parent bacteria separately in chemostats under conditions which establish individual cultures of each of said two parent bacteria at steady state growth; and

mixing portions of said cultures under conditions which promote contact between said two parent bacteria and which select for said recombinant bacterium capable of carrying out said given metabolic function, wherein genetic exchange between said two parent bacteria and survival of only said recombinant bacterium having said given metabolic function is promoted.

5,578,475

COMPOSITION AND METHODS FOR TRANSFECTING EUKARYOTIC CELLS

Joel A. Jessee, Mt. Airy, Md., assignor to Life Technologies, Inc., Gaithersburg, Md.

Continuation-in-part of Ser. No. 90,290, Jul. 12, 1993, abandoned. This application Jul. 12, 1994, Ser. No. 274,397

Int. Cl.[6] C12N *15/64;7/00;7/06*

U.S. Cl. 435—172.3 **36 Claims**

1. A composition for transfecting a eukaryotic cell wherein said composition comprises a nucleic acid, a cationic lipid composition selected from the group consisting of a 3:1 (w/w) mixture of the polycationic lipid, 2,3-dioleyloxy-N-[2(sperminecarboxamido)ethyl]-N,N-dimethyl-1-propanaminiumtrifluoroacetate and dioleoylphosphatidylethanolamine, and a 1:1 (w/w) mixture of N-[1-(2,3-dioleyloxy)propyl]-N,N,N-trimethylammoniumchloride and dioleoylphosphatidylethanolamine and a viral agent which enhances transfection two-fold or more by said cationic lipid composition, which viral agent is an alphavirus or a component of an alphavirus and wherein said nucleic acid is not a nucleic acid of said viral agent.

5,578,476

FLAVIN REDUCTASE GENE

Shuhei Zenno, Yokohamashi; Satoshi Inouye, and Kaoru Saigo, both of Tokyo, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation of Ser. No. 250,855, May 27, 1994, abandoned. This application Aug. 23, 1995, Ser. No. 518,223

Claims priority, application Japan, May 27, 1993, 5-151076

Int. Cl.[6] C12N *9/02;15/63;1/21;* **C07H** *21/04*

U.S. Cl. 435—189 **16 Claims**

1. A substantially purified nucleic acid comprising the nucleic acid sequence of SEQ ID NO:1.

5,578,477

IDENTIFICATION AND CHARACTERIZATION OF INHIBTORS OF PROTEIN FARNESYLTRANSFERASE

Fuyuhiko Tamanoi, Chicago, Ill., assignor to Arch Development Corporation, Chicago, Ill.

Filed Jan. 5, 1993, Ser. No. 931

Int. Cl.[6] C12N *9/10;* **A61K** *38/45*

U.S. Cl. 435—793 **5 Claims**

1. A composition comprising isolated and purified yeast farnesyltransferase, wherein said farnesyltransferase has the following properties:

a) is a heterodimer having an estimated approximate molecular weight of 90 kDa comprising two subunits of 43 kDa and 34 kDa, respectively;

b) exhibits an optimum pH of approximately 7.8;

c) exhibits an optimum temperature of approximately 50°;

d) is inhibited by contact with a peptide containing a C-terminal CAAX wherein C designates cystsine, A designates an aliphatic amino acid and X designates any amino acid; and

e) exhibits only two bands after SDS-PAGE that correspond to the two subunits of a.

5,578,478

RECOMBINANT DNA ENCODING A DESULFURIZATION BIOCATALYST

John Rambosek; Chris S. Piddington; Brian R. Kovacevich, all of Seattle, Wash.; Kevin D. Young, Grand Forks, N. Dak., and Sylvia A. Denome, Thompson, N. Dak., assignors to Energy BioSystems Corporation, The Woodlands, Tex.

Division of Ser. No. 304,081, Sep. 1, 1994, which is a division of Ser. No. 89,755, Jul. 9, 1993, Pat. No. 5,356,801, which is a continuation-in-part of Ser. No. 911,845, Jul. 10, 1992, abandoned. This application Apr. 14, 1995, Ser. No. 421,754

Int. Cl.[6] C12N *9/14;1/20;* **C12P** *21/06;* **C07H** *19/00*

U.S. Cl. 435—195 **8 Claims**

1. A purified protein having the amino acid sequence for ORF-1 (SEQ ID NO:2) or an enzymatically active fragment thereof.

5,578,479

ALPHA-AMYLASE FROM HYPERTHERMOPHILIC ARCHAEBACTERIUM

Kenneth Laderman, and Christian B. Anfinsen, both of Baltimore, Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Jun. 9, 1992, Ser. No. 893,928
Int. Cl.[6] C12N *9/28;1/20;* C12P *19/14*
U.S. Cl. 435—202 7 Claims

1. An α-amylase isolated and purified from the cytosol of Pyrococcus furiosus which has the amino acid sequence shown in FIG. 9 (SEQ ID NO:1).

5,578,480

METHODS FOR THE ISOLATION AND PURIFICATION OF THE RECOMBINANTLY EXPRESSED CHONDROITINASE I AND II ENZYMES FROM *P. VULGARIS*

Kiran M. Khandke, Nanuet, N.Y., assignor to American Cyanamid Company, Wayne, N.J.

Continuation-in-part of Ser. No. 52,206, Apr. 23, 1993, abandoned. This application Apr. 22, 1994, Ser. No. 233,008
Int. Cl.[6] C12N *9/88;15/60*
U.S. Cl. 435—232 24 Claims

1. A method for the isolation and purification of the recombinant chondroitinase I enzyme of *Proteus vulgaris* from *E. coli* host cells, said method comprising the steps of:

(a) lysing by homogenization the host cells to release the enzyme into the supernatant;

(b) subjecting the supernatant to diafiltration to remove salts and other small molecules;

(c) passing the supernatant through an anion exchange resin-containing column to produce an eluate containing the enzyme that has not bound to the column;

(d) loading the eluate from step (c) to a cation exchange resin-containing column so that the enzyme in the eluate binds to the cation exchange column; and

(e) treating the cation exchange column to which the enzyme has bound with a solvent that releases the enzyme from the column, producing an eluate containing the purified enzyme.

5,578,481

CLONING AND CHARACTERIZATION OF A CARDIAC ADENYLYL CYCLASE

Yoshihiro Ishikawa, Cresskill, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 793,961, Nov. 18, 1991, Pat. No. 5,334,521. This application May 10, 1994, Ser. No. 240,357
Int. Cl.[6] C12N *9/88*
U.S. Cl. 435—232 1 Claim

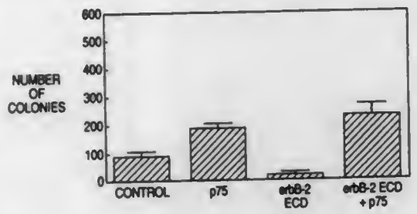
1. A purified and isolated cardiac adenylyl cyclase which has the amino acid sequence depicted in FIG. 2. and identified as SEQ ID NO: 2.

5,578,482

LIGAND GROWTH FACTORS THAT BIND TO THE ERBB-Z RECEPTOR PROTEIN AND INDUCE CELLULAR RESPONSES

Marc E. Lippman, Bethesda, and Ruth Lupu, Gaithersburg, both of Md., assignors to Georgetown University, Washington, D.C.

Continuation-in-part of Ser. No. 875,788, Apr. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 640,497, Jan. 14, 1991, abandoned, and a continuation-in-part of Ser. No. 917,988, Jul. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 872,114, Apr. 22, 1992, abandoned, which is a continuation of Ser. No. 528,438, May 25, 1990, abandoned. This application Jul. 26, 1993, Ser. No. 96,277
Int. Cl.[6] C12N *1/38;5/26*
U.S. Cl. 435—240.1 5 Claims



1. A substantially pure protein, wherein said protein:

reverses antiproliferative effect of soluble erbB-2 extracellular domain (ECD); corresponds to a protein which is obtained by elution of SK-BR-3 cancer cell conditioned media from an ECD affinity column at pH 3.0–3.5;

inhibits cell proliferation and colony formation of cells which overexpress erbB-2;

has apparent molecular weight as measured by SDS PAGE of about 75 kDa;

is capable of inducing phosphorylation of $p185^{erbB-2}$; and

does not bind EGFR.

5,578,483

RECEPTOR TRANSCRIPTION-REPRESSION ACTIVITY COMPOSITIONS AND METHODS

Ronald M. Evans, La Jolla, Calif.; Stanley M. Hollenberg, Portland, Oreg., and Anthony E. Oro, San Diego, Calif., assignors to The Salk Institute for Biological Studies, La Jolla, Calif.

Continuation-in-part of Ser. No. 289,561, Dec. 23, 1988, abandoned. This application Jun. 21, 1991, Ser. No. 691,043
Int. Cl.[6] C12N *5/16;15/85;* C07K *14/705*
U.S. Cl. 435—240.2 8 Claims

1. A trans-repressing analog of a receptor of the steroid/thyroid hormone superfamily of receptors, wherein said analog comprises an amino acid sequence having the N-terminus and DNA binding domain of a receptor of the steroid/thyroid superfamily of receptors fused at its C-terminal end to amino acids 8–1025 of beta-galactosidase.

5,578,484

HYBRIDOMA AND MONOCLONAL ANTIBODY 9H10-A4 SPECIFIC TO AN ANTIGEN OF LNCAP CELLS

Julius S. Horoszewicz, Williamsville, N.Y., assignor to Cytogen Corporation, Princeton, N.J.

Continuation of Ser. No. 822,500, Jan. 17, 1992, abandoned, which is a division of Ser. No. 202,869, Jun. 3, 1988, Pat. No. 5,162,504. This application Sep. 16, 1994, Ser. No. 307,544
Int. Cl.[6] C12N *15/20;* C07K *16/18*
U.S. Cl. 435—240.27 2 Claims

1. Hybridoma cell line 9H10-A4, ATCC Designation HB11430.

5,578,485

THREE-DIMENSIONAL BLOOD-BRAIN BARRIER CELL AND TISSUE CULTURE SYSTEM

Gail K. Naughton, and Brian A. Naughton, both of Groton, Vt., assignors to Advanced Tissue Sciences, Inc., La Jolla, Calif.

Division of Ser. No. 131,361, Oct. 4, 1993, which is a division of Ser. No. 575,518, Aug. 30, 1990, Pat. No. 5,266,480, which is a division of Ser. No. 402,104, Sep. 1, 1989, Pat. No. 5,032,508, which is a continuation-in-part of Ser. No. 242,096, Sep. 8, 1988, Pat. No. 4,963,489, which is a continuation-in-part of Ser. No. 38,110, Apr. 14, 1987, abandoned, which is a continuation-in-part of Ser. No. 36,154, Apr. 3, 1987, Pat. No. 4,721,096, which is a continuation of Ser. No. 853,569, Apr. 18, 1986, abandoned. This application Apr. 6, 1995, Ser. No. 418,237
Int. Cl.[6] C12N *5/00;* C12Q *1/02;* A01N *1/02*
U.S. Cl. 435—240.243 41 Claims

1. A three-dimensional blood-brain barrier cell culture system, comprising neuron cells and astrocytes cultured on a living stromal tissue prepared in vitro, said living stromal tissue comprising confluent small blood vessel endothelial cells attached to and substantially enveloping a framework composed of a biocompatible, non-living material formed into a three-dimensional structure having interstitial spaces bridged by the endothelial cells.

5,578,486

RECOMBINANT MICROBIAL FERTILIZER AND METHODS FOR ITS PRODUCTION

Ling Y. Zhang, Rockville, Md., assignor to International TLB Research Institute, Inc., Poolesville, Md.

Filed Aug. 5, 1994, Ser. No. 286,470
Int. Cl.[6] C12N *1/00;* C05F *11/08*
U.S. Cl. 435—243 12 Claims

1. A microbial fertilizer that comprises a granule comprising

(A) a central rock phosphate core containing a phosphate rock decomposing bacterium;

(B) an intermediate layer comprising a carbonaceous material and a source of starch and containing a nitrogen fixing bacterium, a carbon-waste decomposing bacterium, a rock potassium decomposing bacterium, a growth factor producing yeast, and an energy producing yeast; and

(C) an outer film sufficient to limit the passage of oxygen into the granule.

5,578,487

METHODS FOR DISPERSING HYDROCARBONS USING AUTOCLAVED BACTERIA

Richard L. Tyndall, Clinton, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Division of Ser. No. 388,862, Feb. 15, 1995, which is a division of Ser. No. 203,452, Feb. 28, 1994, Pat. No. 5,420,035, which is a division of Ser. No. 11,841, Feb. 1, 1993, Pat. No. 5,314,821, which is a continuation of Ser. No. 693,998, Apr. 26, 1991, abandoned. This application May 19, 1995, Ser. No. 444,460
Int. Cl.[6] A62D *3/00;* B09B *3/00;* C12N *1/20;* C12S *1/00*
U.S. Cl. 435—262.5 3 Claims

1. A method of dispersing a hydrocarbon comprising:

providing a bacterium selected from the group consisting of ATCC 75527, ATCC 75529, and ATCC 55638, a mutant of any one of said bacteria possessing all the identifying characteristics of any one of said bacteria, and mixtures thereof;

autoclaving said bacterium to derive a dispersant solution therefrom; and

contacting said dispersant solution with a hydrocarbon to disperse said hydrocarbon.

5,578,488

METHOD OF MICROBIALLY DEGRADING TRINITROTOLUENE

Richard L. Tyndall, Clinton, and Arpad Vass, Oak Ridge, both of Tenn., assignors to Martin Marietta Energy System, Inc., Oak Ridge, Tenn.

Division of Ser. No. 391,995, Feb. 21, 1995, Pat. No. 5,484,730, which is a division of Ser. No. 168,603, Dec. 16, 1993, Pat. No. 5,449,618, which is a continuation-in-part of Ser. No. 11,841, Feb. 1, 1993, Pat. No. 5,314,821, which is a continuation of Ser. No. 693,998, Apr. 26, 1991, abandoned. This application Sep. 5, 1995, Ser. No. 523,992
Int. Cl.[6] B09B *3/00;* B09C *1/10*
U.S. Cl. 435—262.5 1 Claim

1. A method of degrading trinitrotoluene comprising the steps of:

a. providing a bacterium selected from the group consisting of American Type Culture Collection Deposit Number 75528 and a mutant of said bacterium possessing all the identifying characteristics of said bacterium; and,

b. contacting trinitrotoluene with said bacterium in amounts and under conditions sufficient to degrade said trinitrotoluene.

5,578,489

REMOVAL OF HYDROPHOBIC ESTERS FROM TEXTILES

Gitte Petersen, Frederiksberg, Denmark, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK92/00347, § 371 Date Jun. 1, 1994, § 102(e) Date Jun. 1, 1994, PCT Pub. No. WO93/13256, PCT Pub. Date Jul. 8, 1993
PCT Filed Nov. 24, 1992, Ser. No. 244,571
Int. Cl.[6] C12S *11/00*
U.S. Cl. 435—263 15 Claims

1. A process for removing hydrophobic esters from fabric, comprising:

(1) impregnating the fabric with an aqueous solution of lipase in an amount effective to hydrolyze said esters to fatty acids to a liquor pick-up ratio of 50–200%,

(2) incubating the impregnated fabric at 15°–70° C. for 1–24 hours as suitable for said lipase to hydrolyze said esters, and

(3) washing and rinsing to remove the fatty acids.

VOL 1192 ISS 4 NO 26 1996 UMI

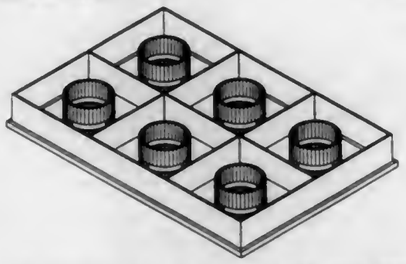
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5,578,490

CELL CULTURE PLATE WITH A SYSTEM FOR LATERAL DIFFUSION OF MOLECULES THROUGH A BARRIER MEMBRANE

Florencio Martinez Ubeira, Santiago de Compostela, Spain, assignor to Universidade de Santiago de Compostela, Spain

PCT No. PCT/ES93/00074, § 371 Date Jul. 18, 1994, § 102(e) Date Jul. 18, 1994, PCT Pub. No. WO94/06902, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 14, 1993, Ser. No. 244,092
Claims priority, application Spain, Sep. 16, 1992, P9201859
Int. Cl.[6] C12M *3/02*
U.S. Cl. 435—287.1 5 Claims



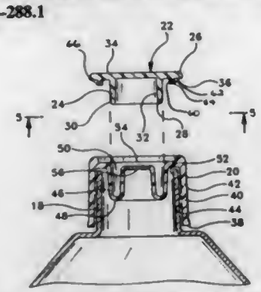
1. Cell culture plate fitted with a system for the lateral diffusion of molecules across a barrier membrane, comprising: a base consisting of an open-topped, flat-bottomed, reservoir well, said reservoir well containing another, smaller diffusion well, likewise open-topped and sharing the same flat base, characterized in that the two wells communicate via one or several slits or orifices located in at least one lateral wall of the diffusion well, and in that said slits or orifices are covered by semipermeable membranes; and a removable lid which when placed over the base allows the whole system to be closed though without creating an airtight seal.

5,578,491

REUSABLE VENTED FLASK CAP COVER

John J. Kayal, Wayne; Susan L. Barker, Tenafly, and John M. Janson, Piscataway, all of N.J., assignors to Becton,Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 8, 1995, Ser. No. 525,807
Int. Cl.[6] B65D *41/16;43/04;* C12M *3/00*
U.S. Cl. 435—288.1 9 Claims



1. A culture vessel assembly constructed to grow cell cultures in incubators comprising:

a vessel comprising a chamber and a neck connected to said chamber having an opening for introducing cells and culture fluids into said chamber;

a cap comprising a top portion, a bottom portion, an annular skirt extending from said top portion to said bottom portion and having an inner surface and outer surface, an inner inverted skin portion surrounded by said inner surface of said annular skirt and extending from said top portion toward said bottom portion, an annular space between said inner surface of said annular skirt and said inverted skirt portion, a compartment area in said top portion as defined by said inverted skirt portion and an orifice in said top portion as defined by said inverted skirt portion surrounded by said compartment area, whereby said means for allowing gas diffusion into and out of said vessel is attached to said orifice; and

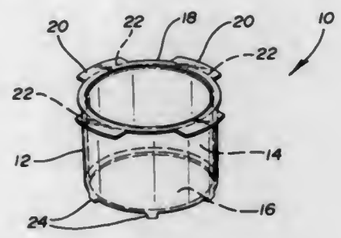
a plug removably attached to said cap for occluding gas diffusion into and out of said vessel comprising a top flange integrally formed to a cylindrical base with lugs comprising a distal and proximal end with a cleat located at said proximal end and wherein said distal end extends underneath said top flange.

5,578,492

CELL CULTURE INSERT

Oresta N. Fedun, Wanaque, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 538,053, Oct. 2, 1995, which is a continuation of Ser. No. 358,037, Dec. 15, 1994, which is a continuation of Ser. No. 630,116, Dec. 19, 1990. This application Jun. 28, 1996, Ser. No. 671,091
Int. Cl.[6] C12M *3/06*
U.S. Cl. 435—297.5 2 Claims



1. A cell culture insert consisting of:

a body having a top end and a bottom end, vertical sidewalls extending from said top end to said bottom end to form a cell culture insert chamber;

a porous membrane positioned with said bottom end of said sidewall to form a bottom surface of said chamber;

a plurality of overhanging flanges extending radially outward from said top end, spaced apart from each other and extending beyond said sidewall; and

weakened regions between said plurality of flanges and said top end whereby said flanges are broken away from said top end of said sidewall.

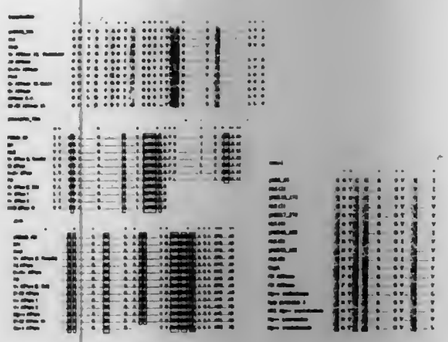
5,578,493

WILSON'S DISEASE GENE

T. Conrad Gilliam, New York, N.Y., and Rudolph E. Tanzi, Canton, Mass., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y., and General Hospital Corporation, Boston, Mass.

Filed Sep. 1, 1993, Ser. No. 118,441
Int. Cl.[6] C07H *21/00;* C12N *9/00;15/12;15/63*
U.S. Cl. 435—320.1 12 Claims

1. An isolated, nucleic acid molecule encoding a human metal transporting ATPase having the amino acid sequence as shown in FIG. 5.



5,578,494

CAP ACTUATOR FOR OPENING AND CLOSING A CONTAINER

Frederick L. Clark, Plano; Kendall B. Hendrick, Southlake; Richard R. Martin, Irving; Larry W. Moore, Plano, all of Tex.; William J. Raymoure, Lake Bluff, Ill.; Paul R. Schrier, Carrollton, Tex.; Edna S. Walker, Chicago, Ill.; Danny R. Walker, Coppell, Tex.; Gary E. Winter, Hanover Park, Ill.; Kevin M. Cloonan, Round Lake, Ill.; David A. Yost, Poolesville, Md.; John M. Clemens, Wadsworth, Ill.; William J. Kanewske, III, Dallas, Tex.; Douglas D. McDowell, Wildwood, Ill.; Carl M. Oleksak, Fort Worth; William D. Rumbaugh, Carrollton, both of Tex.; B. Jane Smith, Vernon Hills, Ill.; James A. Vaught, Euless, Tex.; Apparao Tayi, Grayslake, Ill.; Robert A. Wohlford, Irving, Tex.; James E. Mitchell, Lake Barrington, Ill.; Robert B. Hance, Evanston, Ill.; Peter A. Lagocki, Park Ridge, Ill.; Richard A. Merriam, Dallas, Tex.; Charles D. Pennington, Lake Zurich, Ill.; Linda S. Schmidt, Mundelein, Ill.; Adrian M. Spronk, Lindenhurst, Ill.; Richard L. Vickstrom, Algonquin, Ill.; William E. Watkins, III, Cedar Hill; Gilbert Clift, Mesquite, both of Tex.; Alyn K. Stanton, Barrington, Ill., and David B. Hills, Plano, Tex., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 176,871, Jan. 3, 1994, abandoned, which is a continuation-in-part of Ser. No. 126,411, Sep. 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 859,218, Mar. 27, 1992, abandoned, Ser. No. 915,162, Jul. 20, 1992, Pat. No. 5,376,313, Ser. No. 915,163, Jul. 20, 1992, abandoned, Ser. No. 915,164, Jul. 20, 1992, abandoned, Ser. No. 915,166, Jul. 20, 1992, abandoned, Ser. No. 915,167, Jul. 20, 1992, abandoned, Ser. No. 915,168, Jul. 20, 1992, abandoned, Ser. No. 916,425, Jul. 20, 1992, abandoned, Ser. No. 916,551, Jul. 20, 1992, abandoned, Ser. No. 916,556, Jul. 20, 1992, abandoned, Ser. No. 916,737, Jul. 20, 1992, Pat. No. 5,451,528, Ser. No. 917,253, Jul. 20, 1992, abandoned, Ser. No. 917,634, Jul. 20, 1992, abandoned, Ser. No. 27,268, Mar. 18, 1993, abandoned, Ser. No. 27,270, Mar. 18, 1993, abandoned, Ser. No. 27,387, Mar. 18, 1993, abandoned, Ser. No. 27,388, Mar. 18, 1993, abandoned, Ser. No. 27,481, Mar. 18, 1993, abandoned, Ser. No. 27,269, Mar. 18, 1993, abandoned, and Ser. No. 27,482, Mar. 18, 1993, abandoned, each which is a continuation-in-part of Ser. No. 859,218, said Ser. No. 27,269is a continuation-in-part of Ser. No. 917,634, said Ser. No. 27,482is a continuation-in-part of Ser. No. 916,556. This application Feb. 13, 1996, Ser. No. 600,321
Int. Cl.[6] G01N *35/10;* B65D *51/04*
U.S. Cl. 436—54 11 Claims

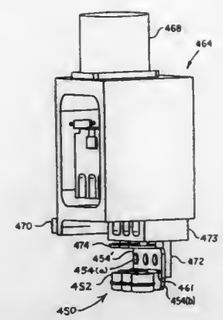
1. A method for opening and closing a container for storing a reagent for use in an automated analytical instrument, comprising the steps of:

positioning said container at a cap actuator station, said container a body, a shoulder projecting from said body, and a neck projecting vertically from said shoulder, said neck surrounding an opening of said container, said container further having fitted thereon an evaporatively sealed capped-closure, said capped-closure comprising a closure and a cap assembly, said closure fitting over said opening and surrounding said vertically projecting neck of said container, said cap assembly connected to said closure by a hinge, said cap assembly comprising a cap to which said closure is hinged and a lever-tab mounted on and extended from said cap, said cap actuator station comprising at least one opening pin and a cap actuator;

opening said capped-closure by actuating said cap actuator to press down said lever-tab with said at least one opening pin at said cap actuator station sufficiently so that said reagent can be withdrawn from said container;

withdrawing said reagent from said container for use in said analytical instrument; and

closing said capped-closure by contacting said opening pin with said cap to form an evaporatively closed seal on said container.

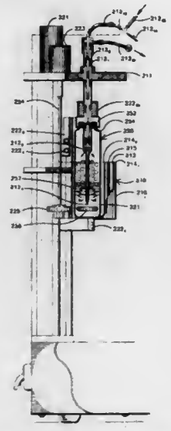


5,578,495

APPARATUS, AND PROCESS, FOR AUTOMATICALLY SAMPLING SOLIDS AND SEMI-SOLIDS MATERIALS FOR ANALYSIS

Terry S. Wilks, Greenwell Springs, La., assignor to Dynatech Precision Sampling Corporation, Baton Rouge, La.

Continuation of Ser. No. 328,791, Oct. 31, 1994, Pat. No. 5,432,098. This application Apr. 3, 1995, Ser. No. 415,317
Int. Cl.[6] G01N *1/10*
U.S. Cl. 436—178 7 Claims



1. In a process for the extraction and separation for analysis of an organic fluid or solids specimen from a semi-solids or solids sample carried within a vial

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the combination of steps which comprise locating a septum sealed vial having a single compartment within which is contained said semi-solids or solids sample adjacent a probe assembly,

projecting said probe assembly through said septum into the compartment of the vial, said probe assembly including

a pair of concentrically mounted needles, an inner needle having a bore

therethrough formed by an enclosing wall, an outlet at the lower terminal end of the needle opening into the bore through which a gas or liquid can be passed, and an upper inlet communicated with the bore of said inner needle for use in introducing a gas or liquid into the bore, and

an outer needle having a bore therethrough formed by an enclosing wall of diameter sufficiently large to provide an annular passageway between the outside wall face of said inner needle and inside wall face of said outer needle, a gas inlet at the lower terminal end of the outer needle terminating above the outlet at the lower terminal end of said inner needle, and gas outlet at the upper terminal end of the outer needle communicated with the annular passageway,

a first line from a supply source of both gas and liquid connected to the inlet of said inner needle through which gas can be passed to exit via the outlet at the lower terminal end of the inner needle to pressurize the contents of the vial, or liquid introduced as a solvent to disperse the semi-solids or solids sample,

a second line connected to the gas outlet at the upper end of said outer needle through which a specimen-containing gas can be transported,

whereby, when the probe assembly is inserted into the septum sealed vial, the gas inlet at the lower terminal end of the outer needle remains above said semi-solids or solids sample,

injecting a liquid solvent via said first line of said probe assembly into the bore of said inner needle, the liquid solvent exiting at the opening at the lower terminal end of the inner needle to fill the vial compartment to a predetermined liquid level, and disperse the semi-solids or solids sample within the liquid solvent to form a slurry,

injecting a gas via said first line into the bore of said inner needle, the gas exiting from the lower terminal end of said inner needle, thereby pressurizing the contents of the vial and mixing with the liquid slurry, and passing gas into the annular passageway of the outer needle, the gas exiting from the second line to a specimen collector for concentration therein, and transfer therefrom for analysis in an analytical instrument.

5,578,496

DETECTION OF AUTOANTIBODIES ASSOCIATED WITH THE DISEASE MYASTHENIA GRAVIS

M. Zouhair Atassi, and Tetsuo Ashizawa, both of Houston, Tex., assignors to Board of Regents, Baylor College of Medicine, Houston, Tex.

Continuation of Ser. No. 965,670, Oct. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 811,050, Dec. 19, 1991, abandoned. This application Oct. 5, 1994, Ser. No. 318,200

Int. Cl.[6] G01N *33/564;33/53;* **A61K** *38/00;* **C07K** *5/00*

U.S. Cl. 436—506 **11 Claims**

1. A method for the detection of human acetylcholine receptor (AChR) autoantibodies in patient serum samples, said autoantibodies being associated with the disease myasthenia gravis, said method comprising the following steps:

(a) obtaining a serum sample from a patient suspected of having myasthenia gravis or being at risk for the development of said disease;

(b) contacting said serum sample with a composition comprising peptides having the following sequences: SEQ ID NOS. 8, 17, 18, and 23;

(c) washing said samples to remove nonspecifically bound antibodies; and,

(d) detecting peptide-autoantibody complex formation;

wherein detection of said peptide-autoantibody complexes indicates the presence of human acetylcholine receptor autoantibodies.

5,578,497

Patent Not Issued For This Number

5,578,498

METAL CHELATE CONTAINING COMPOSITIONS FOR USE IN CHEMILUMINESCENT ASSAYS

Sharat Singh, San Jose, and Edwin F. Ullman, Atherton, both of Calif., assignors to Behringwerke AG, Marburg, Germany

Continuation-in-part of Ser. No. 704,569, May 22, 1991. This application Nov. 22, 1993, Ser. No. 156,181

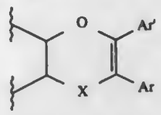
Int. Cl.[6] G01N *33/543;* **C09K** *11/06;11/08*

U.S. Cl. 436—518 **9 Claims**

1. A composition comprising:

(a) a metal chelate comprising a metal selected from the group consisting of europium, terbium, dysprosium, samarium, osmium and ruthenium in at least a hexacoordinated state and

(b) a compound having a structural portion that is



(i) wherein X is O, S or N and the valency of N is completed with hydrogen or an organic radical consisting of atoms selected from the group consisting of C, O, N, S, and P and Ar and Ar' are independently aryl wherein one of Ar or Ar' is electron donating with respect to the other and (ii) wherein the broken lines are to hydrogen, an organic radical or are taken together to form a ring and (iii) wherein said compound is capable of undergoing a chemical reaction with singlet oxygen to form a metastable intermediate that can decompose with the emission of light within the wavelength range of 250 to 1200 nm.

5,578,499

HOMOGENEOUS IMMUNOASSAY SYSTEM EMPLOYING FOURIER TRANSFORM INFRARED SPECTROSCOPY

Ashraf A. Ismail, Quebec, Canada, assignor to The Royal Institution for the Advancement of Learning, Montreal, Canada

Continuation of Ser. No. 875,802, Apr. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 409,788, Sep. 20, 1989, abandoned. This application Apr. 21, 1994, Ser. No. 231,977

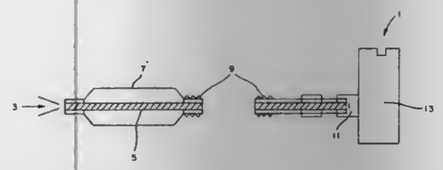
Int. Cl.[6] G01N *33/551;33/552*

U.S. Cl. 436—524 **15 Claims**

1. A homogeneous immunoassay system for the simultaneous determination of the concentration of n different antigens in an aqueous sample, wherein n=2, which system comprises:

an interferometric signal emitted from an infrared source;

a waveguide through which said interferometric signal is propagated by internal reflection, said waveguide coated with n



different antibodies and having at least one region thereof for immersion in an aqueous sample, the aqueous sample having corresponding antigens to each of the n different antibodies therein, each of the corresponding antigens having a labelled fraction and an unlabeled fraction, the labels of each corresponding antigen being different from one another and independently distinguishable from one another in the infrared spectrum, whereby the corresponding antigens can be complexed to their corresponding antibodies on the surface of the waveguide;

a detector for measuring the interferometric signal after its propagation through the waveguide; and

a measuring device for taking a Fourier transform of the interferometric signal for determining an attenuation of the interferometric signal at wavelengths corresponding to an infrared absorption characteristic of said different and independently distinguishable labels incorporated into antigen-antibody complexes, thereby simultaneously determining the concentration of the n different antigens in the aqueous sample.

5,578,500

REAGENTS AND METHODS FOR THE QUANTIFICATION OF IMIPRAMINE OR DESIPRAMINE IN BIOLOGICAL FLUIDS

Maciej Adamczyk, Gurnee; Charles A. Harrington, Lake Villa, and Donald Johnson, Lindenhurst, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

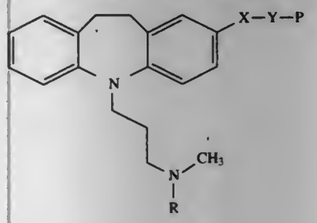
Division of Ser. No. 916,161, Jul. 24, 1992, Pat. No. 5,340,750, which is a continuation-in-part of Ser. No. 739,012, Jul. 31, 1991, abandoned. This application Aug. 5, 1994, Ser. No. 286,731

Int. Cl.[6] G01N *33/542;* **C12N** *9/96;* **C07K** *16/44;* **C07D** *223/18*

U.S. Cl. 436—537 **34 Claims**

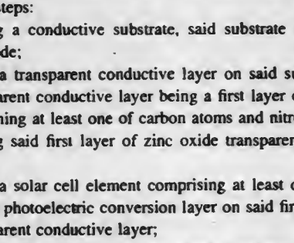
30. A test kit for the quantification of imipramine or desipramine in a test sample, said test kit comprising:

(a) an antibody reagent comprising antibodies which are capable of binding to imipramine or desipramine in a test sample, wherein said antibodies are produced with an immunogen of an imipramine or desipramine derivative of the formula:



wherein X is —NH—SO_2—, Y is —$(CH_2)_3$—CO—, R is CH_3 or H and P is an immunogenic carrier material; and

(b) a labeled reagent which is recognizable by antibodies capable of binding imipramine or desipramine in a test sample, wherein said labeled reagent is an imipramine or desipramine derivative of the formula:



wherein Z is —NH—CO—, R_1 is CH_3 or H and Q is a fluorescent moiety.

5,578,501

METHOD OF MANUFACTURING A SOLAR CELL BY FORMATION OF A ZINC OXIDE TRANSPARENT CONDUCTIVE LAYER

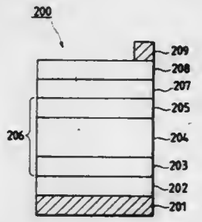
Mitsuyuki Niwa, Nagahama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 197,875, Feb. 17, 1994, Pat. No. 5,420,043, which is a division of Ser. No. 948,317, Sep. 22, 1992, Pat. No. 5,324,365. This application Mar. 10, 1995, Ser. No. 401,992

Claims priority, application Japan, Sep. 24, 1991, 3-272092; Sep. 24, 1991, 3-272093

Int. Cl.[6] H01L *31/18;* **C23C** *14/34*

U.S. Cl. 437—2 **9 Claims**



1. A method of forming a solar cell comprising the following sequential steps:

providing a conductive substrate, said substrate being a first electrode;

forming a transparent conductive layer on said substrate, said transparent conductive layer being a first layer of zinc oxide containing at least one of carbon atoms and nitrogen atoms;

annealing said first layer of zinc oxide transparent conductive layer;

forming a solar cell element comprising at least one semiconductor photoelectric conversion layer on said first zinc oxide transparent conductive layer;

forming a second zinc oxide transparent conductive layer on the solar element and annealing the second zinc oxide layer;

forming a second, transparent electrode on the second zinc oxide layer; and

forming a collector electrode on the second electrode.

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5,578,502

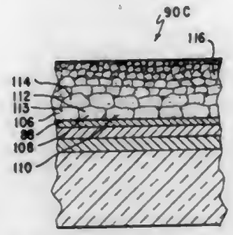
PHOTOVOLTAIC CELL MANUFACTURING PROCESS

Scot P. Albright, Lakewood, Colo., assignor to Photon Energy Inc. D/B/A Golden Photon, Inc., Golden, Colo.

Continuation of Ser. No. 274,574, Jul. 12, 1994, Pat. No. 5,501,744, which is a continuation of Ser. No. 95,599, Jul. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 819,882, Jan. 13, 1992, Pat. No. 5,279,678. This application Dec. 14, 1995, Ser. No. 572,088

Int. Cl.[6] H01L *31/18*

U.S. Cl. 437—4 **36 Claims**



1. A method of forming a photovoltaic device having one or more photovoltaic cells on a substrate, the method comprising:

providing a substrate capable of supporting film layers for a photovoltaic device;

forming a first electrically conductive film layer;

forming an n-type film layer comprising an n-type material;

forming a p-type film layer comprising a p-type material;

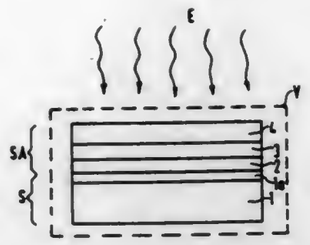
forming a second electrically conductive film layer;

said first electrically conductive film layer, said n-type film layer, said p-type film layer, and said second electrically conductive film layer being supported by said substrate;

said n-type film layer and said p-type film layer being adjacent and being located between and respectively electrically interconnected with said first electrically conductive film layer and said second electrically conductive film layer;

wherein said p-type material is subjected to heat treatment in an oxidizing environment to oxidize impurities in the p-type material to alter the electrical properties of the p-type material; and

wherein said p-type material, after said heat treatment, is subjected to recrystallization in an environment substantially free of oxidants, to substantially increase crystal size of the p-type material for use in said p-type film layer.



keeping the substrate at the processing temperature for a time interval dt in the range of 10 seconds to 1 hour to perform annealing;

providing an encapsulation as a covering above the layer structure at a spacing of less than 5 mm, which encapsulation maintains, throughout the entire annealing process, a partial pressure for the component C which is above the partial pressure of the component C which would develop above a stoichiometrically exact ABC_2 semiconductor.

5,578,504

METHOD FOR DETERMINATION OF RESISTIVITY OF N-TYPE SILICON EPITAXIAL LAYER

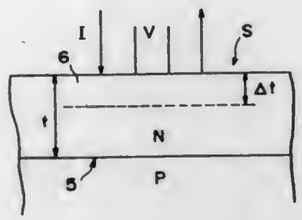
Kiyoshi Mitani, Gunma-ken, and Shigenori Saisu, Fukushima-ken, both of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Jul. 15, 1994, Ser. No. 275,540

Claims priority, application Japan, Jul. 16, 1993, 5-199009

Int. Cl.[6] H01L *21/66*

U.S. Cl. 437—8 **7 Claims**



1. A method for determination of resistivity of an n-type epitaxial layer formed on a silicon substrate characterized by;

subjecting the surface of said n-type epitaxial layer to hydrogen termination; keeping said n-type epitaxial layer in a hydrogen terminal state; and

four point probe method measuring sheet resistance of said surface; and

wherein determination of said resistivity of said n-type silicon epitaxial layer is accomplished by the steps of;

growing said n-type epitaxial layer on a silicon substrate;

displacing an inner gas of an epitaxial growth reactor with hydrogen gas and cooling said silicon substrate to a temperature below 400° C. thereby effecting said hydrogen termination of the surface of said n-type epitaxial layer;

subsequently displacing said hydrogen gas in said epitaxial growth reactor with an inert gas;

simultaneously cooling said silicon substrate to normal room temperature;

removing said cooled silicon substrate from said epitaxial growth reactor; and

four point probe method measuring sheet resistance of said n-type epitaxial layer.

5,578,503

RAPID PROCESS FOR PRODUCING A CHALCOPYRITE SEMICONDUCTOR ON A SUBSTRATE

Franz Karg, and Volker Probst, both of München, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE93/00814, § 371 Date May 9, 1995, § 102(e) Date May 9, 1995, PCT Pub. No. WO94/17269, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 7, 1993, Ser. No. 403,921

Claims priority, application Germany, Sep. 22, 1992, 42 31 706.1

Int. Cl.[6] H01L *31/18*

U.S. Cl. 437—5 **10 Claims**

1. A process for producing a chalcopyrite semiconductor of the type ABC_2, where A is copper, B is indium or gallium, and C is sulfur or selenium, on a substrate, comprising the steps of:

producing a layer structure on the substrate by applying the components A, B, and C in elemental form and/or as a binary interelemental compound B_2C_3, the component C being present in an excess which forms up to twice a stoichiometrically exact proportion of component;

rapidly heating the substrate with the layer structure to a processing temperature, which is greater than or equal to 350° C., at a heating rate of at least 10° C./s; and

5,578,505

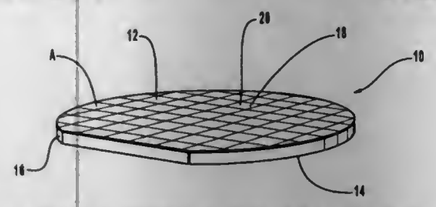
METHODS FOR MEASURING THE SURFACE AREA OF A SEMICONDUCTOR WAFER

Michael Nuttall, Meridian, and Kelly Hurley, Boise, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Dec. 15, 1995, Ser. No. 573,331

Int. Cl.[6] H01L *21/66;21/306;* **G01B** *21/28*

U.S. Cl. 437—8 **20 Claims**



1. A method for measuring the surface area of a top region of a semiconductor wafer, the method comprising the steps of:

(a) depositing a monolayering material over the top region of the semiconductor wafer;

(b) positioning the semiconductor wafer within a chamber of known volume;

(c) exposing the monolayering material positioned in the chamber to a reactant that reacts with substantially all of the monolayering material to form at least one product;

(d) measuring the quantity of the at least one product formed in the reaction of the reactant with the monolayering material; and

(e) determining the corresponding surface area of the top region of the semiconductor wafer from the quantity of the at least one product formed in the reaction of the reactant with the monolayering material in the known volume of the chamber.

5,578,506

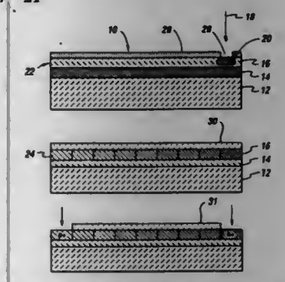
METHOD OF FABRICATING IMPROVED LATERAL SILICON-ON-INSULATOR (SOI) POWER DEVICE

John Lin, Ellicott City, Md., assignor to AlliedSignal Inc., Morris Township, N.J.

Filed Feb. 27, 1995, Ser. No. 395,237

Int. Cl.[6] H01L *21/265;* **H01R** *21/22*

U.S. Cl. 437—21 **9 Claims**



1. A method of fabricating a high performance, lateral Silicon-On-Insulator (SOI) power device having a breakdown voltage less than approximately 100 v, the method comprising:

providing an oxide layer on a silicon substrate;

providing a silicon layer on said oxide layer, said silicon layer having an anode side and a cathode side;

forming a mask on said silicon layer, said mask having a single opening on said anode side of said silicon layer;

introducing an impurity into said silicon layer through said single opening so as to implant a dopant in said anode side; and

applying heat to said silicon layer so as to diffuse said dopant laterally toward said cathode side and create a tailored dopant gradient profile in said silicon layer.

5,578,507

METHOD OF MAKING A SEMICONDUCTOR DEVICE HAVING BURIED DOPED AND GETTERING LAYERS

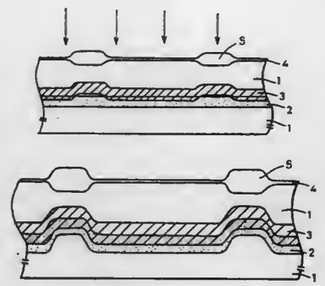
Takashi Kuroi, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 279,876, Jul. 25, 1994, which is a continuation of Ser. No. 902,424, Apr. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 660,824, Feb. 26, 1991, abandoned. This application May 11, 1995, Ser. No. 439,017

Claims priority, application Japan, Apr. 28, 1990, 2-113057

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—24 **6 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

forming a gettering layer by ion-injecting, at a dose rate in the range of 1×10^{14} to about 1×10^{15} ions/cm^2, an element, other than a conductivity type determining element, to a first depth from a main surface of a semiconductor substrate; heat-treating said semiconductor substrate;

forming a buried impurity layer by ion-injecting a conductivity type determining element to a second depth not greater than said first depth of said gettering layer; and heat-treating said semiconductor substrate.

5,578,508

VERTICAL POWER MOSFET AND PROCESS OF FABRICATING THE SAME

Yoshiro Baba, Yokohama; Satoshi Yanagiya; Noboru Matsuda, both of Kawasaki; Akihiko Osawa, and Masanobu Tsuchitani, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 330,828, Oct. 27, 1994, abandoned. This application Apr. 21, 1995, Ser. No. 426,233

Claims priority, application Japan, Oct. 28, 1993, 5-270650

Int. Cl.[6] H01L *21/265;21/302;21/304;21/76*

U.S. Cl. 437—35 **9 Claims**

6. A process of fabricating a semiconductor device, comprising the steps of:

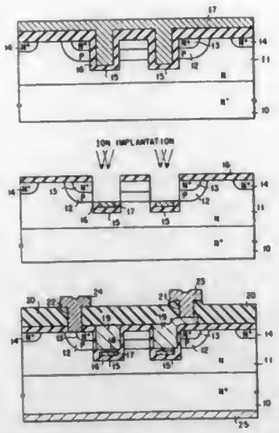
selectively introducing impurities of a second conductivity type into a surface region of a first semiconductor layer of a first conductivity type, thereby forming a second semiconductor layer of the second conductivity type;

forming at least one trench extending from the surface of the second semiconductor layer and penetrating said second semiconductor layer such that a bottom portion of said trench reaches the first semiconductor layer;

forming a first insulating layer on at least the bottom portion of said trench;

depositing an ion implantation mask layer on said first insulating film such that said trench is filled, and etching back said ion implantation mask layer so that said ion implantation mask layer remains up to an intermediate portion of said trench;

removing a portion the first insulating film, which is exposed to the trench; and



implanting channel ions into an exposed inner wall of the trench in a slanting direction.

5,578,509

METHOD OF MAKING A FIELD EFFECT TRANSISTOR

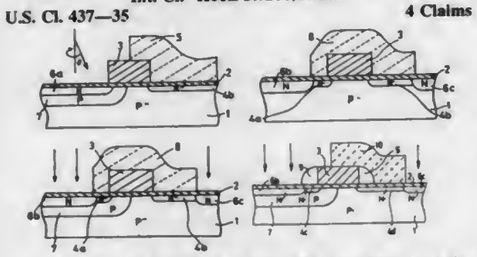
Koichi Fujita, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 230,226, Apr. 20, 1994, Pat. No. 5,451,807. This application May 22, 1995, Ser. No. 446,298

Claims priority, application Japan, Apr. 23, 1993, 5-096408

Int. Cl.[6] H01L *21/266;21/335*

U.S. Cl. 437—35 **4 Claims**



1. A method for producing a field effect transistor including source and drain regions produced by implanting a dopant impurity employing a gate electrode as a mask comprising:

producing a gate electrode at a region on a first conductivity type semiconductor substrate having a first dopant impurity concentration;

implanting a dopant impurity producing a second conductivity type in said substrate employing said gate electrode as a mask, thereby producing source and drain regions having a second dopant impurity concentration;

producing a photoresist pattern on said substrate covering a drain electrode side of said substrate, but not covering a source electrode side of said substrate on the opposite side of said gate electrode from said drain electrode side, and implanting a dopant impurity producing the second conductivity type in said substrate employing said photoresist pattern as an ion implantation mask, thereby converting said source region from the second dopant impurity concentration to a third dopant impurity concentration higher than the second dopant impurity concentration; and

diagonally rotatingly implanting in said substrate a dopant impurity producing the first conductivity type employing said photoresist pattern as an ion implantation mask, thereby producing a first conductivity type region with a higher dopant impurity concentration than the first dopant impurity concentration in said substrate and surrounding said source region.

5,578,510

METHOD OF MAKING AN ISOLATION LAYER STALK SEMICONDUCTOR DEVICE

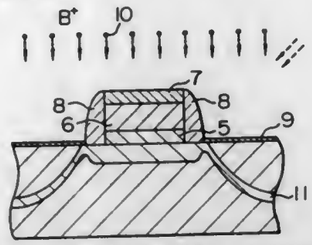
Tomofune Tani, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 219,296, Mar. 28, 1994, abandoned. This application Oct. 24, 1995, Ser. No. 547,157

Claims priority, application Japan, Mar. 30, 1993, 5-096924

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—35 **6 Claims**



1. A method of making a semiconductor device comprising the steps of:

forming an element isolation layer stack on a first region of a silicon substrate between adjacent element forming regions; and

injecting impurity ions upon an entire surface of the silicon substrate so as to form a diffusion layer and whereby said diffusion layer is formed at a first portion disposed in a surface of the substrate just beneath the element isolation layer stack and also at a second portion disposed in the surface of the substrate inside each of the element forming regions adjacent to said first region at a depth spaced from the surface of the substrate at the element forming region which is deeper than that of the first portion.

5,578,511

METHOD OF MAKING SIGNAL CHARGE TRANSFER DEVICES

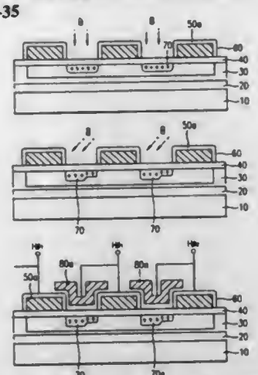
Dong K. Son, Kwacheon-si, Rep. of Korea, assignor to LG Semicon Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 218,411, Mar. 25, 1994, abandoned, which is a division of Ser. No. 995,981, Dec. 23, 1992, abandoned. This application Dec. 8, 1995, Ser. No. 569,317

Claims priority, application Rep. of Korea, Dec. 23, 1991, 23862/1991

Int. Cl.[6] H01L *21/265;21/70;27/00*

U.S. Cl. 437—35 **10 Claims**



1. A method of making a signal charge transfer device on a substrate of a first conductivity type, comprising the steps of:

forming a well of a second conductivity type opposite to the first conductivity type on the substrate;

forming a channel region of the first conductivity type in the well;

forming a first insulating layer on the well;

forming a plurality of first electrodes on the first insulating layer;

forming a second insulating layer on each of the plurality of first electrodes;

forming a plurality of stepped impurity regions of the first conductivity type in the channel region, each of the plurality of stepped impurity regions being disposed between adjacent ones of the plurality of first electrodes and the each of the plurality of stepped impurity regions having an impurity concentration lower than an impurity concentration of the channel region; and

forming a plurality of second electrodes on the first insulating layer, each of the plurality of second electrodes being disposed between adjacent ones of the first electrodes above a respective one of the plurality of stepped impurity regions.

5,578,512

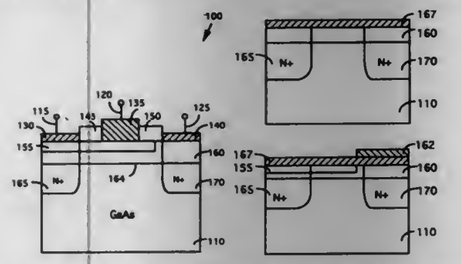
POWER MESFET STRUCTURE AND FABRICATION PROCESS WITH HIGH BREAKDOWN VOLTAGE AND ENHANCED SOURCE TO DRAIN CURRENT

Kung-Chung Tao, Hsingchu City, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Division of Ser. No. 116,918, Sep. 7, 1993, abandoned. This application Mar. 8, 1995, Ser. No. 401,017

Int. Cl.[6] H01L *21/265;21/44;21/338*

U.S. Cl. 437—39 **1 Claim**



1. A method for fabricating a metal semiconductor field effect transistor (MESFET) comprising the steps of:

(a) forming a passivation dielectric layer on top of a semiconductor substrate;

(b) forming two active areas under said dielectric layer by utilizing a first photoresist for defining and implanting first ions of a first conductivity with a first doping concentration into said active areas wherein one of said active areas being a source area and another a drain area and said source area and said drain area being separated with a gate area;

(c) forming a gate channel by implanting second ions over said source area, said gate area and said drain area with a doping concentration lower than said first doping concentration wherein said second ions are of said first conductivity and said gate channel is shallower than said source area and said source area;

(d) defining a current enhancement region by employing a second photoresist to cover said drain area and a small portion of said gate channel contiguous to said drain area;

(e) performing an enhancement ion implantation with a doping concentration lower than said first doping concentration for forming the current enhancement region with third ions of said first conductivity wherein said current enhancement region being shallower than said source area and said drain area;

(f) removing said photoresist and remove said dielectric layer from a source ohmic contact area, a drain ohmic contact area, and a Schottky gate area; and

(g) forming electric contacts on said source ohmic contact area, said drain ohmic contact area, and said Schottky gate area.

5,578,513

METHOD OF MAKING A SEMICONDUCTOR DEVICE HAVING A GATE ALL AROUND TYPE OF THIN FILM TRANSISTOR

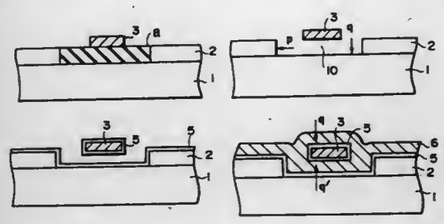
Shigeto Maegawa, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 305,826, Sep. 14, 1994. This application Apr. 20, 1995, Ser. No. 425,646

Claims priority, application Japan, Sep. 17, 1993, 5-231849; Aug. 19, 1994, 6-195669

Int. Cl.[6] H01L *21/786*

U.S. Cl. 437—40 **13 Claims**



1. A method of manufacturing a semiconductor device comprising:

forming an insulating film on a substrate;

forming an opening in the insulating film by anisotropic etching;

embedding a dummy member in the opening;

forming a channel member over the insulating film and the dummy member;

removing the dummy member to form a gap in the opening between the channel member and the substrate; and

forming a thin film on the channel member and in the gap covering the channel member, the thin film being a control electrode of a transistor for forming channels on opposite sides of the channel member.

5,578,514

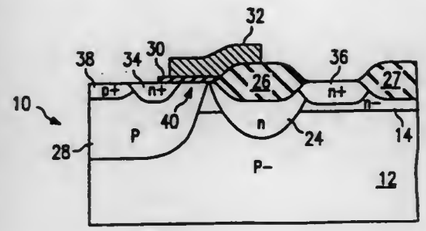
LATERAL DOUBLE DIFFUSED INSULATED GATE FIELD EFFECT TRANSISTOR AND FABRICATION PROCESS

Oh-Kyong Kwon, Plano; Taylor R. Efland, Richardson; Satwinder Malhi, Garland, all of Tex., and Wai T. Ng, Thornhill, Canada, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 191,228, Feb. 1, 1994, Pat. No. 5,406,110, which is a division of Ser. No. 815,732, Dec. 30, 1991, Pat. No. 5,306,652. This application May 12, 1994, Ser. No. 241,543

Int. Cl.[6] H01L *21/336*

U.S. Cl. 437—41 **11 Claims**



1. A method of fabricating a RESURF LDMOS transistor on a semiconductor layer of a first conductivity type comprising the steps of:

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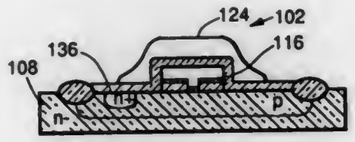
forming a masking layer on said semiconductor layer to define an implant area;
implanting a dopant of a second conductivity type into said defined implant area;
forming a thick insulator layer on said defined implant area to create a low resistance RESURF drift region, wherein said thick insulator layer and said drift region are self-aligned to each other for improved breakdown characteristics;
removing said masking layer after said step of forming said thick insulator layer;
implanting a body of the first conductivity type into said semiconductor layer adjacent said drift region;
implanting a source region and a drain region of said second conductivity type in said semiconductor layer, said source region within said body, said drain region adjacent said drift region: and
forming a conductive gate insulatively disposed on said body extending from said source region to said thick insulator layer.

5,578,515

METHOD FOR FABRICATING GATE STRUCTURE FOR NONVOLATILE MEMORY DEVICE COMPRISING AN EEPROM AND A LATCH TRANSISTOR

Chen-Chi P. Chang, Newport Beach; Mei F. Li, Mission Viejo, and Truc Q. Vu, Signal Hill, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 6, 1995, Ser. No. 554,220
Int. Cl.[6] H01L *21/8247*
U.S. Cl. 437—43 **17 Claims**



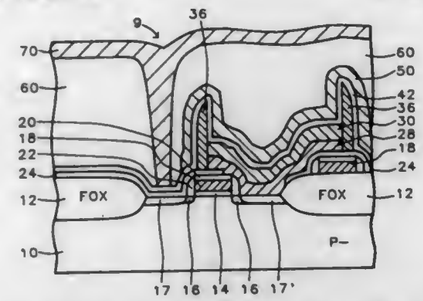
1. A method for fabricating a nonvolatile memory device comprising an Electrically Erasable-Programmable Read-Only Memory (EEPROM) and a latch transistor, comprising:
providing a semiconductor substrate that has EEPROM and latch transistor active areas and an electron tunnel above said EEPROM active area;
depositing a first polysilicon layer over said substrate;
patterning said first polysilicon layer to form an EEPROM floating gate above said electron tunnel and a first latch transistor gate region over said latch transistor active area, said first latch transistor region being electrically connected to said floating gate;
forming a dielectric layer over said EEPROM floating gate and said first latch transistor gate region;
depositing a second polysilicon layer over said EEPROM floating gate and said first latch transistor gate region;
patterning said second polysilicon layer to form an EEPROM control gate over the floating gate and a second latch transistor gate region over said first latch transistor gate region; and
collectively patterning said second and first polysilicon layers to form a latch transistor stacked gate comprising a protective layer, a dielectric spacer and a latch gate from said second latch transistor gate region, said dielectric layer and said first latch transistor gate region, respectively, said latch gate being electrically connected to said EEPROM floating gate.

5,578,516

HIGH CAPACITANCE DYNAMIC RANDOM ACCESS MEMORY MANUFACTURING PROCESS

Hsiang-Ming Chou, Hsin Chu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Filed Jul. 7, 1995, Ser. No. 499,745
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—52 **23 Claims**



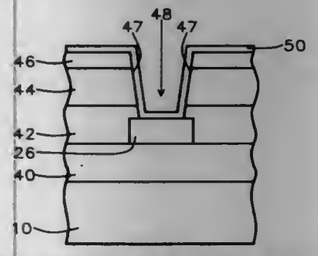
1. A method for manufacturing an array of dynamic random access memory cells on a semiconductor substrate having storage capacitors, comprising the steps of:
forming on a semiconductor substrate an array of device areas having a field oxide area surrounding and electrically isolating each of said device areas;
forming a gate oxide on said device areas;
depositing a first polysilicon layer on said substrate; and
depositing a cap oxide on said first polysilicon layer;
patterning said cap oxide and said first polysilicon layer and forming gate electrodes for each field effect transistor on each said device area and forming concurrently from the same said first polysilicon layer word lines elsewhere on said substrate;
forming source/drain areas in said substrate adjacent to said gate electrodes in said device areas;
forming sidewall spacers on said gate electrodes by depositing a sidewall insulating layer and etching back said sidewall insulating layer to said source/drain areas;
forming source/drain contacts in source/drain areas adjacent to said sidewall spacers by ion implantation;
depositing a first insulating layer on said substrate; and forming said storage capacitors by,
forming contact openings to one of two source/drain areas on each of said field effect transistor,
depositing an undoped second polysilicon layer on said first insulating layer and in said contact openings,
depositing a doped third polysilicon layer on said undoped second polysilicon layer,
depositing a second insulating layer on said doped third polysilicon layer,
patterning anisotropically said second insulating layer, doped third polysilicon and undoped second polysilicon layer leaving portion aligned over said contact openings and over capacitor areas of said memory cells,
depositing a conformal undoped fourth polysilicon layer on said patterned second insulating layer and elsewhere on said substrate,
anisotropically etching back said undoped fourth polysilicon layer to said second insulating layer, and thereby forming polysilicon sidewall spacers on the sidewalls of said patterned second and third polysilicon layers,
removing by selective etching said patterned second insulating layer and said doped third polysilicon layer and thereby forming bottom electrodes for said storage capacitors composed of said undoped second polysilicon layer and said sidewall spacers formed from said fourth polysilicon layer,
said sidewall spacers formed from remaining portions of said fourth polysilicon layer increasing the surface area of said bottom electrodes,
doping said bottom electrodes,
forming an interelectrode dielectric layer on all surfaces of said bottom electrodes,
depositing a doped fifth polysilicon layer on said dielectric layer and elsewhere on said first insulating layer;
patterning said fifth polysilicon layer and forming top electrodes of said storage capacitors and thereby completing said array of DRAM memory cells.

5,578,517

METHOD OF FORMING A HIGHLY TRANSPARENT SILICON RICH NITRIDE PROTECTIVE LAYER FOR A FUSE WINDOW

Chue-San Yoo, and Jin-Yuan Lee, both of Hsin Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed Oct. 24, 1994, Ser. No. 328,587
Int. Cl.[6] H01L *27/00;21/70*
U.S. Cl. 437—60 **22 Claims**



1. A method of forming a protective layer having a transmittance of laser irradiation covering an opening through insulating layers in a semiconductor device comprising the steps of:
forming a first insulating layer on a semiconductor substrate;
forming a fusible link on said first insulating layer;
forming a second insulating layer at least partially covering said fusible link and said first insulating layer;
forming an opening, over the fusible link, at least partially through the second layer, said opening having a bottom and sidewalls surfaces; and
forming a protective layer having between 50% and 100% transmittance to laser irradiation, said protective layer covering said fusible link, said second insulating layer, and the bottom and sidewall surfaces of the opening; said protective layer of silicon nitride having a ratio of silicon to nitride between 1.4 and 1.6.

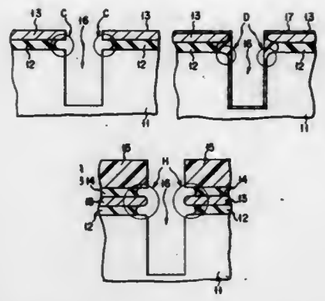
5,578,518

METHOD OF MANUFACTURING A TRENCH ISOLATION HAVING ROUND CORNERS

Hidetoshi Koike, Kawasaki; Kazunari Ishimaru; Hiroshi Gojohbori, both of Yokohama, and Fumitomo Matsuoka, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Dec. 15, 1994, Ser. No. 356,526
Claims priority, application Japan, Dec. 20, 1993, 5-320576
Int. Cl.[6] H01L *21/76*
U.S. Cl. 437—67 **12 Claims**

1. A method of forming a trench device isolation region in a surface of a semiconductor substrate, the method comprising the steps of:
forming a first oxide layer on the surface of said semiconductor substrate;
forming a polycrystalline silicon layer on said first oxide layer;
removing portions of said polycrystalline silicon layer and said first oxide layer to form an opening in said layers to expose a selected portion of the surface of said semiconductor substrate;



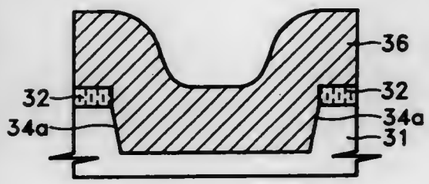
etching said semiconductor substrate through said opening to form a trench in said semiconductor substrate;
subjecting said first oxide layer to side etching through said opening to expose an edge of said semiconductor substrate at a boundary with said trench; and
forming a second oxide layer over substantially all exposed surfaces including an inside of said trench, such that said edge of said semiconductor substrate exposed by said side etching is rounded.

5,578,519

METHOD FOR FORMING ALIGN KEY PATTERN IN SEMICONDUCTOR DEVICE

Yun-hee Cho, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 27, 1995, Ser. No. 561,824
Claims priority, application Rep. of Korea, Jun. 23, 1995, 95-17158
Int. Cl.[6] H01L *21/762*
U.S. Cl. 437—67 **4 Claims**



(ALIGN KEY PATTERN AREA)

1. A method for forming an align key pattern in a semiconductor device, the method comprising the steps of:
forming a first insulating film pattern for defining field regions in a cell array area and an align key pattern area on a semiconductor substrate;
forming trenches in said field regions, using said first insulating film pattern as a mask;
forming a second insulating film on the whole surface of said semiconductor substrate, while filling said trenches;
etching said second insulating film formed on the active regions of said cell array area and on the active and field regions of said align key pattern area, to a predetermined thickness;
etching back the whole surface of said semiconductor substrate;
forming a conductive layer on the whole surface of said semiconductor substrate; and
covering a photoresist on the whole surface of said conductive layer.

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5,578,520

METHOD FOR ANNEALING A SEMICONDUCTOR

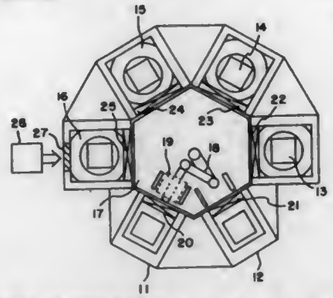
Hongyong Zhang, and Naoto Kusumoto, both of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 104,614, Aug. 11, 1993, Pat. No. 5,352,291, which is a continuation of Ser. No. 886,817, May 22, 1992, abandoned. This application Jul. 15, 1994, Ser. No. 275,909

Claims priority, application Japan, May 28, 1991, 3-152477

Int. Cl.[6] H01L *21/26*

U.S. Cl. 437—81 **15 Claims**



1. A method for manufacturing a semiconductor device comprising the steps of:

preparing a multi-chamber system having at least first and second chambers, said first chamber for forming a film and said second chamber for processing an object with a laser light;

processing a substrate in said first chamber to deposit an amorphous silicon semiconductor film thereon;

transferring said substrate to second chamber without exposing said substrate to the air, after depositing said amorphous semiconductor film; and

processing said substrate in said second chamber to crystallize said semiconductor film by a laser light,

wherein said first and second chambers can be isolated from one another by using a gate valve;

wherein said laser light has a cross section which is elongated in one direction on said substrate and an entire surface of said substrate is irradiated with said laser light by moving said substrate in a direction orthogonal to said one direction.

5,578,521

SEMICONDUCTOR DEVICE WITH VAPORPHASE GROWN EPITAXIAL

Yasutoshi Suzuki, Okazaki; Takamasa Suzuki, Nagoya; Kunihiko Hara, Aichi-ken; Hajime Inuzuka, Nishio; Naomi Awano, Nagoya, and Kouichi Hoshino, Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 845,812, Mar. 9, 1992, abandoned, which is a continuation of Ser. No. 420,721, Oct. 11, 1989, abandoned, which is a continuation of Ser. No. 123,549, Nov. 20, 1987, abandoned. This application May 3, 1995, Ser. No. 432,637

Claims priority, application Japan, Nov. 20, 1986, 61/277592; Nov. 26, 1986, 61/281252

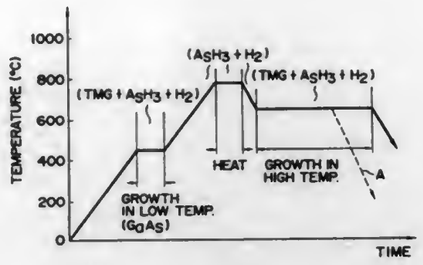
Int. Cl.[6] C30B *25/14*

U.S. Cl. 437—112 **12 Claims**

1. A method of manufacturing a semiconductor device having an epitaxial layer formed on a surface of a semiconductor substrate, said method comprising the steps of:

placing said substrate in a reaction chamber provided with heating means so as to permit selective setting of temperature of said semiconductor substrate;

forming a low-temperature growth layer, as a thin film having a thickness, on the surface of said semiconductor substrate, said thin film being formed of a semiconductor substance having a different lattice constant from that of said semiconductor substrate, said forming step including the steps of:



supplying a material gas which is a mixture of gases containing an organometallic gas as a material of said semiconductor substance into said reaction chamber, and

forming the semiconductor substance to a thickness less than 200 angstroms;

thermally treating the low-temperature growth layer at a temperature higher than that in said forming step, said temperature being sufficient for forming a plurality of island-like monocrystal cores from said thin film, said thermally treating step including the steps of:

stopping the supply of said organometallic gas,

elevating the temperature of said semiconductor substrate to about 750° C. to cause coagulation of the atoms of the semiconductor material constituting the low temperature growth layer formed in said forming step, and

maintaining the temperature of said semiconductor substrate at about 750° C. while the flow of said organometallic gas is stopped to reduce lattice mismatch between the island-like monocrystaline cores and the semiconductor substrate surface; and

causing high-temperature growth of said semiconductor substance on said semiconductor substrate having said island-like monocrystal cores, said causing step including the step of supplying a material gas containing said organometallic gas as the material of said semiconductor substance into said reaction chamber while said semiconductor substrate is held at a high temperature, thereby generating epitaxial growth of said island-like monocrystal cores.

5,578,522

SEMICONDUCTOR DEVICE AND METHOD OF FABRICATING SAME

Katsumi Nakamura, Osaka; Tadaharu Minato, Kobe; Shuuichi Tominaga, Karatsu, and Katsuomi Shiozawa, Kobe, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 384,734, Feb. 7, 1995, Pat. No. 5,508,534. This application Nov. 30, 1995, Ser. No. 565,277

Claims priority, application Japan, Feb. 24, 1994, 6-026874

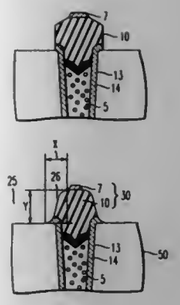
Int. Cl.[6] H01L *21/44;21/48*

U.S. Cl. 437—186 **23 Claims**

1. A method of fabricating a semiconductor device, comprising the steps of:

(a) providing a body of semiconductor having first and second major surfaces;

(b) selectively forming a plurality of trench portions extending from the first major surface of said body to a predetermined depth;



(c) forming a plurality of control electrode layers filling said plurality of trench portions, respectively, and extending over part of the first major surface of said body, the operation of said device being controlled by a control voltage applied commonly to said plurality of control electrode layers after completion of said device;

(d) forming an insulating layer on the first major surface of said body including said plurality of control electrode layers;

(e) patterning said insulating layer to form an opening in a predetermined position; and

(f) performing heat treatment upon said patterned insulating layer to form a smooth inclined surface adjacent said opening of said insulating layer,

wherein the heat treatment in said step (f) is carried out above a temperature at which said insulating layer is softened.

5,578,523

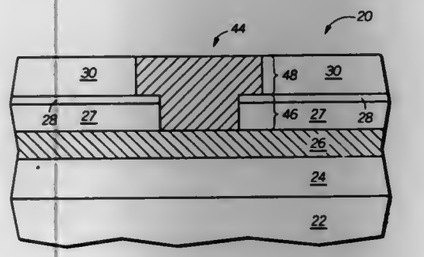
METHOD FOR FORMING INLAID INTERCONNECTS IN A SEMICONDUCTOR DEVICE

Robert W. Fiordalice; Rapu D. Maniar, and Jeffrey L. Klein, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 393,782, Feb. 24, 1995, Pat. No. 5,534,462. This application May 18, 1995, Ser. No. 444,184

Int. Cl.[6] H01L *21/44*

U.S. Cl. 437—190 **21 Claims**



1. A method for forming a semiconductor device comprising the steps of:

providing a semiconductor substrate;

depositing a dielectric layer over the semiconductor substrate;

depositing a polish assisting layer on the dielectric layer, wherein the polish assisting layer is comprised of aluminum nitride;

etching an opening through the polish assisting layer and into the dielectric layer;

depositing a metal layer comprised of aluminum over the semiconductor substrate and on the polish assisting layer, wherein the metal layer fills the opening; and

removing portions of the metal layer existing beyond the opening by polishing.

5,578,524

FABRICATION PROCESS OF A SEMICONDUCTOR DEVICE WITH A WIRING STRUCTURE

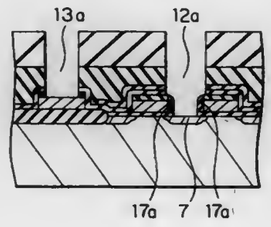
Tadashi Fukase, and Takehiko Hamada, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 29, 1995, Ser. No. 413,868

Claims priority, application Japan, Mar. 30, 1994, 6-061734

Int. Cl.[6] H01L *21/283;21/31*

U.S. Cl. 437—195 **20 Claims**



10. A process for forming a semiconductor device with a wiring structure, comprising the steps of:

(a) providing a semiconductor substrate, adjacent gate electrodes having upraised first and second top surfaces, respectively, formed on said semiconductor substrate and said gate electrodes defining a gap therebetween, and a diffusion layer formed in a surface of said semiconductor substrate at a location beneath said gap;

(b) providing a first wiring layer having an upraised top surface on said semiconductor substrate;

(c) forming a first silicon rich oxide layer only on said first and second top surfaces of said gate electrodes and said top surface of said first wiring layer;

(d) forming a first insulation layer covering said first silicon rich oxide layer, said first wiring layer, said gate electrodes, and in said gap;

(e) forming an etch buffer insulation layer on said first insulation layer and in said gap;

(f) removing a part of said etch buffer insulation layer where located above said first wiring layer to expose a portion of said first insulation layer located above said first wiring layer;

(g) forming a second insulation layer on nonremoved parts of said etch buffer insulation layer remaining after step (f) and on said exposed portion of said first insulation layer;

(h) performing etching to remove first portions of each of said first insulation layer and said second insulation layer located above said first wiring layer to form a wiring contact hole while simultaneously removing a second portion of said second insulation layer where located above said diffusion layer and at said gap between said gate electrodes to form a diffusion layer contact hole extending through said second insulation layer into contact with said etch buffer insulation layer;

(i) performing etching to remove said etch buffer insulation layer where located above said diffusion layer;

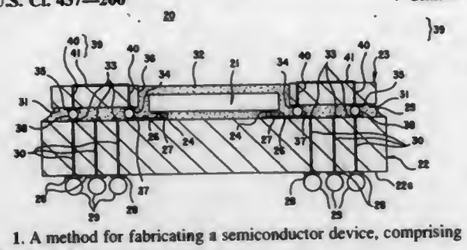
(j) performing etching to remove a portion of said first insulation layer located in said gap and above said diffusion layer; and

(k) forming a second wiring layer filling in said wiring contact hole and said diffusion layer contact hole.

5,578,525
SEMICONDUCTOR DEVICE AND A FABRICATION PROCESS THEREOF

Masataka Mizukoshi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 301,403, Sep. 8, 1994, Pat. No. 5,521,435. This application Feb. 21, 1996, Ser. No. 603,616
Claims priority, application Japan, Dec. 13, 1993, 5-312302
Int. Cl.[6] H01L *21/60*
U.S. Cl. 437—206 **7 Claims**



1. A method for fabricating a semiconductor device, comprising the steps of:

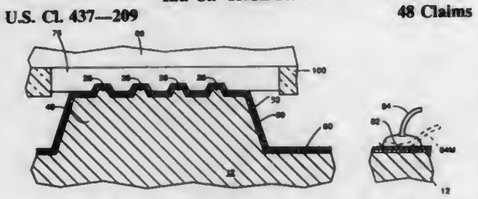
mounting a semiconductor chip on a package substrate that carries first group electrodes and second group electrodes on an upper major surface thereof and third group electrodes on a lower major surface thereof, said package substrate further having through-holes in correspondence to said second and third group electrodes such that each of said through-holes extends from said upper major surface to said lower major surface between one of said second group electrodes and corresponding one of said third group electrodes, said step of mounting being conducted such that electrode pads on said semiconductor chip establish an electrical connection with said first group electrodes on said package substrate; and

mounting a jumper substrate on said package substrate, said jumper substrate carrying thereon first contacts, second contacts, and an interconnection pattern extending between said first contacts and said second contacts, such that each of said first contacts establishes a contact engagement with corresponding one of said first group electrodes and such that each of said second contacts establishes a contact engagement with corresponding one of said second group electrodes.

5,578,526
METHOD FOR FORMING A MULTI CHIP MODULE (MCM)

Salman Akram, Boise; Warren Farnworth, Nampa, and Alan Wood, Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 847,621, Mar. 6, 1992, Pat. No. 5,440,241. This application May 1, 1995, Ser. No. 431,452
Int. Cl.[6] H01L *21/60*
U.S. Cl. 437—209 **48 Claims**



1. A method for forming a multi chip module comprising:

forming a substrate;

forming contact members on the substrate for establishing an electrical connection with contact locations on a semiconductor die, said contact members formed with projections for penetrating the contact locations on the die to a limited penetration depth;

forming a conductive layer on the contact members and projections;

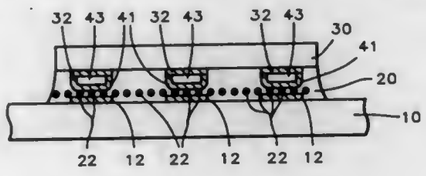
forming an electrical path on the substrate to the conductive layer for each contact member; and

attaching the die to the substrate with the contact locations on the die in contact with the contact members on the substrate.

5,578,527
CONNECTION CONSTRUCTION AND METHOD OF MANUFACTURING THE SAME

Shyh-Ming Chang, Hsinchu; Yu-Chi Lee, Taipei Hsien, and Pao-Yun Tang, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institue, Hsinchu, Taiwan

Filed Jun. 23, 1995, Ser. No. 494,582
Int. Cl.[6] H01L *21/60*
U.S. Cl. 437—209 **17 Claims**



1. A method of forming a bonded structure, comprising:

providing an integrated circuit element having input/output pads;

providing a substrate having input/output pads;

providing composite bumps comprised of a polymer body and a conductive metal coating covering said polymer body wherein each said polymer body of each said composite bump is completely surrounded either by said conductive metal coating of said composite bump and one of said integrated circuit element input/output pads or by said conductive metal coating of said composite bump and one of said substrate input/output pads;

providing a conductive adhesive comprised of a plurality of conductive particles in a non-conductive binder; and

bringing together said integrated circuit element and said substrate to form a plurality of physical and electrical connections between said integrated circuit element input/output pads and said substrate input/output pads wherein each said connection includes a number of said conductive particles and one or two of said composite bumps.

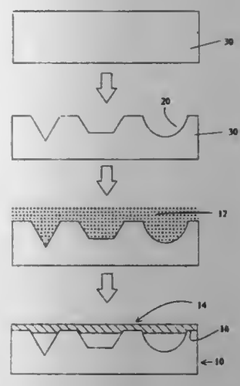
5,578,528
METHOD OF FABRICATION GLASS DIAPHRAGM ON SILICON MACROSTRUCTURE

Dong-Sing Wuu, Hsinchu; Tzung-Rue Hsieh, Miao-Li Hsien; Hui-Fen Wu, Kao-Hsiung Hsien, and Cuo-Lung Lei, Tao-Yuan Hsien, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu Hsien, Taiwan

Filed May 2, 1995, Ser. No. 432,727
Int. Cl.[6] G01L *9/00;9/08;* **H01L** *21/465;21/316*
U.S. Cl. 437—228 **14 Claims**

1. A method for fabricating a glass diaphragm on a silicon macrostructure comprising the steps of:

(a) obtaining a silicon wafer and forming a cavity in said silicon wafer;



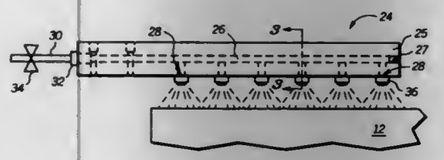
(b) depositing a glass soot into said cavity and filling said cavity, said glass soot also being deposited in a contiguous manner over an external surface of said silicon wafer above said cavity so as to form a glass soot layer having a thickness;

(c) heat-consolidating said glass soot at temperatures between 850 and 1,350° C. so as to cause said glass soot to shrink and form a glass diaphragm over said cavity.

5,578,529
METHOD FOR USING RINSE SPRAY BAR IN CHEMICAL MECHANICAL POLISHING

James M. Mullins, Austin, Tex., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jun. 2, 1995, Ser. No. 459,231
Int. Cl.[6] H01L *21/304;21/306;* **B08B** *3/02*
U.S. Cl. 437—228 **27 Claims**



1. A method for polishing a semiconductor wafer, comprising the steps of:

providing a rinse bar connected to a CMP apparatus, the rinse bar having an elongated member that has:

first and second ends,

a first opening along a portion of a length of the elongated member for a rinse agent to flow from the first end toward the second end, and

a plurality of second openings on a surface of the elongated member, wherein the plurality of second openings is spaced along the length of the elongated member, and wherein the plurality of second openings is connected to the first opening for the rinse agent to flow from the first opening into the plurality of second openings;

positioning the rinse bar, with the plurality of second openings pointing downward, over a polishing pad, wherein the rinse bar extends from a point near an edge of the polishing pad toward a point near a center of the polishing pad;

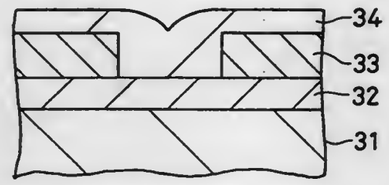
polishing a surface of a semiconductor wafer with the polishing pad to form a polished surface; and

introducing the rinse agent at a pressure no greater than approximately 15 psi above atmospheric pressure through the rinse bar onto the polishing pad while the semiconductor wafer overlies the polishing pad to clean the polished surface.

5,578,530
MANUFACTURING METHOD OF SEMICONDUCTOR DEVICE WHICH INCLUDES FORMING A SILICON NITRIDE LAYER USING A SI, N, AND F CONTAINING COMPOUND

Masakazu Muroyama, and Hideyuki Kito, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 12, 1995, Ser. No. 501,738
Claims priority, application Japan, Jul. 12, 1994, 6-182899
Int. Cl.[6] H01L *21/316;21/318*
U.S. Cl. 437—238 **24 Claims**

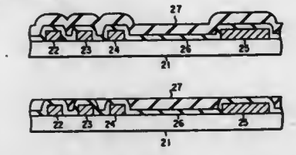


1. A method for manufacturing a semiconductor device comprising the step of forming an SiN layer on a substrate using as a raw material an Si compound containing at least both nitrogen and fluorine.

5,578,531
METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE

Masako Kodera, Kawasaki; Atsushi Shigeta, Yamato, both of Japan, and Hiroyuki Yano, Wappingers Falls, N.Y., assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 212,874, Mar. 15, 1994, abandoned. This application Oct. 24, 1995, Ser. No. 547,581
Claims priority, application Japan, Mar. 29, 1993, 5-069683
Int. Cl.[6] H01L *21/304*
U.S. Cl. 437—228 **9 Claims**



TYPE OF SILICON OXIDE LAYER		POLISHING RATE
SILICON OXIDE LAYER CONTAINING FLUORINE	SILICON OXIDE LAYER FORMED BY DEPOSITION OF SILICON OXIDE FROM SATURATED HYDROFLUOSILIC ACID SOLUTION	3900 Å / min
	SILICON OXIDE LAYER FORMED BY PLASMA CVD USING F-ADDED TEOS MATERIAL GAS	5000 Å / min
SILICON OXIDE LAYER CONTAINING NO FLUORINE	THERMAL OXIDIZED LAYER	7000 Å / min
	SILICON OXIDE LAYER FORMED BY PLASMA CVD USING TEOS MATERIAL GAS	8000 Å / min

1. A method for manufacturing a semiconductor device wherein a depressed and projected structure due to wiring layers provided on a semiconductor substrate is flattened by depositing an insulation layer over the depressed and projected structure, the method comprising the steps of:

forming a first silicon oxide layer containing fluorine over a surface of the structure, a covered configuration by the first silicon oxide layer having projected portions and depressed portions remaining thereon;

forming a second silicon oxide layer containing no fluorine over the first silicon oxide layer to cover the depressed portions and projected portions, a thickness of the second silicon oxide layer exceeding a height of the projected portions; and

polishing a part of the second silicon oxide layer until a polishing speed decreases when a portion of the first silicon oxide layer has been exposed.

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5,578,532

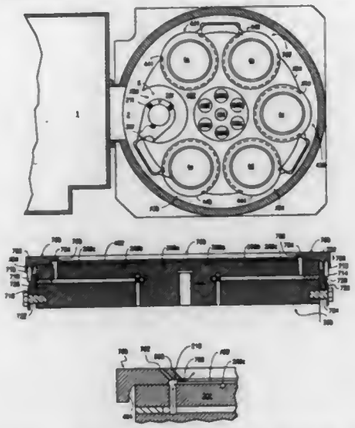
WAFER SURFACE PROTECTION IN A GAS DEPOSITION PROCESS

Everhardue P. van de Ven, Cupertino; Eliot K. Broadbent; Jeffrey C. Benzing, both of San Jose; Barry L. Chin, Sunnyvale, and Christopher W. Burkhart, San Jose, all of Calif., assignors to Novellus Systems, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 7,457, Jan. 22, 1993, Pat. No. 5,374,594, which is a division of Ser. No. 554,225, Jul. 16, 1990, Pat. No. 5,230,741. This application Aug. 23, 1994, Ser. No. 294,514

Int. Cl.[6] C23C *16/00;14/04*

U.S. Cl. 437—245 20 Claims



1. A method of processing a wafer in a deposition chamber, comprising the steps of:

placing the wafer on a wafer support surface;

positioning an exclusion guard in proximity to the wafer edge and a frontside periphery of the wafer;

providing approximately uniform separation between a portion of the exclusion guard and the frontside periphery of the wafer;

introducing a process gas proximate to a frontside interior region of the wafer;

introducing a deposition control gas between the exclusion guard portion and the wafer; and

maintaining a non-negative pressure differential from the introduced deposition control gas to the frontside interior region of the wafer.

5,578,533

CERAMIC COLOR COMPOSITION AND PROCESS FOR PRODUCING A CURVED SURFACE GLASS SHEET EMPLOYING IT

Tsuneo Manabe; Hitoshi Onoda, and Hiroshi Usui, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Sep. 30, 1994, Ser. No. 314,290

Claims priority, application Japan, Oct. 1, 1993, 5-246737; May 20, 1994, 6-106828

Int. Cl.[6] C03C *8/14;8/12;3/064*

U.S. Cl. 501—17 5 Claims

1. A ceramic color composition comprising, as inorganic components, from 5 to 35 wt % of a colored heat resistant pigment powder, from 65 to 95 wt % of a crystallizable glass powder and from 0 to 10 wt % of a refractory filler powder, wherein said glass powder consists essentially of from 10 to 22 wt % of SiO_2, from 60 to 75 wt % of Bi_2O_3, from 0 to 5 wt % of B_2O_3, from 0 to 4 wt % of $Li_2O+Na_2O+K_2O$, from 0 to 15 wt % of BaO and from 0 to 3 wt % of TiO_2.

5,578,534

METHOD OF PRODUCING SL_3N_4 REINFORCED MONOCLINIC $BAO{\cdot}AL_2O_3{\cdot}2SIO_2$ AND $SRO{\cdot}AL_2O_3{\cdot}2SIO_2$ CERAMIC COMPOSITES

Inna G. Talmy, Silver Spring, and James A. Zaykoski, Beltsville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 514,889, Aug. 14, 1995, Pat. No. 5,538,925. This application Mar. 29, 1996, Ser. No. 623,765

Int. Cl.[6] C03C *14/00;10/06*

U.S. Cl. 501—32 15 Claims

1. A process for producing a Si_3N_4 reinforced alkaline earth oxide aluminosilicate ceramic composite structure comprising:

A. forming a composite precursor mixture that is a uniform, intimate mixture of

(1) from about 10 to about 35 weight percent of Si_3N_4 reinforcement material;

(2) from about 15 to about 35 weight percent of an alkaline earth aluminosilicate glass powder wherein the glass is composed of

(a) from about 8 to about 16 weight percent of Al_2O_3,

(b) from about 14 to about 45 mole percent of an alkaline earth oxide powder selected from the group consisting of BaO, SrO, or mixtures thereof, and

(c) the remainder of the glass being SiO_2, powder, and

(3) the remainder of the composite precursor mixture being a monoclinic alkaline earth oxide aluminosilicate powder that is

(a) monoclinic $BaO.Al_2O_3.2SiO_2$, monoclinic $SrO.Al_2O_3.2SiO_2$, or a monoclinic solid solution of monoclinic $BaO.Al_2O_3.2SiO_2$ and monoclinic $SrO.Al_2O_3.2SiO_2$ if the alkaline earth oxide in the glass (2) is SrO, but is

(b) monoclinic $SrO.Al_2O_3.2SiO_2$ or a monoclinic solid solution of from about 50 to less than 100 weight percent of monoclinic $SrO.Al_2O_3.2SiO_2$ with the remainder of the solid solution being monoclinic $BaO.Al_2O_3.2SiO_2$ if the alkaline earth in the glass (2) is BaO or a mixture or BaO and SrO;

B. forming the composite precursor mixture into a green body;

C. firing the green body at a temperature from about 50° C. above the melting point of the alkaline earth aluminosilicate glass to 1580° C. to sinter and densify the green body to form an intermediate composite body; and

D. allowing the sintered, densified intermediate composite body to slowly oven cool to room temperature during which the alkaline earth aluminosilicate glass solidifies and the recrystallization products are formed from the glass to produce the final Si_3N_4 reinforced alkaline earth oxide aluminosilicate composite structure.

5,578,535

REINFORCING FIBER PELLETS

Homer G. Hill, Newark, and Leonard J. Adzima, Pickerington, both of Ohio, assignors to Owens Corning Fiberglas Technology, Inc., Summit, Ill.

Filed Jun. 7, 1995, Ser. No. 485,747

Int. Cl.[6] C03C *13/00*

U.S. Cl. 501—35 11 Claims

1. A reinforcing composition comprising pellets produced by the process of hydrating 1/16 inch to ½ inch long glass fibers to achieve a water content on said glass fibers of from about 11 weight percent to about 20 weight percent, mixing said glass fibers for at least about three minutes, thereby forming pellets, and drying.

5,578,536

EVAPORATING MATERIAL FOR PRODUCING OPTICAL THIN FILM

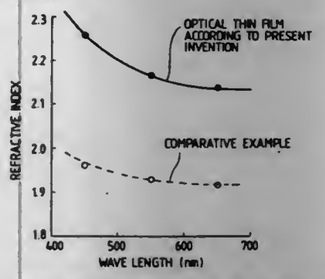
Makoto Kameyama, Funabashi; Noboru Sugahara, Sagamihara; Mitsuharu Sawamura, Yokohama; Junji Terada, Hiratsuka, and Junichi Sakamoto, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 35,784, Mar. 23, 1993, abandoned. This application Apr. 24, 1995, Ser. No. 428,800

Claims priority, application Japan, Mar. 24, 1992, 4-066041

Int. Cl.[6] C04B *35/46;35/48*

U.S. Cl. 501—103 7 Claims



1. An evaporation material for forming a thin film comprising:

titanium oxide (TiO_A) having a molar ratio A(O/Ti) of oxygen (O) to titanium (Ti) in a range of 1.0 to 1.75 and zirconium oxide (ZrO_2), which are mixed with a molar ratio B Ti/Zr of titanium (Ti) to zirconium (Zr) in a range of 1.0 to 4.0, and the resulting mixture is sintered or fused and solidified, forming a material to be evaporated on a substrate to thereby form said thin film.

5,578,537

OLEFIN POLYMERIZATION CATALYST PROCESS FOR ITS PREPARATION AND ITS USE

Hans-Friedrich Herrmann, Darmstadt; Bernd Bachmann, Eppstein/Taunus, and Walter Spaleck, Liederbach, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 55,237, Apr. 28, 1993, abandoned. This application Oct. 7, 1994, Ser. No. 320,127

Claims priority, application European Pat. Off., Apr. 29, 1992, 92107331

Int. Cl.[6] C08F *4/18;4/64*

U.S. Cl. 502—120 13 Claims

1. A supported polymerization catalyst comprising the reaction product of (A) a supported, organoaluminum compound which is prepared by preparing a suspension of a support having a water content of less than 3% by weight in a solution of at least one alkylaluminum compound under inert conditions and hydrolyzing the suspension by the addition of water to the suspension and (B) a metallocene catalyst component.

5,578,538

CASTABLE REFRACTORY MATERIAL

Chiharu Nishikawa, and Jun Ohba, both of Kitakyushu, Japan, assignors to Taiko Refractories Co., Ltd., Fukuoka-ken, Japan

Filed May 19, 1995, Ser. No. 445,378

Claims priority, application Japan, Jun. 8, 1994, 6-151462

Int. Cl.[6] C04B *35/10*

U.S. Cl. 501—124 8 Claims

1. A castable refractory material comprising as binders for exhibiting high strength, per 100 parts by weight of solid components:

(a) 10–30 parts by weight of fine refractory powder inactive to water and selected from the group consisting of alumina, chromia, spinel, titania and mixtures thereof, said fine refractory powder being a mixture of fine refractory powder having an average diameter of 0.2–0.6 μm and fine refractory powder having an average diameter of 1–10 μm at a mixing ratio of 1:2–2:1;

(b) 2–7 parts by weight (as an effective amount) of alumina cement having an average diameter of 3–8 μm, cement clinker minerals of said alumina cement comprising $CaO.Al_2O_3$, $CaO.2Al_2O_3$, and $12CaO.7Al_2O_3$, in such an amount that if said $12CaO.7Al_2O_3$ is present, a diffraction intensity index of said $12CaO.7Al_2O_3$ at a lattice plane distance D of 2.68 Å is 1 or less, assuming that the diffraction intensity index of said $CaO.Al_2O_3$ at a lattice plane distance D of 2.96 Å is 100; and

(c) 0.4–3 parts by weight of fine amorphous silica powder having an average diameter of 0.5 μm or less;

the balance of said solid components being substantially refractory aggregate and refractory powder each selected from the group consisting of alumina, magnesia, spinel, chromia, bauxite and mixtures thereof, where the effective amount of alumina cement is defined by W_{eff}, where X is the amount of CaO and W is the amount of alumina cement:

$$W=(25\times W_{eff})/X.$$

5,578,539

MOLDED ARTICLE BASED ON PZT ($PB(ZR,TI)O_3$, LEAD ZIRCONATE-LEAD TITANATE), METHOD AND INTERMEDIATE PRODUCT FOR ITS MANUFACTURE

Walther Glaubitt; Rainer Jahn, both of Veitshoechheim; and Stephan Merklein, Wuerzburg, all of Germany, assignors to Fraunhofer-Gesellschaft Zur Förderung Der Angewandten Forschung e.V., Munich, Germany

Filed Sep. 23, 1994, Ser. No. 311,428

Claims priority, application Germany, Sep. 27, 1993, 43 32 831.8

Int. Cl.[6] C04B *35/49*

U.S. Cl. 501—134 36 Claims

1. A PZT fiber having a length of up to 600 m, said PZT fiber comprising a lead zirconate-lead titanate mixed substance and being made by a method comprising the steps of:

a) providing at least one organic zirconium compound of formula I

$$Zr(OR^1)_4 \quad (I)$$

and at least one organic titanium compound of formula II,

$$Ti(OR^2)_4 \quad (II),$$

wherein R^1 and R^2 are each independently selected from the group consisting of straight, branched and cyclic alkyl groups having 1 to 10 carbon atoms;

b) reacting from 1 to 3 moles of at least one carboxylic acid having 2 to 10 carbon atoms per mole of the at least one organic titanium plus the at least one organic zirconium compound of formulas I and II with the at least one organic titanium and the at least one organic zirconium compound to form at least one reaction mixture;

c) reacting said at least one reaction mixture formed in step b) together with 1 to 1.5 moles of at least one Pb-containing carboxylate per mole of the at least one organic titanium compound plus the at least one organic zirconium compound to form a combined mixture, the at least one Pb-containing carboxylate being selected from the group consisting of Pb(II)-carboxylates and Pb(IV)-carboxylates, wherein each of said Pb(II)-carboxylates and Pb(IV)-carboxylates is made from an acid member selected from the group consisting of substituted and unsubstituted, monofunctional and polyfunctional, saturated and unsaturated, straight chain and branched chain, cyclic and aromatic carboxylic acids having 1 to 18 carbon atoms and substituted and unsubstituted, monofunctional and polyfunctional, saturated and unsaturated, straight

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chain and branched chain, cyclic and aromatic hydroxycarboxylic acids having 1 to 18 carbon atoms;

d) subjecting the combined mixture formed in step c) to a hydrolytic condensation and removing volatile components from the combined mixture until a solid mass is formed at ambient temperatures;

e) heating the solid mass until a viscous liquid is formed;

f) forming the PZT fiber from the viscous liquid; and

g) heating the PZT fiber to a temperature of at least 500° C.

10. A PZT fiber having a length up to 600 m, said PZT fiber comprising a lead zirconate-lead titanate mixed substance and being made by a method comprising the steps of:

a) mixing at least one alcohol selected from the group consisting of alcohols of formula III

$$R^3—X—R^4—OH \quad (III),$$

and alcohols of formula IV

$$R^3—CX—R^4—OH \quad (IV);$$

wherein R^3 is selected from the group consisting of straight chain, branched and cyclic alkyl groups having 1 to 10 carbon atoms, R^4 is an alkylene groups having 2 to 4 carbon atoms and X is selected from the group consisting of O, S and NR^5 and R^5 is selected from the group consisting of hydrogen and alkyl groups having 1 to 4 carbon atoms, with at least one organic zirconium compound of formula I

$$Zr(OR^1)_4 \quad (I)$$

and at least one organic titanium compound of formula II,

$$Ti(OR^2)_4 \quad (II).$$

wherein R^1 and R^2 are each independently selected from the group consisting of straight, branched and cyclic alkyl groups having 1 to 10 carbon atoms, to form at least one mixture portion, and wherein 1 to 4 moles of the at least one alcohol are used in the mixing per mole of the at least one organic titanium compound plus the at least one organic zirconium compound of formulas I and II;

b) reacting from 1 to 3 moles of at least one carboxylic acid having 2 to 10 carbon atoms per mole of the at least one organic titanium compound plus the at least one organic zirconium compound of formulas I and II with the at least one organic titanium compound and the at least one organic zirconium compound in the at least one mixture portion to form at least one reaction mixture;

c) reacting said at least one reaction mixture formed in step b) together with 1 to 1.5 moles of at least one Pb-containing carboxylate per mole of the at least one organic titanium compound plus the at least one organic zirconium compound to form a combined mixture, the at least one Pb-containing carboxylate being selected from the group consisting of Pb(II)-carboxylates and Pb(IV)-carboxylates, wherein each of said Pb(II)-carboxylates and Pb(IV)-carboxylates is made from an acid member selected from the group consisting of substituted and unsubstituted, monofunctional and polyfunctional, saturated and unsaturated, straight chain and branched chain, cyclic and aromatic carboxylic acids having 1 to 18 carbon atoms and substituted and unsubstituted, monofunctional and polyfunctional, saturated and unsaturated, straight chain and branched chain, cyclic and aromatic hydroxycarboxylic acids having 1 to 18 carbon atoms;

d) subjecting the combined mixture formed in step c) to a hydrolytic condensation and removing volatile components from the combined mixture until a solid mass is formed at ambient temperatures;

e) heating the solid mass until a viscous liquid is formed;

f) forming the PZT fiber from the viscous liquid; and

g) heating the PZT fiber to a temperature of at least 500° C.

19. An endless PZT fiber, said endless PZT fiber comprising a lead zirconate-lead titanate mixed substance and being made by a method comprising the steps of:

a) providing at least one organic zirconium compound of formula I

$$Zr(OR^1)_4 \quad (I)$$

and at least one organic titanium compound of formula II,

$$Ti(OR^2)_4 \quad (II),$$

wherein R^1 and R^2 are each independently selected from the group consisting of straight, branched and cyclic alkyl groups having 1 to 10 carbon atoms;

b) reacting from 1 to 3 moles of at least one carboxylic acid having 2 to 10 carbon atoms per mole of the at least one organic titanium compound plus the at least one organic zirconium compound of formulas I and II with the at least one organic titanium compound and the at least one organic zirconium compound in the at least one mixture portion to form at least one reaction mixture;

c) reacting the at least one reaction mixture formed in step b) together with 1 to 1.5 moles of at least one Pb-containing carboxylate per mole of the at least one organic titanium compound plus the at least one organic zirconium compound to form a combined mixture, the at least one Pb-containing carboxylate being selected from the group consisting of Pb(II)-carboxylates and Pb(IV)-carboxylates, wherein each of said Pb(II)-carboxylates and Pb(IV)-carboxylates is made from an acid member selected from the group consisting of substituted and unsubstituted, monofunctional and polyfunctional, saturated and unsaturated, straight chain and branched chain, cyclic and aromatic carboxylic acids having 1 to 18 carbon atoms and substituted and unsubstituted, monofunctional and polyfunctional, saturated and unsaturated, straight chain and branched chain, cyclic and aromatic hydroxycarboxylic acids having 1 to 18 carbon atoms;

d) subjecting the combined mixture formed in step c) to a hydrolytic condensation and removing volatile components from the combined mixture until a solid mass is formed at ambient temperatures;

e) heating the solid mass until a viscous liquid is formed;

f) forming the endless PZT fiber from the viscous liquid; and

g) heating the endless PZT fiber to a temperature of at least 500° C.

28. An endless PZT fiber, said endless PZT fiber comprising a lead zirconate-lead titanate mixed substance and being made by a method comprising the steps of:

a) mixing at least one alcohol selected from the group consisting of alcohols of formula III

$$R^3—X—R^4—OH \quad (III),$$

and alcohols of formula IV

$$R^3—CX—R^4—OH \quad (IV);$$

wherein R^3 is selected from the group consisting of straight chain, branched and cyclic alkyl groups having 1 to 10 carbon atoms, R^4 is an alkylene groups having 2 to 4 carbon atoms and X is selected from the group consisting of O, S and NR^5 and R^5 is selected from the group consisting of hydrogen and alkyl groups having 1 to 4 carbon atoms, with at least one organic zirconium compound of formula I

$$Zr(OR^1)_4 \quad (I)$$

and at least one organic titanium compound of formula II,

$$Ti(OR^2)_4 \quad (II),$$

wherein R^1 and R^2 are each independently selected from the group consisting of straight, branched and cyclic alkyl groups having 1 to 10 carbon atoms, to form at least one mixture portion, and wherein 1 to 4 moles of the at least one alcohol are used in the mixing per mole of each of the at least one organic titanium compound plus the at least one organic zirconium compounds of formulas I and II;

b) reacting from 1 to 3 moles of at least one carboxylic acid having 2 to 10 carbon atoms per mole of the at least one organic titanium compound plus the at least one organic zirconium compound of formulas I and II with the at least one organic titanium compound and the at least one organic zirconium compound in the at least one mixture portion to form at least one reaction mixture;

c) reacting said at least one reaction mixture formed in step b) together with 1 to 1.5 moles of at least one Pb-containing carboxylate per mole of the at least one organic titanium compound plus the at least one organic zirconium compound present to form a combined mixture, the at least one Pb-containing carboxylate being selected from the group consisting of Pb(II)-carboxylates and Pb(IV)-carboxylates, wherein each of said Pb(II)-carboxylates and Pb(IV)-carboxylates is made from an acid member selected from the group consisting of substituted and unsubstituted, monofunctional and polyfunctional, saturated and unsaturated, straight chain and branched chain, cyclic and aromatic carboxylic acids having 1 to 18 carbon atoms and substituted and unsubstituted, monofunctional and polyfunctional, saturated and unsaturated, straight chain and branched chain, cyclic and aromatic hydroxycarboxylic acids having 1 to 18 carbon atoms;

d) subjecting the combined mixture formed in step c) to a hydrolytic condensation and removing volatile components from the combined mixture until a solid mass is formed at ambient temperatures;

e) heating the solid mass until a viscous liquid is formed;

f) forming the endless PZT fiber from the viscous liquid; and

g) heating the endless PZT fiber to a temperature of at least 500° C.

5,578,540

CATALYST FOR THE PREPARATION OF ELASTOMERIC ETHYLENE-PROPYLENE COPOLYMERS

Viviano Banzi, Vigarano Mainarda, and Gianni Loberti, Porotto, both of Italy, assignors to Enichem Elastomeri S.r.L., Milan, Italy

Continuation of Ser. No. 348,120, Nov. 28, 1994, abandoned. This application Feb. 5, 1996, Ser. No. 595,451

Claims priority, application Italy, Dec. 17, 1993, MI93A2649; Nov. 3, 1994, MI94A0454

Int. Cl.[6] B01J *31/38*

U.S. Cl. 502—115 **7 Claims**

1. A process for the preparation of a solid component of a catalyst for the synthesis of an elastomeric ethylene-propylene copolymer prevalently amorphous, comprising a titanium compound supported on a solid consisting essentially of $MgCl_2$, and said process consisting essentially of the steps of:

i) contacting a solution (I) consisting substantially of an organometallic compound of aluminum diluted with aliphatic hydrocarbons, with a solution (II) prepared by the following steps:

a) dissolving an anhydrous magnesium halide in a composition of solvents said solvents being halohydrocarbons, aromatic hydrocarbons or mixtures thereof, in the presence of an aluminum trihalide;

b) treating said solution (a) with a tetravalent titanium compound having general formula $Ti(OR)_{4-n}X_n$, wherein R is an aliphatic, cycloaliphatic or aromatic hydrocarbon radical containing from 1 to 20 carbon atoms, X is a halogen and n is an integer from 0 to 4; and

ii) separating the solid catalytic component thus formed.

5,578,541

COMPONENTS AND CATALYSTS FOR THE POLYMERIZATION OF OLEFINS

Mario Sacchetti; Illaro Cuffiani, both of Ferrara, and Gianni Pennini, Porotto, all of Italy, assignors to Montell Technology Company bv, Netherlands

Filed Jan. 29, 1993, Ser. No. 10,750

Claims priority, application Italy, Jan. 31, 1992, MI92A0195

Int. Cl.[6] B01J *31/00*

U.S. Cl. 502—126 **22 Claims**

1. Spherical components of catalysts for olefin polymerization comprising a titanium compound having at least one titanium-halogen bond, supported on a magnesium dihalide in active form, the magnesium dihalide in active form being characterized by an X-ray diffraction spectrum wherein the most intense diffraction line appearing in the spectrum of the non-active halide shows a decreased intensity, and in said spectrum a halo appears, the maximum intensity of which is shifted towards lower angles with respect to the angles of the most intense line, wherein:

(a) the total porosity of the catalyst component is greater than 1.0 cm^3/g; and

(b) the pore radius distribution of the catalyst component is such that at least 30% of the total porosity is due to pores having a radius greater than 10,000 Å; and

(c) the total titanium content of the catalyst component, expressed as metallic titanium, is greater than about 2.7% by weight.

5,578,542

SOLUBLE ANIONIC POLYMERIZATION INITIATORS AND METHOD OF PREPARING SAME

David F. Lawson, Uniontown; James E. Hall, Mogadore, both of Ohio, and Yoichi Ozawa, Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 968,929, Oct. 30, 1992, abandoned. This application Mar. 30, 1994, Ser. No. 220,629

The portion of the term of this patent subsequent to Jul. 12, 2011, has been disclaimed.

Int. Cl.[6] C08F *4/08;* **C07D** *295/00;487/08*

U.S. Cl. 502—167 **5 Claims**

1. An acyclic alkane soluble anionic polymerization initiator for the preparation of a polymer having reduced hysteresis characteristics, consisting essentially of a mixture comprising:

from about 90 to about 10 parts by weight of a lithio amine having the formula A_1Li and from about 10 to about 90 parts by weight of at least one other lithio amine having the formula A_2Li;

wherein A_1 and A_2 are different and are independently selected from the group consisting of



cyclic amine radicals having the formula



where R_2 is selected from the group consisting of an alkylene, oxy- or amino-alkylene groups having from about 3 to about 12 methylene groups.

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5,578,543

CARBON FIBRILS, METHOD FOR PRODUCING SAME AND ADHESIVE COMPOSITIONS CONTAINING SAME

Howard G. Tennent, Kennett Square, Pa.; James J. Barber, Arlington, Mass., and Robert Hoch, Middle Village, N.Y., assignors to Hyperion Catalysis Int'l, Inc., Cambridge, Mass.

Division of Ser. No. 978,634, Nov. 19, 1992, abandoned, which is a division of Ser. No. 593,319, Oct. 1, 1990, Pat. No. 5,165,909, which is a continuation of Ser. No. 871,676, Jun. 6, 1986, abandoned, which is a continuation-in-part of Ser. No. 678,701, Dec. 6, 1984, Pat. No. 4,663,230. This application Jun. 5, 1995, Ser. No. 463,879

Int. Cl.[6] B01J *21/18;* **D01F** *9/127*

U.S. Cl. 502—180 **20 Claims**

1. A composite which comprises a plurality of carbon fibrils in a matrix wherein said carbon fibrils are each characterized by a substantially constant diameter between about 3.5 to 70 nanometers and are substantially free of pyrolytically deposited thermal carbon.

5,578,544

METHOD OF CONTROLLING THE POLYMERIZATION OF ACRYLATES

Ming-Hsiung Yeh, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 338,720, Nov. 14, 1994, which is a division of Ser. No. 248,970, May 24, 1994, Pat. No. 5,399,641, which is a division of Ser. No. 179,179, Jan. 10, 1994, Pat. No. 5,359,018. This application Apr. 6, 1995, Ser. No. 418,034

Int. Cl.[6] B01J *27/138*

U.S. Cl. 502—226 **23 Claims**

1. A catalyst comprising at least one compound selected from Zn, Cd and Hg halides, mixed with I_2 wherein the molar ratio of Zn, Cd and Hg halide to I_2 is at least 1.25:1 to less than 19:1.

5,578,545

THERMAL TRANSFER RECORDING MEDIUM AND METHOD FOR THERMAL TRANSFER RECORDING

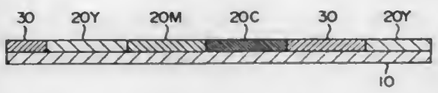
Hideo Fujimura, and Yoshinori Nakamura, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Division of Ser. No. 91,384, Jul. 15, 1993, Pat. No. 5,468,713, which is a division of Ser. No. 800,329, Dec. 3, 1991, Pat. No. 5,254,523. This application Jan. 24, 1995, Ser. No. 377,334

Claims priority, application Japan, Dec. 5, 1990, 2-404643; Dec. 5, 1990, 2-404644; Dec. 5, 1990, 2-404645

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **18 Claims**



15. A method for thermal transfer recording, comprising the steps of:

superposing a sublimation thermal transfer recording sheet on an image-receiving sheet comprising a dye-receiving layer, and

applying thermal energy to the back surface of the thermal transfer recording sheet by a heat application means to produce an image on the dye-receiving layer,

wherein an oil-repelling agent is supplied to the image-recorded surface of the image-receiving sheet when or after the image is produced, thereby imparting a contact angle to tetradecane of 10° or greater to the image-recorded surface.

5,578,546

CATALYST FOR PREPARING BIS-PARA-AMINOCYCLOHEXYLMETHANE CONTAINING A LOW PROPORTION OF TRANS/TRANS ISOMER BY HYDROGENATION OF METHYLENEDIANILINE

Dietrich Maschmeyer, Marl, and Gerhard Thelen, Nottuln, both of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Aug. 4, 1994, Ser. No. 285,527

Claims priority, application Germany, Aug. 20, 1993, 43 28 007.2

Int. Cl.[6] B01J *23/46*

U.S. Cl. 502—327 **11 Claims**

1. A catalyst for preparing bis-para-aminocyclohexylmethane by hydrogenation of methylenedianiline, comprising: ruthenium or rhodium in an amount of from 0.05 to 8% by weight, applied in a layer thickness of from 5 to 150 μm to a support comprising a calcined and surface-rehydrated transition alumina, wherein a suspension of 10 g of said transition alumina in 300 ml of water at 25° C. has an equilibrium pH of at least 8.2 after 60 minutes and after addition of 10 ml of 0.1N hydrochloric acid to this suspension it has a pH of at least 6.0 after 30 minutes.

5,578,547

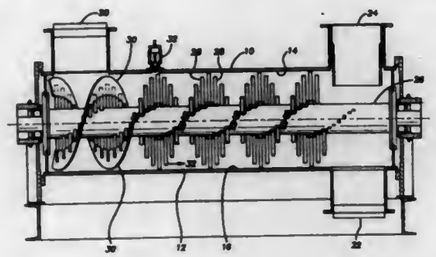
BEAD FOR REMOVING DISSOLVED METAL CONTAMINANTS

Bobby L. Summers, Jr., Hudson, and Lester B. Gress, Brecksville, both of Ohio, assignors to Aero-Terra-Aqua Technologies Corp., Cleveland, Ohio

Filed May 26, 1994, Ser. No. 249,733

Int. Cl.[6] B01J *20/10*

U.S. Cl. 502—407 **24 Claims**



1. A bead consisting essentially of peat moss and sodium silicate, said sodium silicate acting as a binder to immobilize said peat moss, said bead being capable of sorbing a metal or metalloid dissolved in a dilute aqueous solution at a concentration of less than 10 parts metal or metalloid per million parts solution (ppm), said metal or metalloid being selected from the group consisting of silver, iron, chromium, cobalt, uranium, mercury, nickel, arsenic, aluminum, cadmium, lead, manganese, copper, and zinc, the exterior portion of said bead including peat moss.

5. A method of making a metal-ion-sorbing bead, said bead being effective to sorb metal ions from a dilute aqueous solution, said metal being selected from the group consisting of silver, iron, chromium, cobalt, uranium, mercury, nickel, aluminum, cadmium, lead, manganese, copper, and zinc, the method comprising the steps of:

a) providing nonliving biomass and liquid binder to a chamber of an apparatus for mechanical spheronization, said chamber being equipped with means to impart high shear forces to the contents thereof;

b) imparting high shear forces to the biomass and liquid binder, said high shear forces being effective to mix said biomass and binder together into a mixture;

c) forming the mixture into wet beads; and

d) drying the wet beads to form beads effective to sorb said metal ions from a dilute aqueous solution.

5,578,548

THERMOGRAPHIC ELEMENT WITH IMPROVED ANTI-STICK COATING

Jon A. Bjork, Cottage Grove; Ramesh C. Kumar, Maplewood, and John C. Haidos, St. Paul, all of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Oct. 16, 1995, Ser. No. 543,410

Int. Cl.[6] B41M *5/26*

U.S. Cl. 503—202 **12 Claims**

1. A thermographic element comprising: (a) a substrate; (b) an image-forming layer coated onto said substrate; and (c) overlaying said image-forming layer a topcoat layer comprising: the reaction product of (1) a polymer comprising interpolymerized units derived from: (i) about 45–65 wt % vinyl-substituted aromatic monomer; (ii) about 15–0 wt % vinyl monomer containing a pendant nitrile group; (iii) about 5–30 wt % hydroxyl-containing, ethylenically-unsaturated monomer; and (2) a crosslinking agent.

5,578,549

SINGLE-SHEET PROCESS FOR OBTAINING MULTICOLOR IMAGE USING DYE-CONTAINING BEADS

Mitchell S. Burberry, and Lee W. Tutt, both of Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 21, 1995, Ser. No. 576,518

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **11 Claims**

1. A single-sheet process for obtaining a multicolor image comprising:

a) coating a support with a polymeric adhesion layer;

b) coating said adhesion layer with a single dye layer comprising a mixture of at least two different colors of solid, homogeneous beads, each of which contains an image dye, a binder and a laser light-absorbing material, said beads being dispersed in a vehicle, and said beads of each color being sensitized to a different wavelength;

c) exposing said element to laser light at the wavelength to which each type of bead is sensitized, causing said exposed beads to melt and become adhered to said polymeric adhesion layer; and

d) removing any unadhered beads.

5,578,550

HERBICIDAL OXADIAZOLE CARBONAMIDE COMPOUNDS

Wolfgang Buck, Ingelheim, Germany, assignor to American Cyanamid Company, Madison, N.J.

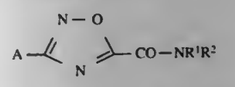
Filed Oct. 5, 1994, Ser. No. 318,327

Claims priority, application European Pat. Off., Oct. 8, 1993, 93116308

Int. Cl.[6] C07D *413/12;271/06;* **A01N** *43/836;43/40*

U.S. Cl. 504—253 **2 Claims**

2. A method of combating undesired plant growth at a locus, comprising application to the locus of a herbicidal composition, which composition comprises an agronomically acceptable carrier and a compound of the general formula



wherein A represents an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, aryl, heteroaryl or aralkyl group, or a group of general formula $X—Y—(CH_2)_n—$ where X represents an optionally substituted alkyl or aryl group, n represents 1 or 2, and Y represents an oxygen atom or a group of general formula $—S(O)_m—$ where m represents 0, 1 or 2; R^1 represents a hydrogen atom; and R^2 represents an optionally substituted heteroaralkyl group, wherein the optional substituents for alkyl, alkenyl, alkynyl, and cycloalkyl, and alkyl portions of aralkyl or heteroaralkyl groups are independently selected from the group consisting of halogen, nitro, cyano, hydroxyl, C_{1-4} alkoxy, C_{1-4} haloalkoxy, (C_{1-4} alkoxy) carbonyl, amino, alkyl- and phenyl-sulphinyl, -sulphenyl and -sulphonyl, and C_{1-4} alkylamino groups, and optional substituents for aryl and heteroaryl, and aryl portions of aralkyl and heteroaralkyl groups are independently selected from the group consisting of halogen, amino, nitro, cyano, hydroxyl, C_{1-4} alkyl, C_{1-4} haloalkyl, and C_{1-4} alkoxy groups.

5,578,551

METHOD FOR SYNTHESIS OF HIGH-TEMPERATURE HG-BA-CA-CU-O (HBCCO) SUPERCONDUCTORS

Ching-Wu Chu; Ruling Meng, and Y. Q. Wang, all of Houston, Tex., assignors to University of Houston, Houston, Tex.

Filed Jul. 28, 1993, Ser. No. 98,688

Int. Cl.[6] C01F *11/02*

U.S. Cl. 505—125 **33 Claims**

33. A method of synthesizing a high temperature superconductor composition, comprising the steps of:

(a) preparing a precursor consisting essentially of $Ba_2C_{n-1}Cu_nO_{x\delta}$, where n=2 or 3 and x≅2n+1, with Ba:Ca-O:Cu equal to about 2:(n−1):n; and

(b) sealing said $Ba_2C_{n-1}Cu_nO_x$ precursor and a composite Hg-source reactant in a container whereby the mass of said precursor and said reactant used is varied and a volume of the container is fixed and wherein vapor pressure in said container is controlled by slowly releasing Hg such that a reaction of said precursor with HgO takes place and formation of $CaHgO_2$ is substantially limited when said precursor and reactant are heated to more than about 500° C.; and

(c) forming $HgBa_2Ca_{n-1}Cu_nO_{2n+2+\delta}$ (Hg-12(n−1)n, where n=2 or 3 and δ is the oxygen surpluso.

5,578,552

INDOLE -3-ALKANOIC ACID DERIVATIVES AND USE FOR INCREASING SUGAR CONTENT AND/OR DECREASING ACIDITY IN FRUIT

Masato Katayama, Midori-ku; Shozo Fujii, Chikusa-ku; Hiroshi Kimoto, Kuwana, and Katsuya Kato, Kita-ku, all of Japan, assignors to Agency of Industrial Science and Technology,, and Ministry of International Trade and Industry, both of Tokyo, Japan

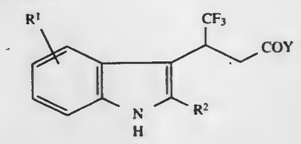
Filed Nov. 9, 1994, Ser. No. 336,744

Claims priority, application Japan, Nov. 9, 1993, 5-304613

Int. Cl.[6] A01N *43/38;* **C07D** *209/18*

U.S. Cl. 504—285 **20 Claims**

1. A composition for increasing the sugar content and/or decreasing the acid content of plant fruits, which agent has as a substantial main component thereof an effective amount of a fluorine-containing β-indolebutyric acid compound represented by the general formula:



wherein Y stands for one member selected from the group consisting of hydroxyl group, alkoxy group, amino group, and alkyl amino group and R^1 and R^2 independently stand for one member selected from the group consisting of hydrogen atom, halogen atom, alkyl group, alkoxy group, aryl group, nitro group, amino group, and alkyl amino group and an agriculturally acceptable carrier, diluent or adjuvant.

5,578,553

1-2-4 COPPER OXIDE SUPERCONDUCTOR, A PROCESS FOR ITS PRODUCTION, AND A COPPER USED THEREIN

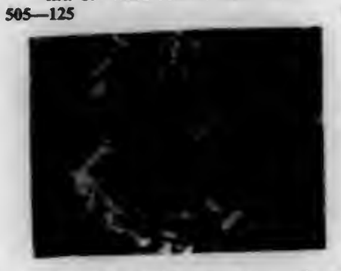
Shinichi Koriyama, Tokyo; Takaaki Ikemachi, Moriguchi, and Hisao Yamauchi, Tokyo, all of Japan, assignors to Kyocera Corporation, Kyoto; International Superconductivity Technology Center, Tokyo, and Sanyo Electric Co., Ltd., Osaka, all of Japan

Continuation of Ser. No. 984,979, Nov. 30, 1992, abandoned. This application Nov. 28, 1994, Ser. No. 345,229

Claims priority, application Japan, Nov. 28, 1991, 3-314943; Dec. 9, 1991, 3-324400

Int. Cl.[6] C04B *35/505;* **H01L** *39/12*

U.S. Cl. 505—125 **5 Claims**



1. A sintered body for a copper oxide superconductor which is composed of flat crystal particles having a composition described by the formula:

$$(R_{1-x}Ca_x)(Ba_{1-y}A_y)_2(Cu_{1-z}M_z)_4O_8$$

wherein

R comprises at least one element selected from the group consisting of Nd, Sm, Eu, Gd, Dy, Ho, Er, Tm, Yb, Lu and Y,

A comprises at least one element selected from the group consisting of Ca, Sr and La,

M comprises at least one element selected from the group consisting of Al, Fe, Co and Ga, and

x, y and z are numbers satisfying the formulae:

$$0 \leqq x \leqq 0.2,\ 0 \leqq y \leqq 0.3,\ 0 \leqq z \leqq 0.2,$$

wherein the particles comprise substantially flat crystal particles having a broad C plane and having a dimensional ratio described by the formula:

$$l/d$$

wherein l comprises a value corresponding to the square root of the area of the C plane of the crystal particles, wherein d comprises a value corresponding to the thickness of the crystal particles, wherein l/d is not less than 6.7, and wherein the flat crystal particles are aligned in substantially the same direction.

5,578,554

METAL OXIDE MATERIAL AND METHOD OF MANUFACTURING THE SAME

Jun Akimitsu, Tokyo; Norio Kaneko, Atsugi; Tohru Den, Tokyo, and Tamaki Kobayashi, Isehara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

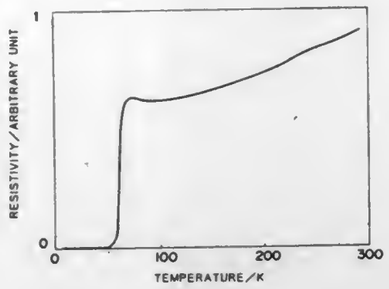
Continuation of Ser. No. 81,707, Jun. 25, 1993, abandoned. This application May 15, 1995, Ser. No. 441,665

Claims priority, application Japan, Jun. 26, 1992, 4-191438; Jan. 14, 1993, 5-020772; Jun. 18, 1993, 5-170890

Int. Cl.[6] H01B *12/00;* **C04B** *35/50*

U.S. Cl. 505—125 **6 Claims**

1. A metal oxide material comprising components, the composition of which is expressed by the following composition formula (I):



$$Ln_aCa_bSr_cBa_dCu_{2+e-h}M_hO_{6+f}C_g \quad (I)$$

where

a+b+c+d=3, $0.2 \leqq a \leqq 0.8$,

$0.2 \leqq b \leqq 1.0$, $0.3 \leqq c \leqq 2.2$,

$0 \leqq d \leqq 1.7$, $0 \leqq e \leqq 0.8$,

$0 \leqq h \leqq 0.2$, $0 < f < 2.0$,

$0.2 \leqq g \leqq 1.0$

Ln is one or more elements or atomic groups selected from a group consisting of Y and lanthanoid elements and M is one or more elements or atomic groups selected from a group consisting of Al, Si, Ti, V, Cr, Fe, Co, Ga, Ge and Pd; and wherein Cu atoms in the Cu-O chain layer of the composition are partially substituted by carbon atoms.

5,578,555

METHOD OF MONITORING THE FABRICATION OF BI-2223 MATERIAL HAVING A HIGH CRITICAL TEMPERATURE

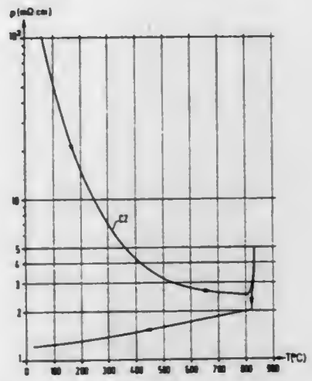
Gérard Duperray, La Norville, France, assignor to Alcatel Alsthom Compagnie Generale d'Electricite, Paris Cedex, France

Continuation of Ser. No. 950,209, Sep. 24, 1992, abandoned. This application Nov. 23, 1994, Ser. No. 348,063

Claims priority, application France, Sep. 30, 1991, 91 11990

Int. Cl.[6] H01B *12/00;* **C04B** *35/622;35/653*

U.S. Cl. 505—450 **5 Claims**



1. A method of fabricating a superconductive material comprising a superconductive phase represented by:

$$(BP)_2Sr_2Ca_nCu_{(1+n)}O_{(6+2n)}$$

where

BP=Bi; $Bi_{(1-x)}Pb_x$

n=2

comprising the steps of:

(a) providing a starting material that is a mixture of powders of precursors for said material having stoichiometric proportions appropriate for the desired superconductive phase;

(b) agglomerating said mixture to form a tubular or a cylindrical piece;

(c) placing the agglomerated piece in a controlled-atmosphere oven for synthesizing said superconductive phase;

(d) continuously measuring the conductivity of said piece;

(e) increasing the oven temperature to thereby increase conductivity of the piece;

(f) further increasing the oven temperature to exceed a value at which conductivity of the piece begins to decrease and at which temperature the piece begins to partially melt;

(g) stopping the rise in oven temperature and setting the oven temperature to a value at which conductivity of the piece again increases to thereby synthesize the superconductive phase; and then

(h) repeating steps (e) to (g) one or more times to progressively purify and complete synthesis of the superconductive phase; and then

(i) cooling the piece to ambient temperature to recover the superconductive material.

5,578,556

TRIAZOLE-MALEATE ADDUCTS AS METAL PASSIVATORS AND ANTIWEAR ADDITIVES

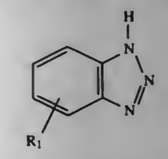
Liehpao Farng, Lawrenceville; Andrew G. Horodysky, Cherry Hill, and Ronald J. Poole, Mullica Hill, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 30, 1995, Ser. No. 564,462

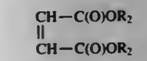
Int. Cl.[6] C10M *133/44*

U.S. Cl. 508—231 **11 Claims**

1. An improved lubricant composition comprising a major proportion of an oil of lubricating viscosity or grease prepared therefrom and a minor multifunctional antiwear, load-carrying/EP, metal passivating, corrosion inhibiting, and stability improving additive product of reaction prepared by reacting optionally in the presence of an initiator (a) an aryl triazole or a triazole with (b) a dialkyl ester where the aryl triazole has the following structure:



where R_1 is hydrogen or C_1 to C_{12} hydrocarbyl or hydrocarbyloxy-hydrocarbylene or mixture thereof; and where the dialkyl ester has the following structure:



where R_2 is C_1 to C_{60} hydrocarbyl; where R_1 and R_2 optionally contain a substituted heteroatom selected from a member of the group consisting of S, O, and N or a mixture thereof; and wherein the reaction is carried out at temperatures varying from ambient to about 350° C. under ambient or autogenous pressures, in molar ratios of reactants which vary from equimolar to more than molar to less than molar for a time sufficient to obtain the desired additive product of reaction.

5,578,557

FOOD GRADE COMPRESSOR OIL

Rodney D. Dougan; Cline A. Tincher, both of Houston, and Thomas F. Wulfers, Seabrook, all of Tex., assignors to Lyondell Petrochemical Company, Houston, Tex.

Filed Apr. 1, 1996, Ser. No. 626,121

Int. Cl.[6] C10M *133/44*

U.S. Cl. 508—437 **22 Claims**

1. A food grade oil composition for use in a high pressure compressor, the oil composition comprising:

a base oil;

an N-acyl derivative of the amino acid sarcosine;

an imidazoline; and

an amine-phosphate.

5,578,558

HYDRAULIC OILS CONTAINING BIODEGRADABLE GUERBET ALCOHOLS

Gerhard Mueller; Frank Bongardt, both of Duesseldorf; Matthias Fies, Krefeld, and Peter Daute, Essen, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Filed Feb. 8, 1996, Ser. No. 583,110

Claims priority, application Germany, Jul. 15, 1993, 43 23 829.7

Int. Cl.[6] C10M *105/12*

U.S. Cl. 508—577 **10 Claims**

1. In a hydraulic oil comprising a base oil and at least one of an antioxidant, a corrosion inhibitor, an extreme pressure additive, an anti-wear additive, or a pour point depressant, the improvement wherein the base oil comprises at least one Guerbet alcohol of the formula R—OH in which R is a single-branched radical containing from 24 to 44 carbon atoms and which has an iodine value of from about 20 to about 150.

5,578,559

LAVATORY CLEANING BLOCK

Richard Dolan, Jersey City, and Paul Riccobono, Bedminster, both of N.J., assignors to Block Drug Company, Inc., Jersey City, N.J.

Filed May 14, 1993, Ser. No. 62,118

Int. Cl.[6] C11D *17/04;3/28*

U.S. Cl. 510—192 **23 Claims**

1. A solid toilet cleaning block comprising a compressed admixture of:

(a) a halogen containing sanitizing agent in an amount sufficient to release an effective amount of sanitizing at a substantially constant rate for at least two months of ordinary use;

(b) a bulking agent; and

(c) an effective amount of a sacrificial dissolution rate regulating agent selected from the group consisting of sodium chloride, potassium chloride and sodium sulphate.

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5,578,560

WATER-CONTAINING DETERGENT MIXTURES COMPRISING OLIGOGLYCOSIDE SURFACTANTS

Brigitte Giesen; Guenter Kreienfeld; Andreas Syldath, all of Duesseldorf, and Karl-Heinz Schmid, Mettmann, all of Germany, assignors to Henkel Corporation, Plymouth Meeting, Pa.

PCT No. PCT/EP93/02727, § 371 Date Apr. 13, 1995, § 102(e) Date Apr. 13, 1995, PCT Pub. No. WO94/09102, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 6, 1993, Ser. No. 416,814

Claims priority, application Germany, Oct. 14, 1992, 42 34 487.5

Int. Cl.[6] C11D *1/72;1/831*

U.S. Cl. 510—237 **20 Claims**

1. An aqueous detergent composition comprising:

(a) from 12 to 15% by weight of a nonionic surfactant selected from the group consisting of alkyl oligoglycosides, alkenyl oligoglycosides, and mixtures thereof;

(b) from 20 to 30% by weight of an alkyl sulfate;

(c) from 40 to 60% by weight of an alkyl ether sulfate, and

(d) from 12 to 15% by weight of a component selected from the group consisting of amphoteric surfactants, zwitterionic surfactants, and mixtures thereof, all weights being based on the solids content of the composition.

5,578,561

NONIONIC POWDERY DETERGENT COMPOSITION

Yuichi Sakamoto; Hiroyuki Kondo, and Kiyofumi Kida, all of Wakayama, Japan, assignors to KAO Corporation, Tokyo, Japan

Continuation of Ser. No. 132,276, Oct. 6, 1993, abandoned. This application Nov. 1, 1995, Ser. No. 551,368

Claims priority, application Japan, Oct. 12, 1992, 4-272763; Oct. 12, 1992, 4-272764

Int. Cl.[6] C11D *3/08;1/72*

U.S. Cl. 510—349 **10 Claims**

1. A nonionic powdery detergent composition comprising 12 to 40% by weight of the following component (a) and 5 to 60% by weight of the following component (b), said component (a) being absorbed in a powdery or granular starting material(s), including said component (b), of the detergent composition:

(a) a nonionic surfactant having a melting point of 40° C. or below, and

(b) an amorphous aluminosilicate having a composition represented by the following formula (I):

$$x(M_2O).y(MeO).Al_2O_3.z(SiO_2) \quad (I)$$

wherein M represents an alkali metal atom, Me represents an alkaline earth metal atom, and x, y and z represent the molar numbers of the respective components, with the proviso that they satisfy the following relationship:

$$0.2 \leq x \leq 2.0,\ 0 \leq y \leq 0.1 \text{ and } 1.5 \leq z \leq 6.0,$$

and having an oil-absorbing capacity of at least 100 ml/100 g and a water content of 5 to 20% by weight, and wherein the volume of pores having diameters of smaller than 0.1 μm is at most 20% based on the total pore volume, and the volume of pores having diameters of 0.1 to 2.0 μm is at least 50% based on the total pore volume wherein the amorphous aluminosilicate (b) is produced by reacting an alkali metal aluminate with an alkali metal silicate while maintaining the pH of the reaction system in the range of 8 to 14 by the addition of at least one acidic agent selected from the group consisting of an inorganic acid, an organic acid and an acidic salt.

5,578,562

CLEANER FORMULATION

Ronald R. Lockhart, P.O. Box 331, Downingtown, Pa. 19335

Continuation-in-part of Ser. No. 79,931, Jun. 23, 1993, Pat. No. 5,431,841, which is a continuation-in-part of Ser. No. 21,979, Feb. 24, 1993, Pat. No. 5,306,439. This application Aug. 10, 1994, Ser. No. 288,025

The portion of the term of this patent subsequent to Jun. 23, 2013, has been disclaimed.

Int. Cl.[6] C11D *17/00;1/37;3/10*

U.S. Cl. 510—446 **12 Claims**

1. A molded wafer cleaner composition, comprising:

an effervescence source consisting of citric acid and sodium bicarbonate compressed together in an amount effective to give a compaction sufficient to produce effervescence for at least 15 minutes;

a cleaning effective amount of detergent admixed into said wafer prior to compression of said wafer; and

an outer package sealingly protecting said wafer from air and moisture until said package is opened for use.

5,578,563

COMPOSITION FOR REDUCING MALODOR IMPRESSION ON INANIMATE SURFACES

Toan Trinh, Maineville; Jerome P. Cappel, Cincinnati; Philip A. Geis, West Chester; Mark L. McCarty, Loveland, and Susan S. Zwerdling, Wyoming, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 12, 1994, Ser. No. 289,733

Int. Cl.[6] C11D *7/26;7/12*

U.S. Cl. 510—513 **21 Claims**

1. An aqueous composition for reducing malodor impression, comprising:

A. from about 0.1% to about 20%, by weight of the composition, of solubilized, water-soluble alkali metal salt selected from the group consisting of carbonate salts, bicarbonate salts, and mixtures thereof,

B. from about 0.01% to about 1%, by weight of the composition, of perfume;

C. from about 0.1% to about 5%, by weight of the composition, of solubilized, water-soluble, cyclodextrin;

D. from about 0.05% to about 3%, by weight of the composition, of solubilizing aid which is a surfactant; and

E. aqueous carrier; and

wherein said composition is essentially free of any material that would soil or stain fabric, wherein said composition contains less than 5%, by weight of the composition, of low molecular weight monohydric alcohol, and wherein the pH of said composition is from about 7.5 to about 10.5.

5,578,564

NICKEL-FREE HEMOGLOBIN AND METHODS FOR PRODUCING SUCH HEMOGLOBIN

Mark L. Chivers, Arvada, and Thomas K. Belval, Broomfield, both of Colo., assignors to Somatogen, Inc., Boulder, Colo.

Filed Jul. 23, 1993, Ser. No. 97,273

Int. Cl.[6] A61K *37/02*

U.S. Cl. 514—6 **30 Claims**

1. A method for obtaining essentially nickel-free hemoglobin comprising removal of nickel from a nickel-containing hemoglobin solution by exposing the nickel-containing hemoglobin solution to a chelating agent for sufficient time to allow chelating of significant nickel, followed by removal of the chelating agent.

5,578,565

RECONSTITUTED PLATELET MEMBRANE VESICLES

Francis C. Chao, Newton, and Frank H. Liang, Shrewsbury, both of Mass., assignors to PRP, Inc., Watertown, Mass.

Division of Ser. No. 786,056, Oct. 31, 1991, Pat. No. 5,428,008, which is a continuation-in-part of Ser. No. 508,832, Apr. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 337,916, Apr. 14, 1989, Pat. No. 5,185,160. This application Nov. 29, 1994, Ser. No. 346,407

Int. Cl.[6] A61K *31/66;35/14;38/16;* **C12N** *5/02*

U.S. Cl. 514—8 **8 Claims**

1. A method of treating a subject comprising:

administering to a subject a pharmaceutically acceptable sterile preparation of micellar structures capable of promoting hemostasis, the micellar structures consisting essentially of a combination of glycoprotein and phospholipid.

5,578,566

KGF RECEPTOR-DERIVED ANTAGONISTS OF KGF BINDING

Donald P. Bottaro, Kensington; Jeffrey S. Rubin, Rockville, both of Md., and Stuart A. Aaronson, Great Falls, Va., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed May 4, 1993, Ser. No. 59,030

Int. Cl.[6] A61K *38/00;* **C07K** *5/00;7/00*

U.S. Cl. 514—12 **16 Claims**

1. A composition for inhibiting the binding between keratinocyte growth factor and a keratinocyte growth factor receptor, comprising a KGFR peptide which inhibits binding between keratinocyte growth factor and peptide 367, wherein the KGFR peptide is at least 10 amino acids in length and has a sequence identical to a subsequence of the sequence from position 199 to position 247 of keratinocyte growth factor receptor.

5,578,567

NASAL PHARMACEUTICAL COMPOSITION

François Cardinaux, Seewen; Christine Oechslein, Kaiseraugst, and Andreas Rummelt, Oberwil, all of Switzerland, assignors to Sandoz Ltd., Basle, Switzerland

Continuation of Ser. No. 28,852, Mar. 10, 1993, abandoned, which is a continuation of Ser. No. 948,366, Sep. 21, 1992, abandoned, which is a continuation of Ser. No. 762,825, Sep. 19, 1991, abandoned. This application Aug. 25, 1993, Ser. No. 112,024

Claims priority, application United Kingdom, Sep. 20, 1990, 9020544

Int. Cl.[6] A61K *38/29;* **C07K** *14/635*

U.S. Cl. 514—012 **8 Claims**

1. A compound of formula I

H—X_1—Val—Ser—Glu—Ile—Gln—Leu—Met—His—Asn—Leu—Gly—Lys—His—Leu—Asn—Ser—Met—Glu—Arg—Val—Glu—Trp—Leu—Arg—Lys—Lys—Leu—Gln—Asp—Val—His—Asn—Phe—Val—X_2—X_3

wherein

X_1 is Ser or Ala,

X_2 is Leu or Ala, and

X_3 is OH or NH_2

in free form or in the form of a salt or complex.

5,578,568

METHOD OF TREATING CONDITIONS ASSOCIATED WITH INTESTINAL ISCHEMIA/REPERFUSION

William S. Ammons, Pinole, and Károly M. Mészáros, San Ramon, both of Calif., assignors to XOMA Corporation, Berkeley, Calif.

Filed Apr. 22, 1994, Ser. No. 232,527

Int. Cl.[6] A61K *38/17*

U.S. Cl. 514—12 **8 Claims**

1. A method of treating adverse physiological effects associated with intestinal ischemia reperfusion selected from the group consisting of bradycardia and depressed respiration comprising the step of administering to a subject suffering from the effects of intestinal ischemia reperfusion an effective amount of bactericidal permeability-increasing (BPI) protein product.

5,578,569

METHOD OF INCREASING BONE GROWTH

Cherk S. Tam, 1072 Rectory Lane, Oakville, Ontario L6M 2B7, Canada

Continuation-in-part of Ser. No. 120,217, Sep. 13, 1993, abandoned, which is a continuation-in-part of Ser. No. 31,386, Mar. 12, 1993, abandoned. This application Apr. 18, 1994, Ser. No. 229,009

Int. Cl.[6] A61K *38/18*

U.S. Cl. 514—12 **12 Claims**

1. A method of increasing bone growth in a mammal by administering a therapeutically effective amount of a polypeptide having the amino acid sequence of SEQ ID NO: 4: NH_2-Asp-Ser-Asp-Leu-Tyr-Ala-Glu-Leu-Arg-Cys-Met-Cys-Ile-Lys-Thr-Thr-Ser-Gly-Ile-His-Pro-Lys-Asn-Ile-Gln-Ser-Leu-Glu-Val-Ile-Gly-Lys-Gly-Thr-His-Cys-Asn-Gln-Val-Glu-Val-Ile-Ala-Thr-Leu-Lys-Asp-Gly- Arg-Lys-Ile-Cys-Leu-Asp-Pro-Asp-Ala-Pro-Arg-Ile-Lys-Lys-Ile-Val- Gln-Lys-Lys-Leu-Ala-Gly-Asp-Glu-Ser-Ala-Asp-CO_2H, or a conservatively substituted variant thereof.

5,578,570

METHOD OF TREATING SEPTIC SHOCK USING THYMOSIN BETA4

Allan L. Goldstein, Bethesda, Md., and Mirela O. Fagarasan, Washington, D.C., assignors to The George Washington University Medical Center, Washington, D.C.

Continuation-in-part of Ser. No. 132,858, Oct. 7, 1993, abandoned. This application Jun. 10, 1994, Ser. No. 258,227

Int. Cl.[6] A61K *38/17*

U.S. Cl. 514—12 **20 Claims**

1. A method of obstructing progression of a sepsis cascade in a mammal in which a sepsis cascade is occurring, comprising administering to said mammal a sepsis cascade progression-obstructing amount of thymosin β_4 ($T\beta_4$).

5,578,571

CYTOSTATIC OR CYTOTOXIC COMBINATION OF ACTIVE SUBSTANCES FOR USE IN THERAPEUTIC PROCEDURES

Michael Zeppezauer, Scheidt, and Hans P. Leinenbach, Riegsberg, both of Germany, assignors to Symbiotec Gesellschaft zur Forschung und Entwicklung auf dem Gebiet der Biotechnologie mbH, Herborn, Germany

Continuation of Ser. No. 635,709, Dec. 28, 1990, abandoned. This application Sep. 22, 1994, Ser. No. 310,378

Claims priority, application Germany, Jan. 4, 1990, 40 00 154.7

Int. Cl.[6] A61K *38/00;* **A01N** *37/18;* **C07K** *5/00;7/00*

U.S. Cl. 514—12 **5 Claims**

1. A composition having cytostatic or cytotoxic effects on lym-

phoma cells, comprising:

a therapeutically acceptable carrier and, in quantities having in combination of two active substances a synergistic therapeutic effect at the lymphoma cells,

vincristin as one of said two active substances and

at least one histone selected from the group consisting of H1, H2A, H2B, and a dimer H2A:H2B.

5,578,572

ANTI-GRAM-POSITIVE BACTERIAL METHODS AND MATERIALS

Arnold Horwitz, Los Angeles; Lewis H. Lambert, Jr., Fremont, and Roger G. Little, II, Benicia, all of Calif., assignors to Xoma Corporation, Berkeley, Calif.

Continuation-in-part of Ser. No. 274,299, Jul. 11, 1994, which is a continuation-in-part of Ser. No. 209,762, Mar. 11, 1994, which is a continuation-in-part of Ser. No. 183,222, Jan. 14, 1994, abandoned. This application Jan. 13, 1995, Ser. No. 372,783

Int. Cl.[6] A61K *38/16;38/17*

U.S. Cl. 514—12 **13 Claims**

1. A method of treating a BPI-susceptible gram-positive bacterial infection comprising the step of administering to a subject suffering from a BPI-susceptible gram-positive bacterial infection a BPI protein product in an amount sufficient for monotherapeutic effectiveness.

5,578,573

VIRAL INTEGRASE INHIBITING PEPTIDES

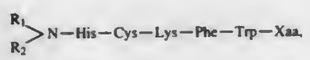
Richard A. Houghten, Del Mar; Patricia A. Weber, San Diego, both of Calif.; Ronald H. A. Plasterk, Bussum, and Ramon A. Puras Lutzke, Amsterdam, both of Netherlands, assignors to Houghten Pharmaceuticals, Inc., San Diego, Calif.

Filed Jan. 20, 1995, Ser. No. 375,911

Int. Cl.[6] A61K *38/08;* **C07K** *7/06;* **C12N** *9/12*

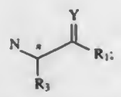
U.S. Cl. 514—17 **42 Claims**

1. A viral integrase inhibiting peptide having the amino acid sequence:



(SEQ ID NO: 1)

wherein Xaa is



wherein R_1 is H, $COCH_3$, CH_2Ph, CH_2CH_2Ph, COPh, COO-t-butyl, $COOCH_2Ph$, a linear alkyl having 2 to 6 carbons or a branched alkyl having 3 to 6 carbons,

R_2 is H, C_2H_5, a linear alkyl having 2 to 6 carbons, a branched alkyl having 3 to 6 carbons, or CH_2Ph;

R_3 is H, CH_3, CH_2-Ph, CH_2-pyridyl, CH_2-imidazole, CH_2-indole, $CH_2—(CH_2)_nCOOH$, $CH_2—(CH_2)_nCONHR_5$, $CH_2—(CH_2)_nNHR_5$, $CH_2—(CH_2)_nSR_5$, $CH_2—(CH_2)_nNHC(NH)NH_2$; or $CH_2—(CH_2)_nOH$;

R_4 is OH, NH_2, SH, $NHCH_3$, $N(CH_3)_2$, $NHCH_2Ph$, or OR_5; and

R_5 is H, CH_3, a linear alkyl having 2 to 6 carbons or a branched alkyl having 3 to 6 carbons;

wherein Ph is C_6H_5, Y is O or H_2, n is 0, 1, 2 or 3; and, wherein when the carbon atom at "*" is a chiral center, the chiral center can be either R or S.

5,578,574

ANTITHROMBOTIC AGENTS

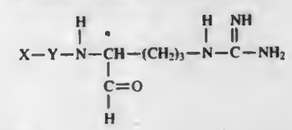
Robert T. Shuman, Greenwood; Robert B. Rothenberger, Brownsburg; Kenneth D. Kurz, Indianapolis; Daniel J. Sall, Greenwood; Gerald F. Smith, Indianapolis, and Michael R. Wiley, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 206,554, Mar. 4, 1994, abandoned. This application Mar. 2, 1995, Ser. No. 397,452

Int. Cl.[6] A61K *38/00;* **C07K** *5/00;7/00;17/00*

U.S. Cl. 514—18 **25 Claims**

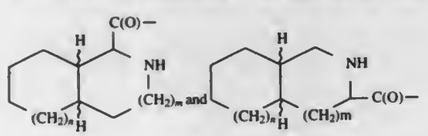
I. A compound having the formula I



I

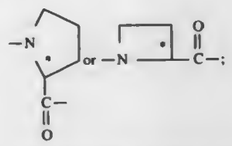
wherein

X is an unsubstituted or substituted group selected from homoprolinyl, prolinyl, thiazolidinoyl, isothiazolidinoyl, thiomorpholinoyl, piperazinoyl, morpholinoyl, oxazolidinoyl, isoxazolidinoyl, 2-azanorbornoyl, and fused bicyclic rings



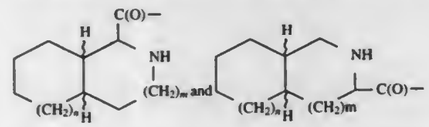
where n is 1–3 and m is 2 or 3 and in a sulfur containing group the sulfur may be oxidized with one or two oxygen atoms;

Y is



or a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable solvate of said compound or salt thereof;

and further wherein when X is a substituted group selected from homoprolinyl, prolinyl, thiazolidinoyl, isothiazolidinoyl, thiomorpholinoyl, piperazinoyl, morpholinoyl, oxazolidinoyl, isoxazolidinoyl, 2-azanorbornoyl, and fused bicyclic rings,



there can be one to three of the same or different substituents

that will afford a stable structure selected from halo, hydroxyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, amino ($—NH_2$), mono(C_1–C_4 alkyl)amino, di(C_1–C_4 alkyl)amino, mercapto, C_1–C_4alkylthio ($—S(O)_p(C_1–C_4$ alkyl)), $—NHS(O)_p(C_1–C_4$ alkyl), $—NHC(O)C_1–C_4$ alkyl, $—S(O)_pNH2$, $—S(O)_pNH(C_1–C_4$ alkyl), $—S(O)_pN(C_1–C_4$ alkyl)$_2$, substituted or unsubstituted phenoxy, substituted or unsubstituted naphthyloxy, substituted or unsubstituted pyridyloxy, substituted or unsubstituted phenylthio; p is 0, 1 or 2; and the substituents on the phenoxy, naphthyloxy, pyridyloxy and phenyl thio groups are one or two of the same or different substituents selected from halo, hydroxyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, amino ($—NH_2$), mono(C_1–C_4 alkyl)amino, di(C_1–C_4 alkyl)amino, mercapto, C_1–C_4alkylthio ($—S(O)_p(C_1–C_4$ alkyl)), $—NHS(O)_p(C_1–C_4$ alkyl), $—NHC(O)C_1–C_4$ alkyl, $—S(O)_pNH2$, $—S(O)_pNH(C_1–C_4$ alkyl), $—S(O)_pN(C_1–C_4$ alkyl)$_2$, and p is 0, 1 or 2.

5,578,575

PARTIALLY MODIFIED AND RETRO-INVERTED TETRAPEPTIDES ANALOGUES OF C-REACTIVE PROTEIN FRAGMENTS

Antonio S. Verdini; Massimo Pinori; Silvana Cappelletti; Laura Gazerro, and Flavio Leoni, all of Sesto S. Giovanni, Italy, assignors to Italfarmaco S.P.A., Milan, Italy

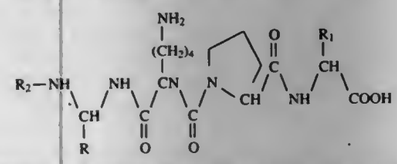
Continuation of Ser. No. 307,580, Sep. 27, 1994, Pat. No. 5,521,159. This application Feb. 28, 1996, Ser. No. 608,317 Claims priority, application Italy, Apr. 16, 1992, M192A0939

Int. Cl.[6] A61K *38/07*

U.S. Cl. 514—18 **1 Claim**

1. A method for treating septic shock comprising:

administering to a subject in need of treatment for septic shock an effective amount of a compound of formula (I)



(I)

wherein R is a hydrogen atom or the side-chain of threonine; R_1 is the side-chain of arginine, leucine or glutamine; and R_2 is a hydrogen atom or a metabolically perishable acyl group; with the proviso that when R_1 is the side-chain of arginine, R cannot be the side-chain of threonine; diastereo-isomeric forms and pharmacologically acceptable salts, esters and amides thereof.

5,578,576

METHOD AND COMPOSITION FOR TREATING INTESTINAL WOUNDS OR ULCERS

Desmond Leddin, Nova Scotia, Canada, assignor to Dalhousie University, Nova Scotia, Canada

Filed Sep. 2, 1994, Ser. No. 300,428

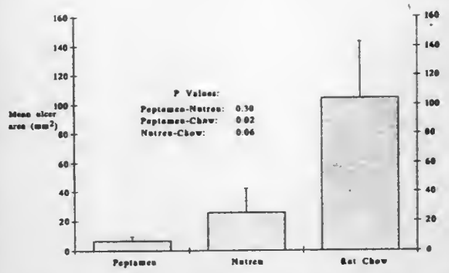
Int. Cl.[6] A61K *38/16;38/01;38/04;31/70*

U.S. Cl. 514—21 **19 Claims**

1. A method for aiding healing of intestinal wounds or ulcers in a patient receiving a non-steroidal anti-inflammatory drug comprising the step of administering to the patient a therapeutically effective amount of a composition comprising:

a protein source comprising approximately 14% to about 25% of the total calories;

a carbohydrate source comprising approximately 40% to about 60% of the total calories; and



a fat source comprising approximately 33% to about 44% of the total calories, the fat source including a medium-chain triglyceride to long chain triglyceride ratio of approximately 1:4 to 4:1.

5,578,577

METHOD FOR STORING LABILE PROTEINS

Shanfun Ching, Libertyville; Patricia A. Billings, Gurnee, and Julian Gordon, Lake Bluff, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 260,612, Jun. 12, 1994, abandoned, which is a continuation of Ser. No. 809,598, Dec. 18, 1991, abandoned, which is a continuation of Ser. No. 72,459, Jul. 13, 1987, Pat. No. 5,120,643. This application Jun. 6, 1995, Ser. No. 469,714

Int. Cl.[6] A61K *38/00;* **C07K** *1/00;* **G01N** *33/543*

U.S. Cl. 514—21 **3 Claims**

1. A method for storing labile proteins which prevents aggregation and inactivation of the proteins when maintained in the dry state wherein said proteins may be rapidly resolubilized, which method comprises drying the protein on a substrate in the presence of an aqueous medium containing a meta-soluble protein, wherein said labile proteins exhibit no loss of activity for at least 6 months when stored at 37° C. in the dry state.

5,578,578

OPHTHALMIC SOLUTIONS

Gerald Hecht, and Ole J. Lorenzetti, both of Fort Worth, Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 977,312, Nov. 16, 1992, Pat. No. 5,409,904, which is a continuation of Ser. No. 553,924, Jul. 17, 1990, abandoned, which is a continuation-in-part of Ser. No. 95,601, Sep. 10, 1987, abandoned, which is a continuation of Ser. No. 899,167, Aug. 22, 1986, abandoned, which is a continuation of Ser. No. 671,042, Nov. 13, 1984, abandoned. This application Apr. 19, 1995, Ser. No. 425,132

The portion of the term of this patent subsequent to Apr. 25, 2012, has been disclaimed.

Int. Cl.[6] A01N *43/04*

U.S. Cl. 514—23 **4 Claims**

1. An ophthalmic solution comprising a therapeutically effective amount of a viscous or viscoelastic material selected from the group consisting of collagen, modified collagen and modified cellulose and combinations thereof in a physiologically compatible salt solution, the salt solution containing bicarbonate ions.

5,578,579

4"-DEOXYERYTHROMYCIN DERIVATIVES

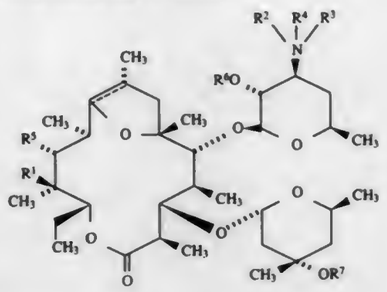
Paul A. Lartey, Wadsworth; Larry L. Klein; Ramin Faghih, both of Lake Forest, and Hugh N. Nellans, Mundelein, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 944,150, Sep. 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 823,490, Jan. 21, 1992, abandoned. This application Aug. 2, 1994, Ser. No. 284,730

Int. Cl.[6] A61K *31/70;* **C07H** *17/08*

U.S. Cl. 514—29 **14 Claims**

1. A compound having the formula:



or a pharmaceutically acceptable salt thereof, wherein the dotted line is an optional second C8 to C9 bond;

R^1 is selected from the group consisting of hydrogen and hydroxy;

R^2 and R^3 are independently selected from the group consisting of hydrogen, and loweralkyl, with the proviso that when the second C8C9 bond is present and R^1 is hydroxy, R^2 and R^3 are not simultaneously ethyl;

R^4 is absent;

R^5 is hydroxy;

R^6 is selected from the group consisting of hydrogen and loweralkyl; and

R^7 is methyl.

10. A pharmaceutical composition comprising a therapeutically effective amount of a compound according to claim **1** and a pharmaceutically acceptable carrier.

5,578,580

VETERINARY COMPOSITION, FEEDSTUFF AND PROCESS

Graziano Sassi, Bertinoro, Italy, assignor to Ascor Chimici S.r.l., Forli, Italy

Continuation of Ser. No. 250,505, May 27, 1994, abandoned. This application Nov. 20, 1995, Ser. No. 560,945

Claims priority, application European Pat. Off., May 28, 1993, 93830239

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—29 **16 Claims**

1. A veterinary composition comprising

a) from 50 to 500 g of erythromycin thiocyanate,

b) from 10 to 200 g of animal or vegetal proteic meal,

c) from 1 to 100 g of a sweetening agent, and

d) from 450 to 900 g of a film former, which composition is in the form of sustained release microcapsules between 20 and 1200 microns in size, and which composition when administered to an animal masks the taste and smell of the erythromycin thiocyanate and is thereby palatable to the animal.

5,578,581

ACTIVE AVERMECTIN ANALOGUE

Prakash S. Masurekar, Warren; Wesley L. Shoop, Somerville; Michael A. Wallace, Lebanon, and Richard L. Monaghan, Somerset, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

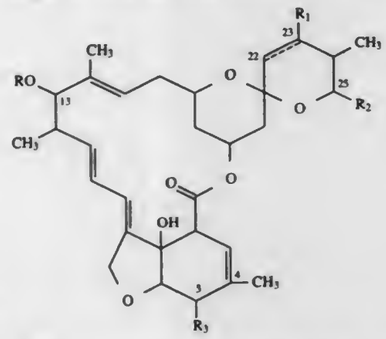
Filed Apr. 26, 1994, Ser. No. 233,489

Int. Cl.[6] A61K *31/70;* **C07H** *17/08*

U.S. Cl. 514—30 **6 Claims**

1. A method for treating an animal suffering from a parasitic condition which comprises administering a therapeutically effective amount of a compound of the structure:

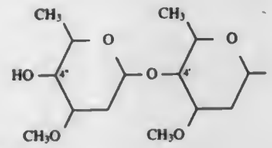
I



wherein

R is the 4'-(α-l-oleandrosyl)-'-l-oleandrose group of the structure:

II



and wherein

the broken line indicates a single or a double bond;

R_1 is hydroxy and is present only when said broken line indicates a single bond;

R_2 is 26-epi-sec-butyl; and

R_3 is methoxy or hydroxy.

5,578,582

METHODS OF TREATING ISCHEMIA WITH C2, N^6-DISUBSTITUTED ADENOSINE DERIVATIVES

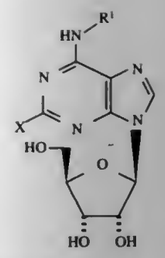
Lars J. Knutsen, Vedbæk, and Jesper Lau, Farum, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Division of Ser. No. 963,878, Oct. 20, 1992, Pat. No. 5,432,164. This application May 5, 1995, Ser. No. 435,005

Int. Cl.[6] A61K *31/70;* **C07H** *19/167*

U.S. Cl. 514—46 **16 Claims**

1. A method of treating myocardial or cerebral ischemia, comprising administering to a person in need thereof an effective amount of a compound of formula I:

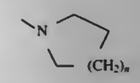


(I)

wherein

X is halogen, perhalomethyl, cyano, C_{1-6}-alkoxy, C_{1-6}-alkylthio or C_{1-6}-alkylamino;

R^1 is



which is optionally substituted with one or two C_{1-6}-alkyl groups, C_{2-6}-alkenyl, C_{2-6}-alkynyl, phenoxy, phenylsulphonyl, phenylthio, hydroxy, phenyl, C_{1-6}-alkoxy or -C_{1-6}-alkyl-C_{1-6}-alkoxy, wherein n is 1; or

a pharmaceutically acceptable salt thereof.

5,578,583

MICROEMULSIONS USED AS VEHICLES FOR CARRYING CHEMOTHERAPEUTIC AGENTS TO NEOPLASTIC CELLS

Raul C. Maranhão, São Paulo, Brazil, assignor to Fundacão E. J. Zerbini, São Paulo, Brazil

Continuation of Ser. No. 42,105, Apr. 1, 1993, abandoned. This application Feb. 13, 1995, Ser. No. 388,148

Int. Cl.[6] A61K *31/175;31/70;* **B01J** *13/00*

U.S. Cl. 514—49 **4 Claims**

1. A method for treating neoplasms, wherein cells from said neoplasms have an increased number of LDL receptors compared to normal cells, comprising:

binding apolipoprotein E in the blood plasma to a surface of a microemulsion comprising a nucleus of cholesterol esters and no more than 20% triglycerides surrounded by a core of phospholipids and free cholesterol and containing a chemotherapeutic drug, wherein the surface of said microemulsion consists essentially of the particles of a lipidic mixture;

binding the apolipoprotein E to the LDL receptors on the neoplastic cells; and

delivering the drug to said neoplastic cells.

5,578,584

FEED CONTAINING GALACTO-OLIGOSACCHARIDES FOR DOMESTIC FOWLS

Yasuo Katta, and Shigeru Wakabayashi, both of Hyogo-ken, Japan, assignors to Matsutani Chemical Industry Co., Ltd., Kyogo-Ken, Japan

Filed Mar. 23, 1994, Ser. No. 216,282

Claims priority, application Japan, Mar. 24, 1993, 5-065241

Int. Cl.[6] A61K *31/715*

U.S. Cl. 514—54 **5 Claims**

1. A method for preventing accumulation of fats in a domestic fowl body and the formation of fatty liver to thus improve the meat quality, to reduce the content of cholesterols in eggs and to improve the egg-laying rate and the egg shell strength which comprises feeding the fowls with a feed comprised of a basal feed and a galacto-oligosaccharide composition which mainly comprises glucose and galactose as saccharide components wherein

(a) the galacto-oligosaccharide composition comprises not less than 40% by weight of trisaccharides and higher saccharides which have a glucose to galactose ratio of about 1:1, and

(b) the galacto-oligosaccharide composition is prepared by heat-treating lactose in the presence of a mineral acid in an amount of 250 to 1500 ppm and in the presence of water in an amount of 2 to 15% by weight based on the composition using an extruder.

5,578,585

PLEUROMUTILIN DERIVATIVE COMPLEXES

Heinrich F. Matous, Wörgl, and Erich Zeisl, Jenbach, both of Austria, assignors to Biochemie Gesellschaft m.b.H., Tyrol, Austria

Continuation of Ser. No. 918,514, Jul. 22, 1992, abandoned. This application Mar. 10, 1995, Ser. No. 402,272

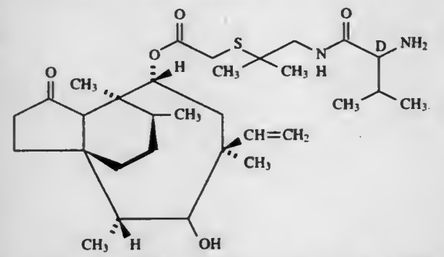
Claims priority, application Austria, Jul. 24, 1991, 1477/91

Int. Cl.[6] A01N *43/04;* **C07G** *11/00;* **A61K** *47/26;* **A23K** *1/165*

U.S. Cl. 514—58 **22 Claims**

1. A complex of the pleuromutilin derivative of formula I

I



in free base or pharmaceutically acceptable acid addition or quaternary salt form and a cyclodextrin.

5,578,586

DRY EYE TREATMENT PROCESS AND SOLUTION

Thomas Glonek, Oak Park, Ill.; Jack V. Greiner, Winchester, and Donald R. Korb, Boston, both of Mass., assignors to Ocular Research of Boston, Inc., Boston, Mass.

Continuation of Ser. No. 898,375, Jun. 9, 1992, Pat. No. 5,294,607, which is a continuation-in-part of Ser. No. 529,657, May 29, 1990, abandoned, Ser. No. 457,086, Dec. 26, 1989, abandoned, Ser. No. 111,874, Oct. 23, 1987, Pat. No. 4,914,088, and Ser. No. 33,185, Apr. 2, 1987, abandoned. This application Feb. 4, 1994, Ser. No. 192,051

Int. Cl.[6] A61K *31/685;31/66;31/20*

U.S. Cl. 514—76 **22 Claims**

1. An artificial tear film over an ocular surface comprising an aqueous layer coated with a film of an oil.

5,578,587

METHODS AND COMPOSITIONS CONTAINING VITAMIN D COMPOUNDS FOR IMPROVEMENT OF SKIN CONDITIONS

Hector F. DeLuca, Deerfield, and Connie M. Smith, Madison, both of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 971,669, Nov. 4, 1992, Pat. No. 5,459,136, which is a continuation of Ser. No. 573,560, Aug. 24, 1990, abandoned. This application Mar. 1, 1995, Ser. No. 396,637

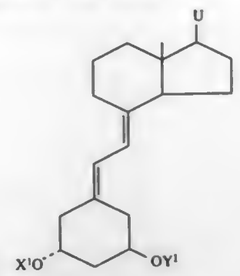
Int. Cl.[6] A61K *31/59*

U.S. Cl. 514—167 **8 Claims**

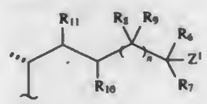
1. A method for treating skin conditions selected from the group consisting of lack of adequate skin firmness, wrinkles, lack of

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dermal hydration and insufficient sebum secretion which comprises administering to a patient by oral or parenteral means and effective amount of a compound of the formula:



where X^1 and Y^1 are each selected from the group consisting of hydrogen, acyl, alkylsilyl and alkoxyalkyl, and where U is selected from the group consisting of alkyl, hydrogen, hydroxyalkyl, fluoroalkyl and a side chain of the formula



wherein Z^1 represents hydrogen, hydroxy or O-acyl, R_6 and R_7 are each selected from the group consisting of alkyl, hydroxyalkyl and fluoroalkyl, or, when taken together represent the group $-(CH_2)_m-$where m is an integer having a value of from 2 to 5, R_8 is selected from the group consisting of hydrogen, hydroxy, fluorine, O-acyl, alkyl, hydroxyalkyl and fluoroalkyl, R_9 is selected from the group consisting of hydrogen, fluorine, alkyl, hydroxyalkyl and fluoroalkyl, or, R_8 and R_9 taken together represent double-bonded oxygen or double-bonded carbon, R_{10} and R_{11} are each selected from the group consisting of hydrogen, hydroxy, O-acyl, fluorine and alkyl, or, R_{10} and R_{11} taken together form a carbon-carbon double bond or a carbon-carbon triple bond, and wherein n is an integer having a value of from 1 to 5 and wherein the carbon at any one of positions 20, 22, or 23 in the side chain may be replaced by an O, S, or N atom.

5,578,588

MEDICAMENT FOR INCREASING THE TESTOSTERONE LEVEL

Claudia Mattern, Starnberg, and Rüdiger Häcker, Herrsching, both of Germany, assignors to Arrowdean Ltd., Ireland

PCT No. PCT/DE93/00397, § 371 Date Nov. 7, 1994, § 102(e) Date Nov. 7, 1994, PCT Pub. No. WO93/21924, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 30, 1993, Ser. No. 335,729

Claims priority, application Germany, May 6, 1992, 42 14 953.3

Int. Cl.[6] A61K *31/56*

U.S. Cl. 514—177 **3 Claims**

1. A method for increasing the level of testosterone in a human comprising nasal administration of at least one testosterone precursor.

5,578,589

METHOD FOR SUPPRESSING AN IMUMUNORESPONSE WITH AN ESTRADIOL DERIVATIVE-CHLORAMBUCIL

Fumio Tamura; Tsuyoshi Saito, both of Ibaraki; Satoshi Mitsuhashi; Tadahiro Matsudaira, both of Saitama, and Kiro Asano, Ibaraki, all of Japan, assignors to Kureha Chemical Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 253,552, Jun. 3, 1994, abandoned, which is a division of Ser. No. 70,797, Jun. 3, 1993, Pat. No. 5,354,745. This application May 15, 1995, Ser. No. 440,838

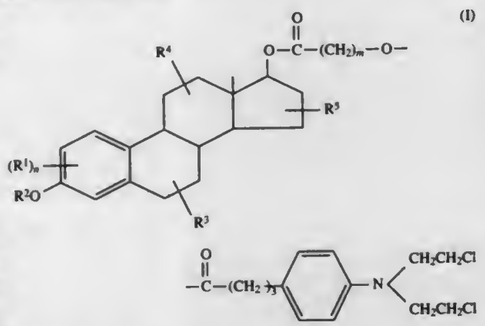
Claims priority, application Japan, Jun. 11, 1992, 4-177363

Int. Cl.[6] A61K *31/56*

U.S. Cl. 514—178 **6 Claims**

1. A method for suppressing an immunoresponse in an animal, comprising administering to an animal a composition comprising an effective amount of an estradiol derivative-chlorambucil conjugate of the formula (I):

(I)



wherein R^1 is alkyl or alkoxy of 1 to 4 carbon atoms; R^2 is acyl, dansyl, or alkyl; R^3, R^4, and R^5 independently are H, oxo, OH, or acyloxy; m is an integer of 1 to 3; and n is an integer of 0 to 3; provided that when n is 0 all of R^3, R^4, and R^5 are not H at the same time, and at least one of R^3, R^4, and R^5 is a group other than H and OH; and further, when n is 2 or 3, the groups R^1 are the same or different.

5,578,590

PHARMACEUTICAL COMPOSITION PREPARATION FOR USE IN INHIBITING PROTEIN KINASE C

Hans H. Grunicke, Mils, Austria; Dieter Herrmann, Heidelberg, Germany; Johann Hofmann, Scharnitz, Austria, and Elmar Bosies, Weinheim, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Continuation of Ser. No. 759,201, Sep. 11, 1991, abandoned, which is a continuation of Ser. No. 395,698, Aug. 18, 1989, abandoned. This application Oct. 7, 1994, Ser. No. 319,478

Claims priority, application Germany, Aug. 18, 1988, 38 27 974.6

Int. Cl.[6] A61K *31/545;31/55;31/70;31/35*

U.S. Cl. 514—200 **8 Claims**

1. A method of inhibiting protein kinase C in a mammal having a tumor system which contains protein kinase C and which mammal is undergoing cytostatic therapy, said method comprising administering to said mammal an effective amount of a protein kinase C inhibiting compound selected from the group consisting of quercetin,ilmofosin, 4-hydroxy-7-methoxy-N,N,N-trimethyl-3,5,9-trioxa-4-phosphaheptacosan-1-aminium 4-oxide and staurosporin.

5,578,591

2-ISOCEPHEM AND OXACEPHEM DERIVATIVES, AND USE AS ANTIBACTERIAL AGENTS

George Burton, Wallington; Brian C. Gasson, Redhill, and Stephen C. M. Fell, Horsham, all of England, assignors to Pfizer, Inc., New York, N.Y.

PCT No. PCT/GB93/00068, § 371 Date Jul. 20, 1994, § 102(e) Date Jul. 20, 1994, PCT Pub. No. WO93/15085, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 14, 1993, Ser. No. 256,677

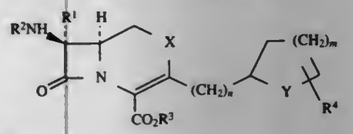
Claims priority, application United Kingdom, Jan. 22, 1992, 9201290; Jan. 22, 1992, 9201291

Int. Cl.[6] A61K *31/395;* **C07D** *501/48*

U.S. Cl. 514—210 **14 Claims**

1. A compound of formula (I) or a salt thereof:

(I)

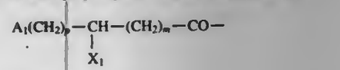


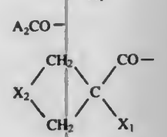
wherein

R^1 is hydrogen, methoxy or formamido;

R^2 is an acyl group of the formulae (a) to (f):

(a)

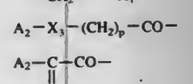




(b)

(c)

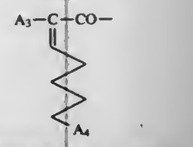
(d)



(e)



(f)



wherein p is 0, 1 or 2; m is 0, 1 or 2; A_1 is (C_{1-6}) alkyl, substituted (C_{1-6}) alkyl wherein the substituents are selected from the list from which R^4 is selected, (C_{3-6}) cycloalkyl, cyclohexenyl, cyclohexadienyl, phenyl, substituted phenyl, thienyl, pyridyl, or an optionally substituted thiazolyl group, a (C_{1-6}) akylthio group or (C_{1-6}) alkyloxy; X_1 is a hydrogen or halogen atom, a carboxylic acid, carboxylic ester, sulphonic acid, azido, tetrazolyl, hydroxy, amino, ureido, heterocyclylamino, or guanidino; A_2 is an aryl group, a substituted C_{1-6} alkyl group; or a substituted dithietane; X_2 is a $—CH_2OCH_2—$, $—CH_2SCH_2—$ or C_{2-6} alkylene group; X_3 is an oxygen or sulphur atom; A_3 is an aryl or heteroaryl group; and A_4 is hydrogen, (C_{1-6}) alkyl, (C_{3-8}) cycloalkyl, (C_{3-8}) cycloalkyl(C_{1-6})alkyl, (C_{1-6}) alkoxycarbonyl(C_{1-6})alkyl, (C_{2-6}) alkenyl, carboxy(C_{1-6})alkyl, (C_{2-6}) alkynyl, aryl or (C_{1-6})alkyl substituted by up to three aryl groups; wherein said substituent is R_4 as defined below;

CO_2R^3 is a carboxy group or a carboxylate anion, or R^3 is a readily removable carboxy protecting group or a pharmaceutically acceptable salt-forming group or in vivo hydrolyzable ester group;

R^4 represents hydrogen or up to four substituents, which may be present on any of the carbon atoms in the ring system shown, selected from C_{1-6} alkyl, C_{2-6} alkenyl, alkynyl, C_{2-6} alkoxy, hydroxy, halogen, amino, C_{2-6} alkylamino, acylamino, di$(C_{1-6}$alkyl)amino, CO_2R, $CONR_2$, SO_2NR_2 where R is hydrogen or C_{1-6} alkyl, aryl or heterocyclyl, which may be the same or different and wherein any R^4 alkyl substituent is optionally substituted by one or more substituents selected from the list from which R^4 is selected;

X is S, SO or SO_2; Y is S, SO or SO_2; n is 0 or 1; and m is 1 or 2;

wherein said alkyl, alkenyl and alkynyl each are straight and branched chain groups;

said aryl is phenyl or naphthyl, each of which may be substituted with up to five groups selected from halogen, mercapto, (C_{1-6}) alkyl, phenyl, (C_{1-6}) alkyl, hydroxy, amino, nitro, carboxy, (C_{1-6}) alkylcarbonyloxy, (C_{1-6}) alkcoxycarbonyl, formyl, or (C_{1-6}) alkylcarbonyl groups; and wherein said heteroaryl is a heteroaromatic heterocyclic ring or ring system, having 5 or 6 ring atoms in each ring.

5,578,592

CEPHALOSPORIN DERIVATIVES

George Burton, Wallington, and Richard L. Elliott, Banstead, both of England, assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/GB93/00457, § 371 Date Sep. 6, 1994, § 102(e) Date Sep. 6, 1994, PCT Pub. No. WO93/18044, PCT Pub. Date Sep. 16, 1993

PCT Filed Mar. 4, 1993, Ser. No. 302,652

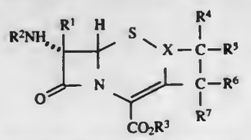
Claims priority, application United Kingdom, Mar. 6, 1992, 9204953

Int. Cl.[6] A61K *31/39;31/54;* **C07D** *513/14;513/22*

U.S. Cl. 514—210 **13 Claims**

1. A compound of formula (I) or a salt thereof:

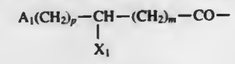
(I)



wherein R^1 is hydrogen, methoxy or formamido;

R^2 is an acyl group of one of the formulae (a) to (f):

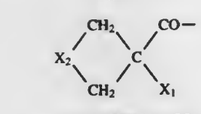
(a)



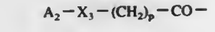
(b)



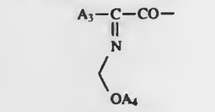
(c)



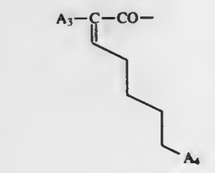
(d)



(e)



(f)



VOL 1192 ISS 4 NO 26 1996 UMI

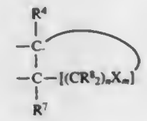
wherein p is 0, 1 or 2; m is 0, 1 or 2; A_1 is (C_{1-6}) alkyl, substituted (C_{1-6}) alkyl wherein the substituents are selected from the list from which R^4 is selected, (C_{3-6}) cycloalkyl, cyclohexenyl, cyclohexadienyl, phenyl, substituted phenyl, thienyl, pyridyl, or an optionally substituted thiazolyl group, a (C_{1-6}) alkylthio group or (C_{1-6}) alkyloxy; X_1 is a hydrogen or halogen atom, a carboxylic acid, carboxylic ester, sulphonic acid, azido, tetrazolyl, hydroxy, amino, ureido, heterocyclylamino, or guanidino; A_2 is an aryl group, a substituted C_{1-6} alkyl group or a substituted dithietane; X_2 is a $—CH_2OCH_2—$, $—CH_2SCH_2—$ or C_{2-6} alkylene group; X_3 is an oxygen or sulphur atom; A_3 is an aryl or heteroaryl group; and A_4 is hydrogen, (C_{1-6})alkyl, (C_{3-8})cycloalkyl, (C_{3-8})cycloalkyl(C_{1-6})alkyl, (C_{1-6})alkoxycarbonyl(C_{1-6})alkyl, (C_{2-6})alkenyl, carboxy(C_{1-6})alkyl, (C_{2-6})alkynyl, aryl or (C_{1-6})alkyl substituted by up to three aryl groups; wherein said substituent is R_4 as defined below;

CO_2R^3 is a carboxy group or a carboxylate anion; or R^3 is a readily removable carboxy protecting group or a pharmaceutically acceptable salt-forming group or in vivo hydrolyzable ester group;

R^4, R^5, R^6 and R^7 each independently represent hydrogen, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{2-6} alkoxy, hydroxy, C_{1-6} thioalkyl, thiophenyl, halogen, amino, cyano, C_{1-6} alkylamino, di(C_{1-6} alkyl)amino, CO_2R, $CON(R_2)$, $SO_2N(R_2)$ where R is hydrogen or (C_{1-6} alkyl), aryl, heterocyclyl, (C_{1-6})alkanoyl, ($C_{3\ 1-6}$ alkoxy)-carbonyl, (C_{1-6} alkoxy) (C_{1-6} alkyl), (C_{1-6})alkanoyloxy, 3 (C_{1-6})-alkanoyloxy(C_{1-6})alkyl, and tri(C_{1-6} alkyl)silyl and where any R^4, R^5, R^6 or R^7 alkyl substituent may be substituted with any other of the aforementioned groups;

wherein R^4 and R^7 may be absent and be replaced by a chemical bond between the two carbon atoms shown;

and wherein R^5 and R^6 may be linked together into a cyclic system of formula:



wherein X represents —O— or $—NR^8—$, wherein each R^8 may be the same or different and independently represents hydrogen or a substituent group, or two groups R^8 may be linked into a ring system, or any two adjacent $—CR^8{}_2—$ units may be replaced by a $—CR^8{=}CR^8—$ unit, and wherein n is an integer 1 to 7, and m is 0, 1, 2, or 3;

wherein said alkyl, alkenyl and alkynyl each are straight and branched chain groups;

said aryl is phenyl or naphthyl, each of which may be substituted with up to five groups selected from halogen, mercapto, mercapto(C_{1-6})alkyl, phenyl, (C_{1-6})alkyl, hydroxy(C_{1-6})alkyl, halo(C_{1-6})alkyl, hydroxy, amino, nitro, carboxy, (C_{1-6})alkylcarbonyloxy, (C_{1-6})alkoxycarbonyl, formyl, or (C_{1-6})alkylcarbonyl groups; and wherein said heteroaryl is a beteroaromatic heterocyclic ring or ring system, having 5 or 6 ring atoms in each ring, said ring being aromatic, containing up to four heteroatoms selected from oxygen, nitrogen and sulphur, and optionally substituted by up to three of halogen, (C_{1-6})alkyl, (C_{1-6})alkoxy, halo(C_{1-6})alkyl, hydroxy, carboxy, carboxy salts, (C_{1-6})alkoxycarbonyl, (C_{1-6})alkoxycarbonyl(C_{1-6})alkyl, phenyl, naphthyl, and oxo groups.

5,578,593

SPIRO PIPERIDINES AND HOMOLOGS PROMOTE RELEASE OF GROWTH HORMONE

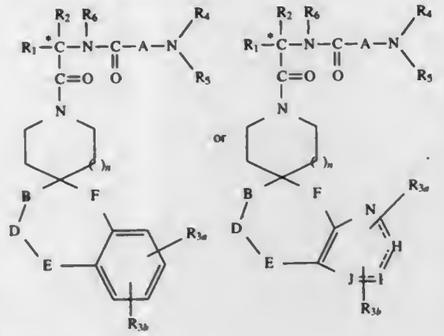
Meng-Hsin Chen, Westfield; David B. R. Johnston, Warren; Ravi P. Nargund, East Brunswick; Arthur A. Patchett; James R. Tata, both of Westfield, and Libu Yang, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 989,322, Dec. 11, 1992, abandoned. This application Nov. 3, 1993, Ser. No. 146,848

Int. Cl.[6] A61K *31/55;31/44;* **C07D** *401/00;471/00*

U.S. Cl. 514—212 **17 Claims**

1. A compound of the formula:



wherein:

R_1 is selected from:

C_1–C_{10} alkyl, aryl, heteroaryl, aryl (C_1–C_6 alkyl), heteroaryl (C_1–C_6 alkyl), C_3–C_7 cycloalkyl(C_1–C_6alkyl), C_1–C_5alkyl-K-C_1–C_5 alkyl, aryl(C_0–C_5alkyl)-K-(C_1–C_5 alkyl), heteroaryl(C_0–C_5alkyl)-K-(C_1–C_5 alkyl), and C_3–C_7 cycloalkyl(C_0–C_5 alkyl)-K-(C_1–C_5 alkyl), where K is selected from: O, $S(O)_m$, $N(R_2)C(O)$, $C(O)N(R_2)$, OC(O), C(O)O, $—CR_2{=}CR_2—$ and $—C{\equiv}C—$ where R_2 and the alkyl groups may be futher substituted by 1 to 5 halogen, $S(O)mR_{2a}$, 1 to 3 of OR_{2a} or $C(O)OR_{2a}$ and the aryl and heteroaryl may be further substituted by phenyl, phenoxy, halophenyl, 1 to 3 of C_1–C_6 alkyl, 1 to 3 of halogen, 1 to 2 of OR_2, methylenedioxy, $S(O)_mR_2$, 1 to 2 of CF_3, OCF_3, nitro, $N(R_2)(R_2)$, $N(R_2)C(O)(R_2)$, $C(O)OR_2$, $C(O)N(R_2)(R_2)$, $SO_2N(R_2)(R_2)$, $N(R_2)SO_2$ aryl, $N(R_2)SO_2$ heteroaryl or $N(R_2)SO_2R_2$

R_2 is selected from:

hydrogen, C_1–C_6 alkyl, and C_3–C_7 cycloalkyl, and where two C_1–C_6 alkyl groups are present on one atom, they may be optionally joined to form a C_3–C_8 cyclic ring optionally including oxygen, sulfur or NR_{2a};

R_{2a} is hydrogen or C_1–C_6 alkyl;

R_{3a} and R_{3b} are independently selected from:

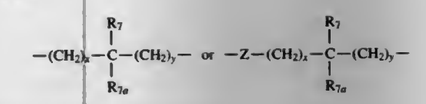
hydrogen, halogen, C_1–C_6 alkyl, OR_2, cyano, OCF_3, methylenedioxy, nitro, $S(O)_mR$, CF_3 or $C(O)OR_2$, and when R_{3a} and R_{3b} are in an ortho arrangement they maybe joined to form a C_5 to C_8 aliphatic or aromatic ring optionally including 1 or 2 heteroatoms selected from oxygen, sulfer, or nitrogen;

R_4 and R_5 are independently selected from:

hydrogen, C_1–C_6 alkyl, and substituted C_1–C_6 alkyl where the substituents may be 1 to 5 halo, 1 to 3 hydroxy, 1 to 3 C_1–C_{10} alkanoyloxy, 1 to 3 C_1–C_6 alkoxy, phenyl, phenoxy, 2-furyl, C_1–C_6 alkoxycarbonyl, $S(O)_m$(C_1–C_6 alkyl); or R_4 and R_5 can be taken together to form $—(CH_2)_rL_u(CH_2)_s—$ where L_u is $C(R_2)_2$, O, $S(O)_m$ or $N(R_2)$, r and s are independently 1 to 3 and R_2 is as defined above;

R_6 is hydrogen or C_1–C_6 alkyl;

A is:



where x and y are independently 0–3;

Z is $N—R_2$ or O;

R_7 and R_{7a} are independently selected from:

hydrogen, C_1–C_6 alkyl, trifluoromethyl, phenyl, and substituted C_1–C_6 alkyl where the substituents are selected from: imidazolyl, phenyl, indolyl, p-hydroxyphenyl, OR_2, $S(O)_mR_2$, $C(O)OR_2$, C_3–C_7 cycloalkyl, $N(R_2)(R_2)$, and $C(O)N(R_2)(R_2)$; or R_7 and R_{7a} can independently be joined to one or both of R_4 and R_5 groups to form an alkylene bridge between the terminal nitrogen and the alkyl portion of the R_7 or R_{7a} groups, wherein the bridge contains 1 to 5 carbons atoms;

B, D, E, and F are independently $C(R_8)(R_{10})$, or C═O, such that one or two of B, D, E, or F may be optionally missing to provide a 5, 6, or 7 membered ring; or B and D or D and E taken together may be $CR_8{=}CR_{10}$, where $CR_8{=}CR_{10}$ may include a benzofusion in which R_8 and R_{10} ethylene units are linked to form a phenyl ring;

R_8 and R_{10} are independently selected from:

hydrogen, R_2, $(CH_2)_qaryl$, $(CH_2)_qheteroaryl$, $(CH_2)_qO(R_2)$, $(CH_2)_qO(CH_2)_qaryl$, $(CH_2)_qO(CH_2)_qheteroaryl$, $(CH_2)_qOC(O)R_2$, $(CH_2)_qOC(O)(CH_2)_qaryl$, $(CH_2)_qOC(O)(CH_2)_qheteroaryl$, $(CH_2)_qOC(O)N(R_2)(R_2)$, $(CH_2)_qOC(O)N(R_2)(CH_2)_qaryl$, $(CH_2)_qOC(O)N(R_2)(CH_2)_qheteroaryl$, $(CH_2)_qC(O)R_2$, $(CH_2)_qC(O)(CH_2)_qaryl$, $(CH_2)_qC(O)(CH_2)_qheteroaryl$, $(CH_2)_qC(O)OR_2$, $(CH_2)_qC(O)O(CH_2)_qaryl$, $(CH_2)_qC(O)O(CH_2)_qheteroaryl$, $(CH_2)_qC(O)N(R_2)(R_2)$, $(CH_2)_qC(O)N(R_2)(CH_2)_qaryl$, $(CH_2)_qC(O)N(R_2)(CH_2)_qheteroaryl$, $(CH_2)_qN(R_2)(R_9)$, $(CH_2)_qS(O)_mR_2$, $(CH_2)_qS(O)_m(CH_2)_qaryl$, $(CH_2)_qS(O)_m(CH_2)_qheteroaryl$, $(CH_2)_qSO_2N(R_2)(R_2)$, $(CH_2)_qSO_2N(R_2)(CH_2)_qaryl$, $(CH_2)_qSO_2N(R_2)(CH_2)_qheteroaryl$, (1H-tetrazol-5-yl, $(CH_2)_qC(O)NHSO_2R_2$, $(CH_2)_qC(O)NHSO_2(CH_2)_qaryl$, $(CH_2)_qC(O)NHSO_2(CH_2)_qheteroaryl$, $(CH_2)_qSO_2NHC(O)R_2$, $(CH_2)_qSO_2NHC(O)(CH_2)_qaryl$, $(CH_2)_qSO_2NHC(O)(CH_2)_qheteroaryl$, $(CH_2)_qSO_2NH(CH_2)_qaryl$, $(CH_2)_qSO_2NH(CH_2)_qheteroaryl$, and $(CH_2)_qSO_2N(R_2)—C{\equiv}N$ and the CH_2), may be substituted by 1 to 2 C_{1-4} alkyl and the R_2, $(CH_2)_q$ and aryl groups may optionally be substituted by 1 to 5 halogen, 1 to 3 OR_{2a}, $C(O)OR_{2a}$, $C(O)O(CH_2)_qaryl$, 1 to 3 C_1–C_4 alkyl, $C(O)N(R_{2a})(R_{2a})$, $SO_2N(R_{2a})(R_{2a})$, $S(O)_mR_{2a}$, $N(R_{2a})(R_{2a})$, 1 to 2 CF_3, or 1H-tetrazol-5-yl;

R_9 is selected from:

R_2, $(CH_2)_qaryl$, $(CH_2)_qheteroaryl$, $C(O)R_2$, $C(O)(CH_2)_qaryl$, $C(O)(CH_2)_qheteroaryl$, $C(O)N(R_2)(R_2)$, $C(O)N(R_2)(CH_2)_qaryl$, $C(O)N(R_2)(CH_2)_qheteroaryl$, $C(O)OR_2$, $C(O)O(CH_2)_qaryl$, $C(O)O(CH_2)_qheteroaryl$, $S(O)_2N(R_2)(R_2)$, $SO_2N(R_2)(CH_2)_qaryl$, $SO_2N(R_2)(CH_2)_qheteroaryl$, SO_2R_2, $SO_2(CH_2)_qaryl$, and $SO_2(CH_2)_q$ heteroaryl and the $(CH_2)_q$ may be substituted by 1 to 2 C_1–C_4 alkyl and the R_2, $(CH_2)_q$ and aryl and heteroaryl may be substituted by 1 to 5 halogen, 1 to 3 OR_{2a}, $C(O)OR_{2a}$, $C(O)O(CH_2)_qaryl$, 1 to 3 C_1–C_4 alkyl, $C(O)N(R_{2a})(R_{2a})$, $SO_2N(R_{2a})(R_{2a})$, $S(O)_mR_{2a}$, $N(R_{2a})(R_{2a})$ or 1 to 2 CF_3;

m is 0 to 2;

n is 1 or 2;

q is 0 to 3;

t is 0 to 3;

aryl is independently selected from: phenyl and napthyl, and heteroaryl is independently selected from: pyridyl, thiophenyl, thienyl, furanyl, benzothiophenyl, tetrazolyl, indolyl, N-methyl indolyl, dihydroindolyl, indazolyl, N-formylindolyl, benzimidazolyl, thiazolyl, pyrimidinyl and thiadiazloyl;

G, H, I and J are independently a carbon, nitrogen, sulfur or oxygen atom, such that at least one of G, H, I and J is a heteroatom, only one or two of G, H, I and J may be sulfur or oxygen, and one of G, H, I or J may be optionally missing to afford a 5 or 6 membered heterocyclic aromatic ring;

and pharmaceutically acceptable salts and individual diastereomers thereof.

5,578,594

SULFONAMIDOCARBOXAMIDES

Jean Ackermann; David Banner, both of Basel, Switzerland; Klaus Gubernator, Freiburg, Germany; Kurt Hilpert, Hofstetten, and Gérard Schmid, Kienberg, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

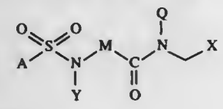
Division of Ser. No. 21,919, Feb. 24, 1993, Pat. No. 5,405,854. This application Dec. 21, 1994, Ser. No. 361,274

Claims priority, application Switzerland, Mar. 6, 1992, 728/92; Jan. 21, 1993, 180/93

Int. Cl.[6] A61K *31/395;* **C07D** *413/12*

U.S. Cl. 514—236.2 **26 Claims**

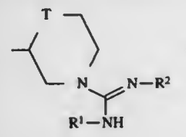
1. A compound of the formula



I

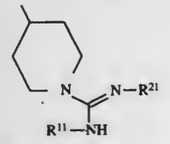
wherein

X is a group of the formula



(X^1)

or



(X^2)

T is CH_2 or O ;

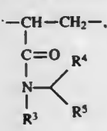
R^1, R^2, R^{11} and R^{21} are each, independently, hydrogen or —COO-lower-alkyl;

Y is hydrogen or, when X is a group X^2 or when X is a group X^1 in which at least one of R^1 and R^2 is not hydrogen, then Y can also be $—CH_2COOH$ or $—SO_2—A'$;

A and A' are aryl, heteroaryl, heterocyclyl, alkyl or cycloalkyl;

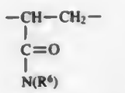
Q is hydrogen, lower-alkyl or lower-alkyl substituted by OH, —COOH or —COO-lower alkyl;

M is a group of the formula M^1 or, when X is a group X^2 or when X is a group X^1 and at least one of R^1, R^2 and Q is not hydrogen and/or when A is alkyl or cycloalkyl , then M can also be a group of one of the formulae M^2 to M^8;



(M^1)

-continued



(M²)

—CH₂CH(NH(CO)₁₋₂R⁷)— (M³),

—CH₂CH(NHC(O)O-benzyl)— (M⁴),

=CH(CH₂)₁₋₂R⁷ (M⁵),

=CHCH₂C(O)R⁸ (M⁶),

=CHCH₂NH(CO)₁₋₂R⁷ (M⁷)

or

=CHCH₂NHC(O)O-benzyl (M⁸)

R^3 is hydrogen, lower-alkyl, lower-alkenyl, aryl, heteroaryl, cycloalkyl, aryl-lower alkyl, heteroaryl-lower alkyl, or cycloalkyl-lower alkyl;

R^4 is hydrogen, lower-alkyl, aryl, cycloalkyl, aryl-lower alkyl, or cycloalkyl-lower alkyl;

R^5 is hydrogen, lower-alkyl, a group R^{51}, or a group R^{31} bonded via lower-alkylene,

R^5 is —COOH, —COO-lower-alkyl, lower-alkanoyl, OH, lower-alkanoyloxy, lower-alkoxy, aryl-lower alkoxy, —$CONH_2$, —$CONHCH_2CH_2OH$, —CONHOH, —$CONHOCH_3$, —CONHO-benzyl, —$CONHSO_2$-lower-alkyl, —$CONHCH_2CH_2$-aryl, —CONH-cycloalkyl, —$CONHCH_2$-heteroaryl, NH_2, —NHCOO-lower-alkyl, —NHCOO-lower-aralkyl, —$NHSO_3H$, —$NHSO_2$-lower alkyl, —$NHSO_3$-lower-alkyl, —NH-lower-alkanoyl, —NHCOCOOH, —NHCOCOO-lower-alkyl, —NH-cycloalkyl, —NH(3,4-dioxo-2-hydroxy-cyclobut-1-enyl), —NH-[2-lower(alkoxy or-alkenyloxy)-3,4-dioxocyclobut-1-enyl], —$NHCH_2$-heteroaryl, —NHCOCO-(aryl or lower-alkyl), —$NHCOCH_2C_1$, —$NHCOCH_2O$-aryl, —$NHCOCH_2$-aryl, —NHCO-aryl, —NHCO-heteroaryl, —$NHPO_3(R^9, R^{10})$, heteroaryl, —$CON(CH_2)_{4-9}$, —$CON(CH_2)_{4-9}$ interrupted by O or S, —$CON(CH_2)_{4-9}$ substituted by up to 2 substituents selected from lower-alkyl, —COOH, —COO-lower alkyl, —CH_2OH or —CH_2O -benzyl, or —$CON(CH_2)_{4-9}$ interrupted by O or S and substituted by up to 2 substituents selected from lower alkyl, —COOH, —COO lower alkyl, —CH_2OH or —CH_2O -benzyl;

R^9 and R are hydrogen, lower-alkyl or phenyl, provided that R^4 can not be phenyl, when Q, R^1, R^2, R^3 and R^5 are simultaneously hydrogen;

$N(R^6)$ is benzylamino, —$N(CH_2)_{4-9}$, $N(CH_2)_{4-9}$ interrupted by O or S, $N(CH_2)_{4-9}$ ring substituted by up to 2 substituents selected from lower-alkyl, COOH, or —$N(CH_2)_{4-9}$ interrupted by O or S and ring substituted by up to 2 substituents selected from lower alkyl, —COOH, —COO-lower alkyl, —CH_2OH or —CH_2O-benzyl;

R^7 and R^8 are aryl, heteroaryl, cycloalkyl or heterocyclyl, or

R^8 is $N(CH_2)_{4-9}$ or —$N(CH_2)_{4-9}$ substituted by up to 2 substituents selected from oxo —COO-lower-alkyl, —$(CH_2)_{0-1}OH$, —$(CH_2)_{0-1}OCO$-lower-alkyl, $CONH_2$, —CONH-lower-alkyl or —CON(lower-alkyl)$_2$, wherein when T is CH_2 at least one of A, A^1, A^3, A^5, $N(R^6)$, R^7 and R^8 is a heterocyclic ring or contains a heterocyclic ring, a hydrate, solvate or physiologically compatible salt thereof.

5,578,595

CYCLOPROPYLACETIC ACID DERIVATIVES

Manfred Böger, Weil am Rhein, Germany, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

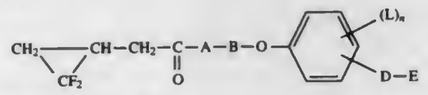
Division of Ser. No. 225,167, May 20, 1994, abandoned, which is a division of Ser. No. 34,635, Mar. 22, 1993, Pat. No. 5,326,901, which is a continuation of Ser. No. 731,189, Jul. 15, 1991, abandoned. This application Mar. 21, 1995, Ser. No. 407,741

Claims priority, application Switzerland, Jul. 18, 1990, 2383/90

Int. Cl.[6] A01N *43/58;* **C07D** *333/24;233/40;211/72;237/02;* **C07C** *69/74;233/00*

U.S. Cl. 514—247 **13 Claims**

1. A 2-(2,2-difluorocyclopropyl)-acetic acid derivative of formula I



(I)

wherein

A is oxygen or —NR_1—,

B is C_2–C_6alkylene,

D is oxygen, sulfur or —O—CH_2–,

E is phenyl; phenyl substituted by from one to three substituents selected from the group halogen, C_1–C_4alkyl, C_1–C_3haloalkyl and C_1–C_4alkoxy; a five-membered aromatic heterocycle having from one to three hetero atoms selected from the group nitrogen, oxygen and sulfur; a five-membered aromatic heterocycle having from one to three hetero atoms selected from the group nitrogen, oxygen and sulfur that is substituted by one or two substituents selected from the group halogen, C_1–C_4alkyl and C_1–C_3haloalkyl; a six-membered aromatic heterocycle having from one to three nitrogen atoms; or a six-membered aromatic heterocycle having from one to three nitrogen atoms that is substituted by one or two substituents selected from the group halogen, C_1–C_4alkyl and C_1–C_3haloalkyl,

L is halogen or methyl,

n is 0, 1 or 2, and

R_1 is hydrogen, C_1–C_4alkyl, phenylthio or tolylthio.

5,578,596

2-ALKOXY-5,6,7,8-TETRAHYDROQUINOXALINE DERIVATIVES, AND PRODUCTION METHOD AND USE THEREOF

Hideyuki Watanabe; Masao Yaso, and Daisuke Mochizuki, all of Tagata-gun, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP93/01589, § 371 Date May 8, 1995, § 102(e) Date May 8, 1995, PCT Pub. No. WO94/11362, PCT Pub. Date May 25, 1994

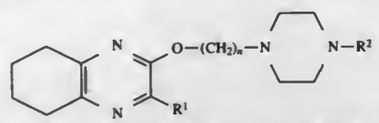
PCT Filed Nov. 4, 1993, Ser. No. 432,168

Claims priority, application Japan, Nov. 9, 1992, 4-298996

Int. Cl.[6] A61K *31/495;31/505;* **C07D** *401/12;403/12*

U.S. Cl. 514—249 **3 Claims**

1. A compound represented by formula (1) or a non-toxic salt thereof



(I)

wherein R^1 represents hydrogen atom or a lower alkyl group; R^2 represents a pyridyl group which is unsubstituted or substituted with 1 to 3 substituents each independently selected from the group consisting of a halogen atom, a lower alkyl group, a tri-fluoromethyl group, a lower alkoxy group, a carbamoyl group and a cyano group, or a pyrimidinyl group which is unsubstituted or substituted with 1 to 2 substituents each independently selected from the group consisting of a lower alkyl group and a lower alkoxy group; and n is an integer of from 2 to 5.

5,578,597

COMBINATION THERAPY FOR HIV INFECTION

Reynold Spector, Scotch Plains, N.J.; Paul J. Deutsch, Sea Cliff, N.Y., and Alan Nies, Scotch Plains, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 135,706, Oct. 13, 1993, abandoned. This application Jul. 21, 1995, Ser. No. 505,842

Int. Cl.[6] A61K *31/495*

U.S. Cl. 514—255 **5 Claims**

1. The composition comprising the combination of compounds, which is ketoconazole and N-(2(R)-hydroxy-1(S)-indanyl)-2(R)-phenylmethyl-4-(S)hydroxy-5-(1-(4-(3-pyridylmethyl)-2 (S)-N'-(t-butylcarboxamido)-piperazinyl))-pentaneamide, or pharmaceutically acceptable salt thereof.

5,578,598

POLYELECTROLYTE COMPLEX ANTIBACTERIAL AGENT IN ANTIBACTERIAL MATERIAL

Koji Abe, Nagano; Mitsunao Tanaka, Tokyo; Satoshi Inaba, Tokyo, and Masaharu Akimoto, Tokyo, all of Japan, assignors to Iatron Laboratories, Inc., Tokyo, Japan

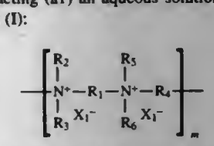
Continuation of Ser. No. 915,681, Jul. 29, 1992, abandoned. This application Oct. 3, 1994, Ser. No. 317,288

Claims priority, application Japan, Nov. 29, 1990, 2-325405; Nov. 29, 1990, 2-325406; Oct. 26, 1991, 3-306857; Oct. 26, 1991, 3-306858

Int. Cl.[6] A61K *31/495*

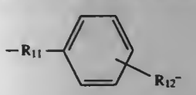
U.S. Cl. 514—255 **9 Claims**

1. Antibacterial agent comprising a polyelectrolyte complex prepared by reacting (a1) an aqueous solution of a cationic polymer of formula (I):

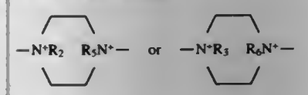


(I)

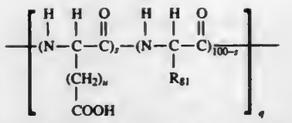
wherein (i) R_1 and R_4 are, independently, an alkylene group of 1 to 10 carbon atoms, a group of the general formula



wherein R_{11} and R_{12} are, independently, an alkylene group of 1 or 2 carbon atoms, or an arylene group, and R_2, R_3, R_5 and R_6 are, independently, an alkyl group of 1 to 3 carbon atoms, or (ii) R_1 forms, together with the 2 nitrogen atoms and R_2, R_3, R_5 and R_6 in the formula a group of the formula



wherein R_2, R_3, R_5 and R_6 are, independently, an alkyl group of 1 to 3 carbon atoms, R_4 has the same meaning as above (i) , X_1— is a halogen atom, and m is an integer of 5 to 500, and (b1) an aqueous solution of an anionic polymer of formula (IV):



(IV)

wherein u is 1 or 2, R_{81} is a hydrogen atom; an alkyl group of 1 to 4 carbon atoms; an alkyl group of 1 to 4 carbon atoms substituted by a hydroxyl or mercapto group or by an alkylthio group of 1 to 3 carbon atoms; or an imidazolylmethyl or indolylmethyl group; s is 20 to 100, q is an integer of 10 to 1000, wherein the concentration ratio of the cationic sites of the cationic polymer and the anionic sites of the anionic polymer are within the range of 0.25 to 4.0, and recovering a reaction product of (a1) and (b1) as a precipitate.

5,578,599

STIMULATION OF HAIR GROWTH WITH MINOXIDIL AND A 5ALPHA-REDUCTASE INHIBITOR

Arthur R. Diani, Mattawan; Allen E. Buhl, and Heinrich J. Schostarez, both of Portage, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 9,451, Jan. 27, 1993, abandoned, which is a continuation of Ser. No. 565,777, Aug. 10, 1990, abandoned. This application Jan. 20, 1995, Ser. No. 376,468

Int. Cl.[6] A61K *31/505;31/44*

U.S. Cl. 514—275 **4 Claims**

1. A method for increasing or restoring hair growth over the sole administration of a topical minoxidil treatment comprising the concomitant administration of:

a topical preparation of minoxidil in an amount sufficient to promote hair growth, applied to an area of skin where hair growth is to be increased or restored; and

an oral administration of 17β-(N-tert-butylcarbamoyl)-4-aza-5-α-androst-1-en-3-one in an amount from about 0.05 to about 0.03 mg/Kg to promote hair growth such that hair growth is increased over the administration of minoxidil alone.

5,578,600

STABLE LIQUID PREPARATION OF COMPLEX VITAMIN FOR INTERNAL USE

Yutaka Murata, Inba-mura; Yuko Kikuchi, Tokyo; Tomohiko Ohsugi; Noriko Aoki, both of Narita; Teiji Murata, Shisui-machi; Toshiaki Kurazumi, Narita, and Akira Iwasa, Yotsukaido, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Oct. 14, 1994, Ser. No. 323,344

Claims priority, application Japan, Oct. 14, 1993, 5-256767

Int. Cl.[6] A61K *31/51;31/415*

U.S. Cl. 514—276 **8 Claims**

1. A stable liquid preparation of a complex vitamin for internal use, said liquid preparation having an adjusted pH of 3.5 to 4.5, consisting essentially of:

a) a vitamin combination of at least vitamins B_1 and B_{12};

b) a sugar alcohol as a sweetening agent; and

c) at least one other component selected from the group consisting of drug efficacy ingredients, crude drug ingredients, solubilizers, preservatives, coloring agents and perfumes.

171-489 O.G.-96-16: QL3

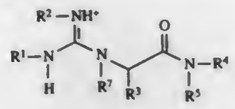
5,578,601

NONPEPTIDE BRADYKININ ANTAGONISTS

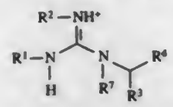
Peter R. Seoane, Coatesville; Joseph M. Salvino, Schwenksville; Brent D. Douty, Coatesville; Mohamed M. A. Awad, Frazer; Roland E. Dolle, King of Prussia; David G. Sawutz, Mohnton; David M. Faunce, Collegeville, and Wayne T. Houck, Spring City, all of Pa., assignors to Sterling Winthrop Inc., New York, N.Y.

Division of Ser. No. 19,955, Feb. 19, 1993, Pat. No. 5,510,380.
This application May 25, 1995, Ser. No. 450,062
Int. Cl.[6] A01N *43/42*
U.S. Cl. 514—299 17 Claims

1. A nonpeptide bradykinin receptor antagonist compound of the formulae (I) and (II)



(I)



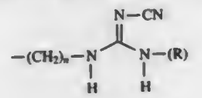
(II)

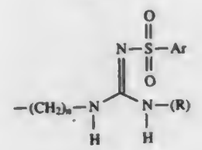
or a pharmaceutically acceptable salt thereof wherein

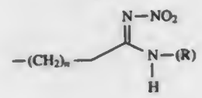
R^1 and R^2 are independently H, substituted or unsubstituted alkyl, cycloalkyl or aryl in which one or two hydrogen atoms are optionally replaced by carboxy, lower-alkyl, hydroxy, halo, lower-alkoxyamino, or lower-alkylamino;

R^3 is substituted or unsubstituted cycloalkyl, aryl, heteroaryl or aryloxy in which one, two or three hydrogen atoms on a carbon atom in the aromatic ring is optionally replaced by halo, carboxy, lower-alkyl or hydroxy;

R^4 is substituted or unsubstituted cycloalkyl, aryl, heteroaryl, aryloxy, heteroaryloxy, arylsulfonyl, in which one, two or three hydrogen atoms on a carbon atom is substituted by N, P, halo, carboxy, lower-alkylamino or lower-alkyl hydroxy,



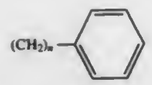




wherein n is 1 to 4;

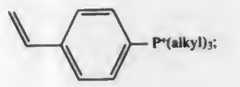
R is alkyl;

R^5 is H or



wherein n is 1 to 4; and

R^6 is



and

R^7 is alkyl.

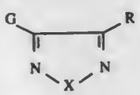
5,578,602

CERTAIN 1-AZABICYCLO[3.3.1]NONENE DERIVATIVES AND THEIR PHARMACOLOGICAL USES

Per Sauerberg, Farum, and Preben H. Olesen, Copenhagen, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Division of Ser. No. 204,832, Mar. 2, 1994, Pat. No. 5,527,813, which is a continuation-in-part of Ser. No. 26,943, Mar. 5, 1993, Pat. No. 5,418,240, which is a continuation-in-part of Ser. No. 744,160, Aug. 13, 1991, Pat. No. 5,260,314. This application May 25, 1995, Ser. No. 450,838
Claims priority, application Denmark, Aug. 21, 1990, 1985/90
Int. Cl.[6] C07D *451/14;451/02;* A61K *31/435;31/46*
U.S. Cl. 514—299 65 Claims

1. A compound of formula I



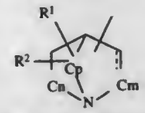
(I)

wherein

X is oxygen or sulphur;

R is hydrogen, amino, halogen, —CHO, —NO_2, —OR^4, —SR^4, —SOR^4, —SO_2R^4, C_{3-7}-cycloalkyl, C_{4-8}-(cycloalkylalkyl), —Z—C_{3-7}-cycloalkyl or —Z—C_{4-8}-(cycloalkylalkyl) wherein R^4 is straight or branched C_{1-15}-alkyl, straight or branched C_{2-15}-alkenyl, straight or branched C_{2-15}-alkynyl, each of which is optionally substituted with one or more halogen(s), —CF_3, —CN, —OH, phenyl or phenoxy wherein the phenyl or phenoxy is optionally substituted with halogen, —CF_3, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, —OCF_3, —$CONH_2$ or —$CSNH_2$; or R is phenyl or benzyloxycarbonyl, each of which is optionally substituted with halogen, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, —OCF_3, —$CONH_2$ or —$CSNH_2$; or R is —OR^5Y, —SR^5Y, —OR^5ZY, —SR^5ZY, —O—R^4—Z—R^5 or —S—R^4—Z—R^5 wherein Z is oxygen or sulphur, R^5 is straight or branched C_{1-15}-alkyl, straight or branched C_{2-15}-alkenyl, straight or branched C_{2-15}-alkynyl, and Y is a heterocyclic group selected from the group consisting of thienyl, tetrazol, thiazolyl, thiadiazolyl, benzothiazolyl, phthalimido, pyridyl and 1,3-dioxolanyl wherein the heterocyclic group is optionally substituted at a carbon or nitrogen atom with straight or branched C_{1-6}-alkyl, phenyl or benzyl; and

G is an azabicyclic ring of formula II



(II)

wherein the thiadiazole or oxadiazole ring is attached at any carbon atom of the azabicyclic ring;

R^1 and R^2 may be present at any appropriate position and independently are hydrogen, straight or branched C_{1-5}-alkyl, straight or branched C_{2-5}-alkenyl, straight or branched C_{2-5}-alkynyl, straight or branched C_{1-10}-alkoxy, —OH, halogen, —NH_2, carboxy or straight or branched C_{1-5}-alkyl substituted with —OH; m is 2, n is 2 and p is 1; and ⋯ is a single or double bond; or

a pharmaceutically acceptable salt thereof.

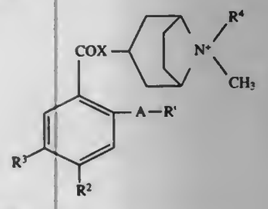
5,578,603

AMINOBENZOIC ACID DERIVATIVES

Shuhei Miyazawa; Shigeki Hibi; Hiroyuki Yoshimura; Takashi Mori; Yorihisa Hoshino; Mitsuo Nagai; Kouichi Kikuchi; Hisashi Shibata; Kazuo Hirota; Takashi Yamanaka; Isao Yamatsu, and Masanori Mizuno, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 13,080, Feb. 3, 1993, Pat. No. 5,389,643.
This application Nov. 8, 1994, Ser. No. 337,480
Claims priority, application Japan, Feb. 4, 1992, 4-18959; Sep. 3, 1992, 4-235533
Int. Cl.[6] A61K *31/46;* C07D *405/10*
U.S. Cl. 514—304 12 Claims

1. An aminobenzoic acid derivative represented by the following formulas (I-2) or (I-3), or a pharmacologically acceptable salt thereof;



(I-2)

wherein

R^1 represents a tetrahydrofuranyl or a 1,3-benzodioxolanyl group;

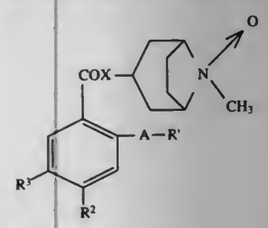
R^2 represents an amino, a monoacyl or diacylamino, —NHCOOH or a mono- or di-substituted alkylamino group;

R^3 represents a halogen atom;

X represents a group represented by the formulas: —O— or —NH—;

A represents an oxygen or sulfur atom; and

R^4 represents a C_1–C_8 lower alkyl or aralkyl group wherein said alkyl moiety has 1 to 8 carbon atoms, and



(I-3)

wherein

R^1 represents a tetrahydrofuranyl group or a 1,3-benzodioxolanyl group;

R^2 represents an amino, a mono- or di-acylamino, —NHCOOH or a mono- or di-substituted alkylamino group;

R^3 represents a halogen atom;

X represents a group represented by the formulas: —O— or —NH—; and

A represents an oxygen or sulfur atom.

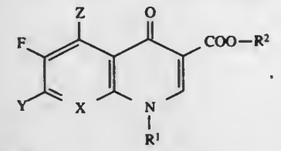
5,578,604

5-VINYL- AND 5-ETHINYL-QUINOLONE- CARBOXYLIC ACIDS

Thomas Himmler, Odenthal; Uwe Petersen, Leverkusen; Klaus-Dieter Bremm, Recklinghausen; Rainer Endermann, Wuppertal; Michael Stegemann, and Heinz-Georg Wetzstein, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 3, 1995, Ser. No. 398,328
Claims priority, application Germany, Mar. 11, 1994, 44 08 212.6
Int. Cl.[6] A61K *31/47;* C07D *215/56;471/04*
U.S. Cl. 514—312 8 Claims

1. Quinolone-carboxylic acid derivatives of the formula (I)



(I)

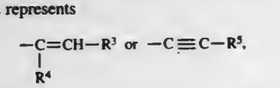
in which

R^1 represents straight-chain or branched C_1–C_4-alkyl which is optionally substituted by hydroxyl, halogen or C_1–C_3-alkoxy, or represents C_3–C_6-cycloalkyl which is optionally substituted by halogen or C_1–C_3-alkyl, or C_2–C_4-alkenyl, furthermore C_1–C_3-alkoxy, amino, monoalkylamino having 1 to 3 C atoms, dialkylamino having 2 to 6 C atoms, or phenyl which is optionally mono- to trisubstituted by halogen,

R^2 represents hydrogen, alkyl having 1 to 4 carbon atoms or (5-methyl-2-oxo-1,3-dioxol-4-yl)-methyl,

X represents a group CH, C-halogen, $COCH_3$, $COCHF_2$, C—CH_3,

Z represents



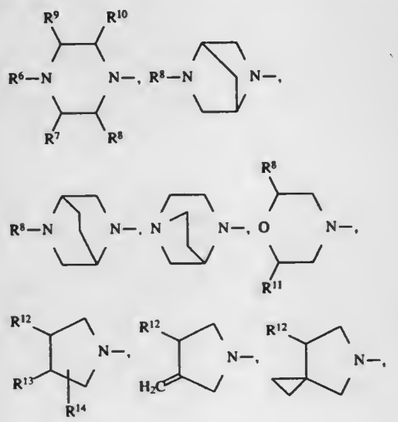
in which

R^3 represents hydrogen, C_1–C_3-alkyl, C_1–C_3 -alkoxy or alkoxymethyl having 1 to 3 C atoms in the alkoxy moiety,

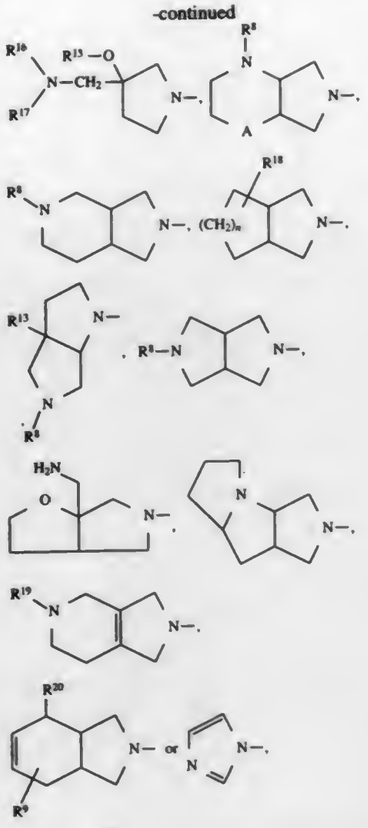
R^4 represents hydrogen or halogen and

R^5 represents hydrogen, C_1–C_6-alkyl which is optionally mono- to trisubstituted by halogen or hydroxyl, or C_2–C_3-alkenyl, alkoxy having 1 to 3 C atoms, alkoxymethyl having 1 to 3 C atoms in the alkoxy moiety, halogen or trimethylsilyl and

Y represents



-continued



in which

R^6 represents hydrogen, straight-chain or branched C_1–C_4-alkyl which is optionally substituted by hydroxyl or methoxy, or cyclopropyl, oxoalkyl having 1 to 4 C atoms, or acyl having 1 to 3 C atoms,

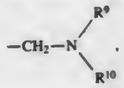
R^7 represents hydrogen, methyl, phenyl, thienyl or pyridyl,

R^8 represents hydrogen or methyl,

R^9 represents hydrogen or methyl,

R^{10} represents hydrogen or methyl,

R^{11} represents hydrogen, methyl or



R^{12} represents hydrogen, methyl, amino, alkyl- or dialkylamino which has 1 or 2 C atoms in the alkyl moiety and is optionally substituted by hydroxyl, or aminomethyl, aminoethyl, alkyl- or dialkylaminomethyl which has 1 or 2 C atoms in the alkyl moiety and is optionally substituted by hydroxyl, or 1-imidazolyl,

R^{13} represents hydrogen, hydroxyl, methoxy, methylthio or halogen, methyl, hydroxymethyl,

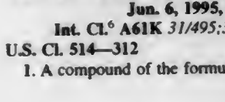
R^{14} represents hydrogen or methyl,

R^{15} represents hydrogen, methyl or ethyl,

R^{16} represents hydrogen, methyl or ethyl,

R^{17} represents hydrogen, methyl or ethyl,

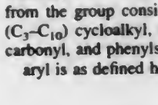
R^{18} represents hydroxyl,



R^{19} represents hydrogen, C_1–C_3-alkyl which is optionally substituted by hydroxyl, alkoxycarbonyl having 1 to 4 carbon atoms in the alkoxy moiety or C_1–C_3-acyl,

R^{20} represents hydrogen, hydroxyl,

hydroxymethyl or



in which

R^{21} denotes hydrogen or methyl,

A represents CH_2, O or a direct bond and

n represents 1 or 2,

and their pharmaceutically acceptable hydrates and acid addition salts as well as the alkali metal salts, alkaline earth metal salts, silver salts guanidinium salts.

5,578,605

N-[(4-HETEROARYL)-1-PIPERIDINYL)ALKYL]-1,2,3,4-TETRAHYDROQUINOLINES AND RELATED COMPOUNDS AND THEIR THERAPEUTIC UTILITY

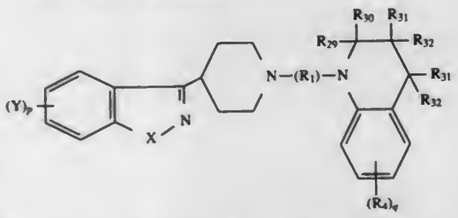
Edward J. Glamkowski, Warren, and Yulin Chiang, Covent Station, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 470,437

Int. Cl.[6] **A61K** *31/495;31/55;31/505;* **C07D** *401/00*

U.S. Cl. 514—312 **20 Claims**

1. A compound of the formula:



wherein, X is —O—, —S—, —NH—, or —(R_2)—; R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, (C_3–C_{10}) cycloalkyl, aroyl, (C_1–C_{18}) alkanoyl, (C_1–C_{18}) alkoxycarbonyl, and phenylsulfonyl groups;

aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;

R_1 is $—CR_{24}R_{27}—(CR_{23}R_{24})_n—CR_{24}R_{27}—$ where n is 0, 1, 2, or 3; or

$—CHR_{24}—CH═CH—CHR_{24}—$,

$—CHR_{24}—C≡C—CHR_{24}—$,

$—CHR_{24}—CH≡CH—CR_{23}R_{24}—CHR_{24}—$,

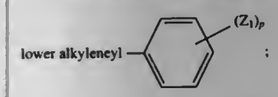
$—CHR_{24}—CR_{23}R_{24}—CH═CH—CHR_{24}—$,

$—CHR_{24}—C≡C—CR_{23}R_{24}—CHR_{24}—$, or

$—CHR_{24}—CR_{23}R_{24}—C≡C—CHR_{24}—$,

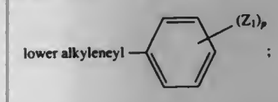
the —CH═CH— bond being cis or trans

R_{23} is hydrogen, (C_1–C_{18}) linear alkyl phenyl, hydroxy, (C_1–C_{18}) alkoxy, aryloxy, aryl (C_1–C_{18}) alkyloxy, (C_1–C_{18})alkanoyloxy, hydroxy (C_1–C_6)alkyl, (C_1–C_{18}) alkoxy(C_1–C_6)alkyl, phenyl (C_1–C_6)alkoxy, aryl(C_1–C_{18})alkyloxy(C_1–C_6)alkyl, (C_1–C_{18})alkanoyloxy(C_1–C_6)alkyl, or



where Z_1 is lower alkyl, —OH, lower alkoxy, $—CF_3$, $—NO_2$, $—NH_2$, or halogen, and p is as previously defined; and

R_{24} is hydrogen, (C_1–C_{18})linear alkyl phenyl, hydroxy (C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl(C_1–C_6)alkyloxy, aryl(C_1–C_{18})alkyloxy(C_1–C_6)alkyl, (C_1–C_{18})alkanoyloxy(C_1–C_6) alkyl, or

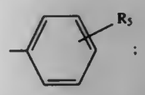


where Z_1 is as previously defined, and p is as previously defined;

R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C═O or C═S;

R_4 is hydrogen, lower alkyl, lower alkoxy, hydroxy, tri(C_1–C_6)alkylsilyloxy, hydroxy lower alkyl, alkanoyloxy lower alkyl, amino, mono- or dialkylamino, (C_1–C_{18})acyl amino, (C_1–C_{18})alkanoyl, trifluoromethyl, chlorine, fluorine, bromine, —O—C(═O)—(C_1–C_{18}straight or branched chain)-alkyl or —C(═O)-aryl;

aryl is phenyl or



where R_5 is hydrogen, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy;

and, any hydroxyl group attached to an aliphatic or aromatic carbon atom, or any primary or secondary nitrogen atom may be acylated with a (C_4–C_{18})carboxylic group, in addition, any nitrogen atom may alternatively be acylated with a (C_8–C_{18})alkoxycarbonyl group;

q is 1, 2, 3, or 4;

R_{29} and R_{30} are hydrogen, (C_1–C_6)alkyl, aryl(C_1–C_6)alkyl, phenyl, or substituted phenyl;

R_{31} and R_{32} are hydrogen, hydroxy, (C_1–C_6)alkyl, aryl(C_1–C_6)alkyl, phenyl, substituted phenyl, hydroxymethyl, or $CHOR_{33}$ where R_{33} is (C_1–C_{18})alkanoyl; or either R_{29} and R_{30} taken together or R_{31} and R_{32} taken together with the carbon group to which they are attached form a C═O or C═S group; and aryl is as defined above;

all geometric, optical, and stereoisomers thereof,

or a pharmaceutically acceptable acid addition salt thereof.

5,578,606

α– AND β–AMINO ACID HYDROXYETHYLAMINO SULFONYL UREA DERIVATIVES USEFUL AS RETROVIRAL PROTEASE INHIBITORS

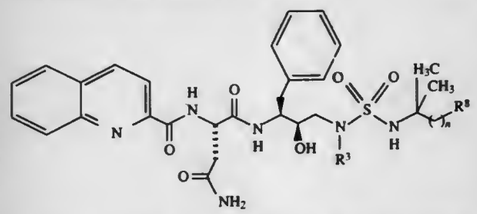
Michael L. Vasquez, Gurnee; Richard A. Mueller, Glencoe, both of Ill.; John J. Talley, Chesterfield, Mo.; Daniel P. Getman, Chesterfield, Mo.; Gary A. DeCrescenzo, St. Peters, Mo., and Eric T. Sun, San Diego, Calif., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Oct. 30, 1992, Ser. No. 968,712

Int. Cl.[6] **C07D** *401/12;413/12;417/12;* **A61K** *31/47;31/505;31/54*

U.S. Cl. 514—314 **6 Claims**

1. A compound represented by the formula



or a pharmaceutically acceptable salt thereof, wherein n represents an integer of 0 to 2;

R^3 is

(a) alkyl radical of 1 to 8 carbon atoms,

(b) phenylalkyl radical of 1 to 8 alkyl carbon atoms wherein said phenyl radical is optionally substituted with methyl, methoxy, tert-butoxy, fluoro, chloro, hydroxy, amino, or cyano radicals, or

(c) heteroaralkyl radicals of 1 to 8 alkyl carbon atoms wherein said heteroaryl radical is a pyridyl, pyrrolyl, imidazolyl, pyrazolyl, pyrimidinyl, triazolyl, oxazolyl, or thiazolyl radical; and

R^8 is

(a) phenyl radical optionally substituted with methyl, methoxy, tert-butoxy, fluoro, chloro, hydroxy, amino or cyano radicals,

(b) pyridyl, imidazolyl, pyrrolyl, pyrazolyl, pyrimidinyl, triazolyl, oxazolyl, or thiazolyl radicals,

(c) cyano, hydroxyl, carboxy, alkylthio of 1 to 8 carbon atoms, alkylsulfonyl of 1 to 8 carbon atoms, or phenylsulfonyl optionally substituted with methyl, methoxy, tert-butoxy, fluoro, chloro, hydroxy, amino or cyano radicals,

(d) alkanoyl of 1 to 8 carbon atoms, alkoxycarbonyl of 1 to 8 alkoxy carbon atoms, or phenylalkoxycarbonyl of 1 to 8 alkoxy carbon atoms wherein said phenyl radical is optionally substituted with methyl, methoxy, tert-butoxy, fluoro, chloro, hydroxy, amino or cyano radicals,

(e) dialkylaminocarbonyl of 1 to 8 alkyl carbon atoms, dialkylamino of 1 to 8 alkyl carbon atoms, or N-alkyl-N-phenylamino of 1 to 8 alkyl carbon atoms wherein said phenyl radical is optionally substituted with methyl, methoxy, tert-butoxy, fluoro, chloro, hydroxy, amino, or cyano radicals,

(f) 2-heterocyclyoethoxyl wherein said heterocyclyl radical a pyrrolidinyl, piperidinyl, piperazinyl, morpholinyl, or thiamorpholinyl radical, or

(g) pyrrolidinyl, piperidinyl, morpholinyl, thiamorpholinyl or 4-alkylpiperazinyl of 1 to 8 alkyl carbon atoms radicals.

VOL 1192 ISS 4 NO 26 1996 UMI

5,578,607

6-(2-IMIDAZOLINYLAMINO)QUINOLINE COMPOUNDS USEFUL AS ALPHA-2 ADRENOCEPTOR AGONISTS

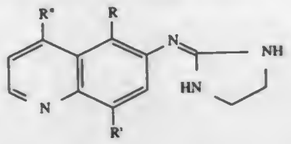
Thomas L. Cupps, Oxford; Peter J. Maurer, Cincinnati, and Jeffrey J. Ares, Hamilton, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 169,343, Dec. 17, 1993, abandoned. This application Oct. 20, 1994, Ser. No. 326,564

Int. Cl.[6] **C07D** *403/12;* **A61H** *31/47*

U.S. Cl. 514—314 **17 Claims**

1. A compound having the following structure:



wherein:

(a) R is unsubstituted alkanyl or alkenyl having from 1 to about 3 carbon atoms;

(b) R' is selected from the group consisting of unsubstituted alkanyl or alkenyl having from 1 to about 3 carbon atoms; unsubstituted alkylthio or alkoxy having from 1 to about 3 carbon atoms; hydroxy; thiol; and halo; and

(c) R" is selected from the group consisting of hydrogen; unsubstituted alkanyl or alkenyl having from 1 to about 3 carbon atoms; methyl monosubstituted with hydroxy, thiol or amino; unsubstituted alkylthio or alkoxy having from 1 to about 3 carbon atoms; amino; unsubstituted amide; amido, unsubstituted or substituted with alkanyl or alkenyl having from 1 to about 3 carbon atoms; halo; unsubstituted sulfoxide; unsubstituted sulfonyl; and cyano.

5,578,608

SYMMETRICAL DIARYL AND DIHETEROANYL CIS EPOXY ALKANES ANTIVIRAL COMPOUNDS

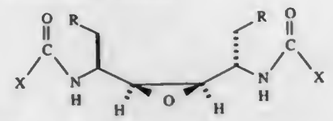
William J. Hornback, and John E. Munroe, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 177,650, Jan. 5, 1994, abandoned, which is a continuation of Ser. No. 901,447, Jun. 19, 1992, abandoned. This application Jan. 17, 1995, Ser. No. 372,722

Int. Cl.[6] **A61K** *31/47;31/415;31/335;* **C07D** *215/38;303/36;303/08*

U.S. Cl. 514—314 **24 Claims**

1. A compound of formula I



wherein:

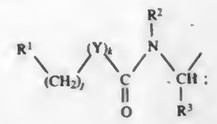
R is C_1–C_6 alkyl, cycloalkyl, a 5- to 7- member monocyclic or 7- to 10- member bicyclic heterocycle, which has 0–5 double bonds, and consists of carbon atoms and from one to three heteroatoms selected from nitrogen, oxygen and sulfur and, wherein, any nitrogen and sulfur heteroatoms are oxidized or unoxidized and, any nitrogen heteroatom is quarternized or unquarternized, aryl, cycloalkyl(C_1–C_4)alkyl, heterocycle(C_1–C_4)alkyl, wherein said heterocycle has the same meanings as defined above, aryl(C_1–C_4)alkyl, or —A—$(CH_2)_q$—R^0, where

A is —O—, —NH— or —S—;

q is 0, 1, 2, or 3;

R^0 is cycloalkyl, aryl, heterocycle, as defined above;

X is



where:

R^1 is aryl, cycloalkyl, heterocycle as defined above;

R^2 is hydrogen or C_1–C_4 alkyl;

R^3 is an amino acid side chain, —CH_2CH_3, —$CH_2CH_2CH_3$, —$CH_2(CH_2)_2CH_3$, —$C(CH_3)_3$, cyano(C_1–C_4)alkyl, heterocycle(C_1– C_4)alkyl as defined above, aryl(C_1–C_4)alkyl or —$(CH_2)_s$—A^0— $(CH_2)_r$—R^4 or —CH_2—C(O)—NR^2—$(CH_2)_r$—R^5, where

s is 1, 2, 3, or 4;

r is 0, 1, 2, or 3;

A^0 is —O—, —NH— or —S—;

R^4 is C_1–C_6 alkyl, cycloalkyl, aryl, or heterocycle as defined above;

R^5 is cycloalkyl, aryl, or heterocycle as defined above;

j is 0, 1, 2, 3, or 4;

k is 0 or 1; and

Y is —O—, —N(R^2)— or —S—;

or a pharmaceutically acceptable salt thereof.

17. A method of treating HIV infection comprising administering to a primate in need of thereof, an effective amount of a compound of the claim 1.

5,578,609

2-CARBOCYCLIC AND 2-HETEROCYCLIC QUINOLINE-4-CARBOXYLIC ACIDS AND SALTS THEREOF USEFUL AS IMMUNOSUPPRESSIVE AGENTS

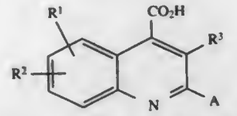
Douglas G. Batt, Wilmington, Del.; Joseph J. Petraitis, Glenmoore, Pa., and Susan R. Sherk, Wilmington, Del., assignors to The DuPont Merck Pharmaceutical Company, Wilmington, Del.

Division of Ser. No. 217,911, Mar. 25, 1994, Pat. No. 5,523,408. This application Aug. 3, 1995, Ser. No. 510,933

Int. Cl.[6] **C07D** *40/02;215/52;* **A61K** *31/47*

U.S. Cl. 514—314 **8 Claims**

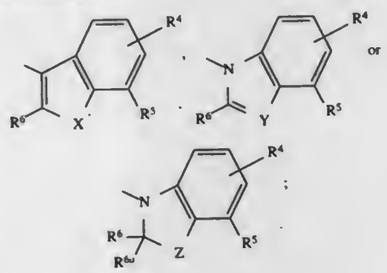
1. A compound of Formula I



(I)

or pharmaceutically acceptable salts or prodrug forms thereof wherein:

A is selected from:



X is —$N(R^7)$—, —O—, —S—, or —CH=CH—;

Y is —N— or —$C(R^8)$—;

Z is —$C(R^8)(R^9)$—;

R^1 and R^2 are independently selected from H, Cl, Br, F, CF_3, or C_1–C_4 alkyl;

R^3 is selected from hydrogen, C_1–C_3 alkyl, —CN, —NR^8R^9, —OR^8, —SR^8, —CF_3, —OCF_3, —SCF_3;

R^4 is selected from hydrogen, Cl, F, C_1–C_3 alkyl, —OR^{8a}, —CF_3, —OCF_3, —SR^{8a}, —SCF_3, —NR^8R^9;

R^5 is an aryl or heteroaryl selected from phenyl, thienyl, furyl, pyridinyl, thiazolyl, or oxazolyl, said aryl or heteroaryl being optionally substituted with 0–2 R^{11};

R^6 and R^{6a} are independently selected from hydrogen or C_1–C_3 alkyl;

R^7, R^8, and R^9 are independently selected from hydrogen or C_1–C_3 alkyl;

R^{8a} is C_1–C_3 alkyl;

R^8 and R^9 can alternatively join to form —$(CH_2)_4$—, —$(CH_2)_5$—, —$CH_2CH_2N(R^{10})CH_2CH_2$—, or —$CH_2CH_2OCH_2CH_2$—;

R^{10} is hydrogen or methyl;

R^{11} is selected from hydrogen, Cl, F, C_1–C_3 alkyl, —OR^{8a}, —CF_3, —OCF_3, —SR^{8a}, —SCF_3, —NR^8R^9.

5,578,610

PIPERIDINE DERIVATIVES

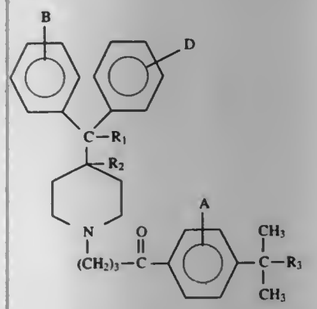
Thomas E. D'Ambra, Wynantskill, N.Y., assignor to Albany Molecular Research, Inc., Albany, N.Y.

Division of Ser. No. 382,649, Feb. 2, 1995, which is a continuation of Ser. No. 83,102, Jun. 24, 1993, abandoned. This application May 31, 1995, Ser. No. 456,273

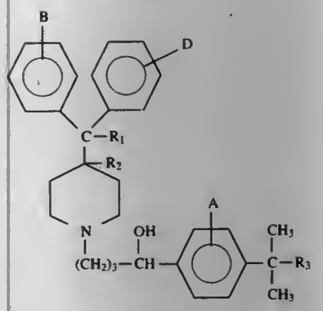
Int. Cl.[6] **A61K** *31/445;* **C07D** *211/34*

U.S. Cl. 514—317 **17 Claims**

1. A substantially pure piperdine derivative compound of the formulae:



or



wherein

R_1 is hydrogen or hydroxy;

R_2 is hydrogen;

or R_1 and R_2 taken together form a second bond between the carbon atoms bearing R_1 and R_2;

R_3 is —COOH or —$COOR_4$;

R_4 is an alkyl with 1 to 6 carbon atoms;

A, B, and D can be one or more different substituents of their rings and are individually hydrogen, halogens, alkyl, hydroxy, or alkoxy,

or a salt thereof.

5,578,611

USE OF α-1C SPECIFIC COMPOUNDS TO TREAT BENIGN PROSTATIC HYPERPLASIA

Charles Gluchowski, Wayne; Carlos C. Forray, Paramus; George Chiu, Bridgewater; Theresa A. Branchek, Teaneck; John M. Wetzel, Elmwood Park, and Paul R. Hartig, Kinnelon, all of N.J., assignors to Synaptic Pharmaceutical Corporation, Paramus, N.J.

Continuation-in-part of Ser. No. 975,867, Nov. 13, 1992, Pat. No. 5,403,847. This application Apr. 13, 1994, Ser. No. 228,932

Int. Cl.[6] **A61K** *31/445;31/135*

U.S. Cl. 514—318 **36 Claims**

1. A method of treating benign prostatic hyperplasia in a subject which comprises administering to the subject a therapeutically effective amount of a compound which:

a. binds to a human α_{1C} adrenergic receptor with a binding affinity greater than 20-fold higher than the binding affinity with which the compound binds to a human α_{1A} adrenergic receptor, a human α_{1B} adrenergic receptor, and a human histamine H_1 receptor; and

b. binds to a human α_2 adrenergic receptor with a binding affinity which is greater than 20-fold lower than the binding affinity with which the compound binds to such α_{1C} adrenergic receptor.

5,578,612

INDOLE DERIVATIVES

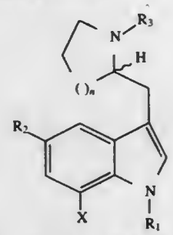
John E. Macor, and Martin J. Wythes, both of New York, N.Y., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 401,647, Mar. 10, 1995, abandoned, which is a continuation of Ser. No. 53,930, Apr. 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 39,244, Apr. 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 597,928, Oct. 15, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 469,258

Int. Cl.[6] **A61K** *31/40;* **C07D** *401/06;403/06*

U.S. Cl. 514—323 **24 Claims**

1. A compound of the formula



I

wherein n is 0, 1, or 2; X is hydrogen, chlorine, bromine, or iodine; R_1 is hydrogen; R_2 is —$(CH_2)_m$—$SO_2NR_5R_6$; R_3 is hydrogen; R_5 and R_6 are independently selected from hydrogen, C_1 to C_6 alkyl, aryl, and C_1 to C_3 alkyl-aryl or R_5 and R_6 taken together to form a 4, 5, or 6 membered ring; y is 0, 1, or 2; x is 1 or 2; m is 0, 1, 2, or 3; and the above aryl groups and the aryl moieties of the above alkylaryl groups are independently selected from phenyl and substituted phenyl, wherein said substituted phenyl may be substituted with one to three groups selected from C_1 to C_4 alkyl, halogen, hydroxy, cyano,

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carboxamido, nitro, and C_1 to C_4 alkoxy, or the pharmaceutically acceptable salt thereof.

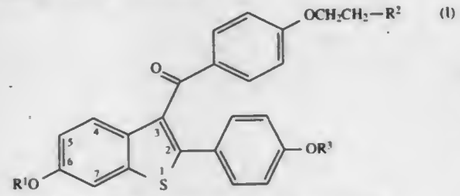
5,578,613

METHODS FOR INHIBITING WEIGHT GAIN OR INDUCING WEIGHT LOSS

Henry U. Bryant, and Jeffrey A. Dodge, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

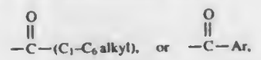
Filed Dec. 21, 1993, Ser. No. 171,291
Int. Cl.[6] A61K *31/445*
U.S. Cl. 514—324 **5 Claims**

1. A method of inhibiting weight gain or inducing weight loss comprising administering to a human an effective amount of a compound having the formula



(I)

wherein R^1 and R^3 are independently hydrogen, $—CH_3$,



wherein Ar is optionally substituted phenyl;

R^2 is piperidino; or a pharmaceutically acceptable salt of solvate thereof.

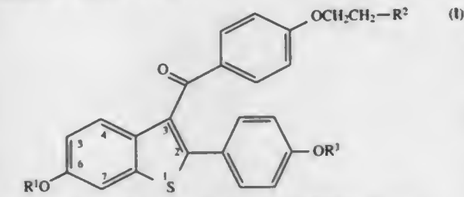
5,578,614

METHODS FOR INHIBITING WEIGHT GAIN OR INDUCING WEIGHT LOSS

Henry U. Bryant, and Jeffrey A. Dodge, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

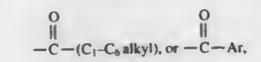
Division of Ser. No. 171,291, Dec. 21, 1993. This application Mar. 15, 1995, Ser. No. 404,854
Int. Cl.[6] A61K *31/445*
U.S. Cl. 514—324 **5 Claims**

1. A method of inhibiting appetite comprising administering to a human an effective amount of a compound having the formula



(I)

wherein R^1 and R^3 are independently hydrogen, $—CH_3$,



wherein Ar is optionally substituted phenyl;

R^2 is piperidino; or a pharmaceutically acceptable salt of solvate thereof.

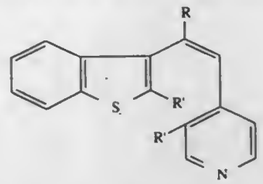
5,578,615

METHOD FOR TREATING HERPES VIRAL INFECTIONS USING BENZOTHIOPHENE ANALOGS.

Elmer J. Reist, Menlo Park, Calif., assignor to SRI International, Menlo Park, Calif.

Continuation of Ser. No. 101,371, Aug. 2, 1993, Pat. No. 5,424,315. This application Apr. 21, 1995, Ser. No. 426,212
Int. Cl.[6] A61K *31/44*
U.S. Cl. 514—337 **21 Claims**

1. A method to treat herpes viral infection in an infected subject, which comprises administering to the subject an effective amount of an antiviral agent having the structural formula (I)



(I)

wherein:

the R' are both hydrogen or are linked together to form a single covalent bond; and

R is selected from the group consisting of

—CN,

—$COOR^1$ where R^1 is H, lower alkyl or phenyl,

—$CONHR^1$, and

—NHR^2 where R^2 is selected from the group consisting of H, lower alkyl, and —$COOR^3$ where R^3 is lower alkyl or trifluoromethyl.

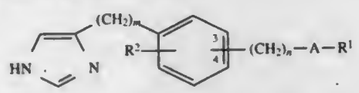
5,578,616

PHENYL-ALKYL-IMIDAZOLES

Robert G. Aslanian, Rockaway; Michael J. Green, Skillman, and Neng-Yang Shih, North Caldwell, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 153,231, Nov. 15, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 469,941
Int. Cl.[6] A61K *31/44;31/415;* C07D *401/10*
U.S. Cl. 514—341 **21 Claims**

21. A method of treating sleep disturbances, convulsions, depression, or disturbances of hypothalamo-hypophyseal secretions, which comprises administering to a patient suffering from sleep disturbances, convulsions, depression, or disturbances of hypothalamo-hypophyseal secretions an effective amount of a compound or salt of the formula



IA

wherein:

A is selected from —O—CO—NR^1, —O—CO—, —NR^1—CO—NR^1—, —NR^1—CO—, —CO—NR^1—, —COO—, —CH_2—NR^1— and —C(:NR^1)—NR^1—;

the groups R^1, which may be the same or different when there are two or three such groups are selected from hydrogen, lower alkyl, aryl, cycloalkyl, heterocyclic and heterocyclyl-alkyl groups, and a group of the formula —$(CH_2)_y$—G, where G is selected from CO_2R^3, COR^3, $CONR^3R^4$, OR^3, SR^3, NR^3R^4, heteroaryl and phenyl, which phenyl is optionally substituted by halogen, lower alkoxy or polyhaloloweralkyl, and y is an integer from 1 to 3;

R^2 is selected from hydrogen and halogen atoms, alkyl, alkenyl, alkynyl and trifluoromethyl groups, and groups of the formula OR^3, SR^3 and NR^3R^4;

R^3 and R^4 are independently selected from hydrogen, and lower alkyl and cycloalkyl groups, or R^3 and R^4 together with the intervening nitrogen atom may form a saturated ring containing 4 to 6 carbon atoms that may be substituted with one or two lower alkyl groups;

with the proviso that, when y is 1 and G is OR^3, SR^3 or NR^3R^4, then neither R^3 nor R^4 is hydrogen;

the group —$(CH_2)_n$—A—R^1 is at the 4-position, and the group R^2 is at any free position;

with the proviso that, when A is the group —CH_2—NR^1—, the group —$(CH_2)_n$—A—R^1 is at the 3- or 4-position;

m is an integer from 1 to 3;

and n is 0 or an integer from 1 to 3;

or a pharmaceutically acceptable acid addition salt thereof;

or a pharmaceutically acceptable salt thereof with a base when G is CO_2H;

including a tautomeric form thereof.

5,578,617

METHOD AND COMPOSITIONS FOR TREATING AGE RELATED DISORDERS

John M. Carney, Lexington, Ky., and Robert A. Floyd, Oklahoma City, Okla., assignors to Oklahoma Medical Research Foundation, Oklahoma City, Okla., and University of Kentucky Research Foundation, Lexington, Ky.

Division of Ser. No. 27,559, Mar. 5, 1993, Pat. No. 5,405,874, which is a continuation of Ser. No. 589,177, Sep. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 422,651, Oct. 17, 1989, Pat. No. 5,025,032. This application Dec. 28, 1994, Ser. No. 365,548
Int. Cl.[6] A61K *31/44;31/40*
U.S. Cl. 514—345 **25 Claims**

1. A method of improving short term memory in a patient suffering from short term memory loss comprising administering to said patient an effective amount of a composition capable of treating said short term memory loss and improving short term memory, said composition having as the active agent a compound selected from the group consisting of 5,5-dimethyl pyrroline N-oxide (DMPO); α-(4-pyridyl 1-oxide)-N-tert-butylnitrone (POBN); and derivatives thereof selected from the group consisting of hydroxy POBNs and DMPOs, POBN and DMPO esters, acetoxy POBNs and DMPOs, alkyl POBNs and DMPOs, alkoxy POBNs and DMPOs and phenyl POBNs and DMPOs having spin trapping activity in vivo in tissue; and

a pharmaceutically acceptable carrier therefor.

5,578,618

PROSTAGLANDIN DERIVATIVES FOR THE TREATMENT OF GLAUCOMA OR OCULAR HYPERTENSION

Johan W. Stjernschantz, and Bahram Resul, both of Uppsala, Sweden, assignors to Pharmacia Aktiebolag, Uppsala, Sweden

Division of Ser. No. 986,943, Dec. 8, 1992, Pat. No. 5,422,368, which is a continuation of Ser. No. 469,442, Apr. 16, 1990, abandoned. This application Feb. 16, 1995, Ser. No. 390,394
Claims priority, application Sweden, Sep. 6, 1988, 88003110; Oct. 28, 1988, 8803855
Int. Cl.[6] A61K *31/557*
U.S. Cl. 514—365 **21 Claims**

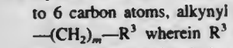
1. A therapeutic composition for topical treatment of ocular hypertension or glaucoma containing a prostaglandin PGA, PGB, PGE or PGF in an amount sufficient to reduce intraocular pressure without causing substantial ocular irritation, and an ophthalmologically compatible vehicle, in which the alpha chain of the prostaglandin comprises a chain of 6 to 10 carbon atoms, which is either

(a) saturated or

(b) unsaturated having one or more double bonds, allene bonds, or a triple bond, the alpha chain being

(c) unsubstituted or

(d) substituted with one or more substituents selected from the group of alkyl groups, alicyclic rings, aromatic rings or heteroaromatic rings, and in which the omega chain of the prostaglandin has the formula



wherein

C is a carbon atom (the number according to standard prostaglandin nomenclature being indicated by the subscript);

B is a single bond, a double bond, or a triple bond;

D represents a sub-chain of 1–10 carbon atoms with substituents on each carbon atom that are selected from the group consisting of a hydrogen atom, an alkyl group, an oxo group and a hydroxyl group, and

R_2 is an aromatic heterocyclic group having 5–6 ring atoms.

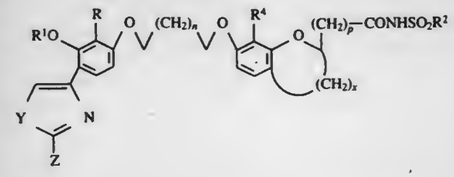
5,578,619

ALKOXY-SUBSTITUTED DIHYDROBENZOPYRAN-2-SULFONIMIDES

Stevan W. Djuric, 924 Dolphin Dr., Malvern, Pa. 19355, and Thomas D. Penning, 374 Larch, Elmhurst, Ill. 60126

Continuation of Ser. No. 249,107, May 25, 1994, abandoned. This application Dec. 8, 1995, Ser. No. 569,323
Int. Cl.[6] C07D *409/12;* A61K *31/425*
U.S. Cl. 514—365 **13 Claims**

1. A compound of the formula:



wherein

R represents alkyl having 2 to 6 carbon atoms, alkenyl having 2 to 6 carbon atoms, alkynyl having 2 to 6 carbon atoms, or —$(CH_2)_m$—R^3 wherein R^3 represents cycloalkyl of 3 to 5 carbons atoms and m is 1 or 2;

R^1 represents alkyl having 1 to 4 carbon atoms;

R^2 represents alkyl having 1 to 5 carbon atoms, phenyl or phenyl substituted with halogen or alkyl having 1 to 5 carbon atoms;

R^4 represents alkyl having 1 to 6 carbon atoms;

n is an integer from 1 to 5;

p is an integer from 0 to 6;

x is 0 or 2;

Y represents NH, oxygen or sulfur; and

Z represents hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, NR^6R^5

wherein

R^6 and R^5 are independently hydrogen or alkyl having 1 to 4 carbon atoms, or SR^7 wherein R^7 is, hydrogen, benzyl or alkyl having 1 to 4 carbon atoms; and the stereoisomers and pharmaceutically acceptable salts thereof.

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5,578,620

THIAZOLIDINE AND OXAZOLIDINE DERIVATIVES, THEIR PREPARATION AND THEIR MEDICAL USE

Takashi Fujita; Koichi Fujimoto; Takao Yoshioka; Hiroaki Yanagisawa; Toshihiko Fujiwara; Hiroyoshi Horikoshi; Minoru Oguchi, and Kunio Wada, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

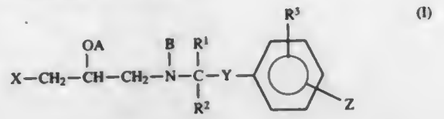
Filed Mar. 23, 1995, Ser. No. 410,033

Claims priority, application Japan, Mar. 23, 1994, 6-051541

Int. Cl.[6] C07D *277/34;* **A61K** *31/425*

U.S. Cl. 514—370 **53 Claims**

1. A compound of formula (I):



(I)

wherein:

R^1 and R^2 are the same or different and each represents a hydrogen atom or an alkyl group having from 1 to 8 carbon atoms, or R^1 and R^2 together represent a group of formula $-(CH_2)_k-$

wherein k represents an integer of from 2 to 6;

R^3 represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, a halogen atom or a hydroxy group;

A and B are the same or different and each represents a hydrogen atom, an alkyl group having from 1 to 8 carbon atoms, an aralkyl group in which an alkyl group having from 1 to 5 carbon atoms is substituted by an aryl group as defined below, an aliphatic carboxylic acyl group having from 1 to 11 carbon atoms, an aliphatic carboxylic acyl group which has from 2 to 6 carbon atoms and which is substituted by an aryl group as defined below, an aromatic carboxylic acyl group in which the aryl part is as defined below, a carbamoyl group of formula $-CONR^6R^7$,

wherein R^6 and R^7 are the same or different and each represents a hydrogen atom, an alkyl group having from 1 to 11 carbon atoms, an aryl group as defined below or an aralkyl group in which an alkyl group having from 1 to 5 carbon atoms is substituted by an aryl group as defined below;

or A and B together represent a group of formula >C=O, a group of formula >C=S, a group of formula $-C(=O)-C(=O)-$, a group of formula $-CH_2C(=O)-$, a group of formula $-CH_2CH_2-$, a group of formula $-SO_2-$ or a group of formula $-CH_2SO_2-$;

X represents a group of formula: $W-(CH_2)_m-X^1-$

wherein W represents

an aryl group as defined below, a heterocyclic group having 5 or 6 ring atoms of which from 1 to 3 are hetero-atoms selected from the group consisting of oxygen, sulfur and nitrogen hetero-atoms and being unsubstituted or being substituted by at least one substituent selected from the group consisting of substituents α as defined below or such a heterocyclic group which is fused to at least one ring system selected from the group consisting of carbocyclic and heterocyclic rings having 5 or 6 ring atoms and which is unsubstituted or is substituted by at least one substituent selected from the group consisting of substituents α as defined below,

X^1 represents a single bond, an oxygen atom, a sulfur atom or a group of formula $>NR^4$

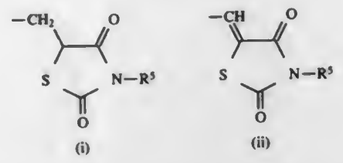
wherein R^4 represents a hydrogen atom, an alkyl group having from 1 to 8 carbon atoms, an aralkyl group in which an alkyl group having from 1 to 5 carbon atoms is substituted by at least one aryl group as defined below or an aryl group as defined below, and

m represents 0 or an integer of from 1 to 8;

Y represents a group of formula: $-(CH_2)_n-Y^1-$

wherein Y^1 represents a single bond, an oxygen atom or a sulfur atom, and n represents an integer of from 1 to 5;

Z represents a group of formula (i) or (ii):



(i) (ii)

wherein R^5 represents a hydrogen atom, a carboxyalkyl group having from 2 to 5 carbon atoms, an alkanoyloxyalkyl group having a total of from 2 to 12 carbon atoms, a cycloalkyl-substituted alkanoyloxyalkyl group having a total of from 6 to 12 carbon atoms, a cycloalkylcarbonyloxyalkyl group having a total of from 5 to 17 carbon atoms, an alkoxycarbonyloxyalkyl group having a total of from 3 to 17 carbon atoms, a cycloalkyl-substituted alkoxycarbonyloxyalkyl group having a total of from 6 to 17 carbon atoms or a cycloalkyloxycarbonyloxyalkyl group having a total of from 5 to 17 carbon atoms;

said aryl groups are carbocyclic aromatic groups which have from 6 to 14 ring carbon atoms and which are unsubstituted or are substituted by at least one substituent selected from the group consisting of substituents α, defined below; and

said substituents α are selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms, alkoxy groups having from 1 to 4 carbon atoms, haloalkyl groups having from 1 to 4 carbon atoms, hydroxy groups, halogen atoms, phenyl groups, nitro groups and groups of formula $-NR^aR^b$, wherein R^a and R^b are independently selected from the group consisting of hydrogen atoms, alkyl groups having from 1 to 8 carbon atoms, aralkyl groups in which an alkyl group having from 1 to 5 carbon atoms is substituted by an aryl group as defined above, aryl groups as defined above, aliphatic carboxylic acyl groups having from 1 to 11 carbon atoms, aliphatic carboxylic acyl groups which have from 2 to 6 carbon atoms and which are substituted by an aryl group as defined above, and aromatic carboxylic acyl groups in which the aryl part is as defined above, provided that any aryl group represented by or included in a group represented by R^a or R^b is not itself further substituted by a group of formula $-NR^aR^b$;

or a salt or ester thereof.

5,578,621

BENZAMIDE DERIVATIVES

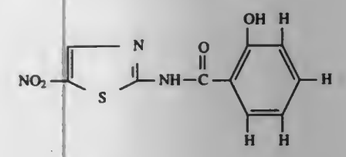
Jean-Francois Rossignol, 2650 Heron La. South, Clearwater, Fla. 34622

Filed Sep. 8, 1994, Ser. No. 301,407

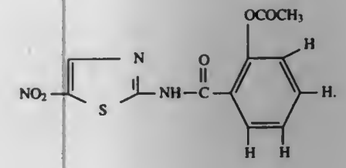
Int. Cl.[6] A61K *31/425*

U.S. Cl. 514—371 **7 Claims**

1. A pharmaceutical composition which comprises, as active agent, a mixture of the compound of formula (I):



and a compound of formula (II):



5,578,622

ISOTHIAZOLE DERIVATIVES AND THEIR USES

Kenichi Ikeda, Kawanishi; Katsutoshi Endo; Tsutomu Nishiguchi, both of Kawachinagano, and Yoshimi Niwano, Osakasayama, all of Japan, assignors to Asamura Patent Office, Tokyo, Japan

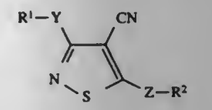
Filed Jun. 29, 1995, Ser. No. 496,764

Claims priority, application Japan, Jun. 30, 1994, 6-171806

Int. Cl.[6] A01N *43/80;* **A61K** *31/425;* **C07D** *275/03*

U.S. Cl. 514—372 **8 Claims**

1. An isothiazole derivative represented by the formula (I),



(I)

wherein R^1 represents a hydrogen atom, C_1–C_6 alkyl, C_2–C_7 alkenyl, C_3–C_7 alkynyl, C_3–C_7 cycloalkyl, C_1–C_6 cyanoalkyl, C_1–C_6 haloalkyl, C_2–C_7 alkoxyalkyl, C_3–C_7 alkoxycarbonylalkyl, C_2–C_7 haloalkenyl, C_2–C_7 alkylcarbonyl, C_2–C_7 alkoxycarbonyl, iodoalkynyl or iodoalkynyloxyalkyl group, R^2 represents a C_1–C_6 alkyl, C_2–C_7 alkenyl, C_3–C_7 alkynyl, C_3–C_7 cycloalkyl, C_1–C_6 cyanoalkyl, C_1–C_6 haloalkyl, C_2–C_7 alkoxyalkyl, C_3–C_7 alkoxycarbonylalkyl, C_2–C_7 haloalkenyl, C_2–C_7 alkylcarbonyl, C_2–C_7 alkoxycarbonyl, iodoalkynyl or iodoalkynyloxyalkyl group, provided that at least one of R^1 and R^2 represents an iodoalkynyl or iodoalkynyloxyalkyl group, Y represents O or S, and Z represents O, S, SO, SO_2 or NR^3 in which R^3 represents a hydrogen atom, C_1–C_6 alkyl, C_2–C_7 alkenyl, C_3–C_7 alkynyl or benzyl group, or R^3 and R^2, taken together, represent a C_3–C_5 alkylene group which may contain O or N.

5,578,623

SACCHARIN DERIVATIVE PROTEOLYTIC ENZYME INHIBITORS

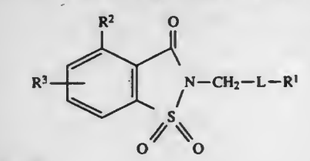
Richard P. Dunlap, Penfield; Albert J. Mura, Rochester; Dennis J. Hlasta, Clifton Park; Ranjit C. Desai, Colonie; Lee H. Latimer, Brighton, and Chakrapani Subramanyam, East Greenbush, all of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

Division of Ser. No. 289,113, Aug. 11, 1994, Pat. No. 5,464,852, which is a division of Ser. No. 113,508, Aug. 27, 1993, Pat. No. 5,380,737, which is a continuation of Ser. No. 793,035, Nov. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 514,920, Apr. 26, 1990, abandoned, and a continuation-in-part of Ser. No. 608,068, Nov. 1, 1990, abandoned, and a continuation-in-part of Ser. No. 782,016, Oct. 24, 1991, Pat. No. 5,128,339, said Ser. No. 514,920is a continuation-in-part of Ser. No. 347,125, May 4, 1989, abandoned, and a continuation-in-part of Ser. No. 347,126, May 4, 1989, abandoned. This application May 19, 1995, Ser. No. 445,240

Int. Cl.[6] A61K *31/425;* **C07D** *275/04*

U.S. Cl. 514—373 **10 Claims**

1. A compound having the structural formula



Formula I

wherein

L is O;

R^1 is acyl wherein acyl is an amino acid or peptide acyl or cycloalkanecarbonyl or monocyclic, bicylic or tricyclic aryl-lower-alkanoyl unsubstituted or substituted in alkanoyl by hydroxy or monocyclicli, substituted or unsubstituted, aromatic or hydroaromatic C-beterocyclylcarbonyl, monocyclic substituted or unsubstituted aryloxy-2-lower-alkanoyl or B'=N-carbonyl wherein B'=N is amino, lower-alkylamino, di-lower-alkylilmino, aryl-lower-alkylamino, diarylamino, 1-pyrrolidinyl, 1-piperidinyl, 1-morpholinyl, 1-pipcrazinyl, 4-lower-alkyl-1-piperazinyl or 1-azepinyl or (mono or di-lower-alkyl, phenyl or di-lower-alkoxyphenyl)phosphiny or (mono or di-lower-alkyl, phenyl or phenyl-lower-alkyl)phosphono:

L-R^1 is a leaving group, and H—L—R^1 is the conjugate acid thereof which has a pK_a value less than or equal to 8;

R^2 is primary or secondary alkyl of two to four carbon atoms, primary alkylamino of one to three carbon atoms, primary alkylmethylamino of two to four carbon atoms, diethylamino or primary alkoxy of one to three carbon atoms; and

R^3 is from one to three substituents at any or all of the 5-, 6- and 7-positions and is selected from the group consisting of hydrogen, lower-alkyl, cycloalkyl, amino-lower-alkyl, lower-alkylamino-lower-alkyl, di-lower-alkylamino-lower-alkyl, hydroxy-lower-alkyl, lower-alkoxy-lower-alkyl, perfluoro-lower-alkyl, perchloro-lower-alkyl, formyl, cyano, carboxy, aminocarbonyl, R-oxycarbonyl, B=N wherein B=N is amino, lower-alkylamino, di-lower-alkylamino, carboxy-lower-alkylamino, 1-pyrrolidinyl, 1-piperidinyl, 1-azetidinyl, 4-morpholinyl, 1-piperazinyl, 4-lower-alkyl-1-piperazinyl, 4-benzyl-1-piperazinyl or 1-imidazolyl, 1-lower-alkyl-2-pyrrolyl, lower-alkylsulfonylamino, perfluoro-lower-alkylsulfonylamino, perchloro-lower-alkylsulfonylamino, nitro, hydroxy, lower-alkoxy, cycloalkoxy, B=N-lower-alkoxy, hydroxy-lower-alkoxy, polyhydroxy-lower-alkoxy or acetal or ketal thereof, lower-alkoxy-lower-alkoxy, poly-lower-alkoxy-lower-alkoxy, hydroxy-poly-lower-alkylenoxy, lower-alkoxy-poly-lower-alkylenoxy, B=N-carbonyloxy, carboxy-lower-alkoxy, R-oxycarbonyl-lower-alkoxy, methylenedioxy, R-thio, R-sulfinyl, R-sulfonyl, perfluoro-lower-alkylsulfonyl, perchloro-lower-alkylsulfonyl, aminosulfonyl, lower-alkylaminosulfonyl, di-lower-alkylaminosulfonyl and halo wherein R is lower-alkyl, phenyl, benzyl or naphthyl or phenyl or naphthyl having one or

two substituents selected from the group consisting of lower-alkyl, lower-alkoxy and halo;
or a pharmaceutically acceptable acid addition salt thereof if the compound has a basic functional group or a pharmaceutically acceptable base addition salt thereof if the compound has an acidic functional group.

5,578,624
HETEROARYLPYRROLIDINES AND THEIR USE AS ANTIPSYCHOTICS AND ANALGESICS

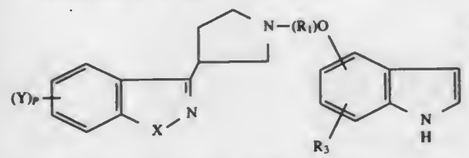
Joseph T. Strupczewski, Flemington, N.J., and Kenneth J. Bordeau, Kintnersville, Pa., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 468,076

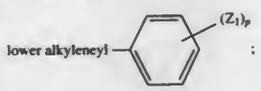
Int. Cl.[6] A61K *31/495;31/55;31/505;31/44;* **C07D** *401/00;403/00;407/00;417/00;419/00;221/04;275/04, 239/02*

U.S. Cl. 514—373 **14 Claims**

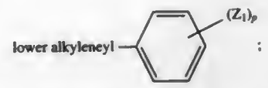
1. A compound of the formula:



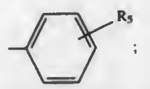
wherein, X is —O—, —S—, —NH—, or —N (R_2) —;
R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, cycloalkyl, aroyl, alkanoyl, alkoxycarbonyl, and phenysulfonyl groups;
aryl is as defined hereinafter;
p is 1 or 2;
Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;
R_1 is $—CR_{24}R_{27}—(CR_{23}R_{24})_n—CR_{24}\ R_{27}—$ where n is 0, 1, 2, or 3; or
$—CHR_{24}—CH═CH—CHR_{24}—$,
$—CHR_{24}—C≡C—CHR_{24}—$,
$—CHR_{24}—CH═CH—CR_{23}R_{24}—CHR_{24}—$,
$—CHR_{24}—CR_{23}R_{24}—CH═CH—CHR_{24}—$,
$—CHR_{24}—C≡C—CR_{23}R_{24}—CHR_{24}—$, or
$—CHR_{24}—CR_{23}R_{24}—C═C—CHR_{24}—$,
the —CH═CH— bond being cis or trans;
R_{23} is hydrogen, (C_1–C_{18}) linear alkyl, phenyl, hydroxy, (C_1–C_{18}) alkoxy, aryloxy, aryl (C_1–C_{18}) alkyloxy, (C_1–C_{18}) alkanoyloxy, hydroxy (C_1–C_6) alkyl, (C_1–C_{18}) alkoxy (C_1–C_6) alkyl, phenyl (C_1–C_6) alkoxy, aryl (C_1–C_{18}) alkyloxy (C_1–C_6) alkyl, (C_1–C_{18}) alkanoyloxy (C_1–C_6) alkyl, or



where Z_1 is lower alkyl, —OH, lower alkoxy, $—CF_3$, $—NO_2$, $—NH_2$, or halogen, and p is as previously defined; and
R_{24} is hydrogen, (C_1–C_{18}) linear alkyl, phenyl, hydroxy (C_1–C_6) alkyl, (C_1–C_{18}) alkoxy (C_1–C_6) alkyl, phenyl (C_1–C_6) alkyloxy, aryl (C_1–C_{18}) alkyloxy (C_1–C_6) alkyl, (C_1–C_{18}) alkanoyloxy (C_1–C_6) alkyl, or



where Z_1 is as previously defined, and p is as previously defined;
R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C=O or C=S; and
aryl is phenyl or



where R_5 is hydrogen, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy; and
R_3 is hydrogen or $—OCH_3$;
all geometric, optical, and stereoisomers thereof;
or a pharmaceutically acceptable acid addition salt thereof.

5,578,625
ACARICIDE

Junji Suzuki, Suzaka; Yasuo Kikuchi, Nagano; Tatsuya Ishida, Nagano, and Tatsufumi Ikeda, Nagano, all of Japan, assignors to Yashima Chemical Industrial Co., Ltd., Kanagawa, Japan

PCT No. PCT/JP93/00783, § 371 Date Dec. 5, 1994, § 102(e) Date Dec. 5, 1994, PCT Pub. No. WO93/25079, PCT Pub. Date Dec. 23, 1993

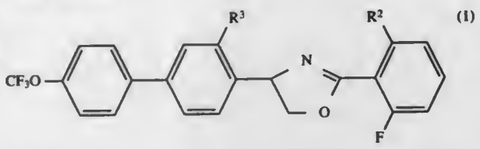
PCT Filed Jun. 11, 1993, Ser. No. 347,443

Claims priority, application Japan, Jun. 12, 1992, 4-177737

Int. Cl.[6] A01N *43/76*

U.S. Cl. 514—374 **3 Claims**

I. A method for control of ticks which externally parasitize pets or wild animals or birds, which method comprises applying an acaricidally effective amount of an oxazoline compound to the pets or wild animals or birds, said compound represented by the following formula



wherein
R^3 denotes a fluorine atom, a chlorine atom, a C_1 to C_{15} alkyl group or a C_1 to C_{15} alkoxy group, and R^2 denotes a fluorine atom or a chlorine atom.

5,578,626
PHARMACEUTICAL COMPOSITIONS

Edward A. Boyd, Purley; Brenda Costall, Addingham; Mary E. Kelly, Thornton, and Philip J. Parsons, Reading, all of England, assignors to British Technology Group Limited, London, England

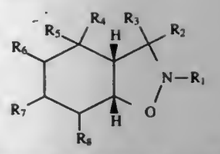
Division of Ser. No. 290,752, Aug. 15, 1994, Pat. No. 5,476,867. This application Jun. 7, 1995, Ser. No. 478,142

Claims priority, application United Kingdom, Feb. 19, 1992, 9203500; Jan. 19, 1993, 9300921

Int. Cl.[6] A61K *31/42*

U.S. Cl. 514—379 **20 Claims**

1. A method of treatment of a patient requiring improvement of learning disability and/or reversal of amnesia which comprises administering to said patient a therapeutically effective amount of a compound of formula (I)



(I)

in which R_1 represents hydrogen, a C_{1-6} aliphatic hydrocarbyl group or a C_{1-4} aliphatic hydrocarbyl group substituted by a C_{3-6} alicyclic hydrocarbyl group or by a phenyl group, which phenyl group is unsubstituted or substituted by a halogeno or C_{1-3} halogenoalkyl group, R_2, represents hydrogen, R_3 represents hydrogen, a 5- or 6-membered ring aromatic heterocyclyl group containing one or two heteroatoms selected from nitrogen, oxygen and sulphur which is unsubstituted or substituted by a halogeno or C_{1-3} halogenoalkyl group, or a group AR wherein A is a straight chain C_{1-4} aliphatic hydrocarbyl group terminally substituted by R which is hydrogen, a phenyl group or a 5- or 6-membered ring aromatic heterocyclyl group containing one or two heteroatoms selected from nitrogen, oxygen and sulphur, which phenyl or heterocyclyl group R is unsubstituted or substituted by a halogeno or C_{1-3} halogenoalkyl group, R_4 and R_5 each represent hydrogen or together represent an oxo group and R_6, R_7 and R_8 each represent hydrogen, or R_4 represents hydrogen arid two of R_5, R_6, R_7 and R_8 together represent the second bond of a double bond joining positions 4 and 5, 5 and 5 or 6 and 7 with the remaining two of R_5, R_6, R7 and R_8 representing hydrogen, the compound optionally being in the form of a salt thereof formed with a physiologically acceptable inorganic or organic acid.

5,578,627
1,2-BENZOISOXAZOLE DERIVATIVE OR ITS SALT AND BRAIN-PROTECTING AGENT COMPRISING THE SAME

Kenji Takeda; Nobuo Terashima; Joji Nakano, all of Toyama; Hisashi Minami, Toda; Toyokazu Kobayashi, Toyama; Kunikazu Furuhata, Namerikawa; Tadakazu Takakura, Toyama; Makoto Takata, Toda; Hiroyo Kawafuchi, Nakanikawa-gun, and Toru Hiraiwa, Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/01549, § 371 Date Apr. 12, 1995, § 102(e) Date Apr. 12, 1995, PCT Pub. No. WO94/10158, PCT Pub. Date May 11, 1994

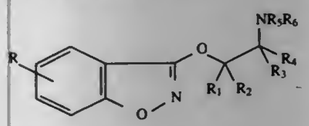
PCT Filed Oct. 27, 1993, Ser. No. 411,667

Claims priority, application Japan, Oct. 25, 1992, 4-312743; Jul. 2, 1993, 5-238688; Jul. 15, 1993, 5-197776

Int. Cl.[6] A61K *31/405;* **C07D** *209/10*

U.S. Cl. 514—379 **32 Claims**

1. A 1,2-benzoisoxazole compound represented by the following general formula or a salt thereof:



wherein R represents at least one member selected from hydrogen atom, halogen atoms, nitro group, cyano group, hydroxyl group, and substituted or unsubstituted lower alkyl, lower alkenyl, lower alkynyl, aralkyl, aryl, lower alkyloxy, cycloalkyl, aralkyloxy, aryloxy, amino, lower acyl, arylcarbonyl, lower alkanesulfonyl, arenesulfonyl, lower alkylthio, carbamoyl, heterocyclic, lower alkylene and lower alkenylene groups; R_1 and R_2, which may be the same or different, represent hydrogen atoms or substituted or unsubstituted lower alkyl groups; R_3 represents a hydrogen atom or a substituted or unsubstituted lower alkyl, aryl, aralkyl or heterocyclic group; R_4 represents a substituted or unsubstituted lower alkyl, aryl or heterocyclic group, or alternatively R_3 and R_4, when taken together, represent a lower alkylene group; R_5 and R_6, which may be the same or different, represent hydrogen atoms or substituted or unsubstituted lower alkyl, lower alkenyl, lower alkynyl, lower acyl, lower alkyloxycarbonyl or aralkyl groups.

5,578,628
MEDICAMENTS FOR THE TREATMENT OF NAUSEA AND VOMITING

Michael B. Tyers, Welwyn; Ian H. Coates, Hertford; David C. Humber, Ealing; George B. Ewan, Chalfont St. Peter, and James A. Bell, Melbourn, all of England, assignors to Glaxo Group Limited, England

Continuation of Ser. No. 315,314, Feb. 24, 1989, abandoned, which is a division of Ser. No. 177,042, Apr. 4, 1988, Pat. No. 4,929,632, which is a division of Ser. No. 877,805, Jun. 24, 1986, Pat. No. 4,753,789. This application Mar. 30, 1990, Ser. No. 501,974

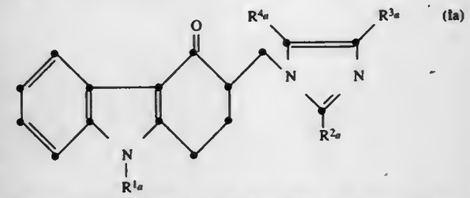
Claims priority, application United Kingdom, Jun. 25, 1985, 8516083

The portion of the term of this patent subsequent to Feb. 16, 2005, has been disclaimed.

Int. Cl.[6] A61K *31/415*

U.S. Cl. 514—397 **2 Claims**

1. A method of treatment of nausea and vomiting which comprises administering to a human or animal subject in need thereof an effective amount for the treatment of nausea and vomiting of a compound of formula (Ia)



(Ia)

wherein R^{1a} represents a hydrogen atom or a methyl, ethyl, propyl, prop-2-yl, prop-2-enyl or cyclopentyl group; R^{3a} represents a hydrogen atom; and either R^{2a} represents a methyl, ethyl, propyl or prop-2-yl group and R^{4a} represents a hydrogen atom or R^{2a} represents a hydrogen atom and R^{4a} represents a methyl or ethyl group or a physiologically acceptable salt or solvate thereof.

5,578,629
BENZAMIDE-CONTAINING INHIBITORS OF FARNESYL-PROTEIN TRANSFERASE

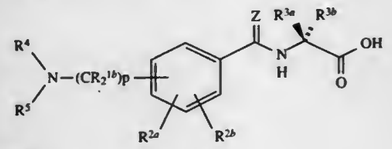
Terrence M. Ciccarone, Telford; Theresa M. Williams, Harleysville, and Suzanne C. MacTough, Chalfont, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 29, 1995, Ser. No. 413,137

Int. Cl.[6] C07D *277/04;277/12;237/20;323/29;321/10*

U.S. Cl. 514—397 **17 Claims**

1. A compound which inhibits Ras farnesyl-transferase having the Formula I:



I

wherein:
R^{1a} and R^{1b} are independently selected from:
a) hydrogen,

b) aryl, heterocycle, cycloalkyl, alkenyl, alkynyl, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, CN, NO_2, $(R^{10})_2N$—$C(NR^{10})$—, $R^{10}C(O)$—, $R^{10}OC(O)$—, N_3, —$N(R^{10})_2$, or $R^{11}OC(O)NR^{10}$—,

c) C_1–C_6 alkyl, and

d) C_1–C_6 alkyl substituted by a group selected from: aryl, heterocyclic, cycloalkyl, alkenyl, alkynyl, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, CN, $(R^{10})_2N$—$C(NR^{10})$—, $R^{10}C(O)$—, $R^{10}OC(O)$—, N_3, —$N(R^{10})_2$, or $R^{11}OC(O)$—NR^{10}—;

R^{2a} and R^{2b} are independently selected from:

a) hydrogen,

b) C_1–C_6 alkyl,

c) C_1–C_6 alkyl substituted by a group selected from: alkenyl, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, CN, N_3, $(R^{10})_2N$—$C(NR^{10})$—, $R^{10}C(O)$—, $R^{10}OC(O)$—, —$N(R^{10})_2$, or $R^{11}OC(O)NR^{10}$—,

d) aryl, heterocycle, cycloalkyl, alkenyl, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, CN, NO_2, $(R^{10})_2N$—$C(NR^{10})$—, $R^{10}C(O)$—, $R^{10}OC(O)$—, N_3, —$N(R^{10})_2$, or $R^{11}OC(O)NR^{10}$—, and

e) C_1–C_6 alkyl substituted with a a group selected from:

i) aryl,

ii) substituted aryl,

iii) heterocyclic,

iv) substituted heterocyclic,

v) C_3–C_{10} cycloalkyl, and

vi) substituted C_3–C_{10} cycloalkyl;

R^{3a} and R^{3b} are independently selected from:

a) a side chain of a naturally occurring amino acid,

b) an oxidized form of a side chain of a naturally occurring amino acid which is:

i) methionine sulfoxide, or

ii) methionine sulfone, and

c) a group selected from C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_3–C_{10} cycloalkyl, aryl or heterocyclic group, the group which is substituted with a substituent is selected from F, Cl, Br, $N(R^{10})_2$, NO_2, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, CN, $(R^{10})_2N$—$C(NR^{10})$—, $R^{10}C(O)$—, $R^{10}OC(O)$—, N_3, —$N(R^{10})_2$, $R^{11}OC(O)NR^{10}$— and C_1–C_{20} alkyl,

d) a group selected from C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_3–C_{10} cycloalkyl, aryl or heterocyclic group, and

e) C_1–C_6 alkyl substituted with a a group selected from:

i) aryl,

ii) substituted aryl,

iii) heterocyclic,

iv) substituted heterocyclic,

v) C_3–C_{10} cycloalkyl, and

vi) substituted C_3–C_{10} cycloalkyl;

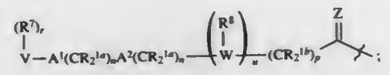
or

R^{3a} and R^{3b} are combined to form —$(CH_2)_s$— or —$(CH_2)_s$— wherein one of the carbon atoms is replaced by a moiety selected from: O, $S(O)_m$, —NC(O)—, and —$N(COR^{10})$—;

R^4 and R^5 are independently selected from:

a) hydrogen, and

b)



R^7 is independently selected from:

a) hydrogen,

b) aryl, heterocycle, cycloalkyl, alkenyl, alkynyl, perfluoroalkyl, F, Cl, Br, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, CN, NO_2, $R^{10}{}_2N$— $C(NR^{10})$—, $R^{10}C(O)$—, $R^{10}OC(O)$—, N_3, —$N(R^{10})_2$, or $R^{11}OC(O)NR^{10}$—,

c) C_1–C_6 alkyl, and

d) C_1–C_6 alkyl substituted by a group selected from: aryl, heterocycle, cycloalkyl, alkenyl, alkynyl, perfluoroalkyl, F, Cl, Br, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NH$—, CN, H_2N—$C(NH)$—, $R^{10}C(O)$—, $R^{10}OC(O)$—, N_3, —$N(R^{10})_2$, or $R^{10}OC(O)NH$—;

R^8 is selected from:

a) hydrogen,

b) alkenyl, alkynyl, perfluoroalkyl, F, Cl, Br, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, CN, NO_2, $(R^{10})_2N$—$C(NR^{10})$—, $R^{10}C(O)$—, $R^{10}OC(O)$—, N_3, —$N(R^{10})_2$, or $R^{11}OC(O)NR^{10}$—,

c) C_1–C_6 alkyl, and

d) C_1–C_6 alkyl substituted by a group selected from: perfluoroalkyl, F, Cl, Br, $R^{10}O$—, $R^{11}S(O)_m$—, $R^{10}C(O)NR^{10}$—, CN, $(R^{10})_2N$— $C(NR^{10})$—, $R^{10}C(O)$—, $R^{10}OC(O)$—, N_3, —$N(R^{10})_2$, or $R^{11}OC(O)NR^{10}$—;

R^{10} is independently selected from hydrogen, C_1–C_6 alkyl, benzyl and aryl;

R^{11} is independently selected from C_1–C_6 alkyl and aryl;

A^1 and A^2 are independently selected from: a bond, —CH=CH—, —C≡C—, —C(O)—, —C(O)NR^{10}—, —$NR^{10}C(O)$—, O, —$N(R^{10})$—, —$S(O)_2N(R^{10})$—, —$N(R^{10})S(O)_2$—, or $S(O)_m$;

V is selected from:

a) hydrogen,

b) heterocyele,

c) aryl,

d) C_1–C_{20} alkyl wherein from 0 to 4 carbon atoms are replaced with a a heteroatom selected from O, S, and N, and

e) C_2–C_{20} alkenyl,

provided that V is not hydrogen if A^1 is $S(O)_m$ and V is not hydrogen if A^1 is a bond, n is 0 and A^2 is $S(O)_m$;

W is a heterocycle;

Z is independently H_2 or O;

m is 0, 1 or 2;

n is 0, 1, 2, 3 or 4;

p is 0, 1, 2, 3 or 4;

r is 0 to 5, provided that r is 0 when V is hydrogen;

s is 4 or 5; and

u is 0 or 1;

or a pharmaceutically acceptable salt thereof.

5,578,630

HETEROCYCLIC COMPOUNDS WHICH INHIBIT AROMATASE

Peter C. Cherry; Michael W. Foxton, and Andrew T. Merritt, all of Greenford, Great Britain, assignors to Glaxo Group Limited, London, Great Britain

PCT No. PCT/EP93/01520, § 371 Date Nov. 25, 1994, § 102(e) Date Nov. 25, 1994, PCT Pub. No. WO93/25548, PCT Pub. Date Dec. 23, 1993

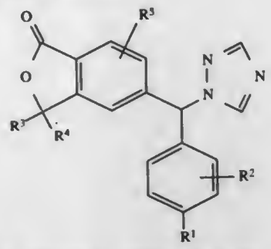
PCT Filed Jun. 14, 1993, Ser. No. 338,510

Claims priority, application United Kingdom, Jun. 17, 1992, 9212833

Int. Cl.[6] A61K *31/41;* **C07D** *405/06*

U.S. Cl. 514—383 **18 Claims**

1. A compound of formula (I)



(I)

wherein R^1 represents a cyano or nitro group;

R^2 represents hydrogen or one or more halogen atoms;

R^3 represents a C_{1-6}alkyl group and R^4 represents hydrogen or a C_{1-6}alkyl group or R^3 and R^4 together represent a C_{3-6}cycloalkyl group; and

R^5 represents hydrogen or one or more halogen atoms or C_{1-6}alkoxy groups or pharmaceutically acceptable salts or solvates thereof.

5,578,631

METHODS OF COMBATING *PNEUMOCYSTIS CARINII* PNEUMONIA AND COMPOUNDS USEFUL THEREFOR

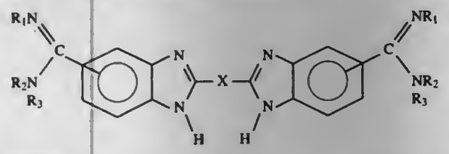
Richard R. Tidwell; Christine C. Dykstra, and James E. Hall, all of Chapel Hill, N.C., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Division of Ser. No. 958,696, Oct. 13, 1992, Pat. No. 5,428,051. This application Apr. 24, 1995, Ser. No. 427,597

Int. Cl.[6] A61K *31/415;31/55;31/505;* **C07D** *403/14*

U.S. Cl. 514—394 **3 Claims**

1. A compound according to formula (I)



(I)

wherein:

R_1 and R_2 together represent —$(CH_2)_m$— wherein m is from two to four;

R_3 is H or loweralkyl; and

X is selected from the group consisting of —CH=CH—CH_2—CH_2—, CH_2—CH=CH—CH_2—, —CH=CH—CH=CH—, and any of the foregoing substituted from 1 to 2 times with loweralkyl;

and the pharmaceutically acceptable salts thereof.

5,578,632

MEDICAMENTS FOR THE TREATMENT OF GASTROINTESTINAL DYSFUNCTION

Michael B. Tyers, Welwyn, England, assignor to Glaxo Group Limited, London, United Kingdom

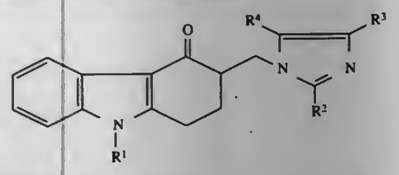
Division of Ser. No. 501,974, Mar. 30, 1990, which is a continuation of Ser. No. 315,314, Feb. 24, 1989, abandoned, which is a division of Ser. No. 177,042, Apr. 4, 1988, Pat. No. 4,929,632, which is a division of Ser. No. 877,805, Jun. 24, 1986, Pat. No. 4,753,789. This application Jun. 7, 1995, Ser. No. 483,162

Claims priority, application United Kingdom, Jun. 25, 1985, 8516083

Int. Cl.[6] A61K *31/415;31/34*

U.S. Cl. 514—397 **10 Claims**

1. A method of treatment of gastrointestinal dysfunction which comprises administering to a human or animal subject an effective amount of a compound of formula (I)



(I)

wherein

R^1 represents a hydrogen atom or a C_{1-10} alkyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkyl-(C_{1-4})alkyl, C_{3-6} alkenyl, C_{3-10} alkynyl, phenyl or phenyl-C_{1-3} alkyl group;

and one of the groups represented by

R^2, R^3 and R^4 is a hydrogen atom or a C_{1-6} alkyl, C_{3-7} cycloalkyl, C_{2-6} alkenyl or phenyl-C_{1-3} alkyl group and each of the other two groups which may be the same or different, represents a hydrogen atom or a C_{1-6} alkyl group;

or a physiologically acceptable salt or solvate thereof, in combination with ranitidine.

5,578,633

N-SULFONYLINDOLINE DERIVATIVES, THEIR PREPARATION AND THE PHARMACEUTICAL COMPOSITIONS IN WHICH THEY ARE PRESENT

Jean Wagnon, Montpellier; Paul de Cointet, Toulouse; Dino Nisato; Claude Plouzane, both of Saint Georges D'Orques; Claudine Serradeil-Legal, Escalquens, and Bernard Tonnerre, Vailhauques, all of France, assignors to Sanofi, Paris, France

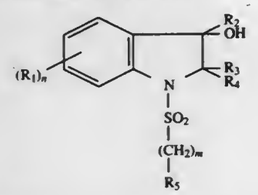
Division of Ser. No. 348,150, Nov. 28, 1994, Pat. No. 5,481,005, which is a division of Ser. No. 240,360, May 10, 1994, Pat. No. 5,397,801, which is a division of Ser. No. 923,839, Aug. 3, 1992, Pat. No. 5,338,755, which is a continuation-in-part of Ser. No. 737,655, Jul. 30, 1991, abandoned. This application Jun. 2, 1995, Ser. No. 458,614

Claims priority, application France, Jul. 31, 1990, 90 09778; Aug. 2, 1991, 91 09908

Int. Cl.[6] A61K *31/40;* **C07D** *209/04*

U.S. Cl. 514—418 **11 Claims**

1. A compound of the formula



(I)

in which

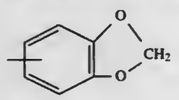
R_1 is a halogen atom, a C_1–C_4 alkyl, a hydroxyl, a C_1–C_4 alkoxy, a benzyloxy group, a cyano group, a trifluoromethyl group, a nitro group or an amino group;

R_2 is a C_1–C_6 alkyl, a C_3–C_7 cycloalkyl, a C_5–C_7 cycloalkene or a phenyl which is unsubstituted or monosubstituted or polysubstituted by a C_1–C_4 alkyl, a C_1–C_4 alkoxy, a halogen, a trifluoromethyl group, a nitro group or an amino group;

R_3 is a hydrogen atom or a C_1–C_4 alkyl;

R_4 is a carboxyl group, an alkoxycarbonyl group in which the alkyl group is C_1–C_6, a benzyloxycarbonyl group or a carboxamide group of the formula $CONR_6R_7$;

R_5 is a C_1–C_4 alkyl, a 1-naphthyl, a 2-naphthyl, a 5-dimethylamino- 1-naphthyl or a phenyl which is unsubstituted or substituted by one or more substituents selected from a halogen atom, a C_1–C_4 alkyl, a trifluoromethyl group, a nitro group, an amino group which is free or substituted by one or 2 C_1–C_4 alkyls, a hydroxyl, a C_1–C_4 alkoxy, a C_1–C_4 alkenoxy, a C_1–C_4 alkylthio, a trifluoromethoxy group, a benzyloxy group, a cyano group, a carboxyl group, a C_1–C_4 alkoxycarbonyl group, a carbamoyl group or a C_1–C_4 alkylamido group, or, when m=0, R_5 is as defined above or a group



R_6 and R_7 are each independently hydrogen, a C_1–C_6 alkyl or a phenylalkyl in which the alkyl is C_1–C_4, or R_6 and R_7 together form a group —$(CH_2)_p$—;

n is 0, 1 or 2;

m is 0, 1 or 2; and

p is 4, 5 or 6;

and its salts, where appropriate.

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5,578,634

1H-INDOLE-3-ACETIC ACID HYDRAZIDE $SPLA_2$ INHIBITORS

Nicholas J. Bach, Indianapolis; Robert D. Dillard, Zionsville; Susan E. Draheim, Indianapolis; Robert B. Hermann, Indianapolis, and Richard W. Schevitz, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

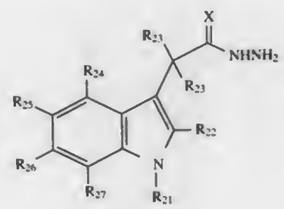
Division of Ser. No. 48,608, Apr. 16, 1993. This application May 12, 1995, Ser. No. 440,154

Int. Cl.[6] C07D *209/18;403/06;* **A61K** *31/405;31/41*

U.S. Cl. 514—419 **10 Claims**

1. A 1H-indole-3-acetic acid hydrazide represented by the formula (III), and pharmaceutically acceptable salts thereof:

(III)



wherein;

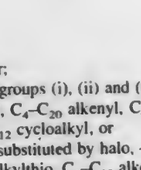
X is oxygen or sulfur;

R_{21} is selected from groups (i), (ii) and (iii) where;

(i) is C_4–C_{20} alkyl, C_4–C_{20} alkenyl, C_4-C_{20} alkynyl, C_4–C_{20} haloalkyl, C_4–C_{12} cycloalkyl, or

(ii) is aryl or aryl substituted by halo, —CN, —CHO, —OH, —SH, C_1–C_{10} alkylthio, C_1–C_{10} alkoxy, C_1–C_{10} alkyl, carboxyl, amino, or hydroxyamino;

(iii) is

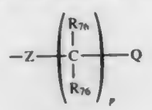


where y is from 1 to 8, R_{74} is, independently, hydrogen or C_1– C_{10} alkyl, and R_{75} is aryl or aryl substituted by halo, —CN, —CHO, —OH, nitro, phenyl, —SH, C_1–C_{10} alkylthio, C_1–C_{10} alkoxy, C_1–C_{10} alkyl, amino, hydroxyamino, benzyloxy, or pyridyl;

R_{22} is halo, C_1–C_3 alkyl, ethenyl, C_1–C_2 alkylthio, C_1–C_2 alkoxy, —CHO, —CN;

each R_{23} is independently hydrogen, C_1–C_3 alkyl, or halo;

R_{24}, R_{25}, R_{26}, and R_{27} are each independently hydrogen, C_1–C_{10} alkyl, C_2–C_{10} alkenyl, C_2–C_{10} alkynyl, C_3–C_8 cycloalkyl, aryl, aralkyl, C_1–C_{10} haloalkyl, C_2–C_{10} alkoxy, C_1–C_{10} haloalkoxy, C_4–C_8 cycloalkoxy, phenoxy, halo, hydroxy, carboxyl, —SH, —CN, —S(C_1– C_{10} alkyl), arylthio, thioacetal, —C(O)O(C_1–C_{10} alkyl), hydrazino, hydrazido, —NH_2, —NO_2, —$NR_{82}R_{83}$, and —C(O)$NR_{82}R_{83}$, where, R_{82} and R_{83} are independently hydrogen, C_1–C_{10} alkyl, or C_1–C_{10} hydroxyalkyl; or a group having the formula;



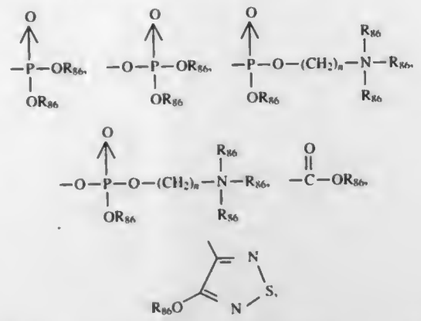
where,

each R_{76} is independently selected from hydrogen, C_1–C_{10} alkyl, hydroxy, or both R_{76} taken together are =O;

p is 1 to 8,

Z is a bond, —O—, —N(C_1–C_{10} alkyl)—, —NH, or —S—; and

Q is —CON($R_{82}R_{83}$), -5-tetrazolyl, —SO_3H,



where R_{86} is, independently, hydrogen, a metal, or C_1–C_{10} alkyl, and n is a number from 1 to 8.

5,578,635

Patent Not Issued For This Number

5,578,636

POLYTHIOPHENE ANTI-TUMOR AGENTS

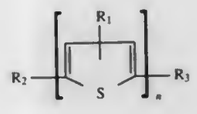
Ching T. Chang, Taipei, Taiwan; Ching-Jer Chang, West Lafayette, Ind.; Chen-Tao Lee, Hsinchu, Taiwan; Fen-Lan Lin, Hsinchu, Taiwan; Jih-Dar Tsai, Hsinchu, Taiwan; Curtis L. Ashendel, West Lafayette, Ind.; Thomas C. K. Chan, Hopkinton, Mass.; Robert L. Geahlen, and David J. Waters, both of West Lafayette, Ind., assignors to International Technology Purdue Research Foundation, West Lafayette, Ind., and Research Institute, Hsinchu, Taiwan

Filed Apr. 8, 1994, Ser. No. 224,828

Int. Cl.[6] A61K *31/38*

U.S. Cl. 514—444 **3 Claims**

1. A method for treating a patient having a solid tumor, said method comprising the step of administering to the patient in the absence of light activation an effective amount of a compound of the formula:



wherein n is 0 or 1,

R_1 is H, CH_2OH, CHO, or CH_2NH_2,

R_2 is selected from the group consisting of 2-thienyl, 3-thienyl, and mono- or di-substituted 2-thienyl, and R_3 is selected from the group consisting of mono- and di-substituted 2-thienyl, wherein the thienyl substituents are selected from the group consisting of CH_2OR_4, CHO and CH_2NH_2 wherein

R_4 is H or COC_1–C_{17} alkyl;

cyclodextrin complexes of such compound and

when R_2 or R_3 is thienyl substituted with CH_2NH_2, the pharmaceutically acceptable salt of the compounds represented thereby.

5,578,637

METHODS OF INHIBITION OR KILLING CANCER CELLS USING AN ENDOPEROXIDE

Henry C. Lai, Seattle, and Narendra P. Singh, Lynnwood, both of Wash., assignors to University of Washington, Seattle, Wash.

Filed May 3, 1995, Ser. No. 434,452

Int. Cl.[6] A01N *43/16;43/02;* **A61K** *31/35;31/335*

U.S. Cl. 514—450 **13 Claims**

1. A method for the treatment of a human or non-human mammal patient suffering from cancer, said method comprising identifying a patient in need of such treatment and then:

(a) administering to said patient an amount of an iron enhancing agent effective to increase the intracellular iron concentration of the patient; and

(b) administering to said patient a therapeutically effective amount of a compound containing an endoperoxide group wherein the endoperoxide compound is selected from the group consisting of sesquiterpene lactones and alcohols, carbonates, esters, ethers and sulfonates thereof, arteflene, 1,2,4-trioxanes and 1,2,4,5-tetraoxanes.

5,578,638

TREATMENT OF GLAUCOMA AND OCULAR HYPERTENSION WITH β_3–ADRENERGIC AGONISTS

Romulus K. Brazzell, New City, N.Y., and Bernard Dubnick, Westwood, N.J., assignors to American Cyanamid Company, Wayne, N.J.

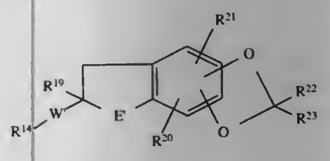
Filed Nov. 5, 1993, Ser. No. 148,154

Int. Cl.[6] A61K *31/335;31/42;31/35*

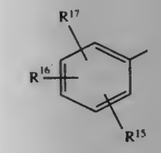
U.S. Cl. 514—463 **2 Claims**

1. A method of treating glaucoma or reducing intraocular pressure in a patient in need of such treatment which comprises topically administering to the eye of a mammal or systemically administering to a mammal in an amount effective to reduce intraocular pressure, a compound having the Formula (v):

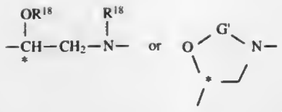
(V)



wherein R^{14} is naphthyl, 5,6,7,8-tetrahydronaphth-(1 or 2)-yl or 5,8-dihydronaphth-(1 or 2)-yl; or



wherein R^{15}, R^{16}, and R^{17} may be the same or different and are hydrogen, (C_1–C_4)alkyl, (C_1–C_4)alkoxy, hydroxy, halogen trifluoromethyl, carboxy, hydroxy(C_1–C_{10})alkyl, (C_1–C_{10})alkoxycarbonyl, thio(C_1–C_4)alkyl, sulfonyl or sulfinyl; n is an integer from 1 to 3; E' is —$(CH_2)_n$—; W' is a divalent radical of



wherein * signifies an asymmetric carbon; R^{18} is hydrogen, (C_1–C_4)alkyl, (C_1–C_4)acyl, (C_1–C_4)alkoxycarbonyl or benzoyl; G' is carbonyl or thiocarbonyl; R^{19} is hydrogen or (C_1–C_4)alkyl; R^{20} and R^{21} may be the same or different and are hydrogen, (C_1–C_4)alkyl, (C_1–C_4)alkoxy, hydroxy, halogen, trifluoromethyl, carboxy, hydroxy(C_1–C_{10})alkyl, (C_1–C_{10})alkoxycarbonyl, thio(C_1–C_4)alkyl, sulfonyl or sulfinyl; R^{22} and R^{23} are hydrogen, carboxyl, (C_1–C_{10})alkoxycarbonyl, hydroxymethyl, —$CH_2OCH_2COOR^{24}$ or —$CH_2OCH_2CH_2OR^{24}$, wherein R^{24} is hydrogen, (C_1–C_4)alkyl, or $CONHR^{25}$, R^{25} is hydrogen, straight or branched (C_1–C_{10})alkyl or 2-methoxy-1-ethyl; with the proviso that R^{22} and R^{23} may not both be hydrogen; or the pharmacologically acceptable salts or esters thereof; the racemic mixtures thereof or the diastereomeric mixtures thereof.

5,578,639

PLA_2 INHIBITORS AND THEIR USE FOR INHIBITION OF INTESTINAL CHOLESTEROL ABSORPTION

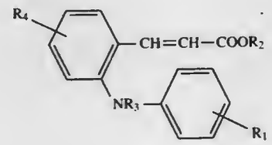
Reynold Homan, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 269,746, Jul. 1, 1994. This application May 30, 1995, Ser. No. 450,660

Int. Cl.[6] A61K *31/195;31/215;31/275*

U.S. Cl. 514—522 **8 Claims**

1. A method of treating atherosclerosis or coronary artery disease in a mammal suffering therefrom which comprises administering to said mammal an effective amount of a compound of the formula



wherein:

R_1 and R_4 independently are hydrogen, hydroxy, lower alkyl, halogen, trifluoromethyl, cyano, nitro, methylthio, lower alkenyl or lower alkynyl;

R_2 is hydrogen, lower alkyl, trifluoromethyl, lower alkenyl or lower alkynyl;

R_3 is hydrogen, lower alkyl, trifluoromethyl, lower alkenyl or lower alkynyl; or a pharmaceutically acceptable salt thereof.

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5,578,640

PROTECTIVE PROSTAGLANDINS FOR USE IN CONJUNCTION WITH CHEMOTHERAPEUTIC AGENTS

Wayne R. Hanson, Oak Park, Ill., assignor to Loyola University of Chicago, Chicago, Ill.

Division of Ser. No. 286,074, Aug. 4, 1994, which is a continuation-in-part of Ser. No. 886,270, May 20, 1992, abandoned. This application May 11, 1995, Ser. No. 438,814

Int. Cl.[6] A61K *31/215;31/19;31/557*

U.S. Cl. 514—530 3 Claims

1. A method of treating alopecia induced by chemotherapy agents in a mammal, comprising administering a therapeutically effective amount of an E-type prostaglandin prior to administration of the chemotherapeutic agent.

5,578,641

COSMETIC COMPOSITION

Simon M. Jackson, West Los Angeles, Calif.; Anthony V. Rawlings, Wyckoff, and Ian R. Scott, Allendale, both of N.J., assignors to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.

Filed Apr. 20, 1994, Ser. No. 230,366

Claims priority, application United Kingdom, Apr. 20, 1993, 9308103

Int. Cl.[6] A61K *7/48*

U.S. Cl. 514—547 9 Claims

1. A composition suitable for topical application to human skin which comprises:

(i) from 0.0001% to 10% by weight of tetraacetyl phytosphingosine as a ceramide pathway intermediate; and

(ii) a balancing amount of a cosmetically acceptable vehicle for the intermediate.

5,578,642

SELF-EMULSIFYING AND/OR EMOLLIENT AGENTS

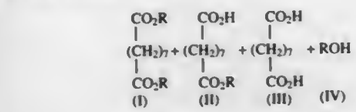
Barry A. Salka, Fair Lawn; Bruce W. Gesslein, Brick, both of N.J., and Norman Milstein, Montgomery, Ohio, assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Aug. 17, 1994, Ser. No. 292,115

Int. Cl.[6] A61K *31/225;7/42;* C11D *3/20;* B01J *13/00*

U.S. Cl. 514—547 22 Claims

1. A product of the process comprising reacting from about 40 to about 50 weight percent of azelaic acid with from about 50 to 60 weight percent of a C12–18 fatty alcohol, said product having the general formula I–IV:



wherein R is a C12–18 alkyl group, and the product contains from about 40 to about 50 weight percent of (I), from about 50 to about 60 weight percent of (II), from about 1 to about 2 weight percent of (III), and from about 0 to about 1 weight percent of (IV), all weights being based on the weight of said product.

5,578,643

PROTECTIVE PROSTAGLANDINS FOR USE IN CONJUNCTION WITH CHEMOTHERAPEUTIC AGENTS

Wayne R. Hanson, Oak Park, Ill., assignor to Loyola University of Chicago, Chicago, Ill.

Continuation-in-part of Ser. No. 886,270, May 20, 1992, abandoned. This application Aug. 4, 1994, Ser. No. 286,074

Int. Cl.[6] A61K *31/215;31/19;31/557*

U.S. Cl. 514—573 20 Claims

1. A method for protecting non-stomach and ion-duodenal tissue in a mammal from injury resulting from chemotherapeutic agents comprising, administering prior to the administration of such chemotherapeutic agent, a therapeutically effective amount of an E-type prostaglandin.

5,578,644

METHOD OF TREATING WRINKLES USING ISOCITRIC ACID

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 179,190, Jan. 10, 1994, Pat. No. 5,470,880, which is a continuation of Ser. No. 89,101, Jul. 12, 1993, Pat. No. 5,389,677, which is a division of Ser. No. 8,223, Jan. 22, 1993, abandoned, which is a continuation of Ser. No. 812,858, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 469,738, Jan. 19, 1990, abandoned, which is a continuation of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 471,518

Int. Cl.[6] A61K *7/48;31/19*

U.S. Cl. 514—574 10 Claims

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising isocitric acid or a topically effective salt thereof, in an amount and for a period of time sufficient to visibly reduce said wrinkle, wherein said wrinkle is a facial wrinkle.

5,578,645

METHODS AND COMPOSITIONS FOR TREATING ACUTE OR CHRONIC PAIN AND DRUG ADDICTION

Jeffrey Askanazi, Haworth, N.J.; David P. Katz, Dobbs Ferry, N.Y., and Tuula Manner, Turku, Finland, assignors to Aminotek Sciences, Inc., Demarest, N.J.

Continuation of Ser. No. 89,292, Jul. 9, 1993, which is a continuation of Ser. No. 926,719, Aug. 7, 1992, Pat. No. 5,256,669. This application Jun. 7, 1995, Ser. No. 478,917

Int. Cl.[6] A61K *31/135;31/195*

U.S. Cl. 514—648 6 Claims

1. A method for treating addiction to narcotic drugs in a mammal comprising administering to the mammal a therapeutically effective amount of a solution comprising methadone and at least one branched chain amino acid selected from the group consisting of leucine, isoleucine, and valine, wherein the branched chain amino acid is present in an amount of from about 1 to 100% by weight of the solution.

5,578,646

PHARMACEUTICALLY ACCEPTABLE ANTHRACENE COMPOUNDS

Alfredo Pineyro-Lopez, Nuevo Leon, Mexico, assignor to Alfredo Pineyro-Lopez, Mexico

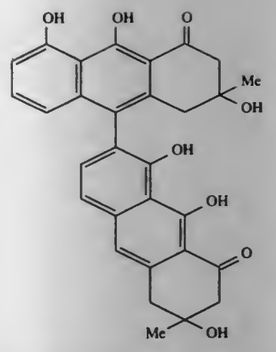
Filed Jul. 19, 1991, Ser. No. 733,191

Claims priority, application Germany, Jul. 20, 1990, 40 23 159.3

Int. Cl.[6] A61K *31/12*

U.S. Cl. 514—680 1 Claim

1. A method of treating a malignant tumor in a human which comprises administering a compound having the formula:



to said malignant tumor, wherein said tumor is a liver, lung or colon tumor.

5,578,647

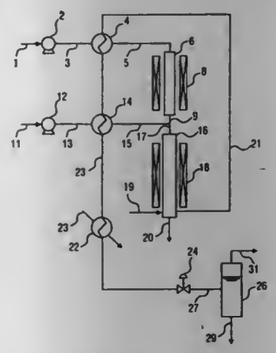
METHOD OF PRODUCING OFF-GAS HAVING A SELECTED RATIO OF CARBON MONOXIDE TO HYDROGEN

Lixiong Li, and Earnest F. Gloyna, both of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Dec. 20, 1994, Ser. No. 359,467

Int. Cl.[6] C07C *27/00;27/10*

U.S. Cl. 518—700 49 Claims



1. A method of producing an off-gas with a selected CO/H_2 ratio of from about 0.1 to about 8 and a CO/CO_2 ratio of at least about 0.1 by hydrothermal processing of a reactant capable of producing CO and H_2 under hydrothermal conditions, the method comprising:

contacting the reactant at a temperature of at least about 374° C. and a pressure of at least about 22.1 MPa in the presence of water and with an amount of an additive effective to produce the selected CO/H_2 ratio, said contacting being for a time sufficient to produce off-gas having the selected CO/H_2 ratio and having a CO/CO_2 ratio of at least about 0.1;

wherein the reactant capable of producing CO and H_2 under hydrothermal conditions is selected from the group consisting of hydrocarbons, oxygenated hydrocarbons, organic wastes, lignocellulosic materials, sewage sludge, industrial sludge, and fossil fuels;

and wherein the additive effective to produce the selective CO/H_2 ratio is selected from the group consisting of acids, bases, salts, oxides, or oxidants.

5,578,648

LAMINATION ADHESIVE CONTAINING THERMOPLASTIC RESINS AND UNMELTED THERMOPLASTIC FIBERS

Friedrich Beyer; Klaus Hölzel, and Achim Werner, all of Hameln, Germany, assignors to Vorwerk & Co. Interholding GmbH, Wuppertal, Germany

Filed Oct. 20, 1993, Ser. No. 139,949

Claims priority, application Germany, Oct. 30, 1992, 42 36 635.6; Nov. 12, 1992, 42 38 196.7

Int. Cl.[6] C08L *23/06;77/00;* C08J *11/04*

U.S. Cl. 521—45.5 17 Claims

1. A powdered or granulated lamination adhesive, comprising

unmelted fibrous components of polyamide, and thermoplastic portions of polyolefin;

wherein said fibrous components of polyamide are attached to each other by said portions of polyolefin;

individual fibers of said polyamide are only partly covered with said thermoplastic portions of polyolefin; and

an attachment of individual non-melted fibers of said polyamide comprises an enclosure of said polyamide fibers within a melt of said portions of polyolefin.

5,578,649

PROCESS FOR PRODUCING EPOXY ADHESIVE AUXILIARY, AND EPOXY ADHESIVE

Yoshio Imai, Kyoto; He Fei-Feng; Xue Shu-Chang, both of Hadano, and Takao Hidai, Anjo, all of Japan, assignors to INOAC Corporation, Japan

Continuation of Ser. No. 133,981, Oct. 8, 1993, abandoned. This application Mar. 13, 1995, Ser. No. 402,564

Claims priority, application Japan, Oct. 9, 1992, 4-298098; Apr. 14, 1993, 5-112096

Int. Cl.[6] C08J *11/24;* C08G *59/64*

U.S. Cl. 521—49.5 7 Claims

1. A process of producing an epoxy adhesive which comprises (a) mixing rigid polyurethane foam in powder form with glycol and amino alcohol, and heating the resulting mixture at 150°–280° C., said glycol and said amino alcohol and the amounts thereof, being effective in the resulting heated mixture to chemically decompose said rigid polyurethane foam into a reclaimed liquid having a total amine value of 30–180 KOH mg/g, and a hydroxyl value of 400–750 KOH mg/g, and (b) mixing said reclaimed liquid with a polyglycidyl ether of an epoxy resin adhesive in an amount of 0.5–3.0 parts for 1 part of said epoxy resin adhesive, wherein said epoxy resin adhesive is a bisphenol or novolak epoxy adhesive.

5,578,650

METHODS OF PREPARING HOLLOW ACRYLATE POLYMER MICROSPHERES

Joaquin Delgado, Stillwater, Minn., and Kengo Imamura, Sagamihara, Japan, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 1, 1995, Ser. No. 566,050

Int. Cl.[6] C08J *9/28;9/32*

U.S. Cl. 521—56 17 Claims

1. A process for preparing an aqueous suspension of hollow, acrylate polymer microspheres, said process comprising the steps of:

(1) forming an emulsion of monomer droplets in an aqueous phase by blending a mixture comprising:

(i) at least one monomer of an alkyl acrylate or methacrylate ester of a non-tertiary alcohol,

(ii) at least one acid that is not free radically polymerizable,

(iii) at least one emulsifier, and

(iv) water, and

(2) initiating polymerization of the monomer droplets.

5,578,651

PROCESS FOR PRODUCING RIGID POLYURETHANE FOAMS

Wilhelm Lamberts, Leverkusen, and Norbert Eisen, Köln, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

PCT No. PCT/EP93/01957, § 371 Date Jan. 27, 1995, § 102(e) Date Jan. 27, 1995, PCT Pub. No. WO94/03532, PCT Pub. Date Feb. 17, 1994

PCT Filed Jul. 22, 1993, Ser. No. 374,747

Claims priority, application Germany, Aug. 4, 1992, 42 25 765.4

Int. Cl.[6] C08G *18/00*

U.S. Cl. 521—107 9 Claims

1. Process for producing rigid polyurethane foams by the reaction of

1) polyisocyanates with

2) compounds of a molecular weight of from 92 to 10,000 having at least two hydrogen atoms active towards isocyanates in the presence of

3) hydrofluoroalkanes as foaming agents and of

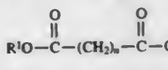
4) solubilisers as well as optionally in the presence of

5) other auxiliary substances and additives known per se,

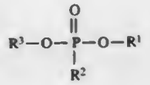
characterised in that at least one of the following compounds are used as solubilisers (4)

$R^1-O-CO-O-R^2$;

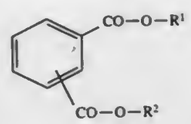
$R^1-O-CO-O-CO-O-R^2$;



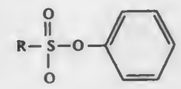
wherein R^1 and R^2 signify C_1–C_{12}-alkyl or together C_2–C_6-alkylene and n signifies an integer from 0 to 6,



wherein R^1 to R^3 signify C_1–C_{12}-alkyl which is optionally substituted by halogens, C_5–C_{10}-cycloalkyl or optionally substituted aryl,



wherein R^1 and R^2 signify C_1–C_{16}-alkyl or C_5–C_{10}-cycloalkyl,



wherein R signifies C_1–C_{20} alkyl or C_5–C_{10} cycloalkyl.

5,578,652

METHOD OF PRODUCING RIGID FOAMS AND PRODUCTS PRODUCED THEREFROM

Robert H. Blanpied, and James D. Thornsberry, both of Meridian, Miss., assignors to Exxon Chemical Patents, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 389,955, Feb. 17, 1995, abandoned. This application Jul. 3, 1995, Ser. No. 498,276

Int. Cl.[6] C08J *9/14*

U.S. Cl. 521—107 15 Claims

1. A method of producing a rigid thermosetting plastic foam, the method comprising the steps of:

(1) preparing a first of two foam forming blends using polymeric polymethylene polyphenylisocyanate;

(2) preparing a second of two foam forming blends by mixing together:

a polyol component comprised of a majority of polyester polyol;

a liquid flame retardant;

a suitable catalyst to promote the reaction between the first of two foam forming blends and the polyol component; and,

a blowing agent comprised at least partially from depolymerization of dicyclopentadiene to yield cyclopentane; and,

(3) mixing together the first and second foam forming blends to form the rigid thermosetting plastic foam.

5,578,653

PREPARATION OF CELLULAR POLYURETHANES

Regina Hendreich, Frauendorf; Peter Falke, Schwarzheide; Dieter Tintelnot, Diepholz, and Marion Wenzel, Ludwigshafen, all of Germany, assignors to BASF Schwarzheide, Germany

Filed Oct. 12, 1995, Ser. No. 542,249

Claims priority, application Germany, Nov. 10, 1994, 44 40 212.0

Int. Cl.[6] C08G *18/00*

U.S. Cl. 521—114 16 Claims

1. A process for the preparation of cellular polyurethanes by reacting

a) at least one organic and/or modified organic polyisocyanate,

b) at least one relatively high-molecular-weight compound containing at least two reactive hydrogen atoms, optionally

c) low-molecular-weight chain extenders and/or crosslinking agents,

in the presence of

d) blowing agents,

e) catalysts, and, if desired,

f) auxiliaries and/or additives,

wherein the blowing agent d) is at least one acetal.

5,578,654

Patent Not Issued For This Number

5,578,655

APPARATUS AND PROCESS FOR THE PRODUCTION OF FROTHED POLYURETHANE FOAMS

Carlo Fiorentini, Saronno, Italy, assignor to Foaming Technologies Cardio B.V., Netherlands

Filed Jan. 11, 1996, Ser. No. 584,274

Claims priority, application Italy, Jan. 12, 1995, MI95A0053

Int. Cl.[6] C08G *18/00*

U.S. Cl. 521—155 9 Claims

1. A process for the continuous production of a pre-expanded polyurethane foam for producing frothed polyurethane slab stock comprising the steps of: forming a liquid mixture comprising reactive chemical components, a liquid low boiling blowing agent and a nucleation gas; mixing the chemical components, the liquid blowing agent and the nucleation gas in a mechanical mixer comprising a mixing chamber having a central discharge opening in a bottom wall, and a rotor member rotatably supported inside the mixing chamber for mixing the chemical components, the blowing agent and the nucleation gas at a pressure sufficient for keeping the blowing agent in a liquid state; the mixing step inside the mixing chamber is performed by conveying the resulting mixture along a mixing path in the mixing chamber radially extending between opposing surfaces of the rotor member and the bottom wall, and by subjecting the mixture to repeated and intense mechanical stirring and whirling actions while the same mixture is radially reverse flowing, in the mixing path, in respect to centrifugal forces generated by the rotor member, towards the central discharge opening; and discharging a resulting mixture through a frothing device thereby frothing the mixture under pressure controlled conditions.

5,578,656

METHODS OF PREPARING POLYMERIC FOAMS USING CYCLIC UREA BLOWING PROMOTERS

Herbert R. Gillis, Sterling Heights, Mich.; Aalfdrik R. Postema, Overijse, and Dirk Stanssens, Lanaken, both of Belgium, assignors to Imperial Chemical Industries PLC, London, England

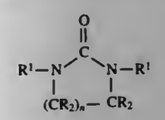
Continuation of Ser. No. 830,810, Feb. 4, 1992, abandoned. This application Jnn. 24, 1994, Ser. No. 265,563

Claims priority, application United Kingdom, Feb. 4, 1991, 9102362

Int. Cl.[6] C08L *75/04*

U.S. Cl. 521—166 14 Claims

1. A method for the preparation of flexible cellular polymeric products which comprises reacting an organic polyisocyanate with an isocyanate-reactive composition, characterized in that the isocyanate-reactive composition comprises: (A) an isocyanate-reactive compound having a molecular weight of 1000 to 10,000 and a functionality of 2 to 4 which is selected from the group consisting of polyols, polyamines, imine-functional compounds, enamine-containing compounds and mixtures thereof; and (B) 1 to 60 weight percent of a cyclic urea blowing promoter having at least one isocyanate-reactive substituent, wherein the cyclic urea has the formula:



wherein each R^1 independently is a lower alkyl radical of C_1–C_6, or a lower alkyl radical substituted with an isocyanate-reactive group; wherein each R independently is H, a lower alkyl radical of C_1–C_6 or $-(CH_2)_m-X$, wherein X is an isocyanate-reactive group which is OH or NH_2, and m is 0, 1 or 2; and

wherein n is 1 or 2 with the proviso that at least one R^1 or R is or comprises an isocyanate-reactive group.

5,578,657

CRT ADHESIVE COMPOSITION AND CRT OBTAINED BY THE USE THEREOF

Takuji Inoue, Hasuda; Tsunenari Saito, Tokyo; Kenji Nakayama, Omiya; Hiroe Ito, Yono, and Minoru Yokoshima, Toride, all of Japan, assignors to Sony Corporation, and Nippon Kayaku Kabushiki Kaisha, both of Tokyo, Japan

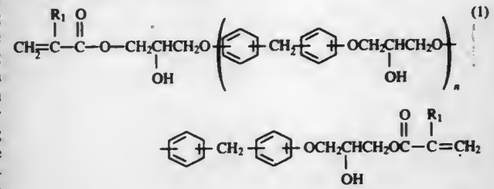
Filed May 11, 1995, Ser. No. 438,810

Claims priority, application Japan, May 17, 1994, 6-103024; Nov. 1, 1994, 6-269051

Int. Cl.[6] C08L *63/10*

U.S. Cl. 522—92 16 Claims

1. An adhesive composition for use in cathode ray tubes comprising: a bisphenol A epoxy (meth)acrylate which is obtained by reacting a bispbenol A epoxy resin with (meth)acrylic acid and has a molecular weight of 550 or more and/or an epoxy (meth)acrylate (A) represented by the formula (1):



(1)

in which, R_1 represents a hydrogen atom or CH_3; and the average value of n represents a number of 0.5 or more, a hydroxyl-containing mono(meth)acrylate (C) and a photopolymerization initiator (D), optionally together with a urethane (meth)acrylate (B).

5,578,658

HIGH-SPEED POLYMERIZABLE RESIN COMPOSITION AND LENSES OBTAINED THEREFROM

Katsuyoshi Sasagawa; Kenichi Fujii; Noboru Kawasaki, and Toshiyuki Suzuki, all of Kanagawa-ken, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Dec. 1, 1994, Ser. No. 352,811

Claims priority, application Japan, Dec. 20, 1993, 5-319487

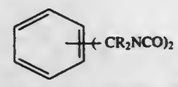
Int. Cl.[6] C08G *18/38;18/67;* G02C *7/02*

U.S. Cl. 523—105 4 Claims

1. A plastic lens having a refractive index of at least 1.59 and being free of optical strain, which has been obtained by thermally polymerizing in a short time a high-speed polymerizable resin composition comprising:

a) at least 70 but smaller than 90 parts by weight of a mixture composed of:

i) an aromatic polyisocyanate compound represented by the following formula (I):



(I)

wherein R represents a hydrogen atom or a methyl group, and

ii) at least one polythiol having a sulfur content of at least 40 percent by weight and selected from the group consisting of 1,2-bis(mercaptoethyl)trithioglycerin, pentaerythrithiol, 1,2,4-tris(mercaptomethyl)benzene and 1,3,5-tris(mercaptomethyl)benzene; and

b) at least 10 but smaller than 30 parts by weight of a compound selected from the group consisting of hydroxyethyl acrylate, hydroxyethyl methacrylate, 1,3-bis(acryloyl)glycerin, 1,3-bis(methyacryloyl)glycerin, 1-acryloyl-3-methacryloyl glycerin, 1-methacryloyl-3-acryloyl glycerin, hydroxymethylstyrene and mercaptomethylstyrene, said composition containing isocyanato groups, mercapto groups and hydroxyl groups at an NCO/(SH+OH) equivalent ratio of from 0.50 to 1.50.

5,578,659

POLYARYLENE SULFIDE RESIN COMPOSITION

Sachio Anada; Nozomu Nakagawa; Kazutomo Tokushige, and Toshikatsu Nitoh, all of Shizuoka, Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Jun. 23, 1995, Ser. No. 494,242

Claims priority, application Japan, Jul. 4, 1994, 6-152327

Int. Cl.[6] C08K *7/06*

U.S. Cl. 523—212 11 Claims

1. A polyarylene sulfide resin composition whicb has excellent metal corrosion resistance, comprising:

(A) 100 parts by weight of a polyarylene sulfide resin,
(B) 0.1 to 1.0 part by weight of (i) a carbonate, a hydroxide or an oxide of a metal selected from zinc and barium, and barium, (ii) a magnesium hydroxide, (iii) a magnesium oxide, (iv) a mixture thereof, or (v) a double salt thereof, each of (i)–(v) having been pre-treated in a surface thereof with a first alkoxysilane compound,
(C) 0 to 10 parts by weight of a second alkoxysilane compound, and
(D) 5 to 500 parts by weight of an inorganic filler.

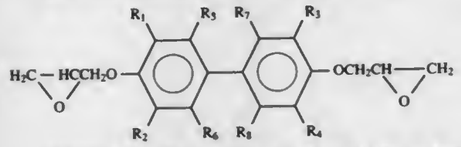
5,578,660

EPOXY RESIN COMPOSITION

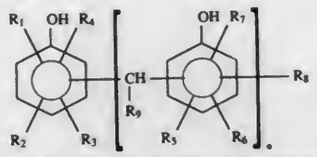
Hiroshi Fujita, Tochigi-ken; Naoki Mogi, Utsunomiya; Shigehisa Ueda, Utsunomiya, and Takashi Aihara, Utsunomiya, all of Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

Continuation of Ser. No. 67,611, May 27, 1993, abandoned. This application Aug. 8, 1994, Ser. No. 287,592
Claims priority, application Japan, Sep. 21, 1992, 4-250947; Sep. 21, 1992, 4-250949; Sep. 25, 1992, 4-256005; Sep. 25, 1992, 4-256006; Dec. 18, 1992, 4-338984; Feb. 26, 1993, 5-037929
Int. Cl.[6] C08L *63/00;63/02*
U.S. Cl. 523—443 **13 Claims**

1. An epoxy resin composition for sealing semiconductors consisting essentially of:
(A) an epoxy resin containing (i) 100 parts by weight of an epoxy resin represented by the following formula (1):



wherein R_1–R_8 are the same or different atoms or groups selected from hydrogen or alkyl groups, and (ii) 0–100 parts by weight of an o-cresol novolak epoxy resin;
(B) a hardener containing (i) 33–158 parts by weight of a phenolic resin hardener represented by the following formula (2a):



(2a)

wherein R_1 and R_7 are the same or different atoms or groups selected from hydrogen, or alkyl groups, R_2–R_6 and R_8 are hydrogen, R_9 is a group selected from phenyl or methyl, and n is 1–6, (ii) and 0–64 parts by weight of a different novolak resin hardener;
(C) an amount of inorganic filler sufficient to improve soldering stress resistance; and
(D) a hardening accelerator.

5,578,661

GEL FORMING SYSTEM FOR USE AS WOUND DRESSINGS

Adrian S. Fox, Monroe, N.Y., and Amy E. Allen, Stamford, Conn., assignors to Nepera, Inc., Harriman, N.Y.

Filed Mar. 31, 1994, Ser. No. 221,159
Int. Cl.[6] C08L *5/00;39/06;71/02*
U.S. Cl. 524—027 **31 Claims**

1. A gel forming system comprising an aqueous mixture of at least three different components including a first component of at least one hydrophilic water-soluble polymer of polyethylene oxide, polyvinylpyrrolidone or mixtures thereof, said first component being present in an amount sufficient to increase the initial viscosity of the mixture and impart adhesivity properties thereto; a second component of an acid-containing polymer comprising poly-(vinyl pyrrolidone/acrylic acid), poly(methyl vinyl ether/maleic anhydride, poly(ethylene/maleic anhydride) or poly(acrylic acid) in an amount which contains sufficient acid or acid-forming groups to provide crosslinking capabilities or intermolecular hydrogen bonding with the first component to increase the cohesiveness of the mixture over time; a third component of an amino-containing polymer for accepting protons from the second component and increasing the cohesiveness of the mixture; and water; wherein the system has a pH in the range of between about 5.5 and 8.5, and the mixture is initially combined in a relatively fluid state before subsequently forming a cohesive gel structure.

5,578,662

BIOABSORBABLE BRANCHED POLYMERS CONTAINING UNITS DERIVED FROM DIOXANONE AND MEDICAL/SURGICAL DEVICES MANUFACTURED THEREFROM

(1) **Steven L. Bennett, Southington; Ying Jiang, North Haven; Elliott A. Gruskin, Killingworth, and Kevin M. Connolly, Hamden, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.**

Continuation-in-part of Ser. No. 278,898, Jul. 22, 1994. This application Jun. 7, 1995, Ser. No. 477,098
Int. Cl.[6] C08G *63/08;65/26;65/32*
U.S. Cl. 524—54 **16 Claims**

1. A bioabsorbable composition comprising a branched copolymer containing a major amount of alkylene oxide units and a minor amount of units derived from a bioabsorbable monomer, said copolymer being endcapped with at least one lysine isocyanate group. (2a)

5,578,663

PAVEMENT REJUVENATOR AND DRESSING CONDITIONER WITH ELASTOMER

Edward W. McGovern, Pittsburgh, Pa., assignor to K.A.E. Paving Consultants, Inc., Pittsburgh, Pa.

Filed Apr. 27, 1995, Ser. No. 429,581
Int. Cl.[6] C08L *95/00*
U.S. Cl. 524—66 **10 Claims**

1. A pavement treating composition comprising a quantity of bituminous pavement rejuvenator consisting essentially of a coal tar derivative containing a mixture or di-, tri- and tetracyclic aromatic compounds and their alkyl homologs containing lower alkyl groups together with a significant amount of phenolic and hydroxy derivatives, said mixture having a specific gravity at 25°/25° C. of at least 1.08, a maximum Brookfield viscosity at 25° C. of 30 cps, and an initial boiling point of at least 180° C. and a continuous boiling range to at least 300° C., with 70–40% by volume of the material remaining as residue at 300° C., in admixture with a quantity of elastomer.

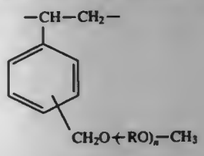
5,578,664

METHODS OF SOLUBILIZING IODINE IN AQUEOUS MEDIUM AND AQUEOUS ANTISEPTIC COMPOSITION CONTAINING IODINE

Mitsutoshi Masuda; Yukimichi Nakao, and Toshimi Shimizu, all of Tsukuba, Japan, assignors to Director-General Of Agency Of Industrial Science & Technology, Japan

Filed Sep. 6, 1995, Ser. No. 524,041
Claims priority, application Japan, Sep. 9, 1994, 6-216269
Int. Cl.[6] C08K *3/02;* **C08L** *25/18*
U.S. Cl. 524—80 **7 Claims**

1. A method of solubilizing iodine in an aqueous medium, comprising mixing said aqueous medium with iodine together with a polystyrene derivative having the recurring units of the formula:



wherein R represents an alkylene group having 1–4 carbon atoms and n is an integer of 2–20.

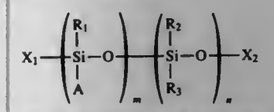
5,578,665

PIPERIDINE COMPOUNDS CONTAINING SILANE GROUPS FOR USE AS STABILISERS FOR ORGANIC MATERIALS

Primo Carrozza, Padova, and Valerio Borzatta, Bologna, both of Italy, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

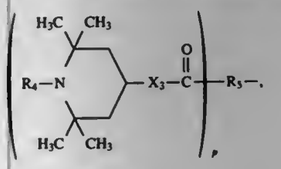
Division of Ser. No. 234,892, Apr. 28, 1994, Pat. No. 5,418,267, which is a division of Ser. No. 19,520, Feb. 19, 1993, Pat. No. 5,321,066, which is a division of Ser. No. 805,429, Dec. 11, 1991, Pat. No. 5,219,905. This application Mar. 7, 1995, Ser. No. 399,666
Claims priority, application Italy, Dec. 17, 1990, 22402/90
Int. Cl.[6] C07F *7/10;7/18*
U.S. Cl. 524—99 **16 Claims**

1. A compound of the formula (I)

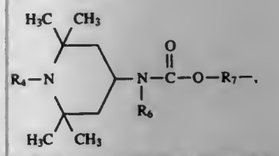


(I)

in which A is one of the groups of the formulae (IIa)-(IIb),

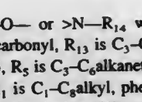


(IIa)



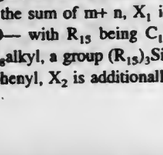
(IIb)

alkoxy, C_3–C_6alkenyl, C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl; or C_1–C_8acyl, X_3 is —O— or >N—R_{12} where R_{12} is hydrogen, C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl; C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl; or tetrahydrofurfuryl, C_2–C_4alkyl substituted in the 2-, 3- or 4-position by C_1–C_8alkoxy, by di-(C_1–C_4alkyl)-amino or by a group of the formula (III)



(III)

where X_4 is a direct bond, —O—, —CH_2—, —CH_2CH_2— or H_3C-N<, or R_{12} is a group of the formula (IV),



(IV)

with R_4 as defined above, or R_{12} is one of the groups of the formulae (Va)-(Vd)



(Va)



(Vb)

(Vc)

(Vd)

where R_4 is as defined above, X_5 is —O— or >N—CH_3 and X_6 is —CH_2CH_2—, —CO—, —COCO— or —$COCH_2CO$—, or X_3 is a 1,4-piperazinediyl group, p is 1, 2 or 3 and, when p is 1, R_5 is C_2–C_{18}alkanediyl and, when p is 2, R_5 is C_2–C_{20}alkanetriyl, C_5–C_7cycloalkanetriyl or C_7–C_9bicycloalkanetriyl or a group

where X_7 is —O— or >N—R_{14} with R_{14} being C_1–C_8acyl or (C_1–C_8alkoxy)-carbonyl, R_{13} is C_3–C_{12}alkanediyl and q is 0 or 1, and, when p is 3, R_5 is C_3–C_6alkanetetrayl, R_6 is as defined above for R_{12}, R_7 is R_1 is C_1–C_8alkyl, phenyl, C_1–C_8alkoxy or OH, R_2 and R_3 which are identical or different are C_1–C_8alkyl or phenyl, or R_2 is also hydrogen, m+ n is a number from 1 to 100, n varies from zero to 90% of the sum of m+ n, X_1 is as defined for R_1 or is a group $(R_{15})_3SiO$— with R_{15} being C_1–C_8alkyl or phenyl, X_2 is hydrogen, C_1–C_8alkyl, a group $(R_{15})_3Si$— or, when R_1 and X_1 are C_1–C_8alkyl or phenyl, X_2 is additionally a group



and, when m+ n is a number from 3 to 10, X_1 and X_2 together also form a direct bond; each of the groups R_1, R_2, R_3 and A have the same definition or different definitions in the recurring structural units contained in formula (I) and, when the compounds of the formula (I) are copolymeric, they have a random distribution or a block distribution of the individual structural units.

5,578,666

FLAME RETARDANT COMPOSITION

Edward D. Weil, Hastings On Hudson, and Weiming Zhu, Elmhurst, both of N.Y., assignors to Polytechnic University, Brooklyn, N.Y.

Filed Jul. 29, 1994, Ser. No. 282,837

Int. Cl.[6] C08K *5/3462;5/5373;* **C09K** *21/10;21/12*

U.S. Cl. 524—100 **27 Claims**

1. A flame retardant material comprising a normally flammable polymer blended with an effective amount of a flame retardant additive comprising a synergistic flame retardant combination of a melamine phosphate and tris(neopentyl) nitrilotris(methylphosphonate) at a ratio of about 2:1 to 1:5; wherein said effective amount is sufficient in itself to achieve a test standard rating of said material of at least V-O according to the UL-94 test rating, or to achieve an equivalent flame retardancy test rating to another test method.

5,578,667

SULPHONATED PHENOLIC TRIAZINE ANTIOXIDANTS FOR POLYAMIDE FIBERS

Francesco Fuso, Therwil, and Gerhard Reinert, Allschwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

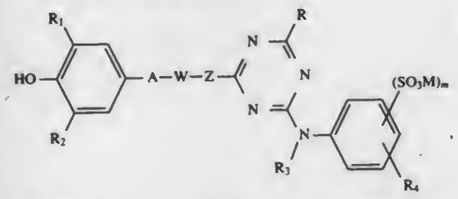
Filed Sep. 15, 1995, Ser. No. 528,587

Claims priority, application Switzerland, Sep. 19, 1994, 2851/94

Int. Cl.[6] C08K *5/3492;* **C07D** *403/00;* **D06P** *5/02*

U.S. Cl. 524—100 **18 Claims**

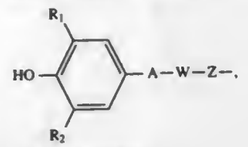
1. A water-soluble antioxidant of formula



(1)

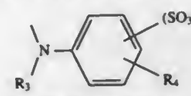
wherein

R is halogen; C_1–C_5alkyl; phenyl-C_1–C_5alkyl; C_1–C_5alkoxy in which, from C_2, the alkyl chain may be interrupted by an oxygen or a sulfur atom; C_3–C_5alkenyloxy; C_4–C_8cycloalkoxy; amino; mono- or di(phenyl-C_1–C_5alkyl)amino; unsubstituted or hydroxy- or carboxy-substituted mono- or di-C_1–C_5alkylamino, in which the alkyl chain may be interrupted by an oxygen or a sulfur atom or by SO_2; mono- or di-C_3–C_5alkenyl-amino; unsubstituted or C_1–C_5alkyl-substituted mono- or di-C_4–C_8cycloalkylamino; unsubstituted phenoxy or phenoxy which is substituted by halogen, C_1–C_5alkyl, C_1–C_5alkoxycarbonyl, C_1–C_5alkoxy, carboxy, carbamoyl, mono- or di-C_1–C_5alkanoyl-amino or C_1–C_5alkanoyl; phenyl; phenylthio; phenyl-C_1–C_5alkylthio; C_1–C_5alkylthio; C_4–C_8cycloalkylthio; unsubstituted or C_1–C_5alkyl-, hydroxy- or carboxy-substituted 1-azacycloalkyl; unsubstituted or C_1–C_5alkyl-substituted morpholino; a radical of formula



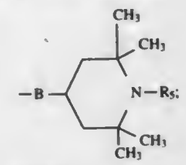
(2)

a radical of formula



(3)

or a radical of formula



(4)

wherein

one of the two substituents R_1 and R_2 is hydrogen: C_1–C_8alkyl; C_5–C_7cycloalkyl; phenyl-C_1–C_4alkyl or phenyl; and the other substituent R_1 or R_2 is C_1–C_8alkyl; C_5–C_7cycloalkyl; phenyl-C_1–C_4alkyl or phenyl;

R_3 is hydrogen or C_1–C_4alkyl;

R_4 is hydrogen; halogen; hydroxy; C_1–C_5alkyl; C_1–C_5alkoxycarbonyl; C_1–C_5alkoxy; C_1–C_5alkanoyl; carboxy; amino; mono- or di-C_1–C_5alkylamino; or mono- or di-C_1–C_5-alkanoylamino;

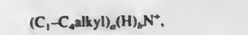
R_5 is hydrogen; oxyl; hydroxy; C_1–C_5alkyl; C_2–C_5alkenyl; C_1–C_5alkoxy; C_1–C_5alkanoyl; benzoyl or benzyl;

m is 0, 1 or 2;

n is 0, 1 or 2;

and the sum m+n is 1, 2, 3 or 4;

M may be the same or different and is hydrogen: an alkali metal, alkaline earth metal or ammonium cation or an organic ammonium cation of formula



wherein

a is an integer from 0 to 3;

b is an integer from 1 to 4; and the sum of a+b=4;

A is a direct bond or unsubstituted or phenyl-substituted C_1–C_8alkylene in which, from C_2, the alkylene chain may be interrupted by an oxygen or a sulfur atom, and, from C_3, the alkylene chain may be straight or branched;

B is oxygen or —N(R_6)—, wherein R_6 is hydrogen or C_1–C_6alkyl;

W is a direct bond; —O—CO—; —NH—CO—; —CO—NH—G—; or —CO—O—G—, wherein G is a direct bond, C_1–C_6alkylene, C_5–C_8cycloalkylene, phenylene or the radical —CH_2—C_6H_4—CH_2—, and —CO—NH—G— is able to form a ring with Z;

and

Z is oxygen, sulfur or —N(R_7)—, wherein R_7 is hydrogen, C_1–C_4alkyl, allyl or benzyl.

16. A process for the photochemical and thermal stabilisation of polyamide fibre materials, which comprises treating dyed or undyed polyamide fibre materials with a water-soluble antioxidant of formula (1) as claimed in claim 1.

5,578,668

WATER-REDISPERSIBLE POWDERS OF VINYL/ACRYLIC POLYMERS

Jean-Francois Colombet, Rueil Malmaison, and Bruno Thiebaut, Cachan, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Filed Dec. 23, 1991, Ser. No. 811,980

Claims priority, application France, Dec. 21, 1990, 90 16078

Int. Cl.[6] C08K *3/34;5/54*

U.S. Cl. 524—265 **10 Claims**

1. A water-dispersible, storage-stable pulverulent composition of matter, comprising particulates of a water-insoluble film-forming vinyl and/or acrylic polymer containing from 0.5 to 20 parts by weight of at least one silicone per 100 parts by weight of said film-forming polymer.

5,578,669

WATER-BASED POLYURETHANE COATING COMPOSITION

Taketoshi Odawa, Hirakata, and Toshihiro Okai, Katano, both of Japan, assignors to Nippon Paint Co., Ltd., Japan

Filed Dec. 20, 1994, Ser. No. 360,024

Claims priority, application Japan, Dec. 24, 1993, 5-347701; Feb. 17, 1994, 6-045050; Oct. 20, 1994, 6-282631

Int. Cl.[6] C08K *3/32;3/34;* **C08L** *75/04*

U.S. Cl. 524—414 **6 Claims**

1. A water-based coating composition which comprises 100 parts by weight, on the solid content basis, of a self-emulsifying polycarbonate-based polyurethane resin emulsion and 5 to 100 parts by weight, on the solid content basis, of an aqueous resol phenol resin and the water-based coating composition has a pH of 7.0 to 10, and further comprising at least one member selected from the group consisting of oxazoline compounds having a glass transition temperature of not lower than 40° C. and containing a styrenic polymer or a styrene-acrylic copolymer, and melamine resins having a curing initiation temperature of not higher than 140° C., the total amount, on the solid content basis, of said member and the aqueous phenol resin being 10 to 200 parts by weight.

5,578,670

MAGNETIC POWDER FOR BONDED MAGNETS, COMPOSITION FOR BONDED MAGNETS AND METHOD FOR PREPARING THE COMPOSITION

Kazuma Nakazawa, Kodaira; Munehiko Kato, Yokohama, and Toshikazu Shinogaya, Kodaira, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed May 17, 1995, Ser. No. 443,330

Claims priority, application Japan, May 19, 1994, 6-129606; Jul. 12, 1994, 6-182890

Int. Cl.[6] C08K *3/10;* **C04B** *35/26*

U.S. Cl. 524—435 **11 Claims**

1. A magnetic composition for bonded magnets comprising 88 to about 65% by volume of a magnetic powder impacted by agitation in a high speed air stream and from 12 to about 35% by volume of a resin binder wherein said high speed air stream has a speed of from 20 to 150 m/second when employing a hybridization system using a circulating high speed air impact method or a speed of from 50 to 500 m/second when using a jet mill.

5,578,671

INTUMESCENT PUTTY

Walton W. Welna, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 366,959, Dec. 30, 1994, abandoned. This application Dec. 6, 1995, Ser. No. 567,956

Int. Cl.[6] C08K *3/34*

U.S. Cl. 524—443 **30 Claims**

1. An indefinitely conformable, intumescent putty comprising a blend of intumescent material, rubber, and unvulcanized rubber, said rubber and said unvulcanized rubber together providing said putty with a softness value of at least 4 mm, said putty containing less than 0.25 percent by weight halogen, said putty containing less than 0.25 percent by weight water other than bound water, wherein bound water is water that does not come off until the putty is heated to at least 100° C., and said putty containing less than 0.25 percent by weight rubber curing agent, based on the total weight of the putty.

5,578,672

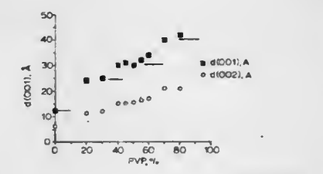
INTERCALATES; EXFOLIATES; PROCESS FOR MANUFACTURING INTERCALATES AND EXFOLIATES AND COMPOSITE MATERIALS CONTAINING SAME

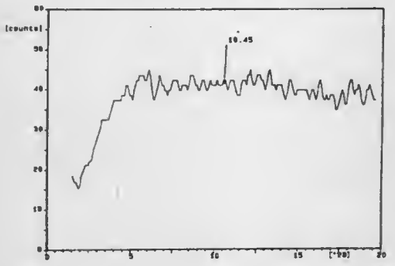
Gary W. Beall, McHenry; Semeon Tsipursky, Lincolnwood; Anatoliy Sorokin, Buffalo Grove, and Anatoliy Goldman, Palatine, all of Ill., assignors to Amcol International Corporation, Arlington Heights, Ill.

Filed Jun. 7, 1995, Ser. No. 480,080

Int. Cl.[6] C08K *9/06*

U.S. Cl. 524—446 **47 Claims**





1. An intercalate, capable of being exfoliated into individual phyllosilicate platelets, said intercalate manufactured by extruding a mixture of a phyllosilicate; an intercalant polymer having a functionality selected from the group consisting of an aromatic ring; carbonyl; carboxyl; hydroxyl; amine; amide; ether and ester structures; and water through a die-opening, said water present in the mixture in an amount of at least about 20% by weight based on the dry weight of the phyllosilicate, and said polymer present in the mixture in an amount of 16% to about 80% by weight, based on the dry weight of phyllosilicate to achieve sorption of the polymer between adjacent spaced layers of the phyllosilicate to expand the spacing between a predominance of the adjacent phyllosilicate platelets to at least about 10 Å, when measured after sorption of the water-soluble polymer, without first reacting the phyllosilicate with a silane compound or onium ion compound.

VOL 1192 ISS 4 NO 26 1996 UMI

16. A method of manufacturing an intercalated phyllosilicate, capable of being exfoliated into individual phyllosilicate platelets, said phyllosilicate having a polymer intercalated between adjacent phyllosilicate platelets comprising:

extruding a mixture of a phyllosilicate; an intercalant polymer having a functionality selected from the group consisting of an aromatic ring; carbonyl; carboxyl; hydroxyl; amine; amide; ether and ester structures; and an aqueous liquid carrier through a die-opening, water being included in the mixture in an amount of at least about 20% by weight, based on the dry weight of the phyllosilicate, and said polymer present in the mixture in an amount of 16% to about 80% by weight, based on the dry weight of phyllosilicate to achieve intercalation of said adjacent phyllosilicate platelets in an amount sufficient to space said adjacent phyllosilicate platelets to a distance of at least about 10 Å without first reacting the phyllosilicate with a silane compound or onium ion compound.

5,578,673
POLYMERISABLE COMPOSITIONS

David P. Ashton, Warrington; Geraldine A. Moorman, Leyland, and Roger N. Rothon, Guilden Sutton , all of United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 244,264, Oct. 4, 1994. This application Jun. 5, 1995, Ser. No. 462,067

Claims priority, application United Kingdom, Nov. 15, 1991, 9124305; Nov. 15, 1991, 9124307; Nov. 15, 1991, 9124309

Int. Cl.[6] C08K *3/34*

U.S. Cl. 524—517 **20 Claims**

1. A highly, filled curable composition comprising

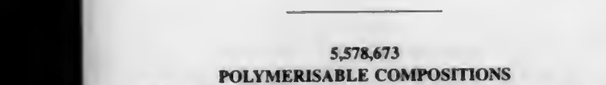
(A) an addition polymerisable organic liquid which on curing forms a solid polymer;

(B) 20 to 80% by volume of a finely divided particulate filler having a weight average particle size of less than 50 microns but not having a BET surface area of more than 30 $m^2.cm^{-3}$; and

(C) a polymeric dispersant comprising

(a) a polymeric component containing at least one segment of low Tg polymeric material having a Tg of less than 0° C. and

(b) silicon containing groups of the formula (I)



(I)

which are pendant from the polymeric component and wherein

X is a hydrolysable group,

Y is a hydrocarbyl radical,

a is an integer of 1 to 3,

b is 0 or an integer of 1 to 2 and a+b equals 3,

Z is a group resulting from the reaction of a functional group pendant from the polymeric component and a corresponding reactive group on a precursor of the silicon containing group and

W is a direct bond or a hydrocarbyl radical containing from 1 to 20 carbon atoms, which may optionally contain a functional group.

5,578,674
HIGH-STRENGTH FILMS OF BLOCK COPOLYMER LATICES

David R. Speth, Midland, Mich.; Brian W. Walther, Baton Rouge, La., and Ronald R. Pelletier, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 170,625, Dec. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 2,433, Jan. 8, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 469,184

Int. Cl.[6] C08J *3/03;* **C08K** *5/01;* **C08L** *53/00;* **B29D** *7/00*

U.S. Cl. 524—575 **30 Claims**

1. A process for preparing a film which comprises:

(1) forming an aqueous dispersion which comprises:

I. an organic phase comprising one or more block copolymer(s) corresponding to the formula:

$$A—B—X_m—(B—A)_n$$

wherein each A is a polymer block consisting essentially of a monovinylidene aromatic monomer, each B is a polymer block consisting essentially of a conjugated diene and, optionally, a monovinylidene aromatic monomer, X is the remnant of a multifunctional coupling agent, m is 0 or 1, and n is an integer from 1 to 5, each monovinylidene aromatic monomer block having a weight average molecular weight from about 8,000 to about 15,000 Daltons, each conjugated diene block having a weight average molecular weight from about 30,000 to about 200,000 Daltons,

II. a surfactant in sufficient amount to emulsify the organic phase in water and such that a film formed from the dispersion exhibits the required properties, and

III. water, wherein the effective phase volume of the A block in the organic phase is from about 5 to about 20 percent

(2) depositing a coating of the aqueous dispersion on a surface and drying the coating to form a film;

(3) removing the film from the surface; and

(4) annealing the film at about 30° C. to about 120° C. for about 1 to about 60 minutes such that the film exhibits a tensile strength at break of 11.0 MPa or greater.

5,578,675
NON-ISOCYANATE BASECOAT/CLEARCOAT COATING COMPOSITIONS WHICH MAY BE AMBIENT CURED

Patrick J. Mormile, Bowling Green; Rajnikant P. Shah, Holland, and Anthony J. Tye, Toledo, all of Ohio, assignors to BASF Corporation, Mount Olive, N.J.

Continuation of Ser. No. 95,080, Jul. 21, 1993, abandoned. This application Dec. 27, 1994, Ser. No. 331,313

Int. Cl.[6] C08G *18/00;* **C08L** *75/00*

U.S. Cl. 524—589 **7 Claims**

1. A pigmented basecoat coating composition consisting essentially of:

a) a coreactant having an active hydrogen functionality,

b) at least one anhydride functional coreactant,

c) a carbodiimide compound having the formula:

$$X—Y\text{+}R_1—N=C=N—R_2\text{+}$$

$$\text{+}Y—Z—Y—R_2\text{+}_m N=C=N\text{+}R—$$

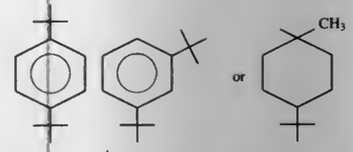
$$\text{+}N=C=N—R_2\text{+}_{n-1}Y—X$$

Wherein:

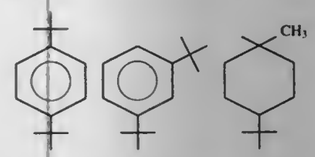
m is from 0 to 1

n is from 1 to 10

R_1=A divalent hydrocarbon residue from a diisocyanate having a tertiary hydrocarbon selected from the group consisting of:

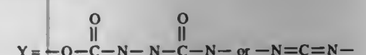


R_2=A divalent hydrocarbon residue from a diisocyanate selected from:



or residues from aliphatic, branched aliphatic or cycloaliphatic diisocyanates, biurets, allophonates, isocyanurates or uretdiones thereof;

X=Any radical with substituents that are unreactive towards a carbodiimide;



Z=A polyvalent radical with substitutents that are unreactive towards a carbodiimide to function as an extending or branching site.

5,578,676
METHOD FOR MAKING POLYMERS WITH INTRINSIC LIGHT-ABSORBING PROPERTIES

Tony Flaim, Rte. 3, Box 3257, St. James, Mo. 65559; James Lamb, III, 1511 Scenic Dr., Rolla, Mo. 65401; Kimberly A. Moeckli, 904 E. First St., Salem, Mo. 65560, and Terry Brewer, Rte. 2, Box 297, Rolla, Mo. 65401

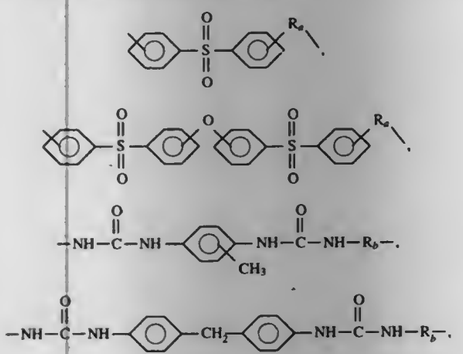
Division of Ser. No. 835,715, Feb. 12, 1992, Pat. No. 5,234,990. This application Apr. 30, 1993, Ser. No. 55,793

Int. Cl.[6] C08J *3/00;* **C08K** *5/36;* **C08L** *81/00*

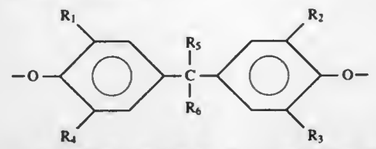
U.S. Cl. 524—609 **12 Claims**

1. A method of forming an anti-reflective layer for DUV microlithographic processes, comprising:

forming a polymer composition by dissolving a polymer in a suitable solvent, said polymer having a functional repeat unit selected from the group consisting of:

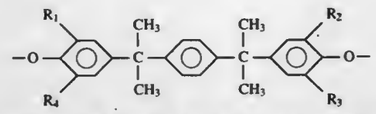


and combinations thereof, wherein R_a is selected from the group consisting of:



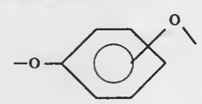
(A)

wherein R_1=R_4; R_2=R_3; R_1, R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen and methyl; and R_6 is selected from the group consisting of hydrogen, methyl and phenyl;

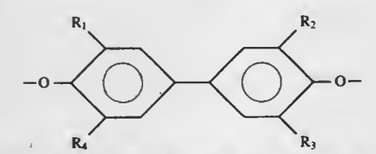


(B)

wherein R_1=R_2=R_3=R_4 and are selected from the group consisting of hydrogen and methyl;

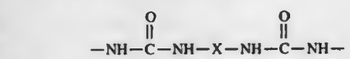


(C)

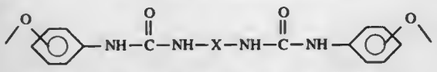


(D)

wherein R_1=R_2=R_3=R_4 and are selected from the group consisting of hydrogen and methyl;

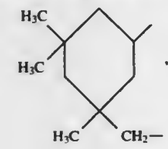


(E)



(F)

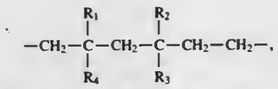
wherein X is selected from the group consisting of:



(1)



(2)



(3)

wherein R_1=R_2=R_3=CH_3 and R_4=H, or R_1=R_2=R_4=CH_3 and R_3=H; and

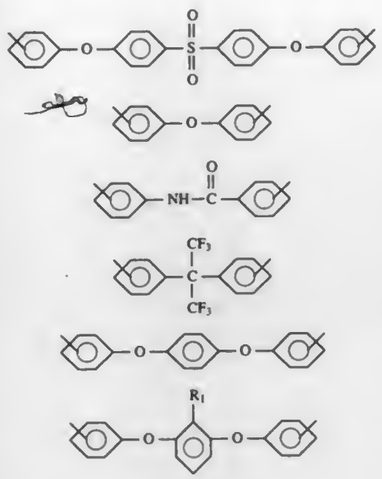
(G) combinations thereof;

wherein R_1 is selected from the group consisting of:



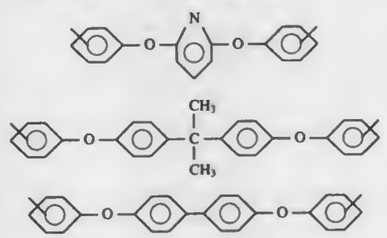
(A)

wherein R_6 is selected from the group consisting of Cl, C≡N, CH_3, H, OCH_3, and $COOR_2$, wherein R_2 is $—CH_3$ or $—CH_2CH_3$;

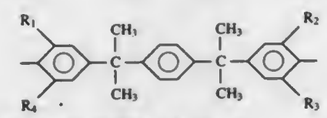


(B)

wherein R_1 is selected from H and C≡N;

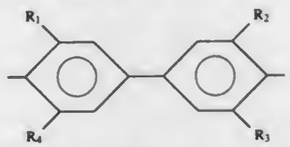


(J)



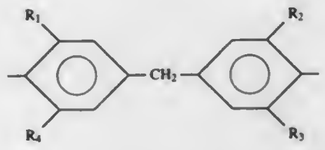
(K)

wherein R_1=R_2=R_3=R_4=H or CH_3;



(L)

wherein R_1=R_2 and are selected from consisting of H, CH_3, OCH_3, and R_3=R_4 and are selected from consisting of H and CH_3;



(M)

wherein R_1=R_2=R_3=R_4=H or CH_3; and (N) combinations thereof;

forming an anti-reflective coating by applying said polymer composition to a substrate; and thereafter applying a photoresist material compatible with said anti-reflective coating.

5,578,677

(C) THERMOSETTING COMPOSITIONS

(D) **Masahiro Ishidoya, Kamakura; Kishio Shibato, Yokohama; Keiji Komoto, Tokyo; Kenji Shibamoto; Mitsuyuki Mashita, both of Yokohama, and Osamu Ohe, Tokyo, all of Japan, assignors to Nippon Oil and Fats Company, Limited, Tokyo, Japan**

(E) **Division of Ser. No. 260,002, Jun. 15, 1994, Pat. No. 5,516,839, which is a division of Ser. No. 680,356, Apr. 4, 1991, Pat. No. 5,352,740. This application Dec. 27, 1995, Ser. No. 578,083**

(F) **Claims priority, application Japan, Apr. 10, 1990, 2-94267; Sep. 28, 1990, 2-259695; Oct. 26, 1990, 2-288776; Mar. 28, 1991, 3-089510**

(G) **Int. Cl.[6] C08L** *67/02;33/02;* **C07C** *69/00;* **C08F** *8/14;* **C08G** *63/91;18/82*

U.S. Cl. 525—34 **14 Claims**

1. A thermosetting composition which comprises: (D) a self-crosslinking compound having in the molecule (a) one or more functional groups of the formula (2):

(H)

(2)

(I)

wherein R^5, R^6 and R^7 are each selected from the group consisting of a hydrogen atom and an organic group of 1 to 18 carbon atoms, R^8 is an organic group of 1 to 18 carbon atoms, Y^2 is selected from the group consisting of an oxygen atom and a sulfur atom, or R^7 and R^8 are bonded with each other to form a heterocyclic structure which comprises Y^2 as the heteroatom component; and (b) one or more reactive functional groups which can form a chemical bond with carboxyl functional groups which are regenerated from said (a) by heating;

(C) optionally, a thermal latent acid catalyst which is activated during curing of the composition by heating;

(A) optionally, a compound having in the molecule two or more functional groups of the formula (1):

(1)

wherein R^1, R^2 and R^3 are each selected from the group consisting of a hydrogen atom and an organic group of 1 to 18 carbon atoms, R^4 is an organic group of 1 to 18 carbon atoms, Y^1 is selected from the group consisting of an oxygen atom and a sulfur atom or R^3 and R^4 are bonded with each other to form a heterocyclic structure which comprises Y^1 as the heteroatom component; and/or,

(B) optionally, a compound having in the molecule two or more reactive functional groups which can form a chemical bond by heating with either one or both of the functional group of the formula (1) and the functional group of the formula (2).

5,578,678

GRAFT POLYMERS OF NATURAL SUBSTANCES CONTAINING SACCHARIDE STRUCTURES OR DERIVATIVES THEREOF AND ETHYLENICALLY UNSATURATED COMPOUNDS AND THEIR USE

Heinrich Hartmann, Limburgerhof; Walter Denzinger, Speyer; Michael Kroener, Mannheim; Claudia Nilz, Dannstadt-Schauernheim; Friedrich Linhart, Heidelberg, and Andreas Stange, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 914,926, Jul. 17, 1992. This application Apr. 19, 1994, Ser. No. 229,636

Claims priority, application Germany, Aug. 22, 1991, 41 27 733.3

The portion of the term of this patent subsequent to Aug. 2, 2011, has been disclaimed.

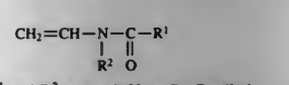
Int. Cl.[6] C08F *251/00;* **D21H** *21/06;21/10*

U.S. Cl. 525—54.3 **12 Claims**

1. A polymer prepared by free radical polymerization of monomers selected from the group consisting of (A) and (B) , wherein

(A) monomers or a monomer mixture of

(a) from 10–100% by weight of N-vinyl carboxamides of the formula



(I)

wherein R^1 and R^2 are each H or C_1–C_6-alkyl,

(b) 0–90% by weight of other carboxyl-free monoethylenically unsaturated monomers which are copolymerizable with monomers (a), said carboxyl-free monoethylenically unsaturated monomers selected from the group consisting of vinyl esters of C_1–C_6-saturated carboxylic acids, esters of monoethylenically unsaturated C_3–C_6-carboxylic acids, amides of monoethylenically unsaturated C_3–C_6-carboxylic acids, nitriles of monoethylenically unsaturated C_3–C_6-carboxylic acids, N-vinylpyrrolidone, N-vinylcaprolactam, acrylonitrile, methacrylonitrile, N-vinylimidazole, substituted N-vinylimidazoles, N-vinylimidazolines, vinyl sulfonic acid, allyl sulfonic acid, methallyl sulfonic acid, styrene sulfonic acid, 3-sulfopropyl acrylate, 3-sulfopropyl methacrylate and 2-acrylimido-2-methyl-propane sulfonic acid, and

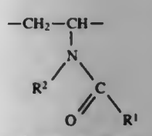
(c) 0–5% by weight of monomers containing two or more ethylenically unsaturated, non-conjugated double bond; wherein a+b+c=100%,

are polymerized in the presence of

(B) a compound selected from the group consisting of monosaccharides, oligosaccharides, polysaccharides, oxidatively, hydrolytically or enzymatically degraded polysaccharides, oxidized hydrolytically degraded or oxidized enzymatically degraded polysaccharides, chemically modified mono-, oligo, or polysaccharides selected from the group consisting of phosphated starch, acetylated starch, starch alkyl ethers, starch hydroxyalkyl ethers, starch carboxyalkyl ethers, starch allyl ethers, cationically modified starches, hydrogenation products of starch hydrolysis products, carboxymethylcellulose, hydroxyethylcellulose, hydroxypropylcellulose, carboxymethyl-hydroxyethylcellulose, sulfoethylcellulose, carboxymethyl-sulfoethylcellulose, hydroxypropylsulfoethylcellulose, hydroxyethylsulfoethylcellulose, methylsulfoethylcellulose and ethylsulfoethylcellulose, and mixtures thereof;

in a monomer weight ratio (A):(B) of from 95:5 to 20:80

to form a polymer having a K-value of 8–250 measured in a 1% strength solution of said polymer at pH 7 and at 25° C., said polymer containing 10% by weight or more of units of the formula



(II)

wherein R^1 and R^2 are each H or C_1–C_6-alkyl.

5,578,679

FLAME-RESISTING RESIN COMPOSITION

Yasuhiro Suzuki, and Masahito Tada, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 363,257

Claims priority, application Japan, Dec. 28, 1993, 5-350097

Int. Cl.[6] C08G *63/48*

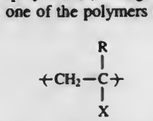
U.S. Cl. 525—64 **12 Claims**

1. A flame-resisting resin composition comprising:

(A) 90 to 99.5% by weight of a polyarylene sulfide; and

(B) 0.5 to 10% by weight of a graft copolymer composed of an olefinic copolymer (a) having 30 to 59% by weight, based on the weight of said graft copolymer, of an α-olefin repeating unit and a glycidyl ester residue repeating unit of an α,β-unsaturated mono-carboxylic acid, and at least one of polymers (b) having the repeating unit represented by the following formula (I):

said olefinic copolymer (a) being branched or crosslinked with at least one of the polymers (b),



(I)

wherein R represents a hydrogen atom or a lower alkyl group having from 1 to about 6 carbon atoms, X represents a benzyl group, $—COOCH_3$, $—COOC_2H_5$, $—COOC_4H_9$, $—COOCH_2CH(C_2H_5)C_4H_9$, —CN, a phenyl group or a maleimide group.

5,578,680

VIBRATION-ABSORBING ELASTOMERIC COMPOSITE, PROCESS FOR MAKING THE SAME, AND VIBRATION DAMPER COMPRISING THE SAME

Takao Ando, Kyoto; Katsura Gohda, Takatsuki; Eiji Ichihara, and Hiroshi Itayama, both of Kyoto, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Sep. 17, 1993, Ser. No. 121,880

Claims priority, application Japan, Sep. 17, 1992, 4-275295

Int. Cl.[6] C08L *75/04*

U.S. Cl. 525—131 **32 Claims**

1. A vibration-absorbing elastomeric composite, which comprises

(A) 10–60% by weight of at least one thermoplastic resin selected from the group consisting of olefinic polymers, ethylene-unsaturated ester copolymers and natural rubber, and

(B) 90-40% by weight of a polyurethane resin, prepared by reacting a polyisocyanate with a polyol insitu in melted thermoplastic resin (A):

wherein said polyurethane (B) has a nitrogen atom content of at least 3% by weight and has a solubility parameter which is higher by at least 2.5 than that of said thermoplastic resin and wherein said composite has a Tan δ of at least 1.0 at 20° C.

5,578,681

CURABLE ELASTOMERIC BLENDS

David L. Tabb, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 143,262, Oct. 26, 1993, Pat. No. 5,412,034. This application Apr. 3, 1995, Ser. No. 415,868

Int. Cl.[6] C08J *3/24;* **C08L** *27/22;33/04;31/04*

U.S. Cl. 525—194 **13 Claims**

1. A co-curable elastomeric blend consisting essentially of

(a) at least about 5%, by weight of components (a) and (b), of at least one elastomeric fluoropolymer having at least about 45 weight percent fluorine;

(b) at least about 5%, by weight of components (a) and (b), of at least one elastomeric copolymer comprising

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(1) 20–55 percent by weight ethylene and

(2) 45–80 percent by weight of at least one polar comonomer selected from the group consisting of alkyl acrylates, alkyl methacrylates, and vinyl esters wherein the polar comonomer comprises at least 55–80% by weight of the copolymer (b); and

(c) at least one curing agent, capable of crosslinking (a) and (b) independently, in an amount effective for crosslinking both (a) and (b);

wherein at least one of (a) and (b) contains about from 0.1 to 10.0% by weight of at least one cure site monomer; provided that if additional elastomeric polymer is present in concentrations exceeding 2 parts by weight based on 100 parts of the combined weight of (a) and (b), the additional elastomeric polymer has heat resistance at least meeting the requirements for Type D rubber materials according to ASTM D-2000.

5,578,682

BIMODALIZATION OF POLYMER MOLECULAR WEIGHT DISTRIBUTION

Donald A. White, Keasbey, N.J., assignor to Exxon Chemical Patents Inc., Wilmington, Del.

Filed May 25, 1995, Ser. No. 450,068

Int. Cl.[6] C08F *255/10;255/02;279/02*

U.S. Cl. 525—282 **27 Claims**

1. A process for producing a polymer (A) having a bimodal molecular weight distribution from a polymer (B) having a monomodal molecular weight distribution, which polymer (B) normally exhibits a decrease in molecular weight when subjected to high shear mixing in the presence of free radical initiator, comprising:

a) heating a mixture of said polymer and a polyunsaturated crosslinking agent and, optionally, a free radical initiator to form a uniform mixture; and

b) subjecting said mixture to high shear mixing conditions to obtain a polymer (A) having a bimodal molecular weight distribution, the low molecular weight mode having a peak molecular weight lower than that of polymer (B) and high molecular weight mode with a peak molecular weight higher than that of polymer (B).

5,578,683

CROSSLINKABLE GRAFT PRESSURE-SENSITIVE ADHESIVES

Carol A. Koch, San Gabriel; Prakash Mallya, Pasadena, both of Calif., and Colin C. Smith, Mill Hall, Pa., assignors to Avery Dennison Corporation, Pasadena, Calif.

Filed Jun. 27, 1994, Ser. No. 266,972

Int. Cl.[6] C08F *265/04;220/06*

U.S. Cl. 525—301 **37 Claims**

1. An inherently tacky pressure-sensitive adhesive graft copolymer comprising an acrylic backbone forming a continuous phase and comprised of at least one interpolymerized alkyl acrylate ester containing from about 4 to about 8 carbon atoms in the alkyl group and having pendant therefrom side chains formed from a crosslinkable macromonomer having a copolymerizable vinyl end group forming a discontinuous phase each of said side chains having a molecular weight of from about 1,000 to about 25,000, a glass transition temperature of greater than about 25° C. and containing at least one crosslinkable moiety selected from the group consisting of epoxy and carboxyl.

5,578,684

PREPARATION OF POLYVINYLPYRIDINE N-OXIDES

Christian Schade, Ludwigshafen; Dieter Boeckh, and Juergen Detering, both of Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/00490, § 371 Date Aug. 24, 1995, § 102(e) Date Aug. 24, 1995, PCT Pub. No. WO94/20549, PCT Pub. Date Sep. 15, 1994

PCT Filed Feb. 21, 1995, Ser. No. 507,237

Claims priority, application Germany, Mar. 3, 1993, 43 06 609.7

Int. Cl.[6] C08F *8/42*

U.S. Cl. 525—360 **12 Claims**

1. A process for preparing polyvinylpyridine N-oxides, comprising:

oxidizing polyvinylpyridines in an aqueous hydrogen peroxide solution having a water content of at least 25% in the presence of an acid and a catalyst of an oxide, acid or salt thereof of an element of Group 5b, 6b, 7b or 8.

5,578,685

CURING COMPONENT FOR EPOXY RESINS COMPRISING MANNICH BASE FROM ALKYLATED POLYHYDROXY AROMATIC

Uwe Neumann, Bad Schwalbach, and Claus Godau, Kiedrich, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 301,986, Sep. 9, 1994. This application Jun. 2, 1995, Ser. No. 460,588

Claims priority, application Germany, Sep. 13, 1993, 43 31 052.4

Int. Cl.[6] C08G *59/00;65/08;65/14*

U.S. Cl. 525—481 **10 Claims**

1. A process for producing an amino group-containing curing component for epoxy resins, comprising reacting an alkylated polyhydroxy aromatic, a polyamine and an aldehyde by the Mannich reaction and adding primary aliphatic monoamines after the Mannich reaction, wherein the alkylated polyhydroxy aromatic is prepared by acid catalyzed reaction of a polyhydroxy aromatic (a1) and an unsaturated compound (a2) which carries at least one olefinic double bond and is at least one olefin selected from the group consisting of 1-hexene, 1-heptene, and isomers thereof, cyclohexene, cyclopentadiene, indene, vinyl toluene, styrene, and 2-phenyl propene.

5,578,686

PHENOLIC ALLYL ETHERS

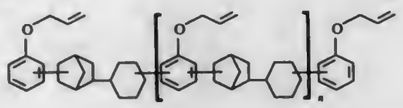
Pen-Chung Wang, Houston, and Donald R. Kelsey, Fulshear, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 294,272, Aug. 22, 1994, Pat. No. 5,495,051. This application Jul. 24, 1995, Ser. No. 505,926

Int. Cl.[6] C08L *65/00;* **C08F** *290/00*

U.S. Cl. 525—534 **6 Claims**

1. A composition comprising the phenolic allyl ether having the formula



in which n is a number within the range of 0 to about 20 and a polymaleimide.

5,578,687

PROCESS FOR PREPARING POLY(4-HYDROXYSTYRENE)

James R. Sounik, and Keith M. Russ, both of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Oct. 13, 1995, Ser. No. 542,584

The portion of the term of this patent subsequent to Sep. 26, 2015, has been disclaimed.

Int. Cl.[6] C08F *2/06*

U.S. Cl. 526—212 **23 Claims**

1. A process for preparing a poly(hydroxystyrene) which comprises the steps of (a) heating a carbinol under decomposition conditions in the presence of a solvent selected from the group consisting of glycols, alcohols, and mixtures thereof for a sufficient period of time to form hydroxystyrene, said solvent having a boiling point in substantially the same range as said hydroxystyrene, and (b) polymerizing said hydroxystyrene under suitable polymerization conditions of pressure and temperature and for a sufficient period of time to form poly(hydroxystyrene), with the proviso that said solvent is also maintained in the same vapor phase or in the same solution with said hydroxystyrene.

5,578,688

ANTIFOULING AGENT

Katsuji Ito; Satoshi Kamata, and Toshiro Goto, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 217,101, Mar. 24, 1994, abandoned. This application Jul. 3, 1995, Ser. No. 497,844

Claims priority, application Japan, Mar. 24, 1993, 5-089281

Int. Cl.[6] C08F *18/20*

U.S. Cl. 526—245 **10 Claims**

1. An antifouling agent comprising as an effective component, a polymer consisting essentially of polymeric units derived from an acrylate or methacrylate monomer containing a polyfluoroalkyl group, polymeric units derived from an acrylate or methacrylate containing a blocked isocyanate group, and polymeric units derived from an acrylate or methacrylate containing a polyoxyalkylene chain, wherein the proportion of the polymeric units derived from an acrylate or methacrylate containing a polyfluoroalkyl group is at least 20 wt %, the proportion of the polymeric units derived from an acrylate or methacrylate containing a blocked isocyanate group is from 0.1 to 10 wt %, and the proportion of the polymeric units derived from an acrylate or methacrylate containing a polyoxyalkylene chain is from 5 to 70 wt %.

5,578,689

POLYMERIC COMPOSITION OBTAINED BY SUSPENDED EMULSION POLYMERIZATION

Pierre Nogues, and Francois Erard, both of Bernay, France, assignors to Atochem, Puteaux, France

Continuation of Ser. No. 22,753, Feb. 19, 1993, abandoned, which is a continuation of Ser. No. 650,635, Feb. 5, 1991, abandoned, which is a division of Ser. No. 109,585, Mar. 17, 1988, Pat. No. 5,047,488. This application Feb. 22, 1994, Ser. No. 200,571

Claims priority, application France, Mar. 17, 1987, 87 03636

Int. Cl.[6] C08F *14/06;2/22*

U.S. Cl. 526—344.3 **3 Claims**

1. A polymeric composition obtained by suspended emulsion polymerization comprising, homopolymers or copolymers comprising at least one vinyl chloride monomer, wherein said polymeric composition has a mean particulate diameter of at least 10 μm, an apparent density of at least 0.50 g/cm^3 and a porosity, evaluated by plasticizer uptake at ambient temperature, of at least 15 g of di-2-ethylhexylphthalate per 100 g of resin.

5,578,690

SILYL-TERMINATED INTERPOLYMER OF ETHYLENE AND METHOD FOR PREPARING SILYL-TERMINATED POLYOLEFINS

Tobin J. Marks, Evanston, and Peng-Fei Fu, Skokie, both of Ill., assignors to Northwestern University, Evanston, Ill.

Filed Apr. 28, 1995, Ser. No. 431,521

Int. Cl.[6] C08F *210/16;2/38*

U.S. Cl. 526—347 **15 Claims**

1. A process for preparing a silyl-terminated polyethylene comprising:

reacting

(A) at least one monomer selected from the group consisting of ethylene and a combination of ethylene and an α-olefin having the formula

$$H_2C{=}CH(R)$$

in which R represents a monovalent group selected from the group consisting of alkyl radical having 1 to 10 carbon atoms and aryl radical; and

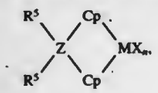
(B) a silane having the formula

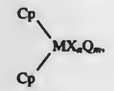
$$R^2R^3R^4SiH$$

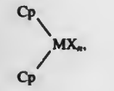
wherein R^2, R^3 and R^4 each represents a monovalent group independently selected from the group consisting of hydrogen, alkyl radicals having 1 to 4 carbon atoms, aryl radicals, alkylaryl radicals, arylalkyl radicals, alkoxy radicals having 1–4 carbon atoms, phenoxy radical, fluorinated alkyl radicals having 3 to 6 carbon atoms, dialkylamino group in which the alkyl groups contain 1 to 4 carbon atoms and a diorganopolysiloxane chain containing 1 to 10 siloxane units,

said reaction taking place in the presence of

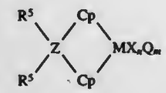
(C) a catalyst comprising a metallocene compound having its formula selected from the group consisting of







and



wherein Cp denotes a cyclopentadienyl or a substituted cyclopentadienyl radical, Z is selected from the group consisting of Si, C, Ge and Sn, R^5 is selected from the group consisting of alkyl radicals having 1 to 4 carbon atoms, aryl radicals and methoxy, M is a metal selected from the group consisting of Group 3 elements, Group 4 elements and Lanthanide series elements, X is a metal ligand selected from the group consisting of hydrogen, halogen, alkyl radicals having 1 to 8 carbon atoms, substituted alkyl radicals having 1 to 8 carbon atoms, allylic radicals having 3 to 6 carbon atoms and aryl radicals having 6 to 8 carbon atoms, Q is an anionic counterion of an element selected from the group consisting of boron, aluminum, gallium, zinc and cadmium and n and m are integers, each having a value of 1 to 3 such that (m+n) is selected to satisfy the valence of said metal M.

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7. An interpolymer of ethylene and at least one α-olefin having the formula

$H_2C{=}CH(R)$

in which R represents a monovalent group selected from the group consisting of alkyl radical having 1 to 10 carbon atoms and aryl radical,

wherein only one terminus of said interpolymer is a silyl group of the formula

$-R^2R^3R^4Si-$

in which R^2, R^3 and R^4 each represents a monovalent group independently selected from the group consisting of hydrogen, alkyl radicals having 1 to 4 carbon atoms, aryl radicals, alkylaryl radicals, arylalkyl radicals, alkoxy radicals having 1–4 carbon atoms, phenoxy radical, fluorinated alkyl radicals having 3 to 6 carbon atoms, dialkylamino group in which the alkyl groups contain 1 to 4 carbon atoms and a diorganopolysiloxane chain containing 1 to 10 siloxane units.

5,578,691

POLYSACCHARIDES GRAFTED WITH ALIPHATIC POLYESTERS DERIVED FROM CYCLIC ESTERS

Ramani Narayan, Okemos, Mich.; Philippe Dubois, Braives, Belgium, and Mohan Krishnan, Okemos, Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Division of Ser. No. 400,979, Mar. 8, 1995. This application Apr. 15, 1996, Ser. No. 632,623

Int. Cl.[6] C08G *16/00*

U.S. Cl. 527—300 **8 Claims**

1. A polymer composition which comprises an aliphatic polyester grafted to a polysaccharide to provide a grafted polymer, wherein the polymer is derived by a ring-opening polymerization and reaction of the polysaccharide containing less than about 2 percent by weight moisture with a cyclic ester monomer containing 4 to 24 carbon atoms in the presence of an anhydrous organometallic polymerizing agent, wherein the grafted polymer is between about 0.1% and 99% of the polymer composition.

5,578,692

METHODS OF MAKING POLYSILOXANES

Timothy N. Biggs, and Gary E. Le Grow, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 529,789, Sep. 18, 1995. This application Feb. 5, 1996, Ser. No. 596,973

Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—15 **12 Claims**

1. A method of making triorganosiloxy endcapped alkylmethyl siloxanes comprising contacting and reacting a linear triorganosiloxy endcapped methylhydrogen polysiloxane containing less than 0.2% branch sites, with an alpha-olefin, in the presence of a platinum catalyst, until a triorganosiloxy endcapped alkylmethyl siloxane containing less than 200 parts per million hydrogen as residual ≡SiH is formed.

5,578,693

MULTIFUNCTIONAL TERMINALLY UNSATURATED URETHANE OLIGOMERS

Richard A. Hagstrom, Cheshire, and Jay K. Martin, Winsted, both of Conn., assignors to Bomar Specialties Company, Winsted, Conn.

Filed Sep. 5, 1995, Ser. No. 523,245

Int. Cl.[6] C08G *18/10*

U.S. Cl. 528—75 **6 Claims**

1. A multifunctional terminally unsaturated urethane oligomer comprising the reaction product of (a) a terminally unsaturated isocyanate containing polyurethane oligomer with (b) an alkoxylated polyhydric alcohol.

5,578,694

PROCESS FOR PRODUCING AROMATIC POLYCARBONATE

Masuzo Yokoyama; Junji Takano; Masami Hasegawa, and Yukiko Tatsukawa, all of Mie, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

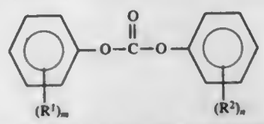
Filed Sep. 12, 1995, Ser. No. 526,548

Claims priority, application Japan, Sep. 21, 1994, 6-226992

Int. Cl.[6] C08G *64/04;* **C07C** *68/06*

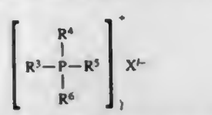
U.S. Cl. 528—198 **12 Claims**

1. A process for producing an aromatic polycarbonate which comprises melt-polycondensing an aromatic diol compound with a diaryl carbonate compound represented by formula (I):



(I)

wherein R^1 and R^2 each independently represent an alkyl group having 1 to 10 carbon atoms or an alkoxy group, and m and n each is 0 or an integer of 1 or 2, in the presence of an interesterification catalyst, said interesterification catalyst comprising a quaternary phosphonium salt compound represented by formula (II):



(II)

wherein R^3, R^4, R^5, and R^6 each independently represent an alkyl group having 1 to 12 carbon atoms, an aryl group, an aralkyl group, or a cycloalkyl group, and X^{l-} is an anion selected from the group consisting of a carbonate ion, a phosphate ion, and a tetrahydroxyboron ion, with the letter l indicating the valency of X.

5,578,695

CROSSLINKING AGENT AND CURABLE COMPOSITION

Osamu Isozaki, Yokohama, Japan, assignor to Kansai Paint Company, Ltd., Hyogo, Japan

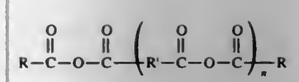
Division of Ser. No. 27,152, Mar. 18, 1993, Pat. No. 5,418,297. This application Dec. 13, 1994, Ser. No. 357,267

Claims priority, application Japan, Nov. 26, 1991, 3-310361; Dec. 11, 1991, 3-327652; Jun. 25, 1992, 4-167702; Jun. 25, 1992, 4-167703

Int. Cl.[6] C08G *67/04*

U.S. Cl. 528—271 **3 Claims**

1. A crosslinking agent comprising a compound having at least two noncyclic acid anhydride groups and represented by the following formula:



wherein R is a monovalent hydrocarbon group having 2 to 50 carbon atoms and optionally containing an ether linkage, urethane linkage or ester linkage, R' is a bivalent hydrocarbon group having 2 to 50 carbon atoms and containing a urethane linkage or ester linkage, and n is an integer of 1 to 500.

5,578,696

HEAT RESISTANT ADHESIVE FILM, AN ADHESION STRUCTURE, AND METHOD OF ADHESION

Amane Mochizuki; Kazumi Higashi, and Masako Maeda, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

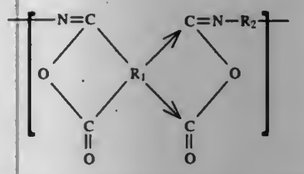
Filed Apr. 6, 1994, Ser. No. 223,661

Claims priority, application Japan, Apr. 7, 1993, 5-080592; Dec. 24, 1993, 5-327493

Int. Cl.[6] C08G *73/10;69/26*

U.S. Cl. 528—353 **5 Claims**

1. A heat-resistant adhesive film comprising a polyisoimide resin containing at least 40 mol % of an isoimide unit represented by formula (I):



(I)

wherein R_1 represents a tetravalent aromatic or aliphatic residue; R_2 represents a divalent aromatic or aliphatic residue; and the arrows represents a bond replaceable on isomerization, in the molecule thereof.

5,578,697

POLYIMIDE PRECURSOR, BISMALEIMIDE-BASED CURED RESIN PRECURSOR AND ELECTRONIC PARTS HAVING INSULATING MEMBERS MADE FROM THESE PRECURSORS

Yoshiaki Kawamonzen, Kawasaki; Masayuki Oba, Yokohama; Yukihiro Mikogami, Yokohama; Shigeru Matake, Yokohama; Shuzi Hayase, Yokohama, and Satoshi Mikoshiba, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 29, 1995, Ser. No. 413,173

Claims priority, application Japan, Mar. 29, 1994, 6-059280

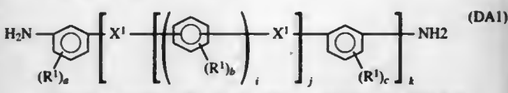
Int. Cl.[6] C08G *73/10*

U.S. Cl. 528—353 **20 Claims**

1. A polyimide precursor having a molecular structure obtained by polymerizing

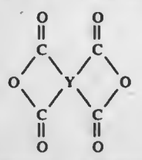
(a) 0.97 to 1.03 molar equivalent of a diamine component containing 0.40 molar equivalent or more of aromatic diamine compound represented by the following general formula (DA1), and

(b) an acid anhydride component containing $(1-n_1/2)$ molar equivalent of a tetracarboxylic dianhydride represented by the following general formula (DAH1) and n_1, molar equivalent of at least one compound selected from the group consisting of maleic anhydride and maleic derivative anhydride, wherein n_1 ranges from 0.02 to 0.40:



(DA1)

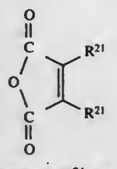
wherein X^1 groups may be the same or different and represent bivalent oxy, thio, sulfonyl, carbonyl, peralkylpolysiloxanylene or a nonsubstituted or fluoro-substituted aliphatic hydrocarbon group, or a single bond; R^1 substituents may be the same or different and represent individually fluoro, or a nonsubstituted or fluoro-substituted aliphatic hydrocarbon group; a, b and c each are an integer of 0 to 4; i is an integer of 1 to 6; j is an integer of 0 to 6; and k is 0 or 1,



(DAH1)

wherein Y is a tetravalent organic group; and

wherein said compound selected from the group consisting of maleic anhydride and maleic derivative anhydride has the following general formula (MA1)



(MA1)

wherein R^{21} substituents may be the same or different and represent individually halo, or a nonsubstituted or fluoro-substituted aliphatic hydrocarbon group, or hydrogen atom.

5,578,698

Patent Not Issued For This Number

5,578,699

PROCESS FOR MAKING AMINO FUNCTIONAL POLY(PARA-PHENYLENE VINYLENE)S

John D. Stenger-Smith; William P. Norris; Andrew P. Chafin, all of Ridgecrest, Calif., and Scott T. Sackinger, Columbia, S.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

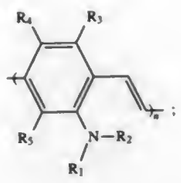
Division of Ser. No. 252,701, May 31, 1994. This application May 18, 1995, Ser. No. 457,350

Int. Cl.[6] C08G *75/00;* **C08F** *6/00*

U.S. Cl. 528—373 **12 Claims**

1. A process for producing amino substituted phenylene vinylene polymers by reacting a bis-cycloalkylene sulfonium salt of an amino substituted bishalomethyl benzene compound with alkali metal hydroxide at reduced temperature to form a cycloalkylene sulfonium salt precursor polymer and heating said precursor polymer at a temperature of about 150° C. to about 300° C., said polymers having a singular independent repeating unit of the general formula (I):

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wherein

R_1 and R_2 are each independently hydrogen; alkyl having 1 to 22 carbon atoms; alkyl sulfonate having 1 to 22 carbon atoms; alcobol having 1 to 22 carbon atoms;

R_3, R_4, R_5 are each independently hydrogen; alkyl having 1 to 22 carbon atoms; alkoxy having 1 to 22 carbon atoms; nitro; halogen; amine; sulfonates; silyl; perfluoro alkyl; and cyano esters; and

n is an integer from 2 to 20,000.

5,578,700

CONTINUOUS VACUUM MICROWAVE RUBBER CRUMB RECLAMATION UNIT

James R. Hunt, Tucker, and Jerry L. Hunt, Rossville, both of Ga., assignors to Hunt Industries Inc., Tucker, Ga.

Filed May 1, 1995, Ser. No. 431,547

Int. Cl.[6] C08C *3/02;2/00*

U.S. Cl. 528—501 **3 Claims**

1. A method for continuously removing volatiles from rubber and recovering rubber crumb, comprising:

a) providing an apparatus comprising a first and second chamber; b) reducing the pressure within said first chamber; c) continuously moving rubber particles through said first chamber with a screw conveyor; d) providing substantially precise microwave energy input into said rubber particles without any substantial chemical destruction of volatile components as it is continuously moved through said first chamber; e) recovering volatiles from said rubber particles after it has been sufficiently heated by said means for providing substantially precise microwave energy input; f) withdrawing rubber crumb from said first chamber, and repeating steps b) through f), for said second chamber.

5,578,701

PRB110 - NUCLEAR PHOSPHOPROTEIN - THE RETINOBLASTOMA SUSCEPTIBILITY GENE PRODUCT

Wen-Hwa Lee, and Eva Y.-H. P. Lee, both of San Diego, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Apr. 8, 1994, Ser. No. 225,099

Int. Cl.[6] C07K *16/30;* A61K *39/395*

U.S. Cl. 530—391.3 **4 Claims**

1. A purified polyclonal antibody which specifically binds retinoblastoma phosphoprotein $ppRB^{110}$.

5,578,702

TOXIN ACTIVE AGAINST LEPIDOPTERAN INSECTS

Michael J. Adang, Athens, Ga., assignor to Mycogen Plant Science, Inc., San Diego, Calif.

Continuation of Ser. No. 713,624, Jun. 10, 1991, which is a continuation of Ser. No. 260,574, Oct. 20, 1988, abandoned, which is a continuation-in-part of Ser. No. 848,733, Apr. 4, 1986, abandoned, which is a continuation-in-part of Ser. No. 535,354, Sep. 26, 1983, abandoned. This application Nov. 10, 1993, Ser. No. 150,506

Int. Cl.[6] C12N *15/32;* C07K *13/00*

U.S. Cl. 530—350 **1 Claim**

1. A truncated *Bacillus thuringiensis* delta-endotoxin having the amino acid sequence shown in FIG. 1.

5,578,703

SUBSTANTIALLY PURE RECEPTOR LIKE TFG-β1 BINDING MOLECULES

Hidenori Ichijo; Kobei Miyazono; Lars Ronnstrand; Ulf Hellman; Christer Wernstedt, and Carl-Hendrik Heldin, all of Upsala, Sweden, assignors to Ludwig Institute for Cancer Research, New York, N.Y.

PCT No. PCT/US92/05199, § 371 Date Apr. 22, 1994, § 102(e) Date Apr. 22, 1994, PCT Pub. No. WO92/22319, PCT Pub. Date Dec. 23, 1992

Continuation-in-part of Ser. No. 717,316, Jun. 18, 1991, Pat. No. 5,229,495. This PCT application Jun. 18, 1992, Ser. No. 167,939

Int. Cl.[6] C07K *14/47;14/71*

U.S. Cl. 530—350 **2 Claims**

1. Substantially pure membrane derived receptor like transforming growth factor β1 binding protein which has a molecular weight of from 75–80 kd as determined by SDS-PAGE wherein said molecule is a dimer consisting of two substantially pure, receptor like transforming growth factor β1 binding protein molecules, each of which has a molecular weight of 35–40 kd as determined by SDS-PAGE.

2. Substantially pure, receptor like transforming growth factor β1 binding protein which has a molecular weight of 160 kd as determined by SDS-PAGE under reducing conditions and under non-reducing conditions.

5,578,704

ANTIBODY TO OSTEOCLAST ALPHA VBETA 3 INTEGRIN

Kyung J. Kim, San Francisco, Calif.; Michael A. Horton, Essex, Great Britain; Sarah C. Bodary, San Francisco, and Anan Chuntharapai, Colma, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

PCT No. PCT/US93/02987, § 371 Date Sep. 30, 1994, § 102(e) Date Sep. 30, 1994, PCT Pub. No. WO93/20229, PCT Pub. Date Oct. 14, 1993

Continuation-in-part of Ser. No. 25,913, Mar. 3, 1993, abandoned, which is a continuation of Ser. No. 862,679, Apr. 3, 1992, abandoned. This PCT application Mar. 30, 1993, Ser. No. 307,844

Int. Cl.[6] C07K *16/28;* C12P *21/08;* C12N *5/20*

U.S. Cl. 530—388.22 **5 Claims**

1. The hybridoma cell line deposited with the American Type Culture Collection and having the accession number HB 11029.

5,578,705

CYTOPLASMIC ANTIPROTEINASE-2 CODING SEQUENCES

Cindy A. Sprecher, Seattle, Wash., assignor to ZymoGenetics, Inc., Seattle, Wash.

Division of Ser. No. 385,500, Feb. 8, 1995. This application Jun. 5, 1995, Ser. No. 465,213

Int. Cl.[6] C07K *14/00;1/00;* C12N *15/00;15/09*

U.S. Cl. 530—388.26 **3 Claims**

1. An isolated mammalian CAP-2 protein wherein said protein has the amino acid sequence depicted in Seq. ID No. 2 and inhibits serine protease activity or a biologically active homolog thereof.

5,578,706

METHODS AND COMPOSITIONS CONCERNING HOMOGENOUS IMMUNOTOXIN PREPARATIONS

Victor F. Ghetie; Jonathan W. Uhr, and Ellen S. Vitetta, all of Dallas, Tex., assignors to Board of Regents, The University of Texas, Austin, Tex.

Filed Nov. 4, 1993, Ser. No. 147,768

Int. Cl.[6] C07K *16/46*

U.S. Cl. 530—391.7 **8 Claims**

1. An immunotoxin preparation comprising a substantially purified immunotoxin species, wherein said immunotoxin species is an antibody molecule conjugated to two plant toxin A chains of the same kind and lacking a cell binding B chain, said immunotoxin species being more than about 50% by weight of the total immunotoxin present in the preparation.

5,578,707

SOLUBLE INTERFERON-GAMMA RECEPTOR FRAGMENT

Daniela Novick, Rehovot, and Menachem Rubinstein, Givat Shmuel, both of Israel, assignors to Yeda Research and Development, Co., Ltd., Rehovot, Israel

Division of Ser. No. 578,826, Sep. 7, 1990, Pat. No. 5,221,789. This application Feb. 12, 1993, Ser. No. 16,992

Claims priority, application Israel, Sep. 7, 1989, 91562

Int. Cl.[6] C07K *14/315;* A61K *38/17*

U.S. Cl. 530—395 **7 Claims**

1. A soluble human interferon-gamma (IFN-gamma) receptor, a salt thereof, or a fusion of said soluble receptor and additional polypeptide with which it is not natively associated, in substantially purified form, said soluble receptor, salt, or fusion

(a) being capable of specifically binding to recombinant IFN-gamma and specifically inhibiting the binding of IFN-gamma by an anti-IFN-gamma monoclonal antibody;

(b) being capable of being specifically bound by anti-IFN-gamma receptor monoclonal antibody No. 177-1, produced by a hybridoma deposited with the Collection Nationale de Cultures de Microorganismes, Paris, France under No. CNCM I-814;

(c) being capable of neutralizing the antiviral activity of IFN-gamma in WISH cells (ATCC CCL25) against vesicular stomatitis virus;

said soluble receptor being further characterized as

(d) having an apparent molecular weight when analyzed by sodium dodecyl sulfatepolyacrylamide gel electrophoresis (SDS-PAGE) under non-reducing conditions of about 40,000;

(e) being cleavable with formic acid and cyanogen bromide to yield, when analyzed by under reducing conditions, Coomassie Blue stainable bands with apparent molecular weights of about 35,000, 30,000, 20,000–26,000, and 14,000–18,000; the aforementioned band with an apparent molecular weight of about 20,000–26,000 including a cleavage product comprising the amino acid sequence MPQVPVFTVEVKNYGVKN; and

(f) being obtainable from human urine.

5,578,708

BONE-ASSOCIATED TRANSCRIPTION CONTROL FACTOR-LIKE PROTEIN

Makoto Okazaki, Kawagoe; Sunao Takeshita, Tsu; Shinji Kawai, Iruma-gun; Reiko Kikuno, Tokorozawa, all of Japan, and Egon Amann, Marburg, Germany, assignors to Hoechst Japan Limited, Tokyo, Japan

Filed Mar. 8, 1994, Ser. No. 208,108

Claims priority, application Japan, Mar. 10, 1993, 5-048875

Int. Cl.[6] C07K *14/51*

U.S. Cl. 530—399 **1 Claim**

1. An isolated and purified protein comprising OSF-6, having the amino acid sequence from no. 1 to no. 442 in (SEQ NO: 2) of the sequence tables.

5,578,709

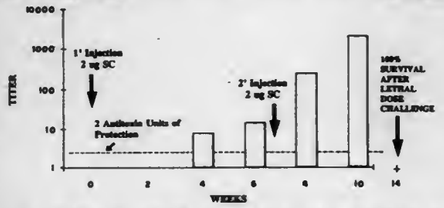
MACROMOLECULAR MICROPARTICLES AND METHODS OF PRODUCTION

James E. Woiszwillo, Milford, Mass., assignor to Middlesex Sciences, Inc., Norwood, Mass.

Continuation-in-part of Ser. No. 28,237, Mar. 9, 1993. This application Mar. 4, 1994, Ser. No. 206,456

Int. Cl.[6] C07K *17/02;1/00;* C08H *1/02;* G01N *33/544*

U.S. Cl. 530—410 **18 Claims**



1. A method for making microparticles having uniform size comprising the steps of:

a) combining a solution containing a macromolecule with a solution containing both polyvinylpyrrolidone and polyethylene glycol to produce a reaction solution:

b) incubating the reaction solution at a predetermined temperature greater than room temperature for a sufficient amount of time to form microparticles; and

c) separating the microparticles from the reaction solution.

5,578,710

ACTIVATION OF RECOMBINANT PROTEINS

Dorothea Ambrosius, Iffeldorf; Carola Dony, Starnberg, and Rainer Rudolph, Weilheim, all of Germany, assignors to Boehringer Mannheim GmbH, Germany

Continuation of Ser. No. 837,779, Feb. 14, 1992, abandoned. This application Oct. 21, 1993, Ser. No. 139,054

Claims priority, application Germany, Feb. 21, 1991, 41 05 480.6

Int. Cl.[6] A23J *1/00;* C07K *1/00;* C12P *21/06*

U.S. Cl. 530—412 **14 Claims**

1. Process for improving the renaturation of recombinant proteins, comprising the steps of:

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adding at least one oligonucleotide sequence encoding a helper sequence of 2 to 20 amino acids in length to a DNA sequence coding for a protein, wherein said oligonucleotide sequence is added to the part of the DNA sequence encoding the protein's N and/or C-terminus, and wherein the relative hydrophobicity of said helper sequence, calculated as the sum of the relative hydrophobicities for the individual amino acids, is a negative numerical value, and wherein the helper sequences have a value for the ratio of relative hydrophobicity to the number of amino acids which is −2.0 kcal/mol or less,

expressing the DNA sequence including the oligonucleotide sequence encoding said helper sequence, and

thereafter renaturing any expressed protein.

5,578,711

PROCESS FOR THE PREPARATION OF DYESTUFFS

Roderich Raue, Leverkusen; Alfred Brack, Odenthal, and Karl-Heinrich Lange, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

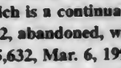
Division of Ser. No. 442,049, May 6, 1995, Pat. No. 5,502,172, which is a division of Ser. No. 311,831, Sep. 23, 1994, which is a continuation of Ser. No. 48,024, Apr. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 874,674, Apr. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 665,632, Mar. 6, 1991, abandoned. This application Sep. 14, 1995, Ser. No. 527,971

Claims priority, application Germany, Mar. 15, 1990, 40 08 263.6

Int. Cl.[6] C09B *29/24*

U.S. Cl. 534—579 **10 Claims**

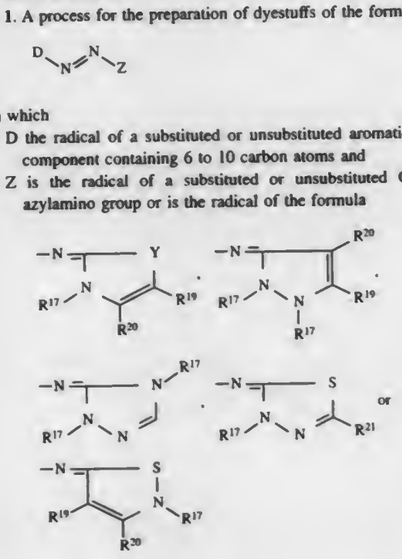
1. A process for the preparation of dyestuffs of the formula



in which

D the radical of a substituted or unsubstituted aromatic diazo component containing 6 to 10 carbon atoms and

Z is the radical of a substituted or unsubstituted C_6–C_{10}-azylamino group or is the radical of the formula



in which

Y represents —S—, —O— or



R^{17} represents hydrogen, unsubstituted C_1–C_8-alkyl or C_1–C_8-alkyl which is substituted by hydroxy, halogen, cyano, C_1–C_4-alkoxy, carboxyl, C_1–C_4-(di)alkylaminocarbonyl, C_1–C_4-alkoxycarbonyl or C_1–C_4-alkylsulphonyl or represents C_2–C_4-alkylen, unsubstituted phenylmethyl, unsubstituted phenylethyl or phenylmethyl or phenylethyl which in each case is substituted by halogen, cyano, C_1–C_4-alkyl or C_1–C_4-alkoxy,

R^{19} and R^{20} either represent hydrogen or together represent the remaining members of a fused benzene ring and

R^{21} represent C_1–C_4-(di)alkylamino, C_6–C_4-(di)arylamino, C_1–C_4-alkyl-C_6–C_{10}-arylamino, morpholino, piperidino, piperazino, pyrrolidino, C_1–C_4-alkylmercapto or C_6–C_{10}-arylmercapto,

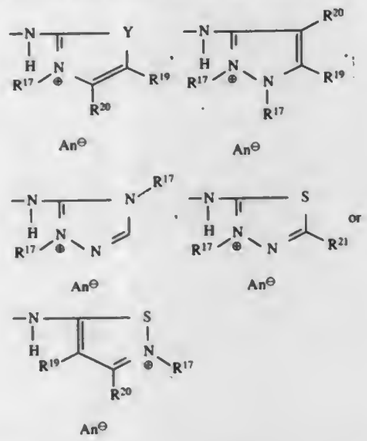
in which a diazo component of the formula

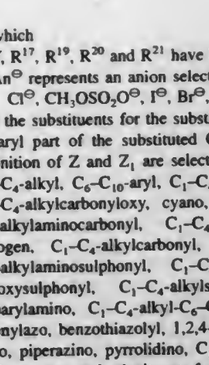


and a component of the formula

wherein

Z_1 is a radical of a substituted or unsubstituted C_6–C_{10}-arylamino group or a radical of the formulae





in which

Y, R^{17}, R^{19}, R^{20} and R^{21} have be above give meaning and

$An^{\ominus}$ represents an anion selected from the group consisting of $Cl^{\ominus}$, $CH_3OSO_2O^{\ominus}$, $I^{\ominus}$, $Br^{\ominus}$, $CH_3COO^{\ominus}$,

and the substituents for the substituted aromatic diazo component or aryl part of the substituted C_6–C_{10}-arylamino groups in the definition of Z and Z_1 are selected from the group consisting of C_1–C_4-alkyl, C_6–C_{10}-aryl, C_1–C_4-alkoxy, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkylcarbonyloxy, cyano, C_1–C_4-(di)alkylamino, C_1–C_4-(di)alkylaminocarbonyl, C_1–C_4-alkylcarbonylamino, hydroxy, halogen, C_1–C_4-alkylcarbonyl, C_1–C_4-alkylsulphonyl, C_1–C_4-(di)alkylaminosulphonyl, C_1–C_4-alkylsulphonylamino, C_1–C_4-alkoxysulphonyl, C_1–C_4-alkylsulphonyloxy, nitro, C_6–C_{10}-(di)arylamino, C_1–C_4-alkyl-C_6–C_{10}-arylamino, phenylsulphonyl, phenylazo, benzothiazolyl, 1,2,4-oxadiazolyl, morpholino, piperidino, piperazino, pyrrolidino, C_1–C_4-alkylmercapto and C_6–C_{10}-arylmercapto; and substituents for the amino part of the substituted C_6–C_{10}-arylamino group in the definition of Z and Z_1 are selected from the group consisting of C_1–C_8-alkyl, C_2–C_4-alkylene or substituted or unsubstituted C_1–C_4-alkyl-C_6–C_{10}-aryl, are reacted in an aqueous medium with a nitrite selected from the group consisting of alkali nitrite, C_1–C_5-alkyl nitrite, glycol nitrite or polyol nitrite at a CO_2 pressure of more than 5 bar and at a temperature of 0°–125° C.

5,578,712

FIBRE-REACTIVE MONOAZONAPHTHYL DYESTUFFS

Markus Doerr, Staufen, Germany, and Roland Wald, Huningue, France, assignors to Sandoz Ltd., Basel, Switzerland

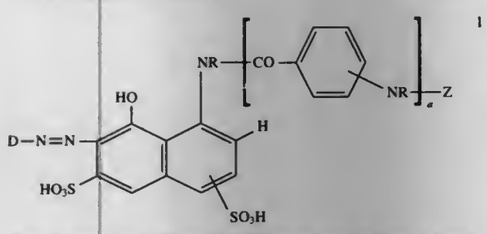
Continuation of Ser. No. 106,002, Aug. 13, 1993, abandoned. This application May 2, 1995, Ser. No. 431,650

Claims priority, application Germany, Aug. 14, 1992, 42 26 919.9; Jan. 25, 1993, 43 01 883.1

Int. Cl.[6] C09B *62/245;62/085;62/24;* **D06P** *1/382*

U.S. Cl. 534—634 **18 Claims**

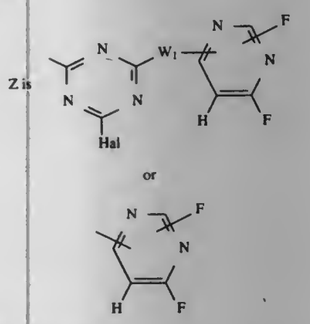
1. A compound of formula I



or salts thereof, or a mixture of such compounds of salts, in which each R is independently hydrogen, C_{1-4}alkyl, or C_{1-4}alkyl monosubstituted by OH, CN, or Cl,

a is 0 or 1,

Z is

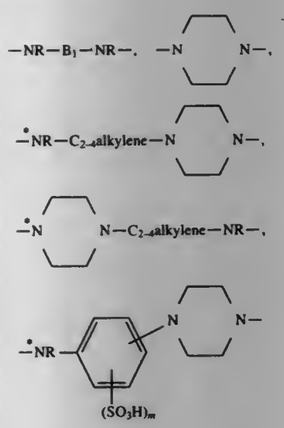


or

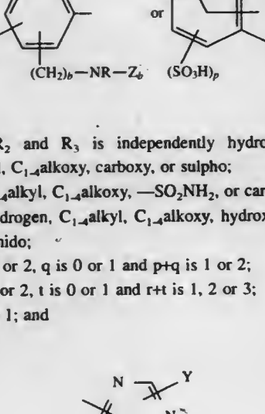
wherein

Hal is fluorine or chlorine,

W_1 is



or



in which

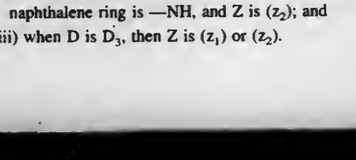
each m is independently 0 or 1,

each marked nitrogen atom is bound to a carbon atom of the triazine ring, and

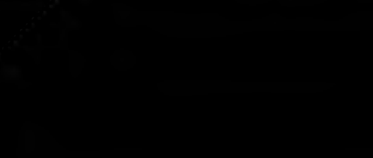
B_1 is C_{2-4}alkylene; —C_{2-3}alkylene—Q—C_{2-3}alkylene- in which Q is —O— or —NR—; or C_{3-4}alkylene which is monosubstituted by hydroxy;

D is D_1, D_2 or D_3 where

D_1 is



D_2 is



D_3 is

in which

each of R_2 and R_3 is independently hydrogen, halogen, C_{1-4}alkyl, C_{1-4}alkoxy, carboxy, or sulpho;

R_4 is C_{1-4}alkyl, C_{1-4}alkoxy, —SO_2NH_2, or carboxy;

R_5 is hydrogen, C_{1-4}alkyl, C_{1-4}alkoxy, hydroxy, carboxy, or acetamido;

p is 0, 1 or 2, q is 0 or 1 and p+q is 1 or 2;

r is 0, 1 or 2, t is 0 or 1 and r+t is 1, 2 or 3;

b is 0 or 1; and

Z_b is

wherein

X is hydrogen, chloro or cyano, and

the two Y's are the same and each is fluoro or chloro;

with the provisos that

(i) when D is D_1, then Z is (z_1);

(ii) when D is D_2, then a is 1, the —NR radical attached to the naphthalene ring is —NH, and Z is (z_2); and

(iii) when D is D_3, then Z is (z_1) or (z_2).

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5,578,713

ONE STEP PROCESS FOR PRODUCTION OF DIRITHROMYCIN

John M. McGill, III, Lafayette, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

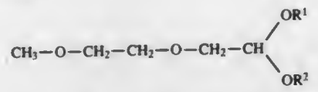
Continuation of Ser. No. 768,803, Sep. 30, 1991, abandoned. This application Jul. 20, 1993, Ser. No. 95,366

Int. Cl.[6] C07H *1/00*

U.S. Cl. 536—18.5 **22 Claims**

1. A process for making crystalline dirithromycin Comprising the steps of:

(a) dissolving in aqueous acetonitrile an acetal, represented by the formula



wherein R^1 and R^2 are straight or branched alkyl groups of one to about six carbon atoms which may be identical to or different from each other or together with each other may be $—CH_2—CH_2—$, $—CH_2—CH_2—CH_2—$, or $—CH_2—CH_2—CH_2—CH_2—$ thereby forming a 5-to 7-membered ring when taken in conjunction with the structure to which they are attached

(b) hydrolyzing the product of step (a) over time in the presence of an acid catalyst thereby forming a hemiacetal; and

(c) reacting the hemiacetal of step (b) with erythromycylamine thereby forming crystalline dirithromycin, wherein the entire process is capable of being carried out in situ.

5,578,714

DNA ENCODING DUFFY 9PD PROTEIN

Angel O. Pogo, Pelham, and Asok Chaudhuri, Rego Park, both of N.Y., assignors to New York Blood Center, Inc., New York, N.Y.

Filed Oct. 21, 1993, Ser. No. 140,797

Int. Cl.[6] C07H *21/04*; C07K *14/705*

U.S. Cl. 536—23.5 **3 Claims**

1. Isolated or synthetic DNA consisting of a nucleotide sequence encoding the gpD amino acid sequence depicted in SEQ ID No: 1.

5,578,715

METHODS, KITS, AND PROBES FOR DIAGNOSING HIV-2

Marc Alizon, Paris; Luc Montagnier, Le Plessy Robin; Denise Guetard; Francois Clavel, both of Paris; Pierre Sonigo, and Mireille Guyader, both of Paris, all of France, assignors to Institut Pasteur, Paris, France

Division of Ser. No. 3,764, Jan. 16, 1987, Pat. No. 5,051,496, which is a continuation-in-part of Ser. No. 933,184, Nov. 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 916,080, Oct. 6, 1986, abandoned, and Ser. No. 835,228, Mar. 3, 1986, Pat. No. 4,839,288. This application Sep. 4, 1991, Ser. No. 754,903

Claims priority, application France, Jan. 22, 1986, 86.00910; Jan. 22, 1986, 86.00911; Feb. 6, 1986, 86.01635; Feb. 13, 1986, 86.01985

Int. Cl.[6] C07H *21/04*

U.S. Cl. 536—23.72 **2 Claims**

1. A nucleic acid selected from the group consisting of:

(1) env1, having nucleotides 1735–1809 of the envelope sequence of HIV-2, having the following sequence:

GTCAC TGCTA TAGAG AAGTA CCTAC AGGAC CAGGC

-continued

GCGGC TAAAT TCATG GGGAT GTGCG TTTAG ACAAG

TCTGC;

(2) env2, having nucleotides 1912–1983 of the envelope sequence of HIV-2, having the following sequence:

AGTAA AAGTT TAGAA CAGGC ACAAA TTCAG CAAGA

GAAAA ATATG TATGA ACTAC AAAAA TTAAA TAGCT

GG;

(3) env3, having nucleotides 1482–1530 of the envelope sequence of HIV-2, having the following sequence:

CCTAC AAAAG AAAAA AGATA CTCCT CTGCT CACGG

GAGAC ATACA AGA;

(4) env4, having nucleotides 55–129 of the envelope sequence of HIV-2, having the following sequence:

TGCAC CCAAT ATGTA ACTGT TTTCT ATGGC GTACC

CACGT GGAAA AATGC AACCA TTCCC CTGTT TTGTG

CAACC;

(5) env5, having nucleotides 175–231 of the envelope sequence of HIV-2, having the following sequence:

GATGA TTATC AGGAA ATAAC TTTGA ATGTA ACAGA

GGCTT TTGAT GCATG GAATA AT;

(6) env6, having nucleotides 274–330 of the envelope sequence of HIV-2, having the following sequence:

GAGAC ATCAA TAAAA CCATG TGTGA AACTA ACACC

TTTAT GTGTA GCAAT GAAAT GC;

(7) env7, having nucleotide 607–660 of the envelope sequence of HIV-2, having the following sequence:

AACCA TTGCA ACACA TCAGT CATCA CAGAA TCATG

TGACA AGCAC TATTG GGAT;

(8) env8, having nucleotide 661–720 of the envelope sequence of HIV-2, having the following sequence:

GCTAT AAGGT TTAGA TACTG TGCAC CACCG GGTTA

TGCCC TATTA AGATG TAATG ATACC;

(9) env9, having nucleotide 997–1044 of the envelope sequence of HIV-2, having the following sequence:

AAAAG ACCCA GACAA GCATG GTGCT GGTTC AAAGG

CAAAT GGAAA GAC;

(10) env10, having nucleotide 1132–1215 of the envelope sequence of HIV-2, having the following sequence:

AAAGG CTCAG ACCCA GAAGT AGCAT ACATG TGGAC

TAACT GCAGA GGAGA GTTTC TCTAC TGCAA CATGA

CTTGG TTCCT CAAT;

(11) env11, having nucleotide 1237–1305 of the envelope sequence of HIV-2, having the following sequence:

CGCAA TTATG CACCG TGCCA TATAA AGCAA ATAAT

TAACA CATGG CATAA GGTAG GGAGA AATGT ATAT;

and

(12) gag1, having nucleotide 991–1053 of the GAG sequence of HIV-2, having the following sequence:

GACTG TAAAT TAGTG CTAAA AGGAC TAGGG ATGAA

CCCTA CCTTA GAAGA GATGC TGACC GCC.

5,578,716

DNA METHYLTRANSFERASE ANTISENSE OLIGONUCLEOTIDES

Mosbe Szyf, Cote St. Luc, Canada, and Eric von Hofe, Wellesley, Mass., assignors to McGill University, Canada, and Hybridon, Inc., Worcester, Mass.

Filed Dec. 1, 1993, Ser. No. 161,673

Int. Cl.[6] C07H *21/00*; A61K *48/00*

U.S. Cl. 536—24.5 **4 Claims**

2. An antisense oligonucleotide having the sequence 5'-TTGGCATCTGCCATTCCCACTCTA-3' (SEQ ID NO: 2).

5,578,717

NUCLEOTIDES FOR INTRODUCING SELECTABLY CLEAVABLE AND/OR ABASIC SITES INTO OLIGONUCLEOTIDES

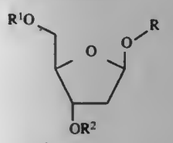
Michael S. Urdea, Alamo, and Thomas Horn, Berkeley, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Division of Ser. No. 559,961, Jul. 27, 1990, Pat. No. 5,430,136, which is a continuation-in-part of Ser. No. 398,711, Aug. 25, 1989, Pat. No. 5,258,506, which is a continuation-in-part of Ser. No. 251,152, Sep. 29, 1988, Pat. No. 5,118,605, which is a continuation-in-part of Ser. No. 661,508, Oct. 16, 1984, Pat. No. 4,775,619. This application May 8, 1995, Ser. No. 436,663

Int. Cl.[6] C07H *19/10;19/20;21/00*

U.S. Cl. 536—26.1 **11 Claims**

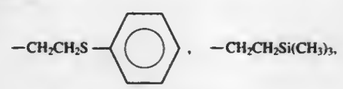
1. A compound having the structure

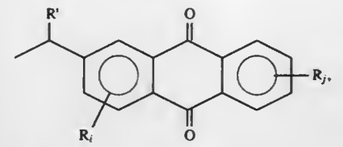


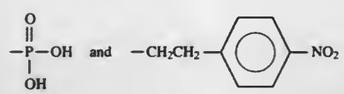
wherein

R^1 is a base-stable, acid-sensitive blocking group;

R^2 is a phosphorous derivative selected to enable addition of the compound to the 5' position of an oligonucleotide chain; and R is selected from the group consisting of 2-nitrobenzyl, 4-penten-1-yl,







in which R' is hydrogen, aryl or aralkyl, the R_j may be the same or different and are selected from the group consisting of amino, nitro, halogeno, hydroxyl, lower alkyl and lower alkoxy, the R_j may be the same or different and are selected from the group consisting of amino, nitro, halogeno, hydroxyl, lower alkyl and lower alkoxy, i is zero, 1, 2 or 3, and j is zero, 1, 2, 3 or 4.

5,578,718

THIOL-DERIVATIZED NUCLEOSIDES

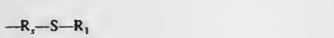
Phillip D. Cook, and Muthiah Manoharan, both of Carlsbad, Calif., assignors to ISIS Pharmaceuticals, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 211,882, Apr. 22, 1994, which is a continuation-in-part of Ser. No. 782,374, Oct. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 463,358, Jan. 11, 1990, abandoned, and Ser. No. 566,977, Aug. 13, 1990, abandoned. This application Sep. 3, 1993, Ser. No. 116,801

Int. Cl.[6] C07H *19/06;19/16;21/00*

U.S. Cl. 536—27.21 **25 Claims**

1. A nucleoside comprising a ribofuranosyl sugar portion and a base portion, wherein said nucleoside bears at a 2'-O-position, a 3'-O-position, or a 5'O-position a substituent having formula:



where:

R_5 has formula R_A, $R_A—C(O)—Q—R_A$ $RA—Q—R_A—Q—R_A$; each R_A is independently selected from alkyl having from 1 to about 10 carbon atoms;

each Q is independently selected from NH, **0**, and S;

R_1 is H or a thiol protecting group or has formula $S—R_2$, $CH_2C(O)—NH—R_2$, $—CH_2—CH═CH—C(O)—R_2$, $—CH_2—CH_2—NH—S(O)_2R_2$; or (maleimido)$—R_2$, and

R_2 is a steroid molecule, a reporter molecule, a lipophilic molecule, a peptide, a protein, an alkylator, an intercalator, a crown ether, a crown amine, a porphyrin, a peptide nucleic acid, or a thiol attached to a poly(ethylene glycol).

24. A process for derivatizing a nucleoside bearing a 2'-hydroxy group, a 3'-hydroxy group, or a 5'-hydroxy group, comprising contacting said nucleoside with a compound having formula $L_1—R_A—S—R_{1a}$ for a time and under conditions effective to form a linkage having formula $—O—R_A—S—R_{1a}$, wherein L_1 is a leaving group and R_{1a} is an acid labile thiol protecting group.

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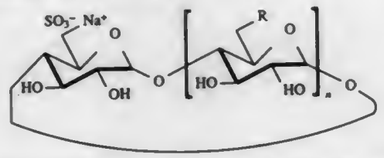
5,578,719

SULPHONATED DERIVATIVES OF CYCLOMALTO-OLIGOSACCHARIDES, THEIR PREPARATION PROCESS AND SUPPORT FOR ACTIVE SUBSTANCES CONTAINING THESE DERIVATIVES

Andrée Gadelle, Mont Bonnot, and Corinne Bayle, Volvic, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 13, 1994, Ser. No. 242,117
Claims priority, application France, Jun. 3, 1993, 93 06654
Int. Cl.[6] C07H *5/04*; C08B *37/02*; C07G *17/00*
U.S. Cl. 536—55.1 10 Claims

1. A sulphonated derivative of cyclomalto-oligosaccharide, in accordance with the following formula (I):



(I)

in which n is an integer from 2 to 50 and R represents —$SO_3^-Na^+$ or —OH, in which R can differ from one cycle to the next.

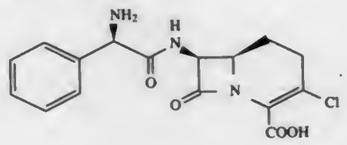
5,578,720

LORACARBEF HYDROCHLORIDE C1-C3 ALCOHOL SOLVATES AND USES THEREOF

Jane G. Amos, Mooresville; Perry C. Heath, Indianapolis; Douglas E. Prather, Brownsburg, and John E. Toth, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 77,305, Jun. 15, 1993. This application May 18, 1995, Ser. No. 444,124
Int. Cl.[6] C07D *221/00*
U.S. Cl. 540—205 6 Claims

1. A crystalline hydrochloride ethanol solvate form of the compound of formula I:



(I)

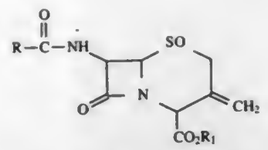
5,578,721

PROCESS FOR PREPARATION OF 3-EXOMETHYLENE CEPHAM SULFOXIDE ESTERS

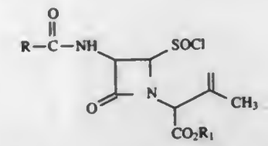
Niranjan L. Gupta; Ramanathan Sankaran, both of Bhopal; Shibu Varughese, Bangalose, and Sakina Sitabkhan, Bhopal, all of Ind., assignors to Lupin Laboratories Limited, Maharashtra, Ind.

Filed Jul. 11, 1994, Ser. No. 273,309
Int. Cl.[6] C07D *501/02*
U.S. Cl. 540—215 15 Claims

1. A process for the manufacture of 3-exomethylene cepham sulfoxide ester of the formula



wherein R is benzyloxy and R_1 is para nitrobenzyl, which comprises reacting a chlorosulfinylazetidinone compound of the formula



with a Lewis Acid type Friedel-Crafts catalyst selected from covalent chlorides of Sn(IV), Ti(IV) or Zr(IV) in an amount of 2–3 moles per mole of said chlorosulfinylazetidinone and a sulfur compound selected from dimethylsulfide, phenyl sulfide, penta methylene sulfide, dimethyl sulfoxide, dibenzyl sulfide, or carbon disulfide in an amount of 1 to 1.5 moles per mole of chlorosulfinylazetidinone compound in an inert solvent at a temperature of between −15° C. to 45° C. under anhydrous conditions.

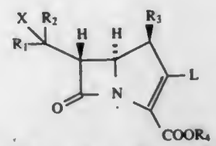
5,578,722

PROCESS FOR PREPARING CARBAPENEM COMPOUNDS

Makoto Sunagawa, Itami, and Haruki Matsumura, Nara, both of Japan, assignors to Sumitomo Pharmaceuticals Co., Ltd., Osaka-fu, Japan

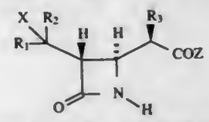
Filed Mar. 20, 1995, Ser. No. 407,071
Claims priority, application Japan, Mar. 29, 1994, 6-083928
Int. Cl.[6] C07D *487/04*
U.S. Cl. 540—302 10 Claims

1. A process for preparing a carbapenem compound of formula (III):



(III)

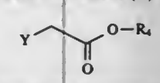
wherein R_1 and R_2 are the same or different and each is a hydrogen atom or a lower alkyl group, R_3 is a lower alkyl group, R_4 is a protecting group for a carboxyl group, L is a substituted or unsubstituted arylsulfonyloxy group, a lower alkanesulfonyloxy group, a halogeno-lower alkanesulfonyloxy group, a di-lower alkylphosphoryloxy group, a di-(halogeno-lower alkyl)phosphoryloxy group or a di-(substituted or unsubstituted aryl)phosphoryloxy group, and X is a hydrogen atom or a protected hydroxy group, which consisting of reacting a β-lactam compound of formula (I):



(I)

wherein R_1, R_2, R_3 and X are the same as defined above, and COZ is an active ester of a carboxyl group, a substituted or unsubstituted arylthiocarbonyl group, a substituted or unsubstituted heteroarylthiocarbonyl group, a substituted or unsubstituted aralkylthiocarbonyl group, a substituted aryloxycarbonyl group, or a heteroaryloxy-

carbonyl group, with an excess amount of an acetic acid ester derivative of formula (II) for catching the residue Z^-:



(II)

wherein Y is a substituted or unsubstituted arylsulfonyloxy group, a lower alkanesulfonyloxy group, a halogeno-lower alkanesulfonyloxy group or a halogen atom, and R_4 is the same as defined above, in the presence of a base, followed by treating the product with an active esterifying agent for a hydroxy group.

5,578,723

PROCESS FOR PREPARING CYANURIC ACID BY SEPERATION FROM AN ISOCYANIC ACID/AMMONIA GAS MIXTURE

Erich Schulz, Ansfelden; Georg Häubl, and Martin Müllner, both of Linz, all of Austria, assignors to DSM Chemie Linz GmbH, Linz, Austria

Filed Jul. 21, 1995, Ser. No. 505,820
Claims priority, application Austria, Jul. 22, 1994, 1454/94
Int. Cl.[6] C07D *251/32*;*251/60*
U.S. Cl. 544—192 10 Claims

1. A process for preparing cyanuric acid which comprises cooling an isocyanic acid/ammonia gas mixture having a temperature of 300° to 480° C. to 200°–300° C., and isolating cyanuric acid at this temperature by trimerization of the isocyanic acid and separating off the solid cyanuric acid from the unreacted isocyanic/ammonia gas mixture, and recycling or further processing unreacted isocyanic acid/ammonia gas mixture.

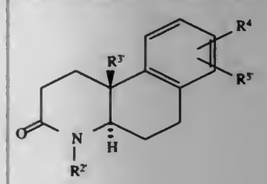
5,578,724

PROCESS FOR PREPARATION OF BENZO[F]QUINOLINONES

Kevin L. Haehl; Thomas J. Kress, both of Greenwood, and James P. Wepsiec, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 20, 1994, Ser. No. 309,282
Int. Cl.[6] C07D *237/00*;*221/06*;*239/02*;*239/72*
U.S. Cl. 544—234 5 Claims

1. A process for preparing a compound of the formula



A

wherein

R^{2a} is methyl,;

R^{3a} is hydrogen or methyl;

R^4 is hydrogen, halo, methyl or ethyl;

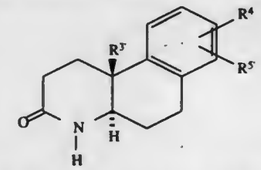
R^{5a} is halo, nitro, cyano, C_1–C_6 alkyl, trifluoromethyl or C_1–C_6 alkoxy;

or R^{5a} is a group -A-R^6 wherein A is C_1–C_6 alkyl, C_2–C_6 alkenyl, or C_2–C_6 alkynyl; and R^6 is halo, trifluoromethyl, or C_1–C_6 alkoxy;

or R^{5a} is a group -X'-R^7 wherein X' is C_1–C_4 alkyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl or a bond; and R^7 is phenyl, naphthalenyl, pyridinyl, pyrazinyl, pyridazinyl, pyrimidinyl, anthracenyl, acenaphthalenyl, thiazolyl, benzimidazolyl, indazolyl, thiophenyl, phenanthrenyl, quinolinyl, fluorenyl, isoquinolinyl, indanyl, benzopyranyl, indolyl, benzisoquinolinyl, benzindolyl, benzothiazolyl, benzothiopbenyl, quinoxalinyl, benzoxazolyl, tetrazolyl, naphthothiazolyl, quinazolinyl, thiazolopyridinyl, pyridazinoquinazolinyl, benzisothiazolyl, benzodioxolyl, benzodioxinyl, diphenylmethyl or triphenylmethyl;

the above R^7 groups are unsubstituted or substituted with 1–3 groups chosen from the group consisting of halo, trifluoromethyl, trifluoroethoxy, C_1–C_4 alkyl, trifluoromethoxy, hydroxy, C_1–C_3 alkoxy, nitro, C_1–C_3 alkylthio, C_1–C_6 alkanoyl, phenyl, oxy, phenoxy, phenylthio, C_1–C_3 alkylsulfonyl, cyano, benzyloxy, benzylthio, (mono-halo, nitro or trifluoromethyl-)benzyl (oxy or thio), (mono-C_1–C_3 alkyl, C_1–C_3 alkoxy or halo)-(phenyl, phenoxy, phenylthio, phenylsulfonyl or phenoxysulfonyl), halo-C_1–C_6 alkanoyl, phenyl(oxy or thio)(C_1–C_3 alkyl), (halo, C_1–C_3 alkyl or C_1–C_3 alkoxy)phenyl(oxy or thio) (C_1–C_3 alkyl), or benzoyl; or an above R^7 group is substituted with a morpholino (C_1–C_3 alkyl) group, or a phenyl (C_1–C_3 alkyl)piperidinyl group; or R^7 is a perhalophenyl group;

comprising reacting a compound of the formula



B

with methyl, iodide in a reaction mixture comprising an organic solvent chosen from the group consisting of tetrahydrofuran, dimethoxyethane, diethoxyethane and methyl t-butyl ether, and aqueous sodium or potassium hydroxide without a phrase transfer catalyst.

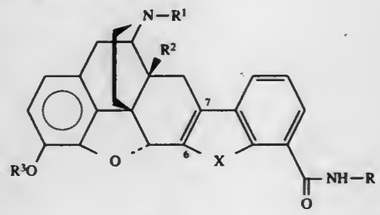
5,578,725

DELTA OPIOID RECEPTOR ANTAGONISTS

Philip S. Portoghese, St. Paul, Minn., and Francine S. Farouz-Grant, San Francisco, Calif., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Jan. 30, 1995, Ser. No. 380,091
Int. Cl.[6] C07D *489/10*
U.S. Cl. 546—35 21 Claims

1. A compound of the formula:



wherein R^1 is (C_1–C_5)alkyl, (C_6–C_{12})aryl, trans(C_4–C_5)alkenyl, allyl; C_3–C_6(cycloalkyl)alkyl, C_5–C_7(cycloalkenyl)alkyl, (C_6–C_{12})aralkyl or furan-2-ylalkyl, wherein alkyl is (C_1–C_5)alkyl; R^2 is H, OH or $O_2C(C_1$–$C_5)$alkyl; R^3 is H, (C_6–C_{10})aralkyl, wherein alkyl is (C_1–C_5)alkyl, (C_1–C_5)alkyl or (C_1–C_5)alkylCO; X is O, S or NY, wherein Y is H, benzyl or (C_1–C_5)alkyl; R is $CH(Z)CO_2Y$, wherein Z is H, CH_2CO_2Y or $(CH_2)_nN(R^4)(R^5)$, wherein n is an integer of 1 to 5 and R^4 and R^5 are individually H, (C_1–C_4)alkyl, phenyl, (C═NH)NH_2, benzyloxycarbonyl or (C═NHNO_2); or a pharmaceutically acceptable salt thereof.

5,578,726

PROCESS FOR PRODUCING 7 β-SUBSTITUTED-4-AZA-5 α-ANDROSTAN-3-ONES

Raman K. Bakshi, Edison, and Gary H. Rasmusson, Watchung, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

PCT No. PCT/US93/04443, § 371 Date Nov. 10, 1994, § 102(e) Date Nov. 10, 1994, PCT Pub. No. WO93/23376, PCT Pub. Date Nov. 25, 1993

Continuation of Ser. No. 886,049, May 20, 1992, Pat. No. 5,237,064. This PCT application May 11, 1993, Ser. No. 335,791

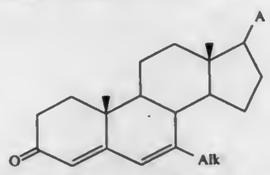
Int. Cl.[6] C07J *73/00*

U.S. Cl. 546—77 **9 Claims**

7. A process comprising the steps of:

(a) contacting the compound IV, where Alk is

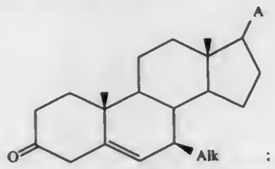
IV



C_1–C_4 alkyl, and C_3–C_6 cycloalkyl; and

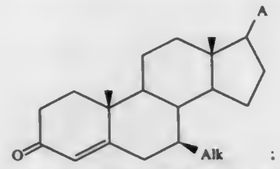
where A is a substituent inert under the reaction conditions selected from —H, t-butyl dimethyl silyloxy, hydroxy, acetylamino, amino, $C_{1\text{-}10}$alkyl, phenyl substituted $C_{1\text{-}10}$alkyl, pyridyl substituted $C_{1\text{-}10}$alkyl, carboxylic ester, carboxamide, carboxylic acid, and carbamate; with a reducing system comprised of: metallic lithium and liquid ammonia in an inert organic solvent therefor at a temperature in the range of about −78° to −45° C. for a sufficient time to stereoselectively produce the 7β compound V:

V



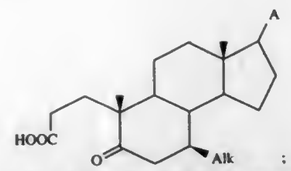
(b) contacting isolated compound V with a double bond isomerization agent in an inert organic solvent therefor, at a temperature of 40° to 65° C., under conditions in which the radical A is inert, for sufficient time to form the isomerized compound VI:

VI



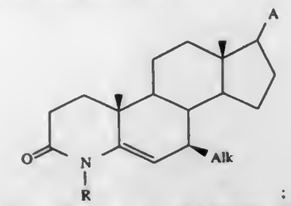
(c) contacting isolated compound VI with an oxidizing agent selected from potassium permanganate, sodium periodate, ruthenium tetraoxide and ozone in an inert solvent therefor, at a temperature in the range of 23° to 80° C., under conditions in which radical A is inert, for a sufficient time to form the seco acid VII:

VII



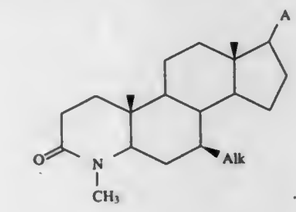
(d) contacting the isolated seco acid compound VII with an amine of the formula R—NH_2 wherein R is H, C_1–C_4 alkyl, benzyl or allyl, at a temperature of from 100° to 200° C. in an inert solvent therefor, under conditions in which A is inert to form the 4-aza-steroid VIII:

VIII



(e) contacting isolated VIII with a platinum catalyst in an inert organic solvent, at room temperature, under conditions where A is inert, for a sufficient time to form the 7-Alk 4-aza steroid IX:

IX



5,578,727

PROCESS FOR 1H-IMIDAZO[4,5-C]QUINOLINES

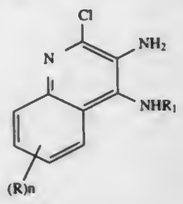
Jean-Denis Andre, and Daniel Lagain, both of St. Paul, Minn., assignors to Riker Laboratories, Inc., St. Paul, Minn.

Division of Ser. No. 606,513, Oct. 31, 1990, which is a division of Ser. No. 426,677, Oct. 26, 1989, Pat. No. 4,988,815. This application May 31, 1995, Ser. No. 455,851

Int. Cl.[6] C07D *471/00*

U.S. Cl. 546—82 **9 Claims**

1. A process for preparing a compound of the formula



wherein

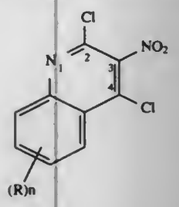
R_1 is selected from the group consisting of: straight chain or branched chain alkyl of one to about 10 carbon atoms; straight chain or branched chain alkenyl of 3 to about 10 carbon atoms wherein the olefinic unsaturation is at least one carbon atom removed from the 1-nitrogen; substituted straight chain or branched chain alkenyl of 3 to about 10 carbon atoms wherein the olefinic unsaturation is at least one carbon atom removed

from the 1-nitrogen, and wherein the substituent is selected from the group consisting of lower alkyl, cycloalkyl of 3 to about 6 carbon atoms, and cycloalkyl of 3 to about 6 carbon atoms substituted by lower alkyl; substituted straight chain or branched chain alkyl of one to about 10 carbon atoms, wherein the substituent is selected from the group consisting of lower alkyl, cycloalkyl of 3 to about 6 carbon atoms, and cycloalkyl of 3 to about 6 carbon atoms substituted by lower alkyl; hydroxyalkyl of one to about 6 carbon atoms; and dihydroxyalkyl of one to about 6 carbon atoms;

each R is independently selected from the group consisting of lower alkoxy, halogen, and lower alkyl, which process comprises the steps of

n is an integer from zero to 2, with the proviso that if n is 2, then said R groups together contain no more than 6 carbon atoms;

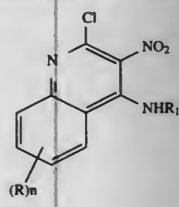
(1) reacting a compound of the formula



with a compound of the formula

R_1NH_2

to selectively produce a compound of the formula



and

(2) reducing the product of step (1).

5,578,728

PROCESS FOR THE PREPARATION OF A BENZO(A)QUINOLIZIONE DERIVATIVE

Paul Spurr, Riehen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

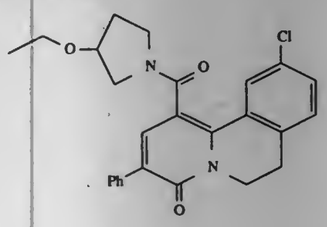
Filed Oct. 21, 1994, Ser. No. 327,159

Claims priority, application Switzerland, Oct. 28, 1993, 3252/93

Int. Cl.[6] C07D *455/06*

U.S. Cl. 546—95 **18 Claims**

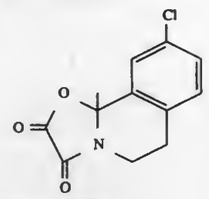
1. A process for the preparation of a benzo[a]quinolizinone derivative of the formula



which process comprises

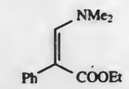
a) reacting the compound of formula

VII



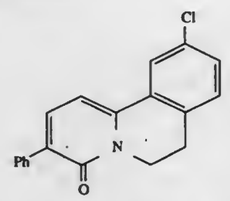
with the compound of formula:

XII



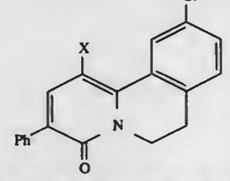
wherein Ph is phenyl, Et is ethyl and Me is methyl to prepare the compound of formula

IIa



b) treating the compound of formula IIa with a halogenating agent to prepare the compound of formula

IIb



wherein X is halogen and Ph is phenyl, and

c) reacting a compound of formula IIb with carbon monoxide in the presence of a carbonylation catalyst and (S)-3-ethoxypyrrolidine.

5,578,729

DIMERIC ARYLISOQUINOLINE ALKALOID COMPOUNDS

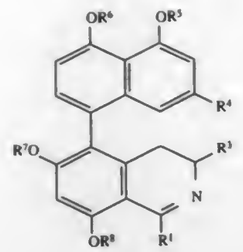
Gerhard Bringmann, Würzburg, Germany; Michael R. Boyd, Ijamsville, Md.; Roland Götz, Rothenburg, Germany, and T. Ross Kelly, Watertown, Mass., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C., and The Trustees of Boston College, Chestnut Hill, Mass.

Continuation of Ser. No. 305,211, Sep. 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 279,291, Jul. 22, 1994, and Ser. No. 279,339, Jul. 22, 1994. This application Dec. 23, 1994, Ser. No. 363,684

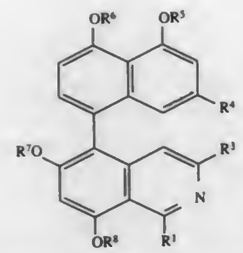
Int. Cl.[6] C07D *401/10*

U.S. Cl. 546—140 **5 Claims**

1. A dimeric arylisoquinoline compound comprised of coupled first and second arylisoquinoline monomer halves which are the same or different, wherein said first and second monomer halves have the formula (minus an H at the coupling point):



or



wherein R^1, R^3, and R^4 may be the same or different and each may be H or C_1–C_6 alkyl, R^2, R^5, R^6, R^7 and R^8 may be the same or different and each may be H, C_1–C_6 alkyl R^9CH_2—, R^9CO—, or R^9SO_2—, R^9 may be H, C_1–C_6 alkyl or aryl and one or more of the ring positions 1, 3, 4, 2', 3', 4', 5', 6', 6, 7, and 8 may instead be substituted with halo, nitro, amino, hydroxyl, thiol, acyl, C_1–C_6 alkyl, or cyano, one or more phenolic hydroxyl group(s) may instead be an ester, sulfonate ester, or ether group, one or more methyl ether group(s) may instead be a phenolic hydroxyl group, one or more phenolic hydroxyl group(s) may instead be an aromatic hydrogen substituent, one or more secondary amine site(s) may instead be an amide, sulfonamide, tertiary amine, alkyl quaternary ammonium salt or corresponding Hoffmann elimination product thereof, and one or more tertiary amine site(s) may instead be a secondary amine.

5,578,730

PROCESS FOR PRODUCING β-AMINOALCOHOLS COMPOUNDS

Hans Hilpert, Reinach, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 208,420, Mar. 9, 1994, Pat. No. 5,455,353. This application Mar. 9, 1995, Ser. No. 401,824

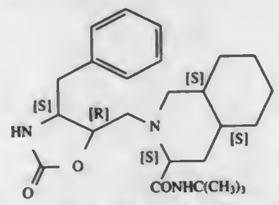
Claims priority, application Switzerland, Mar. 24, 1993, 896/93

Int. Cl.[6] C07D *401/06*

U.S. Cl. 546—146 **4 Claims**

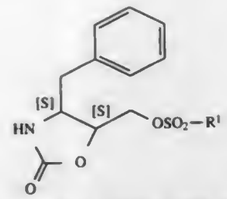
1. A process for the production of the oxazolidinone of formula,

9



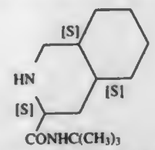
which process comprises refluxing a sulphonic acid ester of formula,

VII



wherein R^1 is lower-alkyl or phenyl, which phenyl may be substituted or unsubstituted with the carboxamide of formula,

8



in the presence of a base and a solvent to form said oxazolidinone.

5,578,731

AZODICARBOXYLIC ACID DERIVATIVES CONTAINING HINDERED AMINE MOIETIES AS POLYMER STABILIZERS

Ramanathan Ravichandran, Nanuet, and Ambelal R. Patel, Scarsdale, both of N.Y., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

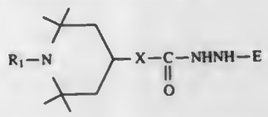
Division of Ser. No. 316,272, Sep. 30, 1994, Pat. No. 5,470,980, which is a continuation-in-part of Ser. No. 224,616, Apr. 7, 1994, Pat. No. 5,380,828, which is a continuation-in-part of Ser. No. 132,081, Oct. 5, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 463,449

Int. Cl.[6] C07D *211/30;211/56*

U.S. Cl. 546—247 **8 Claims**

1. An asymmetrical hydrazine derivative of formula V

(V)

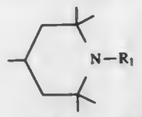


where

R_1 is alkoxy of 1 to 18 carbon atoms or cycloalkoxy of 5 to 12 carbon atoms;

X is —O— or —NR_2— where R_2 is hydrogen, alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, phenylalkyl of 7 to 15 carbon atoms, alkyl of 2 to 4 carbon atoms substituted by one alkoxy group of 1 to 12 carbon atoms or a group of formula II

II



in which R_1 is as defined above; and

E is a alkyl of 1 to 20 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, aryl of 6 to 14 carbon atoms or phenylalkyl of 7 to 22 carbon atoms, or

E is —$CONHR_4$, —$CSNHR_5$, —COR_6COR_7, —COR_8CONHR_9, —COR_{10}, —$COOR_{11}$ or —SO_2R_{12},

in which R_4, R_5, R_7, R_9, R_{10}, R_{11} and R_{12} are each independently of the other hydrogen, alkyl of 1 to 20 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, aryl of 6 to 14 carbon atoms or phenylalkyl of 7 to 22 carbon atoms; and

R_6 and R_8 are each independently of the other an alkylene of 1 to 12 carbons.

5,578,732

PRODUCTION OF 2-(2-PYRIDYLMETHYLSULFINYL) BENZIMIDAZOLE COMPOUNDS BY SELECTIVE OXIDATION IN THE PRESENCE OF A VANADIUM CATALYST

Masayasu Kato, Hyogo; Yoshio Toyoshima, and Norio Iwano, both of Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 68,320, May 28, 1993, abandoned, which is a continuation of Ser. No. 759,651, Sep. 13, 1991, abandoned, which is a continuation of Ser. No. 222,424, Jul. 21, 1988, abandoned. This application Apr. 27, 1995, Ser. No. 430,178

Claims priority, application Japan, Jul. 21, 1988, 62-194809

Int. Cl.[6] C07D *401/06;401/12*

U.S. Cl. 546—273.7 **6 Claims**

1. A method for producing 2-{{3-methyl-4-(2,2,2-trifluoroethoxy)pyrid- 2-yl}methylsulfinyl}benzimidazole by the selective mono-oxidation of a sulfur atom, which comprises contacting 2-{{3-methyl-4-(2,2,2-trifluoroethoxy)-pyrid-2-yl} methylthio}benzimidazole with an excess of hydrogen peroxide relative to one equivalent of the starting compound, 2-{{3-methyl-4-(2,2,2-trifluoroethoxy)-pyrid-2-yl}methylthio}benzimidazole, in the presence of from about 0.01 to 10 mole % of vanadium pentaoxide, sodium metavanadate, ammonium metavanadate or vanadium (IV) acetylacetonate relative to 2-{{3-methyl-4-(2,2,2-trifluoroethoxy)-pyrid- 2-yl}methylthio}benzimidazole.

5,578,733

PROCESS FOR THE PRODUCTION OF TETRAZOLYL COMPOUNDS

Yasushi Shida, and Kokichi Yoshida, both of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

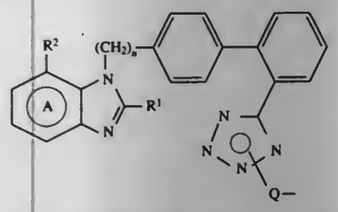
Filed Jan. 27, 1995, Ser. No. 378,825

Claims priority, application Japan, Jan. 28, 1994, 6-008233

Int. Cl.[6] C07D *257/04*

U.S. Cl. 548—253 **11 Claims**

1. A process for producing a tetrazolyl compound which comprises reacting an N-protected tetrazolyl compound represented by the formula



wherein ring A is a benzene ring optionally having one or more substituents in addition to the group represented by R^2; R^1 is a hydrogen atom or an optionally substituted hydrocarbon residue which may bind through a hetero atom; R^2 is an esterified carboxyl group; Q' is triphenylmethyl; n is 1 or 2, with a mineral acid under substantially anhydrous conditions in the presence of an alcohol.

5,578,734

METHOD FOR THE PREPARATION OF S-(+)-ETHODOLIC ACID AND SALINE DERIVATIVES

Giuseppe Vecchi, Aldesago, Switzerland, assignor to APR Applied Pharma Research SA, Stablo, Switzerland

Filed Jun. 29, 1994, Ser. No. 266,795

Int. Cl.[6] C07D *491/052*

U.S. Cl. 548—432 **9 Claims**

1. Method for optically resolving an enantiomeric mixture of ethodolic acid to produce S-(+)-ethodolic acid, said method comprising the steps of:

salifying an enantiomeric racemic mixture of ethodolic acid with at least 0.5 moles per mole of a mixture of alpha-(+)-phenethylamine enantiomers, said salification being carried out in acetone, to produce a precipitate containing a salt of optically active phenethylamine and the S-(+)-enantiomer of ethodolic acid;

separating said precipitate; and

isolating the desired S-(+) enantiomer of ethodolic acid.

5,578,735

PROCESS FOR THE PREPARATION OF INDOLE COMPOUNDS FROM N-PROTECTED INDOLINES

Jean J. Vandenbossche; Herve Borowiak, both of Sevran, and Alain LaGrange, Coupvray, all of France, assignors to L'Oreal, Paris, France

Filed Oct. 26, 1995, Ser. No. 547,732

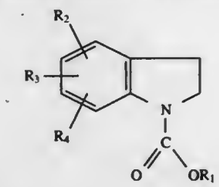
Claims priority, application France, Oct. 27, 1994, 94 12892

Int. Cl.[6] C07D *209/10*

U.S. Cl. 548—491 **16 Claims**

1. A process for preparing an indole compound comprising a single step of contacting, in the presence of a hydrogenation catalyst, an N-protected indoline of the formula (I):

(I)



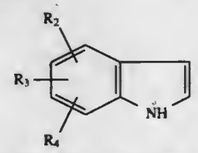
wherein:

R_1 represents a linear or branched, substituted or unsubstituted C_2–C_{10} alkenyl radical, or a substituted or unsubstituted benzyl group;

R_2, R_3, and R_4, which may be identical or different, represent a hydrogen atom, a halogen atom, or a C_1–C_7 alkyl, aryl, hydroxyl, C_1–C_7 alkoxy, C_3–C_7 alkenyloxy, aryloxy, acyloxy, formyl, aroyl, hydroxymethyl, arylhydroxymethyl, carboxyl, alkoxy(C_1–C_7)carbonyl, carbamoyl, amino, monoalkyl(C_1–C_7)amino, dialkyl(C_1–C_7)amino, alkoxy(C_1–C_7)carbonylamino, acylamino, N-alkyl(C_1–C_7)acylamino, dialkyl(C_1–C_7)formamidino, or dialkoxy(C_1–C_7)methyl radical,

with hydrogen or a hydrogen donor, said contacting being carried out with stirring, in a solvent medium, at a pH less than or equal to 7 and at a temperature ranging from room temperature to the reflux temperature of the contacting medium to obtain an indole compound of the formula (II):

(II)



wherein R_2, R_3, and R_4 are defined as above.

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5,578,736

COMPOUNDS FOR THE PHOTO-DECONTAMINATION OF PATHOGENS IN BLOOD

Susan Wollowitz, Walnut Creek; Stephen T. Isaacs, Orinda; Henry Rapoport, and Hans P. Spielmann, both of Berkeley, all of Calif., assignors to Steritech, Inc., Concord, Calif.

Division of Ser. No. 342,366, Nov. 18, 1994, which is a division of Ser. No. 83,459, Jun. 28, 1993, Pat. No. 5,399,719. This application May 31, 1995, Ser. No. 456,205

Int. Cl.[6] C07D *493/02;493/04*

U.S. Cl. 549—282 **7 Claims**

1. A psoralen compound, comprising:

a) a substituent R_1 on the 4' carbon atom, selected from the group consisting of:

$-(CH_2)_u-NH_2$,

$-(CH_2)_w-R_2-(CH_2)_z-NH_2$,

$-(CH_2)_w-R_2-(CH_2)_z-R_3-(CH_2)_z-NH_2$, and

$-(CH_2)_w-R_2-(CH_2)_x-R_3-(CH_2)_y-R_4-(CH_2)_z-NH_2$;

wherein R_2, R_3, and R_4 are independently selected from the group consisting of O and NH, in which u is a whole number from 1 to 10, w is a whole number from 1 to 5, x is a whole number from 2 to 5, y is a whole number from 2 to 5, and z is a whole number from 2 to 6; and

b) substituents R_5, R_6, and R_7 on the 4, 5', and 8 carbon atoms respectively, independently selected from the group consisting of H and $(CH_2)_vCH_3$,

where v is a whole number from 0 to 5; or a salt thereof.

5,578,737

CHLORINATION PROCESS, ALKYLATION OF PRODUCTS OF SAID PROCESS AND SOME PRODUCTS THEREOF

Katherine S. Clement, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 90,597, Jul. 12, 1993, Pat. No. 5,387,725, which is a continuation-in-part of Ser. No. 789,232, Nov. 7, 1991, abandoned. This application Nov. 21, 1994, Ser. No. 342,515

Int. Cl.[6] C07D *311/96*

U.S. Cl. 549—331 **13 Claims**

1. A compound selected from 9,9-bis(4-ethylphenyl)fluorene, 9,9-bis(4-ethenylphenyl)fluorene, 9,9-bis(4- ethynylphenyl)fluorene, 9,9-bis(2,3-dimethylphenyl)fluorene, 9-(3,4-dimethylphenyl)9-(2,3-dimethylphenyl)fluorene, 9,9-bis(3-amino-4hydroxyphenyl)fluorene, 9,9-bis(4-amino-3hydroxyphenyl)fluorene, 9-(3-amino-4-hydroxyphenyl)-9(4-amino-3-hydroxyphenyl)fluorene, 9,9-bis(1,3-isobenzofurandion-5-yl)fluorene, 9,9-bis(benzocyclobutanyl)fluorene, 9,9-bis(4-halophenyl)fluorene, 9,9-bis(dihydroxyphenyl)fluorene, spiro[9H-fluorene-9,9'-(9H)carbazine)-3',6'-diol, spiro(9H-fluorene-9,9'-(9H)carbazine)-3',6'-diamine, spiro(9H-fluorene-9,9'-(9H)carbazine)-2',7'-diamine, spiro(9H-fluorene-9,9'-(9H)xanthene)-2',7'-dicarboxylic acid, spiro(9H-fluorene-9,9'-(9H)xanthene)-3',6'-diamine, 2',7'-diacetylspiro(9H-fluorene-9,9'-(9H)xanthene), spiro(9H-fluorene-9,13'-(13H)-6-oxapentacene)-2',10'-diol spiro(9H-fluorene-9, 13'-(13H)-6-oxapentacene)-3',9'-diol, 3',6'diaminospiro(9H-fluorene-9,9'-thiaxanthene)-10',10'-dioxide, spiro(9H-fluorene-9,9'(9H, 10H)-dihydroanthracene-2',7'-bismaleimide, 10-oxo-spiro(9H-fluorene-9,9'(9H, 10H)-dihydroanthracene)-3',6'-diamine, 2',7'-dimethyl-spiro(9H-fluorene-9,9'-(9H)xanthene), 2',7'-dicyano-spiro(9H-fluorene-9,9'-(9H)xanthene), 2',7'-diformyl-spiro(9H-fluorene-9,9'-(9H)xanthene), 2,7-diamino-3,6-dihydroxy-9,9'-spirobifluorene, 2,7-diamino-3,6-dimethyl-9,9'-spirobifluorene, spiro(9H-fluorene-9,9'(9H,10H)-dihydroanthracene)-2',7'-diamine, 2',3',6',7'-tetraaminospiro(9H-fluorene-9,9'-thiaxanthese)-10',10'-dioxide, spiro(9H-fluorene-9,9'(9H)xanthene)-2',3',6,7'-tetraamine, 2,3,6,7-tetraamino-9,9'-spirobifluorene, 2,7-diamino-9,9'-spirobifluorene-3,6-dithiol, 2,7-bis(1-methyl-1-(4-hydroxyphenyl)-ethyl)spiro(xanthene-9,9'-fluorene), 2,7-bis(4-hydroxyphenyl)spiro(xanthene-9,9'-fluorene), 1,3,6,8,10,10-hexamethylspiro(dihydroanthracene-9,9'-fluorene)-2,7-diol, 1,3,6,8-tetrabromo-10,10-dimethylspiro(dihydroanthracene-9,9'-fluorene)-2,7-diol, and 1,3,6,8-tetramethylspiro(dihydroanthracene-9,9'-fluorene)-2,7-diol, spiro(9H-fluorene-9,9'-(9H)xanthene)-3',6'-dicarboxylic acid, spiro(9H-fluorene-9,9'-(9H)xanthene)-2',7'-dicarbonyl chloride, spiro(9H-fluorene-9,9'-(9H)xanthene)-3',6'-dicarbonyl chloride, 3',6'-dimethyl-spiro(9H-fluorene-9,9'-(9H)xanthene), 2',7'-diisopropylspiro(9H-fluorene-9,9'-(9H)xanthene), 3',6'-diisopropylspiro(9H-fluorene-9,9'-(9H)xanthene), 2',3',6',7'-tetramethylspiro(9H-fluorene-9,9'-(9H)-xanthene), spiro(9H-fluorene-9,9'-(9H)xanthene)-2',3',6',7'-tetracarboxylic acid, or spiro(9H-fluorene9,9'-(9H)xanthene)-2',3',6',7'-tetracarboxylic acid dianydride, and mixtures thereof.

5,578,738

SYNTHESES OF D-CHIRO-3-INOSOSE AND (+)-D-CHIRO INOSITOL

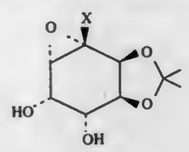
Tomas Hudlicky, and Martin Mandel, both of Blacksburg, Va., assignors to Virgina Tech Intellectual Properties, Inc., Blacksburg, Va.

Division of Ser. No. 974,057, Nov. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 956,522, Oct. 5, 1992, abandoned. This application Mar. 24, 1995, Ser. No. 410,467

Int. Cl.[6] C07D *317/70*

U.S. Cl. 549—433 **8 Claims**

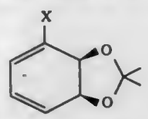
1. A process for the preparation of an epoxydiol useful as a synthon, the epoxydiol having the formula:



12

wherein X is Cl or Br;

the process comprising reacting an acetonide of the formula:



11

wherein X is as defined above;

with permanganate in an appropriate solvent at a temperature of from about −78° C. to about 40° C., at a pH of between about 4–8.

5,578,739

PROCESS FOR THE PREPARATION OF BACCATIN III AND 10-DEACETYLBACCATIN III DERIVATIVES

Augustin Hittinger, Igny, France, assignor to Rhone-Poulenc Rorer S.A., Antony, France

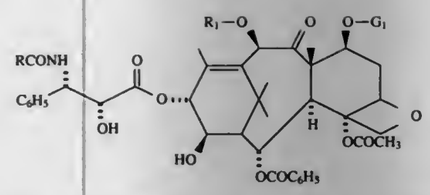
Continuation of Ser. No. 175,380, Jan. 10, 1994, abandoned. This application Jul. 6, 1995, Ser. No. 498,613

Claims priority, application France, Jul. 10, 1991, 91 08673

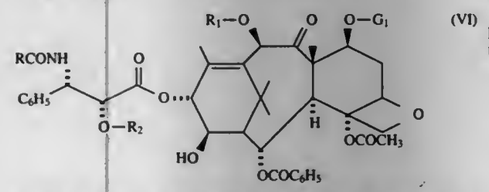
Int. Cl.[6] C07D *305/14*

U.S. Cl. 549—510 **10 Claims**

1. Process for the preparation of a derivative of baccatin III or of 10-deacetylbaccatin III which is devoid of cytotoxicity, of formula:



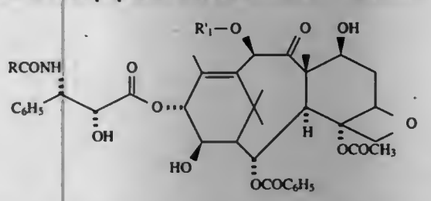
in which R represents a tert-butoxy or phenyl radical, R_1 represents an acetyl radical or a protecting group of the hydroxyl functional group in the form of an ether, ester or carbonate and G_1 represents a protecting group of the hydroxyl functional group in the form of an ether, ester or carbonate, in the 2'R,3'S or 2'S,3'S form, comprising treating a taxane derivative of formula:



(VI)

in which R_1 and G_1 are defined as above and R_2 represents a protecting group of the hydroxyl functional group selected from the methoxymethyl, 1-ethoxyethyl, benzyloxymethyl, (β-trimethylsilylethoxy)methyl or tetrahydropyranyl radicals, in acid medium by means of an alcoholic solution of an inorganic acid.

4. Method for using a taxane derivative obtained by the process of claim 1 for the preparation of a taxane derivative of formula:



in which R represents a tert-butoxy or phenyl radical and R'_1 represents a hydrogen atom or an acetyl radical, comprising treating a taxane derivative obtained by the process of claim 1 , optionally purified by chromatography or crystallization, under non-epimerizing conditions to remove a protecting group represented by R_1 and G_1.

5,578,740

PROCESS FOR PREPARATION OF EPOXY COMPOUNDS ESSENTIALLY FREE OF ORGANIC HALIDES

Andrew T. Au, Sugarland, and J. Lowell Nafziger, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 23, 1994, Ser. No. 363,129

Int. Cl.[6] C07D *301/14;* **C07C** *69/52*

U.S. Cl. 549—525 **29 Claims**

1. A process for the preparation of an epoxy-containing compound comprising the steps of

(1) providing an allyl reagent which contains at least one allyl carboxylated group or allyl carbonate group;

(2) allylating one or more compounds containing at least one hydroxyl group, thiol group, or primary or secondary aromatic amine group per molecule using the allyl reagent from step (1), whereby an allyl ether, allyl amine or allyl thioether compound is formed; and

(3) converting the allyl groups on the compound from step (2) to epoxide groups, whereby a glycidyl ether, glycidyl amine or glycidyl thioether compound is formed.

5,578,741

PROCESS FOR PREPARING ENCLOPENTADIENYL-TYPE LIGANDS

Krisztina Frey; Gabriele von Massow; Helmut G. Alt, all of Bayreuth, Germany, and M. Bruce Welch, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 303,982, Sep. 9, 1994. This application May 19, 1995, Ser. No. 444,248

Int. Cl.[6] C07C *2/76*

U.S. Cl. 585—360 **11 Claims**

1. A process for preparing a cyclopentadienyl-type ligand comprising reacting a halocyclopentadienyl-type compound and a nucleophile;

wherein said halocyclopentadienyl-type compound is represented by the formula ZCH_2X' wherein Z is a cyclopentadienyl-type group and X' is a halide;

wherein said cyclopentadienyl-type group is an unsubstituted cyclopentadienyl, substituted cyclopentadienyl, unsubstituted indenyl, substituted indenyl, unsubstituted fluorenyl, or substituted fluorenyl group, wherein the substituents on said cyclopentadienyl-type group are hydrocarbyl groups containing 1 to 12 carbon atoms, alkoxy groups containing 1 to 12 carbon atoms, trialkylsilyl groups where each alkyl group contains 1 to 12 carbon atoms, alkyl halide groups where the alkyl group contains 1 to 12 carbon atoms, or halide; and

wherein said nucleophile is represented by the formula JA, wherein J is an alkali metal, wherein A is $—YPR_2$ or $—YNR_2$, or wherein Y is an alkylene group containing 1 to 24 carbon atoms, wherein each R is individually selected from alkyl groups containing 1 to 20 carbon atoms.

5,578,742

BIS-PHENYL-HEXENES

Manfred Metzler, Theodor-Heuss-Strasse 3, D-67663 Kaiserslautern, and Reinhard Pechan, Elektrastrasse 14, D-81925 Munich, both of Germany

PCT No. PCT/EP93/00892, § 371 Date Oct. 14, 1994, § 102(e) Date Oct. 14, 1994, PCT Pub. No. WO93/22262, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 13, 1993, Ser. No. 318,675

Claims priority, application Germany, Apr. 15, 1992, 42 12 628.2

Int. Cl.[6] C07C *15/18*

U.S. Cl. 585—436 **7 Claims**

1. A 3,4-bis (4-X-phenyl)-3-hexene in which the groups X in each case represent alkyl residues with 2 to 4 carbon atoms, substituted or unsubstituted alkenyl or alkynyl residues with 2 to 10 carbon atoms, or substituted or unsubstituted aralkyl residues with 1 to 10 non-aromatic carbon atoms.

5,578,743

CYCLOPYMERIZATION POLYMERS FROM NON-CONJUGATED DIENES

Suzzy C. Ho, Dayton; Margaret M. Wu, Skillman, both of N.J., and Yusheng Xiong, Newtown, Pa., assignors to Mobile Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 114,881, Sep. 1, 1993, abandoned. This application Apr. 4, 1995, Ser. No. 416,426

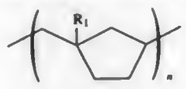
Int. Cl.[6] C07C *2/10;* **C08F** *36/20*

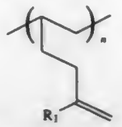
U.S. Cl. 585—530 **11 Claims**

1. An atactic liquid hydrocarbon homopolymer comprising irregular head-to-tail enchainment of randomly recurring units in

VOL 1192 ISS 4 NO 26

the homopolymer backbone, said units having the structure



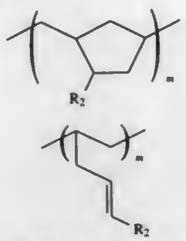


wherein R_1 is C_1–C_{20} alkyl or hydrogen and n is an integer of 1 to 100, said homopolymer having a bromine number between 1.5 and 10 and molecular weight between 1000 and 10,000.

7. A process for the production of an atactic liquid hydrocarbon homopolymer lubricant comprising polymerizing at least one non-conjugated diene having the structure



wherein R_3 comprises alkyl or hydrogen, and x has a value of 1–3 in contact with a reduced valence state Group VIB metal catalyst on a porous support under polymerization conditions, wherein said homopolymer cootains irregular head-to-tail enchainment of randomly recurring units in the homopolymer backbone, said units having the structure



wherein R_2 is C_1–C_{20} alkyl or hydrogen and m is an integer of 1 to 100, said homopolymer having a bromine number between 1.5 and 10 and a molecular weight of at least 1000.

5,578,744

CATALYTICALLY ACTIVE GEL AND A PROCESS FOR ITS PREPARATION

Angela Carati, San Giuliano Milanese; Enrico Davini, Monterotondo; Mario G. Clerici, San Donato Milanese, and Giuseppe Bellussi, Piacenza, all of Italy, assignors to Enitricerche S.p.A., and Snamprogetti S.p.A., both of Milan, Italy

Division of Ser. No. 134,854, Oct. 12, 1993, Pat. No. 5,434,118, which is a continuation of Ser. No. 810,497, Dec. 19, 1991, abandoned. This application May 19, 1995, Ser. No. 444,414

Claims priority, application Italy, Dec. 21, 1990, 22477/90

Int. Cl.[6] **C07C** *2/00;2/12*

U.S. Cl. 585—530 **17 Claims**

1. A catalytic process, which is carried out in the presence of a gel product which is amorphous to X-rays and catalytically active in acid-catalyzed or oxidation reactions and which consists of a silica matrix within which one or more oxides exhibiting catalytic activity are uniformly dispersed; which gel product has a monomodal porosity in the micropore region and a large surface area and has a molar ratio SiO_2 to catalytic oxide of between 5/1 and 300/1; the gel product being prepared by:

a) preparing an aqueous solution of (1) a tetra-alkyl ammonium hydroxide (TAA-OH) where the alkyl group is ethyl, n-propyl or n-butyl; (2) a water-soluble silicon compound which is hydrolyzable to SiO_2; (3) one or more water-soluble salts and acids which form the catalytic oxides and which are water-soluble salts and acids of elements selected from the group consisting of titanium, gallium, chromium, iron, zirconium, vanadium, molybdenum, zinc, cobalt, phophorous and tin;

with the quantity of solution constituents being within the following molar ratios:

SiO_2/catalytic oxides	between 5/1 and 300/1,
TAA—OH/SiO_2	between 0.05/1 and 0.5/1, and
H_2O/SiO_2	between 5/1 and 40/1;

b) heating the solution to cause gelling;

c) drying the gel; and

d) calcining the dried gel, first in an inert atmosphere and then in an oxidizing atmosphere.

5,578,745

CALIBRATION STANDARDS FOR PROFILOMETERS AND METHODS OF PRODUCING THEM

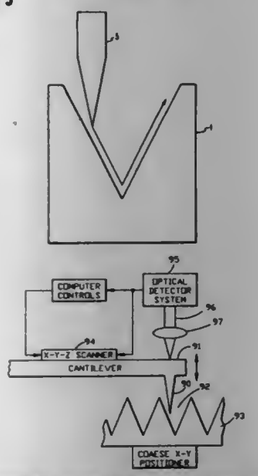
Thomas Bayer, Aidlingen-Dachtel; Johann Greschner, Pliezhausen, both of Germany; Yves Martin, Ossining, N.Y.; Klaus Meissner, Herrenberg, and Helga Weiss, Boblingen, both of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 10, 1995, Ser. No. 419,295

Claims priority, application European Pat. Off., Apr. 11, 1994, 94105568

Int. Cl.[6] **H01L** *21/20*

U.S. Cl. 73—1 J **11 Claims**



1. In combination with a scanning probe microscope an improved calibration standard for performing measurements on a scanning probe installed in the scanning probe microscope comprising:

a supporting structure of single crystal material having a surface with either a 100 or 110 orientation with at least two V-shaped grooves, said grooves with sidewalls having a 111 orientation, said grooves being located in closed relationship to each other in a way that their adjacent sidewalls form a sharp blade means for profiling with the scanning probe using the scanning probe microscope, said sharp blade means having a known tip radius and angle between its sidewalls for use in calculating the shape and dimensions of the scanning probe.

5,578,746

APPARATUS FOR CHEMICAL VAPOR DEPOSITION AND METHOD OF USE

Andrew C. Campbell, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 28, 1995, Ser. No. 496,636

Int. Cl.[6] **G01N** *37/00*

U.S. Cl. 73—28.01 **26 Claims**

1. An apparatus for chemical vapor deposition comprising:

a reaction chamber;

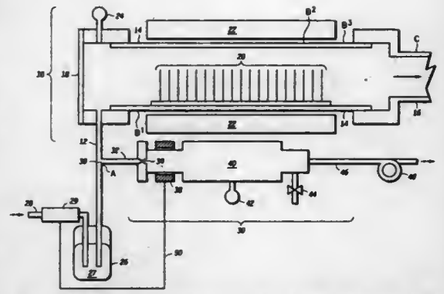
a gas line capable of including a carrier gas and a low volatility material, wherein the gas line is connected to the reaction chamber and the gas line includes a first aperture;

a vapor monitor including an inlet, a second aperture, a particle monitor, a vacuum chamber, and an exhaust line, wherein:

the inlet is connected to the first aperture;

the second aperture lies between the inlet and the vacuum chamber and has a smaller cross-sectional area compared to the inlet and the vacuum chamber;

the particle monitor is attached to the vacuum chamber and lies near the second aperture; and



the exhaust line is connected to the vacuum chamber but not the reaction chamber;

evacuating means connected to the exhaust line of the vapor monitor; and

means for adjusting a flow rate of the low volatility material in the gas line, wherein the means for adjusting is coupled to the particle monitor.

5,578,747

DEVICE FOR TESTING IMPERVIOUSNESS OF A FLEXIBLE MEMBRANE MOUNTED ON A RIGID SUPPORT

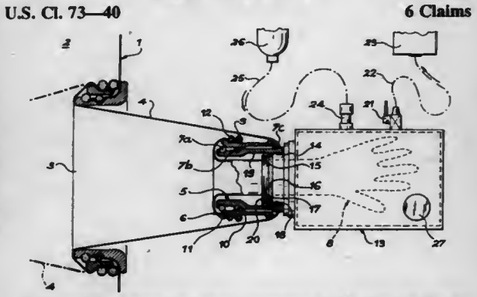
Jon M. Nottingham, Villedieu Le Chaffeau, France, and Jean-Mary Jenny, Fribourg, Switzerland, assignors to Jean-Marie Gatto, London, England, and Dominique Bertrand, Morley, Australia

Filed Jun. 5, 1995, Ser. No. 462,001

Claims priority, application France, Jun. 6, 1994, 94 06895

Int. Cl.[6] **G01M** *3/04*

U.S. Cl. 73—40 **6 Claims**



1. Device for testing the imperviousness of a flexible membrane installed through an opening of a collar, said device comprising a box equipped with a neck to be engaged in the collar, the neck including a gasket against the collar and an opening situated in front of the membrane when the neck is engaged, a device for varying the pressure in the box, and a device for measuring the gaseous contents of the box.

5,578,748

METHOD AND SYSTEM FOR CALCULATING EFFECTIVE FUEL ECONOMY

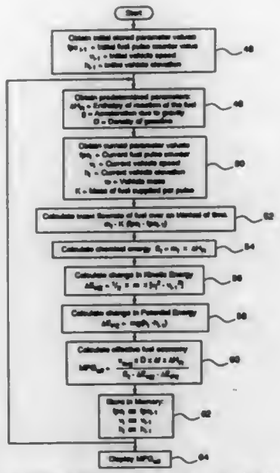
Diana D. Brehob, and Todd A. Kappauf, both of Dearborn, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 247,188, May 20, 1994, abandoned. This application Sep. 25, 1995, Ser. No. 533,144

Int. Cl.[6] **G01F** *9/00;* **G01M** *15/00*

U.S. Cl. 73—114 **20 Claims**

1. A method for determining and displaying on a visual display the effective fuel economy (MPG_{eff}) of a fuel consuming engine during a time interval Δ, in a vehicle, the method comprising:



providing a vehicle having a mass and said fuel consuming engine;

determining an enthalpy of reaction (ΔH_R) of the fuel, which represents the energy released per unit mass by combustion following actual injection of fuel into the engine;

determining an amount of chemical energy (E_f) contained in the fuel based on the enthalpy of reaction of the fuel;

sensing a vehicle speed at predetermined periods of time during the time interval and generating corresponding velocity signals (v_i, v_{i-1});

determining a change in kinetic energy (ΔE_{KE}) of the vehicle during the time interval based solely on the velocity signals and the mass of the vehicle;

determining a change in potential energy (ΔE_{PE}) of the vehicle;

determining the effective fuel economy of the vehicle based on the chemical energy, the change in kinetic energy and the change in potential energy;

generating an electrical signal for receipt by the visual display corresponding to the determined effective fuel economy; and

displaying the determined effective fuel economy.

5,578,749

THROTTLE-OPENING DETECTING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

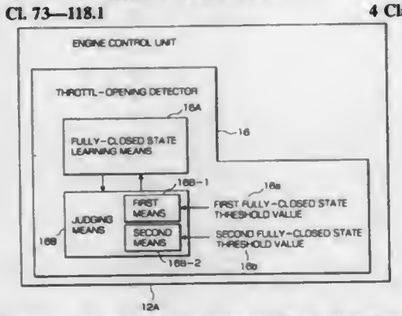
Shinichi Mogaki, Tokyo, Japan, assignor to Mitsubish Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1996, Ser. No. 621,989

Claims priority, application Japan, Aug. 23, 1995, 7-214961

Int. Cl.[6] F02D *9/08;45/00*

U.S. Cl. 73—118.1 **4 Claims**



1. A throttle-opening detecting apparatus for an internal combustion engine comprising:

a throttle-opening sensor for detecting a degree of opening of a throttle valve and generating a corresponding output signal;

fully-closed state value learning means for storing and updating as a fully-closed state learned value a minimum value of the output of said throttle-opening sensor;

judgment means for judging the fully closed state of said throttle valve based on comparison of said throttle-opening sensor output and said fully-closed state learned value;

said judgment means comprising:

first means for judging said throttle valve as being in the fully closed state when said throttle-opening sensor output is less than a first judging value which is obtained by adding a first threshold value to said learned value; and

second means for judging, when said throttle-opening sensor output is greater than said first judging value and less than a second judging value which is obtained by adding a second threshold value to said learned value, said throttle valve as being in the fully closed state after lapse of a predetermined time.

5,578,750

SENSOR FOR MAGNETICALLY SCANNING A MOVING ELEMENT IN AN INTERNAL COMBUSTION ENGINE

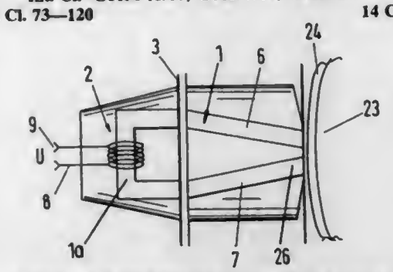
Axel Häussler, Zürich, and Marcel Weder, Sulgen, both of Switzerland, assignors to New Sulzer Diesel AG, Winterthur, Switzerland

Filed Sep. 1, 1995, Ser. No. 522,774

Claims priority, application European Pat. Off., Oct. 3, 1994, 94810574

Int. Cl.[6] G01M *15/00;* **G01B** *7/14;* **G01N** *27/72*

U.S. Cl. 73—120 **14 Claims**



1. A device for electromagnetically scanning the passage of an element including magnetizable and non-magnetizable material moving relative to the device, the device comprising a magnetic circuit for placement in an operative position relative to the element, an electric circuit operatively coupled with the magnetic circuit for generating an output responsive to movement of the element relative to the magnetic circuit, and a housing having first and second parts defining an interface between them, the first part of the housing mounting a portion of the magnetic circuit and the second part of the housing mounting a remaining portion of the magnetic circuit and the entire electric circuit so that the electric circuit does not extend across the interface to thereby protect the generated output against degradation.

5,578,751

OCEANOGRAPHIC SENSOR SUITE WET WELL SYSTEM

Daniel W. French, Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

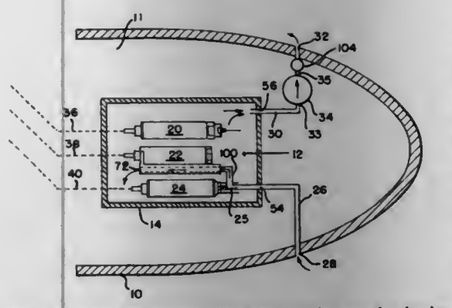
Filed Dec. 8, 1995, Ser. No. 530,464

Int. Cl.[6] G01F *1/00*

U.S. Cl. 73—170.29 **15 Claims**

1. A wet well sensor system comprising:

a housing member having a housing member wall with a fluid inlet and a fluid outlet formed therein;



a canister portion positioned within said housing member having a side wall and opposing end walls mounted in a fluid tight manner to said side wall and defining a cavity therein, said canister portion having an inlet port formed in one said end wall of said canister portion and in communication with the fluid inlet of said housing member, and an outlet port formed in one side end wall of said canister portion and in communication with the fluid outlet of said housing member;

a plurality of sensor members positioned within said canister portion, each of said plurality of sensor members having a dry cable attached thereto for supplying sensed information to a location exterior of said canister portion and interior to said housing member;

means for stationarily mounting said plurality of sensor members within said canister portion; and

means for circulating fluid from the fluid inlet to said fluid outlet of said housing member and intermediately through said canister portion, such that fluid is prevented from filling said housing member interior.

5,578,752

PROCESS FOR MEASURING THE FLOW RATE OF THICK MATTER PUMPS

Karl Schlecht, Filderstadt, and Axel Rockstroh, Bad Urach, both of Germany, assignors to Putzmeister-Werk Maschinenfabrik GmbH, Aichtal, Germany

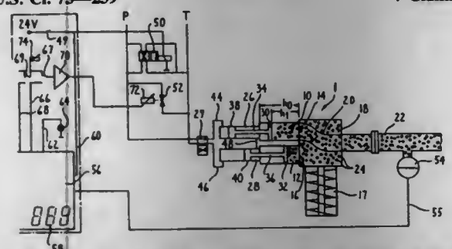
PCT No. PCT/EP93/00252, § 371 Date Aug. 22, 1994, § 102(e) Date Aug. 22, 1994, PCT Pub. No. WO93/18301, PCT Pub. Date Sep. 16, 1993

PCT Filed Feb. 4, 1993, Ser. No. 290,931

Claims priority, application Germany, Mar. 2, 1992, 42 06 576.3

Int. Cl.[6] F04B *35/02*

U.S. Cl. 73—239 **7 Claims**



1. In a process for the determination of the conveyance amount or of the conveyance flow of a thick-matter piston pump including the steps of: providing at least one conveyance cylinder for thick matter; transporting thick matter through a conveyance line by said at least one conveyance cylinder; continuously measuring a conveyance pressure (p) in the conveyance line; determining a stroke number or stroke frequency as well as a conveyance volume of the individual pressure strokes from the measured conveyance pressure (p); computing a volume flow from the measured conveyance pressure (p); measuring a time spacing (T_2) between successive pressure strokes from a time-dependent amplitude course of the measured conveyance pressure; determining the stroke number, a stroke frequency and a filling degree (r) of the conveyance cylinder from the measured time spacing; determining an effective conveyance volume per pressure stroke from the stroke number, the stroke frequency and the filling degree (r); the improvement comprising: in the step of determining the filling degree (r) in each pressure stroke, measuring at least one of an effective conveyance time (T_1) and a piston path (h_1) when the conveyance pressure (p) is greater than a predetermined pressure threshold value (p_s); and further comprising the steps of digitally coverting the amplitude measurement values of the conveyance pressure at a predetermined sampling rate; sorting the digitally converted amplitude measurement value of the conveyance pressure according to size into various counting storers; counting the values in all of the counting storers; transforming the counted values of all the counting storers into a frequency spectrum thereof, and determining a pressure threshold value (p_s) between a lower frequency maximum allocated to a low-pressure level (p_l) and of an upper frequency maximum allocated to a high-pressure level (p_h).

5,578,753

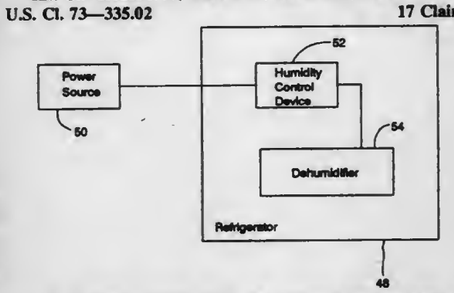
HUMIDITY AND/OR TEMPERATURE CONTROL DEVICE

John Weiss, Mt. Sinai, N.Y., and Chwen C. Jean, Taipei, Taiwan, assignors to Micro Weiss Electronics, Inc., West Babylon, N.Y.

Filed May 23, 1995, Ser. No. 450,957

Int. Cl.[6] H02H *3/00;* **F24F** *6/00;* **B01F** *3/02;* **G01W** *1/00*

U.S. Cl. 73—335.02 **17 Claims**



1. A humidity control device for sensing humidity and for selectively energizing an electrical device connected to an AC line voltage in response to the sensed humidity, which comprises:

a humidity sensing circuit, the humidity sensing circuit including circuit components, at least one of the circuit components being a humidity sensor which is coupled and responsive to the AC line voltage, the circuit components forming a balanced circuit such that the humidity sensing circuit is substantially self-compensating for AC line voltage variations, the humidity sensing circuit sensing the humidity and comparing the sensed humidity with a preselected humidity set point and generating a first output signal in response to the comparison thereof,

a zero crossing detector, the zero crossing detector detecting a zero crossing of the AC line voltage, the zero crossing detector being responsive to the AC line voltage and generating a second output signal indicating the zero crossing thereof,

a microcontroller, the microcontroller being responsive to the first and second output signals of the humidity sensing circuit and zero crossing detector and generating a third output signal in response thereto; and

means for switching the AC line voltage connected to the electrical device, the AC line voltage switching means being responsive to the third output signal of the microcontroller and selectively providing the AC line voltage to the electrical device in response thereto thereby selectively energizing and deenergizing the electrical device in a manner which substantially reduces radio frequency interference.

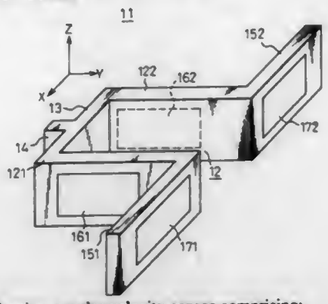
VOL 1192 ISS 4 NO 26 1996 UMI

5,578,754

VIBRATION-TYPE ANGULAR-VELOCITY SENSOR

Kenzi Kato, Okazaki, and Tomoyuki Kanda, Inabe-gun, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 15, 1994, Ser. No. 358,077
Claims priority, application Japan, Dec. 16, 1993, 5-316255
Int. Cl.[6] G01P 9/04
U.S. Cl. 73—504.12 8 Claims



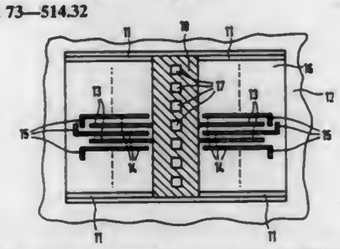
1. A vibration angular-velocity sensor comprising:
a vibrating body which vibrates in an x-axis direction, said x-axis direction being perpendicular to a longitudinal direction of the vibrating body; and
a Coriolis force detection device disposed on the vibrating body so as to extend in the x-axis direction, said Coriolis force detection device vibrating in the longitudinal direction when said Coriolis force detection device undergoes an angular velocity about a z-axis direction, said z-axis direction being perpendicular to both the x-axis and longitudinal directions,
wherein said Coriolis force detection device detects a Coriolis force generated in the longitudinal direction when said Coriolis force detection device vibrates in the longitudinal direction.

5,578,755

ACCELEROMETER SENSOR OF CRYSTALLINE MATERIAL AND METHOD FOR MANUFACTURING THE SAME

Michael Offenberg, Tuebingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 2, 1994, Ser. No. 348,700
Claims priority, application Germany, Dec. 3, 1993, 43 41 271.8
Int. Cl.[6] G01P 15/125
U.S. Cl. 73—514.32 7 Claims



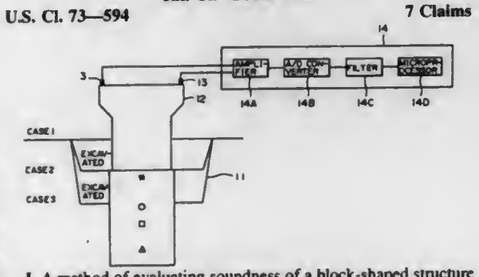
1. An accelerometer sensor composed of crystalline material, comprising:
a seismic mass, suspended by suspension segments, permitting a movement in a first direction in response to an acceleration;
a plurality of parallel plates extending from the seismic mass at right angles to the first direction;
a plurality of additional plates coupled on a first end to a base, the additional plates being parallel to the parallel plates, and forming a capacitor arrangement with the parallel plates;
wherein the seismic mass is composed of polycrystalline material, the parallel plates and the suspension segments are composed of monocrystalline material, and the monocrystalline material and polycrystalline material being doped to attain an electric conductivity.

5,578,756

METHOD AND APPARATUS FOR EVALUATING SOUNDNESS OF BLOCK-LIKE STRUCTURES

Yutaka Nakamura, Sagamihara; Muneyuki Tamogami, Hachioji; Shinji Sato, Kokubunji, and Mitsuhiro Tachibana, Urawa, all of Japan, assignors to Railway Technical Research Institute and Co., and Ltd. System and Data Research, both of Japan

Filed Apr. 18, 1995, Ser. No. 424,001
Claims priority, application Japan, Jun. 17, 1994, 6-159295
Int. Cl.[6] G01M 7/02
U.S. Cl. 73—594 7 Claims



1. A method of evaluating soundness of a block-shaped structure against collapse, comprising the steps of:
(a) measuring microtremors based upon outputs from at least two three-way sensors mounted at arbitrary positions on the block-shaped structure;
(b) determining a contribution factor of rocking vibration, which is part of overall vibration, on the basis of horizontal and vertical components of the waveform of the measured microtremors;
(c) determining extent of rocking vibration at said arbitrary positions using the determined contribution factor; and
(d) evaluating the block-like structure as being in an unstable state with regard to collapse responsive to a determination that the determined extent of rocking vibration R of the block-like structure at one of the arbitrary positions exceeds unity.

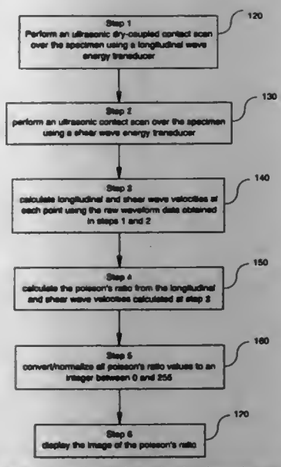
5,578,757

METHOD OF POISSON'S RATIO IMAGING WITHIN A MATERIAL PART

Don J. Roth, Lakewood, Ohio, assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 9, 1994, Ser. No. 288,364
Int. Cl.[6] G01N 29/00
U.S. Cl. 73—597 6 Claims

1. A method of imaging Poisson's ratio variation within a material part, comprising the steps of:
performing a first scan over a material part using a longitudinal wave energy transducer thereby producing longitudinal data,
performing a second scan over said material part using a shear wave energy transducer, thereby producing shear wave data,
approximating longitudinal velocities using said longitudinal data,
approximating said shear wave velocities using said shear wave data,
approximating Poisson's ratios using the relationship: $v=[(vl^2/2-vs^2)/(vl^2-vs^2)]$, where (vl) is said longitudinal velocity and (vs) is said shear wave velocity,
normalizing said Poisson's ratios thereby producing normalized data, and



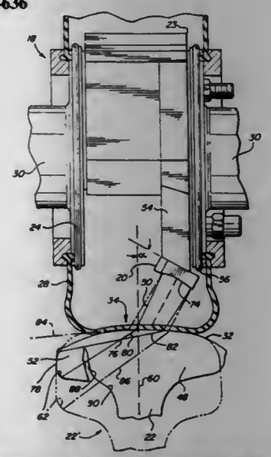
displaying said normalized data therby imaging said Poisson's ratio variation within said material part.

5,578,758

RAIL INVESTIGATING ULTRASONIC TRANSDUCER

R. Mark Havira, New Fairfield, and Anthony Iorfino, Stamford, both of Conn., assignors to Pandrol Jackson Technologies, Inc., Danbury, Conn.

Filed Jun. 21, 1995, Ser. No. 492,986
Int. Cl.[6] G01N 29/04
U.S. Cl. 73—636 6 Claims



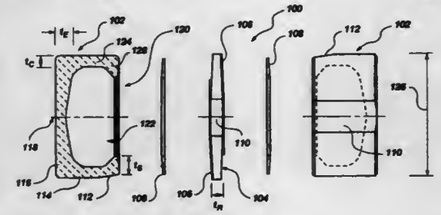
1. An apparatus for an acoustic investigation of a rail with a fluid filled rotating wheel inside of which is a stable yoke on which a plurality of ultrasonic transducers are mounted for the investigation with ultrasonic beams which exit the wheel at a generally common area in a flexible outer membrane of the wheel as it rotates about an axis to travel along the top running surface of the head of the rail under inspection, comprising:
an ultrasonic transducer mounted to the yoke, below the rotational axis of the wheel and away from ultrasonic beams from other transducers, and having a single, discrete area, focused beam emitting surface with a radius of curvature selected so that the focal point of the ultrasonic beam, after acoustic refraction, is located between the center of the rail and an outer lateral surface of the rail head, said focused beam emitting surface further being so located and sized so as to direct the ultrasonic focused beam at the common area of the flexible outer membrane to enter the rail head in a direction that significantly reduces reflections from outer rail surfaces below the acoustically refracted focal point of the ultrasonic beam inside the rail.

5,578,759

PRESSURE SENSOR WITH ENHANCED SENSITIVITY

Lawrence D. Clayton, Sandy, Utah, assignor to Quartzdyne, Inc., Salt Lake City, Utah

Filed Jul. 31, 1995, Ser. No. 509,195
Int. Cl.[6] G01L 11/00
U.S. Cl. 73—702 33 Claims



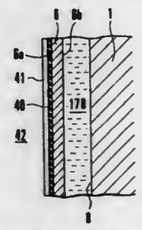
1. A pressure sensor, comprising:
a sensor element having a peripheral support structure including two opposing faces;
first and second longitudinally-extending end caps each having a blind interior bore defined at its bottom by a transversely oriented endwall from which a sidewall extends longitudinally to an open mouth, said mouth of each of said end caps being adjacent said sensor element and each end cap being secured to one of said faces of said peripheral support structure; and
said sidewall of each end cap including a proximal portion surrounding said mouth and by which said end cap is secured to said support structure, said proximal portion being of greater thickness than a medial portion of said sidewall longitudinally spaced from said mouth.

5,578,760

SEAL DIAPHRAGM STRUCTURE FOR PRESSURE MEASURING DEVICE

Motoo Suzuki, Tokyo, Japan, assignor to Yamatake-Honeywell Co., Ltd.

Filed Mar. 6, 1995, Ser. No. 398,805
Claims priority, application Japan, Mar. 17, 1994, 6-071268
Int. Cl.[6] G01L 7/00
U.S. Cl. 73—706 6 Claims



1. A seal diaphragm structure for a pressure measuring device, comprising:
a seal diaphragm having a first surface opposing a target fluid and a second surface contacting a pressure transfer sealed liquid sealed in said pressure measuring device;
an insulating film formed directly on to wholly cover the first surface of said seal diaphragm; and

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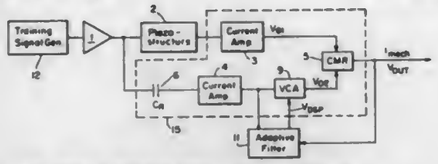
a p-type semiconductor film formed directly to wholly cover said insulating film.

5,578,761

ADAPTIVE PIEZOELECTRIC SENSORIACTUATOR

Robert L. Clark, Jr., Durham; Jeffrey S. Vipperman, Hillborough, both of N.C., and Daniel G. Cole, Blacksburg, Va., assignors to Duke University, Durham, N.C.

Filed Aug. 25, 1995, Ser. No. 519,513
Int. Cl.[6] G01B 7/16
U.S. Cl. 73—769 **16 Claims**



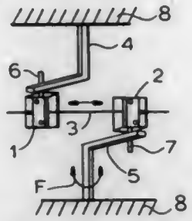
1. An adaptive sensoriactuator system, comprising:
a signal generator for generating a training signal;
a sensoriactuator, being responsive to the training signal, for generating a sensor signal that is a function of its electrical response and mechanical response; and
a compensator for resolving a portion of the sensor signal that results from the mechanical response by estimating the electrical response from a comparison of the training signal and the sensor signal.

5,578,762

METHOD AND DEVICE FOR THE VISCOELASTIC PROPERTIES OF POLYMERIC COATINGS OF OPTICAL FIBERS

Luisella Chiaro, Caluso; Giorgio Grego, S. Francesco Al Campo, and Pada Rgio, Castiglione Torinese, all of Italy, assignors to CSELT - Centro Studi E Laboratori Telecomunicazioni S.p.A., Romoli, Italy

Filed Apr. 7, 1995, Ser. No. 418,603
Claims priority, application Italy, May 5, 1994, TO94A0363
Int. Cl.[6] G01N 3/02
U.S. Cl. 73—860 **6 Claims**



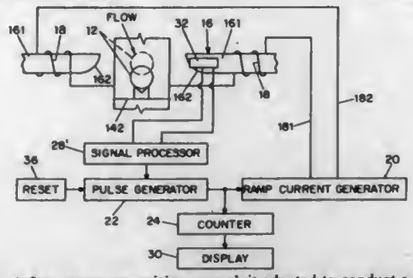
1. A method of measuring viscoelastic characteristics of a polymeric coating of a coated optical fiber, comprising the steps of:
(a) engaging the polymeric coating of a sample of the coated optical fiber at spaced-apart locations with respective clamps so compressing outer surfaces of the coating as not to tear the coating but to permit relative movement between said outer surface of said coating and the optical fiber;
(b) applying a tensile prestress to said coating;
(c) while said coating is under said tensile prestress imparting relative oscillating motion to said clamps to subject said coating to a longitudinal prestress of an intensity varying about a value of said prestress, thereby subjecting said coating to periodically variable deformation; and
(d) measuring opposing stress during step (c) and determining said viscoelastic characteristics of said coating from the measured opposing stress.

5,578,763

ELECTROMAGNETIC FLOW METER

Jordan L. Spencer, and David C. Rodgers, both of Tenafly, N.J., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Jun. 22, 1995, Ser. No. 493,622
Int. Cl.[6] G01F 1/58
U.S. Cl. 73—861.08 **6 Claims**



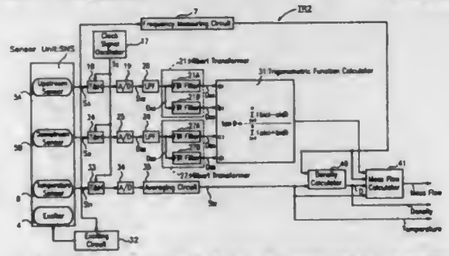
1. A flow meter comprising a conduit adapted to conduct a flow of a fluid, a stop in the conduit, a body movably received in the conduit, normally kept in engagement with the stop by the fluid flow, and including at least a portion of a magnetically responsive material, an electromagnet located outside the conduit in a position upstream from the stop relative to the direction of the fluid flow and having poles at a location such as to impose a magnetic force on the magnetically responsive material of the body when it is energized, means for energizing the electromagnet so as to progressively increase the magnetic force that it produces until the magnetic force is sufficient to move the body against the fluid flow and attract the body to a position between the poles, means for detecting changes in the magnetic flux field of the electromagnet when the body moves away from the stop and toward the electromagnet and producing a sensing signal indicative thereof, and means responsive to the sensing signal for detecting the magnitude of the current supplied to the electromagnet and producing a measurement signal indicative thereof.

5,578,764

CORIOLIS TYPE MASS FLOWMETER UTILIZING PHASE SHIFTERS FOR PHASE SHIFTING OF THE OUTPUT SIGNALS

Toyoaki Yokoi, and Hiroshi Owada, both of Tokyo, Japan, assignors to Yokogawa Electric Corporation, Tokyo, Japan

Filed Jul. 5, 1995, Ser. No. 498,310
Claims priority, application Japan, Jul. 11, 1994, 6-158985
Int. Cl.[6] G01F 1/84
U.S. Cl. 73—861.356 **10 Claims**



1. In a Coriolis type mass flowmeter comprising a measuring tube through which a fluid being examined flows and having a pair of fixed ends and means for vibrating the measuring tube in a prescribed mode to measure mass flow with a pair of Coriolis signals obtained by vibrating the measuring tube; the improvement comprising
a first analog to digital converter means for converting one of said pair of Coriolis signals to a first digital output signal;

a second analog to digital converter means for converting another of said pair of Coriolis signals to a second digital output signal;
a first phase shifter means for converting said first digial output signal to a first converted signal whose phase is deviated from the phase of said first digital output signal by 90°;
a second phase shifter means for converting said second digital to a second converted signal whose phase is deviated from the phase of said second digital output signal by 90°;
a trigonometric function calculator means for calculating the following equation to obtain tan Φ:

$$\tan \Phi = (bc-ad)/(ac+bd),$$

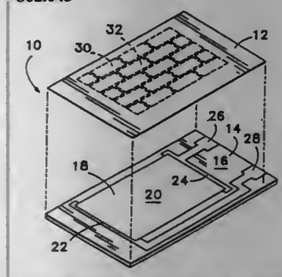
wherein a represents the first digital output signal, b represents the first converted signal, c represents the second digital output signal, d represents the second converted signal, and tan Φ represents a tangent signal of the phase difference between said pair of Coriolis signals; and
clock generator means for supplying said first and second analog to digital converter means with a timing signal having a prescribed sampling period which is independent of said Coriolis signals.

5,578,765

TRANSDUCER ARRAY

Patrick J. Franz, Portland, Oreg., assignor to InControl Solutions, Inc., Lake Oswego, Oreg.

Division of Ser. No. 948,143, Sep. 18, 1992, Pat. No. 5,431,064.
This application Jun. 1, 1995, Ser. No. 457,627
Int. Cl.[6] G01L 1/00
U.S. Cl. 73—862.043 **4 Claims**



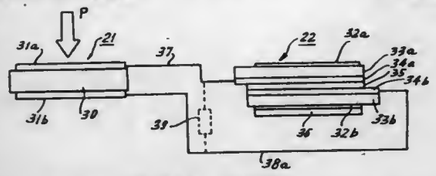
1. A method for measuring an applied force using a plurality of transducers comprising:
selecting a plurality of transducers;
arranging the plurality of transducers in a two dimensional array;
spacing apart each transducer within the array from every other transducer;
applying a known electric current across first and second terminals defined at spaced apart locations along a resistive layer;
determining a baseline resistance value across the terminals in the absence of the transducer array;
urging the transducer array against the resistive layer with an applied force;
creating at least two contact points between the resistive layer and a first transducer of the array, at least a portion of said current passing from the resistive layer through the first transducer between the first transducer contact points;
creating at least two contact points between the resistive layer and a second transducer of the array, at least a portion of said current passing from the resistive layer through the second transducer between the second transducer contact points; and
measuring a resistance value across the first and second terminals, said resistance value being determinative of the applied force.

5,578,766

FORCE DETECTOR/INDICATOR

Makoto Kondo, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Apr. 3, 1995, Ser. No. 415,697
Claims priority, application Japan, Apr. 5, 1994, 6-066993
Int. Cl.[6] G01L 1/00
U.S. Cl. 73—862.68 **21 Claims**



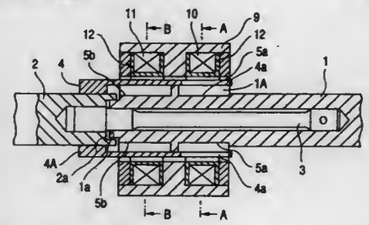
1. A force detector/indicator comprising:
a piezoelectric plate that generates voltage when subjected to pressure, said piezoelectric plate having electrodes; and
a liquid crystal display having a threshold level, for activating said liquid crystal display, sufficiently lower than generated voltage of said piezoelectric plate, said liquid crystal display having electrodes;
electrode lines that electrically connect said electrodes of said piezoelectric plate and said liquid crystal display so as to convey generated voltage of said piezoelectric plate as an input signal to turn on said liquid crystal display;
wherein a high-resistance conductive material is between said electrode lines electrically connecting said piezoelectric plate and said liquid crystal display for the purpose of forming a discharge route, said high-resistance conductive material is at said electrodes of said piezoelectric plate and said liquid crystal display.

5,578,767

TORQUE SENSOR

Kazuo Chikaraishi, and Kouichi Satoh, both of Gunma, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Mar. 6, 1996, Ser. No. 611,878
Claims priority, application Japan, Mar. 6, 1995, 7-070403; Aug. 28, 1995, 7-240465; Jan. 9, 1996, 8-018042; Jan. 9, 1996, 8-018043
Int. Cl.[6] G01L 3/02
U.S. Cl. 73—862.331 **4 Claims**



1. A torque sensor, comprising:
a first rotary shaft;
a second rotary shaft disposed coaxially with said first rotary shaft;
a torsion bar for connecting said first rotary shaft to said second rotary shaft;
a tubular member made of conductive and nonmagnetic material, said tubular member being integrally coupled with said second shaft in a rotation direction, while surrounding a circumferential outer surface of said first rotary shaft;
a coil surrounding said tubular member; and
electromotive force measuring means for measuring electromotive forces induced in said coil;

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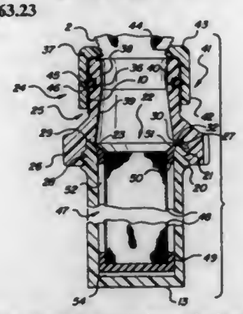
wherein at least a surrounded portion of said first rotary shaft, which is surrounded by said tubular member, is made of magnetic material;
wherein said surrounded portion of said first rotary shaft includes axially extended grooves;
wherein said tubular member includes windows such that said windows are arrayed so as to partially overlap with said grooves, respectively, and an overlapping area of said window and said groove is varied in accordance with a relative angular position of said tubular member to said first rotary shaft; and
wherein said coil surrounds portions of said tubular member where said windows are formed so that a torque generated in said first and said second shafts is detected on the basis of the measurement result of said electromotive force measuring means.

5,578,768

PLANKTON SAMPLE TAKING APPARATUS

William H. Phillips, Saginaw, Mich., assignor to Trippensee Corporation, Saginaw, Mich.

Filed Oct. 4, 1994, Ser. No. 317,395
Int. Cl.[6] G01N *1/12*
U.S. Cl. 73—863.23 **14 Claims**



1. Apparatus for taking a sample from a body of water comprising an elongate container having a wall defining a bore of selected transverse dimension, said container having an inlet and an outlet; means for coupling said inlet to a sample gathering device; and a hollow, tubular sample collector accommodated within said bore, said collector having a transverse dimension less than that of said bore thereby to provide a space between said collector and the wall defining said bore, said collector having a screened portion in communication with said inlet and through which water may flow into said space for discharge through said outlet.

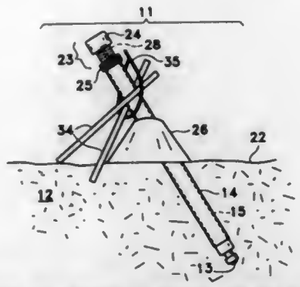
5,578,769

METHODS AND APPARATUS FOR UNDISTURBED SUBSURFACE SOIL CHEMISTRY SAMPLING

Gordon E. Warrington, 8125 Turman Ct., Fort Collins, Colo. 80525, and Earl O. Skogley, 3535 Stucky Rd., Bozeman, Mont. 59715

Filed Dec. 20, 1993, Ser. No. 171,563
Int. Cl.[6] G01N *1/22*
U.S. Cl. 73—864.74 **42 Claims**

1. An method for sampling the chemistry of a subsurface substance comprising the steps of:
a. establishing a point beneath a surface level at which it is desirable to ascertain a substance's chemistry;
b. positioning a sample means adjacent to said point wherein said point is situated on a vertical line beneath said surface level and wherein said step of positioning a sample means adjacent to said point comprises the step of angled drilling with respect to said vertical line; and
c. avoiding any substantial disturbance of the subsurface substance at said point; and then



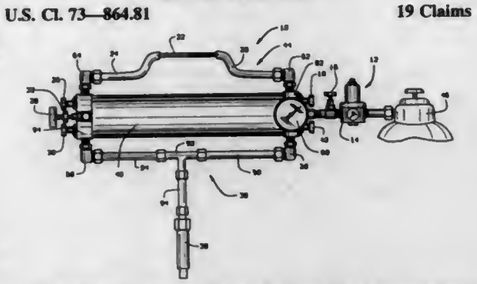
d. sampling said substance's chemistry through action of said sample means while continuing said step of avoiding any substantial disturbance at said point; then
e. retrieving said sample means;
f. analyzing said sample means;
g. ascertaining the chemistry of the subsurface substance at said point;
h. avoiding any substantial disturbance of a subsurface substance above said point; and
i. repetitively sampling said substance's chemistry. at said point wherein said step of avoiding any substantial disturbance of a subsurface substance above said point and said step of avoiding any substantial disturbance of the subsurface substance at said point are each simultaneously accomplished while accomplishing said step of positioning a sample means adjacent to said point and while accomplishing said step of sampling said substance's chemistry through action of said sample means and while accomplishing said step of retrieving said sample means.

5,578,770

APPARATUS AND METHOD FOR GAS DETECTION

Brian H. Welker, Sugar Land, Tex., assignor to Welker Engineering Company, Sugar Land, Tex.

Filed Sep. 11, 1995, Ser. No. 526,233
Int. Cl.[6] G01N *31/22*
U.S. Cl. 73—864.81 **19 Claims**



1. An apparatus used in conjunction with a gas detection tube that has a front end and a back end that are each opened when the gas detection tube is used for testing the concentration of a gas sample from a gas source, the apparatus comprising:
a) a sample cylinder defining a chamber;
b) a piston slidably mounted within said chamber of said sample cylinder, said piston delineating a first variable volume space and a second variable volume space within said chamber;
c) a piston rod coupled to said piston for displacing said piston within said chamber;
d) a process valve disposed between and in selective fluid communication with said first variable volume space and the gas source for selectively filling said first variable volume space with the gas sample;

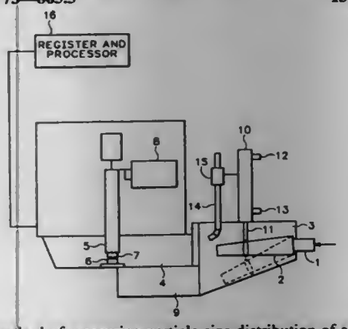
e) a purge valve disposed between and in selective fluid communication with said first variable volume space and a flare line for selectively purging said first variable volume space of foreign material;
f) a pair of test valves, the first of said test valves disposed between and in selective fluid communication with said first variable volume space and the front end of the gas detection tube for selectively introducing the gas sample into the gas detection tube, the second of said test valves disposed between and in selective fluid communication with said second variable volume space and the back end of the gas detection tube for selectively storing the sample after the gas sample has passed through the gas detection tube; and
g) an exhaust valve disposed between and in selective fluid communication with said second variable volume space and the flare line for selectively discharging the sample from said sample cylinder.

5,578,771

METHOD FOR MEASURING PARTICLE SIZE DISTRIBUTION

Lauri Karhu, Espoo, Finland, assignor to Outokumpu Mintec OY, Espoo, Finland

Continuation-in-part of Ser. No. 196,005, Feb. 9, 1994, abandoned. This application Nov. 27, 1995, Ser. No. 563,133
Claims priority, application Finland, Feb. 12, 1993, 930617
Int. Cl.[6] G01N *15/02*
U.S. Cl. 73—865.5 **13 Claims**



1. A method of measuring particle size distribution of a flowing material that is composed of solid particles in a carrier fluid and has a known percent solids, the method employing a measuring element that comprises first and second measuring members having respective confronting measuring surfaces and a means for causing relative movement of the measuring members toward and away from each other, and wherein the area of one of said measuring surfaces is in the range 0.008–0.5 cm^2 divided by said known percent solids and the area of the other of said measuring surfaces is at least as great as that of said one measuring surface.

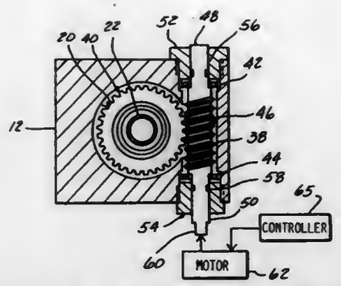
5,578,772

METHOD AND FIXTURE FOR HOLDING THREADED VALVE ASSEMBLIES FOR TESTING

Paul M. Kadis, 9685 Fox Meadow, Chardon, Ohio 44024

Filed Dec. 1, 1993, Ser. No. 161,055
Int. Cl.[6] G01D *21/00*
U.S. Cl. 73—866.5 **5 Claims**

1. A test fixture for testing a valve assembly having a stem section including threaded body portion and sealing ring encircling said threaded body portion, said test fixture comprising:
housing means having an open bore configured to receive said valve stem section readily insertable into said bore, said valve assembly being held against rotation when said valve stem is inserted in said bore;



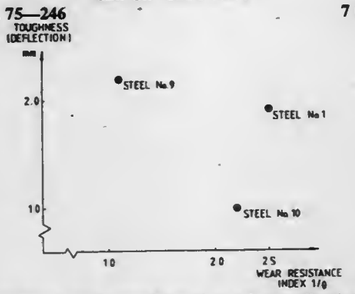
a rotary element rotatably mounted within said housing means having an internally threaded bore aligned with said valve housing bore, the thread of said internally threaded bore adapted to threadedly mate with said threaded body portion of said valve assembly to be tested;
selectively actuatable drive means for causing said rotary element to be rotated in either rotative direction, said valve assembly moved axially in said bore by rotation of said rotary element;
a seal engaging surface concentric to said housing bore and located to be engaged with said sealing ring as said valve assembly is drawn into said housing bore by rotation of said rotary element by said drive means in a direction causing advance of said threaded body portion into said threaded internal bore, whereby said valve assembly can be drawn axially into said test fixture and said sealing ring sealed against said seal engaging surface without being rotated.

5,578,773

HIGH-SPEED STEEL MANUFACTURED BY POWDER METALLURGY

Henry Wisell, Söderfors, Sweden, assignor to Erasteel Kloster Aktiebolag, Soderfors, Sweden

PCT No. PCT/SE92/00538, § 371 Date Feb. 4, 1994, § 102(e) Date Feb. 4, 1994, PCT Pub. No. WO93/02821, PCT Pub. Date Feb. 18, 1993
PCT Filed Aug. 4, 1992, Ser. No. 193,045
Claims priority, application Sweden, Aug. 7, 1991, 9102299; Dec. 11, 1991, 9103650
Int. Cl.[6] C22C *35/00*
U.S. Cl. 75—246 **7 Claims**



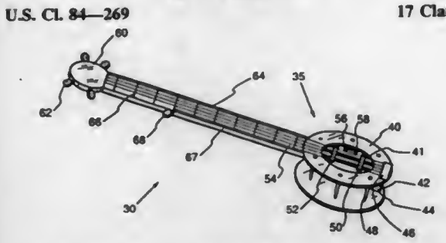
1. High-speed steel manufactured powder-metallurgically and comprising the following chemical composition in weight-%:
2.2–2.7 C
from traces to max 1.0 Si
from traces to max 1.0 Mn
3.5–4.5 Cr
2.5–4.5 Mo
2.5–4.5 W
7.5–9.5 V
from traces to max 1.0 Co
with the balance being substantially iron and incidental impurities and accessory elements.

5,578,774

BODY FOR AN ELECTRONIC STRINGED INSTRUMENT ADAPTED TO PRODUCE BANJO TONES

George E. Dickson,II, 1224 Escalon Ave., Escalon, Calif. 95320

Filed Sep. 27, 1995, Ser. No. 534,329
Int. Cl.[6] G10D *1/10*
U.S. Cl. 84—269 17 Claims



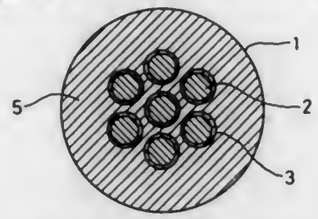
1. An electronic stringed musical instrument comprising:
(a) a bead having a front panel and a back panel, the front panel having an outer edge and an inner edge, the inner edge defining an opening through the approximate center of the front panel, the outer perimeter of the back panel being about the same shape as the outer edge of the front panel;
(b) means for attaching the back panel in parallel spaced apart relationship to the front panel, the space therebetween remaining open, said means for attaching including an elongated member disposed between the front and back panels and extending across said space therebetween;
(c) a neck having its proximal end rigidly attached to one end of the elongated member and extending outward from the head;
(d) several strings, each string having a first and a second end, the first end of each string being coupled to the distal portion of the neck and the second end of each string coupled to an end of the elongated member opposite the one end;
(e) a bridge mounted to the elongated member and extending through said opening for supporting the strings; and
(f) at least one pickup mounted on the elongated member under the strings for sensing the vibrations of the strings.

5,578,775

STRING WIRE FOR MUSICAL INSTRUMENT

Keisuke Ito, 1-105, Misoracho 1-ban,, Otsu-shi, Shiga 520-02, Japan

PCT No. PCT/JP91/00911, § 371 Date Jan. 10, 1994, § 102(e) Date Jan. 10, 1994, PCT Pub. No. W0/93-1585, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 8, 1991, Ser. No. 175,382
Int. Cl.[6] G10D *3/00*
U.S. Cl. 84—297 S 18 Claims



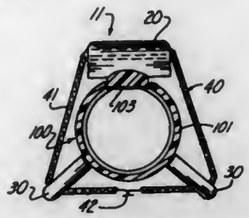
1. A wire for a string for use on musical instruments, comprising one or more filaments and a precious metal, the one or more filaments being impregnated within the precious metal.

5,578,776

CLARINET MOUTHPIECE GRASPING RIG

Konstantin L. Valtchev, 43 Cosmic Drive, North York, Ontario, Canada

Continuation-in-part of Ser. No. 248,914, May 25, 1994, Pat. No. 5,440,962. This application Aug. 8, 1995, Ser. No. 512,360
Int. Cl.[6] G10D *9/02*
U.S. Cl. 84—383 R 8 Claims



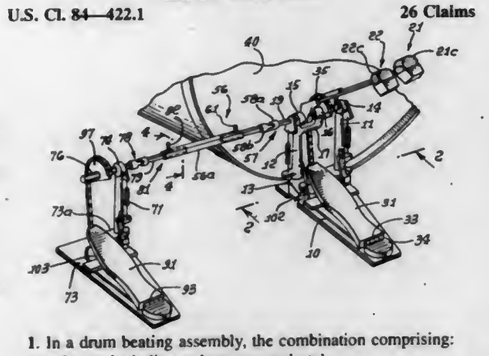
1. A grasping ring unit for use with a mouthpiece/reed assembly which includes a generally cylindrical barrel member and a generally tapered mouthpiece member having a reduced neck portion dimensioned to be operatively engaged by said barrel member; wherein, the grasping ring unit comprises:
a relatively short hollow cylindrical grasping ring member having a distal end and a proximal end and being fixedly secured on said distal end in a surrounding relationship relative to said mouthpiece member, proximate the juncture of said mouthpiece member and said barrel member.

5,578,777

DRUM BEATER AND PEDAL APPARATUS ALLOWING INFINITELY ADJUSTABLE BEATER POSITIONING

Donald G. Lombardi, 2118 E. Hillcrest Dr., Thousand Oaks, Calif. 91360

Continuation-in-part of Ser. No. 190,499, Feb. 2, 1994, Pat. No. 5,396,826, which is a continuation-in-part of Ser. No. 35,065, Mar. 22, 1993, Pat. No. 5,361,670, which is a continuation of Ser. No. 783,864, Oct. 28, 1991, Pat. No. 5,204,485. This application Dec. 12, 1994, Ser. No. 354,212
Int. Cl.[6] G10D *13/00*
U.S. Cl. 84—422.1 26 Claims



1. In a drum beating assembly, the combination comprising:
a) a frame, including at least one pedestal,
b) an axle carried by the pedestal to rotate relative thereto, the axle having an axis of rotation,
c) a drum beater carried by the axle,
d) a pedal operatively connected to the axle to rotate the axle and beater in response to pedal movement,
e) a crank connected with the axle to rotate therewith,
f) a return spring positioned to exert tension on the crank to yieldably resist axle rotation by the pedal, about said axis,
g) and a continuously variable connection between said spring and crank to allow adjustment of the position of spring tension exertion on the crank, about said axle axis, whereby

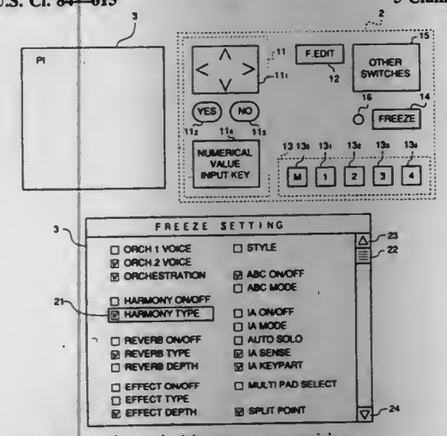
the rest position of the beater relative to a drum surface may be infinitely adjusted.

5,578,778

ELECTRONIC MUSICAL INSTRUMENT

Tsutomu Imaizumi, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed May 16, 1995, Ser. No. 442,316
Claims priority, application Japan, May 23, 1994, 6-132620
Int. Cl.[6] G10H *1/18;7/00*
U.S. Cl. 84—615 5 Claims



1. An electronic musical instrument comprising:
first memory means for storing plural kinds of data for controlling present operation of said electronic musical instrument;
changing means for changing values of said plural kinds of data stored in said first memory means;
second memory means for storing plural kinds of data;
data-designating means for designating part of said plural kinds of data;
instructing means for instructing to load at least part of said plural kinds of data stored in said second memory means into said first memory means;
rewriting means for selectively reading out data other than said part of said plural kinds of data designated by said data-designating means, from among said plural kinds of data stored in said second memory means, in response to an instruction from said instructing means, and for rewriting corresponding data stored in said first memory means by said data read out; and
range-changing means for changing a range of said part of said plural kinds of data to be designated by said data-designating means.

5,578,779

METHOD AND INTEGRATED CIRCUIT FOR ELECTRONIC WAVEFORM GENERATION OF VOICED AUDIO TONES

Roi N. Peers, Jr., Livermore, Calif., assignor to ESS Technology, Inc., Fremont, Calif.

Filed Sep. 13, 1994, Ser. No. 305,087
Int. Cl.[6] G10H *5/00*
U.S. Cl. 84—647 14 Claims

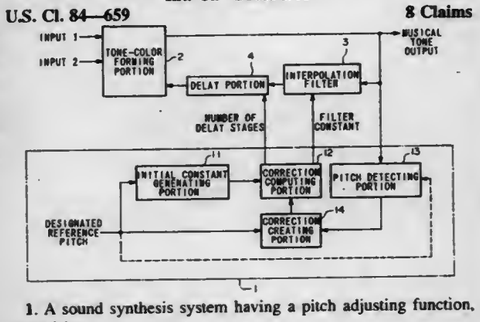
1. A stage for generating audio musical tone samples, comprising:
a first adder with a first input for connection to the output of a previous stage, and a second input for connection to the output of a stage previous to said previous stage;
a second adder having a first input connected to an output of the first adder through a multiplier, and a second input for connection to a phase drive distinct in phase from a phase drive applied to said previous stages or a subsequent stage;
a waveform generator connected to receive an address from an output of the second adder and for outputting a waveform as addressed by said address; and
a multiplier connected to modify said waveform output by the waveform generator by an input multiplication factor "B" before being output from said stage as a stage output when the present stage is an intermediate stage and as a final tone output when said present stage is a final stage in a chain of stages.

5,578,780

SOUND SYNTHESIS SYSTEM HAVING PITCH ADJUSTING FUNCTION BY CORRECTING LOOP DELAY

Masatada Wachi, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Apr. 21, 1995, Ser. No. 426,567
Claims priority, application Japan, Apr. 28, 1994, 6-111929
Int. Cl.[6] G10H *5/02*
U.S. Cl. 84—659 8 Claims



1. A sound synthesis system having a pitch adjusting function, comprising:
loop means, containing delay means, through which a sound signal circulates;
pitch detecting means for detecting a pitch of the sound signal, which is extracted from the loop means, so as to produce first pitch information representative of the pitch detected;
pitch designating means for designating a pitch for a sound to be produced so as to produce second pitch information representative of the pitch designated;
initial constant creating means for creating an initial constant, corresponding to an initial delay, in accordance with the

second pitch information, the initial delay being applied to the delay means so that the sound signal, circulating through the loop means, is subjected to the initial delay by the delay means; and

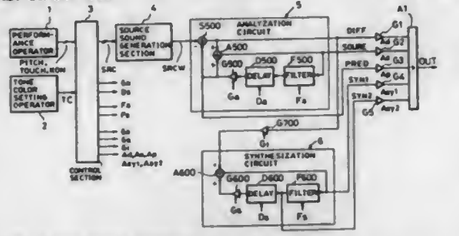
correcting means for correcting an amount of delay of the delay means in such a way that the pitch of the sound signal is automatically adjusted to be equal to the pitch represented by the second pitch information in real time.

5,578,781

TONE SIGNAL SYNTHESIS DEVICE BASED ON COMBINATION ANALYZING AND SYNTHESIZATION

Hideo Suzuki, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Sep. 30, 1994, Ser. No. 316,122
Claims priority, application Japan, Oct. 4, 1993, 5-248342
Int. Cl.[6] G10H *1/12*
U.S. Cl. 84—661 **39 Claims**



38. A tone signal synthesis device comprising:

means for providing an original sound waveform signal;

analyzing means for processing the original sound waveform signal to generate one or more analyzed waveform signal components;

synthesizing means for receiving and processing at least one of the analyzed waveform signal components, to thereby output a synthesized waveform signal, wherein fundamental processing characteristics of said analyzing means are in opposite functional relation to fundamental processing characteristics of said synthesizing means;

control means for controlling parameters that are used for processing in said analyzing and synthesizing means, independently of each other; and

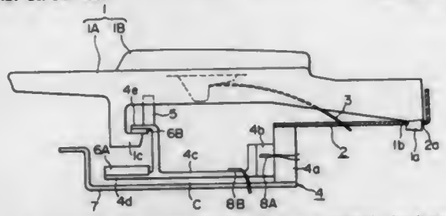
output means for outputting at least the signal output from said synthesizing means as the tone signal.

5,578,782

MUSICAL TONE CONTROL DEVICE FOR ELECTRONIC KEYBOARD INSTRUMENT

Takemichi Masubuchi, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Dec. 23, 1994, Ser. No. 363,386
Claims priority, application Japan, Dec. 27, 1993, 5-332066; Dec. 28, 1993, 5-338507
Int. Cl.[6] G10H *1/055;1/34*
U.S. Cl. 84—687 **13 Claims**



1. A musical tone control device for an electronic keyboard instrument comprising:

a keyboard frame rotatably supporting at least one key such that said key can rotate vertically with respect to said keyboard frame, said key being pressed in an upward vertical direction by a return spring;

a stopper member comprising a base portion fixedly secured to said keyboard frame, an edge portion, and a vertically flexible portion located between said base portion and said edge portion, said edge portion including an upper limit stopper disposed so as to stop rotation of said key in said upward vertical direction and a lower limit stopper disposed so as to stop rotation of said key in a downward vertical direction; and

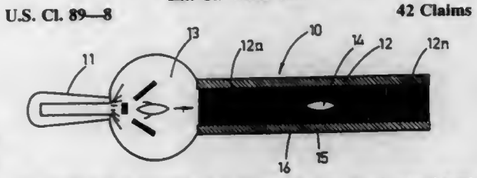
sensor means for sensing an upward force applied by said key to said upper limit stopper and a downward force applied by said key to said lower limit stopper, said sensor means producing a control signal corresponding to said sensed forces, said control signal being used to control generation of a musical tone in accordance with a specific musical parameter.

5,578,783

RAM ACCELERATOR SYSTEM AND DEVICE

Julius Brandeis, Haifa, Israel, assignor to State of Israel, Ministry of Defence, Rafael Armaments Development Authority, Haifa, Israel

Filed Dec. 19, 1994, Ser. No. 358,346
Claims priority, application Israel, Dec. 20, 1993, 108095
Int. Cl.[6] F41F *1/00*
U.S. Cl. 89—8 **42 Claims**



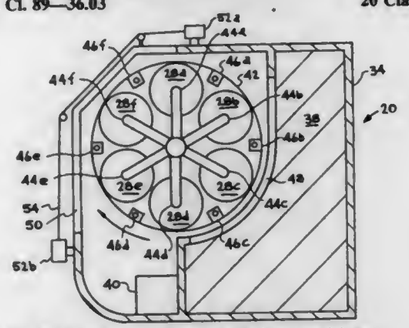
1. Method for accelerating a projectile in an accelerator barrel comprising the steps of storing a compressed fluid in said projectile, feeding a combustible gas mixture into said barrel, pre-accelerating said projectile, introducing said pre-accelerated projectile into said barrel and ejecting said compressed fluid from said projectile within said barrel to ignite said mixture and accelerate said projectile.

5,578,784

PROJECTILE STOPPING SYSTEM

Thomas J. Karr, Alamo, and Lee C. Pittenger, Livermore, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Feb. 5, 1996, Ser. No. 595,442
Int. Cl.[6] F41H *5/007;5/16*
U.S. Cl. 89—36.03 **20 Claims**



1. An device for intercepting a projectile comprising:

a projectile path receiver receiving data indicative of the path of a projectile;

a flinger mechanism coupled to a projectile catcher, said flinger mechanism for launching said projectile catcher therefrom; and

a projectile catcher release controller coupled to said flinger for controlling launch parameters of said projectile catcher such that said flinger launches said projectile catcher into said path of said projectile.

5,578,785

METAL COMPLEX COMPOUNDS

Nikolaus Fiederling, Leverkusen, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Jul. 12, 1995, Ser. No. 501,342
Int. Cl.[6] C06C *7/00*
U.S. Cl. 102—202.5 **11 Claims**

9. An insensitive, highly temperature-stable explosive containing a metal complex compound with the general formula $Me(DADPyOx)_x$ where Me stands for a transition metal ion, DADPyOx stands for 2,6-diamino-3,5-dinitropyridine-1-oxide and x represents an integer of 1, 2, 3 or 4.

5,578,786

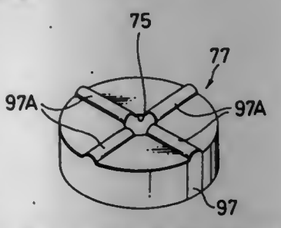
Patent Not Issued For This Number

5,578,787

GAS GENERATING AGENT OF AIR BAG INFLATION GAS GENERATOR

Hirokazu Kobari; Junichi Kishimoto, and Michio Shiota, all of Fukushima-ken, Japan, assignors to Nippon Koki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 526,196, Sep. 11, 1995, abandoned, which is a continuation of Ser. No. 97,975, Jul. 27, 1993, abandoned. This application Jan. 31, 1996, Ser. No. 594,418
Int. Cl.[6] C06D *5/06*
U.S. Cl. 102—288 **8 Claims**



1. A gas generating agent of an air bag inflation gas generator comprising a plurality of coaxially disposed substantially planar gas generating agent bodies each having a through hole formed in the axial direction and spacer projections formed on one side in order to keep a space between adjacent gas generating agent bodies to thereby enhance ignition, characterized in that the spacer projections are disposed radially and equidistant from one another and further characterized in that the spacer projections are formed as linear stripes extending from the through hole to the outer circumferential surface of the gas generating agent body.

5,578,788

MANUFACTURE AND USE OF IMPROVED EXPLOSIVE COMPOSITION

Björn Engsbråten, Obrebro, Sweden, assignor to Nitro Nobel AB, Nora, Sweden

Division of Ser. No. 13,434, Feb. 4, 1993, Pat. No. 5,486,247. This application Sep. 8, 1995, Ser. No. 525,044
Claims priority, application Sweden, Jun. 2, 1992, 9200330
Int. Cl.[6] F42B *3/00*
U.S. Cl. 102—301 **20 Claims**

1. In a process for utilizing an explosive composition comprising an oxidizing salt that includes an ammonium ion wherein said explosive composition is inserted into a basic environment and is blasted, the improvement of providing within said explosive composition an acid which is capable of neutralizing liberated ammonia from within said composition thereby rendering said composition particularly suited for usage in a basic environment while enhancing the quality of the nearby environment.

5,578,789

ENERGETIC PLASTICIZERS FOR POLYBUTADIENE-TYPE SOLID PROPELLANT BINDERS

Adolf E. Oberth, Fair Oaks, Calif., assignor to Aerojet General, Rancho Cordova, Calif.

Filed May 4, 1992, Ser. No. 878,222
Int. Cl.[6] C06B *45/10*
U.S. Cl. 149—19.9 **6 Claims**

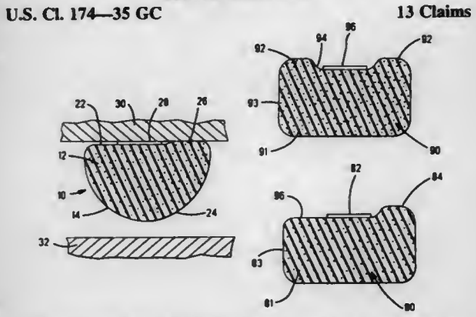
1. An isocyanate-curable solid propellant composition comprising: an inorganic oxidizer, a metallic fuel, and a polybutadiene binder, wherein the improvement consists of said binder containing polybutadiene-compatible, nitrate ester plasticizers of aliphatic hydroxyl compounds, having hydrocarbon chains from 6 to 18 carbon atoms, and a ratio of 4 to 8 carbon atoms per nitrate group, and where said plasticizers constitute from 40 to 75 percent of the total weight of said binder.

5,578,790

SHIELDING GASKET

Walter A. Peregrim, Wilkes-Barre, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Sep. 6, 1995, Ser. No. 524,193
Int. Cl.[6] H05K *9/00*
U.S. Cl. 174—35 GC **13 Claims**



1. A shielding gasket for electrically sealing between a first and a second conductive panel, comprising:

a resilient core having a securing side for securing to the first conductive panel, and an engaging side for engaging the second conductive panel, the core extending in a longitudinal direction and having a height;

an electrically conductive sheath at least partially surrounding the core;

a strip of adhesive disposed along the securing side, the strip extending in the longitudinal direction along the core; and

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an extension along the securing side the extension protruding beyond the adhesive strip and running along the longitudinal direction of the core, parallel to the adhesive

the extension providing in its place electrical contact to the first conductive panel at the same time as the adhesive secures.

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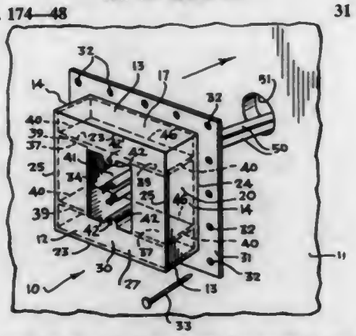
COMBINED WALL MOUNT AND ELECTRICAL OUTLET BOX

John J. Bosse, Jr., 56 Ivy Way, Lancaster, N.Y. 14086

Filed May 12, 1994, Ser. No. 241,764

Int. Cl.[6] H02G 3/10

U.S. Cl. 174—48 31 Claims



1. A plastic electrical wall mount unit for mounting on a surface comprising a housing, a plurality of side walls on said housing, inner and outer sides on said side walls, inner and outer edges on said side walls, a front wall molded integrally with said side walls proximate said outer edges of said side walls and extending inwardly therefrom toward other of said side walls, a flange molded integrally with said side walls proximate said inner edges of said side walls and extending outwardly away from said outer sides of said side walls, a preformed opening in said front wall, and fastener-receiving members secured within and in spaced relationship to said side walls.

5,578,792

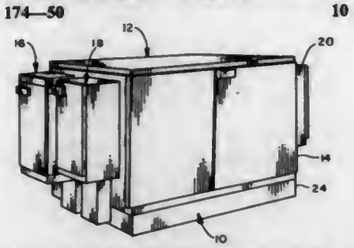
INTERCONNECTION ARRANGEMENT FOR ELECTRICAL EQUIPMENT ENCLOSURES

David H. Devonald, III, 2120 Cranbrook Rd., Green Oaks, Ill. 60048; Leonard V. Chabala, 1626 S. 14th St., Maywood, Ill. 60153; Albert F. Cowsky, 547 Bianco Dr., Elk Grove Village, Ill. 60007, and Michael P. O'Dell, 312 S. Kenilworth, Oak Park, Ill. 60302

Continuation of Ser. No. 760,630, Sep. 16, 1991, abandoned. This application Sep. 15, 1994, Ser. No. 308,162

Int. Cl.[6] H05K 5/02; H02B 7/00; 1/04

U.S. Cl. 174—50 10 Claims



1. An arrangement for field retrofit installation to an existing electrical equipment enclosure having an exterior surface defined by at least one upstanding sidewalls extending from a base perimeter and defining an enclosure interior, the arrangement providing interconnections between different predetermined locations on the exterior surface of the electrical equipment enclosure, the arrangement comprising:

means for supporting the electrical equipment enclosure such that the base perimeter of the electrical equipment enclosure is positioned atop central portion of said supporting means, said supporting means having an exterior surface defined by at least one upstanding sidewalls so as to define an interior space and supporting means base perimeter that defines central portions of said supporting means; and

means for defining predetermined enclosed cable pathway ducts within and through said interior space of said supporting means said cable pathway ducts traversing under the central portions of said supporting means, and to and through said at last one upstanding sidewalls of said exterior surface of said supporting means, extending upward and being attached to predetermined points on the exterior surface of at least one of said upstanding sidewalls of the electrical equipment enclosure, said enclosed cable pathway ducts defining enclosed cable pathways between the predetermined points on the exterior surface of the electrical equipment enclosure so as to provide total isolation between said enclosed cable pathways and said interior space of said supporting means as well as the enclosure interior.

5,578,793

VIDEO CASSETTE RECORDER CHASSIS FRAME ASSEMBLY

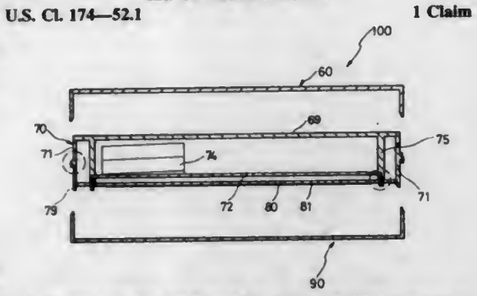
Youn-Seong Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd, Seoul, Rep. of Korea

Filed Aug. 23, 1994, Ser. No. 294,686

Claims priority, application Rep. of Korea, Aug. 24, 1993, 1993-16469

Int. Cl.[6] H05K 5/00; 1/14

U.S. Cl. 174—52.1 1 Claim



1. A video cassette recorder of the type comprising a top cover, a bottom cover and a chassis frame having a plate portion and a pair of skirt plates extending from both lateral edges of the plate portion, said chassis frame containing a deck and a main printed circuit board between the skirt plates, the main printed circuit board having a pattern surface, said video cassette recorder characterized in that:

the main printed circuit board is mounted between the skirt plates at a position farther from the plate portion than from the deck, with the pattern surface of the main printed circuit board facing toward the bottom cover, the main printed circuit board having a number of lugs sidewardly protruding from two lateral edges thereof and two rows of a number of through-holes formed therethrough, which are in substantially parallel relationship with the skirt plates;

the skirt plates of the chassis frame extend toward the bottom cover and the chassis frame has a same number of tongues as that of the lugs, which are horizontally arranged for alternating with cut-outs provided at one end side of the skirt plates, each of said tongues having a recess on its inner surface so that each of the lugs is closely fitted into each of the recesses, two arrays of bosses extending from the plate portion toward the bottom cover, each array containing a same number of bosses as that of the through-holes in each of the two rows, each of said bosses including a groove adapted to receive a lateral edge of the deck and a distal portion having a longitudinally threaded hole, said distal portion adapted to pass through one of the through-holes, and the chassis frame has a number of stoppers which are horizontally aligned on two lateral external surfaces of the skirt plates so as to connect the chassis frame with the bottom cover and the top cover; and

the bottom cover has as many apertures as the number of bosses, corresponding to the threaded holes, so that the deck is fitted through the grooves and the chassis frame is joined with the bottom cover by a thread.

5,578,794

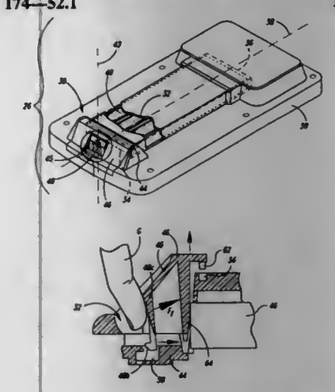
COVER ASSEMBLY FOR RESTRAINING AN OBJECT IN AN ENCLOSURE

Dennis Lamb, Stanwood; Monte R. Washburn, Bothell, and Mark Lockman, Everett, all of Wash., assignors to Fluke Corporation, Everett, Wash.

Filed Jan. 5, 1995, Ser. No. 369,203

Int. Cl.[6] H05K 5/00; E05C 19/10

U.S. Cl. 174—52.1 14 Claims



1. A cover assembly for restraining an object in an enclosure, the enclosure having opposing open and closed ends, an insertion axis which is substantially orthogonal to the open and closed ends, and a cover axis which is substantially orthogonal to the insertion axis, the cover assembly comprising:

a cover frame located at the open end which defines an opening in the enclosure to receive the object along the insertion axis;

a cover to cover the opening;

a restraining mechanism securing the cover to the cover frame to restrict movement of the cover relative to the cover three along the insertion axis when the cover is in a closed position and thereby restrain the object in the enclosure; and

a latch to secure the cover to the cover frame to restrict movement of the cover relative to the cover frame along the cover axis when the cover is in the closed position, the latch being constructed so that a force acting on the latch has first and second component forces, the first component force disengaging the latch and the second component force moving the cover relative to the cover frame along the cover axis.

5,578,795

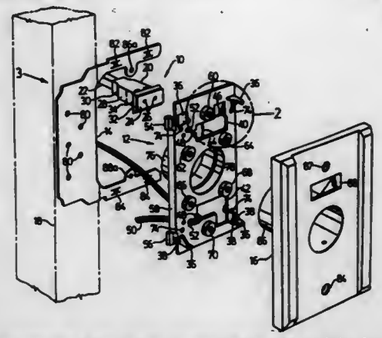
INLET VALVE ASSEMBLY FOR CENTRAL VACUUM SYSTEM

John F. Ward, Midhurst, Canada, assignor to Canplas Industries Ltd., Barrie, Canada

Division of Ser. No. 890,208, May 29, 1992, abandoned. This application May 31, 1994, Ser. No. 251,416

Int. Cl.[6] H01R 13/73

U.S. Cl. 174—53 9 Claims



1. A mounting plate for use in association with an inlet face plate in a central vacuum cleaning system, the mounting plate comprising:

a main body having at least one first generally L-shaped opening dimensioned to both temporarily retain an electrical receptacle therein in a narrower width portion and to allow the electrical receptacle to be mounted in the associated inlet face plate in a wider width portion; and

at least one second vacuum opening to accommodate a vacuum connection to the inlet face plate.

5,578,796

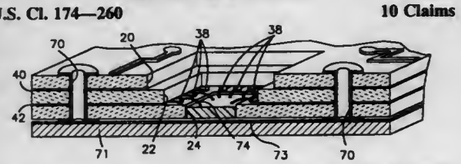
APPARATUS FOR LAMINATING AND CIRCUITIZING SUBSTRATES HAVING OPENINGS THEREIN

Ashwinkumar C. Bhatt; Thomas P. Duffy, both of Endicott; Gerry A. Hackett, Apalachin, and Jeffrey McKeveny, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 359,491, Dec. 20, 1994, Pat. No. 5,542,175. This application Jun. 6, 1995, Ser. No. 466,081

Int. Cl.[6] H05K 1/18; 1/02

U.S. Cl. 174—260 10 Claims



1. A laminated structure comprising first, second and third substrates formed of an organic material,

said substrates having respectively first, second and third through openings therein in an aligned configuration,

said first opening being smaller than said second opening to thereby form a first step on said first substrate about the perimeter of said first opening,

said second opening being smaller than said third opening to thereby form a second step on said second substrate about the perimeter of said second opening,

a metallic ground plane laminated to and substantially covering said first substrate,

an integrated circuit chip supported by said ground plane and defined in said first opening, and

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bonding pads located on said first step and connected by circuitry located on said first substrate to said integrated circuit chip.

5,578,797

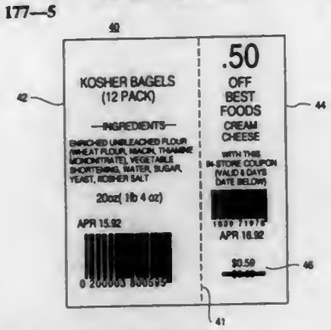
METHOD AND APPARATUS FOR PRINTING MERCHANDISING INFORMATION

Richard C. W. Hewitt, Washington; Michael J. Rawlings, Rockaway, both of N.J., and Joseph Sielski, Orange, Calif., assignors to Ishida Co., Ltd., Kurita, Japan

Division of Ser. No. 877,144, May 1, 1992, abandoned. This application Apr. 21, 1994, Ser. No. 230,711

Int. Cl.[6] G01G *23/38*

U.S. Cl. 177—5 **4 Claims**



1. A weighing scale, comprising:

a label cassette easily inserted or removed from a cavity in the weighing scale;

labels, inserted into said label cassette, each one of said labels having an attachable portion and a detachable portion, the back side of said detachable portion being sticky or non-sticky, when the back side of said detachable portion is sticky, a backing being placed on the sticky layer,

the back side of said attachable portion being sticky to attach said attachable portion to a product,

when the back side of said detachable portion has said backing, said backing not being removed from said detachable portion when said attachable portion is attached to the product; and

printing means for printing said attachable portion of said labels, to be attached to a weighed product, with product information, and printing said detachable portion of said labels with merchandising information including coupon information.

5,578,798

ON BOARD VEHICLE WEIGHING DEVICE HAVING LOAD CELLS

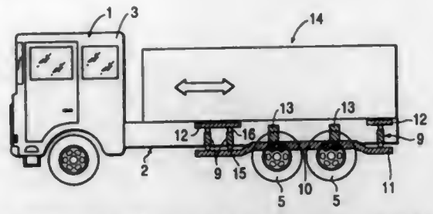
Henry Nuyts, Retie, Belgium, assignor to NV Nuyts ORB, Oud-Turnhout, Belgium

Filed Dec. 20, 1993, Ser. No. 169,664

Claims priority, application Belgium, Dec. 22, 1992, 09201128; Sep. 24, 1993, 09300998

Int. Cl.[6] G01G *19/08*

U.S. Cl. 177—136 **23 Claims**



1. A weighing device adapted for mounting to a chassis of a vehicle and for weighing a load carried by the vehicle, comprising:

at least two individual weighing frames for supporting a load to be weighed suspended from the vehicle chassis;

a plurality of connecting elements each having a flexible joint having an upper end and a lower end, wherein one of the upper and lower ends of each of the connecting elements is operatively connected to the vehicle chassis and the other of the upper and lower ends is connected to one of the weighing frames to support all of the weighing frames, each connecting element having a loading cell for measuring the force exerted to the weighing frame by the load; and

a plurality of lifting devices each operatively connected to the weighing frames, each lifting device being operable between an extended position where the load is lifted away from the vehicle chassis and a retracted position where the load rests on the vehicle chassis,

wherein weighing of the load is made while the lifting devices are in the extended position where the load is completely supported on the weighing frames supported by the connecting elements carrying the loading cells.

5,578,799

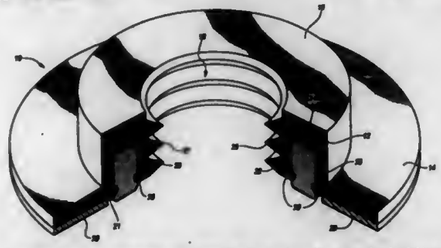
PATIENT-TO-TRANSDUCER INTERFACE DEVICE

Thomas F. Callahan, Maynard; Matthew G. Callahan, Ipswich, both of Mass., and Ann F. Bell, Kenosha, Wis., assignors to University Research Engineers & Ass., Maynard, Mass.

Filed Jun. 2, 1995, Ser. No. 458,125

Int. Cl.[6] H04R *25/00*

U.S. Cl. 181—137 **19 Claims**



1. A patient-to-transducer interface device for use in holding a transducer against the surface of a body, said interface device comprising:

a flange having first and second sides, a through hole passing through said flange from said first side to said second side, and a channel positioned outward from said through hole, said channel having an opening on said second side of said flange;

a pliable pack positioned in said channel, wherein said pliable pack is softer than said flange; and

adhesive material applied to said second side of said flange outward from said channel.

5,578,800

MEMBER FOR LOUDSPEAKER

Seiji Kijima, Osaka, Japan, assignor to Nitto Denko Corporation, Osaka, Japan

Filed Feb. 24, 1995, Ser. No. 394,257

Claims priority, application Japan, Feb. 28, 1994, 6-030237

Int. Cl.[6] H04R *7/00*

U.S. Cl. 181—171 **10 Claims**

1. A loudspeaker member comprising a viscoelastic foam obtained by vulcanization-foaming a viscous rubber mixture comprising the following components (A), (B), (C), and (D), wherein the viscoelastic foam has a tensile strength of from 0.1 to 100 kg/cm^2 and a specific gravity of from 0.07 to 1.2;

(A) a rubber,

(B) a softening agent,

(C) an organic foaming agent,

(D) a vulcanizing agent.

5,578,801

APPARATUS AND METHOD FOR SENSING SLIPPAGE OF ELEVATOR DRIVE CABLE OVER A TRACTION SHEAVE

Hanspeter Hofmann, Neukeferloh, Germany, assignor to Technischer Uberwachungs-Verein Bayern e.V., Munich, Germany

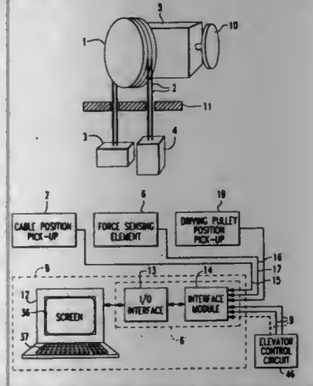
PCT No. PCT/EP90/00477, § 371 Date Aug. 1, 1991, § 102(e) Date Aug. 1, 1991, PCT Pub. No. WO90/11958, PCT Pub. Date Oct. 18, 1990

PCT Filed Mar. 23, 1990, Ser. No. 688,487

Claims priority, application Germany, Apr. 7, 1989, 8904375 U

Int. Cl.[6] B66B *5/02*

U.S. Cl. 187—393 **25 Claims**



1. An apparatus for sensing motion parameters of an elevator that has at least one cable assembly which is guided over a driving pulley and has one elevator car suspended therefrom at one end and a counterweight at an opposite end, wherein the elevator car is driven by a drive motor, which acts on the driving pulley, and a braking device connected to the driving pulley, the drive motor and braking device being controlled by a control circuit, the apparatus comprising;

an evaluation unit having a timer and a plurality of in-puts connected to the control circuit, at which control signals are present to selectively accelerate and decelerate the elevator car and the counterweight,

a first position pick-up, connected to one of the in-puts of the evaluation unit in communication with the cable assembly; and

a second position pick-up, connected to another of the plurality of in-puts of the evaluation unit, communicating with the driving pulley;

the evaluation unit further including means for determining at least acceleration values according to distances sensed by the first and second position pick-up for checking non-slippage of the at least one cable assembly relative to the driving pulley, the evaluation unit further including in-put switches for triggering evaluation processes, including the determination of distances, speeds and accelerations by signals from the control circuit.

171-489 O.G.-96-18: QL3

5,578,802

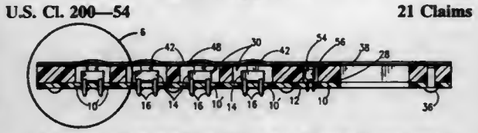
KEYPAD STRUCTURE INCLUDING SWITCHES WITH EXTERNAL METAL DOME LIKE SPRING OPERATING MEMBERS

David Palmowski, 3368 Pleasant Valley Rd., Syracuse, N.Y. 13215

Filed Jan. 9, 1995, Ser. No. 370,120

Int. Cl.[6] H01H *13/70*

U.S. Cl. 200—54 **21 Claims**



1. A manually operated, multi-character keypad comprising:

a) a printed circuit board carrying at least one continuous circuit;

b) a plurality of miniature push-button switches each having a body portion carrying an outwardly biased button moveable inwardly by pressure applied to an operating surface for switch operation;

c) means connecting said switches in electrical communication with said circuit with said body portions extending from one side of said printed circuit board in a predetermined, spaced array;

d) a unitary, continuous, spacer member mounted to said one side of said printed circuit board and having a plurality of through, first openings each surrounding one of said switch body portions;

e) a flexible layer mounted in covering relation to said spacer member on the side opposite said printed circuit board, whereby manual pressure applied to portions of said flexible layer directly overlying said openings moves the underlying switch button inwardly to operate said switch; and

f) a plurality of dome-type spring members each having a peripheral support portion and a central operating portion moveable by manual pressure from an unbiased position to a biased position and returning to said unbiased position upon removal of said pressure, and means for mounting said spring members with respect to said spacer member and said buttons for transfer of movement of said spring operating portion from said unbiased to said biased position to cause inward movement of said buttons.

5,578,803

CONTROL MODULE CONTAINING LOGIC CONTROLS FOR ELECTRIC WINDOW OPERATION IN MOTOR VEHICLES

Siv Andersson, and Helen Bogren, both of Trollhättan, Sweden, assignors to Saab Automobile Aktiebolag, Sweden

PCT No. PCT/SE94/00107, § 371 Date Jun. 21, 1995, § 102(e) Date Jun. 21, 1995, PCT Pub. No. WO94/18684, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 10, 1994, Ser. No. 464,651

Claims priority, application Sweden, Feb. 12, 1993, 9300459

Int. Cl.[6] H01H *9/00*

U.S. Cl. 200—5 R **17 Claims**

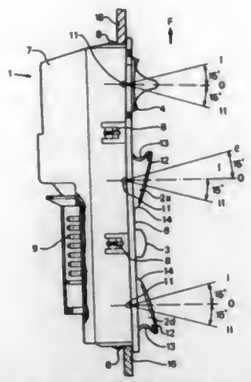
1. A control module for servo assisted window operation in a motor vehicle having at least one front and one rear openable side windows, the control module comprising:

a base plate to be positioned in the vehicle,

a respective actuator for each of the openable side windows, each actuator controlling a switching function which controls operation of the respective window, the actuators being positioned on the base plate in respective positions that are related to the respective windows which the actuators actuate;

each actuator having a respective first operating surface; for the front side window, the first operating surface sloping obliquely upward from the base plate in the forward direction relative to the base plate; for the rear side window, the first operating surface sloping obliquely upward in the rearward direction relative to the base plate;

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a second operating surface formed respectively on each actuator at least partly beneath that portion of the first operating surface of the actuator which is spaced furthest from the base plate so as to enable finger pressure to be applied on the second operating surface;

whereby finger pressure on the first operating surface depresses the respective actuator for moving the window in one direction while lifting of the second operating surface lifts the actuator for moving the window in the opposite direction.

5,578,804

METAL-ENCLOSED GAS-INSULATED SWITCHING INSTALLATION

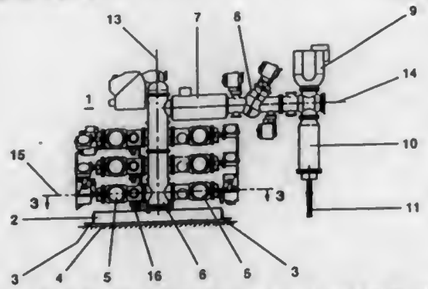
Ernst Berger, Mellingen; Franz Heil, Baden-Rütihof; Herbert Schifko, Glattbrugg, and Piero Tecchio, Oberrohrdorf, all of Switzerland, assignors to ABB Management AG, Baden, Switzerland

Filed Mar. 29, 1995, Ser. No. 412,923

Claims priority, application Switzerland, Apr. 19, 1994, 1219/94

Int. Cl.[6] H01H *33/70;* **H02B** *13/035*

U.S. Cl. 218—43 **7 Claims**



1. A metal-enclosed, gas-insulated switching installation, comprising:

at least two busbar systems, the busbar systems each lying in planes extending in a first direction;

a circuit breaker, the circuit breaker including a pole having a pole axis extending in a second direction perpendicular to the first direction, the pole being disposed between the two busbar systems, and a removable extinction chamber;

an electrically conductive connection between the two busbar systems, the electrically conductive connection extending along a connecting axis perpendicular to the second direction, the electrically conductive connection including an isolator for each busbar system, and a contact assembly electrically connecting the isolators, the contact assembly including a contact ring electrically connected to the isolators, the contact ring being concentric with the pole axis and electrically connectable and disconnectable to the extinction chamber.

5,578,805

METAL-ENCLOSED GAS-FILLED SWITCHGEAR UNITS

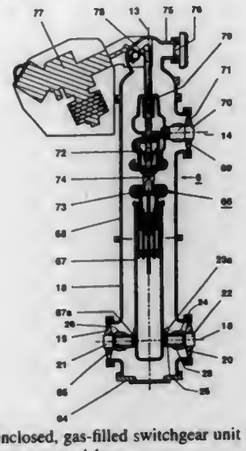
Ernst Berger, Mellingen, and Franz Heil, Baden-Rütihof, both of Switzerland, assignors to ABB Management AG, Baden, Switzerland

Filed Apr. 13, 1995, Ser. No. 421,259

Claims priority, application Germany, Jun. 13, 1994, 44 20 524.4

Int. Cl.[6] H01H *33/70;* **H02B** *13/035*

U.S. Cl. 218—43 **9 Claims**



1. A metal-enclosed, gas-filled switchgear unit including at least one busbar system, comprising:

a circuit breaker pole housing, the pole housing being in the form of a metallic enclosure and having a pole axis;

at least one upper current terminal and at least one lower current terminal, the upper current terminal and the lower current terminal each being connected to the pole housing by separate insulators, the upper current terminal and the lower current terminal having an upper electrically conductive connection arrangement and a lower electrically conductive connection arrangement, respectively;

an arcing chamber extending along the pole axis in the pole housing and in a breakable electrical path between the upper current terminal and the lower current terminal; and

the lower connection arrangement including a contact subassembly having an electrically conductive contact ring electrically connected to at least part of the arcing chamber, the contact subassembly being arranged in the interior of the pole housing and the contact ring being concentric with the pole axis.

5,578,806

COMPRESSED GAS-BLAST CIRCUIT BREAKER

Werner Hofbauer, Baden, and Joachim Stechbarth, Siglistorf, both of Switzerland, assignors to ABB Management AG, Baden, Switzerland

Filed Jul. 24, 1995, Ser. No. 506,117

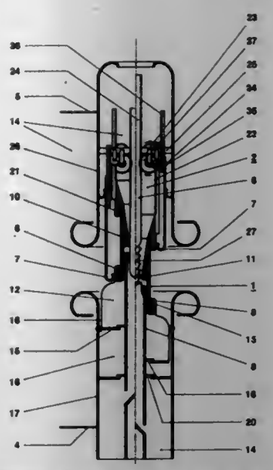
Claims priority, application Germany, Aug. 1, 1994, 44 27 163.8

Int. Cl.[6] H01H *33/42;33/915*

U.S. Cl. 218—59 **15 Claims**

1. A compressed gas-blast circuit breaker comprising:

two contact members which are movable relative to one another along an axis and each contact member having at least one arcing contact and one main current contact,



a drive to transmit moving force to a first of the two contact members,

an insulating nozzle positioned coaxially to the two contact members and mounted on a first of the two contact members, the insulating nozzle positioned for directing compressed gas during disconnection from one of a compression space, which is operated by the contact members, and a pressure space which is independent of the switching travel, into an exhaust space (14), and

a transmission device to transmit drive force from the first contact member through an insulating part to the second contact member, the transmission device having two transmission elements, a first element which acts on the arcing contact and a second element which acts on the main current contact of the second contact member,

wherein the insulating part is the insulating nozzle and wherein the insulating nozzle includes at an end facing the second contact member a first shield which coaxially surrounds the insulating nozzle and transmits force produced by the drive from the insulating nozzle to the first transmission element.

5,578,807

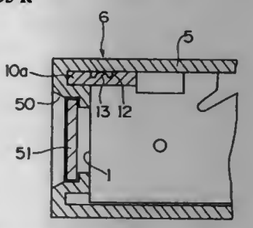
ELECTROMAGNETIC COUNTER

Shigeru Tsukakoshi, 2-3-701, Tsutsujigaoka 3-chome, Akishima-shi, Tokyo 196, Japan

Filed Aug. 8, 1994, Ser. No. 287,368

Int. Cl.[6] G01C *22/00*

U.S. Cl. 235—95 R **6 Claims**



1. An electromagnetic counter comprising:

a synthetic resin frame having a front portion,

a counter display device disposed in the frame and having character wheels located at the front portion, and a driving device for operating the character wheels,

a synthetic resin casing having a size to completely receive the frame therein, said casing having a window at one side so that the character wheels disposed in the frame are seen therethrough, and an opening at a side opposite to the window to allow the frame to enter into the casing, and

means for focusing ultrasonic waves formed at the frame near the window so that when ultrasonic waves are applied to the focusing means through the casing, the frame and casing are welded thereat to prevent removal of the frame from the casing.

5,578,808

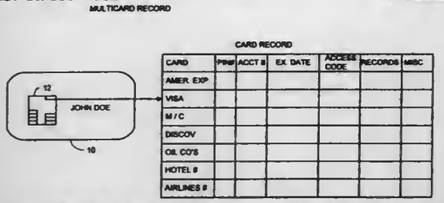
DATA CARD THAT CAN BE USED FOR TRANSACTIONS INVOLVING SEPARATE CARD ISSUERS

Douglas C. Taylor, New York, N.Y., assignor to Datamark Services, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 172,482, Dec. 22, 1993. This application Feb. 28, 1995, Ser. No. 395,575

Int. Cl.[6] G06K *5/00*

U.S. Cl. 235—380 **4 Claims**



1. A smart card for recording data relating to a card user and a plurality of card issuers and, associated with each issuer, the following fields:

an application code field indicating a type of application made available to the user by the issuer;

a PIN field identifying the user;

an access code field wherein the card issuer can have access to the fields associated with that issuer but not to fields associated with any other issuer;

an account number field;

an expiration date field; and

a miscellaneous data field provided for the issuer to record additional data to facilitate its operations with respect to the user;

wherein the fields associated with each issuer are separate from the fields associated with every other issuer.

5,578,809

CODE DATA READ APPARATUS FOR PHOTOGRAPHIC FILM

Yoshiyuki Yamaji; Yukimasa Naka, and Shigetaka Nakamura, all of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Continuation of Ser. No. 343,941, Nov. 17, 1994, abandoned. This application Mar. 21, 1996, Ser. No. 619,235

Claims priority, application Japan, Nov. 18, 1993, 5-289410

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **6 Claims**

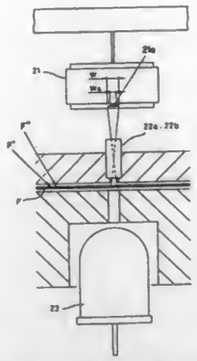
3. A code data reading apparatus for reading a bar code of bars and blanks formed on a film having a film width, said code data reading apparatus comprising:

a light emitting means for directing a beam of light toward the bar code formed on the film;

a code data detector including at least one detecting surface disposed in a path of the light emitted by said light emitting means for receiving light from said light emitting means after the light has passed through the bar code, and for producing an electric signal corresponding to an intensity of the light incident on said at least one detecting surface;

an imaging means for focusing, onto said at least one detecting surface, the light emitted by said light emitting means and passed through the bar code, so as to project onto said at least

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one detecting surface an enlarged image of the bars and blanks where a length in a film-width direction of the enlarged image of a shortest of the bars and blanks projected onto said at least one detecting surface is greater than a length in the film width direction of said at least one detecting surface, so that the intensity of light incident on said at least one detecting surface is not affected by stagger movements of the film; and

wherein said imaging means comprises two rod lenses for tracing of two tracks, respectively, across the bar code.

5,578,810

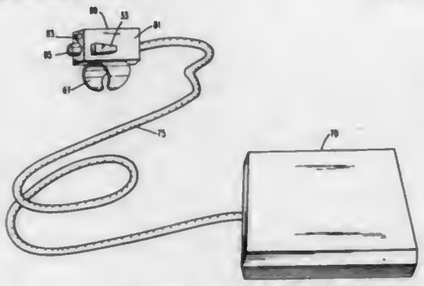
RING MOUNTED MINIATURE OPTICAL SCANNER

Simon Bard; Boris Metlitsky, both of Stony Brook; Mark Krichever, Hauppauge, and Jerome Swartz, Old Field, all of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Continuation of Ser. No. 246,382, May 20, 1994, Pat. No. 5,410,140, which is a continuation of Ser. No. 73,995, Jun. 9, 1993, abandoned, which is a continuation of Ser. No. 787,458, Nov. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 699,417, May 13, 1991, Pat. No. 5,191,197, which is a continuation-in-part of Ser. No. 193,265, May 11, 1988, Pat. No. 5,144,120. This application Apr. 3, 1995, Ser. No. 416,128

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—472 **37 Claims**



34. In a system for reading indicia having parts of different light reflectivity by directing light toward the indicia and by collecting reflected light returning from the indicia, the arrangement comprising:

a light scanner for generating a scanning light beam which scans the indicia and for producing reflected light of variable intensity reflected from said indicia; and

a ring for supporting said light scanner on a single finger of a user.

5,578,811

INFORMATION RECORDING AND/OR REPRODUCING APPARATUS PROVIDED WITH OPTICAL CARD CARRYING MECHANISM

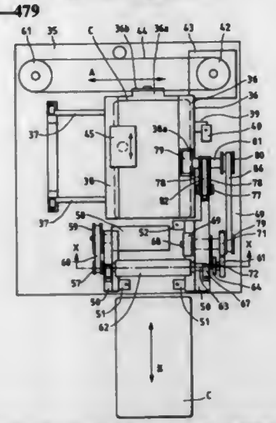
Kazunori Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1995, Ser. No. 431,567

Claims priority, application Japan, Apr. 28, 1994, 6-114607

Int. Cl.[6] G06K *13/04*

U.S. Cl. 235—479 **3 Claims**



1. An information recording/reproducing apparatus for recording and/or reproducing information on or from a card-shaped information recording medium, comprising:

a carriage on which the medium is to be mounted;

conveying means for conveying the medium onto said carriage while maintaining contact with the medium, said conveying means including a card conveying mechanism located at substantially a center position of said carriage in a direction in which the medium is conveyed;

an optical head for recording/reproducing information onto and from the card; and

moving means for moving said carriage relative to said optical head,

wherein said conveying means is free from contact with the medium after the medium has been conveyed onto said carriage.

5,578,812

CAMERA HAVING SUPERIMPOSED INFORMATION DISPLAY DEVICE

Yosuke Kusaka, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 311,896, Sep. 26, 1994, which is a continuation of Ser. No. 225,913, Apr. 11, 1994, abandoned, which is a continuation of Ser. No. 129,576, Sep. 30, 1993, abandoned, which is a continuation of Ser. No. 32,176, Mar. 15, 1993, abandoned, which is a continuation of Ser. No. 951,317, Sep. 25, 1992, abandoned, which is a continuation of Ser. No. 837,106, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 641,431, Jan. 15, 1991, abandoned. This application Nov. 17, 1995, Ser. No. 559,944

Claims priority, application Japan, Jan. 18, 1990, 2-11066

Int. Cl.[6] G01J *1/20*

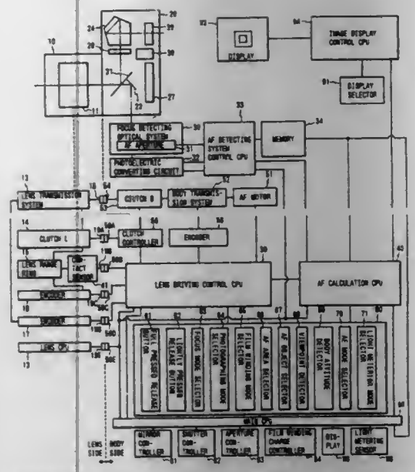
U.S. Cl. 250—201.2 **1 Claim**

1. A camera having a device for making a display within a viewfinder, comprising:

a display device operable for displaying information inside an image plane frame of the viewfinder;

a light measuring circuit having a light sensor; and

an operation control circuit for controlling to periodically alternate a displaying operation of said display device and a light measuring operation of said light sensor of said light measuring circuit in case that said light measuring circuit measures light.



5,578,813

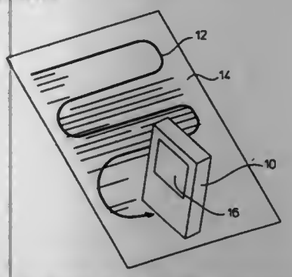
FREEHAND IMAGE SCANNING DEVICE WHICH COMPENSATES FOR NON-LINEAR MOVEMENT

Ross R. Allen, 408 Hainline Dr., Belmont, Calif. 94002; David Beard, 842 Los Robles, Palo Alto, Calif. 94306; Mark T. Smith, 726 Pico Ave., San Mateo, Calif. 94403, and Barclay J. Tullis, 1795 Guinda St., Palo Alto, Calif. 94303

Filed Mar. 2, 1995, Ser. No. 396,826

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—208.1 **22 Claims**



1. A method of forming an output image comprising the steps of:

moving a scanning device relative to an original having an image, said scanning device having an imaging means for detecting said image, moving said scanning device defining a scan path;

capturing a sequence of image data formed as said imaging means moves along said scan path;

forming navigation information representative of travel of said scanning device along said scan path, said travel including curvilinear and rotational movement; and

forming an output image from said image data, including removing image distortion artifacts arising from said curvilinear and rotational movement of said scanning device along said scan path, said removing image distortion artifacts being based upon said navigation information.

5,578,814

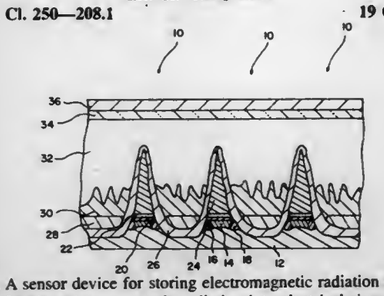
SENSOR DEVICE FOR STORING ELECTROMAGNETIC RADIATION AND FOR TRANSFORMING SUCH INTO ELECTRIC SIGNALS

Alexander A. Dadali, Bayonne, N.J., and Aleksandr M. Fomin, St. Halturina, Russian Federation, assignors to Intronix, Inc., Hackensack, N.J.

Continuation-in-part of Ser. No. 128,796, Sep. 29, 1993, Pat. No. 5,428,216. This application May 24, 1995, Ser. No. 449,307

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—208.1 **19 Claims**



1. A sensor device for storing electromagnetic radiation and for transforming electromagnetic radiation into electrical signals, said sensor device comprising:

a substrate;

a transistor formed on said substrate, said transistor having a source, a channel, a drain, a gate insulator, and a gate, said gate insulator being formed over said source, said channel, and said drain, said gate being formed over said gate insulator;

a first additional electrode formed over said gate;

a dielectric layer formed over said first additional electrode, said transistor, and said substrate;

a conducting layer formed over substantially all of said dielectric layer, said conducting layer having a first opening formed therein, the location of said first opening corresponding to the location of said first additional electrode, and hence said gate, beneath said dielectric layer;

a second additional electrode formed over substantially all of said conducting layer and said dielectric layer, said second additional electrode having a second opening formed therein, the location of said second opening corresponding to the location of said first additional electrode, and hence said gate, beneath said dielectric layer;

an active medium formed over said second additional electrode and said dielectric layer;

a transparent electrode formed over said active medium; and

a layer of luminofore formed over said transparent electrode.

5,578,815

BIAS CIRCUIT FOR MAINTAINING A CONSTANT POTENTIAL DIFFERENCE BETWEEN RESPECTIVE TERMINALS OF MORE THAN ONE AVALANCHE PHOTODIODE

Shigeki Nakase; Shigeyuki Nakamura, and Tsuyoshi Ohta, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Jul. 8, 1994, Ser. No. 272,071

Claims priority, application Japan, Jul. 9, 1993, 5-170289

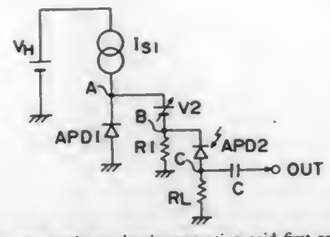
Int. Cl.[6] G01J *1/42*

U.S. Cl. 250—214 R **12 Claims**

1. A photodetecting circuit comprising:

(a) a first avalanche photodiode for detecting light, said first avalanche photodiode having a first breakdown voltage and a first cathode;

(b) a second avalanche photodiode having a second breakdown voltage and a second cathode, said second breakdown voltage being within 100±20% of said first breakdown voltage; and



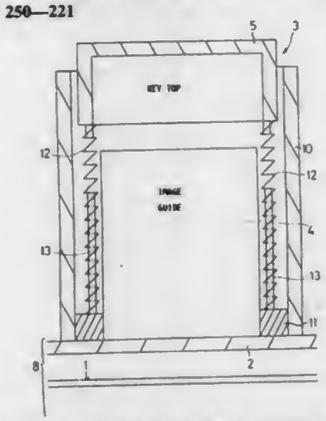
(c) a constant voltage circuit connecting said first cathode and said second cathode, wherein a potential of said second cathode is higher than a potential of said first cathode, and wherein a difference in potential between said first cathode and said second cathode is maintained constant by said constant voltage circuit.

5,578,816

DISPLAY PUSH SWITCH FOR USE WITH DISPLAY DEVICE HAVING AN IMAGE TRANSMISSION MEMBER FIXEDLY DISPOSED WITHIN A SWITCH HOUSING

Hirokazu Fukatsu, Nagoya, Japan, assignor to Tietech Corporation, Nagoya, Japan

Filed Jan. 24, 1995, Ser. No. 377,714
Claims priority, application Japan, Jan. 25, 1994, 7-058168
Int. Cl.[6] G01V *9/04*
U.S. Cl. 250—221 **8 Claims**



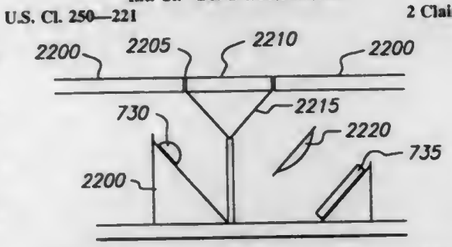
1. A display push switch adapted for mounting on a surface structure of a display device, comprising:
a switch housing having an open upper end and an open lower end;
a key top member made of substantially transparent material and disposed within said open upper end of said switch housing, said key top member being operable by an operator to be pushed into said switch housing; and
image transmission means fixedly disposed within said switch housing and having a lower end surface and an upper end surface, said lower end surface fixedly confronting the surface structure of the display device through said open lower end of said switch housing, and said upper end surface confronting said key top member and being spaced from said switch housing and said key top member to permit a stroke movement of said key top member when said key top member is pushed by the operator;
said image transmission means including a plurality of image transmission elements each having a longitudinal axis extending between said upper and lower end surfaces in a vertical direction and operable to transmit an image from said display device to said key top member, said elements being arranged in juxtaposed relationship with each other.

5,578,817

POINTING DEVICE UTILIZING A PHOTODETECTOR ARRAY AND CONTROLLED BY A HUMAN FINGER CONTACTING A PRISM

Marc Bidiville, Pully, Switzerland; Eric Raeber, Menlo Park, Calif.; Javier Arreguit, Le Mont sur Lausanne, Switzerland; Harthmuth Buczek, Marin-Epagnier, Switzerland; Floris A. Van Shaik, Chavannes, Switzerland; François Bauduin, Chézard, Switzerland, and Denis O'Keeffe, Newmarket, Ireland, assignors to Logitech, Inc., Fremont, Calif.

Division of Ser. No. 424,125, Apr. 19, 1995, which is a continuation-in-part of Ser. No. 199,982, Feb. 18, 1994, abandoned, which is a continuation of Ser. No. 956,907, Oct. 5, 1992, Pat. No. 5,288,993. This application Jun. 7, 1995, Ser. No. 485,315
Int. Cl.[6] G09G *1/00;3/00;5/08*
U.S. Cl. 250—221 **2 Claims**



1. A pointing device for controlling the position of a cursor on a visual display comprising
a prism having first and second sides and a face,
source means for illuminating, at least intermittently, a first side of the prism at an angle sufficient to cause total internal reflection off the face and out through the second side of the prism, said prism being responsive to the presence of a human finger on the face of the prism to prevent the occurrence of total internal reflection for at least a portion of the area in which the finger touches the face,
sensor means positioned relative to the second side of the prism for receiving the reflected illumination from the source means and for causing an output in response thereto, and
processing means at least intermittently responsive to the output from the sensor means for generating a cursor control output.

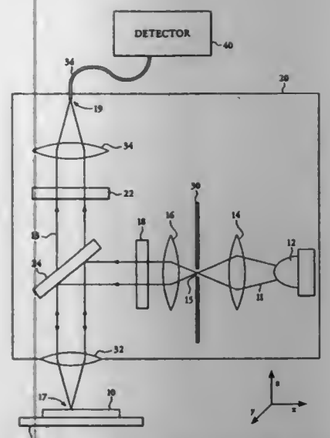
5,578,818

LED POINT SCANNING SYSTEM

Robert C. Kain, San Jose; Michael F. Miller, Mountain View, and Lars Majlof, Saratoga, all of Calif., assignors to Molecular Dynamics, Sunnyvale, Calif.

Filed May 10, 1995, Ser. No. 438,416
Int. Cl.[6] H01J *3/14;* **G01N** *21/64*
U.S. Cl. 250—234 **34 Claims**

1. An LED optical system for point scanning of a sample comprising:
(a) a movable scan head having
(i) an LED light source providing an illumination beam along a single path,
(ii) an illumination spatial filter having a pinhole aperture spaced apart from the light source,
(iii) means for focusing the illumination beam into the pinhole aperture,
(iv) means for directing the illumination beam after the illumination beam has been focused into the pinhole aperture onto a spot of the sample to cause signal radiation to be returned from the sample, and



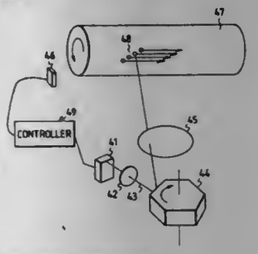
(v) means for collecting and detecting the signal radiation returned from the sample,
(b) a stage for supporting the sample, and
(c) means for moving the scan head along a first axis relative to the stage to illuminate a plurality of spots along a scan line on the sample.

5,578,819

OPTICAL RECORDER HAVING A SIGNAL SEPARATION CIRCUIT AND A FIFO MEMORY CIRCUIT

Keiji Kataoka; Susumu Saito; Shuuho Yokokawa; Satoshi Aita; Muneyoshi Akai; Shigeo Nemoto; Isao Nakajima; Hitomi Shimizu; Kunitomo Takahashi, and Youji Hirose, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1995, Ser. No. 493,556
Claims priority, application Japan, Jun. 30, 1994, 6-149347
Int. Cl.[6] H01J *3/14*
U.S. Cl. 250—235 **4 Claims**



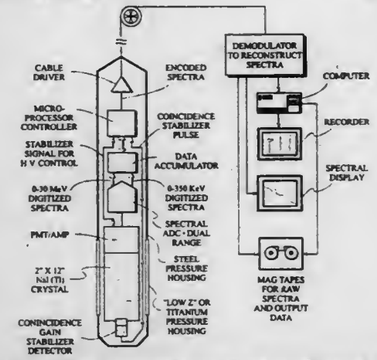
1. An optical recorder, comprising:
a photosensitive member;
means for generating a plurality of laser beams, said plurality of laser beams being formed into rows;
means for scanning said photosensitive member by said plurality of laser beams, said plurality of laser beams being arranged at an inclined angle with respect to a scanning direction;
means for detecting the respective scanning positions of said plurality of laser beams;
control means for controlling the scanning positions of said plurality of laser beams on the basis of a detection result from said detecting means;
an optical sensing signal separation circuit for separating a set of signals generated in time series order by the laser beams detected by said detecting means into signals respectively corresponding to the laser beams;
a synchronous clock generation circuit for generating synchronous clocks in response to the respective separated signals;
a first-in-first-out memory circuit element which temporarily stores data signals for effecting optical recording corresponding to each of the laser beams and outputs the data signals in the order in which the data signals were stored in synchronism with a corresponding synchronous clock; and
an OR circuit for subjecting to an OR operation each of the data signals output from said first-in-first-out memory circuit element and each of signals used for irradiating said detecting means with said laser beams.

5,578,820

METHOD FOR DETERMINING CEMENT THICKNESS IN A WELL ANNULUS

Larry L. Gadeken, and Harry D. Smith, Jr., both of Houston, Tex., assignors to Halliburton Company, Dallas, Tex.

Filed Apr. 28, 1995, Ser. No. 430,985
Int. Cl.[6] G01V *5/00;5/06*
U.S. Cl. 250—256 **9 Claims**



1. A method for determining the thickness of cement that has been placed in an annulus between a casing string and a wellbore in a formation, comprising the steps of:
(a) logging the amount of radioactivity emitted by a naturally occurring radioactive material in the formation prior to emplacement of the casing and cement to produce a first log;
(b) including in the cement an amount of the same radioactive material;
(c) placing the casing and cement in the wellbore;
(d) logging the amount of radioactivity emitted by said radioactive material and transmitted through the casing to produce a second log; and
(e) calculating the amount of cement in the annulus by determining the amount of said radioactive material in the annulus using information from said first and second logs.

5,578,821

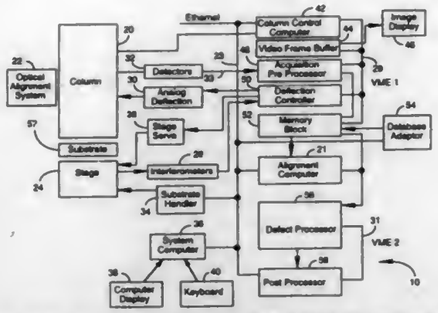
ELECTRON BEAM INSPECTION SYSTEM AND METHOD

Dan Meisberger, San Jose; Alan D. Brodie, Palo Alto; Anil A. Desai; Dennis G. Emge, both of San Jose; Zhong-Wei Chen, Palo Alto; Richard Simmons, Los Altos; Dave E. A. Smith, San Mateo; April Dutta, Milpitas; J. Kirkwood H. Rough, San Jose; Leslie A. Honfi, Sunnyvale; Henry Pearce-Percy, Los Gatos, and John McMurtry, Menlo Park, all of Calif., assignors to KLA Instruments Corporation, San Jose, Calif.

Continuation of Ser. No. 889,460, May 27, 1992, abandoned. This application Jan. 11, 1995, Ser. No. 371,458
Int. Cl.[6] H01J *37/00*
U.S. Cl. 250—310 **51 Claims**

1. An automatic system for the automatic inspection of a substantially non-conductive substrate comprising:
a field emission electron source to provide an electron beam;

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a charged particle beam column to deliver and scan said electron beam from said field emission electron source on a surface of said substantially non-conductive substrate;

at least one charged particle detector to detect at least one of three types of charged particles emanating from the top and bottom surfaces of said substantially non-conductive substrate, namely, secondary charged particles, back-scattered charged particles and transmitted charged particles;

a continuously moving x-y stage disposed to receive said substantially non-conductive substrate and to provide at least one degree of motion to said substantially non-conductive substrate while the substantially non-conductive substrate is being scanned by the charged particle beam; and

a multi-processor image defect computer coupled to said at least one charged particle detector to identify defects on said substrate.

5,578,822

PARTICLE-OPTICAL APPARATUS COMPRISING A DETECTOR FOR SECONDARY ELECTRONS

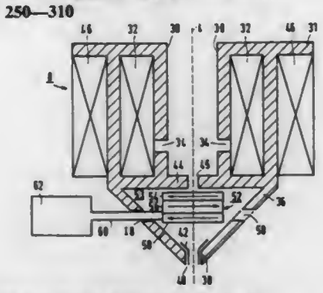
Karel D. Van Der Mast, Eindhoven; Pieter Krult, Delft; Kars Z. Troost, and Alexander Henstra, both of Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 10, 1995, Ser. No. 419,493

Claims priority, application European Pat. Off., Apr. 12, 1994, 94200983

Int. Cl.[6] H01J *37/14;37/244*

U.S. Cl. 250—310 **7 Claims**



1. A particle-optical apparatus comprising:

a particle source for producing a primary beam of electrically charged particles which propagate along an optical axis of the apparatus;

means for deflecting the beam to cause it to scan a specimen to be examined;

focusing means for bringing the beam into focus in the vicinity of said specimen, said focusing means being a combination of a gap lens and a monopole lens having lens fields which are shifted relative to one another along said optical axis;

a detection device for detecting electrically charged particles originating from the specimen, at least a part of said detection device being situated within said focusing means;

a screening plate between the gap lens and the monopole lens for establishing a substantially field-free space between the lens fields thereof; and

said part of the detection device which is situated within said focusing means is also situated within said field-free space.

5,578,823

TRANSMISSION ELECTRON MICROSCOPE AND METHOD OF OBSERVING ELEMENT DISTRIBUTION BY USING THE SAME

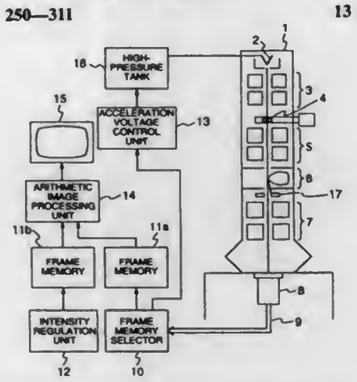
Yoshifumi Taniguchi, Ibaraki-ken, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 12, 1995, Ser. No. 571,060

Claims priority, application Japan, Dec. 16, 1994, 6-313607

Int. Cl.[6] H01J *37/153*

U.S. Cl. 250—311 **13 Claims**



1. A transmission electron microscope system, comprising:

an electron gun;

an irradiating electron lens system for irradiating a specimen with an electron beam emitted from said electron gun;

an electron image forming electron lens system for forming an image of electrons having passed through said specimen;

an energy filter for spectrally filtering electron beams produced after transmission through said specimen in dependence on energies thereof;

means for selecting only the electron beam having specific energy from the electron beams resulting from said spectral filtering;

image pickup means for taking an image formed by said selected electron beam;

a plurality of frame memories for storing the selected image picked up by said image pickup means;

frame memory selecting means for selecting periodically said frame memories for storing in the selected frame memories the images picked up by said image pickup means, respectively;

means for changing an acceleration voltage for said electron beam in synchronism with selection of the frame memory by said frame memory selecting means; and

means for comparing and arithmetically processing the images stored in two of said frame memories on a pixel-by-pixel basis to thereby output a corresponding picture signal.

5,578,824

IMAGE FORMING SYSTEM

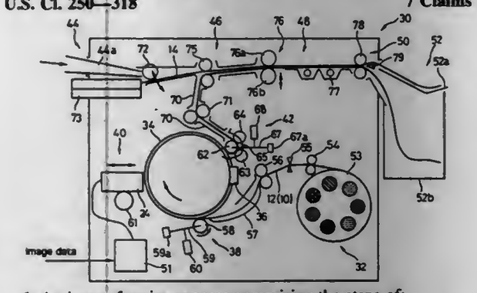
Hideyuki Koguchi, Kanagawa, and Yoshiharu Sasaki, Shizuoka, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 21, 1995, Ser. No. 427,102

Claims priority, application Japan, Apr. 22, 1994, 6-084800

Int. Cl.[6] G03C *5/16*

U.S. Cl. 250—318 **7 Claims**



1. An image forming process comprising the steps of:

superposing a donor sheet having at least a thin image-forming film on a support upon an image-receiving material having an image-receiving layer provided on a support either directly or with at least one cushion layer interposed so that said thin image-forming film faces said image-receiving layer;

applying thermal energy imagewise onto said donor sheet so that the adhesion of said thin image-forming film to said image-receiving layer is strengthened in the energy applied areas; and

peeling said donor sheet from said image-receiving material so that said thin image-forming film is transferred onto said image-receiving layer in correspondence to said imagewise application of energy,

whereby an image is formed on said image-receiving material;

wherein prior to the step of superposing, selecting said donor sheet from a plurality of donor sheets, with each of said donor sheets having a thin image-forming film so that said plurality of donor sheets in turn provides a plurality of thin image-forming films containing different substances to be used in combination with said image-receiving material which is selected from a plurality of different image-receiving materials, thereby insuring that at least two operations selected from among color image formation, mask image formation, plate-making and filter preparation are possible.

5,578,825

INFRARED RAY SENSOR DRIVING CIRCUIT

Sung M. Cho, Kyungki-Do, and Jun R. Choi, Seoul, both of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 16, 1994, Ser. No. 357,879

Claims priority, application Rep. of Korea, Dec. 18, 1993, 28512/1993

Int. Cl.[6] G01J *5/10*

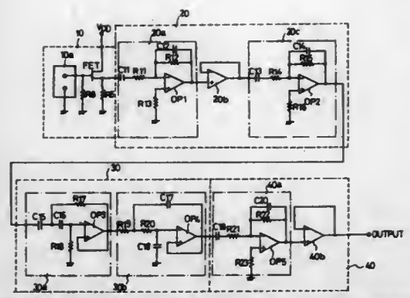
U.S. Cl. 250—338.1 **9 Claims**

1. An infrared ray sensor driving circuit for driving signals detected by an infrared ray sensor, comprising:

impedance matching means for converting a high impedance of signals detected by the infrared ray sensor to a low impedance signal;

first amplifying means for amplifying a signal outputted from the impedance matching means by a first predetermined gain, buffering the amplified signal to decrease impedance thereof, and amplifying the buffered signal by a second predetermined gain;

filtering means for filtering the signal outputted from the first amplifying means to pass frequencies of a predetermined band width; and



second amplifying means for amplifying the signal outputted from the filtering means by a third predetermined gain.

5,578,826

THERMAL ISOLATION FOR HYBRID THERMAL DETECTORS

William K. Walker, Plano; John P. Long, Garland; Robert A. Owen, Rowlett; Bert T. Runnels, Garland, and Gail D. Shelton, Mesquite, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 268,365, Jun. 30, 1994. This application Jun. 6, 1995, Ser. No. 468,159

Int. Cl.[6] G01J *5/10*

U.S. Cl. 250—338.3 **8 Claims**



1. A method of fabricating a hybrid thermal detector, comprising the steps of:

forming a focal plane array from at least three thermal sensors which provide a sensor signal output representative of thermal radiation incident to the focal plane array, each thermal sensor formed in part from an associated pyroelectric element;

providing a substrate with at least three signal contact pads for receiving the sensor signal output from the respective thermal sensors and at least three bias contact pads for applying bias inputs to the respective thermal sensors;

forming at least three pairs of mesa-type formations, wherein each pair has a first mesa-type formation projecting from the substrate adjacent to one of the signal contact pads and a second mesa-type formation projecting from the substrate adjacent to one of the bias contact pads;

forming at least three pairs of mesa strip conductors, each conductor formed from a single film of thermally insulating material, each mesa strip conductor extending from the top of an associated mesa-type formation to a corresponding contact pad; and

coupling the focal plane array with the substrate using the mesa strip conductors.

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5,578,827
PROCESS FOR MONITORING POLYCONDENSATION OR POLYADDITION REACTIONS

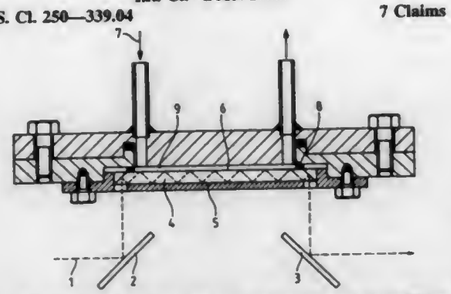
Udo Wolf, Kempen, and Manfred Schreckenberg, Krefeld, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 19, 1995, Ser. No. 504,381

Claims priority, application Germany, Jul. 29, 1994, 44 26 944.7

Int. Cl.[6] G01N *21/35*

U.S. Cl. 250—339.04 **7 Claims**



1. In a process for monitoring polycondensation or polyaddition reactions by measuring the OH, NH or NCO value or acid value of participating reactants by means of infra-red ATR spectroscopy, the improvement which comprises measuring the temperature-dependent IR absorption of the OH, NH or NCO value or acid value of a sample at at least one wavenumber, measuring the temperature-dependent self-absorption of an ATR measuring crystal, comparing the latter with a temperature/absorption calibration value of the measuring crystal, and using the comparison to determine the sample temperature and to correct the temperature-dependence of the sample absorption spectra by means of the determined sample temperature.

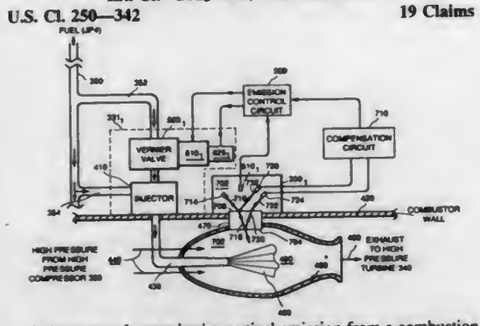
5,578,828
FLAME SENSOR WINDOW COATING COMPENSATION

Dale M. Brown, Schenectady, and Gerald J. Michon, Waterford, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 15, 1994, Ser. No. 339,845

Int. Cl.[6] G01J *1/42;5/10;* **F02C** *9/28*

U.S. Cl. 250—342 **19 Claims**



1. Apparatus for monitoring optical emission from a combustion flame within a gas turbine combustor through an optical window in a wall of the combustor separating combustion and non-combustion side regions, said window having a combustion side surface facing the combustion side region and defining a combustion side interface with the combustion side region, and said window having a non-combustion side surface facing the non-combustion side region and defining a non-combustion side interface with the non-combustion side region, said combustion side surface being susceptible to becoming coated with deposits during operation of the combustor thus effectively degrading transmission of optical emission from the combustion flame through said window, said apparatus comprising:

a primary detector located within the non-combustion side region for detecting intensity of optical emission from the combustion flame transmitted through both the combustion and non-combustion side surfaces of said window;

an optical signal source located within the non-combustion side region for directing illumination through the non-combustion side interface into said window; and

a compensation detector positioned within the non-combustion side region for responding to intensity of any signal source illumination internally reflected at the combustion side interface and transmitted back through the non-combustion side interface to produce a window coating compensation signal as an indicator of coating thickness on said combustion side surface.

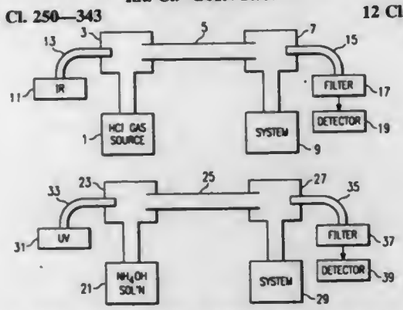
5,578,829
ON-LINE MONITOR FOR MOISTURE CONTAMINATION IN HCL GAS AND COPPER CONTAMINATION IN NH_4OH SOLUTIONS

Robert T. Talasek, Plano, and Jeremiah D. Hogan, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 23, 1994, Ser. No. 247,441

Int. Cl.[6] G01N *21/17*

U.S. Cl. 250—343 **12 Claims**



1. A method of monitoring a material flow for a contaminant therein comprising the steps of:

(a) providing a non-recirculating flow path, operable to supply a processing material to a processing station;

(b) selecting light having a wavelength or wavelength range that is selectively highly absorbed by one of the material and a material contaminant;

(c) passing through a portion of said flow path, while the material is flowing through the flow path to the processing station, a light beam comprised of said selected wavelength or wavelength range;

(d) filtering said light beam following its passage through said flow path to remove undesired wavelengths; and

(e) providing an indication of material contamination from said filtered light beam.

5,578,830
NEUTRON DOSE EQUIVALENT METER

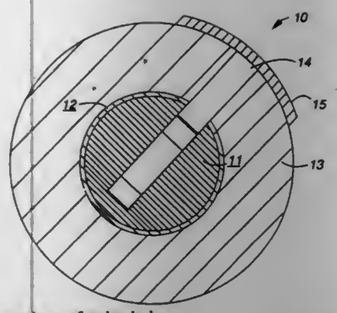
Richard H. Olsher; Hsiao-Hua Hsu; William H. Casson; Dennis G. Vasilik, all of Los Alamos, N.M.; Jeffrey H. Kleck, Menlo Park, and Anthony Beverding, Foster City, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed May 31, 1995, Ser. No. 456,271

Int. Cl.[6] G01T *3/00*

U.S. Cl. 250—390.03 **9 Claims**

1. A neutron dose equivalent detector for measuring neutron dose equivalents comprising:



an inner sphere of polyethylene;

a middle shell overlying said inner sphere, the middle shell comprising organosiloxane loaded with boron;

an outer shell overlying said middle shell, said outer shell comprising polyethylene loaded with tungsten;

wherein said neutron dose equivalent detector defines a channel through said outer shell, said middle shell, and said inner sphere for accepting a neutron counter tube;

a neutron counter tube located in said channel; and

wherein said neutron dose equivalent detector defines two hemispheres mated together in a tongue and groove arrangement.

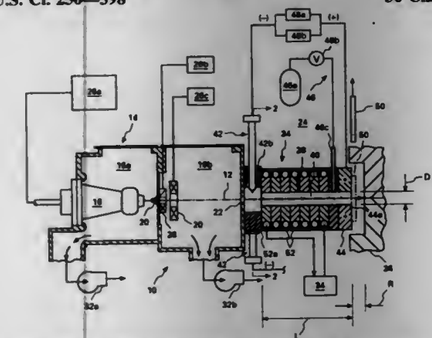
5,578,831
METHOD AND APPARATUS FOR CHARGED PARTICLE PROPAGATION

Ady Hershcovitch, Mount Sinai, N.Y., assignor to Associated Universities, Inc., Washington, D.C.

Filed Mar. 23, 1995, Ser. No. 409,148

Int. Cl.[6] H01J *37/317*

U.S. Cl. 250—398 **30 Claims**



1. A charged particle propagating apparatus **10** comprising:

a generator **14** including a chamber **16***a,b* maintainable under vacuum with a gun **18** therein for discharging a beam **12**, **12***b* of charged particles from within said vacuum chamber **16***a,b* and out of said vacuum chamber **16***a,b* through a beam exit **22** disposed in a wall of said vacuum chamber **16***b;*

a higher pressure region **24** adjoining said vacuum chamber wall at said beam exit **22** maintainable at a pressure greater than said vacuum in said vacuum chamber **16***a,b;* and

a plasma interface **34** disposed at said beam exit **22** and including a channel **38** for bounding a plasma **40** maintainable between a cathode **42** and an anode **44** disposed at opposite ends thereof, said plasma channel **38** being aligned with said beam exit **22** for propagating said beam **12** from said vacuum chamber **16***a,b*, through said plasma **40**, and into said higher pressure region **24**, and said plasma **40** being effective for pumping down said beam exit **22** for preventing pressure increase in said vacuum chamber **16***b* due to flow communication with said higher pressure region **24**.

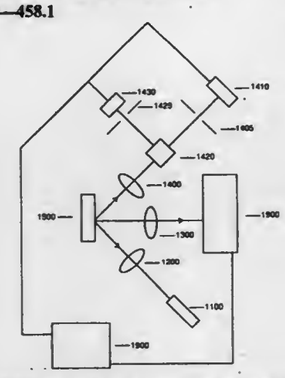
5,578,832
METHOD AND APPARATUS FOR IMAGING A SAMPLE ON A DEVICE

Mark Trulson, Santa Clara; David Stern, Mountain View; Peter Fiekowsky, Los Altos; Richard Rava, Palo Alto; Ian Walton, Menlo Park, and Stephen P. A. Fodor, Palo Alto, all of Calif., assignors to Affymetrix, Inc., Santa Clara, Calif.

Filed Sep. 2, 1994, Ser. No. 301,051

Int. Cl.[6] G01N *21/63*

U.S. Cl. 250—458.1 **22 Claims**



1. An apparatus for imaging a sample located on a support, said apparatus comprising:

a body for immobilizing said support, said support comprising at least a first surface having said sample thereon;

an electromagnetic radiation source for generating excitation radiation having a first wavelength;

excitation optics for transforming a geometry of said excitation radiation to an excitation line, said excitation line having a focal plane, and directing said excitation line at said sample for exciting a plurality of regions thereon, said excitation line causing a labeled material on said sample to emit a response radiation, said response radiation having a second wavelength, said first wavelength being different from said second wavelength;

collection optics for collecting said response radiation from said plurality of regions;

a detector for sensing said response radiation received by said collection optics, said detector generating a signal proportional to the amount of radiation sensed thereon, said signal representing an image associated with said plurality of regions from said sample;

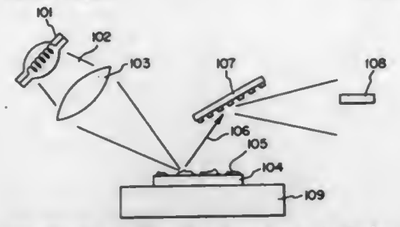
a translator for allowing a subsequent plurality of regions on said sample to be excited;

a processor for processing and storing said signal so as to generate a 2-dimensional image of said sample;

a mirror for directing said excitation radiation to excite said plurality of regions at a non-zero incident angle such that said response radiation and said excitation line reflected from said support are decoupled from each other; and

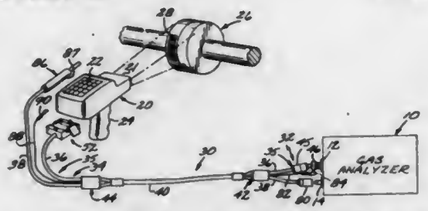
a focuser for automatically focusing said sample in said focal plane of said excitation line, said focuser comprising first focusing optics for receiving said reflected excitation line and focusing said reflected excitation line to a first spot, a first slit located such that said first spot traverses said first slit when said translator moves said support in a direction relative to said excitation line, said first spot located at substantially a center of said first slit when said support is substantially in said focal plane, and a first radiation detector located behind said first slit for generating a signal proportional to an amount of radiation detected, said amount of radiation being greatest when said support is located in said focal plane.

5,578,833
ANALYZER
Tadahiro Ohmi, 1-17-301, Komegabukuro 2-chome, Aoba-ku, Sendai-shi, Miyagi-ken 980, and Koji Kotani, Miyagi-ken, both of Japan, assignors to Tadahiro Ohmi, Sendai, Japan
PCT No. PCT/JP92/01265, § 371 Date Apr. 25, 1994, § 102(e) Date Apr. 25, 1994, PCT Pub. No. WO93/07470, PCT Pub. Date Apr. 15, 1993
PCT Filed Oct. 1, 1992, Ser. No. 211,381
Claims priority, application Japan, Oct. 1, 1991, 3-280417
Int. Cl.[6] G01N 21/64
U.S. Cl. 250—461.1 19 Claims



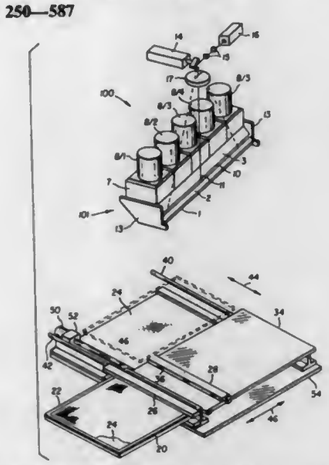
1. An analyzer for analyzing impurities on the surface of a sample, said analyzer comprising:
a stage for retaining said sample;
a light source for emitting ultraviolet rays;
a means for collecting ultraviolet rays emitted by said light source, and for applying the rays to said surface of said sample; and
a means for detecting light emitted by said impurities on said surface of said sample to which said ultraviolet rays were applied, and for determining the wavelength distribution of the detected light.

5,578,834
ELECTRICAL/OPTICAL INTERFACE COUPLER
Rex Trobridge, Costa Mesa, Calif., assignor to Tracker Technologies, Inc., Long Beach, Calif.
Filed Jun. 21, 1994, Ser. No. 263,380
Int. Cl.[6] G02B 27/00
U.S. Cl. 250—551 24 Claims



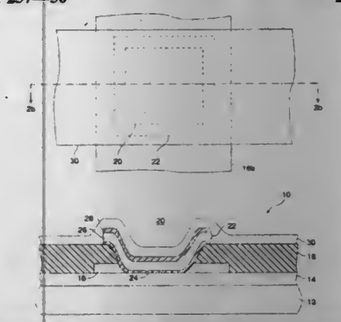
1. A removable coupler inter-connectable between an electrical interface of an analog signal generating device and an optical interface of an optical signal receiving device and comprising:
an elongated flexible cable having electrical and optical ends and including an electrical conductor housed therein and leading from said electrical end;
an electrical connector attached to said cable at said electrical end for being releasably connected to said analog signal generating device;
an optical interface housing attached to said cable at said optical end, said housing including a releasable connector for releasably connecting said housing to said optical signal receiving device, and a circuit for receiving an analog signal generated from said analog signal generating device and converting said analog signal to a digital signal; and
an optical emitter mounted in said optical interface housing and electrically connected to said circuit and responsive to said digital signal from said circuit to generate a corresponding optical signal for transmission to said optical signal receiving device.

5,578,835
STORAGE PHOSPHOR READER CALIBRATION TECHNIQUE
Michael K. Rogers, Mendon; Robert W. Apps, Rochester, and Barry H. Keys, Batavia, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 17, 1995, Ser. No. 560,146
Int. Cl.[6] G01N 23/04
U.S. Cl. 250—587 7 Claims



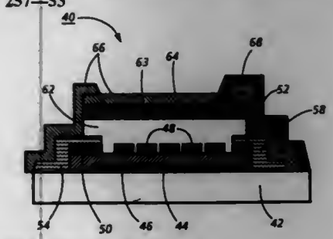
1. In a storage phosphor reader including a source of a beam of stimulating light, an oscillating mirror for repetitively scanning said beam of stimulating light in a line scan direction across a storage phosphor moved in a page scanning direction past said beam of light, and a plurality of photodetectors arrayed in a line scanning direction for converting light emitted by a scanned storage phosphor into an electrical image signal, the method of calibrating said storage phosphor reader comprising the steps of:
moving a storage phosphor which has been exposed to a uniform field of x-ray radiation in a page scan direction past said line scanning beam of stimulating light;
measuring the signal produced by said plurality of photodetectors to determine the leading edge of the storage phosphor as taken in the page scan direction;
while overscanning the storage phosphor in a line scan direction, measuring the signal produced by said plurality of photodetectors to determine the front and rear edges of said storage phosphor and from said measurements, setting the start and end points of the oscillation of said mirror so that the traverse of said stimulating light on said storage phosphor begins at said front edge and ends at said rear edge;
thereafter, measuring the signal produced by each of said plurality of photodetectors to determine whether each is operating;
adjusting the signal channel of each of said plurality of photodetectors so that the signal produced by said plurality of photodetectors is substantially uniform across a line scan; and
determining a collector profile correction signal to be added to each line scan of a storage phosphor read by said reader.

5,578,836
ELECTRICALLY PROGRAMMABLE ANTIFUSE ELEMENT
John D. Husher, Los Altos Hills, and Abdul R. Forouhi, San Jose, both of Calif., assignors to Actel Corporation, Sunnyvale, Calif.
Continuation of Ser. No. 790,366, Nov. 12, 1991, Pat. No. 5,404,029, which is a continuation-in-part of Ser. No. 604,779, Oct. 26, 1990, Pat. No. 5,181,096, which is a continuation-in-part of Ser. No. 508,306, Apr. 12, 1990, Pat. No. 5,070,384.
This application Nov. 14, 1994, Ser. No. 339,060
Int. Cl.[6] H01L 23/48;29/46;27/02;29/62
U.S. Cl. 257—50 28 Claims



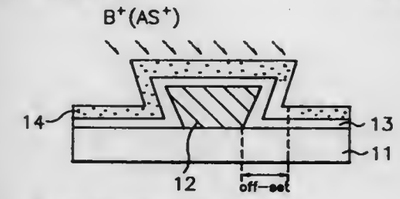
1. A semiconductor device disposed on a semiconductor substrate including a plurality of electrically programmable antifuse elements, each of said antifuse elements disposed over an insulating layer over said substrate and comprising:
a lower electrode comprising a layer chosen from the group of AlSi and AlSiCu;
a field dielectric layer disposed over said lower electrode;
an antifuse aperture extending completely through said field dielectric and said lower electrode;
an antifuse material disposed in said antifuse aperture, said antifuse material comprising a multilayer structure including at least a layer of silicon nitride and a layer of amorphous silicon; and
an upper electrode disposed above said field dielectric layer and said antifuse material.

5,578,837
INTERGRATING HYPERACUITY SENSORS AND ARRAYS THEREOF
Warren B. Jackson, San Francisco; David K. Biegelsen, Portola Valley, and Richard L. Weisfield, Los Altos, all of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 3, 1995, Ser. No. 368,114
Int. Cl.[6] H01L 29/04;31/036;31/0376;31/20
U.S. Cl. 257—53 7 Claims



1. A sensor element comprised of:
a plurality of conductive storage nodes;
a plurality of conductive collection electrodes;
a first semiconductive material layer to form low resistance contacts with said plurality of storage nodes and with said plurality of collection electrodes;
a second semiconductive material layer adjacent said first semiconductive layer and wherein said first semiconductive material layer, said second semiconductive material layer, and said storage nodes are sensitive to illumination; and
a gate electrode proximate said first semiconductive layer;
wherein a first voltage applied to said gate electrode causes said first semiconductive material layer to have a first resistance between said plurality of storage nodes and said plurality of collection electrodes such that illumination radiated onto said second semiconductive material layer induces charges on said plurality of storage nodes, and wherein a second voltage applied to said gate electrode causes said first semiconductive material layer to have a second resistance lower than said first resistance between said plurality of storage nodes and said plurality of collection electrodes such that charges on said plurality of storage nodes can flow to said plurality of collection electrodes.

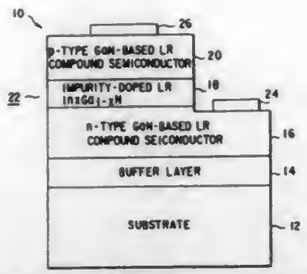
5,578,838
STRUCTURE OF AND FABRICATING METHOD FOR A THIN FILM TRANSISTOR
Seok W. Cho, Chungcheongbuk-do, and Jong M. Choi, Seoul, both of Rep. of Korea, assignors to LG Semicon Co., Ltd., Cheongju, Rep. of Korea
Filed May 12, 1995, Ser. No. 440,027
Claims priority, application Rep. of Korea, May 12, 1994, 1994-10410
Int. Cl.[6] H01L 23/48;29/40;29/76;31/036
U.S. Cl. 257—66 9 Claims



1. A thin film transistor comprising:
an insulation substrate;
a gate electrode formed on the insulation substrate, wherein the gate electrode has first and second sides, wherein the first side has a negative slope;
an insulation film side wall formed at the second side of the gate electrode;
a gate insulation film formed on the insulation substrate, the gate electrode and the side wall;
a semiconductor layer formed on the gate insulation film;
a channel region formed within the semiconductor layer at the first side of the gate electrode; and
impurity diffusion regions formed within the semiconductor layer adjacent to the channel region.

5,578,839
LIGHT-EMITTING GALLIUM NITRIDE-BASED COMPOUND SEMICONDUCTOR DEVICE
Shuji Nakamura; Takashi Mukai, and Naruhito Iwasa, all of Anan, Japan, assignors to Nichia Chemical Industries, Ltd., Japan
Filed Nov. 17, 1993, Ser. No. 153,153
Claims priority, application Japan, Nov. 20, 1992, 4-335556; Jan. 8, 1993, 5-018122; Jan. 8, 1993, 5-018123; Mar. 5, 1993, 5-070873; Mar. 5, 1993, 5-070874; May 17, 1993, 5-114542; May 17, 1993, 5-114543; May 17, 1993, 5-114544
Int. Cl.[6] H01L 33/00
U.S. Cl. 257—96 39 Claims

1. A light-emitting gallium nitride-based compound semiconductor device having a double-heterostructure comprising:



a light-emitting layer having first and second major surfaces and formed of a low-resistivity $In_xGa_{1-x}N$, where $0<x<1$ ductor doped with an impurity;

a first clad layer joined to said first major surface of said light-emitting layer and formed of an n-type gallium nitride-based compound semiconductor having a composition different from that of said compound semiconductor of said light-emitting layer; and

a second clad layer joined to said second major surface of said light-emitting layer and formed of a low-resistivity, p-type gallium nitride-based compound semiconductor having a composition different from that of said compound semiconductor of said light emining layer;

wherein said compound semiconductor of said light-emitting layer is of the n-type and is doped with a p-type impurity.

5,578,840

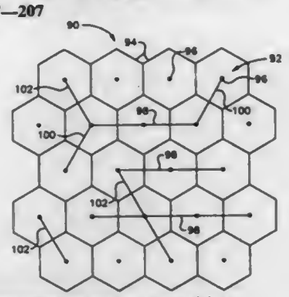
MICROELECTRONIC INTEGRATED CIRCUIT STRUCTURE AND METHOD USING THREE DIRECTIONAL INTERCONNECT ROUTING BASED ON HEXAGONAL GEOMETRY

Ranko Scepanovic; James S. Koford, both of San Jose, Calif.; Valeriy B. Kudryavstev, Moscow, Russian Federation; Alexander E. Andreev, Moskovskaja, Russian Federation; Stanislav V. Aleshin, and Alexander S. Podkolzin, both of Moscow, Russian Federation, assignors to LIS Logic Corporation, Milpitas, Calif.

Filed Nov. 2, 1994, Ser. No. 333,367

Int. Cl.[6] H01L *27/10;27/118*

U.S. Cl. 257—207 **9 Claims**



1. A microelectronic structure, comprising:

a substrate;

a plurality of microelectronic cells formed on the substrate, each cell including at least one serrated edge defined by edges of a plurality of closely packed hexagons superimposed on the substrate, each cell comprising an interconnection terminal disposed at a center of one of said hexagons; and

a plurality of first and second electrical conductors that extend in first and second directions for interconnecting selected terminals in a predetermined manner respectively; in which

the first and second conductors pass through said centers of said hexagons and extend perpendicular to edges of said hexagons.

5,578,841

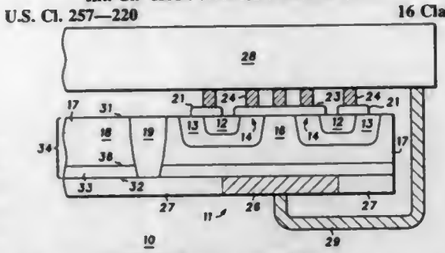
VERTICAL MOSFET DEVICE HAVING FRONTSIDE AND BACKSIDE CONTACTS

Barbara Vasquez, Austin, Tex.; Irenee M. Pages, Tolosane, France, and E. James Prendergast, Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 18, 1995, Ser. No. 573,979

Int. Cl.[6] H01L *27/148;29/768;29/80;23/48*

U.S. Cl. 257—220 **16 Claims**



1. A vertical MOSFET device, comprising:

a semiconductor substrate with a first side and a second side opposite the first side;

an epitaxial layer over the first side, wherein the epitaxial layer has a source region, a drain region, and a channel region which couples the source region to the drain region, wherein the semiconductor substrate and the epitaxial layer have a combined thickness of approximately 20–100 microns;

a source electrode electrically coupled to the source region, the source electrode located over the first side of the semiconductor substrate;

a gate electrode over the channel region, the gate electrode located over the first side of the semiconductor substrate;

a drain electrode coupled to the second side of the semiconductor substrate;

flip chip bumps over the source electrode and the gate electrode; and

an assembly substrate electrically coupled to the flip chip bumps.

5,578,842

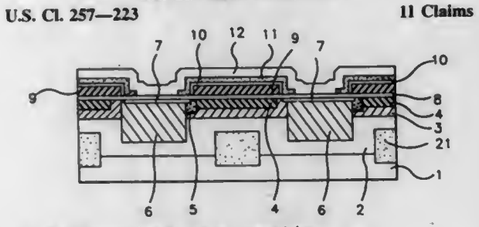
CHARGE COUPLED DEVICE IMAGE SENSOR

Uva Shinji, Kyungki-do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 113,598, Aug. 27, 1993, abandoned. This application Mar. 15, 1995, Ser. No. 405,375

Int. Cl.[6] H01L *29/78;27/14*

U.S. Cl. 257—223 **11 Claims**



1. A solid state image sensor, comprising:

a semiconductor substrate;

a plurality of photodiodes for photoelectric conversion; and

a plurality of charge coupled devices (CCDs) for signal charge transmission and disposed in CCD channel regions;

and having a vertical overflow drain structure;

wherein the improvement comprises:

a plurality of first wells;

each said first well having an island shape, enclosing a corresponding said photodiode, and being spaced from one another in all directions;

said first wells being disposed in a well layer; and

a plurality of second wells covering said CCD channel regions and having a depth less than that of said first well layer;

each of said second wells having a conductivity opposed to that of said substrate, and serving as a separating zone for separating said CCD channel regions from said substrate on at least a pixel region; and

a plurality of buried layers which are formed under said second wells and separated from said second wells.

5,578,843

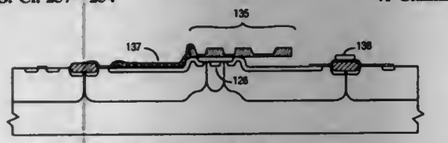
SEMICONDUCTOR SENSOR WITH A FUSION BONDED FLEXIBLE STRUCTURE

Raffi M. Garabedian, San Leandro; M. Salleh Ismail, Newark, and Gary J. Pashby, San Jose, all of Calif., assignors to Kavlico Corporation, Moorpark, Calif.

Filed Oct. 6, 1994, Ser. No. 318,918

Int. Cl.[6] H01L *27/20;29/84*

U.S. Cl. 257—254 **41 Claims**



1. A semiconductor device comprising:

a semiconductor substrate having a mesa on a first surface, wherein the mesa is surrounded by a lower plane region of the first surface and has a top surface which is elevated relative to the lower plane region, the mesa having a depression formed in its top surface;

a flexible membrane bonded to the top surface of the mesa and suspended over the depression; and

an active region formed in a portion of the substrate underlying the depression and under the flexible membrane.

5,578,844

SEMICONDUCTOR ELEMENT AND PROCESS FOR PRODUCTION FOR THE SAME

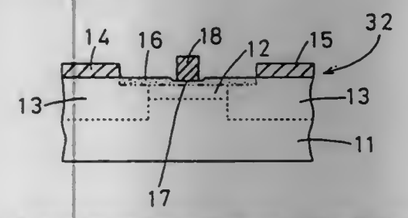
Takashi Marukawa, and Hiroyuki Nakano, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 301,961, Sep. 7, 1994, abandoned. This application Feb. 27, 1996, Ser. No. 607,817

Claims priority, application Japan, Sep. 7, 1993, 5-222555; Jul. 28, 1994, 6-197888

Int. Cl.[6] H01L *29/80;31/112*

U.S. Cl. 257—280 **9 Claims**



1. A semiconductor element comprising a Schottky electrode which forms a Schottky junction with an active layer formed on a compound semiconductor substrate characterized in that

a modified layer is formed by plasma treatment in at least a portion of a region of the active layer, in which region the Schottky electrode is formed, wherein the modified layer has a higher resistance than that of the active layer and said active layer and modified layer have substantially a same impurity concentration.

5,578,845

DIELECTRIC THIN FILM DEVICE WITH LEAD ERBIUM ZIRCONATE TITANATE

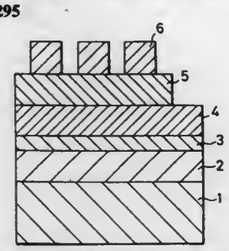
Yoshiyuki Masuda, Noda; Yasushi Ogimoto, Nagareyama, and Noboru Ootani, Tokyo, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 22, 1994, Ser. No. 264,060

Claims priority, application Japan, Jun. 23, 1993, 5-152206; Jun. 15, 1994, 6-133156

Int. Cl.[6] H01L *27/108;29/76;29/94;31/119*

U.S. Cl. 257—295 **10 Claims**



1. A dielectric thin film element comprising a dielectric thin film comprising lead erbium zirconate titanate represented by $(Pb_{1-y}Er_y)(Zr_xTi_{1-x})O_3$ and $0<x<1$ and $0<y<1$.

5,578,846

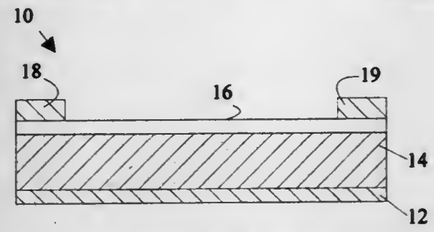
STATIC FERROELECTRIC MEMORY TRANSISTOR HAVING IMPROVED DATA RETENTION

Joseph T. Evans, Jr., 13609 Verbena Pl., N.E.; William L. Warren, 7716 Wm. Moyers Ave., NE., and Bruce A. Tuttle, 12808 Lillian Pl., NE., all of Albuquerque, N.M. 87112

Filed Mar. 17, 1995, Ser. No. 406,386

Int. Cl.[6] H01L *29/78*

U.S. Cl. 257—295 **3 Claims**



1. An improved ferroelectric FET structure comprising:

a semiconductor layer having first and second contacts thereon, said first and second contacts being separated from one another;

a bottom electrode; and

a ferroelectric layer sandwiched between said semiconductor layer and said bottom electrode, said ferroelectric layer comprising a perovskite structure having A and B sites and having a chemical composition ABO_3 wherein said B-sites are filled with a first element, a second element, or a dopant element that has an oxidation state greater than +4, said dopant element being present in said ferroelectric layer in sufficient concentration to impede shifts in the resistance measured between the first and second contacts with time, wherein said all of said first, second and dopant elements are present in said ferroelectric layer, wherein said ferroelectric comprises Pb in said A-site, and wherein said first and second elements are Zr and Ti, respectively.

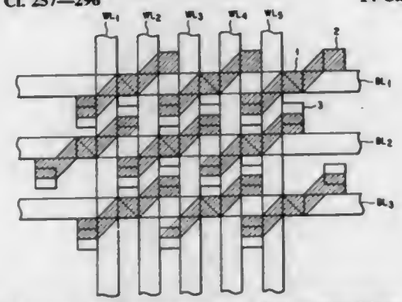
VOL 1192 ISS 4 NO 26

5,578,847

DYNAMIC SEMICONDUCTOR MEMORY DEVICE WITH HIGHER DENSITY BIT LINE/WORD LINE LAYOUT

Masami Aoki; Takashi Yamada, both of Yokohama, Japan; Hiroshi Takato, Wappingers Falls, N.Y.; Tohru Ozaki, Tokyo, Japan; Katsuhiko Hieda, and Akihiro Nitayama, both of Wappingers Falls, N.Y., assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 92,681, Jul. 16, 1993, abandoned. This application Mar. 13, 1995, Ser. No. 402,570
Claims priority, application Japan, Jul. 17, 1992, 4-190994
Int. Cl.[6] H01L *27/108*
U.S. Cl. 257—296 **14 Claims**



6. A dynamic semiconductor memory device, comprising:
a semiconductor substrate;
a plurality of memory cells each formed of a MOS transistor and a capacitor which is formed on said semiconductor substrate and has a storage node contact;
a plurality of word lines formed on said semiconductor substrate, spaces being provided between adjacent word lines and including odd-numbered and even-numbered spaces;
a plurality of bit lines formed on said semiconductor substrate to intersect said word lines, said bit lines including odd-numbered and even-numbered bit lines; and
a plurality of bit line contacts formed under said bit lines with each commonly used by two memory cells of said plurality of memory cells, those of said bit line contacts which electrically connect said even-numbered bit lines to said memory cells being arranged in said even-numbered spaces and those of said bit line contacts which electrically connect said odd-numbered bit lines to said memory cells being arranged in said odd-numbered spaces, wherein
said storage node contact of one of said two memory cells connected to a said first bit line contact and said storage node contact of one of said two memory cells connected to a second bit line contact, which is formed under the same bit line as said first bit line contact and is adjacent thereto, are arranged across the bit line,
and said storage node contacts of said memory cells, which are connected to adjacent of said bit line contacts connected to the same bit line and which are connected to adjacent of said word lines, are arranged to sandwich the same bit line, and are arranged at the same space between an adjacent two of said word lines.

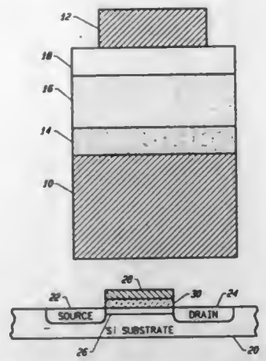
5,578,848

ULTRA THIN DIELECTRIC FOR ELECTRONIC DEVICES AND METHOD OF MAKING SAME

Dim-Lee Kwong; Giwan Yoon; Jonghan Kim; Liang-Kai Han, and Jiang Yan, all of Austin, Tex., assignors to Regents of the University of Texas System, Austin, Tex.

Division of Ser. No. 237,745, May 4, 1994, Pat. No. 5,478,765. This application Sep. 18, 1995, Ser. No. 529,926
Int. Cl.[6] H01L *29/60;27/02;27/10*
U.S. Cl. 257—296 **2 Claims**

1. In a dynamic random access memory, a capacitor structure comprising a first doped silicon electrode, a first layer of thermally



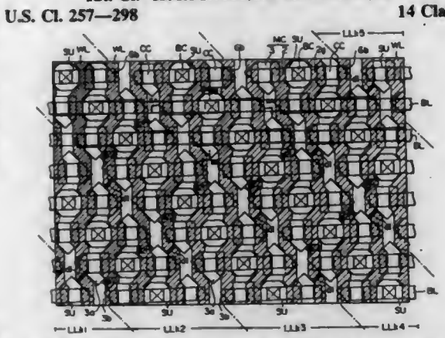
grown Si_3N_4 on a surface of said first electrode, a second layer of vapor deposited Si_3N_4 on said first layer, a third layer of thermally grown oxynitride (ON) on said second layer, and a second electrode on said layer of ON, and a field effect transistor including a source region, a drain region, and a channel region between said source region and said drain region, a gate electrode over said channel region, and a dielectric between said gate electrode and said channel region, said dielectric comprising a fourth layer of thermally grown Si_3N_4, a fifth layer of vapor deposited Si_3N_4 on said fourth layer, and a sixth layer of thermally grown ON on said fifth layer.

5,578,849

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE INCLUDING A MEMORY DEVICE HAVING MEMORY CELLS WITH INCREASED INFORMATION STORAGE CAPACITANCE

Yoshitaka Tadaki, Hanno; Jun Murata, Kunitachi; Toshihiro Sekiguchi, Hidaka; Hideo Aoki, Hamura; Keizo Kawakita, Ome; Hiroyuki Uchiyama, Higashimurayama; Michio Nishimura, Tokorozawa; Michio Tanaka, Ome; Yuji Ezaki, Fussa; Kazuhiko Saitoh, Ibaraki-ken; Katsuo Yuhara, Ome, and Songsu Cho, Ibaraki-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan, and Texas Instruments, Inc., Dallas, Tex.

Filed Nov. 16, 1994, Ser. No. 341,966
Claims priority, application Japan, Nov. 19, 1993, 5-290777
Int. Cl.[6] H01L *27/108;29/76;29/94;31/119*
U.S. Cl. 257—298 **14 Claims**



1. A semiconductor memory device comprising a semiconductor substrate, a plurality of word line conductors and a plurality of bit line conductors formed over said substrate, and a plurality of memory cells each provided at an intersection between one of said word line conductors and one of said bit line conductors, wherein:
adjacent two memory cells for each bit line conductor form a memory cell pair unit structure, in which each of the memory cell pair unit structures includes a first information storage

capacitor, a first switching transistor, a second switching transistor and a second information storage capacitor arranged in the described order under one of said bit line conductors in a lengthwise direction of said bit line conductors, each of said transistors having a pair of semiconductor regions formed in said substrate and a control electrode formed between said pair of semiconductor regions over said substrate, an electric current being caused to flow between said pair of semiconductor regions when the transistor is conductive responsive to a control signal applied to said control electrode, one of the pair of semiconductor regions of said first transistor and one of the pair of semiconductor regions of said second transistor being united at their boundary into a single region and including a diffusion layer connected to one of said bit line conductors via a bit line connection conductor made of impurity-doped polycrystalline silicon, the gate electrodes of said first and second transistors being connected to word line conductors adjacent to each other, respectively, the others of the pair of semiconductor regions of said first and second transistors being connected to said first and second information storage capacitors, respectively, said first information storage capacitor and said first switching transistor forming one of said adjacent two memory cells, said second information storage capacitor and said second switching transistor forming the other of said adjacent two memory cells; and
a series of memory cell pair unit structures formed under one bit line conductor, positionally shifted with respect to series of memory cell pair unit structures formed under adjacent first and second bit line conductors on opposite sides of said one bit line conductor, respectively, in a direction parallel with said bit lines such that a second information storage capacitor of a memory cell pair unit structure formed under said adjacent first bit line conductor and a first information storage capacitor of a memory cell pair unit structure formed under said adjacent second bit line conductor are located adjacent to a bit line connection conductor of a memory cell pair unit structure formed under said one bit line conductor, as viewed in a direction perpendicular to said substrate,
wherein said pair of semiconductor regions of each of said first and second transistors are formed in an element forming region of said substrate;
said first and second information storage capacitors are formed over said first and second switching transistors, respectively, in each of said memory cell pair unit structures; and
a lengthwise direction of each of said element forming regions of the substrate in which the first and second semiconductor regions of the first and second switching transistors of a memory cell pair unit structure are formed is not parallel with that of its associated bit line conductor with a predetermined sloping direction.

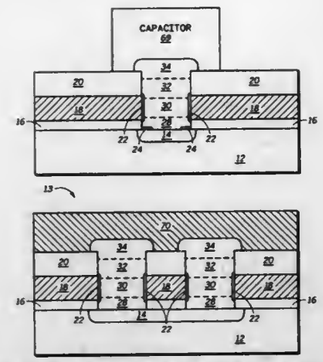
5,578,850

VERTICALLY ORIENTED DRAM STRUCTURE

Jon T. Fitch; Carlos A. Mazuré, and Keith E. Witek, all of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 426,206, Apr. 21, 1995, abandoned, which is a division of Ser. No. 230,409, Apr. 20, 1994, Pat. No. 5,451,538, which is a division of Ser. No. 150,328, Nov. 9, 1993, Pat. No. 5,414,289, which is a continuation of Ser. No. 9,205, Jan. 25, 1993, abandoned, which is a division of Ser. No. 844,038, Mar. 2, 1992, Pat. No. 5,208,172. This application Jan. 16, 1996, Ser. No. 585,975
Int. Cl.[6] H01L *29/10;29/72*
U.S. Cl. 257—329 **35 Claims**

1. A dynamic random access memory (DRAM) cell comprising:
a substrate having a surface, the substrate being a semiconductor on insulator substrate that has a dielectric layer underlying a semiconductive layer;
a first dielectric layer overlying the substrate and having a first portion of an opening;
a control electrode conductive layer overlying the first dielectric layer and having a second portion of the opening horizontally



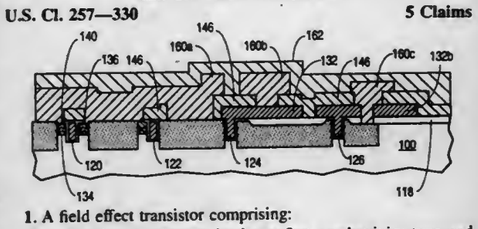
aligned to the first portion of the opening, the second portion of the opening forming a sidewall of the control electrode conductive layer;
a second dielectric layer overlying the control electrode conductive layer and having a third portion of the opening horizontally aligned to the second portion of the opening, the first, second, and third portions of the opening forming a device opening that exposes a surface of the substrate;
a sidewall dielectric laterally adjacent the sidewall of the control electrode conductive layer;
a first current electrode formed within said device opening, having a second conductivity type, being laterally adjacent the first dielectric layer, and overlying the substrate;
a channel region formed within said device opening, having a first conductivity type, and being laterally adjacent the sidewall dielectric and overlying the first current electrode, the first current electrode physically isolating the channel region from the substrate;
a second current electrode formed within said device opening, having the second conductivity type, being laterally adjacent the second dielectric layer, and overlying the channel region; and
a capacitor formed overlying and coupled to the second current electrode.

5,578,851

TRENCHED DMOS TRANSISTOR HAVING THICK FIELD OXIDE IN TERMINATION REGION

Fwu-Iuan Hshieh, Saratoga; Mike F. Chang, Cupertino; Yueh-Se Ho, Sunnyvale, and King Owyang, Atherton, all of Calif., assignors to Siliconix incorporated, Santa Clara, Calif.

Continuation of Ser. No. 290,323, Aug. 15, 1994, abandoned. This application Mar. 29, 1996, Ser. No. 625,639
Int. Cl.[6] H01L *29/76;29/94*
U.S. Cl. 257—330 **5 Claims**



1. A field effect transistor comprising:
a semiconductor substrate having a first conductivity type and having a principal surface;
an active region of the transistor comprising:
(a) a plurality of spaced-apart doped semiconductor regions of a second conductivity type extending from the principal surface into the substrate, being deep body regions of the transistor;

(b) a plurality of trenches extending into the substrate from the principal surface and being filled with a conductive material; and

(c) doped regions of the first and second conductivity type extending into the substrate from the principal surface adjacent at least some of the trenches, being respectively source and body regions of the transistor; and

a termination region of the transistor comprising:

a field oxide layer formed on portions of the principal surface, including on a portion of the principal surface extending to an outer edge of the termination region and beyond an outer edge of an underlying doped region.

5,578,852

SEMICONDUCTOR MEMORY CELL HAVING INFORMATION STORAGE TRANSISTOR AND SWITCHING TRANSISTOR

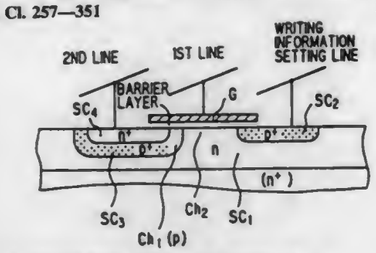
Yutaka Hayashi, and Takeshi Matsushita, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 420,068, Apr. 11, 1995, Pat. No. 5,506,436, which is a division of Ser. No. 164,812, Dec. 10, 1993, Pat. No. 5,428,238. This application Oct. 11, 1995, Ser. No. 541,127

Claims priority, application Japan, Dec. 10, 1992, 4-352200; May 7, 1993, 5-130130; Sep. 7, 1993, 5-246264

Int. Cl.[6] H01L *27/01;27/12;31/0392;29/76*

U.S. Cl. 257—351 **1 Claim**



1. A semiconductor memory cell comprising:

a first semiconductor region of a first conductivity type formed in a surface region of a semiconductor substrate or on an insulating substrate,

a first conductive region formed in a surface region of said first semiconductor region in contacting relationship forming a rectifier junction therebetween,

a second semiconductor region of a second conductivity type formed in a surface region of said first semiconductor region but spaced apart from said first conductive region,

a second conductive region formed in a surface region of said second semiconductor region in contacting relationship forming a rectifier junction therebetween, and

a conductive gate disposed in such a manner as to form a bridge over a barrier layer between said first semiconductor region and said second conductive region and between said first conductive region and said second semiconductor region, wherein

said conductive gate is connected to a first memory-cell-selection line,

said first conductive region is connected to a write information selection line, and

said second conductive region is connected to a second memory-cell-selection line.

5,578,853

SEMICONDUCTOR MEMORY CELL HAVING INFORMATION STORAGE TRANSISTOR AND SWITCHING TRANSISTOR

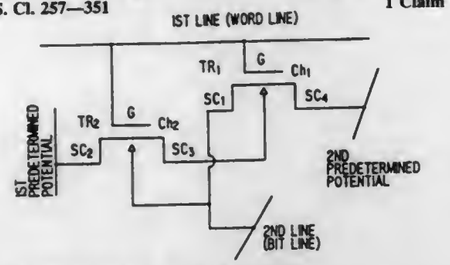
Yutaka Hayashi, and Takeshi Matsushita, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 420,068, Apr. 19, 1995, Pat. No. 5,506,436, which is a division of Ser. No. 164,812, Dec. 10, 1993, Pat. No. 5,428,238. This application Oct. 11, 1995, Ser. No. 541,172

Claims priority, application Japan, Dec. 10, 1992, 4-352200; May 7, 1993, 5-130130; Sep. 7, 1993, 5-246264

Int. Cl.[6] H01L *27/01;27/12;31/0392;29/76*

U.S. Cl. 257—351 **1 Claim**



1. A semiconductor memory cell comprising:

a first semiconductor region of a first conductivity type formed in a surface region of a semiconductor substrate or on an insulating substrate,

a first conductive region formed in a surface region of said first semiconductor region in contacting relationship forming a rectifier junction therebetween,

a second semiconductor region of a second conductivity type formed in a surface region of said first semiconductor region but spaced apart from said first conductive region,

a second conductive region formed in a surface region of said second semiconductor region in contacting relationship forming a rectifier junction therebetween, and

a conductive gate disposed in such a manner as to form a bridge over a barrier layer between said first semiconductor region and said second conductive region and between said first conductive region and said second conductive region, wherein

said conductive gate is connected to a first memory-cell-selection line, and

said first semiconductor region is connected to a second memory-cell-selection line.

5,578,854

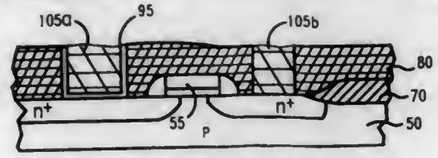
VERTICAL LOAD RESISTOR SRAM CELL

Bomy A. Chen, Hopewell Junction, N.Y., and Gorden S. Starkey, Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 11, 1995, Ser. No. 514,018

Int. Cl.[6] H01L *29/52;29/54;23/522;23/532*

U.S. Cl. 257—349 **12 Claims**



1. An electrically conducting contact stud comprising:

a substrate having at least one contact area;

an insulating layer overlying on said substrate;

a hole opening in said insulating layer exposing said contact area and having an insulating sidewall;

said contact stud formed inside said bole opening;

said contact stud having an inner part of conducting material and a peripheral and a bottom part of resistive material;

said bottom part of resistive material is sandwiched between and in electrical contact with said contact area and the conducting inner part and,

said peripheral part of resistive material sandwiched between the conducting inner part and the insulating sidewall of the hole opening.

5,578,855

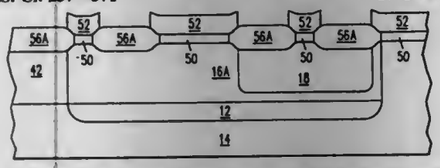
HIGH-VOLTAGE CMOS TRANSISTORS ON A STANDARD CMOS WAFER

Husam Gaffur, San Jose, and Sukyoon Yoon, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 196,417, Feb. 15, 1994, abandoned. This application Apr. 26, 1995, Ser. No. 429,182

Int. Cl.[6] H01L *29/76;21/265*

U.S. Cl. 257—371 **17 Claims**



1. A method for forming a high voltage CMOS device, comprising:

providing a p-type substrate;

forming a lightly doped p-type first epitaxial layer on the p-type substrate;

implanting an n-type impurity to form a heavily doped n+ buried layer within the first epitaxial layer;

forming a lightly doped p-type second epitaxial layer over the first epitaxial layer;

implanting an n-type impurity to form a lightly doped n-well in the second epitaxial layer; and

implanting a p-type impurity to form a p-field extension region in the n-well.

5,578,856

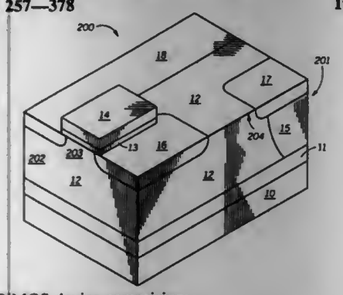
BICMOS DEVICE HAVING A BIPOLAR TRANSISTOR AND A MOS TRIGGERING TRANSISTOR

Ravi Subrahmanyan, and Howard C. Kirsch, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Division of Ser. No. 24,719, Mar. 1, 1993, Pat. No. 5,459,083. This application Apr. 28, 1995, Ser. No. 430,667

Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*

U.S. Cl. 257—378 **19 Claims**



1. A BiMOS device comprising:

a semiconductor substrate;

a well region having a first conductivity type and a surface, wherein the well region overlies the substrate, includes a channel region and a base region, and is configured to electrically float;

a first doped region, wherein the first doped region:

has a second conductivity type that is opposite the first conductivity type; and

lies adjacent to the channel region and the base region and to the surface of the well region;

a second doped region, wherein the second doped region:

has the second conductivity type;

lies adjacent to the surface of the well region; and

is separated from the first doped region by a portion of the well region;

a gate dielectric layer overlying the well region; and

a first gate electrode that overlies at least a portion of each of the gate dielectric layer, the well region, and the first and second doped regions.

5,578,857

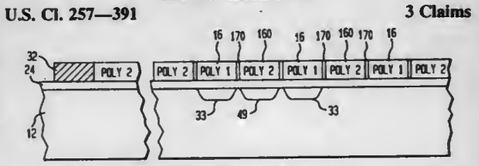
DOUBLE POLY HIGH DENSITY BURIED BIT LINE MASK ROM

Gary Hong; Ming-Tzong Yang, and Chen-Chiu Hsue, all of Hsin-Chu, Taiwan, assignors to United Microelectronics Corporation, Hsin-chu, Taiwan

Division of Ser. No. 92,190, Jul. 14, 1993, Pat. No. 5,393,233. This application Dec. 5, 1994, Ser. No. 349,432

Int. Cl.[6] H01L *29/76*

U.S. Cl. 257—391 **3 Claims**



1. A read only memory device comprising:

a semiconductor substrate having a first conductivity type,

a plurality of marks formed on said substrate within a die area defined on said substrate, said marks having a predetermined thickness,

a plurality of bit lines formed in said substrate in said die area and extending in a first direction, said bit lines having a second conductivity type,

a plurality of polysilicon word lines formed on said substrate in said die area and extending in a second direction perpendicular to said first direction, each of said polysilicon wordlines being separated from an adjacent one of said polysilicon word lines by a region of insulating material, and having a thickness which equals said predetermined thickness of said marks, and

a plurality of doped channel regions in said substrate for defining a code stored in said read only memory device,

each of said channel regions being located under one of said wordlines and connecting a pair of adjacent bit lines.

5,578,858

INFRARED RADIATION ABSORPTION DEVICE

Michael Mueller, Dresden; Ralf Gottfried-Gottfried, Wetzler, and Heinz Kueck, Langebrueck, all of Germany, assignors to Fraunhofer-Gesellschaft zur Foerderung der angewandten Forschung e.V., Munich, Germany

PCT No. PCT/DE93/00954, § 371 Date Apr. 13, 1995, § 102(e) Date Apr. 13, 1995, PCT Pub. No. WO94/09517, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 7, 1993, Ser. No. 416,754

Claims priority, application Germany, Oct. 13, 1992, 42 34 471.9

Int. Cl.[6] H01L *31/00*

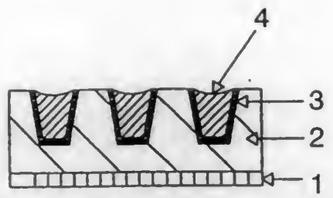
U.S. Cl. 252—432 **18 Claims**

1. A device for converting infrared radiation into thermal energy for thermal detectors, comprising:

a support body;

a lower layer applied on said support body;

VOL 1192 ISS 4 NO 26 1996 UMI



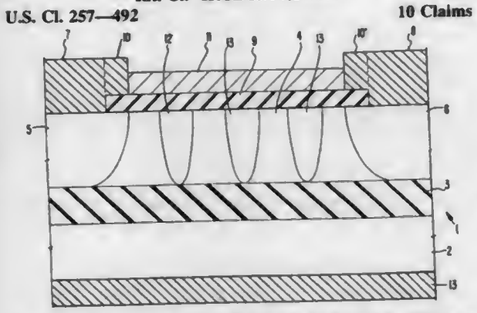
a central layer located on the lower layer;
an upper component located on the central layer, said upper component facing incident infrared radiation;
wherein said lower layer absorbs a portion of the incident radiation to be converted which is transmitted by the upper component and the central layer, said lower layer reflecting a remaining portion of said infrared radiation into the central layer;
wherein said central layer absorbs radiation coming from the upper component and the reflected radiation coming from the lower layer;
wherein said upper component is used for absorption of incoming radiation from an exterior of the device, for absorption of radiation reflected by the lower and the central layers, and for reflection of radiation reflected by the lower and the central layers back in the central layer;
wherein said upper component reflects back into the central layer any stray radiation reflected by the lower layer which is not absorbed by said upper component; and
further wherein said upper component has a lower reflectivity for the infrared radiation to be converted which is applied from an exterior to said upper component than for radiation applied from an interior of said device.

5,578,859

SEMICONDUCTOR STRUCTURE HAVING ONE OR MORE LATERAL, HIGH-BLOCKING SEMICONDUCTOR COMPONENTS

Wolfgang Wondrak, Frankfurt; Raban Held, Mömbris; Erhard Stein, Mörfelden-Walldorf, and Horst Neubrand, Frankfurt, all of Germany, assignors to Daimler-Benz AG, Stuttgart, Germany

PCT No. PCT/EP92/02985, § 371 Date Jan. 9, 1995, § 102(e) Date Jan. 9, 1995, PCT Pub. No. WO93/14522, PCT Pub. Date Jul. 22, 1993
PCT Filed Dec. 23, 1992, Ser. No. 256,588
Claims priority, application Germany, Jan. 18, 1992, 42 01 276
Int. Cl.[6] H01L *23/58;29/861*
U.S. Cl. 257—492 **10 Claims**



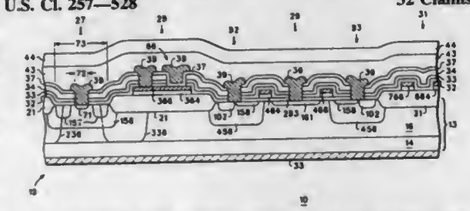
1. Semiconductor structure having at least one lateral, high-blocking semiconductor component in a semiconductor arrangement, comprising: a metalized semiconductor substrate, a dielectric layer contiguous to the semiconductor substrate, a homogeneously doped drift zone disposed on the dielectric layer, and heavily-doped zones of the semiconductor component which are formed in the drift zone and are electrically contacted, and wherein at least the heavily-doped zones of the semiconductor components, which have a high potential difference compared to the substrate during an operational functioning mode of the semiconductor component, extend to the dielectric layer, and said drift zone has a thickness in a range of 1 to 30 μm and is subdivided into vertically extending, highly-doped partial zones that are separated from one another.

5,578,860

MONOLITHIC HIGH FREQUENCY INTEGRATED CIRCUIT STRUCTURE HAVING A GROUNDED SOURCE CONFIGURATION

Julio C. Costa; Wayne R. Burger, both of Phoenix; Natalino Camilleri; Christopher P. Dragon, both of Tempe; Daniel J. Lamey, Phoenix; David K. Lovelace, Chandler, and David Q. Ngo, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 1, 1995, Ser. No. 431,948
Int. Cl.[6] H01L *23/62;29/76;29/00*
U.S. Cl. 257—528 **32 Claims**



1. A monolithic high frequency integrated circuit structure comprising:
a semiconductor body including a substrate of a first conductivity type and a first layer of the first conductivity type formed on the substrate, the substrate having a higher dopant concentration than the first layer, wherein the first layer is isolated into a plurality of active areas by a plurality of passivation regions;
a high frequency power FET device formed in a first active area, the high frequency power FET device including a first source region of a second conductivity type, a first drain region of the second conductivity type spaced apart from the first source region, a first gate electrode layer between the first source region and the first drain region and separated from the first layer by a first gate dielectric layer, and a first sinker region of the first conductivity type formed in the first layer and connecting the first source region to the substrate; and
a series capacitor structure including a bottom plate formed on one of the plurality of passivation regions, a dielectric layer formed on the bottom plate, and a top plate formed on the dielectric layer.

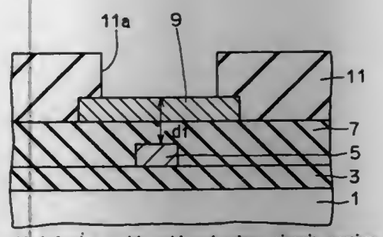
5,578,861

SEMICONDUCTOR DEVICE HAVING REDUNDANT CIRCUIT

Mitsuya Kinoshita; Atsushi Hachisuka, and Kazuhiro Tsukamoto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1994, Ser. No. 357,298
Claims priority, application Japan, Dec. 28, 1993, 5-338414
Int. Cl.[6] H01L *27/10;23/62;29/00*
U.S. Cl. 257—529 **9 Claims**

1. A semiconductor device which includes a specific circuit portion having at least a predetermined function and a redundant circuit portion for spare use having the same function as said specific circuit portion, and is provided with a connection portion which can be fused and removed for replacing said specific circuit portion, if defective, with said redundant circuit portion, said semiconductor device having said redundant circuit comprising:
a semiconductor substrate having a main surface;
a connection conductive layer formed on the main surface of said semiconductor substrate by patterning and which can be fused and removed;
a silicon nitride film formed on said connection conductive layer; and
a silicon oxide film located immediately above said connection conductive layer, formed on the main surface of said semiconductor substrate and having a hole reaching a surface of said silicon nitride film.

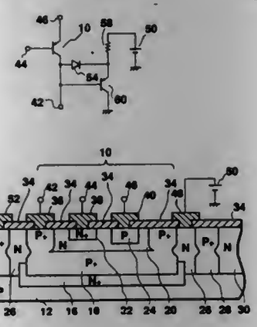


5,578,862

SEMICONDUCTOR INTEGRATED CIRCUIT WITH LAYER FOR ISOLATING ELEMENTS IN SUBSTRATE

Nobuo Fujii, Yokohama; Yosuke Mizukawa, and Yasuo Mitsuhashi, both of Nagaokakyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 998,853, Dec. 30, 1992, abandoned. This application Oct. 13, 1994, Ser. No. 322,374
Int. Cl.[6] H01L *29/00*
U.S. Cl. 257—547 **33 Claims**



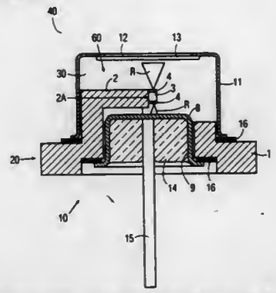
10. An electronic circuit comprising:
(a) a transistor around which a PN junction is formed;
(b) means for reverse biasing the PN junction around said transistor to isolate said transistor from other elements; and
(c) means for keeping a parasitic diode, located between a layer constituting the PN junction around said transistor and at least part of said transistor, reverse biased and permanently in a cutoff state.

5,578,863

OPTOELECTRONIC SEMICONDUCTOR DEVICE WITH A RADIATION-EMITTING SEMICONDUCTOR DIODE, AND METHOD OF MANUFACTURING SUCH A DEVICE

Johannes A. De Poorter, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 23, 1994, Ser. No. 345,024
Claims priority, application Belgium, Nov. 25, 1993, 9301296
Int. Cl.[6] H01L *31/0232;27/15;31/12;33/00*
U.S. Cl. 257—433 **13 Claims**



1. An optoelectronic semiconductor device (**10**) comprising a radiation-emitting semiconductor diode (**3**), said diode (**3**) having an exit surface for generated radiation (R) with a coating (**4**) provided on said exit surface, characterized in that the coating (**4**) is impermeable to gases and the radiation-emitting semiconductor diode (**3**) is situated within an envelope (**20**) which is hermetically sealed from the outer world (**40**) and in that a gaseous oxidizing compound (**30**) is provided inside the envelope (**20**).

5,578,864

SEMICONDUCTOR MATERIAL FOR USE IN THERMOELECTRIC CONVERSION, THERMOELECTRIC CONVERTING METHOD AND THERMOELECTRIC DEVICE

Yasuo Ochi, and Kazuo Ohara, both of Sagamihara, Japan, assignors to Kabushiki Kaisha Ohara, Kanagawa, Japan

Filed Aug. 14, 1995, Ser. No. 515,008
Claims priority, application Japan, Aug. 26, 1994, 6-202393
Int. Cl.[6] H01L *31/058*
U.S. Cl. 257—467 **27 Claims**

1. A thermoelectric semiconductor member in a thermoelectric conversion device; the thermoelectric conversion device comprising at least a pair of p and n type of thermoelectric semiconductor members that are connected to each other at one end thereof and separated from each other at an other end, and at least a pair of separate electrodes mounted to the thermoelectric semiconductor members at the other end; characterized in that at least one of the pair of thermoelectric semiconductor members comprises a shaped and sintered double oxide which contains antimony and has a trirutile crystal structure, said double oxide comprising a composition that is represented by MSb_2O_6, wherein M represents a metal element that can be changed into a divalent ion.

5,578,865

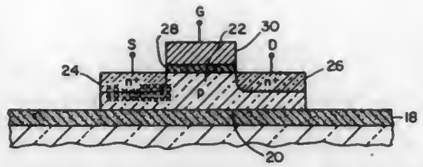
REDUCTION OF PARASITIC EFFECTS IN FLOATING BODY MOSFETS

Duy-Phach Vu, Taunton, and Ngwe K. Cheong, Boston, both of Mass., assignors to Kopin Corporation, Taunton, Mass.

Division of Ser. No. 153,781, Nov. 16, 1993, Pat. No. 5,420,055, which is a continuation of Ser. No. 823,858, Jan. 22, 1992, abandoned. This application Apr. 24, 1995, Ser. No. 426,875
Int. Cl.[6] H01L *29/167*
U.S. Cl. 257—611 **12 Claims**

1. A floating-body MOSFET device comprising:

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a channel region of a first conductivity type formed in a silicon thin film over an insulating layer;

a source region of a second conductivity type adjacent the channel region in the silicon thin film such that a p-n junction exists between the source region and the channel region; and

a high concentration of recombination centers in the silicon and underlying the p-n junction relative to a concentration of recombination centers at a second junction between a drain region and the channel region.

5,578,866

METHOD OF MANUFACTURING A BLOCK-SHAPED SUPPORT BODY FOR A SEMICONDUCTOR COMPONENT

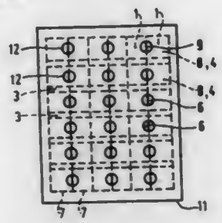
Johannes A. DePoorter; Rudolf P. Tijburg, both of Eindhoven, and Hermanus A. Van De Pas, Wijchen, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 1, 1993, Ser. No. 115,335

Claims priority, application European Pat. Off., Sep. 7, 1992, 92202694

Int. Cl.[6] H01L *23/544*

U.S. Cl. 257—620 **36 Claims**



1. A method of manufacturing a block-shaped support body (1), whereby in the upper side of a plane plate (2) of a heat-conducting material mutually parallel grooves (3) are formed between which the support bodies (1) to be formed are present, the plate (2) being provided with a conductive layer (4), while layer-shaped regions (6) comprising solder are provided on the conductive layer (4) near a fin (9) of the support bodies (1) to be formed, wherein, before or after the provision of the grooves, the plate (2) is subdivided into strips (7) which in lateral direction comprise at most two support bodies (1) to be formed, which are substantially perpendicular to the direction of the grooves (3), and whose side surfaces (13) are substantially smooth and plane, and wherein the strips (7) are provided with the conductive layer (4), and wherein the layer-shaped regions (6) comprising solder are provided on an upper surface (8) or a side surface (13) of the strips (7) by arranging a mask (11) over at least one strip positioned next to and against at least one other strip provided with the conductive layer (4), in which mask openings (12) are present where the layer-shaped regions (6) comprising solder are to be formed, after which the layer-shaped regions (6) comprising solder are provided.

5,578,867

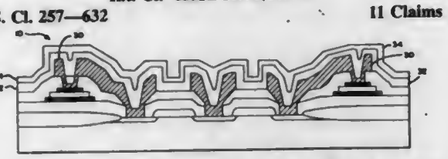
PASSIVATION METHOD AND STRUCTURE USING HARD CERAMIC MATERIALS OR THE LIKE

George Argos, Jr.; John D. Spano, and Steven D. Traynor, all of Colorado Springs, Colo., assignors to Ramtron International Corporation, Colorado Springs, Colo.

Division of Ser. No. 212,495, Mar. 11, 1994, Pat. No. 5,438,023. This application Feb. 27, 1995, Ser. No. 394,467

Int. Cl.[6] H01L *29/76;31/00*

U.S. Cl. 257—632 **11 Claims**



1. A passivation structure for a surface of an integrated circuit including ferroelectric devices comprising a passivation layer on the surface of the integrated circuit, the passivation layer being distinct from the ferroelectric devices, and wherein the passivation layer is comprised of a ceramic material selected from a group consisting of doped and undoped titanates, zirconates, niobates, tantalates, stanates, hafnates, and manganates, and having a Mohs hardness level of seven or greater.

5,578,868

IC MEMORY CARD

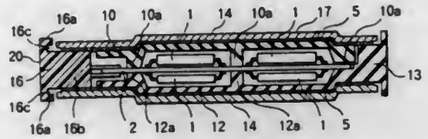
Jun Obuchi, Itami; Hiroshi Miura; Tomomi Morii, both of Sanda, and Shigeo Onoda, Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1995, Ser. No. 449,431

Claims priority, application Japan, May 31, 1994, 6-119042

Int. Cl.[6] H01L *23/02*

U.S. Cl. 257—679 **5 Claims**



1. An IC memory card having a substantially rectangular shape with longer and shorter sides and comprising:

a connector at one side of said IC memory card, said connector comprising a connector body having a rectangular parallelepiped shape and a flange portion extending from a longer side of said connector body and including a surface for establishing connection with an external unit, said flange portion having grooves where said flange is connected to said connector body and opposing the surface, the grooves extending lengthwise along all of a longer side of said memory card.

5,578,869

COMPONENTS FOR HOUSING AN INTEGRATED CIRCUIT DEVICE

Paul R. Hoffman, Modesto, Calif.; Deepak Mahulikar, Madison, Conn.; George A. Brathwaite, Hayward; Dawit Solomon, Manteca, both of Calif., and Arvind Parthasarathi, North Branford, Conn., assignors to Olin Corporation, Manteca, Calif.

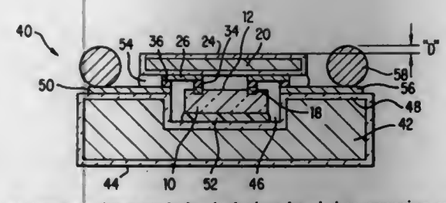
Filed Mar. 29, 1994, Ser. No. 413,149

Int. Cl.[6] H01L *23/52;23/34;23/48;23/04*

U.S. Cl. 257—691 **34 Claims**

9. A component for an electronic package comprising:

a metallic substrate coated with an electrically non-conductive layer;



at least two integrated circuit devices bonded to opposing surfaces of said metallic substrate; and

a first plurality of conductive circuit traces formed on opposing surfaces of said metallic substrate wherein the input/output pads of said at least two integrated circuit devices are directly soldered to said first plurality of circuit traces, said first plurality of circuit traces further bonded to a second plurality of circuit traces.

5,578,870

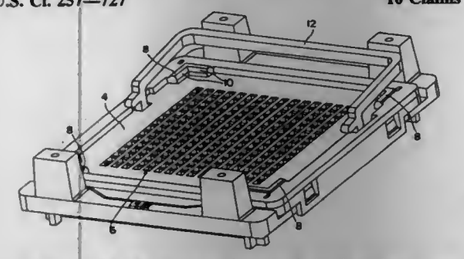
TOP LOADING TEST SOCKET FOR BALL GRID ARRAYS

Jeffery A. Farnsworth, Scottsdale; Patrick H. Harper, and Robert Hooley, both of Phoenix, all of Ariz., assignors to Precision Connector Designs, Inc., Peabody, Mass.

Filed Aug. 3, 1995, Ser. No. 510,763

Int. Cl.[6] H01L *23/34;23/48*

U.S. Cl. 257—727 **10 Claims**



1. A socket for ball grid array integrated circuit packages comprising:

a housing with a top structure with an opening large enough to allow the grid array package to pass through with the ball contacts facing said socket, the ball contacts defining a first plane,

a top plate with through holes arranged to receive said ball contacts,

a plurality of electrical contacts fixed to said socket with a first end arranged to mate with said ball contacts and said first ends extending into said holes in the top plate from a direction opposite the ball contacts, and where the distance between the electrical contact and the edges of the through hole define an opening,

spring means arranged to provide a force on the top plate in a direction parallel with said plane, where said spring means acts to reduce said opening, and

means for driving the top plate to compress said spring means wherein said opening is enlarged for accepting the ball contacts, wherein, with said ball contacts inserted into said openings, said spring means forces said top plate such that said ball contacts are secured between said edges of said through holes in said top plate and said mating first end of said electrical contacts thereby retaining said ball grid array integrated circuit package in said socket.

5,578,871

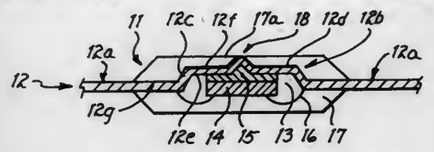
INTEGRATED CIRCUIT PACKAGE AND METHOD OF MAKING THE SAME

Richard H. J. Fierkens, Keurbeek 15, 6914 AE, Herwen, Netherlands

Filed Oct. 18, 1994, Ser. No. 324,717

Int. Cl.[6] H01L *23/495*

U.S. Cl. 257—676 **3 Claims**



1. An integrated circuit package comprising, in combination:

a one-piece, self-supporting substrate having a mounting location, said mounting location having a first side and a second side facing away from said first side;

an integrated circuit chip secured to said first side of said mounting location, said mounting location being provided with a pointed protrusion which projects from said second side;

a plastic enclosure for said mounting location and said chip, said plastic enclosure having an external peripheral surface, said second side is spaced from said peripheral surface, said pointed protrusion extending from said second side into contact with said peripheral surface of said plastic enclosure, wherein the point of said pointed protrusion lies in a same plane as said external peripheral surface; and said substrate has a first portion which is in a plane and a second portion which is bent out of said plane and includes said mounting location, said first side of said mounting location spaced from said plane, said protrusion is substantially centered with respect to said mounting location.

5,578,872

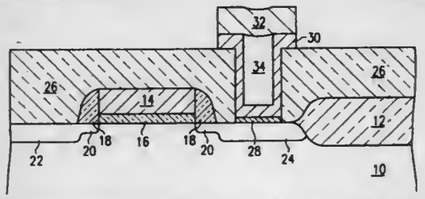
PLANAR CONTACT WITH A VOID

Fusen E. Chen, Milpitas, Calif.; Girish A. Dixit, Dallas, and Robert O. Miller, The Colony, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Division of Ser. No. 370,456, Jan. 9, 1995, which is a continuation of Ser. No. 919,948, Jul. 27, 1992, abandoned. This application Apr. 7, 1995, Ser. No. 418,838

Int. Cl.[6] H01L *29/41;29/43*

U.S. Cl. 257—751 **21 Claims**



1. A structure consisting of a portion of a semiconductor device, comprising:

a dielectric layer having a contact opening therethrough exposing a portion of an underlying conductive structure;

a barrier layer in the bottom of the contact opening;

a first conductive layer disposed over a portion of the dielectric layer, along the sidewalls of the contact opening and in the bottom of the opening; and

a second conductive layer disposed over the first conductive layer wherein the second conductive layer does not fill the contact opening, leaving a void between the first and second conductive layers within the opening.

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5,578,873

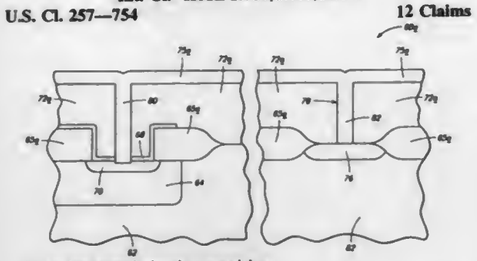
INTEGRATED CIRCUITRY HAVING A THIN FILM POLYSILICON LAYER IN OHMIC CONTACT WITH A CONDUCTIVE LAYER

Monte Manning, Kuna, Id., assignor to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 321,560, Oct. 12, 1994. This application May 22, 1995, Ser. No. 445,664

Int. Cl.[6] H01L 29/04;27/11;29/54

U.S. Cl. 257—754 12 Claims



1. An integrated circuit comprising:

a semiconductor substrate;

a first conductivity type substrate diffusion region within the semiconductor substrate, the first conductivity type substrate diffusion region being electrically conductive and having an outer first total area;

a thin film polysilicon layer of the first conductivity type overlying and being in ohmic electrical connection with the substrate diffusion region, the thin film polysilicon layer comprising a portion which is in physical contact with the substrate diffusion region, the portion of the thin film polysilicon in physical contact with the substrate diffusion region defining a polysilicon first area; and

a pillar of electrically conductive material extending outwardly from the thin film polysilicon layer over the electrically conductive diffusion region, the pillar having a total cross sectional second area where the pillar joins the thin film polysilicon layer, the total cross sectional second area being less than the polysilicon first area and being received entirely within the confines of the polysilicon first area.

5,578,874

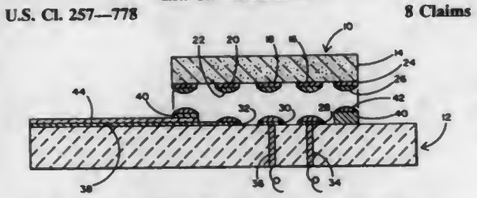
HERMETICALLY SELF-SEALING FLIP CHIP

Garrett I. Kurogi, Lakewood, and Matthew J. Swass, El Segundo, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 14, 1994, Ser. No. 260,056

Int. Cl.[6] H01L 23/48

U.S. Cl. 257—778 8 Claims



1. A hermetically sealed flip chip structure comprising:

a dielectric substrate (12) having a face and having solder-coated contacts (28, 30, 32) mounted on said face thereof and with at least one of said contacts (28, 30) having corresponding vias (34, 36) through said substrate (12) for connection to said at least one of said contacts (28, 30);

a barrier (40) surrounding said surface contacts (28, 30, 32) on said substrate (12) said barrier (40) having a contact (42) thereon;

an integrated circuit-containing body (14), a face on said body (14), integrated circuit contacts (16, 18, 20) on said face of said body (14), said integrated circuit contacts (16, 18, 20) on said face of said body (14) corresponding in position to said contacts (28, 30, 32) on said substrate, a barrier (24) on said face of said body (14), said barrier (24) surrounding said contacts (16, 18, 20) on said face of said body (14), said barrier (24) having a contact (26) thereon, said barrier (24) on said body (14) corresponding to said barrier (40) on said substrate (12) so that when said contacts (16, 18, 20) on said body (14) are against said contacts (28, 30, 32) on said substrate (12), said barriers (24, 40) lie against each other, said barriers (24, 40) being sealed together so as to hermetically seal said contacts (16, 18, 20; 28, 30, 32,) between said body (14) and said substrate (12), and said contact (42) on said barrier (40) corresponding to said contact (26) on said barrier (24),

wherein there is at least one printed wiring strip (38) on the surface of said dielectric substrate (12) and there is an insulator layer (44) over said printed wiring strip (38), said surrounding barrier (40) on said substrate (12) being positioned over said insulating layer (44) so that said surrounding barrier (40) is electrically isolated from said printed wiring strip (38).

5,578,875

DUAL BATTERY RECHARGER WITH BACKUP POWER FEATURE FOR USE IN SYSTEMS HAVING A BASE UNIT AND BATTERY-POWERED PORTABLE UNIT

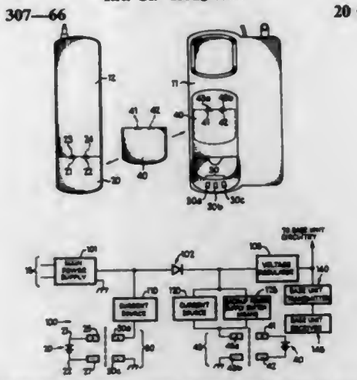
Michael W. Dormer, Basingstoke, and Michael B. Ashdown, High Wycombe, both of Great Britain, assignors to Vtech Communications, Ltd., Hong Kong

Filed Jun. 1, 1994, Ser. No. 252,410

Claims priority, application United Kingdom, Jun. 2, 1993, 9311313

Int. Cl.[6] H02J 7/00

U.S. Cl. 307—66 20 Claims



1. An alternative power supply apparatus for use in association with systems having a base unit connected to an external power supply and an associated battery-powered portable unit, said alternative power supply apparatus comprising:

two rechargeable batteries wherein a first one of said two rechargeable batteries is operably associated with the battery-powered portable unit and serves to provide electrical power to the battery-powered portable unit, said first one and second one of said two rechargeable batteries being operably interchangeable;

first port means operably associated with the base unit for operably and detachably receiving said first one of said two rechargeable batteries so as to allow electrical current to flow between said first port means and said first one of said two rechargeable batteries;

second port means operably associated with the base unit for operably and detachably receiving a second one of said two rechargeable batteries so as to allow electrical current to flow between said second port means and said second one of said two rechargeable batteries;

first current source means operably associated with the external power supply and said first port means for providing an electrical current to said first one of said two rechargeable batteries upon said operable reception of said first one of said two rechargeable batteries by said first port means;

second current source means operably associated with the external power supply and said second port means for providing an electrical current to said second one of said two rechargeable batteries upon said operable reception of said second one of said two rechargeable batteries by said second port means; and

backup power supply switch means operably connected between said second port means and circuitry in the base unit for providing voltage from said second one of said two rechargeable batteries operably received by said second port means upon failure of the external power supply to provide voltage to at least a radio transmitter and receiver both of which communicate with said associated battery-powered portable unit, said radio transmitter and receiver being included as part of said circuitry.

5,578,876

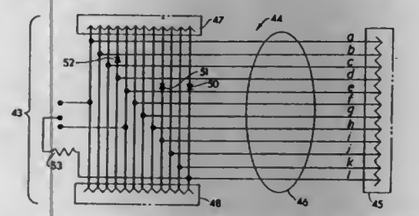
UNIQUE COMPUTER POWER SYSTEM WITH BACKUP POWER

Timothy P. Crampton, Marietta, Ga., assignor to Applied Research & Technology, Inc., Atlanta, Ga.

Continuation of Ser. No. 103,451, Aug. 6, 1993, abandoned, which is a continuation of Ser. No. 404,104, Sep. 7, 1989, Pat. No. 5,237,258, which is a continuation of Ser. No. 132,995, Dec. 15, 1987, Pat. No. 4,885,521, which is a continuation of Ser. No. 927,657, Nov. 5, 1986, abandoned, and a continuation-in-part of Ser. No. 759,358, Aug. 26, 1985, Pat. No. 4,672,293. This application Nov. 23, 1994, Ser. No. 343,848

Int. Cl.[6] H02J 1/10

U.S. Cl. 307—80 17 Claims



1. A modifiable cabling device for electrically interconnecting a first power supply, a second power supply, and a DC power bus of a computer device comprising:

an electrically adaptable interface member including, at least,

a first plug releasably connectable to a first power supply,

a second plug releasably connectable to a DC power V3 bus of a computer device, and

a plurality of signal paths connected electrically between said first plug and said second plug;

a jack attachment releasably connectable to a second power supply; and

a plurality of conductor paths connected electrically between said plurality of signal paths and said jack attachment, wherein each of said plurality of conductor paths is connected electrically to, at least, one of said plurality of signal paths to form a T-configuration in which said conductor paths function as the leg in the T-configuration,

whereby electrical power for electrification of a DC power bus of a computer device is suppliable by a first power supply and a second power supply.

5,578,877

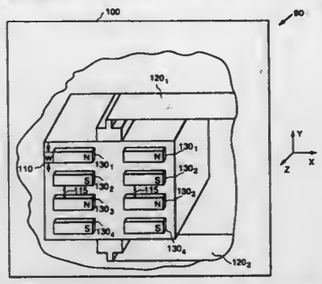
APPARATUS FOR CONVERTING VIBRATORY MOTION TO ELECTRICAL ENERGY

Jerome J. Tiemann, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 13, 1994, Ser. No. 258,869

Int. Cl.[6] B61L 25/02; H02K 35/02

U.S. Cl. 310—15 30 Claims



1. Apparatus for converting vibratory motion along a predetermined vibration axis to electrical energy, said apparatus comprising:

an enclosure;

a magnet carrier structure in said enclosure;

suspension means for suspending said carrier structure in said enclosure, said suspension means allowing reciprocating movement of said carrier structure relative to said enclosure substantially along said vibration axis in response to the vibratory motion;

first and second magnet means attached to said carrier structure for producing a respective magnetic flux, each separate magnet means comprising a plurality of magnets arranged in rows, respectively, extending along a longitudinal axis situated at a predetermined angle relative to the vibration axis, the magnets in each of said magnet means being in spaced relationship with one another to have a predetermined magnet-row interspace between one another, and any two consecutive ones of said magnet rows having an opposite magnetic polarity with respect to one another; and

first and second coil assembly means, each of said coil assembly means comprising a plurality of coil assemblies attached to said enclosure and arranged in armature rows, each of said coil assembly means being situated to be magnetically coupled to separate ones of the first and second magnet means, respectively, for producing electrical current due to magnetic flux changes whenever the carrier structure and the enclosure move reciprocally with respect to one another along said vibration axis, each magnet of said first and second magnet means having two magnetic poles spaced substantially equidistantly from any of said coil assemblies, wherein in each of the armature rows each separate coil assembly is situated in spaced relationship with one another to have a predetermined armature-row interspace between one another, the predetermined magnet-row interspace and the armature-row interspace being sufficiently different from one another so that at any given position encountered while the carrier structure and the enclosure move reciprocally with respect to one another no more than about one of any of the magnet rows substantially corresponds with any one of the armature rows, thereby minimizing any detent effects.

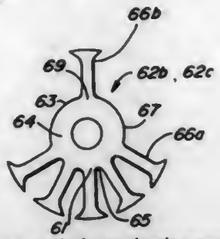
VOL 1192 ISS 4 NO 26 1996 UMI

5,578,878

COUNTERBALANCED ELECTRIC MOTOR

Robert D. Hall, Berkey, Ohio, assignor to United Technologies Motor Systems, Inc., Dearborn, Mich.

Filed Aug. 30, 1994, Ser. No. 298,103
Int. Cl.[6] H02K *5/24;1/06;1/26*
U.S. Cl. 310—51 **8 Claims**



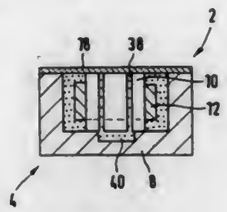
1. An armature assembly for an electric motor comprising:
a longitudinally elongated shaft having a substantially cylindrical primary shaft portion extending along a first central longitudinal axis and a secondary shaft portion extending longitudinally from said primary shaft portion along a second longitudinal axis parallel to and displaced from the first central axis in a first radial direction; and
a lamination stack mounted on the primary shaft portion, said lamination stack formed of a plurality of lamination plates arrayed in abutting face-to-face relationship, each lamination plate of a first portion of the lamination plates having a central annular hub portion having a central opening adapted to receive said primary shaft portion and a plurality of radially directed spokes extending outwardly from the hub portion at equally spaced intervals around the circumference thereof, and each lamination of a second portion of the lamination plates lacking the radially directed spokes along selected portions of the circumferential extent thereof such that said second portion of the lamination plates and the lamination stack are unbalanced and the armature assembly is balanced upon rotation thereof.

5,578,879

ELECTRIC MACHINE WITH FLUID COOLING

Götz Heidelberg, Am Hügel 16, 8136 Starnberg-Percha; Peter Ehrhart, Saalburgstr. 24a, and Andreas Gründl, Hasenenystr. 20, both of 8000 Müchen 70, all of Germany

Continuation of Ser. No. 383,674, Feb. 1, 1995, abandoned, which is a continuation of Ser. No. 842,369, Mar. 19, 1993, abandoned. This application Oct. 3, 1995, Ser. No. 538,616
Claims priority, application Germany, Sep. 28, 1989, 3932481.8
Int. Cl.[6] H02K *1/20;9/00;9/19;3/24*
U.S. Cl. 310—54 **5 Claims**



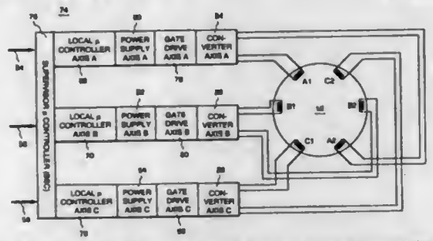
1. An electric machine, comprising:
(a) a stator part having stator poles and current conductor windings, said poles being aligned substantially in a first direction, each one of said windings being associated with a respective one of said stator poles;
(b) an armature part disposed opposite the stator part with an air gap therebetween, said armature part being in magnetic correlation with said stator part;
(c) said stator part and said armature part being movable relative to each other in said first direction;
(d) a stator support having a U-shaped cross section in a plane transverse to said first direction, said stator support including a base wall and first and second side-walls, and a closing cover on the side of said air gap, said closing cover contacting said poles, and said poles and said windings being attached to said stator support;
(e) a first flow space for cooling fluid located between said stator poles and said first side-wall, and a second flow space for the cooling fluid located between said poles and said second side-wall, and wherein said first and second flow spaces extend along said stator poles such that the cooling fluid flows at least across partial regions of said windings, and wherein said first and second flow spaces contain said current conductor windings comprised of conductor wires spaced to allow said cooling fluid to flow between said conductor wires;
(f) a first flow passage for the cooling fluid extending substantially in the first direction, said first flow passage being provided in a base portion of said stator part; and
(g) second flow passages for the cooling fluid extending through at least some of said stator poles, said second flow passages being in communication with said flow spaces and said first flow passage; and
(h) wherein connecting passages for the cooling fluid are defined between at least some of said windings and said cover, and wherein said connecting passages communicate with said flow spaces and said second flow passages; and
(i) wherein said machine is arranged such that the cooling fluid flows along a path that extends through said first and second flow spaces, then through said connecting passages and said second flow passages, and then into said first flow passage.

5,578,880

FAULT TOLERANT ACTIVE MAGNETIC BEARING ELECTRIC SYSTEM

James P. Lyons, and Mark A. Preston, both of Niskayuna, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 18, 1994, Ser. No. 276,586
Int. Cl.[6] H02K *7/09*
U.S. Cl. 310—90.5 **8 Claims**



1. A fault tolerant active magnetic bearing system comprising:
a magnetic bearing having a rotor mounted for rotation within a stator and for coupling to a shaft, said stator having at least six adjacent electromagnets configured such that each electromagnet is situated opposite from a corresponding electromagnet, adjacent electromagnets being separated by nonmagnetic flux barriers, each pair of diametrically opposite electromagnets being adapted to jointly generate a magnetically isolated control axis such that there are at least three control axes, only two of said control axes being required to maintain operation of said magnetic bearing;
an electric power distribution system having at least three independent power buses, each of said power buses being coupled to a respective pair of said diametrically opposite electromagnets for supplying power thereto;
power control means operatively coupled in circuit with said power buses and said bearing for controlling power to each said respective pair of said diametrically opposite electromagnets; and

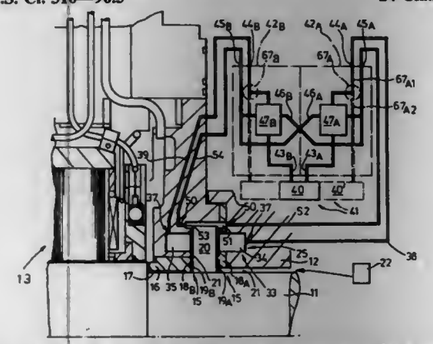
a plurality of bearing system controllers each coupled to a separate respective one of said power control means, each of said bearing system controllers being communication linked with each other for coordinating operation of the separate respective ones of said axis control means.

5,578,881

AXIAL VIBRATION DAMPING ARRANGEMENT

Michael K. Swann, Gales Ferry, and Richard R. Shultz, Groton, both of Conn., assignors to Glacier RPB Inc., Mystic, Conn.

Filed Sep. 29, 1994, Ser. No. 313,600
Int. Cl.[6] H02K *7/09;5/24*
U.S. Cl. 310—90.5 **24 Claims**



1. An axial thrust vibration damping arrangement for a rotor shaft rotatable within a housing, said damping arrangement comprising at least one radially extending thrust face fixed with respect to the rotor shaft and facing along a longitudinal axis of the shaft; at least one damping chamber in the housing, open towards the thrust face and extending at least part way about the shaft; at least one source of gas at elevated pressure; a gas duct connected to said source and opening into said at least one damping chamber; and a gas flow controller responsive to reciprocation of the thrust face to modulate supply of gas to said at least one damping chamber by way of said gas duct, and thus the pressure therein, at the same frequency as the thrust face reciprocation and advanced in phase with respect to variations in thrust face position relative to said at least one damping chamber within a predetermined frequency range to effect a corresponding variation in axial thrust on the thrust face and damping of said thrust face reciprocation.

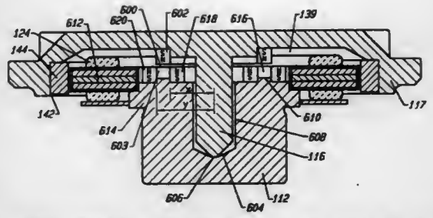
5,578,882

PASSIVE MAGNETIC BEARINGS FOR A SPINDLE MOTOR

John C. Dunfield; Kamran Oveyssi, and Gunter K. Heine, all of Aptos, Calif., assignors to SeagateTechnology, Inc., Scotts Valley, Calif.

Division of Ser. No. 201,676, Feb. 25, 1994, Pat. No. 5,541,460. This application Jun. 2, 1995, Ser. No. 460,648
Int. Cl.[6] F16C *39/06;* **H02K** *21/14*
U.S. Cl. 310—90.5 **11 Claims**

1. In a disc drive, an apparatus for journaling a rotor about a stator of a spindle motor comprising:
a pivot, said pivot for pivotally displacing said rotor about said stator;
an inner annular disc having outer radius X, said inner annular disc comprising an axially aligned magnetic pole, said inner disc fixably attached to a top portion of said stator;
an outer annular disc having an inner radius greater than X, said outer annular disc comprising an axially aligned magnetic pole having a magnetic pole orientation similar to said magnetic pole of said inner annular disc, said outer annular disc fixably attached to said top portion of said stator at a radial distance from said first annular disc whereby a first radial gap is formed between said inner and said outer annular discs; and
a middle annular disc, said middle annular disc comprising an axially aligned magnet pole axially magnetically oriented similarly to said pole of said inner annular disc, said middle disc fixably attached to said rotor and centrally disposed so as to oppose said first gap.

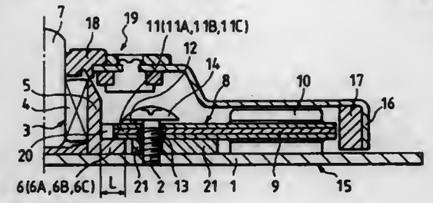


5,578,883

MOTOR HAVING A FIXING STRUCTURE FOR FIXING A BEARING SET TO A CIRCUIT BOARD

Hiroshi Sakashita, and Yukio Kotagiri, both of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Jun. 29, 1994, Ser. No. 267,240
Claims priority, application Japan, Jun. 29, 1993, 5-182253
Int. Cl.[6] H02K *1/18;5/00*
U.S. Cl. 310—91 **6 Claims**



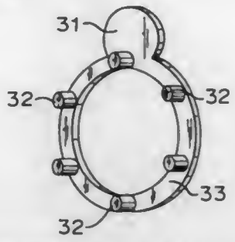
1. A motor comprising:
a circuit board;
a stator core having a plurality of salient poles with a stator coil wound therearound;
a rotor case having a drive magnet disposed opposed to the stator core;
a bearing for supporting a rotary shaft fixed to a central portion of the rotor case; and
a housing fixed to the circuit board and for holding the bearing, wherein a plurality of flange portions are respectively formed partially on an outer peripheral surface of said housing, a plurality of further flange portions, respectively superimposable on top of said flange portions of said housing, are formed partially on an inner peripheral surface of said stator core, a plurality of projected portions and screw holes are further formed in said stator core such that said projected portions and screw holes are disposed adjacent to each other and said projected portions protrude from a top surface of said stator core, whereby when said further flange portions of said stator core are superimposed on top of said flange portions of said housing, by threadedly inserting screws through said screw holes in contact with said projected portions into said circuit board, said further flange portions of said stator core are flexed to press down said flange portions of said housing, so that said housing is fixed to said circuit board.

5,578,884

PERMANENT MAGNET TYPE ROTATING MACHINE

Satoshi Moribayashi; Shuzou Isozumi, and Takeo Gotou, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 207,199, Mar. 8, 1994, Pat. No. 5,481,148.
This application Jun. 7, 1995, Ser. No. 477,259
Claims priority, application Japan, Mar. 26, 1993, 5-68215
Int. Cl.[6] H02K 1/18
U.S. Cl. 310—154 1 Claim



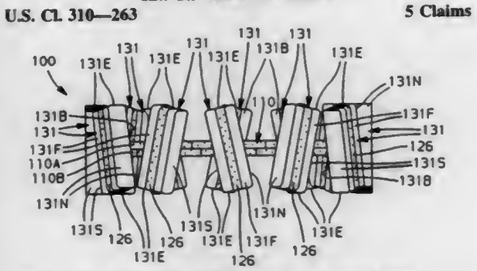
1. A permanent magnet type rotating machine comprising:
a cylindrical yoke;
a plurality of permanent magnets installed on an inner periphery of the cylindrical yoke;
a rotor rotatably installed at an inner peripheral portion of the plurality of permanent magnets;
a pinion driven to rotate by the rotor and in mesh with a ring gear of an engine;
a shift lever for moving the pinion in an axial direction;
a lever packing installed between the shift lever and the yoke; and
a retaining portion provided at the lever packing to elastically retain the plurality of permanent magnets in the axial direction.

5,578,885

ROTOR ASSEMBLY FOR HYBRID ALTERNATOR

Stephen A. Alford, Alexandria; Richard A. Rausch, Anderson, and Gilbert E. Shirk, Chesterfield, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 22, 1994, Ser. No. 361,419
Int. Cl.[6] H02K 1/22;21/04
U.S. Cl. 310—263 5 Claims



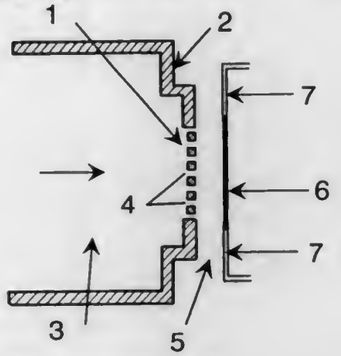
1. A rotor assembly for a hybrid alternator comprising:
a shaft;
first and second claw-pole segments formed of magnetic material carried by said shaft, said first claw-pole segment having a plurality of first circumferentially spaced and axially extending pole fingers, said second claw-pole segment having a plurality of second circumferentially spaced and axially extending pole fingers, said pole fingers being generally V-shaped having first and second side surfaces, each of said side surfaces having a respective permanent magnet support ledge extending substantially normally therefrom, said first and second claw-pole segments being so oriented on said shaft that the pole fingers of said first and second claw-pole segments are interleaved in spaced relationship defining first and second pluralities of permanent magnet channels between opposing side surfaces radially inward of said permanent magnet support ledges, each of said first plurality of permanent magnet channels skewed in a first diagonal direction and each of said second plurality of permanent magnet channels respectively interposed adjacent ones of the first plurality of permanent magnet channels and skewed in a second diagonal direction opposite the first diagonal direction;
a rotor core formed of magnetic material carried by said shaft interposed between said claw-pole segments having opposite ends respectively engaging said claw-pole segments;
a field coil disposed about said rotor core; and,
a permanent magnet assembly comprising a first substantially ring-shaped member supporting a first plurality of permanent magnets about an outer periphery thereof being complementarily oriented with said first plurality of permanent magnet channels and a second substantially ring-shaped member axially adjacent said first member and supporting a second plurality of permanent magnets about an outer periphery thereof being complementarily oriented with said second plurality of permanent magnet channels, whereby said permanent magnets are bounded by opposing side surfaces and support ledges of said first and second pole fingers.

5,578,886

COLLECTOR FOR THERMIONIC ENERGY CONVERTER COVERED WITH CARBON LIKE MATERIAL AND HAVING A LOW ELECTRIC WORK FUNCTION

Leif Holmlid, S-435 31, Mölnlycke, and Robert Svensson, S-438 93, Landvetter, both of Sweden

PCT No. PCT/SE92/00530, § 371 Date Jan. 31, 1994, § 102(e) Date Jan. 31, 1994, PCT Pub. No. WO93/03494, PCT Pub. Date Feb. 18, 1993
PCT Filed Jul. 29, 1992, Ser. No. 190,049
Claims priority, application Sweden, Jul. 31, 1991, 9102263
Int. Cl.[6] H01J 45/00
U.S. Cl. 310—306 12 Claims



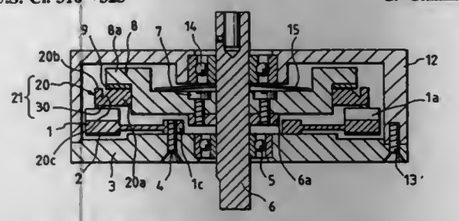
1. A thermionic converter comprising:
an emitter;
a collector having a surface positioned to receive electrons from said emitter;
vapor of a thermionic material interposed between said collector and said emitter;
wherein the collector is at least partly covered by a thin layer of a material capable of interacting with said thermionic material and forming excited states of said thermionic material such that excited thermionic material is maintained on the surface of the collector, thereby providing a work function of the surface of said collector less than 0.9 eV.

5,578,887

VIBRATION ACTUATOR

Takayuki Shirasaki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 428,516
Claims priority, application Japan, Apr. 27, 1994, 6-089719
Int. Cl.[6] H01L 41/08
U.S. Cl. 310—323 29 Claims



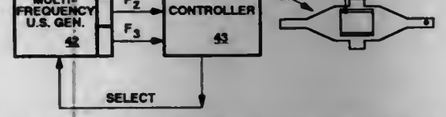
1. A vibration actuator comprising:
a vibration member for generating a vibration; and
a contact member having a base portion, a contact portion and a first portion connecting said base portion and said contact portion, said first portion including a first groove having a cross-section with a substantially triangular shape, a thickness of said first portion being gradually reduced in a direction from said base portion to said contact portion, said contact portion being contacted to said vibration member, such that said contact member and said vibration member are moved relative to each other by vibration of said vibration member.

5,578,888

MULTI RESONANCE UNIBODY ULTRASONIC TRANSDUCER

Ali R. Safabakhsh, Yardley, Pa., assignor to Kulicke and Soffa Investments, Inc., Wilmington, Del.

Filed Dec. 5, 1994, Ser. No. 349,251
Int. Cl.[6] H02N 2/00
U.S. Cl. 310—328 12 Claims



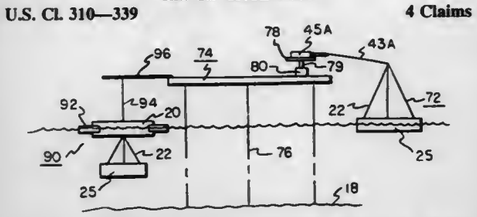
1. A multi-resonance frequency ultrasonic transducer having a efficient lower and higher resonance frequency, comprising:
an monolythic transducer body,
a rectangular aperture in the approximate center of mass of said transducer body,
said aperture having an axial length and a transverse width,
a multi-resonance frequency transducer driver comprising a plurality of piezo electric crystals forming a stack of length L and a width W mounted in compression under load along the axial length direction of said aperture,
said stack of piezo electric crystals having a length L which is equal to or greater than one-quarter of one wavelength of the higher resonance frequency,
said stack of piezo electric crystals of length L being smaller than one-quarter of one wavelength of said lower resonance frequency, and
the design resonance frequency impedance characteristics of unibody transducer being such that it embraces both useful higher and the lower resonance frequencies.

5,578,889

PIEZOELECTRIC GENERATION OF ELECTRICAL POWER FROM SURFACE WAVES ON BODIES OF WATER USING SUSPENDED WEIGHTED MEMBERS

Michael Y. Epstein, Belle Mead, N.J., assignor to Ocean Power Technologies, Inc., West Trenton, N.J.

Filed Feb. 14, 1995, Ser. No. 388,558
Int. Cl.[6] H01L 41/08
U.S. Cl. 310—339 4 Claims



1. Apparatus for converting mechanical energy from surface waves on a body of water to electrical energy comprising a first member, a piezoelectric element supported from said first member, a second, weighted member supported from said piezoelectric element for applying a preselected straining of said piezoelectric element, said first member being a float having positive buoyancy for floating on the surface of said body of water and being movable in direct response to passing surface waves for inducing oscillation in said apparatus, said second member being suspended in said water and having a negative buoyancy, the apparatus being designed to resonate in response to passing waves at a first frequency, and including means for tuning the apparatus for changing the natural frequency of oscillation thereof in direct correspondence to changes in the frequency of said waves.

5,578,890

CRYSTAL RESONATOR PACKAGE

John R. Vig, Colts Neck, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 29, 1994, Ser. No. 366,125
Int. Cl.[6] H01L 23/04
U.S. Cl. 310—340 5 Claims

1. A metal crystal resonator package having a cavity lined with high purity aluminum for housing a crystal resonator under ultra high vacuum wherein the metal is selected from the group comprising stainless steel, aluminum alloy, nickel alloys, and molybdenum.

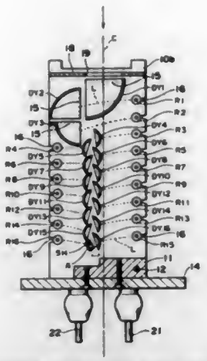
5,578,891

ELECTRON MULTIPLIER

Shiro Sakai; Takehisa Okamoto, and Makoto Nakamura, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan

Continuation of Ser. No. 63,560, May 19, 1993, abandoned.
This application Jun. 1, 1995, Ser. No. 457,174
Claims priority, application Japan, May 20, 1992, 4-127690
Int. Cl.[6] H01J 43/18
U.S. Cl. 313—103 R 9 Claims

1. An electron multiplier comprising:
a plurality of dynodes arranged in multiple stages, each dynode facing an adjacent dynode within the plurality of dynodes;
a voltage dividing circuit including a plurality of series connected resistors for applying a suitable potential to each of the dynodes, each of the resistors being electrically connected to an adjacent resistor within the plurality of resistors, the resistors being arranged in two rows on a back-side of the dynodes; and
a pair of support plates formed of an insulating material, the support plates being arranged on opposing sides of each



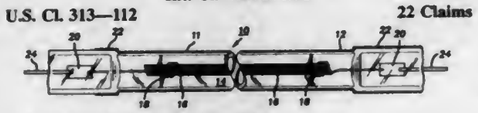
dynode and resistor, the support plates sandwiching and supporting the plurality of resistors and the plurality of dynodes.

5,578,892

BUG FREE LINEAR QUARTZ HALOGEN LAMP

Pamela K. Whitman, and Thomas G. Parham, both of Gates Mills, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 13, 1995, Ser. No. 403,045
Int. Cl.[6] H01K 1/32
U.S. Cl. 313—112 22 Claims



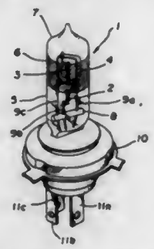
1. An electric bug lamp comprising:
a vitreous light transmissive envelope;
a light source capable of generating light within said envelope; and
a filter disposed on a surface of said envelope comprising ultra-fine undoped titania having a particle size of 0.01 to 0.75 microns and a blue absorbing pigment.

5,578,893

BULB FOR VEHICULAR LIGHTING EQUIPMENT

Teruaki Yamamoto, Tokyo, Japan, assignor to PIAA Corporation, Tokyo, Japan

Continuation of Ser. No. 153,425, Nov. 16, 1993, abandoned.
This application Sep. 7, 1995, Ser. No. 524,837
Int. Cl.[6] H01J 5/16
U.S. Cl. 313—112 1 Claim



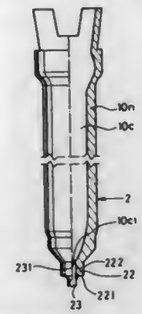
1. A bulb assembly for use in vehicular lighting equipment, said bulb assembly comprising,
a reflector having a focal point,
a glass bulb member having a centerline,
a first filament located in proximity with a rearward end of the bulb member, a second filament located in proximity with a forward end of the bulb member wherein said first filament is located so as to coincide with the focal point wherein said second filament is aligned with the centerline of the glass bulb and remote from the focal point such that a substantially parallel light flux is created for lighting distant locations,
a shield located within the bulb and parallel with the second filament,
a light shield located on the bulb at the forward end of the bulb and located forward of the focal point, a plug disposed at the rearward end of the bulb, the bulb being mounted in lighting equipment with a reflector such that radiation flux is oriented by said shield located within the bulb and said reflector when said second filament is actuated, said bulb having oxide thin films which are dipped-coated on a portion of said bulb corresponding to said second filament so as to form a long wavelength permissive multilayered film on said bulb wherein said films comprise layers of dipped-coated films having a thickness of 1.2 to 1.8 micrometers thereby to convert light rays passing from said second filament into a colored beam having a peak wavelength band of at least 500 nanometers.

5,578,894

SPARK PLUG FOR USE IN INTERNAL COMBUSTION ENGINE

Takafumi Oshima, Nagoya, Japan, assignor to NGK Spark Plug Co., Ltd., Nagoya, Japan

Continuation of Ser. No. 35,703, Mar. 23, 1993, abandoned.
This application Mar. 27, 1995, Ser. No. 411,077
Claims priority, application Japan, Mar. 24, 1992, 4-065791; Jan. 11, 1993, 5-002881
Int. Cl.[6] H01T 13/20
U.S. Cl. 313—141 2 Claims



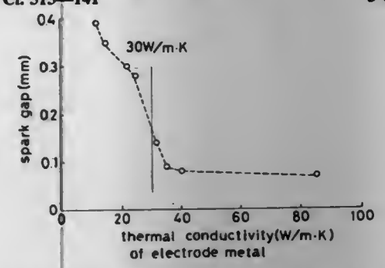
1. A spark plug, comprising:
a center electrode and an outer electrode, at least one of said center electrode and said outer electrode comprising a nickel-alloyed clad and a thermally conductive copper-alloyed core embedded in said nickel-alloyed clad;
said copper-alloyed core including an additive metal substantially evenly dispersed therein, said additive metal forming a supersaturated solid solution with a copper metal upon precipitation in said copper metal of said additive metal or an intermetallic compound from a copper phase;
wherein said additive metal is selected from the group consisting of chromium, zirconium and a combination thereof, said additive metal is present in said copper-alloyed core in an amount in the range of 0.5 to 1.5 weight percent and said additive metal has a precipitated particle size of less than 10 μm, and said copper-alloyed core has a thermal conductivity of at least 200 W/m.k at normal temperature when measured by a laser-flash method.

5,578,895

SPARK PLUG HAVING A NOBLE METAL ELECTRODE TIP

Takafumi Oshima, Nagoya, Japan, assignor to NGK Spark Plug Co., Ltd., Nagoya, Japan

Continuation of Ser. No. 265,340, Jun. 24, 1994, abandoned.
This application Apr. 26, 1996, Ser. No. 639,002
Claims priority, application Japan, Jul. 26, 1993, 5-184207
Int. Cl.[6] H01T 13/20
U.S. Cl. 313—141 5 Claims



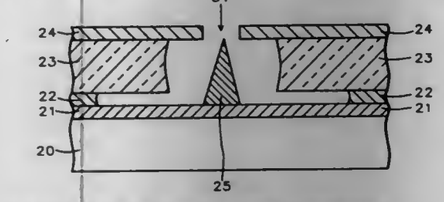
1. A spark plug having an electrode metal made form a heat- and erosion-resistant nickel alloy whose front end has a noble metal tip made of a metal from the group consisting of iridium and ruthenium, wherein:
the electrode metal has a thermal conductivity of at least 30 W/m·K so as to avoid rapid temperature rise in the noble metal tip to thereby minimize oxidation-evaporation and attendant wear thereof.

5,578,896

COLD CATHODE FIELD EMISSION DISPLAY AND METHOD FOR FORMING IT

Jammy C. Huang, Taipei, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Apr. 10, 1995, Ser. No. 419,435
Int. Cl.[6] H01J 1/02
U.S. Cl. 313—309 18 Claims



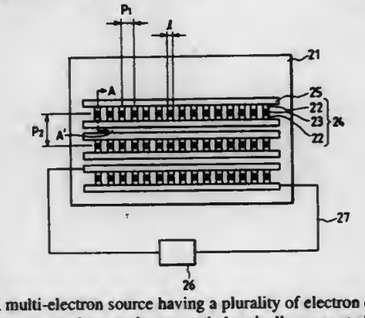
1. A cold cathode field emission display comprising:
a dielectric substrate;
cathode columns for said display, formed of parallel, spaced conductors over said substrate;
an electrically resistive layer between said columns and said substrate;
gate lines for said display, formed of parallel, spaced conductors, over, and at an angle to, and comprising a different material from, said cathode columns;
a dielectric layer between said cathode columns and said gate lines;
a plurality of openings, located at the intersections of said cathode columns and said gate lines, passing through said gate lines, said dielectric layer and said cathode columns, the width of each of said openings being greater in that part that is surrounded by material from said cathode columns than elsewhere; and
a plurality of cone shaped field emission microtips, each centrally located within one of the openings, the base of each of said microtips being in contact with said electrically resistive layer and the apex of each microtip being in the same plane as that of said gate lines.

5,578,897

MULTI-ELECTRON SOURCE, IMAGE-FORMING DEVICE USING MULTI-ELECTRON SOURCE, AND METHODS FOR PREPARING THEM

Ichiro Nomura, Atsugi; Yoshikazu Banno, Ebina; Tetsuya Kaneko, Yokohama; Toshihiko Takeda, Atsugi, and Kumi Iwai, Isehara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 10,302, Jan. 28, 1993, Pat. No. 5,470,265.
This application Mar. 16, 1995, Ser. No. 404,958
Claims priority, application Japan, May 23, 1990, 2-131346
Int. Cl.[6] H01J 1/00
U.S. Cl. 313—310 14 Claims



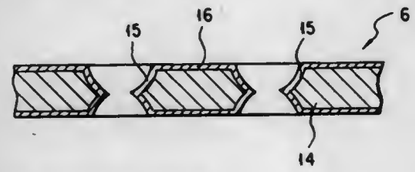
1. A multi-electron source having a plurality of electron emitting elements arranged on a substrate and electrically connected to each other, each of said electron emitting elements comprising a conductive film containing a crack as an electron emitting portion,
wherein, an average width of the cracks of all the electron emitting elements is in the range of 0.05 μm to 1.0 μm.

5,578,898

SHADOW MASK AND CATHODE RAY TUBE

Emiko Higashinakagawa, Kawasaki; Mituharu Hagiwara, Tokyo; Shinzo Sugai, Yokohama; Yasuhisa Ohtake, Fukaya, and Fumio Mori, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 196,366, Feb. 15, 1994, abandoned.
This application Jan. 16, 1996, Ser. No. 585,747
Claims priority, application Japan, Feb. 15, 1993, 5-025486
Int. Cl.[6] H01J 29/80
U.S. Cl. 313—402 24 Claims



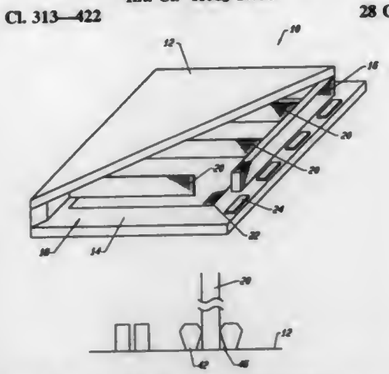
1. A shadow mask comprising:
a mask main body consisting of an Fe—Ni-based alloy containing iron and nickel as main constituents;
a large number of fine electron beam apertures formed in said mask main body; and
a surface layer formed on the surface of said mask main body and containing at least one compound selected from the group consisting of iron nitride, iron nickel nitride, iron boride, iron nickel boride, iron silicide, and iron nickel silicide.

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5,578,899
FIELD EMISSION DEVICE WITH INTERNAL STRUCTURE FOR ALIGNING PHOSPHOR PIXELS WITH CORRESPONDING FIELD EMITTERS

Duane A. Haven, and Chungdee Pong, both of Cupertino, Calif., assignors to Silicon Video Corporation, Cupertino, Calif.

Filed Nov. 21, 1994, Ser. No. 343,075
Int. Cl.[6] H01J *29/18*
U.S. Cl. 313—422 **28 Claims**

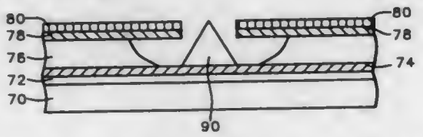


1. A field emission display device, comprising:
a faceplate including a faceplate interior side with an active region made of a plurality of phosphor pixels;
a backplate including a backplate interior side with a plurality of field emitters;
sidewalls positioned between the faceplate and the backplate to form an enclosed sealed envelope between the sidewalls, backplate interior side and the faceplate interior side;
at least one spacer wall in the envelope supporting the backplate and the faceplate against forces acting in a direction toward the envelope; and
at least one internal structure that fixes and constrains the faceplate and the backplate, and aligns the plurality of phosphor pixels with corresponding field emitters, the internal structure including a spacer wall receiver formed on the interior side of the faceplate.

5,578,900
BUILT IN ION PUMP FOR FIELD EMISSION DISPLAY

Chao-Chi Peng, Chinchu, and Chun-hui Tsai, Hsinchu, both of Taiwan, assignors to Industrial Technology Research Institute, Hsin-Chu, Taiwan

Filed Nov. 1, 1995, Ser. No. 551,317
Int. Cl.[6] H01J *1/62;63/04;1/02;1/16*
U.S. Cl. 313—495 **20 Claims**

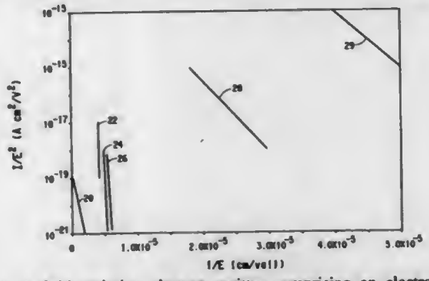


1. A field emission display having an ion pump, said display having a baseplate and an opposing face plate, comprising:
a substrate acting as a base for said baseplate;
parallel, spaced conductors acting as cathode electrodes, over said substrate;
an insulating layer over said cathode electrodes and said substrate;
parallel, spaced conductors acting as gate electrodes, over said insulating layer;
a plurality of openings extending through said insulating layer and said gate electrodes;
at each of said openings is a field emission microtip connected to and extending up from one of said cathode electrodes;
said faceplate having a glass base, mounted opposite and parallel to said baseplate;
a pattern of phosphorescent material over said glass base;
a conducting anode electrode over said phosphorescent material, whereby when electrons which are emitted from said field emission microtips strike said pattern of phosphorescent material, light is emitted, as well as outgassed material; and
ion pump cathode electrodes formed of a gettering material, over said gate electrodes, whereby during display operation said outgassed material is collected at said ion pump cathode electrodes.

5,578,901
DIAMOND FIBER FIELD EMITTERS

Graciela B. Blanchet-Fincher, Wilmington, Del.; Don M. Coates, Santa Fe; David J. Devlin, Los Alamos, both of N.M.; David F. Eaton, Wilmington, Del.; Aris K. Silzars, Landenburg, Pa., and Steven M. Valone, Santa Fe, N.M., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del., and The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 196,340, Feb. 14, 1994, abandoned. This application Feb. 13, 1995, Ser. No. 387,539
Int. Cl.[6] H01J *1/30;3/02*
U.S. Cl. 313—496 **58 Claims**



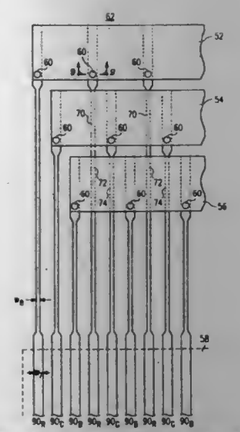
1. A field emission electron emitter comprising an electrode fabricated from at least one diamond composite fiber, said diamond composite fiber comprising a non-diamond core and a diamond coating on said non-diamond core, wherein electron emission occurs along the length of the fiber.

5,578,902
FIELD EMISSION DISPLAY HAVING MODIFIED ANODE STRIPE GEOMETRY

Kenneth G. Vickers, Whitesboro, Tex., assignor to Texas Instruments Inc., Dallas, Tex.

Filed Mar. 13, 1995, Ser. No. 402,750
Int. Cl.[6] H01J *1/53*
U.S. Cl. 313—496 **8 Claims**

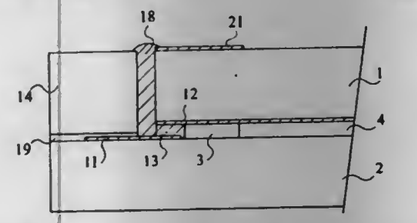
1. A field emission display apparatus comprising:
an emitter plate comprising a plurality of column conductors intersecting a plurality of row conductors, and electron emitters at the intersection of each of said row and column conductors; and
an anode plate adjacent said emitter plate, said anode plate including conductive stripes which are alternately covered by material luminescing in a first, second, and third primary color, said conductive stripes covered by the same luminescent material being electrically interconnected by a first, second, and third bus respectively to form comb-like structures corresponding to each of said colors; said second bus overlapping said conductive stripes of said first color, and said third bus overlapping said conductive stripes of said first and second colors; said anode plate having an active display region;
wherein said conductive stripes have a first width within said active region and a second width, different from said first width, under said overlapping second and third buses.



5,578,903
EXTERNAL ELECTRIC CONNECTIONS FOR FLAT DISPLAY SCREENS

Richard Pepi, Pourrieres, France, assignor to Pixtel International, Rousset, France

Filed Jan. 11, 1995, Ser. No. 371,103
Int. Cl.[6] H01J *5/48*
U.S. Cl. 313—583 **12 Claims**

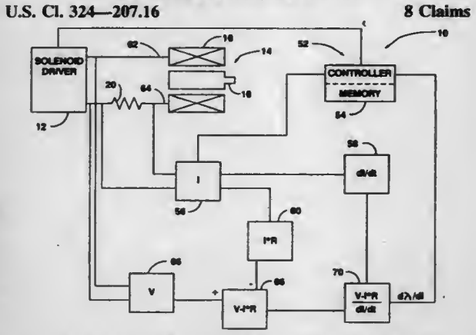


1. A flat display device including a planar first plate (2) and a planar second plate (1) parallel one with respect to the other and each being provided, on its inner surface, with internal conductors (5, 6, 12) extending outside a vacuum chamber (4) provided between the two plates, the first plate (2) having at least one lateral protruding portion (8) protruding with respect to the second plate (1), wherein at least one insulating bar (14, 15) is fastened onto the inner surface of said protruding portion (8) and is provided, on its surface facing the edge of said second plate (1) and in register with extensions of said inner conductors (5, 6) of the first plate (2), with grooves (16, 17) defining conductive transverse passageways (18), said at least one insulating bar having an upper surface that is substantially coplanar with an upper surface of said second plate.

5,578,904
METHOD AND APPARATUS FOR DETERMINING THE POSITION OF AN ARMATURE OF AN ELECTROMAGNETIC ACTUATOR IN RESPONSE TO THE MAGNITUDE AND TIME DERIVATIVE OF THE ACTUATOR COIL CURRENT

Tony L. Marcott, Plainfield; Andrew H. Nippert, Washington, both of Ill., and Matthew G. Branch, Milwaukee, Wis., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 800,815, Nov. 29, 1991, Pat. No. 5,481,187. This application Jun. 7, 1995, Ser. No. 473,891
Int. Cl.[6] G01B *7/14;* **G01R** *27/26*
U.S. Cl. 324—207.16 **8 Claims**

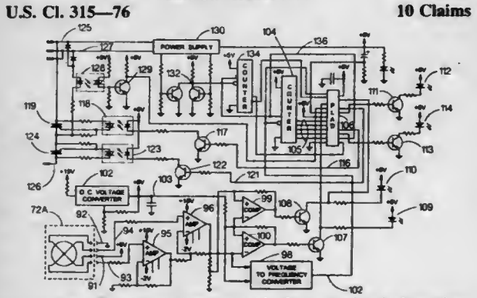


1. An apparatus for determining the position of an armature of an electromagnetic actuator having a coil, the armature being movable to and between first and second positions in response to a current flowing in the coil, comprising:
means for measuring the magnitude of current in the coil and producing a magnitude signal;
means for measuring the rate of change of current in the coil and producing a rate of change signal;
means for measuring the derivative of flux linkage versus current in the coil in response to said rate of change signal and producing a flux linkage signal; and
means for determining the position of the armature with respect to the coil in response to said magnitude and flux linkage signals.

5,578,905
FLOW-RESPONSIVE AIR PURGED PORTABLE ELECTRIC LAMP

Warren S. Graber, Inverness, Ill., assignor to Woodhead Industries, Inc., Buffalo Grove, Ill.

Filed Oct. 11, 1995, Ser. No. 540,643
Int. Cl.[6] H01K *7/00*
U.S. Cl. 315—76 **10 Claims**



1. A portable electric lamp suitable for operation in hazardous locations comprising: a housing including a light-transmissive wall portion; a lamp circuit including a lamp in said housing; electrical power leads for coupling power into said housing; a conduit for transmitting air under pressure into said housing at said first side of said housing; a flow controller providing an orifice of predeter-

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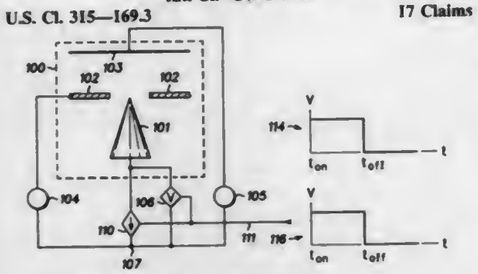
mined size and located in said housing to communicate the interior of said housing with the exterior thereof; a control module including a first circuit for generating an electrical flow signal representative of the flow rate of said air through said orifice; said control module further including an integrating circuit for integrating said flow signal over time for generating a second electrical signal representative of the volume of said air passing through said flow controller, and switch circuit means responsive to said second electrical signal for coupling electrical power to energize said lamp when a predetermined volume of air has passed through said flow controller.

5,578,906

FIELD EMISSION DEVICE WITH TRANSIENT CURRENT SOURCE

Robert T. Smith, Tempe, Ariz., assignor to Motorola, Schaumburg, Ill.

Filed Apr. 3, 1995, Ser. No. 416,120
Int. Cl.[6] G09G *3/10*
U.S. Cl. 315—169.3 **17 Claims**



1. A field emission device comprising:
an electron emitter, for emitting electrons;
an extraction electrode proximally disposed with respect to the electron emitter;
an anode for collecting some of any emitted electrons, distally disposed with respect to the electron emitter;
a transient current source operably coupled between the electron emitter and a reference potential, the transient current source including an external current controlling terminal and providing a transient current to the electron emitter for enhancing response time for emission of electrons from the electron emitter of the field emission device in response to current controlling signals applied to the external current controlling terminal; and
a controlling input line for providing current controlling signals to the transient current source, the controlling input line being operably coupled to the external current controlling terminal of the transient current source.

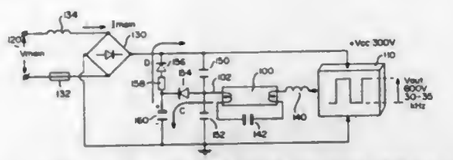
5,578,907

POWER SUPPLY CIRCUIT

Kuang Z. Tao, Block 178, Bishan Street 13, #03-215 Singapore, Singapore, and Kee L. Lim, 63 Hillview Avenue, Unit 08-01, Singapore, Singapore

Filed Sep. 19, 1994, Ser. No. 306,432
Int. Cl.[6] H05B *41/16*
U.S. Cl. 315—247 **18 Claims**

1. A power supply circuit used with a main voltage supply to operate a load, comprising:
a switching power supply that powers the load;
means for linking said switching power supply with the main voltage supply, said linking means comprising a rectifier and a load current smoothing capacitor coupled to said switching power supply; and
current flow direction control means for controlling a charge path and a discharge path of said load current smoothing capacitor, whereby said load current smoothing capacitor is charged solely by said switching power supply and discharged to said linking means, the load being connected in series with said switching power supply and said load current smoothing capacitor.

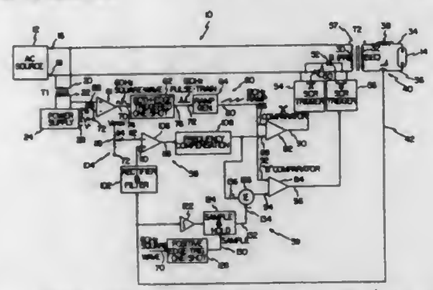


5,578,908

PHASE CONTROL CIRCUIT HAVING INDEPENDENT HALF CYCLES

Eric G. Persson, Minnetonka, Minn., assignor to Nicollet Technologies Corporation, Minneapolis, Minn.

Filed Jun. 7, 1995, Ser. No. 487,502
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—307 **14 Claims**



1. A phase control circuit configured for controlling power delivered from an AC source to an AC load, wherein the AC source supplies an AC drive signal having a plurality of sequential positive and negative half cycles, the phase control circuit comprising:
first power switching means coupled between the AC source and the AC load for conducting current of the AC drive signal after a first phase delay during the positive half cycles;
second power switching means coupled between the AC source and the AC load for conducting current of the AC drive signal after a second phase delay during the negative half cycles;
means coupled to the first and second power switching means for determining the first and second phase delays;
means coupled to the AC load for determining a DC current component in the AC load and for generating a phase delay correction signal as a function of the DC current component; and
means for adjusting at least one of the first and second phase delays independently of the other phase delay as a function of the phase delay correction signal to reduce the DC current component.

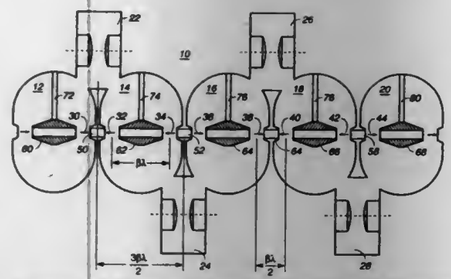
5,578,909

COUPLED-CAVITY DRIFT-TUBE LINAC

James H. Billen, Los Alamos, N.M., assignor to The Regents of the Univ. of California Office of Technology Transfer, Suite 150, Alameda, Calif.

Filed Jul. 15, 1994, Ser. No. 275,865
Int. Cl.[6] H05H *9/00;7/00*
U.S. Cl. 315—505 **11 Claims**

1. A linear accelerator (linac) for accelerating charged particles with radio frequency (rf) energy through an intermediate velocity range, said accelerator comprising:



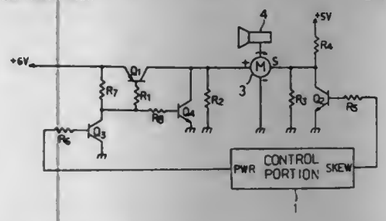
a plurality of accelerating cavities, each one of said accelerating cavities defining input and output coaxial bore tubes connecting adjacent ones of said accelerating cavities; and
a number of drift tubes, n, within each of said accelerating cavities located intermediate and coaxial with said input and output bore tubes, said n drift tubes defining n+1 accelerating gaps between said input and output bore tubes, wherein the center-to-center spacing between successive ones of said accelerating gaps in said accelerating cavity is the distance a particle travels in one period of said rf.

5,578,910

SKEW MOTOR DRIVING CIRCUIT

Hong-Kweon Moon, Kyongki-Do, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Kyongki-do, Rep. of Korea

Filed Jun. 15, 1995, Ser. No. 490,627
Int. Cl.[6] G05B *19/29*
U.S. Cl. 318—285 **2 Claims**



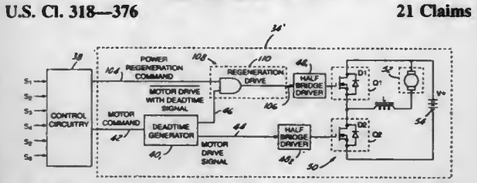
1. In an apparatus for receiving a satellite video,
a skew motor driving circuit of satellite video receiver comprising:
a third transistor Q3 for executing on/off operation in response to a control signal controlling a skew motor power,
a first transistor Q1 for supplying/cutting a skew motor inputting power to a skew motor in conjunction with on/off operation of the third transistor,
a fourth transistor Q4 for eliminating a remaining voltage remaining upon cutting a driving voltage supplied to the skew motor being contrary to the operation of the first and third transistors, and
a second transistor Q2 for supplying skew pulses to the skew motor in response to skew pulse 4 input signal.

5,578,911

METHOD AND APPARATUS FOR POWER REGENERATION IN AN ELECTRIC VEHICLE MOTOR DRIVE USING A DEADTIME GENERATOR AND HAVING CONTINUOUSLY VARIABLE REGENERATION CONTROL

James C. Carter, Clarkston, and Joseph F. Impullitti, Farmington Hills, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Sep. 21, 1994, Ser. No. 309,697
Int. Cl.[6] H02P *3/00*
U.S. Cl. 318—376 **21 Claims**



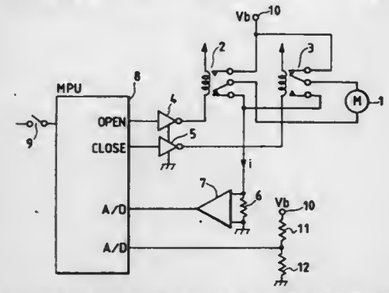
1. A control apparatus for controlling a motor adapted to drive an electric vehicle, comprising:
control means for generating a motor command signal;
deadtime generator means responsive to said motor command signal for generating an inverted motor drive signal having deadtime; and,
motor drive means energizable by a power source and coupled to said inverted motor drive signal having deadtime for causing the motor to operate in a power regeneration mode wherein power generated by the motor is delivered to the power source, said motor drive means being further coupled to said motor command signal for causing the motor to operate in a motoring mode wherein power from the power source is delivered to the motor to operate the motor.

5,578,912

ON-CAR MOTOR DRIVING APPARATUS AND SELF-DIAGNOSING AND SELECTIVE DRIVING MECHANISMS FOR THE SAME

Ken Mizuta, Miyagi-ken; Yukio Miura, Furukawa; Toshihiko Kawata, Sendai, and Ken Shibazaki, Furukawa, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Feb. 3, 1995, Ser. No. 383,265
Claims priority, application Japan, Feb. 4, 1994, 6-012882; Feb. 7, 1994, 6-013653
Int. Cl.[6] B60J *1/12*
U.S. Cl. 318—434 **6 Claims**



1. A motor driving apparatus for applying a motor driving voltage to a motor, the motor being connected to a moving unit mounted on a vehicle, the moving unit being movable in a forward or reverse direction by the motor in response to a command signal entered by a passenger, the apparatus comprising:
a switching circuit for connecting the motor driving voltage to the motor such that a motor drive current passes through the motor in one of a forward and a reverse direction in response to a switching signal;
means for measuring the motor drive current; and

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a controller for transmitting the switching signal in response to the command signal, the controller including:

means for measuring a level of the motor driving voltage and for generating a voltage level value;

means for calculating a unit time value, the calculated unit time value being inversely proportional to the voltage level value; and

means for measuring a variation in the motor drive current over a time period, the time period being determined by said unit time value, and for comparing the motor drive current variation with a preset value;

wherein the controller generates a switching signal which disconnects the motor driving voltage from the motor when the motor drive current variation differs from the preset value by a predetermined amount.

5,578,913

NC DEVICE CONTROLLING MACHINING PROCESSES WITH PRE- AND POST-EXECUTION IN-POSITION VALUES

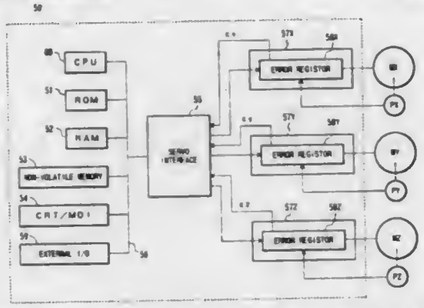
Shouki Yasuda, Nagoya; Koichi Yasumoto, Konan, and Katsunori Tsutsui, Chita-gun, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 17, 1994, Ser. No. 343,938

Claims priority, application Japan, Nov. 17, 1993, 5-288215

Int. Cl.[6] H02D *5/00*

U.S. Cl. 318—569 **34 Claims**



1. A numerical control device for performing machining processes using a numerical control program contained in a microprocessor system comprising:

retrieving means for retrieving consecutive blocks of the numerical control program on a block-by-block basis, the numerical control program being prepared for performing machining processes;

memory means for storing a pre-execution in-position value and a post-execution in-position value for each of the blocks of the numerical control program, the pre-execution in-position value indicating a first tolerance associated with a corresponding block to be obtained before the numerical control program is executed, the post-execution in-position value indicating a second tolerance associated with the corresponding block to be obtained after the numerical control program has been executed;

control means for controlling execution of the block of the numerical control program in accordance with at least one of the corresponding pre-execution in-position value and the post-execution in-position value; and

machining means for performing the machining process in accordance with the block of the numerical control program.

5,578,914

CHARGING SYSTEM FOR MULTI-CELL BATTERY

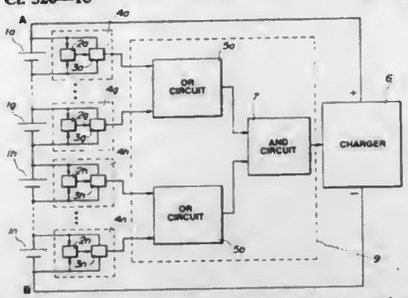
Koji Morita, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed May 30, 1995, Ser. No. 453,428

Claims priority, application Japan, Jun. 8, 1994, 6-150517

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—18 **19 Claims**



7. A battery charging system for charging a battery of series connected cells, said system comprising:

a charging means for supplying a charging current to a series connection of said cells to charge said battery;

a plurality of regulator circuits each of which is connected in parallel with a unique one of said cells and each of which comprises a regulating means for regulating a terminal voltage of the corresponding one of said cells by controlling a bypass current bypassing the corresponding one of said cells, and a commanding means for producing a command signal in accordance with the terminal voltage of the corresponding one of said cells; and

a control means for causing said charging means to reduce said charging current in response to said command signal;

wherein said regulating means of each of said regulator circuits comprises a voltage detecting means for detecting the terminal voltage, said voltage detecting means comprises a first comparing means for comparing the terminal voltage with a predetermined first voltage level, and said regulating means of each of said regulator circuits further comprises a bypass current controlling means for maintaining the terminal voltage substantially constant by decreasing a current flowing through the corresponding one of said cell by increasing the bypass current in accordance with an output signal produced by said first comparing means; and

wherein said commanding means comprises a saturation detecting means for detecting a saturation of the bypass current by monitoring an increase of the terminal voltage from said first voltage level and for producing said command signal when the saturation of the bypass current is detected, and said saturation detecting means comprises a second comparing means for producing said command signal when the terminal voltage becomes equal to or higher than a second predetermined voltage level which is higher than said first voltage level.

5,578,915

DYNAMIC BATTERY STATE-OF-CHARGE AND CAPACITY DETERMINATION

Dell A. Crouch, Jr., and Tracy F. Strickland, both of Noblesville, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 26, 1994, Ser. No. 311,991

Int. Cl.[6] H02J *7/04*

U.S. Cl. 320—48 **13 Claims**

1. In a rechargeable electrochemical battery system characterized by a series arrangement of multiple electrochemical modules, a method of dynamically determining battery state-of-charge (SOC) comprising the steps of:

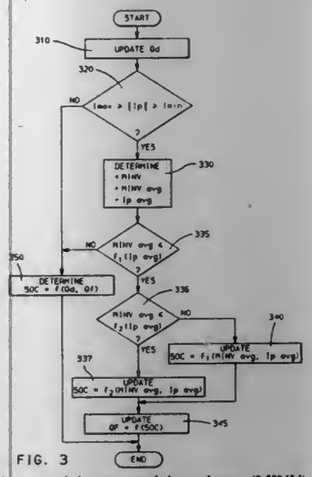


FIG. 3

determining a minimum module voltage (MINV) from said battery system;

determining a series current (I) through said battery system;

establishing a nominal discharge module threshold voltage (Vth) as a function of said series current (I);

when said series current (I) is outside a predetermined range of current values, determining battery state-of-charge (SOC) as a function of time integrated series current (Qd) and a predetermined battery capacity (Qf); and

when said series current (I) is within said predetermined range of current values, determining battery state-of-charge (SOC) as one of

a) a function of time integrated series current (Qd) and said predetermined battery capacity (Qf) when said minimum module voltage (MINV) is greater than said nominal discharge module threshold voltage (Vth), and

b) a function of series current (I) and minimum module voltage (MINV) when said minimum module voltage (MINV) is not greater than said nominal discharge module threshold voltage (Vth).

5,578,916

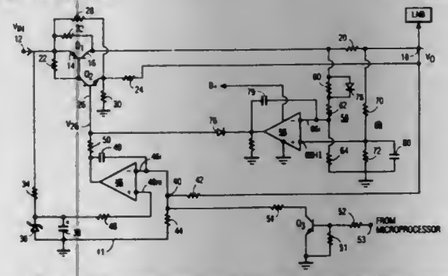
DUAL VOLTAGE VOLTAGE REGULATOR WITH FOLDBACK CURRENT LIMITING

Max W. Muterspaugh, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed May 16, 1994, Ser. No. 241,122

Int. Cl.[6] G05F *1/577;1/40*

U.S. Cl. 323—267 **13 Claims**



1. A voltage regulator providing a plurality of regulated output voltages, and current limiting for each of said plurality of regulated output voltages, comprising:

an input terminal for receiving an unregulated DC input voltage;

an output terminal for providing a DC output voltage;

means responsive to a control signal and coupled between the input terminal and the output terminal for regulating said DC output voltage at the output terminal;

means for changing the control signal in response to the magnitude of the regulated DC voltage, the magnitude of the control signal also being switchable for providing a first and a second regulated DC voltages at the output terminal;

a first sensing means including a first voltage divider for providing a first sensed voltage corresponding to the value of the regulated DC voltage,

a second sensing means including a second voltage divider for providing a second sensed voltage corresponding to the value of the current drawn by the load;

means responsive to the first and second sensed voltages for limiting the current supplied to the load when the magnitude of said current drawn by the load exceeds a threshold value; and

means coupled to one of the first and second voltage dividers for changing the one of the first and second sensed voltages when the regulated DC voltage is switched between the first and second regulated DC voltages.

5,578,917

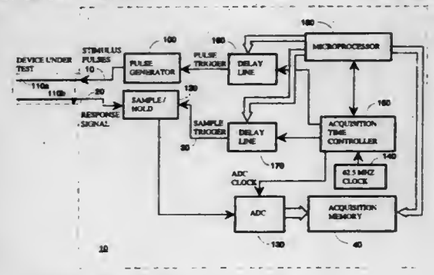
REPETITIVE DIGITAL SAMPLING CIRCUIT USING TWO DELAY LINES FOR IMPROVED TIME ACCURACY

Jeffrey S. Bottman, Seattle, Wash., assignor to Fluke Corporation, Everett, Wash.

Filed Mar. 20, 1995, Ser. No. 415,925

Int. Cl.[6] G01R *23/16*

U.S. Cl. 324—76.15 **16 Claims**



1. A digital sampling circuit, comprising:

(a) pulse generator means responsive to a pulse trigger signal for launching a stimulus signal into a device under test;

(b) sampling means responsive to a sample trigger signal for providing digital samples of a response signal received from said device under test;

(c) a first delay line coupled to said pulse generator means for delaying said pulse trigger signal by a pulse delay time;

(d) a second delay line coupled to said sampling means for delaying said sample trigger signal by a sample delay time; and

(e) an acquisition time controller circuit for generating said pulse trigger signal and said sample trigger signal wherein said sampling means generates a plurality of digital samples corresponding to a selected point on said response signal, each digital sample is determined by a unique combination of said pulse delay time and said sample delay time, and a composite sample corresponding to said selected point is calculated from a sum of said plurality of digital samples.

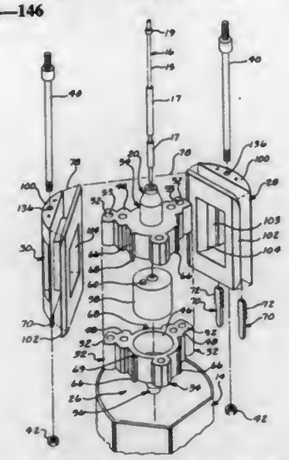
VOL 1192 ISS 4 NO 26 1996 UMI

5,578,918

MODULAR TWO OR THREE COIL MOVEMENT HAVING A MAGNET HOMING FREE CROSS SECTIONAL SHAPE OF THE SHIELD POT

Wilfried Baatz, Seattle, Wash., assignor to Floscan Instrument Company, Inc., Seattle, Wash.

Filed Jul. 21, 1994, Ser. No. 278,185
Int. Cl.[6] G01R 1/04;1/16
U.S. Cl. 324—146 22 Claims



1. A moving magnet movement for driving an indicator in a meter, the movement comprising:
(a) a housing;
(b) a permanent magnet rotatably coupled to the housing for rotation about an axis of rotation;
(c) first and second coil assemblies positioned and angularly displaced from each other around the axis of rotation of the permanent magnet, each coil assembly including an electrical coil that produces a magnetic flux in response to an electrical signal so as to angularly displace the permanent magnet; and
(d) a shield pot having a noncircular cross-sectional shape and being formed of a magnetically susceptible material at least partially surrounding the first and second coils, permanent magnet and housing, the cross-sectional shape of the shield pot allowing the axis of rotation of the permanent magnet to be located such that the noncircular cross section of the shield pot does not create a homing position for the permanent magnet and so that the noncircular cross-sectional shape of the shield pot allows the axis of rotation of the permanent magnets of two individual movements to be placed closer together than similarly sized movements using shield pots having a circular cross-sectional shape and permanent magnets having an axis of rotation located at the central axis of the shield pots.

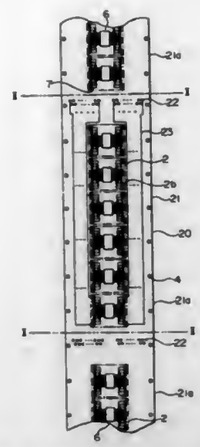
5,578,919

METHOD OF TESTING SEMICONDUCTOR DEVICE AND TEST APPARATUS FOR THE SAME

Shinji Semba; Shinji Enoshima; Kunio Kobayashi, all of Itami, and Isamu Yamamoto, Sagamihara, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 30,875, Mar. 12, 1993, abandoned. This application Mar. 20, 1995, Ser. No. 407,381
Claims priority, application Japan, Oct. 30, 1992, 4-293093
Int. Cl.[6] G01R 31/26
U.S. Cl. 324—158.1 6 Claims

1. A method for testing a semiconductor device comprising:
preparing a tape carrier comprising an elongated electrically insulating tape divided into a plurality of separable tape sections, each tape section including a plurality of outer edges



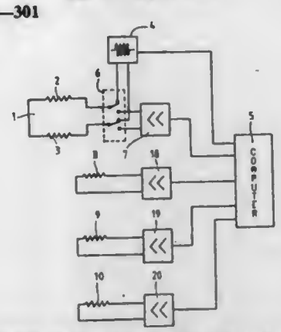
and a plurality of semiconductor device mounting portions, each mounting portion having a plurality of leads for electrical connection to a semiconductor chip mounted at the respective mounting portion, a plurality of testing connection terminals on each of said tape sections disposed along a single one of the outer edges of the respective tape section, and a plurality of testing wires directly connecting said leads to respective testing connection terminals;
mounting a semiconductor chip on each of said semiconductor device mounting portions of one of said tape sections;
connecting each semiconductor chip on a tape section to the respective leads of said tape section to form a semiconductor device;
cutting said elongated tape carrier, separating said tape section from said elongated tape carrier; and
testing each of said semiconductor chips mounted on said tape section through said testing connection terminals at the single outer edge of said tape section.

5,578,920

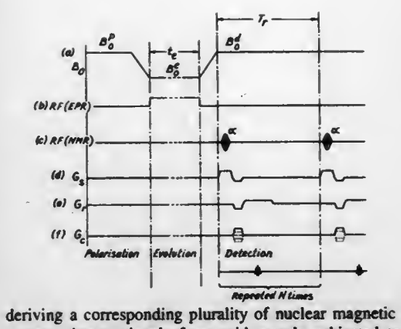
COMPENSATION OF INTERFERING FIELDS IN NMR MEASUREMENTS IN THE EARTH'S MAGNETIC FIELD

Anton Kuster, Greifensee, Switzerland, and Dirk D. Laukien, Lexington, Mass., assignors to Spectrospin AG, Switzerland

Filed Jul. 10, 1995, Ser. No. 499,830
Claims priority, application Germany, Jul. 14, 1994, 44 24 842.3
Int. Cl.[6] G01V 3/00
U.S. Cl. 324—301 18 Claims



1. An apparatus for the detection of nuclear magnetic resonance (NMR) from the earth comprising: detection coil means for detecting an NMR induction voltage from excited nuclear spins precessing in the earth's magnetic field within a sensitivity region in the earth, the detection coil means comprising a first and a second partial coil having parallel coil axes, the partial coils being electrically connected to one another and wound in opposite directions; first amplifier means connected to the detection coil means for amplifying the NMR induction voltage; compensation coil means for detecting an inhomogeneous interference induction voltage from a spatially inhomogeneous interference field, the compensation coil means having three mutually orthogonal compensation coils to detect and reconstruct an arbitrarily oriented vector interference signal; and second amplifier means connected to the compensation coil means for amplifying the interference induction voltage, the second amplifier means having an adjustable gain.



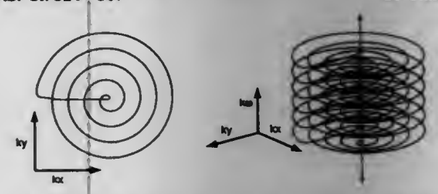
deriving a corresponding plurality of nuclear magnetic resonance image signals from said sample subjected to said plurality of nuclear magnetic resonance interrogating signals, and
combining said plurality of nuclear magnetic resonance image signals into a complete nuclear magnetic resonance image.

5,578,921

MAGNETIC RESONANCE IMAGING USING THREE-DIMENSIONAL SPECTRAL-SPATIAL EXCITATION

Glen R. Morrell, Stanford, Calif., assignor to Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Filed Jan. 10, 1995, Ser. No. 370,907
Int. Cl.[6] G01R 33/20
U.S. Cl. 324—307 16 Claims



1. A method of selectively exciting nuclei in an object for magnetic resonance imaging comprising the steps of
applying a static magnetic field B_0 through said object, and
applying an RF excitation pulse to said object which is spatially selective along two axes and spectrally selective in chemical shift whereby arbitrarily specified excitation profiles, with arbitrarily specified magnitude and phase, in two spatial dimensions and one spectral dimension are achieved.

5,578,922

METHOD OF CONTAINING IMAGES REPRESENTING THE DISTRIBUTION OF PARAMAGNETIC MATERIAL IN SOLUTION

David J. Lurie, Cults, England; John R. Mallard, Aberdeen, Scotland, and Ian Nicholson, Dunstan, England, assignors to British Technology Group Limited, London, England

PCT No. PCT/GB93/01652, § 371 Date Feb. 3, 1995, § 102(e) Date Feb. 3, 1995, PCT Pub. No. WO94/03824, PCT Pub. Date Feb. 17, 1994
PCT Filed Aug. 5, 1993, Ser. No. 382,004
Claims priority, application United Kingdom, Aug. 5, 1992, 9216597
Int. Cl.[6] G01V 3/00
U.S. Cl. 324—307 7 Claims

1. A method of proton-electron double-resonance magnetic resonance imaging comprising steps of:
subjecting a sample containing paramagnetic material to a polarizing magnetic field during a polarization period;
subjecting said sample to an evolution period after said polarization period, said evolution period comprising a step of subjecting said sample to radio-frequency radiation at a frequency in correspondence with a respective polarizing magnetic field, so as to excite electron paramagnetic resonance in said paramagnetic material;
subjecting said sample to a detection period after said evolution period, said detection period including steps of:
subjecting said sample to a plurality of nuclear magnetic resonance interrogating signals,

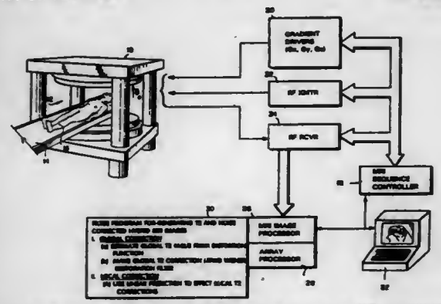
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5,578,923

T2 RESTORATION AND NOISE SUPPRESSION OF HYBRID MR IMAGES USING WIENER AND LINEAR PREDICTION TECHNIQUES

Haiguang Chen, San Francisco, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 145,742, Nov. 4, 1993. This application Jun. 21, 1995, Ser. No. 493,014
Int. Cl.[6] G01R 33/20
U.S. Cl. 324—309 2 Claims



1. A method for enhancing MRI data acquired at different NMR echo times to compensate for T2 and noise distortions, said method comprising the steps of:
deriving linear predictions of estimated local amplitude and phase for one-dimensional Fourier-transformations of MRI data in the spatial frequency domain, and
utilizing said linear predictions to make local amplitude and phase corrections to such data during MR image reconstruction processing.

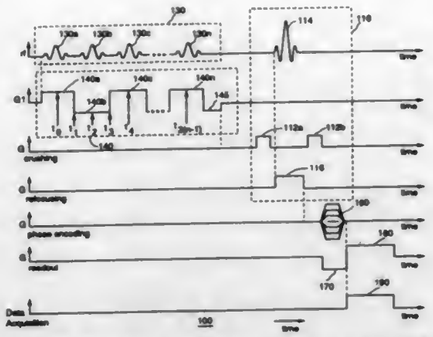
5,578,924

METHODS FOR THE SIMULTANEOUS DETECTION OF MULTIPLE MAGNETIC RESONANCE IMAGES

Charles L. Dumoulin, Ballston Lake, and Christopher J. Hardy, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 15, 1995, Ser. No. 558,296
Int. Cl.[6] G01R 33/48
U.S. Cl. 324—309 9 Claims

1. A method for the generation of image data from multiple portions of a subject with magnetic resonance, comprising the steps of:



a) placing said subject into a magnetic field to polarize nuclear spins;

b) applying to said subject a composite excitation radiofrequency (RF) pulse comprised of a series of N discrete RF pulses, each having a selected frequency and phase to nutate nuclear spins within said subject for the purpose of creating transverse spin magnetization;

c) applying to said subject a composite excitation magnetic field gradient pulse having alternating polarity, substantially simultaneously with the application of the composite excitation RF pulse to constrain the creation of transverse spin magnetization to N selected portions within said subject;

d) applying to said subject at a selected time after the application of the composite excitation RF pulse, a refocusing RF pulse to generate a spin echo;

e) applying to said subject a refocusing magnetic field gradient pulse substantially simultaneously with the application of the refocusing RF pulse to limit the region of refocusing in said subject;

f) applying to said subject at a selected time after the application of the composite excitation RF pulse, a phase-encoding magnetic field gradient pulse of a selected amplitude in a first selected direction to cause transverse spin magnetization to be dephased by an amount proportional to the location of the transverse magnetization in the first direction;

g) applying to said subject at a selected time after the application of the composite excitation RF pulse, a readout dephasing magnetic field gradient pulse of a selected amplitude in a second selected direction substantially orthogonal to the first direction to cause transverse spin magnetization to be dephased by an amount proportional to the location of the transverse magnetization in the second direction;

h) applying a readout magnetic field gradient pulse in the second selected direction with a polarity substantially opposite that of the readout dephasing magnetic field gradient pulse;

i) detecting with a receiver operating at a selected frequency an MR response signal generated by the transverse spin magnetization in the presence of the readout magnetic field gradient pulse;

j) repeating steps 'b'--'i' a plurality, Y times, each repetition having a unique amplitude for the phase-encoding gradient pulse; and

k) creating a reconstructed MR image containing MR image data from each of the N excited portions of said subject by performing a two-dimensional Fourier transform of the detected MR response signals.

5,578,925

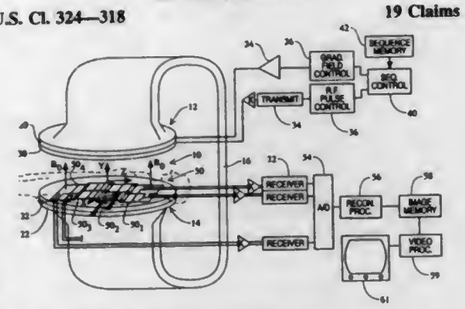
VERTICAL FIELD QUADRATURE PHASED ARRAY COIL SYSTEM

David A. Molyneaux, Mentor, and William O. Braum, Solon, both of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Filed Aug. 18, 1995, Ser. No. 512,274

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—318 **19 Claims**



1. In a magnetic resonance imaging system which includes a pair of generally horizontal magnet pole pieces between which a vertical, temporally constant B_0 magnetic field is defined, a generally C-shaped ferrous flux path connecting the pole pieces, gradient magnetic field coils disposed adjacent the pole pieces for causing gradient magnetic fields across the temporally constant B_0 magnetic field, an RF transmitter for exciting resonance in selected dipoles in between the pole faces such that the dipoles generate resonance signals at a characteristic resonance frequency, a radio frequency coil array for receiving resonance signals from the resonating dipoles, at least one radio frequency receiver for demodulating the resonance signals from the radio frequency coil array, and a reconstruction processor for reconstructing the demodulated radio frequency signals into an image representation, the radio frequency coil array comprising:

a first radio frequency coil having a first field of view, the first radio frequency coil including:

a first electrically conductive outer loop;

a first electrically conductive connecting element extending between a first pair of symmetric 180° opposite points of the first loop;

a second electrically conductive element connected between a second pair of symmetric 180° opposite points on the first loop, which second pair of 180° opposite points on the first loop are substantially 90° offset from the first pair of 180° opposite points, such that the resonance signals from the first and second conductive elements are substantially 90° out-of-phase in a quadrature relationship, the first and second electrically conductive elements being connected via electrical leads with the receiver;

a second radio frequency coil having a second field of view different from and contiguous to the first field of view, the second radio frequency coil including:

a second electrically conductive loop that partially overlaps the first electrically conductive loop;

a third electrically conductive connecting element extending between a third pair of symmetric 180° opposite points of the second loop;

a fourth electrical connecting member connected between a fourth pair of 180° opposite points on the loop, which fourth 180° opposite points on the loop are substantially 90° offset from the third pair of 180° opposite points.

5,578,926

LOCATING SYSTEM FOR FINDING MAGNETIC OBJECTS IN THE GROUND INCLUDING IMPROVED MEANS FOR ACCURATE CORRELATION OF MEASURED MAGNETOMETER PROBE SIGNALS TO PROBE POSITIONS

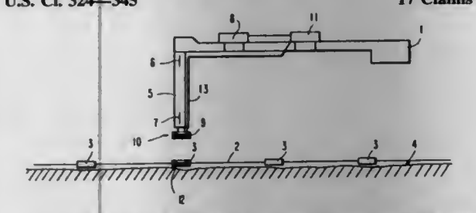
Horst Reinhardt, Eningen, Germany, assignor to Vallon GmbH, Eningen, Germany

Filed Oct. 18, 1993, Ser. No. 139,102

Claims priority, application Germany, Oct. 21, 1992, 42 35 356.4

Int. Cl.[6] G01V *3/08*

U.S. Cl. 324—345 **17 Claims**



1. Locating system for locating magnetic objects located in the ground, said locating system comprising:

a plurality of position transmitters (3) spaced from each other at predetermined positions over a measurement path;

a magnetometer probe (1) movable by an operator over said measurement path and including means (5,6,7) for providing successive measured magnetometer signal values as said magnetometer probe (1) is moved by said operator over said measurement path;

position detector means (11) for measuring magnetometer probe position, said position detector means (11) including sensor means (10) for sensing when said sensor means (10) passes over each of said position transmitters (3) and for generating successive magnetometer probe position signal values indicative of said magnetometer probe position on said measurement path when said sensor means (10) passes over each of said position transmitters (3), said sensor means being movable over said measurement path together with said magnetometer probe (1) in a fixed spatial relationship with said magnetometer probe (1); and

data receiving and analyzing means (8) for accurately obtaining a functional relationship between said successive measured magnetometer signal values and said magnetometer position signal values, said data receiving and analyzing means (8) being connected to said position detector means (11) to receive said magnetometer position signal values and connected to said means (5,6,7) for generating said measured magnetometer signal values to receive said measured magnetometer signal values.

5,578,927

MEASUREMENT CIRCUIT FOR A MODULAR SYSTEM OF CELLS ELECTRICALLY CONNECTED IN SERIES, IN PARTICULAR FOR ELECTRICAL ACCUMLATOR BATTERIES

Michel Perelle, Parcay-Meslay, France, assignor to SAFT, Romainville, France

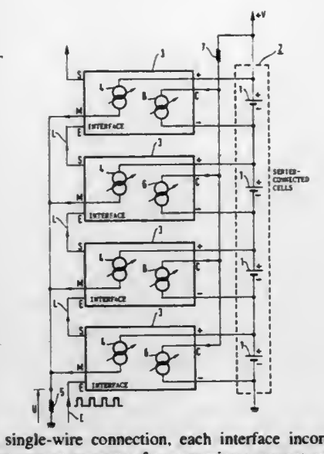
Filed Dec. 8, 1994, Ser. No. 354,759

Claims priority, application France, Dec. 9, 1993, 93 14798

Int. Cl.[6] G01N *27/416*; **G01R** *31/36*

U.S. Cl. 324—434 **4 Claims**

1. A measurement circuit for a modular system of cells electrically connected in series and each constituted by one or more electrical energy elements, said circuit comprising individual measurement interfaces each respectively connected to the power terminals of a different cell and each including a single-wire measurement output for carrying a current measurement signal to be transmitted to a common transducer to which the respective measurement outputs of the interfaces are connected in common via a common single-wire connection, each interface incorporating at least a first current generator for generating a current measurement signal relating to a change in the characteristic of the corresponding cell, the interfaces being connected in series by successive elements of a single-wire link capable of serially transmitting individual switching control pulses grouped into streams, each interface having a control circuit adapted to respond to a first control pulse of a stream of received control pulses by turning on the first current generator of the interface and transmitting any subsequent pulses of the same stream to any downstream interface whose input is connected to a control output of the interface via an element of the single-wire link.



5,578,928

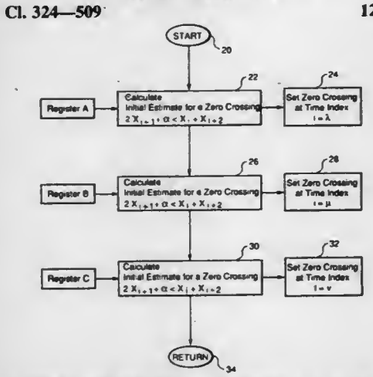
METHOD FOR DETECTING ZERO CROSSINGS IN A RECTIFIED POWER SIGNAL

David A. Langan, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 23, 1995, Ser. No. 376,252

Int. Cl.[6] G01R *31/14*

U.S. Cl. 324—509 **12 Claims**



1. A method for detecting zero crossings in a rectified power signal comprising three separate signal constituents for energizing a three-phase circuit, said method comprising:

sampling at least two consecutive cycles of each signal constituent at a predetermined sampling rate;

storing a predetermined number of samples for each signal constituent;

computing a respective initial zero crossing estimate for each signal constituent by searching for three consecutive samples in each respective one of the three signal constituents so that a middle sample of the three consecutive samples has a

respective sample value which is less than the respective sample values of the two remaining samples and satisfy

$$2x(i+1)+\alpha<x(i)+x(i+2).$$

where x(i+1) represents the sample value of the middle sample at time i+1, x(i) and x(i+2) represent sample values for the two remaining samples at time i and i+2, respectively, and α is a predetermined constant; and

checking the accuracy of the respective initial zero crossing estimate for each signal constituent.

5,578,929

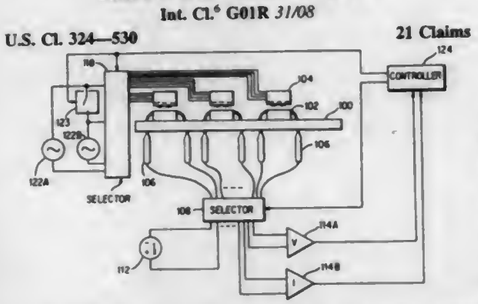
Patent Not Issued For This Number

5,578,930

MANUFACTURING DEFECT ANALYZER WITH IMPROVED FAULT COVERAGE

Timothy W. Sheen, Brighton, Mass., assignor to Teradyne, Inc., Boston, Mass.

Filed Mar. 16, 1995, Ser. No. 405,478
Int. Cl.[6] G01R *31/08*
U.S. Cl. 324—530 **21 Claims**



1. A manufacturing defect analyzer for testing a printed circuit board having a plurality of components disposed on it, comprising:

(a) a plurality of sensors, each sensor:

(i) adapted to be disposed above one of the components on the printed circuit board;

(ii) having a plurality of layers having conductive traces on at least one layer, the conductive traces forming at least one conductive path between a first point and a second point; and

(iii) at least two terminals, one such terminal connected to the first point and one such terminal connected to the second point;

(b) test control means for:

(i) connecting the sensor to allow a current flow between the two terminals of the sensor and measuring a test signal inductively coupled between the printed circuit board and the sensor; and

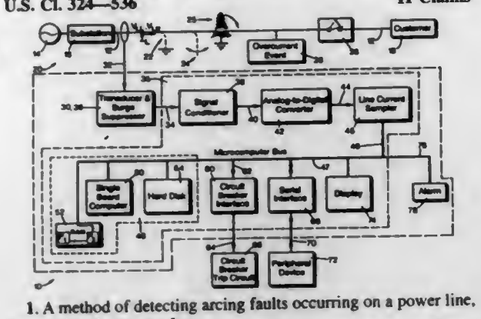
(ii) connecting the sensor to prevent a current flow between the two terminals of the sensor and measuring a test signal capacitively coupled between the printed circuit board and the sensor.

5,578,931

ARC SPECTRAL ANALYSIS SYSTEM

B. Don Russell, and B. Michael Aucoin, both of College Station, Tex., assignors to The Texas A & M University System, College Station, Tex.

Continuation of Ser. No. 138,489, Oct. 15, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 485,664
Int. Cl.[6] G01R *31/08;19/00*
U.S. Cl. 324—536 **11 Claims**



1. A method of detecting arcing faults occurring on a power line, comprising the steps of:

using a pre-determined arcing fault signal model, which characterizes the behavior of an arcing fault;

monitoring a load signal parameter indicative of the power flowing through said power line;

deriving a frequency spectrum of sample frequency components based on said load signal parameter; and

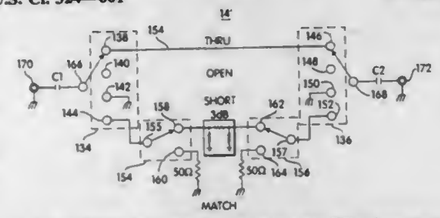
comparing individual components of said spectrum of sample frequency components to corresponding frequency values of said arcing fault signal model to determine whether an arcing fault exists on said power line.

5,578,932

METHOD AND APPARATUS FOR PROVIDING AND CALIBRATING A MULTIPORT NETWORK ANALYZER

Vahe A. Adamian, Lexington, Mass., assignor to ATN Microwave, Inc., Billerica, Mass.

Continuation of Ser. No. 156,277, Nov. 22, 1993, Pat. No. 5,467,021, which is a continuation-in-part of Ser. No. 66,534, May 24, 1993, Pat. No. 5,434,511. This application Jun. 7, 1995, Ser. No. 484,528
Int. Cl.[6] G01R *15/12*
U.S. Cl. 324—601 **12 Claims**



1. An apparatus for multiplexing a two-port RF, microwave, or millimeter wave vector network analyzer into N-ports, where N is at least three ports and for characterizing S-parameters of an N-port device under test, the apparatus comprising:

a test set that multiplexess the two-port vector network analyzer into the N-ports, the test set having a first port adapted to be coupled to a first port of the two-port vector network analyzer, a second port adapted to be coupled to a second port of the two-port vector network analyzer, and N-ports, the test set including:

a means for selectively coupling one of the N-ports to the second port of the test set, the means for selectively coupling providing a first reflection coefficient to one port of the N-ports of the test set; and

N-2 sources of reflection coefficents, each source of the N-2 sources of reflection coefficient providing a plurality of reflection coefficients to one port of the N-ports of the test set;

the apparatus further comprising a multi-state transfer standard having N-ports, each of the N-ports of the multistate transfer standard adapted to be coupled to a respective one of the N-ports of the test set, the multi-state transfer standard providing, at each of the N-ports a plurality of conditions necessary to calculate N−1 sets of two-port error coefficients to calibrate the two-port vector network analyzer and the test set; and

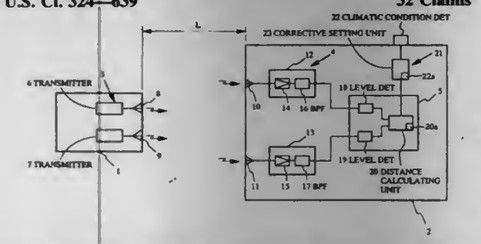
wherein-the first reflection coefficient, the plurality of reflection coefficient and the N−1 sets of two-port error coefficients are used to characterize the S-parameters of the device under test.

5,578,933

DISTANCE MEASURING SYSTEM

Kenichi Nonaka, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1995, Ser. No. 383,783
Claims priority, application Japan, Feb. 4, 1994, 6-012367
Int. Cl.[6] G01S *11/00*
U.S. Cl. 324—639 **32 Claims**



1. A distance measuring system for measuring a distance between two objects, comprising:

transmitting means adapted to be mounted on one of the two objects, for transmitting a plurality of electromagnetic waves having respective wavelengths different from each other at respective transmit levels toward the other of the two objects;

receiving means adapted to be mounted on the other object, for receiving the electromagnetic waves transmitted from said transmitting means; and

distance detecting means for detecting a ratio of detected levels at which at least one set of electromagnetic waves of said electromagnetic waves is received by said receiving means, as corresponding to a distance between the two objects, and determining the distance between the two objects from said transmit levels and said ratio of said detected levels.

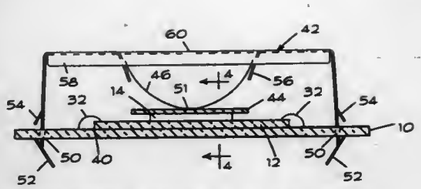
5,578,934

METHOD AND APPARATUS FOR TESTING UNPACKAGED SEMICONDUCTOR DICE

Alan G. Wood, Boise; Warren M. Farnworth, Nampa; Salman Akram, and David R. Hembree, both of Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 345,064, Nov. 14, 1994, Pat. No. 5,541,525, which is a continuation-in-part of Ser. No. 124,899, Sep. 21, 1993, Pat. No. 5,495,179, which is a continuation-in-part of Ser. No. 46,675, Apr. 14, 1993, Pat. No. 5,367,253, which is a continuation-in-part of Ser. No. 973,931, Nov. 10, 1992, Pat. No. 5,302,891, which is a continuation of Ser. No. 709,858, Jun. 4, 1991, abandoned. This application May 1, 1995, Ser. No. 432,111
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—758 **24 Claims**

1. A method for testing an unpackaged semiconductor die comprising:



providing a mother board with an electrical connector;

providing a plurality of interconnects mounted on the mother boards each interconnect configured to establish electrical communication with the die and having a contact member in electrical communication with the electrical connector, said contact member configured for contacting a contact location on the die;

optically aligning the contact location on the die with the contact member on a selected interconnect and placing the contact location on the die in contact with the contact member on the selected interconnect;

biasing the die and the selected interconnect together with the contact member on the selected interconnect in electrical communication with the contact location on the die; and

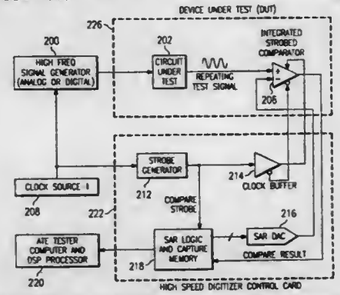
testing the die by applying test signals through the electrical connector and selected interconnect to the die.

5,578,935

UNDERSAMPLING DIGITIZER WITH A SAMPLING CIRCUIT POSITIONED ON AN INTEGRATED CIRCUIT

Mark A. Burns, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 25, 1995, Ser. No. 452,623
Int. Cl.[6] G01R *31/28*
U.S. Cl. 324—763 **8 Claims**



1. An apparatus for measuring a repetitive test waveform, comprising:

a signal generating circuit to output said repetitive test waveform in accordance with clock signals;

a clock circuit coupled to said signal generating circuit to output said clock signals;

a circuit under test on an integrated circuit to input said repetitive test waveform and to output a repeating test signal;

a strobed comparator positioned on the same integrated circuit as the circuit under test, said strobed comparator sampling the repeating test signal in accordance with sampling point strobe signals and a comparison level signal and to output a comparison signal;

a strobe generating circuit coupled to sampling circuit to output said sampling point strobe signals, and forming sampling point strobe intervals spaced across said repetitive test waveform;

a successive approximation digital to analog converter providing the comparison level signal for said strobed comparator;

said processor to provide successive approximation values to said successive approximation routine digital to analog converter;

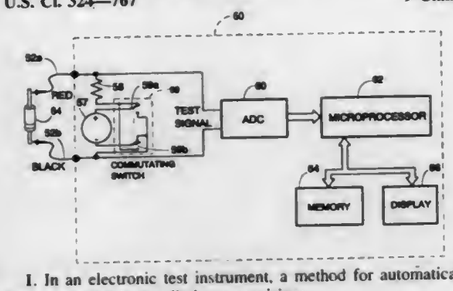
waveform capture memory to store said comparison level signals for subsequent retrieval, said waveform capture memory and successive approximation routine logic collecting one bit at a time from each digitized sample, resulting in a digitized waveform corresponding to said repetitive test waveform.

5,578,936

METHOD AND APPARATUS FOR AUTOMATICALLY TESTING SEMICONDUCTOR DIODES

Robert T. Gibson, Snohomish, and Todd E. Holmdahl, Bothell, both of Wash., assignors to Fluke Corporation, Everett, Wash.

Filed Jan. 23, 1995, Ser. No. 376,602
Int. Cl.[6] G01R *31/22*
U.S. Cl. 324—767 **9 Claims**



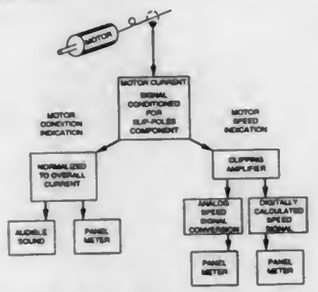
1. In an electronic test instrument, a method for automatically testing semiconductor diodes, comprising:
(a) applying a bipolar voltage across a device under test;
(b) measuring a positive and a negative voltage developed across said device under test responsive to said bipolar voltage;
(c) comparing said positive voltage and said negative voltage to a set of predetermined open circuit and short circuit values to provide a first and a second diode state;
(d) determining a device status to be one of open circuit, short circuit, diode, and unknown from said first and second diode states; and
(e) displaying said device status.

5,578,937

INSTRUMENT FOR ANALYSIS OF ELECTRIC MOTORS BASED ON SLIP-POLES COMPONENT

Howard D. Haynes, Knoxville; Curtis W. Ayers, Clinton, and Donald A. Casada, Knoxville, all of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Mar. 31, 1995, Ser. No. 414,679
Int. Cl.[6] G01R *23/16*
U.S. Cl. 324—772 **8 Claims**



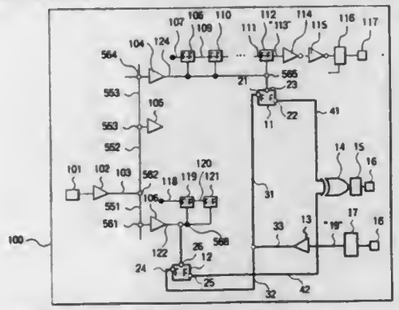
1. A method for diagnosing an ac induction motor comprising the steps of:
sensing the ac current drawn by said motor;
converting said ac current signal to an ac voltage signal;
demodulating said ac voltage signal to obtain a slip-poles component;
band-pass filtering said demodulated ac voltage signal to enhance said slip-poles component of said demodulated ac voltage signal;
analyzing the magnitude of said enhanced slip-poles component to obtain motor condition information; and
analyzing the frequency of said enhanced slip-poles component to obtain motor speed information.

5,578,938

SEMICONDUCTOR INTEGRATED CIRCUIT HAVING A CLOCK SKEW TEST CIRCUIT

Tetsuo Kazami, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jun. 26, 1995, Ser. No. 494,493
Claims priority, application Japan, Jun. 27, 1994, 6-145005
Int. Cl.[6] H03K *19/00*
U.S. Cl. 326—16 **8 Claims**



1. A semiconductor integrated circuit comprising: a clock signal input pin for receiving a clock signal; a test signal input pin for receiving a test signal; a first and a second flip flops each having a data input and a clock input; a first and a second test signal transmission means each for transmitting said test signal to said data input of corresponding one of said first and second flip flops, said first signal transmission means producing a propagation delay substantially same as the propagation delay of said second signal transmission means; a first and a second clock signal transmission means each for transmitting said clock signal to said clock input of corresponding one of said first and second flip flops; said first clock signal transmission means producing a propagation delay smaller than the propagation delay of said second clock signal transmission means; and a coincidence detection means for detecting coincidence of the output of said first flip flop with the output of said second flip flop.

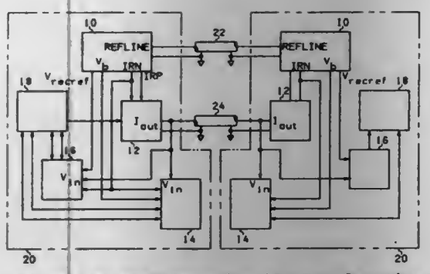
5,578,939

BIDIRECTIONAL TRANSMISSION LINE DRIVER/RECEIVER

Gregory E. Beers, 11700 Knollpark Dr., Austin, Tex. 78758; Richard F. Frankeny, 8107 Danforth Cove, Austin, Tex. 78746, and Mithkal M. Smadi, 1021 Oaklands Dr., Round Rock, Tex. 78681

Filed Jan. 23, 1995, Ser. No. 376,708
Int. Cl.[6] H03K *19/0175*
U.S. Cl. 326—30 **12 Claims**

1. An apparatus for sending and receiving logic signals, comprising:
a transmission line having a certain impedance and first and second transmission line ends for communicating logic signals;
a driver connected to the first transmission line end, the driver comprising a source for sending the logic signals, and a reference generator connected to the source for setting the magnitude of the signals sent by the source;
a receiver connected to the second transmission line end, the receiver comprising a transmission line terminator for sinking the signals, and a reference generator connected to the terminator for setting a bias of the terminator to establish a certain family of terminator impedances for sinking the signals;
wherein the driver reference generator and the receiver reference generator interactively match the terminator impedance to the transmission line for the set magnitude of the signals.

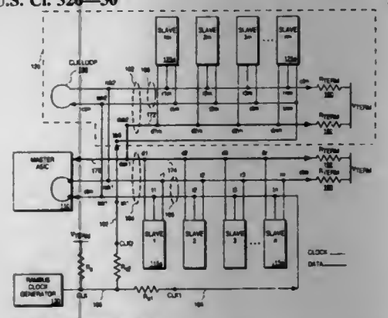


5,578,940

MODULAR BUS WITH SINGLE OR DOUBLE PARALLEL TERMINATION

John B. Dillon, Palo Alto; Srinivas Nimmagadda, Santa Clara, and Alfredo Moncayo, Redwood City, all of Calif., assignors to Rambus, Inc., Mountain View, Calif.

Filed Apr. 4, 1995, Ser. No. 416,326
Int. Cl.[6] H03K *17/16;19/003*
U.S. Cl. 326—30 **18 Claims**



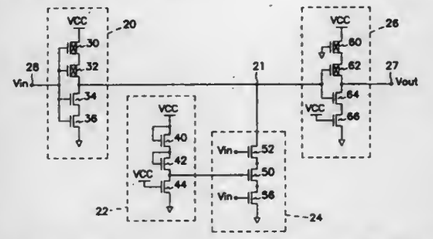
1. A bus comprising:
a terminated motherboard data net for communicating data signals between a master and one or more motherboard devices;
a socket for communicating the data signals between the motherboard data net and a terminated module data net of a removable module, the module data net communicating the data signals between the master and one or more module devices;
wherein a data signal swing and a level of reflection of the data signals are substantially independent of the presence of the module.

5,578,941

VOLTAGE COMPENSATING CMOS INPUT BUFFER CIRCUIT

Joseph C. Sher, and Manny K. F. Ma, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Aug. 23, 1995, Ser. No. 518,546
Int. Cl.[6] H03K *19/0185;19/0948*
U.S. Cl. 326—34 **24 Claims**



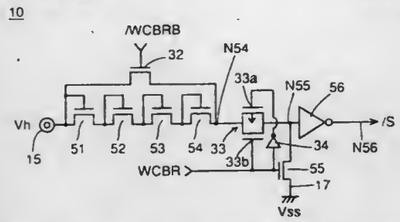
1. A supply voltage compensating CMOS input buffer circuit, comprising:
an input inverter for receiving an input signal having pairs of complimentary p-channel and n-channel transistors coupled in series between the supply voltage and a reference voltage, said transistors having a channel size ratio selected to provide TTL input trip points at a predetermined supply voltage and switching logic levels of an output based on the level of the input signal reaching said trip points; and
a voltage compensating circuit coupled to the output of the input inverter for providing a supply voltage variable active load to the p-channel transistors to stabilize the levels of input signals at which the input inverter switches its output state when the supply voltage changes, said voltage compensating circuit further comprising:
a pair of n-channel trip point centering transistors coupled to the input signal for limiting the flow of current through the voltage compensating circuit.

5,578,942

SUPER VCC DETECTION CIRCUIT

Masaki Shimoda, and Yoshinori Inoue, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 487,212
Claims priority, application Japan, Sep. 30, 1994, 6-236944
Int. Cl.[6] H03K *17/16*
U.S. Cl. 326—38 **11 Claims**



1. A semiconductor memory device detecting a potential of an input terminal for a prescribed period and operating in accordance with the detected result, said potential detected being higher than a power supply potential, comprising:
a potential detection means for detecting the potential of said input terminal;
a first signal generation means for outputting a first control signal during said prescribed period;
a first connection means provided between said input terminal and said potential detection means and rendered conductive in

response to an output of said first control signal from said first signal generation means; and

internal means for operation in accordance with the detection result of said potential detection means.

5,578,943

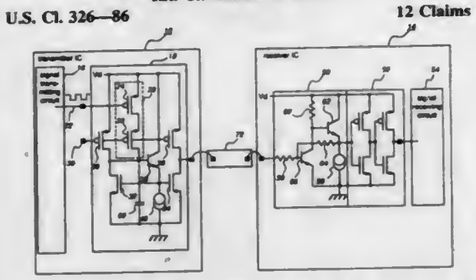
SIGNAL TRANSMITTER AND APPARATUS INCORPORATING SAME

Lawrence H. Sasaki, Oxford-on-Rideau, Canada, assignor to Bell-Northern Research Ltd., Ottawa, Canada

Filed Jan. 5, 1995, Ser. No. 368,945

Int. Cl.[6] H03K *19/0175*

U.S. Cl. 326—86 **12 Claims**



1. A signal transmitter for connection via a conductor to a signal receiver for transferring digital signals, the signal transmitter comprising:

means for providing a digital voltage in response to an input signal from a signal source;

a voltage-current converter for converting the digital voltage to current and for providing a digital current, the voltage-current converter including a totem pole circuit of two transistors, the digital voltage being fed to the input terminal of one of the two transistors and a bias voltage being fed to the input terminal of the-other transistor of the two transistors; and

a high output impedance current amplifier for causing an amplified digital current to flow in the conductor in response to the digital current provided by the voltage-current converter, the current amplifier including a current mirror circuit having an input current transistor and an output current transistor, current flowing in both transistors in response to the bias voltage, the digital current from the voltage-current converter being fed to the current input transistor, so that current flows in the input current transistor in response to the digital current and the current flowing in the output current transistor is an amplified current of the digital current, the amplified current flowing in the conductor.

5,578,944

SIGNAL RECEIVER AND APPARATUS INCORPORATING SAME

Lawrence H. Sasaki, Oxford-on-Rideau, Canada, assignor to Northern Telecom Limited, Montreal, Canada

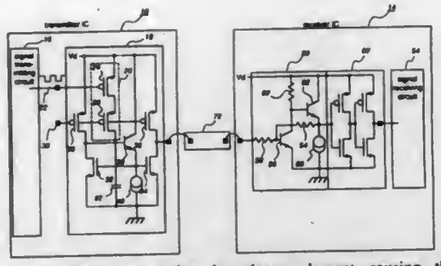
Division of Ser. No. 368,945, Jan. 5, 1995. This application Oct. 13, 1995, Ser. No. 542,492

Int. Cl.[6] H03K *19/0175*

U.S. Cl. 326—86 **6 Claims**

1. A signal receiver for connection via a conductor to a signal transmitter having a high output current impedance and for receiving digital current transferred from the signal transmitter via the conductor, the signal receiver comprising:

a transimpedance amplifier having a low input current impedance for converting the digital current flowing in the conductor to voltage and for providing a received digital voltage, the transimpedance amplifier having a voltage conversion impedance element which is connected in series to the conductor,



the voltage conversion impedance element causing the received digital voltage in response to the digital current,

a receiving signal process means responsive to the received digital signal of voltage to process it; and

a multi level converter for providing a plurality of different digital voltages to the receiving signal process means in response to the received digital voltage provided by the transimpedance amplifier.

5,578,945

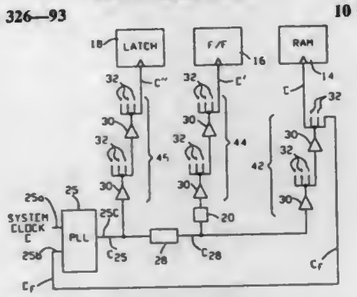
METHODS AND APPARATUS FOR PROVIDING A NEGATIVE DELAY ON AN IC CHIP

Laurence P. Flora, Valley Center, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Nov. 30, 1994, Ser. No. 348,277

Int. Cl.[6] H03K *19/096*

U.S. Cl. 326—93 **10 Claims**



1. An integrated circuit chip comprising:

means for providing a system clock having a predetermined clock period;

a first component which requires said system clock;

a second component having an input which requires a clock having a relatively large delay with respect to said system clock, said relatively large delay being at least greater than one-half of said clock period;

a phase-locked-loop having two inputs and an output, one input being coupled to said system clock and the other input being coupled to said input of said first component, said phase-locked-loop being operative to synchronize the input signals applied thereto:

a delay element providing a delay substantially equal to the difference between said clock period and said large delay;

means for coupling the output of said phase-locked-loop to said input of said first component via a first path including said delay element; and

means for coupling the output of said phase-locked-loop to said second component via a second path which does not include said delay element;

said first and second paths providing the same delay except for said delay element.

5,578,946

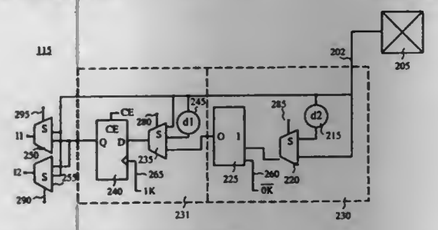
INPUT SYNCHRONIZATION MECHANISM FOR INSIDE/OUTSIDE CLOCK

Richard A. Carberry, and Bernard J. New, both of Los Gatos, Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Oct. 6, 1995, Ser. No. 539,982

Int. Cl.[6] H03K *19/096;19/177*

U.S. Cl. 326—93 **21 Claims**



1. An integrated circuit comprising:

a clock pad for receiving an input clock signal;

a data pad for receiving an input data signal;

a delayed clock distribution network coupled to receive said input clock signal and for supplying an inside clock that is delayed with reference to said input clock signal;

an early clock distribution network disposed along a periphery of said integrated circuit and coupled to receive said input clock signal and for supplying an outside clock that is not substantially delayed with reference to said input clock signal;

a first circuit coupled to receive said input data signal and coupled to receive said outside clock, said first circuit latching said input data signal in synchronization with said outside clock; and

a second circuit coupled to receive an output signal of said first circuit and coupled to receive said inside clock, said second circuit latching said first data in synchronization with said inside clock.

5,578,947

DELAYED DETECTION TYPE DEMODULATOR

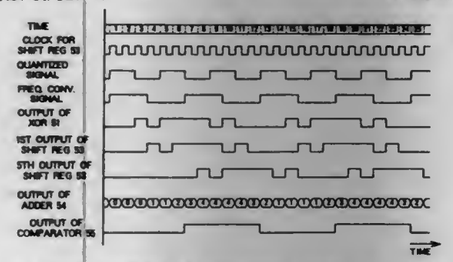
Toshiharu Kojima, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 219,024, Mar. 28, 1994, which is a division of Ser. No. 997,768, Dec. 24, 1992, Pat. No. 5,313,170. This application Jun. 6, 1995, Ser. No. 468,835

Claims priority, application Japan, Dec. 27, 1991, 3-347245; Mar. 12, 1992, 4-053583; Mar. 25, 1992, 4-067124

Int. Cl.[6] H03D *13/00*

U.S. Cl. 327—7 **9 Claims**



1. A phase comparator for determining a phase shift of a quantized receive signal relative to a quantized phase reference signal, comprising:

a multiplier for receiving the quantized receive signal and the quantized phase reference signal, for multiplying the quantized receive and phase reference signals and for outputting a quantized multiplied signal;

a phase shift measurement circuit having an input coupled to an output of said multiplier, for determining a duration in which the quantized multiplied signal is at a logical "1" during each half period of the quantized phase reference signal so as to determine a phase shift of the quantized receive signal relative to the quantized phase reference signal, and for outputting a quantized phase shift signal;

a phase shift polarity determiner circuit for receiving the quantized multiplied signal, for determining whether the quantized multiplied signal leads or lags the quantized phase reference signal, and for outputting a phase shift polarity signal; and

wherein a combination of the phase shift polarity signal and the quantized phase shift signal comprise the phase shift of the quantized receive signal relative to the quantized phase reference signal.

5,578,948

HARMONIC TONE GENERATOR FOR LOW LEVEL INPUT AUDIO SIGNALS AND SMALL AMPLITUDE INPUT AUDIO SIGNALS

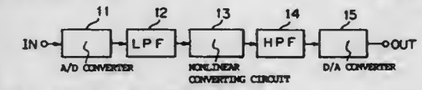
Soichi Toyama, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 13, 1992, Ser. No. 819,987

Claims priority, application Japan, Jun. 28, 1991, 3-158915

Int. Cl.[6] H03B *19/00;* **G10H** *7/00*

U.S. Cl. 327—119 **8 Claims**



1. A harmonic tone generator comprising:

A/D converting means for converting an input analog audio signal into a digital audio signal indicative of an audio signal level;

non-linear converting means for converting said digital audio signal supplied from said A/D converting means into an output digital signal in accordance with a predetermined non-linear function, said output digital signal including harmonic tone components not included in said input signal but included in said fundamental tone, said output signal having the same frequency as the fundamental tone of said input signal;

D/A converting means for converting said output digital signal of said non-linear converting means into an analog signal; and

a low pass filter interposed between said A/D converting means and said non-linear converting means.

5,578,949

SINGLE STAGE VOLTAGE TO CURRENT CONVERSION SWITCHING SYSTEM

Richard H. McMorrow, Jr., Lincoln, Mass., assignor to Analogic Corporation, Peabody, Mass.

Filed Feb. 16, 1995, Ser. No. 391,404

Int. Cl.[6] H02M *11/00*

U.S. Cl. 327—103 **4 Claims**

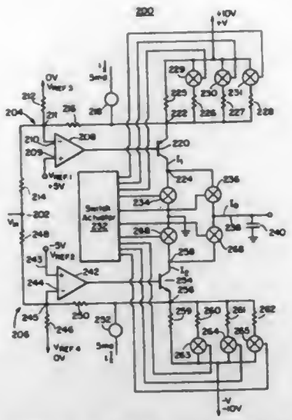
1. A voltage to current conversion switching system comprising:

an input terminal for receiving an input signal voltage to be converted to a current;

an output terminal;

a positive channel having a first operational amplifier with a reference input and a summing input, said summing input receives said input voltage signal and introduces a first offset voltage to said input signal voltage, a first semiconductor circuit connected to the output of said first operational amplifier to provide a first offset current signal which is dependent on the value of said first offset voltage, and first switching means interconnected with said first semiconductor circuit to deliver said first offset current signal to said output terminal;

a negative channel having a second operational amplifier with a reference input and a summing input, said summing input receives said input voltage signal and introduces a second



offset voltage to said input signal voltage, and a second semiconductor circuit connected to the output of said second operational amplifier to provide a second offset current signal which is dependent on the value of said second offset voltage and which is equal in amplitude and opposite in polarity to said first offset current signal to compensate for temperature drift and switching current injection in the first and second offset current signals; and second switching means interconnected with said second semiconductor circuit to deliver said second offset current signal to said output terminal; and

means for actuating said first and second switching means simultaneously to open and close and periodically combine said first and second offset current signals to form an output current with temperature drift and switching current injection compensation.

5,578,950

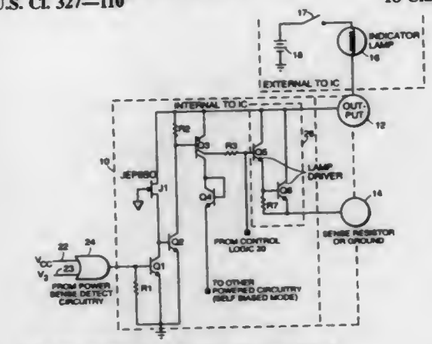
LOW VOLTAGE INDICATOR WITH A SELF-BIASED DRIVER CIRCUIT

Frank J. Kolanko, Greenville, and Jay D. Moser, Sr., Hope, both of R.I., assignors to Cherry Semiconductor Corporation, East Greenwich, R.I.

Filed Jul. 8, 1994, Ser. No. 272,257

Int. Cl.[6] H03K *17/18;17/615*

U.S. Cl. 327—110 **18 Claims**



1. A low voltage indicator circuit comprising:

an output terminal;

a driver connected to said output terminal;

a first transistor having (a) a first terminal coupled to said output terminal, (b) a base, (c) and a second terminal coupled to said driver;

means, coupled between the base of said first transistor and at least one voltage supply line, for holding said first transistor off in response to at least a threshold voltage being present on the at least one voltage supply line; and

wherein said first transistor is turned on by a voltage on said output terminal in response to less than the threshold voltage being present on the at least one voltage supply line such that current is provided through the second terminal of said first transistor to turn on said driver.

5,578,951

CMOS CIRCUIT FOR IMPROVED POWER-ON RESET TIMING

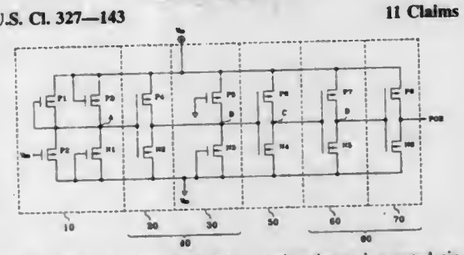
Hee-choon Lee, Seoul, and Je-whan Yoo, Kyungki-do, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 8, 1994, Ser. No. 352,250

Claims priority, application Rep. of Korea, Dec. 10, 1993, 93-27140

Int. Cl.[6] H03L *7/00*

U.S. Cl. 327—143 **11 Claims**



1. A power-on reset circuit for a semiconductor integrated circuit, comprising:

discharging means for fully discharging a first intermediate signal when a first power supply voltage is low and generating a first constant voltage of a power-on reset signal when the first power supply voltage is high;

delaying means for receiving the first intermediate signal, maintaining the power-on reset signal at the constant voltage for a predetermined time after the first power supply voltage is raised above a first predetermined voltage, and generating a second intermediate signal;

first inverting means for receiving and inverting the second intermediate signal; and

buffering means for receiving the output of the first inverting means and outputting the power-on reset signal at a second constant voltage after the first power supply voltage is raised above a second predetermined voltage,

wherein said discharging means comprises first, second, third and fourth transistors each having a gate, first drain/source and second drain/source,

wherein said power supply voltage is connected to the first drain/source of said first transistor and the gate and first drain/source of said third transistor,

wherein the gate and second drain/source of said first transistor, the second drain/source of said third transistor, the first drain/source of said second transistor and the first drain/source of said fourth transistor are commonly connected, and

wherein the gate of said second transistor is connected to a first applied voltage, the second drain/source of said second transistor and the gate and second drain/source of said fourth transistor are connected to ground potential.

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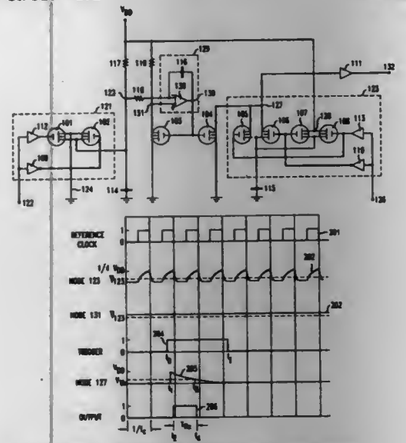
FIXED-INTERVAL TIMING CIRCUIT AND METHOD

Masakazu Shoji, Warren, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 8, 1994, Ser. No. 335,616

Int. Cl.[6] H03K *9/08*

U.S. Cl. 327—172 **14 Claims**



1. A circuit for defining a fixed interval, comprising:

a first capacitor;

a first switch configured to alternately charge and discharge said first capacitor at frequency f_c;

means connected to sense the effective resistance of said first capacitor at frequency f_c, and responsively bias a transistor so that its effective resistance is maintained at a level substantially equal to that of said sensed effective resistance of said first capacitor;

a second capacitor charged to a first level;

a second switch configured to switchably discharge said second capacitor via said biased transistor; and

means for generating a signal having a fixed duration as a function of the rate at which said charge upon said second capacitor discharges through said biased transistor.

5,578,953

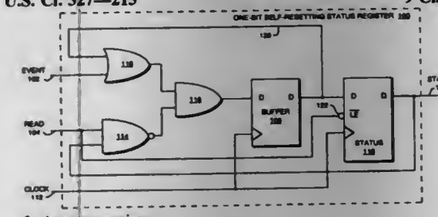
SELF-RESETTING STATUS REGISTER

Jeffrey R. Nuckols, Indialantic, Fla., assignor to AirNet Communications Corporation, Melbourne, Fla.

Filed Sep. 22, 1995, Ser. No. 532,427

Int. Cl.[6] H03K *3/037*

U.S. Cl. 327—215 **9 Claims**



1. A status register:

(A) comprising:

(i) a buffer memory having a zero state and a one state;

(ii) a status memory having a zero state and a one state and being capable of being disabled from changing states;

(iii) means for, at least occasionally, setting the status memory to the same state as the buffer memory unless the status memory is disabled;

(iv) a first terminal coupled to the status memory for providing a status signal indicating the state of the status memory;

(v) a second terminal for receiving a read signal;

(vi) a third terminal for receiving an event signal;

(vii) a gating arrangement coupled to the buffer memory for:

(a) responsive to the event signal, setting the buffer memory to the one state unless the read signal is received during the event signal when the status memory is in the one state, and

(b) responsive to the read signal, setting the buffer memory to the zero state when the status memory is in the one state, whereby after a read signal, the buffer memory is in the zero state unless the event signal is received during the read signal when the status memory is in the zero state; and

(B) wherein the read signal disables the status memory, whereby the state of the status memory does not change for at least the duration of the read signal even if the state of the buffer memory changes during the read signal, but if the state of the buffer memory changes during the read signal the state of the status memory subsequently reflects the changed state of the buffer memory.

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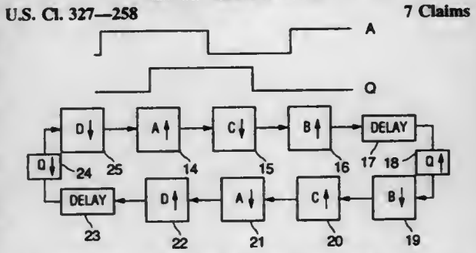
SELF-TIMING FOUR-PHASE CLOCK GENERATOR

A. Karl Rapp, Los Gatos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 70,614, Jun. 2, 1993, Pat. No. 5,398,001. This application Nov. 16, 1994, Ser. No. 340,653

Int. Cl.[6] H03K *3/04;5/13*

U.S. Cl. 327—258 **7 Claims**



1. A four phase clock signal generator comprising:

first clock means for generating an upward signal transition in a first phase of the clock signal;

second clock means responsive to said upward transition in said first phase for generating a downward signal transition in a third phase of the clock signal;

third clock means responsive to said downward transition in said third phase for generating an upward signal transition in a second phase of the clock signal;

clock signal phase recognition means for storing a state of the phases of the clock signal, wherein when the first phase of the clock signal is high, the third phase of the clock signal is low, a fourth phase of the clock signal is low, and the second phase of the clock signal transitions high, the first clock signal phase recognition means produces a downward signal transition of said second phase of the clock signal;

fourth clock means responsive to said downward transition of said second phase for generating an upward signal transition of said third pbase of the clock signal;

fifth clock means responsive to said upward transition of said third phase for generating a downward signal transition of said first phase of the clock signal;

sixth clock means responsive to said downward transition of said first phase for producing an upward signal transition of the fourth phase of the clock signal;

second clock signal phase recognition means for storing a state of the phases of the clock signal, wherein when the first phase of the clock signal is low, the second phase of the clock signal is high, and the

fourth phase of the clock signal transitions high, the second clock signal phase recognition means produces a downward signal transition of said fourth phase of the clock signal; and said first clock means responsive to said downward transition of said fourth phase to produce said upward signal transition of said first phase of the clock signal, whereby said clock generator starts a new clock cycle.

5,578,955

SIGNAL SUPPLY CIRCUIT

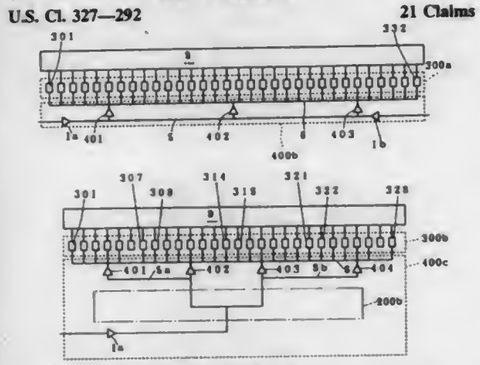
Shuichi Matsue, and Hiroshi Furukawa, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1994, Ser. No. 233,271

Claims priority, application Japan, May 7, 1993, 5-106762; Dec. 9, 1993, 5-309250

Int. Cl.[6] H03K *19/096*

U.S. Cl. 327—292 **21 Claims**



1. A signal supply circuit, comprising:

two first signal transmitting elements each including an output end and an input end which receives an input signal, and

said input signal is supplied to said input end of any one of said two first signal transmitting elements;

a first wire including a first end and a second end, said first end being connected to said output end of one of said two first signal transmitting elements;

wherein said output end of the other of said two first signal transmitting elements is connected to said second end of said first wire, and

a plurality of second signal transmitting elements each including an input end and an output end, said input ends of said second signal transmitting elements being connected to said first wire;

a second wire which is connected to said output ends of said second signal transmitting elements; and

a plurality of output terminals which are connected to said second wire at different positions, wherein

said input ends of said plurality of said second signal transmitting elements are connected to said first wire at different positions, and

said output ends of said plurality of said second signal transmitting elements are connected to said second wire at said different positions.

5,578,956

CIRCUIT FOR LIMITING THE MAXIMUM CURRENT VALUE SUPPLIED TO A LOAD BY A POWER MOS AT POWER-UP

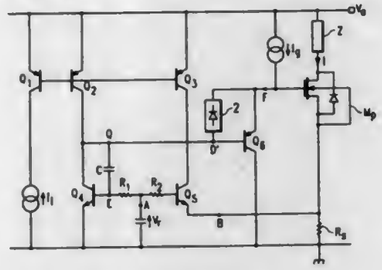
Giorgio Rossi, Nerviano; Fabio Marchio', Sedriano; Liana Luoni, Como, and Franco Cocetta, Cornaredo, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Continuation of Ser. No. 316,042, Sep. 30, 1994, abandoned. This application Mar. 14, 1996, Ser. No. 615,729

Claims priority, application European Pat. Off., Sep. 30, 1993, 93830400

Int. Cl.[6] H03K *5/08*

U.S. Cl. 327—309 **17 Claims**



1. A power integrated circuit, comprising:

a power transistor;

a gate drive circuit connected to drive the gate of said power transistor;

a current-limiting circuit,

operatively connected to receive a signal which indicates the current through said power transistor, and to provide an output accordingly, and

comprising a compensating capacitor and

a limiting circuit which comprises an additional transistor which is in the same technology as said power transistor, and which is configured and connected to limit the voltage on said compensating capacitor to a value which is dependent on the process and temperature variation of said additional transistor.

5,578,957

INTEGRATED CIRCUIT HAVING DIFFERENT POWER SUPPLIES FOR INCREASED OUTPUT VOLTAGE RANGE WHILE RETAINING SMALL DEVICE GEOMETRIES

Richard A. Erhart, Chandler, and Thomas W. Ciccone, Paradise Valley, both of Ariz., assignors to Vivid Semiconductor, Inc., Chandler, Ariz.

Continuation of Ser. No. 183,036, Jan. 18, 1994, Pat. No. 5,510,748. This application Nov. 27, 1995, Ser. No. 564,540

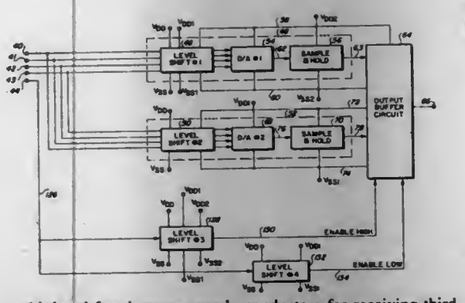
Int. Cl.[6] H03L *5/00;* **G09G** *5/00*

U.S. Cl. 327—333 **7 Claims**

1. A monolithic integrated circuit having transistors formed therein, the transistors being subject to compromised reliability when operated at voltages exceeding a given safe operating voltage, the integrated circuit generating an output signal having an amplitude that exceeds the given safe operating voltage, said integrated circuit comprising:

a. first and second power supply conductors for receiving first and second power supply voltages which define a first voltage range having a magnitude below the given safe operating voltage;

b. first circuit means coupled between said first and second power supply conductors, said first circuit means including an input terminal for receiving an input signal and including at least one transistor formed within the integrated circuit for producing a first output signal in response thereto, the first output signal having a voltage within the first voltage range;



c. third and fourth power supply conductors for receiving third and fourth power supply voltages which define a second voltage range having a magnitude below the given safe operating voltage and different from the first voltage range, at least one of said third and fourth power supply voltages corresponding to a least positive voltage, and at least one of said first and second power supply voltages corresponding to a most positive voltage, the magnitude of the voltage difference between the most positive voltage and the least positive voltage exceeding the magnitude of the given safe operating voltage;

d. second circuit means coupled between said third and fourth power supply conductors, said second circuit means including an input terminal for receiving an input signal and including at least one transistor formed within the integrated circuit for producing a second output signal in response thereto, the second output signal having a voltage within the second voltage range;

e. a control terminal for receiving a control signal; and

f. output circuit means coupled to said first circuit means for receiving the first output signal and being coupled to said second circuit means for receiving the second output signal, said output circuit means including an output terminal and including at least one transistor formed within the integrated circuit for providing to the output terminal a full-range output signal that varies between the first and second voltage ranges, the full range output signal extending substantially up to the most positive voltage and extending substantially down to the least positive voltage, said output circuit means being coupled to said control terminal and responsive to said control signal for selecting either the first output signal or the second output signal to said output terminal.

5,578,958

LOGARITHMIC AMPLIFIER

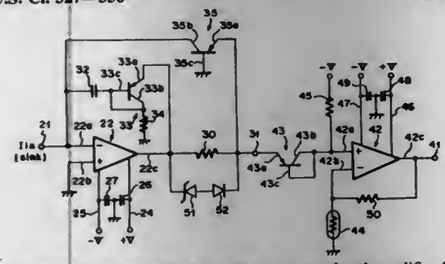
Hiroaki Yasuda, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 11, 1995, Ser. No. 526,094

Claims priority, application Japan, Sep. 12, 1994, 6-216860

Int. Cl.[6] H03G *11/08;* **G06F** *7/556*

U.S. Cl. 327—350 **12 Claims**



1. A logarithmic amplifier including an operational amplifier for logarithmic conversion and a feedback circuit for feeding back an output of the operational amplifier via a resistor connected to an output terminal of the operational amplifier, said logarithmic amplifier further comprising:

an element having an effective resistance which becomes smaller when a voltage of more than a predetermined value is applied to the element, the element being connected in parallel with the resistor.

5,578,959

INTEGRATED CIRCUIT WITH AN ELECTRICALLY ADJUSTABLE PARAMETER

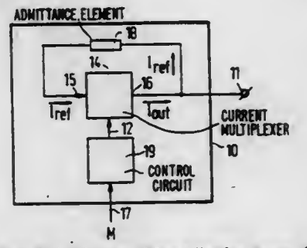
Robert H. Van Der Wal, and Laurens J. De Haas, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 14, 1993, Ser. No. 167,278

Claims priority, application European Pat. Off., Dec. 15, 1992, 92203925

Int. Cl.[6] G06F *7/44;* **G06G** *7/16*

U.S. Cl. 327—356 **16 Claims**



1. An integrated circuit comprising adjusting means for adjusting at least one electric parameter of the integrated circuit, the adjusting means being arranged for adjusting an effective admittance value of an effective admittance circuit comprising

an admittance element,

a parallel circuit, coupled in parallel to the admittance element, and arranged for conducting a parallel current I_p in parallel with a current through the admittance element,

the adjusting means comprising

a control circuit, having an output coupled to a control input of the parallel circuit and an input for receiving a control signal M for controlling the conducting of the parallel circuit,

and wherein the parallel circuit is arranged for making the parallel current I_p proportional to a reference current I_{ref} through the admittance element: $I_p = \alpha I_{ref}$. With a proportionality coefficient α, the control circuit being arranged for setting the coefficient α in a non-linear dependence on the control signal M, the dependence being a ratio f_1/f_2 of a first and second factor of which the second factor f_2 depends substantially polynomially on the control signal M and the first factor need not depend on the control signal M.

5,578,960

DIRECT-CURRENT STABILIZER

Tsuneo Matsumura, Shiki-gun; Kenji Hachimura, Nara, and Tomohiro Suzuki, Kitakatsuragi-gun, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 76,154, Jun. 14, 1993, abandoned. This application Sep. 12, 1995, Ser. No. 527,016

Claims priority, application Japan, Sep. 30, 1992, 4-262060

Int. Cl.[6] H03K *3/01;* **G05F** *1/40*

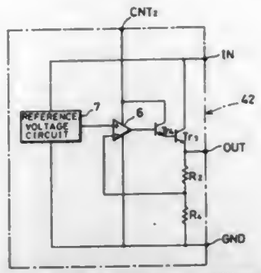
U.S. Cl. 327—535 **2 Claims**

1. An integrated direct-current stabilizer comprising:

an input terminal for receiving an input voltage;

an output terminal whereat a stabilized output voltage is provided;

an n-p-n control transistor having a collector connected to the input terminal and an emitter coupled to a common ground and said output terminal, the control transistor controlling said



output voltage of said direct-current stabilizer at a predetermined value by reducing the input voltage;

a differential amplifier formed as an integrated circuit with the control transistor for controlling a base current of said control transistor in accordance with said output voltage and a reference voltage at its input so that said control transistor controls said output voltage at said predetermined value;

a control terminal, provided separately from said input terminal, for supplying to said differential amplifier a source voltage, said differential amplifier, in response to the source voltage, applying to a base of said control transistor a control voltage which is greater than or equal to a sum of an emitter voltage and a base-emitter voltage;

a further n-p-n transistor having a collector connected to said control terminal, a base connected to an output of the differential amplifier, and an emitter connected to the base of said control transistor, said further n-p-n transistor and said control transistor being a Darlington pair; and

wherein a withstanding voltage of said control terminal is higher than a withstanding voltage of said input terminal, and wherein the input terminal and said source voltage applied to the control terminal are input to the common ground.

5,578,961

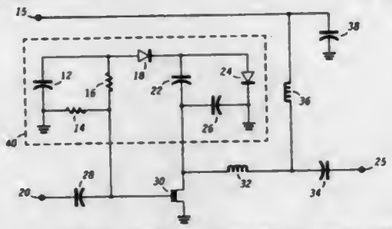
MMIC BIAS APPARATUS AND METHOD

Lyle A. Fajen; Michael Dydyk, both of Scottsdale, and Hugh R. Malone, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 280,961, Jul. 27, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 585,866

Int. Cl.[6] G05F *3/02*

U.S. Cl. 327—543 **18 Claims**



1. A microwave monolithic integrated circuit (MMIC) RF-generated bias circuit comprising:

an input for receiving an RF signal;

a rectifier for producing a rectified RF signal, the rectifier coupled to the input through a MMIC field effect transistor and to electrical ground;

a voltage divider for receiving the rectified RF signal and for producing a negative DC voltage in response thereto, the voltage divider coupled to the rectifier and to the electrical ground; and

an output for applying the negative DC voltage to the MMIC field effect transistor (FET) for biasing, the output coupled to the voltage divider.

5,578,962

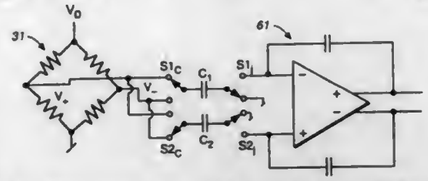
INSTRUMENTATION AMPLIFIER FOR SENSOR SIGNAL CONDITIONING USING LOW-COST, HIGH-ACCURACY ANALOG CIRCUITRY

Ali J. Rastegar, Gilroy, Calif., assignor to MCA Technologies, Inc., Santa Clara, Calif.

Filed May 10, 1995, Ser. No. 438,635

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—9 **23 Claims**



9. A sensor correction circuit for producing a corrected sensor output signal, comprising:

a bridge sensor coupled to a reference voltage and producing a differential output signal pair including a first signal and a second signal, the first and second signals being of different magnitudes when the bridge sensor is placed under load;

a differential amplifier having first and second input terminals;

first and second circuit nodes operatively connected to the first and second input terminals, respectively;

first and second sampling capacitors each having a first capacitor plate and a second capacitor plate; and

first switching means for:

during a first operational phase, connecting the first plate of the first capacitor to the first signal of the differential output signal pair, connecting the first plate of the second capacitor to the second signal of the differential output signal pair, and connecting the second plates of the first and second capacitors to the reference voltage; and

during a second operational phase, connecting the first plate of the first capacitor to the second signal of the differential output signal pair, connecting the first plate of the second capacitor to the first signal of the differential output signal pair, and connecting the second plates of the first and second capacitors to respective ones of the first and second circuit nodes.

5,578,963

INTEGRATED AMPLIFIER WITH FLAT GAIN FOR HIGH AND LOW IMPEDANCE LOADS

Henning H. Andersen, Hørsholm, Denmark, assignor to Topholm & Westermann APS, Vaerlose, Denmark

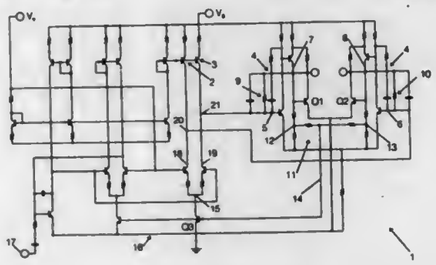
PCT No. PCT/EP93/03109, § 371 Date Mar. 8, 1995, § 102(e) Date Mar. 8, 1995, PCT Pub. No. WO94/15397, PCT Pub. Date Jul. 7, 1994

PCT Filed Nov. 6, 1993, Ser. No. 397,223

Claims priority, application Germany, Dec. 19, 1992, 42 43 009.7

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—252 **4 Claims**



1. Circuit arrangement for an integrated output amplifier (1), with two essentially identical constant current sources (2, 3), a voltage amplifier (4) with two inputs (5, 6) and two outputs (7, 8) and two essentially identical output transistors coupled with these, as well as two essentially identical feedback networks (9, 10) producing negative feedback which are connected between the output transistors (Q1, Q2) and the assigned input transistors of the voltage amplifier (4), characterized in that the output transistors (Q1, Q2) are actively driven at tbeir base electrodes by the voltage amplifier (4), while the emitter electrodes are connected to ground and the collector electrodes to a load (22), in that the first two feedback networks (9, 10) are connected between the collectors of the output transistors (Q1, Q2) and the base electrodes of the corresponding input transistors of the voltage amplifier (4), in that a third feedback network (11) which controls the closed-circuit current is connected on the input side (12, 13) to the base electrodes of the output transistors and on the output side (14) with the base electrode of a transistor (Q3) acting as a current sink, whereby the emitter electrode of the latter is connected with ground and the collector electrode with an input (15) of a current splitting network (16), whereby said current splitting network is also provided with a signal input (17), and in that the current splitting network (16) has two parallel branches (18, 19) between which the current flowing through this network can be split, whereby said current is controlled by the signal at the signal input (17), and in that the branches (18 and 19) of the current splitting network (16) are connected on the one hand with the constant current sources (2 and 3) and on the other hand with the inputs (5 and 6) of the voltage amplifier (4).

5,578,964

CMOS DIFFERENTIAL OPERATIONAL AMPLIFIER

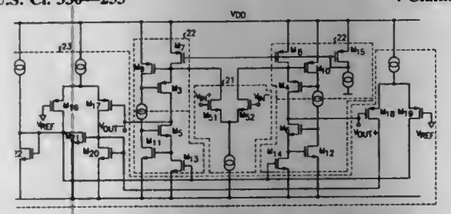
Young H. Kim, and Dong S. Ha, both of Seoul, Rep. of Korea, assignors to Korea Telecommunication Authority, Rep. of Korea

Filed Apr. 24, 1995, Ser. No. 428,541

Claims priority, application Rep. of Korea, Apr. 26, 1994, 1994-8824

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—253 **4 Claims**



1. A CMOS differential operational amplifier comprising:

a differential input stage for receiving differential input voltage signals and converting the input voltage signals into current signals;

a cascode output stage comprising a regulated current source having a negative feedback loop to increase an output resistance of the regulated current source, the regulated current source connected to said differential input stage for amplifying said current signals from said differential input stage and converting them into output voltage signals and having positive and negative output ports;

a common-mode feedback circuit, connected to said cascode output stage, for making a common-mode voltage signal of the output voltage signals equal to a reference voltage signal; and

a load capacitor connected to said positive and negative output ports.

5,578,965

TUNABLE OPERATIONAL TRANSCONDUCTANCE AMPLIFIER AND TWO-QUADRANT MULTIPLIER EMPLOYING MOS TRANSISTORS

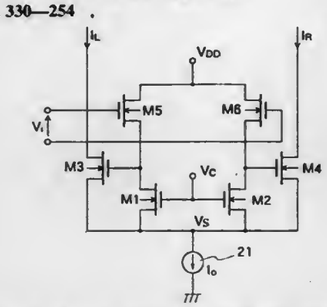
Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 477,257

Claims priority, application Japan, Jun. 13, 1994, 6-130466; Jun. 13, 1994, 6-130467

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—254 **21 Claims**



1. A tunable MOS operational transconductance amplifier which outputs a differential output current in response to a differential input voltage, comprising:

a tail current source;

first and second transistor pairs having commonly connected sources and driven by said tail current source; and

a third transistor pair connected in cascode to said first transistor pair and serving as loads to said first transistor pair;

gates of said second transistor pair being connected to drains of said first transistor pair, respectively.

5,578,966

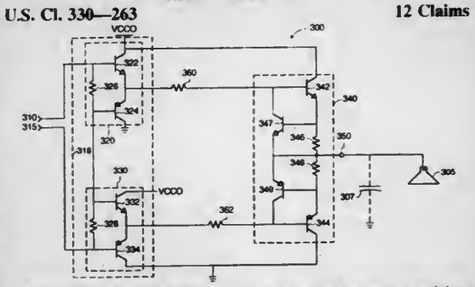
OUTPUT STAGE FOR A HIGH-SPEED VIDEO AMPLIFIER

Thomas B. Mills, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 428,755, Apr. 25, 1995, Pat. No. 5,525,931. This application Jun. 5, 1995, Ser. No. 461,463

Int. Cl.[6] H03F *3/30*

U.S. Cl. 330—263 **12 Claims**



9. An output stage for an amplifier, said output stage comprising:

a first input node adaptable to receive a first input signal;

a second input node adaptable to receive a second input signal;

a first current gain stage having:

a first push-pull amplifier having a first transistor of a first polarity type and a second transistor of a second polarity type, each of said first and second transistors having a control terminal connected to said first input node; and

a second push-pull amplifier having a third transistor of said first polarity type and a fourth transistor of said second polarity type, each of said third and fourth transistors having a control terminal connected to said second input node;

a second current gain stage having a fifth transistor of said first polarity type and a sixth transistor of said second polarity type, said fifth transistor having a control terminal connected to a current-handling terminal of said first transistor and to a current-handling terminal of said second transistor, said sixth transistor having a control terminal connected to a second current-handling terminal of said third transistor and to a second current-handling terminal of said fourth transistor; and

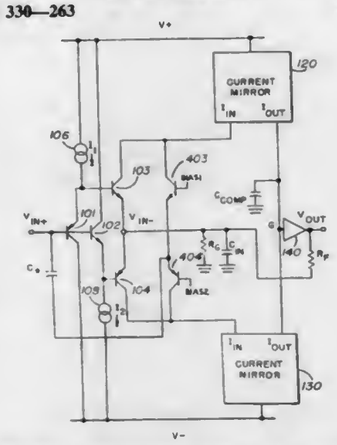
a signal output terminal connected to a first current-handling terminal of said fifth transistor and to a first current-handling terminal of said sixth transistor.

5,578,967

CIRCUIT COMPENSATING FOR CAPACITANCE AT INVERTING INPUT OR CURRENT FEEDBACK AMPLIFIER

Barry Harvey, Los Altos, Calif., assignor to Elantec, Milpitas, Calif.

Filed Sep. 28, 1995, Ser. No. 535,936
Int. Cl.[6] H03F *3/30*
U.S. Cl. 330—263 **8 Claims**



1. Capacitance compensation circuit for a current feedback amplifier, the current feedback amplifier having a positive input terminal (V_{IN+}), a negative input terminal (V_{IN-}) with a parasitic capacitance (C_{IN}) and a gain node (G) connected to an output buffer, the current feedback amplifier including a first pair of emitter follower transistors having bases coupled to the positive input (V_{IN+}), emitters connected to the negative input (V_{IN-}), and collectors coupled to the gain node (G), the capacitance compensation circuit comprising:

a capacitor (C*) having a first end connected to the positive input (V_{IN+}) and a second end; and

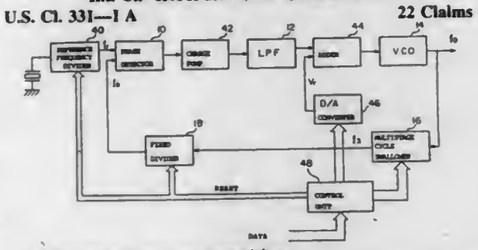
a second pair of emitter follower transistors, each transistor of the second pair having a base connected to receive a bias voltage, an emitter connected to the second end of the capacitor (C*) and a collector connected to the collector of one transistor in the first pair of emitter follower transistors.

5,578,968

FREQUENCY CONVERTER, MULTISTAGE FREQUENCY CONVERTER AND FREQUENCY SYNTHESIZER UTILIZING THEM

Shinsaku Mori, c/o Keio Gijuku Daigaku, Rikougakubu, Denkikougakuka 14-1, Hiyoshi 3-Chome, Kouboku-ku, Yokohama-shi, Kanagawa 223; Duk-Kyu Park, c/o Keio Gijuku Daigaku, Rikougakubu, Denkikougakuka Mori-Kenkyushitsu 14-1, Hiyoshi 3-Chome, Kouboku-ku, Yokohama-shi, Kanagawa 223, and Hiroshi Miyagi, Yokohama, all of Japan, assignors to Shinsaku Mori; Shintom Co., Ltd., and Duk-Kyu Park, all of Kanagawa, Japan

Continuation of Ser. No. 75,513, Jul. 14, 1993, abandoned.
This application Jun. 7, 1995, Ser. No. 482,797
Claims priority, application Japan, Oct. 17, 1991, 3-269784; Sep. 7, 1992, 4-237532; Oct. 2, 1992, 4-265178
Int. Cl.[6] H03K *23/66;23/68;* **H03L** *7/197*
U.S. Cl. 331—1 A **22 Claims**



I. A frequency converter comprising:

a divider, a count value of the divider being decremented by one for each pulse of a pulse train having a predetermined frequency for performing a dividing operation, the count value being decremented from an initial integer division ratio, wherein the count value is reset to the initial integer division ratio and the divider generates an output signal when the count value is zero;

a nonvolatile memory device coupled to the divider and storing a plurality of integer division ratios, one of the plurality of integer division ratios being output from the nonvolatile memory device to the divider as the initial integer division ratio in response to an initial integer division ratio selecting signal; and

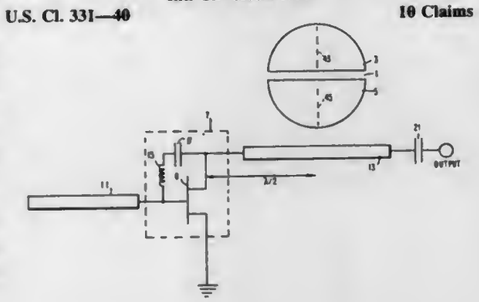
a cycle swallower for receiving the output signal from the divider as a control input signal to remove pulses from the pulse train at a predetermined interval corresponding to the initial integer division ratio, thereby providing a frequency converter output signal having a frequency that is a non-integer times lower than the frequency of the pulse train.

5,578,969

SPLIT DIELECTRIC RESONATOR STABILIZED OSCILLATOR

Aron Z. Kain, 1733 Corning St., Los Angeles, Calif. 90035

Filed Jun. 13, 1995, Ser. No. 489,943
Int. Cl.[6] H03B *5/18*
U.S. Cl. 331—40 **10 Claims**



I. A split dielectric resonator stabilized oscillator comprising

a support holding an oscillating means having an output conductor carrying an RF sinusoid at substantially one frequency; and

in close proximity to the oscillating means and electromagnetically coupled thereto, a split dielectric resonator comprising two dielectric elements electromagnetically coupled to each other and separated from each other by a non-zero distance d;

adjustment means for varying the distance d, said means having a coefficient of linear expansion intermediate that of the dielectric and its support;

a negative impedance device having an output port coupled to the output conductor;

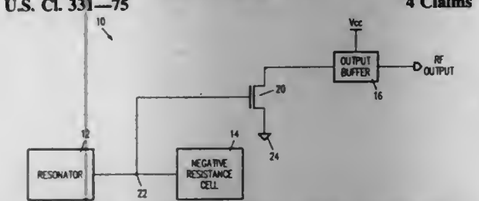
wherein the split dielectric resonator is electromagnetically coupled to the appropriate conductor at a predetermined point appropriately positioned from the output port.

5,578,970

BICMOS MONOLITHIC MICROWAVE OSCILLATOR USING NEGATIVE RESISTANCE CELL

Thai M. Nguyen, 2540 Elliot Ct., Santa Clara, Calif. 95051, and David E. Bien, 966 Azalea Dr., Sunnyvale, Calif. 94086

Filed Mar. 19, 1993, Ser. No. 34,947
Int. Cl.[6] H03B *7/14*
U.S. Cl. 331—75 **4 Claims**



1. A microwave oscillator including a resonator, comprising:

a negative resistance cell, formed on a semiconductor substrate, said negative resistance cell including a bipolar transistor having a base coupled to an output of the resonator;

a field effect transistor formed on said semiconductor substrate and having a gate coupled to said base of said bipolar transistor; and

an output buffer formed on said semiconductor substrate and coupled to said negative resistance cell through a non-gate terminal of said field effect transistor.

5,578,971

AMPLITUDE MODULATION CIRCUIT AND METHOD

Michitoshi Minami; Yutaka Kojima, both of Mitaka; Kazuhisa Hayeiwa, and Hisashi Naka, both of Tokyo, all of Japan, assignors to Japan Radio Co., Ltd., Mitaka, and Nippon Hoso Kyokai, Tokyo, both of Japan

Filed Dec. 26, 1995, Ser. No. 578,236
Claims priority, application Japan, Jan. 31, 1995, 7-014506
Int. Cl.[6] H03C *1/00;* **H03F** *3/24*
U.S. Cl. 332—149 **9 Claims**

I. An amplitude modulation circuit comprising:

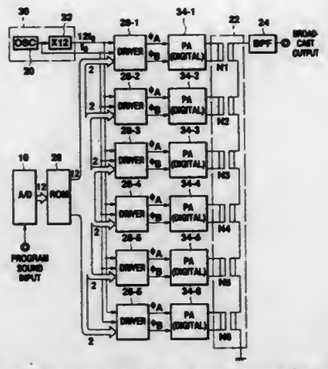
means for dividing a quantized input signal into a plurality of bit groups;

means for generating a plurality of phase-shift carriers having the same frequency and having phases different from one another;

means for selecting, for each of said plurality of bit groups and in response to the value of said each of said plurality of bit groups, at least two phase-shift carriers from among said plurality of phase-shift carriers;

a plurality of differentially switched power amplifiers correspondingly associated with said plurality of bit groups, the output of each of said plurality of differentially switched power amplifiers being differentially switched by at least two phase-shift carriers which have been selected for corresponding one of said plurality of bit groups; and

means for weighting and adding the outputs of said plurality of differentially switched power amplifiers to generate an amplitude modulated wave.

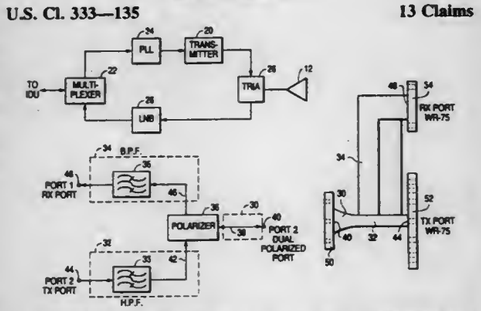


5,578,972

TRANSMIT/RECEIVE ISOLATION ASSEMBLY FOR A VERY SMALL APERTURE SATELLITE TERMINAL

Ian Hadden, Ellicott City, and Robert Hannah, Germantown, both of Md., assignors to Hughes Aircraft, Los Angeles, Calif.

Filed Mar. 17, 1995, Ser. No. 405,689
Int. Cl.[6] H01P *1/23*
U.S. Cl. 333—135 **13 Claims**



1. An apparatus for coupling a receiver and a transmitter to a single antenna via a feedhorn so as to allow for the simultaneous transmission and reception of signals, said apparatus comprising:

a single integrally formed one-piece unit including,

a polarizer having a first, second and third port, said polarizer operative for separating and combining a first and second signal which are orthogonally polarized;

a circular waveguide section having a first port formed integral with said first port of said polarizer, and a second port for coupling to said antenna, said circular waveguide operative for transmitting said first and second signals;

a transmitter waveguide section having a first port formed integral with said second port of said polarizer, and a second port for coupling to said transmitter; and

a receiver waveguide section having a first port formed integral with said third port of said polarizer, and a second port for coupling to said receiver;

wherein said polarizer, said circular waveguide section, said transmitter waveguide section and said receiver waveguide section are integrally formed as a single unit.

5,578,973

WAVEGUIDE MULTIPLEXER/DEMULTIPLEXER

Stilianos Tokouzbalidis, Backnang; Uwe Rosbenberg, Aspach, and Werner Speidrich, Backnang, all of Germany, assignors to Ant Nachrichtentechnik GmbH, Backnang, Germany

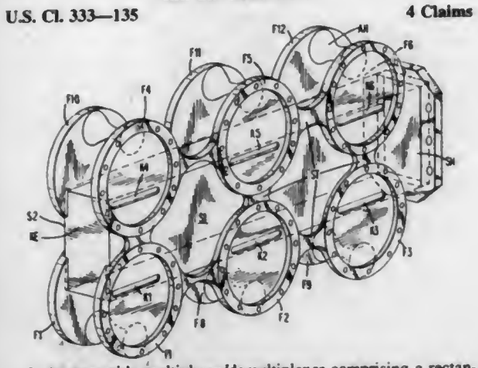
PCT No. PCT/DE94/00302, § 371 Date Dec. 24, 1995, § 102(e) Date Dec. 24, 1995, PCT Pub. No. WO94/24721, PCT Pub. Date Oct. 27, 1994

PCT Filed Mar. 18, 1994, Ser. No. 535,128

Claims priority, application Germany, Apr. 10, 1993, 43 11 853.4

Int. Cl.[6] H01P *1/213*

U.S. Cl. 333—135 4 Claims



1. A waveguide multiplexer/demultiplexer comprising a rectangular collecting waveguide (SH), said collecting waveguide having a short-circuit plane (KE) at one end thereof, at least one sidewall, a longitudinal axis (L) and means for coupling the collecting waveguide to a plurality of tunable waveguide filters on the at least one sidewall, the waveguide filters each being tunable to different frequency channels;

wherein said at least one sidewall is provided with at least one pair of coupling openings (K1,K4; K2,K5; K3,K6), said coupling openings of each of said at least one pair are arranged in a side-by-side relationship in a transverse direction (T) relative to said longitudinal axis (L) of said collecting waveguide, each of said coupling openings (K1,K4; K2,K5; K3,K6) is spaced from the short-circuit plane (KE) at a distance (d_1,d_2) corresponding to an odd-numbered multiple of a quarter of a mean wavelength for the frequency channel to be coupled via the respective coupling opening, and the two coupling openings (K1,K4; K2,K5; K3,K6) of each of said at least one pair are sufficiently offset (o) from a center (c) of said at least one sidewall of the collecting wave guide (SH) transversely towards respective longitudinal edges (e) of said at least one sidewall so that one of the two waveguide filters for said two coupling openings can be coupled to said collecting waveguide (SH) via said coupling opening of said one of the two waveguide filters when said two waveguide filters are tuned to different frequencies.

5,578,974

PIEZOELECTRIC FILTER WITH A CURVED ELECTRODE

Tsung-Fu Yang, and Wei-Shung Huang, both of Taiwan, Taiwan, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 28, 1995, Ser. No. 431,179

Int. Cl.[6] H03H *9/00*

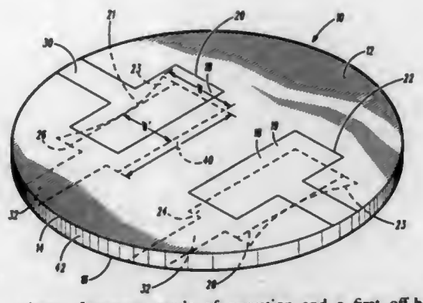
U.S. Cl. 333—187 8 Claims

1. A piezoelectric resonator, comprising:

a piezoelectric crystal plate having two opposite surfaces including a signal surface and a ground surface;

a plurality of electrodes in substantially overlying relationship on each of the opposite surfaces having a substantially rectangular portion having a length and width, and providing a primary frequency mode of operation and a first off-band spurious mode upon suitable energization; and

at least one electrode on the ground surface includes an integral electrode extension extending outwardly from the rectangular portion defining a concave end-portion along the length and outer boundary of the electrode on the ground surface a width of the electrode on the ground surface being minimal in proximity to a middle portion of the concave end-portion, to provide attenuation of the first off-band spurious mode.



5,578,975

COAXIAL DIELECTRIC FILTER HAVING ADJACENT RESONATORS DISPOSED IN OPPOSITE DIRECTIONS

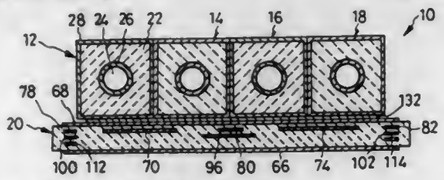
Satoshi Kazama, Takasaki, and Tatsuya Imaizumi, Gunmaken, both of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 85,318, Jun. 29, 1993, Pat. No. 5,412,359. This application Nov. 10, 1994, Ser. No. 337,277

Claims priority, application Japan, Jun. 30, 1992, 4-197541

Int. Cl.[6] H01P *1/205*

U.S. Cl. 333—202 27 Claims



1. A wave filter apparatus comprising:

(a) a base structure comprising:

(i) a base plate having a pair of surfaces which are disposed opposite each other;

(ii) at least two base terminal conductor regions disposed at one of the surfaces of the base plate;

(iii) a grounding conductor region disposed at said one surface of the base plate; and

(iv) a resonator coupling element electrically connected between the base terminal conductor regions, the resonator coupling element being embedded in the base plate, at least a part of the resonator coupling element being disposed under the grounding conductor region; and

(b) at least two dielectric resonators mounted to the base structure, each dielectric resonator comprising:

(i) a dielectric body substantially in the shape of an elongate tube;

(ii) an inner conductor disposed on an inside surface of the dielectric body;

(iii) an outer conductor disposed on an outside surface of the dielectric body and electrically connected to the grounding conductor region of the base structure;

(iv) a shorting conductor disposed on a first end of the dielectric body for electrically interconnecting the inner and the outer conductors; and

(v) a terminal disposed on a second end of the dielectric body and electrically connected to the inner conductor and to a respective one of the base terminal conductor regions of the base structure,

wherein the resonator coupling element is disposed in parallel to at least one of the dielectric resonators.

5,578,976

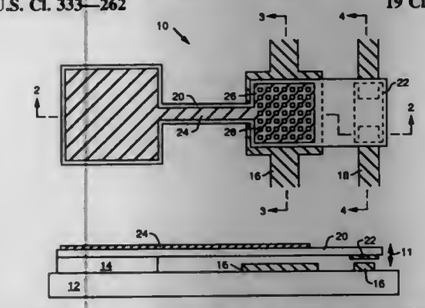
MICRO ELECTROMECHANICAL RF SWITCH

Jun J. Yao, Thousand Oaks, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Jun. 22, 1995, Ser. No. 493,445

Int. Cl.[6] H01P *1/10*; H01H *57/00*

U.S. Cl. 333—262 19 Claims



1. A micro electromechanical switch formed on a substrate, comprising:

an anchor structure, a bottom electrode, and a signal line formed on the substrate;

said signal line having a gap forming an open circuit;

a cantilever arm formed of insulating material attached to said anchor structure and extending over said bottom electrode and said signal line gap;

an electrical contact formed on said cantilever arm remote from said anchor structure and positioned facing said gap in said signal line;

a top electrode formed atop said cantilever arm; and

a portion of said cantilever arm and said top electrode positioned above said bottom electrode forming a capacitor structure electrostatically attractable toward said bottom electrode upon selective application of a voltage on said top electrode.

5,578,977

PROXIMITY SWITCH WITH THREE SWITCHING POSITIONS

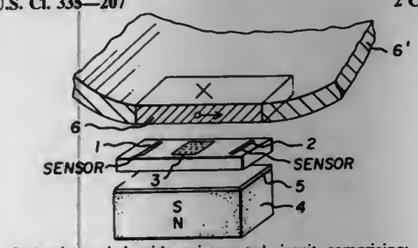
Luc Jansseune, Oostende, Belgium, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 20, 1995, Ser. No. 530,876

Claims priority, application Germany, Sep. 20, 1994, 94 15 257 U

Int. Cl.[6] H01H *9/00*

U.S. Cl. 335—207 2 Claims



1. A microswitch with an integrated circuit, comprising:

a ferromagnetic tripping body being movable between three switching positions;

two Hall sensors being associated with said tripping body;

a permanent magnet disposed fixedly below said two Hall sensors, said permanent magnet having one pole facing toward said two Hall sensors for generating field lines penetrating said Hall sensors; and

a dual evaluation circuit for ascertaining a ratio of magnetic flux in each of said two Hall sensors and for deriving a switching signal from a change in said ratio upon an approach of said tripping body, said dual evaluation circuit having first and second outputs, and said dual evaluation circuit changing a switching state with respect to one of said outputs in reaction to a positive or negative difference in magnetic flux between said two Hall sensors, for switching an occurrence of a vanishingly small difference, a positive difference and a negative difference in magnetic flux through said three positions of said tripping body.

5,578,978

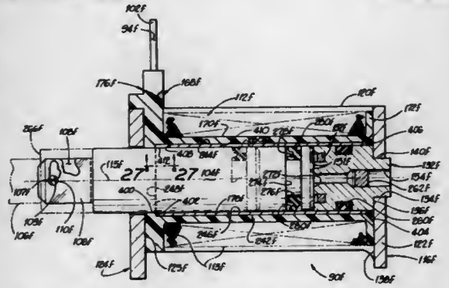
ELECTRO-FLUID ACTUATOR AND SYSTEM

Marty M. Zoerner, Reed City, Mich., assignor to Nartron Corp., Reed City, Mich.

Continuation-in-part of Ser. No. 922,069, Jul. 29, 1992, abandoned. This application Dec. 20, 1993, Ser. No. 169,526

Int. Cl.[6] H01F *7/18*

U.S. Cl. 335—239 49 Claims

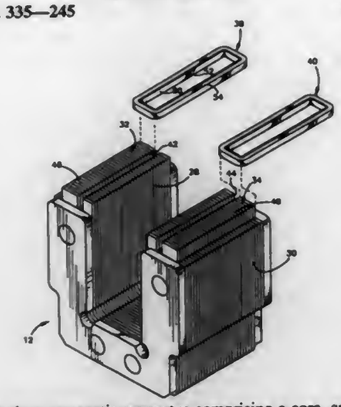


46. An electrically energized actuator assembly, comprising an electrically energizable field coil, an armature movable in response to energization of said field coil, an electrical circuit, wherein when said electrical circuit is closed said field coil is energized as to cause said armature to move in a first direction toward a first extreme position, resilient means for resiliently resisting the movement of said armature in said first direction, wherein when said electrical circuit is opened said field coil is de-energized permitting said resilient means to move said armature in a second direction toward a second extreme position, and delay means, said delay means being effective to retard the movement of said armature in said second direction whereby in comparison the speed of movement of said armature in said first direction against the resilient resistance of said resilient means is purposely faster than the speed of movement of said armature in said second direction, and additional means which become operative upon said armature attaining a preselected location in its movement toward said second extreme position to override the otherwise normal operation of said delay means and thereby significantly increase the speed of movement of said armature in said second direction. irection.

5,578,979
ELECTROMAGNETIC APPARATUS

David M. Adams, Mequon, and Jerome K. Hastings, Sussex, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 6, 1993, Ser. No. 1,388
Int. Cl.[6] H01F 7/10
U.S. Cl. 335—245 4 Claims

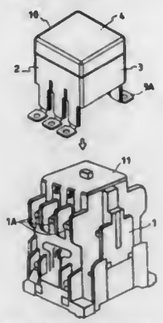


1. An electromagnetic apparatus comprising a core, an armature movable relative to said core, and shading ring means connected with said core, said shading ring means including a base formed of a first metal and a layer of a second metal clad to said base, said first metal being formed of a material which work hardens and has a greater resistance to fatigue failure induced by vibration than said second metal, said second metal having a greater electrical conductivity than said first metal.

5,578,980
HYBRID SWITCH

Koji Okubo, and Soichi Okita, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Apr. 24, 1995, Ser. No. 427,952
Claims priority, application Japan, Apr. 25, 1994, 6-086125
Int. Cl.[6] H01H 67/02
U.S. Cl. 335—132 9 Claims



1. A hybrid switch for making and breaking a current, comprising:

an electromagnetic contactor having a top portion and side portions, said electromagnetic contactor having main contact terminals for conducting a flow of the current after a current making operation;

a semiconductor switch device connected in parallel with the main contact terminals of said electromagnetic contactor, for conducting operations of making and breaking the current; and

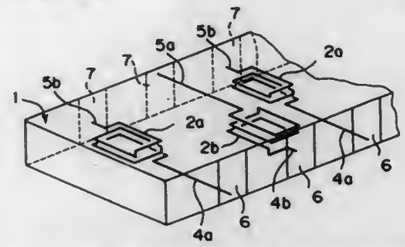
a semiconductor unit body mounted on the top portion of the electromagnetic contactor, said body including a casing having a substantially square top portion and four side portions housing said semiconductor switch, a plurality of contact plates having a first portion extending downwardly from opposite side portions in a direction substantially perpendicular to said top portion, said plurality of plates embracing the side portions of the electromagnetic contactor, each of said plurality of plates having an end portion with a hole, said end portions being bent outwardly from said opposite side portions of the unit body to form circuit terminals aligned with and substantially parallel to said main circuit terminals of the electromagnetic contactor; and

a terminal screw mounted in each of said holes and corresponding main circuit terminals, fastening the semiconductor body to said main circuit terminals.

5,578,981
LAMINATED INDUCTOR

Hiromichi Tokuda, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed May 5, 1993, Ser. No. 57,670
Claims priority, application Japan, May 8, 1992, 4-030021 U
Int. Cl.[6] H01G 27/30
U.S. Cl. 336—171 3 Claims



1. An array type of a laminated inductor noise filter for insertion in a signal transmitting line comprising:

at least three inductors, each of said inductors including,

a coil section, which is formed of alternating laminating insulating layers and coil conductors, said coil section having a spiral coil which is formed by connecting coil conductors electrically through the insulating layers,

a pair of leading sections which have different lengths and extend from said coil section to opposite sides of the laminated inductor, and

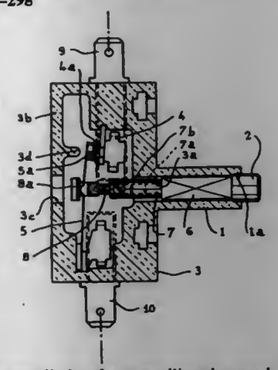
a pair of in-line type of external electrodes which are disposed on opposite sides of the laminated inductor, said in-line type of external electrodes being connected to said coil section through said leading sections;

the coil sections of the inductors being staggered in both a vertical direction and a first horizontal direction of the inductor to reduce magnetic coupling between the coil sections, and the coil section for one of said inductors and one of said pair of leading sections for an adjacent inductor to the one inductor being staggered in the vertical direction, and axes of the spiral coils of the coil sections being displaced from one another along a second horizontal direction of the inductor and being staggered in said first horizontal direction of the laminated inductor.

5,578,982
TEMPERATURE LIMITERS

Jean Serigny, La Tronche, France, assignor to Cotherm, Vinay, France

Filed Jan. 11, 1995, Ser. No. 371,770
Claims priority, application France, Jan. 14, 1994, 94 00564; Jun. 10, 1994, 94 07342
Int. Cl.[6] H01H 37/00
U.S. Cl. 337—298 14 Claims



1. A temperature limiter for controlling the supply of electrical energy to a principal circuit comprising, a box formed of a ceramic material and defining an interior space, a hollow ceramic tube extending from said box and communicating with said interior space, first and second terminals extending from said box, a first contact electrically connected to said first terminal and a second contact carried by an elastic blade electrically connected to said second terminal, said elastic blade being oriented within said interior space and normally exerting a resilient force to open said first and second contacts with respect to one another to thereby terminate electrical energy to the principal circuit, a pellet mounted within said ceramic tube formed of a metallic alloy having a magnetic permeability limited by a first Curie point, a magnet movably mounted within said ceramic tube and formed of a metallic alloy, a plunger means connected to said magnet so as to be movable therewith and formed of a metallic alloy having a magnetic permeability limited by a second Curie point, said plunger means including an adjustment means engageable with said elastic blade for adjusting the spacing between said elastic blade and said magnetic so that said second contact engages said first contact when said magnetic engages said pellet when the temperature of said pellet does not exceed said first Curie point.

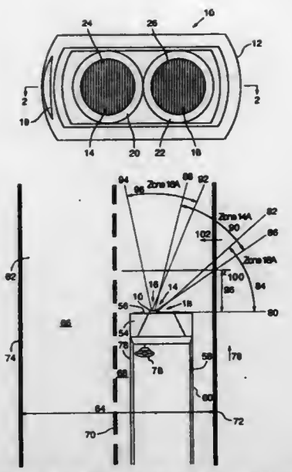
5,578,983
SCHOOL BUS SAFETY DEVICE AND METHOD OF USE

Robin R. C. Inwood, 25 Shady Lane, St. Thomas, Ontario, Canada; John L. Norman, 110 Dear Valley Crescent, London, Ontario, Canada, and Frank Da Costa, 1483 Jalna Boulevard, London, Ontario, Canada

Filed Jan. 4, 1994, Ser. No. 177,157
Int. Cl.[6] B60Q 1/00
U.S. Cl. 340—438 B 28 Claims

1. A safety device for mounting on a vehicle and allowing a driver of the vehicle to direct the movement of passengers exiting the vehicle and crossing from a first side of a road to a second side of the road after the vehicle has come to a stop adjacent the first side, comprising:

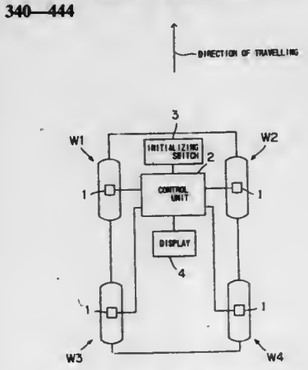
a) a first light for indicating to the passengers a first position located on the first side of the road, ahead of the vehicle and in sight of the driver and for directing the passengers to move from the first position to a second position located in the road immediately in front of the vehicle and in the sight of the driver, said first light being visible only when the passengers are at the first position and having selectable modes of operation which are an off mode, a steady-on mode and flashing-on mode, said first light operating in one of said steady-on and flashing-on modes of operation to indicate when said passengers are in said first position and operating in the other of said steady-on and flashing-on modes of operation for directing the passengers to said second position, (b) a second light for indicating to the passengers the second position and for directing the passengers to move from the second position to the second side of the road, thereby crossing the road, said second light being visible only when the passengers are at the second position and having selectable modes of operation which are an off-mode, a steady-on mode and a flashing-on mode, said second light operating in one of said steady-on and flashing-on modes of operation to indicate when the passengers are in the second position and operating in the other of the steady-on and flashing-on modes of operation for directing the passengers to said second side of the road.



5,578,984
TIRE AIR PRESSURE REDUCTION DETECTING METHOD AND APPARATUS

Mikao Nakajima, Osaka, Japan, assignor to Sumitomo Electric, and Sumitomo Rubber Ind., Hyogo, Japan

Filed Oct. 28, 1994, Ser. No. 330,740
Claims priority, application Japan, Nov. 4, 1993, 5-275553; Nov. 16, 1993, 5-287021; Nov. 17, 1993, 5-288429
Int. Cl.[6] B60C 23/00
U.S. Cl. 340—444 11 Claims



1. A tire air-pressure reduction judging method of detecting rotational angular speeds of the four tires attached to a four-

wheeled vehicle and detecting a reduction in the air pressure of a tire based on the detected rotational angular speeds, said method comprising the steps of:

obtaining, as functions of speeds or forward/backward accelerations, the ratios of the rotational angular speeds of driving tires under normal pressure to the rotational angular speeds of non-driving tires under normal pressure, and storing the relationship between said speeds or forward/backward accelerations and said ratios thus obtained;

obtaining the speed or forward/backward acceleration of the vehicle while the vehicle actually travels;

obtaining, based on said stored relationship, the ratio corresponding to said speed or forward/backward acceleration thus obtained;

correcting said rotational angular speeds based on said ratio thus obtained; and

detecting a reduction in the air pressure of a tire based on said rotational angular speeds thus corrected.

5,578,985

HYBRID DISPLAY INSTRUMENT, PARTICULARLY FOR USE IN AN AUTOMOBILE INSTRUMENT PANEL

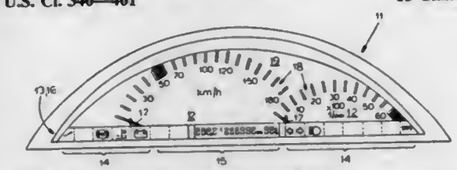
Rolf Cremers, Marxzell, and Wolfgang Ziegler, Karlsbad, both of Germany, assignors to Valeo Borg Instruments Verwaltung GmbH, Remchingen, Germany

Filed Jan. 18, 1995, Ser. No. 374,498

Claims priority, application Germany, Jan. 18, 1994, 44 01 231.4

Int. Cl.[6] B60Q *1/00*

U.S. Cl. 340—461 **15 Claims**



1. A hybrid display instrument, comprising:

means for defining an elongated display area having at least one arcuate dial for displaying analog information and a band along substantially a full length of a longitudinal edge of said display area;

at least one pointer mounted to sweep across said arcuate dial and provided with a drive responsive to said analog information for indicating said analog information by a position of said pointer along said dial;

means outside said area for generating symbolic information and for projecting said symbolic information into said display area along said band; and

a plurality of symbolic information display cells provided along said band and visible and readable simultaneously with said dial and receiving symbolic information projected into said display area by said means for generating symbolic information, whereby said cells provide respective, selectively fixed and variable information readable together with said analog information said band being provided along a lower edge of said display area, and said pointer having a pivot below a bottom of said band.

5,578,986

CAR DISPLAY LAMP

Hiroshi Isobe, and Tsugetaka Isobe, both of Aichi-ken, Japan, assignors to Tatsumi Co., Ltd., Aichi-ken, Japan

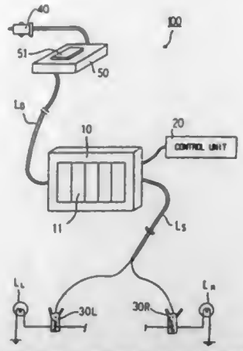
Filed Jan. 17, 1995, Ser. No. 367,226

Int. Cl.[6] B60Q *1/34*

U.S. Cl. 340—475 **6 Claims**

1. A car display device comprising:

detection means for detecting an on-off signal with a predetermined period to flash turn signal lamps; and



control means connected with said detection means for inputting said on-off signal and a display for actuating said display for a predetermined display time when only one pulse of said on-off signal is detected, said isolated pulse not being continuous to other pulses within a first predetermined time longer than one period and shorter than two periods of said predetermined period of said on-off signal wherein said control means comprises:

first timer which outputs duration signals (B, E) showing a duration in which said on-off signal is continuously output, said duration being determined by resetting and restarting said first timer in synchronization with each of level transfers with a predetermined direction of said on-off signal to measure said first predetermined time which is longer than one period and shorter than two periods of said on-off signal:

second timer which outputs a reference signal (D) showing a reference time when a second predetermined time passed after the beginning of said duration shown by said duration signal B, said reference time being determined by resetting and restarting said second timer in synchronization with the beginning of said duration of said duration signal to measure said second predetermined time which is longer than said first predetermined time of said first timer and shorter than two periods of said on-off signal; and

signal output means which outputs a display signal (G) for said predetermined display time to actuate said display device when it is judged from both said duration signal (E) and said reference signal that said duration is over at said reference time.

5,578,987

MONITORING APPARATUS FOR AN ALARM DEVICE

Zhou XuYang; Koichi Futsuhara, and Masayoshi Sakai, all of Saitama-ken, Japan, assignors to The Nippon Signal Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/01055, § 371 Date Dec. 21, 1995, § 102(e) Date Dec. 21, 1995, PCT Pub. No. WO96/00955, PCT Pub. Date Nov. 1, 1996

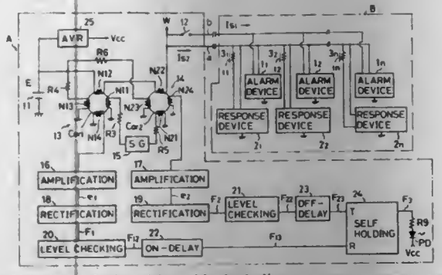
PCT Filed Jun. 29, 1994, Ser. No. 569,161

Int. Cl.[6] G08B *29/00; H04R 29/00*

U.S. Cl. 340—506 **8 Claims**

1. A monitoring apparatus for an alarm device, where an alarm device side is situated remotely from an alarm device drive side, for monitoring from the alarm device drive side, the generation of an audible alarm at the alarm device side,

said alarm device side including; an alarm device for generating an audible alarm, and an audible alarm generation sensing means for sensing an audible alarm generated by said alarm device and transmitting an audible alarm sensed output to said alarm device drive side within a predetermined time interval after the audible alarm has stopped,



said alarm device drive side including; a power source connected through a feeder to said alarm device and audible alarm generation sensing means on the alarm device side, a drive switch disposed in a command lead connected in parallel with said feeder connecting the power source and alarm device, which is switched on to apply a command signal for audible alarm generation to said alarm device,

first verification means for verifying the generation of an audible alarm based on an audible alarm sensed output from said audible alarm generation sensing means transmitted through said feeder after audible alarm generation of said alarm device is stopped by switching off said drive switch,

second verification means for verifying that the alarm device side has returned to an original condition the same as that prior to audible alarm generation, based on a current change in said feeder due to the stopping of the audible alarm sensed output of the audible alarm generation sensing means, and

judgement means for generating a normal judgement output indicating that an audible alarm has been generated normally, when a verification output of an audible alarm sensed output is generated in the first verification means, and a verification output of the return to the original condition is generated in the second verification means.

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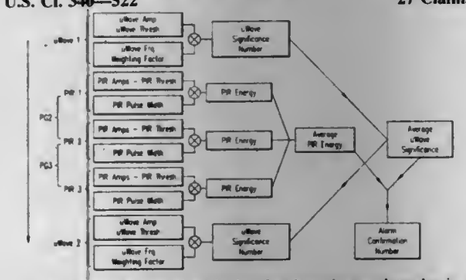
INTRUSION DETECTION SYSTEM HAVING SELF-ADJUSTING THRESHOLD

Paul Hoseit, El Dorado Hills; Gordon Whiting, Orangevale, and Frederick W. Eggers, Dixon, all of Calif., assignors to C & K Systems, Inc., Folsom, Calif.

Filed Sep. 16, 1994, Ser. No. 307,524

Int. Cl.[6] G08B *19/00*

U.S. Cl. 340—522 **27 Claims**



1. An intrusion detection device for detecting an intruder in a volume of space, said device comprising:

first sensing means for generating a first signal in response to the detection of the intruder;

first amplifying means for receiving said first signal and for generating a first amplified signal;

second sensing means for generating a second signal in response to the detection of the intruder;

second amplifying means for receiving said second signal and for generating a second amplified signal;

digitizing means for digitizing said first and second amplified signals to produce first and second digitized signals, respectively; and

processing means for receiving said first and second digitized signals and for comparing same to a first and a second threshold signal respectively, to generate a first and a second digital signal, respectively in the event said first and second digitized signals exceed said first and second threshold signals respectively, and for calculating a characteristic of said second digital signal, representing the energy of said second digital signal, and for dynamically adjusting said first threshold signal, in response to said characteristic calculated for said second digital signal, and for using said first and second digital signals in generating an alarm signal.

5,578,989

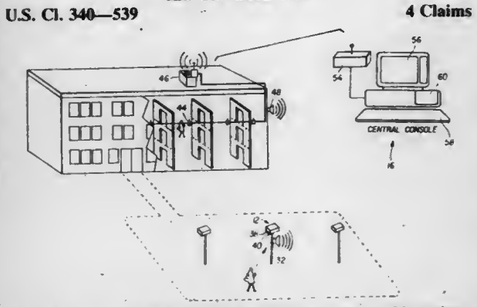
PERSONAL SECURITY SYSTEM WITH SYSTEM WIDE TESTING

Daniel F. Pedtke, Fairport, N.Y., assignor to Detection Systems, Inc., Fairport, N.Y.

Continuation of Ser. No. 126,841, Sep. 20, 1993, Pat. No. 5,467,074, which is a continuation-in-part of Ser. No. 835,847, Feb. 18, 1992, abandoned. This application Feb. 13, 1995, Ser. No. 387,662

Int. Cl.[6] G08B *1/08*

U.S. Cl. 340—539 **4 Claims**



1. A security system including multiple receivers, said receivers having a monitoring range and monitoring a predetermined frequency; said system comprising:

a portable transmitter having first and second modes of operation for transmitting at said predetermined frequency, said first mode transmitting an emergency signal and said second mode transmitting a modified signal to indicate a test;

said receivers together monitoring a geographical area greater than said monitoring range, and having first and second modes of operation, respectively, responding throughout said area to successful receipt of said emergency and modified signals, said receivers in said first mode issuing an alarm signal and in said second mode issuing a test signal.

5,578,990

INTRUSION DETECTION ALARMING DEVICE

Jack G. Sanford, Jr., 226 N. First St., Campbell, Calif. 95008, and Jack G. Sanford, Sr., 301 California Ave., Columbus, Kans. 66725

Continuation-in-part of Ser. No. 926,226, Aug. 6, 1992, abandoned. This application Nov. 2, 1993, Ser. No. 146,523

Int. Cl.[6] G08B *13/00*

U.S. Cl. 340—541 **14 Claims**

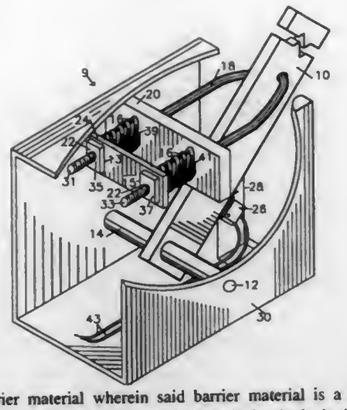
1. An intrusion detection alarming device comprising:

a base;

said base being connected to a physical structure;

an alarming lever arm comprising an inner and an outer end, said inner end being pivotally attached to said base for rotational deflection;

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a barrier material wherein said barrier material is a material selected from the group consisting of wire, barbed wire, razor ribbon, razor ribbon concertina, barbed wire concertina, and woven wire mesh;

said barrier material being attached to and supported by said alarming lever arm;

a tension means comprising a first end and a second end, said first end attached to said base and said second end attached to said alarming lever arm;

an electronic sensor means affixed to said base for detecting rotational deflection of said alarming lever arm;

said alarming lever arm having a first state and a second state, said first state occurring when said tension means is restraining the rotational deflection of said alarming lever arm about said inner end and said electronic sensor means is not detecting rotational deflection of said alarming lever arm;

said second state occurring when said tension means is extended due to the addition of force or weight applied to said barrier material or said alarming lever arm by an intruder , causing said alarming lever arm to be rotationally deflected about said inner end, whereby said electronic sensor means detects said rotational deflection of said alarming lever arm; and

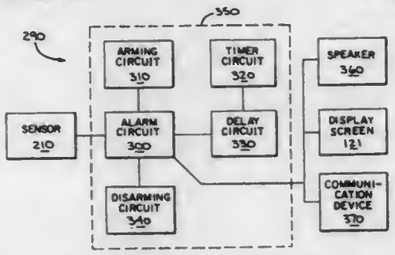
a sensor state signal transmission means extending from said electronic sensor means.

5,578,991

SECURITY SYSTEM AND METHOD FOR A PORTABLE PERSONAL COMPUTER

Erica J. Scholder, Austin, Tex., assignor to Dell USA, L.P., Austin, Tex.

Filed Dec. 2, 1994, Ser. No. 348,387
Int. Cl.[6] G08B *13/14*
U.S. Cl. 340—571 **25 Claims**



1. A security system for a portable computer, said portable computer having general purpose data processing and storage circuitry, said security system comprising:

a sensor for detecting a separation of said portable computer from an object, said sensor transitioning from an inactivated state to an activated state when said portable computer is separated;

an alarm circuit integrated in said general purpose data processing and storage circuitry and coupled to said sensor and having a disarmed state and an armed state, said alarm circuit detecting when said sensor is in said activated state and issuing a notification when said alarm circuit is in said armed state and said sensor is in said activated state; and

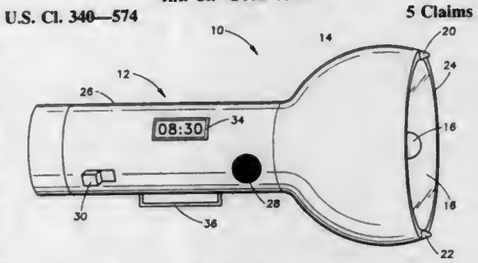
a computer input device for providing data to said general purpose data processing and storage circuitry to selectively place said alarm circuit in said armed state and said disarmed state.

5,578,992

PERSONAL SAFETY ALARM AND TIMEKEEPING DEVICE

Montgomery G. B. Harding, 3 Stark Ct., Princeton Woods, Newark, Del. 19702

Filed Sep. 18, 1995, Ser. No. 529,447
Int. Cl.[6] G08B *13/00*
U.S. Cl. 340—574 **5 Claims**



1. A personal safety alarm device, comprising:

a main housing;

a light source included within the housing;

an audio alarm speaker disposed on an outside surface of the housing;

a timekeeping device and associated display therewith, said display located on the outside surface of the main housing; and

an alarm triggering circuit which further comprises an alarm switch, said switch, when activated, causing said audio alarm speaker to sound intermittently, and further causing said light source to flash intermittently; with

said timekeeping device being deactivated whenever said alarm switch is activated, and said display associated with said timekeeping device remaining activated, thereby displaying the time which said alarm switch is activated.

5,578,993

TEMPERATURE COMPENSATED ANNUNCIATOR

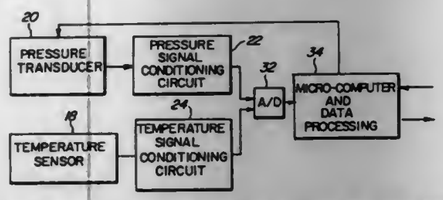
Abdul N. Sitabkhan, Arcadia, and James W. Tseng, La Canada, both of Calif., assignors to Autronics Corporation, Arcadia, and Mass Systems Inc., Baldwin Park, both of Calif.

Filed Nov. 28, 1994, Ser. No. 345,929
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—614 **5 Claims**

1. A temperature compensated annunciator for monitoring an amount of fillant in a pressurized vessel comprising:

temperature sensor means for determining a temperature of said fillant and generating a temperature signal corresponding to said fillant temperature;

pressure transducer means for measuring the pressure within said pressurized vessel and generating a pressure signal corresponding to said measured pressure;



fillant amount determining means for receiving the temperature signal from said temperature sensor means and determining a calculated pressure corresponding to a minimum operational fillant level of said pressurized vessel;

judging means for judging whether said measured pressure in said pressurized vessel is below said calculated pressure corresponding to said minimum operational fillant level;

signaling means for signaling a user when said judging means judges that said measured pressure in said pressurized vessel is below said calculated pressure;

storage means for storing a value corresponding to the measured pressure;

leak detection means for determining a reduction in the amount of fillant in the vessel by comparing the pressure measured by the pressure transducer means with a previously measured pressure stored in said storage means during a given temperature cycle; and

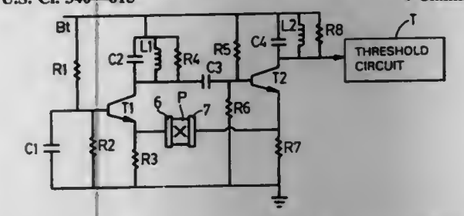
forecast means for forecasting, if said leak detection means determines a reduction in the amount of fillant, when said fillant amount will be less than said minimum operational fillant level.

5,578,994

LIQUID LEVEL SWITCH

Bogdan Cherek, and John E. Gillis, both of Peterborough, Canada, assignors to Milltronics Ltd., Peterborough, Canada

Filed May 25, 1994, Ser. No. 248,911
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—618 **4 Claims**



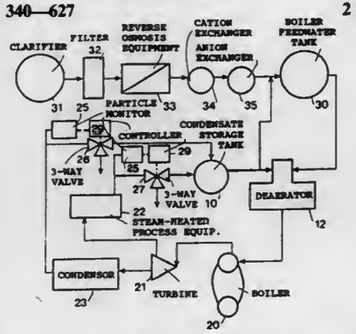
1. A piezoelectric level sensor comprising an electrical oscillator circuit including frequency defining elements in both feed forward and feedback circuit paths, the frequency defining element in the feedback path being a piezoelectric crystal device constructed to have a lowest frequency vibration mode in air which is substantially equal to a first frequency defined by the frequency defining element in the feed forward circuit, which mode is suppressed by acoustic coupling of the device to a body of liquid such that a lowest frequency vibration mode of the device when in contact with liquid has a second frequency which is substantially above the frequency of the frequency defining element in the feed forward circuit, whereby positive feedback through the oscillator circuit can occur when the piezoelectric device is in contact with air, but not when it is in contact with liquid, and means for detecting an output from the oscillator circuit at said first frequency.

5,578,995

METHOD OF MONITORING AND CONTROLLING CONDENSATE QUALITY

Robert L. Bryant, County of DeKalb, and Charles R. Veal, County of Gwinnett, both of Ga., assignors to Chemtrac Systems, Inc., Norcross, Ga.

Filed Jan. 25, 1994, Ser. No. 187,397
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—627 **2 Claims**



1. A method of controlling concentrations of particulate matter in condensate flow in a condensate return system, in which an intense light beam is directed towards a detector and across a portion of the condensate flow, concentrations of particulate matter in the condensate flow being controlled so that they do not exceed a predetermined limiting concentration, comprising:

(a) continuously measuring, on-line, numbers known as particle indices which are indicative of particulate matter concentrations in the condensate flow, each particle index being proportional to a ratio equal to fluctuations in intensity of the light beam divided by absolute intensity of the light beam, the fluctuations being caused by particles which are present in said portion of the condensate flow during a fixed interval of time; and

(b) automatically diverting the condensate flow from the condensate return system when the particulate matter concentration, as indicated by the particle index, is greater than the predetermined limiting concentration.

5,578,996

LONG LIFE DETECTOR

Kalvin Watson, and Thomas W. Kondziolka, both of Chicago, Ill., assignors to BRK Brands, Inc., Aurora, Ill.

Filed Nov. 23, 1994, Ser. No. 344,744
Int. Cl.[6] G08B *17/10*
U.S. Cl. 340—628 **23 Claims**

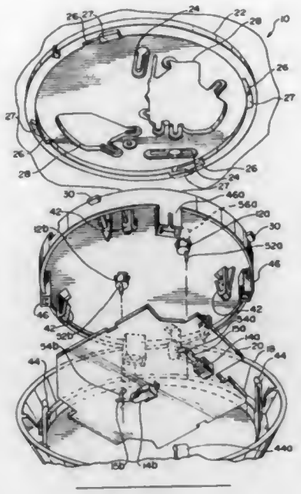
1. An ambient condition detector comprising:

a sensor;

a control unit coupled to said sensor;

an energy source non-removably coupled to said control unit; and

a single use turn-on switch having a break-away control member wherein said energy source is switched once from a non-conducting state into electrical conduction with said control unit, wherein said sensor includes at least one of a smoke sensor and a gas sensor.

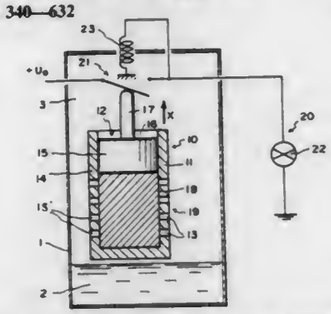


5,578,997

FUEL DETECTOR FOR A TURBOJET ENGINE OIL TANK

Michel M. A. A. Lechevalier, Mormant, France, assignor to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation S.N.E.C.M.A., Paris, France

Filed Nov. 2, 1993, Ser. No. 144,532
Claims priority, application France, Nov. 4, 1992, 92 13170
Int. Cl.[6] G08B *17/10*
U.S. Cl. 340—632 7 Claims



1. Apparatus for detecting fuel vapors in the atmosphere in an enclosure comprising:

a) a housing defining an inner chamber;

b) a piston slidably located in the inner chamber so as to divide the inner chamber into a first chamber portion and a second chamber portion;

c) an actuating cartridge located in the second chamber portion comprising a fluorinated silicone elastomer which expands in volume when subjected to heat and which produces an exothermic reaction in the presence of fuel vapors;

d) at least one orifice defined by the housing located so as to allow communication of the atmosphere in the enclosure with the second chamber portion such that fuel vapor in the atmosphere will cause the actuating cartridge to expand in volume, thereby moving the piston relative to the housing; and,

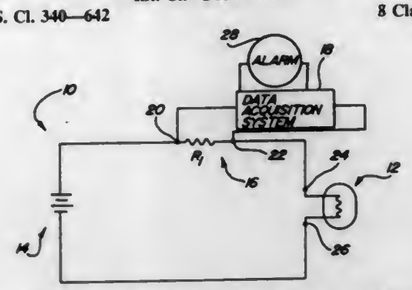
e) alarm means actuated by movement of the piston.

5,578,998

METHOD AND APPARATUS FOR PREDICTING OF LAMP FAILURE

Matthew H. Kasprowicz, Waterford, Mich., assignor to Chivas Products Limited, Sterling Heights, Mich.

Filed Mar. 20, 1995, Ser. No. 406,680
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—642 8 Claims



1. A lamp testing apparatus for testing an electrical lamp to predict whether the electrical lamp is likely to white-out, the apparatus comprising:

a power supply for providing the electrical lamp with a source of power during a test interval of time, the power supply being electrically interconnected with the electrical lamp;

a resistor in series with the power supply and the electrical lamp; and

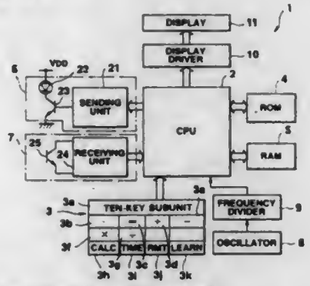
a data acquisition system for measuring a voltage drop across said resistor for said test time interval to determine a measured, minimum voltage drop across said resistor at the end of said test time interval, and comparing said minimum voltage drop across the resistor with a predetermined minimum voltage value in order to predict whether the electrical lamp is likely to white-out.

5,578,999

REMOTE CONTROL WITH LEARNING FUNCTION AND CONFIRMATION THEREOF

Kouichi Matsuzawa, Tokyo, and Hiroshi Morohoshi, Tokorozawa, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1994, Ser. No. 347,042
Claims priority, application Japan, Dec. 6, 1993, 5-339734; Feb. 28, 1994, 6-30601
Int. Cl.[6] G05B *19/02*
U.S. Cl. 340—825.22 12 Claims



1. A remote control device comprising:

plural input keys corresponding respectively to various key functions;

function indicating means for indicating the various key functions of said plural input keys;

plural remote-control signal storing means corresponding respectively to said plural input keys, for storing remote-control signals externally supplied thereto, respectively;

mode setting means for setting a storing mode in which an externally supplied remote-control signal is received and stored in the remote-control signal storing means, and a transmitting mode in which the remote-control signal stored in the remote-control signal storing means is read out and transmitted;

first control means for indicating all the key functions of the input keys and the remote-control signal storing means corresponding to which input keys store no remote-control signal, on said function indicating means in the storing mode set by said mode setting means;

first selecting means for selecting one of the input keys, whose key functions are caused by said first control means to be indicated on said function indicating means;

storage control means for storing the externally supplied remote-control signal in the remote-control signal storing means corresponding to the input key selected by said first selecting means;

second control means for indicating all the key functions of the input keys and the remote-control signal storing means corresponding to which input keys store remote-control signals, on said function indicating means in the transmitting mode set by said mode setting means;

second selecting means for selecting one of the input keys, the key functions of which are caused by said second control means to be indicated on said function indicating means; and

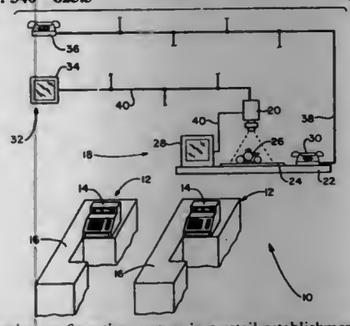
sending means for sending the remote-control signal stored in the remote-control signal storing means corresponding to the input key selected by said second selecting means.

5,579,000

AUDIO/VIDEO PRICE CONFIRMATION SYSTEM

Dennis E. Mulqueen, 3743 Dunmore NW., Canton, Ohio 44708

Continuation of Ser. No. 188,597, Jan. 26, 1994, abandoned, which is a continuation of Ser. No. 41,526, Apr. 1, 1993, abandoned, which is a continuation of Ser. No. 896,458, May 26, 1992, abandoned, which is a continuation of Ser. No. 302,781, Jan. 30, 1989, abandoned. This application Aug. 18, 1995, Ser. No. 516,977
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.3 6 Claims



1. A price confirmation system in a retail establishment providing video and audio communication links, comprising:

at least one checkout station having a cash register and a checkout counter;

a display area in close proximity to said checkout station, but excluding said checkout station therefrom, said display area comprising:

a cross-hatched grid having a pattern of cross-hatching between one-half inch and five inches, said cross-hatched grid receiving thereon an article of unknown price, said cross-hatched grid maintained on a support surface;

a video camera positioned above said cross-hatched grid for viewing just the article of unknown price and said cross-hatched grid and generating a color video image of the article disposed on said cross hatched grid, said video camera adjustable to properly show the nature and size of the article to be priced;

a video display screen for displaying said video color image of the article disposed on said cross-hatched grid;

a video communication link interconnecting said video camera to said video display screen and

an audio transceiving device; and

a plurality of remote stations displaced from said checkout station and said display area, each of said plurality of remote stations comprising:

a remote video display screen connected to said video communication link for receiving and displaying said color video image of the article disposed on said cross-hatched grid; and

a remote audio transceiving device interconnected by an audio communication link to said audio transceiving device;

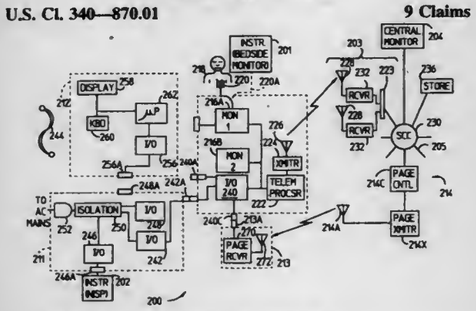
wherein both said remote video display screen and said remote audio transceiving device allow an individual at one of said plurality of remote stations to communicate with an individual at said display area for the purpose of confirming a price of the article which is then entered at said cash register.

5,579,001

PAGING-BASED BACKCHANNEL IN A MEDICAL TELEMETRY SYSTEM

Michael K. Dempsey, Acton; Mark S. Kotfila, Chelmsford, and Robert J. Snyder, Westford, all of Mass., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Filed Oct. 20, 1994, Ser. No. 326,617
Int. Cl.[6] G08C *19/16*
U.S. Cl. 340—870.01 9 Claims



1. A patient monitoring system, comprising:

a multiport transmitter for carrying out a patient monitoring function; and

a backchannel receiver module operable for receiving a backchannel transmission, translating the received backchannel transmission to provide respective backchannel information, and providing the backchannel information to the multiport transmitter;

wherein the backchannel transmission is received in the form of a signal on paging-based communications channel.

171-489 O.G.-96-20: QL3

VOL 1192 ISS 4 NO 26 1996 UMI

5,579,002

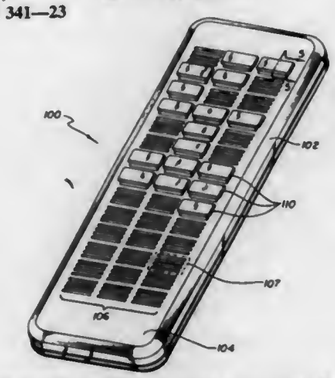
USER-CONFIGURABLE CONTROL DEVICE

Jerry Iggulden, Santa Clarita, Calif.; Richard Crack, Burnaby, Canada; Nigel Taylor, Maple Ridge, Canada; Bruce Stevens; Keith Constable, both of Coquitlam, Canada, and Derek Pyner, Delta, Canada, assignors to Arthur D. Little Enterprises, Inc., Cambridge, Mass.

Continuation of Ser. No. 147,855, Nov. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 65,598, May 21, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 479,835

Int. Cl.[6] H03K *17/94*

U.S. Cl. 341—23 1 Claim



1. A method of remotely controlling a television set comprising the steps of:

(a) providing to a user of said television set an electrically operated remote control transmitter having a plurality of key receiving sites thereon;

(b) providing to said user, separate from said remote control transmitter, a set of function control keys, each function control key of said set having a uniquely patterned surface that is uniquely associated with a corresponding control function;

(c) said user selecting a subset of said set of function control keys;

(d) said user inserting said subset of function control keys at a respective plurality of arbitrarily selected key receiving sites on said substrate;

(e) said user pressing one of said inserted subset of function control keys;

(f) sensing the uniquely patterned surface of said pressed one of said inserted subset of function control keys by electrical means within said remote control transmitter;

(g) transmitting a remote control command from said remote control transmitter to said television set corresponding to said control function uniquely associated with said pressed one of said inserted subset of function control keys.

5,579,003

DIGITAL DATA MODULATION/DEMODULATION SYSTEM WHEREIN THE MODULATED DATA SATISFIES A MINIMUM RUN NUMBER OF ZEROS

Koichi Hirayama, and Yoshiyuki Ishizawa, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 1, 1994, Ser. No. 221,956

Claims priority, application Japan, Apr. 2, 1993, 5-076792; Mar. 18, 1994, 6-048429

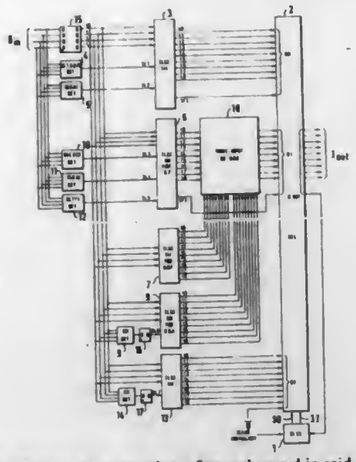
Int. Cl.[6] H03M *7/00*

U.S. Cl. 341—59 18 Claims

1. A modulation system comprising:

means for providing a consecutive binary data sequence;

a separator for separating said consecutive binary data sequence into a plurality of code-words;



a first converter for converting a first code-word in said plurality of code-words into a first modulated code-word, wherein a pattern of said first modulated code-word is based on a pattern of a second code-word following said first code-word in said data sequence;

a second converter for converting said first code-word into a second modulated code-word, wherein a pattern of said second modulated code-word is based on said pattern of said second code-word following said first code-word in said data sequence; and

a code selector for selecting one of said first and said second modulated code-words from among said modulated code-words such that a succession of said modulated code-words output by said code selector contains a minimum of three bits "0" between a first bit "1" and a following second bit "1" so that there is no less than two consecutive bits "0" between successive nine-bit modulated code-words in said succession of modulated code-words output by said code selector.

5,579,004

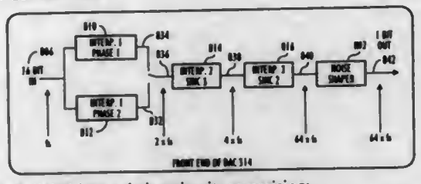
DIGITAL INTERPOLATION CIRCUIT FOR A DIGITAL-TO-ANALOG CONVERTER CIRCUIT

Alfredo R. Linz, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 2, 1994, Ser. No. 333,399

Int. Cl.[6] H03M *1/66*

U.S. Cl. 341—144 18 Claims



1. A digital interpolation circuit, comprising:

a first interpolation stage, having an input and an output, wherein said input is adapted to receive a multi-bit digital input signal, wherein said first interpolation stage oversamples said multi-bit digital input signal by a factor of two;

a second interpolation stage, having an input and an output, wherein said input of said second interpolation stage is connected to said output of said first interpolation stage, and wherein said second interpolation stage oversamples said output from said first interpolation stage by a factor of two, and wherein said first stage compensates for rolloff introduced by said second interpolation stage; and

a third interpolation stage, having an input and an output, wherein said input of said third interpolation stage is connected to said output of said second interpolation stage, wherein said third interpolation stage oversamples said output from said second interpolation stage by a factor of 16, and wherein said oversampled signal is then provided to said output of said third interpolation stage.

5,579,005

DIGITAL CORRECTION FOR MISSING CODES CAUSED BY CAPACITIVE MISMATCHINGS IN SUCCESSIVE APPROXIMATION ANALOG-TO-DIGITAL CONVERTERS

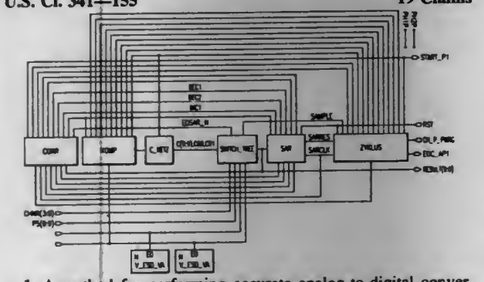
Angelo Moroni, Villanova del Sillaro, Italy, assignor to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed Dec. 14, 1994, Ser. No. 356,075

Claims priority, application European Pat. Off., Dec. 15, 1993, 93830503

Int. Cl.[6] H03M *1/06*

U.S. Cl. 341—155 19 Claims



1. A method for performing accurate analog-to-digital conversion, comprising the steps of:

(a.) performing an initial analog-to-digital conversion on an analog signal to provide a first converted digital value at a first resolution;

(b.) adjusting said digital first converted value by one least significant bit thereof, to produce an adjusted digital value at the same said first resolution as said first converted digital value;

(c.) reconverting said adjusted digital value to produce a converted analog signal, and comparing said converted analog signal with said analog input;

(d.) outputting said first converted digital value IF said comparison step indicates that said first converted value was accurate, and outputting said adjusted converted value otherwise.

5,579,006

A/D CONVERTER

Hiroshi Hasegawa, and Michio Yotsuyanagi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,320

Claims priority, application Japan, Dec. 28, 1993, 5-334128; Sep. 7, 1994, 6-213777; Sep. 7, 1994, 6-213778

Int. Cl.[6] H03M *1/44*

U.S. Cl. 341—162 20 Claims

1. An analog-to-digital converter comprising:

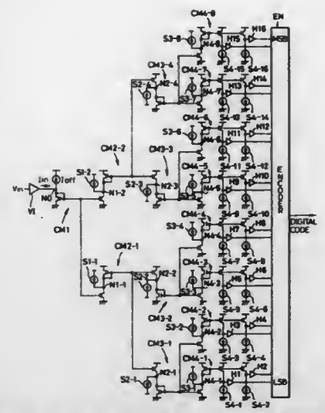
an input current mirror circuit having a current input terminal for receiving an analog signal current and having a plurality of current output terminals;

a constant current source supplying a constant current to said current input terminal;

means for subtracting said constant current from said analog signal current;

a tree structure for routing said input current mirror circuit, said tree structure including branches, said branches including a plurality of signal paths;

each stage of said tree structure comprising:



a plurality of current mirror circuits, each having an input terminal for inputting a current of a corresponding one of a plurality of output terminals of a preceding current mirror circuit in a preceding stage and a plurality of current output terminals;

a plurality of constant current sources supplying constant current to said plurality of current output terminals of each current mirror circuit within a stage; and

a plurality of means for subtracting said constant current from said output current of the corresponding current mirror circuit in the preceding stage; and

said analog-to-digital converter further comprising a plurality of current comparator circuits comparing respective output current values of said current output terminals of a current mirror final stage of said tree structure with respective reference current values, wherein comparator outputs of said plurality of current comparator circuits comprise digital signals.

5,579,007

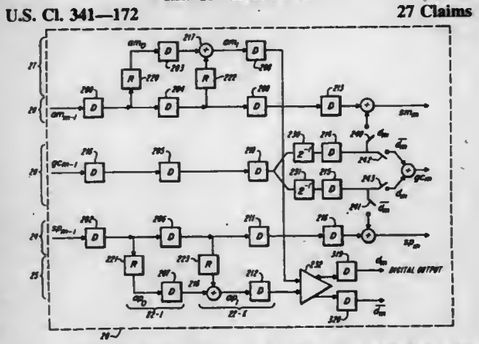
CHARGE-TO-DIGITAL CONVERTER

Susanne A. Paul, Lexington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 7, 1994, Ser. No. 271,520

Int. Cl.[6] H03M *1/42*

U.S. Cl. 341—172 27 Claims



1. A charge-to-digital converter including a pipeline of at least one conversion unit, each conversion unit operable for processing a serial stream of positive and negative signal charges corresponding to a differential signal to be digitized, and scaling charges corresponding to a full-scale signal, and for generating a digital output signal, each of said conversion units comprising:

means for receiving positive and negative signal charges and one or more scaling charges from a predetermined source;

positive and negative signal channels operable for processing positive and negative signal charges, respectively;

a distributed sensing pipeline of one or more sensing stages, said sensing stages operable for producing positive and negative accumulator charges representative of the positive charges in said positive signal channel and the negative charges in said negative signal channel;

means for generating positive and negative modification charges corresponding to predetermined proportions of said full-scale signal and associated with said positive and negative signal charges, respectively;

means for generating a digital signal representative of the difference between said positive and negative accumulator charges; and

means responsive to said digital signal for enabling the addition of said associated modification charge to the lesser of said positive and negative signal charges and for preventing the addition of said associated modification charge to the greater of said positive and negative signal charges.

5,579,008

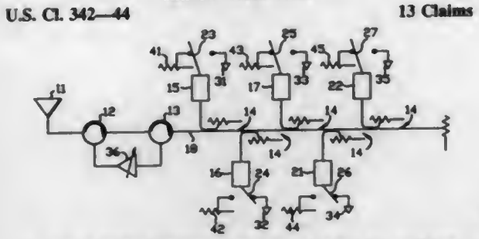
ELECTRONIC LICENSE PLATE APPARATUS AND METHOD

Garry N. Hulderman, Riverside, and Allen C. Hagelberg, Upland, both of Calif., assignors to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Jul. 14, 1995, Ser. No. 502,796

Int. Cl.[6] G01S *13/80*

U.S. Cl. 342—44 **13 Claims**



1. An apparatus for association with an object for providing a reflective return digital coded message in response to a signal from an interrogating radar, said apparatus comprising;

means associated with the object for receiving the interrogating radar signal;

means coupled to said receiving means for transmitting the interrogating signal within said apparatus;

a plurality of coupling means positioned along said transmitting means for dividing off said transmitting means a portion of the received interrogating signal;

delay line means coupled to each said coupling means, each said delay line means being unique to all other said delay line means;

means coupled to each delay line means for selectively reflecting or absorbing each delayed signal passing through said respective delay line means; and

means for reradiating from said apparatus the uniquely delayed reflected pulses, thereby forming a digital word comprised of the reflected pulses, which reradiated digital word is time spaced from the interrogation radar signal and from any such interrogation radar signal reflected from said object.

5,579,009

SENSOR SYSTEM

Bo Nilsson-Almqvist, and Björn Nilsson, both of Karlskoga, Sweden, assignors to Bofors AB, Karlskoga, Sweden

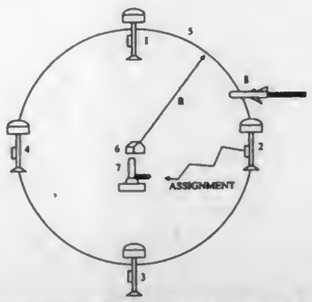
Filed Sep. 22, 1994, Ser. No. 310,406

Claims priority, application Sweden, Sep. 22, 1993, 9303081

Int. Cl.[6] G01S *13/58;13/72;13/86*

U.S. Cl. 342—55 **12 Claims**

1. A sensor system comprising:



a plurality of sensor stations of the same type for surveillance of an area intended to include an object to be protected, said sensor stations being spaced apart essentially along the periphery of a circle, each for surveillance of a segment of the periphery of said circle, in the central part of which an object to be protected is intended to be contained, each sensor station including:

a detector unit which is arranged to scan an arc in an azimuth sector of said circle allocated to it up towards the background of the sky in each of two detection fields formed along the arc having different elevation angles with respect to said detector unit;

measuring means for measuring the time of the passage of a target between the two detection fields; and

means for calculating the target position relative to the sensor station on the basis of the measured time, the speed of the target, the angle between the detection fields and the angle to the target.

5,579,010

MULTIBEAM RADAR SYSTEM

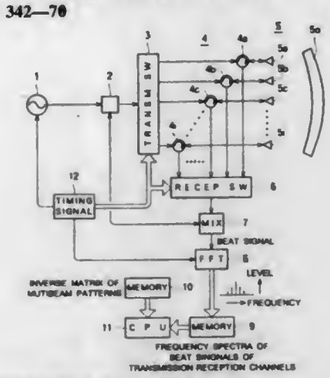
Akira Iihoshi, and Ken-ichi Tohya, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1995, Ser. No. 449,822

Claims priority, application Japan, May 27, 1994, 6-137993

Int. Cl.[6] G01S *13/60;13/94*

U.S. Cl. 342—70 **10 Claims**



1. A multibeam radar system comprising:

a multibeam transmission-and-reception apparatus for transmitting beams of ultrasonic waves or radio waves in a direction, receiving echo signals from an object, electronically scanning the transmitted beams while changing the direction of the transmitted beams discretely, and repeating these operations for plural transmission-reception channels determined according to directions of transmission and reception;

a reception level-holder for detecting intensities of echo waves received from the object at the transmission- channels, detecting a distance to the object or a corresponding physical quantity, and successively storing the intensities as reception levels of the transmission-reception channels;

a matrix or inverse matrix multibeam pattern storage means for previously creating and storing a matrix of multibeam patterns comprising a matrix of beam patterns corresponding to the transmission-reception channels or a matrix that is an inverse of the first-mentioned matrix, said beam patterns being squares of directivities of the transmitted beams of the transmission-reception channels represented in terms of sets of discrete values of the directions of transmission and reception; and

an inverse calculator for arranging those of the reception levels of the transmission-reception channels stored in the reception level storage which show substantially the same distance or corresponding physical quantities in corresponding rows or columns, performing inverse calculation processing according to said matrix or inverse matrix of said multibeam patterns already stored in said matrix or inverse matrix multibeam pattern storage, whereby calculating correcting values for the reception levels of the transmission-reception channels.

5,579,011

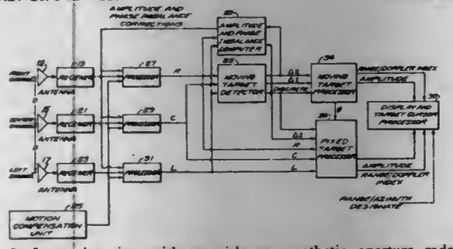
SIMULTANEOUS TRIPLE APERTURE RADAR

Walter J. Smrek, Lake Ronkonkoma, N.Y., assignor to Grumman Aerospace Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 263,924, May 15, 1981, abandoned, which is a continuation of Ser. No. 90,570, Nov. 2, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 436,747

Int. Cl.[6] G01S *13/58*

U.S. Cl. 342—113 **23 Claims**



1. In conjunction with an airborne synthetic aperture radar system having at least a first, second and third receiving antenna element, a method for detecting a moving target comprising the steps of:

a) positioning said first, second and third receiving antenna elements in a spaced relationship;

b) compensating the radar return signals received during a given aperture by said spaced first, second and third antenna elements to account for the motion of the radar bearing aircraft;

c) processing the motion compensated received radar return signals to form a first, second and third doppler processed signal, respectively;

d) phase shifting said first doppler processed signal by a predetermined amount;

e) phase shifting said second doppler processed signal by a predetermined amount;

f) differencing said phase shifted first doppler processed signal and said second doppler processed signal to form a first difference signal;

g) differencing said phase shifted second doppler processed signal and said third doppler processed signal to form a second difference signal; and

h) detecting using said first and second difference signals the presence or absence of a moving target.

5,579,012

SPEED DETECTING APPARATUS

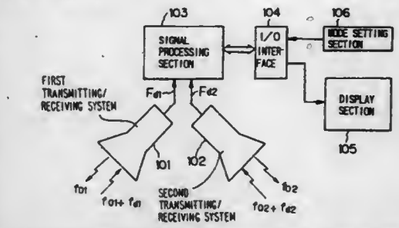
Mikio Iwakuni, Yachiyo; Yoshihiko Baba, Nada, and Masahiro Takiguchi, Yachiyo, all of Japan, assignors to Uniden Corporation, Chiba, Japan

Filed Feb. 9, 1995, Ser. No. 385,865

Claims priority, application Japan, Dec. 5, 1994, 6-301128

Int. Cl.[6] G01S *13/60*

U.S. Cl. 342—117 **20 Claims**



1. A speed detecting apparatus mounted on an object moving on the ground and computing a moving speed by receiving a reflection wave produced by a microwave signal or a millimeter signal transmitted to the ground and detecting a Doppler frequency, comprising:

a plurality of transmitting/receiving systems, each having an antenna and a transmitter/receiver, and each transmitting/receiving electromagnetic radiation at a different frequency; and

a signal processing section for computing moving speed according to a Doppler frequency detected by said plurality of transmitting/receiving systems;

said plurality of transmitting/receiving systems each having a different antenna and set at a different angle, respectively.

5,579,013

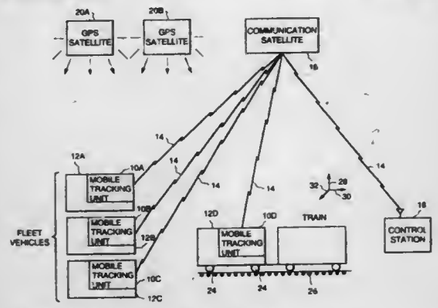
MOBILE TRACKING UNIT CAPABLE OF DETECTING DEFECTIVE CONDITIONS IN RAILWAY VEHICLE WHEELS AND RAILTRACKS

John E. Hershey, Ballston Lake, and Kenneth B. Welles, II, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 5, 1994, Ser. No. 238,772

Int. Cl.[6] H04B *7/185;* G01S *5/02*

U.S. Cl. 342—357 **17 Claims**



1. A mobile tracking unit comprising:

a rotation measurement unit for generating data substantially indicative of rotational rate of the set of wheels;

a motion sensor for generating data indicative of motion at least along a generally vertical axis relative to the railtrack;

a data processor coupled to the motion sensor and to the rotation measurement unit for receiving the rotational rate and motion data, said data processor being adapted to detect, based on the received rotational rate and motion data, a defective condition associated with at least one wheel of the wheel set, said data

processor being further adapted to detect, based on the received motion data, a defective condition associated with at least a portion of the railtrack;

a navigation set for generating data substantially corresponding to a respective railway vehicle position so that the location at which any respective defective condition occurs can be substantially determined; and

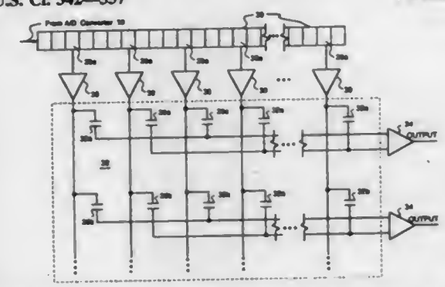
an electromagnetic radiation emitter for transmitting predetermined data associated with the railway vehicle to a remote location.

5,579,014

PARALLEL CORRELATOR FOR GLOBAL POSITIONING SYSTEM RECEIVER

Glen W. Brooksby, Glenville; Gerald J. Michon, Waterford, and Jerome J. Tiemann, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 20, 1995, Ser. No. 376,211
Int. Cl.[6] H04B *7/185*; **G01S** *5/02*
U.S. Cl. 342—357 **4 Claims**



1. A correlator for determining identities of a plurality of satellites comprising:

antenna means for receiving a unique signature signal from each one of a plurality of said satellites;

analog-to-digital converter means coupled to said antenna means for converting signature signals from analog form to digital form;

a capacitor matrix coupled to said analog-to-digital converter means, said matrix comprising a plurality of rows of capacitors wherein each of said capacitors in each respective row is weighted proportional to the signature signal of a respective one of said satellites such that each respective output signal of said capacitor matrix corresponds to the signature signal of a respective one of said satellites; and

output means coupled to said capacitor matrix for producing signals that identify said satellites according to their respective signature signals.

5,579,015

ELECTRONIC SWEEP DEVICE WITH ACTIVE LENS AND INTEGRATED LIGHT SOURCE

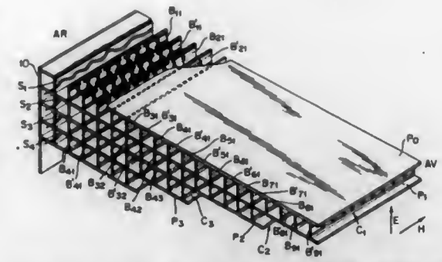
Gerard Collignon, Les Ulis, France, assignor to Societe d'Etude du Radant, Les Ulis Cedex, France

Filed Jul. 1, 1985, Ser. No. 788,616
Claims priority, application France, Jul. 12, 1984, 84 11066
Int. Cl.[6] H01Q *3/22*
U.S. Cl. 342—375 **10 Claims**

1. An electronic sweep device with integrated active lens and source, for the control of a hyperfrequency beam, characterized in that it includes:

a bundling of superimposed channels C, separated one from the other by thin metal planes P which are directed roughly perpendicular to the electric field $\vec{E}$ of the processed beam,

a metal short-circuit plane **10** which closes said channels on one side (AR) and connects all of said metal planes



plural source means each located inside a different channel close to said metal short-circuit plane (**10**),

phase displacement means comprising a sequence of elements (B, B') which are arranged inside said channels C, said elements located one behind the other in each of said channels C,

radioelectric means associated with said source means S in order to transmit and receive,

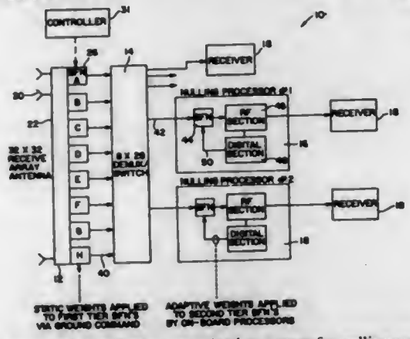
electronic control means associated with said elements of said phase displacement means in order to control each of those elements in an active or passive state.

5,579,016

PHASED ARRAY MULTIPLE AREA NULLING ANTENNA ARCHITECTURE

James L. Wolcott, La Mirada; William C. Wong, Palos Verdes Estates, and Kenneth E. Westall, Seal Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sep. 20, 1995, Ser. No. 531,262
Int. Cl.[6] H01Q *3/22;3/24;3/26*
U.S. Cl. 342—378 **21 Claims**



1. An adaptive nulling communication system for nulling undesired signals from communication signals in multiple separate and distinct coverage areas having at least two separate and distinct primary coverage areas, said system comprising:

phased array antenna means for receiving a plurality of signals, said phased array antenna means including a plurality of receiving elements for receiving said plurality of signals, each of said signals having a signal characteristic;

a plurality of first beam forming networks coupled to said phased array antenna means for providing signal coverage to said multiple separate and distinct coverage areas, each of said first beam forming networks coupled to each of said receiving elements;

distribution means for distributing a plurality of signals received from said multiple separate and distinct coverage areas;

a plurality of second beam forming networks coupled to said distribution means for nulling said undesired signals; and

a plurality of processors corresponding to at least the number of separate and distinct primary coverage areas for weighting and adjusting said plurality of second beam forming networks

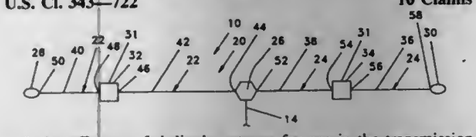
in response to said undesired signals, wherein said plurality of second beam forming networks nulls said undesired signals from said communication signals, each of said processors assigned to a separate and distinct coverage area of interest and each of said processors including characterizing means for identifying communication signals from an assigned coverage area of interest and for suppressing communication signals outside said assigned coverage area of interest based on said signal characteristics of said plurality of signals.

5,579,017

SMITHDOM IMPROVED MULTIBAND ANTENNA AND METHOD

Ralph L. Smith, 255 N. Old Manor, Wichita, Kans. 67208

Filed Mar. 6, 1995, Ser. No. 398,800
Int. Cl.[6] H01Q *11/12*
U.S. Cl. 343—722 **10 Claims**



1. An off-center fed dipole antenna for use in the transmission and reception of radio frequency energy over a broad bandwidth while maintaining a standing wave ratio of less than 1.5:1 for frequencies in harmonic bands without requiring the use of an antenna tuning means, comprising:

a first radiating element having a pair of opposed ends and a first length having a first measurement with a first value;

a second radiating element having a pair of opposed ends and a second length having a second measurement with a second value;

an excitation point insulator electrically insulating one of said opposed ends of said first radiating element from one of said opposed ends of said second radiating element for connecting to a feedline;

a first insulator member secured to one of said opposed ends of said first radiating element;

a second insulator member secured to another of said opposed ends of said second radiating element; and

a first capacitor member having a first capacitor value electrically disposed in said first radiating element such that said first radiating element comprises a first outer radiating element electrically communicating with said first insulator member and said capacitor member and a first inner radiating element electrically communicating with said connection point and said capacitor member to form an off-center fed dipole antenna for use in the transmission and reception of radio frequency energy over a broad bandwidth; said first value in combination with said second value and in combination with said first capacitor value obtaining a stand-in wave ratio of less than 1.5:1 for transmitting, without requiring the use of an antenna tuning means, over a bandwidth having a frequency in a meter band selected from the group consisting of the 80/75 meter band,the 40 meter band, the 20 meter band, the 17 meter band, the 12 meter band, and at least a portion of 10 meter band.

5,579,018

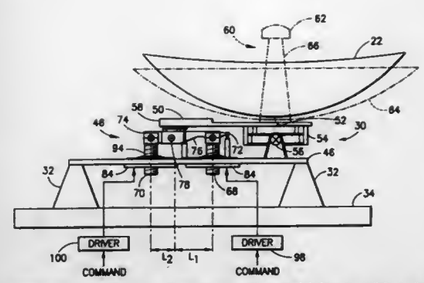
REDUNDANT DIFFERENTIAL LINEAR ACTUATOR

Colin M. Francis, Redwood Shores; Christopher M. Balkenhol, and Carolyn S. Balkenhol, both of San Mateo, all of Calif., assignors to Space Systems/Loral, Inc., Palo Alto, Calif.

Filed May 11, 1995, Ser. No. 435,401
Int. Cl.[6] H01Q *3/00*
U.S. Cl. 343—757 **11 Claims**

1. A load positioning device comprising:

a lever having a first end, and a second end opposite said first end;



a support, and a pivot interconnecting said lever with a load, said pivot being located on said lever colinearly with and between said first end and said second end, said pivot being located closer to said second end of said lever than to said first end of said lever;

a first actuator connected between said first end of said lever and said support and being operative to adjust a first spacing between said first end of said lever and said support, said first actuator having a first telescoping length equal to said first spacing;

a second actuator connected between said second end of said lever and said support and being operative to adjust a second spacing between said second end of said lever and said support, said second actuator having a second telescoping length equal to said second spacing;

wherein a spacing of said pivot from said support is intermediate said first actuator length and said second actuator length; and

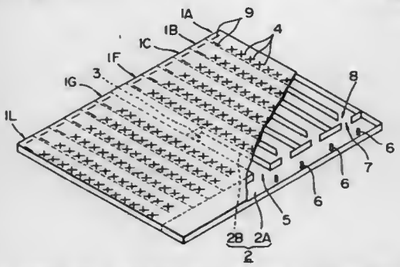
operation of either of said actuators serves to adjust an orientation of said load relative to said support.

5,579,019

SLOTTED LEAKY WAVEGUIDE ARRAY ANTENNA

Masahiro Uematsu, Kimitsu; Takashi Ojima, Chiba; Nobuharu Takahashi, Tokyo; Naohisa Goto, Kawasaki; Jiro Hirokawa, Tokyo, and Makoto Ando, Kawasaki, all of Japan, assignors to Nippon Steel Corporation, Tokyo, and Naohisa Goto, Kawasaki, both of Japan

Continuation of Ser. No. 169,215, Dec. 20, 1993, abandoned.
This application Dec. 29, 1995, Ser. No. 580,787
Claims priority, application Japan, Oct. 7, 1993, 5-276152
Int. Cl.[6] H01A *13/10*
U.S. Cl. 343—771 **12 Claims**



1. A slotted leaky waveguide array antenna to be connected to a converter, having a rotary center about which said antenna is to be rotated in a substantially horizontal plane for tracking an azimuth direction, said slotted leaky waveguide array antenna comprising:

a plurality of radiation waveguides closely juxtaposed in parallel to each other on a surface plane, each of said plurality of radiation waveguides having a waveguide axis and having a plurality of slots arranged in a direction of said waveguide axis, said rotary center being located between two adjacent radiation waveguides of said plurality of radiation waveguides;

a feed waveguide located on the same surface plane as said plurality of radiation waveguides, and having a feed section for composing a composite wave with electromagnetic waves received at said radiation waveguides, and for transmitting said composite wave to said converter through said feed section, wherein said feed section is located at said rotary center; and

a feed probe for electrically connecting said feed section and said converter;

wherein said feed waveguide includes a first section extended along first ends of said radiation waveguides, and a second section juxtaposed in parallel with said radiation waveguides and extended from said feed section to said first section between said two adjacent radiation waveguides of said plurality of radiation waveguides.

5,579,020

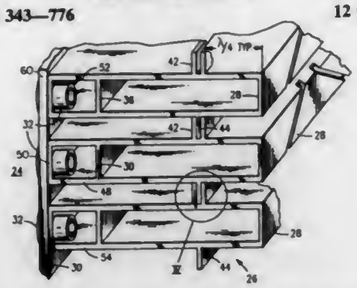
LIGHTWEIGHT EDGE-SLOTTED WAVEGUIDE ANTENNA STRUCTURE

Richard R. Kinsey, Dewitt, N.Y., assignor to Sensis Corporation, Dewitt, N.Y.

Continuation-in-part of Ser. No. 126,599, Sep. 27, 1993, abandoned. This application Jan. 11, 1995, Ser. No. 371,138

Int. Cl.[6] H01Q *13/00*

U.S. Cl. 343—776 **12 Claims**



1. An integrated planar microwave array antenna for use in the X-band and higher frequencies, comprising:

a backplate having a plurality of preformed penetrations therethrough, said penetrations being disposed in a predetermined pattern;

a plurality of spaced apart extruded waveguide elements, each having a fenestrated front wall, a back wall, a first broad wall, and a second broad wall, said walls defining an elongated cavity having a generally rectangular cross-section for passage of microwave energy therealong, a height dimension of said cavity being defined by said first broad wall and said second broad wall, said broad walls of said plurality of waveguide elements all being disposed in mutually parallel alignment; a rivet compartment being formed on each said back wall, said compartment including a rear wall having a plurality of bores therethrough that align with said penetrations of said backplate; and

rivet means extending through said preformed penetrations of said backplate and said bores of said rivet compartments for attaching said waveguide elements in precise mutual alignment to said backplate, wherein said rivet means are excluded from said elongated cavities of said waveguide elements.

5,579,021

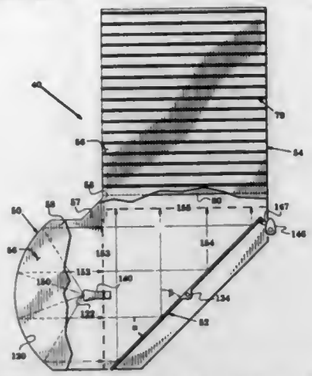
SCANNED ANTENNA SYSTEM

Jar J. Lee, Irvine, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 17, 1995, Ser. No. 405,646

Int. Cl.[6] H01Q *13/00*

U.S. Cl. 343—781 P **28 Claims**



11. A scanned antenna for converting a microwave signal into a scanned antenna beam, comprising:

a parallel-plate waveguide haying first and second portions;

a plurality of parallel-plate stubs issuing transversely from said first portion to form an antenna aperture;

said second portion adapted to form a reflector which reflects said microwave signal along a first signal path as a reflected microwave signal; and

a mirror pivotably mounted within said parallel-plate waveguide and positioned between said reflector and said first portion to redirect said reflected microwave signal along a second signal path into said first portion.

5,579,022

Patent Not Issued For This Number

5,579,023

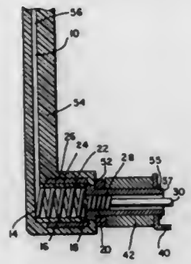
ROTATABLE ANTENNA AND INTEGRAL, SHIELDED IMPEDANCE MATCHING NETWORK

Herbert R. Blaese, 3314 Olcott Ave., Chicago, Ill. 60634

Filed May 8, 1995, Ser. No. 436,153

Int. Cl.[6] H01Q *1/24;1/50*

U.S. Cl. 343—851 **11 Claims**



1. A rotatable antenna, which comprises:

a radiator having a distal end and a proximal end;

a matching network coupled to said proximal end of said radiator;

said matching network comprising a coil extending generally perpendicular to said radiator;

an electrically conductive sleeve overlying said coil;

a transmission line coupled to said electrically conductive sleeve and coil;

said transmission line comprising a main conductor and a ground conductor;

said main conductor being tapped to said coil and said ground conductor being electrically connected to said sleeve, whereby said matching network substantially matches the impedance of said radiator to the impedance of said transmission line;

a mounting member;

said matching network being rotatable with respect to said mounting member whereby said radiator is rotatable about an axis generally perpendicular to said radiator.

5,579,024

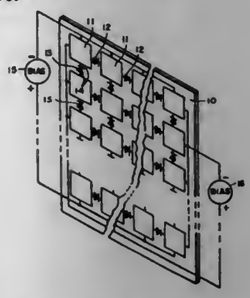
ELECTROMAGNETIC ENERGY SHIELD

Jean-Claude Sureau, Boston, Mass., assignor to Radant Systems, Inc., Stow, Mass.

Filed Aug. 20, 1984, Ser. No. 642,536

Int. Cl.[6] H01Q *15/02;15/14*

U.S. Cl. 343—909 **12 Claims**



1. A structure for transmitting electromagnetic energy within a first selected frequency range and for preventing the transmission of electromagnetic energy outside said frequency range during a first mode of operation and for substantially preventing the transmission of any electromagnetic energy during the second mode of operation, said structure comprising

an insulative member,

a plurality of polygonally-shaped conductive elements positioned in a symmetrical array on at least one surface of said structure,

at least a first group of adjacent conductive elements being interconnected by diode elements capable of conduction in a first direction and at least a second group of adjacent conductive elements being interconnected by diode elements capable of conduction along a second direction orthogonal to said first direction, and

means for placing all of said diode elements substantially simultaneously in their conductive states in said first mode of operation and for placing all of said diode elements substantially simultaneously in their non-conductive states in said second mode of operation.

5,579,025

DISPLAY CONTROL DEVICE FOR CONTROLLING FIRST AND SECOND DISPLAYS OF DIFFERENT TYPES

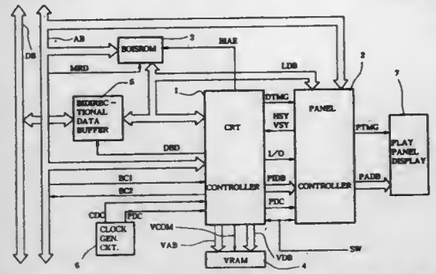
Shuhei Itoh, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 784,898, Oct. 30, 1991, abandoned. This application Apr. 13, 1994, Ser. No. 227,182

Claims priority, application Japan, Oct. 31, 1990, 2-295609

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—3 **21 Claims**



1. A display control device performing, in accordance with an application program prepared for a first display, a display control for a second display, the display control device comprising:

clock generation means for generating a basic clock for driving the second display;

a first controller including a first timing control register for rewriting contents thereof in accordance with the application program in response to a change in a display mode of the display control device, the first controller generating a timing control signal and outputting display data for the first display; and

a second controller including a second timing control register for setting a display timing of the second display, and the second controller producing and outputting a synchronizing signal for the second display on the basis of contents of the second timing control register and the basic clock;

wherein the synchronizing signal is provided to the first controller from the second controller; and

wherein said first controller is operated by the basic clock and generates a timing signal for the second display on the basis of the synchronizing signal for the second display outputted from the second controller and the contents of the first timing control register such that the display data for the first display is outputted to the second controller from the first controller and a timing of the first controller is synchronized with the synchronizing signal from the second controller, said second controller converting the display data outputted from the first controller while outputting the converted display data to the second display.

5,579,026

IMAGE DISPLAY APPARATUS OF HEAD MOUNTED TYPE

Seiichiro Tabata, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 13, 1994, Ser. No. 242,605

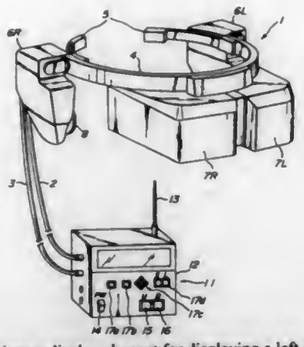
Claims priority, application Japan, May 14, 1993, 5-113166; Apr. 27, 1994, 6-089723

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—8 **3 Claims**

1. An image display apparatus of head mounted display type comprising:

a right eye image display element for displaying a right image to be exclusively observed by a right eye of a user and having (a) an image display plane which includes an image display area and an image non-display area and (b) a frame member surrounding said image display plane;



a left eye image display element for displaying a left image to be exclusively observed by a left eye of the user and having (a) an image display plane which includes an image display area and an image non-display area and (b) a frame member surrounding said image display plane of said left eye image display element;

a right eye optical system for introducing the right eye image displayed on the image display area of the right eye image display element into the right eye of the user;

a left eye optical system for introducing the left eye image displayed on the image display area of the left eye image display element into the left eye of the user; and

an electronic control means for controlling said right and left eye image display elements such that the right and left eye images are displayed on the image display areas of the right and left eye image display elements, respectively, wherein said right and left eye image display elements and right and left eye optical systems are arranged on a main body which is adapted to be put on the head of the user, and said control means comprises a detecting means provided on said main body for detecting a deviation of the main body from a standard position to derive a detection signal, a calculating means for calculating amounts of shift and/or rotation of the right and left eye images displayed on said right and left eye image display elements, respectively, in accordance with said detection signal, and an image converting means for converting original image signals in accordance with said amounts of shift and/or rotation, and wherein said detecting means is formed to detect a horizontal rotation of the head and/or body of the user to derive a horizontal rotation angle signal, a vertical rotation of the head and/or body of the user to derive a vertical rotation angle signal and a swinging rotation of the head and/or body of the user to derive a swinging angle signal, and said calculating means calculates an amount of a horizontal shift in accordance with said horizontal rotation angle signal such that the right and left eye images displayed on the right and left eye image display elements are shifted horizontally in a direction which is opposite to a direction of said horizontal rotation of the head and/or body of the user, an amount of a vertical shift in accordance with said vertical rotation angle signal such that the right and left eye images displayed on the right and left eye image display elements are shifted vertically in a direction which is opposite to a direction of said vertical rotation of the head and/or body of the user, and a rotation angle in accordance with said swinging angle signal such that the right and left eye images displayed on the right and left eye image display elements are rotated in a direction which is opposite to a direction of said swinging rotation of the head and/or body of the user, whereby said amounts of horizontal shift and vertical shift and rotation angle are supplied to said image converting means and said original signal is converted by the image converting means such that said right and left eye images are seen by the user to be stationary on a virtual image plane even if the main body is deviated from the standard position.

5,579,027

METHOD OF DRIVING IMAGE DISPLAY APPARATUS

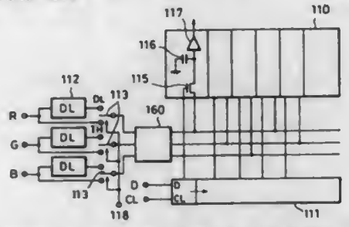
Katsuhito Sakurai, Atsugi; Mamoru Miyawaki, Tokyo, and Akira Ishizaki, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 389,073, Feb. 14, 1995, abandoned, which is a continuation of Ser. No. 10,003, Jan. 27, 1993, abandoned. This application Mar. 12, 1996, Ser. No. 614,321

Claims priority, application Japan, Jan. 31, 1992, 4-040586; Jan. 31, 1992, 4-040587

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—100 **8 Claims**



1. A method of driving an image display apparatus having a plurality of horizontal lines of pixels, in which pixels on an n+1-th line are deviated from pixels on an n-th line by a deviation of z pixels in the horizontal direction, the deviation of said pixels in the horizontal direction being periodic with a period of y lines, where y is two or more, and which has y−1 delay circuits each having a respective delay quantity that is a respective integral multiple of zt, where t is a time corresponding to one pixel in the horizontal direction, the delay circuits being provided for an image signal line of a sampling circuit thereof, and which has y switches, said method of driving an image display apparatus comprising the steps of:

transmitting from each delay circuit a through signal and a delay signal delayed from the through signal by the delay quantity; and

sequentially changing over the y switches to change over between the delay signal and the through signal transmitted from each of said delay circuits at a period of y lines at each pixel line.

5,579,028

APPARATUS FOR MIXING PLAY VIDEO SIGNAL WITH GRAPHICS VIDEO SIGNAL

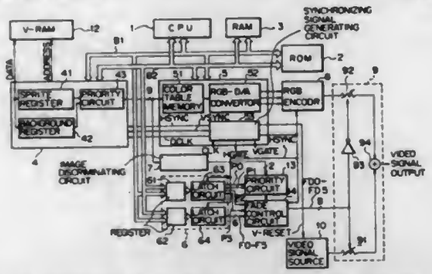
Noriyoshi Takeya, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 1, 1993, Ser. No. 69,360

Claims priority, application Japan, Jun. 3, 1992, 4-143040

Int. Cl.[6] G09G *5/00*; H04N *9/74*

U.S. Cl. 345—115 **1 Claim**



1. An apparatus for mixing a play video signal derived by playing a recording medium with a graphics video signal derived on the basis of the results of processing performed by data processing means, comprising:

data generating means for generating image data on a pixel-by-pixel basis;

converting means for converting image data generated from said data generating means to said graphics video signal;

video image discriminating means for discriminating, on the basis of the image data generated from said data generating means, which of a video image represented by said play video signal and a video image represented by said graphics video signal is to be displayed and for generating a video image selecting signal indicative of the discrimination result;

delay means for delaying said video image selecting signal in order to eliminate a difference between a time necessary to generate said graphics video signal in said converting means and a time necessary to generate said video image selecting signal in said video image discriminating means;

mixing means for mixing said play video signal with said graphics video signal in accordance with the video image selecting signal issued from said delay means,

means for controlling said data generating means in order to generate an image data for testing;

means for detecting a time at which the video image selecting signal is issued from said video image discriminating means corresponding to said image data for testing issued from said data generating means and for generating a first detecting signal;

means for detecting a time at which a graphics video signal is issued from said converting means in response to said image data for testing and for generating a second detecting signal;

counting means for counting a time length from a time at which said first detecting signal is generated to a time at which said second detecting signal is generated; and

control means for changing the delay time of said delay means in accordance with the counting result of said counting means.

5,579,029

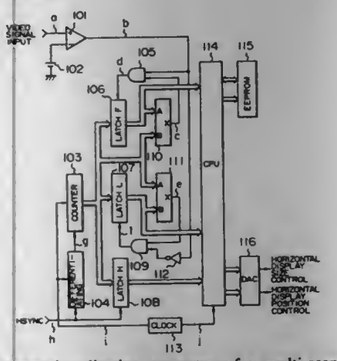
DISPLAY APPARATUS HAVING AUTOMATIC ADJUSTING APPARATUS

Ikuya Arai; Kouji Kitou, and Jun Miura, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 195,053, Feb. 14, 1994, abandoned, which is a continuation of Ser. No. 922,781, Jul. 31, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 461,307

Int. Cl.[6] G09G *5/12*

U.S. Cl. 345—132 **64 Claims**



1. An automatic adjusting apparatus of a multi-scan display which receives at least a video signal and displays a video image according to said video signal on a screen, said apparatus comprising:

detecting means for detecting a scanning period of said video signal, a display start position and a display end position;

arithmetic operation control means for calculating a ratio Y of a video display period over one of a horizontal scanning period and/or a vertical scanning period and a ratio X of a front porch period over one of a horizontal scanning period and/or a vertical scanning period based on information output from said detecting means and for generating control information to set said video image displayed on the screen to a predetermined display size and/or a predetermined display position based only on the calculated ratios; and

converting means for converting said control information supplied from said arithmetic operation control means to a control voltage or current, and for outputting said control voltage or current to a deflection circuit as a control signal of the deflection circuit of said multi-scan display.

5,579,030

METHOD AND APPARATUS FOR DISPLAY OF TEXT ON SCREENS

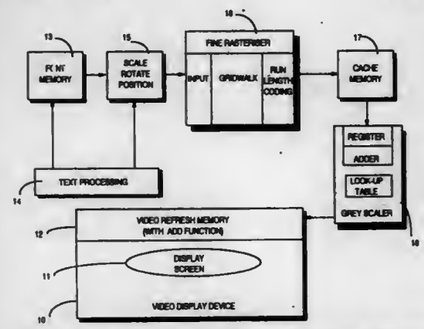
Peter Karow, Hamburg, Germany, assignor to Adobe Systems Incorporated, Mountain View, Calif.

Filed Sep. 29, 1994, Ser. No. 312,936

Claims priority, application European Pat. Off., Nov. 18, 1993, 93250316

Int. Cl.[6] G09G *5/22*

U.S. Cl. 345—143 **14 Claims**



1. A method for displaying text and graphics on a video display device comprising a screen with a display raster having a given number of pixels in the x- and a given number of consecutive lines in the y-direction, and a video refresh memory, said method using glyphs formatted in an intelligent outline description which are loaded from memory on demand and scaled, rotated, and positioned according to text processing requirements and rastered by pixels being located along their contours, said method comprising the steps of:

rasterising each glyph as it appears in the text processing requirements as necessary, in a high resolution fine-raster in which each screen pixel is more finely resolved with m fine-pixels in the x- and n fine-pixels in the y-direction, m and n being integers larger than 1, and in which each glyph is represented as run length code and stored in a cache-memory describing the positions of start and end transitions between white and black glyph strokes in the fine-raster,

determining, depending on each glyph's position as provided by the text processing requirements, one out of m×n different positions of said stored fine-rastered glyph relative to the screen raster, there being m×n different possible positions for the fine-pixels of the glyph to fall as groups of m×n fine-pixels into respectively corresponding single screen pixels,

summing, for each screen pixel the group of m×n fine-pixels falling in said screen pixel by calculating from start positions and end positions to determine a grey-value for said screen pixel, depending on the sum of black fine-pixels in relation to the number of m×n fine-pixels in register with said screen pixel at said determined position, and

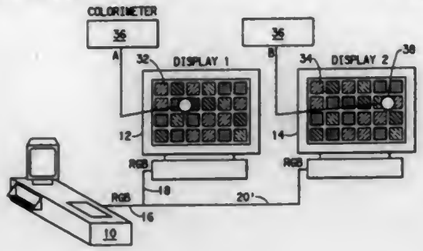
storing the determined grey value in the video refresh memory thus providing one out of m×n possible glyph variants from each cache-stored, fine-rastered glyph.

VOL 1192 ISS 4 NOV 26 1996 UMI

5,579,031
COLOR MATCHING METHOD AND APPARATUS

Zhongjie Liang, Sewell, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 992,874, Dec. 15, 1992, abandoned.
This application Feb. 14, 1995, Ser. No. 389,985
Int. Cl.[6] G09G *5/02*
U.S. Cl. 345—154 **12 Claims**



1. A method for matching the color input signals of at least a first display device and at least a second display device, the first and second display devices having an input, comprising:

(I) creating a transform LUT for converting input color values to output color values by:

(1) producing a first preselected plurality of input color values;

(2) using said plurality of input values to display a plurality of color patches in said first and said second display devices;

(3) obtaining a colorimetric value of each of the displayed color patches in each of the display devices and using said colorimetric values to create a first and a second model for the first and second devices respectively correlating preselected input color values to displayed colorimetric values for each of the two devices;

(4) inputting to said first and second models a second preselected plurality of color values;

(5) comparing an output value signal received from the first model to an output value signal received from the second model to obtain an error signal indicative of the difference between the two output value signals from each of said second plurality of color values;

(6) using the error signal to modify the input color values to the second model and again comparing the output value signal received from the first model to the output value signal received from the second model to obtain a new error signal;

(7) repeating the process of steps (5) and (6) above until the error signal is a minimum; and

(8) using the modified color values obtaining at the minimum error signal to create the transform LUT correlating input values to the modified color values;

(II) displaying a plurality of source color image values on said first display device;

(III) using the transform LUT to transform the plurality of source color image values to corresponding new image values before inputting

said new image values to the input of the second

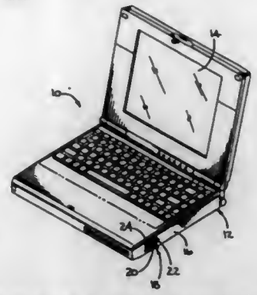
display device; and

(IV) displaying said new color image values on said second display device producing a colorimetric match with the source color image values displayed on the first display device.

5,579,032
POINTING DEVICE FOR A COMPUTER SYSTEM

John Busch, Austin, Tex., assignor to Dell USA, L.P., Austin, Tex.

Filed Jul. 25, 1995, Ser. No. 506,503
Int. Cl.[6] G09G *5/08*
U.S. Cl. 345—157 **39 Claims**



1. A pointing device for a computer system having a chassis and comprising:

a sensor carrier slidably coupled to said chassis to allow substantially linear reciprocating movement with respect thereto;

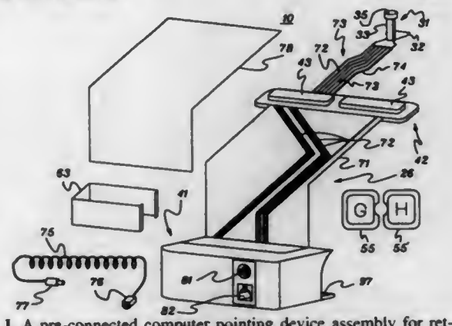
a first sensor coupled to said sensor carrier and adapted to generate a first signal as a function of an angular displacement of a rotatable shaft associated with said first sensor, said rotatable shaft configured to be retracted to within an interior portion of said chassis and toggled between a retracted storage position within said chassis and an extended operating position; and

a second sensor coupled to said chassis and adapted to generate a second signal as a function of said linear reciprocating movement of said sensor carrier, said first and second signals cooperable to provide input data representing a unique point on a computer screen of said computer system.

5,579,033
POINTING DEVICE FOR RETROFITTING ONTO THE KEYBOARD OF AN EXISTING COMPUTER SYSTEM

Joseph D. Rutledge, Mahopac, and Edwin J. Selker, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 20, 1992, Ser. No. 886,662
Int. Cl.[6] G09G *5/08*
U.S. Cl. 345—161 **17 Claims**



1. A pre-connected computer pointing device assembly for retrofitting onto a keyboard of an existing computer system comprising:

analog input means for sensing tactile input and producing a first signal representative thereof, said analog input means being adapted for mounting between adjacent keys of the keyboard, said analog input means comprising an isometric pointing stick;

digital input means for producing a second signal, said digital input means comprising a low profile keypad adapted to be mounted on a peripheral area of the keyboard;

data processing means adapted to be mounted to a rear surface of the keyboard for processing said first and second signals;

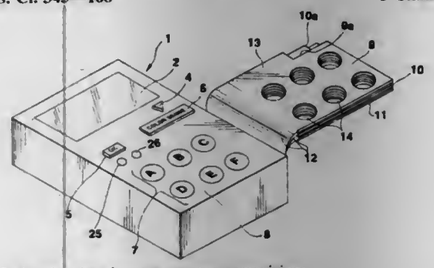
flexible band means for physically and electrically connecting the analog input means and the digital input means to the data processing means, said flexible band means comprising a first strip physically connecting the analog input means to the digital input means and configured to fit between keys of the keyboard, and a second strip physically connecting the digital input means to the data processing means and adapted to traverse an underside of the keyboard; and

means for affixing the analog input means, the digital input means, the data processing means and the flexible band means onto the keyboard of the existing computer system such that they do not interfere with the normal operation of the keyboard, said means for affixing comprising a pre-coating of adhesive on a keyboard abutting surface of the analog input means, digital input means, data processing means and flexible band means.

5,579,034
COLOR DATA INPUT APPARATUS

Takaharu Aoyama, Koganei; Jun Oshima, Akigawa; Emiko Morooka, Fuchu; Kayoko Hashimoto, and Takashi Kojo, both of Ome, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 359,033
Claims priority, application Japao, Dec. 28, 1993, 5-353811
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—168 **5 Claims**



1. A color data input apparatus comprising:

a housing;

key input means including plural keys mounted on a front surface of said housing;

plural color designating sheet means each having plural color indications to which color data are assigned respectively, the plural color indications being corresponding respectively to the plural keys of said key input means, the color data each representing a color;

color data memory means for storing the color data assigned to the plural color indications of said plural color designating sheet means;

sheet selecting means for selecting one of the plural color designating sheet means;

reading means for, when one of the plural color designating sheet means is selected by said sheet selecting means and a key of said key input means is operated, reading out from said color data memory means color data assigned to a color indication of the color designating sheet means selected by said sheet selecting means, the color indication corresponding to the operated key of said key input means;

read out data memory means for storing color data read out by said reading means;

advice data memory means for storing advice data on a combination of plural color data among the color data stored in said color data memory means;

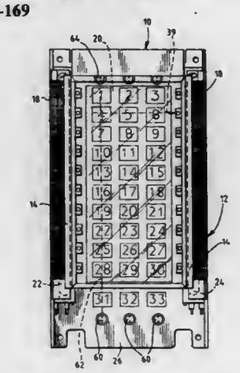
search means for searching through said advice data memory means for advice data on a combination of plural color data stored in said read out data memory means; and

display means for displaying the advice data searched by said search means.

5,579,035
LIQUID CRYSTAL DISPLAY MODULE

John L. Beiswenger, Coatesville, Pa., assignor to Technomarket, L.P., Chicago, Ill.

Filed Jul. 5, 1991, Ser. No. 726,270
The portion of the term of this patent subsequent to Sep. 25, 2007, has been disclaimed.
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—169 **24 Claims**



1. A liquid crystal display module which comprises:

a liquid crystal display;

a housing of essentially C-shaped cross section, said liquid crystal display being attached to opposed ends of the C-shaped cross section of said housing;

electronic control means positioned on said housing, a least some of said electronic control means being carried on the side of the said housing which is opposed to said liquid crystal display; and

conductor means carried by said housing and providing electronic communication between said electronic control means and said liquid crystal display, at least part of said conductor means extending about an outer, curved surface portion of said housing defined by said C-shaped cross section.

5,579,036
TOUCH SCREEN DEVICE AND SHIELDING BRACKET THEREFOR

Joseph W. Yates, IV, Duluth, Ga., assignor to AT&T Global Information Solutions Company, Dayton, Ohio

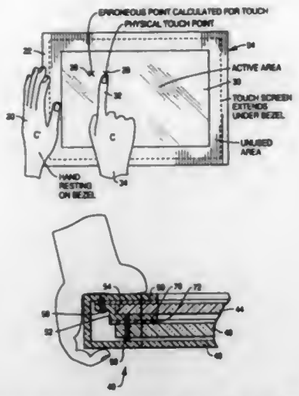
Filed Apr. 28, 1994, Ser. No. 234,881
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—173 **19 Claims**

1. A capacitive touch screen shield, comprising:

a first shield element of rigid conductive material, having an upper surface and a lower surface, also having a central opening through which a touch screen positioned beneath the shield element is accessible, and having a peripheral portion which extends past the outer edges of the touch screen; and

a second shield element of rigid conductive material which is located beneath the touch screen and supports the touch screen, the second shield element including an upturned portion which shields the edges of the touch screen, the second shield element having a flange portion extending outwardly of the upturned portion in a plane parallel to a plane through the

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first shield element for securing the second shield element to the lower surface of the first shield element.

5,579,037

METHOD AND SYSTEM FOR SELECTING OBJECTS ON A TABLET DISPLAY USING A PEN-LIKE INTERFACE

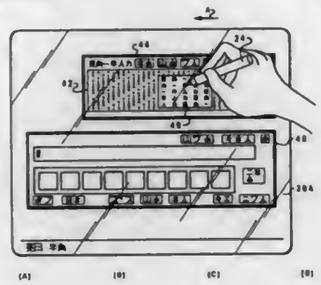
Yoshinori Tahara; Naomi Miyamoto, and Hirokazu Yasumuro, all of Kanagawa, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

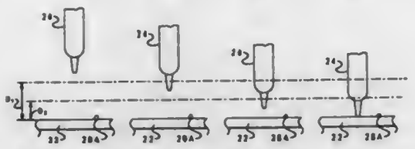
Filed Jun. 28, 1994, Ser. No. 267,997

Claims priority, application Japan, Jun. 29, 1993, 5-159420

Int. Cl.[6] G06F *3/033*

U.S. Cl. 345—173 **12 Claims**





1. A system for selecting objects on a screen comprising:
a display means for displaying objects on a screen.
a substantially pen-shaped pointing means for pointing to a position on a screen,
a detection means for detecting both the plane position of the point of said pointing means and the distance between the point of said pointing means and the screen of said display means, and
a control means for displaying a plurality of objects on the screen of said display means, said control means displaying objects in an enlarged form on said screen in a predetermined enlarged image area containing the predetermined position on the screen corresponding to said plane position when the distance detected by said detection means is less than or equal to a first predetermined value and greater than a second predetermined value, said second value being smaller than said first predetermined value, said control means fixing the enlarged objects displayed in said enlarged image area regardless of the change in plane position detected by said detection means when said distance detected by said detection means is less than or equal to said second predetermined value, and said control means selecting the object at the position on said screen pointed to by said pointing means when a selecting action is taken.

5,579,038

RECORDING APPARATUS AND INK EMPLOYING BIODEGRADABLE SUBSTANCE

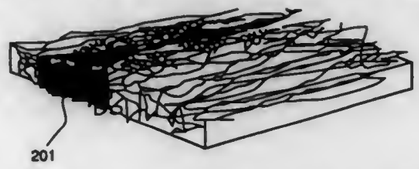
Isao Kimura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1994, Ser. No. 203,366

Claims priority, application Japan, Mar. 2, 1993, 5-041374; May 21, 1993, 5-119850

Int. Cl.[6] B41J *2/17;2/185*

U.S. Cl. 347—36 **13 Claims**



1. An ink-jet recording apparatus comprising a waste-ink absorbent, wherein said absorbent is comprised of a composition containing a biodegradable polymer and a microorganism growth nutrient, and a container, made of a material containing an antimicrobial agent, housing said absorbent.

5,579,039

INK JET RECORDING APPARATUS

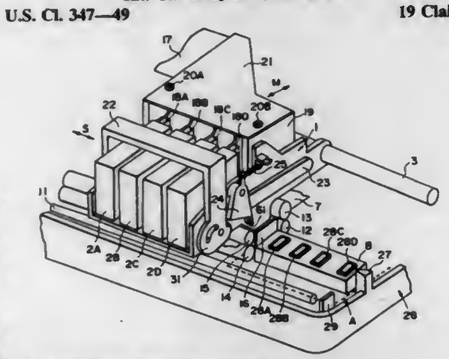
Mitsuru Kurata; Yasuo Miyauchi, and Takayuki Matsuo, all of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 737,151, Jul. 29, 1991, abandoned. This application Apr. 18, 1994, Ser. No. 229,127

Claims priority, application Japan, Jul. 31, 1990, 2-203179; Aug. 31, 1990, 2-230324; Sep. 27, 1990, 2-255154; Sep. 28, 1990, 2-259162; Jun. 27, 1991, 3-181687

Int. Cl.[6] B41J *2/01;25/34;29/54*

U.S. Cl. 347—49 **19 Claims**



1. A recording apparatus comprising:
a carriage for moving a recording head in a recording region for effecting recording on a recording material and in a non-recording region adjacent to said recording region;

mounting means, in said carriage, for detachably mounting said recording head to said carriage;
operating means for permitting mounting and demounting of said recording head by said mounting means;
prohibiting means, in said carriage, for prohibiting operation of said operating means; and
releasing means for releasing the prohibiting operation of said prohibiting means, only when said carriage is at a predetermined position in said non-recording region.

5,579,040

VAPOR TYPE PRINTER APPARATUS USING A DETACHABLE CARTRIDGE

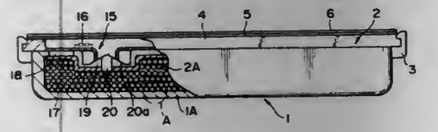
Shuji Sato, Kanagawa; Masanori Ogata, Saitama, and Hiroyuki Shiota, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 10, 1994, Ser. No. 288,390

Claims priority, application Japan, Aug. 11, 1993, 5-199610

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—88 **36 Claims**



1. A printer comprising:
a printer head for storing a solid dye, transforming said solid dye to a vaporized dye and transferring said vaporized dye to a substrate;
a cartridge detachably attached to said printer head for storing a supply solid dye and refilling said printer head with said supply solid dye, said cartridge being detached from said printer head when said printer head is ready for printing; and
a heater for liquefying said supply solid dye in said cartridge to produce a liquefied dye so that said liquefied dye is supplied from said cartridge to said printer head,
wherein said printer head has a sensor for detecting an amount of said solid dye remaining in said printer head.

5,579,041

PRINTING DEVICE BORDERING FUNCTION AND A METHOD THEREOF

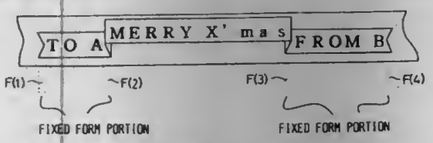
Kazuhisa Hirono, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 11, 1994, Ser. No. 272,575

Claims priority, application Japan, Aug. 18, 1993, 5-226524

Int. Cl.[6] B41J *5/30;2/32;* **G06K** *15/00*

U.S. Cl. 347—171 **17 Claims**



1. A print device, comprising:
input means for inputting characters and instructions;
input data storing means for storing document data corresponding to the characters input by said input means;
display means for displaying a document represented by the document data stored in said input data storing means;
border storage means for storing border data including at least two blocks of border line;
designating means for designating at least one block of border line of the border data for association with the document data;
locating means for locating the at least one block of border line with respect to a character of the input characters;
border data expanding means for expanding the border data in accordance with the characters input to create the document data;
and
printing means for printing the document represented by the document data with the designated at least one block of border line.

5,579,042

RECORDING APPARATUS WITH IMPROVED INK SHEET CONVEYANCE

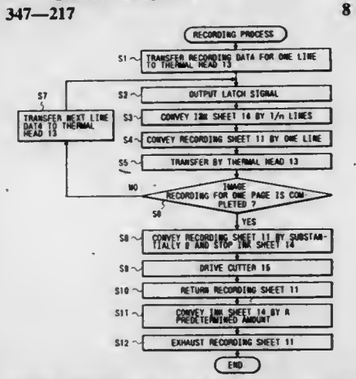
Yasushi Ishida, Setagaya-ku; Minoru Yokoyama, Yokohama; Akihiro Tomoda, Yokohama; Masakatsu Yamada, Yokohama; Takashi Awai, Yokohama; Takehiro Yoshida, Shibuya-ku; Makoto Kobayashi, Tama; Satoshi Wada; Takeshi Ono, both of Kawasaki, and Tomoyuki Takeda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 400,520, Mar. 7, 1995, abandoned, which is a continuation of Ser. No. 49,669, Apr. 21, 1993, abandoned, which is a continuation of Ser. No. 554,907, Jul. 20, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 484,908

Claims priority, application Japan, Jul. 20, 1989, 1-186109; Jul. 6, 1990, 2-177364

Int. Cl.[6] B41J *17/08;17/10;2/325*

U.S. Cl. 347—217 **8 Claims**



1. A thermal transfer recording apparatus for recording on a recording medium by transferring an ink of an ink sheet onto said recording medium, said apparatus comprising:
a thermal head for effecting said ink sheet at a recording area to record on said recording medium;
ink sheet conveying means for conveying said ink sheet, said ink sheet conveying means being operably associated with a driving motor to convey said ink sheet in a first direction at said recording area;
load means, provided upstream of said thermal head with respect to said first direction, for applying a predetermined load to said ink sheet in a second direction opposed to said first direction when said ink sheet is conveyed in said first direction by said ink sheet conveying means;
a recording medium conveying mechanism for conveying said recording medium in said second direction, said mechanism being disposed at an area where said thermal head stands;
a cutter for cutting said recording medium, said cutter being provided downstream of said recording area with respect to said second direction; and
control means for preventing said ink sheet from moving in said second direction by a holding torque caused by exciting said driving motor while said recording medium is conveyed from said recording area to a position where said cutter is located, and for conveying said ink sheet in said first direction by said driving motor by an amount sufficient to remove a slackness of said ink sheet, the slackness being caused by a movement of said ink sheet in said first direction while a front edge of

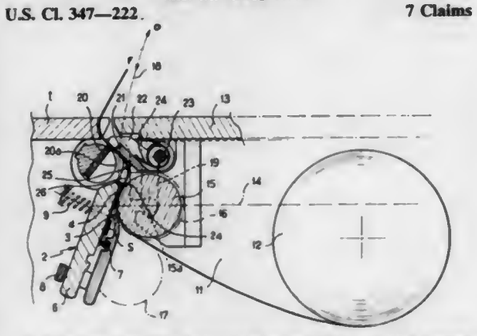
said recording medium cut by said cutter is retracted from the position where said cutter is located, the movement being caused by a force on said ink sheet in said first direction between said recording area and said ink sheet conveying means which exceeds the load of said load means.

5,579,043

OPENABLE THERMAL PRINTER

Bernard Patry, Orsay, France, assignor to Axiohm, Montrouge, France

PCT No. PCT/FR93/01094, § 371 Date Oct. 31, 1994, § 102(e) Date Oct. 31, 1994, PCT Pub. No. WO94/11197, PCT Pub. Date May 26, 1994
PCT Filed Nov. 5, 1993, Ser. No. 325,441
Claims priority, application France, Nov. 6, 1992, 92 13390
Int. Cl.[6] B41J *11/70*
U.S. Cl. 347—222 **7 Claims**



1. A thermal printer for printing on paper, comprising a thermal print head having at least one row of heating points, that cooperates with a paper drive roll by bearing thereagainst, the print head being carried resiliently by a fixed chassis portion, said paper drive roll being carried by a cover having a hinge and being hinged to said fixed chassis and forming an access to a compartment in the printer for containing a roll of paper, wherein, when said cover is closed, a zone of contact between said paper drive roll and said at least one row of heating points is situated, in a closing direction of said cover, behind a diameter line of said paper drive roll that passes through said hinge between said cover and said fixed chassis portion, said print head comprising a tip portion disposed in front of said at least one row of heating points, said tip portion being shaped so as to provide a cam-forming surface for displacing said print head when reacting against a force said paper drive roll traveling past said tip portion in said closing direction.

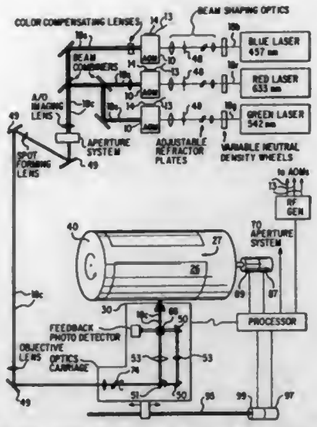
5,579,044

DIGITAL PROOFING SYSTEM

Andrew Warner, Harvard; Alward I. Pinard, Westford, and Harold Thidemann, Belmont, all of Mass., assignors to Intergraph Corporation, Huntsville, Ala.

Filed Aug. 20, 1993, Ser. No. 110,301
Int. Cl.[6] B41J *2/47*
U.S. Cl. 347—236 **12 Claims**

1. A system for plotting a graphic image on a substrate, the system comprising:
source means for providing at least two original beams: a first original beam having a first wavelength and a second original beam having a second wavelength, wherein the first and second wavelengths are different;
deflection means, having an input, for deflecting along a path a portion of each of the two original beams by an amount dependent upon the frequency of a signal that is present at the input;
a signal generator for providing a signal, having a frequency, to the input of the deflection means;



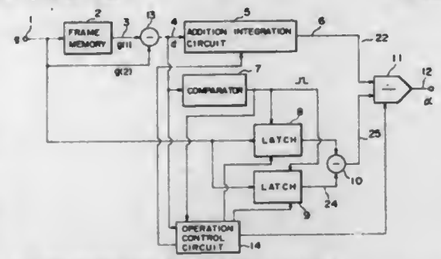
scanning-head means for directing the deflected beam portions onto the substrate;
first axis translation means for causing relative movement of the deflected beam portions along a first axis of the substrate; and
second axis translation means for causing relative movement of the deflected beam portions along a second axis of the substrate,
wherein the deflection means includes an acousto-optical crystal for each of the two original beams, positioned so that the beam passes through the crystal, and a transducer for causing vibrations in the crystal based on the frequency of the signal received by the deflection means, and
wherein the system further includes delay means for altering the distance between the transducer and where the beam first enters the crystal, so as to alter how much time passes between when the signal generator provides a signal and the beam portion associated with that signal reaches the substrate.

5,579,045

APPARATUS FOR DETECTING MOVEMENT USING A DIFFERENCE BETWEEN FIRST AND SECOND IMAGE SIGNALS

Masayoshi Sekine, Tokyo, and Toshiaki Kondo, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 50,729, Dec. 21, 1992, abandoned, which is a continuation of Ser. No. 798,946, Nov. 27, 1991, abandoned. This application Apr. 21, 1994, Ser. No. 231,972
Claims priority, application Japan, Nov. 30, 1990, 2-333839
Int. Cl.[6] H04N *5/225*
U.S. Cl. 348—208 **24 Claims**



I. A movement detection apparatus comprising:
first means for detecting a difference signal between first and second image signals, the second signal being delayed by one frame from the first signal;
second means for integrating the difference signal detected by said first means;

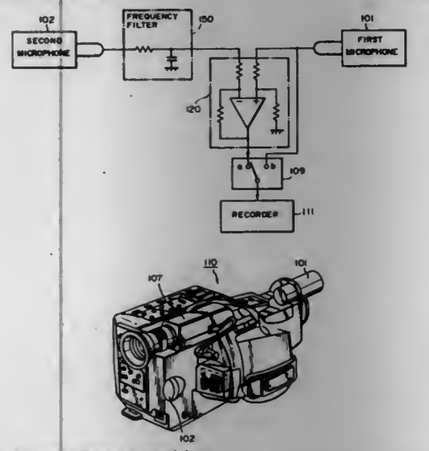
third means for detecting a level of said first image signal when the difference signal detected by said first means reaches a zero point;
fourth means for detecting a difference between the level detected by said third means at a first zero point and the level detected at a second zero point; and
fifth means for dividing an output signal of said second means by an output signal of said fourth means to detect a signal corresponding to image movement.

5,579,046

VOICE FILTER SYSTEM FOR A VIDEO CAMERA

Yasuo Mitsuhashi, and Masaki Morita, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 99,407, Jul. 30, 1993, abandoned, which is a continuation of Ser. No. 727,003, Jul. 8, 1991, abandoned. This application Sep. 6, 1994, Ser. No. 300,520
Claims priority, application Japan, Jul. 26, 1990, 2-199800; Oct. 24, 1990, 2-288240
Int. Cl.[6] H04N *5/225*
U.S. Cl. 348—232 **5 Claims**



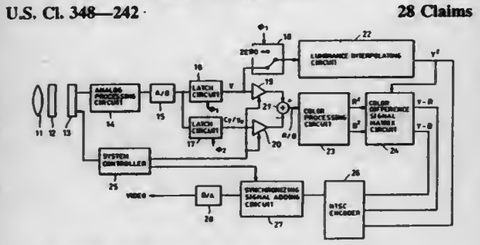
I. A video camera comprising:
a first microphone having a directivity toward a subject for collecting sounds incoming from the subject and also voice sounds from a camera operator, said first microphone converting the combined sounds into a first output voice signal;
a second directional microphone, spaced apart from said first microphone and located adjacent to the mouth of the camera operator, said second microphone having a narrow-beamed directivity toward an operator for collecting the voice sounds from the operator and to convert the operator voice sounds into a second output voice signal;
a delay element for delaying the second voice signal such that a difference between a time required to transmit the operator voice sounds between the operator and the first microphone and a time required to propagate the operator voice sounds between the operator and the second microphone will be compensated;
subtractor means for subtracting the delayed second output voice signal from the first output voice signal to form a differential output signal;
an optical system for collecting light representing the image of the subject; and
recording means for recording the differential signal and the image;
whereby the level of the operator's voice sounds recorded are reduced in order to improve the clarity of the sounds from the subject.

5,579,047

IMAGE SIGNAL PROCESSING APPARATUS USING COLOR FILTERS AND AN IMAGE PICK-UP DEVICE PROVIDING INTERLACED FIELD SIGNALS

Taku Yamagami; Takashi Sasaki, both of Yokohama, and Akira Suga, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 166,935, Dec. 15, 1993, abandoned, which is a division of Ser. No. 735,793, Jul. 25, 1991, Pat. No. 5,305,096. This application Aug. 2, 1994, Ser. No. 284,287
Claims priority, application Japan, Jul. 31, 1990, 2-204776; Jul. 31, 1990, 2-204777; Jul. 31, 1990, 2-204784
Int. Cl.[6] H04N *9/64*
U.S. Cl. 348—242 **28 Claims**



1. An image signal processing apparatus comprising:
(a) image pickup means for photoconverting an optical image into a first image signal and a second image signal interlaced with said first image signal;
(b) color filter means disposed adjacent said image pickup means and having first filter portions for passing a predetermined spectrum component of the optical image, the first filter portions being disposed in an offset manner, with respect to each other, between interlaced lines; and
(c) signal processing means for converting said first image signal and said second image signal into a first digital image signal and a second digital image signal, respectively, and for combining said first digital image signal and said second digital image signal to form a combined digital image signal.

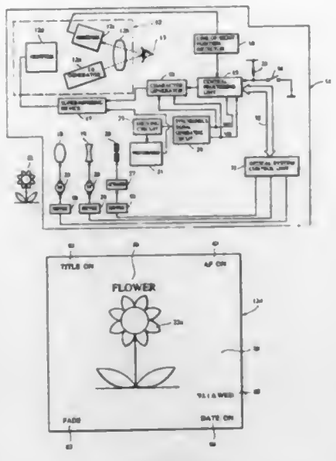
5,579,048

SELECTION APPARATUS USING AN OBSERVER'S LINE OF SIGHT

Masahide Hirasawa, Sagamihara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1994, Ser. No. 280,926
Claims priority, application Japan, Jul. 30, 1993, 5-208721
Int. Cl.[6] H04N *5/232*
U.S. Cl. 348—333 **68 Claims**

1. A selection apparatus comprising:
display means for indicating a plurality of displays on the same screen;
line-of-sight position detecting means for detecting a line-of-sight position of an operator on said screen;
input means through which the operator inputs an instruction, said input means operating without using a line of sight; and
control means for selecting at least one of said plurality of displays indicated by said display means in accordance with said line-of-sight position and said instruction,
wherein said control means erases at least the non-selected displays and executes the contents of the selected display.



5,579,049

APPARATUS AND METHOD FOR CONTROLLING EXPOSURE BY SHUTTER SPEED CONTROL AND/OR GAIN CONTROL

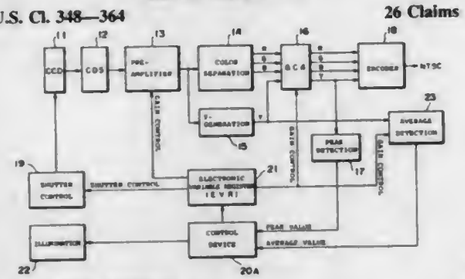
Hiroshi Shimaya; Yutaka Maeda; Chiaki Ichikawa, and Toshio Nakajima, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 22, 1993, Ser. No. 171,177

Claims priority, application Japan, Dec. 22, 1992, 4-356408; Jun. 10, 1993, 5-163830; Dec. 14, 1993, 5-342132

Int. Cl.[6] H04N *5/238*

U.S. Cl. 348—364 **26 Claims**



3. An image apparatus comprising:

shutter means in which a shutter speed is variable;

imaging means for imaging a subject under exposure conditions realized by said shutter means to output a video signal representing an image of the subject;

amplifying means for amplifying the video signal outputted from said imaging means;

a peak detecting circuit for performing peak detection of the video signal outputted from said imaging means;

an average level detecting circuit for detecting an average level of the video signal outputted from said imaging means;

level difference detecting means for detecting a level difference between a peak level obtained by said peak detecting circuit and the average level obtained by said average level detecting circuit; and

controlling means for carrying out shutter speed control in said shutter means and gain control in said amplifying means so that said detected average level approaches a proper average level, when the level difference detected by said level difference detecting means exceeds a reference value.

5,579,050

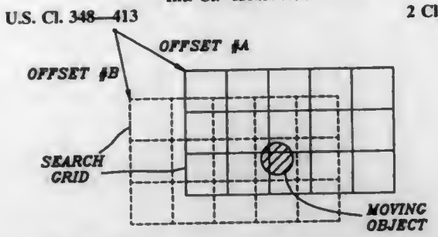
APPARATUS FOR ENCODING A VIDEO SIGNAL USING A SEARCH GRID

Hae-Mook Jung, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 9, 1995, Ser. No. 401,313

Int. Cl.[6] H04N *7/36*

U.S. Cl. 348—413 **2 Claims**



1. An apparatus, for use in a motion-compensated video signal encoder, for determining a predicted current frame based on a current frame and a previous frame of a digital video signal using a predetermined number of search grids of an identical size, each of the search grids having a set of search blocks formed within the current frame, comprising:

means for detecting a set of motion vectors for each of the search grids, each of the motion vectors being determined by calculating an error between each of the search blocks and candidate blocks which are formed in the previous frame and selecting one candidate block which yields a minimum error;

means for accumulating the minimum errors for all of the search blocks contained in each of the search grids to provide an accumulated minimum error signal for each of the search grids;

means for comparing the search grids by using the accumulated error signals to provide a search grid selection signal for selecting a search grid which produces a lowest accumulated minimum error;

means, in response to the search grid selection signal, for selecting one set of motion vectors corresponding to the selected search grid; and

means for assigning the value of one of the pixels in the previous frame, which corresponds to one of the pixels in the current frame through the selected one set of motion vectors, as the value of said one of the pixels in the current frame, to thereby determine the predicted current frame.

5,579,051

METHOD AND APPARATUS FOR CODING AN INPUT SIGNAL BASED ON CHARACTERISTICS OF THE INPUT SIGNAL

Tokumichi Murakami; Yoshiaki Kato, and Toshiaki Shimada, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 157,638, Nov. 24, 1993, abandoned. This application Dec. 14, 1994, Ser. No. 355,659

Claims priority, application Japan, Dec. 25, 1992, 4-346552; Feb. 25, 1993, 5-036371; Aug. 23, 1993, 5-207842

Int. Cl.[6] H04N *7/32*

U.S. Cl. 348—415 **17 Claims**

1. A coding system comprising:

an encoder, responsive to a control signal, that selectively chooses a quantization step size of the encoder and that encodes an input signal into a coded signal using the quantization step size;

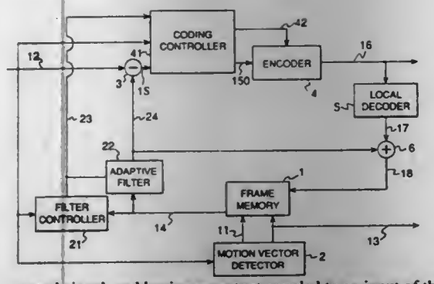
a frame memory that stores a previous signal and provides a predicative signal corresponding to a difference between the input signal and the previous signal;

means for generating a predictive error signal corresponding to a difference between the input signal and the predictive signal;

a filter, having an input coupled to the frame memory to receive the predictive signal, having a control input coupled to a filter control signal, and having an output coupled to an input of the means for generating a predictive error signal, that receives and filters the predictive signal, and that outputs a filtered signal to the means for generating a predictive error signal; and

a filter controller, having an output coupled to the control input of the filter, that is responsive to the input signal and the predictive signal, and that generates the filter control signal to control the filter; and

coding controller, responsive to the input signal and the predictive error signal, that calculates characteristics of the input signal and the predictive error signal and that generates the coding control signal the encoder based on the characteristics of the input signal and the predictive error signal.



5,579,052

PICTURE PROCESSING SYSTEM

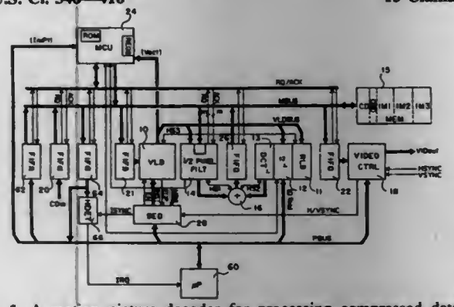
Alain Artieri, Meylan, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis Pouilly, France

Filed May 24, 1994, Ser. No. 247,996

Claims priority, application France, May 27, 1993, 93 06612; Oct. 29, 1993, 93 13293

Int. Cl.[6] H04N *7/30;7/32*

U.S. Cl. 348—416 **13 Claims**



1. A motion picture decoder for processing compressed data arriving in packets corresponding to picture blocks, said packets being separated by headers having decoding parameters of the packets, said system including:

a first plurality of processing elements using said decoding parameters in processing data in the packets;

a memory bus connected to a picture memory and the first plurality of processing elements;

a memory controller connected to the memory bus to exchange data between the picture memory and the first plurality of processing elements at rates adapted to the processing rates of said elements;

a variable length decoder, connected to the memory bus to receive the compressed data, that extracts packets and decoding parameters from the compressed data;

a pipeline circuit having a second plurality of processing elements connected to process packets in pipelined fashion; and

a parameter bus connected to the variable length decoder and the pipeline circuit to provide packets and decoding parameters to the pipeline circuit to be processed, and to provide decoding parameters to the first plurality of processing elements of the system;

wherein the pipeline circuit includes:

a run-level decoder connected to the parameter bus to receive the packets;

an inverse quantizer circuit directly receiving processed packets output by the variable length decoder, and connected to the parameter bus to receive quantizer scale coefficients among the decoding parameters; and

an inverse cosine transform circuit directly receiving processed packets output by the inverse quantizer circuit and coupled to the memory bus to store decoded blocks in the picture memory.

5,579,053

METHOD FOR RASTER CONVERSION BY INTERPOLATING IN THE DIRECTION OF MINIMUM CHANGE IN BRIGHTNESS VALUE BETWEEN A PAIR OF POINTS IN DIFFERENT RASTER LINES FIXED BY A PERPENDICULAR INTERPOLATION LINE

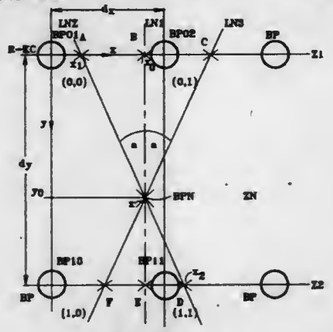
Juergen Pandel, Feldkirchen-Westerham, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 13, 1995, Ser. No. 387,189

Claims priority, application Germany, Mar. 3, 1994, 44 07 101.9

Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—448 **9 Claims**



O=EXISTING PIXEL
X=PIXEL TO BE GENERATED

1. A method for the format conversion of picture sequences present in a first pixel raster into a second pixel raster, in which the brightness values of the pixels in the second pixel raster are generated by interpolation from the pixels in a first line and in a second line of the first pixel raster adjacent to a pixel to be generated, comprising the steps of:

a) selecting a plurality of pairs of points, each pair of points having one point on said first line and one point on said second line, each pair of points being intersected by one of a plurality of intersection lines which all pass through a location of the pixel to be generated, at least one of said interpolation lines being perpendicular relative to said first and second lines;

b) determining a change in brightness between the pair of points intersected by the perpendicular interpolation line;

c) determining a change in brightness between respective pairs of points intersected by successive interpolation lines in two directions of rotation until the change in brightness value in the direction of one interpolation line is a minimum compared with the changes in brightness in the direction of adjacently situated interpolation lines; and

d) generating the brightness value of the pixel to be generated by interpolating in the direction having the minimum change in brightness value only if the change in brightness value in the direction having the minimum in the change in brightness value is less than a predetermined threshold, and otherwise

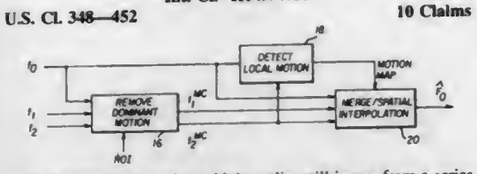
interpolating in the direction of said perpendicular interpolation line for the pixel to be generated.

5,579,054

SYSTEM AND METHOD FOR CREATING HIGH-QUALITY STILLS FROM INTERLACED VIDEO

M. Ibrahim Sezan, Rochester, N.Y., and Andrew J. Patti, Palo Alto, Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 21, 1995, Ser. No. 426,309
Int. Cl.[6] H04N 7/01
U.S. Cl. 348—452 10 Claims



1. A method for creating a high quality still image from a series of three interlaced video fields, comprising the steps of:

a) removing dominant motion from the second and third fields relative to the first field to produce dominant motion compensated second and third fields;

b) detecting local motion between areas in the first field and corresponding areas in the dominant motion compensated third field to produce a motion/no motion decision map; and

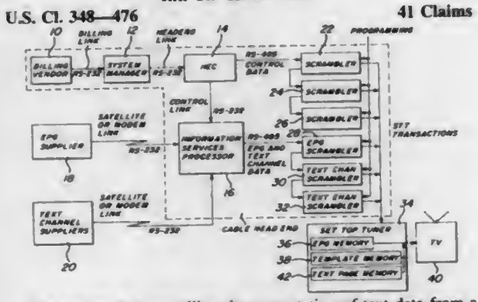
c) using the decision map, merging the first field and the motion compensated second field in areas of no local motion and performing spatial interpolation on the first field in areas containing local motion.

5,579,055

ELECTRONIC PROGRAM GUIDE AND TEXT CHANNEL DATA CONTROLLER

Scott Hamilton; Ray T. Haman, both of Duluth; Gregory S. Durden, Jonesboro, all of Ga.; Jan L. Christensen, Plantation, and Melvin Paulick, Gainesville, both of Fla., assignors to Scientific-Atlanta, Inc., Norcross, Ga.

Filed Jun. 7, 1993, Ser. No. 72,911
Int. Cl.[6] H04N 7/087
U.S. Cl. 348—476 41 Claims



1. A system for controlling the presentation of text data from a text service provider to a customer's television display, comprising:

a database for storing text data from a plurality of sources of text data;

means for formatting text data stored in said database and associated display commands into transactions having a predetermined number of bytes, and for assigning each of said sources of text data to a unique video program channel for transmission to said customer's television display;

means for inserting said transactions into predetermined intervals of the unique video program channel to which text data in said transactions is assigned; and

a text data receiver associated with said customer's television display which extracts said transactions from their unique video program channel and presents a screen of text data from said transactions to said customer's television display in accordance with said associated display commands in said transactions.

5,579,056

DIGITAL MULTI-STANDARD TV COMPOSITE VIDEO ENCODER FOR HIGH COLOR RESOLUTION TV GAME

Albert Yi-Long Chang, Yu-HO, Taiwan, assignor to Syntek Design Technology Limited, Taiwan

Filed May 3, 1994, Ser. No. 237,596
Int. Cl.[6] H04N 5/46
U.S. Cl. 348—555 9 Claims



1. In a digital multi-standard composite video signal encoder for use in a high color resolution TV game machine, part of the encoder being combined with part of the game machine in an integrated circuit and another part of the encoder having peripheral components outside the integrated circuit including:

(1) a crystal oscillator chip, a second capacitor, and three jump lines for selection of any one of NTSC-M, NTSC 4.43/50, NTSC 4.43/60, PAL-B/G/I/D, PAZ-M and PAL-N systems;

(2) a first capacitor of fixed capacitance for use in phase-locked circuit filtering;

(3) a switching circuit and first and second resistors for selection of signals to produce SVHS signals having separation between luminance and chrominance signals or a composite video signal having combined luminance and chrominance signals;

(4) a third resistor for controlling current flow in a digital-to-analog converter;

5) a third capacitor and a fourth capacitor for use as filters in an analog power source; an improvement to the part of the encoder in the integrated circuit, which comprises:

(a) an RGB color difference signal converter that accepts RGB primary color signals generated by the game machine, a negative composite blanking signal, and a video sampling clock signal for converting the RGB signals respectively into a luminance signal, a weighted red color difference signal VW, and a weighted blue color difference signal UW;

(b) one part of a multi-system signal generator for generating four subcarrier signals and a chrominance-sampling clock signal of different quadrants and phases, and generating a horizontal phase-lock reference signal;

(c) a composite chrominance signal generator that combines the weighted red color difference signal and weighted blue color difference signal with a composite color burst gate signal from the game machine and the subcarrier signals for generating a composite chrominance signal containing color burst;

(d) a bandpass filter that accepts the composite chrominance signal,for producing a band-limited composite chrominance signal;

(e) a first digital-to-analog converter for converting the band-limited composite chrominance signal into an analog current signal to build up an analog composite chrominance signal on the second resistor;

(f) a composite synchronization signal inserter that accepts the luminance signal for producing a composite luminance signal containing a composite synchronization signal;

(g) a low-pass filter that accepts the composite luminance signal for producing a band-limited composite luminance signal;

(h) a time delay matching device for matching timing between the band-limited composite luminance signal and the band-limited composite chrominance signal;

i) a second digital-to-analog converter for converting the composite luminance signal into an analog current signal to build up an analog composite luminance signal on the first resistor; and

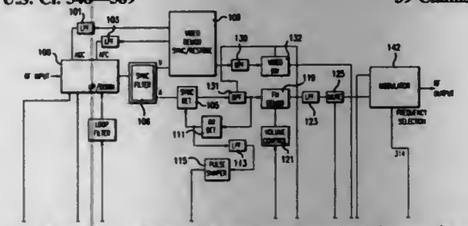
(j) a phase-locked loop circuit that uses a horizontal sync signal generated by the game machine for phase-locking with the horizontal phase-lock reference signal, generating a high-frequency clock signal for the game machine and maintaining a fixed ratio between a frequency of the signals and a frequency of the horizontal sync signal whereby to reduce subcarrier interference visability.

5,579,057

DISPLAY SYSTEM FOR SELECTIVELY OVERLAYING SYMBOLS AND GRAPHICS ONTO A VIDEO SIGNAL

Robert O. Banker, Cumming; Cham Ith, Duluth; Kinney C. Bacon, Lawrenceville, and David B. Burleson, Roswell, all of Ga., assignors to Scientific-Atlanta, Inc., Norcross, Ga.

Continuation of Ser. No. 73,404, Jun. 7, 1993, abandoned.
This application Jan. 5, 1995, Ser. No. 369,867
Int. Cl.[6] H04N 5/262;5/272;5/278
U.S. Cl. 348—589 39 Claims



1. A display system of a subscriber terminal for use in a subscription television system, said subscriber terminal cormected to a television receiver which displays the programming of the subscription television system, said display system comprising:

a memory having a first graphics screen definition portion for storing graphics data, a second symbol screen definition portion and a third symbol set definition portion, the second and third portions for storing symbol data;

a display processor for generating a fast video signal according to said symbol data and said graphics data stored in said memory; and

a display multiplexer for receiving a second video signal, said second video signal originating remote from the subscriber terminal, for receiving said first video signal outputted from said display processor, and for selectively outputting a pixel of one of said first video signal and said second video signal for display on the television receiver.

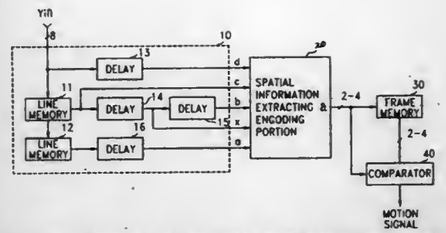
5,579,058

MOTION DETECTION CIRCUIT AND METHOD USING SPATIAL INFORMATION

Myeong-hwan Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 25, 1994, Ser. No. 348,904
Claims priority, application Rep. of Korea, Nov. 24, 1993, 93-25126
Int. Cl.[6] H04N 5/14
U.S. Cl. 348—699 26 Claims

1. A motion detection circuit using spatial information comprising:



a memory portion for receiving input signals and creating delayed input signals by delaying said input signals, wherein said delayed input signals are transformed into samples necessary for extracting spatial correlation information;

a spatial information extraction and encoding portion for obtaining a subtraction value between peripheral pixels of a frame using said samples output from said memory portion, comparing said subtraction value with at least one predetermined reference value, and generating spatial correlation information;

a frame memory for storing said spatial correlation information output from said spatial information extraction and encoding portion; and

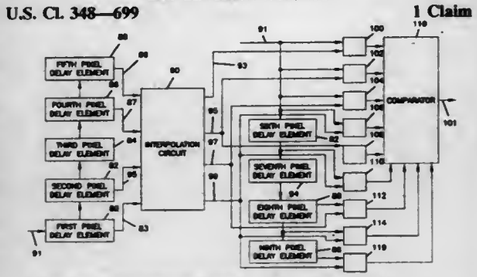
a comparator portion for comparing current spatial correlation information output from the spatial information extraction and encoding portion with a previous spatial correlation information output from said frame memory and for outputting a motion signal, based on said comparison, which represents whether said input signals are in a moving area or a stationary area.

5,579,059

MOTION VECTOR ESTIMATOR

Soon H. Jang, and Yong S. Moon, both of Seoul, Rep. of Korea, assignors to Korea Telecommunication Authority, Rep. of Korea

Filed Jun. 22, 1995, Ser. No. 493,792
Claims priority, application Rep. of Korea, Jun. 24, 1994, 94-14584
Int. Cl.[6] H04N 7/28;7/32
U.S. Cl. 348—699 1 Claim



1. An improved motion vector extractor comprising:

first pixel delay means for delaying pixel data of the previous frame by a one pixel interval;

second pixel delay means for delaying the pixel data of the previous frame by a horizontal line interval of a seek block;

third pixel delay means for delaying the pixel data of the previous frame by a seek block horizontal line and one pixel interval;

pixel interpolation means for combing the pixel data of the previous frame and the delayed pixel data of the previous frame from said first to third pixel delay means and producing at least one interpolation pixel data positioned between adjacent ones thereof, in accordance with the combined result;

fourth pixel delay means for delaying pixel data of the present frame to produce rectangularly arranged pixel data of the present frame;

a plurality of mean absolute difference detection means, each of said plurality of mean absolute difference detection means subtracting a corresponding one of the interpolation pixel data from said pixel interpolation means from a corresponding one of the rectangularly arranged pixel data of the present frame from said fourth pixel delay means to produce a mean absolute difference with respect to the corresponding pixel data of the present frame; and

comparison means for comparing the mean absolute differences from said plurality of mean absolute difference detection means with one another and extracting a motion vector of a picture in accordance with the compared result.

5,579,060

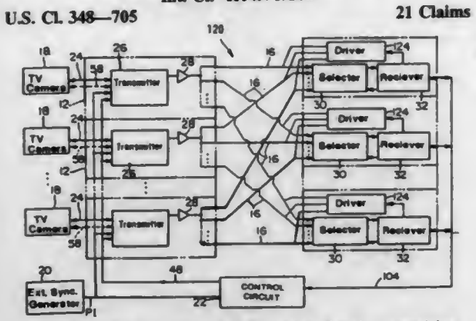
DATA TRANSMITTER FOR SELECTIVELY TRANSMITTING DATA TO RECEIVERS VIA TRANSMISSION LINES SWITCHED ON OR OVER IN SYNCHRONIZATION WITH AN EXTERNAL SYNCHRONIZING SIGNAL

David Elberbaum, Tokyo, Japan, assignor to Elbex Video, Ltd., Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,426

Int. Cl.[6] H04N *5/268*

U.S. Cl. 348—705 **21 Claims**



1. An apparatus for selecting information signals, comprising:

a plurality of transmitting means each adapted to process an electrical information signal;

a plurality of receiving means for selectively receiving said information signal;

a plurality of information transmission lines for connecting each receiving means to said plurality of transmitting means;

an external synchronizing signal generating means for generating and feeding an external synchronizing signal to said plurality of transmitting means and said plurality of receiving means;

wherein:

each transmitting means includes a distribution circuit for feeding said information signal to said plurality of receiving means through said information transmission lines,

each receiving means includes a selection circuit for selectively switching on one or more of said plurality of information transmission lines or switching over from one of said plurality of information transmission lines to another,

the switching on or the switching over timing of said information transmission lines in said selection circuits of said plurality of receiving means is synchronized with said external synchronizing signal, and

said information signal contains a video signal; and

a plurality of video signal generating means for feeding said video signal to said transmitting means;

each video signal generating means including an internal synchronizing signal generation circuit synchronized by said external synchronizing signal, and at least one receiving means further including a video signal processing means for reproducing and/or recording an image corresponding to the video signal contained in said information signal fed from said selection circuit, and

wherein:

said external synchronizing signal is a pulse signal having a voltage level higher than the maximum voltage level or lower than the minimum voltage level of said video signal,

each transmitting means further includes a circuit for injecting said external synchronizing signal into a transmission line extended from said transmitting means to said video signal generating means, and

each video signal generating means further includes a level comparing circuit for extracting said external synchronizing signal by comparing the signal level of said pulse signal with a reference signal having a predetermined voltage level for applying said extracted external synchronizing signal to said internal synchronizing signal generation circuit.

5,579,061

TRANSMITTER FOR TRANSMITTING TUNING DATA IN A TELEVISION SIGNAL AND RECEIVER FOR RECEIVING SAME

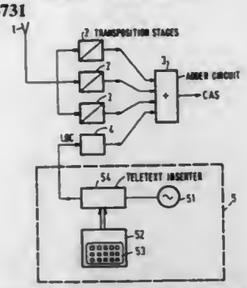
Bernardus H. M. Vaske, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 12, 1994, Ser. No. 241,811

Claims priority, application Belgium, May 13, 1993, 09300492

Int. Cl.[6] H04N *5/445*

U.S. Cl. 348—731 **9 Claims**



1. A transmitter for transmitting a plurality of television signals via respective transmission channels, comprising:

a data generator for transmitting tuning data in one of said television signals at a first predetermined repetition frequency, said tuning data representative of said transmission channels used by said transmitter; and

means for transmitting a data signal in said one television signal which includes said tuning data, at a second predetermined repetition frequency higher than said first predetermined repetition frequency.

5,579,062

INTERCHANGEABLE LENS EYEGLASSES WITH TEMPLE RELEASE MECHANISM

Larry L. Sondrol, 9375 71st St. South, Cottage Grove, Minn. 55016

Continuation-in-part of Ser. No. 270,990, May 5, 1994, Pat. No. 5,418,880. This application May 22, 1995, Ser. No. 445,861

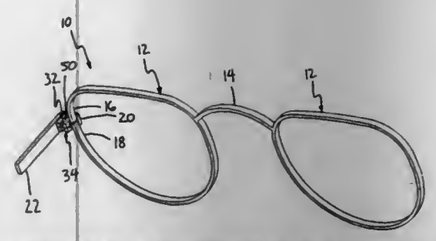
Int. Cl.[6] G02C *1/08;5/00*

U.S. Cl. 351—92 **16 Claims**

1. Eyeglass frame which allows for the removal and replacement of lenses, comprising;

a pair of temple arms;

a pair of split frames, each having a medial side and a lateral side, wherein each frame is split on said lateral side to form an upper eye wire and a lower eye wire;



a bridge attached to and connecting the medial side of each of said split frames; and

a pair of attachment means for attaching each of said temple arms to said upper and lower eye wires, wherein each said attachment means secures said upper and lower eye wires together when said temple arm is positioned substantially perpendicular to a first vertical plane containing said split frames and said bridge, and wherein each said attachment means allows said upper and lower eye wires to be separated when said temple arm is rotated to a predetermined angle to said first vertical plane and in a second substantially vertical plane extending through said temple arm.

5,579,063

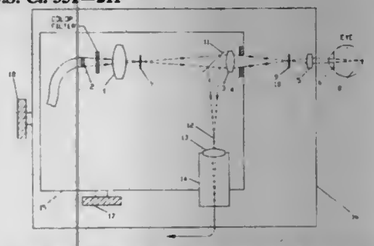
METHODS AND DEVICES FOR THE MEASUREMENT OF THE DEGRADATION OF IMAGE QUALITY ON THE RETINA OF THE HUMAN EYE DUE TO CATARACT

Peter C. Magnante, 218 Wigwam Rd., West Brookfield, Mass. 01585; Leo T. Chylack, Jr., 15 Bradford Rd., Duxbury, Mass. 02331, and David Miller, 9 Francis St., Brookline, Mass. 02146

Filed Oct. 11, 1994, Ser. No. 321,114

Int. Cl.[6] A61B *3/10*

U.S. Cl. 351—211 **6 Claims**



1. An ophthalmic device for measuring objectively the blurring of optical images projected on the retina of the human eye, including:

a) a target consisting of at least one rectangle,

b) an optical projection system for imaging said target on the retina of the human eye,

c) an optical image acquisition system for conveying the retinal image of said target back onto the image plane of a photo-electronic imaging device,

d) a photo-electronic imaging device for transforming the retinal image of said target to an electronic signal which represents the image,

e) a computer for processing the electronic image in order to obtain a measurement of the blurring of the retinal image of said target.

5,579,064

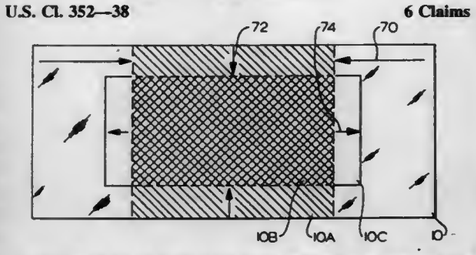
COMPACT ANAMORPHIC MOTION PICTURE SYSTEM

Richard Vetter, 17627 Camino de Yatasto, Pacific Palisades, Calif. 90272

Continuation-in-part of Ser. No. 221,036, Mar. 31, 1994, which is a continuation-in-part of Ser. No. 807,056, Dec. 12, 1991, abandoned. This application Sep. 15, 1995, Ser. No. 528,732

Int. Cl.[6] G03B *19/18;21/32*

U.S. Cl. 352—38 **6 Claims**



1. A method for producing a large width-to-height ratio image on a motion picture theater screen, by photographing a scene to produce an original camera film image, processing the film to produce a release print, and projecting the release print onto a screen, wherein:

said step of photographing includes using an anamorphic camera lens to produce horizontally compressed anamorphic camera film frame images of the scene on originating camera film, with said camera film frame images each having a predetermined aspect ratio of width divided by height;

said step of processing includes using an anamorphic lens to produce vertically compressed anamorphic release print film frame images of said camera film images on release print film, wherein said anamorphic release print film frame images each have a larger aspect ratio than said anamorphic camera film frame images and with said release print film frame images each containing substantially all areas of said camera images, so the percent of horizontal expansion required during projection to project a geometrically similar image of the scene, is reduced, and wherein said release print film has a higher resolution than said originating camera film.

5,579,065

PANORAMIC CAMERA WITH CONTROL DEVICE

Hans-Joerg Schoenherr, and Hans Zimmet, both of Dresden, Germany, assignors to Kamerawerke Noble GmbH, Dresden, Germany

Filed Jul. 17, 1995, Ser. No. 502,939

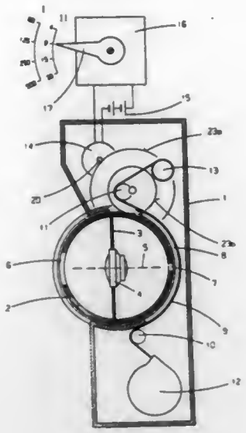
Claims priority, application Germany, Jul. 15, 1994, 44 24 982.9

Int. Cl.[6] G03B *37/00*

U.S. Cl. 396—22 **9 Claims**

1. A panoramic camera, comprising an objective drum; an electric motor which drives said objective drum and has a motor shaft, said electric motor being arranged axis-parallel to and at a distance from said objective drum and having a regulatable speed; a plurality of outputs having different speeds and connected with said motor shaft; and a plurality of intermediate outputs connecting said outputs selectively with said objective drum.

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5,579,066

CAMERA

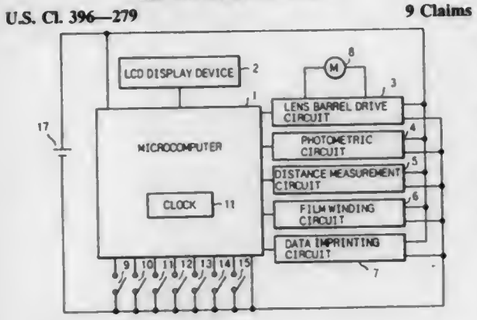
Hidenori Miyamoto, Urayasu; Toshiyuki Nakamura, and Isao Soshi, both of Tokyo, all of Japan, assignors to Nixon Corporation, Tokyo, Japan

Filed Mar. 4, 1994, Ser. No. 205,848

Claims priority, application Japan, Mar. 9, 1993, 5-048323; Mar. 29, 1993, 5-070262

Int. Cl.[6] G03B *17/24;17/18*

U.S. Cl. 396—279 **9 Claims**



1. A camera comprising:

a clock that operates according to electrical power supplied from a battery and outputs a date and a time;

a reset switch to reset the date and the time of said clock;

a data imprint device to imprint the date and the time of photography based upon the date and the time output from said clock;

a changeover detector that detects a changeover of said battery; and

a control device that prevents the imprinting of the date and the time of photography by said data imprint device when the changeover of said battery is detected by said changeover detector, the control device further ceasing prevention of said imprinting when the date and the time of said clock have been reset by said reset switch.

5,579,067

CAMERA CAPABLE OF RECORDING INFORMATION

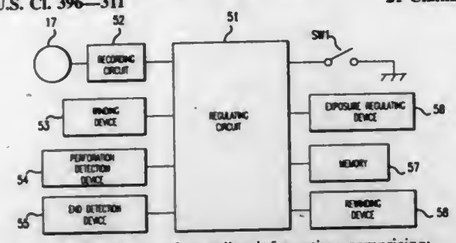
Tsutomu Wakabayashi, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,459

Claims priority, application Japan, Dec. 17, 1993, 5-318563

Int. Cl.[6] G03B *17/24*

U.S. Cl. 396—311 **21 Claims**



1. A camera capable of recording information, comprising:

recording means for recording information onto an information recording area on a film, as the film is being fed, wherein the information relates to each frame of a film;

determining means for determining whether information recorded on one photographic frame is the same as information recorded on a photographic frame previous to said one photographic frame; and

regulating means for regulating the recording means, wherein when the determining means determines that information relating to said one photographic frame is the same as information relating to the previous photographic frame, the information relating to said photographic frame is not recorded, and when the determining means determines that information relating to said one photographic frame is not the same as the previous photographic frame, the information is recorded.

5,579,068

ELECTRONIC FLASH APPARATUS OF A CAMERA

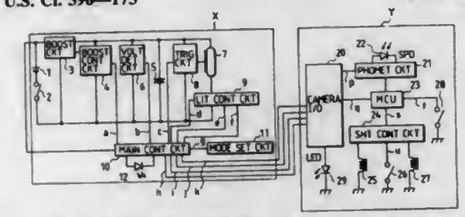
Hideki Matsui, Fujisawa; Nobuyoshi Hagiuda; Ryotaro Takayanagi, both of Yokohama, and Hiroshi Sakamoto, Kawasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 268,737, Jun. 30, 1994, abandoned, which is a continuation of Ser. No. 84,140, Jul. 1, 1993, abandoned. This application Sep. 6, 1995, Ser. No. 524,425

Claims priority, application Japan, Jul. 6, 1992, 4-046924 U; Jul. 6, 1992, 4-046925 U

Int. Cl.[6] G03B *15/05*

U.S. Cl. 396—173 **8 Claims**



1. An electronic flash apparatus of a camera incorporating a focal plane shutter, comprising:

a capacitor for storing an electric charge;

a flashtube for irradiating a subject with a flash of light by the electric charge stored in said capacitor;

a setting means capable of setting any of a single flash mode in which said flashtube effects a single flash and a high-speed mode in which said flashtube effects high-speed repetitive flash;

a voltage setting means for setting a first voltage as an energizing voltage when said single flash mode is set and setting a second voltage higher than said first voltage as an energizing voltage when said high-speed mode is set; and

an energizing means for monitoring a voltage when the electric charge is stored in said capacitor and energizing a ready light just when the voltage in the storage of the electric charge exceeds the set energizing voltage.

5,579,069

CAMERA WITH SPECIAL SWITCH ASSEMBLY

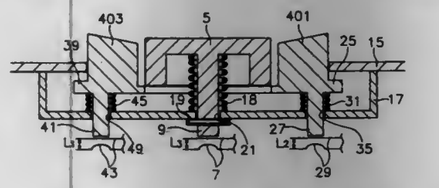
Myeong-je Park, Changwon-si, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Filed Jun. 3, 1994, Ser. No. 253,495

Claims priority, application Rep. of Korea, Dec. 22, 1993, 93-29018

Int. Cl.[6] G03B *1/18;7/00*

U.S. Cl. 396—72 **2 Claims**



1. A switch assembly for a camera with a zoom lens and a top cover comprising:

a shutter release switch for effectuating a photographic operation of the camera;

a telephoto switch for effectuating the movement of the zoom lens to a telephoto position; and

a wide-angle switch for effectuating the movement of the zoom lens to a wide-angle position, said telephoto and wide-angle switches adjacent and surrounding the shutter release switch;

wherein the shutter release switch includes:

a release button abutting on a telephoto button associated with the telephoto switch and wide-angle button associated with the wide-angle switch;

a first rod fixedly attached to the shutter release button and extended toward a supporting plate integral in the camera;

an elastic member between the shutter release button and the supporting plate; and

a stopper attached to the first rod below the supporting plate to define an upper limit for the upward movement of the first rod away from the supporting plate; and

wherein each of the telephoto switch and the wide-angle switch includes:

a second and third rod fixedly attached to each of the telephoto and wide-angle buttons and extended toward the supporting plate;

an elastic member between each of the telephoto and wide-angle buttons and the supporting plate; and

a stopper attached to each of the second and third rods below the supporting plate to define an upper limit for the upward movement of the second and third rods away from the supporting plate; and

wherein each of the telephoto and wide-angle buttons has a protrusion integral thereon for slidable engagement with a guide groove on the shutter release button; and a rim portion abutting on an edge portion of the top cover of the camera when the rods reach said upper limit for the upward movement of the rods.

5,579,070

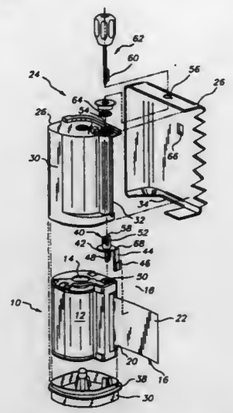
ONE-TIME-USE CAMERA HAS DRIVER FOR CLOSING FILM CASSETTE WHICH IS BROKEN TO DISABLE CAMERA AFTER COMPLETED USE

David C. Smart, and Douglas H. Pearson, both of Rochester, N.Y., assignors to Eatman Kodak Company, Rochester, N.Y.

Filed Jan. 24, 1996, Ser. No. 590,666

Int. Cl.[6] G03B *17/30*

U.S. Cl. 396—538 **5 Claims**



1. A camera for use with a film cassette having a movable light lock supported within a film egress/ingress slot to be moved closed after a filmstrip is wound into the cassette, comprises a cassette-receiving chamber, and a movable driver to be moved to close the light lock before the cassette is removed from said chamber, and is characterized in that:

an exterior ingress opening to said chamber is provided to admit an insertion tool into the chamber to push the cassette out of the chamber;

said driver has a weakened portion and is located for the tool to push the driver to force the cassette out of said chamber; and

fixed means is located to break said weakened portion during movement of said driver, whereby said camera will be disabled.

5,579,071

CAMERA STABILIZING SUPPORT

Donald E. Wetzel, Arcadia, Calif.; Garrett W. Brown, 515 Addison Ct., Philadelphia, Pa. 19147, and James M. Bartell, Long Beach, Calif., assignors to Garrett W. Brown, Philadelphia, Pa.

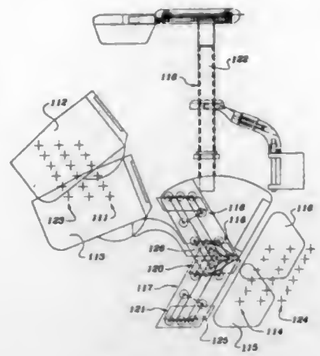
Filed Mar. 21, 1994, Ser. No. 215,357

Int. Cl.[6] G03B *17/00*

U.S. Cl. 396—428 **53 Claims**

21. In a mobile support system for receiving a plurality of elements during use, the support system including an elongated support body, a mounting assembly associated with a first end of the support body, for receiving an apparatus and for causing the apparatus to assume a selected attitude, means associated with a second end of the support body, for receiving components for use with the apparatus and for placing the support system in dynamic balance, and gimbal means associated with the support body at a position between the first end and the second end, for attaching the support body and the support system to a carrying system, the improvement which comprises:

means associated with the second end of the support body, for coordinating movements of two of the components received by the support system so that movement of a first of the two components automatically causes a corresponding movement of a second of the two components, for maintaining the dynamic balance of the support system.

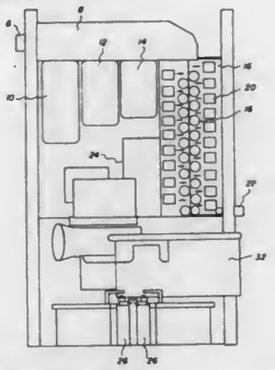


5,579,072

FILM DRYING APPARATUS WITH UNIFORM FLOW AIR TUBES

Lee F. Frank, Rochester, and David K. Bischoff, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 389,528, Feb. 16, 1995, Pat. No. 5,481,327. This application Oct. 2, 1995, Ser. No. 538,103
Int. Cl.[6] G03D *7/00;3/02*
U.S. Cl. 396—579 15 Claims



1. An air tube comprising:
an elongate main tube body including an open air inlet end and a closed end opposite said open air inlet end;
an air discharge port adjoining to said main tube body between said ends, said air discharge port including an air exhaust slot; and
an air diffuser disposed between said main tube body and said air discharge port, said air diffuser having a plurality of air flow apertures, substantially all said apertures being disposed at a lateral offset from said air exhaust slot.

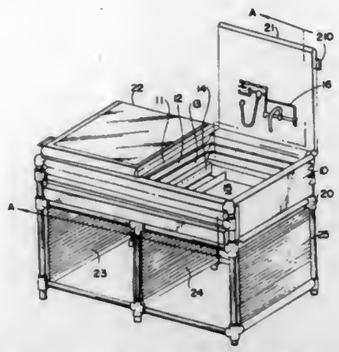
5,579,073

PHOTOGRAPHIC PROCESSING SYSTEM

Shlomo Ben-Yaacov, 51-C Lispenard St., New York, N.Y. 10013

Filed Nov. 28, 1994, Ser. No. 348,981
Int. Cl.[6] G03D *17/00*
U.S. Cl. 396—598 17 Claims

1. A photographic processing apparatus comprising:
a generally rectangular housing having first and second generally parallel side walls, first and second end walls and a bottom side;



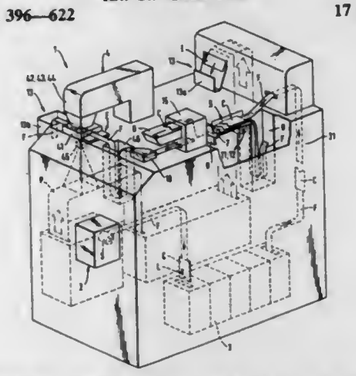
a plurality of chemical processing trays having first and second side walls, first and second end walls, and a bottom:
said chemical processing trays being slidably mounted to said generally parallel side walls of said generally rectangular housing for longitudinal movement parallel to said generally parallel side walls of said generally rectangular housing;
first and second covers pivotally mounted to one of said generally parallel side walls of said generally rectangular housing for enclosure thereof;
said first cover having a variable water supply disposed thereon; and
said second cover having optically transparent top and bottom surfaces and a switchable fluorescent light source therebetween for illumination of said photographic processing apparatus.

5,579,074

INTEGRATED PHOTOGRAPHIC PROCESSING SYSTEM AND PROCEDURE FOR OPERATING THE SYSTEM

Hugo Knecht, Schöfflisdorf, Switzerland, and Ennio Pessot, Pordenone, Italy, assignors to Gretag Imaging AG, Regensdorf, Switzerland

Filed Nov. 8, 1994, Ser. No. 337,820
Claims priority, application Switzerland, Nov. 8, 1993, 3344/93
Int. Cl.[6] G03D *3/08*
U.S. Cl. 396—622 17 Claims



1. Integrated photographic processing system comprising: an input station inside a housing for receiving undeveloped, exposed film and for uncoiling, cutting and feeding the inserted film into a film conveyance system of an adjacent film processor in which the film is developed;
a projection printer arranged at an output of the film processor for image-by-image exposure of negatives contained on the film onto photographic paper;

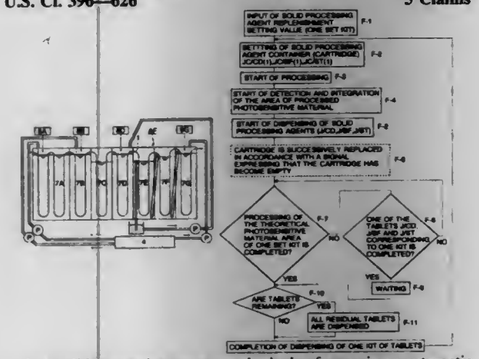
a paper processor for developing the exposed photographic paper;
an output station for the developed film and for the developed photographic paper, respectively; and
an intermediate storage located between an output of the film processor and the projection printer, for storing developed film, said intermediate storage being equipped with an automatic conveyance device for transferring the developed film to a film stage of the projection printer, the conveyance device being operable independently of the conveyance system of the film processor and a conveyance system of the printer, wherein the intermediate storage further comprises:
a holder for at least one conveyance card connected to an advancing front edge of the film, the holder being operable such that plural conveyance cards are deposited into the holder over each other imbricately shifted toward the film processor; and
a vertical shaft for receiving developed film connected to the plural conveyance cards.

5,579,075

AUTOMATIC PROCESSING APPARATUS FOR PROCESSING SILVER HALIDE PHOTOSENSITIVE MATERIAL AND SUPPLY METHOD OF SUPPLYING SOLID PROCESSING AGENT USED FOR SILVER HALIDE PHOTOSENSITIVE MATERIAL AND SUPPLY DEVICE THEREOF

Moeko Hagiwara, and Tsuyoshi Haraguchi, both of Hino, Japan, assignors to Konica Corporation, Japan

Filed Feb. 28, 1995, Ser. No. 395,622
Claims priority, application Japan, Mar. 9, 1994, 6-038624
Int. Cl.[6] G03D *3/02*
U.S. Cl. 396—626 5 Claims



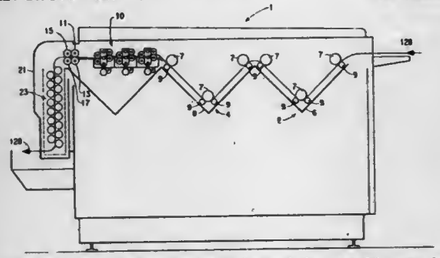
1. A solid processing agent supply device for use in an automatic processing apparatus including a processing solution tank for processing a silver halide photosensitive material, the device comprising:
(a) a container for accommodating one set of a solid processing agents in the form of granules, powder, pellets or tablets which can process a predetermined amount of the material;
(b) detecting means for detecting an amount of the material to be processed;
(c) condition setting input means for setting a condition to divide said one set of the solid processing agent accommodated in the container into said plurality of portions;
(d) supply means for dividing said one set of the solid processing agent accommodated in the container into a plurality of portions and for supplying the divided solid processing agent into the processing solution tank, based on said set condition; and
(e) solid processing agent supply control means for controlling said supply means so that a supply of said one set of solid processing agent can be forcibly completed by said supply means at a theoretical completion time of the supply of said one set of solid processing agent.

5,579,076

METHOD AND APPARATUS FOR PROCESSING PHOTOSENSITIVE MATERIAL

Edward A. Calisto, Hockessin, Del.; Daniel F. Juers, Fairport, N.Y., and John G. Van Remoortel, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 13, 1995, Ser. No. 421,119
Int. Cl.[6] G03D *3/02*
U.S. Cl. 396—627 10 Claims



1. An apparatus for processing a sheet of photographic material, comprising:
a plurality of wash stations including a first and a last station, each of the wash stations comprising:
a first spray bar for spraying washing solution on a top surface of the sheet,
a second spray bar for spraying washing solution on a bottom surface of the sheet,
a first pair of rollers defining a nip positioned at a first level to feed the sheet between the first spray bar and the second spray bar,
a second pair of rollers defining a nip positioned at a second level lower than the first level to receive the sheet from the first and second spray bars and to feed the sheet to an adjacent wash station which if there are only two wash stations is the last station or a non-wash station, and
a container for receiving washing solution from the first and second spray bars, and
means for providing washing solution to the spray bars and for flowing washing solution through the containers in a counter current arrangement to the direction of material transport; and
means for rotating the rollers to transport the sheet through the wash stations in order from the first station and ultimately through the last station.

5,579,077

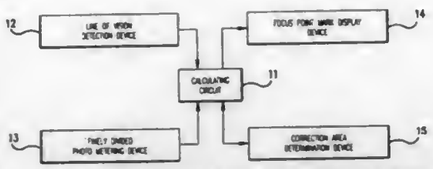
CAMERA EQUIPPED WITH A PHOTOMETRIC VALUE COMPENSATING DEVICE

Masao Owashi, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Mar. 8, 1995, Ser. No. 400,816
Claims priority, application Japan, Mar. 11, 1994, 6-067675
Int. Cl.[6] G03B *7/08;17/20*
U.S. Cl. 396—51 24 Claims

1. A camera equipped with a photometric value compensating device, said camera comprising:
a finder including a finder field;
a photographic information display that superimposes photographic information inside the finder field;
a photo metering device that divides said finder field into multiple areas, measures the light intensity of each area, and transmits information based on the measured light intensity of each area as a photometric brightness value;

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a correction area determining device that determines at least one area of said multiple areas for correction of said photometric brightness value of said at least one area based on the brightness of said photographic information in said at least one area; and

a correction device that calculates a corrected brightness value based on said photometric brightness value for each area that said correction area determining device has determined for correction.

5,579,078

CAMERA WITH VISUAL AXIS DETECTION EQUIPMENT

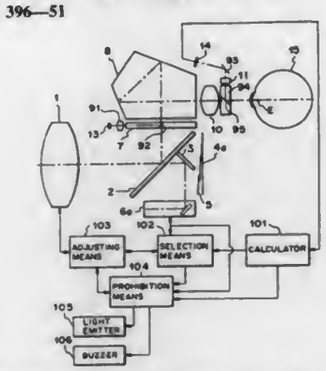
Kenji Suzuki, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 144,605, Nov. 1, 1993, abandoned, which is a continuation of Ser. No. 766,348, Sep. 27, 1991, abandoned. This application May 18, 1995, Ser. No. 443,687

Claims priority, application Japan, Sep. 29, 1990, 2-260837; Sep. 29, 1990, 2-260838; Sep. 29, 1990, 2-260839

Int. Cl.[6] G03B *13/36*

U.S. Cl. 396—51 **53 Claims**



1. A camera having an optical system, comprising:

observing means for observing an object;

means for detecting a direction of a visual axis of an observer looking into said observing means;

means for detecting a focus condition of each of a plurality of different positions in a field of view, and for outputting a plurality of focus signals respectively corresponding to the plurality of detected focus conditions;

means for obtaining a focus result from a focus signal which corresponds to the position in the field of view looked at by the observer as detected by said means for detecting the direction of the visual axis;

means for preparing a focus adjustment signal based on the focus result obtained by said means for obtaining; and

prohibition means for preparing a prohibit signal to prohibit a focus adjustment operation of the optical system, said prohibit signal being based on an output from said means for detecting the direction of the visual axis, said prohibition means preparing the prohibit signal when said means for detecting the direction of the visual axis cannot detect the visual axis direction or detects a visual axis with low reliability or detects that said visual axis direction is not directed to said plurality of different positions.

5,579,079

OPTICAL APPARATUS EQUIPPED WITH SIGHT LINE DETECTOR

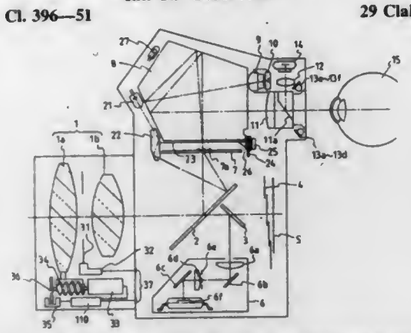
Akira Yamada; Keiji Nagata; Yoshiaki Irie, all of Yokohama, and Akihiko Nagano, Ichihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 69,828, Jun. 1, 1993, abandoned. This application Apr. 19, 1995, Ser. No. 425,082

Claims priority, application Japan, Jun. 2, 1992, 4-167014; Jul. 16, 1992, 4-213795; Sep. 7, 1992, 4-262748; Sep. 7, 1992, 4-264294

Int. Cl.[6] G03B *13/02*

U.S. Cl. 396—51 **29 Claims**



1. An apparatus for detecting information of an eye of a person, said apparatus comprising:

means for detecting light reflected from the eye of the person to obtain the information; and

illuminating means for illuminating the eye of the person with light from a first position when the person is wearing spectacles and from a second, different position when the person is not wearing spectacles.

5,579,080

CAMERA INCLUDING AN APPARATUS FOR DETECTING A LINE OF SIGHT

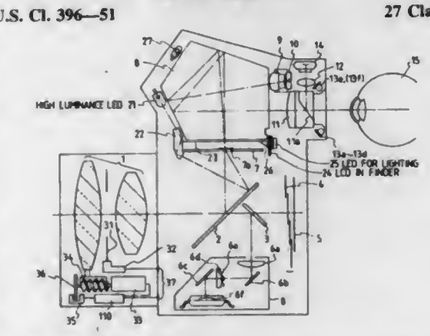
Yoshiaki Irie; Akira Yamada, both of Yokohama, and Akihiko Nagano, Ichihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 142,061, Oct. 28, 1993, abandoned. This application Mar. 13, 1996, Ser. No. 614,907

Claims priority, application Japan, Oct. 28, 1992, 4-290373; Oct. 28, 1992, 4-290401; Oct. 28, 1992, 4-290402

Int. Cl.[6] G03B *7/00*

U.S. Cl. 396—51 **27 Claims**



1. A camera comprising:

a line-of-sight detecting device for detecting a line of sight of an observer;

photometric means for detecting luminances of a plurality of subareas into which a luminance detection area is partitioned;

selecting means for selecting a specific subarea from the plurality of subareas on the basis of information regarding the line of sight detected by said light-of-sight detecting device;

first generating means for generating first luminance data regarding the specific subarea selected by said selecting means;

second generating means for generating second luminance data regarding a group of subareas composed of a plurality of subareas excluding the specific subarea;

weighting means for weighting the first luminance data and the second luminance data and for producing a corresponding output; and

correcting means for correcting the output of said weighting means on the basis of a difference between the first luminance data and the second luminance data.

5,579,081

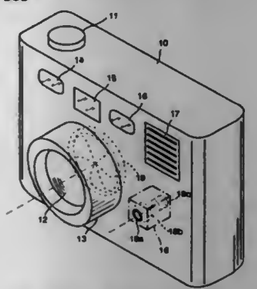
CAMERA WITH BUILT-IN ELECTRONIC FLASH

Minoru Ishiguro, Saitama-ken, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama-ken, Japan

Filed Nov. 24, 1995, Ser. No. 562,628

Int. Cl.[6] G03B *15/05*

U.S. Cl. 396—161 **6 Claims**



1. A built-in flash camera equipped with an ever-flash exposure control system including operation means for calculating a triggering time from the commencement of gradual opening of a program shutter at which an electronic flash is triggered and a flash duration time for which the electronic flash continuously provides illumination light so as to make proper exposure and flash control means for triggering the electronic flash at the triggering time for the flash duration time, said operation means comprising:

first operation means for calculating an aperture size of said program shutter according to a given subject distance necessary to make proper exposure with illumination light of a possibly longest flash duration time and calculating a triggering time necessary for said program shutter to develop said aperture; and

second operation means for comparing said triggering time calculated by said first operation means with a predetermined shortest time, substituting said predetermined shortest time for said triggering time T1 when said triggering time T1 is shorter than said predetermined shortest time, and calculating a flash duration time according to said given subject distance suitable for proper exposure with flash illumination light when said electronic flash is triggered at said predetermined shortest time.

5,579,082

CONTROL DEVICE FOR PREVENTING RED-EYE EFFECT ON CAMERA

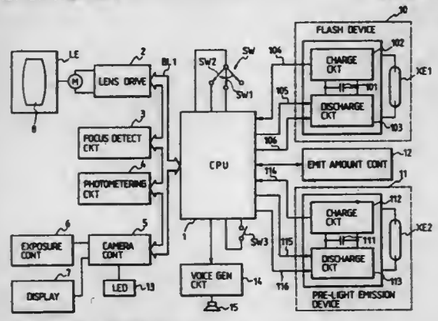
Toru Fukuhara, Isehara; Toshio Sosa, Narashino; Toshio Dobashi, Yokohama; Nobuaki Sasagaki, Kawasaki; Masaharu Hara, Kawasaki; Hachiro Kanai, Kawasaki; Norikazu Yokonuma, Tokyo; Daiki Tsukahara, Kawasaki; Kiyosada Machida, Urawa; Noriyasu Kotani, Okegawa; Minoru Kato, Kawasaki; Hideya Inoue, Yokohama; Hidenori Miyamoto, Kawasaki; Tadashi Otani; Yoshiaki Ohtsubo, both of Tokyo, and Tatsuo Amanuma, Ageo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 71,613, Jun. 4, 1993, which is a continuation of Ser. No. 974,512, Nov. 12, 1992, abandoned, which is a division of Ser. No. 930,466, Aug. 20, 1992, abandoned, which is a continuation of Ser. No. 785,210, Oct. 25, 1991, abandoned, which is a continuation of Ser. No. 632,648, Dec. 26, 1990, abandoned, which is a continuation of Ser. No. 445,996, Dec. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 323,386, Mar. 14, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 486,504

Claims priority, application Japan, Mar. 25, 1988, 63-72236

Int. Cl.[6] G03B *15/03*

U.S. Cl. 396—158 **20 Claims**



1. A camera comprising:

a device which outputs a main flash command;

a device responsive to a manual operation member operated by a photographer, which outputs a pre-flash command;

a flash device which emits illumination light using charges in a charge device; and

a judging device which automatically judges whether a photographing condition in which a pre-flash command should be outputted is established;

wherein an operation of said flash device for a pre-flash is permitted based on only the pre-flash command, despite a judgement result of said judging device.

5,579,083

IMAGE FORMING SYSTEM WITH ORIGINAL FEEDING APPARATUS

Masataka Naito, Kawasaki; Yuji Takahashi, Tokyo; Masakazu Hiroi, Yokohama; Yoshinori Isobe, Tokyo; Akimaro Yoshida, Yokohama; Hitoshi Fujimoto, Kawasaki, and Tomohito Nakagawa, Matsudo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

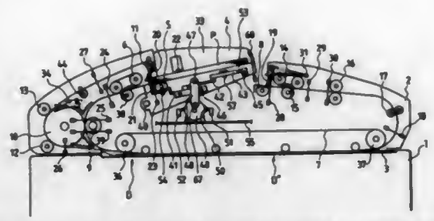
Continuation of Ser. No. 2,724, Jan. 11, 1993, abandoned. This application Mar. 10, 1995, Ser. No. 402,393

Claims priority, application Japan, Jan. 13, 1992, 4-024615; Jan. 13, 1992, 4-024616

Int. Cl.[6] G03G *15/04*

U.S. Cl. 355—50 **7 Claims**

1. An image forming apparatus including a sheet original feeding apparatus having a sheet supply apparatus and a platen, and operable in an original-stationary scanning mode in which a sheet original is scanned while stationary on the platen and an original-



through scanning mode in which a sheet original is scanned while moving across the platen, comprising:

first feeding means for feeding the sheet original across the platen; and

second feeding means for introducing the sheet original to the platen,

wherein, in the original-stationary scanning mode, plural sheet originals are set on said platen simultaneously, plural sheet originals set on the platen are fed by said first feeding means when one of the sheet originals set on the platen is scanned to feed out the first sheet original from the platen and a next sheet original is fed to the platen by said second feeding means;

and wherein a supply interval from the preceding copy sheet to the next copy sheet is set to be shorter for the original-through scanning mode than during the original-stationary scanning mode.

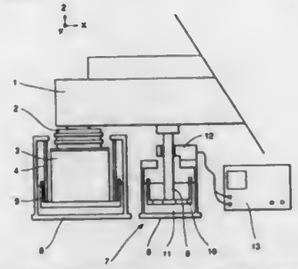
5,579,084

APPARATUS AND METHOD FOR MANUFACTURING SEMICONDUCTORS

Kazuo Takahashi, Kawasaki, and Mitsuru Inoue, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 15,382, Feb. 9, 1993, abandoned.
This application Oct. 31, 1994, Ser. No. 332,498
Claims priority, application Japan, Feb. 21, 1992, 4-070071
Int. Cl.[6] G03B *27/42*

U.S. Cl. 355—53 **8 Claims**



1. An apparatus for manufacturing semiconductors comprising:

supporting mechanism for flexibly supporting said apparatus so as to insulate vibrations from a floor;

damping mechanism for damping vibrations of said apparatus relative to said floor, said damping mechanism comprising a movable member vibrating together with said apparatus and a container holding a viscous liquid operating on said movable member said damping mechanism and said supporting mechanism being arranged in parallel between said apparatus and said floor;

clamp mechanism for clamping said movable member in order to substantially fix said movable member relative to said container; and

control means for controlling clamp operation of said clamp mechanism in accordance with a sequence of operations of said apparatus, wherein said control means controls said clamp mechanism so as to clamp said movable member when stepwise motion of a semiconductor substrate is performed in said apparatus, cancels clamping said movable member when alignment operation of the semiconductor substrate is performed in said apparatus, and cancels clamping said movable member when exposure operation of the semiconductor substrate is performed in said apparatus.

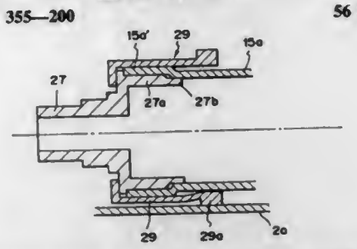
5,579,085

IMAGE FORMING APPARATUS AND DETACHABLE PROCESS CARTRIDGE HAVING PRESS-FITTED FLANGE TO CYLINDER

Shigeo Miyabe; Hiroo Kobayashi; Kazuo Shishido, all of Yokohama, and Koji Miura, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 123,147, Sep. 17, 1993, abandoned.
This application Jul. 11, 1995, Ser. No. 500,567
Claims priority, application Japan, Sep. 21, 1992, 4-274854
Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—200 **56 Claims**



1. A process cartridge removably mountable onto a main body of an image forming apparatus, said process cartridge comprising:

an image carrying member;

a developing agent carrying member for supplying a developing agent to said image carrying member in order to develop a latent image formed on said image carrying member;

a flange provided in an end portion of said developing agent carrying member by being fitted therein, wherein an outer diameter of a fitting portion of said flange to be fitted into said developing agent carrying member is larger than an inner diameter of a fitting portion of said developing agent carrying member to be fitted into said flange before said flange and said developing agent carrying member are fitted to each other, said flange is mounted to said developing agent carrying member by press-fitting, and said flange has a guide portion having an outer diameter smaller than the inner diameter of said developing agent carrying member at an end of said fitting portion, said guide portion being a guide when said flange and said developing agent carrying member are fitted; and

a spacer for keeping a constant spacing between said image carrying member and said developing agent carrying member,

wherein a contacting position of said spacer with said image carrying member and said developing agent carrying member is located at a more central side of said developing agent carrying member than the fitting portion of said flange press-fitted into said developing agent carrying member in an axial direction of said developing agent carrying member.

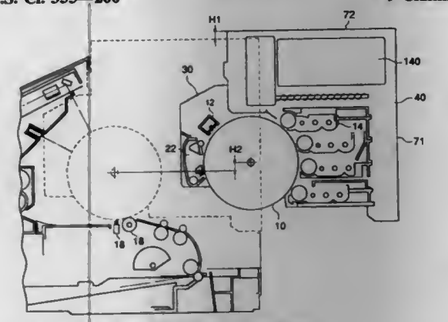
5,579,086

IMAGE FORMING APPARATUS WITH REMOVABLE PHOTORECEPTOR CARRIAGE

Yoshikazu Ikunami, and Kazuyoshi Kimura, both of Hachioji, Japan, assignors to Konica Corporation, Japan

Filed Oct. 27, 1995, Ser. No. 549,401
Claims priority, application Japan, Nov. 11, 1994, 6-277978
Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—200 **9 Claims**



1. An image forming apparatus comprising:

(a) a main body of the apparatus;

(b) an image forming body for forming an image thereon;

(c) a transfer unit provided on the main body for transferring a toner image formed on the image forming body onto a recording material and

(d) a carriage movable between an installed position and a pull-out position in the main body,

wherein the carriage supports the image forming body, and fixes the image forming body at a position where an image can be formed when the carriage is at the installed position,

and wherein the carriage forms a part of an upper surface of the main body when the carriage is located at the installed position, and a portion over the transfer unit is opened when the carriage is located at the pull-out position, thereby the recording material is accessible through the opened portion over the transfer unit.

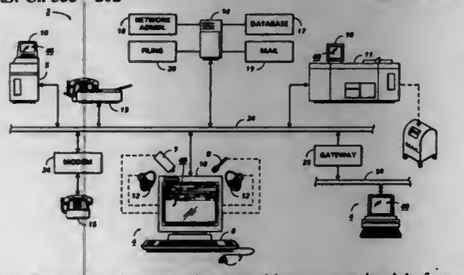
5,579,087

CONSTRUCTING A MULTI-SEGMENT PRINT JOB FROM MULTIPLE LOCAL OR REMOTE SOURCES USING A NETWORK INTERFACE

David L. Salgado, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 287,817, Aug. 9, 1994, abandoned.
This application Jan. 16, 1996, Ser. No. 586,333
Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—202 **22 Claims**



1. A method of constructing a multi-segment print job from multiple local and remote sources of job segments on a network using a network interface to identify print job segments, location of segments, and print characteristics of segments, as well as selecting a printing device comprising the steps of:

entering a start build print job function at the network interface;

selecting segment 1 of the print job including segment identification and location from a first source on the network,

selecting segment 2 of the print job including segment identification and location from a second source on the network, the second source being different from the first source,

continuing segment identification and location until the complete print job has been identified,

specifying print job characteristics such as quantity, quality, and exception characteristics for each segment,

entering an end build print job function at the network interface, and

identifying a single printing device on the network to complete the multi-segment print job and assembling the print job at said printing device.

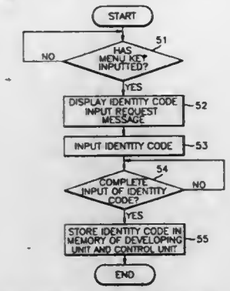
5,579,088

IMAGE FORMING APPARATUS HAVING PROGRAMMABLE DEVELOPER CARTRIDGE

Chang-Kyung Ko, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 30, 1994, Ser. No. 366,556
Claims priority, application Rep. of Korea, Dec. 31, 1993, 31813/1993
Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—203 **19 Claims**



1. A device for locking a detachable article of consumption in an image forming apparatus, said device comprising:

first memory means connected to said detachable article of consumption, for storing a first identification code therein;

second memory means disposed in said image forming apparatus, for storing a predetermined identification;

control means for controlling the driving of said detachable article of consumption, said control means comprising locking means for generating a release signal enabling driving said detachable article of consumption, when said first identification code read from said first memory means corresponds to said predetermined identification code stored in said second memory means; and

key input means for inputting first code data representative of said first identification code to be stored in said first memory means, and for inputting second code data representative of said predetermined identification code to be stored in said second memory means.

5,579,089

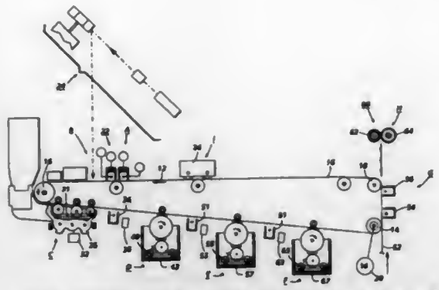
METHOD AND APPARATUS FOR REDUCING TRANSFERRED BACKGROUND TONER

Jeffrey J. Folkins, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 30, 1994, Ser. No. 346,708
Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—208 **2 Claims**

1. A printing machine comprising:



a charge retentive surface having a non-image area of a first voltage level and a developed image area of a second voltage level,

a corona generating device for recharging the charge retentive surface to a substantially uniform voltage level intermediate the first voltage level and the second voltage level; and

a bi-polar AC voltage applied to said corona generating device for generating corona of a first polarity and of a second polarity;

wherein said corona generating device recharges the charge retentive surface to a voltage level within a range from about 5 volts to about 25 volts of the first voltage level.

5,579,090

IN AN IMAGE PROCESSING SYSTEM, AN IMAGE PROCESSING APPARATUS AND METHOD FOR STABILIZING OUTPUT IMAGE QUALITY BY CONTROLLING IMAGE FORMING PARAMETERS

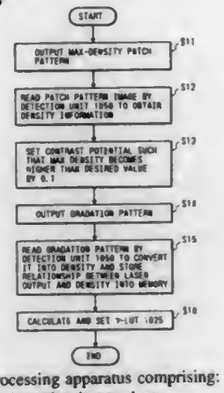
Nobuatsu Sasanuma, Yokohama, and Yuichi Ikeda, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 11, 1995, Ser. No. 371,214

Claims priority, application Japan, Jan. 12, 1994, 6-014806; Mar. 25, 1994, 6-056053

Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—208 **13 Claims**



1. An image processing apparatus comprising:

input means for inputting image data;

correcting means for correcting the image data;

image forming means for forming and outputting an image on a medium in accordance with the image data corrected by said correcting means;

pattern generating means for generating pattern data which is used for forming a pattern on the medium;

detecting means for detecting the pattern on the medium and outputting a detection result;

first controlling means for controlling, on the basis of the output detection result, an image forming condition of said image forming means so that a maximum density which is capable of being reproduced by said image forming means is higher than a target maximum density which is capable of being reproduced by the image processing apparatus; and

second controlling means for controlling a correcting condition of said correcting means so as to correct the image to be output by the image forming means.

5,579,091

DEVELOPING UNIT FOR ELECTRO-PHOTOGRAPHIC APPARATUS

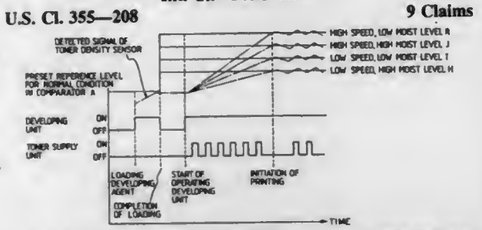
Koutarou Yamada, Hitachinaka; Youji Hirose, Mito; Hiroshi Ueno, Hitachinaka; Isao Watanabe, Hitachinaka; Yoshio Ogura, Hitachinaka; Katuhiro Shinohara, Hitachinaka; Kouhei Katayama, Hitachinaka, and Minoru Murase, Hitachinaka, all of Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1995, Ser. No. 397,882

Claims priority, application Japan, Mar. 4, 1994, 6-034643

Int. Cl.[6] G03G *15/06*

U.S. Cl. 355—208 **9 Claims**



1. A developing unit for an electro-photographic apparatus having a developing agent in the form of a mixture of toner and carrier having a preset toner density, a toner density sensor for detecting the toner density of the developing agent, a comparator for comparing the detected toner density signal output from the toner density sensor with a comparing reference value, and a toner supplying unit for supplying toner to said developing agent based on a comparing result produced by said comparator, wherein:

said comparator comprises reference value changing means for changing said comparing reference value to a value higher than a preset normal reference value in an initial stage of use of said developing agent, so as to control the toner density of the developing agent to have a toner density higher than said preset toner density in said initial stage of use of said developing agent before initiation of printing.

5,579,092

COLOR PRINTER CORRECTABLE POSITIONAL ERRORS IN RESPECTIVE PRINTING MECHANISMS

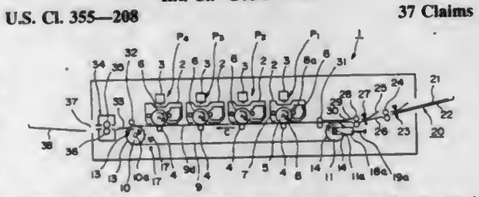
Minoru Isobe; Katsuyuki Ito; Kazuyoshi Yoshida, and Noboru Otaki, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1995, Ser. No. 402,234

Claims priority, application Japan, Mar. 14, 1994, 6-042696; Jun. 8, 1994, 6-126443

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—208 **37 Claims**



10. A color printer having a plurality of sequentially arranged printing mechanisms for sequentially performing printing on a recording medium to form a color image on the recording medium, the color printer comprising:

a medium carrier for carrying the recording medium and for moving the recording medium sequentially past each printing mechanism;

driving means for driving the medium carrier, whereby the medium carrier moves through a plurality of positions past each printing mechanism;

test pattern forming means for simultaneously causing each printing mechanism to form a test pattern on the medium carrier as the medium carrier moves through the plurality of positions past each printing mechanism;

detecting means arranged with respect to the medium carrier for detecting a passage of the respective test pattern formed by each printing mechanism;

measuring means for measuring a time differential with respect to each test pattern, the time differential comprising the difference between a time the test pattern was expected to be detected and a time the test pattern is actually detected; and

controlling means for controlling a print start time for each printing mechanism based on the respective time differential.

5,579,093

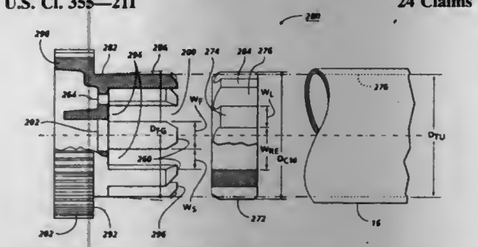
RESILIENTLY BIASED END CAPS FOR PHOTOCONDUCTIVE DRUMS

Moritz P. Wagner, Walworth; William A. Hammond, Rochester, and Eugene A. Swain, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1995, Ser. No. 483,000

Int. Cl.[6] G03G *5/00*

U.S. Cl. 355—211 **24 Claims**



1. A hub for supporting a tube, comprising:

an expandable body adapted to be mounted at least partially in the tube; and

a radially expandable urging member having at least a portion thereof internal to said body to expand said body so that a portion therein contacts the tube.

5,579,094

FILAMENT FIBER DEVELOPMENT TRAPS

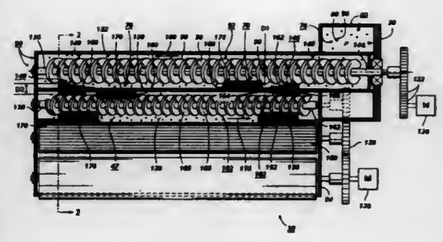
Thomas J. Behe, Webster, and Samuel P. Mordenga, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 11, 1994, Ser. No. 320,723

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—215 **20 Claims**

4. A developer unit according to claim 1. wherein said fibrous element comprises a plurality of fibrous elements with each of said plurality of fibrous elements being spaced from one another.



5,579,095

CHARGING DEVICE

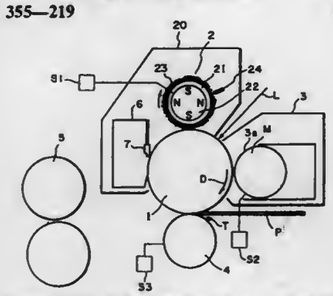
Hideyuki Yano; Harumi Ishiyama, both of Yokohama; Tadashi Furuya, Kawasaki, and Seiji Mashimo, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1995, Ser. No. 492,526

Claims priority, application Japan, Jun. 22, 1994, 6-140180; Jun. 13, 1995, 7-146240

Int. Cl.[6] G03G *15/02*

U.S. Cl. 355—219 **30 Claims**



1. A charging device for charging a member to be charged, comprising:

charging material for charging the member to be charged, said charging material including

a layer of particles capable of being supplied with a voltage and contactable to the member to be charged,

said particle layer comprising first particles having a volume resistivity of not less than 6.0×10^3 Ohm.cm and less than 1.0×10^5 Ohm.cm and second particles having a volume resistivity of not less than 6.3×10^5 Ohm.cm mixed with said first particles.

5,579,096

IMAGING APPARATUS AND METHOD FOR CLEANING TRANSFER/CONVEYER MEANS

Yousuke Saito; Takao Umeda; Masayasu Anzai; Hiroyuki Mabuchi; Yasuo Kikuchi; Masato Miwa, and Takashi Suzuki, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Jul. 5, 1995, Ser. No. 498,125

Claims priority, application Japan, Jul. 5, 1994, 6-153816

Int. Cl.[6] G03G *15/14*

U.S. Cl. 355—271 **6 Claims**

1. An imaging apparatus comprising:

an image carrier for carrying a toner image;

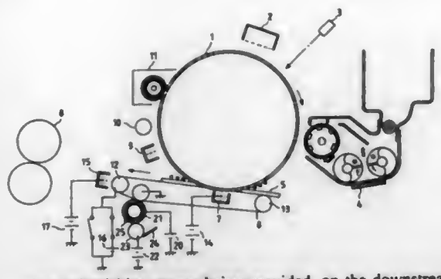
transfer/conveyer means for conveying a transfer material so as to press the transfer material against part of the image carrier;

a transcriber installed on the opposite side of the image-carrier-side of said transfer/conveyer means and used for transferring the toner image onto the transfer material in a transcription unit;

charge furnishing means for providing deposits sticking to said transfer/conveyer means with electric charges opposite in polarity to those on the surface of the image carrier, said

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charge furnishing means being provided, on the downstream side of the transcription unit, in the direction in which said transfer/conveyer means is moved, and close to said transfer/conveyer means; and

cleaning means for removing deposits from transfer/conveyer means, said cleaning means being provided on the downstream side of said charge furnishing means, in the direction in which said transfer/conveyer means is moved, wherein said cleaning means comprises:

a cleaning member which makes contact with said transfer/conveyer means and is used for removing the deposits; and

means for joining the image carrier and said transfer/conveyer means together and disjoining the transfer/conveyer means from the image carrier, the image carrier being charged opposite in magnetic polarity to the deposits sticking to said transfer/conveyer means, and deposit removing means for removing deposits sticking to the image carrier;

wherein said joining and disjoining means makes part of the transfer/conveyer means cleaned by said cleaning member contact the image carrier so as to transfer the residual deposits on said transfer/conveyer means to the image carrier; and said deposit removing means removes the deposits thus transferred.

5,579,097

XEROGRAPHIC PRINTING AND SHEET PROCESSING APPARATUS

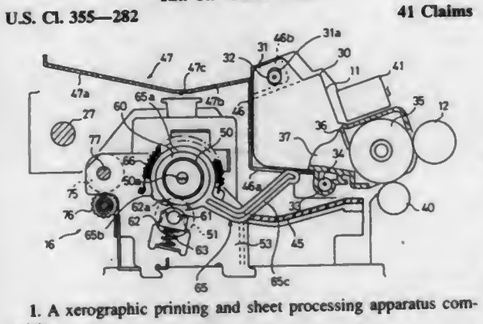
Tetsuro Tomoe; Hiroaki Tsuchiya; Daisuke Hayashi, and Shinichi Tanaka, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jul. 12, 1993, Ser. No. 89,377

Claims priority, application Japan, Jul. 13, 1992, 4-185137

Int. Cl.[6] G03G *15/20*

U.S. Cl. 355—282 **41 Claims**



1. A xerographic printing and sheet processing apparatus comprising:

an image printing apparatus for printing onto a sheet an image developed with magnetic toner from a latent image;

a residual toner container for collecting toner residual from said image printing apparatus;

an image fixing unit, disposed downstream of said image printing apparatus, for fixing the toner developed image superficially onto said sheet; and

a transport guide member, disposed in a position opposite said residual toner container, said transport guide member consisting of a member formed of a resin having a surface resistivity ranging from $1\times10^{10}\ \Omega$ to $1\times10^{14}\ \Omega$, and extending from said image printing apparatus to a sheet inlet of said image fixing unit, wherein said transport guide member guides the sheet onto which the toner developed image is printed from said image printing apparatus to said image fixing unit.

5,579,098

IMAGE FORMING APPARATUS WITH REMOVEABLE FIXING UNIT

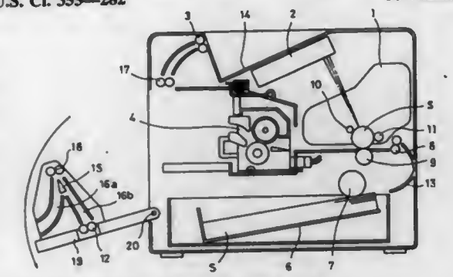
Tomio Noguchi, Kawasaki; Yasuyoshi Hayakawa, Yokohama; Naoki Asano, Kawasaki, and Kazunori Takashima, Kamakura, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 21, 1994, Ser. No. 345,346

Claims priority, application Japan, Nov. 30, 1993, 5-299913; Oct. 4, 1994, 6-240034

Int. Cl.[6] G03G *15/20*

U.S. Cl. 355—282 **33 Claims**



1. An image forming apparatus comprising:

an apparatus body;

image forming means mounted in said apparatus body for forming a non-fixed image on a recording member;

a fixing unit for fixing the non-fixed image formed by said image forming means on the recording member, wherein said fixing unit is detachably mounted to said apparatus body; and

pressing means for applying pressing force against said fixing unit wherein said fixing unit is secured to the apparatus body by the pressing force of said pressing means wherein said apparatus body further includes an insertion slit and said fixing unit further includes an elastic projection portion, said projection portion insertable into said insertion slit and elastically deformed when said fixing unit is mounted.

5,579,099

DOCUMENT CONVEYING DEVICE AND DOCUMENT READING DEVICE OPERABLE THEREWITH

Kouji Nishiyama, and Yoshio Toyoshima, both of Yashio, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 26, 1995, Ser. No. 378,721

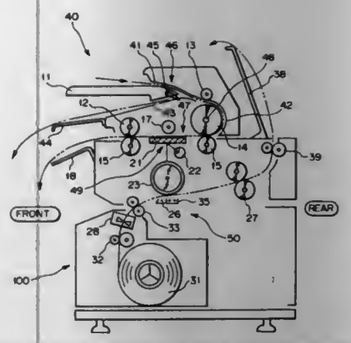
Claims priority, application Japan, Jan. 26, 1994, 6-006762

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—308 **4 Claims**

1. A document conveying device mounted on a document reading device which sequentially reads a document image moving via an illuminating position with an illuminating section thereof from one edge of said document, and for conveying, when an image of a single document is illuminated by said document reading device a plurality of times, said single document in a reciprocating motion via said illuminating position, said device comprising:

a document table located above the illuminating section and for supporting a document laid thereon and guiding said document to an inlet;



a turning section for turning over the document inserted into said inlet and guiding said document to the illuminating position;

document conveying means located upstream and downstream of the illuminating position with respect to a direction in which the document is inserted, said document conveying means being reversibly driven for conveying said document to a position upstream of said turning section and a position downstream of said illuminating position;

an accommodating section positioned between said document table and the illuminating position and capable of accommodating the document conveyed from said turning section when said document conveying means is reversed;

a path selector for selectively steering the document being conveyed by said document conveying means either to said inlet or to said accommodating section;

document edge sensing means adjoining the illuminating position for sensing a leading edge of the document being conveyed by said document conveying means; and

control means for controlling said document conveying means and said path selector in response to a number of times of reciprocation of the document to occur and an output of said document edge sensing means.

5,579,100

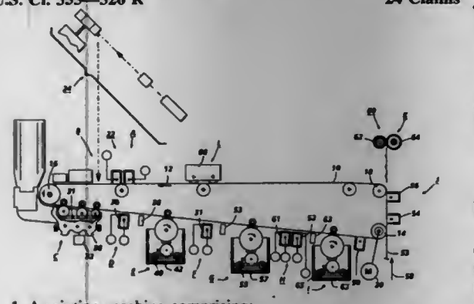
SINGLE POSITIVE RECHARGE METHOD AND APPARATUS FOR COLOR IMAGE FORMATION

Zhao-Zhi Yu, Webster; Charles H. Tabb, Penfield; John F. O'Brien, Fairport; James R. Beachner, Webster; Mark A. Gwaltney, Fairport; Meng H. Lean, Briarcliff Manor, and Jeffrey J. Folkins, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1994, Ser. No. 363,081

Int. Cl.[6] G03G *15/01*

U.S. Cl. 355—326 R **24 Claims**



1. A printing machine comprising:

a charge retentive surface having a developed image thereon, the developed image having an electrical potential of a first magnitude associated therewith; and

a corona generating device for recharging said charge retentive surface and the developed image to an electrical potential which has a magnitude less than said first magnitude.

5,579,101

DEVELOPER CARTRIDGE AND DEVELOPING APPARATUS

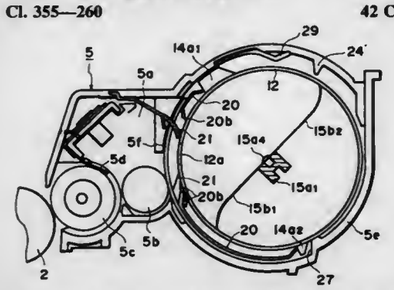
Kazuhiko Omata, Satte; Yutaka Ban, Tokyo; Akihito Kanamori, Toride, and Kazuyuki Miyano, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,126

Claims priority, application Japan, Dec. 28, 1993, 5-335536

Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—260 **42 Claims**



1. A developer cartridge detachably mountable to a developing apparatus having a shutter for closing and opening a developer receiving opening, said developer cartridge comprising:

a cylindrical portion for accommodating developer, said cylindrical portion including an opening extending along a length thereof;

a sealing member for sealing the opening;

a first projection engagable with the shutter of the developing apparatus for moving the shutter to an open position for the developer receiving opening in interrelation with rotation of said developer cartridge in a first direction; and

a second projection engageable with the shutter of the developing apparatus for moving the shutter to a closed position for the developer receiving opening in interrelation with rotation of said developer cartridge in a second direction which is opposite the first direction,

wherein said first projection and said second projection project out of a longitudinal extension of the opening.

5,579,102

TRANSMITTER AND RECEIVER UNITS FOR SPATIAL POSITION MEASUREMENT SYSTEM

Timothy Pratt; Andrew W. Dornbusch; Yvan J. Bellvean; Eric J. Lundberg, all of Blacksburg, Va., and Michael H. Sweeney, Commerce Township, Mich., assignors to Spatial Positioning Systems, Inc., Blacksburg, Va.

Continuation of Ser. No. 123,891, Oct. 5, 1995, Pat. No. 5,461,473, which is a continuation-in-part of Ser. No. 714,891, Jun. 17, 1991, Pat. No. 5,247,487, and a continuation-in-part of Ser. No. 755,780, Sep. 6, 1991, Pat. No. 5,294,970. This application Oct. 5, 1995, Ser. No. 539,379

Int. Cl.[6] G01C *3/00*; **G01B** *11/26*; **E02F** *3/76*; **G02B** *3/02*

U.S. Cl. 356—3.12 **13 Claims**

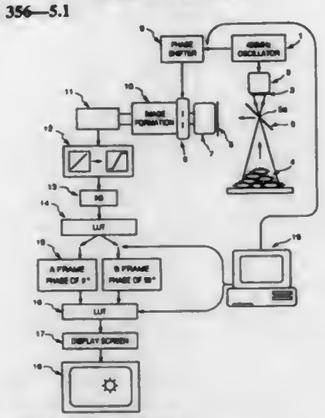
1. A laser transmitter unit for a spatial measurement system comprising: a laser emitter; a bearing/motor assembly coupled to the laser emitter, the bearing/motor assembly including a rotatable hollow spindle shaft through which a laser beam generated by the laser emitter passes and a motor for driving the spindle shaft; a prism assembly coupled to the spindle shaft, wherein the prism assembly divides the laser beam generated by the laser emitter into a pair of fanned laser beams; and reflecting means for reflecting the

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fanned laser beams generated by the prism assembly as counter-rotating fanned laser beams.

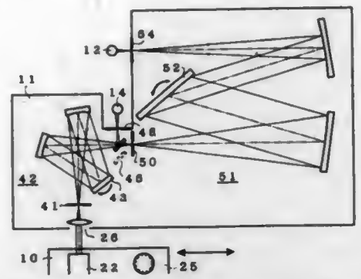
5,579,103
OPTICAL RADAR RANGER WITH MODULATION OF IMAGE SENSOR SENSITIVITY
Jin Tachikawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 15, 1994, Ser. No. 356,147
Claims priority, application Japan, Dec. 22, 1993, 5-324220
Int. Cl.[6] G01C *3/00*
U.S. Cl. 356—5.1 **6 Claims**



1. An optical radar comprising:
first modulating means for modulating a beam intensity with a first waveform;
irradiating means for irradiating a target object with said beam;
image pickup means for photoelectrically converting an optical image of the target object;
second modulating means for modulating the sensitivity of said image pickup means with a second waveform;
measuring means for measuring distances to the respective points of the target object from the plurality of light amount values of the respective points of the target object, which light amount values are obtained by shifting a difference between the phase of the first and second waveform a plurality of times.

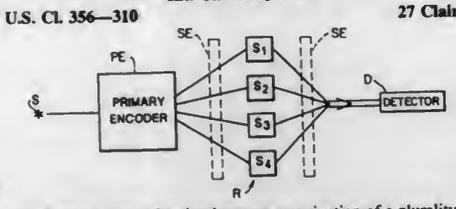
5,579,104
APPARATUS APPLIED TO SPECTROSCOPY
Akira Honda, and Seiji Kojima, both of Otsu, Japan, assignors to Shimadzu Corporation, Kyoto, Japan
Filed Apr. 27, 1995, Ser. No. 430,217
Claims priority, application Japan, Apr. 28, 1994, 6-114322
Int. Cl.[6] B01N *21/00*
U.S. Cl. 356—73 **6 Claims**

1. A spectroscopic apparatus applied to both inductively coupled plasma (ICP) emission spectroscopy and atomic absorption spectrometry, said apparatus comprising:



(a) ICP emission means for exciting a sample to a plasma to produce a light including an emission spectrum of said sample;
(b) atomic absorption means for heating and atomizing a sample in a heating tube and allowing a light from a light source to pass through said atomized sample;
(c) first spectroscopic means for separating a light passed through a first light inlet to produce a first spectrum with a first spectral element;
(d) second spectroscopic means for separating a light passed through a second light inlet to produce a second spectrum with a second spectral element;
(e) light detection means for measuring an intensity of a light; and
(f) control means operable in an ICP emission spectroscopic mode and in an atomic absorption spectrometric mode, where the control means
leads the light from said ICP emission means to said first light inlet, introduces the light separated by said first spectroscopic means to said second light inlet, and introduces the light separated by said second spectroscopic means to said light detector means in the ICP emission spectroscopic mode, and
leads the light emitted from the light source and passed through said atomic absorption means to said first light inlet and introduces the light separated by said first spectroscopic means to said light detector means in the atomic absorption spectrometric mode.

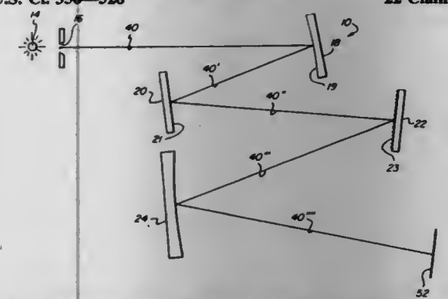
5,579,105
SPECTROMETERS
Peter S. Belton, Norwich, and Kevin M. Wright, Eaton, both of England, assignors to British Technology Group Ltd., London, United Kingdom
Continuation of Ser. No. 835,435, Apr. 17, 1992, abandoned.
This application Jun. 8, 1994, Ser. No. 257,426
Int. Cl.[6] G01J *3/04*
U.S. Cl. 356—310 **27 Claims**



1. A spectrometer for simultaneous examination of a plurality of remotely distributed samples comprising:
radiation source means for establishing a radiation path;
one only detector in said radiation path for detecting radiation emanating from said radiation source means;
radiation path between said sample receiving means and said one only detector; and

sample receiving means disposed between said radiation source and said one only detector for holding said plurality of remotely distributed samples in said radiation path;
primary encoder means, disposed in said radiation path between said radiation source means and said one only detector, for encoding through a complete spectrum one of a wavelength and a frequency of radiation in said radiation path; and
secondary encoder means, disposed in said radiation path between said radiation source means and said one only detector, for selectively modulating an intensity of radiation directed at each one of said plurality of remotely distributed samples in said radiation path by a predetermined amount, thereby permitting said modulated radiation to be multiplexed onto said one only detector.

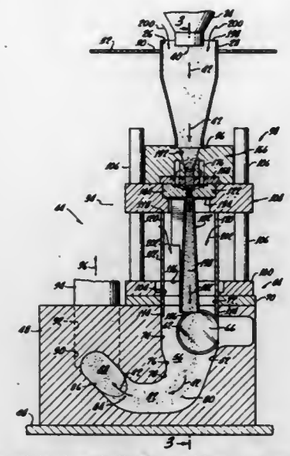
5,579,106
METHOD AND APPARATUS FOR PROVIDING ASTIGMATISM-REDUCED IMAGES WITH SPECTROSCOPIC INSTRUMENTS
Alexander Kremer, Stamford, Conn., assignor to Oriel Corporation, Stratford, Conn.
Filed Feb. 21, 1995, Ser. No. 391,235
Int. Cl.[6] G01J *3/28*
U.S. Cl. 356—528 **22 Claims**



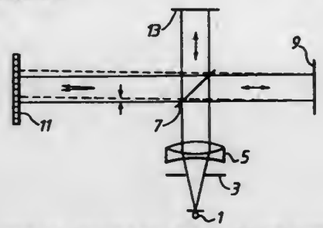
1. An apparatus for providing an astigmatically-reducing image with a spectroscopic instrument comprising:
a housing having an entrance aperture and an exit aperture;
a collimator, positioned inside the housing, for receiving and collimating elecromagnetic radiation entering through the entrance aperture;
a cylindrical reflective surface, positioned inside the housing, for receiving and reflecting collimated electromagnetic radiation, the cylindrical reflective surface having a cylindrical axis and a radius of curvature;
a diffractor, positioned inside the housing, for receiving and diffracting the collimated electromagnetic radiation reflected from the cylindrical reflective surface, the diffractor having a surface with a plurality of diffraction rulings inscribed thereon; and
a focuser, positioned inside the housing, the collecting, focusing and directing electromagnetic radiation diffraction from the diffractor towards the exit aperture.

5,579,107
METHOD AND APPARATUS FOR DRY PARTICLE ANALYSIS
Craig Wright, and Curt Torgerson, both of San Diego, Calif., assignors to Horiba Instruments, Inc., Irvine, Calif.
Filed May 25, 1995, Ser. No. 451,023
Int. Cl.[6] G01N *15/02;21/85*
U.S. Cl. 356—336 **22 Claims**

1. A dry particle analyzer comprising: means for drizzling particles from a bulk sample thereof, means for providing a downward flow of first sheath ambient air around said drizzling particles in a flow regime of laminar bulk flow with a surrounding viscous boundary layer, means for suddenly changing the flow regime of said drizzling particles and first sheath air to a flow regime with a surrounding second sheath of high velocity air causing high shear and acceleration of said drizzling particles and first sheath air flow and with admixture of said second sheath air, means for columnating and decelerating said particles and said admixture of first sheath air and second sheath air, means for providing a downward and columnar flow of third sheath ambient air around said columnated drizzled particles and first and second air flows admixed together and substantially in velocity union therewith, and means defining a vertically downwardly extending optical analysis cell passage receiving the unified downward flow of drizzled particles and admixed first and second sheath air surrounded by said third sheath air for columnated downward flow therein, whereby the drizzled particles flow downwardly continuously from said bulk sample and through said analysis cell passage.



5,579,108
SYSTEM AND METHOD FOR DETECTING THE ANGLE OF A LIGHT BEAM USING A MASK WITH A TRANSMISSIVITY PATTERN
Chung W. See, Leicester, Great Britain, assignor to Rank Taylor Hobson Limited, United Kingdom
PCT No. PCT/GB93/00790, § 371 Date Oct. 14, 1994, § 102(e) Date Oct. 14, 1994, PCT Pub. No. WO93/21496, PCT Pub. Date Oct. 28, 1993
PCT Filed Apr. 15, 1993, Ser. No. 318,762
Claims priority, application United Kingdom, Apr. 16, 1992, 9208412
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—345 **11 Claims**



1. A system for detecting the angle of a light beam within a measurement range of angles, the system comprising:
photodetector means comprising an array of photodetector cells;
at least one mask having a transmissivity pattern in which transmissivity through said mask varies periodically with dis-

VOL 1192 ISS 4 NO 26 1996 UMI

tance along said mask, said at least one mask being arranged so that said beam of light passes through said mask to project said transmissivity pattern onto said photodetector means to form a pattern of light on said photodetector means; and

analyzing means for receiving a signal read out from the array of photodetector cells and analyzing the signal for a phase property of said pattern of light to obtain a measure of the angle of the light beam,

the cells of the array being at a pitch shorter than half the shortest wavelength of said pattern of light for any angle of the light beam in the measurement range, and the array having a length longer than twice the longest wavelength of said pattern of light for any angle of the light beam in the measurement range.

5,579,109

3 FREQUENCY HETERODYNE LASER INTERFEROMETER THAT DOUBLES THE RESOLUTION

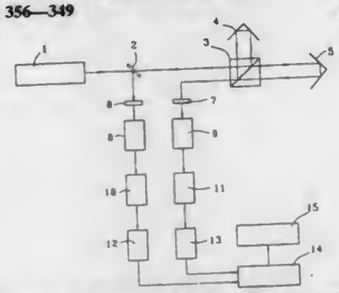
Hosuhng Suh, and Myungsai Chung, both of Taejon, Rep. of Korea, assignors to Korea Research Institute of Standards and Science, Taejon, Rep. of Korea

Filed Sep. 9, 1994, Ser. No. 303,524

Claims priority, application Rep. of Korea, Dec. 28, 1993, 93-30360

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—349 **6 Claims**



1. A 3-frequency heterodyne laser interferometer comprising:

a He-Ne laser oscillating means for oscillating a laser in 3 longitudinal modes;

a beam splitter for splitting the output beams of the laser oscillating means into transmissive beams and reflecting beams, for directing the reflecting beams, i.e., first beams as reference beams to a first reference beam detector, and for directing the transmissive beams, i.e., second beams as comparison beams to a polarizing beam splitter;

said first reference beam detector for detecting a reference secondary beat frequency between the three frequencies from the reference beams;

a first amplifier for amplifying the reference secondary beat frequency signals;

a first band pass filter for selecting signals of only a certain band from among the output signals of said first amplifier;

a polarizing beam splitter for receiving the comparison beams to split them into two sets of spectra in accordance with the polarizing direction, and to direct a first spectrum and a second spectrum respectively to a first corner cubic prism and to a second corner cubic prism;

said first and second cubic prisms for receiving the first and second spectra from said beam splitter to reflect them back and to input them again into said polarizing beam splitter;

a second reference beam detector for detecting the reference secondary beat frequency of the first and second spectra outputted from said polarizing beam splitter in a synthesized form;

a second amplifier and a second band pass filter connected to the output of said second reference beam detector in the cited order for carrying out the same function as that of said first amplifier and that of said first band pass filter;

a 2-channel counter for receiving the output signals of said first and second band pass filters to count the frequencies; and

a moving distance display for receiving the output of the 2-channel counter to calculate the moving distance of said second corner cubic prism, for carrying out the compensation of the air refraction to calculate the actual moving distance, and for displaying the moving distance.

5,579,110

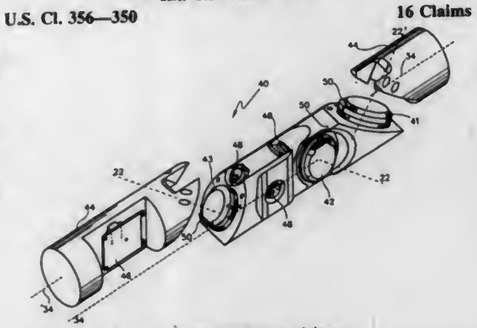
IN-LINE MULTIPLE ROTATION SENSOR ASSEMBLY

Alan B. Touchberry, St. Louis, and Thomas J. Rolfer, Blaine, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 31, 1994, Ser. No. 298,623

Int. Cl.[6] G01C *19/70*

U.S. Cl. 356—350 **16 Claims**



1. An inertial measurement unit comprising:

an elongated housing having dimensions of a cross-section having a center, and of a length, and having a longitudinal axis approximately parallel to the dimension of length and intersecting the center of the cross-section;

a first rotation sensor, having a center of mass approximately aligned on the longitudinal axis, for sensing rotation about an input axis, having a closed-path laser cavity, and a dithering device having a base and being attached to the laser cavity, the dithering device being for at least partially rotating, alternately clockwise and counterclockwise, the laser cavity about the Input axis and relative to the base, the base being attached to said housing with the input axis at an angle between 35 and 55 degrees relative to the longitudinal axis;

a second rotation sensor, having a center of mass approximately aligned on the longitudinal axis, for sensing rotation about an input axis, having a closed-path laser cavity, and a dithering device having a base and being attached to the laser cavity, the dithering device being for at least partially rotating, alternately clockwise and counterclockwise, the laser cavity about the input axis and relative to the base, the base being attached to said housing with the input axis approximately orthogonal to the longitudinal axis and to the input axis of said first rotation sensor; and

a third rotation sensor, having a center of mass approximately aligned on the longitudinal axis, for sensing rotation about an input axis, having a closed-path laser cavity, and a dithering device having a base and being attached to the laser cavity, the dithering device being for at least partially rotating, alternately clockwise and counterclockwise, the laser cavity about the input axis and relative to the base, the base being attached to said housing with the input axis approximately orthogonal to the input axes of said first and second rotation sensors; and

wherein said first, second and third rotation sensors are situated, respectively, in line along the longitudinal axis to improve inertial properties and to reduce coning of said inertial measurement unit.

5,579,111

ENCODING APPARATUS FOR MAKING MEASUREMENTS OF TWO-DIMENSIONAL DISPLACEMENT OF AN OBJECT

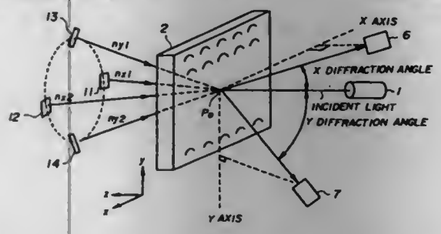
Hideo Maeda, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 215,566, Mar. 22, 1994, abandoned. This application Nov. 2, 1995, Ser. No. 552,167

Claims priority, application Japan, Mar. 23, 1993, 5-087927; Mar. 16, 1994, 6-072654

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—356 **22 Claims**



1. An encoding apparatus for making measurements of a two-dimensional displacement of an object comprising:

a light source;

diffraction grating means for producing first diffracted light rays and second diffracted light rays in response to light emitted from the light source, said diffraction grating means including a number of fine grating portions orthogonally arranged in columns and rows on a diffraction grating surface, said columns and rows of said grating portions being respectively parallel to a first coordinate axis and a second coordinate axis, said first and second coordinate axes being perpendicular to each other, each of the first diffracted light rays having a direction cosine with respect to said first coordinate axis, and each of the second diffracted light rays having a direction cosine with respect to said second coordinate axis;

interference means for producing a first interference light ray by subjecting two diffracted light rays of said first diffracted light rays, supplied from said diffraction grating means, to light interference, and for producing a second interference light ray by subjecting two diffracted light rays of said second diffracted light rays, supplied from said diffraction grating means, to light interference;

first detection means for detecting a phase change of the first interference light ray from the interference means with respect to a direction parallel to said first coordinate axis, so that a movement of an object fixed to the diffraction grating means relative to the light source in said direction is measured based on said phase change; and

second detection means for detecting a phase change of the second interference light from the interference means with respect to a direction parallel to said second coordinate axis, so that a movement of the object relative to the light source in said direction is measured based on said phase change, wherein said first and second detection means detect the phase changes of the first and second interference light rays, respectively, simultaneously.

5,579,112

OPTICAL TOMOGRAPHIC IMAGING EQUIPMENT HAVING A LIGHT SOURCE UNIT FOR GENERATING A LIGHT WAVE HAVING A PREDETERMINED COHERENCE LENGTH

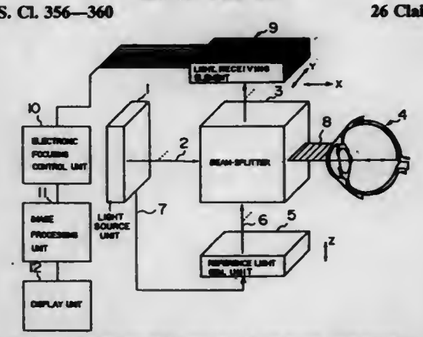
Yuiti Sugiyama, and Junji Miyazaki, both of Yamagata, Japan, assignors to Biophotonics Information Laboratories Ltd., Yamagata, Japan

Filed Oct. 27, 1994, Ser. No. 329,978

Claims priority, application Japan, Mar. 28, 1994, 6-057137

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—360 **26 Claims**



1. An optical tomographic imaging equipment comprising:

a light source unit, having a light source for radiating a light wave having a predetermined coherence length, for splitting the light wave radiated from said light source into a first light wave and a second light wave and emitting the same;

a light-receiving unit having a plurality of light-receiving elements;

an object unit for introducing the first light wave emitted from said light source unit into a subject in a form of an object light irradiating the subject, and introducing into said light-receiving unit a reflected light obtained through reflection of the object light from the subject;

a reference light generating unit for converting the second light wave received from said light source unit into a reference light having a frequency shifted from that of the second light wave by continuously varying an optical path as a travelling path of the second light wave to said light-receiving unit, and introducing the reference light to said light-receiving unit wherein at least part of the reference light is superposed on the reflected light in said light-receiving unit;

said light-receiving elements generating a corresponding plurality of light-receiving signals in response to reception of an interference wave resulting from superposition of the reflected light and the reference light; and

an electronic focusing control unit for relatively delaying and adding said plurality of light-receiving signals to one another to generate a resultant light-receiving signal involved in emphasis of information of a predetermined point on a light path of the object light within the subject.

5,579,113

APPARATUS FOR TESTING MATRIXES

Gerhard Papst, and Klaus Schiffer, both of Elbigenalp, Austria, assignors to Koch Digitaldisc Gesellschaft m.b.h. & Co. KG., Elbigenalp, Austria

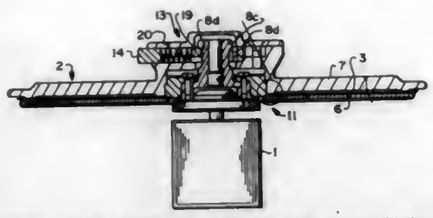
Filed Mar. 10, 1995, Ser. No. 402,516

Claims priority, application Austria, Mar. 15, 1994, 543/94

Int. Cl.[6] G01N *21/84;21/01;* **G11B** *3/90;27/36*

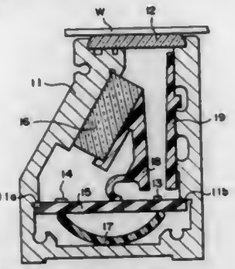
U.S. Cl. 356—426 **23 Claims**

1. Apparatus for testing matrixes for manufacturing optical storage media, with a rotatable holding device for holding a matrix and with an opto-electronic sensing system for reading data stored on the matrix, characterised in that between the matrix and the sensing system a cover configured as a rigid, transparent disk rotating



together with the holding device and the matrix is provided, said cover being separate from said matrix and said matrix being held in a plane condition by said holding device and said cover.

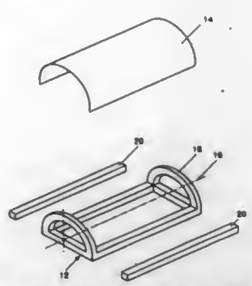
5,579,114
IMAGE SENSOR AND FACSIMILE APPARATUS INCORPORATING THE SAME
Masaya Imamura, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan
Filed Sep. 23, 1992, Ser. No. 949,139
Claims priority, application Japan, Sep. 25, 1991, 3-245627
Int. Cl.[6] H04N *1/024;* **H01J** *40/14*
U.S. Cl. 358—482 **36 Claims**



1. An image sensor for projecting light onto a surface of an article and converting the light reflected from said article into an electric signal, said image sensor comprising:
(a) a frame;
(b) a light emitting portion provided in said frame so as to project light onto the surface of said article, in order to reflect light from said article;
(c) a light receiving portion provided in said frame so as to receive light reflected from said article;
(d) an optical system provided in said frame so as to introduce said light reflected from said article to said light receiving portion;
(e) a substrate provided in said frame, having a relatively flat surface to which said light receiving portion and said light emitting portion are attached; and
(f) an elastic member which is provided in said frame so as to push the upper surface of said substrate with said light receiving portion attached thereto upward and fix said substrate against said frame.

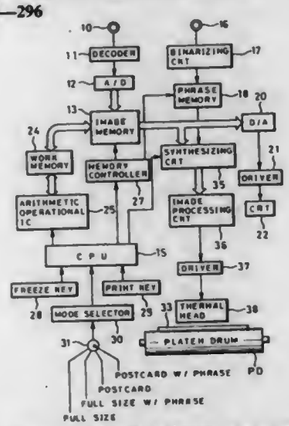
5,579,115
SCANNING APPARATUS FOR SCANNING A PARTIALLY SUPPORTED MEDIA
Amnon Stein, Ramat Gan, and Rafail Bronstein, Kfar Saba, both of Israel, assignors to Scitex Corporation Ltd., Herzliya, Israel
Filed Jan. 7, 1993, Ser. No. 1,469
Claims priority, application Israel, Jan. 12, 1992, 100635
Int. Cl.[6] H04N *1/04;1/21*
U.S. Cl. 358—296 **34 Claims**

1. Scanning apparatus for scanning a medium, comprising:



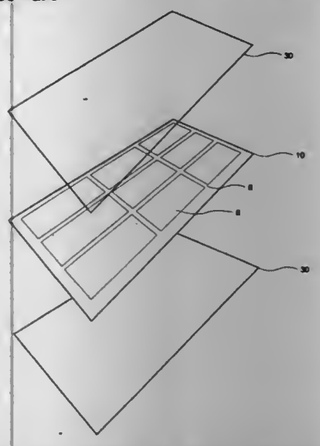
medium support means for supporting a medium in a generally curved orientation by contracting substantially less than an entire surface area of the medium; and
scanning means for scanning said medium; and
wherein the medium support means supports the medium in the generally curved orientation by engagement with the medium only in the vicinity of the edges thereof.

5,579,116
VIDEO PRINTER AND PRINTING METHOD IN USE WITH THE SAME
Naoshi Sugiyama, and Kazuo Miyaji, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jul. 20, 1994, Ser. No. 277,627
Claims priority, application Japan, Jul. 22, 1993, 5-181478
Int. Cl.[6] H04N *1/23;1/40;1/387*
U.S. Cl. 358—296 **31 Claims**



1. A video printer for printing an image on a recording sheet in accordance with image information, said image having a predetermined aspect ratio and being longer in a horizontal direction than in a vertical direction, said predetermined aspect ratio being substantially equal to an aspect ratio of said recording sheet being oriented horizontally longer than vertically, said video printer comprising:
a size reducing device for processing said image information to reduce a size of said image;
a rotationally converting device for automatically converting said image information to cause orientation of said image to make a one fourth rotation, allowing a reduced image to remain horizontally longer in a predetermined portion of said recording sheet being oriented vertically longer than horizontally; and
a recording head, supplied with said image information after said reduction and said rotational conversion, for recording said image on said recording sheet, said image being recorded in said predetermined portion of said recording sheet.

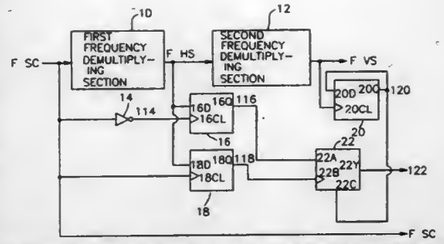
5,579,117
METHOD OF MANUFACTURE OF A TRADING CARD AND THE LIKE USING COMPUTER GENERATED DUPLEX TEMPLATE PRINTING METHOD
Emile Arsenault, and Evan Leibovitch, both of 1440 Torrington Drive, Mississauga, Ontario, Canada
Filed Sep. 7, 1994, Ser. No. 301,634
Int. Cl.[6] G03B *27/48;17/24;* **B32B** *3/00;* **B42D** *15/00*
U.S. Cl. 358—296 **13 Claims**



1. A method of manufacturing handleable card having images on front and back surface of said card, the method comprising the steps of:
preparing variable information on a computer file having front and back template files, and placing variable information on the said template;
scanning at least one photographic images into computer legible format, saving said images in a file;
importing said photographic images from said files into the front template and placing;
printing the front and back template images onto a single sheet material having a front and back surface, such that the front of said sheet material contains the image of the front template and the back of said sheet material contains the image of the back template image;
covering the front and back surface of said sheet material with the images thereon with a substantially transparent plastic laminate film and (passing) said sheet material with the laminate cover thereon through laminator, wherein said sheet material is strengthened and when cut into separate card portions and subjected to folding or bending will spring back to its substantially original condition without significant adverse effect.

5,579,118
APPARATUS FOR PROCESSING A STILL SCREEN IN A DIGITAL VIDEO REPRODUCING SYSTEM
Moo-Ho Bae, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea
Filed Jul. 28, 1995, Ser. No. 508,511
Claims priority, application Rep. of Korea, Jul. 30, 1994, 94-18852
Int. Cl.[6] H04N *9/79;9/80*
U.S. Cl. 386—8 **6 Claims**

1. An apparatus for processing a still screen in a digital video reproducing system, said apparatus comprising:
a first frequency demultiplying section for demultiplying a chrominance subcarrier reproduced from a video information recording medium and outputting a first frequency demultiplying section signal being a horizontal synchronizing signal;

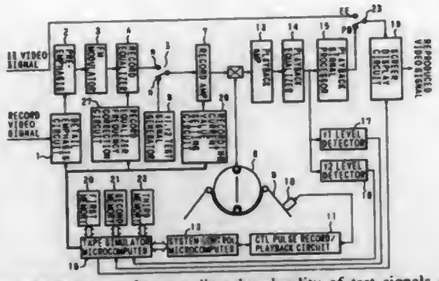


a second frequency demultiplying section for demultiplying the first frequency demultiplying section signal provided by the first frequency demultiplying section in a predetermined frequency demultiplying ratio and outputting a second frequency demultiplying section signal being a vertical synchronizing signal;
an inverting section for inverting the chrominance subcarrier and outputting an inverting section signal;
a first delaying section for delaying the horizontal synchronizing signal provided by the first frequency demultiplying section in response to the inverting section signal which the inverting section applies to a first delaying section clock input thereof, and outputting a first delaying section signal;
a second delaying section for delaying the first frequency demultiplying section signal provided by the first frequency demultiplying section in response to the chrominance subcarrier applied to a second delaying section clock input thereof, and outputting a second delaying section signal;
a third frequency demultiplying section for outputting a third frequency demultiplying section signal corresponding to a signal obtained by frequency-demultiplyiog the vertical synchronizing signal by two from a third frequency demultiplying section inverting output thereof connected to a third frequency demultiplying section data input thereof in response to the vertical synchronizing signal which the second frequency demultiplying section applies to a third frequency demultiplying section clock input thereof; and
a switching section for switching the first delaying section signal and the second delaying section signal respectively provided by the first delaying section and the second delaying section in response to the third frequency demultiplying section signal which the third frequency demultiplying section applies to a third switching section input thereof as a switching control signal.

5,579,119
RECORDING SIGNAL CONTROL APPARATUS CAPABLE OF OPTIMIZING RECORDING CONDITIONS FOR MAGNETIC RECORDING MEDIUM
Yoshiaki Mimura, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 12, 1993, Ser. No. 134,005
Claims priority, application Japan, Oct. 19, 1992, 4-279753; Oct. 18, 1993, 5-260202
Int. Cl.[6] H04N *9/79*
U.S. Cl. 386—9 **39 Claims**

1. A recording signal control apparatus capable of optimizing recording conditions for a magnetic recording medium, comprising:
first memory means for storing the type of a magnetic recording medium used for recording and playing back recording signals;
second memory means for storing data concerning the optimum amount of detail emphasis to be applied at the time of recording on said magnetic recording medium;
test signal generating means for generating a plurality of test signals of different frequencies to measure characteristic data of said magnetic recording medium to be used for the recording of recording signals;

VOL 1192 ISS 4 NO 26



recording means for recording the plurality of test signals on recording tracks on said magnetic recording medium;

replaying means for replaying the plurality of test signals automatically from the starting point of recording after recording for a predetermined length of time;

level detecting means for detecting the level of each of the plurality of test signals of different frequencies replayed from said magnetic recording medium by said replaying means;

third memory means for storing the test signal levels detected by said level detecting means;

detail emphasizing means for emphasizing detail of the recording signals to be recorded on said magnetic recording medium;

display means for displaying a type name that identifies the type of said magnetic recording medium on which the test signals are recorded; and

control means for storing the type name identifying the type of said magnetic recording medium into said first memory means and the characteristic data of said magnetic recording medium into said second memory means in accordance with the level detection results fed from said level detecting means, and for controlling said detail emphasizing means by calculating the amount of detail emphasis to be applied to the recording signals on the basis of the characteristic data stored in said second memory means for said magnetic recording medium displayed on said display means.

5,579,120

COPYRIGHT PROTECTION FOR DIGITAL SIGNAL RECORDING AND/OR REPRODUCTION AND RECORDING MEDIUM THEREOF

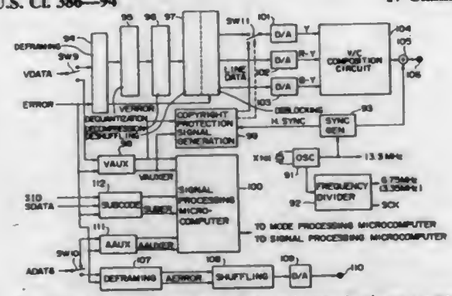
Masaki Oguro, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 27, 1994, Ser. No. 313,382

Claims priority, application Japan, Oct. 8, 1993, 5-277633

Int. Cl.[6] H04N *5/76; G11B 15/04; 19/04*

U.S. Cl. 386—94 **17 Claims**



8. A digital image signal recording and reproduction apparatus for recording and reproducing a digital image signal which has a recording format including a recording area for a coded image signal and another recording area for incident information, the recording area for incident information having a pack structure which includes a header pack for recording line designation data designating an arbitrary line of the image signal and a parameter regarding coding of the recording signal and a data pack for recording data obtained by coding a signal of a line designated by the header pack in accordance with the parameter, comprising:

means for coding and recording the image signal into the recording area for an image signal;

means for recording data designating a predetermined line of a copyright protection signal inserted in the predetermined line of the image signal and a parameter regarding coding of the copyright protection signal into the header pack and recording the coded copyright protection signal into the data pack;

means for reading the coded image signal from the recording area for an image signal and decoding the read out image signal; and

means for reading the header pack and the data pack to restore the copyright protection signal and inserting the restored copyright protection signal into the predetermined line of the decoded image signal.

5,579,121

REAL-TIME IMAGE COMPRESSION PROCESSOR

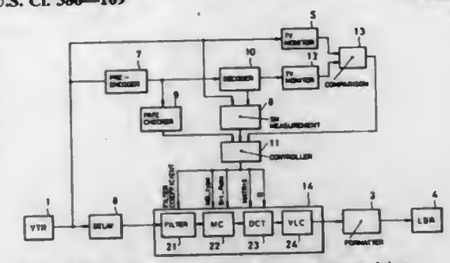
Minemasa Ohta; Hiroaki Watanabe, and Naoto Itoh, all of Nakakoma-gun, Japan, assignors to Pioneer Video Corporation, Yamanashi, and Pioneer Electronic Corporation, Tokyo, both, Japan

Filed Dec. 16, 1994, Ser. No. 357,013

Claims priority, application Japan, Dec. 16, 1993, 5-316938

Int. Cl.[6] H04N *7/26; 5/76*

U.S. Cl. 386—109 **2 Claims**



1. A real-time image compression processor comprising:

a first encoder for obtaining a first compressed video signal by compressively encoding a video signal;

delay means for obtaining a delayed video signal by delaying said video signal for a given period of time;

a second encoder for obtaining a second compressed video signal by compressively encoding said delayed video signal;

a recording apparatus for recording said second compressed signals on a recording medium; and

parameter adjustment means for adjusting the compression parameters for said second encoder in accordance with said first compressed video signal, said parameter adjustment means comprising:

rate checking means for detecting the generation rate of said first compressed video signal;

a decoder for obtaining a demodulated video signal by demodulating said first compressed video signal;

means for measuring S/N for measuring an S/N ratio of said video signal and said demodulated video signal, respectively, and generating an S/N degradation signal corresponding to the degree of the S/N degradation of said demodulated video signal with respect to said video signal;

first image display means for reproducing image on the basis of said video signal;

second image display means for reproducing image on the basis for said demodulated video signal;

means for comparing images by comparing the displayed images on said first and second image display means, respectively, to generate an image quality degradation signal corresponding to the degree of degradation of the image quality of the displayed image by said second image display means against that of the displayed image by said first image display means; and

a controller for adjusting the compression parameters for said second encoder in response to at least one of said generation rate, said S/N degradation signal, and said image quality degradation signal.

5,579,122

APPARATUS FOR EXTRACTING A COMPOSITE VIDEO SIGNAL OF A SELECTED CHANNEL FROM TIME DIVISIONAL MULTIPLEXED VIDEO SIGNALS

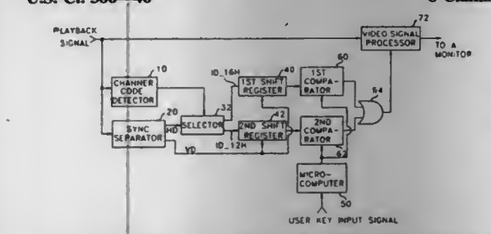
Sang-mu Lee, Suwon-city, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Oct. 6, 1995, Ser. No. 540,162

Claims priority, application Rep. of Korea, Oct. 6, 1994, 94-25567

Int. Cl.[6] H04N *5/76*

U.S. Cl. 386—46 **8 Claims**



1. An apparatus for extracting a composite video signal of a selected channel from time divisional multiplexed video signals of at least two channels, said time divisional multiplexed video signals containing channel identification codes for uniquely identifying composite video signals as corresponding to one of the at least two channels, said channel identification codes being inserted into an identical position of the composite video signal of each channel, said apparatus for extracting comprising:

sync separation means for separating horizontal sync signals and vertical sync signals contained in the time divisional multiplexed video signal to produce separated horizontal sync signals and separated vertical sync signals;

data detection means, connected to said sync separation means, for detecting at least two channel identification codes in a multiplexed composite video signal of a channel from the time divisional multiplexed video signal, based upon said separated horizontal sync signal and said separated vertical sync signal;

channel identification code generation means for generating a selected channel identification code indicative of the selected channel in response to an external channel selection signal;

at least two comparators, each of said at least two comparators comparing one of the at least two channel identification code detected by said data detection means with the selected channel identification code generated by said channel identification code generation means and outputting a first binary signal according to the comparison result;

an OR gate for logically summing the first binary signals output from each of said comparators and outputting a second binary signal according to the logically summed result; and

signal extraction means for extracting a composite video signal of a channel which is synchronized with the second binary signal from the time division multiplexed video signal as a composite video signal of a selected channel.

5,579,123

TRACK JUDGEMENT APPARATUS FOR DISCRIMINATING BETWEEN VIDEO AND OTHER SIGNALS DURING SIGNAL REPRODUCTION

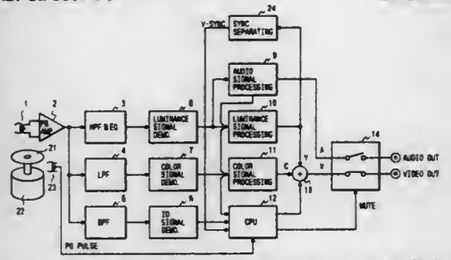
Kouichi Sato, Tokyo, Japan, assignor to Asahi Kogaku Kogyu Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 938,588, Sep. 2, 1992, abandoned, which is a continuation of Ser. No. 683,629, Apr. 11, 1991, abandoned. This application Mar. 15, 1994, Ser. No. 213,466

Claims priority, application Japan, Apr. 13, 1990, 2-98538; Apr. 13, 1990, 2-98539

Int. Cl.[6] H04N *5/76*

U.S. Cl. 386—96 **18 Claims**



1. An apparatus for discriminating between video and further signals during reproduction of a signal by a reproducing means from a medium storing both video and further information, wherein reproduced video signals include a predetermined signal portion occurring at a video signal frequency, said apparatus comprising:

first means for generating a detection signal during reproduction of a video signal upon the occurrence in said reproduced signal of said predetermined signal portion, and for also generating said detection signal during reproduction of a further signal upon the occurrence of a signal portion similar to said predetermined signal portion; and

second means for determining said reproduced signal to be a further signal only if said first means generates said detection signals at a frequency higher than said video signal frequency.

5,579,124

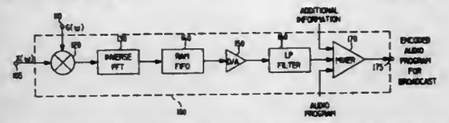
METHOD AND APPARATUS FOR ENCODING/DECODING BROADCAST OR RECORDED SEGMENTS AND MONITORING AUDIENCE EXPOSURE THERETO

Victor A. Aijala, Arnold; Gerald B. Cohen, Gaithersburg; James M. Jensen, Columbia; Wendell D. Lynch, Silver Spring, and Juan C. Urbi, Laurel, all of Md., assignors to The Arbitron Company, Columbia, Md.

Continuation of Ser. No. 976,558, Nov. 16, 1992, abandoned. This application Feb. 28, 1995, Ser. No. 396,342

Int. Cl.[6] H04N *5/76; 5/00*

U.S. Cl. 386—96 **110 Claims**



1. A method for detecting encoded information in broadcast or recorded audio signals, comprising the steps of: receiving an encoded broadcast or recorded segment signal including an audio signal portion having an encoded identification signal, the encoded identification signal being produced by modulating a first code signal having a predetermined nonzero bandwidth and not derived from the audio signal portion with an identification signal having a narrower bandwidth than the predetermined nonzero bandwidth of the first code signal, correlating the audio signal portion with a second code signal corresponding to the first code signal and not

derived from the audio signal portion to produce a correlated signal, and recovering the identification signal from the correlated signal.

5,579,125

IMAGE RECORDING APPARATUS

David P. Owen, Brimpton, England, assignor to Quantel Limited, Newbury, England

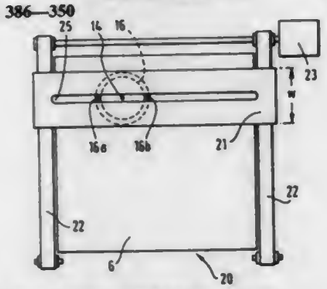
Continuation of Ser. No. 967,746, Oct. 28, 1992, Pat. No. 5,453,842. This application Jul. 6, 1995, Ser. No. 498,586

Claims priority, application United Kingdom, Sep. 9, 1992, 9219050

The portion of the term of this patent subsequent to Oct. 28, 2012, has been disclaimed.

Int. Cl.[6] H04N *5/84*

U.S. Cl. 386—350 **29 Claims**



1. An image recording apparatus comprising:

raster scan display screen for displaying an image defined by electronic data, the display screen being arranged to display the image over a period of time by the scanning of a point of light over the display screen;

a focusing means for focusing the image displayed on the display screen onto a photographic film;

a masking means positionable in relation to the display screen and the film, the masking means comprising a moving plate having an aperture; and

a positioning means for maintaining an alignment between the aperture and the point of light during said scanning to allow light from said point of light to pass through the aperture to the film and to prevent unwanted light caused by the displaying of the image on the display screen from being focused onto said film,

wherein the display screen comprises a multiplicity of scan lines over which the point of light is scanned and the aperture comprises an elongate slot disposed substantially parallel to said scan lines and having a length sufficient to allow to pass therethrough light from the point of light as it traverses and entire scan line and having a width which limits the light transmitted therethrough mainly to the scan line being traversed by the light.

5,579,126

FACSIMILE APPARATUS SERVING AS LAN SERVER ON LOCAL AREA NETWORK

Takao Otsuka, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 1, 1994, Ser. No. 252,649

Claims priority, application Japan, Jun. 2, 1993, 5-154604; Jun. 2, 1993, 5-154605

Int. Cl.[6] H04N *1/32*

U.S. Cl. 358—403 **15 Claims**

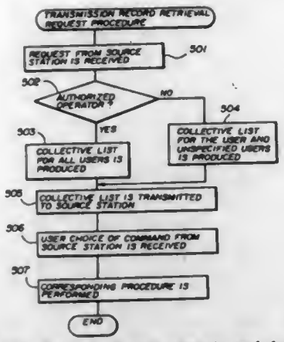
1. A facsimile apparatus which is linked to a local area network including a plurality of stations and operates as a facsimile server on the local area network, said facsimile apparatus comprising:

facsimile means for transmitting a document file to a communication line in response to a transmission request from one of the stations of the local area network, and for receiving a document file, addressed to one of the stations, from the communication line;

user record storage means for storing user record lists, each of which includes a user name record, a password record, and an authorization attribute record, the user name record identifying a user who has performed a log-in procedure on one of the stations, and the authorization attribute record indicating whether or not said user is an authorized operator;

transmission record storage means for storing first transmission result record lists for document files of specified users received or transmitted by said facsimile means, each of said first transmission result record lists being a set of first records with respect to one of the specified users, at least one of said first records being a user name identifying a specified user, and for storing second transmission result record lists for document files of unspecified users received or transmitted by said facsimile means, each of said second transmission result record lists being a set of second records with respect to one of the unspecified users; and

control means, responsive to a retrieval request from a first user on one of said stations, for producing a collective list containing the first records for at least said first user stored in said transmission record storage means and containing the second records for all the unspecified users stored therein, and for transmitting the produced collective list to said one of said stations, on which the retrieval request has been issued by the first user, and for displaying the collective list on said one of said stations.



5,579,127

FACSIMILE APPARATUS

Yoji Kaneko, Yamato, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 430,299, Apr. 28, 1995, abandoned, which is a continuation of Ser. No. 116,544, Sep. 7, 1993, abandoned, which is a continuation of Ser. No. 578,441, Sep. 7, 1990, abandoned. This application Nov. 21, 1995, Ser. No. 561,236

Claims priority, application Japan, Sep. 8, 1989, 1-234219

Int. Cl.[6] H04N *1/00;* **H04M** *11/00*

U.S. Cl. 358—434 **13 Claims**

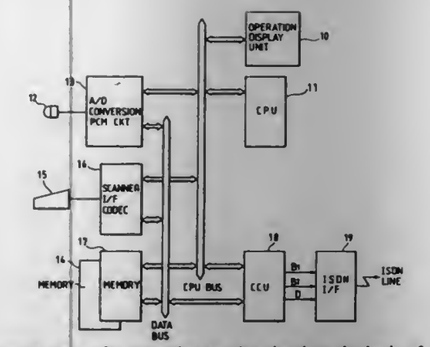
1. A facsimile apparatus comprising:

reception means for simultaneously receiving encoded digital image data and encoded digital voice data which were sent from a partner apparatus;

memory means for simultaneously storing the digital image data and the digital voice data which were received by said reception means;

instruction means for instructing the digital image data and the digital voice data stored in said memory means to be output;

decode means for decoding the digital image data and the digital voice data both stored in said memory means, in accordance with an instruction from said instruction means;



output means for outputting a voice signal on the basis of the decoded voice data and outputting visible image data on the basis of the decoded image data, wherein said output means simultaneously outputs the image data and the voice data; and

judgment means for judging, based on a procedure signal sent from the partner apparatus before the data reception, whether the data sent from the partner apparatus are both the voice data and the image data or is either one of the voice and image data,

wherein said reception means, said memory means and said output means execute the simultaneous processing of the voice data and the image data, when said judgment means judges that the data sent from the partner apparatus are both the voice data and the image data.

5,579,128

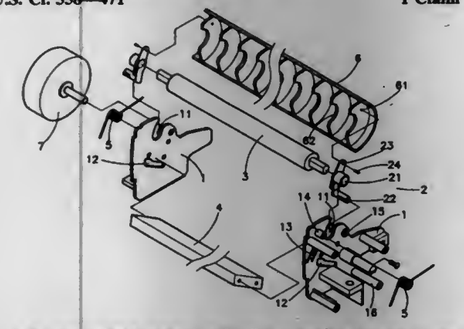
CONTACT IMAGE SENSOR AND ROLLER MOUNTING STRUCTURE FOR SCANNERS

John Cheng, Taipei Hsien, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan

Filed Oct. 3, 1995, Ser. No. 538,356

Int. Cl.[6] H04N *1/40; 1/04*

U.S. Cl. 358—471 **1 Claim**



1. A contact image sensor and roller mounting structure, comprising:

two end supports, each end support comprising a sliding slot, a locating hole, a plug hole, a spring holder, an axle housing, and a locating post for mounting;

two roller holders respectively mounted on said end supports to hold a roller, each roller holder comprising an axle housing mounted in the sliding slot of one end support, a locating pin inserted into the axle housing of one end support, and a locating hole;

a roller having two opposite ends respectively fitted into the axle housings of said roller holders;

a contact image sensor having two opposite ends respectively fastened to the locating holes of said end supports, and being disposed in contact with said roller;

two torsional springs respectively mounted on the spring holders of said end supports, each having one end fastened to the plug hole of one end support and an opposite end stopped at the axle housing of one roller holder and the axle housing of the respective end support;

a top cover connected between said roller holders and covered over said roller, having two locating holes at two opposite ends respectively fastened to the locating holes of said roller holders by a respective fastening element, and a longitudinal series of arched contact surface portions fitting the periphery of said roller; and

a motor mounted on one end support and coupled to one end of said roller for turning it to deliver a document.

5,579,129

ORIGINAL READING APPARATUS AND INFORMATION PROCESSING APPARATUS WITH ORIGINAL READING APPARATUS

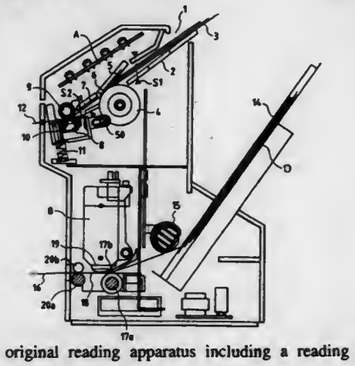
Naohiro Iwata, Yokosuka; Minoru Yokoyama, Yokohama; Yuji Nakano, Kawasaki, and Hideyuki Terashima, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1994, Ser. No. 351,946

Claims priority, application Japan, Dec. 17, 1993, 5-317771; Apr. 18, 1994, 6-078632

Int. Cl.[6] H04N *1/413*

U.S. Cl. 358—474 **17 Claims**



1. An original reading apparatus including a reading means comprising:

a first rotary member for conveying an original;

an image information reading portion disposed downstream of said first rotary member; and

a second rotary member, disposed downstream of said first rotary member and opposed to said image information reading portion, for conveying the original,

said apparatus being operative to perform:

a pre-scan mode for reading a color reference member by said reading portion before the original is read by said reading portion, the pre-scan mode being effected such that said reading portion is caused to be opposed to the color reference member by relatively shifting said reading means and the color reference member,

a registration operation for aligning a tip end of the original before the original is read, and

a reading mode for reading the original by said reading means and conveying the original,

wherein the pre-scan mode is effected by rotating said second rotary member is a reverse direction, the registration mode is effected by stopping said second rotary member and by rotating said first rotary member in a normal direction, and the reading mode is effected by rotating said second rotary member in a normal direction.

5,579,130
IMAGE COMMUNICATION APPARATUS AND METHOD THAT PAINTS A COLOR CORRESPONDING TO A PATTERN

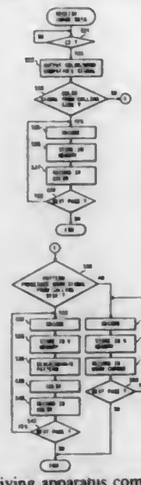
Masanori Sakai, Yokohama; Kunio Yoshihara, Sagamihara; Yoshinobu Aiba, Yokohama; Hiroshi Ohmura, Inagi; Hideto Kohtani, Yokohama; Hirohiko Itoh, Kawasaki, and Takehito Utsunomiya, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1992, Ser. No. 907,027

Claims priority, application Japan, Jul. 5, 1991, 3-191026; Oct. 23, 1991, 3-304161

Int. Cl.[6] H04N *1/46*

U.S. Cl. 358—501 **22 Claims**



19. An image receiving apparatus comprising:
reception means for receiving monochromatic image information via a communication line;
recognition means for recognizing a pattern image including a repeated pattern;
conversion means for converting the pattern image recognized by said recognition means into a painted color image; and
recording means for color-recording image information converted by said conversion means.

5,579,131
COLOR IMAGE READING APPARATUS

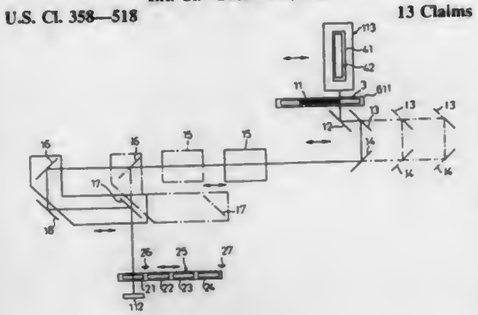
Keiji Kusumoto, Toyokawa; Shoji Imaizumi, Osaka, and Kenichi Muroki, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 5, 1993, Ser. No. 631

Claims priority, application Japan, Jan. 8, 1992, 4-001720; Jan. 14, 1992, 4-004474

Int. Cl.[6] G03F *3/08;3/10*

U.S. Cl. 358—518 **13 Claims**



1. An image reading apparatus for reading a color image on each picture element, comprising:
a reader which reads the color image and outputs image data corresponding to each of three primary colors on each picture element;
a detector which detects whether the color image is a positive print or not;
correcting means for correcting a look-up table data and a gain adjustment value which corrects the image data output from the reader for each of the three primary colors, wherein correction by said correcting means is different among the three primary colors; and
a controller which controls that both of the look-up table data and the gain adjustment value are set to an initial value, or corrected to data or value based on the image data output from the reader, in response to the detection of the detector.

5,579,132
IMAGE PROCESSING SYSTEM AND METHOD FOR FAITHFULLY REPRODUCING COLORS OF OBJECT FROM NEGATIVE FILM

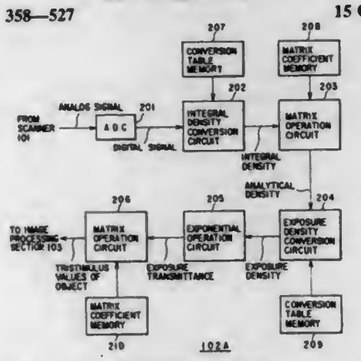
Koji Takahashi, and Noboru Sasaki, both of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 8, 1993, Ser. No. 117,666

Claims priority, application Japan, Sep. 8, 1992, 4-264114

Int. Cl.[6] H04N *1/54*

U.S. Cl. 358—527 **15 Claims**



1. An image processing system comprising:
input converting means for reading an image of an object fixed on a film and converting the image into a corresponding signal;
demodulating means connected to said input converting means, for demodulating a colorimetric signal indicating colorimetric information of the object in response to the signal in accordance with the characteristics of the spectral sensitivities of the film; and
output means connected to said demodulating means, for outputting an image having substantially the same color as that of the object based on the colorimetric signal.

5,579,133
REAR VIEW MIRROR STRUCTURE

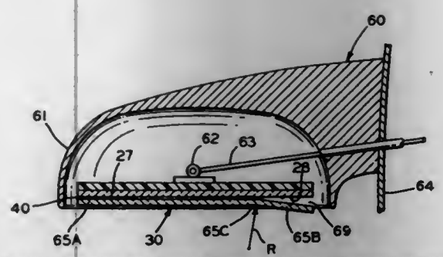
George D. Black, 9694 Sheffield Rd., Perrysburg, Ohio 43551, and George S. Wade, 5544 Citation Rd. N, Toledo, Ohio 43615

Continuation of Ser. No. 76,001, Jun. 11, 1993, abandoned, which is a continuation-in-part of Ser. No. 993,055, Dec. 18, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 466,363

Int. Cl.[6] G02B *5/08;7/182*; B60R *1/06;1/08*

U.S. Cl. 359—866 **8 Claims**

1. A rear view mirror structure for a vehicle, including:



a) a housing for attachment to the vehicle, said housing having a hollow portion;
b) a mirror pivot attached to said housing in the hollow portion thereof for pivotal movement of a mirror attached thereto and disposed substantially within the hollow portion of said housing;
c) a mirror holding member having a first side and a second side, said first side being attached to said mirror pivot, and second side being adhesively attached to said mirror and in registration therewith said mirror holding member having a flat portion; and d) said mirror comprises a one-piece mirror member having a first flat portion provided with an image reflecting mirrored surface and a second angled portion provided with an image reflecting mirrored surface, said first flat and said second angled portion joined by a relatively narrow concave radius portion provided with an image reflecting mirrored surface, wherein the mirrored surfaces of said first flat portion, said second angled portion,and concave portion form a continuous image reflecting surface, the second angled portion disposed nearer to the vehicle than the first flat portion to permit view of the lane directly beside the vehicle.

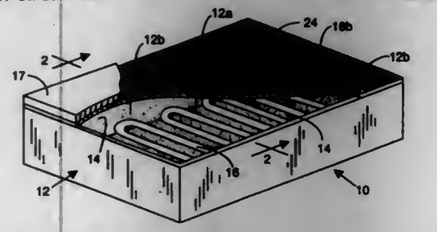
5,579,134
PRISMATIC REFRACTING OPTICAL ARRAY FOR LIQUID FLAT PANEL CRYSTAL DISPLAY BACKLIGHT

J. Michael Lengyel, Ramona, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 30, 1994, Ser. No. 348,271

Int. Cl.[6] G02F *1/13*

U.S. Cl. 359—49 **19 Claims**



10. An LCD device comprising:
a light source;
an enclosure containing said light source, said enclosure including a planar transparent exit window defining an inner plane exposed to said light source and an outer plane opposite said inner plane, said outer plane being substantially parallel to said inner plane, said exit window having a given index of refraction defining in conjunction with a surrounding medium a critical angle, at least one of said inner and outer surfaces being non-planar and including facet formations defining facet surfaces, said facet surfaces are orientated at said critical angle relative to an axis normal to said outer plane; and
a liquid crystal panel in face-to-face relation to said outer surface.

5,579,135
OPTICAL ELEMENT

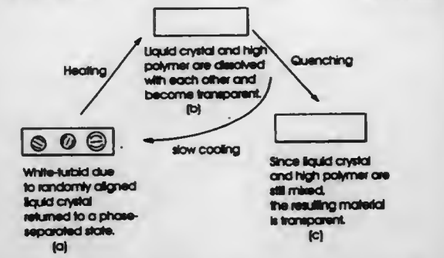
Tisato Kajiyama; Hirotsugu Kikuchi, both of Fukuokaken, and Satoshi Tanioka, Chibaken, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 84,133, Jul. 1, 1993, abandoned. This application Oct. 13, 1995, Ser. No. 542,503

Claims priority, application Japan, Jul. 6, 1992, 4-202029

Int. Cl.[6] G02F *1/13*

U.S. Cl. 359—52 **14 Claims**



1. An optical element comprising a liquid crystal dispersion film layer composed of a spongy matrix polymer and a liquid crystal wherein the spongy matrix polymer and the liquid crystal become phase separated at use temperatures and mixed at high temperatures, wherein the liquid crystal dispersion film layer becomes transparent upon the application of heat and remains transparent. upon quenching because the liquid crystal and spongy matrix polymer are still mixed, and wherein the liquid crystal dispersion film layer returns to a phase-separated state upon slow cooling.

5,579,136
OPTICAL INFORMATION PROCESSOR EMPLOYING A PHASE TYPE SPATIAL LIGHT MODULATOR

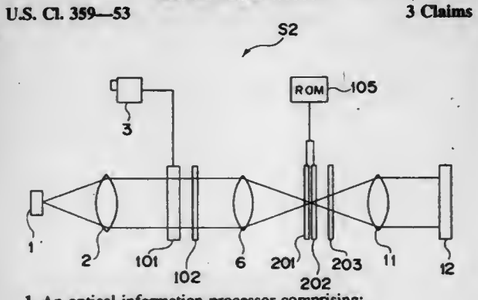
Atsushi Fukui; Kanji Nishii, both of Osaka, and Masami Ito, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 132,347, Oct. 6, 1993. This application Feb. 3, 1995, Ser. No. 383,098

Claims priority, application Japan, Oct. 7, 1992, 4-267741

Int. Cl.[6] G02F *1/1335*

U.S. Cl. 359—53 **3 Claims**



1. An optical information processor comprising:
a first liquid crystal cell for displaying a first image;
a coherent light source for irradiating the first liquid crystal cell;
a first polarizer for receiving output light from the first liquid crystal cell;
a first lens which is provided such that the first liquid crystal cell is disposed at a front focal surface of the first lens;
a second liquid crystal cell for displaying a second image and having an input side which is disposed at a rear focal surface of the first lens, wherein the second liquid crystal cell is a twisted nematic liquid crystal cell and wherein a direction of alignment of liquid crystal molecules at the input side of the second liquid crystal cell is parallel to a transmission axis of the first polarizer;

a second liquid polarizer for receiving output light from an output side of the second liquid crystal cell, wherein a transmission axis of the second polarizer is parallel to a direction of alignment of liquid crustal molecules at the output side of the second liquid crystal cell;

a second lens which bas a front focal surface coincident with the rear focal surface of the first lens; and

a photoelectric converter which is disposed at a rear focal surface of the second lens.

5,579,137

PROCESS FOR INJECTION OF LIQUID CRYSTAL INTO AN ELECTROOPTICAL DEVICE

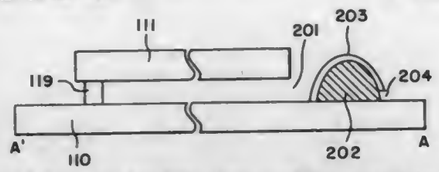
Michio Shimizu, Chiba, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Filed Jun. 6, 1995, Ser. No. 471,102

Claims priority, application Japan, Jun. 16, 1994, 6-158024

Int. Cl.[6] G02F *1/1339;1/1341;1/1333*

U.S. Cl. 359—62 **5 Claims**



1. A process for fabricating a liquid crystal electro-optical device which comprises injecting a liquid crystal material or a mixture of a liquid crystal material and an uncured resin material by means of a vacuum filling method into a space between a pair of substrates having a sealed margin except for a filling hole,

wherein the liquid crystal material or the mixture is mounted in the vicinity of the filling hole and is covered with a sheet-like substance such that the liquid crystal material or the mixture is not covered completely, and then injecting the liquid crystal material or the mixture by means of vacuum filling.

5,579,138

POLARIZER HAVING A GLASS SUBSTRATE WITH FILMS ON EITHER SIDE WITH DIFFERENT WAVELENGTH CHARACTERISTICS AND PROJECTION DISPLAY USING SAME

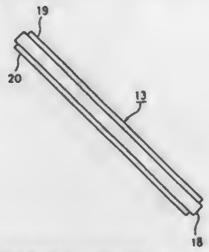
Shinya Sannohe, and Yoshito Miyatake, both of Neyagawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-Fu, Japan

Filed Mar. 28, 1994, Ser. No. 218,957

Claims priority, application Japan, Apr. 1, 1993, 5-075471

Int. Cl.[6] G02F *1/1335;* G02B *1/10;5/28*

U.S. Cl. 359—63 **23 Claims**



1. A polarizing apparatus comprising:

a first transparent block (11, 21) having at least three plane surfaces for transmitting light,

a second transparent block (12, 22) having at least three transparent surfaces for transmitting light,

first and second polarization separation films (19, 20) having mutually different spectral transmittances of S-polarization component (15, 25) the films being evaporation-deposited on opposite planes of a transparent glass substrate (18), respectively, thereby forming a polarization separation means (13, 23) which is located between one plane of said first transparent block (11, 21) and one plane of said second transparent block (12, 22).

5,579,139

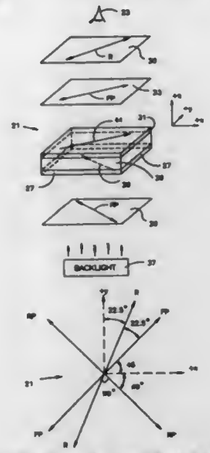
LCD WITH REDUCED CANOPY REFLECTION HAVING A RETARDER OF 220-320 NM RETARDATION OUTSIDE A POLARIZER

Adiel Abileah, Farmington Hills; Patrick F. Brinkley, Bloomfield, and Gang Xu, Northville, all of Mich., assignors to OIS Optical Imaging Systems, Inc., Northville, Mich.

Filed Jun. 7, 1995, Ser. No. 482,993

Int. Cl.[6] G02F *1/1341;1/1335*

U.S. Cl. 359—73 **18 Claims**



1. A liquid crystal display for providing an image to a viewer, the display comprising:

a liquid crystal layer adjacent at least one electrode, said electrode for selectively applying a voltage across said liquid crystal layer;

front and rear linear polarizers sandwiching said liquid crystal layer therebetween, said front polarizer adapted to be positioned closest to the viewer; and

a retarder disposed adjacent said front polarizer so that said front polarizer is located between said liquid crystal layer and said retarder, and wherein said retarder has a retardation value of from about 220 to 320 nm so as to reduce image reflections off of an external medium.

12. A method of reducing liquid crystal display image reflections off of a reflection point on an external medium, the method comprising the steps of:

providing a liquid crystal display having a retarder disposed adjacent the front polarizer so that said front polarizer is located between said retarder and a liquid crystal layer;

causing an image to be emitted from the display in an incident direction toward the reflection point; and

retarding the image using the retarder so that the image has a polarization direction substantially parallel to an incident plane when the image reaches the reflection point on the medium, the incident plane being defined by the incident direction and a direction normal to the medium surface at the reflection point, wherein the incident plane is defined by the incident direction and a direction normal to the medium surface at the reflection point.

5,579,140

MULTIPLE DOMAIN LIQUID CRYSTAL DISPLAY ELEMENT AND A MANUFACTURING METHOD OF THE SAME

Motohiro Yamahara, Osaka; Nobukazu Nagae; Masayuki Okamoto, both of Tenri; Toshiyuki Hirai, Kashihara; Teruyoshi Hara, Yamatokoriyama; Tokihiko Shinomiya, Nara; Nobuaki Yamada, Higashiosaka; Shuichi Kozaki, Nara, and Wataru Horie, Hashimoto, all of Japan, assignors to Sharp Kabushiki Kaisha, Japan

Filed Apr. 18, 1994, Ser. No. 229,320

Claims priority, application Japan, Apr. 22, 1993, 5-96289; Aug. 31, 1993, 5-216695; Sep. 16, 1993, 5-230580; Oct. 25, 1993, 5-266634; Feb. 23, 1994, 6-25486

Int. Cl.[6] G02F *1/1337*

U.S. Cl. 359—75 **50 Claims**



13. A liquid crystal display element comprising two opposing electrodes, and a liquid crystal layer disposed between said electrodes, wherein

alignment means for aligning a liquid crystal of said liquid crystal layer in at least three different directions is disposed above a side of said liquid crystal layer of at least one of said electrodes, wherein said liquid crystal layer comprises a plurality of liquid crystal domains, and a liquid crystal in each of said liquid crystal domains is aligned in at least three different directions.

5,579,141

LIQUID CRYSTAL DISPLAY APPARATUS HAVING REGIONS WITH DIFFERENT PRETILT ANGLES

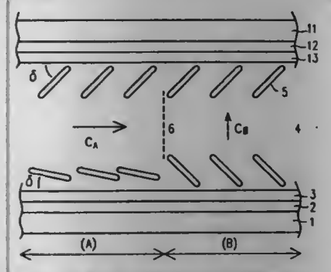
Hisataka Suzuki, Kashihara; Mitsuaki Hirata, Tenri; Shigeaki Mizushima, Ikoma; Noriko Watanabe, Nara; Hiroko Iwagoe, Yamatokoriyama, and Seiji Makino, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 22, 1994, Ser. No. 278,951

Claims priority, application Japan, Jul. 23, 1993, 5-183091; Jul. 30, 1993, 5-190499

Int. Cl.[6] G02F *1/1337*

U.S. Cl. 359—75 **40 Claims**



1. A liquid crystal display apparatus comprising:

a first substrate and a second substrate disposed to face each other;

a liquid crystal layer sandwiched between the first substrate and the second substrate; and

a first alignment film formed between formed between the liquid crystal layer and the first substrate and a second alignment film formed between the liquid crystal layer and the second substrate;

wherein the liquid crystal layer includes a plurality of liquid crystal layer regions having aligning conditions which are different from each other, optical transmittance of the plurality of liquid crystal layer regions being variable to conduct display, the plurality of liquid crystal layer regions including a first liquid crystal layer region and a second liquid crystal layer region,

wherein an orientation direction in a substrate plane of liquid crystal molecules in the vicinity of the center of the first liquid crystal layer region is different from an orientation direction in the substrate plane of liquid crystal molecules in the vicinity of the center of the second liquid crystal layer region, substantially by 90°, and

wherein a pretilt angle of the first alignment film is different from a pretilt angle of the second alignment film in the first liquid crystal layer region, and a pretilt angle of the first alignment film is substantially the same as a pretilt angle of the second alignment film in the second liquid crystal layer region.

5,579,142

LIQUID CRYSTAL DISPLAY DEVICE HAVING PLEOCHROIC DYE AND PARTICULAR RELATIONSHIP OF RATIO D/P_O AND TWIST ANGLE

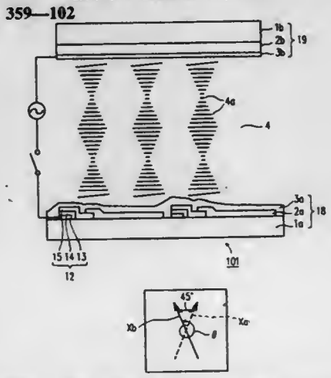
Yutaka Sawayama, Tenri, and Masako Nakamura, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 13, 1995, Ser. No. 542,663

Claims priority, application Japan, Oct. 14, 1994, 6-249594; Jul. 24, 1995, 7-187583

Int. Cl.[6] G02F *1/137;1/1335*

U.S. Cl. 359—102 **9 Claims**



1. A liquid crystal display device comprising:

a pair of substrates, at least one of which is transparent; and

a liquid crystal layer interposed between the pair of substrates, the liquid crystal layer having a helical structure including: a liquid crystal material having a positive dielectric constant anisotropy; a pleochroic dye; and at least one of a cholesteric liquid crystal material and a chiral agent as an optical active material,

wherein the liquid crystal layer has a helical axis in a thickness direction of the liquid crystal layer, and

longitudinal axes of liquid crystal molecules in a vicinity of the pair of substrates are substantially parallel to the substrates,

a ratio of a natural pitch (p_0) and a thickness (d) of the liquid crystal layer of the helical structure satisfies a relationship: $(2\theta-\pi)/4\pi<d/p_0\leqq\theta/2\pi$, where a twisted angle of the helical structure is θ rad, and

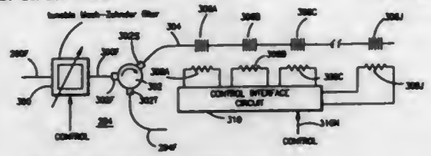
the twisted angle θ rad of the helical structure is within a range: $2\pi\leqq\theta\leqq5\pi/2$.

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5,579,143
OPTICAL SYSTEM WITH TUNABLE IN-FIBER GRATINGS

David R. Huber, Warrington, Pa., assignor to Ciena Corporation, Columbia, Md.

Filed Jun. 4, 1993, Ser. No. 71,263
Int. Cl.[6] H04J *14/02*
U.S. Cl. 359—130 20 Claims

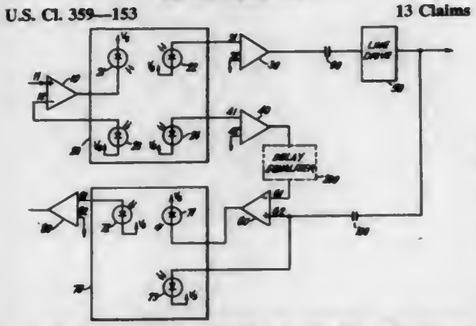


1. A tuneable optical filter comprising:
a directional optical transfer device;
a first optical fiber for carrying a plurality of optical carriers, to said transfer device;
a second optical fiber connected to said transfer device for receiving said plurality of optical carriers;
a tuneable first in-fiber gratiog in said second optical fiber;
a first controller for tuning said first in-fiber grating to reflect a desired optical carrier back to the transfer device; and
a third optical fiber connected to said transfer device for receiving optical carriers reflected back to the transfer device by said first in-fiber grating.

5,579,144
DATA ACCESS ARRANGEMENT HAVING IMPROVED TRANSMIT-RECEIVE SEPARATION

David Whitney, San Jose, Calif., assignor to Siemens Components, Inc., Cupertino, Calif.

Filed Jun. 30, 1995, Ser. No. 497,580
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—153 13 Claims

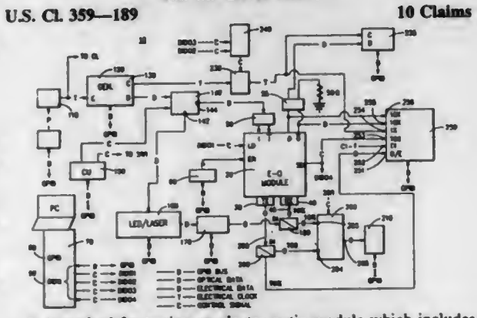


1. In a data access arrangement for coupling a data terminal equipment having a transmit and receive line with a network, a circuit comprising:
(a) a first optical isolating circuit having
i) a light emitting diode,
ii) an output photo-optical device, being optically coupleable with the light emitting diode, for providing an output signal based on light detected by it,
iii) a servo-feedback photo-optical device, being optically coupleable with the light emitting diode, for providing an output signal based on light detected by it, and
iv) a cancellation signal photo-optical device, being optically coupleable with the light emitting diode, for providing an output signal based on light detected by it;
(b) a second optical isolating circuit having
i) a light emitting diode,
ii) an output photo-optical device, being optically coupleable with the light emitting diode of the second optical isolating circuit, for providing an output signal based on light detected by it, and
iii) a servo-feedback photo-optical device, being optically coupleable with the light emitting diode of the second optical isolating circuit, for providing an output signal based on light detected by it;
(c) a first differentiator having
i) a first input coupleable with the transmit line of the data terminal equipment,
ii) a second input provided with the output signal of the servo-feedback photo-optical device of the first optical isolating circuit, and
iii) an output coupled with the light emitting diode of the first optical isolating circuit, for providing an output signal representing a difference between its first input and its second input;
(d) a first driver having an input provided with the output signal of the output photo-optical device of the first optical isolating circuit and having an output coupleable with the network;
(e) a second driver having an input provided with the output signal of the cancellation signal photo-optical device and having an output;
(f) a second differentiator having
i) a first input provided with the output signal of the servo-feedback photo-optical device of the second optical isolating circuit, and coupleable with the network,
ii) a second input coupled with the output of the second driver,
iii) an output coupled with the light emitting diode of the second optical isolating circuit, for providing an output representing a difference between its first input and its second input; and
(g) a third driver having
i) an input provided with the output signal of the output photo-optical device of the second optical isolating circuit, and
ii) an output coupleable with the receive line of the data terminal equipment.

5,579,145
AUTOMATED SYSTEM AND CORRESPONDING METHOD FOR MEASURING RECEIVER TIME DELAY OF ELECTRO-OPTIC MODULES

David C. Bogdan, Vestal; Donald L. Pearl, Endwell; David T. Pribula, Port Crane, all of N.Y.; Nancy R. Aulet, Austin, Tex.; Muhammed I. Hussain, Hopewell Junction, and George W. Hutt, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 13,460, Feb. 4, 1993. This application May 23, 1995, Ser. No. 450,937
Int. Cl.[6] H04B *10/08*
U.S. Cl. 359—189 10 Claims



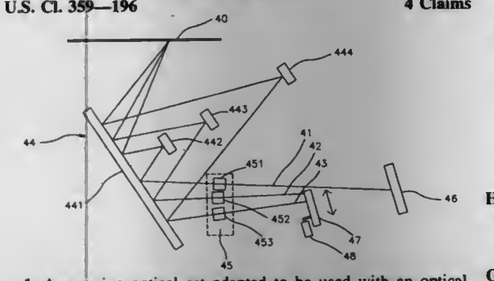
1. A method for testing an electro-optic module which includes an electro-optic receiver, comprising the steps of:

providing an automated test system for testing electro-optic modules that include electro-optic receivers;
connecting an electro-optic module that includes an electro-optic receiver to the automated test system;
automatically measuring receiver signal detect assert and deassert times associated with said electro-optic receiver, wherein the electro-optic receiver receives from the automated test system a pseudo-random digital optical signal having square wave pulses and produces corresponding electrical pulses, and generates a receiver signal detect threshold (RSDT) signal when the receiver first detects the optical signal, such that a signal detect assert time delay is the time lag from the time the automated test system is enabled to produce the pseudo-random digital optical signal to the time the RSDT signal is detected by the automated test system, and the signal detect deassert time delay is the time lag from the time the automated test system is disabled to produce the pseudo-random digital optical signal to the time the RSDT signal is no longer detected.

5,579,146
SCANNING OPTICAL SET

Jaffe Hsiao, Hsin-Chu, Taiwan, assignor to Must Systems Inc., Taiwan

Filed Aug. 17, 1995, Ser. No. 516,094
Int. Cl.[6] G02B *26/08;26/02*
U.S. Cl. 359—196 4 Claims



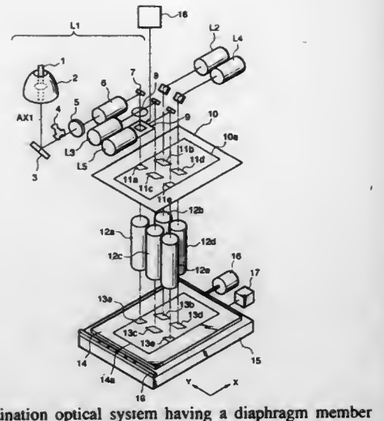
1. A scanning optical set adapted to be used with an optical-electronic converter for providing an optical image to said optical-electronic converter to generate an electronic signal comprising:
a reflective mirror set for receiving said optical image and for outputting, through different optical paths, a plurality of output images;
a lens set, through which said output images are focused onto said optical-electronic converter; and
a blocking apparatus installed between said optical-electronic converter and said lens set for blocking at least one of said plurality of output images from reaching said optical converter.

5,579,147
SCANNING LIGHT EXPOSURE APPARATUS

Susumu Mori, and Tsuyoshi Naraki, both of Tokyo, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Dec. 6, 1994, Ser. No. 354,715
Claims priority, application Japan, Dec. 8, 1993, 5-308221
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—204 4 Claims

1. A scanning light exposure apparatus comprising:
a plurality of illumination optical systems for irradiating light beams to a corresponding plurality of sub-areas in a pattern area of a mask;
a plurality of projection optical systems arranged along a predetermined direction for projecting erected images of unity magnification of the sub-areas by respective light beams transmitted through the mask onto a photo-sensitive substrate;

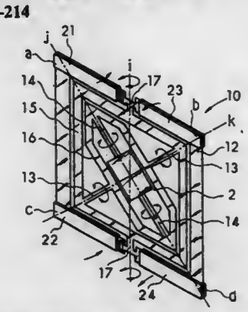


each illumination optical system having a diaphragm member arranged at a substantially conjugate position to the photo-sensitive substrate in said illumination optical system for limiting a projection area of the sub-area to the photo-sensitive substrate;
scanning means for synchronously scanning said mask and said photo-sensitive substrate substantially transversely to the predetermined direction relative to said projection optical system; and
diaphragm control means for changing a width of an aperture of each diaphragm member along a direction transverse to the predetermined direction.

5,579,148
TWO-DIMENSIONAL OPTICAL SCANNER

Hideaki Nishikawa, Obu, and Tsukasa Koumura, Toyota, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 28, 1994, Ser. No. 354,015
Claims priority, application Japan, Nov. 29, 1993, 5-297776; Oct. 26, 1994, 6-262583
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—214 19 Claims



1. A two-dimensional optical scanner comprising:
a mirror section including at least one reflective surface for reflecting light;
a first retainer being a rigid body provided with a first given clearance around said mirror section;
a first torsional vibrating member connecting said mirror section and said first retainer, said first torsional vibrating member being formed of an elastic material so as to torsionally rotate in a first direction when affected by a first specific cyclical external force and to generate rotational torque in a second direction reverse to said first direction, said first torsional vibrating member forcibly oscillating said mirror section about a first center axis passing through a first center of gravity of said mirror section;

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a second retainer formed of a rigid body provided with a second given clearance around said first retainer;

a second torsional vibrating member connecting said first retainer and said second retainer, said second torsional vibrating member being made of an elastic material so that it torsionally rotates in a third direction when affected by a second specific cyclical external force and generates rotational torque in a fourth direction reverse to said third direction, said second torsional vibrating member forcibly oscillating said mirror section through said first retainer about a second axis passing through a second center of gravity of said mirror section and said first retainer, said second axis crossing said first axis;

a third torsional vibrating member connected to said second retainer and oscillating about a third axis crossing said first axis and said second axis when affected by a third specific cyclical external force; and

an electrically operated oscillating means for imparting said third specific external force to said third torsional vibrating member, said third specific external force causing said first specific cyclical external force and said second specific cyclical external force.

5,579,149

MINIATURE NETWORK OF LIGHT OBTURATORS

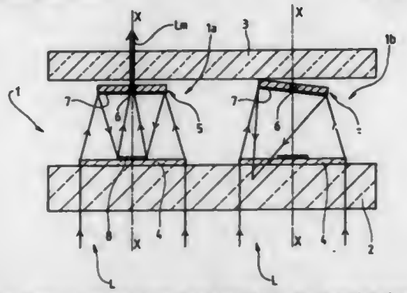
Jean-Marc Moret, Cortaillod; Philippe Renaud, St-Sulpice; Felix Rudolf, St-Blaise, and Raymond Vuilleumier, Fontainemelon, all of Switzerland, assignors to CSEM Centre Suisse D'Electronique et de Microtechnique SA, Neuchatel, Switzerland

Filed Sep. 12, 1994, Ser. No. 304,689

Claims priority, application France, Sep. 13, 1993, 93 10960

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—223 **10 Claims**



1. A network of miniature light obturators for transforming the light of a luminous beam into modulated light in the form of a matricial or linear set of points of light, each of said obturators being capable of selective activation or deactivation in order to allow passage of, or to block, the light of the luminous beam, said network comprising:

a substrate to which microshutters, respectively forming said obturators, are attached by means of elastic fastenings resisting rotation of said microshutters away from a predetermined rest position;

control means for selectively controlling rotation of the microshutters away from said rest position to a second position, said microshutters being respectively placed in optical paths of the light of said luminous beam in order to be able to block or to enable passage of the light of the luminous beam along said paths in accordance with the position of each microshutter, each microshutter further being fitted with a reflecting surface for deflecting said luminous beam light when the microshutter is in its light-blocking position; and

a supplementary reflecting surface, a diaphragm and a focusing means which are placed in the optical path associated with each microshutter in a manner such that, when said each microshutter is in one of its positions, the luminous light beam is focused on said diaphragm in order to allow the luminous light beam to pass, and, when said each microshutter is in the other of its positions, the luminous light beam is deflected relative to said diaphragm and consequently blocked,

said supplementary reflecting surface being provided at the center of said focusing means, and said diaphragm being in said each microshutter.

5,579,150

OPTICAL RECORDING MEDIUM USING A CHARGE TRANSFER COMPLEX

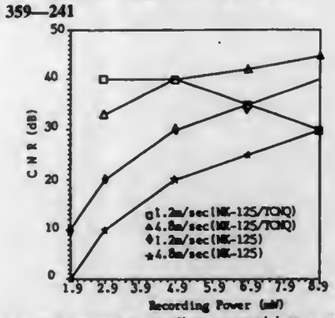
Og K. Cho, Seoul, and Kyoung S. Min, Kyoungki-do, both of Rep. of Korea, assignors to Cheil Synthetics Inc., Kyoungsangbuk-do, Rep. of Korea

Filed Jun. 7, 1995, Ser. No. 488,093

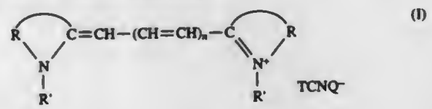
Claims priority, application Rep. of Korea, Aug. 30, 1994, 94-21847

Int. Cl.[6] G02F *1/03;* **G03C** *1/492*

U.S. Cl. 359—241 **5 Claims**



1. An optical recording medium comprising a substrate, a recording layer comprising a dye-containing recording material which layer is on the substrate, and a reflective layer and a protective layer disposed on the recording layer, wherein the recording material comprises (tetracyanoquinodimethane) TCNQ or a derivative thereof and at least one cyanine-based dye which is capable of reacting with said TCNQ or a derivative thereof to form charge transfer complex of formula (I):



(I)

wherein,

R represents a beteroaromatic residue,

R' represents an alkyl group, and

n represents a positive integer not less than two (2).

5,579,151

SPATIAL LIGHT MODULATOR

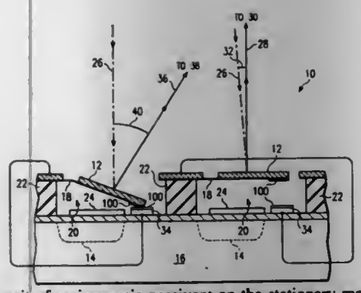
Chih-Chen Cho, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 17, 1995, Ser. No. 390,189

Int. Cl.[6] G02B *26/00*

U.S. Cl. 359—291 **16 Claims**

1. A micromechanical device of the type which includes a movable element having a normal position set by a deformable beam in its undeformed state and a deflected position in which the beam is deformed and a portion of the element engages a portion of a stationary member, deformation of the beam storing therein energy which tends to return the element to the normal position, the element being selectively electrostatically movable into its deflected position; the device comprising:



a deposit of an inorganic passivant on the stationary member at the portion that the element engages the stationary member, wherein the deposit is between about 0.5 nm and about 20 nm thick.

5,579,152

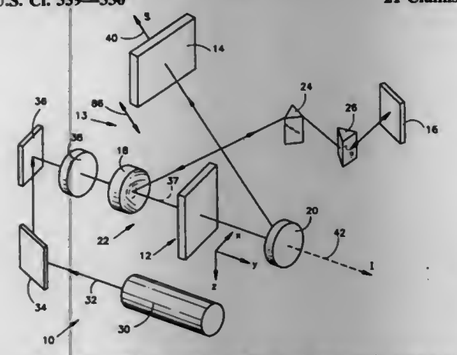
TUNABLE OPTICAL PARAMETRIC OSCILLATOR

Randall J. Ellingson, Ithaca, N.Y.; Peter E. Powers, Livermore, Calif.; Lap K. Cheng, Bear, Del., and Chung L. Tang, Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation-in-part of Ser. No. 165,797, Dec. 13, 1993, abandoned. This application Jan. 19, 1995, Ser. No. 375,106

Int. Cl.[6] G02F *1/39*

U.S. Cl. 359—330 **21 Claims**



1. A broadly tunable femtosecond optical parametric generator, comprising:

a cavity having a pumping section defined by a first pair of spaced mirrors;

a nonlinear optical crystal in said pumping section of said cavity, said crystal being selected from the group consisting of KTP, CTA and RTA and having optical x, y, and z axes;

a tunable femtosecond pump laser producing a pumping beam having pulses of less than about 100 fs at a wavelength tunable between about 0.7 μm and 1.1 μm; and

means directing said pumping beam to impinge on said crystal in said pumping section, said pumping beam lying in the plane of said crystal optical x and optical y axes to cause said pumping beam to generate in said crystal femtosecond idler and signal output beams at tunable wavelengths.

5,579,153

OPTICAL POWER LIMITING AMPLIFIER

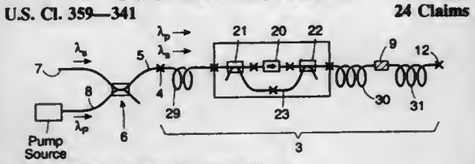
Richard I. Laming, Hamble, and Michael N. Zervas, Bassett, both of Great Britain, assignors to Pirelli Cavi S.p.A., Italy

Filed Apr. 22, 1993, Ser. No. 52,244

Claims priority, application Great Britain, Apr. 27, 1992, 9209095

Int. Cl.[6] H01C *3/06;* **G02B** *6/26*

U.S. Cl. 359—341 **24 Claims**



1. In an optical amplifier comprising:

an optical waveguide doped with a rare earth and capable of producing stimulated emission of light within a predetermined band of wavelengths and within a predetermined power range and when pumped with light of wavelength λ p, said waveguide having an input end and an output end;

means for introducing pump light at a wavelength λ p into at least one of said input end and said output end; and

coupling means for coupling input signals at a predetermined wavelength in said band and at different power levels into said input end of said waveguide, said waveguide providing gain for said signals depending upon the amount of

pumping light power along the length of said waveguide wherein the improvement comprises differential loss inducing means intermediate said input end and said output end and spaced from both said input end and said output end which causes a loss for said signals of said predetermined wavelength which is greater by a predetermined amount than the loss for light at said pumping wavelength λ p, said predetermined amount and the spacing of said loss inducing means from said input end and said output and being selected to cause amplification of said input signals of lower power than other said input signals and in said power range greater than amplification of said other said input signals of greater than power than said input signals of lower power and in said power range by an amount which produces output signals corresponding to said input signals which are of a substantially constant output power at said output end when the dynamic power range of said input signals introduced into said input end is at least 15 dB.

5,579,154

OPTICAL FIBER AMPLIFIER

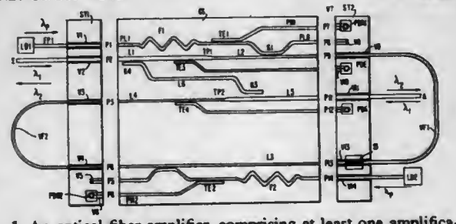
Roland Mueller-Fiedler, Leonberg; Heiner Hauer, Fellbach; Albrecht Kuke, Auenwald; Bernhard Schwaderer, Weissach im Tal, and Ulrich Kohn, Backnang, all of Germany, assignors to Ant Nachrichtentechnik GmbH, Backnang, Germany

Filed Sep. 29, 1995, Ser. No. 537,243

Claims priority, application Germany, Oct. 13, 1994, 94 116 138.2

Int. Cl.[6] H01S *3/00;* **G02B** *6/12*

U.S. Cl. 359—341 **14 Claims**



1. An optical fiber amplifier, comprising at least one amplification waveguide; at least one pump source; at least one wavelength-selective coupler which couples a light of said pump source into

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said amplification waveguide; a carrier substrate provided with a plurality of components; and at least one silicon carrier having anisotropically etched grooves in which components are fixed and in which ends of the components on said carrier substrate can be introduced, said pump source being mounted on said silicon carrier, and said silicon carrier being fitted on one end at said carrier substrate so that said components on said silicon carrier are adjusted in relation to said components on said carrier substrate.

5,579,155

SEMICONDUCTOR OPTICAL AMPLIFIER

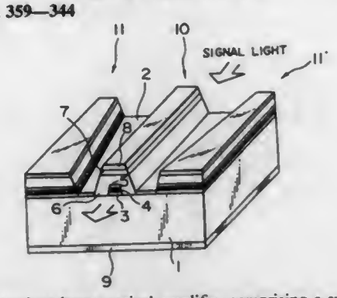
Mitsuhiro Kitamura, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Nov. 10, 1994, Ser. No. 337,271

Claims priority, application Japan, Nov. 11, 1993, 5-282240

Int. Cl.[6] H01S *3/19;3/18*

U.S. Cl. 359—344 **7 Claims**



1. A semiconductor optical amplifier comprising a substrate, at least one semiconductor active layer, formed overlying said substrate, for amplifying a signal light received through a light-receiving end of said active layer to emit the signal light through a light-emitting end of the active layer, said active layer having a first band gap wavelength in the vicinity of said light-receiving end and a second band gap wavelength in the vicinity of said light-emitting end, said first band gap wavelength being longer than said second band gap wavelength.

5,579,156

PHOTOMICROSCOPE WITH A VIDEO CAMERA AND AN EXPOSURE TIME CONTROL FOR A STILL CAMERA

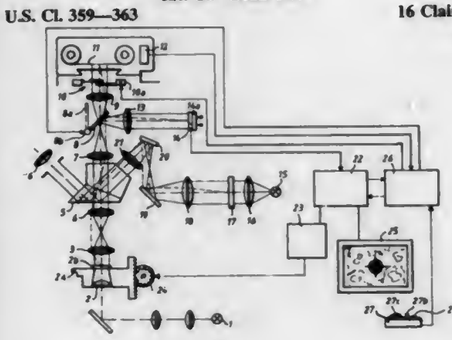
Bernd Faltermeier, Aalen; Bernd Meder, Westhausen, all of Germany; Franz Trautwein, Aalen-Hofherrnweiler; Bernd Spruck, Mögglingen, and Gerhard Herrmann, Aalen, assignors to Carl-Zeiss-Stiftung, Heidenheim, Germany

Filed May 18, 1995, Ser. No. 444,342

Claims priority, application Germany, May 18, 1994, 44 17 365.2

Int. Cl.[6] G02B *21/36*

U.S. Cl. 359—363 **16 Claims**



1. A photomicroscope comprising an objective (**3**; **203**) through which a light beam path passes, a camera port for attachment of a photographic still camera (**11**, **12**; **211**, **212**), to which said light beam path leads from said objective, a shutter (**10**; **210**) arranged in said light beam path, a video camera (**14**; **214**) for recording a microscope image as a video image and generating output signals and a control switching device (**26**; **126**; **226**) for determining required exposure time of said photographic still camera (**11**, **12**; **211**, **212**) in response to said output signals from said video camera and for opening said shutter for said required exposure time.

5,579,157

CONFOCAL OPTICAL SCANNER

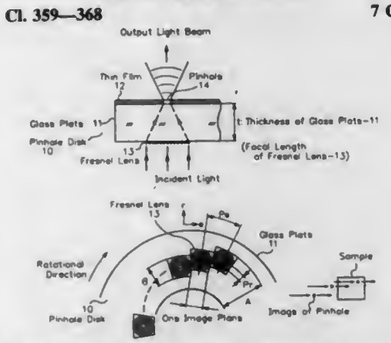
Takeo Tanaami, and Kenta Mikuriya, both of Tokyo, Japan, assignors to Yokogawa Electric Corporation, Tokyo, Japan

Division of Ser. No. 344,143, Nov. 23, 1994, which is a division of Ser. No. 942,156, Sep. 8, 1992, Pat. No. 5,428,475. This application Mar. 4, 1996, Ser. No. 606,462

Claims priority, application Japan, Oct. 31, 1991, 3-286112; Jan. 30, 1992, 4-015411; Jun. 9, 1992, 4-149320

Int. Cl.[6] G02B *21/00;26/02*

U.S. Cl. 359—368 **7 Claims**



1. In a confocal optical scanner comprising a pinhole disk defining a plurality of pinholes to scan light passing through said pinholes onto a sample, the improvement comprising

said pinhole disk comprising a plurality of collector means, and said plurality of pinholes disposed at focal points of said plurality of collector means, and wherein

said plurality of pinholes are formed in a plurality of lines outwardly extending from the center of said disk and in a plurality of substantially concentric rows extending outwardly from said center, wherein said rows are substantially spiral in shape, and wherein a first pitch between adjacent lines is substantially equal to a second pitch between adjacent rows as measured from the same pinhole, wherein

said first and second pitches are disposed to be equal when the center coordinate of each pinhole satisfies the following equations:

$$r_i = r_o + \theta_i \cdot m \cdot a/2\pi$$

$$\theta_i = [2\pi/(m \cdot a)][-r_o + \sqrt{(r_o^2 + i \cdot m \cdot a^2/\pi)}]$$

wherein i=1, 2, . . . , n, being the order from inside of the spiral, r_i=radius of ith pinhole; r_o=innermost radius; θ_i=angle of ith pinhole; m=number of spirals; and a=pinhole pitch.

5,579,158

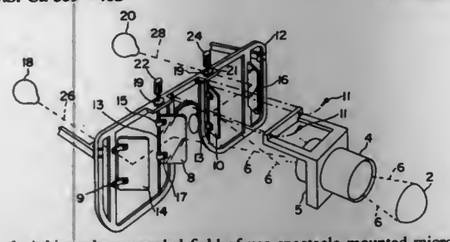
BINOCULAR EXPANDED FIELD OF VIEW SPECTACLE MOUNTED MICROSCOPE

William V. Padula, P.O. Box 1408, Guilford, Conn. 06437

Continuation-in-part of Ser. No. 40,458, Apr. 1, 1993, abandoned. This application May 1, 1995, Ser. No. 432,108

Int. Cl.[6] G02B *27/02;21/22;* **G02C** *1/00*

U.S. Cl. 359—482 **6 Claims**



1. A binocular expanded field of use spectacle mounted microscope for a visually impaired person comprising:

a single microscope provided in front of, mounted to and extending from a bridge of a spectacle frame;

a first pair of optical path deflecting means, each of said first pair of optical path deflecting means being rotatably coupled to said spectacle frame on each side of said bridge and projecting into a line of sight and visual axis of said microscope and having a light deflecting surface facing in a direction of said microscope said first pair of optical path deflecting means being rotated to partially overlap said line of sight; and

a second pair of optical path deflecting means, each of said second pair of optical path deflecting means being mounted on said spectacle frame such that said line of sight and visual axis from said microscope deflected by said first pair of optical path deflecting means is directed toward each eye of a wearer;

whereby said line of sight of said each eye of a wearer is partially overlapped and over converged by rotating said first pair of optical path deflecting means to provide an expanded field of view comprising a single zone of binocular vision and a zone of monocular vision on each side of said single zone of binocular vision.

5,579,159

OPTICAL MULTILAYER THIN FILM AND BEAM SPLITTER

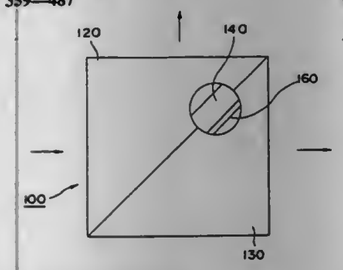
Taku Ito, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 18,383, Feb. 17, 1993, Pat. No. 5,400,179. This application Dec. 8, 1994, Ser. No. 355,200

Claims priority, application Japan, Feb. 18, 1992, 4-068985; Feb. 18, 1992, 4-068986

Int. Cl.[6] G02B *5/30;1/10*

U.S. Cl. 359—487 **8 Claims**



1. A beam splitter, comprising:

a first prism having a predetermined refractive index;

a second prism having a predetermined refractive index; and

a multilayer polarizing light separating film interposed between said first and second prisms, said multilayer polarizing light separating film comprising a first layer having a predetermined refractive index and formed on said incoming side prism, and a plurality of lamination layers each composed of at least four sublayers each having different refractive indices, wherein each of the refractive indices is determined such that reflectance of a P polarized component of reflected light becomes equal to or greater than 80% when light is incident upon said film with an angle of incidence more than a predetermined angle.

5,579,160

OPTICAL SYSTEM CAPABLE OF CORRECTING IMAGE POSITION

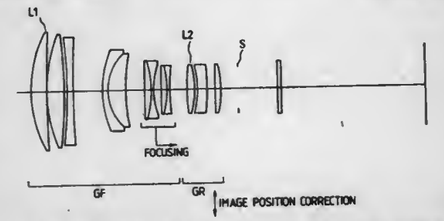
Susumu Sato, Chiba, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Mar. 9, 1995, Ser. No. 401,278

Claims priority, application Japan, Mar. 15, 1994, 6-070035

Int. Cl.[6] G02B *27/64;* **G03B** *7/08*

U.S. Cl. 359—557 **14 Claims**



1. An optical system capable of correcting an image position, comprising, in the following order from the object side:

a front group which is fixed in position in a direction substantially perpendicular to an optical axis; and

a rear group which has a positive refractive power and is movable in the direction substantially perpendicular to the optical axis,

wherein said optical system satisfies:

$$1.45<n1<1.64$$

$$62<v1<78$$

$$0.05<\phi a/F<0.15$$

where n1 is the refractive index of an optical member, located at a position closest to the object side, of optical members constituting said front group, v1 is the Abbe's number of said optical member, ϕa is the average value of effective diameters of lens surfaces of lenses constituting said rear group, and F is the focal length of said optical system.

5,579,161

IMAGE DISPLAY APPARATUS

Nobutoshi Sekiguchi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1993, Ser. No. 150,358

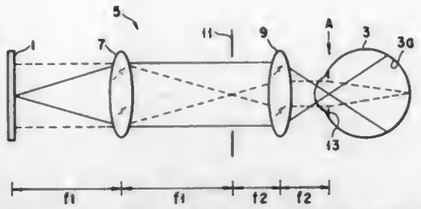
Claims priority, application Japan, Nov. 12, 1992, 4-302160; Sep. 7, 1993, 5-246206

Int. Cl.[6] G02B *27/46*

U.S. Cl. 359—559 **32 Claims**

1. An image display apparatus comprising:

display means for producing and displaying a Fourier transformed image of an original image; and



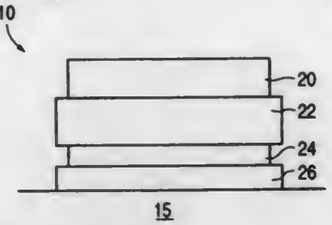
optical means for forming the Fourier transformed image displayed by the display means near a pupil plane of an observer's eye so that the original image is produced on the retina of the eye.

5,579,162

ANTIREFLECTION COATING FOR A TEMPERATURE SENSITIVE SUBSTRATE

Erik J. Bjornard, Northfield, and William A. Meredith, Jr., Faribault, both of Minn., assignors to Viratec Thin Films, Inc., Faribault, Minn.

Filed Oct. 31, 1994, Ser. No. 332,291
Int. Cl.[6] G02B *1/10;5/08;* **F21V** *9/04*
U.S. Cl. 359—580 **10 Claims**



1. A coated article comprising:

a temperature-sensitive substrate having a melting point lower than glass;

an anti-reflection coating including a plurality of layers substantially transparent to visible light, at least one of said layers being a DC reactively sputtered material having a refractive index higher than said substrate and selected from the group consisting of tin oxide, indium oxide, zinc oxide, tin-doped indium oxide, antimony-doped tin oxide, tin-bismuth oxide, and tin-zinc oxide, and at least one other layer having a refractive index lower than said substrate.

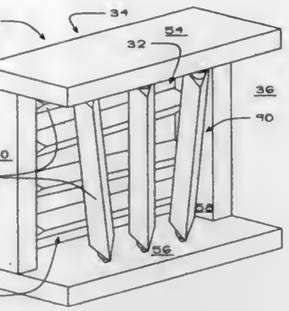
5,579,163

METHOD AND APPARATUS FOR PRODUCING SPECTRAL DISPLAYS

Jeffrey M. Peterson, 3442 Richland Dr. No. 7, Santa Barbara, Calif. 93105

Filed Dec. 23, 1994, Ser. No. 363,539
Int. Cl.[6] G02B *5/04*
U.S. Cl. 359—591 **24 Claims**

1. An apparatus for displaying spectral patches on a surface area toward which a source of light is directed comprising first means for converting light from the source of light into a first plurality of spectral patches and for projecting and displaying the patches of said first plurality of patches onto said surface area; and second means for converting part of the converted light from said first convening means into a second plurality of spectral patches, for projecting the spectral patches of said second plurality in a plurality of different directions, and for displaying the patches of said second plurality on said surface area.

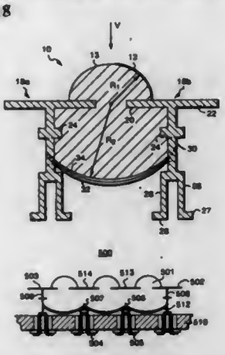


5,579,164

SPATIALLY MULTIPLEXED IMAGE DISPLAY SYSTEM

Philip Chapnik, Newton, Mass., assignor to Pharos Technology Corporation, Lexington, Mass.

Filed Nov. 12, 1993, Ser. No. 152,285
Int. Cl.[6] G02B *27/10;27/22;7/02*
U.S. Cl. 359—618 **39 Claims**



1. A spatially multiplexed image display device for displaying to a viewer a series of different fixed images as the viewer moves in relation to the display device, comprising:

at least two separate lens units, each having a plurality of lenses, each said lens unit having a width and a length and edges;

means for holding together said lens units edge-to-edge to create an array of lenses for viewing by a viewer;

a plurality of sub-image units, each having a plurality of sub-images, each said sub-image carrying multiple separate image portions, each said image portion being a small portion of an overall image designed to be viewed in said display device, wherein there is one said sub-image for each lens in said array of lenses;

means for placing said sub-image units proximate said lens units such that there is a said sub-image proximate each lens in said array of lenses; and

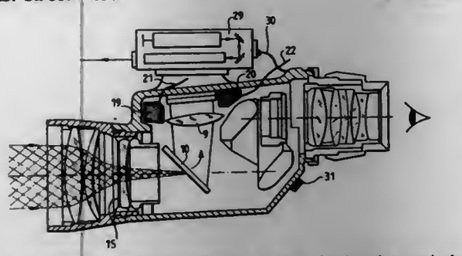
wherein a given image portion from each said sub-image is viewed at a particular viewing angle between a viewer and said display device, the viewed image portions together forming a single unified image, and in which the viewed image portions change as the viewing angle changes, to present to the viewer a series of different fixed images as the viewer moves in relation to the display device.

5,579,165

COMPUTERIZED BINOCULARS

Claude Michel, Asnieres, and Philippe Glry, Bois-Colombes, both of France, assignors to Thomson-CSF, Puteaux, France

Filed Oct. 29, 1992, Ser. No. 968,177
Claims priority, application France, Oct. 31, 1991, 91 13490
Int. Cl.[6] G02B *27/14;23/00*
U.S. Cl. 359—630 **20 Claims**



1. A viewing device comprising a casing for housing optical components including an objective lens and an eyepiece, these components providing a view along an optical axis (AA'), and a focusing component operator adjustable from outside the casing, the optical components forming an image of a field of view, said viewing device also including, inside the casing:

components to display a luminous image formed of pixels which can be controlled by a computer,

at least one reflex optical component to superimpose the image from the display components on the image of the field of view,

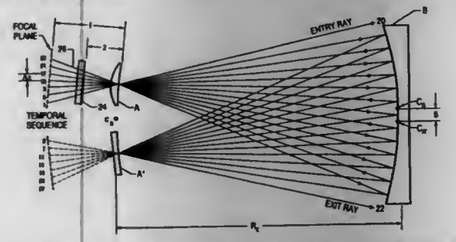
and, mounted on the casing, sensors to determine direction of the device line of sight and to measure an angle relative to a geographical reference, with the possibility of connecting these sensors to a computer via links.

5,579,166

PRECISION OPTICAL PULSE TRAIN GENERATOR

Edward J. Beiting, 2 Sausalito Cir. East, Manhattan Beach, Calif. 90266

Division of Ser. No. 259,287, Jun. 13, 1994, which is a continuation of Ser. No. 962,793, Aug. 5, 1992, abandoned. This application Apr. 18, 1995, Ser. No. 423,178
Int. Cl.[6] G02B *27/14;27/10*
U.S. Cl. 359—636 **11 Claims**



1. A generator for generating a series of pulses, said generator comprising,

pulsed source means for providing a pulse having a pulse shape and a maximum amplitude,

reflecting means having a plurality of surfaces for receiving said pulse and reflecting said pulse off of said surfaces a plurality of reflections defining a path extending between said surfaces, said pulse does not retrace through any portion along said path when reflecting off of said plurality of surfaces, said pulse reflecting a plurality of reflections off of one point of one of said surfaces, and

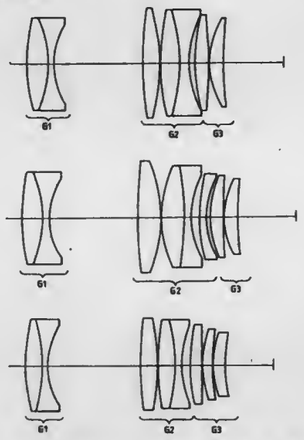
splitting means for splitting said pulse for each of said plurality of reflection off of said one point of said one surface of said surfaces and for providing said series of pulses each of which having said pulse shape with proportional amplitude to said maximum amplitude.

5,579,167

SUPER-WIDE FIELD EYEPIECE

Yasuhiro Oomura, Tokyo, and Yoshiyuki Shimizu, Miura, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Aug. 4, 1994, Ser. No. 285,518
Claims priority, application Japan, Aug. 27, 1993, 5-235498
Int. Cl.[6] G02B *25/00*
U.S. Cl. 359—643 **7 Claims**



1. A super-wide field eyepiece comprising, in order from an incidence side of light;

a first lens unit having a lens with a surface closest to the incidence side which is convex on the incidence side, and a lens with a surface closest to an exit side which is concave on the exit side, the first lens unit being made in a meniscus form as a whole;

a second lens unit including at least one lens having negative refractive power, and having positive refractive power as a whole; and

a third lens unit including at least two positive lenses, and having positive refractive power as a whole;

an air space between the surface of the first lens unit closest to the exit side and the surface of the second lens unit closest to the incidence side being greatest of all air spaces formed on an optical axis;

wherein said super-wide field eyepiece satisfies the following conditions:

$0.5<f3/f<1.5$

$0.5<f3i/(m.f)<1.5$

$1.2<R1/f<5.0$

$-0.25<f/f1<0.25$

where f1 is the focal length of said first lens unit, f3 is the focal length of said third lens unit, f is the focal length of the entire eyepiece system, R1 is the radius of curvature of the convex surface, m is the number of the positive lenses constituting said third lens unit, and f3i is the focal length of the ith lens from the incidence side of the lenses constituting said third lens unit.

VOL 1192 ISS 4 NO 26 1996 UMI

5,579,168

ZOOM LENS SYSTEM WITH GRADIENT INDEX LENS

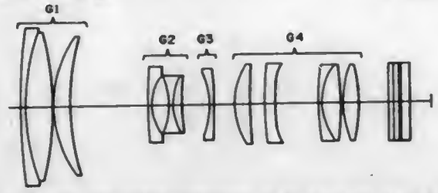
Masayuki Aoki, Oyama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 20, 1994, Ser. No. 360,080

Claims priority, application Japan, Dec. 22, 1993, 5-345621; Dec. 22, 1993, 5-345622

Int. Cl.[6] G02B 9/00

U.S. Cl. 359—653 **19 Claims**



1. A zoom lens system comprising in the following order from the object side:

a first lens group of a positive refracting power;

a second lens group of a negative refracting power;

a third lens group; and

a fourth lens group of a positive refracting power,

wherein, when changing a focal length of said zoom lens system from a wide-angle end to a telephoto end, said second lens group moves in one direction along an optical axis of said zoom lens from the object side toward the image side and said third lens group moves so as to reciprocate along the optical axis, and said first lens group has a gradient index lens whose refractive index varies along the optical axis and which satisfies the following condition:

$$-10.6<(\nu 2-\nu 1)/[(n2-n1)\cdot 100]<-0.9$$

wherein

n1: a refractive index with respect to d-line at an object-side vertex of said gradient index lens,

n2: a refractive index with respect to d-line at an image-side vertex of said gradient index lens,

v1: Abbe number with respect to d-line at the object-side vertex of said gradient index lens,

v2: Abbe number with respect to d-line at the image-side vertex of said gradient index lens.

5,579,169

UNDERWATER WIDE ANGLE LENS

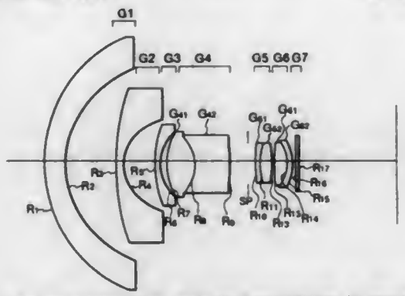
Motohisa Mouri, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Sep. 12, 1994, Ser. No. 302,476

Claims priority, application Japan, Sep. 13, 1993, 5-249682

Int. Cl.[6] G02B 15/14

U.S. Cl. 359—682 **8 Claims**



1. An underwater wide angle lens comprising, in succession from the object side, a fore group and a rear group, said fore group consisting of, in succession from the object side, a first lens group having negative refractive power, a second lens group having negative refractive power, a third lens group having negative refractive power and a fourth lens group having positive refractive power, and said rear group having, in succession from the object side, a fifth lens group having positive refractive power and a sixth lens group having positive refractive power, wherein at least one of said fifth lens group and said sixth lens group is a cemented lens, and focusing is effected by at least one of said second to sixth lens groups.

5,579,170

Patent Not Issued For This Number

5,579,171

ZOOM LENS EQUIPPED WITH THE IMAGE STABILIZING FUNCTION

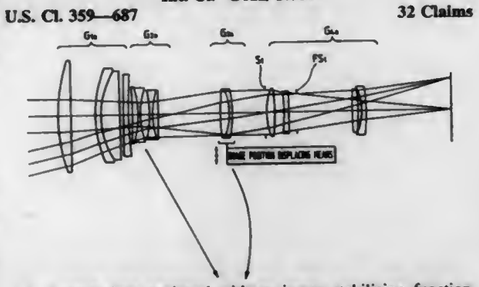
Kenzaburo Suzuki, Tokyo; Masahiro Nakatsuji, Machida, and Keiji Moriyama, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 208,857, Mar. 11, 1994, abandoned. This application Nov. 22, 1995, Ser. No. 563,908

Claims priority, application Japan, Mar. 30, 1993, 5-93816; Mar. 30, 1993, 5-93817

Int. Cl.[6] G02B 27/64

U.S. Cl. 359—687 **32 Claims**



1. A zoom lens equipped with an image stabilizing function, comprising, in order from the object side, a first lens unit having positive refractive power, a second lens unit having negative refractive power, a third lens unit having positive refractive power, and a fourth lens unit having positive refractive power, wherein, during magnification change from the wide angle end to the telephoto end, said second lens unit is moved toward the image side for magnification change, wherein said zoom lens includes image position displacing means for moving said third lens unit in a direction substantially orthogonal to the optical axis to effect image stabilization, and said zoom lens satisfies the following condition:

$$\Delta Y=f_4/f_3\cdot\Delta S,$$

where ΔS is the amount of movement of the third lens unit in the direction substantially orthogonal to the optical axis, f_3 is the focal length of the third lens unit, f_4 is the focal length of the fourth lens unit, and ΔY is the amount of movement of the image during magnification change.

5,579,172

ZOOM LENS SYSTEM

Masayuki Aoki, Oyama, and Takeshi Suzuki, Ebina, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

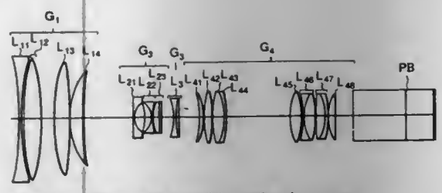
Filed Jul. 5, 1994, Ser. No. 270,723

Claims priority, application Japan, Jul. 19, 1993, 5-177139; Jul. 20, 1993, 5-178962; Jul. 20, 1993, 5-178963

Int. Cl.[6] G02B 15/14

U.S. Cl. 359—688 **45 Claims**

1. A zoom lens system comprising a plurality of lens groups as shown below in an order from an object side:



a first lens group with a positive refractive power;

a second lens group with a negative refractive power;

a third lens group with a negative refractive power;

and a fourth lens group with a positive refractive power,

wherein, for varying a focal length from a wide-end to a telephoto-end, said second lens group is moved from an object side to an image side along an optical axis and said third lens group is moved to reciprocate on said optical axis,

said second lens group having an aspherical lens surface, and

said aspherical lens surface is formed in a shape where the positive refractive power gradually increases or in a shape where the negative refractive power gradually decreases from said optical axis toward a periphery, and satisfies the following condition:

$$10^{-3}<|xa(h)-x(h)|/h<10^{-1}$$

where,

h: a maximum effective radius of said aspherical lens surface,

xa(h): a value of x at said maximum effective radius h as expressed on the coordinate system in which a vertex of said aspherical lens surface is set at the origin, an x axis is set as the optical axis and a y axis is set as a line which passes through the origin and orthogonally intersects said x axis,

x(h): a value of x of a paraxial curvature radius of said aspherical lens surface at said maximum effective radius h as expressed on said coordinate system.

5,579,173

FOCUS ADJUSTING APPARATUS OF ZOOM LENS

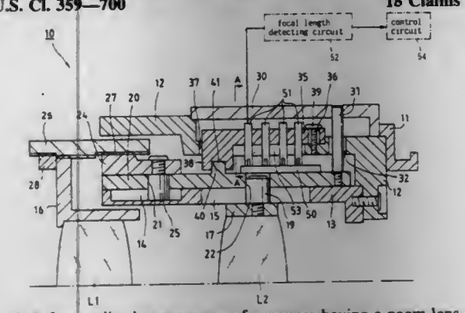
Takuji Hamasaki, and Zenichi Okura, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 86,851, Jul. 7, 1993, Pat. No. 5,448,414. This application Jun. 5, 1995, Ser. No. 463,305

Claims priority, application Japan, Jul. 13, 1992, 4-048798

Int. Cl.[6] G02B 15/14

U.S. Cl. 359—700 **18 Claims**



1. A focus adjusting apparatus of a camera having a zoom lens, comprising:

a driving ring, fixedly positioned along an optical axis of the zoom lens and rotatable about the optical axis of the zoom lens during a zooming operation, said driving ring further being adjustably movable along the optical axis during an assembly operation, movement of said driving ring along the optical axis during the assembly operation axially moving an entire optical system of said zoom lens;

back focus adjustment means for adjusting an axial position of the driving ring during the assembly operation, to adjust a distance between the entire optical system and a film plane of the camera so that no change of focal point occurs during the zooming operation;

an axially movable member, said member movable together with said driving ring along the optical axis in accordance with axial movement of said driving ring during back focus adjustment by said back focus adjustment means, said axially movable member being fixed to a portion of a camera body and permitting said driving ring to rotate relative to said axially movable member when said driving ring is rotated to perform a zooming operation; and

detecting means provided between said axially movable member and said driving ring, for detecting an angular position of said driving ring.

5,579,174

OBJECTIVE LENS FOR ENDOSCOPE

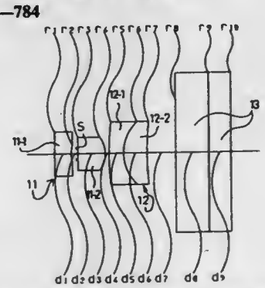
Satoru Tachihara, and Tomohiko Kanzaki, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1994, Ser. No. 339,187

Claims priority, application Japan, Nov. 12, 1993, 5-283618

Int. Cl.[6] G02B 9/12

U.S. Cl. 359—784 **14 Claims**



1. An objective lens for an endoscope, comprising:

a first lens group of a positive power having a plurality of lenses, said first lens group having a negative first lens located adjacent to an object to be photographed; and

a second lens group of a negative power, a first surface on an image side of said second lens group being a concave surface;

wherein said objective lens satisfies the following relationships:

$$0.6<f_F/f<1.0;$$

$$-6.0<f_S/f<-1.0; \text{ and}$$

$$1.0<L_D/f<4.0,$$

wherein

f_F designates a focal length of the first lens group

f_S designates a focal length of the second lens group

f designates a focal length of the whole lens system

L_D designates a sum of the whole lens length and back focal distance.

5,579,175

ACTUATOR FOR OPTICAL EQUIPMENT CAPABLE OF REDUCING THE NUMBER OF COILS TO NECESSARY TO MOVE AN OBJECTIVE LENS IN A TRACKING DIRECTION AND A FOCUSING DIRECTION

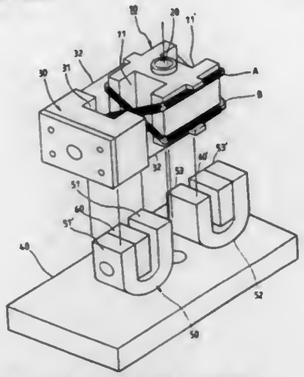
Chun-dong Kim, Suwon, and Hak-hyun Jang, Sungnam, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Feb. 17, 1995, Ser. No. 390,472

Claims priority, application Rep. of Korea, Feb. 18, 1994, 94-2950

Int. Cl.[6] G02B 7/02

U.S. Cl. 359—814 20 Claims



1. An actuator for an optical unit comprising:
a base plate;
a support member fixed to said base plate;
a lens holder, in which an objective lens is installed, having a recess in each of two surfaces substantially parallel to a photo axis of the objective lens and opposing each other;
elastic rods for supporting the objective lens with respect to said support member, and which are arranged to allow the objective lens to move in a tracking direction and a focusing direction;
a plurality of fixed coils for moving said lens holder in a tracking direction and a focusing direction, and which are fixedly wound about the surfaces of said lens holder in such a manner that an axis of each of the wound coils forms an acute angle with respect to the photo axis of the objective lens; and
a magnetic field generator for generating magnetic fields which magnetically interlink portions of the plurality of the fixed coils which are spaced from the lens holder by the recesses.

5,579,176

OPTICAL SYSTEM SUPPORTING DEVICE WITH FLOWABLE DAMPING MATERIAL

Tetsuo Ikegame; Masayasu Kanazawa, and Izumi Yamazaki, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Japan

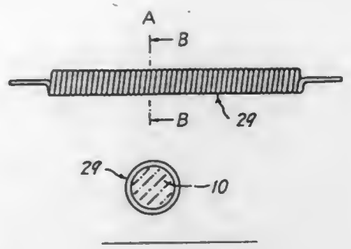
Filed Apr. 29, 1994, Ser. No. 236,566

Claims priority, application Japan, Apr. 30, 1993, 5-104395; Jun. 14, 1993, 5-167466

Int. Cl.[6] G02B 7/02; G11B 7/00

U.S. Cl. 359—822 1 Claim

1. An optical system supporting device comprising: an optical element, a holding member for holding the optical element, a supporting member for displaceably supporting the holding member and a driving means for driving the holding member in a predetermined direction, wherein a holding part for flowable damping material is provided on at least one location of the supporting member and a flowable damping material is disposed in the holding part, and said supporting member is a coil spring and said holding part is a space provided in the center portion of the coil spring.



5,579,177

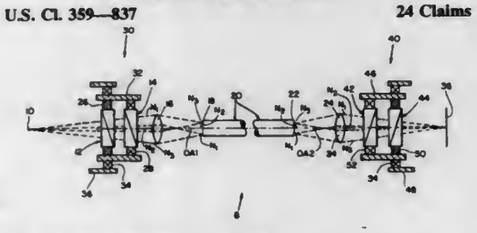
OPTICAL DISPERSION APPARATUS AND METHOD

Kenneth D. Stumpf, Chelmsford, Mass., assignor to Dolan-Jenner Industries, Inc., Lawrence, Mass.

Filed Nov. 1, 1993, Ser. No. 146,406

Int. Cl.[6] G02B 5/04; 27/12

U.S. Cl. 359—837 24 Claims



1. An optical assembly comprising:
a first planar parallel plate prism comprising:
a first prismatic element having planar interior and exterior surfaces; and
a second prismatic element having planar interior and exterior surfaces, the interior surface of the first prismatic element contacting and attaching to the interior surface of the second prismatic element, the exterior surface of the first prismatic element being substantially parallel to the exterior surface of the
second prismatic element; a second planar parallel plate prism comprising:
a first prismatic element having planar interior and exterior surfaces; and
a second prismatic element having planar interior and exterior surfaces, the interior surface of the first prismatic element contacting and attaching to the interior surface of the second prismatic element, the exterior surface of the first prismatic element being substantially parallel to the exterior surface of the second prismatic element;
a first housing for mounting the first and second prisms along an optical axis;
a first bearing mounted to the first housing and one of the prisms for rotationally isolating the first and second prisms from each other such that the first and second prisms are rotatable relative to each other about the optical axis;
a second housing for supporting the first housing; and
a second bearing mounted to the first and second housings for rotationally isolating the first housing from the second housing about the optical axis such that the first and second prisms are rotatable together in unison about the optical axis with rotation of the first housing.

5,579,178

ELECTRICALLY POWERED FOLDABLE REARVIEW MIRROR FOR AUTOMOBILES INCLUDING A SEALING STRUCTURE FOR A DRIVING UNIT

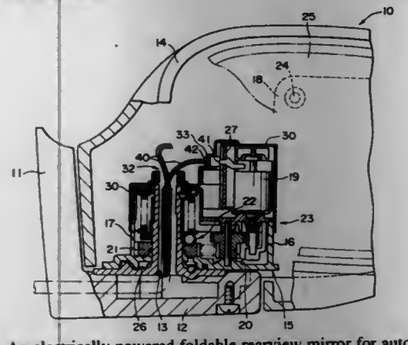
Toshihiro Mochizuki, Fujieda, Japan, assignor to Murakami Kaimeido Co., Ltd., Shizuoka, Japan

Filed Apr. 17, 1995, Ser. No. 423,034

Claims priority, application Japan, Apr. 19, 1994, 6-103238

Int. Cl.[6] G02B 7/182; B60R 1/06

U.S. Cl. 359—841 8 Claims



1. An electrically powered foldable rearview mirror for automobiles, comprising a mirror base attachable to an automobile body and having an extending portion; a cylindrical shaft arranged on said extending portion and having an upper end; a frame rotatably mounted around said cylindrical shaft; a mirror body supported on said frame; a driving unit provided in said mirror body and including an electrically powered folding motor disposed on said frame, and a speed reduction mechanism connected to an output axis of said motor; a connector for supplying electric power to said motor; positioning means so as to halt and hold said mirror body at an erected position and at a folded position; a containing chamber formed on said frame; a sealing cap engaged on outside of said chamber so as to seal said motor and said speed reduction mechanism, said sealing cap having a harness cord ejecting hole with a faucet joint and a hole for receiving said connector for supplying electric power to said motor so that said harness cord ejection hole communicates with and grips said upper end of said cylindrical shaft, said sealing cap being arranged so that a slight clearance is provided between said sealing cap and said upper end of said shaft and extends radially outside, above and radially inside said upper end of said shaft.

5,579,179

METHOD FOR MANUFACTURING AN ARRAY OF THIN FILM ACTUATED MIRRORS

Jeong-Beom Ji, and Young-Jun Choi, both of Seoul, Rep. of Korea, assignors to Daewoo Electronics Co., Ltd.

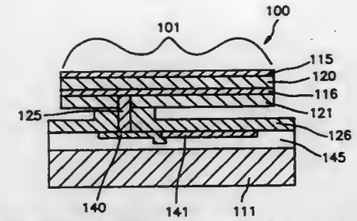
Filed Jun. 6, 1995, Ser. No. 470,411

Claims priority, application Rep. of Korea, Jun. 22, 1994, 94-14156; Jun. 30, 1994, 94-15347

Int. Cl.[6] G02B 26/00

U.S. Cl. 359—846 13 Claims

1. A method for manufacturing an array of M×N thin film actuated mirrors for use in an optical projection system, the method comprising the steps of:
(a) providing a base having a top surface;
(b) forming a separation layer on the top surface of the base;
(c) depositing a first thin film layer, made of an electrically conductive and light reflecting material, capable of functioning as a mirror as well as a bias electrode in the thin film actuated mirrors, on top of the separation layer;
(d) forming a thin film electrodisplacive layer on top of the first thin film layer;



(e) heat treating the thin film electrodisplacive layer to allow a phase transition thereof to take place;
(f) depositing a second thin film layer, made of an electrically conductive material, capable of functioning as a signal electrode in the thin film actuated mirrors, on top of the thin film electrodisplacive layer;
(g) forming an elastic layer, made of an insulating material, on top of the second thin film layer;
(h) forming a thin film sacrificial layer on top of the elastic layer;
(i) forming an array of M×N empty slots by removing portions of the sacrificial layer, each of the empty slots extending from top of the sacrificial layer to top of the elastic layer;
(j) forming a supporting layer, made of a poly-silicon, on top of the sacrificial layer, wherein each of the empty slots is also filled with the poly-silicon;
(k) forming an array of M×N conduits, each of the conduits extending from top of the supporting layer to top of the second thin film layer, each of the conduits passing through each of the empty slots to thereby form a multilayer structure;
(l) forming an array of M×N transistors on top of the multilayer structure, each of the transistors being electrically connected to each of the conduits through a conduction line pattern to thereby form a semifinished actuated mirror structure;
(m) attaching an active matrix to the semifinished actuated mirror structure;
(n) separating the base from the semifinished actuated mirror structure by removing the separation layer to thereby form an actuated mirror structure;
(o) patterning the actuated mirror structure into an array of M×N semifinished actuated mirrors; and
(p) removing the thin film sacrificial layer in each of the semifinished actuated mirrors to thereby form the array of M×N thin film actuated mirrors.

5,579,180

PORTABLE LIGHT REFLECTOR

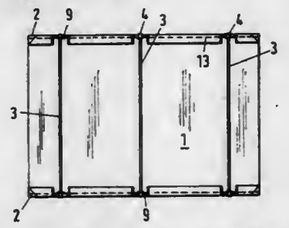
Peter Geller, Borsteler Bogen 27, D-22453 Hamburg, Germany

Filed Oct. 15, 1993, Ser. No. 136,668

Claims priority, application Germany, Nov. 11, 1992, 9215330 U

Int. Cl.[6] G03B 21/56; G02B 5/136

U.S. Cl. 359—847 7 Claims



1. A portable light reflector comprising a collapsible frame and a reflecting sheet fastened to the frame, the collapsible frame comprising two longitudinal struts and at least two transverse stirrups for connecting the longitudinal struts, each transverse stirrup having two end portions and a connecting portion connecting the end

portions, the longitudinal struts defining a plane, each end portion of the transverse stirrups extending at an angle relative to the plane, each angle between the end portions and the connecting portion being greater than 90°, wherein the reflecting sheet is of a spring-elastic material which is tensioned when mounted on the longitudinal struts of the frame in a position of use, further comprising pins connected to the longitudinal struts, the end portions of the transverse stirrups being slid onto the pins in the position of use, wherein the pins and the end portions of the transverse stirrups are aligned in axial direction thereof in the position of use and the axial direction is determined by the angle between the end portions and the connecting portion.

5,579,181

APPARATUS FOR PROCESSING REPRODUCED DATA INCLUDING TWO MULTIPLEXERS THE FIRST OF WHICH IS RESPONSIVE TO REPRODUCED FIELD INFORMATION

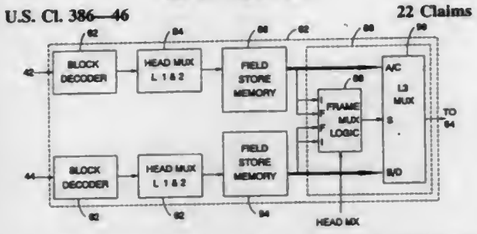
James H. Wilkinson, Tadley, United Kingdom, assignor to Sony Corporation, Tokyo, Japan, and Sony United Kingdom Limited, Weybridge, England

Filed Jun. 2, 1993, Ser. No. 70,193

Claims priority, application United Kingdom, Jul. 6, 1992, 9214331

Int. Cl.[6] H04N *5/78*

U.S. Cl. 386—46 **22 Claims**



1. Data processing apparatus for processing data representing fields of a video signal, said data being recorded in a spatially and temporally demultiplexed manner on a recording medium and replayed by means of a plurality of replay heads, wherein said replay heads are organised in groups and where each group comprises a plurality of said replay heads connected in common to a head channel, and wherein said data processing apparatus comprises:

a plurality of first multiplexer means, each said first multiplexer means being connected to a respective said head channel and being responsive to field information included in first control information for multiplexing data relating to a plurality of data processing channels from said replay heads of a said head channel, said first control information being recorded on said recording medium with data to be multiplexed; and

second multiplexer means connected to receive an output of each of said first multiplexer means, said second multiplexer means being responsive to second control information to selectively multiplex data between said head channels to separate data into respective ones of said data processing channels, said second control information including information recorded on said recording medium with said data to be multiplexed.

5,579,182

APPARATUS FOR RECORDING DIGITAL SIGNALS SUPERPOSED WITH CONTROLLED FREQUENCY COMPONENTS

Shinji Hamai; Masao Okabe, Hannan, and Yasunori Kawakami, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

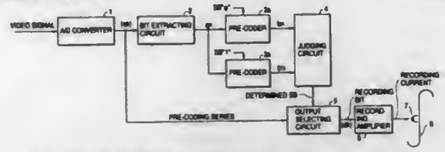
Continuation of Ser. No. 124,637, Sep. 22, 1993, abandoned.

This application May 30, 1995, Ser. No. 453,777

Claims priority, application Japan, Oct. 16, 1992, 4-278954; Dec. 1, 1992, 4-321608; Dec. 1, 1992, 4-321610; Dec. 1, 1992, 4-321611

Int. Cl.[6] G11B *5/09;20/14;20/16*

U.S. Cl. 360—41 **2 Claims**



1. A recording apparatus comprising:

a bit extractor, said bit extractor extracting even-numbered bits from a series of m bits of an input data series and odd-numbered bits from a next series of m bits of the input data series, where m is an even number of 2 or larger, and combining the even-numbered bits extracted from said series of m bits of the input data series with the odd-numbered bits extracted from said next series of m bits of the input data to obtain a new series of m bits;

a first pre-coder, said first pre-coder adding one "0" bit to said new series of m bits and modulating the added result by NRZI modulation to obtain a first series of m+1 bits;

a second pre-coder, said pre-coder adding one "1" bit to said new series of m bits and modulating the added result by NRZI modulation to obtain a second series of m+1 bits;

an output selector, said output selector comparing frequency characteristics of respective said first and second series of m+1 bits with a predetermined frequency characteristic and selecting from said first and second series of m+1 bits one whose frequency characteristic is closer to said predetermined frequency characteristic to obtain output bit series; and

recording means for recording said output bit series on a recording medium.

5,579,183

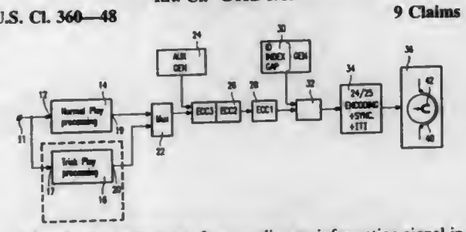
RECORDING AND REPRODUCING AN MPEG INFORMATION SIGNAL ON/FROM A RECORD CARRIER

Wilhelmus J. Van Gestel; Ronald W. J. J. Saeijs, both of Eindhoven, Netherlands, and Imran A. Shah, Ossining, N.Y., assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 8, 1994, Ser. No. 225,193

Int. Cl.[6] G11B *5/09*

U.S. Cl. 360—48 **9 Claims**



1. Recording arrangement for recording an information signal in tracks on a record carrier, the recording arrangement comprising

an input terminal for receiving the information signal,

channel encoding means for channel encoding the information signal so as to obtain a channel signal suitable for recording in a track on said record carrier,

writing means for writing the channel signal in the track, the channel signal comprising sequential signal blocks, each signal block comprising a first block section which comprises a synchronization signal and a second block section which comprises a number of channel bytes, characterized in that the information signal is an MPEG information signal in accordance with an MPEG format, the MPEG information signal consisting of a single sequential series of transport packets having a single priority, that the channel encoding means are adapted to store all information except sync bytes included in each one of a plurality of groups of x transport packets of the MPEG information signal in the second block sections of a corresponding distinct one of a plurality of groups of y signal blocks of the channel signal, that the second block section of at least the first signal block of each group of y signal blocks comprise a third block section for storing identification information identifying the signal block as being the first signal block of a group of y signal blocks, and that x and y are integers such that x≧and y>1.

5,579,184

PLAYBACK CLOCK SIGNAL GENERATING CIRCUIT WHICH USES A FIRST AND SECOND PHASE LOCK LOOP

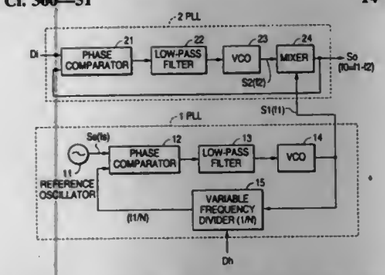
Shuichi Nakanishi, and Shinichi Kitahara, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 14, 1994, Ser. No. 261,120

Claims priority, application Japan, Jun. 17, 1993, 5-145300; Feb. 14, 1994, 6-017091

Int. Cl.[6] G11B *5/09*

U.S. Cl. 360—51 **14 Claims**



7. A playback clock signal generating circuit for generating a playback clock signal from a data signal and a head position information, said playback clock signal being in synchronization with said data signal, said data signal being read and reproduced by a head from data written on a disk at a frequeocy selected from a plurality of frequencies which varies stepwise, said head position information being indicative of a radial position of the head which moves radially over the disk during disk read/write operations as the disk is being rotated at a constant speed, said playback clock signal generating circuit comprising:

a first phase-locked loop for outputting a first signal having a frequency variable in a predetermined frequency step depending on the head position information; and

a second phase-locked loop for outputting a playback clock signal in response to the reproduced data signal and said first signal, wherein said second phase-locked loop includes

a second voltage-controlled oscillator for outputting a second signal;

a mixer for frequency converting said second signal with said first signal to output said playback clock signal;

a second phase comparator responsive to the reproduced data signal and the playback clock signal outputted from said mixer; and

a second low-pass filter connected between said second phase comparator and said second voltage-controlled oscillator.

5,579,185

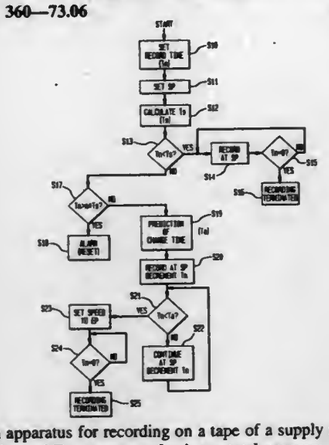
VIDEO TAPE RECORDING/REPRODUCING APPARATUS HAVING AUTOMATIC PREDICT AND MODE CHANGING CAPABILITY

Rong-Dzung Tsai, Pingtung, and Ta-Huang Liu, Tainan, both of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Sep. 28, 1994, Ser. No. 314,427

Int. Cl.[6] G11B *15/46*

U.S. Cl. 360—73.06 **18 Claims**



1. An apparatus for recording on a tape of a supply reel, having a tape time of Ts, a program having a total program time of Tn, said apparatus advancing said tape at high and low speeds and comprising:

a recording timer for receiving said program time Tn, and for decrementing said program time Tn in real time as said tape is advanced,

a processor connected to said recording timer, for determining only once per recording, a recording change-over time Ta at the start of said recording, depending on said total program time Tn, said tape time on said supply reel Ts, and a ratio of said high and low speeds n, and for continually comparing said decremented program time Tn, outputted by said recording timer, to Ta while said tape is advanced, and

a reel servo controller, responsive to said comparison by said processor, for, during said recording, advancing said tape at high speed until Tn<Ta, and for thereafter advancing said tape at said low speed.

5,579,186

MAGNETIC DISK UNIT AND METHOD FOR CONTROLLING THE SAME

Satoshi Yamamoto; Akira Shinjoh, both of Fujisawa, Japan; Isao Yoneda, Sagamihara, Japan; Arun Sharma, New Rochelle, N.Y.; Muthuthamby Sri-Jayantha, Ossining, N.Y., and Hien P. Dang, Nannet, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 49,758, Apr. 20, 1993, abandoned.

This application Apr. 3, 1995, Ser. No. 416,587

Claims priority, application Japan, Apr. 20, 1992, 4-099888

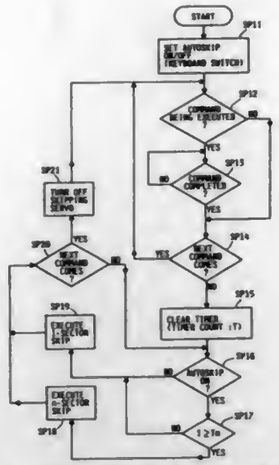
Int. Cl.[6] G11B *5/02*

U.S. Cl. 360—75 **10 Claims**

1. A method for controlling a magnetic disk unit employing a sector servo system for positioning a head in accordance with servo information disposed in each of a plurality of discrete angularly spaced servo information regions, said method comprising the steps of:

processing said servo information supplied from said head;

identifying a particular operation mode of said magnetic disk unit other than a write or read operation, and generating a mode signal representing said particular operation mode;



acquiring said servo information selectively during a first time interval in response to said mode signal, wherein during said first time interval, said step of acquiring servo information comprises selectively acquiring said servo information from a first portion of said discrete angularly spaced servo information regions, said first portion being fewer than all of said discrete angularly spaced servo information regions;

acquiring said servo information selectively during a second time interval following said first time interval in response to said mode signal, wherein during said second time interval, said step of acquiring servo information comprises selectively acquiring said servo information from a second portion of said discrete angularly spaced servo information regions, said second portion being fewer than said first portion; and

controlling positioning of said head on the basis of said servo information selected.

5,579,187

TAPE LOADING MECHANISM WITH DRUM BASE

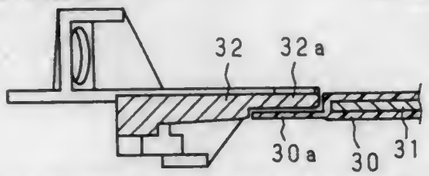
Mitsuhiro Kawaguchi, and Yoshiki Nagaoka, both of Nagaoka-kyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jul. 21, 1994, Ser. No. 278,144

Claims priority, application Japan, Aug. 5, 1993, 5-194777

Int. Cl.[6] G11B *5/027;5/52;21/04;21/18*

U.S. Cl. 360—85 **12 Claims**



1. A tape loading mechanism for loading a magnetic tape, comprising:

a rotary drum having at least one recording/reproducing head;

a drum base on which said rotary drum is mounted including a drum base step portion formed in a thickness direction at a joining area;

a main plate on which said drum base is mounted and joined to at the joining area, said main plate including a main plate step portion formed in a thickness direction at the joining area which overlaps with the drum base step portion;

a movable tape guide for winding the magnetic tape on said rotary drum, and

a guide grove formed, ranging from said drum base to said main plate, to guide said movable tape guide,

wherein a smooth joint is formed by the main plate step portion and the drum base step portion which permits precise movement of said movable tape guide along said guide groove.

5,579,188

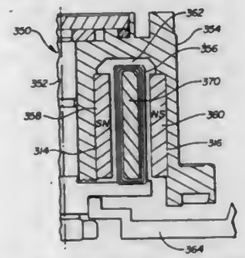
IRONLESS SPINDLE MOTOR FOR DISC DRIVE

John C. Dunfield, Santa Cruz; Gunter K. Heine; Kamran Oveyssi, both of Aptos, all of Calif., and Marcel Jufer, Morges, Switzerland, assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jun. 6, 1995, Ser. No. 469,643

Int. Cl.[6] G11B *17/04;17/08;* **H02K** *21/12;5/16*

U.S. Cl. 360—99.08 **24 Claims**



1. A disc drive data storage system, comprising:

a housing;

a central axis;

a stationary member which is fixed with respect to the housing and coaxial with the central axis;

a rotatable member which is rotatable about the central axis with respect to the stationary member;

a hydrodynamic bearing interconnecting the rotatable member with the stationary member;

at least one data storage disc attached to and coaxial with the rotatable member;

at least one magnet attached to the rotatable member; and

a stator winding which is fixed with respect to the housing and is coaxial with the rotatable member, wherein the stator winding has an ironless structure which is magnetically coupled to the magnet such that the stator winding and the hydrodynamic bearing cooperate to reduce excitation of pure tone vibrations in the disc drive data storage system.

5,579,189

MICROMINIATURE HARD DISK DRIVE

James H. Morehouse, Jamestown; David M. Furay, Boulder; Robert A. Alt, Longmont, and Richard K. Thompson, Berthoud, all of Colo., assignors to Integral Peripherals, Inc., Boulder, Colo.

Division of Ser. No. 766,480, Sep. 25, 1991, Pat. No. 5,379,171. This application Dec. 14, 1993, Ser. No. 168,797

Int. Cl.[6] G11B *5/54;21/22*

U.S. Cl. 360—105 **16 Claims**

1. A disk drive information storage device comprising:

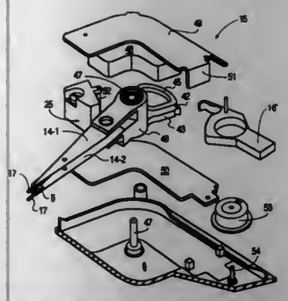
a housing having a footprint that includes a first dimension of about 35 mm;

a substantially rigid disk;

an actuator rotatable about a pivot and comprising a head for storing information in and/or retrieving information from said disk; and

an inertial latch for preventing rotation of said actuator with respect to said device when said device is subjected to a rotational force, said inertial latch comprising:

an inertial body rotatable about an axis, said inertial body including a pawl extending from said body in a direction



perpendicular to said axis, said pawl being capable of engaging said actuator so as to prevent said actuator from rotating about said pivot when said device is subjected to a rotational force; and

bias means for biasing said inertial body such that said pawl engages said actuator only when said device is being subjected to an external rotational force.

5,579,190

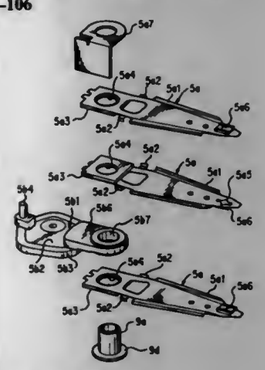
DISK DRIVE HAVING AN IMPROVED TRANSDUCER SUSPENSION ASSEMBLY

Mark Mastache, and Peter A. Capano, both of Boise, Id., assignors to Hewlet-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 856,013, Apr. 8, 1992. This application Mar. 16, 1995, Ser. No. 406,756

Int. Cl.[6] G11B *5/55;21/08*

U.S. Cl. 360—106 **10 Claims**



1. A disk drive, comprising:

a. a disk drive base;

b. at least one memory disk rotatably mounted to said base, said memory disk having a recording surface;

c. at least one flexible integral load beam having a mounting end and a distal end, said mounting end having an opening therethrough;

d. a reinforcing plate attached to said mounting end of said flexible integral load beam, said reinforcing plate having an opening therethrough aligned with said opening in said mounting end of said flexible integral load beam to form a reinforced mounting opening in the reinforced mounting end of said flexible integral load beam, said reinforced mounting opening being defined by a continuous wall;

e. a transducer attached to said distal end of said flexible integral load beam;

f. a tubular member having an external surface, said tubular member being disposed in said reinforced mounting opening of said flexible integral load beam, said external surface of said tubular member being compressed against said continuous wall of said opening in said reinforced mounting end of said flexible integral load beam, joining said tubular member and said flexible integral load beam together to form a transducer actuator assembly;

g. means engaged with said transducer actuator assembly for movably mounting said transducer actuator assembly to said base with said flexible integral load beam and said transducer over said recording surface of said memory disk, and

h. an actuator motor having a stator mounted to said base and a movable coil means for moving said transducer actuator assembly and moving said transducer to different radial locations with respect to said recording surface of said memory disk.

5,579,191

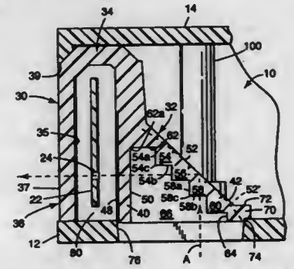
PRISM FOR A DATA CARTRIDGE

Jerry L. Alexander, St. Paul Park; Kevin N. Biffert, Moorhead, both of Minn.; Jerome V. Gagnier, Wahpeton, N. Dak.; Thiruppathy Srinivasan, Wahpeton, N. Dak., and Viet N. Tran, Wahpeton, N. Dak., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 17, 1995, Ser. No. 503,233

Int. Cl.[6] G11B *23/087;15/18;* **G03B** *23/02;* **G02B** *5/04*

U.S. Cl. 360—132 **15 Claims**



8. A data cartridge for use in a drive having a main incident light path axis, the data cartridge comprising:

a) a main base plate having a base plate window formed therein;

b) a cover having top, front, right, left and back sides arranged generally in a rectangular configuration and mounted to the main base plate to define a data cartridge shell; and

c) a reflective device mounted inside the data cartridge shell contiguous to the base plate window, the device having:

i) a transparent main body comprising:

A) a first portion having an external face, an internal face substantially parallel to the external face and at least a first end, both the internal and external faces being substantially normal to the light path axis when the reflecting device is positioned in a drive;

B) a second portion having an external face, an internal face and at least a first end, the first end of the first portion being contiguous to the first end of the second portion, and the external face of the second portion being angled at greater than the critical angle to the light path axis when the reflecting device is positioned in a drive; and

C) a plurality of steps formed on the internal face of the second portion, each step having a first face substantially perpendicular to the main incident light path axis when the reflecting device is positioned in a drive, and an adjacent second face substantially parallel to the main incident light path axis when the reflecting device is positioned in a drive;

ii) a bridge portion extending outwardly from the main body contiguous to the first end of the first portion; and

iii) a transparent window portion spaced from the main body and extending downwardly from the bridge portion substantially parallel to the faces of the first portion.

VOL 1192 ISS 4 NO 26 1996 UMI

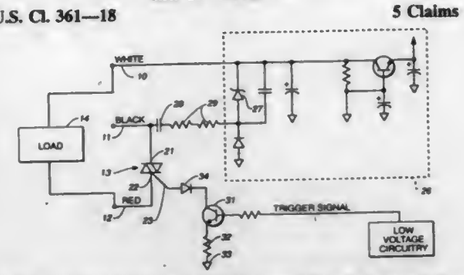
VOL 1192 ISS 4 NO 26

5,579,192

THYRISTOR POWER CONTROL CIRCUIT

Wade Lee, Lafayette, Calif., assignor to Larry C. Y. Lee, Hayward, Calif.

Filed Jun. 27, 1994, Ser. No. 266,008
Int. Cl.[6] H02H 7/00
U.S. Cl. 361—18 5 Claims



1. Control circuitry for applying electrical power from a live power lead and a neutral power lead to a load in response to a trigger signal, comprising:

a thyristor having first and second main terminals and a gate terminal, said thyristor having a characteristic threshold potential for enabling current flow between said first and second main terminals, a first of said first and second main terminals being connected to said live power lead, the other of said first and second main terminals being connected to a first side of said load, and said neutral power lead being connected to a second side of said load;

biasing means for biasing said live power lead at a negative potential with respect to said neutral power lead and defining a circuit ground substantially at said negative potential; and

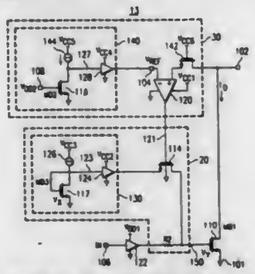
gate circuit means connected between said gate terminal and said circuit ground for applying a gate potential at least as great as said characteristic threshold potential to said gate terminal in response to said trigger signal.

5,579,193

REDUCING THE NATURAL CURRENT LIMIT IN A POWER MOS DEVICE BY REDUCING THE GATE-SOURCE VOLTAGE

Thomas A. Schmidt, Dallas; Ross E. Teggatz, McKinney, and Joseph A. Devore, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 265,609, Jun. 24, 1994. This application Jun. 7, 1995, Ser. No. 486,926
Int. Cl.[6] H02H 7/10
U.S. Cl. 361—18 8 Claims



1. A circuit to protect a power MOS device of an integrated circuit from an excessive drain current, the MOS device having a source, a gate with a gate-source voltage thereon and an input terminal communicating therewith for receiving an externally provided input signal, and a drain connected to an output terminal of the integrated circuit; the circuit comprising:

means for sensing trigger current which produces a trigger signal if the drain current exceeds a selected trigger current value; and

means responsive to the trigger signal for reducing the gate-source voltage by coupling to the gate and the source a facility that reduces the gate-source voltage to a selected approximately constant value;

wherein the means for sensing trigger current further comprises:

a means for creating a compensated trigger current reference voltage;

a comparator having an input connected to the compensated trigger current reference voltage and another input connected to the drain of the power MOS device; and

an output of the comparator connected to the means for reducing gate-source voltage; and

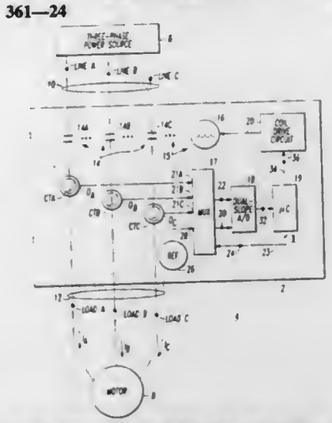
wherein the means for creating a compensated trigger current reference voltage further comprises a transistor of the same type as the power MOS device, having a source connected to the source of the power MOS device, a gate connected to a supply voltage, and a drain, the transistor having a gate whose width is a second known ratio of the width of the gate of the power MOS device; and a means for generating a reference trigger current that is a known ratio of the selected trigger current value connected to the drain of the transistor.

5,579,194

MOTOR STARTER WITH DUAL-SLOPE INTEGRATOR

Raymond W. Mackenzie, Baldwin Borough, and Joseph C. Engel, Monroeville, both of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 13, 1994, Ser. No. 354,999
Int. Cl.[6] H02H 5/04
U.S. Cl. 361—24 8 Claims



1. A circuit interrupter apparatus for selectively connecting a power source to a load, said apparatus comprising:

electromagnetic means having separable contact means and coil means, the separable contact means for selectively connecting said power source to said load, the coil means being energized to close the separable contact means and to hold the separable contact means closed;

power supply means for supplying coil current to energize the coil means;

switching means for selectively switching the coil current to the coil means, said switching means being controlled by an input;

pulse width modulation means having an input with an electrical signal and an output with a switching signal connected to the input of said switching means, said pulse width modulation means for controlling said switching means with the switching signal which has an off state with a variable period and an on state with a variable period, the electrical signal having a magnitude which modulates the variable period of the on state, the magnitude having a first value which produces a first period of the on state in order to provide a first value of the coil current to the coil means which pull-ins and closes the separable contact means, the magnitude having a second value which produces a second period of the on state in order to provide a second value of the coil current to the coil means which holds the separable contact means closed, and the magnitude having a third value which produces a third period of the on state in order to provide a third value of the coil current to the coil means which opens the separable contact means; and

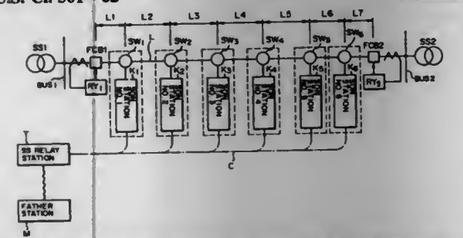
control means for controlling the magnitude of the electrical signal of the input of said pulse width modulation means.

5,579,195

POWER STOPPAGE MINIMIZING SYSTEMS FOR DISTRIBUTION LINES AND METHODS OF USING A DISTRIBUTION LINE

Kazuo Nishijima, Katsuta; Hiroshi Inoue, Hitachi; Minoru Kanoi; Terunobu Miyazaki, both of Ibaraki-ken, and Mitsuru Nakamura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 9, 1994, Ser. No. 207,664
Claims priority, application Japan, Mar. 12, 1993, 5-051611
Int. Cl.[6] H02H 3/00
U.S. Cl. 361—62 4 Claims



1. A power stoppage minimizing system for a distribution line, comprising:

first and second distribution lines each connected through a circuit breaker to a corresponding bus and having a plurality of switches;

a normally open tie point switchgear provided between adjacent ends of said first and second distribution lines;

a protective relay for opening the circuit breaker a fixed time after the occurrence of a short circuit on the first distribution line;

communicating means for transmitting signals among said plurality of switches; and

a father station for transmitting the signals to said plurality of switches by means of said communicating means,

wherein said switchgear includes:

means for transmitting an overcurrent signal to other switchgears at a power supply side of the distribution line by means of said communicating means, when the overcurrent signal on the distribution line is detected,

means for inputting the overcurrent signal indicating that the overcurrent from the switchgear at a load side on the distribution line is detected, and

opening means for outputting a signal to open a personal switch within the fixed time on the conditions that the overcurrent signal is transmitted by the overcurrent signal transmitting means and that no overcurrent is inputted from the switchgear at the load side by the overcurrent signal inputting means, and

said father station includes:

opening command outputting means for giving a command for opening the switch to the switchgear on the side of the load from the position of the switchgear operated by said opening means, and

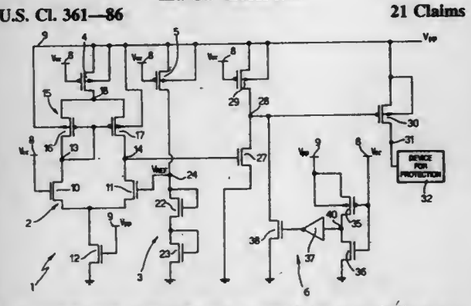
switch closing command outputting means for giving a closing command of the switch to the tie point switchgear.

5,579,196

PROTECTION CIRCUIT FOR DEVICES COMPRISING NONVOLATILE MEMORIES

Saverio Pezzini, Vimercate, Italy, assignor to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Jun. 27, 1994, Ser. No. 267,145
Claims priority, application European Pat. Off., Jun. 28, 1993, 93830279
Int. Cl.[6] H02H 3/18
U.S. Cl. 361—86 21 Claims



1. A protection circuit for devices comprising nonvolatile memories, the circuit comprising:

at least a first and a second supply line at a first and second supply voltage respectively;

reference voltage source means;

comparing means connected to said first supply line and to said source means;

switch means controlled by said comparing means via a control terminal and located between said second supply line and the output of said circuit; and

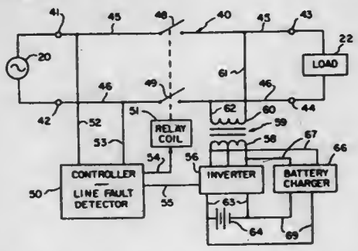
enabling control means connected to said first and second supply lines and to said comparing means for disabling said comparing means and turning on said switch means when said first and second supply voltages differ by a value below a predetermined threshold.

5,579,197

BACKUP POWER SYSTEM AND METHOD

Kevin R. Mengelt, Port Edwards; Michael J. Cane, Mauston, and Mark L. Schultz, Wisconsin Rapids, all of Wis., assignors to Best Power Technology, Incorporated, Necedah, Wis.

Filed Jan. 24, 1995, Ser. No. 377,540
Int. Cl.[6] H02H 3/00
U.S. Cl. 361—93 21 Claims



1. A backup power system connectable to a main AC power system at input terminals and to a load at output terminals, comprising:

(a) a battery;

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(b) power supply lines forming a main power supply path from the input terminals to the output terminals to normally supply power from an AC power system connected to the input terminals to a load connected to the output terminals such that an AC voltage at the output terminals is synchronized in phase and frequency to an AC voltage at the input terminals;

(c) a relay having switchable relay contacts connected in at least one of the power supply lines in the main power supply path and including a control coil responsive to a control signal to switch the relay contacts from a position providing conduction continuity in the power supply line to a position breaking conduction continuity through the power supply line, the relay being the only switching device in the power supply path so that an electrically continuous main power path is provided from the input terminals to the output terminals when the relay contacts are closed;

(d) a transformer having a secondary connected to the power supply lines between the relay contacts and the output terminals and a primary coupled to the secondary;

(e) an inverter having gate controlled switching devices connected to receive DC power from the battery and having an output connected to provide AC power to the primary of the transformer when the switching devices are switched; and

(f) control means, connected to provide control signals to the control coil of the relay and to the gates of the gate controlled switching devices of the inverter, and including means for sensing the voltage at the input terminals and determining when a power line fault occurs in the main AC power system, and upon occurrence of a fault for providing a control signal to the relay control coil to open the relay contacts and for simultaneously turning on the inverter by providing control signals to the gates of the switching devices of the inverter to generate an AC output voltage waveform at the output of the inverter and thereby at the secondary of the transformer to provide AC output power across the output terminals, the controller monitoring the phase and frequency of the AC input voltage before the fault occurs and controlling the gates of the inverter to provide AC output voltage from the inverter which is synchronized in phase and frequency to the AC input voltage from the AC power system before the fault, wherein the control means further includes means for sensing the current drawn from the battery through the inverter to the load and for turning off the control signals to the gates of the switching devices when a selected current limit level is reached for a selected short period of time less than a cycle of the AC waveform, for thereafter turning on the control signals to the gates of the switching devices to provide the AC voltage waveform from the inverter and for again turning off the signals to the gates if the current drawn from the battery through the inverter exceeds the selected current limit level.

5,579,198

APPARATUS FOR INTERRUPTING ELECTRICAL POWER BETWEEN TWO CONDUCTORS

Christopher J. Wieloch; Mark A. Kappel, both of Brookfield; Jeffrey R. Annis, Waukesha, all of Wis.; David J. Benard, Newbury Park, Calif.; Ellen Boehmer, Thousand Oaks, Calif., and Gernot Hildebrandt, Simi Valley, Calif., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Sep. 29, 1995, Ser. No. 537,215

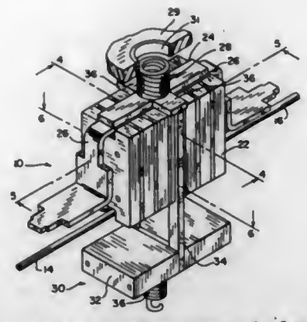
Int. Cl.[6] H01H *73/00*

U.S. Cl. 361—93 **30 Claims**

1. A circuit interrupter for interrupting electrical power between first and second conductors comprising:

a core having a periphery including upper, lower, left and right sides;

first and second conductors, the first conductor being disposed at least partially around the periphery of the core in a first direction and the second conductor being disposed at least partially around the periphery of the core in a second direction opposite to the first direction, the first and second conductors being electrically isolated from one another;



first and second spaced apart arc runners, the first arc runner being electrically coupled to the first conductor and the second arc runner being electrically coupled to the second conductor; and

a conductive spanner biased into contact with the first and second arc runners for conducting electrical power between the first and second conductors, and movable out of contact with the arc runners in response to excessive current flow through the conductors.

5,579,199

NON-VOLATILE MEMORY DEVICE AND A METHOD FOR PRODUCING THE SAME

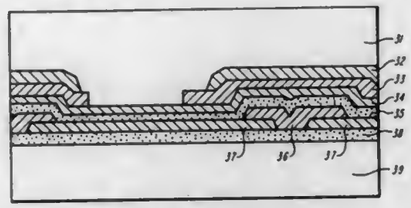
Tadashi Kawamura, Tenri; Naofumi Kimura, Nara; Yoshitaka Yamamoto, Yamatokoriyama, and Yutaka Ishii, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 24, 1993, Ser. No. 158,258

Claims priority, application Japan, Nov. 26, 1992, 4-317415; Mar. 23, 1993, 5-064393

Int. Cl.[6] G11C *13/04*

U.S. Cl. 365—108 **24 Claims**



1. A non-volatile memory device comprising:

a substrate;

a storage medium provided above the substrate;

a writing means having a heating means provided above the substrate, for heating the storage medium by the heating means to write data in the storage medium with a thermal change of a capacitance of the storage medium; and

a reading means having an electrical reading means provided above the substrate, for reading the data by detecting the change in the capacitance of the storage medium,

wherein the electrical reading means comprises first paired electrodes formed of first electrodes and second electrodes, which cross and overlap each other; and

wherein the heating means comprises second paired electrodes formed of the second electrodes and third electrodes which cross and overlap the second electrodes and exothermic bodies respectively inserted in an intersection of each of said second paired electrodes.

5,579,200

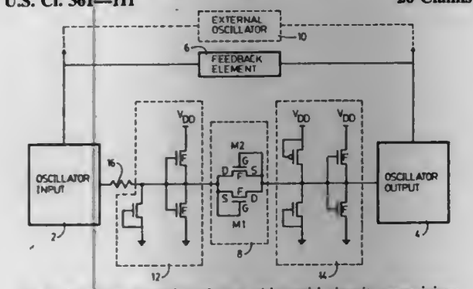
ELECTROSTATIC DISCHARGE PROTECTION FOR METAL-OXIDE-SILICON FEEDBACK ELEMENTS BETWEEN PINS

Kamal Rajkanan, Fremont, and Alex Gyure, Sunnyvale, both of Calif., assignors to Zilog, Inc., Campbell, Calif.

Continuation of Ser. No. 11,344, Jan. 29, 1993, abandoned. This application Mar. 24, 1995, Ser. No. 409,800

Int. Cl.[6] H02H *9/00*

U.S. Cl. 361—111 **20 Claims**



1. A circuit on a semiconductor chip, said circuit comprising:

first and second wire bond pads adapted to be electrically connected to an external oscillator;

a feedback element electrically connected between said first and second wire bond pads; and

electrostatic discharge protection circuitry electrically connected between said first and second wire bond pads for protecting said feedback element from electrostatic discharge between said first and second wire bond pads, said electrostatic discharge circuitry providing at least one discharge path that does not pass through a power or ground of the circuit when pin-to-pin ESD testing is done between said two bond pads, the electrostatic discharge protection circuitry comprising a first metal-oxide-silicon field effect transistor having a source and gate electrically connected to the first wire bond pad and a drain electrically connected to the second wire bond pad and a second metal-oxide-silicon field effect transistor having a source and gate electrically connected to the second wire bond pad and having a drain electrically connected to the first wire bond pad.

5,579,201

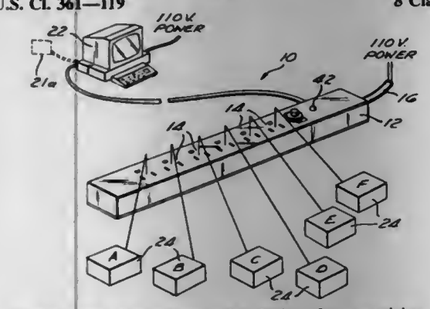
MODIFIED ELECTRICAL STRIP FOR ENERGIZING/DE-ENERGIZING SECONDARY DEVICES SIMULTANEOUSLY WITH A MAIN DEVICE

Vicken H. Karageozian, 31021 Marbella Vista, San Juan Capistrano, Calif. 92675

Filed Aug. 23, 1995, Ser. No. 518,246

Int. Cl.[6] H02H *1/04;3/22*

U.S. Cl. 361—119 **8 Claims**



1. An electrical power strip device for energizing and de-energizing at least one secondary device substantially simultaneously with the energization and de-energization of a primary device of the type having a power supply cord which is connectable to a first electrical power source and a power output jack which becomes energized and de-energized simultaneously with the energization and de-energization of said primary device via it's power supply cord, said power strip device comprising:

a housing having at least one plug-receiving receptacle formed therein;

a first power strip cord extending from the housing and connectable to a second electrical power source to deliver electrical current from said second electrical power source to said at least one plug-receiving receptacle;

a relay switch positioned within said housing, said relay switch being alternately positionable in a) an open position which prevents power from passing from said first power strip cord to said at least one plug-receiving receptacle, and b) a closed position which allows power to pass from said first power strip cord to said at least one plug-receiving receptacle;

a second power strip cord extending from the housing and connectable to the power output jack of the primary device and to said relay switch such that a) when the power output jack of the primary device is energized, power will pass through said second power strip cord to cause said relay switch to assume it's closed position, and b) when the power output receptacle of the primary device is de-energized, power will cease to flow through said second power strip cord, thereby causing said relay switch to assume it's open position.

5,579,202

TRANSFORMER DEVICE

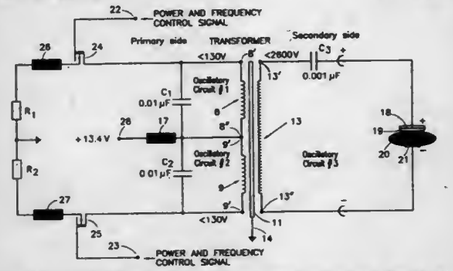
Ulf Tolfsen, Torsnes; Nils S. Syvertsen, Sølvstien, and Johan Horsrud, Kjerrebuen, all of Norway, assignors to Labyrint Development A/S, Norway

Filed Jan. 24, 1995, Ser. No. 377,437

Claims priority, application Norway, Feb. 7, 1994, 940392

Int. Cl.[6] H01F *27/32*

U.S. Cl. 361—232 **10 Claims**



1. A transformer device, said transformer device having a primary side and a secondary side and being capable of supplying a high-frequency, pulsating DC voltage on said secondary side, said transformer device being an air core type having no core of ferromagnetic material, said transformer device comprising:

a first winding and a second winding, said windings being bifilar-wound in a reciprocal phase relationship of 180°, said first winding and said second winding each having a beginning portion and an end portion,

a coupling of said first and second windings, said coupling being in series and including a common junction point of said end portion of said first winding and said beginning portion of said second winding,

a voltage supply on said primary side, said voltage supply being controlled by a time-set or time-variable power control signal at said beginning portion of said first winding and at said end portion of said second winding, said voltage supply providing a DC voltage to said common junction point;

two capacitors positioned on said primary side, one of said capacitors being coupled in parallel to said first winding and the other of said capacitors being coupled in parallel to said second winding so as to form two oscillatory circuits;

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a first insulating layer positioned around said primary side;

an electrostatic screen positioned around said first insulating layer, said electrostatic screen being capable of being connected to a ground connection;

a second insulating layer positioned around said electrostatic screen;

a multi-layered secondary coil on said secondary side, said secondary coil comprising layers wound around said second insulating layer, each wound layer of said secondary coil being enveloped by an insulating material; and

wherein said pulsating DC voltage on said secondary side has a frequency which is twice the frequency of said power control signal.

5,579,203

COVER ARRANGEMENT FOR ELECTROLYTIC CAPACITORS

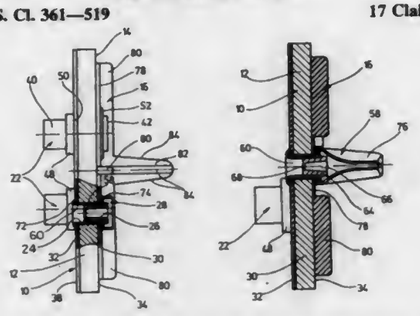
Rudolf Klaschka, Tannenweg 9, D-79793 Wutöschingen, Germany

Filed Jan. 17, 1995, Ser. No. 373,025

Claims priority, application Germany, Jan. 15, 1994, 44 01 034.6

Int. Cl.[6] H01G *9/00;9/10*

U.S. Cl. 361—519 **17 Claims**



1. In a cover arrangement for the pressure-tight closure of a capacitor can for electrolytic capacitors having a cover part which has at least one aperture, and having at least one element which is one of a metallic connecting element and a valve element which is inserted into the aperture in the cover part, said connecting element having an outer connection projecting beyond an outer surface of the cover part, an inner connection projecting beyond an inner surface of the cover part and a shaft located between the outer connection and the inner connection and passing through the aperture in a gas-tight manner such that it cannot rotate, the improvement comprising the cover part having a hard-paper core which is coated externally with respect to the capacitor can with an elastomerically flexible sealing layer and internally with respect to the capacitor can with a chemically resistant material layer, wherein the cover part has an elastomeric molding arranged internally which has at least one aperture which is aligned with the aperture in the cover part, and wherein the element has an external circumferential collar and an internal circumferential collar pressed against the external sealing layer and the internal molding respectively therebetween in an axially force-fitting manner.

5,579,204

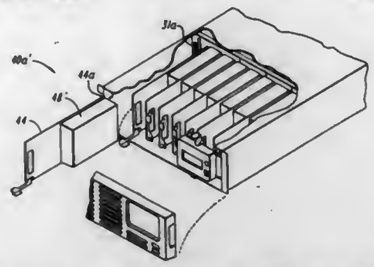
DISK CARRIER ASSEMBLY

Eric C. Nelson, Mendon; Christopher A. Heyden, Belmont; Steven W. Collins; Stephen G. Finnegan, both of Franklin, and Christopher M. Thompson, Worchester, all of Mass., assignors to EMC Corporation, Hopkinton, Mass.

Filed Aug. 5, 1994, Ser. No. 286,775

Int. Cl.[6] G06F *1/16;* **H05K** *5/00*

U.S. Cl. 361—685 **26 Claims**



1. A storage carrier device for use in a disk storage subsystem having a midplane card and a midplane card connector mounted on said midplane and for carrying one of a first disk drive unit and a second disk drive unit, wherein said first disk drive unit has a first disk drive unit connector which is compatible with said midplane card connector and said second disk drive unit has a second disk drive unit connector which is incompatible with said midplane card connector, said storage carrier device comprising:

a carrier board having a first end and a second end, said carrier board having first and second pluralities of openings defining respective first and second mounting positions for respective first and second disk drive units and wherein said carrier board is adapted to receive one of the first disk drive unit in the first mounting position and the second disk drive unit in the second mounting position and wherein said carrier board has a seated mounting position within said disk storage system in which said first end of said carrier board is adjacent said midplane card connector

wherein, when said one of said first and second disk drive units is said first disk drive unit, said first disk drive unit being mountable to said carrier board in said first mounting position to position said first disk drive unit connector so that it is directly mated with and electrically coupled to said midplane card connector when said carrier board is disposed in said seated mounted position; and

wherein, when said disk drive unit is said second disk drive unit, said second disk drive unit being mountable to said carrier board in said second mounting position to locate said second disk drive unit connector so that it is spaced from and not directly coupled to said midplane card connector when said carrier board is disposed in said seated mounting position.

5,579,205

ELECTROMECHANICAL MODULE WITH POST-SOLDER ATTACHABLE/REMOVABLE HEAT SINK FRAME AND LOW PROFILE

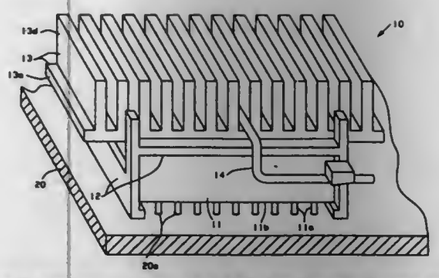
Jerry I. Tustaniwskyi, Mission Viejo, and Stephen A. Smiley, San Diego, both of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Aug. 28, 1995, Ser. No. 519,956

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—704 **15 Claims**

1. An electromechanical module comprising: an IC package having a top surface which dissipates heat and a bottom surface from which input/output terminals extend, a heat sink which draws heat from said top surface, a frame which attaches to said IC package, and a spring which connects to said frame and holds said heat sink in place; wherein



said frame includes a pair of spaced-apart elongated beams and a pair of end members which connect to opposite ends of said beams;

said beams together with said end members surround said IC package and expose all of said top surface, and said heat sink is in direct thermal contact with said top surface;

each end member has at least one leg which extends toward the bottom surface of said IC package, and each leg has a lip that catches on said bottom surface; and,

said beams are structured to bow at their center towards the bottom surface of said IC package and thereby move the lips on said legs further apart and past said bottom surface.

5,579,206

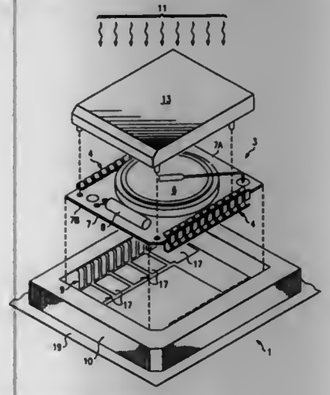
ENHANCED LOW PROFILE SOCKETS AND MODULE SYSTEMS

Neil McLellan, Garland; Mike Strittmatter, Carrollton; Joseph P. Hundt, Corinth; Christopher M. Sells, and Francis A. Scherpenberg, both of Carrollton, all of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 92,631, Jul. 16, 1993, Pat. No. 5,528,463. This application Sep. 12, 1994, Ser. No. 304,065

Int. Cl.[6] H05K *1/11;1/16*

U.S. Cl. 361—784 **22 Claims**



1. A socket system, comprising:

(a) a printed circuit board;

(b) an electrical module;

(c) a socket having a hollow core and a recess in one end of said socket, said socket holding said electrical module and electrically coupling said electrical module to said printed circuit board; and

(d) a cap having extended edges that bend around said electrical module to enclose and seal said electrical module.

5,579,207

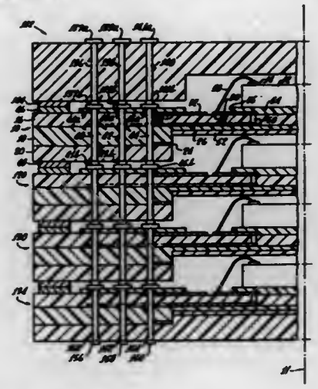
THREE-DIMENSIONAL INTEGRATED CIRCUIT STACKING

Warren Hayden, Redondo Beach; David K. Uyemura, Torrance; Richard E. Burney, Long Beach; Christopher M. Schreiber, Lake Elsinore, and Jacques F. Linder, Palos Verdes, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Oct. 20, 1994, Ser. No. 326,455

Int. Cl.[6] H05K *1/08*

U.S. Cl. 361—790 **18 Claims**



1. A multi-die package comprising:

a plurality of stacked chip layers, each said chip layer comprising:

a carrier substrate having top and bottom sides,

a plurality of electrically conductive vias extending through said carrier substrate between said top and bottom sides, each said via having electrically conductive top and bottom via pads on the top and bottom sides of the carrier substrate, wherein each said via pad is oblong and has a major axis, and wherein the major axis of the pad of the top side of each via is angulated relative to the major axis of the pad of the bottom side of the same via,

a pattern of electrically conductive traces formed on the top side of said carrier substrate, at least some of said traces having an outer end connected to one of said via pads,

a chip mounted on said top side of said substrate and having a plurality of chip pads, and

an electrical connection between each of said chip pads and one of said traces,

said chip layers being arranged in a stack of chip layers with the vias of one carrier substrate aligned with the vias of an adjacent carrier substrate and with the via pads on top and bottom sides of each carrier substrate being electrically connected to via pads on respective bottom and top sides of adjacent carrier substrates.

5,579,208

SEMICONDUCTOR DEVICE HAVING A PLURALITY OF SEMICONDUCTOR CHIPS

Tosiyuki Honda, Kawasaki, and Takao Haranosono, Satsumagun, both of Japan, assignors to Fujitsu Limited, Kawasaki, and Kyushu Fujitsu Electronics Limited, Satsuma, both of Japan

Division of Ser. No. 214,318, Mar. 17, 1994, Pat. No. 5,471,369. This application Jun. 2, 1995, Ser. No. 459,689

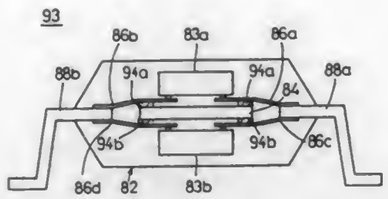
Claims priority, application Japan, Jul. 9, 1993, 5-170540

Int. Cl.[6] H05K *5/02;* **H01L** *23/28*

U.S. Cl. 361—813 **7 Claims**

1. A semiconductor device comprising:

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a package having at least a first semiconductor chip and a second semiconductor chip, said first semiconductor chip being positioned above said second semiconductor chip;

at least a first lead frame and a second lead frame provided between said first and second semiconductor chips, and extending from said package so that said first semiconductor chip and said second semiconductor chip can be electrically connected to external devices, said first lead frame extending from a first side of said first and second semiconductor chips to a second side opposite to said first side of said first and second semiconductor chips, said second lead frame extending from said second side to said first side;

first connecting means for connecting first semiconductor chip to said first and second lead frames; and

second connecting means for connecting said second semiconductor chip to said first and second lead frames, wherein said first connecting means comprises a first TAB lead and said second connecting means comprises a second TAB lead, and wherein said first semiconductor chip is positioned so that a surface on which circuitry is provided faces downwardly, a first insulating member being provided between said first TAB lead and said first and second lead frames, and said second semiconductor chip is positioned so that a surface on which circuitry is provided faces upwardly, a second insulating member being provided between said second TAB lead and said first and second lead frames.

5,579,209

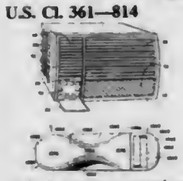
REMOTE CONTROL HOUSING WITH FUNCTIONAL ATTRIBUTES FOR A ROOM AIR CONDITIONER

Larry J. Manson, Baroda; Jerry L. McColgin, St. Joseph; Chris A. Scriber, Holland; Gary Bolin, and Kenneth T. Shelley, both of St. Joseph, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Continuation-in-part of Ser. No. 325,886, Oct. 19, 1994. This application Nov. 23, 1994, Ser. No. 344,385

Int. Cl.[6] H05K *5/02*

U.S. Cl. 361—814 **25 Claims**



1. A remote control unit including an electronic circuit and a housing comprising:

a top side, a bottom side and a periphery extending between the top side and the bottom side, the housing having a longitudinal dimension and a lateral dimension, the bottom side being configured to include two supporting pads at opposite longitudinal portions of the bottom side and a rib extending between the two supporting pads, each of the pads providing support for the housing on a planar surface at at least two laterally spaced apart positions, recesses formed in the bottom side at opposite lateral edges of the bottom side so as to provide a space between the planar surface and the bottom side sufficient to enable a user to insert a fingertip in at least one of the spaces.

5,579,210

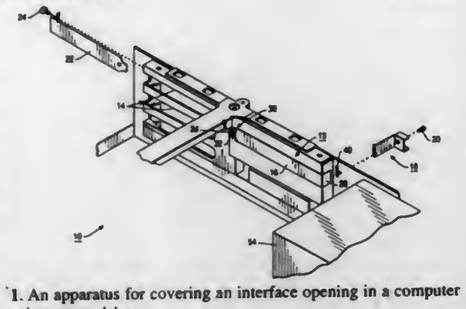
APPARATUS AND METHOD FOR COVERING INTERFACE OPENINGS IN A COMPUTER HOUSING

Walter Ruhland, Anhausen, Germany, and Eric H. M. Lin, Taipei, Taiwan, assignors to AT&T Global Information Solutions Company, Dayton, Ohio

Filed May 5, 1995, Ser. No. 437,105

Int. Cl.[6] H05K *9/00*

U.S. Cl. 361—816 **18 Claims**



1. An apparatus for covering an interface opening in a computer housing, comprising:

an electromagnetic shielding cover which is positionable over the interface opening, said shielding cover having a first end portion and a second end portion, wherein the first end portion of said shielding cover is positionable within a recess located within the computer housing;

a clamp maintainable in an operational mode during which said clamp is urged against the second end portion of said shielding cover so as to secure said shielding cover in place over the interface opening; and

a fastener for maintaining said clamp in the operational mode.

5,579,211

RELAY WITH A PLUG ADAPTOR SYSTEM AND METHOD FOR MANUFACTURING SAME

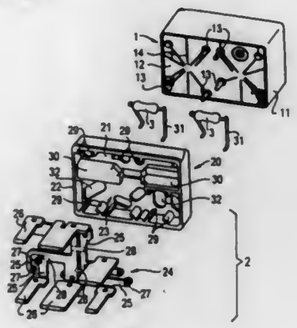
Horst Hendel, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 23, 1995, Ser. No. 546,673

Claims priority, application Germany, Oct. 24, 1994, 44 37 954.4

Int. Cl.[6] H05K *7/00*

U.S. Cl. 361—819 **22 Claims**



1. An arrangement comprising:

a relay with terminal pins projecting from a lower side of the relay;

a plug adaptor connectable to the lower side of the relay, the adaptor including:

an insulating base;

a male connector member secured to the insulating base, the member having a plurality of conductor segments lying generally in a plane parallel to the lower side, each conductor segment respectively forming a solder recess for non-positive fit contacting of a respective one of the terminal pins, the male connector member also having a plurality of blades bent off from the conductor segments perpendicularly relative to the lower side, the blades extending from the base at an exit region; and

a circumferential wall surrounding an interspace defined between the lower side of the relay and the base as well as the exit region of the blades from an underside of the base;

wherein at least the exit region is filled with casting compound.

5,579,212

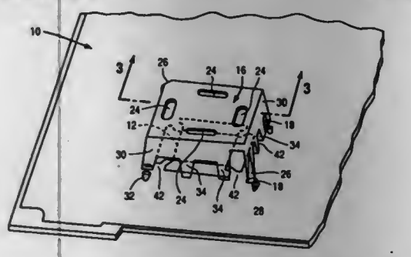
PROTECTIVE COVER FOR A SILICON CHIP DEVICE AND METHOD RELATING THERETO

Daniel Albano, Carlisle; Robert S. Antonuccio, Burlington, both of Mass.; William A. Izzicupo, Windham, and Mario N. Palmeri, Jr., Nashua, both of N.H., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 99,292, Jul. 29, 1993, abandoned. This application Mar. 22, 1995, Ser. No. 410,007

Int. Cl.[6] H05K *7/12*

U.S. Cl. 361—820 **19 Claims**



1. A cover securable to a PCB for protecting a silicon chip device previously mounted on the PCB, the chip device having at least one series of leads extending laterally outwardly from at least two of its sides and having electrical connections with the PCB,

the cover having a cover portion,

the cover having a first side projecting from said cover portion constructed to be adjacent to the connections of one of the lead sides,

the cover having at least one additional side projecting from said cover portion,

said first side being dimensioned to surround the leads of the one lead side of the chip device in a protective manner from outside contact when the cover is mounted on the PCB,

said first side and said additional side each having legs extending from said cover portion to a base of the cover,

said legs having facilities at their base ends for securing the cover to the PCB,

the cover having other facilities extending from said cover portion, and said other facilities having lengths extending from said cover portion that are greater than the lengths said first and additional projecting sides extend from said cover portion for maintaining the cover outwardly from the chip device and out of contact with the chip device and leads of the one lead side.

5,579,213

ELECTRONIC COMPONENT WITH SOLDERING-LESS TERMINAL STRUCTURE

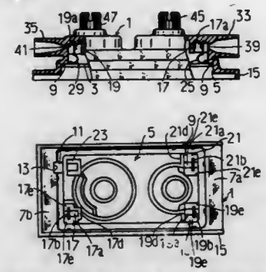
Hironobu Hasebe, Takaoka; Takashi Kanayama, and Shinichi Kamata, both of Toyama-ken, all of Japan, assignors to Hokuriku Electric Industry Co., Ltd., Japan

Division of Ser. No. 365,497, Dec. 28, 1994, Pat. No. 5,546,280. This application Jan. 18, 1996, Ser. No. 587,546

Claims priority, application Japan, Dec. 28, 1993, 5-336906; Dec. 21, 1994, 6-318669

Int. Cl.[6] H01R *9/00*

U.S. Cl. 361—823 **1 Claim**



1. A high-voltage electronic component comprising:

a circuit board having a circuit pattern including a connection electrode provided on a front surface thereof;

an insulating casing made of insulating resin and provided therein with a board receiving section of which one end is open;

a board fixing rib for supporting said circuit board which is formed in said board receiving section so as to define a space between said front surface of said circuit board and an inner surface of said insulating casing; and

a terminal conductor connected at one end thereof to said connection electrode on said circuit board and extending at the other end thereof to a side of a rear surface of said circuit board;

said terminal conductor being formed of a single conductive metal plate by working;

said one end of said terminal conductor being formed with an elastic contact terminal section which is interposedly supported between said front surface of said circuit board and said inner surface of said insulating casing and contacted with said connection electrode;

said terminal conductor including an intermediate section extending along an end surface of said circuit board to the side of said rear surface of said circuit board.

5,579,214

HALF-WAVE RECTIFIER CIRCUIT

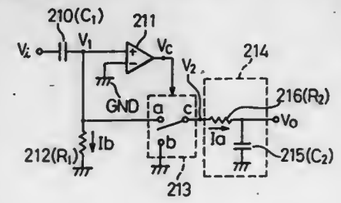
Kazuhiro Kitani; Yuji Segawa, and Kunihiko Gotoh, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Oct. 31, 1994, Ser. No. 332,299

Claims priority, application Japan, Dec. 28, 1993, 5-335661

Int. Cl.[6] H02M *1/12*

U.S. Cl. 363—44 **11 Claims**



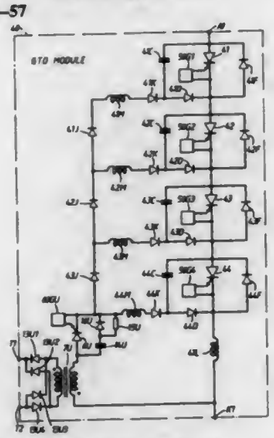
1. A half-wave rectifier circuit for obtaining a DC voltage output depending on an input signal level through half-wave rectification of the input signal, comprising:
a capacitor for removing a DC component included in an input signal;
a comparator for comparing the input signal from which a DC component is removed with the reference value and then outputting a signal when one is larger than the other;
a smoothing circuit for outputing said half-wave rectifier circuit by smoothing an input signal thereof; and
a switch circuit which receives the input signal from which a DC component is removed, turning ON and OFF the input signal depending on an output signal of said comparator and which supplies the output signal thereof to said smoothing circuit, wherein said smoothing circuit shows a high input impedance when said input signal is turned OFF.

5,579,215

POWER CONVERSION DEVICE WITH SNUBBER ENERGY REGENERATING CIRCUIT

Yukinori Turuta, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 30, 1995, Ser. No. 521,329
Claims priority, application Japan, Sep. 8, 1994, 6-214754; Feb. 27, 1995, 7-038216
Int. Cl.[6] H02H 7/122
U.S. Cl. 363—57 **10 Claims**



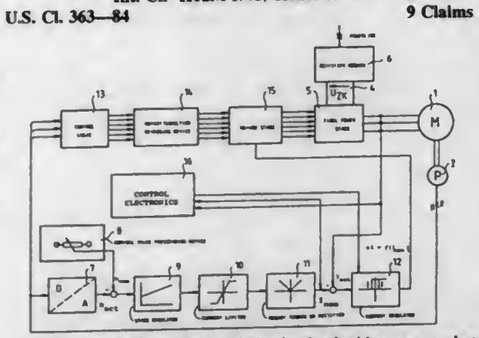
1. A power conversion device, comprising:
a plurality of bridge connected self-turn-off modules;
each of said self-turn-off modules including;
a plurality of self-turn-off devices connected in series,
a plurality of first snubber circuits, each including a first series circuit of a first snubber capacitor and a first snubber diode,
each of said first snubber circuits being connected in parallel with one of said self-turn-off devices to form a first parallel circuit, respectively;
a snubber energy regenerating circuit including a regenerating transformer and a first auxiliary switch connected in series with a primary winding of said regenerating transformer,
a secondary winding of said regenerating transformer being adapted for connecting to an outer power source;
a plurality of first gate circuits, each for driving one of said self-turn-off devices, respectively, and
a second gate circuit for driving said first auxiliary switch, said second gate circuit turning on said first auxiliary switch after said self-turn-off devices are turned on;
said snubber energy regenerating circuit being actuated by turning on of said first auxiliary switch so as to form a plurality of first closed circuits, thereby to discharge energies stored in said first snubber capacitors through said first closed circuits to regenerate said energies to said outer power source through said secondary winding of said regenerating transformer, and each of said first closed circuits including a series circuit of said first auxiliary switch, said primary winding of said regenerating transformer, and one of said first parallel circuits, respectively.

5,579,216

CIRCUIT ARRANGEMENT FOR AN INDUCTIVE LOAD

Helmut Meyer, Weinheim, and Johann Schunn, Leimen, both of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Continuation of Ser. No. 247,295, May 23, 1994, abandoned. This application Feb. 20, 1996, Ser. No. 603,387
Claims priority, application Germany, May 21, 1993, 43 17 044.7
Int. Cl.[6] H02M 5/42; H02K 23/00
U.S. Cl. 363—84 **9 Claims**



1. Circuit arrangement for an inductive load with a rotor and at least one winding, a DC-voltage intermediate circuit and at least one switchable semiconductor rectifier of a power stage connected to the winding for passing current of a given current value through the winding at a given current frequency, and a current regulator operative for applying hysteresis to the current, comprising control electronics connected to the current regulator for regulating the hysteresis of the current regulator, respectively, as a function of at least one of the current value through the winding and the current frequency.

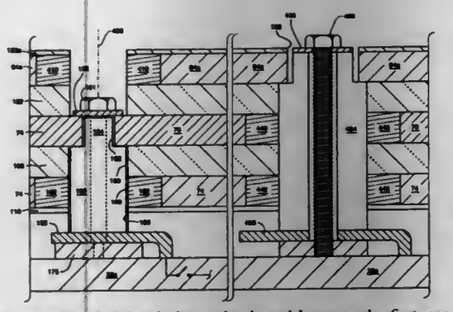
5,579,217

LAMINATED BUS ASSEMBLY AND COUPLING APPARATUS FOR A HIGH POWER ELECTRICAL SWITCHING CONVERTER

David Deam, San Ramon, and William L. Erdman, Brentwood, both of Calif., assignors to Kenetech Windpower, Inc., Livermore, Calif.

Continuation-in-part of Ser. No. 990,681, Dec. 15, 1992, Pat. No. 5,365,424, which is a continuation-in-part of Ser. No. 728,112, Jul. 10, 1991, Pat. No. 5,172,310. This application Nov. 15, 1994, Ser. No. 339,551
Int. Cl.[6] H02M 1/10; H01B 5/00
U.S. Cl. 363—144 **7 Claims**

5. A laminated bus assembly including a coupling mechanism for electrically coupling an electrical device to a low impedance laminated bus assembly in a high power switching converter that includes a plurality of switch pairs each including a +DC switch and a −DC switch to convert between AC power on an AC power line that has a plurality of phases and DC power from a DC device, said laminated bus assembly comprising:
a first plane having a plurality of AC bar conductors positioned therein, including an AC bar conductor for each phase of AC power;
a second plane including a −DC bar conductor;
a third plane including a +DC bar conductor;



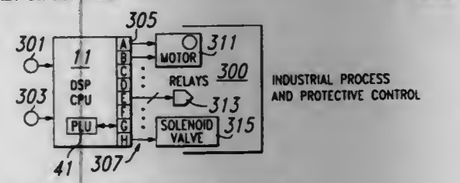
a plurality of dielectric layers laminated between the first, second, and third planes;
a −DC coupler for coupling the −DC bar conductor to each −DC switch, including a first conductive bushing;
a +DC coupler for coupling the +DC bar conductor to each +DC switch, including a second conductive bushing;
a +AC switch coupler for coupling each +AC bar conductor to each +DC switch, including a first plurality of conductive bushings; and
a −AC switch coupler for coupling each −AC bar conductor to each −DC switch, including a second plurality of conductive bushings.

5,579,218

DEVICES AND SYSTEMS WITH PARALLEL LOGIC UNIT, AND METHODS

Peter N. Ehlig, Houston, Tex., and Frederic Boutaud, Roquefort les Pius, France, assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 233,477, Apr. 26, 1994, which is a continuation of Ser. No. 347,605, May 4, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 485,205
Int. Cl.[6] G06F 19/00
U.S. Cl. 364—130 **4 Claims**



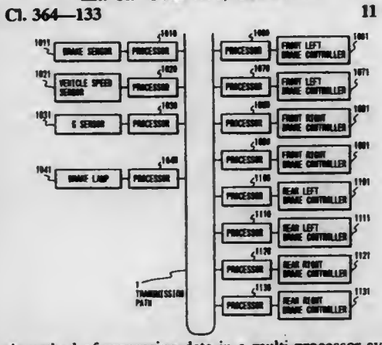
1. A process control system comprising:
sensors responsive to the state of said process;
process control elements responsive to directions defined by electrical bits; and
a data processing device connected to said sensors and said process control elements and including:
a data bus,
a program bus,
a data memory connected to said data bus and having data memory locations,
an electronic computation unit connected to said data bus,
an accumulator connected to said electronic computation unit and to said data bus,
a logic circuit connected to said program bus for receiving instructions and connected to said data bus for executing logic operations in accordance with at least some of the instructions, the logic operations affecting bits in at least one of said data memory locations independently of said electronic computation unit without affecting said accumulator, and
a control circuit for sending instructions to said logic circuit on said program bus and to said electronic computation unit; and
an interface for supplying selected bits to said process control elements.

5,579,219

MULTI-PROCESSOR SYSTEM AND METHOD OF PROCESSING DATA THEREBY

Kinji Mori, Machida, and Shigeki Hirasawa, Kawasaki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 705,533, May 24, 1991, abandoned. This application Mar. 14, 1994, Ser. No. 213,824
Claims priority, application Japan, May 25, 1990, 2-133825
Int. Cl.[6] G06F 7/10; G05B 15/00
U.S. Cl. 364—133 **11 Claims**



1. A method of processing data in a multi-processor system by transmitting data between multiple processors interconnected via a transmission path, at least one of said multiple processors having an application program which utilizes a plurality of data for execution thereof, said method comprising the steps of:
registering, for later use in said at least one of said multiple processors, information related to said plurality of data utilized for execution of said application program;
receiving in said at least one of said multiple processors from said transmission path, data to be utilized by said application program based upon the registered information;
determining whether at least one datum of said plurality of data utilized for execution of said application program has been received in said receiving step, said at least one datum being a predetermined datum for starting execution of said application program; and
starting execution of said application program when said predetermined datum has been received as indicated by a result of said determining step, regardless of whether or not all of said plurality of data utilized for execution of said application program has been received;
wherein in said starting step when there is at least an unreceived datum of said plurality of data utilized for execution of said application program, execution of said application program is started using an initial value preliminarily specified to correspond to said unreceived datum as said unreceived datum, and received data.

5,579,220

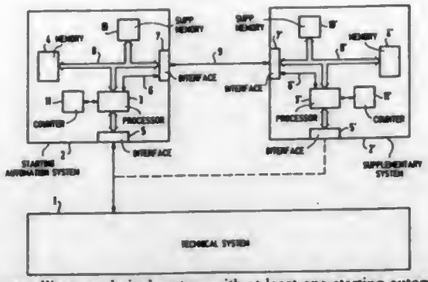
METHOD OF UPDATING A SUPPLEMENTARY AUTOMATION SYSTEM

Herbert Barthel, Herzogenaurach; Horst Daar, Erlangen, and Hartmut Schuetz, Heroldsbach, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 27, 1994, Ser. No. 281,373
Claims priority, application Germany, Jul. 28, 1993, 4325326.1
Int. Cl.[6] G05B 9/02
U.S. Cl. 364—187 **13 Claims**

1. A method of updating a supplemental automation system comprising:

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controlling a technical system with at least one starting automation system, said starting automation system comprising an executed program which includes a plurality of data used in controlling said technical system;

updating said data in a supplementary automation system coupled to said starting automation system and said technical system, said updating occurring without interrupting control of said technical system by said starting automation system and wherein said updating step occurs entirely during a non-time-critical state of said technical system;

specifying data configurations in said starting automation system which indicate non-time-critical states of said technical system, such that said starting automation system is capable of recognizing non-time-critical states in said technical system: and

specifying an update time in said starting automation system, such that said update time is an amount of time required to completely perform said updating step in said supplementary automation system, such that said starting automation system is capable of recognizing whether a time duration of said non-time-critical state exceeds said update time.

5,579,221

HOME AUTOMATION SYSTEM HAVING USER CONTROLLED DEFINITION FUNCTION

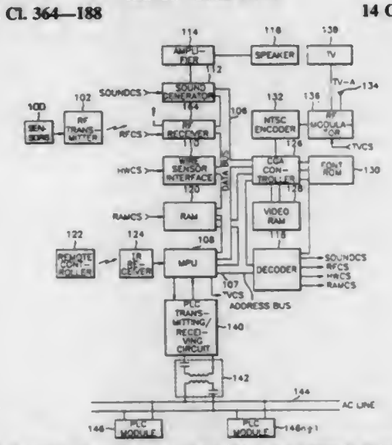
Yong-Soon Mun, Euiwang, Rep. of Korea, assignor to Sam-Sung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 30, 1994, Ser. No. 366,558

Claims priority, application Rep. of Korea, Dec. 31, 1993, 31795/1993

Int. Cl.[6] G05B *19/42*

U.S. Cl. 364—188 **14 Claims**



1. A home automation system having a user controlled definition function and operated in response to input of a call code, said system including power line controller modules each for switching power to an appliance in response to receipt of a control code and variable visual display means for displaying input video information, said home automation system comprising:

video display processing means having a font memory and a video memory, for assessing font data received from said font memory corresponding to a character code in response to receipt of said character code and providing a video signal corresponding to assessed font data to said variable visual display means;

control means for providing to said video display processing means said character code input as alphanumeric characters corresponding to a user defined number, a name of said appliance, said call code and said control code in response to a user defined function mode, said control means storing said name of said appliance, said call code and said control code in a storage region having an address corresponding to said user defined number, and transmitting said call code and said control code to interfacing means in response to input of said user defined number; and

said interfacing means for transmitting said call code and said control code output from said control means to said power line controller modules.

5,579,222

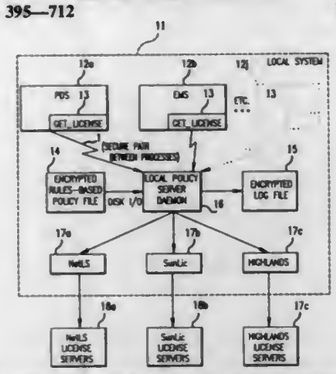
DISTRIBUTED LICENSE ADMINISTRATION SYSTEM USING A LOCAL POLICY SERVER TO COMMUNICATE WITH A LICENSE SERVER AND CONTROL EXECUTION OF COMPUTER PROGRAMS

Jeffrey E. Bains, and Willard W. Case, both of Madison, Ala., assignors to Intergraph Corporation, Huntsville, Ala.

Continuation-in-part of Ser. No. 798,934, Nov. 27, 1991. This application Dec. 14, 1992, Ser. No. 990,583

Int. Cl.[6] G06F *15/16;17/60*

U.S. Cl. 395—712 **18 Claims**



1. An improved system, operative on a computer having a plurality of digital computers, each computer at a node, in communication with each other over a data path, for administration of license terms for use on the network of a software product with respect to the running of which on nodes of the network a number of licenses have been made available and each of a set of nodes may be caused to seek a license to run the software product, the system being of a type having usage tracking means, associated with one of the computers acting as a license server, for (i) causing storage of the number of licenses available for running the software product on nodes of the network, (ii) identifying the current set of nodes with respect to which a license has been granted to run the software product at a given time, and (iii) determining whether at any given time any licenses remain to be granted for permitting an additional node to run the software product, so that the software product may include instructions to cause enforcement of the license terms;

wherein the improvement comprises:

(a) a policy server database containing data specifying conditions under which usage of the software product is permitted on any given node; and

(b) policy server means, maintained and operating locally as an independent process; from the software product, on each computer, with respect to which the license terms are to be enforced, in association with the policy server database, for (i) communicating with the license server, (ii) interfacing with both the software product and the policy server database, and (iii) making a permission-to-run availability determination, with respect to local usage of the software product, on the basis of applicable data from the license server and the policy server database, so that enforcement of license terms applicable to the software product at a given local node is achieved on the basis of both license policy maintained in the policy server database as well as applicable data from the license server.

5,579,223

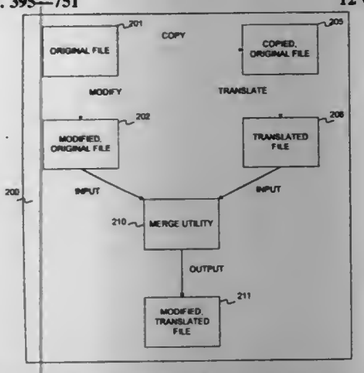
METHOD AND SYSTEM FOR INCORPORATING MODIFICATIONS MADE TO A COMPUTER PROGRAM INTO A TRANSLATED VERSION OF THE COMPUTER PROGRAM

Suryanarayanan V. Raman, Redmond, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Dec. 24, 1992, Ser. No. 996,705

Int. Cl.[6] G06F *17/24;17/28*

U.S. Cl. 395—751 **12 Claims**



1. A method of developing multiple natural language versions of a computer program, the method comprising the steps of:

creating a first natural language version of the computer program, wherein the computer program contains instructions for controlling a computer system to output text in a first natural language;

translating the first natural language version to create a translated version of the computer program such that the translated version contains instructions for controlling the computer system to output text in a second natural language;

modifying the instructions in the first natural language version to create a modified version of the computer program;

comparing programmatically the instructions in the modified version with the instructions in the translated version to identify differences between the modified version and the translated version; and

automatically incorporating the modifications made to the first natural language version into the translated version to create a modified translated version.

5,579,224

DICTIONARY CREATION SUPPORTING SYSTEM

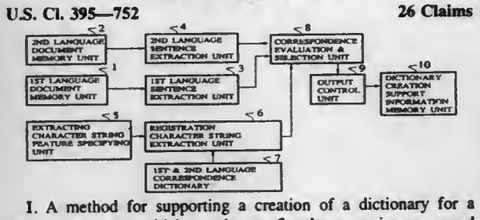
Hideki Hirakawa, and Akira Kumano, both of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 20, 1994, Ser. No. 309,443

Claims priority, application Japan, Sep. 20, 1993, 5-232649

Int. Cl.[6] G06F *19/00*

U.S. Cl. 395—752 **26 Claims**



1. A method for supporting a creation of a dictionary for a translation system which translates a first language into a second language, comprising the steps of:

entering a first language document and a corresponding second language document;

extracting each first language character string to be registered in the dictionary from the first language document entered at the entering step;

selectively extracting each corresponding second language character string with respect to each first language character string from the corresponding second language document according to a level of correspondence between a section of the first language document from which each first language character string is extracted and a section of the corresponding second language document to which each corresponding second language character string belongs, by morphologically and syntactically analyzing the first language document and the second language document; and

selectively outputting each first language character string extracted at the extracting step along with each corresponding second language character string extracted at the selectively extracting step as a candidate for a registration knowledge to be registered in the dictionary according to the level of correspondence.

5,579,225

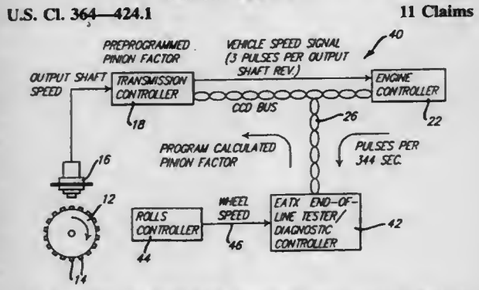
METHOD OF GENERATING AN OUTPUT SIGNAL REPRESENTING VEHICLE SPEED AND INDICATING SAME

Anthony V. Panicci, Royal Oak, and Edward R. Hanish, Livonia, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Continuation of Ser. No. 62,371, May 14, 1993, abandoned. This application Apr. 17, 1995, Ser. No. 425,328

Int. Cl.[6] G06G *7/70*

U.S. Cl. 364—424.1 **11 Claims**



5. A method of generating an output signal representing the speed of a motor vehicle and indicating the speed, the motor vehicle having a vehicle speedometer system with an instrument cluster, a transmission with a transmission output member and an

output speed sensor and a transmission controller, said method comprising the steps of:

sensing actual vehicle speed;

providing the sensed actual vehicle speed to a diagnostic controller;

sensing revolution of the transmission output member by the output speed sensor;

reading a signal of an actual number of pulses per revolution of the transmission output member using the transmission controller;

determining a pinion factor representing transmission output member revolutions per mile based on the actual number of pulses per revolution of the transmission output member divided by the actual vehicle speed;

programming the pinion factor into the transmission controller;

applying the determined pinion factor by the transmission controller to the signal from the transmission output speed sensor and generating a vehicle speed output signal representing the vehicle speed and indicating the vehicle speed by the instrument cluster using the vehicle speed output signal.

5,579,226

GEAR CHANGE CONTROLLER FOR AUTOMATIC TRANSMISSION

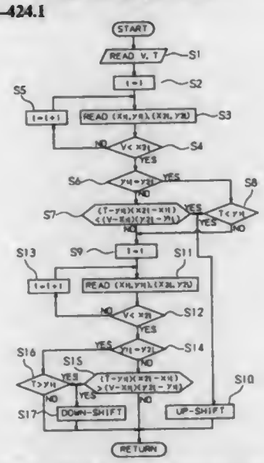
Naonori Iizuka, Fuji, Japan, assignor to Jatco Corporation, Japan

Filed Sep. 14, 1994, Ser. No. 305,669

Claims priority, application Japan, Sep. 29, 1993, 5-243121

Int. Cl.[6] B60K *41/06*

U.S. Cl. 364—424.1 **2 Claims**



1. A gear change controller for an automatic transmission comprising:

a vehicle speed sensor and a throttle opening sensor;

gear control means for determining a gear position of the automatic transmission, based on inputs from said vehicle speed sensor and said throttle opening sensor and based on kinked lines expressing vehicle speed x vs throttle opening y characteristics, and generating a change-over signal according to the determined gear position; and

a gear change-over actuator driven by said change-over signal from said gear control means;

wherein said gear control means includes:

a memory unit which stores coordinate data (x1i, y1i) and (x2i, y2i) {i=1, 2, 3, . . . } corresponding to two ends of each of a plurality of elemental linear portions of said kinked lines respectively expressing said vehicle speed x vs throttle opening y characteristics for shifting gear positions; and

a determining unit which, based on a vehicle speed V detected by said vehicle speed sensor and a throttle opening T detected by said throttle opening sensor, first selects one of the linear portions for which one of the expression x2i>V is satisfied and having a minimum value of x2i and the expression y2i>T is satisfied and having the minimum value of y2i, then determines a shift to higher gear position should be made when the condition (T−y1i)(x2i−x1i)<(V−x1i)(y2i−y1i) occurs with respect to the kinked line for up-shifting, and determines a shift to lower gear position should be made when the condition (T− y1i)(x2i−x1i)>(V−x1i)(y2i−y1i) occurs with respect to the kinked line for down-shifting.

5,579,227

LIFT TRUCK DIAGNOSTICS

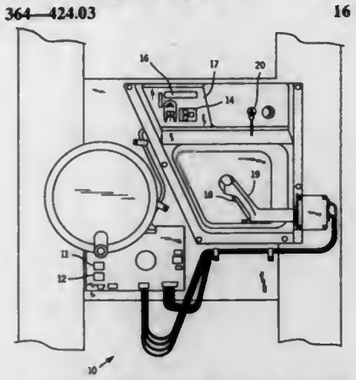
James M. Simmons, Jr., Newark Valley, and James W. Davis, Binghamton, both of N.Y., assignors to The Raymond Corporation, Greene, N.Y.

Continuation of Ser. No. 319,700, Oct. 7, 1994, abandoned.

This application Apr. 9, 1996, Ser. No. 629,795

Int. Cl.[6] G06F *11/32*

U.S. Cl. 364—424.03 **16 Claims**



1. In a material handling vehicle having a processor which executes a control program to operate the vehicle in either a maintenance mode or a normal operating mode, the improvement therein comprising:

means for monitoring a plurality of vehicle diagnostic parameters;

means operable, while the vehicle is in the maintenance mode, for manually selecting at least one of the diagnostic parameters;

means for storing an indicator for each selected diagnostic parameter, each indicator identifying a corresponding selected diagnostic parameter;

a display for indicating the condition of at least one of the selected diagnostic parameters; and

means responsive to the stored-indicators for indicating the condition of at least one selected diagnostic parameter to the display while the vehicle is in the normal operating mode.

5,579,228

STEERING CONTROL SYSTEM FOR TRAILERS

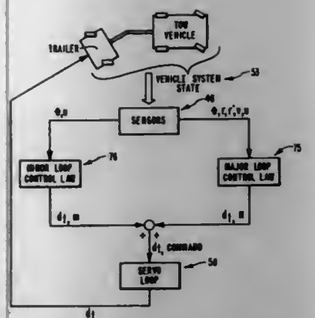
Scott S. Kimbrough, Salt Lake City; R. Scott Vincent, Provo, both of Utah, and Chunchih Chiu, Taichung, Taiwan, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Division of Ser. No. 703,612, May 21, 1991, abandoned. This application Dec. 17, 1993, Ser. No. 169,296

Int. Cl.[6] B60D *1/38;3/00*

U.S. Cl. 364—424.05 **14 Claims**

1. A forward motion steering control system for steering trailer wheels of a trailer towed by a tow vehicle in a forward direction,



said trailer and said tow vehicle forming a vehicle system, said control system comprising:

(a) a means for monitoring steering angles d_t of the trailer wheels,

(b) a means for repeatedly calculating a desired reference state for the vehicle system using a reference state equation selected from the group of equations consisting of:

$$\dot{x}_r = Ax_r + B_c d_c + B_t d_{t,m},$$

$$x_r = -A^{-1}(B_c d_c + B_t d_{t,m}), \text{ and}$$

$$x_r = -A^{-1}(B_c d_c' + B_t d_{t,m}),$$

where $\dot{x}_r$ defines a dynamic reference model and x_r defines a steady state reference model, and where d_t is the steering angle of the tow vehicle wheels, $d_{t,m}$ is a steering command based on the speed of the tow vehicle, B_c is calculated based on the longitudinal distance from the tow vehicle center of gravity to the trailer coupling, the mass of the tow vehicle and the stiffness of the vehicle system state, A is calculated based on stiffness of the vehicle system state arising from the tire/road interface, B_t is calculated based on the mass of the tow vehicle, the longitudinal distance from the tow vehicle center of gravity to the trailer coupling, and the longitudinal distance from the trailer center of gravity to the trailer coupling, and $d_{c,f}$ is a filtered d_t using an appropriately selected filter,

(c) a means for repeatedly calculating desired steering angles $d_{t,command}$ for the trailer wheels that will bring the vehicle system towards said desired reference state, the calculation of $d_{t,command}$ being based on the difference between the actual vehicle state and the desired reference state, and

(d) a means for repeatedly adjusting the steering angles d_t of the trailer wheels in response to $d_{t,command}$ to bring the vehicle system towards said desired reference state and to maintain the vehicle system approximately at the desired reference state;

wherein (c) comprises a means for executing a major loop to calculate $d_{t,M}$, a means for executing a minor loop to calculate $d_{t,m}$, and a means for calculating $d_{t,command}$ from $d_{t,M}$ and $d_{t,m}$;

wherein said major loop is a calculation of major loop steering command $d_{t,M}$ using the equation $d_{t,M} = -Gb_r * P(x_1 - x_r)$ where g is a matrix of scaling functions, and P is chosen to satisfy the Lyapunov Equation; and

wherein said minor loop is a calculation of minor loop steering command $d_{t,m}$ using the equation $d_{t,m} = f(u)\theta$, where f(u) is a vector value function of the tow vehicle speed u.

5,579,229

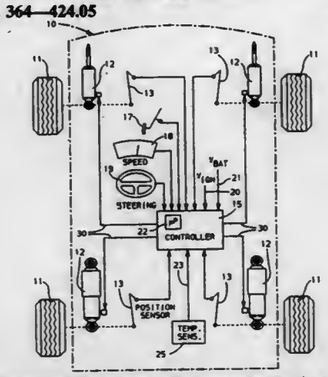
TEMPERATURE RESPONSIVE SUSPENSION SYSTEM CONTROL

Gene A. Maguran, Jr., West Bloomfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 27, 1995, Ser. No. 411,184

Int. Cl.[6] B60G *17/015*

U.S. Cl. 364—424.05 **6 Claims**



1. A suspension system control method for use in a suspension system including a damper controllable in response to an actuator command, comprising the steps of:

measuring an ambient temperature outside a vehicle;

measuring a relative velocity of a suspension system damper;

responsive to the relative velocity and the ambient temperature, estimating a damping fluid temperature of damping fluid within the damper;

comparing the estimated damping fluid temperature to a predetermined threshold;

if the damping fluid temperature is not above the predetermined threshold, constraining the actuator command to a cold temperature maximum value, wherein the cold temperature maximum value is less than a corresponding normal non-cold temperature maximum value for the actuator command; and

outputting the actuator command to the damper.

5,579,230

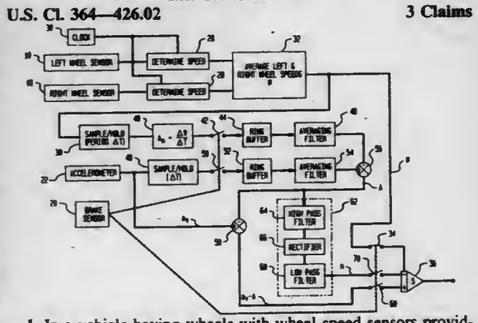
VEHICLE SPEED ESTIMATION FOR ANTILOCK BRAKING USING A CHASSIS ACCELEROMETER

William C. Lin, Troy, and David M. Sidlosky, Huntington Woods, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 10, 1991, Ser. No. 712,287

Int. Cl.[6] G06F *7/70*

U.S. Cl. 364—426.02 **3 Claims**



1. In a vehicle having wheels with wheel speed sensors providing a measure of wheel speed, wheel brakes for braking said wheels, a brake application sensor providing an indication of operation of said wheel brakes for braking said vehicle, and a chassis accelerometer providing a measure of vehicle acceleration

VOL 1192 ISS 4 NO 26 1996 UMI

that is offset from actual vehicle acceleration due to vehicle inclination, a method of estimating vehicle speed during operation of said brakes for braking said vehicle, the method comprising the steps of:

prior to said brake application sensor providing said indication of operation of said wheel brakes, (A) determining actual vehicle speed as represented by said measure of wheel speed provided by said wheel speed sensors, (B) determining actual vehicle acceleration from said determined actual vehicle speed, and (C) determining a difference between said determined actual vehicle acceleration and said measure of vehicle acceleration provided by said chassis accelerometer, said difference comprising an accelerometer bias, and

while said brake application sensor provides said indication of operation of said wheel brakes, (A) subtracting said accelerometer bias from said measure of vehicle acceleration provided by said chassis accelerometer to obtain a corrected measured vehicle acceleration and (B) estimating vehicle speed by integrating said corrected measured vehicle acceleration from an initial vehicle speed value equal to a last determined actual vehicle speed prior to said indication of operation of said wheel brakes.

5,579,231

MANAGEMENT SYSTEM FOR MANUFACTURE

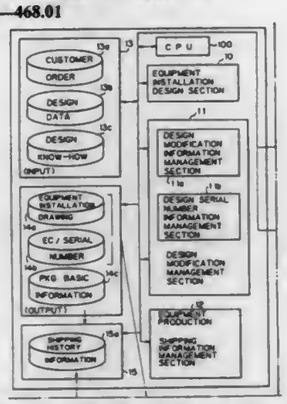
Kouji Sudou; Masao Shukuya; Katsuo Okuyama; Masao Ishiwata, all of Kawasaki; Hidetoshi Uchibori; Toshinari Matsui, both of Oyama; Shigeru Kubo, Oyama; Michinori Matsubayashi, Oyama; Kazuhide Toyoda, Oyama; Eiko Takei, Oyama; Hidekazu Morihiro, Kawasaki; Masayoshi Suzuki, Utsunomiya, and Hideo Ohata, Oyama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 855,062, Mar. 19, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 487,910

Claims priority, application Japan, Mar. 19, 1991, 3-054837; Mar. 20, 1991, 3-057371

Int. Cl.[6] G06F *17/60*

U.S. Cl. 364—468.01 **27 Claims**



1. An equipment production management system for use in the assembly of part units from a plurality of mutually different types of elementary parts and for selectively combining a plurality of types of the part units to form equipment as a final product of a production process, said system comprising:

first means for producing a construction sequence of at least one of the parts units and for outputting construction information including said construction sequence;

second means for producing the at least one of the parts units by assembling a variety of the elementary parts in accordance with said construction information;

third means for storing the part units in a storage;

fourth means for producing the equipment by assembling necessary part units selected from said storage in accordance with said construction information output from said first means;

fifth means for shipping completed equipment;

an information inputting and outputting terminal;

a central control unit for managing at least a part of said first, second, third, fourth and fifth means in a unified manner and coupled to said information inputting and outputting terminal for inputting into and outputting from the central control unit terminal information, said central control unit including a customer base order data file, a design data file, a design know-how data file storing know-how data enabling production of an optimum system design with respect to said customer base order data file, an equipment installation design unit and an arithmetic processing unit, said equipment installation design unit including data file producing means for producing an equipment installation data file corresponding to an order received from a customer based on said customer base order data file, said design data file and said design know-how data file; and

transfer means for transferring necessary information about said equipment installation data file to said first, second, third, fourth and fifth means to automatically perform at least one operation.

5,579,232

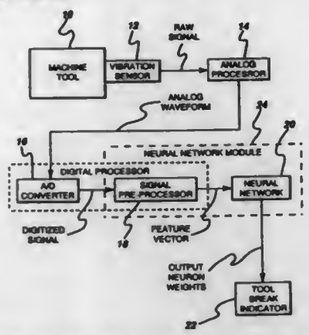
SYSTEM AND METHOD INCLUDING NEURAL NET FOR TOOL BREAK DETECTION

David W. Tong, Scotia; Kenneth M. Martin, Clifton Park, both of N.Y.; Jerry H. Carmichael, Westchester, and Edward N. Diei, Cincinnati, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 38,440, Mar. 29, 1993, abandoned. This application Mar. 9, 1995, Ser. No. 401,333

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—474.17 **7 Claims**



1. A system for detecting tool break events while machining a workpiece comprising:

means for generating electrical signals representing vibrations at an interface between a tool and said workpiece;

analog signal processing means for producing from said signals, unipolar, signal energy-versus-time analog waveforms;

digital processor means for a) sampling and digitizing said unipolar output signals, b) screening said sampled and digitized signals for alerting spikes, and c) calculating a plurality of feature vectors for digitized signals at, preceding, and following said alerting spikes, said plurality of feature vectors including mean values, slopes of mean values, standard deviations, and slopes of standard deviations; and

a trained neural net for receiving said plurality of feature vectors at an input layer of said trained neural net, said neural net trained iteratively by applying inside data representative of a normal event and outside data representative of an abnormal event, the neural net using an adjustable bias parameter for biasing correct classification of inside and outside data during training and for forming an acceptable class boundary about said inside data and outside data, said trained neural net using said acceptable class boundary to classify said plurality of features as at least one of a break event, a non-break event, and an abnormal event.

5,579,233

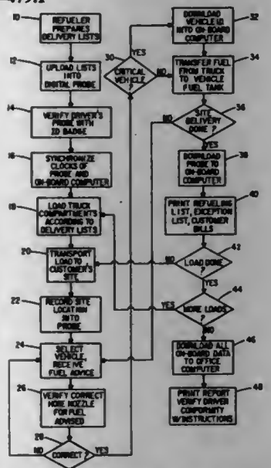
METHOD OF ON-SITE REFUELING USING ELECTRONIC IDENTIFICATION TAGS, READING PROBE, AND A TRUCK ON-BOARD COMPUTER

Robert R. Burns, 4705 Wilford Way, Edina, Minn. 55435

Filed Jan. 9, 1995, Ser. No. 370,097

Int. Cl.[6] G06F *17/60*

U.S. Cl. 364—479.1 **18 Claims**



1. A method for ensuring accurate on-site delivery of petroleum or similar products from a delivery truck, through a pump, accumulating gallonage meter, and associated delivery hose, to the fuel tanks of customer vehicles or to customer storage tanks comprising:

(a) affixing to each customer site and to each of the fuel tanks at each site a machine-readable identifier carrying encoded information;

(b) providing the delivery truck with an on-board digital computer, said computer being able to periodically read said truck's accumulating gallonage meter at pre-determined intervals, and store these readings and the time each reading is taken;

(c) providing to the driver of the truck a delivery list having information thereon concerning where and how to load the truck with a product and where to deliver the product, and a digital probe having a microprocessor and a RAM memory for storing therein at least some of the information from the delivery list;

(d) loading said truck at a storage facility with a product in accordance with the information contained on said delivery list;

(e) transporting said product to said customer site;

(f) using said digital probe to read said machine-readable identifier affixed to said customer site;

(g) using said digital probe to read said machine-readable identifiers affixed to said fuel tanks;

(h) comparing information read from said machine-readable identifiers affixed to said fuel tanks with information stored in said RAM memory of said digital probe for signaling said driver the proper product to be loaded into said fuel tanks;

(i) recording in said digital probe the time said probe touched said machine-readable identifiers affixed to said fuel tanks; and

(j) transferring the product from said truck into said fuel tanks of said customers through said delivery hose.

5,579,234

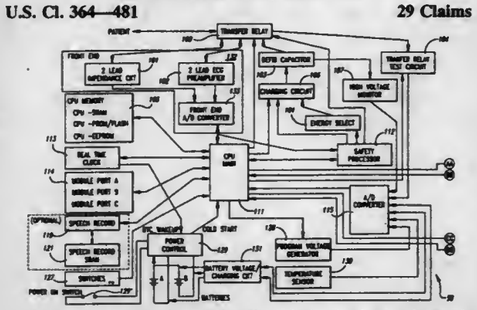
SYSTEM FOR AUTOMATICALLY TESTING AN ELECTRONIC DEVICE DURING QUIESCENT PERIODS

Robert A. Wiley, Tukwila, and Abraham H. Kou, Redmond, both of Wash., assignors to Physio-Control Corporation, Redmond, Wash.

Filed Mar. 11, 1994, Ser. No. 209,948

Int. Cl.[6] G01R *15/12*; A61N *1/39*

U.S. Cl. 364—481 **29 Claims**



1. A method of testing a plurality of circuits in an electronic system having an active mode of operation and a quiescent mode of operation, comprising the steps of:

determining if the electronic system is in a quiescent mode of operation;

testing an operation of at least a first circuit if the electronic system is in the quiescent mode of operation, the testing of the first circuit being impractical during a non-quiescent mode of operation of the electronic system;

storing the results of the tested operation of the first circuit; and

providing a first indication to an operator of the electronic system if the tested operation of the first circuit is unacceptable.

5,579,235

METHOD OF MONITORING RPM SENSORS

Andreas Schlichenmaier, Zaberfeld.Leonbronn; Klaus Haefele, Leutenbach; Ulrich Schwabe, Ditzingen; Christian Dittmar, Korntal; Martin Blanc, Knittlingen-Kleinvillars, and Thomas Purat, Asperg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

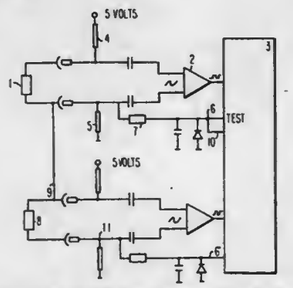
PCT No. PCT/DE93/00249, § 371 Date Oct. 7, 1994, § 102(e) Date Oct. 7, 1994, PCT Pub. No. WO93/20452, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 18, 1993, Ser. No. 318,740

Claims priority, application Germany, Apr. 7, 1992, 42 11 622.8

Int. Cl.[6] G06F *7/70*

U.S. Cl. 364—483 **2 Claims**



1. In a process for monitoring a plurality of rpm sensors, said process comprising the steps of superposing a direct current voltage on an alternating voltage signal from one rpm sensor in one rpm sensor circuit to form a combined voltage signal and monitor-

ing a voltage level of the combined voltage signal at a monitoring point in the one rpm sensor circuit to detect a fault, the improvement comprising changing the voltage level at the monitoring point in the one rpm sensor circuit by feeding a test voltage pulse to a pole of the one rpm sensor during a predetermined time interval in a test stage; and monitoring a voltage level at a monitoring point of at least one other rpm sensor in at least one other rpm sensor circuit to determine if the voltage level at the monitoring point in the at least one other rpm sensor circuit changes during the predetermined time interval in which the voltage level is changed at the monitoring point in the one rpm sensor circuit and thus to determine when a short circuit exists between the at least one other rpm sensor and the one rpm sensor.

5,579,236

VOLTAGE/CURRENT MEASURING UNIT AND METHOD

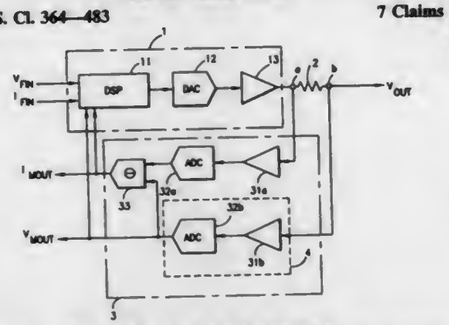
Toshio Tamamura, Hachioji, and Shinichi Tanida, Kawasaki, both of Japan, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 195,383, Feb. 14, 1994, abandoned. This application Apr. 11, 1996, Ser. No. 634,755

Claims priority, application Japan, Feb. 27, 1993, 5-063389

Int. Cl.[6] G01R *19/145*

U.S. Cl. 364—483 **7 Claims**



1. A voltage/current measuring unit comprising:

a signal generating source including a digital signal processor having a digital error detecting unit, and a digital-to-analog converter (DAC), connected in series, said digital error detecting unit providing a digital error voltage to said DAC that is a difference between settable input digital voltage and feedback digital signal values;

a current measuring resistor having first and second terminals respectively connected to an output terminal of the signal generating source and a connection terminal;

a voltage measuring circuit connected to said digital error detecting unit for measuring a voltage at said second terminal of said current measuring resistor and for providing a voltage feedback signal to said signal generating source; and

a current measuring circuit connected to said digital error detecting unit for measuring a voltage across said first and second terminals of said current measuring resistor, and for providing a current feedback signal to said signal generating source;

said voltage measuring circuit and current measuring circuit both including analog-to-digital converter means for respectively concerning a voltage appearing at said second terminal of said current measuring resistor and a voltage appearing across said first and second terminals of said current measuring resistor int digital feedback voltage values that are fed to said signal generating source as said feedback digital signal values.

5,579,237

METHOD OF DESIGNING A CELL PLACEMENT OF AN INTEGRATED CIRCUIT

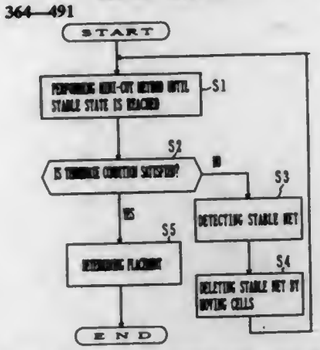
Toshiyuki Shibuya, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 10, 1994, Ser. No. 339,211

Claims priority, application Japan, Nov. 15, 1993, 5-284682

Int. Cl.[6] G06F *17/10*

U.S. Cl. 364—491 **21 Claims**



1. An integrated circuit placement method for designing a cell placement of an integrated circuit by setting a cut line which divides the integrated circuit into a plurality of blocks and moving cells such that the cut size as a number of nets connecting the cells and traversing the cut line is minimized, said method comprising the steps of:

a) detecting stable nets, which have caused a local minimum state if the cut size has reached the local minimum state after executing a mini-cut method from the nets;

b) selecting all or a part of the detected stable nets and moving cells, connected to the selected stable nets and placed in different blocks, to either of the blocks; and

d) detecting stable nets if it is determined that cut size cannot satisfy a terminate condition after executing the mini-cut method immediately following said step b), and for reactivating said step b).

5,579,238

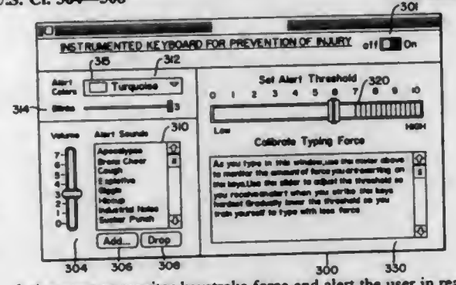
INSTRUMENTED COMPUTER KEYBOARD FOR PREVENTION OF INJURY

Michael Krugman, 41 W. 86th St. #7K, New York, N.Y. 10024

Continuation-in-part of Ser. No. 327,157, Oct. 21, 1994, abandoned. This application Aug. 21, 1995, Ser. No. 517,265

Int. Cl.[6] G01H *11/00*

U.S. Cl. 364—508 **17 Claims**



1. A system to monitor keystroke force and alert the user in real time if the keystroke force used exceeds a selected threshold, the system comprising:

a computer keyboard to enter words and numbers and having a casing and a plurality of keys;

a computer for processing the entered words and numbers, the computer being coupled to the keyboard, a sound card coupled to the computer and having a microphone input port;

a sensor means for sensing vibrations when the user strikes the keyboard and for outputting electrical signals corresponding to the strength of the vibrations, the sensor means being coupled to the microphone input port and being mounted on the keyboard casing; and

computer program means within the computer to activate an alarm to the user when the vibrations exceed a selected threshold.

5,579,239

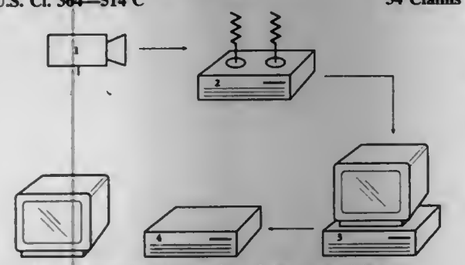
REMOTE VIDEO TRANSMISSION SYSTEM

Mitchael C. Freeman, 14318 E. 11th St., Tulsa, Okla. 74108; Richard C. Freeman, 563 S. 87th East Ave., Tulsa, Okla. 74112; Chad Boss, 14131 E. 12th St., Tulsa, Okla. 74108, and Michael H. Freeman, R.R. 1, Box 315-A, Liberty Mounds, Okla. 74047

Filed Feb. 16, 1994, Ser. No. 198,130

Int. Cl.[6] H04L *5/00*

U.S. Cl. 364—514 C **34 Claims**



1. An apparatus for transmission of data, comprising:

a mobile remote unit including:

a.) means for capturing, digitizing, and compressing at least one composite signal;

b.) means for storing said composite signal;

c.) means for transmitting said composite signal;

a host unit including:

a.) means for receiving at least one composite signal transmitted by the remote unit;

a playback unit including:

a.) means for exchanging data with said host unit;

b.) means for storing the composite signal received by the host unit;

c.) means for decompressing said composite signal.

5,579,240

METHOD AND AN APPARATUS FOR ILLUMINATING POINTS ON A MEDIUM

Niels Buus, Lystrup, Denmark, assignor to Dicon A/S, Lystrup, Denmark

PCT No. PCT/DK93/00180, § 371 Date Nov. 28, 1994, § 102(e) Date Nov. 28, 1994, PCT Pub. No. WO94/24327, PCT Pub. Date Dec. 9, 1993

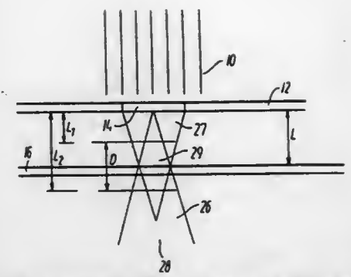
PCT Filed May 25, 1993, Ser. No. 343,479

Claims priority, application Denmark, May 26, 1992, 0694/94

Int. Cl.[6] G02B *13/24*

U.S. Cl. 364—525 **8 Claims**

1. A method for the illumination of points on a medium (**16**), said illumination being performed by illuminating a plurality of perforations (**14**) with optical energy having a center wavelength (λ), said optical energy passing through the perforations (**14**) and illuminating the medium (**16**) arranged at a distance (L) therefrom, said perforations (**14**) having a cross-section so as to provide, for each perforation (**14**), a diverging bundle of rays (**28**) created by diffraction, characterized by arranging the medium (**16**) to be illuminated at a distance (L) from the perforations (**14**) so that the medium (**16**) is substantially located in the transition of the diverging bundles of rays (**28**) between the Fresnel region (**27**) and the Fraunhofer region (**26**).



5,579,241

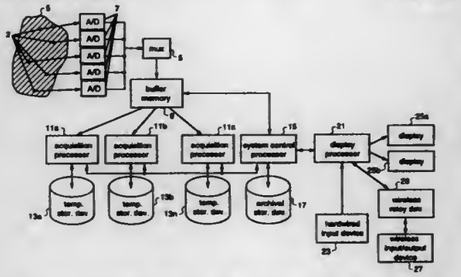
REAL-TIME ACQUISITION AND ARCHIVING SYSTEM FOR MULTIPLE TIME-SAMPLED SIGNALS

Nelson R. Corby, Jr., Scotia, and Richard A. Hogle, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 29, 1994, Ser. No. 267,623

Int. Cl.[6] G06T *12/40;* **G09G** *5/14*

U.S. Cl. 364—550 **2 Claims**



1. A data acquisition, display and archive device for processing data from a plurality of sensors spatially arranged on a subject comprising:

a) a buffer memory for receiving and storing the data;

b) a plurality of temporary acquisition branches connected in parallel, each branch comprising:

1. a temporary storage device capable of storing data,

2. an acquisition processor coupled to the temporary storage device for reading data from the buffer memory, storing the data on the temporary storage device, emptying the buffer memory and for reading the data from the temporary storage device;

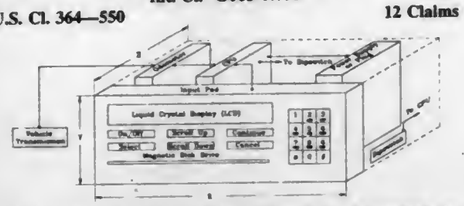
c) an archive storage device capable of storing large amounts of data; and

d) a system control processor coupled to each acquisition processor by a control line, for sensing when the buffer memory requires emptying, and for activating an acquisition branch to empty the buffer memory, the system control processor also activating an acquisition branch to download data from its connected temporary storage device to the archive storage device, providing output of status of the system and data stored, the system control processor being responsive to operator input.

5,579,242
SYSTEM FOR ELECTRONIC RECORDING AND ACCOUNTING OF MOTOR VEHICLE MILEAGE

Janice V. Fisher, 322 Weatherbee Rd., Fort Pierce, Fla. 34950

Filed Aug. 24, 1994, Ser. No. 294,909
Int. Cl.[6] G06F 17/00
U.S. Cl. 364—550 12 Claims

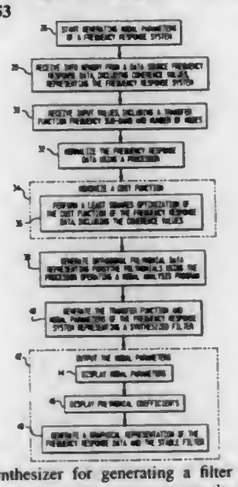


1. A system for electronically recording and accounting for mileage of a motor vehicle comprising:
- a first input means for receiving input data from a user of the system;
- a display means connected to said first input means for displaying output data to the user;
- a processing means directly connected to said first input means and said display means for manipulating said input data received from the user and mileage data received from an odometer connected to the motor vehicle;
- a generation means for generating an electrical pulse to said processing means for each revolution of a cable, wherein said cable is connected to said odometer;
- a second input means connected directly to said processing means for receiving model number data and transmission data for the motor vehicle wherein said second input means comprises a series of dipswitches, said dipswitches having at least two positions;
- an output means connected to said processing means for storing said output data;
- a power means for providing electrical power to the system.

5,579,243
MODAL PARAMETER ESTIMATION FOR STABLE FILTERS

Ronald H. Levine, Woodbridge, Conn., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 20, 1994, Ser. No. 309,281
Int. Cl.[6] G06F 17/11
U.S. Cl. 364—553 20 Claims

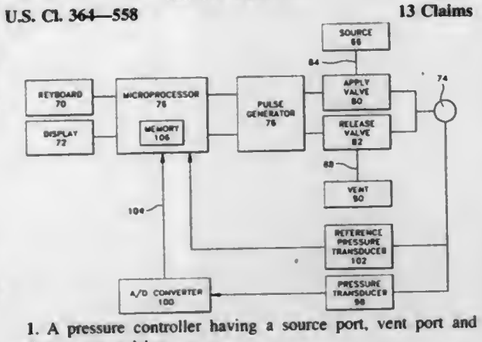


7. A filter synthesizer for generating a filter from frequency response data of a frequency response system, the filter synthesizer comprising:
- an input device for inputting the frequency response data, including coherence values;
- memory and stored programs for receiving and storing the frequency response data;
- a processor operating with the stored programs and including:
  - means for processing the frequency response data;
  - first means for generating first orthogonal polynomial data from a cost value generated from a cost function applied to the frequency response data including the coherence values, the generated first orthogonal polynomial data corresponding to a first transfer function relating to the frequency response data; and
  - second means for generating modal parameters from the generated first orthogonal polynomial data; and
- an output device for outputting the generated first orthogonal polynomial data and the modal parameters corresponding to the first transfer function determining the synthesized filter.

5,579,244
PRESSURE CONTROLLER

Roderick G. Brown, Nottingham, United Kingdom, assignor to Druck Limited, United Kingdom

Filed Apr. 25, 1995, Ser. No. 429,232
Claims priority, application United Kingdom, Nov. 2, 1994, 9422139
Int. Cl.[6] G01N 7/00
U.S. Cl. 364—558 13 Claims

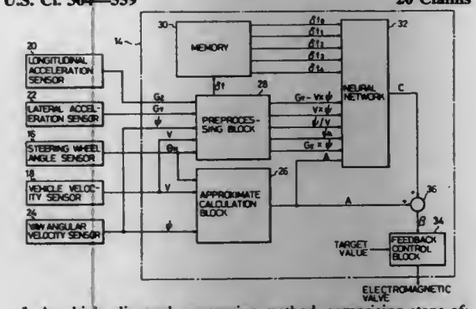


1. A pressure controller having a source port, vent port and outlet port comprising:
- selection means permitting a user to select a pressure to be maintained at the outlet port;
- apply and release valves for regulating gas flow, each valve having an inlet and an outlet and a control input for receiving pulse width modulated control signals; the apply valve inlet being adapted to be connected to a source of pressurized gas, the apply valve outlet being connected to the source port, the release valve inlet being connected to the vent port, and the release valve outlet being adapted to be connected to a vent;
- a pressure transducer connected to the outlet port and adapted to generate a digital signal representing the pressure;
- processor means connected to the pressure transducer and selection means, and adapted to generate control signals to the apply and release valves;
- valve characterization means for calibrating the controller by independently determining n_o for each valve for at least two predetermined pressures within the range of the controller; and
- means for storing the calibration n_o values in the processor means for use by said processor means in generating control signals during operation of the controller;
- wherein each pulse width modulated control signal has at least one period, each period having one pulse, the pulse being measured as a percentage of the period, and wherein n_o is the percentage of the pulse width modulated control signal received at an individual valve at which gas flow is initiated.

5,579,245
VEHICLE SLIP ANGLE MEASURING METHOD AND A DEVICE THEREFOR

Manabu Kato, Okazaki, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 4, 1994, Ser. No. 191,082
Claims priority, application Japan, Mar. 17, 1993, 5-057421
Int. Cl.[6] G01B 7/00
U.S. Cl. 364—559 20 Claims



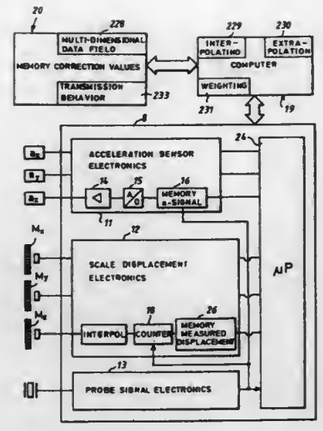
1. A vehicle slip angle measuring method, comprising steps of:
- (a) detecting, using at least one sensor of the vehicle, a steering state of front wheels of a vehicle;
- (b) detecting, using at least one sensor of the vehicle, a motion state of the vehicle;
- (c) deriving an approximate value of a vehicle slip angle at a centroid of the vehicle based on the front wheel steering state and the motion state, respectively detected in said steps (a) and (b);
- (d) supplying the front wheel steering state and the motion state, respectively detected in said steps (a) and (b) and the approximate value derived in said step (c) to a learned neural network, to estimate a correction value corresponding to a deviation between the approximate value and an actual value of the vehicle slip angle at the centroid of the vehicle; and
- (e) controlling the vehicle based upon a value derived by correcting the approximate value derived in said step (c), by using the correction value estimated in said step (d), as the vehicle slip angle at the centroid of the vehicle body.

5,579,246
METHOD AND DEVICE FOR THE CORRECTION OF MEASUREMENT ERRORS DUE TO VIBRATIONS IN COORDINATE MEASURING DEVICES

Peter Ebersbach, Essingen, and Helmut Müller, Gmünd, both of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Germany

Filed Dec. 12, 1994, Ser. No. 353,595
Claims priority, application Germany, Dec. 11, 1993, 43 42 312.4
Int. Cl.[6] G01B 5/008; 7/008
U.S. Cl. 364—571.01 17 Claims

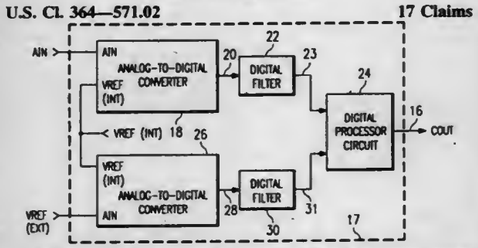
1. Method for correction of measurement errors due to vibration in a coordinate measuring device, comprising:
- continuously monitoring the time course of interfering vibrations by means of sensors (a_x, a_y, a_z) on a vibrating portion (5) of said coordinate measuring device and storing measured values of interfering vibrations during a time interval,
- adjusting the measured values of said sensors with stored correction parameters that describe the natural frequency (v) an the damping constants (δ) of the vibrations and also the amplitude and phase information of the characteristic modes (G_i) of the vibrations contributing to the interfering vibrations, and
- calculating the measurement errors of said coordinate measuring device due to vibration at points of probing from the time course of corrected measured values of said sensors (a_x, a_y, a_z).



5,579,247
METHOD AND APPARATUS FOR DECREASING THE INTERFERENCE AND NOISE SENSITIVITY OF A RATIOMETRIC CONVERTER TYPE OF CIRCUIT

Donald A. Kerth, and Navdeep S. Sooch, both of Austin, Tex., assignors to Crystal Semiconductor Corporation, Austin, Tex.

Continuation of Ser. No. 441,672, May 15, 1995, abandoned, which is a continuation of Ser. No. 197,666, Feb. 14, 1994, abandoned, which is a continuation of Ser. No. 656,294, Feb. 15, 1991, abandoned. This application Sep. 29, 1995, Ser. No. 537,224
Int. Cl.[6] G06F 19/00
U.S. Cl. 364—571.02 17 Claims



1. A method for converting a sense signal and a reference signal from a remote transducer to an output signal, said output signal being proportional to said sense signal and inversely proportional to said reference signal, such conversion method comprising the steps of:
- (a) converting said sense signal from said remote transducer to a digital sense signal using a conversion reference signal such that said digital sense signal is inversely proportional to the amplitude of said conversion reference signal, said conversion reference signal being independent of both of said sense signal and said reference signal;
- (b) converting said reference signal from said remote transducer to a digital reference signal using said conversion reference signal;
- (c) filtering said digital sense signal to provide a filtered digital sense signal;
- (d) filtering said digital reference signal to provide a filtered digital reference signal; and
- (e) dividing said filtered digital sense signal by said filtered digital reference signal to provide said output signal.

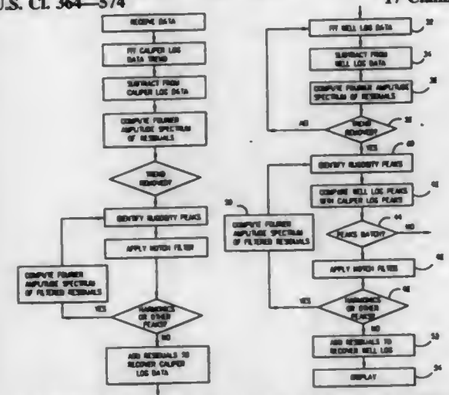
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5,579,248

METHOD FOR REMOVING BOREHOLE RUGOSITY NOISE FROM WELL LOG DATA

John A. Nieto, Carrollton; Denis P. Schmitt, Richardson; Robert G. Keys, Dallas, and Keh Pann, Richardson, all of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jan. 9, 1995, Ser. No. 369,965
Int. Cl.[6] G01V *1/36;1/40*
U.S. Cl. 364—574 **17 Claims**



1. A method for removal of sinusoidal noise from a log comprising the steps of:

receiving caliper log data and well log data having sinusoidal noise;

reducing said caliper log data to a zero-mean, stationary series by approximating the background trend in said caliper log data with a piece wise cubic spline and subtracting said piece wise cubic spline from said caliper log data;

identifying the wavenumber of said sinusoidal noise in said caliper log data by its peak in a Fourier amplitude spectrum of residuals after said reducing step; and

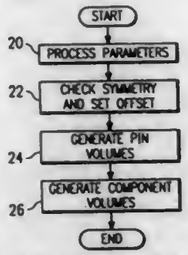
removing said sinusoidal noise from said caliper log data by applying a filter.

5,579,249

SYSTEM FOR MODELING AN INTEGRATED CHIP PACKAGE AND METHOD OF OPERATION

Darvin R. Edwards, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 1, 1993, Ser. No. 146,665
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—578 **16 Claims**



1. A system for modeling an integrated chip package, comprising:

a parametric processor operable to acquire a plurality of parameter values for a plurality of parameters based on said integrated chip package and to obtain a symmetry offset based on said parameters, wherein the plurality of parameters defines spacial relationships between a plurality of parts of the integrated chip package; and

a volume generator coupled to the parametric processor operable to generate a plurality of volume coordinates in accordance with said symmetry offset for a plurality of volumes associated with the plurality of parts of the integrated chip package by using the plurality of parameter values and to model the integrated chip package.

5,579,250

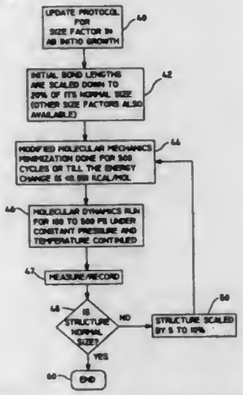
METHOD OF RATIONAL DRUG DESIGN BASED ON AB INITIO COMPUTER SIMULATION OF CONFORMATIONAL FEATURES OF PEPTIDES

Vitukudi N. Balaji, 1642 Orchard Wood Rd., Encinitas, Calif. 92024, and Chandra U. Singh, 4 Thornhurst, San Antonio, Tex. 78218

Continuation of Ser. No. 223,513, Apr. 5, 1994, abandoned, which is a continuation of Ser. No. 628,111, Dec. 14, 1990, Pat. No. 5,331,573. This application Apr. 24, 1995, Ser. No. 427,987

The portion of the term of this patent subsequent to Jul. 19, 2011, has been disclaimed.

Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—496 **26 Claims**



1. A computer-assisted method of rational design of bioactive compounds, comprising:

(a) electronically simulating and selecting the most probable conformations of a given polypeptide, wherein the most probable conformation of a given polypeptide is selected by an ab initio procedure, comprising:

(i) simulating a real-size primary structure of a polypeptide in a solvent box, wherein the polypeptide comprises a plurality of amino acid residues linked together in a chain, each residue having ϕ, ψ angles associated therewith, said ϕ, ψ angles defining the relative angle of a first and second amide plane of said amino acid residue with a common C^{α} atom of said amino acid residue;

(ii) shrinking the size of the polypeptide isobarically and isothermally; and

(iii) expanding the polypeptide to its real size in selected time periods to determine an energetically most probable three-dimensional structure of the peptide;

(b) designing a chemically modified analog that substantially mimics the energetically most probable three-dimensional structure of the peptide;

(c) chemically synthesizing the chemically modified analog of the peptide; and

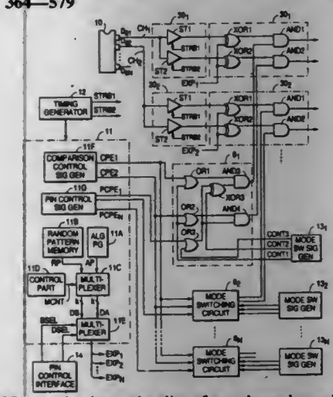
(d) evaluating the bioactivity of the synthesized chemically modified analog and selecting the analogs that exhibit bioactivity.

5,579,251

IC TESTER

Kazuhiko Sato, Gyoda, Japan, assignor to Advantest Corporation, Japan

PCT No. PCT/JP93/00381, § 371 Date Nov. 29, 1993, § 102(e) Date Nov. 29, 1993, PCT Pub. No. WO93/20457, PCT Pub. Date Oct. 14, 1993
PCT Filed Mar. 29, 1993, Ser. No. 142,472
Claims priority, application Japan, Mar. 31, 1992, 4-076715; Mar. 31, 1992, 4-076721
Int. Cl.[6] G06F *11/00;* **G01R** *31/28*
U.S. Cl. 364—579 **16 Claims**



1. An IC tester having a plurality of test channels, each including a level/timing comparator section for performing a logic decision on a level of an input signal supplied thereto at a desired timing, and a logic comparator section, receiving a signal obtained as a result of the logic decision in said level/timing comparator section, for logically comparing said signal with an expected value signal generated by pattern generating means and for outputting therefrom or inhibiting a signal obtained as a result of the logic comparison therein from being output in accordance with a comparison control signal generated by comparison control signal generating means, said IC tester comprising:

pin control signal generating means for producing a pin control signal corresponding to each of the test channels;

mode switching signal generating means associated with each of the test channels for generating a mode switching signal; and

mode switching/logic operation means, associated with each of the test channels, for receiving the comparison control signal from the comparison control signal generating means, an associated pin control signal from said pin control signal generating means, and an associated mode switching signal from said mode switching signal generating means, for determining whether or not to supply the received comparison control signal to the logic comparator section of an associated test channel.

5,579,252

COMPUTER MONITOR POWER-SAVING DEVICE

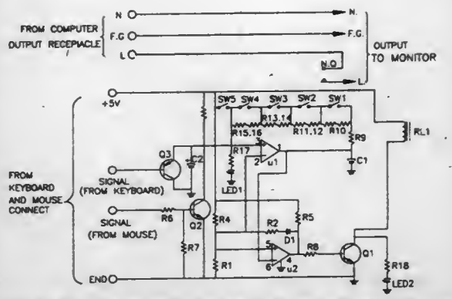
Jen S. Huang, 3FL. No. 276-2, Ta-Tung Road, Sec. 1, Hsi-Chih City, Taipei Hsien, Taiwan

Filed Sep. 20, 1994, Ser. No. 309,176
Int. Cl.[6] G06F *1/00*
U.S. Cl. 364—707 **7 Claims**

1. On a computer having a monitor, a computer monitor power saving device for switching off power delivery to the monitor when no user-input signal is received by the computer for a preset idle period, comprising:

(a) detection means, for detecting whether a user-input signal is being provided to the computer, said detection means generating a first voltage while no user-input signal is detected;

(b) a first comparator, for comparing the first voltage to a first preset reference voltage, and for generating an output voltage if the first voltage exceeds the first preset reference voltage;



(c) an RC circuit including a capacitor and a plurality of resistors, said RC circuit having a time constant preset to such a value that a voltage of said capacitor is charged by the output voltage of said first comparator to equal a second preset reference voltage after the preset idle period is elapsed;

(d) a second comparator, for comparing the voltage of said capacitor to the second preset reference voltage, and for generating a power-off signal when the voltage of said capacitor exceeds the second preset reference voltage; and

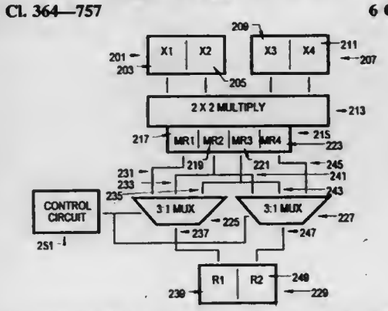
(e) switch means, responsive to the power-off signal, for disconnecting the power delivery to the monitor.

5,579,253

COMPUTER MULTIPLY INSTRUCTION WITH A SUBRESULT SELECTION OPTION

Ruby B. Lee, 12933 Atherton Ct., Los Altos, Calif. 94022; Charles R. Dowdell, 5020 Alder Ct., Fort Collins, Colo. 80525, and Joel D. Lamb, 1819 Etton Dr., Fort Collins, Colo. 80526

Filed Sep. 2, 1994, Ser. No. 300,609
Int. Cl.[6] G06F *7/52*
U.S. Cl. 364—757 **6 Claims**



1. A computing apparatus for multiplying operand and aligning multiplication results into a single register, comprising:

a first N-bit operand register having a first operand;

a second N-bit operand register having a second operand;

a multiplier circuit operative to multiply the first and the second operands together, thereby producing as an output an intermediate result that is 2N-bits wide having N high bits and N low bits; and

a bit selection circuit including a plurality of multiplexers wherein each of said multiplexers is operative in response to a multiply with select computer instruction to select a respective one of a fixed set of intermediate result bits and place a bit so selected into a particular bit location in a result register, wherein bits of said intermediate result output by said multiplier circuit are selected from both the N high bits and the N low bits, such that a subresult is stored in a single register without requiring post multiply operations;

wherein each of said multiplexers selects said respective one of a fixed set of intermediate result bits from an intermediate result having at least N+1 intermediate result bits.

5,579,254

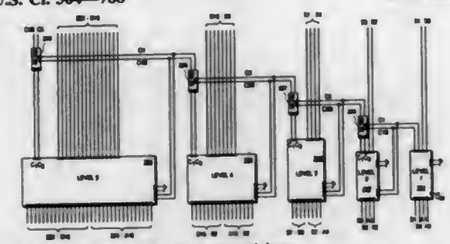
FAST STATIC CMOS ADDER

Sudarshan Kumar, and Jashojiban Banik, both of Aloha, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 32,607, Mar. 17, 1993, Pat. No. 5,471,414. This application Jun. 6, 1995, Ser. No. 471,287

Int. Cl.[6] G06F 7/50;7/38

U.S. Cl. 364—788 12 Claims



1. A conditional sum adder comprising:

a first 2-bit adder which computes two sum bits and an initial carry signal;

an additional number of 2-bit adders, wherein an additional 2-bit adder includes a sum circuit and a carry circuit, said sum circuit calculates two sum bits by adding two 2-bit numbers and factoring a first carry signal and a second carry signal from previous 2-bit adders, said carry circuit generating a third carry signal by adding the two 2-bit numbers assuming that said first carry signal and said second carry signal from said previous 2-bit adders indicates a carry and generating a fourth carry signal by adding the two 2-bit numbers assuming that said first carry signal and said second carry signal from said previous 2-bit adders indicates no carry; and

a multiplexer coupled to said additional 2-bit adders to select either said third carry signal and a complement of said third carry signal or said fourth carry signal and a complement of said fourth carry signal according to said first carry signal and said second carry signal from said previous 2-bit adders.

5,579,255

ANALOG ARITHMETIC CIRCUIT WITH ELECTRIC RESISTOR NETWORKS AND NUMERICAL SOLUTION METHOD OF FOURTH-ORDER PARTIAL DIFFERENTIAL EQUATION BY THE USE OF THE CIRCUIT

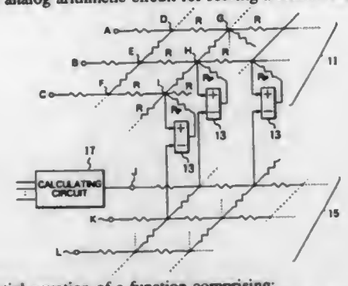
Fumio Sakata, Tokyo, Japan, assignor to Sakata Denki Co., Ltd., and Radic Co., Ltd., both of Tokyo, Japan

Filed May 24, 1995, Ser. No. 449,487

Int. Cl.[6] G06G 7/38

U.S. Cl. 364—810 8 Claims

1. An analog arithmetic circuit for solving a fourth-order partial



differential equation of a function comprising:

a first resistor network comprising a plurality of first resistors connected to each other in a form of a lattice structure to have a plurality of first interconnected points arranged in a matrix form and a plurality of additional resistors having one ends connected to said first interconnected points, respectively, said first resistor network having a plurality of first peripheral terminals at outer ends of outermost ones of said first resistors, said first peripheral terminals being supplied with external point voltages of first predetermined voltage levels, respectively, outermost ones of said first interconnected points being supplied with boundary voltages of second predetermined voltage levels, first resultant voltages being present at the remaining ones of said first interconnected points excluding said outermost first interconnected points;

a plurality of subtracting means connected to said remaining first interconnected points, respectively, for subtracting second resultant voltages from said first resultant voltages to produce subtracted voltages, said subtracted voltages being supplied to the other ends of said additional resistors, respectively;

a second resistor network comprising a plurality of second resistors connected to each other in a form of a lattice structure to have a plurality of second interconnected points arranged in a matrix form and corresponding to said remaining first interconnected points, respectively, said second resistor network having a plurality of second peripheral terminals at outer ends of outermost ones of said second resistors, said second peripheral terminals corresponding to said first peripheral terminals, respectively, said second resultant voltages being present at said second interconnected points and being supplied therefrom to said subtracting means, respectively; and

a plurality of calculating means connected to said second peripheral terminals, respectively, each of said calculating means calculating a total voltage of one of said external point voltages supplied to a corresponding one of said first peripheral terminals, two of said boundary voltages supplied to two adjacent to the corresponding one of said outermost first interconnected points, and one of said first resultant voltages on the adjacent one of said remaining ones of said first interconnected points adjacent to said corresponding one of said outermost first interconnected points, and subtracting four times of one of said boundary voltages supplied to said corresponding one of said outermost first interconnected points from said total voltage to produce a calculated voltage, said calculated voltage being supplied to the corresponding one of said second external terminals, whereby said first resultant voltages provide solutions of said function of said fourth-order partial differential equation.

5,579,256

SEMICONDUCTOR MEMORY DEVICE AND DEFECT REMEDYING METHOD THEREOF

Kazuhiko Kajigaya; Kazuyuki Miyazawa, both of Iruma; Manabu Tsunozaki, Ohme; Kazuyoshi Oshima, Ohme; Takashi Yamazaki, Ohme; Yuji Sakai, Machida; Jiro Sawada, Kokubunji; Yasunori Yamaguchi, Tokyo; Tetsurou Matsumoto, Higashiyamato; Shinji Udo; Hiroshi Yoshioka, both of Akishima; Hirokazu Saito; Mitsuhiro Takano, both of Tokorozawa; Makoto Morino, Akishima; Sinichi Miyatake, Tokyo; Eiji Miyamoto, Ohme; Yasuhiro Kasama, Tokyo; Akira Endo, Hachioji; Ryoichi Hori, Tokyo; Jun Etoh, Hachioji; Masashi Horiguchi, Kawasaki; Shinichi Ikenaga, Koganei, and Atsushi Kumata, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 159,621, Dec. 1, 1993, which is a division of Ser. No. 899,572, Jun. 18, 1992, abandoned, which is a continuation of Ser. No. 424,904, Oct. 18, 1989, abandoned. This application May 31, 1995, Ser. No. 455,411

Claims priority, application Japan, Nov. 1, 1988, 63-277132; Nov. 7, 1988, 63-279239; Jan. 24, 1989, 1-14423; Mar. 20, 1989, 1-65840

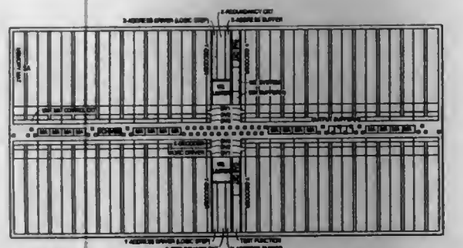
Int. Cl.[6] G11C 5/02

U.S. Cl. 365—51 6 Claims

1. A semiconductor memory device formed in a quadrilateral region on a semiconductor substrate, said quadrilateral region comprising:

a first region extending in a direction of a first center line which intersects a middle point of a short side of said quadrilateral region;

a second region extending in a direction of a second center line which intersects a middle point of a long side of said quadrilateral region; and



a third region, a fourth region, a fifth region and a sixth region which are four divided regions divided by said first region and said second region from said quadrilateral region,

said device comprising:

a first memory array, a second memory array, a third memory array and a fourth memory array each of which is formed in a corresponding one of said third region, said fourth region, said fifth region and said sixth region and each of which comprises a plurality of memory cells and a plurality of sense amplifiers;

a peripheral circuit formed in at least one of said first region and said second region, said peripheral circuit operating in connection with operations of said first memory array, said second memory array, said third memory array and said fourth memory array; and

a plurality of bonding pads formed extending in a direction of said first center line in said first region, said plurality of bonding pads being arranged in a zigzag formation.

5,579,257

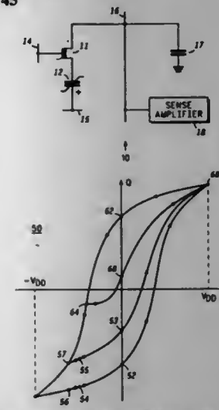
METHOD FOR READING AND RESTORING DATA IN A DATA STORAGE ELEMENT

Jy-Der D. Tai, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg

Filed Aug. 31, 1995, Ser. No. 522,477

Int. Cl.[6] G11C 11/22

U.S. Cl. 365—145 20 Claims



1. A method for reading and restoring data in a data storage element, comprising the steps of:

providing the data storage element having a switch and a capacitor with polarization retention, wherein the switch has a control electrode coupled for receiving control signals, a first current conducting electrode coupled via the capacitor with polarization retention for receiving restoration signals, and a second current conducting electrode coupled for transmitting data;

providing data in the data storage element;

placing the switch in a non-conductive state;

applying a first restoration signal to the first current conducting electrode of the switch via the capacitor with polarization retention;

applying a charging voltage to the second current conducting electrode of the switch;

removing the charging voltage applied to the second current conducting electrode of the switch;

placing the switch in a conductive state;

applying a data value voltage to the second current conducting electrode of the switch in response to a voltage at the second current conducting electrode of the switch to read data from the data storage element;

applying a second restoration signal to the first current conducting electrode of the switch via the capacitor with polarization retention; and

placing the switch in the non-conductive state to restore data in the data storage element.

5,579,258

FERROELECTRIC MEMORY

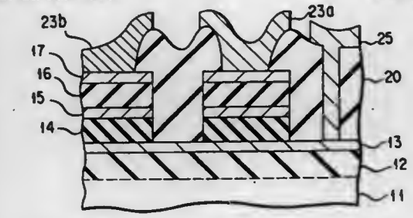
Hideo Adachi, Iruma, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1992, Ser. No. 982,570

Claims priority, application Japan, Nov. 28, 1991, 3-314508; Mar. 25, 1992, 4-67275

Int. Cl.[6] G11C 11/22

U.S. Cl. 365—145 44 Claims



1. A ferroelectric memory comprising:

first stripe electrodes;

second stripe electrodes crossing the first stripe electrodes at a different height level from the first stripe electrodes;

a plurality of memory cells, each of said memory cells being arranged between the first and second stripe electrodes, and each memory-cell including:

a ferroelectric thin film electrically connected with one of the first stripe electrodes;

a nonlinear resistive thin film layer electrically connected with the ferroelectric thin film and with one of the second stripe electrodes, said nonlinear resistive thin film layer having an odd-numbered multilayer structure, said nonlinear resistive layer having a three-layered structure of respective layers of $Bi_2O_3/ZnO/Bi_2O_3$; and

an intermediate electrode formed between the ferroelectric thin film and the nonlinear resistive thin film layer, said intermediate electrode being electrically connected with the ferroelectric thin film and with the nonlinear resistive thin film layer so as to electrically connect the nonlinear resistive thin film layer with the ferroelectric thin film.

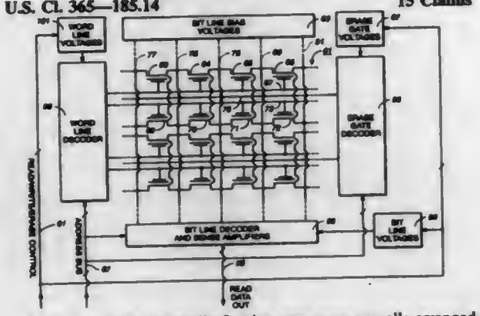
VOL 1192 ISS 4 NO 26 1996 UMI

5,579,259

LOW VOLTAGE ERASE OF A FLASH EEPROM SYSTEM HAVING A COMMON ERASE ELECTRODE FOR TWO INDIVIDUALLY ERASABLE SECTORS

George Samachisa, San Jose, and Jack H. Yuan, Cupertino, both of Calif., assignors to SanDisk Corporation, Sunnyvale, Calif.

Filed May 31, 1995, Ser. No. 453,124
Int. Cl.[6] G11C 7/00;16/02
U.S. Cl. 365—185.14 15 Claims



1. An array of non-volatile floating gate memory cells arranged on an integrated circuit in rows and columns, comprising:

a plurality of control gates elongated in a first direction and spaced apart in a second direction, said first and second directions being substantially perpendicular to each other,

a plurality of erase gates elongated in said first direction, spaced apart in said second direction, and respectively positioned adjacent to corresponding rows of memory cells in such a manner that the individual erase gates are coupled with a plurality of corresponding floating gates of individual ones of the adjacent rows of memory cells, and

means connected to the control and erase gates for removing charge from the corresponding floating gates in a corresponding adjacent row of memory cells of a selected one of the erase gates without disturbing a charge on the corresponding floating gates of the memory cells in another corresponding adjacent row of memory cells of the selected one of the erase gates.

5,579,260

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE AND DATA PROGRAMMING METHOD

Hiroshi Iwahashi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Aug. 26, 1994, Ser. No. 296,747
Claims priority, application Japan, Aug. 27, 1993, 5-235576
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—185.24 4 Claims

1. A non-volatile semiconductor memory device, comprising:

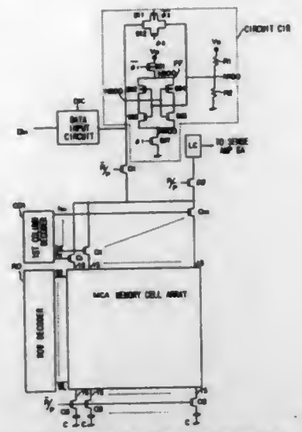
a memory cell array including memory cells arranged in matrix form having row lines and column lines, each of the memory cells including a transistor having a floating gate and a control gate, and storing data in accordance with a storage state of charges of the floating gate, the memory cells in the same row being commonly connected to one of the row lines, the memory cells in the same column being commonly connected to one of the column lines; and

programming means for programming data to a memory cell by applying a program voltage to the corresponding row line to inject electrons to the floating gate of the memory cell by using an electron tunnel effect, the memory cell having a threshold voltage varying in dependence upon the amount of charge on its floating gate,

wherein if the threshold voltage of the memory cell is lower than a predetermined threshold voltage level after electrons have been injected to the floating gate of the memory cell by applying the program voltage having a first voltage value, electrons are injected to the floating gate of the memory cell again by applying the program voltage having a second voltage value higher than the first voltage value.

electrons are simultaneously injected to the floating gates of memory cells requiring injection of electrons and connected to one of the row lines, and

when the program voltage having the second voltage value is applied to inject electrons to the floating gate of the memory cell whose threshold voltage is lower than the predetermined threshold voltage level, a predetermined voltage is applied to the column line connected to a memory cell whose threshold voltage becomes higher than the predetermined threshold voltage level by applying the program voltage having the first voltage value, in order to prevent electrons from further being injected to the floating gate of the memory cell whose threshold voltage is higher than the predetermined threshold voltage level.

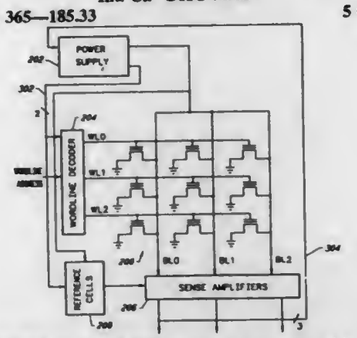


5,579,261

REDUCED COLUMN LEAKAGE DURING PROGRAMMING FOR A FLASH MEMORY ARRAY

Nader Radjy, Palo Alto; Lee E. Cleveland, Santa Clara; Jian Chen, San Jose, and Shane C. Hollmer, Santa Clara, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 21, 1995, Ser. No. 426,716
Int. Cl.[6] G11C 16/02
U.S. Cl. 365—185.33 5 Claims



1. A method of programming a selected memory cell in a group of memory cells having drains connected to a bit line, the method comprising the steps of:

applying a gate to source voltage of an initial value to the memory cells in the group of memory cells during application of a drain voltage to create a current in the bit line and decreasing the gate to source voltage to a first value where substantially no current flows from the bit line;

applying a first gate to source voltage to the selected cell while applying a first drain voltage with values sufficient to enable electrons to tunnel to a floating gate of the selected cell; and

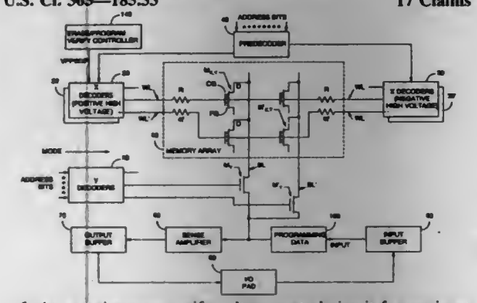
applying a second gate to source voltage having the first value to each non-selected cell in the group of cells during application of the first gate to source voltage and the first drain voltage.

5,579,262

PROGRAM VERIFY AND ERASE VERIFY CONTROL CIRCUIT FOR EPROM/FLASH

Paul J. Song, Sunnyvale, Calif., assignor to Integrated Silicon Solution, Inc., Sunnyvale, Calif.

Filed Feb. 5, 1996, Ser. No. 596,505
Int. Cl.[6] G11C 13/00
U.S. Cl. 365—185.33 17 Claims



1. An erase/program verify voltage control circuit for use in an EPROM/flash memory system that includes a plurality of memory cells that can be programmed, erased and read by a host device, said voltage control circuit comprising:

a comparator having a first differential input that is coupled to a stable voltage reference and a second differential input that is coupled to a first circuit node; said comparator changing its output as a function of differences between said voltage reference and a voltage at said first node;

a feedback network having an input coupled to said comparator's output, said feedback network being configured to respond to changes in said comparator's output by driving said first node towards said reference voltage when said reference voltage and said voltage at said first node differ; and

a voltage divider network that maintains a second circuit node at a selectable word line supply voltage when said first node is equal to said voltage reference, said word line supply voltage being selected from a preset program verify voltage when said host is performing a program verify operation and a preset erase verify voltage when said host is performing an erase verify operation.

5,579,263

POST-FABRICATION SELECTABLE REGISTERED AND NON-REGISTERED MEMORY

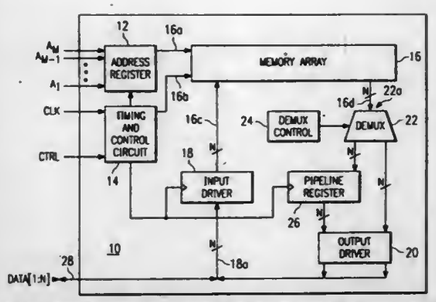
Thomas A. Teel, Austin, and David C. McClure, Carrollton, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Dec. 22, 1994, Ser. No. 362,187
Int. Cl.[6] G06F 12/00;7/00
U.S. Cl. 365—189.02 26 Claims

1. A memory comprising:

a memory array having a data quantity output for outputting a data quantity;

a data output driver having an input for receiving the data quantity and an output for outputting the data quantity from the memory;



a data quantity pipeline register having an input for receiving the data quantity and an output coupled to said input of said data output driver; and

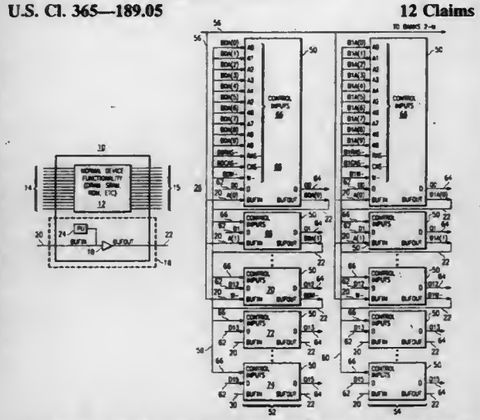
means for selectively coupling a data quantity from said data quantity output of said memory array to said input of said data output driver in a first operational mode and from said data output of said memory array to said input of said data quantity pipeline register in a second operational mode.

5,579,264

DISTRUBUTED SIGNAL DRIVERS IN ARRAYABLE DEVICES

Richard J. Glass, Austin, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 97,805, Jul. 26, 1993, abandoned.
This application Oct. 14, 1994, Ser. No. 323,428
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—189.05 12 Claims



1. A method of providing distributed buffering of control signals in an array of devices, wherein the array of devices is organized into a plurality of banks of devices, each device having buffering circuitry incorporated therein, the buffering circuitry processing signals independently of the operation of the processing of data signals by the internal circuitry of the devices, the method comprising the steps of:

buffering a set of control signals applied to a first bank of devices with the buffering circuitry in a plurality of devices of the first bank to provide a buffered set of control signals; and

applying the buffered set of control signals from the first bank of devices to an input bus, the input bus being coupled to input terminals of the first bank of devices;

wherein the buffered set of control signals are applied to the input terminals of the devices of the first bank of devices to control the functional circuitry of the first bank of devices.

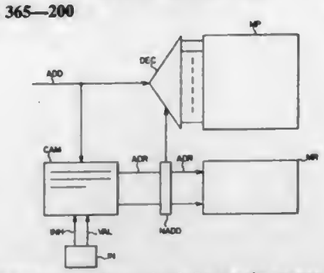
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5,579,265

MEMORY REDUNDANCY CIRCUIT

Jean Devin, Aix-en-Provence, France, assignor to SGS-Thomson Microelectronics S.A., Saint-Genis, France

Filed Feb. 27, 1995, Ser. No. 393,464
Claims priority, application France, Feb. 28, 1994, 9402282
Int. Cl.[6] G11C 7/00;29/00
U.S. Cl. 365—200 15 Claims



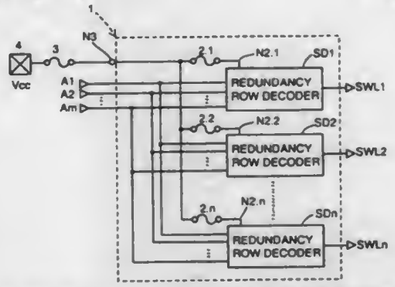
1. A memory redundancy circuit for a main memory comprising several memory zones, each accessible by a memory address, this redundancy circuit comprising a redundancy memory addressable by a defective address memory that is designed to contain different defective addresses corresponding to defective zones of the main memory and that, at each operation for addressing of the main memory, compares a main memory address with each defective address to produce a comparison signal so that, in the event of concordance, it prohibits addressing of the main memory and addresses a zone of the redundancy memory, wherein said redundancy circuit comprises an inhibition circuit having at least a first state in which it gives a signal to the defective address memory to prohibit the defective address memory from issuing an output.

5,579,266

SEMICONDUCTOR MEMORY DEVICE

Yoshiaki Tahara, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 460,943
Claims priority, application Japan, Sep. 6, 1994, 6-212436(P)
Int. Cl.[6] G11C 7/00;29/00
U.S. Cl. 365—200 5 Claims



1. A semiconductor memory device in which data are electrically rewritable, comprising:
- a memory cell array including a plurality of memory cells rows and columns, each specified by its own address formed by a plurality of address signals;
- a redundancy memory cell row or column for substituting for defective memory cell row or column of said memory cell array;
- a plurality of address signal input terminals, each provided corresponding to each of said plurality of address signals; and
- redundancy means responsive to input of the plurality of address signals specifying said defective memory cell row or column from said plurality of address signal input terminals for selecting said redundancy memory cell row or column instead of said defective memory cell row or column, wherein

said redundancy means includes
- a plurality of gate means, each provided corresponding to each of said plurality of address signal input terminals for inhibiting passage of an address signal input from a corresponding address signal input terminal in response to application of a first potential to its control electrode and passing the address signal in response to application of a second potential to its control electrode,
- a first fuse provided corresponding to each of said gate means, connected between a first node receiving said first potential and a control electrode of the corresponding gate means, and cut off when an address signal input from the address signal input terminal for the corresponding gate means among the plurality of address signals specifying said defective memory cell row or column has a first logic,
- a second fuse provided corresponding to each of said gate means, connected between a second node receiving said second potential and the control electrode of the corresponding gate means, and cut off when an address signal input from the address signal input terminal for the corresponding gate means among the plurality of address signals specifying said defective memory cell row or column has a second logic, and

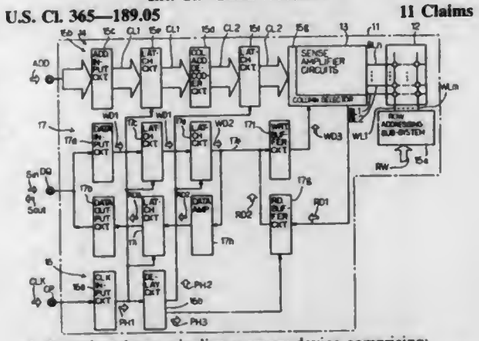
selecting means for selecting said redundancy memory cell row or column in response to all the address signals passed through said plurality of gate means having the first logic.

5,579,267

SEMICONDUCTOR PIPELINE MEMORY DEVICE ELIMINATING TIME LOSS DUE TO DIFFERENCE BETWEEN PIPELINE STAGES FROM DATA ACCESS

Yasuji Koshikawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 26, 1995, Ser. No. 534,208
Claims priority, application Japan, Sep. 28, 1994, 6-232732
Int. Cl.[6] G11C 7/00;8/00
U.S. Cl. 365—189.05 11 Claims



1. A semiconductor pipeline memory device comprising:
- a plurality of addressable memory cells for storing data bits, respectively;
- a plurality of data propagation paths selectively coupled to said plurality of addressable memory cells;
- an addressing system responsive to an external address signal supplied to an address port so as to make said plurality of addressable memory cells selectively accessible;
- a data propagation system coupled between said plurality of data propagation paths and a data port; and
- a pipeline controlling system causing said addressing system and said data propagation system to trace a pipeline sequence from an address input to a data supply, and producing at least a first timing clock signal changed to a first active level in each of pipeline cycles, a second timing clock signal changed to a second active level after said first timing clock signal in said each of said pipeline cycles and a third timing clock signal changed to a third active level between said first timing clock signal and said second timing clock signal in said each of said pipeline cycles,

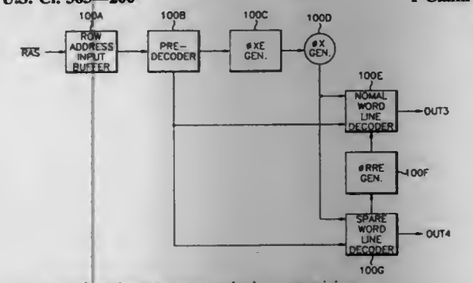
said pipeline sequence including
- a first pipeline stage close to said address port and having first temporary storage means responsive to said first timing clock signal so as to achieve a first task in a first time interval between said first timing clock signal in each of said pipeline cycles and said second timing clock signal in said each of said pipeline cycles,
- a second pipeline stage contiguous to said first pipeline stage and having second temporary storage mean's responsive to said second and third timing clock signals so as to achieve a second task in a second time interval between said second timing clock signal in each of said pipeline cycles and said third timing clock signal in the next pipeline cycle, and
- a third pipeline stage contiguous to said second pipeline stage and having third temporary storage means and responsive to said first timing clock signal so as to achieve a third task in a third time interval between said third timing clock signal in each of said pipeline cycles and said first timing clock signal in the next pipeline cycle.

5,579,268

SEMICONDUCTOR MEMORY DEVICE CAPABLE OF DRIVING WORD LINES AT HIGH SPEED

Dong-Il Seo, Kyungki-do, and Tae-Seong Jang, Boosan, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Division of Ser. No. 280,849, Jul. 26, 1994, which is a continuation-in-part of Ser. No. 224,480, Apr. 6, 1994, abandoned. This application Dec. 29, 1995, Ser. No. 580,885
Claims priority, application Rep. of Korea, Apr. 6, 1993, 5723/1993
Int. Cl.[6] G11C 11/40
U.S. Cl. 365—200 1 Claim



1. A semiconductor memory device comprising:
- a row address input buffer for receiving a row address strobe signal and for generating a row address input buffer signal;
- a predecoder for receiving said row address input buffer signal from said row address input buffer and for predecoding a row address therefrom to obtain a predecoder signal;
- a word line signal generating means for generating a word line boosting signal from said predecoder signal;

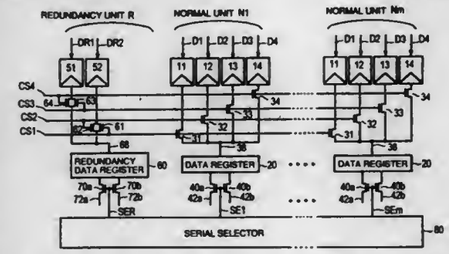
power source supply means for receiving the word line boosting signal from said word line signal generating means and for generating source power therefrom;
- a spare word line decoder for receiving said row address, said predecoder signal and said source power, said spare word line decoder generating a spare word line decoder output signal when said row address corresponds to a predetermined address stored in said spare word line decoder, said spare word line decoder also generating a redundancy signal when said spare word line decoder output signal is generated;
- a redundancy delay circuit for delaying said redundancy signal a predetermined period of time; said redundancy circuit receiving only said redundancy signal and outputting a delayed redundancy signal; and
- a normal word line decoder which receives said predecoder signal, said source power, said delayed redundancy signals and said row address, said normal word line decoder being operable to select a normal word line when said row address corresponds to a predetermined address stored in said normal word line decoder and said delayed redundancy signal indicates that said spare word line decoder output signal was not generated by said spare word line decoder.

5,579,269

SEMICONDUCTOR MEMORY DEVICE HAVING REDUNDANCY SERIAL ACCESS MEMORY PORTION

Kouji Yamamoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 405,672, Mar. 17, 1995, abandoned. This application Apr. 15, 1996, Ser. No. 623,280
Claims priority, application Japan, Mar. 30, 1994, 6-061526
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—200 6 Claims



4. A semiconductor memory device including a redundancy circuit and capable of storing a plurality of data and reading out the stored data serially, comprising:
- (a) a plurality of normal units each including
  - an even number of normal sense amplifiers amplifying said data,
  - a normal register provided corresponding to said even number of normal sense amplifiers, and
  - an even number of normal switching elements provided corresponding to said even number of normal sense amplifiers and each connected between a corresponding normal sense amplifier and said normal register;
- (b) a redundancy unit including
  - a plurality of redundancy sense amplifiers amplifying said data, and each provided corresponding to two of said normal sense amplifiers,
  - a redundancy register provided corresponding to said plurality of redundancy sense amplifiers, and
  - a plurality of redundancy switching elements provided corresponding to said plurality of redundancy sense amplifiers, and each connected between a corresponding redundancy sense amplifier and said redundancy register;
- (c) an even number of signal lines provided corresponding to said plurality of normal sense amplifiers and in common to said normal and redundancy units,
  - each of said normal switching elements being turned on in response to a corresponding one of said signal lines, and each of said redundancy switching elements being turned on in response to corresponding two of said signal lines;

said semiconductor memory device further comprising
- (d) selecting means for selecting the normal registers in said plurality of normal units serially and transferring data between the selected normal register and an external portion when said redundancy circuit is inactivated, and for selecting said redundancy register instead of one of said normal registers said transferring data between the redundancy register and an external portion when said redundancy circuit is activated.

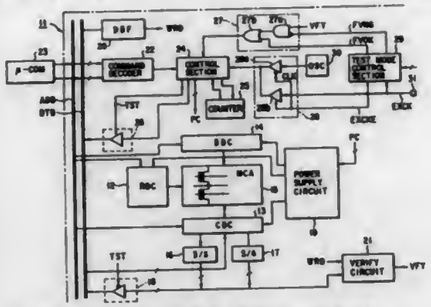
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5,579,270

FLASH EEPROM WITH AUTO-FUNCTION FOR AUTOMATICALLY WRITING OR ERASING DATA

Akihiro Yamazaki, Sagamihara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaka, Japan

Filed Apr. 25, 1995, Ser. No. 428,696
Claims priority, application Japan, Apr. 27, 1994, 6-089495
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—201 20 Claims



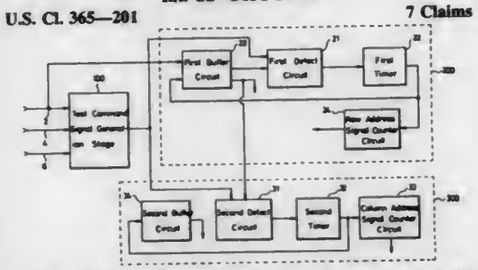
1. A non-volatile semiconductor memory comprising:
write means for writing data into a non-volatile semiconductor memory cell;
erase means for erasing data written in the non-volatile semiconductor memory cell;
verify means for verifying data written by the write means and the data erased by the erase means, thereby outputting a verify signal indicating whether or not data write/erase has been normally performed;
control means for controlling the write means and the erase means in accordance with the verify signal output from the verify means;
count means connected to the control means for counting the number of repetitions of data write by the write means or the number of repetitions of data erasion by the erase means; and
varying means connected between the control means and the verify means for forcibly varying the verify signal output from the verify means in a test mode.

5,579,271

AUTOMATIC TEST CIRCUIT FOR A SEMICONDUCTOR MEMORY DEVICE CAPABLE OF GENERATING INTERNAL RAS AND CAS SIGNALS, AND ROW AND COLUMN ADDRESS SIGNALS

Seon I. Sohn, and Yong Hwang, both of Kyoungki-do, Rep. of Korea, assignors to Hyundai Electronics Industries, Co. Ltd., Kyoungki-do, Rep. of Korea

Filed Nov. 7, 1995, Ser. No. 554,698
Claims priority, application Rep. of Korea, Nov. 9, 1994, 94-29344; Nov. 9, 1994, 94-29345
Int. Cl.[6] G11C 29/00
U.S. Cl. 365—201 7 Claims



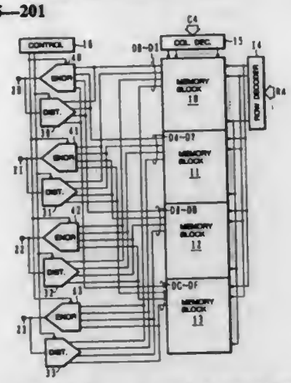
1. An automatic test circuit for a semiconductor memory device comprising:
test command signal generation means for generating a test command signal in response to an external row address strobe signal, an external column address strobe signal, an external write signal and an external read signal;
row address signal generation means for generating an internal row address strobe signal and a row address signal in response to the external row address strobe signal and the test command signal from said test command signal generation means; and
column address signal generation means for generating an internal column address strobe signal and a column address signal in response to the internal row address strobe signal from said row address signal generation means and the test command signal from said test command signal generation means.

5,579,272

SEMICONDUCTOR MEMORY DEVICE WITH DATA COMPRESSION TEST FUNCTION AND ITS TESTING METHOD

Toshiya Uchida, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 28, 1995, Ser. No. 563,797
Claims priority, application Japan, Mar. 15, 1995, 7-056370
Int. Cl.[6] G11C 7/00;29/00
U.S. Cl. 365—201 7 Claims



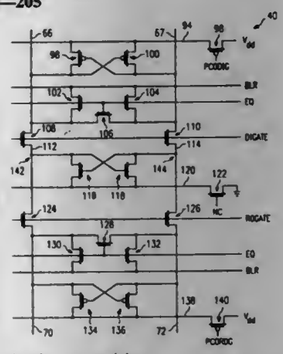
1. A semiconductor memory device including memory blocks, data terminal for data input/output and data lines for said memory blocks, said device comprising:
a matching detection circuit having inputs and an output coupled to said data terminal, each of said inputs being coupled to one of said data lines, said one corresponding to one of said memory blocks;
a distribution circuit having an input coupled to said data terminal and having outputs for outputting data corresponding to data provided to said input of said distribution circuit, said outputs of said distribution circuit being insulated from each other and coupled to said inputs of said matching detection circuit respectively; and
a control circuit for invalidating said output of said matching detection circuit and validating said outputs of said distribution circuit during a data write in a data compression test mode, and for validating said output of said matching detection circuit and invalidating said outputs of said distribution circuit during a data read in said data compression test mode.

5,579,273

STORAGE CIRCUITRY USING SENSE AMPLIFIER SHARED BETWEEN MEMORIES OF DIFFERING NUMBER OF ROWS

Jimmie D. Childers, Missouri City, Tex.; Seiichi Yamamoto, Ibaragi, and Masanari Takeyasu, Ibaraki, both of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 227,705, Apr. 14, 1994, which is a continuation of Ser. No. 918,161, Jul. 21, 1992, abandoned, which is a continuation of Ser. No. 486,984, Mar. 1, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 482,384
Int. Cl.[6] G11C 7/06
U.S. Cl. 365—205 17 Claims



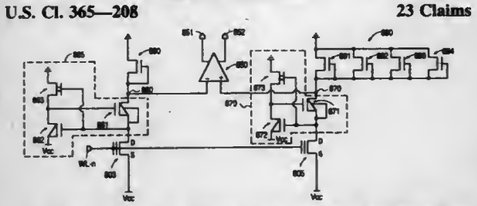
1. Storage circuitry comprising:
a first memory having a plurality of M rows of first memory cells disposed in a single column, each of said first memory cells connected to a first pair of bit lines;
a set of M first word lines, each first word line connected to a corresponding one of said first memory cells;
a second memory having a plurality of J rows of second memory cells disposed in a single column, where J does not equal M, each of said second memory cells connected to a second pair of bit lines;
a set of J second word lines, each second word line connected to a corresponding one of said second memory cells; and
sense amplifier circuitry located between said first memory and said second memory and connected to said first pair of bit lines and said second pair of bit lines, said sense amplifier circuitry including
a sense amplifier having a pair of sense amplifier bit lines, said sense amplifier when activated latching an output signal between said sense amplifier bit lines corresponding to a ratio of voltages on said pair of sense amplifier bit lines,
a first gate circuit selectively connecting said first pair of bit lines to said pair of sense amplifier bit lines or isolating said first pair of bit lines from said pair of sense amplifier bit lines, and
a second gate circuit selectively connecting said second pair of bit lines to said pair of sense amplifier bit lines or isolating said second pair of bit lines from said pair of sense amplifier bit lines,
whereby said sense amplifier circuitry produces said output signal a) corresponding to data stored in a first memory cell accessed by one of said first word lines when said first gate circuit connects said first pair of bit lines to said pair of sense amplifier bit lines and said second gate circuit isolates said second pair of bit lines from said pair of sense amplifier bit lines, and b) corresponding to data stored in a second memory cell accessed by one of said second word lines when said first gate circuit isolates said first pair of bit lines from said pair of sense amplifier bit lines and said second gate circuit connects said second pair of bit lines to said pair of sense amplifier bit lines.

5,579,274

SENSE CIRCUIT FOR A FLASH EEPROM CELL HAVING A NEGATIVE DELTA THRESHOLD VOLTAGE

Michael A. Van Buskirk, and Michael Briner, both of San Jose, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 135,224, Oct. 13, 1993, Pat. No. 5,477,499.
This application Jun. 6, 1995, Ser. No. 483,038
Int. Cl.[6] G11C 7/02
U.S. Cl. 365—208 23 Claims



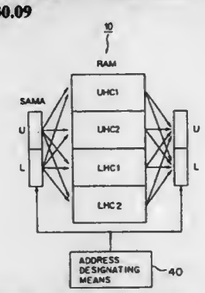
11. A sense circuit for sensing a state of a flash EEPROM cell having an electrical drain connected to a first voltage level and an electrical source connected to a second voltage level that is less than said first voltage level, said sense circuit comprising:
a cascode preamplifier having a first line coupled to said electrical source of said flash EEPROM cell and a second line; and
a resistive element having a first line connected to said second line of said cascode preamplifier and a second line connected to a third voltage level that is less than said second voltage level;
wherein said cascode amplifier further comprises:
a first P-channel MOS field effect transistor (FET) having a source connected to said first line of said cascode preamplifier; a drain connected to said first line of said resistive element; and a gate;
a second P-channel MOSFET having a gate connected to said first line of said cascode preamplifier; a source connected to said first voltage level; and a drain connected to said gate of said first P-channel MOSFET; and
an N-channel MOSFET having a gate connected to said first line of said cascode preamplifier; a source connected to said third voltage level; and a drain connected to the drain of said second P-channel MOSFET.

5,579,275

VIDEO MEMORY SYSTEM

Haruki Toda, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Dec. 12, 1994, Ser. No. 353,675
Claims priority, application Japan, Dec. 10, 1993, 5-341373
Int. Cl.[6] G11C 8/00
U.S. Cl. 365—230.09 32 Claims



11. A video memory system, comprising:
a RAM having a first RAM section, a second RAM section, a third RAM section and a fourth RAM section, each section for storing data;
a first SAM having a first SAM portion and a second SAM portion, each portion for temporarily storing data corresponding to any one of said first to fourth RAM sections;

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a second SAM having a third SAM portion and a fourth SAM portion, each portion for temporarily storing data corresponding to any one of said first to fourth RAM sections;

transferring means for,

in a first mode,

transferring data between the first SAM portion and the first RAM section and

transferring data between the second SAM portion and any one of the second to fourth RAM sections,

in a second mode,

transferring data between the first SAM portion and the second RAM section and

transferring data between the second SAM portion and any one of the first, third or fourth RAM sections, and

in a third mode,

transferring data between the first SAM portion and the third RAM section and

transferring data between the second SAM portion and any one of the first, second or fourth RAM sections, and

in a fourth mode,

transferring data between the first SAM portion and the fourth RAM section and

transferring data between the second SAM portion and any one of the first to third RAM sections; and

address designating means for freely designating a head address at which a serial access of the first SAM starts and a final address at which the serial access of the first SAM ends.

5,579,276

INTERNAL VOLTAGE BOOSTING CIRCUIT IN A SEMICONDUCTOR MEMORY DEVICE

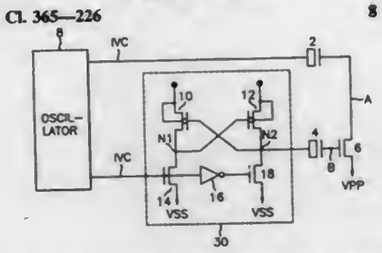
Sei-Seung Yoon, Seoul, and Byung-Chul Kim, Kyungki-do, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 13, 1995, Ser. No. 542,965

Claims priority, application Rep. of Korea, Oct. 13, 1994, 26238/1994

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—226 **8 Claims**



1. An internal voltage boosting circuit of a semiconductor memory device comprising:

voltage converting means which receives an internal voltage level signal for converting said internal voltage level signal to a power supply voltage level signal;

pumping means controlled by said power supply voltage level signal for pumping a pumping node above a predetermined precharge voltage level; and

transmission means connected to said pumping node for outputting a voltage boosted above said predetermined precharge voltage level.

5,579,277

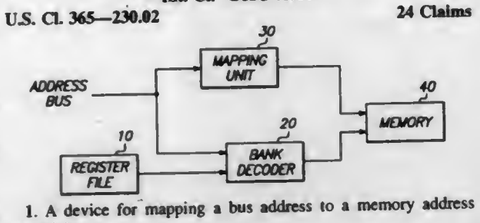
SYSTEM AND METHOD FOR INTERLEAVING MEMORY BANKS

James D. Kelly, Aptos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed May 1, 1995, Ser. No. 432,908

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—230.02 **24 Claims**



1. A device for mapping a bus address to a memory address comprising:

a bank decoder for developing interleave enable, address mode and odd bank signals responsive to the bus address and a register file, said register file storing a bank base and corresponding address modes for a selected one of a plurality of desired memory configurations;

mode selecting means for selecting between first and second modes of said bank base and the corresponding address modes to generate the memory address which supports said selected one of said desired memory configurations; and

a mapping unit for mapping the bus address to the memory address by selecting between said first and second modes based on said interleave enable and address mode signals, said mapping unit including,

a plurality of first multiplexers for performing a direct hard wire mapping of row and column addresses from the bus address,

a plurality of registers for registering said row and column addresses from said first multiplexers, and

a second multiplexer for selecting said row and column addresses from said registers corresponding to one of said first and second modes selected.

5,579,278

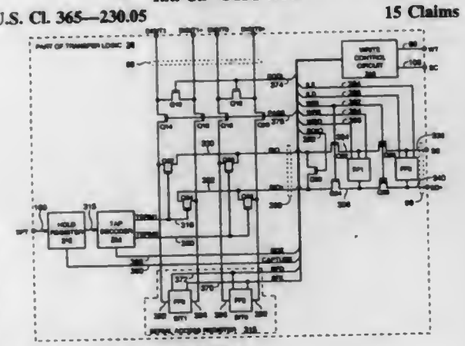
MULTIPORT MEMORY WITH PIPELINED SERIAL INPUT

Loren L. McLaury, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 153,120, Nov. 15, 1993, Pat. No. 5,452,259. This application Jul. 18, 1995, Ser. No. 504,006

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—230.05 **15 Claims**



1. A memory device comprising:

an array of memory elements;

a serial access input latch;

a serial access write register coupled to said input latch;

a serial to parallel conversion register coupled to said write register;

an access device having a control input, said access device coupled between said conversion register and said array of memory elements; and

a timing control circuit coupled to the control input of said access device.

5,579,279

SEMICONDUCTOR MEMORY DEVICE AND METHOD OF MANUFACTURING THE SAME

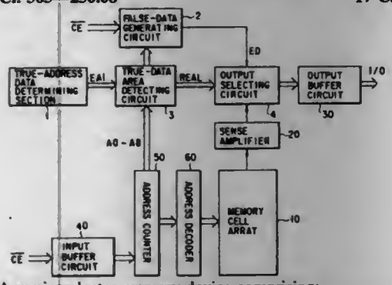
Yoshio Mochizuki; Hideo Kato, both of Kawasaki, and Nobutake Sugiura, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Sep. 26, 1995, Ser. No. 534,108

Claims priority, application Japan, Oct. 15, 1994, 6-275971

Int. Cl.[6] G11C *8/00;7/00;11/34*

U.S. Cl. 365—230.08 **17 Claims**



1. A semiconductor memory device comprising:

a plurality of memory cells arranged in rows and columns, each having a gate, a source and a drain;

a plurality of word lines to which the gates of said memory cells are connected;

a plurality of bit lines to which the drains of said memory cells are connected;

means for applying a potential to said word lines;

bit-line selecting means for selecting at least one of said bit lines to read data from at least one of said memory cells;

a sense amplifier for detecting a potential of said at least one bit line selected, thereby sensing a current supplied to said at least one memory cell from which data is to be read;

an output circuit for outputting an output of said sense amplifier;

a true-address data determining section for outputting true-address data, said true-address data determining section having nonvolatile circuit characteristics or wiring corresponding to an internal address particular to a chip;

a true-address data area detecting circuit for comparing the true-address output from the true-address data determining section with internal address data and for generating a signal when the internal address data is identical to the true-address data, said signal designating whether the data stored in said at least one memory cell should be output;

a false-data generating circuit for generating false data when the internal address data is other than the true-address data; and

an output selecting circuit for selecting the false data or the data stored in said at least one memory cell.

5,579,280

SEMICONDUCTOR MEMORY DEVICE AND METHOD FOR GATING THE COLUMNS THEREOF

Moon-Hoi Son, Seoul; Churoo Park, Suwon-city, and Seong-Ook Jung, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon-city, Rep. of Korea

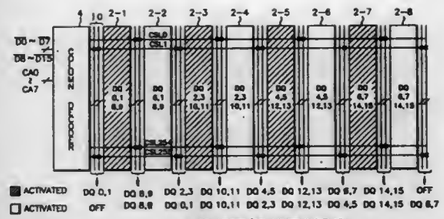
Filed Jun. 2, 1995, Ser. No. 458,765

Claims priority, application Rep. of Korea, Jun. 4, 1994, 12655/1994

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—238.5 **11 Claims**

1. A semiconductor memory device with a block write function for reading and writing data having at least two bytes, comprising:



a plurality of memory cell blocks for each associating first bits accessed in response to a first column address to designate the upper one of said two bytes and for each associating second bits accessed in response to a second column address to designate the lower one of said two bytes;

at least two column select lines enabled in response to each of said first and second column addresses; and

a control circuit for separately controlling said at least two column select lines, wherein the bits of said upper and lower bytes stored in said memory cell blocks are all output in response to said first and second column addresses.

5,579,281

METHOD OF IMPROVING AN ESTIMATE OF SEISMIC WAVE PROPAGATION VELOCITIES BY FOCUSING ANALYSIS

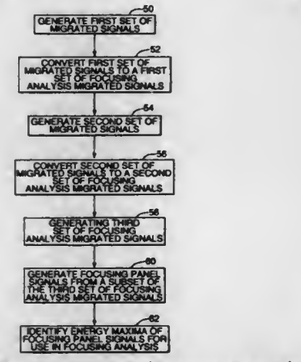
François Audebert, Paris, France, assignor to Compagnie Generale De Geophysique, Massy, France

Filed Jan. 31, 1994, Ser. No. 189,313

Claims priority, application France, Feb. 1, 1993, 93 01029

Int. Cl.[6] G01V *1/34*

U.S. Cl. 367—50 **12 Claims**



1. A method of utilizing received seismic waves so as to estimate the propagation velocities of seismic waves underground in which a seismic source and sensors are regularly disposed along a prospecting section at abscissas, the seismic source generates seismic waves into an underground area and the sensors detect the seismic waves that have been reflected by underground geological interfaces present in the underground area, each of the sensors generates sensor signals which are indicative of the seismic waves reflected by the underground geological interfaces which are received by the sensor, an arrangement for processing the sensor signals generates a set of raw focusing signals indicative of the received seismic waves detected by the sensors extrapolated to a plurality of extrapolation depths, and wherein for a plurality of raw focusing signals each corresponding to the received seismic waves extrapolated to one of the plurality of extrapolation depths and over a contiguous interval of abscissas along the prospecting section, the method comprising the steps of:

generating for each said extrapolation depth a first set of migrated signals indicative of said raw focusing signal which

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is zero offset downwards migrated to a first set of imaging depths greater than said extrapolation depth;

converting said first set of migrated signals to a first set of focusing analysis migrated signals which are indicative of said first set of migrated signals to which a selected time condition has been applied;

generating for each said extrapolation depth a second set of migrated signals indicative of said raw focusing signal which is inverse zero offset upwards migrated to a second set of imaging depths less than said extrapolation depth;

converting said second set of migrated signals to a second set of focusing analysis migrated signals which are indicative of said second set of migrated signals to which a selected time condition has been applied;

generating a third set of focusing analysis migrated signals in accordance with said first and second sets of focusing analysis migrated signals which are generated for each of said plurality of extrapolation depths;

generating focusing panel signals which are indicative of a subset of said third set of focusing analysis migrated signals which are at given abscissa; and

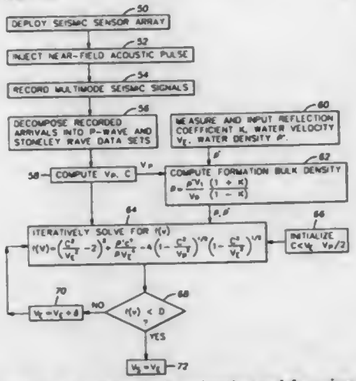
identifying the energy maxima of said focusing panel signals in order to perform focusing analysis on said focusing panel signals to estimate the propagation velocities of said seismic waves underground.

5,579,282

METHOD FOR DETERMINING THE SHEAR-WAVE VELOCITY BENEATH A BODY OF WATER

Frederick J. Barr, Houston, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Filed Aug. 25, 1995, Ser. No. 519,464
Int. Cl.[6] G01V *1/28;1/38*
U.S. Cl. 367—75 **6 Claims**



1. A method for quantitatively estimating and for using selected elastic parameters of a formation that lies beneath a body of water having a known density, comprising:

injecting a near-field acoustic impulse from a source into the formation, said acoustic impulse presenting a significantly curved wavefront to the water-formation boundary for generating a multi-modal acoustic wavefield that includes at least a refracted-wave propagation mode and a boundary-wave propagation mode;

deploying an array of spaced-apart seismic sensors beneath the surface of said body of water along a selected line of survey for detecting acoustic signals comprising said multi-modal acoustic wavefield;

measuring the water velocity;

providing a programmed computer in communication with said seismic sensors, said computer including at least a data recording means, a programmable central processing unit (CPU) and a display means;

storing in said recording means, in time scale format as a function of sensor spacing, signals indicative of the arrival times of the detected acoustic signals at each said seismic sensor;

decomposing the stored signals into separate data sets corresponding to the individual propagation modes of said multi-modal wavefield;

programming a first portion of the CPU to resolve the respective arrival-time signal indications with the corresponding sensor spacings for each of the separate data sets to derive the refracted formation velocity and the boundary wave velocity;

programming a second portion of the CPU to calculate the reflection coefficient of the water bottom from the measured water velocity and the refracted formation velocity;

programming a third portion of the CPU to calculate the density of the formation from input values for the water velocity, the known water density and the calculated reflection coefficient; and

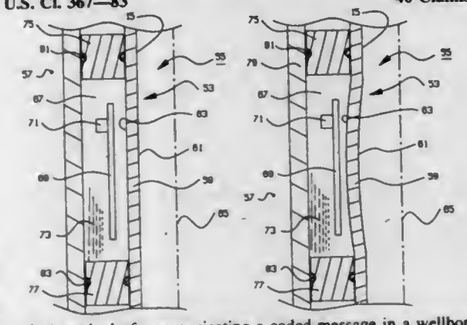
programming a fourth portion of the CPU to iteratively calculate the shear wave velocity vector of the formation along said line of survey from the known value for water density, the calculated formation density, the refracted formation velocity and the boundary wave velocity.

5,579,283

METHOD AND APPARATUS FOR COMMUNICATING CODED MESSAGES IN A WELLBORE

Steve C. Owens, Katy; Brett W. Bouldin, Pearland; David E. Rothers, Houston; Douglas J. Lehr, The Woodlands, and Michael W. Holcombe, Houston, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 751,861, Aug. 28, 1991, abandoned, and Ser. No. 831,202, Jan. 31, 1992, Pat. No. 5,343,963, which is a continuation-in-part of Ser. No. 751,861, which is a continuation-in-part of Ser. No. 873,654, Apr. 23, 1992, Pat. No. 5,226,494, which is a continuation of Ser. No. 784,666, Oct. 24, 1991, which is a continuation of Ser. No. 549,803, Jul. 9, 1990, abandoned. This application Jun. 3, 1993, Ser. No. 71,422
Int. Cl.[6] G01V *1/40;* E21B *47/06;* E21C *7/06*
U.S. Cl. 367—83 **40 Claims**



1. A method of communicating a coded message in a wellbore between a transmission node and a reception node, through a fluid column extending therebetween, comprising the method steps of:

providing a transmission apparatus at said transmission node which is in communication with said fluid column; for for generating an acoustic pressure pulse to produce at least a portion of said coded message;

providing a reception apparatus at said reception node which includes:

(a) a rigid structural component with an exterior surface which is in contact with said fluid column and an interior surface which is not in contact with said fluid column;

(b) a sensor assembly which detects elastic deformation of said rigid structural component;

utilizing said transmission apparatus to generate acoustic pressure pulses in said fluid column in a predetermined pattern to generate said coded message; and

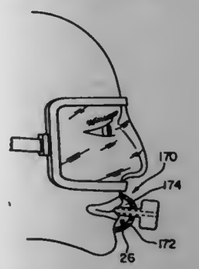
utilizing said reception apparatus to detect said coded message in said fluid column through changes in elastic deformation of said rigid structural component.

5,579,284

SCUBA DIVING VOICE AND COMMUNICATION SYSTEM USING BONE CONDUCTED SOUND

David F. May, P.O. Box 2603, 1636 State St. Unit E, Columbus, Ind. 47202

Filed Oct. 10, 1995, Ser. No. 541,826
Int. Cl.[6] H04B *11/00*
U.S. Cl. 367—132 **28 Claims**



1. A scuba diving mouthpiece for supplying air to a diver, said mouthpiece attachable to a source of air, said mouthpiece comprising:

a mouth engageable body including at least one biteplate, each said biteplate adapted for being disposed between and engageable by the teeth of the driver;

at least one sound transducer associated with said body; and

at least one sound conducting member, each said sound conducting member being operatively connected to one of said sound transducers, each said sound conducting member being embedded within said body and configured to receive audio sounds from said connected sound transducer, each said sound conducting member also being configured to transmit audio sounds through at least one said biteplate, whereby said audio sounds may be conducted to the teeth of the diver.

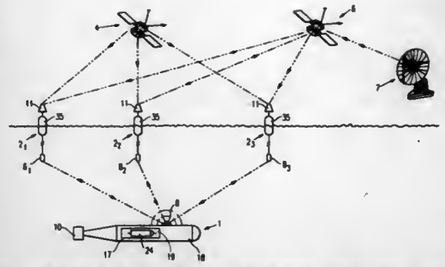
5,579,285

METHOD AND DEVICE FOR THE MONITORING AND REMOTE CONTROL OF UNMANNED, MOBILE UNDERWATER VEHICLES

Thomas Hubert, La Méridienne, Chemin Saint-Jacques, 13100 Le Tholonet, France

PCT No. PCT/FR93/01186, § 371 Date Aug. 21, 1995, § 102(e) Date Aug. 21, 1995, PCT Pub. No. WO94/14081, PCT Pub. Date Jun. 23, 1994
PCT Filed Dec. 3, 1993, Ser. No. 454,125
Claims priority, application France, Dec. 17, 1992, 92 15667
Int. Cl.[6] G01S *5/00;5/14;11/14*
U.S. Cl. 367—133 **10 Claims**

1. Device for the monitoring and remote control of an unmanned autonomous underwater vessel (1) and for the positioning thereof, characterised in that it comprises at least one drifting and/or autonomous unmanned floating vessel (2) comprising at least one first receiver (3) for monodirectional communication with at least a first transmitter (4) of first positioning radar signals, said floating vessel comprising at least one transmitter-receiver (5) for bidirectional communication with at least a second transmitter-receiver (6) of second navigation radar signals, said device comprising at least one land-based transmitter-receiver (7) for bidirectional communication with the second transmitter-receiver (6), the floating vessel (2) comprising at least one transmitter-receiver (8) for data and synchronisation signals, said autonomous underwater vessel comprising at least one transmitter-receiver (9) for data and synchronisation signals compatible with the transmitter-receiver (8) of the floating vessel.

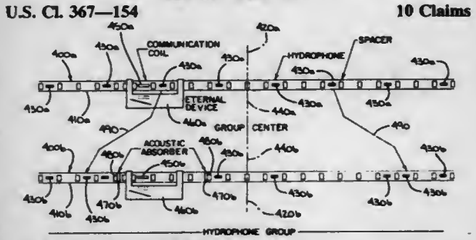


5,579,286

QUIET GEOPHYSICAL CONSTRUCTION PRACTICES FOR REDUCED DIAMETER STREAMERS

Robert D. Skorheim, Dallas, Tex., assignor to Whitehall Corporation, Dallas, Tex.

Filed Nov. 22, 1994, Ser. No. 343,673
Int. Cl.[6] G01V *1/38*
U.S. Cl. 367—154 **10 Claims**



1. A hydrophone module, comprising:

an elongated hydrophone module housing having a desired hydrophone group center associated therewith;

a plurality of hydrophone elements located substantially aperiodically along a length of said housing and electrically coupled together in a hydrophone group, said hydrophone group having an actual hydrophone group center proximate said desired hydrophone group center to thereby allow locations of said plurality of hydrophone elements to be altered without dislocating said actual hydrophone group center; and

communication circuitry located along a length of said module housing and an external device coupled to an exterior of said module housing and proximate to said communication circuitry, said external device capable of generating interference in proximate ones of said plurality of hydrophone elements, said locations of said plurality of hydrophone elements alterable away from said external device to thereby avoid said interference.

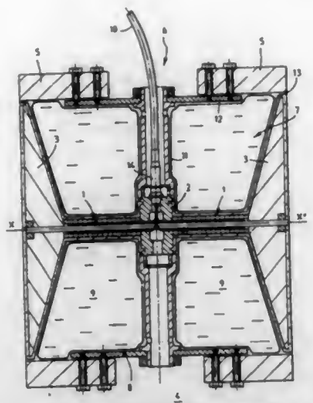
5,579,287

PROCESS AND TRANSDUCER FOR EMITTING WIDE BAND AND LOW FREQUENCY ACOUSTIC WAVES IN UNLIMITED IMMERSION DEPTHS

Didier D. Boucher, and Yves Le Gall, both of Six Fours, France, assignors to L'Etat Francais, represente par le Delegue General pour l'Armement, Paris, France

Filed May 30, 1995, Ser. No. 452,854
Claims priority, application France, May 27, 1994, 94 06439
Int. Cl.[6] H04R *17/00*
U.S. Cl. 367—167 **10 Claims**

1. A process for making a transducer for emitting wide band and low frequency acoustic waves in unlimited immersion depths in an



ambient medium, the transducer comprising at least one electro-acoustic motor connected to at least one vibration wall and a hollow shell having a cavity in which the at least one motor is positioned, said cavity being delimited by the at least one vibration wall, comprising the steps of:

providing at least one ambient medium opening in said shell that extends from said cavity;

providing, in at least part of the volume of the cavity, at least one flexible bladder; and

filling the bladder with a liquid that is more compressible than the ambient medium.

5,579,288

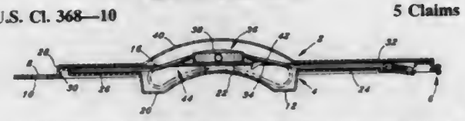
WRISTWATCH DISPLAY PACKAGE

James B. Malloy, West Hartford, and Charles G. Barrett, Groton, both of Conn., assignors to Timex Corporation, Middlebury, Conn.

Filed Nov. 21, 1994, Ser. No. 342,492

Int. Cl.[6] B65D *43/24*

U.S. Cl. 368—10 **5 Claims**



1. An improved wristwatch display package comprising first and second elongated sheet members of transparent plastic adapted to be nested together around the peripheral edges thereof, an elongated display card having printing thereon disposed between said sheet members and within the nested peripheral edges, said card defining a window for displaying a portion of a wristwatch through the transparent plastic, said first sheet member defining an arcuate elongated protrusion, and second sheet member defining a pair of spaced protrusions which protrude in a direction opposite that of said arcuate protrusion when the elongated sheet members are so nested, said arcuate protrusion and said pair of spaced protrusions together defining an arcuate cavity, said arcuate cavity traversing and extending both above and below the nested elongated sheet members, said arcuate cavity being surrounded by said window in said elongated display card and adapted to receive and display portions of a wristwatch through said window.

5,579,289

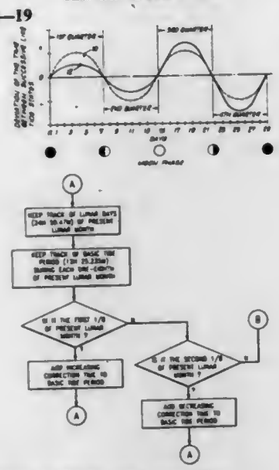
NAUTICAL CLOCK APPARATUS AND METHODS

Breene M. Kerr, 115 Bay St., Easton, Md. 21601-2703

Continuation-in-part of Ser. No. 110,293, Aug. 20, 1993, Pat. No. 5,475,655, which is a continuation of Ser. No. 829,651, Feb. 3, 1992, Pat. No. 5,270,986, which is a continuation-in-part of Ser. No. 594,650, Oct. 9, 1990, Pat. No. 5,086,417, which is a continuation of Ser. No. 422,991, Oct. 16, 1989, Pat. No. 4,993,002. This application Dec. 13, 1994, Ser. No. 355,407

Int. Cl.[6] G04B *19/26*

U.S. Cl. 368—19 **39 Claims**



1. An improved nautical clock comprising:

a clock base;

a tide state indicator attached to said base; and

electronic means attached to said tide state indicator and to said base for operating said tide state indicator to continuously indicate a time between successive like tide states based on a set time interval therebetween of about 12 hours and 25.235 minutes adjusted in response to a harmonic correction including at least one of two sinusoidal correction components having different periods and a variable phase relationship such that said time is longer than about 12 hours and 25.235 minutes during at least one portion of each lunar month and shorter than about 12 hours and 25.235 minutes during at least one other portion of each lunar month.

5,579,290

EPICYCLOIDAL STEP MOTOR

Roberto Zafferri, Sorengo, and Marco Brandestini, Montagnola, both of Switzerland, assignors to R. Audemars SA, Cadempino, Switzerland

Filed Sep. 28, 1995, Ser. No. 535,944

Claims priority, application Switzerland, Oct. 3, 1994, 02983/94

Int. Cl.[6] G04B *19/00*; H02K *37/00*; H02N *1/00*

U.S. Cl. 368—76 **13 Claims**

1. Epicycloidal step motor, comprising:

a cylindrical, magnetic rotor having an external toothing; and

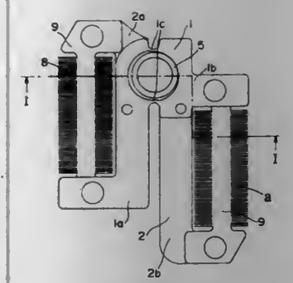
a stator having a single-phase winding, pole pieces and an inner toothing;

wherein said pole pieces surround said rotor, defining stable positions of said rotor and defining displacements of said rotor between said stable positions;

wherein said external toothing is in permanent engagement with said inner toothing;

wherein said rotor is a hollow cylinder axially magnetized; and

wherein said pole pieces form a non-cylindrical opening.



5,579,291

COMPACT-SIZE MAGNETO-OPTICAL HEAD APPARATUS

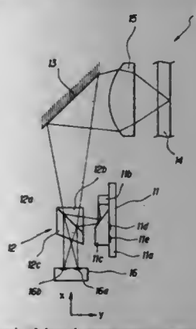
Yoshiyuki Matsumoto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 16, 1994, Ser. No. 358,024

Claims priority, application Japan, Dec. 24, 1993, 5-347361

Int. Cl.[6] G11B *11/00; 7/00*

U.S. Cl. 369—13 **10 Claims**



1. A magneto-optical head apparatus comprising:

light beam generating means for emitting a light beam;

an objective lens for converging the light beam emitted from said light beam generating means on a point on an optical axis;

a separating optical element for separating the light beam emitted from said light beam generating means and a light beam through said objective lens from each other;

a reflecting mirror for deflecting the light beam emitted from said light beam generating means at 90 degrees so that the light beam is led to said objective lens; and

a photodetector for receiving the light beam through said objective lens and separated by said separating optical element,

wherein said light beam generating means, said objective lens, said separating optical element, said reflecting mirror, and said photodetector are disposed so that an optical axis of the light beam emitted from said light beam generating means, an optical axis extending from said separating optical element to said reflecting mirror, an optical axis extending from said reflecting mirror to said objective lens, and an optical axis extending from said separating optical element to said photodetector define the same plane,

and wherein said light beam generating means comprises

a light source for emitting a light beam,

a light receiving portion for receiving the light beam through said objective lens and separated by said separating optical element, and

a further separating optical element for separating the light beam emitted from said light source and the light beam through said objective lens from each other and for leading the light beam through said objective lens to said light receiving portion.

5,579,292

MAGNETO-OPTICAL DATA RECORDING APPARATUS USING A SAMPLE-SERVO SYSTEM FOR APPLYING HEATING PULSES TO RECORD DATA

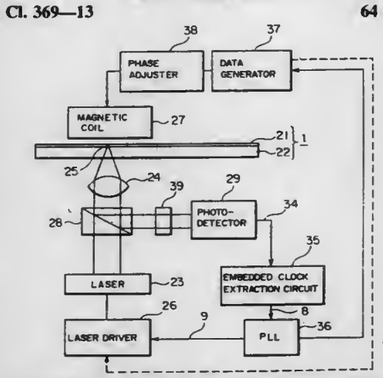
Seiji Yonezawa, Hachioji; Norio Obta, Iruma; Toshio Niihara, Sayama; Keiji Kataoka, Kawagoe; Masahiko Takahashi, Hachioji; Hirofumi Sukeda, Kokubunji, and Toshiaki Tsuyoshi, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 979,338, Nov. 20, 1992, Pat. No. 5,473,581, which is a continuation of Ser. No. 353,602, May 18, 1989, Pat. No. 5,170,383. This application Apr. 26, 1995, Ser. No. 429,008

Claims priority, application Japan, May 20, 1988, 63-121734

Int. Cl.[6] G11B *11/00*

U.S. Cl. 369—13 **64 Claims**



1. A magneto-optical data recording system comprising:

a magneto-optic data recording medium having a plurality of servo areas at least for tracking control and a plurality of data areas, a respective data area adjoining a respective servo area;

means for applying a magnetic field pulse of a polarity corresponding to code data to be recorded to the magneto-optic data recording medium; and

means for locally heating the portion of the magneto-optic recording medium to which the magnetic field pulse is applied;

wherein the magnetic field pulse applying means applies a magnetic field pulse of a polarity corresponding to a code data to be recorded along a track of the medium during recording, and wherein the heating means continuously heats data areas of the medium in a pulsating manner at a predetermined frequency by applying continuously applied pulses having equal time intervals between centers of the continuously applied pulses over the entire data areas and occurring at the predetermined frequency, a portion of the continuously applied pulses being synchronous with the code data.

5,579,293

MAGNETIC HEAD DRIVING CIRCUIT FOR CONTROLLING SWITCHING OPERATIONS IN A MAGNETOOPTICAL RECORDING APPARATUS

Kazuyoshi Ishii, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 217,104, Mar. 24, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 476,043

Claims priority, application Japan, Mar. 26, 1993, 5-090483; Mar. 10, 1994, 6-039638

Int. Cl.[6] G11B *11/00*

U.S. Cl. 369—13 **19 Claims**

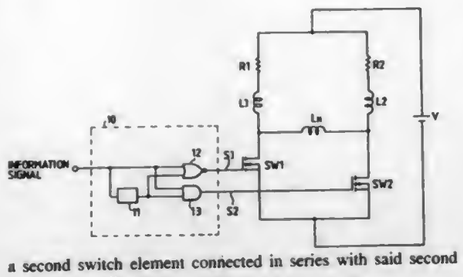
1. A magnetic head driving apparatus comprising:

a first auxiliary coil;

a first switch element connected in series with said first auxiliary coil;

a second auxiliary coil;

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a second switch element connected in series with said second auxiliary coil;

a main coil for generating a magnetic field, said main coil being connected between a node between said first auxiliary coil and said first switch element, and a node between said second auxiliary coil and said second switch element; and

control means for controlling switching operations of said first and second switch elements to change a direction of current supplied to said main coil, said control means causing said first and second switch elements to alternate being in an ON state and causing a predetermined time difference between a point in time at which said first switch element is switched from the ON state to an OFF state and a point in time at which said second switch element is switched from the OFF state to the ON state, using a delay element.

5,579,294

MAGNETO-OPTICAL MEDIUM AND RECORDING AND/OR REPRODUCING APPARATUS THEREOF

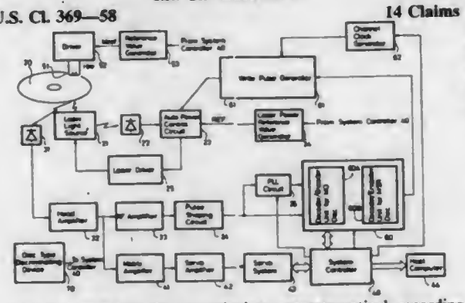
Masumi Ohta; Isamu Nakao; Toshiki Udagawa, all of Tokyo; Atsushi Fukumoto, Kanagawa, and Shunji Yoshimura, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 971,068, Nov. 3, 1992, abandoned, which is a division of Ser. No. 831,935, Feb. 6, 1992, abandoned. This application Sep. 1, 1994, Ser. No. 299,544

Claims priority, application Japan, Feb. 8, 1991, 3-018070; Feb. 15, 1991, 3-042890

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—58 **14 Claims**



14. An apparatus for reproducing magneto-optical recording mediums, comprising:

means for generating a first channel clock, having a first frequency, used to read data from a magneto-optical super resolution (MSR) type of magneto-optical recording medium, said first type of magneto-optical recording medium having a recording layer, a reproducing layer and an intermediate layer for magnetically coupling said recording layer and said reproducing layer in a stationary state, in which a magnetic coupling between said recording layer and said reproducing layer breaks down in an area in which a temperature is increased to be higher than a predetermined temperature by the radiation of a light upon reproducing and in which a recorded information held on said recording layer is read out from said reproducing layer in the radiated area except the area in which said magnetic coupling has broken down;

means for generating a second channel clock, having a second frequency, used to read data from a magneto-optical (MO) type of recording medium in which a recorded information is reproduced by using substantially the whole area of said radiated area, such that the second frequency is not equal to the first frequency;

discriminating means for discriminating said MSR type of recording medium and said MO type of recording medium by detection of a disc type identifying aperture; and

means for switching said first and second channel clocks in response to a discriminating signal from said discriminating means.

5,579,295

SCANNING DEVICE AND OPTICAL PLAYER COMPRISING THE SCANNING DEVICE

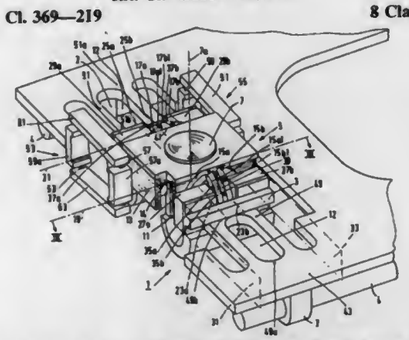
Gerard E. Van Rosmalen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 7, 1993, Ser. No. 165,057

Claims priority, application European Pat. Off., Dec. 17, 1992, 92203983

Int. Cl.[6] G11B *7/09;7/12*

U.S. Cl. 369—219 **8 Claims**



1. A scanning device having a first section, a movable second section including a lens having an optical axis, means for mounting the movable section with respect to the first section to allow movement along a first axis for focusing the lens and movement along a second axis transverse to the first axis, and an actuator structure for causing the movable section to move along each of said axes,

wherein the actuator structure comprises at least one focusing coil, two pairs of tracking coils, and a plurality of magnet portions,

each of the tracking coils has a respective coil axis oriented transversely of a plane defined by said first and second axes,

the tracking coils of a pair are disposed along a line parallel to the second axis, and the lens is disposed between the pairs of tracking coils,

characterized in that said plurality of magnet portions comprises two pairs of magnet poles, each pole having a pole face and a pole surface; said pairs of poles being arranged at opposite sides of the optical axis of the lens such that the pole faces of each pair of poles face the coils of a respective pair of said tracking coils,

the poles of each respective pair are spaced from one another, the pole surfaces thereof facing each other and bounding a respective zone oriented transversely of a plane defined by said first and second axes, and

in a center position of the lens, each pole face is symmetrically positioned with respect to the tracking coil facing said pole face, and portions of each pair of tracking coils extend into said zone between the pole surfaces of the associated pair of poles;

whereby torques exerted on said tracking coils by stray magnetic fields produced by said magnet poles balance out to a substantial degree even when said lens is moved from said center position thereof by operation of said focusing coil.

5,579,296

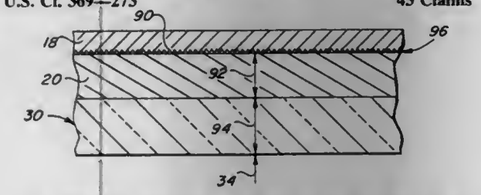
OPTICALLY READABLE THIN FILM DIGITAL DATA STORAGE MEDIUM

Raymond E. Smith, Sun City, and Warren F. Moleé , Laguna Niguel, both of Calif., assignors to Cyberwerks Interactive, L.L.C., Los Angeles, Calif.

Filed Jan. 18, 1995, Ser. No. 374,244

Int. Cl.[6] G11B *23/38*

U.S. Cl. 369—273 **43 Claims**



1. A semi-rigid thin film digital data storage medium for use with a CD player with a centrally located spindle for supporting and rotating a standard CD having planar upper and lower surfaces and embedded data tracks consisting of encoded digital data, the CD player having a data readout system including a source of coherent light positioned below the CD for generating a light beam to sequentially illuminate each data track to produce a reflected light beam modulated by the encoded digital data to be intercepted and converted to a corresponding electrical signal by an optical readout device, the thin film digital data storage medium comprising:

a. a semi-rigid, self-supporting composite data carrier having a first area and including

i. an optically transparent support layer formed from a stiff, semi-rigid material having a defined thickness and first and second opposing planar surfaces for providing a secondary refraction zone,

ii. a thin film data layer formed from a web of flexible, non-self supporting plastic film having a first surface and an opposing ink printable second surface, the first surface of the thin film data layer positioned adjacent to and bonded to the second surface of the support layer;

b. an optically reflective microembossed data surface formed on the first surface of the thin film data layer within a data zone and having a series of spaced apart, displaced surface elements with an elevation offset relative to undisplaced surface elements to encode digital data, the secondary refraction zone of the support layer configured to receive and partially converge the CD player light beam but having insufficient refractive power to directly focus the light beam onto the microembossed data surface; and

c. a first visual media zone formed on the ink printable second surface of the thin film data layer for receiving and displaying a visually perceptible image or textual information.

5,579,297

OPTICAL DATA STORAGE CARTRIDGE HAVING A DUAL SHUTTER CONFIGURATION AND SHUTTER HINGE DEVICE

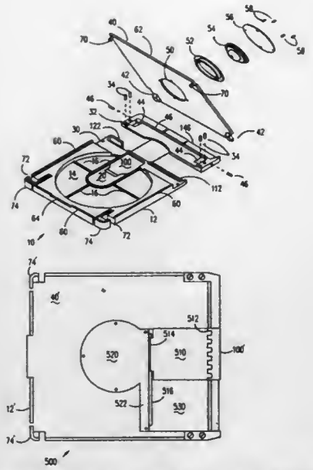
Edwin R. Childers, Tucson, Ariz.; Jon S. Drier, San Jose, Calif., and Michael Henry, Tucson, Ariz., assignors to International Business Machines Corporation, New York, N.Y.

Continuation of Ser. No. 145,258, Oct. 29, 1993. This application Apr. 19, 1995, Ser. No. 425,685

Int. Cl.[6] G11B *23/03*

U.S. Cl. 369—291 **18 Claims**

1. An optical data storage cartridge comprising:



a base member having a substantially cylindrical interior portion for receiving a hubless optical disk through a disk opening and having a base member aperture for providing access for electromagnetic radiation to a first planar surface of the disk;

a lid member for covering the disk opening, the lid member having a lid aperture for providing access for electromagnetic radiation to a second planar surface of the disk, the lid member mounted on a top side of the base member;

a hinge device for attaching the lid member to the base member;

a retractable base member shutter for covering the base member aperture mounted on a bottom side of the base member;

a retractable lid shutter for covering the lid aperture mounted on the lid member, the lid shutter being on a top side of the cartridge opposite the bottom side of the base member;

a shutter hinge attached to the lid shutter for connecting the lid shutter to the base member shutter, the shutter hinge allowing the lid shutter to move with the lid when the lid is open; and

a rotatable hub member mounted to a surface of the lid member which faces the interior portion of the base member, the rotatable hub member being located opposite the base member aperture, the rotatable hub member for engaging the hubless optical disk.

5,579,298

OPTICAL SCANNER HAVING SYMMETRY ABOUT AN OBLIQUE DIVIDER

Willem G. Opheij; Jozef P. H. Benschop, and Heidrun Steinhauser, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 390,158, Feb. 16, 1995, abandoned, which is a continuation of Ser. No. 103,942, Aug. 9, 1993, abandoned. This application Feb. 27, 1996, Ser. No. 607,623

Claims priority, application European Pat. Off., Aug. 12, 1992, 92202487

Int. Cl.[6] G11B *7/00*

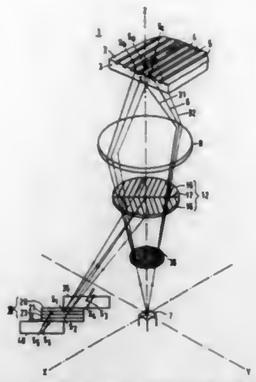
U.S. Cl. 369—112 **21 Claims**

1. A device for optically scanning tracks in a radiation-reflecting information plane, the device comprising:

a radiation source for supplying a radiation beam which is a scanning bee or from which the scanning beam is derived;

an objective system for focusing the scanning beam to a scanning spot on the information plane;

a dividing element having two sub-areas, which each has a single grating line structure therein, located symmetrically at both sides of a dividing line thereof and arranged in the optical path of radiation from the information plane for splitting at least a part of the radiation into two scanning subbeams, the angle between the dividing line and an effective



track direction of the tracks projected on the dividing element being between 15° and 80°; and

a radiation-sensitive detection system for producing output signals corresponding to the sub-beams for combination into an error signal.

5,579,299

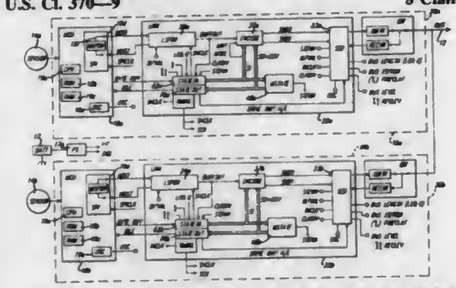
COMMUNICATIONS NETWORK, A DUAL MODE DATA TRANSFER SYSTEM THEREFOR

Richard A. Halter, Warren; Robert J. Randel, Walled Lake; Ronald F. Hormel, Clinton Township, and John Stark, Ann Arbor, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Dec. 16, 1994, Ser. No. 357,002

Int. Cl.[6] H04J *15/00;* **H04L** *12/413*

U.S. Cl. 370—9 **8 Claims**



1. A link apparatus containing a circuit for interchanging data bytes using a serial peripheral interface (SPI) circuit of a microcontroller (MCU) at a chosen clock rate to accomplish loading a series of data bytes from the MCU into the link apparatus and unloading another series of data bytes from the link apparatus into the MCU substantially simultaneously and then for transferring each bit of the loaded byte onto a single-wire communications bus (bus) as J1850 data symbols at the chosen clock rate but delayed in proportion to a variation in length of the variable pulse width of each symbol, the link apparatus being contained in a node of a multiple node vehicle communications network and having output terminals connected to the bus, the bus and the J1850 symbols being prescribed for use in an automobile industrial standard for data communications network interfaces, each node also having the MCU connected between an external input device and input terminals of the link apparatus for receiving a chosen measurand from the input device and then translating the measurand into digital byte messages in response to changes of the measurand and for cooperating with the link apparatus to affect the SPI transfers, the link apparatus also containing a symbol encoder/decoder (SED) for receiving the bits of the bytes loaded from the MCU and then formatting each bit of the bytes into a symmetrical, variable pulse width modulated (VPWM) signal, the VPWM signal being routed from the link apparatus to an integrated driver/receiver (IDR) circuit that connects to the bus, the IDR containing a transmitter circuit for converting each VPWM signal into a trapezoidal shaped waveform analog signal (symbol) containing information expressing a magnitude value of the digital bit component of the byte message being communicated so that other nodes on the bus might use the communicated information, the IDR also containing a receiver circuit for reflecting each symbol placed on the bus and reconverting the symbol into a restructured VPWM bit, the restructured bit being routed back to the link device where the VPWM bit is converted by the SED into a digital data bit and then a series of the digital data bits are reassembled as a data byte in a data register of the link and then unloaded into the MCU via another SPI-XFR providing arbitration and status information to the MCU regarding the placement of the data message on the communications bus, the link apparatus comprising:

A) A state machine device for establishing a series of operating states for the node comprising:

1) a statein unit having a plurality of synchronous and asynchronous bolding registers;

2) a main state machine unit having:

a) a next state decoder at an input port,

b) a memory circuit composed of a parallel arrangement of a plurality of flip-flops having input terminals connected to the output of next state decoder,

c) an output decoder having input terminals connected to the output of the memory circuit, and

d) synchronized output gates having input terminals connected to the output of the memory circuit and output terminals of the statein unit for providing synchronous output state signals within the link apparatus;

the state machine device being used to monitor output signals from the SED that provide information concerning the status of and the symbols on the bus and to provide a SPI transfer clock and handshaking signals to the MCU, the state machine device also determining when the bus is idle and in a condition to receive a new message and to respond to handshaking signals from the MCU indicating that the MCU has converted measurand information into data bytes;

B) a stateout unit having input terminals connected to output terminals of the state machine device and the statein unit for providing control signals within the link apparatus and to the MCU;

C) a link apparatus SPI data register (LSPDR) circuit having an input connected to receive each data bit of the byte transferred from a MCU SPI data register (MSPDR) during a SPI transfer operation of the MCU;

D) an encoder circuit for accepting a signal from the state machine device during a particular state and then automatically generating a coded address that routes to the SED for generating a VPWM signal that routes to the transmitter circuit of the IDR for placing a start of frame (SOF) protocol symbol on the bus during a chosen state of the state machine device and for accepting data bits from the LSPDR in response to handshaking signals from the state machine device and control signals of SED in order to initiate the loading of data symbols on the bus after the protocol symbol SOF has been communicated over the bus;

E) a firmware program stored in a ROM of the MCU that instructs a CPU to perform a solicited transfer of data bytes in a message frame and for responding to unsolicited transfers of data bytes interchanged with the link apparatus; and

F) a vector device connected to the SED and the main state machine device containing circuits for determining arbitration of the SOF protocol symbol with respect to other SOF protocol symbols that might appear on the bus nearly simultaneously, the vector device providing an error signal that resets the state machine device to an initial state if another protocol symbol from another node appears on the bus prior to a transmitting node.

5,579,300

PRIVATE AUTOMATIC BRANCH EXCHANGE FOR INTEGRATED SERVICES DIGITAL NETWORK

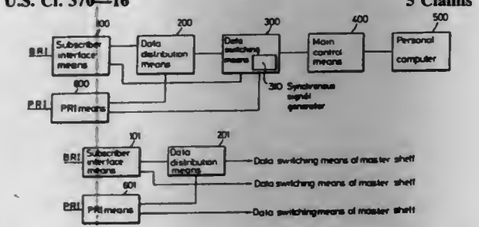
Sang R. Lee, Kyoungki-do, and Jin Y. Park, Seoul, both of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki-Do, Rep. of Korea

Continuation-in-part of Ser. No. 257,007, Jun. 8, 1994, abandoned. This application May 2, 1995, Ser. No. 434,308

Claims priority, application Rep. of Korea, Jun. 14, 1993, 93-10825

Int. Cl.[6] H04L *12/50*

U.S. Cl. 370—16 **5 Claims**



1. A private automatic branch exchange for an integrated services digital network, comprising:

a master shelf including,

first subscriber interface means connected to a group of subscribers in a basic rate interface manner,

first primary rate interface means connected to an integrated services digital network exchange in a primary rate interface manner,

data switching means connected to said first subscriber interface means and said first primary rate interface means to perform a switching operation and to generate system synchronous clocks of 4 MHz, 2 MHz and 8 KHz,

first data distribution means for multiplexing signals from said first subscriber interface means and said first primary rate interface means in the master shelf and for transferring multiplexed signals to said data switching means,

main control means connected to perform system administration/maintenance functions, and

a personal computer connected to said main control means to perform transferring and processing data regarding the system administration/maintenance functions,

said first primary rate interface means having a frame structure of 32 channels and layer-1, layer-2, layer-3 and operating system software to perform a subscriber's telephone function through interfacing with said first data distribution means and said data switching means; and

a slave shelf including,

second subscriber interface means connected to the group of subscribers in the basic rate interface manner,

second primary rate interface means connected to the integrated services digital network exchange in the primary rate interface manner, and

second data distribution means for multiplexing signals from said second subscriber interface means and said second primary rate interface means in the slave shelf and for transferring multiplexed signals to said data switching means in said master shelf,

said second primary rate interface means having the frame structure of the 32 channels and the layer-1, layer-2, layer-3 and operating system software to perform the subscriber's telephone function through interfacing with said second data distribution means and said data switching means in said master shelf.

5,579,301

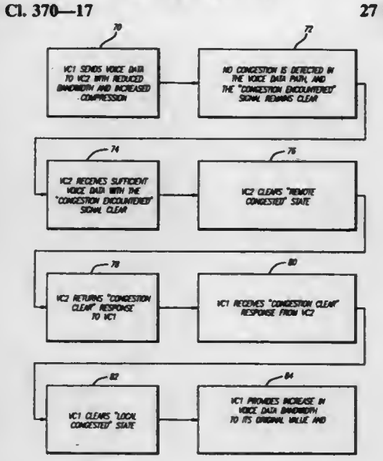
SYSTEM FOR, AND METHOD OF, MANAGING VOICE CONGESTION IN A NETWORK ENVIRONMENT

Douglas Ganson, and Thomas C. Sheppard, both of Simi Valley, Calif., assignors to MICOM Communications Corp., Simi Valley, Calif.

Filed Feb. 28, 1994, Ser. No. 203,792

Int. Cl.[6] H04J *3/14*

U.S. Cl. 370—17 **27 Claims**



18. In a method of preventing congestion in the transmission of voice signals between first and second voice channels through a network including network nodes and data links between the network nodes and between the network nodes and the channels, comprising the steps of:

providing the voice signals with a particular bandwidth and with a particular compression at the first channel,

sending the voice signals with the particular bandwidth and the particular compression from the first channel through the data links and the network nodes to the second channel,

detecting congestion of the voice signals at an individual one of the network nodes,

generating a congestion encountered signal at the individual one of the nodes for transmission through the data links and the nodes to the second channel,

transmitting a congestion encountered signal from the second channel to the first channel when the congestion encountered signal is received at the second channel, the congestion encountered signal indicating only the existence or lack of existence of a congestion, and

reducing below the particular bandwidth the voice signals provided at the first channel for transmission to the second channel and simultaneously increasing the compression of the voice signals at the first channel above the particular compression, and

thereafter transmitting a signal from the second channel to the first channel, after the transmission by the first channel of the signals at the reduced bandwidth and the increased compression for a particular period of time and the reception of such signals at the second channel, to indicate that the congestion encountered state at the second channel has been eliminated.

5,579,302

METHOD AND APPARATUS FOR REGULATING VIRTUAL-CHANNEL CELL TRANSMISSION

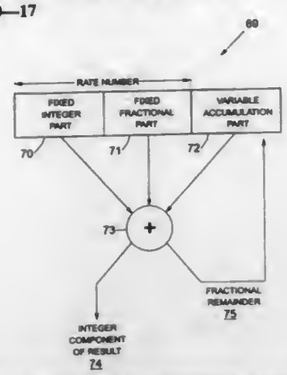
David Banks, Redland, United Kingdom, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 5, 1995, Ser. No. 498,535

Claims priority, application European Pat. Off., Aug. 31, 1994, 94306389

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—17 **12 Claims**



1. A method of regulating the transmission of cells onto a link, the cells being associated with a plurality of different virtual channels, the method comprising the steps of:

(a) providing for each virtual channel a control data item having a fixed integer part, a fixed fractional part, and a variable accumulation part;

(b) periodically determining for each virtual channel a control number, this determination involving:

adding together said three parts of the control data item for the channel concerned to produce a result with an integer component and a fractional remainder;

using the integer component of the result to set said control number; and

storing said fractional remainder as said accumulation part of said control data item for the virtual channel concerned; and

(c) regulating cell transmission for the virtual channel concerned according to the value of said control number determined in step (b) for the virtual channel.

5,579,303

DATA TRANSMISSION APPARATUS

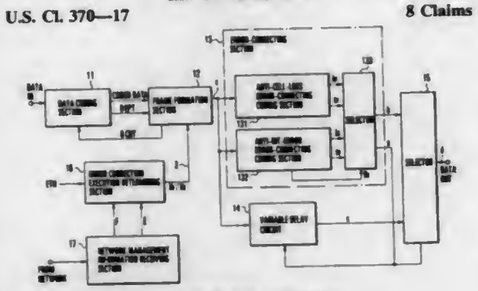
Takashi Kiriyama, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 28, 1995, Ser. No. 535,534

Claims priority, application Japan, Sep. 28, 1994, 6-232723

Int. Cl.[6] H04J *3/14*

U.S. Cl. 370—17 **8 Claims**



1. A data transmission apparatus comprising:

data coding means for coding input data and outputting the coded data;

determination means for determining execution/non-execution of error-correcting coding processing on the basis of a congestion state and a bit error generation state in a network in which data transmission is to be performed, and generating determination information representing the determination result;

frame formation means for multiplexing the determination information from said determination means with the coded data from said data coding means in units of frames, and generating frame data having a predetermined frame format;

error-correcting coding means for executing error-correcting coding processing for the coded data in units of frames in accordance with the determination information contained in the frame data from said frame formation means, and generating frame length information representing a frame length of a frame for which error-correcting coding processing is executed;

variable delay means for, when the determination information contained in the frame data from said frame formation means represents non-execution of error-correcting coding processing, delaying the frame data of the frame, for which error-correcting coding processing is not executed, by a frame length indicated by frame length information of an immediately preceding frame for which error-correcting coding processing is to be executed; and

output means for outputting outputs from said error-correcting coding means and said variable delay means in a time-serial manner.

5,579,304

CODE-DIVISION MULTIPLE-ACCESS RECEIVER WITH SEQUENTIAL INTERFERENCE-CANCELING ARCHITECTURE

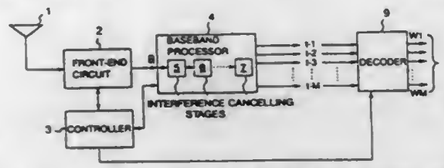
Hiroki Sugimoto; Ikuo Kawasumi, and Kenji Horiguchi, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1995, Ser. No. 397,676

Claims priority, application Japan, Mar. 10, 1994, 6-039421

Int. Cl.[6] H04B *1/69;* **H04K** *1/00*

U.S. Cl. 370—18 **60 Claims**



1. A method of receiving a code-division multiple-access signal combining symbol values spread by a plurality of spreading codes, comprising the steps of:

(a) converting said code-division multiple-access signal to a baseband signal;

(b) recognizing a boundary of a symbol in said baseband signal;

(c) generating a spreading code by which said symbol was spread, and a corresponding despreading code;

(d) generating a symbol value input of said symbol, by using said baseband signal and said despreading code;

(e) estimating an interference signal, by using said spreading code to spread the symbol value input;

(f) modifying said baseband signal by subtracting said interference signal; and

(g) repeating said steps (b) through (f) at least once for each symbol value combined in said code-division multiple-access signal.

5,579,305

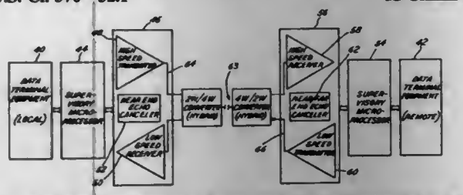
ASYMMETRIC DUPLEX MODEM UTILIZING NARROW BAND ECHO CANCELLATION

Andrew L. Norrell, Nevada City, Calif., and Christopher R. Hansen, 11665 Squirrel Creek, Grass Valley, Calif. 95945, assignors to U.S. Robotics, Inc., Skokie, Ill.

Filed Feb. 9, 1994, Ser. No. 193,730

Int. Cl.[6] H04B *3/23*

U.S. Cl. 370—32.1 **12 Claims**



1. A modem for connecting digital data terminal equipment to an analog communication link, said modem having a high-speed channel and a low-speed channel, said high-speed channel having a bandwidth in a first range of frequencies and said low-speed channel having a bandwidth in a second range of frequencies, said second range of frequencies being narrower than said first range of frequencies, a signal emanating from said modem being partially reflected back to said modem said analog communication link as a reflected signal, said reflected signal defining a reflected signal bandwidth, said modem comprising, in combination:

transmission means for transmitting a signal from said digital data terminal equipment over said analog communication link in a selected one of said channels;

receiving means for receiving a signal from said analog communication link in another one of said channels; and

signal cancelling means for substantially cancelling a portion of said reflected signal bandwidth.

5,579,306

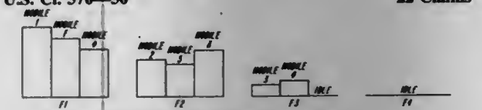
TIME AND FREQUENCY SLOT ALLOCATION SYSTEM AND METHOD

Paul W. Dent, Stehags, Sweden, assignor to Ericsson Inc., Research Triangle Park, N.C.

Filed Sep. 1, 1994, Ser. No. 299,255

Int. Cl.[6] H04Q *7/00;* **H04J** *3/16*

U.S. Cl. 370—50 **22 Claims**



1. A radio communication system comprising:

a plurality of frequencies for transmission of communication signals;

a plurality of time slots on each frequency;

a plurality of first stations which transmit and receive communication signals on the time slots; and

at least one second station which assigns time slots on a first frequency to first stations which are to be communicated with by employing highest second station transmitter power levels and which assigns time slots on a second frequency to first stations which are to be communicated with by employing second station transmitter power levels which are lower than said highest second station transmitter power levels, wherein each time slot transmitted on said first frequency is transmitted at a higher power level than each time slot transmitted on said second frequency.

5,579,307

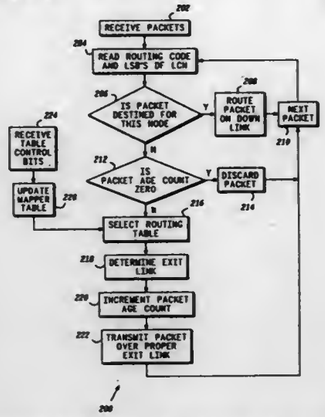
PACKET ROUTING SYSTEM AND METHOD WITH QUASI-REAL-TIME CONTROL

Peter J. Richetta, Tempe; Kenneth M. Peterson, Phoenix, and Victor H. Cutler, Jr., Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 23, 1995, Ser. No. 409,288

Int. Cl.[6] H04B *7/14*

U.S. Cl. 370—54 **11 Claims**



6. A communication system that routes data packets comprising:

a plurality of nodes, each node of said plurality having a memory for storing a plurality of routing tables and a mapping table therein, said mapping table referring to one of said plurality of routing tables for each of a plurality of routing table identifiers;

communication links coupling said nodes;

a first transceiver associated with each of said nodes for receiving mapping table control bits;

a processor associated with each of said nodes with means for updating said mapping table using said mapping table control bits, the processor causing said mapping table to reference other routing tables for each of said routing table identifiers; and

a second transceiver associated with each of said nodes for reading a destination routing code and said routing table identifier from said data packets, wherein

said processor has means for identifying one routing table of said plurality of routing tables by indexing said mapping table using said routing table identifier and said destination routing code to determine an exit link, said exit link being one of said communication links, and

wherein said second transceiver routes said data packets away from one of said nodes over said exit link.

5,579,308

CROSSBAR/HUB ARRANGEMENT FOR MULTIMEDIA NETWORK

Richard Humpleman, Fremont, Calif., assignor to Samsung Electronics, Ltd., Kyungki-do, Rep. of Korea

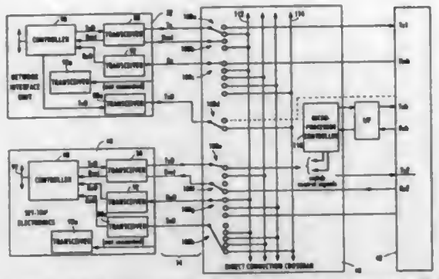
Filed Nov. 22, 1995, Ser. No. 561,534

Int. Cl.[6] H04L *12/44;12/50*

U.S. Cl. 370—58.1 **6 Claims**

1. A direct circuit crossbar and hub arrangement of a network having end terminals coupled to the network, comprising:

a direct circuit crossbar selectively coupled to the end terminals of the network and coupled to the network, the direct circuit crossbar establishing a direct circuit between two end terminals, and connecting the two end terminals as a pair to the network; and



a passive hub of the network coupled to the end terminals of the network that are not selectively coupled to the direct circuit crossbar and also coupled via the direct circuit crossbar to the end terminals connected as a pair to the network.

5,579,309

OBJECT ORIENTED PROGRAM-CONTROLLED BROADBAND COMMUNICATION EQUIPMENT FOR OPTIMIZED METHOD CALLS

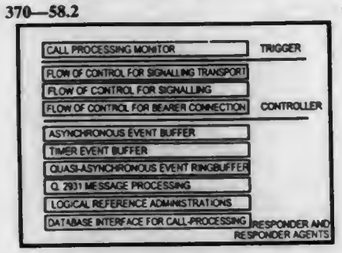
Juergen Totzke, Poing, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 25, 1995, Ser. No. 428,430

Claims priority, application Germany, Apr. 29, 1994, 44 15 172.1

Int. Cl.[6] H04J *3/12;* **H04Q** *11/04;* **G06F** *9/44*

U.S. Cl. 370—58.2 **6 Claims**



1. A communication equipment comprising:

means for controlling the communication equipment with at least one object-oriented switching process, the at least one switching process comprising a plurality of object-related structure elements for implementing different switching-oriented functions respectively available for a plurality of switching procedures, said means for controlling further comprising means for instantiating objects by the structure elements for realizing specific switching functions and wherein the objects communicate with one another by method calls, wherein a network layer for subscriber signaling is comprised of a plurality of sub-layers; each of the sub-layers having a structure element hierarchy comprising at least one structure element; and wherein a calling subscriber side and a called subscriber side are represented in every structure element of the respective structure element hierarchy by at least one separate object; and wherein objects of a same subscriber side communicate directly with one another via select ones of said method calls and objects from different subscriber sides communicate directly with one another via asynchronous internal events.

5,579,310

METHOD FOR SWITCHING THROUGH DIGITAL SIGNALS

Jürgen Helles, München; Franz-Otto Hamborg, Berlin; Hans-Otto Kersten, Berlin, and Horst Wild, Berlin, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

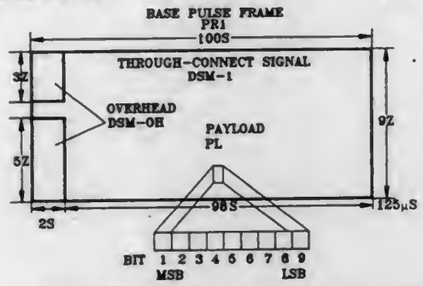
PCT No. PCT/DE93/00008, § 371 Date Jul. 14, 1994, § 102(e) Date Jul. 14, 1994, PCT Pub. No. WO93/14582, PCT Pub. Date Jul. 22, 1993

PCT Filed Jan. 11, 1993, Ser. No. 256,560

Claims priority, application Germany, Jan. 15, 1992, 42 00 864.6

Int. Cl.[6] H04Q *11/04*

U.S. Cl. 370—60 **6 Claims**



1. A method for switching digital signals through a switching network, comprising the steps of:

inserting the digital signals into cross-connect pulse frames, each of the cross-connect pulse frames having 9 lines and 100.N columns in a two-dimensional representation, where N is a whole number greater than zero, each of the 9 lines of each of the columns containing a through-connect data word having 9 bits, of which an octet having 8 bits is used for inserting the digital signals and of which the ninth bit is used for transmission information, monitoring information and control information; and

transmitting the through-connect data words through said switching network, wherein said 8 bits of said through-connect data words are used for representing said digital signals in said cross-connect pulse frames.

5,579,311

TELECOMMUNICATIONS SWITCHING

Geoffrey Chopping; Thomas S. Maddern, and Paul A. Smith, all of Dorset, United Kingdom, assignors to GPT Limited, United Kingdom

Filed Sep. 8, 1994, Ser. No. 302,513

Claims priority, application United Kingdom, Sep. 21, 1993, 9319449

Int. Cl.[6] H04L *12/56;* **H04J** *3/12*

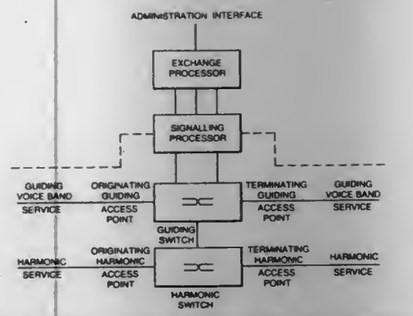
U.S. Cl. 370—60.1 **17 Claims**

1. A telecommunications switching system having a guiding transmission path and a harmonic transmission path, comprising:

a first exchange switching node containing an originating guiding access point on an exchange where an originating subscriber's guiding transmission path terminal is connected, the originating subscriber's guiding terminal having both supervisory and signaling means;

a second exchange switching node containing an originating harmonic access point on an exchange where an originating subscriber's harmonic transmission path terminal is connected;

a third exchange switching node containing a terminating guiding access point on an exchange where a terminating subscriber's guiding transmission path terminal is connected, the terminating subscriber's guiding terminal having both supervisory and signaling means;



a fourth exchange switching node containing a terminating harmonic access point on an exchange where a terminating subscriber's harmonic transmission path terminal is connected;

harmonic call switching means for establishing a harmonic call between the exchange having the originating harmonic access point and the exchange having the terminating harmonic access point; and

guiding call means for establishing a guiding call between the guiding access points and passing through the exchanges having the originating and terminating harmonic access points.

5,579,312

METHOD AND APPARATUS FOR SCHEDULING THE TRANSMISSION OF CELLS OF GUARANTEED-BANDWIDTH VIRTUAL CHANNELS

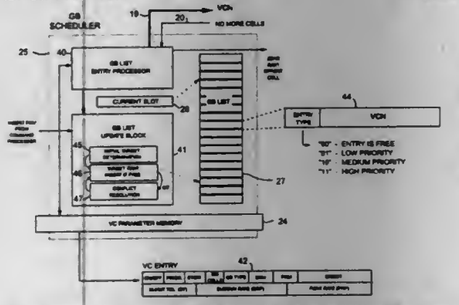
Pascal Regaché, Eybens, France, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 30, 1995, Ser. No. 453,657

Claims priority, application European Pat. Off., Jun. 28, 1994, 94410045

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—60.1 **12 Claims**



1. A guaranteed-bandwidth scheduler for scheduling the transmission of cells of guaranteed-bandwidth virtual channels, the channels being identified in the scheduler by respective identifying labels, herein VCNs; the scheduler comprising:

a circular list having a predetermined number of entry slots each capable of storing a single VCN;

initial-insertion means for inserting into a respective slot in said list a VCN of each guaranteed-bandwidth virtual channel with a cell available for transmission, each said guaranteed-bandwidth virtual channel being represented once in the list;

control means for advancing through the list slot by slot and for processing the VCN, if any, found in a current slot of interest whereby to cause transmission of a cell of a corresponding virtual channel, the control means being further operative to remove the VCN, if any, in the current slot of interest, and if there are still cells to send on a virtual channel concerned, to insert the VCN in a target slot offset ahead of the current slot by an amount dependent on a predetermined transmission rate for the virtual channel concerned, the control means including conflict resolution means for resolving conflicts should the target slot for inserting the VCN be already occupied.

5,579,313

METHOD OF MULTIPLEXING SPEECH SIGNAL AND CONTROL SIGNAL IN ISDN B-CHANNELS FOR AN EXCHANGE SYSTEM

Masaaki Ishibashi, Tama; Kazuhisa Shimazaki, Moriguchi; Satoshi Hioki, Amazaki, and Tsutomu Shimasue, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

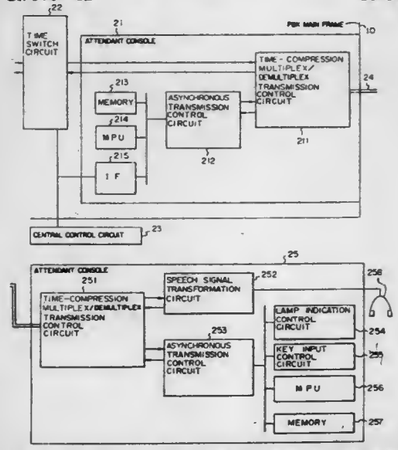
Continuation of Ser. No. 537,239, Jun. 13, 1990, abandoned.

This application Nov. 27, 1992, Ser. No. 983,115

Claims priority, application Japan, Jun. 13, 1989, 1-150066

Int. Cl.[6] H04Q *11/04*

U.S. Cl. 370—62 **10 Claims**



1. A method for use in an exchange system provided with first and second information signals, and generating first and second control signals, said exchange system including an attendant console and an attendant console control circuit which are coupled together by a two-way transmission line including a signalling channel and a plurality of information channels in both an upstream frame and a downstream frame, the method comprising the steps of:

a) multiplexing the first information signal and the first control signal including at least one of a first display signal, a lamp signal and a first incoming call ringing signal, from the attendant console control circuit, to produce a first multiplexed signal, the first information signal and the first control signal being multiplexed in first and second information channels, respectively, the first and second information channels each having respective bandwidths larger than a bandwidth of the signalling channel;

b) transmitting the first multiplexed signal from the attendant console control circuit to the attendant console on the downstream frame of the two-way transmission line;

c) multiplexing the second information signal and the second control signal including a key signal, to produce a second multiplexed signal, the second information signal and the second control signal being multiplexed in third and fourth voice information channels, respectively, the third and fourth information channels each having respective bandwidths larger than a bandwidth of the signalling channel; and

d) transmitting the second multiplexed signal from the attendant console to the attendant console control circuit on the upstream frame of the two-way transmission line.

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5,579,314

CONNECTIONLESS INFORMATION SERVICE DELIVERY

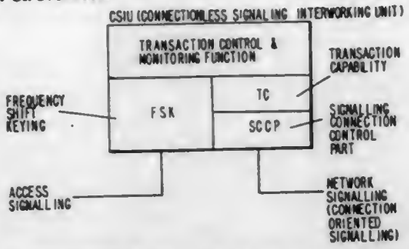
Keith P. Jones, Warwickshire, United Kingdom, assignor to GPT Limited, United Kingdom

Filed May 1, 1995, Ser. No. 431,786

Claims priority, application United Kingdom, May 4, 1994, 9408798

Int. Cl.[6] H04Q *1/30*

U.S. Cl. 370—68.1 **4 Claims**



1. A telecommunications system having subscriber and/or private automatic branch exchange accesses, an access signalling system, and a connectionless network signalling system, said telecommunications system comprising:

a connectionless signalling interworking unit for controlling the access signalling system remotely from said accesses, and operative for interworking the network signalling system and the access signalling system, said unit including a transaction control and transaction monitoring means for passing information bi-directionally between network points without establishing a bearer connection between the network points.

5,579,315

HEARTBEAT COLLISION PREVENTION CIRCUIT AND METHOD

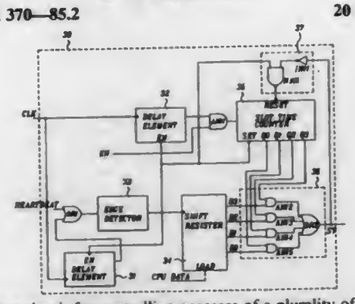
Hyung L. Lyu, Seoul, and Dong H. Lee, Kyungki-Do, both of Rep. of Korea, assignors to Goldstar Electron Co., Ltd., Choongchungbook-Do, Rep. of Korea

Filed Jan. 6, 1995, Ser. No. 369,457

Claims priority, application Rep. of Korea, Apr. 14, 1994, 7860/1994

Int. Cl.[6] H04L *12/407*

U.S. Cl. 370—85.2 **20 Claims**



12. In a circuit for controlling accesses of a plurality of stations to a data line in a network in which said plurality of stations are connected to said data line and a heartbeat line, said data line transmitting data therethrough, said heartbeat line transmitting a heartbeat signal therethrough; a heartbeat collision prevention method comprising the steps of:

(a) detecting an edge of said heartbeat signal;

(b) loading data indicative of a data transmission priority from a central processing unit and shifting the data in response to the detected edge of said heartbeat signal to rotate the data transmission priority among said plurality of stations;

(c) logically combining a count value obtained by counting a clock signal and a value obtained by shifting the loaded data and outputting the resultant signal as a slot time; and

(d) transmitting data when said slot time becomes low in logic.

5,579,316

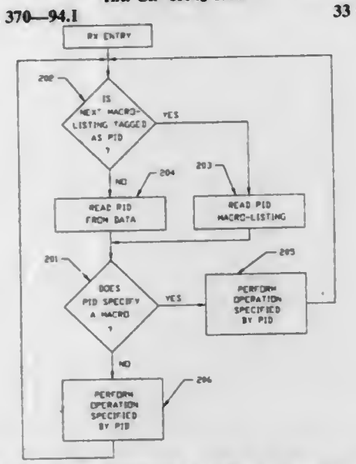
COMMUNICATIONS TECHNIQUE FOR TRANSMITTING LIMITED SIZE DIGITAL DATA FRAMES USING MACRO HEADERS TO REPRESENT MULTIPLE HEADER CODE PATTERNS ASSOCIATED WITH ENCAPSULATION PROTOCOLS AND SIGNAL PROCESSING OPERATIONS TO WHICH TRANSMITTED DATA ARE SUBJECTED

W. Stuart Venters, and Kevin W. Schneider, both of Huntsville, Ala., assignors to Adtran, Huntsville, Ala.

Filed May 2, 1994, Ser. No. 237,355

Int. Cl.[6] H04J *3/00*

U.S. Cl. 370—94.1 **33 Claims**



17. A method of transmitting a frame of digital data over a digital communications channel from a first site to a second site comprising the steps of:

(a) specifying a plurality of multi-bit communication control codes, that are normally appended to digital data to be transmitted over said digital communications channel, said control codes being employed at said second site to recover said digital data from a received frame;

(b) generating a multi-bit macro-code as a substitute representation of said plurality of communication control codes;

(c) combining said macro-code and digital data within a respective frame for transmission; and

(d) transmitting said respective frame over said communication channel to second site.

5,579,317

PACKET ERROR PROPAGATION FOR MPEG TRANSPORT DEMULTIPLEXERS

King-Fai Pang, Mountain View, and Darren D. Neuman, San Jose, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

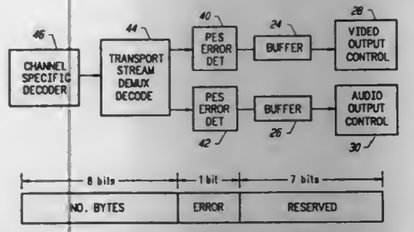
Filed Aug. 15, 1995, Ser. No. 515,434

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—94.1 **8 Claims**

1. In an audio and video signal transmission system in which audio and video signals are encoded in packets which are multiplexed to form a stream for transmission, a method of decoding the transmitted signals comprising the steps of

a) demultiplexing a received stream to separate audio and video packets.



b) identifying the presence of any error in each packet,

c) parsing a packet header received with each packet, and

d) inserting an error propagation header with each packet to signal the presence of an error, said error propagation header identifying byte count of an associated packet and an error flag.

5,579,318

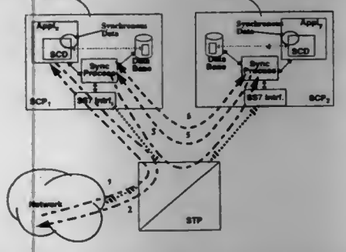
PROCESSES AND APPARATUS FOR MAINTAINING DATA CONCURRENCE BETWEEN DATABASES IN TELECOMMUNICATIONS NETWORKS

Carolyn K. Reuss, Atlanta; Jerry C. Shih, Roswell, and Paul T. Watson, Alpharetta, all of Ga., assignors to BellSouth Corporation, Atlanta, Ga.

Filed Jun. 30, 1994, Ser. No. 269,917

Int. Cl.[6] H04J *3/24*

U.S. Cl. 370—94.2 **51 Claims**



1. A process for maintaining data concurrence in a plurality of databases in a telecommunications network, including the steps of:

a. providing to a Control Network Element information regarding data in at least one of the databases which is desired to be changed;

b. communicating to a Source Network Element that contains at least one of the databases, via the Control Network Element, a first message that contains (i) information about the data that is desired to be changed; and (ii) a time stamp;

c. changing information in the database in the Source Network Element based on information in the message received by the Source Network Element;

d. communication to a Target Network Element that contains at least one of the databases, via the Source Network Element, a second message that contains (i) information about the data that is desired to be changed; and (ii) the time stamp; and

e. changing information in the database in the Target Network Element based on information in the message received by the Target Network Element.

5,579,319

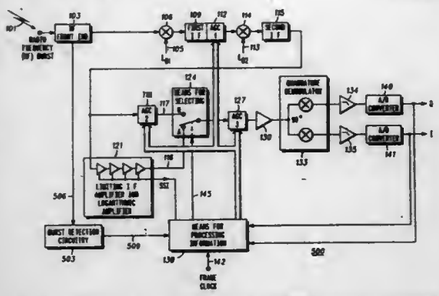
RECEIVER PATH SELECTION BASED ON BURST-TYPE IN A TIME DIVISION MULTIPLE ACCESS RECEIVER

Christopher J. Daniel, Lake Zurich, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 22, 1994, Ser. No. 310,613

Int. Cl.[6] H04J *3/16*

U.S. Cl. 370—95.3 **24 Claims**



24. A time division multiple access (TDMA) receiver comprising:

burst detection circuitry having as input a first signal and outputting a second signal related to determined burst-type information;

a processor having as input the second signal and outputting a control signal, the output control signal related to the determined burst-type information contained within the second signal; and

a switch having as input the control signal, a first receiver path and a second receiver path and outputting information from one of the first receiver path or the second receiver path based on the control signal.

5,579,320

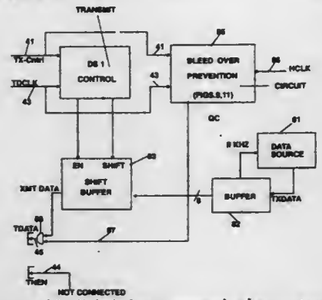
CHANNEL UNIT TRANSMISSION FOR REMOVING FALSE DATA BITS IN ADJACENT UNTERMINATED CHANNEL SLOTS FOR D4 AND SLC-96 CHANNEL BANKS

Clifford L. Hall, III, Huntsville, and Scott C. Bailey, Harvest, both of Ala., assignors to Adtran, Inc., Huntsville, Ala.

Filed Jan. 5, 1995, Ser. No. 369,187

Int. Cl.[6] H04J *3/16*

U.S. Cl. 370—95.1 **24 Claims**



1. For use with digital data communication system having a digital data transmission link over which a digital communications signal transmitter transmits digital data communication signals during successive time division multiplexed transmission time slots, respective ones of said transmission time slots being associated with respective channel units that are coupled to a data input link, signal values of said digital data signals being representative of the voltage level of said data input link sampled by said digital communications signal transmitter at successive prescribed transitions of a sampling clock signal, said data input link being refer-

enced to a prescribed voltage level through an electrical circuit element, said electrical circuit element being operative to pull said data input link to said prescribed voltage level, during a transmission time slot for which there is no associated installed channel unit coupled to said data input link and asserting a digital data representative voltage level on said data input link, a method of bringing said data input link to said prescribed voltage level comprising the steps of:

(a) monitoring the occurrence of the last of said prescribed transitions of said sampling clock signal during a respective transmission time slot associated with a respective associated installed channel unit; and

(b) driving said data input link to said prescribed voltage level subsequent to said occurrence of the last of said prescribed transitions of said sampling clock signal during said respective transmission time slot associated with said respective installed channel unit, but prior to the occurrence of the first of said prescribed transitions of said sampling clock signal during an immediately successive transmission time slot for which there is no associated installed channel unit coupled to said data input link.

5,579,321

TELECOMMUNICATION SYSTEM AND A MAIN STATION AND A SUBSTATION FOR USE IN SUCH A SYSTEM

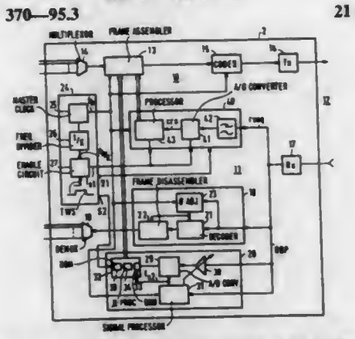
Petrus, A. M. Van Grinsven, and Wilfred Snijders, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 14, 1994, Ser. No. 213,485

Claims priority, application European Pat. Off., Mar. 15, 1993, 93200742

Int. Cl.[6] H04J *3/00*

U.S. Cl. 370—95.3 **21 Claims**



1. A telecommunication system comprising: a main station and a plurality of substations, in which system communication between the main station and the substations occurs at a predetermined bit rate via a transmission channel in time intervals in accordance with a time division multiple access protocol, which channel is common to the substations; wherein, for ranging the substations, each substation comprises transmission means for transmitting ranging information to the main station and adjustment means for adjusting the time intervals for transmission of ranging information to the main station on the basis of ranging control information received from the main station, and the main station comprises receiving means for receiving the ranging information, sampling means for taking samples of the ranging information, and processing means for determining the ranging control information from the samples; and further wherein each substation is arranged to transmit to the main station ranging information including a repetitive ranging-bit-pattern, and the processing means in the main station are arranged to process samples of the repetitive ranging-bit-pattern such that a quasi-oversampled ranging-bit-pattern is obtained, the processing means being arranged to derive fine and/or coarse ranging control information from the quasi-oversampled ranging-bit-pattern.

5,579,322

DUAL PORT MEMORY HAVING TESTING CIRCUIT

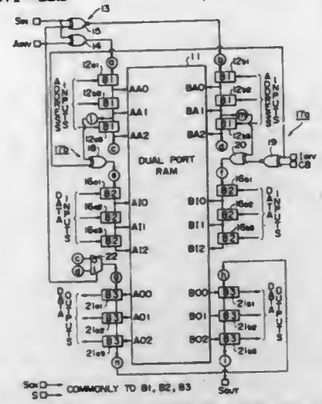
Takeshi Onodera, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Aug. 25, 1994, Ser. No. 295,439

Claims priority, application Japan, Sep. 2, 1993, 5-243863

Int. Cl.[6] G01R *15/12*; **G11C** *29/00*

U.S. Cl. 371—22.3 **8 Claims**



1. An embedded testing circuit of a dual port memory embedded in a semiconductor integrated circuit together with a dual port memory for testing the memory comprising:

a first group of scan registers formed of serially connected plural stages of scan registers provided on each port at the address input side of said dual port memory corresponding to each node;

an address inputting circuit for selectively supplying predetermined pattern data or their inverted pattern data to one port side of said first group of scan registers and the other of said inverted pattern data or said predetermined pattern data to the other port side of said first group of scan registers;

a second group of scan registers formed of serially connected plural stages of scan registers provided on each port at the data input side of said dual port memory corresponding to each node; and

a data inputting circuit for selectively supplying said predetermined pattern data or said inverted pattern data passed through the one port side of said first group of scan registers to the one port side of said second group of scan registers and selectively supplying, in a first mode, said inverted pattern data or said predetermined pattern data passed through the other port side of said first group of scan registers, and, in a second mode, said predetermined pattern data or said inverted pattern data passed through the other port side of said first group of scan registers, to the other port side of said second group of scan registers,

wherein in said first mode, data written from a port A and data written from a port B are always held in inverse relationship to each other; and

wherein in said second mode, the same data can be written from port A and port B.

5,579,323

VIRTUAL TRIBUTARY/TRIBUTARY UNIT TRANSPORT METHOD AND APPARATUS

Dale L. Krisher, Wake Forest, N.C., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Jul. 22, 1994, Ser. No. 279,215

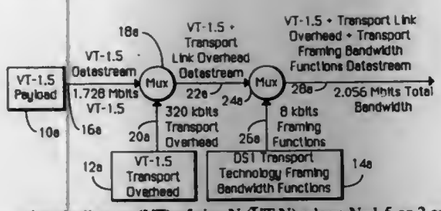
Int. Cl.[6] H04J *3/00*

U.S. Cl. 370—99 **22 Claims**

1. Apparatus, comprising:

a first multiplexer (**18**), responsive to a payload datastream signal (**16**) for a Synchronous Optical Network (SONET) virtual tributary (VT) of size N (VT-N) where N=1.5 or 2 and responsive to a SONET VT-N transport link overhead signal (**20**), for providing a SONET VT-N payload plus SONET transport link overhead signal (**22**); and

a second multiplexer (**24**), responsive to said SONET VT-N payload plus SONET transport link overhead signal (**22**) and to a transport technology framing signal (**26**), for providing a SONET VT-N payload plus SONET transport link overhead plus transport technology framing signal (**28**).



5,579,324

SYNCHRONIZING CIRCUIT ARRANGEMENT

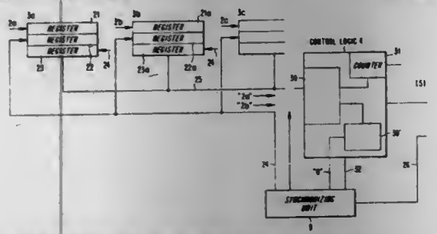
Karl S. M. Buhrgard, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Oct. 11, 1994, Ser. No. 320,661

Claims priority, application Sweden, Oct. 12, 1993, 93033413

Int. Cl.[6] H04J *3/06*

U.S. Cl. 370—105.1 **19 Claims**



1. A synchronizing circuit arrangement, comprising:

a multiplexing/demultiplexing unit for dividing a sequentially orientated bit stream into defined mutually sequential data packets thereby establishing a boundary between two closely adjacent data packets by constantly selecting the bit positions and values within a predetermined part of a consecutive bit sequence in each transmitted data packet so that a predetermined check calculation of the predetermined part will give a predetermined value; the multiplexing/demultiplexing unit including:

a control logic for synchronizing each incoming bit stream by inserting into a series-parallel converter for respective bit streams a time delay corresponding to synchronism;

a memory for receiving from the control logic in a parallel-format synchronized bit stream; and

an outgoing connection for receiving the parallel-format synchronized bit stream through buffer circuits and a parallel-series converter;

wherein a bit sequence belonging to received data packets and consecutive to the predetermined part of a consecutive bit sequence is evaluated to establish the extent to which the check calculation gives the predetermined value; and in the event of the check calculation and predetermined value agree, the multiplexing/demultiplexing unit establishes the boundary between two closely adjacent data packets through the bit sequence of the selected part; and in the case of a multiplexing function, the multiplexing/demultiplexing unit coordinates the bit stream into a data packet on a number of incoming connections and one outgoing connection establishing a grouped logic link, and in the case of a demultiplexing function the multiplexing/demultiplexing unit coordinates bit streams into data packets on one incoming connection and a number of outgoing connections establishing a grouped logic link.

5,579,325

METHOD AND APPARATUS FOR TRANSMITTING DATA SIGNALS OVER PARALLEL DATA LINES

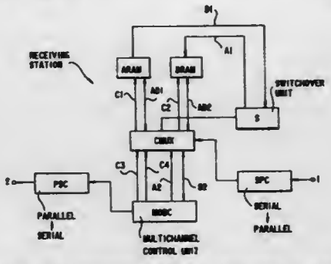
Reinhard Lipfert, Krefeld, and Kai Garweg, Duisburg, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 21, 1994, Ser. No. 343,026

Claims priority, application Germany, Nov. 19, 1993, 43 39 463.9

Int. Cl.[6] H04J *3/06*; **H04L** *7/00*

U.S. Cl. 370—105.2 **4 Claims**



3. A system for transmitting data, comprising n transmission channels, a transmitting station and a receiving station, m channels of said n channels (n≧m≧0) for transmitting data, and each of the m channels effecting a partial data transmission,

said transmitting station including means for simultaneously transmitting a predetermined data value on each of said m channels;

said receiving station including an address memory, a data memory and control means;

said receiving station transmitting a confirmation signal to said transmitting station after having received the predetermined data value on all of said m channels;

said transmitting station, after receiving the confirmation signal, transmitting over all of the m channels a numerical sequence beginning with a predetermined starting value;

said receiving station ascertaining time offset values from the data values received in the various channels;

said address memory storing the ascertained time offset values to form offset addresses;

said data memory sequentially storing received data under control of said control means;

said control means controlling addressing and reading out of said data memory with the offset addresses stored in said address memory; and

said control means assigning the read-out data to an output channel.

5,579,326

METHOD AND APPARATUS FOR PROGRAMMING SIGNAL TIMING

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jan. 31, 1994, Ser. No. 189,589

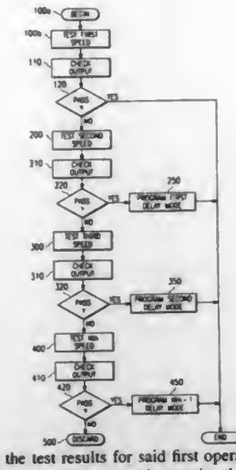
Int. Cl.[6] G11C *17/00*

U.S. Cl. 371—61 **10 Claims**

1. A method of testing a device, comprising the steps of:

transmitting a signal to a mode control circuit, wherein said mode control circuit generates an output signal to a programmable delay circuit;

testing said device for a first operational speed;



analyzing the test results for said first operational speed;

testing said device for a second operational speed if said analyzing step for said first operational speed indicates an alternate operational speed is desired, said second operational speed having a first delay mode enabled by said mode control circuit;

analyzing the test results for said second operational speed; and

permanently programming said device for the first delay mode if said analyzing step for said second operational speed indicates a third alternate operational speed is not desired.

5,579,327

EXTERNAL-CAVITY TUNABLE WAVELENGTH LIGHT SOURCE USING SEMICONDUCTOR LASER HAVING PHASE ADJUSTMENT AREA

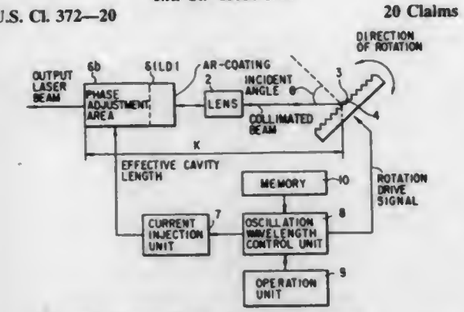
Hiroaki Ohtateme, Atsugi; Hiroaki Endoh; Hiroshi Goto, both of Isehara; Ko Ikeuchi, Hadano, and Akihiko Asai, Tokyo, all of Japan, assignors to Anritsu Corporation, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 465,063

Claims priority, application Japan, Jun. 6, 1994, 6-147182; Jul. 4, 1994, 6-174777

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—20 20 Claims



1. A tunable wavelength light source, comprising:

a semiconductor laser having first and second end faces capable of emitting a laser beam and opposing each other, and a phase adjustment area, said first end face being AR-coated;

a diffraction grating, arranged on an optical path of the laser beam emitted from said first end face, for spectrally dispersing the laser beam emitted from said first end face of said semiconductor laser and returning only a light component having a specific wavelength to said first end face, thereby forming an external cavity having a cavity length corresponding to a distance between said second end face of said semiconductor laser and a spectral dispersion surface of said diffraction grating, said external cavity oscillating an external cavity longitudinal mode based on the cavity length;

current injection means for injecting a current to said phase adjustment area of said semiconductor laser, thereby changing an effective cavity length of said external cavity; and

oscillation wavelength control means for controlling a current value to be injected from said current injection means and controlling a wavelength to be selected by said diffraction grating so as to oscillate a light beam having a desired wavelength between said external cavity longitudinal modes in order that the wavelength of the laser beam emitted from said second end face of said semiconductor laser can be changed while holding a predetermined cavity length of said external cavity.

5,579,328

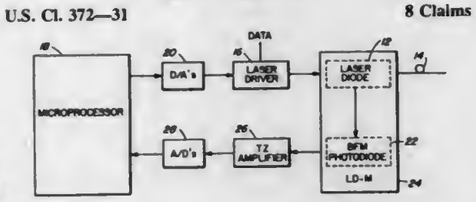
DIGITAL CONTROL OF LASER DIODE POWER LEVELS

Richard A. Habel, Ottawa, and Kim B. Roberts, Kanata, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 10, 1995, Ser. No. 513,280

Int. Cl.[6] H01S *3/13*

U.S. Cl. 372—31 8 Claims



1. An apparatus for controlling the average and peak optical power of an injection laser in order to compensate for temperature and aging effects, said apparatus comprising:

a first voltage controlled current source for applying a bias current to said injection laser;

a second voltage controlled current source for applying a modulating current to said laser, said second current source being modulated by a high frequency differential input to modulate the optical output of the laser;

a digital drive means associated with said second voltage controlled current source to apply a low frequency pseudo-random sequence to said modulating current, the bit rate and amplitude of said pseudo-random sequence being substantially lower than the amplitude and bit rate of the modulating current;

a photodetector located adjacent a back facet of said laser to detect a representative optical output of said laser and to provide an electrical signal corresponding to said optical output;

a processing circuit including a microprocessor to compare the peak and average output as detected by said back facet monitor with reference signals in a control algorithm in said microprocessor and to generate feedback signals; and

a first feedback loop from said processing circuit to said first voltage controlled current source to control said average optical output of said laser, and a second feedback loop from said processing circuit to said second voltage controlled current source to control the peak optical output of said laser.

5,579,329

SEMICONDUCTOR LASER APPARATUS, INFORMATION RECORDING/REPRODUCING APPARATUS AND IMAGE RECORDING APPARATUS

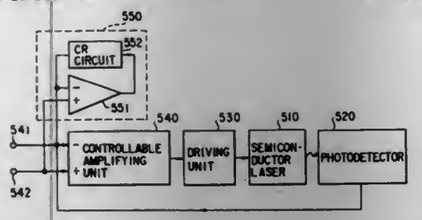
Toyoki Taguchi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 5, 1995, Ser. No. 465,413

Claims priority, application Japan, Jul. 15, 1994, 6-162580

Int. Cl.[6] H01S *3/00*

U.S. Cl. 372—38 29 Claims



1. A semiconductor apparatus comprising:

a semiconductor laser;

a photodetector for detecting an output beam of said semiconductor laser;

a driving unit for driving said semiconductor laser;

a controllable amplifying unit for receiving an externally supplied control signal and an output beam of said photodetector and supplying a drive signal determined by said control signal and said output beam of the photodetector to said driving unit, thereby feedback-controlling the output of the semiconductor laser; and

a compensation unit for actively controlling the phase of a feedback control loop constituted by said photodetector, said driving unit and said controllable amplifying unit in accordance with temporal and electrical behaviors of the feedback control loop.

5,579,330

Patent Not Issued For This Number

5,579,331

DELTA-STRAINED QUANTUM-WELL SEMICONDUCTOR LASERS AND OPTICAL AMPLIFIERS

Paul H. Shen, Howell; Paul W. Cooke, Hazlet, and Wayne H. Chang, Princeton Junction, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 31, 1995, Ser. No. 455,584

Int. Cl.[6] H01S *3/18*

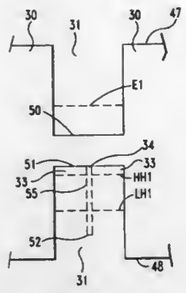
U.S. Cl. 372—45 10 Claims

1. A quantum-well semiconductor device comprising:

a highly doped N-region of semiconductor material;

a highly doped P-region of semiconductor material; and

at least one quantum-well heterostructure sandwiched between said N-region and said P-region, said quantum-well heterostructure including at least one quantum well having a delta-strained layer therein, the quantum well being sandwiched between at least two quantum barrier layers, wherein there is a lattice mismatch between said delta-strained layer and said quantum-well, and wherein conduction, heavy hole and valence band edges of said quantum-well remain substantially constant across the quantum well, and wherein a light hole band edge of said delta-strained layer is substantially lower than a light hole band edge of said quantum well.



5,579,332

PLASMA LIGHT SOURCE

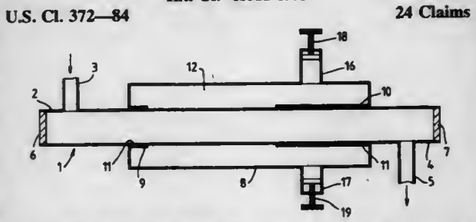
Michael R. Osborne, Ickenham, and Keith H. Bayliss, Bridgnorth, both of United Kingdom, assignors to United Kingdom Atomic Energy Authority, Didcot, United Kingdom

Filed Oct. 24, 1994, Ser. No. 327,830

Claims priority, application United Kingdom, Nov. 16, 1993, 9323601

Int. Cl.[6] H01S *3/03*

U.S. Cl. 372—84 24 Claims



1. A light source including a gaseous medium which is excited to a light emitting state by means of a microwave electromagnetic field, including means for generating the electromagnetic field by circularly polarised microwave radiation.

5,579,333

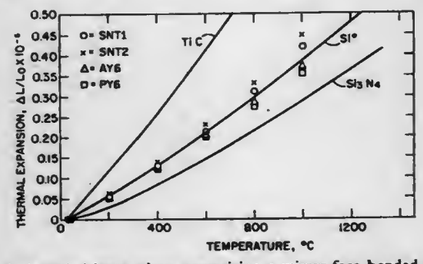
COOLED LASER MIRROR MATERIALS

Jeffrey T. Neil, E. Pepperell, and J. Thomas Smith, Acton, both of Mass., assignors to United States of America as represented by the Secretary of the Air Force, Wright-Patterson Air Force Base, Ohio

Filed Sep. 4, 1985, Ser. No. 772,492

Int. Cl.[6] C02B *5/08*

U.S. Cl. 372—99 3 Claims



1. A cooled laser mirror comprising a mirror face bonded to a heat exchanger assembly, said mirror face being silicon and said heat exchanger assembly being a silicon nitride matrix having a particulate phase uniformly dispersed therein, said silicon nitride matrix comprising silicon nitride, yttria, and alumina; said particulate phase being selected from the group consisting of titanium

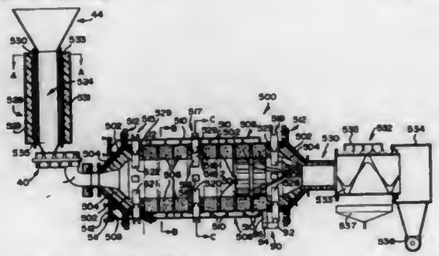
carbide, titanium nitride, titanium carbonitride, and combination thereof; said heat exchanger assembly being electrically conductive, said heat exchanger assembly having a thermal expansion equal to or slightly greater than said mirror face.

5,579,334

METHOD AND APPARATUS FOR REACTING SOLID PARTICULATE REAGENTS IN AN ELECTRIC FURNACE

Rodney C. Baxter, 32 Woodland Park, Spitfire Road, Sunninghill; Derek R. Oldnall, 54 King Street, Irene, and Bodo R. Rohrmann, 21 Den Haag Street, Die Heuwel, all of South Africa

Filed Mar. 2, 1995, Ser. No. 397,350
Int. Cl.[6] H05B *3/00*
U.S. Cl. 373—109 **25 Claims**



1. A furnace comprising:

a first cylindrical furnace shell rotatable about a rotational axis, the first furnace shell providing a first furnace chamber for holding a bed of solid particulate reagent as the first furnace shell rotates; and first and second electrodes exposed to the first furnace chamber and being electrically insulated from the furnace shell, with the electrodes being spaced apart so that the solid particulate reagent in the first furnace chamber is heated up by direct resistance heating thereof, utilizing the electrodes; and

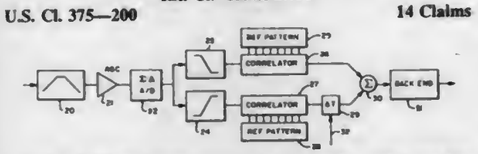
a second cylindrical furnace shell rotatable about the rotational axis and spaced axially from the first furnace shell, the second furnace shell providing a second furnace chamber which is in communication with the first furnace chamber and through which the solid particulate reagent from the first chamber passes in a longitudinal direction which is parallel to the rotational axis, and third and fourth electrodes exposed to the second furnace chamber and being electrically insulated from the furnace shell, with the third and fourth electrodes being spaced apart so that the solid particulate reagent in the second furnace chamber is heated by direct resistance heating thereof, utilizing the third and fourth electrodes.

5,579,335

SPLIT BAND PROCESSING FOR SPREAD SPECTRUM COMMUNICATIONS

Philip H. Sutterlin, and J. Marcus Stewart, both of San Jose, Calif., assignors to Echelon Corporation, Palo Alto, Calif.

Filed Sep. 27, 1995, Ser. No. 534,574
Int. Cl.[6] H04L *27/30*
U.S. Cl. 375—200 **14 Claims**



1. In a spread spectrum communication system where information is transmitted over a medium on an information carrying signal (ICS) having a broadband frequency spectrum, a method for compensation for distortion in the ICS, comprising the steps of:

separating the ICS into at least two sub-bands, each of the sub-bands covering a different predetermined band of frequencies, the frequencies bands of the sub-bands approximately covering the broadband frequency spectrum of the ICS;

separately correlating the ICS in each of the sub-bands with at least one predetermined pattern;

delaying results of one of the correlations with respect to results of the other correlation;

combining the results of the two correlations after the delaying step;

examining the results of the correlations; and

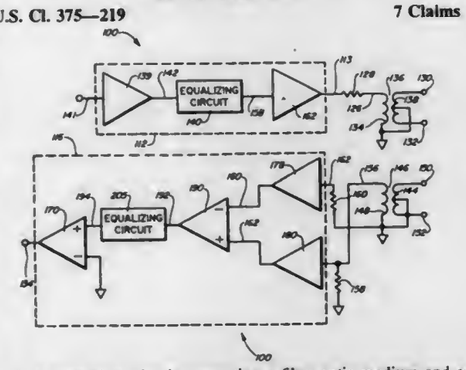
developing a control signal based on the examination of the results of the correlation, the control signal controlling the duration of the delaying.

5,579,336

BIDIRECTIONAL TRANSRECEIVER FOR HIGH SPEED DATA SYSTEM

John J. Fitzgerald, Leominster, and Donald G. Shuda, Chelmsford, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 88,442, Jul. 7, 1993, abandoned, which is a division of Ser. No. 374,046, Jun. 29, 1989, Pat. No. 5,253,249. This application Oct. 2, 1995, Ser. No. 537,548
Int. Cl.[6] H04B *1/38*
U.S. Cl. 375—219 **7 Claims**



1. A transceiver circuit connecting a fiber optic medium and a short data link comprising a first and second twisted pair of conductors in a high speed fiber optic data transmission network for simultaneously receiving and transmitting data over respectively said first and second twisted pair of conductors comprising:

a transmitter section for supplying an intermediate transmitted data signal;

a first equalizing means for receiving said intermediate transmitted data signal and providing an equalized transmitted data signal;

first balancing means for receiving said equalized transmitted data signal and for providing a first differential voltage signal to said first twisted pair;

second balancing means for receiving a second differential voltage signal transmitted over said second twisted pair and providing a first output having a reference voltage and a second output having an intermediate received data signal;

a high speed subtracting circuit receiving said first output and said second output and providing a received data signal characteristic of said second differential voltage signal; and

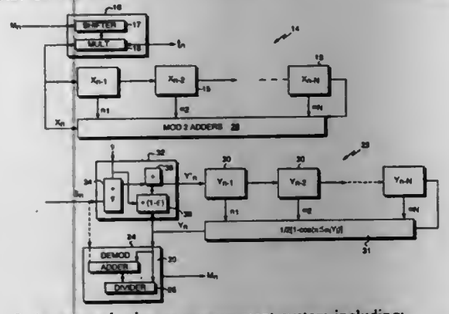
a second equalizing means for receiving said received data signal from said subtracting circuit and providing an equalized received data signal.

5,579,337

SYSTEM EMPLOYING DISSIPATIVE PSEUDORANDOM DYNAMICS AND SELECTIVE FEEDBACK FOR COMMUNICATIONS AND MEASUREMENT

Geoffrey Grinstein, Yorktown Heights, N.Y., and Neil Gershenfeld, Somerville, Mass., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 19, 1995, Ser. No. 491,624
Int. Cl.[6] H04B *15/00*
U.S. Cl. 375—206 **12 Claims**



I. A communication or measurement system including:

A. a transmitter for transmitting a modulated signal, the transmitter including a first feedback shift register that produces a pseudo-random noise signal that is used to modulate a message signal;

B. a receiver for receiving the modulated message signal, the receiver including a second feedback shift register for reproducing the pseudo-random noise signal from the received modulated signal and using the noise signal to recover the message signal from the received signal, the second feedback shift register being characterized by a non-chaotic expression that is associated with the expression that governs the first feedback shift register and has stable fixed points at integer values and unstable fixed points at ½ integer values;

C. a coupling circuit that produces an update signal, y'_n, for the second shift register, $y'_n=(1-\epsilon)y_n+\epsilon S_n$, where ϵ is a coupling factor selected between 0 and 1, y_n is a feedback signal produced by the second shift register and S_n is a sample of the received signal, the coupling circuit applying the update signal to a first stage of the second shift register; and

D. means for selecting, as a signal to update the second feedback shift register, (i) the feedback signal y_n if an associated signal sample S_n differs from a binary signal value by more that a predetermined amount, or (ii) the update signal y'_n, if an associated signal sample S_n does not differ from the binary signal value by more that a predetermined amount.

5,579,338

SPREAD SPECTRUM RECEIVER USING PARTIAL CORRELATIONS

Toshiharu Kojima, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 84,310, Jun. 28, 1993, abandoned. This application Jan. 25, 1994, Ser. No. 186,819
Claims priority, application Japan, Jun. 29, 1992, 4-171318
Int. Cl.[6] H04B *15/00*
U.S. Cl. 375—208 **9 Claims**

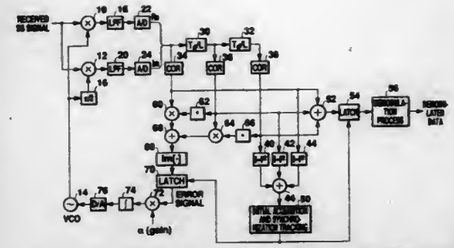
1. A spread spectrum receiver for receiving spread spectrum signals, comprising:

a quasi-coherent detection circuit for mixing a receive spread spectrum (SS) signal spread spectrum modulated by pseudonoise (PN) signal with local carriers orthogonal to each other for providing a complex baseband signal;

partial correlation calculation means for dividing the complex baseband signal provided by said quasi-coherent detection circuit into partial data sequences and calculating correlations between the partial data sequences and partial PN signals corresponding thereto for providing partial correlation signals;

means for calculating the sum of squares of absolute values of the partial correlation signals provided by said partial correlation calculation means and providing a summed square correlation signal; and

initial acquisition and synchronization tracking means being responsive to said summed square correlation signal for detecting a period of the PN signal contained in the received SS signal and outputting a timing signal synchronized with the period of the PN signal.

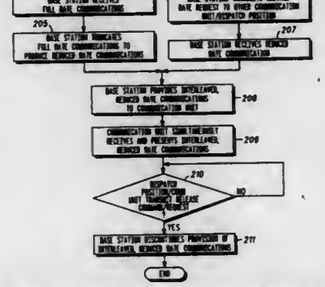


5,579,339

METHOD FOR CONCURRENT MONITORING OF MULTIPLE COMMUNICATIONS

Thomas J. McClaughry, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 4, 1994, Ser. No. 223,414
Int. Cl.[6] H04B *1/38;* **H04L** *5/16*
U.S. Cl. 375—220 **22 Claims**



1. In a digital communication system that includes a plurality of digital communication units, at least one dispatch position, and a base station, a method for a communication unit of the plurality of digital communication units to concurrently and audibly monitor voice information from multiple communications from at least one other communication unit of the plurality of digital communication units and the at least one dispatch position, the method comprising the steps of:

a) transmitting, by the communication unit, a concurrent monitoring request to the base station;

b) responsive to the concurrent monitoring request, providing, by the base station, multiple communications from the at least one dispatch position and the at least one other communication unit to the communication unit, each of said multiple communications containing voice information; and

c) by the communication unit, simultaneously rendering the multiple communications containing voice information

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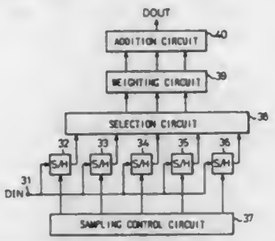
audible to an operator of the communication unit such that said operator of the communication unit can concurrently and audibly monitor voice information from the multiple communications.

5,579,340

WAVEFORM EQUALIZER

Motofumi Tokuriki, and Katsuya Ishikawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 29, 1994, Ser. No. 267,496
Claims priority, application Japan, Jun. 29, 1993, 5-158873
Int. Cl.[6] H03H *7/30;7/40;* **H03K** *5/159*
U.S. Cl. 375—232 **11 Claims**



1. A waveform equalizer, comprising:
a data signal input terminal which receives an input data signal which is the object of waveform equalization;
a plurality of sample and hold circuits connected individually and in parallel to the data signal input terminal;
a sampling control circuit which repeatedly brings the plurality of sample and hold circuits, one by one, to a sampling operation state;
a selection circuit which selects respective outputs of a predetermined number of sample and hold circuits which are in a hold operation state, from among the plurality of sample and hold circuits;
a weighting circuit which weights the outputs of the predetermined number of sample and hold circuits selected by the selection circuit and produces corresponding weighted outputs; and
an addition circuit which adds the weighted outputs of the weighting circuit and thereby produces, and outputs, a waveform-equalized data signal.

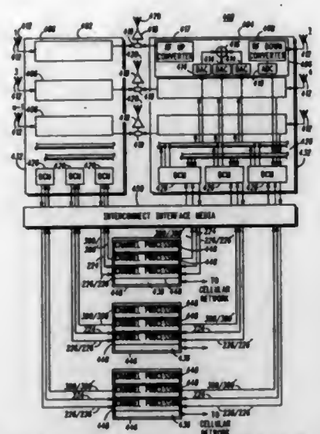
5,579,341

MULTI-CHANNEL DIGITAL TRANSCEIVER AND METHOD

Paul F. Smith, North Richland Hills, Tex.; John M. Smith, Elgin, Ill.; Alan P. Rottinghaus, Barrington, Ill.; Sheila M. Rader, Wildwood, Ill.; Danny T. Pinckley, Arlington, Tex.; Yuda Y. Luz, Prairie View; Daniel M. Lurey, Hoffman Estates, both of Ill.; Kevin M. Laird, Haltom City, Tex.; Tony Kobrinetz, Hoffman Estates, Ill.; Robert C. Elder, McHenry, Ill., and Donald E. Bailey, Palatine, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 29, 1994, Ser. No. 366,283
Int. Cl.[6] H04B *7/02*
U.S. Cl. 375—267 **35 Claims**

35. A multi-channel wideband frequency transceiver comprising:
a plurality of receive antennas for receiving radio frequency signals;
a plurality of radio frequency converters coupled to each of the plurality of receive antennas and operable to convert the radio frequency signals to intermediate frequency signals;
a plurality of analog-to-digital converters coupled to each of the radio frequency converters for converting the intermediate frequency signals to digital signals;



a switched digital down converter coupled to the analog-to-digital converters and operable for selecting one of the digital signals and converting the one of the digital signals to a baseband intermediate frequency signal;
a plurality of channel processors coupled to the switched digital down converter for recovering one of a plurality of communication channels contained within the baseband intermediate frequency signal and for communicating the recovered communication channel to a network interconnect of a communication system; the plurality of channel processors being further operable to receive digital downlink communication signals from the network interconnect and for processing the digital downlink communication signals for transmission on one of the plurality of communication channels;
a plurality of up converters/modulators respectively associated with each of the plurality of communication channels and connected to the channel processors for up converting and modulating the digital downlink communication signals to digital intermediate frequency signals;
a plurality of digital summers connecting the up converters/modulators for summing the digital intermediate frequency signals into digital intermediate frequency signal sub-groups;
a plurality of digital-to-analog converters for converting the digital intermediate frequency signal sub-groups into analog signals;
an analog summer selectively connected to the digital-to-analog converters for summing a sub-set of the analog signals into an analog intermediate frequency signal;
a radio-frequency up converter coupled to the analog summer for converting the analog intermediate frequency signal to a radio frequency signal; and
a power amplifier coupled to the radio-frequency up converter for amplifying the radio frequency signal and for communicating the radio frequency signal to a transmit antenna.

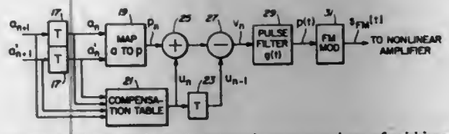
5,579,342

PRE-COMPENSATED FREQUENCY MODULATION (PFM)

Stewart N. Crozier, Kanata, Canada, assignor to Her Majesty the Queen in right of Canada as represented by the Minister of Communications, Ottawa, Canada

Filed Sep. 22, 1994, Ser. No. 300,189
Int. Cl.[6] H04K *1/02*
U.S. Cl. 375—296 **6 Claims**

3. A system for transmitting FM signals, comprising:
(a) means for receiving input data bits,
(b) means for applying undelayed and delayed representations of said input data bits to a compensation table, to obtain an output compensation signal,



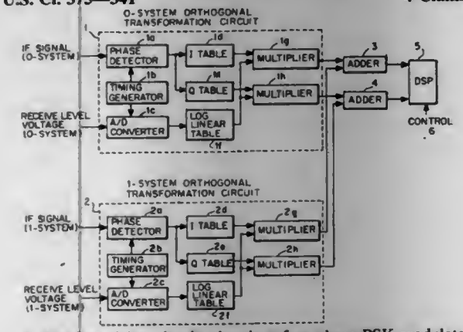
(c) means for mapping said delayed representations of said input data bits into various amplitude real symbols depending on the number of symbols,
(d) means for compensating said real symbols with the output compensation signal,
(e) means for applying the compensated real symbols to a pulse shaping filter,
(f) means for applying the output of the pulse shaping filter to an FM modulator, and
(g) means for applying the output of the FM modulator to a non-linear amplifier.

5,579,343

SOFT DECISION CIRCUIT

Hideo Ohmura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 7, 1995, Ser. No. 418,420
Claims priority, application Japan, May 31, 1994, 6-118111
Int. Cl.[6] H04L *27/06;27/22;1/02*
U.S. Cl. 375—341 **4 Claims**



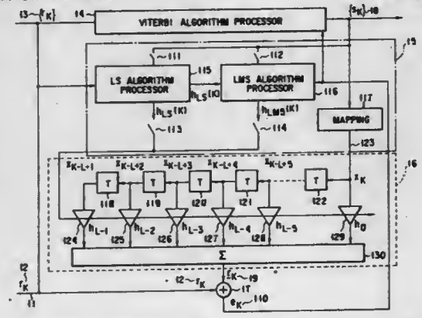
1. A soft decision circuit wherein a four-phase PSK modulated signal is received by diversity reception using a first receiver of a 0-system and a second receiver of a 1-system and soft decision to improve an error rate of the receive signal is based on outputs of the two receivers, characterized in that
each of said first and second receivers includes:
a phase amount detector for detecting a phase amount of an IF signal of the receive signal;
an I table and a Q table for converting the phase amount detected by said phase amount detector into orthogonal I/Q signals;
an A/D converter for converting a receive level signal of the receive signal into a digital value;
a log linear table for converting an output of said A/D converter into a squared value of a true value;
a first multiplier for multiplying an output of said I table with an output of said log linear table to weight the output of said I table; and
a second multiplier for multiplying an output of said Q table with the output of said log linear table to weight the output of said Q table; and
said soft decision circuit comprises:
a first adder for adding an output of said first multiplier of said receiver of said 0-system and an output of said first multiplier of said receiver of said 1-system;
a second adder for adding an output of said second multiplier of said receiver of said 0-system and an output of said second multiplier of said receiver of said 1-system; and
a digital signal processing circuit for performing determination using an output of said first adder and an output of said second adder as soft decision information.

5,579,344

ADAPTIVE MAXIMUM LIKELIHOOD SEQUENCE ESTIMATION APPARATUS AND ADAPTIVE MAXIMUM LIKELIHOOD SEQUENCE ESTIMATION METHOD

Minoru Namekata, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 308,423, Sep. 19, 1994, abandoned.
This application Nov. 14, 1995, Ser. No. 557,930
Claims priority, application Japan, Sep. 20, 1993, 5-232878
Int. Cl.[6] H01L *27/06*
U.S. Cl. 375—341 **14 Claims**

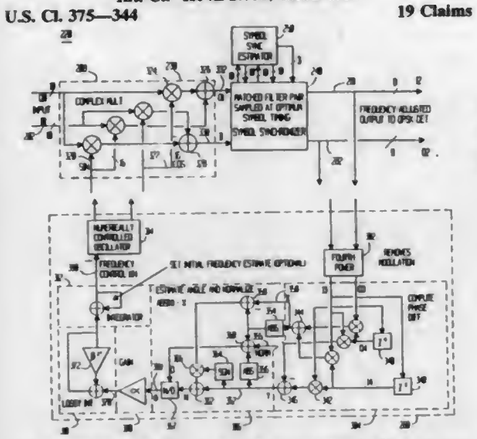


1. An adaptive maximum likelihood sequence estimation apparatus comprising:
first estimation means for estimating a transmission signal sequence from input received signals and an error signal at time period (k−1);
second estimation means for estimating an estimation received signal at time period k on the basis of a known signal sequence and a transmission path impulse response at time period (k−1) estimated during a period when the known signal sequence is being received, and for estimating an estimation received signal at time period k on the basis of the transmission path impulse response at time period (k−1) estimated during a period when an unknown signal sequence is being received, and the transmission signal sequence estimated by the first estimation means;
error signal generation means for generating the error signal on the basis of the received signal at time period k and the estimation received signals at time period k from said second estimation means; and
third estimation means for estimating the transmission path impulse response at time period k using a predetermined adaptive algorithm on the basis of the error signal generated by said error signal generation means, the received signals, and the transmission signal sequence estimated by the first estimation means,
wherein said third estimation means comprises means for estimating the transmission path impulse response by a non-recursive calculation during a reception period of the known signal sequence of the received signal, and for estimating the transmission path impulse response by a recursive calculation during a reception period of the unknown signal sequence of the received signals following the known signal sequence period.

5,579,345
CARRIER TRACKING LOOP FOR QPSK DEMODULATOR

Brian W. Kroeger, Sykesville; Jeffrey S. Baird, Baltimore, and Joseph B. Bronder, Elkridge, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 13, 1994, Ser. No. 322,847
Int. Cl.[6] H04L *27/06;* **H03D** *3/22*
U.S. Cl. 375—344 **19 Claims**



1. A demodulator for a mobile telecommunications system, including a carrier tracking loop receiving a series of symbol samples, comprising:

a complex multiplier for multiplying the received symbol samples by a complex exponential value to output a near baseband signal;

a matched filter pair, coupled to said complex multiplier, for filtering the near baseband signal to output a complex filtered signal;

phase difference means, coupled to said matched filter pair, for determining a phase difference between two sequential symbol samples of the received symbol samples based on the complex filtered signal;

normalized angle determining means, coupled to said phase difference means, for determining a normalized angle representative of a carrier frequency offset in the near baseband signal in accordance with the determined phase difference;

increment phasor determining means, coupled to said normalized angle determining means, for determining an increment phasor from the determined normalized angle; and

generating means, coupled to said increment phasor determining means and said complex multiplier, for generating the complex exponential value in accordance with the determined increment phasor,

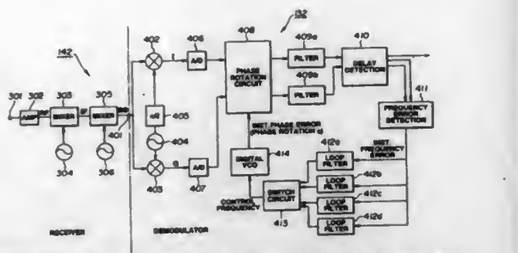
said complex multiplier, said matched filter pair, said phase difference means, said normalized angle determining means, said increment phasor determining means and said generating means forming a frequency locked loop.

5,579,346
AUTOMATIC FREQUENCY CONTROL METHOD AND CIRCUIT FOR USE IN A DELAY DETECTION TYPE DEMODULATOR

Kiyoko Kanzaki, Kamakura, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 17, 1995, Ser. No. 373,425
Claims priority, application Japan, Jan. 19, 1994, 6-004200
Int. Cl.[6] H04L *27/06*
U.S. Cl. 375—344 **5 Claims**

1. An AFC circuit for use in a receive demodulator for receiving a multi-value phase modulation signal for each of a plurality of time division multiplex radio channels, performing an orthogonal demodulation to the multi-value phase modulation signal and detecting original modulation multi-value information from base-band signals after being subjected to the orthogonal demodulation, the AFC circuit comprising:



phase rotation means for performing a phase rotation to each of the baseband signals obtained by the orthogonal demodulation for each of the radio channels;

delay detection means for performing a delay detection to the baseband signals after being subjected to the phase rotation;

frequency error detection means for detecting a frequency error from a delay detection pattern by the delay detection means;

a plurality of loop filter means for receiving the frequency error detected by the frequency error detection means and generating a control frequency from the frequency error;

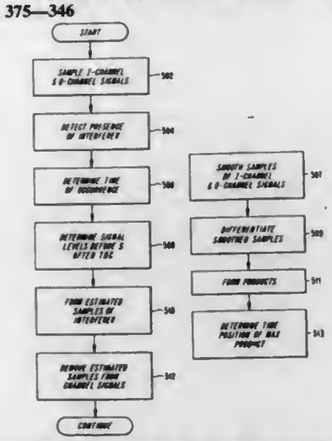
switching means for selectively switching output of each of the plurality of loop filter means at a time division multiplex timing of each of the radio channels; and

variable frequency oscillation means for accumulating the control frequency selectively switched by the switching means and supplying the accumulated control frequency to the phase rotation means as an instantaneous phase value for the phase rotation of the baseband signals.

5,579,347
DIGITALLY COMPENSATED DIRECT CONVERSION RECEIVER

Bjorn Lindquist, Bjarred; Martin Isberg, Lund; Heino Wendelrup, Malmo; Martin Sallenhag, and Kjell Gustafsson, both of Lund, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Dec. 28, 1994, Ser. No. 365,037
Int. Cl.[6] H03D *1/22;* **H04B** *1/12;1/30*
U.S. Cl. 375—346 **16 Claims**



6. In a method of recovering an information signal from a carrier signal modulated by the information signal that includes separating the modulated carrier signal into a base-band in-phase signal and a base-band quadrature signal, a method of digitally compensating for an interfering signal comprising the steps of:

generating digital samples of the base-band in-phase signal and the base-band quadrature signal;

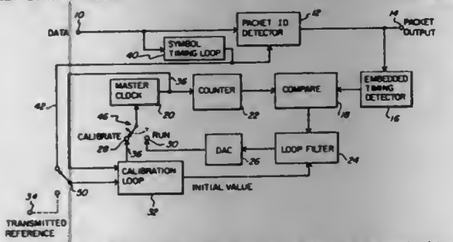
detecting a presence of a second-order product signal having a time-varying spectral content produced by the interfering signal; and

digitally compensating the digital samples by removing the second-order product signal, thereby producing compensated digital samples, wherein a non-linear, time-varying compensation corresponding to the spectral content of the second-order product signal is applied to the digital samples.

5,579,348
METHOD AND APPARATUS FOR IMPROVING THE APPARENT ACCURACY OF A DATA RECEIVER CLOCK CIRCUIT

G. Kent Walker, Escondido, and Paul Moroney, Olivenhain, both of Calif., assignors to GI Corporation, Hatboro, Pa.

Filed Feb. 2, 1994, Ser. No. 191,028
Int. Cl.[6] H04L *7/00;* **H03D** *3/24*
U.S. Cl. 375—355 **21 Claims**



1. A method for reducing the acquisition time of an embedded timing component in an information portion of a received signal by improving the apparent accuracy of a master clock in a data receiver clock circuit used to recover said embedded timing component, comprising the steps of:

detecting a timing relationship inherent in said received signal prior to the acquisition of said embedded timing component, said timing relationship having an accuracy that is greater than the accuracy of said master clock;

controlling said master clock in response to said timing relationship to operate with an improved range of accuracy;

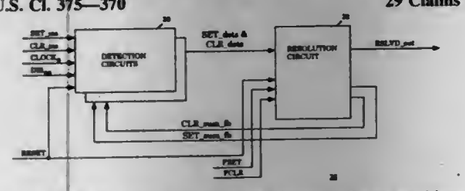
acquiring said embedded timing component after said clock circuit is operating with said improved range of accuracy; and

controlling said master clock in response to said embedded timing component instead of in response to said timing relationship after said embedded timing component has been acquired.

5,579,349
CIRCUITRY FOR RESOLVING MULTIPLE ASYNCHRONOUS STATE INPUTS

Gary W. Brady, Aloha, and David G. Ellis, Hillsboro, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 30, 1993, Ser. No. 85,961
Int. Cl.[6] H04L *7/00*
U.S. Cl. 375—370 **29 Claims**



1. In a digital system comprising a plurality of state machines asynchronously generating a plurality of control signal sets, each state machine generating at least one set of control signals and each of said control signal sets having two control signals, an apparatus for resolving said plurality of control signal sets into an output signal having two possible output states, said apparatus comprising:

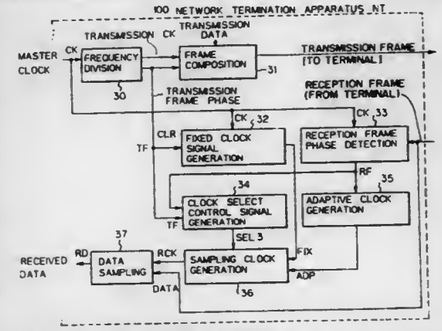
a) detection means coupled to said state machines for receiving said plurality of control signal sets, detecting active control signals in said received plurality of control signal sets, and generating a plurality of detection signal sets corresponding to said control signal sets, each of said plurality of detection signal sets having two detection signals corresponding to the two control signals of one of said plurality of control signal sets for identifying active control signals being detected in the corresponding control signal set; and

b) resolution means coupled to said detection means and said state machines for receiving said plurality of detection signal sets, and generating said output signal based on the current state of said output signal and selected ones of said received detection signals that are applicable to the current state of said output signal.

5,579,350
CLOCK CHANGE CIRCUIT PREVENTING SPIKE GENERATION BY DELAYING SELECTION CONTROL SIGNAL

Yukio Furukawa; Akihiko Takada, and Kazuo Wani, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 34,498, Mar. 19, 1993, abandoned. This application Feb. 22, 1995, Ser. No. 393,947
Claims priority, application Japan, Mar. 19, 1992, 4-063993
Int. Cl.[6] H04L *7/00*
U.S. Cl. 375—371 **4 Claims**



1. A clock change circuit comprising:

clock gate means for receiving first and second clock signals, and outputting an active timing signal when both said first and second clock signals are at an inactive level, said active timing signal indicating the timing;

delay means being input a select control signal and the active timing signal, and for outputting a delayed select control signal the state of which is changed to the same state as the select control signal after the active timing signal is received from the clock gate means;

select means being input the first and second clock signals, and for selecting one of the first and second clock signals according to the delayed select control signal to output the selected clock signal;

fixed receiving clock generation means for generating a fixed receiving clock signal having a predetermined frequency and a predetermined phase;

original receiving clock detect means for being input a data signal, and detecting timing information included in the data signal to generate an original receiving clock signal in synchronization with the data signal, based on the timing information;

adaptive clock generation means for inputting the original receiving clock signal, outputting an adaptive clock signal, detecting a phase difference between the adaptive clock signal and the original receiving clock signal, and shifting the phase of the adaptive clock signal so that the phase difference becomes equal to a predetermined value; and

clock change signal generation means for determining whether or not the phase of the original receiving clock signal is within a predetermined range from the phase of a transmission frame synchronization clock, and outputting as the select control signal a signal the state of which varies dependent upon whether or not the phase of the original receiving clock signal is within the predetermined range from the phase of the transmission frame synchronization clock.

5,579,351

JITTER SUPPRESSION CIRCUIT

Hyung-Chul Kim, Kyunggi-do, Rep. of Korea, assignor to LG Information & Communications, Ltd., Seoul, Rep. of Korea

Filed Oct. 19, 1995, Ser. No. 545,067

Claims priority, application Rep. of Korea, Oct. 19, 1994, 94-26764

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—371 **9 Claims**



1. A jitter suppression circuit for removing a jitter component contained in a synchronous reference clock signal which is supplied from a synchronization network to a phase locked loop circuit in a switching system, said phase locked loop circuit generating a clock signal in response to the synchronous reference clock signal from said synchronization network, comprising:

first means for generating a first signal in response to the synchronous reference clock signal from said synchronization network and a frequency-divided one of the clock signal from said phase locked loop circuit;

second means for delaying a phase of the first signal from said first means by a first desired angle to generate a second signal and delaying a phase of the synchronous reference clock signal from said synchronization network by a second desired angle to generate a third signal;

third means for generating a fourth signal in response to the first signal from said first means and the synchronous reference clock signal from said synchronization network;

fourth means for generating a fifth signal in response to the second and third signals from said second means; and

fifth means for generating a sixth signal in response to the fourth signal from said third means and the fifth signal from said fourth means and outputting the generated sixth signal as a synchronous reference clock signal to said phase locked loop circuit.

5,579,352

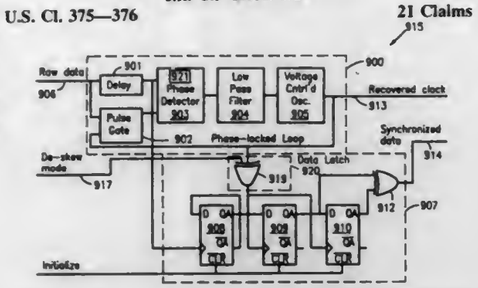
SIMPLIFIED WINDOW DE-SKEWING IN A SERIAL DATA RECEIVER

William D. Llewellyn, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 6, 1994, Ser. No. 223,619

Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—376 **21 Claims**



1. A serial data receiver for extracting synchronized data from a binary input signal, said receiver comprising:

a clock recovery circuit extracting a recovered clock signal from said binary input signal;

a data latch providing a synchronized data signal; and

a switching mechanism selectively providing said recovered clock signal to said data latch in a de-skew mode or an inverted recovered clock signal to said data latch in a normal operation mode, said mechanism comprising

a recovered clock input for receiving said recovered clock signal from said clock recovery circuit,

a select input receiving a select signal, and

an output coupled to said data latch;

wherein said select signal on said select input determines which of said recovered clock signal or said inverted recovered clock signal is provided to said data latch.

5,579,353

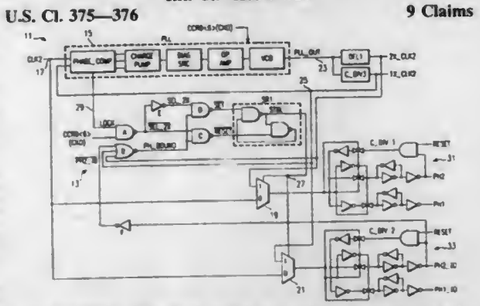
DYNAMIC CLOCK MODE SWITCH

Kevin C. Parmenter, Carrollton, and Yutaka Takahashi, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 135,934, Oct. 12, 1993, abandoned. This application Jul. 26, 1995, Ser. No. 499,066

Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—376 **9 Claims**



1. A dynamic clock mode switch for switching clock frequencies in response to an enable signal, while allowing continuing operation of a depending system, said switch comprising:

a phase-locked loop circuit (PLL) for locking onto an input clock signal having a first frequency in response to said enable signal and for providing a first output clock signal, phase locked to said input clock signal, having a second frequency

automatic clock switching means for providing said first output clock signal as the dynamic clock mode switch output clock signal, and for automatically switching to said input clock signal as the dynamic clock mode switch output clock signal when said PLL loses lock, but only at a subsequent clock phase boundary.

5,579,354

METHOD OF MEASURING A CORROSION POTENTIAL, METHOD OF SIMULATING POTENTIAL CHARACTERISTICS OF A REACTION RATE, AND PLANT MONITORING SYSTEM ADOPTING THEM

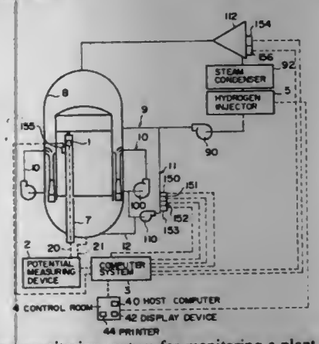
Masanori Sakai, Hitachiota; Noriyuki Ohnaka, Katsuta; Takahashi Takuya, and Yamauchi Hiroshi, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 20, 1994, Ser. No. 359,362

Claims priority, application Japan, Dec. 20, 1993, 5-320517

Int. Cl.[6] G21C *17/00*

U.S. Cl. 376—245 **14 Claims**



1. A plant monitoring system for monitoring a plant including a sensor for detecting a concentration of at least one species of a certain specified substance existing within the plant, comprising:

a memory unit storing therein a formula of a relationship between a corrosion rate and a corrosion potential that is derived from at least two reaction rate equations relevant to at least one reaction process model indicating at least two steps of consecutive elementary electrochemical reaction processes in which the specified substance participates within said plant, and information on a reaction rate of a reaction that is taking place with respect to a structural material of said plant;

an arithmetic and control unit which computes a potential of the structural material by using the formula and the information on the reaction rate stored in said memory unit, and the concentration of said specified substance detected by said sensor; and

an output unit for delivering the potential of said structural material computed by said arithmetic and control unit.

5,579,355

HEAT DISSIPATION SYSTEM FOR A NUCLEAR REACTOR, IN PARTICULAR A PRESSURIZED WATER REACTOR

Werner Leidemann, Obermichelbach; Pius Mackert, Erlangen, and Heinz-Werner Hartmann, Buckenhof, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

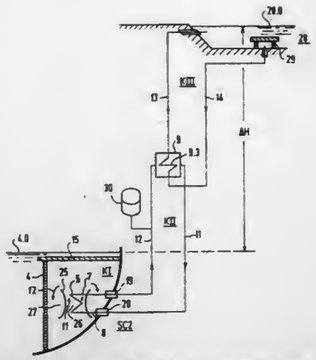
Filed Sep. 11, 1995, Ser. No. 526,413

Claims priority, application Germany, Mar. 10, 1993, 43 07 543.6

Int. Cl.[6] G21C *9/00*

U.S. Cl. 376—298 **21 Claims**

1. In a nuclear reactor having a containment, a containment shell surrounding the containment and a concrete construction of a reactor building surrounding the containment shell, a heat dissipation system for the nuclear reactor, comprising:



a) a sump volume disposed in a lower region of the containment shell for receiving coolant;

b) a sump cooler being disposed inside said sump volume, having cooling tubes with a primary side and a secondary side and having feed and return lines, said primary side of said cooling tubes being covered at least when said sump volume is largely filled with coolant;

c) an intermediate cooler having a tertiary side, said intermediate cooler being connected through said feed and return lines of said sump cooler to said secondary side of said cooling tubes; and

d) a heat sink being disposed outside the reactor building and being connected to said intermediate cooler on said tertiary side.

5,579,356

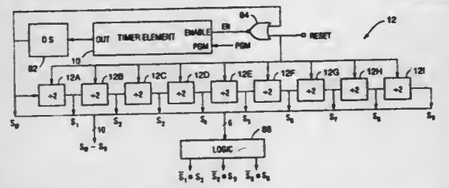
TIMER CIRCUIT WITH PROGRAMMABLE DECODE CIRCUITRY

Christophe J. Chevallier, Palo Alto, Calif., assignor to Micron Quantum Devices, Inc., Santa Clara, Calif.

Filed Jul. 28, 1995, Ser. No. 508,847

Int. Cl.[6] H03K *51/12*

U.S. Cl. 377—20 **19 Claims**



1. A timer circuit comprising:

a timer element which generates a periodic timing signal;

a frequency divider responsive to the periodic timing signal for providing a plurality of different frequency divided outputs;

decode circuit means for combining selected ones of the frequency divided outputs based upon decode parameters and generating a timer circuit output pulse having a duration determined by the selected ones of the frequency divided outputs; and

a plurality of programmable non-volatile data storage units for storing the decode parameters.

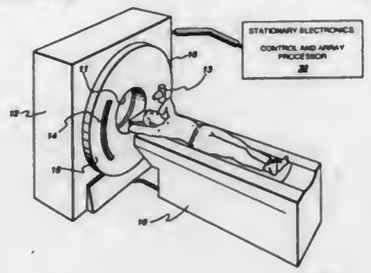
VOL 1192 ISS 4 NO 26 1996 UMI

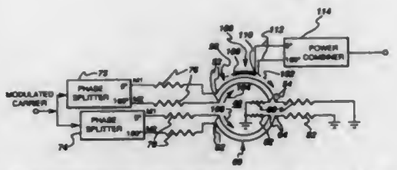
5,579,357

TRANSMISSION LINE USING A PHASE SPLITTER FOR HIGH DATA RATE COMMUNICATION IN A COMPUTERIZED TOMOGRAPHY SYSTEM

Daniel D. Harrison, Delanson, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 20, 1995, Ser. No. 407,089
Int. Cl.[6] A61B 6/03
U.S. Cl. 378—4 28 Claims





15. In a computerized tomography system having a first frame and a second frame relatively rotatable with respect to said first frame, an apparatus comprising:

a phase splitter having an input port coupled to receive a modulated carrier having a predetermined bandwidth, said phase splitter having first and second output ports for supplying, respectively, first and second modulated carrier constituents having a substantially uniform 180° phase angle differential between one another while maintaining a substantially uniform amplitude over said bandwidth;

a transmission line attached to said second frame and positioned substantially around said second frame, said transmission line comprising at least one individual segment having first and second conductors respectively coupled to the first and second output ports of said phase splitter to receive the first and second modulated carrier constituents from said phase splitter; and

a coupler attached to said first frame and being positioned sufficiently near said transmission line for establishing radio coupling therebetween so as to receive the first and second modulated carrier constituents being applied to said at least one individual segment.

5,579,358

COMPENSATION FOR MOVEMENT IN COMPUTED TOMOGRAPHY EQUIPMENT

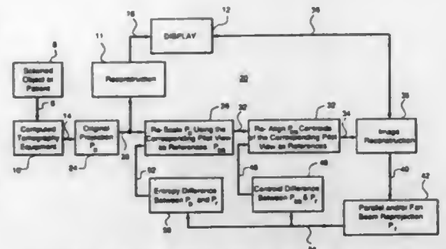
Wen-Tai Lin, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 26, 1995, Ser. No. 452,450
Int. Cl.[6] G01N 23/00
U.S. Cl. 378—4 8 Claims

1. A method of compensation for motion of an imaged object in computed tomography scanning the motion being associated with expansion and contraction of said imaged object comprising:

determining respective centroids of said object being scanned for each of a predetermined number of successive image scans;

aligning said respective centroids of said successive image scans;



reprojecting an initial image scan to provide an initial projection;

compensating for displacement of said respective centroids between a respective subsequent pilot image scan and said initial projection;

rescaling and realigning the projection data in response to said displacement to improve a reconstructed image; said rescaling being based on the entropy difference between said initial image scan and said pilot image scan; and

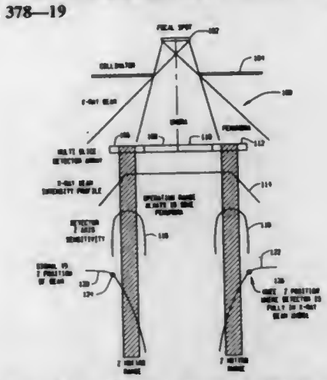
iteratively continuing said rescaling and said realigning until the effects of motion of said object are reduced to a selected level in said reconstructed image.

5,579,359

METHODS AND APPARATUS FOR CALIBRATING DETECTOR CELL OUTPUT SIGNALS

Thomas L. Toth, Brookfield, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Dec. 21, 1995, Ser. No. 576,764
Int. Cl.[6] A61B 6/03; G06F 19/00;159/00
U.S. Cl. 378—19 14 Claims



1. A method for calibrating projection data in a multi-slice computed tomography system, the computed tomography system including an x-ray source and a detector array having at least two rows of detector cells, said method comprising the steps of:

determining the signal gain for each detector cell at multiple z-axis locations;

fitting a correction polynomial Q_n to a signal variation curve as a function of z-axis position so that the correction polynomial value multiplied by its channel signal produces a constant value over the operational range of z-axis positions;

determining beam positions (Z_n) as a function of each position reference signal (D_n) and the Z position of the beam at a sensor channel;

determining a z-axis location for each detector cell and a correction vector for each cell; and

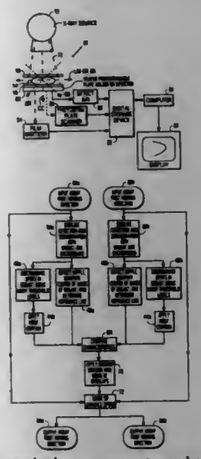
multiplying each channel signal by the correction vector to calibrate each channel signal.

5,579,360

MASS DETECTION BY COMPUTER USING DIGITAL MAMMOGRAMS OF THE SAME BREAST TAKEN FROM DIFFERENT VIEWING DIRECTIONS

Mohamed Abdel-Mottaleb, Ossining, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Dec. 30, 1994, Ser. No. 367,023
Int. Cl.[6] A61B 6/00
U.S. Cl. 378—37 18 Claims



1. A method of producing a computer-enhanced mammogram comprising:

irradiating a breast of a patient being examined with X-ray radiation sequentially in a predetermined first viewing direction and in a predetermined different second viewing direction;

receiving the X-ray radiation exiting the breast sequentially from said first viewing direction and from said second viewing direction within respective two-dimensional fields;

producing digital signals as a function of the X-ray radiation received, which digital signals correspond to a first input two-dimensional array of digital pixels for said first viewing direction and a second input two-dimensional array of digital pixels for said second viewing direction;

in response to said signals, storing said first input two-dimensional array and said second input two-dimensional array in a digital memory means accessible to a computer; and

with said computer:

for each of the first input array and the second input array, detecting a skinline and thereby segmenting the array into breast and background regions, identifying a reference point along the detected skinline corresponding to the location of the nipple, and identifying spots within the breast region which based on their size and shape are suspect;

correlating characteristics of spots identified as suspect in the first input array with characteristics of spots identified as suspect in the second input array, said correlating including comparing positions of spots identified as suspect in the first input array relative to the identified reference point in said first input array with the positions of the spots identified as suspect in the second input array relative to the identified reference point in said second input array, and

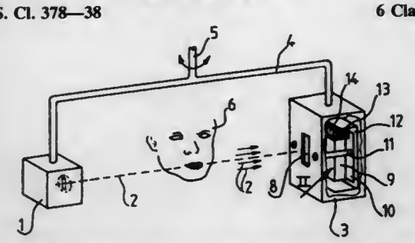
producing an output two-dimensional array of digital pixels from the at least one of the first input array and the second input array in which the spots identified as suspect in at least one of the first input array and the second input array whose characteristics are correlated within predetermined criteria to the spots identified as suspect in the other of the first input array and the second input array are marked or enhanced.

5,579,361

RADIODIAGNOSIS APPARATUS OF THE CHARGE TRANSFER DETECTOR TYPE

Thierry Augais, Gif sur Yvette, and Manuel Thorez, Brie sur Marne, both of France, assignors to Trophy Radiologie, Vincennes, France

Filed May 30, 1995, Ser. No. 453,699
Claims priority, application France, May 31, 1994, 94 06628
Int. Cl.[6] A61B 6/14
U.S. Cl. 378—38 6 Claims



1. A radiodiagnosis apparatus for making panoramic and advantageously tomographic radiographic pictures of an object such as the jaw of a patient, of the type comprising a source of X-rays and a receiver of the X-rays having passed through said object, the receiver comprising a secondary slot for the passage of the received X-rays and downstream of a scintillator screen transforming these received X-rays into visible light, a sensor of the charge-transfer device type provided to be read through transfer of the electric charges accumulated in the image elements from one line into the next line, which is fixedly mounted in the receiver so that its image zone corresponds to the opening of the secondary slot, means for the control of the transfer of the charges by the shift of the lines of charges, at a frequency simulating the displacement of a conventional radiographic film behind the secondary slot, a device for the processing of the data supplied by the sensor and an image reproducing device, wherein the improvement consists in that the shift control means comprise a movable part moving behind the secondary slot at a speed at which a radiographic film would move and a detector of the speed of displacement of this movable part as well as a unit for the conversion of the speed thus established into an equivalent frequency of the shift of the lines of the charge transfer sensor.

5,579,362

METHOD OF AND APPARATUS FOR THE QUANTITATIVE MEASUREMENT OF PAINT COATING

Naoki Matsuura; Seiya Shibata; Tatsuo Fukuzaki, all of Takatsuki; Akira Tanaka, Sakai; Shigeo Fukuda, Kurashiki; Hiroki Nishiyama, Funahashi, and Mitsuru Tanaka, Osaka, all of Japan, assignors to Rigaku Industrial Corp.; Igeta Steel Sheet Co., Ltd., both of Osaka; Kawatetsu Galvanizing Co., Ltd.; Taiyo Steel Co., Ltd., both of Tokyo, and Yodogawa Steel Works, Ltd., Osaka, all of Japan

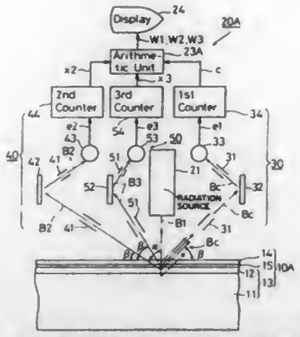
Continuation of Ser. No. 255,908, Jun. 19, 1994, abandoned, which is a continuation of Ser. No. 159,712, Dec. 1, 1993, abandoned, which is a continuation of Ser. No. 890,269, May 29, 1992, abandoned. This application Dec. 22, 1995, Ser. No. 576,853
Claims priority, application Japan, Sep. 19, 1991, 3-270044; Dec. 27, 1991, 3-358717
Int. Cl.[6] G01B 15/02
U.S. Cl. 378—59 11 Claims

1. A method of measuring the amount of coating of a painting material on a galvanized substrate, which comprises the steps of:

directing any one of X-rays and Gamma-rays onto a surface of a sample including the substrate and the painted layer thereon;

measuring simultaneously an intensity of Compton scattering rays emitted from an irradiated portion of the sample and an intensity of fluorescent X-rays emitted from the irradiated

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portion within the substrate of the sample, each time measurement of the amount of the deposited painting material is carried out;

describing the measured intensity of the Compton scattering rays by a first function having variables represented by an amount of the galvanizing material and the amount of the deposited painting material, respectively, said first function including absorption components associated with said amount of the galvanizing material and said amount of the painting material;

describing the measured intensity of the fluorescent X-rays by a second function having variables represented by the amount of the galvanizing material and the amount of the deposited painting material, respectively, said second function including absorption components associated with said amount of the galvanizing material and said amount of the painting material;

solving simultaneously the first and second functions to thereby determine the amount of the deposited painting material.

5,579,363

METHOD FOR OBTAINING THE IMAGE OF THE INTERNAL STRUCTURE OF AN OBJECT

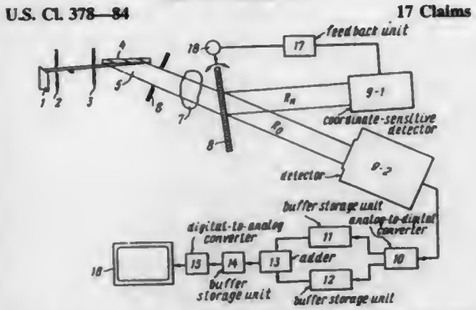
Viktor N. Ingal; Elena A. Belyaevskaya, both of Sankt-Peterburg, and Valery P. Efanov, Moscow, all of Russian Federation, assignors to V-Ray Imaging Corporation

Continuation of Ser. No. 229,887, Apr. 19, 1994, abandoned, which is a continuation of Ser. No. 956,880, Dec. 11, 1992, Pat. No. 5,319,694. This application Jul. 11, 1995, Ser. No. 500,559

Claims priority, application Russian Federation, May 14, 1991, 4934958

Int. Cl.[6] G21K *1/06*

U.S. Cl. 378—84 **17 Claims**



1. An apparatus for obtaining an image of the internal structure of an object adapted for use with a penetrating radiation, the apparatus comprising:

a source of penetrating radiation;

a crystal monochrometer having a reflection plane for forming a plane beam of the penetrating radiation, the crystal monochrometer being located upstream from such object;

a crystal analyzer including a reflection plane and a Bragg reflection range for forming an interference image of such object, the crystal analyzer being located downstream from such object, the crystal analyzer being positioned to effect the Bragg reflection of such plane beam, and the crystal analyzer having a Bragg reflection range which is at least twice the divergence of such plane beam; and

a coordinate-sensitive beam detector positioned to detect the penetrating radiation which is Bragg reflected by the crystal analyzer.

5,579,364

ROTATING-ANODE X-RAY TUBE

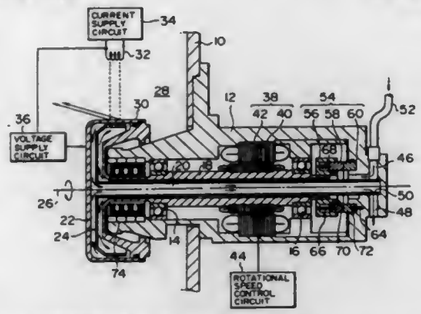
Naohisa Osaka, Oume, and Toru Kobayashi, Hidaka, both of Japan, assignors to Rigaku Corporation, Tokyo, Japan

Filed Jan. 23, 1995, Ser. No. 376,877

Claims priority, application Japan, Jan. 28, 1994, 6-026376

Int. Cl.[6] H01J *35/18*

U.S. Cl. 378—130 **11 Claims**



1. A rotating-anode X-ray tube comprising:

a tube shield having an inside which can be evacuated to a vacuum;

a casing mounted on the tube shield;

a rotary pipe rotatably supported in the casing;

a target which is fixed to one end of the rotary pipe and which is rotatable along with the rotary pipe;

a cooling-fluid passage provided in the rotary pipe and in, the target;

a cooling-fluid sealing device disposed between the casing and the rotary pipe;

wherein said cooling-fluid sealing device comprises a mechanical seal which includes:

a rotary ring which is rotatable along with the rotary pipe and which is movable axially of the rotary pipe;

a stationary ring fixed to the casing; and

pressing means for pressing the rotary ring against the stationary ring;

a housing fixed to the rotary pipe, the housing having an annular recess, and wherein the rotary ring is partly inserted into the annular recess so as to be axially movable; and

a whirl-stop provided between the housing and the rotary ring to prevent a relative rotation therebetween; and

wherein the pressing means is provided between the housing and the rotary ring.

5,579,365

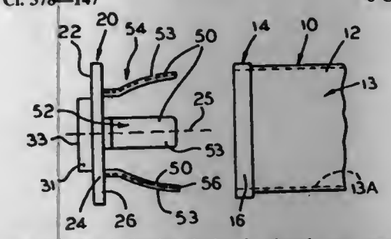
SNAP-IN COLLIMATOR DEVICE

Raymond G. Jacobs, 27080 Ridge Rd., Wauconda, Ill. 60084, and Douglas A. Barnett, 2980 SW. 122nd Ave., Beaverton, Oreg. 97005

Continuation of Ser. No. 177,592, Jan. 5, 1994, abandoned. This application Apr. 5, 1994, Ser. No. 223,289

Int. Cl.[6] G21K *1/02*

U.S. Cl. 378—147 **6 Claims**



1. In a position indicating device for dental x-ray machines, which device is of round transverse cross sectional configuration defining a bore for the length of same, with such bore having its internal surfacing lined for x-ray absorption and having its own collimation and an x-ray emitting end,

a snap-fit collimator device therefor for use with rectangular dental instrumentation, said device comprising:

a body providing a collimator of rectangular form in the size of such instrumentation;

means for snap-fit mounting said body on such x-ray emitting end of the position indicating device with said collimator disposed transversely of and centered on the position indicating device bore, wherein said means for said snap-fit mounting of said body on such x-ray emitting end of the position indicating device is formed from plastic material and includes similar integral legs spaced to resiliently and frictionally engage said positioning indicating device about the bore thereof and permit said body to be seated in abutting relation to x-ray emitting end of said position indicating devices; and

means for permitting full rotational adjustment of said body relative to the position indicating device for permitting said collimator of said body to be aligned with such rectangular dental instrumentation when such position indicator device is secured to an x-ray machine.

5,579,366

LINE DETECTOR CAMERA FOR EMPLOYMENT IN, PARTICULARLY, DENTAL X-RAY DIAGNOSTICS INSTALLATIONS

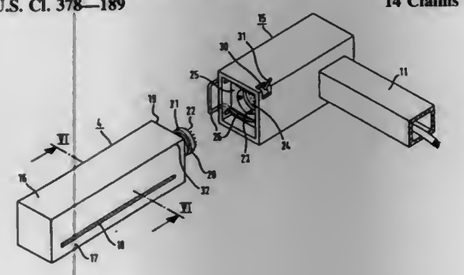
Michael Doebert, Lorsch; Werner Guenther, Bensheim; Ulrich Schulze-Ganzlin, Lorsch; Josef Ploetz, and Erich Heubeck, both of Bensheim, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 6, 1994, Ser. No. 268,119

Claims priority, application Germany, Jul. 6, 1993, 43 22 484.9

Int. Cl.[6] H01J *31/49*

U.S. Cl. 378—189 **14 Claims**



1. An x-ray diagnostics installation comprising:

an x-ray source;

a line detector camera;

holder means, to which said x-ray source and said line detector camera are mounted opposite and spaced from each other a distance adapted to accommodate a human skull, for moving said x-ray source and said line detector camera relative to the skull with the skull remaining stationary, for recording an x-ray exposure with said line detector camera;

said line detector camera generating electrical output signals dependent on x-rays from said x-ray source, said line detector camera having an elongated housing having a surface facing said x-ray source, said surface having a longitudinally extending slot therein for the entry of x-rays, an x-ray sensitive detector disposed behind said slot, said detector having a plurality of detector elements arranged to form at least one line, each detector element having a contact connected to at least one control line, each control line being connected to a connector part disposed at an end of said housing, and said connector part a plurality of electrical connections and manually operable mechanical connector means for releasably connecting said line detector camera to said holder means, said mechanical Connector means comprising the only mechanical connection between said detector camera and said holder means and permitting said line detector camera to be manually pulled away from said holder to release said mechanical connector means.

5,579,367

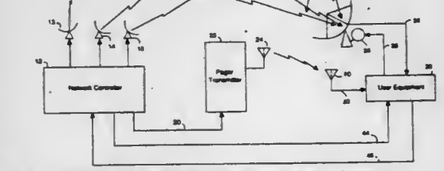
MULTI-MEDIUM CLOSED-LOOP CONTROLLED SATELLITE BROADCAST NETWORK FOR SIMPLE END-USER OPERATION

J. Brian Raymood, Hayward, and Dan E. Bower, Newark, both of Calif., assignors to Chaparral Communications, Inc., San Jose, Calif.

Filed Mar. 13, 1995, Ser. No. 403,274

Int. Cl.[6] H04M *1/24;* **G01S** *5/02;3/02;* **H04B** *7/185*

U.S. Cl. 379—1 **6 Claims**



1. A satellite-program user equipment, comprising:

a fixed-location microwave radio receiver for connection to a steerable-dish antenna for receiving plurality of satellite signals comprising program and command signal transmissions broadcast from a plurality of orbiting satellites;

a program decoder connected to the microwave radio receiver for deciphering individual programs and commands from said received satellite signals;

a pager-service receiver for detecting radio signals and decoding commands addressed to said user equipment;

a command decoder connected to receive said commands from the program decoder and the pager-service receiver and for organizing said commands into control signals;

a telephone interface for communicating with a remote network controller in charge of said program and command signal transmission broadcasts; and

a diagnostic unit connected to receive condition information from the microwave radio receiver, the program decoder and the pager-service receiver and to report an output with a phone connection initiated by the telephone interface to a network controller.

5,579,368

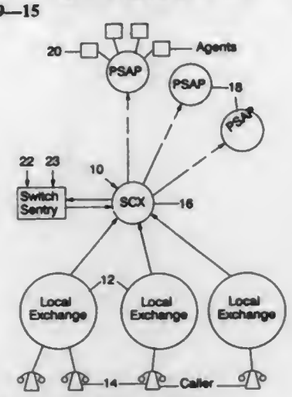
DEVICE FOR MONITORING A SWITCH

Paul van Berkum, Winfield, Ill., assignor to Rockwell International Corporation, Seal Beach, Calif.

Continuation of Ser. No. 884,678, May 18, 1992, abandoned. This application Apr. 29, 1994, Ser. No. 235,268

Int. Cl.[6] H04M *3/08;3/22*

U.S. Cl. 379—15 **25 Claims**



1. A switch sentry device, comprising:

a digital telephony switch;

means for processing information;

means for simulating a call from the processing means to the switch;

means responsive to the call simulating means for simulating a primary ringing line from the switch to the processing means;

means responsive to the call simulating means for simulating an alternate ringing line from the switch to the processing means;

means for determining an inoperative condition of the switch;

means for determining priority in a plurality of alarms indicating a plurality of fault conditions; and

means for indicating a condition only of the most critical of the alarms in said priority of alarms.

5,579,369

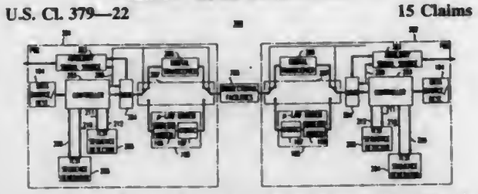
FACILITY TYPE DETERMINATION TECHNIQUE

Alexander Feiner, Rumson, and Burton R. Saltzberg, Middletown, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 173,332, Dec. 23, 1993, abandoned. This application Oct. 11, 1995, Ser. No. 540,693

Int. Cl.[6] H04M *1/24;3/08;3/22*

U.S. Cl. 379—22 **15 Claims**



1. Apparatus for use in a communications system wherein data is communicated from a first location to at least one other location at various times via a facility connection which changes at different ones of said various times, said apparatus comprising

means for transmitting a predetermined test signal from said first location to said other location via said facility connection at one of said various times; and

means, responsive to an acknowledgment signal generated within each said other location and transmitted to said first location in response to said predetermined test signal, for determining whether said facility connection comprises a digital facility at said one of said various times, and said predetermined test signal is a pseudo-random sequence, which includes a first portion which is transmitted at a first rate and a second portion which is transmitted at a second rate.

5,579,370

PORTABLE TELEPHONE SYSTEM

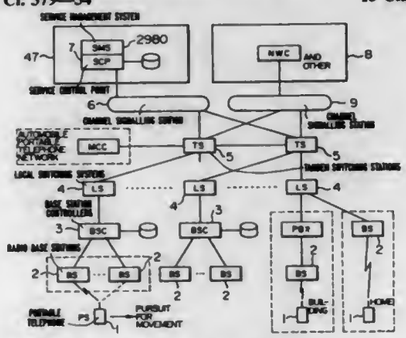
Yutaka Fukushima; Tetsuo Takemura, both of Yokohama; Shinichi Iwaki, Kamakura; Mitsuyoshi Hashida, Yokohama; Masao Wanami, Yokohama; Isao Shimbo, Yokohama; Mitsuhiro Wada, Yokohama; Hirofumi Udaki, Yokohama; Yoshihiro Kondo, Yokohama; Yoshinobu Yamamoto, Fujisawa; Arata Nakagoshi, Kokubunji; Koulchi Ohta, Yokohama; Hiroshi Kuwahara, Kodaira, and Yumiko Watanabe, Tokyo, all of Japan, assignors to Hitachi, Ltd., and Kokusai Electric Co., Ltd., both of Tokyo, Japan

Filed Sep. 8, 1992, Ser. No. 941,963

Claims priority, application Japan, Oct. 7, 1991, 3-259488

Int. Cl.[6] H04M *11/04;11/00*

U.S. Cl. 379—34 **15 Claims**



1. A portable telephone system, comprising:

a plurality of radio base stations, each installed in a respective area;

a portable telephone connected to said radio base stations through corresponding radio transmission paths;

a network service point for registering position information of said portable telephone in response to a position registration request transmitted from said portable telephone and for managing the position information of said portable telephone; and

a switching system connected to said radio base stations through said transmission paths for switching a call of said portable telephone through said radio base stations in accordance with the position information of said portable telephone managed in said network service point,

wherein said portable telephone includes means for determining whether or not said portable telephone is moving at a high rate of speed in accordance with the reception state of electromagnetic waves from said radio base stations collected for a predetermined term, and means for suppressing transmission of the position registration request to said network service point when the determining means determines that said portable telephone is moving at a high rate of speed.

5,579,371

COMMON CHANNEL SIGNALING NETWORK APPLICATIONS PLATFORM

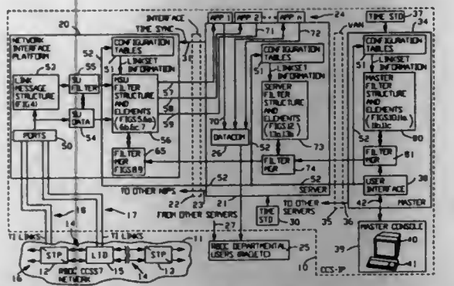
James Aridas; Judith L. Culpepper; Kathleen A. Giessuebel, all of Virginia Beach, Va.; Dennis A. Perkinson, West Chester, Pa.; Nancy L. Sweet, and Karen Wolff, both of Virginia Beach, Va., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Nov. 22, 1994, Ser. No. 344,316

Int. Cl.[6] H04M *3/22;15/60;3/00;* **H04J** *3/12*

U.S. Cl. 379—34 **8 Claims**

1. A platform for use with a Common Channel Signaling System No. 7 (CCS7) network which transports SS7 Signal units (SU) therethrough, wherein an SU can be of an SU type including a



Fill-In Signal Unit (FISU) type, a Link Status Signal Unit (LSSU) type or a Message Signal Unit (MSU) type, wherein an MSU can be of an MSU category that is one of a plurality of MSU categories, said platform supporting a plurality of concurrently executable application software programs for processing SUs in accordance with diverse application functionality, respectively, said platform comprising:

input interface means for receiving copies of said SUs from said CCS7 network, and

filtering means for separating said SUs into groups of MSUs of interest to said plurality of application software programs, respectively,

said filtering means including SU filter means responsive to said copied SUs for passing said MSUs,

said filtering means further including MSU filter means responsive to said MSUs passed by said SU filter means for separating said MSUs into said groups in accordance with said MSU category,

said platform operative to direct said groups to said application software programs, respectively.

5,579,372

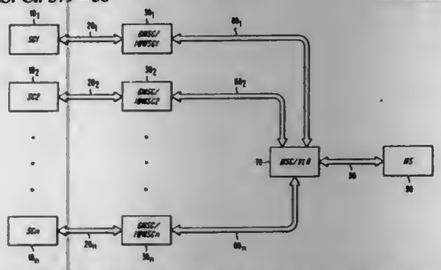
FLOW CONTROL METHOD FOR SHORT MESSAGE SERVICE - BUSY SUBSCRIBER

Bo A. V. Åström, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Dec. 12, 1994, Ser. No. 355,282

Int. Cl.[6] H04Q *7/38*

U.S. Cl. 379—58 **22 Claims**



1. A mobile telephone system for sending messages to and from mobile stations comprising:

a plurality of service centers for sending and receiving messages to and from the mobile stations; and

a switching center for establishing a message dialog and detecting message busy conditions for a message being sent to one of the mobile stations by one of said plurality of service centers while a message is attempted to be sent to the one mobile station by another of said service centers and sequentially developing a list of addresses for each of said service centers attempting to send messages to the one mobile station, wherein said switching center sequentially sends an alert signal to each of said service centers in said list upon completion of sending messages by said one service center until each of said service centers in said list is exhausted.

5,579,373

TRANSMISSION POWER CONTROL METHOD IN CELLULAR RADIOTELEPHONE SYSTEM

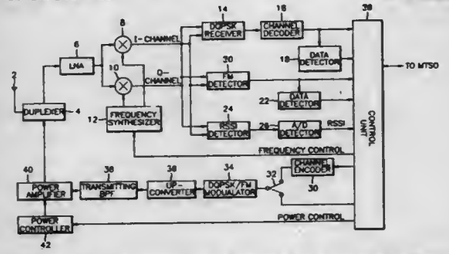
Bu-Kwan Jang, Taegu, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 5, 1993, Ser. No. 147,288

Claims priority, application Rep. of Korea, Nov. 5, 1992, 1992-20709

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—59 **20 Claims**



1. A transmission power control method in a cellular radiotelephone system comprising, within at least one cell site, first and second stations, each having a transmitter and a receiver for a predetermined radio channel, and dynamically adjusting transmission power levels, comprising the steps of:

forming location groups by dividing radio channels within the cell site around said first station into a plurality of groups arranged from a lowest group to a highest group;

measuring, in said first station, a signal level of a signal received from said second station;

allotting said second station to one of said location groups corresponding to said measured signal level;

assigning an idle traffic channel to said second station by checking traffic channels according to an allotted location group of said second station;

determining an operational state of the second station, a normal operation state being determined as said operational state in a case of the received signal level being within a level range, a power decrease requiring state being determined as said operational state in a case of the received signal level being over a maximum value of the level range, and a power increase requiting state being determined as said operational state in a case of the received signal level being below a minimum value of the level range, by comparing the received signal level of the signal received from said first station and measured in said second station with the level range, the level range being received and determined in said first station;

decreasing a transmission power of said second station in response to the determination of said power decrease requiring state to allot said second station to a lower location group and checking traffic channels according to the lower location group to decrease a transmission power of said second station when there is no idle channel; and

increasing a transmission power of said second station in response to the determination of said power increase requiring state to allot said second station to a higher location group and checking traffic channels according to the higher location group to increase a transmission power of said second station when there is no idle channel.

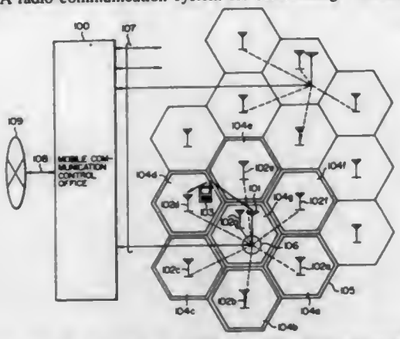
VOL 1192 ISS 4 NO 26 1996 UMI

5,579,374
INDEPENDENT CELL SYSTEM OF FORWARD AND REVERSE LINKS

Nobukazu Doi, Hachioji, and Takashi Yano, Tokorozawa, both of Japan, assignors to Hitachi, Ltd., and Hitachi Denshi Kabushiki Kaisha, both of Tokyo, Japan

Filed Sep. 2, 1994, Ser. No. 299,630
Claims priority, application Japan, Sep. 3, 1993, 5-219537
Int. Cl.[6] H04Q *7/36*
U.S. Cl. 379—59 **5 Claims**

1. A radio communication system for establishing a communi-



cations link for at least one mobile wireless terminal operating within a region of interest covered by said system, comprising:

a plurality of forward base stations each forming a macrocell containing a single forward base station;

a plurality of sets of reverse base stations, each set located within the macrocell of a respective forward base station for communicating with said forward base station through respective channels, the reverse base stations within each macrocell forming microcells therein; and

at least one mobile communication control office connected between said plurality of forward base stations and a public or local area network,

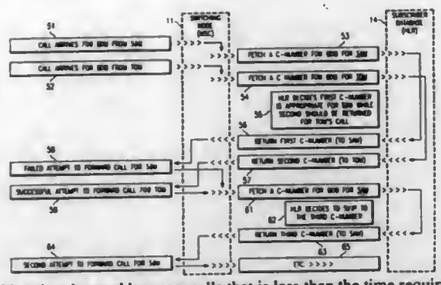
wherein a forward communications link is established between said public or local area network and said mobile wireless terminal by channels connecting said public or local area network, said mobile communications office, a first one of said forward base stations, and said mobile wireless terminals, forward communication between said one of said forward base stations and said mobile wireless terminal taking place solely unidirectionally from said first one of said forward base stations to the mobile wireless terminal, and a reverse communications link between said mobile wireless terminal and said public or local area network being formed by channels connecting said mobile wireless terminal, one of said reverse base stations, a second one of said forward base stations, said mobile communications control office, and said public or local area network reverse communication between said mobile wireless terminal and said one of said reverse base stations taking place solely unidirectionally from said mobile wireless terminal to said one of said reverse base stations.

5,579,375
CALL TRANSFER WITHIN CELLULAR COMMUNICATIONS SYSTEM

Thomas Ginter, Garland, Tex., assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation of Ser. No. 71,693, Jun. 3, 1993, abandoned. This application May 2, 1995, Ser. No. 433,128
Int. Cl.[6] H04Q *7/38*
U.S. Cl. 379—59 **26 Claims**

1. A method of forwarding a plurality of incoming telephone calls from a plurality of calling parties for a mobile station to a sequence of call-forwarding numbers within a conventional cellular radio telephone system, said incoming telephone calls arriving



with a time interval between calls that is less than the time required to return one of said call forwarding numbers to one of said plurality of calling parties, said method comprising the steps of:

designating a home location register (HLR) for said mobile station;

storing said sequence of call-forwarding numbers in a database in said HLR;

transmitting, for each of said plurality of incoming telephone calls from a plurality of calling parties, a corresponding request message to said HLR requesting a call-forwarding number from said sequence of call-forwarding numbers, said corresponding request message including a unique call identification number;

retrieving add forwarding a different one of said sequence of call-forwarding numbers for each one of said plurality of incoming telephone calls; and

maintaining a record between said unique call identification number and said sequence of call forwarding numbers to mark those certain ones of said sequence of call-forwarding numbers that have been retrieved for each one of said plurality of request messages and to identify those ones of said sequence of forward-to-numbers which have not been retrieved and which are available for retrieval in response to a subsequently received request message.

5,579,376
PHANTOM MOBILE-IDENTIFICATION NUMBER METHOD AND APPARATUS

William C. Kennedy, III, Dallas, and Robert J. Charles, Plano, both of Tex., assignors to Highwaymaster Communications, Inc., Dallas, Tex.

Continuation of Ser. No. 178,411, Jan. 6, 1994, abandoned, which is a continuation of Ser. No. 150,238, Nov. 9, 1993, Pat. No. 5,454,027, which is a continuation of Ser. No. 826,521, Jan. 27, 1992, abandoned. This application May 3, 1995, Ser. No. 434,127
Int. Cl.[6] H04Q *7/32*
U.S. Cl. 379—60 **21 Claims**

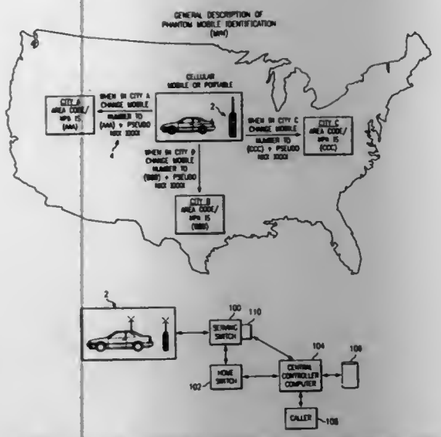
1. A method of coupling a call to a cellular telephone unit located in an area serviced by a serving switch, the cellular telephone unit having a home mobile identification number including a network planning area number, the method comprising:

receiving at the cellular telephone unit a serving switch system identification number;

transmitting from the cellular telephone unit to a central controller computer, coupled to the serving switch, the home mobile identification number and the serving switch system identification number;

determining, at the central controller computer; a local cellular system number for the cellular telephone unit in response to the home mobile identification number and the serving switch system identification number received from the cellular telephone unit;

determining, at the cellular telephone unit, the local cellular system number for the cellular telephone unit in response to the home mobile identification number and the received serving switch system identification number; and

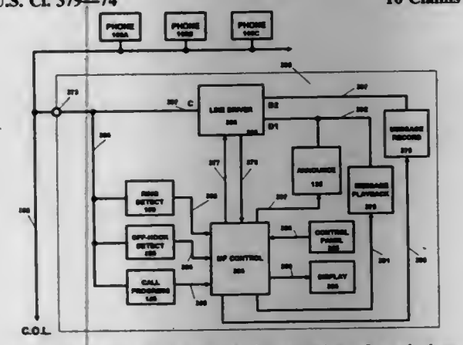


modifying, at the cellular telephone unit, only the network planning area number of the home mobile identification number of the cellular telephone unit to identify the cellular telephone unit with the local cellular system number.

5,579,377
REMOTE-CONTROL TELEPHONE ANSWERING SYSTEM AND METHOD

Laurence S. Rogers, 15 Aspen Rd., Scarsdale, N.Y. 10583

Filed Nov. 18, 1994, Ser. No. 342,093
Int. Cl.[6] H04M *1/64*
U.S. Cl. 379—74 **16 Claims**



6. An apparatus for improving the operation of a telephone answering machine, said answering machine being of a type that is for coupling to a first telephone line in parallel with a first telephone coupled to said first telephone line, and said answering machine further being of a type that is operable in a first mode of operation, (1) to record a message transmitted to the answering machine over a telephone network, and (2) to be remotely controlled by command signals transmitted to the answering machine over said telephone network from a second telephone at least to cause said message recorded by said answering machine to be played back and coupled to said first telephone line for transmission via said telephone network to said second telephone, said apparatus comprising:

first means for enabling said answering machine to operate in said first mode of operation, and

second means for enabling said answering machine to operate in a second mode of operation, said second means including:

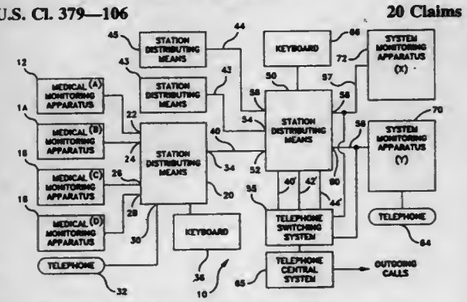
(A) a circuit for enabling said telephone answering machine to be remotely controlled, by command signals transmitted to the answering machine from said first telephone, at least to play back said recorded message and to couple said played back recorded message to said first telephone line so that said played back recorded message is heard through said first telephone, and

(B) a circuit for reducing audible interference between the played back recorded message being played back through said first telephone and audio signals transmitted from said telephone network to said first telephone line during said play back.

5,579,378
MEDICAL MONITORING SYSTEM

Frank H. Arlinghaus, Jr., Windmill La., Rumson, N.J. 07760

Continuation-in-part of Ser. No. 111,630, Aug. 25, 1993, abandoned. This application Sep. 25, 1995, Ser. No. 533,167
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—106 **20 Claims**



1. A medical monitoring system, comprising:

at least one patient medical monitoring apparatus for monitoring at least one aspect of a patient's physical condition and generating at least one real-time variable signal in response thereto;

at least one station distributing means electrically connected to said at least one patient medical monitoring apparatus, the station distributing means being electrically coupled to a first end of a telephone line;

a system distributing means electrically connected to a second end of said telephone line; and

at least one system monitoring apparatus electrically connected to said system distributing means;

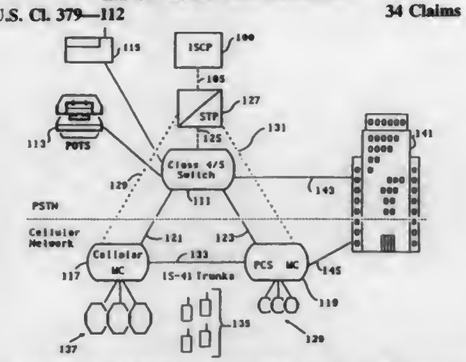
wherein said at least one station distributing means receives each of said at least one variable signal, and generates an information signal therefrom, the station distributing means including means for encoding the information signal to include routing information therein and means for modulating the encoded information signal to a frequency outside an audio base-band, wherein said station distributing means transmits the encoded information signal over said telephone line to said system distributing means, wherein the system distributing means includes a means for sorting, prioritizing and directing the information signal based upon the routing information contained therein, the system distributing means directing the information contained therein to said at least one system monitoring apparatus, whereby transmission of said information signal does not affect normal telephone operation.

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5,579,379
PERSONAL COMMUNICATIONS SERVICE HAVING A CALLING PARTY PAYS CAPABILITY

Peter J. D'Amico, Lindenwold; Douglas R. Jones, Mt. Laurel, both of N.J., and Laurie D. Schwartz, Columbia, Md., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Continuation-in-part of Ser. No. 229,891, Apr. 19, 1994, which is a division of Ser. No. 845,924, Mar. 5, 1992, Pat. No. 5,353,331. This application Oct. 18, 1994, Ser. No. 324,652
Int. Cl.[6] H04M *15/00;15/06;17/00*
U.S. Cl. 379—112 **34 Claims**



1. A method of routing calls in an integrated wired and wireless communication network, said network including communication lines, a central office switching system having at least one distribution switch and at least one Mobile Telephone Switching Office (MTSO) providing a communication link between said communication lines and wireless communication units, and a network controller separate from said distribution switches, said method comprising the steps of:

stopping a call to one of said wireless communication units at one of said distribution switches;

sending notification of said stopped call to said network controller;

receiving at said distribution switch data from said network controller regarding existence of a calling party pays feature in effect for a party being called by said caller;

playing an announcement to said caller;

receiving an acknowledgement from said caller at said distribution switch; and

routing said call responsive to said acknowledgment from said caller in accordance with routing instructions received at said distribution switch from said network controller.

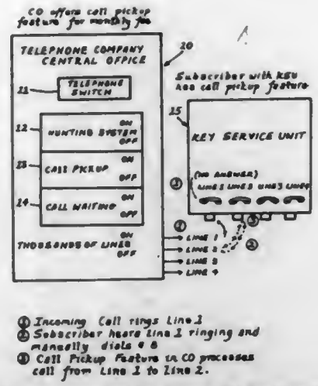
5,579,380
METHOD AND APPARATUS FOR PROCESSING TELEPHONE CALLS FROM ONE LINE TO ANOTHER

Ernie Ferguson, Cold Water, Mich.; Mark Bradley, Canyon Country, Calif., and Thomas G. Hurley, Jr., Memphis, Tenn., assignors to Connection Laboratories, Inc., Hernando, Miss.

Filed Oct. 25, 1994, Ser. No. 328,474
Int. Cl.[6] H04M *1/00;3/42*
U.S. Cl. 379—165 **5 Claims**

1. A telephone system having a call pickup feature in the central office of a telephone company and a key service unit (KSU) on a telephone subscriber's premises, the KSU having a main published line on one circuit and at least one additional line on another circuit and all of the operable circuits in the subscriber's KSU being operably connected to the call pickup feature and in the same pickup group wherein the call pickup feature is accessible by the subscriber signaling the dialing sequence of the pickup code such as *8 to the central office, wherein the improvement comprises:

(a) an apparatus on the subscriber's premises, said apparatus including:



① Incoming Call rings Line 1
② Subscriber hears Line 1 ringing and manually dials # 6
③ Call Pickup feature in CO processes call from Line 1 to Line 2.

(i) means for connecting the circuit for the subscriber's main published line from the telephone company first to the apparatus and then to the KSU;

(ii) means for connecting the circuits of the subscriber's other operable telephone lines from the telephone company first to the apparatus and then to the KSU;

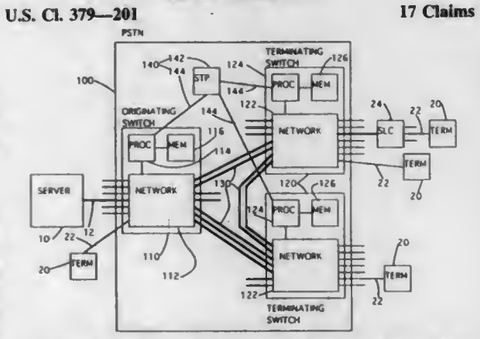
(iii) means for receiving an incoming call to the subscriber's main published line; and

(iv) means for selectively processing an incoming call to an available additional line or if there is no available additional line to either the main published line or to send a "busy" signal to the caller, wherein the means for selectively processing an incoming call to either the main published line or to send a "busy" signal to the caller if there is no available additional line comprises a dip switch and a CPU in the apparatus, the dip switch being operatively connected to the CPU and the CPU being programmed to process the incoming call to the main published line if the dip switch is open and to send a "busy" signal to the caller if the dip switch is closed.

5,579,381
METHODS AND APPARATUS FOR PROVIDING SUPPRESSED RINGING ACCESS

Bernard Courville, Pierrefonds; Sandro Cianci, Montreal; Jeffrey J. Brown, Edmonton, and Norman Zolyniak, Pointe Claire, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 25, 1994, Ser. No. 295,584
Int. Cl.[6] H04M *3/42*
U.S. Cl. 379—201 **17 Claims**



1. A method for providing a connection between a server and a subscriber line without ringing a telephone connected to the subscriber line, the method comprising:

sending a connection request from the server to an originating switch, the connection request comprising a signal indicating the subscriber line to which the server is to be connected and a signal indicating that a suppressed ringing connection to that subscriber line is desired;

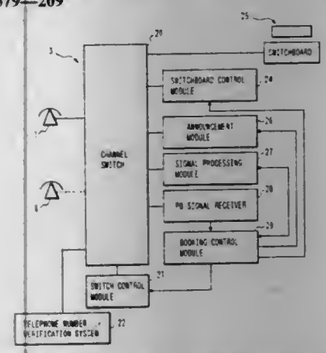
processing the connection request at the originating switch and forwarding the processed connection request to a terminating switch which is connected to the subscriber line; and

performing a connection routine at the terminating switch in response to the forwarded connection request to connect the server to the subscriber line, the connection routine being adapted to avoid audible ringing of a telephone set connected to the subscriber line.

5,579,382
INTERNATIONAL DIRECT DIALING BOOKING SYSTEM

Kensuke Tsukishima, Tokyo, Japan, assignor to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Feb. 14, 1995, Ser. No. 388,297
Claims priority, application Japan. Feb. 28, 1994, 6-052630; Feb. 28, 1994, 6-052636
Int. Cl.[6] H04M *3/42;1/64;7/00*
U.S. Cl. 379—209 **4 Claims**



1. An international direct dialing booking system comprising:

means for performing a booking procedure when there is a call-in of an access number for booking by an international direct dialing made by a calling party and a signal receiver receives a predetermined signal from the calling party providing an input;

means for selectively one of changing and cancelling the input accepted by the means for performing the booking procedure;

announcement means for requesting with an automatic announcement whether the input is to be one of changed and cancelled and for accepting a response;

means for connecting to an operator if the response to announcement means is not one of changed and cancelled;

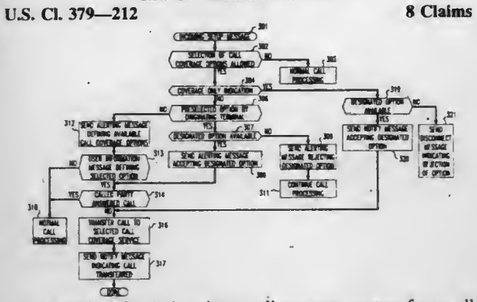
means for calling the calling party at the call time registered by the means for performing the booking procedure; and

means for calling a called party when there is a response from the calling party, wherein the input accepted by the means for performing the booking procedure can be one of changed and cancelled.

5,579,383
CALLING TERMINAL CONTROLLED CALL COVERAGE

Bruce M. Bales, Louisville, and Stephen M. Thieler, Boulder, both of Colo., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 23,295, Feb. 26, 1993, abandoned. This application Jun. 20, 1995, Ser. No. 493,232
Int. Cl.[6] H04M *3/42;11/00*
U.S. Cl. 379—212 **8 Claims**



1. A method for designating a call coverage system for a call initiated by a calling telecommunication terminal under control of a user to a called telecommunication terminal that has call coverage provided by a plurality of call coverage systems, comprising the steps of:

transmitting a call origination message to the called telecommunication terminal by the calling telecommunication terminal;

including a call coverage capability indication in the call origination message transmitted to the called telecommunication terminal;

transmitting identities of the plurality of the call coverage systems to the calling telecommunication terminal by the called telecommunication terminal in response to the call coverage capability indication;

determining an identity of a selected one of the plurality of the call coverage systems from the transmitted identities of the plurality of the call coverage systems by the calling telecommunication terminal under control of the user;

transmitting the identity of the selected one of the plurality of the call coverage systems to the called telecommunication terminal by the calling telecommunication terminal; and

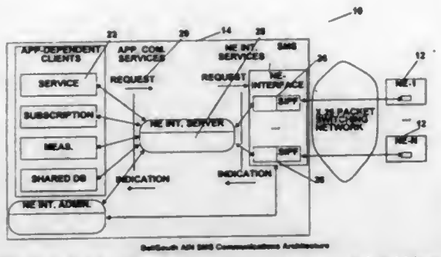
transferring the call to the selected one of the plurality of the call coverage systems by the called telecommunication terminal in response to the identity of the selected one of the plurality of the call coverage systems.

5,579,384
TELECOMMUNICATIONS NETWORK SERVICE CENTRAL MANAGEMENT SYSTEM INTERFACING WITH PROTOCOL SPECIFIC REGIONAL STATIONS PROVIDING SERVICES TO SUBSCRIBERS

James M. Seymour, Roswell, Ga., assignor to Bellsouth Corporation, Atlanta, Ga.

Continuation of Ser. No. 198,142, Feb. 17, 1995, abandoned. This application Jun. 7, 1995, Ser. No. 474,540
Int. Cl.[6] G06F *15/163;* **H04M** *3/22*
U.S. Cl. 379—243 **31 Claims**

1. A system for communication between a public switched telecommunications network service management system, which is adapted to manage and control, in a centralized fashion, data relating to changes in service provided to subscribers of said system, and a plurality of network elements, at least some of which are adapted to provide data for services offered to said subscribers of said public switched telecommunications network, which elements are available for query by central offices and switches of said public switched telecommunications network, using at least one predetermined protocol for communicating between said service management system and said network elements, said system



comprising at least one network element interface, each said interface corresponding to one of said network elements and communicating with said element, each interface adapted to be programmed to transform said public switched telecommunications network service management system data relating to changes in services provided to subscribers of said system into a format that complies with said predetermined protocol.

5,579,385

METHOD OF SIGNALLING SUBSCRIBER NUMBERS IN A TELECOMMUNICATIONS NETWORK

Klaus Wille; Karl-Heinz Martin, and Christian Kofler, all of München, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

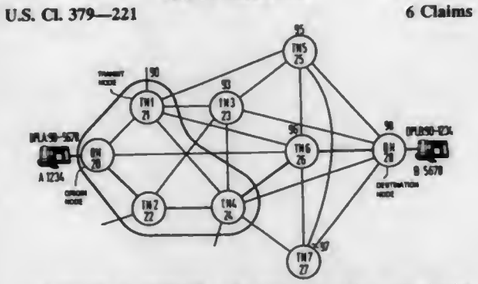
PCT No. PCT/DE93/00278, § 371 Date Sep. 29, 1994, § 102(e) Date Sep. 29, 1994, PCT Pub. No. WO93/21031, PCT Pub. Date Oct. 28, 1993

PCT Filed Mar. 25, 1993, Ser. No. 313,174

Claims priority, application Germany, Mar. 30, 1992, 42 10 407.6

Int. Cl.[6] H04M *7/00*

U.S. Cl. 379—221 **6 Claims**



1. A process for signalling a call number in a telecommunication network, telecommunication connections being directed from a telecommunication terminal equipment on a transmission side via an origin node, via transit nodes and a destination node to a telecommunication terminal equipment on a reception side, the origin node being arranged in an area of closed numbering and there being inserted into first signalling information, of the telecommunication connection to be set up, a node number designating the origin node, a call number of the telecommunication terminal equipment on the transmission side, a node identity number assigned to the telecommunication terminal equipment on the reception side and a call number of the telecommunication terminal equipment on the reception side, comprising the steps of:

checking in nodes involved in a setup of the connection on the basis of the node number of the origin node and on the basis of the node identity number of the destination node whether the call number of the telecommunication terminal equipment on the transmission side is to be modified;

supplementing the call number of the telecommunication terminal equipment on the transmission side in a node in an area of closed numbering which neighbors an area of open numbering by an area identity number designating the area of closed numbering; and

not supplementing the call number of the telecommunication terminal equipment on the transmission side in nodes of open numbering following the area of closed numbering.

5,579,386

TELEPHONE NETWORK ALERTING CADENCE CONTROL SYSTEM

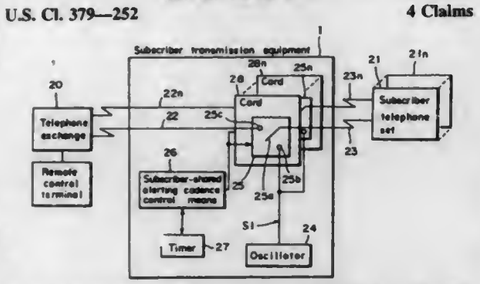
Eiji Koda, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 939,315, Sep. 2, 1992, abandoned. This application Apr. 26, 1995, Ser. No. 430,141

Claims priority, application Japan, Sep. 2, 1991, 3-221463

Int. Cl.[6] H04M *3/06*

U.S. Cl. 379—252 **4 Claims**



4. An alerting cadence control system installed in a subscriber transmission equipment for a telephone network including a telephone exchange, said subscriber transmission equipment being connected to said telephone exchange by a plurality of first lines, and a plurality of telephone sets each connected to said subscriber transmission equipment by a respective one of a plurality of second lines, the control system comprising:

an oscillator for outputting a high frequency signal;

a plurality of switching means, one of said plurality of switching means being provided for each of said plurality of telephone sets for performing a first and a second switching action, said first switching action including connecting said oscillator to and disconnecting said oscillator from a respective one of said plurality of second lines connected to an associated telephone set, said second switching action including connecting a respective one of said plurality of first lines to and disconnecting said respective one first line from said respective one second line;

subscriber-shared alerting cadence control means connected to said plurality of switching means for controlling said first switching action of each of said plurality of switching means, said subscriber-shared alerting cadence control means including memory means for storing data in the format of at least one control setting table in which is written a control program for controlling each one of said plurality of switching means connected to each one of said plurality of telephone sets so that said first switching action of each of said plurality of switching means causes said high frequency signal to be sent to or be prevented from being sent to the associated one of the plurality of telephone sets through the respective second line;

timer means connected to said subscriber-shared alerting cadence control means for setting timing intervals for said first switching action of each of said plurality of switching means; and

remote control means connected to said telephone exchange for modifying settings for each one of said plurality of telephone sets individually, said remote control means modifying settings in said at least one control setting table through remote terminal equipment via said first lines so as to address subscriber needs for services at installations of said individual telephone sets and to respond to subscriber requests for new services,

wherein said at least one control setting table comprises:

an item number column in which item numbers are set;

a switching control column containing on/off settings for controlling said first switching action of each of said switching means;

a timer setting column containing timer settings for said timer means;

processing function columns containing function settings for notifying said telephone exchange of requests for new services including a first silent interval for indicating who is calling; and

a next item number column having settings of next item numbers to be processed.

5,579,387

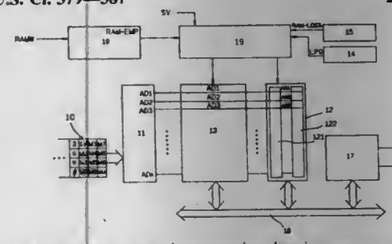
APPARATUS FOR ACCESSING FUNCTION CODE IN TELEPHONE

Jui-Kuang Wu; Mao-Sung Chen, and Meng-Tsang Wu, all of Hsinchu, Taiwan, assignors to Winbond Electronics Corporation, Hsin-Chu, Taiwan

Filed Jun. 30, 1994, Ser. No. 268,839

Int. Cl.[6] H04J *3/12*

U.S. Cl. 379—387 **20 Claims**



1. A telephone system incorporating therein a memory accessing apparatus, said system comprising:

a telephone;

an input device communicating with said telephone for generating a signal;

a first memory for storing a function code;

a second memory electrically connected to said first memory for storing a datum corresponding to said function code; and

an address decoder electrically connected to said input device and said second memory for decoding said signal generated from said input device and designating thereby an address to access at least one of said function code and said datum, wherein said function code stored in said first memory and said datum stored in said second memory are accessible by same said address.

5,579,388

NETWORK-INDEPENDENT ELECTRICAL ENERGY USER WITH ADDITIONAL, PHOTOVOLTAIC POWER SUPPLY

Arthur Endroes, Muncich, and Richard Einzinger, Steinhoering, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 1, 1995, Ser. No. 432,053

Claims priority, application Germany, Apr. 29, 1994, 44 15 131.4

Int. Cl.[6] H04M *19/00;* **H01L** *31/0368*

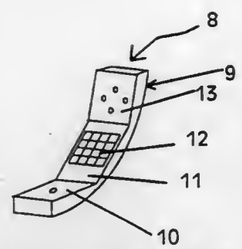
U.S. Cl. 379—433 **8 Claims**

1. A network-independent, portable electrical energy user comprising:

a housing containing energy-consuming electrical components;

an energy supply buffered by an energy store in said housing; and

a flexible solar cell laminated on an exterior surface of said housing and electrically connected to said energy store for supplying additional energy thereto and for re-charging said energy store, said solar cell comprising a thin silicon tricrystal wafer.



5. An energy user as claimed in claim 1 wherein said energy user comprises a telephone.

5,579,389

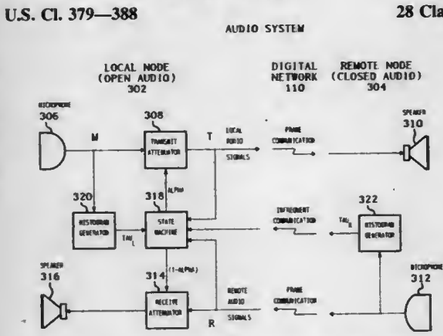
HISTOGRAM-BASED PROCESSING OF AUDIO SIGNALS

Larry Wagner, Oakland, Calif., and Robert A. Marshall, Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 342,270, Nov. 16, 1994, which is a continuation-in-part of Ser. No. 340,172, Nov. 15, 1994, which is a continuation-in-part of Ser. No. 157,694, Nov. 24, 1993, Pat. No. 5,506,954. This application Dec. 20, 1994, Ser. No. 359,468

Int. Cl.[6] H04M *3/56*

U.S. Cl. 379—388 **28 Claims**



1. An apparatus for processing audio signals, comprising:

(a) a transmit attenuator for attenuating local audio signals generated by a local microphone for transmission to a remote node;

(b) a receive attenuator for attenuating remote audio signals received from the remote node for playback at a local speaker; and

(c) a controller, electrically connected to the transmit attenuator and the receive attenuator, for controlling a level of transmit attenuation for the transmit attenuator and a level of receive attenuation for the receive attenuator, wherein:

the controller generates a local histogram based on the local audio signals; and

the controller uses the local histogram to generate the level of transmit attenuation and the level of receive attenuation.

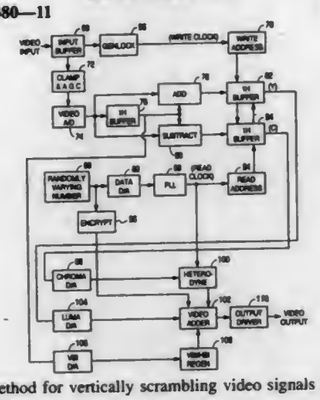
5,579,390
METHOD AND APPARATUS FOR VERTICALLY SCRAMBLING AND DESCRAMBLING OF VIDEO SIGNALS

John O. Ryan; Ronald Quan, both of Cupertino; James R. Holzgrafe, Morgan Hill, and Peter J. Wonfor, El Granada, all of Calif., assignors to Macrovision Corporation, Sunnyvale, Calif.

Division of Ser. No. 202,349, Feb. 28, 1994, Pat. No. 5,438,620, which is a continuation of Ser. No. 795,890, Nov. 19, 1991, abandoned. This application Mar. 8, 1995, Ser. No. 400,832

Int. Cl.[6] H04N 7/169

U.S. Cl. 380—11 **5 Claims**



1. A method for vertically scrambling video signals comprising the steps of:

timeshifting the composite horizontal lines of the video signal relative to the vertical sync signal in each video field, wherein the composite horizontal lines in each successive field are timeshifted by a different amount;

encrypting an indication of the amount of timeshifting; and

inserting the indication into the video signal.

5,579,391
TV SCRAMBLE SYSTEM FOR PREVENTING ILLEGAL RECEPTION

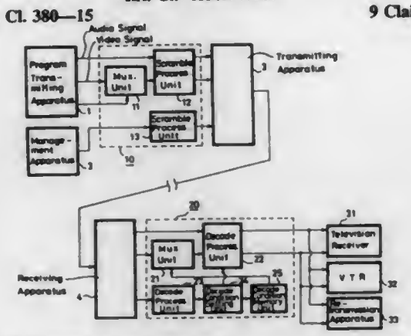
Kiichi Ihara, Kanagwa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 132,875, Oct. 7, 1993, abandoned. This application May 2, 1995, Ser. No. 434,315

Claims priority, application Japan, Oct. 9, 1992, 4-271810

Int. Cl.[6] H04N 7/167

U.S. Cl. 380—15 **9 Claims**



1. A scramble system comprising:

a program transmitting apparatus for outputting a video program and ancillary information concerning said video program;

a scrambling apparatus for inserting said ancillary information into a vertical blanking period of a video signal transmitted from said program transmitting apparatus and scrambling said video signal together with an audio signal;

a transmitting apparatus for transmitting a scrambled signal supplied from said scrambling apparatus as a broadcast wave;

a receiving apparatus for receiving and demodulating said broadcast wave transmitted from said transmitting apparatus;

a decoding apparatus for inserting an identification code of each of said decoding apparatus into a vertical blanking period of a video signal demodulated by said receiving apparatus, said decoding apparatus comprising a decode condition memory unit, a decode processing unit, and a decode condition setting unit, said decode condition setting unit being responsive to detection of a predetermined relation between a signal generated locally within said decoding apparatus by said decode condition memory unit and a portion of said broadcast wave for generating a signal enabling said decode processing unit to unscramble said demodulated video signal; and

a video equipment to which a signal from said decoding apparatus is supplied.

5,579,392
DUPLICATING AND CIPHERING DEVICE AND METHODS FOR CODIFICATION OF FACSIMILE TELECOPIES

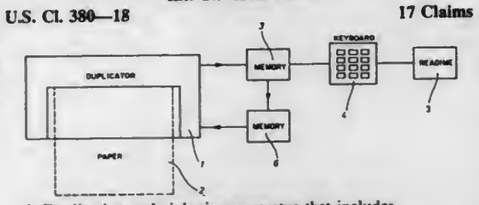
Walter Holzer, Drosteweg 19, 7758 Meersburg, Germany

Filed Jul. 1, 1991, Ser. No. 723,573

Claims priority, application Germany, Jul. 4, 1990, 40 21 061.8; Jul. 11, 1990, 40 21 783.3

Int. Cl.[6] H04L 9/00

U.S. Cl. 380—18 **17 Claims**



1. Duplicating and ciphering apparatus that includes,

a duplicating component incorporating insert means for receiving an original paper, a scanner for scanning one or more dot rows on the paper, a printer, means for feeding the paper, and output means for putting out the printed paper,

the apparatus comprising,

the duplicating component having connections for an electronic memory for storing information read by the scanner, and for a coding and ciphering device for coding and ciphering that information,

the apparatus further comprising,

said coding and ciphering device connected to the duplicating component, said

coding and ciphering device including a keyboard, means for manually changing the ciphering process and a reading device for reading information from removable input-output medium.

5,579,393
SYSTEM AND METHOD FOR SECURE MEDICAL AND DENTAL RECORD INTERCHANGE

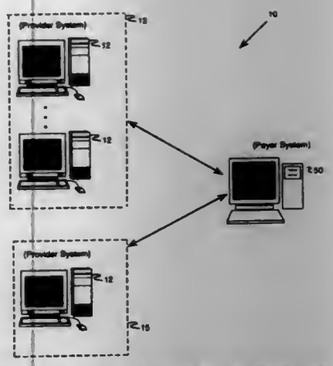
Guy Conner, and Larry Schmier, both of Santa Rosa, Calif., assignors to EScan, Inc., Santa Rosa, Calif.

Filed Jun. 21, 1994, Ser. No. 263,143

Int. Cl.[6] H04L 9/00

U.S. Cl. 380—25 **26 Claims**

9. A provider system for secure medical and dental record communication with a payer system, wherein the payer system performs record evaluation and processing, the provider system comprising:



a processing unit having an input and an output, for executing computer program steps;

a digital imager having an output, the digital imager for capturing an image;

a memory wherein a provider management unit resides, the memory having an input and an output, the provider management unit controlling the generation of an image identification corresponding to the image, the creation of an image relation structure having a status indicator that corresponds to a manner in which the image was acquired, and the generation of a message that includes the image, the input of the memory coupled to the output of the processing unit and to the output of the digital imager, the output of the memory coupled to the input of the processing unit; and

a data transmission/reception device having an input, for transmitting and receiving data between the payer system and a provider system, the input of the data transmission/reception device coupled to the output of the memory and to the output of the processing unit.

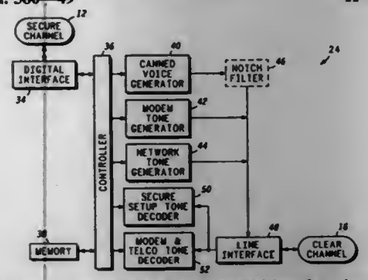
5,579,394
CLEAR CHANNEL INTERFACE MODULE AND METHOD THEREFOR

William B. Waldron, Jr., Chandler; Terrel W. Sandberg, and Paul R. Kennedy, both of Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 6, 1994, Ser. No. 301,386

Int. Cl.[6] H04N 9/12

U.S. Cl. 380—49 **11 Claims**



1. A method of operating a clear channel interface that resides between a first channel which accommodates both clear and secure communications and a second channel which does not accommodate clear communications, said method comprising the steps of:

detecting an initiation of a call being setup through said first and second channels;

initiating a message that conveys a signal to initiate a security setup;

said initiate security setup signal is at least one audio tone;

said message is an audio voice message;

said at least One audio tone is substantially absent from said audio voice message;

sending, in response to said detecting step, said message through said first channel, said message conveying an instruction to said second channel to initiate a security setup; and

determining, after said initiating step, when the security setup signal is received from said first channel;

configuring said message to substantially omit said initiate security setup signal from said message; and

stopping said message after said initiate security setup signal is received by said second channel.

5,579,395
STEREO DECODER WITH CROSS-TALK COMPENSATION

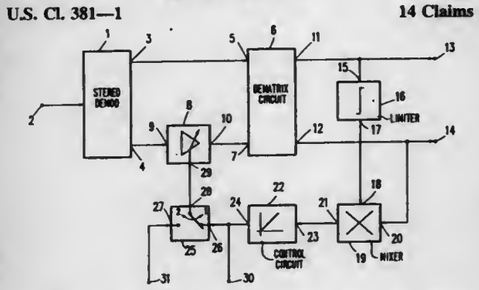
Manfred Horl, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 5, 1994, Ser. No. 286,607

Claims priority, application Germany, Aug. 10, 1993, 43 26 811.0

Int. Cl.[6] H04R 5/00

U.S. Cl. 381—1 **14 Claims**



1. A circuit arrangement for converting a stereo signal comprising a mid-plane signal and a side signal into an output signal for each of two audio signal channels, which arrangement comprises an adjustment circuit for minimizing crosstalk between the output signals, comprising:

a first limiter circuit adapted to receive a first one of the output signals and to transform it into an at least substantially rectangular first amplitude-limited signal of the same frequency as that of the first one of the output signals,

a first mixer circuit for deriving a first rectified signal by multiplying the first amplitude-limited signal by a second one of the output signals,

a first control circuit for deriving a first correction signal from the first rectified signal,

an adjustment circuit for influencing the amplitude of at least one of the mid-plane signal and the side signal by means of the first correction signal,

a first storage device coupled to the first control circuit for storing the first correction signal, and

a first switching device by means of which, in a first mode of the circuit arrangement, the first correction signal is applied to the adjustment circuit, and by means of which, in a second mode of the circuit arrangement, the first correction signal stored in the first storage device is applied to the adjustment circuit.

5,579,396
SURROUND SIGNAL PROCESSING APPARATUS

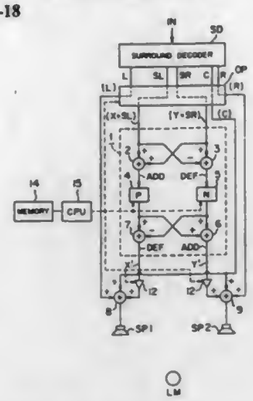
Toshiyuki Iida, Kawasaki; Tomohiro Mouri, Tokyo-To, and Yasuhisa Okabe, Isehara, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Aug. 1, 1994, Ser. No. 283,757

Claims priority, application Japan, Jul. 30, 1993, 5-208872; May 31, 1994, 6-141011

Int. Cl.[6] H04R *5/00*

U.S. Cl. 381—18 **12 Claims**



1. An audio video reproducing apparatus comprising:

filter means for the processing an inputted rear surround signal in accordance with predetermined transfer characteristics provided therein;

inverting means for inverting polarity of the signal processed by said filter means to obtain an inversion signal thereof;

first adding means for adding the signal processed by said filter means and one of two-channel front stereophonic signals, to output a first addition signal;

second adding means for adding the inversion signal inverted by said inverting means and the other of the stereophonic signals, to output a second addition signal; a pair of speakers, responsive to the first and second addition signals, for reproducing the inputted rear surround signal, together with the two-channel front stereophonic signals to localize sound images of the reproduced rear surround signals at predetermined positions relative to a listener; and

a display unit, the speakers being arranged on both sides of the display unit, for reproducing a picture relative to the reproduced signals, wherein

the transfer characteristics of said filter means are set as follows:

$$(F-K)/(S-A)$$

where S denotes transfer characteristics between one of the speakers and one of the listener's ears positioned on the same side as the speaker, respectively; A denotes transfer characteristics between one of the speakers and one of the listener's ears positioned on an opposite side to the speaker, respectively; F denotes transfer characteristics between one of the two positions at which two sound images are required to be localized and one of the listener's ears positioned on the same side as the image position, respectively; K denotes transfer characteristics between one of the two positions at which the two sound images are required to be localized and one of the listener's ears positioned on an opposite side to the image position; and / denotes a reverse convolution calculation.

5,579,397
AMPLIFIER DEVICE FOR A CONDENSER MICROPHONE

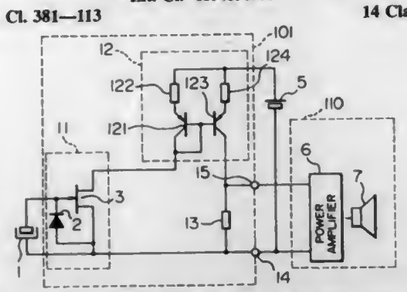
Masaharu Ikeda, and Ryoji Abe, both of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 13, 1994, Ser. No. 305,348

Claims priority, application Japan, Jan. 21, 1994, 6-005218

Int. Cl.[6] H04R *3/00*

U.S. Cl. 381—113 **14 Claims**



1. An amplifier device for a condenser microphone comprising:

buffer amplifier means having an input of a large resistance and an output end approximately regarded as a current source; and

current mirror means for changing a direction of an output current of said buffer amplifier means to invert a phase of said output current of said buffer amplifier means and having an output end which can be approximately regarded as a current source, the output end of said current mirror means serving as an output of said amplifier device, wherein said current mirror means reduces influence on the amplifier device of ripples from a power source.

5,579,398
ELECTRO-ACOUSTIC TRANSDUCER

Stuart C. Ewens, Chailey, United Kingdom, assignor to Knowles Electronics Co., United Kingdom

PCT No. PCT/GB93/02457, § 371 Date Aug. 1, 1994, § 102(e) Date Aug. 1, 1994, PCT Pub. No. WO94/14292, PCT Pub. Date Jun. 23, 1994

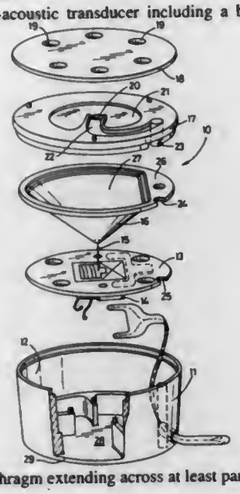
PCT Filed Nov. 30, 1993, Ser. No. 256,971

Claims priority, application United Kingdom, Dec. 4, 1992, 9225650

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—154 **2 Claims**

1. An electro-acoustic transducer including a body defining a



chamber, a diaphragm extending across at least part of the chamber

to define a front chamber portion and a rear chamber portion, a grounded metal part within the rear chamber, an end piece extending across the chamber and forming a wall of the front chamber portion, the end piece having a main acoustic inlet/outlet and a Thuras tube connecting the rear portion and the main inlet/outlet, wherein at least a portion of the Thuras tube is defined by a channel formed in the end piece forming the wall of the chamber; and an end cap overlying the end piece with subsidiary inlets/outlets formed therein offset from the main inlet/outlet, said end cap closing off the channel to form said portion of the Thuras tube, said channel defining an extended air path between the subsidiary inlets/outlets and the grounded metal part.

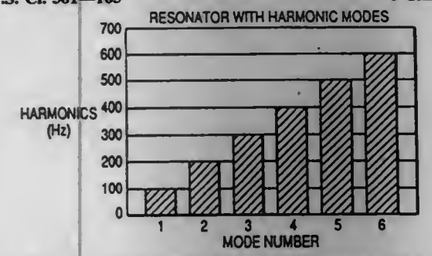
5,579,399
ACOUSTIC RESONATOR HAVING MODE-ALIGNMENT-CANCELLED HARMONICS

Timothy S. Lucas, Richmond, Va., assignor to Macrosonix Corporation, Richmond, Va.

Continuation of Ser. No. 226,469, Apr. 12, 1994, abandoned, which is a division of Ser. No. 881,339, May 11, 1992, Pat. No. 5,319,938. This application Jul. 22, 1994, Ser. No. 279,156

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—165 **8 Claims**



1. An electrodynamic driver for an acoustic resonator of a type having a chamber containing a fluid, said chamber having a geometry which produces destructive self-interference of at least one harmonic in said fluid to avoid shock wave formation at peak acoustic pressure amplitudes greater than 10% of mean pressure, said electrodynamic driver comprising:

a current conducting coil rigidly coupled to the acoustic resonator, said current conducting coil being periodically excited;

a magnet coupled to said current conducting coil; and

a resilient device coupling said magnet to the acoustic resonator, a periodic excitation of said current conducting coil causing a periodic displacement of the acoustic resonator.

5,579,400
HEADPHONES

Burkhard Ballein, Gronaustrasse 59, D-42285 Wuppertal, Germany

Continuation of Ser. No. 91,895, Jul. 14, 1993, abandoned. This application Dec. 5, 1994, Ser. No. 349,456

Claims priority, application Germany, Jul. 17, 1992, 42 23 515.4

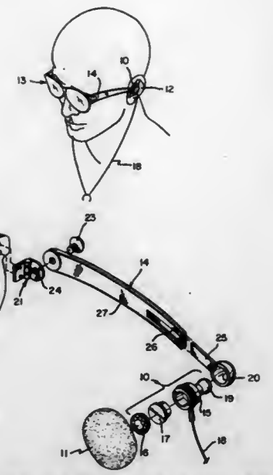
Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—183 **16 Claims**

1. Eyeglass headphones comprising:

a frame containing two eyeglass lenses, the frame having a left end and a right end, the frame and lenses lying generally in a first vertical plane;

a left eyeglass arm both hingedly and pivotally attached at a first end to the left end of the frame, the left eyeglass arm being hingedly movable between a first wearing position and a second storage position, and the left eyeglass arm further being pivotable into different angular positions in a second vertical plane generally perpendicular to the first vertical plane;



a right eyeglass arm both hingedly and pivotally attached at a first end to the right end of the frame, the right eyeglass arm being hingedly movable between a first wearing position and a second storage position, and the right eyeglass arm further being pivotable into different angular positions in a third vertical plane generally perpendicular to the first vertical plane;

wherein each of the left and right eyeglass arm extends to the center of an ear of a user when the eyeglass headphones are worn by the user; and

a pair of electroacoustic receivers each mounted to a second end of the left and right eyeglass arms, respectively, each of the receivers adapted to be inserted within an outer ear of the user and being the only means of securing the second ends of said arms to the user when the eyeglass headphones are worn by the user.

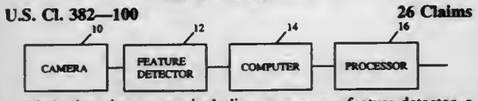
5,579,401
FEATURE GROUPING IN MOVING BODIES IN AN IMAGE

C. William Gear, Princeton, N.J., assignor to NEC Research Institute, Inc., Princeton, N.J.

Continuation of Ser. No. 164,467, Dec. 8, 1993, abandoned. This application Sep. 7, 1995, Ser. No. 525,814

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—100 **26 Claims**



16. An imaging system including a camera, a feature detector, a computer, and a processor for determining the number of independent moving bodies in image flames containing a plurality of moving bodies and associating points in the image with respective bodies for determining the trajectories of the moving bodies comprising;

a camera for recording a sequence of image frames of a scene containing a plurality of moving bodies;

a feature detector for obtaining image data related to identified points arising from the moving bodies in said sequence of image frames recorded by the camera;

a computer for receiving said image data related to identified points, said computer:

forming a matrix W where column vector w_i of matrix W includes the coordinates of each ith point;

representing the set of all points by $M=diag(w_1, w_2, \ldots, w_s)$ where $w_p, p= 1, \ldots, s$ are point coordinates and there are s bodies and each body has a set of n_p feature points;

forming a block transformation matrix T having entries T_{jp},j=1, . . . , m and p=1, . . . , s, where T_{jp} is the pth object in the jth frame subject to a transformation/projection;

representing the observed data, matrix D, as D=TM where the upper bound on the rank of D is 4 s and the lower bound is s, where s is the number of independent moving bodies;

forming the echelon form of matrix D; and

providing output data commensurate with the number of independent bodies in the image and with which points are associated with respective bodies from the echelon form of matrix D where columns having non-zero elements in the same row correspond to points belonging to same rigid body if matrix T has full rank and where the rank of echelon form of matrix D is related to a lower bound on the number of independent bodies in the image, and

a processor for receiving said output data and determining the trajectories of each moving body in the sequence of image frames.

5,579,402

METHOD FOR CONSTRUCTING A HISTOGRAM IN DIGITAL IMAGE PROCESSING BY STATISTICAL PIXEL SAMPLING

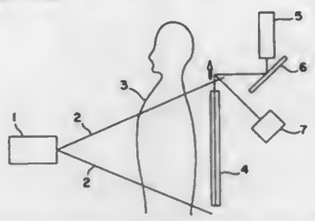
Lucien Hayen, Antwerpen, Belgium, assignor to AGFA-Gevaert, Mortsel, Belgium

Continuation of Ser. No. 973,427, Nov. 9, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 457,322

Claims priority, application European Pat. Off., Nov. 14, 1991, 91202952

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—132 **5 Claims**



1. A method of creating a histogram of an image signal matrix representative of a radiographic image having a plurality of pixels, said method comprising the steps of:

i) scanning a stimulable phosphor sheet carrying the radiation image with stimulating rays;

ii) detecting for each pixel the light emitted after stimulation;

iii) converting for each pixel the detected light into electrical signals;

iv) collecting a subset of said electrical signals by statistical sampling relative to discrete, non-clustered pixels, said statistical sampling being performed by the following steps:

a) choosing a range of sample distances di;

b) deducting from di a range of corresponding pixel numbers ni;

c) choosing a value n out of ni;

d) generating one random number y within the ni-range;

e) defining all sampling lines as follows: locating the initial sample-line (on which the first pixel-samples will be taken) at height y, and defining all next sample-lines by upgrading the position of the initial sample-line by increments of n;

f) generating a series of random numbers xj={x1, x2 . . . xl} within the same above-mentioned range ni;

g) sampling all pixels pj as follows: determining the initial pixel (which will be sampled first) on each line at horizontal position x1 for the first line, x2 for the second line, etc; and defining all next pixels on each line to be sampled by upgrading the initial pixel position xJ by increments of n up to the end of each line to be sampled;

v) creating a histogram by means of said subset;

vi) displaying said histogram on a monitor; and,

vii) using said histogram for the determination of the relevant image window.

5,579,403

Patent Not Issued For This Number

5,579,404

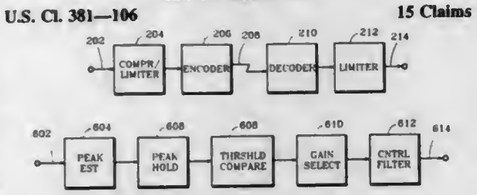
DIGITAL AUDIO LIMITER

Louis D. Fielder, Millbrae; Marina Bosi-Goldberg, Menlo Park; Grant A. Davidson, Oakland, and Kenneth J. Gundry, San Francisco, all of Calif., assignors to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Filed Feb. 16, 1993, Ser. No. 17,535

Int. Cl.[6] H03G *7/00*

U.S. Cl. 381—106 **15 Claims**



2. A signal processing system comprising

processing means for generating a processed audio signal in response to an input audio signal having an apparent loudness and being limited to a first peak amplitude, wherein said processed audio signal has an apparent loudness substantially the same as said apparent loudness of said input audio signal but is not limited to said first peak amplitude, wherein said processing means for generating said processed audio signal comprises a perceptual-coding system,

estimating means for generating an estimated peak amplitude of said processed audio signal, and

limiting means responsive to said processed audio signal for generating an output audio signal limited to a second peak amplitude by applying a gain factor to a portion of the total bandwidth of said processed audio signal, said gain factor established in response to said estimated peak amplitude.

5,579,405

METHOD AND APPARATUS FOR CONTOUR VECTOR IMAGE PROCESSING

Yoshihiro Ishida; Akihiro Katayama, and Junichi Yamakawa, all of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 80,242, Jun. 23, 1993, abandoned. This application Nov. 21, 1995, Ser. No. 561,154

Claims priority, application Japan, Jun. 26, 1992, 4-169581

Int. Cl.[6] G06K *9/48*

U.S. Cl. 382—197 **22 Claims**

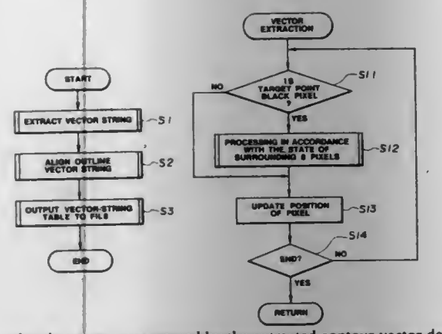
1. An image processing method comprising the steps of:

inputting image data;

extracting contour vector data representing a contour of the image data input in said inputting step;

storing the contour vector data extracted in said extracting step; and

generating image data representing an image in the input image data based on magnification-varying processing performed on the contour vector data so that a pixel within a region surrounded by the contour vector data is made into a black pixel, and so that a pixel represented by the contour vector data is also made into a black pixel,



wherein vectors represented by the extracted contour vector data are located between a white and a black pixel at a boundary between a white and a black region, and are located closer to the black pixel.

5,579,406

APPARATUS AND METHOD FOR OUTLINE DATA PROCESSING

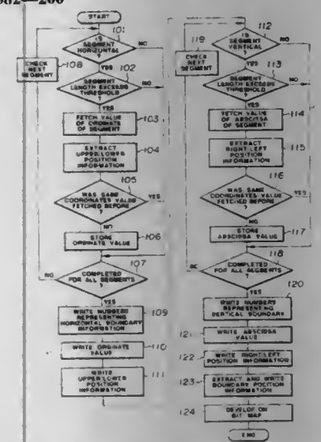
Yuko Morikawa, Kawasaki, Japan, assignor to Fuji Xerox Co., Ltd., Japan

Continuation of Ser. No. 748,798, Aug. 22, 1991, abandoned. This application Aug. 19, 1993, Ser. No. 109,602

Claims priority, application Japan, Aug. 24, 1990, 2-223499

Int. Cl.[6] G06T *3/40*

U.S. Cl. 382—200 **12 Claims**



7. A method of drawing graphic characters, comprising the steps of:

sequentially selecting a plurality of segments having two ends stored in an outline data storing means for storing outline data containing the plurality of segments and coordinates of both ends of each of the plurality of segments by sequentially tracing in a predetermined direction the coordinates stored in the outline data means, and extracting, from the plurality of segments, horizontal segments extending substantially in horizontal directions and having lengths longer than a predetermined length;

sequentially selecting the plurality of segments stored in the outline data storing means by sequentially tracing in a predetermined direction the coordinates stored in the outline data storing means, and extracting, from the plurality of segments, vertical segments extending substantially in vertical directions and having lengths longer than a predetermined length;

determining upper and lower regions of the character of graphic symbol;

determining left-hand and right-hand regions of the character, or graphic symbol;

judging, based on the relative position of y-coordinate values of the centers of the horizontal segments extracted in the first step, whether the horizontal segments extracted in the first step, whether the horizontal segments constitute upper segments or lower segments of the horizontal strokes of a character or a graphic symbol formed by the horizontal segments, within said upper and lower region;

judging, based on the relative position of x-coordinate values of the centers of the vertical segments extracted in the second step, whether the vertical segments constitute right segments or left segments of the vertical strokes of a character or a graphic symbol formed by the vertical segments, within said right-hand and left-hand regions;

storing as horizontal boundary information upper and lower segments extracted in the first step and a judgment result obtained in the third step;

storing as vertical boundary information right and left segments extracted in the second step and a judgment result obtained in the fourth step; and

enlarging or reducing the character or the graphic symbol indicated by the outline data by referring to the horizontal boundary information stored in the fifth step and the vertical boundary information stored in the sixth step and developing it into bit map data.

5,579,407

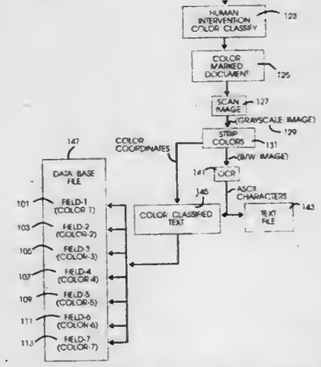
OPTICAL CHARACTER CLASSIFICATION

James D. Murez, 804 Main St., Venice, Calif. 90291

Continuation of Ser. No. 871,939, Apr. 21, 1992, abandoned. This application Sep. 2, 1993, Ser. No. 116,221

Int. Cl.[6] G06K *9/46*

U.S. Cl. 382—164 **8 Claims**



5. A process for classifying each one of a plurality of different portions of highlighted text information into text data fields, each portion being highlighted with one of a plurality of colors, each color having a corresponding graylevel, comprising the steps of:

scanning a printed form having at least a plurality of portions of the text information highlighted with a highlighting color, to produce an image of said form;

detecting, in said image, a respective highlighting graylevel corresponding to each highlighting color;

associating each of said text data fields with one of a plurality of graylevel ranges;

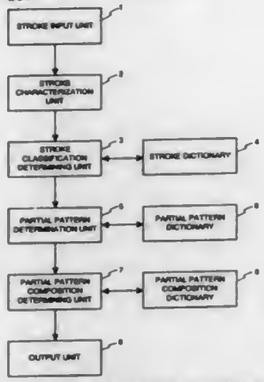
classifying each highlighted portion of text into a text data field by determining into which one of the plurality of graylevel ranges the highlighting graylevel falls, and associating the highlighted portion of text with the text data field corresponding to the determined graylevel range.

VOL 1192 ISS 4 NO 26 1996

5,579,408
CHARACTER RECOGNITION METHOD AND APPARATUS

Katsuhiko Sakaguchi, Kawasaki; Shigeki Mori, Koshigaya; Kazuhiro Matsubayashi, Yokohama, and Tsunekazu Arai, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 976,376, Nov. 13, 1992, abandoned.
This application Feb. 6, 1995, Ser. No. 384,683
Claims priority, application Japan, Nov. 14, 1991, 3-299264
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—187 **32 Claims**



1. A character recognition apparatus comprising:
a partial pattern dictionary for registering partial patterns of character images in a form of data indicating strokes, the data for each partial pattern are ordered in a predetermined rule which is independent of a stroke input sequence of a character image;
a partial pattern composition dictionary for registering character images which are composed of a single or a plurality of partial patterns;
input means for inputting strokes of a character image to be recognized;
obtaining means for obtaining data indicating strokes inputted by said input means;
sorting means for sorting the data obtained by said obtaining means in accordance with the predetermined rule;
first extraction means for extracting a single or plurality of partial patterns by searching said partial pattern dictionary based upon the data sorted by said sorting means;
second extraction means for extracting a pertinent character by searching said partial pattern composition dictionary with the partial pattern which is obtained by said first extraction means; and
output means for outputting a result of character recognition based on the searched character which is obtained by said second extraction means.

5,579,409
METHODS FOR DETERMINING THE EXTERIOR POINTS OF AN OBJECT IN A BACKGROUND

Akhileswar G. Vaidyanathan, and Hooshmand M. Kalayeh, both of Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 999,702, Dec. 31, 1992, Pat. No. 5,371,810, which is a continuation-in-part of Ser. No. 767,339, Sep. 27, 1991, Pat. No. 5,481,620. This application Nov. 30, 1993, Ser. No. 159,641
Int. Cl.[6] G06K *9/46*
U.S. Cl. 382—203 **22 Claims**

1. A method for determining the exterior points of an object in a background, comprising the steps of:
(a) generating an image of the object and the background;

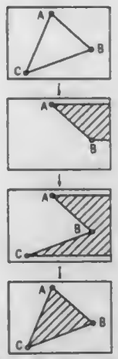


(b) searching the image for the object;
(c) determining the perimeter points of the object, each perimeter point having a row-position coordinate value and a column-position coordinate value;
(d) creating a perimeter buffer, the perimeter buffer comprising the perimeter points;
(e) sorting the perimeter points in the perimeter buffer first by row and then by column to create a row-column sorted perimeter buffer; and
(f) designating as the exterior points of the object all the points on each row which are a first predetermined number of pixels before the perimeter point having the lowest column-position coordinate value and a second predetermined number of pixels beyond the perimeter point having the highest column-position coordinate value for each respective row.

5,579,410
REGION FILLING CIRCUIT AND METHOD OF FILLING A REGION

Yasuhiro Ami, and Tadahiko Komatsu, both of Hyogo, Japan, assignors to Mitsubishi Electric Semiconductor Software Corporation, Hyogo, Japan

Continuation-in-part of Ser. No. 130,496, Oct. 1, 1993, abandoned. This application Jun. 17, 1994, Ser. No. 262,051
Claims priority, application Japan, Oct. 9, 1992, 4-271484
Int. Cl.[6] G06K *9/46*
U.S. Cl. 382—203 **3 Claims**

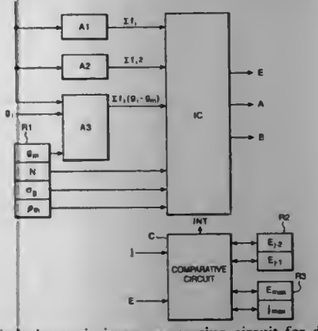


1. A region filling circuit to be connected to a microcomputer and a memory for filling a pattern through inversion of bit data corresponding to each of a plurality of pixels forming said pattern, comprising:
a bit assignment circuit for holding assigning data of bits to be filled in a filling area on the basis of coordinate data of a filling starting position and a filling end position provided by said microcomputer, each bit of the assigning data to be filled being at either a first bit level or a second bit level;
a register means for storing address data specifying the filling area including address data of the filling starting position and address of the filling end position;
a circuit for maintaining the bit level of each bit of the assigning data to be filled at its respective bit level when the filling starting position and the filling end position are included in the filling area, and outputting the bit level of each bit of the assigning data to be filled at the first bit level when the filling starting position and the filling end position are not included in the filling area;
means for reading out bit data from the memory in response to address data from said registers means;
an inverting circuit for performing an exclusive OR operation between the bit data read out from memory and the assigning data of bits to be filled from the bit assignment circuit, the bit level of each bit of the read out bit data being inverted when the bit level of the corresponding bit of the assigning data is at the first bit level;
means in the register means for sequentially incrementing the address data specifying the filling area stored in the plurality of registers beginning with the address data of the filling starting position; and
a decision circuit for comparing each sequentially incremented address data with the address data of the filling end position and determining a completion of filling when the comparing indicates correspondence.

5,579,411
HIGH-SPEED CIRCUIT FOR PERFORMING PATTERN MATCHING OF IMAGE DATA AND THE LIKE SUITABLE FOR LARGE SCALE INTEGRATION IMPLEMENTATION

Guoliang Shou; Sunao Takatori, and Makoto Yamamoto, all of Tokyo, Japan, assignors to Yozan Inc., Tokyo, and Sharp Corporation, Osaka, both of Japan

Continuation of Ser. No. 108,423, Aug. 19, 1993, abandoned. This application Apr. 21, 1995, Ser. No. 426,587
Claims priority, application Japan, Aug. 21, 1992, 4-245657
Int. Cl.[6] G06K *9/62*
U.S. Cl. 382—217 **13 Claims**



1. A digital electronic image processing circuit for detecting a pattern in an image, said circuit comprising:
an input signal line receiving a series of digital image pixel values, each pixel value representing a measurement of lightness of a region of an image;
first, second and third arithmetic circuits having first, second and third outputs respectively, said first, second and third arithmetic circuits receiving a common input on said input signal line, said first, second and third outputs connected in parallel to a fourth circuit;
a gamma register storing a series of template pixel values and communicating the template pixel values to said third arithmetic circuit, the template pixel values representing the pattern;
wherein said first arithmetic circuit generates an output signal characterized as a sum of image pixel values;
wherein said second arithmetic circuit generates an output signal characterized as a sum of squares of image pixel values;
wherein said third arithmetic circuit generates an output signal characterized as:

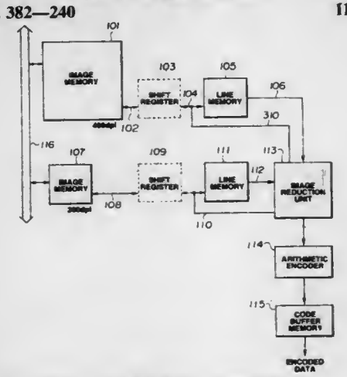
$$\Sigma fi(gi-gm)$$

where fi represent the image pixel values, and
where gi represent the template pixel values; and
wherein the fourth circuit generates an output signal representing a measure of similarity between said template pixel values and said input pixel values, thereby detecting the pattern in the image.

5,579,412
IMAGE PROCESSING APPARATUS

Tsutomu Ando, Zama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 148,342, Nov. 8, 1993, abandoned. This application May 17, 1995, Ser. No. 443,387
Claims priority, application Japan, Nov. 13, 1992, 4-303861
Int. Cl.[6] G06K *9/36;9/46*
U.S. Cl. 382—240 **11 Claims**



1. An image processing apparatus comprising:
first storage means for storing first image data;
second storage means for storing image data which is different from the image data stored in said first storage means;
conversion means for converting a resolution of the image data read from said first storage means and said second storage means to reduce the resolution of the read image data; and
encoding means for encoding the image data read from said first storage means and said second storage means,
wherein, while the first image data having a first resolution read from said first storage means is being converted by said conversion means into a second image data having a second resolution, the first image data having the first resolution is encoded by said encoding means with reference to the second image data having the second resolution from said conversion means, and the second image data having the second resolution is stored in said second storage means, and
wherein, while the second image data having the second resolution read from said second storage means is being converted by said conversion means into a third image data having a third resolution, the second image data having the second resolution is encoded by said encoding means with reference to the third image data having the third resolution from said conversion means, and the third image data having the third resolution is stored in said first storage

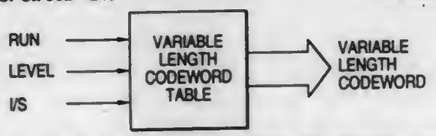
means in which the image data having the first resolution has previously been stored.

5,579,413

PICTURE DATA ENCODING METHOD

Gisle Bjontegaard, Myrvoll, Norway, assignor to Teledirektoratets Forskningsavdeling, Kjeller, Norway

PCT No. PCT/NO93/00038, § 371 Date Sep. 8, 1994, § 102(e) Date Sep. 8, 1994, PCT Pub. No. WO93/18616, PCT Pub. Date Sep. 16, 1993
PCT Filed Mar. 10, 1993, Ser. No. 302,660
Claims priority, application Norway, Mar. 11, 1992, 92.0956
Int. Cl.[6] G06K 9/36
U.S. Cl. 382—248 5 Claims



1. A method of converting a transformed and quantized picture block data signal into a variable length encoded data signal, the picture block data signal indicative of plural transformed and quantized two-dimensional picture blocks each defined by a corresponding matrix of zero and non-zero quantized transform coefficients in which the non-zero quantized transform coefficients thereof are concentrated in a block corner, said method comprising:

converting each picture block of the picture block data signal into a series of successive event data indicative of a sequence of the quantized transform coefficients along a predetermined run direction within each picture block, each event data containing three data parameters, a first of the three data parameters being a run length indicative of a number of the zero quantized transform coefficients along the predetermined run direction between a current non-zero quantized transform coefficient and an immediately preceding non-zero quantized transform coefficient, a second of the three data parameters being a value of the current non-zero quantized transform coefficient, and a third of the three data parameters indicating whether the current non-zero quantized transform coefficient is a final non-zero quantized transform coefficient along the predetermined run direction within each block; and

applying the series of successive event data to a predetermined codeword look-up data table to convert the series of successive event data to corresponding variable length codewords which are output as the variable length encoded data signal.

5,579,414

OCR IMAGE PREPROCESSING METHOD FOR IMAGE ENHANCEMENT OF SCANNED DOCUMENTS BY REVERSING INVERT TEXT

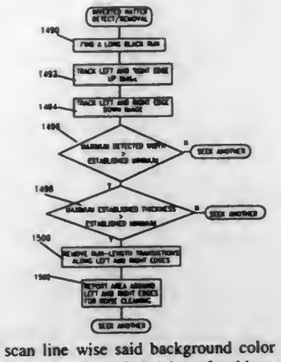
Bruce B. Fast, 2600 Prindle Rd., Belmont, Calif. 94402, and Dana R. Allen, 1745 Hunt Dr., Burlingame, Calif. 94010

Division of Ser. No. 963,051, Oct. 19, 1992, abandoned. This application May 22, 1995, Ser. No. 447,095
Int. Cl.[6] G06K 9/40
U.S. Cl. 382—254 1 Claim

1. A scanned document run-length coded image enhancement process for reversing image sections of reverse printed textual matter contained in said run-length coded image, each of said image sections having a left and a right border, and having a black background color and a white foreground color, said process including the steps for

determining one of said image sections containing reverse print information

and subdividing said image section into an upper section and a lower section,



reversing scan line wise said background color and said foreground color at the left border of said upper and lower section,

reversing scan line wise said background color and said foreground color at the right border of said image section;

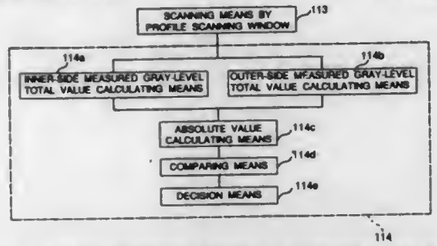
said reversing of background and foreground color including summation of run-length segments left and right of a border in one run-length segment with the color assignment of the run-length segment on the left side of said border.

5,579,415

COMPUTER IMPLEMENTED METHOD OF RECOGNIZING A POITION OF AN OBJECT

Misuzu Takano, Osaka-fu; Yoshihiro Itsuzaki, Nara-ken; Kinji Horikami; Masaya Nakao, both of Osaka-fu, and Kazumasa Okumura, Kyoto-fu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Continuation-in-part of Ser. No. 283,170, Aug. 3, 1994. This application Aug. 29, 1994, Ser. No. 294,858
Claims priority, application Japan, Aug. 6, 1993, 5-195964; Aug. 31, 1993, 5-215345
Int. Cl.[6] G06K 9/20
U.S. Cl. 382—282 18 Claims



1. A computer implemented method of recognizing a position of an object, comprising the steps of:

picking up an image of an object having a circular arc shape as at least part of its profile using an image pickup device;

converting image information of the picked-up image into gray image data and storing the gray image data in a storage device;

scanning the stored gray image data with a profile scanning window composed of a plurality of gray-level detection areas crossing an imaginary scanning circular profile corresponding to the circular arc shape on the gray image and arranged circularly along the imaginary scanning circular profile and using it to measure a gray-level representative value of an inner-side gray-level detection area and a gray-level representative value of an outer-side gray-level detection area which are inside and outside of the scanning circular profile;

calculating, at each scanning position during scanning and for each gray-level detection area, an absolute value of a difference between the measured gray-level representative value of the inner-side gray-level detection area and the measured gray-level representative value of the outer-side gray-level detection area;

determining a number of gray-level detection areas in which the absolute value of the difference is larger than a specified gray-level threshold value;

detecting a position of the profile scanning window where the calculated number of gray-level detection areas becomes a maximum with respect to their neighborhood, as a position of the circular arc shape of the object; and

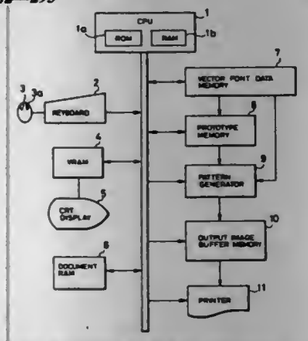
recognizing the position of the object from the detected position of the circular arc shape thereof.

5,579,416

CHARACTER PROCESSING APPARATUS FOR SELECTIVELY MODIFYING A FONT PATTERN

Yukari Shibuya, Kawasaki; Kunio Seto, Inagi; Masaki Hamada, Tokyo, and Akifumi Shirasaka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 924,784, Aug. 4, 1992, abandoned, which is a continuation of Ser. No. 666,439, Mar. 11, 1991, abandoned, which is a continuation of Ser. No. 217,881, Jun. 16, 1988, abandoned. This application May 23, 1994, Ser. No. 247,418
Claims priority, application Japan, Oct. 27, 1986, 61-253664; Oct. 27, 1986, 61-255123
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—293 54 Claims



1. A character processing apparatus comprising:

designating means for designating a desired one or more of a plurality of items of modification information for each graphic pattern in order to generate a plurality of graphic patterns;

parameter memory means for storing type parameters to generate a plurality of modified font patterns for all character patterns of a single font, the single font being represented by vector data, and the type parameters being based on the designated one or more items of modification information;

means for generating a request for display;

display means which can display a plurality of graphic patterns corresponding to the plurality of modified font patterns each corresponding to the same character of the single font on the basis of the type parameters stored in said parameter memory means in response to the request generated by said generating means;

selecting means for selecting one of the plurality of graphic patterns that correspond to the plurality of modified patterns that are displayed by said display means; and

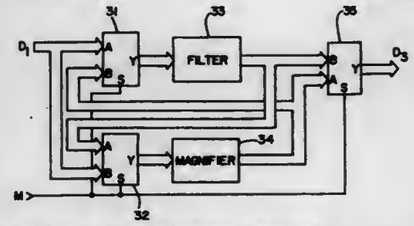
replacing means for replacing all character patterns existing in a designated area in a font train that have been input from an input means and displayed by said display means with a corresponding replacement character pattern based on the type parameters corresponding to the graphic pattern corresponding to the modified font pattern selected by said selecting means, wherein the character patterns in the designated area may be different from the one graphic pattern corresponding to the character pattern of the single font displayed by said display means.

5,579,417

IMAGE PROCESSING APPARATUS

Yukio Sakano, Fuchu, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 10,259, Jan. 28, 1993, abandoned. This application Apr. 26, 1995, Ser. No. 429,007
Claims priority, application Japan, Jan. 28, 1992, 4-013243
Int. Cl.[6] G06K 9/32
U.S. Cl. 382—298 8 Claims



1. An image processing apparatus, comprising:

a) filtering means for enhancing or smoothing edges of an image signal, the filtering means having at least a filtering means input and a filtering means output;

b) magnifying means for magnifying the image signal, the magnifying means having at least a magnifying means input and a magnifying means output; and

c) control means, responsive to a magnification ratio signal and connected to the filtering means and the magnifying means, for changing connections among:

1) the filtering means input,

2) the filtering means output,

3) the magnifying means input, and

4) the magnifying means output

so as to change the order in which said image signal passes through said filtering means and said magnifying means, wherein the control means constitutes means for changing between a first configuration and a second configuration, wherein:

A) in the first configuration, the filtering means input is connected to be responsive to the magnifying means output, and the magnifying means input is not responsive to the filtering means output; and

B) in the second configuration, the magnifying means input is connected to be responsive to the filtering means output, and the filtering means input is not responsive to the magnifying means output.

5,579,418

IMAGE INTERPOLATION APPARATUS

Leon C. Williams, Walworth, and Terri A. Clingerman, Palmyra, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

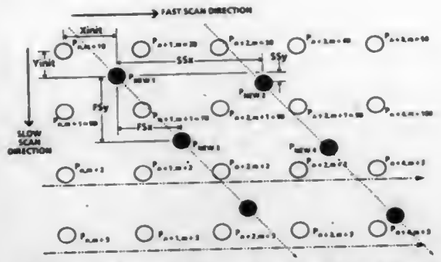
Filed Dec. 12, 1994, Ser. No. 355,443
Int. Cl.[6] G06K 9/42
U.S. Cl. 382—300 12 Claims

1. A method of providing interpolated video image signals from original video image signals representing a document image, each video image signal defined in terms of intensity and position in the original video image, comprising the steps:

receiving an original document image from an original video image signal source;

storing enough of the received video image signals in a page memory to overlap an entire scan line of interpolated video signals;

receiving a set of values indicating an interpolation requirement: a slow scan initial value Xinit, a fast scan initial value Yinit, a



fast scan x offset value FSx, a fast scan y offset value FSy, a slow scan x offset value SSx, and a slow scan y offset value SSy;

for each new video image signal generating from said received values a reference video image signal within the document image, and a pair of interpolation coefficients for interpolating new video image signal values;

for the new video image signal, retrieving to an interpolation calculator from the page memory a set of original video image signals including said reference video image signal, and three other video image signals whose position is a predetermined function of the position of said reference video image signals;

generating a new video image signal having an intensity and position as a function of the set of original video image signals, wherein the step of generating for each new video image signal from said determined values a reference pixel within the image, and a pair of interpolation coefficients for interpolating new pixel values is in accordance with the functions:

a=Fraction [Xinit+SSx (scanline)+FSx(pixel)]

b=Fraction of [Yinit+SSy(scanline)+FSy(pixel)]

n=Integer[Xinit+SSx(scanline)+FSx(pixel)]

m=Integer of[Yinit+SSy(scanline)+FSy(pixel)]

where

a is a fast scan coefficient of video image signal

b is a slow scan coefficient of video image signal

n is the position of the video image signals in the fast scan direction; and

m is the position of the video image signal in the slow scan direction;

pixel is the position of the new video image signal in a scan line of the new document image; and

scanline is the position of the new scan line in the new document image.

5,579,419

IMAGE STORING/RETRIEVING APPARATUS USING A MARK SHEET TO ENABLE USER SELECTION OF IMAGES

Hiroyuki Yaguchi, Tokyo; Keishi Inaba, Yokohama; Hidehiko Asai, Kawasaki; Makoto Kikugawa, Tokyo; Hideyuki Makitani, Fuchu; Kunio Yoshihara, Sagamihara; Hirohiko Itoh, and Hidenori Ozaki, both of Kawasaki, all of Japan, assignors to Canon Kabusbiki Kaisha, Tokyo, Japan

Filed May 17, 1993, Ser. No. 61,743

Claims priority, application Japan, May 19, 1992, 6-126142

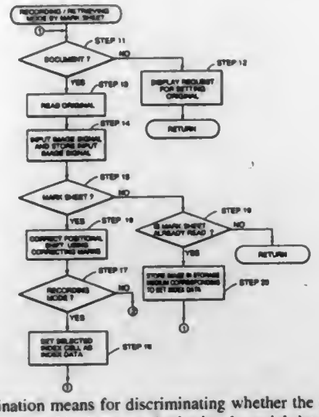
Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—305 **28 Claims**

1. An image storing apparatus for storing an image in a storage medium on the basis of data written on a mark sheet having a marking area used to set index data, said image storing apparatus comprising:

reading means for reading an image of the mark sheet;

a memory for storing the image of the mark sheet which has been read by said reading means;



discrimination means for discriminating whether the mark sheet was read upside down on the basis of special data contained in the image of the mark sheet which has been read by said reading means;

correction means for correcting a positional relation of top and bottom of the image of the mark sheet which has been stored in said memory when said discrimination means discriminates that the mark sheet was read upside down; and

setting means for detecting a marked marking area on the basis of the image of the mark sheet which has been corrected by said correction means and for setting the index data of the image to be stored in said storage medium.

5,579,420

OPTICAL FILTER

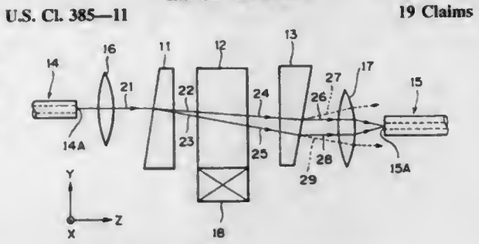
Nobuhiro Fukushima, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Feb. 7, 1996, Ser. No. 598,190

Claims priority, application Japan, Aug. 23, 1995, 7-214732

Int. Cl.[6] G02B *6/00*

U.S. Cl. 385—11 **19 Claims**



1. An optical filter comprising:

a first birefringent element having a first principal axis, for splitting an input beam into a first beam having a plane of polarization perpendicular to said first principal axis and a second beam having a plane of polarization parallel to said first principal axis to output said first beam and said second beam;

a second birefringent element having a second principal axis inclined at an angle to said first principal axis, for receiving said first beam and said second beam, and outputting a third beam converted in polarized condition from said first beam and a fourth beam converted in polarized condition from said second beam;

a third birefringent element provided substantially symmetrically with said first birefringent element with respect to said second birefringent element and having a third principal axis, for receiving said third beam and said fourth beam, splitting said third beam into a fifth beam having a plane of polarization perpendicular to said third principal axis and a sixth beam having a plane of polarization parallel to said third principal axis to output said fifth beam and said sixth beam, and splitting said fourth beam into a seventh beam having a plane of polarization perpendicular to said third principal axis and an eighth beam having a plane of polarization parallel to said third principal axis to output said seventh beam and said eighth beam; and

adjusting means for changing vector of birefringence in said second birefringent element;

said first, second, and third birefringent elements being arranged in this order on an optical path leading from an input port to an output port;

said optical path comprising a first optical path including said first, third, and fifth beams and a second optical path including said second, fourth, and eighth beams;

said sixth and seventh beams being deviated from said optical path to be removed.

5,579,421

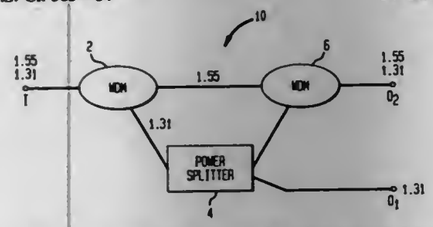
OPTICAL INTEGRATED CIRCUITS AND METHODS

Charles Duvall, Atlanta; Ian A. White, Roswell, and Henry H. Yaffe, Dunwoody, all of Ga., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 21, 1995, Ser. No. 560,755

Int. Cl.[6] G02B *6/12;6/28*

U.S. Cl. 385—14 **34 Claims**



1. An optical circuit for receiving a first optical signal at a first wavelength on an input line and for splitting said first optical signal onto a first output line and a second output line said optical circuit comprising:

a first wavelength division multiplexer;

a power splitter; and

a second wavelength division multiplexer;

said first wavelength division multiplexer for receiving said first optical signal at said first wavelength on said input line and for routing said first optical signal to said power splitter;

said power splitter outputting a first portion of said first optical signal on said first output line and routing a second portion of said first optical signal to said second wavelength division multiplexer;

said second wavelength division multiplexer outputting said second portion of said first optical signal on said second output line;

said first wavelength division multiplexer passing a second optical signal at a second wavelength to said second wavelength division multiplexer and said second wavelength division multiplexer outputting said second optical signal on said second output line;

wherein said first optical signal at said first wavelength is routed onto said first and second output lines and said second optical signal at said second wavelength is supplied to said second output line and not to said first output line.

5,579,422

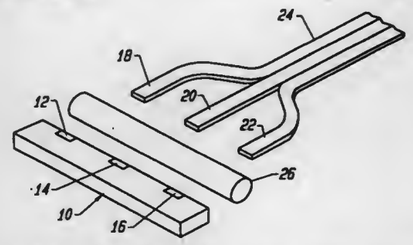
APPARATUS FOR COUPLING A MULTIPLE EMITTER LASER DIODE TO A MULTIMODE OPTICAL FIBER

David F. Head, Los Gatos, and Thomas M. Baer, Mountain View, both of Calif., assignors to Spectra-Physics Lasers, Inc., Mountain View, Calif.

Continuation of Ser. No. 841,610, Feb. 25, 1992, Pat. No. 5,436,990, which is a continuation of Ser. No. 614,437, Nov. 16, 1990, Pat. No. 5,127,068. This application Jun. 1, 1995, Ser. No. 457,466

Int. Cl.[6] G02B *6/32*

U.S. Cl. 385—34 **16 Claims**



1. A laser system, comprising:

a laser diode bar, said diode bar with a plurality of emitter regions, each emitting region with an output facet, said diode bar having output in a high numerical aperture direction and a low numerical aperture direction,

a microlens having a linear axis oriented substantially perpendicular to the emission path of radiation from said emitter regions, positioned in the emission path of said emitter regions, spaced from said diode bar by a distance selected to achieve a desired modification of the divergence of the diode bar output in its high numerical aperture direction,

a power source coupled to the laser diode bar.

5,579,423

OPTICAL FIBER LASER DEVICE

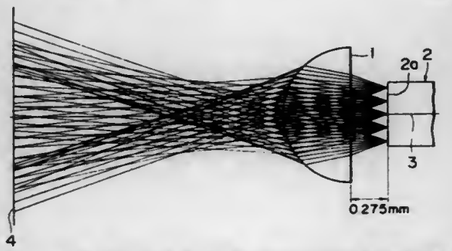
Akio Tanaka, Chiba; Toru Hirano, Hamamatsu; Takuya Kohno, Tokyo, and Masami Ohsawa, Saitama-ken, all of Japan, assignors to Lederle (Japan), Ltd., Tokyo; Hamamatsu Photonics K.K., Shizuoka-ken, and Moritex Corp., Tokyo, all of Japan

Filed Jul. 28, 1995, Ser. No. 508,449

Claims priority, application Japan, Aug. 3, 1994, 6-211662

Int. Cl.[6] G02B *6/00*

U.S. Cl. 385—35 **1 Claim**



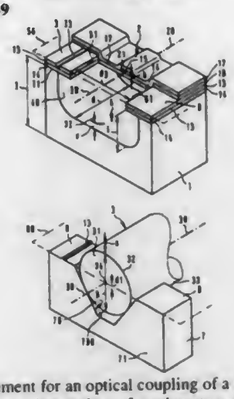
1. An optical fiber laser device for photodynamic therapy characterized in that a laser outgoing end of optical fibers whose diameter of a laser guiding portion (core) is d is disposed on a center optical axis on the plane side of a semispherical lens having a diameter D, which is formed of a material which is transparent with respect to a wavelength of a laser beam and of which refractive index n_d is less than 1.6 so that a spacing L therebetween is $0.35 \geqq L \geqq 0.2$ mm, and the relationship between the diameter D of said semispherical lens and the diameter d of the laser guiding portion (core) is $D/d \geqq 2.5$.

5,579,424

ARRANGEMENT FOR AN OPTICAL COUPLING OF A FIBER TO A PLANAR OPTICAL WAVEGUIDE AND A METHOD OF FORMING THE ARRANGEMENT

Hartmut Schneider, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 242,263, May 13, 1994, abandoned.
This application Nov. 21, 1995, Ser. No. 561,137
Claims priority, application Germany, Jun. 18, 1993, 43 20 249.7
Int. Cl.[6] G02B 6/30
U.S. Cl. 385—49 18 Claims



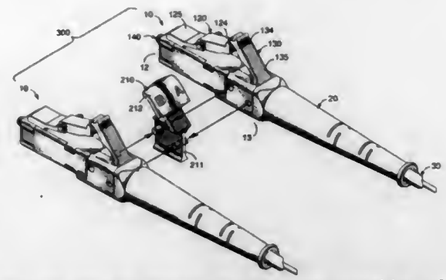
1. An arrangement for an optical coupling of a planar waveguide integrated on a carrying surface of a substrate and an optical fiber, said arrangement comprising a first substrate having a carrying surface with a trench-like depression in said carrying surface adjacent an edge of the substrate, a planar waveguide comprising a central longitudinal axis extending parallel to the carrier surface and an end face extending essentially vertically relative to said longitudinal axis and facing toward the first-mentioned edge of the substrate at a distance from said edge so that the trench-like depression is fashioned in the carrier surface between the end face of the planar waveguide and the edge of the substrate, said trench-like depression extending between two planar surfaces arranged on both sides of the longitudinal axis of the planar waveguide and forming a first common plane extending from the edge of the substrate in the direction of the longitudinal axis of the planar waveguide up to the end face thereof; and a fiber holding part having a recess between two planar surfaces of said part arranged on a second common plane, said fiber being secured in the recess with the axis of the fiber being at a distance d_1 relative to the second common plane of the planar surface of the holder part so that when the planar surfaces of the second common plane of the holder part engage the two planar surfaces of the substrate, the longitudinal axis of the fiber is essentially at the same height as the longitudinal axis of the planar waveguide with reference to the first common plane of said substrate and the fiber is arranged in the depression of the substrate with a lateral play to said axis that extends over an entire distance from the first-mentioned edge to the end face of the planar waveguide.

5,579,425

ANTI-SNAG DUPLEX CONNECTOR

Norman R. Lampert, Norcross, Ga., and George J. Shevchuk, Old Bridge, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 30, 1995, Ser. No. 520,809
Int. Cl.[6] G02B 6/38
U.S. Cl. 385—59 23 Claims



1. A duplex connector comprising a pair of simplex connectors joined by a duplex clip, each simplex connector comprising a generally rectangular housing having: (i) a plug end for insertion into a mating receptacle, (ii) a cable-entrance end for receiving a cable containing a transmission medium, and (iii) top-, bottom-, left-, and right-side surfaces; said duplex clip comprising a first planar structure having one or more pins which extend in a direction that is generally perpendicular to the first planar structure, said left- and right-side surfaces including one or more pin-receiving holes therein for interconnection with the duplex clip.

CHARACTERIZED IN THAT:

each housing further includes a latch mounted on its top-side surface for securing it to a receptacle, said latch being movable toward the bottom-side surface of the housing; and

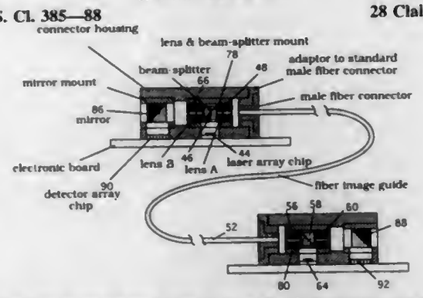
the duplex connector further includes at least one cantilever member for slidably engaging the latch to release the housing from the mating receptacle, said cantilever member forming an acute angle with the top-side surface of the housing that points in a direction away from the plug end of the housing toward the cable-entrance thereof.

5,579,426

FIBER IMAGE GUIDE BASED BIT-PARALLEL COMPUTER INTERCONNECT

Yao Li, Mammouth Junction, and Ting Wang, Princeton, both of N.J., assignors to NEC Research Institutes, Inc., Princeton, N.J.

Filed Nov. 18, 1994, Ser. No. 341,772
Int. Cl.[6] G02B 6/36
U.S. Cl. 385—88 28 Claims



1. A fiber image guide based bit-parallel interconnect comprising:

a fiber image guide comprising material selected from the group consisting of a flexible fiber bundle guide, a rigid fiber bundle guide which can be bent only while heated to a predetermined temperature, a rigid and unbendable graded-index glass guide and a flexible graded-index plastic or polymer guide;

a laser array for providing a bit-parallel optical format signal;

a first imaging means for imaging the bit-parallel optical format signal onto a first end of said fiber image guide;

a second imaging means for imaging the bit-parallel optical format signal from second end of said fiber image guide as an output data pattern onto an output plane, and

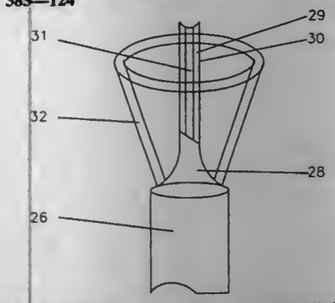
detector means disposed at said output plane for converting said output data pattern into electronic data.

5,579,427

GRADED INDEX SINGLE CRYSTAL OPTICAL FIBERS

S. Y. Rusanov; A. A. Yakovlev, and A. I. Zagumennyi, all of Moscow, Russian Federation, assignors to Ceram Optec Industries, Inc., East Longmeadow, Mass.

Filed Dec. 15, 1994, Ser. No. 356,844
Int. Cl.[6] G02B 6/18
U.S. Cl. 385—124 10 Claims



1. A graded refractive index single crystal optical fiber drawn from a doped single crystal:

wherein said doped single crystal comprises a pure single crystal material and at least one dopant homogeneously distributed in said material and being formed into a preform rod;

said optical fiber being grown from a melt region formed on said preform rod;

said optical fiber having a cross section with a central cross section having a different refractive index than an outer cross section;

said at least one dopant is distributed radially across said fiber's cross section so as to achieve said variation in refractive index of said fiber; and

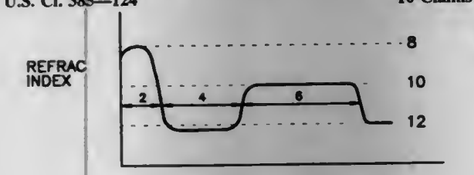
wherein if said dopant has a concentration in a solid single crystal fiber of C_s and a concentration in said melt region of C_l such that distribution coefficient $k=C_s/C_l$ is less than one, then said dopant concentration in said central cross section of said fiber is greater than in said outer cross section.

5,579,428

SOLITONS IN DISPERSION FLATTENED WAVEGUIDE

Alan F. Evans, Beaver Dams, and Donald B. Keck, Big Flats, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Jun. 7, 1995, Ser. No. 482,716
Int. Cl.[6] G02B 6/18
U.S. Cl. 385—124 10 Claims



5. A single mode optical waveguide fiber designed for use in a telecommunication system using soliton signal pulses, comprising:

a core glass region, having a refractive index profile, said index profile including at least two sub-sections;

a clad glass layer, having a substantially constant refractive index n_c, surrounding said core glass region, wherein at least a portion of the refractive index profile of at least one sub-section has a refractive index greater than n_c;

said single mode waveguide characterized by a total dispersion slope over a pre-selected wavelength range; and

wherein said telecommunication system incorporates at least one optical amplifier, having a substantially uniform gain over an operating wavelength range, which is coincident with at least a part of said pre-selected wavelength range, and coincident with a range of center wavelengths of a plurality of wavelength division multiplexed soliton signal pulses; and,

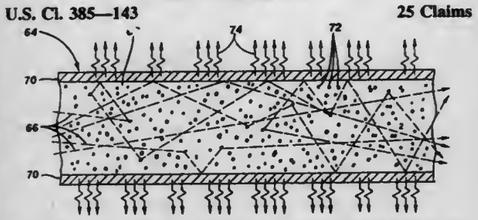
wherein the total dispersion slope is no greater than about 0.10 ps/nm^2-km over the coincident part of the pre-selected wavelength range, the operating wavelength range of said optical amplifier, and the range of center wavelengths of the soliton signal pulses.

5,579,429

LASER DYE DOPED FLUORESCENT OPTICAL FIBER AND METHOD OF PREPARATION OF THE SAME

Daniel Naum, Eugene, Oreg., assignor to DN Labs, Inc., Eugene, Oreg.

Filed Sep. 6, 1995, Ser. No. 524,066
Int. Cl.[6] G02B 6/16
U.S. Cl. 385—143 25 Claims



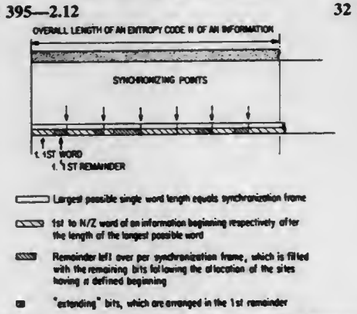
1. A fluorescent fiber for illumination comprising at least a core, the core being constructed by polymerization of a final mixture, the final mixture being constructed by adding a laser dye and a free radical initiator to an initial mixture, the initial mixture comprising a monomer and a cross-linking agent to cross-link the monomer, the monomer comprising between 35% and 70% by volume of the initial mixture.

5,579,430

DIGITAL ENCODING PROCESS

Bernhard Grill, Rednitzhembach; Karl-Heinz Brandenburg, Erlangen; Thomas Sporer, Fürth; Bernd Kürten, and Ernst Eberlein, both of Grossenseebach, all of Germany, assignors to Fraunhofer Gesellschaft zur Foerderung der angewandten Forschung e.V., Munich, Germany

Continuation of Ser. No. 169,768, Dec. 20, 1993, abandoned, which is a continuation of Ser. No. 768,239, Dec. 4, 1991, abandoned. This application Jan. 26, 1995, Ser. No. 380,135
Claims priority, application Germany, Apr. 17, 1989, 39 12 605.6
Int. Cl.[6] G01L 3/02;9/00
U.S. Cl. 395—2.12 32 Claims



1. A digital coding process for at least one of transmitting and storing acoustical signals, the process comprising the steps of:

sampling an acoustical signal to obtain samples;

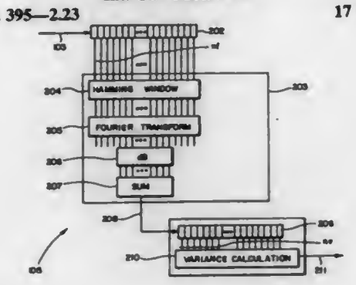
transforming the samples of said acoustical signal using a transform/filter bank into a sequence of second samples to thereby reproduce a spectral composition of said acoustical signal;
quantizing said sequence of second samples in accordance with the requirements with varying precision;
at least partially coding said sequence of second samples using an optimum encoder, and in which a corresponding decoding and inverse transformation takes place during reproduction of the acoustical signal;
correlating the occurrence probability of the quantized spectral coefficient to the length of the code utilizing a code in such a way that the more frequently said spectral coefficient occurs, the shorter the code word; and
allocating a code word to several elements of said sequence or to a value range to thereby reduce the size of the table of said encoder;
wherein the allocating step further comprising the steps of:
directly assigning a code word to only one part of the value range of an element of said sequence; and
assigning all values lying outside said partial range a common identifier and a special code.

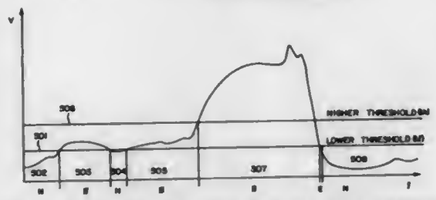
5,579,431

SPEECH DETECTION IN PRESENCE OF NOISE BY DETERMINING VARIANCE OVER TIME OF FREQUENCY BAND LIMITED ENERGY

Benjamin K. Reaves, Yamatotakada, Japan, assignor to Panasonic Technologies, Inc., Secaucus, N.J., and Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Oct. 5, 1992, Ser. No. 956,614
Int. Cl.[6] G10L *9/00*
U.S. Cl. 395—2.23 **17 Claims**





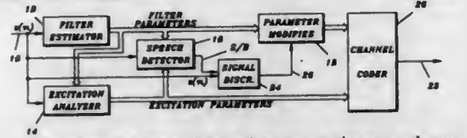
1. A device for detecting speech in an input signal comprising:
first determining means for determining a plurality of values representative of a plurality of frequency band limited energy within the signal, wherein the signal is sampled at a predetermined sampling rate in a single frequency band over a first plurality of frames, wherein each frame comprises a plurality of samples;
second determining means for receiving the plurality of values from said first determining means, and determining a variance of the frequency band limited energy of the signal the single frequency band over a second plurality of frames; and
third determining means for determining beginning and ending points of speech within the signal using the variance of the frequency band limited energy, wherein the third determining means comprises:
fourth determining means for determining a beginning of speech as occurring when the variance of the frequency band limited energy exceeds an upper threshold level and for determining an ending of speech as occurring when the variance of the frequency band limited energy falls below a lower threshold level, the upper threshold level being greater than the lower threshold level.

5,579,432

DISCRIMINATING BETWEEN STATIONARY AND NON-STATIONARY SIGNALS

Kari T. Wigren, Uppsala, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed May 25, 1994, Ser. No. 248,714
Claims priority, application Sweden, May 26, 1993, 9301798
Int. Cl.[6] G10L *3/02*
U.S. Cl. 395—2.23 **26 Claims**



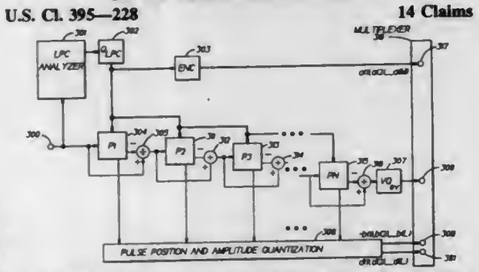
1. A method of discriminating between stationary and non-stationary signals, such as signals representing background sounds in a mobile radio communication system, said method comprising the steps of:
(a) estimating a statistical moment of a signal in each of N time sub windows T_p, where N>2, of a time window T of predetermined length;
(b) estimating a variation of the estimates obtained in step (a) as a measure of the stationarity of said signal; and
(c) determining whether the estimated variation obtained in step (b) exceeds a predetermined stationarity limit γ.

5,579,433

DIGITAL CODING OF SPEECH SIGNALS USING ANALYSIS FILTERING AND SYNTHESIS FILTERING

Kari J. Jarvinen, Tampere, Finland, assignor to Nokia Mobile Phones, Ltd., Salo, Finland

Filed May 7, 1993, Ser. No. 60,427
Claims priority, application Finland, May 11, 1992, 922128
Int. Cl.[6] G10L *3/02;9/00;5/00;7/00*
U.S. Cl. 395—228 **14 Claims**



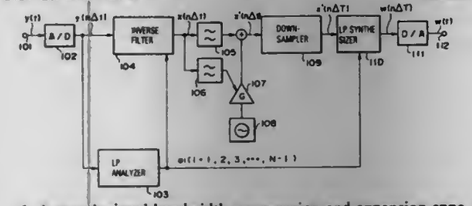
4. A method for performing digital speech coding, comprising the steps of:
forming, in a short term analyzer, a set of prediction parameters a(i) corresponding to an input speech signal, the prediction parameters being formed so as to characterize a short term spectrum of the input speech signal;
producing an excitation signal in an encoder comprised of a plurality of serially coupled coding blocks each having an analysis filter, a sample selection block, and a synthesis filter, the excitation signal comprising a number of samples and enabling a synthesis of a speech signal corresponding to the input speech signal when the excitation signal is used in conjunction with the prediction parameters; wherein
in a first coding block the analysis filter has an input for receiving the speech signal and in each coding block following the first coding block the analysis filter has an input for receiving a modified speech signal from which at least one partial excitation signal has been removed, each analysis filter further having an output for outputting speech signal sample values to the sample selection block, wherein the sample selection block selects K, sample values representing a selected partial excitation signal;
in each coding block, forming in the synthesis filter a synthesized speech signal corresponding to the selected partial excitation signal, the synthesis filter having an output providing a partial excitation synthesis result to an output of the coding block;
the method further including the steps of subtracting from the speech signal, for the first coding block, a partial excitation synthesis result that is output from the first coding block to generate a difference signal, and for each coding block following the first coding block, subtracting the partial excitation synthesis result that is output from the coding block from the difference signal that is generated for a previous coding block to obtain the difference signal; and
supplying the difference signal as a modified speech signal to the input of the analysis filter of a next serially coupled coding block; wherein
the selected partial excitation signal obtained in each of the plurality of coding blocks is used in forming the excitation signal.

5,579,434

SPEECH SIGNAL BANDWIDTH COMPRESSION AND EXPANSION APPARATUS, AND BANDWIDTH COMPRESSING SPEECH SIGNAL TRANSMISSION METHOD, AND REPRODUCING METHOD

Yasushi Kudo, Kamakura, and Yoshiro Kokuryo, Tachikawa, both of Japan, assignors to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1994, Ser. No. 354,035
Claims priority, application Japan, Dec. 6, 1993, 5-305460
Int. Cl.[6] G01L *3/02*
U.S. Cl. 395—2.28 **11 Claims**



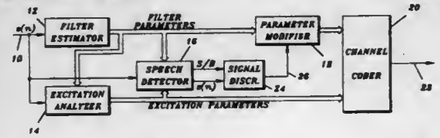
1. A speech signal bandwidth compression and expansion apparatus having a transmitting side and a receiving side, said transmitting side comprising:
linear prediction analyzer means for extracting system parameters from a speech signal to be transmitted;
a linear prediction system for conducting inverse filter processing to obtain a prediction residual signal from said speech signal by using said system parameters;
filter means for removing a high frequency band component of said prediction residual signal;
down-sampler means for lowering a sampling rate of an output signal of said filter means by a predetermined rate to obtain a baseband signal; and
linear prediction synthesizer means for obtaining a narrow band time series signal from said baseband signal by using said system parameters, and
said receiving side comprising:
a linear prediction system for conducting inverse filter processing to generate a reproduced baseband signal from said narrow band time series signal;
up-sampler means for raising a sampling rate of said reproduced baseband signal by a predetermined rate to obtain a reproduced time series signal;
means for generating a high frequency band component from said reproduced time series signal;
means for adding said generated high frequency band component to said reproduced baseband signal to obtain an excitation signal; and
linear prediction synthesizer means for deriving a reproduced speech signal from said excitation signal by using said system parameters.

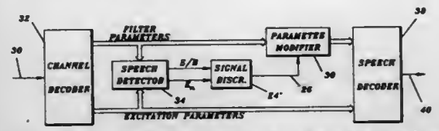
5,579,435

DISCRIMINATING BETWEEN STATIONARY AND NON-STATIONARY SIGNALS

Klas F. J. Jansson, Sundbyberg, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Nov. 1, 1994, Ser. No. 332,740
Claims priority, application Sweden, Nov. 2, 1993, 9303613
Int. Cl.[6] G01L *3/00;3/02*
U.S. Cl. 395—2.42 **12 Claims**





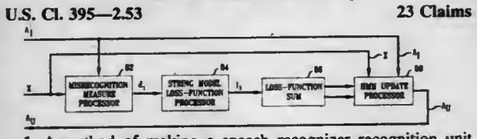
1. A method of discriminating between stationary and non-stationary frames containing signals representing background sounds in a mobile radio communication system, comprising the steps of:
(a) forming a set of first consecutive measures representing spectral changes in said signals from frame to frame;
(b) forming a second measure of the rate of spectral change of said signals from said first measures; and
(c) determining whether said second measure exceeds a predetermined stationarity limit γ.

5,579,436

RECOGNITION UNIT MODEL TRAINING BASED ON COMPETING WORD AND WORD STRING MODELS

Wu Chou, Piscataway, and Biing-Hwang Juang, Warren, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 846,484, Mar. 2, 1992. This application Mar. 15, 1993, Ser. No. 30,895
Int. Cl.[6] G10L *5/04;5/06*
U.S. Cl. 395—2.53 **23 Claims**



1. A method of making a speech recognizer recognition unit model database based on one or more known speech signals and a set of current recognizer recognition unit models, the method comprising the steps of:
receiving a known speech signal;

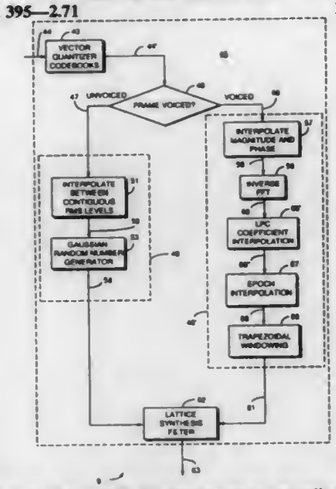
generating a first recognizer scoring signal based on the known speech signal and a current recognition unit model for that signal;
generating one or more other recognizer scoring signals, each such scoring signal based on the known speech signal and another current recognition unit model;
generating a misrecognition signal based on the first and other recognizer scoring signals;
based on a value of a predetermined loss function when applied to the misrecognition signal and the known speech signal, modifying one or more of the current recognition unit models to decrease the likelihood of misrecognizing an unknown speech signal; and
storing one or more modified recognition unit models in memory.

5,579,437

PITCH EPOCH SYNCHRONOUS LINEAR PREDICTIVE CODING VOCODER AND METHOD

Bruce A. Fette, Mesa; Sean S. You, and Chad S. Bergstrom, both of Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 68,325, May 28, 1993, Pat. No. 5,504,834.
This application Jul. 17, 1995, Ser. No. 502,991
Int. Cl.[6] G10L *5/02;9/00*
U.S. Cl. 395—2.71 **18 Claims**



14. A method for pitch epoch synchronous encoding of speech signals and decoding digital signals representing encoded speech signals, said method comprising steps of:
inputting an input signal; and, when said input signal comprises an input speech signal:
processing the input speech signal to characterize qualities including linear predictive coding coefficients;
determining whether the input speech signal comprises voiced speech or unvoiced speech;
analyzing input speech signals using frequency domain techniques when input speech signals comprise voiced speech to provide an excitation function, wherein said step of analyzing input speech signals using frequency domain techniques comprises steps of:
determining epoch excitation positions within a frame of speech data;
determining fractional pitch;
determining a group of synchronous linear predictive coding (LPC) coefficients by performing epoch-synchronous LPC analysis; and
selecting an interpolation excitation target from within a particular epoch of speech data to provide a target excitation function, wherein the target excitation function comprises per-epoch speech parameters and wherein said encoding step includes encoding fractional pitch and synchronous LPC coefficients; and
encoding the excitation function to provide a digital output signal representing the input speech signal; and, when said input signal comprises an input digital signal representing encoded speech signals:
determining voicing of the input digital signal, synthesizing speech signals using frequency domain techniques when the input digital signal represents voiced speech; and, when the input digital signal represents unvoiced speech:
decoding a series of contiguous root-mean-square (RMS) amplitudes;
interpolating between the contiguous RMS amplitudes to regenerate an excitation envelope;
modulating a noise generator with the excitation envelope to provide unvoiced excitation; and
synthesizing unvoiced speech from the unvoiced excitation; and, when the input digital signal represents voiced speech:
interpolating phases between transmitted phases to fill an array describing phase with interpolated phase data;
inverse fast Fourier transforming said interpolated phase data to provide reconstructed target epochs;
interpolating linear predictive coding (LPC) coefficients to simulate LPC coefficients elided in a transmitter to provide reconstructed LPC coefficients;
interpolating between the reconstructed target epochs to provide a reconstructed voiced excitation function; and
synthesizing speech signals from the reconstructed voiced excitation function and the reconstructed LPC coefficients with a lattice synthesis filter to provide reconstructed speech signals.

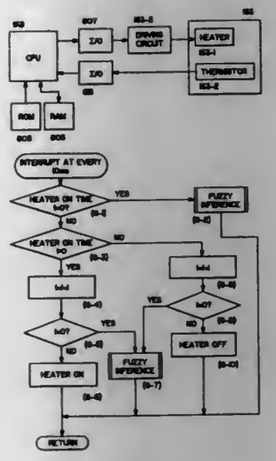
5,579,438

FUZZY INFERENCE IMAGE FORMING APPARATUS

Satoshi Kaneko; Tokuharu Kaneko; Hiroaki Tsuchiya; Nobuo Nakazawa; Hisashi Fukushima; Yasushi Miura, and Nobuhiko Takekoshi, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 370,454, Jan. 9, 1995, abandoned, which is a continuation of Ser. No. 125,145, Sep. 23, 1993, abandoned, which is a continuation of Ser. No. 536,330, Jun. 7, 1990, abandoned. This application Sep. 12, 1995, Ser. No. 527,103
Claims priority, application Japan, Jun. 7, 1989, 1-146444; Jun. 7, 1989, 1-146451; Jun. 7, 1989, 1-146452; May 23, 1990, 2-131395
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—3 **21 Claims**

1. An image forming apparatus for forming an image on a recording material comprising:
a plurality of processing means for forming said image;
detection means for detecting a plurality of state parameters of a physical condition of at least one of said plurality of processing means, the plurality of state parameters being applied to membership functions to calculate a fuzzy inference; and
a transmission line for transmitting the detected state parameters to a computer at a predetermined time interval, said computer uses the fuzzy inference to infer a control parameter for controlling at least one of said plurality of processing means based on the detected state parameters, the control parameter is calculated from the fuzzy inference.

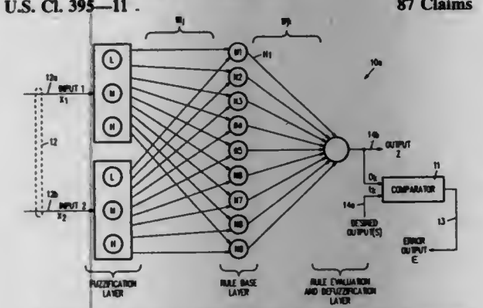


5,579,439

FUZZY LOGIC DESIGN GENERATOR USING A NEURAL NETWORK TO GENERATE FUZZY LOGIC RULES AND MEMBERSHIP FUNCTIONS FOR USE IN INTELLIGENT SYSTEMS

Emdadur R. Khan, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 24, 1993, Ser. No. 36,634
Int. Cl.[6] G06F *9/44;15/80*
U.S. Cl. 395—11 **87 Claims**



65. A computer-implemented method for processing a plurality of input signals as a plurality of fuzzy logic rule antecedents, comprising the computer-implemented steps of:
receiving a plurality of input data signals;
fuzzifying said plurality of input data signals to provide a plurality of fuzzified data signals corresponding to a plurality of fuzzy logic rule antecedents; and
multiplying together selected ones of said plurality of fuzzified data signals to provide a plurality of product signals corresponding to a plurality of fuzzy logic rule consequents.

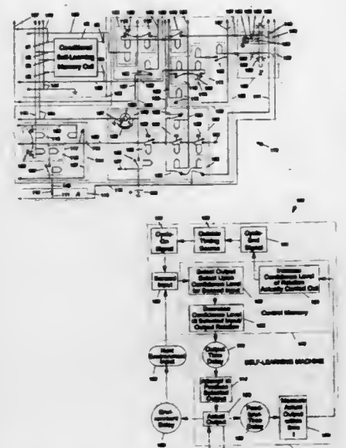
5,579,440

MACHINE THAT LEARNS WHAT IT ACTUALLY DOES

Robert A. Brown, 8 Foster St., Mattapoisett, Mass. 02739

Filed Nov. 22, 1993, Ser. No. 155,587
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—20 **6 Claims**

1. A self-learning and self-organizing machine that operates in a sequence of sensing and action periods of predetermined duration, said machine comprising:



a. a timing means to herald a beginning and an end of a sensing and action period within said sequence of said sensing and action periods, and
b. at least one sensor means to measure a value of said sensor means at said beginning of said sensing and action period, and
c. at least one actuator means to make an attempt to produce a selected value of said actuator means during said sensing and action period, and
d. a feedback sensing means to measure an actual value of said actuator means after a predetermined delay from said attempt to produce said value of said actuator means, and
e. a self-learning memory means to make a record of a confidence level of said actual value of said actuator means occurring with said value of said sensor means in each said sensing and action period, and
f. said self-learning memory means to select said selected value of said actuator means, said selected value having a highest of said confidence level within said record, and
g. an actuator brake means to restrain said actuator means except when said self-learning memory means makes said attempt to produce said selected value of said actuator means, whereby
h. said self-learning machine attempts to produce a highest historical probability of said actual value of said actuator means occurring with said value of said sensor means in said sensing and action period, said self-learning machine also being self-organizing.

5,579,441

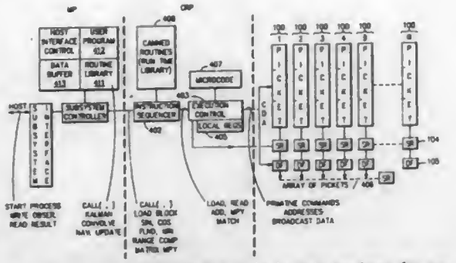
REFRACTION ALGORITHM FOR PRODUCTION SYSTEMS WITH CONTENT ADDRESSABLE MEMORY

John D. Bezek, Owego, and Peter M. Kogge, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 879,250, May 5, 1992, abandoned. This application Aug. 15, 1994, Ser. No. 290,628
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—51 **4 Claims**

1. A computer system having expert system resources, comprising:
a computer memory store, at least a portion of said computer memory store including a content addressable memory;
a knowledge base stored in said computer memory store including working memory elements stored in said content addressable memory, each of said working memory elements including a time stamp signifying a time of inclusion in said knowledge base;

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an inference engine coupled to said knowledge base for performing an inferencing process, said inference engine including a plurality of rules;

first means in said inference engine for selecting a rule for execution by binding a set of working memory elements to said rule and for executing said rule in response to said set of working memory elements;

a time stamp mechanism for:

generating time stamps;

placing time stamps on working memory elements; and

placing a first time stamp on said rule indicating a time when said rule was last executed and placing a second time stamp on said rule indicating a time said rule is selected for its next execution;

and, second means in said inference engine for comparing time stamps on said working memory elements to said first and second time stamps and permitting execution of said rule only if:

(1) at least one working memory element in said set of working elements has a time stamp indicating that said at least one working memory element was placed in said knowledge base after a time indicated by said first time stamp; and,

(2) the time stamps of all said working memory elements indicate that said all working memory elements were placed in said knowledge base earlier than a time indicated by said second time stamp.

5,579,442

ADAPTIVE KINEMATIC CONTROL APPARATUS

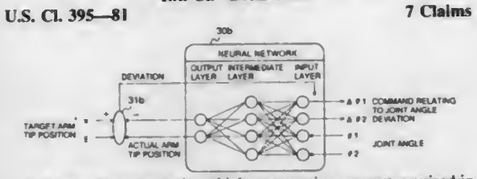
Takashi Kimoto; Daiki Masumoto; Hiroshi Yamakawa, and Shigemi Nagata, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 28, 1994, Ser. No. 233,423

Claims priority, application Japan, Apr. 30, 1993, 5-104173

Int. Cl.[6] G05B *19/04*

U.S. Cl. 395—81 **7 Claims**



1. A control apparatus by which an actuation amount required in controlling a control amount of a controlled object to match a target control amount is determined, said control apparatus comprising:

a converting part which is constructed to map the correspondence between an actuation amount indicated by the controlled target and a control amount, and which receives an input of the actuation amount so as to output a control amount corresponding to said input, wherein the converting part comprises a layer neural network including an input layer and output layer, wherein an error occurring between a target joint position and a current joint position is computed in the output layer and the error is propagated to the input layer so as to output the control amount;

a calculating part which, when an initial actuation amount is input to said converting part, calculates a corrective actuation amount corresponding to said initial actuation amount and allowing the target control amount to match the control amount output from said converting part, on the basis of a difference between the target control amount and the control amount output from said converting part; and

an outputting part which outputs a sum of the initial actuation amount and the corrective actuation amount calculated by said calculating part, as the actuation amount to be fed to the controlled target, wherein the actuation amount is used to control the controlled object.

5,579,443

EMERGENCY VEHICULAR COMMUNICATION DEVICE CAPABLE OF CONTACTING A PLURALITY OF SERVICES

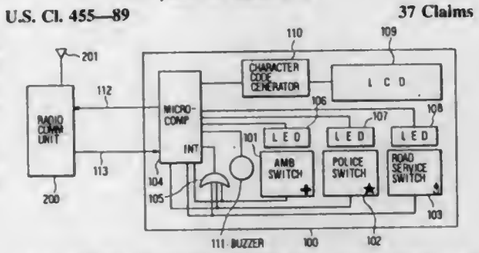
Junji Tatematsu, West Bloomfield; Yasuhisa Yoshino, Troy, both of Mich., and Toshiyuki Kaneiwa, Konan, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 53,134, Apr. 29, 1993, abandoned.

This application Mar. 3, 1995, Ser. No. 400,396

Int. Cl.[6] H04B *1/38*

U.S. Cl. 455—89 **37 Claims**



1. An emergency vehicular communication device adapted to be installed in a vehicle, said device comprising:

a plurality of request switches respectively designating a plurality of services which a user may request, at least two of said switches being manually operable either sequentially or simultaneously at the option of said user;

request signal generating means for checking and storing operational conditions of all of said request switches even when operated simultaneously, and for generating at least one request signal, said at least one request signal being indicative of a plurality of requested services, based on said operational conditions of switches which have been operated within a predetermined actuation time period of one another, a plurality of different types of request signals being generable based on types of services needed by said user as reflected by operation of said request switches, said operational conditions of said request switches being provided to said request signal generating means simultaneously when said request switches are operated simultaneously;

transmitting means for transmitting said at least one request signal to a remote facility to alert each requested service in said plurality of services;

receiving means for receiving from said facility an acknowledgement signal acknowledging receipt of said at least one request signal;

an indicating device constructed and disposed to inform said user that said at least one request signal has been received by said facility.

5,579,444

ADAPTIVE VISION-BASED CONTROLLER

Marie R. Dalziel, London; Neil E. Wiseman, Cambridge; Martin A. Oliver, Beckington; Andrew K. Forrest, London; William F. Clocksin, Girton; Tony R. King, Cambridge; Robert A. Wipfel, Bristol; Ian Warren, Northfleet; David J. Phillips, Sidcup, and Ping D. Chuang, Plaistow, all of England, assignors to Axiom Bildverarbeitungssysteme GmbH, Berlin, Germany

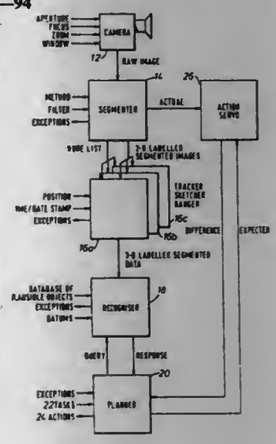
Continuation of Ser. No. 466,282, Feb. 28, 1990, abandoned.

This application Feb. 3, 1995, Ser. No. 384,397

Claims priority, application United Kingdom, Aug. 28, 1987, 8720331

Int. Cl.[6] B25J *9/18*

U.S. Cl. 395—94 **20 Claims**



17. A vision based method of controlling movement of a robot arm in a defined workspace, said method comprising:

decomposing a desired task into discrete actions to be performed by the robot arm;

reducing images of the workspace derived from one or more electronic cameras or other electronic imaging devices to images containing only pertinent features;

deriving a three-dimensional model of the workspace from said reduced images;

storing a knowledge base of known feature models;

identifying objects and their relative positions in the workspace by comparing said three dimensional model of the workspace derived from the reduced images with features stored in said knowledge base;

determining the robot arm movements required to perform the desired task from information associated with said discrete actions and the relative positions of the identified objects; and

moving the robot arm and comparing sensed movements of the robot arm with the required movements and recalculating the required movements in the event of a predetermined deviation therefrom; said images being reduced to images containing pertinent features by detecting edges of objects or other features in the images and producing a topographical representation thereof, said topographical representation comprising a closed contour map and a corresponding vertex list providing connecting information relating to vertices in the contour map and further comprising a curve list providing connecting information relating to curves connecting the vertices in the contour map.

5,579,445

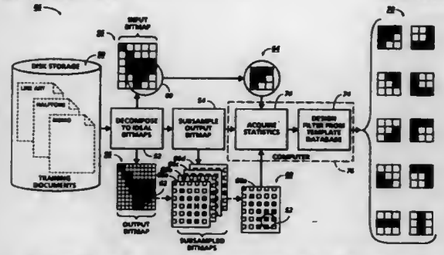
IMAGE RESOLUTION CONVERSION METHOD THAT EMPLOYS STATISTICALLY GENERATED MULTIPLE MORPHOLOGICAL FILTERS

Robert P. Loce; Michael S. Cianciosi, both of Rochester, and Jeffrey D. Kingsley, Williamson, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 17, 1993, Ser. No. 169,487

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—102 **21 Claims**



1. A method for automatically creating a set of filters to be used for filtering an image bitmap, wherein application of the filters will result in an enhancement of the image bitmap, comprising the steps of:

(a) generating a first resolution image, represented as a plurality of image signals, from a document and storing the first resolution image in a first bitmap memory;

(b) generating a second resolution image, represented as a plurality of image signals, from the document and storing the second resolution image in a second bitmap memory;

(c) subsampling the second bitmap memory to produce a subsampled first resolution image;

(d) storing, in a subsample memory, the subsampled first resolution image;

(e) defining a multiple signal input window that may be passed through the first bitmap memory;

(f) defining a single signal output window that may be passed through the subsample memory, so that the position of the output window within the subsample memory is a function of the position of the input window within the first bitmap memory;

(g) storing a plurality of entries in a database memory, each entry including a representation of the bitmap pattern within the multiple signal input window and corresponding state found within the single signal output window; and

(h) deriving, from the database-memory, a set of filters for enhancement of the image bitmap.

5,579,446

MANUAL/AUTOMATIC USER OPTION FOR COLOR PRINTING OF DIFFERENT TYPES OF OBJECTS

Sachin S. Naik, San Diego, and Frank A. Kurucz, Escondido, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 27, 1994, Ser. No. 187,942

Int. Cl.[6] G06K *15/00*

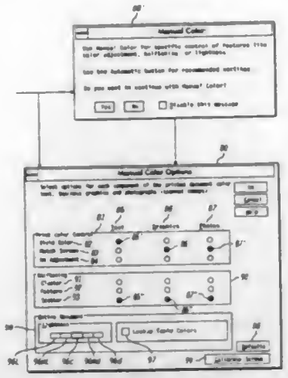
U.S. Cl. 395—109 **28 Claims**

1. A printing system for use in printing objects of any of plural different color-object types; said system comprising:

a color printer; and

a printer control device with a user interface having an option for controlling two separate print-quality characteristics based on the type of color object to be printed by said color printer.

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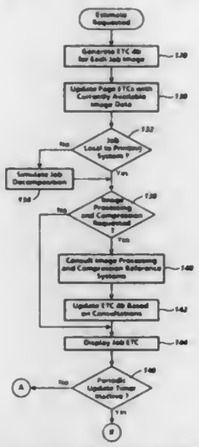


5,579,447

SYSTEM FOR DEVELOPING AND DISPLAYING A REPRESENTATION OF A TOTAL ESTIMATED TIME TO PRINT A JOB

David L. Salgado, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 25, 1994, Ser. No. 344,915
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—109 24 Claims



1. In a printing system for producing prints from a job comprising plural electronic pages with image data, an apparatus for developing and displaying a representation of a total estimated time to print the job, comprising:

a user interface, with a display screen, for selectively programming the job with plural print related attributes, wherein selected ones of the print related attributes affect a time required to print the job;

a memory for storing the image data and the print related attributes;

a processor for generating an estimated time to print value for each of the plural electronic pages based on the selected attributes programmed during said programming which affect the time required to print the job, said estimated time to print generating being performed prior to printing the job; and

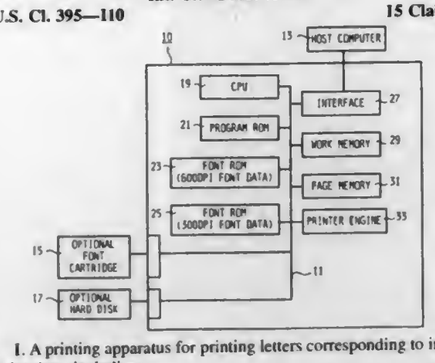
said processor summing the values generated with said estimated time to print generating for obtaining the total estimated time to print, wherein the representation of the total estimated time to print is displayed on said display screen.

5,579,448

PRINTING APPARATUS FOR PRINTING OF QUARTER EM-SIZE

Ichiro Yamamoto, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 4, 1994, Ser. No. 191,078
Claims priority, application Japan, Apr. 14, 1993, 5-112121
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—110 15 Claims



1. A printing apparatus for printing letters corresponding to input print data, including:

first font data storing means for storing font data of a first resolution;

judging means for judging a presence of a second font data storing means for storing font data of a second resolution which is half of the first resolution when the print data is a quarter em-size letter; and

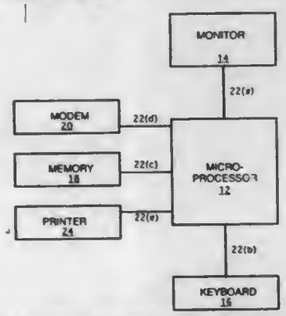
control means for performing such a control that when said judging means judges the presence of said second font data storing means, the quarter em-size letter is printed on the basis of the font data stored in said second font data storing means, and when said judging means judges the absence of said second font data storing means, the quarter em-size letter is printed on the basis of the font data stored in said first font data storing means.

5,579,449

METHOD FOR DOWNLOADING AND PRINTING BITMAPPED GRAPHICS

Kevin L. Strobel, Fairfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 21, 1994, Ser. No. 360,907
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—110 8 Claims



1. A method for printing bitmapped graphics, comprising the steps of:

(a) deriving a first set of source data, from a selected application in a computer, wherein said first set of source data is in the form of a graphic image; and, if text is required together with said graphic image, then deriving a second set of source data, from a selected application in said computer, wherein said second set of source data is in the form of a bitmap font glyph;

(b) converting said graphic image into a bitmapped graphic;

(c) transferring said bitmapped graphic and said bitmap font glyph, from said selected application, to a printer driver;

(d) assigning a first set of identifying headers to said transferred bitmapped graphic and assigning a second set of identifying headers to said bitmap font glyph;

(e) downloading said bitmapped graphic and said first set and said second set of identifying headers, from said printer driver to a printer means for printing on a substrate; and

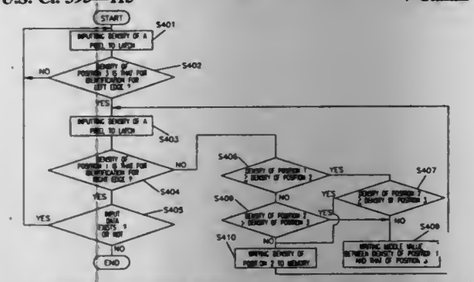
(f) printing said downloaded bitmapped graphic to said substrate.

5,579,450

IMAGE PROCESSING APPARATUS INVOLVING COMPARISON OF DENSITIES OF THREE CONTIGUOUS PIXELS

Hitomi Hanyu, and Yoshiaki Hanyu, both of Soka, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 24, 1993, Ser. No. 156,834
Claims priority, application Japan, Nov. 25, 1992, 4-338070
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—115 7 Claims



7. An image processing apparatus for deciding pixel densities of respective pixels using an anti-aliasing process for left and right edges of a figure, and for sending resulting pixel density data to a memory, the apparatus comprising:

a) memory read/write control means, the memory read/write control means including:

a1) means for inputting:

i) a contribution ratio,

ii) a density value,

iii) a y coordinate for a raster line,

iv) a start coordinate x_1, and

v) an end coordinate x_2; and

a2) means, responsive to the inputting means, for sending an address to the memory;

b) a look-up table (LUT), responsive to the memory read/write control means, for providing pixel densities based on the contribution ratio and the density value, and for executing a read-modify-write process;

c) hardware, responsive to the LUT and including means for latching densities of three respective contiguous pixels, including densities for a middle pixel and two outer pixels; and

d) a comparing processor, responsive to the hardware, the comparing processor including:

d1) means for deciding a resulting pixel density corresponding to the middle pixel, the deciding means including:

i) means for comparing the densities of the three contiguous pixels;

ii) means for deciding the resulting pixel density as being an intermediate value between the densities of the two outer pixels if the middle pixel's density is not between the densities of the two outer pixels; and

iii) means for deciding the resulting pixel density as being the density of the middle pixel if the middle pixel's density is between the densities of the two outer pixels; and

d2) means for sending the resulting pixel density data to the memory;

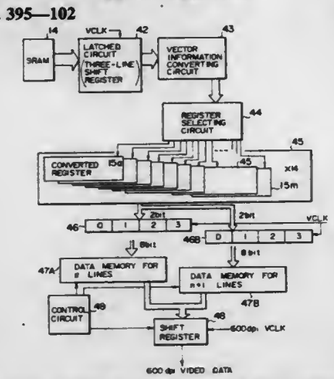
wherein identification densities for identifying edges of the figure are generated in the second position before the left edge of the figure and in the second position after the right edge of the figure.

5,579,451

IMAGE OUTPUT DEVICE AND IMAGE CONTROL METHOD FOR SMOOTHING IMAGE OR INCREASING IMAGE RESOLUTION BY USE OF SAME

Yoshitaka Suzuki, Tokyo, Japan, assignor to Kyocera Corporation, Kyoto, Japan

Filed May 26, 1993, Ser. No. 67,212
Claims priority, application Japan, May 30, 1992, 4-163991; Jun. 30, 1992, 4-196505
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—102 3 Claims



3. An image output device for a page printer, comprising:

means for converting into a vector a dot distribution around an attentional pixel in a K×L coordinate adjacent to the attentional pixel on the basis of rasterized data of the coordinate, where K and L represent odd numbers and K≧L,

means for selecting correction vector information having a maximum location error from among pieces of vector information in a −X axis direction, a +X axis direction, a −Y axis direction and a +Y axis direction,

means for selecting, on the basis of the vector information and the identity of the attentional pixel as at least one of a dot pixel and a blank pixel, a corresponding register from a plurality of registers in which at least one of correction data for smoothing an image pattern and correction data for increasing an image density are stored,

means for forming video data of at least one of a smoothed image pattern and an increased image density on the basis of correction data read out from the register,

means for selecting, on the basis of the vector information and the identity of the attentional pixel as at least one of a dot pixel and a blank pixel, a corresponding register from a plurality of density increasing registers in which M×M bit data for location error correction are stored, where M represents an integer, and

means for forming video data having an increased image density every one scanning line on the basis of the bit data read out from the selected register,

whereby the video data are output to a print engine driver in accordance with an M-fold video clock,

wherein {4×(M×M)−2} registers are provided every one component in the −X axis direction, the +X axis direction, the −Y axis direction or the +Y axis direction.

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5,579,452

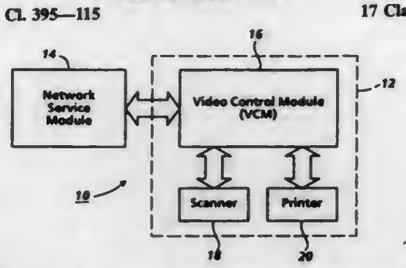
METHOD OF MANAGING MEMORY ALLOCATION IN A PRINTING SYSTEM

Samuel D. Ambalavanar, Rochester; Ronnie E. Sanford, Webster; Orlando Diaz, Rochester; Kenneth D. Romano, Webster, and Anthony M. Frumusa, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 29, 1994, Ser. No. 315,274

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—115 **17 Claims**



1. A method of managing memory allocation among a plurality of clients in a printing system with a controller and memory, the memory including a plurality of blocks with each of the plurality of blocks corresponding with an identifier indicating a location of one of the plurality of blocks in the memory, the controller having a resource manager for managing use of the memory and each client seeking to store one or more images, in the form of image data, in the memory, comprising:

in response to a request from one of the plurality of clients to store an image data set in memory, placing a first set of the identifiers, corresponding with a first set of the plurality of blocks, in a database;

accessing the first set of identifiers in the database with the one of the plurality of clients;

filling up one or more of the first set of blocks, with image data from the image data set, by referring to the first set of identifiers;

transmitting an interrupt signal to the controller, from the one of the plurality of clients when a designated one of the first set of blocks is filled; and

in response to receiving the interrupt signal at the controller, placing a second set of identifiers, corresponding with a second set of the blocks, in the database, so that when the one of the plurality of clients has filled up a substantial portion of the first set of blocks, the one of the plurality of clients accesses the second set of blocks, by reference to the second set of identifiers for filling up one or more blocks of the second set of blocks wherein memory allocation is accomplished with a minimum amount of controller processing overhead.

5,579,453

SMART DIRECT MEMORY ACCESS CONTROLLER

William M. Lindenfelser, Rochester; Frederick A. Donahue, Walworth, and Anthony E. Audi, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 16, 1994, Ser. No. 358,126

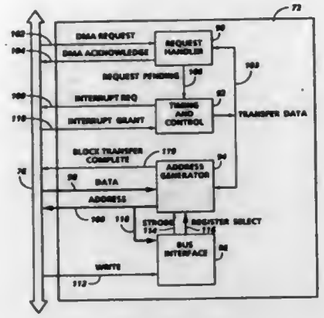
Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—115 **25 Claims**

1. A non-linear direct memory access controller for transferring data from a memory circuit having a plurality of address locations, comprising:

a plurality of field generating circuits, each of said field generating circuits generating a field value, each of the field values being combinable to generate an address for accessing one of the plurality of address locations of the memory circuit; and

a controller coupled to each of said plurality of field generating circuits, said controller selecting one of said plurality of field generating circuits to generate the field value.



5,579,454

THREE DIMENSIONAL GRAPHICS PROCESSING WITH PRE-SORTING OF SURFACE PORTIONS

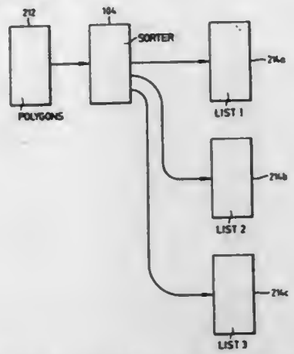
Adam Billyard, London; Paul Otto, and David Lau-Kee, both of Guildford, all of England, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 1, 1992, Ser. No. 937,701

Claims priority, application United Kingdom, Sep. 6, 1991, 9119141

Int. Cl.[6] G06T *15/40*

U.S. Cl. 395—121 **18 Claims**



1. An apparatus for generating a sequence of two-dimensional images of a three-dimensional object, the two-dimensional images representing the object from respective desired viewing directions, the apparatus comprising:

a surface portion store for storing surface portion data corresponding to a plurality of surface portions of the object;

a first sorter for sorting said surface portion data to generate a first ordered list of surface portions corresponding to an order in which the portions may be overwritingly displayed to effect hidden surface removal, by (i) determining which, if any, of the surface portions cannot occlude others from any viewing direction and which can, (ii) entering those which cannot occlude any others in said first ordered list so as to be drawn first, and thereafter (iii) entering further surface portions in said first ordered list in succession, such that each of said first ordered portions is entered in the first ordered list when the surface portions which it can occlude are surface portions already entered in the first ordered list;

a second sorter for sorting surface portions which have not been entered in said first ordered list into a plurality of second ordered lists, each second ordered list being generated with reference to a respective predetermined view direction;

a list selector for selecting, for each two-dimensional image to be generated, one of said plurality of second lists in dependence upon the desired viewing direction of that image; and

an image generator for generating each of said two-dimensional images representing the object by rendering each said portion from the first list and said selected second list in order of occurrence therein, in accordance with the desired viewing directions, portions which are backwards facing relative to the desired viewing direction not being rendered.

5,579,455

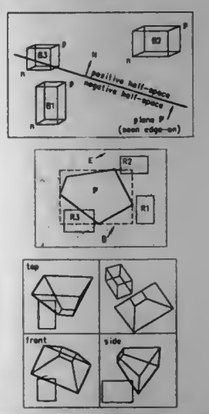
RENDERING OF 3D SCENES ON A DISPLAY USING HIERARCHICAL Z-BUFFER VISIBILITY

Edward C. Greene; Michael H. Kass, and Gavin S. P. Miller, all of Palo Alto, Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jul. 30, 1993, Ser. No. 100,113

Int. Cl.[6] G06T *15/00*

U.S. Cl. 395—122 **37 Claims**



1. Apparatus for use in rendering a 3D scene onto a display, said display having a display area divided into a plurality of display cells, said 3D scene comprising at least one surface divided into a plurality of surface cells, each of said surface cells corresponding to a respective one of said display cells, said apparatus comprising a depth buffer having a plurality of granularity levels proceeding from a finest level to a coarsest level,

each of said granularity levels containing at least one Z-max element,

each of the Z-max elements in said finest granularity level covering a respective one of said display cells,

each of the Z-max elements in a granularity level coarser than said finest granularity level corresponding to and covering all of the display cells covered by a respective group of the Z-max elements in the next finer granularity level,

each of said Z-max elements which covers a display cell into which a surface cell has been rendered, containing a depth value indicating the depth in said 3D scene of the farthest surface cell which is rendered into the group of display cells covered by said Z-max element.

5,579,456

DIRECT RENDERING OF TEXTURED HEIGHT FIELDS

Michael A. Cosman, South Jordan, Utah, assignor to Evans & Sutherland Computer Corp., Salt Lake City, Utah

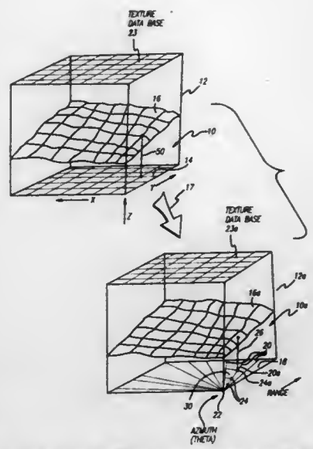
Continuation of Ser. No. 137,907, Oct. 15, 1993, abandoned. This application Nov. 29, 1995, Ser. No. 564,820

Int. Cl.[6] G06T *15/00*

U.S. Cl. 395—128 **26 Claims**

1. A process for producing a perspective image based on height field data, said image having a foreground and a background, said process comprising the steps of:

establishing a centered viewpoint for said perspective image;



sampling said height field data to generate a radial form height field, said height field having a relatively greater level of detail for said foreground and a relatively lesser level of detail for said background, said sampling step including:

defining rays extending radially from said centered viewpoint in model space, said rays being substantially parallel in image space; and

sampling said height field data at selected locations along said rays in model space to provide height samples, said locations forming vertices of substantially square trapezoidal shapes in model space, said shapes increasing in size with increasing radial distance from said centered viewpoint in model space, but being substantially uniform in image space;

processing picture elements in relation to said viewpoint based on said radial form height field to provide perspective display data; and

driving a display in accordance with said perspective display data to provide said perspective image.

5,579,457

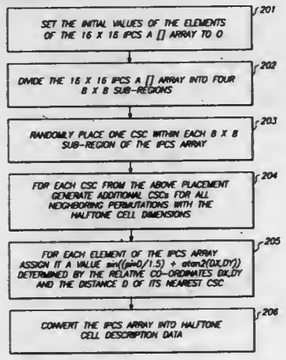
IMAGE DISPLAY APPARATUS AND METHOD USING IRREGULARLY PLACED CURVING STRUCTURES

Daniel Hall, Cambridge, England, assignor to The Harlequin Group Ltd., Cambridge, England

Filed Jul. 29, 1994, Ser. No. 283,028

Int. Cl.[6] H04N *1/21*

U.S. Cl. 395—132 **1 Claim**



1. A method of displaying images defined by illuminating pixels in an arrangement of halftone cells, comprising:

VOL 1192 ISS 4 NO 26 1996 UMI

locating, for each of the halftone cells, a plurality of curving structure centers ("CSCs"), wherein the CSCs comprise an inside CSC located inside the halftone cell and an outside CSC located outside the halftone cell, the outside CSC being located responsive to location of the inside CSC;

determining, for each pixel within each halftone cell, a corresponding closest CSC;

associating a metric for each pixel within each halftone cell, the metric being determined responsive to displacement from said pixel to said corresponding closest CSC along a curving structure;

selecting an overall order of illumination for each pixel within each halftone cell responsive to comparison of said metric with metrics for other pixels; and

illuminating said pixels responsive to said selected order.

5,579,458

DISPLAY CONTROL SYSTEM FOR A SCAN TYPE DISPLAY APPARATUS

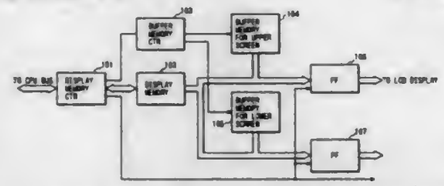
Hirobumi Yokosuka; Yasuo Sakai, and Kazuo Miyazaki, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 791,184, Nov. 13, 1991, abandoned. This application Sep. 23, 1994, Ser. No. 310,992

Claims priority, application Japan, Nov. 13, 1990, 2-306393

Int. Cl.[6] G06T *1/60*

U.S. Cl. 395—133 **4 Claims**



1. A display control system for a scanning type liquid crystal display apparatus in which a liquid crystal display screen is divided into a plurality of split display regions and respective display regions are simultaneously scanned in parallel, comprising:

a dual port memory having a random access port and serial access port, display data being inputted through the random access port and outputted through the serial access port;

a plurality of buffer memories, each buffer memory provided in correspondence to a respective split display region for memorizing portions of said display data corresponding to at least one raster of the split display region;

means for generating display addresses to read out sequentially display data corresponding to each raster of every split display region one by one from said serial access port of said dual port memory to the buffer memories;

an operating means for adding or subtracting an address value corresponding to a scroll value to or from the display addresses which access display data of a split display region to be scrolled during scrolling of the split display region;

means for alternately storing the display data corresponding to each raster of the split display regions read out from said serial access port of said dual port memory into each of said buffer memories based on said display addresses; and

means for simultaneously reading out the display data stored in said buffer memories for transferring said display data to said plurality of split display regions of said scanning type liquid crystal display apparatus.

5,579,459

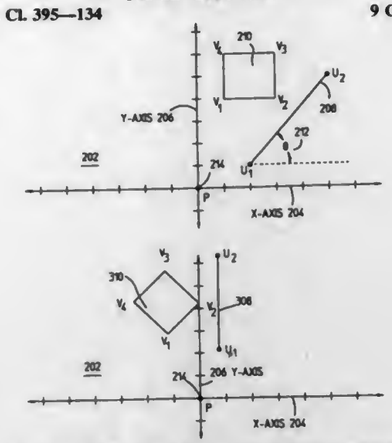
METHOD FOR CLIPPING A LINE SEGMENT AGAINST AN ARBITRARY POLYGON IN THE FLOATING POINT DOMAIN

Kenn Jennyc, Calgary, Canada, assignor to Hewlett-Packard Co., Palo Alto, Calif.

Filed Mar. 9, 1995, Ser. No. 401,590

Int. Cl.[6] G06T *15/30*

U.S. Cl. 395—134 **9 Claims**



1. A method for clipping a line segment against a polygon using floating point operations comprising the steps of:

(a) rotating the line segment and the polygon located at a first position with respect to a first coordinate frame to obtain a rotated line segment and a rotated polygon located at a second position, said first coordinate frame includes at least two axes and used to represent a location and an orientation of the line segment and the polygon;

(b) clipping said rotated line segment against said rotated polygon; and

(c) unrotating said rotated clipped line segment with respect to said first coordinate frame to said first position.

5,579,460

PAINT-OUT METHOD AND APPARATUS

Hiroshi Shinnai, Yamaguchi, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 269,317, Oct. 1, 1991, abandoned. This application Jun. 23, 1995, Ser. No. 494,004

Claims priority, application Japan, Dec. 21, 1990, 2-413427

Int. Cl.[6] G06T *15/00*

U.S. Cl. 395—137 **11 Claims**

1. In a system including a memory means, a method of painting a graphic figure to be displayed by a graphics apparatus, the method comprising the steps, performed by a processor, of:

extracting a list of vertices from a figure having multiple graphic lines;

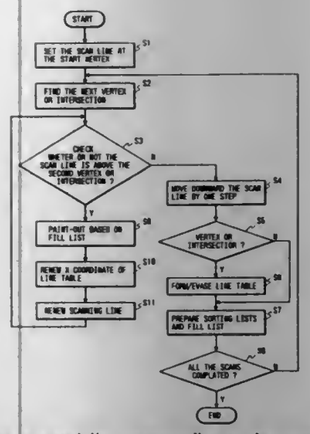
moving a scan line in a direction of a first coordinate;

generating line tables containing attributes of respective graphic lines;

generating, in accordance with the line tables, an intersection list containing coordinates representing intersections of the graphic lines;

writing attribute information, in accordance with the list of vertices, for a graphic line into the memory means when a position of the scan line intersects the graphic line and a previous position of the scan line did not intersect the graphic line;

erasing attribute information for the graphic line from the memory means when the scan line does not intersect the corresponding graphic line;



generating a sorted list corresponding to the contents of the memory means when the scan line intersects an intersection of graphic lines, in accordance with the intersection list; and finding, responsive to the sorted list, a region to be painted by processing the graphic figure in a direction of the scan line.

5,579,461

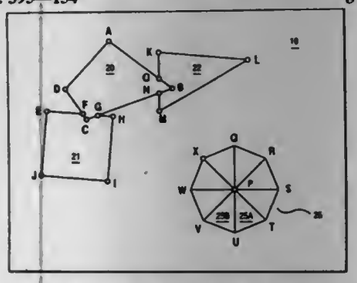
METHOD AND APPARATUS FOR FILLING POLYGONS

Avijit Saha, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 123,510, Sep. 20, 1993, Pat. No. 5,463,723. This application Jun. 7, 1995, Ser. No. 476,166

Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—134 **8 Claims**



1. A computer program product, stored in computer readable memory and executable by a data processing system, for rendering a graphical polygon, said polygon being defined by connecting edges surrounding a polygon interior, comprising:

means for computing a plurality of spans, each span including a portion of the polygon interior and at least two polygon edge points on each of at lest two edges of the polygon, including computing which of the at least two polygon edge points of the span are to be rendered;

means for computing at least one color value for each computed span; and

means for rendering said spans on a display using said computer color values including only polygon edge points computed to be rendered.

5,579,462

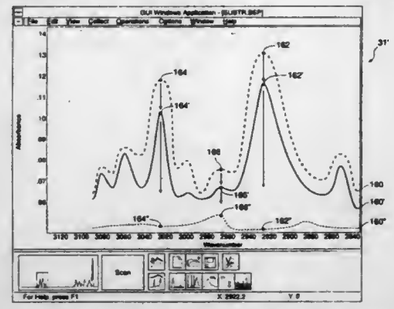
USER INTERFACE FOR SPECTROMETER

Luther L. Barber, Needham; Mark L. Olson, Framingham, and Paul V. Carter, Brighton, all of Mass., assignors to Bio-Rad Laboratories, Cambridge, Mass.

Filed Nov. 3, 1994, Ser. No. 333,955

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—140 **14 Claims**



1. A method for graphically forming a difference spectrum from a sample spectrum and a reference spectrum on a computer system, the computer system including a display, a processor, a memory, and a relative pointing device, the method comprising the steps of:

displaying at least a portion of an initial difference spectrum on the display, said initial difference spectrum being proportioned to the sample spectrum.

selecting a data point in said initial difference spectrum, having an associated wave number, on the display with the relative pointing device;

moving said data point a measurable amount on the display with the relative pointing device;

determining a scaling factor in response to said measurable amount and to a data point in the reference spectrum having said associated wavenumber with the processor;

scaling each data point in the reference spectrum by said scaling factor to form a scaled reference spectrum;

determining the difference spectrum between the sample spectrum and said scaled reference spectrum with the processor; and

displaying at least a portion of the difference spectrum on the display.

5,579,463

WAVEFORM DISPLAY APPARATUS OF FREQUENCY SWEEP TYPE FOR FACILITATING DISPLAY OF A HIGH DEFINITION WAVEFORM

Mitsuyoshi Takano, Machida, and Alichi Katayama, Isehara, both of Japan, assignors to Anritsu Corporation, Tokyo, Japan

Division of Ser. No. 776,259, Nov. 27, 1991. This application Feb. 8, 1995, Ser. No. 385,554

Claims priority, application Japan, Mar. 30, 1990, 2-86973

The portion of the term of this patent subsequent to Jan. 22, 2011, has been disclaimed.

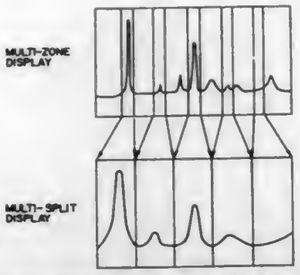
Int. Cl.[6] G06T *3/00*

U.S. Cl. 395—140 **11 Claims**

1. A waveform display apparatus of frequency sweep type, comprising:

a measurement unit for measuring a signal to be measured by sweeping a frequency under a predetermined measurement frequency condition so as to obtain waveform data corresponding to the frequency;

a display device for displaying the waveform data obtained by said measurement unit as developed on a frequency axis thereof;



first parameter setting means for setting a first measurement frequency range, and setting a first scale factor for displaying waveform data in the first measurement frequency range on said display device;

a first parameter memory for storing parameters set by said first parameter setting means;

reference parameter setting means for setting a desired frequency on the frequency axis on said display device as a reference position, said desired frequency being within said first measurement frequency range corresponding to the waveform data displayed with the first scale factor;

second parameter setting means for setting a second measurement frequency range, and setting a second scale factor enlarging the first scale factor, for a portion of the frequency axis which includes said desired frequency and set by the reference parameter setting means for displaying waveform data in the second measurement frequency range on said display device;

a second parameter memory for storing parameters set by said second parameter setting means; and

control means for controlling the first and second measurement frequency ranges in said measurement unit, and controlling a display position in said display device so as to cause a coincidence between said desired frequency at the reference position set by said reference parameter setting means and one frequency in the second frequency range at the reference position, and to permit to display the waveform data in the second frequency range according to the second scale factor.

5,579,464

FREE-FORM SURFACE CREATION METHOD AND APPARATUS THEREOF

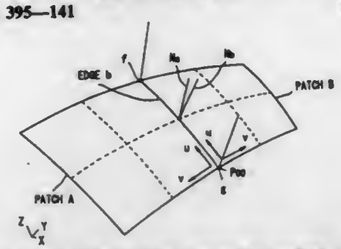
Katsu Saito, Saitama, and Tetsuzo Kuragano, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 3, 1995, Ser. No. 433,157

Claims priority, application Japan, May 18, 1994, 6-128122

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—141 **8 Claims**



1. A free-form surface creation method for creating a free-form surface by forming a large number of quadrilateral frame spaces each delimited by four boundary curves in a three-dimensional space by frame processing, and by patching the respective quadrilateral frame spaces with a quadrilateral patch represented by a predetermined vector function, wherein:

reference normal lines of a plurality of points defined on respective four edges are determined based on four normal lines of said quadrilateral patch and said four edges; and

said respective determined reference normal lines at said plurality of points are approximated to normal lines at respective points corresponding to said plurality of points defined on the edges of a patch adjacent to said quadrilateral patch, each edge being shared with said quadrilateral patch, so as to determine internal control points of said quadrilateral patch are determined.

5,579,465

SHIFTED CHARACTER PATTERN DATA PROCESSOR

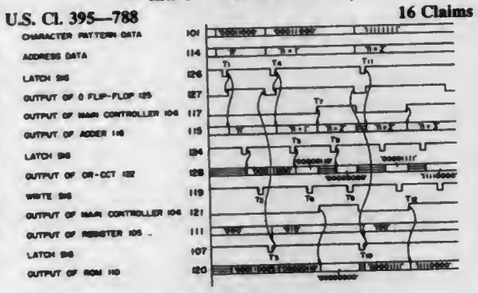
Shigeru Ueda, Wako, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 750,696, Aug. 20, 1991, abandoned, which is a continuation of Ser. No. 378,489, Jul. 12, 1989, abandoned, which is a continuation of Ser. No. 875,564, Jun. 18, 1986, abandoned. This application Oct. 27, 1993, Ser. No. 141,706

Claims priority, application Japan, Jun. 27, 1985, 60-138979

Int. Cl.[6] G06F *3/00;9/00*

U.S. Cl. 395—788 **16 Claims**



1. A character pattern data processor comprising:

input means for inputting pattern data;

selection data generation means for generating shift amount data representative of a lateral shift amount of the input pattern data;

shifted pattern data output means for outputting at least one of first and second shifted pattern data different from each other, in response to the input pattern data and the shift amount data, said shifted pattern data output means comprising a memory for storing a plurality of shifted pattern data, including at least the first and second shifted pattern data, obtained by shifting pattern data by respectively different shift amounts;

memory means;

address designating means for designating an address of said memory means, said address designating means capable of designating a common address for respectively different pattern data; and

combination means for combining data previously stored at the address designated by said address designating means with the shifted pattern data output from said shifted pattern data output means, and for writing thus-combined data at the address designated by said address designating means.

5,579,466

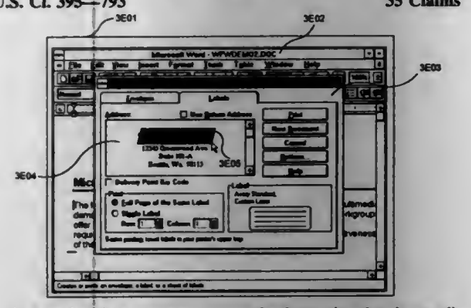
METHOD AND SYSTEM FOR EDITING AND FORMATTING DATA IN A DIALOG WINDOW

Catherine L. Habib, Redmond, and Steven Bush, Issaquah, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Sep. 1, 1994, Ser. No. 299,938

Int. Cl.[6] G06F *17/24*

U.S. Cl. 395—793 **35 Claims**



1. A method in a computer system for formatting data in an edit field, the computer system having windows for inputting and displaying data and having an application program that supports editing, the application program providing a rich text edit control for implementing the behavior of the edit field, the method comprising the computer-implemented steps of:

opening a dialog window, wherein the dialog window is displayed;

displaying the edit field in the displayed dialog window;

receiving data, directly from a user, to be displayed in the edit field; and without closing the dialog window,

displaying the received data in the edit field according to a first format;

determining a second format; and

using the rich text edit control, re-displaying the received data displayed in the edit field according to the determined second format.

5,579,467

METHOD AND APPARATUS FOR FORMATTING A COMMUNICATION

Stephen P. Capps, San Carlos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 889,721, May 27, 1992, abandoned. This application Mar. 16, 1995, Ser. No. 406,640

Int. Cl.[6] G06F *17/27*

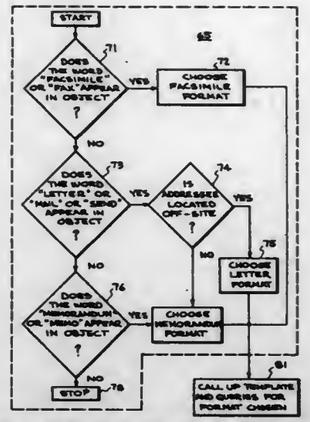
U.S. Cl. 395—768 **45 Claims**

1. A method for creating a communication having a desired format comprising the steps of:

entering a text document into a computer system, said text document having an original format and including message content to be transmitted in a communication to an addressee, concise address information included in said message content to provide said addressee in said communication, and a format identifer, wherein said message content, said concise address information, and said format identifier are all located within a main body portion of the text document such that neither said concise address information nor said format identifier are provided in a heading separate from said message content;

determining a desired format for the communication based upon said format identifier and associating a format template with said desired communication format, said format template having an information slot and an information query associated with said information slot;

analyzing the text document based upon said information query to identify at least some of said concise address information that answers said query and fill in said information slot with database address information stored in and retrieved from a database separate from said text document, said database address information being referred to by said identified concise address information and being in greater amount and having greater detail than said identified concise address information; and



creating a formatted communication having said desired format in accordance with said format template, the desired format being different from said original format, said communication including a template portion and a body portion, the template portion including at least some of said database address information filled in said identification slot, the body portion including said message content to be transmitted to said addressee.

5,579,468

INFORMATION PROCESSING UNIT HAVING FUNCTION MODULES INDEPENDENTLY RECOGNIZING USER INFORMATION

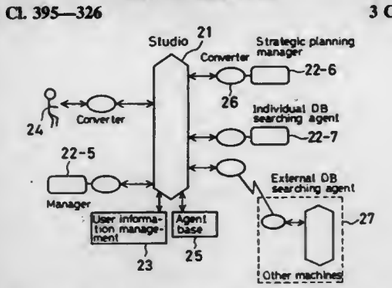
Hisao Miyauchi; Hirosi Iizuka; Takashi Kayamori; Toshiro Watanabe; Norikazu Saito; Yutaka Hidai; Katsumi Kunihara; Masajiro Fukunaga; Satoshi Yoshizawa; Makoto Hirose; Tadashi Hoshiai; Tetsuya Yoshimura, and Nobuo Asahi, all of Tokyo, Japan, assignors to Institute for Personalized Information Environment; Tokyo, Japan

Continuation of Ser. No. 123,035, Sep. 20, 1993, abandoned, which is a continuation of Ser. No. 567,879, Aug. 15, 1990, abandoned. This application Mar. 2, 1995, Ser. No. 397,727

Claims priority, application Japan, Aug. 29, 1989, 1-222498

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—326 **3 Claims**



1. An information processing system, comprising:

a plurality of function modules, each divided into element functions each having independent features; each of said plurality of function modules recognizing information presented by a user independently and directly, each of said plurality of function modules responding to content of said information,

and each of said plurality of function modules executing processing using said information presented by the user;

a work memory area being a shared medium accessible from said plurality of function modules and for reading and writing information including messages for executing interaction by ones of said plurality of function modules, the information in said work memory area including problems to be solved by ones of said plurality of function modules, and the information in said work memory area including information relating to the user as well as an interactive history with the user constituting historical records of interaction between the user and each of said plurality of function modules;

a control module for monitoring content of said information written in said work memory area and for updating ones of said plurality of function modules, whereby:

said control module includes a user information control module;

said user information control module accumulates and controls parameters pertaining to the user including skill, knowledge level, and personal preferences specified by the user, and said user information control module accumulates and controls information from said historical records of interaction between the user and each of said plurality of function modules pertaining to expertise of the user; and said parameters and said information pertaining to expertise of the user are referred to by each of said plurality of function modules; and

said control module executes coordinated processing and dispersed processing of information by the user and each of said plurality of function modules to said work memory area.

5,579,469

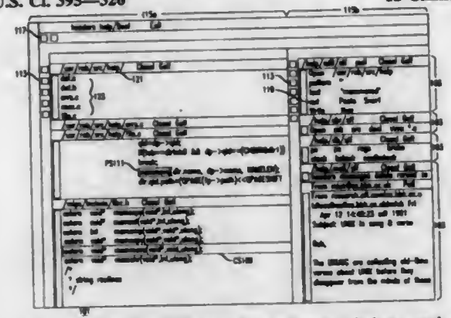
GLOBAL USER INTERFACE

Robert C. Pike, Basking Ridge, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 267,643, Jun. 29, 1994, abandoned, and Ser. No. 712,212, Jun. 7, 1991, abandoned. This application Oct. 19, 1995, Ser. No. 545,376

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—326 **12 Claims**



1. In a computing system having one or more windows, each of which displays text from a file belonging to a file system in which each file has one of a plurality of file contexts which are employed by the file system to locate the file, a method for providing an input to the computer system comprising the steps of:

associating each window with the file context for the file whose text is being displayed therein;

receiving a portion of the text selected by a user from anywhere in any given one of the windows; and

automatically providing as the input the portion together with the file context for the given one of the windows.

5,579,470

Patent Not Issued For This Number

5,579,471

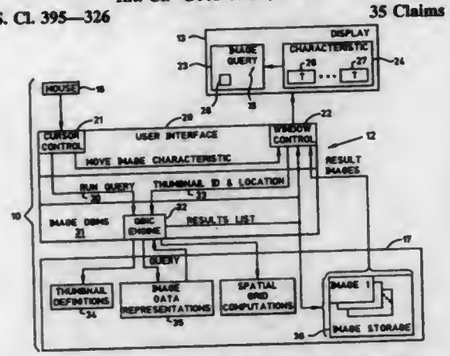
IMAGE QUERY SYSTEM AND METHOD

Ronald J. Barber, San Jose; Bradley J. Beitel, Woodside; William R. Equitz, Palo Alto; Carlton W. Niblack, San Jose; Dragutin Petkovic, Saratoga; Thomas R. Work, San Francisco, and Peter C. Yanker, Mountain View, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 973,474, Nov. 9, 1992, abandoned. This application Mar. 23, 1994, Ser. No. 216,986

Int. Cl.[6] G06F *17/30;3/14*

U.S. Cl. 395—326 **35 Claims**



19. A computerized method of managing an image database, comprising the steps of:

constructing an image database by:

storing a plurality of images in an image store; and

storing a plurality of image data representations of the plurality of images;

receiving a specification of one or more image characteristics in a search image, specification of the one or more image characteristics including a type and a location;

querying the image database for images that are similar to the search image by:

identifying from the image data representations one or more images that include the type specified in the search image near the location specified in the search image; and

determining similarity between each image of the one or more images and the search image;

accumulating a set of images determined to be similar to the search image;

ranking the images of the set of images according to a degree of similarity to the search image; and

providing the set of images, in ranked order, from the image store.

5,579,472

GROUP-ORIENTED COMMUNICATIONS USER INTERFACE

George A. Keyworth, II, Santa Fe, N.M.; Baldev Krishan, and Kalyan V. Krishnan, both of Fremont, Calif., assignors to Novalink Technologies, Inc., Fremont, Calif.

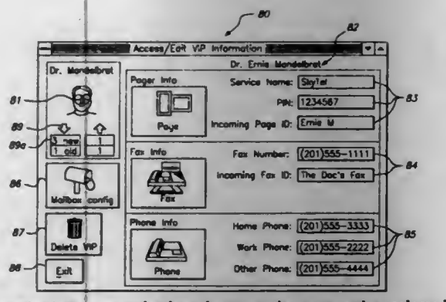
Filed Nov. 9, 1994, Ser. No. 337,100

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—326 **30 Claims**

1. A method of displaying information pertaining to communications between a user and members in a selected group, the method comprising a series of steps of:

displaying a gallery including a plurality of images, each one of the plurality of images corresponding to a member in the selected group, each one of the plurality of images having a status indicator and an associated message directional icon, the status indicator representing a current status of messages of a type represented by the associated message directional icon;



monitoring communications between the user and a selected member in the selected group to determine a current status of messages of the type represented by the associated message directional icon; and

updating the status indicator displayed in the gallery for the one of the plurality of images corresponding to the selected member in the selected group.

5,579,473

INTERFACE CONTROLLER FOR FRAME BUFFER RANDOM ACCESS MEMORY DEVICES

Stephen A. Schlapp, San Jose; Michael F. Deering, Los Altos; Ewa M. Kubalska, San Jose, and Michael G. Lavelle, Saratoga, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 18, 1994, Ser. No. 276,814

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—501 **23 Claims**

16. A frame buffer memory device controller comprising:

a translator, wherein said translator receives pixel access transactions targeted for pixel data mapped in a frame buffer memory device and converts said pixel access transactions into access parameters for said frame buffer memory device;

an allocator coupled to said translator, wherein said allocator receives said access parameters from said translator and determines a cache state of said frame buffer memory device based on previous pixel access transactions;

a scheduler coupled to said allocator, wherein said scheduler buffers requests received from said allocator,

an arbiter coupled to said scheduler and a video request generator, wherein said arbiter receives instructions from said scheduler and said video request generator and issues requests to said frame buffer memory device such that a cache transfer operation to said frame buffer memory device is performed before dispatching said pixel access transaction to said frame buffer memory device.

5,579,474

DISK ARRAY SYSTEM AND ITS CONTROL METHOD

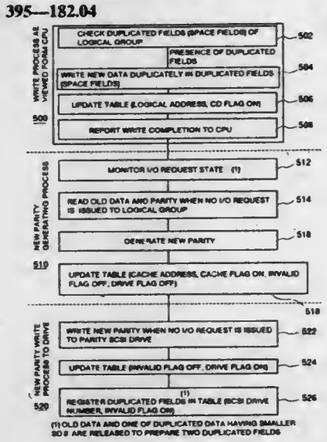
Hitoshi Kakuta, Tokyo, and Yoshifumi Takamoto, Fuchu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 173,557, Dec. 22, 1993. This application May 24, 1994, Ser. No. 248,452

Claims priority, application Japan, Dec. 28, 1992, 4-348301; May 27, 1993, 5-125766

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—182.04 **16 Claims**



9. A disk array system having a plurality of drives for holding data in a form of a combination of a plurality of write data and an error correcting code, comprising:

(a) first error correcting code generating means for generating at least one error correcting code from (m−1) write data supplied from an upper unit;

(b) first writing means for writing one data group constituted by said (m−1) write data and said error correcting code in m space fields each belonging to each of m drives;

(c) second writing means responsive to an update request issued by said upper unit for old write data of said (m−1) write data by said upper unit, for writing new write data designated by said update request in each of two space fields belonging to two drives other than said m drives as a pair of duplicated write data belonging to said data group,

(d) means for reading out three data including one of said pair of duplicated write data, said old write data, and said error correcting code from drives holding said three data, at a proper timing after writing of said pair of duplicated write data;

(e) second error correcting code generating means for generating by using said read out three data, a new error correcting code for said data group after updating of said old write data by said new write data;

(f) means for updating said old error correcting code written by said first writing means by said new error correcting code; and

(g) means for releasing, after updating said old error correcting code by said new error correcting code, a first field holding said old write data and a second field holding one of said pair of duplicated write data, so as to make the first and second fields be space fields.

VOL 1192 ISS 4 NO 26 1996 UMI

5,579,475

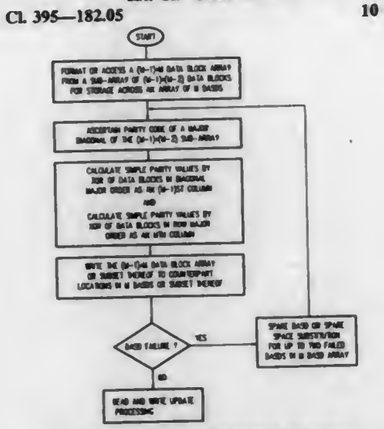
METHOD AND MEANS FOR ENCODING AND REBUILDING THE DATA CONTENTS OF UP TO TWO UNAVAILABLE DASDS IN A DASD ARRAY USING SIMPLE NON-RECURSIVE DIAGONAL AND ROW PARITY

Miguel M. Blaum; James T. Brady, both of San Jose; Jehoshua Bruck, Palo Alto, and Jaishankar M. Menon, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 85,707, Jun. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 653,596, Feb. 11, 1991, Pat. No. 5,271,012, and Ser. No. 718,724, Jun. 21, 1991, abandoned. This application Aug. 24, 1995, Ser. No. 518,955

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—182.05 **10 Claims**



PARITY CODING AND REBUILD IN THE EVENT OF FAILED DASDS

7. In a system having a plurality of DASDs, said system including means for operatively accessing an integer number M of said plurality in a higher level redundant array of inexpensive disks (RAID) configuration, M being a prime number, said accessing means being responsive to a source of external commands for reading and writing of data blocks stored on selected ones of said M of said plurality of DASDs, said data blocks being arranged in a (M−1)*(M−2) logical array, said logical array being formed from (M−1) rows and (M−2) data blocks per row, each of the (M−2) data blocks in each of the (M−1) rows in said logical array being written across counterpart ones of the M−2 of the DASDs, ones of said plurality being designated as spares, a method comprising the steps of:

(a) ascertaining a parity mode of the data blocks distributed over a major diagonal of the logical array, the data blocks in the logical array also being ordered as a plurality of diagonals;

(b) generating an (M−1)*M logical array from the (M−1)*(M−2) logical array by forming a (M−1)st column of parity values by calculating a simple parity over each diagonal of said plurality of diagonals according to the parity mode of step (a) in a diagonal major order and by forming an M-th column of parity values by calculating the simple parity to over each row in row major order;

(c) writing the generated (M−1)*M logical array across the M DASDs;

(d) responsive to a write update command to modify a data block NOT located on the major diagonal of the logical array by reading the old data block, an old diagonal parity value, and an old row parity value, calculating a new diagonal and a new row parity value, and writing the modified data block and the new diagonal and row parity values in place among the M DASDs, and responsive to a write update command to modify a data block located on the major diagonal, repeating steps (a) and (b) with respect to generation of (M−1) new diagonal parity values and the new row parity value and writing the modified data block and new diagonal parities and new row parity in place among the M DASDs; and

(e) responsive to unavailability of up to two DASDs, rebuilding a portion of said logical array from not less than (M−2) available DASDs and writing said rebuilt unavailable portion to counterpart ones of said plurality of DASDs operatively designated as spares.

5,579,476

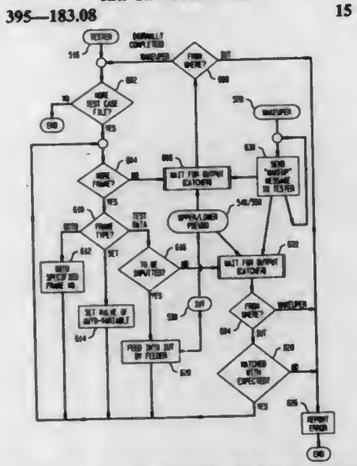
AUTOMATIC TEST ENVIRONMENT FOR COMMUNICATIONS PROTOCOL SOFTWARE

Hsu-Feng Cheng, Hsinchu, and Jung-Ming Fang, Taipei Hsizn, both of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Continuation of Ser. No. 139,303, Oct. 19, 1993, abandoned. This application Jul. 12, 1995, Ser. No. 501,456

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.08 **15 Claims**



1. In a test system having a memory and a multi-tasking processor, a method for testing a communications protocol software implementation, of a particular layer in a hierarchy of protocols, stored in said memory, said multi-tasking processor contemporaneously executing said communications protocol software implementation, a pre-defined and pre-programmed tester process and a wake-upper process, said tester process comprising the steps of:

using said processor, catching data outputted from said communications protocol software implementation to upper and lower layer communications protocol software,

using said processor, interpreting each frame of a sequence of frames, which sequence includes input data frames and output data frames,

in response to said processor interpreting an input data frame in said step of interpreting, using said processor to feed input data contained in said input data frame directly to said communications protocol software implementation, and

in response to said processor interpreting an output data frame in said step of interpreting, using said processor to compare output data contained in said output data frame with corresponding output data received in said step of catching, and said wake-upper process comprising:

using said processor, generating a single wake-up message for receipt by said tester process in said step of catching contemporaneously with said execution of said tester process and said execution of said communications protocol software implementation,

wherein said processor is preliminarily programmed in a predetermined manner to select execution priorities of each process executing thereon in relation to each other so that said processor executes said wake-upper process only when said communications protocol software implementation has ceased executing completely and when said processor waits during said step of catching to receive data outputted from said communication protocol software implementation or said tester process,

said tester process being preliminarily programmed in a predetermined manner for receiving said single wake-up message and determining that said communication protocol software implementation has unexpected ceased execution if said single wake-up message is received during said step of catching after said processor interpreted an output frame and said tester process determining that said communication protocol software implementation has properly ceased execution if said single wake-up message is received during said step of catching after the last frame is interpreted in said step of interpreting.

5,579,477

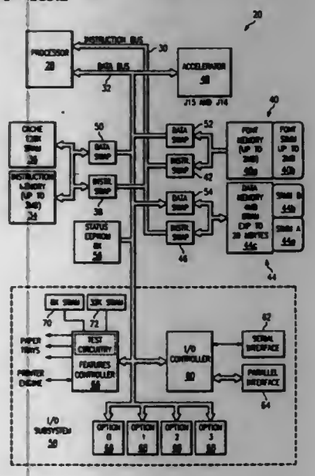
TEST CIRCUITRY FOR PRINTER MEMORY

Thomas M. Ogletree, Houston, Tex., assignor to Compaq Computer Corporation, Houstin, Tex.

Continuation of Ser. No. 279,448, Jul. 25, 1994, abandoned. This application Mar. 15, 1996, Ser. No. 616,764

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.2 **7 Claims**



1. A printer comprising:

a print engine;

a processor for controlling said engine responsive to data from a computer;

one or more memory circuits for storing information during printing operation of the printer;

test circuitry external to said processor for accessing said one or more memory circuits prior to printing operation for testing the proper operation of said one or more memory circuits such that the testing is controlled and executed by said test circuitry and not by said processor.

5,579,478

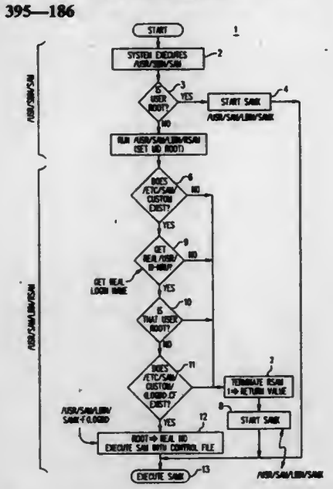
SYSTEM ADMINISTRATION MODULE FOR AN OPERATING SYSTEM AFFORDS GRADED RESTRICTED ACCESS PRIVILEGES

Tammy A. Heiserman, and Aland B. Adams, both of Ft. Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 16, 1995, Ser. No. 441,892

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—186 **1 Claim**



1. A method of allowing a computer system super user of unlimited privileges to grant to an ordinary user of the computer system graded restricted access to a specified collection of activities registered to a System Administration Manager program and performed by software installed in the computer system, the method comprising the steps of:

(a) storing in a first collection of one or more files related by a first naming convention, a formatted indication of all the activities that can be performed by using the System Administration Manager program, including names of activities, icons associated with each activity and commands for executing each software program whose execution corresponds to an activity;

(b) storing in a second collection of one or more files related by a second naming convention, and accessible only by the super user, a formatted indication of the activities that are to be the specified collection and the ordinary user that is to have graded restricted access to the specified collection; and

(c) executing the System Administration Manager program at the request of an arbitrary user, such executing including the steps of:

(d) temporarily promoting the arbitrary user to super user for the duration of steps (e) through (h);

(e) subsequent to step (d), inspecting the second collection to determine if the arbitrary user is an ordinary user named therein; and

(f) if the arbitrary user is an ordinary user named in the second collection, then performing steps (g) and (h) recited below, elsewise ending the temporary promotion of step (d) and declining to perform steps (g) and (h):

(g) displaying a menu of the specified activities, and only those activities; and

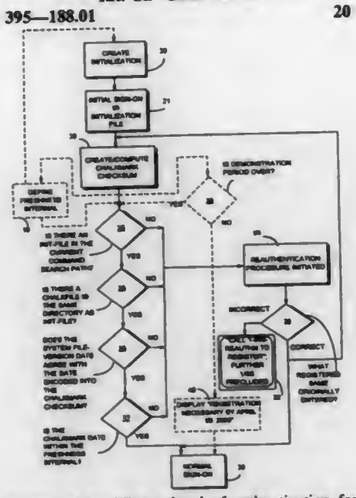
(h) executing from the menu of specified activities one or more activities thereof selected by the promoted user.

5,579,479

COMPUTER SOFTWARE LICENSING AUTHENTICATION METHOD AND APPARATUS

Thomas Plum, Kamuela, Hi., assignor to Plum Hall Inc., Kamuela, Hi.

Filed Oct. 3, 1994, Ser. No. 316,888
Int. Cl.[6] G06F *12/14*
U.S. Cl. 395—188.01 20 Claims



1. A method of providing a level of authentication for a computer software program sign-on intermediate trust-based licensing and hardware-based protection, using a computer and a display screen having a standard sign-on procedure, comprising the steps of:

(a) requiring entry of a registration name at the time of initial use of the computer software program which is provided in an Init-File;

(b) providing a freshness interval based upon number of sign-ons or the passage of time as the maximum allowable hiatus between re-authentication sign-ons;

(c) at each invocation of the computer software program determining if an invocation is within the freshness interval;

(d) if the invocation is within the freshness interval, controlling the computer and display screen to provide standard sign-on;

(e) if the invocation is not within the freshness interval, controlling the computer and display screen to provide a re-authentication query on the display screen which requires a response before standard sign-on will be allowed;

(f) if a correct response to the query in step (e) is given, controlling the computer and display screen to provide standard sign-on, and starting a new re-authentication freshness interval so that steps (c)–(e) may be repeated; and

(g) if an incorrect response to the query in step (e) is given, controlling the computer and display screen to provide information about authorized registration.

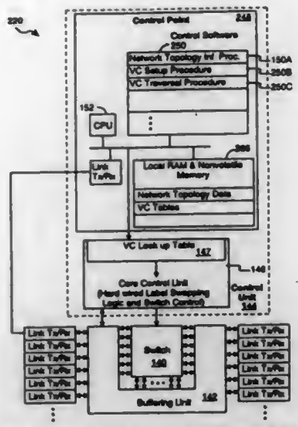
5,579,480

SYSTEM AND METHOD FOR TRAVERSING ATM NETWORKS BASED ON FORWARD AND REVERSE VIRTUAL CONNECTION LABELS

Israel Cidon, Palo Alto; Man-Tung T. Hsiao, Fremont, both of Calif.; Raphael Rom, Haifa, Israel; Phanindra Jujjavarapu, Pleasanton, Calif.; Moshe Sidi, Haifa, Israel, and Asad Khamisy, Sunnyvale, Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Apr. 28, 1995, Ser. No. 430,348
Int. Cl.[6] H04L *12/56*
U.S. Cl. 395—200.1 21 Claims

1. A switch based label swapping communication network, comprising:



a set of interconnected hosts and switch based label swapping communication nodes, where each said communication node is connected to at least one other of said communication nodes by input links and output links and each of said hosts are attached to at least one of said communication nodes by input links and output links;

each said communication node further including a switching apparatus that, when it receives a digital message at one of its input links, sends the message over a programmable set of its output links selected in accordance with said one input link's identity and an input label contained in the received message, and prior to sending said message over each output line in said set of output links, replaces said input label in said received message with a programmable output label selected in accordance with said one input link's identity, said input label and the identity of the output link on which the message is being sent;

said network including at least one a virtual connection between hosts coupled to distinct ones of said nodes in said network, said virtual connection including a tree of data channel segments on a plurality of said links that interconnect a tree of said nodes in said network;

each of said control processors at said tree of said nodes including a message generation procedure, executed by each of said control processors, for generating a virtual connection traversal message that includes (1) a message header having an input label that identifies a first control channel connecting said control processor to the control processor another one of said nodes, and (2) a data portion that identifies a data channel segment in one of said virtual connections;

each of said control processors at said tree of said nodes further including a virtual connection traversal procedure, executed by each of said control processors, for collectively transmitting said virtual connection traversal message over a sequence of control channels to the control processors at a sequence of nodes along said virtual connection, wherein each of said control channels is topologically parallel to one of the data channel segments in said one virtual connection; and

each of said control processors including a communication port for sending and receiving messages including said virtual connection traversal message; and

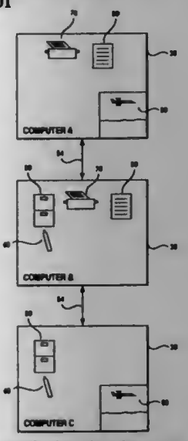
said virtual connection traversal procedure including instructions for parsing said virtual connection traversal header in each virtual connection traversal message received by the control processors executing said virtual connection traversal procedure to identify a next data channel segment, if any, along said virtual connection and to identify a control channel topologically parallel to said identified next data channel segment, and for then retransmitting said received virtual connection traversal message along said identified control channel to the control processor of a next node along said virtual connection.

5,579,481

SYSTEM AND METHOD FOR CONTROLLING DATA TRANSFER BETWEEN MULTIPLE INTERCONNECTED COMPUTER SYSTEMS WITH AN UNTETHERED STYLUS

Bernard C. Drerup, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 922,900, Jul. 31, 1992, abandoned.
This application May 1, 1995, Ser. No. 434,905
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.01 12 Claims



1. A method of transferring data between interconnected data processing systems, the method comprising the steps of:

assigning a user to a portable stylus which contains an identification of the user that is detectable by each of the data processing systems;

selecting, with said portable stylus, data from a first one of the data processing systems for transfer to an unidentified one of the data processing systems;

detecting the identification at a second one of the data processing systems via the portable stylus; and

transferring, in response to the detection of the identification, the selected data to the second data processing system.

5,579,482

METHOD AND APPARATUS FOR STORING INTERFACE INFORMATION IN A COMPUTER SYSTEM

Robert L. Einkauf, Fremont; Glen M. Riley, Los Gatos, and James M. Von De Bur, San Jose, all of Calif., assignors to Echelon Corporation, Palo Alto, Calif.

Continuation of Ser. No. 38,554, Mar. 26, 1995, abandoned, which is a continuation of Ser. No. 671,122, Mar. 19, 1991, abandoned. This application Jul. 26, 1995, Ser. No. 506,754
Int. Cl.[6] H01J *13/00*
U.S. Cl. 395—200.1 12 Claims

1. A node for use in a network, the node comprising:

a processor; and

storage means coupled to said processor;

said storage means having stored therein an application program and exposed interface data;

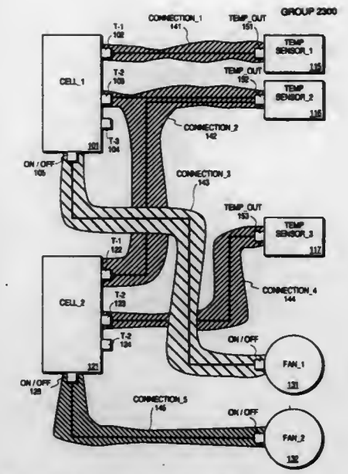
said application program containing references to at least one network variable;

said exposed interface data including global data and at least one network variable record;

said global data including buffer information;

said processor communicating values between said storage means and said network;

said processor being configured to buffer values communicated between said network and said node according to buffer parameters contained in said buffer information;



said network variable record including

data that specifies that said record corresponds to said at least one network variable; and

variable type information including at least one of a service type, a service type flag that indicates whether said service type is configurable, a priority, and a priority flag that indicates whether said priority is configurable; and

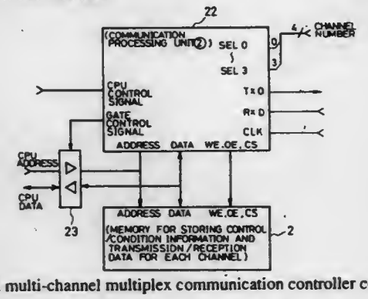
said processor being configured to communicate values that correspond to said at least one network variable between said storage means and said network based on said variable type information.

5,579,483

COMMUNICATION CONTROLLER FOR CONTROLLING MULTI-CHANNEL MULTIPLEX COMMUNICATION AND HAVING CHANNEL SELECTION FUNCTIONS AND MEMORY FOR STORING COMMUNICATION CONTROL DATA FOR EACH CHANNEL

Shunji Imai, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 55,250, May 3, 1993, abandoned.
This application May 1, 1995, Ser. No. 432,009
Claims priority, application Japan, May 8, 1992, 4-116031
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.01 2 Claims



1. A multi-channel multiplex communication controller comprising:

a serial data reception unit connected to a single serial data transmission line;

a serial data transmission unit connected to the single serial data transmission line;

a channel selection unit for selecting a channel from among a plurality of channels as specified by a channel number input;

a communication processing unit for controlling data transmission and reception over a channel selected by the channel selection unit by assigning the serial data transmission line to channels selected by the channel selection unit on a time-division basis from among the plurality of channels; and

a memory having a storage area for storing communication control data on data transmission and reception operations for each channel, a storage area for storing transmission data for each channel and a storage area for storing reception data for each channel;

wherein the communication processing unit comprises a controller which directly accesses the memory when a channel is selected by the channel selection unit, and which (a) reads communication control data for the selected channel and takes transmission data from the memory based on the communication control data to transmit the transmission data over the selected channel, (b) reads communication control data for the selected channel and receives reception data based on the communication control data to receive the reception data over the selected channel and stores the data in the memory, (c) corrects the read communication control data based on transmission and reception operations after completion of transmission and reception operations and (d) stores corrected communication control data in the storage area of the selected channel in the memory.

5,579,484

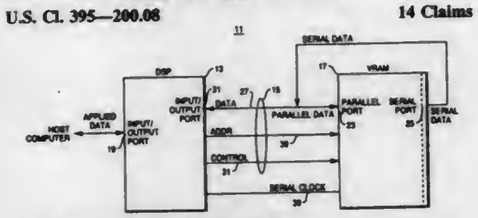
SYSTEM FOR PERFORMING FAST DATA ACCESSING IN MULTIPLY/ACCUMULATE OPERATIONS WHILE USING A VRAM

Robert W. Cooper, Waterloo, Canada, assignor to NCR Corporation, Dayton, Ohio

Filed Feb. 22, 1991, Ser. No. 659,861

Int. Cl.[6] G06F *3/14;13/10*

U.S. Cl. 395—200.08 **14 Claims**



1. A data access system comprising:

memory means including a Video Random Access Memory (VRAM) for storing data words, said VRAM having a parallel access port and a serial access port;

processing means including a processor having a first input–output port and a second input–output port, and

a data bus for coupling said second input–output port of the processor to said parallel and serial access ports of the VRAM;

said processor being responsive to data words applied via said first input–output port for transferring said applied data words, via said second input–output port, said data bus, and said parallel access port, to said VRAM for storage, and for accessing a group of said stored data words as a serial sequence via said serial access port in response to said processor supplying only an initial starting address of a first data word of said group of stored data words when said system is operated in a fast sequential mode.

5,579,485

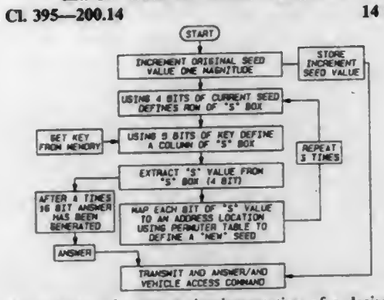
APPARATUS FOR REMOTE IMPLEMENTATION OF A COMMAND

Lynne Edgar, Rochester; Ronald G. Moore, Troy; Reno V. Ramsey, Sterling Heights, and Al E. Tousignant, Clinton Township, Wayne County, all of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 120,883, Sep. 13, 1993, abandoned. This application Aug. 3, 1995, Ser. No. 510,757

Int. Cl.[6] G06F *13/00;7/04;* **H04Q** *7/00*

U.S. Cl. 395—200.14 **14 Claims**



1. An apparatus for remote implementation of a desired command, the apparatus comprising:

means for producing a seed value;

means for calculating a first answer using a predetermined identifying value and said seed value as an input variable to a first transfer function, wherein said identifying value is truncated to produce a first truncated identifying value, and wherein said seed value is truncated to produce a first truncated seed value, and wherein said first truncated identifying value and said first truncated seed value are input into said first transfer function to produce a first partial answer, and wherein said identifying value is sequentially truncated a plurality of additional iterations to produce a plurality of subsequent truncated identifying values, and wherein said seed value is sequentially truncated a plurality of additional iterations to produce a plurality of subsequent truncated seed values, and wherein the next sequential subsequent truncated identifying value and the next sequential subsequent truncated seed value are input into said first transfer function to produce a plurality of subsequent partial answers, wherein said first answer comprises said first and plurality of subsequent partial answers concatenated on with another;

a transmitter for transmitting a first signal representative of said desired command, said seed value and said first answer;

a receiver for receiving said first signal;

means for calculating a second answer using said first signal as an input to a second transfer function;

means for performing a comparison test on said first and second answer; and

means for implementing said desired command upon incident of said first and second answers satisfying said comparison test.

5,579,486

COMMUNICATION NODE WITH A FIRST BUS CONFIGURATION FOR ARBITRATION AND A SECOND BUS CONFIGURATION FOR DATA TRANSFER

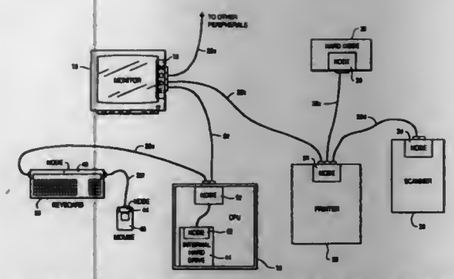
Florin Oprescu, Sunnyvale, and Roger W. Van Brunt, San Francisco, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jan. 14, 1993, Ser. No. 4,431

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—200.15 **20 Claims**

1. A communication system for interconnecting a plurality of local hosts, the communication system providing a first bus configuration for arbitration and a second bus configuration for unidirectional data transfer, comprising:



a plurality of nodes, each node including an arbiter, a data bus, at least one port, and at least one multiplexer responsive to said arbiter for selectively coupling each port of the node to one of the arbiter and the data bus;

a plurality of point-to-point links, each point-to-point link coupling a port of a first node with a port of a second, different node, so that the nodes have a tree topology coupled by said point-to-point links;

a plurality of local hosts, each local host being coupled to one of the nodes for arbitrating bus access, receiving data, and transmitting data; and

wherein in the first bus configuration the multiplexers couple the arbiters to the ports to receive and transmit arbitration messages thereon, and in the second bus configuration the multiplexers couple the data bus to the ports to selectively receive and transmit data thereon.

5,579,487

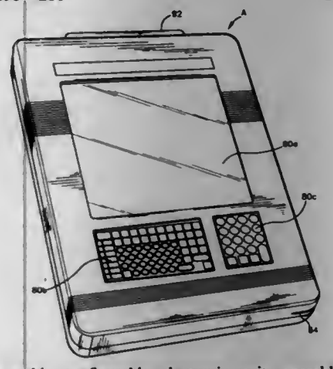
PORTABLE WORK SLATE COMPUTER WITH MULTIPLE DOCKING POSITIONS FOR INTERCHANGEABLY RECEIVING REMOVABLE MODULES

Robert F. Meyerson, Captiva Island, Fla.; Yung-Fu Chang, Medina, Ohio; Ynjiun P. Wang, Ft. Myers, Fla., and Daniel G. Wall, Union Town, Ohio, assignors to Teletransaction, Inc., Akron, Ohio

Continuation-in-part of Ser. No. 956,112, Oct. 2, 1992, abandoned. This application Jun. 30, 1994, Ser. No. 269,190

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—280 **12 Claims**



1. A portable configurable electronic unit, operable with a changeable complement of removable modules, the complement of removable modules including a plurality of module types, each different module type providing different operational capabilities, the unit comprising:

a) a housing supporting electronic circuitry including a processor and a memory accessible by the processor, the housing further including a hand gripping portion for supporting the unit with a hand of a user and including a plurality of docking positions each configured to releasably support a selected removable module;

b) each of the plurality of docking positions including a standardized docking interface having electrical connectors which engage corresponding electrical connectors of a standardized module interface of a module removably attached to the docking position to enable coupling of electrical signals between the docking interface and the module;

c) a bus configuration including a bus controller, the bus configuration electrically coupled to the processor and a docking interface of each of the plurality of docking positions to electrically couple the processor and the docking interfaces;

d) the bus controller configured to send an identification signal to the processor identifying a module type of a module upon attachment of the module to a selected one of the plurality of docking positions;

e) programming stored in the memory and executed by the processor to enable the processor to control an operation of each module attached to a selected different one of the plurality of docking positions, the programming stored in the memory prior to attachment of any of the modules to any of the docking positions; and

f) the programming including at least one program uniquely associated with each of the plurality of module types, the processor, upon receiving a model type identification signal from the bus controller, executing the at least one program associated with the identified module type of the module to control operation of the module.

5,579,488

PROGRAMMABLE CONTROL DEVICE

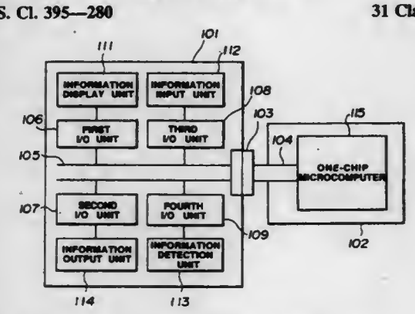
Keiichi Ikeda, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 941,785, Sep. 8, 1992, abandoned. This application Mar. 13, 1995, Ser. No. 402,977

Claims priority, application Japan, Sep. 9, 1991, 3-256007; Aug. 25, 1992, 4-225983; Aug. 25, 1992, 4-225984

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—280 **31 Claims**



1. A programmable control device, comprising:

a first bus line to which a first control unit and a first connection unit are connected, said first control unit being connected to a device and operating to control said device and said first control unit being connected to said first connection unit through the first bus; and

a second bus line, to which a second control unit and a second connection unit are connected, said second control unit being connected to said second connection unit through the second bus and said first and second connection units being detachably connectable to each other, and said second control unit being coupled to the first control unit via the second bus line, the second connection unit, the first connection unit and the first bus line to control said first control unit according to information stored in a storage unit connected to said second control unit,

wherein control of said device by said first control unit differs in the cases in which said second control unit is connected and in which said second control unit is not connected, respectively.

5,579,489

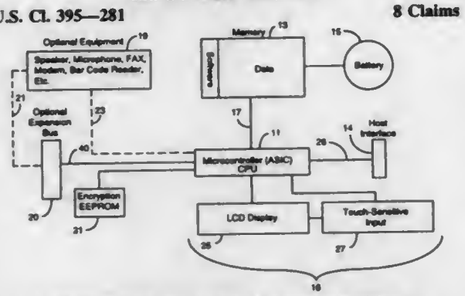
HAND-HELD PORTABLE COMPUTER HAVING CAPABILITY FOR EXTERNAL EXPANSION OF AN INTERNAL BUS

Pascal Dornier, Sunnyvale; Dan Kikinis, Saratoga, and William J. Seiler, Scotts Valley, all of Calif., assignors to Elonex I.P. Holdings, Ltd., London, England

Continuation-in-part of Ser. No. 144,231, Oct. 28, 1993, and Ser. No. 16,122, Feb. 10, 1993, Pat. No. 5,457,785. This application Jul. 26, 1994, Ser. No. 280,925

Int. Cl.[6] G06F *3/00;13/00*

U.S. Cl. 395—281 **8 Claims**



1. A digital assistant I/O expansion system comprising:

a first enclosure defining the bounds of a digital assistant;

a CPU within the enclosure;

a memory coupled to the CPU;

a touchscreen combination I/O apparatus implemented on a surface of the enclosure;

an internal I/O bus coupled to the CPU and to an expansion connector in a surface of the enclosure;

an expansion bus external to the enclosure, the expansion bus having the width and parallel structure of the internal I/O bus;

an intermediate bus link connected to the expansion connector and to the expansion bus;

first state-translation circuitry connected to the internal I/O bus and to the intermediate bus link; and

second state-translation circuitry connected to the intermediate bus link and to the expansion bus;

wherein the first state-translation circuitry translates and multiplexes bus signals appropriate to I/O peripheral devices from the internal I/O bus onto the intermediate bus link, and the second state-translation circuitry translates the signals on the intermediate bus link onto the expansion bus, providing on the expansion bus the signals and structure of the internal bus in a manner allowing the CPU to transact with peripheral devices connected to the expansion bus exactly as though they were connected on the internal I/O bus, requiring no dedicated device-driver software executed by the CPU.

5,579,490

EXPANDED ADDRESS BUS SYSTEM

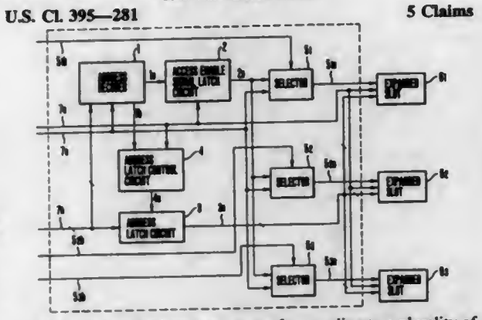
Masami Michino, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Division of Ser. No. 377,683, Jan. 25, 1995, Pat. No. 5,450,522, which is a continuation of Ser. No. 62,331, May 17, 1993, abandoned, which is a continuation of Ser. No. 754,196, Aug. 28, 1991, abandoned, which is a continuation of Ser. No. 233,106, Aug. 17, 1988, abandoned. This application Jun. 5, 1995, Ser. No. 462,665

Claims priority, application Japan, Aug. 17, 1987, 62-203106; Aug. 17, 1987, 62-203107

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—281 **5 Claims**



1. An expanded address bus system for coupling to a plurality of slave devices, each of which is inserted into one of a plurality of expanded slots, said expanded address bus system comprising:

an address bus having a bus access enable signal transmitted thereon and being compatible with an expanded bus type A or an expanded bus type B, said expanded bus type A having a predetermined address bus width equal in address bus width to said address bus, and said expended bus type B having an address bus width that is narrower than said address bus, said expanded address bus system further comprising:

an address decoder circuit receiving a set of address signals that address a whole address space of said expanded address bus system, said address decoder circuit decoding said set of address signals and producing decoded signals representing a portion of said whole address space during a slave access period, said whole address space including a portion having addresses assigned to respective slave devices, each of whose address bus is compatible with said expanded bus type B; and

a plurality of selector circuits, corresponding in a one to one relation with said plurality of expanded slots, for selecting and for outputting either a selected one of said decoded signals of said address decoder circuit or the bus access enable signal onto the address bus of said slave devices that are inserted in said expanded slots, respectively.

5,579,491

LOCAL PROACTIVE HOT SWAP REQUEST/ ACKNOWLEDGE SYSTEM

Kenneth L. Jeffries, Leander; Craig S. Jones, and Victor K. Pecone, both of Austin, all of Tex., assignors to Dell U.S.A., L.P., Austin, Tex.

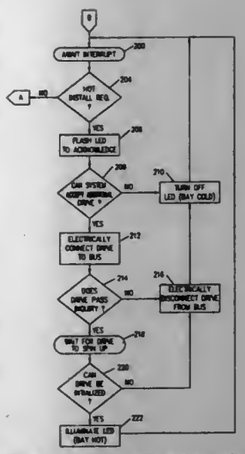
Filed Jul. 7, 1994, Ser. No. 271,617

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—283 **52 Claims**

1. Apparatus for implementing a local proactive hot swap request/acknowledge scheme in a computer system comprising a computer bus and at least one electrical device physically and electrically connectable to said bus, the apparatus comprising:

user-actuatable means supported on said at least one electrical device for generating a request for a hot swap procedure comprising a hot installation or a hot removal of said at least one electrical device;



processor means electrically connected to said user-actuatable generating means, for processing said hot swap request to determine whether said requested hot swap procedure may be performed without detrimentally affecting ongoing operations of said bus and said system, and for generating signals indicative of said processing results;

indicating means electrically connected to said at least one electrical device and said processor means, for indicating said processing results to a user, said indicating means being responsive to receipt of said generated signals from said processor means;

means connected to said processor means for performing said requested hot swap procedure when said processor means determines that said requested bot swap procedure may be performed;

logic, executable by said processor means, for determining whether said at least one electrical device is either free and spare or free and redundant;

logic, executable by said processor means in response to a determination that said at least one electrical device is either free and spare or free and redundant, for determining whether said system is capable of removing an electrical device; and

logic, executable by said processor means in response to a determination that said system is capable of removing an electrical device, for causing said performing means to remove said at least one electrical device from said bus, and for causing said indicating means to provide a third indication signal to said user.

5,579,492

DATA PROCESSING SYSTEM AND A METHOD FOR DYNAMICALLY IGNORING BUS TRANSFER TERMINATION CONTROL SIGNALS FOR A PREDETERMINED AMOUNT OF TIME

James G. Gay, Pflugerville, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

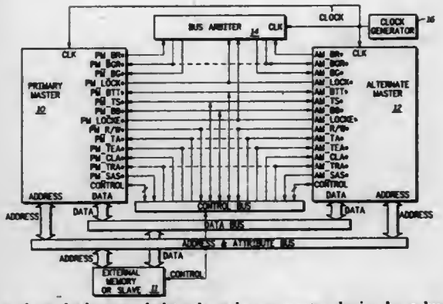
Filed Nov. 1, 1993, Ser. No. 143,667

Int. Cl.[6] G06F *13/22*

U.S. Cl. 395—290 **30 Claims**

1. A data processing system comprising:

a primary master device, the primary master device having at least one input for receiving at least one input control signal from external to the primary master device, the primary master device having at least one output for providing at least one output control signal external to the primary master device, the primary master device initiating a bus cycle at a first point in time and starting to sample data from the at least one input beginning at a second point in time wherein the second point in time is after the first point in time;



a slave device coupled to the primary master device by a bus, the bus communicating a plurality of signals between the primary master device and the slave device, the slave device having at least one output coupled to the at least one input of the primary master device for communicating at least one bus transfer termination signal which indicates to the primary master device that data transmitted via the bus between the slave device and the primary master device was processed; and

bus arbiter circuitry coupled to the primary master device for arbitrating ownership of the bus by the primary master device, wherein the at least one bus transfer termination signal is ignored for all time between the first point in time and the second point in time.

5,579,493

SYSTEM WITH LOOP BUFFER AND REPEAT CONTROL CIRCUIT HAVING STACK FOR STORING CONTROL INFORMATION

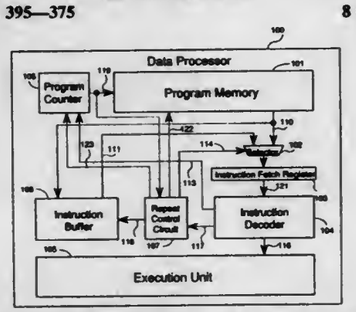
Atsushi Kiuchi, Kunitachi, and Tetsuya Nakagawa, Koganei, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 8, 1994, Ser. No. 354,166

Claims priority, applicatiou Japan, Dec. 13, 1993, 5-311750

Int. Cl.[6] G06F *9/40*

U.S. Cl. 395—375 **8 Claims**



1. A low-power data processor in which an instruction module to be repeatedly executed is read out from an instruction memory and fetched by an instruction fetch register in such a way as to decrease the power consumption of the processor, said data processor comprising:

an on-chip instruction buffer for storing only at least a part of the instructions of an instruction module to be repeatedly executed; and

repeat control means for successively transferring the instructions in said instruction module from said instruction memory to said instruction buffer as well as to said instruction fetch register at the first time of execution of said instruction module, and, when the number of the instructions of said instruction module to be repeatedly executed as stored in said instruction buffer equals the capacity of said instruction buffer, stopping storage of the remaining instructions of said

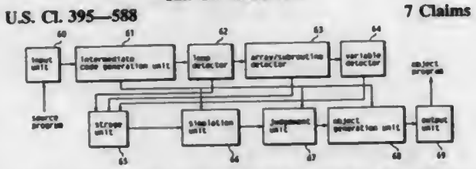
instruction module in said instruction buffer while continuing to transfer the remaining instructions to said instruction fetch register from said instruction memory and storing information used for controlling reading of each of the instructions stored in said instruction buffer, including means operating during each subsequent time of execution of the instructions of said instruction module for transferring the instructions stored in said instruction buffer to said instruction fetch register only from said instruction buffer and for transferring the remaining instructions which are not stored in said instruction buffer to said instruction fetch register from said instruction memory, on the basis of said stored reading control information.

5,579,494

APPARATUS FOR DETECTING POSSIBILITY OF PARALLEL PROCESSING AND METHOD THEREOF AND A PROGRAM TRANSLATION APPARATUS UTILIZED THEREIN

Koji Zaiki, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 981,002, Nov. 10, 1992, Pat. No. 5,450,554. This application Feb. 21, 1995, Ser. No. 395,373
Claims priority, application Japan, Nov. 11, 1991, 3-294090
Int. Cl.[6] G06F *9/45*
U.S. Cl. 395—588 **7 Claims**



1. An apparatus for detecting whether iterations of a program loop can be processed in parallel, wherein the program loop includes at least one of a conditional branch statement, a variable appended with a subscript which is determined by a calculation, and a subroutine call statement, the apparatus comprising:

simulation means for simulating each iteration of the program loop;

variable storage means for storing values of variables, which are defined in program statements executed during simulation of the iterations, each value being stored with information showing both a location in the program where the value of the variable is defined and a number of the simulated iteration in which the variable is defined; and

judgment means for judging that parallel processing is possible when, for each simulated iteration, variables whose values are referred to in program statements of a current iteration are defined in preceding program statements within the current iteration.

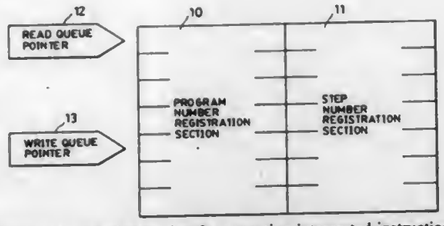
5,579,495

INFORMATION PROCESSING IN WHICH A SIMULATION OF PARALLELISM IS ACHIEVED

Kunitaka Ozawa, Isehara; Tsuneaki Kadosawa, Ninomiyamachi; Takashi Nakamura, Hiratsuka; Eiji Koga, Hadano, and Hitoshi Watanabe, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 769,799, Oct. 2, 1991, abandoned. This application Mar. 28, 1995, Ser. No. 411,406
Claims priority, application Japan, Oct. 8, 1990, 2-271219
Int. Cl.[6] G06F *9/40*
U.S. Cl. 395—383 **8 Claims**

1. An information processing system having a memory for storing a plurality of programs, each program consisting of a plurality of numbered steps and each step including a respective instruction, said system further having an instruction interpretation section for interpreting the instructions in the programs and an



instruction execution section for executing interpreted instructions interpreted by said instruction interpretation section, said system comprising:

storage means for storing in sequence a number of a step in each of said programs to be executed next within the respective program, said storage means comprising a plurality of memory-locations which concurrently store the numbers of respective ones of the steps;

reading means for reading, from the storage means, the number next in sequence;

means for providing the instruction of the step whose number was read out to said instruction interpretation section and for providing the corresponding interpreted instruction to said instruction execution section for execution, a number of a further step to be executed next within the program including the step whose number was read out being determined in accordance with the corresponding interpreted instruction;

writing means for writing the further-step number into sequence in different respective memory-locations of the storage means after execution of the corresponding interpreted instruction, said reading means then reading a further step number next in sequence after operation of said writing means: and

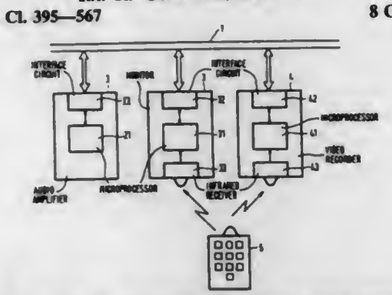
means for indicating to said storage means a position in the sequence at which each step to be executed next is stored, and means for indicating to said storage means a position from which each step to be executed is read out.

5,579,496

METHOD AND APPARATUS FOR PROCESSING CONTROL INSTRUCTIONS RECEIVED FROM MULTIPLE SOURCES CONNECTED TO A COMMUNICATION BUS

Bernard Van Steenbrugge, Redhill, United Kingdom, assignor to U.S. Phillips Corporation, New York, N.Y.

Continuation of Ser. No. 209,681, Mar. 10, 1994, abandoned, which is a continuation of Ser. No. 853,366, Mar. 18, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 483,629
Claims priority, application European Pat. Off., Apr. 2, 1991, 91200758
Int. Cl.[6] G09G *3/02*; G05B *19/00*
U.S. Cl. 395—567 **8 Claims**



1. A method for processing a plurality of control instructions received from at least two sources which are coupled to a communication connection, the control instruction being intended for controlling an apparatus and said method comprising the steps of:

a) receiving and executing a first control instruction from a first source;

b) storing a first instruction code representing said first control instruction and a first source code identifying said first source;

c) receiving a second control instruction from a second source;

d) comparing a second instruction code representing said second control instruction to said first instruction code and, comparing a second source code identifying said second source to said first source code; and

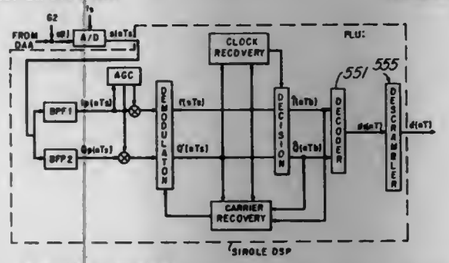
e) disregarding said second control instruction if said second source is different than said first source and said second instruction code matches said first instruction code, and executing said second control instruction if said second instruction code is different than said first instruction code or said second source is the same as the first source.

5,579,497

DEVICES AND SYSTEMS WITH PARALLEL LOGIC UNIT, AND METHODS

Peter N. Ehlig, Houston, Tex., and Frederic Boutaud, Roquefort les Pins, France, assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 233,477, Apr. 26, 1994, which is a continuation of Ser. No. 347,605, May 4, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 484,115
Int. Cl.[6] G06F *19/00*
U.S. Cl. 375—222 **2 Claims**



1. A modem, comprising:

A combined analog-to-digital and digital-to-analog converter circuit for connection to a telephone line; and

a processing circuit, connected to said converter circuit and for connection to a telephone, including a single-chip data processing device operable for both scrambling and modulation, said device including:

data bus,

a program bus,

a data memory connected to said data bus and having data memory locations,

an electronic computation unit connected to said data bus and to said program bus,

an accumulator connected to said electronic computation unit and to said data bus, logic circuit connected to said program bus for receiving instructions and connected to said data bus for executing logic operations in accordance with at least some of the instructions, the logic operations affecting bits in at least some of said data memory locations independently of said electronic computation unit without affecting said accumulator, and

a control circuit for sending instructions to said logic circuit on said program bus and to said electronic computation unit, and wherein

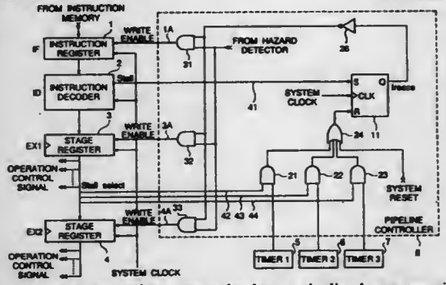
said logic circuit executes operations in a scrambling process simultaneously with said electronic computation unit executing operations in a modulation process.

5,579,498

PIPELINED DATA PROCESSING SYSTEM CAPABLE OF STALLING AND RESUMING A PIPELINE OPERATION WITHOUT USING AN INTERRUPT PROCESSING

Yasushi Ooi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 270,588, Jul. 5, 1994, abandoned. This application Mar. 18, 1996, Ser. No. 617,427
Claims priority, application Japan, Jul. 5, 1993, 5-165612
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—595 **14 Claims**



1. A data processing system having a pipelined structure in which an instruction execution process is divided into a plurality of stages, the data processing system having an instruction set containing a stall instruction, and comprising:

pipeline control means for controlling an execution and stall of a pipeline operation; and

a plurality of pipeline operation resume means selected according to said stall instruction, where a timing signal of resuming said pipeline operation is generated,

said pipeline control means for putting said stages into a "frozen" condition based on a stall signal generated by execution of said stall instruction, and for returning said "frozen" condition to a "run" condition based on said timing signal generated by said pipeline operation resume means designated by an operand included in said stall instruction such that processing is performed in synchronism with arrival of data without an interrupt processing.

5,579,499

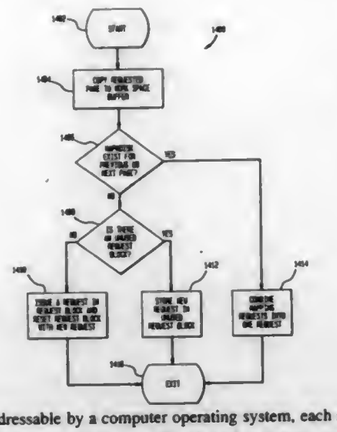
PRODUCT FOR REPRESENTING DATA OBJECT IN CONCATENATED MULTIPLE VIRTUAL ADDRESS SPACES WITH COMBINED REQUESTS FOR SEGMENT MAPPING

Jean G. Fecteau, Toronto; Eugene Kligerman, and Lubor Kollar, both of North York, all of Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 442,770, May 17, 1995, which is a division of Ser. No. 443,397, May 17, 1995, which is a continuation of Ser. No. 975,245, Nov. 12, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 468,987
Claims priority, application Canada, Dec. 11, 1991, 2055295
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—419 **2 Claims**

1. A computer program product for use with a database management system, comprising:

a computer usable medium having computer readable program code means embodied in said medium for mapping on demand a page of a data object contained in a database and stored in one or more database storage disks, wherein the database comprises one or more database data objects, wherein the database is accessed via a contiguous data space representation, the contiguous data space being represented by a plurality of concatenated sub-data spaces, wherein each sub-data space is a virtual data space of a maximum size that



is addressable by a computer operating system, each sub-data space comprising a plurality of data segments, each data segment comprising a plurality of pages, wherein the pages of the contiguous data space representation are contiguous, each page comprising a known number of addressable storage locations, wherein the contiguous data space, the sub-data spaces, the data segments, and the pages are addressable by the database management system, wherein the address of a page to be mapped has been determined to be placed in a data segment of a sub-data space, said computer program product having:

first computer readable program code means for determining whether the sub-data space has been created for representation in the contiguous data space;

second computer readable program code means for creating the sub-data space for representation in the contiguous data space if said first computer readable program code means determines that the sub-data space has not been created in the contiguous data space;

third computer readable program code means for creating a segment bit map for the sub-data space if said first computer readable program code means determines that the sub-data space has not been created in the contiguous data space, wherein said segment bit map comprises a plurality of bits, each bit representing a data segment contained in the sub-data space and indicating whether said data segment has been mapped to the database storage disk;

fourth computer readable program code means for determining if a bit in said segment bit map is equal to a predetermined value, wherein said bit corresponds to the data segment of the sub-data space containing the page to be mapped, and said predetermined value indicates that the data segment corresponding to said bit has been mapped to the database storage disk;

fifth computer readable program code means for mapping a data segment of the data object from the database storage disk to the data segment of the sub-data space, wherein said data segment from the database storage disk contains the page to be mapped, and said mapping occurs if said fourth computer readable program code means determines that said bit in said segment bit map does not equal said predetermined value; and

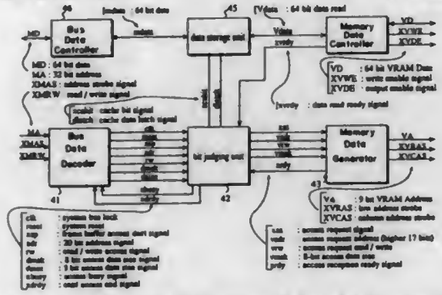
sixth computer readable program code means for setting said bit in said segment bit map to said predetermined value, wherein said setting occurs when said fifth computer readable program code means is performed.

5,579,500

CONTROL APPARATUS FOR CONTROLLING DATA READ ACCESSES TO MEMORY AND SUBSEQUENT ADDRESS GENERATION SCHEME BASED ON DATA/ MEMORY WIDTH DETERMINATION AND ADDRESS VALIDATION

Tsutomu Sekibe; Tomohiko Kitamura, and Toshiyuki Ochiai, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 23, 1994, Ser. No. 200,217
Claims priority, application Japan, Feb. 24, 1993, 5-035092
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—421.1 **6 Claims**



6. A control apparatus for controlling data read accesses to memory in response to an access request sent through a system bus, the control apparatus comprising:

a data storage means for preserving data corresponding to a predetermined address, said data storage means comprising:

a data latch means for latching said data outputted from a memory; and

a selection means for selecting said data latched by said data latch means when said access address has been judged to match the predetermined address and for selecting data outputted from said memory when said access address has been judged not to match the predetermined address, thereby forwarding selected data to the system bus;

a judging means for judging whether an access address indicated by said access request matches the predetermined address, said judging means comprising:

an address storage means for preserving an address indicating said data latched by said data latch means;

a hit judging means for judging whether said access address matches the address preserved in said address storage means;

a validity judging means for judging whether the data preserved in said data storage means are valid or invalid and for informing said judging means of a result judged by said validity judging means, wherein said hit judging means judges that said access address matches the address preserved in said address storage means, when informed of invalidity; and

a data size judging means for detecting that access data have smaller data width than said memory and do not include a final position of the data width of said memory;

a control means for making said data storage means output data preserved therein to the system bus when said access address has been judged to match the predetermined address, and for making said data storage means hold data corresponding to a next address subsequent to said access address when said access address has been judged not to match the predetermined address, wherein said next address indicates data subsequent to data corresponding to said access address, said data indicated by said next address having a same data width as said memory, said control means comprising:

an address generation means for generating said next address when said access address has been judged to match the address preserved in said address storage means, and for generating said access address and said next address in sequence and forwarding to said control means when said access address has been judged not to match the address preserved in said address storage means wherein said address generation means suspends an operation of generating said next address upon receiving said first result and said data size judging means informs said address generation means of a second result detected by said data size judging means, said address generation means comprising:

a first incrementer for incrementing said access address;

a first selector for selecting an output of said first incrementer when said access address has been judged to match the address preserved in said address storage means and selecting a high order address when said access address has been judged not to match the address preserved in said address storage means;

a latch circuit for latching an output of said first selector;

a second incrementer for incrementing the output of said first selector; and

a second selector for selecting an output of said latch circuit when said access address has been judged to match the address preserved in said address storage means and for selecting said output of said latch circuit and then selecting an output of said second incrementer as an updated access address to said memory when said access address has been judged no to match the address preserved in said address storage means; and

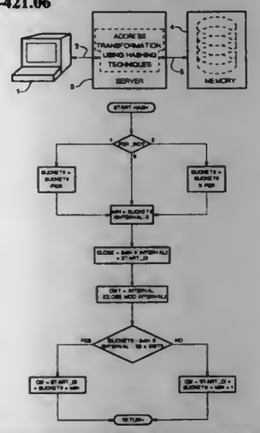
a latch control means for, when data are read out from said memory, making said data latch means latch said data corresponding to said next address generated by said address generation means, wherein said control means controls said data read access to said memory by a use of said access address outputted from said address generation means.

5,579,501

METHOD FOR TRANSFORMING A HASH BUCKET NUMBER TO A CONTROL INTERVAL TO IDENTIFY THE PHYSICAL LOCATION OF INFORMATION IN A MASS MEMORY

Arnold S. Lipton; Mariam P. Sanford, both of Phoenix; David A. Egolf; David W. Wagner, both of Glendale; Todd B. Kneisel, Phoenix, and Michael L. Giroux, Glendale, all of Ariz., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Filed Nov. 30, 1994, Ser. No. 347,005
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—421.06 **8 Claims**



1. In a computer system including a user interface, a processor and a mass memory, which mass memory stores information in physically contiguous memory location segments which are interrupted by discontinuities at a regular interval, a process for communicating between the user interface and the mass memory comprising the steps of:

A) establishing, for each set of information to be stored in the mass memory with which the process will be used, a set of characteristics which include at least:

1) the regular interval at which discontinuities appear, the "INTERVAL"; and

2) any offset from a first physical location in a relevant subdivision of the mass memory at which the first record of an information set is to be stored, the "START_CI";

B) employing the user interface to specify a virtual identification for the physical location to be accessed in the mass memory;

C) relating the virtual identification to a hash bucket number, the "BUCKET#", in a series of sequentially contiguous hash bucket numbers;

E) in the processor, transforming the hash bucket number into a physical location "CI#" in the mass memory employing an integer arithmetic hashing process comprising the following sub-steps:

1) obtaining a value "M1N" by employing the equation:

MIN=BUCKET#/(INTERVAL−1);

2) obtaining a value "CLOSE" by employing the equation:

CLOSE=(MIN * INTERVAL)+START_CI;

3) obtaining a value "DIST" by employing the equation:

DIST=INTERVAL−(CLOSE MOD INTERVAL)

in which the term "CLOSE MOD INTERVAL" means the remainder of CLOSE divided by INTERVAL;

4) making a YES/NO decision by making the determination:

(BUCKET#−(MIN * (INTERVAL−1)))<DIST?;

5) if the decision in sub-step 4) is YES, obtaining the CI# by employing the equation:

CI#=START_CI+BUCKET#+MIN;

6) if the decision in sub-step 4) is NO, obtaining the CI# by employing the equation:

CI#=START_CI+BUCKET#+MIN+1; and

F) using the CI# to identify the physical location to be accessed in the mass memory to thereby facilitate the establishment of a communications path between the user interface and the identified physical location in the mass memory.

5,579,502

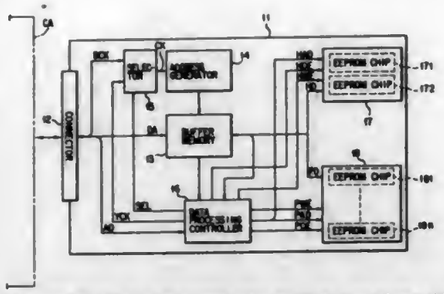
MEMORY CARD APPARATUS USING EEPROMS FOR STORING DATA AND AN INTERFACE BUFFER FOR BUFFERING DATA TRANSFER BETWEEN THE EEPROMS AND AN EXTERNAL DEVICE

Kazuo Konishi; Shimpei Yoshioka, both of Yokohama; Setsuo Terasaki, Kamakura; Hiroaki Matsubara, Fukaya; Koji Maruyama, Yokohama; Toshiaki Sato, Fakaya, and Takaaki Suyama, Honjo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 330,606, Oct. 28, 1994, abandoned, which is a continuation of Ser. No. 924,881, Aug. 6, 1992, abandoned. This application Jul. 21, 1995, Ser. No. 505,369
Claims priority, application Japan, Aug. 9, 1991, 3-200308; Aug. 9, 1991, 3-200309; Aug. 9, 1991, 3-200310; Aug. 9, 1991, 3-200311; Aug. 9, 1991, 3-200519; Aug. 9, 1991, 3-200520; Aug. 9, 1991, 3-200522; Aug. 9, 1991, 3-200523; Aug. 9, 1991, 3-200524; Aug. 9, 1991, 3-200705
Int. Cl.[6] G06F *12/04*
U.S. Cl. 395—430 **11 Claims**

1. A memory card apparatus for receiving and storing data from an external unit, said data including a first data group including at least one group of first data which is read/written in units of bytes, and a second data group including at least one group of second data which is sequentially arranged as a whole, each second group of data being larger than each first group of data, said memory card comprising:

memory for inputting and outputting said data with respect to said external unit, said memory being capable of high-speed read and write operations;



a first EEPROM for performing read and write operations with respect to said memory, said first EEPROM having a storage capacity large enough to record said first data group and being capable of performing said read and write operations in units of bytes;

a second EEPROM for performing read and write operations with respect to said memory, said second EEPROM having a storage capacity large enough to record said second data group and being capable of performing a data read/write operation in units of reference areas, each reference area having a plurality of consecutive bytes; and

control means for characterizing data stored in said memory as one of said first data group and said second data group and for writing said data to a selected one of said first and second EEPROMs based on said characterization, said control means including:

write control means for, after data has been transferred from said memory to said selected EEPROM and written therein, reading out said data written in said selected EEPROM, comparing said readout data with said data stored in said memory, and again transferring said data from said memory to said selected EEPROM when said readout data and said data stored in said memory do not coincide with each other,

clock switching means for effecting a first switch and a second switch, said first switch being between an input operation in which data supplied from said external unit is input to said memory and an output operation in which data from said memory is output to said external unit, said first switch being effected based on a first clock which is supplied from said external unit, and said second switch being between a writing operation in which data from said memory is transferred to and written in said selected EEPROM and a reading operation in which data from said selected EEPROM is read into said memory, said second switch being effected based on an internally generated second clock; and

refusal signal generation means for, while data from said memory is being read out from and written into said second EEPROM in units of reference areas, generating and outputting a data input refusal signal for refusing input of data from said external unit.

5,579,503

DIRECT CACHE COUPLED NETWORK INTERFACE FOR LOW LATENCY

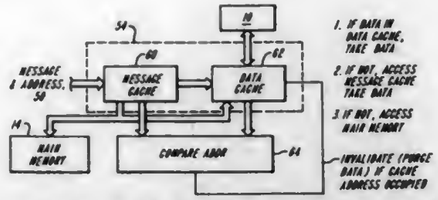
Randy R. Osborne, Cambridge, Mass., assignor to Mitsubishi Electric Information Technology, Cambridge, Mass.

Filed Nov. 16, 1993, Ser. No. 153,805

Int. Cl.[6] G06F *13/12*

U.S. Cl. 395—446 **8 Claims**

1. In a network in which messages having addresses are transmitted to various nodes of said network from one stand-alone computer system to another in which each node has a computer including a processor, and a main memory, a low latency network interface comprising:



a cache at a node dedicated to caching said network messages so as to permit storing message data directly at the address contained in said message, said cache being coupled to the processor and main memory at said node;

means for directly coupling said cache to said network messages, thus to eliminate any buffering between said network and said cache: and,

means for sending a message over said network including data and preincorporated information indicating an address in said main memory at which said data is to be finally stored, whereby means are provided for coupling said message to said cache without buffering, with said data being stored in said cache at said address.

5,579,504

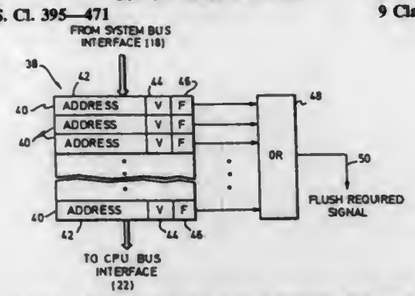
MULTI-PROCESSOR COMPUTER SYSTEM HAVING SHARED MEMORY, PRIVATE CACHE MEMORIES, AND INVALIDATE QUEUES HAVING VALID BITS AND FLUSH BITS FOR SERIALIZING TRANSACTIONS

Michael A. Callander, Hudson; G. Michael Uhler, Marlborough, and W. Hugh Durdan, Waban, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 494,824, Mar. 15, 1990, abandoned, which is a continuation of Ser. No. 212,347, Jun. 27, 1988, abandoned. This application Mar. 17, 1995, Ser. No. 407,784

Int. Cl.[6] G06F *9/28;12/12*

U.S. Cl. 395—471 **9 Claims**



1. In a computer system having a main memory for storing a set of data, said computer system further having a plurality of processors, each processor having an associated cache memory for storing a subset of the data stored in said main memory, said computer system further having a system bus for intercoupling the processors and the main memory and for intercoupling each of the processors with any other of the processors, an apparatus for maintaining the integrity of data stored in the main memory and in the cache memories comprising:

a. a read data queue for each processor, said read data queue coupled to said system bus, said read data queue having a plurality of entries, each entry having a data field for storing read data to be processed into said processor's cache memory and a valid bit field for identifying a full read data entry; and

an invalidate queue for each processor, said invalidate queue having a plurality of entries, each entry having an address field for storing invalidates, a valid bit field for identifying a full invalidate entry and a flush bit field for indicating an

invalidate to be processed, wherein upon initiation of a read request by any of said processors for data for which the memory address of that data is not resident in the cache corresponding to said processor, said processor directs that the valid bit field for each entry in its associated invalidate queue be read to its associated flush bit field and commences processing all invalidates for which a flush bit is set while inhibiting the processing of read data values from the read data queue until all said invalidates have been processed.

5,579,505

MEMORY ACCESS SYSTEM AND METHOD FOR GRANTING OR PREVENTING ATOMIC OR NONATOMIC MEMORY ACCESS REQUESTS TO SHARED MEMORY REGIONS

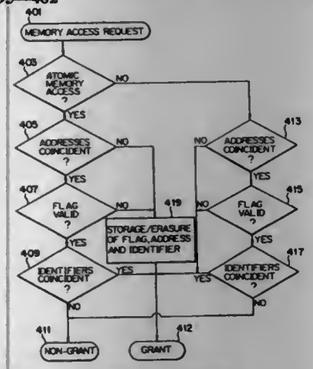
Takahide Ohkami, Kanagawa-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 160,363, Nov. 29, 1993, Pat. No. 5,446,862, which is a continuation of Ser. No. 630,300, Dec. 19, 1990, abandoned. This application Aug. 21, 1995, Ser. No. 517,549

Claims priority, application Japan, Feb. 23, 1990, 2-43820

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—482 **22 Claims**



8. A data processing system, comprising:

a memory bus;

a memory address space accessible by the memory bus;

a plurality of processors connected to the memory bus, wherein a first process executing on at least one of the plurality of processors may make a new access request to any address within the memory address space, and wherein the new access request may be an exclusive access request which is not interruptible by any other access request; and

a memory bus access control system connected to the memory bus, the memory bus access control system one of granting and denying the new access request by one of granting and denying access to the memory bus to the first process, wherein the memory bus access control system includes an atomic memory access controller that determines whether a second process executing on at least one of the plurality of processors, is already executing an exclusive access request, and wherein the atomic memory access controller includes a memory access memory array that stores data indicative of an address of the second process and an identifier field that identifies the second process when the second process executes an exclusive access request.

5,579,506

SEMICONDUCTOR MEMORY DEVICE HAVING MEANS FOR TEMPORARILY STORING OPERATION COMMAND DATA

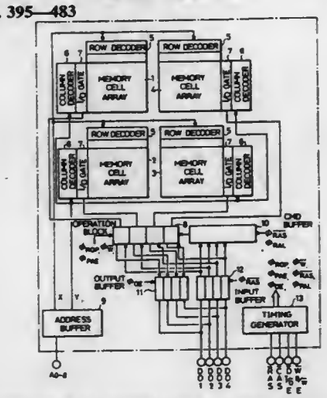
Toshiyuki Ogawa, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1991, Ser. No. 717,405

Claims priority, application Japan, Jun. 21, 1990, 2-165214

Int. Cl.[6] G06F *13/28*

U.S. Cl. 395—483 **9 Claims**



1. A semiconductor memory device, comprising:

a plurality of semiconductor memory elements for storing information data,

address signal input terminals receiving address signals for specifying address of said plurality of semiconductor memory elements,

data input/output terminals receiving the information data to be stored in said plurality of semiconductor memory elements and operation command data and outputting the information data stored in said plurality of semiconductor memory elements, the information data and operation command data being supplied to the same terminal of said data input/output terminals,

storing means for temporarily storing the operation command data supplied to said data input/output terminals, and

operation executing means for controlling said storing means to temporarily store said operation command data supplied to said data input/output terminals, and for executing said operation command data to operate upon information data supplied to said data input/output terminals.

5,579,507

DATA TRANSFER CONTROL OF VIRTUAL STORAGE SUPPORTED BY THREE-LEVEL HIERARCHICAL STORAGE

Masaaki Hosouchi, Yokohama; Hisashi Katada, Yamanashi-ken, and Toshiaki Arai, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 5, 1993, Ser. No. 102,645

Claims priority, application Japan, Aug. 10, 1992, 4-212961

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—497.02 **22 Claims**

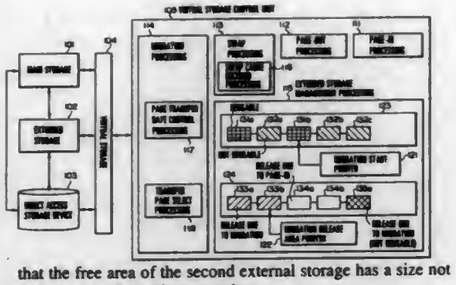
1. A storage control method for use in a computer system having a main storage, a first external storage, and a second external storage having an access speed higher than an access speed of the first external storage, the method comprising the steps of:

(a) determining a size of a free area of the second external storage;

(b) comparing the free area size with a predetermined first reference value;

(c) when the free area size is determined in step (b) to be smaller than the first reference value, transferring storage contents of the second external storage to the first external storage such

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that the free area of the second external storage has a size not less than the first reference value;

(d) when the free area size of the second external storage is determined to be larger than the first reference value, comparing the free area size of the second external storage with a predetermined second reference value larger than the first reference value; and

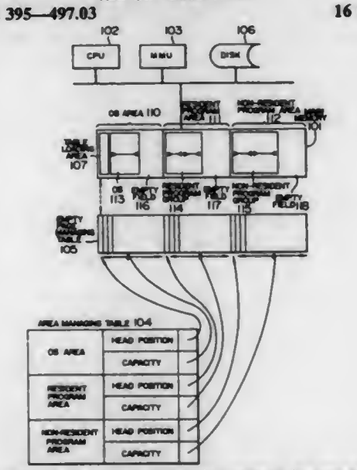
(e) when the free area size of the second external storage is determined in step (d) to be smaller than the second reference value, transferring an amount of the storage contents of the second external storage to the first external storage, the amount being determined such that the transferring operation does not cause delays on current input/output operations of data files.

5,579,508

MAIN MEMORY MANAGING METHOD AND APPARATUS IN WHICH MAIN MEMORY IS PARTITIONED INTO THREE DISTINCT AREAS

Ryokichi Yoshizawa, Hitachi; Tomoaki Nakamura, Katsuta, and Shigenori Kaneko, Nakaminato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 660,886, Feb. 26, 1991, abandoned. This application Aug. 24, 1994, Ser. No. 293,334
Claims priority, application Japan, Mar. 8, 1990, 2-55136
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—497.03 **16 Claims**



1. A method of managing a main memory in response to a request to execute a program, comprising the steps of:

(a) allotting the program to one of three distinct areas of main memory by using data in an area managing table, which stores head addresses and capacities of the respective three distinct areas, to identify an allocated area for the program within one of the three distinct areas, said areas in the main memory being a single OS area, a single first class program area and a single second class program area, respectively;

(b) retrieving an indication of the presence or absence of an empty storage space conforming to requirements of the program in said allocated area, wherein the indication of an empty storage space is provided only for the one of the three distinct areas in which the allocated area is located, independent of the other two distinct areas;

(c) allotting said program to said allocated area when the presence of a conforming empty storage space in said allocated area is determined through said step (b); and

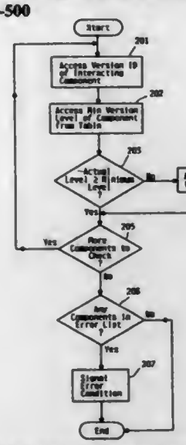
(d) abandoning efforts to allot said program to main memory when no conforming empty storage space in said allocated area an be determined through said step (b).

5,579,509

APPARATUS AND METHOD FOR VERIFYING COMPATIBILITY OF SYSTEM COMPONENTS

David A. Furtney; Mark E. Ingebretson, and Douglas L. Simonson, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 8, 1991, Ser. No. 652,820
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—500 **19 Claims**



1. A method for verifying that a plurality of system components executing on a computer system are compatible with each other, wherein a component version is associated with each of said plurality of components, and wherein each of said components is associated with a component version identifier identifying the component version of said component, said method comprising steps of:

obtaining the component version identifier associated with a first of said plurality of components;

determining whether the component version identified by said component version identifier associated with said first component satisfies requirements for compatibility with a second of said plurality of components;

obtaining the component version identifier associated with said second of said plurality of components; and

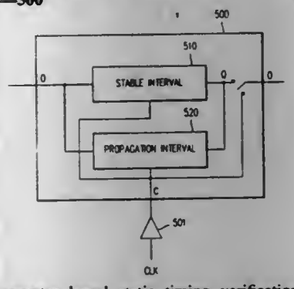
determining whether the component version identified by said component version identifier for associated with said second component satisfies requirements for compatibility with said first of said plurality of components, wherein the determination whether the component version identified by said component version identifier associated with said second component satisfies requirements for compatibility with said first component is independent of the determination whether the component version identified by said component version identifier associated with said first component satisfies requirements for compatibility with said second component.

5,579,510

METHOD AND STRUCTURE FOR USE IN STATIC TIMING VERIFICATION OF SYNCHRONOUS CIRCUITS

Albert R. Wang, Fremont, and Richard Rudell, Los Gatos, both of Calif., assignors to Synopsys, Inc., Mountain View, Calif.

Filed Jul. 21, 1993, Ser. No. 95,627
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—500 **45 Claims**



1. In a computer based static timing verification system, a method comprising:

defining for each synchronous primitive element in a synchronous digital circuit, a universal synchronization element having a signal propagation time interval and a signal stable time interval wherein said propagation time interval and said signal stable time interval are a propagation time interval and a signal stable time interval, respectively, of that synchronous primitive element wherein a set of universal synchronization elements is defined; and

representing said synchronous digital circuit in said static timing verification system by representiag each synchronous primitive element in said synchronous digital circuit with a corresponding universal synchronization element wherein said corresponding universal synchronization element has the signal propagation time interval and the signal stable time interval as that of the synchronous primitive element; and said corresponding universal synchronization element is selected from said set of universal synchronization elements.

5,579,511

METHOD AND APPARATUS FOR CHECKING THE INTEGRITY OF A COMPLEX COMPUTER INSTALLATION USED IN THE FLIGHT CONTROL OF AN AIRCRAFT

Victor Cavasa, Pilarac, and Patrick Schuster, Toulouse, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Continuation of Ser. No. 78,425, Jun. 17, 1993, abandoned. This application Oct. 17, 1994, Ser. No. 324,374
Claims priority, application France, Jun. 18, 1992, 9207430
Int. Cl.[6] G06F *13/10*
U.S. Cl. 395—500 **5 Claims**

1. Method for checking the operating characteristics of a complex installation, used in the flight control of an aircraft before starting of the installation with said installation comprising at least one system of combined electronic devices with each device having functional specifications and with said system including at least one computer having a memory, said installation having a predetermined configuration and having functional units connected to said combined devices for receiving control signals, said method consisting of:

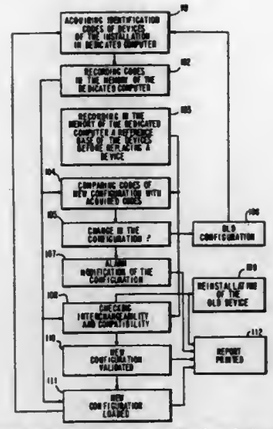
allocating to each device in said installation an identification code corresponding to the structure and the functional specifications of this device,

checking with said computer before starting said installation if the interchanging of at least one existing device of the installation, to which a predetermined identification code is allocated, by a new device to which a new identification code is allocated, to determine if a change of the predetermined configuration of the installation will disturb the control signals supplied by the installation, wherein said checking consists of:

recording in the memory of said computer, a base of identification codes for the devices of the installation, including the identification codes of the interchanged device, so as to obtain a base of a new configuration of the installation, after the interchanging,

recording in the memory of said computer a reference base of the identification codes of the devices of the installation, this reference base corresponding to the predetermined configuration of the installation, before the interchanging, and with the reference base containing a dictionary of devices which are interchangeable and compatible with the devices of the installation,

comparing with the computer the identification codes of the reference base, before the interchanging with the identification codes of the reference base of the new configuration, so that the computer starts an alarm when the comparison between the reference base before and after the interchanging of devices indicates that the configuration of the installation has changed to the extent that it is no longer compatible with the reference base.



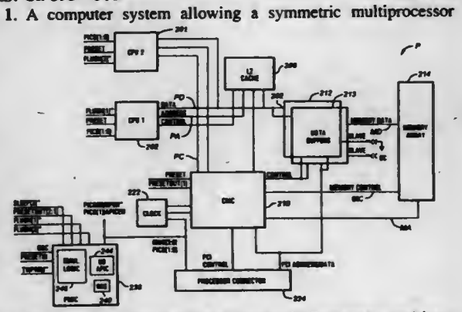
5,579,512

SYSTEMPRO EMULATION IN A SYMMETRIC MULTIPROCESSING COMPUTER SYSTEM

Alan L. Goodrum, and Gary W. Thome, both of Tomball, Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Dec. 30, 1994, Ser. No. 366,466
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—500 **4 Claims**

1. A computer system allowing a symmetric multiprocessor



computer system to emulate an asymmetric Systempro multiprocessor computer system, the computer system comprising:

a symmetric multiprocessor computer system, said computer system including first and second microprocessors having

internal cache systems and advanced programmable interrupt controllers adapted for multiprocessor operation and including an external cache system;

means for providing emulation registers at the same locations as the multiprocessor specific registers in the Systempro computer system; and

means for adapting specific identical bits in said emulation registers to perform compatible operations to said first and second microprocessors.

5,579,513

METHOD FOR MONITORING THE SYNCHRONIZATION OF CLOCKS IN COMPUTER NETWORKS

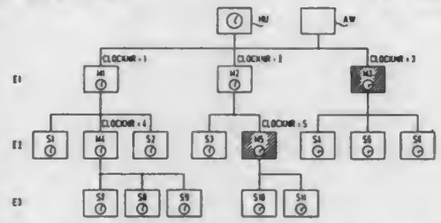
Franz Strohmer, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 991,681, Dec. 16, 1992. This application Jun. 7, 1995, Ser. No. 488,465

Claims priority, application European Pat. Off., Dec. 18, 1991, 91121712

Int. Cl.[6] G06F *1/04*

U.S. Cl. 395—559 **24 Claims**



1. In a computer network having a hierarchical structure including a central master clock module and a plurality of network levels, in which at least one master clock module synchronizes at least one slave clock module in a level beneath each of said at least one master clock module, a method for determining the presence of unsynchronized clocks and for determining an event resolution between clock modules in the same level within the computer network, comprising the steps of:

(a) forming in each of said master clock modules and each of said slave clock modules of said computer network a time-stamp message, the time-stamp message for a first clock module including:

(i) a time-of-day field;

(ii) a date field;

(iii) a synchronization source field, corresponding to an identifier of the master clock module in said computer network located hierarchically above said first clock module;

(iv) a synchronization type field, having at least a field corresponding to whether the master clock module identified in (iii) is synchronized to said central master clock module;

(v) a synchronization delay field, corresponding in part to a largest variation between which two of said clock modules in the computer network level within which is located the first clock module may be separated in time;

(vi) a time-of-day resolution field, corresponding to the resolution in time of said first clock module;

(b) sending said time-stamp message from said first clock module to a central evaluation unit for monitoring of the synchronization of said clock module with respect to the time of said central master clock module.

5,579,514

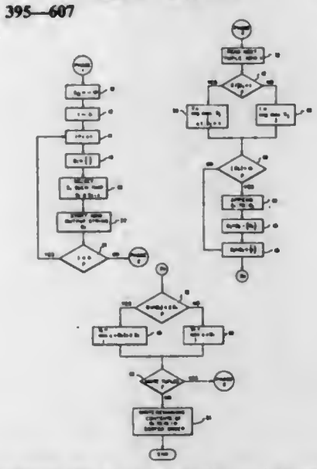
METHODOLOGY FOR INCREASING THE AVERAGE RUN LENGTH PRODUCED BY REPLACEMENT SELECTION STRATEGY IN A SYSTEM CONSISTING OF MULTIPLE, INDEPENDENT MEMORY BUFFERS

John J. E. Turek, and Philip S. Yu, both of Chappaqua, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 22, 1993, Ser. No. 142,536

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—607 **20 Claims**



1. An external parallel sort method for use in a computer system having a plurality of record storage areas available for sorting, comprising the steps of:

partitioning a range of key values into a plurality of key subranges equal in number to the plurality of record storage areas;

assigning one of the key subranges to each of the record storage areas;

transferring unsorted records to be sorted to the record storage areas in accordance with a sort key value within each record and the key subrange assigned to each of the record storage areas;

when a record is transferred to a filled record storage area, transferring a record from said filled record storage area to an output string, the record transferred to the output string being the record that has the lowest key value that is not lower than the key value of the last record added to the output string of the filled record storage area;

when a record is transferred from a filled record storage area to the output string and has a higher key value than the last record added to said output string, updating the key subrange for the filled record storage area to begin at said higher key value; and

when a key subrange is updated to begin at a key value higher than a key value next higher than an ending key value of the next lower subrange, increasing the ending key value of the next lower subrange to a new value which is not lower than a key value next lower than the higher key value,

whereby said output strings contain sorted runs of records having an average run length determined by the size of the total record storage area rather than the size of the individual record storage areas.

5,579,515

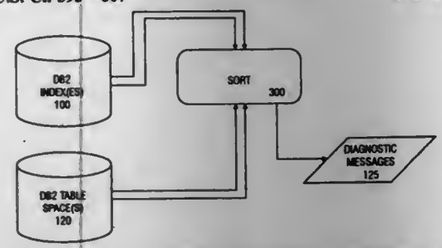
METHOD OF CHECKING INDEX INTEGRITY IN A DB2 DATABASE

Thomas E. Hintz, and Kerry C. Tenberg, both of Austin, Tex., assignors to BMC Software, Inc., Houston, Tex.

Filed Dec. 16, 1993, Ser. No. 168,962

Int. Cl.[6] G06F *7/00;9/00*

U.S. Cl. 395—607 **6 Claims**



1. A method of testing DB2 index integrity, comprising the steps of:

(a) reading, in parallel, (1) a plurality of DB2 data records from a DB2 table space, and (2) a plurality of DB2 index entries from each of at least one DB2 indexes associated with said DB2 table space, normally each said index entry being nominally associated with exactly one said DB2 data record;

(b) constructing a SORT record for each said data record and each said index entry;

(c) collating the SORT records for the data records and said SORT records for the index entries into a single sequence of SORT records to group together (1) the SORT records for each data record, with (2) the one or more SORT records for said one or more index entries associated with said respective date record; and

(d) performing a specified diagnosis routine utilizing said single sequence of SORT records as an input.

5,579,516

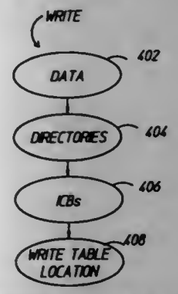
METHOD FOR STORING DATA FILES ON A MULTIPLE VOLUME MEDIA SET

David J. Van Maren, and Jeffrey Dicorpo, both of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 15, 1994, Ser. No. 357,575

Int. Cl.[6] G06F 7/22

U.S. Cl. 395—601 **17 Claims**



1. A method for sequentially writing non-sequentially formatted meta-data for a set of files on a multiple volume media set, wherein said method minimizes a number of media swaps necessary to read and write said metadata from and to said multiple volume media set, comprising the steps of:

(a) determining an amount of space on said media set required to store an information control block table containing information control blocks for all data files and directories as well as any overflow sectors and logical links in the set of files;

(b) reserving space, on the multiple volume media set, for said information control block table to be recorded in a first portion having a size sufficient to store said information control block table;

(c) building a directory having an entry for each of its subdirectories and files, wherein each entry has an information control block address sequentially assigned to each of said subdirectories and said files;

(d) writing said directory to a second portion of the multiple volume media set;

(e) repeating steps (c)–(d) for every other directory file in said set of files, wherein said repeating step starts at a starting point and follows a preset order;

(f) building an information control block for each of said data files and directories in the set of files, directories and subdirectories; and

(g) writing each of said information control blocks built at step (f) into said information control block table at said information control block address assigned in step (c), wherein the number of media swaps necessary to read and write said metadata from and to said multiple volume media set is minimized.

5,579,517

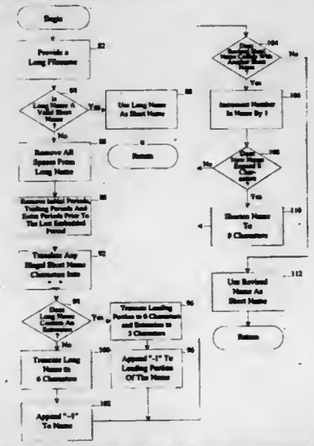
COMMON NAME SPACE FOR LONG AND SHORT FILENAMES

Aaron R. Reynolds, Redmond; Dennis R. Adler, Mercer Island; Ralph A. Lipe, Woodinville; Ray D. Pedrizetti, Issaquah; Jeffrey T. Parsons, and Rasipuram V. Arun, both of Redmond, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 41,497, Apr. 1, 1993, abandoned. This application Apr. 24, 1995, Ser. No. 427,004

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—616 **4 Claims**



1. In a computer system having a processor running an operating system and a memory means storing the operating system, a method comprising the computer-implemented steps of:

(a) storing in the memory means a first directory entry for a file wherein the first directory entry holds a short filename for the file, said short filename including at most a maximum number of characters that is permissible by the operating system;

(b) storing in the memory means a second directory entry for a the file wherein the second directory entry holds a long filename for the file and wherein the second directory entry includes an attributes field which may be set to make the second directory entry invisible to the operating system and the step of storing the second directory entry further comprises the step of setting the attributes field so that the second

directory entry is invisible to the operating system, said long filename including more than the maximum number of characters that is permissible by the operating system; and

(c) accessing the first directory entry with the operating system.

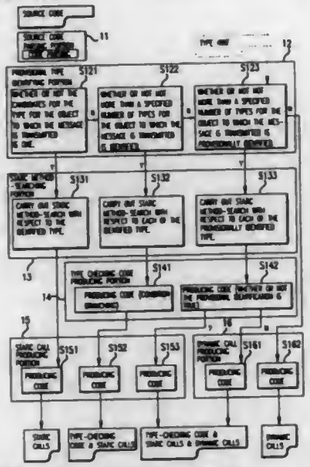
5,579,518

MESSAGE COMPILER FOR OBJECT-ORIENTED LANGUAGE THAT STATICALLY PRODUCES OBJECT CODE BY PROVISIONALLY IDENTIFYING A SET OF CANDIDATE TYPES

Kazuki Yasumatsu, Yokohama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 208,514, Mar. 10, 1994, abandoned. This application May 31, 1995, Ser. No. 455,255
Claims priority, application Japan, Mar. 19, 1993, 5-060614
Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—705 **3 Claims**



1. A data processing system including a message compiler, for an object-oriented language with which object types are determined during execution of a programming code, said compiler compiling source code relating to a message into object code, the message compiler comprising:

source code parsing means for receiving said source code and for parsing said source code to identify at least one message containing said source code to be transmitted to a corresponding object;

provisional type identifying means for identifying a set of candidate types for said corresponding object to which said at least one message is to be transmitted, based on a parsed result of said source code by said source code parsing means;

static method-searching means for statically providing a method corresponding to each candidate type within said set of candidate types when said set of candidate types includes at least one candidate type;

type-checking code producing means for producing object code at compile time to perform a type-check with each candidate type within said set of candidate types and said corresponding method, if said set of candidate types includes more than one candidate type;

static call producing means for producing object code for a statically bound call based on said corresponding method statically provided by said static method-searching means if said set of candidate types includes only one correct type, and for producing object code for a statically bound call based on said corresponding method for a type-checked correct type for each candidate type within said set of candidate types; and

dynamic call producing means for producing object code for a dynamically bound call, which will determine a type at execution time for the type that is unknown at compile time, if the provisional type identifying means identifies an empty set for said set of candidate types and if each candidate type within said set of candidate types is a type-checked incorrect type,

wherein a first probability that said compiled object code from said source code is executed by said statically bound call during execution of said compiled object code is increased relative to a second probability that said compiled object code is executed by said dynamically bound call during execution of said compiled object code.

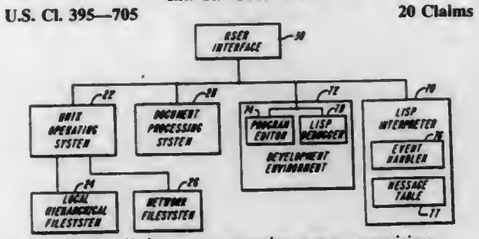
5,579,519

EXTENSIBLE ELECTRONIC DOCUMENT PROCESSING SYSTEM FOR CREATING NEW CLASSES OF ACTIVE DOCUMENTS

Stephen Pelletier, San Francisco, Calif., assignor to Interleaf, Inc.

PCT No. PCT/US91/01479, § 371 Date Feb. 16, 1994, § 102(e) Date Feb. 16, 1994
Continuation-in-part of Ser. No. 489,176, Mar. 5, 1990, abandoned. This PCT application Mar. 4, 1991, Ser. No. 923,937
Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—705 **20 Claims**



1. An electronic document processing system comprising:

a document processor for creating an electronic representation of a document having one or more portions, the documents being arranged in a hierarchical structure, each portion being on one of multiple levels of the hierarchical structure;

a computer procedure creator, responsive to user inputs, for creating a computer procedure and for associating the created computer procedure with one or more user selected portions on one or more of the levels; and

a program definer for defining the created computer procedure to be operative with respect to the electronic representation of one or more portions of the document in response to at least one predetermined event.

5,579,520

SYSTEM AND METHODS FOR OPTIMIZING COMPILED CODE ACCORDING TO CODE OBJECT PARTICIPATION IN PROGRAM ACTIVITIES

John G. Bennett, San Mateo, Calif., assignor to Borland International, Inc., Scotts Valley, Calif.

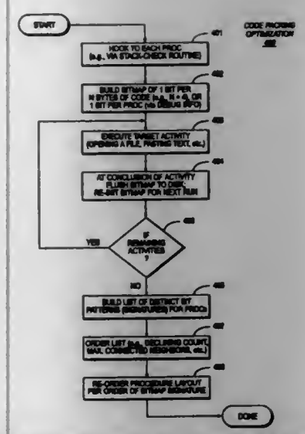
Filed May 13, 1994, Ser. No. 242,561
Int. Cl.[6] G06F *9/45*

U.S. Cl. 395—704 **30 Claims**

1. In a system for operating computer programs, said programs comprising machine code having a plurality of procedures, a method for optimizing placement of procedures within a target program, the method comprising:

(a) dividing execution of said target program into a plurality of activities which are based on operation of said target program by an end user, each of said activities requiring invocation of at least one procedure of said target program for completion of said each activity;

(b) for each of said activities, executing said target program and at completion of said each activity, storing profile information for indicating which procedures of said target program were invoked for completion of said each activity; and



(c) placing procedures which are invoked for a particular set of activities in contiguous locations of said target program, based on said profile information stored for each activity.

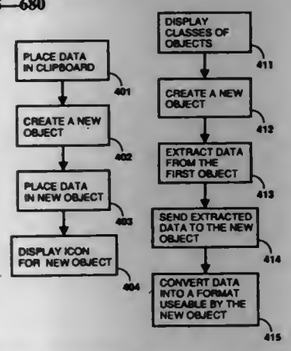
5,579,521

CONVERSION OF DATA AND OBJECTS ACROSS CLASSES IN AN OBJECT MANAGEMENT SYSTEM

Wanda N. Shearer, Dublin, and Barbara Holden, Menlo Park, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 21,913, Feb. 24, 1993, Pat. No. 5,386,564. This application Oct. 12, 1994, Ser. No. 321,931
Int. Cl.[6] G06F *3/153*

U.S. Cl. 395—680 **18 Claims**



1. A computer implemented method within an object management facility comprising the step of:

(a) in response to a user pasting data within a clipboard to a window controlled by the object management facility, performing the following substeps:

(a.1) creating, by the object management facility, a new object for the data;

(a.2) placing the data within the new object; and,

(a.3) displaying by the object management facility, an icon for the new object.

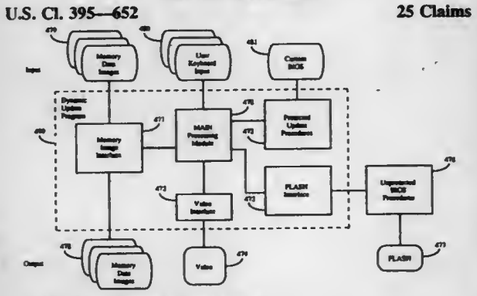
5,579,522

DYNAMIC NON-VOLATILE MEMORY UPDATE IN A COMPUTER SYSTEM

Orville H. Christeson, Portland; Douglas L. Gabel, Aloha, and Sean T. Murphy, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 135,310, Oct. 12, 1993, which is a continuation of Ser. No. 695,952, May 6, 1991, abandoned. This application Jul. 24, 1995, Ser. No. 505,995
Int. Cl.[6] G06F *9/06*

U.S. Cl. 395—652 **25 Claims**



1. A computer system comprising:

a processor for executing processing logic;

a programmable non-volatile semiconductor memory device coupled to said processor, said programmable non-volatile semiconductor memory device having BIOS firmware programmed therein, portions of said programmable non-volatile semiconductor memory device being write modifiable;

a random access memory (RAM) device coupled to said processor;

means for transferring a first portion of said BIOS firmware from said programmable non-volatile semiconductor memory device to said RAM, said first portion being specifically directed to updating other portions of said programmable non-volatile semiconductor memory device, said means for transferring coupled to said processor;

means for erasing a portion of said programmable non-volatile semiconductor memory device, said means for erasing coupled to said processor; and,

means for updating a second portion of said BIOS firmware in said programmable non-volatile semiconductor memory while said first portion of said BIOS firmware is executing from said RAM, said means for updating coupled to said processor.

5,579,523

METHOD FOR CONTROLLED LOCKING/UNLOCKING OF A SYSTEM USING A LOCKING MODE FLAG DURING AN INTERRUPT ROUTINE

Shigeo Tanaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

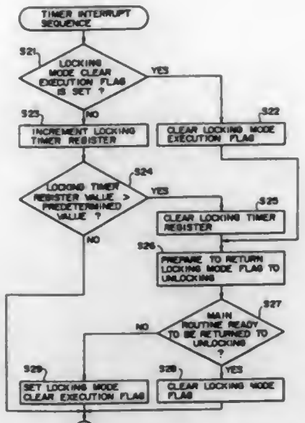
Continuation of Ser. No. 247,288, May 23, 1994, abandoned, which is a division of Ser. No. 133,838, Oct. 12, 1993, Pat. No. 5,402,183. This application Aug. 22, 1995, Ser. No. 517,805
Claims priority, application Japan, Oct. 13, 1992, 4-300387; Feb. 12, 1993, 5-047396
Int. Cl.[6] G06F *1/32*

U.S. Cl. 395—726 **3 Claims**

1. A method of controlling a locking/unlocking operation of a system comprising the steps of:

checking in an interrupt routine if a locking mode clear execution flag is set;

if said locking mode clear execution flag is set, clearing said locking mode clear execution flag, checking whether a main routine of the system is ready to be unlocked again, and clearing said locking mode execution flag if said main routine of the system is ready to be unlocked again;



if said locking mode clear execution flag is not set, determining if a register value of a locking timer is greater than a predetermined value;

if said register value of said locking timer is not greater than said predetermined value, exiting said interrupt routine;

if said register value of said locking timer is greater than said predetermined value, clearing said locking timer register, checking whether the main routine of the system is ready to be unlocked again, and clearing said locking mode execution flag if said main routine of the system is ready to be unlocked again.

5,579,524

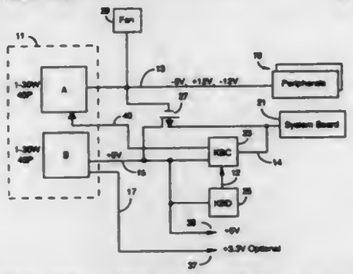
OPTIMIZED POWER SUPPLY SYSTEM FOR COMPUTER EQUIPMENT

Dan Kikinis, Saratoga, Calif., assignor to Elonex I.D. Holdings, Ltd., London, England

Continuation of Ser. No. 131,767, Oct. 4, 1993, abandoned. This application May 1, 1995, Ser. No. 432,527

Int. Cl.[6] H02J *9/06*; G06F *11/00*

U.S. Cl. 395—750 **16 Claims**



1. A power supply system for supplying power to a computer having a full power mode and a standby power mode, wherein a subset of power-using elements of the computer are powered in the standby power mode, the power supply system comprising:

a first power supply module connected to and supplying power to power-using elements of the computer not included in the subset of power-using elements powered in the standby power mode;

control circuitry sensing external inputs to the computer, and having a control connection to the first power supply module; and

a second power supply module connected to and supplying power to power-using elements of the computer included in the subset of power-using elements powered in the standby power mode, including the control circuitry;

wherein the control circuitry, through the control connection to the first power supply module, turns the first power supply module off to enter the standby power mode, and turns the first power supply module on in response to at least one of the sensed external inputs to resume the full power mode.

5,579,525

PIPELINED ARRANGEMENT INCLUDING DATA PROCESSING STORAGES HAVING DYNAMIC LATCHES FOR REDUCING DELAY IN DATA PROCESSING

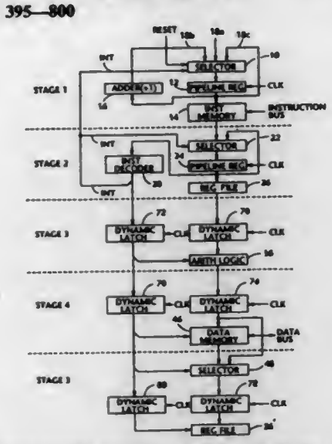
Kazumasa Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 5, 1994, Ser. No. 270,650

Claims priority, application Japan, Jul. 2, 1993, 5-163706

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800 **4 Claims**



1. A pipelined data processing arrangement having a plurality of stages which are coupled in series and each of which includes temporary storage means, comprising:

a first stage for successively issuing a plurality of instructions in synchronism with time slots, said first stage including storage means which, in response to occurrence of an interrupt request, retains therein an instruction applied thereto over one or more time slots which follow a time slot wherein said interrupt request has been issued;

a second stage coupled to decode each of said instructions applied thereto from said first stage, said second stage issuing said interrupt request if pipelined operation should be interrupted, said second stage including storage means which, in response to said interrupt request, retains therein a decoded instruction over one or more time slots which follow said time slot wherein said interrupt request has been issued; and

a plurality of data processing stages which follow said second stage, each of said data processing stages including dynamic latch means for holding a data processing instruction and data, both of which are applied from a previous stage, only during a time slot for which said data processing instruction is applied thereto.

5,579,526

SYNCHRONOUS/ASYNCHRONOUS FEEDBACK SYSTEM HAVING LOGIC CIRCUIT FOR CHANGING THE STATE OF THE PROCESSING CORE IN RESPONSE TO OUTPUT OF SYNCHRONOUS STATE MACHINE AND ASYNCHRONOUS LATE INPUTS

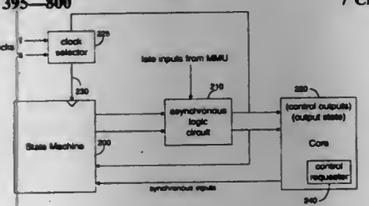
Simon C. Watt, Cambridge, United Kingdom, assignor to Advanced Risc Machines Limited, Cambridge, United Kingdom

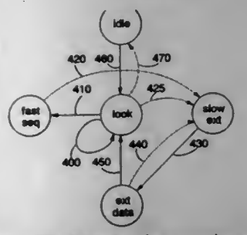
Filed Oct. 13, 1994, Ser. No. 322,318

Claims priority, application United Kingdom, May 17, 1994, 9409946

Int. Cl.[6] G06F *13/00;13/42*

U.S. Cl. 395—800 **7 Claims**





1. Data processing apparatus for executing successive data processing instructions, said apparatus comprising:

a processing core having a current operational state, said current operational state being one of a predetermined set of possible operational states and selected in response to a control state signal supplied to said core;

a synchronous state machine circuit for generating an output state signal in response to a predetermined phase of a current clock cycle of a clocking signal, said output state signal indicating a provisionally valid next operational state of said core and is dependent upon said current operational state of said core and control signals generated by said core before said predetermined phase of said current clock cycle indicative of a next data processing instruction to be executed by said core; and

an asynchronous logic circuit for generating said control state signal in response to said output state signal and a late control signal received by said asynchronous logic circuit after said predetermined phase of said current clock cycle, said control state signal being received by the core and being capable of causing the core to change said current operational state, and said control state signal being also received by the synchronous state machine at the next clock pulse to complete a feedback loop.

5,579,527

APPARATUS FOR ALTERNATELY ACTIVATING A MULTIPLIER AND A MATCH UNIT

Danny Chin, West Windsor Township, Mercer County; Joseph E. Peters, Jr., East Brunswick, and Herbert H. Taylor, Jr., Hopewell Township, Mercer County, all of N.J., assignors to David Sarnoff Research Center, Princeton, N.J.

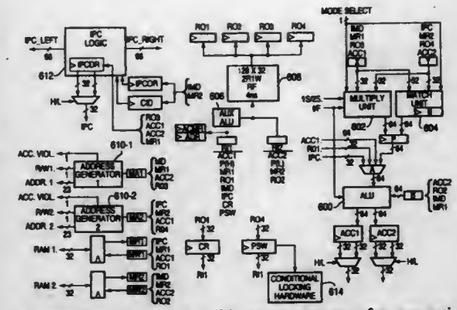
Continuation of Ser. No. 138,646, Oct. 20, 1993, , which is a continuation-in-part of Ser. No. 926,265, Aug. 5, 1992, abandoned. This application Mar. 14, 1995, Ser. No. 405,434

Int. Cl.[6] G06F *9/38;15/00*

U.S. Cl. 395—800 **2 Claims**

1. Apparatus comprising:

memory means for storing operand values;



a multiplier, coupled to said memory means, for generating arithmetic products of operand values retrieved from said memory means;

a match unit, coupled to said memory means, for detecting matches between a predetermined bit pattern and a sequence of bits, said predetermined bit pattern and said sequence of bits are contained within operand values retrieved from the memory means, and for generating a count value indicating a number of detected matches between the predetermined bit pattern and subsequences of bits within the sequence of bits;

control means, connected to said multiplier and said match unit, for selectively activating said multiplier when said match unit is deactivated, activating said match unit when said multiplier is deactivated, or deactivating both the multiplier and the match unit, said control means causes said match unit to execute no operation instructions when said match unit is disabled;

register means, connected to said multiplier and said match unit, for temporarily storing said arithmetic products and said count value; and

an arithmetic logic unit (ALU), connected to said register means, for performing arithmetic logic operations on said arithmetic products and said count value.

5,579,528

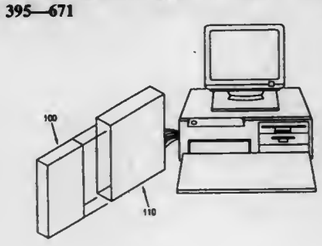
COMPUTER SYSTEM EMPLOYING DOCKING BAY WITH SPRING LOADED CONNECTOR PINS AND FILE COHERENCY METHOD

David S. Register, Austin, Tex., assignor to Dell USA, L.P., Austin, Tex.

Continuation of Ser. No. 815,474, Dec. 31, 1991, abandoned. This application Apr. 3, 1995, Ser. No. 416,550

Int. Cl.[6] G06F *13/00;17/00*

U.S. Cl. 395—671 **10 Claims**



1. A system, comprising:

a first computer system, including, in one or more physical housings, at least one central processing unit (CPU), program memory, at least one input device, and a display;

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a second computer system, including, in a single hand-portable housing, at least one central processing unit (CPU), program memory, at least one input device, and a display, said housing of second computer system being smaller in overall size than housings of said first computer system;

a docking bay, comprising a recess which is large enough to accept insertion of said housing of said second computer system, and which is complementary to the external shape of said housing of said second computer system, and which is shaped to constrain said housing of said second computer system to a single direction of motion during insertion;

Wherein said first and second computer systems are each separately operable as fully programmable stand-alone computer systems;

and wherein said docking bay includes spring-loaded, pogo-type pins mounted in the interior thereof, said pins being positioned to be axially compressed in said single direction when said housing of said second computer system is inserted within said docking bay;

and wherein said pins of said docking bay are connected to provide a data interface to said first computer system;

and wherein said second computer system includes contact pads, in the exterior thereof, which are connected to provide a serial data interface to said CPU of said second computer system;

and wherein said first and second computer systems are configured to automatically detect a connection between said pins and said contact pads, and to automatically call a data transfer program in response to a detection of said connection for transferring files bidirectionally between said first and second computer systems to thereby maintain file coherency.

5,579,529

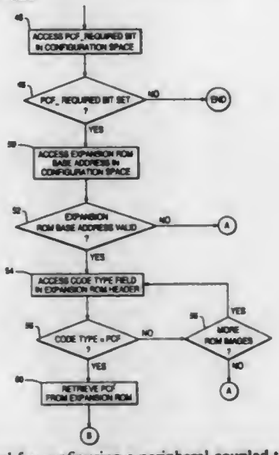
METHOD FOR CONFIGURING COMPUTER PERIPHERALS

Michael R. Terrell; Jeffery W. Kaisner; Jonathan D. Amsden, all of Easley; Thomas C. Burke, Liberty, and David K. Todd, Greenville, all of S.C., assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 176,022, Dec. 30, 1993, abandoned. This application Apr. 19, 1995, Ser. No. 424,227

Int. Cl.[6] G06F *13/00;13/10*

U.S. Cl. 395—828 **18 Claims**



1. A method for configuring a peripheral coupled to a computer, the peripheral comprising a memory including an indicating register signifying whether the peripheral has user-selectable operating parameters and a configuration space, the configuration space comprising at least one configuration file and one or more configuration registers for setting the user-selectable operating parameters of the peripheral, each configuration file having a version indicator and a plurality of user selectable settings, the method comprising the steps of:

(a) accessing the indicating register in the peripheral;

(b) accessing the configuration space in the peripheral when the value stored in the indicating register indicates that the peripheral has one or more user-selectable operating parameters;

(c) interpreting the configuration file's contents to identify the user selectable settings for the user-selectable operating parameters of the peripheral and to determine how the user-selectable setting options should be presented to the user, comprising the steps of reading the version indicator and identifying the user-selectable settings according to the version indicator;

(d) presenting the user-selectable settings for the user-selectable operating parameters of the peripheral to a user;

(e) accepting a selection of one of the user-selectable settings for each of the user-selectable operating parameters of the peripheral from the user in the computer; and

(f) setting the operating parameters of the peripheral according to the selected settings by storing a value from the configuration file into one or more of the configuration registers in the configuration space.

5,579,530

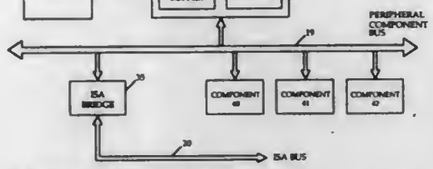
METHOD AND APPARATUS FOR DYNAMICALLY ALLOCATING ACCESS TIME TO A RESOURCE SHARED BETWEEN A PERIPHERAL BUS AND A HOST BUS BY DYNAMICALLY CONTROLLING THE SIZE OF BURST DATA TRANSFERS ON THE PERIPHERAL BUS

Gary Solomon; Jeff Harness, both of Hillsboro, and Sudarshan B. Cadambi, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 897,335, Jun. 11, 1992, abandoned. This application Feb. 14, 1995, Ser. No. 389,078

Int. Cl.[6] G06F *13/36;13/14*

U.S. Cl. 395—855 **28 Claims**



1. A computer system, comprising:

bridge circuit that enables communication between a host bus and a peripheral bus and that enables access to a shared resource of the computer system from both the host bus and the peripheral bus, the bridge circuit having a write buffer for posting data for transfer to the shared resource and a burst counter that controls a maximum data length for a burst data transfer to the write buffer over the peripheral bus;

processor coupled for communication over the host bus, the processor writing a first count into the burst counter to set the maximum data length for the burst data transfer to the write buffer over the peripheral bus, the processor then determining an access time to the shared resource over the host bus during the burst data transfer to the write buffer over the peripheral bus, the processor then writing a second count into the burst counter to control a maximum data length for a subsequent burst data transfer to the write buffer over the peripheral bus.

5,579,531

SYSTEM FOR SELECTING PATH AMONG PLURALITY OF PATHS USING PLURALITY OF MULTIPLEXERS COUPLED TO COMMON BUS TO TRANSFER DATA BETWEEN PERIPHERAL DEVICES AND EXTERNAL DEVICE

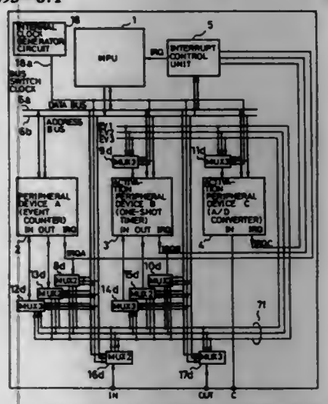
Mitsuru Sugita, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1993, Ser. No. 26,941

Claims priority, application Japan, Apr. 28, 1992, 4-136201

Int. Cl.[6] G06F *15/02*

U.S. Cl. 395—871 **5 Claims**



1. A semiconductor device including a microprocessor; a bus coupled to said microprocessor; first and second peripheral devices, each controlled by said microprocessor through said bus, and each having a data input and a data output; first and second external terminals for coupling said semiconductor device to an external device; and a subsystem for transferring data between said peripheral devices and said external device using a reduced number of external terminals, said subsystem comprising:

a plurality of signal paths;

a first multiplexer, coupled to said first external terminal and having a first control input coupled to said bus, for selecting a first one of said plurality of signal paths to transfer data between said external device and a particular one of said first and second peripheral devices;

a second multiplexer, coupled to said second external terminal and having a second control input coupled to said bus, for selecting a second one of said plurality of signal paths to transfer data between said external device and a particular one of said first and second peripheral devices;

a third multiplexer, coupled to said data input of said first peripheral device and having a third control input coupled to said bus, for selecting among said plurality of signal paths, including said first one and said second one, to enable data to be transmitted from said external device to said first peripheral device through a particular one of said first and second external terminals;

a fourth multiplexer, coupled to said data output of said first peripheral device and having a fourth control input coupled to said bus, for selecting among said plurality of signal paths, including said first one and said second one, to enable data to be transmitted from said first peripheral device to said external device through a particular one of said first and second external terminals;

a fifth multiplexer, coupled to said data input of said second peripheral device and having a fifth control input coupled to said bus, for selecting among said plurality of signal paths, including said first one and said second one, to enable data to be transmitted from said external device to said second peripheral device through a particular one of said first and second external terminals; and

a sixth multiplexer, coupled to said data output of said second peripheral device and having a sixth control input coupled to said bus, for selecting among said plurality of signal paths, including said first one and said second one, to enable data to be transmitted from said second peripheral device to said external device through a particular one of said first and second external terminals.

5,579,532

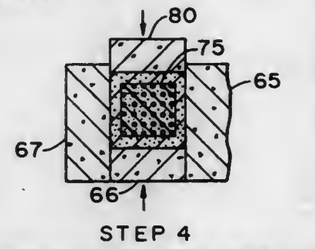
ROTATING RING STRUCTURE FOR GAS TURBINE ENGINES AND METHOD FOR ITS PRODUCTION

Jon F. Edd, Monroeville, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 16, 1992, Ser. No. 899,696

Int. Cl.[6] B22F *3/16*

U.S. Cl. 419—2 **18 Claims**



1. A method of making a ceramic fiber reinforced composite ring comprising:

(a) providing a film forming mixture comprised of solid particles of a high temperature metal or intermetallic matrix material and an organic medium comprising a polymeric binder dissolved in an organic solvent;

(b) placing a plurality of substantially continuous, laterally spaced ceramic fibers adjacent an elongated substrate;

(c) casting said mixture over said fibers and said substrate, thereby to form an elongated tape adjacent said substrate;

(d) separating said tape from said substrate;

(e) circumferentially winding said tape around a mandrel to form an unconsolidated ring; and

(f) compressing said unconsolidated ring in an axial direction at an elevated temperature of at least about 800° C. to achieve a desired axial spacing between adjacent fibers in the ring and to form a unitary ceramic fiber reinforced composite ring.

5,579,533

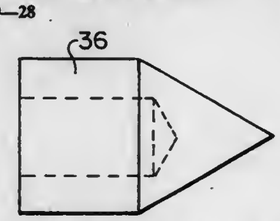
METHOD OF MAKING A SOLDERING IRON TIP FROM A COPPER/IRON ALLOY COMPOSITE

Carl E. Weller, Nokomis, Fla., assignor to Donald Fegley, Pottstown, Pa., and Emily L Weller, Nokomis, Fla.

Division of Ser. No. 291,944, Aug. 17, 1994. This application Aug. 17, 1995, Ser. No. 515,894

Int. Cl.[6] B22F *3/16*

U.S. Cl. 419—28 **14 Claims**



1. A method of making a soldering tip comprising the steps of: blending particles comprising 50–95 weight percent uncoated copper particles with 5–50 weight percent iron particles to form a mixture of uncoated copper particles and iron particles,

wherein said weight percentages are by weight of the finished soldering tip; and then

compacting said mixture of particles;

sintering said mixture of particles; and

shaping said mixture of particles into the shape of said soldering tip.

5,579,534

HEAT-RESISTANT MEMBER

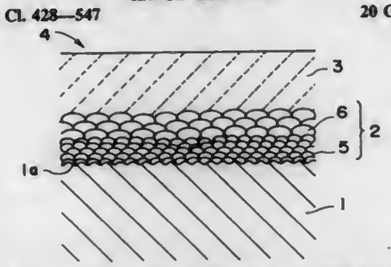
Masayuki Itoh; Kazuhiro Yasuda; Kunihiko Wada; Seiichi Suenaga, and Shinji Arai, all of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed May 19, 1995, Ser. No. 445,069

Claims priority, application Japan, May 23, 1994, 6-108166

Int. Cl.[6] B22F 7/04

U.S. Cl. 428—547 **20 Claims**



1. A heat-resistant member comprising a metallic substrate, a ceramic coating layer covering a surface of said metallic substrate, and a metallic bonding layer interposed between said metallic substrate and said ceramic coating layer and possed of at least a first layer of an aggregate of minute particles having an average particle diameter of from 1 to 44 μm, said first layer being disposed on said metallic substrate side and a second layer of an aggregate of coarse particles having an average particle diameter in the range of from 45 to 300 μm, said second layer being disposed on said ceramic coating layer side.

5,579,535

PERSONAL COMMUNICATION SYSTEM PROVIDING SUPPLEMENTAL INFORMATION MODE

Noah P. Orlen; Robert L. Breeden, and Richard E. Bessom, all of Boca Raton, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 8,117, Jan. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 724,279, Jul. 1, 1991, abandoned. This application Jan. 6, 1995, Ser. No. 369,553

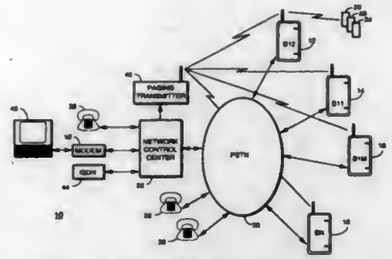
Int. Cl.[6] H04Q 7/22;7/26

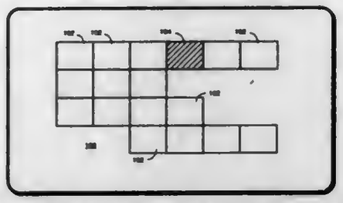
U.S. Cl. 455—33.1 **16 Claims**

1. A personal communication system comprising:

stationary transceiver stations located within a predetermined geographic region for providing communication capability between one or more portable units and a wireline network within the predetermined geographic region and for transmitting a data base including at least positional information indicative of relative locations of the stationary transceiver stations within the predetermined geographic region; and

a portable unit for receiving the data base including the positional information and for presenting an iconic representation indicative of the relative locations of the stationary transceiver stations within the predetermined geographic region, wherein the iconic representation further indicates to the user the stationary transceiver station with which the portable unit has established communication such that, as the portable unit is relocated between different areas within the predetermined geographic region and communication is established with





different stationary transceiver stations, the iconic representation indicates to the user when the portable unit is approaching an area in which communication with the stationary transceiver stations included in the predetermined geographic region cannot be established.

5,579,536

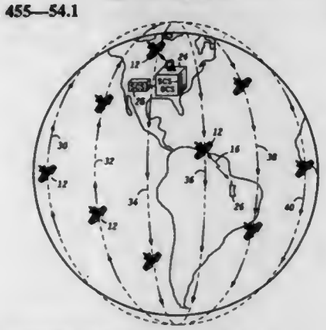
METHOD AND APPRATUS FOR ESTABLISHING COMMUNICATION LINKS BETWEEN NON-STATIONARY COMMUNICATION UNITS

James T. Stackman, Chandler; Dennis P. Diekelman, Tempe; Victor H. Cutler, Jr., Mesa, all of Ariz., and Gerald J. Davieau, Eldersburg, Md., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 13, 1994, Ser. No. 259,093

Int. Cl.[6] H04B 1/00

U.S. Cl. 455—54.1 **22 Claims**



21. A communication system comprising:

communication units, each having at least one communication antenna, where the communication units establish communication links according to link establishment schedules which inform the communication units as to when, during a future time period, the communication units will establish communication links between each other, and

at least one control facility that calculates one or more link boundary corridors, each link boundary corridor having an upper latitude and a lower latitude, generates the link establishment schedules based on which of the communication units should be located within the one or more link boundary corridors during the future time period, and transmits the link establishment schedules to the communication units prior to the future time period.

5,579,537

BROADCAST SYSTEM WITH ASSOCIATED DATA CAPABILITIES

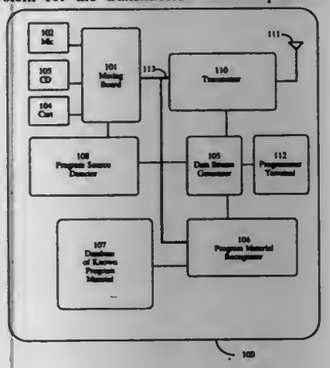
Tsutumo Takahisa, Santa Clara, Calif., assignor to Digital D.J. Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 45,352, Apr. 8, 1993. This application Apr. 20, 1995, Ser. No. 425,993

Int. Cl.[6] H04B 7/00

U.S. Cl. 455—66 **22 Claims**

1. A system for the transmission and reception of program material and associated data, comprising:



a transmitter for broadcasting said program material and said associated data, said associated data including header data defining a plurality of user interface selections;

a receiver, including,

a demodulator for detecting said program material and said associated data as detected program material and detected associated data, respectively;

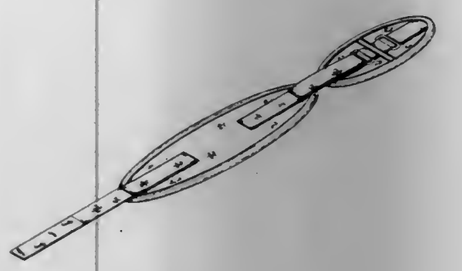
program material reproduction circuitry for reproducing said detected program material; and

user interface apparatus for displaying a first portion of said detected associated data on a display, for displaying on said display said header data from said detected associated data as a menu of user interface choices, and for displaying a subsequent portion of said detected associated data responsive to user selection of one of said user interface choices, said receiver operating in a plurality of modes responsive to mode selection made by a user by manipulation of said user interface apparatus.

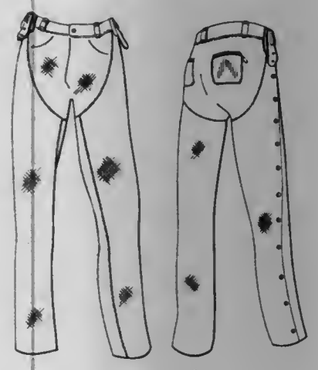
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DESIGNS

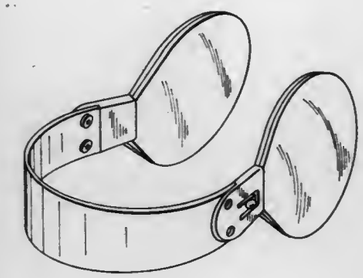
375,823
ADJUSTABLE WEIGHT BELT
Mark C. Bielweis, Fairlawn, Ohio, assignor to Fitness Quest Inc., Canton, Ohio
Filed Feb. 20, 1996, Ser. No. 50,428
Term of patent 14 years
U.S. Cl. D2—624



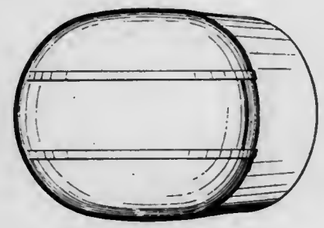
375,824
TROUSERS
Luigi Volpati, Piazza Padella 7, 1-00062 Bracciano, Roma, Italy
Filed Oct. 7, 1994, Ser. No. 29,498
Term of patent 14 years
U.S. Cl. D2—742



375,825
HEADBAND WITH DETACHABLE EAR PIECE
Jenna Whidden, 405 E. 78th St., Apt. 1D, New York, N.Y. 10021
Filed Oct. 18, 1994, Ser. No. 29,869
Term of patent 14 years
U.S. Cl. D2—866



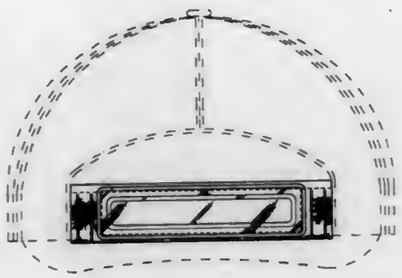
375,826
CAP
David Summers, Kansas City, Mo., assignor to Koch Supplies, Inc., Kansas City, Mo.
Filed Oct. 16, 1995, Ser. No. 45,270
Term of patent 14 years
U.S. Cl. D2—882



171–489 O.G.–96–26: QL3

VOL 1192 ISS 4 NOV 26 1996 UMI

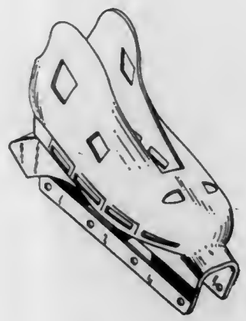
375,827
CAP BAND COVER
Kenneth L. Will, 5621 Beaver Trail, Indian Woods, Ind.
Filed Jun. 24, 1994, Ser. No. 24,979
Term of patent 14 years
U.S. Cl. D2—891



375,828
SLIPPER
Wayne DeLangie, 4547 Glines Ave., Santa Maria, Calif. 93455
Filed Mar. 25, 1996, Ser. No. 52,115
Term of patent 14 years
U.S. Cl. D2—898



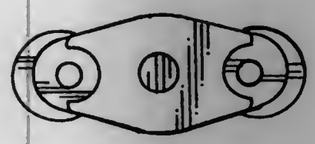
375,829
INTEGRAL IN-LINE SKATE BOOT AND SKATE FRAME
Richard Schaper, Maple Grove; Dan M. Sutherland, Arden Hills; Erik Mueller, and Philip Dretzka, both of Minneapolis, all of Minn., assignors to First Team Sports, Inc., Mounds View, Minn.
Filed Jan. 12, 1994, Ser. No. 17,459
Term of patent 14 years
U.S. Cl. D2—904



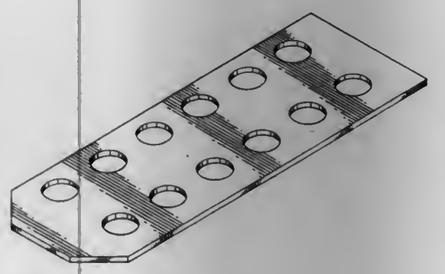
375,830
SHOE
William Bianchini, Elmwood, Mass., assignor to C. & J. Clark America, Inc., Kennett Square, Pa.
Filed Sep. 14, 1995, Ser. No. 43,909
Term of patent 14 years
U.S. Cl. D2—907



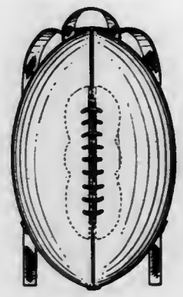
375,831
TENSION AND LENGTH ADJUSTER FOR A SHOELACE OR SHOCK CORD
David L. Perry, Essex Junction, Vt., assignor to D P Design, Inc., Williston, Vt.
Filed Jun. 6, 1995, Ser. No. 39,839
Term of patent 14 years
U.S. Cl. D2—978



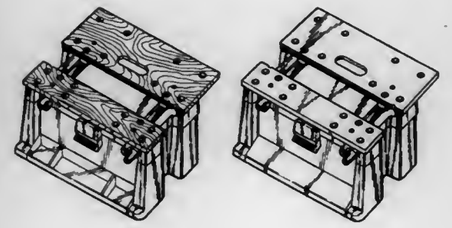
375,832
THREAD SEPARATOR
Karen Miller, 10217 Lakeview Dr., El Paso, Tex. 79924
Filed Aug. 11, 1995, Ser. No. 42,509
Term of patent 14 years
U.S. Cl. D3—23



375,833
BACK PACK
David B. Dixon, and Maria Do Carmo Nazareth, both of New York, N.Y., assignors to Mildex Pack, Inc., New York, N.Y.
Filed Nov. 14, 1994, Ser. No. 30,939
Term of patent 14 years
U.S. Cl. D3—217



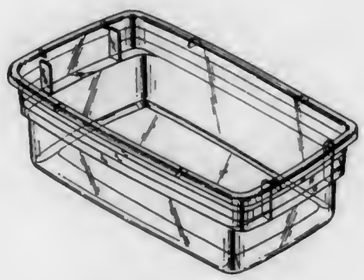
375,834
UTILITY BOX INCORPORATING AN INTEGRAL CLAMPING VISE
Edward H. Meisner, Short Hills, N.J.; Keith Kristiansen, Stratford, Conn.; Michael Ballone, New Providence, N.J.; Roberta S. Hall, Sparks; Michael A. Loferski, Monkton, both of Md.; Michael D. Dolsen, Millbrook, Canada; Christopher Bennett, Whitby, Canada; John B. Mason, Sr., Canada; Frank Basten, both of Brockville, and Colin Overy, Augusta, Canada, assignors to Black & Decker Inc., Newark, Del.
Continuation-in-part of Ser. No. 27,131, Aug. 12, 1994, abandoned. This application Jul. 12, 1995, Ser. No. 41,348
Term of patent 14 years
U.S. Cl. D3—274



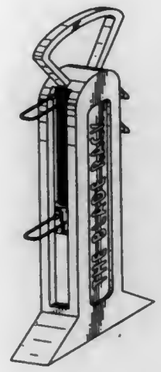
375,835
PACK WITH CARRYING STRAPS
Gary Christopher, La Jolla; Christina Goheen, San Diego; Whitefoord S. Mays, III, San Diego, and Michael J. McDonald, San Diego, all of Calif., assignors to 4 Sport and Play, Inc., San Diego, Calif.
Filed Jan. 31, 1995, Ser. No. 34,259
Term of patent 14 years
U.S. Cl. D3—289



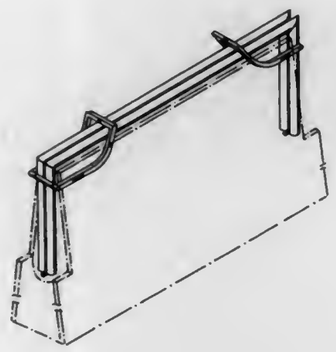
375,836
STORAGE CONTAINER
Rino Conti, Stoughton, Mass., assignor to Holiday Housewares, Inc., Leominster, Mass.
Filed Nov. 13, 1995, Ser. No. 46,288
Term of patent 14 years
U.S. Cl. D3—304



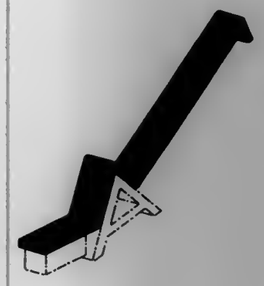
375,837
SKATE CARRIER
Tom Frank, 6545 SW. Alice La., Beaverton, Oreg. 97008
Filed Dec. 8, 1995, Ser. No. 47,615
Term of patent 14 years
U.S. Cl. D3—317



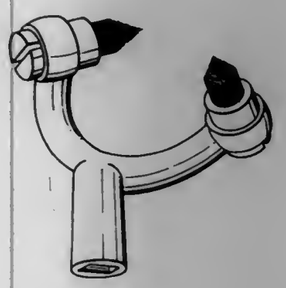
375,838
HANDBAG FRAME
Reva Ostrow, New York, N.Y., assignor to Reva Ostrow, Inc., New York, N.Y.
Filed Jan. 11, 1995, Ser. No. 33,389
Term of patent 14 years
U.S. Cl. D3—324



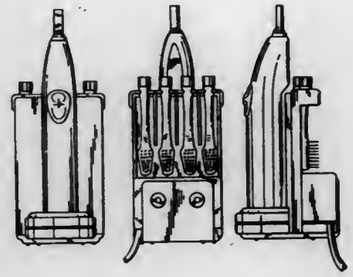
375,839
TOOTHBRUSH HANDLE
Travis Schiano, and Lisa A. Schiano, mother & natural guardian, both of 12 Dorothy La., Kings Park, N.Y. 11754
Filed May 12, 1994, Ser. No. 22,808
Term of patent 14 years
U.S. Cl. D4—104



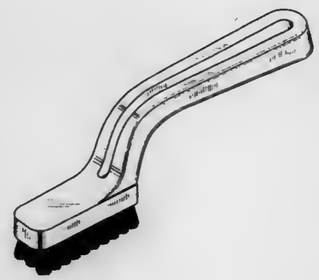
375,840
INTERDENTAL BRUSH HEAD
Kyosuke Ando, Green-Heights 6-7-501, 550 Nagasawa, Yokosuka-shi, Kanagawa-ken, Japan
Filed Nov. 30, 1995, Ser. No. 47,249
Claims priority, application Japan, Jul. 5, 1995, 7-19136
Term of patent 14 years
U.S. Cl. D4—105



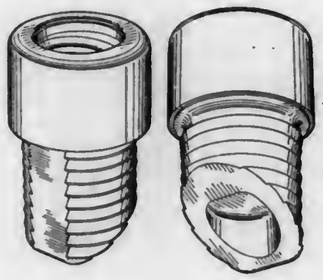
375,841
COMBINED TOOTHBRUSH AND WALL BRACKET
Andrew Serbinski, Annandale, N.J., assignor to Teledyne Industries, Inc., Fort Collins, Colo.
Filed Jun. 23, 1993, Ser. No. 9,849
Term of patent 14 years
U.S. Cl. D4—108



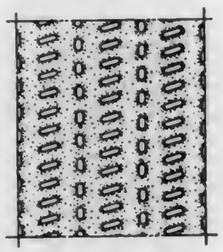
375,842
SMALL GROUT BRUSH
Donald Gringer, New York, N.Y., assignor to Allway Tools, Inc., Bronx, N.Y.
Filed Jun. 14, 1995, Ser. No. 40,259
Term of patent 14 years
U.S. Cl. D4—132



375,843
BROOM HANDLE CONNECTOR
Anthony H. Wolfenden, Elwood, Australia, assignor to The Decor Corporation Pty Ltd, Victoria, Australia
Filed Sep. 18, 1995, Ser. No. 44,088
Term of patent 14 years
U.S. Cl. D4—199



375,844
NONWOVEN FABRIC
Joel E. Edwards, Newnan; Ruth L. Levy, Sugar Hill; Ann L. McCormack, Cumming; John J. Sayovitz, and Ernest P. Sedlock, both of Marietta, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Continuation of Ser. No. 172,339, Dec. 23, 1993. This application Nov. 23, 1994, Ser. No. 31,379
Term of patent 14 years
U.S. Cl. D5—47



375,845
SEAT
Pascal Mourgue, Paris, France, assignor to Cinna of Briord, Serrieres de Briord, France
Filed May 30, 1995, Ser. No. 39,509
Claims priority, application Hague Agreement, Jan. 9, 1995, DM/031 767
The portion of the term of this patent subsequent to Mar. 26, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—334



375,846
CONTEMPORARY DINING CHAIR WITH SQUARE BACK RUNNERS
Sidney A. Lenger, Kernsville, N.C., assignor to Schottenstein Stores Corporation, Columbus, Ohio
Filed Oct. 25, 1995, Ser. No. 45,634
Term of patent 14 years
U.S. Cl. D6—370



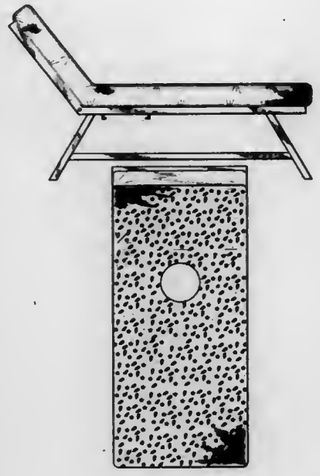
375,847
CHAIR
Miguel Tello, 704 Lexington Ave., El Cerrito, Calif. 94530
Filed Apr. 20, 1994, Ser. No. 21,538
Term of patent 14 years
U.S. Cl. D6—373



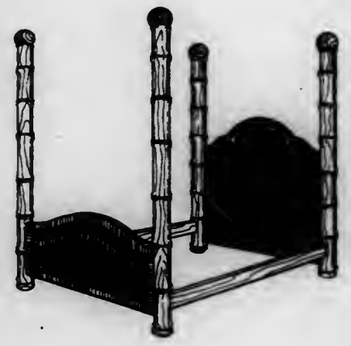
375,848
ARMCHAIR
Raymond Grosfillex, Oyonnax, France, assignor to Sarl Grosfillex, Oyonnax, France
Filed Sep. 12, 1995, Ser. No. 43,749
Claims priority, application Hague Agreement, Jul. 24, 1995, DMA/003008
Term of patent 14 years
U.S. Cl. D6—379



375,849
BED
Robert J. Conrad, Rt. 1 Box 111-A, Walker, W. Va. 26180
Continuation of Ser. No. 779,579, Oct. 21, 1991, abandoned. This application Apr. 28, 1994, Ser. No. 22,008
Term of patent 14 years
U.S. Cl. D6—382



375,850
BED
William A. James, Newport Beach, Calif., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Apr. 4, 1995, Ser. No. 37,129
Term of patent 14 years
U.S. Cl. D6—393



375,851

Patent Not Issued For This Number

375,852

CONSOLE

H. Thomas Keller, High Point, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.

Filed Dec. 13, 1995, Ser. No. 47,868

Term of patent 14 years

U.S. Cl. D6—477



375,853

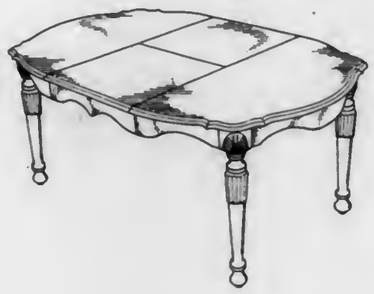
TABLE

Chan-shin Lee, No. 303, Tzuli 1st Rd., Sanmin Dist, Kaohsiung, Taiwan

Filed Dec. 27, 1995, Ser. No. 48,369

Term of patent 14 years

U.S. Cl. D6—480



375,854

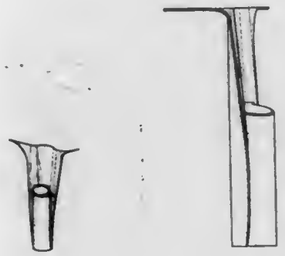
LEG FOR CHAIR

Shivaprasad Dhanapal, Statesville, N.C., and John Ledingham, Chicago, Ill., assignors to Rubbermaid Health Care Products Inc., Statesville, N.C.

Filed Nov. 14, 1995, Ser. No. 46,408

Term of patent 14 years

U.S. Cl. D6—495



375,855

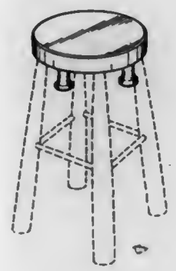
SEAT FOR A STOOL

Edward F. Marx, 16903 Gorsuch Mill Rd., Upperco, Md. 21155

Filed Dec. 6, 1995, Ser. No. 47,539

Term of patent 14 years

U.S. Cl. D6—502



375,856

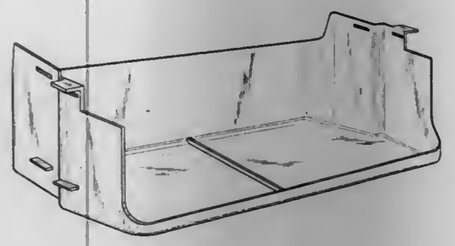
MICROWAVE DISH STORAGE SHELF

Robert H. Martin, Columbus, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Dec. 22, 1995, Ser. No. 48,269

Term of patent 14 years

U.S. Cl. D6—511



375,857

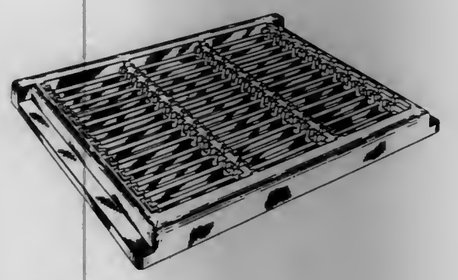
DRAWER

Gilles De Biois, Drummondville, Canada, assignor to Québec Inc., Brummondville, Canada

Filed Jun. 15, 1995, Ser. No. 40,310

Term of patent 14 years

U.S. Cl. D6—511



375,858

SELF-STANDING TOOTHBRUSH AND TUMBLER HOLDER

Norton Sharpe, Los Angeles, Calif., assignor to Franklin Brass Manufacturing Company, Rancho Dominquez, Calif.

Filed Jun. 29, 1995, Ser. No. 40,942

Term of patent 14 years

U.S. Cl. D6—531



375,859

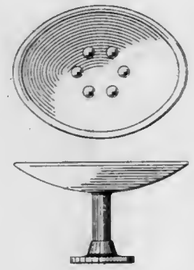
SELF-STANDING SOAP DISH

Norton Sharpe, Los Angeles, Calif., assignor to Franklin Brass Manufacturing Company, Rancho Dominguez, Calif.

Filed Jun. 29, 1995, Ser. No. 40,889

Term of patent 14 years

U.S. Cl. D6—536

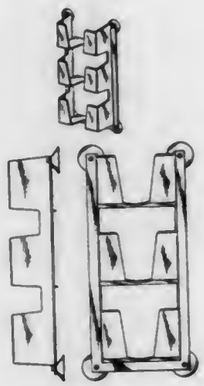


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375,860
GRAVITY FLOW RACK
Joseph Coretti, Jr., and Edward I. Knorring, Jr., both of Wheaton, Ill., assignors to B-O-F Corporation, Aurora, Ill.
Filed Jan. 30, 1995, Ser. No. 34,189
Term of patent 14 years
U.S. Cl. D6—566

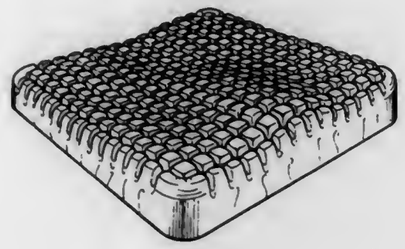


375,861
DISPLAY SHELF
Paul Belokin, Jr., Denton, Tex., assignor to Martin Paul, Inc., Denton, Tex.
Filed Sep. 21, 1992, Ser. No. 948,899
The portion of the term of this patent subsequent to Oct. 18, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—570

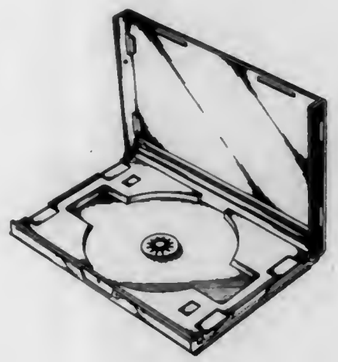


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Patent Not Issued For This Number

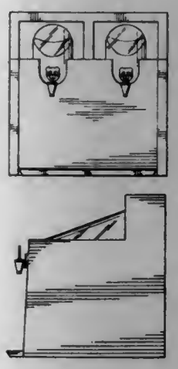
375,863
ANATOMICAL CUSHION
Francesca Bigolin, Bassano Del Grappa, Italy, assignor to Royal Media S.R.L., S. Pietro In Gu', Italy
Filed May 22, 1995, Ser. No. 39,145
Claims priority, application Italy, Nov. 23, 1994, VI9400065
Term of patent 14 years
U.S. Cl. D6—601



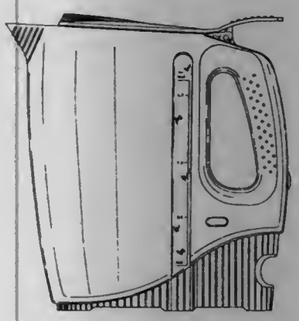
375,864
STORAGE CONTAINER
Yoshihiko Taniyama, 9380 Old Southwick Pass, Alpharetta, Ga. 30202
Filed Jul. 1, 1994, Ser. No. 25,568
The portion of the term of this patent subsequent to Dec. 21, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—632



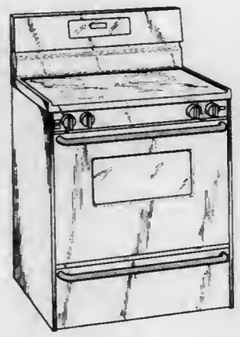
375,865
PORTABLE COOLER CABINET DISPENSER
Nancy Sovann, 1707 Sahara La., Mitchellville, Md. 20716
Filed Feb. 14, 1995, Ser. No. 34,849
Term of patent 14 years
U.S. Cl. D7—308



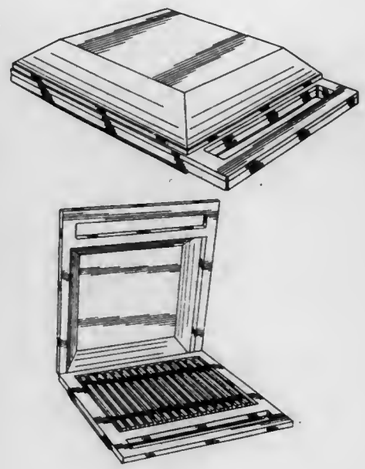
375,866
KETTLE
Choi L. Wai, Kowloon, Hong Kong, assignor to Goodway Electrical Co. Ltd., Hong Kong
Division of Ser. No. 22,701, May 10, 1994, Pat. No. Des. 367,394. This application Oct. 31, 1995, Ser. No. 46,739
Claims priority, application United Kingdom, Dec. 2, 1993, 2035617
Term of patent 14 years
U.S. Cl. D7—319



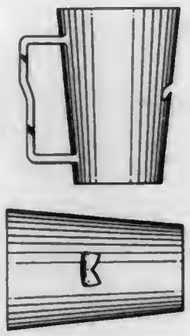
375,867
COOKING RANGE
Walton E. Sparks, Dublin, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Nov. 6, 1995, Ser. No. 46,028
Term of patent 14 years
U.S. Cl. D7—340



375,868
ELECTRIC GRILL
Duke Larson, Lake Geneva, Wis., assignor to Daniel J. Korbas, Woodstock, Ill.
Filed Sep. 27, 1995, Ser. No. 44,639
Term of patent 14 years
U.S. Cl. D7—361



375,869
CONTAINER WITH BOTTLE OPENER
Heriberto Canela, 8027 W. 14th Ave., Hialeah, Fla. 33014
Filed Jan. 4, 1996, Ser. No. 48,588
Term of patent 14 years
U.S. Cl. D7—507



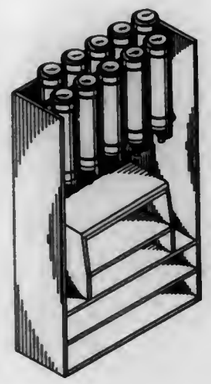
375,870
DRINKING VESSEL
David R. Stonehouse, Finchley, Great Britain, assignor to Courage Limited, Staines, Great Britain
Filed Feb. 22, 1995, Ser. No. 36,549
Claims priority, application United Kingdom, Sep. 22, 1994, 2042077
Term of patent 14 years
U.S. Cl. D7—523



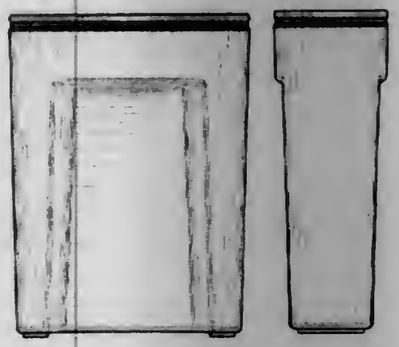
375,871
DRINKING TUMBLER
Charles W. Jarvis, Irvine, Calif., assignor to Cambro Manufacturing Company, Huntington Beach, Calif.
Filed Oct. 20, 1995, Ser. No. 46,658
The portion of the term of this patent subsequent to Nov. 19, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—523



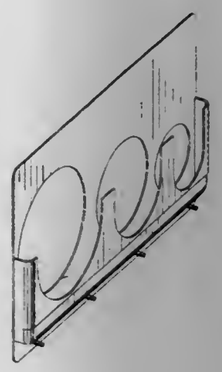
375,872
MERCHANDISING UNIT FOR STORING AND DISPENSING PERISHABLES
Johnie Romero, Greenwell Springs, La.; Andrew R. Weber, Chatham, N.J.; Helene Paulson, New York; Arthur T. Sempliner, Douglaston, both of N.Y., and Jay Brenowitz, Milltown, N.J., assignors to Community Coffee Company, Inc., Baton Rouge, La.
Filed Apr. 20, 1995, Ser. No. 37,799
Term of patent 14 years
U.S. Cl. D7—589



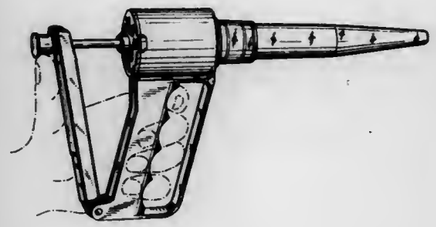
375,873
FOOD STORAGE CONTAINER
Richard B. Ahern, Jr., Akron; Derek Campbell, Dayton; Maaike Evers, Columbus, all of Ohio; Debra A. Fritsch, Grand Rapids, Mich.; Norio Fujikawa, Columbus, Ohio; David Gresham, East Hampton, N.Y.; Paul J. Kudirka, Ada; Mark Metzler, Alto, both of Mich.; Donald J. Staufenberg, Dublin, Ohio, and Michael Sullivan, Ada, Mich., assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 11, 1995, Ser. No. 47,668
Term of patent 14 years
U.S. Cl. D7—602



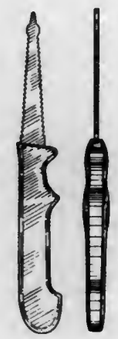
375,874
FUNNEL HOLDER
Larry L. Chrisco, Fairland, Okla., assignor to Blitz U.S.A. Inc., Miami, Okla.
Filed Sep. 5, 1995, Ser. No. 43,348
Term of patent 14 years
U.S. Cl. D7—637



375,875
BASTER
Lawrence Hutzler, Canaan, Conn., and Paul Heling, Solingen-Wald, Germany, assignors to Hutzler Manufacturing Company, Inc., Canaan, Conn.
Filed Apr. 15, 1994, Ser. No. 21,399
Term of patent 14 years
U.S. Cl. D7—669

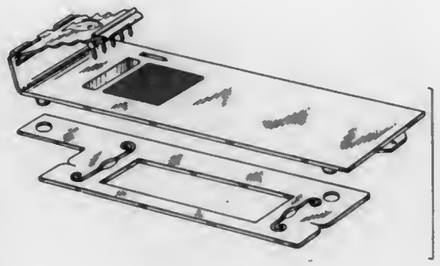


375,876
PUMPKIN TOOL
Ian T. Allison, P.O. Box 1705, Santa Rosa, Calif. 95402
Filed Oct. 30, 1995, Ser. No. 45,758
Term of patent 14 years
U.S. Cl. D7—696

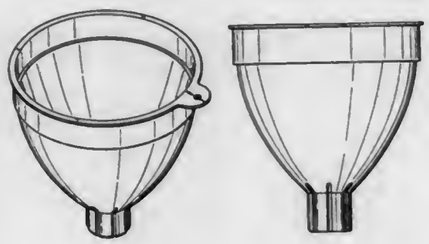


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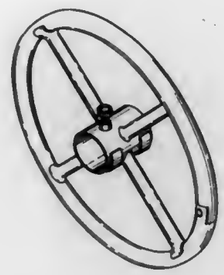
375,877
FISH CLEANING BOARD
Don Dotson, 5019 Constitution Ave., Colorado Springs, Colo. 80915, and Ian Barker, 567 Newcastle St., West Perth, Australia
Filed Oct. 20, 1993, Ser. No. 14,410
Term of patent 14 years
U.S. Cl. D7—698



375,878
FUNNEL
Michael A. Morris, Menlo Park, Calif., assignor to Geo Plastics, Redwood City, Calif.
Filed Jan. 22, 1996, Ser. No. 49,229
Term of patent 14 years
U.S. Cl. D7—700



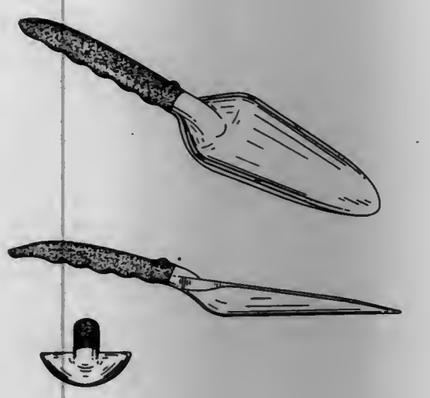
375,879
HOSE HANDLER
Brent S. Nielsen, 107 South 7th St., Clinton, Iowa 52732
Filed May 19, 1995, Ser. No. 39,082
Term of patent 14 years
U.S. Cl. D8—1



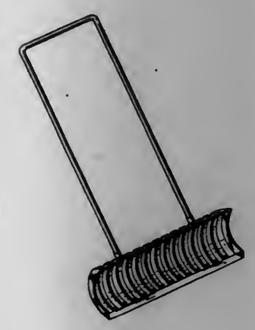
375,880
LIMB SHAKER
Charles T. Morehead, 402 E. Lover's La., Arlington, Tex. 76010
Filed May 30, 1995, Ser. No. 39,419
Term of patent 14 years
U.S. Cl. D8—1



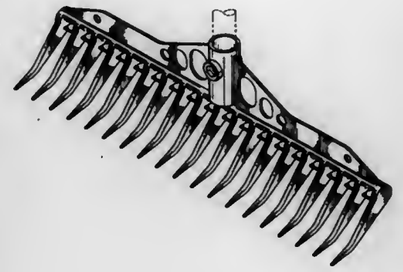
375,881
HAND TROWEL
Kenneth J. Spear, Vienna; Frank G. Czerwinski, Parkersburg, both of W. Va., and Steven F. Brooker, Marietta, Ohio, assignors to O. Ames Co., Parkersburg, W. Va.
Filed Oct. 23, 1995, Ser. No. 45,518
Term of patent 14 years
U.S. Cl. D8—10



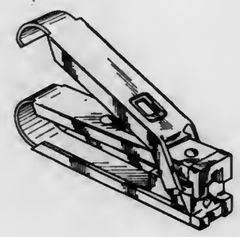
375,882
SNOW PUSHER
Bryan S. Ritchie, Davisville, and Kenneth J. Spear, Vienna, both of W. Va., assignors to O. Ames Co., Parkersburg, W. Va.
Filed Nov. 22, 1995, Ser. No. 46,979
Term of patent 14 years
U.S. Cl. D8—10



375,883
UTILITY RAKE
Kenneth A. Fomby, West Hwy. 82, P.O. Box 636, Gainesville, Tex. 76241-0636
Filed Jul. 25, 1995, Ser. No. 41,808
Term of patent 14 years
U.S. Cl. D8—13

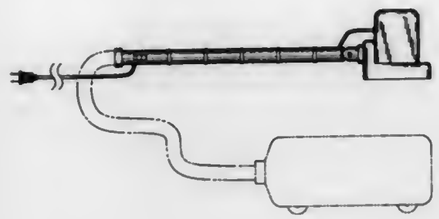


375,884
CLIPPER FOR SMALL DIAMETER PLASTIC ROD
Kenneth S. Palmer, 5000 W. Lakeridge Rd., Denver, Colo. 80219
Filed Aug. 21, 1995, Ser. No. 42,949
Term of patent 14 years
U.S. Cl. D8—51

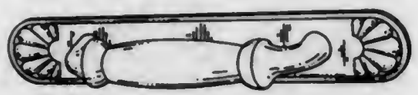


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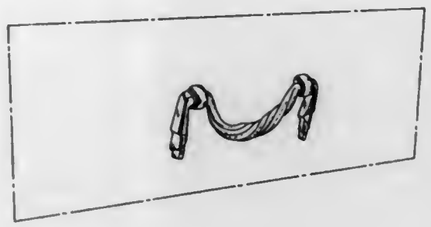
375,885
SANDING MACHINE FOR DRY LINING
Terence M. Taylor, 38, Elmbridge Parade Greatfield Estate, Hull, North Humberside, England
Filed Sep. 28, 1994, Ser. No. 29,059
Term of patent 14 years
U.S. Cl. D8—62



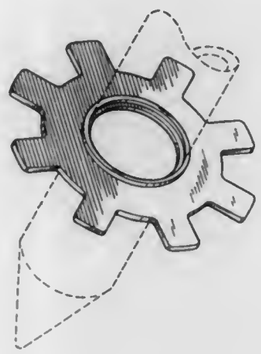
375,886
COMBINED PULL AND BACKPLATE
Deborah Mattson, Plainwell, and Doyle Watt, Grand Rapids, both of Mich., assignors to Keeler Brass Company, Grand Rapids, Mich.
Division of Ser. No. 18,086, Jan. 28, 1994, which is a division of Ser. No. 2,509, Dec. 11, 1992, Pat. No. Des. 347,566, which is a division of Ser. No. 491,129, Mar. 8, 1990, Pat. No. Des. 333,968. This application Aug. 23, 1995, Ser. No. 43,033
Term of patent 14 years
U.S. Cl. D8—301



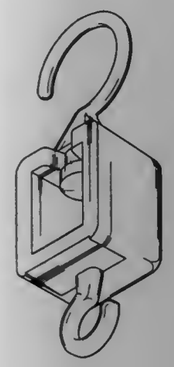
375,887
DRAWER PULL
Michael D. Tatum, Dallas, Tex., and Robert W. Purdom, deceased, late of Washington, D.C., assignors to Kimball International, Inc., Jasper, Ind.
Filed Apr. 13, 1994, Ser. No. 21,284
Term of patent 14 years
U.S. Cl. D8—305



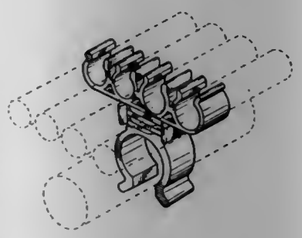
375,888
RESILIENT SPIDER FOR WELL INSTALLATION
Joel S. Loitherstein, 76 Warren Rd., Ashland, Mass. 01722
Filed May 22, 1995, Ser. No. 39,459
Term of patent 14 years
U.S. Cl. D8—354



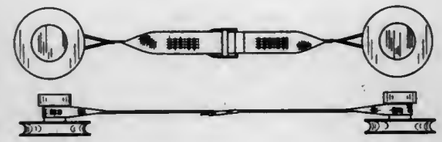
375,889
CHRISTMAS ORNAMENT SWIVEL
Debra L. Miller, and Rosella L. Miller, both of 3010 N. 5th St., Coeur d'Alene, Id. 83814
Filed Dec. 29, 1995, Ser. No. 48,459
Term of patent 14 years
U.S. Cl. D8—367



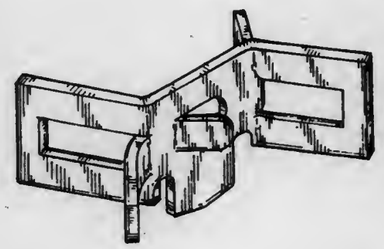
375,890
ROD HOLDER
Motoharu Takai, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan
Filed Oct. 26, 1995, Ser. No. 45,690
Claims priority, application Japan, Apr. 28, 1995, 7-11925
Term of patent 14 years
U.S. Cl. D8—380



375,891
TRUNK LID FASTENING HOLDER
Carl E. Bailey, Greensboro, and Clyde C. Bailey, Jr., Climax, both of N.C., assignors to C. B. Company, Inc., Greensboro, N.C.
Continuation of Ser. No. 856,441, Mar. 24, 1992, abandoned. This application Jun. 15, 1994, Ser. No. 22,799
Term of patent 14 years
U.S. Cl. D8—382

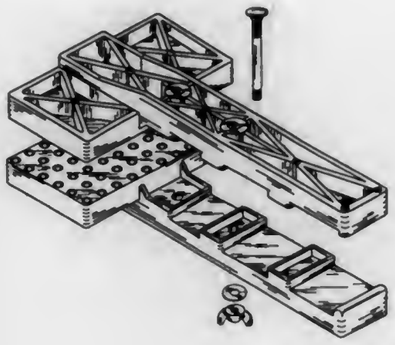


375,892
REFRACTORY ANCHOR
Robert P. Kraemer, Jr., P.O. Box 305, Pitman, N.J. 08071
Continuation of Ser. No. 23,759, Jun. 1, 1994, abandoned, which is a continuation of Ser. No. 1,022, Nov. 2, 1992, abandoned. This application Aug. 22, 1995, Ser. No. 42,989
Term of patent 14 years
U.S. Cl. D8—384



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375,893
AWNING STABILIZER CLAMP
June Hutcheson, and Stewart Tobias, both of Palmetto, Fla., assignors to Noble Manufacturing, Inc., Palmetto, Fla.
Continuation-in-part of Ser. No. 8,812, May 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 930,291, Aug. 17, 1992, abandoned. This application Jul. 11, 1994, Ser. No. 25,759
Term of patent 14 years
U.S. Cl. D8—394



375,894
ROD HOLDER
Atsushi Ogawa, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan
Filed Oct. 26, 1995, Ser. No. 45,689
Claims priority, application Japan, May 15, 1995, 7-13190
Term of patent 14 years
U.S. Cl. D8—396



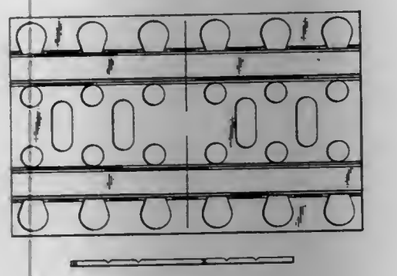
375,895
COMBINED BOTTLE AND CAP
Anelle Miller, New York, N.Y., assignor to Origins Natural Resources Inc., New York, N.Y.
Filed Sep. 28, 1995, Ser. No. 44,668
Term of patent 14 years
U.S. Cl. D9—300



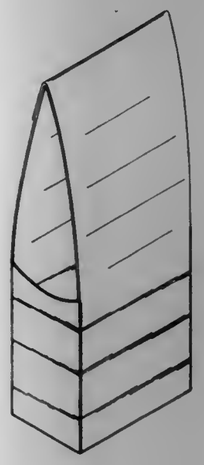
375,896
BOW BAG
Marlys J. Martinson, 8745 Lakeview Rd., Bloomington, Minn. 55438, and Cheryl A. Wald, 548 10th Ave. SW., New Brighton, Minn. 55112
Filed May 17, 1993, Ser. No. 6,988
Term of patent 14 years
U.S. Cl. D9—305



375,897
HOLDER FOR BOTTLES
Finn R. Hansen, Hønefoss, Norway, assignor to Norpapp Industri A/S, Baerums Verk, Norway
Filed Oct. 17, 1994, Ser. No. 29,789
Claims priority, application Denmark, Apr. 19, 1994, MA 0342 1994
Term of patent 14 years
U.S. Cl. D9—344



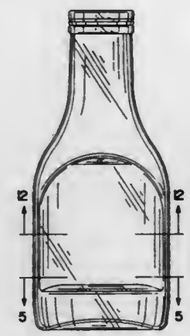
375,898
DISPLAY CARTON
Stewart L. Bolton, Springfield, N.J., assignor to Kraft Foods, Inc., Northfield, Ill.
Filed May 18, 1995, Ser. No. 38,999
Term of patent 14 years
U.S. Cl. D9—415



375,899
COMBINED BOTTLE AND CLOSURE
Mark D. Gerhart, Westminster, Md., and Harry Haubert, Freehold Township, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Filed Aug. 24, 1995, Ser. No. 43,068
Term of patent 14 years
U.S. Cl. D9—521



375,900
GLASS MILK BOTTLE
Dale G. DeVore, Elmore, Ohio, assignor to Owens-Brockway Glass Container Inc., Toledo, Ohio
Filed Oct. 20, 1994, Ser. No. 29,988
Term of patent 14 years
U.S. Cl. D9—563

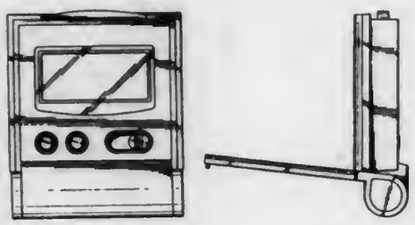


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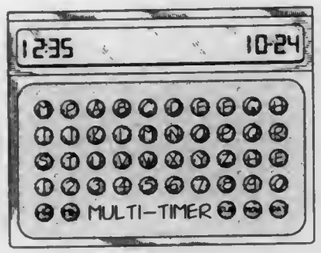
375,901
CLOCK
Sai-Wing Wong, Kowloon, Hong Kong, assignor to Eastman Time Litd., Hong Kong
Filed May 24, 1995, Ser. No. 39,219
Term of patent 14 years
U.S. Cl. D10—6



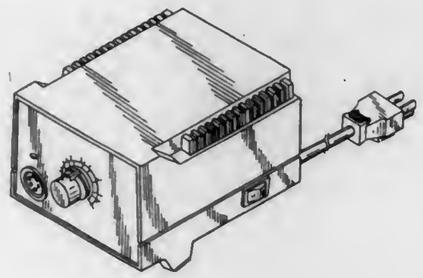
375,902
LCD ALARM CLOCK
Shu K. Wong, Hong Kong, Hong Kong, assignor to Herald Electronics Limited, New Territories, Hong Kong
Filed Nov. 20, 1995, Ser. No. 46,908
Term of patent 14 years
U.S. Cl. D10—15



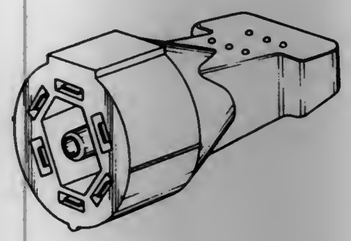
375,903
MULTI-EVENT TIMER
Tom C. Rieger, 5025 Quan Dr. #1, Jacksonville, Fla. 32205
Filed Aug. 14, 1995, Ser. No. 42,578
Term of patent 14 years
U.S. Cl. D10—40



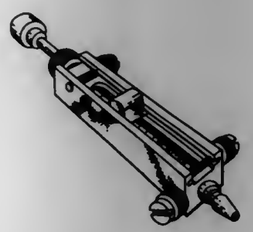
375,904
TEMPERATURE CONTROLLER FOR SOLDERING IRONS
Shogo Fukuda, Osaka, Japan, assignor to Hakko Corporation, Osaka, Japan
Filed Aug. 10, 1995, Ser. No. 42,448
Term of patent 14 years
U.S. Cl. D10—50



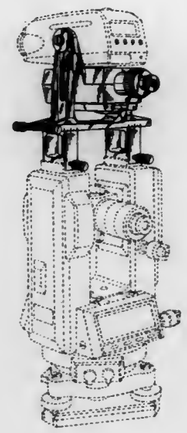
375,905
POWER TESTING DEVICE
John Kittridge, 4217 Highland Rd., Suite 230, Waterford, Mich. 48320
Filed Sep. 5, 1995, Ser. No. 43,500
Term of patent 14 years
U.S. Cl. D10—78



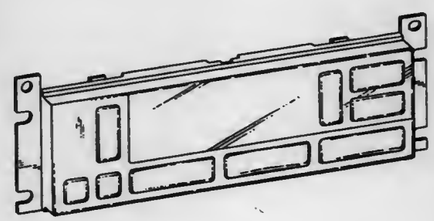
375,906
FLUID MEASURING AND TRANSFER DEVICE
David F. Negrotti, Linwood, Mass., assignor to Davcotech, Inc., Linwood, Mass.
Filed Oct. 19, 1995, Ser. No. 45,427
Term of patent 14 years
U.S. Cl. D10—96



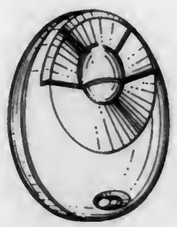
375,907
SUPPORT BASE FOR A LASER LIGHT RANGE METER EQUIPPED WITH A TELESCOPE
Kunitoshi Ogawa, Odawara, Japan, assignor to Sokkia Co., Ltd., Tokyo, Japan
Filed Oct. 11, 1995, Ser. No. 45,154
Claims priority, application Japan, Apr. 18, 1995, 7-10562
Term of patent 14 years
U.S. Cl. D10—103



375,908
FRONT PANEL FOR AN AUTOMOTIVE CLIMATE CONTROL
Nevenka Schumaker, Bloomfield Hills, and Rama R. Sreeramaneni, Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Oct. 31, 1995, Ser. No. 45,868
Term of patent 14 years
U.S. Cl. D10—49



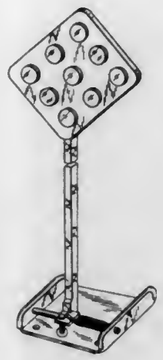
375,909
OVAL SHAPED REMOTE CONTROL TRANSMITTER
Mark Dziersk, Chicago, Ill., and Javier Verdura, Canton, Conn., assignors to Audiovox Corporation, Hauppauge, N.Y.
Filed Jan. 6, 1995, Ser. No. 34,440
Term of patent 14 years
U.S. Cl. D10—106



375,910
ANIMAL DOLL FOR USE AS A PERSONAL ALARM
Chi F. Tsui, Chai Wan, Hong Kong, assignor to Fixtron Ltd., United Kingdom
Filed Feb. 1, 1996, Ser. No. 49,840
Claims priority, application United Kingdom, Aug. 3, 1995, 2049297
Term of patent 14 years
U.S. Cl. D10—106



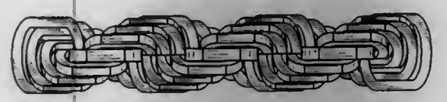
375,911
FREE-STANDING GAUGE
Donald C. Pretsch, Jr., 5237 Clifton St., Alexandria, Va. 22312
Filed Apr. 19, 1995, Ser. No. 37,729
Term of patent 14 years
U.S. Cl. D10—110



375,912
BELL
Chung-Shyan Huang, No. 1-1, Chang Mar Street, Hsiu Shui Hsiang, Chang Hua Hsien, Taiwan
Filed Nov. 15, 1995, Ser. No. 46,459
Term of patent 14 years
U.S. Cl. D10—116



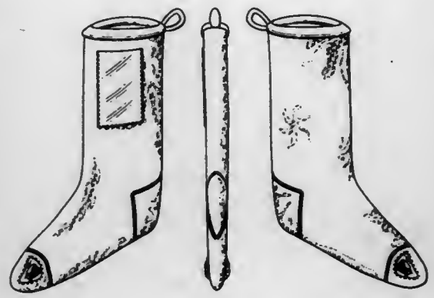
375,913
JEWELRY CHAIN
David Rozenwasser, 26 Har Dafna Street, Savion, Israel
Filed Sep. 27, 1994, Ser. No. 29,028
Claims priority, application Israel, May 25, 1994, 22661
Term of patent 14 years
U.S. Cl. D11—13



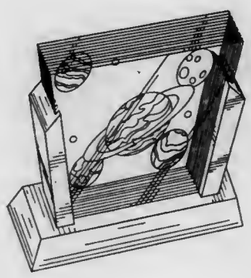
375,914
DIAMOND
H. Bradley Harris, Clearwater, and Harvey J. Harris, St. Petersburg, both of Fla., assignors to Fancoldi, R.T., Switzerland
Division of Ser. No. 1,271, Nov. 6, 1992, Pat. No. Des. 352,673.
This application Jul. 5, 1994, Ser. No. 25,560
Term of patent 14 years
U.S. Cl. D11—90



375,915
LUMP OF COAL CHRISTMAS STOCKING
Scott Skinner, and Debra L. M. Skinner, both of 6434 Lake Apopka Pl., San Diego, Calif. 92119
Filed Jun. 9, 1995, Ser. No. 40,129
Term of patent 14 years
U.S. Cl. D11—126

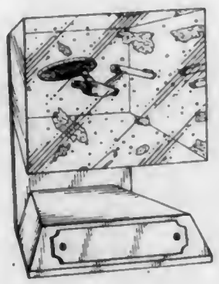


375,916
RECOGNITION AWARD
Kendall B. Cotner, New Albany, Ind., assignor to Bruce Fox, Inc., New Albany, Ind.
Filed Mar. 20, 1995, Ser. No. 36,459
Term of patent 14 years
U.S. Cl. D11—131

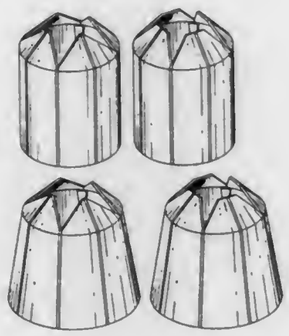


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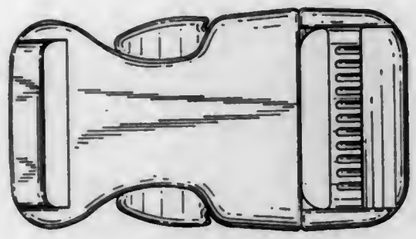
375,917
ORNAMENT
Alastair D. Seyler, 32 Yeoman Gardens, Paddock Wood, Tonbridge, Kent, United Kingdom, and Michael D. Seyler, Glenview, Boughton Hall Avenue, Send., Woking, Surrey, United Kingdom
Filed Nov. 2, 1995, Ser. No. 45,929
Term of patent 14 years
U.S. Cl. D11—131



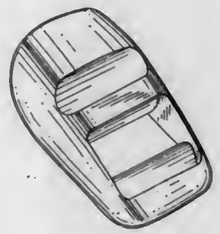
375,918
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklaboma City, Okla.
Continuation-in-part of Ser. No. 808,568, Dec. 16, 1991, Pat. No. Des. 362,827, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, said Ser. No. 710,272is a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,11, and a continuation-in-part of Ser. No. 411,247, Sep. 22, 1989, abandoned, and a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Jan. 5, 1993, Ser. No. 3,538
The portion of the term of this patent subsequent to Oct. 5, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164



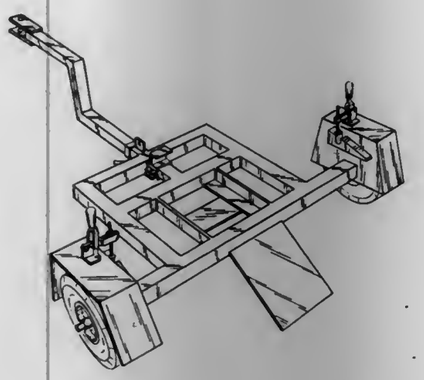
375,919
BUCKLE
Mark J. Krauss, E. Greenwich, R.I., assignor to American Cord & Webbing Co., Inc., Woonsocket, R.I.
Filed Oct. 5, 1995, Ser. No. 45,009
Term of patent 14 years
U.S. Cl. D11—216



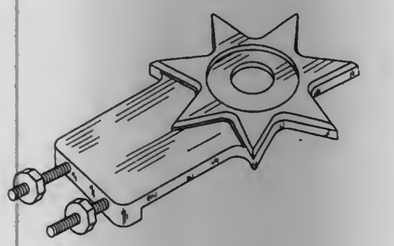
375,920
ONE-PIECE BUCKLE
Joseph Anscher, Muttontown, N.Y., assignor to National Molding Corp., Farmingdale, N.Y.
Filed Oct. 10, 1995, Ser. No. 45,079
Term of patent 14 years
U.S. Cl. D11—218



375,921
TRANSPORT TRAILER
Rodger A. Kunkle, 3085 Serenity Dr., Crestview, Fla. 32539
Filed Feb. 27, 1995, Ser. No. 35,426
Term of patent 14 years
U.S. Cl. D12—101

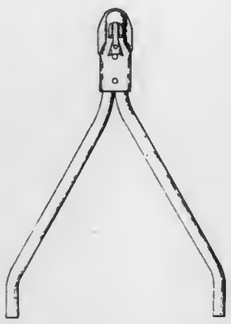


375,922
BICYCLE CHAIN TENSIONER
Mark von Giese, Morgan Hill, Calif., assignor to VG Components, Morgan Hill, Calif.
Filed Aug. 25, 1994, Ser. No. 27,619
Term of patent 14 years
U.S. Cl. D12—117





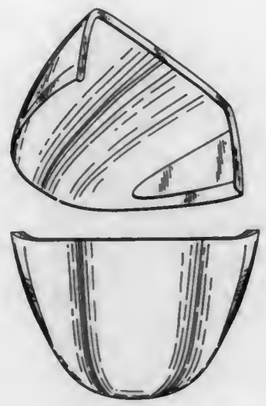
375,923
TOW BAR
Richard McCoy, Granger, Ind.; David L. Kulp, Edwardsburg, Mich., and Lori A. Birky, Bristol, Ind., assignors to Reese Products, Inc., Elkhart, Ind.
Filed Nov. 22, 1995, Ser. No. 47,089
Term of patent 14 years
U.S. Cl. D12—162



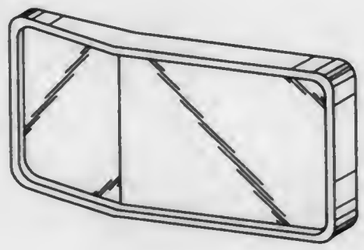
375,924
BOAT FENDER STRAP
Aaron Kramer, 2815 S. Raritan, Englewood, Colo. 80110
Filed Aug. 4, 1995, Ser. No. 42,208
Term of patent 14 years
U.S. Cl. D12—168

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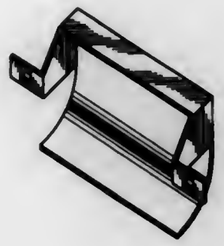
375,925
AIR FAIRING
Timothy A. Griffin, Scappoose, Oreg., assignor to Freightliner Corporation, Portland, Oreg.
Filed Jun. 26, 1995, Ser. No. 40,749
Term of patent 14 years
U.S. Cl. D12—181



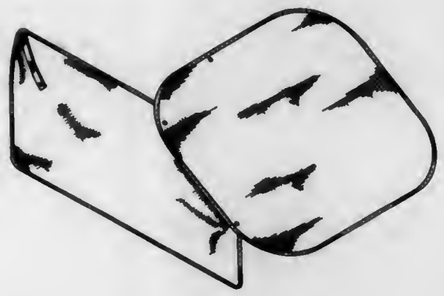
375,926
REARVIEW MIRROR
Carl E. Snyder, 11931 N. Tami Pl., Tucson, Ariz. 85737
Filed May 26, 1995, Ser. No. 39,478
Term of patent 14 years
U.S. Cl. D12—187



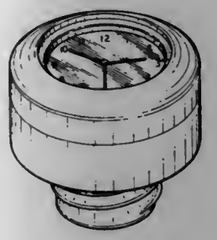
375,927
AIR SCOOP FOR DEFOGGING/DEFROSTING WEST COAST MIRROR HEADS
Ross Quintana, P.O. Box 5031, Moss Point, Miss. 39563, and James V. Cayo, P.O. Box 1601, Mobile, Ala. 36633
Filed Nov. 25, 1994, Ser. No. 31,408
Term of patent 14 years
U.S. Cl. D12—188



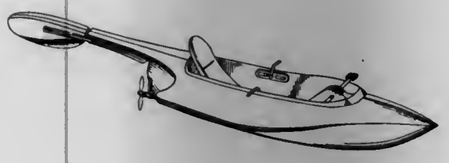
375,928
VEHICULAR SUN SHIELD WITH SINGLE SIDE SUN SHIELD EXTENSION
John Wang, Sylmar, Calif., assignor to Auto-Shade, L.L.C., Moorpark, Calif.
Filed Mar. 10, 1995, Ser. No. 35,999
Term of patent 14 years
U.S. Cl. D12—191



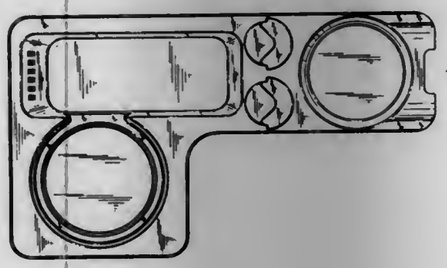
375,929
GAS CAP FOR MOTORCYCLES
George B. Lujack, and Caron J. Addesso, both of P.O. Box 422, Long Beach, N.Y. 11561
Filed Mar. 13, 1996, Ser. No. 51,559
Term of patent 14 years
U.S. Cl. D12—197



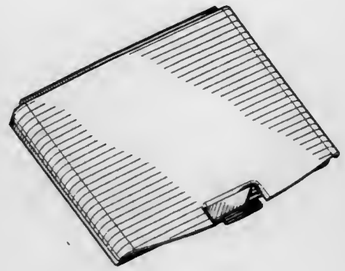
375,930
AQUACYCLE
Harry Howard, 3192 W. Jackson Rd., Nixa, Mo. 65714
Filed Aug. 22, 1995, Ser. No. 44,358
Term of patent 14 years
U.S. Cl. D12—306



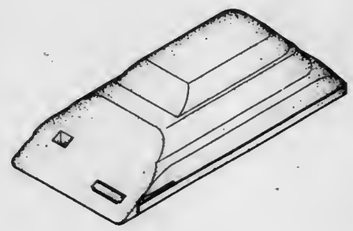
375,931
BEVERAGE TRAY FOR AUTOMOBILE CONSOLE
Paul J. Ferrigan, Charlotte, N.C., assignor to Saratoga Technologies, Inc., Charlotte, N.C.
Filed Oct. 4, 1995, Ser. No. 44,963
Term of patent 14 years
U.S. Cl. D12—419



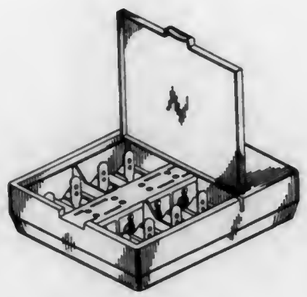
375,932
BATTERY HOUSING
Albert L. Nagele, Wilmette; Leonid Soren, Lincolnwood, and James R. Brunette, Wheeling, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation-in-part of Ser. No. 19,602, Mar. 7, 1994, Pat. No. Des. 367,640. This application May 9, 1995, Ser. No. 38,589
Term of patent 14 years
U.S. Cl. D13—103



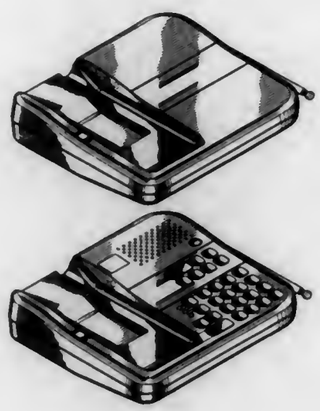
375,933
BATTERY
Chen L. Kao, 4F–1, No. 148, Yu Cheng Street, Nan Kang District, Taipei, Taiwan
Filed Sep. 19, 1995, Ser. No. 44,149
Term of patent 14 years
U.S. Cl. D13—103



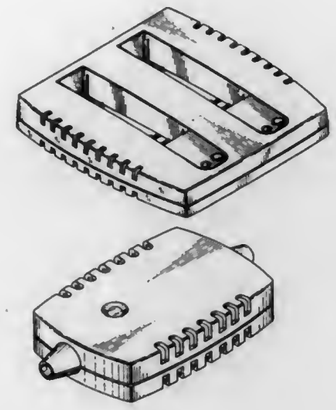
375,934
BATTERY CHARGER
Marc A. Rosen, New York, N.Y.; Richard J. Suchanek; Judith D. Pyle, both of Madison, Wis.; Kevin A. Marshall, Williston Park, N.Y.; Gerald A. Albright, Middleton, Wis.; Theresa A. Pyle-Smith, Madison, Wis.; Robert W. Zimmermann, Sun Prairie, Wis., and Robert K. Kloppenburg, Middleton, Wis., assignors to Rayovac Corporation, Madison, Wis.
Filed Jan. 14, 1994, Ser. No. 17,589
Term of patent 14 years
U.S. Cl. D13—107



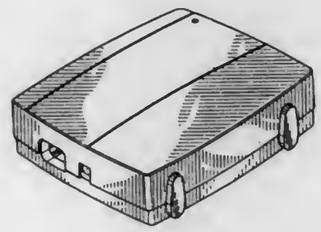
375,935
CHARGER BASE HOUSING
Albert L. Nagele, Wilmette, and Louis J. Lundell, Buffalo Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 5, 1995, Ser. No. 33,149
Term of patent 14 years
U.S. Cl. D13—108



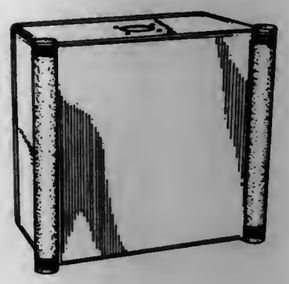
375,936
MODULAR DROP CHARGER AND DC-DC CONVERTER FOR PORTABLE ELECTRONIC EQUIPMENT
Dennis Palatov, Lake Forest, Calif., assignor to Xtend Micro Products, Inc., Irvine, Calif.
Filed Aug. 25, 1995, Ser. No. 43,119
Term of patent 14 years
U.S. Cl. D13—108



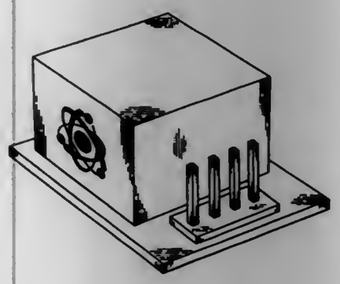
375,937
WIRELESS LOCAL LOOP POWER SUPPLY
Steven A. Mergenthaler, Boulder, Colo.; Dawn E. Beattie, Carlsbad, Calif.; Paul E. Jacobs, La Jolla, Calif.; Michael H. Daffara, Ramona, Calif.; James C. Wightman, Bloomfield, and David C. Stowers, Nutley, both of N.J., assignors to Qualcomm Incorporated, San Diego, Calif.
Filed Dec. 1, 1995, Ser. No. 47,360
Term of patent 14 years
U.S. Cl. D13—110



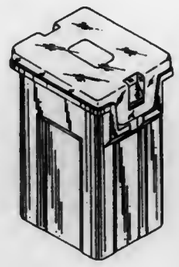
375,938
OPERATING HOUSING
Norbert Müller, Dietzhölztal, and Jürgen Zachrai, Dillenburg, all of Germany, assignors to Rittal-Werk Rudolf Loh GmbH & Co. KG, Germany
Filed Oct. 18, 1994, Ser. No. 29,899
Claims priority, application Germany, Apr. 18, 1994, M9403156.8
Term of patent 14 years
U.S. Cl. D13—152



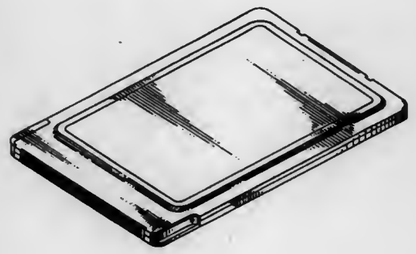
375,939
AUTOMOTIVE ANTI-LOCKOUT ACCESSORY
Donald R. Hazelmyer, 8488 Button Rd., Cicero, N.Y. 13039
Filed Jul. 20, 1995, Ser. No. 41,659
Term of patent 14 years
U.S. Cl. D13—158



375,940
FUSE-LINK FOR AUTOMOBILES
Akihiko Shimizu, Ibi-gun, and Manabu Ota, Ogaki, both of Japan, assignors to Pacific Engineering Co., Ltd., Japan
Filed Feb. 28, 1995, Ser. No. 36,618
Term of patent 14 years
U.S. Cl. D13—161

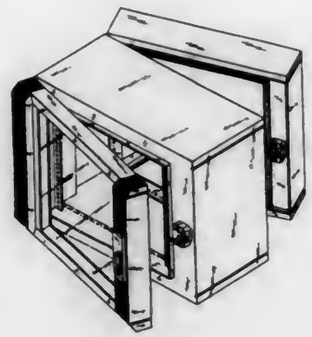


375,941
TOP, FRONT, REAR, LEFT AND RIGHT OF PERSONAL COMPUTER MEMORY CARD
Albert J. Kerklaan, Milton, Canada, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 7, 1993, Ser. No. 9,269
Claims priority, application Canada, Dec. 8, 1992, 08-12-92-5
Term of patent 14 years
U.S. Cl. D13—182

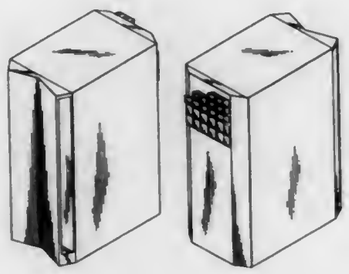


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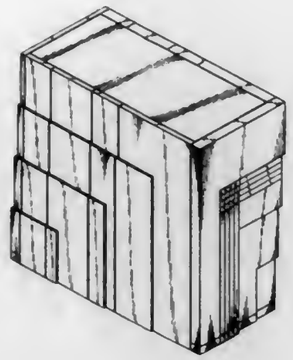
375,942
ENCLOSURE FOR ELECTRONIC EQUIPMENT
Roger Fursier, Butts, Park House, Longlands, GB-Saltash, Cornwall, Great Britain; Claus-Dieter Bovermann, Am Oberg 7, 3565 Breidenbach-Niederdieten, Germany; Norbert Muller, Auf der Weide 1, 6344 Dietzholztal-Ewersbach, Germany, and Wolfgang Schuler, Richard-Wagner-Ring 8, 6332 Ehringshausen, Germany
Filed Apr. 11, 1990, Ser. No. 508,341
Claims priority, application Germany, Oct. 11, 1989, M8907077.1
Term of patent 14 years
U.S. Cl. D13—184



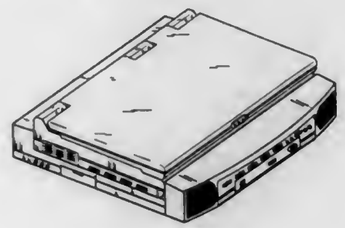
375,943
CABINET FOR ELECTRONIC DATA PROCESSING EQUIPMENT
Gerard F. Muenkel, Highland, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 18, 1995, Ser. No. 44,080
Term of patent 14 years
U.S. Cl. D14—100



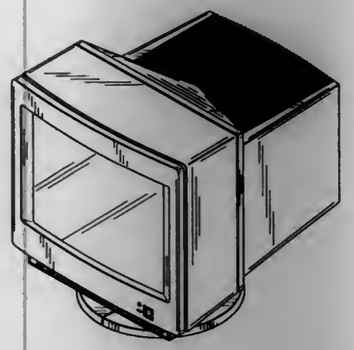
375,944
COMPUTER CABINET
Perry D. Franz, Elk Mound; Steven M. Oberlin, Chippewa Falls, both of Wis., and Timothy W. Desley, Minneapolis, Minn., assignors to Cray Research, Inc., Eagan, Minn.
Filed Dec. 21, 1995, Ser. No. 48,129
Term of patent 14 years
U.S. Cl. D14—102



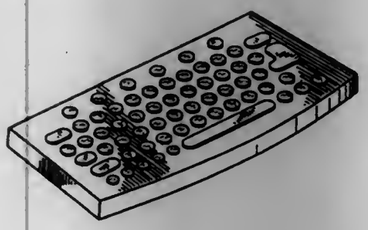
375,945
COMBINED PORTABLE COMPUTER DOCKING STATION AND COMPUTER
Seong S. Shin, Cupertino, and Young S. Kim, Los Altos, both of Calif., assignors to Daewoo Telecom Ltd., Compton, Calif.
Filed Dec. 27, 1994, Ser. No. 32,758
Term of patent 14 years
U.S. Cl. D14—107



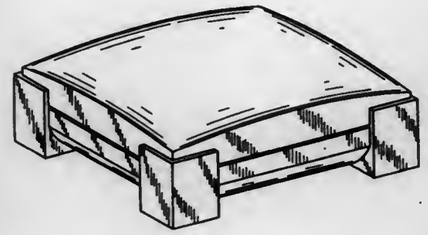
375,946
DISPLAY MONITOR
Tristan A. Merino, Austin, Tex., and Markus Oates, Glasgow, Scotland, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 7, 1995, Ser. No. 41,180
Term of patent 14 years
U.S. Cl. D14—113



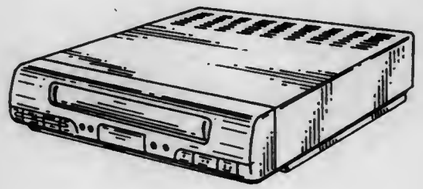
375,947
KEYBOARD
Richard K. Brenner, Fanwood, N.J.; Mark S. Kimbrough, Austin, Tex.; Philip Leung, Heaton, England; Robert H. Garrett, and Pearce Jones, both of Austin, Tex., assignors to Brother International Corporation, Somerset, N.J.
Filed Jan. 16, 1996, Ser. No. 48,948
Term of patent 14 years
U.S. Cl. D14—115



375,948
FACSIMILE CONTROLLER
Michael G. Langlois, Kanata, Canada, assignor to Mitel Corporation, Ontario, Canada
Filed Jul. 19, 1994, Ser. No. 26,089
Claims priority, application Canada, Jun. 17, 1994, 1994-1177
Term of patent 14 years
U.S. Cl. D14—118

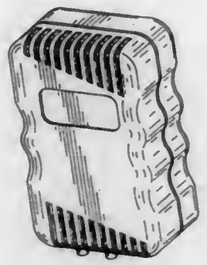


375,949
VIDEO CASSETTE PLAYER
Sa Y. Hong, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Jun. 13, 1994, Ser. No. 24,378
Claims priority, application Rep. of Korea, Jan. 17, 1994, 845/1994
Term of patent 14 years
U.S. Cl. D14—135

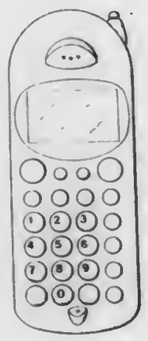


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375,950
ELECTRONIC TRANSCEIVER
Myrddin Jones, Devon; Robert Vito, Berwyn, both of Pa., and Rick Aversano, Blythewood, S.C., assignors to Elcom Technologies Corporation, Malvern, Pa.
Filed Nov. 16, 1995, Ser. No. 46,498
Term of patent 14 years
U.S. Cl. D14—137



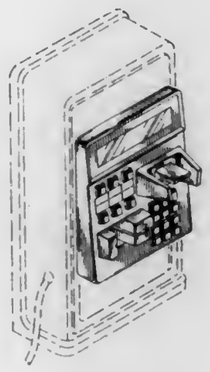
375,951
FACE PLATE FOR A RADIOTELEPHONE
Thomas Birmanns, Ingolstadt, Germany, assignor to Temic Telefunken Microelectronic GmbH, Heilbronn, Germany
Filed Sep. 20, 1995, Ser. No. 44,208
Claims priority, application Germany, Mar. 23, 1995, 95 02 731.9
Term of patent 14 years
U.S. Cl. D14—138



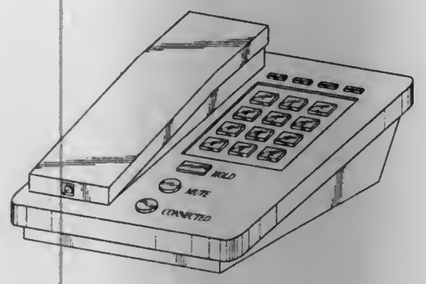
375,952
PORTABLE TELEPHONE
Daniel L. Williams, Vernon Hills; Steven W. Murray, Hanover Park, and Norman L. Ho, Deerfield, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 27, 1996, Ser. No. 50,827
Term of patent 14 years
U.S. Cl. D14—138



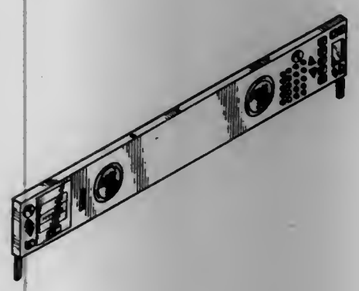
375,953
TELEPHONE CARD READER CONSOLE
Terry W. Smith, Wachula, and Donald W. Plungis, Tampa, both of Fla., assignors to Protel, Inc., Lakeland, Fla.
Filed Nov. 3, 1995, Ser. No. 45,948
Term of patent 14 years
U.S. Cl. D14—146



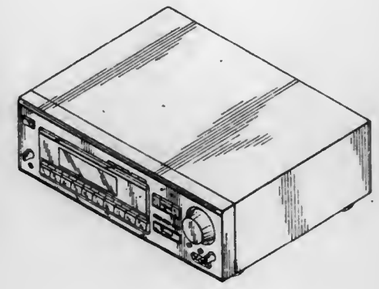
375,954
TELEPHONE
Nancy Smith, 1101 Seneca St., Apt. 704, Bethlehem, Pa. 18015
Filed Sep. 11, 1995, Ser. No. 43,688
Term of patent 14 years
U.S. Cl. D14—151



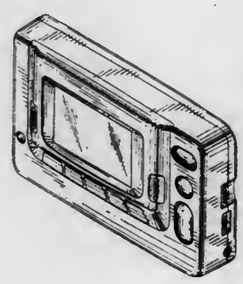
375,955
COMBINED STEREO AND CASSETTE PLAYER
Brian C. Rankins, and Dwjuan Davis, both of 523 Sanford St., Covington, Ky. 41011
Filed Jun. 20, 1995, Ser. No. 40,479
Term of patent 14 years
U.S. Cl. D14—162



375,956
TUNER
Eiji Shintani, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 30, 1995, Ser. No. 43,229
Claims priority, application Japan, Apr. 4, 1995, 7-9150
Term of patent 14 years
U.S. Cl. D14—197

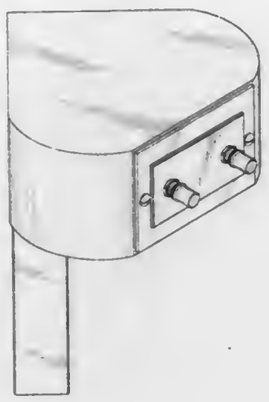


375,957
RADIO RECEIVER
Atsuo Nagai, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 23, 1995, Ser. No. 45,551
Term of patent 14 years
U.S. Cl. D14—197



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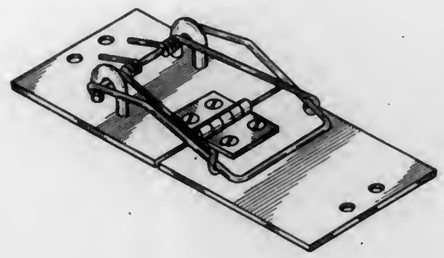
375,958
SPEAKER ENCLOSURE
Frankie J. Asencio, Columbus, Ohio, assignor to Network Entertainment Systems, Inc., Columbus, Ohio
Filed Aug. 29, 1995, Ser. No. 43,208
Term of patent 14 years
U.S. Cl. D14—213



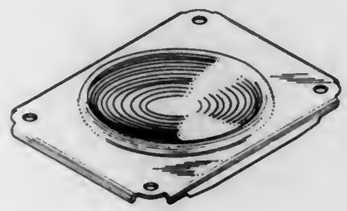
375,959
COMMUNICATIONS HEADSET
Michael G. Davis, Dallas, Oreg.; Gabriele Bungardt, Aptos, Calif.; Luis Pedraza, West Roxbury, Mass., and Tim Dearborn, Rochester Hills, Mich., assignors to Plantronics, Inc., Santa Cruz, Calif.
Filed Apr. 24, 1995, Ser. No. 37,939
Term of patent 14 years
U.S. Cl. D14—223



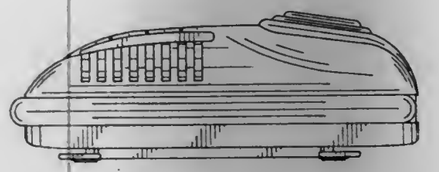
375,960
LINK FOR ROTARY MOTION DEVICE
Jerry N. Boright, 2824 Grayson, Ferndale, Mich. 48220
Filed Nov. 18, 1994, Ser. No. 31,249
Term of patent 14 years
U.S. Cl. D15—5



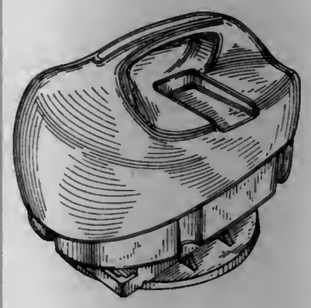
375,961
BASE PLATE FOR A REFRIGERATION COMPRESSOR
Peter A. Kotlarek, Onalaska; Bill P. Simmons, and James B. Winder, both of La Crosse, all of Wis., assignors to American Standard Inc., Piscataway, N.J.
Filed Aug. 3, 1995, Ser. No. 42,200
Term of patent 14 years
U.S. Cl. D15—7



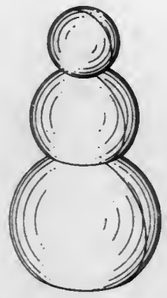
375,962
AIR COMPRESSOR
Paul W. K. Wong, New Territories, Hong Kong, assignor to Good Hope Industries Ltd., Hong Kong
Filed Nov. 29, 1994, Ser. No. 31,499
Claims priority, application United Kingdom, Aug. 23, 1994, 2041220
Term of patent 14 years
U.S. Cl. D15—9



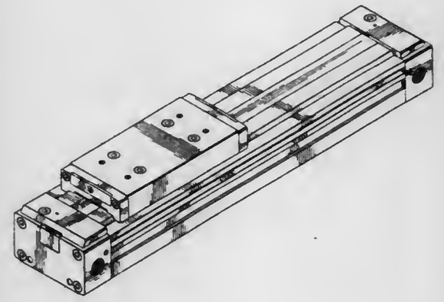
375,963
POWER HEAD FOR A CORDLESS ELECTRIC LAWNMOWER
Michael Braun, Wauwatosa; Patrick Bruener, Hartland; Eric Fickas, Germantown; Eileen Scharenbroch, West Bend, and Kipp Stevens, Milwaukee, all of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.
Filed Jul. 18, 1995, Ser. No. 41,589
Term of patent 14 years
U.S. Cl. D15—17



375,964
SNOWMAN MOLD
Nick Poubouridis, 31-15 83rd St., Jackson Heights, N.Y. 11370
Filed Feb. 16, 1996, Ser. No. 50,388
Term of patent 14 years
U.S. Cl. D15—136

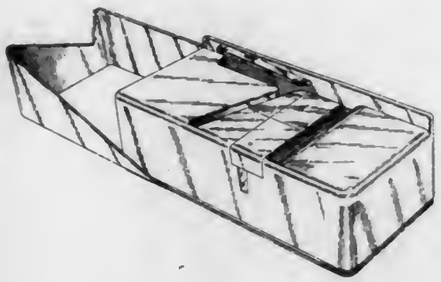


375,965
RODLESS CYLINDER WITH A MOVABLE TABLE
Masatoshi Shiino, Kakamihara; Terumasa Takeuchi, Aichi-ken, and Osamu Fushihara, Nagoya, all of Japan, assignors to CKD Corporation, Aichi, Japan
Division of Ser. No. 34,164, Jan. 27, 1995, Pat. No. Des. 367,863. This application Nov. 14, 1995, Ser. No. 46,410
Claims priority, application Japan, Jul. 29, 1994, 6-23011; Jul. 29, 1994, 6-23012
Term of patent 14 years
U.S. Cl. D15—143

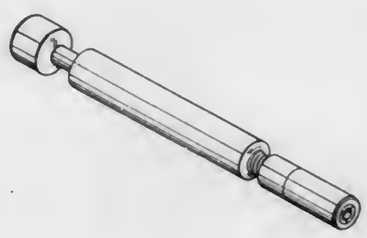


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375,966
ENVELOPE SEALER AND TRAY
Robert Bradshaw, 10,000 W. Court St., Pasco, Wash. 99301
Continuation of Ser. No. 28,783, Sep. 22, 1994, abandoned, which is a continuation of Ser. No. 7,232, Apr. 15, 1993, abandoned. This application May 6, 1995, Ser. No. 43,575
Term of patent 14 years
U.S. Cl. D15—146



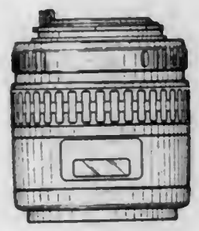
375,967
GREASE FITTING CLEANING TOOL
Paul B. Michener, 5565 Lytle Rd., Waynesville, Ohio 45068
Filed Jan. 16, 1996, Ser. No. 48,888
Term of patent 14 years
U.S. Cl. D15—150



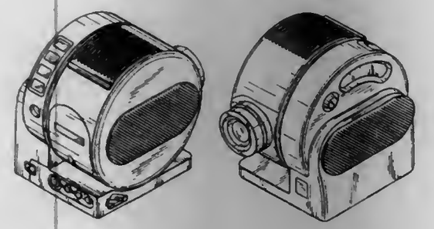
375,968
BASEBALL-TYPE BINOCULARS
Takashi Ushiyama, Tokyo, Japan, assignor to Copitar Co., Ltd., Japan
Filed Nov. 8, 1995, Ser. No. 46,178
Term of patent 14 years
U.S. Cl. D16—133



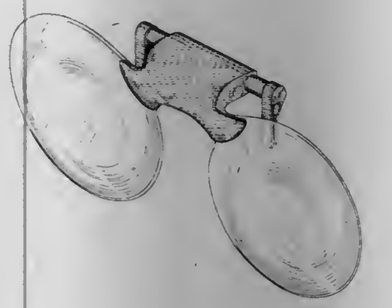
375,969
LENS FOR SINGLE-LENS REFLEX CAMERA
Akira Watanabe, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 5, 1996, Ser. No. 48,598
Claims priority, application Japan, Jul. 7, 1995, 7-19572
Term of patent 14 years
U.S. Cl. D16—134



375,970
VIDEO PROJECTOR
Tomohiro Ilarata, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 12, 1994, Ser. No. 32,259
Claims priority, application Japan, Jul. 15, 1994, 6-21268
Term of patent 14 years
U.S. Cl. D16—225



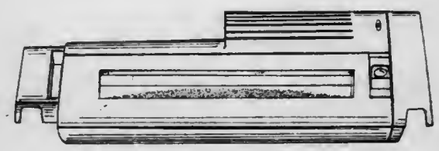
375,971
CLIP-ON SUNGLASSES
Philippe Peluso, 3102 Via Sorbette, Carlsbad, Calif. 92008; David L. Volk, 301 Oakwood Ct., Clairton, Pa. 15025, and Steven D. Goldenbogen, 733 Broughton St., Pittsburgh, Pa. 15213
Filed Feb. 12, 1996, Ser. No. 50,210
Term of patent 14 years
U.S. Cl. D16—330



375,972
CASH REGISTER
Takuro Masuda, Yokohama, Japan, assignor to Kabushiki Kaisha TEC, Shizuoka, Japan
Filed Dec. 4, 1995, Ser. No. 47,418
Claims priority, application Japan, Jun. 15, 1995, 7-17023
Term of patent 14 years
U.S. Cl. D18—4



375,973
PAPER SHREDDER
Jeff Kennedy, Algonquin, and Walter B. Herbst, Lake Forest, both of Ill., assignors to General Binding Corporation, Northbrook, Ill.
Filed Aug. 25, 1995, Ser. No. 43,359
Term of patent 14 years
U.S. Cl. D18—34

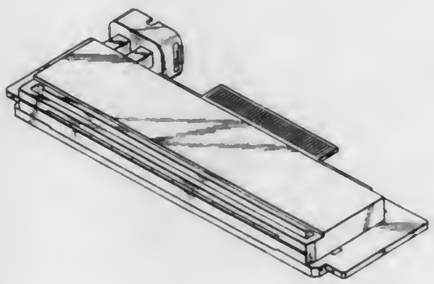


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375,974
PRINTER
Shinya Kogoh; Hideji Kobashi, both of Yokohama, Japan; William T. Clark; Mark S. Penke, both of West Henrietta, N.Y.; Jacob W. Patla, Fairport, N.Y., and Makoto Kenmochi, Yokohama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Jul. 13, 1995, Ser. No. 41,429
Claims priority, application Japan, Jan. 17, 1995, 7-000491
Term of patent 14 years
U.S. Cl. D18—53



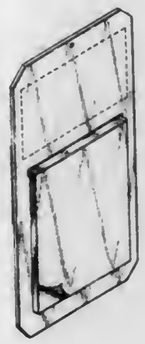
375,975
PRINTING HEAD
Yutaka Koizumi, Yokohama; Toshio Kashino, Chigasaki; Seiichiro Karita, Yokohama; Kiyomi Aono, Kokubunji; Kouichi Omata, and Hiroki Tajima, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 28, 1995, Ser. No. 38,089
Claims priority, application Japan, Nov. 2, 1994, 6-33600
Term of patent 14 years
U.S. Cl. D18—56



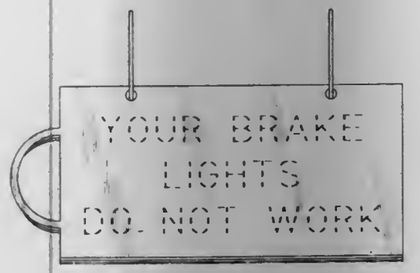
375,976
HOLDER FOR DOCUMENTS
Patrick Marguerie, Annecy Le Vieux, France, assignor to Impex SA, Les Abrets, France
Filed Apr. 11, 1995, Ser. No. 37,368
Claims priority, application Hague Agreement, Oct. 12, 1994, DM/030 958
Term of patent 14 years
U.S. Cl. D19—65



375,977
MAGNETIC SUPPORT SUPPORTING A NOTEPAD AND FOR MOUNTING A BUSINESS CARD
Robert F. Swarts, 4080 Golf Dr., San Jose, Calif. 95127
Filed Oct. 13, 1994, Ser. No. 29,669
Term of patent 14 years
U.S. Cl. D19—90



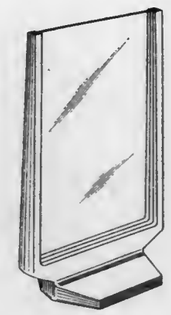
375,978
SET OF HANDHELD FLASH CARDS FOR USE IN A VEHICLE
Stephen P. Fitzgerald, 3435 Ocean Park Blvd. #206, Santa Monica, Calif. 90405
Filed Oct. 30, 1995, Ser. No. 46,729
Term of patent 14 years
U.S. Cl. D20—10



375,979
MARKER
William E. Adams, Portersville, Pa., assignor to Adams Mfg. Corp., Portersville, Pa.
Filed Nov. 28, 1995, Ser. No. 47,149
Term of patent 14 years
U.S. Cl. D20—17



375,980
HEIGHT ADJUSTABLE SIGN HOLDER
Wayne A. Current, Holmdel, N.J., assignor to International Visual Corp., Port Washington, N.Y.
Filed Jun. 7, 1995, Ser. No. 39,928
Term of patent 14 years
U.S. Cl. D20—40

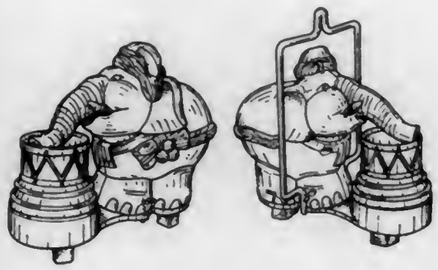


375,981
VIDEO GAME MACHINE WITH SEAL PRINTER
Kenji Takahata, Hino, and Tadahisa Sawano, Hachiohji, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 28, 1995, Ser. No. 48,429
Term of patent 14 years
U.S. Cl. D21—48

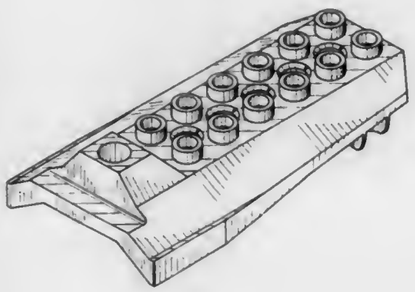


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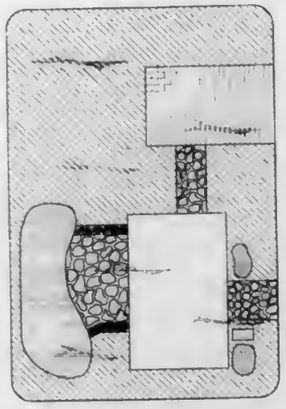
375,982
BUBBLE BLOWING ELEPHANT
Sally Bhandburgravl, Nutley, N.J., and Mary Butcher, Bronx, N.Y., assignors to Link Group Inernational, Ridgefield, Conn.
Filed Jul. 17, 1995, Ser. No. 41,499
Term of patent 14 years
U.S. Cl. D21—61



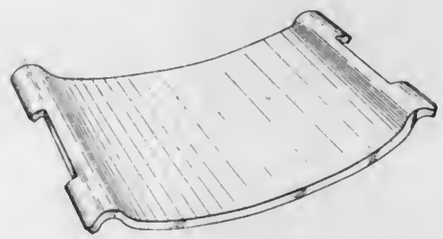
375,983
TOY BUILDING ELEMENT
Flemming H. Olsen, Espergærde, and Per Brømsø, Copenhagen, both of Denmark, assignors to INTERLEGO AG, Baar, Switzerland
Filed Sep. 14, 1995, Ser. No. 43,919
Term of patent 14 years
U.S. Cl. D21—108



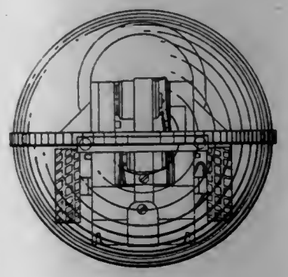
375,984
PLAY MAT FOR DOLL HOUSES
Doreen R. Burns, 1106 Easton Rd., Hellertown, Pa. 18055
Filed Feb. 16, 1995, Ser. No. 34,968
Term of patent 14 years
U.S. Cl. D21—114



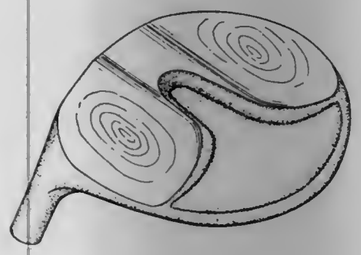
375,985
FITNESS PLATFORM
Donald E. Dailey, 9307 Petersburg Rd., Evansville, Ind. 47711, and Robert T. Tank, 735 Plaza Dr., Evansville, Ind. 47715
Filed Jun. 21, 1995, Ser. No. 40,555
Term of patent 14 years
U.S. Cl. D21—191



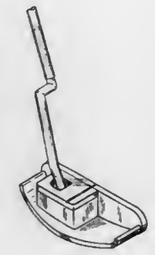
375,986
REMOTE CONTROLLED MOVABLE BALL AMUSEMENT DEVICE
William T. Wilkinson, Sunset Dr., R.D. #1, Salem, N.J. 08079, and John J. Nelson, Levitown, Pa., assignors to William T. Wilkinson, Salem, N.J.
Continuation of Ser. No. 292,273, Aug. 18, 1994. This application Sep. 5, 1995, Ser. No. 43,438
Term of patent 14 years
U.S. Cl. D21—204



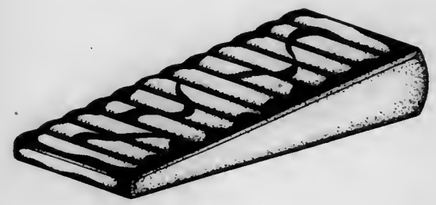
375,987
GOLF CLUB HEAD
Fu-Nan Lin, Kaohsiung, Taiwan, assignor to ROCS Precision Casting Co., Ltd., Taiwan
Filed Nov. 9, 1995, Ser. No. 46,238
Term of patent 14 years
U.S. Cl. D21—214



375,988
GOLF PUTTER
James W. Phillips, 3087 Landmark Blvd., #1804, Palm Harbor, Fla. 34684
Filed Aug. 4, 1995, Ser. No. 42,229
Term of patent 14 years
U.S. Cl. D21—219



375,989
INFLATABLE RAFT
Lawrence I. Jacobs, P.O. Box 1667, Newport Beach, Calif. 92663
Filed Jun. 27, 1995, Ser. No. 40,800
Term of patent 14 years
U.S. Cl. D21—237

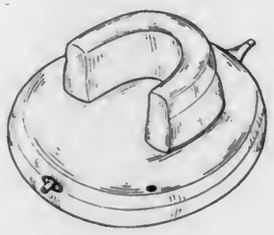


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375,990
TOWABLE RAFT
Leroy L. Peterson, Omaha, Nebr., assignor to Sportsstuff, Inc., Omaba, Nebr.
Filed Aug. 31, 1995, Ser. No. 43,299
Term of patent 14 years
U.S. Cl. D21—237



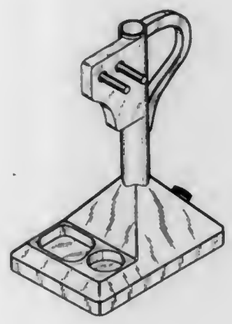
375,991
WATER RECREATION DEVICE
Leroy L. Peterson, 11213 E Circle (A), Omaha, Nebr. 68137
Filed Oct. 17, 1995, Ser. No. 45,349
Term of patent 14 years
U.S. Cl. D21—237



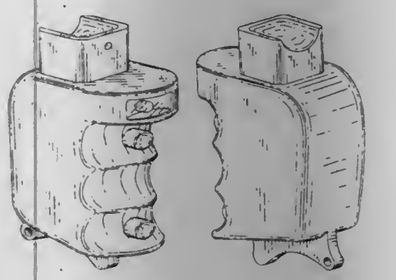
375,992
PISTOL
Terry M. Haber, El Toro; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Lake Forest, Calif.
Filed Oct. 16, 1995, Ser. No. 45,298
Term of patent 14 years
U.S. Cl. D22—104



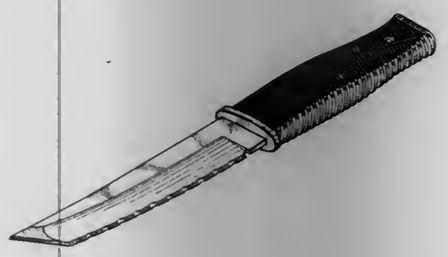
375,993
ARCHERY STAND
David Skinnes, Rt. 4, Box 286, Ashland, Wis. 54806
Filed Jun. 16, 1995, Ser. No. 40,389
Term of patent 14 years
U.S. Cl. D22—107



375,994
COMBINED DEFENSE SPRAY AND FLASHLIGHT
David A. Collins, Hot Springs, and Jerry L. Ellerbee, Bryant, both of Ark., assignors to DAC Technologies of America, Inc., Little Rock, Ark.
Filed Aug. 16, 1995, Ser. No. 42,763
Term of patent 14 years
U.S. Cl. D22—117



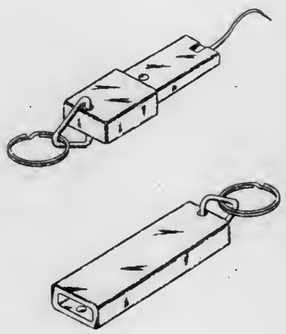
375,995
KNIFE
Lynn C. Thompson, 2747 Seahorse, Ventura, Calif. 93001
Filed Feb. 1, 1996, Ser. No. 49,838
Term of patent 14 years
U.S. Cl. D22—118



375,996
FISHING ROD HOLDER WITH STRIKE SIGNAL
Darold L. Weatherman, 1603 Tenth St., #26, Nevada, Iowa 50201
Filed Aug. 30, 1994, Ser. No. 27,839
Term of patent 14 years
U.S. Cl. D22—148



375,997
COMBINED FISH LINE KNOT REMOVER TOOL AND SHEATH
Raymond P. Tipp, P.O. Box 3778, Missoula, Mont. 59806
Filed Aug. 16, 1994, Ser. No. 27,257
The portion of the term of this patent subsequent to Aug. 15, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D22—149

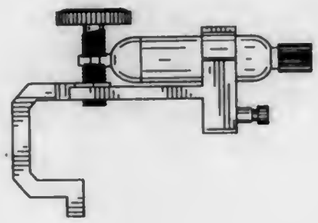


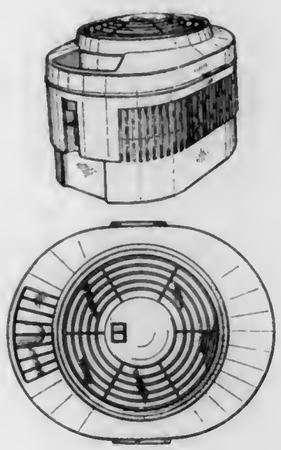
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375,998
STONE WATER WHEEL
Brenda Gore, P.O. Box 306, Clermont, Ga. 30527
Filed Sep. 8, 1995, Ser. No. 43,639
Term of patent 14 years
U.S. Cl. D23—201

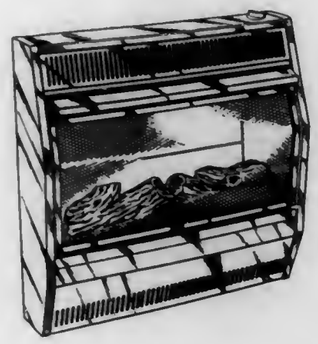


375,999
AIR VALVE
Tony N. T. Wing, Chai Wan, Hong Kong, assignor to Veny Plastic Co., Ltd., Hong Kong, Hong Kong
Filed Aug. 21, 1995, Ser. No. 42,958
Term of patent 14 years
U.S. Cl. D23—233



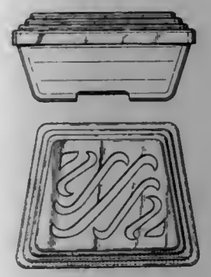


376,000
GAS FIRED HEATER
Andrew M. Wilson, Handsacre, and Kulwant Mandir, Hall Green, both of England, assignors to Valor Limited, Birmingham, England
Filed Jan. 9, 1995, Ser. No. 33,260
Claims priority, application United Kingdom, Jul. 8, 1994, 2040192
Term of patent 14 years
U.S. Cl. D23—342

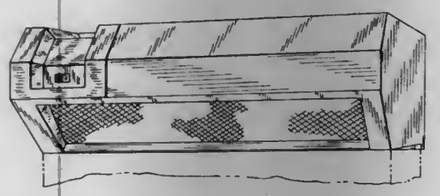


376,001
HUMIDIFIER
Lawrence Katzman; Richard Katzman, both of New York, N.Y.; Marc Harrison, Portsmouth, R.I., and Dov Z. Glucksman, Davers, Mass., assignors to Kaz, Incorporated, New York, N.Y.
Filed Sep. 1, 1994, Ser. No. 27,939
Term of patent 14 years
U.S. Cl. D23—356

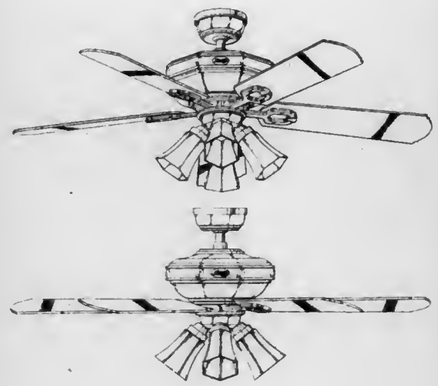
376,002
CONTAINER FOR AN AIR FRESHENER
John M. Upson, Kirkella, United Kingdom, assignor to Reckitt & Colman Products Limited, London, United Kingdom
Filed Aug. 7, 1995, Ser. No. 42,328
Claims priority, application United Kingdom, Feb. 7, 1995, 2045032
Term of patent 14 years
U.S. Cl. D23—366



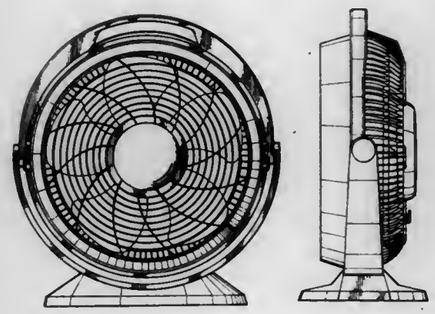
376,003
VENTLESS HOOD FOR COOKING APPLIANCES
William J. Hansen, Brookfield, and John E. Wright, Oconomowoc, both of Wis., assignors to Alto-Shaam, Inc., Menomonee Falls, Wis.
Continuation-in-part of Ser. No. 22,388, May 4, 1994, abandoned. This application May 9, 1995, Ser. No. 38,611
Term of patent 14 years
U.S. Cl. D23—372



376,004
COMBINED CEILING FAN AND LIGHT KIT
Masao Tsuji, Germantown, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.
Filed Oct. 23, 1995, Ser. No. 45,503
Term of patent 14 years
U.S. Cl. D23—377

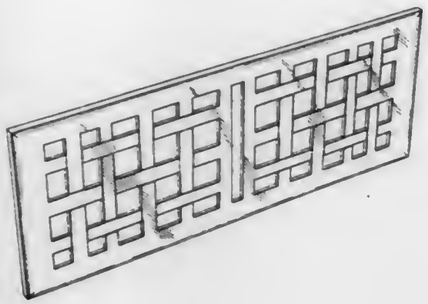


376,005
PIVOT FAN
Charles Litvin, 1065 Stable La., West Chester, Pa. 19382
Filed Aug. 23, 1995, Ser. No. 43,009
Term of patent 14 years
U.S. Cl. D23—382



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376,006
FLOOR REGISTER
Morris Smolarski, Clayton, Australia, assignor to Ripponlea Australia Pty. Ltd., Victoria, Australia
Filed Mar. 7, 1995, Ser. No. 35,799
Claims priority, application Australia, Sep. 7, 1994, 121755
Term of patent 14 years
U.S. Cl. D23—388



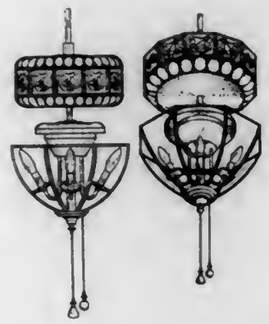
376,007
AIR VENT COVER
Allen C. Thomas, 5513 W. Sligh Ave., Tampa, Fla. 33634
Filed May 4, 1995, Ser. No. 38,369
Term of patent 14 years
U.S. Cl. D23—393



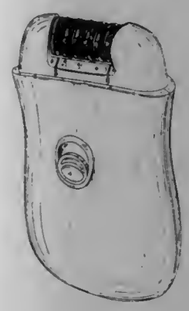
376,008
COMBINED CEILING FAN MOTOR HOUSING, CANOPY, SUPPORT ROD, PULL CORDS AND LIGHT FIXTURES UNIT
Bobby Chan, No. 203 Wu Chiuan Nan Road, Taichung City, Taiwan
Filed Nov. 7, 1995, Ser. No. 46,078
Term of patent 14 years
U.S. Cl. D23—411



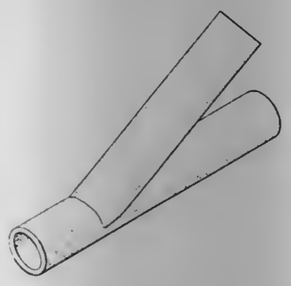
376,009
COMBINED CEILING FAN MOTOR HOUSING, SUPPOT ROD, PULL CORDS AND LIGHT FIXTURES UNIT
Bobby Chan, No. 203 Wu Chluan Nan Road, Taichung City, Taiwan
Filed Nov. 7, 1995, Ser. No. 46,098
Term of patent 14 years
U.S. Cl. D23—411



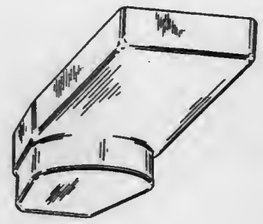
376,010
EPILATOR
Albart Klp, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed May 16, 1995, Ser. No. 38,928
Claims priority, application WIPO, Dec. 15, 1994, DMA/002731
Term of patent 14 years
U.S. Cl. D24—133



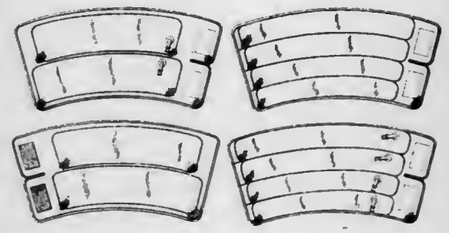
376,011
SYNTHETIC VASCULAR PROSTHESIS
Mioko Nunokawa, 35-5-203, Tomigaya 1-chome, Shibuya-ku, Tokyo-to, Japan
Filed Apr. 26, 1995, Ser. No. 38,019
Claims priority, application Japan, Oct. 27, 1994, 6-32796
Term of patent 14 years
U.S. Cl. D24—155



376,012
MAMMOGRAPHIC ACCESSORY
Gordon L. Hixson, Sr., Chattanooga, Tenn., assignor to American Mammographics, Inc., Chattanooga, Tenn.
Filed Sep. 5, 1995, Ser. No. 43,498
Term of patent 14 years
U.S. Cl. D24—158

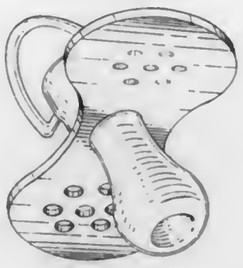


376,013
COMPRESSION SLEEVE FOR DEEP VEIN THROMBOSIS
Terry L. Sandman, Toledo, Ohio; Kenneth M. Bolam, and Donald H. Peeler, both of Charlotte, N.C., assignors to Beiersdorf-Jobst, Inc., Charlotte, N.C.
Filed Apr. 5, 1994, Ser. No. 20,928
Term of patent 14 years
U.S. Cl. D24—169

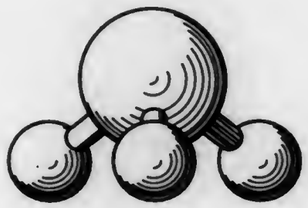


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376,014
PACIFIER
Brian K. McKenney, 7840 S. Franklin Rd., Indianapolis, Ind. 46259
Filed Nov. 7, 1995, Ser. No. 46,079
Term of patent 14 years
U.S. Cl. D24—194



376,015
MASSAGER
Jeff Newberry, 3500 Greystone #212, Austin, Tex. 78731
Filed Sep. 18, 1995, Ser. No. 44,119
Term of patent 14 years
U.S. Cl. D24—211



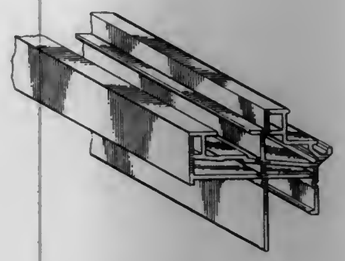
376,016
MASSAGE ROD
Liu-Kin Chen, Taipei, Taiwan, assignor to IMEI Chemical Enterprise Ltd., Taipei, Taiwan
Filed May 4, 1995, Ser. No. 38,398
Term of patent 14 years
U.S. Cl. D24—214



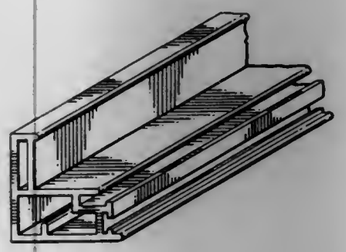
376,017
HOME
Yassi Gabbay, 1374 Benedict Canyon Dr., Beverly Hills, Calif. 90210, assignor to Gordon Fishman, Newport Beach, and Yassi Gabbay, Beverly Hills, both of Calif.
Filed Mar. 1, 1995, Ser. No. 35,553
Term of patent 14 years
U.S. Cl. D25—33



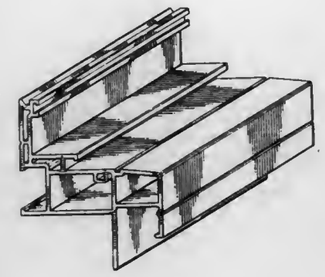
376,018
WINDOW JAMB
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Oct. 18, 1995, Ser. No. 45,359
Term of patent 14 years
U.S. Cl. D25—124



376,019
WINDOW LOCK RAIL SASH
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Oct. 18, 1995, Ser. No. 45,365
Term of patent 14 years
U.S. Cl. D25—124



376,020
CASEMENT FRAME
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Oct. 19, 1995, Ser. No. 45,418
Term of patent 14 years
U.S. Cl. D25—124

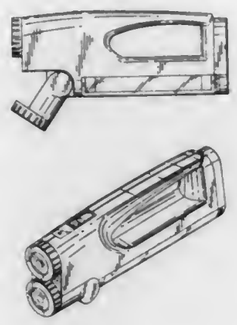


376,021
FENCE PICKET
Robert J. Hallacker, 64 Helen Ave., Freehold, N.J. 07728
Filed Feb. 1, 1995, Ser. No. 34,329
Term of patent 14 years
U.S. Cl. D25—126

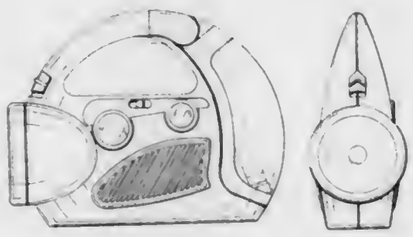


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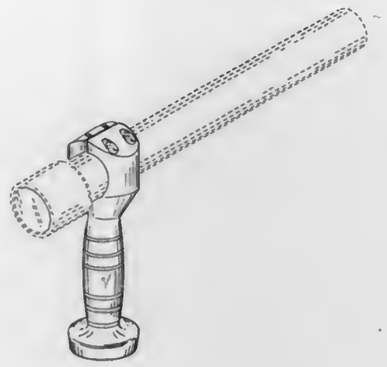
376,022
FLUORESCENT LANTERN WITH TWIN SPOTLIGHT
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Ltd., Kowloon, Hong Kong
Filed Nov. 15, 1995, Ser. No. 46,472
Claims priority, application United Kingdom, May 23, 1995, 2047695
Term of patent 14 years
U.S. Cl. D26—38



376,023
COMBINED MULTI-FUNCTIONAL LANTERN AND RADIO
Se K. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Jan. 22, 1996, Ser. No. 49,278
Claims priority, application United Kingdom, Oct. 12, 1995, 2051128
Term of patent 14 years
U.S. Cl. D26—38



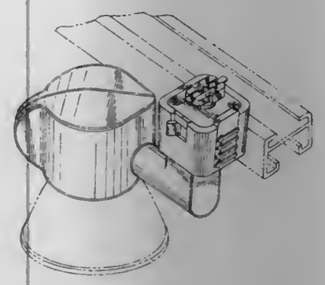
376,024
CYLINDER HANDLE
John P. Ryan, 1028 E. Glade, Mesa, Ariz. 85204
Filed Nov. 9, 1994, Ser. No. 30,826
Term of patent 14 years
U.S. Cl. D26—41



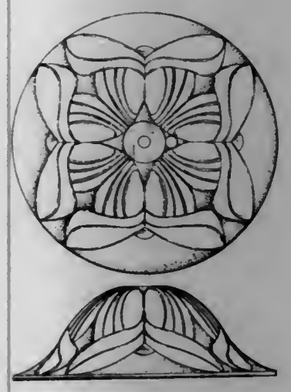
376,025
FLASHLIGHT
Edward D. Lewis, Danville, Ind., assignor to Buztronics, Inc., Indianapolis, Ind.
Filed Jun. 7, 1995, Ser. No. 39,908
Term of patent 14 years
U.S. Cl. D26—47



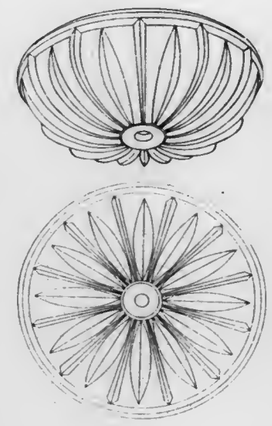
376,026
TRACK LIGHTING LAMP FIXTURE
Peter F. Wachter, Northfield, Ill., assignor to Juno Lighting, Inc., Des Plaines, Ill.
Filed Oct. 30, 1995, Ser. No. 45,775
Term of patent 14 years
U.S. Cl. D26—63



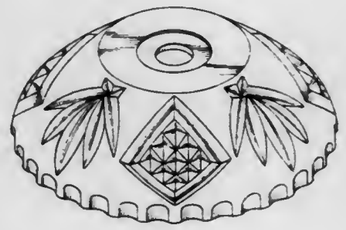
376,027
GLASS SHADE
Chun-Fu Sung, 3 F., No. 23, Yuan Huang West Road, Fong Yuan, Taichung Hsien, Taiwan
Filed Jan. 18, 1996, Ser. No. 49,200
Term of patent 14 years
U.S. Cl. D26—133



376,028
DOME LAMPSHADE WITH DECORATIVE RADIAL RIBS
Richard W. McDowell, Palos Verdes, Calif., assignor to Jimway, Inc., Bell, Calif.
Filed May 9, 1995, Ser. No. 38,602
Term of patent 14 years
U.S. Cl. D26—134

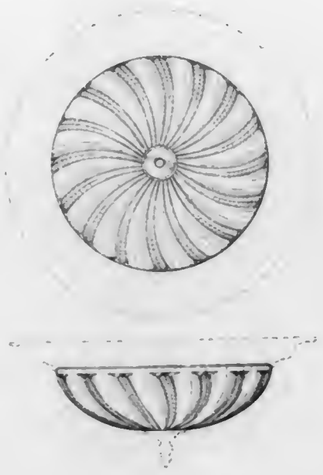


376,029
GLASS SHADE
Sung D. Fu, 3rd F. No. 23, Yuan Huang West Road, Fung Yung, Taichung, Taiwan
Filed Dec. 13, 1995, Ser. No. 47,840
Term of patent 14 years
U.S. Cl. D26—134

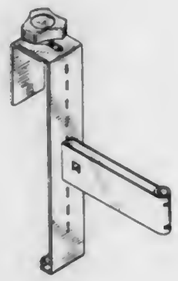


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376,030
GLASS DOME FOR LIGHTING FIXTURE
Stephen Cohen, Cote St. Luc, Canada, assignor to Artcraft of Montreal Ltd., Montreal, Canada
Filed Dec. 14, 1995, Ser. No. 47,907
Term of patent 14 years
U.S. Cl. D26—134



376,031
LAMP BRACKET AND HANGING MOUNTING ASSEMBLY
Paul R. Burch, Vernon Hills, Ill., assignor to Art Specialty Company, Chicago, Ill.
Filed Dec. 5, 1994, Ser. No. 31,729
Term of patent 14 years
U.S. Cl. D26—138



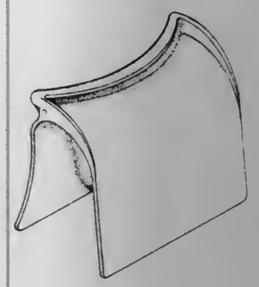
376,032
TURN SIGNAL GRILL
Jerry Jeffries, 23358 Los Pocitos, Laguna Hills, Calif. 92653
Filed Dec. 6, 1995, Ser. No. 47,528
Term of patent 14 years
U.S. Cl. D26—139



376,033
TOBACCO HOOKAH
Randolph A. Heine, Pinellas Park, Fla., assignor to New Tradition Pipe Company, Pinellas Park, Fla.
Filed Mar. 4, 1996, Ser. No. 51,089
Term of patent 14 years
U.S. Cl. D27—162



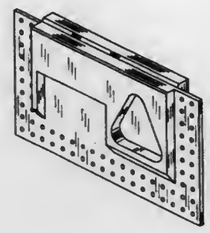
376,034
NECK REST FOR SHAMPOO BOWLS
Peggy L. Willis, 5104 Camden, Pearland, Tex. 77584
Filed Sep. 27, 1993, Ser. No. 13,498
Term of patent 14 years
U.S. Cl. D28—20



376,035
CASE FOR A PERFUME SPRAY
Alain Boucheron, Paris, France, assignor to PCI Parfums et Cosmetiques International, Paris, France
Filed Oct. 11, 1995, Ser. No. 45,163
Claims priority, application France, Apr. 11, 1995, 952115
Term of patent 14 years
U.S. Cl. D28—91.1



376,036
LIFTING FITTING FOR REMOVABLE TRUCK TRAILERS
John J. Lanigan, Sr., and James A. Baumann, both of Orland Park, Ill., assignors to Mi-Jack Products, Inc., Hazel Crest, Ill.
Filed Apr. 18, 1994, Ser. No. 21,417
Term of patent 14 years
U.S. Cl. D34—35



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Abe, Kishiro; and Itoh, Mitsuru, to Topy Kogyo Kabushiki Kaisha. Wheel disk having a non-uniform thickness. 5,577,810, Cl. 301-63.100.

Abe, Koji; Tanaka, Mitsunao; Inaba, Satoshi; and Akimoto, Masaharu, to Iatron Laboratories, Inc. Polyelectrolyte complex antibacterial agent in antibacterial material. 5,578,598, Cl. 514-255.000.

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Ohtani, Akira; Uetani, Yoshihiro; Abe, Masao; Funada, Yasuhito; and Kii, Keisuke, 5,578,249, Cl. 252-519.000.

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Cherry, Peter C.; Foxton, Michael W.; and Merritt, Andrew T., 5,578,630, Cl. 514-383.000.
Tyers, Michael B.; Coates, Ian H.; Humber, David C.; Ewan, George B.; and Bell, James A., 5,578,628, Cl. 514-397.000.
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Gleason Corporation: *See*—
Leininger, Mary M.; and Young, Danny C., 5,577,843, Cl. 384-275.000.

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Kordonsky, William I.; Prokhorov, Igor V.; Gorodkin, Sergei R.; Gorodkin, Gennadii R.; Gleb, Leonid K.; and Kashevsky, Bronislav E., 5,577,948, Cl. 451-35.000.

Glenn, Neville R., to Holmes Product Corp. Air treatment system. 5,578,113, Cl. 96-52.000.

Glinter, Jeffrey A.; and Wize, Gary A., to General Motors Corporation. Van-type vehicle seat. 5,577,805, Cl. 297-378.120.

Global Therapeutics, Inc.: *See*—
De Scheerder, Ivan; and Horn, Joseph B., 5,578,149, Cl. 148-563.000.

Global Upholstery Company: *See*—
Tedesco, Romeo, 5,577,804, Cl. 297-344.190.

Glöckl, Josef. Active dynamic seat. 5,577,801, Cl. 297-201.000.

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Glovatsky, Andrew Z., to Ford Motor Company. Method of improved oven reflow soldering. 5,577,657, Cl. 228-180.100.

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Gluchowski, Charles; Forray, Carlos C.; Chiu, George; Branchek, Theresa A.; Wetzel, John M.; and Hartig, Paul R., to Synaptic Pharmaceutical Corporation. Use of α-1C specific compounds to treat benign prostatic hyperplasia. 5,578,611, Cl. 514-318.000.

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Gnade, Bruce E.: *See*—
Vickers, Kenneth G.; Shen, Chi-Cheong; Gnade, Bruce E.; and Levine, Jules D., 5,577,943, Cl. 445-24.000.

Gober, Giles D. Device to discharge habitual finger sucking. 5,578,066, Cl. 607-58.000.

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Koike, Hidetoshi; Ishimaru, Kazunari; Gojohbori, Hiroshi; and Matsuoka, Fumitomo, 5,578,518, Cl. 437-67.000.

Gold, Danny. Friction based one-handed closure and release mechanism. 5,577,306, Cl. 24-715.300.

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Di Giacomo, Michael; Scheffee, Robert S.; Woods, Charles D.; and Gold, Stephen, 5,577,769, Cl. 280-736.000.

Goldbach, Robert D., to Metro Machine Corp.; and Marinex International, Inc. Tank vessel subassembly for equipment, piping and other nonstructural components. 5,577,454, Cl. 114-65.00R.

Goldman, Anatoliy: *See*—
Beall, Gary W.; Tsipursky, Semeon; Sorokin, Anatoliy; and Goldman, Anatoliy, 5,578,672, Cl. 524-446.000.

Goldstar Co., Ltd.: *See*—
Chang, Jae W., 5,577,665, Cl. 239-256.000.
Cho, Sung M.; and Choi, Jun R., 5,578,825, Cl. 250-338.100.

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Lyu, Hyung L.; and Lee, Dong H., 5,579,315, Cl. 370-85.200.

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Goodin, Daniel S.: *See*—
Aguilar, John M.; and Goodin, Daniel S., 5,578,017, Cl. 604-275.000.

Goodrum, Alan L.; and Thome, Gary W., to Compaq Computer Corporation. Systempro emulation in a symmetric multiprocessing computer system. 5,579,512, Cl. 395-500.000.

Goossen, Keith W.: *See*—
D'Asaro, Lucian A.; Dahringer, Donald W.; Goossen, Keith W.; and Walker, James A., 5,578,162, Cl. 156-630.100.

Goozen, Robert: *See*—
Robinson, Darrell; Learmont, Robert O.; Loehr, Karl R.; Goozen, Robert; Lewis, Michael E.; and Pruehs, Allen V., 5,577,933, Cl. 439-517.000.

Gordon, John D. Golf swing weight shift window training apparatus and method. 5,577,916, Cl. 434-252.000.

Gordon, Julian; Stimpson, Donald I.; and Hsieh, Wang-Ting, to Abbott Laboratories. Method and apparatus for collecting a cell sample from a liquid specimen. 5,578,459, Cl. 135-29.000.

Gordon, Julian: *See*—
Ching, Shanfun; Billings, Patricia A.; and Gordon, Julian, 5,578,577, Cl. 514-21.000.

Gordon, Norman S.; and Cooper, Robert P., to Laurus Medical Corporation. Endoscopic suture system. 5,578,044, Cl. 606-144.000.

Gorlov, Alexander M.: *See*—
Istorik, Boris L.; Chpolianski, Iouli B.; and Gorlov, Alexander M., 5,577,882, Cl. 415-53.100.

Gorodkin, Gennadii R.: *See*—
Kordonsky, William I.; Prokhorov, Igor V.; Gorodkin, Sergei R.; Gorodkin, Gennadii R.; Gleb, Leonid K.; and Kashevsky, Bronislav E., 5,577,948, Cl. 451-35.000.

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Kordonsky, William I.; Prokhorov, Igor V.; Gorodkin, Sergei R.; Gorodkin, Gennadii R.; Gleb, Leonid K.; and Kashevsky, Bronislav E., 5,577,948, Cl. 451-35.000.

Goto, Hiroshi: *See*—
Ohtateme, Hiroaki; Endoh, Hiroaki; Goto, Hiroshi; Ikeuchi, Ko; and Asai, Akihiko, 5,579,327, Cl. 372-20.000.

Goto, Naohisa: *See*—
Uematsu, Masahiro; Ojima, Takashi; Takahashi, Nobuharu; Goto, Naohisa; Hirokawa, Jiro; and Ando, Makoto, 5,579,019, Cl. 343-771.000.

Goto, Toshiro: *See*—
Ito, Katsuji; Kamata, Satoshi; and Goto, Toshiro, 5,578,688, Cl. 526-245.000.

Goto, Yukio: *See*—
Miki, Toshio; Kometani, Hideo; Fujimura, Hiroshi; Goto, Yukio; Takagawa, Hiroyuki; and Nishikawa, Akira, 5,578,208, Cl. 210-487.000.

Gotoh, Kunihiko: *See*—
Kitani, Kazuhiro; Segawa, Yuji; and Gotoh, Kunihiko, 5,579,214, Cl. 363-44.000.

Gotou, Takeo: *See*—
Moribayashi, Satoshi; Isozumi, Shuzou; and Gotou, Takeo, 5,578,884, Cl. 310-154.000.

Gottfried-Gottfried, Ralf: *See*—
Mueller, Michael; Gottfried-Gottfried, Ralf; and Kueck, Heinz, 5,578,858, Cl. 252-432.000.

Gottwick, Ulrich: *See*—
Polzin, Norbert; and Gottwick, Ulrich, 5,577,580, Cl. 192-4.00A.

Götz, Roland: *See*—
Bringmann, Gerhard; Boyd, Michael R.; Götz, Roland; and Kelly, T. Ross, 5,578,729, Cl. 546-140.000.

Goulait, David J. K.; and Cabell, David W., to Procter & Gamble Company, The. Method for manufacturing tape tab fasteners. 5,578,152, Cl. 156-66.000.

Gouyon, Philippe A. C.; Jolu, Jérôme E. R.; Meunier, Gilles C.; Rauner, Jacques A. A.; and Rosset, Patrice J.-M., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "Snecma" . Metallic lip seal and turbo jet engine equipped with said seal. 5,577,887, Cl. 415-174.200.

Govan, Kenneth M.: *See*—
Blackwood, Thomas; Govan, Kenneth M.; Wilkie, Jacqueline; Deacon, Alaistair M.; Grant, Andrew D.; and Stickland, Matthew T., 5,577,496, Cl. 128-201.250.

GPT Limited: *See*—
Chopping, Geoffrey; Maddern, Thomas S.; and Smith, Paul A., 5,579,311, Cl. 370-60.100.
Jones, Keith P., 5,579,314, Cl. 370-68.100.

Grabek, Joseph F., Jr. Roofing shingle. 5,577,361, Cl. 52-543.000.

Graber, Warren S., to Woodhead Industries, Inc. Flow-responsive air purged portable electric lamp. 5,578,905, Cl. 315-76.000.

Grabscheid, Joachim, to Voith Sulzer Paperiermaschinen Gesellschaft mbH. Pressing device for extracting liquid from a pulp web. 5,577,441, Cl. 100-168.000.

Graf, Edwin X., to Voith Sulzer Papiermaschinen GmbH. Slice beam support plate. 5,578,172, Cl. 162-344.000.

Graf, Peter: *See*—
Althaus, Rolf; Farkas, Franz; Graf, Peter; Häusermann, Fredy; and Kreis, Erhard, 5,577,378, Cl. 60-39.170.

Graham, Gregory J.: *See*—
Martin, Paul M.; Graham, Gregory J.; Farrar, David S.; and Faigley, Stephen R., 5,577,837, Cl. 366-145.000.

Granke, Kenneth: *See*—
Dayton, Michael P., 5,578,075, Cl. 623-1.000.

Grant, Andrew D.: *See*—
Blackwood, Thomas; Govan, Kenneth M.; Wilkie, Jacqueline; Deacon, Alaistair M.; Grant, Andrew D.; and Stickland, Matthew T., 5,577,496, Cl. 128-201.250.

Grant, Kevin L.: *See*—
Kamen, Dean L.; Grant, Kevin L.; Faust, Valentine; and Lanigan, Richard J., 5,578,012, Cl. 604-151.000.

Grant, Larry A.; Marder, James M.; and Wright, Wayne L., to Brush Wellman, Inc. Aluminum-beryllium alloys having high stiffness and low thermal expansion for memory devices. 5,578,146, Cl. 148-437.000.

Grant, Larry J.; Monnin, Raymond V.; and Scott, James W., to Owens Corning Fiberglas Technology, Inc. Method of making an insulation assembly. 5,578,258, Cl. 264 118.000.

Grass AG: *See*—
Grass, Alfred, 5,577,296, Cl. 16-258.000.

Grass, Alfred, to Grass AG. Door hinge with snap-in locking device for quick assembly. 5,577,296, Cl. 16-258.000.

Grasshoff, Jurgen M.; Marshall, John L.; Minns, Richard A.; Puttick, Anthony J.; Taylor, Lloyd D.; and Telfer, Stephen J., to Polaroid Corporation. Process for generation of unbuffered super-acid and for imaging. 5,578,424, Cl. 430-333.000.

Grassin, Catherine M. T.; and Fauquembergue, Pierre C. L., to Gist-brocades, B.V. Process for the production of juices from fruits and vegetables. 5,578,335, Cl. 426-51.000.

Gray, Gregory L.: *See*—
Berka, Randy M.; Cullen, Daniel; Gray, Gregory L.; Hayenga, Kirk J.; and Lawlis, Virgil B., 5,578,463, Cl. 435-69.100.

Great Northern Corporation: *See*—
Hanson, Charles R.; and Kromholz, Joseph A., 5,577,608, Cl. 206-386.000.

Greco, Ralph: *See*—
Haimovich, Beatrice; Freeman, Amihay; and Greco, Ralph, 5,578,073, Cl. 623-1.000.

Green, Brian C.: *See*—
Franklin, Charles C.; Kenney, Donald P.; and Green, Brian C., 5,577,895, Cl. 417-238.000.

Green, Michael J.: *See*—
Aslanian, Robert G.; Green, Michael J.; and Shih, Neng-Yang, 5,578,616, Cl. 514-341.000.

Greenall, William C. Organizer for personal effects. 5,577,611, Cl. 206-459.100.

Greene, Edward C.; Kass, Michael H.; and Miller, Gavin S. P., to Apple Computer, Inc. Rendering of 3D scenes on a display using hierarchical z-buffer visibility. 5,579,455, Cl. 395-122.000.

Greenhalgh, Geoffrey: *See*—
Woodward, Alan C.; and Greenhalgh, Geoffrey, 5,578,104, Cl. 65-106.000.

Gref, Ruxandra: *See*—
Domb, Abraham J.; Gref, Ruxandra; Minamitake, Yoshiharu; Peracchia, Maria T.; and Langer, Robert S., 5,578,325, Cl. 424-501.000.

Greff, Richard J.; and McLucas, Bruce, to Stackhouse, Inc. Laparoscopic smoke evacuation system. 5,578,000, Cl. 604-22.000.

Grego, Giorgio: *See*—
Chiaro, Luisella; Grego, Giorgio; and Regio, Pada, 5,578,762, Cl. 73-860.000.

Greiner, Jack V.: *See*—
Glonek, Thomas; Greiner, Jack V.; and Korb, Donald R., 5,578,586, Cl. 514-76.000.

Grenier, Pascal, deceased (by Nadine Garcel, legal heir): *See*—
Schneider, Michel; Yan, Feng; Grenier, Pascal, deceased; Puginier, Jérôme; and Barrau, Marie-Bernadette, 5,578,292, Cl. 424-9.510.

Greschner, Johann: *See*—
Bayer, Thomas; Greschner, Johann; Martin, Yves; Meissner, Klaus; and Weiss, Helga, 5,578,745, Cl. 73-1.00J.

Gresham, Tony R. Harvester for root crops and method of using same. 5,577,562, Cl. 171-27.000.

Gress, Lester B.: *See*—

Summers, Bobby L., Jr.; and Gress, Lester B., 5,578,547, Cl. 502-407.000.

Gretag Imaging AG: *See—*
Knecht, Hugo; and Pessot, Ennio, 5,579,074, Cl. 396-622.000.

Gretener, Beat: *See—*
Yaremko, Mykola; Chachowski, Rosemary; Frischknecht, Marcel; Batliner, Gregor; Flueler, Linus; Forster, Marco; Gander, Martin; Gretener, Beat; Imfeld, Walter; Kunz, Hansjoerg; Kuster, Martin; and Puchegger, Karl, 5,578,269, Cl. 422-64.000.

Greulich, Klaus: *See—*
Riemscheid, Helmut; Weiss, Karl; Frielingsdorf, Herbert; Amborn, Peter; Magirius, Stefan; Greulich, Klaus; Schmidt, Gretel; and Urban, Peter, 5,577,420, Cl. 74-567.000.

Grey, Ian E.: *See—*
Harris, Harold R.; Aral, Halil; Bruckard, Warren J.; Freeman, David E.; Houchin, Martin R.; McDonald, Kenneth J.; Sparrow, Graham J.; and Grey, Ian E., 5,578,109, Cl. 75-399.000.

Grill, Bernhard; Brandenburg, Karl-Heinz; Sporer, Thomas; Kürten, Bernd; and Eberlein, Ernst, to Fraunhofer Gesellschaft zur Foerderung der angewandten Forschung e.V. Digital encoding process. 5,579,430, Cl. 395-2.120.

Grinnell, Brian W., to Eli Lilly and Company. Method of using eukaryotic expression vectors comprising the BK virus enhancer. 5,578,465, Cl. 435-69.100.

Grinstein, Geoffrey; and Gershenfeld, Neil, to International Business Machines Corporation. System employing dissipative pseudorandom dynamics and selective feedback for communications and measurement. 5,579,337, Cl. 375-206.000.

Groeblacher, Hans, to Mikron Industries, Inc. Apparatus for the cooling of extruded plastic profiles or sections. 5,578,328, Cl. 425-71.000.

Grønbæk, Jens, to Danfoss A/S. Forming tool. 5,577,406, Cl. 72-467.000.

Grönberg, Pauli. Method for fitting a saddle on the back of a horse. 5,577,372, Cl. 54-66.000.

Gronenij Advies & Techniek BV: *See—*
Oude Luttighuis, Hermanus H. F., 5,578,114, Cl. 96-108.000.

Groth, Dale W.: *See—*
Lentsch, Steven E.; Groth, Dale W.; Oakes, Thomas R.; and Baum, Burton M., 5,578,134, Cl. 134-3.000.

Grumman Aerospace Corporation: *See—*
Smrek, Walter J., 5,579,011, Cl. 342-113.000.

Gründl, Andreas: *See—*
Heidelberg, Götz; Ehrhart, Peter; and Gründl, Andreas, 5,578,879, Cl. 310-54.000.

Grunicke, Hans H.; Herrmann, Dieter; Hofmann, Johann; and Bosies, Elmar, to Boehringer Mannheim GmbH. Pharmaceutical composition preparation for use in inhibiting protein kinase C. 5,578,590, Cl. 514-200.000.

Gruskin, Elliott A.: *See—*
Bennett, Steven L.; Jiang, Ying; Gruskin, Elliott A.; and Connolly, Kevin M., 5,578,662, Cl. 524-54.000.

Gubernator, Klaus: *See—*
Ackermann, Jean; Banner, David; Gubernator, Klaus; Hilpert, Kurt; and Schmid, Gérard, 5,578,594, Cl. 514-236.200.

Guenther, Dolores: *See—*
Guenther, Torbett B., 5,577,275, Cl. 4-576.100.

Guenther, Torbett B., to Guenther, Torbett B.; and Guenther, Dolores. Tub/shower grab bar. 5,577,275, Cl. 4-576.100.

Guenther, Werner: *See—*
Doebert, Michael; Guenther, Werner; Schulze-Ganzlin, Ulrich; Ploetz, Josef; and Heubeck, Erich, 5,579,366, Cl. 378-189.000.

Guerra, Miguel A.: *See—*
Fall, David J.; and Guerra, Miguel A., 5,578,278, Cl. 422-234.000.

Guetard, Denise: *See—*
Alizon, Marc; Montagnier, Luc; Guetard, Denise; Clavel, Francois; Sonigo, Pierre; and Guyader, Mireille, 5,578,715, Cl. 536-23.720.

Gugala, Zbigniew H.; Loman, Lawrence J.; and Scapes, John N., to Henry Valve Company. Stem seal configuration for ball valves. 5,577,709, Cl. 251-315.140.

Guido, Anthony; and Jette, William. Method and apparatus for joining deformable sheet stock. 5,577,313, Cl. 29-432.200.

Guilbaud, Jean-Pierre, to Tritube; and Jean-Pierre Guilbaud Sarl. Adjustable seat. 5,577,803, Cl. 297-314.000.

Gundersen, Borge P.: *See—*
Martin, Wallace A.; Edwards, Russell J.; Gundersen, Borge P.; Keene, Darren S.; Kindt-Larsen, Ture; Lepper, John M.; Madsen, Niels J.; Ravn, Thomas C.; Wang, Daniel T.; and Holley, William E., 5,578,331, Cl. 425-445.000.

Gunderson, Glenn K.; and Gunderson, William K. Adjustable food product slicer. 5,577,430, Cl. 83-870.000.

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Gunderson, Glenn K.; and Gunderson, William K., 5,577,430, Cl. 83-870.000.

Gundry, Kenneth J.: *See—*
Fielder, Louis D.; Bosi-Goldberg, Marina; Davidson, Grant A.; and Gundry, Kenneth J., 5,579,404, Cl. 381-106.000.

Gupta, Anand: *See—*
Ye, Yan; Gupta, Anand; and Shamouliam, Shamouil, 5,578,131, Cl. 118-723.00R.

Gupta, Niranjan L.; Sankaran, Ramanathan; Varughese, Shibu; and Sitabkhan, Sakina, to Lupin Laboratories Limited. Process for preparation of 3-exomethylene cepham sulfoxide esters. 5,578,721, Cl. 540-215.000.

Gustafsson, Kjell: *See—*
Lindquist, Björn; Isberg, Martin; Wendelrup, Heino; Sallenhag, Martin; and Gustafsson, Kjell, 5,579,347, Cl. 375-346.000.

Gustavson, Linda M.: *See—*
Theodore, Louis J.; Reno, John M.; and Gustavson, Linda M., 5,578,287, Cl. 424-1.490.

Gutowski, Timothy G.; Dillon, Gregory P.; Li, Haorong; and Chey, Sukyoung, to Massachusetts Institute of Technology. Method and system for forming a composite product from a thermoformable material. 5,578,158, Cl. 156-285.000.

Gutrugianios, Mike. Strap buckle. 5,577,300, Cl. 24-170.000.

Guyader, Mireille: *See—*
Alizon, Marc; Montagnier, Luc; Guetard, Denise; Clavel, Francois; Sonigo, Pierre; and Guyader, Mireille, 5,578,715, Cl. 536-23.720.

Gwaltney, Mark A.: *See—*
Yu, Zhao-Zhi; Tabb, Charles H.; O'Brien, John F.; Beachner, James R.; Gwaltney, Mark A.; Lean, Meng H.; and Folkins, Jeffrey J., 5,579,100, Cl. 355-326.00R.

Gygax, Ralph A.: *See—*
Wang, Jianjun; Cornelius, Billy D.; and Gygax, Ralph A., 5,577,364, Cl. 53-53.000.

Gyure, Alex: *See—*
Rajkanan, Kamal; and Gyure, Alex, 5,579,200, Cl. 361-111.000.

Ha, Dong S.: *See—*
Kim, Young H.; and Ha, Dong S., 5,578,964, Cl. 330°253.000.

Haar, Thomas, to Alfons Haar Maschinenbau GmbH & Co. Plate positioning and feeding system for a punch. 5,577,427, Cl. 83-206.000.

Haas, Kevin: *See—*
Arvanitis, Aristotelis; Zhang, Weiping; and Haas, Kevin, 5,577,308, Cl. 29-25.350.

Habel, Richard A.; and Roberts, Kim B., to Northern Telecom Limited. Digital control of laser diode power levels. 5,579,328, Cl. 372-31.000.

Habib, Catherine L.; and Bush, Steven, to Microsoft Corporation. Method and system for editing and formatting data in a dialog window. 5,579,466, Cl. 395-793.000.

Hablanian, Marsbed, to Varian Associates, Inc. High performance turbomolecular vacuum pumps. 5,577,881, Cl. 415-55.600.

Hachimura, Kenji: *See—*
Matsumura, Tsuneo; Hachimura, Kenji; and Suzuki, Tomohiro, 5,578,960, Cl. 327-535.000.

Hachiro, Toshitaka: *See—*
Sato, Ryuji; Tsutsumi, Kojiro; Hachiro, Toshitaka; Kawaguchi, Hiroshi; and Fujimoto, Sachito, 5,577,488, Cl. 123-688.000.

Hachisuka, Atsushi: *See—*
Kinoshita, Mitsuya; Hachisuka, Atsushi; and Tsukamoto, Kazuhiro, 5,578,861, Cl. 257-529.000.

Häcker, Rüdiger: *See—*
Mattern, Claudia; and Häcker, Rüdiger, 5,578,588, Cl. 514-177.000.

Hackett, Gerry A.: *See—*
Bhatt, Ashwinkumar C.; Duffy, Thomas P.; Hackett, Gerry A.; and McKeveny, Jeffrey, 5,578,796, Cl. 174-260.000.

Hadate, Hidenori: *See—*
Hattori, Hidenori; Takizawa, Naoto; Hadate, Hidenori; and Kondou, Tomoko, 5,578,065, Cl. 607-46.000.

Hadden, Ian; and Hannah, Robert, to Hughes Aircraft. Transmit/receive isolation assembly for a very small aperture satellite terminal. 5,578,972, Cl. 333-135.000.

Haddox, Mark L., to Jodon Engineering Associates, Inc. Microwave measurement of train wheel wear. 5,577,690, Cl. 246-169.00R.

Haeder, Thomas Q.; Albright, Larry E.; Loraas, Orlan J.; Shelbourn, William C.; Berg, Gerald M.; Johnson, Lyle L.; Sagaser, Thomas M.; and Brock, Knute K., to Clark Equipment Company. Hydraulic interblock system. 5,577,876, Cl. 414-699.000.

Haefele, Klaus: *See—*
Schlichenmaier, Andreas; Haefele, Klaus; Schwabe, Ulrich; Dittmar, Christian; Blanc, Martin; and Purat, Thomas, 5,579,235, Cl. 364-483.000.

Haefliger, William W.: *See—*
McDonald, Henry H., 5,578,080, Cl. 623-6.000.
McDonald, Henry H., 5,578,081, Cl. 623-6.000.

Haehl, Kevin L.; Kress, Thomas J.; and Wepsiec, James P., to Eli Lilly and Company. Process for preparation of benzo[f]quinolinones. 5,578,724, Cl. 544-234.000.

Haga, Kyosuke; Suzuki, Mikio; Inaguma, Yoshiharu; Fukumura, Kenichi; and Kato, Hideya, to Toyoda Koki Kabushiki Kaisha. Hydraulic power steering apparatus. 5,577,573, Cl. 180-417.000.

Hagelberg, Allen C.: *See—*
Hulderman, Garry N.; and Hagelberg, Allen C., 5,579,008, Cl. 342-44.000.

Hagen, George T.; Kelley, Scott A.; and Smydra, Andrew J., to TRW Vehicle Safety Systems Inc. Attachment structure for use in an inflatable vehicle occupant restraint system. 5,577,762, Cl. 280-728.200.

Hagiuda, Nobuyoshi: *See—*
Matsui, Hideki; Hagiuda, Nobuyoshi; Takayanagi, Ryotaro; and Sakamoto, Hiroshi, 5,579,068, Cl. 396-173.000.

Hagiwara, Mituharu: *See—*
Higashinakagawa, Emiko; Hagiwara, Mituharu; Sugai, Shinzo; Ohtake, Yasuhisa; and Mori, Fumio, 5,578,898, Cl. 313-402.000.

Hagiwara, Moeko; and Haraguchi, Tsuyoshi, to Konica Corporation. Automatic processing apparatus for processing silver halide photosensitive material and supply method of supplying solid processing agent used for silver halide photosensitive material and supply device thereof. 5,579,075, Cl. 396-626.000.

Hagstrom, Richard A.; and Martin, Jay K., to Bomar Specialties Company. Multifunctional terminally unsaturated urethane oligomers. 5,578,693, Cl. 528-75.000.

Hahn, Marlyn E., to Berg Technology, Inc. Wafer retention in an electrical receptacle. 5,577,936, Cl. 439-607.000.

Haidos, John C.: *See—*
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Chen, Fusen E.; Dixit, Girish A.; and Miller, Robert O., 5,578,872, Cl. 257-751.000.
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Shi, Shan-Rong; Tandon, Atul K.; Kalra, Krishan L.; Malhotra, Nagesh; Su, Sheng-Hui; and Yu, Cheng-Zhi, to Biogenex Laboratories. Enhancement of immunochemical staining in aldehyde-fixed tissues. 5,578,452, Cl. 435-7.210.

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Shibuya, Takashi; Chaen, Hiroto; Sakai, Shuzo; and Miyake, Toshio, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Process for preparing neotrehalose, and its uses. 5,578,469, Cl. 435-100.000.

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Sundram, Kalyana; Perlman, Daniel; and Hayes, Kenneth C., to Brandeis University. Increasing the HDL level and the HDL/LDL ratio in human serum with fat blends. 5,578,334, Cl. 426-2.000.

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Takeda, Kenji; Terashima, Nobuo; Nakano, Joji; Minami, Hisashi; Kobayashi, Toyokazu; Furuhata, Kunikazu; Takakura, Tadakazu; Takata, Makoto; Kawafuchi, Hiroyo; and Hiraiwa, Toru, to Toyama Chemical Co., Ltd. 1,2-benzoisoxazole derivative or its salt and brain-protecting agent comprising the same. 5,578,627, Cl. 514-379.000.

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Ishida, Yasushi; Yokoyama, Minoru; Tomoda, Akihiro; Yamada, Masakatsu; Awai, Takashi; Yoshida, Takehiro; Kobayashi, Makoto; Wada, Satoshi; Ono, Takeshi; and Takeda, Tomoyuki, 5,579,042, Cl. 347-217.000.

Takeda, Toshihiko: *See*—
Nomura, Ichiro; Banno, Yoshikazu; Kaneko, Tetsuya; Takeda, Toshihiko; and Iwai, Kumi, 5,578,897, Cl. 313-310.000.

Takei, Eiko: *See*—
Sudou, Kouji; Shukuya, Masao; Okuyama, Katsuo; Ishiwata, Masao; Uchibori, Hidetoshi; Matsui, Toshinari; Kubo, Shigeru; Matsubayashi, Michinori; Toyoda, Kazuhide; Takei, Eiko; Morihiro, Hidekazu; Suzuki, Masayoshi; and Ohata, Hideo, 5,579,231, Cl. 364-468.010.

Takekoshi, Nobuhiko: *See*—
Kaneko, Satoshi; Kaneko, Tokuharu; Tsuchiya, Hiroaki; Nakazawa, Nobuo; Fukushima, Hisashi; Miura, Yasushi; and Takekoshi, Nobuhiko, 5,579,438, Cl. 395-3.000.

Takemoto, Takatoshi; and Kawashima, Kazunari, to Kabushiki Kaisha Ace Denken. Game apparatus and game system. 5,577,959, Cl. 463-25.000.

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Fukushima, Yutaka; Takemura, Tetsuo; Iwaki, Shinichi; Hashida, Mitsuyoshi; Wanami, Masao; Shimbo, Isao; Wada, Mitsuhiro; Udaki, Hirofumi; Kondo, Yoshihiro; Yamamoto, Yoshinobu; Nakagoshi, Arata; Ohta, Kouichi; Kuwahara, Hiroshi; and Watanabe, Yumiko, 5,579,370, Cl. 379-34.000.

Takenoshita, Itsuroh: *See*—
Kume, Katsuya; Oishi, Yozo; Kuramoto, Mitsuo; and Takenoshita, Itsuroh, 5,578,365, Cl. 428-195.000.

Takeshita, Sunao: *See*—
Okazaki, Makoto; Takeshita, Sunao; Kawai, Shinji; Kikuno, Reiko; and Amann, Egon, 5,578,708, Cl. 530-399.000.

Takeuchi, Eiichi: *See*—
Koyama, Kazuo; Takeuchi, Eiichi; and Suehiro, Masayoshi, 5,578,143, Cl. 148-319.000.

Takeya, Noriyoshi, to Pioneer Electronic Corporation. Apparatus for mixing play video signal with graphics video signal. 5,579,028, Cl. 345-115.000.

Takeyasu, Masanari: *See*—
Childers, Jimmie D.; Yamamoto, Seiichi; and Takeyasu, Masanari, 5,579,273, Cl. 365-205.000.

Takiguchi, Masahiro: *See*—
Iwakuni, Mikio; Baba, Yoshihiko; and Takiguchi, Masahiro, 5,579,012, Cl. 342-117.000.

Takikawa, Shigeki: *See*—
Mazaki, Hitoshi; Matsumoto, Takuya; Shiozaki, Iwane; and Takikawa, Shigeki, 5,578,243, Cl. 252-299.010.

Takizawa, Naoto: *See*—
Hattori, Hidenori; Takizawa, Naoto; Hadate, Hidenori; and Kondou, Tomoko, 5,578,065, Cl. 607-46.000.

Takuya, Takahashi: *See*—
Sakai, Masanori; Ohnaka, Noriyuki; Takuya, Takahashi; and Hiroshi, Yamauchi, 5,579,354, Cl. 376-245.000.

Talasek, Robert T.; and Hogan, Jeremiah D., to Texas Instruments Incorporated. On-line monitor for moisture contamination in HCL gas and copper contamination in NH_4OH solutions. 5,578,829, Cl. 250-343.000.

Talley, John J.: *See*—
Vazquez, Michael L.; Mueller, Richard A.; Talley, John J.; Getman, Daniel P.; DeCrescenzo, Gary A.; and Sun, Eric T., 5,578,606, Cl. 514-314.000.

Talmy, Inna G.; and Zaykoski, James A., to United States of America, Navy. Method of producing Si_3N_4 reinforced monoclinic $BaO\text{-}Al_2O_3\text{-}2SiO_2$ and $SrO\text{-}Al_2O_3\text{-}2SiO_2$ ceramic composites. 5,578,534, Cl. 501-32.000.

Tam, Cherk S. Method of increasing bone growth. 5,578,569, Cl. 514-12.000.

Tam, Thomas Y.: *See*—
Dunbar, James J.; Kavesh, Sheldon; Prevorsek, Dusan C.; Tam, Thomas Y.; Weedon, Gene C.; and Winckelhofer, Robert C., 5,578,374, Cl. 428-364.000.

Tamamura, Toshio; and Tanida, Shinichi, to Hewlett-Packard Company. Voltage/current measuring unit and method. 5,579,236, Cl. 364-483.000.

Tamanoi, Fuyuhiko, to Arch Development Corporation. Identification and characterization of inhibtors of protein farnesyltransferase. 5,578,477, Cl. 435-793.000.

Tamaoki, Akifumi: *See*—
Ohshita, Kouji; and Tamaoki, Akifumi, 5,577,322, Cl. 29-890.130.

Tamogami, Muneyuki: *See*—
Nakamura, Yutaka; Tamogami, Muneyuki; Sato, Shinji; and Tachibana, Mitsuhiro, 5,578,756, Cl. 73-594.000.

Tamura, Fumio; Saito, Tsuyoshi; Mitsuhashi, Satoshi; Matsudaira, Tadahiro; and Asano, Kiro, to Kureha Chemical Industry Co., Ltd. Method for suppressing an immunoresponse with an estradiol derivative-chlorambucil conjugate. 5,578,589, Cl. 514-178.000.

Tan, Chee-Teck: *See*—
King, Chwan-Kong; Tan, Chee-Teck; Scharpf, Lewis G., Jr.; O'Chat, David P.; and Schulman, Marvin, 5,577,668, Cl. 239-559.000.

Tan, Tah H. Plastering machine. 5,578,327, Cl. 425-62.000.

Tanaami, Takeo; and Mikuriya, Kenta, to Yokogawa Electric Corporation. Confocal optical scanner. 5,579,157, Cl. 359-368.000.

Tanabe, Hiroshi: *See*—
Imataki, Hiroyuki; Hiraoka, Mizuho; Nagano, Kazumi; Yano, Takaya; and Tanabe, Hiroshi, 5,578,184, Cl. 205-118.000.

Tanabe Seiyaku Co., Ltd.: *See*—
Tosa, Tetsuya; Shibatani, Takeji; Watanabe, Taizo; Minobe, Satoshi; and Masuda, Makoto, 5,578,455, Cl. 435-7.320.

Tanaka, Akio; Hirano, Toru; Kohno, Takuya; and Ohsawa, Masami, to Lederle (Japan), Ltd.; Hamamatsu Photonics K.K.; and Moritex Corp. Optical fiber laser device. 5,579,423, Cl. 385-35.000.

Tanaka, Akira: *See*—
Matsuura, Naoki; Shibata, Seiya; Fukuzaki, Tatsuo; Tanaka, Akira; Fukuda, Shigeo; Nishiyama, Hiroki; and Tanaka, Mitsuru, 5,579,362, Cl. 378-59.000.

Tanaka, Keishin: *See*—
Suzuki, Osamu; Tanaka, Keishin; Hayashi, Tatsuo; Matsuto, Takushi; Kumagai, Chiaki; Sakurai, Takeshi; and Ota, Atsuo, 5,577,816, Cl. 303-174.000.

Tanaka, Masanori, to Izumi Products Company. Electric shaver. 5,577,324, Cl. 30-43.600.

Tanaka, Michio: *See*—
Tadaki, Yoshitaka; Murata, Jun; Sekiguchi, Toshihiro; Aoki, Hideo; Kawakita, Keizo; Uchiyama, Hiroyuki; Nishimura, Michio; Tanaka, Michio; Ezaki, Yuji; Saitoh, Kazuhiko; Yuhara, Katsuo; and Cho, Songsu, 5,578,849, Cl. 257-298.000.

Tanaka, Mitsunao: *See*—
Abe, Koji; Tanaka, Mitsunao; Inaba, Satoshi; and Akimoto, Masaharu, 5,578,598, Cl. 514-255.000.

Tanaka, Mitsuru: *See*—
Matsuura, Naoki; Shibata, Seiya; Fukuzaki, Tatsuo; Tanaka, Akira; Fukuda, Shigeo; Nishiyama, Hiroki; and Tanaka, Mitsuru, 5,579,362, Cl. 378-59.000.

Tanaka, Nobuhiro; and Hirata, Eiji, to Kao Corporation. Method and apparatus for stowing a load. 5,577,873, Cl. 414-400.000.

Tanaka, Shigeo, to Sony Corporation. Method for controlled locking/unlocking of a system using a locking mode flag during an interrupt routine. 5,579,523, Cl. 395-726.000.

Tanaka, Shinichi: *See*—
Tomoe, Tetsuro; Tsuchiya, Hiroaki; Hayashi, Daisuke; and Tanaka, Shinichi, 5,579,097, Cl. 355-282.000.

Tanaka, Tsutomu: *See*—
hou, Hikaru; Miyazaki, Sho; Tanaka, Tsutomu; Saito, Masashi; Yamada, Shinichi; Wakata, Shigekazu; and Saijo, Eiji, 5,577,920, Cl. 439-34.000.

Tanaka, Yoshiyuki: *See*—
Yamashita, Kazukuni; Hikizi, Shigetoshi; Takano, Tamotsu; Ohama, Naomichi; Tanaka, Yoshiyuki; Tsukiyama, Tominari; Takahashi, Tsukasa; Hori, Mitsumasa; and Yoshioka, Hideyuki, 5,577,362, Cl. 52-745.030.

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Tandon, Atul K.: *See*—
Shi, Shan-Rong; Tandon, Atul K.; Kalra, Krishan L.; Malhotra, Nagesh; Su, Sheng-Hui; and Yu, Cheng-Zhi, 5,578,452, Cl. 435-7.210.

Tang, Chung L.: *See*—
Ellingson, Randall J.; Powers, Peter E.; Cheng, Lap K.; and Tang, Chung L., 5,579,152, Cl. 359-330.000.

Tang, Pao-Yun: *See*—
Chang, Shyh-Ming; Lee, Yu-Chi; and Tang, Pao-Yun, 5,578,527, Cl. 437-209.000.

Tani Electronics Industry Co., Ltd.: *See*—
Nanzai, Takashi, 5,577,875, Cl. 414-680.000.

Tani, Tomofune, to Nippon Steel Corporation. Method of making an isolation layer stack semiconductor device. 5,578,510, Cl. 437-35.000.

Tanida, Shinichi: *See*—
Tamamura, Toshio; and Tanida, Shinichi, 5,579,236, Cl. 364-483.000.

Taniguchi, Yoshifumi, to Hitachi, Ltd. Transmission electron microscope and method of observing element distribution by using the same. 5,578,823, Cl. 250-311.000.

Tanioka, Satoshi: *See*—
Kajiyama, Tisato; Kikuchi, Hirotsugu; and Tanioka, Satoshi, 5,579,135, Cl. 359-52.000.

Tanner, Michael J.: *See*—
Simon, Richard K.; Duffy, Michael L.; Tanner, Michael J.; Barringer, Mathias N.; and Rawls, Nathan C., 5,578,271, Cl. 422-98.000.

Tanzi, Rudolph E.: *See*—
Gilliam, T. Conrad; and Tanzi, Rudolph E., 5,578,493, Cl. 435-320.100.

Tao, Kuang Z.; and Lim, Kee L. Power supply circuit. 5,578,907, Cl. 315-247.000.

Tao, Kung-Chung, to Industrial Technology Research Institute. Power MESFET structure and fabrication process with high breakdown voltage and enhanced source to drain current. 5,578,512, Cl. 437-39.000.

Target Therapeutics, Inc.: *See*—
Mirigian, Gregory E., 5,578,074, Cl. 623-1.000.

Tata, James R.: *See*—
Chen, Meng-Hsin; Johnston, David B. R.; Nargund, Ravi P.; Patchett, Arthur A.; Tata, James R.; and Yang, Lihu, 5,578,593, Cl. 514-212.000.

Tate, James R.; Lee, Allen E.; Zacher, Bryan P.; and Olson, Vernon D., to Menasha Corporation. Structural panel. 5,577,363, Cl. 52-784.150.

Tatematsu, Junji; Yoshino, Yasuhisa; and Kaneiwa, Toshiyuki, to Nippondenso Co., Ltd. Emergency vehicular communication device capable of contacting a plurality of services. 5,579,443, Cl. 455-89.000.

Tatsukawa, Yukiko: *See*—
Yokoyama, Masuzo; Takano, Junji; Hasegawa, Masami; and Tatsukawa, Yukiko, 5,578,694, Cl. 528-198.000.

Tatsumi Co., Ltd.: *See*—
Isobe, Hiroshi; and Isobe, Tsugetaka, 5,578,986, Cl. 340-475.000.

Taya, Masaaki: *See*—
Kohtaki, Takaaki; Taya, Masaaki; Unno, Makoto; and Doujo, Tadashi, 5,578,408, Cl. 430-106.600.
Kotaki, Takaaki; Taya, Masaaki; Unno, Makoto; Mikuriya, Yushi; and Dojyo, Tadashi, 5,578,409, Cl. 430-109.000.

Tayi, Apparao: *See*—
Clark, Frederic L.; Hendrick, Kendall B.; Martin, Richard R.; Moore, Larry W.; Raymoure, William J.; Schrier, Paul R.; Walker, Edna S.; Walker, Donny R.; Winter, Gary E.; Cloonan, Kevin M.; Yost, David A.; Clemens, John M.; Kanewske, William J., III; McDowell, Douglas D.; Oleksak, Carl M.; Rumbaugh, William D.; Smith, B. Jane; Vaught, James A.; Tayi, Apparao; Wohlford, Robert A.; Mitchell, James E.; Hance, Robert B.; Lagocki, Peter A.; Merriam, Richard A.; Pennington, Charles D.; Schmidt, Linda S.; Spronk, Adrian M.; Vickstrom, Richard L.; Watkins, William E., III; Clift, Gilbert; Stanton, Alyn K.; and Hills, David B., 5,578,494, Cl. 436-54.000.

Taylor, Douglas C., to Datamark Services, Inc. Data card that can be used for transactions involving separate card issuers. 5,578,808, Cl. 235-380.000.

Taylor, Harvey W.: *See*—
Held, Robert P.; Pizzocri, Massimo; and Taylor, Harvey W., 5,578,412, Cl. 430-257.000.

Taylor, Herbert H., Jr.: *See*—
Chin, Danny; Peters, Joseph E., Jr.; and Taylor, Herbert H., Jr., 5,579,527, Cl. 395-800.000.

Taylor, Jerry W. Hemorrhoid removing device. 5,578,047, Cl. 606-157.000.

Taylor, Julian S. Method of making relief valve interchangeable buckling pins for a selectable pressure setting. 5,577,523, Cl. 137-70.000.

Taylor, Julian S. Large diameter resettable rupture pin relief valve. 5,577,524, Cl. 137-70.000.

Taylor, Lloyd D.: *See*—
Grasshoff, Jurgen M.; Marshall, John L.; Minns, Richard A.; Puttick, Anthony J.; Taylor, Lloyd D.; and Telfer, Stephen J., 5,578,424, Cl. 430-333.000.

Taylor, Lucille F.; Sivik, Mark R.; Willey, Alan D.; Burckett-St. Laurent, James C. T.; and Hartman, Frederick A., to Procter & Gamble Company, The. Automatic dishwashing compositions comprising quaternary substituted bleach activators. 5,578,136, Cl. 139-25.200.

Taylor, Michael L.: *See*—
Barkley, Naomi P.; Dosani, Majid A.; Sanning, Donald E.; and Taylor, Michael L., 5,577,522, Cl. 134-111.000.

Taylor, Nigel: *See*—
Iggulden, Jerry; Crack, Richard; Taylor, Nigel; Stevens, Bruce; Constable, Keith; and Pyner, Derek, 5,579,002, Cl. 341-23.000.

Taylor, Robert H., to Texas Instruments Incorporated. Interconnect for use in flat panel display. 5,577,944, Cl. 445-25.000.

Taylor, Robert S.: *See*—
Engelbert, David G.; Taylor, Robert S.; and Wallestad, Steven D., 5,577,814, Cl. 303-118.100.

Taylor, Thomas J.; and Shannon, Ronald D., to Schuller International, Inc. Phenol/formaldehyde fiberglass binder compositions exhibiting reduced emissions. 5,578,371, Cl. 428-288.000.

TCI Technology, Inc.: *See*—
Reed, Michael J.; and Lavery, Michael F., 5,577,735, Cl. 273-439.000.

TDK Corporation: *See*—
Hirata, Hideki; Endo, Hiroyuki; Kuribayashi, Isamu; and Komaki, Tsuyoshi, 5,578,355, Cl. 428-64.300

TDW Delaware, Inc.: *See*—
Welch, Joseph L., 5,577,776, Cl. 285-55.000.

Tecchio, Piero: *See*—
Berger, Ernst; Heil, Franz; Schifko, Herbert; and Tecchio, Piero, 5,578,804, Cl. 218-43.000.

Techco Corp.: *See*—
Phillips, Edward H., 5,577,899, Cl. 417-371.000.

Technimark, Inc.: *See*—
Frings, Hermann J.; Hallmann, Franz J.; and Keusch, Albert, 5,577,677, Cl. 242-118.110.

Technischer Überwachungs-Verein Bayern e.V.: *See*—
Hofmann, Hanspeter, 5,578,801, Cl. 187-393.000.

Technomarket, L.P.: *See*—
Beiswenger, John L., 5,579,035, Cl. 345-169.000

Tedesco, Romeo, to Global Upholstery Company. Seat height adjustment mechanism for a chair. 5,577,804, Cl. 297-344.190.

Teel, Thomas A.; and McClure, David C., to SGS-Thomson Microelectronics, Inc. Post-fabrication selectable registered and non-registered memory. 5,579,263, Cl. 365-189.020.

Teggatz, Ross E.: *See*—
Schmidt, Thomas A.; Teggatz, Ross E.; and Devore, Joseph A., 5,579,193, Cl. 361-18.000.

Teijin Limited: *See*—
Dohi, Masahiko; Nishibe, Yoshihisa; Makino, Yuji; and Suzuki, Yoshiki, 5,578,324, Cl. 424-499.000.

Teledirektoratets Forskningsavdeling: *See*—
Bjøntegaard, Gisle, 5,579,413, Cl. 382-248.000.

Teleflex Incorporated: *See*—
Reasoner, Michael, 5,577,415, Cl. 74-502.400.

Telefonaktiebolaget L M Ericsson: *See*—
Ginter, Thomas, 5,579,375, Cl. 379-59.000.

Telefonaktiebolaget LM Ericsson: *See*—
Åström, Bo A. V., 5,579,372, Cl. 379-58.000.
Buhrgard, Karl S. M., 5,579,324, Cl. 370-105.100.
Jansson, Klas F. J., 5,579,435, Cl. 395-2.420.
Lindquist, Björn; Isberg, Martin; Wendelrup, Heino; Sallenhag, Martin; and Gustafsson, Kjell, 5,579,347, Cl. 375-346.000.
Wigren, Karl T., 5,579,432, Cl. 395-2.230.

Teletransaction, Inc.: *See*—
Meyerson, Robert F.; Chang, Yung-Fu; Wang, Ynjiun P.; and Wall, Daniel G., 5,579,487, Cl. 395-280.000.

Telfer, Stephen J.: *See*—
Grasshoff, Jurgen M.; Marshall, John L.; Minns, Richard A.; Puttick, Anthony J.; Taylor, Lloyd D.; and Telfer, Stephen J., 5,578,424, Cl. 430-333.000.

Temple, Victor A. K.; and Glascock, Homer H., II, to Harris Corporation. Method of packaging a semiconductor device. 5,577,656, Cl. 228-123.100.

Tenberg, Kerry C.: *See*—
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Tennent, Howard G.; Barber, James J.; and Hoch, Robert, to Hyperion Catalysis Int'l, Inc. Carbon fibrils, method for producing same and adhesive compositions containing same. 5,578,543, Cl. 502-180.000.

Tenyo Co., Ltd.: *See*—
Kondo, Hiroshi, 5,577,728, Cl. 273-157.00A.

Teppo, David S.: *See*—
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TER S.r.l.: *See*—
Albini, Giovanni; Ruscitti, Tommaso; and Carlappi, Franco, 5,577,640, Cl. 222-378.000.

Terada, Junji: *See*—
Kameyama, Makoto; Sugahara, Noboru; Sawamura, Mitsuharu; Terada, Junji; and Sakamoto, Junichi, 5,578,536, Cl. 501-103.000.

Teradyne, Inc.: *See*—
Sheen, Timothy W., 5,578,930, Cl. 324-530.000.

Terasaki, Setsuo: *See*—
Konishi, Kazuo; Yoshioka, Shimpei; Terasaki, Setsuo; Matsubara, Hiroaki; Maruyama, Koji; Sato, Toshiaki; and Suyama, Takaaki, 5,579,502, Cl. 395-430.000.

Terashima, Hideyuki: *See*—
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Terashima, Nobuo: *See*—
Takeda, Kenji; Terashima, Nobuo; Nakano, Joji; Minami, Hisashi; Kobayashi, Toyokazu; Furuhata, Kunikazu; Takakura, Tadakazu; Takata, Makoto; Kawafuchi, Hiroyo; and Hiraiwa, Toru, 5,578,627, Cl. 514-379.000.

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Terpstra, Daniel A.: *See*—
Schoene, Keith R.; and Terpstra, Daniel A., 5,577,600, Cl. 200-43.170.

Terrell, Michael R.; Kaisner, Jeffery W.; Amsden, Jonathan D.; Burke, Thomas C.; and Todd, David K., to NCR Corporation. Method for configuring computer peripherals. 5,579,529, Cl. 395-828.000.

Teshima, Kenzo: *See*—
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Teshima, Yasuhiko: *See*—
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Tesma International Inc.: *See*—
Lindsay, Alan R., 5,577,582, Cl. 192-70.190.

Teves, Leonides Y. Blood analyzer. 5,577,499, Cl. 128-632.000.

Texaco Inc.: *See*—
Brooker, D. Duane; and Falsetti, James S., 5,578,094, Cl. 48-197.00R.
Cox, Steven C., 5,577,926, Cl. 439-204.000.
O'Young, Chi-Lin; and Suib, Steven L., 5,578,282, Cl. 423-50.000.

Texas A & M University System, The: *See*—
Russell, B. Don; and Aucoin, B. Michael, 5,578,931, Cl. 324-536.000.

Texas Instruments Incorporated: *See*—
Burns, Mark A., 5,578,935, Cl. 324-763.000.
Childers, Jimmie D.; Yamamoto, Seiichi; and Takeyasu, Masanari, 5,579,273, Cl. 365-205.000.
Cho, Chih-Chen, 5,579,151, Cl. 359-291.000.

Edwards, Darvin R., 5,579,249, Cl. 364-578.000.
Ehlig, Peter N.; and Boutaud, Frederic, 5,579,218, Cl. 364-130.000.
Ehlig, Peter N.; and Boutaud, Frederic, 5,579,497, Cl. 375-222.000.
Frank, Steven N.; Belcher, James F.; Stanford, Charles E.; Owen, Robert A.; and Kyle, Robert J. S., 5,577,309, Cl. 29-25.420.
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Kwon, Oh-Kyong; Efland, Taylor R.; Malhi, Satwinder; and Ng, Wai T., 5,578,514, Cl. 437-41.000.
Parmenter, Kevin C.; and Takahashi, Yutaka, 5,579,353, Cl. 375-376.000.
Schmidt, Thomas A.; Teggatz, Ross E.; and Devore, Joseph A., 5,579,193, Cl. 361-18.000.
Tadaki, Yoshitaka; Murata, Jun; Sekiguchi, Toshihiro; Aoki, Hideo; Kawakita, Keizo; Uchiyama, Hiroyuki; Nishimura, Michio; Tanaka, Michio; Ezaki, Yuji; Saitoh, Kazuhiko; Yuhara, Katsuo; and Cho, Songsu, 5,578,849, Cl. 257-298.000.
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Vickers, Kenneth G.; Shen, Chi-Cheong; Gnade, Bruce E.; and Levine, Jules D., 5,577,943, Cl. 445-24.000.
Vickers, Kenneth G., 5,578,902, Cl. 313-496.000.
Walker, William K.; Long, John P.; Owen, Robert A.; Runnels, Bert T.; and Shelton, Gail D., 5,578,826, Cl. 250-338.300.
Tezuka, Junichi, Beam support system for forming precompressed wood joints, 5,577,856, Cl. 403-294.000.
Thariani, Ann: *See*—
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Thariani, Kumail; and Thariani, Ann. Foot and body maintenance massage and scrubbing tool. 5,577,997, Cl. 601-135.000.
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Maschmeyer, Dietrich; and Thelen, Gerhard, 5,578,546, Cl. 502-327.000.
Theodor Esser and Eugene T. King: *See*—
Mirza, M. Ather, 5,578,051, Cl. 606-170.000.
Theodore, Louis J.; Reno, John M.; and Gustavson, Linda M., to Neorx Corporation. Three-step pretargeting methods using improved biotin-active agent. 5,578,287, Cl. 424-1.490.
Thibodeau, Steven N.; and Bren, Gary D., to Mayo Foundation for Medical Education and Research. Tumor-specific genomic instability as a prognostic indicator. 5,578,450, Cl. 435-6.000.
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Thiebaut, Bruno: *See*—
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Thieler, Stephen M.: *See*—
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Thomas, Barbara J.; Loth, Myriam; and Connors, Thomas F., to Colgate-Palmolive Company. Microemulsion liquid cleaning compositions with insect repellent. 5,578,250, Cl. 510-365.000.
Thomas, Nelson A. Fishing rod which regulates rotational speed of spool during casting. 5,577,679, Cl. 242-286.000.
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Wolf, Gary A., to RFE Industries, Inc. Method of manufacturing fully annealed metal anodes. 5,578,177, Cl. 204-292.000.
Wolf, Udo; and Schreckenberg, Manfred, to Bayer Aktiengesellschaft. Process for monitoring polycondensation or polyaddition reactions. 5,578,827, Cl. 250-339.040.
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Ryan, John O.; Quan, Ronald; Holzgrafe, James R.; and Wonfor, Peter J., 5,579,390, Cl. 380-11.000.
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Akram, Salman; Farnworth, Warren; and Wood, Alan, 5,578,526, Cl. 437-209.000.
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Graber, Warren S., 5,578,905, Cl. 315-76.000.
Woodrow, Harold E.: *See*—
Shore, Terence M.; and Woodrow, Harold E., 5,577,405, Cl. 72-235.000.
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To, Chun Y., 5,577,852, Cl. 402-31.000.
Wright, Barry T., to Molex Incorporated. Traffic cone-mounted warning lights. 5,577,824, Cl. 340-908.100.
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Belton, Peter S.; and Wright, Kevin M., 5,579,105, Cl. 356-310.000.
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Finley, Brenda L.; and Wright, Ralph W., Jr., 5,578,363, Cl. 428-194.000.
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Grant, Larry A.; Marder, James M.; and Wright, Wayne L., 5,578,146, Cl. 148-437.000.
Wu, Hui-Fen: *See*—
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Dougan, Rodney D.; Tincher, Cline A.; and Wulfers, Thomas F., 5,578,557, Cl. 508-437.000.
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Ambalavanar, Samuel D.; Sanford, Ronnie E.; Diaz, Orlando; Romano, Kenneth D.; and Frumusa, Anthony M., 5,579,452, Cl. 395-115.000.
Behe, Thomas J.; and Mordenga, Samuel P., 5,579,094, Cl. 355-215.000.
Folkins, Jeffrey J., 5,579,089, Cl. 355-208.000.
Jackson, Warren B.; Biegelsen, David K.; and Weisfield, Richard L., 5,578,837, Cl. 257-53.000.
Lindenfelser, William M.; Donahue, Frederick A.; and Audi, Anthony E., 5,579,453, Cl. 395-115.000.

Loce, Robert P.; Cianciosi, Michael S.; and Kingsley, Jeffrey D., 5,579,445, Cl. 395-102.000.
Mojarradi, Mohammad M.; Sandstrom, Dennis W; Vo, Tuan A.; and Elhatem, Abdul, 5,577,617, Cl. 206-724.000.
Petropoulos, Mark C.; Foley, Geoffrey M. T.; and Swain, Eugene A., 5,578,410, Cl. 430-133.000.
Salgado, David L., 5,579,087, Cl. 355-202.000.
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Wagner, Moritz P.; Hammond, William A.; and Swain, Eugene A., 5,579,093, Cl. 355-211.000.
Williams, Leon C.; and Clingerman, Terri A., 5,579,418, Cl. 382-300.000.
Yu, Zhao-Zhi; Tabb, Charles H.; O'Brien, John F.; Beachner, James R.; Gwaltney, Mark A.; Lean, Meng H.; and Folkins, Jeffrey J., 5,579,100, Cl. 355-326.00R.
Ziolo, Ronald F., 5,578,245, Cl. 252-314.000.

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Carberry, Richard A.; and New, Bernard J., 5,578,946, Cl. 326-93.000.

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Ho, Suzzy C.; Wu, Margaret M.; and Xiong, Yusheng, 5,578,743, Cl. 585-530.000.

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Ammons, William S.; and Mészáros, Károly M., 5,578,568, Cl. 514-12.000.
Horwitz, Arnold; Lambert, Lewis H., Jr.; and Little, Roger G., II, 5,578,572, Cl. 514-12.000.

Xomed, Inc.: *See*—
Prescott, Anthony D., 5,578,086, Cl. 623-11.000.

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Abileah, Adiel; Brinkley, Patrick F.; and Xu, Gang, 5,579,139, Cl. 359-73.000.

XuYang, Zhou; Futsuhara, Koichi; and Sakai, Masayoshi, to Nippon Signal Co., Ltd., The. Monitoring apparatus for an alarm device. 5,578,987, Cl 340-506.000.

Yachi, Masaharu, to Seiko Epson Corporation. Method of making an aluminum containing interconnect without hardening of a sidewall protection layer. 5,578,163, Cl. 156-643.100.

Yaffe, Henry H.: *See*—
Duvall, Charles; White, Ian A.; and Yaffe, Henry H., 5,579,421, Cl. 385-14.000.

Yagi, Sakai; and Nagano, Toru, to Yazaki Corporation. Connector assembly. 5,577,934, Cl. 439-540.100.

Yaguchi, Hiroyuki; Inaba, Keishi; Asai, Hidehiko; Kikugawa, Makoto; Makitani, Hideyuki; Yoshihara, Kunio; Itoh, Hirohiko; and Ozaki, Hidenori, to Canon Kabushiki Kaisha. Image storing/retrieving apparatus using a mark sheet to enable user selection of images. 5,579,419, Cl. 382-305.000.

Yakovlev, A. A.: *See*—
Rusanov, S. Y.; Yakovlev, A. A.; and Zagumennyi, A. I., 5,579,427, Cl. 385-124.000.

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Chumak, Fedor A.; Cherednik, Vladimir N.; and Zlobin, Mikhail N., 5,578,198, Cl. 209-168.000.

Yamada, Akira; Nagata, Keiji; Irie, Yoshiaki; and Nagano, Akihiko, to Canon Kabushiki Kaisha. Optical apparatus equipped with sight line detector. 5,579,079, Cl. 396-51.000.

Yamada, Akira: *See*—
Irie, Yoshiaki; Yamada, Akira; and Nagano, Akihiko, 5,579,080, Cl. 396-51.000.

Yamada, Kazuhiro: *See*—
Takai, Yasushi; Yamada, Kazuhiro; Toide, Takashi; and Tajima, Shigenobu, 5,578,266, Cl. 420-83.000.

Yamada, Koutarou; Hirose, Youji; Ueno, Hiroshi; Watanabe, Isao; Ogura, Yoshio; Shinohara, Katuhiro; Katayama, Kouhei; and Murase, Minoru, to Hitachi Koki Co., Ltd. Developing unit for electro-photographic apparatus. 5,579,091, Cl. 355-208.000.

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Ishida, Yasushi; Yokoyama, Minoru; Tomoda, Akihiro; Yamada, Masakatsu; Awai, Takashi; Yoshida, Takehiro; Kobayashi, Makoto; Wada, Satoshi; Ono, Takeshi; and Takeda, Tomoyuki, 5,579,042, Cl. 347-217.000.

Yamada, Nobuaki: *See*—
Yamahara, Motohiro; Nagae, Nobukazu; Okamoto, Masayuki; Hirai, Toshiyuki; Hara, Teruyoshi; Shinomiya, Tokihiko; Yamada, Nobuaki; Kozaki, Shuichi; and Horie, Wataru, 5,579,140, Cl. 359-75.000.

Yamada, Satoru: *See*—
Mori, Takahiro; Kataoka, Ichiro; Yamada, Satoru; and Itoyama, Shigenori, 5,578,141, Cl. 136-251.000.

Yamada, Satoshi: *See*—
Miyasaka, Takaaki; Ito, Yoshitaka; Toshigami, Hiromichi; Matumoto, Takashi; Yamada, Satoshi; Tada, Masaaki; and Kasahara, Hiroshi, 5,577,857, Cl. 403-316.000.

Yamada, Shinichi: *See*—
Itou, Hikaru; Miyazaki, Sho; Tanaka, Tsutomu; Saito, Masashi; Yamada, Shinichi; Wakata, Shigekazu; and Saijo, Eiji, 5,577,920, Cl. 439-34.000.

Yamada, Takashi: *See*—
Aoki, Masami; Yamada, Takashi; Takato, Hiroshi; Ozaki, Tohru; Hieda, Katsuhiko; and Nitayama, Akihiro, 5,578,847, Cl. 257-296.000.

Yamaga, Kenichi; and Kobayashi, Toshiki, to Tokyo Electron Kabushiki Kaisha; and Tokyo Electron Tohoku Kabushiki Kaisha. Apparatus for heat treating semiconductors at normal pressure and low pressure. 5,578,132, Cl. 118-724.000.

Yamagami, Taku, Sasaki, Takashi; and Suga, Akira, to Canon Kabushiki Kaisha. Image signal processing apparatus using color filters and an image pick-up device providing interlaced field signals. 5,579,047, Cl 348-242.000.

Yamaguchi, Hiroshi: *See*—
Sekine, Takayuki; and Yamaguchi, Hiroshi, 5,577,999, Cl. 602-8.000.

Yamaguchi, Tadashi; Nosaki, Katsutoshi; Inoue, Akihisa; and Masumoto, Tsuyoshi, to YKK Corporation; Masumoto, Tsuyoshi; Inoue, Akihisa; and Honda Giken Kogyo Kabushiki Kaisha. Ultrafine particles of amorphous metal and method for production thereof. 5,578,108, Cl. 75-336.000.

Yamaguchi, Yasunori: *See*—
Kajigaya, Kazuhiko; Miyazawa, Kazuyuki; Tsunozaki, Manabu; Oshima, Kazuyoshi; Yamazaki, Takashi; Sakai, Yuji; Sawada, Jiro; Yamaguchi, Yasunori; Matsumoto, Tetsurou; Udo, Shinji; Yoshioka, Hiroshi; Saito, Hirokazu; Takano, Mitsuhiro; Morino, Makoto; Miyatake, Sinichi; Miyamoto, Eiji; Kasama, Yasuhiro; Endo, Akira; Hori, Ryoichi; Etoh, Jun; Horiguchi, Masashi; Ikenaga, Shinichi; and Kumata, Atsushi, 5,579,256, Cl. 365-51.000.

Yamaha Corporation: *See*—
Imaizumi, Tsutomu, 5,578,778, Cl. 84-615.000.
Itoh, Shuhei, 5,579,025, Cl. 345-3.000.
Masubuchi, Takemichi, 5,578,782, Cl. 84-687.000.
Suzuki, Hideo, 5,578,781, Cl. 84-661.000.
Wachi, Masatada, 5,578,780, Cl. 84-659.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Shiohara, Masakazu; and Kubo, Shoichi, 5,577,570, Cl. 180-219.000.

Yamahachi Chemical Co., Ltd.: *See*—
Toyama, Tetsuyuki, 5,577,444, Cl. 101-379.000.

Yamahara, Motohiro; Nagae, Nobukazu, Okamoto, Masayuki; Hirai, Toshiyuki; Hara, Teruyoshi; Shinomiya, Tokihiko; Yamada, Nobuaki; Kozaki, Shuichi; and Horie, Wataru, to Sharp Kabushiki Kaisha. Multiple domain liquid crystal display element and a manufacturing method of the same. 5,579,140, Cl. 359-75.000.

Yanaji, Yoshiyuki; Naka, Yukimasa; and Nakamura, Shigetaka, to Noritsu Koki Co., Ltd. Code data read apparatus for photographic film. 5,578,809, Cl. 235-462.000.

Yamakawa, Hiroshi: *See*—
Kimoto, Takashi; Masumoto, Daiki; Yamakawa, Hiroshi; and Nagata, Shigemi, 5,579,442, Cl. 395-81.000.

Yamakawa, Junichi: *See*—
Ishida, Yoshihiro; Katayama, Akihiro; and Yamakawa, Junichi, 5,579,405, Cl. 382-197.000.

Yamakawa, Kazuyoshi: *See*—
Hara, Takefumi; Yamakawa, Kazuyoshi; Shuto, Sadanobu; Yamamoto, Mitsuru; Suzuki, Makoto; Shimada, Yasuhiro; Nagaoka, Katsuro; Nagaoka, Satoshi; Shibahara, Yoshihiko; and Ikeda, Hideo, 5,578,436, Cl. 430-503.000.
Nagaoka, Satoshi; Yamakawa, Kazuyoshi; Yamamoto, Mitsuru, Suzuki, Makoto; Shimada, Yasuhiro; Nagaoka, Katsuro; Ikeda, Hideo; Hara, Takefumi; and Shuto, Sadanobu, 5,578,441, Cl. 430-599.000.

Yamamoto, Hirofumi: *See*—
Funakoshi, Yasushi; Ogata, Khoji; Kojima, Masayuki; Kawaziri, Hitoshi; Yamamoto, Hirofumi; Noto, Kazuhiko; and Mori, Naomichi, 5,578,200, Cl. 210-134.000.

Yamamoto, Ichiro, to Brother Kogyo Kabushiki Kaisha. Printing apparatus for printing of quarter em-size. 5,579,448, Cl. 395-110.000.

Yamamoto, Isamu: *See*—
Semba, Shinji; Enoshima, Shinji; Kobayashi, Kunio; and Yamamoto, Isamu, 5,578,919, Cl. 324-158.100.

Yamamoto, Kouji, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device having redundancy serial access memory portion. 5,579,269, Cl. 365-200.000.

Yamamoto, Makoto: *See*—
Shou, Guoliang; Takatori, Sunao; and Yamamoto, Makoto, 5,579,411, Cl. 382-217.000.

Yamamoto, Mitsuru: *See*—
Hara, Takefumi; Yamakawa, Kazuyoshi; Shuto, Sadanobu; Yamamoto, Mitsuru; Suzuki, Makoto; Shimada, Yasuhiro; Nagaoka, Katsuro; Nagaoka, Satoshi; Shibahara, Yoshihiko; and Ikeda, Hideo, 5,578,436, Cl. 430-503.000.
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Yamamoto, Satoshi; Shinjoh, Akira; Yoneda, Isao; Sharma, Arun; Sri-Jayantha, Muthuthamby; and Dang, Hien P., to International Business Machines Corporation. Magnetic disk unit and method for controlling the same. 5,579,186, Cl. 360-75.000.

Yamamoto, Seiichi; Yoshida, Tetsuo; and Hioki, Takanori, to Fuji Photo Film Co., Ltd. Silver halide photographic material and method for processing the same. 5,578,414, Cl. 430-264.000.

Yamamoto, Seiichi: *See*—
Childers, Jimmie D.; Yamamoto, Seiichi; and Takeyasu, Masanari, 5,579,273, Cl. 365-205.000.

Yamamoto, Tadashi: *See*—
Niwa, Minoru; Muramatsu, Kimio; Kanai, Makoto; Inoue, Michio; Mizutani, Junichi; Kanich, Takanori; and Yamamoto, Tadashi, 5,577,766, Cl. 280-731.000.

Yamamoto, Teruaki, to PIAA Corporation. Bulb for vehicular lighting equipment. 5,578,893, Cl. 313-112.000.

Yamamoto, Yasushi, to Daikin Industries, Ltd. Rotary compressor. 5,577,903, Cl. 418-66.000.

Yamamoto, Yoshinobu: *See*—
Fukushima, Yutaka; Takemura, Tetsuo; Iwaki, Shinichi; Hashida, Mitsuyoshi; Wanami, Masao; Shimbo, Isao; Wada, Mitsuhiro; Udaki, Hirofumi; Kondo, Yoshihiro; Yamamoto, Yoshinobu; Nakagoshi, Arata; Ohta, Kouichi; Kuwahara, Hiroshi; and Watanabe, Yumiko, 5,579,370, Cl. 379-34.000.

Yamamoto, Yoshitaka: *See*—
Kawamura, Tadashi; Kimura, Naofumi; Yamamoto, Yoshitaka; and Ishii, Yutaka, 5,579,199, Cl. 365-108.000.

Yamamoto, Yuji: *See*—
Yoshimura, Seiji; Yamamoto, Yuji; Shoji, Yoshihiro; Nishio, Koji; Saito, Toshihiko; Nishiguchi, Nobuhiro; Tsujioku, Keiichi; and Fujimoto, Minoru, 5,578,395, Cl. 429-197.000.

Yamanaka, Takashi: *See*—
Miyazawa, Shuhei; Hibi, Shigeki; Yoshimura, Hiroyuki; Mori, Takashi; Hoshino, Yorihisa; Nagai, Mitsuo; Kikuchi, Kouichi; Shibata, Hisashi; Hirota, Kazuo; Yamanaka, Takashi; Yamatsu, Isao; and Mizuno, Masanori, 5,578,603, Cl. 514-304.000.

Yamanishi, Takahiro: *See*—
Takeda, Hideo; Fujii, Hiroaki; Yamanishi, Takahiro; and Tokoro, Rika, 5,577,765, Cl. 280-729.000.

Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Shiozawa, Hiroyoshi; Sugao, Hiroya; Yamazaki, Shigeru; and Yano, Katsuhiko, 5,578,322, Cl. 424-490.000.

Yamasaki, Kazuyuki; Kataoka, Masaki; Imazu, Shirou; and Matuura, Kenji, to Sharp Kabushiki Kaisha. Apparatus and method for waste water treatment utilizing aerobic and anaerobic microorganisms and capable of exhaust gas treatment. 5,578,214, Cl. 210-650.000.

Yamashita, Hisao: *See*—
Kuroda, Osamu; Yamashita, Hisao; Honji, Akio; Watanabe, Noriko; Ogawa, Toshio; Miyadera, Hiroshi; and Atago, Takeshi, 5,577,383, Cl. 60-284.000.

Yamashita, Kazukuni; Hikizi, Shigetoshi; Takano, Tamotsu; Ohama, Naomichi; Tanaka, Yoshiyuk.; Tsukiyama, Tominari; Takahashi, Tsukasa; Hori, Mitsumasa; and Yoshioka, Hideyuki, to Mitsubishi Jukogyo Kabushiki Kaisha. Module construction method in a steel structure building zone. 5,577,362, Cl. 52-745.030.

Yamatake-Honeywell Co., Ltd.: *See*—
Suzuki, Motoo, 5,578,760, Cl. 73-706.000.

Yamatsu, Isao: *See*—
Miyazawa, Shuhei; Hibi, Shigeki; Yoshimura, Hiroyuki; Mori, Takashi; Hoshino, Yorihisa; Nagai, Mitsuo; Kikuchi, Kouichi; Shibata, Hisashi; Hirota, Kazuo; Yamanaka, Takashi; Yamatsu, Isao; and Mizuno, Masanori, 5,578,603, Cl. 514-304.000.

Yamauchi, Hisao: *See*—
Koriyama, Shinichi; Ikemachi, Takaaki; and Yamauchi, Hisao, 5,578,553, Cl. 505-125.000.

Yamazaki, Akihiro, to Kabushiki Kaisha Toshiba. Flash EEPROM with auto-function for automatically writing or erasing data. 5,579,270, Cl. 365-201.000.

Yamazaki, Izumi: *See*—
Ikegame, Tetsuo; Kanazawa, Masayasu; and Yamazaki, Izumi, 5,579,176, Cl. 359-822.000.

Yamazaki, Shigeru: *See*—
Shiozawa, Hiroyoshi; Sugao, Hiroya; Yamazaki, Shigeru; and Yano, Katsuhiko, 5,578,322, Cl. 424-490.000.

Yamazaki, Shunpei: *See*—
Hayashi, Shigenori; and Yamazaki, Shunpei, 5,578,130, Cl. 118-723.00E.

Yamazaki, Takashi: *See*—
Kajigaya, Kazuhiko; Miyazawa, Kazuyuki; Tsunozaki, Manabu; Oshima, Kazuyoshi; Yamazaki, Takashi; Sakai, Yuji; Sawada, Jiro; Yamaguchi, Yasunori; Matsumoto, Tetsurou; Udo, Shinji; Yoshioka, Hiroshi; Saito, Hirokazu; Takano, Mitsuhiro; Morino, Makoto; Miyatake, Sinichi; Miyamoto, Eiji; Kasama, Yasuhiro; Endo, Akira; Hori, Ryoichi; Etoh, Jun; Horiguchi, Masashi; Ikenaga, Shinichi; and Kumata, Atsushi, 5,579,256, Cl. 365-51.000.

Yamazaki, Toshimasa: *See*—
Tagawa, Koichi; Nakatani, Akira; and Yamazaki, Toshimasa, 5,577,413, Cl. 74-475.000.

Yan, Feng: *See*—
Schneider, Michel; Yan, Feng; Grenier, Pascal, deceased; Puginier, Jérôme; and Barrau, Marie-Bernadette, 5,578,292, Cl. 424-9.510.

Yan, Jiang: *See*—
Kwong, Dim-Lee; Yoon, Giwan; Kim, Jonghan; Han, Liang-Kai; and Yan, Jiang, 5,578,848, Cl. 257-296.000.

Yanagisawa, Hiroaki: *See*—
Fujita, Takashi; Fujimoto, Koichi; Yoshioka, Takao; Yanagisawa, Hiroaki; Fujiwara, Toshihiko; Horikoshi, Hiroyoshi; Oguchi, Minoru; and Wada, Kunio, 5,578,620, Cl. 514-370.000.

Yanagiya, Satoshi: *See*—
Baba, Yoshiro; Yanagiya, Satoshi; Matsuda, Noboru; Osawa, Akihiko; and Tsuchitani, Masanobu, 5,578,508, Cl. 437-35.000.

Yang, Lihu: *See*—
Chen, Meng-Hsin; Johnston, David B. R.; Nargund, Ravi P.; Patchett, Arthur A.; Tata, James R.; and Yang, Lihu, 5,578,593, Cl. 514-212.000.

Yang, Ming-Tzong: *See*—
Hong, Gary; Yang, Ming-Tzong; and Hsue, Chen-Chiu, 5,578,857, Cl. 257-391.000.

Yang, Tsung-Fu; and Huang, Wei-Shung, to Motorola, Inc. Piezoelectric filter with a curved electrode. 5,578,974, Cl. 333-187.000.

Yanker, Peter C.: *See*—
Barber, Ronald J.; Beitel, Bradley J.; Equitz, William R.; Niblack, Carlton W.; Petkovic, Dragutin; Work, Thomas R.; and Yanker, Peter C., 5,579,471, Cl. 395-326.000.

Yano, Hideyuki; Ishiyama, Harumi; Furuya, Tadashi; and Mashimo, Seiji, to Canon Kabushiki Kaisha. Charging device. 5,579,095, Cl. 355-219.000.

Yano, Hiroyuki: *See*—
Kodera, Masako; Shigeta, Atsushi; and Yano, Hiroyuki, 5,578,531, Cl. 437-228.000.

Yano, Katsuhiko: *See*—
Shiozawa, Hiroyoshi; Sugao, Hiroya; Yamazaki, Shigeru; and Yano, Katsuhiko, 5,578,322, Cl. 424-490.000.

Yano, Takashi: *See*—
Doi, Nobukazu; and Yano, Takashi, 5,579,374, Cl. 379-59.000.

Yano, Takaya: *See*—
Imataki, Hiroyuki; Hiraoka, Mizuho; Nagano, Kazumi; Yano, Takaya; and Tanabe, Hiroshi, 5,578,184, Cl. 205-118.000.

Yao, Jun J., to Rockwell International Corporation. Micro electromechanical RF switch. 5,578,976, Cl. 333-262.000.

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Trinh, Toan; Cappel, Jerome P.; Geis, Philip A.; McCarty, Mark L.; and Zwerdling, Susan S., 5,578,563, Cl. 510-513.000.

ZymoGenetics, Inc.: *See—*
Sprecher, Cindy A., 5,578,705, Cl. 530-388.260.

634182 Alberta Ltd.: *See—*
Britton, Daniel W., 5,577,746, Cl. 280-204.000.

999520 Ontario Limited: *See—*
Krause, Hans W., 5,578,112, Cl. 96-24.000.

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TO WHOM

PATENTS WERE ISSUED ON THE 26th DAY OF NOVEMBER, 1996

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bagshaw, Stanley R.: *See*—
Rea, Philip L.; and Bagshaw, Stanley R., Re. 35,380, Cl. 52-387.000.

Browning: *See*—
Rose, Clyde E., Re. 35,381, Cl. 89-14.300.

Miller, Robert B.; Smith, John R.; and Muehlenweg, Carl A., to Titan Corporation, The. Interstitial X-ray needle. Re. 35,383, Cl. 378-138.000.

Muehlenweg, Carl A.: *See*—
Miller, Robert B.; Smith, John R.; and Muehlenweg, Carl A., Re. 35,383, Cl. 378-138.000.

Rea, Philip L.; and Bagshaw, Stanley R. Tile mounting system. Re. 35,380, Cl. 52-387.000.

Rose, Clyde E., to Browning. Ballistic optimizing system for rifles. Re. 35,381, Cl. 89-14.300.

Saito, Tetsushi, to Yamaha Hatsudoki Kabushiki Kaisha. Lubrication arrangement for engine. Re. 35,382, Cl. 123-90.270.

Smith, John R.: *See*—
Miller, Robert B.; Smith, John R.; and Muehlenweg, Carl A., Re. 35,383, Cl. 378-138.000.

Titan Corporation, The: *See*—
Miller, Robert B.; Smith, John R.; and Muehlenweg, Carl A., Re. 35,383, Cl. 378-138.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Saito, Tetsushi, Re. 35,382, Cl. 123-90.270.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Baer, Austin R., to Roton Barrier, Inc. Multi-piece bearing assembly for a hinge structure. B1 4,976,008, Cl. 16-354.000.

Bobel, Andrew; and Moisin, Mihail S., to Motorola Lighting, Inc. Circuit for driving a gas discharge lamp load. B1 5,138,236, Cl. 315-209.00R.

Borel, Michel; Boronat, Jean-Francois; Meyer, Robert; and Rambaud, Philippe, to Commissariat a l'Energie Atomique. Electron source with micropoint emissive cathodes and display means by cathodoluminescence excited by field emission using said source. B1 4,940,916, Cl. 315-306.000.

Boronat, Jean-Francois: *See*—
Borel, Michel; Boronat, Jean-Francois; Meyer, Robert; and Rambaud, Philippe, B1 4,940,916, Cl. 315-306.000.

Commissariat a l'Energie Atomique: *See*—
Borel, Michel; Boronat, Jean-Francois; Meyer, Robert; and Rambaud, Philippe, B1 4,940,916, Cl. 315-306.000.

Dickson, Raymond A., Jr.: *See*—
Sauter, Bruce M.; and Dickson, Raymond A., Jr., B1 8,325,246, Cl. D23-290.000.

Hitachi, Ltd.: *See*—
Kitamura, Wahei; Murakami, Gen; and Nishi, Kunihiko, B1 5,295,297, Cl. 29-827.000.

Jordan, Mark: *See*—
Mammano, Robert A.; and Jordan, Mark, B1 5,272,396, Cl. 326-30.000.
Mammano, Robert A.; and Jordan, Mark, B1 5,338,979, Cl. 326-30.000.

Kitamura, Wahei; Murakami, Gen; and Nishi, Kunihiko, to Hitachi, Ltd. Method of producing semiconductor memory. B1 5,295,297, Cl. 29-827.000.

Kohler Co.: *See*—
Sauter, Bruce M.; and Dickson, Raymond A., Jr., B1 8,325,246, Cl. D23-290.000.

Mammano, Robert A.; and Jordan, Mark, to Unitrode Corporation. Controllable bus terminator with voltage regulation. B1 5,272,396, Cl. 326-30.000.

Mammano, Robert A.; and Jordan, Mark, to Unitrode Corporation. Controllable bus terminator. B1 5,338,979, Cl. 326-30.000.

Meyer, Robert: *See*—
Borel, Michel; Boronat, Jean-Francois; Meyer, Robert; and Rambaud, Philippe, B1 4,940,916, Cl. 315-306.000.

Moisin, Mihail S.: *See*—
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Motorola Lighting, Inc.: *See*—
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Murakami, Gen: *See*—
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Nishi, Kunihiko: *See*—
Kitamura, Wahei; Murakami, Gen; and Nishi, Kunihiko, B1 5,295,297, Cl. 29-827.000.

Rambaud, Philippe: *See*—
Borel, Michel; Boronat, Jean-Francois; Meyer, Robert; and Rambaud, Philippe, B1 4,940,916, Cl. 315-306.000.

Roton Barrier, Inc.: *See*—
Baer, Austin R., B1 4,976,008, Cl. 16-354.000.

Sauter, Bruce M.; and Dickson, Raymond A., Jr., to Kohler Co. Sink. B1 8,325,246, Cl. D23-290.000.

Unitrode Corporation: *See*—
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Mammano, Robert A.; and Jordan, Mark, B1 5,338,979, Cl. 326-30.000.

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Allison, Ian T. Pumpkin tool. 375,876, Cl. D7-696.000.

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Alto-Shaam, Inc.: *See*—
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American Mammographics, Inc.: *See*—
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American Standard Inc.: *See*—
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Ando, Kyosuke. Interdental brush head. 375,840, Cl. D4-105.000.

Anscher, Joseph, to National Molding Corp. One-piece buckle. 375,920, Cl. D11-218.000.

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275 5,578,089
308 5,578,090
399 5,578,091
620 5,578,092

CLASS 47

33 5,577,343
39 5,577,344
72 5,577,345

CLASS 48

128 5,578,093
197 R 5,577,346
5,578,094

CLASS 49

28 5,577,347
317 5,577,348
495.1 5,577,349

CLASS 51

295 5,578,095
5,578,096
5,578,097
5,578,098
297 5,578,099

CLASS 52

6 5,577,350
67 5,577,351
74 5,577,352
92.2 5,577,353
94 5,577,354
204.62 5,577,355
233 5,577,356
5,577,357
238.1 5,577,358
291 5,577,359
387 Re.35,380
518 5,577,360
543 5,577,361
745.03 5,577,362
784.15 5,577,363

CLASS 53

53 5,577,364
398 5,577,365
399 5,577,366
425 5,577,367
432 5,577,368
474 5,577,369
478 5,577,370
589 5,577,371

CLASS 54

66 5,577,372

CLASS 55

341.1 5,578,100

CLASS 56

10.2 E 5,577,373
12.1 5,577,374
17.5 5,577,375

CLASS 57

293 5,577,376

CLASS 60

39.02 5,577,377
39.17 5,577,378
39.31 5,577,379
39.36 5,577,380
226.1 5,577,381
276 5,577,382
284 5,577,383
550 5,577,384
612 5,577,385
742 5,577,386

CLASS 62

51.2 5,577,387
112 5,577,388
115 5,577,389
228.5 5,577,390
298 5,577,391
380 5,577,392
390 5,577,393
653 5,577,394

CLASS 63

3 5,577,395
13 5,577,396

CLASS 65

17.2 5,578,101
27 5,578,102
60.5 5,578,103
106 5,578,104
359 5,578,105
391 5,578,106

CLASS 66

4 5,577,400
8 5,577,401
9 B 5,577,402
20 5,577,397
64 5,577,398

CLASS 68

12.02 5,577,399
133 5,577,407

CLASS 70

370 5,577,408
379 R 5,577,409
456 R 5,577,403

CLASS 71

34 5,578,107

CLASS 72

235 5,577,405
467 5,577,406

CLASS 73

1.1 5,578,745
28.01 5,578,746
40 5,578,747
114 5,578,748
118.1 5,578,749
120 5,578,750
169 5,577,410
170.29 5,578,751
239 5,578,752
313 5,577,411
335.02 5,578,753
504.12 5,578,754
514.32 5,578,755
594 5,578,756
597 5,578,757
636 5,578,758
702 5,578,759
706 5,578,760
769 5,578,761
860 5,578,762
861.08 5,578,763
861.356 5,578,764
862.043 5,578,765
862.331 5,578,767
862.68 5,578,766
863.23 5,578,768
864.74 5,578,769
864.81 5,578,770
865.5 5,578,771
866.5 5,578,772

CLASS 74

127 5,577,412
475 5,577,413
490.03 5,577,414
502.4 5,577,415
502.5 5,577,416
523 5,577,417
528 5,577,418
552 5,577,419
567 5,577,420
606 R 5,577,421
612 5,577,422
650 5,577,423

CLASS 75

236 5,577,424
246 5,578,773
336 5,578,108
399 5,578,109
403 5,578,110

CLASS 81

57.39 5,577,425
439 5,577,426

CLASS 83

206 5,577,427
449 5,577,428
468.4 5,577,429
870 5,577,430

CLASS 84

269 5,578,774
297 S 5,578,775
383 R 5,578,776
422.1 5,578,777
615 5,578,778
647 5,578,779
659 5,578,780
661 5,578,781
687 5,578,782

CLASS 89

1.51 5,577,431
8 5,578,783
14.3 Re.35,381
36.03 5,578,784
36.17 5,577,432

CLASS 91

61 5,577,433
178 5,577,434
516 5,577,435

CLASS 92

116 5,577,436

CLASS 95

86 5,578,111

CLASS 96

24 5,578,112
52 5,578,113
108 5,578,114
121 5,578,115
194 5,578,116

CLASS 99

353 5,577,437
403 5,577,438
549 5,577,439

CLASS 100

34 5,577,440
168 5,577,441

CLASS 101

163 5,577,442
375 5,577,443
379 5,577,444
424.1 5,577,445

CLASS 102

202.5 5,578,785
288 5,578,787
301 5,578,788

CLASS 104

2 5,577,446
5,577,447
53 5,577,448

CLASS 105

26.05 5,577,449

CLASS 106

19 A 5,578,117
217.6 5,578,118
287.35 5,578,119
438 5,578,120
486 5,578,121
709 5,578,122

CLASS 108

86 5,577,450
156 5,577,451
168 5,577,452

CLASS 111

109 5,577,453

CLASS 114

65 R 5,577,454
219 5,577,455
315 5,577,456
343 5,577,457
363 5,577,458

CLASS 116

234 5,577,459

CLASS 117

13 5,578,123

CLASS 118

50 5,578,124
257 5,578,125
500 5,578,126
695 5,578,127
696 5,578,128
719 5,578,129
723 E 5,578,130
723 R 5,578,131
724 5,578,132

CLASS 119

51.5 5,577,461
166 5,577,462
173 5,577,463
475 5,577,464
498 5,577,465
706 5,577,466

CLASS 122

27 5,577,467

CLASS 123

90.12 5,577,468
90.16 5,577,469
90.27 Re.35,382
90.36 5,577,470
169 EL 5,577,471
193.3 5,577,472
298 5,577,473
352 5,577,474
417 5,577,475
425 5,577,476
456 5,577,477
5,577,478
458 5,577,479
470 5,577,480
5,577,481
491 5,577,482
5,577,483
571 5,577,484
617 5,577,485
674 5,577,486
679 5,577,487
688 5,577,488

CLASS 124

44.5 5,577,489

CLASS 126

299 D 5,577,490
362 5,577,491
698 5,577,492
699 5,577,493

CLASS 128

201.13 5,577,494
201.24 5,577,495
201.25 5,577,496
203.15 5,577,497
205.28 5,577,498
632 5,577,499
633 5,577,500
653.1 5,577,501
5,577,502
653.2 5,577,503
5,577,504

CLASS 123

662.02 5,577,505
662.03 5,577,506
663.01 5,577,507
681 5,577,508
696 5,577,509
709 5,577,510
746 5,577,511
759 5,577,512
765 5,577,513
844 5,577,514
846 5,577,515
877 5,577,516
898 5,577,517

CLASS 131

32 5,577,518

CLASS 132

208 5,577,519
214 5,577,520
285 5,577,521

CLASS 134

2 5,578,133
3 5,578,134
7 5,578,135
42 5,578,137
5,578,138
111 5,577,522

CLASS 135

29 5,578,459

CLASS 136

245 5,578,139
246 5,578,140
251 5,578,141
5,578,142

CLASS 137

70 5,577,523
5,577,524
75 5,577,525
262 5,577,526
268 5,577,527
315 5,577,528
318 5,577,529
360 5,577,530
369 5,577,531
460 5,577,532
514.3 5,577,533
596.17 5,577,534

CLASS 138

99 5,577,535

CLASS 139

25.2 5,578,136
452 5,577,536

CLASS 141

18 5,577,537
94 5,577,538
332 5,577,539

CLASS 148

319 5,578,143
415 5,578,144
421 5,578,145
437 5,578,146
508 5,578,147
527 5,578,148
563 5,578,149
595 5,578,150

CLASS 149

19.9 5,578,789

CLASS 156

64 5,578,151
66 5,578,152
106 5,578,153
172 5,578,154
226 5,577,540
267 5,578,155
275.5 5,578,156
278 5,578,157
285 5,578,158
358 5,578,159
462 5,578,160
626.1 5,578,161
630.1 5,578,162
643.1 5,578,163
5,578,164
5,578,165
5,578,166
654.1 5,578,167

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CLASS 160

7 5,577,541
177 5,577,542
178.1 5,577,543
191 5,577,544

CLASS 162

164.3 5,578,168
175 5,578,169
203 5,578,170
216 5,578,171
344 5,578,172

CLASS 164

4.1 5,577,545
97 5,577,546
122 5,577,547
452 5,577,548
473 5,577,549
516 5,577,550

CLASS 165

9 5,577,551
10 5,577,553
53 5,577,554
133 5,577,555
296 5,577,552

CLASS 166

88.1 5,577,556
246 5,577,558
278 5,577,559
387 5,577,560

CLASS 169

70 5,577,561

CLASS 171

27 5,577,562

CLASS 172

456 5,577,563

CLASS 174

35 GC 5,578,790
48 5,578,791
50 5,578,792
52.1 5,578,793
5,578,794
53 5,578,795
260 5,578,796

CLASS 175

93 5,577,564
228 5,577,565
321 5,577,566

CLASS 177

5 5,578,797
136 5,578,798

CLASS 180

9.23 5,577,567
19.1 5,577,568
169 5,577,569
219 5,577,570
220 5,577,747
299 5,577,571
305 5,577,572
417 5,577,573

CLASS 181

137 5,578,799
171 5,578,800

CLASS 182

180 5,577,574

CLASS 184

6.24 5,577,575

CLASS 187

393 5,578,801

CLASS 188

65.4 5,577,576
73.36 5,577,577
171 5,577,578
315 5,577,579

CLASS 192

4 A 5,577,580
18 A 5,577,581
45.1 5,577,586
70.19 5,577,582
79 5,577,583
85 R 5,577,584
91 A 5,577,585
105 CD 5,577,587
113.35 5,577,588

CLASS 194

204 5,577,589
209 5,577,590
343 5,577,591

CLASS 198

303 5,577,592
346.1 5,577,593
347.3 5,577,594
5,577,595
349 5,577,596
465.1 5,577,597
832.2 5,577,598

CLASS 200

5 A 5,578,802
5 R 5,578,803
43.14 5,577,599
43.17 5,577,600
331 5,577,601
5,577,602
5,577,603
408 5,577,604
564 5,577,605

CLASS 203

6 5,578,173

CLASS 204

243 R 5,578,174
290 F 5,578,175
290 R 5,578,176
292 5,578,177
413 5,578,178
451 5,578,179
468 5,578,180
523 5,578,181
531 5,578,182

CLASS 205

64 5,578,183
118 5,578,184
123 5,578,185
125 5,578,186
191 5,578,187
334 5,578,188
341 5,578,189
436 5,578,190
614 5,578,191
746 5,578,193
782 5,578,194

CLASS 206

327 5,577,606
349 5,577,607
386 5,577,608
449 5,577,609
454 5,577,610
459.1 5,577,611
494 5,577,612
510 5,577,613
521 5,577,614
554 5,577,615
710 5,577,616
724 5,577,617

CLASS 208

46 5,578,195
57 5,578,196
112 5,578,197

CLASS 209

168 5,578,198
421 5,577,618

CLASS 210

85 5,578,223
96.1 5,578,199
134 5,578,200
142 5,578,201
150 5,578,202
168 5,578,203
198.2 5,578,204
199 5,578,205
236 5,578,206
323.2 5,578,207
487 5,578,208
512.1 5,578,209
610 5,578,210
5,578,211
5,578,212
638 5,578,213
641 5,578,214
650 5,578,215
659 5,578,216
5,578,217
670 5,578,218
672 5,578,219
730 5,578,220
747 5,578,221
767 5,578,222
773

CLASS 211

13 5,577,619
40 5,577,620
41 5,577,621
132 5,577,622
187 5,577,623

CLASS 215

221 5,577,624
235 5,577,625
237 5,577,626

CLASS 216

2 5,578,224
24 5,578,225
33 5,578,226

CLASS 218

43 5,578,804
5,578,805
59 5,578,806

CLASS 219

121.63 5,578,227
121.72 5,578,228
5,578,229
211 5,578,230
388 5,578,231
532 5,578,232
645 5,578,233

CLASS 220

4.23 5,577,627
343 5,577,628
525 5,577,629
581 5,577,630
603 5,577,631
730 5,577,632

CLASS 221

1 5,577,633
43 5,577,634
45 5,577,635

CLASS 222

94 5,577,636
137 5,577,637
185.1 5,577,638
192 5,577,639
378 5,577,640
386 5,577,641
438 5,577,642
529 5,577,643

CLASS 223

85 5,577,644
87 5,577,645

CLASS 224

148.6 5,577,647
321 5,577,649
5,577,650
422 5,577,646
578 5,577,652
637 5,577,648
684 5,577,653

CLASS 227

175.1 5,577,654

CLASS 228

56.3 5,577,655
123.1 5,577,656
180.1 5,577,657
222 5,577,658

CLASS 229

125.29 5,577,659

CLASS 235

95 R 5,578,807
380 5,578,808
462 5,578,809
472 5,578,810
479 5,578,811

CLASS 236

12.12 5,577,660

CLASS 237

1 R 5,577,661

CLASS 238

8 5,577,662

CLASS 239

1 5,577,663
99 5,577,664
256 5,577,665
290 5,577,666
533.8 5,577,667
559 5,577,668

CLASS 241

1 5,577,669
5 5,577,670
14 5,577,671
5,577,672
33 5,577,673
46.15 5,577,674
65 5,577,675

CLASS 242

18.1 5,577,676
118.11 5,577,677
283 5,577,678
286 5,577,679
313 5,577,680
342 5,577,681
348.3 5,577,682
383.2 5,577,683
533.2 5,577,684
547 5,577,685
597.4 5,577,686

CLASS 244

110 E 5,577,687
117 R 5,577,688
138 R 5,577,689

CLASS 246

169 R 5,577,690
437 5,577,691

CLASS 248

106 5,577,692
176.1 5,577,693
188 5,577,694
200 5,577,695
206.5 5,577,696
5,577,697
214 5,577,698
218.3 5,577,699
261 5,577,700
524 5,577,701
544 5,577,702
550 5,577,703
688 5,577,704

CLASS 250

201.2 5,578,812
208.1 5,578,813
5,578,814
214 R 5,578,815
221 5,578,816
5,578,817
234 5,578,818
235 5,578,819
256 5,578,820
310 5,578,821
5,578,822
311 5,578,823
318 5,578,824
338.1 5,578,825
338.3 5,578,826
339.04 5,578,827
342 5,578,828
343 5,578,829
390.03 5,578,830
398 5,578,831
458.1 5,578,832
461.1 5,578,833
551 5,578,834
587 5,578,835

CLASS 251

129.15 5,577,705
149.6 5,577,706
159 5,577,707
315.11 5,577,708
315.14 5,577,709

CLASS 252

62.52 5,578,238
88.1 5,578,239
299.01 5,578,241
5,578,242
299.61 5,578,243
314 5,578,244
389.23 5,578,245
432 5,578,246
500 5,578,247
518 5,578,248
519 5,578,249
582 5,578,251
586 5,578,252
700 5,578,253

CLASS 254

25 5,577,711

CLASS 256

7 5,577,712
24 5,577,710
64 5,577,713
65 5,577,714

CLASS 257

50 5,578,836
53 5,578,837
66 5,578,838
96 5,578,839
207 5,578,840
220 5,578,841
223 5,578,842
254 5,578,843
280 5,578,844
295 5,578,845
5,578,846
296 5,578,847
5,578,848
5,578,849
298 5,578,850
329 5,578,851
330 5,578,854
349 5,578,852
351 5,578,853
5,578,855
371 5,578,856
378 5,578,857
391 5,578,863
433 5,578,864
467 5,578,859
492 5,578,860
528 5,578,861
529 5,578,862
547 5,578,865
611 5,578,866
620 5,578,867
632 5,578,871
676 5,578,868
679 5,578,869
691 5,578,870
727 5,578,872
751 5,578,873
754 5,578,874
778

CLASS 261

112.2 5,578,254

CLASS 264

29.5 5,578,255
40.1 5,578,256
5,578,257
118 5,578,258
223 5,578,260
272.15 5,578,261
532 5,578,262
537 5,578,263

CLASS 266

263 5,578,264

CLASS 267

220 5,577,716

CLASS 269

87.2 5,577,717

CLASS 270

1.01 5,577,718

CLASS 271

227 5,577,719
265.04 5,577,720

CLASS 273

26 A 5,577,721
26 B 5,577,722
58 H 5,577,723
65 A 5,577,724
67 A 5,577,725
5,577,727
157 A 5,577,728
260 5,577,730
274 5,577,729
292 5,577,731
317 5,577,732
348 5,577,733
407 5,577,734
439 5,577,735
442 5,577,736

CLASS 277

1 5,577,737
9.5 5,577,738
26 5,577,740
39 5,577,739
153 5,577,741
203 5,577,742

CLASS 279

72 5,577,743

CLASS 280

32.6 5,577,744
47.19 5,577,745
204 5,577,746
244 5,577,748
250.1 5,577,753
261 5,577,749
293 5,577,750
415.1 5,577,751
432 5,577,752
605 5,577,754
607 5,577,755
617 5,577,756
624 5,577,757
673 5,577,758
688 5,577,759
689 5,577,760
705 5,577,761
728.2 5,577,762
5,577,763
5,577,764
729 5,577,765
731 5,577,766
5,577,767
735 5,577,768
736 5,577,769
752 5,577,770
772 5,577,771
838 5,577,772

CLASS 283

93 5,577,774

CLASS 285

24 5,577,775
55 5,577,776
354 5,577,777

CLASS 289

17 5,577,778

CLASS 292

80 5,577,779
170 5,577,780
195 5,577,781
216 5,577,782
268 5,577,783

CLASS 293

120 5,577,784

CLASS 294

19.1 5,577,785
34.5 5,577,786
82.19 5,577,787
96 5,577,788

CLASS 296

24.1 5,577,789
63 5,577,790
97.5 5,577,791
97.9 5,577,792
146.4 5,577,793
146.6 5,577,794
190 5,577,795
202 5,577,796
203 5,577,797
216 5,577,798

CLASS 297

35 5,577,799
195.11 5,577,800
201 5,577,801
301.2 5,577,802
314 5,577,803
344.19 5,577,804
378.12 5,577,805
423.46 5,577,806
452.15 5,577,811
463.1 5,577,807

CLASS 299

39.2 5,577,808

CLASS 301

37.43 5,577,809
63.1 5,577,810

CLASS 303

112 5,577,812
116.4 5,577,813
118.1 5,577,814
119.2 5,577,815
174 5,577,816

CLASS 307

66 5,578,875
80 5,578,876

CLASS 310

15 5,578,877
51 5,578,878
54 5,578,879
90.5 5,578,880
5,578,881
5,578,882
91 5,578,883
154 5,578,884
263 5,578,885

306 5,578,886
323 5,578,887
328 5,578,888
339 5,578,889
340 5,578,890

CLASS 312

107 5,577,817
235.8 5,577,818
242 5,577,819
319.2 5,577,820
334.11 5,577,821
404 5,577,822
5,577,823

CLASS 313

103 R 5,578,891
112 5,578,892
5,578,893
141 5,578,894
5,578,895
309 5,578,896
310 5,578,897
402 5,578,898
422 5,578,899
495 5,578,900
496 5,578,901
5,578,902
583 5,578,903

CLASS 315

76 5,578,905
169.3 5,578,906
209 R B1 5,138,236
247 5,578,907
306 B1 4,940,916
307 5,578,908
505 5,578,909

CLASS 318

285 5,578,910
376 5,578,911
434 5,578,912
569 5,578,913

CLASS 320

18 5,578,914
48 5,578,915

CLASS 323

267 5,578,916

CLASS 324

76.15 5,578,917
146 5,578,918
158.1 5,578,919
207.16 5,578,904
301 5,578,920
307 5,578,921
5,578,922
309 5,578,923
5,578,924
318 5,578,925
345 5,578,926
434 5,578,927
509 5,578,928
530 5,578,930
536 5,578,931
601 5,578,932
639 5,578,933
758 5,578,934
763 5,578,935
767 5,578,936
772 5,578,937

CLASS 326

16 5,578,938
30 5,578,939
5,578,940
B2 5,272,396
B2 5,338,979
34 5,578,941
38 5,578,942
86 5,578,943
5,578,944
93 5,578,945
5,578,946

CLASS 327

7 5,578,947
103 5,578,949
110 5,578,950
119 5,578,948
143 5,578,951
172 5,578,952
215 5,578,953
258 5,578,954
292 5,578,955
309 5,578,956
333 5,578,957
350 5,578,958
356 5,578,959
535 5,578,960
543 5,578,961

CLASS 330

9 5,578,962
252 5,578,963
253 5,578,964
254 5,578,965
263 5,578,966
5,578,967

CLASS 331

1 A 5,578,968
40 5,578,969
75 5,578,970

CLASS 332

149 5,578,971

CLASS 333

135 5,578,972
5,578,973
187 5,578,974
202 5,578,975
262 5,578,976

CLASS 335

132 5,578,980
207 5,578,977
239 5,578,978
245 5,578,979

CLASS 336

171 5,578,981

CLASS 337

298 5,578,982

CLASS 340

438 B 5,578,983
444 5,578,984
461 5,578,985
475 5,578,986
506 5,578,987
522 5,578,988
539 5,578,989
541 5,578,990
571 5,578,991
574 5,578,992
614 5,578,993
618 5,578,994
627 5,578,995
628 5,578,996
632 5,578,997
642 5,578,998
825.22 5,578,999
825.3 5,579,000
870.01 5,579,001
908.1 5,577,824

CLASS 341

23 5,579,002
59 5,579,003
144 5,579,004
155 5,579,005
162 5,579,006
172 5,579,007

CLASS 342

44 5,579,008
55 5,579,009
70 5,579,010
113 5,579,011
117 5,579,012
357 5,579,013
5,579,014
375 5,579,015
378 5,579,016

CLASS 343

722 5,579,017
757 5,579,018
771 5,579,019
776 5,579,020
781 P 5,579,021
851 5,579,023
909 5,579,024

CLASS 345

3 5,579,025
8 5,579,026
100 5,579,027
115 5,579,028
132 5,579,029
143 5,579,030
154 5,579,031
157 5,579,032
161 5,579,033
168 5,579,034
169 5,579,035
173 5,579,036
5,579,037

CLASS 347

36 5,579,038
49 5,579,039
88 5,579,040
171 5,579,041
217 5,579,042
222 5,579,043
236 5,579,044

CLASS 348

208 5,579,045
232 5,579,046
242 5,579,047
333 5,579,048
364 5,579,049
413 5,579,050
415 5,579,051
416 5,579,052
448 5,579,053
452 5,579,054
476 5,579,055
555 5,579,056
589 5,579,057
699 5,579,058
5,579,059
705 5,579,060
731 5,579,061

CLASS 351

92 5,579,062
211 5,579,063

CLASS 352

38 5,579,064

CLASS 353

31 5,577,826

CLASS 355

50 5,579,083
53 5,579,084
200 5,579,085
5,579,086
202 5,579,087
203 5,579,088
208 5,579,089
5,579,090
5,579,091
211 5,579,093
215 5,579,094
219 5,579,095
260 5,579,101
271 5,579,096
282 5,579,097
5,579,098
308 5,579,099
326 R 5,579,100

CLASS 356

3.12 5,579,102
5.1 5,579,103
73 5,579,104
310 5,579,105
336 5,579,107
345 5,579,108
349 5,579,109
350 5,579,110
356 5,579,111
360 5,579,112
426 5,579,113
528 5,579,106

CLASS 358

296 5,579,115
5,579,116
5,579,117
403 5,579,126
434 5,579,127
471 5,579,128
474 5,579,129
482 5,579,114
501 5,579,130
518 5,579,131
527 5,579,132

CLASS 359

49 5,579,134
52 5,579,135
53 5,579,136
62 5,579,137
63 5,579,138
73 5,579,139
75 5,579,140
5,579,141
102 5,579,142
130 5,579,143
153 5,579,144
189 5,579,145
196 5,579,146
204 5,579,147
214 5,579,148
223 5,579,149
241 5,579,150
291 5,579,151
330 5,579,152
341 5,579,153
5,579,154
344 5,579,155
363 5,579,156
368 5,579,157
482 5,579,158
487 5,579,159
557 5,579,160
559 5,579,161
580 5,579,162
591 5,579,163
618 5,579,164
630 5,579,165
636 5,579,166
643 5,579,167
653 5,579,168
682 5,579,169
687 5,579,171
688 5,579,172
700 5,579,173
784 5,579,174
814 5,579,175
822 5,579,176
837 5,579,177
841 5,579,178
846 5,579,179
847 5,579,180
866 5,579,133

CLASS 360

41 5,579,182
48 5,579,183
51 5,579,184
73.06 5,579,185
75 5,579,186
85 5,579,187
99.08 5,579,188
105 5,579,189
106 5,579,190
132 5,579,191

CLASS 361

18 5,579,192
5,579,193
24 5,579,194
62 5,579,195
86 5,579,196
93 5,579,197
5,579,198
111 5,579,200
119 5,579,201
232 5,579,202
519 5,579,203
685 5,579,204
704 5,579,205
784 5,579,206
790 5,579,207
813 5,579,208
814 5,579,209
816 5,579,210
819 5,579,211
820 5,579,212
823 5,579,213

CLASS 362

61 5,577,836
102 5,577,827
103 5,577,828
119 5,577,829
152 5,577,830
240 5,577,831
249 5,577,832
297 5,577,833
302 5,577,834
353 5,577,835
405 5,577,838

CLASS 363

44 5,579,214
57 5,579,215
84 5,579,216
144 5,579,217

CLASS 364

130 5,579,218
133 5,579,219
187 5,579,220
188 5,579,221
424.03 5,579,227
424.05 5,579,228
5,579,229
424.1 5,579,225
5,579,226
426.02 5,579,230
468.01 5,579,231
474.17 5,579,232
479.1 5,579,233
481 5,579,234
483 5,579,235
5,579,236

CLASS 365

51 5,579,256
108 5,579,199
145 5,579,257
5,579,258
185.14 5,579,259
185.24 5,579,260
185.33 5,579,261
5,579,262
189.02 5,579,263
189.05 5,579,264
5,579,267
200 5,579,265
5,579,266
5,579,268
5,579,269
73.06 5,579,270
5,579,271
5,579,272
205 5,579,273
208 5,579,274
226 5,579,276
230.02 5,579,277
230.05 5,579,278
230.08 5,579,279
230.09 5,579,275
238.5 5,579,280

CLASS 366

76.3 5,577,839
145 5,577,837

CLASS 367

50 5,579,281
75 5,579,282
83 5,579,283
132 5,579,284
133 5,579,285
154 5,579,286
167 5,579,287

CLASS 368

10 5,579,288
19 5,579,289
76 5,579,290

CLASS 369

13 5,579,291
5,579,292
5,579,293
58 5,579,294
112 5,579,298
219 5,579,295
273 5,579,296
291 5,579,297

CLASS 370

9 5,579,299
16 5,579,300
17 5,579,301
5,579,302
5,579,303
18 5,579,304
32.1 5,579,305
50 5,579,306
54 5,579,307
58.1 5,579,308
58.2 5,579,309
60 5,579,310
60.1 5,579,311
5,579,312
62 5,579,313
68.1 5,579,314
85.2 5,579,315
94.1 5,579,316
5,579,317
94.2 5,579,318
95.1 5,579,320
95.3 5,579,319
5,579,321
99 5,579,323
105.1 5,579,324
105.2 5,579,325

CLASS 371

22.3 5,579,322
61 5,579,326

CLASS 372

20 5,579,327
31 5,579,328
38 5,579,329
45 5,579,331
84 5,579,332
99 5,579,333

CLASS 373

109 5,579,334

CLASS 374

130 5,577,840
140 5,577,841

CLASS 375

200 5,579,335
206 5,579,337
208 5,579,338
219 5,579,336
220 5,579,339
222 5,579,497
232 5,579,340
267 5,579,341
296 5,579,342
341 5,579,343
5,579,344
344 5,579,345
5,579,346
346 5,579,347
355 5,579,348
370 5,579,349
371 5,579,350
5,579,351
376 5,579,352
5,579,353

CLASS 376

245 5,579,354
298 5,579,355

CLASS 377

20 5,579,356

CLASS 378

4 5,579,357
5,579,358
19 5,579,359
37 5,579,360
38 5,579,361
59 5,579,362
84 5,579,363
130 5,579,364
138 Re.35,383
147 5,579,365
189 5,579,366

CLASS 379

1 5,579,367
15 5,579,368
22 5,579,369
34 5,579,370
5,579,371
58 5,579,372
59 5,579,373
5,579,374
5,579,375
60 5,579,376
74 5,579,377
106 5,579,378
112 5,579,379
165 5,579,380
201 5,579,381
209 5,579,382
212 5,579,383
221 5,579,385
243 5,579,384
252 5,579,386
357 5,579,387
388 5,579,389
433 5,579,388

CLASS 380

11 5,579,390
15 5,579,391
18 5,579,392
25 5,579,393
49 5,579,394

CLASS 381

1 5,579,395
18 5,579,396
106 5,579,404
113 5,579,397
154 5,579,398
165 5,579,399
183 5,579,400

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CLASS 382

100 5,579,401
132 5,579,402
164 5,579,407
187 5,579,408
197 5,579,405
200 5,579,406
203 5,579,409
5,579,410
217 5,579,411
240 5,579,412
248 5,579,413
254 5,579,414
282 5,579,415
293 5,579,416
298 5,579,417
300 5,579,418
301 5,579,419

CLASS 384

114 5,577,842
275 5,577,843
484 5,577,844
5,577,845
492 5,577,846
517 5,577,847

CLASS 385

11 5,579,420
14 5,579,421
34 5,579,422
35 5,579,423
49 5,579,424
59 5,579,425
88 5,579,426
124 5,579,427
5,579,428
143 5,579,429

CLASS 386

8 5,579,118
9 5,579,119
46 5,579,122
5,579,181
94 5,579,120
96 5,579,123
5,579,124
109 5,579,121
350 5,579,125

CLASS 395

2.12 5,579,430
2.23 5,579,431
5,579,432
2.28 5,579,434
2.42 5,579,435
2.53 5,579,436
2.71 5,579,437
3 5,579,438
11 5,579,439
20 5,579,440
51 5,579,441
81 5,579,442
94 5,579,444
102 5,579,445
5,579,451
109 5,579,446
5,579,447
110 5,579,448
5,579,449
115 5,579,450
5,579,452
5,579,453
121 5,579,454
122 5,579,455
128 5,579,456
132 5,579,457
133 5,579,458
134 5,579,459
5,579,461
137 5,579,460
140 5,579,462
5,579,463
141 5,579,464
182.04 5,579,474
182.05 5,579,475
183.08 5,579,476
183.2 5,579,477
186 5,579,478
188.01 5,579,479
200.01 5,579,481
5,579,483
200.08 5,579,484
200.1 5,579,480
5,579,482
200.14 5,579,485
200.15 5,579,486
228 5,579,433
280 5,579,487
5,579,488
281 5,579,489
5,579,490
283 5,579,491
290 5,579,492
326 5,579,468
5,579,469
5,579,471
5,579,472
375 5,579,493
383 5,579,495
419 5,579,499
421.06 5,579,501
421.1 5,579,500
430 5,579,502
446 5,579,503
471 5,579,504
482 5,579,305
483 5,579,506
497.02 5,579,507
497.03 5,579,508
500 5,579,509
5,579,510
5,579,511
5,579,512
501 5,579,473
559 5,579,513
567 5,579,496
588 5,579,494
595 5,579,498
601 5,579,516
607 5,579,514
5,579,515
616 5,579,517
652 5,579,522
671 5,579,528
680 5,579,521
704 5,579,520
705 5,579,518
5,579,519
712 5,579,222
726 5,579,523
750 5,579,524
751 5,579,223
752 5,579,224
768 5,579,467
788 5,579,465
793 5,579,466
800 5,579,525
5,579,526
5,579,527
828 5,579,529
855 5,579,530
871 5,579,531

CLASS 396

22 5,579,065
51 5,579,077
5,579,078
5,579,079
72 5,579,069
158 5,579,082
161 5,579,081
173 5,579,068
279 5,579,066
311 5,579,067
428 5,579,071
538 5,579,070
579 5,579,072
598 5,579,073
622 5,579,074
626 5,579,075
627 5,579,076

CLASS 400

472 5,577,848
490 5,577,849

CLASS 401

83 5,577,850
202 5,577,851

CLASS 402

31 5,577,852
46 5,577,853

CLASS 403

2 5,577,854
291 5,577,855
294 5,577,856
316 5,577,857
5,577,858
325 5,577,859
403 5,577,860

CLASS 404

6 5,577,861

CLASS 405

53 5,577,862
87 5,577,863
154 5,577,864
266 5,577,865
284 5,577,866

CLASS 407

114 5,577,867

CLASS 408

14 5,577,868

CLASS 411

7 5,577,870
404 5,577,871
432 5,577,872

CLASS 414

138.3 5,577,874
400 5,577,873
408 5,577,877
680 5,577,875
699 5,577,876
708 5,577,878
735 5,577,902
744.5 5,577,879

CLASS 415

53.1 5,577,882
55.1 5,577,880
55.6 5,577,881
90 5,577,883
105 5,577,885
115 5,577,884
172.1 5,577,886
174.2 5,577,887
210.1 5,577,888

CLASS 416

97 R 5,577,889

CLASS 417

44.2 5,577,890
53 5,577,891
5,577,892
151 5,577,893
5,577,894
238 5,577,895
259 5,577,896
310 5,577,897
312 5,577,898
371 5,577,899
407 5,577,900
571 5,577,901

CLASS 418

66 5,577,903

CLASS 419

2 5,579,532
28 5,579,533

CLASS 420

40 5,578,265
83 5,578,266

CLASS 422

46 5,578,267
63 5,578,268
64 5,578,269
67 5,578,270
98 5,578,271
102 5,578,272
110 5,578,273
111 5,578,274
163 5,578,275
173 5,578,276
180 5,578,277
186.07 5,578,280
234 5,578,278
245.1 5,578,279
307 5,578,281

CLASS 423

50 5,578,282
240 R 5,578,283
348 5,578,284
593 5,578,285
5,578,286

CLASS 424

1.49 5,578,287
1.53 5,578,289
1.69 5,578,288
9.4 5,578,290
9.5 5,578,291
9.51 5,578,292
49 5,578,293
52 5,578,294
57 5,578,295
62 5,578,296
70.122 5,578,298
70.7 5,578,297
78.03 5,578,299
78.08 5,578,300
85.1 5,578,301
93.45 5,578,302
93.71 5,578,303
94.1 5,578,304
94.64 5,578,305
143.1 5,578,306
195.1 5,578,307
240.1 5,578,308
274.1 5,578,309
401 5,578,310
5,578,311
5,578,312
423 5,578,313
424 5,578,314
435 5,578,315
441 5,578,316
443 5,578,317
5,578,318
448 5,578,319
450 5,578,320
453 5,578,321
490 5,578,322
499 5,578,323
5,578,324
5,578,325
501 5,578,326
529

CLASS 425

62 5,578,327
71 5,578,328
192 R 5,578,329
198 5,578,330
445 5,578,331
555 5,578,332
588 5,578,333

CLASS 426

2 5,578,334
51 5,578,335
72 5,578,336
573 5,578,337
597 5,578,338
658 5,578,339

CLASS 427

2.1 5,578,340
97 5,578,341
131 5,578,342
202 5,578,343
211 5,578,344
333 5,578,345
5,578,346
336 5,578,347
389 5,578,348
453 5,578,349
596 5,578,350

CLASS 428

1 5,578,351
40.1 5,578,352
43 5,578,353
64.3 5,578,355
95 5,578,357
104 5,578,358
131 5,578,359
138 5,578,360
144 5,578,361
147 5,578,362
194 5,578,363
195 5,578,364
5,578,365
209 5,578,366
5,578,367
229 5,578,368
247 5,578,369
288 5,578,370
5,578,371
336 5,578,372
364 5,578,373
5,578,374
402 5,578,375
425.9 5,578,376
426 5,578,377
441 5,578,378
446 5,578,379
447 5,578,380
5,578,381
480 5,578,382
547 5,579,534
551 5,578,383
608 5,578,384
611 5,578,385
614 5,578,386
694 T 5,578,387

CLASS 429

30 5,578,388
49 5,578,389
93 5,578,390
97 5,578,391
99 5,578,392
120 5,578,393
155 5,578,394
197 5,578,395
209 5,578,396
211 5,578,397
233 5,578,398
245 5,578,399
249 5,578,400

CLASS 430

5 5,578,401
5,578,402
7 5,578,403
5,578,404
59 5,578,405
83 5,578,406
106 5,578,407
106.6 5,578,408
109 5,578,409
133 5,578,410
139 5,578,411
257 5,578,412
258 5,578,413
264 5,578,414
270.11 5,578,415
270.18 5,578,416
280.1 5,578,417
5,578,418
281.1 5,578,419
306 5,578,420
313 5,578,421
5,578,422
314 5,578,423
333 5,578,424
347 5,578,425
383 5,578,426
393 5,578,427
398 5,578,428
401 5,578,429
5,578,430
429 5,578,431
436 5,578,432
480 5,578,433
501 5,578,434
503 5,578,435
558 5,578,437
567 5,578,438
576 5,578,439
581 5,578,440
599 5,578,441

CLASS 431

8 5,577,904
66 5,577,905
268 5,577,906

CLASS 432

159 5,577,907
239 5,577,908
5,577,909

CLASS 433

92 5,577,910
119 5,577,911
172 5,577,912

CLASS 434

69 5,577,913
113 5,577,914
238 5,577,915
252 5,577,916
304 5,577,917
319 5,577,918
322 5,577,919

CLASS 435

1.1 5,578,442
5 5,578,448
6 5,578,443
5,578,444
5,578,445
5,578,446
5,578,449
5,578,450
5,578,458
7.1 5,578,451
7.21 5,578,452
7.22 5,578,453
7.32 5,578,455
7.36 5,578,456
7.93 5,578,457
29 5,578,460
69.1 5,578,461
5,578,462
5,578,463
5,578,464
5,578,465
69.7 5,578,466
91.2 5,578,467
91.32 5,578,468
100 5,578,469
130 5,578,470
131 5,578,471
161 5,578,472
172.3 5,578,473
5,578,474
5,578,475
189 5,578,476
195 5,578,478
202 5,578,479
232 5,578,480
5,578,481
240.1 5,578,482
240.2 5,578,483
240.243 5,578,485
240.27 5,578,484
243 5,578,486
262.5 5,578,487
5,578,488
263 5,578,489
287.1 5,578,490
288.1 5,578,491
297.5 5,578,492
320.1 5,578,493
793 5,578,477

CLASS 436

54 5,578,494
178 5,578,495
506 5,578,496
518 5,578,498
524 5,578,499
537 5,578,500

CLASS 437

2 5,578,501
4 5,578,502
5 5,578,503
8 5,578,504
5,578,505
21 5,578,506
24 5,578,507
35 5,578,508
5,578,509
5,578,510
5,578,511
39 5,578,512
40 5,578,513
41 5,578,514
43 5,578,515
52 5,578,516
60 5,578,517
67 5,578,518
5,578,519
81 5,578,520
112 5,578,521
186 5,578,522
190 5,578,523
195 5,578,524
206 5,578,525
209 5,578,526
5,578,527
228 5,578,528
5,578,529
238 5,578,530
245 5,578,532

CLASS 439

34 5,577,920
125 5,577,921
157 5,577,922
170 5,577,923
188 5,577,924
191 5,577,925
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540.1 5,577,934
581 5,577,935
607 5,577,936
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CLASS 440

27 5,577,940
46 5,577,941

CLASS 441

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CLASS 445

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CLASS 446

75 5,577,945
208 5,577,946
220 5,577,947

CLASS 451

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36 5,577,949
42 5,577,950
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95 5,577,953

179 5,577,954
455 5,577,955
539 5,577,956

CLASS 453

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CLASS 454

233 5,577,958

CLASS 455

33.1 5,579,535
34.1 5,579,536
66 5,579,537
89 5,579,443

CLASS 463

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CLASS 464

77 5,577,963

CLASS 473

54 5,577,971
145 5,577,964
230 5,577,965
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279 5,577,967
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CLASS 474

78 5,577,969
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CLASS 475

5 5,577,973
120 5,577,974
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CLASS 477

78 5,577,978
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144 5,577,980

CLASS 482

4 5,577,981
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11 5,577,983
43 5,577,984
52 5,577,985
63 5,577,986
140 5,577,987

CLASS 493

154 5,577,988
169 5,577,989

CLASS 501

17 5,578,533
32 5,578,534
35 5,578,535
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134 5,578,539

CLASS 502

115 5,578,540
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126 5,578,541
167 5,578,542
180 5,578,543
226 5,578,544
327 5,578,546
407 5,578,547

CLASS 503

202 5,578,548
227 5,578,545
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CLASS 504

253 5,578,550
285 5,578,552

CLASS 505

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CLASS 508

188 5,578,236
231 5,578,556
391 5,578,235
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454 5,578,237
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CLASS 510

192 5,578,559
237 5,578,560
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513 5,578,240
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CLASS 514

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522 5,578,639
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547 5,578,641
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574 5,578,644
648 5,578,645
680 5,578,646

CLASS 518

700 5,578,647

CLASS 521

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114 5,578,653
155 5,578,655
166 5,578,656

CLASS 522

92 5,578,657

CLASS 523

105 5,578,658
212 5,578,659
443 5,578,660

CLASS 524

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517 5,578,673
575 5,578,674
589 5,578,675
609 5,578,676

CLASS 525

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131 5,578,680
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CLASS 526

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CLASS 527

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CLASS 528

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198 5,578,694
271 5,578,695
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373 5,578,699
501 5,578,700

CLASS 530

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395 5,578,707
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410 5,578,709
412 5,578,710

CLASS 534

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634 5,578,712

CLASS 536

18.5 5,578,713
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26.1 5,578,717
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CLASS 540

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CLASS 544

192 5,578,723
234 5,578,724

CLASS 546

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CLASS 548

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CLASS 549

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CLASS 585

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CLASS 600

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CLASS 601

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CLASS 602

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CLASS 604

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CLASS 606

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174 5,578,052
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192 5,578,048
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205 5,578,056
232 5,578,057
236 5,578,058

CLASS 607

3 5,578,060
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19 5,578,064
46 5,578,065
58 5,578,066
122 5,578,067
126 5,578,068
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742 375,824
866 375,825
882 375,826
891 375,827
898 375,828
904 375,829
907 375,830
978 375,831
D3— 123 375,832
217 375,833
274 375,834
289 375,835
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324 375,838
D4— 104 375,839
105 375,840
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132 375,842
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D6— 334 375,845
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632 375,864
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319 375,866
340 375,867
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698 375,877
700 375,878
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396 375,894
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305 375,896
344 375,897
415 375,898
521 375,899
563 375,900
D10— 6 375,901
15 375,902
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103 375,907
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116 375,912
D11— 13 375,913
90 375,914
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131 375,916
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164 375,918
216 375,919
D12— 218 375,920
101 375,921
117 375,922
162 375,923
168 375,924
181 375,925
187 375,926
188 375,927
191 375,928
197 375,929
306 375,930
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D13— 103 375,932
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107 375,934
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152 375,938

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	161	375,940		213	375,959	D19—	65	375,976		117	375,994		158	376,012		138	376,031
	182	375,941		223	375,960		90	375,977		118	375,995		169	376,013		139	376,032
	184	375,942	D15—	5	375,961	D20—	10	375,978		148	375,996		194	376,014		162	376,033
D14—	100	375,943		7	375,962		17	375,979		149	375,997		211	376,015	D27—	20	376,034
	102	375,944		9	375,963	D21—	40	375,980	D23—	201	375,998		214	376,016	D28—	91.1	376,035
	107	375,945		17	375,964		48	375,981		233	375,999	D25—	33	376,017		35	376,036
	113	375,946		136	375,965		61	375,982		342	376,000		124	376,018	D34—		
	115	375,947		143	375,966		108	375,983		356	376,001			376,019			
	118	375,948		146	375,967		114	375,984		366	376,002			376,020			
	135	375,949		150	375,968		191	375,985		372	376,003		126	376,021			
	137	375,950	D16—	133	375,969		204	375,986		377	376,004	D26—	38	376,022			
	138	375,951		134	375,970		214	375,987		382	376,005			376,023			
		375,952		225	375,971		219	375,988		388	376,006		41	376,024			
	146	375,953		330	375,972		237	375,989		393	376,007		47	376,025			
	151	375,954	D18—	4	375,973			375,990		411	376,008		63	376,026			
	162	375,955		34	375,974			375,991			376,009		133	376,027			
	197	375,956		53		D22—	104	375,992	D24—	133	376,010		134	376,028			

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P.—	1	9,705		34.1	9,707		44	9,709		68.1	9,711			9,713			
	11	9,706			9,708		54.1	9,710		82.2	9,712		88.1	9,714			

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PATENTS

01	:	5,577,293	5,577,509	5,578,042	5,578,573	5,579,016	5,579,482										
		5,577,403	5,577,512	5,578,044	5,578,615	5,579,018	5,579,486										
		5,577,800	5,577,513	5,578,050	5,578,641	5,579,021	5,579,489										
		5,578,232	5,577,530	5,578,052	5,578,683	5,579,064	5,579,510										
		5,579,222	5,577,550	5,578,054	5,578,699	5,579,071	5,579,519										
		5,579,316	5,577,556	5,578,069	5,578,701	5,579,107	5,579,520										
		5,579,320	5,577,574	5,578,074	5,578,704	5,579,134	5,579,521										
04	:	5,577,286	5,577,602	5,578,077	5,578,717	5,579,144	5,579,524										
		5,577,419	5,577,607	5,578,080	5,578,718	5,579,163	5,579,537										
		5,577,497	5,577,655	5,578,081	5,578,736	5,579,166	5,272,396										
		5,577,659	5,577,686	5,578,082	5,578,774	5,579,188	5,338,979										
		5,577,697	5,577,687	5,578,083	5,578,777	5,579,192	08	:	5,577,466								
		5,577,763	5,577,704	5,578,118	5,578,779	5,579,200			5,577,489								
		5,577,767	5,577,710	5,578,119	5,578,784	5,579,201			5,577,862								
		5,577,818	5,577,713	5,578,131	5,578,789	5,579,205			5,577,919								
		5,577,965	5,577,755	5,578,139	5,578,813	5,579,207			5,577,971								
		5,578,167	5,577,759	5,578,145	5,578,817	5,579,217			5,578,149								
		5,578,336	5,577,783	5,578,146	5,578,818	5,579,250			5,578,230								
		5,578,860	5,577,785	5,578,157	5,578,821	5,579,253			5,578,279								
		5,578,870	5,577,790	5,578,165	5,578,832	5,579,259			5,578,317								
		5,578,906	5,577,806	5,578,179	5,578,834	5,579,261			5,578,371								
		5,578,957	5,577,807	5,578,180	5,578,836	5,579,262			5,578,502								
		5,578,961	5,577,817	5,578,183	5,578,837	5,579,274			5,578,564								
		5,579,257	5,577,820	5,578,185	5,578,840	5,579,277			5,578,769								
		5,579,297	5,577,829	5,578,203	5,578,843	5,579,296			5,578,867								
		5,579,307	5,577,832	5,578,226	5,578,851	5,579,301			5,579,062								
		5,579,394	5,577,842	5,578,240	5,578,855	5,579,305			5,579,189								
		5,579,437	5,577,851	5,578,274	5,578,869	5,579,308			5,579,383								
		5,579,501	5,577,861	5,578,280	5,578,872	5,579,317			5,579,478								
		5,579,536	5,577,890	5,578,290	5,578,874	5,579,335			5,579,516								
06	:	5,577,280	5,577,909	5,578,310	5,578,882	5,579,348	09	:	5,577,272								
		5,577,287	5,577,912	5,578,312	5,578,899	5,579,352			5,577,278								
		5,577,300	5,577,913	5,578,314	5,578,921	5,579,356			5,577,379								
		5,577,311	5,577,932	5,578,342	5,578,923	5,579,367			5,577,799								
		5,577,312	5,577,955	5,578,359	5,578,940	5,579,389			5,577,910								
		5,577,329	5,577,961	5,578,384	5,578,945	5,579,390			5,577,918								
		5,577,335	5,577,968	5,578,390	5,578,946	5,579,393			5,578,046								
		5,577,343	5,577,993	5,578,442	5,578,954	5,579,404			5,578,048								
		5,577,380	5,577,995	5,578,444	5,578,962	5,579,407			5,578,187								
		5,577,385	5,578,000	5,578,452	5,578,966	5,579,414			5,578,221								
		5,577,439	5,578,007	5,578,461	5,578,967	5,579,422			5,578,662								
		5,577,440	5,578,009	5,578,463	5,578,969	5,579,439			5,578,693								
		5,577,455	5,578,010	5,578,474	5,578,970	5,579,446			5,578,758								
		5,577,459	5,578,013	5,578,483	5,578,976	5,579,455			5,578,881								
		5,577,461	5,578,027	5,578,498	5,578,988	5,579,467			5,579,106								
		5,577,465	5,578,028	5,578,515	5,578,990	5,579,471			5,579,158								
		5,577,492	5,578,029	5,578,532	5,578,993	5,579,473			5,579,243								
		5,577,493	5,578,035	5,578,568	5,579,002	5,579,475			5,579,288								
		5,577,506	5,578,040	5,578,572	5,579,008	5,579,480			5,579,449								

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